

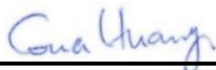
FCC SAR TEST REPORT

FCC ID : 2AJN7-TP00152A
Equipment : Notebook Computer
Brand Name : Lenovo
Model Name : TP00152A, TP00152B
Applicant : LC Future Center Limited Taiwan Branch
7F., No.780, Beian Rd., Zhongshan Dist., Taipei 104, Taiwan
Manufacturer : LCFC (HeFei) Electronics Technology Co., Ltd.
No. 3188-1, Yungu Road (Hefei Export Processing Zone), Hefei
Economics & Technology Development Area, Anhui, CHINA
Standard : FCC 47 CFR Part 2 (2.1093)

Equipment: Quectel RM520N-GL, Intel AX211D2W and Intel BE200D2W tested inside of Lenovo Notebook Computer.

The product was received on Dec. 20, 2023 and testing was started from Dec. 30, 2023 and completed on Jan. 13, 2024. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been pass the FCC requirement.

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



Approved by: Cona Huang / Deputy Manager



Sporton International Inc. Wensan Laboratory



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History of this test report

| Report No. | Version | Description | Issued Date |
|------------|---------|-------------------------|---------------|
| FA3N2403 | 01 | Initial issue of report | Feb. 01, 2024 |
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1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) for LC Future Center Limited Taiwan Branch, Notebook Computer, TP00152A, TP00152B, are as follows.

| Equipment Class | Frequency Band | | Highest SAR Summary | Highest Simultaneous Transmission 1g SAR (W/kg) | |
|------------------|----------------|----------------|------------------------|--|------|
| | | | Body 1g SAR (W/kg) | | |
| Licensed | WCDMA | WCDMA II | 0.52 | 1.20 | |
| | | WCDMA IV | 0.93 | | |
| | | WCDMA V | 0.39 | | |
| | LTE | LTE Band 7 | 1.14 | | |
| | | LTE Band 12/17 | 0.48 | | |
| | | LTE Band 13 | 0.47 | | |
| | | LTE Band 14 | 0.45 | | |
| | | LTE Band 2/25 | 1.10 | | |
| | | LTE Band 5/26 | 0.40 | | |
| | | LTE Band 30 | 1.10 | | |
| | | LTE Band 4/66 | 1.14 | | |
| | | LTE Band 71 | 0.21 | | |
| | | LTE Band 38/41 | 1.09 | | |
| | | LTE Band 42 | 0.98 | | |
| | | LTE Band 43 | 0.92 | | |
| | | LTE Band 48 | 1.09 | | |
| | | FR1 | FR1 n7 | | 1.07 |
| | | | FR1 n12 | | 0.33 |
| | FR1 n13 | | 0.38 | | |
| | FR1 n14 | | 0.35 | | |
| | FR1 n2/n25 | | 1.16 | | |
| | FR1 n5/n26 | | 0.33 | | |
| | FR1 n30 | | 1.20 | | |
| | FR1 n66 | | 1.20 | | |
| | | FR1 n71 | 0.26 | | |
| | | FR1 n38/n41 | 1.11 | | |
| | FR1 n48 | 1.10 | | | |
| | FR1 n77/n78 | 1.13 | | | |
| Date of Testing: | | | 2023/12/30 ~ 2024/1/13 | | |

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation and the FCC designation No. TW3786 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test. This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR) specified in FCC 47 CFR part 2 (2.1093), and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

Reviewed by: Jason Wang
Report Producer: Carlie Tsai

2. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards, the below KDB standard may not including in the TAF code without accreditation.

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 616217 D04 SAR for laptop and tablets v01r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02



3. Equipment Under Test (EUT) Information

3.1 General Information

| Product Feature & Specification | |
|---|---|
| Equipment Name | Notebook Computer |
| Brand Name | Lenovo |
| Model Name | TP00152A, TP00152B |
| FCC ID | 2AJN7-TP00152A |
| Integrated WWAN Module | Brand Name: Quectel Model Name: RM520N-GL |
| Integrated WLAN Module 1 | Brand Name: Intel Model Name: AX211D2W |
| Integrated WLAN Module 2 | Brand Name: Intel Model Name: BE200D2W |
| Integrated NFC Module | Brand Name: Foxconn Model Name: T77H747 |
| Wireless Technology and Frequency Range | WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3450 MHz ~ 3550 MHz LTE Band 43: 3700 MHz ~ 3800 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n12 : 699 MHz ~ 716 MHz 5G NR n13: 777 MHz ~ 787 MHz 5G NR n14 : 788 MHz ~ 798 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n26 : 814 MHz ~ 849 MHz 5G NR n30 : 2305 MHz ~ 2315 MHz 5G NR n38 : 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n48 : 3550 MHz ~ 3700 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n71 : 663 MHz ~ 698 MHz 5G NR n77 : 3700 MHz ~ 3980 MHz, 3450 MHz ~ 3550 MHz 5G NR n78 : 3700 MHz ~ 3800 MHz, 3450 MHz ~ 3550 MHz |
| Mode | RMC 12.2Kbps HSDPA HSUPA DC-HSDPA LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM |
| EUT Stage | Production Unit |
| Remark: | <ol style="list-style-type: none"> This device has two antenna vendors; RF exposure evaluation selects ATC as the main test, ICT will spot check worst case found in ATC. The Intel AX211D2W WLAN/BT module (FCC ID: PD9AX211D2) is integrated into this host. The Intel BE200D2W WLAN/BT module (FCC ID: PD9BE200D2) is also integrated into this host. The FCC ID: MCLT77H747 NFC module is integrated into this host, and NFC transmitters are consider to be operating simultaneously when there is overlapping transmission with the exception of transmission during network hand-offs with maximum hand-off duration less than 30 seconds. |



| WWAN Antenna Information | | | | |
|--------------------------|--------------|-----------------------------|----------------|------|
| Main Antenna | Manufacturer | Amphenol Taiwan Corporation | Peak gain(dBi) | 1.90 |
| | Part number | DC330022430 / DC330022420 | Type | PIFA |
| | Manufacturer | Luxshare-ICT | Peak gain(dBi) | 1.90 |
| | Part number | DC330022530 / DC330022520 | Type | PIFA |
| MIMO2 Antenna | Manufacturer | Amphenol Taiwan Corporation | Peak gain(dBi) | 1.94 |
| | Part number | DC330022430 | Type | PIFA |
| | Manufacturer | Luxshare-ICT | Peak gain(dBi) | 1.94 |
| | Part number | DC330022530 | Type | PIFA |
| Auxiliary Antenna | Manufacturer | Amphenol Taiwan Corporation | Peak gain(dBi) | 0.02 |
| | Part number | DC330022430 / DC330022420 | Type | PIFA |
| | Manufacturer | Luxshare-ICT | Peak gain(dBi) | 0.02 |
| | Part number | DC330022530 / DC330022520 | Type | PIFA |



3.2 General LTE SAR Test and Reporting Considerations

| Summarized necessary items addressed in KDB 941225 D05 v02r05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|------------|---|--------|--------|--------|----------|--|----------|---------|---------|-------|--------|--------|--------|------|-----|-----|-----|------|------|------|-----|--------|-----|-----|-----|------|------|------|-----|--------|-----|-----|-----|------|------|------|-----|--------|-----|-----|-----|------|------|------|-----|--------|-----|-----|-----|------|------|------|-----|---------|-----|--|--|--|--|--|-----|
| FCC ID | 2AJN7-TP00152A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment Name | Notebook Computer | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operating Frequency Range of each LTE transmission band | LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3450 MHz ~ 3550 MHz LTE Band 43: 3700 MHz ~ 3800 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Bandwidth | LTE Band 2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 14: 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 25: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 26: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 30: 5MHz, 10MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 42: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 43: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 48: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 71: 5MHz, 10MHz, 15MHz, 20MHz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| uplink modulations used | QPSK / 16QAM / 64QAM / 256QAM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LTE Voice / Data requirements | Data only | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LTE MPR permanently built-in by design | <p>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 3</td> </tr> <tr> <td>256 QAM</td> <td colspan="6">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table> | Modulation | Channel bandwidth / Transmission bandwidth (N _{RB}) | | | | | | MPR (dB) | 1.4 MHz | 3.0 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz | QPSK | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 1 | 16 QAM | ≤ 5 | ≤ 4 | ≤ 8 | ≤ 12 | ≤ 16 | ≤ 18 | ≤ 1 | 16 QAM | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 2 | 64 QAM | ≤ 5 | ≤ 4 | ≤ 8 | ≤ 12 | ≤ 16 | ≤ 18 | ≤ 2 | 64 QAM | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 3 | 256 QAM | ≥ 1 | | | | | | ≤ 5 |
| Modulation | Channel bandwidth / Transmission bandwidth (N _{RB}) | | | | | | MPR (dB) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1.4 MHz | 3.0 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| QPSK | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 QAM | ≤ 5 | ≤ 4 | ≤ 8 | ≤ 12 | ≤ 16 | ≤ 18 | ≤ 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 QAM | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 64 QAM | ≤ 5 | ≤ 4 | ≤ 8 | ≤ 12 | ≤ 16 | ≤ 18 | ≤ 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 64 QAM | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 256 QAM | ≥ 1 | | | | | | ≤ 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LTE A-MPR | In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Spectrum plots for RB configuration | A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Power reduction applied to satisfy SAR compliance | Yes, Proximity and G-Sensor. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LTE Carrier Aggregation Combinations | Inter-Band and Intra-Band possible combinations and the detail power measurement please referred to section 12. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LTE Carrier Aggregation Additional Information | This device supports maximum of 5 carriers in the downlink and 2 carriers in the uplink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



| Transmission (H, M, L) channel numbers and frequencies in each LTE band | | | | | | | | | | | | | | | | |
|---|-------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|------------------|--|-------------|--|
| LTE Band 2 | | | | | | | | | | | | | | | | |
| | Bandwidth 1.4 MHz | | Bandwidth 3 MHz | | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | | | | | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | | | | |
| L | 18607 | 1850.7 | 18615 | 1851.5 | 18625 | 1852.5 | 18650 | 1855 | 18675 | 1857.5 | 18700 | 1860 | | | | |
| M | 18900 | 1880 | 18900 | 1880 | 18900 | 1880 | 18900 | 1880 | 18900 | 1880 | 18900 | 1880 | | | | |
| H | 19193 | 1909.3 | 19185 | 1908.5 | 19175 | 1907.5 | 19150 | 1905 | 19125 | 1902.5 | 19100 | 1900 | | | | |
| LTE Band 4 | | | | | | | | | | | | | | | | |
| | Bandwidth 1.4 MHz | | Bandwidth 3 MHz | | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | | | | | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | | | | |
| L | 19957 | 1710.7 | 19965 | 1711.5 | 19975 | 1712.5 | 20000 | 1715 | 20025 | 1717.5 | 20050 | 1720 | | | | |
| M | 20175 | 1732.5 | 20175 | 1732.5 | 20175 | 1732.5 | 20175 | 1732.5 | 20175 | 1732.5 | 20175 | 1732.5 | | | | |
| H | 20393 | 1754.3 | 20385 | 1753.5 | 20375 | 1752.5 | 20350 | 1750 | 20325 | 1747.5 | 20300 | 1745 | | | | |
| LTE Band 5 | | | | | | | | | | | | | | | | |
| | Bandwidth 1.4 MHz | | Bandwidth 3 MHz | | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | | | | | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | | | | |
| L | 20407 | 824.7 | 20415 | 825.5 | 20425 | 826.5 | 20450 | 829 | 20450 | 829 | 20450 | 829 | | | | |
| M | 20525 | 836.5 | 20525 | 836.5 | 20525 | 836.5 | 20525 | 836.5 | 20525 | 836.5 | 20525 | 836.5 | | | | |
| H | 20643 | 848.3 | 20635 | 847.5 | 20625 | 846.5 | 20600 | 844 | 20600 | 844 | 20600 | 844 | | | | |
| LTE Band 7 | | | | | | | | | | | | | | | | |
| | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | | | | | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | | | | |
| L | 20775 | 2502.5 | 20800 | 2505 | 20825 | 2507.5 | 20850 | 2510 | 20850 | 2510 | 20850 | 2510 | | | | |
| M | 21100 | 2535 | 21100 | 2535 | 21100 | 2535 | 21100 | 2535 | 21100 | 2535 | 21100 | 2535 | | | | |
| H | 21425 | 2567.5 | 21400 | 2565 | 21375 | 2562.5 | 21350 | 2560 | 21350 | 2560 | 21350 | 2560 | | | | |
| LTE Band 12 | | | | | | | | | | | | | | | | |
| | Bandwidth 1.4 MHz | | Bandwidth 3 MHz | | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | | | | | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | | | | |
| L | 23017 | 699.7 | 23025 | 700.5 | 23035 | 701.5 | 23060 | 704 | 23060 | 704 | 23060 | 704 | | | | |
| M | 23095 | 707.5 | 23095 | 707.5 | 23095 | 707.5 | 23095 | 707.5 | 23095 | 707.5 | 23095 | 707.5 | | | | |
| H | 23173 | 715.3 | 23165 | 714.5 | 23155 | 713.5 | 23130 | 711 | 23130 | 711 | 23130 | 711 | | | | |
| LTE Band 13 | | | | | | | | | | | | | | | | |
| | Bandwidth 5 MHz | | | | Bandwidth 10 MHz | | | | Bandwidth 15 MHz | | | | Bandwidth 20 MHz | | | |
| | Channel # | | Freq.(MHz) | | Channel # | | Freq.(MHz) | | Channel # | | Freq.(MHz) | | Channel # | | Freq.(MHz) | |
| L | 23205 | | 779.5 | | 23230 | | 782 | | 23255 | | 784.5 | | 23280 | | 787 | |
| M | 23230 | | 782 | | 23255 | | 784.5 | | 23280 | | 787 | | 23305 | | 789.5 | |
| H | 23255 | | 784.5 | | 23280 | | 787 | | 23305 | | 789.5 | | 23330 | | 792 | |
| LTE Band 14 | | | | | | | | | | | | | | | | |
| | Bandwidth 5 MHz | | | | Bandwidth 10 MHz | | | | Bandwidth 15 MHz | | | | Bandwidth 20 MHz | | | |
| | Channel # | | Channel # | | Channel # | | Freq.(MHz) | | Channel # | | Freq.(MHz) | | Channel # | | Freq.(MHz) | |
| L | 23305 | | 790.5 | | 23330 | | 793 | | 23355 | | 795.5 | | 23380 | | 798 | |
| M | 23330 | | 793 | | 23355 | | 795.5 | | 23380 | | 798 | | 23405 | | 800.5 | |
| H | 23355 | | 795.5 | | 23380 | | 798 | | 23405 | | 800.5 | | 23430 | | 803 | |
| LTE Band 17 | | | | | | | | | | | | | | | | |
| | Bandwidth 5 MHz | | | | Bandwidth 10 MHz | | | | Bandwidth 15 MHz | | | | Bandwidth 20 MHz | | | |
| | Channel # | | Freq.(MHz) | | Channel # | | Freq. (MHz) | | Channel # | | Freq. (MHz) | | Channel # | | Freq. (MHz) | |
| L | 23755 | | 706.5 | | 23780 | | 709 | | 23805 | | 711.5 | | 23830 | | 714 | |
| M | 23790 | | 710 | | 23815 | | 713 | | 23840 | | 716 | | 23865 | | 719 | |
| H | 23825 | | 713.5 | | 23850 | | 716.5 | | 23875 | | 719.5 | | 23900 | | 722 | |



| LTE Band 25 | | | | | | | | | | | | |
|-------------|-------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|
| | Bandwidth 1.4 MHz | | Bandwidth 3 MHz | | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 26047 | 1850.7 | 26055 | 1851.5 | 26065 | 1852.5 | 26090 | 1855 | 26115 | 1857.5 | 26140 | 1860 |
| M | 26340 | 1880 | 26340 | 1880 | 26340 | 1880 | 26340 | 1880 | 26340 | 1880 | 26340 | 1880 |
| H | 26683 | 1914.3 | 26675 | 1913.5 | 26665 | 1912.5 | 26640 | 1910 | 26615 | 1907.5 | 26590 | 1905 |
| LTE Band 26 | | | | | | | | | | | | |
| | Bandwidth 1.4 MHz | | Bandwidth 3 MHz | | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 26697 | 814.7 | 26705 | 815.5 | 26715 | 816.5 | 26740 | 819 | 26765 | 821.5 | | |
| M | 26865 | 831.5 | 26865 | 831.5 | 26865 | 831.5 | 26865 | 831.5 | 26865 | 831.5 | 26865 | 831.5 |
| H | 27033 | 848.3 | 27025 | 847.5 | 27015 | 846.5 | 26990 | 844 | 26965 | 841.5 | | |
| LTE Band 30 | | | | | | | | | | | | |
| | Bandwidth 5 MHz | | | | Bandwidth 10 MHz | | | | | | | |
| | Channel # | | Freq.(MHz) | | Channel # | | Freq.(MHz) | | | | | |
| L | 27685 | | 2307.5 | | 27710 | | 2310 | | | | | |
| M | 27710 | | 2310 | | | | | | | | | |
| H | 27735 | | 2312.5 | | | | | | | | | |
| LTE Band 38 | | | | | | | | | | | | |
| | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | | | | | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 37775 | 2572.5 | 37800 | 2575 | 37825 | 2577.5 | 37850 | 2580 | | | | |
| M | 38000 | 2595 | 38000 | 2595 | 38000 | 2595 | 38000 | 2595 | | | | |
| H | 38225 | 2617.5 | 38200 | 2615 | 38175 | 2612.5 | 38150 | 2610 | | | | |
| LTE Band 41 | | | | | | | | | | | | |
| | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | | | | | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 39675 | 2498.5 | 39700 | 2501 | 39725 | 2503.5 | 39750 | 2506 | | | | |
| L | 40148 | 2545.8 | 40160 | 2547 | 40173 | 2548.3 | 40185 | 2549.5 | | | | |
| M | 40620 | 2593 | 40620 | 2593 | 40620 | 2593 | 40620 | 2593 | | | | |
| H | 41093 | 2640.3 | 41080 | 2639 | 41068 | 2637.8 | 41055 | 2636.5 | | | | |
| H | 41565 | 2687.5 | 41540 | 2685 | 41515 | 2682.5 | 41490 | 2680 | | | | |
| LTE Band 42 | | | | | | | | | | | | |
| | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | | | | | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 42115 | 3452.5 | 42140 | 3455 | 42165 | 3457.5 | 42190 | 3460 | | | | |
| M | 42590 | 3500 | 42590 | 3500 | 42590 | 3500 | 42590 | 3500 | | | | |
| H | 43065 | 3457.5 | 43040 | 3545 | 43015 | 3542.5 | 42990 | 3540 | | | | |
| LTE Band 43 | | | | | | | | | | | | |
| | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | | | | | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 44615 | 3702.5 | 44640 | 3705 | 44665 | 3707.5 | 44690 | 3710 | | | | |
| M | 45090 | 3750 | 45090 | 3750 | 45090 | 3750 | 45090 | 3750 | | | | |
| H | 45565 | 3797.5 | 45540 | 3795 | 45515 | 3792.5 | 45490 | 3790 | | | | |



| LTE Band 48 | | | | | | | | | | | | |
|-------------|-------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|
| | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | | | | | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 55265 | 3552.5 | 55290 | 3555 | 55315 | 3557.5 | 55340 | 3560 | | | | |
| L | 55810 | 3607 | 55815 | 3607.5 | 55820 | 3608 | 55830 | 3609 | | | | |
| M | 56170 | 3643 | 56165 | 3642.5 | 56160 | 3642 | 56150 | 3641 | | | | |
| H | 56715 | 3697.5 | 56690 | 3695 | 56665 | 3692.5 | 56640 | 3690 | | | | |
| LTE Band 66 | | | | | | | | | | | | |
| | Bandwidth 1.4 MHz | | Bandwidth 3 MHz | | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 131979 | 1710.7 | 131987 | 1711.5 | 131997 | 1712.5 | 132022 | 1715 | 132047 | 1717.5 | 132072 | 1720 |
| M | 132322 | 1745 | 132322 | 1745 | 132322 | 1745 | 132322 | 1745 | 132322 | 1745 | 132322 | 1745 |
| H | 132665 | 1779.3 | 132657 | 1778.5 | 132647 | 1777.5 | 132622 | 1775 | 132597 | 1772.5 | 132572 | 1770 |
| LTE Band 71 | | | | | | | | | | | | |
| | Bandwidth 5 MHz | | Bandwidth 10 MHz | | Bandwidth 15 MHz | | Bandwidth 20 MHz | | | | | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 133147 | 665.5 | 133172 | 668 | 133197 | 670.5 | 133222 | 673 | | | | |
| M | 133297 | 680.5 | 133297 | 680.5 | 133297 | 680.5 | 133297 | 680.5 | | | | |
| H | 133447 | 695.5 | 133422 | 693 | 133397 | 690.5 | 133372 | 688 | | | | |



3.3 General 5G NR SAR Test and Reporting Considerations

| 5G NR Information | |
|---|---|
| FCC ID | 2AJN7-TP00152A |
| Equipment Name | Notebook Computer |
| Operating Frequency Range of each 5G NR transmission band | 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n12 : 699 MHz ~ 716 MHz 5G NR n13: 777 MHz ~ 787 MHz 5G NR n14 : 788 MHz ~ 798 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n26 : 814 MHz ~ 849 MHz 5G NR n30 : 2305 MHz ~ 2315 MHz 5G NR n38 : 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n48 : 3550 MHz ~ 3700 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n71 : 663 MHz ~ 698 MHz 5G NR n77 : 3700 MHz ~ 3980 MHz, 3450 MHz ~ 3550 MHz 5G NR n78 : 3700 MHz ~ 3800 MHz, 3450 MHz ~ 3550 MHz |
| Channel Bandwidth | 5G NR n2: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n5: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n7: 5MHz, 10MHz, 15MHz, 20MHz, 25 MHz, 30MHz, 40MHz 5G NR n12: 5MHz, 10MHz, 15MHz 5G NR n13: 5MHz, 10MHz 5G NR n14: 5MHz, 10MHz 5G NR n25: 5MHz, 10MHz, 15MHz, 20MHz, 25 MHz 30MHz, 40MHz 5G NR n26: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n30: 5MHz, 10MHz 5G NR n38: 10MHz, 15MHz, 20MHz, 30MHz, 40MHz 5G NR n41: 20MHz, 30MHz, 40MHz, 50MHz, 60MHz, 70MHz, 80MHz, 90MHz, 100MHz 5G NR n48: 10MHz, 20MHz, 30MHz, 40MHz 5G NR n66: 5MHz, 10MHz, 15MHz, 20MHz, 30MHz, 40MHz 5G NR n71: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n77: 10MHz, 15MHz, 20MHz, 30MHz, 40MHz, 50MHz, 60MHz, 70MHz, 80MHz, 90MHz, 100MHz 5G NR n78: 10MHz, 15MHz, 20MHz, 30MHz, 40MHz, 50MHz, 60MHz, 70MHz, 80MHz, 90MHz, 100MHz |
| SCS | FDD: SCS15KHz, TDD: SCS30KHz |
| uplink modulations used | DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CP-OFDM QPSK / 16QAM / 64QAM / 256QAM |
| A-MPR (Additional MPR) disabled for SAR Testing? | Yes |
| LTE Anchor Bands for n2 | LTE B4/5/7/12/13/14/30/66/71 |
| LTE Anchor Bands for n5 | LTE B2/7/30/48/66 |
| LTE Anchor Bands for n7 | LTE B2/4/5/12/13/66/71 |
| LTE Anchor Bands for n12 | LTE B2/7/30/48/66 |
| LTE Anchor Bands for n14 | LTE B2/30/66 |
| LTE Anchor Bands for n25 | LTE B5/7/12/13/26/48/66/71 |
| LTE Anchor Bands for n30 | LTE B2/5/12/14/66 |
| LTE Anchor Bands for n38 | LTE B2/4/5/12/66/71 |
| LTE Anchor Bands for n41 | LTE B2/4/5/12/25/26/66/71 |
| LTE Anchor Bands for n48 | LTE B2/5/13/66 |
| LTE Anchor Bands for n66 | LTE B2/5/7/12/13/14/30/48/71 |
| LTE Anchor Bands for n71 | LTE B2/7/48/66 |
| LTE Anchor Bands for n77 | LTE B2/5/7/12/13/14/25/30/41/66/71 |
| LTE Anchor Bands for n78 | LTE B2/4/5/7/12/13/25/26/38/41/66/71 |



| NR Band 2 | | | | | | | | | | | | | | |
|----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|--------|
| Bandwidth 5MHz | | Bandwidth 10MHz | | Bandwidth 15MHz | | Bandwidth 20MHz | | | | | | | | |
| Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | | | | | | | |
| L | 370500 | 1852.5 | 371000 | 1855 | 371500 | 1857.5 | 372000 | 1860 | | | | | | |
| M | 376000 | 1880 | 376000 | 1880 | 376000 | 1880 | 376000 | 1880 | | | | | | |
| H | 381500 | 1907.5 | 381000 | 1905 | 380500 | 1902.5 | 380000 | 1900 | | | | | | |
| NR Band 5 | | | | | | | | | | | | | | |
| Bandwidth 5MHz | | Bandwidth 10MHz | | Bandwidth 15MHz | | Bandwidth 20MHz | | | | | | | | |
| Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | | | | | | | |
| L | 165300 | 826.5 | 165800 | 829 | 166300 | 831.5 | 166800 | 834 | | | | | | |
| M | 167300 | 836.5 | 167300 | 836.5 | 167300 | 836.5 | 167300 | 836.5 | | | | | | |
| H | 169300 | 846.5 | 168800 | 844 | 168300 | 841.5 | 167800 | 839 | | | | | | |
| NR Band 7 | | | | | | | | | | | | | | |
| Bandwidth 5MHz | | Bandwidth 10MHz | | Bandwidth 15MHz | | Bandwidth 20MHz | | Bandwidth 25MHz | | Bandwidth 30MHz | | Bandwidth 40MHz | | |
| Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | |
| L | 500500 | 2502.5 | 501000 | 2505 | 501500 | 2507.5 | 502000 | 2510 | 502500 | 2512.5 | 503000 | 2515 | 504000 | 2520 |
| M | 507000 | 2535 | 507000 | 2535 | 507000 | 2535 | 507000 | 2535 | 507000 | 2535 | 507000 | 2535 | 507000 | 2535 |
| H | 513500 | 2567.5 | 513000 | 2565 | 512500 | 2562.5 | 512000 | 2560 | 511500 | 2557.5 | 511000 | 2555 | 510000 | 2550 |
| NR Band 12 | | | | | | | | | | | | | | |
| Bandwidth 5MHz | | | | Bandwidth 10MHz | | | | Bandwidth 15MHz | | | | | | |
| Ch. # | | Freq. (MHz) | | Ch. # | | Freq. (MHz) | | Ch. # | | Freq. (MHz) | | | | |
| L | 140300 | 701.5 | 140800 | 704 | 141300 | 706.5 | | | | | | | | |
| M | 141500 | 707.5 | 141500 | 707.5 | 141500 | 707.5 | | | | | | | | |
| H | 142700 | 713.5 | 142200 | 711 | 141700 | 708.5 | | | | | | | | |
| NR Band 13 | | | | | | | | | | | | | | |
| Bandwidth 5MHz | | | | | | Bandwidth 10MHz | | | | | | | | |
| Ch. # | | | Freq. (MHz) | | | Ch. # | | | Freq. (MHz) | | | | | |
| L | 155900 | 779.5 | 156400 | 782 | | | | | | | | | | |
| M | 156400 | 782 | | | | | | | | | | | | |
| H | 156900 | 784.5 | | | | | | | | | | | | |
| NR Band 14 | | | | | | | | | | | | | | |
| Bandwidth 5MHz | | | | | | Bandwidth 10MHz | | | | | | | | |
| Ch. # | | | Freq. (MHz) | | | Ch. # | | | Freq. (MHz) | | | | | |
| L | 158100 | 790.5 | 158600 | 793 | | | | | | | | | | |
| M | 158600 | 793 | | | | | | | | | | | | |
| H | 159100 | 795.5 | | | | | | | | | | | | |
| NR Band 25 | | | | | | | | | | | | | | |
| Bandwidth 5MHz | | Bandwidth 10MHz | | Bandwidth 15MHz | | Bandwidth 20MHz | | Bandwidth 25MHz | | Bandwidth 30MHz | | Bandwidth 40MHz | | |
| Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | |
| L | 370500 | 1852.5 | 371000 | 1855 | 371500 | 1857.5 | 372000 | 1860 | 372500 | 1862.5 | 373000 | 1865 | 374000 | 1870 |
| M | 376500 | 1882.5 | 376500 | 1882.5 | 376500 | 1882.5 | 376500 | 1882.5 | 376500 | 1882.5 | 376500 | 1882.5 | 376500 | 1882.5 |
| H | 382500 | 1912.5 | 382000 | 1910 | 381500 | 1907.5 | 381000 | 1905 | 380500 | 1902.5 | 380000 | 1900 | 379000 | 1895 |
| NR Band 26 | | | | | | | | | | | | | | |
| Bandwidth 5MHz | | Bandwidth 10MHz | | Bandwidth 15MHz | | Bandwidth 20MHz | | | | | | | | |
| Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | | | | | | | |
| L | 163300 | 816.5 | 163800 | 819 | 164300 | 821.5 | 164800 | 824 | | | | | | |
| M | 166300 | 831.5 | 166300 | 831.5 | 166300 | 831.5 | 166300 | 831.5 | | | | | | |
| H | 169300 | 846.5 | 168800 | 844 | 168300 | 841.5 | 167800 | 839 | | | | | | |
| NR Band 30 | | | | | | | | | | | | | | |
| Bandwidth 5MHz | | | | | | Bandwidth 10MHz | | | | | | | | |
| Ch. # | | | Freq. (MHz) | | | Ch. # | | | Freq. (MHz) | | | | | |
| L | 461500 | 2307.5 | 462000 | 2310 | | | | | | | | | | |
| M | 462000 | 2310 | | | | | | | | | | | | |
| H | 462500 | 2312.5 | | | | | | | | | | | | |



