

# FCC SAR TEST REPORT

FCC ID : QYLFN990B  
Equipment : 5G NR Module  
Brand Name : Getac  
Model Name : FN990A28  
Applicant : Getac Technology Corporation.  
5F., Building A, No. 209, Sec.1, Nangang Rd., Nangang  
Dist., Taipei City 115018, Taiwan, R.O.C.  
Standard : FCC 47 CFR Part 2 (2.1093)

The product was installed into Notebook (Brand Name: Getac, Model Name: B360, B360 Pro, B360G3, B360 ProG3, B360 Plus, B360X, B360X Pro, B360Y (Y= 10 characters, Y can be 0-9, a-z, A-Z, "-", "\_" or blank for marketing purpose and no impact safety related critical components and constructions.)) during test.

The product was received on Jul. 04, 2026 and testing was started from Jul. 04, 2026 and completed on Jul. 13, 2026. 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**

No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan



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## History of this test report

| Report No. | Version | Description             | Issued Date   |
|------------|---------|-------------------------|---------------|
| FA661230B  | 01      | Initial issue of report | Aug. 28, 2026 |
|            |         |                         |               |
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## 1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) for Getac Technology Corporation., 5G NR Module, FN990A28, are as follows.

| Equipment Class  | Frequency Band | Highest SAR Summary        | Highest Body Simultaneous Transmission<br>1g SAR (W/kg) |
|------------------|----------------|----------------------------|---------------------------------------------------------|
|                  |                | Body<br>(Separation: 0 mm) |                                                         |
|                  |                | 1g SAR (W/kg)              |                                                         |
| Licensed         | LTE Band 42    | 0.46                       | 0.99                                                    |
|                  | LTE Band 43    | 0.99                       |                                                         |
|                  | LTE Band 48    | 0.68                       |                                                         |
|                  | FR1 n48        | 0.68                       |                                                         |
|                  | FR1 n77        | 0.98                       |                                                         |
| Date of Testing: |                | 2026/07/04 ~ 2026/07/13    |                                                         |

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: Paula Chen**

## 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                                                                                                                                                                             | 5G NR Module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Brand Name                                                                                                                                                                                 | Getac                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Model Name                                                                                                                                                                                 | FN990A28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| FCC ID                                                                                                                                                                                     | QYLFN990B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Wireless Technology and Frequency Range                                                                                                                                                    | WCDMA Band II: 1850 MHz ~ 1910 MHz<br>WCDMA Band IV: 1710 MHz ~ 1755 MHz<br>WCDMA Band V: 824 MHz ~ 849 MHz<br>LTE Band 2: 1850 MHz ~ 1910 MHz<br>LTE Band 4: 1710 MHz ~ 1755 MHz<br>LTE Band 5: 824 MHz ~ 849 MHz<br>LTE Band 7: 2500 MHz ~ 2570 MHz<br>LTE Band 12: 699 MHz ~ 716 MHz<br>LTE Band 13: 777 MHz ~ 787 MHz<br>LTE Band 14: 788 MHz ~ 798 MHz<br>LTE Band 17: 704 MHz ~ 716 MHz<br>LTE Band 25: 1850 MHz ~ 1915 MHz<br>LTE Band 26: 814 MHz ~ 849 MHz<br>LTE Band 38: 2570 MHz ~ 2620 MHz<br>LTE Band 41: 2496 MHz ~ 2690 MHz<br>LTE Band 42: 3550 MHz ~ 3600 MHz, 3450 MHz ~ 3550MHz<br>LTE Band 43: 3650 MHz ~ 3675 MHz, 3600 MHz ~ 3700MHz<br>LTE Band 48: 3550 MHz ~ 3700 MHz<br>LTE Band 66: 1710 MHz ~ 1780 MHz<br>LTE Band 71: 663 MHz ~ 698 MHz<br>5G NR n2 : 1850 MHz ~ 1910 MHz<br>5G NR n5 : 824 MHz ~ 849 MHz<br>5G NR n7 : 2500 MHz ~ 2570 MHz<br>5G NR n12 : 699 MHz ~ 716 MHz<br>5G NR n13 : 777 MHz ~ 787 MHz<br>5G NR n14 : 788 MHz ~ 798 MHz<br>5G NR n25 : 1850 MHz ~ 1915 MHz<br>5G NR n26 : 814 MHz ~ 849 MHz<br>5G NR n38 : 2570 MHz ~ 2620 MHz<br>5G NR n41 : 2496 MHz ~ 2690 MHz<br>5G NR n48 : 3550 MHz ~ 3700 MHz<br>5G NR n66 : 1710 MHz ~ 1780 MHz<br>5G NR n71 : 663 MHz ~ 698 MHz<br>5G NR n77: 3700 MHz ~ 3980 MHz, 3450MHz ~ 3550MHz<br>5G NR n78: 3700 MHz ~ 3800 MHz, 3450MHz ~ 3550MHz |
| Mode                                                                                                                                                                                       | RMC 12.2Kbps<br>HSDPA<br>HSUPA<br>DC-HSDPA<br>LTE: QPSK, 16QAM, 64QAM, 256QAM<br>5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| EUT Stage                                                                                                                                                                                  | Production Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Remark:</b><br>1. According to the section14 antenna location, the distance of WWAN Main and Aux transmit antenna to the bottom side is larger than 200mm; SAR testing is not necessary |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |



# FCC SAR TEST REPORT

Report No. : FA661230B

| Host Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Equipment Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Notebook                                                                                                                                                                                                                                                                                                                                                                                                          |
| Brand Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Getac                                                                                                                                                                                                                                                                                                                                                                                                             |
| Model Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | B360, B360 Pro, B360G3, B360 ProG3, B360 Plus, B360X, B360X Pro<br>B360Y (Y= 10 characters, Y can be 0-9, a-z, A-Z, "-", "_" or blank for marketing purpose and no impact safety related critical components and constructions.)                                                                                                                                                                                  |
| Integrated WLAN Module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Brand Name: Intel<br>Model Name: BE211NGW                                                                                                                                                                                                                                                                                                                                                                         |
| Integrated RFID Module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Brand Name: Getac<br>Model Name: SN-NSVG7-C01                                                                                                                                                                                                                                                                                                                                                                     |
| Wireless Technology and Frequency Range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | WLAN 2.4 GHz Band: 2400 MHz ~ 2483.5 MHz<br>WLAN 5.2 GHz Band: 5150 MHz ~ 5250 MHz<br>WLAN 5.3 GHz Band: 5250 MHz ~ 5350 MHz<br>WLAN 5.6 GHz Band: 5470 MHz ~ 5725 MHz<br>WLAN 5.8 GHz Band: 5725 MHz ~ 5850 MHz<br>WLAN 5.9 GHz Band: 5850 MHz ~ 5895 MHz<br>WLAN 6E: 5925 MHz ~ 6425 MHz, 6425 MHz ~ 6525 MHz, 6525 MHz ~ 6875 MHz, 6875 MHz ~ 7125 MHz<br>Bluetooth: 2400 MHz ~ 2483.5 MHz<br>RFID : 13.56 MHz |
| Mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | WLAN: 802.11a/b/g/n/ac/ax/be<br>HT20/HT40/VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160/EHT20/EHT40/EHT80/EHT160/EHT320<br>Bluetooth BR/EDR/LE<br>RFID: ASK                                                                                                                                                                                                                                                       |
| EUT Stage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Production Unit                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Remark:</b><br>1. The Intel BE211NGW WLAN/BT module is integrated into this host. The maximum WLAN/BT output power and evaluation results are referenced from the Intel test report (Report No.: 250519-01.TR03, FCC ID: PD9BE211NG). The SAR results are used for simultaneous transmission analysis.<br>2. The RFID module is integrated into this host, the RFID test report is referenced from Sporton FCC SAR report, report no.: FA661209 (FCC ID: QYLSNNSVG7C01B); the SAR result is used to do simultaneous transmission analysis.<br>3. The device will have different models of the five SUKs depending on the different markets, The RF exposure was selected SKU D perform tested, SKU E spot check worst case. |                                                                                                                                                                                                                                                                                                                                                                                                                   |

| DVT SKUs                | SKU A                      | SKU B                                           | SKU C                      | SKU D                                    | SKU E                                                       |
|-------------------------|----------------------------|-------------------------------------------------|----------------------------|------------------------------------------|-------------------------------------------------------------|
| CPU                     | Ultra 5, 125H              | Ultra 7, 165H                                   | Ultra 7 268V vPro          | Ultra 5 325H                             | Ultra 7, 356H                                               |
| Display                 | ADP 13.3",FHD              | ADP 13.3",FHD                                   | ADP 13.3",FHD              | AUO 14", FHD                             | AUO 14", FHD                                                |
| Touch screen            | Support                    | Support                                         | Support                    | Support                                  | Support                                                     |
| Memory                  | kingston 8GB*2             | kingston 32GB*2                                 | kingston 32GB*2            | 16GB                                     | 32GB*2                                                      |
| Main storage            | SSD 256GB                  | SSD 1TB                                         | SSD 1TB                    | 256GB                                    | 1TB                                                         |
| Second storage          | SSD 256GB                  | SSD 1TB                                         | Not Support                | 256GB                                    | 1TB                                                         |
| Wifi+BT                 | BE200NGW                   | BE200NGW                                        | BE201NGW                   | BE211NGW                                 | BE211NGW                                                    |
| WWAN                    | FN990A28                   | FN990A28                                        | FN990A28                   | FN990A28                                 | FN990A28                                                    |
| GPS/GNSS                | FN990A28                   | MC-1010-V2b                                     | MC-1010-V2b                | MC-1010-V2b                              | MC-1010-V2b                                                 |
| AC adapter              | FSP, 90W ,<br>FSP090-ABBN3 | Chicony,<br>120W,A17-120P1A                     | FSP, 90W ,<br>FSP090-ABBN3 | FSP065-RBBN3,65W<br>FSP100-A1BR3, Type C | FSP090-ABBN3,90W<br>MTA190474W4,90W<br>FSP100-A1BR3, Type C |
| FINGERPRINT             | Support                    | Not Support                                     | Not Support                | Support                                  | Support                                                     |
| RFID                    | Support<br>(SN-NSVG7-C01)  | Support<br>(SN-NSVG7-C01)                       | Support<br>(SN-NSVG7-C01)  | Not Support                              | Not Support                                                 |
| BCR                     | Support                    | Support                                         | Support                    | Support                                  | Support                                                     |
| Smart Card              | Support                    | Support                                         | Support                    | Support                                  | Support                                                     |
| SD Card Reader          | Support                    | Support                                         | Support                    | Support                                  | Support                                                     |
| Battery                 | BP2S1P4060S-01             | BP3S2P3450P-01<br>BP3S2P2100S-04                | BP2S1P4060S-01             | BP2S1P4060S-01                           | BP3S2P3450P-01D                                             |
| Optional ports          | RS232/2nd TBT4             | RS232/2nd TBT4                                  | RS232/2nd TBT4             | RS232/2 <sup>nd</sup> TBT4               | RS232/2 <sup>nd</sup> TBT4                                  |
| ODD (Expansion)         | Not Support                | Support<br>(3rd battery<br>pack:BP3S2P2100S-04) | Not Support                | Not Support                              | Support<br>(3rd battery<br>pack:BP3S2P2100S-04)             |
| MXM/PCMCIA/Express      | Not Support                | ADLINK,91-7C006-110E                            | Not Support                | Not Support                              | MXM                                                         |
| Expansion optional port | Not Support                | Not Support                                     | Not Support                | Not Support                              | Not Support                                                 |

### 3.2 General LTE SAR Test and Reporting Considerations

| Summarized necessary items addressed in KDB 941225 D05 v02r05           |                                                                                                                                                                                                        |                                                               |                  |             |                  |             |                  |             |
|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|------------------|-------------|------------------|-------------|------------------|-------------|
| FCC ID                                                                  | QYLFN990B                                                                                                                                                                                              |                                                               |                  |             |                  |             |                  |             |
| Equipment Name                                                          | 5G NR Module                                                                                                                                                                                           |                                                               |                  |             |                  |             |                  |             |
| Operating Frequency Range of each LTE transmission band                 | LTE Band 42: 3550 MHz ~ 3600 MHz, 3450 MHz ~ 3550MHz<br>LTE Band 43: 3650 MHz ~ 3675 MHz, 3600 MHz ~ 3700MHz<br>LTE Band 48: 3550 MHz ~ 3700 MHz                                                       |                                                               |                  |             |                  |             |                  |             |
| Channel Bandwidth                                                       | LTE Band 42: 5MHz, 10MHz, 15MHz, 20MHz<br>LTE Band 43: 5MHz, 10MHz, 15MHz, 20MHz<br>LTE Band 48: 5MHz, 10MHz, 15MHz, 20MHz                                                                             |                                                               |                  |             |                  |             |                  |             |
| uplink modulations used                                                 | QPSK / 16QAM / 64QAM / 256QAM                                                                                                                                                                          |                                                               |                  |             |                  |             |                  |             |
| LTE Voice / Data requirements                                           | Data only                                                                                                                                                                                              |                                                               |                  |             |                  |             |                  |             |
| LTE MPR permanently built-in by design                                  | Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3                                                                                                                                |                                                               |                  |             |                  |             |                  |             |
|                                                                         | Modulation                                                                                                                                                                                             | Channel bandwidth / Transmission bandwidth (N <sub>RB</sub> ) |                  |             |                  |             |                  | 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. |                                                               |                  |             |                  |             |                  |             |
| LTE Carrier Aggregation Combinations                                    | UL CA referred to section 12.                                                                                                                                                                          |                                                               |                  |             |                  |             |                  |             |
| LTE Carrier Aggregation Additional Information                          | 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 42 Part 96                                                     |                                                                                                                                                                                                        |                                                               |                  |             |                  |             |                  |             |
|                                                                         | Bandwidth 5 MHz                                                                                                                                                                                        |                                                               | Bandwidth 10 MHz |             | Bandwidth 15 MHz |             | Bandwidth 20 MHz |             |
|                                                                         | Ch. #                                                                                                                                                                                                  | Freq. (MHz)                                                   | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) |
| L                                                                       | 43315                                                                                                                                                                                                  | 3552.5                                                        | 43140            | 3555        | 43165            | 3557.5      | 43190            | 3560        |
| M                                                                       | 43340                                                                                                                                                                                                  | 3575                                                          | 43340            | 3575        | 43340            | 3575        | 43340            | 3575        |
| H                                                                       | 43565                                                                                                                                                                                                  | 3597.5                                                        | 43540            | 3595        | 43515            | 3592.5      | 43490            | 3590        |
| LTE Band 42 Part 27Q                                                    |                                                                                                                                                                                                        |                                                               |                  |             |                  |             |                  |             |
|                                                                         | Bandwidth 5 MHz                                                                                                                                                                                        |                                                               | Bandwidth 10 MHz |             | Bandwidth 15 MHz |             | Bandwidth 20 MHz |             |
|                                                                         | Ch. #                                                                                                                                                                                                  | Freq. (MHz)                                                   | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) |
| L                                                                       | 42114.1                                                                                                                                                                                                | 3452.5                                                        | 42140            | 3455        | 42165            | 3457.5      | 42190            | 3460        |
| M                                                                       | 42589.1                                                                                                                                                                                                | 3500                                                          | 42589.1          | 3500        | 42589.1          | 3500        | 42589.1          | 3500        |
| H                                                                       | 43064.1                                                                                                                                                                                                | 3547.5                                                        | 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) |
| L                                                                       | 44115                                                                                                                                                                                                  | 3652.5                                                        | 44140            | 3655        | 44165            | 3657.5      | 44190            | 3660        |
| M                                                                       | 44215                                                                                                                                                                                                  | 3662.5                                                        | 44215            | 3662.5      | 44215            | 3662.5      | 44215            | 3662.5      |
| H                                                                       | 44315                                                                                                                                                                                                  | 3672.5                                                        | 44290            | 3670        | 44265            | 3667.5      | 44240            | 3665        |
| LTE Band 43 Part 96                                                     |                                                                                                                                                                                                        |                                                               |                  |             |                  |             |                  |             |
|                                                                         | Bandwidth 5 MHz                                                                                                                                                                                        |                                                               | Bandwidth 10 MHz |             | Bandwidth 15 MHz |             | Bandwidth 20 MHz |             |
|                                                                         | Ch. #                                                                                                                                                                                                  | Freq. (MHz)                                                   | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) | Ch. #            | Freq. (MHz) |
| L                                                                       | 43615                                                                                                                                                                                                  | 3602.5                                                        | 43640            | 3605        | 43665            | 3607.5      | 43690            | 3610        |
| M                                                                       | 44090                                                                                                                                                                                                  | 3650                                                          | 44090            | 3650        | 44090            | 3650        | 44090            | 3650        |
| H                                                                       | 44565                                                                                                                                                                                                  | 3697.5                                                        | 44540            | 3695        | 44515            | 3692.5      | 44490            | 3690        |
| 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) |
| L                                                                       | 55265                                                                                                                                                                                                  | 3552.5                                                        | 55290            | 3555        | 55315            | 3557.5      | 55340            | 3560        |
| L<br>M                                                                  | 55810                                                                                                                                                                                                  | 3607                                                          | 55815            | 3607.5      | 55820            | 3608        | 55830            | 3609        |
| M<br>H                                                                  | 56170                                                                                                                                                                                                  | 3643                                                          | 56165            | 3642.5      | 56160            | 3642        | 56150            | 3641        |
| H                                                                       | 56715                                                                                                                                                                                                  | 3697.5                                                        | 56690            | 3695        | 56665            | 3692.5      | 56640            | 3690        |

### 3.3 General 5G NR SAR Test and Reporting Considerations

| 5G NR Information                                         |                                                                                                                                            |             |                 |             |                 |             |                |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------|-------------|-----------------|-------------|----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|
| FCC ID                                                    | QYLFN990B                                                                                                                                  |             |                 |             |                 |             |                |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |
| Equipment Name                                            | 5G NR Module                                                                                                                               |             |                 |             |                 |             |                |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |
| Operating Frequency Range of each 5G NR transmission band | 5G NR n48 : 3550 MHz ~ 3700 MHz<br>5G NR n77: 3700 MHz ~ 3980 MHz, 3450MHz ~ 3550MHz<br>5G NR n78: 3700 MHz ~ 3800 MHz, 3450MHz ~ 3550MHz  |             |                 |             |                 |             |                |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |
| Channel Bandwidth                                         | 5G NR n48: 10MHz, 15MHz, 20MHz, 30MHz, 40MHz<br>5G NR n77/78: 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<br>CP-OFDM QPSK / 16QAM / 64QAM / 256QAM                                             |             |                 |             |                 |             |                |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |
| A-MPR (Additional MPR) disabled for SAR Testing?          | Yes                                                                                                                                        |             |                 |             |                 |             |                |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |
| LTE Anchor Bands for n77                                  | LTE B2/13/66                                                                                                                               |             |                 |             |                 |             |                |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |
| NR Band 48                                                |                                                                                                                                            |             |                 |             |                 |             |                |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |
|                                                           | Bandwidth10MHz                                                                                                                             |             | Bandwidth 15MHz |             | Bandwidth20MHz  |             | Bandwidth30MHz |             | Bandwidth 40MHz |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |
|                                                           | Ch. #                                                                                                                                      | Freq. (MHz) | Ch. #           | Freq. (MHz) | Ch. #           | Freq. (MHz) | Ch. #          | Freq. (MHz) | Ch. #           | Freq. (MHz) |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |
| L                                                         | 637000                                                                                                                                     | 3555        | 637168          | 3557.52     | 637334          | 3560.01     | 637668         | 3565.02     | 638000          | 3570        |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |
| M                                                         | 641666                                                                                                                                     | 3624.99     | 641666          | 3624.99     | 641666          | 3624.99     | 641666         | 3624.99     | 641666          | 3624.99     |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |
| H                                                         | 646332                                                                                                                                     | 3694.98     | 646166          | 3692.49     | 646000          | 3690        | 645666         | 3684.99     | 645332          | 3679.98     |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |
| NR Band 77 Part 27O                                       |                                                                                                                                            |             |                 |             |                 |             |                |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |
|                                                           | 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 Part 27O                                       |                                                                                                                                            |             |                 |             |                 |             |                |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |
|                                                           | 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        | 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     | 650000          | 3750        |
| NR Band 77/78 Part 27Q                                    |                                                                                                                                            |             |                 |             |                 |             |                |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |                 |             |
|                                                           | 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     | 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     | 633332          | 3499.98     |

#### 4. Smart Transmit feature for RF Exposure compliance

The Smart Transmit algorithm maintains the time-averaged transmit power, in turn, time-averaged RF exposure of SAR\_design\_target, below the predefined time-averaged power limit, for each characterized technology and band (refer to RF exposure part0 report).

Smart Transmit allows the device to transmit at higher power instantaneously, as high as Pmax, when needed, but enforces power limiting to maintain time-averaged transmit power to Plimit. Below table shows Plimit EFS settings and maximum tune up output power Pmax configured for this EUT for various transmit conditions (Device State Index DSI).

**<Plimit for supported technologies and bands (Plimit in EFS file)>**

| Band             | Antenna      | 1g SAR design target (W/kg) | TDD duty cycle | Plimit* | Pmax * (dBm) | Power Tolerance (dB) |
|------------------|--------------|-----------------------------|----------------|---------|--------------|----------------------|
|                  |              |                             |                | Body    |              |                      |
| WCDMA II         | Main(Ant 0)  | 0.95                        | 100.00%        | 32.0    | 23.5         | 1                    |
| WCDMA IV         | Main(Ant 0)  | 0.95                        | 100.00%        | 30.3    | 23.5         | 1                    |
| WCDMA V          | Main(Ant 0)  | 0.95                        | 100.00%        | 31.4    | 23.5         | 1                    |
| LTE Band 7       | Main(Ant 0)  | 0.95                        | 100.00%        | 30.2    | 23.0         | 1                    |
| LTE Band 7       | Aux(Ant 2)   | 0.95                        | 100.00%        | 28.2    | 23.0         | 1                    |
| LTE Band 12/17   | Main(Ant 0)  | 0.95                        | 100.00%        | 32.2    | 23.0         | 1                    |
| LTE Band 13      | Main(Ant 0)  | 0.95                        | 100.00%        | 30.5    | 23.0         | 1                    |
| LTE Band 14      | Main(Ant 0)  | 0.95                        | 100.00%        | 30.7    | 23.0         | 1                    |
| LTE Band 25/2    | Main(Ant 0)  | 0.95                        | 100.00%        | 30.7    | 23.0         | 1                    |
| LTE Band 25/2    | Aux(Ant 2)   | 0.95                        | 100.00%        | 32.1    | 23.0         | 1                    |
| LTE Band 26/5    | Main(Ant 0)  | 0.95                        | 100.00%        | 31.1    | 23.0         | 1                    |
| LTE Band 38      | Main(Ant 0)  | 0.95                        | 63.30%         | 33.7    | 21.0         | 1                    |
| LTE Band 38      | Aux(Ant 2)   | 0.95                        | 63.30%         | 29.1    | 21.0         | 1                    |
| LTE Band 41      | Main(Ant 0)  | 0.95                        | 63.30%         | 33.6    | 20.5         | 1                    |
| LTE Band 41_HPUE | Main(Ant 0)  | 0.95                        | 43.30%         |         | 21.9         | 1                    |
| LTE Band 41      | Aux(Ant 2)   | 0.95                        | 63.30%         | 27.6    | 20.5         | 1                    |
| LTE Band 41_HPUE | Aux(Ant 2)   | 0.95                        | 43.30%         |         | 21.9         | 1                    |
| LTE Band 42      | MIMO2(Ant 3) | 0.95                        | 63.30%         | 10.6    | 19.5         | 1                    |
| LTE Band 43      | MIMO2(Ant 3) | 0.95                        | 63.30%         | 10.9    | 19.5         | 1                    |
| LTE Band 48      | MIMO2(Ant 3) | 0.95                        | 63.30%         | 10.3    | 19.5         | 1                    |
| LTE Band 48      | MIMO1(Ant 1) | 0.95                        | 63.30%         | 9.6     | 19.5         | 1                    |
| LTE Band 66/4    | Main(Ant 0)  | 0.95                        | 100.00%        | 31.6    | 23.0         | 1                    |
| LTE Band 71      | Main(Ant 0)  | 0.95                        | 100.00%        | 32.9    | 23.0         | 1                    |
| n5               | Main(Ant 0)  | 0.95                        | 100.00%        | 30.9    | 23.5         | 1                    |
| n7               | Main(Ant 0)  | 0.95                        | 100.00%        | 32.5    | 23.0         | 1                    |
| n7               | Aux(Ant 2)   | 0.95                        | 100.00%        | 27.9    | 23.0         | 1                    |
| n12              | Main(Ant 0)  | 0.95                        | 100.00%        | 32.9    | 23.0         | 1                    |
| n13              | Main(Ant 0)  | 0.95                        | 100.00%        | 30.2    | 23.0         | 1                    |
| n14              | Main(Ant 0)  | 0.95                        | 100.00%        | 30.5    | 23.0         | 1                    |
| n25/2            | Main(Ant 0)  | 0.95                        | 100.00%        | 31.0    | 23.5         | 1                    |
| n25/2            | Aux(Ant 2)   | 0.95                        | 100.00%        | 32.1    | 23.5         | 1                    |
| n26              | Main(Ant 0)  | 0.95                        | 100.00%        | 31.2    | 23.0         | 1                    |
| n41/n38(PC3)     | Main(Ant 0)  | 0.95                        | 100.00%        | 32.0    | 23.0         | 1                    |
| n41/n38(PC2)     | Main(Ant 0)  | 0.95                        | 50.00%         |         | 23.0         | 1                    |
| n41/n38(PC3)     | Aux (Ant 2)  | 0.95                        | 100.00%        | 31.2    | 23.0         | 1                    |
| n41/n38(PC2)     | Aux (Ant 2)  | 0.95                        | 50.00%         |         | 23.0         | 1                    |
| n48              | MIMO2(Ant 3) | 0.95                        | 100.00%        | 11.2    | 21.5         | 1                    |
| n48              | MIMO1(Ant 1) | 0.95                        | 100.00%        | 10.5    | 21.5         | 1                    |
| n66              | Main(Ant 0)  | 0.95                        | 100.00%        | 31.0    | 23.5         | 1                    |
| n71              | Main(Ant 0)  | 0.95                        | 100.00%        | 33.6    | 23.5         | 1                    |



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|              |              |      |         |      |      |   |
|--------------|--------------|------|---------|------|------|---|
| n77/n78      | MIMO2(Ant 3) | 0.95 | 100.00% | 11.0 | 23.0 | 1 |
| n77/n78_HPUE | MIMO2(Ant 3) | 0.95 | 50.00%  |      | 23.0 | 1 |
| n77/n78      | MIMO1(Ant 1) | 0.95 | 100.00% | 10.7 | 23.0 | 1 |
| n77/n78_HPUE | MIMO1(Ant 1) | 0.95 | 50.00%  |      | 23.0 | 1 |

\*Pmax is used for the RF tune-up procedure. The maximum allowed output power is equal to Pmax + device uncertainty.

\*\*All Plimit power levels entered in the table correspond to average power levels after accounting for the duty cycle in the case of TDD modulation schemes (e.g., GSM TDD, LTE TDD, and NR TDD).

The maximum allowed output power is Plimit + device uncertainty. However, if Plimit is higher than Pmax, the device output power will be limited to Pmax.

## **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.

### **5.3 RF Exposure limit for above 6GHz**

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

Peak Spatially Averaged Power Density was evaluated over a circular area of 4cm<sup>2</sup> per interim FCC Guidance for near-field power density evaluations per October 2018 TCB Workshop notes

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

## **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 ( $\rho$ ). The equation description is as below:

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

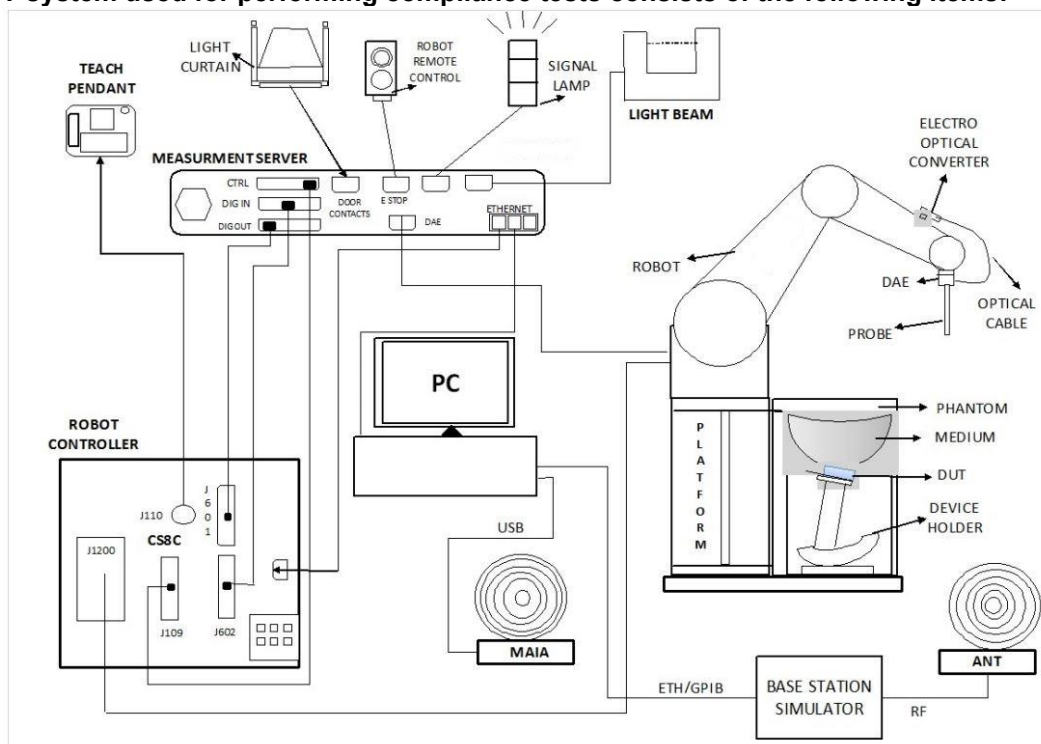
SAR is expressed in units of Watts per kilogram (W/kg)

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

Where:  $\sigma$  is the conductivity of the tissue,  $\rho$  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.

| Laboratory         | EMC & Wireless Communications Laboratory                                       |          | Wensan Laboratory                                                                                     |          |          |          |          |
|--------------------|--------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|
| Test Site Location | <b>TW1190</b><br>No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan |          | <b>TW3786</b><br>No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan |          |          |          |          |
| Test Site No.      | SAR01-HY                                                                       | SAR03-HY | SAR08-HY                                                                                              | SAR09-HY | SAR15-HY | SAR18-HY | SAR21-HY |
|                    | SAR04-HY                                                                       | SAR05-HY | SAR11-HY                                                                                              | SAR12-HY | SAR16-HY | SAR19-HY | SAR22-HY |
|                    | SAR06-HY                                                                       | SAR10-HY | SAR13-HY                                                                                              | SAR14-HY | SAR17-HY | SAR20-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 >

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

### < EX3DV4 Probe >

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

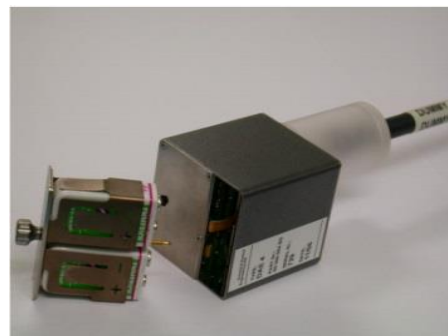


**Fig 5.1 Photo of DAE**

## 7.4 Phantom

### < SAM Twin Phantom >

|                          |                                                         |                                                                                    |
|--------------------------|---------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>Shell Thickness</b>   | 2 ± 0.2 mm;<br>Center ear point: 6 ± 0.2 mm             |  |
| <b>Filling Volume</b>    | Approx. 25 liters                                       |                                                                                    |
| <b>Dimensions</b>        | Length: 1000 mm; Width: 500 mm; Height: adjustable feet |                                                                                    |
| <b>Measurement Areas</b> | 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 >

|                        |                                                  |                                                                                     |
|------------------------|--------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Shell Thickness</b> | 2 ± 0.2 mm (sagging: < 1%)                       |  |
| <b>Filling Volume</b>  | Approx. 30 liters                                |                                                                                     |
| <b>Dimensions</b>      | Major ellipse axis: 600 mm<br>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) Configure the device RF transmitters to be in continuous transmission mode., 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 dB0) 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.

|                                                                                                        | $\leq 3$ GHz                                                                                                                                                                                                                                                           | $> 3$ GHz                                              |
|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface | $5 \pm 1$ 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              | $30^\circ \pm 1^\circ$                                                                                                                                                                                                                                                 | $20^\circ \pm 1^\circ$                                 |
| Maximum area scan spatial resolution: $\Delta x_{Area}$ , $\Delta y_{Area}$                            | $\leq 2$ GHz: $\leq 15$ mm<br>$2 - 3$ GHz: $\leq 12$ mm                                                                                                                                                                                                                | $3 - 4$ GHz: $\leq 12$ mm<br>$4 - 6$ GHz: $\leq 10$ 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 $\leq$ 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 to 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 whose 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.

