

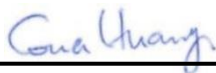
# RF Exposure Evaluation

## (Mobile Condition)

FCC ID : A4RGP4BC  
Equipment : Phone  
Applicant : Google LLC  
1600 Amphitheatre Parkway,  
Mountain View, California, 94043 USA  
Standard : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated in accordance with 47 CFR Part 2.1091 for the device and pass the limit.

The results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.



Approved by: Cona Huang / Deputy Manager



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1. Description of Equipment Under Test (EUT)

| Product Feature & Specification         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Equipment Name                          | Phone                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| FCC ID                                  | A4RGP4BC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Wireless Technology and Frequency Range | GSM850: 824.2 MHz ~ 848.8 MHz<br>GSM1900: 1850.2 MHz ~ 1909.8 MHz<br>WCDMA Band II: 1850 MHz ~ 1910 MHz<br>WCDMA Band IV: 1710 MHz ~ 1755 MHz<br>WCDMA Band V: 824 MHz ~ 849 MHz<br>LTE Band 2: 1850 MHz ~ 1910 MHz<br>LTE Band 4: 1710 MHz ~ 1755 MHz<br>LTE Band 5: 824 MHz ~ 849 MHz<br>LTE Band 7: 2500 MHz ~ 2570 MHz<br>LTE Band 12: 699 MHz ~ 716 MHz<br>LTE Band 13: 777 MHz ~ 787 MHz<br>LTE Band 14: 788 MHz ~ 798 MHz<br>LTE Band 17: 704 MHz ~ 716 MHz<br>LTE Band 25: 1850 MHz ~ 1915 MHz<br>LTE Band 26: 814 MHz ~ 849 MHz<br>LTE Band 30: 2305 MHz ~ 2315 MHz<br>LTE Band 38: 2570 MHz ~ 2620 MHz<br>LTE Band 41: 2496 MHz ~ 2690 MHz<br>LTE Band 48: 3550 MHz ~ 3700 MHz<br>LTE Band 66: 1710 MHz ~ 1780 MHz<br>LTE Band 71: 663 MHz ~ 698 MHz<br>5G NR n2 : 1850 MHz ~ 1910 MHz<br>5G NR n5 : 824 MHz ~ 849 MHz<br>5G NR n7 : 2500 MHz ~ 2570 MHz<br>5G NR n12 : 699 MHz ~ 716 MHz<br>5G NR n14 : 788 MHz ~ 798 MHz<br>5G NR n25 : 1850 MHz ~ 1915 MHz<br>5G NR n30 : 2305 MHz ~ 2315 MHz<br>5G NR n38 : 2570 MHz ~ 2620 MHz<br>5G NR n41 : 2496 MHz ~ 2690 MHz<br>5G NR n48 : 3550 MHz ~ 3700 MHz<br>5G NR n66 : 1710 MHz ~ 1780 MHz<br>5G NR n71 : 663 MHz ~ 698 MHz<br>5G NR n77: 3450MHz ~ 3550MHz, 3700 MHz ~ 3980 MHz<br>WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz<br>WLAN 5.2G Band: 5150 MHz ~ 5250 MHz<br>WLAN 5.3G Band: 5250 MHz ~ 5350 MHz<br>WLAN 5.5G Band: 5470 MHz ~ 5725 MHz<br>WLAN 5.8G Band: 5725 MHz ~ 5850 MHz<br>WLAN 5.8G UNII4 Band: 5850 MHz ~ 5895 MHz<br>WLAN6E: 5925 MHz ~ 6425 MHz, 6425 MHz ~ 6525 MHz, 6525 MHz ~ 6875 MHz, 6875 MHz ~ 7125 MHz<br>Bluetooth: 2400 MHz ~ 2483.5 MHz<br>NFC: 13.56 MHz<br>WPT: 110KHz ~ 148.5KHz<br>UWB: 6489.6 MHz, 7987.2 MHz |
| Mode                                    | GSM/GPRS/EGPRS<br>RMC/AMR 12.2Kbps<br>HSDPA<br>HSUPA<br>LTE: QPSK, 16QAM, 64QAM, 256QAM<br>5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM<br>WLAN: 802.11a/b/g/n/ac/ax HT20/HT40/VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160<br>Bluetooth BR/EDR/LE<br>NFC:ASK<br>WPT: ASK<br>UWB: BPM-BPSK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

Reviewed by: Jason Wang

Report Producer: Paula Chen



**2. Maximum Tune-up Limit (unit: dBm)**

1. The maximum power of the WWAN antenna will be selected to evaluate the power density
2. For MPE calculation is using the highest output among 2Tx switching antennas for each frequency band.
3. The device additional support uplink MIMO on n41, n48 and n77.
4. n41 PC1.5 Main Tx0 Ant2 and Sub Tx0 Ant 1, n48 PC3 Sub Tx0 Ant1 of device only support uplink MIMO.
5. n41 PC1.5 Main Tx1 Ant 0, Sub Tx1 Ant 5, and n48 PC3 Sub Tx1 Ant5 of device only support uplink MIMO.

**<WWAN Maximum Power>**

| Maximum Transmit Burst Average Power (dBm) |          |         |            |                  |
|--------------------------------------------|----------|---------|------------|------------------|
| Band                                       | Config   | Antenna | Duty cycle | Mobile Condition |
|                                            |          |         |            | Index 1          |
| GSM850 GSM/GPRS 1TX                        | Main TX0 | 0       | 12.50%     | 33.5             |
| GSM850 GPRS 2TX                            | Main TX0 | 0       | 25.00%     | 32.5             |
| GSM850 GPRS 3TX                            | Main TX0 | 0       | 37.50%     | 31.5             |
| GSM850 GPRS 4TX                            | Main TX0 | 0       | 50.00%     | 30.5             |
| GSM850 EDGE 1TX                            | Main TX0 | 0       | 12.50%     | 28               |
| GSM850 EDGE 2TX                            | Main TX0 | 0       | 25.00%     | 27.5             |
| GSM850 EDGE 3TX                            | Main TX0 | 0       | 37.50%     | 27.5             |
| GSM850 EDGE 4TX                            | Main TX0 | 0       | 50.00%     | 25.5             |
| GSM1900 GSM/GPRS 1TX                       | Main TX0 | 2       | 12.50%     | 31               |
| GSM1900 GPRS 2TX                           | Main TX0 | 2       | 25.00%     | 29.5             |
| GSM1900 GPRS 3TX                           | Main TX0 | 2       | 37.50%     | 29               |
| GSM1900 GPRS 4TX                           | Main TX0 | 2       | 50.00%     | 28               |
| GSM1900 EDGE 1TX                           | Main TX0 | 2       | 12.50%     | 26               |
| GSM1900 EDGE 2TX                           | Main TX0 | 2       | 25.00%     | 25               |
| GSM1900 EDGE 3TX                           | Main TX0 | 2       | 37.50%     | 25               |
| GSM1900 EDGE 4TX                           | Main TX0 | 2       | 50.00%     | 24               |
| WCDMA B2                                   | Main TX0 | 2       | 100.00%    | 25.5             |
| WCDMA B4                                   | Main TX0 | 2       | 100.00%    | 25.5             |
| WCDMA B5                                   | Main TX0 | 0       | 100.00%    | 25.5             |
| LTE B7                                     | Main TX0 | 2       | 100.00%    | 25.5             |
| LTE B12/B17                                | Main TX0 | 0       | 100.00%    | 25.5             |
| LTE B13                                    | Main TX0 | 0       | 100.00%    | 25.5             |
| LTE B14                                    | Main TX0 | 0       | 100.00%    | 25.5             |
| LTE B25/B2                                 | Main TX0 | 2       | 100.00%    | 25.5             |
| LTE B26/B5                                 | Main TX0 | 0       | 100.00%    | 25.5             |
| LTE B30                                    | Main TX0 | 2       | 100.00%    | 22.9             |
| LTE-B38 PC3                                | Main TX0 | 2       | 63.30%     | 25.5             |
| LTE-B38 PC2                                | Main TX0 | 2       | 43.30%     | 26.9             |
| LTE B41 PC3                                | Main TX0 | 2       | 63.30%     | 25.5             |
| LTE B41 PC2                                | Main TX0 | 2       | 43.30%     | 27.5             |
| LTE B48 PC3                                | Main TX0 | 6       | 63.30%     | 24.7             |
| LTE B66/B4                                 | Main TX0 | 2       | 100.00%    | 25.5             |
| LTE B71                                    | Main TX0 | 0       | 100.00%    | 25.5             |
| FR1 n5                                     | Main TX0 | 0       | 100.00%    | 25.5             |
| FR1 n7                                     | Main TX0 | 2       | 100.00%    | 25.5             |
| FR1 n12                                    | Main TX0 | 0       | 100.00%    | 25.5             |
| FR1 n14                                    | Main TX0 | 0       | 100.00%    | 25.5             |
| FR1 n25/n2                                 | Main TX0 | 2       | 100.00%    | 25.5             |
| FR1 n30                                    | Main TX0 | 2       | 100.00%    | 22.9             |
| FR1 n38 PC3                                | Main TX0 | 2       | 100.00%    | 25.5             |
| FR1 n41 PC3                                | Main TX0 | 2       | 100.00%    | 25.5             |