| NR Band 38 | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|
| | Bandwidth 10MHz | | Bandwidth 15MHz | | Bandwidth 20MHz | | Bandwidth 30MHz | | Bandwidth 40MHz | | | | | | | | | | | | | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | | | | | | | | | | | | |
| L | 515004 | 2575.02 | 515502 | 2577.51 | 516000 | 2580 | 517002 | 2585.01 | 518004 | 2590.02 | | | | | | | | | | | | |
| M | 519000 | 2595 | 519000 | 2595 | 519000 | 2595 | 519000 | 2595 | 519000 | 2595 | | | | | | | | | | | | |
| H | 522996 | 2614.98 | 522498 | 2612.49 | 522000 | 2610 | 520998 | 2604.99 | 519996 | 2599.98 | | | | | | | | | | | | |
| NR Band 41 | | | | | | | | | | | | | | | | | | | | | | |
| | Bandwidth20MHz | | Bandwidth30MHz | | Bandwidth 40MHz | | Bandwidth 50MHz | | Bandwidth 60MHz | | Bandwidth70MHz | | Bandwidth 80MHz | | Bandwidth 90MHz | | Bandwidth100MHz | | | | | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | | | | |
| L | 501204 | 2506.02 | 502200 | 2511 | 503202 | 2516.01 | 504204 | 2521.02 | 505200 | 2526 | 506202 | 2531.01 | 507204 | 2536.02 | 508200 | 2541 | 509202 | 2546.01 | | | | |
| M | 518598 | 2592.99 | 518598 | 2592.99 | 518598 | 2592.99 | 518598 | 2592.99 | 518598 | 2592.99 | 518598 | 2592.99 | 518598 | 2592.99 | 518598 | 2592.99 | 518598 | 2592.99 | | | | |
| H | 535998 | 2679.99 | 534996 | 2674.98 | 534000 | 2670 | 532998 | 2664.99 | 531996 | 2659.98 | 531000 | 2655 | 529998 | 2649.99 | 528996 | 2644.98 | 528000 | 2640 | | | | |
| NR Band 48 | | | | | | | | | | | | | | | | | | | | | | |
| | Bandwidth10MHz | | Bandwidth20MHz | | Bandwidth30MHz | | Bandwidth 40MHz | | | | | | | | | | | | | | | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | | | | | | | | | | | | | | |
| L | 637000 | 3555 | 637334 | 3560.01 | 637668 | 3565.02 | 638000 | 3570 | | | | | | | | | | | | | | |
| M | 641666 | 3624.99 | 641666 | 3624.99 | 641666 | 3624.99 | 641666 | 3624.99 | | | | | | | | | | | | | | |
| H | 646332 | 3694.98 | 646000 | 3690 | 645666 | 3684.99 | 645332 | 3679.98 | | | | | | | | | | | | | | |
| NR Band 66 | | | | | | | | | | | | | | | | | | | | | | |
| | Bandwidth 5MHz | | Bandwidth 10MHz | | Bandwidth 15MHz | | Bandwidth 20MHz | | Bandwidth 30MHz | | Bandwidth 40MHz | | | | | | | | | | | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | | | | | | | | | | |
| L | 342500 | 1712.5 | 343000 | 1715 | 343500 | 1717.5 | 344000 | 1720 | 345000 | 1725 | 346000 | 1730 | | | | | | | | | | |
| M | 349000 | 1745 | 349000 | 1745 | 349000 | 1745 | 349000 | 1745 | 349000 | 1745 | 349000 | 1745 | | | | | | | | | | |
| H | 355500 | 1777.5 | 355000 | 1775 | 354500 | 1772.5 | 354000 | 1770 | 353000 | 1765 | 352000 | 1760 | | | | | | | | | | |
| NR Band 71 | | | | | | | | | | | | | | | | | | | | | | |
| | Bandwidth 5MHz | | Bandwidth 10MHz | | Bandwidth 15MHz | | Bandwidth 20MHz | | | | | | | | | | | | | | | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | | | | | | | | | | | | | | |
| L | 133100 | 665.5 | 133600 | 668 | 134100 | 670.5 | 134600 | 673 | | | | | | | | | | | | | | |
| M | 136100 | 680.5 | 136100 | 680.5 | 136100 | 680.5 | 136100 | 680.5 | | | | | | | | | | | | | | |
| H | 139100 | 695.5 | 138600 | 693 | 138100 | 690.5 | 137600 | 688 | | | | | | | | | | | | | | |
| NR Band 77 | | | | | | | | | | | | | | | | | | | | | | |
| | Bandwidth10MHz | | Bandwidth15MHz | | Bandwidth 20MHz | | Bandwidth30MHz | | Bandwidth 40MHz | | Bandwidth 50MHz | | Bandwidth 60MHz | | Bandwidth 70MHz | | Bandwidth 80MHz | | Bandwidth 90MHz | | Bandwidth100MHz | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 647000 | 3705 | 647168 | 3707.52 | 647334 | 3710.01 | 647668 | 3715.02 | 648000 | 3720 | 648334 | 3725.01 | 648668 | 3730.02 | 649000 | 3735 | 649334 | 3740.01 | 649668 | 3745.02 | 650000 | 3750 |
| M | 656000 | 3840 | 656000 | 3840 | 656000 | 3840 | 656000 | 3840 | 656000 | 3840 | 656000 | 3840 | 656000 | 3840 | 656000 | 3840 | 656000 | 3840 | 656000 | 3840 | 656000 | 3840 |
| H | 665000 | 3975 | 664832 | 3972.48 | 664666 | 3969.99 | 664332 | 3964.98 | 664000 | 3960 | 663666 | 3954.99 | 663332 | 3949.98 | 663000 | 3945 | 662666 | 3939.99 | 662332 | 3934.98 | 662000 | 3930 |
| NR Band 78 | | | | | | | | | | | | | | | | | | | | | | |
| | Bandwidth10MHz | | Bandwidth15MHz | | Bandwidth 20MHz | | Bandwidth30MHz | | Bandwidth 40MHz | | Bandwidth 50MHz | | Bandwidth 60MHz | | Bandwidth 70MHz | | Bandwidth 80MHz | | Bandwidth 90MHz | | Bandwidth100MHz | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 647000 | 3705 | 647168 | 3707.52 | 647334 | 3710.01 | 647668 | 3715.02 | 648000 | 3720 | 648334 | 3725.01 | 648668 | 3730.02 | 649000 | 3735 | 649334 | 3740.01 | 649668 | 3745.02 | 650000 | 3750 |
| M | 650000 | 3750 | 650000 | 3750 | 650000 | 3750 | 650000 | 3750 | 650000 | 3750 | 650000 | 3750 | 650000 | 3750 | 650000 | 3750 | 650000 | 3750 | 650000 | 3750 | | |
| H | 653000 | 3795 | 652832 | 3792.48 | 652666 | 3789.99 | 652332 | 3784.98 | 652000 | 3780 | 651666 | 3774.99 | 651332 | 3769.98 | 651000 | 3765 | 650666 | 3759.99 | 650332 | 3754.98 | | |
| NR Band 77/78(3450MHz ~ 3550MHz) | | | | | | | | | | | | | | | | | | | | | | |
| | Bandwidth10MHz | | Bandwidth15MHz | | Bandwidth 20MHz | | Bandwidth30MHz | | Bandwidth 40MHz | | Bandwidth 50MHz | | Bandwidth 60MHz | | Bandwidth 70MHz | | Bandwidth 80MHz | | Bandwidth 90MHz | | Bandwidth100MHz | |
| | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) | Ch. # | Freq. (MHz) |
| L | 630334 | 3455.01 | 630500 | 3457.5 | 630668 | 3460.02 | 631000 | 3465 | 631334 | 3470.01 | 631668 | 3475.02 | 632000 | 3480 | 632334 | 3485.01 | 632668 | 3490.02 | 633000 | 3495 | 633332 | 3499.98 |
| M | 633332 | 3499.98 | 633332 | 3499.98 | 633332 | 3499.98 | 633332 | 3499.98 | 633332 | 3499.98 | 633332 | 3499.98 | 633332 | 3499.98 | 633332 | 3499.98 | 633332 | 3499.98 | 633332 | 3499.98 | | |
| H | 636332 | 3544.98 | 636166 | 3542.49 | 636000 | 3540 | 635666 | 3534.99 | 635332 | 3529.98 | 635000 | 3525 | 634666 | 3519.99 | 634332 | 3514.98 | 634000 | 3510 | 633666 | 3504.99 | | |

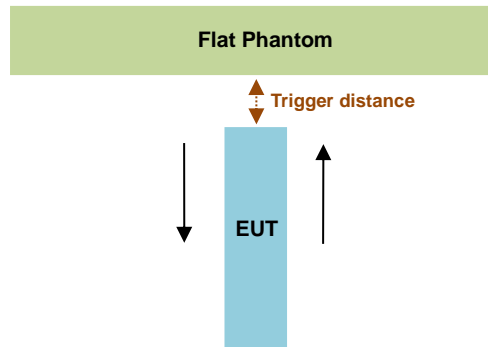
4. Proximity Sensor Triggering Test

<Proximity Sensor Triggering Distance (KDB 616217 D04 section 6.2)>:

For the device is fully integrated, touch sensing capacitive sensor. It uses a charge transfer capacitive acquisition method that is capable of near range proximity detection. In this device offers a state of the art capacitive sensing engine with an embedded sampling capacitor and voltage regulator allowing the overall solution cost to be reduced and improving system immunity in noisy environments.

Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed. The details are illustrated as following, and the shortest triggering distances were reported and used for SAR assessment.

In the preliminary triggering distance testing, the tissue-equivalent medium for different frequency bands were used for verification; no other frequency bands tissue-equivalent medium was found to result in shortest triggering distance than that for 1900MHz, and the tissue-equivalent medium for 1900MHz was used for formal proximity sensor triggering testing.



| Main Antenna | | |
|--|------------------|-------------|
| Proximity Sensor Trigger Distance (mm) | | |
| Position | Bottom of Laptop | |
| | moving toward | moving away |
| Minimum | 19 | 16 |

| MIMO 2 Antenna | | |
|--|------------------|-------------|
| Proximity Sensor Trigger Distance (mm) | | |
| Position | Bottom of Laptop | |
| | moving toward | moving away |
| Minimum | 24 | 24 |

| Aux Antenna | | |
|--|------------------|-------------|
| Proximity Sensor Trigger Distance (mm) | | |
| Position | Bottom of Laptop | |
| | moving toward | moving away |
| Minimum | 18 | 18 |

<Proximity Sensor Triggering Coverage (KDB 616217 D04 section 6.3)>:

Since the antenna and sensor are collocated and all of the peak SAR location is overlapping with the sensor pad for this device, therefore, According to KDB 616217 section6.3, these procedures do not apply and are not required for this device. Due to the antenna and sensor are collocated and the peak SAR location is overlapping with the sensor on this device.



Proximity sensor power reduction

| Exposure Position / wireless mode | | Bottom of Laptop ⁽¹⁾ |
|-----------------------------------|------|---------------------------------|
| WCDMA II | Main | 7.0 dB |
| WCDMA IV | Main | 6.0 dB |
| WCDMA V | Main | 6.5 dB |
| LTE Band 2 | Main | 7.5 dB |
| LTE Band 4 | Main | 6.0 dB |
| LTE Band 5 | Main | 6.0 dB |
| LTE Band 7 | Main | 8.5 dB |
| LTE Band 12 | Main | 4.5 dB |
| LTE Band 17 | Main | 5.5 dB |
| LTE Band 13 | Main | 5.5 dB |
| LTE Band 14 | Main | 4.5 dB |
| LTE Band 25 | Main | 7.5 dB |
| LTE Band 26 | Main | 6.0 dB |
| LTE Band 30 | Main | 4.5 dB |
| LTE Band 38 | Main | 7.5 dB |
| LTE Band 41 | Main | 7.5 dB |
| LTE Band 41_HPUE | Main | 7.0 dB |
| LTE Band 42 | Main | 4.5 dB |
| LTE Band 48 | Main | 5.0 dB |
| LTE Band 66 | Main | 6.0 dB |
| LTE Band 71 | Main | 4.0 dB |
| FR1 n2 | Main | 7.5 dB |
| FR1 n5 | Main | 7.0 dB |
| FR1 n7 | Main | 8.5 dB |
| FR1 n12 | Main | 5.5 dB |
| FR1 n13 | Main | 6.0 dB |
| FR1 n14 | Main | 6.5 dB |
| FR1 n25 | Main | 7.5 dB |
| FR1 n26 | Main | 7.0 dB |
| FR1 n30 | Main | 5.5 dB |
| FR1 n38 | Main | 9.0 dB |
| FR1 n41 | Main | 9.0 dB |
| FR1 n41_HPUE | Main | 8.5 dB |
| FR1 n48 | Main | 7.5 dB |
| FR1 n66 | Main | 6.0 dB |
| FR1 n71 | Main | 5.5 dB |
| FR1 n77 | Main | 11.0 dB |
| FR1 n77_HPUE | Main | 10.5 dB |
| FR1 n78 | Main | 11.0 dB |
| FR1 n78_HPUE | Main | 10.5 dB |

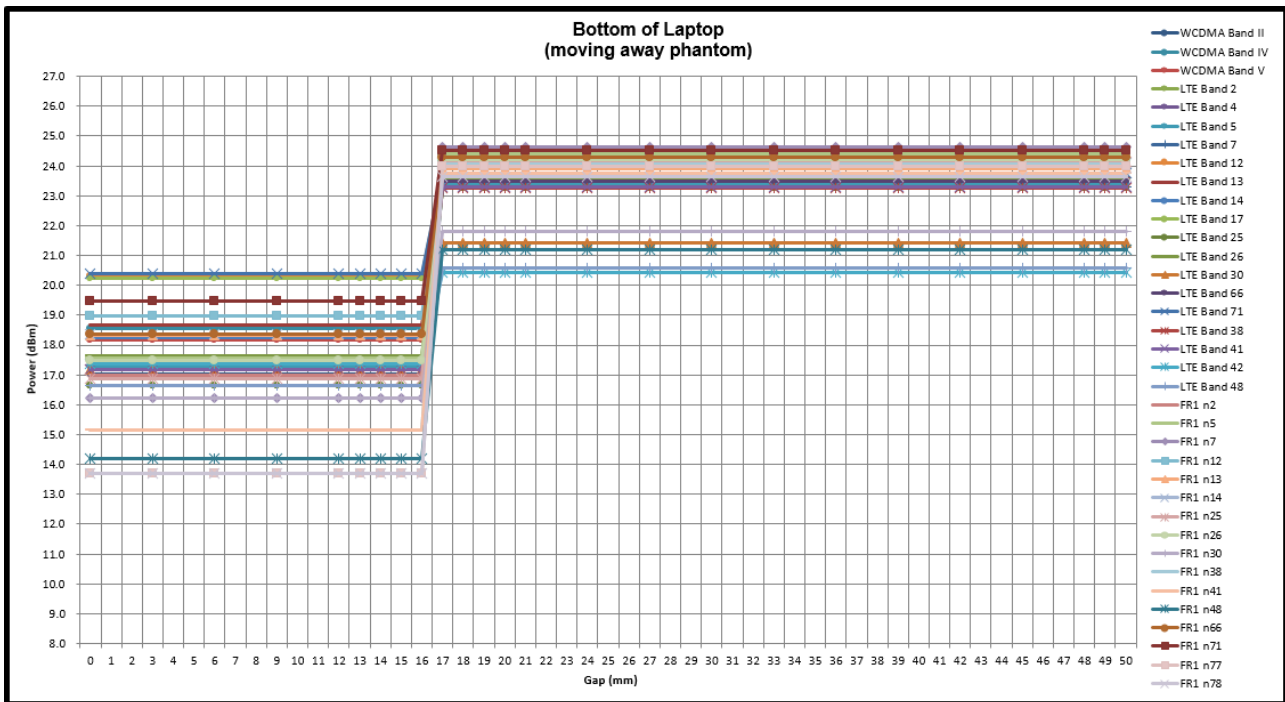
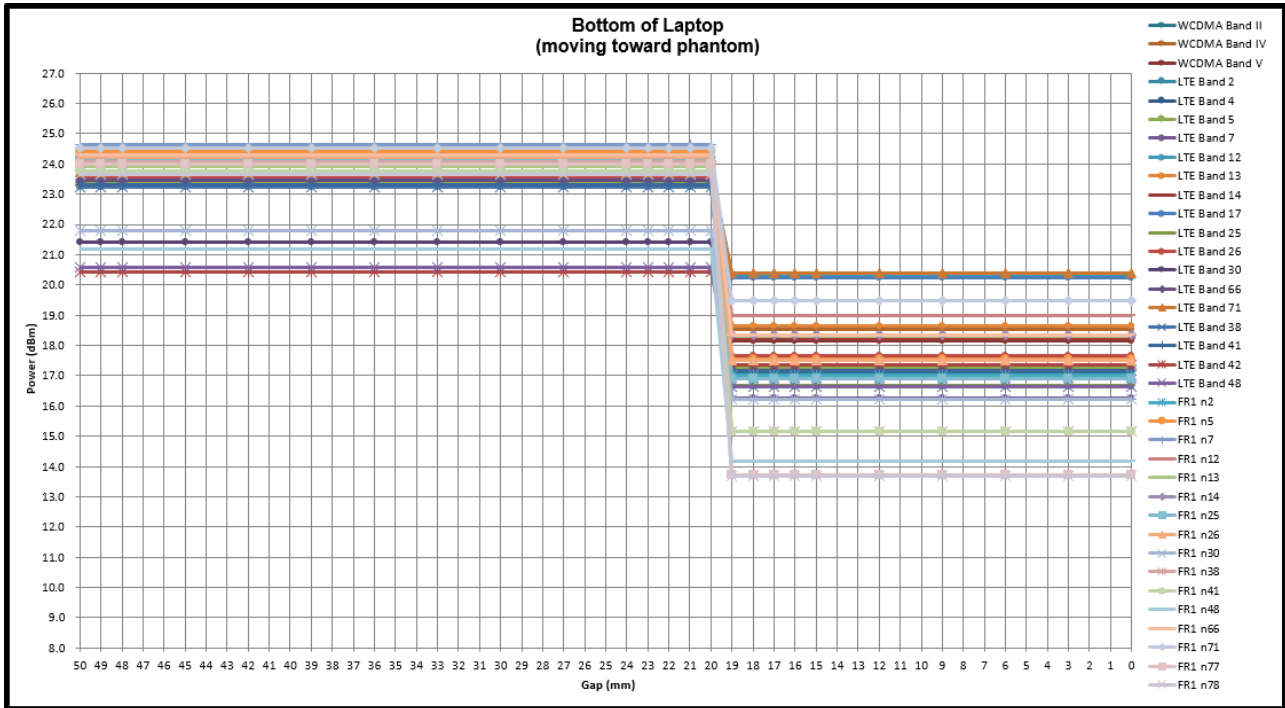
| Exposure Position / wireless mode | | Bottom of Laptop ⁽¹⁾ |
|-----------------------------------|-------|---------------------------------|
| LTE Band 2 | MIMO2 | 4.0 dB |
| LTE Band 4 | MIMO2 | 4.5 dB |
| LTE Band 7 | MIMO2 | 3.5 dB |
| LTE Band 25 | MIMO2 | 4.0 dB |
| LTE Band 30 | MIMO2 | 4.0 dB |
| LTE Band 38 | MIMO2 | 3.5 dB |
| LTE Band 41 | MIMO2 | 3.5 dB |
| LTE Band 42 | MIMO2 | 4.0 dB |
| LTE Band 43 | MIMO2 | 4.0 dB |
| LTE Band 48 | MIMO2 | 4.5 dB |
| LTE Band 66 | MIMO2 | 4.5 dB |
| FR1 n2 | MIMO2 | 4.0 dB |
| FR1 n7 | MIMO2 | 3.5 dB |
| FR1 n25 | MIMO2 | 4.0 dB |
| FR1 n30 | MIMO2 | 4.5 dB |
| FR1 n38 | MIMO2 | 7.0 dB |
| FR1 n41 | MIMO2 | 7.0 dB |
| FR1 n41_HPUE | MIMO2 | 7.5 dB |
| FR1 n48 | MIMO2 | 5.0 dB |
| FR1 n66 | MIMO2 | 5.0 dB |
| FR1 n77 | MIMO2 | 8.0 dB |
| FR1 n77_HPUE | MIMO2 | 7.5 dB |
| FR1 n78 | MIMO2 | 8.0 dB |
| FR1 n78_HPUE | MIMO2 | 7.5 dB |
| FR1 n38 | AUX | 6.5 dB |
| FR1 n41 | AUX | 6.5 dB |
| FR1 n41_HPUE | AUX | 6.0 dB |
| FR1 n48 | AUX | 6.5 dB |
| FR1 n77 | AUX | 9.5 dB |
| FR1 n77_HPUE | AUX | 9.0 dB |
| FR1 n78 | AUX | 9.5 dB |
| FR1 n78_HPUE | AUX | 9.0 dB |

Remark:

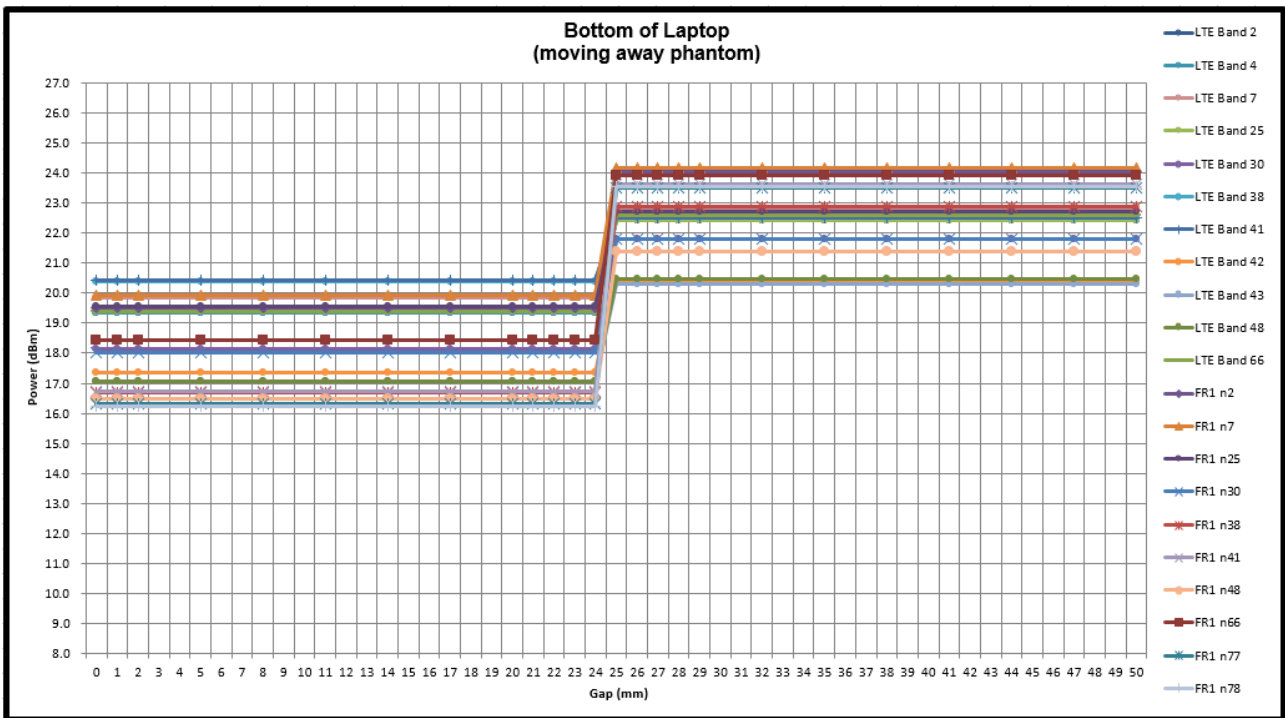
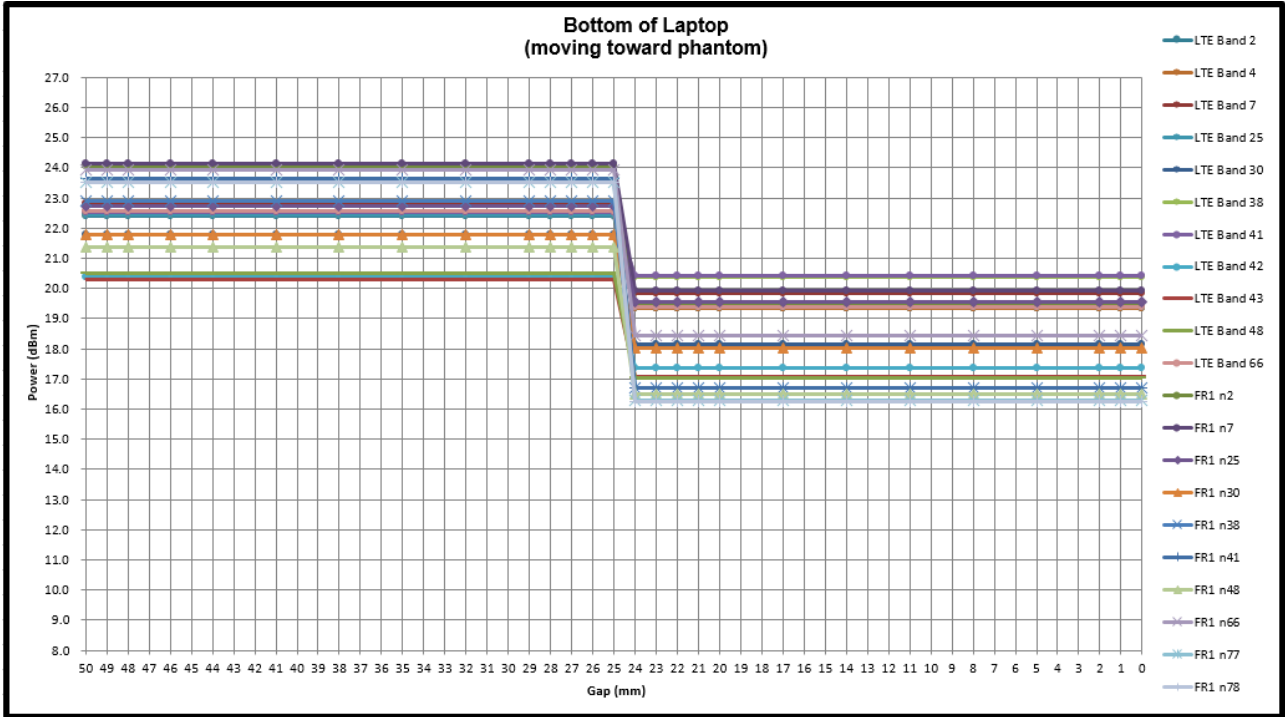
1. ⁽¹⁾: Reduced maximum limit applied by activation of proximity sensor.
2. Tests were performed in accordance with KDB 616217 D04 section 6.1, 6.2, 6.3, 6.4 and 6.5 and compliant results are shown as below.
3. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed:
 - (a) **Main**
 - Bottom of Laptop: [15 mm](#)
 - (b) **MIMO 2**
 - Bottom of Laptop: [23 mm](#)
 - (c) **Aux**
 - Bottom of Laptop: [17 mm](#)

