

**Manufacturer:** Topcon Positioning Systems, Inc.

**Name:** Oscar Frau

**FCC:** WR4-CL20

**Title:** Project handler

**Signature:**



**MPE limits (§1.1310)**

|                                           | Mode                       | Frequency<br>MHz | Duty Cycle<br>% | Power<br>dBm | Antenna                    | EIRP <sup>1</sup><br>dBm | EIRP<br>mW | Distance<br>cm | PD <sup>2</sup><br>mW/cm <sup>2</sup> | PD Limit <sup>3</sup><br>mW/cm <sup>2</sup> | Margin<br>dB | 2.1091 EIRP              | 2.1091 EIRP  | Worst PD/PD values<br>to be considered |
|-------------------------------------------|----------------------------|------------------|-----------------|--------------|----------------------------|--------------------------|------------|----------------|---------------------------------------|---------------------------------------------|--------------|--------------------------|--------------|----------------------------------------|
|                                           |                            |                  |                 |              | Gain <sup>7,8</sup><br>dBi |                          |            |                |                                       |                                             |              | Limit <sup>4</sup><br>mW | Margin<br>dB |                                        |
| SARA-U201                                 | GSM <sup>5,6,7</sup>       | 824,2            | 50              | 33,5         | 1                          | 31,49                    | 1409,2     | 20             | 0,280                                 | 0,549                                       | 2,92         | 2757                     | 2,92         | 0,51022                                |
| SARA-U201                                 | EDGE <sup>5,6,7</sup>      | 824,2            | 50              | 29           | 1                          | 26,99                    | 500,0      | 20             | 0,099                                 | 0,549                                       | 7,42         | 2757                     | 7,42         | 0,18103                                |
| SARA-U201                                 | WCDMA <sup>5,6,7</sup>     | 826,4            | 100             | 25           | 1                          | 26,00                    | 398,1      | 20             | 0,079                                 | 0,551                                       | 8,42         | 2765                     | 8,42         | 0,14376                                |
| SARA-U201                                 | GSM <sup>5,6,7</sup>       | 1850,2           | 50              | 31,5         | 2,5                        | 30,99                    | 1255,9     | 20             | 0,250                                 | 1,00                                        | 6,02         | 5018                     | 6,02         | 0,24986                                |
| SARA-U201                                 | EDGE <sup>5,6,7</sup>      | 1850,2           | 50              | 28           | 2,5                        | 27,49                    | 561,0      | 20             | 0,112                                 | 1,00                                        | 9,52         | 5018                     | 9,52         | 0,11161                                |
| SARA-U201                                 | WCDMA <sup>5,6,7</sup>     | 1852,4           | 100             | 25           | 2,5                        | 27,50                    | 562,3      | 20             | 0,112                                 | 1,00                                        | 9,51         | 5018                     | 9,51         | 0,11187                                |
| CL20                                      | WIFI 2.4GHz <sup>7,8</sup> | 2412             | 100             | 21,5         | 3                          | 24,50                    | 281,8      | 20             | 0,056                                 | 1,00                                        | 12,51        | 5018                     | 12,51        | 0,05607                                |
| Co-Location = 0,51022 + 0,05607 = 0,6 < 1 |                            |                  |                 |              |                            |                          |            |                |                                       |                                             |              |                          |              |                                        |

<sup>1</sup>EIRP = ( Power dBm + Antenna Gain dBi ) + 10 x Log ( Duty Cycle % / 100 )

<sup>2</sup>PD = EIRP / ( 4xπx D<sup>2</sup> )

<sup>3</sup>CFR 47 Part 1, §1.1310(e), table 1 (General Population/Uncontrolled Exposure)

<sup>4</sup>CFR 47 Part 1, §1.1307 (b)(3)(i)

<sup>5</sup>See FCC ID: XPY1CGM5NNN, IC:8595A-1CGM5NNN, HVIN: SARA-U201

<sup>6</sup>See CETECOM GmbH, T E S T R E P O R T, No.: 16-1-0111601T02a-C1, Declared maximum conducted output power and Max. positive tolerance according to manufacturer at page 11 section 4.2.1.1 and page 12 section 4.2.2.1

<sup>7</sup>Tekfun FX-W06-113G-150-IPEX antenna

<sup>8</sup>FCC ID: WR4-CL20, IC: 6050B-CL20, HVIN: CL20

<sup>9</sup>From the original filing FCC ID: XPYLILYW1

**§2.1091 EIRP Limit**

**§1.1307 (b)(3)(i)(B) exemption limit**

0.3 GHz ≤ f < 1.5 GHz (20 cm < d ≤ 40 cm)

| f      | ERP <sub>20cm</sub> | Pth = ERP <sub>20cm</sub> | th = EIRP <sub>20cm</sub> | EIRP   | Margin |
|--------|---------------------|---------------------------|---------------------------|--------|--------|
| GHz    | mW                  | mW                        | mW                        | mW     | dB     |
| 0,8242 | 1681                | 1681                      | 2757                      | 1409,2 | 2,92   |
| 0,8242 | 1681                | 1681                      | 2757                      | 500,0  | 7,42   |
| 0,8264 | 1686                | 1686                      | 2765                      | 398,1  | 8,42   |

| f     | ERP <sub>20cm</sub> | Pth = ERP <sub>20cm</sub> | th = EIRP <sub>20cm</sub> | EIRP   | Margin |
|-------|---------------------|---------------------------|---------------------------|--------|--------|
| GHz   | mW                  | mW                        | mW                        | mW     | dB     |
| 1,850 | 3060                | 3060                      | 5018                      | 1255,9 | 6,02   |
| 1,850 | 3060                | 3060                      | 5018                      | 561,0  | 9,52   |
| 1,852 | 3060                | 3060                      | 5018                      | 562,3  | 9,51   |
| 2,412 | 3060                | 3060                      | 5018                      | 281,8  | 12,51  |