|                        |          |   |         |      |
|------------------------|----------|---|---------|------|
| FR1 n41 PC2            | Main TX0 | 2 | 50.00%  | 27.5 |
| FR1 n41 PC1.5 MIMO     | Main TX0 | 2 | 25.00%  | 26.5 |
| FR1 n48 PC3            | Main TX0 | 6 | 100.00% | 24.7 |
| FR1 n66                | Main TX0 | 2 | 100.00% | 25.5 |
| FR1 n71                | Main TX0 | 0 | 100.00% | 25.5 |
| FR1 n77 PC3            | Main TX0 | 6 | 100.00% | 24.1 |
| FR1 n77 PC2            | Main TX0 | 6 | 50.00%  | 27.1 |
| LTE B2 Sub             | Sub TX0  | 1 | 100.00% | 25.5 |
| LTE B66/B4 Sub         | Sub TX0  | 1 | 100.00% | 25.5 |
| FR1 n2 Sub             | Sub TX0  | 1 | 100.00% | 25.5 |
| FR1 n38 PC3 Sub        | Sub TX0  | 1 | 100.00% | 25.5 |
| FR1 n41 PC3 Sub        | Sub TX0  | 1 | 100.00% | 25.5 |
| FR1 n41 PC2 Sub        | Sub TX0  | 1 | 50.00%  | 27.5 |
| FR1 n41 PC1.5 Sub MIMO | Sub TX0  | 1 | 25.00%  | 26.5 |
| FR1 n48 PC3 Sub MIMO   | Sub TX0  | 1 | 100.00% | 21.1 |
| FR1 n66 Sub            | Sub TX0  | 1 | 100.00% | 25.5 |
| FR1 n77 PC3 Sub        | Sub TX0  | 1 | 100.00% | 25.5 |

| Maximum Transmit Burst Average Power (dBm) |          |         |            |                  |
|--------------------------------------------|----------|---------|------------|------------------|
| Band                                       | Config   | Antenna | Duty cycle | Mobile Condition |
|                                            |          |         |            | Index 1          |
| GSM850 GSM/GPRS 1TX                        | Main TX1 | 1       | 12.50%     | 33.5             |
| GSM850 GPRS 2TX                            | Main TX1 | 1       | 25.00%     | 32.5             |
| GSM850 GPRS 3TX                            | Main TX1 | 1       | 37.50%     | 31.5             |
| GSM850 GPRS 4TX                            | Main TX1 | 1       | 50.00%     | 30.5             |
| GSM850 EDGE 1TX                            | Main TX1 | 1       | 12.50%     | 28.0             |
| GSM850 EDGE 2TX                            | Main TX1 | 1       | 25.00%     | 27.5             |
| GSM850 EDGE 3TX                            | Main TX1 | 1       | 37.50%     | 27.5             |
| GSM850 EDGE 4TX                            | Main TX1 | 1       | 50.00%     | 25.5             |
| GSM1900 GSM/GPRS 1TX                       | Main TX1 | 0       | 12.50%     | 30.8             |
| GSM1900 GPRS 2TX                           | Main TX1 | 0       | 25.00%     | 29.3             |
| GSM1900 GPRS 3TX                           | Main TX1 | 0       | 37.50%     | 28.8             |
| GSM1900 GPRS 4TX                           | Main TX1 | 0       | 50.00%     | 27.8             |
| GSM1900 EDGE 1TX                           | Main TX1 | 0       | 12.50%     | 25.8             |
| GSM1900 EDGE 2TX                           | Main TX1 | 0       | 25.00%     | 24.8             |
| GSM1900 EDGE 3TX                           | Main TX1 | 0       | 37.50%     | 24.8             |
| GSM1900 EDGE 4TX                           | Main TX1 | 0       | 50.00%     | 23.8             |
| WCDMA B2                                   | Main TX1 | 0       | 100.00%    | 25.3             |
| WCDMA B4                                   | Main TX1 | 0       | 100.00%    | 25.3             |
| WCDMA B5                                   | Main TX1 | 1       | 100.00%    | 25.5             |
| LTE B7                                     | Main TX1 | 0       | 100.00%    | 25.1             |
| LTE B12/B17                                | Main TX1 | 1       | 100.00%    | 25.5             |
| LTE B13                                    | Main TX1 | 1       | 100.00%    | 25.5             |
| LTE B14                                    | Main TX1 | 1       | 100.00%    | 25.5             |
| LTE B25/B2                                 | Main TX1 | 0       | 100.00%    | 25.3             |
| LTE B26/B5                                 | Main TX1 | 1       | 100.00%    | 25.5             |
| LTE B30                                    | Main TX1 | 0       | 100.00%    | 23.1             |
| LTE-B38 PC3                                | Main TX1 | 0       | 63.30%     | 25.1             |
| LTE-B38 PC2                                | Main TX1 | 0       | 43.30%     | 26.5             |
| LTE B41 PC3                                | Main TX1 | 0       | 63.30%     | 25.1             |
| LTE B41 PC2                                | Main TX1 | 0       | 43.30%     | 27.1             |
| LTE B48 PC3                                | Main TX1 | 7       | 63.30%     | 24.2             |
| LTE B66/B4                                 | Main TX1 | 0       | 100.00%    | 24.8             |



**FCC RF EXPOSURE REPORT**

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|                        |          |   |         |      |
|------------------------|----------|---|---------|------|
| LTE B71                | Main TX1 | 1 | 100.00% | 25.5 |
| FR1 n5                 | Main TX1 | 1 | 100.00% | 25.5 |
| FR1 n7                 | Main TX1 | 0 | 100.00% | 25.1 |
| FR1 n12                | Main TX1 | 1 | 100.00% | 25.5 |
| FR1 n14                | Main TX1 | 1 | 100.00% | 25.5 |
| FR1 n25/n2             | Main TX1 | 0 | 100.00% | 25.3 |
| FR1 n30                | Main TX1 | 0 | 100.00% | 23.1 |
| FR1 n38 PC3            | Main TX1 | 0 | 100.00% | 24.5 |
| FR1 n41 PC3            | Main TX1 | 0 | 100.00% | 24.5 |
| FR1 n41 PC2            | Main TX1 | 0 | 50.00%  | 27.5 |
| FR1 n41 PC1.5 MIMO     | Main TX1 | 0 | 25.00%  | 26.5 |
| FR1 n48 PC3            | Main TX1 | 7 | 100.00% | 24.2 |
| FR1 n66                | Main TX1 | 0 | 100.00% | 25.3 |
| FR1 n71                | Main TX1 | 1 | 100.00% | 25.5 |
| FR1 n77 PC3            | Main TX1 | 7 | 100.00% | 24.0 |
| FR1 n77 PC2            | Main TX1 | 7 | 50.00%  | 26.5 |
| LTE B2 Sub             | Sub TX1  | 5 | 100.00% | 25.3 |
| LTE B66/B4 Sub         | Sub TX1  | 5 | 100.00% | 25.3 |
| FR1 n2 Sub             | Sub TX1  | 5 | 100.00% | 25.3 |
| FR1 n38 PC3 Sub        | Sub TX1  | 5 | 100.00% | 24.5 |
| FR1 n41 PC3 Sub        | Sub TX1  | 5 | 100.00% | 24.5 |
| FR1 n41 PC2 Sub        | Sub TX1  | 5 | 50.00%  | 26.5 |
| FR1 n41 PC1.5 Sub MIMO | Sub TX1  | 5 | 25.00%  | 25.5 |
| FR1 n48 PC3 Sub MIMO   | Sub TX1  | 5 | 100.00% | 20.4 |
| FR1 n66 Sub            | Sub TX1  | 5 | 100.00% | 25.3 |
| FR1 n77 PC3 Sub        | Sub TX1  | 5 | 100.00% | 24.9 |