|                                                                                                                                                                                                                                                                                                             |                                           |                                                                                             | $\leq 3$ GHz                                         | $> 3$ GHz                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------|
| Maximum zoom scan spatial resolution: $\Delta x_{\text{Zoom}}, \Delta y_{\text{Zoom}}$                                                                                                                                                                                                                      |                                           |                                                                                             | $\leq 2$ GHz: $\leq 8$ mm<br>2 – 3 GHz: $\leq 5$ mm* | 3 – 4 GHz: $\leq 5$ mm*<br>4 – 6 GHz: $\leq 4$ mm*                            |
| Maximum zoom scan spatial resolution, normal to phantom surface                                                                                                                                                                                                                                             | uniform grid: $\Delta z_{\text{Zoom}}(n)$ |                                                                                             | $\leq 5$ mm                                          | 3 – 4 GHz: $\leq 4$ mm<br>4 – 5 GHz: $\leq 3$ mm<br>5 – 6 GHz: $\leq 2$ mm    |
|                                                                                                                                                                                                                                                                                                             | graded grid                               | $\Delta z_{\text{Zoom}}(1)$ : between 1 <sup>st</sup> two points closest to phantom surface | $\leq 4$ mm                                          | 3 – 4 GHz: $\leq 3$ mm<br>4 – 5 GHz: $\leq 2.5$ mm<br>5 – 6 GHz: $\leq 2$ mm  |
|                                                                                                                                                                                                                                                                                                             |                                           | $\Delta z_{\text{Zoom}}(n>1)$ : between subsequent points                                   | $\leq 1.5 \cdot \Delta z_{\text{Zoom}}(n-1)$         |                                                                               |
| Minimum zoom scan volume                                                                                                                                                                                                                                                                                    | x, y, z                                   |                                                                                             | $\geq 30$ mm                                         | 3 – 4 GHz: $\geq 28$ mm<br>4 – 5 GHz: $\geq 25$ mm<br>5 – 6 GHz: $\geq 22$ mm |
| Note: $\delta$ 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 $\leq 1.4$ W/kg, $\leq 8$ mm, $\leq 7$ mm and $\leq 5$ 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 to 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 | Last Cal.     | Due Date      |
|---------------|----------------------------------------------|-----------------|---------------|---------------|---------------|
| SPEAG         | 750MHz System Validation Kit <sup>(2)</sup>  | D750V3          | 1012          | Aug. 22, 2024 | Aug. 20, 2026 |
| SPEAG         | 835MHz System Validation Kit                 | D835V2          | 4d167         | Dec. 02, 2025 | Dec. 01, 2026 |
| SPEAG         | 1750MHz System Validation Kit                | D1750V2         | 1068          | Nov. 12, 2025 | Nov. 11, 2026 |
| SPEAG         | 1900MHz System Validation Kit <sup>(2)</sup> | D1900V2         | 5d041         | Aug. 15, 2024 | Aug. 13, 2026 |
| SPEAG         | 2600MHz System Validation Kit <sup>(2)</sup> | D2600V2         | 1078          | Jun. 11, 2025 | Jun. 09, 2027 |
| SPEAG         | 3500MHz System Validation Kit <sup>(2)</sup> | D3500V2         | 1014          | Jan. 15, 2025 | Jan. 13, 2027 |
| SPEAG         | 3700MHz System Validation Kit <sup>(2)</sup> | D3700V2         | 1022          | Jul. 10, 2024 | Jul. 07, 2027 |
| SPEAG         | 3700MHz System Validation Kit <sup>(2)</sup> | D3700V2         | 1006          | Jun. 12, 2025 | Jun. 10, 2027 |
| SPEAG         | 3900MHz System Validation Kit <sup>(2)</sup> | D3900V2         | 1017          | Apr. 22, 2025 | Apr. 20, 2027 |
| SPEAG         | Data Acquisition Electronics                 | DAE4            | 1647          | Oct. 20, 2025 | Oct. 19, 2026 |
| SPEAG         | Dosimetric E-Field Probe                     | EX3DV4          | 7970          | Jan. 28, 2026 | Jan. 27, 2027 |
| SPEAG         | Dielectric Probe Kit                         | DAK-3.5         | 1146          | Jul. 14, 2025 | Jul. 13, 2026 |
| Testo         | Hygro meter                                  | 608-H1          | 45196600      | Nov. 04, 2025 | Nov. 03, 2026 |
| Testo         | Hygro meter                                  | 608-H1          | 45207528      | Nov. 04, 2025 | Nov. 03, 2026 |
| Anritsu       | Radio Communication Analyzer                 | MT8821C         | 6201074414    | Aug. 19, 2025 | Aug. 18, 2026 |
| Keysight      | 5G Wireless Test Platform                    | E7515B          | MY58300712    | Sep. 09, 2025 | Sep. 08, 2026 |
| SPEAG         | Device Holder                                | N/A             | N/A           | N/A           | N/A           |
| Anritsu       | Signal Generator                             | MG3710A         | 6201502524    | Sep. 24, 2025 | Sep. 23, 2026 |
| Keysight      | ENA Network Analyzer                         | E5071C          | MY46104758    | Oct. 14, 2025 | Oct. 13, 2026 |
| LINE SEIKI    | Digital Thermometer                          | DTM3000-spezial | 3690          | Aug. 14, 2025 | Aug. 13, 2026 |
| Anritsu       | Power Meter <sup>(2)</sup>                   | ML2495A         | 1419002       | Aug. 13, 2024 | Aug. 11, 2026 |
| Anritsu       | Power Sensor                                 | MA2411B         | 1911334       | Jul. 14, 2025 | Jul. 13, 2026 |
| Anritsu       | Spectrum Analyzer                            | MS2830A         | 6272625959    | Aug. 14, 2025 | Aug. 13, 2026 |
| Mini-Circuits | Power Amplifier                              | ZHL-42W+        | N147802518    | Jul. 30, 2025 | Jul. 29, 2026 |
| 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. 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  $\pm 2^\circ\text{C}$  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

The SPEAG Dasy Measurement system implement a SAR error compensation algorithm as documented in IEEE Std 1528-2013 to automatically compensate the measured SAR results for deviations between the measured and required tissue dielectric parameters, according to KDB 865664 D01 and IEC/IEEE 62209-1528, the tolerance for "Delta ( $\sigma$ )" and "Delta ( $\epsilon_r$ )" can be relaxed to  $\pm 10\%$

#### < Tissue Dielectric Parameter Check Results >

| Frequency (MHz) | Liquid Temp (°C) | Conductivity ( $\sigma$ ) | Permittivity ( $\epsilon_r$ ) | Conductivity Target ( $\sigma$ ) | Permittivity Target ( $\epsilon_r$ ) | Delta ( $\sigma$ ) (%) | Delta ( $\epsilon_r$ ) (%) | Limit (%)  | Date       |
|-----------------|------------------|---------------------------|-------------------------------|----------------------------------|--------------------------------------|------------------------|----------------------------|------------|------------|
| 750             | 22.8             | 0.891                     | 42.685                        | 0.89                             | 41.9                                 | 0.11                   | 1.87                       | $\pm 10.0$ | 2026-07-08 |
| 750             | 22.1             | 0.888                     | 42.605                        | 0.89                             | 41.9                                 | -0.22                  | 1.68                       | $\pm 10.0$ | 2026-07-10 |
| 835             | 22.8             | 0.921                     | 42.444                        | 0.9                              | 41.5                                 | 2.33                   | 2.27                       | $\pm 10.0$ | 2026-07-08 |
| 835             | 22.1             | 0.917                     | 42.364                        | 0.9                              | 41.5                                 | 1.89                   | 2.08                       | $\pm 10.0$ | 2026-07-10 |
| 1750            | 22.7             | 1.361                     | 40.767                        | 1.37                             | 40.1                                 | -0.66                  | 1.66                       | $\pm 10.0$ | 2026-07-07 |
| 1750            | 22.1             | 1.353                     | 40.687                        | 1.37                             | 40.1                                 | -1.24                  | 1.46                       | $\pm 10.0$ | 2026-07-11 |
| 1900            | 22.7             | 1.438                     | 40.482                        | 1.4                              | 40                                   | 2.71                   | 1.20                       | $\pm 10.0$ | 2026-07-07 |
| 2600            | 22.9             | 1.96                      | 39.433                        | 1.96                             | 39                                   | 0.00                   | 1.11                       | $\pm 10.0$ | 2026-07-09 |
| 2600            | 22.4             | 1.948                     | 39.353                        | 1.96                             | 39                                   | -0.61                  | 0.91                       | $\pm 10.0$ | 2026-07-12 |
| 3500            | 22.4             | 2.758                     | 37.943                        | 2.91                             | 37.9                                 | -5.22                  | 0.11                       | $\pm 10.0$ | 2026-07-04 |
| 3500            | 22.5             | 2.742                     | 37.85                         | 2.91                             | 37.9                                 | -5.77                  | -0.13                      | $\pm 10.0$ | 2026-07-05 |
| 3500            | 22.6             | 2.733                     | 37.81                         | 2.91                             | 37.9                                 | -6.08                  | -0.24                      | $\pm 10.0$ | 2026-07-06 |
| 3500            | 22.3             | 2.717                     | 37.73                         | 2.91                             | 37.9                                 | -6.63                  | -0.45                      | $\pm 10.0$ | 2026-07-13 |
| 3700            | 22.4             | 2.937                     | 37.607                        | 3.12                             | 37.7                                 | -5.87                  | -0.25                      | $\pm 10.0$ | 2026-07-04 |
| 3700            | 22.5             | 2.92                      | 37.514                        | 3.12                             | 37.7                                 | -6.41                  | -0.49                      | $\pm 10.0$ | 2026-07-05 |
| 3700            | 22.6             | 2.911                     | 37.474                        | 3.12                             | 37.7                                 | -6.70                  | -0.60                      | $\pm 10.0$ | 2026-07-06 |
| 3700            | 22.3             | 2.893                     | 37.394                        | 3.12                             | 37.7                                 | -7.28                  | -0.81                      | $\pm 10.0$ | 2026-07-13 |
| 3900            | 22.4             | 3.107                     | 37.328                        | 3.3272                           | 37.5102                              | -6.62                  | -0.49                      | $\pm 10.0$ | 2026-07-04 |
| 3900            | 22.6             | 3.079                     | 37.195                        | 3.3272                           | 37.5102                              | -7.46                  | -0.84                      | $\pm 10.0$ | 2026-07-06 |
| 3900            | 22.3             | 3.06                      | 37.115                        | 3.3272                           | 37.5102                              | -8.03                  | -1.05                      | $\pm 10.0$ | 2026-07-13 |

## 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 (%) | Measured 10g SAR (W/kg) | Targeted 10g SAR (W/kg) | Normalized 10g SAR (W/kg) | Deviation (%) |
|-----------|------------|-----------------|------------------|---------------------|-----------------|-------------|------------------------|------------------------|--------------------------|---------------|-------------------------|-------------------------|---------------------------|---------------|
| SAR12     | 2026-07-08 | 750             | 250              | D750V3 - 1012       | EX3DV4 - SN7970 | DAE4 Sn1647 | 2.1                    | 8.4                    | 8.4                      | 0.00          | 1.4                     | 5.41                    | 5.6                       | 3.51          |
| SAR12     | 2026-07-10 | 750             | 250              | D750V3 - 1012       | EX3DV4 - SN7970 | DAE4 Sn1647 | 2.1                    | 8.4                    | 8.4                      | 0.00          | 1.39                    | 5.41                    | 5.56                      | 2.77          |
| SAR12     | 2026-07-08 | 835             | 50               | D835V2 - 4d167      | EX3DV4 - SN7970 | DAE4 Sn1647 | 0.501                  | 9.55                   | 10.02                    | 4.92          | 0.328                   | 6.25                    | 6.56                      | 4.96          |
| SAR12     | 2026-07-10 | 835             | 50               | D835V2 - 4d167      | EX3DV4 - SN7970 | DAE4 Sn1647 | 0.502                  | 9.55                   | 10.04                    | 5.13          | 0.328                   | 6.25                    | 6.56                      | 4.96          |
| SAR12     | 2026-07-07 | 1750            | 50               | D1750V2 - 1068      | EX3DV4 - SN7970 | DAE4 Sn1647 | 1.97                   | 36.5                   | 39.4                     | 7.95          | 1.04                    | 19.4                    | 20.8                      | 7.22          |
| SAR12     | 2026-07-11 | 1750            | 50               | D1750V2 - 1068      | EX3DV4 - SN7970 | DAE4 Sn1647 | 1.97                   | 36.5                   | 39.4                     | 7.95          | 1.04                    | 19.4                    | 20.8                      | 7.22          |
| SAR12     | 2026-07-07 | 1900            | 50               | D1900V2 - 5d041     | EX3DV4 - SN7970 | DAE4 Sn1647 | 2.05                   | 39.2                   | 41                       | 4.59          | 1.07                    | 20.7                    | 21.4                      | 3.38          |
| SAR12     | 2026-07-09 | 2600            | 50               | D2600V2 - 1078      | EX3DV4 - SN7970 | DAE4 Sn1647 | 2.98                   | 55.3                   | 59.6                     | 7.78          | 1.35                    | 24.9                    | 27                        | 8.43          |
| SAR12     | 2026-07-12 | 2600            | 50               | D2600V2 - 1078      | EX3DV4 - SN7970 | DAE4 Sn1647 | 2.96                   | 55.3                   | 59.2                     | 7.05          | 1.34                    | 24.9                    | 26.8                      | 7.63          |
| SAR12     | 2026-07-04 | 3500            | 100              | D3500V2 - 1014      | EX3DV4 - SN7970 | DAE4 Sn1647 | 6.51                   | 65.7                   | 65.1                     | -0.91         | 2.4                     | 24.9                    | 24                        | -3.61         |
| SAR12     | 2026-07-05 | 3500            | 100              | D3500V2 - 1014      | EX3DV4 - SN7970 | DAE4 Sn1647 | 6.47                   | 65.7                   | 64.7                     | -1.52         | 2.39                    | 24.9                    | 23.9                      | -4.02         |
| SAR12     | 2026-07-06 | 3500            | 100              | D3500V2 - 1014      | EX3DV4 - SN7970 | DAE4 Sn1647 | 7.08                   | 65.7                   | 70.8                     | 7.76          | 2.61                    | 24.9                    | 26.1                      | 4.82          |
| SAR12     | 2026-07-13 | 3500            | 100              | D3500V2 - 1014      | EX3DV4 - SN7970 | DAE4 Sn1647 | 6.42                   | 65.7                   | 64.2                     | -2.28         | 2.37                    | 24.9                    | 23.7                      | -4.82         |
| SAR12     | 2026-07-04 | 3700            | 100              | D3700V2 - 1022      | EX3DV4 - SN7970 | DAE4 Sn1647 | 6.5                    | 68.1                   | 65                       | -4.55         | 2.46                    | 25.2                    | 24.6                      | -2.38         |
| SAR12     | 2026-07-05 | 3700            | 100              | D3700V2 - 1022      | EX3DV4 - SN7970 | DAE4 Sn1647 | 6.47                   | 68.1                   | 64.7                     | -4.99         | 2.45                    | 25.2                    | 24.5                      | -2.78         |
| SAR12     | 2026-07-06 | 3700            | 100              | D3700V2 - 1006      | EX3DV4 - SN7970 | DAE4 Sn1647 | 7.07                   | 69.9                   | 70.7                     | 1.14          | 2.51                    | 25.6                    | 25.1                      | -1.95         |
| SAR12     | 2026-07-13 | 3700            | 100              | D3700V2 - 1022      | EX3DV4 - SN7970 | DAE4 Sn1647 | 6.2                    | 68.1                   | 62                       | -8.96         | 2.32                    | 25.2                    | 23.2                      | -7.94         |
| SAR12     | 2026-07-04 | 3900            | 100              | D3900V2 - 1017-3900 | EX3DV4 - SN7970 | DAE4 Sn1647 | 7.02                   | 70.2                   | 70.2                     | 0.00          | 2.39                    | 24.6                    | 23.9                      | -2.85         |
| SAR12     | 2026-07-06 | 3900            | 100              | D3900V2 - 1017-3900 | EX3DV4 - SN7970 | DAE4 Sn1647 | 6.96                   | 70.2                   | 69.6                     | -0.85         | 2.37                    | 24.6                    | 23.7                      | -3.66         |
| SAR12     | 2026-07-13 | 3900            | 100              | D3900V2 - 1017-3900 | EX3DV4 - SN7970 | DAE4 Sn1647 | 6.52                   | 70.2                   | 65.2                     | -7.12         | 2.26                    | 24.6                    | 22.6                      | -8.13         |

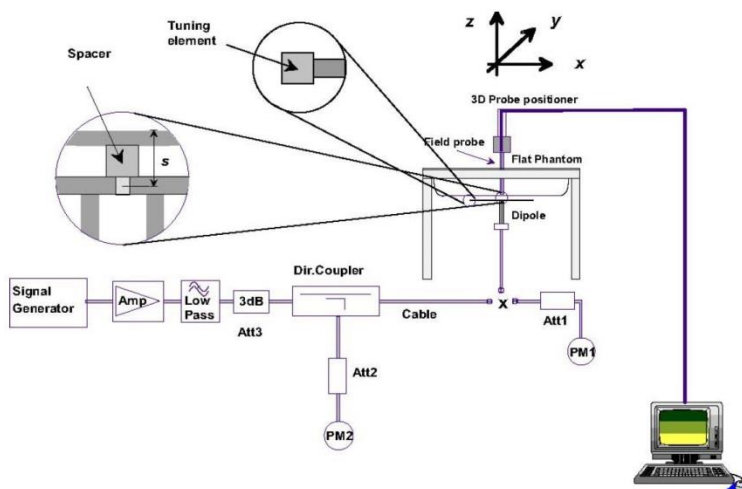


Fig 8.3.1 System Performance Check Setup



Fig 8.3.2 Setup Photo

## **11. LTE Output Power (Unit: dBm)**

### **< LTE Conducted Power >**

#### **General 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  $\leq 0.8$  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  $\leq 1.45$  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  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.

### < 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.

- 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations
- “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
- 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.

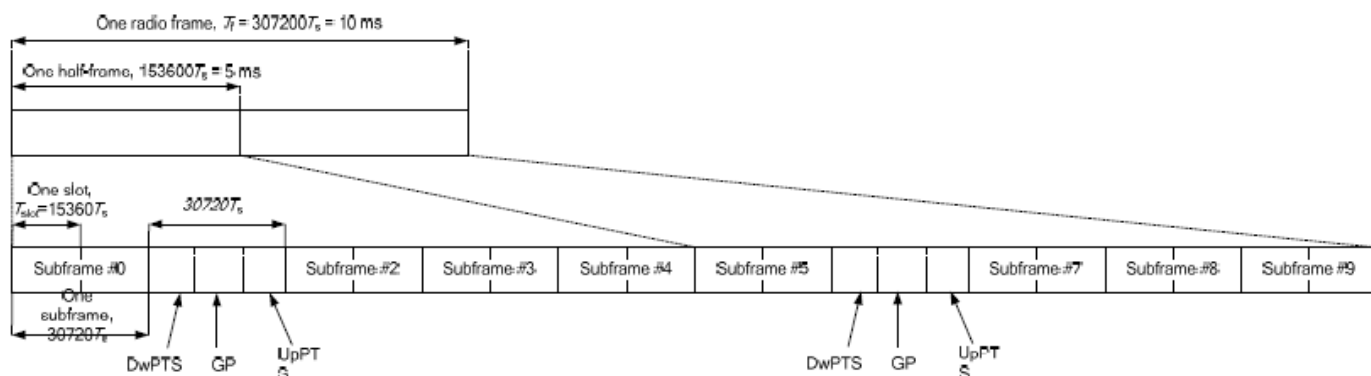


**Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).**

**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 <sub>s</sub> ): 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 <sub>s</sub> ): 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.



## 【LTE Band 42 (27Q) MIMO2】

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           | 42190                    | 42590                       | 42990                     | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3460                     | 3500                        | 3540                      |                        |
| 20              | QPSK       | 1       | 0         | 12.10                    | 12.14                       | 12.16                     | 13.60                  |
| 20              | QPSK       | 1       | 49        | 11.96                    | 12.09                       | 12.03                     | 13.60                  |
| 20              | QPSK       | 1       | 99        | 12.01                    | 12.12                       | 12.02                     | 13.60                  |
| 20              | QPSK       | 50      | 0         | 12.08                    | 12.30                       | 12.32                     | 13.60                  |
| 20              | QPSK       | 50      | 24        | 12.10                    | 12.28                       | 12.16                     | 13.60                  |
| 20              | QPSK       | 50      | 50        | 12.05                    | 12.23                       | 12.11                     | 13.60                  |
| 20              | QPSK       | 100     | 0         | 12.08                    | 12.28                       | 12.16                     | 13.60                  |
| 20              | 16QAM      | 1       | 0         | 12.05                    | 12.19                       | 12.14                     | 13.60                  |
| 20              | 16QAM      | 1       | 49        | 12.10                    | 12.23                       | 12.15                     | 13.60                  |
| 20              | 16QAM      | 1       | 99        | 12.06                    | 12.17                       | 12.14                     | 13.60                  |
| 20              | 16QAM      | 50      | 0         | 12.05                    | 12.24                       | 12.15                     | 13.60                  |
| 20              | 16QAM      | 50      | 24        | 12.09                    | 12.30                       | 12.15                     | 13.60                  |
| 20              | 16QAM      | 50      | 50        | 12.10                    | 12.20                       | 12.13                     | 13.60                  |
| 20              | 16QAM      | 100     | 0         | 12.09                    | 12.28                       | 12.16                     | 13.60                  |
| 20              | 64QAM      | 1       | 0         | 11.88                    | 12.05                       | 11.93                     | 13.60                  |
| 20              | 64QAM      | 1       | 49        | 12.05                    | 12.17                       | 12.08                     | 13.60                  |
| 20              | 64QAM      | 1       | 99        | 11.99                    | 12.13                       | 12.02                     | 13.60                  |
| 20              | 64QAM      | 50      | 0         | 12.03                    | 12.20                       | 12.16                     | 13.60                  |
| 20              | 64QAM      | 50      | 24        | 12.09                    | 12.26                       | 12.15                     | 13.60                  |
| 20              | 64QAM      | 50      | 50        | 12.04                    | 12.20                       | 12.13                     | 13.60                  |
| 20              | 64QAM      | 100     | 0         | 12.09                    | 12.24                       | 12.16                     | 13.60                  |
| 20              | 256QAM     | 1       | 0         | 12.05                    | 12.17                       | 12.10                     | 13.60                  |
| 20              | 256QAM     | 1       | 49        | 11.99                    | 12.16                       | 12.15                     | 13.60                  |
| 20              | 256QAM     | 1       | 99        | 12.01                    | 12.11                       | 12.07                     | 13.60                  |
| 20              | 256QAM     | 50      | 0         | 12.08                    | 12.23                       | 12.16                     | 13.60                  |
| 20              | 256QAM     | 50      | 24        | 12.10                    | 12.26                       | 12.16                     | 13.60                  |
| 20              | 256QAM     | 50      | 50        | 12.05                    | 12.18                       | 12.12                     | 13.60                  |
| 20              | 256QAM     | 100     | 0         | 12.09                    | 12.22                       | 12.10                     | 13.60                  |
| Channel         |            |         |           | 42165                    | 42590                       | 43015                     | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3457.5                   | 3500                        | 3542.5                    |                        |
| 15              | QPSK       | 1       | 0         | 11.98                    | 12.06                       | 12.03                     | 13.60                  |
| 15              | QPSK       | 1       | 37        | 11.82                    | 12.00                       | 11.94                     | 13.60                  |
| 15              | QPSK       | 1       | 74        | 11.97                    | 12.03                       | 11.91                     | 13.60                  |
| 15              | QPSK       | 36      | 0         | 11.93                    | 12.14                       | 12.14                     | 13.60                  |
| 15              | QPSK       | 36      | 20        | 12.09                    | 12.13                       | 12.01                     | 13.60                  |
| 15              | QPSK       | 36      | 39        | 12.01                    | 12.09                       | 12.00                     | 13.60                  |
| 15              | QPSK       | 75      | 0         | 11.95                    | 12.13                       | 12.14                     | 13.60                  |
| 15              | 16QAM      | 1       | 0         | 11.92                    | 12.14                       | 12.12                     | 13.60                  |
| 15              | 16QAM      | 1       | 37        | 11.97                    | 12.13                       | 12.09                     | 13.60                  |
| 15              | 16QAM      | 1       | 74        | 12.03                    | 12.09                       | 12.03                     | 13.60                  |
| 15              | 16QAM      | 36      | 0         | 11.91                    | 12.13                       | 12.06                     | 13.60                  |
| 15              | 16QAM      | 36      | 20        | 11.98                    | 12.12                       | 12.04                     | 13.60                  |
| 15              | 16QAM      | 36      | 39        | 12.00                    | 12.05                       | 12.02                     | 13.60                  |
| 15              | 16QAM      | 75      | 0         | 12.05                    | 12.13                       | 12.08                     | 13.60                  |
| 15              | 64QAM      | 1       | 0         | 11.80                    | 11.91                       | 11.84                     | 13.60                  |
| 15              | 64QAM      | 1       | 37        | 11.93                    | 12.10                       | 11.93                     | 13.60                  |
| 15              | 64QAM      | 1       | 74        | 11.87                    | 12.07                       | 11.88                     | 13.60                  |
| 15              | 64QAM      | 36      | 0         | 12.01                    | 12.13                       | 12.13                     | 13.60                  |
| 15              | 64QAM      | 36      | 20        | 12.07                    | 12.12                       | 12.09                     | 13.60                  |
| 15              | 64QAM      | 36      | 39        | 11.99                    | 12.06                       | 11.99                     | 13.60                  |
| 15              | 64QAM      | 75      | 0         | 12.04                    | 12.13                       | 12.09                     | 13.60                  |
| 15              | 256QAM     | 1       | 0         | 11.98                    | 12.14                       | 11.95                     | 13.60                  |
| 15              | 256QAM     | 1       | 37        | 11.94                    | 12.14                       | 12.14                     | 13.60                  |
| 15              | 256QAM     | 1       | 74        | 11.88                    | 12.09                       | 12.02                     | 13.60                  |
| 15              | 256QAM     | 36      | 0         | 12.06                    | 12.14                       | 12.06                     | 13.60                  |
| 15              | 256QAM     | 36      | 20        | 12.01                    | 12.13                       | 12.13                     | 13.60                  |
| 15              | 256QAM     | 36      | 39        | 11.90                    | 12.11                       | 11.97                     | 13.60                  |
| 15              | 256QAM     | 75      | 0         | 11.94                    | 12.14                       | 11.97                     | 13.60                  |
| Channel         |            |         |           | 42140                    | 42590                       | 43040                     | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3455                     | 3500                        | 3545                      |                        |
| 10              | QPSK       | 1       | 0         | 11.96                    | 12.08                       | 12.10                     | 13.60                  |
| 10              | QPSK       | 1       | 25        | 11.94                    | 11.96                       | 11.93                     | 13.60                  |
| 10              | QPSK       | 1       | 49        | 11.87                    | 12.05                       | 11.92                     | 13.60                  |
| 10              | QPSK       | 25      | 0         | 11.99                    | 12.13                       | 12.16                     | 13.60                  |
| 10              | QPSK       | 25      | 12        | 12.04                    | 12.13                       | 12.06                     | 13.60                  |
| 10              | QPSK       | 25      | 25        | 12.03                    | 12.14                       | 12.08                     | 13.60                  |
| 10              | QPSK       | 50      | 0         | 11.94                    | 12.14                       | 12.05                     | 13.60                  |
| 10              | 16QAM      | 1       | 0         | 11.94                    | 12.14                       | 12.10                     | 13.60                  |
| 10              | 16QAM      | 1       | 25        | 12.01                    | 12.13                       | 12.13                     | 13.60                  |
| 10              | 16QAM      | 1       | 49        | 12.04                    | 12.06                       | 12.05                     | 13.60                  |



# FCC SAR TEST REPORT

Report No. : FA661230B

|                 |        |    |    |        |       |        |                        |
|-----------------|--------|----|----|--------|-------|--------|------------------------|
| 10              | 16QAM  | 25 | 0  | 11.93  | 12.13 | 12.02  | 13.60                  |
| 10              | 16QAM  | 25 | 12 | 12.00  | 12.14 | 12.10  | 13.60                  |
| 10              | 16QAM  | 25 | 25 | 11.99  | 12.12 | 12.04  | 13.60                  |
| 10              | 16QAM  | 50 | 0  | 11.99  | 12.12 | 12.09  | 13.60                  |
| 10              | 64QAM  | 1  | 0  | 11.77  | 12.02 | 11.80  | 13.60                  |
| 10              | 64QAM  | 1  | 25 | 11.97  | 12.07 | 12.06  | 13.60                  |
| 10              | 64QAM  | 1  | 49 | 11.88  | 11.98 | 11.90  | 13.60                  |
| 10              | 64QAM  | 25 | 0  | 11.97  | 12.13 | 12.04  | 13.60                  |
| 10              | 64QAM  | 25 | 12 | 11.96  | 12.12 | 12.10  | 13.60                  |
| 10              | 64QAM  | 25 | 25 | 11.97  | 12.12 | 12.11  | 13.60                  |
| 10              | 64QAM  | 50 | 0  | 11.98  | 12.14 | 12.01  | 13.60                  |
| 10              | 256QAM | 1  | 0  | 11.99  | 12.06 | 12.02  | 13.60                  |
| 10              | 256QAM | 1  | 25 | 11.85  | 12.04 | 12.01  | 13.60                  |
| 10              | 256QAM | 1  | 49 | 11.90  | 12.10 | 11.98  | 13.60                  |
| 10              | 256QAM | 25 | 0  | 12.03  | 12.14 | 12.14  | 13.60                  |
| 10              | 256QAM | 25 | 12 | 11.98  | 12.14 | 12.03  | 13.60                  |
| 10              | 256QAM | 25 | 25 | 12.03  | 12.13 | 12.07  | 13.60                  |
| 10              | 256QAM | 50 | 0  | 12.03  | 12.13 | 12.09  | 13.60                  |
| Channel         |        |    |    | 42115  | 42590 | 43065  | Tune-up limit<br>(dBm) |
| Frequency (MHz) |        |    |    | 3452.5 | 3500  | 3547.5 |                        |
| 5               | QPSK   | 1  | 0  | 11.98  | 11.99 | 12.04  | 13.60                  |
| 5               | QPSK   | 1  | 12 | 11.93  | 11.96 | 11.94  | 13.60                  |
| 5               | QPSK   | 1  | 24 | 11.92  | 12.02 | 11.92  | 13.60                  |
| 5               | QPSK   | 12 | 0  | 11.93  | 12.14 | 12.15  | 13.60                  |
| 5               | QPSK   | 12 | 7  | 12.09  | 12.14 | 12.09  | 13.60                  |
| 5               | QPSK   | 12 | 13 | 11.97  | 12.14 | 11.97  | 13.60                  |
| 5               | QPSK   | 25 | 0  | 11.98  | 12.13 | 12.07  | 13.60                  |
| 5               | 16QAM  | 1  | 0  | 11.96  | 12.07 | 12.03  | 13.60                  |
| 5               | 16QAM  | 1  | 12 | 11.98  | 12.14 | 12.12  | 13.60                  |
| 5               | 16QAM  | 1  | 24 | 11.99  | 12.12 | 12.12  | 13.60                  |
| 5               | 16QAM  | 12 | 0  | 11.93  | 12.14 | 12.02  | 13.60                  |
| 5               | 16QAM  | 12 | 7  | 11.95  | 12.13 | 12.04  | 13.60                  |
| 5               | 16QAM  | 12 | 13 | 12.08  | 12.10 | 12.02  | 13.60                  |
| 5               | 16QAM  | 25 | 0  | 12.00  | 12.12 | 12.07  | 13.60                  |
| 5               | 64QAM  | 1  | 0  | 11.76  | 12.03 | 11.91  | 13.60                  |
| 5               | 64QAM  | 1  | 12 | 12.03  | 12.08 | 12.01  | 13.60                  |
| 5               | 64QAM  | 1  | 24 | 11.94  | 12.05 | 11.98  | 13.60                  |
| 5               | 64QAM  | 12 | 0  | 11.99  | 12.14 | 12.08  | 13.60                  |
| 5               | 64QAM  | 12 | 7  | 11.95  | 12.12 | 12.13  | 13.60                  |
| 5               | 64QAM  | 12 | 13 | 11.94  | 12.12 | 12.06  | 13.60                  |
| 5               | 64QAM  | 25 | 0  | 11.98  | 12.13 | 12.12  | 13.60                  |
| 5               | 256QAM | 1  | 0  | 12.01  | 12.14 | 12.02  | 13.60                  |
| 5               | 256QAM | 1  | 12 | 11.90  | 12.03 | 12.08  | 13.60                  |
| 5               | 256QAM | 1  | 24 | 11.99  | 12.00 | 11.96  | 13.60                  |
| 5               | 256QAM | 12 | 0  | 12.05  | 12.13 | 12.07  | 13.60                  |
| 5               | 256QAM | 12 | 7  | 12.05  | 12.13 | 12.12  | 13.60                  |
| 5               | 256QAM | 12 | 13 | 12.00  | 12.10 | 12.10  | 13.60                  |
| 5               | 256QAM | 25 | 0  | 12.05  | 12.14 | 12.06  | 13.60                  |

## 【LTE Band 42 (96)\_MIMO2】

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           |                          | 43340                       |                           |                        |
| Frequency (MHz) |            |         |           |                          | 3575                        |                           |                        |
| 20              | QPSK       | 1       | 0         |                          | 12.23                       |                           | 13.60                  |
| 20              | QPSK       | 1       | 49        |                          | 12.02                       |                           | 13.60                  |
| 20              | QPSK       | 1       | 99        |                          | 11.98                       |                           | 13.60                  |
| 20              | QPSK       | 50      | 0         |                          | 12.18                       |                           | 13.60                  |
| 20              | QPSK       | 50      | 24        |                          | 12.17                       |                           | 13.60                  |
| 20              | QPSK       | 50      | 50        |                          | 12.06                       |                           | 13.60                  |
| 20              | QPSK       | 100     | 0         |                          | 12.14                       |                           | 13.60                  |
| 20              | 16QAM      | 1       | 0         |                          | 11.99                       |                           | 13.60                  |
| 20              | 16QAM      | 1       | 49        |                          | 12.01                       |                           | 13.60                  |
| 20              | 16QAM      | 1       | 99        |                          | 11.94                       |                           | 13.60                  |
| 20              | 16QAM      | 50      | 0         |                          | 12.12                       |                           | 13.60                  |
| 20              | 16QAM      | 50      | 24        |                          | 12.14                       |                           | 13.60                  |
| 20              | 16QAM      | 50      | 50        |                          | 12.05                       |                           | 13.60                  |
| 20              | 16QAM      | 100     | 0         |                          | 12.11                       |                           | 13.60                  |
| 20              | 64QAM      | 1       | 0         |                          | 11.95                       |                           | 13.60                  |
| 20              | 64QAM      | 1       | 49        |                          | 12.01                       |                           | 13.60                  |
| 20              | 64QAM      | 1       | 99        |                          | 11.94                       |                           | 13.60                  |
| 20              | 64QAM      | 50      | 0         |                          | 12.10                       |                           | 13.60                  |
| 20              | 64QAM      | 50      | 24        |                          | 12.14                       |                           | 13.60                  |
| 20              | 64QAM      | 50      | 50        |                          | 12.02                       |                           | 13.60                  |



