



## Country Reports

Italy

## **YEARBOOK OF WORLD ELECTRONICS DATA 2021**

**The following report has been extracted from the Volume 1 of the 2021 Yearbook of World Electronics Data. Further information on the full report which was published in May 2021 can be found at [www.rer.co.uk](http://www.rer.co.uk) or via email at [andrew.fletcher@rer.co.uk](mailto:andrew.fletcher@rer.co.uk).**

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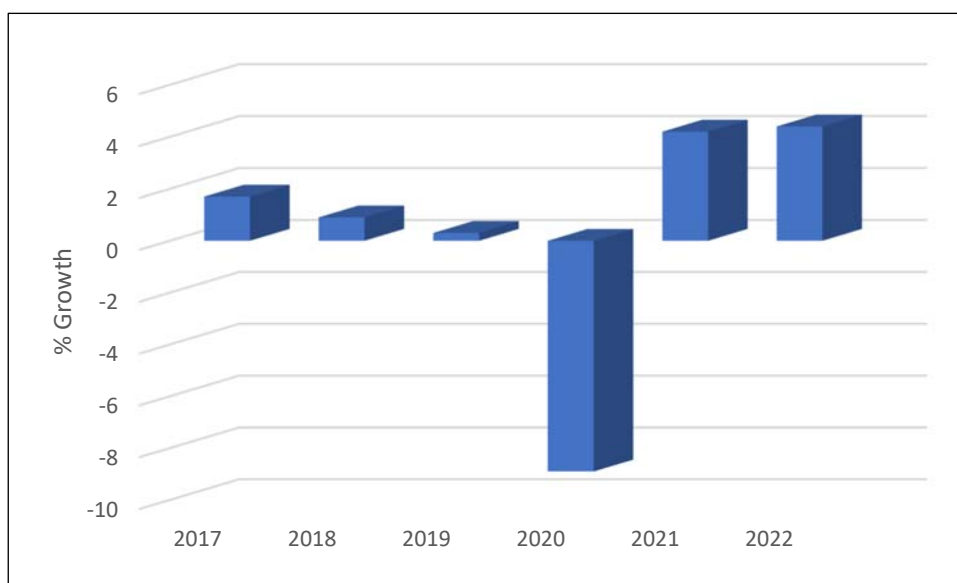
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## Italy

### 1 Economic Overview

- Italy's economy continues to suffer from COVID-19 pandemic and its associated restrictions on mobility and economic activity. Even though construction and manufacturing activity have proven robust against the latest flare-up of the pandemic, the contact-intensive services sector suffered a renewed setback. Real output growth is set to spring cautiously back to life in 2021-Q2, while an accelerating vaccination campaign and the continuing gradual easing of restrictions are paving the way for a strong rebound later in the year. After a steep drop of 8.9% in 2020, real GDP is projected to rebound by 4.2% in 2021 on the back of sizeable domestic policy support and the first stage of NGEU-financed investment.
- In 2022, the investment and reform programme set out in Italy's Recovery and Resilience Plan will take full effect and should help propel output growth to 4.4%. The projected recovery should allow the economy to return to its pre-pandemic level by the end of the forecast period.
- Headcount employment, partly shielded from the pandemic shock through job retention schemes is forecast to rise only in 2022 when the recovery takes hold. By contrast, total hours worked, a more reliable gauge for the pandemic-induced slack in the labour market, dropped by 11% in 2020 but is expected to recover rapidly once activity restrictions are eased. The unemployment rate is set to remain at around 10% over the forecast period, due to the return of the labour force to pre-pandemic levels.
- Base effects related to rising oil prices are set to push HICP inflation above 1% this year, before it moderates to about 1% in 2022. The labour market slack puts downward pressure on core inflation which is projected to exceed 1% only at the end of 2022.



GDP Growth 2017-2022

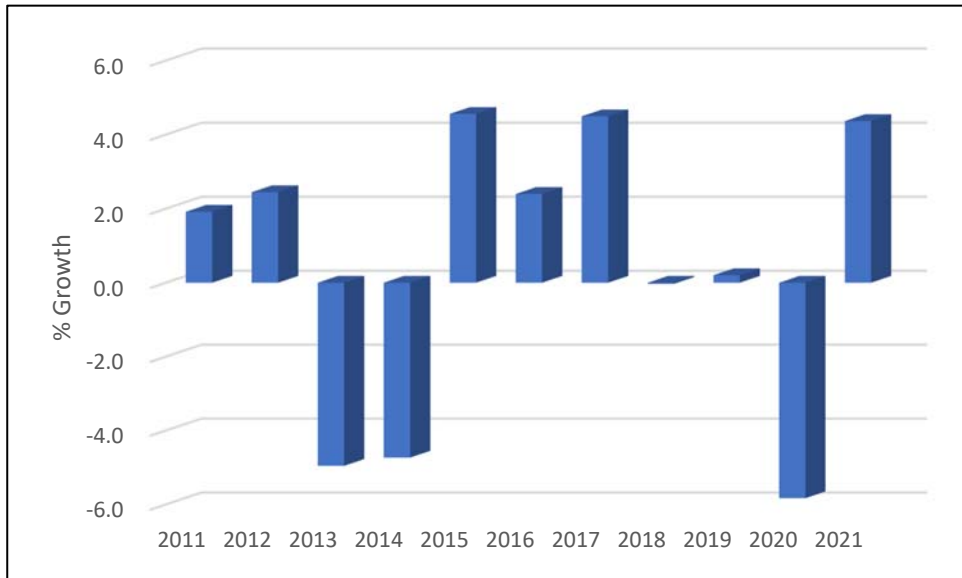
#### Italy GDP Growth 2017-2022

| % Increase    | Actual |      |      | Forecast |      |      |
|---------------|--------|------|------|----------|------|------|
|               | 2017   | 2018 | 2019 | 2020     | 2021 | 2022 |
| Growth of GDP | 1.7    | 0.9  | 0.3  | -8.9     | 4.2  | 4.4  |

Note: Percentage change on previous year. Source: EU Spring Economic Forecast May 2021

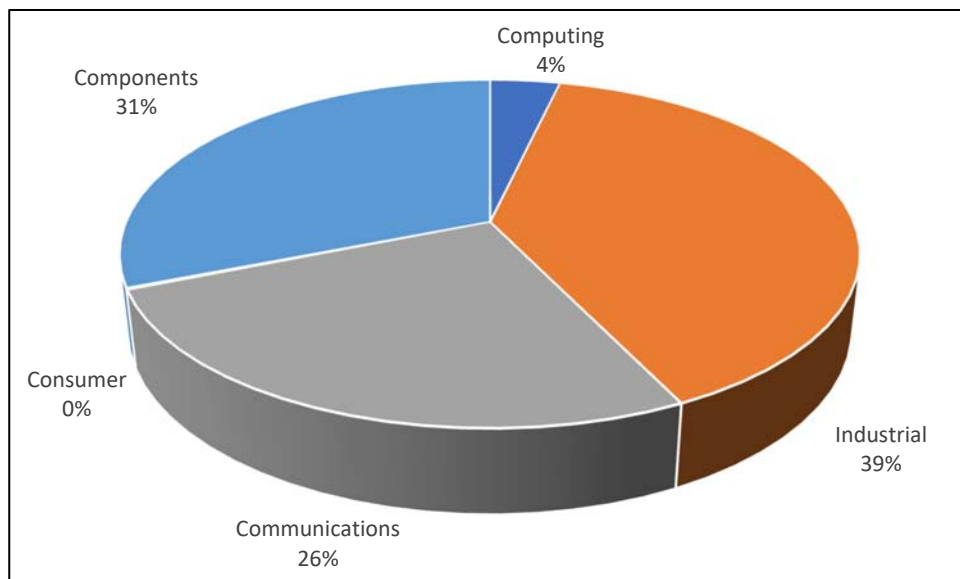
## 2 Electronics Industry Overview

- After increasing by 4.5% in 2017 the production of electronics equipment and components remained stable in 2018 and 2019, low single-digit declines in equipment output offset by growth in the semiconductor sector. In 2020, the pandemic resulted in output falling by an estimated 5.8% but is forecast to rebound in 2021 and increase by 4.4%.



Percentage Growth in Italy Electronics Production 2011-2021

- Control and instrumentation and communications and radar accounted for 26.9% and 18.7% of output respectively in 2020 while components accounted for 31.0%.
- Output for the control and instrumentation sector declined by 4.0% in 2019, in part due to weaker domestic demand but also a slowdown in key export markets over the course of the year. Although initial forecasts following the outbreak of the pandemic anticipated a double-digit decline in output, production on the back of stronger demand in key export markets fell by an estimated 4.3% in 2020. Output is expected to rebound by 4.2% in 2021.

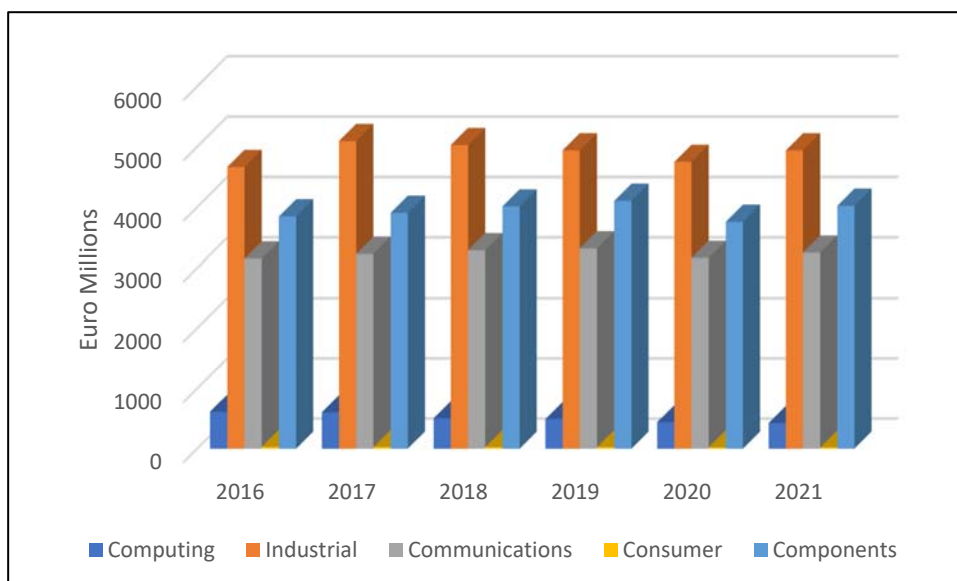


Italy Electronics Industry by Sector 2020

## Summary of Italian Electronics Production

| Euro Millions  | 2016  | 2017  | 2018  | 2019  | 2020  | 2021  |
|----------------|-------|-------|-------|-------|-------|-------|
| Computing      | 614   | 606   | 504   | 492   | 440   | 427   |
| Industrial     | 4664  | 5094  | 5028  | 4940  | 4750  | 4940  |
| Communications | 3150  | 3225  | 3285  | 3317  | 3160  | 3247  |
| Consumer       | 29    | 27    | 26    | 26    | 21    | 21    |
| Components     | 3847  | 3905  | 4010  | 4104  | 3757  | 4023  |
| Total          | 12304 | 12857 | 12853 | 12879 | 12128 | 12657 |

Notes: Computing includes office equipment; Industrial combines control and instrumentation and medical and industrial; and communications combines fixed and wireless communications (inc. defence). Due to computer rounding the summary figures above may differ slightly from the figures presented in the main tables.



Italy Electronics Production by Sector 2016-2021

- The medical sector accounted for an estimated 7.5% of electronic production in 2020. After increasing by 2.6% in 2018, production grew by 10.7% in 2019 on the back of stronger demand in the domestic and key export markets. In 2020, rising output for products used in the treatment of the pandemic was offset by lower production of other medical equipment leading to a 1.5% decline for the year as a whole. Output is forecast to increase by 3.6% in 2021 and then accelerate further in 2022/2023. Leading indigenous medical companies include, DiaSorin and the Esaote Group.
- After growth of 1.9%, the telecommunications segment posted a decline of 2.4% in 2020 primarily as a result of lower production at the height of the pandemic during the second quarter of the year. Growth is forecast to pick-up over the course of 2021 then gradually accelerate over the period to 2024. Opportunities related to the IoT is expected to provide a boost to growth over the period.
- The production of radio communications and radar increased by a modest 0.6% in 2019, growth in radar and navigation offset by stable production for radio communications. Both segments declined in 2020 although the production of defence equipment will be shielded to some extent from the impact of the pandemic. Italy, through Leonardo holds a leading position in the European aerospace and defence industry and is a key member of a number of the pan-European joint ventures in the sector.
- The semiconductor sector is dominated by STMicroelectronics, the Franco-Italian semiconductor group, along with a number of smaller companies, which exploit niche markets. LFoundry, which has its headquarters in Avezzano, was majority owned by the Chinese foundry Semiconductor Manufacturing

International Corporation (SMIC), but entered into an agreement to be acquired by the Chinese company Wuxi Xichanweixin Semiconductor in July 2019.

- Future prospects for the Italian semiconductor sector will be closely linked to the manufacturing strategy of ST. The company currently operates four wafer fabs in Italy at sites in Agrate and Catania. Fab 1 in Catania will be progressively converted into 200 mm and merged with Fab 2. A portion of Fab 1 remains in 150 mm and is devoted to SiC. In Agrate, ST operates two 200 mm fabs and in early 2018 started construction of a 300 mm line supporting the next generation of mixed signal products. Volume production is scheduled by the end of 2021.
- After five years of consecutive growth the production of ICs declined by an estimated 10.4% in 2019, but is forecast to show a strong rebound of 10.0% in 2021, in part, as production is increased to offset the global shortage of semiconductors and by a further 9.5% in 2022 with the ramp-up of ST's new 300mm line.
- Like other countries in Western Europe the production of consumer electronics is now minimal.
- There are a number of EMS providers in Italy with Elemaster ranked 23<sup>rd</sup> largest in Europe in 2019. Tier 1 Global suppliers have also established a presence including Jabil and Flex. Flex, which acquired telecoms infrastructure company Alcatel-Lucent's manufacturing plant in Trieste in 2015, is the largest EMS provider in the country.

## Outlook

### Summary of Italian Electronics Production – Medium Term Forecast 2019-2024

| Euro Millions  | 2019  | 2020  | 2021  | 2022  | 2023  | 2024  |
|----------------|-------|-------|-------|-------|-------|-------|
| Computing      | 492   | 440   | 427   | 415   | 403   | 390   |
| Industrial     | 4940  | 4750  | 4940  | 5175  | 5418  | 5639  |
| Communications | 3317  | 3160  | 3247  | 3373  | 3517  | 3671  |
| Consumer       | 26    | 21    | 21    | 20    | 19    | 18    |
| Components     | 4104  | 3757  | 4023  | 4296  | 4412  | 4568  |
| Total          | 12879 | 12128 | 12657 | 13279 | 13770 | 14286 |

Notes: Computing includes office equipment; Industrial combines control and instrumentation and medical and industrial; and communications combines fixed and wireless communications (inc. defence). Due to computer rounding the summary figures above may differ slightly from the figures presented in the main tables.

- Equipment production in the period to 2024 will continue to be focused on industrial and fixed and wireless communications including defence, with these sectors offsetting the gradual decline in the computer segment.
- The production of passive components will show modest growth over the forecast period with production of commodity products being transferred to lower cost locations while the semiconductor sector, as highlighted, will continue to be influenced by developments at STMicroelectronics. The new 300mm ST wafer fab will help boost output over the forecast period.

### 3 ITALY PRODUCTION

| <b>COMPUTING</b>       |            | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> |
|------------------------|------------|-------------|-------------|-------------|-------------|
| Complete Systems       | €M         | 232         | 195         | 185         | 179         |
|                        | <b>\$M</b> | <b>273</b>  | <b>219</b>  | <b>210</b>  | <b>203</b>  |
| Peripherals            | €M         | 166         | 199         | 170         | 168         |
|                        | <b>\$M</b> | <b>195</b>  | <b>224</b>  | <b>193</b>  | <b>191</b>  |
| Accessories & Parts    | €M         | 76          | 68          | 60          | 56          |
|                        | <b>\$M</b> | <b>89</b>   | <b>76</b>   | <b>68</b>   | <b>63</b>   |
| <b>Computing Total</b> | €M         | 474         | 462         | 415         | 403         |
|                        | <b>\$M</b> | <b>558</b>  | <b>519</b>  | <b>472</b>  | <b>457</b>  |

| <b>OFFICE EQUIPMENT</b>       |            | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> |
|-------------------------------|------------|-------------|-------------|-------------|-------------|
| <b>Office Equipment Total</b> | €M         | 30          | 31          | 25          | 24          |
|                               | <b>\$M</b> | <b>35</b>   | <b>35</b>   | <b>28</b>   | <b>27</b>   |

| <b>CONTROL &amp; INSTRUMENTATION</b>          |            | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> |
|---|------------|-------------|-------------|-------------|-------------|
| <b>Total Industrial &amp; Process Control</b> | €M         | 1400        | 1350        | 1275        | 1359        |
|   | <b>\$M</b> | <b>1647</b> | <b>1517</b> | <b>1449</b> | <b>1544</b> |
| <b>Instrumentation</b>                        |            |             |             |             |             |
| Analytical Instruments                        | €M         | 115         | 105         | 110         | 116         |
|   | <b>\$M</b> | <b>135</b>  | <b>118</b>  | <b>125</b>  | <b>132</b>  |
| Nucleonic Instruments                         | €M         | 11          | 11          | 11          | 10          |
|   | <b>\$M</b> | <b>13</b>   | <b>12</b>   | <b>13</b>   | <b>11</b>   |
| Signal Generators                             | €M         | 11          | 5           | 5           | 5           |
|   | <b>\$M</b> | <b>13</b>   | <b>6</b>    | <b>6</b>    | <b>5</b>    |
| Telecoms Instruments                          | €M         | 22          | 27          | 16          | 16          |
|   | <b>\$M</b> | <b>26</b>   | <b>30</b>   | <b>18</b>   | <b>18</b>   |
| Machine & Materials Test Instruments          | €M         | 295         | 265         | 285         | 296         |
|   | <b>\$M</b> | <b>347</b>  | <b>298</b>  | <b>324</b>  | <b>337</b>  |
| Electrical Quantity Measuring Instruments     | €M         | 98          | 86          | 77          | 77          |
|   | <b>\$M</b> | <b>115</b>  | <b>97</b>   | <b>88</b>   | <b>87</b>   |
| Other Test & Measuring Instruments            | €M         | 1140        | 1090        | 1030        | 1052        |
|   | <b>\$M</b> | <b>1341</b> | <b>1225</b> | <b>1170</b> | <b>1196</b> |
| <b>Total Instrumentation</b>                  | €M         | 1692        | 1589        | 1534        | 1571        |
|   | <b>\$M</b> | <b>1991</b> | <b>1785</b> | <b>1743</b> | <b>1786</b> |
| <b>Accessories &amp; Parts</b>                | €M         | 455         | 467         | 450         | 466         |
|   | <b>\$M</b> | <b>535</b>  | <b>525</b>  | <b>511</b>  | <b>529</b>  |
| <b>Control &amp; Instrumentation Total</b>    | €M         | 3547        | 3406        | 3259        | 3396        |
|   | <b>\$M</b> | <b>4173</b> | <b>3827</b> | <b>3703</b> | <b>3859</b> |

**ITALY PRODUCTION (ctd)**

| <b>MEDICAL &amp; INDUSTRIAL</b>                 |     | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> |
|---|-----|-------------|-------------|-------------|-------------|
| <b>X-Ray &amp; Medical Equipment</b>            |     |             |             |             |             |
| X-Ray Equipment                                 | €M  | 306         | 377         | 355         | 357         |
|   | \$M | <b>360</b>  | <b>424</b>  | <b>403</b>  | <b>406</b>  |
| Electromedical Equipment                        | €M  | 512         | 530         | 540         | 568         |
|   | \$M | <b>602</b>  | <b>596</b>  | <b>614</b>  | <b>646</b>  |
| Hearing Aids                                    | €M  | 14          | 14          | 12          | 14          |
|   | \$M | <b>16</b>   | <b>16</b>   | <b>14</b>   | <b>16</b>   |
| <b>X-Ray &amp; Medical Equipment Total</b>      | €M  | 832         | 921         | 907         | 940         |
|   | \$M | <b>979</b>  | <b>1035</b> | <b>1031</b> | <b>1068</b> |
| <b>Industrial Equipment</b>                     |     |             |             |             |             |
| Railway & Traffic Signalling Equipment          | €M  | 194         | 164         | 162         | 167         |
|   | \$M | <b>228</b>  | <b>184</b>  | <b>184</b>  | <b>190</b>  |
| Other Signalling Equipment                      | €M  | 408         | 394         | 380         | 393         |
|   | \$M | <b>480</b>  | <b>443</b>  | <b>432</b>  | <b>446</b>  |
| Other Industrial Equipment                      | €M  | 47          | 55          | 42          | 45          |
|   | \$M | <b>55</b>   | <b>62</b>   | <b>48</b>   | <b>51</b>   |
| <b>Total Industrial Equipment</b>               | €M  | 649         | 613         | 584         | 604         |
|   | \$M | <b>764</b>  | <b>689</b>  | <b>664</b>  | <b>687</b>  |
| <b>Medical &amp; Industrial Equipment Total</b> | €M  | 1481        | 1534        | 1491        | 1544        |
|   | \$M | <b>1742</b> | <b>1724</b> | <b>1694</b> | <b>1755</b> |

| <b>COMMUNICATIONS &amp; RADAR</b>       |     | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> |
|---|-----|-------------|-------------|-------------|-------------|
| Radar & Navigational Aids               | €M  | 1325        | 1340        | 1270        | 1283        |
|   | \$M | <b>1559</b> | <b>1506</b> | <b>1443</b> | <b>1458</b> |
| Radio Comms inc Mobile Phones           | €M  | 1065        | 1065        | 1000        | 1049        |
| Public Broadcasting & Parts             | \$M | <b>1253</b> | <b>1197</b> | <b>1136</b> | <b>1192</b> |
| <b>Communications &amp; Radar Total</b> | €M  | 2390        | 2405        | 2270        | 2331        |
|   | \$M | <b>2812</b> | <b>2702</b> | <b>2580</b> | <b>2649</b> |

| <b>TELECOMMUNICATIONS</b>       |     | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> |
|---------------------------------|-----|-------------|-------------|-------------|-------------|
| Telephone Sets                  | €M  | 30          | 27          | 30          | 30          |
|                                 | \$M | <b>35</b>   | <b>30</b>   | <b>34</b>   | <b>34</b>   |
| Other Telecoms Equipment        | €M  | 865         | 885         | 860         | 886         |
|                                 | \$M | <b>1018</b> | <b>994</b>  | <b>977</b>  | <b>1006</b> |
| <b>Telecommunications Total</b> | €M  | 895         | 912         | 890         | 916         |
|                                 | \$M | <b>1053</b> | <b>1025</b> | <b>1011</b> | <b>1041</b> |



