

# TEST REPORT FOR LTE TESTING

Report No.: PBJ-NQN2412130113RF01

Product Name: Industrial Cellular Router

Product Model: IR624                      Series Model: IR654, IR694

HVIN:NRQ3-WLAN-S                      Brand Name: inhand

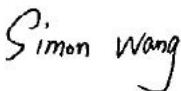
Applicant: Beijing InHand Networks Technology Co., Ltd.

Manufacturer: Beijing InHand Networks Technology Co., Ltd.

Specification: FCC Part 2, Part 24E, Part 22H, Part 27, Part 90S,

Part 96, Part 96.47(2023)

FCC ID: 2AANY-IR624

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                              |
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| Prepared by Simon Wang<br>Engineer / Mobile Department                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Approved by Luke Lu<br>Manager / Mobile Department                                                           |
| <br>Date: Dec. 02, 2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <br>Date: Dec. 02, 2024 |
| <small>This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <a href="http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/">http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/</a> 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.</small> |                                                                                                              |

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## **1. GENERAL INFORMATION**

### **1.1 Notes of the test report**

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### **1.2 Information about the testing laboratory**

|                      |                                                                                                                                  |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Company:             | BV 7Layers Communications Technology (Shenzhen) Co., Ltd                                                                         |
| Address:             | Room B37, Warehouse A5, No.3 Chiwan 4th Road, Zhaoshang Street, Nanshan District Shenzhen, Guangdong, People's Republic of China |
| City:                | Shenzhen                                                                                                                         |
| Country or Region:   | P.R.China                                                                                                                        |
| Tel:                 | +86 755 8869 6566                                                                                                                |
| Fax:                 | +86 755 8869 6577                                                                                                                |
| Email:               | customerservice.sw@bureauveritas.com                                                                                             |
| Designation Number:  | CN1171                                                                                                                           |
| Registration number: | 525120                                                                                                                           |

### **1.3 Applicant's details**

|                    |                                                                                |
|--------------------|--------------------------------------------------------------------------------|
| Company:           | Beijing InHand Networks Technology Co., Ltd.                                   |
| Address:           | Room 501, floor 5, building 3, yard 18, ziyue road, chaoyang district, Beijing |
| City:              | Beijing                                                                        |
| Country or Region: | China                                                                          |
| Contacted person:  | GuJichi                                                                        |
| Tel:               | 15281366255                                                                    |
| Email:             | gujc@inhand.com.cn                                                             |

### **1.4 Manufacturer's details**

|                    |                                                                                |
|--------------------|--------------------------------------------------------------------------------|
| Company:           | Beijing InHand Networks Technology Co., Ltd.                                   |
| Address:           | Room 501, floor 5, building 3, yard 18, ziyue road, chaoyang district, Beijing |
| City:              | Beijing                                                                        |
| Country or Region: | China                                                                          |
| Contacted person:  | GuJichi                                                                        |
| Tel:               | 15281366255                                                                    |
| Email:             | gujc@inhand.com.cn                                                             |



## 1.5 Test Environment

|                                 |            |
|---------------------------------|------------|
| Date of Receipt of test sample: | 2024/11/11 |
| Testing Start Date:             | 2024/11/12 |
| Testing End Date:               | 2024/12/6  |

|                     |                  |              |
|---------------------|------------------|--------------|
| Environmental Data: | Temperature (°C) | Humidity (%) |
| Ambient             | 25               | 40           |
| Maximum Extreme     | 70               | ---          |
| Minimum Extreme     | -20              | ---          |

|                                          |    |
|------------------------------------------|----|
| Normal Supply Voltage (V d.c.):          | 12 |
| Maximum Extreme Supply Voltage (V d.c.): | 36 |
| Minimum Extreme Supply Voltage (V d.c.): | 9  |

## 2. DESCRIPTION OF THE EQUIPMENT UNDER TEST

### 2.1 Final Equipment Build Status

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequency Range:         | LTE Band 2: Tx:1850~1910MHz Rx:1930~1990MHz<br>LTE Band 4: Tx: 1710~1755MHz Rx: 2110~2155MHz<br>LTE Band 5: Tx: 824~849MHz Rx: 869~894MHz<br>LTE Band 7: Tx: 2500~2570MHz Rx: 2620~2690MHz<br>LTE Band 12: Tx:699~716MHz Rx: 729~746MHz<br>LTE Band 13: Tx: 777~787MHz Rx: 746~756MHz<br>LTE Band 14: Tx: 788 ~798 MHz Rx: 758 ~768 MHz<br>LTE Band 17: Tx: 704 ~ 716 MHz Rx: 734 ~ 746 MHz<br>LTE Band 25: Tx: 1850 ~ 1915 MHz Rx: 1930 ~ 1995 MHz<br>LTE Band 26: Tx: 814~849MHz Rx: 859~894MHz<br>LTE Band 30: Tx: 2305 ~ 2315 MHz Rx: 2350 ~ 2360 MHz<br>LTE Band 38: Tx:2570~2620MHz Rx:2570~2620MHz<br>LTE Band 41: Tx: 2496~2690MHz Rx: 2496~2690MHz<br>LTE Band 42: Tx: 3400 ~3600 MHz Rx: 3400 ~ 3600 MHz<br>LTE Band 43: Tx: 3600 ~ 3800 MHz Rx: 3600 ~ 3800 MHz<br>LTE Band 48: Tx:3550~3700MHz Rx:3550~3700MHz<br>LTE Band 66: Tx: 1710~1780MHz Rx: 2110~2200MHz<br>LTE Band 71: Tx: 663 ~698 MHz Rx: 617 ~652 MHz |
| Frequency Range:(CA)     | ULCA:CA_2C, CA_5B, CA_7C, CA_38C, CA_41C, CA_42C, CA_43C, CA_48C, CA_66B, CA_66C (See note1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Modulation Type(Uplink): | QPSK/16QAM/64QAM/256QAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Antenna Type:            | External Antenna                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |



|                    |                                    |                        |                       |
|--------------------|------------------------------------|------------------------|-----------------------|
| Antenna Gain:      | LTE B2: 0.8dBi                     | LTE B4:0.0dBi(Max)     | LTE B5:-2.5dBi        |
|                    | LTE B7:0.4dBi(Max)                 | LTE B12:-0.7dBi        | LTE B13:-0.7dBi (Max) |
|                    | LTE B14: :-0.7dBi (Max)            | LTE B17: -0.7dBi (Max) | LTE B25:0.8dBi        |
|                    | LTE B26:-2.5dBi                    | LTE B30:-0.6dBi (Max)  | LTE B38:-0.1dBi       |
|                    | LTE B41:-0.1dBi                    | LTE B42:-0.7dBi        | LTE B43:-0.7dBi       |
|                    | LTE B48:-0.7dBi                    | LTE B66:0dBi(Max)      | LTE B71:-3.5dBi       |
|                    | ERP = EIRP(Power+Gain) – 2.15 (dB) |                        |                       |
| Power Supply:      | DC supply                          |                        |                       |
| Software Revision: | V3.0                               |                        |                       |
| Hardware Revision: | V1.1                               |                        |                       |
| IMEI:              | 866407060011582                    |                        |                       |

**Note1: Supported frequency inter-bands**

|            |            |            |            |
|------------|------------|------------|------------|
| CA 2A-4A   | CA 2A-5A   | CA 2A-7A   | 2A-12A     |
| CA 2A-13A  | CA 2A-30A  | CA 2A-66A  | CA 4A-5A   |
| CA 4A-7A   | CA 4A-12A  | CA 4A-13A  | CA 4A-30A  |
| CA 5A-7A   | CA 5A-30A  | CA 5A-66A  | CA 12A-30A |
| CA 12A-66A | CA 13A-66A | CA 14A-30A |            |

**Note2:** Test Model No.: IR624  
Series Model: IR654, IR694

These models are the same in these: appearance, PCB layout and basic software function;  
The only difference is that the products are used in different markets.

**2.2 Support Equipment**

The following support equipment was used to exercise the DUT during testing:N/A

**Note3:** This product uses the module model RM520N-GL and supports LTE frequency bands 2/4/5/7/12/13/14/17/25/26/30/38/41/42/43/48/66/71. Therefore, for this product, we referred to the test data reported by the RM520N-GL module and revaluated the spectrum of radiated emissions and EIRP.

For module RM520N-GL: Report No.: SEWM2304000122RG01

FCC ID: XMR2023RM520NGL

**Note4:** The manufacturer asks to reverify the manufacturer B48, Therefore, we tested the B48 frequency band of the entire machine, and the data for other frequency bands came from the module report. But Part96.47 refers to module data.