<WLAN Maximum Power Table>

<2.4GHz WLAN>

| Burst Average Power (dBm) |               |         |                 |                     |                     |                       |
|---------------------------|---------------|---------|-----------------|---------------------|---------------------|-----------------------|
| Transmit Antenna          |               |         |                 | MIMO                |                     |                       |
| 2.4GHz WLAN               | Mode          | Channel | Frequency (MHz) | Ant 4 Tune-Up Limit | Ant 3 Tune-Up Limit | Ant 4+3 Tune-Up Limit |
|                           | 802.11b 1Mbps | 1       | 2412            | 23.00               | 23.00               | -                     |
|                           |               | 6       | 2437            | 23.00               | 23.00               | -                     |
|                           |               | 11      | 2462            | 23.00               | 23.00               | -                     |
|                           |               | 12      | 2467            | 23.00               | 23.00               | -                     |
|                           |               | 13      | 2472            | 20.50               | 20.00               | -                     |

| Burst Average Power (dBm) |                     |         |                 |                          |                          |                       |
|---------------------------|---------------------|---------|-----------------|--------------------------|--------------------------|-----------------------|
| Transmit Antenna          |                     |         |                 | MIMO                     |                          |                       |
| 2.4GHz WLAN               | Mode                | Channel | Frequency (MHz) | Ant 4+3(4) Tune-Up Limit | Ant 4+3(3) Tune-Up Limit | Ant 4+3 Tune-Up Limit |
|                           | 802.11g 6Mbps       | 1       | 2412            | 23.00                    | 23.00                    | 26.00                 |
|                           |                     | 6       | 2437            | 23.00                    | 23.00                    | 26.00                 |
|                           |                     | 11      | 2462            | 19.50                    | 19.50                    | 22.50                 |
|                           |                     | 12      | 2467            | 15.50                    | 15.50                    | 18.50                 |
|                           |                     | 13      | 2472            | 13.00                    | 13.00                    | 16.00                 |
|                           | 802.11n-HT20 MCS0   | 1       | 2412            | 21.00                    | 21.00                    | 24.00                 |
|                           |                     | 6       | 2437            | 23.00                    | 23.00                    | 26.00                 |
|                           |                     | 11      | 2462            | 19.00                    | 19.00                    | 22.00                 |
|                           |                     | 13      | 2472            | 12.00                    | 12.00                    | 15.00                 |
|                           | 802.11ac-VHT20 MCS0 | 1       | 2412            | 21.00                    | 21.00                    | 24.00                 |
|                           |                     | 6       | 2437            | 23.00                    | 23.00                    | 26.00                 |
|                           |                     | 11      | 2462            | 19.00                    | 19.00                    | 22.00                 |
|                           |                     | 13      | 2472            | 12.00                    | 12.00                    | 15.00                 |
|                           | 802.11ax-HE20 MCS0  | 1       | 2412            | 21.00                    | 21.00                    | 24.00                 |
|                           |                     | 6       | 2437            | 23.00                    | 23.00                    | 26.00                 |
|                           |                     | 11      | 2462            | 19.00                    | 19.00                    | 22.00                 |
|                           |                     | 12      | 2467            | 15.00                    | 15.00                    | 18.00                 |
|                           |                     | 13      | 2472            | 12.00                    | 12.00                    | 15.00                 |





**<5GHz WLAN>**

| Burst Average Power (dBm) |                     |         |                 |                          |                          |                       |
|---------------------------|---------------------|---------|-----------------|--------------------------|--------------------------|-----------------------|
| 5.2GHz WLAN               | Transmit Antenna    |         |                 | MIMO                     |                          |                       |
|                           | Mode                | Channel | Frequency (MHz) | Ant 4+8(4) Tune-Up Limit | Ant 4+8(8) Tune-Up Limit | Ant 4+8 Tune-Up Limit |
|                           | 802.11a 6Mbps       | 36      | 5180            | 21.50                    | 21.50                    | 24.50                 |
|                           |                     | 40      | 5200            | 21.50                    | 21.50                    | 24.50                 |
|                           |                     | 44      | 5220            | 21.50                    | 21.50                    | 24.50                 |
|                           |                     | 48      | 5240            | 21.50                    | 21.50                    | 24.50                 |
|                           | 802.11n-HT20 MCS0   | 36      | 5180            | 21.00                    | 21.00                    | 24.00                 |
|                           |                     | 40      | 5200            | 21.00                    | 21.00                    | 24.00                 |
|                           |                     | 44      | 5220            | 21.00                    | 21.00                    | 24.00                 |
|                           |                     | 48      | 5240            | 21.00                    | 21.00                    | 24.00                 |
|                           | 802.11n-HT40 MCS0   | 38      | 5190            | 16.00                    | 16.00                    | 19.00                 |
|                           |                     | 46      | 5230            | 21.50                    | 21.50                    | 24.50                 |
|                           | 802.11ac-VHT20 MCS0 | 36      | 5180            | 20.00                    | 20.00                    | 23.00                 |
|                           |                     | 40      | 5200            | 21.00                    | 21.00                    | 24.00                 |
|                           |                     | 44      | 5220            | 21.00                    | 21.00                    | 24.00                 |
|                           |                     | 48      | 5240            | 21.00                    | 21.00                    | 24.00                 |
|                           | 802.11ac-VHT40 MCS0 | 38      | 5190            | 16.00                    | 16.00                    | 19.00                 |
|                           |                     | 46      | 5230            | 21.50                    | 21.50                    | 24.50                 |
|                           | 802.11ac-VHT80 MCS0 | 42      | 5210            | 16.00                    | 16.00                    | 19.00                 |
|                           | 802.11ax-HE20 MCS0  | 36      | 5180            | 20.00                    | 20.00                    | 23.00                 |
|                           |                     | 40      | 5200            | 21.50                    | 21.50                    | 24.50                 |
|                           |                     | 44      | 5220            | 21.50                    | 21.50                    | 24.50                 |
| 48                        |                     | 5240    | 21.50           | 21.50                    | 24.50                    |                       |
| 802.11ax-HE40 MCS0        | 38                  | 5190    | 16.50           | 16.50                    | 19.50                    |                       |
|                           | 46                  | 5230    | 21.50           | 21.50                    | 24.50                    |                       |
| 802.11ax-HE80 MCS0        | 42                  | 5210    | 16.00           | 16.00                    | 19.00                    |                       |



| Burst Average Power (dBm) |                      |         |                 |                          |                          |                       |
|---------------------------|----------------------|---------|-----------------|--------------------------|--------------------------|-----------------------|
|                           | Transmit Antenna     |         |                 | MIMO                     |                          |                       |
|                           | Mode                 | Channel | Frequency (MHz) | Ant 4+8(4) Tune-Up Limit | Ant 4+8(8) Tune-Up Limit | Ant 4+8 Tune-Up Limit |
| 5.3GHz WLAN               | 802.11a 6Mbps        | 52      | 5260            | 21.50                    | 21.50                    | 24.50                 |
|                           |                      | 56      | 5280            | 21.50                    | 21.50                    | 24.50                 |
|                           |                      | 60      | 5300            | 21.50                    | 21.50                    | 24.50                 |
|                           |                      | 64      | 5320            | 21.50                    | 21.50                    | 24.50                 |
|                           | 802.11n-HT20 MCS0    | 52      | 5260            | 21.00                    | 21.00                    | 24.00                 |
|                           |                      | 56      | 5280            | 21.00                    | 21.00                    | 24.00                 |
|                           |                      | 60      | 5300            | 21.00                    | 21.00                    | 24.00                 |
|                           |                      | 64      | 5320            | 20.00                    | 20.00                    | 23.00                 |
|                           | 802.11n-HT40 MCS0    | 54      | 5270            | 21.50                    | 21.50                    | 24.50                 |
|                           |                      | 62      | 5310            | 16.50                    | 16.50                    | 19.50                 |
|                           | 802.11ac-VHT20 MCS0  | 52      | 5260            | 21.00                    | 21.00                    | 24.00                 |
|                           |                      | 56      | 5280            | 21.00                    | 21.00                    | 24.00                 |
|                           |                      | 60      | 5300            | 21.00                    | 21.00                    | 24.00                 |
|                           |                      | 64      | 5320            | 21.00                    | 21.00                    | 24.00                 |
|                           | 802.11ac-VHT40 MCS0  | 54      | 5270            | 21.00                    | 21.00                    | 24.00                 |
|                           |                      | 62      | 5310            | 16.50                    | 16.50                    | 19.50                 |
|                           | 802.11ac-VHT80 MCS0  | 58      | 5290            | 16.50                    | 16.50                    | 19.50                 |
|                           | 802.11ac-VHT160 MCS0 | 50      | 5250            | 16.50                    | 16.50                    | 19.50                 |
|                           | 802.11ax-HE20 MCS0   | 52      | 5260            | 21.00                    | 21.00                    | 24.00                 |
|                           |                      | 56      | 5280            | 21.00                    | 21.00                    | 24.00                 |
| 60                        |                      | 5300    | 21.00           | 21.00                    | 24.00                    |                       |
| 64                        |                      | 5320    | 21.00           | 21.00                    | 24.00                    |                       |
| 802.11ax-HE40 MCS0        | 54                   | 5270    | 21.00           | 21.00                    | 24.00                    |                       |
|                           | 62                   | 5310    | 16.50           | 16.50                    | 19.50                    |                       |
| 802.11ax-HE80 MCS0        | 58                   | 5290    | 16.50           | 16.50                    | 19.50                    |                       |
| 802.11ax-HE160 MCS0       | 50                   | 5250    | 16.50           | 16.50                    | 19.50                    |                       |



