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1.0 Maximum Permissible Exposure Evaluation (Supplements the test report.)

The measured power is considered for the intended use of the device and resulting RF exposure to the user.

1.2 Criteria

Section Reference	Date
447498 D01 General RF Exposure Guidance v06 // RSS-102 Issue 5	4 Oct 2018

1.3 Procedure

Using measurement of peak power and considering the intended application, determine the permissible exposure level, applicability of exclusion, or whether additional exposure tests (SAR) are indicated. When applicable justify conclusion for selected exposure level and separation distance.

1.4 Power to Exposure Calculation

For 2.4 GHz radio power is determined by radiated field measurement. SAR exemption method was applied for 5 mm spacing of the first radio module. (At such a low power, the smallest spacing was calculated.) The 2nd radio module exposure uses the 20 cm distance from the certification technical documentation obtained from the FCC system.

**Table 1.4.1 Power Calculation for Exposure, 2.4 GHz Radio (Highest frequency 2.480 GHz)
 Radio Module 1 (New Certification)**

Measured Radiated Power mW	Calculated Peak EIRP dBm	Source Duty Cycle Factor dB	Antenna Gain dBi	Calculated EIRP dBm	EIRP In Linear Terms mW
0.7	-1.43	-24.0	3.3*	-22.13	0.006

*From antenna manufacturer specifications.

**Table 1.4.2 Power Calculation for Exposure, 2.4 GHz Radio (Highest frequency 2.480 GHz)
 Radio Module 2 (FCC ID U90-SM220 IC: 7084-SM220)**

Reported Power Density as Certified per Report ACS Project Number: 16-0505
0.124 mW/cm ² at 20 cm

1.5 Field Calculation

Radio 1

Applicable requirement: KDB 447498 Clause 4.3.1 Section 1

Calculation (max power including tune up tolerance = 0.006 mW) for 20 cm spacing:

Limit $S = 1 \text{ mW/cm}^2$:

$S = (P \cdot G) / (4 \cdot \pi \cdot [\text{Distance}]^2)$ = given $\text{Pwr}_{\text{avg}} = 0.006 \text{ mW}$, Gain = 1*, Distance = 20 cm.
*Gain included in term P .

$$S = (0.006) / (4 \cdot \pi \cdot [20 \text{ cm}]^2) = 0.0000012 \text{ mW/cm}^2$$

$$0.0000012 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2 \quad 0.0000012 = 0.00012 \% \text{ of exposure}$$

Radio 2

Field Density Limit = 1 mW/cm² at 20 cm

Reported Field Density = 0.124 mW/cm² at 20 cm

$$0.124 \leq 1 \quad 0.124/1 = 12.4 \% \text{ of exposure}$$

$$\text{Total exposure} = 12.4\% + 0.0002\% = 12.00012\%$$

Therefore, the device meets the applicable FCC and ISED SAR exemption requirements.

Signed:



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