

5. RF EXPOSURE EVALUATION

5.1 Applicable Standard

According to §1.1307(b)(3)(i)

(B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

d = the separation distance (cm);

5.2 Measurement Result

Radio Mode	Maximum Conducted Power including Tune-up Tolerance (dBm)	Maximum Conducted Time-averaged including Tune-up Tolerance Power (dBm)
GSM850 1 Slot	35	25.97
GSM850 2 Slot	33	26.98
GSM850 3 Slot	31	26.74
GSM850 4 Slot	29	25.99
GSM1900 1 Slot	30	20.97
GSM1900 2 Slot	28	21.98
GSM1900 3 Slot	26	21.74
GSM1900 4 Slot	24	20.99

Note:

To average-time power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

Radio	Frequency (MHz)	Distance (mm)	P _{th} (mW)	Maximum Conducted Time-averaged Power including Tune-up Tolerance (dBm)	Antenna Gain (dBi)	Conducted Power or ERP		SAR-Based Exemption
						dBm	mW	
GSM850	824-849	200	1681	26.98	-0.32	26.98	498.88	Compliant
GSM1900	1850-1910	200	3060	21.98	1.78	21.98	157.76	Compliant

Result: The device compliant the SAR-Based Exemption at 20cm distances.

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