| Burst Average Power (dBm) |                      |                   |                 |                          |                          |                       |       |
|---------------------------|----------------------|-------------------|-----------------|--------------------------|--------------------------|-----------------------|-------|
| 5.5GHz WLAN               | Transmit Antenna     |                   |                 | MIMO                     |                          |                       |       |
|                           | Mode                 | Channel           | Frequency (MHz) | Ant 4+8(4) Tune-Up Limit | Ant 4+8(8) Tune-Up Limit | Ant 4+8 Tune-Up Limit |       |
| 802.11a 6Mbps             | 802.11a 6Mbps        | 100               | 5500            | 21.50                    | 21.50                    | 24.50                 |       |
|                           |                      | 116               | 5580            | 18.00                    | 18.00                    | 21.00                 |       |
|                           |                      | 124               | 5620            | 16.50                    | 16.50                    | 19.50                 |       |
|                           |                      | 132               | 5660            | 16.50                    | 16.50                    | 19.50                 |       |
|                           |                      | 140               | 5700            | 16.00                    | 16.00                    | 19.00                 |       |
|                           |                      | 144               | 5720            | 16.00                    | 16.00                    | 19.00                 |       |
|                           | 802.11n-HT20 MCS0    | 802.11n-HT20 MCS0 | 100             | 5500                     | 20.50                    | 20.50                 | 23.50 |
|                           |                      |                   | 116             | 5580                     | 17.00                    | 17.00                 | 20.00 |
|                           |                      |                   | 124             | 5620                     | 16.50                    | 16.50                 | 19.50 |
|                           |                      |                   | 132             | 5660                     | 16.50                    | 16.50                 | 19.50 |
|                           |                      |                   | 140             | 5700                     | 16.50                    | 16.50                 | 19.50 |
|                           | 802.11n-HT40 MCS0    | 802.11n-HT40 MCS0 | 102             | 5510                     | 16.50                    | 16.50                 | 19.50 |
| 110                       |                      |                   | 5550            | 21.00                    | 21.00                    | 24.00                 |       |
| 126                       |                      |                   | 5630            | 19.50                    | 19.50                    | 22.50                 |       |
| 134                       |                      |                   | 5670            | 18.00                    | 18.00                    | 21.00                 |       |
| 142                       |                      |                   | 5710            | 18.00                    | 18.00                    | 21.00                 |       |
| 802.11ac-VHT20 MCS0       | 802.11ac-VHT20 MCS0  | 100               | 5500            | 20.00                    | 20.00                    | 23.00                 |       |
|                           |                      | 116               | 5580            | 17.00                    | 17.00                    | 20.00                 |       |
|                           |                      | 124               | 5620            | 16.50                    | 16.50                    | 19.50                 |       |
|                           |                      | 132               | 5660            | 16.50                    | 16.50                    | 19.50                 |       |
|                           |                      | 140               | 5700            | 16.50                    | 16.50                    | 19.50                 |       |
| 802.11ac-VHT40 MCS0       | 802.11ac-VHT40 MCS0  | 102               | 5510            | 16.50                    | 16.50                    | 19.50                 |       |
|                           |                      | 110               | 5550            | 21.00                    | 21.00                    | 24.00                 |       |
|                           |                      | 126               | 5630            | 19.50                    | 19.50                    | 22.50                 |       |
|                           |                      | 134               | 5670            | 18.00                    | 18.00                    | 21.00                 |       |
|                           |                      | 142               | 5710            | 18.00                    | 18.00                    | 21.00                 |       |
| 802.11ac-VHT80 MCS0       | 802.11ac-VHT80 MCS0  | 106               | 5530            | 17.00                    | 17.00                    | 20.00                 |       |
|                           |                      | 122               | 5610            | 20.00                    | 20.00                    | 23.00                 |       |
|                           |                      | 138               | 5690            | 19.00                    | 19.00                    | 22.00                 |       |
| 802.11ac-VHT160 MCS0      | 802.11ac-VHT160 MCS0 | 114               | 5570            | 16.50                    | 16.50                    | 19.50                 |       |
| 802.11ax-HE20 MCS0        | 802.11ax-HE20 MCS0   | 100               | 5500            | 20.50                    | 20.50                    | 23.50                 |       |
|                           |                      | 116               | 5580            | 17.50                    | 17.50                    | 20.50                 |       |
|                           |                      | 124               | 5620            | 16.50                    | 16.50                    | 19.50                 |       |
|                           |                      | 132               | 5660            | 16.50                    | 16.50                    | 19.50                 |       |
|                           |                      | 140               | 5700            | 16.50                    | 16.50                    | 19.50                 |       |
| 802.11ax-HE40 MCS0        | 802.11ax-HE40 MCS0   | 102               | 5510            | 17.00                    | 17.00                    | 20.00                 |       |
|                           |                      | 110               | 5550            | 21.00                    | 21.00                    | 24.00                 |       |
|                           |                      | 126               | 5630            | 19.50                    | 19.50                    | 22.50                 |       |
|                           |                      | 134               | 5670            | 18.00                    | 18.00                    | 21.00                 |       |
|                           |                      | 142               | 5710            | 18.00                    | 18.00                    | 21.00                 |       |
| 802.11ax-HE80 MCS0        | 802.11ax-HE80 MCS0   | 106               | 5530            | 17.50                    | 17.50                    | 20.50                 |       |
|                           |                      | 122               | 5610            | 20.00                    | 20.00                    | 23.00                 |       |
|                           |                      | 138               | 5690            | 19.00                    | 19.00                    | 22.00                 |       |
| 802.11ax-HE160 MCS0       | 802.11ax-HE160 MCS0  | 114               | 5570            | 17.00                    | 17.00                    | 20.00                 |       |



| Burst Average Power (dBm) |                     |         |                 |                          |                          |                       |
|---------------------------|---------------------|---------|-----------------|--------------------------|--------------------------|-----------------------|
| Transmit Antenna          |                     |         |                 | MIMO                     |                          |                       |
| 5.8GHz WLAN               | Mode                | Channel | Frequency (MHz) | Ant 4+8(4) Tune-Up Limit | Ant 4+8(8) Tune-Up Limit | Ant 4+8 Tune-Up Limit |
|                           | 802.11a 6Mbps       | 149     | 5745            | 15.00                    | 23.00                    | 23.64                 |
|                           |                     | 157     | 5785            | 15.00                    | 23.00                    | 23.64                 |
|                           |                     | 165     | 5825            | 15.00                    | 23.00                    | 23.64                 |
|                           | 802.11n-HT20 MCS0   | 149     | 5745            | 15.00                    | 23.00                    | 23.64                 |
|                           |                     | 157     | 5785            | 15.00                    | 23.00                    | 23.64                 |
|                           |                     | 165     | 5825            | 15.00                    | 23.00                    | 23.64                 |
|                           | 802.11n-HT40 MCS0   | 151     | 5755            | 16.00                    | 21.50                    | 22.58                 |
|                           |                     | 159     | 5795            | 16.00                    | 21.50                    | 22.58                 |
|                           | 802.11ac-VHT20 MCS0 | 149     | 5745            | 15.50                    | 23.00                    | 23.71                 |
|                           |                     | 157     | 5785            | 15.50                    | 23.00                    | 23.71                 |
|                           |                     | 165     | 5825            | 15.50                    | 23.00                    | 23.71                 |
|                           | 802.11ac-VHT40 MCS0 | 151     | 5755            | 16.00                    | 21.50                    | 22.58                 |
|                           |                     | 159     | 5795            | 16.00                    | 21.50                    | 22.58                 |
|                           | 802.11ac-VHT80 MCS0 | 155     | 5775            | 18.00                    | 22.00                    | 24.21                 |
| 802.11ax-HE20 MCS0        | 149                 | 5745    | 15.00           | 23.00                    | 23.64                    |                       |
|                           | 157                 | 5785    | 15.00           | 23.00                    | 23.64                    |                       |
|                           | 165                 | 5825    | 15.00           | 23.00                    | 23.64                    |                       |
| 802.11ax-HE40 MCS0        | 151                 | 5755    | 16.00           | 22.00                    | 22.97                    |                       |
|                           | 159                 | 5795    | 16.00           | 22.00                    | 22.97                    |                       |
| 802.11ax-HE80 MCS0        | 155                 | 5775    | 18.00           | 22.00                    | 24.21                    |                       |



