

# RADIO PERFORMANCE TEST REPORT

Test Report No. : OT-22N-RWD-026

Reception No. : 2209002776

Applicant : Westcom Wireless Inc.

Address : 2773 Leechburg Road, Lower Burrell, Pennsylvania, 15068, United States

Manufacturer : Westcom Wireless Inc.

Address : 2773 Leechburg Road, Lower Burrell, Pennsylvania, 15068, United States

Type of Equipment : ProCom

FCC ID. : 2AO37-ATLASMAX

Model Name : Atlas Max

Multiple Model Name : N/A

Serial number : N/A

Total page of Report : 107 pages (including this page)

Date of Incoming : September 05, 2022

Date of issue : November 16, 2022

## SUMMARY

The equipment complies with the regulation; **FCC PART 15 SUBPART C Section 15.247**

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

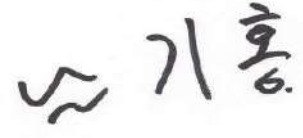
This report is not correlated with the "KS Q ISO/IEC 17025 and KOLAS accreditation" of Korean Laboratory Accreditation Scheme.



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**Revision History**

| Rev. No. | Issue Report No. | Issued Date       | Revisions       | Section Affected |
|----------|------------------|-------------------|-----------------|------------------|
| 0        | OT-22N-RWD-026   | November 16, 2022 | Initial Release | All              |
|          |                  |                   |                 |                  |
|          |                  |                   |                 |                  |

## 1. VERIFICATION OF COMPLIANCE

Applicant : Westcom Wireless Inc.  
Address : 2773 Leechburg Road, Lower Burrell, Pennsylvania, 15068, United States  
Manufacturer : Westcom Wireless Inc.  
Address : 2773 Leechburg Road, Lower Burrell, Pennsylvania, 15068, United States  
Contact Person : Frank Girardi / President  
Telephone No. : +1-724-337-1400  
FCC ID : 2AO37-ATLASMAX  
Model Name : Atlas Max  
Brand Name : -  
Serial Number : N/A  
Date : November 16, 2022

|                                                         |                                                                                |
|---------------------------------------------------------|--------------------------------------------------------------------------------|
| EQUIPMENT CLASS                                         | DSS – PART 15 SPREAD SPECTRUM TRANSMITTER                                      |
| E.U.T. DESCRIPTION                                      | ProCom                                                                         |
| THIS REPORT CONCERNS                                    | Original Grant                                                                 |
| MEASUREMENT PROCEDURES                                  | ANSI C63.10: 2013                                                              |
| TYPE OF EQUIPMENT TESTED                                | Pre-Production                                                                 |
| KIND OF EQUIPMENT<br>AUTHORIZATION REQUESTED            | Certification                                                                  |
| EQUIPMENT WILL BE OPERATED<br>UNDER FCC RULES PART(S)   | FCC PART 15 SUBPART C Section 15.247<br>558074 D01 15.247 Meas Guidance v05r02 |
| Modifications on the Equipment to<br>Achieve Compliance | None                                                                           |
| Final Test was Conducted On                             | 3 m, Semi Anechoic Chamber                                                     |

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

## 2. TEST SUMMARY

### 2.1 Test items and results

| SECTION                         | TEST ITEMS                          | RESULTS              |
|---------------------------------|-------------------------------------|----------------------|
| 15.247(a)(1)(i)                 | 20 dB Bandwidth                     | Met the Limit / PASS |
| 15.247(b)(2)                    | Conducted Maximum Peak Output Power | Met the Limit / PASS |
| 15.247(a)(1)                    | Carrier Frequency Separation        | Met the Limit / PASS |
| 15.247(a)(1)(i)                 | Number of Hopping Frequencies       | Met the Limit / PASS |
| 15.247(a)(1)(i)                 | Time of Occupancy                   | Met the Limit / PASS |
| 15.247(d)                       | Conducted Spurious Emissions        | Met the Limit / PASS |
| 15.247(d)                       | Band Edge(Out of Band Emissions)    | Met the Limit / PASS |
| 15.207(a)                       | AC Power line Conducted Emissions   | Met the Limit / PASS |
| 15.247(d), 15.205(a), 15.209(a) | Radiated Spurious Emissions         | Met the Limit / PASS |
| 15.247(d), 15.205(a), 15.209(a) | Radiated Restricted Band Edge       | Met the Limit / PASS |

Note.: All test items have been performed for each Normal (CH 20 ~ CH 220), Long (CH12 ~ CH 138) and Repeat (CH 20 ~ CH 220) Mode. And the conducted Emissions and Radiated Spurious Emissions have been performed for Transmitting mode and Charging mode.

## 2.2 Additions, deviations, exclusions from standards

No additions, deviations or exclusions have been made from standard.

## 2.3 Related Submittal(s) / Grant(s)

Original submittal only

## 2.4 Purpose of the test

To determine whether the equipment under test fulfills the requirements of the regulation stated in FCC PART 15 SUBPART C Section 15.247.

## 2.5 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10: 2013. Radiated testing was performed at a distance of 3 m from EUT to the antenna.

## 2.6 Test Facility

The Onetech Corp. has been designated to perform equipment testing in compliance with ISO/IEC 17025.

The Electromagnetic compatibility measurement facilities are located at 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea.

-. Site Filing:

VCCI (Voluntary Control Council for Interference) – Registration No. R-4112/ C-14617/ G-10666/ T-11842

ISED (Innovation, Science and Economic Development Canada) – Registration No. Site# 3736A-3

KOLAS (Korea Laboratory Accreditation Scheme) - Accreditation NO. KT085

FCC (Federal Communications Commission) - Accreditation No. KR0013

RRA (Radio Research Agency) – Designation No. KR0013

### 3. GENERAL INFORMATION

#### 3.1 Product Description

The Westcom Wireless Inc., Model Atlas Max (referred to as the EUT in this report) is a ProCom. Product specification information described herein was obtained from product data sheet or user's manual.

|                                                       |                   |           |
|-------------------------------------------------------|-------------------|-----------|
| DEVICE TYPE                                           | ProCom            |           |
| Temperature Range                                     | -10 °C ~ 50 °C    |           |
| OPERATING FREQUENCY                                   | 902 MHz ~ 928 MHz |           |
| MODULATION TYPE                                       | GFSK              |           |
| RF OUTPUT POWER                                       | Mode 1_Normal     | 23.52 dBm |
|                                                       | Mode 2_Long       | 29.25 dBm |
|                                                       | Mode 3_Repeat     | 29.42 dBm |
| ANTENNA TYPE                                          | Helical Antenna   |           |
| ANTENNA GAIN                                          | -0.50 dBi         |           |
| List of each Osc. or crystal<br>Freq.(Freq. >= 1 MHz) | 48 MHz            |           |

#### 3.2 Alternative type(s)/model(s); also covered by this test report.

-. None

### 4. EUT MODIFICATIONS

-. None

## 5. SYSTEM TEST CONFIGURATION

### 5.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

| DEVICE TYPE | MANUFACTURER          | MODEL/PART NUMBER | FCC ID |
|-------------|-----------------------|-------------------|--------|
| Main Board  | Westcom Wireless Inc. | Atlas Max         | N/A    |
| LCD Board   | N/A                   | N/A               | N/A    |
| FPCB 1      | N/A                   | N/A               | N/A    |
| FPCB 2      | N/A                   | N/A               | N/A    |
| Battery     | Mirim Technology      | MS35E-M           | N/A    |

### 5.2 Peripheral equipment

Defined as equipment needed for correct operation of the EUT, but not considered as tested:

| Model             | Manufacturer          | Description   | Connected to |
|-------------------|-----------------------|---------------|--------------|
| Atlas Max         | Westcom Wireless Inc. | ProCom (EUT)  |              |
| HP ProBook 450 G7 | HP                    | NoteBook PC   | Test JIG     |
| JIG               | Bicom                 | Test JIG      | NetBook PC   |
| TPN-CA14          | HP.                   | AC Adapter    | NetBook PC   |
| AC/DC Adapter     | SAMSUNG               | AC/DC Adapter | -            |

### 5.3 Mode of operation during the test

For the testing, software used to control the EUT for staying in continuous transmitting is programmed.

For final testing EUT was set as below to get a maximum emission levels from the EUT.

Mode 1 (Normal): 902.5 MHz, 915.0 MHz, and 927.5 MHz (Low/Middle/High)

Mode 2 (Long): 902.4 MHz, 914.8 MHz, and 927.6 MHz (Low/Middle/High)

Mode 3 (Repeat): 902.5 MHz, 915.0 MHz, and 927.5 MHz (Low/Middle/High)

The EUT was moved throughout the XY, XZ, and YZ planes and the worst case is “XZ” axis, but the worst data was recorded in this report.

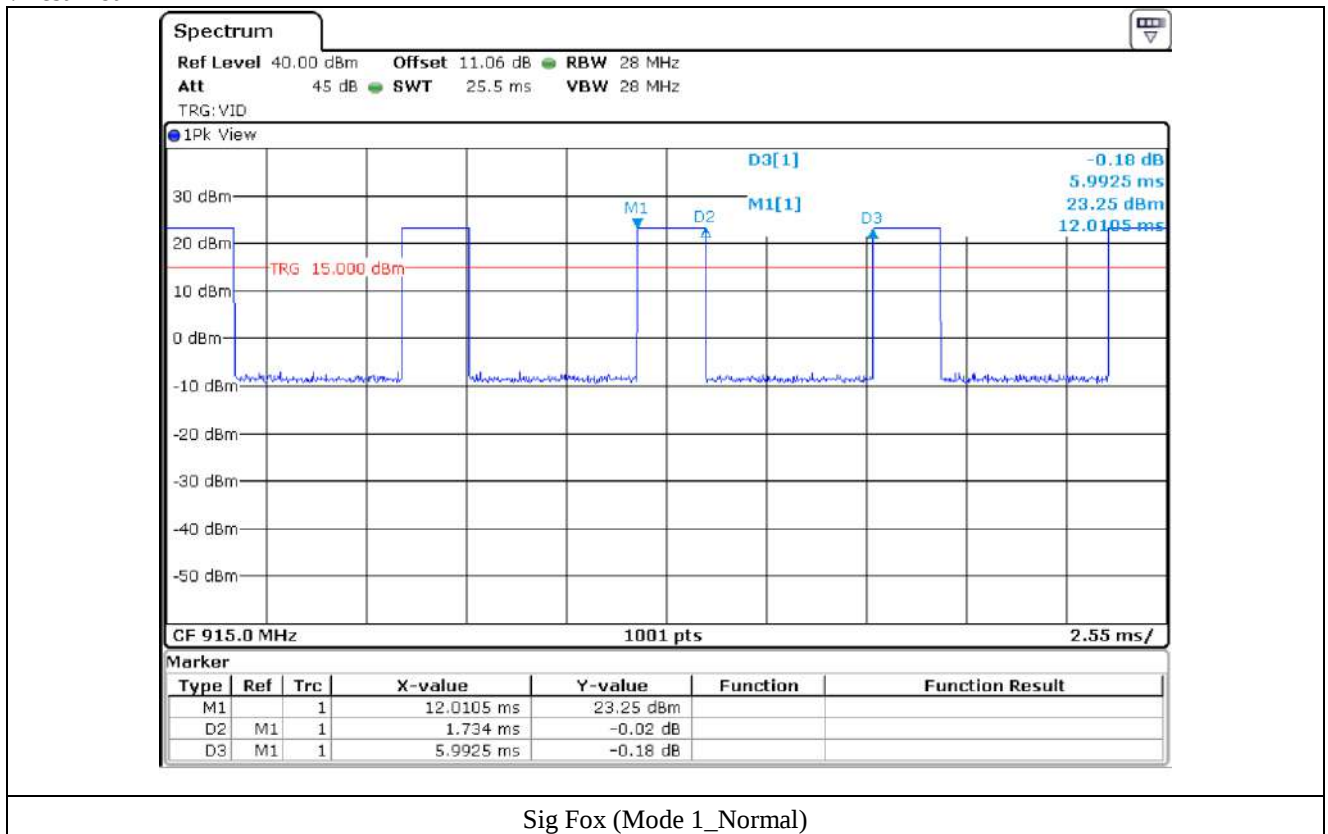
### -. Duty Cycle

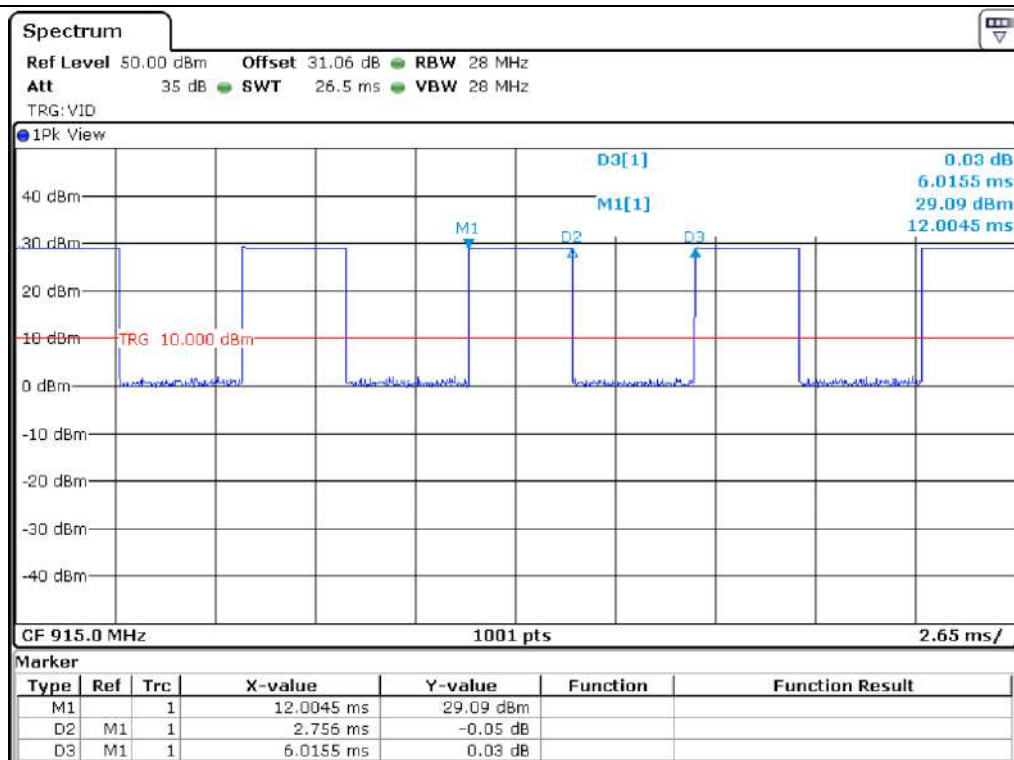
| Mode                 | Tx On Time<br>[ ms ] | Tx Off Time<br>[ ms ] | Duty Cycle<br>[ % ] | Correction Factor<br>[ dB ] |
|----------------------|----------------------|-----------------------|---------------------|-----------------------------|
| GFSK (Mode 1_Normal) | 1.734                | 4.2585                | 28.94               | 5.39                        |
| GFSK (Mode 2_Long)   | 2.756                | 3.2595                | 45.81               | 3.39                        |
| GFSK (Mode 3_Repeat) | 1.25                 | 4.775                 | 20.75               | 6.83                        |

Note – Duty Cycle : (Tx On Time / (Tx On Time + Tx Off Time)) \* 100

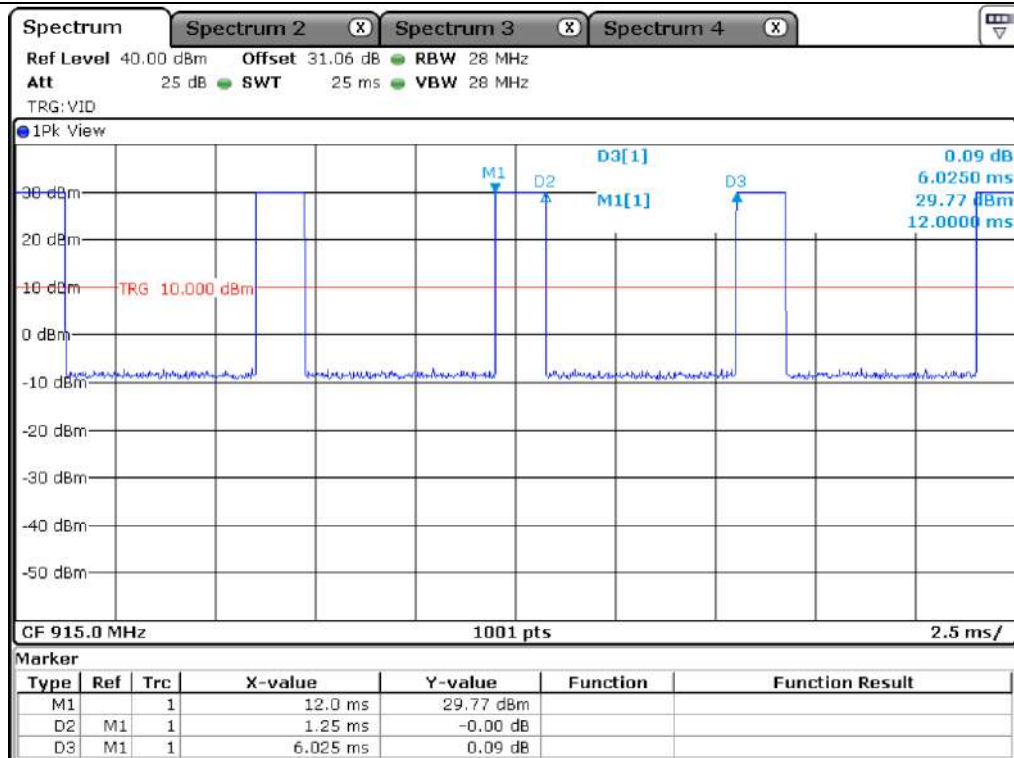
Correction Factor : 10 \* Log(1 / (Duty Cycle / 100))

### -. Test Plot





Sig Fox (Mode 2\_Long)



Sig Fox (Mode 1\_Repeat)

-. Channel List

[Mode 1\_Normal]

| Channel | Frequency[MHz] | Channel | Frequency[MHz] | Channel | Frequency[MHz] |
|---------|----------------|---------|----------------|---------|----------------|
| 20      | 902.500        | 96      | 912.000        | 172     | 921.500        |
| 24      | 903.000        | 100     | 912.500        | 176     | 922.000        |
| 28      | 903.500        | 104     | 913.000        | 180     | 922.500        |
| 32      | 904.000        | 108     | 913.500        | 184     | 923.000        |
| 36      | 904.500        | 112     | 914.000        | 188     | 923.500        |
| 40      | 905.000        | 116     | 914.500        | 192     | 924.000        |
| 44      | 905.500        | 120     | 915.000        | 196     | 924.500        |
| 48      | 906.000        | 124     | 915.500        | 200     | 925.000        |
| 52      | 906.500        | 128     | 916.000        | 204     | 925.500        |
| 56      | 907.000        | 132     | 916.500        | 208     | 926.000        |
| 60      | 907.500        | 136     | 917.000        | 212     | 926.500        |
| 64      | 908.000        | 140     | 917.500        | 216     | 927.000        |
| 68      | 908.500        | 144     | 918.000        | 220     | 927.500        |
| 72      | 909.000        | 148     | 918.500        | -       | -              |
| 76      | 909.500        | 152     | 919.000        | -       | -              |
| 80      | 910.000        | 156     | 919.500        | -       | -              |
| 84      | 910.500        | 160     | 920.000        | -       | -              |
| 88      | 911.000        | 164     | 920.500        | -       | -              |
| 92      | 911.500        | 168     | 921.000        | -       | -              |

[Mode 2\_Long]

| Channel | Frequency[MHz] | Channel | Frequency[MHz] | Channel | Frequency[MHz] |
|---------|----------------|---------|----------------|---------|----------------|
| 12      | 902.400        | 60      | 912.000        | 108     | 921.600        |
| 14      | 902.800        | 62      | 912.400        | 110     | 922.000        |
| 16      | 903.200        | 64      | 912.800        | 112     | 922.400        |
| 18      | 903.600        | 66      | 913.200        | 114     | 922.800        |
| 20      | 904.000        | 68      | 913.600        | 116     | 923.200        |
| 22      | 904.400        | 70      | 914.000        | 118     | 923.600        |
| 24      | 904.800        | 72      | 914.400        | 120     | 924.000        |
| 26      | 905.200        | 74      | 914.800        | 122     | 924.400        |
| 28      | 905.600        | 76      | 915.200        | 124     | 924.800        |
| 30      | 906.000        | 78      | 915.600        | 126     | 925.200        |
| 32      | 906.400        | 80      | 916.000        | 128     | 925.600        |
| 34      | 906.800        | 82      | 916.400        | 130     | 926.000        |
| 36      | 907.200        | 84      | 916.800        | 132     | 926.400        |
| 38      | 907.600        | 86      | 917.200        | 134     | 926.800        |
| 40      | 908.000        | 88      | 917.600        | 136     | 927.200        |
| 42      | 908.400        | 90      | 918.000        | 138     | 927.600        |
| 44      | 908.800        | 92      | 918.400        | -       | -              |
| 46      | 909.200        | 94      | 918.800        | -       | -              |
| 48      | 909.600        | 96      | 919.200        | -       | -              |
| 50      | 910.000        | 98      | 919.600        | -       | -              |
| 52      | 910.400        | 100     | 920.000        | -       | -              |
| 54      | 910.800        | 102     | 920.400        | -       | -              |
| 56      | 911.200        | 104     | 920.800        | -       | -              |
| 58      | 911.600        | 106     | 921.200        | -       | -              |

[Mode 3\_Repeat]

| Channel | Frequency[MHz] | Channel | Frequency[MHz] | Channel | Frequency[MHz] |
|---------|----------------|---------|----------------|---------|----------------|
| 20      | 902.500        | 92      | 911.500        | 164     | 920.500        |
| 24      | 903.000        | 96      | 912.000        | 168     | 921.000        |
| 28      | 903.500        | 100     | 912.500        | 172     | 921.500        |
| 32      | 904.000        | 104     | 913.000        | 176     | 922.000        |
| 36      | 904.500        | 108     | 913.500        | 180     | 922.500        |
| 40      | 905.000        | 112     | 914.000        | 184     | 923.000        |
| 44      | 905.500        | 116     | 914.500        | 188     | 923.500        |
| 48      | 906.000        | 120     | 915.000        | 192     | 924.000        |
| 52      | 906.500        | 124     | 915.500        | 196     | 924.500        |
| 56      | 907.000        | 128     | 916.000        | 200     | 925.000        |
| 60      | 907.500        | 132     | 916.500        | 204     | 925.500        |
| 64      | 908.000        | 136     | 917.000        | 208     | 926.000        |
| 68      | 908.500        | 140     | 917.500        | 212     | 926.500        |
| 72      | 909.000        | 144     | 918.000        | 216     | 927.000        |
| 76      | 909.500        | 148     | 918.500        | 220     | 927.500        |
| 80      | 910.000        | 152     | 919.000        | -       | -              |
| 84      | 910.500        | 156     | 919.500        | -       | -              |
| 88      | 911.000        | 160     | 920.000        | -       | -              |

## 5.4 Configuration of Test System

**Line Conducted Test:** The EUT was tested in the Transmitting Mode and Charging mode. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.10: 2013 to determine the worse operating conditions.

**Radiated Emission Test:** Preliminary radiated emissions test were conducted using the procedure in ANSI C63.10: 2013 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 meter Semi Anechoic Chamber.

The turntable was rotated through 360 degrees and the EUT was tested by positioned three orthogonal planes to obtain the highest reading on the field strength meter. Once maximum reading was determined, the search antenna was raised and lowered in both vertical and horizontal polarization.

## 5.5 Antenna Requirement

For intentional device, according to section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

### Antenna Construction:

The antenna of the EUT is Helical Antenna on the main board in the EUT, so no consideration of replacement by the user.

## 6. PRELIMINARY TEST

### 6.1 AC Power line Conducted Emissions Tests

During Preliminary Test, the following operating mode was investigated.

| Operation Mode                    | The Worse operating condition (Please check one only) |
|-----------------------------------|-------------------------------------------------------|
| Transmitting Mode & Charging Mode | X                                                     |

### 6.2 General Radiated Emissions Tests

During Preliminary Test, the following operating mode was investigated.

| Operation Mode                    | The Worse operating condition (Please check one only) |
|-----------------------------------|-------------------------------------------------------|
| Transmitting Mode & Charging Mode | X                                                     |

## 7. MAXIMUM PEAK OUTPUT POWER

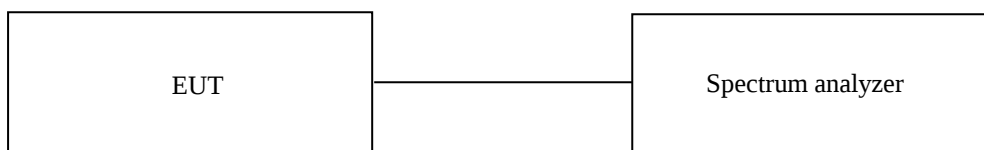
### 7.1 Operating environment

Temperature : 23 °C  
Relative humidity : 41 % R.H.

