6.5 Radio frequency radiation exposure evaluation for portable devices

Reference(s): 47 CFR Part 2, §2.1093
KDB 447498 D01, section 4.3.1

Performed by:	Martin Müller	Date of test:	July 25, 2016
Result:	☒ Test passed	☐ Test not passed	

6.5.1 Data of equipment under test (EUT)

Antenna connector (see clause 3):	☒ permanent	☐ temporary	☐ none
Antenna detachable:	☒ yes	☐ no	
Tune-up function:	☒ yes	☐ no	
Maximum antenna gain (see clause 3):	logarithmic 6.15 dBi	numeric 4.12	
Maximum conducted output power (see clause 6.2.3.2):	logarithmic 13.59 dBm	numeric 22.9 mW	
Maximum conducted output power for tune-up:	logarithmic 13.90 dBm	numeric 24.5 mW	
Maximum operation frequency (see clause 3):	461.5625 MHz		
Minimum test separation distance:	6 mm		

6.5.2 Requirements

To be excluded from SAR tests set out in 47 CFR Part 2, §2.1093, the limits of the general guidelines for RF Exposure as described in KDB 447498 D01, section 4.3.1, have to be kept. 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 equation:

$$\frac{P_{conducted}(mW) \cdot \sqrt{f(GHz)}}{d_{min}(mm)} \leq 3.0$$

with: $P_{conducted}$ = source-based time-averaged maximum conducted output power in mW, adjusted for tune-up tolerance

f = RF channel transmit frequency in GHz

d_{min} = minimum test separation distance in mm determined by the smallest distance from the antenna and radiating structures or outer surface of the device, according to the host form factor, exposure conditions and platform requirements, to any part of the body or extremity of a user or bystander

6.5.3 Results

$$\frac{P_{conducted}(mW) \cdot \sqrt{f(GHz)}}{d_{min}(mm)} \leq 3.0 \quad \Leftrightarrow \quad \frac{25 \cdot \sqrt{0.4615625}}{6} \leq 3.0$$

$$\Leftrightarrow \quad 2.8 \leq 3.0 \ \checkmark$$

Notes:
1 Power and distance are rounded to the nearest mW and mm before calculation.
2 The result is rounded to one decimal place for comparison.