## 2.3 Test Frequencies for CA Band

### Reference test frequencies for LTE operating band CA\_2C

Table 4.3.1.1.2A-2: Test frequencies for CA\_2C

| Range   | CC-Combo /<br>N <sub>RB_agg</sub><br>[RB] | CC1<br>Note1 |                 |                          |                 |                          | CC2<br>Note1 |                 |                          |                 |                          |
|---------|-------------------------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|
|         |                                           | BW<br>[RB]   | N <sub>UL</sub> | f <sub>UL</sub><br>[MHz] | N <sub>DL</sub> | f <sub>DL</sub><br>[MHz] | BW<br>[RB]   | N <sub>UL</sub> | f <sub>UL</sub><br>[MHz] | N <sub>DL</sub> | f <sub>DL</sub><br>[MHz] |
| Low     | 25+100                                    | 25           | 18633           | 1853.3                   | 633             | 1933.3                   | 100          | 18750           | 1865                     | 750             | 1945                     |
|         |                                           | 100          | 18700           | 1860                     | 700             | 1940                     | 25           | 18817           | 1871.7                   | 817             | 1951.7                   |
|         | 50+75                                     | 50           | 18653           | 1855.3                   | 653             | 1935.3                   | 75           | 18773           | 1867.3                   | 773             | 1947.3                   |
|         |                                           | 75           | 18675           | 1857.5                   | 675             | 1937.5                   | 50           | 18795           | 1869.5                   | 795             | 1949.5                   |
|         | 50+100                                    | 50           | 18655           | 1855.5                   | 655             | 1935.5                   | 100          | 18799           | 1869.9                   | 799             | 1949.9                   |
|         |                                           | 100          | 18700           | 1860                     | 700             | 1940                     | 50           | 18844           | 1874.4                   | 844             | 1954.4                   |
|         | 75+75                                     | 75           | 18675           | 1857.5                   | 675             | 1937.5                   | 75           | 18825           | 1872.5                   | 825             | 1952.5                   |
|         |                                           | 75           | 18678           | 1857.8                   | 678             | 1937.8                   | 100          | 18849           | 1874.9                   | 849             | 1954.9                   |
|         | 75+100                                    | 75           | 18678           | 1857.8                   | 678             | 1937.8                   | 100          | 18849           | 1874.9                   | 849             | 1954.9                   |
|         |                                           | 100          | 18700           | 1860                     | 700             | 1940                     | 75           | 18871           | 1877.1                   | 871             | 1957.1                   |
| Mid     | 25+100                                    | 25           | 18808           | 1870.8                   | 808             | 1950.8                   | 100          | 18925           | 1882.5                   | 925             | 1962.5                   |
|         |                                           | 100          | 18875           | 1877.5                   | 875             | 1957.5                   | 25           | 18992           | 1889.2                   | 992             | 1969.2                   |
|         | 50+75                                     | 50           | 18829           | 1872.9                   | 829             | 1952.9                   | 75           | 18949           | 1884.9                   | 949             | 1964.9                   |
|         |                                           | 75           | 18851           | 1875.1                   | 851             | 1955.1                   | 50           | 18971           | 1887.1                   | 971             | 1967.1                   |
|         | 50+100                                    | 50           | 18806           | 1870.6                   | 806             | 1950.6                   | 100          | 18950           | 1885                     | 950             | 1965                     |
|         |                                           | 100          | 18851           | 1875.1                   | 851             | 1955.1                   | 50           | 18995           | 1889.5                   | 995             | 1969.5                   |
|         | 75+75                                     | 75           | 18825           | 1872.5                   | 825             | 1952.5                   | 75           | 18975           | 1887.5                   | 975             | 1967.5                   |
|         |                                           | 75           | 18803           | 1870.3                   | 803             | 1950.3                   | 100          | 18974           | 1887.4                   | 974             | 1967.4                   |
|         | 75+100                                    | 75           | 18826           | 1872.6                   | 826             | 1952.6                   | 75           | 18997           | 1889.7                   | 997             | 1969.7                   |
|         |                                           | 100          | 18801           | 1870.1                   | 801             | 1950.1                   | 100          | 18999           | 1889.9                   | 999             | 1969.9                   |
| High    | 25+100                                    | 25           | 18983           | 1888.3                   | 983             | 1968.3                   | 100          | 19100           | 1900                     | 1100            | 1980                     |
|         |                                           | 100          | 19050           | 1895                     | 1050            | 1975                     | 25           | 19167           | 1906.7                   | 1167            | 1986.7                   |
|         | 50+75                                     | 50           | 19005           | 1890.5                   | 1005            | 1970.5                   | 75           | 19125           | 1902.5                   | 1125            | 1982.5                   |
|         |                                           | 75           | 19027           | 1892.7                   | 1027            | 1972.7                   | 50           | 19147           | 1904.7                   | 1147            | 1984.7                   |
|         | 50+100                                    | 50           | 18956           | 1885.6                   | 956             | 1965.6                   | 100          | 19100           | 1900                     | 1100            | 1980                     |
|         |                                           | 100          | 19001           | 1890.1                   | 1001            | 1970.1                   | 50           | 19145           | 1904.5                   | 1145            | 1984.5                   |
|         | 75+75                                     | 75           | 18975           | 1887.5                   | 975             | 1967.5                   | 75           | 19125           | 1902.5                   | 1125            | 1982.5                   |
|         |                                           | 75           | 18929           | 1882.9                   | 929             | 1962.9                   | 100          | 19100           | 1900                     | 1100            | 1980                     |
|         | 75+100                                    | 75           | 18929           | 1882.9                   | 929             | 1962.9                   | 100          | 19100           | 1900                     | 1100            | 1980                     |
|         |                                           | 100          | 18951           | 1885.1                   | 951             | 1965.1                   | 75           | 19122           | 1902.2                   | 1122            | 1982.2                   |
| 100+100 | 100+100                                   | 100          | 18902           | 1880.2                   | 902             | 1960.2                   | 100          | 19100           | 1900                     | 1100            | 1980                     |

Note 1: Carriers in increasing frequency order.



## Reference test frequencies for LTE operating band CA\_5B

**Table 4.3.1.1.5A-1: Test frequencies for CA\_5B**

| Range | CC-Combo /<br>N <sub>RB_agg</sub><br>[RB] | CC1<br>Note1 |                 |                          |                 |                          | CC2<br>Note1 |                 |                          |                 |                          |
|-------|-------------------------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|
|       |                                           | BW<br>[RB]   | N <sub>UL</sub> | f <sub>UL</sub><br>[MHz] | N <sub>DL</sub> | f <sub>DL</sub><br>[MHz] | BW<br>[RB]   | N <sub>UL</sub> | f <sub>UL</sub><br>[MHz] | N <sub>DL</sub> | f <sub>DL</sub><br>[MHz] |
| Low   | 15+25                                     | 15           | 20416           | 825.6                    | 2416            | 870.6                    | 25           | 20455           | 829.5                    | 2455            | 874.5                    |
|       |                                           | 25           | 20425           | 826.5                    | 2425            | 871.5                    | 15           | 20464           | 830.4                    | 2464            | 875.4                    |
|       | 25+50                                     | 25           | 20428           | 826.8                    | 2428            | 871.8                    | 50           | 20500           | 834                      | 2500            | 879                      |
|       | 50+25                                     | 50           | 20450           | 829                      | 2450            | 874                      | 25           | 20522           | 836.2                    | 2522            | 881.2                    |
|       | 50+50                                     | 50           | 20450           | 829                      | 2450            | 874                      | 50           | 20549           | 838.9                    | 2549            | 883.9                    |
| Mid   | 15+25                                     | 15           | 20501           | 834.1                    | 2501            | 879.1                    | 25           | 20540           | 838.0                    | 2540            | 883.0                    |
|       |                                           | 25           | 20510           | 835.0                    | 2510            | 880.0                    | 15           | 20549           | 838.9                    | 2549            | 883.9                    |
|       | 25+50                                     | 25           | 20478           | 831.8                    | 2478            | 876.8                    | 50           | 20550           | 839                      | 2550            | 884                      |
|       | 50+25                                     | 50           | 20500           | 834                      | 2500            | 879                      | 25           | 20572           | 841.2                    | 2572            | 886.2                    |
|       | 50+50                                     | 50           | 20476           | 831.6                    | 2476            | 876.6                    | 50           | 20575           | 841.5                    | 2575            | 886.5                    |
| High  | 15+25                                     | 15           | 20586           | 842.6                    | 2586            | 887.6                    | 25           | 20625           | 846.5                    | 2625            | 891.5                    |
|       |                                           | 25           | 20595           | 843.5                    | 2595            | 888.5                    | 15           | 20634           | 847.4                    | 2634            | 892.4                    |
|       | 25+50                                     | 25           | 20528           | 836.8                    | 2528            | 881.8                    | 50           | 20600           | 844                      | 2600            | 889                      |
|       | 50+25                                     | 50           | 20550           | 839                      | 2550            | 884                      | 25           | 20622           | 846.2                    | 2622            | 891.2                    |
|       | 50+50                                     | 50           | 20501           | 834.1                    | 2501            | 879.1                    | 50           | 20600           | 844                      | 2600            | 889                      |

Note 1: Carriers in increasing frequency order.

## Reference test frequencies for LTE operating band CA\_7C

**Table 4.3.1.1.7A-1: Test frequencies for CA\_7C**

| Range | CC-Combo /<br>N <sub>RB_agg</sub><br>[RB] | CC1<br>Note1 |                 |                          |                 |                          | CC2<br>Note1 |                 |                          |                 |                          |
|-------|-------------------------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|
|       |                                           | BW<br>[RB]   | N <sub>UL</sub> | f <sub>UL</sub><br>[MHz] | N <sub>DL</sub> | f <sub>DL</sub><br>[MHz] | BW<br>[RB]   | N <sub>UL</sub> | f <sub>UL</sub><br>[MHz] | N <sub>DL</sub> | f <sub>DL</sub><br>[MHz] |
| Low   | 50+100                                    | 50           | 20805           | 2505.5                   | 2805            | 2625.5                   | 100          | 20949           | 2519.9                   | 2949            | 2639.9                   |
|       |                                           | 100          | 20850           | 2510                     | 2850            | 2630                     | 50           | 20994           | 2524.4                   | 2994            | 2644.4                   |
|       | 75+50                                     | 75           | 20825           | 2507.5                   | 2825            | 2627.5                   | 50           | 20945           | 2519.5                   | 2945            | 2639.5                   |
|       | 75+75                                     | 75           | 20825           | 2507.5                   | 2825            | 2627.5                   | 75           | 20975           | 2522.5                   | 2975            | 2642.5                   |
|       | 75+100                                    | 75           | 20828           | 2507.8                   | 2828            | 2627.8                   | 100          | 20999           | 2524.9                   | 2999            | 2644.9                   |
|       |                                           | 100          | 20850           | 2510                     | 2850            | 2630                     | 75           | 21021           | 2527.1                   | 3021            | 2647.1                   |
|       | 100+100                                   | 100          | 20850           | 2510                     | 2850            | 2630                     | 100          | 21048           | 2529.8                   | 3048            | 2649.8                   |
| Mid   | 50+100                                    | 50           | 21006           | 2525.6                   | 3006            | 2645.6                   | 100          | 21150           | 2540                     | 3150            | 2660                     |
|       |                                           | 100          | 21051           | 2530.1                   | 3051            | 2650.1                   | 50           | 21195           | 2544.5                   | 3195            | 2664.5                   |
|       | 75+50                                     | 75           | 21051           | 2530.1                   | 3051            | 2650.1                   | 50           | 21171           | 2542.1                   | 3171            | 2662.1                   |
|       | 75+75                                     | 75           | 21025           | 2527.5                   | 3025            | 2647.5                   | 75           | 21175           | 2542.5                   | 3175            | 2662.5                   |
|       | 75+100                                    | 75           | 21003           | 2525.3                   | 3003            | 2645.3                   | 100          | 21174           | 2542.4                   | 3174            | 2662.4                   |
|       |                                           | 100          | 21026           | 2527.6                   | 3026            | 2647.6                   | 75           | 21197           | 2544.7                   | 3197            | 2664.7                   |
|       | 100+100                                   | 100          | 21001           | 2525.1                   | 3001            | 2645.1                   | 100          | 21199           | 2544.9                   | 3199            | 2664.9                   |
| High  | 50+100                                    | 50           | 21206           | 2545.6                   | 3206            | 2665.6                   | 100          | 21350           | 2560                     | 3350            | 2680                     |
|       |                                           | 100          | 21251           | 2550.1                   | 3251            | 2670.1                   | 50           | 21395           | 2564.5                   | 3395            | 2684.5                   |
|       | 75+50                                     | 75           | 21277           | 2552.7                   | 3277            | 2672.7                   | 50           | 21397           | 2564.7                   | 3397            | 2684.7                   |
|       | 75+75                                     | 75           | 21225           | 2547.5                   | 3225            | 2667.5                   | 75           | 21375           | 2562.5                   | 3375            | 2682.5                   |
|       | 75+100                                    | 75           | 21179           | 2542.9                   | 3179            | 2662.9                   | 100          | 21350           | 2560                     | 3350            | 2680                     |
|       |                                           | 100          | 21201           | 2545.1                   | 3201            | 2665.1                   | 75           | 21372           | 2562.2                   | 3372            | 2682.2                   |
|       | 100+100                                   | 100          | 21152           | 2540.2                   | 3152            | 2660.2                   | 100          | 21350           | 2560                     | 3350            | 2680                     |

