

FCCID: OQ5TX3000N

RF Exposure evaluation

According to 447498 D01 General RF Exposure Guidance v06

4.3. General SAR test exclusion guidance

4.3.1. Standalone SAR test exclusion considerations

- a) For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following: $[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR,³⁰ where
- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
 - Power and distance are rounded to the nearest mW and mm before calculation³¹
 - The result is rounded to one decimal place for comparison
 - The values 3.0 and 7.5 are referred to as numeric thresholds in step b) below
- The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 4.1 f) is applied to determine SAR test exclusion.

³⁰ This is equivalent to the formula written as: $[(\text{max. power of channel, including tune-up tolerance, mW}) / (60 / \sqrt{f(\text{GHz})} \text{ mW})] \cdot [20 \text{ mm} / (\text{min. test separation distance, mm})] \leq 1.0$ for 1-g SAR; also see Appendix A for approximate exclusion threshold numerical values at selected frequencies and distances.

$$\text{eirp} = \text{pt} \times \text{gt} = (\text{EXd})^2 / 30$$

where:

pt = transmitter output power in watts,

gt = numeric gain of the transmitting antenna (unitless),

E = electric field strength in V/m, --- $10^{[(\text{dBuV/m})/20]}/10^6$

d = measurement distance in meters (m)---3m

$$\text{So pt} = (\text{EXd})^2 / 30 \times \text{gt}$$

RF Exposure evaluation

Copied from the FCC test report:

Radiated spurious emissions:

520.600 MHz, Horizontal							
Spurious Emission Frequency (MHz)	Read value (dBm)	Cable Loss (dB)	Antenna Factor (dB)	1-18GHz Pre-amplifier (dB)	Ture value (dBm)	Limit/ dBm	Margin(dB)
Fundamental: 520.6	-19.1	2.8	19.3	0	3.0	24	-21.0
1884.0	-42.5	5.7	27.3	30	-39.5	-13	-26.5
2602.0	-44.2	6.8	28.3	30	-39.1	-13	-26.1
520.600 MHz, Vertical							
Fundamental: 520.6	-19.6	2.8	19.3	0	2.5	24	-21.5
1884.0	-44.6	5.7	27.3	30	-41.6	-13	-28.6
521.324, Horizontal							
Fundamental: 521.3	-18.9	2.8	19.3	0	3.2	24	-20.8
1884.0	-42.9	5.7	27.3	30	-39.9	-13	-26.9
2598.0	-44.4	6.8	28.3	30	-39.3	-13	-26.3
521.324, Vertical							
Fundamental: 521.3	-19.4	2.8	19.3	0	2.7	24	-21.3
1884.0	-46.6	5.7	27.3	30	-43.6	-13	-30.6

541.625 MHz, Horizontal							
Fundamental: 541.6	-19.1	2.8	19.4	0	3.1	24	-20.9
1884.0	-42.3	5.7	27.3	30	-39.3	-13	-26.3
2708.1	-44.8	6.9	28.4	30	-39.5	-13	-26.5
541.625 MHz, Vertical							
Fundamental: 541.6	-19.6	2.8	19.4	0	2.6	24	-21.4
1884.0	-46.2	5.7	27.3	30	-43.2	-13	-30.2

tune-up tolerance = ± 1 dB,

min. test separation distance = 5 mm, since the min distance from the antenna to the outer = 1.0 mm

The max Field strength = 3.2 dBm in 521.325 MHz

Max. power of channel after included tune-up tolerance

Field strength = 4.2 dBm = 2.63 mW in 521.325 MHz

So $(2.63 \text{ mW} / 5.0 \text{ mm}) \times \sqrt{0.521325 \text{ GHz}} = 0.380 < 3$

Then SAR evaluation is not required