| Burst Average Power (dBm) |                  |         |                 |                          |                          |                       |
|---------------------------|------------------|---------|-----------------|--------------------------|--------------------------|-----------------------|
| 5.9GHz WLAN               | Transmit Antenna |         |                 | MIMO                     |                          |                       |
|                           | Mode             | Channel | Frequency (MHz) | Ant 4+8(4) Tune-Up Limit | Ant 4+8(8) Tune-Up Limit | Ant 4+8 Tune-Up Limit |
| 802.11a 6Mbps             |                  | 169     | 5845            | 21.50                    | 21.50                    | 24.50                 |
|                           |                  | 173     | 5865            | 21.50                    | 21.50                    | 24.50                 |
|                           |                  | 177     | 5885            | 21.50                    | 21.50                    | 24.50                 |
| 802.11n-HT20 MCS0         |                  | 169     | 5845            | 21.50                    | 21.50                    | 24.50                 |
|                           |                  | 173     | 5865            | 21.50                    | 21.50                    | 24.50                 |
|                           |                  | 177     | 5885            | 21.50                    | 21.50                    | 24.50                 |
| 802.11n-HT40 MCS0         |                  | 167     | 5835            | 22.00                    | 22.00                    | 25.00                 |
|                           |                  | 175     | 5875            | 22.00                    | 22.00                    | 25.00                 |
| 802.11ac-VHT20 MCS0       |                  | 169     | 5845            | 21.50                    | 21.50                    | 24.50                 |
|                           |                  | 173     | 5865            | 21.50                    | 21.50                    | 24.50                 |
|                           |                  | 177     | 5885            | 21.50                    | 21.50                    | 24.50                 |
| 802.11ac-VHT40 MCS0       |                  | 167     | 5835            | 22.00                    | 22.00                    | 25.00                 |
|                           |                  | 175     | 5875            | 22.00                    | 22.00                    | 25.00                 |
| 802.11ac-VHT80 MCS0       |                  | 171     | 5855            | 20.50                    | 20.50                    | 23.50                 |
| 802.11ac-VHT160 MCS0      |                  | 163     | 5815            | 20.50                    | 20.50                    | 23.50                 |
| 802.11ax-HE20 MCS0        |                  | 169     | 5845            | 22.00                    | 22.00                    | 25.00                 |
|                           |                  | 173     | 5865            | 22.00                    | 22.00                    | 25.00                 |
|                           |                  | 177     | 5885            | 22.00                    | 22.00                    | 25.00                 |
| 802.11ax-HE40 MCS0        |                  | 167     | 5835            | 22.00                    | 22.00                    | 25.00                 |
|                           |                  | 175     | 5875            | 22.00                    | 22.00                    | 25.00                 |
| 802.11ax-HE80 MCS0        |                  | 171     | 5855            | 20.50                    | 20.50                    | 23.50                 |
| 802.11ax-HE160 MCS0       |                  | 163     | 5815            | 20.50                    | 20.50                    | 23.50                 |



<6GHz WLAN>

| Burst Average Power (dBm) |                     |                 |                          |                          |                       |       |
|---------------------------|---------------------|-----------------|--------------------------|--------------------------|-----------------------|-------|
| Transmit Antenna          |                     |                 |                          | MIMO                     |                       |       |
| Mode                      | Channel             | Frequency (MHz) | Ant 4+8(4) Tune-Up Limit | Ant 4+8(8) Tune-Up Limit | Ant 4+8 Tune-Up Limit |       |
| WiFi 6 GHz                | 802.11a 6Mbps       | 1               | 5955                     | 7.00                     | 7.00                  | 10.00 |
|                           |                     | 57              | 6235                     | 7.00                     | 7.00                  | 10.00 |
|                           |                     | 113             | 6515                     | 7.00                     | 7.00                  | 10.00 |
|                           |                     | 173             | 6815                     | 8.50                     | 8.50                  | 11.50 |
|                           | 802.11ax-HE20 MCS0  | 1               | 5955                     | 7.00                     | 7.00                  | 10.00 |
|                           |                     | 57              | 6235                     | 7.00                     | 7.00                  | 10.00 |
|                           |                     | 113             | 6515                     | 7.00                     | 7.00                  | 10.00 |
|                           |                     | 173             | 6815                     | 8.50                     | 8.50                  | 11.50 |
|                           | 802.11ax-HE40 MCS0  | 3               | 5965                     | 11.00                    | 11.00                 | 14.00 |
|                           |                     | 59              | 6245                     | 11.00                    | 11.00                 | 14.00 |
|                           |                     | 107             | 6485                     | 11.00                    | 11.00                 | 14.00 |
|                           |                     | 171             | 6805                     | 11.00                    | 11.00                 | 14.00 |
|                           |                     | 227             | 7085                     | 11.00                    | 11.00                 | 14.00 |
|                           | 802.11ax-HE80 MCS0  | 7               | 5985                     | 13.00                    | 13.00                 | 16.00 |
|                           |                     | 71              | 6305                     | 13.00                    | 13.00                 | 16.00 |
|                           |                     | 119             | 6545                     | 13.00                    | 13.00                 | 16.00 |
|                           |                     | 167             | 6785                     | 14.00                    | 14.00                 | 17.00 |
|                           |                     | 215             | 7025                     | 13.00                    | 13.00                 | 16.00 |
|                           | 802.11ax-HE160 MCS0 | 15              | 6025                     | 16.00                    | 16.00                 | 19.00 |
|                           |                     | 47              | 6185                     | 16.00                    | 16.00                 | 19.00 |
| 111                       |                     | 6505            | 16.00                    | 16.00                    | 19.00                 |       |
| 175                       |                     | 6825            | 17.00                    | 17.00                    | 20.00                 |       |
| 207                       |                     | 6985            | 17.00                    | 17.00                    | 20.00                 |       |

<Bluetooth Maximum Power>

| Mode          | Burst Average Power (dBm) |       |       |       |       |
|---------------|---------------------------|-------|-------|-------|-------|
|               | Ant 4                     |       |       | Ant 4 |       |
|               | BR / EDR                  |       |       | LE    |       |
|               | 1Mbps                     | 2Mbps | 3Mbps | 1Mbps | 2Mbps |
| Tune-up Limit | 20.5                      | 18.5  | 18.5  | 20.5  | 20.5  |

| Mode          | Burst Average Power (dBm) |       |       |       |       |
|---------------|---------------------------|-------|-------|-------|-------|
|               | Ant 3                     |       |       | Ant 3 |       |
|               | BR / EDR                  |       |       | LE    |       |
|               | 1Mbps                     | 2Mbps | 3Mbps | 1Mbps | 2Mbps |
| Tune-up Limit | 20.5                      | 18.5  | 18.5  | 20.5  | 20.5  |

| Mode          | BR / EDR | Burst Average Power (dBm) |            |         |            |            |         |            |            |         |
|---------------|----------|---------------------------|------------|---------|------------|------------|---------|------------|------------|---------|
|               |          | 1Mbps                     |            |         | 2Mbps      |            |         | 3Mbps      |            |         |
|               |          | Ant 4+3(4)                | Ant 4+3(3) | Ant 4+3 | Ant 4+3(4) | Ant 4+3(3) | Ant 4+3 | Ant 4+3(4) | Ant 4+3(3) | Ant 4+3 |
| Tune-up Limit |          | 17.5                      | 17.5       | 20.5    | 15.5       | 15.5       | 18.5    | 15.5       | 15.5       | 18.5    |

| Mode          | LE | Burst Average Power (dBm) |            |         |            |            |         |
|---------------|----|---------------------------|------------|---------|------------|------------|---------|
|               |    | 1Mbps                     |            |         | 2Mbps      |            |         |
|               |    | Ant 4+3(4)                | Ant 4+3(3) | Ant 4+3 | Ant 4+3(4) | Ant 4+3(3) | Ant 4+3 |
| Tune-up Limit |    | 17.5                      | 17.5       | 20.5    | 15.5       | 15.5       | 18.5    |