### 7.2 Test set-up

The maximum peak output power of the intentional radiator shall not exceed the following:

1. For frequency hopping systems operating in the 902-928 MHz band: 1 watt (30 dBm) for systems employing at least 50 hopping channels; and, 0.25 watts (24 dBm) for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.
2. The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi.
3. The e.i.r.p of this module not exceed 4 W because the antenna gain not exceed not 6 dBi.



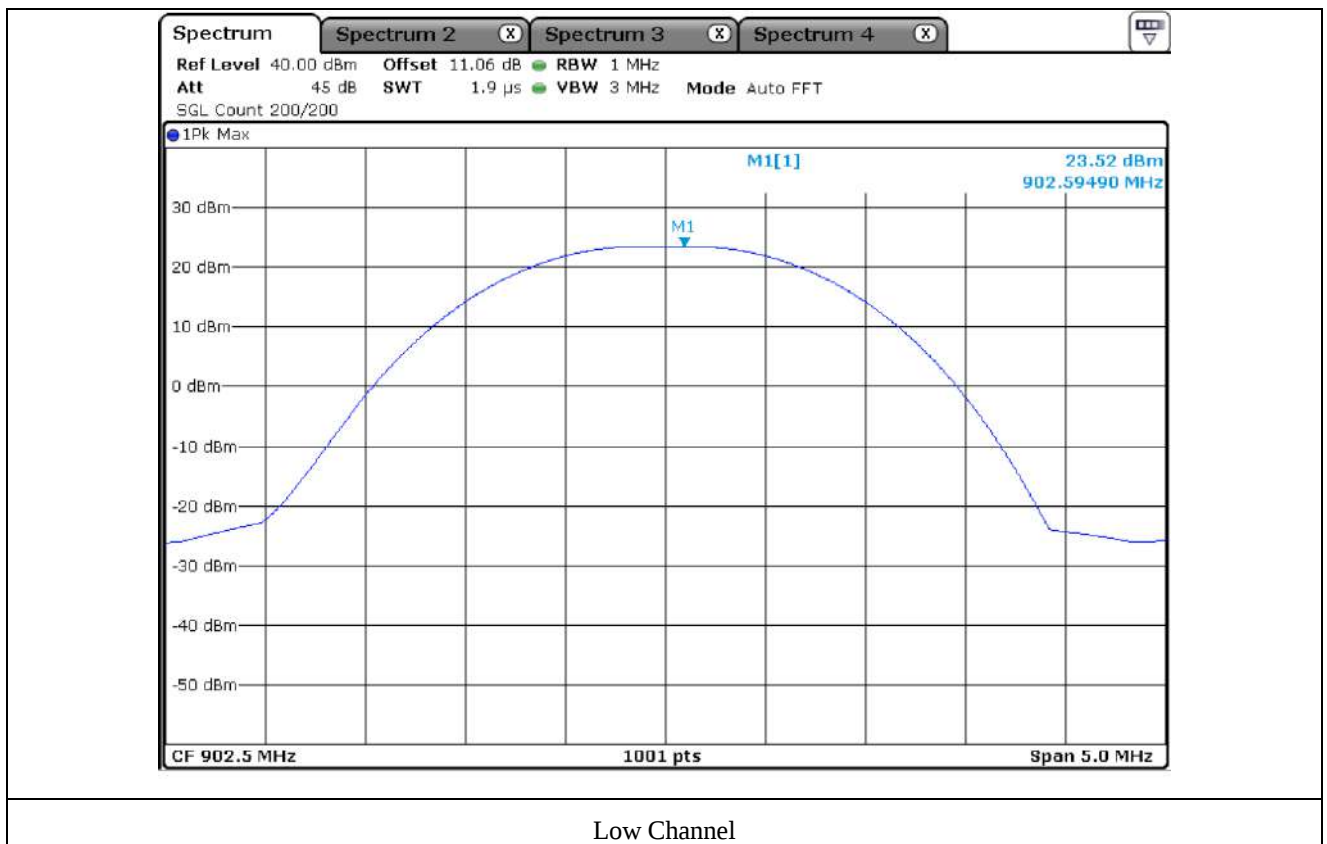
### 7.3 Test Date

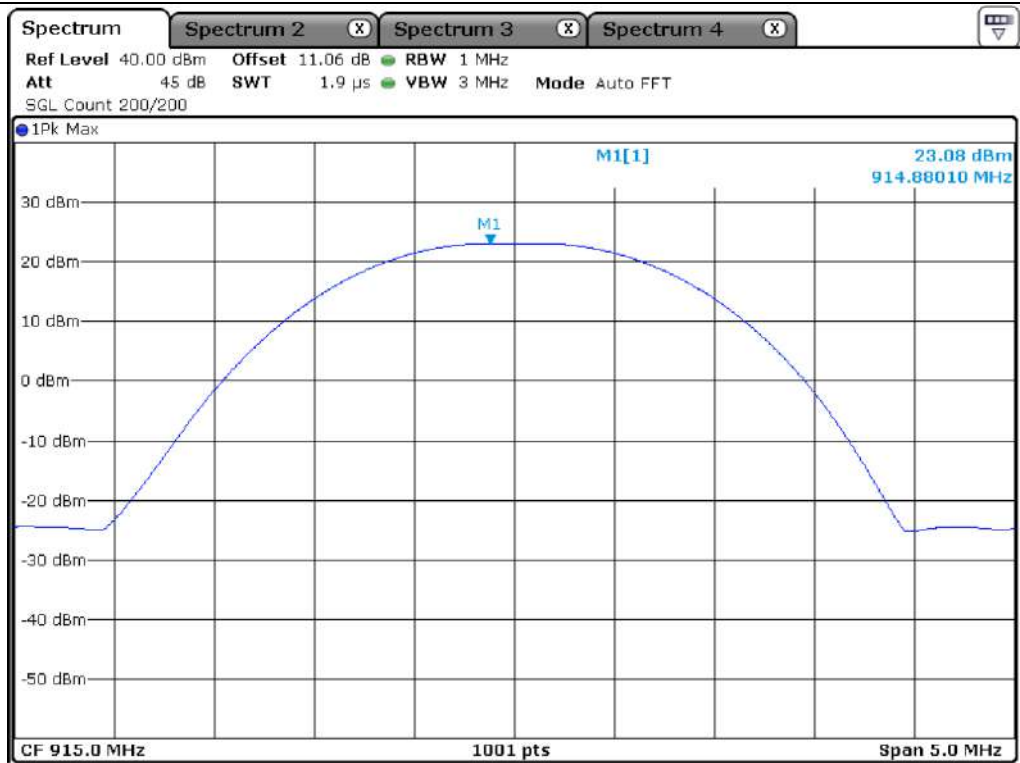
September 17, 2022 ~ November 09, 2022

## 7.4 Test data for Mode 1\_Normal

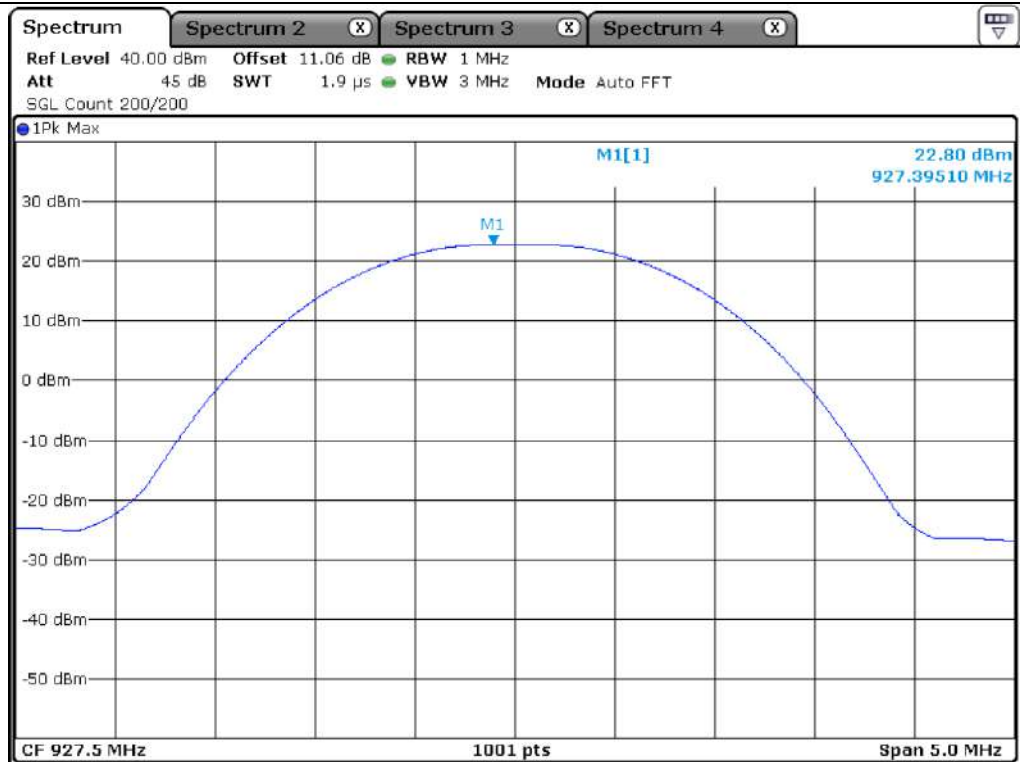
-. Test Result : Pass

| CHANNEL | FREQUENCY<br>(MHz) | MEASURED VALUE |        | LIMIT<br>(mW) | MARGIN<br>(dB) |
|---------|--------------------|----------------|--------|---------------|----------------|
|         |                    | (dBm)          | (mW)   |               |                |
| LOW     | 902.5000           | 23.52          | 224.91 | 1 000         | 775.09         |
| MIDDLE  | 915.0000           | 23.08          | 203.24 | 1 000         | 796.76         |
| HIGH    | 927.5000           | 22.80          | 190.55 | 1 000         | 809.45         |





Middle Channel

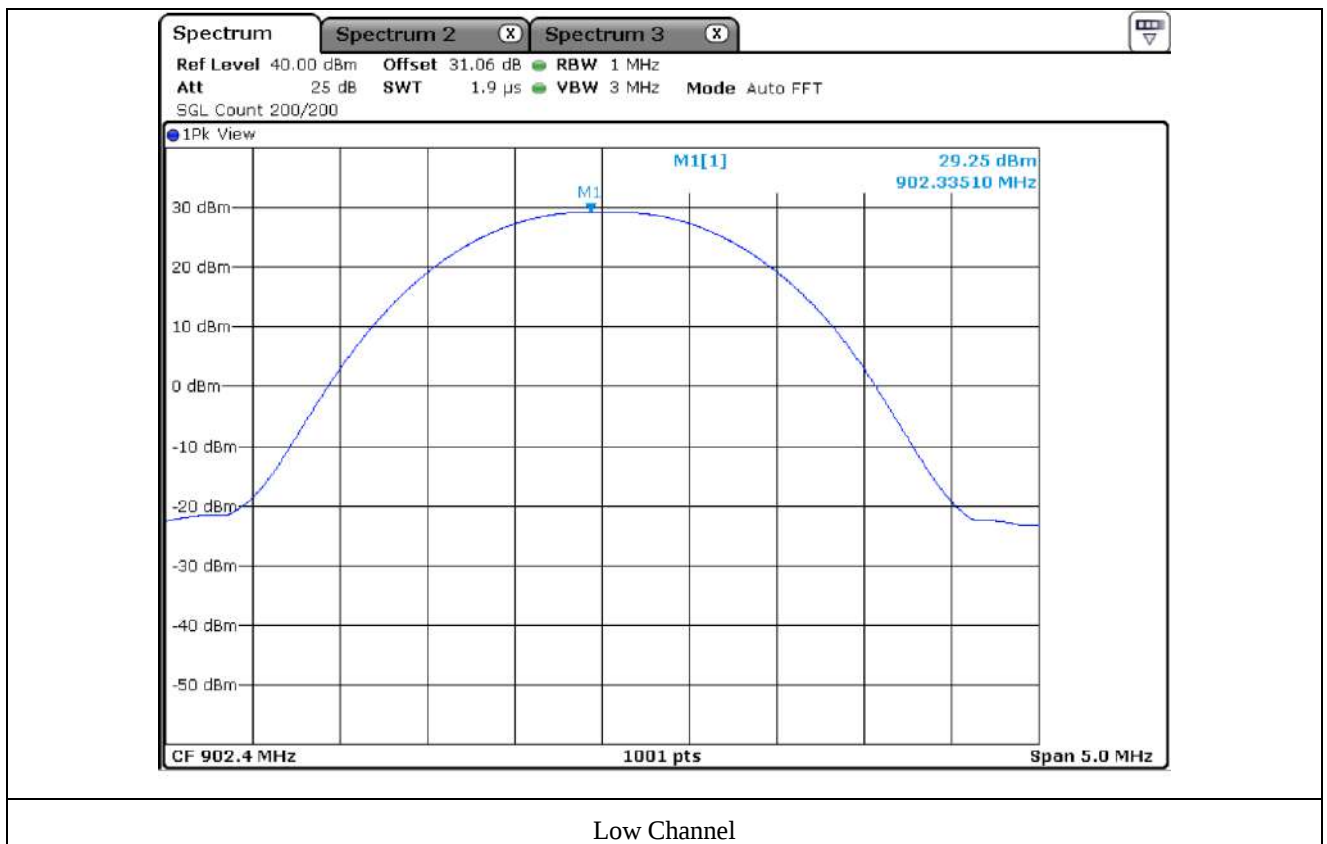


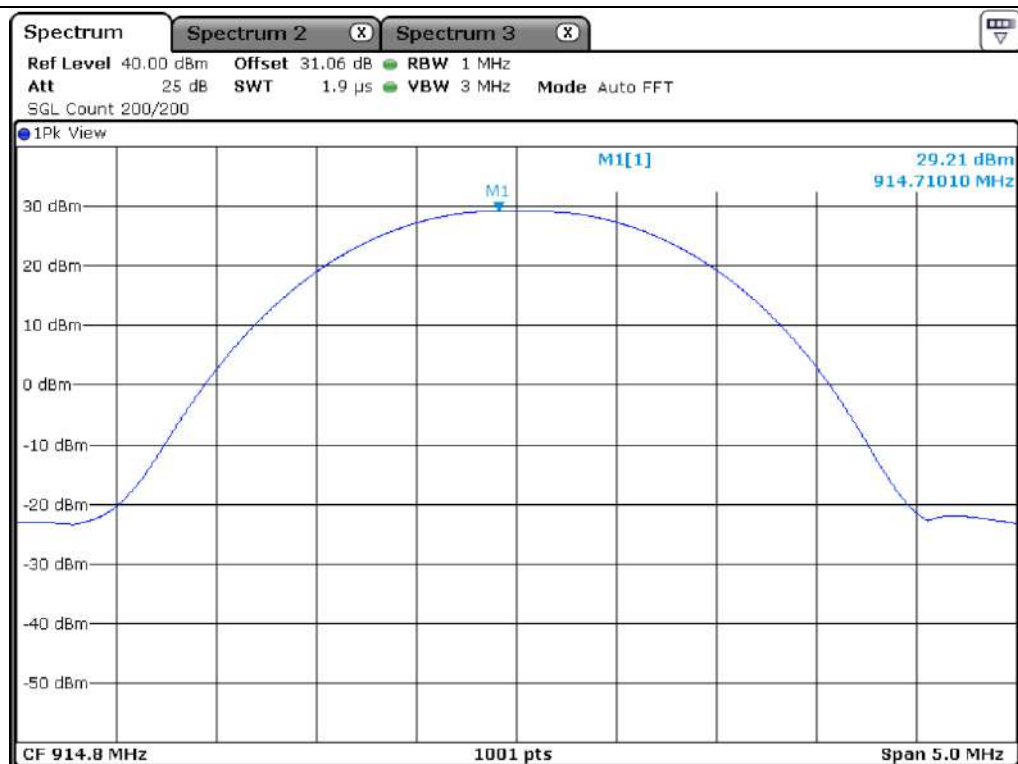
High Channel

## 7.5 Test data for Mode 2\_Long

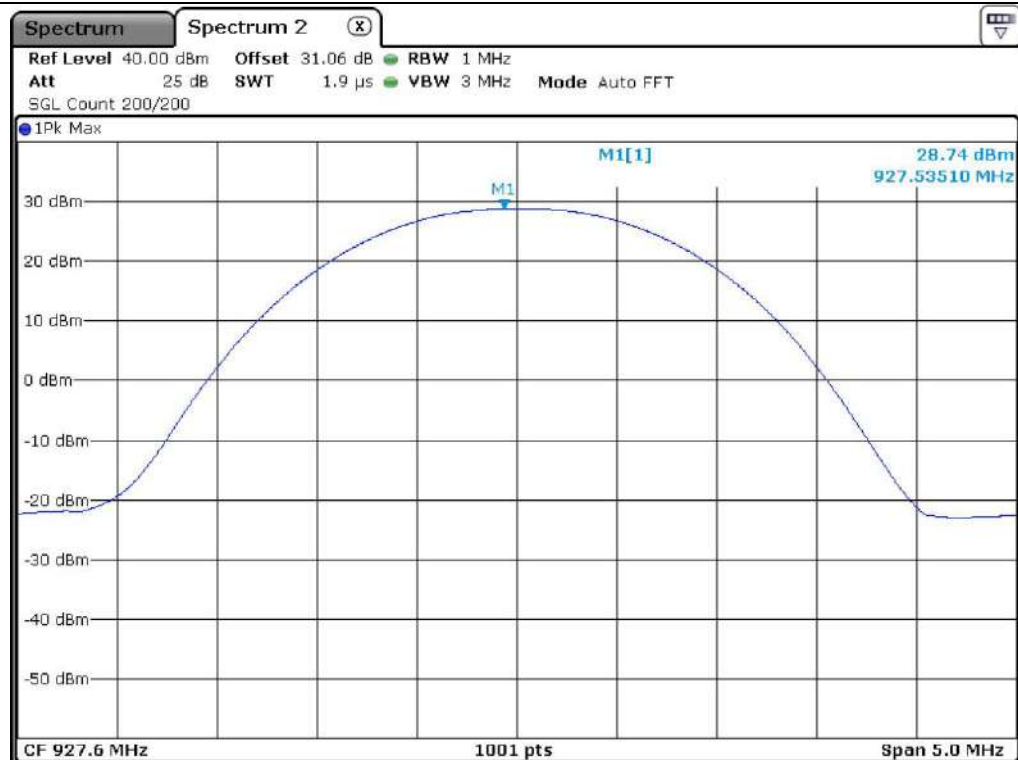
-. Test Result : Pass

| CHANNEL | FREQUENCY<br>(MHz) | MEASURED VALUE |        | LIMIT<br>(mW) | MARGIN<br>(dB) |
|---------|--------------------|----------------|--------|---------------|----------------|
|         |                    | (dBm)          | (mW)   |               |                |
| LOW     | 902.4000           | 29.25          | 841.40 | 1 000.00      | 158.60         |
| MIDDLE  | 914.8000           | 29.21          | 833.68 | 1 000.00      | 166.32         |
| HIGH    | 927.6000           | 28.74          | 748.17 | 1 000.00      | 251.83         |





