Total Quality. Assured.

SECTION RF Exposure

1. SUMMARY OF TEST RESULTS

Requirements	FCC Rule	Compliance
RF Exposure evaluation	1.1310	Complied

2. MPE Evaluation of Mobile Device

2.1 Rule

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

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure		
300-1,500	f/300	6
1,500-100,000	5	6
(B) Limits for General Population/Uncontrolled Exposure		
300-1,500	f/1500	30
1,500-100,000	1.0	30

Note) f = Frequency in MHz

Friis Formula

Friis transmission formula: $Pd = (Pout*G)/(4*pi*r^2)$

Where

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

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

Pd id the limit of MPE, 1 mW/cm^2. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

2.2 Test Results - Complied

- Calculation Result of RF Exposure

Mode	Frequency (MHz)	Target Power (dBm)	Tune up Tolerance (dB)	Max Tune up Power (dB)	Antenna Gain (dBi)	Power Density at 20 ㎝ (mW/cm^2)	Limit (mW/cm^2)
	2 402	-3.5	±1.0	-2.5	2.437	0.000 199	1
GFSK	2 440	-3.5	±1.0	-2.5	2.437	0.000 199	1
	2 480	-3.5	±1.0	-2.5	2.437	0.000 199	1

Note: Max Tune up Power(mW) = 0.56 mW, Antenna Gain(mW) = 1.75 mW

- Target power and Tolerance, Max tune up power

Mode	Frequency (MHz)	Target Power (dBm)	Tolerance (dB)	Max Tune up Power (dBm)	Average Power (dBm)	Measured Average Power (dBm)
	2 402	-3.5	±1.0	-2.5	-3.25	-5.32
GFSK	2 440	-3.5	±1.0	-2.5	-3.56	-5.63
	2 480	-3.5	±1.0	-2.5	-4.14	-6.21

Note 1): Average Power(dBm) = Measured Average Power(dBm) + D.C.C.F(dB)

e.g., 2 480 MHz: -6.21 dB + 2.068 dB = -4.14 dB

Note 2): D.C.C.F = 10log(1/x) = 10log(1/0.621) = 2.068 dB,

x = 0.388 5(On Time) / 0.625 5(Period) = 0.621

D = 62.1 % (duty cycle < 98 %)

Note 3): Measured Average Power was tested by Power meter & sensor(VBW = 50 MHz)