



**CFR 47 FCC PART 22 H  
CFR 47 FCC PART 24 E  
CFR 47 FCC PART 27  
RSS-132, RSS-133, RSS-139**

**TEST REPORT**

*For*

**Smart Mobile Payment Terminal**

**MODEL NUMBER: A910S**

**REPORT NUMBER: 4790824205-1-RF-5**

**ISSUE DATE: July 14, 2023**

**FCC ID: V5PA910S**

**IC: 11689A-A910S**

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Revision History

| <u>Rev.</u> | <u>Issue Date</u> | <u>Revisions</u> | <u>Revised By</u> |
|-------------|-------------------|------------------|-------------------|
| V0          | July 14, 2023     | Initial Issue    |                   |

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## Note:

1. This test report is only published to and used by the applicant, and it is not for evidence purpose in China.
2. The measurement result for the sample received is <Pass> according to < CFR 47 FCC PART 22 H >< CFR 47 FCC PART 24 E>< CFR 47 FCC PART 27 >< RSS-132, RSS-133, RSS-139>when <Accuracy Method> decision rule is applied.

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# 1. ATTESTATION OF TEST RESULTS

## Applicant Information

Company Name: PAX Technology Limited  
 Address: Room 2416, 24/F., Sun Hung Kai Centre, 30 Harbour Road, Wanchai, Hong Kong

## Manufacturer Information

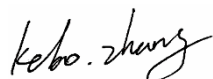
Company Name: PAX Computer Technology (Shenzhen) Co., Ltd.  
 Address: 401 and 402, Building 3, Shenzhen Software Park, Nanshan District, Shenzhen City, Guangdong Province, P.R.C

## EUT Information

EUT Name: Smart Mobile Payment Terminal  
 Model: A910S  
 Sample Received Date: April 23, 2023  
 Sample Status: Normal  
 Sample ID: 6024466  
 Date of Tested: May 6, 2023 to July 14, 2023

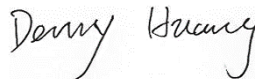
| APPLICABLE STANDARDS                              |              |
|---|--------------|
| STANDARD  | TEST RESULTS |
| CFR 47 FCC PART 22 H                              | PASS         |
| CFR 47 FCC PART 24 E                              | PASS         |
| CFR 47 FCC PART 27                                | PASS         |
| RSS-132 Issue 4, RSS-133 Issue 6, RSS-139 Issue 4 | PASS         |

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## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.26-2015, 971168 D01 Power Meas License Digital Systems v03r01, 971168 D02 Misc Rev Approv License Devices v02r01, 412172 D01 v01r01 Determining ERP and EIRP, CFR 47 FCC Part 2, Part 22 H, Part 24 E, Part 27, RSS-132, RSS-133, RSS-139

## 3. FACILITIES AND ACCREDITATION

|                           |  |
|---------------------------|--|
| Accreditation Certificate | <p><b>A2LA (Certificate No.: 4102.01)</b><br/>         UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.</p> <p><b>FCC (FCC Designation No.: CN1187)</b><br/>         UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules</p> <p><b>ISED (Company No.: 21320)</b><br/>         UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046.</p> <p><b>VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011)</b><br/>         UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793.<br/>         Facility Name:<br/>         Chamber D, the VCCI registration No. is G-20019 and R-20004<br/>         Shielding Room B , the VCCI registration No. is C-20012 and T-20011</p> |
|---------------------------|--|

Note 1: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

Note 2: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note 3: For below 30 MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30 MHz had been correlated to measurements performed on an OFS.

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognize national standards.

### 4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| Test Item  | Uncertainty             |
|--|-------------------------|
| Conduction emission  | 3.62 dB                 |
| Radiated Emission<br>(Included Fundamental Emission) (9 kHz ~ 30 MHz)  | 2.2 dB                  |
| Radiated Emission<br>(Included Fundamental Emission) (30 MHz ~ 1 GHz)  | 4.00 dB                 |
| Radiated Emission<br>(Included Fundamental Emission) (1 GHz to 40 GHz) | 5.78 dB (1 GHz-18 GHz)  |
|  | 5.23dB (18 GHz-26 GHz)  |
|  | 5.64 dB (26 GHz-40 GHz) |
| Bandwidth  | 1.1 %                   |

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

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

|             |                               |
|-------------|-------------------------------|
| EUT Name    | Smart Mobile Payment Terminal |
| Model       | A910S                         |
| Rated Input | DC 5 V, 2 A                   |
| Battery     | 7.2 Vdc                       |

| Battery                 |                  |
|-------------------------|------------------|
| Model No.:              | YW-001C          |
| Rated Voltage:          | 7.2 Vdc          |
| Limited Charge Voltage: | 8.4 Vdc          |
| Rated Capacity:         | 2600 mAh/18.72Wh |

| Battery                 |                  |
|-------------------------|------------------|
| Model No.:              | YW-003C          |
| Rated Voltage:          | 7.2 Vdc          |
| Limited Charge Voltage: | 8.4 Vdc          |
| Rated Capacity:         | 3350 mAh/24.12Wh |

Note: the product have two battery(YW-001C and YW-003C), both battery have been tested, but only the worst battery data(YW-001C) recorded in the report.

| Item | Accessory    | Brand Name | Model Name | Description                             |
|------|--------------|------------|------------|---|
| 1    | Type-C Cable | N/A        | N/A        | Length: 1.0 m<br>No Ferrite Core shield |

### 5.2. TEST CHANNEL CONFIGURATION

| Band         | Mode        | Low        | Middle     | High       |
|--------------|-------------|------------|------------|------------|
| WCDMA Band 2 | HSDPA/HSUPA | 9262       | 9400       | 9538       |
|              |             | 1852.4 MHz | 1880.0 MHz | 1907.6 MHz |
| WCDMA Band 4 | HSDPA/HSUPA | 1312       | 1413       | 1513       |
|              |             | 1712.4 MHz | 1732.6 MHz | 1752.6 MHz |
| WCDMA Band 5 | HSDPA/HSUPA | 4132       | 4182       | 4233       |
|              |             | 826.4 MHz  | 836.4 MHz  | 846.6 MHz  |



### 5.3. MAXIMUM ERP/EIRP POWER AND EMISSION DESIGNATOR

#### WCDMA Band2

| Part 24/RSS-133    |      |           |                               |          |               |                     |
|--------------------|------|-----------|-------------------------------|----------|---------------|---------------------|
| EIRP Limit(W)      | 2    |           |                               |          |               |                     |
| Antenna Gain (dBi) | 0.4  |           |                               |          |               |                     |
| Mode               | Ch   | Freq(MHz) | Conducted Average power (dBm) | EIRP (W) | 99% OBW (MHz) | Emission Designator |
| Rel99              | 9538 | 1907.6    | 18.48                         | 0.08     | 4.144         | 4M14F9W             |
| HSDPA              | 9400 | 1880.0    | 18.14                         | 0.07     | 4.152         | 4M15F9W             |
| HSUPA              | 9400 | 1880.0    | 18.24                         | 0.07     | 4.150         | 4M15F9W             |

#### WCDMA Band4

| Part 27/RSS-139    |      |           |                               |          |               |                     |
|--------------------|------|-----------|-------------------------------|----------|---------------|---------------------|
| EIRP Limit(W)      | 1    |           |                               |          |               |                     |
| Antenna Gain (dBi) | 0.2  |           |                               |          |               |                     |
| Mode               | Ch   | Freq(MHz) | Conducted Average power (dBm) | EIRP (W) | 99% OBW (MHz) | Emission Designator |
| Rel99              | 1413 | 1732.6    | 18.53                         | 0.07     | 4.143         | 4M14F9W             |
| HSDPA              | 1312 | 1712.4    | 18.52                         | 0.07     | 4.146         | 4M15F9W             |
| HSUPA              | 1513 | 1752.6    | 18                            | 0.07     | 4.147         | 4M15F9W             |

#### WCDMA Band5

| Part 22/RSS-132    |      |           |                               |         |               |                     |
|--------------------|------|-----------|-------------------------------|---------|---------------|---------------------|
| ERP Limit(W)       | 7.0  |           |                               |         |               |                     |
| Antenna Gain (dBi) | -2.1 |           |                               |         |               |                     |
| Mode               | Ch   | Freq(MHz) | Conducted Average power (dBm) | ERP (W) | 99% OBW (MHz) | Emission Designator |
| Rel99              | 4233 | 846.6     | 21.96                         | 0.06    | 4.146         | 4M15F9W             |
| HSDPA              | 4182 | 836.4     | 21.04                         | 0.05    | 4.137         | 4M14F9W             |
| HSUPA              | 4182 | 836.4     | 20.95                         | 0.05    | 4.150         | 4M15F9W             |

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#### **5.4. WORST-CASE CONFIGURATION AND MODE**

The radiated spurious emissions measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT was investigated in three orthogonal orientations X, Y and Z. It was determined that X orientation was the worst-case orientation.

Radiated spurious emissions were investigated below 30 MHz, 30 MHz - 1 GHz and above 1 GHz. There were no emissions found on below 1GHz and above 18 GHz, the emissions between 1 GHz – 18 GHz were tested the highest transmitting power channel and the worse configuration.

For WCDMA, HSDPA worst results are shown in test report.

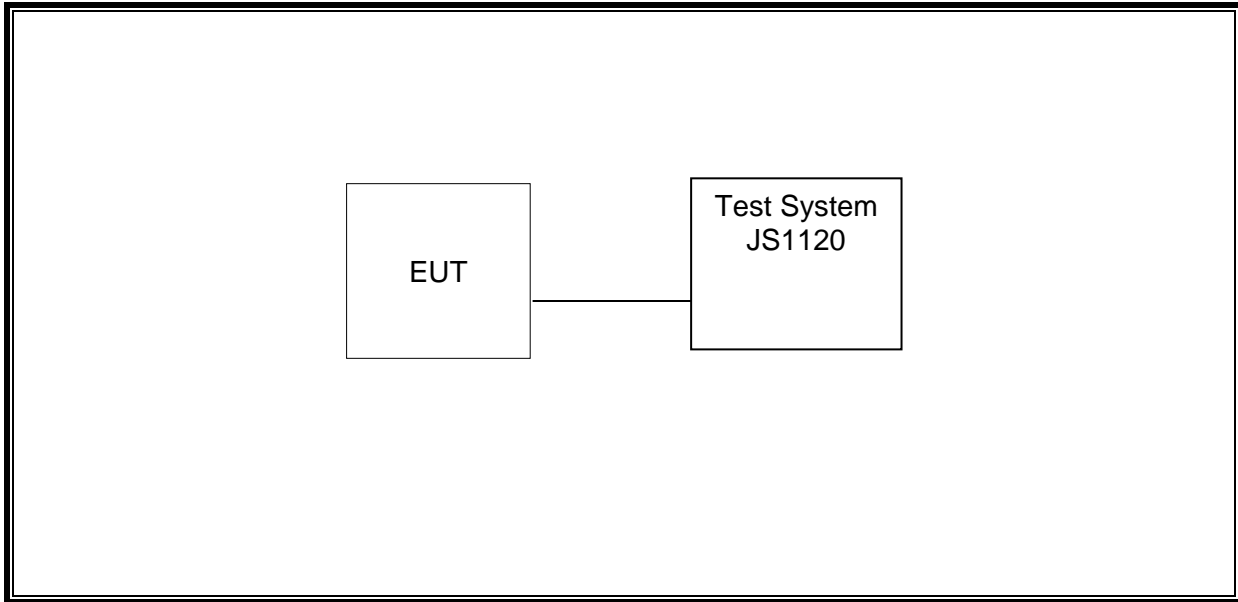
## 5.5. DESCRIPTION OF AVAILABLE ANTENNAS

| Antenna | Band         | Antenna Type | MAX Antenna Gain (dBi) |
|---------|--------------|--------------|------------------------|
| 1       | WCDMA Band 2 | FPC          | 0.4                    |
| 1       | WCDMA Band 4 | FPC          | 0.2                    |
| 1       | WCDMA Band 5 | FPC          | -2.1                   |

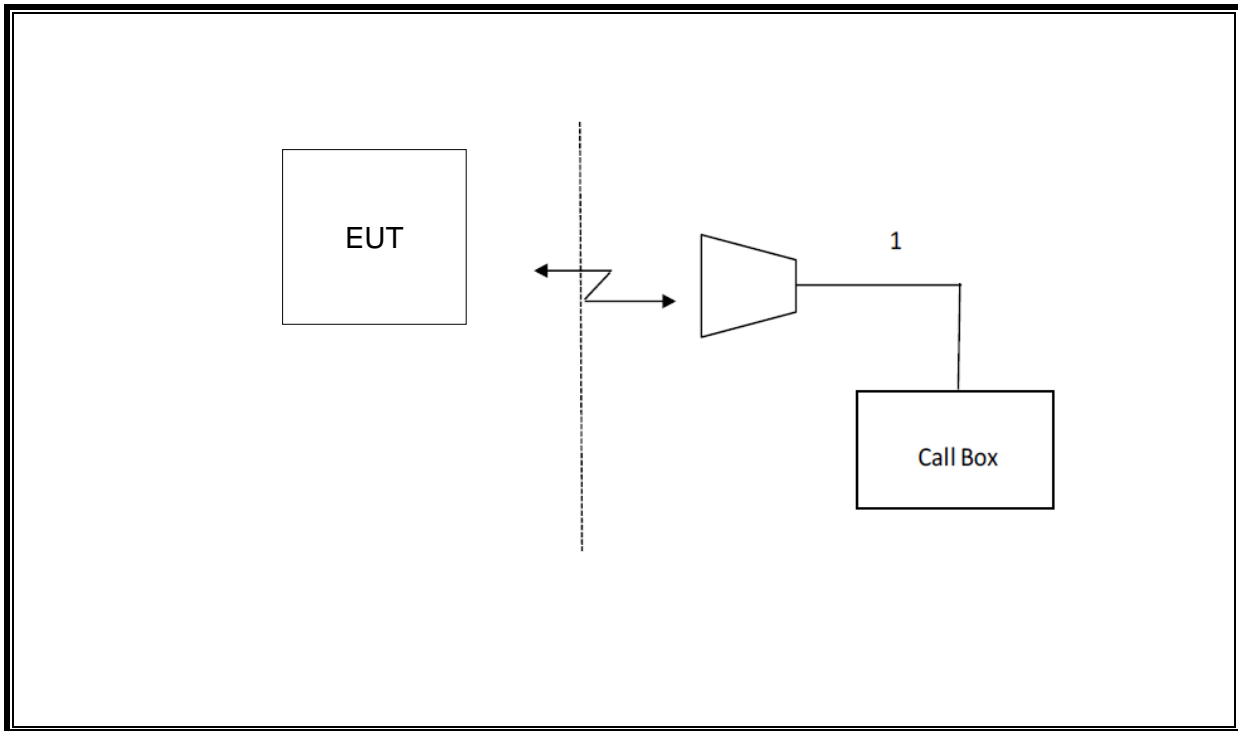
| Band         | Transmit and Receive Mode                    | Description  |
|--------------|--|--|
| WCDMA Band 2 | <input checked="" type="checkbox"/> 1TX, 1RX | Antenna 1 can be used as transmitting/receiving antenna. |
| WCDMA Band 4 | <input checked="" type="checkbox"/> 1TX, 1RX | Antenna 1 can be used as transmitting/receiving antenna. |
| WCDMA Band 5 | <input checked="" type="checkbox"/> 1TX, 1RX | Antenna 1 can be used as transmitting/receiving antenna. |

Note: The value of the antenna gain was declared by customer.

