

RF EXPOSURE EVALUATION

KDB 447498 D01 Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies v06.

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency(RF) Radiation as specified in §1.1307(b)

EUT Specification

| | |
|-----------------------------------|--|
| FCC ID | 2BKVHEZ-TAGCHECKER |
| EUT | 4 Ports UHF RFID Tag Quality Measurement Instrument |
| Frequency band (Operating) | <input type="checkbox"/> BT: 2.402GHz ~ 2.480GHz <input type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input type="checkbox"/> RLAN: 5.180GHz ~ 5.240GHz <input type="checkbox"/> RLAN: 5.260GHz ~ 5.320GHz <input type="checkbox"/> RLAN: 5.500GHz ~ 5.700GHz <input type="checkbox"/> RLAN: 5.745GHz ~ 5.825GHz <input checked="" type="checkbox"/> Others: RFID: 902~928MHz |
| Device category | <input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others _____ |
| Exposure classification | <input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm ²) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm ²) |
| Antenna diversity | <input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity |
| Antenna gain (Max) | 3dBi |
| Evaluation applied | <input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation |



Limits for Maximum Permissible Exposure(MPE)

| Frequency Range(MHz) | Electric Field Strength(V/m) | Magnetic Field Strength(A/m) | Power Density(mW/cm ²) | Average Time |
|---|------------------------------|------------------------------|------------------------------------|--------------|
| (A) Limits for Occupational/Control Exposures | | | | |
| 300-1500 | -- | -- | F/300 | 6 |
| 1500-100000 | -- | -- | 5 | 6 |
| (B) Limits for General Population/Uncontrol Exposures | | | | |
| 300-1500 | -- | -- | F/1500 | 6 |
| 1500-100000 | -- | -- | 1 | 30 |

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in Mw

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

Max Measurement Result

| Operating Mode | Measured Power | Tune up tolerance | Max. Tune up Power | Antenna Gain | Power density at 20cm | Power density Limits (mW/cm ²) |
|----------------|----------------|-------------------|--------------------|--------------|------------------------|--|
| | (dBm) | (dBm) | (dBm) | (dBi) | (mW/ cm ²) | |
| RFID | 26.776 | 26.776 ±1 | 27.776 | 3 | 0.2380 | 0.6018 |

Note: The 4 antennas cannot transmit at the same time. For example, when using antenna 1, only antenna 1 can transmit. During the test, pre-scan all antennas, only the worst case(antenna 4) is recorded in the report.

Result: No Standalone SAR test is required.