Note 1: Carriers in increasing frequency order.



## Reference test frequencies for LTE operating band CA\_38C

**Table 4.3.1.2.6A-1: Test frequencies for CA\_38C**

| Range | CC-Combo /<br>N <sub>RB_agg</sub><br>[RB] | CC1<br>Note1 |                    |                             | CC2<br>Note1 |                    |                             |
|-------|-------------------------------------------|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|
|       |                                           | BW<br>[RB]   | N <sub>UL/DL</sub> | f <sub>UL/DL</sub><br>[MHz] | BW<br>[RB]   | N <sub>UL/DL</sub> | f <sub>UL/DL</sub><br>[MHz] |
| Low   | 75+75                                     | 75           | 37825              | 2577.5                      | 75           | 37975              | 2592.5                      |
|       | 100+100                                   | 100          | 37850              | 2580                        | 100          | 38048              | 2599.8                      |
| Mid   | 75+75                                     | 75           | 37925              | 2587.5                      | 75           | 38075              | 2602.5                      |
|       | 100+100                                   | 100          | 37901              | 2585.1                      | 100          | 38099              | 2604.9                      |
| High  | 75+75                                     | 75           | 38025              | 2597.5                      | 75           | 38175              | 2612.5                      |
|       | 100+100                                   | 100          | 37952              | 2590.2                      | 100          | 38150              | 2610                        |

Note 1: Carriers in increasing frequency order.



## Reference test frequencies for LTE operating band CA\_41C

**Table 4.3.1.2.9A-1: Test frequencies for CA\_41C**

| Range                                           | CC-Combo /<br>N <sub>RB_agg</sub><br>[RB] | CC1<br>Note1 |                    |                             | CC2<br>Note1 |                    |                             |
|-------------------------------------------------|-------------------------------------------|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|
|                                                 |                                           | BW<br>[RB]   | N <sub>UL/DL</sub> | f <sub>UL/DL</sub><br>[MHz] | BW<br>[RB]   | N <sub>UL/DL</sub> | f <sub>UL/DL</sub><br>[MHz] |
| Low                                             | 25+100                                    | 25           | 39683              | 2499.3                      | 100          | 39800              | 2511                        |
|                                                 |                                           | 100          | 39750              | 2506                        | 25           | 39867              | 2517.7                      |
|                                                 | 50+75                                     | 50           | 39703              | 2501.3                      | 75           | 39823              | 2513.3                      |
|                                                 |                                           | 75           | 39725              | 2503.5                      | 50           | 39845              | 2515.5                      |
|                                                 | 50+100                                    | 50           | 39705              | 2501.5                      | 100          | 39849              | 2515.9                      |
|                                                 |                                           | 100          | 39750              | 2506                        | 50           | 39894              | 2520.4                      |
|                                                 | 75+75                                     | 75           | 39725              | 2503.5                      | 75           | 39875              | 2518.5                      |
|                                                 | 75+100                                    | 75           | 39728              | 2503.8                      | 100          | 39899              | 2520.9                      |
|                                                 |                                           | 100          | 39750              | 2506                        | 75           | 39921              | 2523.1                      |
|                                                 | 100+100                                   | 100          | 39750              | 2506                        | 100          | 39948              | 2525.8                      |
| Mid                                             | 25+100                                    | 25           | 40528              | 2583.8                      | 100          | 40645              | 2595.5                      |
|                                                 |                                           | 100          | 40595              | 2590.5                      | 25           | 40712              | 2602.2                      |
|                                                 | 50+75                                     | 50           | 40549              | 2585.9                      | 75           | 40669              | 2597.9                      |
|                                                 |                                           | 75           | 40571              | 2588.1                      | 50           | 40691              | 2600.1                      |
|                                                 | 50+100                                    | 50           | 40526              | 2583.6                      | 100          | 40670              | 2598.0                      |
|                                                 |                                           | 100          | 40571              | 2588.1                      | 50           | 40715              | 2602.5                      |
|                                                 | 75+75                                     | 75           | 40545              | 2585.5                      | 75           | 40695              | 2600.5                      |
|                                                 | 75+100                                    | 75           | 40523              | 2583.3                      | 100          | 40694              | 2600.4                      |
|                                                 |                                           | 100          | 40546              | 2585.6                      | 75           | 40717              | 2602.7                      |
|                                                 | 100+100                                   | 100          | 40521              | 2583.1                      | 100          | 40719              | 2602.9                      |
| High                                            | 25+100                                    | 25           | 41373              | 2668.3                      | 100          | 41490              | 2680                        |
|                                                 |                                           | 100          | 41440              | 2675                        | 25           | 41557              | 2686.7                      |
|                                                 | 50+75                                     | 50           | 41395              | 2670.5                      | 75           | 41515              | 2682.5                      |
|                                                 |                                           | 75           | 41417              | 2672.7                      | 50           | 41537              | 2684.7                      |
|                                                 | 50+100                                    | 50           | 41346              | 2665.6                      | 100          | 41490              | 2680                        |
|                                                 |                                           | 100          | 41391              | 2670.1                      | 50           | 41535              | 2684.5                      |
|                                                 | 75+75                                     | 75           | 41365              | 2667.5                      | 75           | 41515              | 2682.5                      |
|                                                 | 75+100                                    | 75           | 41319              | 2662.9                      | 100          | 41490              | 2680                        |
|                                                 |                                           | 100          | 41341              | 2665.1                      | 75           | 41512              | 2682.2                      |
|                                                 | 100+100                                   | 100          | 41292              | 2660.2                      | 100          | 41490              | 2680                        |
| Note 1: Carriers in increasing frequency order. |                                           |              |                    |                             |              |                    |                             |



**Reference test frequencies for LTE operating band CA\_42C(3450-3550):**

| Range                                           | CC-<br>Combo /<br>NRB_agg<br>[RB] | CC1<br>Note1 |                    |                             | CC2<br>Note1 |                    |                             |
|-------------------------------------------------|-----------------------------------|--------------|--------------------|-----------------------------|--------------|--------------------|-----------------------------|
|                                                 |                                   | BW<br>[RB]   | N <sub>UL/DL</sub> | f <sub>UL/DL</sub><br>[MHz] | BW<br>[RB]   | N <sub>UL/DL</sub> | f <sub>UL/DL</sub><br>[MHz] |
| Low                                             | 25+100                            | 25           | 42123              | 3453.3                      | 100          | 42240              | 3465                        |
|                                                 |                                   | 100          | 42190              | 3460                        | 25           | 42307              | 3471.7                      |
|                                                 | 50+100                            | 50           | 42145              | 3455.5                      | 100          | 42289              | 3469.9                      |
|                                                 |                                   | 100          | 42190              | 3460                        | 50           | 42334              | 3474.4                      |
|                                                 | 75+100                            | 75           | 42168              | 3457.8                      | 100          | 42339              | 3474.9                      |
|                                                 |                                   | 100          | 42190              | 3460                        | 75           | 42361              | 3477.1                      |
|                                                 | 100+100                           | 100          | 42190              | 3460                        | 100          | 42388              | 3479.8                      |
| Mid                                             | 25+100                            | 25           | 42498              | 3490.8                      | 100          | 42615              | 3502.5                      |
|                                                 |                                   | 100          | 42565              | 3497.5                      | 25           | 42682              | 3509.2                      |
|                                                 | 50+100                            | 50           | 42496              | 3490.6                      | 100          | 42640              | 3505                        |
|                                                 |                                   | 100          | 42541              | 3495.1                      | 50           | 42685              | 3509.5                      |
|                                                 | 75+100                            | 75           | 42493              | 3490.3                      | 100          | 42664              | 3507.4                      |
|                                                 |                                   | 100          | 42516              | 3492.6                      | 75           | 42687              | 3509.7                      |
|                                                 | 100+100                           | 100          | 42491              | 3490.1                      | 100          | 42689              | 3509.9                      |
| High                                            | 25+100                            | 25           | 42873              | 3528.3                      | 100          | 42990              | 3540                        |
|                                                 |                                   | 100          | 42940              | 3535                        | 25           | 43057              | 3546.7                      |
|                                                 | 50+100                            | 50           | 42846              | 3525.6                      | 100          | 42990              | 3540                        |
|                                                 |                                   | 100          | 42891              | 3530.1                      | 50           | 43035              | 3544.5                      |
|                                                 | 75+100                            | 75           | 42819              | 3522.9                      | 100          | 42990              | 3540                        |
|                                                 |                                   | 100          | 42841              | 3525.1                      | 75           | 43012              | 3542.2                      |
|                                                 | 100+100                           | 100          | 42792              | 3520.2                      | 100          | 42990              | 3540                        |
| Note 1: Carriers in increasing frequency order. |                                   |              |                    |                             |              |                    |                             |