### 5.6. DESCRIPTION OF TEST SETUP



Radiated



## 6. MEASURING INSTRUMENT AND SOFTWARE USED

| Antenna Terminal Test               |  |              |                             |               |               |               |
|-------------------------------------|--|--------------|-----------------------------|---------------|---------------|---------------|
| Instrument                          |  |              |                             |               |               |               |
| Used                                | Equipment                              | Manufacturer | Model No.                   | Serial No.    | Last Cal.     | Next Cal.     |
| <input checked="" type="checkbox"/> | Spectrum Analyzer                      | R&S          | FSV40                       | S422060001    | Oct.17, 2022  | Oct.16, 2023  |
| <input checked="" type="checkbox"/> | Wideband Radio Communication Tester    | R&S          | CMW500                      | 155523        | Oct.17, 2022  | Oct.16, 2023  |
| <input checked="" type="checkbox"/> | DC Power Supply                        | Array        | 3662A                       | A1512015      | Oct.17, 2022  | Oct.16, 2023  |
| Software                            |  |              |                             |               |               |               |
| Used                                | Description                            | Manufacturer | Name                        |               | Version       |               |
| <input checked="" type="checkbox"/> | Tonsend Cellular Test System           | Tonsend      | JS1120 RF Auto Test System  |               | 3.1.46        |               |
| Radiated Test                       |  |              |                             |               |               |               |
| Instrument                          |  |              |                             |               |               |               |
| Used                                | Equipment                              | Manufacturer | Model No.                   | Serial No.    | Last Cal.     | Next Cal.     |
| <input checked="" type="checkbox"/> | MXE EMI Receiver                       | KESIGHT      | N9038A                      | MY56400036    | Oct.17, 2022  | Oct.16, 2023  |
| <input checked="" type="checkbox"/> | Hybrid Log Periodic Antenna            | TDK          | HLP-3003C                   | 130959        | Aug.02, 2021  | Aug.01, 2024  |
| <input checked="" type="checkbox"/> | Preamplifier                           | HP           | 8447D                       | 2944A09099    | Oct.17, 2022  | Oct.16, 2023  |
| <input checked="" type="checkbox"/> | EMI Measurement Receiver               | R&S          | ESR26                       | 101377        | Oct.17, 2022  | Oct.16, 2023  |
| <input checked="" type="checkbox"/> | Horn Antenna                           | TDK          | HRN-0118                    | 130940        | July 20, 2021 | July 19, 2024 |
| <input checked="" type="checkbox"/> | Horn Antenna                           | Schwarzbeck  | BBHA9170                    | 697           | July 20, 2021 | July 19, 2024 |
| <input checked="" type="checkbox"/> | Preamplifier                           | TDK          | PA-02-0118                  | TRS-305-00067 | Oct.17, 2022  | Oct.16, 2023  |
| <input checked="" type="checkbox"/> | Preamplifier                           | TDK          | PA-02-2                     | TRS-307-00003 | Oct.17, 2022  | Oct.16, 2023  |
| <input checked="" type="checkbox"/> | Loop antenna                           | Schwarzbeck  | 1519B                       | 00008         | Dec.14, 2021  | Dec.13, 2024  |
| <input checked="" type="checkbox"/> | High Pass Filter                       | Wi           | WHKX10-2700-3000-18000-40SS | 23            | Oct.17, 2022  | Oct.16, 2023  |
| Software                            |  |              |                             |               |               |               |
| Used                                | Description                            | Manufacturer | Name                        |               | Version       |               |
| <input checked="" type="checkbox"/> | Test Software for Radiated disturbance | Farad        | EZ-EMC                      |               | Ver. UL-3A1   |               |

## 7. ANTENNA TERMINAL TEST RESULTS

### 7.1. EFFECTIVE (ISOTROPIC) RADIATED POWER OF TRANSMITTER

#### RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27.50  
RSS-132, RSS-133, RSS-139

#### LIMITS

22.913(a) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

27.50(c) 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(d) 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 watts EIRP.

27.50(h) Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

#### RSS-132

The transmitter output power shall be measured in terms of average power. The equivalent radiated power (e.i.r.p.) shall not exceed 7 watts for mobile equipment and 3 watts for portable equipment.

In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

#### RSS-133

The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits 2W.

In addition, the transmitter's peak-to-average power ratio (PAPR) shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

#### RSS-139

The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt.

In addition, the peak to average power ratio (PAPR) of the equipment shall not exceed 13 dB for more than 0.1% of the time, using a signal that corresponds to the highest PAPR during periods of continuous transmission.

#### TEST PROCEDURE

Refer to ANSI C63.26:2015 and KDB 971168 D01 Section 5.6

ERP/ EIRP = P<sub>Meas</sub> + GT - LC

where:

ERP or EIRP = effective or equivalent isotropically radiated power, respectively (expressed in the same units as P<sub>Meas</sub>, typically dBW or dBm);

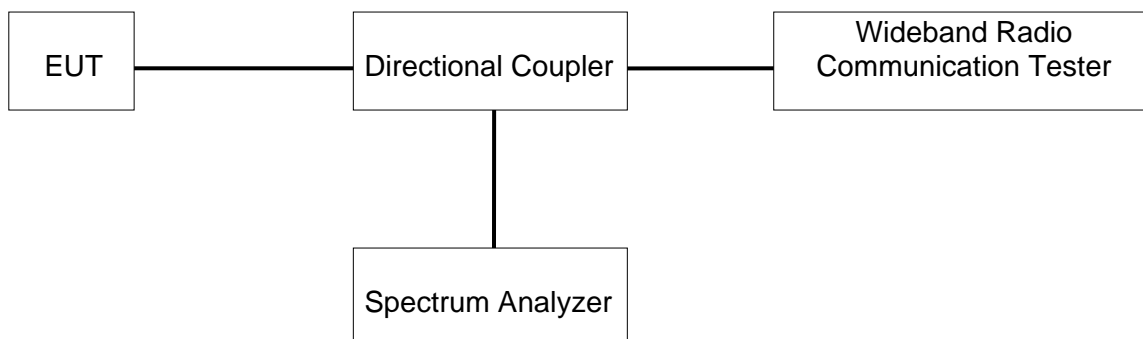
P<sub>Meas</sub> = measured transmitter output power or PSD, in dBm or dBW;

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

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

The transmitter has a maximum radiated ERP / EIRP output powers as follows:

### **TEST SETUP**



### **TEST ENVIRONMENT**

|                     |        |                   |       |
|---------------------|--------|-------------------|-------|
| Temperature         | 23.2°C | Relative Humidity | 52.6% |
| Atmosphere Pressure | 101kPa | Test Voltage      | DC 5V |

### **RESULTS**

Please refer to Appendix A.

## 7.2. PEAK TO AVERAGE RADIO

### LIMITS

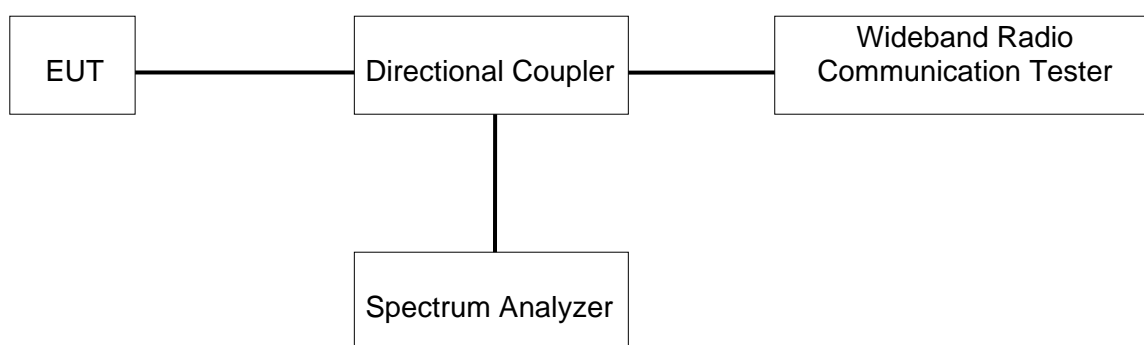
In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

### TEST PROCEDURE

Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01;

The transmitter output was connected to a CMW500 Test Set and configured to operate at maximum power. The PAR was measured on the Spectrum Analyzer.

### TEST SETUP



### TEST ENVIRONMENT

|                     |        |                   |       |
|---------------------|--------|-------------------|-------|
| Temperature         | 23.2°C | Relative Humidity | 52.6% |
| Atmosphere Pressure | 101kPa | Test Voltage      | DC 5V |

### RESULTS

Please refer to Appendix B.



### 7.3. OCCUPIED BANDWIDTH

#### RULE PART(S)

FCC: §2.1049, RSS-132, RSS-133, RSS-139

#### LIMITS

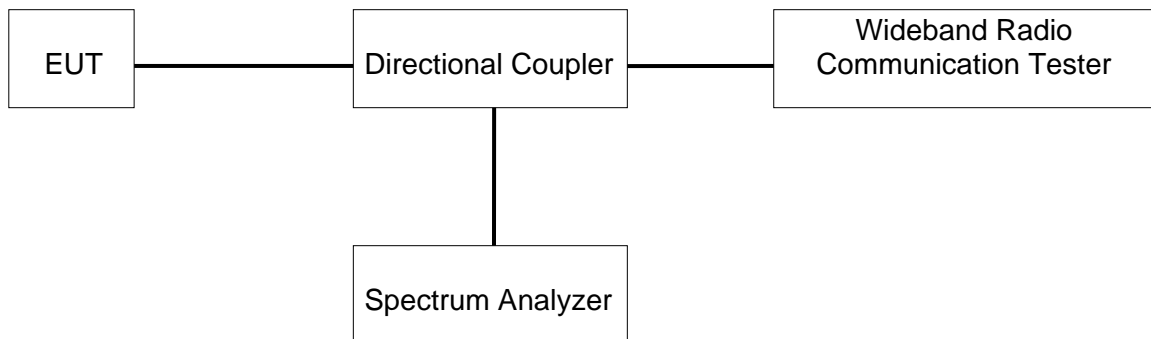
For reporting purposes only.

#### TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

(Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01)

#### TEST SETUP



#### TEST ENVIRONMENT

|                     |        |                   |       |
|---------------------|--------|-------------------|-------|
| Temperature         | 23.2°C | Relative Humidity | 52.6% |
| Atmosphere Pressure | 101kPa | Test Voltage      | DC 5V |

#### RESULTS

Please refer to Appendix C.

---

## 7.4. BAND EDGE EMISSIONS

### RULE PART(S)

FCC §2.1051, §22.917, §24.238, §27.53  
RSS-132, RSS-133, RSS-139

### LIMITS

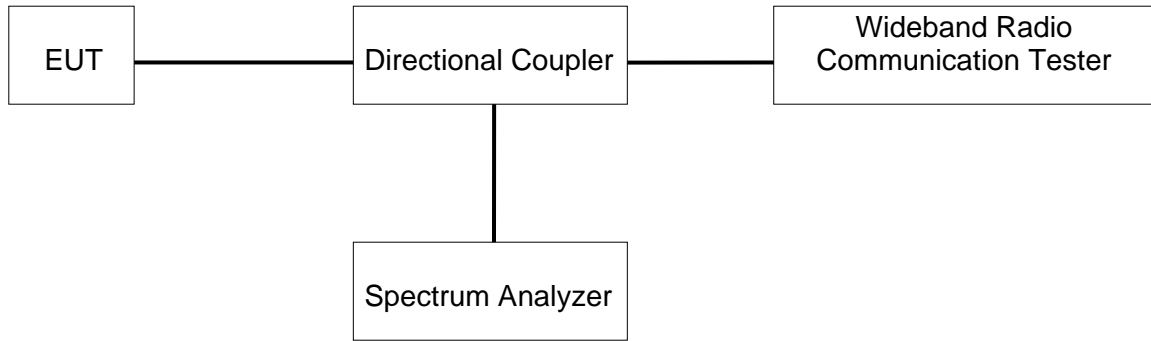
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

### TEST PROCEDURE

Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01

The transmitter output was connected to a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

- a) Set the RBW = 1 ~ 1.5 % of OBW (Typically limited to a minimum RBW of 1% of the OBW)
- b) Set VBW  $\geq 3 \times$  RBW;
- c) Set span  $\geq 1.5$  times the OBW;
- d) Sweep time = Auto;
- e) Detector = RMS;
- f) Ensure that the number of measurement points  $\geq 2 \times$  Span/RBW;
- g) Trace mode = Average (100);

**TEST SETUP**

**TEST ENVIRONMENT**

|                     |        |                   |       |
|---------------------|--------|-------------------|-------|
| Temperature         | 23.2°C | Relative Humidity | 52.6% |
| Atmosphere Pressure | 101kPa | Test Voltage      | DC 5V |

**RESULTS**

Please refer to Appendix D.

## 7.5. SPURIOUS EMISSION AT ANTENNA TERMINAL

### RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53, §90,  
RSS-132, RSS-133, RSS-139

### LIMITS

FCC: §22.901, §22.917, §24.238

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

RSS-132 section 5.5

Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

(i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least  $43 + 10 \log_{10} p$  (watts).

(ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least  $43 + 10 \log_{10} p$  (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

RSS-133 section 6.5.1

Equipment shall comply with the limits in (i) and (ii) below.

(i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least  $43 + 10 \log_{10} p$  (watts).

(ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least  $43 + 10 \log_{10} p$  (watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

RSS-139 section 6.6

(i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least  $43 + 10 \log_{10} p$  (watts) dB.

(ii) After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least  $43 + 10 \log_{10} p$  (watts) dB.

## TEST PROCEDURE

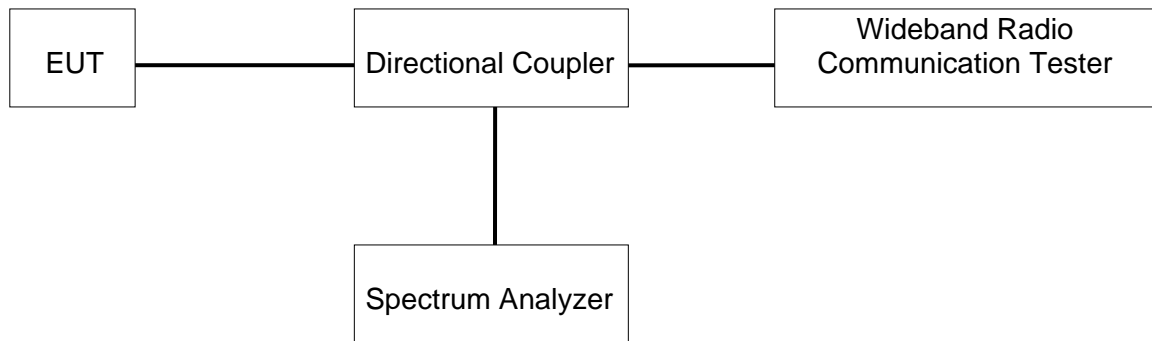
Per KDB 971168 D01 Power Meas License Digital Systems v03r01

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

- a) Set the RBW = 100 kHz for emission below 1GHz and 1MHz for emissions above 1GHz (Tests were performed 1 MHz [Worst case], to sweep 1 time for all frequency range)
- b) Set VBW  $\geq 3 \times$  RBW;
- c) Set span  $\geq 1.5$  times the OBW;
- d) Sweep time = auto couple;
- e) Detector = rms;
- f) Ensure that the number of measurement points = Max (40001);
- g) Trace mode = average (LTE 5), Maxhold (LTE Band7);

Note: Please refer to section 5.4 for bandwidth and RB setting about LTE bands.

## TEST SETUP



**TEST ENVIRONMENT**

|                     |        |                   |       |
|---------------------|--------|-------------------|-------|
| Temperature         | 23.2°C | Relative Humidity | 52.6% |
| Atmosphere Pressure | 101kPa | Test Voltage      | DC 5V |

**RESULTS**

Please refer to Appendix E.

## 7.6. FREQUENCY STABILITY

### Rule Part:

FCC: §2.1055, §22.355, §24.235, §27.54, §90,  
RSS-132, RSS-133, RSS-139

### LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of  $\pm 2.5$  ppm for mobile stations.

§24.235 and §27.54 - The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

#### RSS-132 section 5.3

The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within each of the sub-bands when tested at the temperature and supply voltage variations specified in RSS-Gen.

#### RSS-133 section 6.3

The carrier frequency shall not depart from the reference frequency, in excess of  $\pm 2.5$  ppm for mobile stations and  $\pm 1.0$  ppm for base stations.

In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the emission bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

#### RSS-139 section 6.4

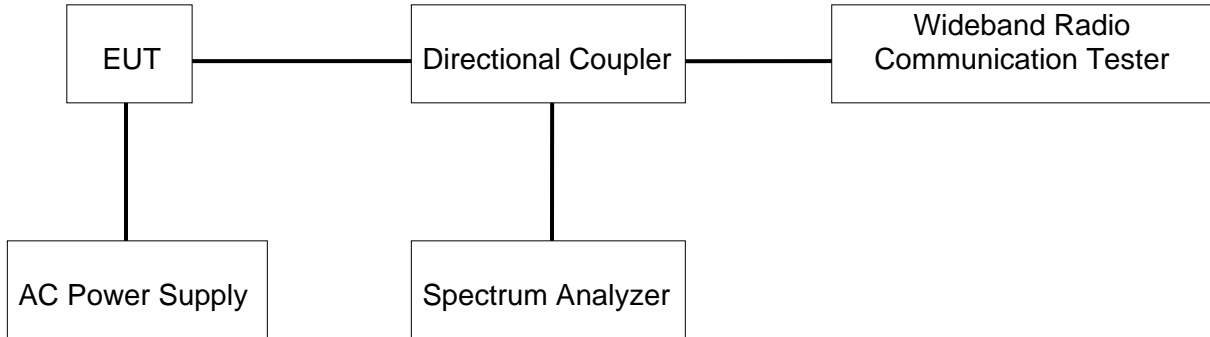
The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

### TEST PROCEDURE

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

|                      | Normal Test Conditions                 | Extreme Test Conditions         |
|----------------------|--|---------------------------------|
| Relative Humidity    | 45 % - 75 %                            | /                               |
| Atmospheric Pressure | 100 kPa ~102 kPa                       | /                               |
| Temperature          | $T_N$ (Normal Temperature):<br>24.8 °C | $T_L$ (Low Temperature): -30 °C |
|                      |  | $T_H$ (High Temperature): 50 °C |
| Supply Voltage 1     | $V_N$ (Normal Voltage): DC 5V          | $V_L$ (Low Voltage): DC 4.25 V  |
|                      |  | $V_H$ (High Voltage): DC 5.75 V |
| Supply Voltage 2     | $V_N$ (Normal Voltage): AC 120V        | $V_L$ (Low Voltage): AC 102 V   |
|                      |  | $V_H$ (High Voltage): AC 138 V  |

Note: Two ways power supply voltage have been tested, only the worst data supply voltage 1 was recorded in the report.

