



January 29, 2016

TUV SUD BABT
Octagon House, Concorde Way
Segensworth Rd N, Fareham
PO15 5RL

Attention: Director of Certification

RE: Analysis of RF Exposure for Fixed and Mobile according to FCC 2.1091 and RSS-102 Issue 5 March 2015.

FCC ID: 2ABLPAT2220
IC: 20546-AT2220

1. Mobile MPE Calculation Summary using a 47cm separation distance:

Mode	Output Power (dBm)	Power Density (mW/cm ²)
802.11b	19.38	0.001
802.11g	15.32	0.0003
Bluetooth	7.25	0.00005
Satellite (L-Band)	29.92	0.158

2. Co-Located Transmitters transmission table:

Transmitter type	Transmitter type that can transmit at the same time
WiFi 802.11 b/g	Satellite (L-Band) / Bluetooth
Bluetooth	WiFi / Satellite (L-Band)
Satellite	WiFi / Bluetooth



America

3. Simultaneous Transmission MPE:

Transmitter type	MPE (mW/cm ²)	Limit (mW/cm ²)	MPE ratio (MPE/Limit)
WiFi (802.11b)	0.001	1.0	0.001
Bluetooth	0.0003	1.0	0.0003
Satellite (L-Band)	0.158	1.0	0.158
Sum of the ratios (should be <1.0)			0.1593



4. Mobile MPE Calculation using a 47cm separation distance (802.11b):

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:	19.38	(dBm)
Maximum peak output power at antenna input terminal:	86.70	(mW)
Antenna gain(typical):	-4.79	(dBi)
Maximum antenna gain:	0.332	(numeric)
Prediction distance:	47	(cm)
Source Based Time Average Duty Cycle:	100	(%)
Prediction frequency:	2462	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1.000	(mW/cm ²)
Power density at prediction frequency:	0.0010	(mW/cm ²)
Power density at prediction frequency:	0.010	(W/m ²)
Margin of Compliance:	-29.84	(dB)

5. Mobile MPE Calculation using a 47cm separation distance (802.11g):

Maximum peak output power at antenna input terminal:	15.32	(dBm)
Maximum peak output power at antenna input terminal:	34.04	(mW)
Antenna gain(typical):	-6.23	(dBi)
Maximum antenna gain:	0.238	(numeric)
Prediction distance:	47	(cm)
Source Based Time Average Duty Cycle:	100	(%)
Prediction frequency:	2412	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1.000	(mW/cm ²)
Power density at prediction frequency:	0.0003	(mW/cm ²)
Power density at prediction frequency:	0.003	(W/m ²)
Margin of Compliance:	-35.34	(dB)



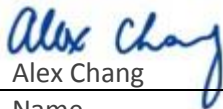
6. Mobile MPE Calculation using a 47cm separation distance (Bluetooth):

Maximum peak output power at antenna input terminal:	7.25	(dBm)
Maximum peak output power at antenna input terminal:	5.31	(mW)
Antenna gain(typical):	-6.01	(dBi)
Maximum antenna gain:	0.251	(numeric)
Prediction distance:	47	(cm)
Source Based Time Average Duty Cycle:	100	(%)
Prediction frequency:	2440	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1.000	(mW/cm ²)
Power density at prediction frequency:	0.00005	(mW/cm ²)
Power density at prediction frequency:	0.0005	(W/m ²)
Margin of Compliance:	-43.19	(dB)

7. Mobile MPE Calculation using a 47cm separation distance (Satellite L-Band):

Maximum peak output power at antenna input terminal:	29.92	(dBm)
Maximum peak output power at antenna input terminal:	981.75	(mW)
Antenna gain(typical):	6.5	(dBi)
Maximum antenna gain:	4.467	(numeric)
Prediction distance:	47	(cm)
Source Based Time Average Duty Cycle:	100	(%)
Prediction frequency:	1626.5	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1.000	(mW/cm ²)
Power density at prediction frequency:	0.1580	(mW/cm ²)
Power density at prediction frequency:	1.580	(W/m ²)
Margin of Compliance:	-8.01	(dB)

Sincerely,

A handwritten signature in blue ink that reads 'Alex Chang'.

Alex Chang

Name

Authorized Signatory

Title: EMC/Wireless Test Engineer