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|                 |        |     |    |        |       |        |               |
|-----------------|--------|-----|----|--------|-------|--------|---------------|
| 20              | 64QAM  | 100 | 0  |        | 12.11 |        | 13.60         |
| 20              | 256QAM | 1   | 0  |        | 12.08 |        | 13.60         |
| 20              | 256QAM | 1   | 49 |        | 11.93 |        | 13.60         |
| 20              | 256QAM | 1   | 99 |        | 11.92 |        | 13.60         |
| 20              | 256QAM | 50  | 0  |        | 12.09 |        | 13.60         |
| 20              | 256QAM | 50  | 24 |        | 12.12 |        | 13.60         |
| 20              | 256QAM | 50  | 50 |        | 12.04 |        | 13.60         |
| 20              | 256QAM | 100 | 0  |        | 12.10 |        | 13.60         |
| Channel         |        |     |    | 43165  | 43340 | 43515  | Tune-up limit |
| Frequency (MHz) |        |     |    | 3557.5 | 3575  | 3592.5 | (dBm)         |
| 15              | QPSK   | 1   | 0  | 12.20  | 12.21 | 12.15  | 13.60         |
| 15              | QPSK   | 1   | 37 | 11.87  | 11.92 | 11.91  | 13.60         |
| 15              | QPSK   | 1   | 74 | 11.85  | 11.86 | 11.80  | 13.60         |
| 15              | QPSK   | 36  | 0  | 12.03  | 12.12 | 11.87  | 13.60         |
| 15              | QPSK   | 36  | 20 | 12.04  | 12.15 | 11.97  | 13.60         |
| 15              | QPSK   | 36  | 39 | 12.01  | 11.98 | 12.04  | 13.60         |
| 15              | QPSK   | 75  | 0  | 12.01  | 12.03 | 12.03  | 13.60         |
| 15              | 16QAM  | 1   | 0  | 11.94  | 11.88 | 11.91  | 13.60         |
| 15              | 16QAM  | 1   | 37 | 11.92  | 11.91 | 11.99  | 13.60         |
| 15              | 16QAM  | 1   | 74 | 11.82  | 11.84 | 11.89  | 13.60         |
| 15              | 16QAM  | 36  | 0  | 12.00  | 12.00 | 11.92  | 13.60         |
| 15              | 16QAM  | 36  | 20 | 11.97  | 12.03 | 11.97  | 13.60         |
| 15              | 16QAM  | 36  | 39 | 12.03  | 11.98 | 11.99  | 13.60         |
| 15              | 16QAM  | 75  | 0  | 12.03  | 12.02 | 11.94  | 13.60         |
| 15              | 64QAM  | 1   | 0  | 11.78  | 11.85 | 11.64  | 13.60         |
| 15              | 64QAM  | 1   | 37 | 11.95  | 11.95 | 11.81  | 13.60         |
| 15              | 64QAM  | 1   | 74 | 11.83  | 11.89 | 12.03  | 13.60         |
| 15              | 64QAM  | 36  | 0  | 11.97  | 11.97 | 11.93  | 13.60         |
| 15              | 64QAM  | 36  | 20 | 12.04  | 12.04 | 11.96  | 13.60         |
| 15              | 64QAM  | 36  | 39 | 11.91  | 11.90 | 11.88  | 13.60         |
| 15              | 64QAM  | 75  | 0  | 11.98  | 11.98 | 11.89  | 13.60         |
| 15              | 256QAM | 1   | 0  | 12.01  | 11.96 | 11.82  | 13.60         |
| 15              | 256QAM | 1   | 37 | 11.84  | 11.82 | 11.80  | 13.60         |
| 15              | 256QAM | 1   | 74 | 11.93  | 11.84 | 11.83  | 13.60         |
| 15              | 256QAM | 36  | 0  | 12.03  | 12.02 | 11.91  | 13.60         |
| 15              | 256QAM | 36  | 20 | 11.92  | 11.98 | 11.99  | 13.60         |
| 15              | 256QAM | 36  | 39 | 11.81  | 11.98 | 11.92  | 13.60         |
| 15              | 256QAM | 75  | 0  | 12.00  | 11.98 | 11.84  | 13.60         |
| Channel         |        |     |    | 43140  | 43340 | 43540  | Tune-up limit |
| Frequency (MHz) |        |     |    | 3555   | 3575  | 3595   | (dBm)         |
| 10              | QPSK   | 1   | 0  | 12.14  | 12.18 | 12.04  | 13.60         |
| 10              | QPSK   | 1   | 25 | 11.92  | 11.99 | 11.95  | 13.60         |
| 10              | QPSK   | 1   | 49 | 11.87  | 11.94 | 11.89  | 13.60         |
| 10              | QPSK   | 25  | 0  | 12.03  | 12.10 | 11.98  | 13.60         |
| 10              | QPSK   | 25  | 12 | 11.95  | 12.14 | 12.04  | 13.60         |
| 10              | QPSK   | 25  | 25 | 11.96  | 12.00 | 11.96  | 13.60         |
| 10              | QPSK   | 50  | 0  | 11.98  | 12.06 | 11.98  | 13.60         |
| 10              | 16QAM  | 1   | 0  | 11.89  | 11.92 | 11.87  | 13.60         |
| 10              | 16QAM  | 1   | 25 | 11.83  | 11.88 | 11.99  | 13.60         |
| 10              | 16QAM  | 1   | 49 | 11.71  | 11.80 | 11.90  | 13.60         |
| 10              | 16QAM  | 25  | 0  | 12.04  | 12.08 | 11.97  | 13.60         |
| 10              | 16QAM  | 25  | 12 | 12.00  | 12.13 | 11.96  | 13.60         |
| 10              | 16QAM  | 25  | 25 | 12.05  | 11.99 | 11.96  | 13.60         |
| 10              | 16QAM  | 50  | 0  | 12.02  | 11.98 | 12.02  | 13.60         |
| 10              | 64QAM  | 1   | 0  | 11.90  | 11.81 | 11.71  | 13.60         |
| 10              | 64QAM  | 1   | 25 | 11.94  | 11.99 | 11.81  | 13.60         |
| 10              | 64QAM  | 1   | 49 | 11.78  | 11.93 | 11.93  | 13.60         |
| 10              | 64QAM  | 25  | 0  | 11.99  | 12.08 | 11.89  | 13.60         |
| 10              | 64QAM  | 25  | 12 | 11.96  | 12.04 | 11.92  | 13.60         |
| 10              | 64QAM  | 25  | 25 | 11.91  | 11.94 | 11.86  | 13.60         |
| 10              | 64QAM  | 50  | 0  | 12.01  | 11.98 | 11.92  | 13.60         |
| 10              | 256QAM | 1   | 0  | 12.02  | 11.93 | 11.82  | 13.60         |
| 10              | 256QAM | 1   | 25 | 11.79  | 11.81 | 11.71  | 13.60         |
| 10              | 256QAM | 1   | 49 | 11.92  | 11.86 | 11.83  | 13.60         |
| 10              | 256QAM | 25  | 0  | 11.99  | 11.97 | 11.86  | 13.60         |
| 10              | 256QAM | 25  | 12 | 11.91  | 12.04 | 12.06  | 13.60         |
| 10              | 256QAM | 25  | 25 | 11.86  | 11.92 | 11.86  | 13.60         |
| 10              | 256QAM | 50  | 0  | 11.96  | 12.09 | 11.92  | 13.60         |
| Channel         |        |     |    | 43115  | 43340 | 43565  | Tune-up limit |
| Frequency (MHz) |        |     |    | 3552.5 | 3575  | 3597.5 | (dBm)         |
| 5               | QPSK   | 1   | 0  | 12.26  | 12.18 | 12.13  | 13.60         |
| 5               | QPSK   | 1   | 12 | 11.90  | 11.99 | 11.93  | 13.60         |
| 5               | QPSK   | 1   | 24 | 11.83  | 11.87 | 11.88  | 13.60         |
| 5               | QPSK   | 12  | 0  | 12.00  | 12.11 | 11.94  | 13.60         |
| 5               | QPSK   | 12  | 7  | 12.06  | 12.09 | 12.03  | 13.60         |
| 5               | QPSK   | 12  | 13 | 11.89  | 11.93 | 11.97  | 13.60         |
| 5               | QPSK   | 25  | 0  | 12.04  | 12.01 | 11.96  | 13.60         |
| 5               | 16QAM  | 1   | 0  | 11.94  | 11.95 | 11.92  | 13.60         |



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|   |        |    |    |       |       |       |       |
|---|--------|----|----|-------|-------|-------|-------|
| 5 | 16QAM  | 1  | 12 | 11.81 | 11.99 | 12.08 | 13.60 |
| 5 | 16QAM  | 1  | 24 | 11.75 | 11.91 | 11.96 | 13.60 |
| 5 | 16QAM  | 12 | 0  | 12.03 | 12.03 | 11.91 | 13.60 |
| 5 | 16QAM  | 12 | 7  | 11.99 | 12.09 | 11.91 | 13.60 |
| 5 | 16QAM  | 12 | 13 | 11.92 | 12.04 | 11.99 | 13.60 |
| 5 | 16QAM  | 25 | 0  | 12.01 | 12.05 | 12.05 | 13.60 |
| 5 | 64QAM  | 1  | 0  | 11.91 | 11.80 | 11.63 | 13.60 |
| 5 | 64QAM  | 1  | 12 | 11.92 | 11.92 | 11.71 | 13.60 |
| 5 | 64QAM  | 1  | 24 | 11.77 | 11.80 | 11.97 | 13.60 |
| 5 | 64QAM  | 12 | 0  | 11.92 | 11.97 | 11.94 | 13.60 |
| 5 | 64QAM  | 12 | 7  | 12.02 | 12.04 | 11.90 | 13.60 |
| 5 | 64QAM  | 12 | 13 | 11.90 | 11.92 | 11.91 | 13.60 |
| 5 | 64QAM  | 25 | 0  | 11.98 | 12.03 | 11.94 | 13.60 |
| 5 | 256QAM | 1  | 0  | 12.05 | 11.99 | 11.93 | 13.60 |
| 5 | 256QAM | 1  | 12 | 11.86 | 11.79 | 11.74 | 13.60 |
| 5 | 256QAM | 1  | 24 | 11.81 | 11.85 | 11.85 | 13.60 |
| 5 | 256QAM | 12 | 0  | 12.04 | 12.06 | 11.90 | 13.60 |
| 5 | 256QAM | 12 | 7  | 12.00 | 11.99 | 11.99 | 13.60 |
| 5 | 256QAM | 12 | 13 | 11.87 | 12.03 | 11.91 | 13.60 |
| 5 | 256QAM | 25 | 0  | 12.07 | 12.01 | 11.85 | 13.60 |

## 【LTE Band 43\_MIMO2】

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           |                          | 44215                       |                           |                        |
| Frequency (MHz) |            |         |           |                          | 3662.5                      |                           |                        |
| 20              | QPSK       | 1       | 0         |                          | 12.38                       |                           | 13.90                  |
| 20              | QPSK       | 1       | 49        |                          | 12.10                       |                           | 13.90                  |
| 20              | QPSK       | 1       | 99        |                          | 12.09                       |                           | 13.90                  |
| 20              | QPSK       | 50      | 0         |                          | 12.26                       |                           | 13.90                  |
| 20              | QPSK       | 50      | 24        |                          | 12.22                       |                           | 13.90                  |
| 20              | QPSK       | 50      | 50        |                          | 12.19                       |                           | 13.90                  |
| 20              | QPSK       | 100     | 0         |                          | 12.26                       |                           | 13.90                  |
| 20              | 16QAM      | 1       | 0         |                          | 12.24                       |                           | 13.90                  |
| 20              | 16QAM      | 1       | 49        |                          | 12.28                       |                           | 13.90                  |
| 20              | 16QAM      | 1       | 99        |                          | 12.16                       |                           | 13.90                  |
| 20              | 16QAM      | 50      | 0         |                          | 12.27                       |                           | 13.90                  |
| 20              | 16QAM      | 50      | 24        |                          | 12.32                       |                           | 13.90                  |
| 20              | 16QAM      | 50      | 50        |                          | 12.22                       |                           | 13.90                  |
| 20              | 16QAM      | 100     | 0         |                          | 12.21                       |                           | 13.90                  |
| 20              | 64QAM      | 1       | 0         |                          | 12.16                       |                           | 13.90                  |
| 20              | 64QAM      | 1       | 49        |                          | 12.11                       |                           | 13.90                  |
| 20              | 64QAM      | 1       | 99        |                          | 12.18                       |                           | 13.90                  |
| 20              | 64QAM      | 50      | 0         |                          | 12.28                       |                           | 13.90                  |
| 20              | 64QAM      | 50      | 24        |                          | 12.28                       |                           | 13.90                  |
| 20              | 64QAM      | 50      | 50        |                          | 12.22                       |                           | 13.90                  |
| 20              | 64QAM      | 100     | 0         |                          | 12.19                       |                           | 13.90                  |
| 20              | 256QAM     | 1       | 0         |                          | 12.20                       |                           | 13.90                  |
| 20              | 256QAM     | 1       | 49        |                          | 12.19                       |                           | 13.90                  |
| 20              | 256QAM     | 1       | 99        |                          | 12.17                       |                           | 13.90                  |
| 20              | 256QAM     | 50      | 0         |                          | 12.25                       |                           | 13.90                  |
| 20              | 256QAM     | 50      | 24        |                          | 12.29                       |                           | 13.90                  |
| 20              | 256QAM     | 50      | 50        |                          | 12.19                       |                           | 13.90                  |
| 20              | 256QAM     | 100     | 0         |                          | 12.19                       |                           | 13.90                  |
| Channel         |            |         |           | 44165                    | 44215                       | 44265                     | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3657.5                   | 3662.5                      | 3667.5                    | (dBm)                  |
| 15              | QPSK       | 1       | 0         | 12.08                    | 12.33                       | 12.00                     | 13.90                  |
| 15              | QPSK       | 1       | 37        | 11.96                    | 11.97                       | 11.91                     | 13.90                  |
| 15              | QPSK       | 1       | 74        | 11.94                    | 12.00                       | 11.97                     | 13.90                  |
| 15              | QPSK       | 36      | 0         | 12.05                    | 12.15                       | 11.96                     | 13.90                  |
| 15              | QPSK       | 36      | 20        | 12.00                    | 12.11                       | 12.05                     | 13.90                  |
| 15              | QPSK       | 36      | 39        | 12.01                    | 12.08                       | 11.90                     | 13.90                  |
| 15              | QPSK       | 75      | 0         | 12.02                    | 12.19                       | 12.08                     | 13.90                  |
| 15              | 16QAM      | 1       | 0         | 12.07                    | 12.21                       | 12.09                     | 13.90                  |
| 15              | 16QAM      | 1       | 37        | 12.11                    | 12.23                       | 12.04                     | 13.90                  |
| 15              | 16QAM      | 1       | 74        | 11.94                    | 12.12                       | 11.91                     | 13.90                  |
| 15              | 16QAM      | 36      | 0         | 12.07                    | 12.18                       | 12.03                     | 13.90                  |
| 15              | 16QAM      | 36      | 20        | 12.14                    | 12.25                       | 12.11                     | 13.90                  |
| 15              | 16QAM      | 36      | 39        | 12.03                    | 12.12                       | 11.98                     | 13.90                  |
| 15              | 16QAM      | 75      | 0         | 12.11                    | 12.09                       | 12.05                     | 13.90                  |
| 15              | 64QAM      | 1       | 0         | 11.92                    | 12.08                       | 11.93                     | 13.90                  |
| 15              | 64QAM      | 1       | 37        | 11.90                    | 11.96                       | 11.90                     | 13.90                  |
| 15              | 64QAM      | 1       | 74        | 11.95                    | 12.16                       | 12.06                     | 13.90                  |
| 15              | 64QAM      | 36      | 0         | 12.12                    | 12.17                       | 12.01                     | 13.90                  |



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|                 |        |    |    |        |        |        |               |
|-----------------|--------|----|----|--------|--------|--------|---------------|
| 15              | 64QAM  | 36 | 20 | 12.02  | 12.21  | 12.10  | 13.90         |
| 15              | 64QAM  | 36 | 39 | 11.99  | 12.14  | 11.98  | 13.90         |
| 15              | 64QAM  | 75 | 0  | 12.05  | 12.09  | 11.98  | 13.90         |
| 15              | 256QAM | 1  | 0  | 12.02  | 12.06  | 11.95  | 13.90         |
| 15              | 256QAM | 1  | 37 | 12.05  | 12.14  | 11.99  | 13.90         |
| 15              | 256QAM | 1  | 74 | 11.95  | 12.14  | 11.94  | 13.90         |
| 15              | 256QAM | 36 | 0  | 12.02  | 12.15  | 11.95  | 13.90         |
| 15              | 256QAM | 36 | 20 | 12.07  | 12.18  | 12.00  | 13.90         |
| 15              | 256QAM | 36 | 39 | 12.06  | 12.05  | 11.91  | 13.90         |
| 15              | 256QAM | 75 | 0  | 11.97  | 12.07  | 12.00  | 13.90         |
| Channel         |        |    |    | 44140  | 44215  | 44290  | Tune-up limit |
| Frequency (MHz) |        |    |    | 3655   | 3662.5 | 3670   | (dBm)         |
| 10              | QPSK   | 1  | 0  | 12.03  | 12.27  | 12.08  | 13.90         |
| 10              | QPSK   | 1  | 25 | 11.93  | 12.07  | 11.90  | 13.90         |
| 10              | QPSK   | 1  | 49 | 11.90  | 11.97  | 11.90  | 13.90         |
| 10              | QPSK   | 25 | 0  | 12.09  | 12.18  | 11.96  | 13.90         |
| 10              | QPSK   | 25 | 12 | 11.99  | 12.07  | 12.10  | 13.90         |
| 10              | QPSK   | 25 | 25 | 12.01  | 12.14  | 11.90  | 13.90         |
| 10              | QPSK   | 50 | 0  | 12.12  | 12.14  | 12.00  | 13.90         |
| 10              | 16QAM  | 1  | 0  | 12.02  | 12.20  | 11.98  | 13.90         |
| 10              | 16QAM  | 1  | 25 | 12.06  | 12.20  | 12.02  | 13.90         |
| 10              | 16QAM  | 1  | 49 | 11.99  | 12.12  | 11.92  | 13.90         |
| 10              | 16QAM  | 25 | 0  | 12.06  | 12.19  | 12.04  | 13.90         |
| 10              | 16QAM  | 25 | 12 | 12.09  | 12.30  | 12.11  | 13.90         |
| 10              | 16QAM  | 25 | 25 | 12.11  | 12.10  | 11.97  | 13.90         |
| 10              | 16QAM  | 50 | 0  | 12.09  | 12.13  | 12.07  | 13.90         |
| 10              | 64QAM  | 1  | 0  | 11.92  | 12.03  | 11.91  | 13.90         |
| 10              | 64QAM  | 1  | 25 | 11.98  | 12.01  | 11.90  | 13.90         |
| 10              | 64QAM  | 1  | 49 | 11.97  | 12.07  | 11.98  | 13.90         |
| 10              | 64QAM  | 25 | 0  | 12.07  | 12.21  | 12.05  | 13.90         |
| 10              | 64QAM  | 25 | 12 | 12.05  | 12.21  | 12.07  | 13.90         |
| 10              | 64QAM  | 25 | 25 | 12.00  | 12.08  | 12.10  | 13.90         |
| 10              | 64QAM  | 50 | 0  | 12.02  | 12.14  | 11.91  | 13.90         |
| 10              | 256QAM | 1  | 0  | 11.98  | 12.17  | 11.94  | 13.90         |
| 10              | 256QAM | 1  | 25 | 11.97  | 12.15  | 11.92  | 13.90         |
| 10              | 256QAM | 1  | 49 | 12.00  | 12.06  | 11.97  | 13.90         |
| 10              | 256QAM | 25 | 0  | 12.07  | 12.23  | 11.95  | 13.90         |
| 10              | 256QAM | 25 | 12 | 12.12  | 12.18  | 12.00  | 13.90         |
| 10              | 256QAM | 25 | 25 | 12.06  | 12.15  | 11.90  | 13.90         |
| 10              | 256QAM | 50 | 0  | 11.98  | 12.11  | 12.03  | 13.90         |
| Channel         |        |    |    | 44115  | 44215  | 44315  | Tune-up limit |
| Frequency (MHz) |        |    |    | 3652.5 | 3662.5 | 3672.5 | (dBm)         |
| 5               | QPSK   | 1  | 0  | 12.06  | 12.29  | 12.06  | 13.90         |
| 5               | QPSK   | 1  | 12 | 11.94  | 12.06  | 11.94  | 13.90         |
| 5               | QPSK   | 1  | 24 | 11.91  | 12.04  | 11.94  | 13.90         |
| 5               | QPSK   | 12 | 0  | 12.00  | 12.17  | 11.97  | 13.90         |
| 5               | QPSK   | 12 | 7  | 12.08  | 12.14  | 12.00  | 13.90         |
| 5               | QPSK   | 12 | 13 | 11.98  | 12.12  | 11.90  | 13.90         |
| 5               | QPSK   | 25 | 0  | 11.99  | 12.16  | 12.06  | 13.90         |
| 5               | 16QAM  | 1  | 0  | 12.04  | 12.15  | 12.02  | 13.90         |
| 5               | 16QAM  | 1  | 12 | 12.11  | 12.18  | 12.02  | 13.90         |
| 5               | 16QAM  | 1  | 24 | 11.92  | 12.09  | 11.90  | 13.90         |
| 5               | 16QAM  | 12 | 0  | 12.10  | 12.14  | 12.07  | 13.90         |
| 5               | 16QAM  | 12 | 7  | 12.12  | 12.19  | 12.10  | 13.90         |
| 5               | 16QAM  | 12 | 13 | 12.04  | 12.16  | 11.94  | 13.90         |
| 5               | 16QAM  | 25 | 0  | 12.03  | 12.17  | 11.96  | 13.90         |
| 5               | 64QAM  | 1  | 0  | 11.96  | 12.09  | 11.94  | 13.90         |
| 5               | 64QAM  | 1  | 12 | 11.95  | 11.99  | 11.91  | 13.90         |
| 5               | 64QAM  | 1  | 24 | 11.91  | 12.11  | 11.95  | 13.90         |
| 5               | 64QAM  | 12 | 0  | 12.03  | 12.19  | 12.09  | 13.90         |
| 5               | 64QAM  | 12 | 7  | 12.10  | 12.15  | 12.00  | 13.90         |
| 5               | 64QAM  | 12 | 13 | 11.99  | 12.11  | 12.04  | 13.90         |
| 5               | 64QAM  | 25 | 0  | 11.97  | 12.18  | 11.97  | 13.90         |
| 5               | 256QAM | 1  | 0  | 11.99  | 12.12  | 12.02  | 13.90         |
| 5               | 256QAM | 1  | 12 | 12.00  | 12.17  | 11.95  | 13.90         |
| 5               | 256QAM | 1  | 24 | 11.97  | 12.13  | 11.91  | 13.90         |
| 5               | 256QAM | 12 | 0  | 12.02  | 12.11  | 12.04  | 13.90         |
| 5               | 256QAM | 12 | 7  | 12.15  | 12.21  | 12.08  | 13.90         |
| 5               | 256QAM | 12 | 13 | 12.06  | 12.17  | 12.00  | 13.90         |
| 5               | 256QAM | 25 | 0  | 11.95  | 12.04  | 12.03  | 13.90         |



## 【LTE Band 43 (96)\_MIMO2】

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           | 43690                    | 44090                       | 44490                     | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3610                     | 3650                        | 3690                      |                        |
| 20              | QPSK       | 1       | 0         | 12.34                    | 12.37                       | 12.03                     | 13.90                  |
| 20              | QPSK       | 1       | 49        | 12.08                    | 12.08                       | 11.91                     | 13.90                  |
| 20              | QPSK       | 1       | 99        | 11.92                    | 12.02                       | 11.90                     | 13.90                  |
| 20              | QPSK       | 50      | 0         | 12.02                    | 12.17                       | 11.90                     | 13.90                  |
| 20              | QPSK       | 50      | 24        | 11.92                    | 12.14                       | 11.91                     | 13.90                  |
| 20              | QPSK       | 50      | 50        | 11.97                    | 12.13                       | 11.90                     | 13.90                  |
| 20              | QPSK       | 100     | 0         | 11.91                    | 12.17                       | 11.90                     | 13.90                  |
| 20              | 16QAM      | 1       | 0         | 11.90                    | 12.07                       | 11.91                     | 13.90                  |
| 20              | 16QAM      | 1       | 49        | 12.00                    | 12.15                       | 11.90                     | 13.90                  |
| 20              | 16QAM      | 1       | 99        | 11.92                    | 12.08                       | 11.90                     | 13.90                  |
| 20              | 16QAM      | 50      | 0         | 11.90                    | 12.21                       | 11.90                     | 13.90                  |
| 20              | 16QAM      | 50      | 24        | 11.97                    | 12.22                       | 11.91                     | 13.90                  |
| 20              | 16QAM      | 50      | 50        | 12.00                    | 12.15                       | 11.90                     | 13.90                  |
| 20              | 16QAM      | 100     | 0         | 11.90                    | 12.22                       | 11.90                     | 13.90                  |
| 20              | 64QAM      | 1       | 0         | 11.91                    | 12.03                       | 11.90                     | 13.90                  |
| 20              | 64QAM      | 1       | 49        | 11.90                    | 12.08                       | 11.90                     | 13.90                  |
| 20              | 64QAM      | 1       | 99        | 11.90                    | 12.09                       | 11.91                     | 13.90                  |
| 20              | 64QAM      | 50      | 0         | 11.98                    | 12.17                       | 11.90                     | 13.90                  |
| 20              | 64QAM      | 50      | 24        | 12.05                    | 12.22                       | 11.91                     | 13.90                  |
| 20              | 64QAM      | 50      | 50        | 12.03                    | 12.16                       | 11.90                     | 13.90                  |
| 20              | 64QAM      | 100     | 0         | 11.92                    | 12.18                       | 11.90                     | 13.90                  |
| 20              | 256QAM     | 1       | 0         | 11.98                    | 12.08                       | 11.90                     | 13.90                  |
| 20              | 256QAM     | 1       | 49        | 11.90                    | 12.09                       | 11.92                     | 13.90                  |
| 20              | 256QAM     | 1       | 99        | 12.00                    | 12.11                       | 11.90                     | 13.90                  |
| 20              | 256QAM     | 50      | 0         | 11.90                    | 12.19                       | 11.90                     | 13.90                  |
| 20              | 256QAM     | 50      | 24        | 11.97                    | 12.22                       | 11.90                     | 13.90                  |
| 20              | 256QAM     | 50      | 50        | 12.01                    | 12.13                       | 11.91                     | 13.90                  |
| 20              | 256QAM     | 100     | 0         | 11.97                    | 12.18                       | 11.91                     | 13.90                  |
| Channel         |            |         |           | 43665                    | 44090                       | 44515                     | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3607.5                   | 3650                        | 3692.5                    |                        |
| 15              | QPSK       | 1       | 0         | 12.30                    | 12.30                       | 11.96                     | 13.90                  |
| 15              | QPSK       | 1       | 37        | 11.97                    | 11.97                       | 11.90                     | 13.90                  |
| 15              | QPSK       | 1       | 74        | 11.90                    | 11.90                       | 11.91                     | 13.90                  |
| 15              | QPSK       | 36      | 0         | 11.90                    | 12.06                       | 11.91                     | 13.90                  |
| 15              | QPSK       | 36      | 20        | 11.90                    | 12.04                       | 11.90                     | 13.90                  |
| 15              | QPSK       | 36      | 39        | 11.90                    | 12.02                       | 11.90                     | 13.90                  |
| 15              | QPSK       | 75      | 0         | 11.90                    | 12.14                       | 11.91                     | 13.90                  |
| 15              | 16QAM      | 1       | 0         | 11.90                    | 12.01                       | 11.90                     | 13.90                  |
| 15              | 16QAM      | 1       | 37        | 11.91                    | 12.08                       | 11.91                     | 13.90                  |
| 15              | 16QAM      | 1       | 74        | 11.91                    | 12.07                       | 11.92                     | 13.90                  |
| 15              | 16QAM      | 36      | 0         | 11.91                    | 12.12                       | 11.91                     | 13.90                  |
| 15              | 16QAM      | 36      | 20        | 11.92                    | 12.12                       | 11.90                     | 13.90                  |
| 15              | 16QAM      | 36      | 39        | 11.94                    | 12.04                       | 11.90                     | 13.90                  |
| 15              | 16QAM      | 75      | 0         | 11.90                    | 12.18                       | 11.90                     | 13.90                  |
| 15              | 64QAM      | 1       | 0         | 11.91                    | 11.96                       | 11.92                     | 13.90                  |
| 15              | 64QAM      | 1       | 37        | 11.90                    | 12.03                       | 11.90                     | 13.90                  |
| 15              | 64QAM      | 1       | 74        | 11.91                    | 11.96                       | 11.91                     | 13.90                  |
| 15              | 64QAM      | 36      | 0         | 11.90                    | 12.14                       | 11.90                     | 13.90                  |
| 15              | 64QAM      | 36      | 20        | 11.99                    | 12.19                       | 11.90                     | 13.90                  |
| 15              | 64QAM      | 36      | 39        | 11.95                    | 12.02                       | 11.90                     | 13.90                  |
| 15              | 64QAM      | 75      | 0         | 11.90                    | 12.11                       | 11.91                     | 13.90                  |
| 15              | 256QAM     | 1       | 0         | 11.96                    | 12.02                       | 11.91                     | 13.90                  |
| 15              | 256QAM     | 1       | 37        | 11.92                    | 12.08                       | 11.91                     | 13.90                  |
| 15              | 256QAM     | 1       | 74        | 11.90                    | 11.98                       | 11.90                     | 13.90                  |
| 15              | 256QAM     | 36      | 0         | 11.92                    | 12.16                       | 11.91                     | 13.90                  |
| 15              | 256QAM     | 36      | 20        | 11.93                    | 12.18                       | 11.90                     | 13.90                  |
| 15              | 256QAM     | 36      | 39        | 11.94                    | 12.00                       | 11.90                     | 13.90                  |
| 15              | 256QAM     | 75      | 0         | 11.91                    | 12.04                       | 11.92                     | 13.90                  |
| Channel         |            |         |           | 43640                    | 44090                       | 44540                     | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3605                     | 3650                        | 3695                      |                        |
| 10              | QPSK       | 1       | 0         | 12.26                    | 12.29                       | 11.92                     | 13.90                  |
| 10              | QPSK       | 1       | 25        | 11.97                    | 12.05                       | 11.90                     | 13.90                  |
| 10              | QPSK       | 1       | 49        | 11.90                    | 11.92                       | 11.91                     | 13.90                  |
| 10              | QPSK       | 25      | 0         | 11.98                    | 12.04                       | 11.90                     | 13.90                  |
| 10              | QPSK       | 25      | 12        | 11.90                    | 12.12                       | 11.91                     | 13.90                  |
| 10              | QPSK       | 25      | 25        | 11.91                    | 12.07                       | 11.90                     | 13.90                  |
| 10              | QPSK       | 50      | 0         | 11.91                    | 12.15                       | 11.90                     | 13.90                  |
| 10              | 16QAM      | 1       | 0         | 11.90                    | 11.95                       | 11.90                     | 13.90                  |
| 10              | 16QAM      | 1       | 25        | 11.92                    | 12.10                       | 11.90                     | 13.90                  |
| 10              | 16QAM      | 1       | 49        | 11.90                    | 12.02                       | 11.90                     | 13.90                  |



