



April 07, 2016

TUV SUD BABT
Octagon House, Concorde Way
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PO15 5RL

Attention: Director of Certification

RE: Analysis of RF Exposure for Portable and Mobile use per KDB 447498 D01 Mobile Portable RF Exposure v05r02 and RSS-102 Issue 5 March 2015.

FCC ID: XM5-SMG2SMT

1. Limits

Limits for General Population/Uncontrolled Exposure (Title 47 Subpart J §2.1091 and KDB 447498 D01 referring to limits under §1.1310)

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Electric Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging 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

**Plane-wave equivalent power density*



2. Mobile MPE Calculation Summary using a 20cm separation distance:

Mode (Worst Case)	Output Power	Power Density (mW/cm ²)
Mobile Satellite Service	8.13 watt	0.6468
WLAN	0.058 watt	0.0233

3. Simultaneous Transmission MPE:

Transmitter type	MPE (mW/cm ²)	FCC Limit (mW/cm ²)	FCC MPE ratio (MPE/Limit)
Mobile Satellite Service	0.6468	1	0.6468
WLAN	0.0233	1	0.0233
Sum of the ratios (should be <1.0)			0.6701



4. *Mobile MPE Calculation using a 100cm separation distance (Mobile Satellite Service):*

Using Power Density formula:

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to isotropic

R = distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal:	39.10	(dBm)
Maximum peak output power at antenna input terminal:	8128.31	(mW)
Antenna gain(typical):	10	(dBi)
Maximum antenna gain:	10.000	(numeric)
Prediction distance:	100	(cm)
Source Based Time Average Duty Cycle:	100	(%)
Prediction frequency:	1643.7	(MHz)
FCC MPE limit for uncontrolled exposure at prediction frequency:	1.000	(mW/cm ²)
Power density at prediction frequency:	0.6468	(mW/cm ²)
Power density at prediction frequency:	6.468	(W/m ²)
FCC Margin of Compliance:	-1.89	(dB)



5. Mobile MPE Calculation using a 20cm separation distance (WLAN):

Maximum peak output power at antenna input terminal:	17.69	(dBm)
Maximum peak output power at antenna input terminal:	58.75	(mW)
Antenna gain(typical):	3	(dBi)
Maximum antenna gain:	1.995	(numeric)
Prediction distance:	20	(cm)
Source Based Time Average Duty Cycle:	100	(%)
Prediction frequency:	2412	(MHz)
FCC MPE limit for uncontrolled exposure at prediction frequency:	1.000	(mW/cm ²)
Power density at prediction frequency:	0.0233	(mW/cm ²)
Power density at prediction frequency:	0.233	(W/m ²)
FCC Margin of Compliance:	-16.32	(dB)

Sincerely,


Alex Chang

Name

Authorized Signatory

Title: Senior EMC/Wireless Test Engineer