**<UWB Maximum Power>**

|                          |                             |       |              |              |
|--------------------------|-----------------------------|-------|--------------|--------------|
| UWB                      | Maximum Average Power (dBm) |       |              |              |
|                          | Ant 1                       | Ant 2 | Ant 3 (CH05) | Ant 3 (CH09) |
|                          | -14                         | -9.0  | -15.6        | -13.15       |
|                          | Antenna Gain (dBi)          |       |              |              |
|                          | Ant 1                       | Ant 2 | Ant 3 (CH05) | Ant 3 (CH09) |
|                          | 0                           | -5    | 1.6          | -0.85        |
| Maximum EIRP Power (dBm) |                             |       |              |              |
| 14                       |                             |       |              |              |

**3. RF Exposure Limit Introduction**

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

| Frequency range (MHz)                                          | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm <sup>2</sup> ) | Averaging time (minutes) |
|----------------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| <b>(A) Limits for Occupational/Controlled Exposures</b>        |                               |                               |                                     |                          |
| 0.3-3.0                                                        | 614                           | 1.63                          | *(100)                              | 6                        |
| 3.0-30                                                         | 1842/f                        | 4.89/f                        | *(900/f <sup>2</sup> )              | 6                        |
| 30-300                                                         | 61.4                          | 0.163                         | 1.0                                 | 6                        |
| 300-1500                                                       |                               |                               | f/300                               | 6                        |
| 1500-100,000                                                   |                               |                               | 5                                   | 6                        |
| <b>(B) Limits for General Population/Uncontrolled Exposure</b> |                               |                               |                                     |                          |
| 0.3-1.34                                                       | 614                           | 1.63                          | *(100)                              | 30                       |
| 1.34-30                                                        | 824/f                         | 2.19/f                        | *(180/f <sup>2</sup> )              | 30                       |
| 30-300                                                         | 27.5                          | 0.073                         | 0.2                                 | 30                       |
| 300-1500                                                       |                               |                               | f/1500                              | 30                       |
| 1500-100,000                                                   |                               |                               | 1.0                                 | 30                       |

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

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

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna



## 4. Radio Frequency Radiation Exposure Evaluation

### 4.1. Power Density Calculation

#### TX0

| Band                 | Antenna | Antenna Gain (dBi) | Maximum Power (dBm) | Maximum EIRP (dBm) | Maximum EIRP (W) | Average EIRP (mW) | Power Density at 20cm (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) | Power Density / Limit |
|----------------------|---------|--------------------|---------------------|--------------------|------------------|-------------------|---------------------------------------------|-----------------------------|-----------------------|
| GSM850 GSM/GPRS 1TX  | 0       | -2.30              | 33.50               | 31.2               | 1.32             | 165.96            | 0.033                                       | 0.549                       | 0.060                 |
| GSM850 GPRS 2TX      | 0       | -2.30              | 32.50               | 30.2               | 1.05             | 261.78            | 0.052                                       | 0.549                       | 0.095                 |
| GSM850 GPRS 3TX      | 0       | -2.30              | 31.50               | 29.2               | 0.83             | 311.89            | 0.062                                       | 0.549                       | 0.113                 |
| GSM850 GPRS 4TX      | 0       | -2.30              | 30.50               | 28.2               | 0.66             | 331.13            | 0.066                                       | 0.549                       | 0.120                 |
| GSM850 EDGE 1TX      | 0       | -2.30              | 28.00               | 25.7               | 0.37             | 46.77             | 0.009                                       | 0.549                       | 0.017                 |
| GSM850 EDGE 2TX      | 0       | -2.30              | 27.50               | 25.2               | 0.33             | 82.78             | 0.016                                       | 0.549                       | 0.030                 |
| GSM850 EDGE 3TX      | 0       | -2.30              | 27.50               | 25.2               | 0.33             | 124.17            | 0.025                                       | 0.549                       | 0.045                 |
| GSM850 EDGE 4TX      | 0       | -2.30              | 25.50               | 23.2               | 0.21             | 104.46            | 0.021                                       | 0.549                       | 0.038                 |
| GSM1900 GSM/GPRS 1TX | 2       | 1.50               | 31.00               | 32.5               | 1.78             | 223.87            | 0.045                                       | 1.000                       | 0.045                 |
| GSM1900 GPRS 2TX     | 2       | 1.50               | 29.50               | 31.0               | 1.26             | 314.73            | 0.063                                       | 1.000                       | 0.063                 |
| GSM1900 GPRS 3TX     | 2       | 1.50               | 29.00               | 30.5               | 1.12             | 420.73            | 0.084                                       | 1.000                       | 0.084                 |
| GSM1900 GPRS 4TX     | 2       | 1.50               | 28.00               | 29.5               | 0.89             | 446.68            | 0.089                                       | 1.000                       | 0.089                 |
| GSM1900 EDGE 1TX     | 2       | 1.50               | 26.00               | 27.5               | 0.56             | 70.79             | 0.014                                       | 1.000                       | 0.014                 |
| GSM1900 EDGE 2TX     | 2       | 1.50               | 25.00               | 26.5               | 0.45             | 111.67            | 0.022                                       | 1.000                       | 0.022                 |
| GSM1900 EDGE 3TX     | 2       | 1.50               | 25.00               | 26.5               | 0.45             | 167.51            | 0.033                                       | 1.000                       | 0.033                 |
| GSM1900 EDGE 4TX     | 2       | 1.50               | 24.00               | 25.5               | 0.35             | 177.41            | 0.035                                       | 1.000                       | 0.035                 |
| WCDMA B2             | 2       | 1.50               | 25.50               | 27.0               | 0.50             | 501.19            | 0.100                                       | 1.000                       | 0.100                 |
| WCDMA B4             | 2       | -1.20              | 25.50               | 24.3               | 0.27             | 269.15            | 0.054                                       | 1.000                       | 0.054                 |
| WCDMA B5             | 0       | -2.30              | 25.50               | 23.2               | 0.21             | 208.93            | 0.042                                       | 0.549                       | 0.076                 |
| LTE B7               | 2       | -0.80              | 25.50               | 24.7               | 0.30             | 295.12            | 0.059                                       | 1.000                       | 0.059                 |
| LTE B12/B17          | 0       | -2.80              | 25.50               | 22.7               | 0.19             | 186.21            | 0.037                                       | 0.466                       | 0.080                 |
| LTE B13              | 0       | -2.40              | 25.50               | 23.1               | 0.20             | 204.17            | 0.041                                       | 0.518                       | 0.078                 |
| LTE B14              | 0       | -2.20              | 25.50               | 23.3               | 0.21             | 213.80            | 0.043                                       | 0.525                       | 0.081                 |
| LTE B25/B2           | 2       | 1.50               | 25.50               | 27.0               | 0.50             | 501.19            | 0.100                                       | 1.000                       | 0.100                 |
| LTE B26/B5           | 0       | -2.30              | 25.50               | 23.2               | 0.21             | 208.93            | 0.042                                       | 0.543                       | 0.077                 |
| LTE B30              | 2       | 1.10               | 22.90               | 24.0               | 0.25             | 251.19            | 0.050                                       | 1.000                       | 0.050                 |
| LTE-B38 PC3          | 2       | -0.80              | 25.50               | 24.7               | 0.30             | 295.12            | 0.059                                       | 1.000                       | 0.059                 |
| LTE-B38 PC2          | 2       | -0.80              | 26.90               | 26.1               | 0.41             | 407.38            | 0.081                                       | 1.000                       | 0.081                 |
| LTE B41 PC3          | 2       | -0.80              | 25.50               | 24.7               | 0.30             | 295.12            | 0.059                                       | 1.000                       | 0.059                 |
| LTE B41 PC2          | 2       | -0.80              | 27.50               | 26.7               | 0.47             | 467.74            | 0.093                                       | 1.000                       | 0.093                 |
| LTE B48 PC3          | 6       | -1.70              | 24.70               | 23.0               | 0.20             | 199.53            | 0.040                                       | 1.000                       | 0.040                 |
| LTE B66/B4           | 2       | -1.20              | 25.50               | 24.3               | 0.27             | 269.15            | 0.054                                       | 1.000                       | 0.054                 |
| LTE B71              | 0       | -5.30              | 25.50               | 20.2               | 0.10             | 104.71            | 0.021                                       | 0.442                       | 0.047                 |
| FR1 n5               | 0       | -2.30              | 25.50               | 23.2               | 0.21             | 208.93            | 0.042                                       | 0.549                       | 0.076                 |
| FR1 n7               | 2       | -0.80              | 25.50               | 24.7               | 0.30             | 295.12            | 0.059                                       | 1.000                       | 0.059                 |
| FR1 n12              | 0       | -2.80              | 25.50               | 22.7               | 0.19             | 186.21            | 0.037                                       | 0.466                       | 0.080                 |
| FR1 n14              | 0       | -2.20              | 25.50               | 23.3               | 0.21             | 213.80            | 0.043                                       | 0.525                       | 0.081                 |
| FR1 n25/n2           | 2       | 1.50               | 25.50               | 27.0               | 0.50             | 501.19            | 0.100                                       | 1.000                       | 0.100                 |
| FR1 n30              | 2       | 1.10               | 22.90               | 24.0               | 0.25             | 251.19            | 0.050                                       | 1.000                       | 0.050                 |
| FR1 n38 PC3          | 2       | -0.80              | 25.50               | 24.7               | 0.30             | 295.12            | 0.059                                       | 1.000                       | 0.059                 |
| FR1 n41 PC3          | 2       | -0.80              | 25.50               | 24.7               | 0.30             | 295.12            | 0.059                                       | 1.000                       | 0.059                 |
| FR1 n41 PC2          | 2       | -0.80              | 27.50               | 26.7               | 0.47             | 467.74            | 0.093                                       | 1.000                       | 0.093                 |
| FR1 n41 PC1.5 MIMO   | 2       | -0.80              | 26.50               | 25.7               | 0.37             | 371.54            | 0.074                                       | 1.000                       | 0.074                 |
| FR1 n48 PC3          | 6       | -1.70              | 24.70               | 23.0               | 0.20             | 199.53            | 0.040                                       | 1.000                       | 0.040                 |
| FR1 n66              | 2       | -0.50              | 25.50               | 25.0               | 0.32             | 316.23            | 0.063                                       | 1.000                       | 0.063                 |
| FR1 n71              | 0       | -5.30              | 25.50               | 20.2               | 0.10             | 104.71            | 0.021                                       | 0.442                       | 0.047                 |
| FR1 n77 PC3          | 6       | -1.70              | 24.10               | 22.4               | 0.17             | 173.78            | 0.035                                       | 1.000                       | 0.035                 |