**Reference test frequencies for LTE operating band CA\_43C(3700-3800):**

| Range                                           | CC-Combo / |      | CC1                |                    |      | CC2                |                    |
|-------------------------------------------------|------------|------|--------------------|--------------------|------|--------------------|--------------------|
|                                                 | NRB_agg    |      | Note1              |                    |      | Note1              |                    |
|                                                 | [RB]       |      |                    |                    |      |                    |                    |
|                                                 |            | BW   | N <sub>UL/DL</sub> | f <sub>UL/DL</sub> | BW   | N <sub>UL/DL</sub> | f <sub>UL/DL</sub> |
|                                                 |            | [RB] |                    | [MHz]              | [RB] |                    | [MHz]              |
| Low                                             | 25+100     | 25   | 44623              | 3703.3             | 100  | 44740              | 3715               |
|                                                 |            | 100  | 44690              | 3710               | 25   | 44807              | 3721.7             |
|                                                 | 50+100     | 50   | 44645              | 3705.5             | 100  | 44789              | 3719.9             |
|                                                 |            | 100  | 44690              | 3710               | 50   | 44834              | 3724.4             |
|                                                 | 75+100     | 75   | 44668              | 3707.8             | 100  | 44839              | 3724.9             |
|                                                 |            | 100  | 44690              | 3710               | 75   | 44861              | 3727.1             |
|                                                 | 100+100    | 100  | 44690              | 3710               | 100  | 44888              | 3729.8             |
| Mid                                             | 25+100     | 25   | 44998              | 3740.8             | 100  | 45115              | 3752.5             |
|                                                 |            | 100  | 45065              | 3747.5             | 25   | 45182              | 3759.2             |
|                                                 | 50+100     | 50   | 44996              | 3740.6             | 100  | 45140              | 3755               |
|                                                 |            | 100  | 45041              | 3745.1             | 50   | 45185              | 3759.5             |
|                                                 | 75+100     | 75   | 44993              | 3740.3             | 100  | 45164              | 3757.4             |
|                                                 |            | 100  | 45016              | 3742.6             | 75   | 45187              | 3759.7             |
|                                                 | 100+100    | 100  | 44991              | 3740.1             | 100  | 45189              | 3759.9             |
| High                                            | 25+100     | 25   | 45373              | 3778.3             | 100  | 45490              | 3790               |
|                                                 |            | 100  | 45440              | 3785               | 25   | 45557              | 3796.7             |
|                                                 | 50+100     | 50   | 45346              | 3775.6             | 100  | 45490              | 3790               |
|                                                 |            | 100  | 45391              | 3780.1             | 50   | 45535              | 3794.5             |
|                                                 | 75+100     | 75   | 45319              | 3772.9             | 100  | 45490              | 3790               |
|                                                 |            | 100  | 45341              | 3775.1             | 75   | 45512              | 3792.2             |
|                                                 | 100+100    | 100  | 45292              | 3770.2             | 100  | 45490              | 3790               |
| Note 1: Carriers in increasing frequency order. |            |      |                    |                    |      |                    |                    |



**Reference test frequencies for LTE operating band CA\_48C(3550-3700):**

| Range                                           | CC-Combo /<br>NRB_agg<br>[RB] | CC1<br>Note1 |        |                 | CC2<br>Note1 |        |                 |
|-------------------------------------------------|-------------------------------|--------------|--------|-----------------|--------------|--------|-----------------|
|                                                 |                               | BW<br>[RB]   | NUL/DL | fUL/DL<br>[MHz] | BW<br>[RB]   | NUL/DL | fUL/DL<br>[MHz] |
| Low                                             | 25+100                        | 25           | 55273  | 3553.3          | 100          | 55390  | 3565            |
|                                                 |                               | 100          | 55340  | 3560            | 25           | 55457  | 3571.7          |
|                                                 | 50+100                        | 50           | 55295  | 3555.5          | 100          | 55439  | 3569.9          |
|                                                 |                               | 100          | 55340  | 3560            | 50           | 55484  | 3574.4          |
|                                                 | 75+100                        | 75           | 55318  | 3557.8          | 100          | 55489  | 3574.9          |
|                                                 |                               | 100          | 55340  | 3560            | 75           | 55511  | 3577.1          |
|                                                 | 100+100                       | 100          | 55340  | 3560            | 100          | 55538  | 3579.8          |
| Mid                                             | 25+100                        | 25           | 55898  | 3615.8          | 100          | 56015  | 3627.5          |
|                                                 |                               | 100          | 55965  | 3622.5          | 25           | 56082  | 3634.2          |
|                                                 | 50+100                        | 50           | 55896  | 3615.6          | 100          | 56040  | 3630            |
|                                                 |                               | 100          | 55941  | 3620.1          | 50           | 56085  | 3634.5          |
|                                                 | 75+100                        | 75           | 55893  | 3615.3          | 100          | 56064  | 3632.4          |
|                                                 |                               | 100          | 55916  | 3617.6          | 75           | 56087  | 3634.7          |
|                                                 | 100+100                       | 100          | 55891  | 3615.1          | 100          | 56089  | 3634.9          |
| High                                            | 25+100                        | 25           | 56523  | 3678.3          | 100          | 56640  | 3690            |
|                                                 |                               | 100          | 56590  | 3685            | 25           | 56707  | 3696.7          |
|                                                 | 50+100                        | 50           | 56496  | 3675.6          | 100          | 56640  | 3690            |
|                                                 |                               | 100          | 56541  | 3680.1          | 50           | 56685  | 3694.5          |
|                                                 | 75+100                        | 75           | 56469  | 3672.9          | 100          | 56640  | 3690            |
|                                                 |                               | 100          | 56491  | 3675.1          | 75           | 56662  | 3692.2          |
|                                                 | 100+100                       | 100          | 56442  | 3670.2          | 100          | 56640  | 3690            |
| Note 1: Carriers in increasing frequency order. |                               |              |        |                 |              |        |                 |



## Reference test frequencies for LTE operating band CA\_66B

Table 4.3.1.1.66A-1: Test frequencies for CA\_66B

| Range             | CC-Combo /<br>N <sub>RB_agg</sub><br>[RB]              | CC1<br>Note1 |                 |                          |                 |                          | CC2<br>Note1 |                 |                          |                 |                          |
|-------------------|--------------------------------------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|
|                   |                                                        | BW<br>[RB]   | N <sub>UL</sub> | f <sub>UL</sub><br>[MHz] | N <sub>DL</sub> | f <sub>DL</sub><br>[MHz] | BW<br>[RB]   | N <sub>UL</sub> | f <sub>UL</sub><br>[MHz] | N <sub>DL</sub> | f <sub>DL</sub><br>[MHz] |
| Low               | 25+25                                                  | 25           | 131997          | 1712.5                   | 66461           | 2112.5                   | 25           | 132045          | 1717.3                   | 66509           | 2117.3                   |
|                   | 25+50                                                  | 25           | 132000          | 1712.8                   | 66464           | 2112.8                   | 50           | 132072          | 1720                     | 66536           | 2120                     |
|                   |                                                        | 50           | 132022          | 1715                     | 66486           | 2115                     | 25           | 132094          | 1722.2                   | 66558           | 2122.2                   |
|                   | 25+75                                                  | 25           | 132002          | 1713                     | 66466           | 2113                     | 75           | 132095          | 1722.3                   | 66559           | 2122.3                   |
|                   |                                                        | 75           | 132047          | 1717.5                   | 66511           | 2117.5                   | 25           | 132140          | 1726.8                   | 66604           | 2126.8                   |
|                   | 50+50                                                  | 50           | 132022          | 1715                     | 66486           | 2115                     | 50           | 132121          | 1724.9                   | 66585           | 2124.9                   |
| Mid               | 25+25                                                  | 25           | 132398          | 1752.6                   | 66862           | 2152.6                   | 25           | 132446          | 1757.4                   | 66910           | 2157.4                   |
|                   | 25+50                                                  | 25           | 132375          | 1750.3                   | 66839           | 2150.3                   | 50           | 132447          | 1757.5                   | 66911           | 2157.5                   |
|                   |                                                        | 50           | 132397          | 1752.5                   | 66861           | 2152.5                   | 25           | 132469          | 1759.7                   | 66933           | 2159.7                   |
|                   | 25+75                                                  | 25           | 132353          | 1748.1                   | 66817           | 2148.1                   | 75           | 132446          | 1757.4                   | 66910           | 2157.4                   |
|                   |                                                        | 75           | 132398          | 1752.6                   | 66862           | 2152.6                   | 25           | 132491          | 1761.9                   | 66955           | 2161.9                   |
|                   | 50+50                                                  | 50           | 132373          | 1750.1                   | 66837           | 2150.1                   | 50           | 132472          | 1760                     | 66936           | 2160                     |
| High <sup>2</sup> | 25+25                                                  | 25           | 132647          | 1777.5                   | 67111           | 2177.5                   | 25           | NA              | NA                       | 67159           | 2182.3                   |
|                   | 25+50                                                  | 25           | 132647          | 1777.5                   | 67111           | 2177.5                   | 50           | NA              | NA                       | 67183           | 2184.7                   |
|                   |                                                        | 50           | 132622          | 1775                     | 67086           | 2175                     | 25           | NA              | NA                       | 67158           | 2182.2                   |
|                   | 25+75                                                  | 25           | 132647          | 1777.5                   | 67111           | 2177.5                   | 75           | NA              | NA                       | 67204           | 2186.8                   |
|                   |                                                        | 75           | 132597          | 1772.5                   | 67061           | 2172.5                   | 25           | NA              | NA                       | 67154           | 2181.8                   |
|                   | 50+50                                                  | 50           | 132622          | 1775                     | 67086           | 2175                     | 50           | NA              | NA                       | 67185           | 2184.9                   |
| High <sup>3</sup> | 25+25                                                  | 25           | 132599          | 1772.7                   | 67063           | 2172.7                   | 25           | 132647          | 1777.5                   | 67111           | 2177.5                   |
|                   | 25+50                                                  | 25           | 132550          | 1767.8                   | 67014           | 2167.8                   | 50           | 132622          | 1775                     | 67086           | 2175                     |
|                   |                                                        | 50           | 132572          | 1770                     | 67036           | 2170                     | 25           | 132644          | 1777.2                   | 67108           | 2177.2                   |
|                   | 25+75                                                  | 25           | 132504          | 1763.2                   | 66968           | 2163.2                   | 75           | 132597          | 1772.5                   | 67061           | 2172.5                   |
|                   |                                                        | 75           | 132549          | 1767.7                   | 67013           | 2167.7                   | 25           | 132642          | 1777                     | 67106           | 2177                     |
|                   | 50+50                                                  | 50           | 132523          | 1765.1                   | 66987           | 2165.1                   | 50           | 132622          | 1775                     | 67086           | 2175                     |
| Note 1:           | Carriers in increasing frequency order.                |              |                 |                          |                 |                          |              |                 |                          |                 |                          |
| Note 2:           | Applicable for intra-band contiguous CA without UL CA. |              |                 |                          |                 |                          |              |                 |                          |                 |                          |
| Note 3:           | Applicable for intra-band contiguous CA with UL CA.    |              |                 |                          |                 |                          |              |                 |                          |                 |                          |