ITALY PRODUCTION (ctd)

| CONSUMER                           |     | 2018 | 2019 | 2020 | 2021 |
|------------------------------------|-----|------|------|------|------|
| <b>Video Equipment</b>             |     |      |      |      |      |
| Colour Television                  | €M  | 3    | 3    | 2    | 2    |
|                                    | \$M | 4    | 3    | 2    | 2    |
| <b>Video Equipment Total</b>       | €M  | 3    | 3    | 2    | 2    |
|                                    | \$M | 4    | 3    | 2    | 2    |
| <b>Audio Equipment</b>             |     |      |      |      |      |
| Mains Audio Equipment              | €M  | 2    | 2    | 1    | 1    |
|                                    | \$M | 2    | 2    | 1    | 1    |
| <b>Audio Equipment Total</b>       | €M  | 2    | 2    | 1    | 1    |
|                                    | \$M | 2    | 2    | 1    | 1    |
| <b>Personal Consumer Equipment</b> |     |      |      |      |      |
| Electronic Musical Instruments     | €M  | 15   | 15   | 13   | 13   |
|                                    | \$M | 18   | 17   | 15   | 15   |
| Electric/Electronic Watches        | €M  | 2    | 2    | 2    | 2    |
|                                    | \$M | 2    | 2    | 2    | 2    |
| Electric/Electronic Clocks         | €M  | 4    | 4    | 3    | 3    |
|                                    | \$M | 5    | 4    | 3    | 3    |
| <b>Total Personal Equipment</b>    | €M  | 21   | 21   | 18   | 18   |
|                                    | \$M | 25   | 24   | 20   | 20   |
| <b>Consumer Equipment Total</b>    | €M  | 26   | 26   | 21   | 21   |
|                                    | \$M | 31   | 29   | 24   | 23   |

| COMPONENTS               |     | 2018 | 2019 | 2020 | 2021 |
|--------------------------|-----|------|------|------|------|
| <b>Active Components</b> |     |      |      |      |      |
| Valves & Tubes           | €M  | 9    | 9    | 12   | 11   |
|                          | \$M | 11   | 10   | 14   | 13   |
| Diodes                   | €M  | 51   | 29   | 27   | 28   |
|                          | \$M | 60   | 33   | 31   | 32   |
| Transistors              | €M  | 20   | 18   | 15   | 16   |
|                          | \$M | 24   | 20   | 17   | 18   |
| Thyristors               | €M  | 12   | 10   | 12   | 13   |
|                          | \$M | 14   | 11   | 14   | 15   |
| Piezoelectric Crystals   | €M  | 10   | 7    | 7    | 7    |
|                          | \$M | 12   | 8    | 8    | 8    |
| Photocells               | €M  | 267  | 270  | 290  | 311  |
|                          | \$M | 314  | 303  | 330  | 353  |

ITALY PRODUCTION (ctd)

| COMPONENTS (ctd)                |     | 2018 | 2019 | 2020 | 2021 |
|---------------------------------|-----|------|------|------|------|
| <b>Active Components</b>        |     |      |      |      |      |
| Other Discrete Semiconductors   | €M  | 50   | 47   | 40   | 42   |
|                                 | \$M | 59   | 53   | 45   | 48   |
| ICs & Other Microcircuits       | €M  | 1912 | 2064 | 1850 | 2035 |
|                                 | \$M | 2249 | 2319 | 2102 | 2313 |
| <b>Active Components Total</b>  | €M  | 2331 | 2454 | 2253 | 2463 |
|                                 | \$M | 2742 | 2757 | 2560 | 2799 |
| <b>Passive Components</b>       |     |      |      |      |      |
| Fixed Capacitors                | €M  | 110  | 100  | 95   | 103  |
|                                 | \$M | 129  | 112  | 108  | 117  |
| Variable Capacitors             | €M  | 1    | 1    | 1    | 1    |
|                                 | \$M | 1    | 1    | 1    | 1    |
| Resistors                       | €M  | 30   | 27   | 20   | 21   |
|                                 | \$M | 35   | 30   | 23   | 24   |
| Connectors                      | €M  | 415  | 405  | 380  | 401  |
|                                 | \$M | 488  | 455  | 432  | 456  |
| Transformers & Inductors        | €M  | 132  | 119  | 105  | 109  |
|                                 | \$M | 155  | 134  | 119  | 124  |
| Relays                          | €M  | 35   | 33   | 31   | 32   |
|                                 | \$M | 41   | 37   | 35   | 36   |
| Switches                        | €M  | 127  | 120  | 110  | 113  |
|                                 | \$M | 149  | 135  | 125  | 128  |
| Printed Circuit Boards          | €M  | 216  | 212  | 200  | 207  |
|                                 | \$M | 254  | 238  | 227  | 235  |
| <b>Total Passive Components</b> | €M  | 1066 | 1017 | 942  | 987  |
|                                 | \$M | 1254 | 1143 | 1070 | 1122 |
| <b>Other Components</b>         |     |      |      |      |      |
| Microphones                     | €M  | 3    | 3    | 3    | 3    |
|                                 | \$M | 4    | 3    | 3    | 3    |
| Loudspeakers                    | €M  | 225  | 230  | 190  | 203  |
|                                 | \$M | 265  | 258  | 216  | 230  |
| Amplifiers                      | €M  | 48   | 46   | 42   | 45   |
|                                 | \$M | 56   | 52   | 48   | 51   |
| Aerials                         | €M  | 50   | 50   | 45   | 46   |
|                                 | \$M | 59   | 56   | 51   | 52   |
| Unrecorded Media                | €M  | 9    | 8    | 6    | 6    |
|                                 | \$M | 11   | 9    | 7    | 6    |

**ITALY PRODUCTION (ctd)**

| <b>COMPONENTS (ctd)</b>                    |     | <b>2018</b>  | <b>2019</b>  | <b>2020</b>  | <b>2021</b>  |
|--|-----|--------------|--------------|--------------|--------------|
| <b>Other Components (ctd)</b>              |     |              |              |              |              |
| Accessories & Parts for Consumer Equipment | €M  | 278          | 296          | 276          | 272          |
|  | \$M | <b>327</b>   | <b>333</b>   | <b>314</b>   | <b>309</b>   |
| <b>Total Other Components</b>              | €M  | 613          | 633          | 562          | 573          |
|  | \$M | <b>721</b>   | <b>711</b>   | <b>639</b>   | <b>651</b>   |
| <b>Total Components Production</b>         | €M  | 4010         | 4104         | 3757         | 4023         |
|  | \$M | <b>4718</b>  | <b>4611</b>  | <b>4269</b>  | <b>4572</b>  |
| <b>TOTAL PRODUCTION - ITALY</b>            |     | <b>2018</b>  | <b>2019</b>  | <b>2020</b>  | <b>2021</b>  |
| <b>Total</b>                               | €M  | 12853        | 12880        | 12128        | 12657        |
|  | \$M | <b>15121</b> | <b>14472</b> | <b>13782</b> | <b>14383</b> |

Notes: 2018 and 2019 are current figures at current exchange rates. 2020 and 2021 are forecasts at 2020 constant values and exchange rates (i.e. inflation is not included). Base year 2020

#### 4 ITALY MARKETS

| <b>COMPUTING</b>              |     | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> |
|-------------------------------|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Computers Total               | €M  | 2466        | 2466        | 2662        | 2743        | 2827        | 2909        | 2991        |
|                               | \$M | <b>2901</b> | <b>2771</b> | <b>3025</b> | <b>3117</b> | <b>3212</b> | <b>3306</b> | <b>3399</b> |
| Peripherals & Other Equipment | €M  | 1768        | 1730        | 1724        | 1755        | 1786        | 1816        | 1845        |
|                               | \$M | <b>2080</b> | <b>1944</b> | <b>1959</b> | <b>1994</b> | <b>2030</b> | <b>2064</b> | <b>2097</b> |
| Accessories & Parts           | €M  | 950         | 907         | 861         | 864         | 867         | 870         | 871         |
|                               | \$M | <b>1118</b> | <b>1019</b> | <b>978</b>  | <b>982</b>  | <b>986</b>  | <b>988</b>  | <b>990</b>  |
| <b>Computing Total</b>        | €M  | 5184        | 5103        | 5247        | 5362        | 5480        | 5595        | 5707        |
|                               | \$M | <b>6099</b> | <b>5734</b> | <b>5963</b> | <b>6094</b> | <b>6228</b> | <b>6359</b> | <b>6486</b> |

| <b>OFFICE EQUIPMENT</b>       |     | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> |
|-------------------------------|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Office Equipment              | €M  | 217         | 248         | 230         | 223         | 215         | 207         | 198         |
|                               | \$M | <b>255</b>  | <b>279</b>  | <b>261</b>  | <b>254</b>  | <b>245</b>  | <b>235</b>  | <b>225</b>  |
| <b>Office Equipment Total</b> | €M  | 217         | 248         | 230         | 223         | 215         | 207         | 198         |
|                               | \$M | <b>255</b>  | <b>279</b>  | <b>261</b>  | <b>254</b>  | <b>245</b>  | <b>235</b>  | <b>225</b>  |

| <b>CONTROL &amp; INSTRUMENTATION</b>          |     | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> |
|---|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Industrial &amp; Process Control</b>       |     |             |             |             |             |             |             |             |
| <b>Total Industrial &amp; Process Control</b> | €M  | 1554        | 1540        | 1324        | 1379        | 1443        | 1510        | 1576        |
|   | \$M | <b>1828</b> | <b>1730</b> | <b>1505</b> | <b>1567</b> | <b>1640</b> | <b>1716</b> | <b>1791</b> |
| <b>Instrumentation</b>                        |     |             |             |             |             |             |             |             |
| Analytical Instruments                        | €M  | 252         | 274         | 297         | 309         | 324         | 339         | 353         |
|   | \$M | <b>296</b>  | <b>308</b>  | <b>338</b>  | <b>352</b>  | <b>368</b>  | <b>385</b>  | <b>402</b>  |
| Nucleonic Instruments                         | €M  | 21          | 28          | 22          | 22          | 22          | 22          | 22          |
|   | \$M | <b>25</b>   | <b>31</b>   | <b>25</b>   | <b>25</b>   | <b>25</b>   | <b>25</b>   | <b>25</b>   |
| Signal Generators                             | €M  | 9           | 10          | 9           | 9           | 8           | 8           | 8           |
|   | \$M | <b>11</b>   | <b>11</b>   | <b>10</b>   | <b>10</b>   | <b>10</b>   | <b>9</b>    | <b>9</b>    |
| Telecoms Instruments                          | €M  | 20          | 21          | 19          | 19          | 20          | 20          | 20          |
|   | \$M | <b>24</b>   | <b>24</b>   | <b>22</b>   | <b>22</b>   | <b>22</b>   | <b>23</b>   | <b>23</b>   |
| Machine & Materials Test Instruments          | €M  | 156         | 150         | 133         | 137         | 142         | 147         | 152         |
|   | \$M | <b>184</b>  | <b>169</b>  | <b>151</b>  | <b>156</b>  | <b>162</b>  | <b>168</b>  | <b>173</b>  |
| Electrical Quantity Measuring Instruments     | €M  | 75          | 75          | 73          | 75          | 78          | 81          | 84          |
|   | \$M | <b>88</b>   | <b>84</b>   | <b>83</b>   | <b>86</b>   | <b>89</b>   | <b>92</b>   | <b>95</b>   |
| Other Test & Measuring Instruments            | €M  | 1071        | 1067        | 965         | 1002        | 1046        | 1091        | 1135        |
|   | \$M | <b>1260</b> | <b>1199</b> | <b>1097</b> | <b>1139</b> | <b>1188</b> | <b>1240</b> | <b>1290</b> |
| <b>Total Instrumentation</b>                  | €M  | 1604        | 1625        | 1518        | 1574        | 1640        | 1708        | 1775        |
|   | \$M | <b>1887</b> | <b>1826</b> | <b>1725</b> | <b>1788</b> | <b>1863</b> | <b>1941</b> | <b>2017</b> |

**ITALY MARKETS (ctd)**

| <b>CONTROL &amp; INSTRUMENTATION (ctd)</b> |     | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> |
|--|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Control &amp; Instrumentation (ctd)</b> |     |             |             |             |             |             |             |             |
| Accessories & Parts                        | €M  | 448         | 453         | 444         | 458         | 475         | 492         | 509         |
|  | \$M | <b>527</b>  | <b>509</b>  | <b>505</b>  | <b>520</b>  | <b>540</b>  | <b>559</b>  | <b>578</b>  |
| <b>Control &amp; Instrumentation Total</b> | €M  | 3606        | 3618        | 3286        | 3411        | 3558        | 3711        | 3859        |
|  | \$M | <b>4242</b> | <b>4065</b> | <b>3734</b> | <b>3876</b> | <b>4043</b> | <b>4216</b> | <b>4385</b> |

| <b>MEDICAL &amp; INDUSTRIAL</b>            |     | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> |
|--|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>X-Ray &amp; Medical Equipment</b>       |     |             |             |             |             |             |             |             |
| X-Ray Equipment                            | €M  | 167         | 173         | 175         | 181         | 187         | 192         | 198         |
|  | \$M | <b>196</b>  | <b>194</b>  | <b>199</b>  | <b>205</b>  | <b>212</b>  | <b>219</b>  | <b>226</b>  |
| Other Electromedical Equipment             | €M  | 745         | 759         | 806         | 841         | 878         | 916         | 955         |
|  | \$M | <b>876</b>  | <b>853</b>  | <b>916</b>  | <b>956</b>  | <b>998</b>  | <b>1041</b> | <b>1085</b> |
| Hearing Aids                               | €M  | 60          | 63          | 53          | 53          | 54          | 54          | 54          |
|  | \$M | <b>71</b>   | <b>71</b>   | <b>60</b>   | <b>61</b>   | <b>61</b>   | <b>61</b>   | <b>61</b>   |
| <b>X-Ray &amp; Medical Equipment Total</b> | €M  | 972         | 995         | 1034        | 1075        | 1118        | 1162        | 1207        |
|  | \$M | <b>1144</b> | <b>1118</b> | <b>1175</b> | <b>1222</b> | <b>1271</b> | <b>1320</b> | <b>1372</b> |
| <b>Industrial Equipment</b>                |     |             |             |             |             |             |             |             |
| Railway & Traffic Signalling Equipment     | €M  | 97          | 98          | 89          | 92          | 95          | 98          | 101         |
|  | \$M | <b>114</b>  | <b>110</b>  | <b>101</b>  | <b>104</b>  | <b>108</b>  | <b>112</b>  | <b>115</b>  |
| Other Signalling Equipment                 | €M  | 416         | 426         | 386         | 402         | 420         | 438         | 456         |
|  | \$M | <b>489</b>  | <b>479</b>  | <b>439</b>  | <b>457</b>  | <b>477</b>  | <b>498</b>  | <b>518</b>  |
| Other Industrial Equipment                 | €M  | 49          | 47          | 42          | 43          | 43          | 44          | 45          |
|  | \$M | <b>58</b>   | <b>53</b>   | <b>48</b>   | <b>48</b>   | <b>49</b>   | <b>50</b>   | <b>51</b>   |
| <b>Industrial Equipment Total</b>          | €M  | 562         | 571         | 517         | 537         | 558         | 580         | 602         |
|  | \$M | <b>661</b>  | <b>642</b>  | <b>588</b>  | <b>610</b>  | <b>634</b>  | <b>660</b>  | <b>684</b>  |
| <b>Medical &amp; Industrial Total</b>      | €M  | 1534        | 1566        | 1551        | 1612        | 1676        | 1742        | 1809        |
|  | \$M | <b>1805</b> | <b>1760</b> | <b>1763</b> | <b>1832</b> | <b>1905</b> | <b>1980</b> | <b>2056</b> |

| <b>COMMUNICATIONS &amp; RADAR</b>                          |     | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> |
|--|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Radar & Navigational Aids                                  | €M  | 946         | 983         | 887         | 919         | 954         | 992         | 1032        |
|  | \$M | <b>1113</b> | <b>1104</b> | <b>1008</b> | <b>1044</b> | <b>1084</b> | <b>1127</b> | <b>1173</b> |
| Radio Comms inc Mobile Phones, Public Broadcasting & Parts | €M  | 3204        | 3145        | 2978        | 3101        | 3238        | 3385        | 3542        |
|  | \$M | <b>3769</b> | <b>3534</b> | <b>3384</b> | <b>3524</b> | <b>3680</b> | <b>3847</b> | <b>4025</b> |
| <b>Communications &amp; Radar Total</b>                    | €M  | 4150        | 4128        | 3865        | 4020        | 4192        | 4377        | 4574        |
|  | \$M | <b>4882</b> | <b>4638</b> | <b>4392</b> | <b>4568</b> | <b>4764</b> | <b>4974</b> | <b>5198</b> |

**ITALY MARKETS (ctd)**

| <b>TELECOMMUNICATIONS</b>             |     | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> |
|---------------------------------------|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Telephone Sets                        | €M  | 104         | 94          | 90          | 91          | 93          | 95          | 97          |
|                                       | \$M | 122         | 106         | 102         | 104         | 106         | 108         | 110         |
| Other Telecommunications<br>Equipment | €M  | 1454        | 1473        | 1427        | 1482        | 1543        | 1608        | 1678        |
|                                       | \$M | 1711        | 1655        | 1622        | 1684        | 1753        | 1828        | 1907        |
| <b>Telecommunications Total</b>       | €M  | 1558        | 1567        | 1517        | 1573        | 1636        | 1703        | 1775        |
|                                       | \$M | 1833        | 1761        | 1724        | 1788        | 1859        | 1935        | 2017        |

| <b>CONSUMER</b>                       |     | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> |
|---------------------------------------|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Video Equipment</b>                |     |             |             |             |             |             |             |             |
| Colour Television                     | €M  | 1146        | 1114        | 1104        | 1125        | 1144        | 1151        | 1156        |
|                                       | \$M | 1348        | 1252        | 1255        | 1278        | 1300        | 1308        | 1314        |
| DVD Players & Recorders               | €M  | 31          | 27          | 25          | 23          | 20          | 16          | 13          |
|                                       | \$M | 36          | 30          | 28          | 26          | 23          | 18          | 15          |
| Video & Digital Still Cameras         | €M  | 264         | 254         | 232         | 216         | 198         | 183         | 172         |
|                                       | \$M | 311         | 285         | 264         | 245         | 225         | 208         | 195         |
| Video Tuners & Satellite<br>Receivers | €M  | 111         | 106         | 103         | 97          | 92          | 87          | 84          |
|                                       | \$M | 131         | 119         | 117         | 110         | 105         | 99          | 95          |
| <b>Video Equipment Total</b>          | €M  | 1552        | 1501        | 1464        | 1461        | 1454        | 1437        | 1425        |
|                                       | \$M | 1826        | 1687        | 1664        | 1660        | 1652        | 1633        | 1619        |
| <b>Audio Equipment</b>                |     |             |             |             |             |             |             |             |
| Portable Audio Equipment              | €M  | 34          | 30          | 27          | 26          | 24          | 23          | 22          |
|                                       | \$M | 40          | 34          | 31          | 29          | 27          | 26          | 25          |
| Mains Audio Equipment                 | €M  | 32          | 29          | 26          | 23          | 21          | 19          | 17          |
|                                       | \$M | 38          | 33          | 30          | 27          | 24          | 21          | 19          |
| Car Audio                             | €M  | 82          | 78          | 66          | 64          | 61          | 59          | 57          |
|                                       | \$M | 96          | 88          | 75          | 72          | 70          | 67          | 65          |
| Other Audio Equipment                 | €M  | 140         | 138         | 135         | 131         | 128         | 124         | 121         |
|                                       | \$M | 165         | 155         | 153         | 149         | 145         | 141         | 138         |
| <b>Audio Equipment Total</b>          | €M  | 288         | 275         | 254         | 244         | 234         | 225         | 217         |
|                                       | \$M | 339         | 309         | 289         | 277         | 266         | 256         | 246         |
| <b>Personal Consumer Equipment</b>    |     |             |             |             |             |             |             |             |
| Electronic Musical Instruments        | €M  | 25          | 26          | 26          | 29          | 31          | 33          | 35          |
|                                       | \$M | 29          | 29          | 30          | 33          | 35          | 38          | 40          |
| Electric/Electronic Watches           | €M  | 179         | 181         | 140         | 148         | 154         | 157         | 159         |
|                                       | \$M | 211         | 203         | 159         | 168         | 175         | 178         | 180         |
| Electric/Electronic Clocks            | €M  | 18          | 16          | 12          | 13          | 14          | 15          | 15          |
|                                       | \$M | 21          | 18          | 14          | 15          | 16          | 17          | 18          |