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|                 |        |    |    |        |       |        |               |
|-----------------|--------|----|----|--------|-------|--------|---------------|
| 10              | 16QAM  | 25 | 0  | 11.90  | 12.07 | 11.91  | 13.90         |
| 10              | 16QAM  | 25 | 12 | 11.90  | 12.17 | 11.90  | 13.90         |
| 10              | 16QAM  | 25 | 25 | 11.96  | 12.02 | 11.91  | 13.90         |
| 10              | 16QAM  | 50 | 0  | 11.90  | 12.18 | 11.91  | 13.90         |
| 10              | 64QAM  | 1  | 0  | 11.90  | 11.92 | 11.91  | 13.90         |
| 10              | 64QAM  | 1  | 25 | 11.90  | 12.06 | 11.91  | 13.90         |
| 10              | 64QAM  | 1  | 49 | 11.92  | 11.98 | 11.91  | 13.90         |
| 10              | 64QAM  | 25 | 0  | 11.97  | 12.11 | 11.90  | 13.90         |
| 10              | 64QAM  | 25 | 12 | 11.98  | 12.15 | 11.90  | 13.90         |
| 10              | 64QAM  | 25 | 25 | 11.96  | 12.04 | 11.90  | 13.90         |
| 10              | 64QAM  | 50 | 0  | 11.91  | 12.06 | 11.90  | 13.90         |
| 10              | 256QAM | 1  | 0  | 11.90  | 12.05 | 11.90  | 13.90         |
| 10              | 256QAM | 1  | 25 | 11.92  | 11.96 | 11.90  | 13.90         |
| 10              | 256QAM | 1  | 49 | 11.91  | 12.03 | 11.91  | 13.90         |
| 10              | 256QAM | 25 | 0  | 11.92  | 12.15 | 11.91  | 13.90         |
| 10              | 256QAM | 25 | 12 | 11.91  | 12.21 | 11.90  | 13.90         |
| 10              | 256QAM | 25 | 25 | 11.98  | 12.00 | 11.91  | 13.90         |
| 10              | 256QAM | 50 | 0  | 11.90  | 12.15 | 11.90  | 13.90         |
| Channel         |        |    |    | 43615  | 44090 | 44565  | Tune-up limit |
| Frequency (MHz) |        |    |    | 3602.5 | 3650  | 3697.5 | (dBm)         |
| 5               | QPSK   | 1  | 0  | 12.24  | 12.35 | 12.00  | 13.90         |
| 5               | QPSK   | 1  | 12 | 11.97  | 11.93 | 11.90  | 13.90         |
| 5               | QPSK   | 1  | 24 | 11.91  | 11.93 | 11.92  | 13.90         |
| 5               | QPSK   | 12 | 0  | 11.95  | 12.10 | 11.90  | 13.90         |
| 5               | QPSK   | 12 | 7  | 11.90  | 12.10 | 11.90  | 13.90         |
| 5               | QPSK   | 12 | 13 | 11.93  | 12.05 | 11.91  | 13.90         |
| 5               | QPSK   | 25 | 0  | 11.90  | 12.04 | 11.92  | 13.90         |
| 5               | 16QAM  | 1  | 0  | 11.90  | 11.93 | 11.90  | 13.90         |
| 5               | 16QAM  | 1  | 12 | 11.91  | 12.09 | 11.91  | 13.90         |
| 5               | 16QAM  | 1  | 24 | 11.91  | 12.00 | 11.91  | 13.90         |
| 5               | 16QAM  | 12 | 0  | 11.90  | 12.18 | 11.90  | 13.90         |
| 5               | 16QAM  | 12 | 7  | 11.92  | 12.13 | 11.91  | 13.90         |
| 5               | 16QAM  | 12 | 13 | 11.96  | 12.08 | 11.90  | 13.90         |
| 5               | 16QAM  | 25 | 0  | 11.91  | 12.17 | 11.90  | 13.90         |
| 5               | 64QAM  | 1  | 0  | 11.90  | 11.93 | 11.90  | 13.90         |
| 5               | 64QAM  | 1  | 12 | 11.91  | 12.03 | 11.91  | 13.90         |
| 5               | 64QAM  | 1  | 24 | 11.91  | 12.03 | 11.92  | 13.90         |
| 5               | 64QAM  | 12 | 0  | 11.97  | 12.06 | 11.90  | 13.90         |
| 5               | 64QAM  | 12 | 7  | 11.96  | 12.15 | 11.92  | 13.90         |
| 5               | 64QAM  | 12 | 13 | 11.92  | 12.04 | 11.90  | 13.90         |
| 5               | 64QAM  | 25 | 0  | 11.90  | 12.09 | 11.90  | 13.90         |
| 5               | 256QAM | 1  | 0  | 11.91  | 12.04 | 11.90  | 13.90         |
| 5               | 256QAM | 1  | 12 | 11.90  | 11.99 | 11.91  | 13.90         |
| 5               | 256QAM | 1  | 24 | 11.99  | 11.97 | 11.91  | 13.90         |
| 5               | 256QAM | 12 | 0  | 11.90  | 12.08 | 11.91  | 13.90         |
| 5               | 256QAM | 12 | 7  | 11.90  | 12.17 | 11.90  | 13.90         |
| 5               | 256QAM | 12 | 13 | 11.90  | 12.02 | 11.90  | 13.90         |
| 5               | 256QAM | 25 | 0  | 11.92  | 12.05 | 11.90  | 13.90         |



## 【LTE Band 48\_MIMO2】

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           | 55340                    | 55830                       | 56150                       | 56640                     | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3560                     | 3609                        | 3641                        | 3690                      |                        |
| 20              | QPSK       | 1       | 0         | 11.61                    | 11.85                       | 11.79                       | 11.82                     | 13.30                  |
| 20              | QPSK       | 1       | 49        | 11.58                    | 11.89                       | 11.68                       | 11.73                     | 13.30                  |
| 20              | QPSK       | 1       | 99        | 11.60                    | 12.18                       | 11.79                       | 11.81                     | 13.30                  |
| 20              | QPSK       | 50      | 0         | 11.61                    | 11.97                       | 11.78                       | 11.82                     | 13.30                  |
| 20              | QPSK       | 50      | 24        | 11.59                    | 11.98                       | 11.79                       | 11.82                     | 13.30                  |
| 20              | QPSK       | 50      | 50        | 11.61                    | 12.01                       | 11.78                       | 11.81                     | 13.30                  |
| 20              | QPSK       | 100     | 0         | 11.61                    | 12.00                       | 11.78                       | 11.82                     | 13.30                  |
| 20              | 16QAM      | 1       | 0         | 11.59                    | 11.92                       | 11.79                       | 11.78                     | 13.30                  |
| 20              | 16QAM      | 1       | 49        | 11.60                    | 12.02                       | 11.79                       | 11.82                     | 13.30                  |
| 20              | 16QAM      | 1       | 99        | 11.61                    | 11.97                       | 11.79                       | 11.81                     | 13.30                  |
| 20              | 16QAM      | 50      | 0         | 11.61                    | 11.97                       | 11.78                       | 11.82                     | 13.30                  |
| 20              | 16QAM      | 50      | 24        | 11.59                    | 11.97                       | 11.77                       | 11.81                     | 13.30                  |
| 20              | 16QAM      | 50      | 50        | 11.59                    | 11.98                       | 11.79                       | 11.81                     | 13.30                  |
| 20              | 16QAM      | 100     | 0         | 11.60                    | 12.00                       | 11.79                       | 11.82                     | 13.30                  |
| 20              | 64QAM      | 1       | 0         | 11.56                    | 11.81                       | 11.61                       | 11.70                     | 13.30                  |
| 20              | 64QAM      | 1       | 49        | 11.58                    | 11.92                       | 11.71                       | 11.78                     | 13.30                  |
| 20              | 64QAM      | 1       | 99        | 11.60                    | 11.99                       | 11.78                       | 11.82                     | 13.30                  |
| 20              | 64QAM      | 50      | 0         | 11.60                    | 11.99                       | 11.79                       | 11.82                     | 13.30                  |
| 20              | 64QAM      | 50      | 24        | 11.60                    | 11.97                       | 11.79                       | 11.82                     | 13.30                  |
| 20              | 64QAM      | 50      | 50        | 11.60                    | 11.96                       | 11.78                       | 11.81                     | 13.30                  |
| 20              | 64QAM      | 100     | 0         | 11.61                    | 11.95                       | 11.76                       | 11.80                     | 13.30                  |
| 20              | 256QAM     | 1       | 0         | 11.61                    | 11.97                       | 11.79                       | 11.82                     | 13.30                  |
| 20              | 256QAM     | 1       | 49        | 11.54                    | 11.88                       | 11.69                       | 11.82                     | 13.30                  |
| 20              | 256QAM     | 1       | 99        | 11.61                    | 11.96                       | 11.77                       | 11.82                     | 13.30                  |
| 20              | 256QAM     | 50      | 0         | 11.61                    | 11.98                       | 11.79                       | 11.82                     | 13.30                  |
| 20              | 256QAM     | 50      | 24        | 11.61                    | 11.97                       | 11.77                       | 11.82                     | 13.30                  |
| 20              | 256QAM     | 50      | 50        | 11.61                    | 12.00                       | 11.79                       | 11.82                     | 13.30                  |
| 20              | 256QAM     | 100     | 0         | 11.60                    | 12.00                       | 11.78                       | 11.82                     | 13.30                  |
| Channel         |            |         |           | 55315                    | 55820                       | 56160                       | 56665                     | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3557.5                   | 3608                        | 3642                        | 3692.5                    |                        |
| 15              | QPSK       | 1       | 0         | 11.47                    | 11.84                       | 11.66                       | 11.69                     | 13.30                  |
| 15              | QPSK       | 1       | 37        | 11.56                    | 11.76                       | 11.56                       | 11.58                     | 13.30                  |
| 15              | QPSK       | 1       | 74        | 11.56                    | 11.84                       | 11.67                       | 11.75                     | 13.30                  |
| 15              | QPSK       | 36      | 0         | 11.58                    | 11.84                       | 11.76                       | 11.68                     | 13.30                  |
| 15              | QPSK       | 36      | 20        | 11.51                    | 11.84                       | 11.64                       | 11.78                     | 13.30                  |
| 15              | QPSK       | 36      | 39        | 11.51                    | 11.85                       | 11.67                       | 11.78                     | 13.30                  |
| 15              | QPSK       | 75      | 0         | 11.54                    | 11.84                       | 11.72                       | 11.80                     | 13.30                  |
| 15              | 16QAM      | 1       | 0         | 11.53                    | 11.85                       | 11.76                       | 11.72                     | 13.30                  |
| 15              | 16QAM      | 1       | 37        | 11.49                    | 11.84                       | 11.70                       | 11.74                     | 13.30                  |
| 15              | 16QAM      | 1       | 74        | 11.53                    | 11.85                       | 11.72                       | 11.73                     | 13.30                  |
| 15              | 16QAM      | 36      | 0         | 11.50                    | 11.85                       | 11.68                       | 11.70                     | 13.30                  |
| 15              | 16QAM      | 36      | 20        | 11.50                    | 11.85                       | 11.76                       | 11.76                     | 13.30                  |
| 15              | 16QAM      | 36      | 39        | 11.57                    | 11.85                       | 11.71                       | 11.73                     | 13.30                  |
| 15              | 16QAM      | 75      | 0         | 11.57                    | 11.85                       | 11.66                       | 11.68                     | 13.30                  |
| 15              | 64QAM      | 1       | 0         | 11.45                    | 11.76                       | 11.55                       | 11.63                     | 13.30                  |
| 15              | 64QAM      | 1       | 37        | 11.45                    | 11.84                       | 11.66                       | 11.76                     | 13.30                  |
| 15              | 64QAM      | 1       | 74        | 11.58                    | 11.85                       | 11.71                       | 11.68                     | 13.30                  |
| 15              | 64QAM      | 36      | 0         | 11.49                    | 11.85                       | 11.70                       | 11.69                     | 13.30                  |
| 15              | 64QAM      | 36      | 20        | 11.57                    | 11.83                       | 11.76                       | 11.74                     | 13.30                  |
| 15              | 64QAM      | 36      | 39        | 11.46                    | 11.84                       | 11.68                       | 11.74                     | 13.30                  |
| 15              | 64QAM      | 75      | 0         | 11.60                    | 11.83                       | 11.71                       | 11.68                     | 13.30                  |
| 15              | 256QAM     | 1       | 0         | 11.58                    | 11.82                       | 11.69                       | 11.73                     | 13.30                  |
| 15              | 256QAM     | 1       | 37        | 11.51                    | 11.73                       | 11.60                       | 11.71                     | 13.30                  |
| 15              | 256QAM     | 1       | 74        | 11.56                    | 11.85                       | 11.71                       | 11.77                     | 13.30                  |
| 15              | 256QAM     | 36      | 0         | 11.58                    | 11.84                       | 11.68                       | 11.74                     | 13.30                  |
| 15              | 256QAM     | 36      | 20        | 11.52                    | 11.84                       | 11.66                       | 11.77                     | 13.30                  |
| 15              | 256QAM     | 36      | 39        | 11.47                    | 11.84                       | 11.68                       | 11.81                     | 13.30                  |
| 15              | 256QAM     | 75      | 0         | 11.57                    | 11.84                       | 11.64                       | 11.74                     | 13.30                  |
| Channel         |            |         |           | 55290                    | 55815                       | 56165                       | 56690                     | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3555                     | 3607.5                      | 3642.5                      | 3695                      |                        |
| 10              | QPSK       | 1       | 0         | 11.50                    | 11.81                       | 11.75                       | 11.71                     | 13.30                  |
| 10              | QPSK       | 1       | 25        | 11.48                    | 11.85                       | 11.67                       | 11.66                     | 13.30                  |
| 10              | QPSK       | 1       | 49        | 11.47                    | 11.84                       | 11.68                       | 11.70                     | 13.30                  |
| 10              | QPSK       | 25      | 0         | 11.57                    | 11.85                       | 11.69                       | 11.73                     | 13.30                  |
| 10              | QPSK       | 25      | 12        | 11.50                    | 11.84                       | 11.72                       | 11.76                     | 13.30                  |
| 10              | QPSK       | 25      | 25        | 11.56                    | 11.85                       | 11.69                       | 11.69                     | 13.30                  |
| 10              | QPSK       | 50      | 0         | 11.59                    | 11.84                       | 11.65                       | 11.67                     | 13.30                  |
| 10              | 16QAM      | 1       | 0         | 11.47                    | 11.84                       | 11.69                       | 11.75                     | 13.30                  |
| 10              | 16QAM      | 1       | 25        | 11.57                    | 11.85                       | 11.65                       | 11.72                     | 13.30                  |
| 10              | 16QAM      | 1       | 49        | 11.48                    | 11.85                       | 11.68                       | 11.72                     | 13.30                  |



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|                 |        |    |    |        |       |       |        |               |
|-----------------|--------|----|----|--------|-------|-------|--------|---------------|
| 10              | 16QAM  | 25 | 0  | 11.56  | 11.85 | 11.76 | 11.71  | 13.30         |
| 10              | 16QAM  | 25 | 12 | 11.54  | 11.85 | 11.74 | 11.66  | 13.30         |
| 10              | 16QAM  | 25 | 25 | 11.56  | 11.85 | 11.70 | 11.74  | 13.30         |
| 10              | 16QAM  | 50 | 0  | 11.56  | 11.85 | 11.72 | 11.69  | 13.30         |
| 10              | 64QAM  | 1  | 0  | 11.52  | 11.70 | 11.46 | 11.55  | 13.30         |
| 10              | 64QAM  | 1  | 25 | 11.44  | 11.81 | 11.67 | 11.76  | 13.30         |
| 10              | 64QAM  | 1  | 49 | 11.54  | 11.85 | 11.70 | 11.71  | 13.30         |
| 10              | 64QAM  | 25 | 0  | 11.55  | 11.85 | 11.65 | 11.70  | 13.30         |
| 10              | 64QAM  | 25 | 12 | 11.45  | 11.83 | 11.71 | 11.76  | 13.30         |
| 10              | 64QAM  | 25 | 25 | 11.56  | 11.84 | 11.76 | 11.79  | 13.30         |
| 10              | 64QAM  | 50 | 0  | 11.58  | 11.84 | 11.66 | 11.71  | 13.30         |
| 10              | 256QAM | 1  | 0  | 11.53  | 11.85 | 11.76 | 11.74  | 13.30         |
| 10              | 256QAM | 1  | 25 | 11.41  | 11.76 | 11.63 | 11.68  | 13.30         |
| 10              | 256QAM | 1  | 49 | 11.58  | 11.84 | 11.66 | 11.77  | 13.30         |
| 10              | 256QAM | 25 | 0  | 11.58  | 11.84 | 11.68 | 11.78  | 13.30         |
| 10              | 256QAM | 25 | 12 | 11.60  | 11.85 | 11.73 | 11.80  | 13.30         |
| 10              | 256QAM | 25 | 25 | 11.49  | 11.84 | 11.77 | 11.76  | 13.30         |
| 10              | 256QAM | 50 | 0  | 11.54  | 11.85 | 11.70 | 11.76  | 13.30         |
| Channel         |        |    |    | 55265  | 55810 | 56170 | 56715  | Tune-up limit |
| Frequency (MHz) |        |    |    | 3552.5 | 3607  | 3643  | 3697.5 | (dBm)         |
| 5               | QPSK   | 1  | 0  | 11.47  | 11.75 | 11.71 | 11.80  | 13.30         |
| 5               | QPSK   | 1  | 12 | 11.48  | 11.83 | 11.60 | 11.62  | 13.30         |
| 5               | QPSK   | 1  | 24 | 11.58  | 11.85 | 11.64 | 11.73  | 13.30         |
| 5               | QPSK   | 12 | 0  | 11.49  | 11.85 | 11.69 | 11.76  | 13.30         |
| 5               | QPSK   | 12 | 7  | 11.46  | 11.83 | 11.70 | 11.69  | 13.30         |
| 5               | QPSK   | 12 | 13 | 11.47  | 11.83 | 11.63 | 11.69  | 13.30         |
| 5               | QPSK   | 25 | 0  | 11.48  | 11.84 | 11.71 | 11.80  | 13.30         |
| 5               | 16QAM  | 1  | 0  | 11.48  | 11.85 | 11.74 | 11.69  | 13.30         |
| 5               | 16QAM  | 1  | 12 | 11.46  | 11.84 | 11.77 | 11.78  | 13.30         |
| 5               | 16QAM  | 1  | 24 | 11.50  | 11.85 | 11.74 | 11.79  | 13.30         |
| 5               | 16QAM  | 12 | 0  | 11.50  | 11.83 | 11.64 | 11.73  | 13.30         |
| 5               | 16QAM  | 12 | 7  | 11.55  | 11.85 | 11.73 | 11.69  | 13.30         |
| 5               | 16QAM  | 12 | 13 | 11.52  | 11.85 | 11.67 | 11.69  | 13.30         |
| 5               | 16QAM  | 25 | 0  | 11.50  | 11.85 | 11.72 | 11.79  | 13.30         |
| 5               | 64QAM  | 1  | 0  | 11.50  | 11.69 | 11.56 | 11.65  | 13.30         |
| 5               | 64QAM  | 1  | 12 | 11.44  | 11.84 | 11.60 | 11.74  | 13.30         |
| 5               | 64QAM  | 1  | 24 | 11.58  | 11.84 | 11.73 | 11.74  | 13.30         |
| 5               | 64QAM  | 12 | 0  | 11.51  | 11.85 | 11.66 | 11.74  | 13.30         |
| 5               | 64QAM  | 12 | 7  | 11.51  | 11.84 | 11.76 | 11.72  | 13.30         |
| 5               | 64QAM  | 12 | 13 | 11.57  | 11.82 | 11.75 | 11.70  | 13.30         |
| 5               | 64QAM  | 25 | 0  | 11.58  | 11.85 | 11.73 | 11.76  | 13.30         |
| 5               | 256QAM | 1  | 0  | 11.51  | 11.85 | 11.76 | 11.73  | 13.30         |
| 5               | 256QAM | 1  | 12 | 11.47  | 11.85 | 11.68 | 11.76  | 13.30         |
| 5               | 256QAM | 1  | 24 | 11.49  | 11.85 | 11.67 | 11.70  | 13.30         |
| 5               | 256QAM | 12 | 0  | 11.53  | 11.85 | 11.75 | 11.71  | 13.30         |
| 5               | 256QAM | 12 | 7  | 11.56  | 11.85 | 11.73 | 11.73  | 13.30         |
| 5               | 256QAM | 12 | 13 | 11.55  | 11.83 | 11.76 | 11.72  | 13.30         |
| 5               | 256QAM | 25 | 0  | 11.46  | 11.84 | 11.70 | 11.80  | 13.30         |



## 【LTE Band 48\_MIMO1】

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           | 55340                    | 55830                       | 56150                       | 56640                     |                        |
| Frequency (MHz) |            |         |           | 3560                     | 3609                        | 3641                        | 3690                      |                        |
| 20              | QPSK       | 1       | 0         | 11.21                    | 11.47                       | 11.32                       | 11.21                     | 12.60                  |
| 20              | QPSK       | 1       | 49        | 11.26                    | 11.68                       | 11.36                       | 11.26                     | 12.60                  |
| 20              | QPSK       | 1       | 99        | 11.24                    | 11.53                       | 11.35                       | 11.24                     | 12.60                  |
| 20              | QPSK       | 50      | 0         | 10.90                    | 11.63                       | 10.88                       | 10.90                     | 12.60                  |
| 20              | QPSK       | 50      | 24        | 10.85                    | 11.08                       | 10.90                       | 10.85                     | 12.60                  |
| 20              | QPSK       | 50      | 50        | 10.84                    | 11.08                       | 10.91                       | 10.84                     | 12.60                  |
| 20              | QPSK       | 100     | 0         | 10.90                    | 11.10                       | 10.93                       | 10.90                     | 12.60                  |
| 20              | 16QAM      | 1       | 0         | 10.96                    | 11.13                       | 10.99                       | 10.96                     | 12.60                  |
| 20              | 16QAM      | 1       | 49        | 10.88                    | 11.10                       | 10.87                       | 10.88                     | 12.60                  |
| 20              | 16QAM      | 1       | 99        | 10.89                    | 11.11                       | 10.84                       | 10.89                     | 12.60                  |
| 20              | 16QAM      | 50      | 0         | 10.92                    | 11.09                       | 10.90                       | 10.92                     | 12.60                  |
| 20              | 16QAM      | 50      | 24        | 10.95                    | 11.13                       | 10.98                       | 10.95                     | 12.60                  |
| 20              | 16QAM      | 50      | 50        | 10.82                    | 11.04                       | 10.85                       | 10.82                     | 12.60                  |
| 20              | 16QAM      | 100     | 0         | 10.79                    | 11.04                       | 10.80                       | 10.79                     | 12.60                  |
| 20              | 64QAM      | 1       | 0         | 10.96                    | 11.67                       | 10.99                       | 10.96                     | 12.60                  |
| 20              | 64QAM      | 1       | 49        | 10.79                    | 11.22                       | 10.84                       | 10.79                     | 12.60                  |
| 20              | 64QAM      | 1       | 99        | 10.81                    | 11.60                       | 10.96                       | 10.81                     | 12.60                  |
| 20              | 64QAM      | 50      | 0         | 10.84                    | 11.04                       | 10.91                       | 10.84                     | 12.60                  |
| 20              | 64QAM      | 50      | 24        | 10.87                    | 11.07                       | 10.89                       | 10.87                     | 12.60                  |
| 20              | 64QAM      | 50      | 50        | 10.90                    | 11.10                       | 10.86                       | 10.90                     | 12.60                  |
| 20              | 64QAM      | 100     | 0         | 10.81                    | 11.07                       | 10.92                       | 10.81                     | 12.60                  |
| 20              | 256QAM     | 1       | 0         | 10.63                    | 10.87                       | 10.64                       | 10.63                     | 12.60                  |
| 20              | 256QAM     | 1       | 49        | 10.72                    | 10.90                       | 10.72                       | 10.72                     | 12.60                  |
| 20              | 256QAM     | 1       | 99        | 10.66                    | 10.91                       | 10.71                       | 10.66                     | 12.60                  |
| 20              | 256QAM     | 50      | 0         | 10.77                    | 11.01                       | 10.82                       | 10.77                     | 12.60                  |
| 20              | 256QAM     | 50      | 24        | 10.76                    | 11.04                       | 10.84                       | 10.76                     | 12.60                  |
| 20              | 256QAM     | 50      | 50        | 10.79                    | 11.07                       | 10.87                       | 10.79                     | 12.60                  |
| 20              | 256QAM     | 100     | 0         | 10.78                    | 11.02                       | 10.81                       | 10.78                     | 12.60                  |
| Channel         |            |         |           | 55315                    | 55820                       | 56160                       | 56665                     | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3557.5                   | 3608                        | 3642                        | 3692.5                    |                        |
| 15              | QPSK       | 1       | 0         | 11.09                    | 11.38                       | 11.29                       | 11.08                     | 12.60                  |
| 15              | QPSK       | 1       | 37        | 11.21                    | 11.41                       | 11.26                       | 11.20                     | 12.60                  |
| 15              | QPSK       | 1       | 74        | 11.18                    | 11.43                       | 11.30                       | 11.18                     | 12.60                  |
| 15              | QPSK       | 36      | 0         | 10.76                    | 11.47                       | 10.76                       | 10.77                     | 12.60                  |
| 15              | QPSK       | 36      | 20        | 10.84                    | 11.04                       | 10.80                       | 10.82                     | 12.60                  |
| 15              | QPSK       | 36      | 39        | 10.78                    | 10.99                       | 10.85                       | 10.71                     | 12.60                  |
| 15              | QPSK       | 75      | 0         | 10.80                    | 10.96                       | 10.82                       | 10.86                     | 12.60                  |
| 15              | 16QAM      | 1       | 0         | 10.83                    | 11.07                       | 10.90                       | 10.82                     | 12.60                  |
| 15              | 16QAM      | 1       | 37        | 10.75                    | 10.99                       | 10.77                       | 10.83                     | 12.60                  |
| 15              | 16QAM      | 1       | 74        | 10.80                    | 11.01                       | 10.81                       | 10.86                     | 12.60                  |
| 15              | 16QAM      | 36      | 0         | 10.89                    | 11.06                       | 10.80                       | 10.86                     | 12.60                  |
| 15              | 16QAM      | 36      | 20        | 10.82                    | 11.03                       | 10.91                       | 10.83                     | 12.60                  |
| 15              | 16QAM      | 36      | 39        | 10.72                    | 10.94                       | 10.71                       | 10.71                     | 12.60                  |
| 15              | 16QAM      | 75      | 0         | 10.72                    | 10.98                       | 10.76                       | 10.66                     | 12.60                  |
| 15              | 64QAM      | 1       | 0         | 10.85                    | 11.47                       | 10.88                       | 10.90                     | 12.60                  |
| 15              | 64QAM      | 1       | 37        | 10.65                    | 11.07                       | 10.83                       | 10.70                     | 12.60                  |
| 15              | 64QAM      | 1       | 74        | 10.71                    | 11.47                       | 10.95                       | 10.69                     | 12.60                  |
| 15              | 64QAM      | 36      | 0         | 10.74                    | 10.89                       | 10.86                       | 10.73                     | 12.60                  |
| 15              | 64QAM      | 36      | 20        | 10.73                    | 10.95                       | 10.75                       | 10.79                     | 12.60                  |
| 15              | 64QAM      | 36      | 39        | 10.83                    | 10.97                       | 10.84                       | 10.89                     | 12.60                  |
| 15              | 64QAM      | 75      | 0         | 10.72                    | 11.02                       | 10.86                       | 10.79                     | 12.60                  |
| 15              | 256QAM     | 1       | 0         | 10.60                    | 10.81                       | 10.60                       | 10.60                     | 12.60                  |
| 15              | 256QAM     | 1       | 37        | 10.70                    | 10.78                       | 10.69                       | 10.61                     | 12.60                  |
| 15              | 256QAM     | 1       | 74        | 10.60                    | 10.80                       | 10.65                       | 10.61                     | 12.60                  |
| 15              | 256QAM     | 36      | 0         | 10.64                    | 10.98                       | 10.81                       | 10.71                     | 12.60                  |
| 15              | 256QAM     | 36      | 20        | 10.70                    | 10.98                       | 10.74                       | 10.63                     | 12.60                  |
| 15              | 256QAM     | 36      | 39        | 10.76                    | 10.96                       | 10.73                       | 10.74                     | 12.60                  |
| 15              | 256QAM     | 75      | 0         | 10.68                    | 10.92                       | 10.70                       | 10.68                     | 12.60                  |
| Channel         |            |         |           | 55290                    | 55815                       | 56165                       | 56690                     | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3555                     | 3607.5                      | 3642.5                      | 3695                      |                        |
| 10              | QPSK       | 1       | 0         | 11.19                    | 11.41                       | 11.21                       | 11.09                     | 12.60                  |
| 10              | QPSK       | 1       | 25        | 11.21                    | 11.47                       | 11.25                       | 11.15                     | 12.60                  |
| 10              | QPSK       | 1       | 49        | 11.20                    | 11.45                       | 11.25                       | 11.21                     | 12.60                  |
| 10              | QPSK       | 25      | 0         | 10.79                    | 11.47                       | 10.86                       | 10.78                     | 12.60                  |
| 10              | QPSK       | 25      | 12        | 10.80                    | 10.99                       | 10.85                       | 10.79                     | 12.60                  |
| 10              | QPSK       | 25      | 25        | 10.83                    | 10.94                       | 10.76                       | 10.79                     | 12.60                  |
| 10              | QPSK       | 50      | 0         | 10.78                    | 10.95                       | 10.91                       | 10.86                     | 12.60                  |
| 10              | 16QAM      | 1       | 0         | 10.92                    | 11.08                       | 10.90                       | 10.84                     | 12.60                  |
| 10              | 16QAM      | 1       | 25        | 10.86                    | 10.98                       | 10.79                       | 10.85                     | 12.60                  |
| 10              | 16QAM      | 1       | 49        | 10.76                    | 11.05                       | 10.79                       | 10.81                     | 12.60                  |



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|                 |        |    |    |        |       |       |        |               |
|-----------------|--------|----|----|--------|-------|-------|--------|---------------|
| 10              | 16QAM  | 25 | 0  | 10.88  | 10.96 | 10.79 | 10.85  | 12.60         |
| 10              | 16QAM  | 25 | 12 | 10.93  | 11.12 | 10.91 | 10.92  | 12.60         |
| 10              | 16QAM  | 25 | 25 | 10.72  | 11.02 | 10.83 | 10.81  | 12.60         |
| 10              | 16QAM  | 50 | 0  | 10.66  | 10.90 | 10.76 | 10.72  | 12.60         |
| 10              | 64QAM  | 1  | 0  | 10.91  | 11.46 | 10.86 | 10.83  | 12.60         |
| 10              | 64QAM  | 1  | 25 | 10.75  | 11.21 | 10.70 | 10.69  | 12.60         |
| 10              | 64QAM  | 1  | 49 | 10.75  | 11.46 | 10.88 | 10.73  | 12.60         |
| 10              | 64QAM  | 25 | 0  | 10.76  | 10.90 | 10.78 | 10.74  | 12.60         |
| 10              | 64QAM  | 25 | 12 | 10.83  | 11.02 | 10.79 | 10.81  | 12.60         |
| 10              | 64QAM  | 25 | 25 | 10.77  | 11.06 | 10.79 | 10.77  | 12.60         |
| 10              | 64QAM  | 50 | 0  | 10.72  | 11.05 | 10.89 | 10.67  | 12.60         |
| 10              | 256QAM | 1  | 0  | 10.62  | 10.84 | 10.60 | 10.61  | 12.60         |
| 10              | 256QAM | 1  | 25 | 10.60  | 10.88 | 10.61 | 10.61  | 12.60         |
| 10              | 256QAM | 1  | 49 | 10.64  | 10.80 | 10.61 | 10.60  | 12.60         |
| 10              | 256QAM | 25 | 0  | 10.72  | 10.91 | 10.81 | 10.68  | 12.60         |
| 10              | 256QAM | 25 | 12 | 10.62  | 10.91 | 10.72 | 10.74  | 12.60         |
| 10              | 256QAM | 25 | 25 | 10.68  | 11.04 | 10.83 | 10.71  | 12.60         |
| 10              | 256QAM | 50 | 0  | 10.66  | 10.90 | 10.74 | 10.72  | 12.60         |
| Channel         |        |    |    | 55265  | 55810 | 56170 | 56715  | Tune-up limit |
| Frequency (MHz) |        |    |    | 3552.5 | 3607  | 3643  | 3697.5 | (dBm)         |
| 5               | QPSK   | 1  | 0  | 11.11  | 11.32 | 11.21 | 11.08  | 12.60         |
| 5               | QPSK   | 1  | 12 | 11.19  | 11.39 | 11.32 | 11.12  | 12.60         |
| 5               | QPSK   | 1  | 24 | 11.17  | 11.42 | 11.26 | 11.12  | 12.60         |
| 5               | QPSK   | 12 | 0  | 10.85  | 11.46 | 10.78 | 10.87  | 12.60         |
| 5               | QPSK   | 12 | 7  | 10.74  | 11.00 | 10.80 | 10.80  | 12.60         |
| 5               | QPSK   | 12 | 13 | 10.82  | 10.95 | 10.79 | 10.77  | 12.60         |
| 5               | QPSK   | 25 | 0  | 10.78  | 11.00 | 10.89 | 10.79  | 12.60         |
| 5               | 16QAM  | 1  | 0  | 10.93  | 11.10 | 10.85 | 10.95  | 12.60         |
| 5               | 16QAM  | 1  | 12 | 10.85  | 10.95 | 10.81 | 10.85  | 12.60         |
| 5               | 16QAM  | 1  | 24 | 10.84  | 10.97 | 10.74 | 10.83  | 12.60         |
| 5               | 16QAM  | 12 | 0  | 10.80  | 11.07 | 10.76 | 10.82  | 12.60         |
| 5               | 16QAM  | 12 | 7  | 10.80  | 11.05 | 10.85 | 10.88  | 12.60         |
| 5               | 16QAM  | 12 | 13 | 10.69  | 10.94 | 10.77 | 10.76  | 12.60         |
| 5               | 16QAM  | 25 | 0  | 10.77  | 10.90 | 10.75 | 10.77  | 12.60         |
| 5               | 64QAM  | 1  | 0  | 10.85  | 11.46 | 10.85 | 10.90  | 12.60         |
| 5               | 64QAM  | 1  | 12 | 10.66  | 11.17 | 10.70 | 10.75  | 12.60         |
| 5               | 64QAM  | 1  | 24 | 10.78  | 11.46 | 10.90 | 10.70  | 12.60         |
| 5               | 64QAM  | 12 | 0  | 10.69  | 11.01 | 10.80 | 10.71  | 12.60         |
| 5               | 64QAM  | 12 | 7  | 10.82  | 10.92 | 10.77 | 10.81  | 12.60         |
| 5               | 64QAM  | 12 | 13 | 10.88  | 10.98 | 10.73 | 10.87  | 12.60         |
| 5               | 64QAM  | 25 | 0  | 10.70  | 10.93 | 10.78 | 10.78  | 12.60         |
| 5               | 256QAM | 1  | 0  | 10.60  | 10.75 | 10.60 | 10.60  | 12.60         |
| 5               | 256QAM | 1  | 12 | 10.62  | 10.85 | 10.61 | 10.67  | 12.60         |
| 5               | 256QAM | 1  | 24 | 10.64  | 10.88 | 10.62 | 10.64  | 12.60         |
| 5               | 256QAM | 12 | 0  | 10.63  | 10.92 | 10.78 | 10.65  | 12.60         |
| 5               | 256QAM | 12 | 7  | 10.70  | 10.92 | 10.78 | 10.75  | 12.60         |
| 5               | 256QAM | 12 | 13 | 10.67  | 10.97 | 10.74 | 10.64  | 12.60         |
| 5               | 256QAM | 25 | 0  | 10.67  | 10.99 | 10.68 | 10.75  | 12.60         |