## Reference test frequencies for LTE operating band CA\_66C

| Range             | CC-Combo /<br>N <sub>RB_agg</sub><br>[RB]              | CC1<br>Note1 |                 |                          |                 |                          | CC2<br>Note1 |                 |                          |                 |                          |
|-------------------|--------------------------------------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|--------------|-----------------|--------------------------|-----------------|--------------------------|
|                   |                                                        | BW<br>[RB]   | N <sub>UL</sub> | f <sub>UL</sub><br>[MHz] | N <sub>DL</sub> | f <sub>DL</sub><br>[MHz] | BW<br>[RB]   | N <sub>UL</sub> | f <sub>UL</sub><br>[MHz] | N <sub>DL</sub> | f <sub>DL</sub><br>[MHz] |
| Low               | 50+75                                                  | 50           | 132025          | 1715.3                   | 66489           | 2115.3                   | 75           | 132145          | 1727.3                   | 66609           | 2127.3                   |
|                   |                                                        | 75           | 132047          | 1717.5                   | 66511           | 2117.5                   | 50           | 132167          | 1729.5                   | 66631           | 2129.5                   |
|                   | 50+100                                                 | 50           | 132027          | 1715.5                   | 66491           | 2115.5                   | 100          | 132171          | 1729.9                   | 66635           | 2129.9                   |
|                   |                                                        | 100          | 132072          | 1720                     | 66536           | 2120                     | 50           | 132216          | 1734.4                   | 66680           | 2134.4                   |
|                   | 75+75                                                  | 75           | 132047          | 1717.5                   | 66511           | 2117.5                   | 75           | 132197          | 1732.5                   | 66661           | 2132.5                   |
|                   |                                                        | 75+100       | 75              | 132050                   | 1717.8          | 66514                    | 2117.8       | 100             | 132221                   | 1734.9          | 66685                    |
|                   |                                                        |              | 100             | 132072                   | 1720            | 66536                    | 2120         | 75              | 132243                   | 1737.1          | 66707                    |
|                   |                                                        | 100+25       | 100             | 132072                   | 1720            | 66536                    | 2120         | 25              | 132189                   | 1731.7          | 66653                    |
|                   |                                                        |              | 25              | 132005                   | 1713.3          | 66469                    | 2113.3       | 100             | 132122                   | 1725.0          | 66586                    |
|                   |                                                        | 100+100      | 100             | 132072                   | 1720            | 66536                    | 2120         | 100             | 132270                   | 1739.8          | 66734                    |
| Mid               | 50+75                                                  | 50           | 132351          | 1747.9                   | 66815           | 2147.9                   | 75           | 132471          | 1759.9                   | 66935           | 2159.9                   |
|                   |                                                        | 75           | 132373          | 1750.1                   | 66837           | 2150.1                   | 50           | 132493          | 1762.1                   | 66957           | 2162.1                   |
|                   | 50+100                                                 | 50           | 132328          | 1745.6                   | 66792           | 2145.6                   | 100          | 132472          | 1760                     | 66936           | 2160                     |
|                   |                                                        | 100          | 132373          | 1750.1                   | 66837           | 2150.1                   | 50           | 132517          | 1764.5                   | 66981           | 2164.5                   |
|                   | 75+75                                                  | 75           | 132347          | 1747.5                   | 66811           | 2147.5                   | 75           | 132497          | 1762.5                   | 66961           | 2162.5                   |
|                   |                                                        | 75+100       | 75              | 132325                   | 1745.3          | 66789                    | 2145.3       | 100             | 132496                   | 1762.4          | 66960                    |
|                   |                                                        |              | 100             | 132348                   | 1747.6          | 66812                    | 2147.6       | 75              | 132519                   | 1764.7          | 66983                    |
|                   |                                                        | 100+25       | 100             | 132397                   | 1752.5          | 66861                    | 2152.5       | 25              | 132514                   | 1764.2          | 66978                    |
|                   |                                                        |              | 25              | 132330                   | 1745.8          | 66794                    | 2145.8       | 100             | 132447                   | 1757.5          | 66911                    |
|                   |                                                        | 100+100      | 100             | 132323                   | 1745.1          | 66787                    | 2145.1       | 100             | 132521                   | 1764.9          | 66985                    |
| High <sup>2</sup> | 50+75                                                  | 50           | 132622          | 1775                     | 67086           | 2175                     | 75           | NA              | NA                       | 67206           | 2187                     |
|                   |                                                        | 75           | 132597          | 1772.5                   | 67061           | 2172.5                   | 50           | NA              | NA                       | 67181           | 2184.5                   |
|                   | 50+100                                                 | 50           | 132622          | 1775                     | 67086           | 2175                     | 100          | NA              | NA                       | 67230           | 2189.4                   |
|                   |                                                        | 100          | 132572          | 1770                     | 67036           | 2170                     | 50           | NA              | NA                       | 67180           | 2184.4                   |
|                   | 75+75                                                  | 75           | 132597          | 1772.5                   | 67061           | 2172.5                   | 75           | NA              | NA                       | 67211           | 2187.5                   |
|                   |                                                        | 75+100       | 75              | 132597                   | 1772.5          | 67061                    | 2172.5       | 100             | NA                       | NA              | 67232                    |
|                   |                                                        |              | 100             | 132572                   | 1770            | 67036                    | 2170         | 75              | NA                       | NA              | 67207                    |
|                   |                                                        | 100+25       | 100             | 132572                   | 1770            | 67036                    | 2170         | 25              | NA                       | NA              | 67153                    |
|                   |                                                        |              | 25              | 132647                   | 1777.5          | 67111                    | 2177.5       | 100             | NA                       | NA              | 67228                    |
|                   |                                                        | 100+100      | 100             | 132572                   | 1770            | 67036                    | 2170         | 100             | NA                       | NA              | 67234                    |
| High <sup>3</sup> | 50+75                                                  | 50           | 132477          | 1760.5                   | 66941           | 2160.5                   | 75           | 132597          | 1772.5                   | 67061           | 2172.5                   |
|                   |                                                        | 75           | 132499          | 1762.7                   | 66963           | 2162.7                   | 50           | 132619          | 1774.7                   | 67083           | 2174.7                   |
|                   | 50+100                                                 | 50           | 132428          | 1755.6                   | 66892           | 2155.6                   | 100          | 132572          | 1770                     | 67036           | 2170                     |
|                   |                                                        | 100          | 132473          | 1760.1                   | 66937           | 2160.1                   | 50           | 132617          | 1774.5                   | 67081           | 2174.5                   |
|                   | 75+75                                                  | 75           | 132447          | 1757.5                   | 66911           | 2157.5                   | 75           | 132597          | 1772.5                   | 67061           | 2172.5                   |
|                   |                                                        | 75+100       | 75              | 132401                   | 1752.9          | 66885                    | 2152.9       | 100             | 132572                   | 1770            | 67036                    |
|                   |                                                        |              | 100             | 132423                   | 1755.1          | 66887                    | 2155.1       | 75              | 132594                   | 1772.2          | 67058                    |
|                   |                                                        | 100+25       | 100             | 132522                   | 1765            | 66986                    | 2165         | 25              | 132639                   | 1776.7          | 67103                    |
|                   |                                                        |              | 25              | 132455                   | 1758.3          | 66919                    | 2158.3       | 100             | 132572                   | 1770.0          | 67036                    |
|                   |                                                        | 100+100      | 100             | 132374                   | 1750.2          | 66838                    | 2150.2       | 100             | 132572                   | 1770            | 67036                    |
| Note 1:           | Carriers in increasing frequency order.                |              |                 |                          |                 |                          |              |                 |                          |                 |                          |
| Note 2:           | Applicable for intra-band contiguous CA without UL CA. |              |                 |                          |                 |                          |              |                 |                          |                 |                          |
| Note 3:           | Applicable for intra-band contiguous CA with UL CA.    |              |                 |                          |                 |                          |              |                 |                          |                 |                          |



### **3. REFERENCE SPECIFICATION**

| Specification     | Version          | Title                                                                                             |
|-------------------|------------------|---------------------------------------------------------------------------------------------------|
| FCC Part 2        | 2023             | Frequency allocations and radio treaty matters; general rules and regulations                     |
| FCC Part 22       | 2023             | Public mobile services                                                                            |
| FCC Part 24       | 2023             | Personal communications services                                                                  |
| FCC Part 27       | 2023             | Miscellaneous wireless communications services                                                    |
| FCC Part 90       | 2023             | Private Land Mobile Radio Services                                                                |
| FCC Part 96       | 2023             | Citizens Broadband Radio Service                                                                  |
| FCC Part 96.47    | 2023             | End user device additional requirements                                                           |
| ANSI C63.26       | 2015             | American national standard for compliance testing of transmitters used in licensed radio services |
| KDB 971168<br>D01 | April 9,<br>2018 | Measurement guidance for certification of licensed digital transmitters                           |
| TIA-603-E-2016    | March<br>2016    | Land Mobile FM or PM Communications Equipment Measurement and Performance Standards               |