Power Measurement during Sensor Trigger distance testing

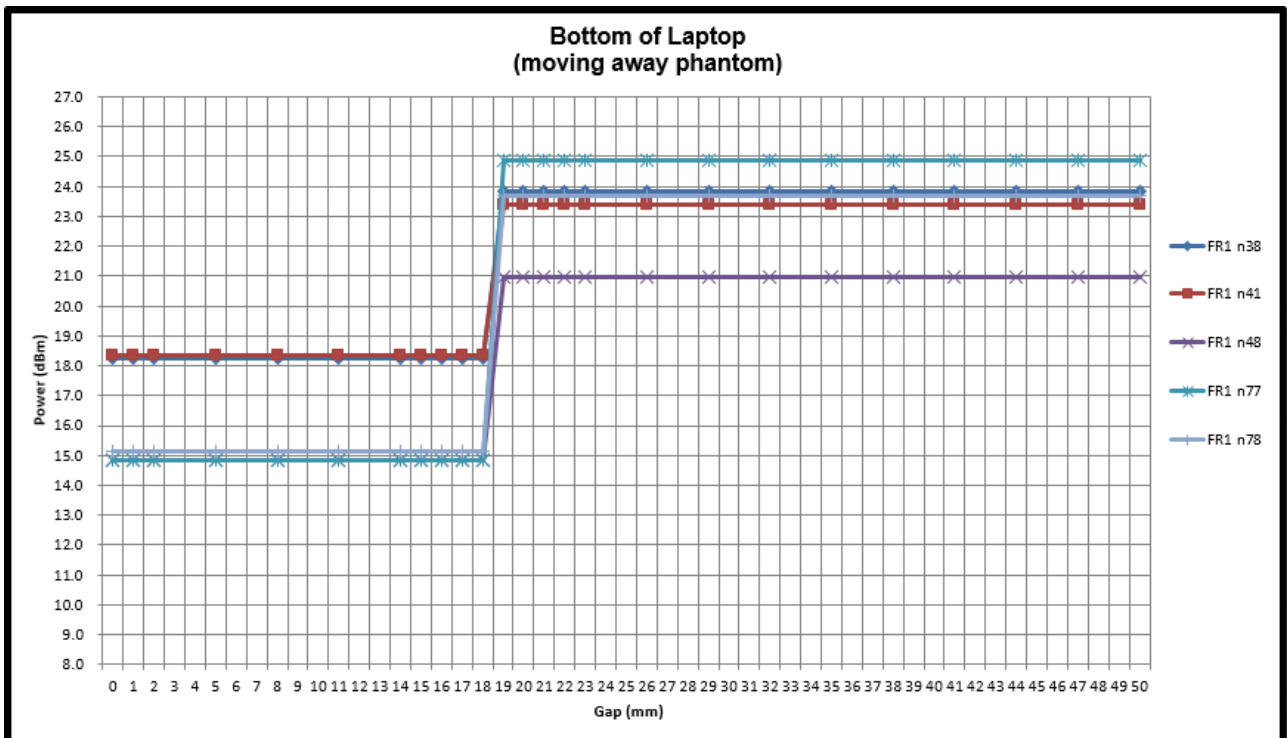
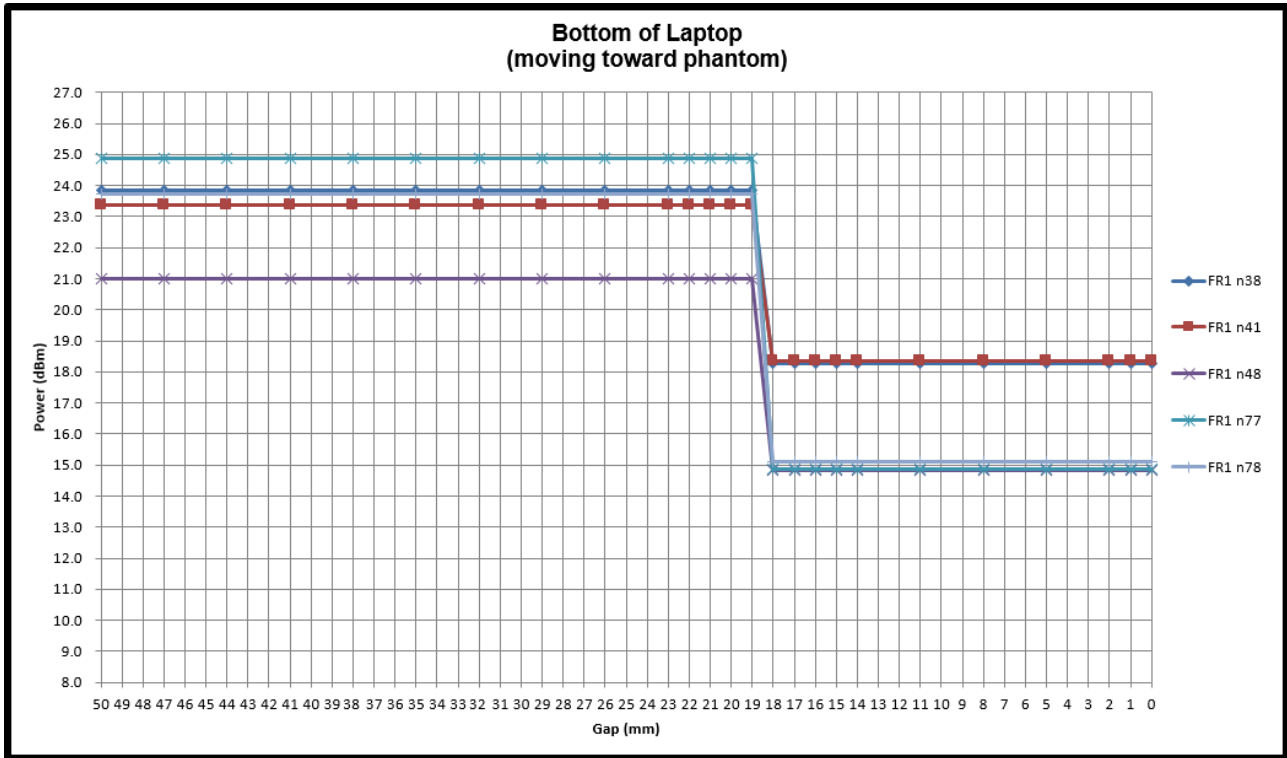
<Main Antenna>



<MIMO2 Antenna>



<Aux Antenna>





5. RF Exposure Limits

5.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

5.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Limits for Occupational/Controlled Exposure (W/kg)

| Whole-Body | Partial-Body | Hands, Wrists, Feet and Ankles |
|------------|--------------|--------------------------------|
| 0.4 | 8.0 | 20.0 |

Limits for General Population/Uncontrolled Exposure (W/kg)

| Whole-Body | Partial-Body | Hands, Wrists, Feet and Ankles |
|------------|--------------|--------------------------------|
| 0.08 | 1.6 | 4.0 |

1. Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.



6. Specific Absorption Rate (SAR)

6.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

6.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$SAR = \frac{d}{dt} \left(\frac{dW}{dm} \right) = \frac{d}{dt} \left(\frac{dW}{\rho dv} \right)$$

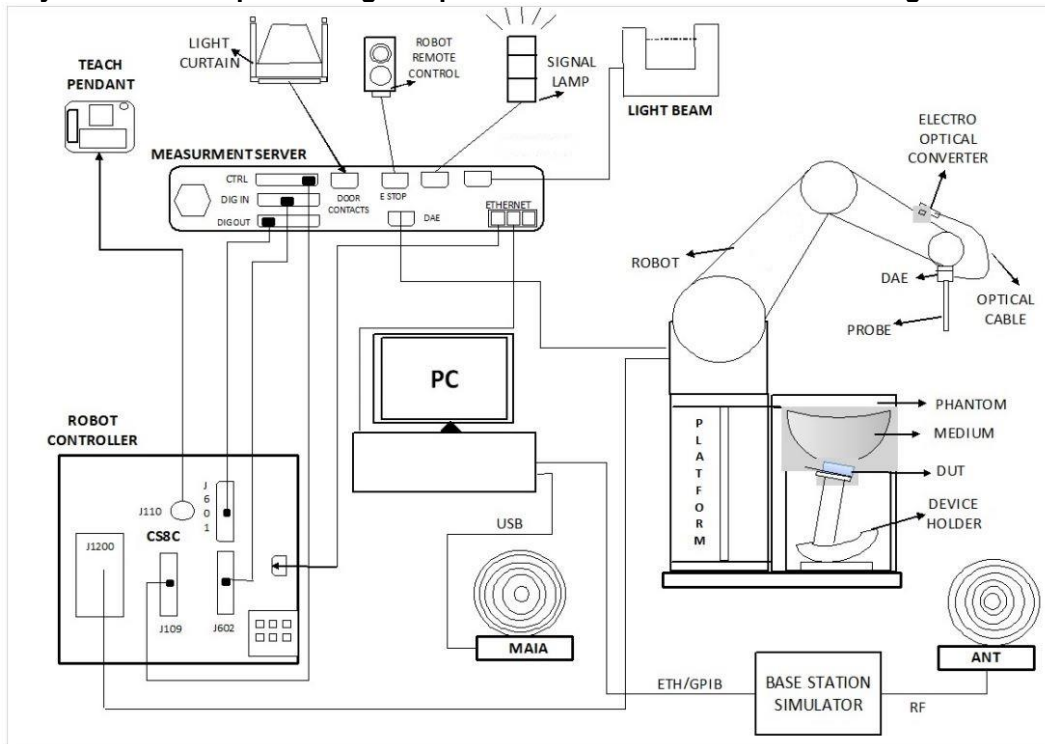
SAR is expressed in units of Watts per kilogram (W/kg)

$$SAR = \frac{\sigma |E|^2}{\rho}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

7. System Description and Setup

The DASY system used for performing compliance tests consists of the following items:



- The DASY system in SAR Configuration is shown above
- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running windows software and the DASY software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

7.1 Test Site Location


The SAR measurement facilities used to collect data are within both Sporton Lab list below test site location are accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190 and 3786) and the FCC designation No. TW1190 and TW3786 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test.

| Test Site | EMC & Wireless Communications Laboratory | | Wensan Laboratory | | |
|--------------------|--|----------|---|----------|----------|
| Test Site Location | TW1190 No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333 | | TW3786 No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010 | | |
| Test Site No. | SAR01-HY | SAR03-HY | SAR08-HY | SAR09-HY | SAR15-HY |
| | SAR04-HY | SAR05-HY | SAR11-HY | SAR12-HY | SAR16-HY |
| | SAR06-HY | SAR10-HY | SAR13-HY | SAR14-HY | SAR17-HY |


7.2 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG).The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

<ES3DV3 Probe>

| | | |
|----------------------|--|--|
| Construction | Symmetric design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |  |
| Frequency | 4 MHz – 4 GHz; Linearity: ± 0.2 dB (30 MHz – 4 GHz) | |
| Directivity | ± 0.2 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis) | |
| Dynamic Range | 5 μ W/g – >100 mW/g; Linearity: ± 0.2 dB | |
| Dimensions | Overall length: 337 mm (tip: 20 mm) Tip diameter: 3.9 mm (body: 12 mm) Distance from probe tip to dipole centers: 3.0 mm | |

<EX3DV4 Probe>

| | | |
|----------------------|---|---|
| Construction | Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |  |
| Frequency | 4 MHz – >6 GHz Linearity: ± 0.2 dB (30 MHz – 6 GHz) | |
| Directivity | ± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis) | |
| Dynamic Range | 10 μ W/g – >100 mW/g Linearity: ± 0.2 dB (noise: typically <1 μ W/g) | |
| Dimensions | Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm | |

7.3 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

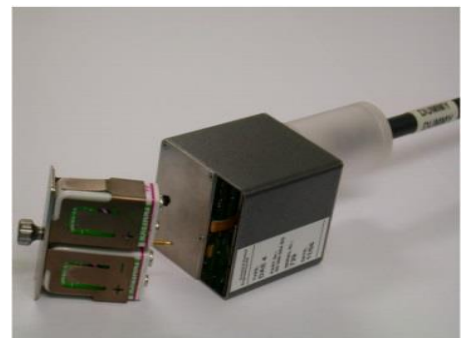



Fig 5.1 Photo of DAE

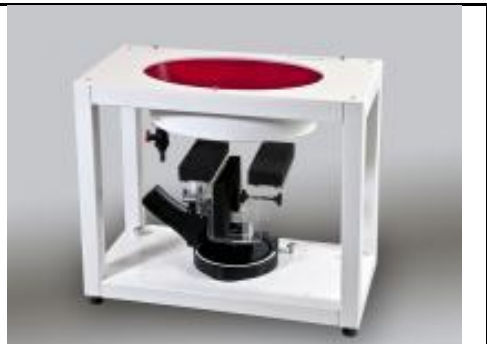
7.4 Phantom

<SAM Twin Phantom>

| | | |
|--------------------------|---|--|
| Shell Thickness | 2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm |  |
| Filling Volume | Approx. 25 liters | |
| Dimensions | Length: 1000 mm; Width: 500 mm; Height: adjustable feet | |
| Measurement Areas | Left Hand, Right Hand, Flat Phantom | |

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

<ELI Phantom>

| | | |
|------------------------|--|---|
| Shell Thickness | 2 ± 0.2 mm (sagging: <1%) |  |
| Filling Volume | Approx. 30 liters | |
| Dimensions | Major ellipse axis: 600 mm Minor axis: 400 mm | |

The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

7.5 Device Holder

<Mounting Device for Hand-Held Transmitter>

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat). And upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

<Mounting Device for Laptops and other Body-Worn Transmitters>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.



Mounting Device for Laptops

8. Measurement Procedures

The measurement procedures are as follows:

- (a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
- (b) Place the EUT in the positions as Appendix D demonstrates.
- (c) Set scan area, grid size and other setting on the DASY software.
- (d) Measure SAR results for the highest power channel on each testing position.
- (e) Find out the largest SAR result on these testing positions of each band
- (f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- (a) Power reference measurement
- (b) Area scan
- (c) Zoom scan
- (d) Power drift measurement

8.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- (a) Extraction of the measured data (grid and values) from the Zoom Scan
- (b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- (c) Generation of a high-resolution mesh within the measured volume
- (d) Interpolation of all measured values from the measurement grid to the high-resolution grid
- (e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- (f) Calculation of the averaged SAR within masses of 1g and 10g

8.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

8.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

| | ≤ 3 GHz | > 3 GHz |
|--|---|--|
| Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface | 5 ± 1 mm | $\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm |
| Maximum probe angle from probe axis to phantom surface normal at the measurement location | 30° ± 1° | 20° ± 1° |
| Maximum area scan spatial resolution: $\Delta x_{Area}, \Delta y_{Area}$ | ≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm | 3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm |
| | When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device. | |

8.4 Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

| | | ≤ 3 GHz | > 3 GHz | |
|--|------------------------------------|--|---|--|
| Maximum zoom scan spatial resolution: $\Delta x_{Zoom}, \Delta y_{Zoom}$ | | ≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm* | 3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm* | |
| Maximum zoom scan spatial resolution, normal to phantom surface | uniform grid: $\Delta z_{Zoom}(n)$ | ≤ 5 mm | 3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm | |
| | graded grid | $\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface | ≤ 4 mm | 3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm |
| | | $\Delta z_{Zoom}(n>1)$: between subsequent points | $\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$ | |
| Minimum zoom scan volume | x, y, z | ≥ 30 mm | 3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm | |
| Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz. | | | | |

8.5 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

8.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASy measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.



9. Test Equipment List

| Manufacturer | Name of Equipment | Type/Model | Serial Number | Calibration | |
|---------------|--|-----------------|---------------|---------------|---------------|
| | | | | Last Cal. | Due Date |
| SPEAG | 750MHz System Validation Kit ⁽²⁾ | D750V3 | 1107 | Jun. 22, 2022 | Jun. 20, 2024 |
| SPEAG | 835MHz System Validation Kit ⁽²⁾ | D835V2 | 4d167 | Nov. 24, 2022 | Nov. 22, 2024 |
| SPEAG | 1750MHz System Validation Kit ⁽²⁾ | D1750V2 | 1068 | Nov. 21, 2022 | Nov. 19, 2024 |
| SPEAG | 1750MHz System Validation Kit ⁽²⁾ | D1750V2 | 1112 | Jun. 22, 2022 | Jun. 20, 2024 |
| SPEAG | 1900MHz System Validation Kit ⁽²⁾ | D1900V2 | 5d185 | Jun. 17, 2022 | Jun. 15, 2024 |
| SPEAG | 2300MHz System Validation Kit ⁽²⁾ | D2300V2 | 1088 | Jul. 13, 2021 | Jul. 10, 2024 |
| SPEAG | 2600MHz System Validation Kit ⁽²⁾ | D2600V2 | 1078 | Jun. 23, 2022 | Jun. 21, 2024 |
| SPEAG | 3300MHz System Validation Kit ⁽²⁾ | D3300V2 | 1034 | Sep. 05, 2022 | Sep. 03, 2024 |
| SPEAG | 3500MHz System Validation Kit ⁽²⁾ | D3500V2 | 1036 | Mar. 23, 2022 | Mar. 21, 2024 |
| SPEAG | 3700MHz System Validation Kit ⁽²⁾ | D3700V2 | 1006 | Jun. 20, 2022 | Jun. 18, 2024 |
| SPEAG | 3900MHz System Validation Kit | D3900V2 | 1092 | May. 15, 2023 | May. 14, 2024 |
| SPEAG | Data Acquisition Electronics | DAE4 | 376 | Sep. 14, 2023 | Sep. 13, 2024 |
| SPEAG | Data Acquisition Electronics | DAE4 | 1424 | Dec. 07, 2023 | Dec. 06, 2024 |
| SPEAG | Data Acquisition Electronics | DAE4ip | 1800 | May. 31, 2023 | May. 30, 2024 |
| SPEAG | Dosimetric E-Field Probe | EX3DV4 | 7694 | Oct. 26, 2023 | Oct. 25, 2024 |
| SPEAG | Dosimetric E-Field Probe | EX3DV4 | 7791 | Feb. 22, 2023 | Feb. 21, 2024 |
| SPEAG | Dosimetric E-Field Probe | EX3DV4 | 7793 | Mar. 08, 2023 | Mar. 07, 2024 |
| Anritsu | Radio Communication Analyzer | MT8821C | 6201341950 | Nov. 13, 2023 | Nov. 12, 2024 |
| Keysight | 5G Wireless Test Platform | E7515B | MY59321826 | Apr. 26, 2023 | Apr. 25, 2024 |
| SPEAG | Device Holder | N/A | N/A | N/A | N/A |
| Anritsu | Signal Generator | MG3710A | 6201502524 | Sep. 27, 2023 | Sep. 26, 2024 |
| Keysight | ENA Network Analyzer | E5071C | MY46104758 | Oct. 30, 2023 | Oct. 29, 2024 |
| SPEAG | Dielectric Probe Kit | DAK-3.5 | 1126 | Sep. 19, 2023 | Sep. 18, 2024 |
| LINE SEIKI | Digital Thermometer | DTM3000-spezial | 3690 | Aug. 09, 2023 | Aug. 08, 2024 |
| Anritsu | Power Meter | ML2495A | 1419002 | Aug. 17, 2023 | Aug. 16, 2024 |
| Anritsu | Power Sensor | MA2411B | 1911176 | Aug. 18, 2023 | Aug. 17, 2024 |
| Anritsu | Spectrum Analyzer | MS2830A | 6201396378 | Jul. 10, 2023 | Jul. 09, 2024 |
| Mini-Circuits | Power Amplifier | ZVE-8G+ | 6418 | Oct. 16, 2023 | Oct. 15, 2024 |
| ATM | Dual Directional Coupler | C122H-10 | P610410z-02 | Note 1 | |
| Warison | Directional Coupler | WCOU-10-50S-10 | WR889BMC4B1 | Note 1 | |
| Woken | Attenuator 1 | WK0602-XX | N/A | Note 1 | |
| PE | Attenuator 2 | PE7005-10 | N/A | Note 1 | |
| PE | Attenuator 3 | PE7005-3 | N/A | Note 1 | |

General Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.
2. The dipole calibration interval can be extended to 3 years with justification according to KDB 865664 D01. The dipoles are also not physically damaged, or repaired during the interval. The justification data in appendix C can be found which the return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration for each dipole.

10. System Verification

10.1 Tissue Verification

The tissue dielectric parameters of tissue-equivalent media used for SAR measurements must be characterized within a temperature range of 18°C to 25°C, measured with calibrated instruments and apparatuses, such as network analyzers and temperature probes. The temperature of the tissue-equivalent medium during SAR measurement must also be within 18°C to 25°C and within ± 2°C of the temperature when the tissue parameters are characterized. The tissue dielectric measurement system must be calibrated before use. The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements.

The liquid tissue depth was at least 15cm in the phantom for all SAR testing

<Tissue Dielectric Parameter Check Results>

| Frequency (MHz) | Liquid Temp. (°C) | Conductivity (σ) | Permittivity (ε _r) | Conductivity Target (σ) | Permittivity Target (ε _r) | Delta (σ) (%) | Delta (ε _r) (%) | Limit (%) | Date |
|-----------------|-------------------|------------------|--------------------------------|-------------------------|---------------------------------------|---------------|-----------------------------|-----------|------------|
| 750 | 22.3 | 0.906 | 42.100 | 0.89 | 41.90 | 1.80 | 0.48 | ±5 | 2023/12/30 |
| 750 | 22.6 | 0.885 | 41.700 | 0.89 | 41.90 | -0.56 | -0.48 | ±5 | 2024/1/9 |
| 750 | 22.5 | 0.885 | 43.000 | 0.89 | 41.90 | -0.56 | 2.63 | ±5 | 2024/1/11 |
| 835 | 22.3 | 0.942 | 41.800 | 0.90 | 41.50 | 4.67 | 0.72 | ±5 | 2023/12/30 |
| 835 | 22.6 | 0.919 | 41.400 | 0.90 | 41.50 | 2.11 | -0.24 | ±5 | 2024/1/9 |
| 835 | 22.5 | 0.915 | 42.600 | 0.90 | 41.50 | 1.67 | 2.65 | ±5 | 2024/1/11 |
| 1750 | 22.5 | 1.380 | 40.800 | 1.37 | 40.10 | 0.73 | 1.75 | ±5 | 2024/1/3 |
| 1750 | 22.5 | 1.370 | 40.700 | 1.37 | 40.10 | 0.00 | 1.50 | ±5 | 2024/1/7 |
| 1750 | 22.6 | 1.360 | 40.600 | 1.37 | 40.10 | -0.73 | 1.25 | ±5 | 2024/1/10 |
| 1900 | 22.5 | 1.400 | 40.400 | 1.40 | 40.00 | 0.00 | 1.00 | ±5 | 2024/1/3 |
| 1900 | 22.5 | 1.390 | 40.400 | 1.40 | 40.00 | -0.71 | 1.00 | ±5 | 2024/1/7 |
| 1900 | 22.6 | 1.440 | 39.100 | 1.40 | 40.00 | 2.86 | -2.25 | ±5 | 2024/1/10 |
| 2300 | 22.6 | 1.640 | 39.500 | 1.67 | 39.50 | -1.80 | 0.00 | ±5 | 2024/1/5 |
| 2300 | 22.7 | 1.730 | 38.800 | 1.67 | 39.50 | 3.59 | -1.77 | ±5 | 2024/1/8 |
| 2300 | 22.5 | 1.640 | 40.100 | 1.67 | 39.50 | -1.80 | 1.52 | ±5 | 2024/1/8 |
| 2600 | 22.6 | 1.980 | 39.400 | 1.96 | 39.00 | 1.02 | 1.03 | ±5 | 2023/12/31 |
| 2600 | 22.7 | 1.960 | 38.200 | 1.96 | 39.00 | 0.00 | -2.05 | ±5 | 2024/1/8 |
| 2600 | 22.5 | 1.980 | 39.000 | 1.96 | 39.00 | 1.02 | 0.00 | ±5 | 2024/1/8 |
| 3300 | 22.4 | 2.770 | 38.300 | 2.70 | 38.13 | 2.59 | 0.45 | ±5 | 2024/1/10 |
| 3500 | 22.6 | 2.920 | 37.800 | 2.91 | 37.90 | 0.34 | -0.26 | ±5 | 2024/1/1 |
| 3500 | 22.5 | 2.930 | 37.800 | 2.91 | 37.90 | 0.69 | -0.26 | ±5 | 2024/1/9 |
| 3500 | 22.4 | 2.940 | 37.900 | 2.91 | 37.90 | 1.03 | 0.00 | ±5 | 2024/1/10 |
| 3700 | 22.6 | 3.080 | 37.500 | 3.12 | 37.70 | -1.28 | -0.53 | ±5 | 2024/1/2 |
| 3700 | 22.3 | 3.200 | 37.500 | 3.12 | 37.70 | 2.56 | -0.53 | ±5 | 2024/1/4 |
| 3700 | 22.4 | 3.110 | 37.600 | 3.12 | 37.70 | -0.32 | -0.27 | ±5 | 2024/1/10 |
| 3700 | 22.3 | 3.100 | 36.800 | 3.12 | 37.70 | -0.64 | -2.39 | ±5 | 2024/1/13 |
| 3900 | 22.3 | 3.400 | 37.200 | 3.33 | 37.51 | 2.10 | -0.83 | ±5 | 2024/1/4 |
| 3900 | 22.4 | 3.490 | 37.100 | 3.33 | 37.51 | 4.80 | -1.09 | ±5 | 2024/1/10 |
| 3900 | 22.3 | 3.300 | 36.600 | 3.33 | 37.51 | -0.90 | -2.43 | ±5 | 2024/1/13 |

10.2 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

| Test Site | Date | Frequency (MHz) | Input Power (mW) | Dipole S/N | Probe S/N | DAE S/N | Measured 1g SAR (W/kg) | Targeted 1g SAR (W/kg) | Normalized 1g SAR (W/kg) | Deviation (%) |
|-----------|------------|-----------------|------------------|---------------|-----------------|---------------|------------------------|------------------------|--------------------------|---------------|
| SAR-18 | 2023/12/30 | 750 | 50 | D750V3-1107 | EX3DV4 - SN7694 | DAE4ip Sn1800 | 0.423 | 8.54 | 8.46 | -0.94 |
| SAR-21 | 2024/1/9 | 750 | 50 | D750V3-1107 | EX3DV4 - SN7793 | DAE4 Sn376 | 0.412 | 8.54 | 8.24 | -3.51 |
| SAR-13 | 2024/1/11 | 750 | 50 | D750V3-1107 | EX3DV4 - SN7791 | DAE4 Sn1424 | 0.405 | 8.54 | 8.1 | -5.15 |
| SAR-18 | 2023/12/30 | 835 | 50 | D835V2-4d167 | EX3DV4 - SN7694 | DAE4ip Sn1800 | 0.485 | 9.8 | 9.7 | -1.02 |
| SAR-21 | 2024/1/9 | 835 | 50 | D835V2-4d167 | EX3DV4 - SN7793 | DAE4 Sn376 | 0.461 | 9.8 | 9.22 | -5.92 |
| SAR-13 | 2024/1/11 | 835 | 50 | D835V2-4d167 | EX3DV4 - SN7791 | DAE4 Sn1424 | 0.479 | 9.8 | 9.58 | -2.24 |
| SAR-18 | 2024/1/3 | 1750 | 50 | D1750V2-1112 | EX3DV4 - SN7694 | DAE4ip Sn1800 | 1.810 | 36.9 | 36.2 | -1.90 |
| SAR-21 | 2024/1/7 | 1750 | 50 | D1750V2-1112 | EX3DV4 - SN7793 | DAE4 Sn376 | 1.870 | 36.9 | 37.4 | 1.36 |
| SAR-13 | 2024/1/10 | 1750 | 50 | D1750V2-1068 | EX3DV4 - SN7791 | DAE4 Sn1424 | 1.690 | 36.7 | 33.8 | -7.90 |
| SAR-18 | 2024/1/3 | 1900 | 50 | D1900V2-5d185 | EX3DV4 - SN7694 | DAE4ip Sn1800 | 1.870 | 39 | 37.4 | -4.10 |
| SAR-21 | 2024/1/7 | 1900 | 50 | D1900V2-5d185 | EX3DV4 - SN7793 | DAE4 Sn376 | 2.060 | 39 | 41.2 | 5.64 |
| SAR-13 | 2024/1/10 | 1900 | 50 | D1900V2-5d185 | EX3DV4 - SN7791 | DAE4 Sn1424 | 1.810 | 39 | 36.2 | -7.18 |
| SAR-18 | 2024/1/5 | 2300 | 50 | D2300V2-1088 | EX3DV4 - SN7694 | DAE4ip Sn1800 | 2.560 | 49.7 | 51.2 | 3.02 |
| SAR-13 | 2024/1/8 | 2300 | 50 | D2300V2-1088 | EX3DV4 - SN7791 | DAE4 Sn1424 | 2.340 | 49.7 | 46.8 | -5.84 |
| SAR-21 | 2024/1/8 | 2300 | 50 | D2300V2-1088 | EX3DV4 - SN7793 | DAE4 Sn376 | 2.540 | 49.7 | 50.8 | 2.21 |
| SAR-18 | 2023/12/31 | 2600 | 50 | D2600V2-1078 | EX3DV4 - SN7694 | DAE4ip Sn1800 | 2.600 | 55.4 | 52 | -6.14 |
| SAR-13 | 2024/1/8 | 2600 | 50 | D2600V2-1078 | EX3DV4 - SN7791 | DAE4 Sn1424 | 2.570 | 55.4 | 51.4 | -7.22 |
| SAR-21 | 2024/1/8 | 2600 | 50 | D2600V2-1078 | EX3DV4 - SN7793 | DAE4 Sn376 | 2.970 | 55.4 | 59.4 | 7.22 |
| SAR-21 | 2024/1/10 | 3300 | 50 | D3300V2-1034 | EX3DV4 - SN7793 | DAE4 Sn376 | 3.510 | 67.3 | 70.2 | 4.31 |
| SAR-18 | 2024/1/1 | 3500 | 50 | D3500V2-1036 | EX3DV4 - SN7694 | DAE4ip Sn1800 | 3.570 | 67.4 | 71.4 | 5.93 |
| SAR-13 | 2024/1/9 | 3500 | 50 | D3500V2-1036 | EX3DV4 - SN7791 | DAE4 Sn1424 | 3.140 | 67.4 | 62.8 | -6.82 |
| SAR-21 | 2024/1/10 | 3500 | 50 | D3500V2-1036 | EX3DV4 - SN7793 | DAE4 Sn376 | 3.130 | 67.4 | 62.6 | -7.12 |
| SAR-18 | 2024/1/2 | 3700 | 50 | D3700V2-1006 | EX3DV4 - SN7694 | DAE4ip Sn1800 | 3.260 | 65.6 | 65.2 | -0.61 |
| SAR-18 | 2024/1/4 | 3700 | 50 | D3700V2-1006 | EX3DV4 - SN7694 | DAE4ip Sn1800 | 3.380 | 65.600 | 67.6 | 3.05 |
| SAR-21 | 2024/1/10 | 3700 | 50 | D3700V2-1006 | EX3DV4 - SN7793 | DAE4 Sn376 | 3.060 | 65.6 | 61.2 | -6.71 |
| SAR-13 | 2024/1/13 | 3700 | 50 | D3700V2-1006 | EX3DV4 - SN7791 | DAE4 Sn1424 | 3.090 | 65.6 | 61.8 | -5.79 |
| SAR-18 | 2024/1/4 | 3900 | 50 | D3900V2-1092 | EX3DV4 - SN7694 | DAE4ip Sn1800 | 3.430 | 67.000 | 68.6 | 2.39 |
| SAR-21 | 2024/1/10 | 3900 | 50 | D3900V2-1092 | EX3DV4 - SN7793 | DAE4 Sn376 | 3.170 | 67 | 63.4 | -5.37 |
| SAR-13 | 2024/1/13 | 3900 | 50 | D3900V2-1092 | EX3DV4 - SN7791 | DAE4 Sn1424 | 3.220 | 67 | 64.4 | -3.88 |