Middle Channel

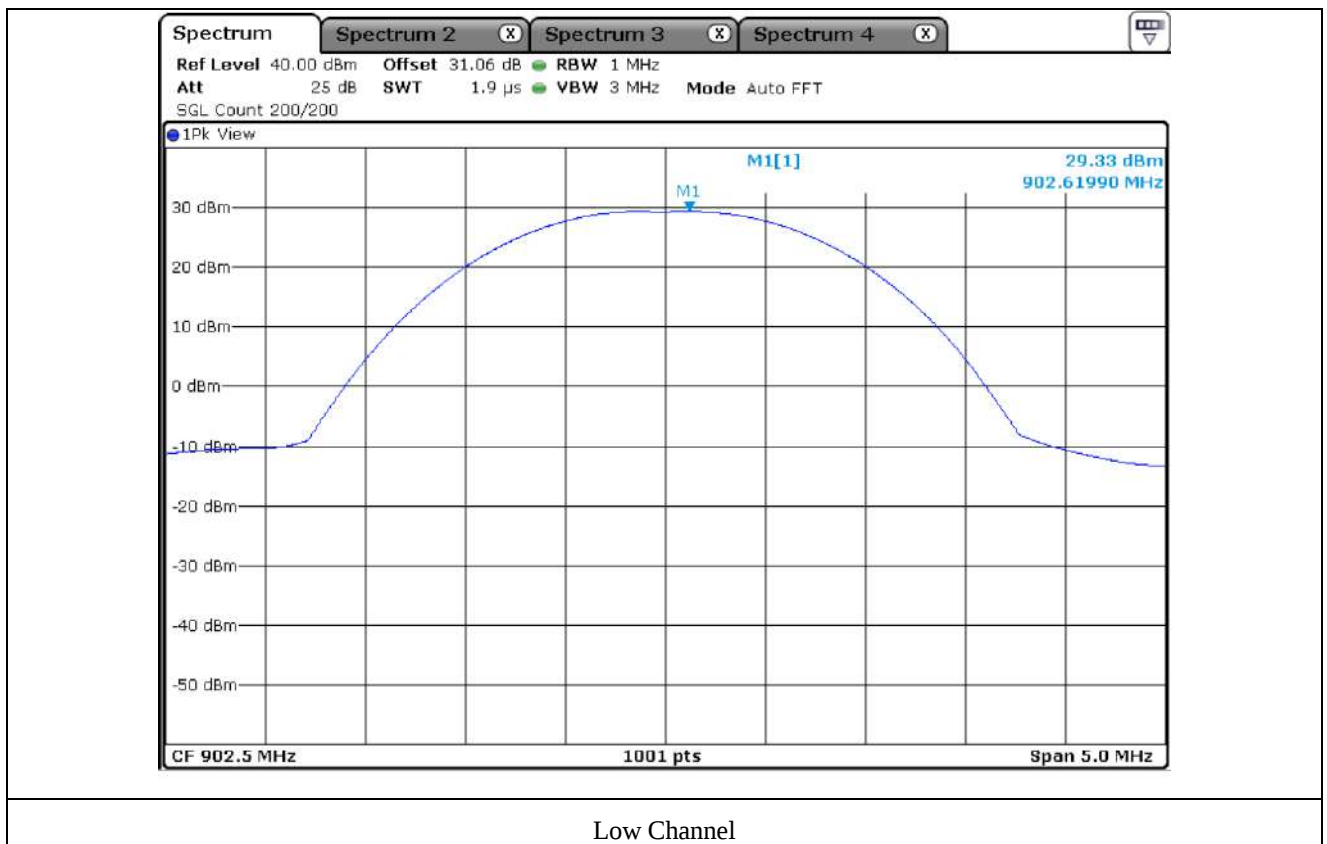


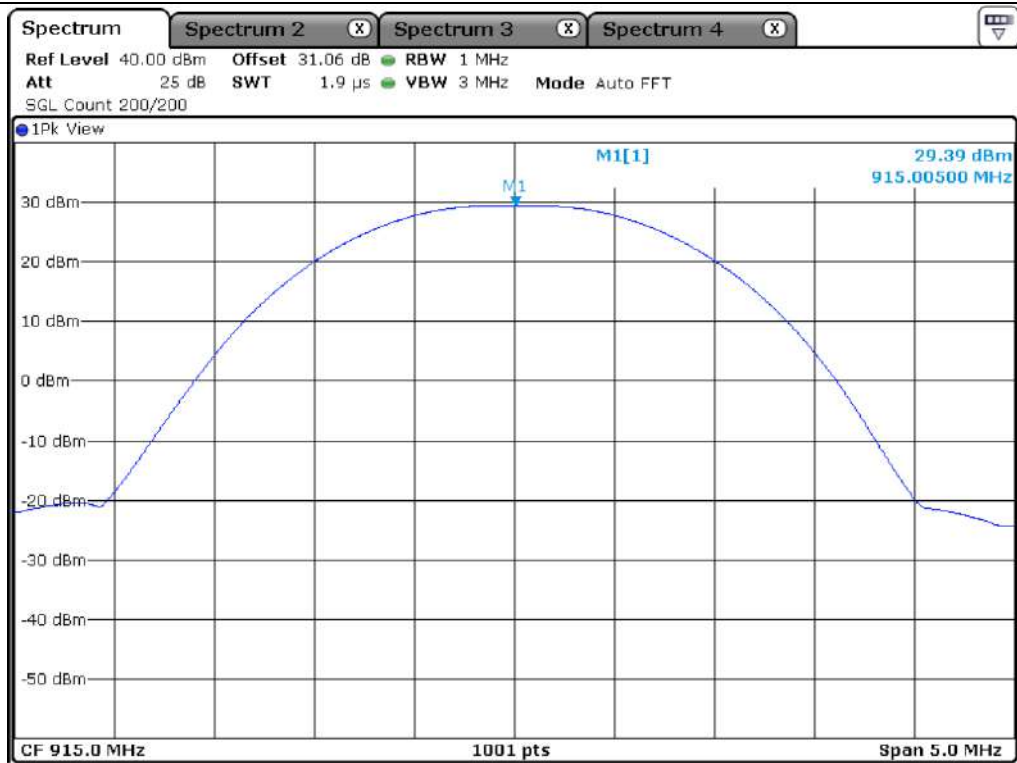
High Channel

## 7.6 Test data for Mode 3\_Repeat

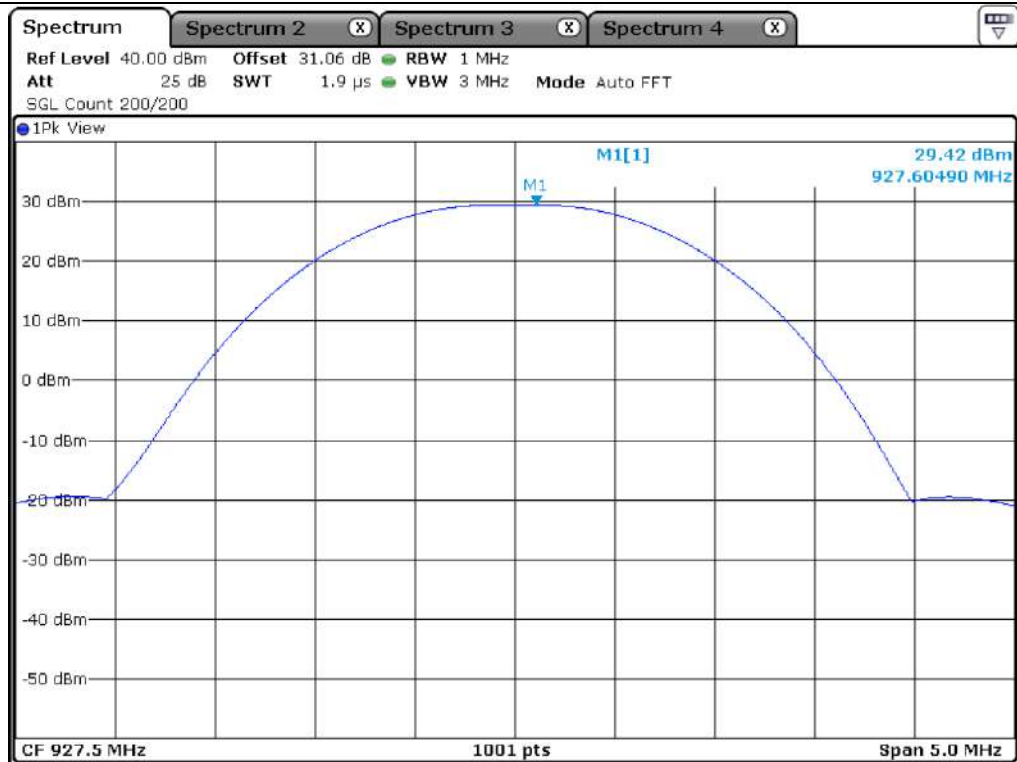
-. Test Result : Pass

| CHANNEL | FREQUENCY<br>(MHz) | MEASURED VALUE |        | LIMIT<br>(mW) | MARGIN<br>(dB) |
|---------|--------------------|----------------|--------|---------------|----------------|
|         |                    | (dBm)          | (mW)   |               |                |
| LOW     | 902.5000           | 29.33          | 857.04 | 1 000.00      | 142.96         |
| MIDDLE  | 915.0000           | 29.39          | 868.96 | 1 000.00      | 131.04         |
| HIGH    | 927.5000           | 29.42          | 874.98 | 1 000.00      | 125.02         |





Middle Channel



High Channel

## 8. BAND EDGES

### 8.1 Operating environment

Temperature : 23 °C  
Relative humidity : 41 % R.H.

### 8.2 Test set-up

According to §15.247(d) in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.



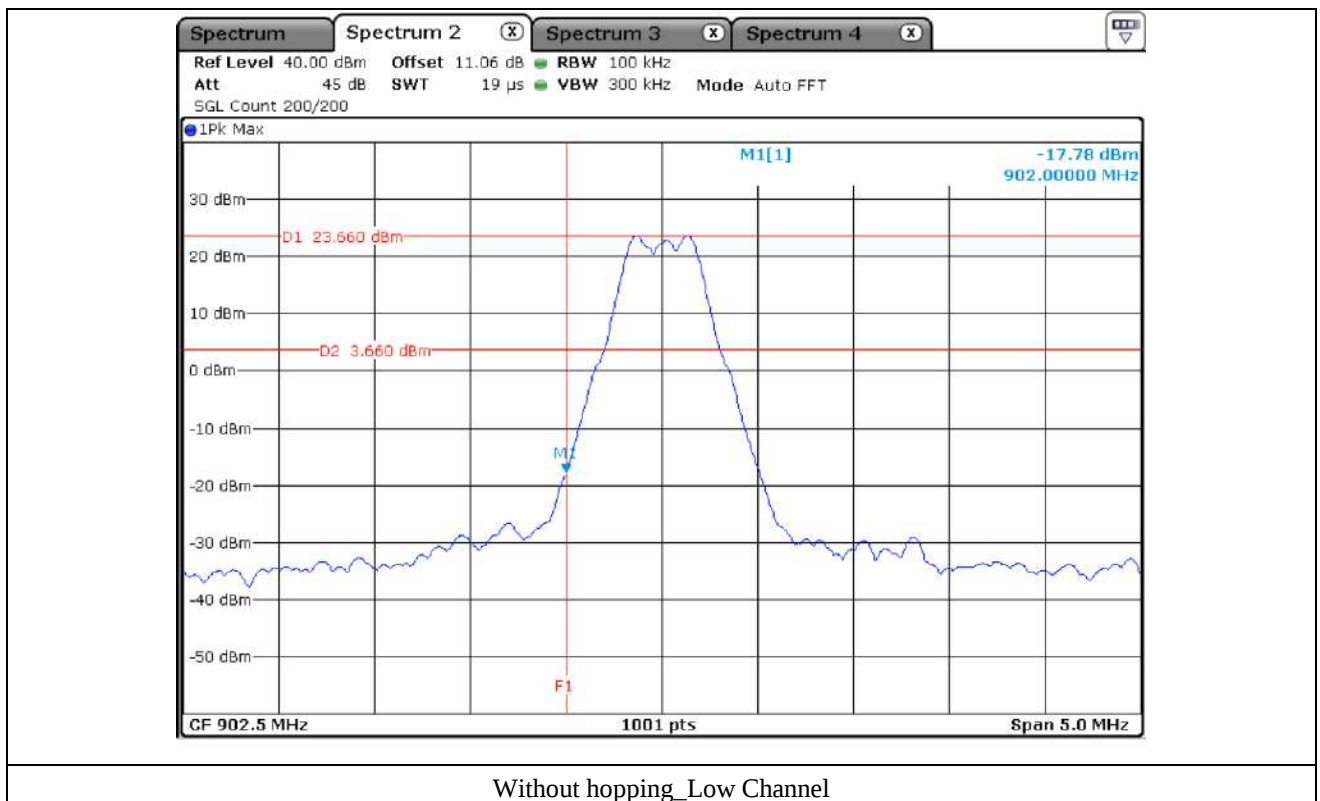
### 8.3 Test Date

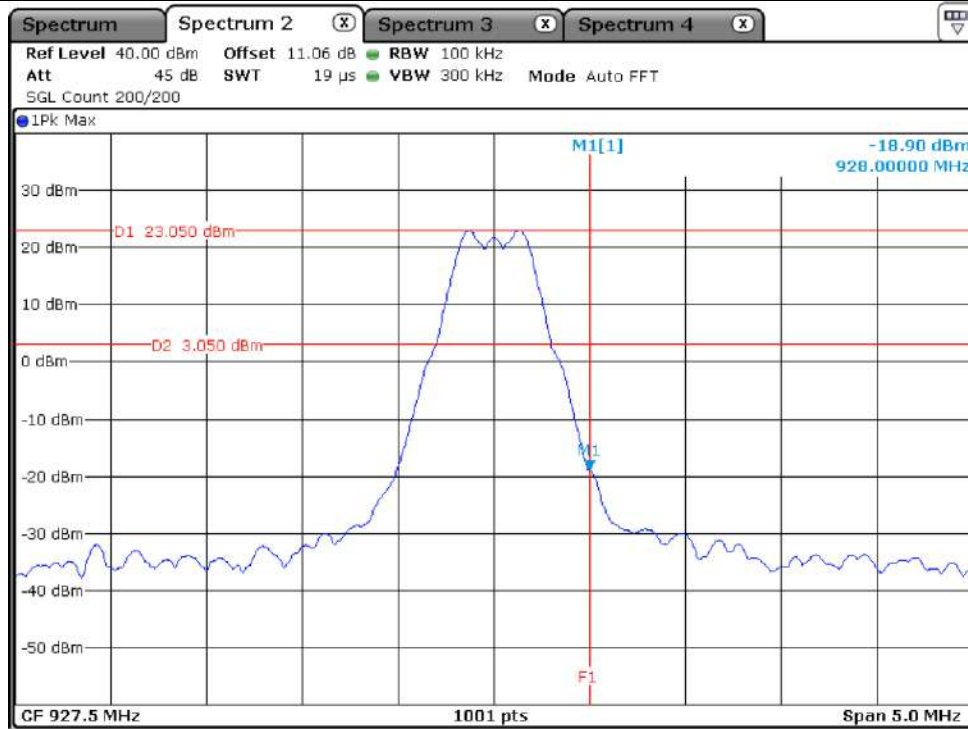
September 17, 2022 ~ November 09, 2022

#### 8.4 Test data for Mode 1\_Normal

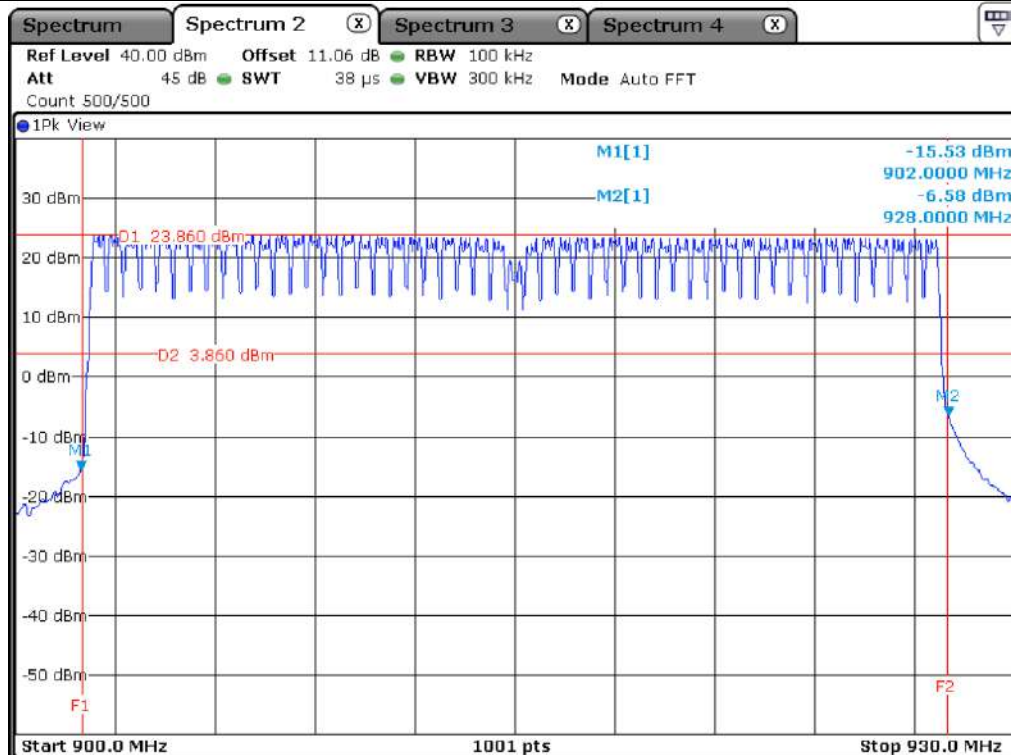
-. Test Result : Pass

| CHANNEL                | FREQUENCY<br>(MHz) | MEASURED VALUE<br>(dB) | LIMIT<br>(dBc) | MARGIN<br>(dB) |
|------------------------|--------------------|------------------------|----------------|----------------|
| <b>Without hopping</b> |                    |                        |                |                |
| LOW                    | 902.0000           | 41.44                  | 20.00          | 21.44          |
| HIGH                   | 928.0000           | 41.95                  | 20.00          | 21.95          |
| <b>With Hopping</b>    |                    |                        |                |                |
| LOW                    | 902.0000           | 39.39                  | 20.00          | 19.39          |
| HIGH                   | 928.0000           | 30.44                  | 20.00          | 10.44          |





Without hopping\_High Channel

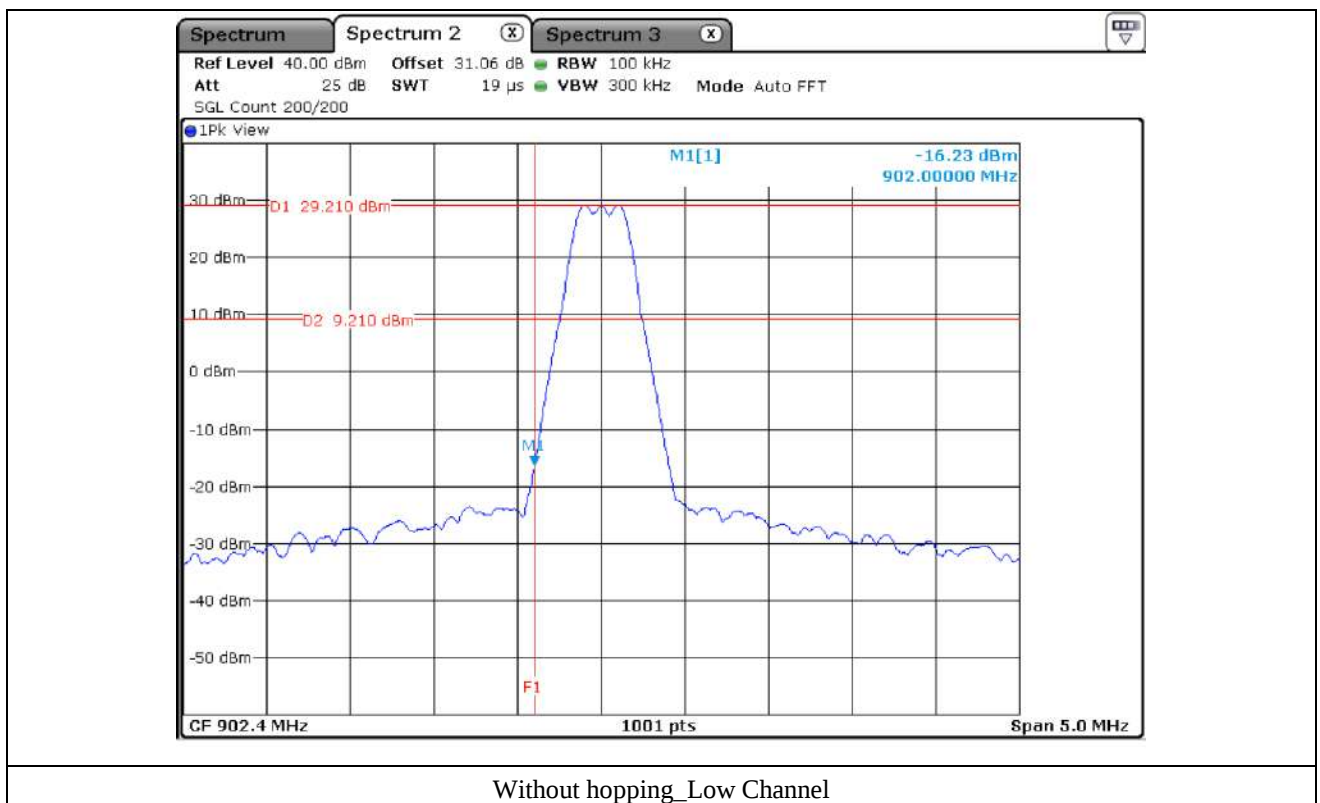


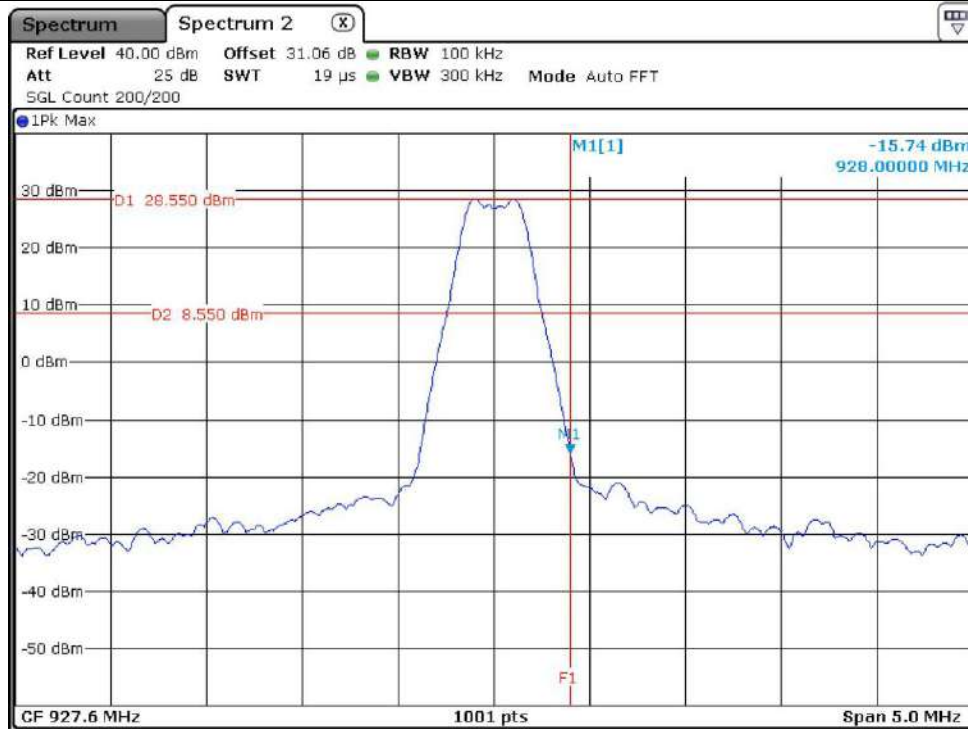
With Hopping

## 8.5 Test data for Mode 2\_Long

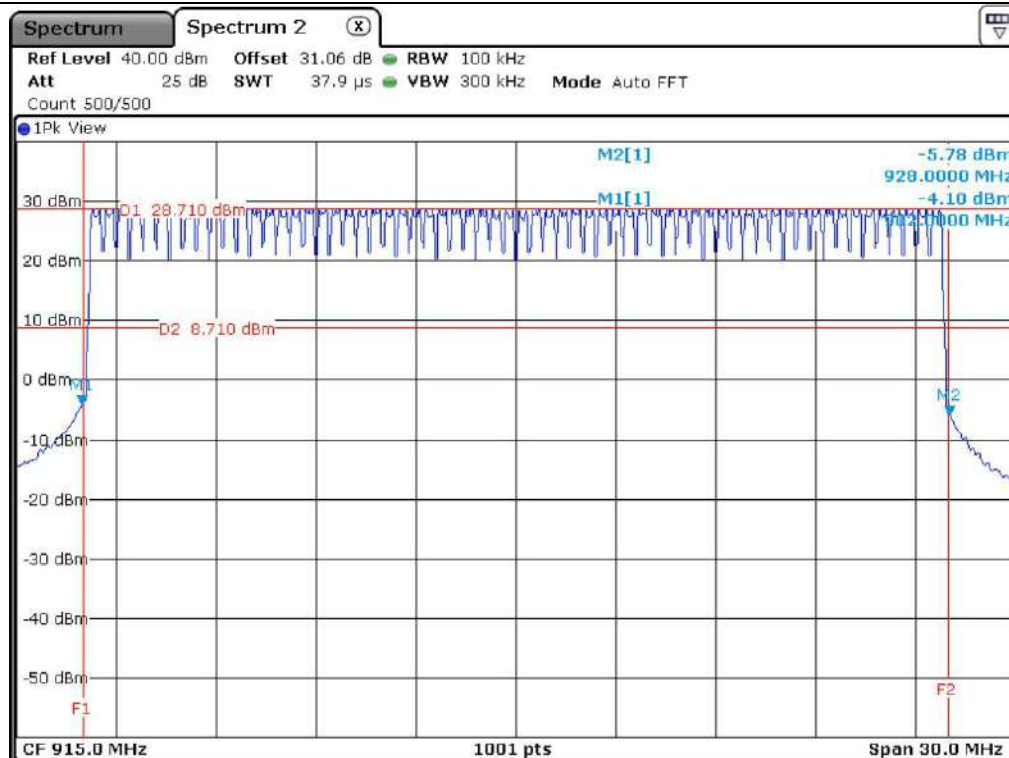
-. Test Result : Pass

| CHANNEL                | FREQUENCY<br>(MHz) | MEASURED VALUE<br>(dB) | LIMIT<br>(dBc) | MARGIN<br>(dB) |
|------------------------|--------------------|------------------------|----------------|----------------|
| <b>Without hopping</b> |                    |                        |                |                |
| LOW                    | 902.0000           | 45.44                  | 20.00          | 25.44          |
| HIGH                   | 928.0000           | 44.29                  | 20.00          | 24.29          |
| <b>With Hopping</b>    |                    |                        |                |                |
| LOW                    | 902.0000           | 32.81                  | 20.00          | 12.81          |
| HIGH                   | 928.0000           | 34.49                  | 20.00          | 14.49          |