## **12. UL/DL Carrier aggregation**

### **< LTE DL Carrier Aggregation >**

#### **General Note:**

1. According to 202410 TCB workshop, the downlink (DL) pertains to receiver functionality, thus it is not related to RF exposure compliance limits related to cumulative effects of different transmitters.
2. According to 202410 TCB workshop, equipment authorization applications shall refer to the worst-case UL powers resulting from all the possible modes of operations. Accordingly, CA-DL cases do not need to be analyzed separately, unless pertinent to establishing UL power setting.
3. This device supports LTE carrier aggregation in the downlink. All 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

### **< LTE UL carrier aggregation >**

#### **General Note:**

1. The device supports uplink carrier aggregation with a maximum of two 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.
2. 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.
3. Additional SAR measurement for 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.

| 2CC Uplink Carrier Aggregation |             |
|--------------------------------|-------------|
| Number                         | Combination |
| 1                              | 42C         |
| 2                              | 43C         |

#### **【CA\_42C\_MIMO2\_Index 1】**

| CA_42C                                |             |            |         |           |         |           |                      |                     |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) |             |            |         |           |         |           |                      |                     |
| PCC Channel                           | SCC Channel | Modulation | PCC     |           | SCC     |           | Measured Power (dBm) | Tune-up Power (dBm) |
|                                       |             |            | RB Size | RB Offset | RB Size | RB Offset |                      |                     |
| 43190                                 | 43388       | QPSK       | 1       | 99        | 1       | 0         | 12.18                | 13.60               |
| 43340                                 | 43538       | QPSK       | 1       | 99        | 1       | 0         | 12.16                | 13.60               |
| 43490                                 | 43292       | QPSK       | 1       | 0         | 1       | 99        | 12.11                | 13.60               |

#### **【CA\_43C\_MIMO2\_Index 1】**

| CA_43C                                |             |            |         |           |         |           |                      |                     |
|---------------------------------------|-------------|------------|---------|-----------|---------|-----------|----------------------|---------------------|
| Combination 20MHz+20MHz (100RB+100RB) |             |            |         |           |         |           |                      |                     |
| PCC Channel                           | SCC Channel | Modulation | PCC     |           | SCC     |           | Measured Power (dBm) | Tune-up Power (dBm) |
|                                       |             |            | RB Size | RB Offset | RB Size | RB Offset |                      |                     |
| 43690                                 | 43888       | QPSK       | 1       | 99        | 1       | 0         | 12.26                | 13.90               |
| 44090                                 | 44288       | QPSK       | 1       | 99        | 1       | 0         | 12.20                | 13.90               |
| 44490                                 | 44292       | QPSK       | 1       | 0         | 1       | 99        | 12.18                | 13.90               |

### 13. 5G NR Output Power (Unit: dBm)

**General 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  $\leq 1.45$  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  $\leq 0.8$  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  $\leq 1.45$  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

**< 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 | $\leq 3.5^1$        | $\leq 1.2^1$         | $\leq 0.2^1$         |
|            |           | $\leq 0.5^2$        | $\leq 0.5^2$         | 0 <sup>2</sup>       |
|            | QPSK      | $\leq 1$            |                      | 0                    |
|            | 16 QAM    | $\leq 2$            |                      | $\leq 1$             |
|            | 64 QAM    |                     | $\leq 2.5$           |                      |
| CP-OFDM    | 256 QAM   |                     | $\leq 4.5$           |                      |
|            | QPSK      | $\leq 3$            |                      | $\leq 1.5$           |
|            | 16 QAM    | $\leq 3$            |                      | $\leq 2$             |
|            | 64 QAM    |                     | $\leq 3.5$           |                      |
|            | 256 QAM   |                     | $\leq 6.5$           |                      |

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 | $\leq 3.5$          | $\leq 0.5$           | 0                    |
|            | QPSK      | $\leq 3.5$          | $\leq 1$             | 0                    |
|            | 16 QAM    | $\leq 3.5$          | $\leq 2$             | $\leq 1$             |
|            | 64 QAM    | $\leq 3.5$          |                      | $\leq 2.5$           |
|            | 256 QAM   |                     | $\leq 4.5$           |                      |
| CP-OFDM    | QPSK      | $\leq 3.5$          | $\leq 3$             | $\leq 1.5$           |
|            | 16 QAM    | $\leq 3.5$          | $\leq 3$             | $\leq 2$             |
|            | 64 QAM    |                     | $\leq 3.5$           |                      |
|            | 256 QAM   |                     | $\leq 6.5$           |                      |

**【FR1 n48\_MIMO1】**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           | 638000                   | 641666                      | 645332                    |                        |
| Frequency (MHz) |            |         |           | 3570                     | 3624.99                     | 3679.98                   |                        |
| 40              | PI/2 BPSK  | 1       | 1         | 10.82                    | 10.85                       | 10.84                     | 11.50                  |
| 40              | PI/2 BPSK  | 1       | 53        | 10.72                    | 10.80                       | 10.71                     | 11.50                  |
| 40              | PI/2 BPSK  | 1       | 104       | 10.82                    | 10.92                       | 10.78                     | 11.50                  |
| 40              | PI/2 BPSK  | 50      | 0         | 10.66                    | 10.81                       | 10.71                     | 11.50                  |
| 40              | PI/2 BPSK  | 50      | 28        | 10.62                    | 10.78                       | 10.74                     | 11.50                  |
| 40              | PI/2 BPSK  | 50      | 56        | 10.55                    | 10.71                       | 10.68                     | 11.50                  |
| 40              | PI/2 BPSK  | 100     | 0         | 10.78                    | 10.84                       | 10.70                     | 11.50                  |
| 40              | QPSK       | 1       | 1         | 10.30                    | 10.45                       | 10.32                     | 11.50                  |
| 40              | QPSK       | 1       | 53        | 10.25                    | 10.39                       | 10.31                     | 11.50                  |
| 40              | QPSK       | 1       | 104       | 10.48                    | 10.56                       | 10.44                     | 11.50                  |
| 40              | QPSK       | 50      | 0         | 10.43                    | 10.51                       | 10.43                     | 11.50                  |
| 40              | QPSK       | 50      | 28        | 10.32                    | 10.42                       | 10.30                     | 11.50                  |
| 40              | QPSK       | 50      | 56        | 10.25                    | 10.43                       | 10.33                     | 11.50                  |
| 40              | QPSK       | 100     | 0         | 10.25                    | 10.38                       | 10.34                     | 11.50                  |
| 40              | 16QAM      | 1       | 1         | 10.15                    | 10.32                       | 10.19                     | 11.50                  |
| 40              | 64QAM      | 1       | 1         | 10.20                    | 10.31                       | 10.29                     | 11.50                  |
| 40              | 256QAM     | 1       | 1         | 10.06                    | 10.11                       | 9.96                      | 11.50                  |
| Channel         |            |         |           | 637668                   | 641666                      | 645666                    | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3565.02                  | 3624.99                     | 3684.99                   |                        |
| 30              | PI/2 BPSK  | 1       | 1         | 10.74                    | 10.78                       | 10.78                     | 11.50                  |
| Channel         |            |         |           | 637334                   | 641666                      | 646000                    | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3560.01                  | 3624.99                     | 3690                      |                        |
| 20              | PI/2 BPSK  | 1       | 1         | 10.78                    | 10.75                       | 10.72                     | 11.50                  |
| Channel         |            |         |           | 637168                   | 641666                      | 646166                    | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3557.52                  | 3624.99                     | 3692.49                   |                        |
| 15              | PI/2 BPSK  | 1       | 1         | 10.81                    | 10.75                       | 10.78                     | 11.50                  |
| Channel         |            |         |           | 637000                   | 641666                      | 646332                    | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3555                     | 3624.99                     | 3694.98                   |                        |
| 10              | PI/2 BPSK  | 1       | 1         | 10.72                    | 10.82                       | 10.71                     | 11.50                  |

**【FR1 n48\_MIMO2】**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           | 638000                   | 641666                      | 645332                    |                        |
| Frequency (MHz) |            |         |           | 3570                     | 3624.99                     | 3679.98                   |                        |
| 40              | PI/2 BPSK  | 1       | 1         | 11.53                    | 11.54                       | 11.52                     | 12.20                  |
| 40              | PI/2 BPSK  | 1       | 53        | 11.44                    | 11.48                       | 11.32                     | 12.20                  |
| 40              | PI/2 BPSK  | 1       | 104       | 11.32                    | 11.47                       | 11.33                     | 12.20                  |
| 40              | PI/2 BPSK  | 50      | 0         | 11.44                    | 11.49                       | 11.39                     | 12.20                  |
| 40              | PI/2 BPSK  | 50      | 28        | 11.35                    | 11.45                       | 11.34                     | 12.20                  |
| 40              | PI/2 BPSK  | 50      | 56        | 11.24                    | 11.37                       | 11.29                     | 12.20                  |
| 40              | PI/2 BPSK  | 100     | 0         | 11.34                    | 11.42                       | 11.32                     | 12.20                  |
| 40              | QPSK       | 1       | 1         | 11.41                    | 11.48                       | 11.38                     | 12.20                  |
| 40              | QPSK       | 1       | 53        | 11.35                    | 11.42                       | 11.28                     | 12.20                  |
| 40              | QPSK       | 1       | 104       | 11.33                    | 11.46                       | 11.31                     | 12.20                  |
| 40              | QPSK       | 50      | 0         | 11.30                    | 11.37                       | 11.30                     | 12.20                  |
| 40              | QPSK       | 50      | 28        | 11.28                    | 11.30                       | 11.26                     | 12.20                  |
| 40              | QPSK       | 50      | 56        | 11.19                    | 11.28                       | 11.21                     | 12.20                  |
| 40              | QPSK       | 100     | 0         | 11.17                    | 11.31                       | 11.19                     | 12.20                  |
| 40              | 16QAM      | 1       | 1         | 11.31                    | 11.34                       | 11.29                     | 12.20                  |
| 40              | 64QAM      | 1       | 1         | 11.34                    | 11.47                       | 11.43                     | 12.20                  |
| 40              | 256QAM     | 1       | 1         | 10.92                    | 10.98                       | 10.82                     | 12.20                  |
| Channel         |            |         |           | 637668                   | 641666                      | 645666                    | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3565.02                  | 3624.99                     | 3684.99                   |                        |
| 30              | PI/2 BPSK  | 1       | 1         | 11.38                    | 11.43                       | 11.41                     | 12.20                  |
| Channel         |            |         |           | 637334                   | 641666                      | 646000                    | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3560.01                  | 3624.99                     | 3690                      |                        |
| 20              | PI/2 BPSK  | 1       | 1         | 11.51                    | 11.46                       | 11.40                     | 12.20                  |
| Channel         |            |         |           | 637168                   | 641666                      | 646166                    | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3557.52                  | 3624.99                     | 3692.49                   |                        |
| 15              | PI/2 BPSK  | 1       | 1         | 11.49                    | 11.47                       | 11.46                     | 12.20                  |
| Channel         |            |         |           | 637000                   | 641666                      | 646332                    | Tune-up limit<br>(dBm) |
| Frequency (MHz) |            |         |           | 3555                     | 3624.99                     | 3694.98                   |                        |
| 10              | PI/2 BPSK  | 1       | 1         | 11.40                    | 11.44                       | 11.41                     | 12.20                  |

**【FR1 n77 (27Q)\_MIMO1】**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           |                          | 633332                      |                           |                        |
| Frequency (MHz) |            |         |           |                          | 3499.98                     |                           |                        |
| 100             | PI/2 BPSK  | 1       | 1         |                          | 11.26                       |                           | 11.70                  |
| 100             | PI/2 BPSK  | 1       | 137       |                          | 11.06                       |                           | 11.70                  |
| 100             | PI/2 BPSK  | 1       | 271       |                          | 11.02                       |                           | 11.70                  |
| 100             | PI/2 BPSK  | 135     | 0         |                          | 11.26                       |                           | 11.70                  |
| 100             | PI/2 BPSK  | 135     | 69        |                          | 11.10                       |                           | 11.70                  |
| 100             | PI/2 BPSK  | 135     | 138       |                          | 10.97                       |                           | 11.70                  |
| 100             | PI/2 BPSK  | 270     | 0         |                          | 11.07                       |                           | 11.70                  |
| 100             | QPSK       | 1       | 1         |                          | 11.25                       |                           | 11.70                  |
| 100             | QPSK       | 1       | 137       |                          | 11.11                       |                           | 11.70                  |
| 100             | QPSK       | 1       | 271       |                          | 11.03                       |                           | 11.70                  |
| 100             | QPSK       | 135     | 0         |                          | 11.21                       |                           | 11.70                  |
| 100             | QPSK       | 135     | 69        |                          | 11.09                       |                           | 11.70                  |
| 100             | QPSK       | 135     | 138       |                          | 10.98                       |                           | 11.70                  |
| 100             | QPSK       | 270     | 0         |                          | 11.10                       |                           | 11.70                  |
| 100             | 16QAM      | 1       | 1         |                          | 11.19                       |                           | 11.70                  |
| 100             | 64QAM      | 1       | 1         |                          | 11.24                       |                           | 11.70                  |
| 100             | 256QAM     | 1       | 1         |                          | 10.58                       |                           | 11.70                  |
| Channel         |            |         |           | 633000                   | 633332                      | 633666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3495                     | 3499.98                     | 3504.99                   | (dBm)                  |
| 90              | PI/2 BPSK  | 1       | 1         | 11.21                    | 11.23                       | 11.22                     | 11.70                  |
| Channel         |            |         |           | 632668                   | 633332                      | 634000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3490.02                  | 3499.98                     | 3510                      | (dBm)                  |
| 80              | PI/2 BPSK  | 1       | 1         | 11.17                    | 11.10                       | 11.19                     | 11.70                  |
| Channel         |            |         |           | 632334                   | 633332                      | 634332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3485.01                  | 3499.98                     | 3514.98                   | (dBm)                  |
| 70              | PI/2 BPSK  | 1       | 1         | 11.13                    | 11.08                       | 11.16                     | 11.70                  |
| Channel         |            |         |           | 632000                   | 633332                      | 634666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3480                     | 3499.98                     | 3519.99                   | (dBm)                  |
| 60              | PI/2 BPSK  | 1       | 1         | 11.10                    | 11.09                       | 11.10                     | 11.70                  |
| Channel         |            |         |           | 631668                   | 633332                      | 635000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3475.02                  | 3499.98                     | 3525                      | (dBm)                  |
| 50              | PI/2 BPSK  | 1       | 1         | 11.19                    | 11.09                       | 11.08                     | 11.70                  |
| Channel         |            |         |           | 631334                   | 633332                      | 635332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3470.01                  | 3499.98                     | 3529.98                   | (dBm)                  |
| 40              | PI/2 BPSK  | 1       | 1         | 11.10                    | 11.20                       | 11.18                     | 11.70                  |
| Channel         |            |         |           | 631000                   | 633332                      | 635666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3465                     | 3499.98                     | 3534.99                   | (dBm)                  |
| 30              | PI/2 BPSK  | 1       | 1         | 11.10                    | 11.13                       | 11.11                     | 11.70                  |
| Channel         |            |         |           | 630668                   | 633332                      | 636000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3460.02                  | 3499.98                     | 3540                      | (dBm)                  |
| 20              | PI/2 BPSK  | 1       | 1         | 11.06                    | 11.15                       | 11.16                     | 11.70                  |
| Channel         |            |         |           | 630500                   | 633332                      | 636166                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3457.5                   | 3499.98                     | 3542.49                   | (dBm)                  |
| 15              | PI/2 BPSK  | 1       | 1         | 11.12                    | 11.08                       | 11.10                     | 11.70                  |
| Channel         |            |         |           | 630334                   | 633332                      | 636332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3455.01                  | 3499.98                     | 3544.98                   | (dBm)                  |
| 10              | PI/2 BPSK  | 1       | 1         | 11.10                    | 11.18                       | 11.14                     | 11.70                  |

**【FR1 n77 (270)\_MIMO1】**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|
| Channel         |            |         |           |                       | 656000                   |                        |                     |
| Frequency (MHz) |            |         |           |                       | 3840                     |                        |                     |
| 100             | PI/2 BPSK  | 1       | 1         |                       | 11.70                    |                        | 11.70               |
| 100             | PI/2 BPSK  | 1       | 137       |                       | 11.48                    |                        | 11.70               |
| 100             | PI/2 BPSK  | 1       | 271       |                       | 11.49                    |                        | 11.70               |
| 100             | PI/2 BPSK  | 135     | 0         |                       | 11.44                    |                        | 11.70               |
| 100             | PI/2 BPSK  | 135     | 69        |                       | 11.46                    |                        | 11.70               |
| 100             | PI/2 BPSK  | 135     | 138       |                       | 11.43                    |                        | 11.70               |
| 100             | PI/2 BPSK  | 270     | 0         |                       | 11.48                    |                        | 11.70               |
| 100             | QPSK       | 1       | 1         |                       | 11.48                    |                        | 11.70               |
| 100             | QPSK       | 1       | 137       |                       | 11.46                    |                        | 11.70               |
| 100             | QPSK       | 1       | 271       |                       | 11.49                    |                        | 11.70               |
| 100             | QPSK       | 135     | 0         |                       | 11.44                    |                        | 11.70               |
| 100             | QPSK       | 135     | 69        |                       | 11.45                    |                        | 11.70               |
| 100             | QPSK       | 135     | 138       |                       | 11.42                    |                        | 11.70               |
| 100             | QPSK       | 270     | 0         |                       | 11.42                    |                        | 11.70               |
| 100             | 16QAM      | 1       | 1         |                       | 11.60                    |                        | 11.70               |
| 100             | 64QAM      | 1       | 1         |                       | 11.68                    |                        | 11.70               |
| 100             | 256QAM     | 1       | 1         |                       | 10.91                    |                        | 11.70               |
| Channel         |            |         |           | 649668                | 656000                   | 662332                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3745.02               | 3840                     | 3934.98                |                     |
| 90              | PI/2 BPSK  | 1       | 1         | 11.22                 | 11.41                    | 11.33                  | 11.70               |
| Channel         |            |         |           | 649334                | 656000                   | 662666                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3740.01               | 3840                     | 3939.99                |                     |
| 80              | PI/2 BPSK  | 1       | 1         | 11.22                 | 11.44                    | 11.43                  | 11.70               |
| Channel         |            |         |           | 649000                | 656000                   | 663000                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3735                  | 3840                     | 3945                   |                     |
| 70              | PI/2 BPSK  | 1       | 1         | 11.25                 | 11.41                    | 11.40                  | 11.70               |
| Channel         |            |         |           | 648668                | 656000                   | 663332                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3730.02               | 3840                     | 3949.98                |                     |
| 60              | PI/2 BPSK  | 1       | 1         | 11.20                 | 11.50                    | 11.36                  | 11.70               |
| Channel         |            |         |           | 648334                | 656000                   | 663666                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3725.01               | 3840                     | 3954.99                |                     |
| 50              | PI/2 BPSK  | 1       | 1         | 11.17                 | 11.38                    | 11.41                  | 11.70               |
| Channel         |            |         |           | 648000                | 656000                   | 664000                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3720                  | 3840                     | 3960                   |                     |
| 40              | PI/2 BPSK  | 1       | 1         | 11.15                 | 11.40                    | 11.42                  | 11.70               |
| Channel         |            |         |           | 647668                | 656000                   | 664332                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3715.02               | 3840                     | 3964.98                |                     |
| 30              | PI/2 BPSK  | 1       | 1         | 11.20                 | 11.47                    | 11.36                  | 11.70               |
| Channel         |            |         |           | 647334                | 656000                   | 664666                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3710.01               | 3840                     | 3969.99                |                     |
| 20              | PI/2 BPSK  | 1       | 1         | 11.22                 | 11.50                    | 11.38                  | 11.70               |
| Channel         |            |         |           | 647168                | 656000                   | 664832                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3707.52               | 3840                     | 3972.48                |                     |
| 15              | PI/2 BPSK  | 1       | 1         | 11.21                 | 11.45                    | 11.44                  | 11.70               |
| Channel         |            |         |           | 647000                | 656000                   | 665000                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3705                  | 3840                     | 3975                   |                     |
| 10              | PI/2 BPSK  | 1       | 1         | 11.20                 | 11.37                    | 11.40                  | 11.70               |

**【FR1 n77 (27Q)\_HPUE\_MIMO1】**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           |                          | 633332                      |                           |                        |
| Frequency (MHz) |            |         |           |                          | 3499.98                     |                           |                        |
| 100             | PI/2 BPSK  | 1       | 1         |                          | 14.15                       |                           | 14.70                  |
| 100             | PI/2 BPSK  | 1       | 137       |                          | 13.95                       |                           | 14.70                  |
| 100             | PI/2 BPSK  | 1       | 271       |                          | 13.91                       |                           | 14.70                  |
| 100             | PI/2 BPSK  | 135     | 0         |                          | 14.15                       |                           | 14.70                  |
| 100             | PI/2 BPSK  | 135     | 69        |                          | 13.99                       |                           | 14.70                  |
| 100             | PI/2 BPSK  | 135     | 138       |                          | 13.86                       |                           | 14.70                  |
| 100             | PI/2 BPSK  | 270     | 0         |                          | 13.96                       |                           | 14.70                  |
| 100             | QPSK       | 1       | 1         |                          | 14.14                       |                           | 14.70                  |
| 100             | QPSK       | 1       | 137       |                          | 14.00                       |                           | 14.70                  |
| 100             | QPSK       | 1       | 271       |                          | 13.92                       |                           | 14.70                  |
| 100             | QPSK       | 135     | 0         |                          | 14.10                       |                           | 14.70                  |
| 100             | QPSK       | 135     | 69        |                          | 13.98                       |                           | 14.70                  |
| 100             | QPSK       | 135     | 138       |                          | 13.87                       |                           | 14.70                  |
| 100             | QPSK       | 270     | 0         |                          | 13.99                       |                           | 14.70                  |
| 100             | 16QAM      | 1       | 1         |                          | 14.08                       |                           | 14.70                  |
| 100             | 64QAM      | 1       | 1         |                          | 14.13                       |                           | 14.70                  |
| 100             | 256QAM     | 1       | 1         |                          | 13.47                       |                           | 14.70                  |
| Channel         |            |         |           | 633000                   | 633332                      | 633666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3495                     | 3499.98                     | 3504.99                   | (dBm)                  |
| 90              | PI/2 BPSK  | 1       | 1         | 14.10                    | 14.12                       | 14.11                     | 14.70                  |
| Channel         |            |         |           | 632668                   | 633332                      | 634000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3490.02                  | 3499.98                     | 3510                      | (dBm)                  |
| 80              | PI/2 BPSK  | 1       | 1         | 14.00                    | 14.09                       | 13.96                     | 14.70                  |
| Channel         |            |         |           | 632334                   | 633332                      | 634332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3485.01                  | 3499.98                     | 3514.98                   | (dBm)                  |
| 70              | PI/2 BPSK  | 1       | 1         | 14.04                    | 14.08                       | 14.05                     | 14.70                  |
| Channel         |            |         |           | 632000                   | 633332                      | 634666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3480                     | 3499.98                     | 3519.99                   | (dBm)                  |
| 60              | PI/2 BPSK  | 1       | 1         | 14.00                    | 13.99                       | 14.05                     | 14.70                  |
| Channel         |            |         |           | 631668                   | 633332                      | 635000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3475.02                  | 3499.98                     | 3525                      | (dBm)                  |
| 50              | PI/2 BPSK  | 1       | 1         | 14.01                    | 13.99                       | 14.03                     | 14.70                  |
| Channel         |            |         |           | 631334                   | 633332                      | 635332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3470.01                  | 3499.98                     | 3529.98                   | (dBm)                  |
| 40              | PI/2 BPSK  | 1       | 1         | 14.02                    | 14.09                       | 14.00                     | 14.70                  |
| Channel         |            |         |           | 631000                   | 633332                      | 635666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3465                     | 3499.98                     | 3534.99                   | (dBm)                  |
| 30              | PI/2 BPSK  | 1       | 1         | 14.02                    | 14.10                       | 14.09                     | 14.70                  |
| Channel         |            |         |           | 630668                   | 633332                      | 636000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3460.02                  | 3499.98                     | 3540                      | (dBm)                  |
| 20              | PI/2 BPSK  | 1       | 1         | 13.99                    | 14.02                       | 14.02                     | 14.70                  |
| Channel         |            |         |           | 630500                   | 633332                      | 636166                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3457.5                   | 3499.98                     | 3542.49                   | (dBm)                  |
| 15              | PI/2 BPSK  | 1       | 1         | 13.96                    | 14.05                       | 13.97                     | 14.70                  |
| Channel         |            |         |           | 630334                   | 633332                      | 636332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3455.01                  | 3499.98                     | 3544.98                   | (dBm)                  |
| 10              | PI/2 BPSK  | 1       | 1         | 14.05                    | 14.00                       | 14.09                     | 14.70                  |

**【FR1 n77 (270)\_HPUE\_MIMO1】**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           |                          | 656000                      |                           |                        |
| Frequency (MHz) |            |         |           |                          | 3840                        |                           |                        |
| 100             | PI/2 BPSK  | 1       | 1         |                          | 14.60                       |                           | 14.70                  |
| 100             | PI/2 BPSK  | 1       | 137       |                          | 14.37                       |                           | 14.70                  |
| 100             | PI/2 BPSK  | 1       | 271       |                          | 14.38                       |                           | 14.70                  |
| 100             | PI/2 BPSK  | 135     | 0         |                          | 14.33                       |                           | 14.70                  |
| 100             | PI/2 BPSK  | 135     | 69        |                          | 14.35                       |                           | 14.70                  |
| 100             | PI/2 BPSK  | 135     | 138       |                          | 14.32                       |                           | 14.70                  |
| 100             | PI/2 BPSK  | 270     | 0         |                          | 14.37                       |                           | 14.70                  |
| 100             | QPSK       | 1       | 1         |                          | 14.37                       |                           | 14.70                  |
| 100             | QPSK       | 1       | 137       |                          | 14.35                       |                           | 14.70                  |
| 100             | QPSK       | 1       | 271       |                          | 14.38                       |                           | 14.70                  |
| 100             | QPSK       | 135     | 0         |                          | 14.33                       |                           | 14.70                  |
| 100             | QPSK       | 135     | 69        |                          | 14.34                       |                           | 14.70                  |
| 100             | QPSK       | 135     | 138       |                          | 14.31                       |                           | 14.70                  |
| 100             | QPSK       | 270     | 0         |                          | 14.31                       |                           | 14.70                  |
| 100             | 16QAM      | 1       | 1         |                          | 14.49                       |                           | 14.70                  |
| 100             | 64QAM      | 1       | 1         |                          | 14.57                       |                           | 14.70                  |
| 100             | 256QAM     | 1       | 1         |                          | 13.80                       |                           | 14.70                  |
| Channel         |            |         |           | 649668                   | 656000                      | 662332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3745.02                  | 3840                        | 3934.98                   | (dBm)                  |
| 90              | PI/2 BPSK  | 1       | 1         | 14.04                    | 14.35                       | 14.33                     | 14.70                  |
| Channel         |            |         |           | 649334                   | 656000                      | 662666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3740.01                  | 3840                        | 3939.99                   | (dBm)                  |
| 80              | PI/2 BPSK  | 1       | 1         | 14.09                    | 14.25                       | 14.31                     | 14.70                  |
| Channel         |            |         |           | 649000                   | 656000                      | 663000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3735                     | 3840                        | 3945                      | (dBm)                  |
| 70              | PI/2 BPSK  | 1       | 1         | 14.13                    | 14.35                       | 14.21                     | 14.70                  |
| Channel         |            |         |           | 648668                   | 656000                      | 663332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3730.02                  | 3840                        | 3949.98                   | (dBm)                  |
| 60              | PI/2 BPSK  | 1       | 1         | 14.04                    | 14.31                       | 14.25                     | 14.70                  |
| Channel         |            |         |           | 648334                   | 656000                      | 663666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3725.01                  | 3840                        | 3954.99                   | (dBm)                  |
| 50              | PI/2 BPSK  | 1       | 1         | 14.16                    | 14.39                       | 14.24                     | 14.70                  |
| Channel         |            |         |           | 648000                   | 656000                      | 664000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3720                     | 3840                        | 3960                      | (dBm)                  |
| 40              | PI/2 BPSK  | 1       | 1         | 14.14                    | 14.34                       | 14.25                     | 14.70                  |
| Channel         |            |         |           | 647668                   | 656000                      | 664332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3715.02                  | 3840                        | 3964.98                   | (dBm)                  |
| 30              | PI/2 BPSK  | 1       | 1         | 14.16                    | 14.39                       | 14.23                     | 14.70                  |
| Channel         |            |         |           | 647334                   | 656000                      | 664666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3710.01                  | 3840                        | 3969.99                   | (dBm)                  |
| 20              | PI/2 BPSK  | 1       | 1         | 14.04                    | 14.31                       | 14.24                     | 14.70                  |
| Channel         |            |         |           | 647168                   | 656000                      | 664832                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3707.52                  | 3840                        | 3972.48                   | (dBm)                  |
| 15              | PI/2 BPSK  | 1       | 1         | 14.10                    | 14.28                       | 14.30                     | 14.70                  |
| Channel         |            |         |           | 647000                   | 656000                      | 665000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3705                     | 3840                        | 3975                      | (dBm)                  |
| 10              | PI/2 BPSK  | 1       | 1         | 14.07                    | 14.28                       | 14.28                     | 14.70                  |

**【FR1 n77 (27Q)\_MIMO2】**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           |                          | 633332                      |                           |                        |
| Frequency (MHz) |            |         |           |                          | 3499.98                     |                           |                        |
| 100             | PI/2 BPSK  | 1       | 1         |                          | 11.15                       |                           | 12.00                  |
| 100             | PI/2 BPSK  | 1       | 137       |                          | 10.85                       |                           | 12.00                  |
| 100             | PI/2 BPSK  | 1       | 271       |                          | 10.99                       |                           | 12.00                  |
| 100             | PI/2 BPSK  | 135     | 0         |                          | 11.00                       |                           | 12.00                  |
| 100             | PI/2 BPSK  | 135     | 69        |                          | 10.86                       |                           | 12.00                  |
| 100             | PI/2 BPSK  | 135     | 138       |                          | 10.85                       |                           | 12.00                  |
| 100             | PI/2 BPSK  | 270     | 0         |                          | 10.85                       |                           | 12.00                  |
| 100             | QPSK       | 1       | 1         |                          | 11.00                       |                           | 12.00                  |
| 100             | QPSK       | 1       | 137       |                          | 10.80                       |                           | 12.00                  |
| 100             | QPSK       | 1       | 271       |                          | 10.90                       |                           | 12.00                  |
| 100             | QPSK       | 135     | 0         |                          | 10.98                       |                           | 12.00                  |
| 100             | QPSK       | 135     | 69        |                          | 10.86                       |                           | 12.00                  |
| 100             | QPSK       | 135     | 138       |                          | 10.81                       |                           | 12.00                  |
| 100             | QPSK       | 270     | 0         |                          | 10.84                       |                           | 12.00                  |
| 100             | 16QAM      | 1       | 1         |                          | 10.98                       |                           | 12.00                  |
| 100             | 64QAM      | 1       | 1         |                          | 11.01                       |                           | 12.00                  |
| 100             | 256QAM     | 1       | 1         |                          | 11.00                       |                           | 12.00                  |
| Channel         |            |         |           | 633000                   | 633332                      | 633666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3495                     | 3499.98                     | 3504.99                   | (dBm)                  |
| 90              | PI/2 BPSK  | 1       | 1         | 11.03                    | 11.05                       | 11.02                     | 12.00                  |
| Channel         |            |         |           | 632668                   | 633332                      | 634000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3490.02                  | 3499.98                     | 3510                      | (dBm)                  |
| 80              | PI/2 BPSK  | 1       | 1         | 10.95                    | 10.92                       | 10.88                     | 12.00                  |
| Channel         |            |         |           | 632334                   | 633332                      | 634332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3485.01                  | 3499.98                     | 3514.98                   | (dBm)                  |
| 70              | PI/2 BPSK  | 1       | 1         | 10.90                    | 10.95                       | 10.89                     | 12.00                  |
| Channel         |            |         |           | 632000                   | 633332                      | 634666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3480                     | 3499.98                     | 3519.99                   | (dBm)                  |
| 60              | PI/2 BPSK  | 1       | 1         | 10.93                    | 10.96                       | 10.91                     | 12.00                  |
| Channel         |            |         |           | 631668                   | 633332                      | 635000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3475.02                  | 3499.98                     | 3525                      | (dBm)                  |
| 50              | PI/2 BPSK  | 1       | 1         | 10.94                    | 10.99                       | 10.88                     | 12.00                  |
| Channel         |            |         |           | 631334                   | 633332                      | 635332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3470.01                  | 3499.98                     | 3529.98                   | (dBm)                  |
| 40              | PI/2 BPSK  | 1       | 1         | 10.95                    | 10.94                       | 10.99                     | 12.00                  |
| Channel         |            |         |           | 631000                   | 633332                      | 635666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3465                     | 3499.98                     | 3534.99                   | (dBm)                  |
| 30              | PI/2 BPSK  | 1       | 1         | 11.00                    | 10.91                       | 10.95                     | 12.00                  |
| Channel         |            |         |           | 630668                   | 633332                      | 636000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3460.02                  | 3499.98                     | 3540                      | (dBm)                  |
| 20              | PI/2 BPSK  | 1       | 1         | 10.92                    | 10.96                       | 10.99                     | 12.00                  |
| Channel         |            |         |           | 630500                   | 633332                      | 636166                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3457.5                   | 3499.98                     | 3542.49                   | (dBm)                  |
| 15              | PI/2 BPSK  | 1       | 1         | 10.99                    | 10.97                       | 10.89                     | 12.00                  |
| Channel         |            |         |           | 630334                   | 633332                      | 636332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3455.01                  | 3499.98                     | 3544.98                   | (dBm)                  |
| 10              | PI/2 BPSK  | 1       | 1         | 10.98                    | 11.01                       | 10.95                     | 12.00                  |