**TEST SETUP**

**TEST ENVIRONMENT**

|                     |        |                   |       |
|---------------------|--------|-------------------|-------|
| Temperature         | 23.2°C | Relative Humidity | 52.6% |
| Atmosphere Pressure | 101kPa | Test Voltage      | /     |

**RESULTS**

Please refer to Appendix F.



## 8. APPENDIX

### 8.1. AppendixA: Effective (Isotropic) Radiated Power Output Data

#### 8.1.1. Test Result

| Band 2 |              | Average Power (dBm) |              |              |
|--------|--------------|---------------------|--------------|--------------|
|        |              | 9262CH              | 9400CH       | 9538CH       |
| WCDMA  | 12.2kbps RMC | 18.34               | 18.46        | <b>18.48</b> |
|        | 64kbps RMC   | 17.91               | 18.06        | 17.72        |
|        | 144kbps RMC  | 18                  | 17.99        | 17.77        |
|        | 384kbps RMC  | 17.93               | 18.08        | 17.74        |
| HSDPA  | Subtest 1    | 18.03               | <b>18.14</b> | 17.82        |
|        | Subtest 2    | 17.83               | 18.06        | 17.77        |
|        | Subtest 3    | 17.8                | 18.12        | 17.8         |
|        | Subtest 4    | 17.84               | 18.09        | 17.76        |
| HSUPA  | Subtest 1    | 15.28               | 15.73        | 15.77        |
|        | Subtest 2    | 16.17               | 16.7         | 16.11        |
|        | Subtest 3    | 16.1                | 16.37        | 16.06        |
|        | Subtest 4    | 16.84               | 16.08        | 16.06        |
|        | Subtest 5    | 18.11               | <b>18.24</b> | 17.94        |
| Band 4 |              | Average Power (dBm) |              |              |
|        |              | 1312CH              | 1413CH       | 1513CH       |
| WCDMA  | 12.2kbps RMC | 17.83               | <b>18.53</b> | 18.51        |
|        | 64kbps RMC   | 17.66               | 16.9         | 18.43        |
|        | 144kbps RMC  | 17.68               | 16.96        | 18.41        |
|        | 384kbps RMC  | 17.65               | 16.91        | 18.38        |
| HSDPA  | Subtest 1    | 17.63               | 17.04        | 18.49        |
|        | Subtest 2    | <b>18.52</b>        | 17           | 18.49        |
|        | Subtest 3    | <b>18.52</b>        | 17.01        | 18.44        |
|        | Subtest 4    | 18.48               | 16.99        | 18.44        |
| HSUPA  | Subtest 1    | 15.43               | 14.77        | 16.4         |
|        | Subtest 2    | 16.35               | 15.31        | 16.36        |
|        | Subtest 3    | 16.36               | 15.04        | 16.4         |
|        | Subtest 4    | 16.4                | 15.08        | 16.4         |
|        | Subtest 5    | 17.88               | 17.14        | <b>18</b>    |
| Band 5 |              | Average Power (dBm) |              |              |
|        |              | 4132CH              | 4182CH       | 4233CH       |
| WCDMA  | 12.2kbps RMC | 21.68               | 21.83        | <b>21.96</b> |
|        | 64kbps RMC   | 21.56               | 21.67        | 21.78        |
|        | 144kbps RMC  | 21.53               | 21.63        | 21.81        |
|        | 384kbps RMC  | 21.52               | 21.7         | 21.77        |
| HSDPA  | Subtest 1    | 20.72               | 21.04        | 20.90        |
|        | Subtest 2    | 20.91               | 21.00        | 20.87        |
|        | Subtest 3    | 20.90               | 21.00        | 20.85        |

|       |           |       |       |       |
|-------|-----------|-------|-------|-------|
|       | Subtest 4 | 20.87 | 20.98 | 20.72 |
| HSUPA | Subtest 1 | 19.93 | 19.55 | 19.69 |
|       | Subtest 2 | 19.44 | 19.77 | 19.65 |
|       | Subtest 3 | 19.41 | 19.76 | 19.65 |
|       | Subtest 4 | 19.43 | 19.76 | 19.68 |
|       | Subtest 5 | 20.61 | 20.95 | 20.49 |

## 8.2. AppendixB:Peak-to-Average Ratio

### 8.2.1. Test Result

#### RMC 12.2kbps:

| Band  | Channel | Peak-to-Average Ratio(dB) | Limit(dB) | Verdict |
|-------|---------|---------------------------|-----------|---------|
| Band2 | 9400    | 3.12                      | 13        | PASS    |
| Band4 | 1413    | 3.18                      | 13        | PASS    |
| Band5 | 4182    | 3.22                      | 13        | PASS    |

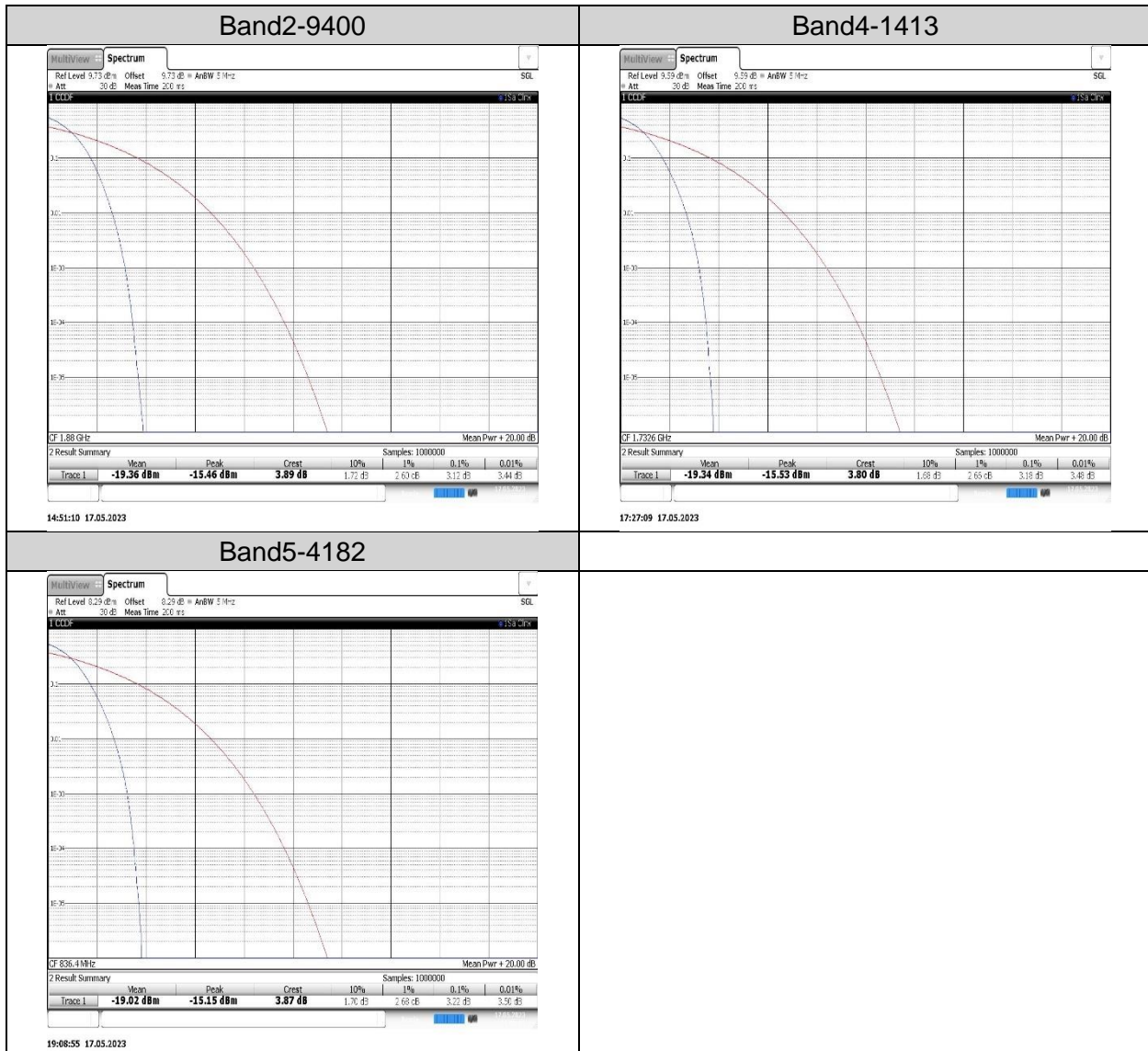
#### HSDPA:

| Band  | Channel | SubTest | Peak-to-Average Ratio(dB) | Limit(dB) | Verdict |
|-------|---------|---------|---------------------------|-----------|---------|
| Band2 | 9400    | 4       | 3.88                      | 13        | PASS    |
| Band4 | 1413    | 4       | 3.88                      | 13        | PASS    |
| Band5 | 4182    | 4       | 3.82                      | 13        | PASS    |

#### HSUPA:

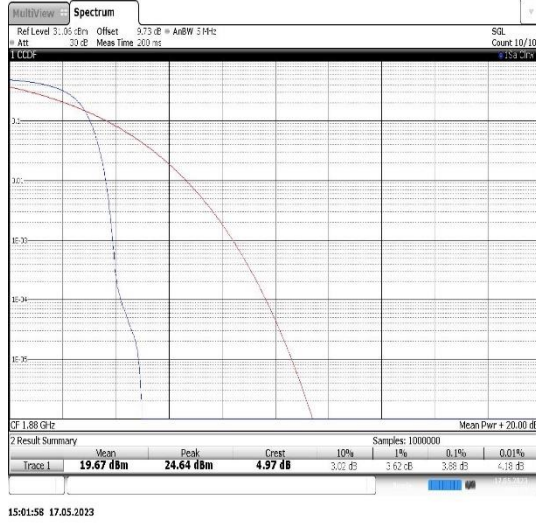
| Band  | Channel | SubTest | Peak-to-Average Ratio(dB) | Limit(dB) | Verdict |
|-------|---------|---------|---------------------------|-----------|---------|
| Band2 | 9400    | 5       | 4.18                      | 13        | PASS    |
| Band4 | 1413    | 5       | 4.64                      | 13        | PASS    |
| Band5 | 4182    | 5       | 4.2                       | 13        | PASS    |

### 8.2.2. Test Graphs

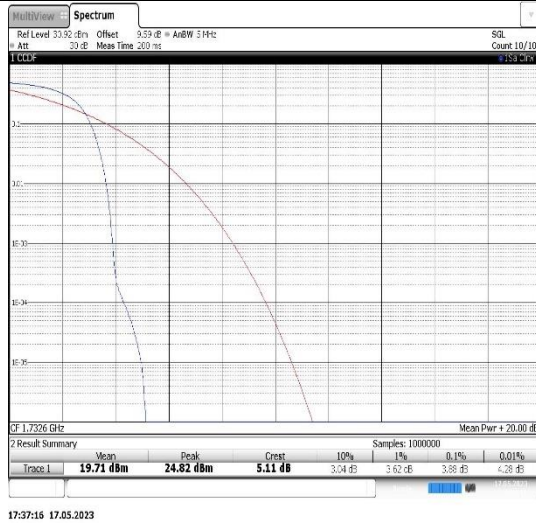


HSDPA:

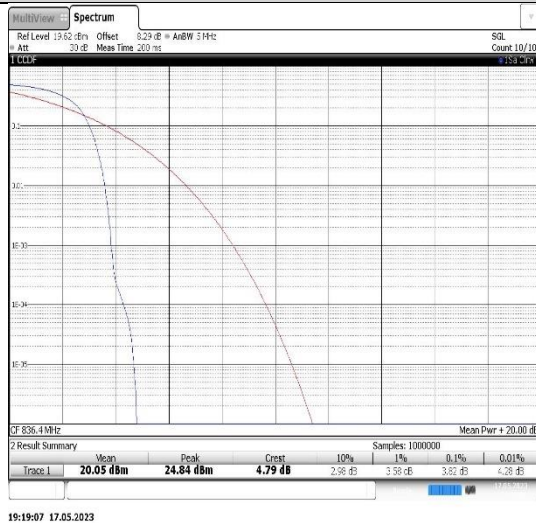
Band2-9400-4



Band4-1413-4

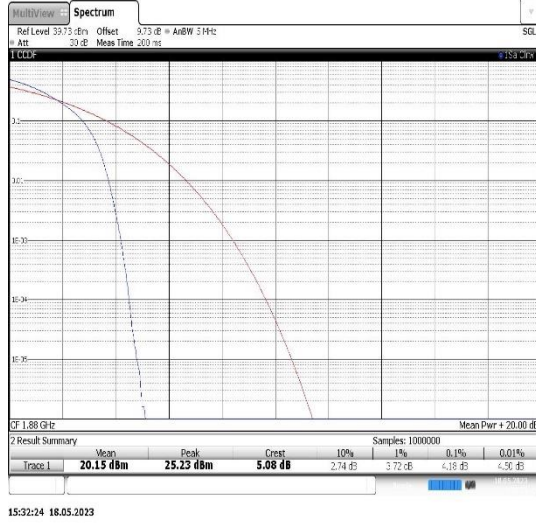


Band5-4182-4

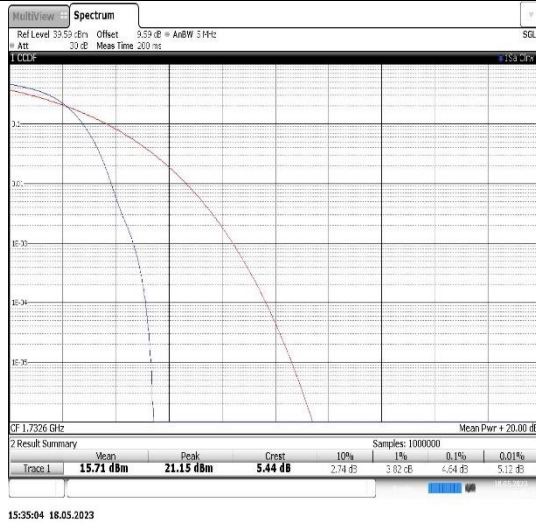


HSUPA:

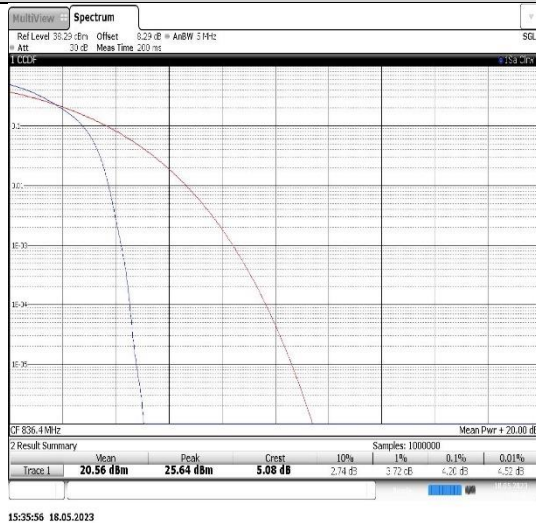
Band2-9400-5



Band4-1413-5



Band5-4182-5



### 8.3. AppendixC:26dB Bandwidth and Occupied Bandwidth

#### 8.3.1. Test Result

##### RMC 12.2kbps:

| Band  | Channel | Occupied Bandwidth (kHz) | 26dB Bandwidth (kHz) | Limit(kHz) | Verdict |
|-------|---------|--------------------------|----------------------|------------|---------|
| Band2 | 9400    | 4.144                    | 4.68                 | ---        | PASS    |
| Band4 | 1413    | 4.143                    | 4.67                 | ---        | PASS    |
| Band5 | 4182    | 4.146                    | 4.68                 | ---        | PASS    |