## ITALY MARKETS (ctd)

| <b>CONSUMER (ctd)</b>                    |     | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> |
|--|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Personal Consumer Equipment</b>       |     |             |             |             |             |             |             |             |
| Electronic Flashlights                   | €M  | 3           | 3           | 2           | 2           | 2           | 2           | 2           |
|  | \$M | 4           | 3           | 2           | 2           | 2           | 2           | 2           |
| <b>Personal Consumer Equipment Total</b> | €M  | 225         | 226         | 180         | 192         | 201         | 206         | 210         |
|  | \$M | 265         | 254         | 205         | 218         | 229         | 234         | 239         |
| <b>Consumer Equipment Total</b>          | €M  | 2065        | 2002        | 1898        | 1896        | 1889        | 1868        | 1852        |
|  | \$M | 2429        | 2249        | 2157        | 2155        | 2147        | 2123        | 2105        |

| <b>COMPONENTS</b>              |     | <b>2018</b> | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> |
|--------------------------------|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Active Components</b>       |     |             |             |             |             |             |             |             |
| Valves & Tubes                 | €M  | 26          | 35          | 21          | 21          | 20          | 20          | 19          |
|                                | \$M | 31          | 39          | 24          | 24          | 23          | 23          | 22          |
| Diodes                         | €M  | 89          | 87          | 80          | 83          | 87          | 89          | 93          |
|                                | \$M | 105         | 98          | 91          | 94          | 99          | 101         | 106         |
| Transistors                    | €M  | 130         | 127         | 119         | 124         | 130         | 134         | 139         |
|                                | \$M | 153         | 143         | 135         | 141         | 148         | 152         | 158         |
| Thyristors                     | €M  | 20          | 19          | 16          | 17          | 17          | 18          | 18          |
|                                | \$M | 24          | 21          | 18          | 19          | 19          | 20          | 20          |
| Other Discrete Semiconductors  | €M  | 191         | 177         | 166         | 174         | 182         | 189         | 197         |
|                                | \$M | 225         | 199         | 189         | 198         | 207         | 215         | 224         |
| Photoelectric Cells            | €M  | 291         | 337         | 259         | 274         | 293         | 312         | 333         |
|                                | \$M | 342         | 379         | 294         | 311         | 333         | 355         | 378         |
| Piezoelectric Crystals         | €M  | 24          | 23          | 20          | 21          | 22          | 22          | 23          |
|                                | \$M | 28          | 26          | 23          | 24          | 25          | 25          | 26          |
| ICs & Other Microcircuits      | €M  | 1757        | 1627        | 1528        | 1656        | 1774        | 1827        | 1900        |
|                                | \$M | 2067        | 1828        | 1736        | 1882        | 2016        | 2076        | 2159        |
| <b>Active Components Total</b> | €M  | 2528        | 2432        | 2209        | 2370        | 2525        | 2611        | 2722        |
|                                | \$M | 2974        | 2733        | 2510        | 2693        | 2869        | 2967        | 3093        |
| <b>Passive Components</b>      |     |             |             |             |             |             |             |             |
| Fixed Capacitors               | €M  | 113         | 109         | 100         | 106         | 111         | 115         | 118         |
|                                | \$M | 133         | 122         | 114         | 120         | 126         | 131         | 134         |
| Variable Capacitors            | €M  | 2           | 1           | 1           | 1           | 1           | 1           | 1           |
|                                | \$M | 2           | 1           | 1           | 1           | 1           | 1           | 1           |
| Resistors                      | €M  | 93          | 88          | 85          | 90          | 93          | 96          | 100         |
|                                | \$M | 109         | 99          | 97          | 102         | 106         | 109         | 114         |
| Connectors                     | €M  | 403         | 402         | 374         | 390         | 406         | 421         | 436         |
|                                | \$M | 474         | 452         | 425         | 443         | 461         | 478         | 495         |

ITALY MARKETS (ctd)

| COMPONENTS                                 |     | 2018  | 2019  | 2020  | 2021  | 2022  | 2023  | 2024  |
|--|-----|-------|-------|-------|-------|-------|-------|-------|
| <b>Passive Components (ctd)</b>            |     |       |       |       |       |       |       |       |
| Transformers & Inductors                   | €M  | 64    | 63    | 58    | 60    | 62    | 64    | 66    |
|  | \$M | 75    | 71    | 66    | 68    | 70    | 73    | 75    |
| Relays                                     | €M  | 61    | 59    | 54    | 56    | 58    | 59    | 61    |
|  | \$M | 72    | 66    | 61    | 64    | 66    | 67    | 69    |
| Switches                                   | €M  | 56    | 54    | 50    | 52    | 53    | 55    | 56    |
|  | \$M | 66    | 61    | 57    | 59    | 60    | 63    | 64    |
| Printed Circuit Boards                     | €M  | 369   | 361   | 335   | 348   | 362   | 376   | 389   |
|  | \$M | 434   | 406   | 381   | 395   | 411   | 427   | 442   |
| <b>Passive Components Total</b>            | €M  | 1161  | 1137  | 1057  | 1103  | 1146  | 1187  | 1227  |
|  | \$M | 1366  | 1278  | 1201  | 1253  | 1302  | 1349  | 1394  |
| <b>Other Components</b>                    |     |       |       |       |       |       |       |       |
| Microphones                                | €M  | 23    | 28    | 25    | 26    | 27    | 28    | 28    |
|  | \$M | 27    | 31    | 28    | 30    | 31    | 32    | 32    |
| Loudspeakers                               | €M  | 158   | 170   | 160   | 166   | 173   | 178   | 183   |
|  | \$M | 186   | 191   | 182   | 189   | 197   | 202   | 208   |
| Amplifiers                                 | €M  | 34    | 31    | 29    | 28    | 28    | 27    | 26    |
|  | \$M | 40    | 35    | 33    | 32    | 32    | 31    | 30    |
| Aerials                                    | €M  | 52    | 50    | 47    | 45    | 43    | 41    | 38    |
|  | \$M | 61    | 56    | 53    | 51    | 49    | 47    | 43    |
| Unrecorded Media                           | €M  | 107   | 102   | 97    | 89    | 81    | 74    | 67    |
|  | \$M | 126   | 115   | 110   | 101   | 92    | 84    | 76    |
| Accessories & Parts for Consumer Equipment | €M  | 325   | 331   | 333   | 341   | 350   | 358   | 365   |
|  | \$M | 382   | 372   | 378   | 388   | 398   | 407   | 415   |
| <b>Other Components Total</b>              | €M  | 699   | 712   | 691   | 695   | 702   | 706   | 707   |
|  | \$M | 822   | 800   | 785   | 790   | 798   | 802   | 803   |
| <b>Components Total</b>                    | €M  | 4388  | 4281  | 3957  | 4168  | 4373  | 4504  | 4656  |
|  | \$M | 5162  | 4810  | 4497  | 4736  | 4969  | 5118  | 5291  |
| <b>TOTAL MARKET - ITALY</b>                |     |       |       |       |       |       |       |       |
| <b>TOTAL MARKET</b>                        | €M  | 22702 | 22513 | 21551 | 22265 | 23020 | 23707 | 24431 |
|  | \$M | 26708 | 25296 | 24490 | 25302 | 26160 | 26940 | 27762 |

Notes: 2018 and 2019 are current figures at current exchange rates

2020 to 2024 are forecasts at 2020 constant values & exchange rates (i.e. Inflation is not included)

Base year 2020



## 5 APPENDICES

### APPENDIX 5.1 EXCHANGE RATES

#### Exchange rates against the US dollar (Annual Average)

| Country            | Currency          |          | 2014  | 2015  | 2016  | 2017  | 2018   | 2019  | 2020  |
|--------------------|-------------------|----------|-------|-------|-------|-------|--------|-------|-------|
| AUSTRALIA          | Australian Dollar | A\$      | 1.11  | 1.33  | 1.35  | 1.30  | 1.33   | 1.44  | 1.45  |
| AUSTRIA            | Euro              | Euro     | 0.75  | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  |
| BELGIUM            | Euro              | Euro     | 0.75  | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  |
| BRAZIL             | Real              | R\$      | 2.36  | 3.33  | 3.49  | 3.19  | 3.65   | 3.94  | 5.15  |
| BULGARIA           | Lev               | Lv       | 1.48  | 1.76  | 1.77  | 1.73  | 1.66   | 1.75  | 1.72  |
| CANADA             | Canadian Dollar   | C\$      | 1.10  | 1.28  | 1.33  | 1.30  | 1.30   | 1.33  | 1.34  |
| CHINA              | Yuan              | Yn       | 6.15  | 6.22  | 6.64  | 6.76  | 6.62   | 6.91  | 6.90  |
| CROATIA            | Kuna              | Kn       | 5.76  | 6.86  | 6.81  | 6.62  | 7.42   | 6.63  | 6.61  |
| CZECH REP          | Koruna            | CzK      | 20.8  | 24.6  | 24.4  | 23.4  | 21.7   | 22.9  | 23.1  |
| DENMARK            | Krone             | DKr      | 5.62  | 6.72  | 6.73  | 6.60  | 6.32   | 6.67  | 6.54  |
| EGYPT              | Egyptian Pound    | ££       | 7.11  | 7.68  | 10.07 | 17.84 | 17.81  | 16.82 | 15.81 |
| ESTONIA            | Kroon             | Eek      | 0.75  | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  |
| EUROPEAN COMMUNITY |                   | Euro     | 0.75  | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  |
| FINLAND            | Euro              | Euro     | 0.75  | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  |
| FRANCE             | Euro              | Euro     | 0.75  | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  |
| GERMANY            | Euro              | Euro     | 0.75  | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  |
| GREECE             | Euro              | Euro     | 0.75  | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  |
| HONG KONG          | Hong Kong Dollar  | Hk\$     | 7.76  | 7.75  | 7.76  | 7.79  | 7.84   | 7.84  | 7.76  |
| HUNGARY            | Forint            | Fr       | 232.8 | 279.1 | 281.6 | 274.3 | 270.4  | 290.5 | 307.9 |
| INDIA              | Rupee             | Rup      | 61.0  | 64.0  | 67.2  | 65.1  | 68.4   | 70.4  | 74.2  |
| INDONESIA          | Rupiah            | Rp       | 11864 | 13344 | 13309 | 13377 | 14239  | 14138 | 14555 |
| IRELAND            | Euro              | Euro     | 0.75  | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  |
| ISRAEL             | Shekel            | Shk      | 3.58  | 3.88  | 3.84  | 3.60  | 3.60   | 3.56  | 3.44  |
| ITALY              | Euro              | Euro     | 0.75  | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  |
| JAPAN              | Yen               | ¥        | 105.9 | 121.0 | 108.8 | 112.1 | 110.4  | 109.0 | 106.8 |
| LITHUANIA          | Litas             | Ltl      | 2.61  | 3.11  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  |
| MALAYSIA           | Ringgit           | Rt       | 3.27  | 3.90  | 4.14  | 4.30  | 4.04   | 4.14  | 4.20  |
| MEXICO             | Peso              | Ps       | 13.31 | 15.87 | 18.68 | 18.91 | 19.23  | 19.25 | 21.48 |
| NETHERLANDS        | Euro              | Euro     | 0.75  | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  |
| NEW ZEALAND        | N Z Dollar        | NZ\$     | 1.21  | 1.43  | 1.44  | 1.41  | 1.45   | 1.52  | 1.54  |
| NORWAY             | Krone             | NKr      | 6.31  | 8.06  | 8.41  | 8.27  | 8.14   | 8.80  | 9.42  |
| PHILIPPINES        | Philippine Peso   | Peso     | 44.5  | 45.4  | 47.5  | 50.4  | 52.7   | 51.8  | 49.6  |
| POLAND             | Zloty             | Zt       | 3.16  | 3.77  | 3.95  | 3.78  | 3.61   | 3.84  | 3.90  |
| PORTUGAL           | Euro              | Euro     | 0.75  | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  |
| ROMANIA            | New Leu           | Lu       | 3.35  | 4.00  | 4.06  | 4.05  | 4.65   | 4.24  | 4.24  |
| RUSSIA             | Rouble            | Ru       | 38.6  | 61.0  | 67.0  | 58.3  | 62.8   | 64.8  | 72.3  |
| SAUDI ARABIA       | Riyal             | SR       | 3.75  | 3.75  | 3.75  | 3.75  | 3.75   | 3.75  | 3.75  |
| SINGAPORE          | Singapore Dollar  | S\$      | 1.27  | 1.37  | 1.38  | 1.38  | 1.35   | 1.36  | 1.38  |
| SLOVAKIA           | Koruna            | SK       | 0.75  | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  |
| SLOVENIA           | Tolar/Euro        | Tol/Euro | 0.75  | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  |
| SOUTH AFRICA       | Rand              | Rd       | 10.85 | 12.74 | 14.71 | 13.30 | 13.26  | 14.45 | 16.46 |
| SOUTH KOREA        | Won               | Wn       | 1056  | 1130  | 1161  | 1130  | 1100   | 1165  | 1180  |
| SPAIN              | Euro              | Euro     | 0.75  | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  |
| SWEDEN             | Krona             | Swkr     | 6.86  | 8.43  | 8.56  | 8.54  | 8.70   | 9.45  | 9.21  |
| SWITZERLAND        | Franc             | SFr      | 0.92  | 0.96  | 0.99  | 0.98  | 0.98   | 0.99  | 0.94  |
| TAIWAN             | Taiwan Dollar     | NT\$     | 30.4  | 31.7  | 32.3  | 30.4  | 30.2   | 30.9  | 29.5  |
| THAILAND           | Baht              | Bt       | 32.5  | 34.2  | 35.3  | 33.9  | 32.3   | 31.1  | 31.3  |
| TURKEY             | New Turkish Lira  | TL       | 2.19  | 2.72  | 3.02  | 3.65  | 4.85   | 5.68  | 7.02  |
| UKRAINE            | Hryunia           | Hr       | 12.17 | 21.61 | 25.59 | 26.70 | 27.24  | 25.85 | 26.97 |
| UNITED KINGDOM     | Pound Sterling    | £        | 0.61  | 0.65  | 0.74  | 0.78  | 0.75   | 0.78  | 0.78  |
| VENEZUELA          | Boliva            | Br       | 6.30  | 6.30  | 9.09  | 10.08 | 130973 | 9.99  | 9.99  |
| VIETNAM            | Dong              | Dg       | 21400 | 21685 | 22369 | 22709 | 23022  | 23051 | 23233 |

Source: [www.oanda.com](http://www.oanda.com)/[www.ofx.com](http://www.ofx.com)/[www.x-rates.com](http://www.x-rates.com)

## APPENDIX 5.2 GUIDE TO THE INTERPRETATION OF THE STATISTICS

This section assesses the main technical factors that can distort comparison of Yearbook estimates of electronics activity with other sources and defines the key terms used in the Yearbook to assist interpretation.

### **Production**

The total output of products fabricated by indigenous manufacturers in a country for sale both for home consumption or for export, but excluding imports and re-exports of finished goods. Some manufacturer may amount to little more than assembly of imported piece-parts and sub-assemblies. However, the most widely accepted definition allows such products to be included as production, provided value is added in the assembly process and the finished article can be classified under a different SIC (Standard Industrial Classification) from those of its components.

Where imports of such parts are significant, adjustment is made in calculating the market by the number of items (units) ignoring the formula 'Production + Imports - Exports = Market' to avoid double counting.

Most production statistics record sales of products and thus exclude goods produced in-house for use by the company itself in its original establishment. However, products shipped overseas are included in import and export statistics with a deduced value being applied, if necessary, and would thus normally be included in production figures. US production statistics record shipments of all products sold or transferred to other establishments of the same company with an appropriate allocation of company overhead and profit.

If no production is shown for a product in a particular country, it may be assumed that the market for the product is serviced by importers only.

### **Market**

The total volume of product consumed by end-users in the country during a particular year, whether shipped by indigenous manufacturers or imported, but excluding exports or re-exports. Yearbook markets are largely an estimate of Apparent Consumption based on the calculation:

Production + Imports - Exports = Apparent Consumption

unless lack of data, or unreliable source material, precludes the applications of this formula, in which case the estimate is based on appropriate alternative sources (such as desk research, industry estimates, company annual reports, consultancy visit reports, input/output analysis, etc.)

Consumption of items produced in-house and not shipped outside the establishment or country of manufacture is regarded as closed markets and is not included.

### **Imports & Exports**

Most countries use the Harmonised System for trade statistics that simplifies international comparison. Appendix 4.6 gives the codes used in the compilation of the Yearbook, but for simplicity, these are only shown to the 4-digit level. Trade is actually analysed to the 8-digit level with over 500 categories being employed. For all countries of the EU the trade statistics compiled by Eurostat are used. In some cases these differ slightly from those published by the individual country authorities.

It is sometimes necessary to adjust trade figures to allow for double counting, single monthly peaks or errors in compilation. Values on the summary pages may, therefore, differ from the source material.

It should also be noted that exports shown on the summary tables include re-exports. Thus, countries with significant entrepot activities, notably Hong Kong and Singapore, but also some European countries such as Belgium and the Netherlands, have higher than expected imports, part of which is then re-exported.

## Products

The products and groups of products included in the Yearbook are chosen, as far as possible, to reflect the usage of electronics. Electronic equipment is fairly easily defined, but some components, particularly passive components, are more difficult to separate from electrical and even mechanical types. To enable international comparison between countries, which is one of the main aims of the Yearbook, broad product headings are standardised. However, the exact coverage of some sectors may vary due to the non-availability of source data. This is a particular problem with relays, switches, inductors and connectors that may include some electrical products in addition to the electronic types.

## Communications Equipment

Apparatus for line telephony or line telegraphy is included under '**Telecommunications**'. Apparatus for radio telephony or radio telegraphy including **mobiles** is included under '**Communications & Radar**'.

## Military Equipment

Increasingly, most types of electronic equipment except consumer contains some that are used for military purposes. Military equipment and components are therefore included under their relevant product heading.

## Forecasts

Each edition of the Yearbook gives estimates of markets and production from the base data 2 years before the date of the edition. Later figures are forecasts made at constant exchange rates using estimated real growth, that is inflation and exchange rate fluctuations are not included.

These forecasts relate to future growth rates for existing types of products or new products that will fall into the same statistical classification as existing products. Wholly innovative products not available at the base year and outside current statistical classifications, but which may be introduced later and obtain a significant sales volume within the forecast period, are beyond the scope of the Yearbook and are not included.

The main factors taken into account when forecasting are the historical performance of the series in question, the general economic outlook and the major growth influencing factors for each sector, which we have considered as follows:

|                                |  |
|--------------------------------|--|
| Electronic Capital Equipment:  | industrial investment outlook<br>public sector purchasing policy<br>technical change<br>product pricing trends<br>government controls (e.g. import restrictions, taxation)<br>maturity of the industry |
| Electronic Consumer Equipment: | consumer expenditure outlook<br>technical change<br>product pricing trends<br>government controls (e.g. credit, taxation, trade restrictions)<br>maturity of the industry (e.g. saturation levels)     |
| Electronic Components:         | demand in all other end-equipment sectors<br>technical change<br>product pricing trends<br>captive/merchant market situation   |

government controls (e.g. import restrictions)  
maturity of the industry

In addition, knowledge of published company activities (such as major contracts, plant expansion or shutdown programmes, military and industrial development projects, and technical and price trends) is also given due weight as applicable.

### **Growth Rates**

For both Production and Market data, Compound Annual Average Growth Rates (CAAGR) are given for each product based on the local currency data (see note on exchange rates below). The CAAGR reflects the annual average growth rate for each individual product between the base year and the last year given, that is two years for production and 5 years for markets. This will enable readers to identify, with relative ease, the important areas of high or low growth within the electronics industry, although this may vary appreciably over the period.

### **Exchange Rates**

For the majority of the countries covered in the Yearbook, values are given in local currency with the value in US dollars shown to facilitate international comparison. Constant exchange rates are used for the forecast years but the current rate is used for the historical data. Year-on-year fluctuations in exchange rates can be significant, with the result that a negative trend revealed in local currency values can turn into an upswing when expressed in US dollars, or vice versa. For this reason it is inappropriate to calculate growth rates, including comparisons of the volume of electronics' business in various countries, from the US dollar series (see note on Growth Rates above).

For some of the Newly Industrialised Countries (NICs) and Emerging Nations and all of the East European countries where exchange rates fluctuate dramatically and most trade is conducted in dollars, values have been expressed in US dollars and forecasts made in this currency. In these cases, local currency values have been calculated from the US dollar values but these serve as a guide only and consideration of the volume of the electronics business and of growth should be taken from the US dollar values for these countries.

### **Inflation**

Forecast figures indicate real growth that is, excluding inflation. However, historical data show current figures and therefore include inflation. This can result in an apparently higher growth rate for earlier years and must be noted when considering long term trends. An indication of real growth is usually given in the overview in the summary but for more detailed examination of real growths we recommend the Yearbook data on diskette.

### **Prices**

Production values are at ex-factory prices net of discounts, allowances, freight charges and returns. Import values are CIF, (including carriage, insurance and freight costs to the port of final destination) and export values are FOB (free-on board). Import duty, VAT and other local taxes, and importer and distributor margins are not included.

Market values therefore represent the above and do not include distributors or retailers margins. In the case of consumer equipment these are very significant and can be the reason for apparent inconsistencies between Yearbook estimates and other sources.

### **Stock Levels**

Changes in stock levels may affect calculations, particularly in the consumer equipment sector. Consumer equipment markets are usually estimated from manufacturers' deliveries to the home market plus imports and are not, therefore, measurements of retail sales (the consumer off-take), which may vary from estimates shown according to wholesale and retail stock levels.

