



November 01, 2018

TUV SUD BABT
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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: YETG32-1214

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*



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

| Downlink (CU) | | | |
|----------------------|---------------------------|--|--------------------------------------|
| Mode | Output Power (dBm) | Power Density (mW/cm²) | FCC Limit (mW/cm²) |
| LTE Band 12 | 16.47 | 0.343 | 0.489 |
| LTE Band 14 | 16.12 | 0.324 | 0.509 |
| 2.4G BLE | -1.01 | 0.0000499 | 1 |

| Uplink (NU) | | | |
|--------------------|----------------------------|--|--------------------------------------|
| Mode | Output Power (dBm)* | Power Density (mW/cm²) | FCC Limit (mW/cm²) |
| LTE Band 12 | 24.29 | 0.396 | 0.469 |
| LTE Band 14 | 23.37 | 0.453 | 0.529 |
| 2.4G BLE | -1.01 | 0.0000499 | 1 |



3. Co-Located Transmitters transmission table:

| Downlink | |
|------------------|---|
| Transmitter type | Transmitter type that can transmit at the same time |
| LTE B12 | 2.4G BLE |
| LTE B14 | 2.4G BLE |
| 2.4G BLE | LTE B12 or LTE B14 |

| Uplink | |
|------------------|---|
| Transmitter type | Transmitter type that can transmit at the same time |
| LTE B12 | 2.4G BLE |
| LTE B14 | 2.4G BLE |
| 2.4G BLE | LTE B12 or LTE B14 |

4. Simultaneous Transmission MPE:

| Downlink | | | |
|------------------------------------|---------------------------|---------------------------------|---------------------------|
| Transmitter type | MPE (mw/cm ²) | FCC Limit (mW/cm ²) | FCC MPE ratio (MPE/Limit) |
| LTE Band 12 | 0.343 | 0.489 | 0.7014 |
| 2.4G BLE | 0.0000499 | 1 | 0.0000499 |
| Sum of the ratios (should be <1.0) | | | 0.7014499 |

| Uplink | | | |
|------------------------------------|---------------------------|---------------------------------|---------------------------|
| Transmitter type | MPE (mw/cm ²) | FCC Limit (mW/cm ²) | FCC MPE ratio (MPE/Limit) |
| LTE Band 14 | 0.453 | 0.529 | 0.8563 |
| 2.4G BLE | 0.0000499 | 1 | 0.0000499 |
| Sum of the ratios (should be <1.0) | | | 0.8563499 |



5. Mobile MPE Calculation using a 20cm separation distance

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

LTE Band 12 Downlink:

| | | |
|--|---------------|-----------------------|
| Maximum peak output power at antenna input terminal: | 16.47 | (dBm) |
| Maximum peak output power at antenna input terminal: | 44.36 | (mW) |
| Antenna gain(typical): | 15.9 | (dBi) |
| Maximum antenna gain: | 38.905 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Source Based Time Average Duty Cycle: | 100 | (%) |
| Prediction frequency: | 734 | (MHz) |
| FCC MPE limit for uncontrolled exposure at prediction frequency: | 0.489 | (mW/cm ²) |
| Power density at prediction frequency: | 0.343 | (mW/cm ²) |
| FCC Margin of Compliance: | -1.54 | (dB) |

LTE Band 14 Downlink:

| | | |
|--|---------------|-----------------------|
| Maximum peak output power at antenna input terminal: | 16.12 | (dBm) |
| Maximum peak output power at antenna input terminal: | 40.93 | (mW) |
| Antenna gain(typical): | 16 | (dBi) |
| Maximum antenna gain: | 39.811 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Source Based Time Average Duty Cycle: | 100 | (%) |
| Prediction frequency: | 763 | (MHz) |
| FCC MPE limit for uncontrolled exposure at prediction frequency: | 0.509 | (mW/cm ²) |
| Power density at prediction frequency: | 0.324 | (mW/cm ²) |
| FCC Margin of Compliance: | -1.96 | (dB) |



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LTE Band 12 Uplink:

| | | |
|--|---------------|-----------------------|
| Maximum peak output power at antenna input terminal: | 24.29 | (dBm) |
| Maximum peak output power at antenna input terminal: | 268.53 | (mW) |
| Antenna gain(typical): | 8.7 | (dBi) |
| Maximum antenna gain: | 7.413 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Source Based Time Average Duty Cycle: | 100 | (%) |
| Prediction frequency: | 704 | (MHz) |
| FCC MPE limit for uncontrolled exposure at prediction frequency: | 0.469 | (mW/cm ²) |
| Power density at prediction frequency: | 0.396 | (mW/cm ²) |
| FCC Margin of Compliance: | -0.73 | (dB) |

LTE Band 14 Uplink:

| | | |
|--|---------------|-----------------------|
| Maximum peak output power at antenna input terminal: | 23.37 | (dBm) |
| Maximum peak output power at antenna input terminal: | 217.27 | (mW) |
| Antenna gain(typical): | 10.2 | (dBi) |
| Maximum antenna gain: | 10.471 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Source Based Time Average Duty Cycle: | 100 | (%) |
| Prediction frequency: | 793 | (MHz) |
| FCC MPE limit for uncontrolled exposure at prediction frequency: | 0.529 | (mW/cm ²) |
| Power density at prediction frequency: | 0.453 | (mW/cm ²) |
| FCC Margin of Compliance: | -0.68 | (dB) |



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2.4GHz BLE:

| | | |
|---|------------------|-----------------------|
| Maximum peak output power at antenna input terminal: | -1.01 | (dBm) |
| Maximum peak output power at antenna input terminal: | 0.79 | (mW) |
| Antenna gain(typical): | -5 | (dBi) |
| Maximum antenna gain: | 0.316 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Source Based Time Average Duty Cycle: | 100 | (%) |
| Prediction frequency: | 2402 | (MHz) |
| FCC MPE limit for uncontrolled exposure at prediction frequency: | 1.00 | (mW/cm ²) |
| ISED MPE limit for uncontrolled exposure at prediction frequency: | 5.351 | (W/m ²) |
| Power density at prediction frequency: | 0.0000499 | (mW/cm ²) |
| Power density at prediction frequency: | 0.000499 | (W/m ²) |
| FCC Margin of Compliance: | -43.02 | (dB) |
| IC Margin of Compliance: | -40.31 | (dB) |

Sincerely,

A handwritten signature in blue ink that reads 'Xiaoying Zhang'.

Xiaoying Zhang

Name

Authorized Signatory

Title: EMC/Wireless Test Engineer