### **4. KEY TO NOTES AND RESULT CODES**

The following are the definition of the test result.

| Code | Meaning                                                                                  |
|------|------------------------------------------------------------------------------------------|
| PASS | Test result shows that the requirements of the relevant specification have been met.     |
| FAIL | Test result shows that the requirements of the relevant specification have not been met. |
| NT   | Normal Temperature                                                                       |
| NV   | Nominal voltage                                                                          |
| HV   | High voltage                                                                             |
| LV   | Low voltage                                                                              |



## **5.RESULT SUMMARY**

| No. | Test case                                                       | FCC reference                                                                                                                                                  | Verdict | Test Lab |
|-----|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------|
| 1   | RF Power Output                                                 | 2.1046                                                                                                                                                         | Pass    | A        |
| 2   | Effective Radiated Power and Effective Isotropic Radiated Power | 22.913(a)(5),<br>24.232(c)<br>27.50(b)(10), 27.50(c)(10), 27.50(h)(2),<br>27.50(d)(4),<br>27.50(a)(3),27.50(j)(3),27.50(k)(3)<br>,90.542(a),90.635(b),96.41(b) | Pass    | A        |
| 3   | Occupied Bandwidth                                              | 2.1049                                                                                                                                                         | Pass    | A        |
| 4   | Peak-Average Ratio                                              | 22.913(d), 24.232(d)<br>27.50(d) (5),27.50(k)(4),96.41(g)                                                                                                      | Pass    | A        |
| 5   | Emission Bandwidth                                              | 2.1049                                                                                                                                                         | Pass    | A        |
| 6   | Spurious Emissions at antenna terminals                         | 2.1051, 22.917(a), 24.238(a)(b)<br>27.53(c), 27.53(g), 27.53(h), 27.53(m),<br>27.53(a), 27.53(l)(2), 27.50(n)(2),<br>90.543(e)(f),90.691(a),96.41(e)           | Pass    | A        |
| 7   | Band Edges Compliance                                           | 2.1051, 22.917(a), 24.238(a)(b)<br>27.53(c), 27.53(g), 27.53(h), 27.53(m),<br>27.53(a),27.53(l)(2), 27.50(n)(2),<br>90.543(e)(f),<br>90.691(a), 96.41(e)       | Pass    | A        |
| 8   | Frequency Stability                                             | 2.1055                                                                                                                                                         | Pass    | A        |
| 9   | End user device additional requirements                         | WINNF-18-IN-00178                                                                                                                                              | Pass    | A        |
| 10  | Radiated Spurious Emissions                                     | 2.1053, 22.917(a), 24.238(a), 27.53(c),<br>27.53(g), 27.53(h), 27.53(f), 27.53(a),<br>27.53(m) , 27.53(l)(2),27.50(n)(2)<br>,90.543(e)(f),90.691(a), 96.41(e)  | Pass    | A        |

### **Lab A:**

BV 7Layers Communications Technology (Shenzhen) Co. Ltd

### **Lab Address:**

Room B37, Warehouse A5, No.3 Chiwan 4th Road, Zhaoshang Street, Nanshan District  
Shenzhen, Guangdong, People's Republic of China

**Accredited Test Lab Cert 3939.01**

The FCC Site Registration No. is 525120; The Designation No. is CN1171.

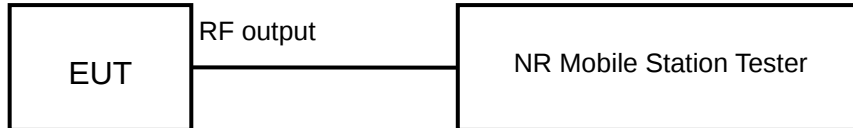


## **6. TEST RESULT**

### **6.1 RF Power Output**

Rule Part(s)  
FCC: 2.1046

Test Setup:



Test procedure:

After a radio link has been established between EUT and Tester, the output power of the cell signal of the testing equipment will be decreased until the output power of the EUT reach a maximum value. Then the test data can be read at the tester screen. The loss between RF output port of the EUT and the input port of the tester will be taken into consideration.

Limits: No RF Power Output requirements in part 2.1046.

Test result:

The test results are shown in Appendix A.

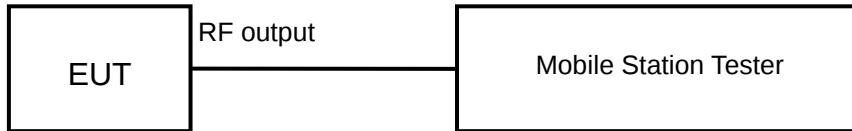


## 6.2 Effective Radiated Power and Effective Isotropic Radiated Power

Rule Part(s)

FCC: 22.913(a) (5), 24.232(c), 27.50(b) (10), 27.50(c) (10), 27.50(h) (2), 27.50(d) (4), 27.50(a) (3), 27.50(j)(3), 27.50(k)(3), 90.542(a), 90.635(b), 96.41(b)

Test setup:



Test procedure:

KDB 971168 D01 v03r01 – Section 5.6

Test Settings

Subclause 5.2.5.5 of ANSI C63.26-2015 is applicable, along with the following provisions. For personal/portable radios utilizing an integral antenna, the factor LC is typically negligible. However, in a fixed station transmit system that utilizes a long cable run between the transmitter and the transmitting antenna, this factor can be significant. The minimum cable loss should be used in this equation.

The relevant equation for determining the ERP or EIRP from the conducted RF output power measured is:

$$\text{ERP/EIRP} = \text{PMeas} - \text{LC} + \text{GT}$$

Where:

ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as PMeas, typically dBW or dBm)

PMeas = measured transmitter output power or PSD, in dBW or dBm

LC = signal attenuation in the connecting cable between the transmitter and antenna in dB

GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

### ERP/EIRP LIMIT

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

24.232(c)

Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

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(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(h) (2)

Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

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. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

27.50(a) (3)



Mobile and portable stations (i) 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 NR 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.

27.50(j)(3)

Mobile and portable stations are limited to 1 Watt EIRP. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

27.50(k)(3)

According to the specific rule Part 27.50 (k)(3) Mobile devices are limited to 1Watt (30 dBm) EIRP, Mobile devices operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

90.542(a)

47 CFR 90.542(a)(6)

Control stations and mobile stations transmitting in the 758–768 MHz band and the 788–798 MHz band are limited to 30 watts ERP.

47 CFR 90.542(a)(7)

Portable stations (hand-held devices) transmitting in the 758–768 MHz band and the 788–798 MHz band are limited to 3 watts ERP.

90.635(a)(b)

The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

96.41(b)

The maximum effective isotropic radiated power (EIRP) and maximum Power Spectral Density (PSD) of any CBSD and End User Device must comply with the limits shown in the table in this paragraph (b):

| Device Maximum  | EIRP(dBm/10megahertz) | Maximum PSD(dBm/MHz) |
|-----------------|-----------------------|----------------------|
| End User Device | 23                    | n/a                  |
| Category A CBSD | 30                    | 20                   |
| Category B CBSD | 47                    | 37                   |

Test result:

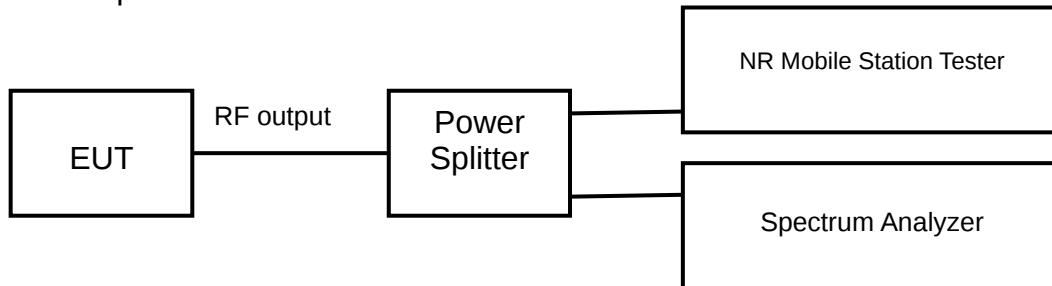
The test results are shown in Appendix A.



### 6.3 Occupied Bandwidth

Rule Part(s)  
FCC: 2.1049

Test Setup:



Test procedure:  
KDB 971168 D01 v03r01 – Section 4.2

Test Setting:

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2.  $RBW = 1 - 5\%$  of the expected OBW
3.  $VBW \geq 3 \times RBW$
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

Limits: No specific occupied bandwidth requirements in part 2.1049

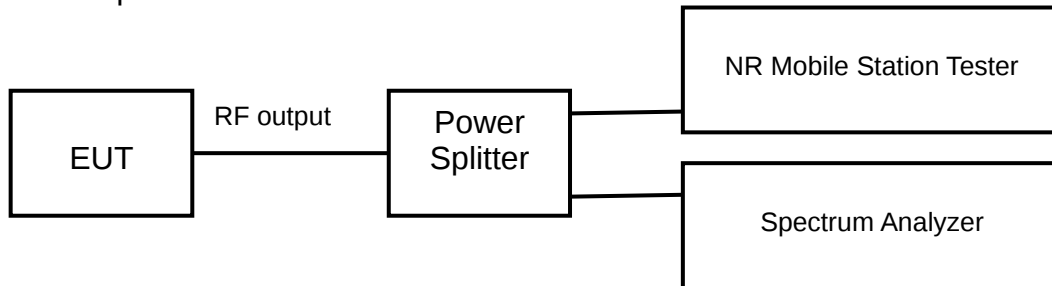
Test result:  
The test results are shown in Appendix A.