Production and market statistics also include manufacturers' inventories, not usually a significant proportion except occasionally in component statistics. Wherever possible, manufacturer's shipments (i.e. production excluding inventories) have been used to calculate apparent consumption data. In certain other instances, production is recorded as invoiced sales of home-produced goods and should not, therefore, include manufacturers' stocks.

Where shipment data are not available, the 'Production + Imports - Exports = Apparent Consumption' formula can become particularly distorted in the highly volatile trading conditions often found, for example, in SE Asia, where manufacturers producing in large quantities for overseas markets may suddenly find themselves left with large stocks as a result of rapid changes in demand. These may be stored and exported in a different year to that in which they were manufactured. As far as possible, a correction is made for this type of effect in our market data when thought to be significant, and can result in an estimate being made for production or trade which differs from an 'official' figure.

### **Accessories, Parts and Spare Parts**

Accessories, parts and spare parts are included as a separate item wherever possible, mainly for comparative purposes, since in a number of countries a separate estimate of this heading is not available although its value is included in total shipments of equipment. Work done, ie PCB assembly is not included.

**APPENDIX 5.3 GUIDE TO STATISTICAL TRADE CLASSIFICATIONS**

In 1988 the Harmonised System was introduced for import and export statistics which is now used by the majority of industrialised countries. The following table gives the codes (to the 4-digit level) used in the compilation of the Yearbook.

|                              | <b>HS</b> |
|------------------------------|-----------|
| EDP                          | 8443      |
|                              | 8471      |
|                              | 8473      |
| Office Equipment             | 8443      |
|                              | 8469      |
|                              | 8470      |
|                              | 8519      |
|                              | 8520      |
| Control &<br>Instrumentation | 8543      |
|                              | 9014      |
|                              | 9015      |
|                              | 9023      |
|                              | 9024      |
|                              | 9025      |
|                              | 9026      |
|                              | 9027      |
|                              | 9030      |
|                              | 9031      |
| 9032                         |           |
| X-Ray & Medical<br>Equipment | 9018      |
|                              | 9021      |
|                              | 9022      |
| Industrial Equipment         | 8514      |
|                              | 8530      |
|                              | 8531      |
|                              | 9013      |
| Communications &<br>Military | 8517      |
|                              | 8526      |
|                              | 9014      |
|                              | 9015      |
| Telecommunication            | 8517      |
|                              | 8520      |

*Appendix*

Consumer Video      8521  
                                 8525  
                                 8528

Consumer Audio      8519  
                                 8520  
                                 8527

Consumer Personal    9006  
                                 9101  
                                 9102  
                                 9103  
                                 9105  
                                 9207

Active Components    8523  
                                 8540  
                                 8541  
                                 8542

Passive Components   8504  
                                 8532  
                                 8533  
                                 8534  
                                 8535  
                                 8536

Other Components     8518  
                                 8522  
                                 8523  
                                 8529

**APPENDIX 5.4 GUIDE TO THE DEFINITION OF THE ELECTRONICS PRODUCT HEADINGS**

**COMPUTING (ELECTRONIC DATA PROCESSING)**

|                              |   |
|------------------------------|---|
| Computers & Complete Systems | Notebook & desktop PCs, tablets, E-readers, mainframes.   |
| Peripherals Storage          | Storage units including central storage units, disc storage units, magnetic tape storage units.   |
| Input/Output                 | Input or Output units including printers (including multifunction devices), readers, visual display units, multiplexers and modems used for computer links, other terminals and consoles.   |
| Accessories and Parts        | Parts, accessories and sub-assemblies for use solely or principally with machines as above. This includes all remaining EDP equipment not fully covered by the above definitions. Complete computers assembled by retailers are included. |
| Software                     | Not included.   |

**OFFICE EQUIPMENT**

|                           |   |
|---------------------------|---|
| Electronic Calculators    | Electronic calculating machines inc. desk and hand-held types, with or without a printing device.   |
| Electronic Cash Registers | Electronic cash registers incorporating a calculating device inc. POS terminals that are not connected to a computer.                           |
| Electronic Accounting     | Electronic accounting machines all types inc. book-keeping Machines and invoicing machines.   |
| Dictation Equipment       | Desk and hand-held dictating machines of audio office type inc. transcription machines.   |
| Photocopiers              | Thermo-copying apparatus, contact-type photocopiers and photocopying apparatus incorporating an optical system (excludes multifunction devices) |

**CONTROL & INSTRUMENTATION**

|                                      |   |
|--------------------------------------|---|
| Industrial & Process Control Systems | Automatic regulators or controlling apparatus. Complete systems for data logging, monitoring, displaying, recording and control of processes including telemetry but excluding components or peripherals where separable. |
| Process Control Instruments          | Process measuring and control instruments for temperature, pressure, flow and level. Potentiometric recorders and controllers, panel mounting.  |



*Appendix*

|   |  |
|---|--|
| Oscilloscopes                                       | Ray oscilloscopes and oscillographs of the light beam and liquid jet types.  |
| Analytical Instruments                              | Apparatus for the analysis of gas, liquids and solids inc. spectrophotometers, spectrographs, spectrofluorimeters, spectropolarimeters and X-ray diffraction/fluorescence apparatus.   |
| Nucleonic Instruments                               | Instruments and apparatus for measuring or detecting ionising radiations inc. reactor instruments, radiation measuring and detecting instruments, nucleonic industrial process measuring and control instruments.  |
| Signal Generators                                   | Signal and waveform generators.  |
| Telecommunications Instruments                      | Cross talk meters, gain measuring instruments, distortion factor meters, psophometers etc.   |
| Machine & Materials Test Instruments                | Echo sounding and ultrasonic sounding or detection instruments and apparatus. Inspection and measuring instruments for engineering metrology (surface, texture etc). Instruments and apparatus for balancing mechanical parts.   |
| Electrical Quantity Measuring Instruments           | Ammeters, voltmeters, ohmmeters (inc. multi-meters) analogue & digital.  |
| Other Test & Measuring                              | Instruments & apparatus for physical and chemical analysis, Hydrometers, Optical Instruments, Exposure Meters, Electronic Meteorological, hydrological & geophysical instruments, Electronic Instruments & Appliances used in Geodesy, Topography, Hydrography & Oceanography (excl rangefinders, theodolites & Tachometres, Instruments used for Exhibitions & Education. |
| Accessories and Parts for Control & Instrumentation | Accessories, parts and spare parts for control and instrumentation.  |

**MEDICAL & INDUSTRIAL**

**X-ray & Medical Equipment**

|                             |   |
|-----------------------------|---|
| Medical X-Ray Equipment     | Apparatus based on the use of X-Rays for diagnostic and therapeutic medical and dental purposes, inc. scanners. |
| Industrial X-Ray Equipment  | Apparatus based on the use of X-Rays for other then medical or dental purposes.                                 |
| Medical Radiation Equipment | Medical apparatus based on the use of radiations from radioactive substances.                                   |
| Industrial Radiation        | Apparatus based on the use of radiations from radioactive Equipment substances for other than medical use.      |
| Electrocardiographs         | Electrocardiographs.  |

*Appendix*

Other Electromedical Equipment Patient monitoring equipment. Electromedical therapeutic apparatus. Electromedical diagnostic apparatus. Diathermic apparatus. Infra-red and ultraviolet ray apparatus. Electroencephalographs. Pacemakers, for stimulating heart muscles and other similar apparatus. Other electromedical apparatus other than radiological.

Hearing Aids Hearing aids with transistor amplifications.

**Industrial Equipment**

Railway Signalling Electronic and electrical traffic control and signalling equipment. Equipment for railways.

Other Traffic Signalling Electronic and electrical traffic control equipment for roads, Equipment inland waterways and port installations.

Security & Fire Alarms Electronic and electrical, burglar, fire and similar security alarms and related equipment.

Other Signalling Equipment Other electronic and electrical sound or visual signalling apparatus such as bells, sirens, buzzers, indicator panels inc. LCD panels, motor vehicle and civil aircraft signalling equipment.

Induction and Dielectric Induction and dielectric heating equipment inc. furnaces Equipment and microwave catering ovens.

**RADIO COMMUNICATIONS (incl mobiles) & RADAR**

Radar Radar apparatus for military, civil and meteorology.

Navigational Aids Ground radio navigational aids.  
Electronic meteorological, hydrological and geophysical instruments and apparatus.  
Shipborne radio navigational aids.  
Electronic marine or river navigational instruments and apparatus.  
Airborne radio navigational aids, inc. radio navigational receivers, radio altimeters, inertia navigation systems and ground proximity warning systems.  
Electronic aeronautical or space navigational instruments and apparatus.  
Portable navigation

Radio Communications For radio-telephony and radio telegraphy for ground, Transmission apparatus shipborne, airborne inc. those for use in civic aircraft.  
Wearable devices

Radio Communications Reception Apparatus For radio-telephony and radio telegraphy for ground, shipborne, airborne inc. those for use in civic aircraft.

Transceivers (combined Transmitter-Receivers) Ground strategic and tactical communications units, two-way mobile radios, handheld and citizen band types, shipborne, airborne inc. those for use in civil aircraft.

*Appendix*

|   |  |
|---|--|
| Mobile Radio Telephones                   | Cellular and other mobile radio telephones.  |
| Pocket Pagers                             | Receivers for paging or calling.   |
| Public Broadcasting Transmitters          | Radio and television transmitters for public broadcasting.   |
| Public Broadcast Other                    | Radio and television relay links.<br>Television cameras for professional use (domestic video cameras and camera recorders are listed under consumer sector).<br>Closed circuit television. |
| Other Communications & Military Equipment | Other transmitters, transceivers and receivers not elsewhere specified, inc. radio remote control apparatus and other airborne electronic equipment. Wireless Military Equipment           |
| Accessories and Parts                     | Accessories, parts and spare parts for communications apparatus and equipment including other equipment not elsewhere specified.   |
| Services                                  | Not included   |

**TELECOMMUNICATIONS**

|                                    |  |
|------------------------------------|--|
| Switching Equipment                | Telephonic and telegraphic switching apparatus including telephone exchange equipment.   |
| Facsimile Equipment                | Facsimile machines.  |
| Transmission Equipment             | Apparatus for carrier-current line systems or digital line systems, for line telephony or line telegraphy incl modems except those used for computer links only. |
| Telephone Sets                     | Telephone sets for line telephony incl. cordless handsets, videophones (mobile radio telephones are included in Radio Communications section).                   |
| Telephone Answering Machines       | Telephone answering machines   |
| Other Telecommunications Equipment | Other fixed line telecommunications equipment not elsewhere specified.   |
| Accessories & Parts                | Accessories, parts and assemblies for line telephony and line telegraphy apparatus and equipment.  |
| Services                           | Not included   |

## **CONSUMER**

### **Consumer Video**

|                               |   |
|-------------------------------|---|
| Colour Television             | All sizes inc. colour receivers incorporating DVD players/recorders, video monitors, television projection equipment. |
| DVD players                   | DVD players & recorders including BlueRay   |
| Video & Digital Still Cameras | Video Cameras including digital camcorders & digital still cameras, security cameras.                                 |
| Tuners & Satellite Receivers  | Video tuners including satellite receivers.   |

### **Consumer Audio**

|                       |   |
|-----------------------|---|
| Portable Audio        | Portable radios including those with a CD player.               |
| Mains Audio Equipment | Clock Radios, Mains Radio, Music Centres incl those with a CD   |
| Car Audio             | Car Audio equipment.  |
| Compact Disc Players  | Players with laser optical reading system, portable CD players. |
| Other Audio Equipment | MP3 players, Other Audio Equipment, Record players & decks.     |

### **Consumer Personal**

|                             |  |
|-----------------------------|--|
| Electric/Electronic Watches | Pocket watches, wrist watches and other electric/electronic watches including smart watches.   |
| Electric/Electronic Clocks  | Clocks with watch movements inc. those with a piezo quartz crystal regulation device. Electric clock systems. Battery operated alarm, wall clocks, other mains operated. |
| Electronic Flashlights      | Discharge lamp (electronic) flashlight apparatus.  |

## **COMPONENTS**

### **Active Components**

|                             |  |
|-----------------------------|--|
| Colour Television Tubes     | All sized colour television picture cathode ray tubes.     |
| Monochrome Television Tubes | All sized monochrome television picture cathode ray tubes. |
| X-Ray Tubes                 | Electronic tubes for use in X-Ray equipment.               |

*Appendix*

|   |  |
|---|--|
| Other Valves & Tubes                        | Television camera tubes, image converters or intensifiers, other photocathode tubes, magnetrons, klystrons, travelling wave tubes, other microwave tubes, receiving amplifier valves & tubes, vacuum fluorescent display tubes, data/graphic display tubes, other display tubes. All other valves & tubes. |
| Diodes                                      | Signal diodes, power rectifiers voltage reference and regulation diodes, microwave and photosensitive, light emitting diodes.  |
| Transistors                                 | Germanium and silicon inc. small signal, power and FET's (field effect transistors).   |
| Thyristors                                  | Thyristors, diacs and triacs.  |
| Photoelectric Cells                         | Photosensitive semiconductor devices, incl. photovoltaic cells   |
| Piezoelectric Crystals                      | Mounted piezoelectric crystals.  |
| Other Discrete                              | Other discrete semiconductors incl. Semiconductors, photocells and piezoelectric crystals not elsewhere specified.   |
| Integrated Circuits                         | Cards, smart cards   |
| Integrated Circuits, Linear                 | Amplifiers, regulators, interfaces, other analogue; incl chips but not wafers.   |
| Integrated Circuits, Digital                | Memories, microprocessors, logic circuits, other digital, incl. chips but not wafers.  |
| Integrated Circuits, Hybrids                | Hybrid integrated circuits.  |
| Integrated Circuits, Other                  | Other integrated circuit and microcircuits.  |
| <b>Passive Components</b>                   |  |
| Electrolytic capacitors                     | Aluminium and tantalum fixed capacitors.   |
| Other Fixed capacitors                      | Ceramic single layer, ceramic multilayer, paper, plastic, other fixed capacitors; power capacitors.  |
| Variable Capacitors                         | Variable and pre-set capacitors.   |
| Fixed Resistors                             | Fixed carbon, composition, film and other excl. heating resistors.   |
| Variable Resistors                          | Variable resistors, rheostats and potentiometers.  |
| Multi-Pin and RF Connectors                 | PCB Connectors, coaxial connectors, rack & panel connectors, other multipin connectors.  |
| Other Connection Devices                    | Plugs and sockets.<br>Other electrical apparatus for making connections to or in electrical circuits for a voltage not exceeding 1000 V.   |
| Small Transformers, Coils & Other inductors | Transformers not exceeding 1kVA. Inductors excl. ballasts discharge tubes.   |

|  |  |
|--|--|
| Relays   | Relays.  |
| Switches   | Isolating and make and break switches<br>Other Switches.   |
| Printed Circuits Boards                                | Printed circuits boards consisting only of conductor elements and contacts.<br>Printed circuits boards with other passive elements (PCBs with components, i.e. stuffed boards, are excluded).  |
| <b>Other Components</b>                                |  |
| Microphones  | Microphones and stands for use with domestic hi-fi systems and professional applications.  |
| Loudspeakers   | Loudspeaker for use with domestic and motor vehicles, and for professional applications.   |
| Amplifiers   | Audio frequency amplifiers, sound amplifier sets for use with domestic hi-fi and professional applications.  |
| Aerials  | Telescopic and whip aerials for portable apparatus and for apparatus fitted in motor vehicles.<br>Outside and inside aerials for radio or television broadcast receivers Inc. built-in types and reception via satellite.<br>Other aerials.  |
| Unrecorded Media                                       | Magnetic tapes audio, video, cassette and other computer/instrumentation tape, not recorded.<br>Magnetic film, not recorded. Magnetic discs, rigid and other, not recorded. Other unprepared media.  |
| Cabinets for Radios, TV & Professional Comms Equipment | Cabinets of wood or other materials.   |
| Accessories & Parts for Consumer Equipment             | Accessories, parts and spare parts inc. parts for:<br>Microphones, loudspeakers and amplifiers.<br>Domestic television receivers and terminal units.<br>Domestic and portable radio receivers (tuners etc).<br>Record players, tape recorders and video recorders inc. sound. heads and parts, needles (all types) whether or not mounted and parts of base metal.<br>Headphones |

## **YEARBOOK OF WORLD ELECTRONICS DATA 2022**

**The following report has been extracted from the Volume 1 of the 2022 Yearbook of World Electronics Data. Further information on the full report which was published in June 2022 can be found at [www.rer.co.uk](http://www.rer.co.uk) or via email at [andrew.fletcher@rer.co.uk](mailto:andrew.fletcher@rer.co.uk).**

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## Italy

### 1 Economic Overview

#### **GDP**

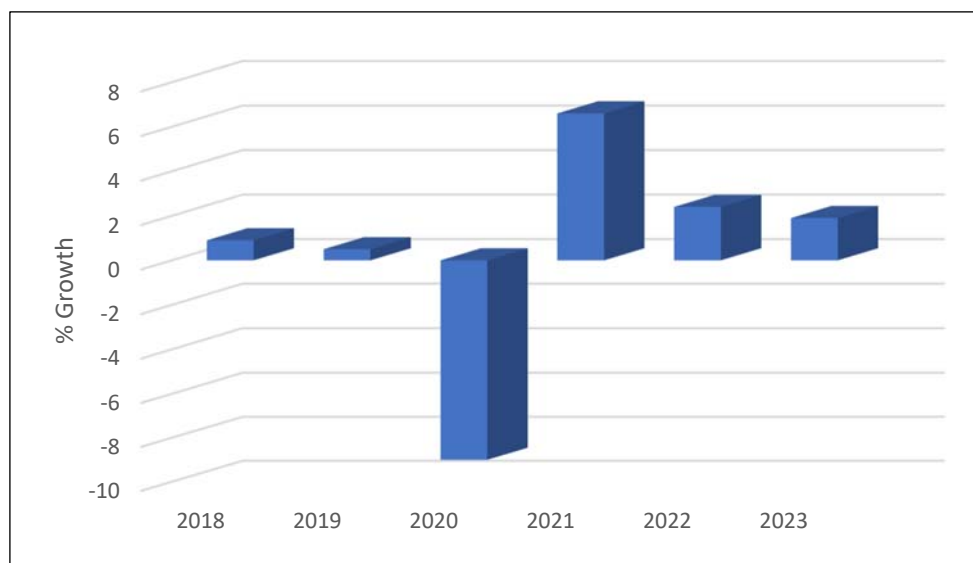
Italy's economy navigated well the prolonged COVID-19 pandemic in 2021, when real output rebounded by 6.6%. However, rising input prices and supply bottlenecks started to weigh on industrial activity in the second half of 2021, while rapidly rising energy prices dented households' purchasing power. Real GDP contracted in the first quarter of 2022 and the short-term outlook remains subdued, as a result of the economic repercussions of Russia's war against Ukraine. Real GDP growth is forecast to slow to 2.4% this year, with most of annual growth attributable to a carryover effect, due to the brisk recovery of 2021. The economy's return to pre-crisis output levels is thus postponed to the second half of 2022. In 2023, economic growth is expected to moderate to 1.9%, which is still sizeably above the long-term average. The outlook remains subject to pronounced downside risks. Namely, as one of the largest importers of Russian natural gas among EU countries, Italy would be severely affected by abrupt supply disruptions.

#### **Inflation**

Sharply rising energy and food prices are set to lift HICP inflation to almost 6% in 2022 with price pressures expected to broaden further. With input prices and inflation expectations at historically high levels, rising selling prices are set to keep inflation above 2% in 2023, despite a waning impact from energy prices. By contrast, wage growth is expected to remain moderate, as several wage contracts were already renewed just before the onset of the energy price surge in mid-2021.

#### **Employment**

The pace of employment growth is expected to be in line with slowing economic activity, also indicated by firms' subdued employment expectations. Despite a significant reduction in the use of short-time work schemes, labour market slack remains sizeable, as both hours worked and headcount employment are projected to reach pre-pandemic levels only by the end of the forecast period. The unemployment rate is set to drop to 8.9% by 2023, amid an increasing labour force.