Without hopping\_High Channel

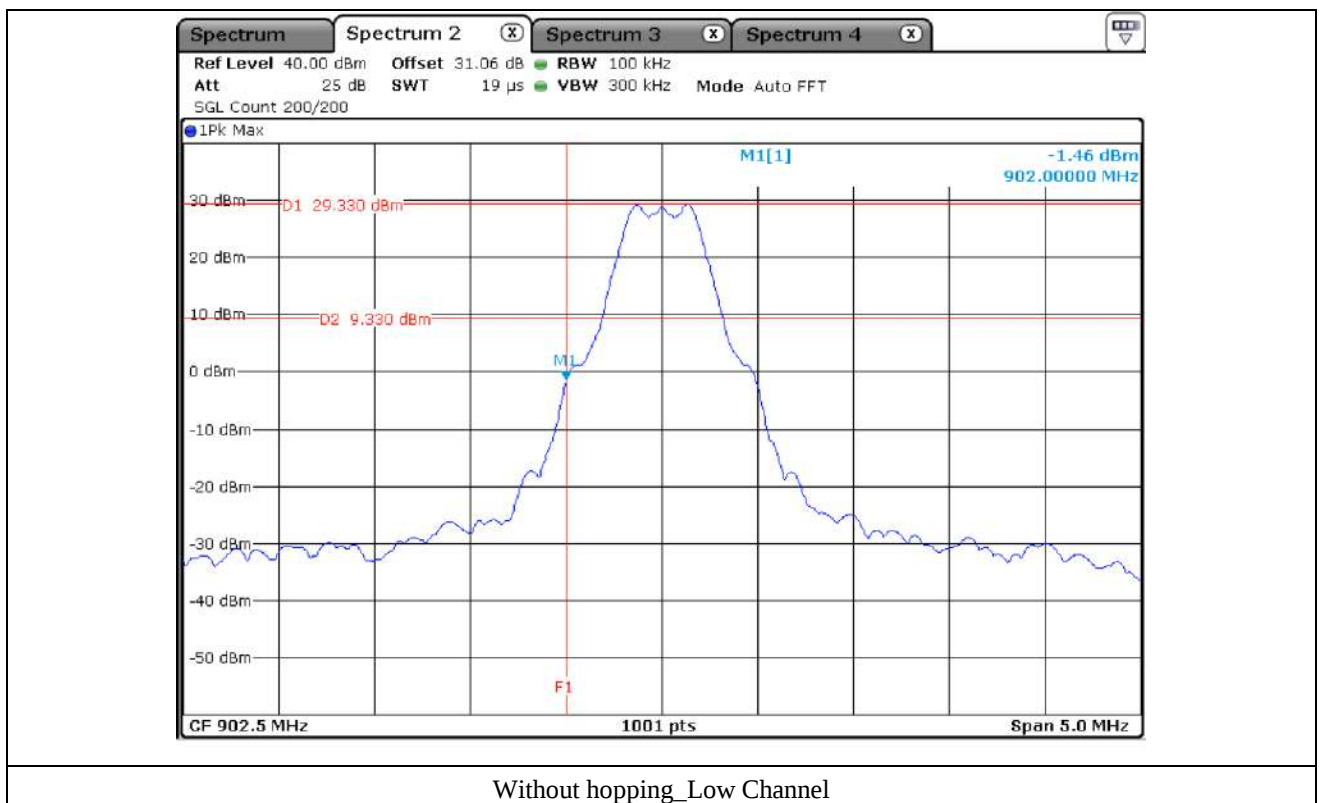


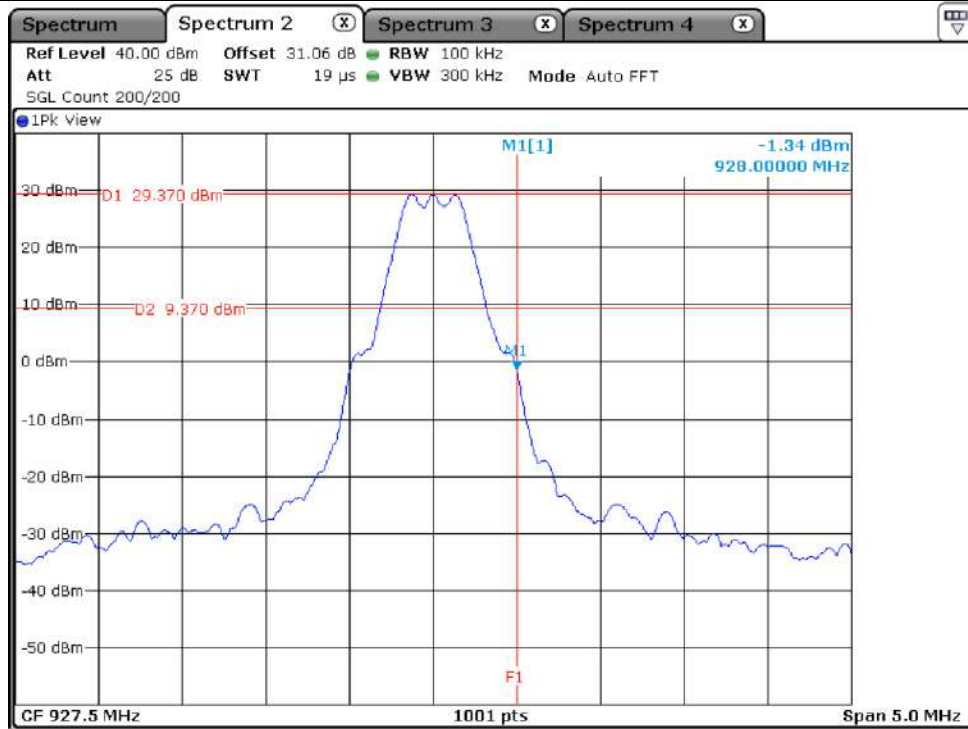
With Hopping

## 8.6 Test data for Mode 3\_Repeat

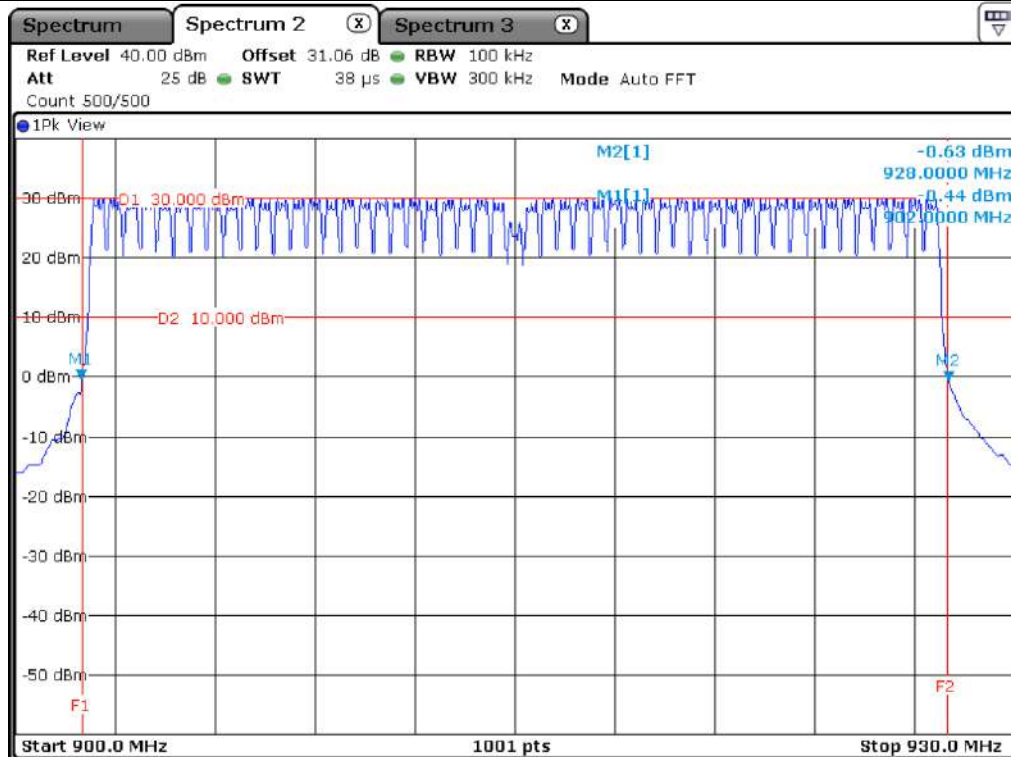
-. Test Result : Pass

| CHANNEL                | FREQUENCY<br>(MHz) | MEASURED VALUE<br>(dB) | LIMIT<br>(dBc) | MARGIN<br>(dB) |
|------------------------|--------------------|------------------------|----------------|----------------|
| <b>Without hopping</b> |                    |                        |                |                |
| LOW                    | 902.0000           | 30.79                  | 20.00          | 10.79          |
| HIGH                   | 928.0000           | 30.71                  | 20.00          | 10.71          |
| <b>With Hopping</b>    |                    |                        |                |                |
| LOW                    | 902.0000           | 30.44                  | 20.00          | 10.44          |
| HIGH                   | 928.0000           | 30.63                  | 20.00          | 10.63          |





Without hopping\_High Channel



With Hopping

## 9. FREQUENCY SEPARATION / OCCUPIED BANDWIDTH (20 dB BANDWIDTH)

### 9.1 Operating environment

Temperature : 23 °C  
Relative humidity : 41 % R.H.

### 9.2 Test set-up

According to §15.247(a)(1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.



### 9.3 Test Date

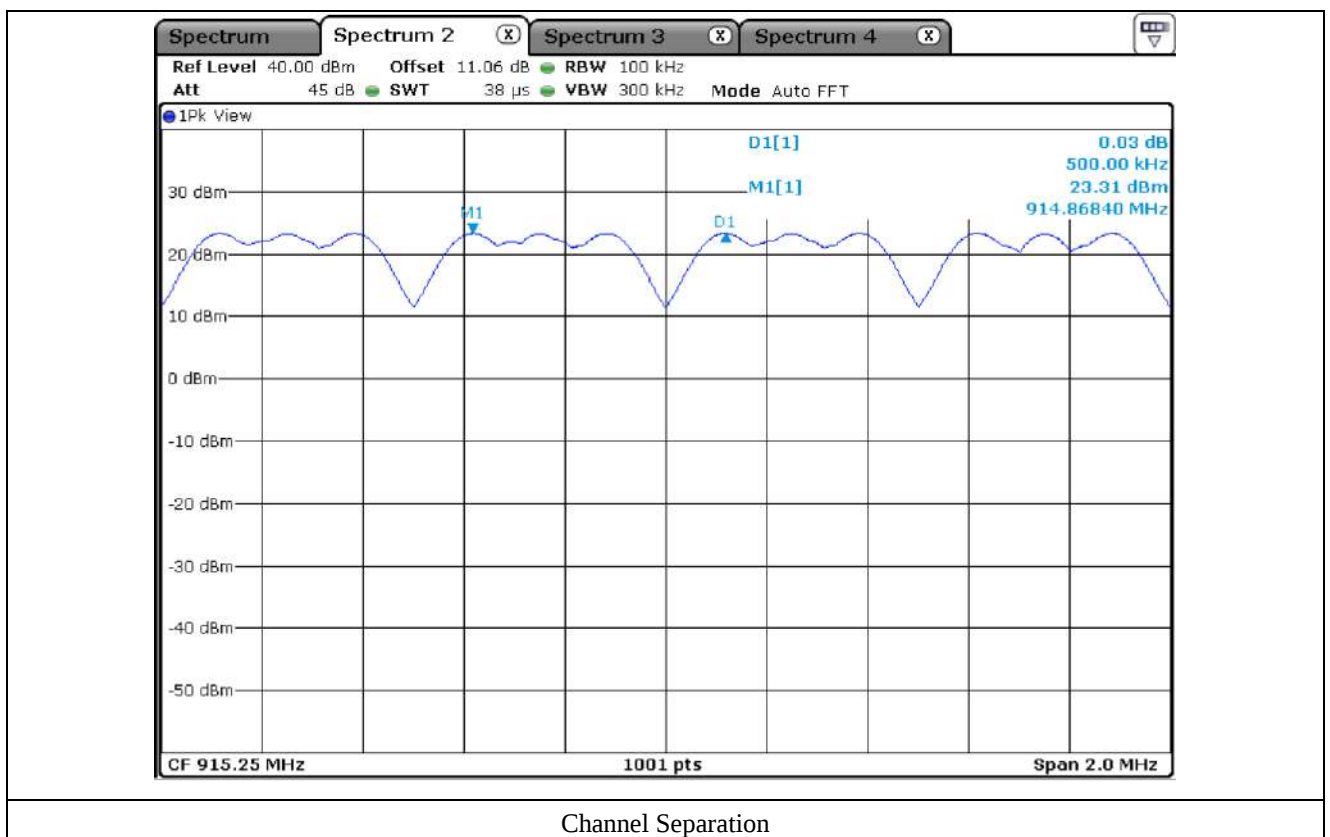
September 17, 2022 ~ November 09, 2022

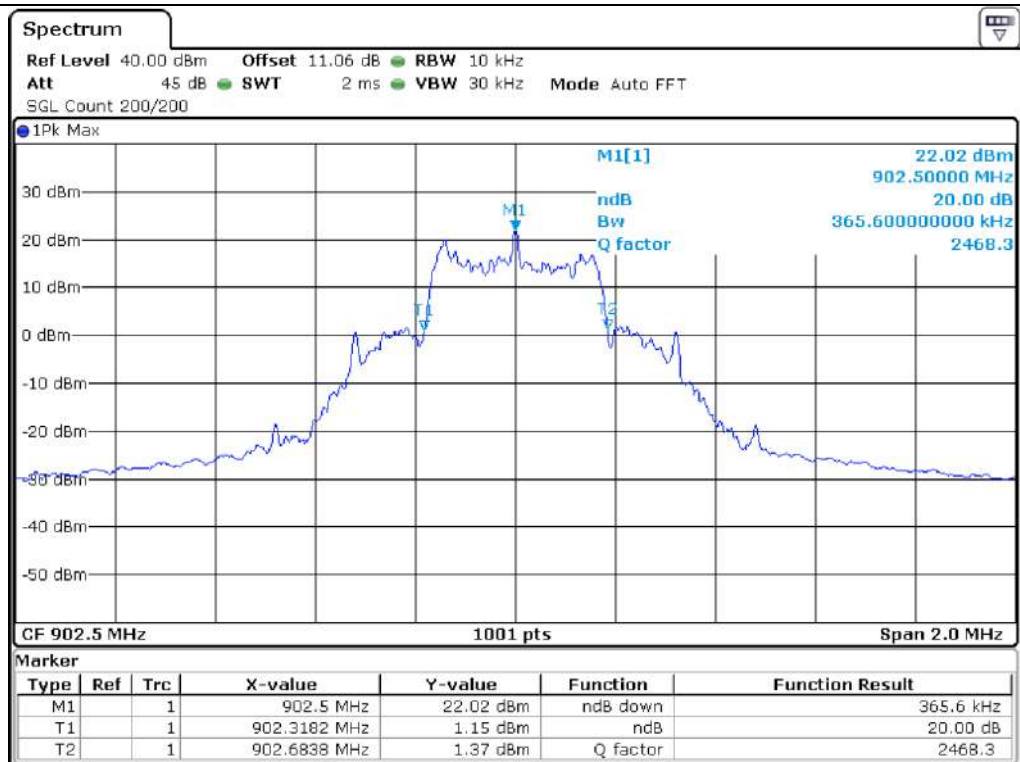
## 9.4 Test data for Mode 1\_Normal

### 9.4.1 Carrier Frequency / 20 dB Bandwidth

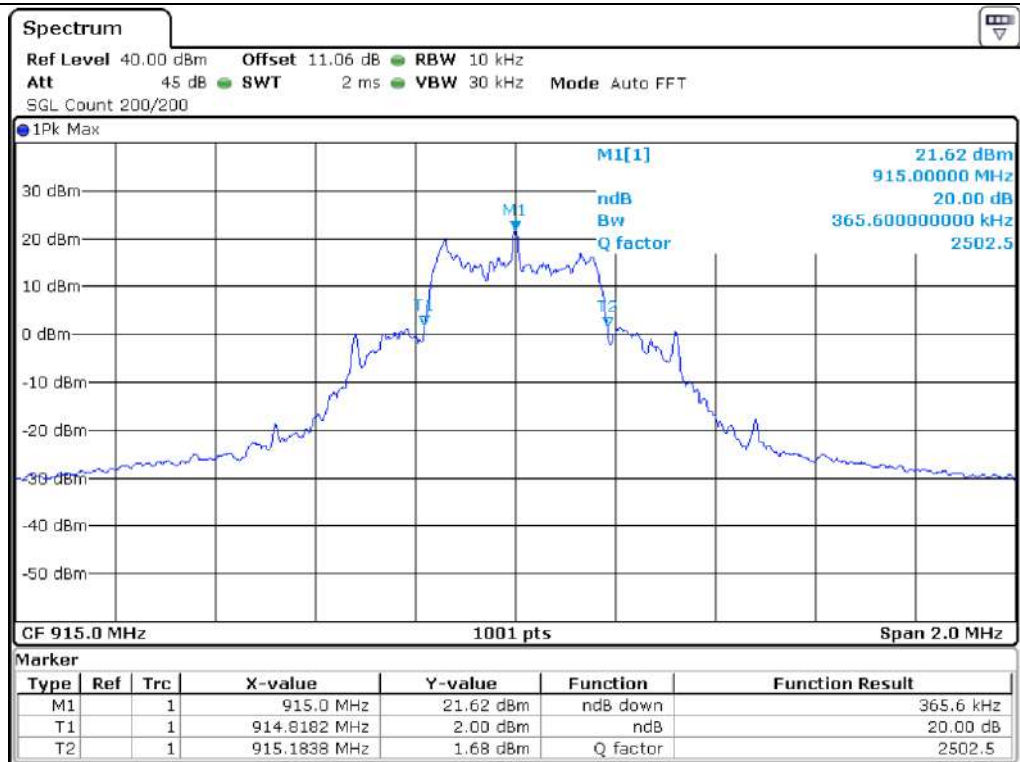
-. Test Result : Pass

| Channel Separation<br>(kHz) | 20 dB Bandwidth |                      | Limit<br>(kHz)                                       | Result |
|-----------------------------|-----------------|----------------------|------------------------------------------------------|--------|
|                             | Channel         | Measured Value (kHz) |                                                      |        |
| 500.00                      | LOW             | 365.60               | $\geq 25$ Or<br>$> 20$ dB B.W. of<br>Hopping Channel | Pass   |
|                             | MIDDLE          | 365.60               |                                                      |        |
|                             | HIGH            | 367.60               |                                                      |        |

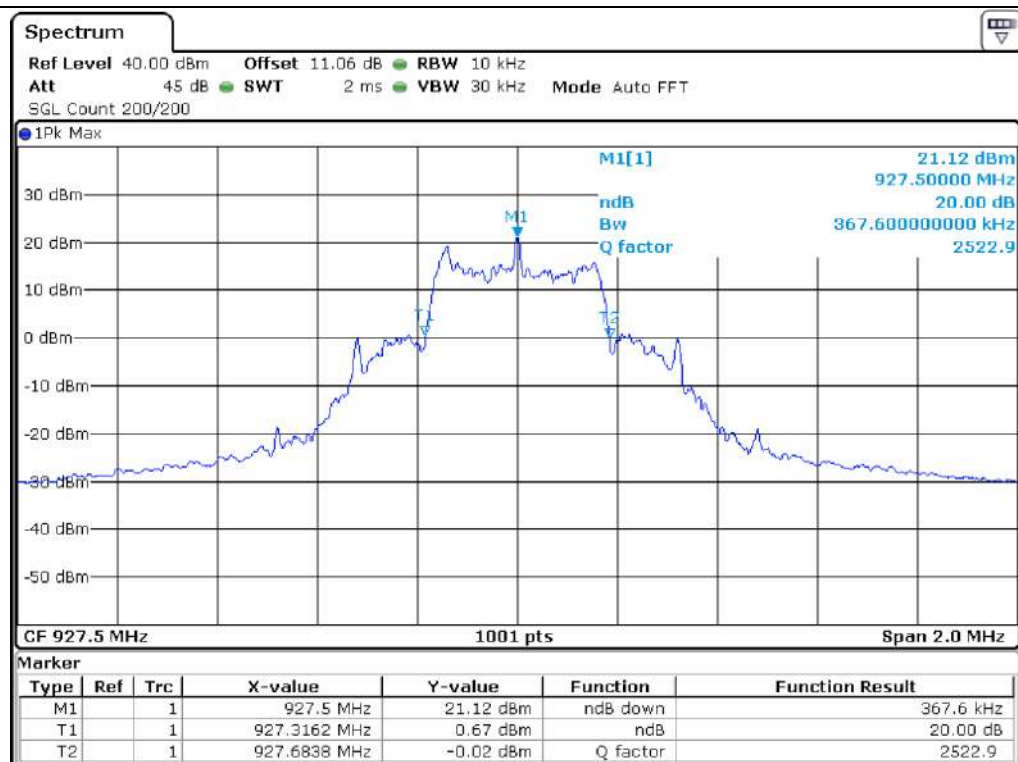




Low Channel



Middle Channel



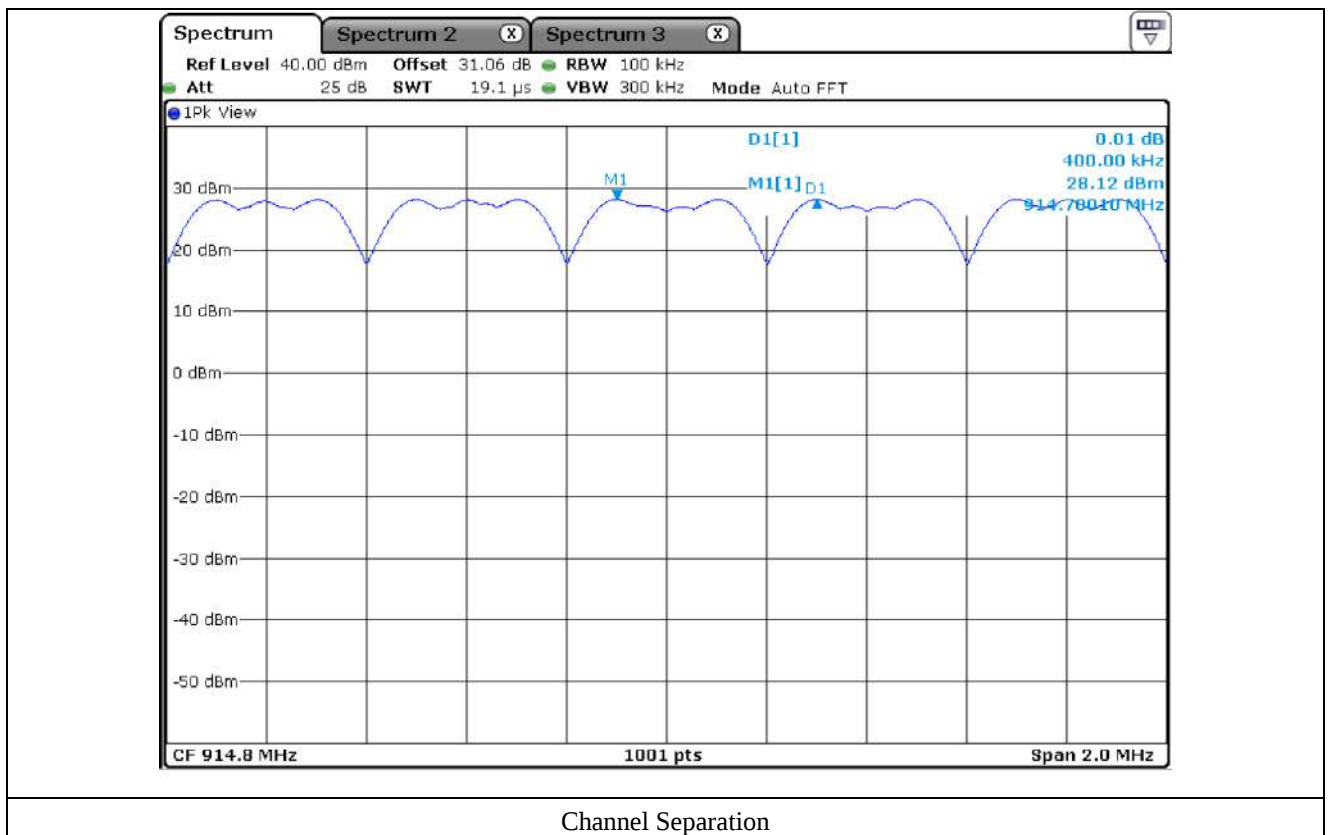
High Channel

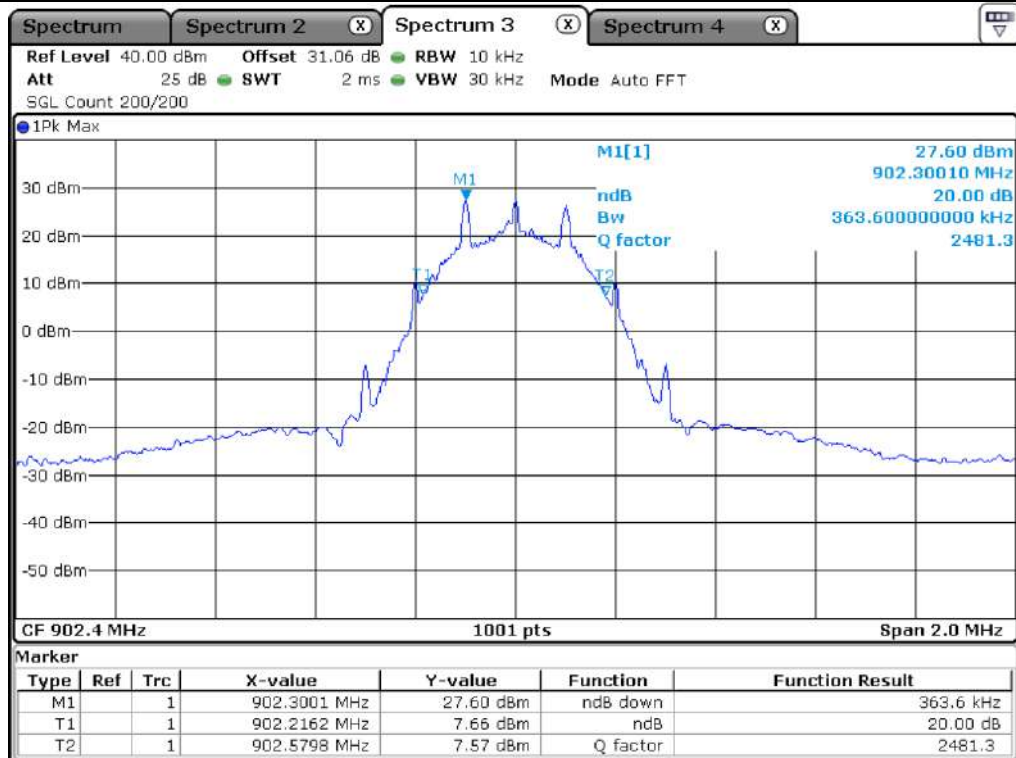
## 9.5 Test data for Mode 2\_Long

### 9.5.1 Carrier Frequency Separation / 20 dB Bandwidth

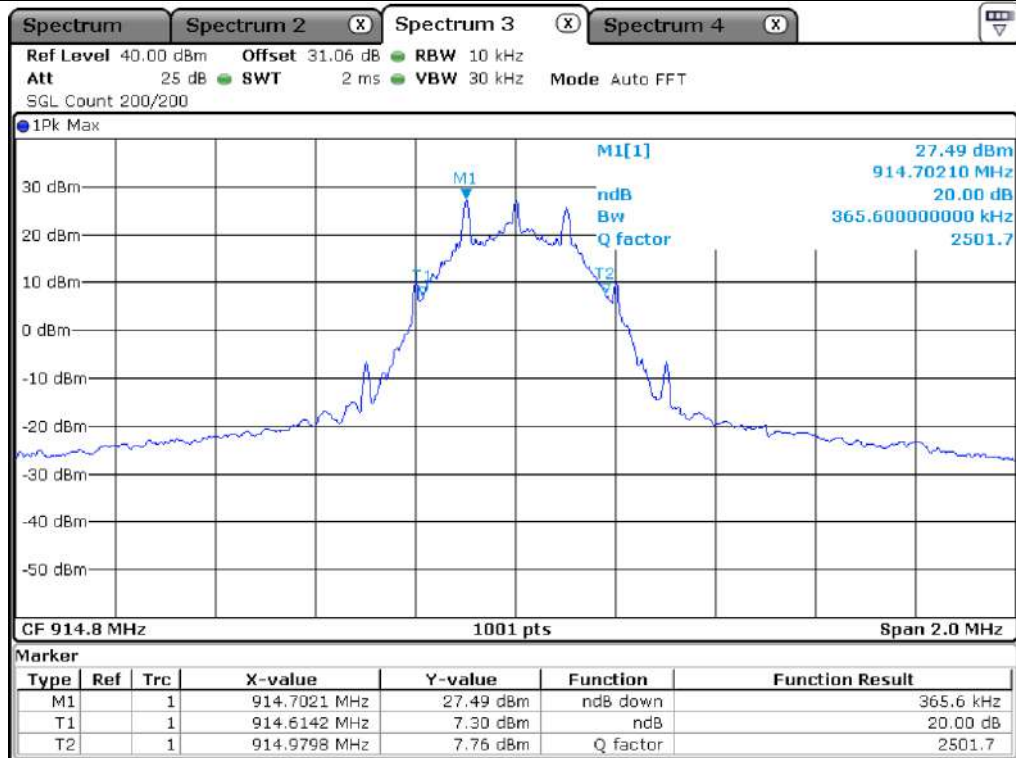
-. Test Result : Pass

| Channel Separation<br>(kHz) | 20 dB Bandwidth |                      | Limit<br>(kHz)                                       | Result |
|-----------------------------|-----------------|----------------------|------------------------------------------------------|--------|
|                             | Channel         | Measured Value (kHz) |                                                      |        |
| 400.00                      | LOW             | 363.60               | $\geq 25$ Or<br>$> 20$ dB B.W. of<br>Hopping Channel | Pass   |
|                             | MIDDLE          | 365.60               |                                                      |        |
|                             | HIGH            | 363.60               |                                                      |        |





