

Calculation: SAR exemption for 915 MHz transmitter

Type identification: **FPS COM 7000**

The EUT produces an radiated average output power of 1.06 mW (for method of measurement refer next page)

The value of this output power allows the exemption of the SAR measurement according to the “447498 D01 General Exposure Guidance V06, Appendix A SAR test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm” and the RSS-102 Issue 5, Table 1 for distances below 5 mm.

Base of the above calculations is the lowest possible frequency in combination with the highest output power of the EUT.

Method of measurement (average output power)

Because the EUT has no antenna connector, which presents the power delivered to the antenna, the average value of the field strength was measured. The method of measurement is described under clause 5.6.1 (final measurement (30 MHz to 1 GHz)) of the test report F151497E8 with the exception that an average detector was used. According to [1] with this the field strength value the radiated average power of the EUT was calculated. The used formula is listed below.

Test results (average output power)

| | | | |
|---------------------|-------|-------------------|------|
| Ambient temperature | 21 °C | Relative humidity | 57 % |
|---------------------|-------|-------------------|------|

Position of EUT: The EUT was set-up on a non-conducting table of a height of 0.8 m. The distance between EUT and antenna was 3 m.

Cable guide: For detail information of test set-up and the cable guide refer to the pictures in annex A of this test report.

Test record: All results are shown in the following.

Supply voltage: During all measurements the EUT was supplied with 3.0 V DC by the internal batteries.

Test results: The test results were calculated with the following formula:

$$\text{Result [dB}\mu\text{V/m]} = \text{reading [dB}\mu\text{V]} + \text{cable loss [dB]} + \text{antenna factor [dB/m]}$$

| Radiated field strength at 3 m OATS (average) | | | | | | | | | |
|---|------------------------|-----------------------|--------------|------------------------|------------------------|------------------|--------------|----------------|-------|
| Frequency MHz | Result dB μ V/m | Limit dB μ V/m | Margin dB | Readings dB μ V | Antenna factor dB/m | Cable loss dB | Height cm | Azimuth deg | Pol. |
| 903.500 | 95.0 | Carrier | - | 69.1 | 22.5 | 3.4 | 100.0 | 270.0 | Vert. |
| 915.150 | 95.5 | Carrier | - | 69.2 | 22.9 | 3.4 | 104.0 | 226.0 | Vert. |
| 926.800 | 94.3 | Carrier | - | 67.5 | 23.4 | 3.4 | 100.0 | 224.0 | Vert. |
| Measurement uncertainty | | | | +2.2 dB / -3.6 dB | | | | | |

The average radiated output power was calculated with the following formula:

$$\text{Calculated average radiated output power [W]} = (\text{field strength [V/m]} * \text{measuring distance [m]})^2 / 30$$

| Frequency MHz | Field strength | | Average radiated power | |
|------------------|----------------|-------|------------------------|------|
| | dB μ V/m | V/m | W | dBm |
| 903.500 | 95.0 | 0.056 | $0.95 \cdot 10^{-3}$ | -0.2 |
| 915.150 | 95.5 | 0.060 | $1.06 \cdot 10^{-3}$ | 0.3 |
| 926.800 | 94.3 | 0.052 | $0.81 \cdot 10^{-3}$ | -0.9 |

Test equipment used (see chapter 6 of F151497E8):

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