GDP Growth 2018-2023



**Italy GDP Growth 2018-2023**

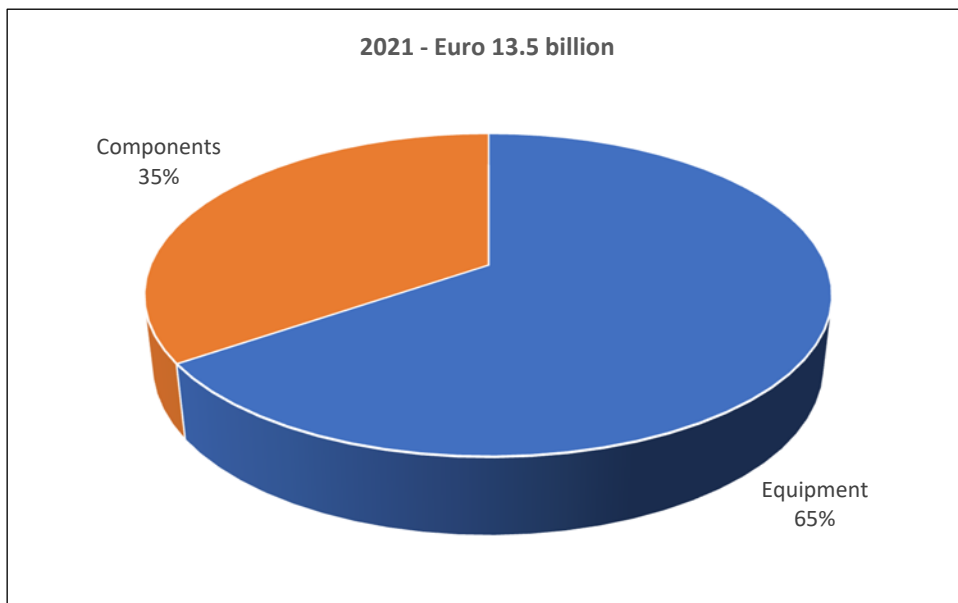
| % Increase    | Actual |      |      | Forecast |      |      |
|---------------|--------|------|------|----------|------|------|
|               | 2018   | 2019 | 2020 | 2021     | 2022 | 2023 |
| Growth of GDP | 0.9    | 0.5  | -9.0 | 6.6      | 2.4  | 1.9  |

Note: Percentage change on previous year. Source: EU Spring Economic Forecast May 2022

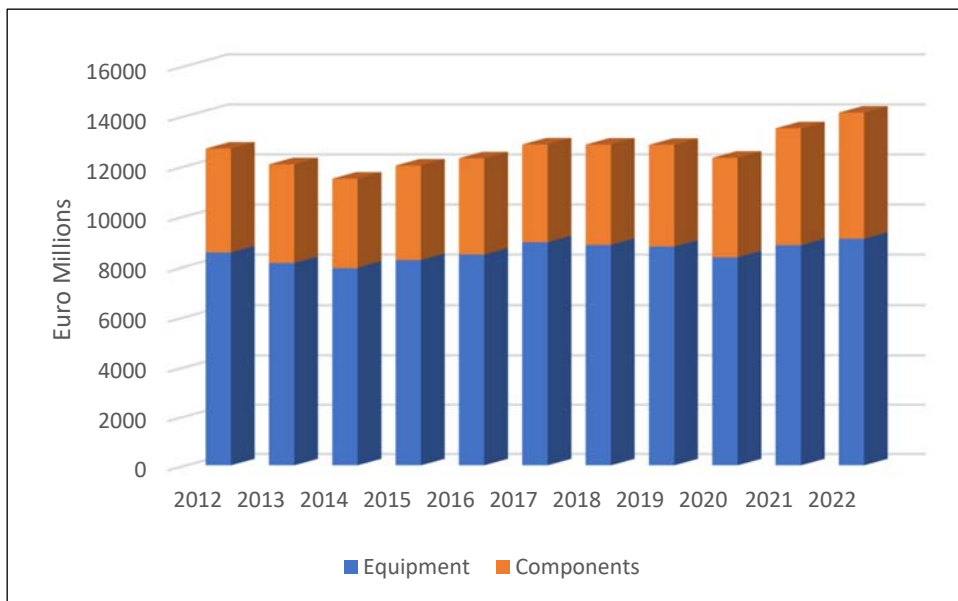
**2 Electronics Industry Overview**

**Overview**

- After declining by 4.0% in 2020 the production of electronics equipment and components rebounded in 2021 increasing by 9.6%. Electronics equipment output, which accounted for 65% of electronics production, increased by 5.8% while electronic component production was boosted by higher average selling prices rose by 17.5%.



Italy Electronics Production by Sector 2021



Italy Electronics Production by Sector 2012-2022

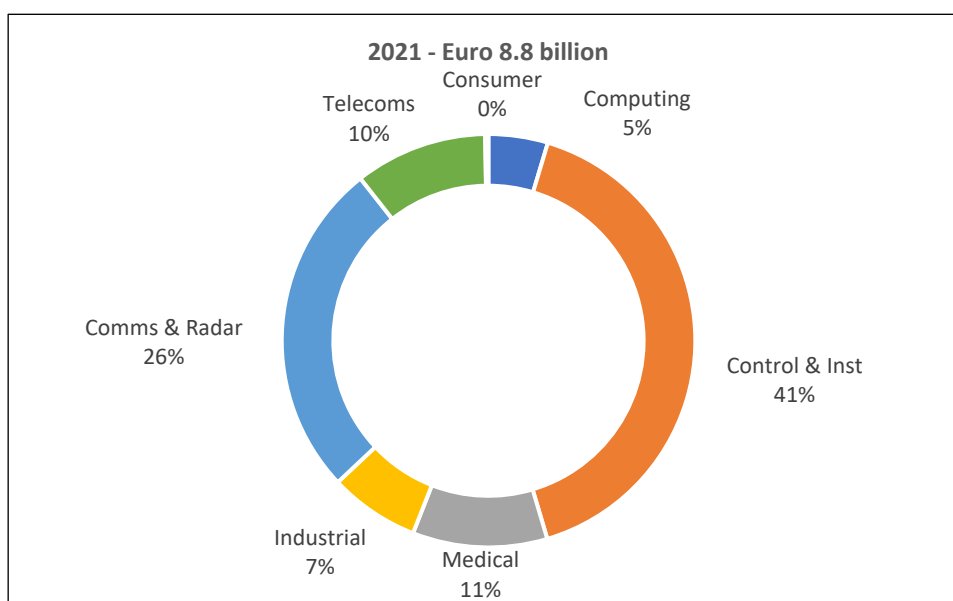
## Summary of Italian Electronics Production

| Euro Millions  | 2017  | 2018  | 2019  | 2020  | 2021  | 2022  |
|----------------|-------|-------|-------|-------|-------|-------|
| Computing      | 606   | 504   | 493   | 407   | 410   | 401   |
| Industrial     | 5094  | 5028  | 4940  | 4762  | 5155  | 5337  |
| Communications | 3225  | 3285  | 3317  | 3160  | 3247  | 3332  |
| Consumer       | 27    | 26    | 26    | 21    | 22    | 21    |
| Components     | 3905  | 4010  | 4067  | 3975  | 4671  | 5041  |
| Total          | 12857 | 12853 | 12843 | 12325 | 13505 | 14131 |

Notes: Computing includes office equipment; Industrial combines control and instrumentation and medical and industrial; and communications combines fixed and wireless communications (inc. defence). Due to computer rounding the summary figures above may differ slightly from the figures presented in the main tables.

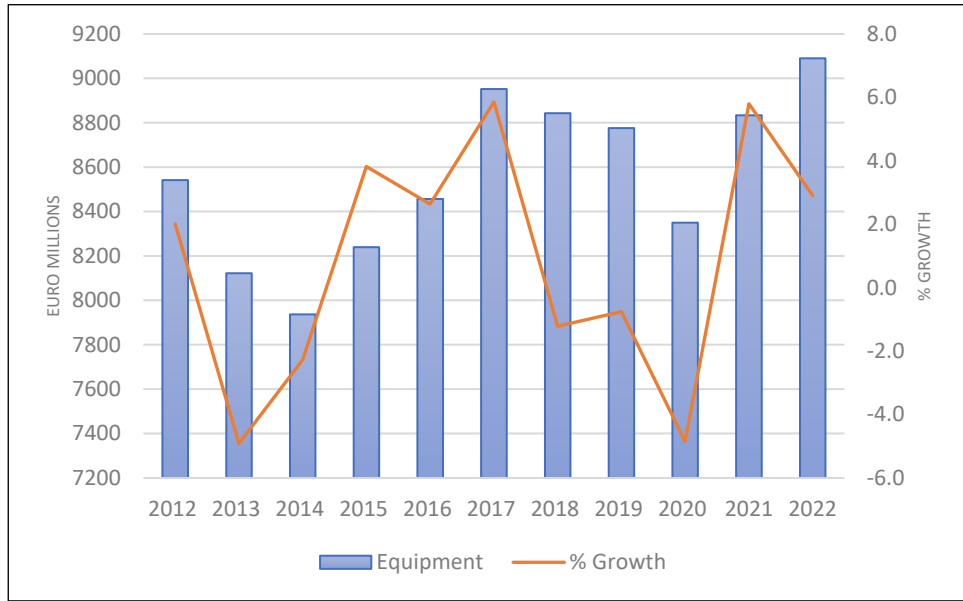
### Equipment

- Control and instrumentation and communications and radar accounted for 40.8% and 26.4% of electronics equipment output respectively in 2021.
- Output for the control and instrumentation sector declined by 4.3% in 2020, a significantly better outcome than the anticipated a double-digit decline forecast at the start of the pandemic, growth supported by stronger than expected demand from key export markets. Output rebound strongly in 2021 increasing by 10.5% but is forecast to ease to 3.8% in 2022 in-line with the downgraded outlook for the global economy.



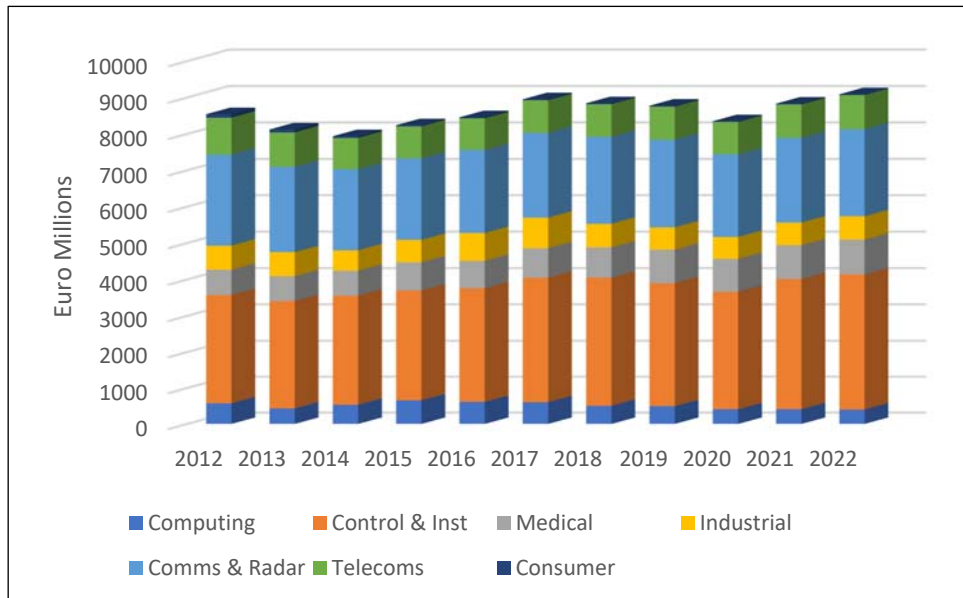
Italy Electronics Equipment Production by Sector 2021

- The medical sector accounted for an estimated 10.5% of electronic equipment production in 2021. In 2020, rising output for products used in the treatment of the pandemic was offset by lower production of other medical equipment leading to a 1.8% decline for the year as a whole. Output increased by 3.0% in 2021 before easing to 2.8% in 2022.
- After growth of 1.9% in 2019, the telecommunications segment posted a decline of 2.4% in 2020 primarily as a result of lower production at the height of the pandemic during the second quarter of the year. Growth picked-up over the course of 2021 with output increasing by 3.0% for the year as a whole and is forecast to remain at similar levels in 2022. Opportunities related to the IoT is expected to provide a boost to growth over the period.



Italy Electronics Equipment Production 2012-2022

- The collapse in the commercial aviation sector as a result of the pandemic was a major contributing factor in the 5.6% decline in communications and radar production in 2020 and with only a gradual recovery expected in the short-term will subdue growth in both 2021 and 2022. Defence related output is expected to be boosted by the war in Ukraine. Leonardo holds a leading position in the European aerospace and defence industry and is a key member of a number of the pan-European joint ventures in the sector.

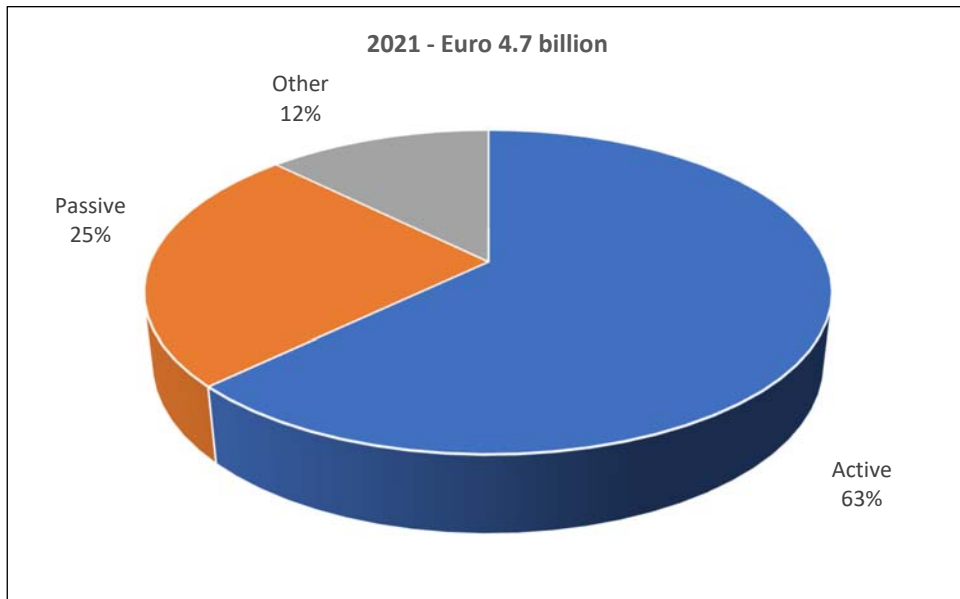


Italy Electronics Equipment Production by Sector 2012-2022

- Like other countries in Western Europe the production of consumer electronics is now minimal.
- There are a number of EMS providers in Italy with Elemaster ranked 24<sup>th</sup> largest in Europe in 2020. Tier 1 Global suppliers have also established a presence including Jabil and Flex. Flex, which acquired telecoms infrastructure company Alcatel-Lucent’s manufacturing plant in Trieste in 2015, is the largest EMS provider in the country.

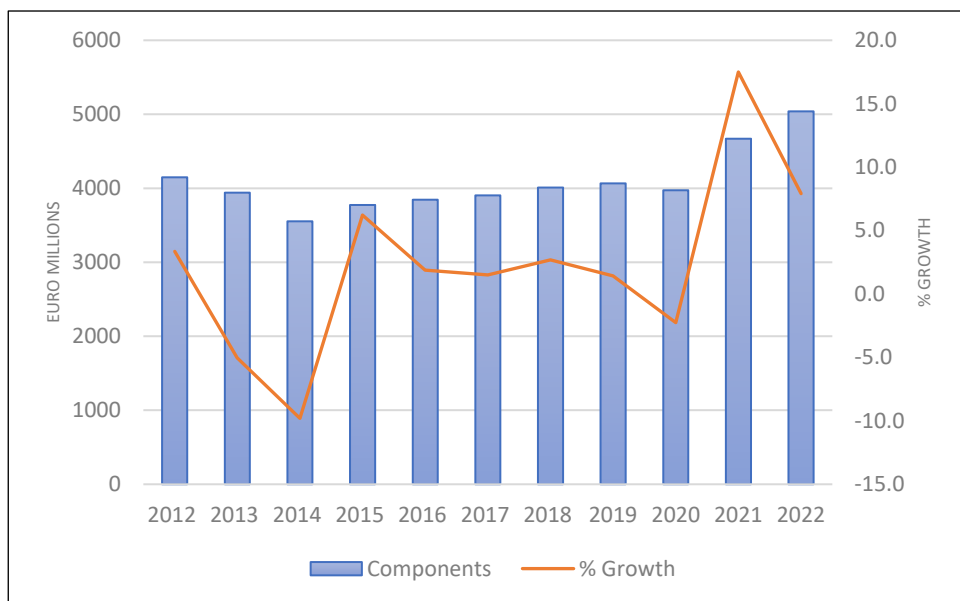
**Components**

- The semiconductor sector is dominated by STMicroelectronics (STM), the Franco-Italian semiconductor group, along with a number of smaller companies, which exploit niche markets.

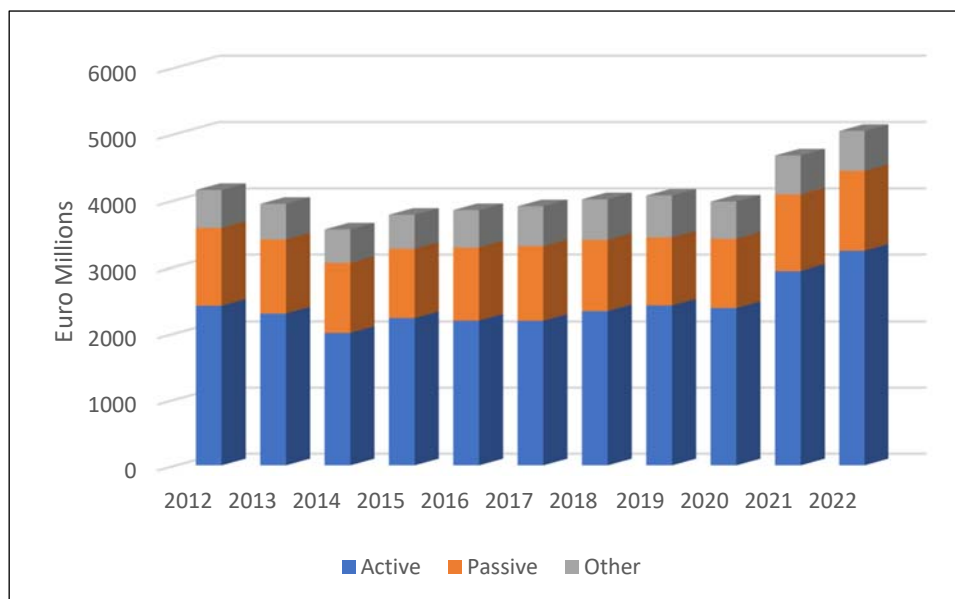


*Italy Electronics Component Production by Sector 2021*

- Future prospects for the Italian semiconductor sector will be closely linked to the manufacturing strategy of STM. In June 2021, STM and semiconductor foundry Tower Semiconductor announced an agreement where Tower would gain access to STM's Agrate R3 300mm fab under construction on its Agrate Brianza site in Italy. ST and Tower will join forces for an accelerated fab ramp-up, a key factor to reach a high utilization level and therefore a competitive wafer cost. ST will share the cleanroom in R3, with Tower installing its own equipment in one third of the total space. The fab is expected to be ready for equipment installation later this year and start production in the second half of 2022. STM has also announced plans for a new integrated silicon carbide wafer fab in Catania with pilot production scheduled for 2023.



*Italy Electronics Component Production 2012-2022*



Italy Electronics Component Production by Sector 2012-2022

- After two years of declining output, growth declined by 1.2% in both 2019 and 2020, the production of ICs increased by 18.8% in 2021 through a combination of increased production to offset global shortages and higher average selling prices. Further double-digit growth of around 10.0% is forecast for 2022.

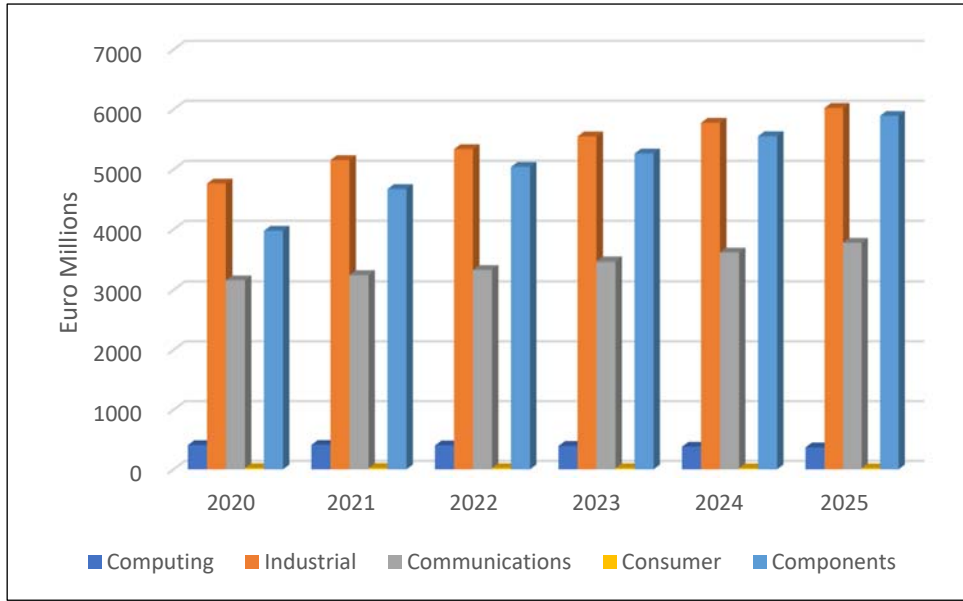
## Outlook

### Summary of Italian Electronics Production – Medium Term Forecast 2020-2025

| Euro Millions  | 2020  | 2021  | 2022  | 2023  | 2024  | 2025  |
|----------------|-------|-------|-------|-------|-------|-------|
| Computing      | 407   | 410   | 401   | 392   | 380   | 368   |
| Industrial     | 4762  | 5155  | 5337  | 5548  | 5776  | 6024  |
| Communications | 3160  | 3247  | 3332  | 3466  | 3614  | 3776  |
| Consumer       | 21    | 22    | 21    | 20    | 19    | 18    |
| Components     | 3975  | 4671  | 5041  | 5264  | 5552  | 5892  |
| Total          | 12325 | 13505 | 14131 | 14690 | 15342 | 16078 |

Notes: Computing includes office equipment; Industrial combines control and instrumentation and medical and industrial; and communications combines fixed and wireless communications (inc. defence). Due to computer rounding the summary figures above may differ slightly from the figures presented in the main tables.

- Equipment production in the period to 2025 will continue to be focused on industrial and fixed and wireless communications including defence, with these sectors offsetting the gradual decline in the computer segment.
- The production of passive components will show modest growth over the forecast period with production of commodity products being transferred to lower cost locations while the semiconductor sector, as highlighted, will continue to be influenced by developments at STMicroelectronics. The latest investments in two new fabs in the country will help boost output over the forecast period.