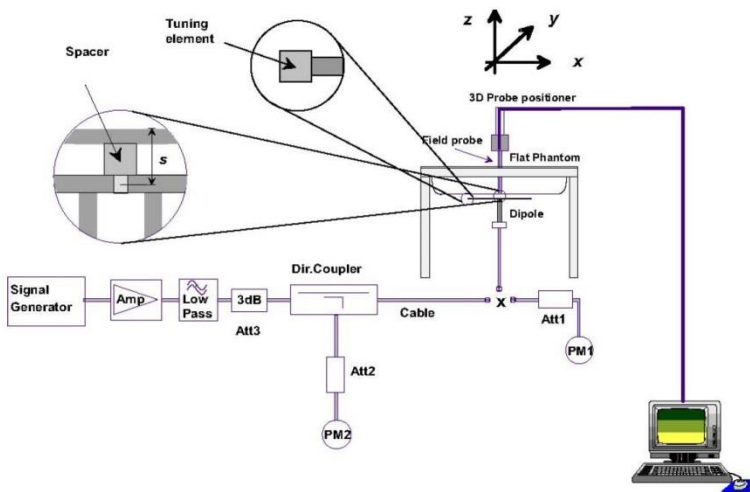


Fig 8.3.1 System Performance Check Setup



Fig 8.3.2 Setup Photo



11. Measurement procedure for output power and SAR

Detail output power measurement data is in the appendix D

<WCDMA Note>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
3. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.
4. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
5. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is $\leq \frac{1}{4}$ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than $\frac{1}{4}$ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
 - i. Set Gain Factors (β_c and β_d) and parameters were set according to each
 - ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
 - iii. Set RMC 12.2Kbps + HSDPA mode.
 - iv. Set Cell Power = -86 dBm
 - v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
 - vi. Select HSDPA Uplink Parameters
 - vii. Set Delta ACK, Delta NACK and Delta CQI = 8
 - viii. Set Ack-Nack Repetition Factor to 3
 - ix. Set CQI Feedback Cycle (k) to 4 ms
 - x. Set CQI Repetition Factor to 2
 - xi. Power Ctrl Mode = All Up bits
- d. The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

| Sub-test | β_c | β_d | β_d (SF) | β_c/β_d | β_{hs} (Note 1, Note 2) | CM (dB) (Note 3) | MPR (dB) (Note 3) |
|----------|-------------------|-------------------|-------------------|-------------------|-------------------------------------|---------------------|----------------------|
| 1 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 0.0 | 0.0 |
| 2 | 12/15 (Note 4) | 15/15 (Note 4) | 64 | 12/15 (Note 4) | 24/15 | 1.0 | 0.0 |
| 3 | 15/15 | 8/15 | 64 | 15/8 | 30/15 | 1.5 | 0.5 |
| 4 | 15/15 | 4/15 | 64 | 15/4 | 30/15 | 1.5 | 0.5 |

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and $\Delta_{NACK} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$, and $\Delta_{CQI} = 24/15$ with $\beta_{hs} = 24/15 * \beta_c$.

Note 3: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$.

Setup Configuration

HSUPA Setup Configuration:

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting * :
 - i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
 - ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
 - iii. Set Cell Power = -86 dBm
 - iv. Set Channel Type = 12.2k + HSPA
 - v. Set UE Target Power
 - vi. Power Ctrl Mode= Alternating bits
 - vii. Set and observe the E-TFCl
 - viii. Confirm that E-TFCl is equal to the target E-TFCl of 75 for sub-test 1, and other subtest's E-TFCl
- d. The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

| Sub-test | β_c | β_d | β_d (SF) | β_c/β_d | β_{HS} (Note1) | β_{ec} | β_{ed} (Note 4) (Note 5) | β_{ed} (SF) | β_{ed} (Codes) | CM (dB) (Note 2) | MPR (dB) (Note 2) (Note 6) | AG Index (Note 5) | E-TFCl |
|----------|----------------|----------------|----------------|-------------------|----------------------|--------------|--|-------------------|----------------------|------------------|----------------------------|-------------------|--------|
| 1 | 11/15 (Note 3) | 15/15 (Note 3) | 64 | 11/15 (Note 3) | 22/15 | 209/25 | 1309/225 | 4 | 1 | 1.0 | 0.0 | 20 | 75 |
| 2 | 6/15 | 15/15 | 64 | 6/15 | 12/15 | 12/15 | 94/75 | 4 | 1 | 3.0 | 2.0 | 12 | 67 |
| 3 | 15/15 | 9/15 | 64 | 15/9 | 30/15 | 30/15 | β_{ed1} : 47/15 β_{ed2} : 47/15 | 4 | 2 | 2.0 | 1.0 | 15 | 92 |
| 4 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 2/15 | 56/75 | 4 | 1 | 3.0 | 2.0 | 17 | 71 |
| 5 | 15/15 | 0 | - | - | 5/15 | 5/15 | 47/15 | 4 | 1 | 1.0 | 0.0 | 12 | 67 |

Note 1: For sub-test 1 to 4, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$. For sub-test 5, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 5/15$ with $\beta_{hs} = 5/15 * \beta_c$.

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCCH, DPCCH, HS-DPCCH, E-DPDCCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: In case of testing by UE using E-DPDCCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCCH power scaling at max power which could results in slightly smaller MPR values.

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration below
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
 - i. Set RMC 12.2Kbps + HSDPA mode.
 - ii. Set Cell Power = -25 dBm
 - iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
 - iv. Select HSDPA Uplink Parameters
 - v. Set Gain Factors (β_c and β_d) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
 - a). Subtest 1: $\beta_c/\beta_d=2/15$
 - b). Subtest 2: $\beta_c/\beta_d=12/15$
 - c). Subtest 3: $\beta_c/\beta_d=15/8$
 - d). Subtest 4: $\beta_c/\beta_d=15/4$
 - vi. Set Delta ACK, Delta NACK and Delta CQI = 8
 - vii. Set Ack-Nack Repetition Factor to 3
 - viii. Set CQI Feedback Cycle (k) to 4 ms
 - ix. Set CQI Repetition Factor to 2
 - x. Power Ctrl Mode = All Up bits
- d. The transmitted maximum output power was recorded.

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification. A summary of these settings are illustrated below:

C.8.1.12 Fixed Reference Channel Definition H-Set 12

Table C.8.1.12: Fixed Reference Channel H-Set 12

| Parameter | Unit | Value |
|--|-----------|-------|
| Nominal Avg. Inf. Bit Rate | kbps | 60 |
| Inter-TTI Distance | TTI's | 1 |
| Number of HARQ Processes | Processes | 6 |
| Information Bit Payload (N_{inf}) | Bits | 120 |
| Number Code Blocks | Blocks | 1 |
| Binary Channel Bits Per TTI | Bits | 960 |
| Total Available SML's in UE | SML's | 19200 |
| Number of SML's per HARQ Proc. | SML's | 3200 |
| Coding Rate | | 0.15 |
| Number of Physical Channel Codes | Codes | 1 |
| Modulation | | QPSK |
| Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table. Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used. | | |

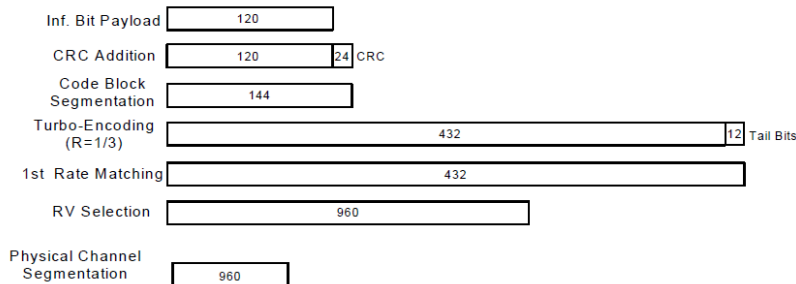


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

**<LTE Note>**

1. A Base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4/B5/B12/B17/B26/B38/B71 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE band 2/4/5/17/38 SAR test was covered by Band 25/66/26/12/41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
 - a. the maximum output power, including tolerance, for the smaller band is \leq the larger band to qualify for the SAR test exclusion
 - b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

SAR was tested with a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by 3GPP.

- a. 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations
- b. “special subframe S” contains both uplink and downlink transmissions, it has been taken into consideration to determine the transmission duty factor according to the worst case uplink and downlink cyclic prefix requirements for UpPTS
- c. Establishing connections with base station simulators ensure a consistent means for testing SAR and recommended for evaluating SAR. The Base station simulator was used for LTE output power measurements and SAR testing.

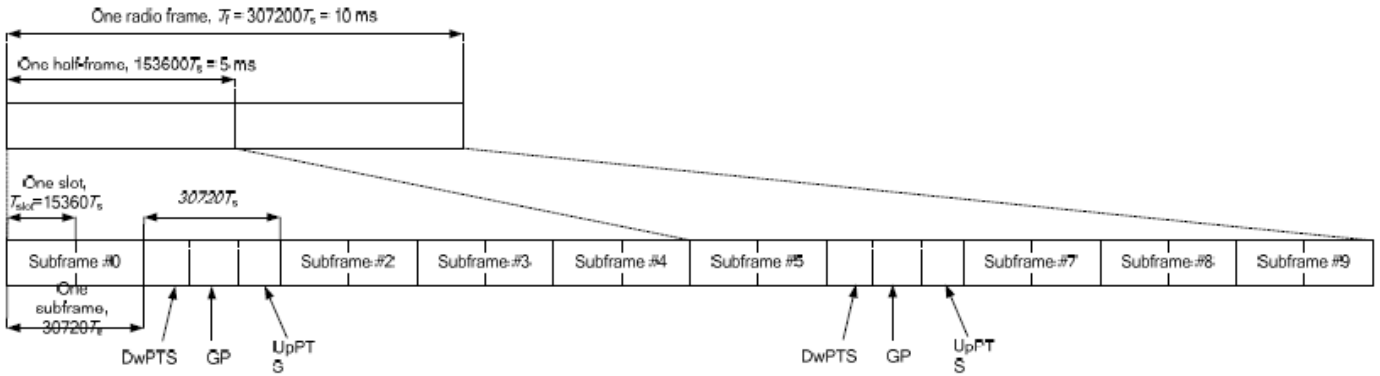


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

| Uplink-downlink configuration | Downlink-to-Uplink Switch-point periodicity | Subframe number | | | | | | | | | |
|-------------------------------|---|-----------------|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 0 | 5 ms | D | S | U | U | U | D | S | U | U | U |
| 1 | 5 ms | D | S | U | U | D | D | S | U | U | D |
| 2 | 5 ms | D | S | U | D | D | D | S | U | D | D |
| 3 | 10 ms | D | S | U | U | U | D | D | D | D | D |
| 4 | 10 ms | D | S | U | U | D | D | D | D | D | D |
| 5 | 10 ms | D | S | U | D | D | D | D | D | D | D |
| 6 | 5 ms | D | S | U | U | U | D | S | U | U | D |

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

| Special subframe configuration | Normal cyclic prefix in downlink | | | Extended cyclic prefix in downlink | | |
|--------------------------------|----------------------------------|--------------------------------|----------------------------------|------------------------------------|--------------------------------|----------------------------------|
| | DwPTS | UpPTS | | DwPTS | UpPTS | |
| | | Normal cyclic prefix in uplink | Extended cyclic prefix in uplink | | Normal cyclic prefix in uplink | Extended cyclic prefix in uplink |
| 0 | $6592 \cdot T_s$ | $2192 \cdot T_s$ | $2560 \cdot T_s$ | $7680 \cdot T_s$ | $2192 \cdot T_s$ | $2560 \cdot T_s$ |
| 1 | $19760 \cdot T_s$ | | | $20480 \cdot T_s$ | | |
| 2 | $21952 \cdot T_s$ | | | $23040 \cdot T_s$ | | |
| 3 | $24144 \cdot T_s$ | | | $25600 \cdot T_s$ | | |
| 4 | $26336 \cdot T_s$ | $4384 \cdot T_s$ | $5120 \cdot T_s$ | $7680 \cdot T_s$ | $4384 \cdot T_s$ | $5120 \cdot T_s$ |
| 5 | $6592 \cdot T_s$ | | | $20480 \cdot T_s$ | | |
| 6 | $19760 \cdot T_s$ | | | $23040 \cdot T_s$ | | |
| 7 | $21952 \cdot T_s$ | | | $12800 \cdot T_s$ | | |
| 8 | $24144 \cdot T_s$ | | | - | | |
| 9 | $13168 \cdot T_s$ | - | - | - | - | - |

| Special subframe (30720·T_s): Normal cyclic prefix in downlink (UpPTS) | | | |
|---|---------------------------------------|---------------------------------------|---|
| | Special subframe configuration | Normal cyclic prefix in uplink | Extended cyclic prefix in uplink |
| Uplink duty factor in one special subframe | 0~4 | 7.13% | 8.33% |
| | 5~9 | 14.3% | 16.7% |

| Special subframe(30720·T_s): Extended cyclic prefix in downlink (UpPTS) | | | |
|--|---------------------------------------|---------------------------------------|---|
| | Special subframe configuration | Normal cyclic prefix in uplink | Extended cyclic prefix in uplink |
| Uplink duty factor in one special subframe | 0~3 | 7.13% | 8.33% |
| | 4~7 | 14.3% | 16.7% |

The highest duty factor is resulted from:

- i. Uplink-downlink configuration: 0. In a half-frame consisted of 5 subframes, uplink operation is in 3 uplink subframes and 1 special subframe.
- ii. special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink
- iii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is: $(3+0.167)/5 = 63.3\%$
- iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is: $(3+0.143)/5 = 62.9\%$
- v. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix $63.3\%/62.9\% = 1.006$ is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
- vi. The device supports Power Class 3 uplink-downlink configurations 0 and 6, and Power Class 2 uplink-downlink configurations 1 to 5 operations for LTE Band 41.
- vii. The highest available duty cycle for Power Class 2 operation is 43.3% using UL-DL configuration 1, for Power Class 3 operation is 63.3% using UL-DL configuration 0. Per FCC Guidance, all SAR tests were performed using Power Class 3. SAR with Power Class 2 at the available duty factor was additionally performed for the Power Class 3 configuration with the highest SAR among all exposure condition.

<5G NR Note>

1. Referencing the procedure in KDB 941225, the test procedures are outlined as below
 - a. For DFT-OFDM output power measurement, full measurement was done for Pi/2 BPSK and QPSK and for the largest supported bandwidth, repeat test for 16QAM/64QAM/256QAM under 1RB 1Offset configuration. For smaller bandwidth, measure conducted power for Pi/2 BPSK and 1RB 1Offset configuration.
 - b. According to the tune-up, CP-OFDM output power is not ½ dB higher than DFT-OFDM mode, and the reported SAR of DFT-OFDM mode reported SAR is ≤ 1.45 W/kg, SAR test and thus conducted power for CP-OFDM mode is not required.
 - c. To start SAR test for the largest channel bandwidth for Pi/2 BPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel. Also do SAR test for 50% RB allocation for Pi/2 BPSK SAR testing using 1RB Pi/2 BPSK allocation procedure
 - d. For Pi/2 BPSK with 100% RB allocation, SAR test is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
 - e. For higher modulation QPSK/16QAM/64QAM/256QAM, according to tune-up document the power level is not ½ dB higher than the same configuration in Pi/2 BPSK, also reported SAR for the Pi/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
 - f. Smaller bandwidth output power for each RB allocation configuration for this device is not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
2. Due to test setup limitations, SAR testing for NR was performed using Factory Test Mode software to establish the connection and perform SAR with 100% transmission. And only for TDD power class2 was performed using Factory Test Mode software to establish the connection and perform SAR with 50% transmission.
3. For NR FDD was establishing connections via a base station simulator to use for output power measurement and SAR testing

<3GPP 38.101 MPR for EN-DC>

Table 6.2.2-1 Maximum power reduction (MPR) for power class 3

| Modulation | | MPR (dB) | | |
|------------|-----------|---------------------|----------------------|----------------------|
| | | Edge RB allocations | Outer RB allocations | Inner RB allocations |
| DFT-s-OFDM | Pi/2 BPSK | ≤ 3.5 ¹ | ≤ 1.2 ¹ | ≤ 0.2 ¹ |
| | | ≤ 0.5 ² | ≤ 0.5 ² | 0 ² |
| | QPSK | | ≤ 1 | 0 |
| | 16 QAM | | ≤ 2 | ≤ 1 |
| | 64 QAM | | ≤ 2.5 | |
| | 256 QAM | | ≤ 4.5 | |
| CP-OFDM | QPSK | | ≤ 3 | ≤ 1.5 |
| | 16 QAM | | ≤ 3 | ≤ 2 |
| | 64 QAM | | ≤ 3.5 | |
| | 256 QAM | | ≤ 6.5 | |

NOTE 1: Applicable for UE operating in TDD mode with Pi/2 BPSK modulation and UE indicates support for UE capability *powerBoosting-pi2BPSK* and if the IE *powerBoostPi2BPSK* is set to 1 and 40 % or less slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79. The reference power of 0 dB MPR is 26 dBm.

NOTE 2: Applicable for UE operating in FDD mode, or in TDD mode in bands other than n40, n41, n77, n78 and n79 with Pi/2 BPSK modulation and if the IE *powerBoostPi2BPSK* is set to 0 and if more than 40 % of slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79.

Table 6.2.2-2 Maximum power reduction (MPR) for power class 2

| Modulation | | MPR (dB) | | |
|------------|-----------|---------------------|----------------------|----------------------|
| | | Edge RB allocations | Outer RB allocations | Inner RB allocations |
| DFT-s-OFDM | Pi/2 BPSK | ≤ 3.5 | ≤ 0.5 | 0 |
| | QPSK | ≤ 3.5 | ≤ 1 | 0 |
| | 16 QAM | ≤ 3.5 | ≤ 2 | ≤ 1 |
| | 64 QAM | ≤ 3.5 | | ≤ 2.5 |
| | 256 QAM | | ≤ 4.5 | |
| CP-OFDM | QPSK | ≤ 3.5 | ≤ 3 | ≤ 1.5 |
| | 16 QAM | ≤ 3.5 | ≤ 3 | ≤ 2 |
| | 64 QAM | | ≤ 3.5 | |
| | 256 QAM | | ≤ 6.5 | |



12. DL/UL carrier aggregation

<LTE Carrier Aggregation combinations>

General Note:

1. This device supports Carrier Aggregation on downlink only for inter and intra band. For the device supports combination bands and configurations are according to 3GPP.
2. In applying the existing power measurement procedure of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of the frequency band and CCs in each row need consideration, and that configurations require power measurement should be highlighted in the below table.

| 2CC Downlink Carrier Aggregation | | | 3CC Downlink Carrier Aggregation | | |
|----------------------------------|-------------|----------------------|----------------------------------|----------------|----------------------|
| Number | Combination | Covered by | Number | Combination | Covered by |
| | | Measurement Superset | | | Measurement Superset |
| 1 | CA_43C | | 61 | CA_48D | 417 |
| 2 | CA_48B | 417 | 62 | CA_66D | 417 |
| 3 | CA_48C | 417 | 63 | CA_25A-25A-25A | 418 |
| 4 | CA_66B | 417 | 64 | CA_48A-48C | 417 |
| 5 | CA_2A-2A | 409 | 65 | CA_66A-66A-66A | 417 |
| 6 | CA_4A-4A | 410 | 66 | CA_66A-66B | 417 |
| 7 | CA_25A-25A | 418 | 67 | CA_66A-66C | 417 |
| 8 | CA_43A-43A | | 68 | CA_2A-2A-4A | 290 |
| 9 | CA_48A-48A | 417 | 69 | CA_2A-2A-5A | 398 |
| 10 | CA_2A-4A | 290 | 70 | CA_2A-2A-7A | 402 |
| 11 | CA_2A-5A | 398 | 71 | CA_2A-2A-12A | 389 |
| 12 | CA_2A-12A | 389 | 72 | CA_2A-2A-13A | 407 |
| 13 | CA_2A-13A | 407 | 73 | CA_2A-2A-14A | 392 |
| 14 | CA_2A-14A | 392 | 74 | CA_2A-2A-29A | 393 |
| 15 | CA_2A-26A | 180 | 75 | CA_2A-2A-30A | 394 |
| 16 | CA_2A-29A | 393 | 76 | CA_2A-2A-46A | 408 |
| 17 | CA_2A-30A | 394 | 77 | CA_2A-2A-66A | 409 |
| 18 | CA_2A-46A | 408 | 78 | CA_2A-2A-71A | 325 |
| 19 | CA_2A-48A | 409 | 79 | CA_2A-4A-4A | 290 |
| 20 | CA_2A-66A | 409 | 80 | CA_2A-5B | 398 |
| 21 | CA_2A-71A | 325 | 81 | CA_2C-5A | 398 |
| 22 | CA_4A-12A | 327 | 82 | CA_2A-7A-7A | 402 |
| 23 | CA_4A-13A | 158 | 83 | CA_2A-7C | 402 |
| 24 | CA_4A-29A | 328 | 84 | CA_2A-12A-12A | 389 |
| 25 | CA_4A-30A | 410 | 85 | CA_2C-12A | 389 |
| 26 | CA_4A-46A | 365 | 86 | CA_2C-29A | 393 |
| 27 | CA_4A-48A | 366 | 87 | CA_2C-30A | 394 |
| 28 | CA_4A-71A | 271 | 88 | CA_2A-46A-46A | 408 |
| 29 | CA_5A-25A | | 89 | CA_2A-46C | 408 |
| 30 | CA_5A-30A | 412 | 90 | CA_2A-48A-48A | 409 |
| 31 | CA_5A-38A | | 91 | CA_2A-48C | 409 |
| 32 | CA_5A-41A | | 92 | CA_2A-66A-66A | 409 |
| 33 | CA_5A-48A | 336 | 93 | CA_2A-66B | 409 |
| 34 | CA_7A-12A | 340 | 94 | CA_2A-66C | 409 |
| 35 | CA_7A-13A | 388 | 95 | CA_2C-66A | 409 |
| 36 | CA_7A-25A | 415 | 96 | CA_4A-4A-5A | 410 |
| 37 | CA_7A-26A | 198 | 97 | CA_4A-4A-7A | 290 |
| 38 | CA_7A-29A | 344 | 98 | CA_4A-4A-12A | 327 |
| 39 | CA_7A-66A | 415 | 99 | CA_4A-4A-13A | 158 |
| 40 | CA_12A-25A | | 100 | CA_4A-4A-29A | 328 |
| 41 | CA_12A-30A | 345 | 101 | CA_4A-4A-30A | 410 |
| 42 | CA_12A-66A | 389 | 102 | CA_4A-4A-71A | 271 |
| 43 | CA_13A-48A | 417 | 103 | CA_4A-5B | 410 |



| | | | | | |
|----|------------|-----|-----|----------------|-----|
| 44 | CA_13A-66A | 417 | 104 | CA_4A-7A-7A | 290 |
| 45 | CA_14A-30A | 351 | 105 | CA_4A-12A-12A | 327 |
| 46 | CA_14A-66A | 392 | 106 | CA_4A-46A-46A | 365 |
| 47 | CA_25A-26A | 418 | 107 | CA_4A-46C | 365 |
| 48 | CA_25A-41A | 418 | 108 | CA_4A-48C | 366 |
| 49 | CA_25A-46A | 256 | 109 | CA_5A-5A-66A | 413 |
| 50 | CA_25A-66A | 415 | 110 | CA_5B-30A | 412 |
| 51 | CA_26A-41A | 418 | 111 | CA_5A-66A-66A | 413 |
| 52 | CA_29A-30A | 354 | 112 | CA_5A-66B | 413 |
| 53 | CA_29A-66A | 393 | 113 | CA_5A-66C | 413 |
| 54 | CA_30A-66A | 412 | 114 | CA_5B-66A | 413 |
| 55 | CA_41A-46A | 374 | 115 | CA_7A-7A-13A | 388 |
| 56 | CA_41A-48A | | 116 | CA_7A-7A-25A | 415 |
| 57 | CA_46A-66A | 416 | 117 | CA_7A-7A-26A | 198 |
| 58 | CA_48A-66A | 417 | 118 | CA_7A-7A-29A | 344 |
| 59 | CA_48A-71A | 154 | 119 | CA_7A-7A-46A | 411 |
| 60 | CA_66A-71A | 325 | 120 | CA_7A-7A-66A | 415 |
| | | | 121 | CA_7C-13A | 388 |
| | | | 122 | CA_7A-25A-25A | 415 |
| | | | 123 | CA_7C-25A | 415 |
| | | | 124 | CA_7C-29A | 344 |
| | | | 125 | CA_7A-66A-66A | 415 |
| | | | 126 | CA_7C-66A | 415 |
| | | | 127 | CA_12A-66A-66A | 389 |
| | | | 128 | CA_12A-66C | 389 |
| | | | 129 | CA_13A-48A-48A | 417 |
| | | | 130 | CA_13A-48C | 417 |
| | | | 131 | CA_13A-66A-66A | 417 |
| | | | 132 | CA_13A-66B | 417 |
| | | | 133 | CA_13A-66C | 417 |
| | | | 134 | CA_14A-66A-66A | 392 |
| | | | 135 | CA_25A-25A-26A | 418 |
| | | | 136 | CA_25A-25A-41A | 418 |
| | | | 137 | CA_25A-25A-66A | 415 |
| | | | 138 | CA_25A-41C | 418 |
| | | | 139 | CA_25A-46C | 256 |
| | | | 140 | CA_26A-41C | 418 |
| | | | 141 | CA_29A-66A-66A | 393 |
| | | | 142 | CA_30A-66A-66A | 412 |
| | | | 143 | CA_41A-46C | 374 |
| | | | 144 | CA_46A-46A-66A | 416 |
| | | | 145 | CA_46A-66A-66A | 416 |
| | | | 146 | CA_46A-66C | 416 |
| | | | 147 | CA_46C-66A | 416 |
| | | | 148 | CA_48A-48A-66A | 417 |
| | | | 149 | CA_48A-48A-71A | 154 |
| | | | 150 | CA_48A-66A-66A | 417 |
| | | | 151 | CA_48A-66B | 417 |
| | | | 152 | CA_48A-66C | 417 |
| | | | 153 | CA_48C-66A | 417 |
| | | | 154 | CA_48C-71A | |
| | | | 155 | CA_66A-66A-71A | 325 |
| | | | 156 | CA_66C-71A | 325 |
| | | | 157 | CA_2A-4A-12A | 287 |
| | | | 158 | CA_2A-4A-13A | |
| | | | 159 | CA_2A-4A-29A | |