Low Channel



Middle Channel



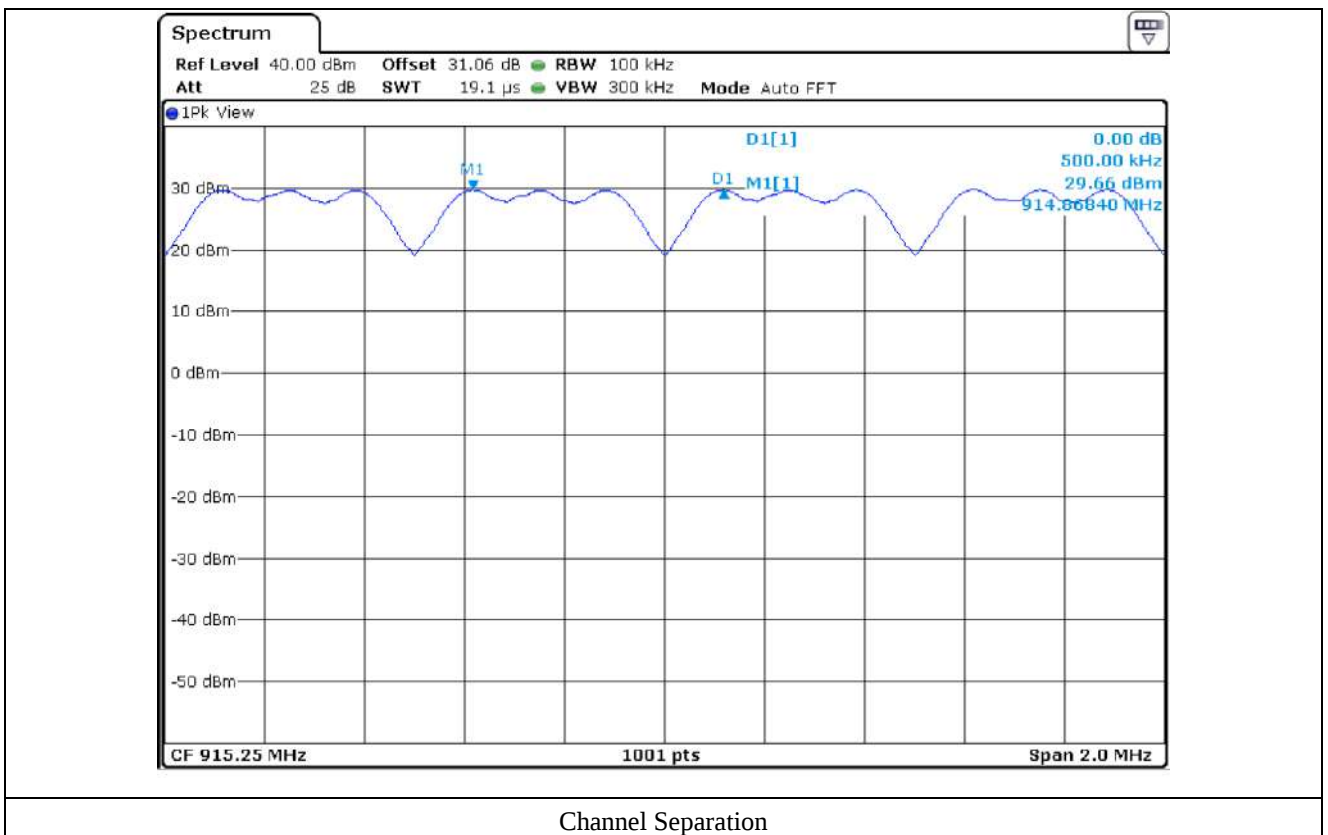
High Channel

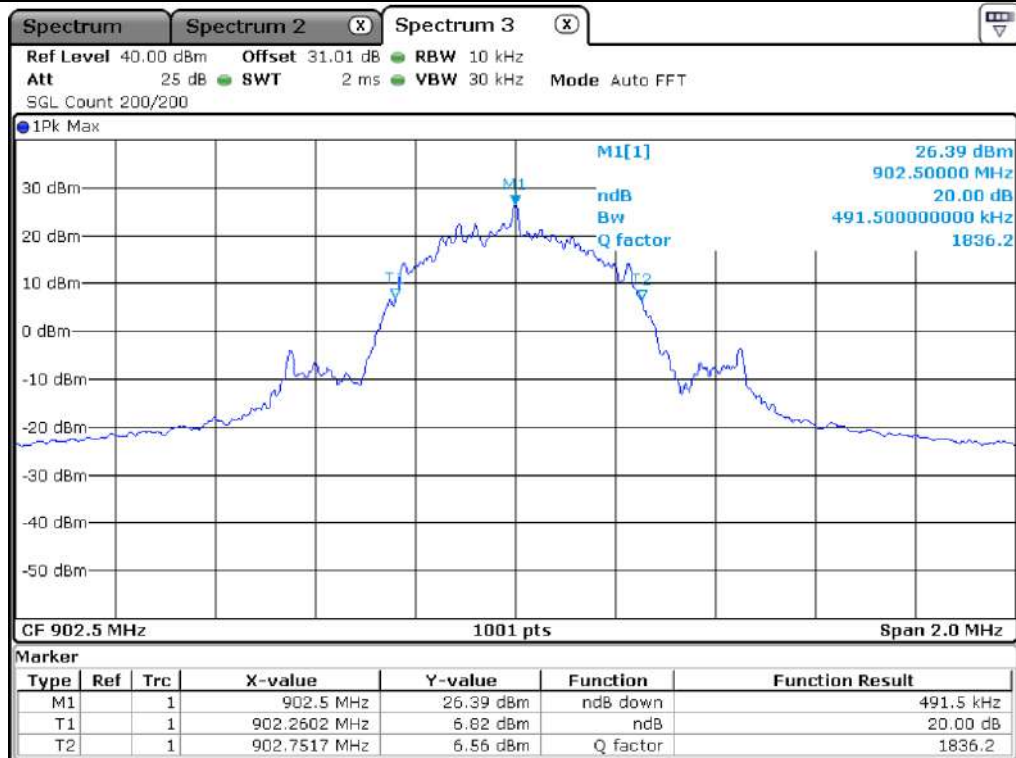
## 9.6 Test data for Mode 3\_Repeat

### 9.6.1 Carrier Frequency / 20 dB Bandwidth

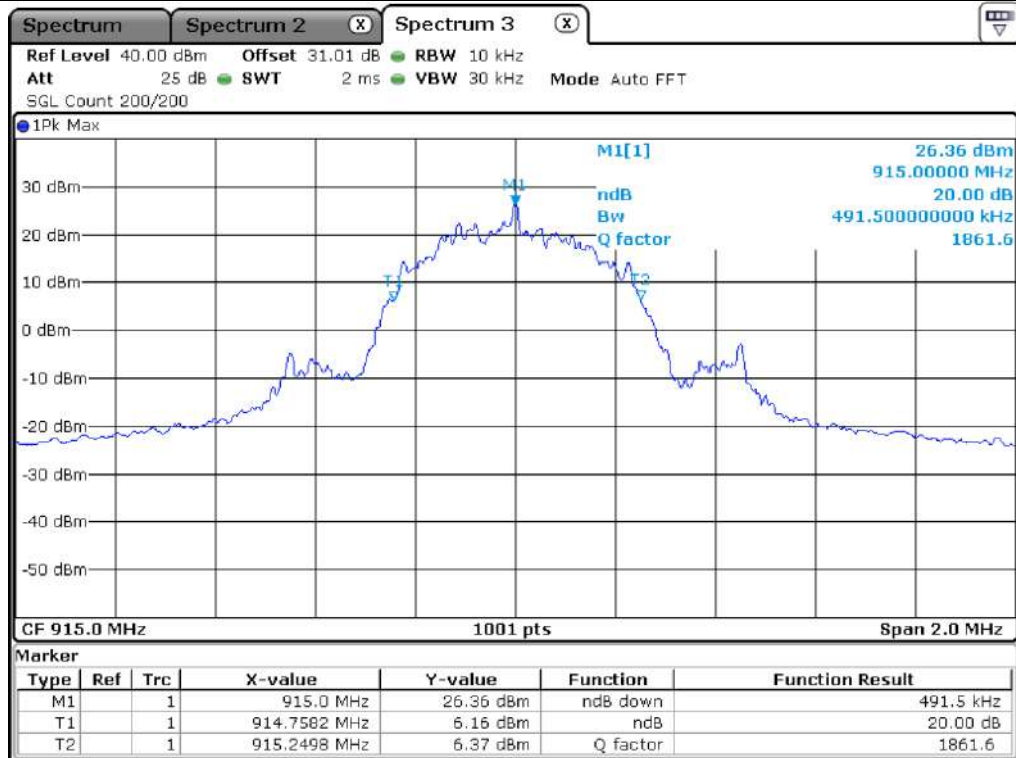
-. Test Result : Pass

| Channel Separation<br>(kHz) | 20 dB Bandwidth |                      | Limit<br>(kHz)                                       | Result |
|-----------------------------|-----------------|----------------------|------------------------------------------------------|--------|
|                             | Channel         | Measured Value (kHz) |                                                      |        |
| 500.00                      | LOW             | 491.50               | $\geq 25$ Or<br>$> 20$ dB B.W. of<br>Hopping Channel | Pass   |
|                             | MIDDLE          | 491.50               |                                                      |        |
|                             | HIGH            | 491.50               |                                                      |        |

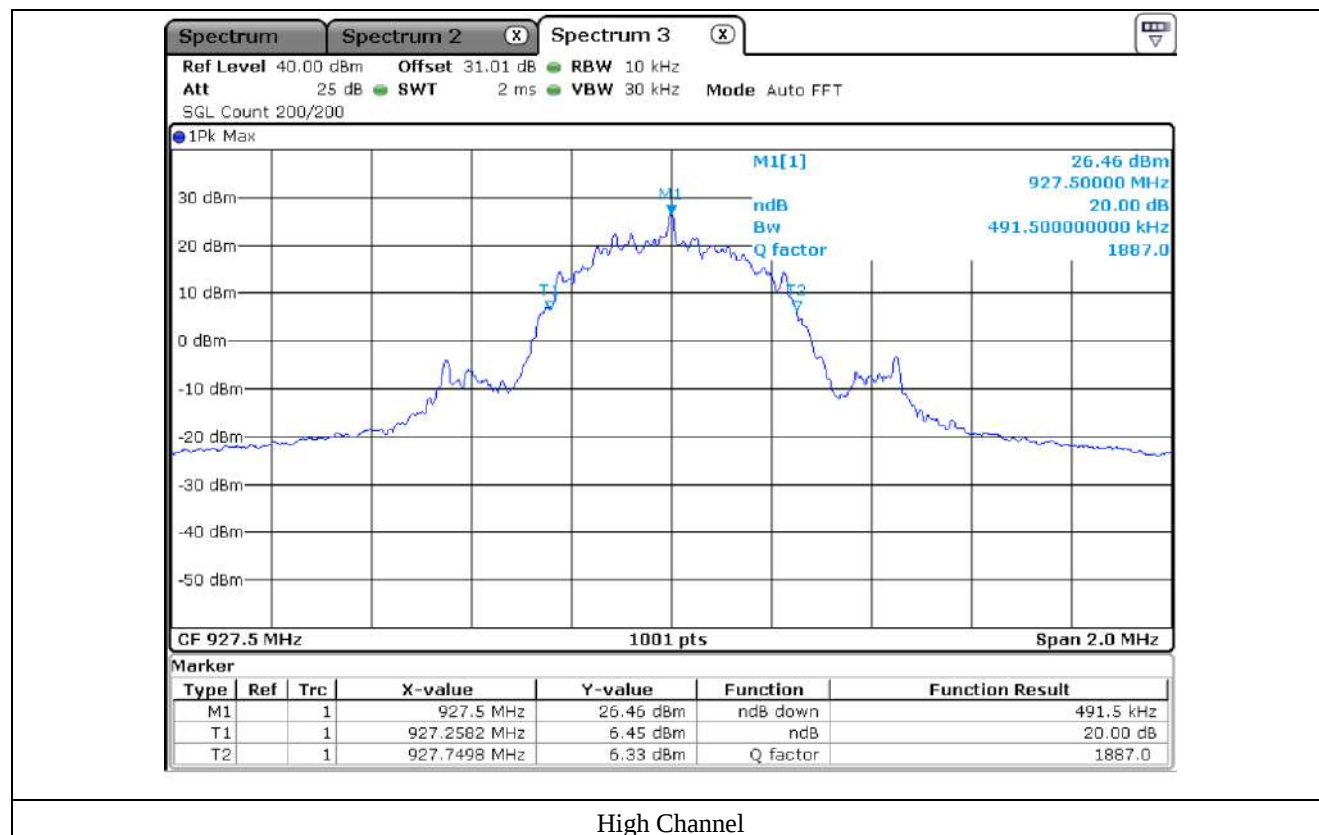




Low Channel



Middle Channel



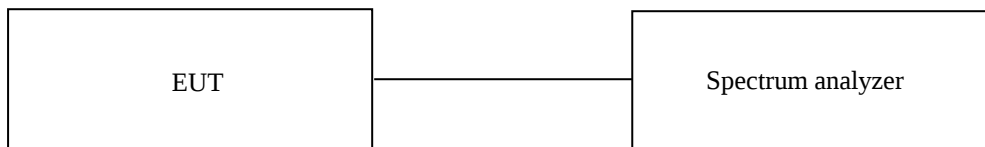
## 10. NUMBER OF HOPPING FREQUENCY

### 10.1 Operating environment

Temperature : 23 °C  
Relative humidity : 41 % R.H.

### 10.2 Test set-up

According to §15.247(a)(1)(i) if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping channels and the average time of occupancy on any channel shall not be greater than 0.4 seconds within a 20-second period. If the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping channels and the average time of occupancy on any channel shall not be greater than 0.4 seconds within a 10-second period. The maximum 20 dB bandwidth of the hopping channel shall be 500 kHz.



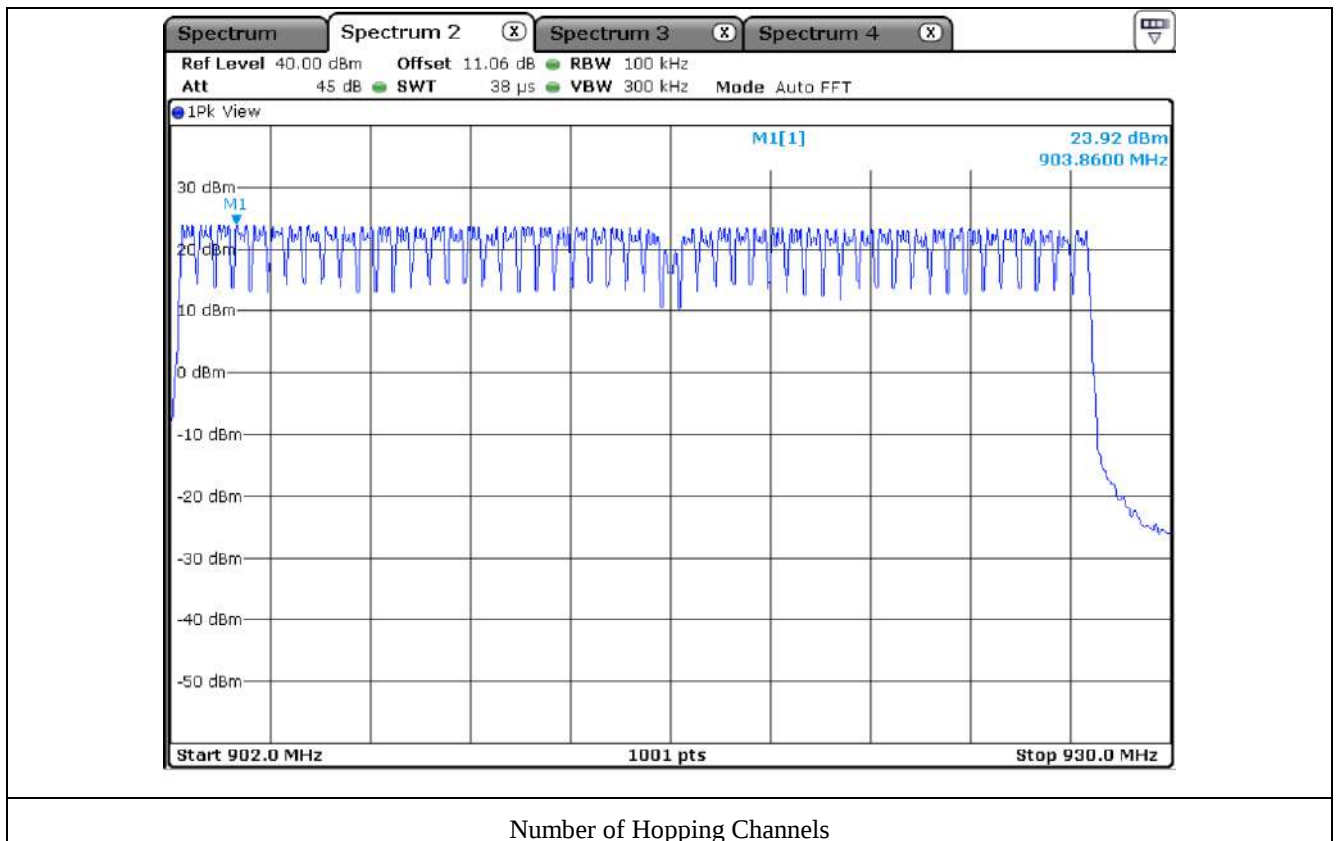
### 10.3 Test Date

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#### 10.4 Test data for Mode 1\_Normal

-. Test Result : Pass

| Number of Hopping Frequencies | Limit (EA) |
|-------------------------------|------------|
| 51                            | 25 ≤       |

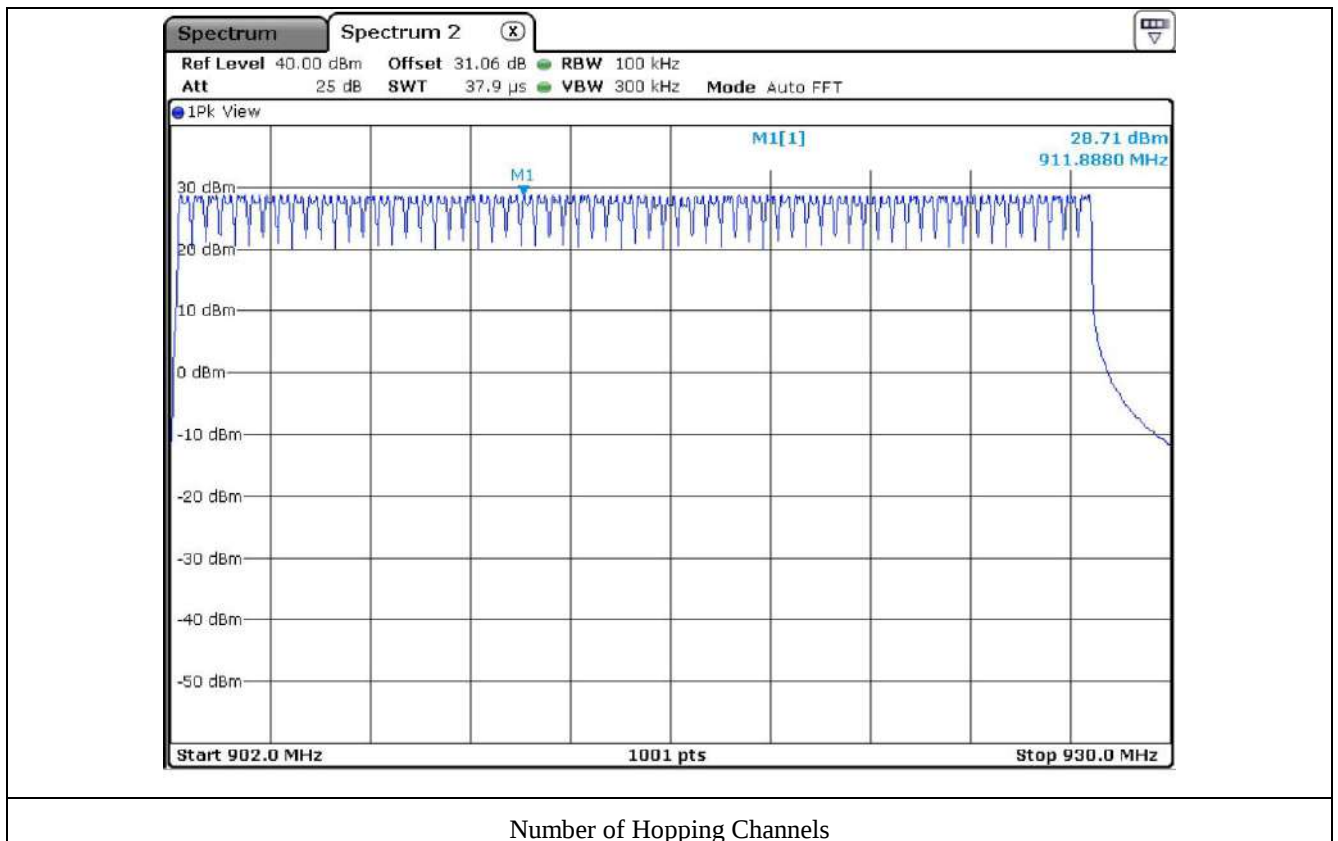


Number of Hopping Channels

### 10.5 Test data for Mode 2\_Long

-. Test Result : Pass

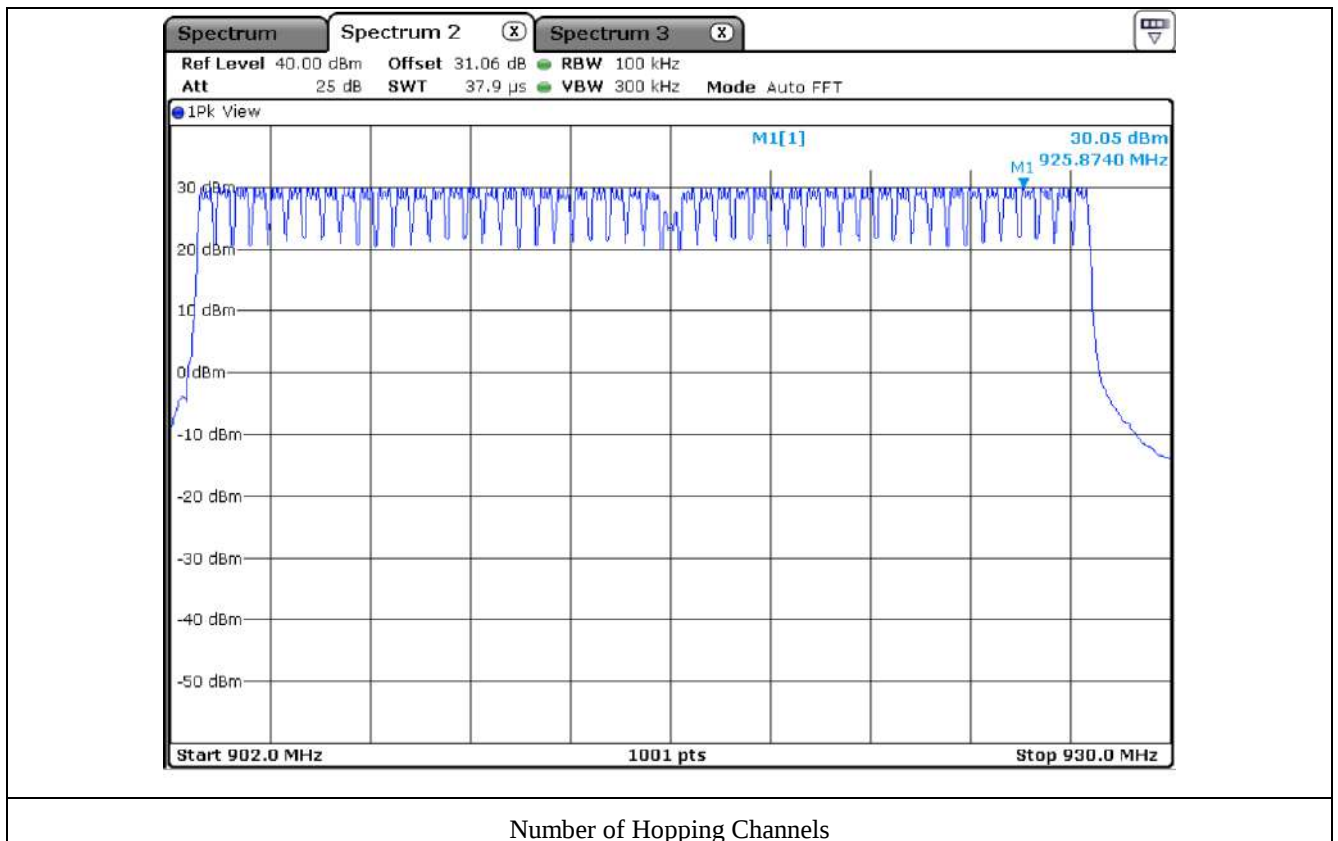
| Number of Hopping Frequencies | Limit (EA) |
|-------------------------------|------------|
| 64                            | 25 ≤       |