Italy Electronics Production by Sector 2020-2025

### 3 ITALY PRODUCTION

| <b>COMPUTING</b>       |            | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> |
|------------------------|------------|-------------|-------------|-------------|-------------|
| Complete Systems       | €M         | 195         | 222         | 230         | 226         |
|                        | <b>\$M</b> | <b>219</b>  | <b>252</b>  | <b>271</b>  | <b>265</b>  |
| Peripherals            | €M         | 199         | 105         | 100         | 100         |
|                        | <b>\$M</b> | <b>224</b>  | <b>119</b>  | <b>118</b>  | <b>118</b>  |
| Accessories & Parts    | €M         | 68          | 63          | 60          | 57          |
|                        | <b>\$M</b> | <b>76</b>   | <b>72</b>   | <b>71</b>   | <b>67</b>   |
| <b>Computing Total</b> | €M         | 462         | 390         | 390         | 382         |
|                        | <b>\$M</b> | <b>519</b>  | <b>443</b>  | <b>459</b>  | <b>450</b>  |

| <b>OFFICE EQUIPMENT</b>       |            | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> |
|-------------------------------|------------|-------------|-------------|-------------|-------------|
| <b>Office Equipment Total</b> | €M         | 31          | 17          | 20          | 19          |
|                               | <b>\$M</b> | <b>35</b>   | <b>19</b>   | <b>24</b>   | <b>22</b>   |

| <b>CONTROL &amp; INSTRUMENTATION</b>          |            | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> |
|---|------------|-------------|-------------|-------------|-------------|
| <b>Total Industrial &amp; Process Control</b> | €M         | 1350        | 1275        | 1425        | 1513        |
|   | <b>\$M</b> | <b>1517</b> | <b>1449</b> | <b>1676</b> | <b>1780</b> |
| <b>Instrumentation</b>                        |            |             |             |             |             |
| Analytical Instruments                        | €M         | 105         | 110         | 130         | 137         |
|   | <b>\$M</b> | <b>118</b>  | <b>125</b>  | <b>153</b>  | <b>161</b>  |
| Nucleonic Instruments                         | €M         | 11          | 11          | 12          | 11          |
|   | <b>\$M</b> | <b>12</b>   | <b>13</b>   | <b>14</b>   | <b>13</b>   |
| Signal Generators                             | €M         | 5           | 5           | 5           | 5           |
|   | <b>\$M</b> | <b>6</b>    | <b>6</b>    | <b>6</b>    | <b>5</b>    |
| Telecoms Instruments                          | €M         | 27          | 16          | 20          | 20          |
|   | <b>\$M</b> | <b>30</b>   | <b>18</b>   | <b>24</b>   | <b>23</b>   |
| Machine & Materials Test Instruments          | €M         | 265         | 285         | 320         | 331         |
|   | <b>\$M</b> | <b>298</b>  | <b>324</b>  | <b>376</b>  | <b>390</b>  |
| Electrical Quantity Measuring Instruments     | €M         | 86          | 77          | 79          | 78          |
|   | <b>\$M</b> | <b>97</b>   | <b>88</b>   | <b>93</b>   | <b>92</b>   |
| Other Test & Measuring Instruments            | €M         | 1090        | 1030        | 1150        | 1170        |
|   | <b>\$M</b> | <b>1225</b> | <b>1170</b> | <b>1353</b> | <b>1377</b> |
| <b>Total Instrumentation</b>                  | €M         | 1589        | 1534        | 1716        | 1751        |
|   | <b>\$M</b> | <b>1785</b> | <b>1743</b> | <b>2019</b> | <b>2060</b> |
| <b>Accessories &amp; Parts</b>                | €M         | 467         | 450         | 460         | 474         |
|   | <b>\$M</b> | <b>525</b>  | <b>511</b>  | <b>541</b>  | <b>558</b>  |
| <b>Control &amp; Instrumentation Total</b>    | €M         | 3406        | 3259        | 3601        | 3738        |
|   | <b>\$M</b> | <b>3827</b> | <b>3703</b> | <b>4236</b> | <b>4397</b> |

**ITALY PRODUCTION (ctd)**

| <b>MEDICAL &amp; INDUSTRIAL</b>                 |     | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> |
|---|-----|-------------|-------------|-------------|-------------|
| <b>X-Ray &amp; Medical Equipment</b>            |     |             |             |             |             |
| X-Ray Equipment                                 | €M  | 377         | 352         | 362         | 361         |
|   | \$M | <b>424</b>  | <b>400</b>  | <b>426</b>  | <b>425</b>  |
| Electromedical Equipment                        | €M  | 530         | 540         | 555         | 580         |
|   | \$M | <b>596</b>  | <b>614</b>  | <b>653</b>  | <b>682</b>  |
| Hearing Aids                                    | €M  | 14          | 12          | 14          | 16          |
|   | \$M | <b>16</b>   | <b>14</b>   | <b>16</b>   | <b>19</b>   |
| <b>X-Ray &amp; Medical Equipment Total</b>      | €M  | 921         | 904         | 931         | 957         |
|   | \$M | <b>1035</b> | <b>1027</b> | <b>1095</b> | <b>1126</b> |
| <b>Industrial Equipment</b>                     |     |             |             |             |             |
| Railway & Traffic Signalling Equipment          | €M  | 164         | 206         | 215         | 221         |
|   | \$M | <b>184</b>  | <b>234</b>  | <b>253</b>  | <b>260</b>  |
| Other Signalling Equipment                      | €M  | 394         | 351         | 360         | 370         |
|   | \$M | <b>443</b>  | <b>399</b>  | <b>424</b>  | <b>436</b>  |
| Other Industrial Equipment                      | €M  | 55          | 42          | 48          | 51          |
|   | \$M | <b>62</b>   | <b>48</b>   | <b>56</b>   | <b>60</b>   |
| <b>Total Industrial Equipment</b>               | €M  | 613         | 599         | 623         | 642         |
|   | \$M | <b>689</b>  | <b>681</b>  | <b>733</b>  | <b>755</b>  |
| <b>Medical &amp; Industrial Equipment Total</b> | €M  | 1534        | 1503        | 1554        | 1599        |
|   | \$M | <b>1724</b> | <b>1708</b> | <b>1828</b> | <b>1881</b> |

| <b>COMMUNICATIONS &amp; RADAR</b>       |     | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> |
|---|-----|-------------|-------------|-------------|-------------|
| Radar & Navigational Aids               | €M  | 1340        | 1270        | 1300        | 1310        |
|   | \$M | <b>1506</b> | <b>1443</b> | <b>1529</b> | <b>1542</b> |
| Radio Comms inc Mobile Phones           | €M  | 1065        | 1000        | 1030        | 1078        |
| Public Broadcasting & Parts             | \$M | <b>1197</b> | <b>1136</b> | <b>1212</b> | <b>1268</b> |
| <b>Communications &amp; Radar Total</b> | €M  | 2405        | 2270        | 2330        | 2388        |
|   | \$M | <b>2702</b> | <b>2580</b> | <b>2741</b> | <b>2810</b> |

| <b>TELECOMMUNICATIONS</b>       |     | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> |
|---------------------------------|-----|-------------|-------------|-------------|-------------|
| Telephone Sets                  | €M  | 27          | 30          | 27          | 27          |
|                                 | \$M | <b>30</b>   | <b>34</b>   | <b>32</b>   | <b>32</b>   |
| Other Telecoms Equipment        | €M  | 885         | 860         | 890         | 916         |
|                                 | \$M | <b>994</b>  | <b>977</b>  | <b>1047</b> | <b>1078</b> |
| <b>Telecommunications Total</b> | €M  | 912         | 890         | 917         | 944         |
|                                 | \$M | <b>1025</b> | <b>1011</b> | <b>1079</b> | <b>1110</b> |



ITALY PRODUCTION (ctd)

| CONSUMER                           |     | 2019 | 2020 | 2021 | 2022 |
|------------------------------------|-----|------|------|------|------|
| <b>Video Equipment</b>             |     |      |      |      |      |
| Colour Television                  | €M  | 3    | 2    | 2    | 2    |
|                                    | \$M | 3    | 2    | 2    | 2    |
| <b>Video Equipment Total</b>       | €M  | 3    | 2    | 2    | 2    |
|                                    | \$M | 3    | 2    | 2    | 2    |
| <b>Audio Equipment</b>             |     |      |      |      |      |
| Audio Equipment                    | €M  | 2    | 1    | 1    | 1    |
|                                    | \$M | 2    | 1    | 1    | 1    |
| <b>Audio Equipment Total</b>       | €M  | 2    | 1    | 1    | 1    |
|                                    | \$M | 2    | 1    | 1    | 1    |
| <b>Personal Consumer Equipment</b> |     |      |      |      |      |
| Electronic Musical Instruments     | €M  | 15   | 13   | 14   | 14   |
|                                    | \$M | 17   | 15   | 16   | 16   |
| Electric/Electronic Watches        | €M  | 2    | 2    | 2    | 2    |
|                                    | \$M | 2    | 2    | 2    | 2    |
| Electric/Electronic Clocks         | €M  | 4    | 3    | 3    | 3    |
|                                    | \$M | 4    | 3    | 4    | 3    |
| <b>Total Personal Equipment</b>    | €M  | 21   | 18   | 19   | 18   |
|                                    | \$M | 24   | 20   | 22   | 22   |
| <b>Consumer Equipment Total</b>    | €M  | 26   | 21   | 22   | 21   |
|                                    | \$M | 29   | 24   | 26   | 25   |

| COMPONENTS               |     | 2019 | 2020 | 2021 | 2022 |
|--------------------------|-----|------|------|------|------|
| <b>Active Components</b> |     |      |      |      |      |
| Valves & Tubes           | €M  | 9    | 12   | 12   | 12   |
|                          | \$M | 10   | 14   | 14   | 14   |
| Diodes                   | €M  | 29   | 36   | 45   | 47   |
|                          | \$M | 33   | 41   | 53   | 55   |
| Transistors              | €M  | 18   | 15   | 35   | 37   |
|                          | \$M | 20   | 17   | 41   | 44   |
| Thyristors               | €M  | 10   | 12   | 13   | 14   |
|                          | \$M | 11   | 14   | 15   | 16   |
| Piezoelectric Crystals   | €M  | 7    | 7    | 9    | 9    |
|                          | \$M | 8    | 8    | 11   | 11   |
| Photocells               | €M  | 233  | 131  | 250  | 288  |
|                          | \$M | 262  | 149  | 294  | 339  |

ITALY PRODUCTION (ctd)

| COMPONENTS (ctd)                |     | 2019 | 2020 | 2021 | 2022 |
|---------------------------------|-----|------|------|------|------|
| <b>Active Components</b>        |     |      |      |      |      |
| Other Discrete Semiconductors   | €M  | 47   | 40   | 45   | 47   |
|                                 | \$M | 53   | 45   | 53   | 55   |
| ICs & Other Microcircuits       | €M  | 2064 | 2125 | 2525 | 2778 |
|                                 | \$M | 2319 | 2415 | 2971 | 3268 |
| <b>Active Components Total</b>  | €M  | 2417 | 2378 | 2934 | 3232 |
|                                 | \$M | 2716 | 2702 | 3452 | 3802 |
| <b>Passive Components</b>       |     |      |      |      |      |
| Fixed Capacitors                | €M  | 100  | 95   | 105  | 113  |
|                                 | \$M | 112  | 108  | 124  | 133  |
| Variable Capacitors             | €M  | 1    | 1    | 1    | 1    |
|                                 | \$M | 1    | 1    | 1    | 1    |
| Resistors                       | €M  | 27   | 20   | 24   | 26   |
|                                 | \$M | 30   | 23   | 28   | 31   |
| Connectors                      | €M  | 405  | 380  | 435  | 461  |
|                                 | \$M | 455  | 432  | 512  | 542  |
| Transformers & Inductors        | €M  | 119  | 105  | 124  | 128  |
|                                 | \$M | 134  | 119  | 146  | 151  |
| Relays                          | €M  | 33   | 31   | 33   | 34   |
|                                 | \$M | 37   | 35   | 39   | 40   |
| Switches                        | €M  | 120  | 110  | 118  | 122  |
|                                 | \$M | 135  | 125  | 139  | 144  |
| Printed Circuit Boards          | €M  | 212  | 293  | 310  | 324  |
|                                 | \$M | 238  | 333  | 365  | 381  |
| <b>Total Passive Components</b> | €M  | 1017 | 1035 | 1150 | 1209 |
|                                 | \$M | 1143 | 1176 | 1353 | 1422 |
| <b>Other Components</b>         |     |      |      |      |      |
| Microphones                     | €M  | 3    | 3    | 5    | 5    |
|                                 | \$M | 3    | 3    | 6    | 5    |
| Loudspeakers                    | €M  | 230  | 190  | 195  | 209  |
|                                 | \$M | 258  | 216  | 229  | 246  |
| Amplifiers                      | €M  | 46   | 42   | 42   | 45   |
|                                 | \$M | 52   | 48   | 49   | 53   |
| Aerials                         | €M  | 50   | 45   | 45   | 46   |
|                                 | \$M | 56   | 51   | 53   | 54   |
| Unrecorded Media                | €M  | 8    | 6    | 4    | 4    |
|                                 | \$M | 9    | 7    | 5    | 4    |

**ITALY PRODUCTION (ctd)**

| <b>COMPONENTS (ctd)</b>                    |     | <b>2019</b>  | <b>2020</b>  | <b>2021</b>  | <b>2022</b>  |
|--|-----|--------------|--------------|--------------|--------------|
| <b>Other Components (ctd)</b>              |     |              |              |              |              |
| Accessories & Parts for Consumer Equipment | €M  | 296          | 276          | 296          | 293          |
|  | \$M | <b>333</b>   | <b>314</b>   | <b>348</b>   | <b>345</b>   |
| <b>Total Other Components</b>              | €M  | 633          | 562          | 587          | 602          |
|  | \$M | <b>711</b>   | <b>639</b>   | <b>691</b>   | <b>708</b>   |
| <b>Total Components Production</b>         | €M  | 4067         | 3975         | 4671         | 5043         |
|  | \$M | <b>4570</b>  | <b>4517</b>  | <b>5495</b>  | <b>5933</b>  |
| <b>TOTAL PRODUCTION - ITALY</b>            |     | <b>2019</b>  | <b>2020</b>  | <b>2021</b>  | <b>2022</b>  |
| <b>Total</b>                               | €M  | 12843        | 12325        | 13505        | 14134        |
|  | \$M | <b>14430</b> | <b>14006</b> | <b>15888</b> | <b>16628</b> |

Notes: 2019 and 2020 are current figures at current exchange rates. 2021 and 2022 are forecasts at 2021 constant values and exchange rates (i.e. inflation is not included). Base year 2021

#### 4 ITALY MARKETS

| <b>COMPUTING</b>              |     | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>2025</b> |
|-------------------------------|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Computers Total               | €M  | 2466        | 2662        | 2818        | 2889        | 2959        | 3039        | 3124        |
|                               | \$M | <b>2771</b> | <b>3025</b> | <b>3315</b> | <b>3399</b> | <b>3481</b> | <b>3575</b> | <b>3675</b> |
| Peripherals & Other Equipment | €M  | 1730        | 1659        | 1633        | 1654        | 1673        | 1698        | 1724        |
|                               | \$M | <b>1944</b> | <b>1885</b> | <b>1921</b> | <b>1946</b> | <b>1969</b> | <b>1997</b> | <b>2028</b> |
| Accessories & Parts           | €M  | 907         | 864         | 891         | 890         | 888         | 888         | 889         |
|                               | \$M | <b>1019</b> | <b>982</b>  | <b>1048</b> | <b>1047</b> | <b>1044</b> | <b>1045</b> | <b>1046</b> |
| <b>Computing Total</b>        | €M  | 5103        | 5185        | 5342        | 5433        | 5520        | 5625        | 5737        |
|                               | \$M | <b>5734</b> | <b>5892</b> | <b>6285</b> | <b>6392</b> | <b>6494</b> | <b>6617</b> | <b>6750</b> |

| <b>OFFICE EQUIPMENT</b>       |     | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>2025</b> |
|-------------------------------|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Office Equipment              | €M  | 248         | 222         | 228         | 220         | 213         | 207         | 199         |
|                               | \$M | <b>279</b>  | <b>252</b>  | <b>268</b>  | <b>259</b>  | <b>251</b>  | <b>244</b>  | <b>234</b>  |
| <b>Office Equipment Total</b> | €M  | 248         | 222         | 228         | 220         | 213         | 207         | 199         |
|                               | \$M | <b>279</b>  | <b>252</b>  | <b>268</b>  | <b>259</b>  | <b>251</b>  | <b>244</b>  | <b>234</b>  |

| <b>CONTROL &amp; INSTRUMENTATION</b>          |     | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>2025</b> |
|---|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Industrial &amp; Process Control</b>       |     |             |             |             |             |             |             |             |
| <b>Total Industrial &amp; Process Control</b> | €M  | 1540        | 1324        | 1440        | 1498        | 1562        | 1630        | 1705        |
|   | \$M | <b>1730</b> | <b>1505</b> | <b>1694</b> | <b>1763</b> | <b>1838</b> | <b>1918</b> | <b>2005</b> |
| <b>Instrumentation</b>                        |     |             |             |             |             |             |             |             |
| Analytical Instruments                        | €M  | 274         | 297         | 326         | 339         | 354         | 369         | 386         |
|   | \$M | <b>308</b>  | <b>338</b>  | <b>384</b>  | <b>399</b>  | <b>416</b>  | <b>434</b>  | <b>454</b>  |
| Nucleonic Instruments                         | €M  | 28          | 22          | 30          | 30          | 30          | 30          | 30          |
|   | \$M | <b>31</b>   | <b>25</b>   | <b>35</b>   | <b>35</b>   | <b>35</b>   | <b>35</b>   | <b>35</b>   |
| Signal Generators                             | €M  | 10          | 9           | 13          | 13          | 12          | 12          | 11          |
|   | \$M | <b>11</b>   | <b>10</b>   | <b>15</b>   | <b>15</b>   | <b>14</b>   | <b>14</b>   | <b>14</b>   |
| Telecoms Instruments                          | €M  | 21          | 19          | 21          | 21          | 22          | 22          | 22          |
|   | \$M | <b>24</b>   | <b>22</b>   | <b>25</b>   | <b>25</b>   | <b>25</b>   | <b>26</b>   | <b>26</b>   |
| Machine & Materials Test Instruments          | €M  | 150         | 133         | 139         | 143         | 148         | 153         | 158         |
|   | \$M | <b>169</b>  | <b>151</b>  | <b>164</b>  | <b>169</b>  | <b>174</b>  | <b>180</b>  | <b>186</b>  |
| Electrical Quantity Measuring Instruments     | €M  | 75          | 73          | 79          | 81          | 84          | 87          | 90          |
|   | \$M | <b>84</b>   | <b>83</b>   | <b>93</b>   | <b>96</b>   | <b>99</b>   | <b>102</b>  | <b>106</b>  |
| Other Test & Measuring Instruments            | €M  | 1067        | 965         | 1022        | 1060        | 1102        | 1147        | 1196        |
|   | \$M | <b>1199</b> | <b>1097</b> | <b>1202</b> | <b>1248</b> | <b>1297</b> | <b>1349</b> | <b>1407</b> |
| <b>Total Instrumentation</b>                  | €M  | 1625        | 1518        | 1630        | 1688        | 1752        | 1819        | 1893        |
|   | \$M | <b>1826</b> | <b>1725</b> | <b>1918</b> | <b>1986</b> | <b>2061</b> | <b>2140</b> | <b>2228</b> |