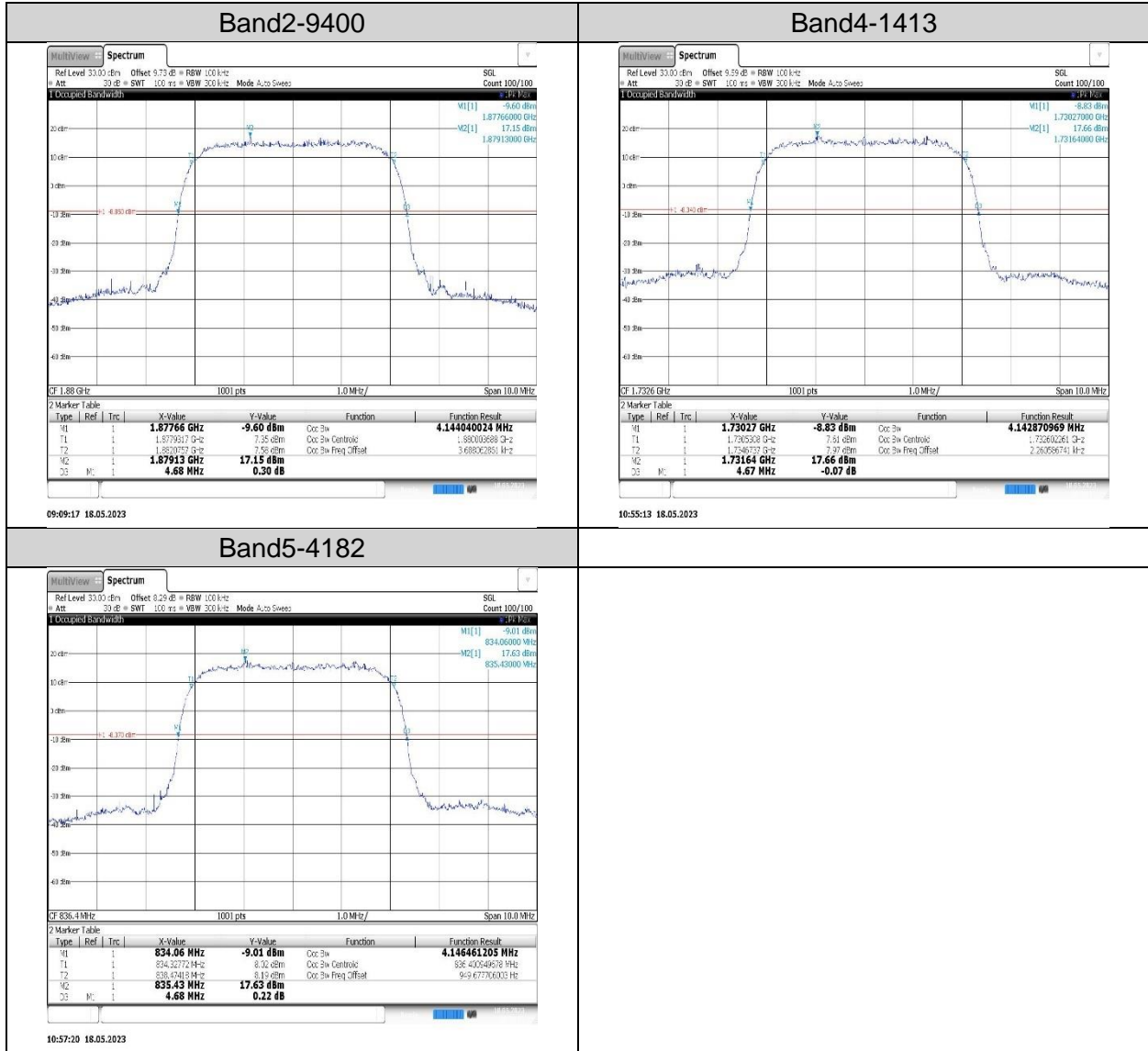
##### HSDPA:

| Band  | Channel | SubTest | Occupied Bandwidth (kHz) | 26dB Bandwidth (kHz) | Limit(kHz) | Verdict |
|-------|---------|---------|--------------------------|----------------------|------------|---------|
| Band2 | 9400    | 4       | 4.152                    | 4.70                 | ---        | PASS    |
| Band4 | 1413    | 4       | 4.146                    | 4.68                 | ---        | PASS    |
| Band5 | 4182    | 4       | 4.137                    | 4.68                 | ---        | PASS    |

##### HSUPA:

| Band  | Channel | SubTest | Occupied Bandwidth (kHz) | 26dB Bandwidth (kHz) | Limit(kHz) | Verdict |
|-------|---------|---------|--------------------------|----------------------|------------|---------|
| Band2 | 9400    | 5       | 4.15                     | 4.66                 | ---        | PASS    |
| Band4 | 1413    | 5       | 4.147                    | 4.68                 | ---        | PASS    |
| Band5 | 4182    | 5       | 4.15                     | 4.70                 | ---        | PASS    |

### 8.3.2. Test Graphs

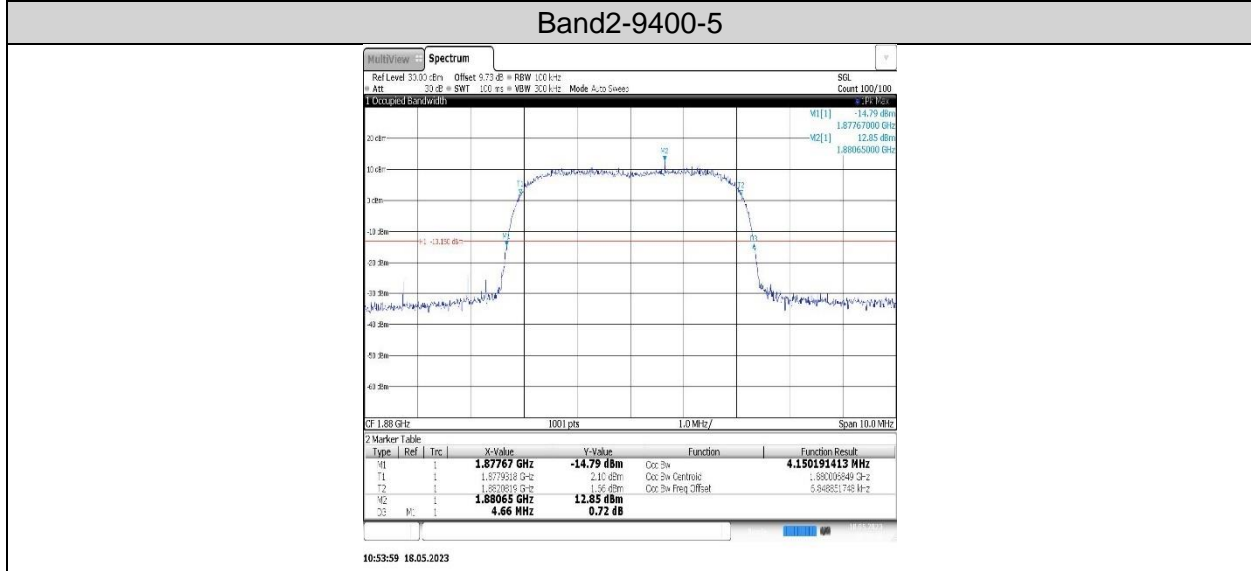


HSDPA:





HSUPA:



## 8.4. AppendixD:Band Edge

### 8.4.1. Test Result

#### RMC 12.2kbps:

| Band  | Channel | Frequency (MHz) | Result (dBm) | Limit(dBm) | Verdict |
|-------|---------|-----------------|--------------|------------|---------|
| Band2 | 9262    | 1849.93         | -34.84       | -13        | PASS    |
| Band2 | 9538    | 1910.00         | -36.10       | -13        | PASS    |
| Band4 | 1312    | 1709.94         | -33.99       | -13        | PASS    |
| Band4 | 1513    | 1755.07         | -35.93       | -13        | PASS    |
| Band5 | 4132    | 823.93          | -34.86       | -13        | PASS    |
| Band5 | 4233    | 849.07          | -33.35       | -13        | PASS    |

#### HSDPA:

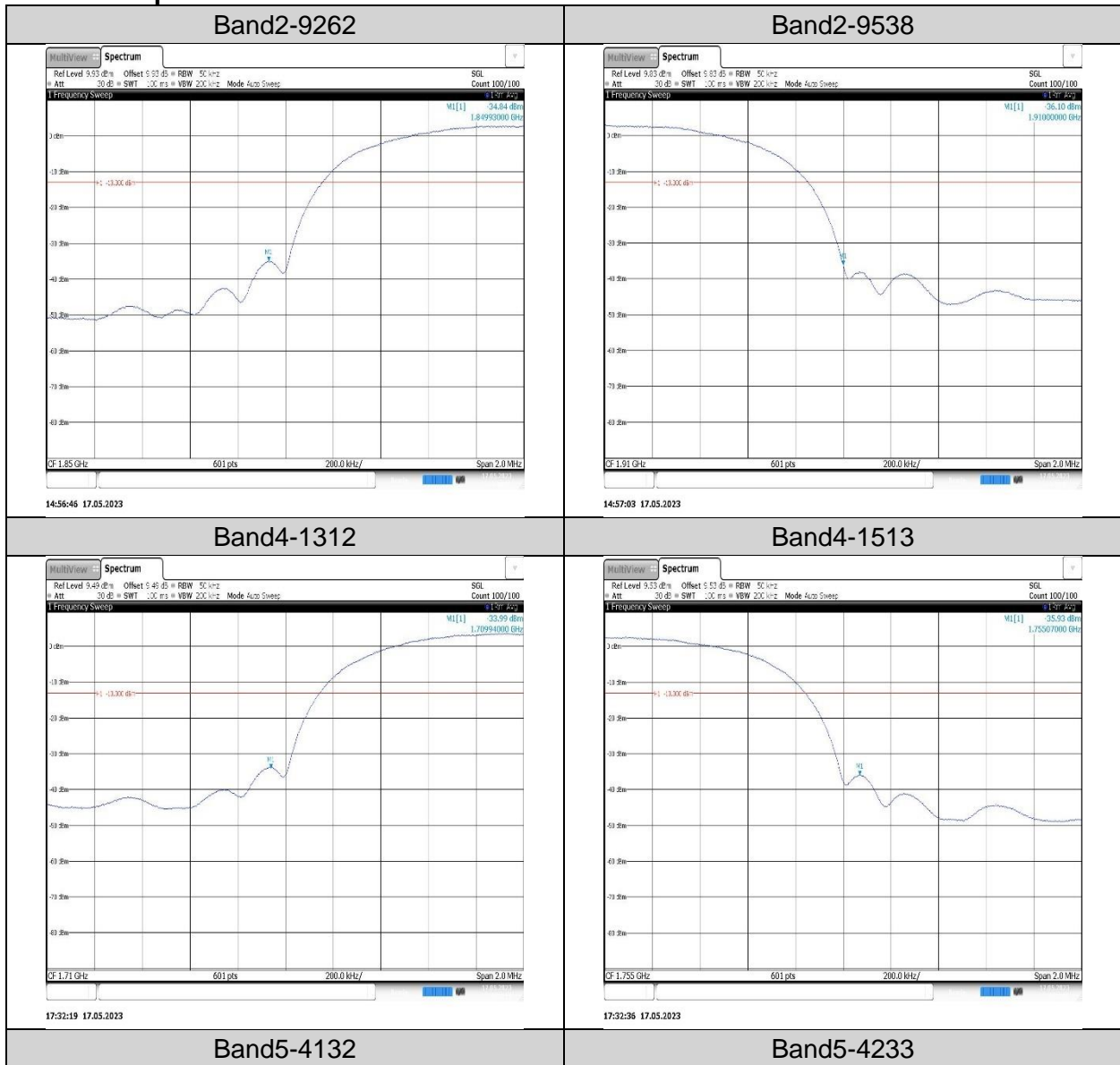
| Band  | Channel | SubTest | Frequency (MHz) | Result (dBm) | Limit(dBm) | Verdict |
|-------|---------|---------|-----------------|--------------|------------|---------|
| Band2 | 9262    | 4       | 1849.94         | -36.28       | -13        | PASS    |
| Band2 | 9538    | 4       | 1910.08         | -36.63       | -13        | PASS    |
| Band4 | 1312    | 4       | 1709.74         | -35.77       | -13        | PASS    |
| Band4 | 1513    | 4       | 1755.00         | -37.95       | -13        | PASS    |
| Band5 | 4132    | 4       | 823.93          | -37.12       | -13        | PASS    |
| Band5 | 4233    | 4       | 849.07          | -34.7        | -13        | PASS    |

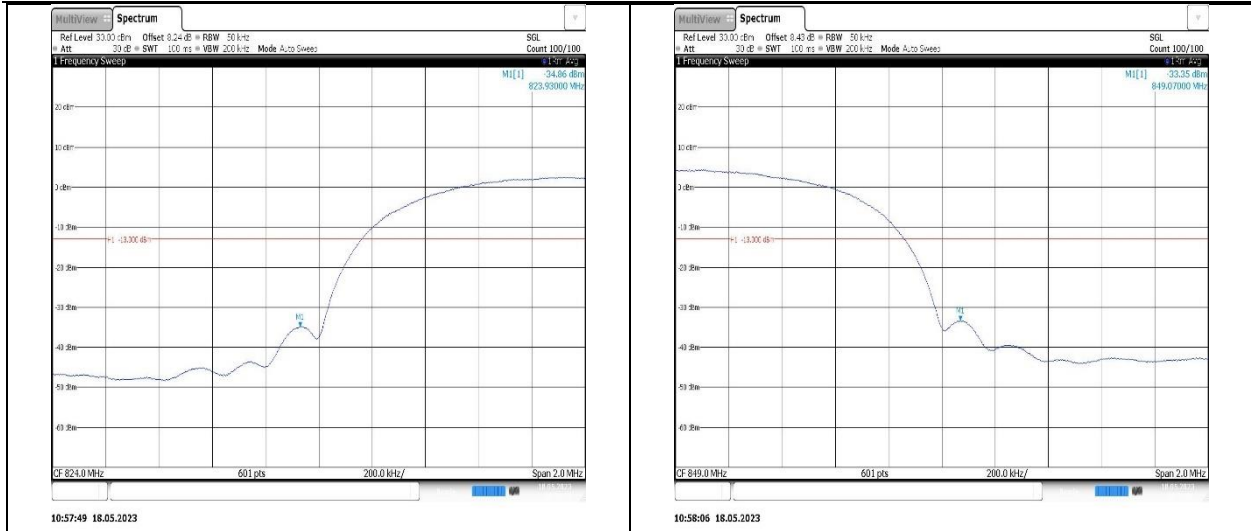
#### HSUPA:

| Band  | Channel | SubTest | Frequency (MHz) | Result (dBm) | Limit(dBm) | Verdict |
|-------|---------|---------|-----------------|--------------|------------|---------|
| Band2 | 9262    | 5       | 1849.93         | -34.7        | -13        | PASS    |
| Band2 | 9538    | 5       | 1910.08         | -36.95       | -13        | PASS    |
| Band4 | 1312    | 5       | 1709.94         | -34.16       | -13        | PASS    |
| Band4 | 1513    | 5       | 1755.06         | -35.92       | -13        | PASS    |
| Band5 | 4132    | 5       | 823.93          | -37.6        | -13        | PASS    |
| Band5 | 4233    | 5       | 849.07          | -35.79       | -13        | PASS    |

