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RF Exposure Exhibit– Technical Report

1.0 Overview

Manufacturer declaration

The EUT is designed for fixed / mobile applications application environments.

1.1 Fixed / Mobile Application

MPE for bystanders which are considered to be ≥20cm away from the front of the transmit antenna

2.0 Maximum Permissible Exposure FCC

47 CFR Sections 1.1307, 1.1310, 2.1091,

447498 D01 General RF Exposure Guidance v06

2.1 MPE for General population /Un-controlled Environments

2.1.2 BLE transmitter

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

where:
S = power density
P = power input to the antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

Prediction frequency:	2425	MHz
Conducted Output Power	6.79	dBm
Antenna Gain	5	dBi
Tune up tolerance	0.00	dB
Time Averaging Factor	0	dB
EIRP Peak	12	dBm
EIRP Peak	15	mW
Prediction distance:	20	cm
Prediction frequency:	2425	MHz
MPE limit for Uncontrolled/General Population exposure at prediction frequency:	1.000	mW/cm^2
Power density at prediction frequency:	0.003	mW/cm^2
Power density at prediction frequency:	0.030	W/m^2
Test Result	Pass	
Exempt from routine evaluation for RF Exposure 0.003 < = 1		

Notes

The table above shows that for a prediction distance of 20 cm, RF exposure evaluation is not required for BLE operating on its own.

2.1.2 Cellular Transmitter

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

where:
S = power density
P = power input to the antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

Prediction frequency:	704	MHz
Conducted Output Power	23.37	dBm
Tune up tolerance	0.00	dB
Time Averaging Factor	0	dB
EIRP Peak	23	dBm
EIRP Peak	217	mW
Prediction distance:	20	cm
Prediction frequency:	704	MHz
MPE limit for Uncontrolled/General Population exposure at prediction frequency:	0.470	mW/cm^2
Power density at prediction frequency:	0.043	mW/cm^2
Power density at prediction frequency:	0.432	W/m^2
Test Result	Pass	
Exempt from routine evaluation for RF Exposure 0.043 < = 0.47		

Notes

The table above shows that for a prediction distance of 20 cm, RF exposure evaluation is not required for Cellular operating on its own.

2.1.3 Co-locating Cellular and BLE

For Co-locating BLE and Cellular

Cellular Fraction of the limit	(0.043/0.47) =9.15%
BLE Fraction of the limit	(0.003/1) =0.3%

9.15% + 0.3% =9.45% < 100% Limit

The calculation above shows that for a prediction distance of 20 cm, RF exposure evaluation is not required for BLE and Cellular co-locating.

End of Report