**【FR1 n77 (270)\_MIMO2】**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           |                          | 656000                      |                           |                        |
| Frequency (MHz) |            |         |           |                          | 3840                        |                           |                        |
| 100             | PI/2 BPSK  | 1       | 1         |                          | 10.95                       |                           | 12.00                  |
| 100             | PI/2 BPSK  | 1       | 137       |                          | 10.82                       |                           | 12.00                  |
| 100             | PI/2 BPSK  | 1       | 271       |                          | 10.90                       |                           | 12.00                  |
| 100             | PI/2 BPSK  | 135     | 0         |                          | 10.74                       |                           | 12.00                  |
| 100             | PI/2 BPSK  | 135     | 69        |                          | 10.70                       |                           | 12.00                  |
| 100             | PI/2 BPSK  | 135     | 138       |                          | 10.73                       |                           | 12.00                  |
| 100             | PI/2 BPSK  | 270     | 0         |                          | 10.76                       |                           | 12.00                  |
| 100             | QPSK       | 1       | 1         |                          | 10.82                       |                           | 12.00                  |
| 100             | QPSK       | 1       | 137       |                          | 10.78                       |                           | 12.00                  |
| 100             | QPSK       | 1       | 271       |                          | 10.93                       |                           | 12.00                  |
| 100             | QPSK       | 135     | 0         |                          | 10.76                       |                           | 12.00                  |
| 100             | QPSK       | 135     | 69        |                          | 10.78                       |                           | 12.00                  |
| 100             | QPSK       | 135     | 138       |                          | 10.74                       |                           | 12.00                  |
| 100             | QPSK       | 270     | 0         |                          | 10.73                       |                           | 12.00                  |
| 100             | 16QAM      | 1       | 1         |                          | 10.68                       |                           | 12.00                  |
| 100             | 64QAM      | 1       | 1         |                          | 10.95                       |                           | 12.00                  |
| 100             | 256QAM     | 1       | 1         |                          | 10.35                       |                           | 12.00                  |
| Channel         |            |         |           | 649668                   | 656000                      | 662332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3745.02                  | 3840                        | 3934.98                   | (dBm)                  |
| 90              | PI/2 BPSK  | 1       | 1         | 10.93                    | 10.94                       | 10.92                     | 12.00                  |
| Channel         |            |         |           | 649334                   | 656000                      | 662666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3740.01                  | 3840                        | 3939.99                   | (dBm)                  |
| 80              | PI/2 BPSK  | 1       | 1         | 10.80                    | 10.94                       | 10.64                     | 12.00                  |
| Channel         |            |         |           | 649000                   | 656000                      | 663000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3735                     | 3840                        | 3945                      | (dBm)                  |
| 70              | PI/2 BPSK  | 1       | 1         | 10.91                    | 10.85                       | 10.55                     | 12.00                  |
| Channel         |            |         |           | 648668                   | 656000                      | 663332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3730.02                  | 3840                        | 3949.98                   | (dBm)                  |
| 60              | PI/2 BPSK  | 1       | 1         | 10.87                    | 10.81                       | 10.62                     | 12.00                  |
| Channel         |            |         |           | 648334                   | 656000                      | 663666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3725.01                  | 3840                        | 3954.99                   | (dBm)                  |
| 50              | PI/2 BPSK  | 1       | 1         | 10.90                    | 10.83                       | 10.54                     | 12.00                  |
| Channel         |            |         |           | 648000                   | 656000                      | 664000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3720                     | 3840                        | 3960                      | (dBm)                  |
| 40              | PI/2 BPSK  | 1       | 1         | 10.91                    | 10.90                       | 10.54                     | 12.00                  |
| Channel         |            |         |           | 647668                   | 656000                      | 664332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3715.02                  | 3840                        | 3964.98                   | (dBm)                  |
| 30              | PI/2 BPSK  | 1       | 1         | 10.84                    | 10.91                       | 10.53                     | 12.00                  |
| Channel         |            |         |           | 647334                   | 656000                      | 664666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3710.01                  | 3840                        | 3969.99                   | (dBm)                  |
| 20              | PI/2 BPSK  | 1       | 1         | 10.79                    | 10.83                       | 10.64                     | 12.00                  |
| Channel         |            |         |           | 647168                   | 656000                      | 664832                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3707.52                  | 3840                        | 3972.48                   | (dBm)                  |
| 15              | PI/2 BPSK  | 1       | 1         | 10.88                    | 10.81                       | 10.53                     | 12.00                  |
| Channel         |            |         |           | 647000                   | 656000                      | 665000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3705                     | 3840                        | 3975                      | (dBm)                  |
| 10              | PI/2 BPSK  | 1       | 1         | 10.88                    | 10.82                       | 10.63                     | 12.00                  |

**【FR1 n77 (27Q)\_HPUE\_MIMO2】**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           |                          | 633332                      |                           |                        |
| Frequency (MHz) |            |         |           |                          | 3499.98                     |                           |                        |
| 100             | PI/2 BPSK  | 1       | 1         |                          | 14.11                       |                           | 15.00                  |
| 100             | PI/2 BPSK  | 1       | 137       |                          | 13.95                       |                           | 15.00                  |
| 100             | PI/2 BPSK  | 1       | 271       |                          | 14.13                       |                           | 15.00                  |
| 100             | PI/2 BPSK  | 135     | 0         |                          | 14.14                       |                           | 15.00                  |
| 100             | PI/2 BPSK  | 135     | 69        |                          | 13.97                       |                           | 15.00                  |
| 100             | PI/2 BPSK  | 135     | 138       |                          | 13.95                       |                           | 15.00                  |
| 100             | PI/2 BPSK  | 270     | 0         |                          | 13.95                       |                           | 15.00                  |
| 100             | QPSK       | 1       | 1         |                          | 14.14                       |                           | 15.00                  |
| 100             | QPSK       | 1       | 137       |                          | 13.89                       |                           | 15.00                  |
| 100             | QPSK       | 1       | 271       |                          | 14.02                       |                           | 15.00                  |
| 100             | QPSK       | 135     | 0         |                          | 14.11                       |                           | 15.00                  |
| 100             | QPSK       | 135     | 69        |                          | 13.97                       |                           | 15.00                  |
| 100             | QPSK       | 135     | 138       |                          | 13.90                       |                           | 15.00                  |
| 100             | QPSK       | 270     | 0         |                          | 13.94                       |                           | 15.00                  |
| 100             | 16QAM      | 1       | 1         |                          | 13.95                       |                           | 15.00                  |
| 100             | 64QAM      | 1       | 1         |                          | 14.13                       |                           | 15.00                  |
| 100             | 256QAM     | 1       | 1         |                          | 14.14                       |                           | 15.00                  |
| Channel         |            |         |           | 633000                   | 633332                      | 633666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3495                     | 3499.98                     | 3504.99                   | (dBm)                  |
| 90              | PI/2 BPSK  | 1       | 1         | 14.10                    | 14.11                       | 14.08                     | 15.00                  |
| Channel         |            |         |           | 632668                   | 633332                      | 634000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3490.02                  | 3499.98                     | 3510                      | (dBm)                  |
| 80              | PI/2 BPSK  | 1       | 1         | 14.01                    | 13.97                       | 13.96                     | 15.00                  |
| Channel         |            |         |           | 632334                   | 633332                      | 634332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3485.01                  | 3499.98                     | 3514.98                   | (dBm)                  |
| 70              | PI/2 BPSK  | 1       | 1         | 14.08                    | 14.07                       | 13.93                     | 15.00                  |
| Channel         |            |         |           | 632000                   | 633332                      | 634666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3480                     | 3499.98                     | 3519.99                   | (dBm)                  |
| 60              | PI/2 BPSK  | 1       | 1         | 14.01                    | 14.05                       | 14.00                     | 15.00                  |
| Channel         |            |         |           | 631668                   | 633332                      | 635000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3475.02                  | 3499.98                     | 3525                      | (dBm)                  |
| 50              | PI/2 BPSK  | 1       | 1         | 14.00                    | 14.00                       | 14.03                     | 15.00                  |
| Channel         |            |         |           | 631334                   | 633332                      | 635332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3470.01                  | 3499.98                     | 3529.98                   | (dBm)                  |
| 40              | PI/2 BPSK  | 1       | 1         | 14.08                    | 13.97                       | 14.02                     | 15.00                  |
| Channel         |            |         |           | 631000                   | 633332                      | 635666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3465                     | 3499.98                     | 3534.99                   | (dBm)                  |
| 30              | PI/2 BPSK  | 1       | 1         | 14.05                    | 14.05                       | 13.97                     | 15.00                  |
| Channel         |            |         |           | 630668                   | 633332                      | 636000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3460.02                  | 3499.98                     | 3540                      | (dBm)                  |
| 20              | PI/2 BPSK  | 1       | 1         | 13.99                    | 14.09                       | 13.93                     | 15.00                  |
| Channel         |            |         |           | 630500                   | 633332                      | 636166                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3457.5                   | 3499.98                     | 3542.49                   | (dBm)                  |
| 15              | PI/2 BPSK  | 1       | 1         | 14.01                    | 13.99                       | 13.98                     | 15.00                  |
| Channel         |            |         |           | 630334                   | 633332                      | 636332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3455.01                  | 3499.98                     | 3544.98                   | (dBm)                  |
| 10              | PI/2 BPSK  | 1       | 1         | 14.05                    | 14.08                       | 13.95                     | 15.00                  |

**【FR1 n77 (270)\_HPUE\_MIMO2】**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           |                          | 656000                      |                           |                        |
| Frequency (MHz) |            |         |           |                          | 3840                        |                           |                        |
| 100             | PI/2 BPSK  | 1       | 1         |                          | 14.32                       |                           | 15.00                  |
| 100             | PI/2 BPSK  | 1       | 137       |                          | 14.16                       |                           | 15.00                  |
| 100             | PI/2 BPSK  | 1       | 271       |                          | 14.25                       |                           | 15.00                  |
| 100             | PI/2 BPSK  | 135     | 0         |                          | 14.06                       |                           | 15.00                  |
| 100             | PI/2 BPSK  | 135     | 69        |                          | 14.01                       |                           | 15.00                  |
| 100             | PI/2 BPSK  | 135     | 138       |                          | 14.04                       |                           | 15.00                  |
| 100             | PI/2 BPSK  | 270     | 0         |                          | 14.08                       |                           | 15.00                  |
| 100             | QPSK       | 1       | 1         |                          | 14.16                       |                           | 15.00                  |
| 100             | QPSK       | 1       | 137       |                          | 14.11                       |                           | 15.00                  |
| 100             | QPSK       | 1       | 271       |                          | 14.29                       |                           | 15.00                  |
| 100             | QPSK       | 135     | 0         |                          | 14.08                       |                           | 15.00                  |
| 100             | QPSK       | 135     | 69        |                          | 14.11                       |                           | 15.00                  |
| 100             | QPSK       | 135     | 138       |                          | 14.06                       |                           | 15.00                  |
| 100             | QPSK       | 270     | 0         |                          | 14.04                       |                           | 15.00                  |
| 100             | 16QAM      | 1       | 1         |                          | 13.98                       |                           | 15.00                  |
| 100             | 64QAM      | 1       | 1         |                          | 14.32                       |                           | 15.00                  |
| 100             | 256QAM     | 1       | 1         |                          | 13.57                       |                           | 15.00                  |
| Channel         |            |         |           | 649668                   | 656000                      | 662332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3745.02                  | 3840                        | 3934.98                   | (dBm)                  |
| 90              | PI/2 BPSK  | 1       | 1         | 14.17                    | 14.19                       | 14.12                     | 15.00                  |
| Channel         |            |         |           | 649334                   | 656000                      | 662666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3740.01                  | 3840                        | 3939.99                   | (dBm)                  |
| 80              | PI/2 BPSK  | 1       | 1         | 14.14                    | 14.19                       | 14.14                     | 15.00                  |
| Channel         |            |         |           | 649000                   | 656000                      | 663000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3735                     | 3840                        | 3945                      | (dBm)                  |
| 70              | PI/2 BPSK  | 1       | 1         | 14.16                    | 14.30                       | 14.18                     | 15.00                  |
| Channel         |            |         |           | 648668                   | 656000                      | 663332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3730.02                  | 3840                        | 3949.98                   | (dBm)                  |
| 60              | PI/2 BPSK  | 1       | 1         | 14.12                    | 14.28                       | 14.09                     | 15.00                  |
| Channel         |            |         |           | 648334                   | 656000                      | 663666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3725.01                  | 3840                        | 3954.99                   | (dBm)                  |
| 50              | PI/2 BPSK  | 1       | 1         | 14.16                    | 14.18                       | 14.15                     | 15.00                  |
| Channel         |            |         |           | 648000                   | 656000                      | 664000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3720                     | 3840                        | 3960                      | (dBm)                  |
| 40              | PI/2 BPSK  | 1       | 1         | 14.20                    | 14.27                       | 14.20                     | 15.00                  |
| Channel         |            |         |           | 647668                   | 656000                      | 664332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3715.02                  | 3840                        | 3964.98                   | (dBm)                  |
| 30              | PI/2 BPSK  | 1       | 1         | 14.09                    | 14.18                       | 14.09                     | 15.00                  |
| Channel         |            |         |           | 647334                   | 656000                      | 664666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3710.01                  | 3840                        | 3969.99                   | (dBm)                  |
| 20              | PI/2 BPSK  | 1       | 1         | 14.20                    | 14.22                       | 14.15                     | 15.00                  |
| Channel         |            |         |           | 647168                   | 656000                      | 664832                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3707.52                  | 3840                        | 3972.48                   | (dBm)                  |
| 15              | PI/2 BPSK  | 1       | 1         | 14.19                    | 14.19                       | 14.08                     | 15.00                  |
| Channel         |            |         |           | 647000                   | 656000                      | 665000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3705                     | 3840                        | 3975                      | (dBm)                  |
| 10              | PI/2 BPSK  | 1       | 1         | 14.10                    | 14.23                       | 14.13                     | 15.00                  |

**【FR1 n78 (27Q)\_MIMO1】**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           |                          | 633332                      |                           |                        |
| Frequency (MHz) |            |         |           |                          | 3499.98                     |                           |                        |
| 100             | PI/2 BPSK  | 1       | 1         |                          | 11.26                       |                           | 11.70                  |
| 100             | PI/2 BPSK  | 1       | 137       |                          | 11.06                       |                           | 11.70                  |
| 100             | PI/2 BPSK  | 1       | 271       |                          | 11.02                       |                           | 11.70                  |
| 100             | PI/2 BPSK  | 135     | 0         |                          | 11.26                       |                           | 11.70                  |
| 100             | PI/2 BPSK  | 135     | 69        |                          | 11.10                       |                           | 11.70                  |
| 100             | PI/2 BPSK  | 135     | 138       |                          | 10.97                       |                           | 11.70                  |
| 100             | PI/2 BPSK  | 270     | 0         |                          | 11.07                       |                           | 11.70                  |
| 100             | QPSK       | 1       | 1         |                          | 11.25                       |                           | 11.70                  |
| 100             | QPSK       | 1       | 137       |                          | 11.11                       |                           | 11.70                  |
| 100             | QPSK       | 1       | 271       |                          | 11.03                       |                           | 11.70                  |
| 100             | QPSK       | 135     | 0         |                          | 11.21                       |                           | 11.70                  |
| 100             | QPSK       | 135     | 69        |                          | 11.09                       |                           | 11.70                  |
| 100             | QPSK       | 135     | 138       |                          | 10.98                       |                           | 11.70                  |
| 100             | QPSK       | 270     | 0         |                          | 11.10                       |                           | 11.70                  |
| 100             | 16QAM      | 1       | 1         |                          | 11.19                       |                           | 11.70                  |
| 100             | 64QAM      | 1       | 1         |                          | 11.24                       |                           | 11.70                  |
| 100             | 256QAM     | 1       | 1         |                          | 10.58                       |                           | 11.70                  |
| Channel         |            |         |           | 633000                   | 633332                      | 633666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3495                     | 3499.98                     | 3504.99                   | (dBm)                  |
| 90              | PI/2 BPSK  | 1       | 1         | 11.21                    | 11.23                       | 11.22                     | 11.70                  |
| Channel         |            |         |           | 632668                   | 633332                      | 634000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3490.02                  | 3499.98                     | 3510                      | (dBm)                  |
| 80              | PI/2 BPSK  | 1       | 1         | 11.17                    | 11.10                       | 11.19                     | 11.70                  |
| Channel         |            |         |           | 632334                   | 633332                      | 634332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3485.01                  | 3499.98                     | 3514.98                   | (dBm)                  |
| 70              | PI/2 BPSK  | 1       | 1         | 11.13                    | 11.08                       | 11.16                     | 11.70                  |
| Channel         |            |         |           | 632000                   | 633332                      | 634666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3480                     | 3499.98                     | 3519.99                   | (dBm)                  |
| 60              | PI/2 BPSK  | 1       | 1         | 11.10                    | 11.09                       | 11.10                     | 11.70                  |
| Channel         |            |         |           | 631668                   | 633332                      | 635000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3475.02                  | 3499.98                     | 3525                      | (dBm)                  |
| 50              | PI/2 BPSK  | 1       | 1         | 11.19                    | 11.09                       | 11.08                     | 11.70                  |
| Channel         |            |         |           | 631334                   | 633332                      | 635332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3470.01                  | 3499.98                     | 3529.98                   | (dBm)                  |
| 40              | PI/2 BPSK  | 1       | 1         | 11.10                    | 11.20                       | 11.18                     | 11.70                  |
| Channel         |            |         |           | 631000                   | 633332                      | 635666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3465                     | 3499.98                     | 3534.99                   | (dBm)                  |
| 30              | PI/2 BPSK  | 1       | 1         | 11.10                    | 11.13                       | 11.11                     | 11.70                  |
| Channel         |            |         |           | 630668                   | 633332                      | 636000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3460.02                  | 3499.98                     | 3540                      | (dBm)                  |
| 20              | PI/2 BPSK  | 1       | 1         | 11.06                    | 11.15                       | 11.16                     | 11.70                  |
| Channel         |            |         |           | 630500                   | 633332                      | 636166                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3457.5                   | 3499.98                     | 3542.49                   | (dBm)                  |
| 15              | PI/2 BPSK  | 1       | 1         | 11.12                    | 11.08                       | 11.10                     | 11.70                  |
| Channel         |            |         |           | 630334                   | 633332                      | 636332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3455.01                  | 3499.98                     | 3544.98                   | (dBm)                  |
| 10              | PI/2 BPSK  | 1       | 1         | 11.10                    | 11.18                       | 11.14                     | 11.70                  |



## 【FR1 n78 (270)\_MIMO1】

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           |                          | 650000                      |                           |                        |
| Frequency (MHz) |            |         |           |                          | 3750                        |                           |                        |
| 100             | PI/2 BPSK  | 1       | 1         |                          | 11.29                       |                           | 11.70                  |
| 100             | PI/2 BPSK  | 1       | 137       |                          | 11.18                       |                           | 11.70                  |
| 100             | PI/2 BPSK  | 1       | 271       |                          | 11.22                       |                           | 11.70                  |
| 100             | PI/2 BPSK  | 135     | 0         |                          | 11.07                       |                           | 11.70                  |
| 100             | PI/2 BPSK  | 135     | 69        |                          | 11.11                       |                           | 11.70                  |
| 100             | PI/2 BPSK  | 135     | 138       |                          | 11.13                       |                           | 11.70                  |
| 100             | PI/2 BPSK  | 270     | 0         |                          | 11.13                       |                           | 11.70                  |
| 100             | QPSK       | 1       | 1         |                          | 11.11                       |                           | 11.70                  |
| 100             | QPSK       | 1       | 137       |                          | 11.14                       |                           | 11.70                  |
| 100             | QPSK       | 1       | 271       |                          | 11.21                       |                           | 11.70                  |
| 100             | QPSK       | 135     | 0         |                          | 11.18                       |                           | 11.70                  |
| 100             | QPSK       | 135     | 69        |                          | 11.15                       |                           | 11.70                  |
| 100             | QPSK       | 135     | 138       |                          | 11.17                       |                           | 11.70                  |
| 100             | QPSK       | 270     | 0         |                          | 11.13                       |                           | 11.70                  |
| 100             | 16QAM      | 1       | 1         |                          | 11.28                       |                           | 11.70                  |
| 100             | 64QAM      | 1       | 1         |                          | 11.29                       |                           | 11.70                  |
| 100             | 256QAM     | 1       | 1         |                          | 10.60                       |                           | 11.70                  |
| Channel         |            |         |           | 649668                   | 650000                      | 650332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3745.02                  | 3750                        | 3754.98                   | (dBm)                  |
| 90              | PI/2 BPSK  | 1       | 1         | 11.20                    | 11.23                       | 11.19                     | 11.70                  |
| Channel         |            |         |           | 649334                   | 650000                      | 650666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3740.01                  | 3750                        | 3759.99                   | (dBm)                  |
| 80              | PI/2 BPSK  | 1       | 1         | 11.19                    | 11.18                       | 11.17                     | 11.70                  |
| Channel         |            |         |           | 649000                   | 650000                      | 651000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3735                     | 3750                        | 3765                      | (dBm)                  |
| 70              | PI/2 BPSK  | 1       | 1         | 11.08                    | 11.15                       | 11.06                     | 11.70                  |
| Channel         |            |         |           | 648668                   | 650000                      | 651332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3730.02                  | 3750                        | 3769.98                   | (dBm)                  |
| 60              | PI/2 BPSK  | 1       | 1         | 11.07                    | 11.10                       | 11.06                     | 11.70                  |
| Channel         |            |         |           | 648334                   | 650000                      | 651666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3725.01                  | 3750                        | 3774.99                   | (dBm)                  |
| 50              | PI/2 BPSK  | 1       | 1         | 11.11                    | 11.22                       | 11.11                     | 11.70                  |
| Channel         |            |         |           | 648000                   | 650000                      | 652000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3720                     | 3750                        | 3780                      | (dBm)                  |
| 40              | PI/2 BPSK  | 1       | 1         | 11.12                    | 11.10                       | 11.06                     | 11.70                  |
| Channel         |            |         |           | 647668                   | 650000                      | 652332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3715.02                  | 3750                        | 3784.98                   | (dBm)                  |
| 30              | PI/2 BPSK  | 1       | 1         | 11.18                    | 11.11                       | 11.17                     | 11.70                  |
| Channel         |            |         |           | 647334                   | 650000                      | 652666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3710.01                  | 3750                        | 3789.99                   | (dBm)                  |
| 20              | PI/2 BPSK  | 1       | 1         | 11.16                    | 11.21                       | 11.10                     | 11.70                  |
| Channel         |            |         |           | 647168                   | 650000                      | 652832                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3707.52                  | 3750                        | 3792.48                   | (dBm)                  |
| 15              | PI/2 BPSK  | 1       | 1         | 11.17                    | 11.17                       | 11.10                     | 11.70                  |
| Channel         |            |         |           | 647000                   | 650000                      | 653000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3705                     | 3750                        | 3795                      | (dBm)                  |
| 10              | PI/2 BPSK  | 1       | 1         | 11.06                    | 11.10                       | 11.04                     | 11.70                  |

**【FR1 n78 (27Q)\_HPUE\_MIMO1】**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low Ch. / Freq. | Power Middle Ch. / Freq. | Power High Ch. / Freq. | Tune-up limit (dBm) |
|-----------------|------------|---------|-----------|-----------------------|--------------------------|------------------------|---------------------|
| Channel         |            |         |           |                       | 633332                   |                        |                     |
| Frequency (MHz) |            |         |           |                       | 3499.98                  |                        |                     |
| 100             | PI/2 BPSK  | 1       | 1         |                       | 14.15                    |                        | 14.70               |
| 100             | PI/2 BPSK  | 1       | 137       |                       | 13.95                    |                        | 14.70               |
| 100             | PI/2 BPSK  | 1       | 271       |                       | 13.91                    |                        | 14.70               |
| 100             | PI/2 BPSK  | 135     | 0         |                       | 14.15                    |                        | 14.70               |
| 100             | PI/2 BPSK  | 135     | 69        |                       | 13.99                    |                        | 14.70               |
| 100             | PI/2 BPSK  | 135     | 138       |                       | 13.86                    |                        | 14.70               |
| 100             | PI/2 BPSK  | 270     | 0         |                       | 13.96                    |                        | 14.70               |
| 100             | QPSK       | 1       | 1         |                       | 14.14                    |                        | 14.70               |
| 100             | QPSK       | 1       | 137       |                       | 14.00                    |                        | 14.70               |
| 100             | QPSK       | 1       | 271       |                       | 13.92                    |                        | 14.70               |
| 100             | QPSK       | 135     | 0         |                       | 14.10                    |                        | 14.70               |
| 100             | QPSK       | 135     | 69        |                       | 13.98                    |                        | 14.70               |
| 100             | QPSK       | 135     | 138       |                       | 13.87                    |                        | 14.70               |
| 100             | QPSK       | 270     | 0         |                       | 13.99                    |                        | 14.70               |
| 100             | 16QAM      | 1       | 1         |                       | 14.08                    |                        | 14.70               |
| 100             | 64QAM      | 1       | 1         |                       | 14.13                    |                        | 14.70               |
| 100             | 256QAM     | 1       | 1         |                       | 13.47                    |                        | 14.70               |
| Channel         |            |         |           | 633000                | 633332                   | 633666                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3495                  | 3499.98                  | 3504.99                |                     |
| 90              | PI/2 BPSK  | 1       | 1         | 14.10                 | 14.12                    | 14.11                  | 14.70               |
| Channel         |            |         |           | 632668                | 633332                   | 634000                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3490.02               | 3499.98                  | 3510                   |                     |
| 80              | PI/2 BPSK  | 1       | 1         | 14.03                 | 13.97                    | 14.09                  | 14.70               |
| Channel         |            |         |           | 632334                | 633332                   | 634332                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3485.01               | 3499.98                  | 3514.98                |                     |
| 70              | PI/2 BPSK  | 1       | 1         | 13.97                 | 14.02                    | 14.03                  | 14.70               |
| Channel         |            |         |           | 632000                | 633332                   | 634666                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3480                  | 3499.98                  | 3519.99                |                     |
| 60              | PI/2 BPSK  | 1       | 1         | 13.99                 | 14.01                    | 14.08                  | 14.70               |
| Channel         |            |         |           | 631668                | 633332                   | 635000                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3475.02               | 3499.98                  | 3525                   |                     |
| 50              | PI/2 BPSK  | 1       | 1         | 14.00                 | 14.10                    | 14.02                  | 14.70               |
| Channel         |            |         |           | 631334                | 633332                   | 635332                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3470.01               | 3499.98                  | 3529.98                |                     |
| 40              | PI/2 BPSK  | 1       | 1         | 13.99                 | 14.11                    | 14.07                  | 14.70               |
| Channel         |            |         |           | 631000                | 633332                   | 635666                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3465                  | 3499.98                  | 3534.99                |                     |
| 30              | PI/2 BPSK  | 1       | 1         | 14.08                 | 14.07                    | 14.09                  | 14.70               |
| Channel         |            |         |           | 630668                | 633332                   | 636000                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3460.02               | 3499.98                  | 3540                   |                     |
| 20              | PI/2 BPSK  | 1       | 1         | 13.96                 | 13.98                    | 14.07                  | 14.70               |
| Channel         |            |         |           | 630500                | 633332                   | 636166                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3457.5                | 3499.98                  | 3542.49                |                     |
| 15              | PI/2 BPSK  | 1       | 1         | 14.03                 | 14.05                    | 14.03                  | 14.70               |
| Channel         |            |         |           | 630334                | 633332                   | 636332                 | Tune-up limit (dBm) |
| Frequency (MHz) |            |         |           | 3455.01               | 3499.98                  | 3544.98                |                     |
| 10              | PI/2 BPSK  | 1       | 1         | 13.97                 | 14.06                    | 14.03                  | 14.70               |



【FR1 n78 (270)\_HPUE\_MIMO1】

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           |                          | 650000                      |                           |                        |
| Frequency (MHz) |            |         |           |                          | 3750                        |                           |                        |
| 100             | PI/2 BPSK  | 1       | 1         |                          | 14.18                       |                           | 14.70                  |
| 100             | PI/2 BPSK  | 1       | 137       |                          | 14.07                       |                           | 14.70                  |
| 100             | PI/2 BPSK  | 1       | 271       |                          | 14.11                       |                           | 14.70                  |
| 100             | PI/2 BPSK  | 135     | 0         |                          | 13.96                       |                           | 14.70                  |
| 100             | PI/2 BPSK  | 135     | 69        |                          | 14.00                       |                           | 14.70                  |
| 100             | PI/2 BPSK  | 135     | 138       |                          | 14.02                       |                           | 14.70                  |
| 100             | PI/2 BPSK  | 270     | 0         |                          | 14.02                       |                           | 14.70                  |
| 100             | QPSK       | 1       | 1         |                          | 14.00                       |                           | 14.70                  |
| 100             | QPSK       | 1       | 137       |                          | 14.03                       |                           | 14.70                  |
| 100             | QPSK       | 1       | 271       |                          | 14.10                       |                           | 14.70                  |
| 100             | QPSK       | 135     | 0         |                          | 14.07                       |                           | 14.70                  |
| 100             | QPSK       | 135     | 69        |                          | 14.04                       |                           | 14.70                  |
| 100             | QPSK       | 135     | 138       |                          | 14.06                       |                           | 14.70                  |
| 100             | QPSK       | 270     | 0         |                          | 14.02                       |                           | 14.70                  |
| 100             | 16QAM      | 1       | 1         |                          | 14.17                       |                           | 14.70                  |
| 100             | 64QAM      | 1       | 1         |                          | 14.18                       |                           | 14.70                  |
| 100             | 256QAM     | 1       | 1         |                          | 13.49                       |                           | 14.70                  |
| Channel         |            |         |           | 649668                   | 650000                      | 650332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3745.02                  | 3750                        | 3754.98                   | (dBm)                  |
| 90              | PI/2 BPSK  | 1       | 1         | 14.09                    | 14.12                       | 14.08                     | 14.70                  |
| Channel         |            |         |           | 649334                   | 650000                      | 650666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3740.01                  | 3750                        | 3759.99                   | (dBm)                  |
| 80              | PI/2 BPSK  | 1       | 1         | 13.95                    | 14.08                       | 14.05                     | 14.70                  |
| Channel         |            |         |           | 649000                   | 650000                      | 651000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3735                     | 3750                        | 3765                      | (dBm)                  |
| 70              | PI/2 BPSK  | 1       | 1         | 14.07                    | 14.08                       | 13.98                     | 14.70                  |
| Channel         |            |         |           | 648668                   | 650000                      | 651332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3730.02                  | 3750                        | 3769.98                   | (dBm)                  |
| 60              | PI/2 BPSK  | 1       | 1         | 13.96                    | 14.01                       | 13.96                     | 14.70                  |
| Channel         |            |         |           | 648334                   | 650000                      | 651666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3725.01                  | 3750                        | 3774.99                   | (dBm)                  |
| 50              | PI/2 BPSK  | 1       | 1         | 14.03                    | 14.10                       | 13.94                     | 14.70                  |
| Channel         |            |         |           | 648000                   | 650000                      | 652000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3720                     | 3750                        | 3780                      | (dBm)                  |
| 40              | PI/2 BPSK  | 1       | 1         | 14.01                    | 14.05                       | 13.98                     | 14.70                  |
| Channel         |            |         |           | 647668                   | 650000                      | 652332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3715.02                  | 3750                        | 3784.98                   | (dBm)                  |
| 30              | PI/2 BPSK  | 1       | 1         | 13.96                    | 14.09                       | 13.94                     | 14.70                  |
| Channel         |            |         |           | 647334                   | 650000                      | 652666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3710.01                  | 3750                        | 3789.99                   | (dBm)                  |
| 20              | PI/2 BPSK  | 1       | 1         | 14.05                    | 13.98                       | 14.03                     | 14.70                  |
| Channel         |            |         |           | 647168                   | 650000                      | 652832                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3707.52                  | 3750                        | 3792.48                   | (dBm)                  |
| 15              | PI/2 BPSK  | 1       | 1         | 14.04                    | 14.04                       | 14.06                     | 14.70                  |
| Channel         |            |         |           | 647000                   | 650000                      | 653000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3705                     | 3750                        | 3795                      | (dBm)                  |
| 10              | PI/2 BPSK  | 1       | 1         | 14.04                    | 13.98                       | 13.94                     | 14.70                  |