| | | | | | |
|--|--|--|-----|----------------|-----|
| | | | 160 | CA_2A-4A-30A | |
| | | | 161 | CA_2A-4A-71A | 271 |
| | | | 162 | CA_2A-5A-7A | 292 |
| | | | 163 | CA_2A-5A-30A | 394 |
| | | | 164 | CA_2A-5A-46A | 395 |
| | | | 165 | CA_2A-5A-48A | |
| | | | 166 | CA_2A-5A-66A | 398 |
| | | | 167 | CA_2A-7A-12A | 274 |
| | | | 168 | CA_2A-7A-13A | 388 |
| | | | 169 | CA_2A-7A-26A | |
| | | | 170 | CA_2A-7A-29A | 305 |
| | | | 171 | CA_2A-7A-46A | 401 |
| | | | 172 | CA_2A-7A-66A | 402 |
| | | | 173 | CA_2A-12A-30A | 309 |
| | | | 174 | CA_2A-12A-66A | 389 |
| | | | 175 | CA_2A-13A-46A | 403 |
| | | | 176 | CA_2A-13A-48A | 404 |
| | | | 177 | CA_2A-13A-66A | 407 |
| | | | 178 | CA_2A-14A-30A | 280 |
| | | | 179 | CA_2A-14A-66A | 392 |
| | | | 180 | CA_2A-26A-66A | |
| | | | 181 | CA_2A-29A-30A | 318 |
| | | | 182 | CA_2A-29A-66A | 393 |
| | | | 183 | CA_2A-30A-66A | 320 |
| | | | 184 | CA_2A-46A-66A | 408 |
| | | | 185 | CA_2A-48A-66A | 409 |
| | | | 186 | CA_2A-66A-71A | 325 |
| | | | 187 | CA_4A-5A-30A | 410 |
| | | | 188 | CA_4A-7A-12A | |
| | | | 189 | CA_4A-12A-30A | 327 |
| | | | 190 | CA_4A-29A-30A | 328 |
| | | | 191 | CA_5A-7A-46A | 411 |
| | | | 192 | CA_5A-30A-66A | 412 |
| | | | 193 | CA_5A-46A-66A | 413 |
| | | | 194 | CA_5A-48A-66A | 336 |
| | | | 195 | CA_7A-12A-66A | 340 |
| | | | 196 | CA_7A-13A-66A | 341 |
| | | | 197 | CA_7A-25A-66A | 415 |
| | | | 198 | CA_7A-26A-66A | |
| | | | 199 | CA_7A-29A-66A | 344 |
| | | | 200 | CA_7A-46A-66A | |
| | | | 201 | CA_12A-30A-66A | 345 |
| | | | 202 | CA_13A-46A-66A | 416 |
| | | | 203 | CA_13A-48A-66A | 417 |
| | | | 204 | CA_14A-30A-66A | 351 |
| | | | 205 | CA_25A-26A-41A | 418 |
| | | | 206 | CA_29A-30A-66A | 354 |
| | | | 207 | CA_29A-46A-66A | |



| 4CC Downlink Carrier Aggregation | | | 5CC Downlink Carrier Aggregation | | |
|----------------------------------|--------------------|----------------------|----------------------------------|----------------------|----------------------|
| Number | Combination | Covered by | Number | Combination | Covered by |
| | | Measurement Superset | | | Measurement Superset |
| 208 | CA_48E | 417 | 355 | CA_48A-48E | 417 |
| 209 | CA_48A-48D | 417 | 356 | CA_48C-48D | 417 |
| 210 | CA_48C-48C | 417 | 357 | CA_2A-2A-46D | 408 |
| 211 | CA_2A-2A-4A-4A | 290 | 358 | CA_2A-2A-66A-66B | 409 |
| 212 | CA_2A-2A-5B | 398 | 359 | CA_2A-2A-66A-66C | 409 |
| 213 | CA_2A-2A-7A-7A | 402 | 360 | CA_2A-46A-46D | 408 |
| 214 | CA_2A-2A-7C | 402 | 361 | CA_2A-46E | 408 |
| 215 | CA_2A-2A-12A-12A | 389 | 362 | CA_2A-48A-48D | 409 |
| 216 | CA_2A-2A-46C | 408 | 363 | CA_2A-48C-48C | 409 |
| 217 | CA_2A-2A-66A-66A | 409 | 364 | CA_2A-48E | 409 |
| 218 | CA_2A-2A-66B | 409 | 365 | CA_4A-46A-46D | |
| 219 | CA_2A-2A-66C | 409 | 366 | CA_4A-48E | |
| 220 | CA_2A-46A-46C | 408 | 367 | CA_5B-66A-66B | 413 |
| 221 | CA_2A-46D | 408 | 368 | CA_5B-66A-66C | 413 |
| 222 | CA_2A-48A-48C | 409 | 369 | CA_7A-7A-46D | 411 |
| 223 | CA_2A-48D | 409 | 370 | CA_13A-48A-48D | 417 |
| 224 | CA_2A-66A-66A-66A | 409 | 371 | CA_13A-48C-48C | 417 |
| 225 | CA_2A-66A-66B | 409 | 372 | CA_25A-25A-41D | 418 |
| 226 | CA_2A-66A-66C | 409 | 373 | CA_25A-41E | 418 |
| 227 | CA_2C-66A-66A | 409 | 374 | CA_41A-46E | |
| 228 | CA_2A-66D | 409 | 375 | CA_46A-46D-66A | 416 |
| 229 | CA_4A-4A-5B | 410 | 376 | CA_46D-66A-66A | 416 |
| 230 | CA_4A-4A-12A-12A | 327 | 377 | CA_46E-66A | 416 |
| 231 | CA_4A-46A-46C | 365 | 378 | CA_48A-48C-66B | 417 |
| 232 | CA_4A-46D | 365 | 379 | CA_48A-48C-66C | 417 |
| 233 | CA_4A-48D | 366 | 380 | CA_48A-48D-66A | 417 |
| 234 | CA_5A-5A-66A-66A | 413 | 381 | CA_48C-48C-66A | 417 |
| 235 | CA_5A-5A-66B | 413 | 382 | CA_48E-66A | 417 |
| 236 | CA_5A-5A-66C | 413 | 383 | CA_2A-2A-5A-66A-66A | 398 |
| 237 | CA_5A-48D | 336 | 384 | CA_2A-2A-5A-66B | 398 |
| 238 | CA_5A-66A-66B | 413 | 385 | CA_2A-2A-5A-66C | 398 |
| 239 | CA_5A-66A-66C | 413 | 386 | CA_2A-2A-5B-66A | 398 |
| 240 | CA_5B-66A-66A | 413 | 387 | CA_2A-2A-7A-7A-13A | 388 |
| 241 | CA_5A-66D | 413 | 388 | CA_2A-2A-7C-13A | |
| 242 | CA_5B-66B | 413 | 389 | CA_2A-2A-12A-66A-66A | |
| 243 | CA_5B-66C | 413 | 390 | CA_2A-2A-13A-66A-66A | 407 |
| 244 | CA_7A-7A-25A-25A | 415 | 391 | CA_2A-2A-13A-66B | 407 |
| 245 | CA_7A-7A-46C | 411 | 392 | CA_2A-2A-14A-66A-66A | |
| 246 | CA_7A-7A-66A-66A | 415 | 393 | CA_2A-2A-29A-66A-66A | |
| 247 | CA_7C-25A-25A | 415 | 394 | CA_2C-5B-30A | |
| 248 | CA_13A-48A-48C | 417 | 395 | CA_2A-5A-46D | |
| 249 | CA_13A-48D | 417 | 396 | CA_2A-5B-66A-66A | 398 |
| 250 | CA_13A-66A-66B | 417 | 397 | CA_2A-5B-66B | 398 |
| 251 | CA_13A-66A-66C | 417 | 398 | CA_2A-5B-66C | |
| 252 | CA_13A-66D | 417 | 399 | CA_2A-7A-7A-46C | 401 |
| 253 | CA_14A-66A-66A-66A | 392 | 400 | CA_2A-7A-7A-66A-66A | 402 |
| 254 | CA_25A-25A-41C | 418 | 401 | CA_2A-7A-46D | |
| 255 | CA_25A-41D | 418 | 402 | CA_2A-7C-66A-66A | |
| 256 | CA_25A-46D | | 403 | CA_2A-13A-46D | |
| 257 | CA_41A-46D | 374 | 404 | CA_2A-13A-48D | |
| 258 | CA_46A-46C-66A | 416 | 405 | CA_2A-13A-66A-66B | 407 |
| 259 | CA_46C-66A-66A | 416 | 406 | CA_2A-13A-66A-66C | 407 |



| | | | | | |
|-----|--------------------|-----|-----|----------------------|-----|
| 260 | CA_46D-66A | 416 | 407 | CA_2A-13A-66D | |
| 261 | CA_48A-48A-66A-66A | 417 | 408 | CA_2A-46D-66A | |
| 262 | CA_48A-48A-66B | 417 | 409 | CA_2A-48D-66A | |
| 263 | CA_48A-48A-66C | 417 | 410 | CA_4A-4A-5B-30A | |
| 264 | CA_48A-48C-66A | 417 | 411 | CA_5A-7A-46D | |
| 265 | CA_48C-66A-66A | 417 | 412 | CA_5B-30A-66A-66A | |
| 266 | CA_48C-66B | 417 | 413 | CA_5A-46D-66A | |
| 267 | CA_48C-66C | 417 | 414 | CA_7A-7A-25A-25A-66A | 415 |
| 268 | CA_48D-66A | 417 | 415 | CA_7C-25A-25A-66A | |
| 269 | CA_2A-2A-4A-5A | 288 | 416 | CA_13A-46D-66A | |
| 270 | CA_2A-2A-4A-12A | 287 | 417 | CA_13A-48D-66A | |
| 271 | CA_2A-2A-4A-71A | | 418 | CA_25A-25A-26A-41C | |
| 272 | CA_2A-2A-5A-30A | 394 | | | |
| 273 | CA_2A-2A-5A-66A | 398 | | | |
| 274 | CA_2A-2A-7A-12A | | | | |
| 275 | CA_2A-2A-7A-13A | 388 | | | |
| 276 | CA_2A-2A-7A-66A | 402 | | | |
| 277 | CA_2A-2A-12A-30A | 309 | | | |
| 278 | CA_2A-2A-12A-66A | 389 | | | |
| 279 | CA_2A-2A-13A-66A | 407 | | | |
| 280 | CA_2A-2A-14A-30A | | | | |
| 281 | CA_2A-2A-14A-66A | 392 | | | |
| 282 | CA_2A-2A-29A-30A | 318 | | | |
| 283 | CA_2A-2A-29A-66A | 393 | | | |
| 284 | CA_2A-2A-30A-66A | 320 | | | |
| 285 | CA_2A-2A-66A-71A | 325 | | | |
| 286 | CA_2A-4A-4A-5A | 288 | | | |
| 287 | CA_2A-4A-4A-12A | | | | |
| 288 | CA_2A-4A-5B | | | | |
| 289 | CA_2A-4A-7A-7A | 290 | | | |
| 290 | CA_2A-4A-7C | | | | |
| 291 | CA_2A-5A-7A-7A | 292 | | | |
| 292 | CA_2A-5A-7C | | | | |
| 293 | CA_2A-5B-30A | 394 | | | |
| 294 | CA_2C-5A-30A | 394 | | | |
| 295 | CA_2A-5A-46C | 395 | | | |
| 296 | CA_2A-5A-66A-66A | 398 | | | |
| 297 | CA_2A-5A-66B | 398 | | | |
| 298 | CA_2A-5A-66C | 398 | | | |
| 299 | CA_2A-5B-66A | 398 | | | |
| 300 | CA_2A-7A-7A-13A | 388 | | | |
| 301 | CA_2A-7A-7A-29A | 305 | | | |
| 302 | CA_2A-7A-7A-46A | 401 | | | |
| 303 | CA_2A-7A-7A-66A | 402 | | | |
| 304 | CA_2A-7C-13A | 388 | | | |
| 305 | CA_2A-7C-29A | | | | |
| 306 | CA_2A-7A-46C | 401 | | | |
| 307 | CA_2A-7A-66A-66A | 402 | | | |
| 308 | CA_2A-7C-66A | 402 | | | |
| 309 | CA_2C-12A-30A | | | | |
| 310 | CA_2A-12A-66A-66A | 389 | | | |
| 311 | CA_2A-12A-66C | 389 | | | |
| 312 | CA_2A-13A-46C | 403 | | | |
| 313 | CA_2A-13A-48C | 404 | | | |
| 314 | CA_2A-13A-66A-66A | 407 | | | |
| 315 | CA_2A-13A-66B | 407 | | | |



| | | | | | |
|-----|--------------------|-----|--|--|--|
| 316 | CA_2A-13A-66C | 407 | | | |
| 317 | CA_2A-14A-66A-66A | 392 | | | |
| 318 | CA_2C-29A-30A | | | | |
| 319 | CA_2A-29A-66A-66A | 393 | | | |
| 320 | CA_2A-30A-66A-66A | | | | |
| 321 | CA_2A-46C-66A | 408 | | | |
| 322 | CA_2A-48A-66A-66A | 409 | | | |
| 323 | CA_2A-48C-66A | 409 | | | |
| 324 | CA_2A-66A-66A-71A | 325 | | | |
| 325 | CA_2A-66C-71A | | | | |
| 326 | CA_4A-4A-5A-30A | 410 | | | |
| 327 | CA_4A-4A-12A-30A | | | | |
| 328 | CA_4A-4A-29A-30A | | | | |
| 329 | CA_4A-5B-30A | 410 | | | |
| 330 | CA_5A-7A-7A-66A | 332 | | | |
| 331 | CA_5A-7A-46C | 411 | | | |
| 332 | CA_5A-7A-66A-66A | | | | |
| 333 | CA_5A-30A-66A-66A | 412 | | | |
| 334 | CA_5B-30A-66A | 412 | | | |
| 335 | CA_5A-46C-66A | 413 | | | |
| 336 | CA_5A-48A-66A-66A | | | | |
| 337 | CA_7A-7A-13A-66A | 341 | | | |
| 338 | CA_7A-7A-25A-66A | 415 | | | |
| 339 | CA_7A-7A-29A-66A | 344 | | | |
| 340 | CA_7A-12A-66A-66A | | | | |
| 341 | CA_7C-13A-66A | | | | |
| 342 | CA_7A-25A-25A-66A | 415 | | | |
| 343 | CA_7C-25A-66A | 415 | | | |
| 344 | CA_7C-29A-66A | | | | |
| 345 | CA_12A-30A-66A-66A | | | | |
| 346 | CA_13A-46C-66A | 416 | | | |
| 347 | CA_13A-48A-66A-66A | 417 | | | |
| 348 | CA_13A-48A-66B | 417 | | | |
| 349 | CA_13A-48A-66C | 417 | | | |
| 350 | CA_13A-48C-66A | 417 | | | |
| 351 | CA_14A-30A-66A-66A | | | | |
| 352 | CA_25A-25A-26A-41A | 418 | | | |
| 353 | CA_25A-26A-41C | 418 | | | |
| 354 | CA_29A-30A-66A-66A | | | | |

<Power verification when LTE Carrier Aggregation Active>

General Note:

- i. According to KDB941225 D05A v01r02, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.
- ii. Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.
- iii. The device supports downlink two carrier aggregation. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
- iv. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.
- v. For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.
- vi. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

$$\text{Nominal channel spacing} = \left\lceil \frac{BW_{\text{Channel}(1)} + BW_{\text{Channel}(2)} - 0.1|BW_{\text{Channel}(1)} - BW_{\text{Channel}(2)}|}{0.6} \right\rceil 0.3 \text{ [MHz]}$$

<Two Carrier power verification>

| Configure | | PCC | | | | | | SCC | | | | Power | | |
|------------|----------------|----------|----------|----------------|------------|------|--------|--------------|----------|----------|----------------|------------|------------------------|-----------------------|
| | | LTE Band | BW (MHz) | UL Freq. (MHz) | UL Channel | Mod. | UL# RB | UL RB Offset | LTE Band | BW (MHz) | DL Freq. (MHz) | DL Channel | With CA Tx.Power (dBm) | W/O CA Tx.Power (dBm) |
| Inter-Band | | 5 | 10 | 844 | 20600 | QPSK | 1 | 0 | 25 | 20 | 1960 | 8340 | 23.33 | 23.42 |
| | | 5 | 10 | 844 | 20600 | QPSK | 1 | 0 | 38 | 20 | 2595 | 38000 | 23.31 | 23.42 |
| | | 5 | 10 | 844 | 20600 | QPSK | 1 | 0 | 41 | 20 | 2593 | 40620 | 23.22 | 23.42 |
| | | 12 | 10 | 707.5 | 23095 | QPSK | 1 | 0 | 25 | 20 | 1960 | 8340 | 23.65 | 23.74 |
| | | 41 | 20 | 2593 | 40620 | QPSK | 1 | 0 | 48 | 20 | 3641 | 56150 | 23.11 | 23.31 |
| Intra-Band | Non-Contiguous | 43 | 20 | 3700 | 44590 | QPSK | 1 | 0 | 43 | 20 | 3665 | 44240 | 20.15 | 20.31 |
| | Contiguous | 43 | 20 | 3700 | 44590 | QPSK | 1 | 0 | 43 | 20 | 3719.80 | 44788 | 20.16 | 20.31 |

<Three Carrier power verification>

| Configure | | PCC | | | | | | SCC1 | | | | SCC2 | | | | Power | | |
|------------|--|----------|----------|----------------|------------|------|--------|--------------|----------|----------|----------------|------------|----------|----------|----------------|------------|------------------------|-----------------------|
| | | LTE Band | BW (MHz) | UL Freq. (MHz) | UL Channel | Mod. | UL# RB | UL RB Offset | LTE Band | BW (MHz) | DL Freq. (MHz) | DL Channel | LTE Band | BW (MHz) | DL Freq. (MHz) | DL Channel | With CA Tx.Power (dBm) | W/O CA Tx.Power (dBm) |
| Inter-Band | | 2 | 20 | 1860 | 18700 | QPSK | 1 | 0 | 4 | 20 | 2132.5 | 2175 | 13 | 10 | 751 | 5230 | 23.10 | 23.25 |
| | | 2 | 20 | 1860 | 18700 | QPSK | 1 | 0 | 4 | 20 | 2132.5 | 2175 | 29 | 10 | 722.5 | 9715 | 23.08 | 23.25 |
| | | 2 | 20 | 1860 | 18700 | QPSK | 1 | 0 | 4 | 20 | 2132.5 | 2175 | 30 | 10 | 2355 | 9820 | 22.90 | 23.25 |
| | | 2 | 20 | 1860 | 18700 | QPSK | 1 | 0 | 5 | 10 | 881.5 | 2525 | 48 | 20 | 3641 | 56150 | 22.93 | 23.25 |
| | | 2 | 20 | 1860 | 18700 | QPSK | 1 | 0 | 7 | 20 | 2655 | 3100 | 26 | 15 | 876.5 | 8865 | 22.86 | 23.25 |
| | | 4 | 20 | 1860 | 18700 | QPSK | 1 | 0 | 26 | 15 | 876.5 | 8865 | 66 | 20 | 2155 | 66886 | 23.05 | 23.25 |
| | | 4 | 20 | 1745 | 20300 | QPSK | 1 | 0 | 7 | 20 | 2655 | 3100 | 12 | 10 | 737.5 | 5095 | 23.21 | 23.44 |
| | | 7 | 20 | 2535 | 21100 | QPSK | 1 | 0 | 26 | 15 | 876.5 | 8865 | 66 | 20 | 2155 | 66886 | 23.10 | 23.28 |
| | | 7 | 20 | 2535 | 21100 | QPSK | 1 | 0 | 46 | 20 | 5537.5 | 50665 | 66 | 20 | 2155 | 66886 | 23.09 | 23.28 |
| | | 48 | 20 | 3690 | 56640 | QPSK | 1 | 0 | 48 | 20 | 3670.2 | 56442 | 71 | 20 | 634.5 | 68761 | 20.35 | 20.49 |
| | | 66 | 20 | 1745 | 132322 | QPSK | 1 | 0 | 29 | 10 | 722.5 | 9715 | 46 | 20 | 5537.5 | 50665 | 23.33 | 23.47 |



<Four Carrier power verification>

Table with columns: Configure, PCC, SCC1, SCC2, SCC3, Power. Rows include LTE Band, BW (MHz), UL Freq. (MHz), UL Channel, Mod., UL# RB, UL RB Offset, DL Freq. (MHz), DL Channel, and Tx.Power (dBm).

<Five Carrier power verification>

Table with columns: Configure, PCC, SCC1, SCC2, SCC3, SCC4, Power. Rows include LTE Band, BW (MHz), UL Freq. (MHz), UL Channel, Mod., UL# RB, UL RB Offset, DL Freq. (MHz), DL Channel, and Tx.Power (dBm).

<LTE Uplink carrier aggregation>

| 2CC Uplink Carrier Aggregation | |
|--------------------------------|-------------|
| Number | Combination |
| 1 | 2C |
| 2 | 5B |
| 3 | 7C |
| 4 | 66B |
| 5 | 66C |
| 6 | 38C |
| 7 | 41C |
| 8 | 42C |
| 9 | 43C |
| 10 | 48C |

<Intra-band>

General Note:

- i. The device supports intra-band uplink carrier aggregation with a maximum of two 20MHz component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre 3GPP requirement.
- ii. The device supports uplink carrier aggregation with a maximum of two 20MHz component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre the 3GPP requirement.
- iii. According TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.
- iv. Additional SAR measurement for LTE UL CA with other DL CA combinations active were not required since the maximum output power for this configuration was not > 0.25dB higher than the maximum output power for UL CA active.

Sensor OFF

| CA_2C_Main | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 18700 | 18898 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 23.11 | 25 |
| 18900 | 18702 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 23.2 | 25 |
| 19100 | 18902 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 23.16 | 25 |

| CA_5B_Main | | | | | | | | | | |
|-------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 10MHz+10MHz (50RB+50RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 20450 | 20549 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 23.38 | 25 |
| 20475 | 20574 | QPSK | 1 | 49 | 1 | 0 | 2 | 0 | 23.33 | 25 |
| 20600 | 20501 | QPSK | 1 | 0 | 1 | 49 | 2 | 0 | 23.28 | 25 |



| CA_7C_Main | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 20850 | 21048 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 23.2 | 25 |
| 21100 | 20902 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 23.15 | 25 |
| 21350 | 21152 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 23.19 | 25 |

| CA_66B_Main | | | | | | | | | | |
|------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 15MHz+5MHz (75RB+25RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 132047 | 132140 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 23.19 | 25 |
| 132229 | 132322 | QPSK | 1 | 0 | 0 | 0 | 2 | 0 | 23.17 | 25 |
| 132504 | 132597 | QPSK | 1 | 0 | 0 | 0 | 2 | 0 | 23.22 | 25 |

| CA_66C_Main | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 132072 | 132270 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 23.15 | 25 |
| 132322 | 132124 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 23.25 | 25 |
| 132572 | 132374 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 23.23 | 25 |

| CA_38C_Main | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 37850 | 38048 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 23.21 | 25 |
| 37802 | 38000 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 23.15 | 25 |
| 38150 | 37952 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 23.16 | 25 |

| CA_41C_Main | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 39750 | 39948 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 23.22 | 25 |
| 40185 | 39987 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 23.09 | 25 |
| 40620 | 40422 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 23.16 | 25 |
| 41055 | 40857 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 23.26 | 25 |
| 41490 | 41292 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 23.24 | 25 |

| CA_41C_HPUE_Main | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 39750 | 39948 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 25.67 | 27.5 |
| 40185 | 39987 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 25.58 | 27.5 |
| 40620 | 40422 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 25.59 | 27.5 |
| 41055 | 40857 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 25.65 | 27.5 |
| 41490 | 41292 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 25.61 | 27.5 |



| CA_42C_MIMO2 | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 42190 | 42388 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 20.43 | 22 |
| 42392 | 42590 | QPSK | 1 | 0 | 0 | 0 | 2 | 0 | 20.33 | 22 |
| 42792 | 42990 | QPSK | 1 | 0 | 0 | 0 | 2 | 0 | 20.25 | 22 |

| CA_43C_MIMO2 (3600-3700MHz) | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 43690 | 43888 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 20.21 | 22 |
| 44090 | 43892 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 20.18 | 22 |
| 44490 | 44292 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 20.19 | 22 |

| CA_43C_MIMO2 (3700-3800MHz) | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 44690 | 44888 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 20.16 | 22 |
| 45090 | 44892 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 20.19 | 22 |
| 45490 | 45292 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 20.2 | 22 |

| CA_48C_MIMO2 | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 55340 | 55538 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 20.44 | 22 |
| 55632 | 55830 | QPSK | 1 | 0 | 0 | 0 | 2 | 0 | 20.35 | 22 |
| 55952 | 56150 | QPSK | 1 | 0 | 0 | 0 | 2 | 0 | 20.12 | 22 |
| 56442 | 56640 | QPSK | 1 | 0 | 0 | 0 | 2 | 0 | 20.23 | 22 |

Sensor ON

| CA_2C_Main | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 18700 | 18898 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 16.56 | 17 |
| 18900 | 18702 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 16.55 | 17 |
| 19100 | 18902 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 16.48 | 17 |

| CA_5B_Main | | | | | | | | | | |
|-------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 10MHz+10MHz (50RB+50RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 20450 | 20549 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 17.2 | 18 |
| 20475 | 20574 | QPSK | 1 | 0 | 1 | 49 | 2 | 0 | 17.15 | 18 |
| 20600 | 20501 | QPSK | 1 | 0 | 1 | 49 | 2 | 0 | 17.08 | 18 |

| CA_7C_Main | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 20850 | 21048 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 16.15 | 16.5 |
| 21100 | 20902 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 16.11 | 16.5 |
| 21350 | 21152 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 16.09 | 16.5 |

| CA_66B_Main | | | | | | | | | | |
|------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 15MHz+5MHz (75RB+25RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 132047 | 132140 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 18.22 | 19 |
| 132229 | 132322 | QPSK | 1 | 0 | 0 | 0 | 2 | 0 | 18.11 | 19 |
| 132504 | 132597 | QPSK | 1 | 0 | 0 | 0 | 2 | 0 | 18.09 | 19 |

| CA_66C_Main | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 132072 | 132270 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 18.11 | 19 |
| 132322 | 132124 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 18.08 | 19 |
| 132572 | 132374 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 18.16 | 19 |

| CA_38C_Main | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 37850 | 38048 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 17.05 | 17.5 |
| 37802 | 38000 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 17.01 | 17.5 |
| 38150 | 37952 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 16.91 | 17.5 |

| CA_41C_Main | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 39750 | 39948 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 17.11 | 17.5 |
| 40185 | 39987 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 16.98 | 17.5 |
| 40620 | 40422 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 16.99 | 17.5 |
| 41055 | 40857 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 17.03 | 17.5 |
| 41490 | 41292 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 17.07 | 17.5 |

| CA_41C_HPUE_Main | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 39750 | 39948 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 19.55 | 20 |
| 40185 | 39987 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 19.41 | 20 |
| 40620 | 40422 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 19.45 | 20 |
| 41055 | 40857 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 19.48 | 20 |
| 41490 | 41292 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 19.53 | 20 |



| CA_42C_MIMO2 | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 42190 | 42388 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 17.26 | 18 |
| 42392 | 42590 | QPSK | 1 | 0 | 0 | 0 | 2 | 0 | 17.25 | 18 |
| 42792 | 42990 | QPSK | 1 | 0 | 0 | 0 | 2 | 0 | 17.3 | 18 |

| CA_43C_MIMO2 | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 44690 | 44888 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 16.91 | 18 |
| 45090 | 44892 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 16.91 | 18 |
| 45490 | 45292 | QPSK | 1 | 0 | 1 | 99 | 2 | 0 | 16.82 | 18 |

| CA_48C_MIMO2 | | | | | | | | | | |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|---------------|-----------------------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) | | | | | | | | | | |
| PCC Channel | SCC Channel | Modulation | PCC | | SCC | | Total RB Size | Target MPR Level (dB) | Measured Power (dBm) | Tune up Power (dBm) |
| | | | RB Size | RB offset | RB Size | RB offset | | | | |
| 55340 | 55538 | QPSK | 1 | 0 | 0 | 0 | 1 | 0 | 17.03 | 17.5 |
| 55632 | 55830 | QPSK | 1 | 0 | 0 | 0 | 2 | 0 | 17.01 | 17.5 |
| 55952 | 56150 | QPSK | 1 | 0 | 0 | 0 | 2 | 0 | 16.98 | 17.5 |
| 56442 | 56640 | QPSK | 1 | 0 | 0 | 0 | 2 | 0 | 16.95 | 17.5 |



<SAR test exclusion table>

General Note:

1. The below table, when the distance is < 50 mm exclusion threshold is "Ratio", when the distance is > 50 mm exclusion threshold is "mW"
2. Maximum power is the source-based time-average power and represents the maximum RF output power among production units
3. Per KDB 447498 D01v06, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
4. Per KDB 447498 D01v06, standalone SAR test exclusion threshold is applied; If the test separation distance is < 5mm, 5mm is used to determine SAR exclusion threshold.
5. Per KDB 447498 D01v06, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot \sqrt{f(\text{GHz})} \leq 3.0$$
 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
 - f(GHz) is the RF channel transmit frequency in GHz
 - Power and distance are rounded to the nearest mW and mm before calculation
 - The result is rounded to one decimal place for comparison
6. Per KDB 447498 D01v06, at 100 MHz to 6 GHz and for *test separation distances* > 50 mm, the SAR test exclusion threshold is determined according to the following
 - a) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm) · (f(MHz)/150)] mW, at 100 MHz to 1500 MHz
 - b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm) · 10] mW at > 1500 MHz and ≤ 6 GHz

<Main Ant>

| Exposure Position | Wireless Interface | WCDMA Band V | WCDMA Band IV | WCDMA Band II | LTE Band 71/n71 | LTE Band 12/17/n12/n17 | LTE Band 13/n13 | LTE Band 14/n14 | LTE Band 5/26/n5/n26 | LTE Band 4/66/n4/n66 | LTE Band 2/5/n2/n25 | LTE Band 30/n30 | LTE Band 7/n7 | LTE Band 38/41/n38/n41 | LTE Band 42 | LTE Band 48/n48 | LTE Band n77 | LTE Band n78 |
|-------------------|----------------------------|--------------|---------------|---------------|-----------------|------------------------|-----------------|-----------------|----------------------|----------------------|---------------------|-----------------|---------------|------------------------|-------------|-----------------|--------------|--------------|
| | Calculated Frequency (MHz) | 846 | 1750 | 1907 | 695 | 715 | 784 | 795 | 848 | 1779 | 1914 | 2312 | 2567 | 2690 | 3550 | 3700 | 3980 | 3800 |
| | Maximum power (dBm) | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 23.0 | 25.0 | 27.5 | 22.0 | 22.0 | 27.5 | 27.5 |
| | Maximum rated power(mW) | 316.23 | 316.23 | 316.23 | 316.23 | 316.23 | 316.23 | 316.23 | 316.23 | 316.23 | 316.23 | 199.53 | 316.23 | 562.34 | 158.49 | 158.49 | 562.34 | 562.34 |
| Bottom of Laptop | Separation distance(mm) | 5.0 | | | | | | | | | | | | | | | | |
| | exclusion threshold | 58.2 | 83.7 | 87.3 | 52.7 | 53.5 | 56.0 | 56.4 | 58.2 | 84.4 | 87.5 | 60.7 | 101.3 | 184.5 | 59.7 | 61.0 | 224.4 | 219.2 |
| | Testing required? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

<Aux Ant>

| Exposure Position | Wireless Interface | FR1 Band n38/n41 | FR1 Band n48 | FR1 Band n77 | FR1 Band n78 |
|-------------------|----------------------------|------------------|--------------|--------------|--------------|
| | Calculated Frequency (MHz) | 2690 | 3700 | 3980 | 3800 |
| | Maximum power (dBm) | 27.5 | 22.0 | 27.5 | 27.5 |
| | Maximum rated power(mW) | 562.34 | 158.49 | 562.34 | 562.34 |
| Bottom of Laptop | Separation distance(mm) | 5.0 | | | |
| | exclusion threshold | 184.5 | 61.0 | 224.4 | 219.2 |
| | Testing required? | Yes | Yes | Yes | Yes |



<MIMO1 Ant>

| Exposure Position | Wireless Interface | FR1 Band n38/n41 | FR1 Band n48 | FR1 Band n77 | FR1 Band n78 |
|-------------------|----------------------------|------------------|--------------|--------------|--------------|
| | Calculated Frequency (MHz) | 2690 | 3700 | 3980 | 3800 |
| | Maximum power (dBm) | 17.5 | 18.0 | 19.5 | 19.5 |
| | Maximum rated power(mW) | 56.23 | 63.10 | 89.13 | 89.13 |
| Bottom of Laptop | Separation distance(mm) | 5.0 | | | |
| | exclusion threshold | 18.4 | 24.3 | 35.6 | 34.8 |
| | Testing required? | Yes | Yes | Yes | Yes |

<MIMO2 Ant>

| Exposure Position | Wireless Interface | LTE Band 4/66/n4/n66 | LTE Band 2/25/n2/n25 | LTE Band 30/n30 | LTE Band 7/n7 | LTE Band 38/41/n38/n41 | LTE Band 42 | LTE Band 43 | LTE Band 48/n48 | LTE Band n77 | LTE Band n78 |
|-------------------|----------------------------|----------------------|----------------------|-----------------|---------------|------------------------|-------------|-------------|-----------------|--------------|--------------|
| | Calculated Frequency (MHz) | 1779 | 1914 | 2312 | 2567 | 2690 | 3550 | 3800 | 3700 | 3980 | 3800 |
| | Maximum power (dBm) | 24.0 | 24.0 | 23.0 | 24.0 | 27.5 | 22.0 | 22.0 | 22.0 | 27.5 | 27.5 |
| | Maximum rated power(mW) | 251.19 | 251.19 | 199.53 | 251.19 | 562.34 | 158.49 | 158.49 | 158.49 | 562.34 | 562.34 |
| Bottom of Laptop | Separation distance(mm) | 5.0 | | | | | | | | | |
| | exclusion threshold | 67.0 | 69.5 | 60.7 | 80.5 | 184.5 | 59.7 | 61.8 | 61.0 | 224.4 | 219.2 |
| | Testing required? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |



13. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
 - b. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - c. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix $63.3\%/62.9\% = 1.006$ is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
 - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
 - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg.
4. For the exposure positions that proximity sensor power reduction is applied for SAR compliance, additional SAR testing with EUT transmitting full power in sensor trigger distance was performed according to section 4. The test results just verification the sensor trigger distance to meet KDB 616217 requirement, when in normal usage will not operate at trigger distance, therefore, these results were not using performed Sim-Tx analysis.