## 6.4 Emission Bandwidth

Rule Part(s)  
FCC: 2.1049

Test Setup:



Test procedure:  
KDB 971168 D01 v03r01 – Section 4.2

Test Setting:

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW  $\geq 3 \times$  RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of 26dB bandwidth observed in Step 7

Limits: No specific emission bandwidth requirements in part 2.1049.

Test result:  
The test results are shown in Appendix A.

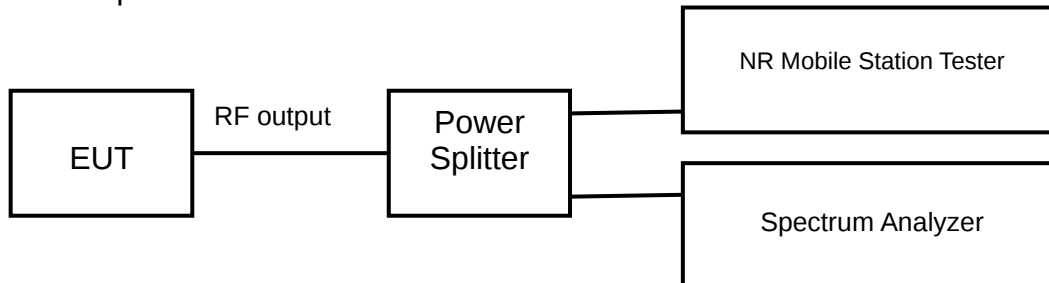


## 6.5 Peak-Average Ratio

Rule Part(s)

FCC: 22.913(d), 24.232(d), 27.50(d) (5), 96.41(g)

Test Setup:



Test procedure:

KDB 971168 D01 v03r01 – Section 5.7.1

Test Setting:

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW  $\geq$  OBW or specified reference bandwidth
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

Limits

24.232(d), 27.50(d) (5)

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.

96.41(g)

The peak-to-average power ratio (PAPR) of any CBSD transmitter output power must not exceed 13 dB

Test result:

The test results are shown in Appendix A.

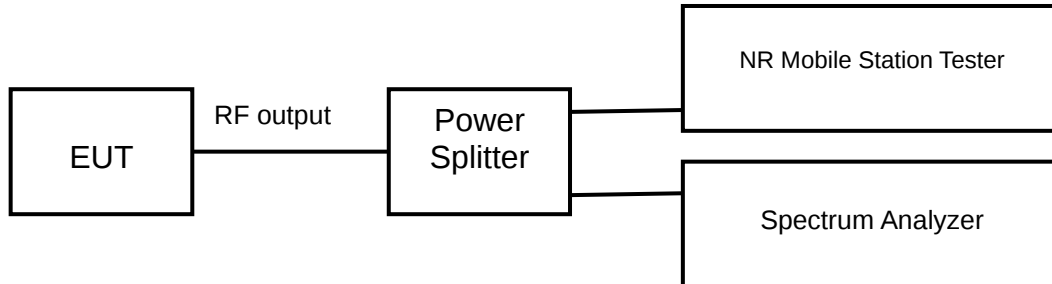


## 6.6 Spurious Emissions at antenna terminal

Rule Part(s)

FCC: 2.1051, 22.917(a), 24.238(a), 27.53(c), 27.53(g), 27.53(h), 27.53(m), 27.53(a), 27.53(l)(2), 27.50(n)(2), 90.543(e)(f), 90.691(a), 96.41(e)

Test Setup:



Test procedure:

KDB 971168 D01 v03r01 – Section 6.0

Test Setting:

1. Start frequency was set to 30MHz and stop frequency was set to at least 10 \* the fundamental frequency
2. Detector = RMS
3. RBW=1MHz
4. VBW=3MHz
5. Trace mode = trace average for continuous emissions, max hold for pulse emissions
6. Sweep time = auto couple
7. The trace was allowed to stabilize

Limits

for channel and frequency assignments made by a CBSD to End User Devices, the conducted power of any End User Device emission outside the fundamental emission shall not exceed  $-13$  dBm/MHz within 0 to B megahertz above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed  $-25$  dBm/MHz. the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.

for CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed  $-25$  dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed  $-40$  dBm/MHz.

Test result:

The test results are shown in Appendix A.

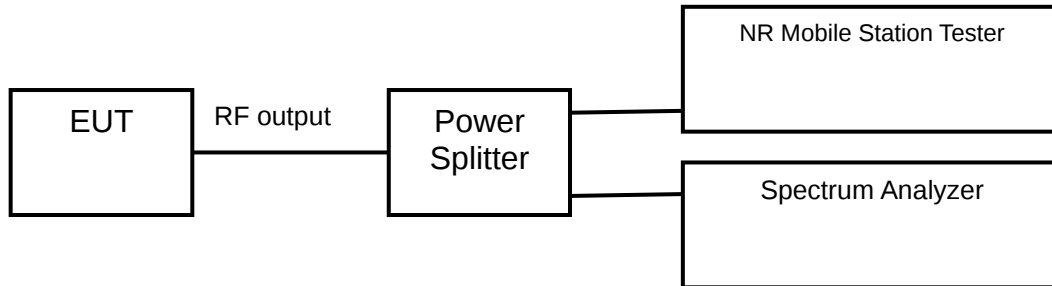


## 6.7 Band Edges Compliance

Rule Part(s)

FCC: 2.1051, 22.917(a), 24.238(a), 27.53(c), 27.53(g), 27.53(h), 27.53(m), 27.53(a), 27.53(l)(2), 27.50(n)(2), 90.543(e)(f), 90.691(a), 96.41(e)

Test Setup:



Test procedure:

KDB 971168 D01 v03r01 – Section 6.0

Test Setting:

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW > 1% of the emission bandwidth
4. VBW > 3 x RBW
5. Detector = RMS
6. Number of sweep points  $\geq 2 \times \text{Span/RBW}$
7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Limits

for channel and frequency assignments made by a CBSD to End User Devices, the conducted power of any End User Device emission outside the fundamental emission shall not exceed  $-13 \text{ dBm/MHz}$  within 0 to B megahertz above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed  $-25 \text{ dBm/MHz}$ . the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.

Test result:

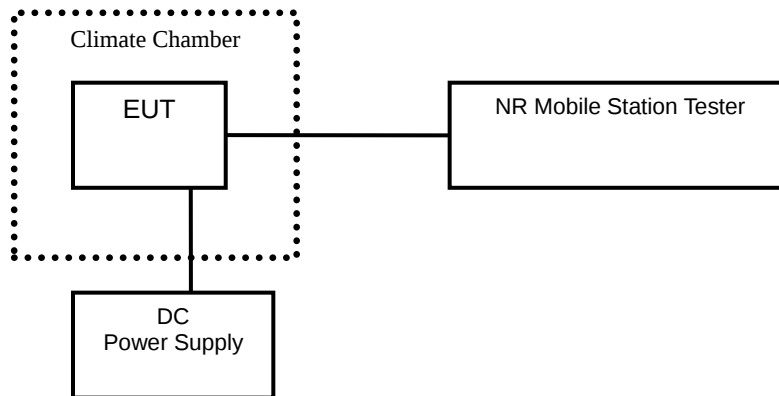
The test results are shown in Appendix A.



## 6.8 Frequency Stability

Rule Part(s)  
FCC: 2.1055

Test setup:



Test Procedure:  
ANSI/TIA-603-E-2016

### Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C (The temperature range can be declared by the manufacturer). A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Limits: For Part 24, Part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

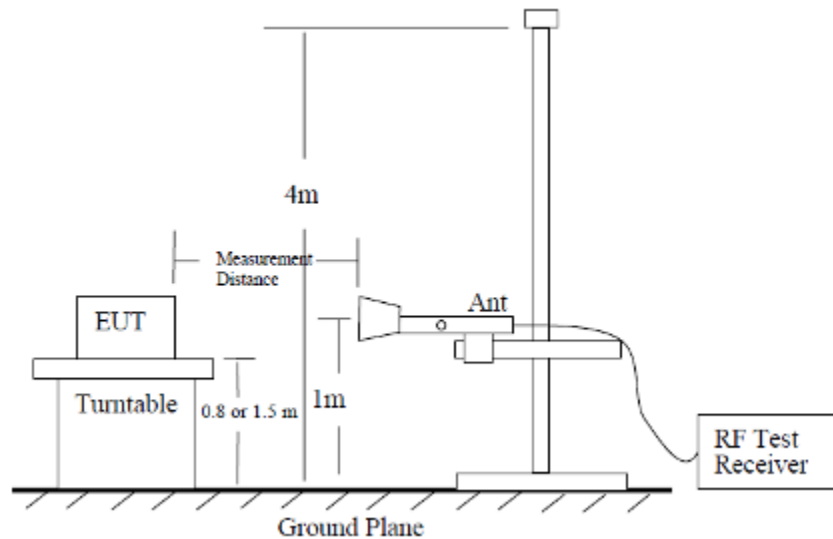
Test result:  
The test results are shown in Appendix A.

## 6.9 Radiated Spurious Emissions

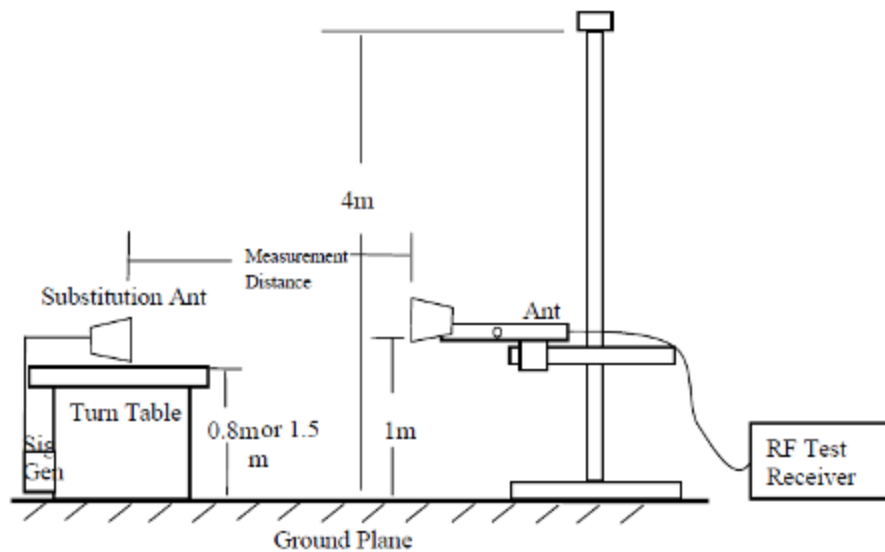
Rule Part(s)

FCC: 2.1053, 22.917(a), 24.238(a), 27.53(c), 27.53(g), 27.53(h), 27.53(f), 27.53(a), 27.53(m), 27.53(l)(2), 27.50(n)(2), 90.543(e)(f), 90.691(a), 96.41(e)

Test Setup:



Step 1



Step 2



#### Test procedure:

The measurements procedures in TIA-603-E-2016 are used.