**【FR1 n78 (27Q)\_MIMO2】**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           |                          | 633332                      |                           |                        |
| Frequency (MHz) |            |         |           |                          | 3499.98                     |                           |                        |
| 100             | PI/2 BPSK  | 1       | 1         |                          | 11.05                       |                           | 11.50                  |
| 100             | PI/2 BPSK  | 1       | 137       |                          | 11.15                       |                           | 11.50                  |
| 100             | PI/2 BPSK  | 1       | 271       |                          | 10.95                       |                           | 11.50                  |
| 100             | PI/2 BPSK  | 135     | 0         |                          | 11.09                       |                           | 11.50                  |
| 100             | PI/2 BPSK  | 135     | 69        |                          | 11.10                       |                           | 11.50                  |
| 100             | PI/2 BPSK  | 135     | 138       |                          | 10.96                       |                           | 11.50                  |
| 100             | PI/2 BPSK  | 270     | 0         |                          | 10.95                       |                           | 11.50                  |
| 100             | QPSK       | 1       | 1         |                          | 10.95                       |                           | 11.50                  |
| 100             | QPSK       | 1       | 137       |                          | 11.10                       |                           | 11.50                  |
| 100             | QPSK       | 1       | 271       |                          | 10.90                       |                           | 11.50                  |
| 100             | QPSK       | 135     | 0         |                          | 11.00                       |                           | 11.50                  |
| 100             | QPSK       | 135     | 69        |                          | 11.08                       |                           | 11.50                  |
| 100             | QPSK       | 135     | 138       |                          | 10.96                       |                           | 11.50                  |
| 100             | QPSK       | 270     | 0         |                          | 10.91                       |                           | 11.50                  |
| 100             | 16QAM      | 1       | 1         |                          | 10.94                       |                           | 11.50                  |
| 100             | 64QAM      | 1       | 1         |                          | 11.08                       |                           | 11.50                  |
| 100             | 256QAM     | 1       | 1         |                          | 11.11                       |                           | 11.50                  |
| Channel         |            |         |           | 633000                   | 633332                      | 633666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3495                     | 3499.98                     | 3504.99                   | (dBm)                  |
| 90              | PI/2 BPSK  | 1       | 1         | 11.10                    | 11.08                       | 11.09                     | 11.50                  |
| Channel         |            |         |           | 632668                   | 633332                      | 634000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3490.02                  | 3499.98                     | 3510                      | (dBm)                  |
| 80              | PI/2 BPSK  | 1       | 1         | 11.08                    | 11.04                       | 11.00                     | 11.50                  |
| Channel         |            |         |           | 632334                   | 633332                      | 634332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3485.01                  | 3499.98                     | 3514.98                   | (dBm)                  |
| 70              | PI/2 BPSK  | 1       | 1         | 11.04                    | 10.93                       | 10.99                     | 11.50                  |
| Channel         |            |         |           | 632000                   | 633332                      | 634666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3480                     | 3499.98                     | 3519.99                   | (dBm)                  |
| 60              | PI/2 BPSK  | 1       | 1         | 11.02                    | 10.97                       | 11.06                     | 11.50                  |
| Channel         |            |         |           | 631668                   | 633332                      | 635000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3475.02                  | 3499.98                     | 3525                      | (dBm)                  |
| 50              | PI/2 BPSK  | 1       | 1         | 11.08                    | 10.98                       | 11.03                     | 11.50                  |
| Channel         |            |         |           | 631334                   | 633332                      | 635332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3470.01                  | 3499.98                     | 3529.98                   | (dBm)                  |
| 40              | PI/2 BPSK  | 1       | 1         | 10.95                    | 10.95                       | 11.06                     | 11.50                  |
| Channel         |            |         |           | 631000                   | 633332                      | 635666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3465                     | 3499.98                     | 3534.99                   | (dBm)                  |
| 30              | PI/2 BPSK  | 1       | 1         | 11.09                    | 10.97                       | 11.04                     | 11.50                  |
| Channel         |            |         |           | 630668                   | 633332                      | 636000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3460.02                  | 3499.98                     | 3540                      | (dBm)                  |
| 20              | PI/2 BPSK  | 1       | 1         | 10.96                    | 11.02                       | 11.03                     | 11.50                  |
| Channel         |            |         |           | 630500                   | 633332                      | 636166                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3457.5                   | 3499.98                     | 3542.49                   | (dBm)                  |
| 15              | PI/2 BPSK  | 1       | 1         | 11.07                    | 10.95                       | 11.00                     | 11.50                  |
| Channel         |            |         |           | 630334                   | 633332                      | 636332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3455.01                  | 3499.98                     | 3544.98                   | (dBm)                  |
| 10              | PI/2 BPSK  | 1       | 1         | 11.00                    | 10.98                       | 10.95                     | 11.50                  |

**【FR1 n78 (270)\_MIMO2】**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           |                          | 650000                      |                           |                        |
| Frequency (MHz) |            |         |           |                          | 3750                        |                           |                        |
| 100             | PI/2 BPSK  | 1       | 1         |                          | 11.04                       |                           | 11.50                  |
| 100             | PI/2 BPSK  | 1       | 137       |                          | 10.63                       |                           | 11.50                  |
| 100             | PI/2 BPSK  | 1       | 271       |                          | 10.73                       |                           | 11.50                  |
| 100             | PI/2 BPSK  | 135     | 0         |                          | 10.68                       |                           | 11.50                  |
| 100             | PI/2 BPSK  | 135     | 69        |                          | 10.63                       |                           | 11.50                  |
| 100             | PI/2 BPSK  | 135     | 138       |                          | 10.65                       |                           | 11.50                  |
| 100             | PI/2 BPSK  | 270     | 0         |                          | 10.71                       |                           | 11.50                  |
| 100             | QPSK       | 1       | 1         |                          | 10.67                       |                           | 11.50                  |
| 100             | QPSK       | 1       | 137       |                          | 10.61                       |                           | 11.50                  |
| 100             | QPSK       | 1       | 271       |                          | 10.82                       |                           | 11.50                  |
| 100             | QPSK       | 135     | 0         |                          | 10.57                       |                           | 11.50                  |
| 100             | QPSK       | 135     | 69        |                          | 10.62                       |                           | 11.50                  |
| 100             | QPSK       | 135     | 138       |                          | 10.63                       |                           | 11.50                  |
| 100             | QPSK       | 270     | 0         |                          | 10.61                       |                           | 11.50                  |
| 100             | 16QAM      | 1       | 1         |                          | 10.59                       |                           | 11.50                  |
| 100             | 64QAM      | 1       | 1         |                          | 10.88                       |                           | 11.50                  |
| 100             | 256QAM     | 1       | 1         |                          | 10.17                       |                           | 11.50                  |
| Channel         |            |         |           | 649668                   | 650000                      | 650332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3745.02                  | 3750                        | 3754.98                   | (dBm)                  |
| 90              | PI/2 BPSK  | 1       | 1         | 11.03                    | 11.02                       | 11.01                     | 11.50                  |
| Channel         |            |         |           | 649334                   | 650000                      | 650666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3740.01                  | 3750                        | 3759.99                   | (dBm)                  |
| 80              | PI/2 BPSK  | 1       | 1         | 10.97                    | 10.92                       | 10.89                     | 11.50                  |
| Channel         |            |         |           | 649000                   | 650000                      | 651000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3735                     | 3750                        | 3765                      | (dBm)                  |
| 70              | PI/2 BPSK  | 1       | 1         | 10.92                    | 10.95                       | 10.87                     | 11.50                  |
| Channel         |            |         |           | 648668                   | 650000                      | 651332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3730.02                  | 3750                        | 3769.98                   | (dBm)                  |
| 60              | PI/2 BPSK  | 1       | 1         | 10.97                    | 10.99                       | 10.90                     | 11.50                  |
| Channel         |            |         |           | 648334                   | 650000                      | 651666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3725.01                  | 3750                        | 3774.99                   | (dBm)                  |
| 50              | PI/2 BPSK  | 1       | 1         | 10.89                    | 10.89                       | 10.92                     | 11.50                  |
| Channel         |            |         |           | 648000                   | 650000                      | 652000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3720                     | 3750                        | 3780                      | (dBm)                  |
| 40              | PI/2 BPSK  | 1       | 1         | 11.00                    | 10.99                       | 10.91                     | 11.50                  |
| Channel         |            |         |           | 647668                   | 650000                      | 652332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3715.02                  | 3750                        | 3784.98                   | (dBm)                  |
| 30              | PI/2 BPSK  | 1       | 1         | 10.95                    | 10.96                       | 10.89                     | 11.50                  |
| Channel         |            |         |           | 647334                   | 650000                      | 652666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3710.01                  | 3750                        | 3789.99                   | (dBm)                  |
| 20              | PI/2 BPSK  | 1       | 1         | 10.97                    | 10.87                       | 10.94                     | 11.50                  |
| Channel         |            |         |           | 647168                   | 650000                      | 652832                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3707.52                  | 3750                        | 3792.48                   | (dBm)                  |
| 15              | PI/2 BPSK  | 1       | 1         | 11.02                    | 10.97                       | 10.89                     | 11.50                  |
| Channel         |            |         |           | 647000                   | 650000                      | 653000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3705                     | 3750                        | 3795                      | (dBm)                  |
| 10              | PI/2 BPSK  | 1       | 1         | 10.96                    | 10.97                       | 10.92                     | 11.50                  |

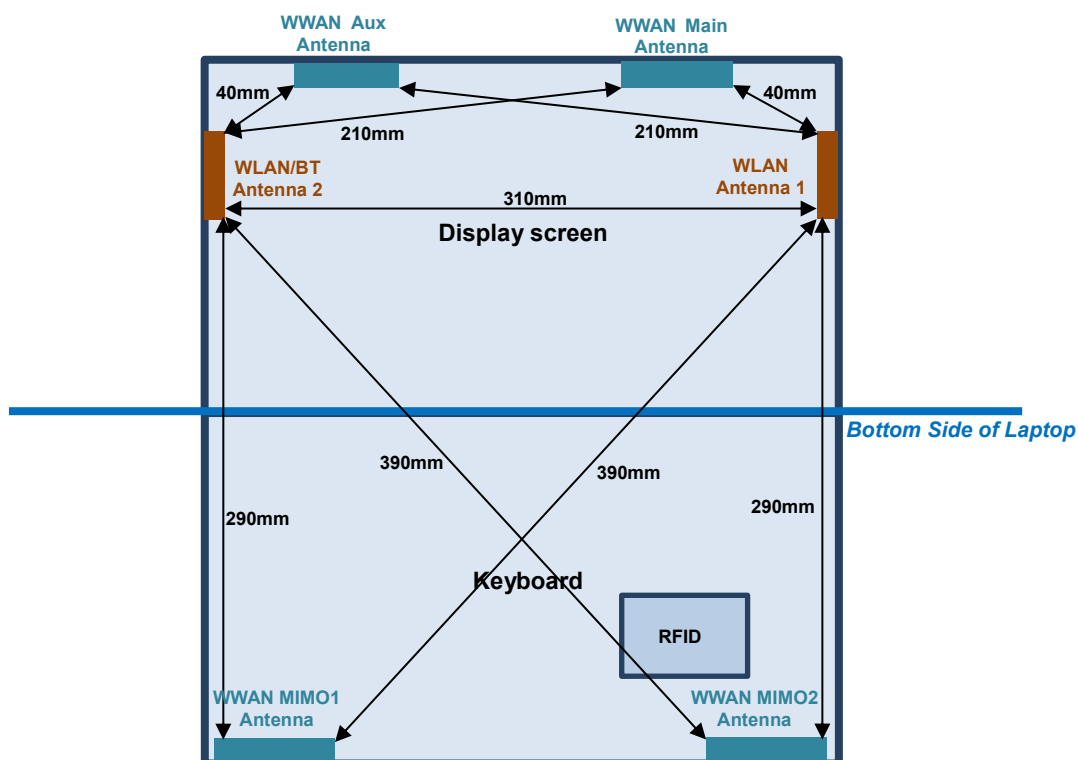
**【FR1 n78 (27Q)\_HPUE\_MIMO2】**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           |                          | 633332                      |                           |                        |
| Frequency (MHz) |            |         |           |                          | 3499.98                     |                           |                        |
| 100             | PI/2 BPSK  | 1       | 1         |                          | 14.07                       |                           | 14.50                  |
| 100             | PI/2 BPSK  | 1       | 137       |                          | 13.75                       |                           | 14.50                  |
| 100             | PI/2 BPSK  | 1       | 271       |                          | 13.93                       |                           | 14.50                  |
| 100             | PI/2 BPSK  | 135     | 0         |                          | 13.94                       |                           | 14.50                  |
| 100             | PI/2 BPSK  | 135     | 69        |                          | 13.77                       |                           | 14.50                  |
| 100             | PI/2 BPSK  | 135     | 138       |                          | 13.75                       |                           | 14.50                  |
| 100             | PI/2 BPSK  | 270     | 0         |                          | 13.75                       |                           | 14.50                  |
| 100             | QPSK       | 1       | 1         |                          | 13.94                       |                           | 14.50                  |
| 100             | QPSK       | 1       | 137       |                          | 13.69                       |                           | 14.50                  |
| 100             | QPSK       | 1       | 271       |                          | 13.82                       |                           | 14.50                  |
| 100             | QPSK       | 135     | 0         |                          | 13.91                       |                           | 14.50                  |
| 100             | QPSK       | 135     | 69        |                          | 13.77                       |                           | 14.50                  |
| 100             | QPSK       | 135     | 138       |                          | 13.70                       |                           | 14.50                  |
| 100             | QPSK       | 270     | 0         |                          | 13.74                       |                           | 14.50                  |
| 100             | 16QAM      | 1       | 1         |                          | 13.91                       |                           | 14.50                  |
| 100             | 64QAM      | 1       | 1         |                          | 13.95                       |                           | 14.50                  |
| 100             | 256QAM     | 1       | 1         |                          | 13.94                       |                           | 14.50                  |
| Channel         |            |         |           | 633000                   | 633332                      | 633666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3495                     | 3499.98                     | 3504.99                   | (dBm)                  |
| 90              | PI/2 BPSK  | 1       | 1         | 14.02                    | 14.03                       | 14.01                     | 14.50                  |
| Channel         |            |         |           | 632668                   | 633332                      | 634000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3490.02                  | 3499.98                     | 3510                      | (dBm)                  |
| 80              | PI/2 BPSK  | 1       | 1         | 13.94                    | 13.92                       | 13.90                     | 14.50                  |
| Channel         |            |         |           | 632334                   | 633332                      | 634332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3485.01                  | 3499.98                     | 3514.98                   | (dBm)                  |
| 70              | PI/2 BPSK  | 1       | 1         | 13.89                    | 13.97                       | 13.90                     | 14.50                  |
| Channel         |            |         |           | 632000                   | 633332                      | 634666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3480                     | 3499.98                     | 3519.99                   | (dBm)                  |
| 60              | PI/2 BPSK  | 1       | 1         | 13.91                    | 13.94                       | 13.88                     | 14.50                  |
| Channel         |            |         |           | 631668                   | 633332                      | 635000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3475.02                  | 3499.98                     | 3525                      | (dBm)                  |
| 50              | PI/2 BPSK  | 1       | 1         | 13.92                    | 13.97                       | 13.88                     | 14.50                  |
| Channel         |            |         |           | 631334                   | 633332                      | 635332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3470.01                  | 3499.98                     | 3529.98                   | (dBm)                  |
| 40              | PI/2 BPSK  | 1       | 1         | 13.97                    | 13.97                       | 13.90                     | 14.50                  |
| Channel         |            |         |           | 631000                   | 633332                      | 635666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3465                     | 3499.98                     | 3534.99                   | (dBm)                  |
| 30              | PI/2 BPSK  | 1       | 1         | 13.90                    | 14.00                       | 13.94                     | 14.50                  |
| Channel         |            |         |           | 630668                   | 633332                      | 636000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3460.02                  | 3499.98                     | 3540                      | (dBm)                  |
| 20              | PI/2 BPSK  | 1       | 1         | 13.95                    | 13.95                       | 13.95                     | 14.50                  |
| Channel         |            |         |           | 630500                   | 633332                      | 636166                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3457.5                   | 3499.98                     | 3542.49                   | (dBm)                  |
| 15              | PI/2 BPSK  | 1       | 1         | 13.91                    | 13.92                       | 13.97                     | 14.50                  |
| Channel         |            |         |           | 630334                   | 633332                      | 636332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3455.01                  | 3499.98                     | 3544.98                   | (dBm)                  |
| 10              | PI/2 BPSK  | 1       | 1         | 13.88                    | 14.01                       | 13.97                     | 14.50                  |

**【FR1 n78 (270)\_HPUE\_MIMO2】**

| BW [MHz]        | Modulation | RB Size | RB Offset | Power Low<br>Ch. / Freq. | Power Middle<br>Ch. / Freq. | Power High<br>Ch. / Freq. | Tune-up limit<br>(dBm) |
|-----------------|------------|---------|-----------|--------------------------|-----------------------------|---------------------------|------------------------|
| Channel         |            |         |           |                          | 650000                      |                           |                        |
| Frequency (MHz) |            |         |           |                          | 3750                        |                           |                        |
| 100             | PI/2 BPSK  | 1       | 1         |                          | 14.35                       |                           | 14.50                  |
| 100             | PI/2 BPSK  | 1       | 137       |                          | 14.00                       |                           | 14.50                  |
| 100             | PI/2 BPSK  | 1       | 271       |                          | 14.09                       |                           | 14.50                  |
| 100             | PI/2 BPSK  | 135     | 0         |                          | 13.90                       |                           | 14.50                  |
| 100             | PI/2 BPSK  | 135     | 69        |                          | 13.82                       |                           | 14.50                  |
| 100             | PI/2 BPSK  | 135     | 138       |                          | 13.89                       |                           | 14.50                  |
| 100             | PI/2 BPSK  | 270     | 0         |                          | 13.81                       |                           | 14.50                  |
| 100             | QPSK       | 1       | 1         |                          | 14.01                       |                           | 14.50                  |
| 100             | QPSK       | 1       | 137       |                          | 13.91                       |                           | 14.50                  |
| 100             | QPSK       | 1       | 271       |                          | 14.04                       |                           | 14.50                  |
| 100             | QPSK       | 135     | 0         |                          | 13.82                       |                           | 14.50                  |
| 100             | QPSK       | 135     | 69        |                          | 13.83                       |                           | 14.50                  |
| 100             | QPSK       | 135     | 138       |                          | 13.91                       |                           | 14.50                  |
| 100             | QPSK       | 270     | 0         |                          | 13.87                       |                           | 14.50                  |
| 100             | 16QAM      | 1       | 1         |                          | 13.73                       |                           | 14.50                  |
| 100             | 64QAM      | 1       | 1         |                          | 14.13                       |                           | 14.50                  |
| 100             | 256QAM     | 1       | 1         |                          | 14.35                       |                           | 14.50                  |
| Channel         |            |         |           | 649668                   | 650000                      | 650332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3745.02                  | 3750                        | 3754.98                   | (dBm)                  |
| 90              | PI/2 BPSK  | 1       | 1         | 14.30                    | 14.32                       | 14.31                     | 14.50                  |
| Channel         |            |         |           | 649334                   | 650000                      | 650666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3740.01                  | 3750                        | 3759.99                   | (dBm)                  |
| 80              | PI/2 BPSK  | 1       | 1         | 14.20                    | 14.24                       | 14.29                     | 14.50                  |
| Channel         |            |         |           | 649000                   | 650000                      | 651000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3735                     | 3750                        | 3765                      | (dBm)                  |
| 70              | PI/2 BPSK  | 1       | 1         | 14.18                    | 14.19                       | 14.17                     | 14.50                  |
| Channel         |            |         |           | 648668                   | 650000                      | 651332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3730.02                  | 3750                        | 3769.98                   | (dBm)                  |
| 60              | PI/2 BPSK  | 1       | 1         | 14.24                    | 14.27                       | 14.28                     | 14.50                  |
| Channel         |            |         |           | 648334                   | 650000                      | 651666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3725.01                  | 3750                        | 3774.99                   | (dBm)                  |
| 50              | PI/2 BPSK  | 1       | 1         | 14.29                    | 14.29                       | 14.22                     | 14.50                  |
| Channel         |            |         |           | 648000                   | 650000                      | 652000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3720                     | 3750                        | 3780                      | (dBm)                  |
| 40              | PI/2 BPSK  | 1       | 1         | 14.26                    | 14.27                       | 14.18                     | 14.50                  |
| Channel         |            |         |           | 647668                   | 650000                      | 652332                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3715.02                  | 3750                        | 3784.98                   | (dBm)                  |
| 30              | PI/2 BPSK  | 1       | 1         | 14.15                    | 14.25                       | 14.19                     | 14.50                  |
| Channel         |            |         |           | 647334                   | 650000                      | 652666                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3710.01                  | 3750                        | 3789.99                   | (dBm)                  |
| 20              | PI/2 BPSK  | 1       | 1         | 14.22                    | 14.20                       | 14.22                     | 14.50                  |
| Channel         |            |         |           | 647168                   | 650000                      | 652832                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3707.52                  | 3750                        | 3792.48                   | (dBm)                  |
| 15              | PI/2 BPSK  | 1       | 1         | 14.23                    | 14.24                       | 14.23                     | 14.50                  |
| Channel         |            |         |           | 647000                   | 650000                      | 653000                    | Tune-up limit          |
| Frequency (MHz) |            |         |           | 3705                     | 3750                        | 3795                      | (dBm)                  |
| 10              | PI/2 BPSK  | 1       | 1         | 14.15                    | 14.28                       | 14.18                     | 14.50                  |

## 14. Antenna Location



The separation distance for antenna to edge :

| Antenna            | To Bottom Side (mm) |
|--------------------|---------------------|
| WWAN Main antenna  | 235                 |
| WWAN MIMO1 antenna | 5                   |
| WWAN MIMO2 antenna | 5                   |
| WWAN Aux antenna   | 235                 |
| WLAN Antenna 1     | 140                 |
| WLAN/BT Antenna 2  | 140                 |

**< 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:  

$$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR}$$
  - 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】**

|                   | Wireless Interface         | WCDMA II | WCDMA IV | WCDMA V | LTE Band 2 | LTE Band 4 | LTE Band 5 | LTE Band 7 | LTE Band 12 | LTE Band 13 | LTE Band 14 | LTE Band 17 | LTE Band 25 | LTE Band 26 | LTE Band 66 | LTE Band 71 | LTE Band 38 | LTE Band 41 | FR1 n2 | FR1 n5 | FR1 n7 | FR1 n12 | FR1 n13 | FR1 n14 | FR1 n25 | FR1 n26 | FR1 n66 | FR1 n71 | FR1 n38 | FR1 n41 |
|-------------------|----------------------------|----------|----------|---------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Exposure Position | Calculated Frequency (MHz) | 1907     | 1752     | 846     | 1909       | 1754       | 848        | 2567       | 715         | 784         | 795         | 713         | 1914        | 848         | 1779        | 695         | 2617        | 2687        | 1907   | 846    | 2567   | 713     | 784     | 795     | 1912    | 847     | 1777    | 695     | 2617    | 2685    |
|                   | Maximum Power (dBm)        | 24.5     | 24.5     | 24.5    | 24.0       | 24.0       | 24.0       | 24.0       | 24.0        | 24.0        | 24.0        | 24.0        | 24.0        | 24.0        | 24.0        | 24.0        | 24.0        | 26.5        | 24.5   | 24.5   | 24.0   | 24.0    | 24.0    | 24.5    | 24.0    | 24.5    | 24.5    | 24.0    | 27.0    |         |
|                   | Maximum Rated Power (mW)   | 281.84   | 281.84   | 281.84  | 251.19     | 251.19     | 251.19     | 251.19     | 251.19      | 251.19      | 251.19      | 251.19      | 251.19      | 251.19      | 251.19      | 251.19      | 251.19      | 446.68      | 281.84 | 281.84 | 251.19 | 251.19  | 251.19  | 251.19  | 281.84  | 251.19  | 281.84  | 281.84  | 251.19  | 501.19  |
| Bottom Side       | Separation Distance (mm)   | 235      |          |         |            |            |            |            |             |             |             |             |             |             |             |             |             |             |        |        |        |         |         |         |         |         |         |         |         |         |
| Bottom Side       | exclusion threshold        | 1959.0   | 1963.0   | 1207.0  | 1959.0     | 1963.0     | 1209.0     | 1944.0     | 1060.0      | 1137.0      | 1149.0      | 1058.0      | 1958.0      | 1209.0      | 1962.0      | 1038.0      | 1943.0      | 1941.0      | 1959.0 | 1207.0 | 1944.0 | 1058.0  | 1137.0  | 1149.0  | 1958.0  | 1208.0  | 1963.0  | 1038.0  | 1943.0  | 1942.0  |
| Bottom Side       | Testing Required?          | No       | No       | No      | No         | No         | No         | No         | No          | No          | No          | No          | No          | No          | No          | No          | No          | No          | No     | No     | No     | No      | No      | No      | No      | No      | No      | No      | No      | No      |

**【MIMO1】**

| Exposure Position | Wireless Interface         | LTE Band 48 | FR1 n48 | FR1 n77 | FR1 n78 |
|-------------------|----------------------------|-------------|---------|---------|---------|
|                   | Calculated Frequency (MHz) | 3697        | 3697    | 3975    | 3795    |
|                   | Maximum Power (dBm)        | 12.6        | 11.5    | 14.8    | 14.7    |
|                   | Maximum Rated Power (mW)   | 18.20       | 14.13   | 30.20   | 29.51   |
| Bottom Side       | Separation Distance (mm)   | 5           |         |         |         |
|                   | exclusion threshold        | 7.0         | 5.4     | 12.0    | 11.5    |
|                   | Testing Required?          | Yes         | Yes     | Yes     | Yes     |



**【MIMO2】**

| Exposure Position | Wireless Interface         | LTE Band 42 | LTE Band 43 | LTE Band 48 | FR1 n48 | FR1 n77 | FR1 n78 |
|-------------------|----------------------------|-------------|-------------|-------------|---------|---------|---------|
|                   | Calculated Frequency (MHz) | 3597        | 3797        | 3697        | 3697    | 3975    | 3795    |
|                   | Maximum Power (dBm)        | 13.6        | 13.9        | 13.3        | 12.2    | 15.0    | 15.0    |
|                   | Maximum Rated Power (mW)   | 22.91       | 24.55       | 21.38       | 16.60   | 31.62   | 31.62   |
| Bottom Side       | Separation Distance (mm)   | 5           |             |             |         |         |         |
|                   | exclusion threshold        | 8.7         | 9.6         | 8.2         | 6.4     | None    | None    |
|                   | Testing Required?          | Yes         | Yes         | Yes         | Yes     | No      | No      |

**【Aux】**

| Exposure Position | Wireless Interface         | LTE Band 2 | LTE Band 7 | LTE Band 25 | LTE Band 38 | LTE Band 41 | FR1 n2 | FR1 n7 | FR1 n25 | FR1 n38 | FR1 n41 |
|-------------------|----------------------------|------------|------------|-------------|-------------|-------------|--------|--------|---------|---------|---------|
|                   | Calculated Frequency (MHz) | 1909       | 2567       | 1914        | 2617        | 2687        | 1907   | 2567   | 1912    | 2617    | 2685    |
|                   | Maximum Power (dBm)        | 24.0       | 24.0       | 24.0        | 24.0        | 26.5        | 24.5   | 24.0   | 24.5    | 24.0    | 27.0    |
|                   | Maximum Rated Power (mW)   | 251.19     | 251.19     | 251.19      | 251.19      | 446.68      | 281.84 | 251.19 | 281.84  | 251.19  | 501.19  |
| Bottom Side       | Separation Distance (mm)   | 235.00     |            |             |             |             |        |        |         |         |         |
|                   | exclusion threshold        | 1959.0     | 1944.0     | 1958.0      | 1943.0      | 1942.0      | 1959.0 | 1944.0 | 1958.0  | 1943.0  | 1942.0  |
|                   | Testing Required?          | No         | No         | No          | No          | No          | No     | No     | No      | No      | No      |

## 15. 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:
  - $\leq 0.8$  W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is  $\leq 100$  MHz
  - $\leq 0.6$  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
  - $\leq 0.4$  W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is  $\geq 200$  MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is  $\geq 0.8$  W/kg.

### 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  $\leq 0.8$  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  $\frac{1}{2}$  dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is  $\leq 1.45$  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  $\frac{1}{2}$  dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.

### 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  $\leq 0.8$  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  $\leq 1.45$  W/kg, smaller bandwidth SAR testing is not required for this device
  - e. For 5G FR1 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.

**15.1 Body SAR**

## 【LTE SAR】

| Plot No | Band         | BW  | Modulation | RB Size | RB Offset | Test Position | Gap (mm) | Antenna | Ch.         | Freq. (MHz) | Sample | 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 42  | 20M | QPSK       | 1       | 0         | Bottom Side   | 0mm      | MIMO2   | 42990       | 3540        | SKU D  | 12.16               | 13.60               | 1.393                  | 62.9         | 1.006                     | -0.11            | 0.302                  | 0.423                  |
|         | LTE Band 42  | 20M | QPSK       | 50      | 0         | Bottom Side   | 0mm      | MIMO2   | 42990       | 3540        | SKU D  | 12.32               | 13.60               | 1.343                  | 62.9         | 1.006                     | 0.05             | 0.315                  | 0.426                  |
|         | LTE Band 42  | 20M | QPSK       | 50      | 0         | Bottom Side   | 0mm      | MIMO2   | 42990       | 3540        | SKU E  | 12.32               | 13.60               | 1.343                  | 62.9         | 1.006                     | 0.18             | 0.074                  | 0.100                  |
| 01      | LTE Band 42  | 20M | QPSK       | 1       | 0         | Bottom Side   | 0mm      | MIMO2   | 43340       | 3575        | SKU D  | 12.23               | 13.60               | 1.371                  | 62.9         | 1.006                     | 0.16             | 0.334                  | 0.461                  |
|         | LTE Band 42  | 20M | QPSK       | 50      | 0         | Bottom Side   | 0mm      | MIMO2   | 43340       | 3575        | SKU D  | 12.18               | 13.60               | 1.387                  | 62.9         | 1.006                     | 0.11             | 0.329                  | 0.459                  |
|         | LTE Band 42C | 20M | QPSK       | 1       | 0         | Bottom Side   | 0mm      | MIMO2   | 43190+43380 | 3560        | SKU D  | 12.18               | 13.60               | 1.387                  | 62.9         | 1.006                     | 0.16             | 0.312                  | 0.435                  |
|         | LTE Band 42  | 20M | QPSK       | 1       | 0         | Bottom Side   | 0mm      | MIMO2   | 43340       | 3575        | SKU E  | 12.23               | 13.60               | 1.371                  | 62.9         | 1.006                     | 0.09             | 0.097                  | 0.134                  |
|         | LTE Band 43  | 20M | QPSK       | 1       | 0         | Bottom Side   | 0mm      | MIMO2   | 44090       | 3650        | SKU D  | 12.37               | 13.90               | 1.422                  | 62.9         | 1.006                     | -0.12            | 0.630                  | 0.901                  |
|         | LTE Band 43  | 20M | QPSK       | 1       | 0         | Bottom Side   | 0mm      | MIMO2   | 43690       | 3610        | SKU D  | 12.34               | 13.90               | 1.432                  | 62.9         | 1.006                     | 0.15             | 0.446                  | 0.643                  |
| 02      | LTE Band 43  | 20M | QPSK       | 1       | 0         | Bottom Side   | 0mm      | MIMO2   | 44490       | 3690        | SKU D  | 12.03               | 13.90               | 1.538                  | 62.9         | 1.006                     | -0.12            | 0.640                  | 0.990                  |
|         | LTE Band 43  | 20M | QPSK       | 50      | 0         | Bottom Side   | 0mm      | MIMO2   | 44090       | 3650        | SKU D  | 12.17               | 13.90               | 1.489                  | 62.9         | 1.006                     | 0.07             | 0.570                  | 0.854                  |
|         | LTE Band 43  | 20  | QPSK       | 50      | 0         | Bottom Side   | 0mm      | MIMO2   | 43690       | 3610        | SKU D  | 12.02               | 13.90               | 1.542                  | 62.9         | 1.006                     | 0.08             | 0.438                  | 0.679                  |
|         | LTE Band 43  | 20  | QPSK       | 50      | 24        | Bottom Side   | 0mm      | MIMO2   | 44490       | 3690        | SKU D  | 11.91               | 13.90               | 1.581                  | 62.9         | 1.006                     | 0.11             | 0.446                  | 0.709                  |
|         | LTE Band 43  | 20M | QPSK       | 100     | 0         | Bottom Side   | 0mm      | MIMO2   | 44490       | 3650        | SKU D  | 12.17               | 13.90               | 1.489                  | 62.9         | 1.006                     | 0.11             | 0.442                  | 0.662                  |
|         | LTE Band 43C | 20M | QPSK       | 1       | 0         | Bottom Side   | 0mm      | MIMO2   | 43690+43888 | 3610        | SKU D  | 12.26               | 13.90               | 1.459                  | 62.9         | 1.006                     | 0.01             | 0.596                  | 0.875                  |
|         | LTE Band 43  | 20M | QPSK       | 1       | 0         | Bottom Side   | 0mm      | MIMO2   | 44490       | 3690        | SKU E  | 12.03               | 13.90               | 1.538                  | 62.9         | 1.006                     | -0.13            | 0.247                  | 0.382                  |
|         | LTE Band 48  | 20M | QPSK       | 1       | 99        | Bottom Side   | 0mm      | MIMO2   | 55830       | 3609        | SKU D  | 12.18               | 13.30               | 1.294                  | 62.9         | 1.006                     | -0.16            | 0.464                  | 0.604                  |
|         | LTE Band 48  | 20M | QPSK       | 1       | 0         | Bottom Side   | 0mm      | MIMO2   | 55340       | 3560        | SKU D  | 11.61               | 13.30               | 1.476                  | 62.9         | 1.006                     | -0.03            | 0.352                  | 0.523                  |
|         | LTE Band 48  | 20M | QPSK       | 1       | 99        | Bottom Side   | 0mm      | MIMO2   | 56150       | 3641        | SKU D  | 11.79               | 13.30               | 1.416                  | 62.9         | 1.006                     | -0.03            | 0.458                  | 0.652                  |
|         | LTE Band 48  | 20M | QPSK       | 1       | 0         | Bottom Side   | 0mm      | MIMO2   | 56640       | 3690        | SKU D  | 11.82               | 13.30               | 1.406                  | 62.9         | 1.006                     | -0.05            | 0.427                  | 0.604                  |
|         | LTE Band 48  | 20M | QPSK       | 50      | 50        | Bottom Side   | 0mm      | MIMO2   | 55830       | 3609        | SKU D  | 12.01               | 13.30               | 1.346                  | 62.9         | 1.006                     | -0.12            | 0.456                  | 0.617                  |
|         | LTE Band 48  | 20M | QPSK       | 50      | 50        | Bottom Side   | 0mm      | MIMO2   | 55340       | 3560        | SKU D  | 11.61               | 13.30               | 1.476                  | 62.9         | 1.006                     | 0.04             | 0.370                  | 0.549                  |
| 03      | LTE Band 48  | 20M | QPSK       | 50      | 24        | Bottom Side   | 0mm      | MIMO2   | 56150       | 3641        | SKU D  | 11.79               | 13.30               | 1.416                  | 62.9         | 1.006                     | 0.12             | 0.476                  | 0.678                  |
|         | LTE Band 48  | 20M | QPSK       | 50      | 0         | Bottom Side   | 0mm      | MIMO2   | 56640       | 3690        | SKU D  | 11.82               | 13.30               | 1.406                  | 62.9         | 1.006                     | 0.15             | 0.404                  | 0.571                  |
|         | LTE Band 48  | 20M | QPSK       | 50      | 24        | Bottom Side   | 0mm      | MIMO2   | 56150       | 3641        | SKU E  | 11.79               | 13.30               | 1.416                  | 62.9         | 1.006                     | 0.04             | 0.169                  | 0.241                  |
|         | LTE Band 48  | 20M | QPSK       | 1       | 49        | Bottom Side   | 0mm      | MIMO1   | 55830       | 3609        | SKU D  | 11.68               | 12.60               | 1.236                  | 62.9         | 1.006                     | 0.03             | 0.253                  | 0.315                  |
|         | LTE Band 48  | 20M | QPSK       | 50      | 0         | Bottom Side   | 0mm      | MIMO1   | 55830       | 3609        | SKU D  | 11.63               | 12.60               | 1.25                   | 62.9         | 1.006                     | -0.01            | 0.272                  | 0.342                  |
|         | LTE Band 48  | 20M | QPSK       | 50      | 50        | Bottom Side   | 0mm      | MIMO1   | 56150       | 3641        | SKU E  | 10.91               | 12.60               | 1.476                  | 62.9         | 1.006                     | -0.14            | 0.157                  | 0.233                  |

