

# VARIANT FCC TEST REPORT

## (PART 27)

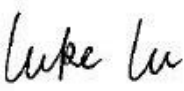
|            |                                                         |
|------------|---------------------------------------------------------|
| Applicant: | Honeywell International Inc                             |
| Address:   | 9680 Old Bailes Road, Fort Mill, SC 29707 United States |

|                           |                                                         |
|---------------------------|---------------------------------------------------------|
| Manufacturer or Supplier: | Honeywell International Inc                             |
| Address:                  | 9680 Old Bailes Road, Fort Mill, SC 29707 United States |
| Product:                  | Mobile Computer                                         |
| Brand Name:               | Honeywell                                               |
| Model Name:               | CT45P-L1N-2                                             |
| FCC ID                    | HD5-CT45PL1N2                                           |
| Date of tests             | Oct, 09, 2025 ~ Nov. 18, 2025                           |

The tests have been carried out according to the requirements of the following standard:

- |                                                               |                                                               |
|---------------------------------------------------------------|---------------------------------------------------------------|
| <input checked="" type="checkbox"/> <b>FCC Part 27</b>        | <input checked="" type="checkbox"/> <b>ANSI/TIA/EIA-603-E</b> |
| <input checked="" type="checkbox"/> <b>ANSI/TIA/EIA-603-D</b> | <input checked="" type="checkbox"/> <b>ANSI C63.26-2015</b>   |
| <input checked="" type="checkbox"/> <b>FCC Part 2</b>         |                                                               |

**CONCLUSION:** The submitted sample was found to COMPLY with the test requirement

|                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Prepared by Hanwen Xu<br>Engineer / Mobile Department                               | Approved by Luke Lu<br>Manager / Mobile Department                                    |
|  |  |
| Date: Nov. 18, 2025                                                                 | Date: Nov. 18, 2025                                                                   |

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



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## RELEASE CONTROL RECORD

| ISSUE NO.             | REASON FOR CHANGE                                                                                                                                                                                                                                                                                                                                                                               | DATE ISSUED   |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| W7L-P21080006RF18     | Original release                                                                                                                                                                                                                                                                                                                                                                                | Sep. 01, 2021 |
| PSU-NQN2509250114RF09 | Based on the original report W7L-P21080006RF18(FCC ID: HD5-CT45PL1N2). The new product add alternate parts, the electrical specs of the alternate part is equivalent to the current part. This report update the SW version, retest power and RF, verify RSE worst case. So this report updates power, RF and RSE worst case(LTE B13 5MHz_CH23255), other data please refer to original report. | Nov. 18, 2025 |



# 1. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC PART 27 & PART 2                         |                                                                                                            |            |           |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------|-----------|
| STANDARD SECTION                                               | TEST TYPE AND LIMIT                                                                                        | RESULT     | TEST LAB* |
| §2.1046                                                        | Conducted Output Power                                                                                     | Compliance | A         |
| §27.50(c)(10)<br>§27.50(b)(10)                                 | Effective Radiated Power<br>(Band 12) (Band 13) (Band 17) (Band 71)                                        | Compliance | A         |
| §27.50(d)(4)<br>§27.50(a)(3)                                   | Equivalent Isotropically Radiated Power<br>(Band 4)(Band 30) (Band 66)                                     | Compliance | A         |
| §2.1055<br>§27.54                                              | Frequency Stability                                                                                        | Compliance | A         |
| §2.1049                                                        | Occupied Bandwidth                                                                                         | Compliance | A         |
| §2.1051<br>§27.53(c)(2)<br>§27.53(g)<br>§27.53(h)              | Conducted Band Edge Measurements<br>(Band 4) (Band 12) (Band 13) (Band 17) (Band 30)<br>(Band 71)(Band 66) | Compliance | A         |
| §2.1051<br>§27.53(g)<br>§27.53(c)(2)<br>§27.53(f)<br>§27.53(h) | Conducted Spurious Emissions<br>(Band 4) (Band 12) (Band 13) (Band 17) (Band 30)<br>(Band 71)(Band 66)     | Compliance | A         |
| §2.1053<br>§27.53(c)(2)<br>§27.53(f)<br>§27.53(g)<br>§27.53(h) | Radiated Spurious Emissions<br>(Band 4) (Band 12) (Band 13) (Band 17) (Band 30)<br>(Band 71)(Band 66)      | Compliance | A         |
| §27.50                                                         | Peak to average ratio*                                                                                     | Compliance | A         |

\* Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01.



**\*Test Lab Information Reference**

**Lab A:**

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

**Lab Address:**

Tower N, Innovation Center, 88 Zuyi Road, High-tech District, Suzhou City, Anhui Province, China

**Accredited Test Lab Cert 6613.01**

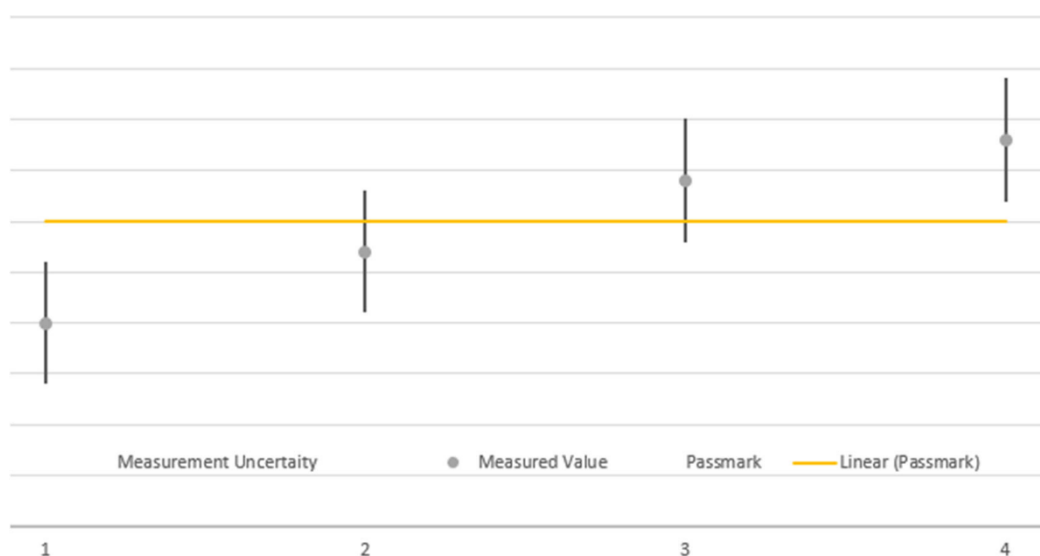
**The FCC Site Registration No. is 434559; The Designation No. is CN1325.**

## 1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| MEASUREMENT                                      | UNCERTAINTY |
|--------------------------------------------------|-------------|
| Frequency Stability                              | ±76.97Hz    |
| Radiated emissions (9KHz~30MHz)                  | ±2.68dB     |
| Radiated emissions & Radiated Power (30MHz~1GHz) | ±4.98dB     |
| Radiated emissions & Radiated Power (1GHz ~6GHz) | ±4.70dB     |
| Radiated emissions (6GHz ~18GHz)                 | ±4.60dB     |
| Radiated emissions (18GHz ~40GHz)                | ±4.12dB     |
| Conducted emissions                              | ±4.01dB     |
| Occupied Channel Bandwidth                       | ±43.58KHz   |
| Conducted Output power                           | ±2.06dB     |
| Band Edge Measurements                           | ±4.70dB     |

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



The verdicts in this test report are given according the above diagram:

| Case | Measured Value  | Uncertainty Range | Verdict |
|------|-----------------|-------------------|---------|
| 1    | below pass mark | below pass mark   | Passed  |
| 2    | below pass mark | within pass mark  | Passed  |
| 3    | above pass mark | within pass mark  | Failed  |
| 4    | above pass mark | above pass mark   | Failed  |

That means, the laboratory applies, as decision rule (see ISO/IEC 17025:2017), the so-called shared risk principle.



## 1.2 TEST SITE AND INSTRUMENTS

| Equipment                          | Manufacturer                 | Model No.        | Serial No.            | Last Cal. | Next Cal. |
|------------------------------------|------------------------------|------------------|-----------------------|-----------|-----------|
| Pre-Amplifier                      | R&S                          | SCU18F1          | 100815                | Aug.29,25 | Aug.28,27 |
| Pre-Amplifier                      | R&S                          | SCU08F1          | 101028                | Jan.22,24 | Jan.21,26 |
| Vector Signal Generator            | R&S                          | SMBV100B         | 102176                | Mar.29,24 | Mar.28,26 |
| Signal Generator                   | R&S                          | SMB100A          | 182185                | Mar.29,24 | Mar.28,26 |
| 3m Fully-anechoic Chamber          | TDK                          | 9m*6m*6m         | HRSW-SZ-EMC-01Chamber | Nov.24,22 | Nov.23,25 |
| 3m Semi-anechoic Chamber           | TDK                          | 9m*6m*6m         | HRSW-SZ-EMC-02Chamber | Aug.20,25 | Aug.19,28 |
| EMI TEST Receiver                  | R&S                          | ESR26            | 101734                | Mar.28,24 | Mar.27,26 |
| EMI TEST Receiver                  | R&S                          | ESW44            | 101973                | Mar.28,24 | Mar.27,26 |
| Bilog Antenna                      | SCHWARZBECK                  | VULB 9163        | 1264                  | Jul.04,25 | Jul.03,27 |
| Horn Antenna                       | ETS-LINDGREN                 | 3117             | 227836                | Aug.20,25 | Aug.19,27 |
| Horn Antenna (18GHz-40GHz)         | Steatite Q-par Antennas      | QMS 00880        | 23486                 | Jul.15,24 | Jul.14,26 |
| Horn Antenna                       | Steatite Q-par Antennas      | QMS 00208        | 23485                 | Mar.22,25 | Mar.21,27 |
| Loop Antenna                       | SCHWARZ                      | HFH2-Z2/Z2E      | 100976                | Feb.22,25 | Feb.21,27 |
| WIDEBANDRADIO COMMUNICATION TESTER | R&S                          | CMW500           | 169399                | Jun.19,24 | Jun.18,26 |
| Test Software                      | EMC32                        | EMC32            | N/A                   | N/A       | N/A       |
| 6DB attenuator                     | Tonscend Technology Co., Ltd | N/A              | 23062787              | N/A       | N/A       |
| Test Software                      | ELEKTRA                      | ELEKTRA4.32      | N/A                   | N/A       | N/A       |
| Open Switch and Control Unit       | R&S                          | OSP220           | 101964                | N/A       | N/A       |
| DC Source                          | HYELEC                       | HY3010B          | 551016                | Aug.30,25 | Aug.29,27 |
| Hygrothermograph                   | DELI                         | 20210528         | SZ014                 | Mar.18,25 | Mar.17,27 |
| PC                                 | LENOVO                       | E14              | HRSW0024              | N/A       | N/A       |
| TMC-AMI18843A(CABLE)               | R&S                          | HF290-NMNM-7.00M | N/A                   | N/A       | N/A       |
| TMC-AMI18843A(CABLE)               | R&S                          | HF290-NMNM-4.00M | N/A                   | N/A       | N/A       |
| CABLE                              | R&S                          | W13.02           | N/A                   | Apr.26,25 | Apr.25,26 |
| CABLE                              | R&S                          | W12.14           | N/A                   | Apr.26,25 | Apr.25,26 |
| CABLE                              | R&S                          | J12J103539-00-1  | SEP-03-20-069         | Apr.26,25 | Apr.25,26 |
| CABLE                              | R&S                          | J12J103539-00-1  | SEP-03-20-070         | Apr.26,25 | Apr.25,26 |
| Temperature Chamber                | votsch                       | VT4002           | 58566078100050        | May.30,24 | May.29,26 |



**NOTE:**

1. The calibration interval of the above test instruments is 12/ 24/ 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.
3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 434559; The Designation No. is CN1325.



## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

|                              |                                                       |                        |
|------------------------------|-------------------------------------------------------|------------------------|
| <b>PRODUCT*</b>              | Mobile Computer                                       |                        |
| <b>BRAND NAME*</b>           | Honeywell                                             |                        |
| <b>MODEL NAME*</b>           | CT45P-L1N-2                                           |                        |
| <b>NOMINAL VOLTAGE*</b>      | 5Vdc (adapter)<br>3.85Vdc (Lithium-ion cell, battery) |                        |
| <b>MODULATION TECHNOLOGY</b> | LTE                                                   | QPSK, 16QAM, 64QAM     |
| <b>FREQUENCY RANGE</b>       | LTE Band 4<br>Channel Bandwidth: 1.4MHz               | 1710.7MHz ~ 1754.3MHz  |
|                              | LTE Band 4<br>Channel Bandwidth: 3MHz                 | 1711.5MHz ~ 1753.5MHz  |
|                              | LTE Band 4<br>Channel Bandwidth: 5MHz                 | 1712.5MHz ~ 1752.5MHz  |
|                              | LTE Band 4<br>Channel Bandwidth: 10MHz                | 1715MHz ~ 1750MHz      |
|                              | LTE Band 4<br>Channel Bandwidth: 15MHz                | 1717.5MHz ~ 1747.5 MHz |
|                              | LTE Band 4<br>Channel Bandwidth: 20MHz                | 1720MHz ~ 1745MHz      |
|                              | LTE Band 12<br>Channel Bandwidth: 1.4MHz              | 699.7MHz ~ 715.3MHz    |
|                              | LTE Band 12<br>Channel Bandwidth: 3MHz                | 700.5MHz ~ 714.5MHz    |
|                              | LTE Band 12<br>Channel Bandwidth: 5MHz                | 701.5MHz ~ 713.5MHz    |
|                              | LTE Band 12<br>Channel Bandwidth: 10MHz               | 704MHz ~ 711MHz        |
|                              | LTE Band 13<br>Channel Bandwidth: 5MHz                | 779.5MHz ~ 784.5MHz    |
|                              | LTE Band 13<br>Channel Bandwidth: 10MHz               | 782MHz                 |
|                              | LTE Band 17<br>Channel Bandwidth: 5MHz                | 706.5MHz ~ 713.5MHz    |
|                              | LTE Band 17<br>Channel Bandwidth: 10MHz               | 709MHz ~ 711 MHz       |
|                              | LTE Band 30<br>Channel Bandwidth: 5MHz                | 2307.5MHz ~ 2312.5MHz  |
|                              | LTE Band 30<br>Channel Bandwidth: 10MHz               | 2310MHz                |
|                              | LTE Band 66<br>Channel Bandwidth: 1.4MHz              | 1710.7MHz ~ 1779.3MHz  |
|                              | LTE Band 66<br>Channel Bandwidth: 3MHz                | 1711.5MHz ~ 1778.5MHz  |
|                              | LTE Band 66<br>Channel Bandwidth: 5MHz                | 1712.5MHz ~ 1777.5MHz  |
|                              | LTE Band 66<br>Channel Bandwidth: 10MHz               | 1715MHz ~ 1775MHz      |



|                     |                                          |                       |
|---------------------|------------------------------------------|-----------------------|
|                     | LTE Band 66<br>Channel Bandwidth: 15MHz  | 1717.5MHz ~ 1772.5MHz |
|                     | LTE Band 66<br>Channel Bandwidth: 20MHz  | 1720MHz ~ 1770MHz     |
|                     | LTE Band 71<br>Channel Bandwidth: 5MHz   | 665.5MHz ~ 695.5MHz   |
|                     | LTE Band 71<br>Channel Bandwidth: 10MHz  | 668MHz ~ 693MHz       |
|                     | LTE Band 71<br>Channel Bandwidth: 15MHz  | 670.5MHz ~ 690.5MHz   |
|                     | LTE Band 71<br>Channel Bandwidth: 20MHz  | 673MHz ~ 688MHz       |
| MAX. EIRP/ERP POWER | LTE Band 4<br>Channel Bandwidth: 1.4MHz  | 203.24mW              |
|                     | LTE Band 4<br>Channel Bandwidth: 3MHz    | 203.70mW              |
|                     | LTE Band 4<br>Channel Bandwidth: 5MHz    | 206.06mW              |
|                     | LTE Band 4<br>Channel Bandwidth: 10MHz   | 199.99mW              |
|                     | LTE Band 4<br>Channel Bandwidth: 15MHz   | 204.64mW              |
|                     | LTE Band 4<br>Channel Bandwidth: 20MHz   | 206.54mW              |
|                     | LTE Band 12<br>Channel Bandwidth: 1.4MHz | 140.60mW              |
|                     | LTE Band 12<br>Channel Bandwidth: 3MHz   | 141.58mW              |
|                     | LTE Band 12<br>Channel Bandwidth: 5MHz   | 140.28mW              |
|                     | LTE Band 12<br>Channel Bandwidth: 10MHz  | 142.23mW              |
|                     | LTE Band 13<br>Channel Bandwidth: 5MHz   | 147.23mW              |
|                     | LTE Band 13<br>Channel Bandwidth: 10MHz  | 149.97mW              |
|                     | LTE Band 17<br>Channel Bandwidth: 5MHz   | 137.40mW              |
|                     | LTE Band 17<br>Channel Bandwidth: 10MHz  | 139.32mW              |
|                     | LTE Band 30<br>Channel Bandwidth: 5MHz   | 263.63mW              |
|                     | LTE Band 30<br>Channel Bandwidth: 10MHz  | 264.24mW              |
|                     | LTE Band 66<br>Channel Bandwidth: 1.4MHz | 220.80mW              |
|                     | LTE Band 66<br>Channel Bandwidth: 3MHz   | 223.36mW              |
|                     | LTE Band 66<br>Channel Bandwidth: 5MHz   | 220.29mW              |
|                     | LTE Band 66<br>Channel Bandwidth: 10MHz  | 224.91mW              |



|                     |                                          |                |
|---------------------|------------------------------------------|----------------|
| MAX. EIRP/ERP POWER | LTE Band 66<br>Channel Bandwidth: 15MHz  | 218.78mW       |
|                     | LTE Band 66<br>Channel Bandwidth: 20MHz  | 225.42mW       |
|                     | LTE Band 71<br>Channel Bandwidth: 5MHz   | 218.27mW       |
|                     | LTE Band 71<br>Channel Bandwidth: 10MHz  | 216.27mW       |
|                     | LTE Band 71<br>Channel Bandwidth: 15MHz  | 219.79mW       |
|                     | LTE Band 71<br>Channel Bandwidth: 20MHz  | 221.31mW       |
| EMISSION DESIGNATOR | LTE Band 12<br>Channel Bandwidth: 1.4MHz | QPSK: 1M10G7D  |
|                     |                                          | 16QAM: 1M10W7D |
|                     |                                          | 64QAM: 1M10W7D |
|                     | LTE Band 12<br>Channel Bandwidth: 3MHz   | QPSK: 2M70G7D  |
|                     |                                          | 16QAM: 2M70W7D |
|                     |                                          | 64QAM: 2M70W7D |
|                     | LTE Band 12<br>Channel Bandwidth: 5MHz   | QPSK: 4M49G7D  |
|                     |                                          | 16QAM: 4M50W7D |
|                     |                                          | 64QAM: 4M50W7D |
|                     | LTE Band 12<br>Channel Bandwidth: 10MHz  | QPSK: 9M04G7D  |
|                     |                                          | 16QAM: 9M02W7D |
|                     |                                          | 64QAM: 9M01W7D |
|                     | LTE Band 13<br>Channel Bandwidth: 5MHz   | QPSK: 4M49G7D  |
|                     |                                          | 16QAM: 4M50W7D |
|                     |                                          | 64QAM: 4M49W7D |
|                     | LTE Band 13<br>Channel Bandwidth: 10MHz  | QPSK: 8M94G7D  |
|                     |                                          | 16QAM: 8M94W7D |
|                     |                                          | 64QAM: 8M93W7D |
|                     | LTE Band 30<br>Channel Bandwidth: 5MHz   | QPSK: 4M50G7D  |
|                     |                                          | 16QAM: 4M50W7D |
|                     |                                          | 64QAM: 4M49W7D |
|                     | LTE Band 30                              | QPSK: 8M97G7D  |



|  |                                          |                |
|--|------------------------------------------|----------------|
|  | Channel Bandwidth: 10MHz                 | 16QAM: 8M96W7D |
|  |                                          | 64QAM: 8M95W7D |
|  | LTE Band 66<br>Channel Bandwidth: 1.4MHz | QPSK: 1M10G7D  |
|  |                                          | 16QAM: 1M10W7D |
|  |                                          | 64QAM: 1M10W7D |
|  | LTE Band 66<br>Channel Bandwidth: 3MHz   | QPSK: 2M70G7D  |
|  |                                          | 16QAM: 2M70W7D |
|  |                                          | 64QAM: 2M70W7D |
|  | LTE Band 66<br>Channel Bandwidth: 5MHz   | QPSK: 4M50G7D  |
|  |                                          | 16QAM: 4M50W7D |
|  |                                          | 64QAM: 4M49W7D |
|  | LTE Band 66<br>Channel Bandwidth: 10MHz  | QPSK: 8M97G7D  |
|  |                                          | 16QAM: 8M96W7D |
|  |                                          | 64QAM: 8M95W7D |
|  | LTE Band 66<br>Channel Bandwidth: 15MHz  | QPSK: 13M5G7D  |
|  |                                          | 16QAM: 13M5W7D |
|  |                                          | 64QAM: 13M5W7D |
|  | LTE Band 66<br>Channel Bandwidth: 20MHz  | QPSK: 18M0G7D  |
|  |                                          | 16QAM: 18M0W7D |
|  |                                          | 64QAM: 17M9W7D |
|  | LTE Band 71<br>Channel Bandwidth: 5MHz   | QPSK: 4M49G7D  |
|  |                                          | 16QAM: 4M49W7D |
|  |                                          | 64QAM: 4M49W7D |
|  | LTE Band 71<br>Channel Bandwidth: 10MHz  | QPSK: 8M97G7D  |
|  |                                          | 16QAM: 8M95W7D |
|  |                                          | 64QAM: 8M97W7D |
|  | LTE Band 71<br>Channel Bandwidth: 15MHz  | QPSK: 13M6G7D  |
|  |                                          | 16QAM: 13M6W7D |
|  |                                          | 64QAM: 13M6W7D |



|                             |                                                                                                           |                |
|-----------------------------|-----------------------------------------------------------------------------------------------------------|----------------|
|                             | <b>LTE Band 71</b><br><b>Channel Bandwidth: 20MHz</b>                                                     | QPSK: 18M0G7D  |
|                             |                                                                                                           | 16QAM: 18M0W7D |
|                             |                                                                                                           | 64QAM: 18M0W7D |
| <b>ANTENNA GAIN*</b>        | <input checked="" type="checkbox"/> Provided by client                                                    |                |
|                             | LTE BAND4                                                                                                 | 2.55dBi        |
|                             | LTE BAND12                                                                                                | 1.11dBi        |
|                             | LTE BAND13                                                                                                | 0.86dBi        |
|                             | LTE BAND17                                                                                                | 1.11dBi        |
|                             | LTE BAND30                                                                                                | 1.17dBi        |
|                             | LTE BAND66                                                                                                | 2.91dBi        |
|                             | LTE BAND71                                                                                                | 1dBi           |
| <b>ANTENNA TYPE*</b>        | PIFA Antenna                                                                                              |                |
| <b>HW VERSION*</b>          | V1.0                                                                                                      |                |
| <b>SW VERSION*</b>          | OS.11.003-HON.11.003                                                                                      |                |
| <b>I/O PORTS*</b>           | Refer to user's manual                                                                                    |                |
| <b>CABLE SUPPLIED*</b>      | USB cable: shielded without ferrite, 1.25 meter<br>Earphone cable: unshielded without ferrite, 1.27 meter |                |
| <b>EXTREME TEMPERATURE*</b> | -10-55 °C                                                                                                 |                |
| <b>EXTREME VOLTAGE*</b>     | 3.4V- 4.4V                                                                                                |                |

**NOTE:**

1. \*Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information , Test Lab is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.
2. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
3. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

| MODULATION MODE | TX FUNCTION |
|-----------------|-------------|
| LTE             | 1TX/1RX     |

4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in the test report.



5. This product includes the following three SKU which hardware is exactly same, the difference is described as following, Sample 1 was full test, sample 2 verify the worst case, check worst case Radiated emission:

| SAMPLE | EUT CONFIGURATION INFORMATION                                                                  |
|--------|------------------------------------------------------------------------------------------------|
| 1      | SKU ID:CT45-L1N-37D120G ,Assembled Scanner Imager: 7-S0703                                     |
| 2      | SKU ID:CT45-L1N-38D120G ,Assembled Scanner Imager: 8 - N6803/S0803                             |
| 3      | SKU ID: CT45-L1N-37D220G , Assembled with Scanner: 7-S0703 for China Only with Android non-GMS |

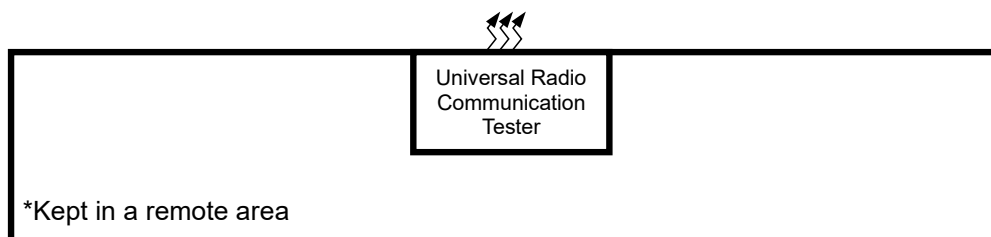
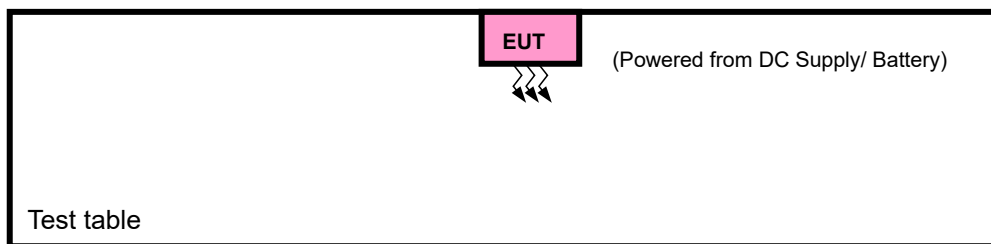
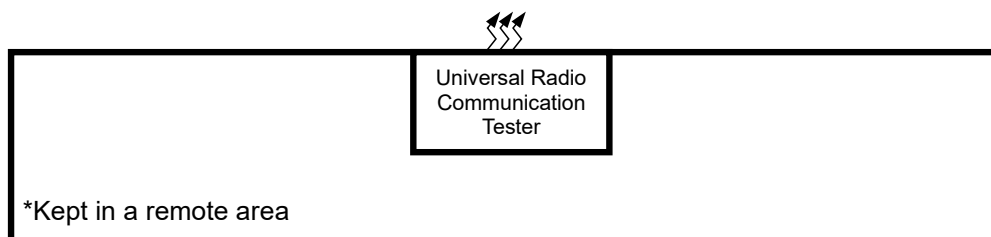
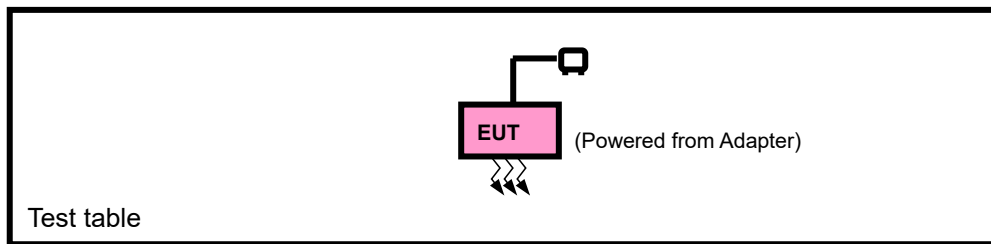
6. List of Accessory:

| ACCESSORIES | BRAND     | MODEL                | SPECIFICATION                         |
|-------------|-----------|----------------------|---------------------------------------|
| Battery     | Honeywell | CT50-BTSC            | Capacity: 3.85vdc 4020mAh             |
| AC Adapter  | HONOR     | ADS-12B-06<br>05010E | I/P:100-240Vac, 0.3A<br>O/P: 5Vdc, 2A |
| USB Cable   | Honeywell | CT40-SN              | Shielded, 1.25meter                   |
| Earphone    | VIVO      | NA                   | Shielded, 1.27meter                   |
| LCD Panel   | CASIL     | CTM10801920T01       | 5.0" FHD(1928*1080)                   |



## 2.2 CONFIGURATION OF SYSTEM UNDER TEST

### FOR RADIATION EMISSION TEST





## 2.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| NO. | PRODUCT   | BRAND  | MODEL NO. | SERIAL NO. | FCC ID |
|-----|-----------|--------|-----------|------------|--------|
| 1   | DC Source | HYELEC | HY3010B   | 551016     | N/A    |

| NO. | SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|-----|-----------------------------------------------------|
| 1   | USB Line: Shielded, Detachable 1.25m;               |
| 2   | DC Line: Unshielded, Detachable 1.0m                |



## 2.4 TEST ITEM AND TEST CONFIGURATION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The worst case was found when positioned on Y-plane for EIRP and X-axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

| EUT CONFIGURE MODE | DESCRIPTION                   |
|--------------------|-------------------------------|
| A                  | EUT + Adapter with LTE link   |
| B                  | EUT + DC Supply with LTE link |

| LTE BAND 4 MODE    |           |                   |                     |                   |                    |                    |
|--------------------|-----------|-------------------|---------------------|-------------------|--------------------|--------------------|
| EUT CONFIGURE MODE | TEST ITEM | AVAILABLE CHANNEL | TESTED CHANNEL      | CHANNEL BANDWIDTH | MODULATION         | MODE               |
| A                  | EIRP      | 19957 to 20393    | 19957, 20175, 20393 | 1.4MHz            | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
|                    |           | 19965 to 20385    | 19965, 20175, 20385 | 3MHz              | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
|                    |           | 19975 to 20375    | 19975, 20175, 20375 | 5MHz              | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
|                    |           | 20000 to 20350    | 20000, 20175, 20350 | 10MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
|                    |           | 20025 to 20325    | 20025, 20175, 20325 | 15MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
|                    |           | 20050 to 20300    | 20050, 20175, 20300 | 20MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |

**Note:** 1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

2. LTE Band 4 are covered by LTE Band 66, Because it is a subset of LTE Band 66 with the same output power and supported bandwidths, So the conducted test data and RSE test data please refer to LTE Band 66



| LTE BAND 12 MODE   |                       |                   |                      |                   |                    |                                            |
|--------------------|-----------------------|-------------------|----------------------|-------------------|--------------------|--------------------------------------------|
| EUT CONFIGURE MODE | TEST ITEM             | AVAILABLE CHANNEL | TESTED CHANNEL       | CHANNEL BANDWIDTH | MODULATION         | MODE                                       |
| A                  | ERP                   | 23017 to 23173    | 23017, 23095 , 23173 | 1.4MHz            | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset                         |
|                    |                       | 23025 to 23165    | 23025, 23095 ,23165  | 3MHz              | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset                         |
|                    |                       | 23035 to 23155    | 23035, 23095 ,23155  | 5MHz              | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset                         |
|                    |                       | 23060 to 23130    | 23060, 23095 ,23130  | 10MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset                         |
| B                  | FREQUENCY STABILITY   | 23060 to 23130    | 23060, 23095 ,23130  | 10MHz             | QPSK               | 50 RB / 0 RB offset                        |
| A                  | OCCUPIED BANDWIDTH    | 23017 to 23173    | 23017, 23095 , 23173 | 1.4MHz            | QPSK, 16QAM, 64QAM | 6 RB / 0 RB offset                         |
|                    |                       | 23025 to 23165    | 23025, 23095 ,23165  | 3MHz              | QPSK, 16QAM, 64QAM | 15 RB / 0 RB offset                        |
|                    |                       | 23035 to 23155    | 23035, 23095 ,23155  | 5MHz              | QPSK, 16QAM, 64QAM | 25 RB / 0 RB offset                        |
|                    |                       | 23060 to 23130    | 23060, 23095 ,23130  | 10MHz             | QPSK, 16QAM, 64QAM | 50 RB / 0 RB offset                        |
| A                  | PEAK TO AVERAGE RATIO | 23017 to 23173    | 23017, 23095 , 23173 | 1.4MHz            | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset<br>6 RB / 0 RB offset   |
|                    |                       | 23025 to 23165    | 23025, 23095 ,23165  | 3MHz              | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset<br>15 RB / 0 RB offset  |
|                    |                       | 23035 to 23155    | 23035, 23095 ,23155  | 5MHz              | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset<br>25 RB / 0 RB offset  |
|                    |                       | 23060 to 23130    | 23060, 23095 ,23130  | 10MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset<br>50 RB / 0 RB offset  |
| A                  | BAND EDGE             | 23017 to 23173    | 23017                | 1.4MHz            | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset<br>6 RB / 0 RB offset   |
|                    |                       |                   | 23173                | 1.4MHz            | QPSK, 16QAM, 64QAM | 1 RB / 5 RB offset<br>6 RB / 0 RB offset   |
|                    |                       | 23025 to 23165    | 23025                | 3MHz              | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset<br>15 RB / 0 RB offset  |
|                    |                       |                   | 23165                | 3MHz              | QPSK, 16QAM, 64QAM | 1 RB / 14 RB offset<br>15 RB / 0 RB offset |
|                    |                       | 23035 to 23155    | 23035                | 5MHz              | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset<br>25 RB / 0 RB offset  |
|                    |                       |                   | 23155                | 5MHz              | QPSK, 16QAM, 64QAM | 1 RB / 24 RB offset<br>25 RB / 0 RB offset |
|                    |                       | 23060 to 23130    | 23060                | 10MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset<br>50 RB / 0 RB offset  |
|                    |                       |                   | 23130                | 10MHz             | QPSK, 16QAM, 64QAM | 1 RB / 49 RB offset<br>50 RB / 0 RB offset |
| A                  | CONDCUDED EMISSION    | 23017 to 23173    | 23017, 23095, 23173  | 1.4MHz            | QPSK               | 1 RB / 0 RB offset                         |
|                    |                       | 23025 to 23165    | 23025, 23095 ,23165  | 3MHz              | QPSK               | 1 RB / 0 RB offset                         |
|                    |                       | 23035 to 23155    | 23035, 23095 ,23155  | 5MHz              | QPSK               | 1 RB / 0 RB offset                         |
|                    |                       | 23060 to 23130    | 23060, 23095 ,23130  | 10MHz             | QPSK               | 1 RB / 0 RB offset                         |

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.



| LTE BAND 13 MODE   |                       |                   |                     |                   |                    |                                            |
|--------------------|-----------------------|-------------------|---------------------|-------------------|--------------------|--------------------------------------------|
| EUT CONFIGURE MODE | TEST ITEM             | AVAILABLE CHANNEL | TESTED CHANNEL      | CHANNEL BANDWIDTH | MODULATION         | MODE                                       |
| A                  | ERP                   | 23205 to 23255    | 23205, 23230, 23255 | 5MHz              | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset                         |
|                    |                       | 23230             | 23230               | 10MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset                         |
| B                  | FREQUENCY STABILITY   | 23230             | 23230               | 10MHz             | QPSK               | 50 RB / 0 RB offset                        |
| A                  | OCCUPIED BANDWIDTH    | 23205 to 23255    | 23205, 23230, 23255 | 5MHz              | QPSK, 16QAM, 64QAM | 25 RB / 0 RB offset                        |
|                    |                       | 23230             | 23230               | 10MHz             | QPSK, 16QAM, 64QAM | 50 RB / 0 RB offset                        |
| A                  | PEAK TO AVERAGE RATIO | 23205 to 23255    | 23205, 23230, 23255 | 5MHz              | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset<br>25 RB / 0 RB offset  |
|                    |                       | 23230             | 23230               | 10MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset<br>50 RB / 0 RB offset  |
| A                  | BAND EDGE             | 23205 to 23255    | 23205               | 5MHz              | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset<br>25 RB / 0 RB offset  |
|                    |                       |                   | 23255               | 5MHz              | QPSK, 16QAM, 64QAM | 1 RB / 24 RB offset<br>25 RB / 0 RB offset |
|                    |                       | 23230             | 23230               | 10MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset                         |
|                    |                       |                   |                     |                   |                    | 1 RB / 49 RB offset                        |
|                    |                       |                   |                     |                   |                    | 50 RB / 0 RB offset                        |
|                    |                       |                   |                     |                   |                    |                                            |
| A                  | CONDCUETED EMISSION   | 23205 to 23255    | 23205, 23230, 23255 | 5MHz              | QPSK               | 1 RB / 0 RB offset                         |
|                    |                       | 23230             | 23230               | 10MHz             | QPSK               | 1 RB / 0 RB offset                         |
| A                  | RADIATED EMISSION     | 23205 to 23255    | 23255               | 5MHz              | QPSK               | 1 RB / 0 RB offset                         |

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

| LTE BAND 17 MODE   |           |                   |                     |                   |                    |                    |
|--------------------|-----------|-------------------|---------------------|-------------------|--------------------|--------------------|
| EUT CONFIGURE MODE | TEST ITEM | AVAILABLE CHANNEL | TESTED CHANNEL      | CHANNEL BANDWIDTH | MODULATION         | MODE               |
| A                  | ERP       | 23755 to 23825    | 23755, 23790, 23825 | 5MHz              | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset |
|                    |           | 23780 to 23800    | 23780, 23790, 23800 | 10MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset |

**Note:**

1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.



2. LTE Band 17 are covered by LTE Band 12, Because it is a subset of LTE Band 12 with the same output power and supported bandwidths, So the conducted test data and RSE test data please refer to LTE Band 12.

**LTE BAND 30**

| EUT CONFIGURE MODE | TEST ITEM             | AVAILABLE CHANNEL | TESTED CHANNEL      | CHANNEL BANDWIDTH | MODULATION         | MODE                                                                  |
|--------------------|-----------------------|-------------------|---------------------|-------------------|--------------------|-----------------------------------------------------------------------|
| A                  | ERP                   | 27685 to 27735    | 27685, 27710, 27735 | 5MHz              | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset                                                    |
|                    |                       | 27710             | 27710               | 10MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset                                                    |
| B                  | FREQUENCY STABILITY   | 27710             | 27710               | 10MHz             | QPSK               | 50 RB / 0 RB Offset                                                   |
| A                  | OCCUPIED BANDWIDTH    | 27685 to 27735    | 27685, 27710, 27735 | 5MHz              | QPSK, 16QAM, 64QAM | 25 RB / 0 RB Offset                                                   |
|                    |                       | 27710             | 27710               | 10MHz             | QPSK, 16QAM, 64QAM | 50 RB / 0 RB Offset                                                   |
| A                  | PEAK TO AVERAGE RATIO | 27685 to 27735    | 27685, 27710, 27735 | 5MHz              | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset<br>50 RB / 0 RB Offset                             |
|                    |                       | 27710             | 27710               | 10MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset<br>50 RB / 0 RB Offset                             |
| A                  | BAND EDGE             | 27685 to 27735    | 27685               | 5MHz              | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset<br>25 RB / 0 RB Offset                             |
|                    |                       |                   | 27735               | 5MHz              | QPSK, 16QAM, 64QAM | 1 RB / 24 RB Offset<br>25 RB / 0 RB Offset                            |
|                    |                       | 27710             | 27710               | 10MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset<br>50 RB / 0 RB Offset<br>1 RB / 49 RB Offset<br>/ |
|                    |                       |                   |                     |                   |                    |                                                                       |
|                    |                       |                   |                     |                   |                    |                                                                       |
|                    |                       |                   |                     |                   |                    |                                                                       |
| A                  | CONDUCTED EMISSION    | 27685 to 27735    | 27685, 27710, 27735 | 5MHz              | QPSK               | 1 RB / 0 RB Offset                                                    |
|                    |                       | 27710             | 27710               | 10MHz             | QPSK               | 1 RB / 0 RB Offset                                                    |

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

| LTE BAND 66 MODE   |                     |                   |                      |                   |                  |                      |
|--------------------|---------------------|-------------------|----------------------|-------------------|------------------|----------------------|
| EUT CONFIGURE MODE | TEST ITEM           | AVAILABLE CHANNEL | TESTED CHANNEL       | CHANNEL BANDWIDTH | MODULATION       | MODE                 |
| A                  | EIRP                | 131979 to 132665  | 131979,132322,132665 | 1.4MHz            | QPSK,16QAM,64QAM | 1 RB / 0 RB Offset   |
|                    |                     | 131987 to 132657  | 131987,132322,132657 | 3MHz              | QPSK,16QAM,64QAM | 1 RB / 0 RB Offset   |
|                    |                     | 131997 to 132647  | 131997,132322,132647 | 5MHz              | QPSK,16QAM,64QAM | 1 RB / 0 RB Offset   |
|                    |                     | 132022 to 132622  | 132022,132322,132622 | 10MHz             | QPSK,16QAM,64QAM | 1 RB / 0 RB Offset   |
|                    |                     | 132047 to 132597  | 132047,132322,132597 | 15MHz             | QPSK,16QAM,64QAM | 1 RB / 0 RB Offset   |
|                    |                     | 132072 to 132572  | 132072,132322,132572 | 20MHz             | QPSK,16QAM,64QAM | 1 RB / 0 RB Offset   |
| B                  | FREQUENCY STABILITY | 132072 to 132572  | 132072,132322,132572 | 20MHz             | QPSK             | 100 RB / 0 RB Offset |



|   |                       |                     |                      |        |                      |                         |
|---|-----------------------|---------------------|----------------------|--------|----------------------|-------------------------|
| A | OCCUPIED<br>BANDWIDTH | 131979 to<br>132665 | 131979,132322,132665 | 1.4MHz | QPSK,16QAM,64QAM     | 6 RB / 0 RB<br>Offset   |
|   |                       | 131987 to<br>132657 | 131987,132322,132657 | 3MHz   | QPSK,16QAM,64QAM     | 15 RB / 0 RB<br>Offset  |
|   |                       | 131997 to<br>132647 | 131997,132322,132647 | 5MHz   | QPSK,16QAM,64QAM     | 25 RB / 0 RB<br>Offset  |
|   |                       | 132022 to<br>132622 | 132022,132322,132622 | 10MHz  | QPSK,16QAM,64QAM     | 50 RB / 0 RB<br>Offset  |
|   |                       | 132047 to<br>132597 | 132047,132322,132597 | 15MHz  | QPSK,16QAM,64QAM     | 75 RB / 0 RB<br>Offset  |
|   |                       | 132072 to<br>132572 | 132072,132322,132572 | 20MHz  | QPSK,16QAM,64QAM     | 100 RB / 0 RB<br>Offset |
| A | BAND EDGE             | 131979 to<br>132322 | 131979               | 1.4MHz | QPSK,16QAM,<br>64QAM | 1 RB / 0 RB<br>Offset   |
|   |                       |                     |                      |        |                      | 6 RB / 0 RB<br>Offset   |
|   |                       | 132322              | 132322               | 1.4MHz | QPSK,16QAM,<br>64QAM | 1 RB / 5 RB<br>Offset   |
|   |                       |                     |                      |        |                      | 6 RB / 0 RB<br>Offset   |
|   |                       | 131987 to<br>132657 | 131987               | 3MHz   | QPSK,16QAM,<br>64QAM | 1 RB / 0 RB<br>Offset   |
|   |                       |                     |                      |        |                      | 15 RB / 0 RB<br>Offset  |
|   |                       | 132657              | 132657               | 3MHz   | QPSK,16QAM,<br>64QAM | 1 RB / 14 RB<br>Offset  |
|   |                       |                     |                      |        |                      | 15 RB / 0 RB<br>Offset  |
|   |                       | 131997 to<br>132647 | 131997               | 5MHz   | QPSK,16QAM,<br>64QAM | 1 RB / 0 RB<br>Offset   |
|   |                       |                     |                      |        |                      | 25 RB / 0 RB<br>Offset  |
|   |                       | 132647              | 132647               | 5MHz   | QPSK,16QAM,<br>64QAM | 1 RB / 24 RB<br>Offset  |
|   |                       |                     |                      |        |                      | 25 RB / 0 RB<br>Offset  |
|   |                       | 132022 to<br>132622 | 132022               | 10MHz  | QPSK,16QAM,<br>64QAM | 1 RB / 0 RB<br>Offset   |
|   |                       |                     |                      |        |                      | 50 RB / 0 RB<br>Offset  |
|   |                       | 132622              | 132622               | 10MHz  | QPSK,16QAM,<br>64QAM | 1 RB / 49 RB<br>Offset  |
|   |                       |                     |                      |        |                      | 50 RB / 0 RB<br>Offset  |
|   |                       | 132047 to<br>132597 | 132047               | 15MHz  | QPSK,16QAM,<br>64QAM | 1 RB / 0 RB<br>Offset   |
|   |                       |                     |                      |        |                      | 75 RB / 0 RB<br>Offset  |
|   |                       | 132597              | 132597               | 15MHz  | QPSK,16QAM,<br>64QAM | 1 RB / 74 RB<br>Offset  |
|   |                       |                     |                      |        |                      | 75 RB / 0 RB<br>Offset  |
|   |                       | 132072 to<br>132572 | 132072               | 20MHz  | QPSK,16QAM,<br>64QAM | 1 RB / 0 RB<br>Offset   |
|   |                       |                     |                      |        |                      | 100 RB / 0 RB<br>Offset |
|   |                       | 132572              | 132572               | 20MHz  | QPSK,16QAM,<br>64QAM | 1 RB / 99 RB<br>Offset  |
|   |                       |                     |                      |        |                      | 100 RB / 0 RB<br>Offset |
| A | CONDCUDED<br>EMISSION | 131979 to<br>132665 | 131979,132322,132665 | 1.4MHz | QPSK                 | 1 RB / 0 RB<br>Offset   |
|   |                       | 131987 to<br>132657 | 131987,132322,132657 | 3MHz   | QPSK                 | 1 RB / 0 RB<br>Offset   |
|   |                       | 131997 to<br>132647 | 131997,132322,132647 | 5MHz   | QPSK                 | 1 RB / 0 RB<br>Offset   |



|   |                       |                  |                      |        |                   |                                            |
|---|-----------------------|------------------|----------------------|--------|-------------------|--------------------------------------------|
| A | PEAK TO AVERAGE RATIO | 132022 to 132622 | 132022,132322,132622 | 10MHz  | QPSK              | 1 RB / 0 RB Offset                         |
|   |                       | 132047 to 132597 | 132047,132322,132597 | 15MHz  | QPSK              | 1 RB / 0 RB Offset                         |
|   |                       | 132072 to 132572 | 132072,132322,132572 | 20MHz  | QPSK              | 1 RB / 0 RB Offset                         |
|   |                       | 131979 to 132665 | 131979,132322,132665 | 1.4MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset<br>6 RB / 0 RB Offset   |
|   |                       | 131987 to 132657 | 131987,132322,132657 | 3MHz   | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset<br>15 RB / 0 RB Offset  |
|   |                       | 131997 to 132647 | 131997,132322,132647 | 5MHz   | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset<br>25 RB / 0 RB Offset  |
|   |                       | 132022 to 132622 | 132022,132322,132622 | 10MHz  | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset<br>50 RB / 0 RB Offset  |
|   |                       | 132047 to 132597 | 132047,132322,132597 | 15MHz  | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset<br>75 RB / 0 RB Offset  |
|   |                       | 132072 to 132572 | 132072,132322,132572 | 20MHz  | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset<br>100 RB / 0 RB Offset |

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

| LTE BAND 71 MODE   |                       |                   |                        |                   |                   |                                            |
|--------------------|-----------------------|-------------------|------------------------|-------------------|-------------------|--------------------------------------------|
| EUT CONFIGURE MODE | TEST ITEM             | AVAILABLE CHANNEL | TESTED CHANNEL         | CHANNEL BANDWIDTH | MODULATION        | MODE                                       |
| A                  | ERP                   | 133147 to 133447  | 133147, 133297, 133447 | 5MHz              | QPSK,16QAM,64QAM  | 1 RB / 0 RB offset                         |
|                    |                       | 133172 to 133422  | 133172, 133297 133422  | 10MHz             | QPSK,16QAM,64QAM  | 1 RB / 0 RB offset                         |
|                    |                       | 133197 to 133397  | 133197, 133297, 133397 | 15MHz             | QPSK,16QAM,64QAM  | 1 RB / 0 RB offset                         |
|                    |                       | 133222 to 133372  | 133222, 133322, 133372 | 20MHz             | QPSK,16QAM,64QAM  | 1 RB / 0 RB offset                         |
| B                  | FREQUENCY STABILITY   | 133222 to 133372  | 133222, 133322, 133372 | 20MHz             | QPSK              | 100 RB / 0 RB offset                       |
| A                  | OCCUPIED BANDWIDTH    | 133147 to 133447  | 133147, 133297, 133447 | 5MHz              | QPSK,16QAM,64QAM  | 25 RB / 0 RB offset                        |
|                    |                       | 133172 to 133422  | 133172, 133297 133422  | 10MHz             | QPSK,16QAM,64QAM  | 50 RB / 0 RB offset                        |
|                    |                       | 133197 to 133397  | 133197, 133297, 133397 | 15MHz             | QPSK,16QAM,64QAM  | 75 RB / 0 RB offset                        |
|                    |                       | 133222 to 133372  | 133222, 133322, 133372 | 20MHz             | QPSK,16QAM,64QAM  | 100 RB / 0 RB offset                       |
| A                  | PEAK TO AVERAGE RATIO | 133147 to 133447  | 133147, 133297, 133447 | 5MHz              | QPSK, 16QAM,64QAM | 1 RB / 99 RB offset<br>25 RB / 0 RB offset |



|   |                     |                  |                        |       |                    |                                             |
|---|---------------------|------------------|------------------------|-------|--------------------|---------------------------------------------|
|   |                     | 133172 to 133422 | 133172, 133297, 133422 | 10MHz | QPSK, 16QAM, 64QAM | 1 RB / 99 RB offset<br>50 RB / 0 RB offset  |
|   |                     | 133197 to 133397 | 133197, 133297, 133397 | 15MHz | QPSK, 16QAM, 64QAM | 1 RB / 99 RB offset<br>75 RB / 0 RB offset  |
|   |                     | 133222 to 133372 | 133222, 133322, 133372 | 20MHz | QPSK, 16QAM, 64QAM | 1 RB / 99 RB offset<br>100 RB / 0 RB offset |
| A | BAND EDGE           | 133147 to 133447 | 133147                 | 5MHz  | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset<br>25 RB / 0 RB offset   |
|   |                     |                  | 133447                 | 5MHz  | QPSK, 16QAM, 64QAM | 1 RB / 24 RB offset<br>25 RB / 0 RB offset  |
|   |                     | 133172 to 133422 | 133172                 | 10MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset<br>50 RB / 0 RB offset   |
|   |                     |                  | 133422                 | 10MHz | QPSK, 16QAM, 64QAM | 1 RB / 49 RB offset<br>50 RB / 0 RB offset  |
|   |                     | 133197 to 133397 | 133197                 | 15MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset<br>75 RB / 0 RB offset   |
|   |                     |                  | 133397                 | 15MHz | QPSK, 16QAM, 64QAM | 1 RB / 74 RB offset<br>75 RB / 0 RB offset  |
|   |                     | 133222 to 133372 | 133222                 | 20MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB offset<br>100 RB / 0 RB offset  |
|   |                     |                  | 133372                 | 20MHz | QPSK, 16QAM, 64QAM | 1 RB / 99 RB offset<br>100 RB / 0 RB offset |
|   |                     | 133147 to 133447 | 133147, 133297, 133447 | 5MHz  | QPSK               | 1 RB / 0 RB offset                          |
|   |                     | 133172 to 133422 | 133172, 133297, 133422 | 10MHz | QPSK               | 1 RB / 0 RB offset                          |
|   |                     | 133197 to 133397 | 133197, 133297, 133397 | 15MHz | QPSK               | 1 RB / 0 RB offset                          |
|   |                     | 133222 to 133372 | 133222, 133322, 133372 | 20MHz | QPSK               | 1 RB / 0 RB offset                          |
| A | CONDCUETED EMISSION | 133147 to 133447 | 133147, 133297, 133447 | 5MHz  | QPSK               | 1 RB / 0 RB offset                          |
|   |                     | 133172 to 133422 | 133172, 133297, 133422 | 10MHz | QPSK               | 1 RB / 0 RB offset                          |
|   |                     | 133197 to 133397 | 133197, 133297, 133397 | 15MHz | QPSK               | 1 RB / 0 RB offset                          |
|   |                     | 133222 to 133372 | 133222, 133322, 133372 | 20MHz | QPSK               | 1 RB / 0 RB offset                          |

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.



| <u>TEST CONDITION</u> |                          |                                   |           |
|-----------------------|--------------------------|-----------------------------------|-----------|
| TEST ITEM             | ENVIRONMENTAL CONDITIONS | INPUT POWER                       | TESTED BY |
| ERP                   | 23deg. C, 70%RH          | DC 5V By Adapter                  | Hanwen Xu |
| FREQUENCY STABILITY   | 23deg. C, 70%RH          | DC 3.4V/ 3.85V/ 4.4V By DC Source | Hanwen Xu |
| OCCUPIED BANDWIDTH    | 23deg. C, 70%RH          | DC 5V By Adapter                  | Hanwen Xu |
| BAND EDGE             | 23deg. C, 70%RH          | DC 5V By Adapter                  | Hanwen Xu |
| CONDCUDETED EMISSION  | 23deg. C, 70%RH          | DC 5V By Adapter                  | Hanwen Xu |
| RADIATED EMISSION     | 23deg. C, 70%RH          | DC 5V By Adapter                  | Hanwen Xu |
| PEAK TO AVERAGE RATIO | 23deg. C, 70%RH          | DC 5V By Adapter                  | Hanwen Xu |



## **2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS**

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 27**

**KDB 971168 D01 Power Meas License Digital Systems v03r01**

**ANSI/TIA/EIA-603-D**

**ANSI/TIA/EIA-603-E**

**ANSI C63.26-2015**

**NOTE:** All test items have been performed and recorded as per the above standards.



### 3. TEST TYPES AND RESULTS

#### 3.1 OUTPUT POWER MEASUREMENT

##### 3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

§27.50(d)(4):

Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

§27.50(c)(10):

Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

§27.50(b)(10)

Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

§27.50(a)(3):

For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth. For mobile and portable stations using time division duplexing (TDD) technology, the duty cycle must not exceed 38 percent in the 2305-2315 MHz and 2350-2360 MHz bands. Mobile and portable stations using FDD technology are restricted to transmitting in the 2305-2315 MHz band. Power averaging shall not include intervals in which the transmitter is off.

### 3.1.2 TEST PROCEDURES

#### EIRP MEASUREMENT:

Per KDB 971168 D01 Power Meas License Digital Systems v03r01 or subclause 5.2.5.5 of ANSI C63.26-2015, the relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_T - L_C$$

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively

(expressed in the same units as  $P_{\text{Meas}}$ , typically dBW or dBm);

$P_{\text{Meas}}$  = measured transmitter output power or PSD, in dBm or dBW;

$G_T$  = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

$L_C$  = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

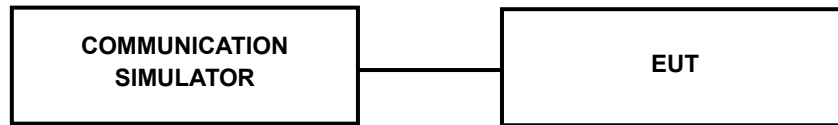
#### CONDUCTED POWER MEASUREMENT:

- a. The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
- b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.



### 3.1.3 TEST SETUP

#### CONDUCTED POWER MEASUREMENT:



For the actual test configuration, please refer to the attached file (Test Setup Photo).



### 3.1.4 TEST RESULTS

#### CONDUCTED OUTPUT POWER (dBm)

| LTE Band 4  |            |                 |           |       |        |       |
|-------------|------------|-----------------|-----------|-------|--------|-------|
| BW<br>[MHz] | Modulation | RB Size         | RB Offset | Low   | Mid    | High  |
|             |            | Channel         |           | 20050 | 20175  | 20300 |
|             |            | Frequency (MHz) |           | 1720  | 1732.5 | 1745  |
| 20          | QPSK       | 1               | 0         | 20.60 | 20.41  | 20.52 |
|             |            | 1               | 50        | 20.54 | 20.36  | 20.49 |
|             |            | 1               | 99        | 20.42 | 20.31  | 20.40 |
|             |            | 50              | 0         | 19.56 | 19.45  | 19.54 |
|             |            | 50              | 25        | 19.65 | 19.52  | 19.60 |
|             |            | 50              | 50        | 19.58 | 19.50  | 19.53 |
|             |            | 100             | 0         | 19.67 | 19.48  | 19.57 |
|             | 16QAM      | 1               | 0         | 19.47 | 19.43  | 19.60 |
|             |            | 1               | 50        | 19.86 | 19.91  | 19.83 |
|             |            | 1               | 99        | 19.63 | 19.64  | 19.60 |
|             |            | 50              | 0         | 18.49 | 18.52  | 18.48 |
|             |            | 50              | 25        | 18.67 | 18.65  | 18.64 |
|             |            | 50              | 50        | 18.61 | 18.70  | 18.64 |
|             |            | 100             | 0         | 18.67 | 18.52  | 18.50 |
|             | 64QAM      | 1               | 0         | 18.47 | 18.44  | 18.52 |
|             |            | 1               | 50        | 18.82 | 18.79  | 18.80 |
|             |            | 1               | 99        | 18.73 | 18.57  | 18.61 |
|             |            | 50              | 0         | 17.49 | 17.58  | 17.51 |
|             |            | 50              | 25        | 17.69 | 17.61  | 17.54 |
|             |            | 50              | 50        | 17.53 | 17.69  | 17.70 |
|             |            | 100             | 0         | 17.58 | 17.50  | 17.65 |



| LTE Band 4  |            |                 |    |        |        |        |
|-------------|------------|-----------------|----|--------|--------|--------|
| BW<br>[MHz] | Modulation | Channel         |    | 20025  | 20175  | 20325  |
|             |            | Frequency (MHz) |    | 1717.5 | 1732.5 | 1747.5 |
| 15          | QPSK       | 1               | 0  | 20.56  | 20.37  | 20.39  |
|             |            | 1               | 37 | 20.50  | 20.24  | 20.47  |
|             |            | 1               | 74 | 20.38  | 20.21  | 20.32  |
|             |            | 36              | 0  | 19.55  | 19.33  | 19.39  |
|             |            | 36              | 19 | 19.57  | 19.42  | 19.51  |
|             |            | 36              | 39 | 19.49  | 19.41  | 19.50  |
|             |            | 75              | 0  | 19.64  | 19.37  | 19.51  |
|             | 16QAM      | 1               | 0  | 19.41  | 19.30  | 19.56  |
|             |            | 1               | 37 | 19.81  | 19.90  | 19.77  |
|             |            | 1               | 74 | 19.60  | 19.50  | 19.45  |
|             |            | 36              | 0  | 18.36  | 18.37  | 18.33  |
|             |            | 36              | 19 | 18.60  | 18.58  | 18.57  |
|             |            | 36              | 39 | 18.59  | 18.64  | 18.56  |
|             |            | 75              | 0  | 18.52  | 18.42  | 18.43  |
|             | 64QAM      | 1               | 0  | 18.33  | 18.40  | 18.41  |
|             |            | 1               | 37 | 18.73  | 18.67  | 18.73  |
|             |            | 1               | 74 | 18.71  | 18.47  | 18.53  |
|             |            | 36              | 0  | 17.35  | 17.57  | 17.47  |
|             |            | 36              | 19 | 17.66  | 17.46  | 17.51  |
|             |            | 36              | 39 | 17.41  | 17.60  | 17.66  |
|             |            | 75              | 0  | 17.44  | 17.40  | 17.59  |