UMTS Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is $\leq 1/4$ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than $1/4$ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is $>$ not $1/2$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is $>$ not $1/2$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4/B5/B12/B17/B26/B38/B71 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE band 2/4/5/17/38 SAR test was covered by Band 25/66/26/12/41; according to TCB workshop, SAR test for overlapping LTE bands can be reduced if
 - a. The maximum output power, including tolerance, for the smaller band is \leq the larger band to qualify for the SAR test exclusion.
 - b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

5G NR Note:

1. Referencing the procedure in KDB 941225, the test procedures are outlined as below:
 - a. To start SAR test for the largest channel bandwidth for PI/2 BPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel. Also do SAR test for 50% RB allocation for PI/2 BPSK SAR testing using 1RB PI/2 BPSK allocation procedure
 - b. For PI/2 BPSK with 100% RB allocation, SAR test is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
 - c. For higher modulation QPSK/16QAM/64QAM/256QAM, according to tune-up document the power level is not $\frac{1}{2}$ dB higher than the same configuration in PI/2 BPSK, also reported SAR for the PI/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
 - d. Smaller bandwidth output power for each RB allocation configuration for this device is not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
 - e. For 5G FR1 n5/n12/n41/n71/n77, the maximum channel bandwidth does not support three non-overlapping channels in the frequency band, the middle channel of the group of overlapping channels were selected for testing.
 - f. Due to test setup limitations, SAR testing for NR was performed using Factory Test Mode software to establish the connection and perform SAR with 100% transmission. And only for TDD power class2 was performed using Factory Test Mode software to establish the connection and perform SAR with 50% transmission.
 - g. For NR FDD was establishing connections via a base station simulator to use for output power measurement and SAR testing.
 - h. 5G FR1 n2/5/38/78 SAR test was covered by 5G FR1 n25/26/41/77; due to the maximum output power, including tolerance, for the smaller band is \leq the larger band, and the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.



13.1 Body SAR

<WCDMA SAR>

| Plot No. | Band | Mode | Test Position | Gap (mm) | Antenna | Power Reduction | Ch. | Freq. (MHz) | Antenna Vendor | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|----------|--------------|------------------|----------|---------|-----------------|------|-------------|----------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
| 01 | WCDMA II | RMC 12.2Kbps | Bottom of Laptop | 0mm | Main | ON | 9400 | 1880 | ATC | 17.04 | 18.00 | 1.247 | -0.04 | 0.415 | 0.518 |
| | WCDMA II | RMC 12.2Kbps | Bottom of Laptop | 0mm | Main | ON | 9400 | 1880 | ICT | 17.04 | 18.00 | 1.247 | 0.08 | 0.379 | 0.473 |
| | WCDMA II | RMC 12.2Kbps | Bottom of Laptop | 15mm | Main | OFF | 9400 | 1880 | ATC | 23.57 | 25.00 | 1.390 | -0.18 | 0.210 | 0.292 |
| 02 | WCDMA IV | RMC 12.2Kbps | Bottom of Laptop | 0mm | Main | ON | 1413 | 1732.6 | ATC | 18.54 | 19.00 | 1.112 | 0 | 0.839 | 0.933 |
| | WCDMA IV | RMC 12.2Kbps | Bottom of Laptop | 0mm | Main | ON | 1312 | 1712.4 | ATC | 18.53 | 19.00 | 1.114 | 0.13 | 0.718 | 0.800 |
| | WCDMA IV | RMC 12.2Kbps | Bottom of Laptop | 0mm | Main | ON | 1513 | 1752.6 | ATC | 18.50 | 19.00 | 1.122 | 0.08 | 0.757 | 0.849 |
| | WCDMA IV | RMC 12.2Kbps | Bottom of Laptop | 0mm | Main | ON | 1413 | 1732.6 | ICT | 18.54 | 19.00 | 1.112 | 0.01 | 0.727 | 0.808 |
| | WCDMA IV | RMC 12.2Kbps | Bottom of Laptop | 0mm | Main | ON | 1312 | 1712.4 | ICT | 18.53 | 19.00 | 1.114 | 0.03 | 0.632 | 0.704 |
| | WCDMA IV | RMC 12.2Kbps | Bottom of Laptop | 0mm | Main | ON | 1513 | 1752.6 | ICT | 18.50 | 19.00 | 1.122 | -0.08 | 0.638 | 0.716 |
| | WCDMA IV | RMC 12.2Kbps | Bottom of Laptop | 0mm | Main | ON | 1413 | 1732.6 | ATC | 23.64 | 25.00 | 1.368 | -0.01 | 0.479 | 0.655 |
| | WCDMA IV | RMC 12.2Kbps | Bottom of Laptop | 15mm | Main | OFF | 1413 | 1732.6 | ATC | 23.64 | 25.00 | 1.368 | -0.01 | 0.479 | 0.655 |
| | WCDMA IV | RMC 12.2Kbps | Bottom of Laptop | 15mm | Main | OFF | 1413 | 1732.6 | ATC | 23.64 | 25.00 | 1.368 | -0.01 | 0.479 | 0.655 |
| 03 | WCDMA V | RMC 12.2Kbps | Bottom of Laptop | 0mm | Main | ON | 4182 | 836.4 | ATC | 18.17 | 18.50 | 1.079 | -0.01 | 0.363 | 0.392 |
| | WCDMA V | RMC 12.2Kbps | Bottom of Laptop | 0mm | Main | ON | 4182 | 836.4 | ICT | 18.17 | 18.50 | 1.079 | 0.01 | 0.340 | 0.367 |
| | WCDMA V | RMC 12.2Kbps | Bottom of Laptop | 15mm | Main | OFF | 4182 | 836.4 | ATC | 24.01 | 25.00 | 1.256 | -0.1 | 0.197 | 0.247 |

<FDD LTE SAR>

| Plot No. | Band | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Antenna | Power Reduction | Ch. | Freq. (MHz) | Antenna Vendor | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|------------|-------------|----------|------------|---------|------------------|------------------|----------|---------|-----------------|-------------|-------------|----------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
| 04 | LTE Band 7 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 21100 | 2535 | ATC | 16.24 | 16.50 | 1.062 | 0 | 0.541 | 0.574 |
| | LTE Band 7 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | Main | ON | 21100 | 2535 | ATC | 15.28 | 15.50 | 1.052 | -0.15 | 0.505 | 0.531 |
| | LTE Band 7 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 21100 | 2535 | ICT | 16.24 | 16.50 | 1.062 | 0.03 | 0.471 | 0.500 |
| | LTE Band 7C | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 20850+21048 | 2510 | ATC | 16.15 | 16.50 | 1.084 | -0.1 | 0.481 | 0.521 |
| | LTE Band 7 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 15mm | Main | OFF | 21100 | 2535 | ATC | 23.28 | 25.00 | 1.486 | 0.08 | 0.319 | 0.474 |
| | LTE Band 7 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 15mm | Main | OFF | 21100 | 2535 | ATC | 22.32 | 24.00 | 1.472 | 0.01 | 0.282 | 0.415 |
| | LTE Band 7 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 21100 | 2535 | ATC | 19.84 | 20.50 | 1.164 | -0.13 | 0.835 | 0.972 |
| | LTE Band 7 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 20850 | 2510 | ATC | 19.66 | 20.50 | 1.213 | -0.13 | 0.907 | 1.101 |
| | LTE Band 7 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 21350 | 2560 | ATC | 19.67 | 20.50 | 1.211 | 0.03 | 0.939 | 1.137 |
| | LTE Band 7 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 21100 | 2535 | ATC | 19.73 | 20.50 | 1.194 | 0.06 | 0.786 | 0.938 |
| | LTE Band 7 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 20850 | 2510 | ATC | 19.65 | 20.50 | 1.216 | -0.03 | 0.818 | 0.995 |
| | LTE Band 7 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 21350 | 2560 | ATC | 19.66 | 20.50 | 1.213 | -0.03 | 0.864 | 1.048 |
| | LTE Band 7 | 20M | QPSK | 100 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 21100 | 2535 | ATC | 19.61 | 20.50 | 1.227 | 0.08 | 0.793 | 0.973 |
| | LTE Band 7 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 21100 | 2535 | ICT | 19.84 | 20.50 | 1.164 | 0.05 | 0.752 | 0.875 |
| | LTE Band 7 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 20850 | 2510 | ICT | 19.66 | 20.50 | 1.213 | -0.11 | 0.822 | 0.997 |
| | LTE Band 7 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 21350 | 2560 | ICT | 19.67 | 20.50 | 1.211 | -0.12 | 0.813 | 0.984 |
| LTE Band 7 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 23mm | MIMO2 | OFF | 21100 | 2535 | ATC | 22.82 | 24.00 | 1.312 | -0.08 | 0.252 | 0.331 | |
| LTE Band 7 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 23mm | MIMO2 | OFF | 21100 | 2535 | ATC | 21.74 | 23.00 | 1.337 | 0.1 | 0.224 | 0.299 | |
| 05 | LTE Band 12 | 10M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 23095 | 707.5 | ATC | 20.32 | 20.50 | 1.042 | 0.08 | 0.442 | 0.461 |
| | LTE Band 12 | 10M | QPSK | 25 | 0 | Bottom of Laptop | 0mm | Main | ON | 23095 | 707.5 | ATC | 19.35 | 19.50 | 1.035 | 0.01 | 0.349 | 0.361 |
| | LTE Band 12 | 10M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 23095 | 707.5 | ICT | 20.32 | 20.50 | 1.042 | -0.04 | 0.459 | 0.478 |
| 05 | LTE Band 12 | 10M | QPSK | 1 | 0 | Bottom of Laptop | 15mm | Main | OFF | 23095 | 707.5 | ATC | 23.74 | 25.00 | 1.337 | 0.1 | 0.128 | 0.171 |
| | LTE Band 12 | 10M | QPSK | 25 | 0 | Bottom of Laptop | 15mm | Main | OFF | 23095 | 707.5 | ATC | 22.79 | 24.00 | 1.321 | -0.18 | 0.118 | 0.156 |
| 06 | LTE Band 13 | 10M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 23230 | 782 | ATC | 18.66 | 19.50 | 1.213 | 0.13 | 0.385 | 0.467 |
| | LTE Band 13 | 10M | QPSK | 25 | 0 | Bottom of Laptop | 0mm | Main | ON | 23230 | 782 | ATC | 17.72 | 18.50 | 1.197 | -0.17 | 0.335 | 0.401 |
| | LTE Band 13 | 10M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 23230 | 782 | ICT | 18.66 | 19.50 | 1.213 | -0.08 | 0.362 | 0.439 |
| | LTE Band 13 | 10M | QPSK | 1 | 0 | Bottom of Laptop | 15mm | Main | OFF | 23230 | 782 | ATC | 23.60 | 25.00 | 1.380 | 0.12 | 0.176 | 0.243 |
| | LTE Band 13 | 10M | QPSK | 25 | 0 | Bottom of Laptop | 15mm | Main | OFF | 23230 | 782 | ATC | 22.66 | 24.00 | 1.361 | 0.08 | 0.162 | 0.221 |



| Plot No. | Band | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Antenna | Power Reduction | Ch. | Freq. (MHz) | Antenna Vendor | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|-------------|----------|------------|---------|-----------|------------------|----------|---------|-----------------|-------|-------------|----------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
| 07 | LTE Band 14 | 10M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 23330 | 793 | ATC | 18.24 | 19.50 | 1.337 | -0.15 | 0.334 | 0.446 |
| | LTE Band 14 | 10M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 23330 | 793 | ATC | 18.24 | 19.50 | 1.337 | 0.1 | 0.285 | 0.381 |
| | LTE Band 14 | 10M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 23330 | 793 | ICT | 18.24 | 19.50 | 1.337 | -0.18 | 0.315 | 0.421 |
| | LTE Band 14 | 10M | QPSK | 1 | 0 | Bottom of Laptop | 15mm | Main | OFF | 23330 | 793 | ATC | 23.69 | 25.00 | 1.352 | 0.14 | 0.195 | 0.264 |
| | LTE Band 14 | 10M | QPSK | 25 | 0 | Bottom of Laptop | 15mm | Main | OFF | 23330 | 793 | ATC | 22.74 | 24.00 | 1.337 | 0.11 | 0.183 | 0.245 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 26340 | 1880 | ATC | 16.66 | 17.50 | 1.213 | -0.01 | 0.370 | 0.449 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | Main | ON | 26340 | 1880 | ATC | 15.73 | 16.50 | 1.194 | 0.1 | 0.294 | 0.351 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 26340 | 1880 | ICT | 16.66 | 17.50 | 1.213 | 0.12 | 0.351 | 0.426 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 15mm | Main | OFF | 26340 | 1880 | ATC | 23.27 | 25.00 | 1.489 | 0.18 | 0.198 | 0.295 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 15mm | Main | OFF | 26340 | 1880 | ATC | 22.35 | 24.00 | 1.462 | 0.14 | 0.192 | 0.281 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 26340 | 1880 | ATC | 19.38 | 20.00 | 1.153 | -0.1 | 0.730 | 0.842 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 26140 | 1860 | ATC | 19.14 | 20.00 | 1.219 | 0.01 | 0.619 | 0.755 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 26590 | 1905 | ATC | 19.15 | 20.00 | 1.216 | -0.15 | 0.861 | 1.047 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 26340 | 1880 | ATC | 19.19 | 20.00 | 1.205 | -0.12 | 0.738 | 0.889 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 26140 | 1860 | ATC | 19.13 | 20.00 | 1.222 | 0.09 | 0.625 | 0.764 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 26590 | 1905 | ATC | 19.14 | 20.00 | 1.219 | -0.16 | 0.870 | 1.061 |
| | LTE Band 25 | 20M | QPSK | 100 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 26340 | 1880 | ATC | 19.15 | 20.00 | 1.216 | -0.12 | 0.730 | 0.888 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 26340 | 1880 | ICT | 19.19 | 20.00 | 1.205 | 0.07 | 0.881 | 1.062 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 26140 | 1860 | ICT | 19.13 | 20.00 | 1.222 | -0.18 | 0.870 | 1.063 |
| 08 | LTE Band 25 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 26590 | 1905 | ICT | 19.14 | 20.00 | 1.219 | -0.02 | 0.904 | 1.102 |
| | LTE Band 25 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 23mm | MIMO2 | OFF | 26340 | 1880 | ATC | 22.44 | 24.00 | 1.432 | 0.14 | 0.084 | 0.120 |
| | LTE Band 25 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 23mm | MIMO2 | OFF | 26340 | 1880 | ATC | 21.72 | 23.00 | 1.343 | -0.17 | 0.075 | 0.101 |
| 09 | LTE Band 26 | 15M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 26865 | 831.5 | ATC | 17.65 | 19.00 | 1.365 | 0.09 | 0.294 | 0.401 |
| | LTE Band 26 | 15M | QPSK | 36 | 0 | Bottom of Laptop | 0mm | Main | ON | 26865 | 831.5 | ATC | 16.77 | 18.00 | 1.327 | 0.08 | 0.276 | 0.366 |
| | LTE Band 26 | 15M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 26865 | 831.5 | ICT | 17.65 | 19.00 | 1.365 | -0.17 | 0.277 | 0.378 |
| | LTE Band 26 | 15M | QPSK | 1 | 0 | Bottom of Laptop | 15mm | Main | OFF | 26865 | 831.5 | ATC | 23.53 | 25.00 | 1.403 | -0.03 | 0.167 | 0.234 |
| | LTE Band 26 | 15M | QPSK | 36 | 0 | Bottom of Laptop | 15mm | Main | OFF | 26865 | 831.5 | ATC | 22.59 | 24.00 | 1.384 | 0.14 | 0.159 | 0.220 |
| | LTE Band 30 | 10M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 27710 | 2310 | ATC | 17.16 | 18.50 | 1.361 | 0.11 | 0.552 | 0.752 |
| | LTE Band 30 | 10M | QPSK | 25 | 0 | Bottom of Laptop | 0mm | Main | ON | 27710 | 2310 | ATC | 16.12 | 17.50 | 1.374 | -0.05 | 0.444 | 0.610 |
| | LTE Band 30 | 10M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 27710 | 2310 | ICT | 17.16 | 18.50 | 1.361 | 0.12 | 0.569 | 0.775 |
| | LTE Band 30 | 10M | QPSK | 25 | 0 | Bottom of Laptop | 0mm | Main | ON | 27710 | 2310 | ICT | 16.12 | 17.50 | 1.374 | 0.18 | 0.459 | 0.631 |
| | LTE Band 30 | 10M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | Main | ON | 27710 | 2310 | ICT | 16.10 | 17.50 | 1.380 | 0.14 | 0.458 | 0.632 |
| | LTE Band 30 | 10M | QPSK | 1 | 0 | Bottom of Laptop | 15mm | Main | OFF | 27710 | 2310 | ATC | 21.41 | 23.00 | 1.442 | 0.05 | 0.160 | 0.231 |
| | LTE Band 30 | 10M | QPSK | 25 | 0 | Bottom of Laptop | 15mm | Main | OFF | 27710 | 2310 | ATC | 20.41 | 22.00 | 1.442 | -0.01 | 0.152 | 0.219 |
| 10 | LTE Band 30 | 10M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 27710 | 2310 | ATC | 18.15 | 19.00 | 1.216 | 0.04 | 0.903 | 1.098 |
| | LTE Band 30 | 10M | QPSK | 25 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 27710 | 2310 | ATC | 18.09 | 19.00 | 1.233 | 0.1 | 0.883 | 1.089 |
| | LTE Band 30 | 10M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 27710 | 2310 | ATC | 18.06 | 19.00 | 1.242 | -0.18 | 0.867 | 1.077 |
| | LTE Band 30 | 10M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 27710 | 2310 | ICT | 18.15 | 19.00 | 1.216 | 0.08 | 0.773 | 0.940 |
| | LTE Band 30 | 10M | QPSK | 1 | 0 | Bottom of Laptop | 23mm | MIMO2 | OFF | 27710 | 2310 | ATC | 21.79 | 23.00 | 1.321 | 0.01 | 0.140 | 0.185 |
| | LTE Band 30 | 10M | QPSK | 25 | 0 | Bottom of Laptop | 23mm | MIMO2 | OFF | 27710 | 2310 | ATC | 20.66 | 22.00 | 1.361 | 0.1 | 0.127 | 0.173 |



| Plot No. | Band | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Antenna | Power Reduction | Ch. | Freq. (MHz) | Antenna Vendor | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|--------------|----------|------------|---------|-----------|------------------|----------|---------|-----------------|---------------|-------------|----------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
| | LTE Band 66 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 132322 | 1745 | ATC | 18.35 | 19.00 | 1.161 | 0.08 | 0.693 | 0.805 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 132072 | 1720 | ATC | 18.25 | 19.00 | 1.189 | -0.14 | 0.748 | 0.889 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 132572 | 1770 | ATC | 18.21 | 19.00 | 1.199 | 0.01 | 0.643 | 0.771 |
| | LTE Band 66 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | Main | ON | 132322 | 1745 | ATC | 17.32 | 18.00 | 1.169 | 0.11 | 0.561 | 0.656 |
| | LTE Band 66 | 20M | QPSK | 100 | 0 | Bottom of Laptop | 0mm | Main | ON | 132322 | 1745 | ATC | 17.31 | 18.00 | 1.172 | 0.14 | 0.582 | 0.682 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 132072 | 1720 | ICT | 18.25 | 19.00 | 1.189 | 0.03 | 0.647 | 0.769 |
| | LTE Band 66B | 15M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 132047+132140 | 1717.5 | ATC | 18.22 | 19.00 | 1.197 | 0.18 | 0.637 | 0.762 |
| | LTE Band 66C | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 132572+132374 | 1770 | ATC | 18.16 | 19.00 | 1.213 | 0.16 | 0.655 | 0.795 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 15mm | Main | OFF | 132322 | 1745 | ATC | 23.47 | 25.00 | 1.422 | 0.08 | 0.503 | 0.715 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 15mm | Main | OFF | 132322 | 1745 | ATC | 23.47 | 25.00 | 1.422 | 0.01 | 0.430 | 0.612 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 132322 | 1745 | ATC | 19.39 | 19.50 | 1.026 | 0.03 | 0.679 | 0.696 |
| | LTE Band 66 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 132322 | 1745 | ATC | 19.17 | 19.50 | 1.079 | 0.05 | 0.693 | 0.748 |
| | LTE Band 66 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 132322 | 1745 | ICT | 19.17 | 19.50 | 1.079 | -0.08 | 1.020 | 1.101 |
| | LTE Band 66 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 132072 | 1720 | ICT | 19.13 | 19.50 | 1.089 | 0.13 | 0.993 | 1.081 |
| 11 | LTE Band 66 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 132572 | 1770 | ICT | 19.12 | 19.50 | 1.091 | -0.01 | 1.040 | 1.135 |
| | LTE Band 66 | 20M | QPSK | 100 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 132322 | 1745 | ICT | 19.16 | 19.50 | 1.081 | -0.18 | 0.994 | 1.075 |
| | LTE Band 66 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 23mm | MIMO2 | OFF | 132322 | 1745 | ATC | 22.57 | 24.00 | 1.390 | 0.07 | 0.094 | 0.131 |
| | LTE Band 66 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 23mm | MIMO2 | OFF | 132322 | 1745 | ATC | 21.62 | 23.00 | 1.374 | 0.18 | 0.096 | 0.132 |
| 12 | LTE Band 71 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 133297 | 680.5 | ATC | 20.39 | 21.00 | 1.151 | 0.11 | 0.179 | 0.206 |
| | LTE Band 71 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | Main | ON | 133297 | 680.5 | ATC | 19.47 | 20.00 | 1.130 | 0.1 | 0.141 | 0.159 |
| | LTE Band 71 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 133297 | 680.5 | ICT | 20.39 | 21.00 | 1.151 | 0.03 | 0.167 | 0.192 |
| | LTE Band 71 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 15mm | Main | OFF | 133297 | 680.5 | ATC | 23.74 | 25.00 | 1.337 | 0.05 | 0.148 | 0.198 |
| | LTE Band 71 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 15mm | Main | OFF | 133297 | 680.5 | ATC | 22.85 | 24.00 | 1.303 | 0.09 | 0.136 | 0.177 |

