1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 Related Submittal(s) / Grant (s)

The submittal(s) (test report) is intended to comply with Section Part 22, subpart H and Part 24, subpart E of the FCC CFR 47 Rules. And RSS-102 issue 7 For 47 CFR 1.1310 Radio frequency Radiation Exposure requirement.

1.2 Limitation

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm^2)	Average Time (minutes)
0.3 – 1.34	614	1.63	*(100)	30
1.34 – 30	824/f	2.19/f	*($180/f^2$)	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	–	–	F/1500	30
1500 – 100,000	–	–	1.0	30

f = Frequency in MHz

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m^2)	Average Time (minutes)
0.003 – 1	280	2.19	-	6
1 – 10	280 / f	2.19 / f	-	6
10 – 30	28	2.19 / f	-	6
30 – 300	28	0.073	2	6
300 – 1500	$1.585\ f^{0.5}$	$0.0042\ f^{0.5}$	f/150	6
1500 – 15000	61.4	0.163	10.0	6
15000 – 150000	61.4	0.163	10.0	$616000/f^{1.2}$
150000 – 300000	$0.158\ f^{0.5}$	$4.21 \times 10^{-4}\ f^{0.5}$	$6.67 \times 10^{-5}\ f$	$616000/f^{1.2}$

f = Frequency in MHz

Operation in cellular band (824 ~ 849 MHz)

The ERP of H3G-800 in cellular band 23.72 dBm max at CDMA cellular mode. The resulted power density at a distance of 20 cm can be deducted as follows.

EUT		Measurement					
Frequency	CH	S.G Output	Antenna Gain	Cable loss	ERP	Maximum tuned up power	Limit
MHz		dBm	dBd	dB	dBm	dBm	dBm
824.7	1013	31.60	1.08	8.96	23.72 ±2	**25.72**	38.50
836.52	384	31.15	1.31	9.24	23.22 ±2	25.22	38.50
848.31	777	30.65	1.63	9.42	22.86 ±2	24.86	38.50

ERP = 25.72 dBm = 373.25 mW

Power Density = ERP * Duty Cycle($4\pi R^{2)}$

= 373.25 * 1($4*\pi*20^2$) = 0.0743 mW/cm^2

where Duty Cycle is 1 for CDMA operation and R is 20 cm

The MPE limit for General Population/Uncontrolled Exposure is shown in the FCC OET Bulletin 65 Supplement C and can be calculated as follopws:

MPE limit = 1.0 mW/cm^2

As we can see the resulted power density is below the MPE limit, therefore H3G-800 in cellular band is compliant with the FCC rules on RF exposure.

Operation in cellular band (1850 ~ 1910 MHz)

The EIRP of H3G-800 in cellular band 23.75 dBm max at CDMA cellular mode. The resulted power density at a distance of 20 cm can be deducted as follows.

EUT		Measurement					
Frequency	CH	S.G Output	Antenna Gain	Cable loss	EIRP	Maximum tuned up power	Limit
MHz		dBm	dBi	dB	dBm	dBm	dBm
1851.25	25	26.67	9.67	12.59	23.75 ±2	**25.75**	33.00
1880.00	600	26.60	9.79	12.67	23.72 ±2	25.72	33.00
1908.75	1175	26.20	9.90	12.81	23.29 ±2	25.29	33.00

EIRP = 25.75 dBm = 375.84 mW

Power Density = EIRP * Duty Cycle($4\pi R^{2)}$

= 375.84 * 1($4*\pi*20^2$) = 0.0748 mW/cm^2

where Duty Cycle is 1 for CDMA operation and R is 20 cm

The MPE limit for General Population/Uncontrolled Exposure is shown in the FCC OET Bulletin 65 Supplement C and can be calculated as follopws:

MPE limit = 1.0 mW/cm^2

As we can see the resulted power density is below the MPE limit, therefore H3G-800 in cellular band is compliant with the FCC rules on RF exposure.