## 【FR1 SAR】

| Plot No | Band         | BW   | Modulation | RB Size | RB Offset | Test Position | Gap (mm) | Antenna | Ch.    | Freq. (MHz) | Sample | 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 Side   | 0mm      | MIMO2   | 641666 | 3624.99     | SKU D  | 11.54               | 12.20               | 1.164                  | -0.06            | 0.516                  | 0.601                  |
|         | FR1 n48      | 40   | BPSK       | 1       | 1         | Bottom Side   | 0mm      | MIMO2   | 638000 | 3570        | SKU D  | 11.53               | 12.20               | 1.167                  | 0.08             | 0.427                  | 0.498                  |
|         | FR1 n48      | 40   | BPSK       | 1       | 1         | Bottom Side   | 0mm      | MIMO2   | 645332 | 3679.98     | SKU D  | 11.52               | 12.20               | 1.169                  | -0.08            | 0.566                  | 0.662                  |
|         | FR1 n48      | 40M  | BPSK       | 50      | 0         | Bottom Side   | 0mm      | MIMO2   | 641666 | 3624.99     | SKU D  | 11.49               | 12.20               | 1.178                  | -0.04            | 0.520                  | 0.613                  |
|         | FR1 n48      | 40   | BPSK       | 50      | 0         | Bottom Side   | 0mm      | MIMO2   | 638000 | 3570        | SKU D  | 11.44               | 12.20               | 1.191                  | 0.14             | 0.432                  | 0.515                  |
|         | FR1 n48      | 40   | BPSK       | 50      | 0         | Bottom Side   | 0mm      | MIMO2   | 645332 | 3679.98     | SKU D  | 11.39               | 12.20               | 1.205                  | -0.13            | 0.509                  | 0.613                  |
|         | FR1 n48      | 40M  | BPSK       | 1       | 1         | Bottom Side   | 0mm      | MIMO2   | 645332 | 3679.98     | SKU E  | 11.52               | 12.50               | 1.253                  | -0.08            | 0.196                  | 0.246                  |
|         | FR1 n48      | 40M  | BPSK       | 1       | 104       | Bottom Side   | 0mm      | MIMO1   | 641666 | 3624.99     | SKU D  | 10.92               | 11.50               | 1.143                  | -0.16            | 0.526                  | 0.601                  |
|         | FR1 n48      | 40   | BPSK       | 1       | 104       | Bottom Side   | 0mm      | MIMO1   | 638000 | 3570        | SKU D  | 10.82               | 11.50               | 1.169                  | -0.07            | 0.387                  | 0.452                  |
| 04      | FR1 n48      | 40   | BPSK       | 1       | 1         | Bottom Side   | 0mm      | MIMO1   | 645332 | 3679.98     | SKU D  | 10.84               | 11.50               | 1.164                  | -0.17            | 0.585                  | 0.681                  |
|         | FR1 n48      | 40M  | BPSK       | 50      | 0         | Bottom Side   | 0mm      | MIMO1   | 641666 | 3624.99     | SKU D  | 10.81               | 11.50               | 1.172                  | -0.13            | 0.403                  | 0.472                  |
|         | FR1 n48      | 40M  | BPSK       | 1       | 1         | Bottom Side   | 0mm      | MIMO1   | 645332 | 3679.98     | SKU E  | 10.84               | 11.50               | 1.164                  | -0.16            | 0.160                  | 0.186                  |
|         | FR1 n77      | 100M | BPSK       | 1       | 1         | Bottom Side   | 0mm      | MIMO2   | 633332 | 3499.98     | SKU D  | 11.15               | 12.00               | 1.216                  | 0.03             | 0.459                  | 0.558                  |
|         | FR1 n77      | 100M | BPSK       | 135     | 0         | Bottom Side   | 0mm      | MIMO2   | 633332 | 3499.98     | SKU D  | 11.00               | 12.00               | 1.259                  | 0.05             | 0.513                  | 0.646                  |
|         | FR1 n77_HPUE | 100  | BPSK       | 135     | 0         | Bottom Side   | 0mm      | MIMO2   | 633332 | 3499.98     | SKU D  | 14.14               | 15.00               | 1.219                  | 0.03             | 0.539                  | 0.657                  |
|         | FR1 n77_HPUE | 100M | BPSK       | 135     | 0         | Bottom Side   | 0mm      | MIMO2   | 633332 | 3499.98     | SKU E  | 14.14               | 15.00               | 1.219                  | -0.05            | 0.220                  | 0.268                  |
|         | FR1 n77      | 100M | BPSK       | 1       | 1         | Bottom Side   | 0mm      | MIMO1   | 633332 | 3499.98     | SKU D  | 11.26               | 11.70               | 1.107                  | -0.07            | 0.355                  | 0.393                  |
|         | FR1 n77      | 100M | BPSK       | 135     | 0         | Bottom Side   | 0mm      | MIMO1   | 633332 | 3499.98     | SKU D  | 11.26               | 11.70               | 1.107                  | 0.10             | 0.368                  | 0.407                  |
|         | FR1 n77      | 100M | BPSK       | 135     | 0         | Bottom Side   | 0mm      | MIMO1   | 633332 | 3499.98     | SKU E  | 11.26               | 11.80               | 1.132                  | -0.15            | 0.140                  | 0.158                  |
|         | FR1 n77      | 100M | BPSK       | 1       | 1         | Bottom Side   | 0mm      | MIMO2   | 656000 | 3840        | SKU D  | 10.95               | 12.00               | 1.274                  | 0.18             | 0.746                  | 0.950                  |
| 05      | FR1 n77      | 100M | BPSK       | 135     | 0         | Bottom Side   | 0mm      | MIMO2   | 656000 | 3840        | SKU D  | 10.74               | 12.00               | 1.337                  | -0.07            | 0.736                  | 0.984                  |
|         | FR1 n77_HPUE | 100  | BPSK       | 135     | 0         | Bottom Side   | 0mm      | MIMO2   | 656000 | 3840        | SKU D  | 14.06               | 15.00               | 1.242                  | -0.14            | 0.712                  | 0.884                  |
|         | FR1 n77      | 100M | BPSK       | 270     | 0         | Bottom Side   | 0mm      | MIMO2   | 656000 | 3840        | SKU D  | 10.76               | 12.00               | 1.33                   | 0.06             | 0.688                  | 0.915                  |
|         | FR1 n77_HPUE | 100M | BPSK       | 135     | 0         | Bottom Side   | 0mm      | MIMO2   | 656000 | 3840        | SKU D  | 14.06               | 15.00               | 1.242                  | 0.00             | 0.698                  | 0.867                  |
|         | FR1 n77      | 100M | BPSK       | 135     | 0         | Bottom Side   | 0mm      | MIMO2   | 656000 | 3840        | SKU E  | 10.74               | 12.00               | 1.337                  | 0.08             | 0.373                  | 0.499                  |
|         | FR1 n77      | 100M | BPSK       | 1       | 1         | Bottom Side   | 0mm      | MIMO1   | 656000 | 3840        | SKU D  | 11.70               | 11.70               | 1.0                    | 0.03             | 0.659                  | 0.659                  |
|         | FR1 n77      | 100M | BPSK       | 135     | 69        | Bottom Side   | 0mm      | MIMO1   | 656000 | 3840        | SKU D  | 11.46               | 11.70               | 1.057                  | -0.07            | 0.689                  | 0.728                  |
|         | FR1 n77      | 100M | BPSK       | 135     | 69        | Bottom Side   | 0mm      | MIMO1   | 656000 | 3840        | SKU E  | 11.46               | 11.80               | 1.081                  | -0.17            | 0.233                  | 0.252                  |

## **15.2 Power Class 2 and Power Class 3 Linearity**

### **General Note:**

This device support Power Class 2 and Power Class 3 operations. 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 and 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%

【Body】

| FR1 n77 (270) _MIMO2                | Power Class 3 | Power Class 2 |
|-------------------------------------|---------------|---------------|
| Max Tune Up Power (dBm)             | 12.0          | 15.0          |
| Reported 1g SAR (W/kg)              | 0.984         | 0.884         |
| Duty Cycle (%)                      | 100.0 %       | 50.0 %        |
| Frame Averaged (mW)                 | 15.85         | 15.81         |
| Linearity SAR (W/kg)                | 0.98          |               |
| % deviation from Expected Linearity |               | -9.94 %       |

| FR1 n77 (27Q) _MIMO2                | Power Class 3 | Power Class 2 |
|-------------------------------------|---------------|---------------|
| Max Tune Up Power (dBm)             | 12.0          | 15.0          |
| Reported 1g SAR (W/kg)              | 0.646         | 0.657         |
| Duty Cycle (%)                      | 100.0 %       | 50.0 %        |
| Frame Averaged (mW)                 | 15.85         | 15.81         |
| Linearity SAR (W/kg)                | 0.64          |               |
| % deviation from Expected Linearity |               | 1.96 %        |

## **16. Simultaneous Transmission Analysis**

| NO. | Simultaneous Transmission Configurations                                | Body |
|-----|-------------------------------------------------------------------------|------|
| 1.  | WWAN + WLAN 2.4GHz Ant 1 + WLAN 2.4GHz Ant 2 + RFID                     | Yes  |
| 2.  | WWAN + WLAN 2.4GHz Ant 1 + Bluetooth Ant 2 + RFID                       | Yes  |
| 3.  | WWAN + WLAN 5G/6GHz Ant 1 + WLAN 5G/6GHz Ant 2 + Bluetooth Ant 2 + RFID | Yes  |

### **General Note:**

1. The Intel BE211NGW WLAN/BT module is integrated into this host. The maximum WLAN/BT output power and evaluation results are referenced from the Intel test report (Report No.: 250519-01.TR03, FCC ID: PD9BE211NG). The SAR results are used for simultaneous transmission analysis.
2. The RFID module is integrated into this host, the RFID test report is referenced from Sporton FCC SAR report, report no.: FA661209 (FCC ID: QYLSNNSVG7C01B); the SAR result is used to do simultaneous transmission analysis.
3. The Scaled SAR summation is calculated based on the same configuration and test position.
4. 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 16.3.

**16.1 5G NR + LTE + WLAN + BT Sim-Tx analysis**

In 5G NR + LTE + WLAN + BT simultaneous transmission, 5G NR and LTE transmission are managed and controlled by Qualcomm® Smart Transmit, while the RF exposure from WLAN and BT radios is managed using legacy approach, i.e., through a fixed power back-off if needed.

Since WLAN and BT do not employ time-averaging, 1gSAR and 10gSAR measurement for WLAN and BT need to be conducted at their corresponding rated power following current FCC test procedures to determine reported SAR values.

Smart Transmit current implementation assumes hotspots from 5G NR and LTE are collocated. Therefore, for a total of 100% exposure margin, if LTE uses x%, then the exposure margin left for 5G NR is capped to (100-x)%. Thus, the compliance equation for LTE + 5G NR is

$$x\% * A + (100-x)\% * B \leq 1.0,$$

Where, A is normalized reported time-averaged SAR exposure ratio from LTE, and  $A \leq 1.0$ ; B is normalized reported time-averaged exposure ratio from 5G NR (i.e., PD exposure for 5G FR2 or SAR exposure for 5G FR1), and  $B \leq 1.0$ .

Let C = normalized reported SAR exposure ratio from WLAN+BT, then for compliance,

$$x\% * A + (100-x)\% * B + C \leq 1.0 \quad (1)$$

$$x\% * A + (100-x)\% * B \leq x\% * \max(A, B) + (100-x)\% * \max(A, B) \leq \max(A, B)$$

$$x\% * A + (100-x)\% * B + C \leq \max(A, B) + C \leq 1.0 \quad (2)$$

if  $A + C \leq 1.0$  and  $B + C \leq 1.0$  can be proven, then " $x\% * A + (100-x)\% * B + C \leq 1.0$ ". Therefore simultaneous transmission analysis for 5G NR + LTE + WLAN + BT can be performed in two steps

Step 1: Prove total exposure ratio (TER) of LTE + WLAN + BT < 1

Step 2: Prove total exposure ratio (TER) of 5G NR + WLAN + BT < 1

**16.2 Body Conditions**

| WWAN Antenna | Exposure Position  | 1             | 2                    | 3                   | 4                    | 5                   | 6                  | 7                 | 8             | 1+2+3+8       | 1+2+3+8 SPLSR Case No | 1+2+7+8       | 1+2+7+8 SPLSR Case No | 1+3+6+8       | 1+3+6+8 SPLSR Case No | 1+4+5+6+7+8   | 1+4+5+6+7+8 SPLSR Case No | 1+4+5+6+7+8 Case No |       |       |        |
|--------------|--------------------|---------------|----------------------|---------------------|----------------------|---------------------|--------------------|-------------------|---------------|---------------|-----------------------|---------------|-----------------------|---------------|-----------------------|---------------|---------------------------|---------------------|-------|-------|--------|
|              |                    | Maximum WWAN  | WLAN 2.4GHz Ant Main | WLAN 2.4GHz Ant Aux | WLAN 5/6GHz Ant Main | WLAN 5/6GHz Ant Aux | Bluetooth Ant Main | Bluetooth Ant Aux | RFID          | Summed        |                       | Summed        |                       | Summed        |                       | Summed        |                           |                     |       |       |        |
|              |                    | 1g SAR (W/kg) | 1g SAR (W/kg)        | 1g SAR (W/kg)       | 1g SAR (W/kg)        | 1g SAR (W/kg)       | 1g SAR (W/kg)      | 1g SAR (W/kg)     | 1g SAR (W/kg) | 1g SAR (W/kg) |                       | 1g SAR (W/kg) |                       | 1g SAR (W/kg) |                       | 1g SAR (W/kg) |                           |                     |       |       |        |
| WWAN MIMO2   | Bottom Side at 0mm | 0.990         | 0.790                | 0.800               | 0.780                | 0.790               | 0.240              | 0.430             | 0.001         | 2.581         | 0.010                 | Case 1        | 2.211                 | 0.010         | Case 2                | 2.031         | 0.010                     | Case 3              | 3.231 | 0.010 | Case 4 |
| WWAN MIMO1   | Bottom Side at 0mm | 0.728         | 0.790                | 0.800               | 0.780                | 0.790               | 0.240              | 0.430             | 0.001         | 2.319         | 0.010                 | Case 5        | 1.949                 | 0.000         | Case 6                | 1.769         | 0.010                     | Case 7              | 2.969 | 0.010 | Case 8 |

### 16.3 SPLSR Evaluation and Analysis

**General Note:**

1. According to antenna location, the minimum distance between each transmit antenna is using for SPLSR analysis.
2.  $SPLSR = (SAR_1 + SAR_2)^{1.5} / (\text{min. separation distance, mm})$ . If  $SPLSR \leq 0.04$ , simultaneously transmission SAR measurement is not necessary.

|        | Band                                      | Position    | SAR<br>(W/kg) | Gap  | Min distance<br>(mm) | Summed SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|--------|-------------------------------------------|-------------|---------------|------|----------------------|----------------------|------------------|---------------------|
|        |                                           |             |               | (mm) |                      |                      |                  |                     |
| Case 1 | WWAN_MIMO2                                | Bottom Side | 0.99          | 0mm  | 290.0                | 1.78                 | 0.01             | Not required        |
|        | WLAN2.4GHz Ant Main+RFID                  |             | 0.791         | 0mm  |                      |                      |                  |                     |
|        | WWAN_MIMO2                                | Bottom Side | 0.99          | 0mm  | 390.0                | 1.79                 | 0.01             | Not required        |
|        | WLAN2.4GHz Ant Aux                        |             | 0.8           | 0mm  |                      |                      |                  |                     |
|        | WLAN2.4GHz Ant Main+RFID                  | Bottom Side | 0.791         | 0mm  | 310.0                | 1.59                 | 0.01             | Not required        |
|        | WLAN2.4GHz Ant Aux                        |             | 0.8           | 0mm  |                      |                      |                  |                     |
| Case 2 | WWAN_MIMO2                                | Bottom Side | 0.99          | 0mm  | 290.0                | 1.78                 | 0.01             | Not required        |
|        | WLAN2.4GHz Ant Main+RFID                  |             | 0.791         | 0mm  |                      |                      |                  |                     |
|        | WWAN_MIMO2                                | Bottom Side | 0.99          | 0mm  | 390.0                | 1.42                 | 0.00             | Not required        |
|        | Bluetooth Ant Aux                         |             | 0.43          | 0mm  |                      |                      |                  |                     |
|        | WLAN2.4GHz Ant Main+RFID                  | Bottom Side | 0.791         | 0mm  | 310.0                | 1.22                 | 0.00             | Not required        |
|        | Bluetooth Ant Aux                         |             | 0.43          | 0mm  |                      |                      |                  |                     |
| Case 3 | WWAN_MIMO2                                | Bottom Side | 0.99          | 0mm  | 290.0                | 1.23                 | 0.00             | Not required        |
|        | Bluetooth Ant Main+RFID                   |             | 0.241         | 0mm  |                      |                      |                  |                     |
|        | WWAN_MIMO2                                | Bottom Side | 0.99          | 0mm  | 390.0                | 1.79                 | 0.01             | Not required        |
|        | WLAN2.4GHz Ant Aux                        |             | 0.8           | 0mm  |                      |                      |                  |                     |
|        | Bluetooth Ant Main+RFID                   | Bottom Side | 0.241         | 0mm  | 310.0                | 1.04                 | 0.00             | Not required        |
|        | WLAN2.4GHz Ant Aux                        |             | 0.8           | 0mm  |                      |                      |                  |                     |
| Case 4 | WWAN_MIMO2                                | Bottom Side | 0.99          | 0mm  | 290.0                | 2.01                 | 0.01             | Not required        |
|        | WLAN5GHz Ant Main+Bluetooth Ant Main+RFID |             | 1.021         | 0mm  |                      |                      |                  |                     |
|        | WLAN5GHz Ant Main+Bluetooth Ant Main+RFID | Bottom Side | 1.021         | 0mm  | 390.0                | 2.24                 | 0.01             | Not required        |
|        | WLAN5GHz Ant Aux+Bluetooth Ant Aux        |             | 1.22          | 0mm  |                      |                      |                  |                     |
|        | WWAN_MIMO2                                | Bottom Side | 0.99          | 0mm  | 310.0                | 2.21                 | 0.01             | Not required        |
|        | WLAN5GHz Ant Aux+Bluetooth Ant Aux        |             | 1.22          | 0mm  |                      |                      |                  |                     |
| Case 5 | WWAN_MIMO1                                | Bottom Side | 0.728         | 0mm  | 390.0                | 1.52                 | 0.00             | Not required        |
|        | WLAN2.4GHz Ant Main+RFID                  |             | 0.791         | 0mm  |                      |                      |                  |                     |
|        | WWAN_MIMO1                                | Bottom Side | 0.728         | 0mm  | 290.0                | 1.53                 | 0.01             | Not required        |
|        | WLAN2.4GHz Ant Aux                        |             | 0.8           | 0mm  |                      |                      |                  |                     |
|        | WLAN2.4GHz Ant Main+RFID                  | Bottom Side | 0.791         | 0mm  | 310.0                | 1.59                 | 0.01             | Not required        |
|        | WLAN2.4GHz Ant Aux                        |             | 0.8           | 0mm  |                      |                      |                  |                     |
| Case 6 | WWAN_MIMO1                                | Bottom Side | 0.728         | 0mm  | 390.0                | 1.52                 | 0.00             | Not required        |
|        | WLAN2.4GHz Ant Main+RFID                  |             | 0.791         | 0mm  |                      |                      |                  |                     |
|        | WWAN_MIMO1                                | Bottom Side | 0.728         | 0mm  | 290.0                | 1.16                 | 0.00             | Not required        |
|        | Bluetooth Ant Aux                         |             | 0.43          | 0mm  |                      |                      |                  |                     |
|        | WLAN2.4GHz Ant Main+RFID                  | Bottom Side | 0.791         | 0mm  | 310.0                | 1.22                 | 0.00             | Not required        |
|        | Bluetooth Ant Aux                         |             | 0.43          | 0mm  |                      |                      |                  |                     |

| Case 7 | Band                                      | Position    | SAR<br>(W/kg) | Gap<br>(mm) | Min distance<br>(mm) | Summed SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|--------|-------------------------------------------|-------------|---------------|-------------|----------------------|----------------------|------------------|---------------------|
|        |                                           |             |               |             |                      |                      |                  |                     |
| Case 7 | WWAN_MIMO1                                | Bottom Side | 0.728         | 0mm         | 390.0                | 0.97                 | 0.00             | Not required        |
|        | Bluetooth Ant Main+RFID                   |             | 0.241         | 0mm         |                      |                      |                  |                     |
|        | WWAN_MIMO1                                | Bottom Side | 0.728         | 0mm         | 290.0                | 1.53                 | 0.01             | Not required        |
|        | WLAN2.4GHz Ant Aux                        |             | 0.8           | 0mm         |                      |                      |                  |                     |
|        | Bluetooth Ant Main+RFID                   | Bottom Side | 0.241         | 0mm         | 310.0                | 1.04                 | 0.00             | Not required        |
|        | WLAN2.4GHz Ant Aux                        |             | 0.8           | 0mm         |                      |                      |                  |                     |
| Case 8 | Band                                      | Position    | SAR<br>(W/kg) | Gap<br>(mm) | Min distance<br>(mm) | Summed SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|        |                                           |             |               |             |                      |                      |                  |                     |
| Case 8 | WWAN_MIMO1                                | Bottom Side | 0.728         | 0mm         | 390.0                | 1.75                 | 0.01             | Not required        |
|        | WLAN5GHz Ant Main+Bluetooth Ant Main+RFID |             | 1.021         | 0mm         |                      |                      |                  |                     |
|        | WLAN5GHz Ant Main+Bluetooth Ant Main+RFID | Bottom Side | 1.021         | 0mm         | 310.0                | 2.24                 | 0.01             | Not required        |
|        | WLAN5GHz Ant Aux+Bluetooth Ant Aux        |             | 1.22          | 0mm         |                      |                      |                  |                     |
|        | WWAN_MIMO1                                | Bottom Side | 0.728         | 0mm         | 290.0                | 1.95                 | 0.01             | Not required        |
|        | WLAN5GHz Ant Aux+Bluetooth Ant Aux        |             | 1.22          | 0mm         |                      |                      |                  |                     |

**Test Engineer :** Kevin Guo and Daniel Teng

## **17. Uncertainty Assessment**

### 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.

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty by the statistical analysis of a series of observations is termed a Type A evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

| Uncertainty Distributions          | Normal             | Rectangular | Triangular | U-Shape |
|------------------------------------|--------------------|-------------|------------|---------|
| Multi-plying Factor <sup>(a)</sup> | 1/k <sup>(b)</sup> | 1/√3        | 1/√6       | 1/√2    |

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b)  $\kappa$  is the coverage factor

### **Standard Uncertainty for Assumed Distribution**

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

The judgment of conformity in the report is based on the measurement results excluding the measurement uncertainty.

**Applicable for SAR Measurements:**

| Uncertainty Budget<br>(4 MHz - 10 GHz range) |                        |             |         |         |          |                                |                                 |
|----------------------------------------------|------------------------|-------------|---------|---------|----------|--------------------------------|---------------------------------|
| Error Description                            | Uncertainty Value (±%) | Probability | Divisor | (Ci) 1g | (Ci) 10g | Standard Uncertainty (1g) (±%) | Standard Uncertainty (10g) (±%) |
| <b>Measurement System</b>                    |                        |             |         |         |          |                                |                                 |
| Probe Calibration                            | 18.60                  | N           | 2       | 1       | 1        | 9.3                            | 9.3                             |
| Axial Isotropy                               | 4.70                   | R           | 1.732   | 0.7     | 0.7      | 1.9                            | 1.9                             |
| Hemispherical Isotropy                       | 9.60                   | R           | 1.732   | 0.7     | 0.7      | 3.9                            | 3.9                             |
| Linearity                                    | 4.70                   | R           | 1.732   | 1       | 1        | 2.7                            | 2.7                             |
| Modulation Response                          | 4.68                   | R           | 1.732   | 1       | 1        | 2.7                            | 2.7                             |
| System Detection Limits                      | 1.00                   | R           | 1.732   | 1       | 1        | 0.6                            | 0.6                             |
| Boundary Effects                             | 2.00                   | R           | 1.732   | 1       | 1        | 1.2                            | 1.2                             |
| Readout Electronics                          | 0.30                   | N           | 1       | 1       | 1        | 0.3                            | 0.3                             |
| Response Time                                | 0.00                   | R           | 1.732   | 1       | 1        | 0.0                            | 0.0                             |
| Integration Time                             | 2.60                   | R           | 1.732   | 1       | 1        | 1.5                            | 1.5                             |
| RF Ambient Noise                             | 3.00                   | R           | 1.732   | 1       | 1        | 1.7                            | 1.7                             |
| RF Ambient Reflections                       | 3.00                   | R           | 1.732   | 1       | 1        | 1.7                            | 1.7                             |
| Probe Positioner                             | 0.40                   | R           | 1.732   | 1       | 1        | 0.2                            | 0.2                             |
| Probe Positioning                            | 6.70                   | R           | 1.732   | 1       | 1        | 3.9                            | 3.9                             |
| Post-processing                              | 4.00                   | R           | 1.732   | 1       | 1        | 2.3                            | 2.3                             |
| <b>Test Sample Related</b>                   |                        |             |         |         |          |                                |                                 |
| Device Holder                                | 3.60                   | N           | 1       | 1       | 1        | 3.6                            | 3.6                             |
| Test sample Positioning                      | 3.03                   | N           | 1       | 1       | 1        | 3.0                            | 3.0                             |
| Power Scaling                                | 0.00                   | R           | 1.732   | 1       | 1        | 0.0                            | 0.0                             |
| Power Drift                                  | 5.00                   | R           | 1.732   | 1       | 1        | 2.9                            | 2.9                             |
| <b>Phantom and Setup</b>                     |                        |             |         |         |          |                                |                                 |
| Phantom Uncertainty                          | 7.60                   | R           | 1.732   | 1       | 1        | 4.4                            | 4.4                             |
| SAR correction                               | 0.00                   | R           | 1.732   | 1       | 0.84     | 0.0                            | 0.0                             |
| Liquid Conductivity Repeatability            | 0.03                   | N           | 1       | 0.78    | 0.77     | 0.0                            | 0.0                             |
| Liquid Conductivity (target)                 | 5.00                   | R           | 1.732   | 0.78    | 0.77     | 2.3                            | 2.2                             |
| Liquid Conductivity (mea.)                   | 2.50                   | R           | 1.732   | 0.78    | 0.77     | 1.1                            | 1.1                             |
| Temp. unc. - Conductivity                    | 3.68                   | R           | 1.732   | 0.78    | 0.77     | 1.7                            | 1.6                             |
| Liquid Permittivity Repeatability            | 0.02                   | N           | 1       | 0.23    | 0.26     | 0.0                            | 0.0                             |
| Liquid Permittivity (target)                 | 5.00                   | R           | 1.732   | 0.23    | 0.26     | 0.7                            | 0.8                             |
| Liquid Permittivity (mea.)                   | 2.50                   | R           | 1.732   | 0.23    | 0.26     | 0.3                            | 0.4                             |
| Temp. unc. - Permittivity                    | 0.84                   | R           | 1.732   | 0.23    | 0.26     | 0.1                            | 0.1                             |
| <b>Combined Std. Uncertainty</b>             |                        |             |         |         |          | 14.5%                          | 14.2%                           |
| <b>Coverage Factor for 95 %</b>              |                        |             |         |         |          | K=2                            | K=2                             |
| <b>Expanded STD Uncertainty</b>              |                        |             |         |         |          | 29.0%                          | 28.4%                           |

**Applicable for Power Density Measurements:**

| Error Description                                                       | Uncertainty Value (±dB) | Probability | Divisor | (Ci) | Standard Uncertainty (±dB) |
|-------------------------------------------------------------------------|-------------------------|-------------|---------|------|----------------------------|
| Probe Calibration                                                       | 0.49                    | N           | 1       | 1    | 0.49                       |
| Probe correction                                                        | 0.00                    | R           | 1.732   | 1    | 0.00                       |
| Frequency response (BW ≤ 1 GHz)                                         | 0.20                    | R           | 1.732   | 1    | 0.12                       |
| Sensor cross coupling                                                   | 0.00                    | R           | 1.732   | 1    | 0.00                       |
| Isotropy                                                                | 0.50                    | R           | 1.732   | 1    | 0.29                       |
| Linearity                                                               | 0.20                    | R           | 1.732   | 1    | 0.12                       |
| Probe scattering                                                        | 0.00                    | R           | 1.732   | 1    | 0.00                       |
| Probe positioning offset                                                | 0.30                    | R           | 1.732   | 1    | 0.17                       |
| Probe positioning repeatability                                         | 0.04                    | R           | 1.732   | 1    | 0.02                       |
| Sensor mechanical offset                                                | 0.00                    | R           | 1.732   | 1    | 0.00                       |
| Probe spatial resolution                                                | 0.00                    | R           | 1.732   | 1    | 0.00                       |
| Field impedance dependance                                              | 0.00                    | R           | 1.732   | 1    | 0.00                       |
| Amplitude and phase drift                                               | 0.00                    | R           | 1.732   | 1    | 0.00                       |
| Amplitude and phase noise                                               | 0.04                    | R           | 1.732   | 1    | 0.02                       |
| Measurement area truncation                                             | 0.00                    | R           | 1.732   | 1    | 0.00                       |
| Data acquisition                                                        | 0.03                    | N           | 1       | 1    | 0.03                       |
| Sampling                                                                | 0.00                    | R           | 1.732   | 1    | 0.00                       |
| Field reconstruction                                                    | 2.00                    | R           | 1.732   | 1    | 1.15                       |
| Forward transformation                                                  | 0.00                    | R           | 1.732   | 1    | 0.00                       |
| Power density scaling                                                   | 0.00                    | R           | 1.732   | 1    | 0.00                       |
| Spatial averaging                                                       | 0.10                    | R           | 1.732   | 1    | 0.06                       |
| System detection limit                                                  | 0.04                    | R           | 1.732   | 1    | 0.02                       |
| <b>Uncertainty terms dependent on the DUT and environmental factors</b> |                         |             |         |      |                            |
| Probe coupling with DUT                                                 | 0.00                    | R           | 1.732   | 1    | 0.0                        |
| Modulation response                                                     | 0.40                    | R           | 1.732   | 1    | 0.2                        |
| Integration time                                                        | 0.00                    | R           | 1.732   | 1    | 0.0                        |
| Response time                                                           | 0.00                    | R           | 1.732   | 1    | 0.0                        |
| Device holder influence                                                 | 0.10                    | R           | 1.732   | 1    | 0.1                        |
| DUT alignment                                                           | 0.00                    | R           | 1.732   | 1    | 0.0                        |
| RF ambient conditions                                                   | 0.04                    | R           | 1.732   | 1    | 0.0                        |
| Ambient reflections                                                     | 0.04                    | R           | 1.732   | 1    | 0.0                        |
| Immunity / secondary reception                                          | 0.00                    | R           | 1.732   | 1    | 0.0                        |
| Drift of the DUT                                                        |                         | R           | 1.732   | 1    |                            |
| <b>Combined Std. Uncertainty</b>                                        |                         |             |         |      | <b>1.34</b>                |
| <b>Expanded STD Uncertainty (95%)</b>                                   |                         |             |         |      | <b>2.68</b>                |

## **18. 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
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- [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
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- [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.