| LTE Band 4  |            |                 |    |       |        |       |
|-------------|------------|-----------------|----|-------|--------|-------|
| BW<br>[MHz] | Modulation | Channel         |    | 20000 | 20175  | 20350 |
|             |            | Frequency (MHz) |    | 1715  | 1732.5 | 1750  |
| 10          | QPSK       | 1               | 0  | 20.45 | 20.31  | 20.46 |
|             |            | 1               | 24 | 20.40 | 20.28  | 20.36 |
|             |            | 1               | 49 | 20.40 | 20.29  | 20.35 |
|             |            | 25              | 0  | 19.45 | 19.41  | 19.51 |
|             |            | 25              | 12 | 19.56 | 19.49  | 19.53 |
|             |            | 25              | 25 | 19.48 | 19.45  | 19.39 |
|             |            | 50              | 0  | 19.63 | 19.38  | 19.47 |
|             | 16QAM      | 1               | 0  | 19.33 | 19.42  | 19.55 |
|             |            | 1               | 24 | 19.84 | 19.90  | 19.69 |
|             |            | 1               | 49 | 19.52 | 19.55  | 19.56 |
|             |            | 25              | 0  | 18.35 | 18.42  | 18.36 |
|             |            | 25              | 12 | 18.63 | 18.52  | 18.63 |
|             |            | 25              | 25 | 18.54 | 18.63  | 18.49 |
|             |            | 50              | 0  | 18.61 | 18.41  | 18.44 |
|             | 64QAM      | 1               | 0  | 18.35 | 18.30  | 18.37 |
|             |            | 1               | 24 | 18.75 | 18.76  | 18.67 |
|             |            | 1               | 49 | 18.61 | 18.56  | 18.55 |
|             |            | 25              | 0  | 17.48 | 17.46  | 17.46 |
|             |            | 25              | 12 | 17.61 | 17.57  | 17.39 |
|             |            | 25              | 25 | 17.44 | 17.58  | 17.65 |
|             |            | 50              | 0  | 17.48 | 17.35  | 17.61 |



| LTE Band 4  |            |                 |    |        |        |        |
|-------------|------------|-----------------|----|--------|--------|--------|
| BW<br>[MHz] | Modulation | Channel         |    | 19975  | 20175  | 20375  |
|             |            | Frequency (MHz) |    | 1712.5 | 1732.5 | 1752.5 |
| 5           | QPSK       | 1               | 0  | 20.59  | 20.36  | 20.37  |
|             |            | 1               | 12 | 20.45  | 20.28  | 20.45  |
|             |            | 1               | 24 | 20.35  | 20.28  | 20.32  |
|             |            | 12              | 0  | 19.47  | 19.36  | 19.46  |
|             |            | 12              | 6  | 19.56  | 19.47  | 19.52  |
|             |            | 12              | 13 | 19.55  | 19.47  | 19.49  |
|             |            | 25              | 0  | 19.52  | 19.46  | 19.51  |
|             | 16QAM      | 1               | 0  | 19.32  | 19.30  | 19.56  |
|             |            | 1               | 12 | 19.75  | 19.82  | 19.70  |
|             |            | 1               | 24 | 19.51  | 19.58  | 19.49  |
|             |            | 12              | 0  | 18.43  | 18.46  | 18.41  |
|             |            | 12              | 6  | 18.56  | 18.64  | 18.57  |
|             |            | 12              | 13 | 18.46  | 18.60  | 18.54  |
|             |            | 25              | 0  | 18.62  | 18.46  | 18.43  |
|             | 64QAM      | 1               | 0  | 18.36  | 18.31  | 18.40  |
|             |            | 1               | 12 | 18.67  | 18.71  | 18.79  |
|             |            | 1               | 24 | 18.62  | 18.45  | 18.59  |
|             |            | 12              | 0  | 17.47  | 17.53  | 17.48  |
|             |            | 12              | 6  | 17.64  | 17.57  | 17.50  |
|             |            | 12              | 13 | 17.45  | 17.68  | 17.58  |
|             |            | 25              | 0  | 17.54  | 17.44  | 17.61  |



| LTE Band 4  |            |                 |    |        |        |        |
|-------------|------------|-----------------|----|--------|--------|--------|
| BW<br>[MHz] | Modulation | Channel         |    | 19965  | 20175  | 20385  |
|             |            | Frequency (MHz) |    | 1711.5 | 1732.5 | 1753.5 |
| 3           | QPSK       | 1               | 0  | 20.54  | 20.39  | 20.49  |
|             |            | 1               | 7  | 20.53  | 20.32  | 20.46  |
|             |            | 1               | 14 | 20.33  | 20.25  | 20.36  |
|             |            | 8               | 0  | 19.46  | 19.32  | 19.51  |
|             |            | 8               | 3  | 19.60  | 19.40  | 19.49  |
|             |            | 8               | 7  | 19.57  | 19.39  | 19.47  |
|             |            | 15              | 0  | 19.52  | 19.42  | 19.47  |
|             | 16QAM      | 1               | 0  | 19.42  | 19.31  | 19.57  |
|             |            | 1               | 7  | 19.76  | 19.84  | 19.81  |
|             |            | 1               | 14 | 19.54  | 19.60  | 19.58  |
|             |            | 8               | 0  | 18.36  | 18.45  | 18.47  |
|             |            | 8               | 3  | 18.60  | 18.50  | 18.59  |
|             |            | 8               | 7  | 18.48  | 18.57  | 18.53  |
|             |            | 15              | 0  | 18.60  | 18.48  | 18.44  |
|             | 64QAM      | 1               | 0  | 18.43  | 18.34  | 18.40  |
|             |            | 1               | 7  | 18.81  | 18.68  | 18.75  |
|             |            | 1               | 14 | 18.64  | 18.48  | 18.46  |
|             |            | 8               | 0  | 17.36  | 17.43  | 17.41  |
|             |            | 8               | 3  | 17.56  | 17.52  | 17.44  |
|             |            | 8               | 7  | 17.51  | 17.59  | 17.59  |
|             |            | 15              | 0  | 17.57  | 17.48  | 17.56  |



| LTE Band 4  |            |                 |   |        |        |        |
|-------------|------------|-----------------|---|--------|--------|--------|
| BW<br>[MHz] | Modulation | Channel         |   | 19957  | 20175  | 20393  |
|             |            | Frequency (MHz) |   | 1710.7 | 1732.5 | 1754.3 |
| 1.4         | QPSK       | 1               | 0 | 20.53  | 20.37  | 20.51  |
|             |            | 1               | 2 | 20.46  | 20.25  | 20.41  |
|             |            | 1               | 5 | 20.27  | 20.18  | 20.32  |
|             |            | 3               | 0 | 20.27  | 20.26  | 20.21  |
|             |            | 3               | 1 | 20.39  | 20.26  | 20.29  |
|             |            | 3               | 3 | 20.25  | 20.17  | 20.30  |
|             |            | 6               | 0 | 19.52  | 19.46  | 19.49  |
|             | 16QAM      | 1               | 0 | 19.33  | 19.28  | 19.46  |
|             |            | 1               | 2 | 19.76  | 19.85  | 19.75  |
|             |            | 1               | 5 | 19.48  | 19.61  | 19.57  |
|             |            | 3               | 0 | 19.18  | 19.32  | 19.17  |
|             |            | 3               | 1 | 19.44  | 19.44  | 19.39  |
|             |            | 3               | 3 | 19.40  | 19.47  | 19.44  |
|             |            | 6               | 0 | 18.58  | 18.48  | 18.47  |
|             | 64QAM      | 1               | 0 | 18.33  | 18.43  | 18.50  |
|             |            | 1               | 2 | 18.76  | 18.66  | 18.65  |
|             |            | 1               | 5 | 18.59  | 18.52  | 18.53  |
|             |            | 3               | 0 | 18.18  | 18.38  | 18.20  |
|             |            | 3               | 1 | 18.49  | 18.32  | 18.29  |
|             |            | 3               | 3 | 18.25  | 18.45  | 18.40  |
|             |            | 6               | 0 | 17.47  | 17.44  | 17.54  |



| LTE Band 12 |            |                 |           |       |       |       |
|-------------|------------|-----------------|-----------|-------|-------|-------|
| BW<br>[MHz] | Modulation | RB Size         | RB Offset | Low   | Mid   | High  |
|             |            | Channel         |           | 23060 | 23095 | 23130 |
|             |            | Frequency (MHz) |           | 704   | 707.5 | 711   |
| 10          | QPSK       | 1               | 0         | 22.15 | 22.28 | 22.52 |
|             |            | 1               | 24        | 22.27 | 22.21 | 22.47 |
|             |            | 1               | 49        | 22.47 | 22.57 | 22.55 |
|             |            | 25              | 0         | 21.71 | 21.70 | 21.63 |
|             |            | 25              | 12        | 21.65 | 21.67 | 21.51 |
|             |            | 25              | 25        | 21.53 | 21.62 | 21.47 |
|             |            | 50              | 0         | 21.68 | 21.58 | 21.52 |
|             | 16QAM      | 1               | 0         | 21.51 | 21.53 | 21.56 |
|             |            | 1               | 24        | 21.49 | 21.61 | 21.59 |
|             |            | 1               | 49        | 21.67 | 21.66 | 21.62 |
|             |            | 25              | 0         | 20.61 | 20.65 | 20.71 |
|             |            | 25              | 12        | 20.65 | 20.58 | 20.68 |
|             |            | 25              | 25        | 20.52 | 20.59 | 20.62 |
|             |            | 50              | 0         | 20.52 | 20.44 | 20.46 |
|             | 64QAM      | 1               | 0         | 20.31 | 20.42 | 20.49 |
|             |            | 1               | 24        | 20.29 | 20.38 | 20.57 |
|             |            | 1               | 49        | 20.69 | 20.66 | 20.53 |
|             |            | 25              | 0         | 19.71 | 19.51 | 19.72 |
|             |            | 25              | 12        | 19.46 | 19.32 | 19.58 |
|             |            | 25              | 25        | 19.41 | 19.55 | 19.56 |
|             |            | 50              | 0         | 19.49 | 19.43 | 19.55 |



| LTE Band 12 |            |                 |    |       |       |       |
|-------------|------------|-----------------|----|-------|-------|-------|
| BW<br>[MHz] | Modulation | Channel         |    | 23035 | 23095 | 23155 |
|             |            | Frequency (MHz) |    | 701.5 | 707.5 | 713.5 |
| 5           | QPSK       | 1               | 0  | 22.08 | 22.19 | 22.51 |
|             |            | 1               | 12 | 22.18 | 22.15 | 22.38 |
|             |            | 1               | 24 | 22.43 | 22.48 | 22.45 |
|             |            | 12              | 0  | 21.64 | 21.61 | 21.60 |
|             |            | 12              | 6  | 21.53 | 21.61 | 21.39 |
|             |            | 12              | 13 | 21.38 | 21.53 | 21.36 |
|             |            | 25              | 0  | 21.56 | 21.45 | 21.47 |
|             | 16QAM      | 1               | 0  | 21.38 | 21.46 | 21.51 |
|             |            | 1               | 12 | 21.36 | 21.46 | 21.57 |
|             |            | 1               | 24 | 21.60 | 21.62 | 21.49 |
|             |            | 12              | 0  | 20.57 | 20.52 | 20.60 |
|             |            | 12              | 6  | 20.51 | 20.50 | 20.57 |
|             |            | 12              | 13 | 20.48 | 20.44 | 20.53 |
|             |            | 25              | 0  | 20.50 | 20.40 | 20.31 |
|             | 64QAM      | 1               | 0  | 20.17 | 20.33 | 20.46 |
|             |            | 1               | 12 | 20.19 | 20.35 | 20.54 |
|             |            | 1               | 24 | 20.57 | 20.56 | 20.42 |
|             |            | 12              | 0  | 19.60 | 19.50 | 19.59 |
|             |            | 12              | 6  | 19.45 | 19.19 | 19.43 |
|             |            | 12              | 13 | 19.34 | 19.53 | 19.55 |
|             |            | 25              | 0  | 19.39 | 19.34 | 19.40 |



| LTE Band 12 |            |                 |    |       |       |       |
|-------------|------------|-----------------|----|-------|-------|-------|
| BW<br>[MHz] | Modulation | Channel         |    | 23025 | 23095 | 23165 |
|             |            | Frequency (MHz) |    | 700.5 | 707.5 | 714.5 |
| 3           | QPSK       | 1               | 0  | 22.01 | 22.26 | 22.50 |
|             |            | 1               | 7  | 22.23 | 22.10 | 22.32 |
|             |            | 1               | 14 | 22.35 | 22.55 | 22.49 |
|             |            | 8               | 0  | 21.64 | 21.67 | 21.55 |
|             |            | 8               | 3  | 21.62 | 21.60 | 21.43 |
|             |            | 8               | 7  | 21.43 | 21.59 | 21.37 |
|             |            | 15              | 0  | 21.62 | 21.46 | 21.41 |
|             | 16QAM      | 1               | 0  | 21.49 | 21.39 | 21.52 |
|             |            | 1               | 7  | 21.36 | 21.52 | 21.55 |
|             |            | 1               | 14 | 21.66 | 21.51 | 21.61 |
|             |            | 8               | 0  | 20.50 | 20.53 | 20.59 |
|             |            | 8               | 3  | 20.50 | 20.52 | 20.67 |
|             |            | 8               | 7  | 20.42 | 20.48 | 20.48 |
|             |            | 15              | 0  | 20.51 | 20.39 | 20.41 |
|             | 64QAM      | 1               | 0  | 20.28 | 20.29 | 20.41 |
|             |            | 1               | 7  | 20.23 | 20.26 | 20.54 |
|             |            | 1               | 14 | 20.66 | 20.65 | 20.50 |
|             |            | 8               | 0  | 19.66 | 19.36 | 19.70 |
|             |            | 8               | 3  | 19.33 | 19.29 | 19.44 |
|             |            | 8               | 7  | 19.29 | 19.53 | 19.55 |
|             |            | 15              | 0  | 19.48 | 19.31 | 19.46 |



| LTE Band 12 |            |                 |   |       |       |       |
|-------------|------------|-----------------|---|-------|-------|-------|
| BW<br>[MHz] | Modulation | Channel         |   | 23017 | 23095 | 23173 |
|             |            | Frequency (MHz) |   | 699.7 | 707.5 | 715.3 |
| 1.4         | QPSK       | 1               | 0 | 22.12 | 22.18 | 22.49 |
|             |            | 1               | 2 | 22.20 | 22.06 | 22.43 |
|             |            | 1               | 5 | 22.46 | 22.52 | 22.50 |
|             |            | 3               | 0 | 22.12 | 22.05 | 22.06 |
|             |            | 3               | 1 | 21.94 | 22.01 | 21.88 |
|             |            | 3               | 3 | 21.90 | 21.93 | 21.88 |
|             |            | 6               | 0 | 21.64 | 21.45 | 21.37 |
|             | 16QAM      | 1               | 0 | 21.42 | 21.38 | 21.51 |
|             |            | 1               | 2 | 21.42 | 21.59 | 21.58 |
|             |            | 1               | 5 | 21.65 | 21.65 | 21.57 |
|             |            | 3               | 0 | 21.37 | 21.53 | 21.48 |
|             |            | 3               | 1 | 21.52 | 21.36 | 21.48 |
|             |            | 3               | 3 | 21.31 | 21.47 | 21.42 |
|             |            | 6               | 0 | 20.50 | 20.41 | 20.45 |
|             | 64QAM      | 1               | 0 | 20.24 | 20.38 | 20.34 |
|             |            | 1               | 2 | 20.21 | 20.29 | 20.56 |
|             |            | 1               | 5 | 20.67 | 20.60 | 20.38 |
|             |            | 3               | 0 | 20.51 | 20.26 | 20.46 |
|             |            | 3               | 1 | 20.25 | 20.05 | 20.39 |
|             |            | 3               | 3 | 20.25 | 20.42 | 20.36 |
|             |            | 6               | 0 | 19.36 | 19.42 | 19.52 |



| LTE Band 13 |            |                 |           |     |       |      |
|-------------|------------|-----------------|-----------|-----|-------|------|
| BW<br>[MHz] | Modulation | RB Size         | RB Offset | Low | Mid   | High |
|             |            | Channel         |           |     | 23230 |      |
|             |            | Frequency (MHz) |           |     | 782   |      |
| 10          | QPSK       | 1               | 0         |     | 23.05 |      |
|             |            | 1               | 24        |     | 22.88 |      |
|             |            | 1               | 49        |     | 22.94 |      |
|             |            | 25              | 0         |     | 22.07 |      |
|             |            | 25              | 12        |     | 21.94 |      |
|             |            | 25              | 25        |     | 21.82 |      |
|             |            | 50              | 0         |     | 21.90 |      |
|             | 16QAM      | 1               | 0         |     | 22.15 |      |
|             |            | 1               | 24        |     | 22.05 |      |
|             |            | 1               | 49        |     | 22.02 |      |
|             |            | 25              | 0         |     | 21.21 |      |
|             |            | 25              | 12        |     | 21.02 |      |
|             |            | 25              | 25        |     | 21.04 |      |
|             |            | 50              | 0         |     | 21.01 |      |
|             | 64QAM      | 1               | 0         |     | 21.20 |      |
|             |            | 1               | 24        |     | 21.12 |      |
|             |            | 1               | 49        |     | 21.11 |      |
|             |            | 25              | 0         |     | 20.09 |      |
|             |            | 25              | 12        |     | 20.11 |      |
|             |            | 25              | 25        |     | 20.10 |      |
|             |            | 50              | 0         |     | 20.15 |      |



| LTE Band 13 |            |                 |    |       |       |       |
|-------------|------------|-----------------|----|-------|-------|-------|
| BW<br>[MHz] | Modulation | Channel         |    | 23205 | 23230 | 23255 |
|             |            | Frequency (MHz) |    | 779.5 | 782   | 784.5 |
| 5           | QPSK       | 1               | 0  | 22.94 | 22.97 | 22.95 |
|             |            | 1               | 12 | 22.80 | 22.77 | 22.79 |
|             |            | 1               | 24 | 22.92 | 22.93 | 22.82 |
|             |            | 12              | 0  | 21.94 | 21.96 | 21.99 |
|             |            | 12              | 6  | 21.81 | 21.84 | 21.79 |
|             |            | 12              | 13 | 21.81 | 21.73 | 21.79 |
|             |            | 25              | 0  | 21.83 | 21.82 | 21.76 |
|             | 16QAM      | 1               | 0  | 22.11 | 22.08 | 22.02 |
|             |            | 1               | 12 | 22.03 | 21.94 | 21.99 |
|             |            | 1               | 24 | 22.01 | 21.89 | 21.97 |
|             |            | 12              | 0  | 21.18 | 21.06 | 21.11 |
|             |            | 12              | 6  | 20.93 | 21.01 | 20.95 |
|             |            | 12              | 13 | 20.94 | 20.98 | 20.93 |
|             |            | 25              | 0  | 20.96 | 21.00 | 20.89 |
|             | 64QAM      | 1               | 0  | 21.06 | 21.05 | 21.19 |
|             |            | 1               | 12 | 21.11 | 21.07 | 21.08 |
|             |            | 1               | 24 | 21.00 | 21.04 | 20.96 |
|             |            | 12              | 0  | 19.94 | 20.02 | 20.04 |
|             |            | 12              | 6  | 20.05 | 20.00 | 20.10 |
|             |            | 12              | 13 | 20.08 | 20.06 | 20.06 |
|             |            | 25              | 0  | 20.04 | 20.11 | 20.13 |



| LTE Band 17 |            |                 |           |       |       |       |
|-------------|------------|-----------------|-----------|-------|-------|-------|
| BW<br>[MHz] | Modulation | RB Size         | RB Offset | Low   | Mid   | High  |
|             |            | Channel         |           | 23780 | 23790 | 23800 |
|             |            | Frequency (MHz) |           | 709   | 710   | 711   |
| 10          | QPSK       | 1               | 0         | 21.95 | 21.88 | 21.83 |
|             |            | 1               | 24        | 22.45 | 22.38 | 22.48 |
|             |            | 1               | 49        | 21.93 | 21.82 | 21.89 |
|             |            | 25              | 0         | 21.78 | 21.75 | 21.68 |
|             |            | 25              | 12        | 21.46 | 21.26 | 21.39 |
|             |            | 25              | 25        | 21.25 | 21.16 | 21.41 |
|             |            | 50              | 0         | 20.93 | 20.98 | 21.35 |
|             | 16QAM      | 1               | 0         | 21.29 | 21.27 | 21.26 |
|             |            | 1               | 24        | 21.46 | 21.48 | 21.45 |
|             |            | 1               | 49        | 21.37 | 21.38 | 21.40 |
|             |            | 25              | 0         | 20.86 | 20.57 | 20.88 |
|             |            | 25              | 12        | 20.56 | 20.51 | 20.55 |
|             |            | 25              | 25        | 20.60 | 20.45 | 20.65 |
|             |            | 50              | 0         | 20.17 | 20.34 | 20.21 |
|             | 64QAM      | 1               | 0         | 20.09 | 20.12 | 20.73 |
|             |            | 1               | 24        | 20.35 | 20.72 | 20.79 |
|             |            | 1               | 49        | 20.57 | 20.11 | 20.13 |
|             |            | 25              | 0         | 19.68 | 19.65 | 19.66 |
|             |            | 25              | 12        | 19.64 | 19.61 | 19.41 |
|             |            | 25              | 25        | 19.61 | 19.42 | 19.44 |
|             |            | 50              | 0         | 19.28 | 19.62 | 19.51 |



| LTE Band 17 |            |                 |    |       |       |       |
|-------------|------------|-----------------|----|-------|-------|-------|
| BW<br>[MHz] | Modulation | Channel         |    | 23755 | 23790 | 23825 |
|             |            | Frequency (MHz) |    | 706.5 | 710   | 713.5 |
| 5           | QPSK       | 1               | 0  | 21.85 | 21.82 | 21.70 |
|             |            | 1               | 12 | 22.36 | 22.27 | 22.42 |
|             |            | 1               | 24 | 21.82 | 21.76 | 21.85 |
|             |            | 12              | 0  | 21.72 | 21.61 | 21.61 |
|             |            | 12              | 6  | 21.44 | 21.15 | 21.37 |
|             |            | 12              | 13 | 21.23 | 21.08 | 21.37 |
|             |            | 25              | 0  | 20.59 | 20.73 | 21.13 |
|             | 16QAM      | 1               | 0  | 21.19 | 21.23 | 21.24 |
|             |            | 1               | 12 | 21.38 | 21.45 | 21.49 |
|             |            | 1               | 24 | 21.31 | 21.31 | 21.38 |
|             |            | 12              | 0  | 20.77 | 20.54 | 20.84 |
|             |            | 12              | 6  | 20.44 | 20.37 | 20.50 |
|             |            | 12              | 13 | 20.53 | 20.30 | 20.60 |
|             |            | 25              | 0  | 20.10 | 20.20 | 20.20 |
|             | 64QAM      | 1               | 0  | 19.99 | 19.97 | 20.70 |
|             |            | 1               | 12 | 20.25 | 20.68 | 20.73 |
|             |            | 1               | 24 | 20.44 | 19.99 | 20.04 |
|             |            | 12              | 0  | 19.57 | 19.54 | 19.55 |
|             |            | 12              | 6  | 19.61 | 19.57 | 19.39 |
|             |            | 12              | 13 | 19.48 | 19.34 | 19.38 |
|             |            | 25              | 0  | 19.20 | 19.59 | 19.45 |



| LTE Band 30 |            |                 |           |     |       |      |
|-------------|------------|-----------------|-----------|-----|-------|------|
| BW<br>[MHz] | Modulation | RB Size         | RB Offset | Low | Mid   | High |
|             |            | Channel         |           |     | 27710 |      |
|             |            | Frequency (MHz) |           |     | 2310  |      |
| 10          | QPSK       | 1               | 0         |     | 23.05 |      |
|             |            | 1               | 24        |     | 22.55 |      |
|             |            | 1               | 49        |     | 22.49 |      |
|             |            | 25              | 0         |     | 21.89 |      |
|             |            | 25              | 12        |     | 21.49 |      |
|             |            | 25              | 25        |     | 21.37 |      |
|             |            | 50              | 0         |     | 21.55 |      |
|             | 16QAM      | 1               | 0         |     | 21.88 |      |
|             |            | 1               | 24        |     | 21.69 |      |
|             |            | 1               | 49        |     | 21.64 |      |
|             |            | 25              | 0         |     | 20.55 |      |
|             |            | 25              | 12        |     | 20.49 |      |
|             |            | 25              | 25        |     | 20.42 |      |
|             |            | 50              | 0         |     | 20.52 |      |
|             | 64QAM      | 1               | 0         |     | 20.81 |      |
|             |            | 1               | 24        |     | 20.75 |      |
|             |            | 1               | 49        |     | 20.76 |      |
|             |            | 25              | 0         |     | 19.53 |      |
|             |            | 25              | 12        |     | 19.52 |      |
|             |            | 25              | 25        |     | 19.55 |      |
|             |            | 50              | 0         |     | 19.57 |      |



| LTE Band 30 |            |                 |    |        |       |        |
|-------------|------------|-----------------|----|--------|-------|--------|
| BW<br>[MHz] | Modulation | Channel         |    | 27685  | 27710 | 27735  |
|             |            | Frequency (MHz) |    | 2307.5 | 2310  | 2312.5 |
| 5           | QPSK       | 1               | 0  | 23.00  | 22.96 | 23.04  |
|             |            | 1               | 12 | 22.50  | 22.52 | 22.42  |
|             |            | 1               | 24 | 22.35  | 22.41 | 22.42  |
|             |            | 12              | 0  | 21.87  | 21.77 | 21.81  |
|             |            | 12              | 6  | 21.45  | 21.43 | 21.46  |
|             |            | 12              | 13 | 21.36  | 21.36 | 21.23  |
|             |            | 25              | 0  | 21.47  | 21.41 | 21.45  |
|             | 16QAM      | 1               | 0  | 21.86  | 21.78 | 21.82  |
|             |            | 1               | 12 | 21.55  | 21.56 | 21.66  |
|             |            | 1               | 24 | 21.55  | 21.60 | 21.56  |
|             |            | 12              | 0  | 20.54  | 20.40 | 20.51  |
|             |            | 12              | 6  | 20.38  | 20.38 | 20.43  |
|             |            | 12              | 13 | 20.28  | 20.37 | 20.29  |
|             |            | 25              | 0  | 20.38  | 20.51 | 20.47  |
|             | 64QAM      | 1               | 0  | 20.70  | 20.80 | 20.67  |
|             |            | 1               | 12 | 20.63  | 20.64 | 20.73  |
|             |            | 1               | 24 | 20.73  | 20.70 | 20.71  |
|             |            | 12              | 0  | 19.50  | 19.49 | 19.45  |
|             |            | 12              | 6  | 19.45  | 19.47 | 19.51  |
|             |            | 12              | 13 | 19.43  | 19.54 | 19.50  |
|             |            | 25              | 0  | 19.49  | 19.53 | 19.48  |



| LTE Band 66 |            |                 |           |        |        |        |
|-------------|------------|-----------------|-----------|--------|--------|--------|
| BW<br>[MHz] | Modulation | RB Size         | RB Offset | Low    | Mid    | High   |
|             |            | Channel         |           | 132072 | 132322 | 132572 |
|             |            | Frequency (MHz) |           | 1720   | 1745   | 1770   |
| 20          | QPSK       | 1               | 0         | 20.35  | 20.45  | 20.40  |
|             |            | 1               | 50        | 20.49  | 20.62  | 20.51  |
|             |            | 1               | 99        | 20.44  | 20.51  | 20.47  |
|             |            | 50              | 0         | 19.51  | 19.53  | 19.42  |
|             |            | 50              | 25        | 19.45  | 19.57  | 19.48  |
|             |            | 50              | 50        | 19.65  | 19.67  | 19.59  |
|             |            | 100             | 0         | 19.62  | 19.65  | 19.58  |
|             | 16QAM      | 1               | 0         | 19.66  | 19.58  | 19.64  |
|             |            | 1               | 50        | 19.84  | 19.70  | 19.81  |
|             |            | 1               | 99        | 19.87  | 19.89  | 19.81  |
|             |            | 50              | 0         | 18.68  | 18.51  | 18.54  |
|             |            | 50              | 25        | 18.63  | 18.64  | 18.55  |
|             |            | 50              | 50        | 18.65  | 18.66  | 18.66  |
|             |            | 100             | 0         | 18.69  | 18.68  | 18.61  |
|             | 64QAM      | 1               | 0         | 18.55  | 18.46  | 18.67  |
|             |            | 1               | 50        | 18.96  | 18.72  | 18.86  |
|             |            | 1               | 99        | 18.92  | 18.89  | 18.76  |
|             |            | 50              | 0         | 17.58  | 17.42  | 17.51  |
|             |            | 50              | 25        | 17.64  | 17.59  | 17.52  |
|             |            | 50              | 50        | 17.66  | 17.67  | 17.62  |
|             |            | 100             | 0         | 16.73  | 17.53  | 17.61  |



| LTE Band 66 |            |                 |    |        |        |        |
|-------------|------------|-----------------|----|--------|--------|--------|
| BW<br>[MHz] | Modulation | Channel         |    | 132047 | 132322 | 132597 |
|             |            | Frequency (MHz) |    | 1717.5 | 1745   | 1772.5 |
| 15          | QPSK       | 1               | 0  | 20.34  | 20.36  | 20.39  |
|             |            | 1               | 37 | 20.34  | 20.49  | 20.49  |
|             |            | 1               | 74 | 20.41  | 20.48  | 20.46  |
|             |            | 36              | 0  | 19.43  | 19.46  | 19.37  |
|             |            | 36              | 19 | 19.32  | 19.49  | 19.45  |
|             |            | 36              | 39 | 19.57  | 19.60  | 19.50  |
|             |            | 75              | 0  | 19.48  | 19.60  | 19.52  |
|             | 16QAM      | 1               | 0  | 19.63  | 19.53  | 19.57  |
|             |            | 1               | 37 | 19.71  | 19.59  | 19.67  |
|             |            | 1               | 74 | 19.82  | 19.74  | 19.66  |
|             |            | 36              | 0  | 18.64  | 18.41  | 18.49  |
|             |            | 36              | 19 | 18.59  | 18.58  | 18.46  |
|             |            | 36              | 39 | 18.53  | 18.62  | 18.58  |
|             |            | 75              | 0  | 18.64  | 18.66  | 18.55  |
|             | 64QAM      | 1               | 0  | 18.47  | 18.44  | 18.64  |
|             |            | 1               | 37 | 18.95  | 18.58  | 18.82  |
|             |            | 1               | 74 | 18.85  | 18.75  | 18.70  |
|             |            | 36              | 0  | 17.44  | 17.39  | 17.45  |
|             |            | 36              | 19 | 17.58  | 17.53  | 17.44  |
|             |            | 36              | 39 | 17.56  | 17.59  | 17.50  |
|             |            | 75              | 0  | 16.66  | 17.47  | 17.46  |