<TDD LTE SAR>

| Plot No. | Band | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Antenna | Power Reduction | Ch. | Freq. (MHz) | Antenna Vendor | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|-------------------|----------|------------|---------|-----------|------------------|----------|---------|-----------------|-------------|-------------|----------------|---------------------|---------------------|------------------------|--------------|---------------------------|------------------|------------------------|------------------------|
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 41055 | 2636.5 | ATC | 17.18 | 17.50 | 1.076 | 62.9 | 1.006 | -0.02 | 0.393 | 0.426 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | Main | ON | 41055 | 2636.5 | ATC | 16.17 | 16.50 | 1.079 | 62.9 | 1.006 | -0.04 | 0.270 | 0.293 |
| | LTE Band 41_HPUE | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 41055 | 2636.5 | ATC | 19.12 | 20.00 | 1.225 | 42.9 | 1.009 | 0.02 | 0.412 | 0.509 |
| | LTE Band 41_HPUE | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 41055 | 2636.5 | ICT | 19.12 | 20.00 | 1.225 | 42.9 | 1.009 | -0.08 | 0.355 | 0.439 |
| | LTE Band 41C | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 39750+39948 | 2506 | ATC | 17.11 | 17.50 | 1.094 | 62.9 | 1.006 | 0.06 | 0.348 | 0.383 |
| | LTE Band 41_HPUEC | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 39750+39948 | 2506 | ATC | 19.55 | 20.00 | 1.109 | 42.9 | 1.009 | 0.08 | 0.413 | 0.462 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 15mm | Main | OFF | 41055 | 2636.5 | ATC | 23.31 | 25.00 | 1.476 | 62.9 | 1.006 | -0.15 | 0.256 | 0.380 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 15mm | Main | OFF | 41055 | 2636.5 | ATC | 22.30 | 24.00 | 1.479 | 62.9 | 1.006 | 0.11 | 0.191 | 0.284 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 40620 | 2593 | ATC | 20.41 | 20.50 | 1.021 | 62.9 | 1.006 | 0.06 | 0.850 | 0.873 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 39790 | 2510 | ATC | 20.26 | 20.50 | 1.057 | 62.9 | 1.006 | -0.02 | 0.837 | 0.890 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 40185 | 2549.5 | ATC | 20.32 | 20.50 | 1.042 | 62.9 | 1.006 | -0.08 | 0.741 | 0.777 |
| 13 | LTE Band 41 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 41055 | 2636.5 | ATC | 20.32 | 20.50 | 1.042 | 62.9 | 1.006 | -0.12 | 1.040 | 1.091 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 41490 | 2680 | ATC | 20.31 | 20.50 | 1.045 | 62.9 | 1.006 | -0.06 | 0.735 | 0.772 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 40620 | 2593 | ATC | 20.38 | 20.50 | 1.028 | 62.9 | 1.006 | -0.03 | 0.826 | 0.854 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 39790 | 2510 | ATC | 20.23 | 20.50 | 1.064 | 62.9 | 1.006 | -0.09 | 0.813 | 0.870 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 40185 | 2549.5 | ATC | 20.29 | 20.50 | 1.050 | 62.9 | 1.006 | -0.05 | 0.720 | 0.760 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 41055 | 2636.5 | ATC | 20.30 | 20.50 | 1.047 | 62.9 | 1.006 | 0.01 | 1.010 | 1.064 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 41490 | 2680 | ATC | 20.28 | 20.50 | 1.052 | 62.9 | 1.006 | 0.17 | 0.714 | 0.756 |
| | LTE Band 41 | 20M | QPSK | 100 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 40620 | 2593 | ATC | 20.35 | 20.50 | 1.035 | 62.9 | 1.006 | -0.06 | 0.815 | 0.849 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 40620 | 2593 | ICT | 20.41 | 20.50 | 1.021 | 62.9 | 1.006 | 0.04 | 0.694 | 0.713 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 39750 | 2506 | ICT | 20.31 | 20.50 | 1.045 | 62.9 | 1.006 | 0.16 | 0.776 | 0.816 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 40185 | 2549.5 | ICT | 20.32 | 20.50 | 1.042 | 62.9 | 1.006 | 0.12 | 0.722 | 0.757 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 41055 | 2636.5 | ICT | 20.32 | 20.50 | 1.042 | 62.9 | 1.006 | 0.09 | 0.721 | 0.756 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 41490 | 2680 | ICT | 20.31 | 20.50 | 1.045 | 62.9 | 1.006 | -0.11 | 0.624 | 0.656 |
| | LTE Band 41 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 23mm | MIMO2 | OFF | 40620 | 2593 | ATC | 22.51 | 24.00 | 1.409 | 62.9 | 1.006 | -0.15 | 0.271 | 0.384 |
| | LTE Band 41 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 23mm | MIMO2 | OFF | 40620 | 2593 | ATC | 21.46 | 23.00 | 1.426 | 62.9 | 1.006 | 0.19 | 0.241 | 0.346 |
| | LTE Band 42 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 42590 | 3500 | ATC | 17.36 | 17.50 | 1.033 | 62.9 | 1.006 | 0.15 | 0.472 | 0.490 |
| | LTE Band 42 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | Main | ON | 42590 | 3500 | ATC | 17.13 | 17.50 | 1.089 | 62.9 | 1.006 | 0.03 | 0.417 | 0.457 |
| | LTE Band 42 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | Main | ON | 42590 | 3500 | ICT | 17.36 | 17.50 | 1.033 | 62.9 | 1.006 | -0.08 | 0.454 | 0.472 |
| | LTE Band 42 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 15mm | Main | OFF | 42590 | 3500 | ATC | 20.43 | 22.00 | 1.435 | 62.9 | 1.006 | 0.1 | 0.160 | 0.231 |
| | LTE Band 42 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 15mm | Main | OFF | 42590 | 3500 | ATC | 19.30 | 21.00 | 1.479 | 62.9 | 1.006 | -0.18 | 0.113 | 0.168 |
| | LTE Band 42 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 42190 | 3460 | ATC | 17.36 | 18.00 | 1.159 | 62.9 | 1.006 | 0.1 | 0.561 | 0.654 |
| | LTE Band 42 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 42590 | 3500 | ATC | 17.22 | 18.00 | 1.197 | 62.9 | 1.006 | 0.12 | 0.534 | 0.643 |
| | LTE Band 42 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 42990 | 3540 | ATC | 17.20 | 18.00 | 1.202 | 62.9 | 1.006 | 0.08 | 0.543 | 0.657 |
| | LTE Band 42 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 42190 | 3460 | ATC | 16.39 | 17.00 | 1.151 | 62.9 | 1.006 | -0.17 | 0.561 | 0.649 |
| | LTE Band 42 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 42590 | 3500 | ATC | 16.25 | 17.00 | 1.189 | 62.9 | 1.006 | -0.03 | 0.534 | 0.638 |
| | LTE Band 42 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 42990 | 3540 | ATC | 16.23 | 17.00 | 1.194 | 62.9 | 1.006 | 0.14 | 0.543 | 0.652 |
| | LTE Band 42 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 42190 | 3460 | ICT | 17.36 | 18.00 | 1.159 | 62.9 | 1.006 | -0.01 | 0.808 | 0.942 |
| 14 | LTE Band 42 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 42590 | 3500 | ICT | 17.22 | 18.00 | 1.197 | 62.9 | 1.006 | -0.02 | 0.810 | 0.975 |
| | LTE Band 42 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 42990 | 3540 | ICT | 17.20 | 18.00 | 1.202 | 62.9 | 1.006 | 0.11 | 0.802 | 0.970 |
| | LTE Band 42C | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 42792+42990 | 3520 | ICT | 17.30 | 18.00 | 1.175 | 62.9 | 1.006 | 0.1 | 0.753 | 0.890 |
| | LTE Band 42C | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 42190+42388 | 3460 | ICT | 17.26 | 18.00 | 1.186 | 62.9 | 1.006 | -0.08 | 0.742 | 0.885 |
| | LTE Band 42C | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 42392+42590 | 3480 | ICT | 17.25 | 18.00 | 1.189 | 62.9 | 1.006 | -0.08 | 0.796 | 0.952 |
| | LTE Band 42 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 23mm | MIMO2 | OFF | 42190 | 3460 | ATC | 20.36 | 22.00 | 1.459 | 62.9 | 1.006 | -0.05 | 0.316 | 0.464 |
| | LTE Band 42 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 23mm | MIMO2 | OFF | 42190 | 3460 | ATC | 19.44 | 21.00 | 1.432 | 62.9 | 1.006 | 0.18 | 0.341 | 0.491 |



Table with columns: Plot No., Band, BW (MHz), Modulation, RB Size, RB offset, Test Position, Gap (mm), Antenna, Power Reduction, Ch., Freq. (MHz), Antenna Vendor, Average Power (dBm), Tune-Up Limit (dBm), Tune-up Scaling Factor, Duty Cycle %, Duty Cycle Scaling Factor, Power Drift (dB), Measured 1g SAR (W/kg), Reported 1g SAR (W/kg). Rows include various LTE bands (43, 43C, 48, 48C) and test configurations.

<5G NR SAR>

| Plot No. | Band | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Antenna | Power Reduction | Ch. | Freq. (MHz) | Antenna Vendor | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|---------|----------|------------|---------|-----------|------------------|----------|---------|-----------------|--------|-------------|----------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
| | FR1 n7 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 507000 | 2535 | ATC | 16.22 | 16.50 | 1.067 | 0.01 | 0.570 | 0.608 |
| | FR1 n7 | 40M | BPSK | 108 | 54 | Bottom of Laptop | 0mm | Main | ON | 507000 | 2535 | ATC | 16.14 | 16.50 | 1.086 | 0.11 | 0.512 | 0.556 |
| | FR1 n7 | 40M | BPSK | 216 | 0 | Bottom of Laptop | 0mm | Main | ON | 507000 | 2535 | ATC | 15.87 | 16.50 | 1.156 | 0.15 | 0.511 | 0.591 |
| | FR1 n7 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 507000 | 2535 | ICT | 16.22 | 16.50 | 1.067 | 0.14 | 0.498 | 0.531 |
| | FR1 n7 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 15mm | Main | OFF | 507000 | 2535 | ATC | 24.65 | 25.00 | 1.084 | 0.11 | 0.398 | 0.431 |
| | FR1 n7 | 40M | BPSK | 108 | 54 | Bottom of Laptop | 15mm | Main | OFF | 507000 | 2535 | ATC | 24.53 | 25.00 | 1.114 | -0.05 | 0.425 | 0.474 |
| 17 | FR1 n7 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 507000 | 2535 | ATC | 19.93 | 20.50 | 1.140 | 0.03 | 0.942 | 1.074 |
| | FR1 n7 | 40M | BPSK | 108 | 54 | Bottom of Laptop | 0mm | MIMO2 | ON | 507000 | 2535 | ATC | 19.92 | 20.50 | 1.143 | 0.03 | 0.884 | 1.010 |
| | FR1 n7 | 40M | BPSK | 216 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 507000 | 2535 | ATC | 19.82 | 20.50 | 1.169 | 0.18 | 0.807 | 0.944 |
| | FR1 n7 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 507000 | 2535 | ICT | 19.93 | 20.50 | 1.140 | 0.05 | 0.805 | 0.918 |
| | FR1 n7 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 23mm | MIMO2 | OFF | 507000 | 2535 | ATC | 23.15 | 24.00 | 1.216 | 0.08 | 0.264 | 0.321 |
| | FR1 n7 | 40M | BPSK | 108 | 54 | Bottom of Laptop | 23mm | MIMO2 | OFF | 507000 | 2535 | ATC | 23.14 | 24.00 | 1.219 | -0.09 | 0.235 | 0.286 |
| 18 | FR1 n12 | 15M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 141500 | 707.5 | ATC | 18.97 | 19.50 | 1.130 | 0.17 | 0.292 | 0.330 |
| | FR1 n12 | 15M | BPSK | 36 | 22 | Bottom of Laptop | 0mm | Main | ON | 141500 | 707.5 | ATC | 18.91 | 19.50 | 1.146 | 0.01 | 0.278 | 0.318 |
| | FR1 n12 | 15M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 141500 | 707.5 | ICT | 18.97 | 19.50 | 1.130 | 0.13 | 0.272 | 0.307 |
| | FR1 n12 | 15M | BPSK | 1 | 1 | Bottom of Laptop | 15mm | Main | OFF | 141500 | 707.5 | ATC | 24.27 | 25.00 | 1.183 | -0.09 | 0.158 | 0.187 |
| | FR1 n12 | 15M | BPSK | 36 | 22 | Bottom of Laptop | 15mm | Main | OFF | 141500 | 707.5 | ATC | 24.12 | 25.00 | 1.225 | -0.08 | 0.145 | 0.178 |
| 19 | FR1 n13 | 10M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 156400 | 782 | ATC | 18.32 | 19.00 | 1.169 | -0.09 | 0.327 | 0.382 |
| | FR1 n13 | 10M | BPSK | 25 | 14 | Bottom of Laptop | 0mm | Main | ON | 156400 | 782 | ATC | 18.26 | 19.00 | 1.186 | 0.01 | 0.222 | 0.263 |
| | FR1 n13 | 10M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 156400 | 782 | ICT | 18.32 | 19.00 | 1.169 | 0.05 | 0.222 | 0.260 |
| | FR1 n13 | 10M | BPSK | 1 | 1 | Bottom of Laptop | 15mm | Main | OFF | 156400 | 782 | ATC | 23.92 | 25.00 | 1.282 | 0.1 | 0.202 | 0.259 |
| | FR1 n13 | 10M | BPSK | 25 | 14 | Bottom of Laptop | 15mm | Main | OFF | 156400 | 782 | ATC | 23.78 | 25.00 | 1.324 | -0.18 | 0.186 | 0.246 |
| 20 | FR1 n14 | 10M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 158600 | 793 | ATC | 18.35 | 18.50 | 1.035 | 0.14 | 0.339 | 0.351 |
| | FR1 n14 | 10M | BPSK | 25 | 14 | Bottom of Laptop | 0mm | Main | ON | 158600 | 793 | ATC | 18.25 | 18.50 | 1.059 | 0.01 | 0.243 | 0.257 |
| | FR1 n14 | 10M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 158600 | 793 | ICT | 18.35 | 18.50 | 1.035 | 0.08 | 0.243 | 0.252 |
| | FR1 n14 | 10M | BPSK | 1 | 1 | Bottom of Laptop | 15mm | Main | OFF | 158600 | 793 | ATC | 24.08 | 25.00 | 1.236 | -0.01 | 0.192 | 0.237 |
| | FR1 n14 | 10M | BPSK | 25 | 14 | Bottom of Laptop | 15mm | Main | OFF | 158600 | 793 | ATC | 23.93 | 25.00 | 1.279 | -0.08 | 0.176 | 0.225 |
| | FR1 n25 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 376500 | 1882.5 | ATC | 16.89 | 17.50 | 1.151 | 0.15 | 0.399 | 0.459 |
| | FR1 n25 | 40M | BPSK | 108 | 54 | Bottom of Laptop | 0mm | Main | ON | 376500 | 1882.5 | ATC | 16.71 | 17.50 | 1.199 | 0.08 | 0.354 | 0.425 |
| | FR1 n25 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 376500 | 1882.5 | ICT | 16.89 | 17.50 | 1.151 | 0.12 | 0.357 | 0.411 |
| | FR1 n25 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 15mm | Main | OFF | 376500 | 1882.5 | ATC | 24.15 | 25.00 | 1.216 | 0.03 | 0.208 | 0.253 |
| | FR1 n25 | 40M | BPSK | 108 | 54 | Bottom of Laptop | 15mm | Main | OFF | 376500 | 1882.5 | ATC | 23.98 | 25.00 | 1.265 | 0.18 | 0.202 | 0.255 |
| | FR1 n25 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 376500 | 1882.5 | ATC | 19.54 | 20.00 | 1.112 | 0.12 | 1.020 | 1.134 |
| | FR1 n25 | 40M | BPSK | 108 | 54 | Bottom of Laptop | 0mm | MIMO2 | ON | 376500 | 1882.5 | ATC | 19.28 | 20.00 | 1.180 | -0.04 | 0.941 | 1.111 |
| | FR1 n25 | 40M | BPSK | 216 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 376500 | 1882.5 | ATC | 19.27 | 20.00 | 1.183 | 0.02 | 0.939 | 1.111 |
| 21 | FR1 n25 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 376500 | 1882.5 | ICT | 19.54 | 20.00 | 1.112 | -0.01 | 1.040 | 1.156 |
| | FR1 n25 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 23mm | MIMO2 | OFF | 376500 | 1882.5 | ATC | 22.72 | 24.00 | 1.343 | 0.15 | 0.087 | 0.117 |
| | FR1 n25 | 40M | BPSK | 108 | 54 | Bottom of Laptop | 23mm | MIMO2 | OFF | 376500 | 1882.5 | ATC | 22.69 | 24.00 | 1.352 | 0.01 | 0.078 | 0.105 |
| 22 | FR1 n26 | 20M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 166300 | 831.5 | ATC | 17.50 | 18.00 | 1.122 | -0.18 | 0.297 | 0.333 |
| | FR1 n26 | 20M | BPSK | 50 | 28 | Bottom of Laptop | 0mm | Main | ON | 166300 | 831.5 | ATC | 17.47 | 18.00 | 1.130 | 0.08 | 0.268 | 0.303 |
| | FR1 n26 | 20M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 166300 | 831.5 | ICT | 17.50 | 18.00 | 1.122 | -0.11 | 0.233 | 0.261 |
| | FR1 n26 | 20M | BPSK | 1 | 1 | Bottom of Laptop | 15mm | Main | OFF | 166300 | 831.5 | ATC | 24.22 | 25.00 | 1.197 | -0.02 | 0.199 | 0.238 |
| | FR1 n26 | 20M | BPSK | 50 | 28 | Bottom of Laptop | 15mm | Main | OFF | 166300 | 831.5 | ATC | 24.11 | 25.00 | 1.227 | 0.12 | 0.209 | 0.257 |



| Plot No. | Band | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Antenna | Power Reduction | Ch. | Freq. (MHz) | Antenna Vendor | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|--------------|----------|------------|---------|-----------|------------------|----------|---------|-----------------|--------|-------------|----------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
| | FR1 n30 | 10M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 462000 | 2310 | ATC | 16.23 | 17.50 | 1.340 | 0.14 | 0.489 | 0.655 |
| | FR1 n30 | 10M | BPSK | 25 | 14 | Bottom of Laptop | 0mm | Main | ON | 462000 | 2310 | ATC | 16.13 | 17.50 | 1.371 | 0.01 | 0.456 | 0.625 |
| | FR1 n30 | 10M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 462000 | 2310 | ICT | 16.23 | 17.50 | 1.340 | 0.05 | 0.428 | 0.573 |
| | FR1 n30 | 10M | BPSK | 1 | 1 | Bottom of Laptop | 15mm | Main | OFF | 462000 | 2310 | ATC | 21.80 | 23.00 | 1.318 | -0.18 | 0.171 | 0.225 |
| | FR1 n30 | 10M | BPSK | 25 | 14 | Bottom of Laptop | 15mm | Main | OFF | 462000 | 2310 | ATC | 21.72 | 23.00 | 1.343 | 0.1 | 0.163 | 0.219 |
| | FR1 n30 | 10M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 462000 | 2310 | ATC | 18.02 | 18.50 | 1.117 | 0.05 | 0.975 | 1.089 |
| 23 | FR1 n30 | 10M | BPSK | 25 | 14 | Bottom of Laptop | 0mm | MIMO2 | ON | 462000 | 2310 | ATC | 17.72 | 18.50 | 1.197 | -0.05 | 1.000 | 1.197 |
| | FR1 n30 | 10M | BPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 462000 | 2310 | ATC | 17.65 | 18.50 | 1.216 | 0.06 | 0.858 | 1.043 |
| | FR1 n30 | 10M | BPSK | 25 | 14 | Bottom of Laptop | 0mm | MIMO2 | ON | 462000 | 2310 | ICT | 17.72 | 18.50 | 1.197 | 0.03 | 0.875 | 1.047 |
| | FR1 n30 | 10M | QPSK | 1 | 1 | Bottom of Laptop | 23mm | MIMO2 | OFF | 462000 | 2310 | ATC | 21.77 | 23.00 | 1.327 | -0.17 | 0.155 | 0.206 |
| | FR1 n30 | 10M | QPSK | 25 | 14 | Bottom of Laptop | 23mm | MIMO2 | OFF | 462000 | 2310 | ATC | 21.53 | 23.00 | 1.403 | -0.03 | 0.141 | 0.198 |
| | FR1 n66 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 349000 | 1745 | ATC | 18.36 | 19.00 | 1.159 | 0.13 | 0.813 | 0.942 |
| | FR1 n66 | 40M | BPSK | 108 | 54 | Bottom of Laptop | 0mm | Main | ON | 349000 | 1745 | ATC | 18.31 | 19.00 | 1.172 | 0.08 | 0.768 | 0.900 |
| | FR1 n66 | 40M | BPSK | 216 | 0 | Bottom of Laptop | 0mm | Main | ON | 349000 | 1745 | ATC | 18.07 | 19.00 | 1.239 | 0.01 | 0.736 | 0.912 |
| | FR1 n66 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 349000 | 1745 | ICT | 18.36 | 19.00 | 1.159 | 0.03 | 0.773 | 0.896 |
| | FR1 n66 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 15mm | Main | OFF | 349000 | 1745 | ATC | 24.28 | 25.00 | 1.180 | -0.05 | 0.538 | 0.635 |
| | FR1 n66 | 40M | BPSK | 108 | 54 | Bottom of Laptop | 15mm | Main | OFF | 349000 | 1745 | ATC | 24.08 | 25.00 | 1.236 | 0.18 | 0.510 | 0.630 |
| | FR1 n66 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 349000 | 1745 | ATC | 18.45 | 19.00 | 1.135 | 0.14 | 0.683 | 0.775 |
| | FR1 n66 | 40M | BPSK | 108 | 54 | Bottom of Laptop | 0mm | MIMO2 | ON | 349000 | 1745 | ATC | 18.30 | 19.00 | 1.175 | 0.17 | 0.724 | 0.851 |
| | FR1 n66 | 40M | BPSK | 216 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 349000 | 1745 | ATC | 18.20 | 19.00 | 1.202 | -0.08 | 0.704 | 0.846 |
| 24 | FR1 n66 | 40M | BPSK | 108 | 54 | Bottom of Laptop | 0mm | MIMO2 | ON | 349000 | 1745 | ICT | 18.30 | 19.00 | 1.175 | 0.01 | 1.020 | 1.198 |
| | FR1 n66 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 23mm | MIMO2 | OFF | 349000 | 1745 | ATC | 22.92 | 24.00 | 1.282 | 0.01 | 0.093 | 0.119 |
| | FR1 n66 | 40M | BPSK | 108 | 54 | Bottom of Laptop | 23mm | MIMO2 | OFF | 349000 | 1745 | ATC | 22.91 | 24.00 | 1.285 | 0.1 | 0.096 | 0.123 |
| 25 | FR1 n71 | 20M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 136100 | 680.5 | ATC | 19.49 | 19.50 | 1.002 | 0.05 | 0.263 | 0.264 |
| | FR1 n71 | 20M | BPSK | 50 | 28 | Bottom of Laptop | 0mm | Main | ON | 136100 | 680.5 | ATC | 19.44 | 19.50 | 1.014 | 0.12 | 0.235 | 0.238 |
| | FR1 n71 | 20M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 136100 | 680.5 | ICT | 19.49 | 19.50 | 1.002 | 0.17 | 0.255 | 0.256 |
| | FR1 n71 | 20M | BPSK | 1 | 1 | Bottom of Laptop | 15mm | Main | OFF | 136100 | 680.5 | ATC | 24.52 | 25.00 | 1.117 | -0.01 | 0.153 | 0.171 |
| | FR1 n71 | 20M | BPSK | 50 | 28 | Bottom of Laptop | 15mm | Main | OFF | 136100 | 680.5 | ATC | 24.35 | 25.00 | 1.161 | -0.08 | 0.141 | 0.164 |
| | FR1 n41 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 518598 | 2592.99 | ATC | 15.16 | 16.00 | 1.213 | 0.1 | 0.501 | 0.608 |
| | FR1 n41 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 0mm | Main | ON | 518598 | 2592.99 | ATC | 15.13 | 16.00 | 1.222 | 0.04 | 0.458 | 0.560 |
| | FR1 n41_HPUE | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 518598 | 2592.99 | ATC | 18.09 | 19.00 | 1.233 | 0.04 | 0.443 | 0.546 |
| | FR1 n41 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 518598 | 2592.99 | ICT | 15.16 | 16.00 | 1.213 | 0.02 | 0.421 | 0.511 |
| | FR1 n41 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 15mm | Main | OFF | 518598 | 2592.99 | ATC | 23.76 | 25.00 | 1.330 | -0.09 | 0.451 | 0.600 |
| | FR1 n41 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 15mm | Main | OFF | 518598 | 2592.99 | ATC | 23.75 | 25.00 | 1.334 | -0.08 | 0.433 | 0.577 |
| | FR1 n41 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 518598 | 2592.99 | ATC | 16.72 | 17.00 | 1.067 | 0.18 | 0.493 | 0.526 |
| | FR1 n41 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 0mm | MIMO2 | ON | 518598 | 2592.99 | ATC | 16.69 | 17.00 | 1.074 | 0.08 | 0.592 | 0.636 |
| | FR1 n41_HPUE | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 518598 | 2592.99 | ATC | 19.29 | 20.00 | 1.178 | -0.02 | 0.535 | 0.630 |
| | FR1 n41 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 0mm | MIMO2 | ON | 518598 | 2592.99 | ICT | 16.69 | 17.00 | 1.074 | -0.1 | 0.395 | 0.424 |
| | FR1 n41 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 23mm | MIMO2 | OFF | 518598 | 2592.99 | ATC | 23.64 | 25.00 | 1.368 | 0.18 | 0.354 | 0.484 |
| | FR1 n41 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 23mm | MIMO2 | OFF | 518598 | 2592.99 | ATC | 23.51 | 25.00 | 1.409 | 0.16 | 0.389 | 0.548 |
| 26 | FR1 n41 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO1 | ON | 518598 | 2592.99 | ATC | 14.23 | 14.50 | 1.064 | 0.03 | 1.040 | 1.107 |
| | FR1 n41 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 0mm | MIMO1 | ON | 518598 | 2592.99 | ATC | 14.18 | 14.50 | 1.076 | -0.05 | 0.940 | 1.012 |
| | FR1 n41 | 100M | BPSK | 270 | 0 | Bottom of Laptop | 0mm | MIMO1 | ON | 518598 | 2592.99 | ATC | 13.97 | 14.50 | 1.130 | 0.18 | 0.867 | 0.980 |
| | FR1 n41_HPUE | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO1 | ON | 518598 | 2592.99 | ATC | 17.20 | 17.50 | 1.072 | -0.17 | 0.931 | 0.998 |
| | FR1 n41 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO1 | ON | 518598 | 2592.99 | ICT | 14.23 | 14.50 | 1.064 | 0.17 | 0.747 | 0.795 |
| | FR1 n41 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | AUX | ON | 518598 | 2592.99 | ATC | 18.33 | 18.50 | 1.040 | 0.01 | 1.030 | 1.071 |
| | FR1 n41 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 0mm | AUX | ON | 518598 | 2592.99 | ATC | 18.29 | 18.50 | 1.050 | 0.03 | 0.861 | 0.904 |
| | FR1 n41 | 100M | BPSK | 270 | 0 | Bottom of Laptop | 0mm | AUX | ON | 518598 | 2592.99 | ATC | 18.12 | 18.50 | 1.091 | -0.08 | 0.751 | 0.820 |
| | FR1 n41_HPUE | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | AUX | ON | 518598 | 2592.99 | ATC | 21.25 | 21.50 | 1.059 | 0.14 | 0.912 | 0.966 |
| | FR1 n41 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | AUX | ON | 518598 | 2592.99 | ICT | 18.33 | 18.50 | 1.040 | 0.11 | 0.751 | 0.781 |
| | FR1 n41 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 17mm | AUX | OFF | 518598 | 2592.99 | ATC | 23.38 | 25.00 | 1.452 | 0.08 | 0.341 | 0.495 |
| | FR1 n41 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 17mm | AUX | OFF | 518598 | 2592.99 | ATC | 23.34 | 25.00 | 1.466 | 0.08 | 0.293 | 0.429 |



| Plot No. | Band | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Antenna | Power Reduction | Ch. | Freq. (MHz) | Antenna Vendor | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|---------|----------|------------|---------|-----------|------------------|----------|---------|-----------------|--------|-------------|----------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
| | FR1 n48 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 641666 | 3624.99 | ATC | 14.19 | 14.50 | 1.074 | 0.08 | 0.330 | 0.354 |
| | FR1 n48 | 40M | BPSK | 50 | 28 | Bottom of Laptop | 0mm | Main | ON | 641666 | 3624.99 | ATC | 14.13 | 14.50 | 1.089 | -0.12 | 0.312 | 0.340 |
| | FR1 n48 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 641666 | 3624.99 | ICT | 14.19 | 14.50 | 1.074 | 0.06 | 0.381 | 0.409 |
| | FR1 n48 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 15mm | Main | OFF | 641666 | 3624.99 | ATC | 21.19 | 22.00 | 1.205 | 0.03 | 0.260 | 0.313 |
| | FR1 n48 | 40M | BPSK | 50 | 28 | Bottom of Laptop | 15mm | Main | OFF | 641666 | 3624.99 | ATC | 20.80 | 22.00 | 1.318 | -0.15 | 0.223 | 0.294 |
| | FR1 n48 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 641666 | 3624.99 | ATC | 16.50 | 17.00 | 1.122 | -0.17 | 0.501 | 0.562 |
| | FR1 n48 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 638000 | 3570 | ATC | 16.49 | 17.00 | 1.125 | -0.08 | 0.484 | 0.544 |
| | FR1 n48 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 645332 | 3679.98 | ATC | 16.49 | 17.00 | 1.125 | -0.04 | 0.431 | 0.485 |
| | FR1 n48 | 40M | BPSK | 50 | 28 | Bottom of Laptop | 0mm | MIMO2 | ON | 641666 | 3624.99 | ATC | 16.38 | 17.00 | 1.153 | 0.07 | 0.482 | 0.556 |
| | FR1 n48 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 641666 | 3624.99 | ICT | 16.50 | 17.00 | 1.122 | 0.15 | 0.911 | 1.022 |
| | FR1 n48 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 638000 | 3570 | ICT | 16.49 | 17.00 | 1.125 | 0.1 | 0.859 | 0.966 |
| | FR1 n48 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 645332 | 3679.98 | ICT | 16.49 | 17.00 | 1.125 | -0.18 | 0.815 | 0.917 |
| | FR1 n48 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 23mm | MIMO2 | OFF | 641666 | 3624.99 | ATC | 21.39 | 22.00 | 1.151 | -0.08 | 0.234 | 0.269 |
| | FR1 n48 | 40M | BPSK | 50 | 28 | Bottom of Laptop | 23mm | MIMO2 | OFF | 641666 | 3624.99 | ATC | 21.34 | 22.00 | 1.164 | -0.13 | 0.216 | 0.251 |
| | FR1 n48 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO1 | ON | 641666 | 3624.99 | ATC | 17.57 | 18.00 | 1.104 | 0.08 | 0.722 | 0.797 |
| | FR1 n48 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO1 | ON | 638000 | 3570 | ATC | 17.52 | 18.00 | 1.117 | 0.01 | 0.732 | 0.818 |
| | FR1 n48 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO1 | ON | 645332 | 3679.98 | ATC | 17.35 | 18.00 | 1.161 | 0.03 | 0.840 | 0.976 |
| | FR1 n48 | 40M | BPSK | 50 | 28 | Bottom of Laptop | 0mm | MIMO1 | ON | 641666 | 3624.99 | ATC | 17.38 | 18.00 | 1.153 | -0.08 | 0.772 | 0.890 |
| | FR1 n48 | 40M | BPSK | 50 | 28 | Bottom of Laptop | 0mm | MIMO1 | ON | 638000 | 3570 | ATC | 17.28 | 18.00 | 1.180 | -0.08 | 0.783 | 0.924 |
| 27 | FR1 n48 | 40M | BPSK | 50 | 28 | Bottom of Laptop | 0mm | MIMO1 | ON | 645332 | 3679.98 | ATC | 17.13 | 18.00 | 1.222 | 0.1 | 0.900 | 1.100 |
| | FR1 n48 | 40M | BPSK | 100 | 0 | Bottom of Laptop | 0mm | MIMO1 | ON | 641666 | 3624.99 | ATC | 17.36 | 18.00 | 1.159 | -0.18 | 0.722 | 0.837 |
| | FR1 n48 | 40M | BPSK | 50 | 28 | Bottom of Laptop | 0mm | MIMO1 | ON | 641666 | 3624.99 | ICT | 17.38 | 18.00 | 1.153 | 0.08 | 0.555 | 0.640 |
| | FR1 n48 | 40M | BPSK | 50 | 28 | Bottom of Laptop | 0mm | MIMO1 | ON | 638000 | 3570 | ICT | 17.28 | 18.00 | 1.180 | -0.17 | 0.663 | 0.783 |
| | FR1 n48 | 40M | BPSK | 50 | 28 | Bottom of Laptop | 0mm | MIMO1 | ON | 645332 | 3679.98 | ICT | 17.13 | 18.00 | 1.222 | -0.03 | 0.729 | 0.891 |
| | FR1 n48 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | AUX | ON | 641666 | 3624.99 | ATC | 14.82 | 15.50 | 1.169 | 0.16 | 0.402 | 0.470 |
| | FR1 n48 | 40M | BPSK | 50 | 28 | Bottom of Laptop | 0mm | AUX | ON | 641666 | 3624.99 | ATC | 14.78 | 15.50 | 1.180 | 0.04 | 0.418 | 0.493 |
| | FR1 n48 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | AUX | ON | 641666 | 3624.99 | ICT | 14.82 | 15.50 | 1.169 | 0.11 | 0.467 | 0.546 |
| | FR1 n48 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 17mm | AUX | OFF | 641666 | 3624.99 | ATC | 20.98 | 22.00 | 1.265 | 0.18 | 0.076 | 0.096 |
| | FR1 n48 | 40M | BPSK | 50 | 28 | Bottom of Laptop | 17mm | AUX | OFF | 641666 | 3624.99 | ATC | 20.81 | 22.00 | 1.315 | 0.18 | 0.166 | 0.218 |