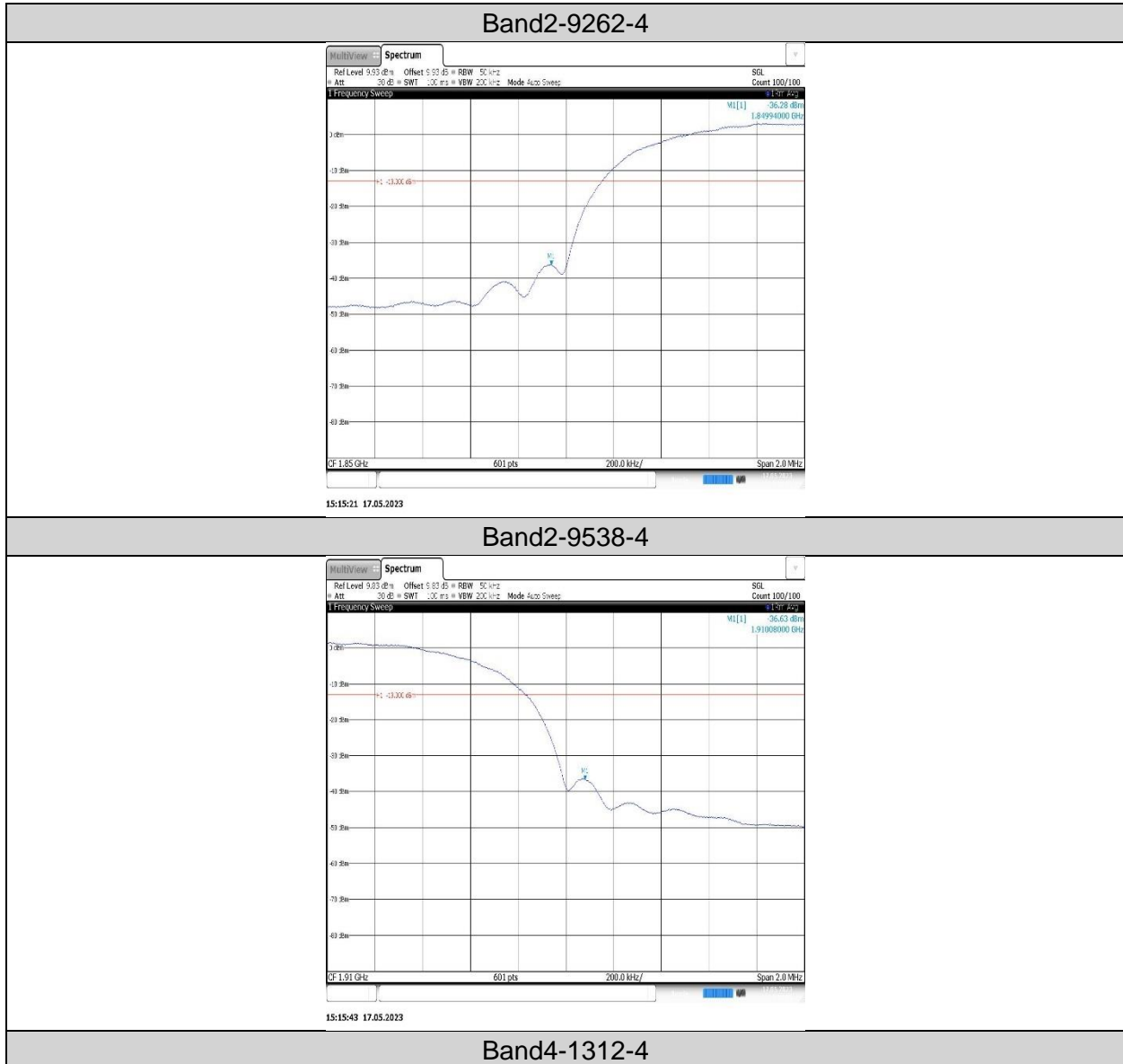
### 8.4.2. Test Graphs

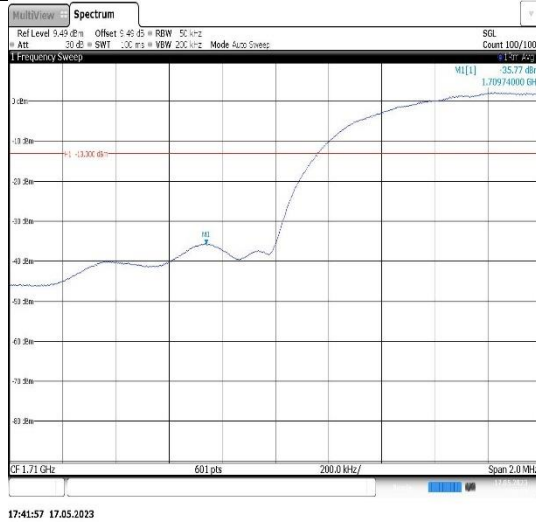
#### RMC 12.2kbps:





**HSDPA:**

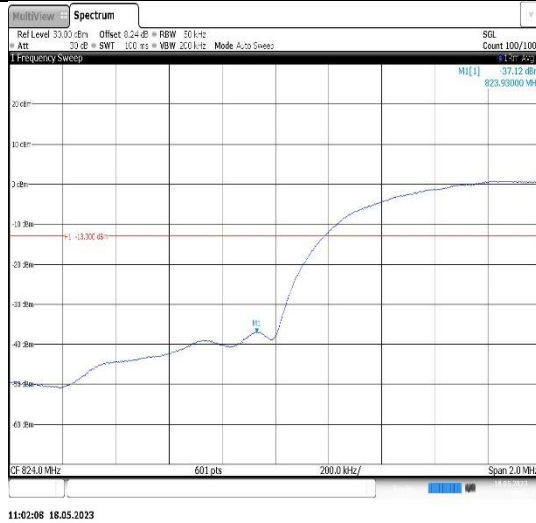




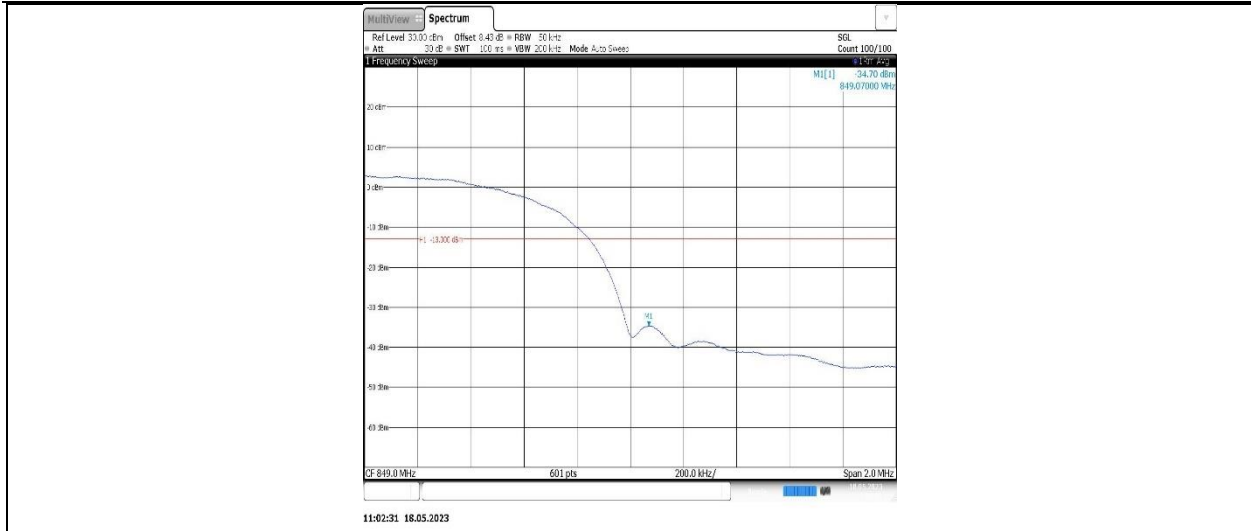
Band4-1513-4



Band5-4132-4

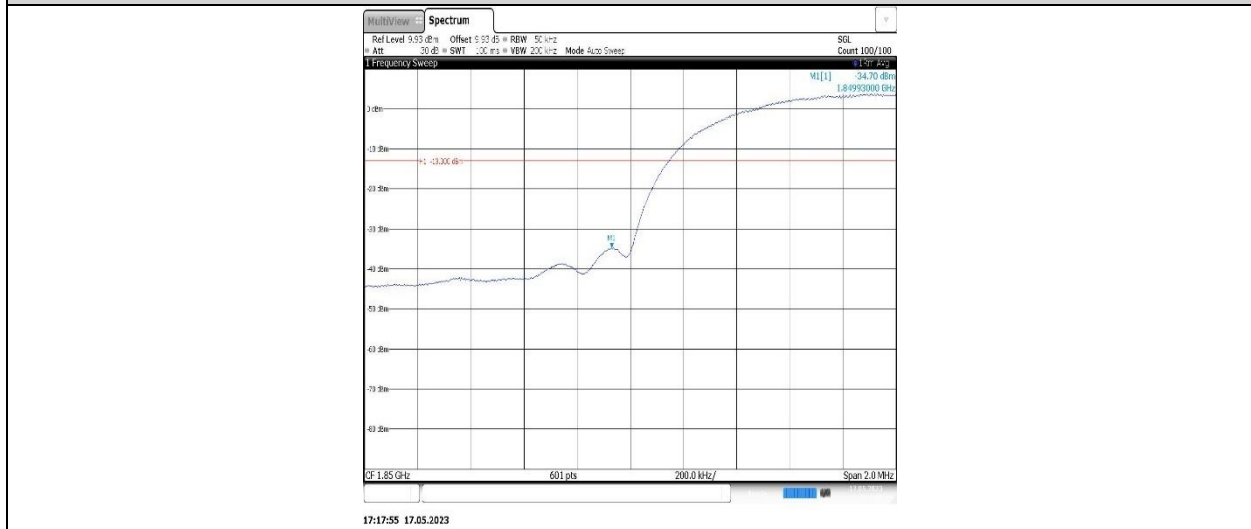


Band5-4233-4

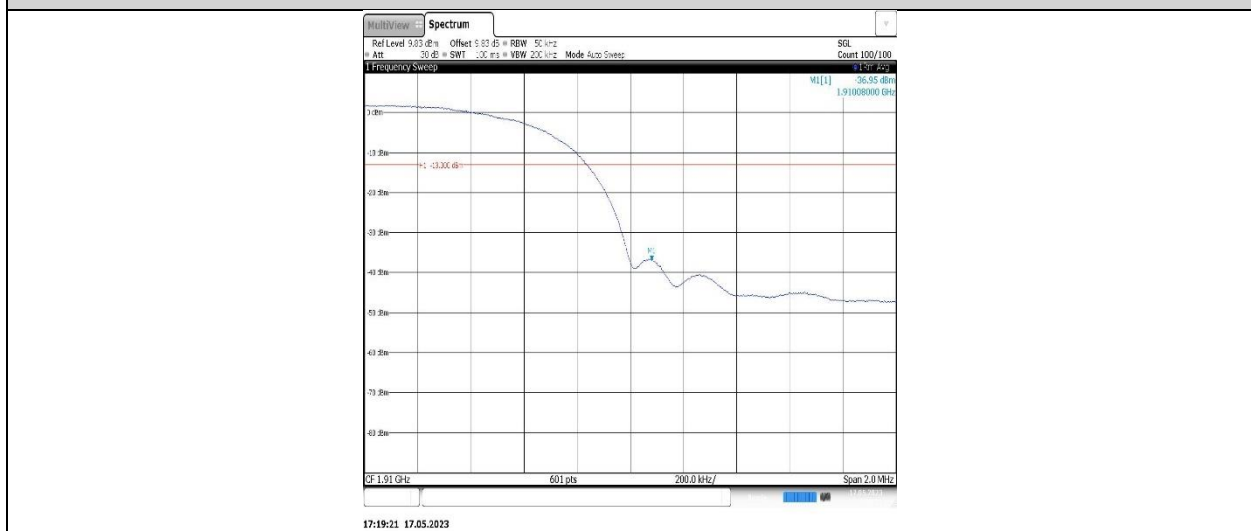


HSUPA:

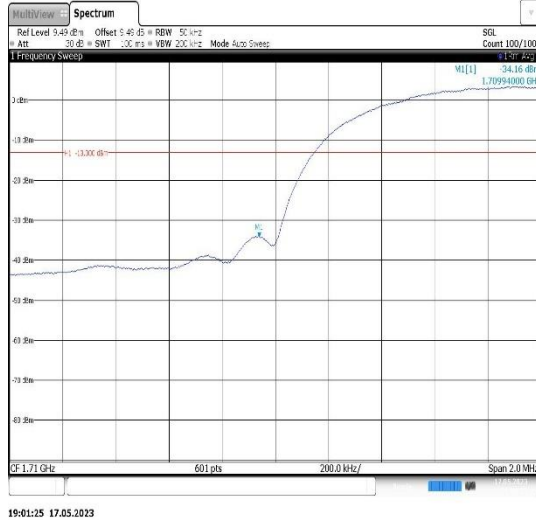
Band2-9262-5



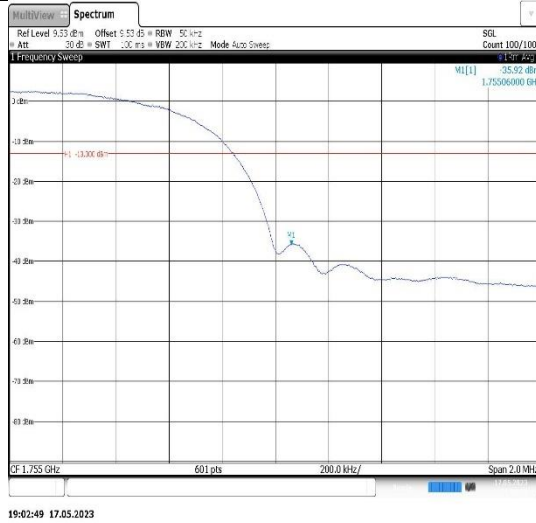
Band2-9538-5



Band4-1312-5



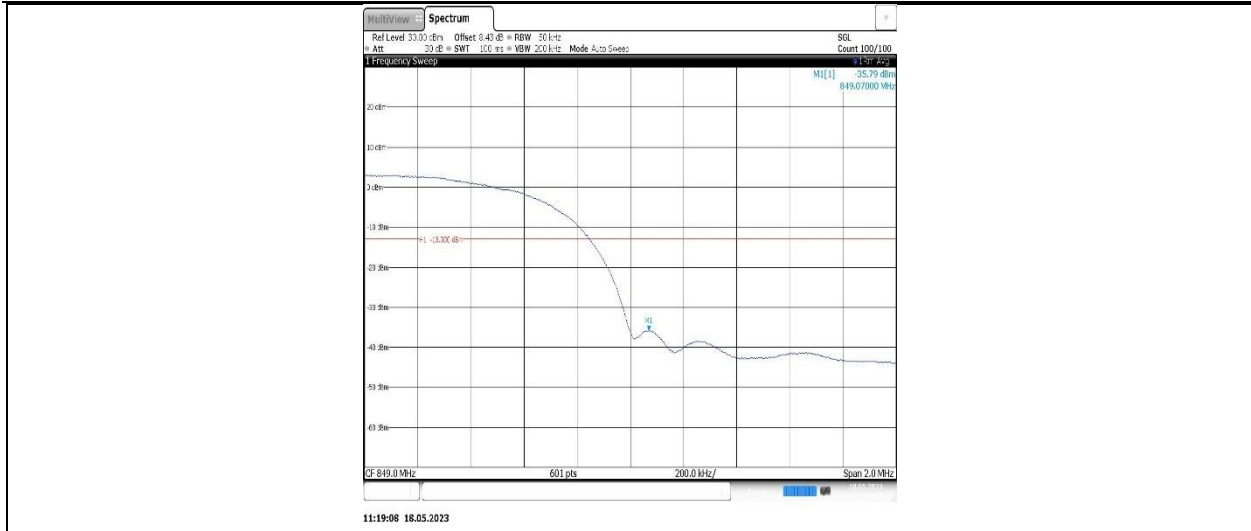
Band4-1513-5



Band5-4132-5



Band5-4233-5

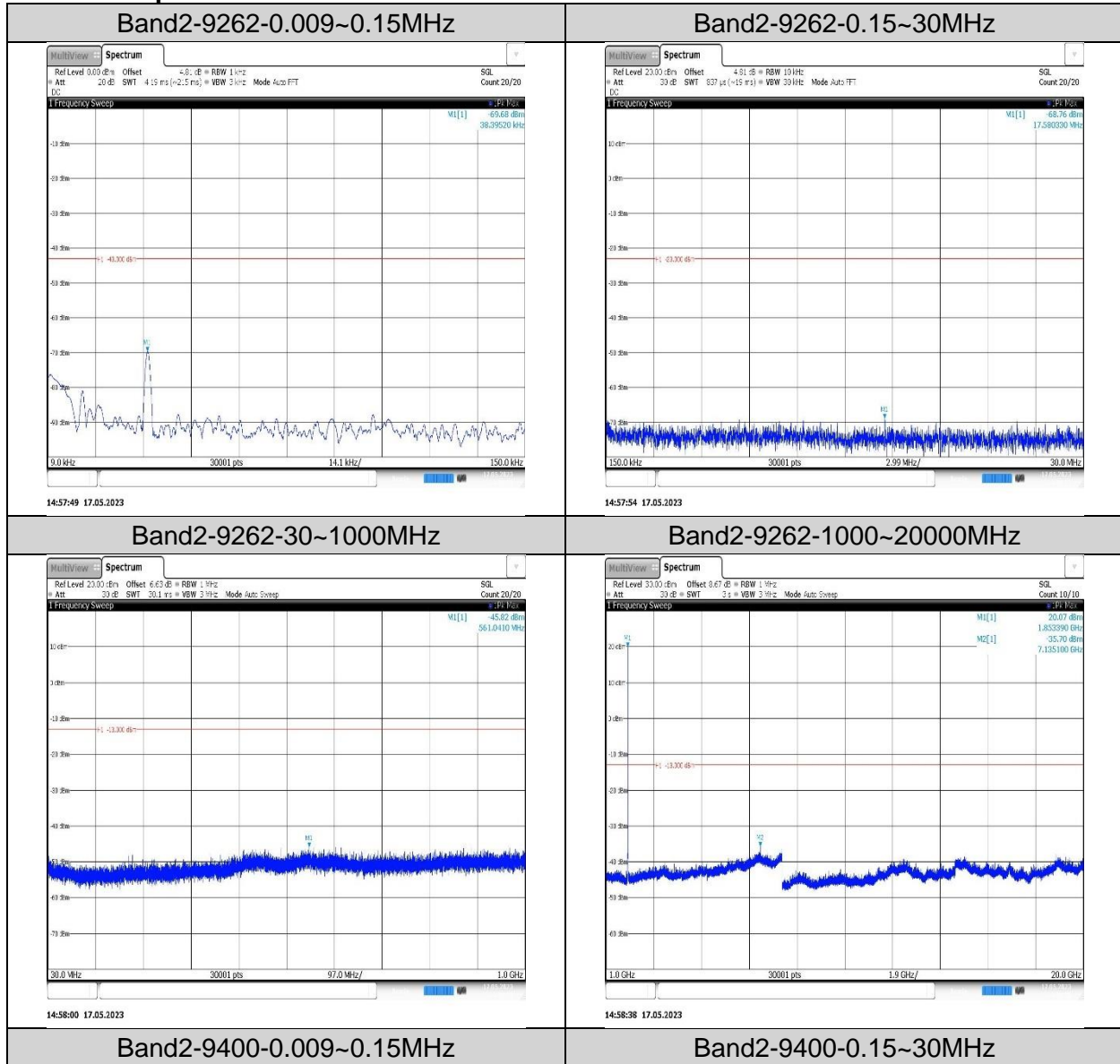


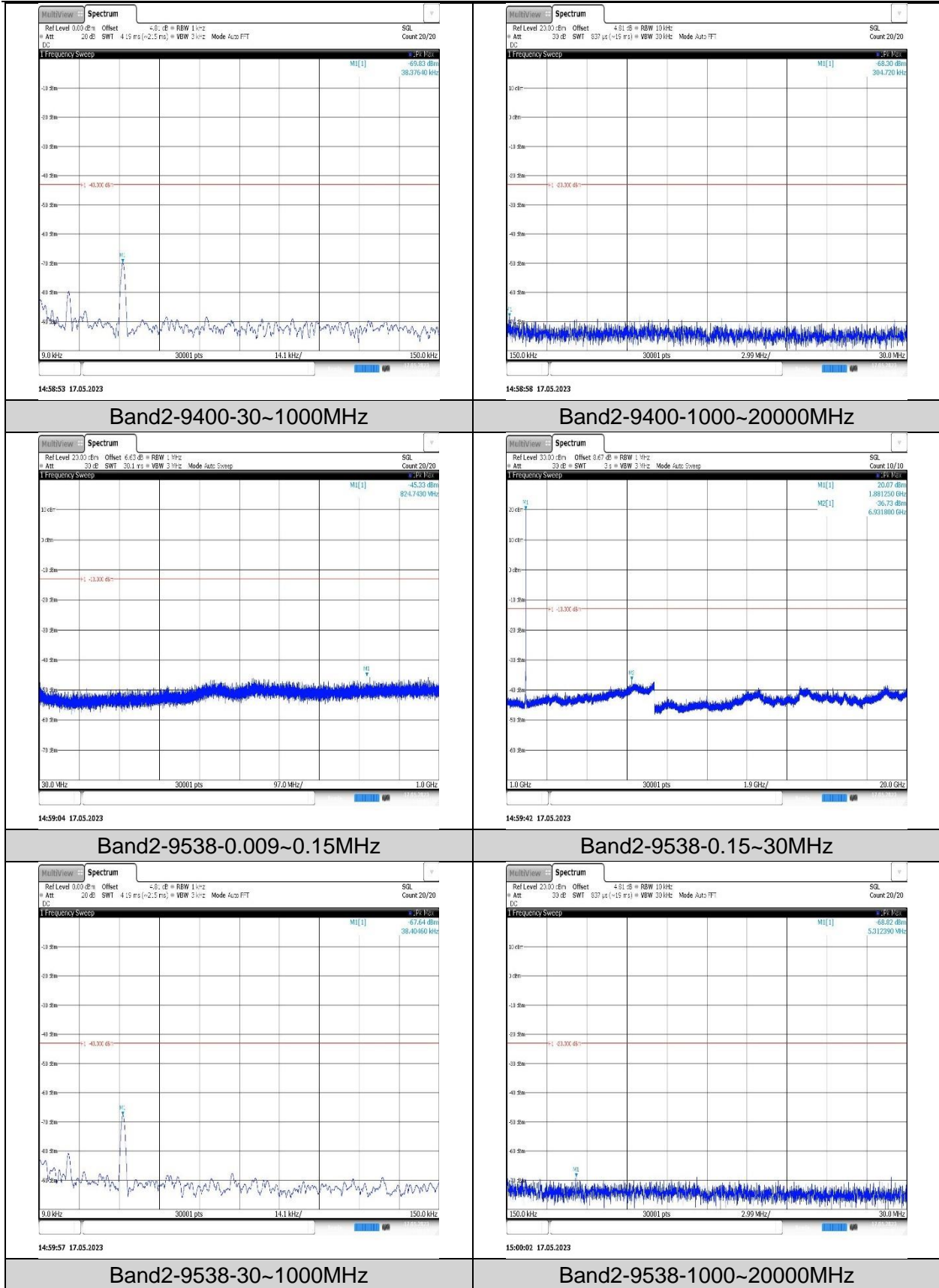


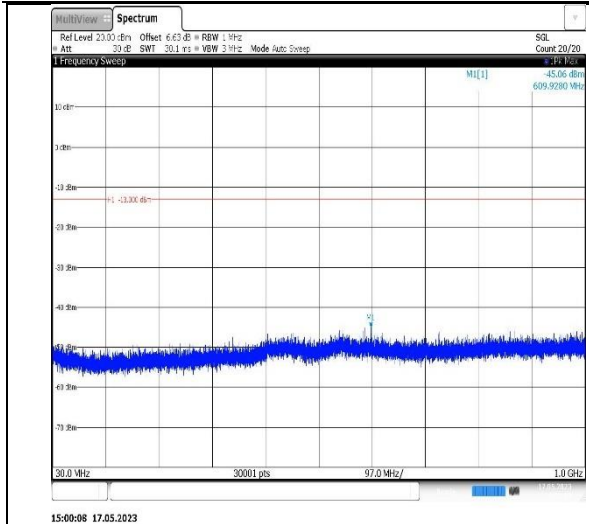
## 8.5. Appendix E: Conducted Spurious Emission

### 8.5.1. Test Graphs

RMC 12.2kbps:

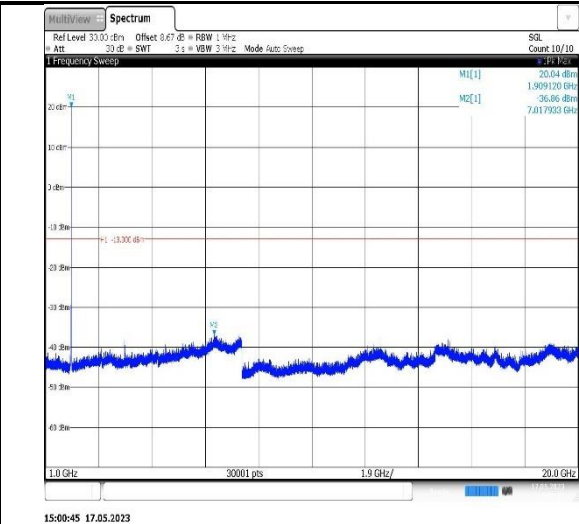






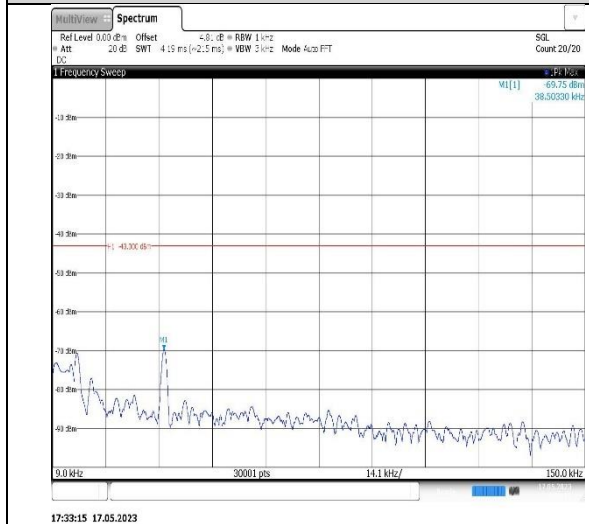
15:00:08 17.05.2023

Band4-1312-0.009~0.15MHz



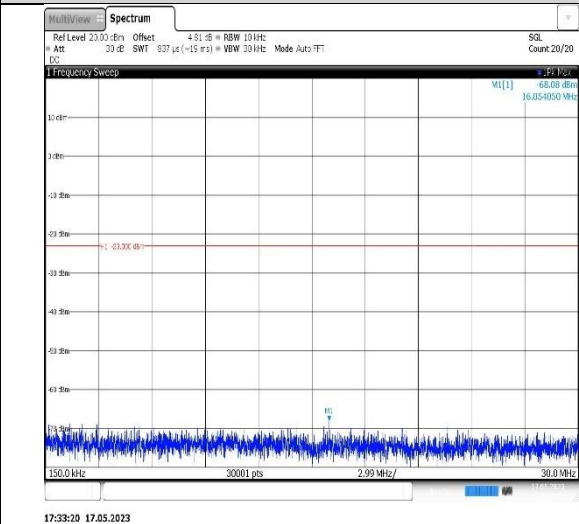
15:00:45 17.05.2023

Band4-1312-0.15~30MHz



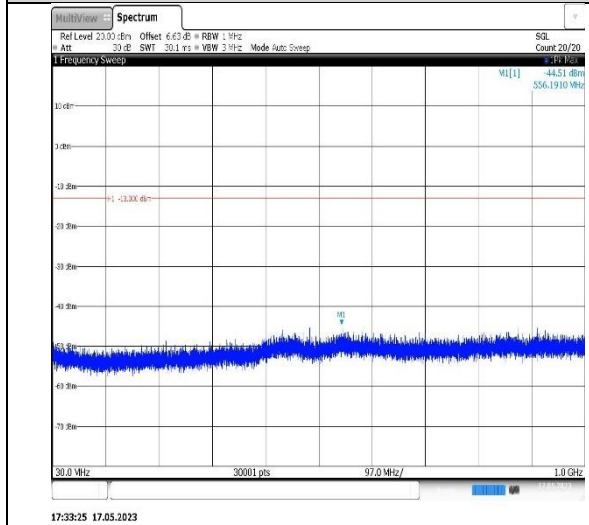
17:33:15 17.05.2023

Band4-1312-30~1000MHz



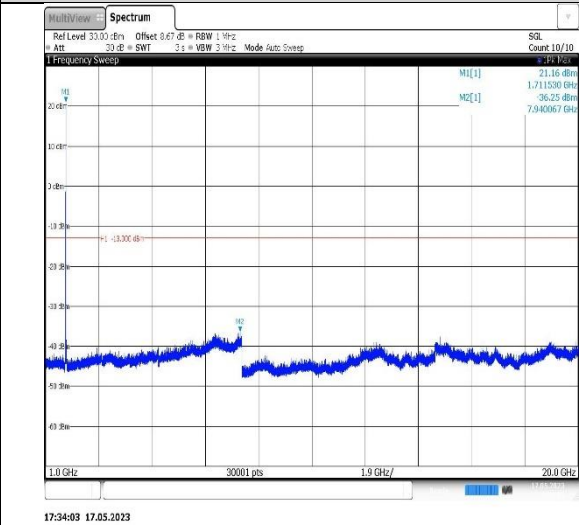
17:33:28 17.05.2023

Band4-1312-1000~20000MHz



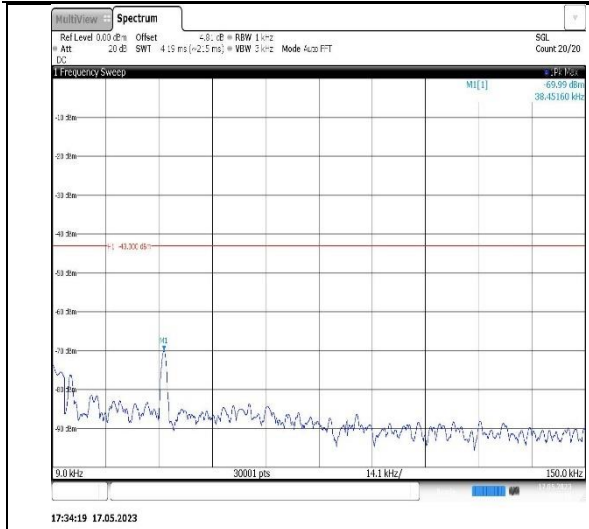
17:33:25 17.05.2023

Band4-1413-0.009~0.15MHz



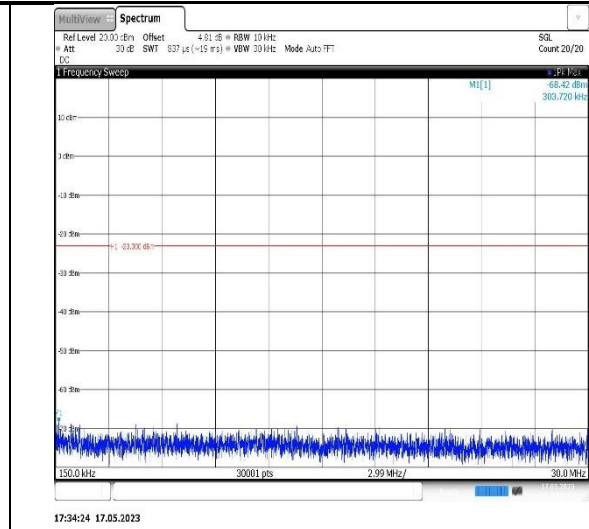
17:34:03 17.05.2023

Band4-1413-0.15~30MHz



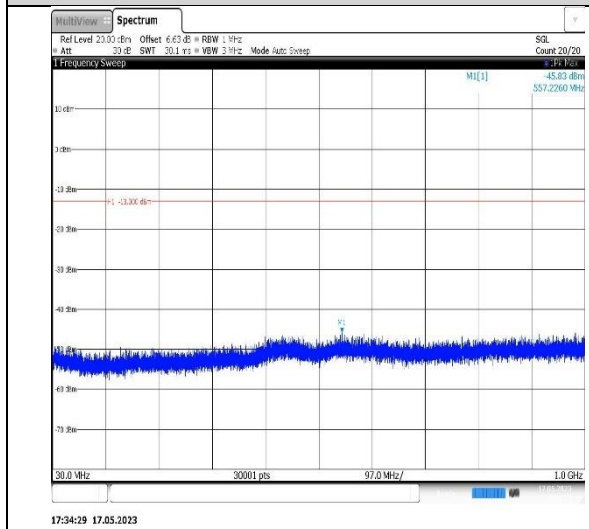
17:34:19 17.05.2023

**Band4-1413-30~1000MHz**



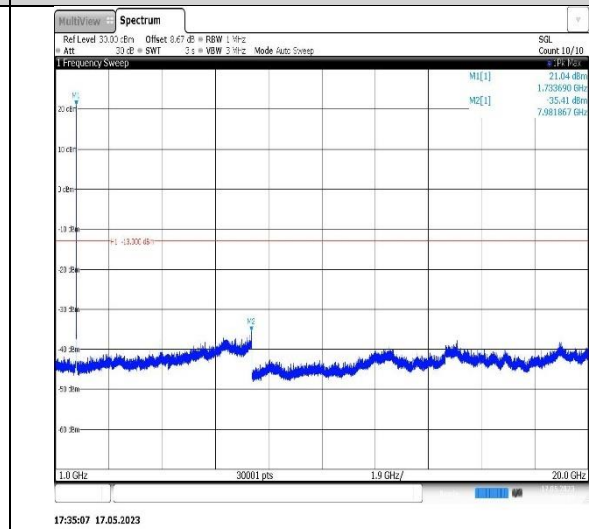
17:34:24 17.05.2023

**Band4-1413-1000~20000MHz**



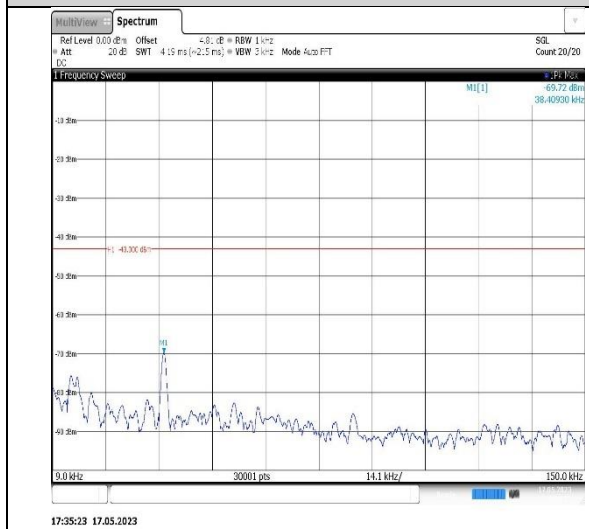
17:34:29 17.05.2023

**Band4-1513-0.009~0.15MHz**



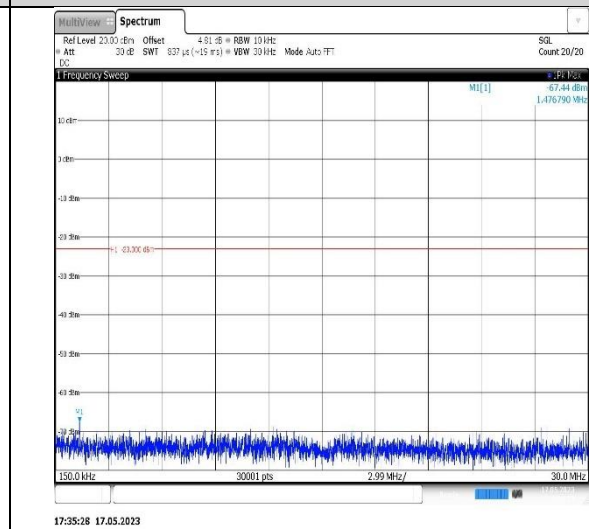
17:35:07 17.05.2023

**Band4-1513-0.15~30MHz**



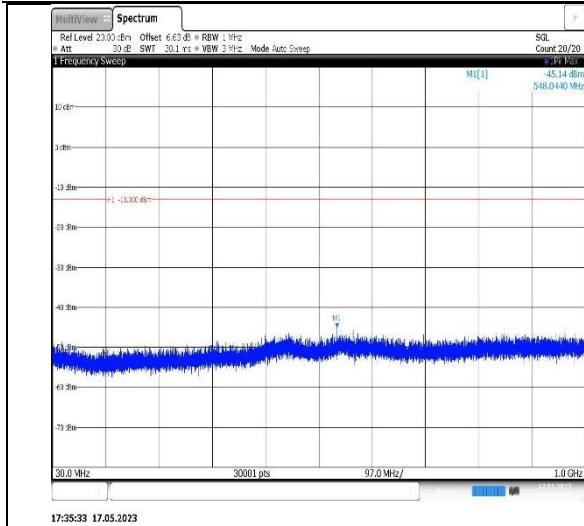
17:35:23 17.05.2023

**Band4-1513-30~1000MHz**

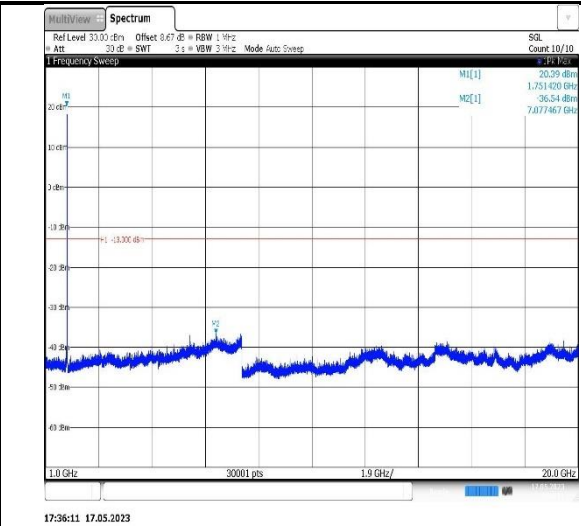


17:35:28 17.05.2023

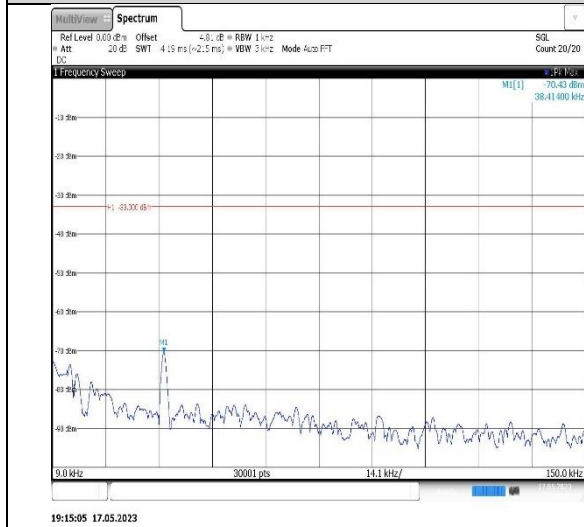
**Band4-1513-1000~20000MHz**



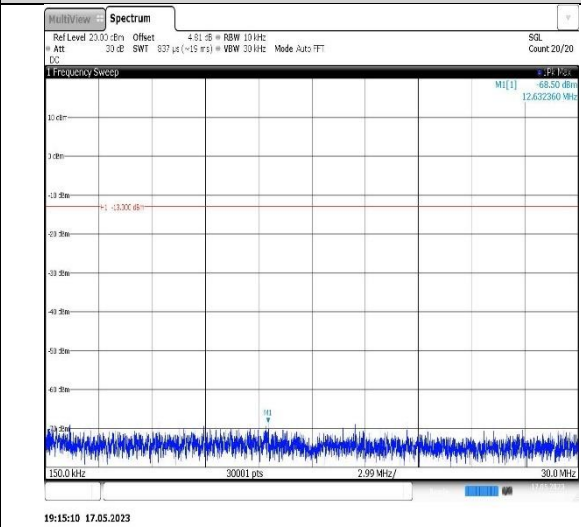
**Band5-4132-0.009~0.15MHz**



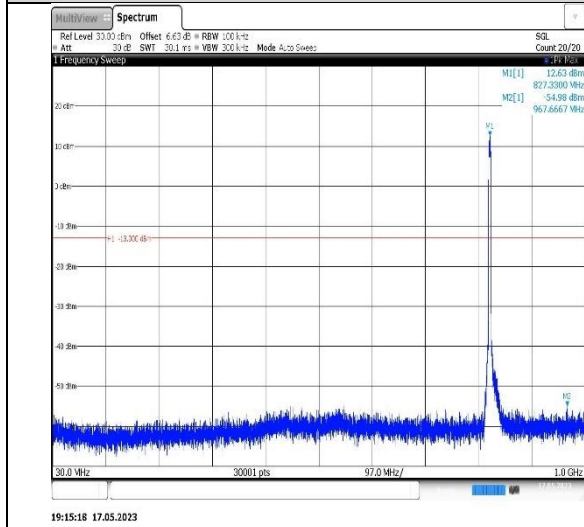
**Band5-4132-0.15~30MHz**



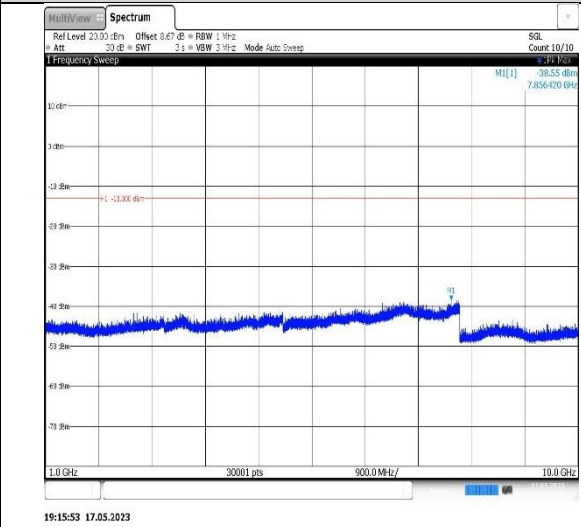
**Band5-4132-30~1000MHz**



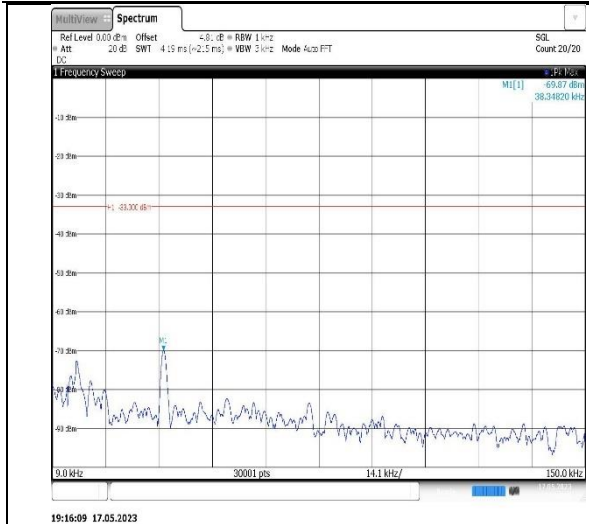
**Band5-4132-1000~10000MHz**



**Band5-4182-0.009~0.15MHz**

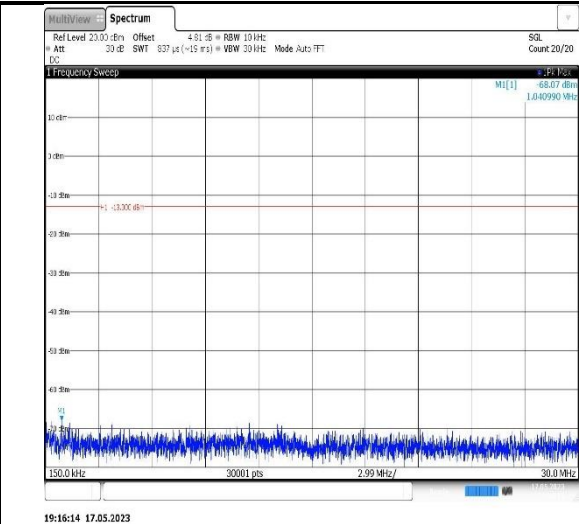


**Band5-4182-0.15~30MHz**



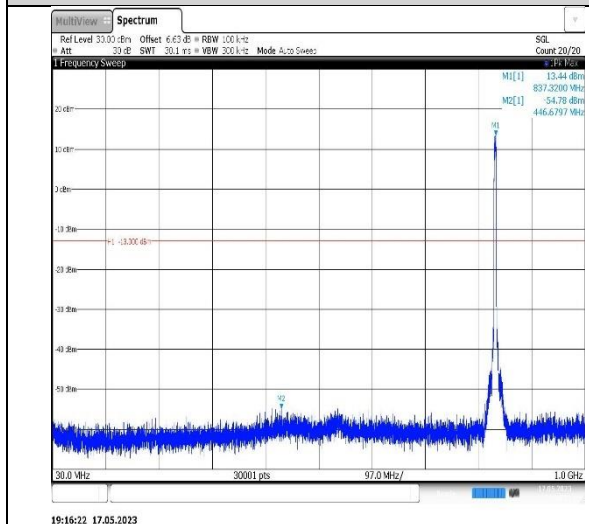
19:16:09 17.05.2023

**Band5-4182-30~1000MHz**



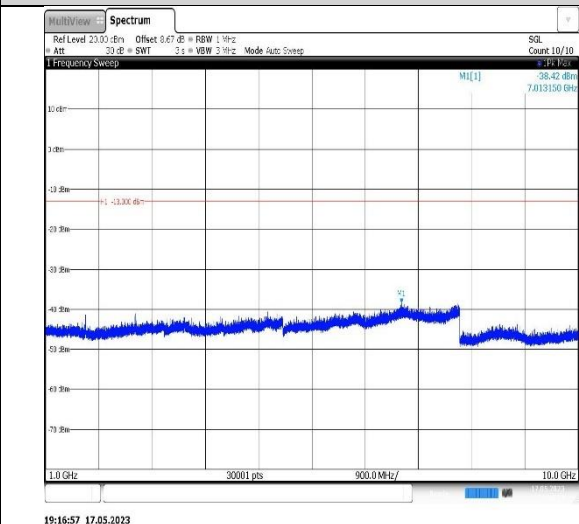
19:16:14 17.05.2023

**Band5-4182-1000~10000MHz**



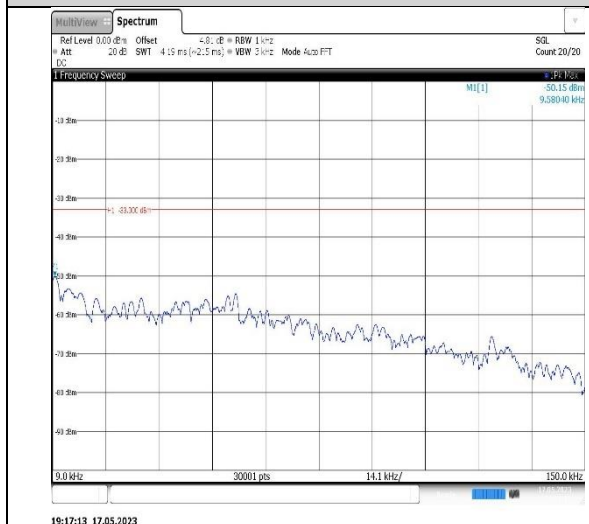
19:16:22 17.05.2023

**Band5-4233-0.009~0.15MHz**



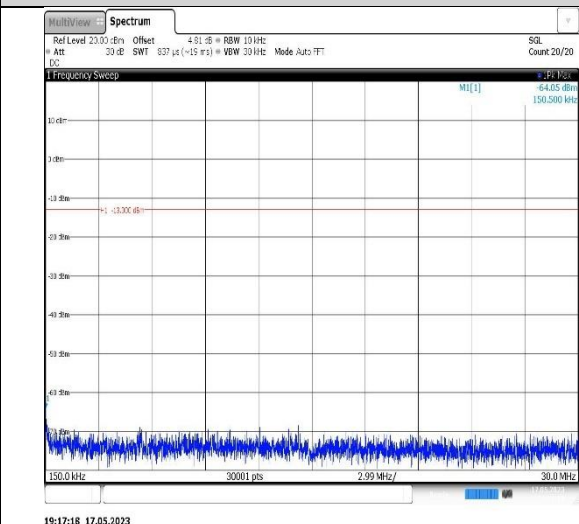
19:16:57 17.05.2023

**Band5-4233-0.15~30MHz**



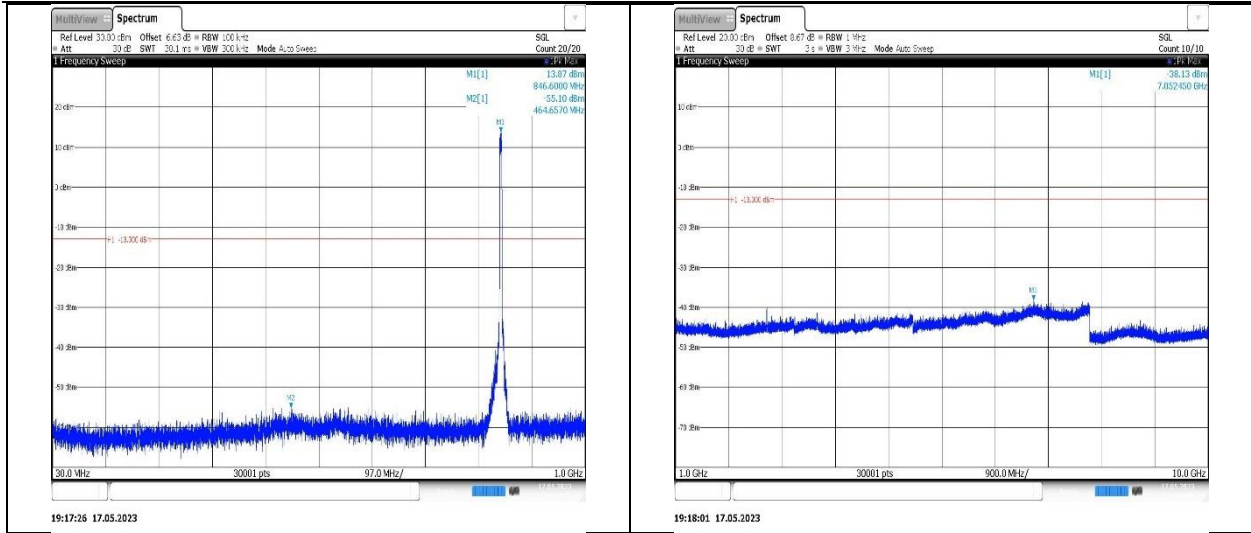
19:17:13 17.05.2023

**Band5-4233-30~1000MHz**



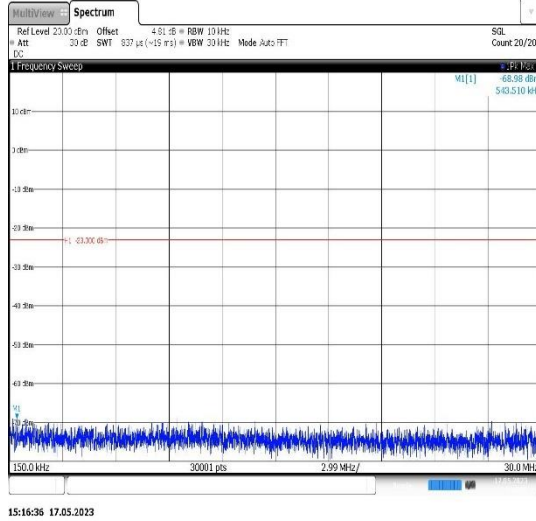
19:17:18 17.05.2023

**Band5-4233-1000~10000MHz**

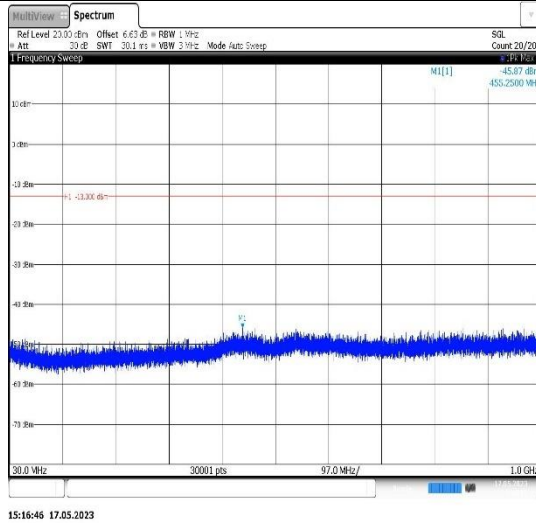


HSDPA:

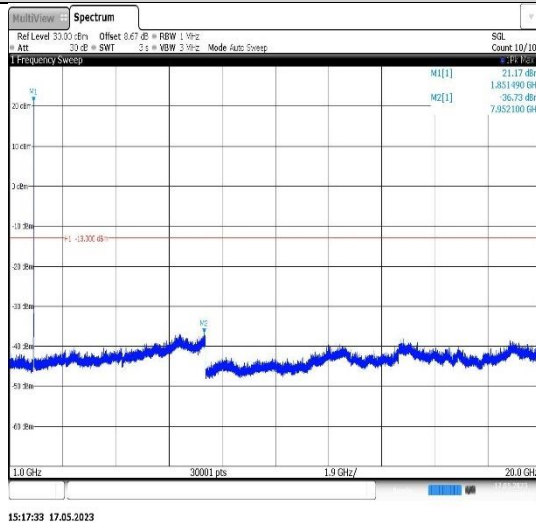
Band2-9262-4-0.15~30MHz



Band2-9262-4-30~1000MHz

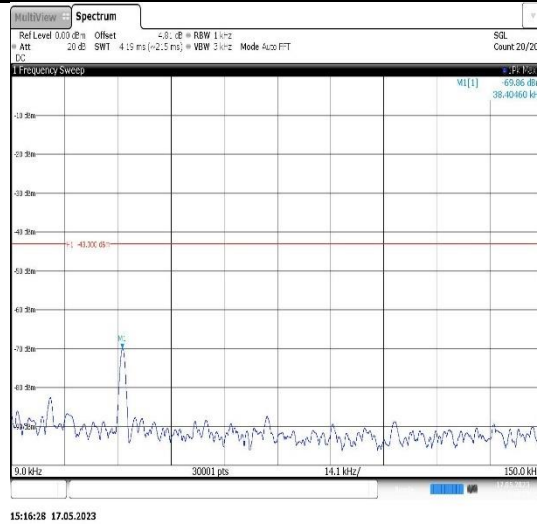


Band2-9262-4-1000~20000MHz

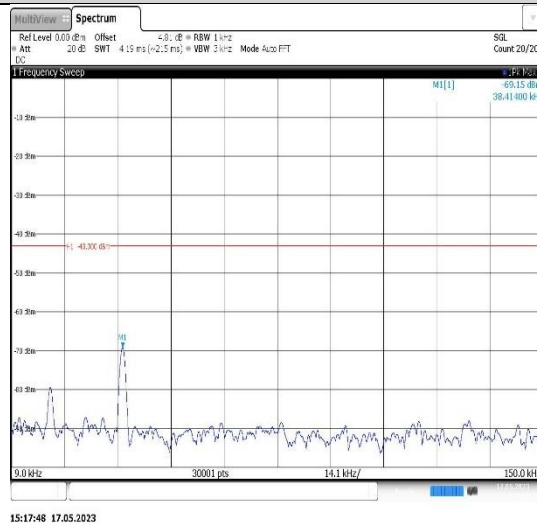


Band2-9262-4-0.009~0.15MHz

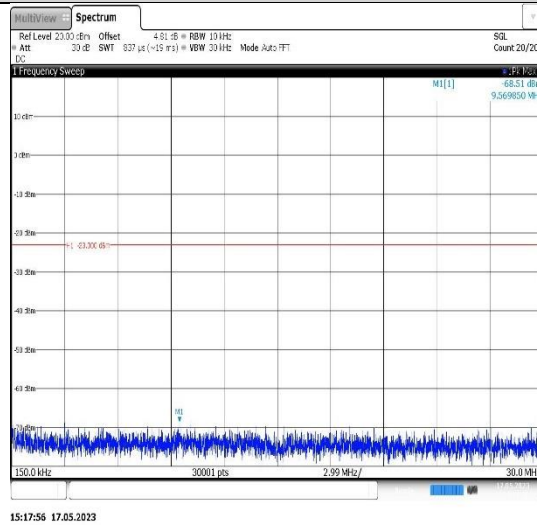




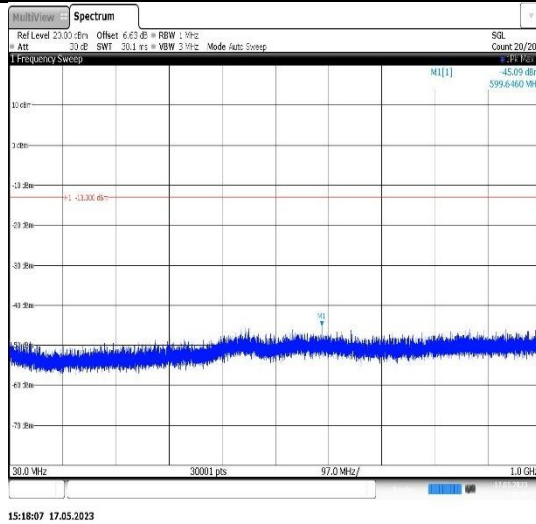
Band2-9400-4-0.009~0.15MHz



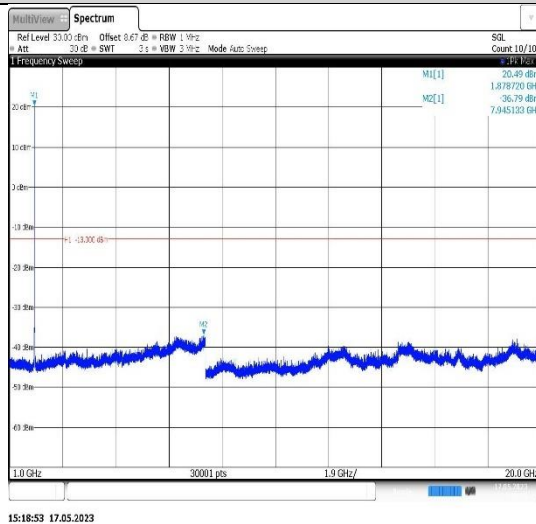
Band2-9400-4-0.15~30MHz



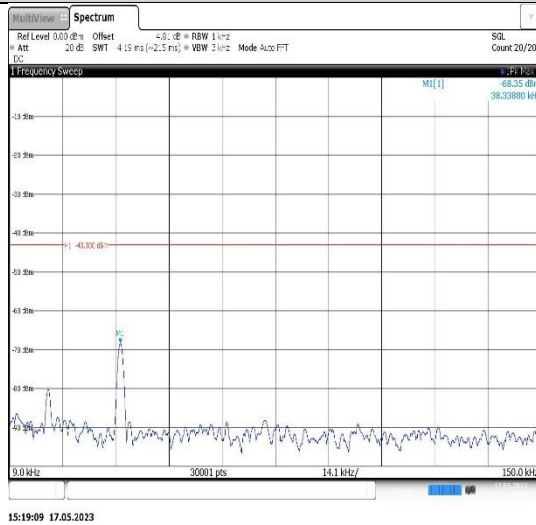
Band2-9400-4-30~1000MHz



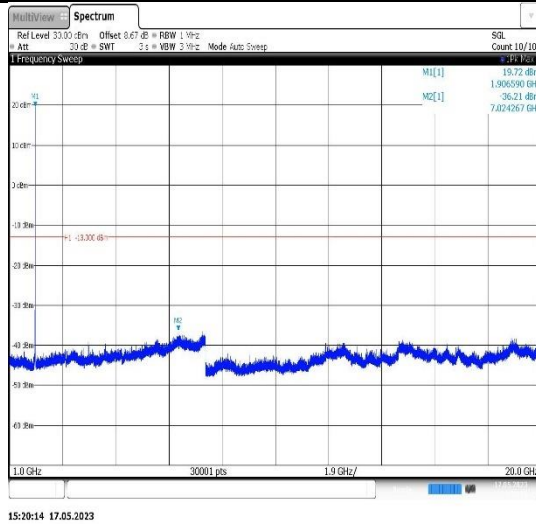
Band2-9400-4-1000~20000MHz



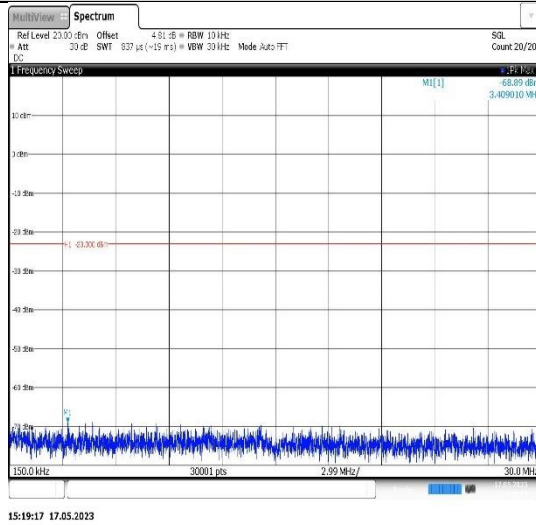
Band2-9538-4-0.009~0.15MHz



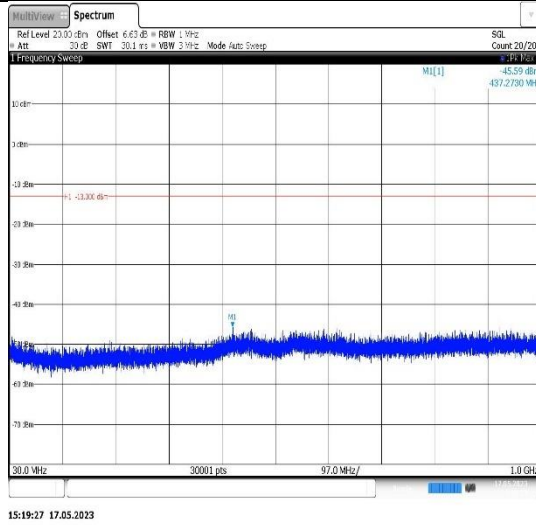
Band2-9538-4-1000~20000MHz



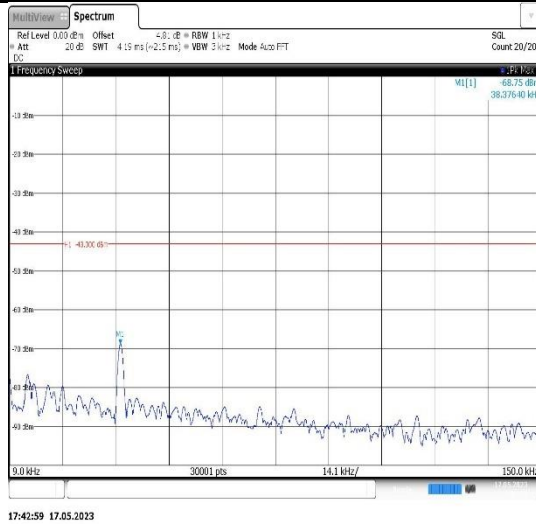
Band2-9538-4-0.15~30MHz



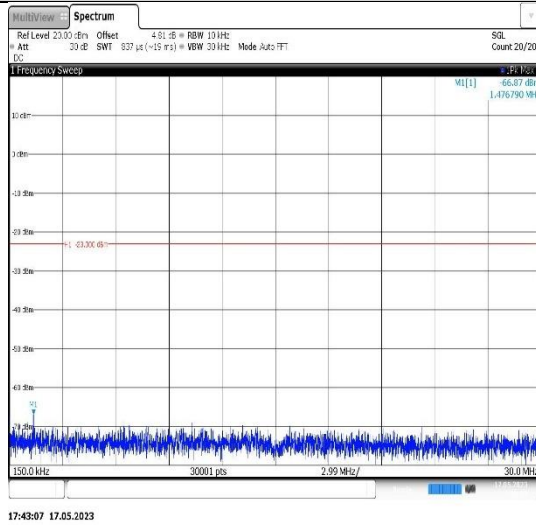
Band2-9538-4-30~1000MHz



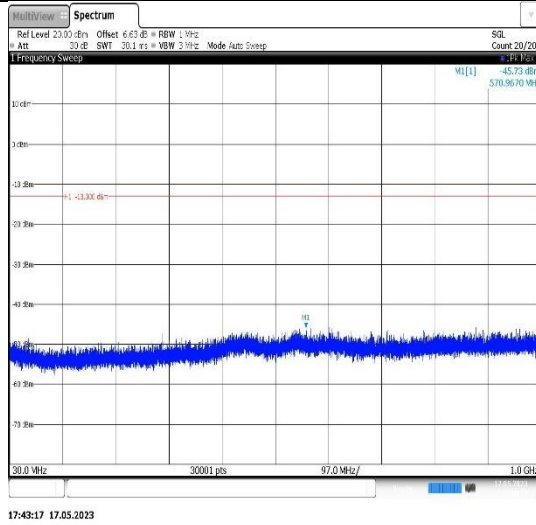
Band4-1312-4-0.009~0.15MHz



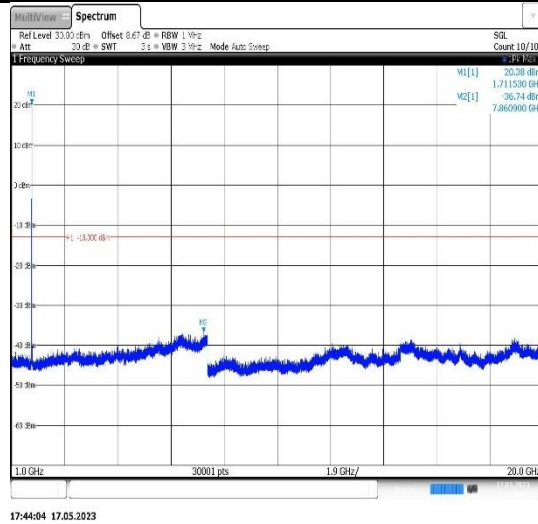
Band4-1312-4-0.15~30MHz



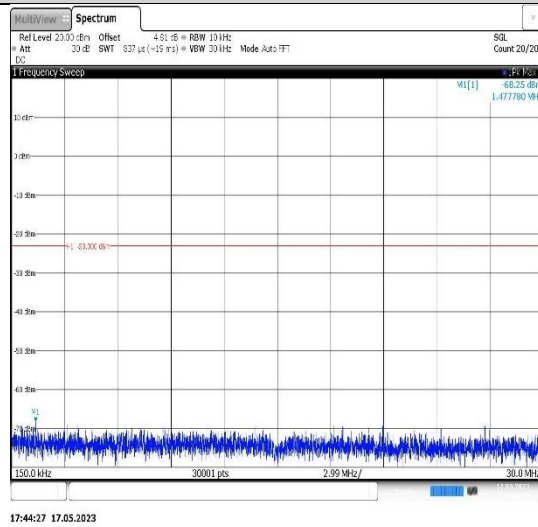
Band4-1312-4-30~1000MHz



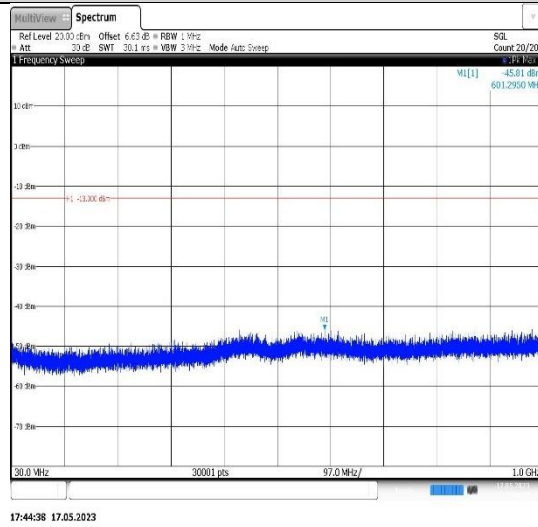
Band4-1312-4-1000~20000MHz



Band4-1413-4-0.15~30MHz



Band4-1413-4-30~1000MHz



Band4-1413-4-1000~20000MHz