| LTE Band 66 |            |                 |    |        |        |        |
|-------------|------------|-----------------|----|--------|--------|--------|
| BW<br>[MHz] | Modulation | Channel         |    | 132022 | 132322 | 132622 |
|             |            | Frequency (MHz) |    | 1715   | 1745   | 1775   |
| 10          | QPSK       | 1               | 0  | 20.26  | 20.32  | 20.32  |
|             |            | 1               | 24 | 20.35  | 20.61  | 20.37  |
|             |            | 1               | 49 | 20.34  | 20.47  | 20.39  |
|             |            | 25              | 0  | 19.46  | 19.51  | 19.36  |
|             |            | 25              | 12 | 19.33  | 19.45  | 19.36  |
|             |            | 25              | 25 | 19.50  | 19.53  | 19.51  |
|             |            | 50              | 0  | 19.55  | 19.61  | 19.43  |
|             | 16QAM      | 1               | 0  | 19.62  | 19.43  | 19.56  |
|             |            | 1               | 24 | 19.72  | 19.59  | 19.79  |
|             |            | 1               | 49 | 19.85  | 19.87  | 19.78  |
|             |            | 25              | 0  | 18.55  | 18.45  | 18.48  |
|             |            | 25              | 12 | 18.48  | 18.51  | 18.41  |
|             |            | 25              | 25 | 18.54  | 18.60  | 18.65  |
|             |            | 50              | 0  | 18.68  | 18.62  | 18.54  |
|             | 64QAM      | 1               | 0  | 18.44  | 18.37  | 18.65  |
|             |            | 1               | 24 | 18.83  | 18.63  | 18.71  |
|             |            | 1               | 49 | 18.85  | 18.85  | 18.64  |
|             |            | 25              | 0  | 17.47  | 17.32  | 17.40  |
|             |            | 25              | 12 | 17.61  | 17.57  | 17.51  |
|             |            | 25              | 25 | 17.64  | 17.62  | 17.51  |
|             |            | 50              | 0  | 16.67  | 17.39  | 17.50  |



| LTE Band 66 |            |                 |    |        |        |        |
|-------------|------------|-----------------|----|--------|--------|--------|
| BW<br>[MHz] | Modulation | Channel         |    | 131997 | 132322 | 132647 |
|             |            | Frequency (MHz) |    | 1712.5 | 1745   | 1777.5 |
| 5           | QPSK       | 1               | 0  | 20.25  | 20.41  | 20.32  |
|             |            | 1               | 12 | 20.42  | 20.52  | 20.40  |
|             |            | 1               | 24 | 20.39  | 20.42  | 20.43  |
|             |            | 12              | 0  | 19.36  | 19.52  | 19.39  |
|             |            | 12              | 6  | 19.44  | 19.56  | 19.42  |
|             |            | 12              | 13 | 19.61  | 19.64  | 19.51  |
|             |            | 25              | 0  | 19.61  | 19.52  | 19.44  |
|             | 16QAM      | 1               | 0  | 19.63  | 19.45  | 19.49  |
|             |            | 1               | 12 | 19.82  | 19.58  | 19.73  |
|             |            | 1               | 24 | 19.72  | 19.85  | 19.78  |
|             |            | 12              | 0  | 18.67  | 18.40  | 18.39  |
|             |            | 12              | 6  | 18.49  | 18.58  | 18.48  |
|             |            | 12              | 13 | 18.51  | 18.64  | 18.56  |
|             |            | 25              | 0  | 18.54  | 18.58  | 18.55  |
|             | 64QAM      | 1               | 0  | 18.45  | 18.43  | 18.61  |
|             |            | 1               | 12 | 18.90  | 18.59  | 18.82  |
|             |            | 1               | 24 | 18.77  | 18.84  | 18.62  |
|             |            | 12              | 0  | 17.55  | 17.32  | 17.50  |
|             |            | 12              | 6  | 17.56  | 17.56  | 17.50  |
|             |            | 12              | 13 | 17.53  | 17.59  | 17.57  |
|             |            | 25              | 0  | 16.62  | 17.51  | 17.55  |



| LTE Band 66 |            |                 |    |        |        |        |
|-------------|------------|-----------------|----|--------|--------|--------|
| BW<br>[MHz] | Modulation | Channel         |    | 131987 | 132322 | 132657 |
|             |            | Frequency (MHz) |    | 1711.5 | 1745   | 1778.5 |
| 3           | QPSK       | 1               | 0  | 20.31  | 20.39  | 20.37  |
|             |            | 1               | 7  | 20.44  | 20.58  | 20.39  |
|             |            | 1               | 14 | 20.37  | 20.44  | 20.39  |
|             |            | 8               | 0  | 19.43  | 19.38  | 19.31  |
|             |            | 8               | 3  | 19.41  | 19.46  | 19.39  |
|             |            | 8               | 7  | 19.50  | 19.55  | 19.55  |
|             |            | 15              | 0  | 19.51  | 19.61  | 19.47  |
|             | 16QAM      | 1               | 0  | 19.52  | 19.53  | 19.63  |
|             |            | 1               | 7  | 19.72  | 19.56  | 19.72  |
|             |            | 1               | 14 | 19.74  | 19.88  | 19.67  |
|             |            | 8               | 0  | 18.67  | 18.39  | 18.47  |
|             |            | 8               | 3  | 18.52  | 18.51  | 18.44  |
|             |            | 8               | 7  | 18.61  | 18.64  | 18.55  |
|             |            | 15              | 0  | 18.54  | 18.60  | 18.54  |
|             | 64QAM      | 1               | 0  | 18.43  | 18.31  | 18.55  |
|             |            | 1               | 7  | 18.93  | 18.65  | 18.81  |
|             |            | 1               | 14 | 18.80  | 18.83  | 18.75  |
|             |            | 8               | 0  | 17.47  | 17.33  | 17.50  |
|             |            | 8               | 3  | 17.56  | 17.52  | 17.50  |
|             |            | 8               | 7  | 17.53  | 17.63  | 17.49  |
|             |            | 15              | 0  | 16.71  | 17.51  | 17.58  |



| LTE Band 66 |            |                 |   |        |        |        |
|-------------|------------|-----------------|---|--------|--------|--------|
| BW<br>[MHz] | Modulation | Channel         |   | 131979 | 132322 | 132665 |
|             |            | Frequency (MHz) |   | 1710.7 | 1745   | 1779.3 |
| 1.4         | QPSK       | 1               | 0 | 20.20  | 20.37  | 20.32  |
|             |            | 1               | 2 | 20.42  | 20.53  | 20.40  |
|             |            | 1               | 5 | 20.39  | 20.46  | 20.34  |
|             |            | 3               | 0 | 20.20  | 20.32  | 20.11  |
|             |            | 3               | 1 | 20.26  | 20.37  | 20.19  |
|             |            | 3               | 3 | 20.40  | 20.39  | 20.33  |
|             |            | 6               | 0 | 19.58  | 19.60  | 19.48  |
|             | 16QAM      | 1               | 0 | 19.62  | 19.44  | 19.60  |
|             |            | 1               | 2 | 19.69  | 19.55  | 19.76  |
|             |            | 1               | 5 | 19.82  | 19.87  | 19.72  |
|             |            | 3               | 0 | 19.37  | 19.24  | 19.24  |
|             |            | 3               | 1 | 19.43  | 19.36  | 19.36  |
|             |            | 3               | 3 | 19.44  | 19.45  | 19.40  |
|             |            | 6               | 0 | 18.57  | 18.65  | 18.55  |
|             | 64QAM      | 1               | 0 | 18.45  | 18.36  | 18.54  |
|             |            | 1               | 2 | 18.91  | 18.58  | 18.73  |
|             |            | 1               | 5 | 18.88  | 18.78  | 18.70  |
|             |            | 3               | 0 | 18.31  | 18.15  | 18.32  |
|             |            | 3               | 1 | 18.45  | 18.31  | 18.25  |
|             |            | 3               | 3 | 18.41  | 18.36  | 18.34  |
|             |            | 6               | 0 | 16.66  | 17.51  | 17.46  |



| LTE Band 71 |            |                 |           |        |        |        |
|-------------|------------|-----------------|-----------|--------|--------|--------|
| BW<br>[MHz] | Modulation | RB Size         | RB Offset | Low    | Mid    | High   |
|             |            | Channel         |           | 133222 | 133322 | 133372 |
|             |            | Frequency (MHz) |           | 673    | 683    | 688    |
| 20          | QPSK       | 1               | 0         | 22.00  | 22.06  | 22.01  |
|             |            | 1               | 50        | 22.31  | 22.45  | 22.22  |
|             |            | 1               | 99        | 21.66  | 21.70  | 21.65  |
|             |            | 50              | 0         | 21.51  | 21.55  | 21.45  |
|             |            | 50              | 25        | 21.55  | 21.56  | 21.46  |
|             |            | 50              | 50        | 21.45  | 21.51  | 21.34  |
|             |            | 100             | 0         | 21.63  | 21.72  | 21.64  |
|             | 16QAM      | 1               | 0         | 21.21  | 21.33  | 21.20  |
|             |            | 1               | 50        | 21.02  | 21.65  | 21.00  |
|             |            | 1               | 99        | 21.21  | 20.84  | 21.15  |
|             |            | 50              | 0         | 20.74  | 20.54  | 20.50  |
|             |            | 50              | 25        | 20.61  | 20.77  | 20.57  |
|             |            | 50              | 50        | 20.73  | 20.43  | 20.47  |
|             |            | 100             | 0         | 20.79  | 20.81  | 20.73  |
|             | 64QAM      | 1               | 0         | 20.14  | 20.21  | 20.36  |
|             |            | 1               | 50        | 20.03  | 20.46  | 20.00  |
|             |            | 1               | 99        | 20.56  | 20.35  | 20.33  |
|             |            | 50              | 0         | 19.60  | 19.57  | 19.49  |
|             |            | 50              | 25        | 19.68  | 19.91  | 19.65  |
|             |            | 50              | 50        | 19.67  | 19.71  | 19.50  |
|             |            | 100             | 0         | 19.75  | 19.78  | 19.61  |



| LTE Band 71 |            |                 |    |        |        |        |
|-------------|------------|-----------------|----|--------|--------|--------|
| BW<br>[MHz] | Modulation | Channel         |    | 133197 | 133297 | 133397 |
|             |            | Frequency (MHz) |    | 670.5  | 680.5  | 690.5  |
| 15          | QPSK       | 1               | 0  | 21.92  | 21.93  | 21.95  |
|             |            | 1               | 37 | 22.26  | 22.42  | 22.11  |
|             |            | 1               | 74 | 21.58  | 21.62  | 21.54  |
|             |            | 36              | 0  | 21.36  | 21.47  | 21.39  |
|             |            | 36              | 19 | 21.53  | 21.53  | 21.31  |
|             |            | 36              | 39 | 21.38  | 21.40  | 21.23  |
|             |            | 75              | 0  | 21.51  | 21.63  | 21.63  |
|             | 16QAM      | 1               | 0  | 21.09  | 21.27  | 21.05  |
|             |            | 1               | 37 | 20.91  | 21.62  | 20.97  |
|             |            | 1               | 74 | 21.19  | 20.76  | 21.03  |
|             |            | 36              | 0  | 20.65  | 20.50  | 20.37  |
|             |            | 36              | 19 | 20.49  | 20.75  | 20.48  |
|             |            | 36              | 39 | 20.67  | 20.40  | 20.34  |
|             |            | 75              | 0  | 20.74  | 20.73  | 20.72  |
|             | 64QAM      | 1               | 0  | 20.01  | 20.13  | 20.26  |
|             |            | 1               | 37 | 19.88  | 20.39  | 19.93  |
|             |            | 1               | 74 | 20.47  | 20.27  | 20.30  |
|             |            | 36              | 0  | 19.53  | 19.52  | 19.40  |
|             |            | 36              | 19 | 19.53  | 19.90  | 19.62  |
|             |            | 36              | 39 | 19.66  | 19.69  | 19.47  |
|             |            | 75              | 0  | 19.66  | 19.73  | 19.60  |



| LTE Band 71 |            |                 |    |        |        |        |
|-------------|------------|-----------------|----|--------|--------|--------|
| BW<br>[MHz] | Modulation | Channel         |    | 133172 | 133297 | 133422 |
|             |            | Frequency (MHz) |    | 668    | 680.5  | 693    |
| 10          | QPSK       | 1               | 0  | 21.97  | 21.91  | 21.93  |
|             |            | 1               | 24 | 22.22  | 22.35  | 22.14  |
|             |            | 1               | 49 | 21.65  | 21.69  | 21.60  |
|             |            | 25              | 0  | 21.49  | 21.41  | 21.40  |
|             |            | 25              | 12 | 21.43  | 21.52  | 21.32  |
|             |            | 25              | 25 | 21.38  | 21.46  | 21.30  |
|             |            | 50              | 0  | 21.55  | 21.60  | 21.56  |
|             | 16QAM      | 1               | 0  | 21.07  | 21.18  | 21.07  |
|             |            | 1               | 24 | 20.99  | 21.63  | 20.95  |
|             |            | 1               | 49 | 21.13  | 20.76  | 21.04  |
|             |            | 25              | 0  | 20.73  | 20.42  | 20.45  |
|             |            | 25              | 12 | 20.51  | 20.64  | 20.48  |
|             |            | 25              | 25 | 20.66  | 20.42  | 20.34  |
|             |            | 50              | 0  | 20.77  | 20.69  | 20.71  |
|             | 64QAM      | 1               | 0  | 20.00  | 20.07  | 20.21  |
|             |            | 1               | 24 | 19.93  | 20.37  | 19.85  |
|             |            | 1               | 49 | 20.54  | 20.28  | 20.28  |
|             |            | 25              | 0  | 19.53  | 19.51  | 19.48  |
|             |            | 25              | 12 | 19.64  | 19.84  | 19.51  |
|             |            | 25              | 25 | 19.65  | 19.65  | 19.47  |
|             |            | 50              | 0  | 19.70  | 19.69  | 19.51  |



| BW<br>[MHz] | Modulation | Channel         |    | 133147 | 133297 | 133447 |
|-------------|------------|-----------------|----|--------|--------|--------|
|             |            | Frequency (MHz) |    | 665.5  | 680.5  | 695.5  |
| 5           | QPSK       | 1               | 0  | 21.95  | 22.04  | 21.98  |
|             |            | 1               | 12 | 22.19  | 22.39  | 22.09  |
|             |            | 1               | 24 | 21.51  | 21.63  | 21.60  |
|             |            | 12              | 0  | 21.50  | 21.45  | 21.32  |
|             |            | 12              | 6  | 21.49  | 21.41  | 21.42  |
|             |            | 12              | 13 | 21.39  | 21.48  | 21.32  |
|             |            | 25              | 0  | 21.49  | 21.66  | 21.50  |
|             | 16QAM      | 1               | 0  | 21.07  | 21.26  | 21.05  |
|             |            | 1               | 12 | 21.00  | 21.50  | 20.99  |
|             |            | 1               | 24 | 21.17  | 20.78  | 21.05  |
|             |            | 12              | 0  | 20.71  | 20.40  | 20.45  |
|             |            | 12              | 6  | 20.53  | 20.63  | 20.45  |
|             |            | 12              | 13 | 20.62  | 20.42  | 20.42  |
|             |            | 25              | 0  | 20.70  | 20.75  | 20.63  |
|             | 64QAM      | 1               | 0  | 20.04  | 20.14  | 20.23  |
|             |            | 1               | 12 | 20.02  | 20.39  | 19.97  |
|             |            | 1               | 24 | 20.46  | 20.21  | 20.21  |
|             |            | 12              | 0  | 19.47  | 19.42  | 19.44  |
|             |            | 12              | 6  | 19.65  | 19.84  | 19.50  |
|             |            | 12              | 13 | 19.64  | 19.66  | 19.49  |
|             |            | 25              | 0  | 19.60  | 19.76  | 19.55  |



## EIRP

## LTE Band 4

| LTE Band 4             |         |                    |                             |              |               |              |              |
|------------------------|---------|--------------------|-----------------------------|--------------|---------------|--------------|--------------|
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | EIRP<br>(dBm) | EIRP<br>(mW) | Limit<br>(W) |
| 20M-QPSK               | 20050   | 1720               | 20.60                       | 2.55         | 23.15         | 206.54       | 1            |
|                        | 20175   | 1732.5             | 20.41                       | 2.55         | 22.96         | 197.70       | 1            |
|                        | 20300   | 1745               | 20.52                       | 2.55         | 23.07         | 202.77       | 1            |
| 20M-<br>16QAM          | 20050   | 1720               | 19.86                       | 2.55         | 22.41         | 174.18       | 1            |
|                        | 20175   | 1732.5             | 19.91                       | 2.55         | 22.46         | 176.20       | 1            |
|                        | 20300   | 1745               | 19.83                       | 2.55         | 22.38         | 172.98       | 1            |
| 20M-<br>64QAM          | 20050   | 1720               | 18.82                       | 2.55         | 21.37         | 137.09       | 1            |
|                        | 20175   | 1732.5             | 18.79                       | 2.55         | 21.34         | 136.14       | 1            |
|                        | 20300   | 1745               | 18.80                       | 2.55         | 21.35         | 136.46       | 1            |
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | EIRP<br>(dBm) | EIRP<br>(mW) | Limit<br>(W) |
| 15M-QPSK               | 20025   | 1717.5             | 20.56                       | 2.55         | 23.11         | 204.64       | 1            |
|                        | 20175   | 1732.5             | 20.37                       | 2.55         | 22.92         | 195.88       | 1            |
|                        | 20325   | 1747.5             | 20.47                       | 2.55         | 23.02         | 200.45       | 1            |
| 15M-<br>16QAM          | 20025   | 1717.5             | 19.81                       | 2.55         | 22.36         | 172.19       | 1            |
|                        | 20175   | 1732.5             | 19.90                       | 2.55         | 22.45         | 175.79       | 1            |
|                        | 20325   | 1747.5             | 19.77                       | 2.55         | 22.32         | 170.61       | 1            |
| 15M-<br>64QAM          | 20025   | 1717.5             | 18.73                       | 2.55         | 21.28         | 134.28       | 1            |
|                        | 20175   | 1732.5             | 18.67                       | 2.55         | 21.22         | 132.43       | 1            |
|                        | 20325   | 1747.5             | 18.73                       | 2.55         | 21.28         | 134.28       | 1            |
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | EIRP<br>(dBm) | EIRP<br>(mW) | Limit<br>(W) |
| 10M-QPSK               | 20000   | 1715               | 20.45                       | 2.55         | 23.00         | 199.53       | 1            |
|                        | 20175   | 1732.5             | 20.31                       | 2.55         | 22.86         | 193.20       | 1            |
|                        | 20350   | 1750               | 20.46                       | 2.55         | 23.01         | 199.99       | 1            |
| 10M-<br>16QAM          | 20000   | 1715               | 19.84                       | 2.55         | 22.39         | 173.38       | 1            |
|                        | 20175   | 1732.5             | 19.90                       | 2.55         | 22.45         | 175.79       | 1            |
|                        | 20350   | 1750               | 19.69                       | 2.55         | 22.24         | 167.49       | 1            |
| 10M-<br>64QAM          | 20000   | 1715               | 18.75                       | 2.55         | 21.30         | 134.90       | 1            |
|                        | 20175   | 1732.5             | 18.76                       | 2.55         | 21.31         | 135.21       | 1            |
|                        | 20350   | 1750               | 18.67                       | 2.55         | 21.22         | 132.43       | 1            |



| LTE Band 4             |         |                    |                             |              |               |              |              |
|------------------------|---------|--------------------|-----------------------------|--------------|---------------|--------------|--------------|
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | EIRP<br>(dBm) | EIRP<br>(mW) | Limit<br>(W) |
| 5M-QPSK                | 19975   | 1712.5             | 20.59                       | 2.55         | 23.14         | 206.06       | 1            |
|                        | 20175   | 1732.5             | 20.36                       | 2.55         | 22.91         | 195.43       | 1            |
|                        | 20375   | 1752.5             | 20.45                       | 2.55         | 23.00         | 199.53       | 1            |
| 5M-16QAM               | 19975   | 1712.5             | 19.75                       | 2.55         | 22.30         | 169.82       | 1            |
|                        | 20175   | 1732.5             | 19.82                       | 2.55         | 22.37         | 172.58       | 1            |
|                        | 20375   | 1752.5             | 19.70                       | 2.55         | 22.25         | 167.88       | 1            |
| 5M-64QAM               | 19975   | 1712.5             | 18.67                       | 2.55         | 21.22         | 132.43       | 1            |
|                        | 20175   | 1732.5             | 18.71                       | 2.55         | 21.26         | 133.66       | 1            |
|                        | 20375   | 1752.5             | 18.79                       | 2.55         | 21.34         | 136.14       | 1            |
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | EIRP<br>(dBm) | EIRP<br>(mW) | Limit<br>(W) |
| 3M-QPSK                | 19965   | 1711.5             | 20.54                       | 2.55         | 23.09         | 203.70       | 1            |
|                        | 20175   | 1732.5             | 20.39                       | 2.55         | 22.94         | 196.79       | 1            |
|                        | 20385   | 1753.5             | 20.49                       | 2.55         | 23.04         | 201.37       | 1            |
| 3M-16QAM               | 19965   | 1711.5             | 19.76                       | 2.55         | 22.31         | 170.22       | 1            |
|                        | 20175   | 1732.5             | 19.84                       | 2.55         | 22.39         | 173.38       | 1            |
|                        | 20385   | 1753.5             | 19.81                       | 2.55         | 22.36         | 172.19       | 1            |
| 3M-64QAM               | 19965   | 1711.5             | 18.81                       | 2.55         | 21.36         | 136.77       | 1            |
|                        | 20175   | 1732.5             | 18.68                       | 2.55         | 21.23         | 132.74       | 1            |
|                        | 20385   | 1753.5             | 18.75                       | 2.55         | 21.30         | 134.90       | 1            |
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | EIRP<br>(dBm) | EIRP<br>(mW) | Limit<br>(W) |
| 1.4M-QPSK              | 19957   | 1710.7             | 20.53                       | 2.55         | 23.08         | 203.24       | 1            |
|                        | 20175   | 1732.5             | 20.37                       | 2.55         | 22.92         | 195.88       | 1            |
|                        | 20393   | 1754.3             | 20.51                       | 2.55         | 23.06         | 202.30       | 1            |
| 1.4M-16QAM             | 19957   | 1710.7             | 19.76                       | 2.55         | 22.31         | 170.22       | 1            |
|                        | 20175   | 1732.5             | 19.85                       | 2.55         | 22.40         | 173.78       | 1            |
|                        | 20393   | 1754.3             | 19.75                       | 2.55         | 22.30         | 169.82       | 1            |
| 1.4M-64QAM             | 19957   | 1710.7             | 18.76                       | 2.55         | 21.31         | 135.21       | 1            |
|                        | 20175   | 1732.5             | 18.66                       | 2.55         | 21.21         | 132.13       | 1            |
|                        | 20393   | 1754.3             | 18.65                       | 2.55         | 21.20         | 131.83       | 1            |



## LTE Band 12

| LTE Band 12            |         |                    |                             |              |              |             |              |
|------------------------|---------|--------------------|-----------------------------|--------------|--------------|-------------|--------------|
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | ERP<br>(dBm) | ERP<br>(mW) | Limit<br>(W) |
| 10M-QPSK               | 23060   | 704                | 22.47                       | 1.11         | 21.43        | 139.00      | 3            |
|                        | 23095   | 707.5              | 22.57                       | 1.11         | 21.53        | 142.23      | 3            |
|                        | 23130   | 711                | 22.55                       | 1.11         | 21.51        | 141.58      | 3            |
| 10M-16QAM              | 23060   | 704                | 21.67                       | 1.11         | 20.63        | 115.61      | 3            |
|                        | 23095   | 707.5              | 21.66                       | 1.11         | 20.62        | 115.35      | 3            |
|                        | 23130   | 711                | 21.62                       | 1.11         | 20.58        | 114.29      | 3            |
| 10M-64QAM              | 23060   | 704                | 20.69                       | 1.11         | 19.65        | 92.26       | 3            |
|                        | 23095   | 707.5              | 20.66                       | 1.11         | 19.62        | 91.62       | 3            |
|                        | 23130   | 711                | 20.57                       | 1.11         | 19.53        | 89.74       | 3            |
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | ERP<br>(dBm) | ERP<br>(mW) | Limit<br>(W) |
| 5M-QPSK                | 23035   | 701.5              | 22.43                       | 1.11         | 21.39        | 137.72      | 3            |
|                        | 23095   | 707.5              | 22.48                       | 1.11         | 21.44        | 139.32      | 3            |
|                        | 23155   | 713.5              | 22.51                       | 1.11         | 21.47        | 140.28      | 3            |
| 5M-16QAM               | 23035   | 701.5              | 21.60                       | 1.11         | 20.56        | 113.76      | 3            |
|                        | 23095   | 707.5              | 21.62                       | 1.11         | 20.58        | 114.29      | 3            |
|                        | 23155   | 713.5              | 21.57                       | 1.11         | 20.53        | 112.98      | 3            |
| 5M-64QAM               | 23035   | 701.5              | 20.57                       | 1.11         | 19.53        | 89.74       | 3            |
|                        | 23095   | 707.5              | 20.56                       | 1.11         | 19.52        | 89.54       | 3            |
|                        | 23155   | 713.5              | 20.54                       | 1.11         | 19.50        | 89.13       | 3            |



| LTE Band 12            |         |                    |                             |              |              |             |              |
|------------------------|---------|--------------------|-----------------------------|--------------|--------------|-------------|--------------|
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | ERP<br>(dBm) | ERP<br>(mW) | Limit<br>(W) |
| 3M-QPSK                | 23025   | 700.5              | 22.35                       | 1.11         | 21.31        | 135.21      | 3            |
|                        | 23095   | 707.5              | 22.55                       | 1.11         | 21.51        | 141.58      | 3            |
|                        | 23165   | 714.5              | 22.50                       | 1.11         | 21.46        | 139.96      | 3            |
| 3M-16QAM               | 23025   | 700.5              | 21.66                       | 1.11         | 20.62        | 115.35      | 3            |
|                        | 23095   | 707.5              | 21.52                       | 1.11         | 20.48        | 111.69      | 3            |
|                        | 23165   | 714.5              | 21.61                       | 1.11         | 20.57        | 114.02      | 3            |
| 3M-64QAM               | 23025   | 700.5              | 20.66                       | 1.11         | 19.62        | 91.62       | 3            |
|                        | 23095   | 707.5              | 20.65                       | 1.11         | 19.61        | 91.41       | 3            |
|                        | 23165   | 714.5              | 20.54                       | 1.11         | 19.50        | 89.13       | 3            |
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | ERP<br>(dBm) | ERP<br>(mW) | Limit<br>(W) |
| 1.4M-QPSK              | 23017   | 699.7              | 22.46                       | 1.11         | 21.42        | 138.68      | 3            |
|                        | 23095   | 707.5              | 22.52                       | 1.11         | 21.48        | 140.60      | 3            |
|                        | 23173   | 715.3              | 22.50                       | 1.11         | 21.46        | 139.96      | 3            |
| 1.4M-<br>16QAM         | 23017   | 699.7              | 21.65                       | 1.11         | 20.61        | 115.08      | 3            |
|                        | 23095   | 707.5              | 21.65                       | 1.11         | 20.61        | 115.08      | 3            |
|                        | 23173   | 715.3              | 21.58                       | 1.11         | 20.54        | 113.24      | 3            |
| 1.4M-<br>64QAM         | 23017   | 699.7              | 20.67                       | 1.11         | 19.63        | 91.83       | 3            |
|                        | 23095   | 707.5              | 20.60                       | 1.11         | 19.56        | 90.36       | 3            |
|                        | 23173   | 715.3              | 20.56                       | 1.11         | 19.52        | 89.54       | 3            |



### LTE Band 13

| LTE Band 13            |         |                    |                             |              |              |             |              |
|------------------------|---------|--------------------|-----------------------------|--------------|--------------|-------------|--------------|
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | ERP<br>(dBm) | ERP<br>(mW) | Limit<br>(W) |
| 10M-QPSK               | 23230   | 782                | 23.05                       | 0.86         | 21.76        | 149.97      | 3            |
| 10M-16QAM              | 23230   | 782                | 22.15                       | 0.86         | 20.86        | 121.90      | 3            |
| 10M-64QAM              | 23230   | 782                | 21.20                       | 0.86         | 19.91        | 97.95       | 3            |
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | ERP<br>(dBm) | ERP<br>(mW) | Limit<br>(W) |
| 5M-QPSK                | 23205   | 779.5              | 22.94                       | 0.86         | 21.65        | 146.22      | 3            |
|                        | 23230   | 782                | 22.97                       | 0.86         | 21.68        | 147.23      | 3            |
|                        | 23255   | 784.5              | 22.95                       | 0.86         | 21.66        | 146.55      | 3            |
| 5M-16QAM               | 23205   | 779.5              | 22.11                       | 0.86         | 20.82        | 120.78      | 3            |
|                        | 23230   | 782                | 22.08                       | 0.86         | 20.79        | 119.95      | 3            |
|                        | 23255   | 784.5              | 22.02                       | 0.86         | 20.73        | 118.30      | 3            |
| 5M-64QAM               | 23205   | 779.5              | 21.11                       | 0.86         | 19.82        | 95.94       | 3            |
|                        | 23230   | 782                | 21.07                       | 0.86         | 19.78        | 95.06       | 3            |
|                        | 23255   | 784.5              | 21.19                       | 0.86         | 19.90        | 97.72       | 3            |