| Plot No. | Band | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Antenna | Power Reduction | Ch. | Freq. (MHz) | Antenna Vendor | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Reported 1g SAR (W/kg) |
|----------|--------------|----------|------------|---------|-----------|------------------|----------|---------|-----------------|--------|-------------|----------------|---------------------|---------------------|------------------------|------------------|------------------------|------------------------|
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 656000 | 3840 | ATC | 13.56 | 14.00 | 1.107 | 0.18 | 0.343 | 0.380 |
| | FR1 n77 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 0mm | Main | ON | 656000 | 3840 | ATC | 13.51 | 14.00 | 1.119 | -0.14 | 0.289 | 0.324 |
| | FR1 n77_HPUE | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 656000 | 3840 | ATC | 16.53 | 17.00 | 1.114 | -0.02 | 0.311 | 0.347 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 656000 | 3840 | ICT | 13.56 | 14.00 | 1.107 | 0.16 | 0.329 | 0.364 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 15mm | Main | OFF | 656000 | 3840 | ATC | 24.00 | 25.00 | 1.259 | 0.16 | 0.290 | 0.365 |
| | FR1 n77 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 15mm | Main | OFF | 656000 | 3840 | ATC | 23.81 | 25.00 | 1.315 | -0.03 | 0.245 | 0.322 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 656000 | 3840 | ATC | 16.06 | 17.00 | 1.242 | 0.1 | 0.390 | 0.484 |
| | FR1 n77 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 0mm | MIMO2 | ON | 656000 | 3840 | ATC | 16.02 | 17.00 | 1.253 | -0.19 | 0.358 | 0.449 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 656000 | 3840 | ICT | 16.06 | 17.00 | 1.242 | 0.13 | 0.661 | 0.821 |
| | FR1 n77_HPUE | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 656000 | 3840 | ICT | 19.10 | 20.00 | 1.230 | 0.12 | 0.625 | 0.769 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 23mm | MIMO2 | OFF | 656000 | 3840 | ATC | 23.36 | 25.00 | 1.459 | 0.09 | 0.311 | 0.454 |
| | FR1 n77 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 23mm | MIMO2 | OFF | 656000 | 3840 | ATC | 23.21 | 25.00 | 1.510 | -0.15 | 0.289 | 0.436 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO1 | ON | 656000 | 3840 | ATC | 16.04 | 16.50 | 1.112 | 0.11 | 0.830 | 0.923 |
| | FR1 n77 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 0mm | MIMO1 | ON | 656000 | 3840 | ATC | 16.00 | 16.50 | 1.122 | 0.03 | 0.771 | 0.865 |
| | FR1 n77_HPUE | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO1 | ON | 656000 | 3840 | ATC | 19.02 | 19.50 | 1.117 | 0.15 | 0.745 | 0.832 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO1 | ON | 656000 | 3840 | ICT | 16.04 | 16.50 | 1.112 | 0.19 | 0.399 | 0.444 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | AUX | ON | 656000 | 3840 | ATC | 14.52 | 15.50 | 1.253 | 0.03 | 0.255 | 0.320 |
| | FR1 n77 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 0mm | AUX | ON | 656000 | 3840 | ATC | 14.43 | 15.50 | 1.279 | 0.18 | 0.255 | 0.326 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | AUX | ON | 656000 | 3840 | ICT | 14.52 | 15.50 | 1.253 | 0.16 | 0.351 | 0.440 |
| | FR1 n77_HPUE | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | AUX | ON | 656000 | 3840 | ICT | 17.52 | 18.50 | 1.253 | 0.09 | 0.328 | 0.411 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 17mm | AUX | OFF | 656000 | 3840 | ATC | 24.88 | 25.00 | 1.028 | 0.05 | 0.241 | 0.248 |
| | FR1 n77 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 17mm | AUX | OFF | 656000 | 3840 | ATC | 24.65 | 25.00 | 1.084 | -0.03 | 0.236 | 0.256 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 633332 | 3499.98 | ATC | 13.71 | 14.00 | 1.069 | 0.14 | 0.324 | 0.346 |
| | FR1 n77 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 0mm | Main | ON | 633332 | 3499.98 | ATC | 13.63 | 14.00 | 1.089 | 0.12 | 0.305 | 0.332 |
| | FR1 n77_HPUE | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 633332 | 3499.98 | ATC | 16.74 | 17.00 | 1.062 | 0.15 | 0.295 | 0.313 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | Main | ON | 633332 | 3499.98 | ICT | 13.71 | 14.00 | 1.069 | -0.06 | 0.312 | 0.334 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 15mm | Main | OFF | 633332 | 3499.98 | ATC | 23.70 | 25.00 | 1.349 | -0.04 | 0.254 | 0.343 |
| | FR1 n77 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 15mm | Main | OFF | 633332 | 3499.98 | ATC | 23.35 | 25.00 | 1.462 | 0.13 | 0.222 | 0.325 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 633332 | 3499.98 | ATC | 16.31 | 17.00 | 1.172 | 0.12 | 0.232 | 0.272 |
| | FR1 n77 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 0mm | MIMO2 | ON | 633332 | 3499.98 | ATC | 16.27 | 17.00 | 1.183 | 0.16 | 0.224 | 0.265 |
| 28 | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 633332 | 3499.98 | ICT | 16.31 | 17.00 | 1.172 | 0.09 | 0.964 | 1.130 |
| | FR1 n77_HPUE | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 633332 | 3499.98 | ICT | 19.28 | 20.00 | 1.180 | -0.03 | 0.913 | 1.078 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 23mm | MIMO2 | OFF | 633332 | 3499.98 | ATC | 23.50 | 25.00 | 1.413 | 0.07 | 0.150 | 0.212 |
| | FR1 n77 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 23mm | MIMO2 | OFF | 633332 | 3499.98 | ATC | 23.34 | 25.00 | 1.466 | -0.12 | 0.162 | 0.237 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO1 | ON | 633332 | 3499.98 | ATC | 16.33 | 16.50 | 1.040 | 0.1 | 0.526 | 0.547 |
| | FR1 n77 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 0mm | MIMO1 | ON | 633332 | 3499.98 | ATC | 16.28 | 16.50 | 1.052 | -0.16 | 0.498 | 0.524 |
| | FR1 n77_HPUE | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO1 | ON | 633332 | 3499.98 | ATC | 19.30 | 19.50 | 1.047 | 0.06 | 0.472 | 0.494 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO1 | ON | 633332 | 3499.98 | ICT | 16.33 | 16.50 | 1.040 | -0.01 | 0.450 | 0.468 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | AUX | ON | 633332 | 3499.98 | ATC | 14.85 | 15.50 | 1.161 | 0.16 | 0.757 | 0.879 |
| | FR1 n77 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 0mm | AUX | ON | 633332 | 3499.98 | ATC | 14.75 | 15.50 | 1.189 | 0.11 | 0.717 | 0.852 |
| | FR1 n77_HPUE | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | AUX | ON | 633332 | 3499.98 | ATC | 17.94 | 18.50 | 1.138 | 0.08 | 0.704 | 0.801 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | AUX | ON | 633332 | 3499.98 | ICT | 14.85 | 15.50 | 1.161 | -0.17 | 0.535 | 0.621 |
| | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 17mm | AUX | OFF | 633332 | 3499.98 | ATC | 24.56 | 25.00 | 1.107 | -0.08 | 0.254 | 0.281 |
| | FR1 n77 | 100M | BPSK | 135 | 69 | Bottom of Laptop | 17mm | AUX | OFF | 633332 | 3499.98 | ATC | 24.43 | 25.00 | 1.140 | -0.08 | 0.241 | 0.275 |

13.2 Repeated SAR Measurement

| No. | Band | BW (MHz) | Modulation | RB Size | RB offset | Test Position | Gap (mm) | Antenna | Power Reduction | Ch. | Freq. (MHz) | Antenna Vendor | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 1g SAR (W/kg) | Ratio | Reported 1g SAR (W/kg) |
|-----|-------------|----------|------------|---------|-----------|------------------|----------|---------|-----------------|--------|-------------|----------------|---------------------|---------------------|------------------------|--------------|---------------------------|------------------|------------------------|-------|------------------------|
| 1st | LTE Band 66 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 132572 | 1770 | ICT | 19.12 | 19.50 | 1.091 | | | -0.01 | 1.040 | - | 1.135 |
| 2nd | LTE Band 66 | 20M | QPSK | 50 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 132572 | 1770 | ICT | 19.12 | 19.50 | 1.091 | | | 0.07 | 1.010 | 1.03 | 1.102 |
| 1st | LTE Band 41 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 41055 | 2636.5 | ATC | 20.32 | 20.50 | 1.042 | 62.9 | 1.006 | -0.12 | 1.040 | - | 1.091 |
| 2nd | LTE Band 41 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 41055 | 2636.5 | ATC | 20.32 | 20.50 | 1.042 | 62.9 | 1.006 | 0.03 | 1.010 | 1.03 | 1.059 |
| 1st | LTE Band 48 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 55830 | 3609 | ICT | 17.05 | 17.50 | 1.109 | 62.9 | 1.006 | 0.01 | 0.978 | - | 1.091 |
| 2nd | LTE Band 48 | 20M | QPSK | 1 | 0 | Bottom of Laptop | 0mm | MIMO2 | ON | 55830 | 3609 | ICT | 17.05 | 17.50 | 1.109 | 62.9 | 1.006 | -0.1 | 0.942 | 1.04 | 1.051 |
| 1st | FR1 n25 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 376500 | 1882.5 | ICT | 19.54 | 20.00 | 1.112 | | | -0.01 | 1.040 | - | 1.156 |
| 2nd | FR1 n25 | 40M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 376500 | 1882.5 | ICT | 19.54 | 20.00 | 1.112 | | | 0.12 | 0.997 | 1.04 | 1.108 |
| 1st | FR1 n30 | 10M | BPSK | 25 | 14 | Bottom of Laptop | 0mm | MIMO2 | ON | 462000 | 2310 | ATC | 17.72 | 18.50 | 1.197 | | | -0.05 | 1.000 | - | 1.197 |
| 2nd | FR1 n30 | 10M | BPSK | 25 | 14 | Bottom of Laptop | 0mm | MIMO2 | ON | 462000 | 2310 | ATC | 17.72 | 18.50 | 1.197 | | | 0.13 | 0.988 | 1.01 | 1.182 |
| 1st | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO1 | ON | 656000 | 3840 | ATC | 16.04 | 16.50 | 1.112 | | | 0.11 | 0.830 | - | 0.923 |
| 2nd | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO1 | ON | 656000 | 3840 | ATC | 16.04 | 16.50 | 1.112 | | | -0.08 | 0.797 | 1.04 | 0.886 |
| 1st | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 633332 | 3499.98 | ICT | 16.31 | 17.00 | 1.172 | | | 0.09 | 0.964 | - | 1.130 |
| 2nd | FR1 n77 | 100M | BPSK | 1 | 1 | Bottom of Laptop | 0mm | MIMO2 | ON | 633332 | 3499.98 | ICT | 16.31 | 17.00 | 1.172 | | | 0.18 | 0.934 | 1.03 | 1.095 |

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR < 1.45 W/kg, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated *measured SAR*.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

13.3 LTE Band 41 Power Class 2 and Power Class 3 Linearity

This device support Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operation is 43.3% using UL-DL configuration 1. Per FCC Guidance based on the device behavior, all SAR tests were performed using Power Class 3. Power Class 2 is tested using the highest SAR test configuration in Power Class 3 for each LTE configuration and exposure condition combination, according to the highest time averaged power for all applicable uplink-downlink configurations in Power Class 2. When the reported SAR vs. output power is linearly scaled with $< 10\%$ discrepancy between power classes and all reported SAR are < 1.4 W/kg, Separate SAR testing for Power Class 2 is not required

Use PC3 power level and SAR to estimated PC2 SAR linearly, and check if the deviation from the measured PC2 SAR is $< 10\%$

| | LTE Band 41_Ant Main (Power Class 3) | LTE Band 41_Ant Main (Power Class 2) |
|-------------------------------------|---|---|
| Maximum Tune up Power (dBm) | 17.5 | 20 |
| Reported 1g SAR (W/kg) | 0.426 | 0.509 |
| Duty Cycle | 63.30% | 43.30% |
| Frame Averaged (mW) | 35.60 | 43.30 |
| Linearity SAR(W/kg) | 0.52 | |
| % deviation from expected linearity | | -1.77% |



13.4 FR1 n41/n77 Power Class 2 and Power Class 3 Linearity

This device support Power Class 2 and Power Class 3 operations for FR1 n41/n77. The highest available duty cycle for Power Class 2 operation is 50%. Per FCC Guidance based on the device behavior, all SAR tests were performed using Power Class 3. Power Class 2 is tested using the highest SAR test configuration in Power Class 3 for each FR1 configuration and exposure condition combination, according to the highest time averaged power for Power Class 2. When the reported SAR vs. output power is linearly scaled with < 10% discrepancy between power classes and all reported SAR are < 1.4 W/kg, Separate SAR testing for Power Class 2 is not required. Use PC3 power level and SAR to estimated PC2 SAR linearly, and check if the deviation from the measured PC2 SAR is <10%

| | FR1 n41_Ant Main (Power Class 3) | FR1 n41_Ant Main (Power Class 2) |
|-------------------------------------|-------------------------------------|-------------------------------------|
| Maximum Tune up Power (dBm) | 16 | 19 |
| Reported 1g SAR (W/kg) | 0.608 | 0.546 |
| Duty Cycle | 100.00% | 50.00% |
| Frame Averaged (mW) | 39.81 | 39.72 |
| Linearity SAR(W/kg) | 0.61 | |
| % deviation from expected linearity | | -9.98% |

| | FR1 n41_Ant MIMO 1 (Power Class 3) | FR1 n41_Ant MIMO 1 (Power Class 2) |
|-------------------------------------|---------------------------------------|---------------------------------------|
| Maximum Tune up Power (dBm) | 14.5 | 17.5 |
| Reported 1g SAR (W/kg) | 1.107 | 0.998 |
| Duty Cycle | 100.00% | 50.00% |
| Frame Averaged (mW) | 28.18 | 28.12 |
| Linearity SAR(W/kg) | 1.10 | |
| % deviation from expected linearity | | -9.63% |

| | FR1 n41_Ant MIMO 2 (Power Class 3) | FR1 n41_Ant MIMO 2 (Power Class 2) |
|-------------------------------------|---------------------------------------|---------------------------------------|
| Maximum Tune up Power (dBm) | 17 | 20 |
| Reported 1g SAR (W/kg) | 0.636 | 0.63 |
| Duty Cycle | 100.00% | 50.00% |
| Frame Averaged (mW) | 50.12 | 50.00 |
| Linearity SAR(W/kg) | 0.63 | |
| % deviation from expected linearity | | -0.71% |

| | FR1 n41_Ant Aux (Power Class 3) | FR1 n41_Ant Aux (Power Class 2) |
|-------------------------------------|------------------------------------|------------------------------------|
| Maximum Tune up Power (dBm) | 18.5 | 21.5 |
| Reported 1g SAR (W/kg) | 1.071 | 0.966 |
| Duty Cycle | 100.00% | 50.00% |
| Frame Averaged (mW) | 70.79 | 70.63 |
| Linearity SAR(W/kg) | 1.07 | |
| % deviation from expected linearity | | -9.59% |



| | FR1 n77_Ant Main | FR1 n77_Ant Main |
|-------------------------------------|------------------|------------------|
| | (Power Class 3) | (Power Class 2) |
| Maximum Tune up Power (dBm) | 14 | 17 |
| Reported 1g SAR (W/kg) | 0.38 | 0.347 |
| Duty Cycle | 100.00% | 50.00% |
| Frame Averaged (mW) | 25.12 | 25.06 |
| Linearity SAR(W/kg) | 0.38 | |
| % deviation from expected linearity | | -8.47% |

| | FR1 n77_Ant MIMO 1 | FR1 n77_Ant MIMO 1 |
|-------------------------------------|--------------------|--------------------|
| | (Power Class 3) | (Power Class 2) |
| Maximum Tune up Power (dBm) | 16.5 | 19.5 |
| Reported 1g SAR (W/kg) | 0.923 | 0.832 |
| Duty Cycle | 100.00% | 50.00% |
| Frame Averaged (mW) | 44.67 | 44.56 |
| Linearity SAR(W/kg) | 0.92 | |
| % deviation from expected linearity | | -9.65% |

| | FR1 n77_Ant MIMO 2 | FR1 n77_Ant MIMO 2 |
|-------------------------------------|--------------------|--------------------|
| | (Power Class 3) | (Power Class 2) |
| Maximum Tune up Power (dBm) | 17 | 20 |
| Reported 1g SAR (W/kg) | 1.13 | 1.078 |
| Duty Cycle | 100.00% | 50.00% |
| Frame Averaged (mW) | 50.12 | 50.00 |
| Linearity SAR(W/kg) | 1.13 | |
| % deviation from expected linearity | | -4.38% |

| | FR1 n77_Ant AUX | FR1 n77_Ant AUX |
|-------------------------------------|-----------------|-----------------|
| | (Power Class 3) | (Power Class 2) |
| Maximum Tune up Power (dBm) | 15.5 | 18.5 |
| Reported 1g SAR (W/kg) | 0.879 | 0.801 |
| Duty Cycle | 100.00% | 50.00% |
| Frame Averaged (mW) | 35.48 | 35.40 |
| Linearity SAR(W/kg) | 0.88 | |
| % deviation from expected linearity | | -8.66% |

14. Simultaneous Transmission Analysis

| NO. | Simultaneous Transmission Configurations | Body |
|-----|---|------|
| 1. | WWAN Main + WWAN MIMO 2 + WLAN Main + WLAN/BT Aux | Yes |
| 2. | WWAN MIMO 1 + WLAN Main + WLAN/BT Aux | Yes |
| 3. | WWAN Aux + WLAN Main + WLAN/BT Aux | Yes |

General Note:

1. The Intel AX211D2W WLAN/BT module (FCC ID: PD9AX211D2) is integrated into this host.
2. The Intel BE200D2W WLAN/BT module (FCC ID: PD9BE200D2) is also integrated into this host.
3. A WiFi/BT SAR of 1.59 W/kg for each transmit antenna was used conservatively for the purpose of simultaneous transmission analysis.
4. The Scaled SAR summation is calculated based on the same configuration and test position.
5. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - i) Scalar SAR summation < 1.6W/kg.
 - ii) $SPLSR = (SAR1 + SAR2)^{1.5} / (\min. \text{separation distance, mm})$, and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
 - iii) If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.
 - iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
 - v) The SPLSR calculated results please refer to section 14.2.

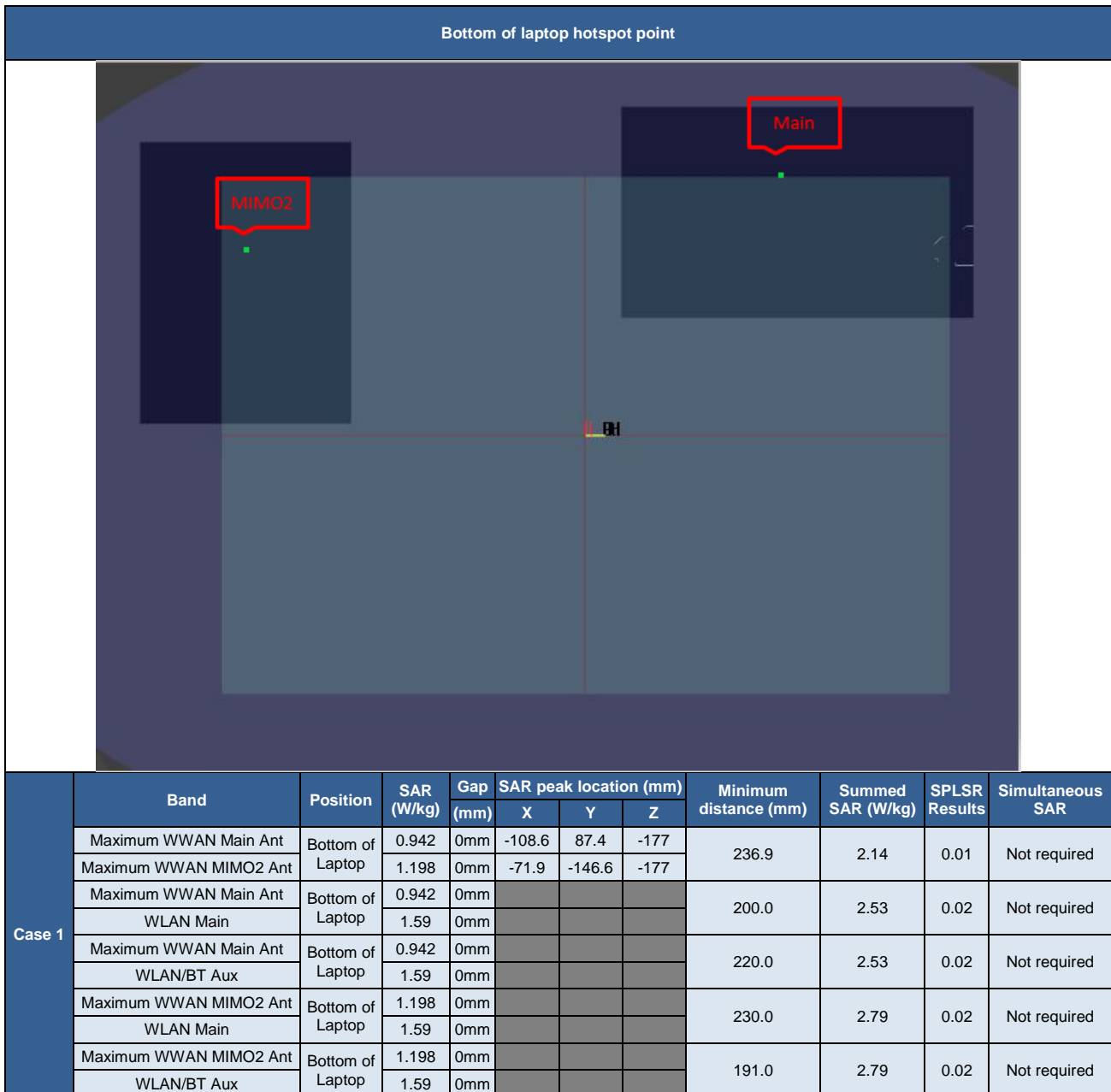
14.1 Body Exposure Conditions

| Exposure Position | 0 | 1 | 2 | 3 | 0+1+2+3 Summed 1g SAR (W/kg) | SPLSR | Case No |
|-------------------------|--------------------------------------|--------------------------------------|----------------------------|------------------------------|------------------------------|-------|---------|
| | Maximum WWAN Main 1g SAR (W/kg) | Maximum WWAN MIMO 2 1g SAR (W/kg) | WLAN Main 1g SAR (W/kg) | WLAN/BT Aux 1g SAR (W/kg) | | | |
| Bottom of Laptop at 0mm | 0.942 | 1.198 | 1.590 | 1.590 | 5.320 | 0.02 | Case 1 |
| Exposure Position | 1 | | 2 | 3 | 1+2+3 Summed 1g SAR (W/kg) | SPLSR | Case No |
| | Maximum WWAN MIMO 1 1g SAR (W/kg) | | WLAN Main 1g SAR (W/kg) | WLAN/BT Aux 1g SAR (W/kg) | | | |
| Bottom of Laptop at 0mm | 1.107 | | 1.590 | 1.590 | 4.287 | 0.03 | Case 2 |
| Exposure Position | 1 | | 2 | 3 | 1+2+3 Summed 1g SAR (W/kg) | SPLSR | Case No |
| | Maximum WWAN Aux 1g SAR (W/kg) | | WLAN Main 1g SAR (W/kg) | WLAN/BT Aux 1g SAR (W/kg) | | | |
| Bottom of Laptop at 0mm | 1.071 | | 1.590 | 1.590 | 4.251 | 0.02 | Case 3 |

14.2 SPLSR Evaluation and Analysis

General Note:

1. According to antenna location of Appendix E, the minimum distance between WWAN and WLAN/BT transmit antenna is using for SPLSR analysis. for WWAN Main to WWAN MIMO2 hotspot point showing as below figure and the minimum 3D distance for each sum combination is used for SPLSR analysis
2. Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneously transmitting antenna. When the sum of 1-g or 10-g SAR of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration. Therefore, the adjacent transmit antennas will be summed first, and then the SPLSR calculation will be evaluated with the farther transmitted antennas.
3. $SPLSR = (SAR_1 + SAR_2)^{1.5} / (min. \text{ separation distance, mm})$. If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary





| Case 2 | Band | Position | SAR (W/kg) | Gap (mm) | Minimum distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|--------|------------------------|------------------|------------|----------|-----------------------|-------------------|---------------|------------------|
| | | | | | | | | |
| Case 2 | Maximum WWAN MIMO1 Ant | Bottom of Laptop | 1.107 | 0mm | 175.0 | 2.70 | 0.03 | Not required |
| | WLAN Main | | 1.59 | 0mm | | | | |
| | Maximum WWAN MIMO1 Ant | Bottom of Laptop | 1.107 | 0mm | 205.0 | 2.70 | 0.02 | Not required |
| | WLAN/BT Aux | | 1.59 | 0mm | | | | |
| Case 3 | Band | Position | SAR (W/kg) | Gap (mm) | Minimum distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
| | | | | | | | | |
| Case 3 | Maximum WWAN Aux Ant | Bottom of Laptop | 1.071 | 0mm | 220.0 | 2.66 | 0.02 | Not required |
| | WLAN Main | | 1.59 | 0mm | | | | |
| | Maximum WWAN Aux Ant | Bottom of Laptop | 1.071 | 0mm | 210.0 | 2.66 | 0.02 | Not required |
| | WLAN/BT Aux | | 1.59 | 0mm | | | | |

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15. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be $\leq 30\%$, for a confidence interval of $k = 2$. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg. Therefore, the measurement uncertainty table is not required in this report.

Declaration of Conformity:

The test results with all measurement uncertainty excluded is presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

16. References

- [1] FCC 47 CFR Part 2 "Frequency Allocations and Radio Treaty Matters; General Rules and Regulations"
- [2] ANSI/IEEE Std. C95.1-1992, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz", September 1992
- [3] IEEE Std. 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", Sep 2013
- [4] SPEAG DASY System Handbook
- [5] FCC KDB 447498 D01 v06, "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies", Oct 2015
- [6] FCC KDB 941225 D01 v03r01, "3G SAR MEAUREMENT PROCEDURES", Oct 2015
- [7] FCC KDB 941225 D05 v02r05, "SAR Evaluation Considerations for LTE Devices", Dec 2015
- [8] FCC KDB 941225 D05A v01r02, "Rel. 10 LTE SAR Test Guidance and KDB Inquiries", Oct 2015
- [9] FCC KDB 616217 D04 v01r02, "SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers", Oct 2015
- [10] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.
- [11] FCC KDB 865664 D02 v01r02, "RF Exposure Compliance Reporting and Documentation Considerations" Oct 2015.