**ITALY MARKETS (ctd)**

| <b>CONTROL &amp; INSTRUMENTATION (ctd)</b> |     | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>2025</b> |
|--|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Control &amp; Instrumentation (ctd)</b> |     |             |             |             |             |             |             |             |
| Accessories & Parts                        | €M  | 453         | 444         | 473         | 488         | 503         | 520         | 539         |
|  | \$M | <b>509</b>  | <b>505</b>  | <b>556</b>  | <b>574</b>  | <b>592</b>  | <b>612</b>  | <b>634</b>  |
| <b>Control &amp; Instrumentation Total</b> | €M  | 3618        | 3286        | 3543        | 3674        | 3817        | 3970        | 4137        |
|  | \$M | <b>4065</b> | <b>3734</b> | <b>4168</b> | <b>4322</b> | <b>4491</b> | <b>4671</b> | <b>4867</b> |

| <b>MEDICAL &amp; INDUSTRIAL</b>            |     | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>2025</b> |
|--|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>X-Ray &amp; Medical Equipment</b>       |     |             |             |             |             |             |             |             |
| X-Ray Equipment                            | €M  | 173         | 175         | 180         | 185         | 191         | 197         | 204         |
|  | \$M | <b>194</b>  | <b>199</b>  | <b>212</b>  | <b>218</b>  | <b>225</b>  | <b>232</b>  | <b>240</b>  |
| Other Electromedical Equipment             | €M  | 759         | 806         | 850         | 885         | 922         | 963         | 1006        |
|  | \$M | <b>853</b>  | <b>916</b>  | <b>1000</b> | <b>1041</b> | <b>1085</b> | <b>1132</b> | <b>1183</b> |
| Hearing Aids                               | €M  | 63          | 53          | 63          | 63          | 63          | 64          | 64          |
|  | \$M | <b>71</b>   | <b>60</b>   | <b>74</b>   | <b>74</b>   | <b>75</b>   | <b>75</b>   | <b>75</b>   |
| <b>X-Ray &amp; Medical Equipment Total</b> | €M  | 995         | 1034        | 1093        | 1133        | 1177        | 1224        | 1274        |
|  | \$M | <b>1118</b> | <b>1175</b> | <b>1286</b> | <b>1333</b> | <b>1384</b> | <b>1439</b> | <b>1499</b> |
| <b>Industrial Equipment</b>                |     |             |             |             |             |             |             |             |
| Railway & Traffic Signalling Equipment     | €M  | 98          | 133         | 139         | 142         | 147         | 152         | 157         |
|  | \$M | <b>110</b>  | <b>151</b>  | <b>164</b>  | <b>168</b>  | <b>173</b>  | <b>179</b>  | <b>185</b>  |
| Other Signalling Equipment                 | €M  | 426         | 357         | 410         | 424         | 441         | 460         | 480         |
|  | \$M | <b>479</b>  | <b>406</b>  | <b>482</b>  | <b>499</b>  | <b>518</b>  | <b>541</b>  | <b>564</b>  |
| Other Industrial Equipment                 | €M  | 47          | 42          | 45          | 45          | 46          | 47          | 47          |
|  | \$M | <b>53</b>   | <b>48</b>   | <b>53</b>   | <b>53</b>   | <b>54</b>   | <b>55</b>   | <b>56</b>   |
| <b>Industrial Equipment Total</b>          | €M  | 571         | 532         | 594         | 612         | 633         | 658         | 684         |
|  | \$M | <b>642</b>  | <b>605</b>  | <b>699</b>  | <b>720</b>  | <b>745</b>  | <b>774</b>  | <b>805</b>  |
| <b>Medical &amp; Industrial Total</b>      | €M  | 1566        | 1566        | 1687        | 1745        | 1810        | 1882        | 1958        |
|  | \$M | <b>1760</b> | <b>1780</b> | <b>1985</b> | <b>2053</b> | <b>2129</b> | <b>2214</b> | <b>2304</b> |

| <b>COMMUNICATIONS &amp; RADAR</b>                          |     | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>2025</b> |
|--|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Radar & Navigational Aids                                  | €M  | 983         | 887         | 920         | 944         | 976         | 1014        | 1055        |
|  | \$M | <b>1104</b> | <b>1008</b> | <b>1082</b> | <b>1110</b> | <b>1149</b> | <b>1193</b> | <b>1241</b> |
| Radio Comms inc Mobile Phones, Public Broadcasting & Parts | €M  | 3145        | 2978        | 3081        | 3177        | 3305        | 3452        | 3612        |
|  | \$M | <b>3534</b> | <b>3384</b> | <b>3625</b> | <b>3738</b> | <b>3889</b> | <b>4061</b> | <b>4249</b> |
| <b>Communications &amp; Radar Total</b>                    | €M  | 4128        | 3865        | 4001        | 4121        | 4282        | 4466        | 4667        |
|  | \$M | <b>4638</b> | <b>4392</b> | <b>4707</b> | <b>4848</b> | <b>5037</b> | <b>5254</b> | <b>5490</b> |

## ITALY MARKETS (ctd)

| TELECOMMUNICATIONS                    |     | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---------------------------------------|-----|------|------|------|------|------|------|------|
| Telephone Sets                        | €M  | 94   | 90   | 86   | 87   | 89   | 91   | 92   |
|                                       | \$M | 106  | 102  | 101  | 102  | 104  | 106  | 109  |
| Other Telecommunications<br>Equipment | €M  | 1473 | 1427 | 1503 | 1557 | 1623 | 1693 | 1770 |
|                                       | \$M | 1655 | 1622 | 1768 | 1832 | 1910 | 1992 | 2082 |
| <b>Telecommunications Total</b>       | €M  | 1567 | 1517 | 1589 | 1645 | 1712 | 1784 | 1862 |
|                                       | \$M | 1761 | 1724 | 1869 | 1935 | 2014 | 2099 | 2191 |

| CONSUMER                                     |     | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|--|-----|------|------|------|------|------|------|------|
| <b>Video Equipment</b>                       |     |      |      |      |      |      |      |      |
| Colour Television                            | €M  | 1114 | 1104 | 1149 | 1119 | 1129 | 1134 | 1111 |
|  | \$M | 1252 | 1255 | 1352 | 1316 | 1328 | 1334 | 1307 |
| DVD Players & Recorders                      | €M  | 27   | 25   | 24   | 22   | 20   | 17   | 15   |
|  | \$M | 30   | 28   | 28   | 26   | 24   | 20   | 18   |
| Video & Digital Still Cameras                | €M  | 186  | 180  | 176  | 169  | 163  | 156  | 147  |
|  | \$M | 209  | 205  | 207  | 199  | 192  | 184  | 173  |
| Video Tuners & Satellite<br>Receivers        | €M  | 106  | 103  | 101  | 96   | 91   | 85   | 79   |
|  | \$M | 119  | 117  | 119  | 113  | 107  | 100  | 93   |
| <b>Video Equipment Total</b>                 | €M  | 1433 | 1412 | 1450 | 1406 | 1403 | 1392 | 1352 |
|  | \$M | 1610 | 1605 | 1706 | 1654 | 1651 | 1638 | 1591 |
| <b>Audio Equipment</b>                       |     |      |      |      |      |      |      |      |
| Audio Equipment                              | €M  | 275  | 254  | 244  | 234  | 227  | 219  | 211  |
|  | \$M | 309  | 289  | 287  | 276  | 267  | 258  | 248  |
| <b>Audio Equipment Total</b>                 | €M  | 275  | 254  | 244  | 234  | 227  | 219  | 211  |
|  | \$M | 309  | 289  | 287  | 276  | 267  | 258  | 248  |
| <b>Personal Consumer Equipment</b>           |     |      |      |      |      |      |      |      |
| Electronic Musical Instruments               | €M  | 26   | 26   | 28   | 30   | 32   | 34   | 36   |
|  | \$M | 29   | 30   | 33   | 35   | 37   | 40   | 42   |
| Electric/Electronic Watches                  | €M  | 181  | 140  | 161  | 165  | 168  | 171  | 173  |
|  | \$M | 203  | 159  | 189  | 194  | 198  | 201  | 204  |
| Electric/Electronic Clocks                   | €M  | 16   | 12   | 14   | 15   | 16   | 16   | 17   |
|  | \$M | 18   | 14   | 16   | 17   | 18   | 19   | 20   |
| Electronic Flashlights                       | €M  | 3    | 2    | 3    | 3    | 3    | 2    | 2    |
|  | \$M | 3    | 2    | 4    | 3    | 3    | 3    | 3    |
| <b>Personal Consumer<br/>Equipment Total</b> | €M  | 226  | 180  | 206  | 212  | 218  | 224  | 228  |
|  | \$M | 254  | 205  | 242  | 250  | 257  | 263  | 268  |
| <b>Consumer Equipment Total</b>              | €M  | 1934 | 1846 | 1900 | 1852 | 1849 | 1835 | 1791 |
|  | \$M | 2173 | 2098 | 2235 | 2179 | 2175 | 2159 | 2107 |

ITALY MARKETS (ctd)

| COMPONENTS                      |     | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---------------------------------|-----|------|------|------|------|------|------|------|
| <b>Active Components</b>        |     |      |      |      |      |      |      |      |
| Valves & Tubes                  | €M  | 35   | 21   | 32   | 33   | 32   | 32   | 31   |
|                                 | \$M | 39   | 24   | 38   | 39   | 38   | 38   | 36   |
| Diodes                          | €M  | 87   | 80   | 98   | 103  | 105  | 109  | 113  |
|                                 | \$M | 98   | 91   | 115  | 121  | 124  | 128  | 133  |
| Transistors                     | €M  | 127  | 119  | 144  | 151  | 155  | 160  | 166  |
|                                 | \$M | 143  | 135  | 169  | 178  | 182  | 188  | 195  |
| Thyristors                      | €M  | 19   | 16   | 20   | 21   | 21   | 22   | 22   |
|                                 | \$M | 21   | 18   | 24   | 25   | 25   | 26   | 26   |
| Other Discrete Semiconductors   | €M  | 177  | 166  | 198  | 209  | 215  | 223  | 232  |
|                                 | \$M | 199  | 189  | 233  | 246  | 253  | 262  | 273  |
| Photoelectric Cells             | €M  | 350  | 250  | 647  | 705  | 740  | 800  | 880  |
|                                 | \$M | 393  | 284  | 761  | 829  | 871  | 941  | 1035 |
| Piezoelectric Crystals          | €M  | 23   | 20   | 23   | 24   | 24   | 25   | 26   |
|                                 | \$M | 26   | 23   | 27   | 28   | 28   | 29   | 31   |
| ICs & Other Microcircuits       | €M  | 1627 | 1528 | 1855 | 2022 | 2081 | 2164 | 2257 |
|                                 | \$M | 1828 | 1736 | 2182 | 2379 | 2448 | 2546 | 2655 |
| <b>Active Components Total</b>  | €M  | 2445 | 2200 | 3017 | 3268 | 3373 | 3535 | 3727 |
|                                 | \$M | 2747 | 2500 | 3549 | 3845 | 3968 | 4159 | 4385 |
| <b>Passive Components</b>       |     |      |      |      |      |      |      |      |
| Fixed Capacitors                | €M  | 109  | 100  | 122  | 128  | 131  | 136  | 141  |
|                                 | \$M | 122  | 114  | 144  | 151  | 154  | 160  | 166  |
| Variable Capacitors             | €M  | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
|                                 | \$M | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| Resistors                       | €M  | 88   | 85   | 101  | 105  | 108  | 112  | 116  |
|                                 | \$M | 99   | 97   | 119  | 124  | 127  | 132  | 136  |
| Connectors                      | €M  | 402  | 374  | 452  | 474  | 488  | 506  | 527  |
|                                 | \$M | 452  | 425  | 532  | 558  | 574  | 595  | 620  |
| Transformers & Inductors        | €M  | 63   | 58   | 65   | 67   | 69   | 71   | 74   |
|                                 | \$M | 71   | 66   | 76   | 79   | 81   | 84   | 87   |
| Relays                          | €M  | 59   | 54   | 58   | 60   | 61   | 63   | 65   |
|                                 | \$M | 66   | 61   | 68   | 71   | 72   | 74   | 76   |
| Switches                        | €M  | 54   | 50   | 55   | 57   | 58   | 60   | 62   |
|                                 | \$M | 61   | 57   | 65   | 67   | 68   | 71   | 73   |
| Printed Circuit Boards          | €M  | 361  | 335  | 353  | 370  | 383  | 397  | 413  |
|                                 | \$M | 406  | 381  | 415  | 435  | 451  | 467  | 486  |
| <b>Passive Components Total</b> | €M  | 1137 | 1057 | 1207 | 1262 | 1299 | 1346 | 1399 |
|                                 | \$M | 1278 | 1201 | 1420 | 1485 | 1528 | 1584 | 1646 |

ITALY MARKETS (ctd)

| COMPONENTS                                 |     | 2019        | 2020        | 2021        | 2022        | 2023        | 2024        | 2025        |
|--|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Other Components</b>                    |     |             |             |             |             |             |             |             |
| Microphones                                | €M  | 28          | 25          | 26          | 27          | 27          | 28          | 29          |
|  | \$M | 31          | 28          | 31          | 32          | 32          | 33          | 34          |
| Loudspeakers                               | €M  | 170         | 160         | 165         | 168         | 172         | 177         | 182         |
|  | \$M | 191         | 182         | 194         | 198         | 202         | 208         | 214         |
| Amplifiers                                 | €M  | 31          | 29          | 31          | 31          | 30          | 29          | 29          |
|  | \$M | 35          | 33          | 36          | 36          | 35          | 34          | 34          |
| Aerials                                    | €M  | 50          | 47          | 50          | 50          | 50          | 49          | 47          |
|  | \$M | 56          | 53          | 59          | 59          | 59          | 58          | 55          |
| Unrecorded Media                           | €M  | 102         | 97          | 93          | 90          | 87          | 84          | 81          |
|  | \$M | 115         | 110         | 109         | 106         | 102         | 99          | 95          |
| Accessories & Parts for Consumer Equipment | €M  | 331         | 333         | 344         | 351         | 358         | 365         | 373         |
|  | \$M | 372         | 378         | 405         | 413         | 421         | 429         | 439         |
| <b>Other Components Total</b>              | €M  | 712         | 691         | 709         | 717         | 724         | 732         | 741         |
|  | \$M | 800         | 785         | 834         | 844         | 852         | 861         | 872         |
| <b>Components Total</b>                    | €M  | 4294        | 3948        | 4933        | 5247        | 5396        | 5613        | 5867        |
|  | \$M | 4825        | 4486        | 5804        | 6173        | 6348        | 6604        | 6902        |
| <b>TOTAL MARKET - ITALY</b>                |     | <b>2019</b> | <b>2020</b> | <b>2021</b> | <b>2022</b> | <b>2023</b> | <b>2024</b> | <b>2025</b> |
| <b>TOTAL MARKET</b>                        | €M  | 22458       | 21435       | 23223       | 23937       | 24599       | 25381       | 26218       |
|  | \$M | 25234       | 24358       | 27321       | 28161       | 28940       | 29860       | 30845       |

Notes: 2019 and 2020 are current figures at current exchange rates

2021 to 2025 are forecasts at 2021 constant values & exchange rates (i.e. Inflation is not included)

Base year 2021



## 5 APPENDICES

### APPENDIX 5.1 EXCHANGE RATES

#### Exchange rates against the US dollar (Annual Average)

| Country            | Currency          |          | 2015  | 2016  | 2017  | 2018   | 2019  | 2020  | 2021  |
|--------------------|-------------------|----------|-------|-------|-------|--------|-------|-------|-------|
| AUSTRALIA          | Australian Dollar | A\$      | 1.33  | 1.35  | 1.30  | 1.33   | 1.44  | 1.45  | 1.33  |
| AUSTRIA            | Euro              | Euro     | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  | 0.85  |
| BELGIUM            | Euro              | Euro     | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  | 0.85  |
| BRAZIL             | Real              | R\$      | 3.33  | 3.49  | 3.19  | 3.65   | 3.94  | 5.15  | 5.38  |
| BULGARIA           | Lev               | Lv       | 1.76  | 1.77  | 1.73  | 1.66   | 1.75  | 1.72  | 1.65  |
| CANADA             | Canadian Dollar   | C\$      | 1.28  | 1.33  | 1.30  | 1.30   | 1.33  | 1.34  | 1.25  |
| CHINA              | Yuan              | Yn       | 6.22  | 6.64  | 6.76  | 6.62   | 6.91  | 6.90  | 6.45  |
| CROATIA            | Kuna              | Kn       | 6.86  | 6.81  | 6.62  | 7.42   | 6.63  | 6.61  | 6.37  |
| CZECH REP          | Koruna            | CzK      | 24.6  | 24.4  | 23.4  | 21.7   | 22.9  | 23.1  | 21.7  |
| DENMARK            | Krone             | DKr      | 6.72  | 6.73  | 6.60  | 6.32   | 6.67  | 6.54  | 6.29  |
| EGYPT              | Egyptian Pound    | £        | 7.68  | 10.07 | 17.84 | 17.81  | 16.82 | 15.81 | 15.59 |
| ESTONIA            | Kroon             | Eek      | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  | 0.85  |
| EUROPEAN COMMUNITY |                   | Euro     | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  | 0.85  |
| FINLAND            | Euro              | Euro     | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  | 0.85  |
| FRANCE             | Euro              | Euro     | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  | 0.85  |
| GERMANY            | Euro              | Euro     | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  | 0.85  |
| GREECE             | Euro              | Euro     | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  | 0.85  |
| HONG KONG          | Hong Kong Dollar  | Hk\$     | 7.75  | 7.76  | 7.79  | 7.84   | 7.84  | 7.76  | 7.77  |
| HUNGARY            | Forint            | Fr       | 279.1 | 281.6 | 274.3 | 270.4  | 290.5 | 307.9 | 303.2 |
| INDIA              | Rupee             | Rup      | 64.0  | 67.2  | 65.1  | 68.4   | 70.4  | 74.2  | 73.9  |
| INDONESIA          | Rupiah            | Rp       | 13344 | 13309 | 13377 | 14239  | 14138 | 14555 | 14303 |
| IRELAND            | Euro              | Euro     | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  | 0.85  |
| ISRAEL             | Shekel            | Shk      | 3.88  | 3.84  | 3.60  | 3.60   | 3.56  | 3.44  | 3.23  |
| ITALY              | Euro              | Euro     | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  | 0.85  |
| JAPAN              | Yen               | ¥        | 121.0 | 108.8 | 112.1 | 110.4  | 109.0 | 106.8 | 109.8 |
| LITHUANIA          | Litas             | Ltl      | 3.11  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  | 0.85  |
| MALAYSIA           | Ringgit           | Rt       | 3.90  | 4.14  | 4.30  | 4.04   | 4.14  | 4.20  | 4.14  |
| MEXICO             | Peso              | Ps       | 15.87 | 18.68 | 18.91 | 19.23  | 19.25 | 21.48 | 20.28 |
| NETHERLANDS        | Euro              | Euro     | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  | 0.85  |
| NEW ZEALAND        | N Z Dollar        | NZ\$     | 1.43  | 1.44  | 1.41  | 1.45   | 1.52  | 1.54  | 1.41  |
| NORWAY             | Krone             | NKr      | 8.06  | 8.41  | 8.27  | 8.14   | 8.80  | 9.42  | 8.60  |
| PHILIPPINES        | Philippine Peso   | Peso     | 45.4  | 47.5  | 50.4  | 52.7   | 51.8  | 49.6  | 49.3  |
| POLAND             | Zloty             | Zt       | 3.77  | 3.95  | 3.78  | 3.61   | 3.84  | 3.90  | 3.86  |
| PORTUGAL           | Euro              | Euro     | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  | 0.85  |
| ROMANIA            | New Leu           | Lu       | 4.00  | 4.06  | 4.05  | 4.65   | 4.24  | 4.24  | 4.16  |
| RUSSIA             | Rouble            | Ru       | 61.0  | 67.0  | 58.3  | 62.8   | 64.8  | 72.3  | 73.7  |
| SAUDI ARABIA       | Riyal             | SR       | 3.75  | 3.75  | 3.75  | 3.75   | 3.75  | 3.75  | 3.75  |
| SINGAPORE          | Singapore Dollar  | S\$      | 1.37  | 1.38  | 1.38  | 1.35   | 1.36  | 1.38  | 1.34  |
| SLOVAKIA           | Koruna            | SK       | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  | 0.85  |
| SLOVENIA           | Tolar/Euro        | Tol/Euro | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  | 0.85  |
| SOUTH AFRICA       | Rand              | Rd       | 12.74 | 14.71 | 13.30 | 13.26  | 14.45 | 16.46 | 14.79 |
| SOUTH KOREA        | Won               | Wn       | 1130  | 1161  | 1130  | 1100   | 1165  | 1180  | 1144  |
| SPAIN              | Euro              | Euro     | 0.90  | 0.90  | 0.89  | 0.85   | 0.89  | 0.88  | 0.85  |
| SWEDEN             | Krona             | Swkr     | 8.43  | 8.56  | 8.54  | 8.70   | 9.45  | 9.21  | 8.58  |
| SWITZERLAND        | Franc             | SFr      | 0.96  | 0.99  | 0.98  | 0.98   | 0.99  | 0.94  | 0.91  |
| TAIWAN             | Taiwan Dollar     | NT\$     | 31.7  | 32.3  | 30.4  | 30.2   | 30.9  | 29.5  | 27.9  |
| THAILAND           | Baht              | Bt       | 34.2  | 35.3  | 33.9  | 32.3   | 31.1  | 31.3  | 32.0  |
| TURKEY             | New Turkish Lira  | TL       | 2.72  | 3.02  | 3.65  | 4.85   | 5.68  | 7.02  | 8.86  |
| UKRAINE            | Hryunia           | Hr       | 21.61 | 25.59 | 26.70 | 27.24  | 25.85 | 26.97 | 27.28 |
| UNITED KINGDOM     | Pound Sterling    | £        | 0.65  | 0.74  | 0.78  | 0.75   | 0.78  | 0.78  | 0.73  |
| VENEZUELA          | Boliva            | Br       | 6.30  | 9.09  | 10.08 | 130973 | 9.99  | 9.99  | 2723  |
| VIETNAM            | Dong              | Dg       | 21685 | 22369 | 22709 | 23022  | 23051 | 23233 | 22936 |

Source: [www.oanda.com](http://www.oanda.com)/[www.ofx.com](http://www.ofx.com)/[www.x-rates.com](http://www.x-rates.com)

## APPENDIX 5.2 GUIDE TO THE INTERPRETATION OF THE STATISTICS

This section assesses the main technical factors that can distort comparison of Yearbook estimates of electronics activity with other sources and defines the key terms used in the Yearbook to assist interpretation.

### **Production**

The total output of products fabricated by indigenous manufacturers in a country for sale both for home consumption or for export, but excluding imports and re-exports of finished goods. Some manufacturer may amount to little more than assembly of imported piece-parts and sub-assemblies. However, the most widely accepted definition allows such products to be included as production, provided value is added in the assembly process and the finished article can be classified under a different SIC (Standard Industrial Classification) from those of its components.

Where imports of such parts are significant, adjustment is made in calculating the market by the number of items (units) ignoring the formula 'Production + Imports - Exports = Market' to avoid double counting.

Most production statistics record sales of products and thus exclude goods produced in-house for use by the company itself in its original establishment. However, products shipped overseas are included in import and export statistics with a deduced value being applied, if necessary, and would thus normally be included in production figures. US production statistics record shipments of all products sold or transferred to other establishments of the same company with an appropriate allocation of company overhead and profit.

If no production is shown for a product in a particular country, it may be assumed that the market for the product is serviced by importers only.

### **Market**

The total volume of product consumed by end-users in the country during a particular year, whether shipped by indigenous manufacturers or imported, but excluding exports or re-exports. Yearbook markets are largely an estimate of Apparent Consumption based on the calculation:

Production + Imports - Exports = Apparent Consumption

unless lack of data, or unreliable source material, precludes the applications of this formula, in which case the estimate is based on appropriate alternative sources (such as desk research, industry estimates, company annual reports, consultancy visit reports, input/output analysis, etc.)