## LTE Band 17

| LTE Band 17            |         |                    |                             |              |              |             |              |
|------------------------|---------|--------------------|-----------------------------|--------------|--------------|-------------|--------------|
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | ERP<br>(dBm) | ERP<br>(mW) | Limit<br>(W) |
| 10M-QPSK               | 23780   | 709                | 22.45                       | 1.11         | 21.41        | 138.36      | 3            |
|                        | 23790   | 710                | 22.38                       | 1.11         | 21.34        | 136.14      | 3            |
|                        | 23800   | 711                | 22.48                       | 1.11         | 21.44        | 139.32      | 3            |
| 10M-<br>16QAM          | 23780   | 709                | 21.46                       | 1.11         | 20.42        | 110.15      | 3            |
|                        | 23790   | 710                | 21.48                       | 1.11         | 20.44        | 110.66      | 3            |
|                        | 23800   | 711                | 21.45                       | 1.11         | 20.41        | 109.90      | 3            |
| 10M-<br>64QAM          | 23780   | 709                | 20.57                       | 1.11         | 19.53        | 89.74       | 3            |
|                        | 23790   | 710                | 20.72                       | 1.11         | 19.68        | 92.90       | 3            |
|                        | 23800   | 711                | 20.79                       | 1.11         | 19.75        | 94.41       | 3            |
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | ERP<br>(dBm) | ERP<br>(mW) | Limit<br>(W) |
| 5M-QPSK                | 23755   | 706.5              | 22.36                       | 1.11         | 21.32        | 135.52      | 3            |
|                        | 23790   | 710                | 22.27                       | 1.11         | 21.23        | 132.74      | 3            |
|                        | 23825   | 713.5              | 22.42                       | 1.11         | 21.38        | 137.40      | 3            |
| 5M-16QAM               | 23755   | 706.5              | 21.38                       | 1.11         | 20.34        | 108.14      | 3            |
|                        | 23790   | 710                | 21.45                       | 1.11         | 20.41        | 109.90      | 3            |
|                        | 23825   | 713.5              | 21.49                       | 1.11         | 20.45        | 110.92      | 3            |
| 5M-64QAM               | 23755   | 706.5              | 20.44                       | 1.11         | 19.40        | 87.10       | 3            |
|                        | 23790   | 710                | 20.68                       | 1.11         | 19.64        | 92.04       | 3            |
|                        | 23825   | 713.5              | 20.73                       | 1.11         | 19.69        | 93.11       | 3            |



### LTE Band 30

| LTE Band 30            |         |                    |                             |              |               |              |              |
|------------------------|---------|--------------------|-----------------------------|--------------|---------------|--------------|--------------|
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | EIRP<br>(dBm) | EIRP<br>(mW) | Limit<br>(W) |
| 10M-QPSK               | 27710   | 2310               | 23.05                       | 1.17         | 24.22         | 264.24       | 0.25         |
| 10M-16QAM              | 27710   | 2310               | 21.88                       | 1.17         | 23.05         | 201.84       | 0.25         |
| 10M-64QAM              | 27710   | 2310               | 20.81                       | 1.17         | 21.98         | 157.76       | 0.25         |
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | EIRP<br>(dBm) | EIRP<br>(mW) | Limit<br>(W) |
| 5M-QPSK                | 27685   | 2307.5             | 23.00                       | 1.17         | 24.17         | 261.22       | 0.25         |
|                        | 27710   | 2310               | 22.96                       | 1.17         | 24.13         | 258.82       | 0.25         |
|                        | 27735   | 2312.5             | 23.04                       | 1.17         | 24.21         | 263.63       | 0.25         |
| 5M-16QAM               | 27685   | 2307.5             | 21.86                       | 1.17         | 23.03         | 200.91       | 0.25         |
|                        | 27710   | 2310               | 21.78                       | 1.17         | 22.95         | 197.24       | 0.25         |
|                        | 27735   | 2312.5             | 21.82                       | 1.17         | 22.99         | 199.07       | 0.25         |
| 5M-64QAM               | 27685   | 2307.5             | 20.73                       | 1.17         | 21.90         | 154.88       | 0.25         |
|                        | 27710   | 2310               | 20.80                       | 1.17         | 21.97         | 157.40       | 0.25         |
|                        | 27735   | 2312.5             | 20.73                       | 1.17         | 21.90         | 154.88       | 0.25         |



## LTE Band 66

| LTE Band 66            |         |                    |                             |              |               |              |              |
|------------------------|---------|--------------------|-----------------------------|--------------|---------------|--------------|--------------|
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | EIRP<br>(dBm) | EIRP<br>(mW) | Limit<br>(W) |
| 20M-QPSK               | 132072  | 1720               | 20.49                       | 2.91         | 23.40         | 218.78       | 1            |
|                        | 132322  | 1745               | 20.62                       | 2.91         | 23.53         | 225.42       | 1            |
|                        | 132572  | 1770               | 20.51                       | 2.91         | 23.42         | 219.79       | 1            |
| 20M-<br>16QAM          | 132072  | 1720               | 19.87                       | 2.91         | 22.78         | 189.67       | 1            |
|                        | 132322  | 1745               | 19.89                       | 2.91         | 22.80         | 190.55       | 1            |
|                        | 132572  | 1770               | 19.81                       | 2.91         | 22.72         | 187.07       | 1            |
| 20M-<br>64QAM          | 132072  | 1720               | 18.96                       | 2.91         | 21.87         | 153.82       | 1            |
|                        | 132322  | 1745               | 18.89                       | 2.91         | 21.80         | 151.36       | 1            |
|                        | 132572  | 1770               | 18.86                       | 2.91         | 21.77         | 150.31       | 1            |
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | EIRP<br>(dBm) | EIRP<br>(mW) | Limit<br>(W) |
| 15M-QPSK               | 132047  | 1717.5             | 20.41                       | 2.91         | 23.32         | 214.78       | 1            |
|                        | 132322  | 1745               | 20.49                       | 2.91         | 23.40         | 218.78       | 1            |
|                        | 132597  | 1772.5             | 20.49                       | 2.91         | 23.40         | 218.78       | 1            |
| 15M-<br>16QAM          | 132047  | 1717.5             | 19.82                       | 2.91         | 22.73         | 187.50       | 1            |
|                        | 132322  | 1745               | 19.74                       | 2.91         | 22.65         | 184.08       | 1            |
|                        | 132597  | 1772.5             | 19.67                       | 2.91         | 22.58         | 181.13       | 1            |
| 15M-<br>64QAM          | 132047  | 1717.5             | 18.95                       | 2.91         | 21.86         | 153.46       | 1            |
|                        | 132322  | 1745               | 18.75                       | 2.91         | 21.66         | 146.55       | 1            |
|                        | 132597  | 1772.5             | 18.82                       | 2.91         | 21.73         | 148.94       | 1            |
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | EIRP<br>(dBm) | EIRP<br>(mW) | Limit<br>(W) |
| 10M-QPSK               | 132022  | 1715               | 20.35                       | 2.91         | 23.26         | 211.84       | 1            |
|                        | 132322  | 1745               | 20.61                       | 2.91         | 23.52         | 224.91       | 1            |
|                        | 132622  | 1775               | 20.39                       | 2.91         | 23.30         | 213.80       | 1            |
| 10M-<br>16QAM          | 132022  | 1715               | 19.85                       | 2.91         | 22.76         | 188.80       | 1            |
|                        | 132322  | 1745               | 19.87                       | 2.91         | 22.78         | 189.67       | 1            |
|                        | 132622  | 1775               | 19.79                       | 2.91         | 22.70         | 186.21       | 1            |
| 10M-<br>64QAM          | 132022  | 1715               | 18.85                       | 2.91         | 21.76         | 149.97       | 1            |
|                        | 132322  | 1745               | 18.85                       | 2.91         | 21.76         | 149.97       | 1            |
|                        | 132622  | 1775               | 18.71                       | 2.91         | 21.62         | 145.21       | 1            |



| LTE Band 66            |         |                    |                             |              |               |              |              |
|------------------------|---------|--------------------|-----------------------------|--------------|---------------|--------------|--------------|
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | EIRP<br>(dBm) | EIRP<br>(mW) | Limit<br>(W) |
| 5M-QPSK                | 131997  | 1712.5             | 20.42                       | 2.91         | 23.33         | 215.28       | 1            |
|                        | 132322  | 1745               | 20.52                       | 2.91         | 23.43         | 220.29       | 1            |
|                        | 132647  | 1777.5             | 20.43                       | 2.91         | 23.34         | 215.77       | 1            |
| 5M-16QAM               | 131997  | 1712.5             | 19.82                       | 2.91         | 22.73         | 187.50       | 1            |
|                        | 132322  | 1745               | 19.85                       | 2.91         | 22.76         | 188.80       | 1            |
|                        | 132647  | 1777.5             | 19.78                       | 2.91         | 22.69         | 185.78       | 1            |
| 5M-64QAM               | 131997  | 1712.5             | 18.90                       | 2.91         | 21.81         | 151.71       | 1            |
|                        | 132322  | 1745               | 18.84                       | 2.91         | 21.75         | 149.62       | 1            |
|                        | 132647  | 1777.5             | 18.82                       | 2.91         | 21.73         | 148.94       | 1            |
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | EIRP<br>(dBm) | EIRP<br>(mW) | Limit<br>(W) |
| 3M-QPSK                | 131987  | 1711.5             | 20.44                       | 2.91         | 23.35         | 216.27       | 1            |
|                        | 132322  | 1745               | 20.58                       | 2.91         | 23.49         | 223.36       | 1            |
|                        | 132657  | 1778.5             | 20.39                       | 2.91         | 23.30         | 213.80       | 1            |
| 3M-16QAM               | 131987  | 1711.5             | 19.74                       | 2.91         | 22.65         | 184.08       | 1            |
|                        | 132322  | 1745               | 19.88                       | 2.91         | 22.79         | 190.11       | 1            |
|                        | 132657  | 1778.5             | 19.72                       | 2.91         | 22.63         | 183.23       | 1            |
| 3M-64QAM               | 131987  | 1711.5             | 18.93                       | 2.91         | 21.84         | 152.76       | 1            |
|                        | 132322  | 1745               | 18.83                       | 2.91         | 21.74         | 149.28       | 1            |
|                        | 132657  | 1778.5             | 18.81                       | 2.91         | 21.72         | 148.59       | 1            |
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | EIRP<br>(dBm) | EIRP<br>(mW) | Limit<br>(W) |
| 1.4M-QPSK              | 131979  | 1710.7             | 20.42                       | 2.91         | 23.33         | 215.28       | 1            |
|                        | 132322  | 1745               | 20.53                       | 2.91         | 23.44         | 220.80       | 1            |
|                        | 132665  | 1779.3             | 20.40                       | 2.91         | 23.31         | 214.29       | 1            |
| 1.4M-16QAM             | 131979  | 1710.7             | 19.82                       | 2.91         | 22.73         | 187.50       | 1            |
|                        | 132322  | 1745               | 19.87                       | 2.91         | 22.78         | 189.67       | 1            |
|                        | 132665  | 1779.3             | 19.76                       | 2.91         | 22.67         | 184.93       | 1            |
| 1.4M-64QAM             | 131979  | 1710.7             | 18.91                       | 2.91         | 21.82         | 152.05       | 1            |
|                        | 132322  | 1745               | 18.78                       | 2.91         | 21.69         | 147.57       | 1            |
|                        | 132665  | 1779.3             | 18.73                       | 2.91         | 21.64         | 145.88       | 1            |



**LTE Band 71**

| LTE Band 71            |         |                    |                             |              |               |              |              |
|------------------------|---------|--------------------|-----------------------------|--------------|---------------|--------------|--------------|
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | EIRP<br>(dBm) | EIRP<br>(mW) | Limit<br>(W) |
| 20M-QPSK               | 133222  | 673                | 22.31                       | 1            | 23.31         | 214.29       | 3            |
|                        | 133322  | 683                | 22.45                       | 1            | 23.45         | 221.31       | 3            |
|                        | 133372  | 688                | 22.22                       | 1            | 23.22         | 209.89       | 3            |
| 20M-<br>16QAM          | 133222  | 673                | 21.21                       | 1            | 22.21         | 166.34       | 3            |
|                        | 133322  | 683                | 21.65                       | 1            | 22.65         | 184.08       | 3            |
|                        | 133372  | 688                | 21.20                       | 1            | 22.20         | 165.96       | 3            |
| 20M-<br>64QAM          | 133222  | 673                | 20.56                       | 1            | 21.56         | 143.22       | 3            |
|                        | 133322  | 683                | 20.46                       | 1            | 21.46         | 139.96       | 3            |
|                        | 133372  | 688                | 20.36                       | 1            | 21.36         | 136.77       | 3            |
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | EIRP<br>(dBm) | EIRP<br>(mW) | Limit<br>(W) |
| 15M-QPSK               | 133197  | 670.5              | 22.26                       | 1            | 23.26         | 211.84       | 3            |
|                        | 133297  | 680.5              | 22.42                       | 1            | 23.42         | 219.79       | 3            |
|                        | 133397  | 690.5              | 22.11                       | 1            | 23.11         | 204.64       | 3            |
| 15M-<br>16QAM          | 133197  | 670.5              | 21.19                       | 1            | 22.19         | 165.58       | 3            |
|                        | 133297  | 680.5              | 21.62                       | 1            | 22.62         | 182.81       | 3            |
|                        | 133397  | 690.5              | 21.05                       | 1            | 22.05         | 160.32       | 3            |
| 15M-<br>64QAM          | 133197  | 670.5              | 20.47                       | 1            | 21.47         | 140.28       | 3            |
|                        | 133297  | 680.5              | 20.39                       | 1            | 21.39         | 137.72       | 3            |
|                        | 133397  | 690.5              | 20.30                       | 1            | 21.30         | 134.90       | 3            |
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | EIRP<br>(dBm) | EIRP<br>(mW) | Limit<br>(W) |
| 10M-QPSK               | 133172  | 668                | 22.22                       | 1            | 23.22         | 209.89       | 3            |
|                        | 133297  | 680.5              | 22.35                       | 1            | 23.35         | 216.27       | 3            |
|                        | 133422  | 693                | 22.14                       | 1            | 23.14         | 206.06       | 3            |
| 10M-<br>16QAM          | 133172  | 668                | 21.13                       | 1            | 22.13         | 163.31       | 3            |
|                        | 133297  | 680.5              | 21.63                       | 1            | 22.63         | 183.23       | 3            |
|                        | 133422  | 693                | 21.07                       | 1            | 22.07         | 161.06       | 3            |
| 10M-<br>64QAM          | 133172  | 668                | 20.54                       | 1            | 21.54         | 142.56       | 3            |
|                        | 133297  | 680.5              | 20.37                       | 1            | 21.37         | 137.09       | 3            |
|                        | 133422  | 693                | 20.28                       | 1            | 21.28         | 134.28       | 3            |



| LTE Band 71            |         |                    |                             |              |               |              |              |
|------------------------|---------|--------------------|-----------------------------|--------------|---------------|--------------|--------------|
| BW [MHz]<br>Modulation | Channel | Frequency<br>(MHz) | Conducted<br>Power<br>(dBm) | Gain<br>(dB) | EIRP<br>(dBm) | EIRP<br>(mW) | Limit<br>(W) |
| 5M-QPSK                | 133147  | 665.5              | 22.19                       | 1            | 23.19         | 208.45       | 3            |
|                        | 133297  | 680.5              | 22.39                       | 1            | 23.39         | 218.27       | 3            |
|                        | 133447  | 695.5              | 22.09                       | 1            | 23.09         | 203.70       | 3            |
| 5M-16QAM               | 133147  | 665.5              | 21.17                       | 1            | 22.17         | 164.82       | 3            |
|                        | 133297  | 680.5              | 21.50                       | 1            | 22.50         | 177.83       | 3            |
|                        | 133447  | 695.5              | 21.05                       | 1            | 22.05         | 160.32       | 3            |
| 5M-64QAM               | 133147  | 665.5              | 20.46                       | 1            | 21.46         | 139.96       | 3            |
|                        | 133297  | 680.5              | 20.39                       | 1            | 21.39         | 137.72       | 3            |
|                        | 133447  | 695.5              | 20.23                       | 1            | 21.23         | 132.74       | 3            |

**REMARKS:** ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).



## 3.2 FREQUENCY STABILITY MEASUREMENT

### 3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

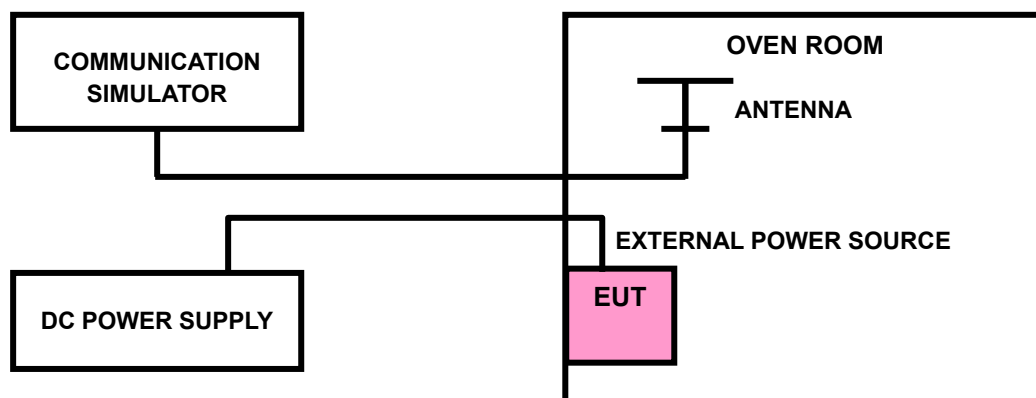
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

### 3.2.2 TEST PROCEDURE

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the  $\pm 0.5^{\circ}\text{C}$  during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

**NOTE:** The frequency error was recorded frequency error from the communication simulator.

### 3.3.3 TEST SETUP





### 3.2.3 TEST RESULTS

Please Refer to Appendix of this test report.

Note: VL = Low voltage(3.4V); VN/NV = Normal voltage(3.85V); VH = High voltage(4.4V); NT = Normal temperature (25°C)

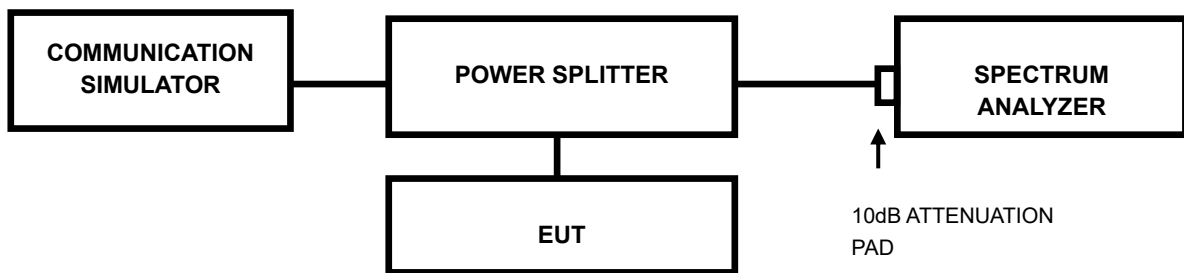


### 3.3 OCCUPIED BANDWIDTH MEASUREMENT

#### 3.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

#### 3.3.2 TEST SETUP



#### 3.3.3 TEST PROCEDURES

- The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

#### 3.3.4 TEST RESULTS

Please Refer to Appendix of this test report.



### 3.4 BAND EDGE MEASUREMENT

#### 3.4.1 LIMITS OF BAND EDGE MEASUREMENT

According to FCC 27.53(h) specified that For operations in the 1710-1755 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least  $43 + 10 \log (P)$  dB. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

According to FCC 27.53(g) specified that For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least  $43 + 10 \log (P)$  dB. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

47 CFR 27.53(c)(2) : On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated o

§27.53(a)(4):

According to FCC 27.53(a)(4) specified that For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:

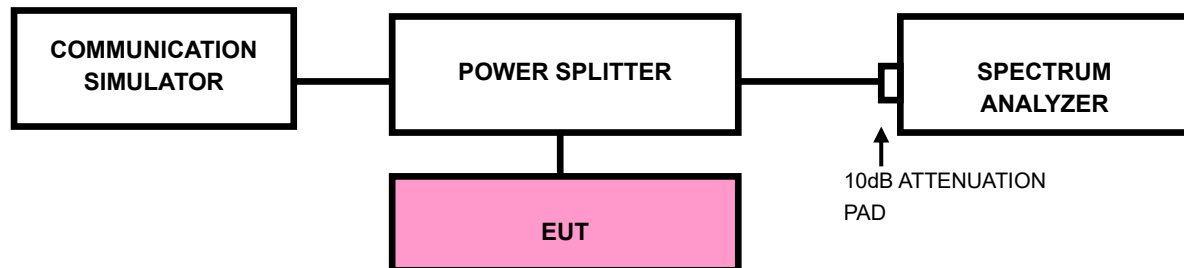
- (i) By a factor of not less than:  $43 + 10 \log (P)$  dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than  $55 + 10 \log (P)$  dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than  $61 + 10 \log (P)$  dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than  $67 + 10 \log (P)$  dB on all frequencies between 2328 and 2337 MHz;
- (ii) By a factor of not less than  $43 + 10 \log (P)$  dB on all frequencies between 2300 and 2305 MHz,  $55 + 10 \log (P)$  dB on all frequencies between 2296 and 2300 MHz,  $61 + 10 \log (P)$  dB on all frequencies between 2292 and 2296 MHz,  $67 + 10 \log (P)$  dB on all frequencies between 2288 and 2292 MHz, and  $70 + 10 \log (P)$  dB below 2288 MHz;
- (iii) By a factor of not less than  $43 + 10 \log (P)$  dB on all frequencies between 2360 and 2365 MHz, and not less than  $70 + 10 \log (P)$  dB above 2365 MHz.

47 CFR 27.53(f) : For operations in the 746–758 MHz, 775–788 MHz, and 805–806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to -70



dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

### 3.4.2 TEST SETUP





### 3.4.3 TEST PROCEDURES

- a) All measurements were done at low and high operational frequency range
- b) Connect the transmitter to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.
- c) Tune the analyzer to the nominal center frequency of the emission bandwidth  
(EBW)
- d) .Set the resolution bandwidth (RBW)  $\geq 1\%$  EBW in the 1MHz band immediately outside and adjacent to the band edge.
- e) Beyond the 1MHz band from the band edge, RBW=1MHz was used.
- f) Set the video bandwidth (VBW) to  $\geq 3 \times$  RBW.
- g) Select the average power (RMS) display detector.
- h) Set the number of measurement points to  $\geq 1001$ .
- i) Use auto-coupled sweep time.
- j) Perform the measurement over an interval of time when the transmission is continuous and at its maximum power level.
- k) The RF fundamental frequency should be excluded against the limit line in the operating frequency band and use RBW is 10KHz or 100KHz.
- l) Record the max trace plot into the test report.

### 3.4.4 TEST RESULTS

Please Refer to Appendix of this test report.



## CONDUCTED SPURIOUS EMISSIONS

### 3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. The emission limit equal to  $-13\text{dBm}$ .

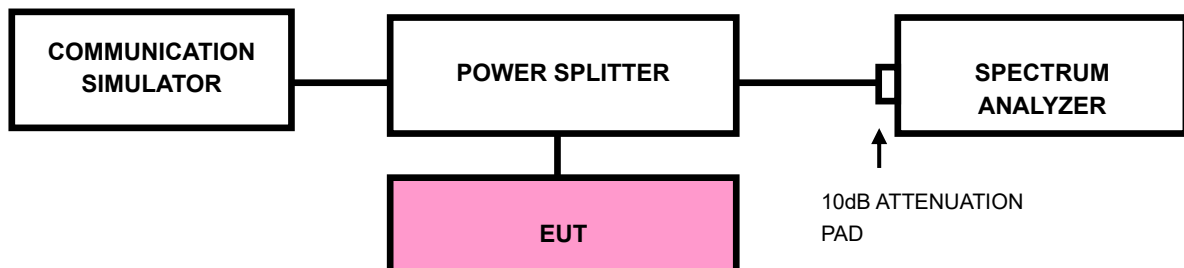
For: LTE Band30

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least  $70 + 10 \log_{10}(P)$  dB. The limit of emission is equal to  $-40\text{dBm}$ .

### 3.5.2 TEST PROCEDURE

- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9kHz up to a frequency including its  $10^{\text{th}}$  harmonic. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

### 3.5.3 TEST SETUP



### 3.5.4 TEST RESULTS

NOTE : The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

Please Refer to Appendix of this test report.



### 3.6 RADIATED EMISSION MEASUREMENT

#### 3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. The emission limit equal to  $-13\text{dBm}$ .

For: LTE Band30

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least  $70 + 10 \log_{10}(P)$  dB. The limit of emission is equal to  $-40\text{dBm}$ .

#### 3.6.2 TEST PROCEDURES

- Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G.
- $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$ .
- E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,  
 $\text{E.R.P power} = \text{E.I.P.R power} - 2.15\text{dBi}$ .

**NOTE:** The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

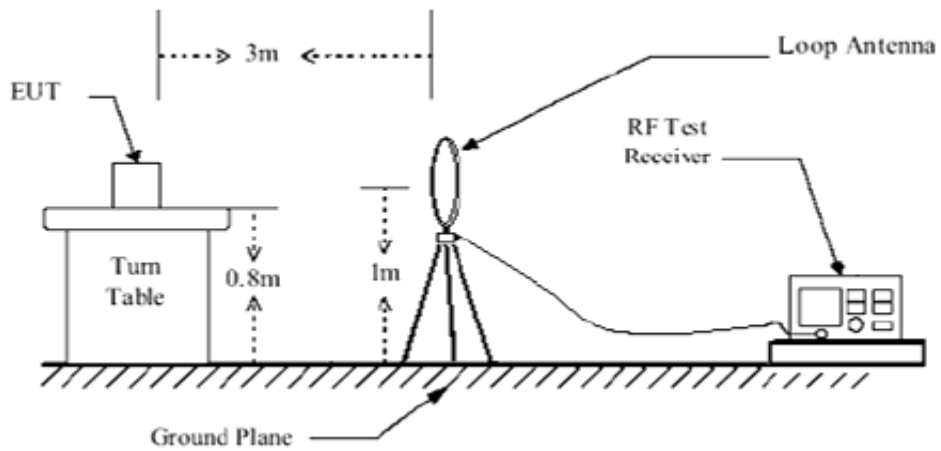
#### 3.6.3 DEVIATION FROM TEST STANDARD

No deviation

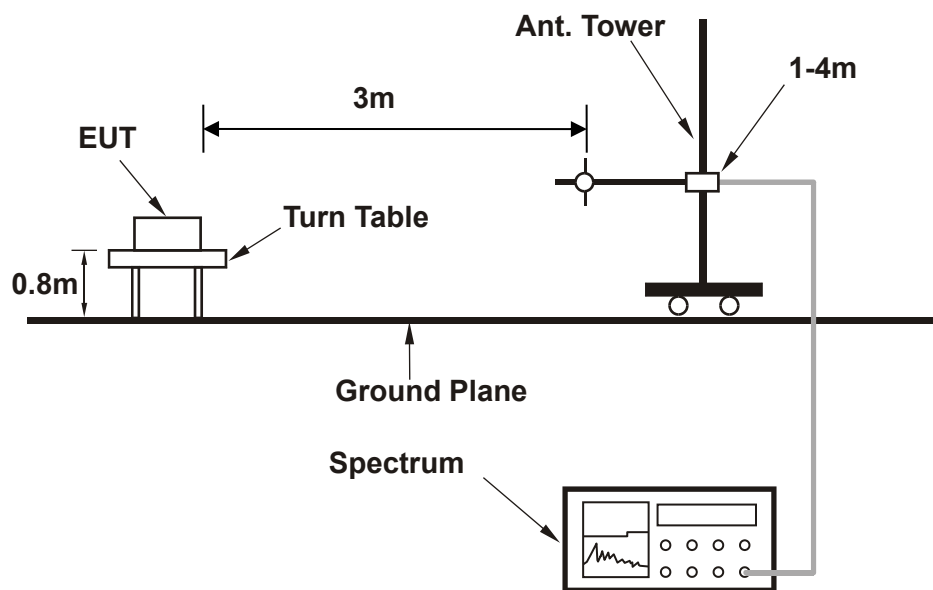


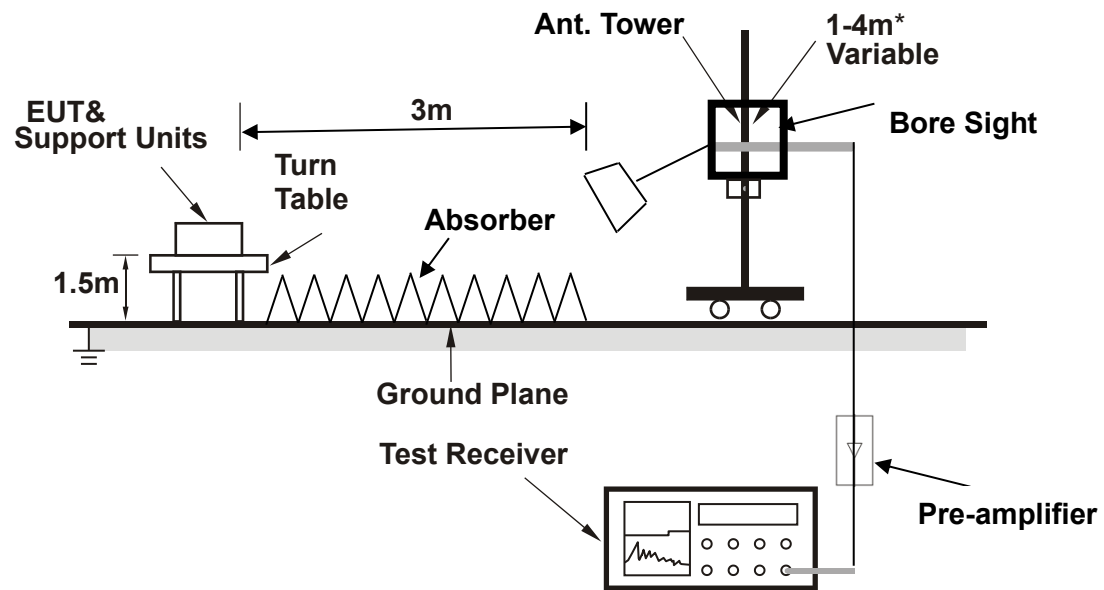
### 3.6.4 TEST SETUP

#### < Frequency Range below 30MHz >



#### < Frequency Range 30MHz~1GHz >





**Note:** Above 1G is a directional antenna depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

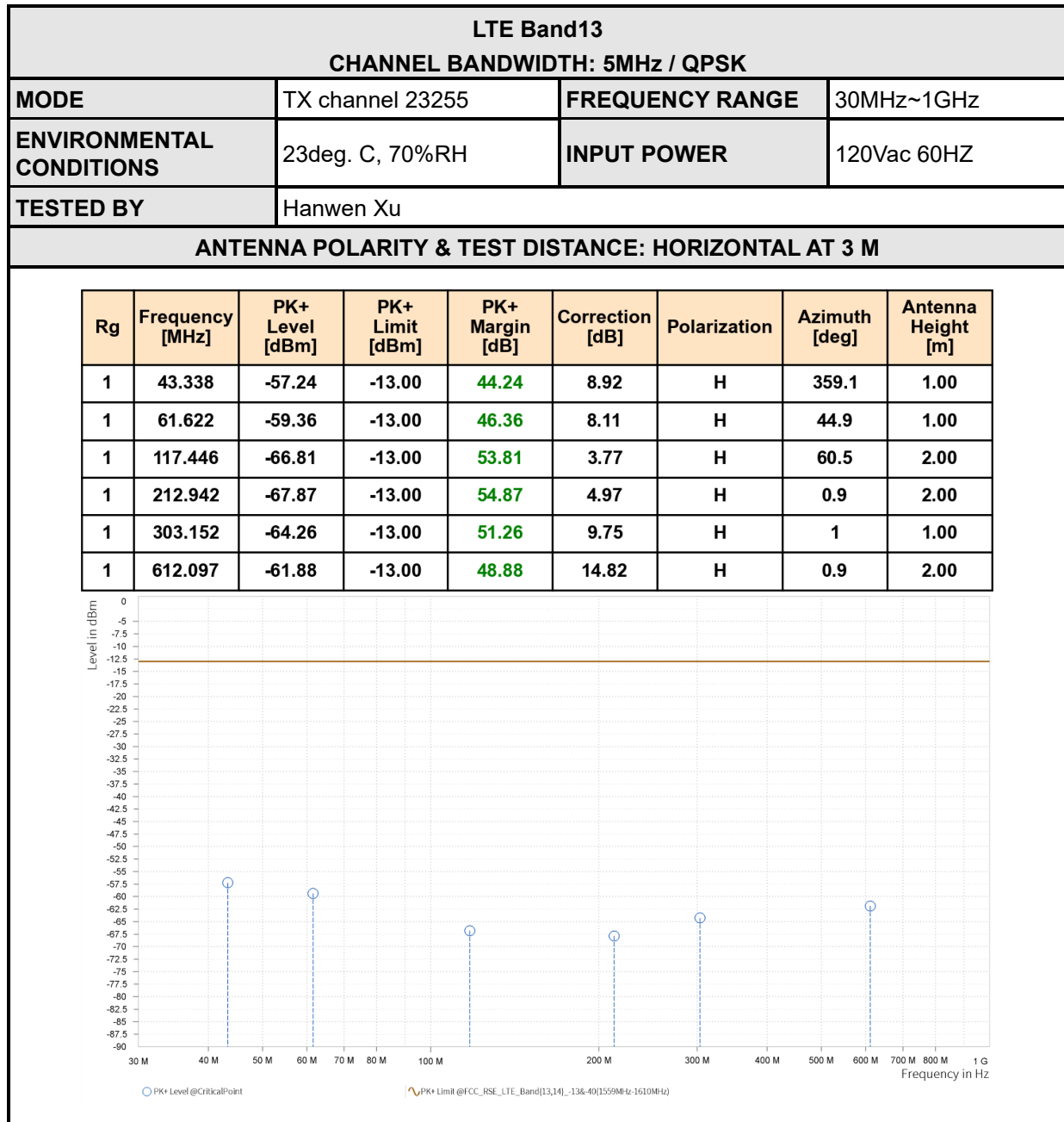
For the actual test configuration, please refer to the attached file (Test Setup Photo).



