August 14, 2105

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

Attention: Director of Certification

RE: Analysis of RF Exposure for Portable use per Title 47, Part 1 Subpart I, §1.1310, Title 47, Part 2 Subpart J, §2.1091 and RSS-102 Issue 4 March 2010.

FCC ID: APV-4230CBT

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

Mode	Output Power	Antenna Gain	Power Density (mW/m^2)
Cellular	24.65 dBm @ 824.7 MHz	5.12 dBi	0.1887
PCS	24.44 dBm @ 1908.75 MHz	6.12 dBi	0.2263
Bluetooth	100.4 dBµV/m @ 3 meters	0 dBi	0.00065441
Bluetooth LE	86.6 dBµV/m @ 3 meters	0 dBi	0.00002728

2. Co-Located Transmitters transmission table:

Transmitter type	Transmitter type that can transmit at the same time
Cellular	Bluetooth
Cellular	Bluetooth LE
PCS	Bluetooth
PCS	Bluetooth LE
Bluetooth	Cellular
Bluetooth LE	Cellular
Bluetooth	PCS
Bluetooth LE	PCS

3. Simultaneous Transmission MPE (Worst Case Combination):

Transmitter type	MPE (mw/cm^2)	Limit (mW/cm^2)	MPE ratio (MPE/Limit)
Cellular/PCS	0.2263	1.0	0.2263
Bluetooth	0.00065441	1.0	0.00065441
		Sum of the ratios (should be <1.0)	0.22695441

4. *Mobile MPE Calculation using a 20cm separation distance (Cellular):*

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:	**24.65**	(dBm)
Maximum peak output power at antenna input terminal:	**291.74**	(mW)
Antenna gain(typical):	**5.12**	(dBi)
Maximum antenna gain:	**3.251**	(numeric)
Prediction distance:	**20**	(cm)
Sourse Based Time Average Duty Cycle:	**100**	(%)
Prediction frequency:	**824.7**	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	**0.550**	(mW/cm^2)
Power density at prediction frequency:	**0.1887**	(mW/cm^2)
Power density at prediction frequency:	**1.887**	(W/m^2)
Margin of Compliance:	**-4.64**	(dB)

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

Maximum peak output power at antenna input terminal:	**24.44**	(dBm)
Maximum peak output power at antenna input terminal:	**277.97**	(mW)
Antenna gain(typical):	**6.12**	(dBi)
Maximum antenna gain:	**4.093**	(numeric)
Prediction distance:	**20**	(cm)
Sourse Based Time Average Duty Cycle:	**100**	(%)
Prediction frequency:	**1908.75**	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	**1.000**	(mW/cm^2)
Power density at prediction frequency:	**0.2263**	(mW/cm^2)
Power density at prediction frequency:	**2.263**	(W/m^2)
Margin of Compliance:	**-6.45**	(dB)

6. Mobile MPE Calculation using a 20cm separation distance (Bluetooth):

Measured Field Strength --Radiated:	**100.4**	(dBuV/m)
Maximum peak output power --Radiated:	**0.0032894**	(W)
Antenna gain(typical):	**0.00**	(dBi)
Maximum antenna gain:	**1.00**	(numeric)
Prediction distance:	**20.00**	(cm)
Prediction frequency:	**319.00**	(MHz)
Limit from table below:	**1**	(mW/cm^2)
Power density at prediction frequency:	**0.00065441**	(mW/cm^2)
Margin of Compliance:	**-31.84**	(dB)

7. Mobile MPE Calculation using a 20cm separation distance (Bluetooth LE):

Measured Field Strength --Radiated:	**86.6**	(dBuV/m)
Maximum peak output power --Radiated:	**0.0001371**	(W)
Antenna gain(typical):	**0.00**	(dBi)
Maximum antenna gain:	**1.00**	(numeric)
Prediction distance:	**20.00**	(cm)
Prediction frequency:	**319.00**	(MHz)
Limit from table below:	**1**	(mW/cm^2)
Power density at prediction frequency:	**0.00002728**	(mW/cm^2)
Margin of Compliance:	**-45.64**	(dB)

***Notes:** Power level and worst case channel information for the cellular radio were derived from the test reports of the original filing, reference Test Report #: NK-12-R-098 from Nemko Korea Co., Ltd. provided by the client. And for Bluetooth FHSS and Bluetooth LE were derived from the test reports of the original filing, reference Test Reports # SC1409996A and SC1409996B from TUV SUD America.

Sincerely,

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Authorized Signatory
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