## 10.6 Test data for Mode 3\_Repeat

-. Test Result : Pass

| Number of Hopping Frequencies | Limit (EA) |
|-------------------------------|------------|
| 50                            | 25 ≤       |



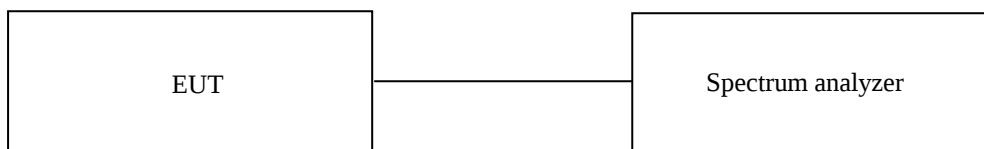
## 11. TIME OF OCCUPANCY (DWELL TIME)

### 11.1 Operating environment

Temperature : 23 °C  
Relative humidity : 45 % R.H.

### 11.2 Test set-up

According to §15.247(a)(1)(i) / RSS-247 5.1.3, Frequency hopping systems operating in the 902 MHz ~ 928 MHz bands. if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.



### 11.3 Test Date

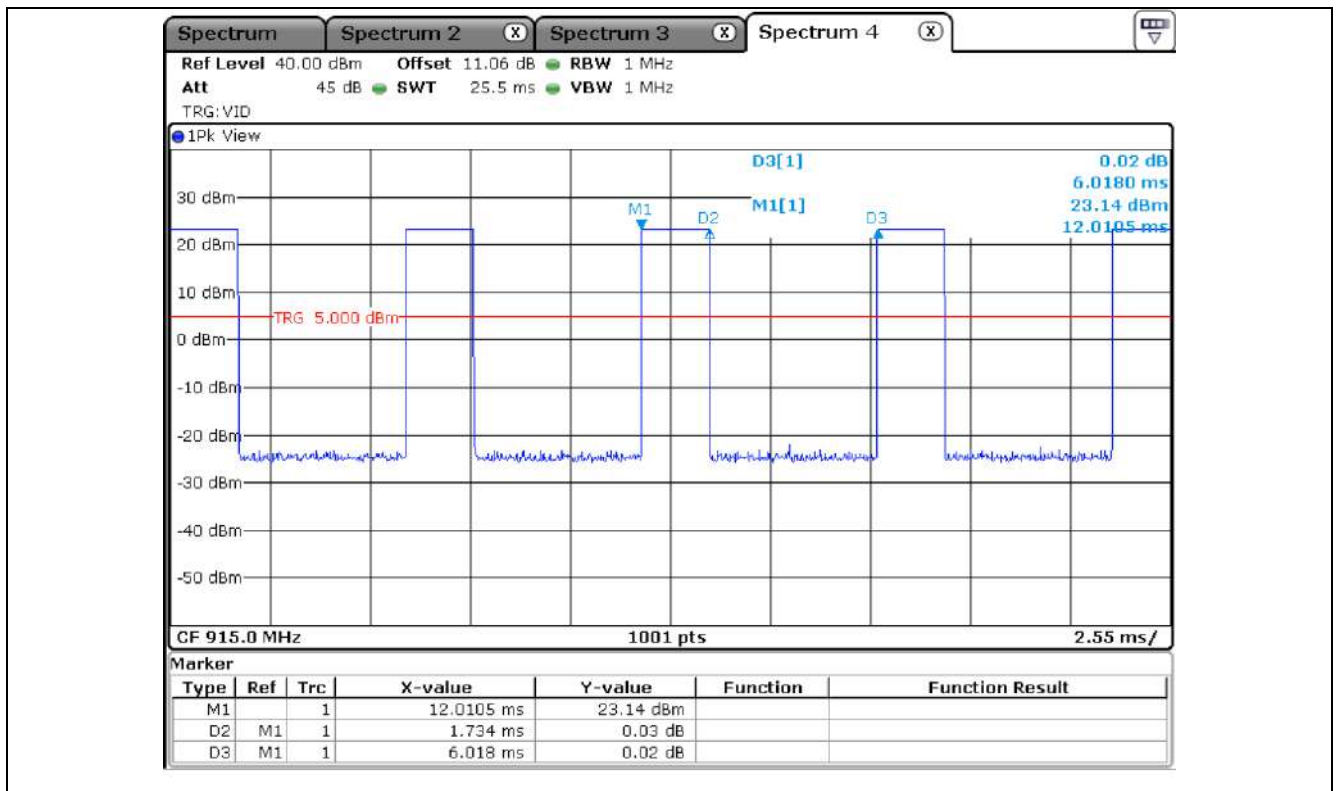
September 17, 2022 ~ November 09, 2022

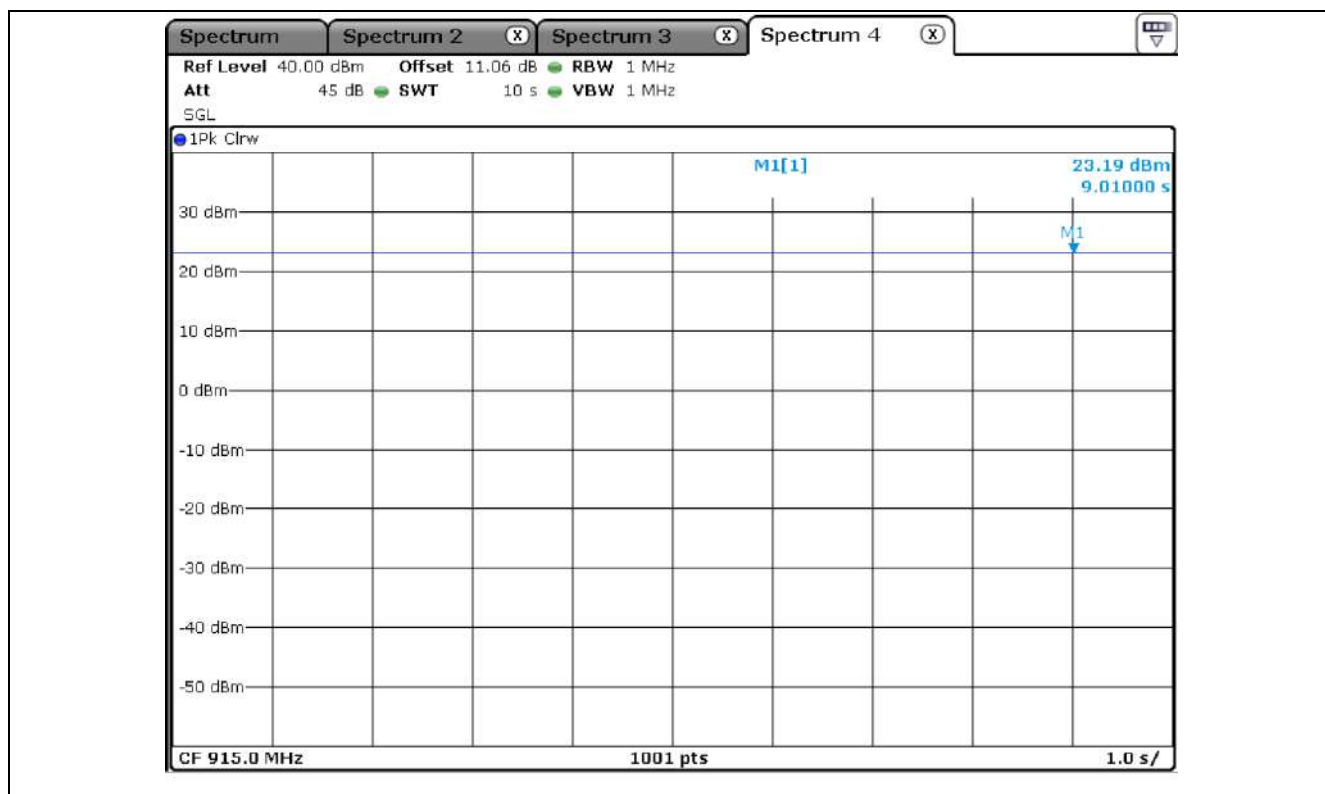
#### 11.4 Test data for Mode 1\_Normal

-. Test Result : Pass

| Channel | Average Time of Occupancy(ms) | Number of Pulse in 10 seconds | Total(ms) | Limit(ms) |
|---------|-------------------------------|-------------------------------|-----------|-----------|
| MIDDLE  | 1.734                         | 1                             | 1.734     | 400.00    |

Note : Total : Average Time of Occupancy \* Number of Pulse in 10 seconds.



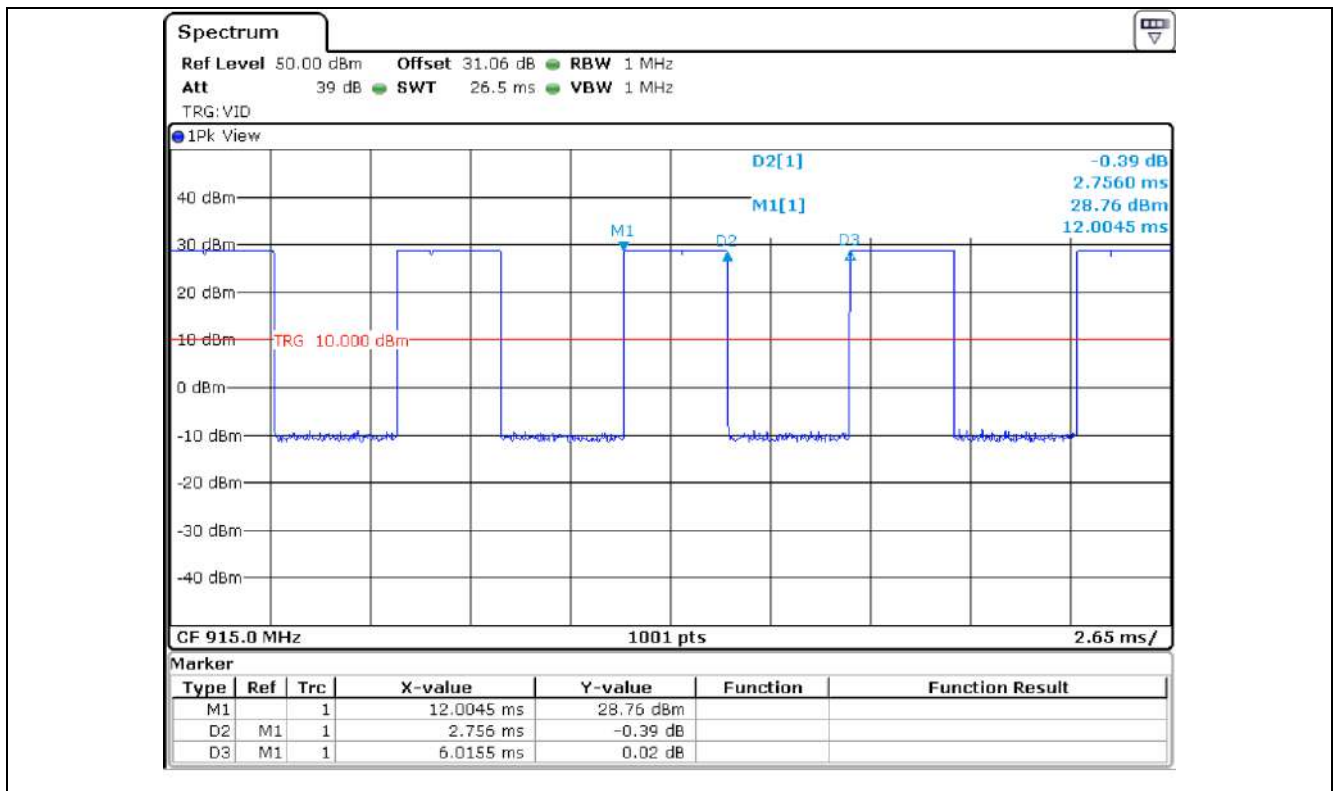


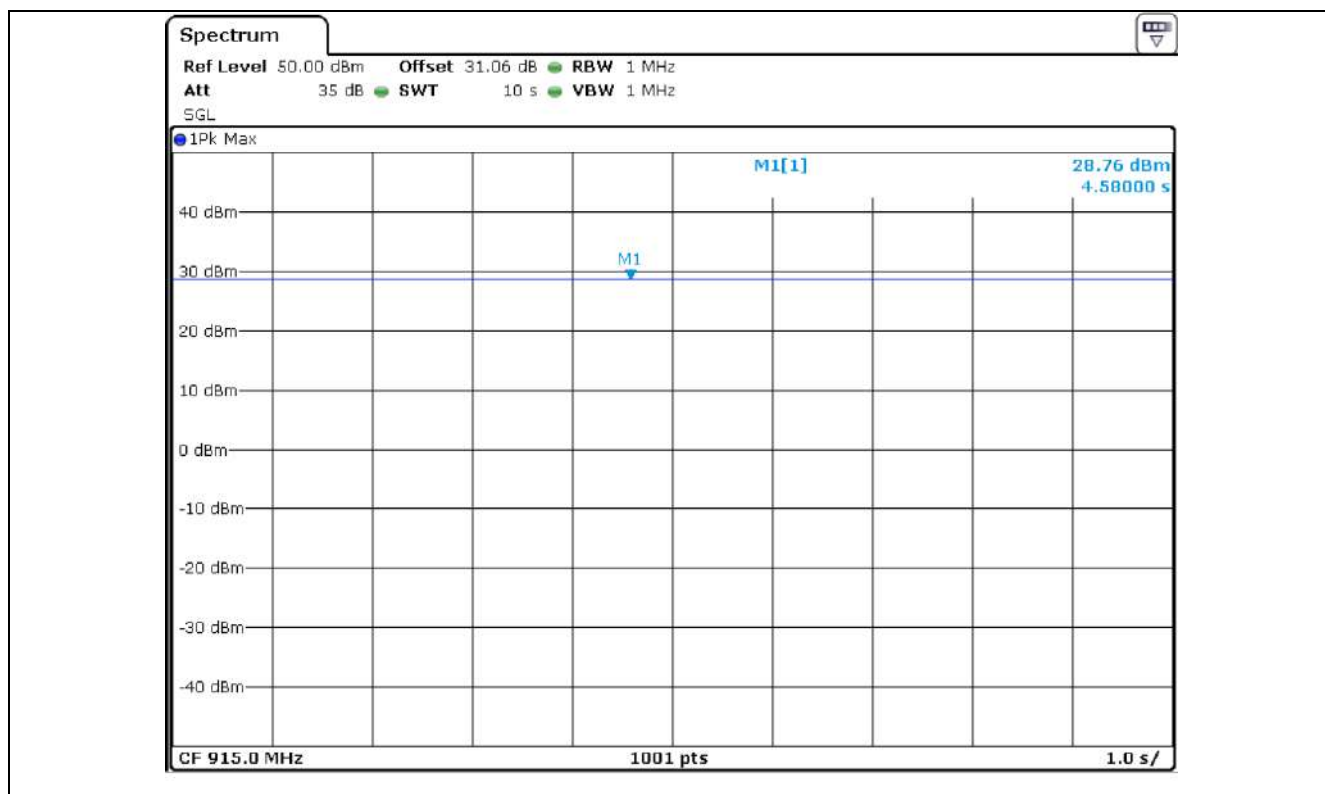
### 11.5 Test data for Mode 2\_Long

-. Test Result : Pass

| Channel | Average Time of Occupancy(ms) | Number of Pulse in 10 seconds | Total(ms) | Limit(ms) |
|---------|-------------------------------|-------------------------------|-----------|-----------|
| MIDDLE  | 2.756                         | 1                             | 2.756     | 400.00    |

Note : Total : Average Time of Occupancy \* Number of Pulse in 10 seconds.



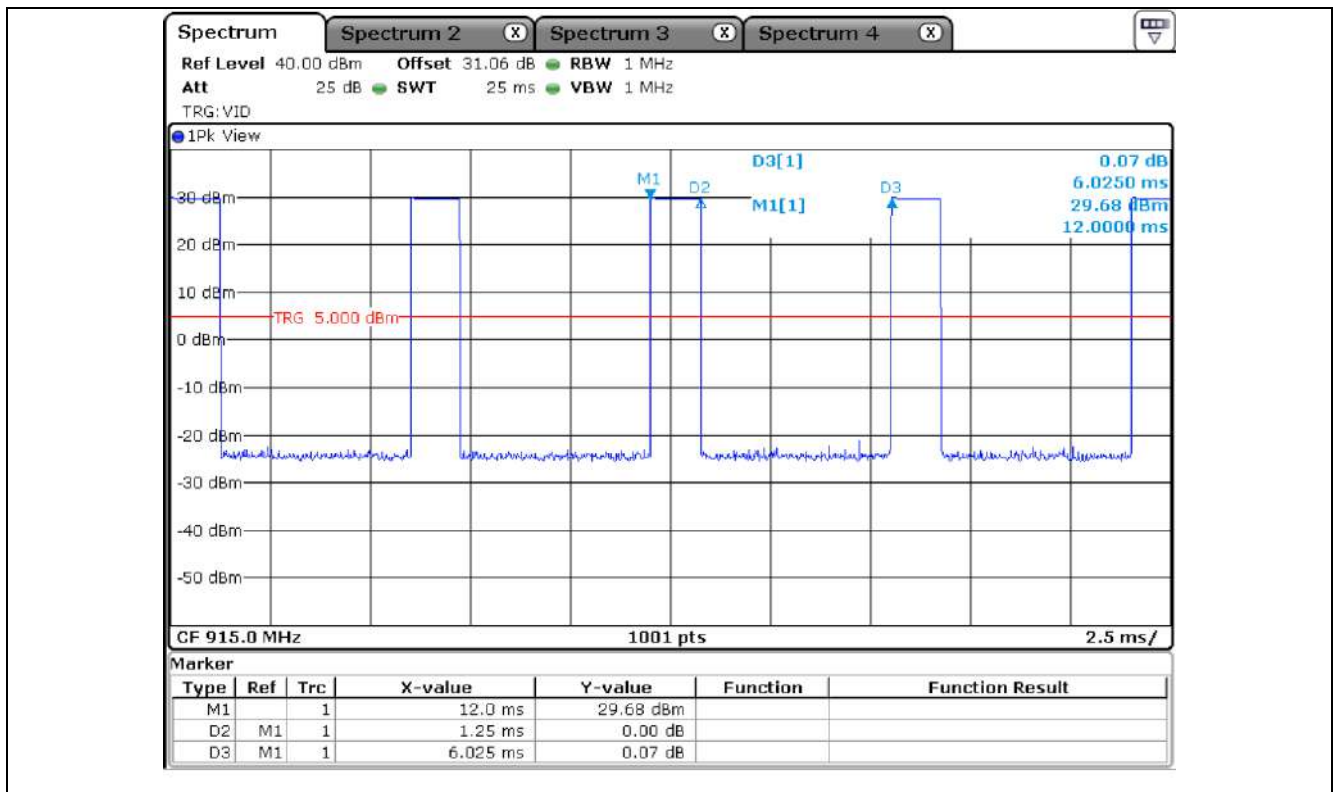


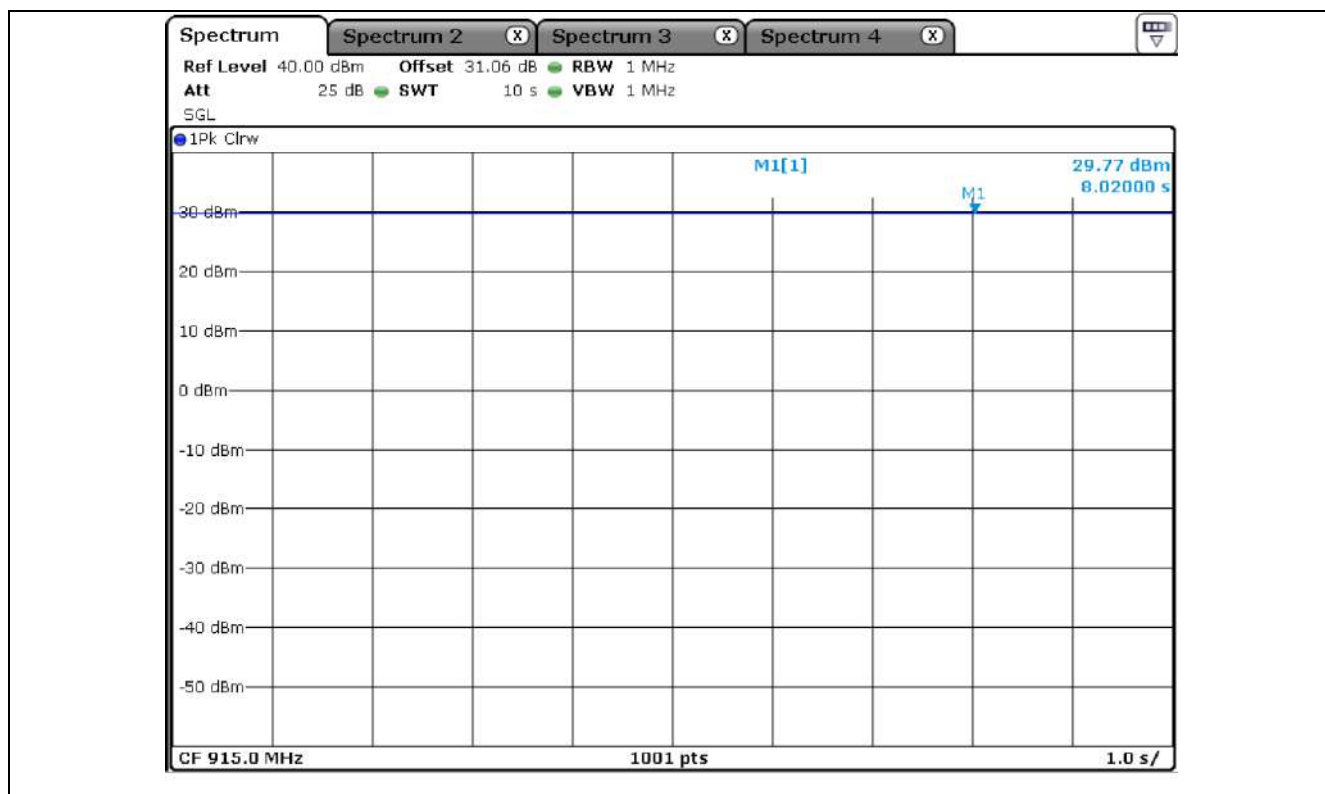
## 11.6 Test data for Mode 3\_Repeat

-. Test Result : Pass

| Channel | Average Time of Occupancy(ms) | Number of Pulse in 10 seconds | Total(ms) | Limit(ms) |
|---------|-------------------------------|-------------------------------|-----------|-----------|
| MIDDLE  | 1.250                         | 1                             | 0.125     | 400.00    |

Note : Total : Average Time of Occupancy \* Number of Pulse in 10 seconds.