### 3.6.5 TEST RESULTS

NOTE : The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

#### BELOW 1GHz WORST-CASE DATA

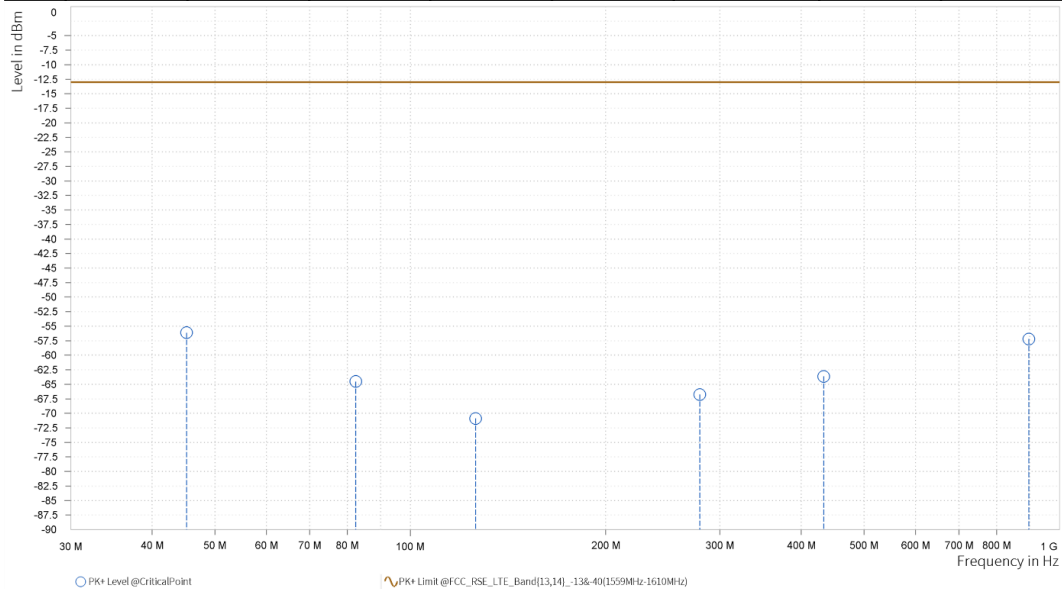




|                          |                  |                 |             |
|--------------------------|------------------|-----------------|-------------|
| MODE                     | TX channel 23255 | FREQUENCY RANGE | 30MHz~1GHz  |
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH  | INPUT POWER     | 120Vac 60HZ |
| TESTED BY                | Hanwen Xu        |                 |             |

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 1  | 45.229          | -56.12          | -13.00          | 43.12           | 9.98            | V            | 1             | 2.00               |
| 1  | 82.429          | -64.53          | -13.00          | 51.53           | 3.74            | V            | 315.2         | 2.00               |
| 1  | 126.127         | -70.89          | -13.00          | 57.89           | 3.11            | V            | 264.9         | 2.00               |
| 1  | 279.290         | -66.75          | -13.00          | 53.75           | 8.29            | V            | 145.3         | 1.00               |
| 1  | 433.035         | -63.64          | -13.00          | 50.64           | 12.61           | V            | 44.9          | 1.00               |
| 1  | 896.501         | -57.21          | -13.00          | 44.21           | 19.06           | V            | 1             | 2.00               |





ABOVE 1GHz

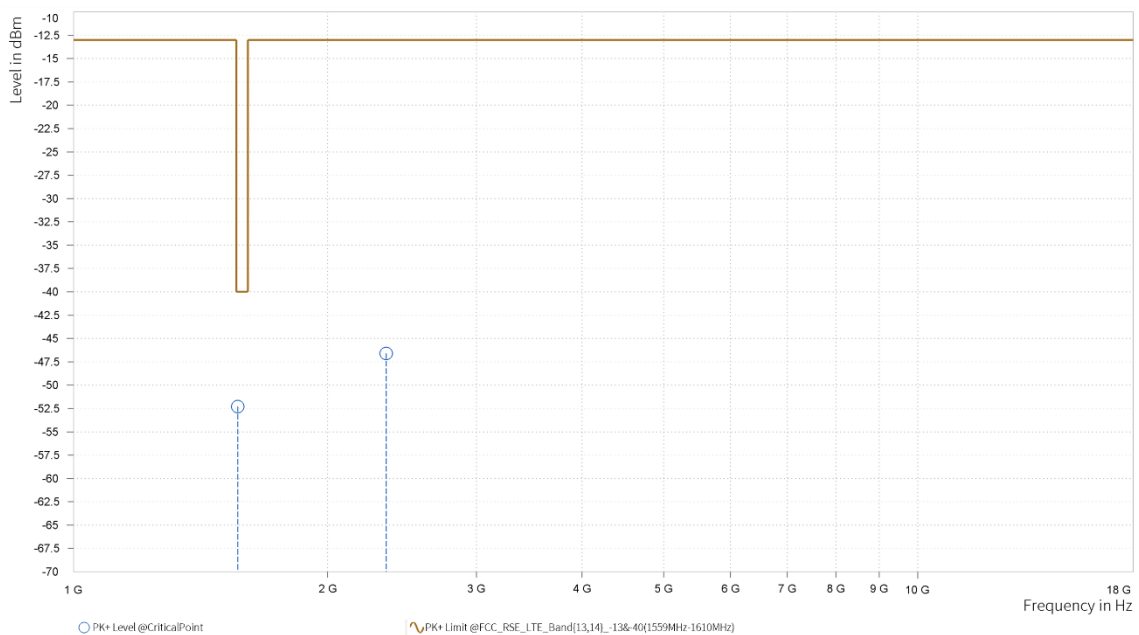
**Note:** For higher frequency, the emission is too low to be detected.

LTE Band 13

|                   |               |                          |                  |
|-------------------|---------------|--------------------------|------------------|
| CHANNEL BANDWIDTH | 5MHz / QPSK   | MODE                     | TX channel 23255 |
| FREQUENCY RANGE   | Above 1000MHz | ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH  |
| INPUT POWER       | 120Vac 60HZ   | TESTED BY                | Hanwen Xu        |

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 2  | 1,564.500       | -52.29          | -40.00          | 12.29           | 17.15           | H            | 358.1         | 1.00               |
| 3  | 2,346.750       | -46.60          | -13.00          | 33.60           | 24.45           | H            | 359.1         | 1.00               |

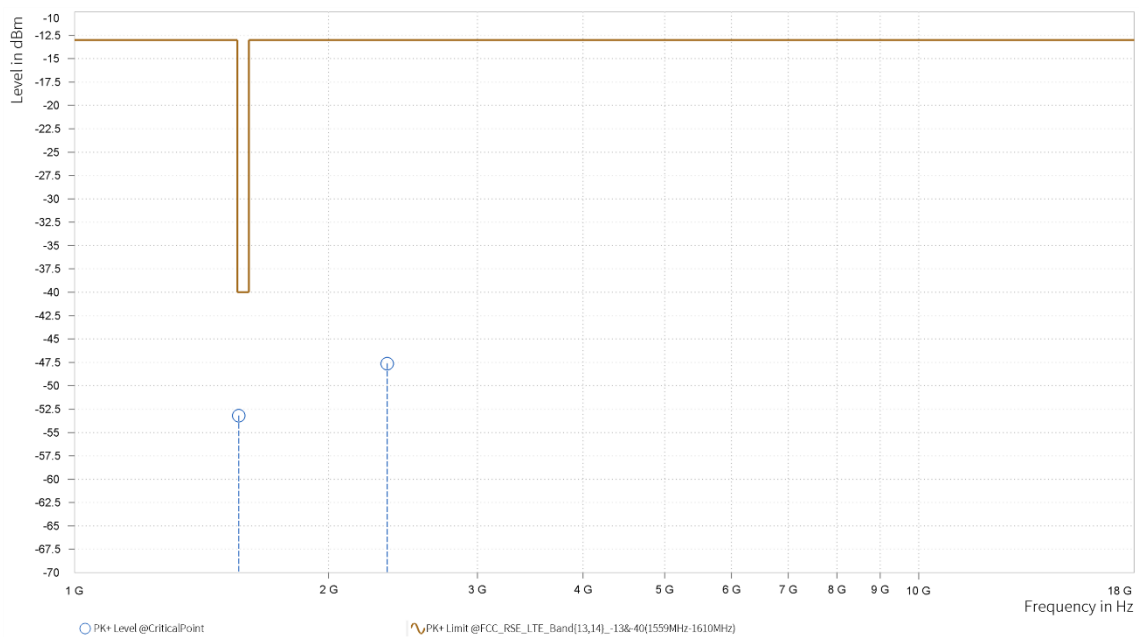




|                   |               |                          |                  |
|-------------------|---------------|--------------------------|------------------|
| CHANNEL BANDWIDTH | 5MHz / QPSK   | MODE                     | TX channel 23255 |
| FREQUENCY RANGE   | Above 1000MHz | ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH  |
| INPUT POWER       | 120Vac 60HZ   | TESTED BY                | Hanwen Xu        |

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 2  | 1,564.500       | -53.20          | -40.00          | 13.20           | 16.86           | V            | 1             | 1.00               |
| 3  | 2,346.750       | -47.63          | -13.00          | 34.63           | 24.05           | V            | 359           | 2.00               |

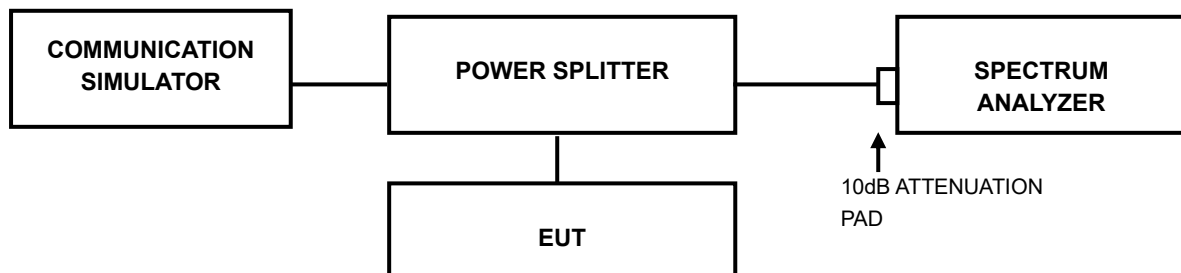


### 3.7 PEAK TO AVERAGE RATIO

#### 3.7.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

#### 3.7.2 TEST SETUP



#### 3.7.3 TEST PROCEDURES

1. Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

#### 3.7.4 TEST RESULTS

Please Refer to Appendix of this test report.



## 4 INFORMATION ON THE TESTING LABORATORIES

We, Huarui 7layers High Technology (Suzhou) Co., Ltd. ,were founded in 2020 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

Lab Address:

Tower N, Innovation Center, 88 Zuyi Road, High-tech District, Suzhou City, Anhui Province, China

Accredited Test Lab Cert 6613.01

If you have any comments, please feel free to contact us at the following:

**Suzhou EMC/RF Lab:**

Tel: +86 (0557) 368 1008



## **5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB**

No any modifications are made to the EUT by the lab during the test.

## 6 Appendix

### LTE BAND 12(INCLUDING LTE BAND17)

#### PEAK-TO-AVERAGE RATIO(CCDF)

##### Test Result

| Bandwidth | Modulation | Channel | RB Configuration | Result (dB) | Limit (dB) | Verdict |
|-----------|------------|---------|------------------|-------------|------------|---------|
| 1.4MHz    | QPSK       | 23017   | 1RB Low          | 3.02        | 13         | PASS    |
| 1.4MHz    | QPSK       | 23017   | Full RB          | 4.38        | 13         | PASS    |
| 1.4MHz    | 16QAM      | 23017   | 1RB Low          | 4.70        | 13         | PASS    |
| 1.4MHz    | 16QAM      | 23017   | Full RB          | 5.26        | 13         | PASS    |
| 1.4MHz    | 64QAM      | 23017   | 1RB Low          | 5.44        | 13         | PASS    |
| 1.4MHz    | 64QAM      | 23017   | Full RB          | 5.96        | 13         | PASS    |
| 1.4MHz    | QPSK       | 23095   | 1RB Low          | 1.98        | 13         | PASS    |
| 1.4MHz    | QPSK       | 23095   | Full RB          | 2.92        | 13         | PASS    |
| 1.4MHz    | 16QAM      | 23095   | 1RB Low          | 3.12        | 13         | PASS    |
| 1.4MHz    | 16QAM      | 23095   | Full RB          | 3.78        | 13         | PASS    |
| 1.4MHz    | 64QAM      | 23095   | 1RB Low          | 3.96        | 13         | PASS    |
| 1.4MHz    | 64QAM      | 23095   | Full RB          | 4.90        | 13         | PASS    |
| 1.4MHz    | QPSK       | 23173   | 1RB Low          | 3.96        | 13         | PASS    |
| 1.4MHz    | QPSK       | 23173   | Full RB          | 4.98        | 13         | PASS    |
| 1.4MHz    | 16QAM      | 23173   | 1RB Low          | 4.90        | 13         | PASS    |
| 1.4MHz    | 16QAM      | 23173   | Full RB          | 5.92        | 13         | PASS    |
| 1.4MHz    | 64QAM      | 23173   | 1RB Low          | 6.00        | 13         | PASS    |
| 1.4MHz    | 64QAM      | 23173   | Full RB          | 6.86        | 13         | PASS    |
| 3MHz      | QPSK       | 23025   | 1RB Low          | 3.76        | 13         | PASS    |
| 3MHz      | QPSK       | 23025   | Full RB          | 4.88        | 13         | PASS    |
| 3MHz      | 16QAM      | 23025   | 1RB Low          | 4.52        | 13         | PASS    |
| 3MHz      | 16QAM      | 23025   | Full RB          | 5.62        | 13         | PASS    |
| 3MHz      | 64QAM      | 23025   | 1RB Low          | 5.70        | 13         | PASS    |
| 3MHz      | 64QAM      | 23025   | Full RB          | 6.46        | 13         | PASS    |
| 3MHz      | QPSK       | 23095   | 1RB Low          | 1.90        | 13         | PASS    |
| 3MHz      | QPSK       | 23095   | Full RB          | 3.12        | 13         | PASS    |
| 3MHz      | 16QAM      | 23095   | 1RB Low          | 2.92        | 13         | PASS    |
| 3MHz      | 16QAM      | 23095   | Full RB          | 3.86        | 13         | PASS    |
| 3MHz      | 64QAM      | 23095   | 1RB Low          | 3.86        | 13         | PASS    |
| 3MHz      | 64QAM      | 23095   | Full RB          | 4.80        | 13         | PASS    |
| 3MHz      | QPSK       | 23165   | 1RB Low          | 3.78        | 13         | PASS    |
| 3MHz      | QPSK       | 23165   | Full RB          | 4.88        | 13         | PASS    |
| 3MHz      | 16QAM      | 23165   | 1RB Low          | 4.70        | 13         | PASS    |
| 3MHz      | 16QAM      | 23165   | Full RB          | 5.82        | 13         | PASS    |
| 3MHz      | 64QAM      | 23165   | 1RB Low          | 5.92        | 13         | PASS    |
| 3MHz      | 64QAM      | 23165   | Full RB          | 6.94        | 13         | PASS    |
| 5MHz      | QPSK       | 23035   | 1RB Low          | 3.76        | 13         | PASS    |
| 5MHz      | QPSK       | 23035   | Full RB          | 3.30        | 13         | PASS    |
| 5MHz      | 16QAM      | 23035   | 1RB Low          | 4.60        | 13         | PASS    |

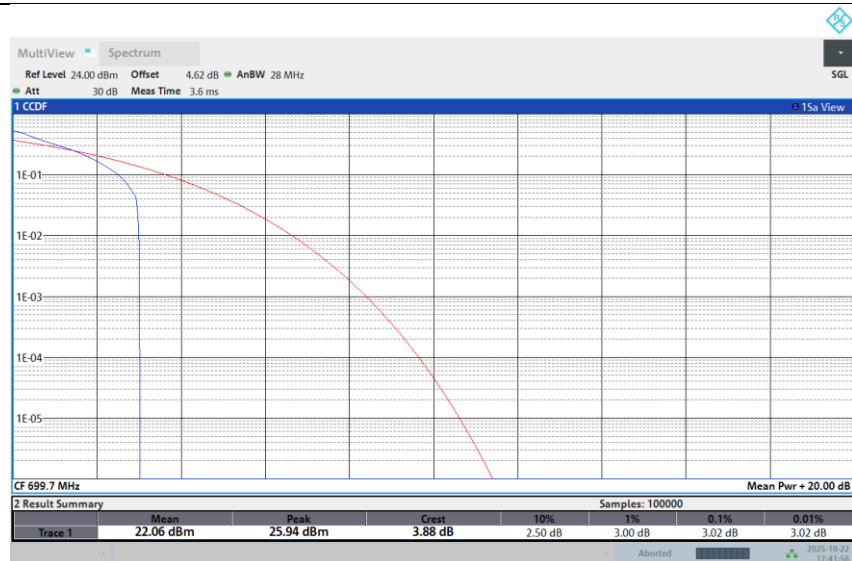
**BUREAU VERITAS** Test Report No.: PSU-NQN2509250114RF09

|       |       |       |         |      |    |      |
|-------|-------|-------|---------|------|----|------|
| 5MHz  | 16QAM | 23035 | Full RB | 3.86 | 13 | PASS |
| 5MHz  | 64QAM | 23035 | 1RB Low | 5.36 | 13 | PASS |
| 5MHz  | 64QAM | 23035 | Full RB | 5.18 | 13 | PASS |
| 5MHz  | QPSK  | 23095 | 1RB Low | 2.08 | 13 | PASS |
| 5MHz  | QPSK  | 23095 | Full RB | 3.20 | 13 | PASS |
| 5MHz  | 16QAM | 23095 | 1RB Low | 2.92 | 13 | PASS |
| 5MHz  | 16QAM | 23095 | Full RB | 3.96 | 13 | PASS |
| 5MHz  | 64QAM | 23095 | 1RB Low | 3.68 | 13 | PASS |
| 5MHz  | 64QAM | 23095 | Full RB | 4.72 | 13 | PASS |
| 5MHz  | QPSK  | 23155 | 1RB Low | 2.18 | 13 | PASS |
| 5MHz  | QPSK  | 23155 | Full RB | 2.92 | 13 | PASS |
| 5MHz  | 16QAM | 23155 | 1RB Low | 2.84 | 13 | PASS |
| 5MHz  | 16QAM | 23155 | Full RB | 4.14 | 13 | PASS |
| 5MHz  | 64QAM | 23155 | 1RB Low | 4.14 | 13 | PASS |
| 5MHz  | 64QAM | 23155 | Full RB | 5.36 | 13 | PASS |
| 10MHz | QPSK  | 23060 | 1RB Low | 3.48 | 13 | PASS |
| 10MHz | QPSK  | 23060 | Full RB | 3.02 | 13 | PASS |
| 10MHz | 16QAM | 23060 | 1RB Low | 4.14 | 13 | PASS |
| 10MHz | 16QAM | 23060 | Full RB | 3.86 | 13 | PASS |
| 10MHz | 64QAM | 23060 | 1RB Low | 5.26 | 13 | PASS |
| 10MHz | 64QAM | 23060 | Full RB | 5.08 | 13 | PASS |
| 10MHz | QPSK  | 23095 | 1RB Low | 1.98 | 13 | PASS |
| 10MHz | QPSK  | 23095 | Full RB | 2.74 | 13 | PASS |
| 10MHz | 16QAM | 23095 | 1RB Low | 3.02 | 13 | PASS |
| 10MHz | 16QAM | 23095 | Full RB | 3.78 | 13 | PASS |
| 10MHz | 64QAM | 23095 | 1RB Low | 3.40 | 13 | PASS |
| 10MHz | 64QAM | 23095 | Full RB | 4.80 | 13 | PASS |
| 10MHz | QPSK  | 23130 | 1RB Low | 1.70 | 13 | PASS |
| 10MHz | QPSK  | 23130 | Full RB | 3.02 | 13 | PASS |
| 10MHz | 16QAM | 23130 | 1RB Low | 2.64 | 13 | PASS |
| 10MHz | 16QAM | 23130 | Full RB | 3.86 | 13 | PASS |
| 10MHz | 64QAM | 23130 | 1RB Low | 3.58 | 13 | PASS |
| 10MHz | 64QAM | 23130 | Full RB | 4.70 | 13 | PASS |