The spectrum was scanned from 30MHz to the 10th harmonic of the highest frequency generated within the equipment.

#### Step 1:

The measurement is carried out in the chamber. EUT was placed on a 0.8m ( $f < 1\text{GHz}$ )/1.5m ( $f > 1\text{GHz}$ ) high non-conductive table at a 3 meters test distance from the test receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT. The height of receiving antenna from 1m to 4m and varies in certain range to find the maximum power value. A radio link shall be established between EUT and Tester. The output power of the cell signal of the tester will be decreased until the output power of the EUT reach a maximum value. A peak detector is used and RBW is set to 100 kHz ( $f < 1\text{GHz}$ )/1MHz ( $f > 1\text{GHz}$ ). The antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum power value on spectrum analyzer or receiver. The spectrum analyzer scans from 30MHz to 10th harmonic of the carrier. A notch filter is necessary in the band near to the carrier frequency. A high pass filter is needed to avoid the distortion of the testing equipment in the band above the carrier frequency.

#### Step 2:

A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.

A power ( $P_{\text{mea}}$ ) is applied to the input of the substitution antenna, and adjusts the level of the signal generator output until the value of the receiver reach the previously recorded ( $P_r$ ). The power of signal source ( $P_{\text{mea}}$ ) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

A "reference path loss" should be calculated after test. The attenuation of "reference path loss" is the cable loss between the Signal Source with the Substitution Antenna ( $P_{\text{ca}}$ ) and the Substitution Antenna Gain ( $G_a$ ).

#### Calculation procedure:

The data of cable loss and antenna gain has been calibrated in full testing frequency range before the testing.

The power of the Radiated Spurious Emissions is calculated by adding the cable loss and antenna gain. The basic equation with a sample calculation is as followed:

$$\text{Power (EIRP)} = P_{\text{mea}} + P_{\text{ca}} + G_a$$

This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15dB) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole,  $\text{ERP} = \text{EIRP} - 2.15 \text{ (dB)}$ .

Assumed the power of signal source record is -20dBm. A cable loss of -30dB, and an antenna gain of 11dB are added.

$$P = P_{\text{mea}} + P_{\text{ca}} + G_a = (-20\text{dBm}) + (-30\text{dB}) + (11\text{dB}) = -39\text{dBm}$$

Note: We tested both horizontal and vertical polarization, but only the largest numerical polarity of the two polarities was recorded in the final report.

#### Test result:

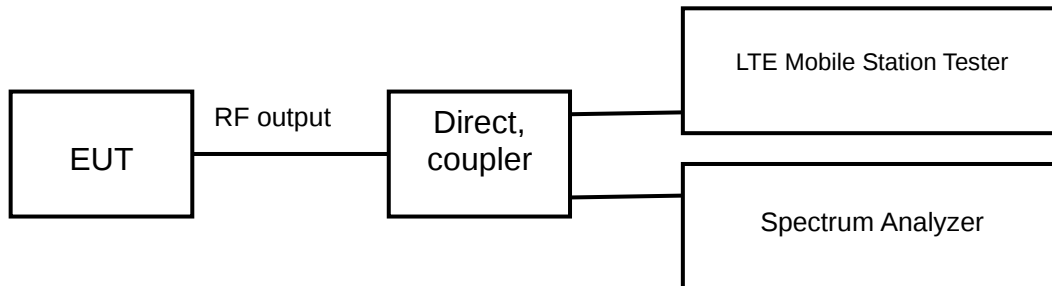
The test results are shown in Appendix B.

## 6.10 End user device additional requirements

Rule Part(s)

Part96.47

Test Setup:



Test Procedure:

WINNF-18-IN-00178

Test Setting:

1. Setup with frequency and power level 20dBm/MHz
2. Enable AP service from Ruckus Cloud managementCheck
3. Check EUD Tx Frequency and power
4. Disable AP service from Ruckus Cloud management
5. Check EUD stops transmission within 10seconds.
6. Setup with frequency and power level 8dBm/MHz
7. Enable AP service from Ruckus Cloud management
8. Check EUD Tx Frequency and power
9. Disable AP service from Ruckus Cloud management
10. Check EUD stops transmission within 10seconds.

Test result:

The test results are shown in Appendix A.



## **7. MEASUREMENT UNCERTAINTIES**

| Items                                                           | Uncertainty  |        |
|-----------------------------------------------------------------|--------------|--------|
| RF Power Output                                                 | 0.6 dB       |        |
| Effective Radiated Power and Effective Isotropic Radiated Power | 0.6 dB       |        |
| Occupied Bandwidth                                              | 3kHz         |        |
| Emission Bandwidth                                              | 3kHz         |        |
| Peak-Average Ratio                                              | 0.8dB        |        |
| Frequency Stability                                             | 48Hz         |        |
| Band Edges Compliance                                           | 1.2dB        |        |
| Spurious Emissions at antenna terminal                          | 9kHz~2GHz    | 1.2dB  |
|                                                                 | 2G~3.6GHz    | 1.4dB  |
|                                                                 | 3.6G~8GHz    | 2.2dB  |
|                                                                 | 8G~12.75GHz  | 2.7dB  |
| Radiated Emission Measurement                                   | 30MHz~200MHz | 4.88dB |
|                                                                 | 200MHz~1GHz  | 4.87dB |
|                                                                 | 1GHz~18GHz   | 4.58dB |
|                                                                 | 18GHz~40GHz  | 4.35dB |

Note 1: According to the test specification limit (The test results fully compliance with the test standard limit requirements)

Note 2: According to test specification limits plus uncertainties (The test results exceed the standard limit requirements and meet the standard requirements after adding the system uncertainty)

Note 3: Test operation mode is Note 1

**8. TEST EQUIPMENTS**

| No. | Name/Model                                    | Manufacturer | S/N          | Calibration Date | Calibration Due Date |
|-----|-----------------------------------------------|--------------|--------------|------------------|----------------------|
| 1   | Mobile Station Tester / MT8820C               | Anritsu      | 6201300660   | 2024.06.21       | 2025.06.20           |
| 2   | Radio Communication Station / CMW500          | R&S          | 161702       | 2024.06.21       | 2025.06.20           |
| 3   | Spectrum Analyzer / FSV40                     | R&S          | 101065       | 2024.06.21       | 2025.06.20           |
| 4   | Spectrum Analyzer / N9020A                    | Agilent      | MY48010771   | 2024.03.06       | 2025.03.05           |
| 5   | Power Divider / 11667A                        | HP           | 19632        | 2024.06.21       | 2025.06.20           |
| 6   | Switching box/CBOX-FULL                       | TSTPASS      | SN5308466    | 2024.07.21       | 2025.07.20           |
| 7   | DC Power Supply / E3645A                      | Agilent      | MY40000741   | 2024.03.06       | 2025.03.05           |
| 8   | Temperature chamber / SH241                   | ESPEC        | 92013758     | 2024.06.21       | 2025.06.20           |
| 9   | Fully-Anechoic Chamber / 12.65m×8.03m×7.50m   | FRANKONIA    | -----        | -----            | -----                |
| 10  | Semi-Anechoic/Chamber / 23.18m×16.88m×9.60m   | FRANKONIA    | ---          | -----            | -----                |
| 11  | Turn table Diameter:1m                        | FRANKONIA    | -----        | -----            | -----                |
| 12  | Turn table Diameter:5m                        | FRANKONIA    | -----        | -----            | -----                |
| 13  | Antenna master FAC(MA4.0)                     | MATURO       | -----        | -----            | -----                |
| 14  | Antenna master SAC(MA4.0)                     | MATURO       | -----        | -----            | -----                |
| 15  | Shielding room / 9.080m×5.255m×3.525m         | FRANKONIA    | -----        | -----            | -----                |
| 16  | Double-Ridged Waveguide Horn Antenna / HF 907 | R&S          | 100512       | 2024.06.21       | 2025.06.20           |
| 17  | Double-Ridged Waveguide Horn Antenna / HF 907 | R&S          | 100513       | 2024.06.21       | 2025.06.20           |
| 18  | Ultra log antenna / HL562                     | R&S          | 100016       | 2024.06.21       | 2025.06.20           |
| 19  | Receive antenna /3160-09                      | SCHWARZ-BECK | 002058-002   | 2024.06.21       | 2025.06.20           |
| 20  | EMI test receiver / ESI 40                    | R&S          | 100015       | 2024.06.21       | 2025.06.20           |
| 21  | EMI test receiver / ESCS30                    | R&S          | 100029       | 2024.06.21       | 2025.06.20           |
| 22  | Receive antenna / HL562                       | R&S          | 100167       | 2024.06.21       | 2025.06.20           |
| 23  | AMN / ENV216                                  | R&S          | 3560.6550.12 | 2024.06.21       | 2025.06.20           |
| 24  | FCC auto test system / RT9100L-2              | Radiosky     | V1.0         | /                | /                    |
| 25  | EMI test software / EMC32                     | R&S          | V10.20.01    | /                | /                    |

**APPENDIX A – TEST DATA OF CONDUCTED EMISSION**

The worst channel results are reflected in the report,Please refer to the attachment.

**APPENDIX B – TEST DATA OF RADIATED EMISSION**

The worst channel results are reflected in the report,Please refer to the attachment.

---End of Test Report---