## 12. 100 kHz BANDWIDTH OUTSIDE THE FREQUENCY BAND

### 12.1 Operating environment

Temperature : 23 °C  
Relative humidity : 41 % R.H.

### 12.2 Test set-up for conducted / radiated measurement

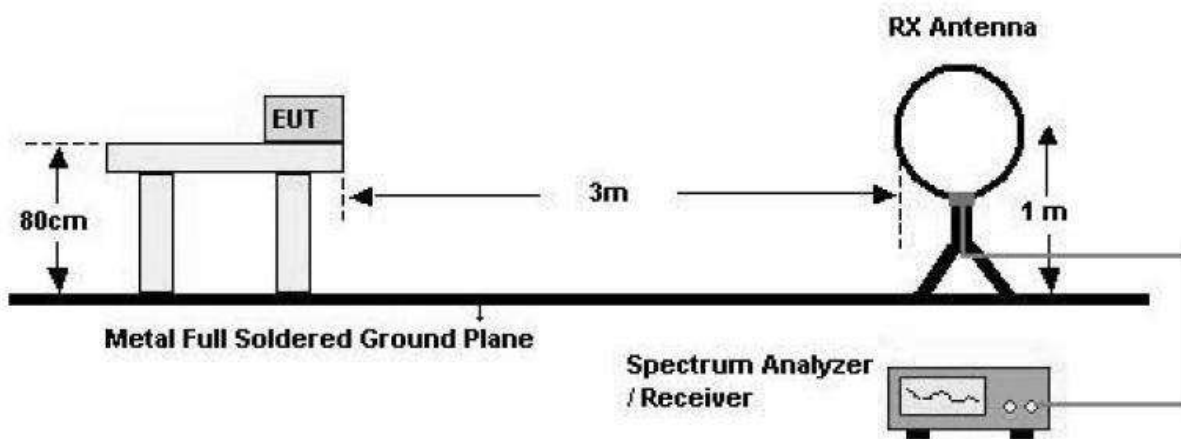
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

#### - Conducted Configuration

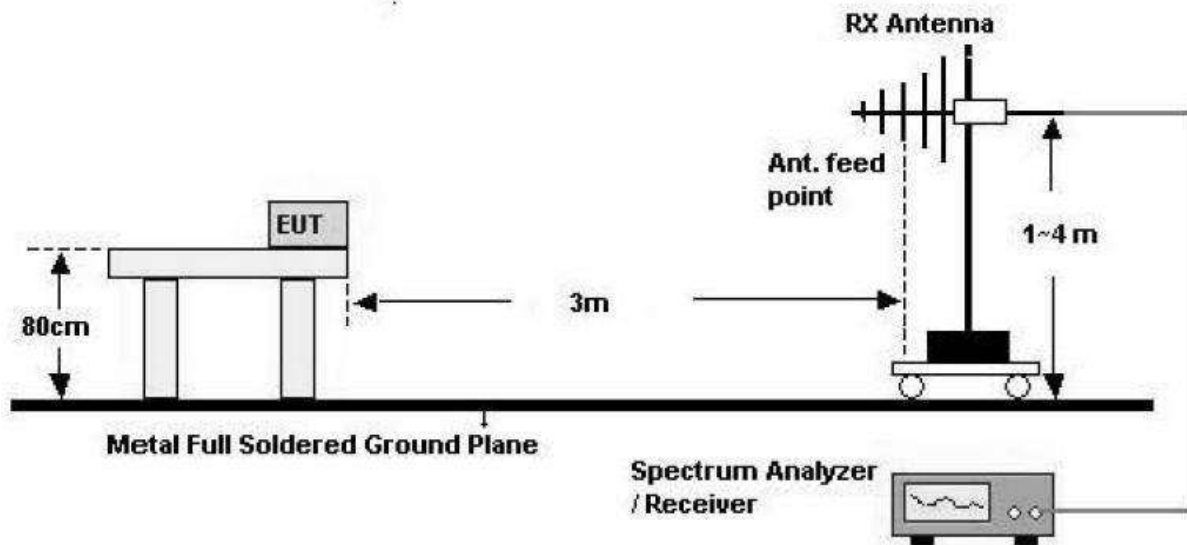


#### - Radiated Configuration

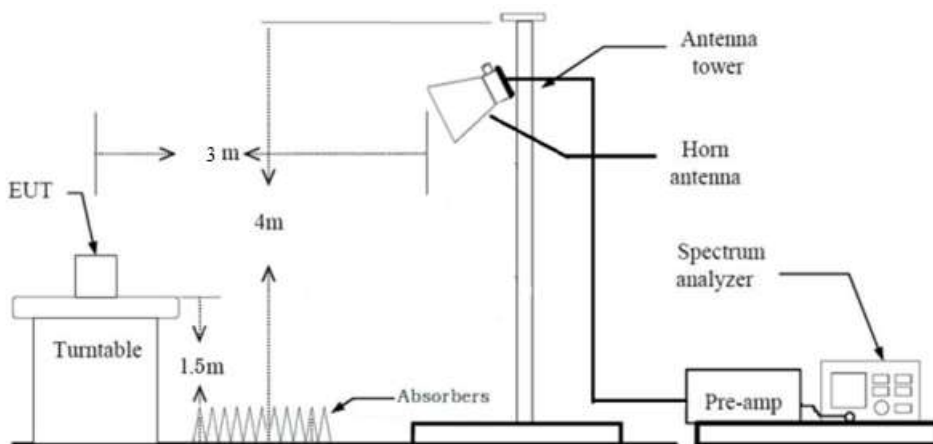
1. Below 30 MHz



## 2. 30 MHz - 1 GHz



## 3. Above 1 GHz



## 12.3 Test Date

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## 12.4 Test data for conducted emission

### 12.4.1 Test data for Mode 1\_Normal

-. Resolution bandwidth : 100 kHz

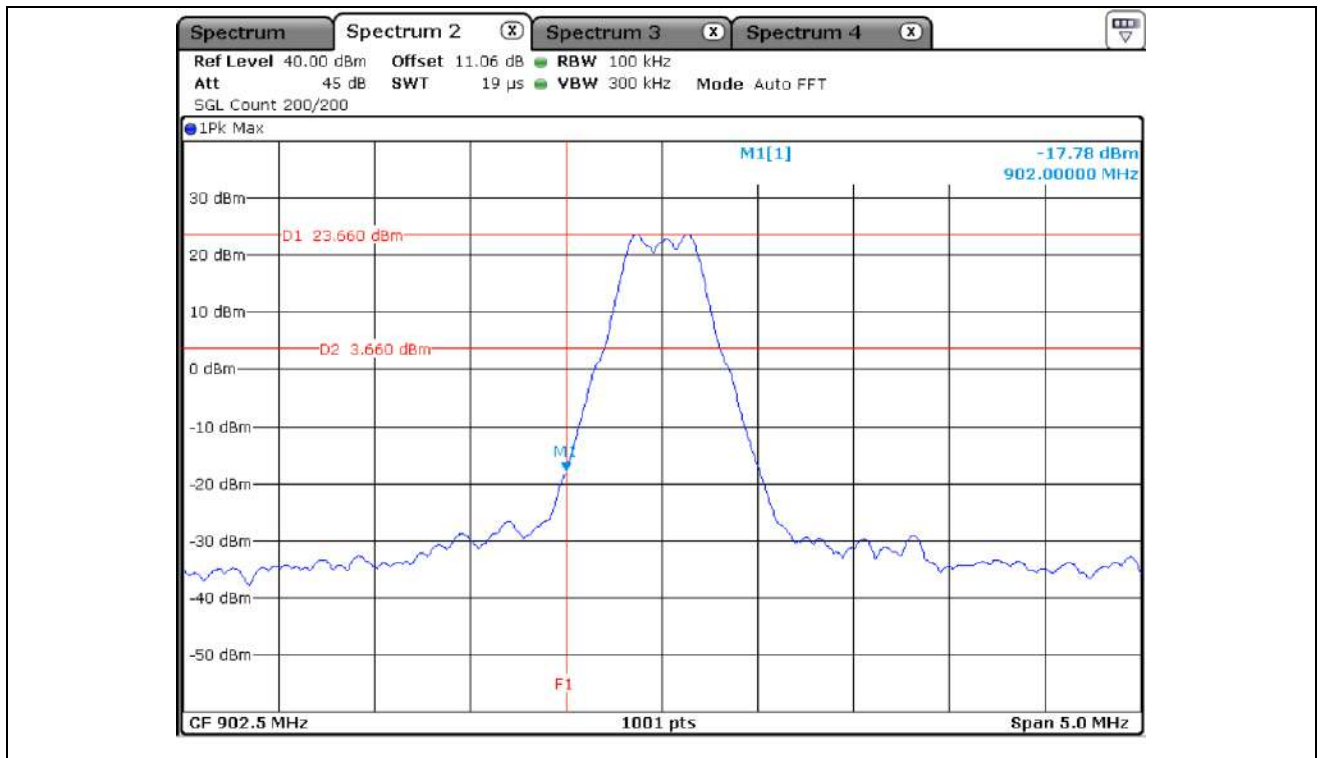
-. Video bandwidth : 300 kHz

-. Detector : Peak

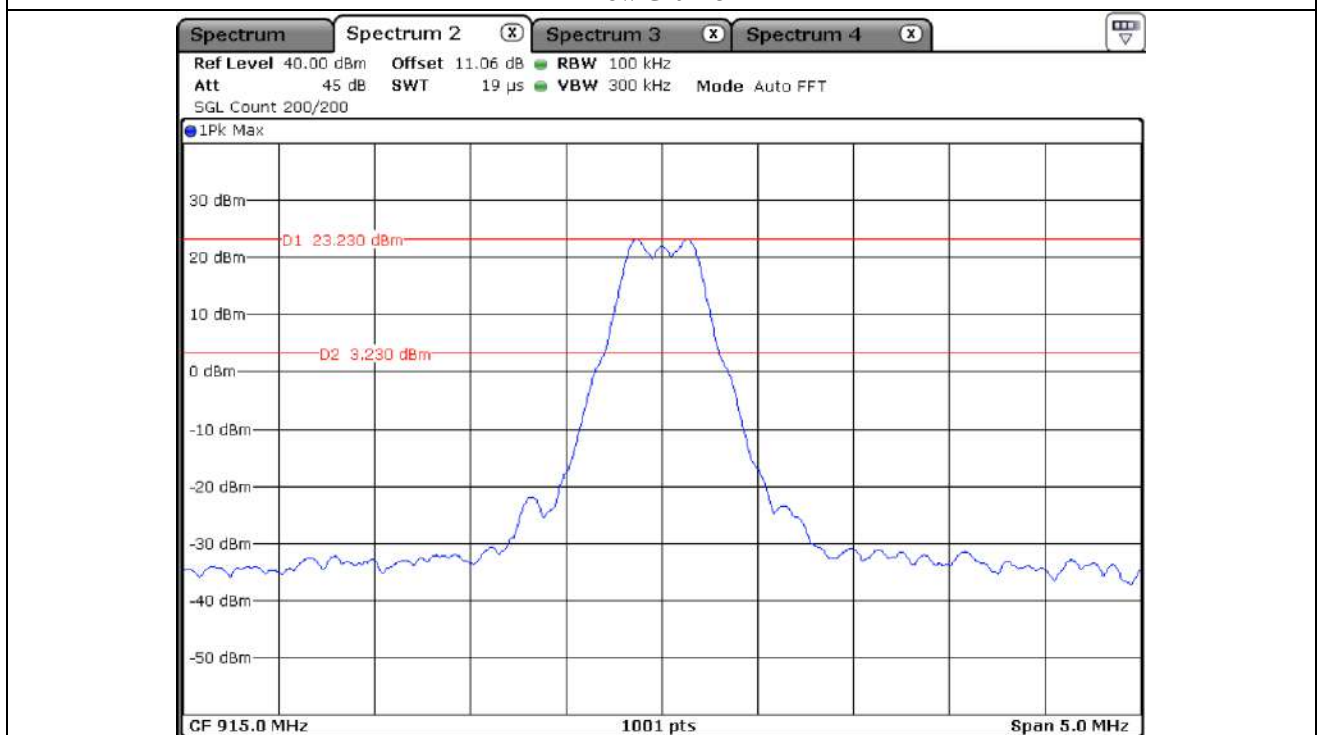
-. Result : PASS

| Channel | Frequency Range | Measured Value(dBm) | Limit(dBm) | Margin(dB) |
|---------|-----------------|---------------------|------------|------------|
| Low     | 30 M ~ 1 GHz    | -38.47              | 2.11       | 40.58      |
|         | 1 GHz ~ 10 GHz  | -4.13               | 2.11       | 6.24       |
| Middle  | 30 M ~ 1 GHz    | -25.41              | 2.70       | 28.11      |
|         | 1 GHz ~ 10 GHz  | -4.5                | 2.70       | 7.20       |
| High    | 30 M ~ 1 GHz    | -21.25              | 2.06       | 23.31      |
|         | 1 GHz ~ 10 GHz  | -5.03               | 2.06       | 7.09       |