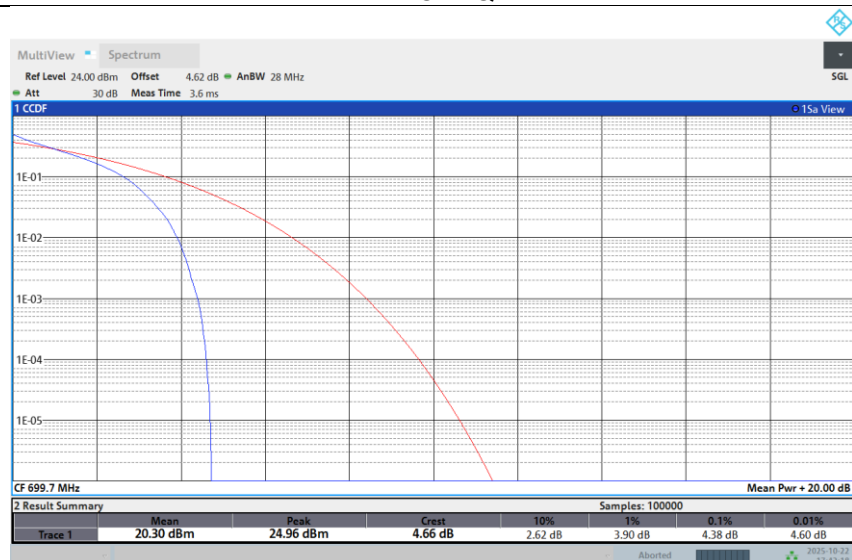


## Test Graphs

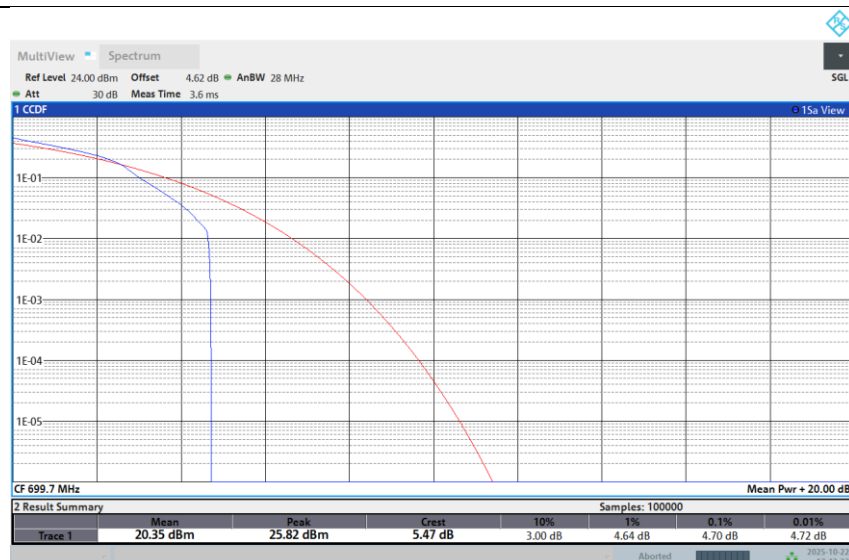
Band 12-1.4M-LOW-QPSK-1RB Low



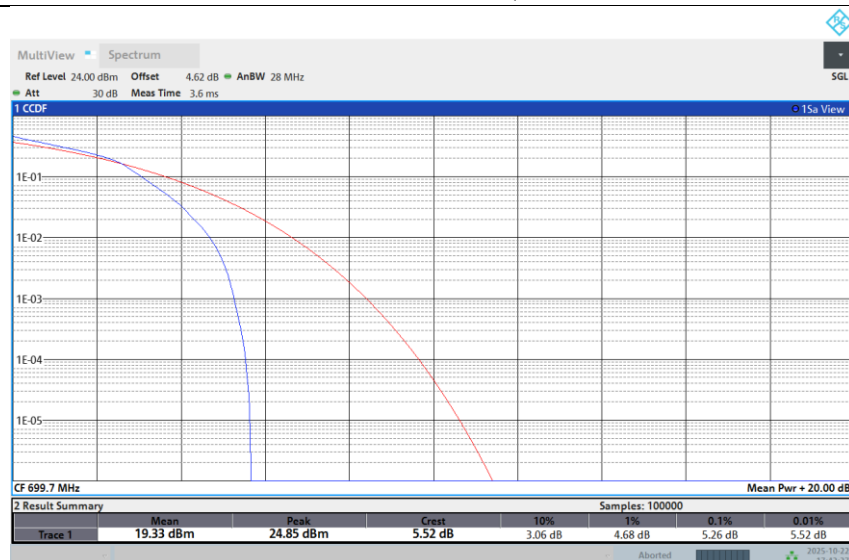
Band 12-1.4M-LOW-QPSK-Full RB



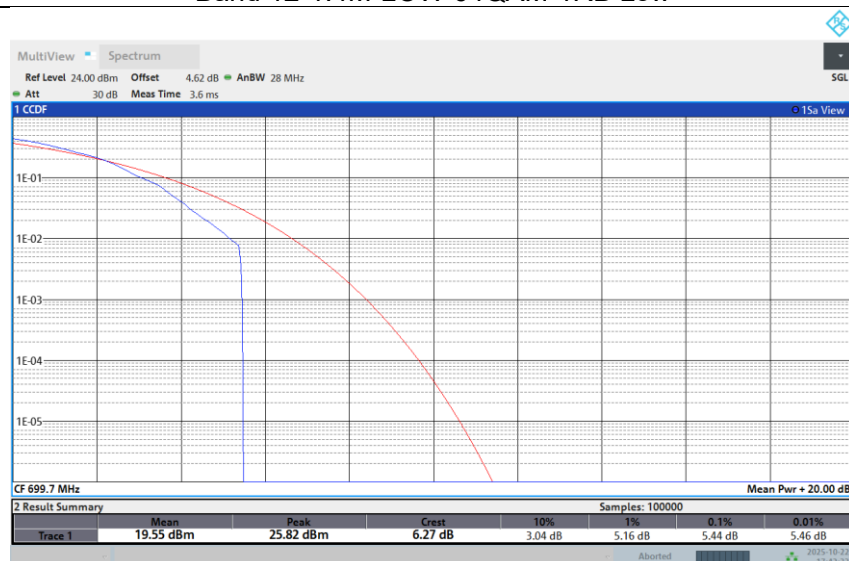
Band 12-1.4M-LOW-16QAM-1RB Low



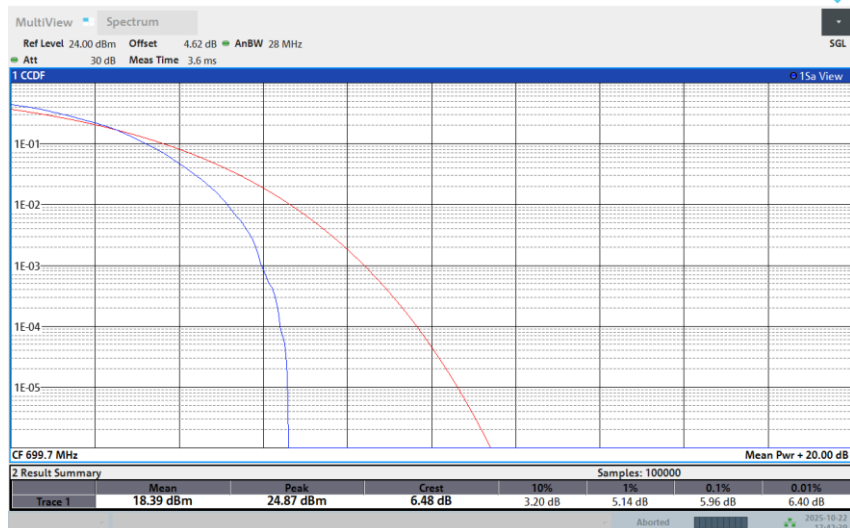
Band 12-1.4M-LOW-16QAM-Full RB



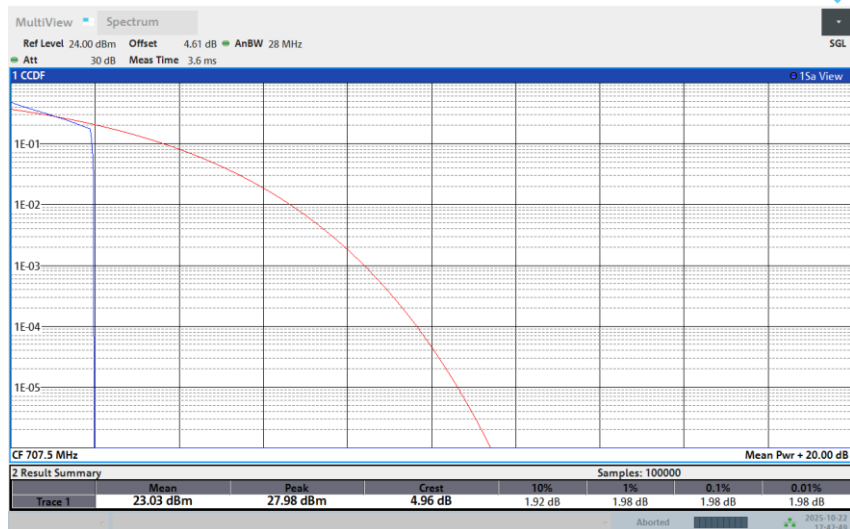
Band 12-1.4M-LOW-64QAM-1RB Low



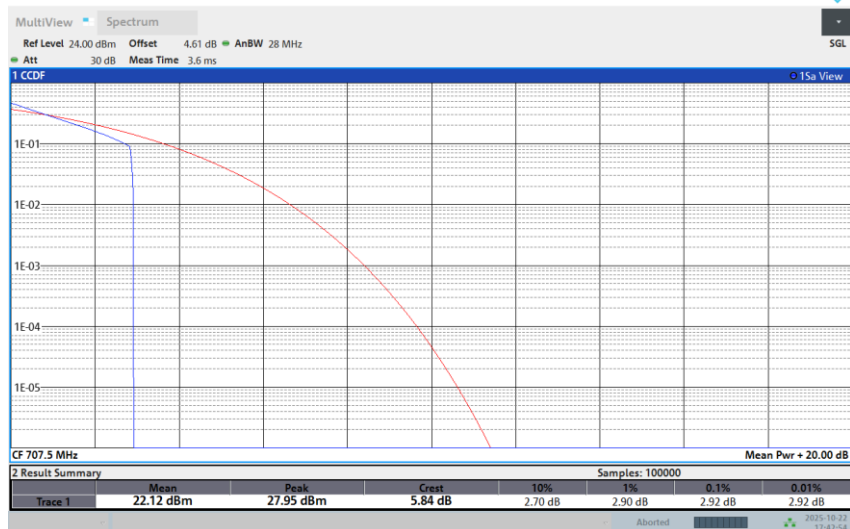
Band 12-1.4M-LOW-64QAM-Full RB



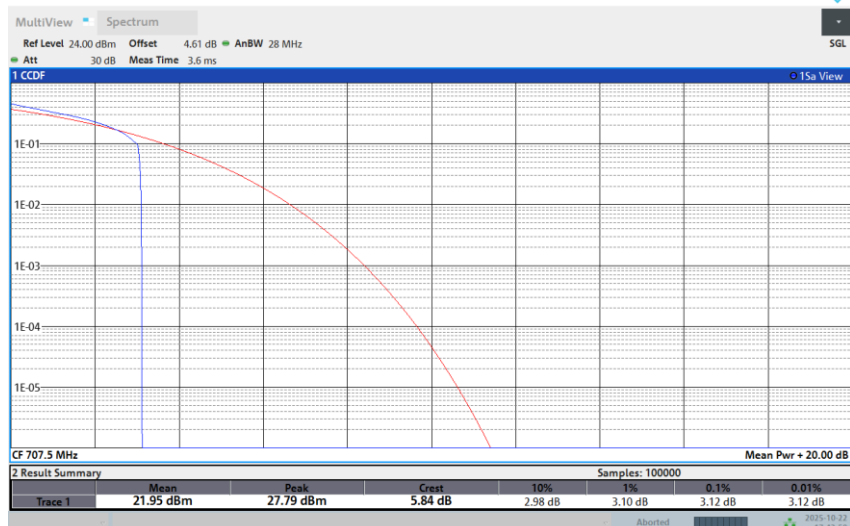
Band 12-1.4M-MID-QPSK-1RB Low



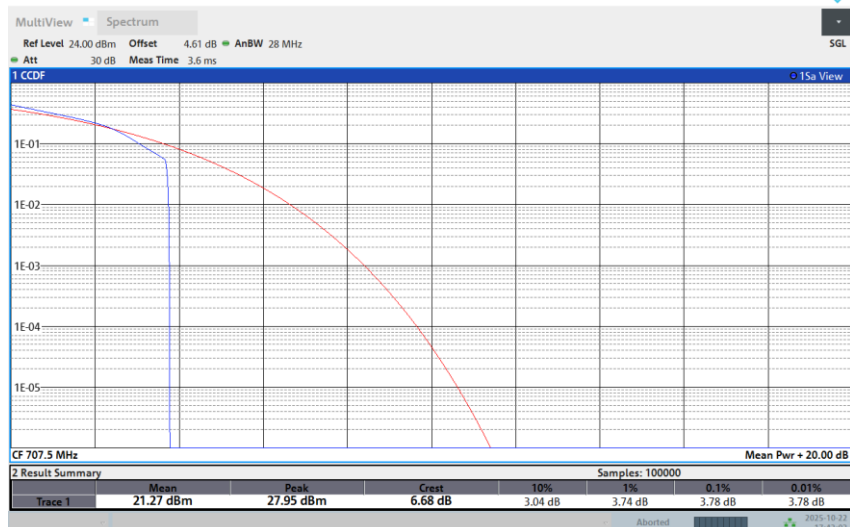
Band 12-1.4M-MID-QPSK-Full RB



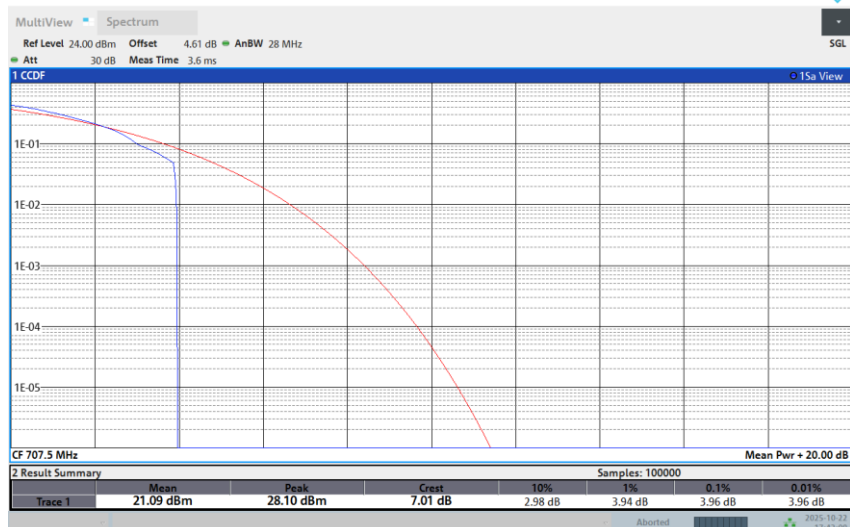
Band 12-1.4M-MID-16QAM-1RB Low



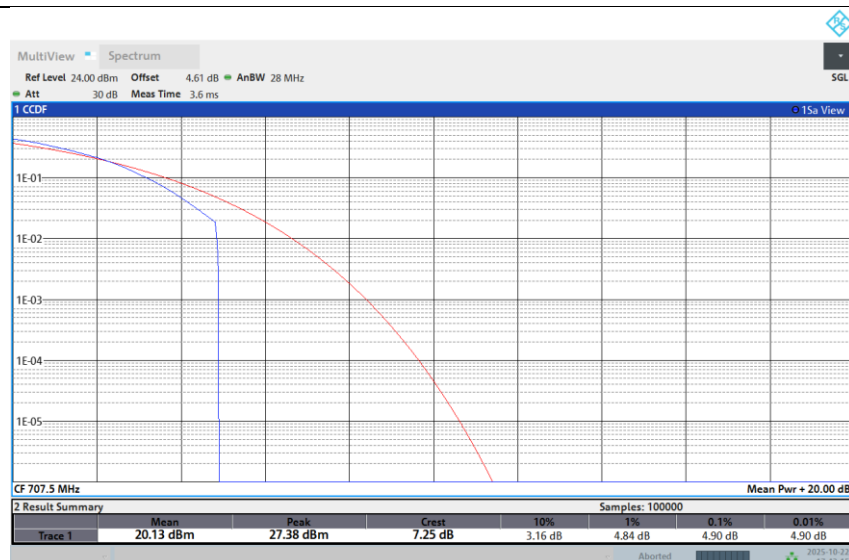
Band 12-1.4M-MID-16QAM-Full RB



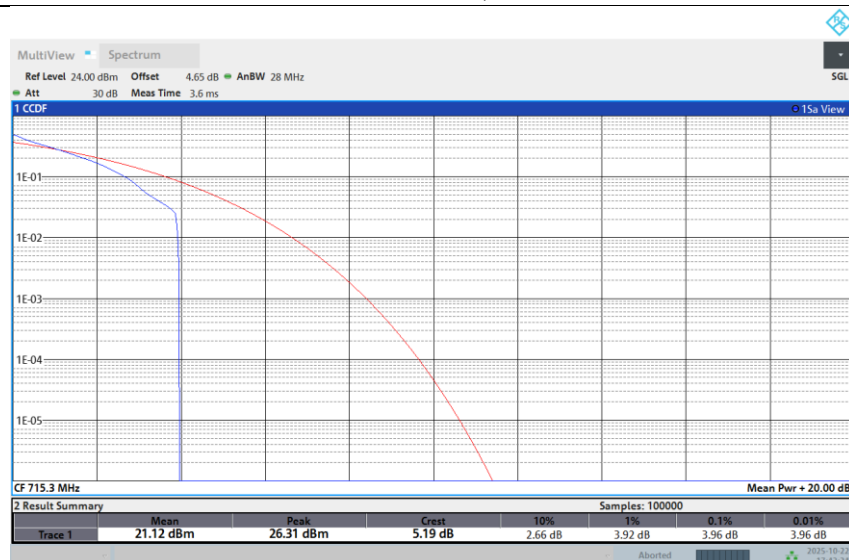
Band 12-1.4M-MID-64QAM-1RB Low



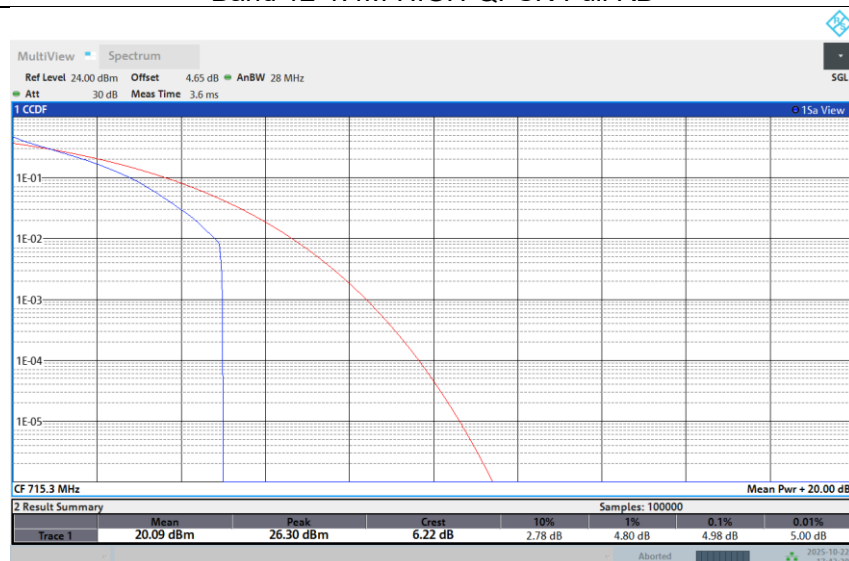
Band 12-1.4M-MID-64QAM-Full RB



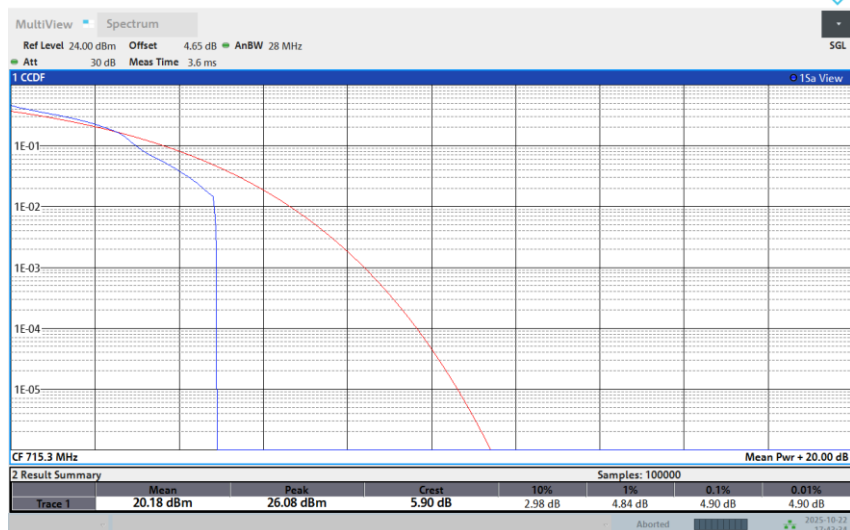
Band 12-1.4M-HIGH-QPSK-1RB Low



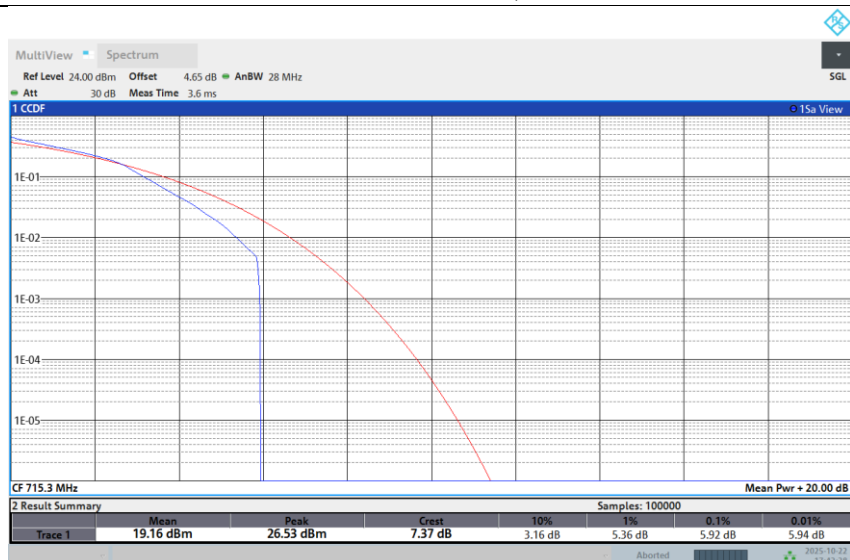
Band 12-1.4M-HIGH-QPSK-Full RB



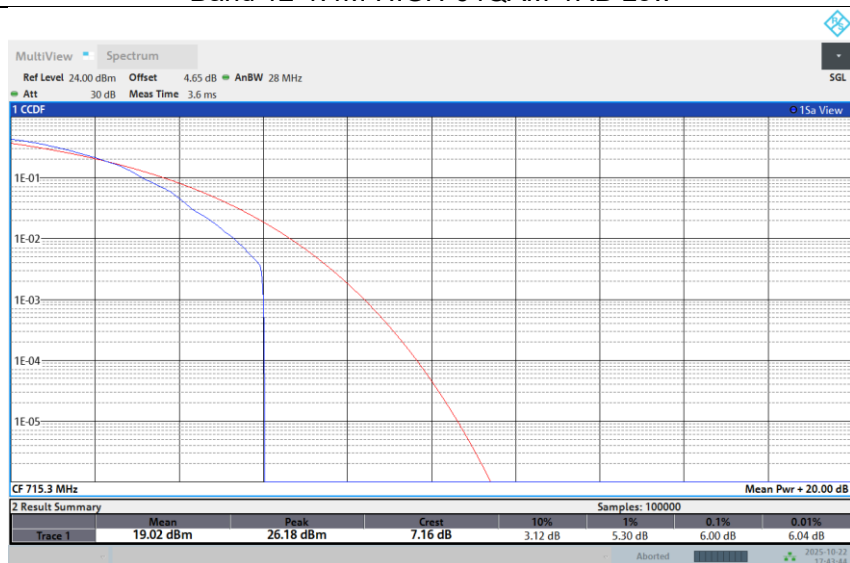
Band 12-1.4M-HIGH-16QAM-1RB Low



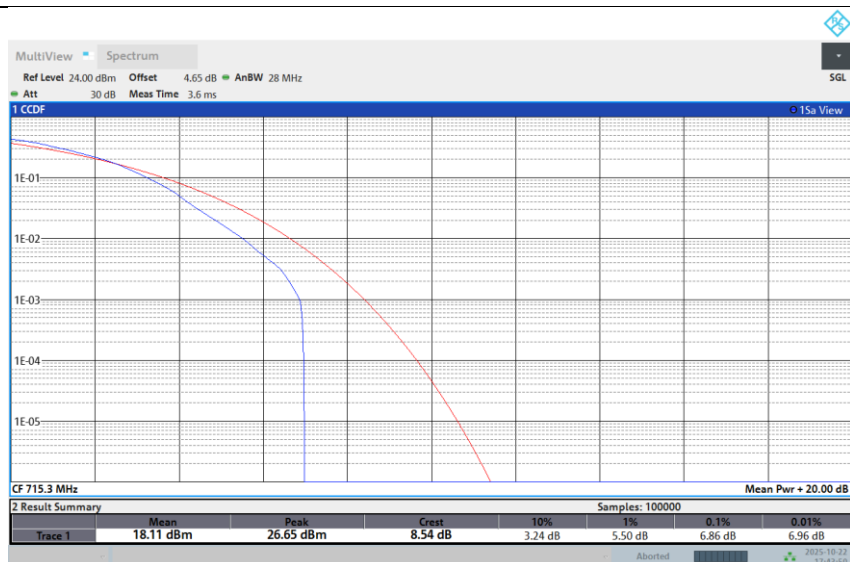
Band 12-1.4M-HIGH-16QAM-Full RB



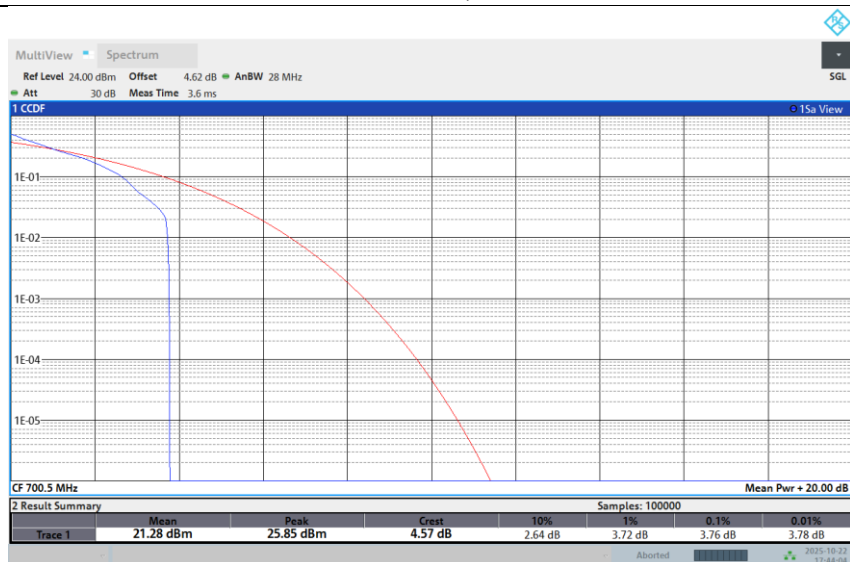
Band 12-1.4M-HIGH-64QAM-1RB Low



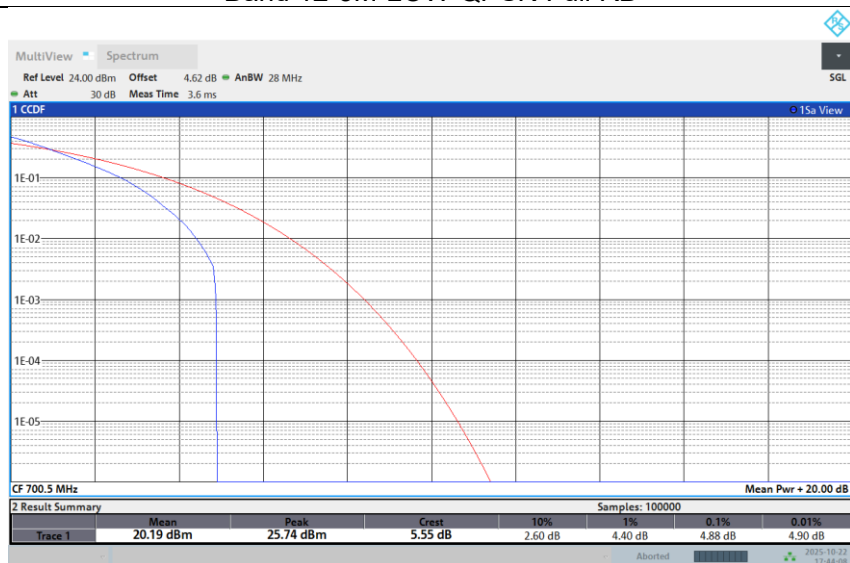
Band 12-1.4M-HIGH-64QAM-Full RB



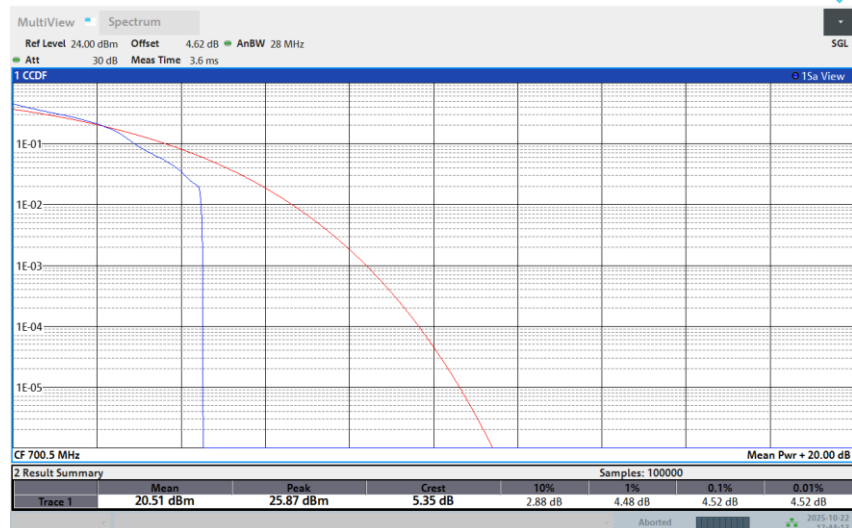
Band 12-3M-LOW-QPSK-1RB Low



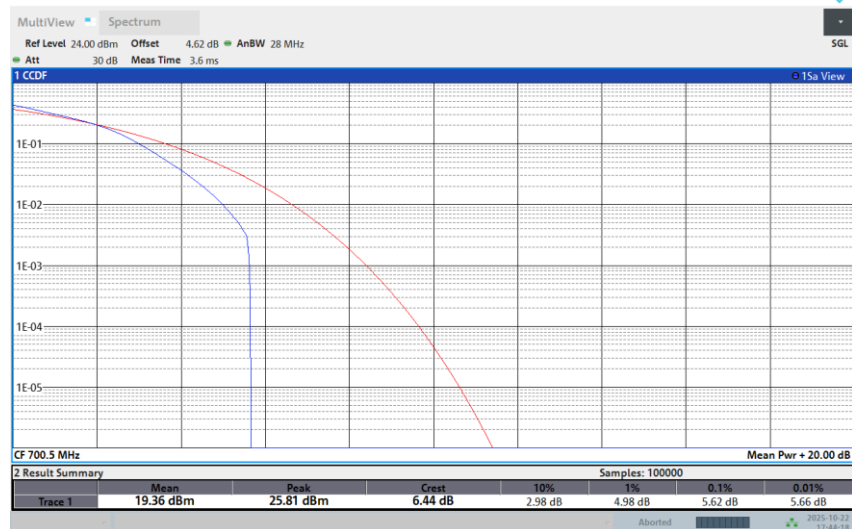
Band 12-3M-LOW-QPSK-Full RB



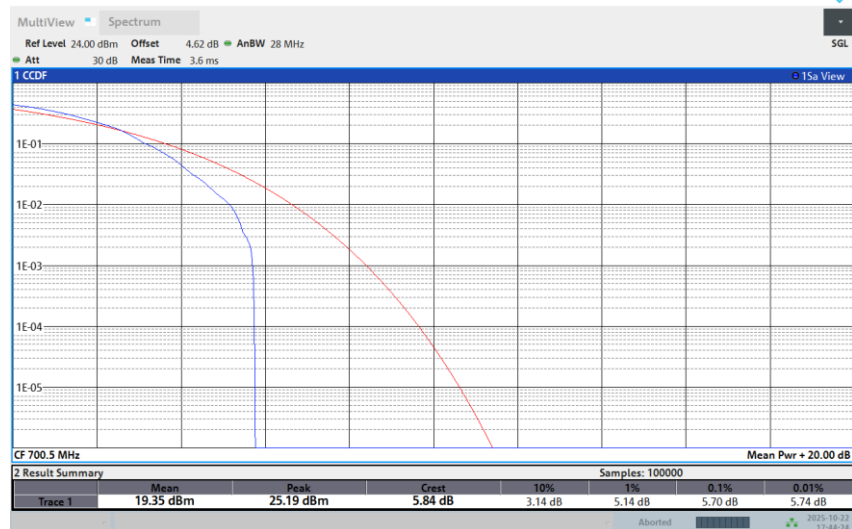
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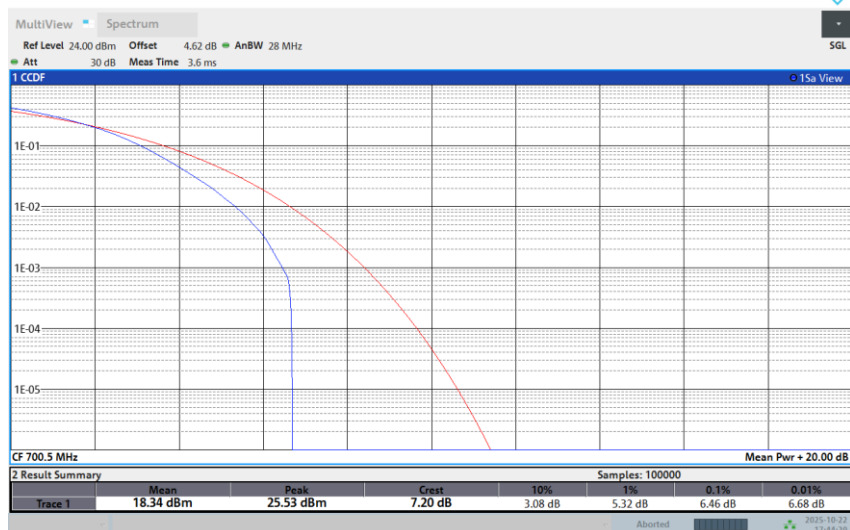
Band 12-3M-LOW-16QAM-Full RB