|                        |   |       |       |      |      |        |       |       |       |
|------------------------|---|-------|-------|------|------|--------|-------|-------|-------|
| FR1 n77 PC2            | 6 | -1.70 | 27.10 | 25.4 | 0.35 | 346.74 | 0.069 | 1.000 | 0.069 |
| LTE B2 Sub             | 1 | -8.30 | 25.50 | 17.2 | 0.05 | 52.48  | 0.010 | 1.000 | 0.010 |
| LTE B66/B4 Sub         | 1 | -4.60 | 25.50 | 20.9 | 0.12 | 123.03 | 0.024 | 1.000 | 0.024 |
| FR1 n2 Sub             | 1 | -8.30 | 25.50 | 17.2 | 0.05 | 52.48  | 0.010 | 1.000 | 0.010 |
| FR1 n38 PC3 Sub        | 1 | -1.70 | 25.50 | 23.8 | 0.24 | 239.88 | 0.048 | 1.000 | 0.048 |
| FR1 n41 PC3 Sub        | 1 | -1.70 | 25.50 | 23.8 | 0.24 | 239.88 | 0.048 | 1.000 | 0.048 |
| FR1 n41 PC2 Sub        | 1 | -0.17 | 27.50 | 27.3 | 0.54 | 540.75 | 0.108 | 1.000 | 0.108 |
| FR1 n41 PC1.5 Sub MIMO | 1 | -1.70 | 26.50 | 24.8 | 0.30 | 302.00 | 0.060 | 1.000 | 0.060 |
| FR1 n48 PC3 Sub MIMO   | 1 | -4.20 | 21.10 | 16.9 | 0.05 | 48.98  | 0.010 | 1.000 | 0.010 |
| FR1 n66 Sub            | 1 | -4.60 | 25.50 | 20.9 | 0.12 | 123.03 | 0.024 | 1.000 | 0.024 |
| FR1 n77 PC3 Sub        | 1 | -5.50 | 25.50 | 20.0 | 0.10 | 100.00 | 0.020 | 1.000 | 0.020 |

**TX1**

| Band                 | Antenna | Antenna Gain (dBi) | Maximum Power (dBm) | Maximum EIRP (dBm) | Maximum EIRP (W) | Average EIRP (mW) | Power Density at 20cm (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) | Power Density / Limit |
|----------------------|---------|--------------------|---------------------|--------------------|------------------|-------------------|---------------------------------------------|-----------------------------|-----------------------|
| GSM850 GSM/GPRS 1TX  | 1       | -4.60              | 33.50               | 28.9               | 0.78             | 97.72             | 0.019                                       | 0.549                       | 0.035                 |
| GSM850 GPRS 2TX      | 1       | -4.60              | 32.50               | 27.9               | 0.62             | 154.15            | 0.031                                       | 0.549                       | 0.056                 |
| GSM850 GPRS 3TX      | 1       | -4.60              | 31.50               | 26.9               | 0.49             | 183.65            | 0.037                                       | 0.549                       | 0.067                 |
| GSM850 GPRS 4TX      | 1       | -4.60              | 30.50               | 25.9               | 0.39             | 194.98            | 0.039                                       | 0.549                       | 0.071                 |
| GSM850 EDGE 1TX      | 1       | -4.60              | 28.00               | 23.4               | 0.22             | 27.54             | 0.005                                       | 0.549                       | 0.010                 |
| GSM850 EDGE 2TX      | 1       | -4.60              | 27.50               | 22.9               | 0.19             | 48.75             | 0.010                                       | 0.549                       | 0.018                 |
| GSM850 EDGE 3TX      | 1       | -4.60              | 27.50               | 22.9               | 0.19             | 73.12             | 0.015                                       | 0.549                       | 0.026                 |
| GSM850 EDGE 4TX      | 1       | -4.60              | 25.50               | 20.9               | 0.12             | 61.51             | 0.012                                       | 0.549                       | 0.022                 |
| GSM1900 GSM/GPRS 1TX | 0       | 1.40               | 30.80               | 32.2               | 1.66             | 208.93            | 0.042                                       | 1.000                       | 0.042                 |
| GSM1900 GPRS 2TX     | 0       | 1.40               | 29.30               | 30.7               | 1.17             | 293.72            | 0.058                                       | 1.000                       | 0.058                 |
| GSM1900 GPRS 3TX     | 0       | 1.40               | 28.80               | 30.2               | 1.05             | 392.64            | 0.078                                       | 1.000                       | 0.078                 |
| GSM1900 GPRS 4TX     | 0       | 1.40               | 27.80               | 29.2               | 0.83             | 416.87            | 0.083                                       | 1.000                       | 0.083                 |
| GSM1900 EDGE 1TX     | 0       | 1.40               | 25.80               | 27.2               | 0.52             | 66.07             | 0.013                                       | 1.000                       | 0.013                 |
| GSM1900 EDGE 2TX     | 0       | 1.40               | 24.80               | 26.2               | 0.42             | 104.22            | 0.021                                       | 1.000                       | 0.021                 |
| GSM1900 EDGE 3TX     | 0       | 1.40               | 24.80               | 26.2               | 0.42             | 156.33            | 0.031                                       | 1.000                       | 0.031                 |
| GSM1900 EDGE 4TX     | 0       | 1.40               | 23.80               | 25.2               | 0.33             | 165.57            | 0.033                                       | 1.000                       | 0.033                 |
| WCDMA B2             | 0       | 1.40               | 25.30               | 26.7               | 0.47             | 467.74            | 0.093                                       | 1.000                       | 0.093                 |
| WCDMA B4             | 0       | 2.60               | 25.30               | 27.9               | 0.62             | 616.60            | 0.123                                       | 1.000                       | 0.123                 |
| WCDMA B5             | 1       | -4.60              | 25.50               | 20.9               | 0.12             | 123.03            | 0.024                                       | 0.549                       | 0.045                 |
| LTE B7               | 0       | 0.70               | 25.10               | 25.8               | 0.38             | 380.19            | 0.076                                       | 1.000                       | 0.076                 |
| LTE B12/B17          | 1       | -5.80              | 25.50               | 19.7               | 0.09             | 93.33             | 0.019                                       | 0.466                       | 0.040                 |
| LTE B13              | 1       | -5.20              | 25.50               | 20.3               | 0.11             | 107.15            | 0.021                                       | 0.518                       | 0.041                 |
| LTE B14              | 1       | -5.40              | 25.50               | 20.1               | 0.10             | 102.33            | 0.020                                       | 0.525                       | 0.039                 |
| LTE B25/B2           | 0       | 1.40               | 25.30               | 26.7               | 0.47             | 467.74            | 0.093                                       | 1.000                       | 0.093                 |
| LTE B26/B5           | 1       | -4.60              | 25.50               | 20.9               | 0.12             | 123.03            | 0.024                                       | 0.543                       | 0.045                 |
| LTE B30              | 0       | 0.90               | 23.10               | 24.0               | 0.25             | 251.19            | 0.050                                       | 1.000                       | 0.050                 |
| LTE-B38 PC3          | 0       | 0.70               | 25.10               | 25.8               | 0.38             | 380.19            | 0.076                                       | 1.000                       | 0.076                 |
| LTE-B38 PC2          | 0       | 0.70               | 26.50               | 27.2               | 0.52             | 524.81            | 0.104                                       | 1.000                       | 0.104                 |
| LTE B41 PC3          | 0       | 0.70               | 25.10               | 25.8               | 0.38             | 380.19            | 0.076                                       | 1.000                       | 0.076                 |
| LTE B41 PC2          | 0       | 0.70               | 27.10               | 27.8               | 0.60             | 602.56            | 0.120                                       | 1.000                       | 0.120                 |
| LTE B48 PC3          | 7       | -1.20              | 24.20               | 23.0               | 0.20             | 199.53            | 0.040                                       | 1.000                       | 0.040                 |
| LTE B66/B4           | 0       | -2.10              | 24.80               | 22.7               | 0.19             | 186.21            | 0.037                                       | 1.000                       | 0.037                 |
| LTE B71              | 1       | -5.30              | 25.50               | 20.2               | 0.10             | 104.71            | 0.021                                       | 0.442                       | 0.047                 |
| FR1 n5               | 1       | -4.60              | 25.50               | 20.9               | 0.12             | 123.03            | 0.024                                       | 0.549                       | 0.045                 |
| FR1 n7               | 0       | 0.70               | 25.10               | 25.8               | 0.38             | 380.19            | 0.076                                       | 1.000                       | 0.076                 |
| FR1 n12              | 1       | -5.80              | 25.50               | 19.7               | 0.09             | 93.33             | 0.019                                       | 0.466                       | 0.040                 |
| FR1 n14              | 1       | -5.40              | 25.50               | 20.1               | 0.10             | 102.33            | 0.020                                       | 0.525                       | 0.039                 |
| FR1 n25/n2           | 0       | 1.40               | 25.30               | 26.7               | 0.47             | 467.74            | 0.093                                       | 1.000                       | 0.093                 |
| FR1 n30              | 0       | 0.90               | 23.10               | 24.0               | 0.25             | 251.19            | 0.050                                       | 1.000                       | 0.050                 |



