Model: F316, FCC ID: QISF316

RF Exposures

F316 developed by Huawei is a Fixed Wireless Terminal for household users. With F316, It is developed on the basis of GSM. The EUT is powered by Lithium rechargeable battery pack and nickel-metal hydride rechargeable battery pack respectively.

The antenna attached with the EUT as below:

a) Integral Antenna with antenna gain 4dBi
b) Dedicated Antenna with antenna gain 4dBi

The maximum radiated power including the tune-up tolerance as below:
For GSM 850 band: 37dBm (Tolerance: +0 / -3dB)
For GSM 1900 band: 33dBm (Tolerance: +0 / -3dB)

Transmitter antenna must be installed to provide a separation distance of at least 20 cm from all persons.

According to FCC Part 2.1091(c), the Mobile Radio Service authorized under subpart H of part 22 and part 24 should be subject to routine environmental evaluation for RF exposure prior to equipment authorization or use if they operate at frequencies of 1.5 GHz or below and their effective radiated power (ERP) is 1.5 watts or more, or if they operate at frequencies above 1.5 GHz and their ERP is 3 watts or more.

The Max measured time-averaged EPR for 850 band
= (32.85 − 9.03) dBm = 23.82 dBm = 0.24 W < 1.5W;

The Max measured time-averaged ERP for 1900 band
= (30.05-9.03) dBm = 21.02 dBm = 0.13 W < 3.0W

The Duty Factor for GSM = 10log(1/8) = -9.03dB

According to the KDB 447498 and OET 65, the simple calculation as below:

For Maximum Permissible Exposure (MPE) evaluation of the product, the maximum power density at 20 cm from this transmitter shall be less than the General Population / Uncontrolled MPE limit in OET Bulletin 65.

For the 850 band:

The source-based time averaged maximum radiated power (including the tune-up tolerance)

= (37.0 – Duty Factor) dBm = 28.0 dBm = 631.0mW

From above data, the exposed power density at a distance (R) of 20cm from the center of radiation of the antenna can be calculated according to OET Bulletin 65 as follow:

The power density at 20 cm from the antenna (GSM 850)

= 631.0 mW / 4πR^2

= 0.13 mW/cm^2

For the 1900 band:

The source-based time averaged maximum radiated power (including the tune-up tolerance)

= (33.0 – Duty Factor) dBm = 24.0 dBm = 251.2mW

From above data, the exposed power density at a distance (R) of 20cm from the center of radiation of the antenna can be calculated according to OET Bulletin 65 as follow:

The power density at 20 cm from the antenna (GSM 1900)

= 251.2 mW / 4πR^2

= 0.05 mW/cm^2

For the GSM 850 band, the MPE limit is 824/1500=0.549 mWcm-2 and for the GSM1900 band, the MPE limit is 1 mWcm-2 for general population and uncontrolled exposure respectively. As the measured power density at 20cm from the transmitter is lower than the MPE limit, the compliance to the MPE limit can be ensured by indicating the minimum 20cm separation between the transmitter's radiating structure and body of the user or nearby persons.

The following RF exposure statement is proposed to be included in the user manual:

"FCC RF Radiation Exposure Statement Caution: This Transmitter must be installed to provide a separation distance of at least 20 cm from all persons."