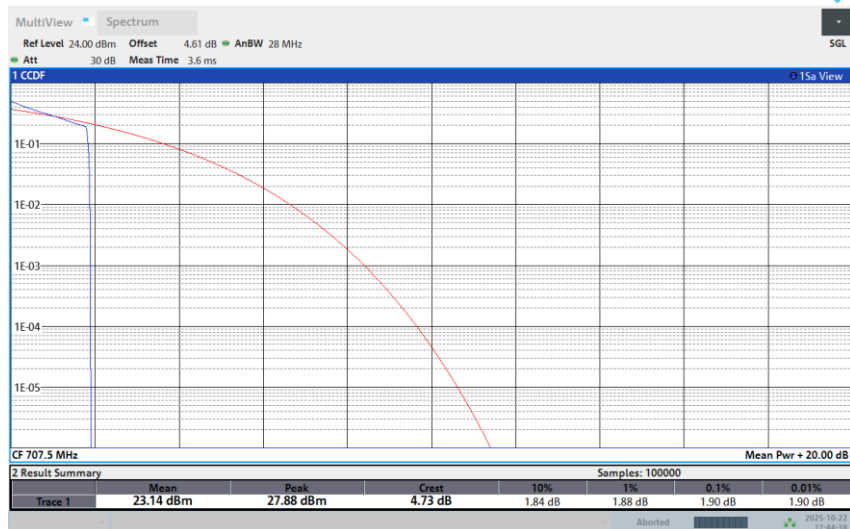
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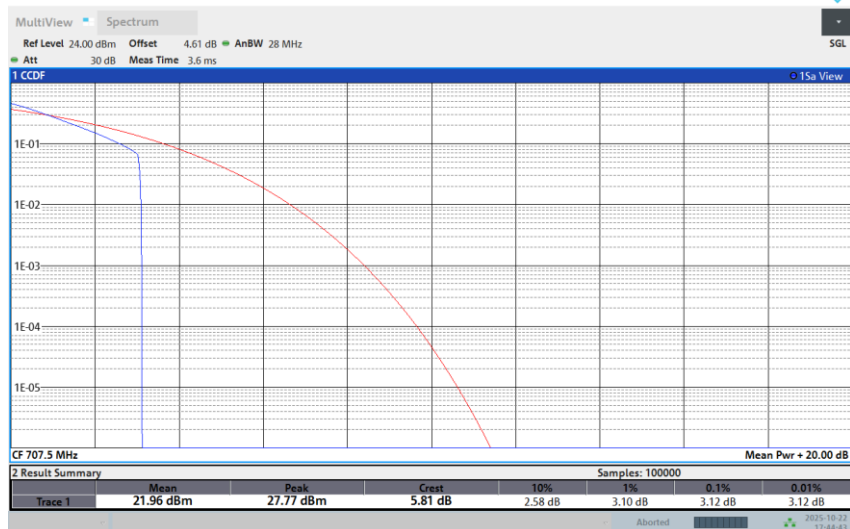
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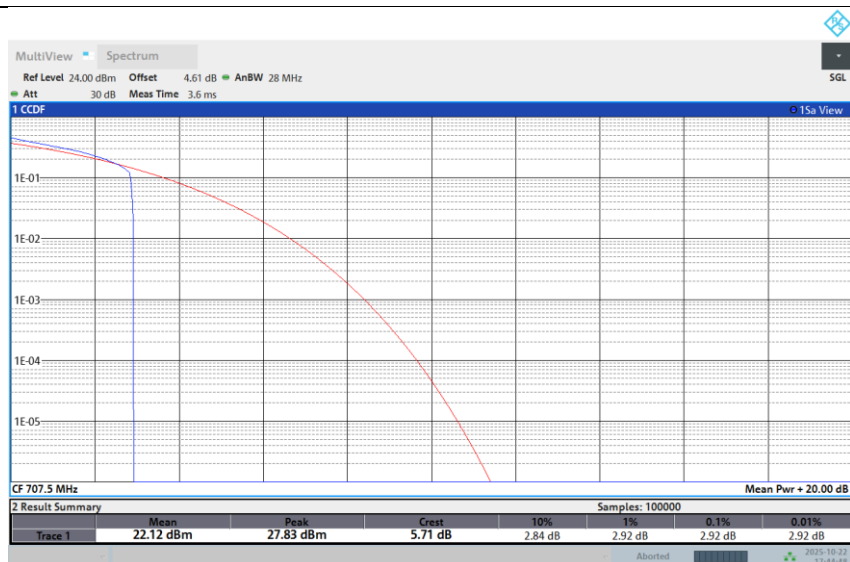
Band 12-3M-MID-QPSK-1RB Low



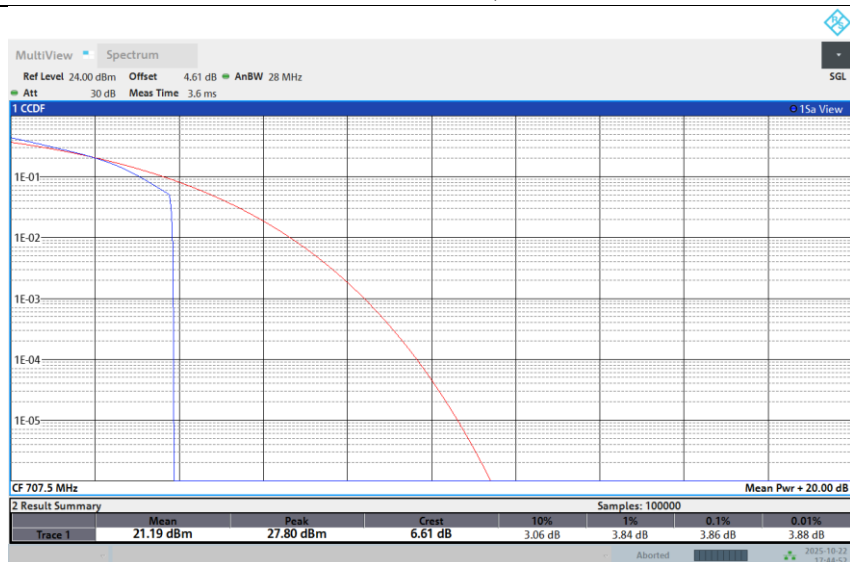
Band 12-3M-MID-QPSK-Full RB



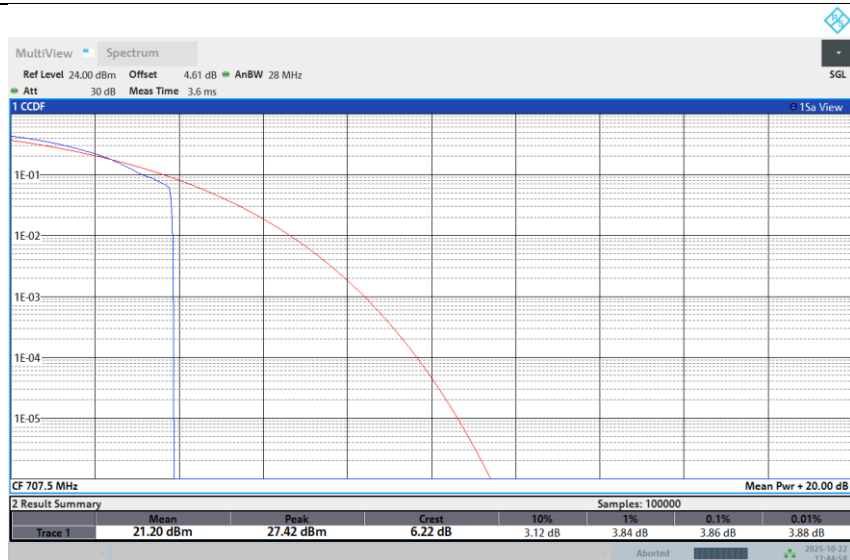
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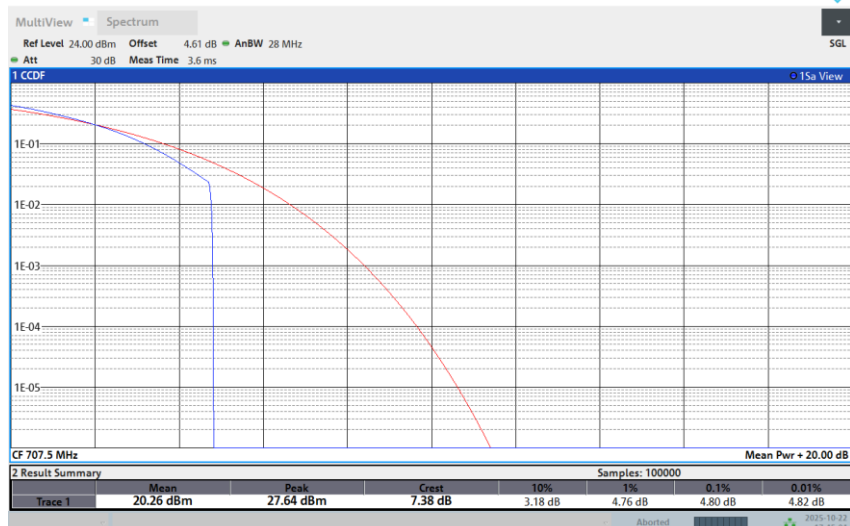
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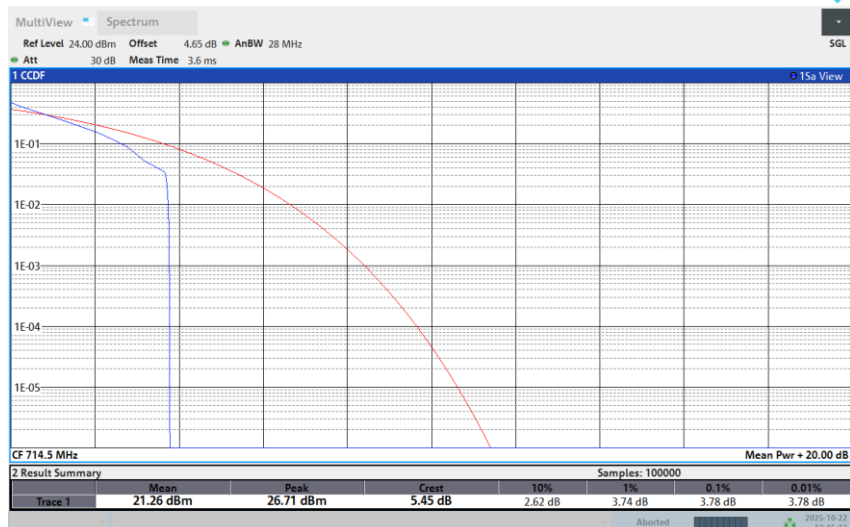
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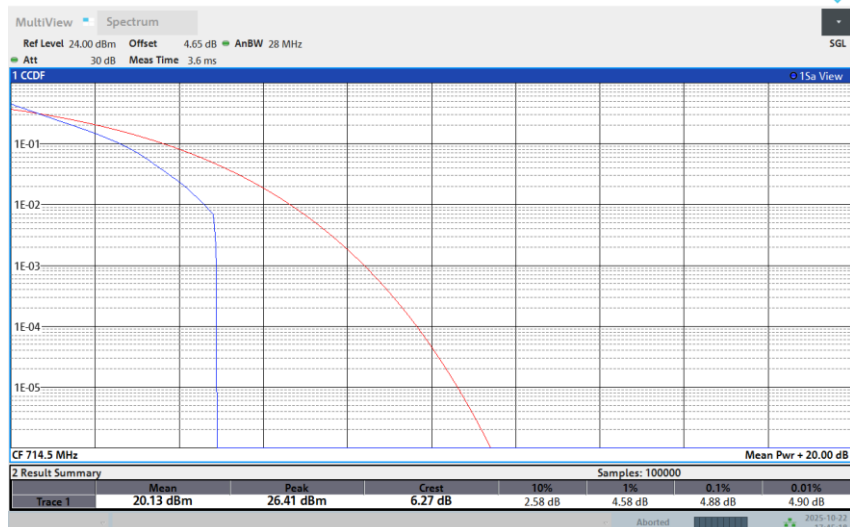
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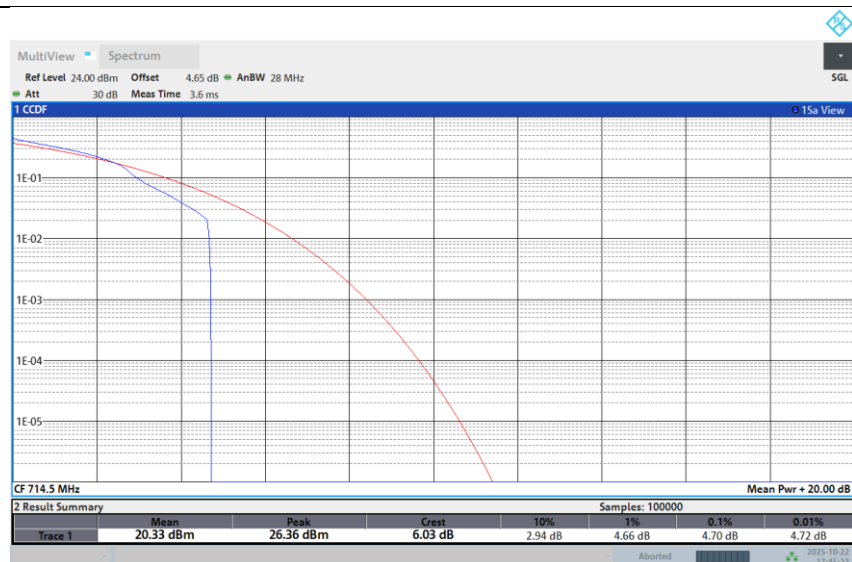
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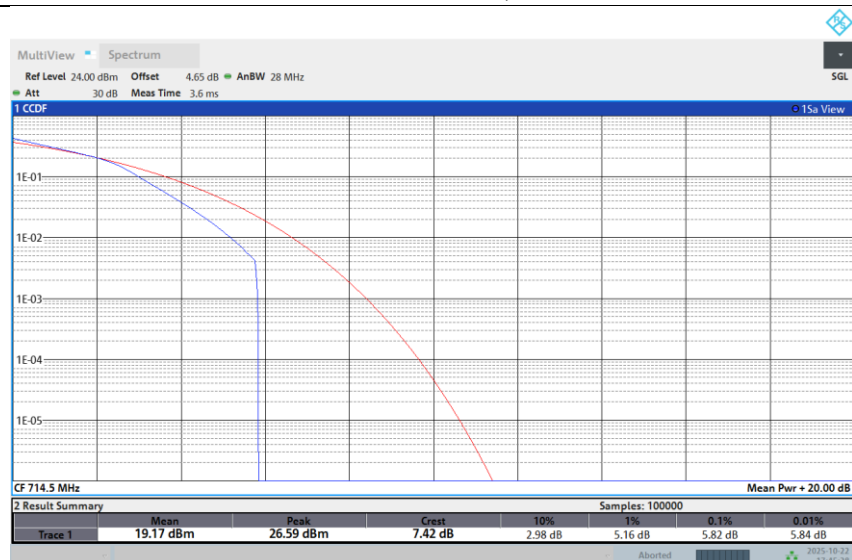
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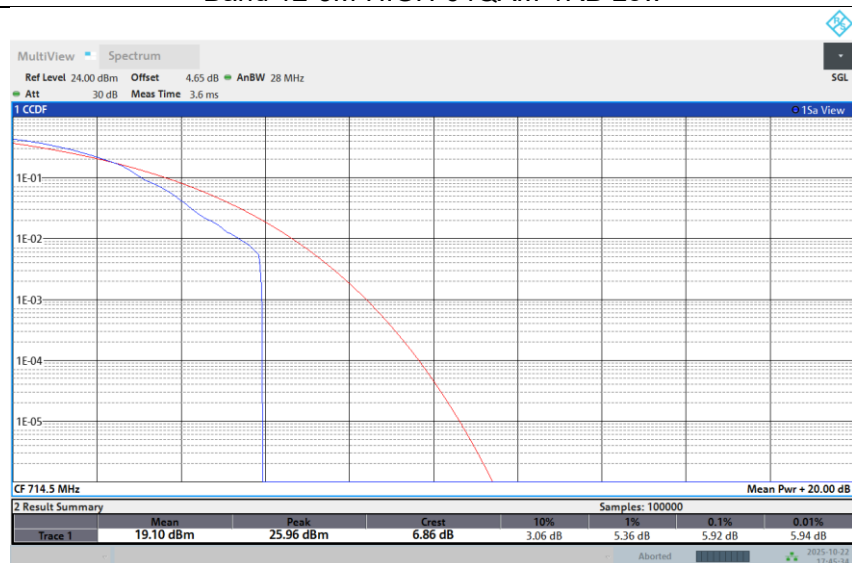
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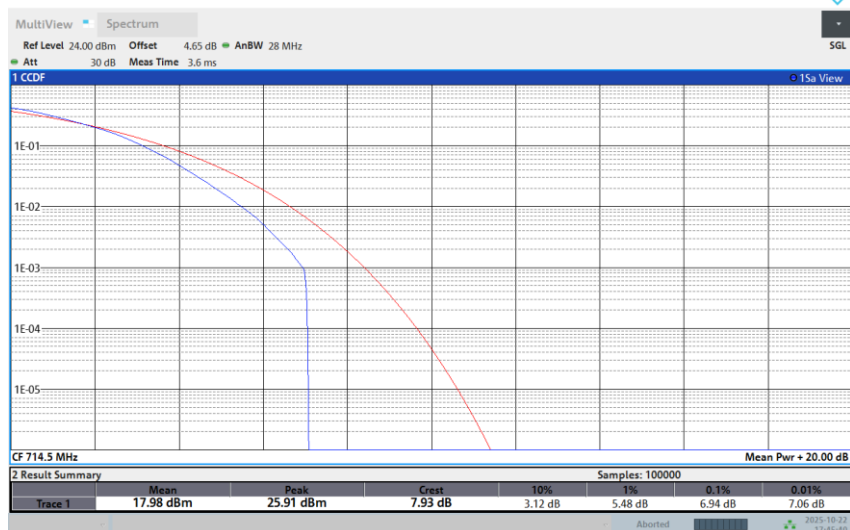
Band 12-3M-HIGH-16QAM-Full RB



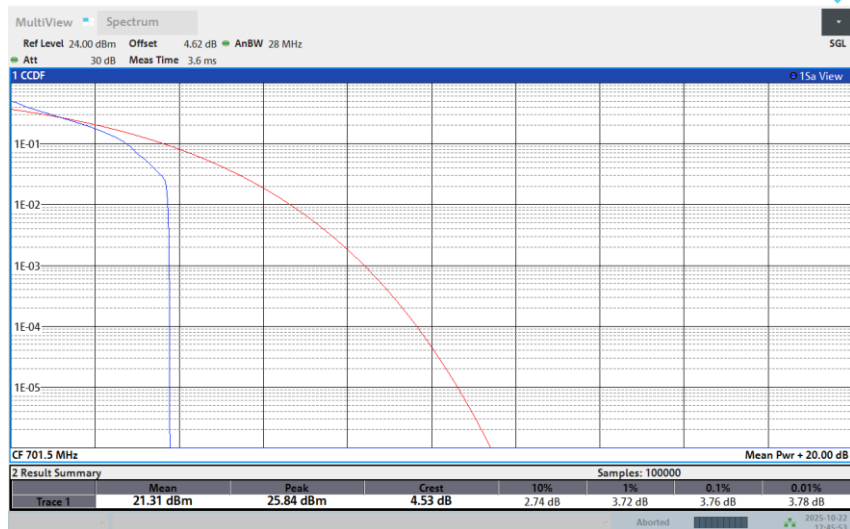
Band 12-3M-HIGH-64QAM-1RB Low



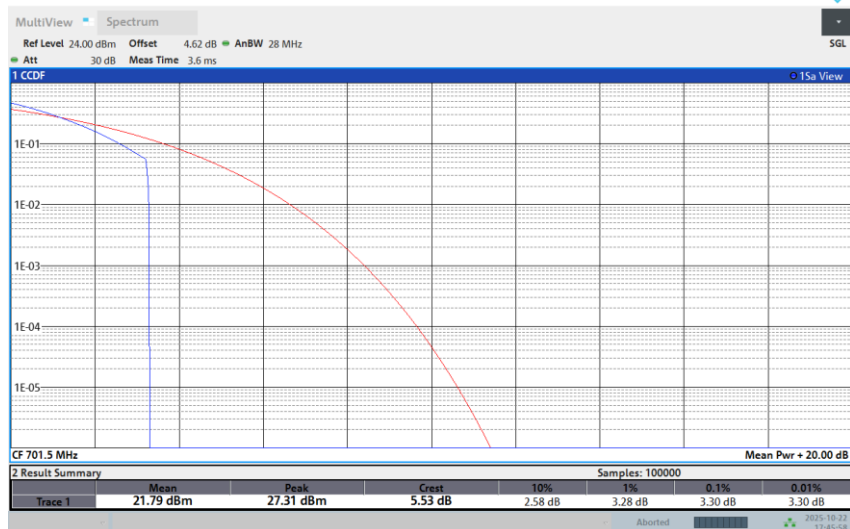
Band 12-3M-HIGH-64QAM-Full RB



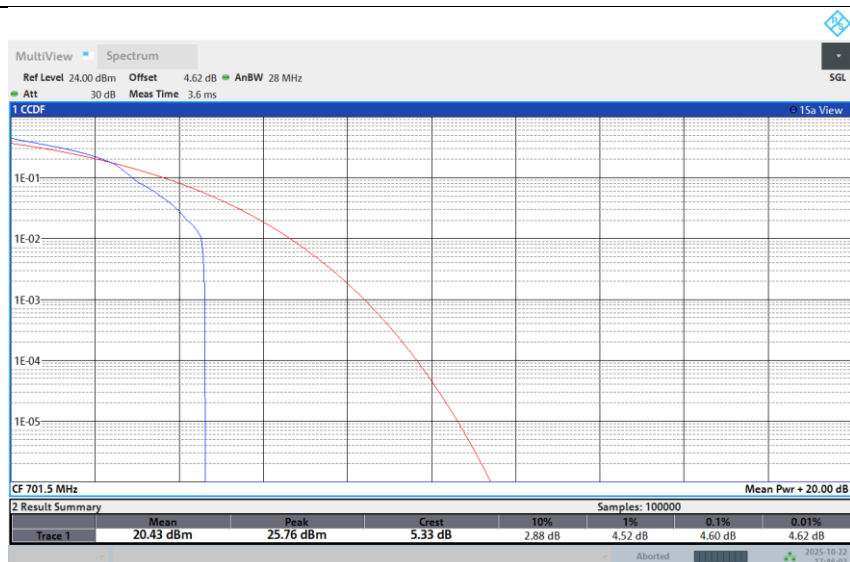
Band 12-5M-LOW-QPSK-1RB Low



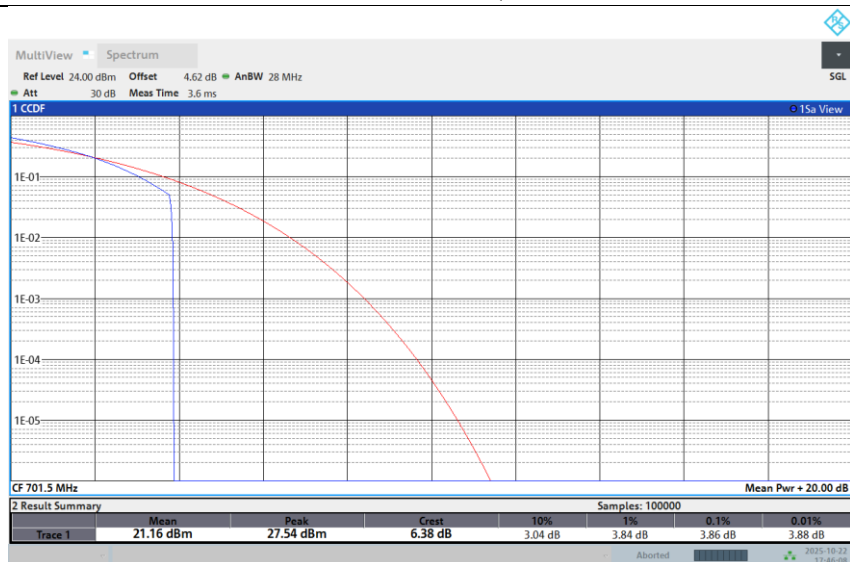
Band 12-5M-LOW-QPSK-Full RB



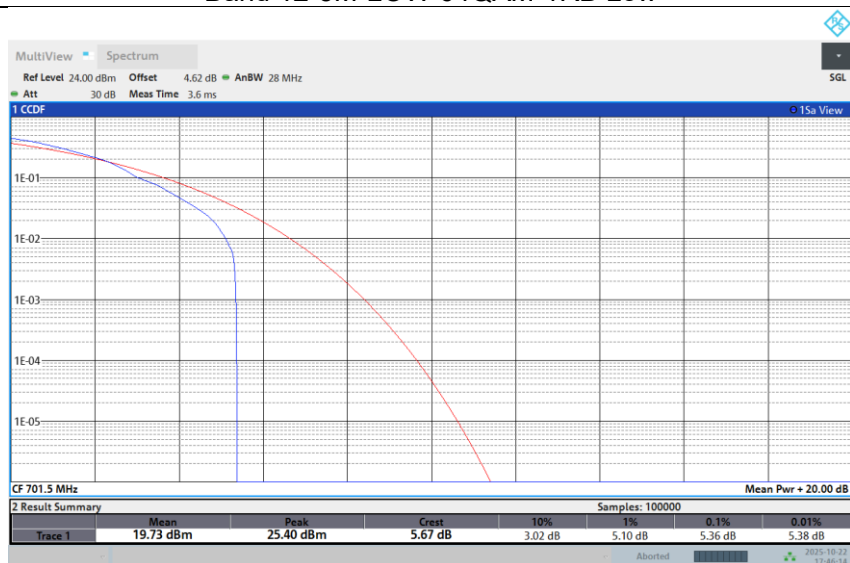
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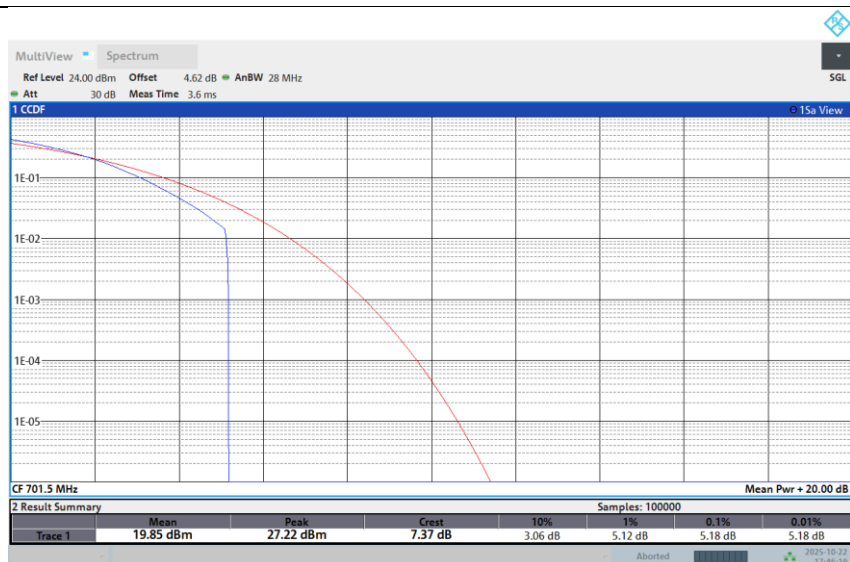
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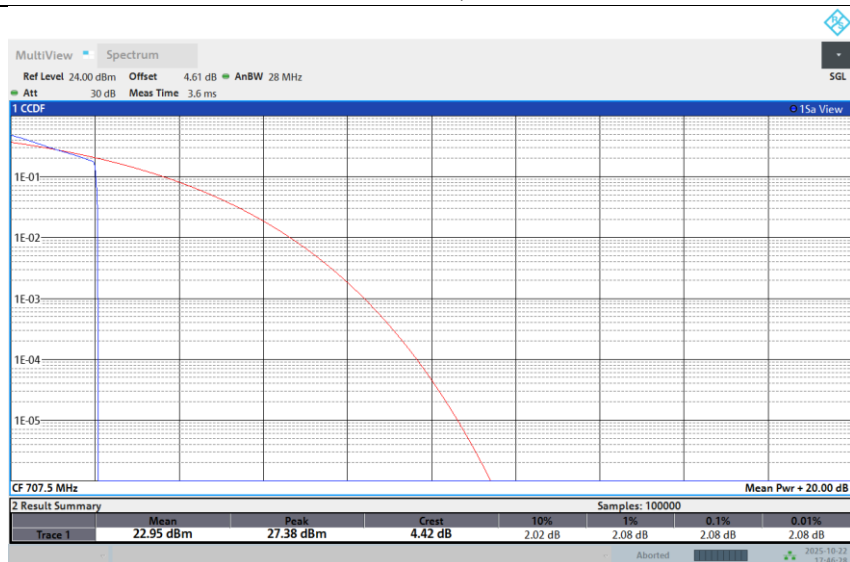
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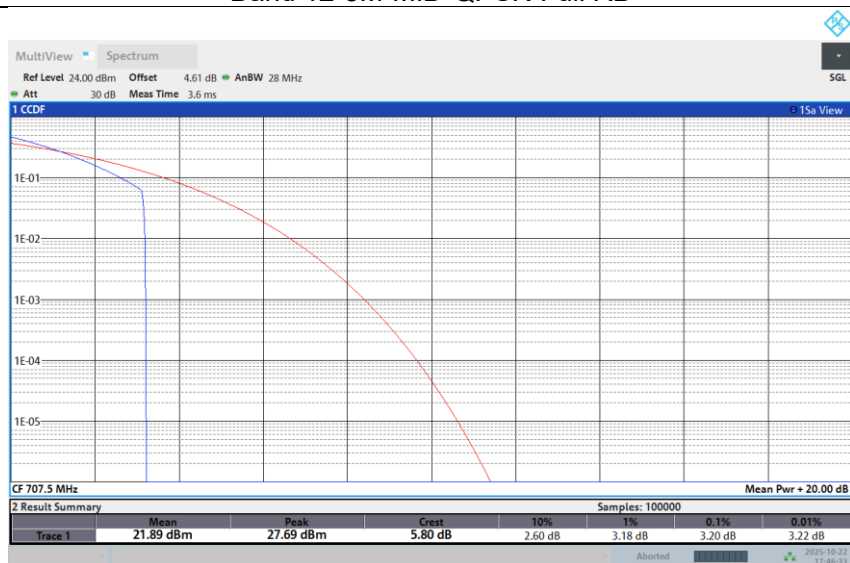
Band 12-5M-LOW-64QAM-Full RB



Band 12-5M-MID-QPSK-1RB Low



Band 12-5M-MID-QPSK-Full RB



Band 12-5M-MID-16QAM-1RB Low