|                        |   |       |       |      |      |        |       |       |       |
|------------------------|---|-------|-------|------|------|--------|-------|-------|-------|
| FR1 n38 PC3            | 0 | 0.70  | 24.50 | 25.2 | 0.33 | 331.13 | 0.066 | 1.000 | 0.066 |
| FR1 n41 PC3            | 0 | 0.70  | 24.50 | 25.2 | 0.33 | 331.13 | 0.066 | 1.000 | 0.066 |
| FR1 n41 PC2            | 0 | 0.70  | 27.50 | 28.2 | 0.66 | 660.69 | 0.132 | 1.000 | 0.132 |
| FR1 n41 PC1.5 MIMO     | 0 | 0.70  | 26.50 | 27.2 | 0.52 | 524.81 | 0.104 | 1.000 | 0.104 |
| FR1 n48 PC3            | 7 | -1.20 | 24.20 | 23.0 | 0.20 | 199.53 | 0.040 | 1.000 | 0.040 |
| FR1 n66                | 0 | -2.10 | 25.30 | 23.2 | 0.21 | 208.93 | 0.042 | 1.000 | 0.042 |
| FR1 n71                | 1 | -5.30 | 25.50 | 20.2 | 0.10 | 104.71 | 0.021 | 0.442 | 0.047 |
| FR1 n77 PC3            | 7 | -1.20 | 24.00 | 22.8 | 0.19 | 190.55 | 0.038 | 1.000 | 0.038 |
| FR1 n77 PC2            | 7 | -1.20 | 26.50 | 25.3 | 0.34 | 338.84 | 0.067 | 1.000 | 0.067 |
| LTE B2 Sub             | 5 | -3.00 | 25.30 | 22.3 | 0.17 | 169.82 | 0.034 | 1.000 | 0.034 |
| LTE B66/B4 Sub         | 5 | -3.80 | 25.30 | 21.5 | 0.14 | 141.25 | 0.028 | 1.000 | 0.028 |
| FR1 n2 Sub             | 5 | -3.00 | 25.30 | 22.3 | 0.17 | 169.82 | 0.034 | 1.000 | 0.034 |
| FR1 n38 PC3 Sub        | 5 | -3.00 | 24.50 | 21.5 | 0.14 | 141.25 | 0.028 | 1.000 | 0.028 |
| FR1 n41 PC3 Sub        | 5 | -3.00 | 24.50 | 21.5 | 0.14 | 141.25 | 0.028 | 1.000 | 0.028 |
| FR1 n41 PC2 Sub        | 5 | -3.00 | 26.50 | 23.5 | 0.22 | 223.87 | 0.045 | 1.000 | 0.045 |
| FR1 n41 PC1.5 Sub MIMO | 5 | -3.00 | 25.50 | 22.5 | 0.18 | 177.83 | 0.035 | 1.000 | 0.035 |
| FR1 n48 PC3 Sub MIMO   | 5 | -4.00 | 20.40 | 16.4 | 0.04 | 43.65  | 0.009 | 1.000 | 0.009 |
| FR1 n66 Sub            | 5 | -3.80 | 25.30 | 21.5 | 0.14 | 141.25 | 0.028 | 1.000 | 0.028 |
| FR1 n77 PC3 Sub        | 5 | -2.60 | 24.90 | 22.3 | 0.17 | 169.82 | 0.034 | 1.000 | 0.034 |

**WLAN / BT / UWB**

| Band               | Antenna Gain (dBi) | Maximum Power (dBm) | Maximum EIRP (dBm) | Maximum EIRP (W) | Average EIRP (mW) | Power Density at 20cm (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) | Power Density / Limit |
|--------------------|--------------------|---------------------|--------------------|------------------|-------------------|---------------------------------------------|-----------------------------|-----------------------|
| WLAN2.4GHz Band    | -0.4               | 26.0                | 25.6               | 0.36             | 363.08            | 0.072                                       | 1.000                       | 0.072                 |
| WLAN5GHz/6GHz Band | 1.2                | 25.0                | 26.2               | 0.42             | 416.87            | 0.083                                       | 1.000                       | 0.083                 |
| Bluetooth          | -0.4               | 20.5                | 20.1               | 0.10             | 102.33            | 0.020                                       | 1.000                       | 0.020                 |
| UWB                |                    |                     | -14.0              | 0.00004          | 0.0398            | 0.00001                                     | 1.000                       | 0.00001               |



| WWAN Power Density / Limit | 2.4GHz WLAN Power Density / Limit    | 5GHz/6GHz WLAN Power Density / Limit | WPT  | UWB     | $\Sigma$ (Power Density / Limit) |
|----------------------------|--------------------------------------|--------------------------------------|------|---------|----------------------------------|
| 0.132                      | 0.072                                | 0.083                                | 0.01 | 0.00001 | 0.29701                          |
| WWAN Power Density / Limit | 5GHz/6GHz WLAN Power Density / Limit | Bluetooth Power Density / Limit      | WPT  | UWB     | $\Sigma$ (Power Density / Limit) |
| 0.132                      | 0.083                                | 0.020                                | 0.01 | 0.00001 | 0.24501                          |

**Note:**

1. Above power density calculation selected highest output power and antenna from all transmit antenna to be evaluation.
2. In simultaneous transmission for this device, 5G NR including uplink MIMO and LTE transmission are managed and controlled by Samsung S.LSI TAS, while the RF exposure from WLAN,WPT, BT and UWB radios are managed using legacy approach, therefore simultaneous transmission compliance can be assessed on LTE+ WLAN+UWB+WPT+BT or NR+WLAN+UWB+WPT+BT, above power density calculation selected highest power density between LTE and 5G NR for simultaneous transmission analysis with other transmitters.
3. The uplink MIMO only operate in 5G FR1 n41/48/77.
4. WPT ratio is, from Sporton WPT evaluation report (FCC ID: A4RGP4BC, Report No.: FA1O2919-06B),  $0.01 = 0.0159 / 1.63$  for calculation.
5. For colocation analysis, the highest (power density/limit) among all WWAN wireless modes is chosen for summation.
6.  $\Sigma$  (Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission) / (corresponding MPE limit)], for all transmission configuration was consider and list above table.
7. Considering the all the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of collocated transmitters is compliant.

**Conclusion:**

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.