Consumption of items produced in-house and not shipped outside the establishment or country of manufacture is regarded as closed markets and is not included.

### **Imports & Exports**

Most countries use the Harmonised System for trade statistics that simplifies international comparison. Appendix 4.6 gives the codes used in the compilation of the Yearbook, but for simplicity, these are only shown to the 4-digit level. Trade is actually analysed to the 8-digit level with over 500 categories being employed. For all countries of the EU the trade statistics compiled by Eurostat are used. In some cases these differ slightly from those published by the individual country authorities.

It is sometimes necessary to adjust trade figures to allow for double counting, single monthly peaks or errors in compilation. Values on the summary pages may, therefore, differ from the source material.

It should also be noted that exports shown on the summary tables include re-exports. Thus, countries with significant entrepot activities, notably Hong Kong and Singapore, but also some European countries such as Belgium and the Netherlands, have higher than expected imports, part of which is then re-exported.

## Products

The products and groups of products included in the Yearbook are chosen, as far as possible, to reflect the usage of electronics. Electronic equipment is fairly easily defined, but some components, particularly passive components, are more difficult to separate from electrical and even mechanical types. To enable international comparison between countries, which is one of the main aims of the Yearbook, broad product headings are standardised. However, the exact coverage of some sectors may vary due to the non-availability of source data. This is a particular problem with relays, switches, inductors and connectors that may include some electrical products in addition to the electronic types.

## Communications Equipment

Apparatus for line telephony or line telegraphy is included under '**Telecommunications**'. Apparatus for radio telephony or radio telegraphy including **mobiles** is included under '**Communications & Radar**'.

## Military Equipment

Increasingly, most types of electronic equipment except consumer contains some that are used for military purposes. Military equipment and components are therefore included under their relevant product heading.

## Forecasts

Each edition of the Yearbook gives estimates of markets and production from the base data 2 years before the date of the edition. Later figures are forecasts made at constant exchange rates using estimated real growth, that is inflation and exchange rate fluctuations are not included.

These forecasts relate to future growth rates for existing types of products or new products that will fall into the same statistical classification as existing products. Wholly innovative products not available at the base year and outside current statistical classifications, but which may be introduced later and obtain a significant sales volume within the forecast period, are beyond the scope of the Yearbook and are not included.

The main factors taken into account when forecasting are the historical performance of the series in question, the general economic outlook and the major growth influencing factors for each sector, which we have considered as follows:

Electronic Capital Equipment: industrial investment outlook  
public sector purchasing policy  
technical change  
product pricing trends  
government controls (e.g. import restrictions, taxation)  
maturity of the industry

Electronic Consumer Equipment: consumer expenditure outlook  
technical change  
product pricing trends  
government controls (e.g. credit, taxation, trade restrictions)  
maturity of the industry (e.g. saturation levels)

|                        |  |
|------------------------|--|
| Electronic Components: | demand in all other end-equipment sectors<br>technical change<br>product pricing trends<br>captive/merchant market situation<br>government controls (e.g. import restrictions)<br>maturity of the industry |
|------------------------|--|

In addition, knowledge of published company activities (such as major contracts, plant expansion or shutdown programmes, military and industrial development projects, and technical and price trends) is also given due weight as applicable.

### **Growth Rates**

For both Production and Market data, Compound Annual Average Growth Rates (CAAGR) are given for each product based on the local currency data (see note on exchange rates below). The CAAGR reflects the annual average growth rate for each individual product between the base year and the last year given, that is two years for production and 5 years for markets. This will enable readers to identify, with relative ease, the important areas of high or low growth within the electronics industry, although this may vary appreciably over the period.

### **Exchange Rates**

For the majority of the countries covered in the Yearbook, values are given in local currency with the value in US dollars shown to facilitate international comparison. Constant exchange rates are used for the forecast years but the current rate is used for the historical data. Year-on-year fluctuations in exchange rates can be significant, with the result that a negative trend revealed in local currency values can turn into an upswing when expressed in US dollars, or vice versa. For this reason it is inappropriate to calculate growth rates, including comparisons of the volume of electronics' business in various countries, from the US dollar series (see note on Growth Rates above).

For some of the Newly Industrialised Countries (NICs) and Emerging Nations and all of the East European countries where exchange rates fluctuate dramatically and most trade is conducted in dollars, values have been expressed in US dollars and forecasts made in this currency. In these cases, local currency values have been calculated from the US dollar values but these serve as a guide only and consideration of the volume of the electronics business and of growth should be taken from the US dollar values for these countries.

### **Inflation**

Forecast figures indicate real growth that is, excluding inflation. However, historical data show current figures and therefore include inflation. This can result in an apparently higher growth rate for earlier years and must be noted when considering long term trends.

### **Prices**

Production values are at ex-factory prices net of discounts, allowances, freight charges and returns. Import values are CIF, (including carriage, insurance and freight costs to the port of final destination) and export values are FOB (free-on board). Import duty, VAT and other local taxes, and importer and distributor margins are not included.

Market values therefore represent the above and do not include distributors or retailers margins. In the case of consumer equipment these are very significant and can be the reason for apparent inconsistencies between Yearbook estimates and other sources.

### **Stock Levels**

Changes in stock levels may affect calculations, particularly in the consumer equipment sector. Consumer equipment markets are usually estimated from manufacturers' deliveries to the home market plus imports and are not, therefore, measurements of retail sales (the consumer off-take), which may vary from estimates shown according to wholesale and retail stock levels.

Production and market statistics also include manufacturers' inventories, not usually a significant proportion except occasionally in component statistics. Wherever possible, manufacturer's shipments (i.e. production excluding inventories) have been used to calculate apparent consumption data. In certain other instances, production is recorded as invoiced sales of home-produced goods and should not, therefore, include manufacturers' stocks.

Where shipment data are not available, the 'Production + Imports - Exports = Apparent Consumption' formula can become particularly distorted in the highly volatile trading conditions often found, for example, in SE Asia, where manufacturers producing in large quantities for overseas markets may suddenly find themselves left with large stocks as a result of rapid changes in demand. These may be stored and exported in a different year to that in which they were manufactured. As far as possible, a correction is made for this type of effect in our market data when thought to be significant, and can result in an estimate being made for production or trade which differs from an 'official' figure.

### **Accessories, Parts and Spare Parts**

Accessories, parts and spare parts are included as a separate item wherever possible, mainly for comparative purposes, since in a number of countries a separate estimate of this heading is not available although its value is included in total shipments of equipment. Work done, ie PCB assembly is not included.

**APPENDIX 5.3 GUIDE TO STATISTICAL TRADE CLASSIFICATIONS**

In 1988 the Harmonised System was introduced for import and export statistics which is now used by the majority of industrialised countries. The following table gives the codes (to the 4-digit level) used in the compilation of the Yearbook.

|                              | <b>HS</b> |
|------------------------------|-----------|
| EDP                          | 8443      |
|                              | 8471      |
|                              | 8473      |
| Office Equipment             | 8443      |
|                              | 8469      |
|                              | 8470      |
|                              | 8519      |
|                              | 8520      |
| Control &<br>Instrumentation | 8543      |
|                              | 9014      |
|                              | 9015      |
|                              | 9023      |
|                              | 9024      |
|                              | 9025      |
|                              | 9026      |
|                              | 9027      |
|                              | 9030      |
|                              | 9031      |
|                              | 9032      |
| X-Ray & Medical<br>Equipment | 9018      |
|                              | 9021      |
|                              | 9022      |
| Industrial Equipment         | 8514      |
|                              | 8530      |
|                              | 8531      |
|                              | 9013      |
| Communications &<br>Military | 8517      |
|                              | 8526      |
|                              | 9014      |
|                              | 9015      |
| Telecommunication            | 8517      |
|                              | 8520      |

*Appendix*

|                    |      |
|--------------------|------|
| Consumer Video     | 8521 |
|                    | 8525 |
|                    | 8528 |
| Consumer Audio     | 8519 |
|                    | 8520 |
|                    | 8527 |
| Consumer Personal  | 9006 |
|                    | 9101 |
|                    | 9102 |
|                    | 9103 |
|                    | 9105 |
|                    | 9207 |
| Active Components  | 8523 |
|                    | 8540 |
|                    | 8541 |
|                    | 8542 |
| Passive Components | 8504 |
|                    | 8532 |
|                    | 8533 |
|                    | 8534 |
|                    | 8535 |
|                    | 8536 |
| Other Components   | 8518 |
|                    | 8522 |
|                    | 8523 |
|                    | 8529 |

**APPENDIX 5.4 GUIDE TO THE DEFINITION OF THE ELECTRONICS PRODUCT HEADINGS**

**COMPUTING (ELECTRONIC DATA PROCESSING)**

|                              |   |
|------------------------------|---|
| Computers & Complete Systems | Notebook & desktop PCs, tablets, E-readers, mainframes.   |
| Peripherals Storage          | Storage units including central storage units, disc storage units, magnetic tape storage units.   |
| Input/Output                 | Input or Output units including printers (including multifunction devices), readers, visual display units, multiplexers and modems used for computer links, other terminals and consoles.   |
| Accessories and Parts        | Parts, accessories and sub-assemblies for use solely or principally with machines as above. This includes all remaining EDP equipment not fully covered by the above definitions. Complete computers assembled by retailers are included. |
| Software                     | Not included.   |

**OFFICE EQUIPMENT**

|                           |   |
|---------------------------|---|
| Electronic Calculators    | Electronic calculating machines inc. desk and hand-held types, with or without a printing device.   |
| Electronic Cash Registers | Electronic cash registers incorporating a calculating device inc. POS terminals that are not connected to a computer.                           |
| Electronic Accounting     | Electronic accounting machines all types inc. book-keeping Machines and invoicing machines.   |
| Dictation Equipment       | Desk and hand-held dictating machines of audio office type inc. transcription machines.   |
| Photocopiers              | Thermo-copying apparatus, contact-type photocopiers and photocopying apparatus incorporating an optical system (excludes multifunction devices) |

**CONTROL & INSTRUMENTATION**

|                                      |   |
|--------------------------------------|---|
| Industrial & Process Control Systems | Automatic regulators or controlling apparatus. Complete systems for data logging, monitoring, displaying, recording and control of processes including telemetry but excluding components or peripherals where separable. |
| Process Control Instruments          | Process measuring and control instruments for temperature, pressure, flow and level. Potentiometric recorders and controllers, panel mounting.  |
| Oscilloscopes                        | Ray oscilloscopes and oscillographs of the light beam and liquid jet types.   |



|   |  |
|---|--|
| Analytical Instruments                              | Apparatus for the analysis of gas, liquids and solids inc. spectrophotometers, spectrographs, spectrofluorimeters, spectropolarimeters and X-ray diffraction/fluorescence apparatus.   |
| Nucleonic Instruments                               | Instruments and apparatus for measuring or detecting ionising radiations inc. reactor instruments, radiation measuring and detecting instruments, nucleonic industrial process measuring and control instruments.  |
| Signal Generators                                   | Signal and waveform generators.  |
| Telecommunications Instruments                      | Cross talk meters, gain measuring instruments, distortion factor meters, psophometers etc.   |
| Machine & Materials Test Instruments                | Echo sounding and ultrasonic sounding or detection instruments and apparatus. Inspection and measuring instruments for engineering metrology (surface, texture etc). Instruments and apparatus for balancing mechanical parts.   |
| Electrical Quantity Measuring Instruments           | Ammeters, voltmeters, ohmmeters (inc. multi-meters) analogue & digital.  |
| Other Test & Measuring                              | Instruments & apparatus for physical and chemical analysis, Hydrometers, Optical Instruments, Exposure Meters, Electronic Meteorological, hydrological & geophysical instruments, Electronic Instruments & Appliances used in Geodesy, Topography, Hydrography & Oceanography (excl rangefinders, theodolites & Tachometres, Instruments used for Exhibitions & Education. |
| Accessories and Parts for Control & Instrumentation | Accessories, parts and spare parts for control and instrumentation.  |

## **MEDICAL & INDUSTRIAL**

### **X-ray & Medical Equipment**

|                             |   |
|-----------------------------|---|
| Medical X-Ray Equipment     | Apparatus based on the use of X-Rays for diagnostic and therapeutic medical and dental purposes, inc. scanners. |
| Industrial X-Ray Equipment  | Apparatus based on the use of X-Rays for other then medical or dental purposes.                                 |
| Medical Radiation Equipment | Medical apparatus based on the use of radiations from radioactive substances.                                   |
| Industrial Radiation        | Apparatus based on the use of radiations from radioactive Equipment substances for other than medical use.      |
| Electrocardiographs         | Electrocardiographs.  |

*Appendix*

Other Electromedical Equipment Patient monitoring equipment. Electromedical therapeutic apparatus. Electromedical diagnostic apparatus. Diathermic apparatus. Infra-red and ultraviolet ray apparatus. Electroencephalographs. Pacemakers, for stimulating heart muscles and other similar apparatus. Other electromedical apparatus other than radiological.

Hearing Aids Hearing aids with transistor amplifications.

**Industrial Equipment**

Railway Signalling Electronic and electrical traffic control and signalling equipment. Equipment for railways.

Other Traffic Signalling Electronic and electrical traffic control equipment for roads, Equipment inland waterways and port installations.

Security & Fire Alarms Electronic and electrical, burglar, fire and similar security alarms and related equipment.

Other Signalling Equipment Other electronic and electrical sound or visual signalling apparatus such as bells, sirens, buzzers, indicator panels inc. LCD panels, motor vehicle and civil aircraft signalling equipment.

Induction and Dielectric Induction and dielectric heating equipment inc. furnaces Equipment and microwave catering ovens.

**RADIO COMMUNICATIONS (incl mobiles) & RADAR**

Radar Radar apparatus for military, civil and meteorology.

Navigational Aids Ground radio navigational aids.  
Electronic meteorological, hydrological and geophysical instruments and apparatus.  
Shipborne radio navigational aids.  
Electronic marine or river navigational instruments and apparatus.  
Airborne radio navigational aids, inc. radio navigational receivers, radio altimeters, inertia navigation systems and ground proximity warning systems.  
Electronic aeronautical or space navigational instruments and apparatus.  
Portable navigation

Radio Communications For radio-telephony and radio telegraphy for ground, Transmission apparatus shipborne, airborne inc. those for use in civic aircraft.  
Wearable devices

Radio Communications Reception Apparatus For radio-telephony and radio telegraphy for ground, shipborne, airborne inc. those for use in civic aircraft.

Transceivers (combined Transmitter-Receivers) Ground strategic and tactical communications units, two-way mobile radios, handheld and citizen band types, shipborne, airborne inc. those for use in civil aircraft.

*Appendix*

|   |  |
|---|--|
| Mobile Radio Telephones                   | Cellular and other mobile radio telephones.  |
| Pocket Pagers                             | Receivers for paging or calling.   |
| Public Broadcasting Transmitters          | Radio and television transmitters for public broadcasting.   |
| Public Broadcast Other                    | Radio and television relay links.<br>Television cameras for professional use (domestic video cameras and camera recorders are listed under consumer sector).<br>Closed circuit television. |
| Other Communications & Military Equipment | Other transmitters, transceivers and receivers not elsewhere specified, inc. radio remote control apparatus and other airborne electronic equipment. Wireless Military Equipment           |
| Accessories and Parts                     | Accessories, parts and spare parts for communications apparatus and equipment including other equipment not elsewhere specified.   |
| Services                                  | Not included   |

**TELECOMMUNICATIONS**

|                                    |  |
|------------------------------------|--|
| Switching Equipment                | Telephonic and telegraphic switching apparatus including telephone exchange equipment.   |
| Facsimile Equipment                | Facsimile machines.  |
| Transmission Equipment             | Apparatus for carrier-current line systems or digital line systems, for line telephony or line telegraphy incl modems except those used for computer links only. |
| Telephone Sets                     | Telephone sets for line telephony incl. cordless handsets, videophones (mobile radio telephones are included in Radio Communications section).                   |
| Telephone Answering Machines       | Telephone answering machines   |
| Other Telecommunications Equipment | Other fixed line telecommunications equipment not elsewhere specified.   |
| Accessories & Parts                | Accessories, parts and assemblies for line telephony and line telegraphy apparatus and equipment.  |
| Services                           | Not included   |

**CONSUMER**

**Consumer Video**

|                   |   |
|-------------------|---|
| Colour Television | All sizes inc. colour receivers incorporating DVD players/recorders, video monitors, television projection equipment. |
|-------------------|---|

*Appendix*

|                               |   |
|-------------------------------|---|
| DVD players                   | DVD players & recorders including BlueRay   |
| Video & Digital Still Cameras | Video Cameras including digital camcorders & digital still cameras, security cameras. |
| Tuners & Satellite Receivers  | Video tuners including satellite receivers.   |

**Consumer Audio**

|                       |   |
|-----------------------|---|
| Portable Audio        | Portable radios including those with a CD player.               |
| Mains Audio Equipment | Clock Radios, Mains Radio, Music Centres incl those with a CD   |
| Car Audio             | Car Audio equipment.  |
| Compact Disc Players  | Players with laser optical reading system, portable CD players. |
| Other Audio Equipment | MP3 players, Other Audio Equipment, Record players & decks.     |

**Consumer Personal**

|                             |  |
|-----------------------------|--|
| Electric/Electronic Watches | Pocket watches, wrist watches and other electric/electronic watches including smart watches.   |
| Electric/Electronic Clocks  | Clocks with watch movements inc. those with a piezo quartz crystal regulation device. Electric clock systems. Battery operated alarm, wall clocks, other mains operated. |
| Electronic Flashlights      | Discharge lamp (electronic) flashlight apparatus.  |

**COMPONENTS**

**Active Components**

|                             |  |
|-----------------------------|--|
| Colour Television Tubes     | All sized colour television picture cathode ray tubes.   |
| Monochrome Television Tubes | All sized monochrome television picture cathode ray tubes.   |
| X-Ray Tubes                 | Electronic tubes for use in X-Ray equipment.   |
| Other Valves & Tubes        | Television camera tubes, image converters or intensifiers, other photocathode tubes, magnetrons, klystrons, travelling wave tubes, other microwave tubes, receiving amplifier valves & tubes, vacuum fluorescent display tubes, data/graphic display tubes, other display tubes. All other valves & tubes. |
| Diodes                      | Signal diodes, power rectifiers voltage reference and regulation diodes, microwave and photosensitive, light emitting diodes.  |

*Appendix*

|   |   |
|---|---|
| Transistors   | Germanium and silicon inc. small signal, power and FET's (field effect transistors).  |
| Thyristors  | Thyristors, diacs and triacs.   |
| Photoelectric Cells                                   | Photosensitive semiconductor devices, incl. photovoltaic cells  |
| Piezoelectric Crystals                                | Mounted piezoelectric crystals.   |
| Other Discrete  | Other discrete semiconductors incl. Semiconductors, photocells and piezoelectric crystals not elsewhere specified.  |
| Integrated Circuits                                   | Cards, smart cards  |
| Integrated Circuits, Linear                           | Amplifiers, regulators, interfaces, other analogue; incl chips but not wafers.  |
| Integrated Circuits, Digital                          | Memories, microprocessors, logic circuits, other digital, incl. chips but not wafers.   |
| Integrated Circuits, Hybrids                          | Hybrid integrated circuits.   |
| Integrated Circuits, Other                            | Other integrated circuit and microcircuits.   |
| <b>Passive Components</b>                             |   |
| Electrolytic capacitors                               | Aluminium and tantalum fixed capacitors.  |
| Other Fixed capacitors                                | Ceramic single layer, ceramic multilayer, paper, plastic, other fixed capacitors; power capacitors.   |
| Variable Capacitors                                   | Variable and pre-set capacitors.  |
| Fixed Resistors                                       | Fixed carbon, composition, film and other excl. heating resistors.  |
| Variable Resistors                                    | Variable resistors, rheostats and potentiometers.   |
| Multi-Pin and RF Connectors                           | PCB Connectors, coaxial connectors, rack & panel connectors, other multipin connectors.   |
| Other Connection Devices                              | Plugs and sockets.<br>Other electrical apparatus for making connections to or in electrical circuits for a voltage not exceeding 1000 V.  |
| Small Transformers, Coils & Other inductors<br>Relays | Transformers not exceeding 1kVA. Inductors excl. ballasts discharge tubes.<br>Relays.   |
| Switches  | Isolating and make and break switches<br>Other Switches.  |
| Printed Circuits Boards                               | Printed circuits boards consisting only of conductor elements and contacts.<br>Printed circuits boards with other passive elements (PCBs with components, i.e. stuffed boards, are excluded). |

**Other Components**

|  |  |
|--|--|
| Microphones  | Microphones and stands for use with domestic hi-fi systems and professional applications.  |
| Loudspeakers   | Loudspeaker for use with domestic and motor vehicles, and for professional applications.   |
| Amplifiers   | Audio frequency amplifiers, sound amplifier sets for use with domestic hi-fi and professional applications.  |
| Aerials  | Telescopic and whip aerials for portable apparatus and for apparatus fitted in motor vehicles.<br>Outside and inside aerials for radio or television broadcast receivers Inc. built-in types and reception via satellite.<br>Other aerials.  |
| Unrecorded Media                                       | Magnetic tapes audio, video, cassette and other computer/instrumentation tape, not recorded.<br>Magnetic film, not recorded. Magnetic discs, rigid and other, not recorded. Other unprepared media.  |
| Cabinets for Radios, TV & Professional Comms Equipment | Cabinets of wood or other materials.   |
| Accessories & Parts for Consumer Equipment             | Accessories, parts and spare parts inc. parts for:<br>Microphones, loudspeakers and amplifiers.<br>Domestic television receivers and terminal units.<br>Domestic and portable radio receivers (tuners etc).<br>Record players, tape recorders and video recorders inc. sound. heads and parts, needles (all types) whether or not mounted and parts of base metal.<br>Headphones |