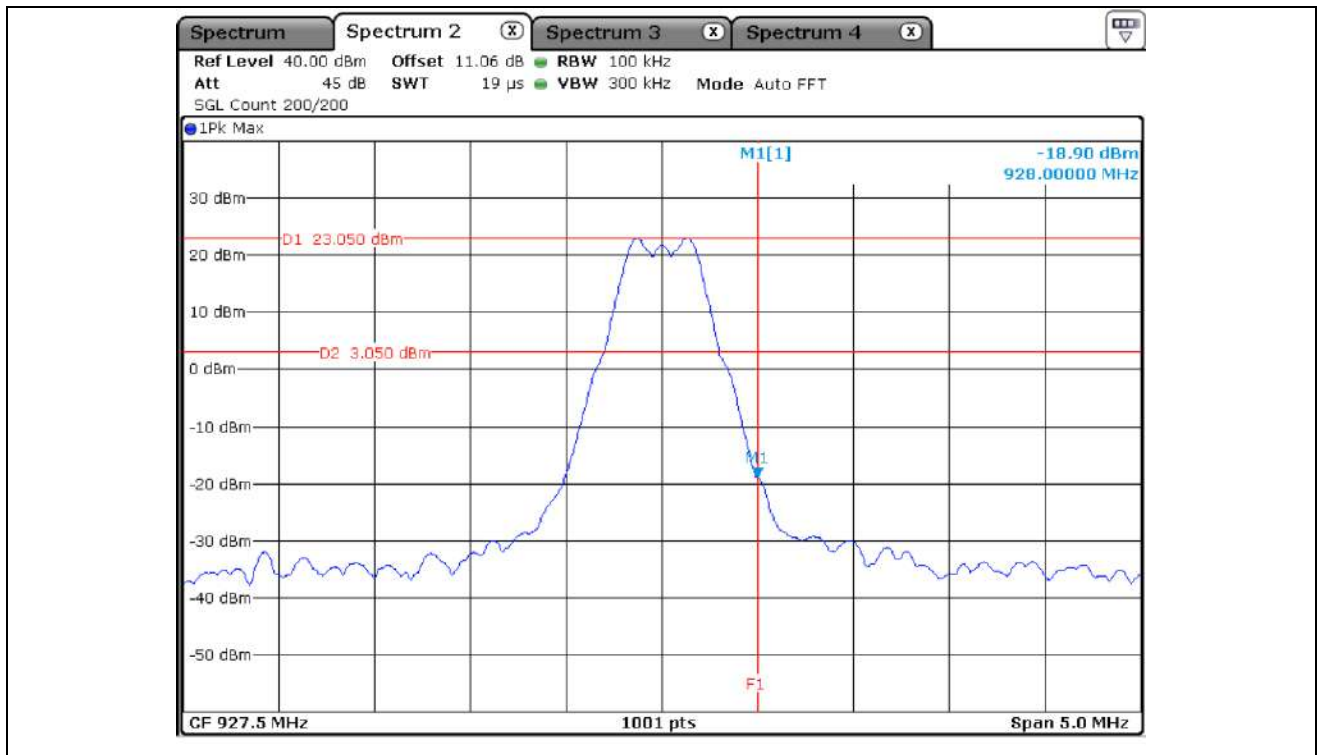
Tabulated test data for Restricted Band



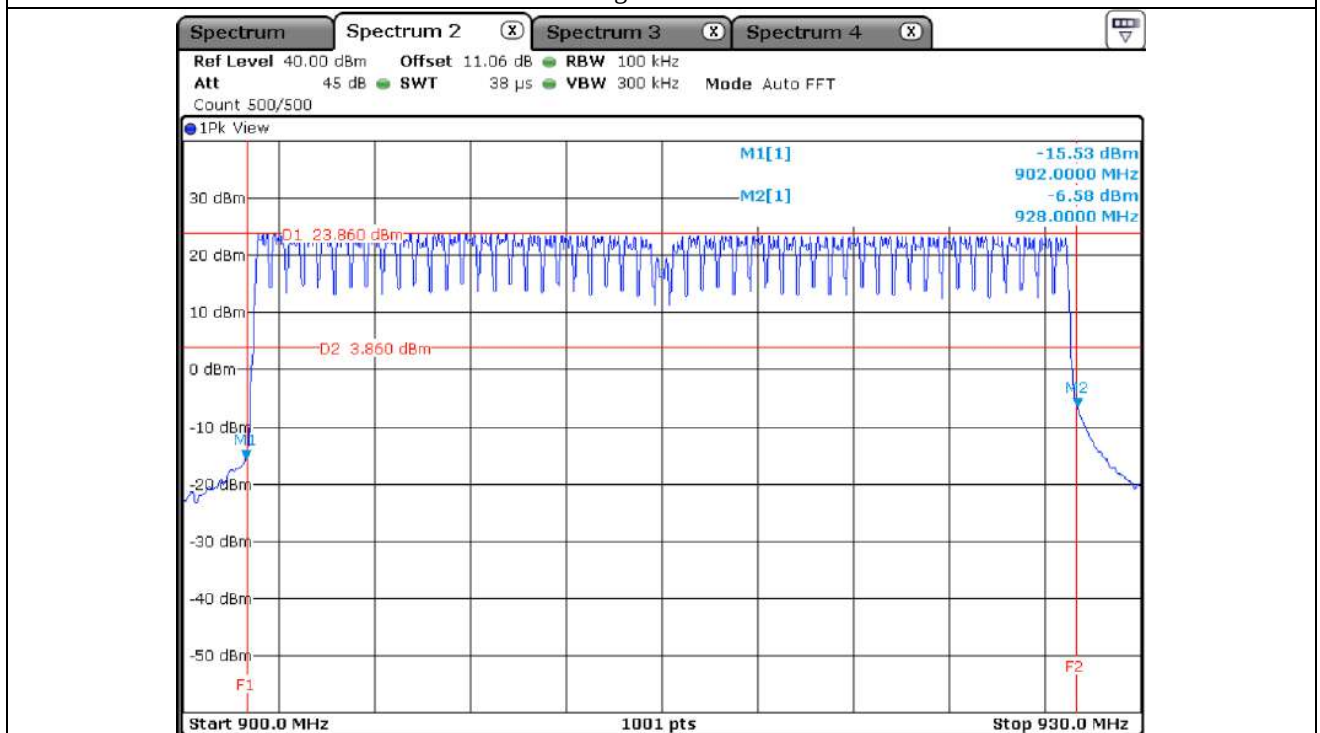
Low Channel



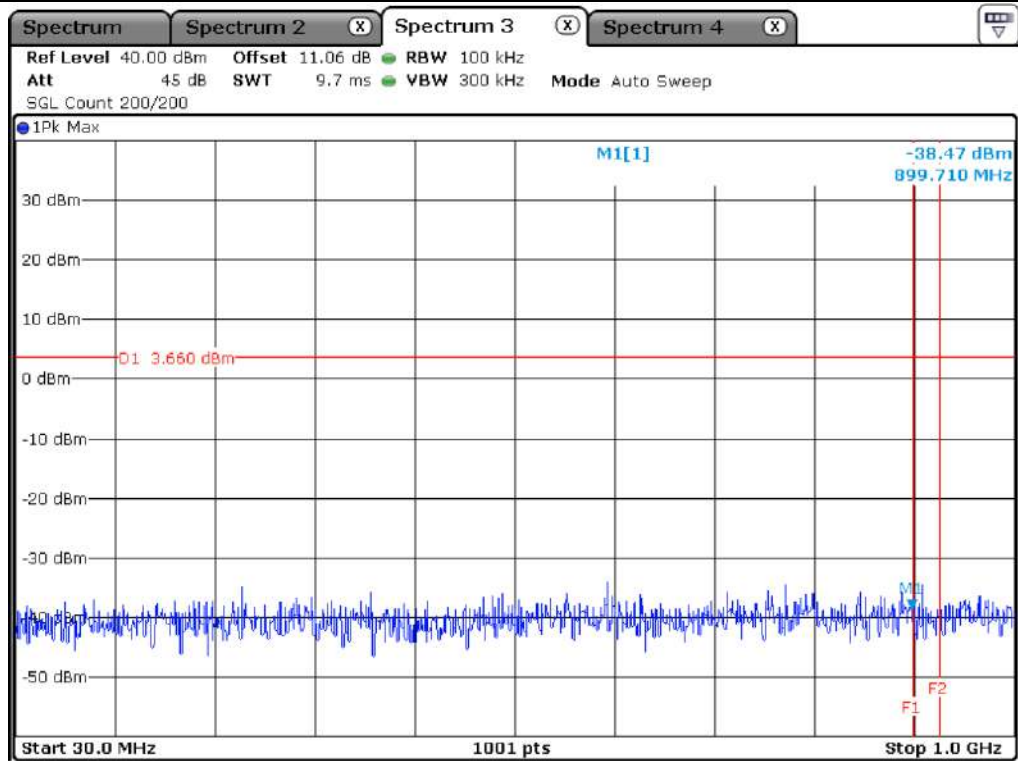
Middle Channel



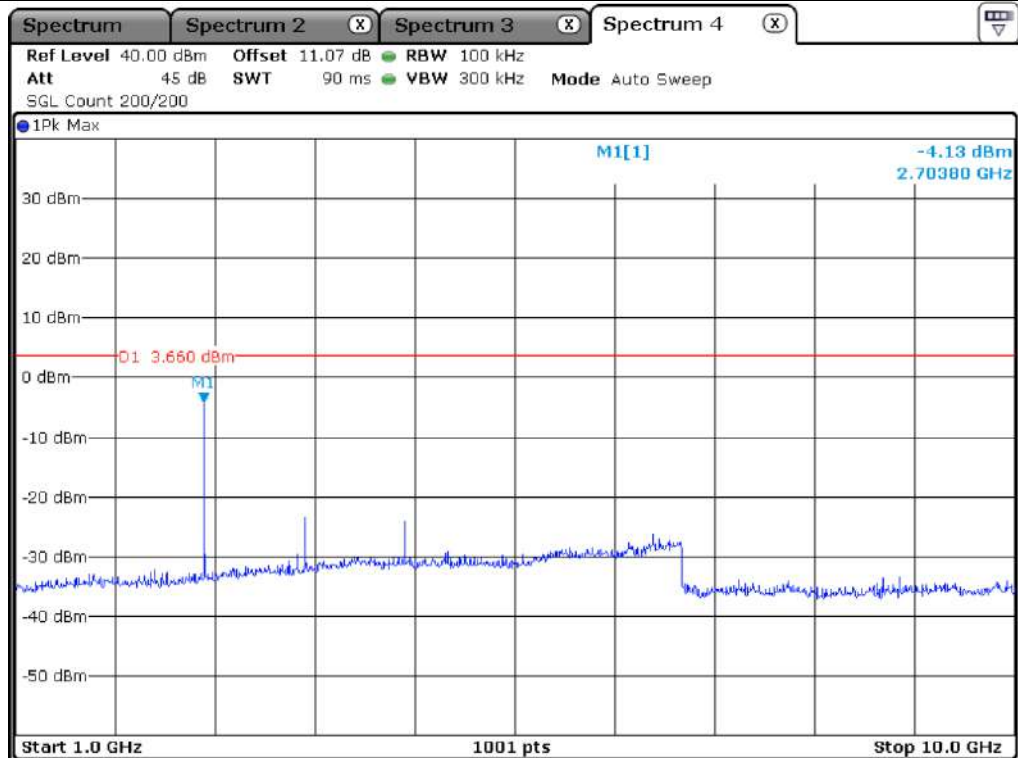
High Channel



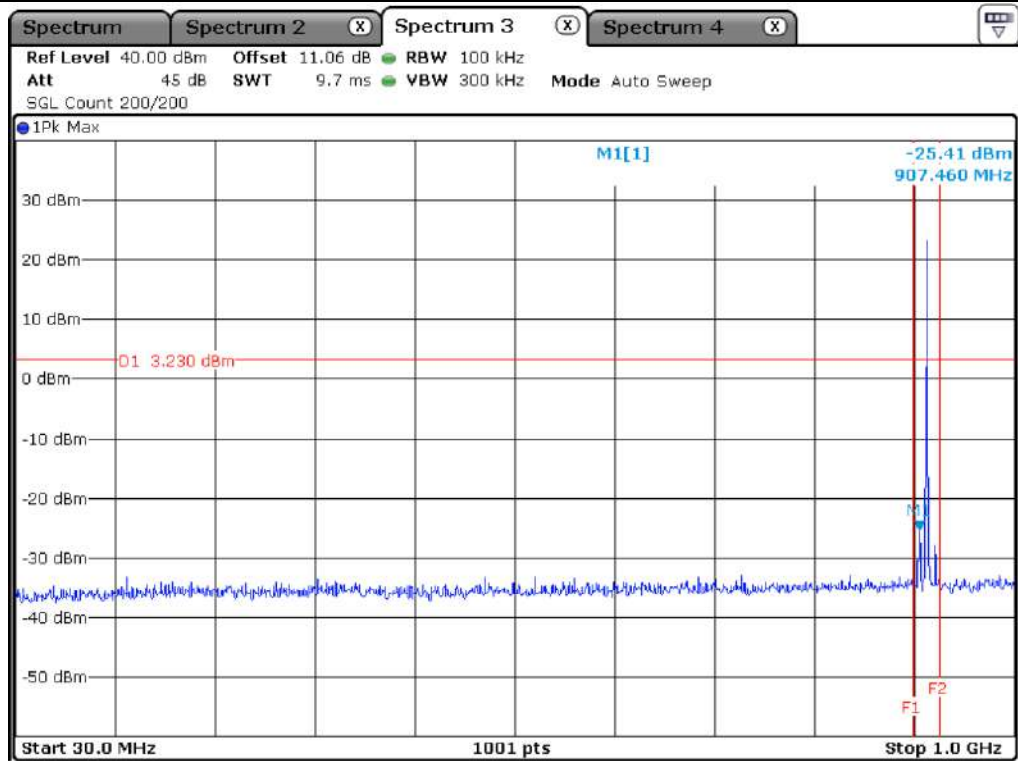
Hopping Channel



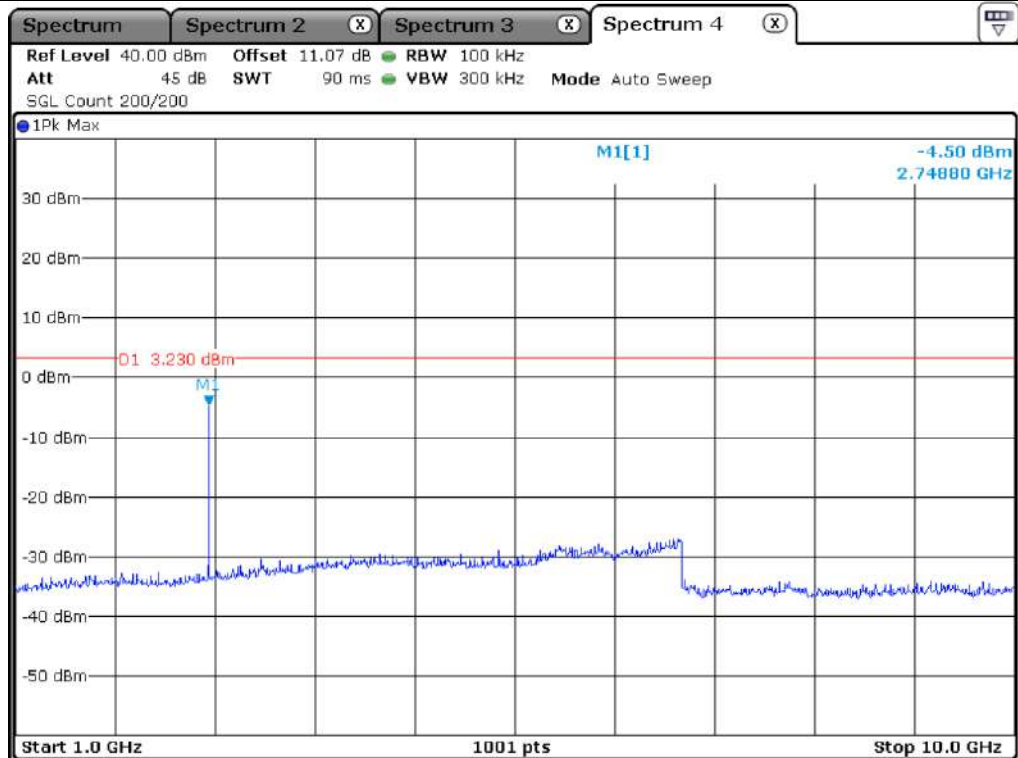
Low Channel



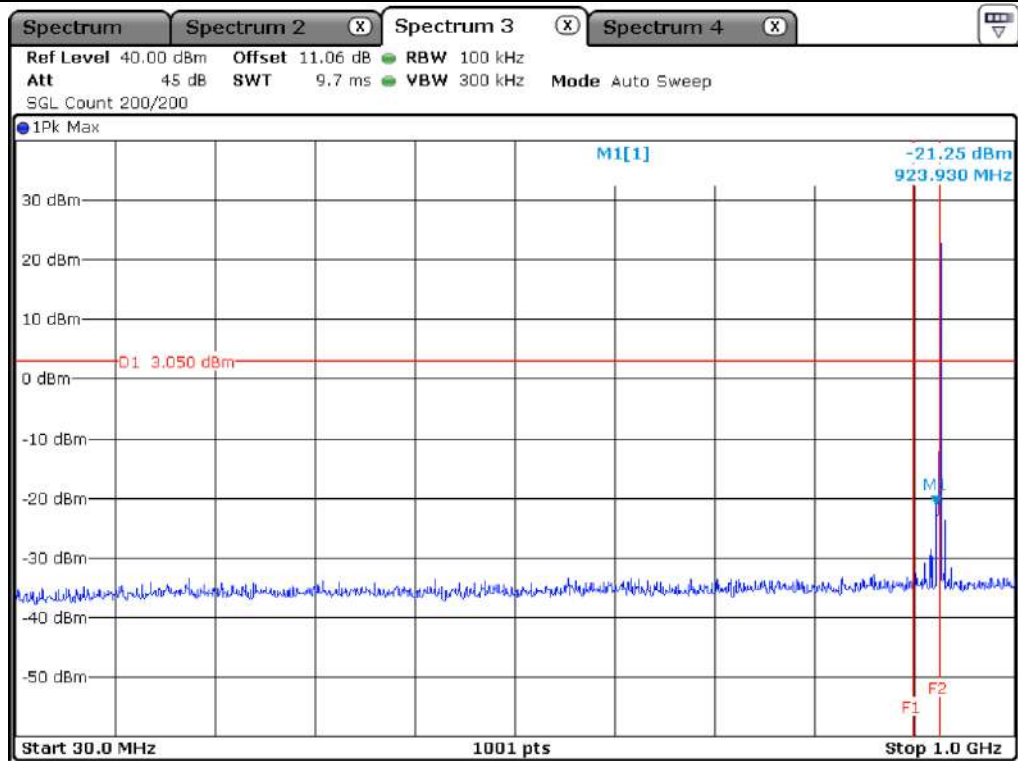
Low Channel



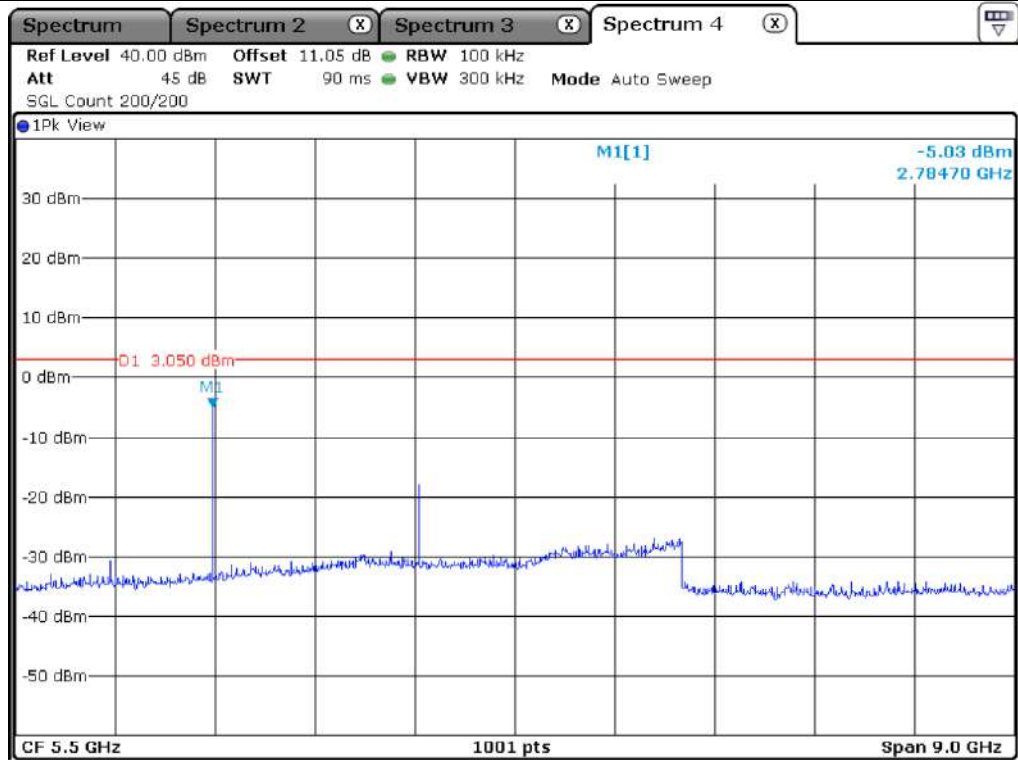
Middle Channel



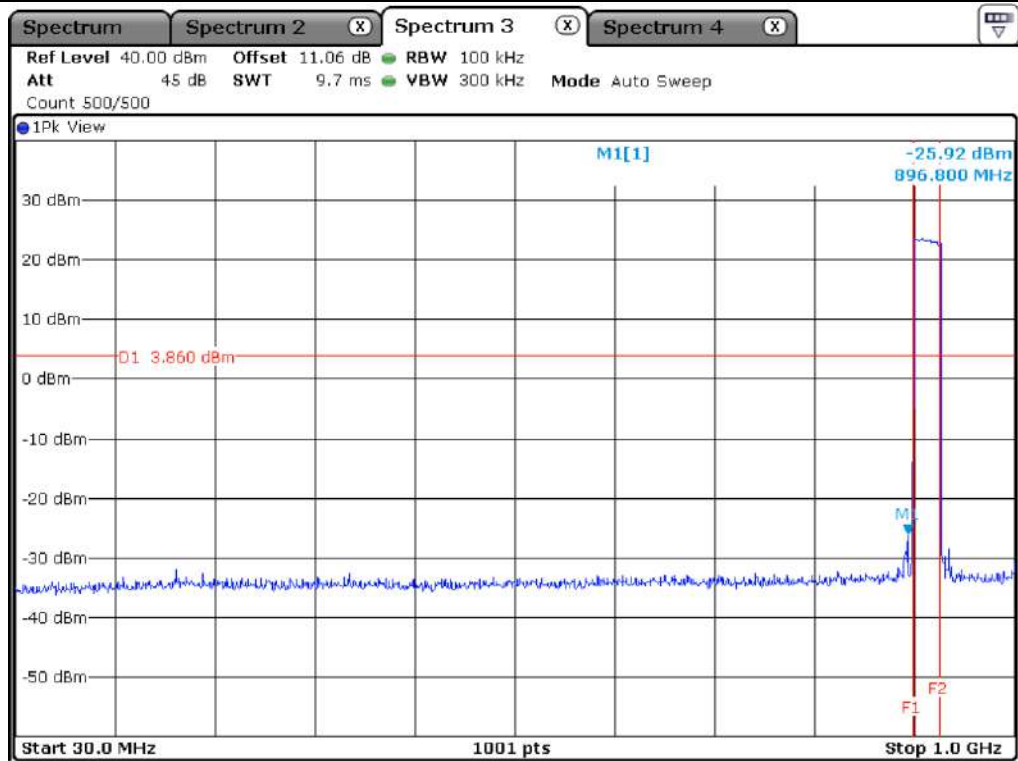
Middle Channel



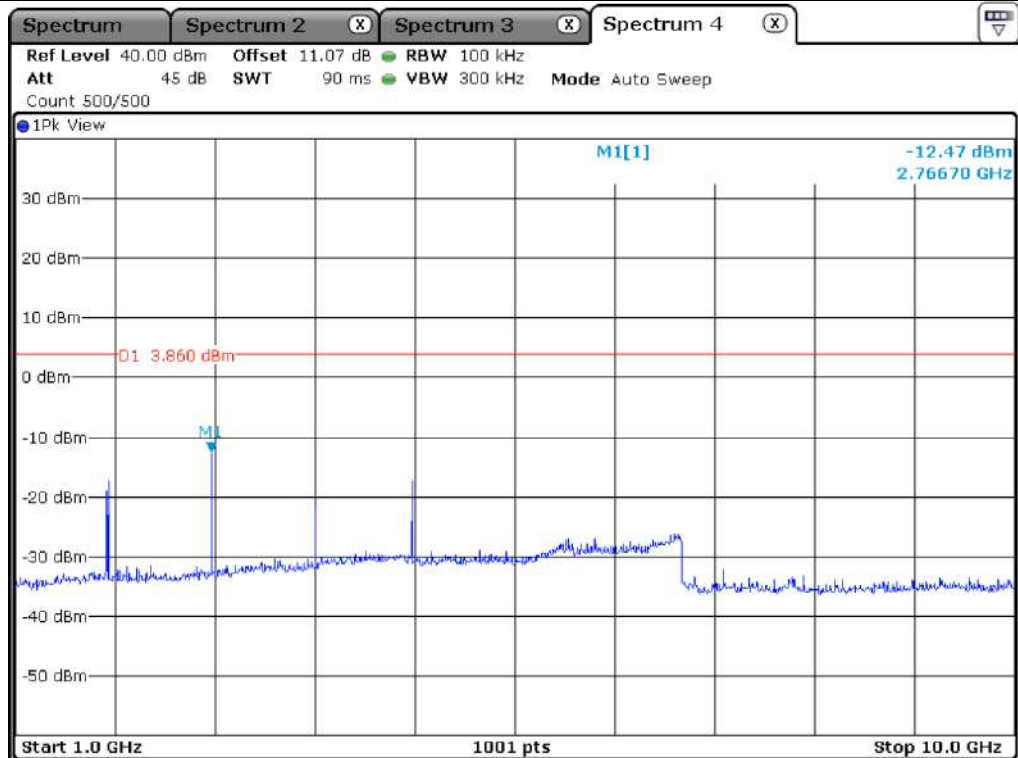
High Channel



High Channel



Hopping Channel



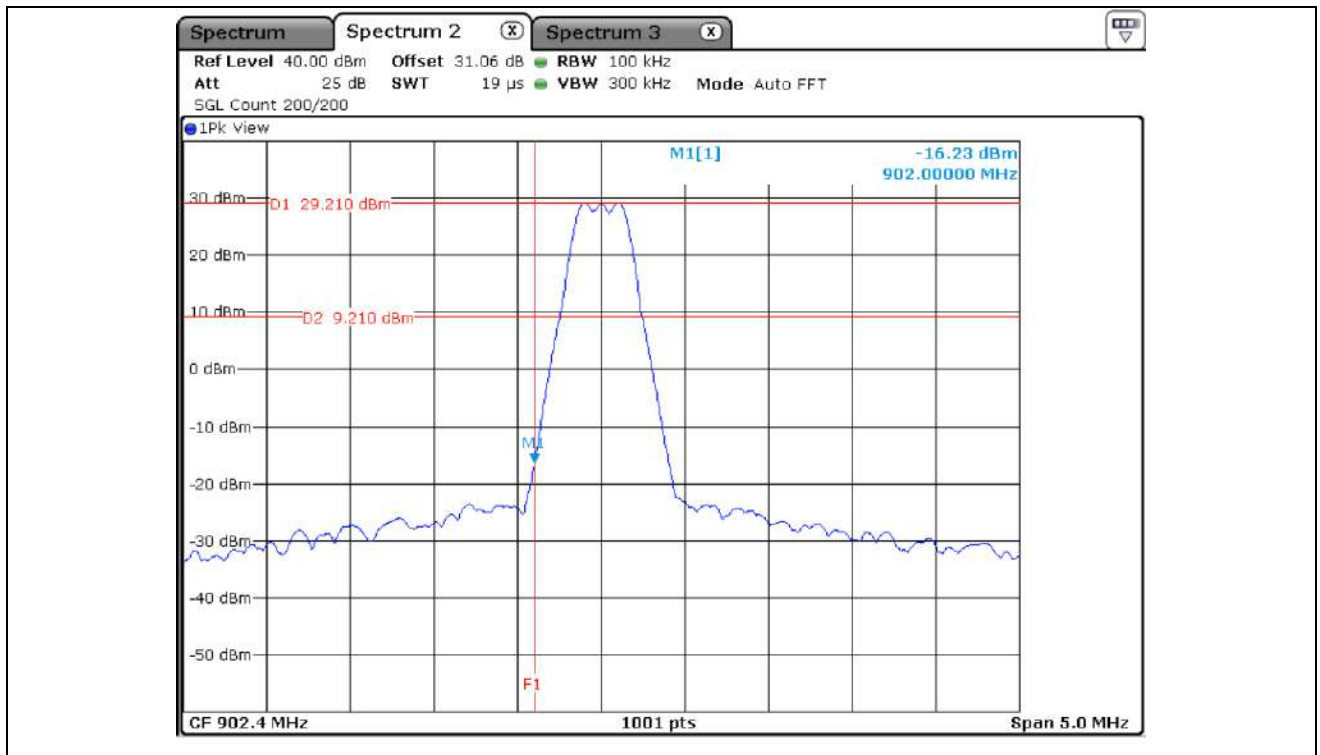
Hopping Channel

#### 12.4.2 Test data for Mode 2\_Long

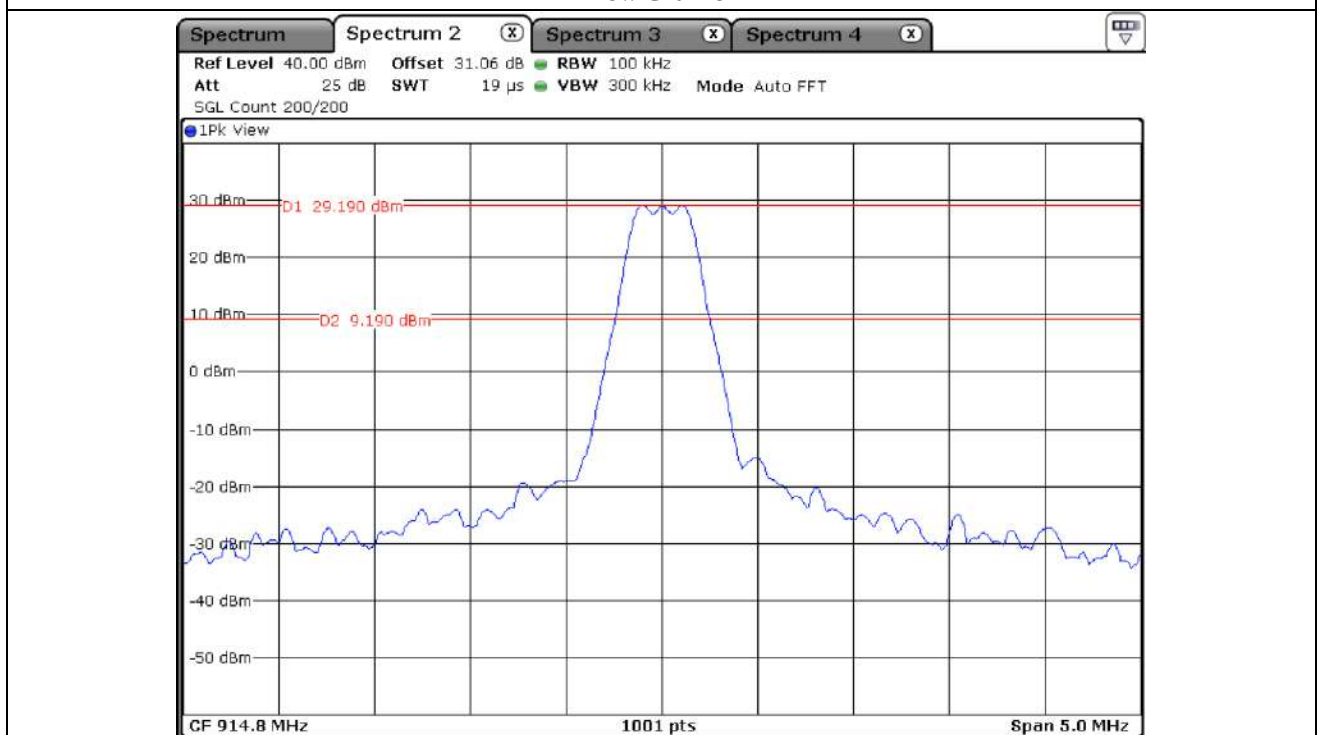
-. Resolution bandwidth : 100 kHz  
 -. Video bandwidth : 300 kHz  
 -. Detector : Peak  
 -. Result : PASS

| Channel | Frequency Range | Measured Value(dBm) | Limit(dBm) | Margin(dB) |
|---------|-----------------|---------------------|------------|------------|
| Low     | 30 M ~ 1 GHz    | -21.52              | 2.11       | 23.63      |
|         | 1 GHz ~ 10 GHz  | -9.65               | 2.11       | 11.76      |
| Middle  | 30 M ~ 1 GHz    | -20.96              | 2.70       | 23.66      |
|         | 1 GHz ~ 10 GHz  | -2.45               | 2.70       | 5.15       |
| High    | 30 M ~ 1 GHz    | 0.69                | 2.06       | 1.37       |
|         | 1 GHz ~ 10 GHz  | -11.81              | 2.06       | 13.87      |

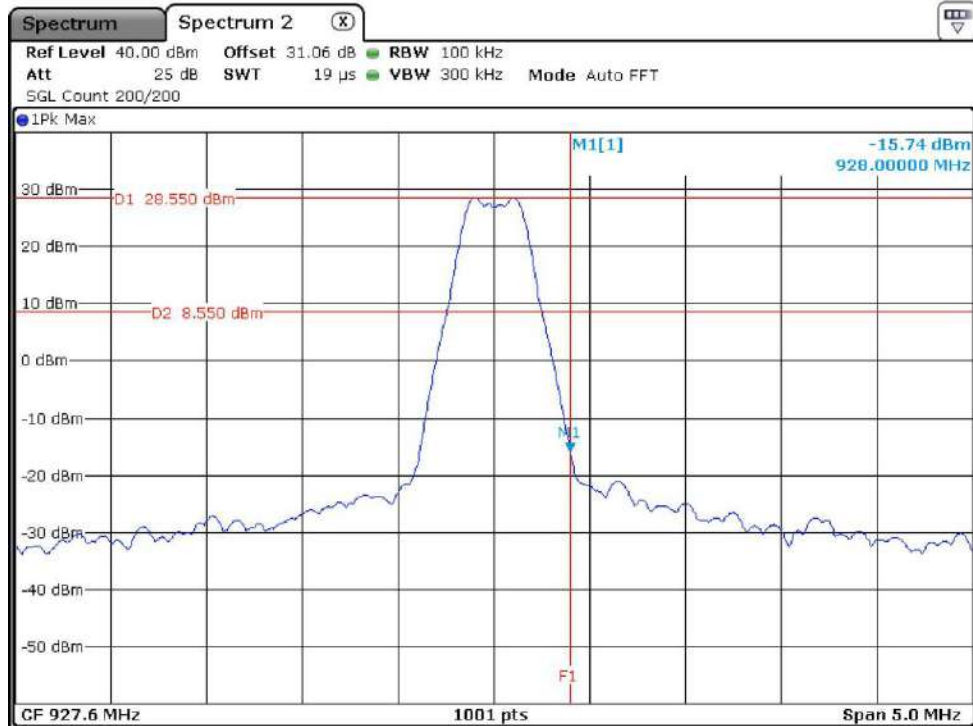
Tabulated test data for Restricted Band



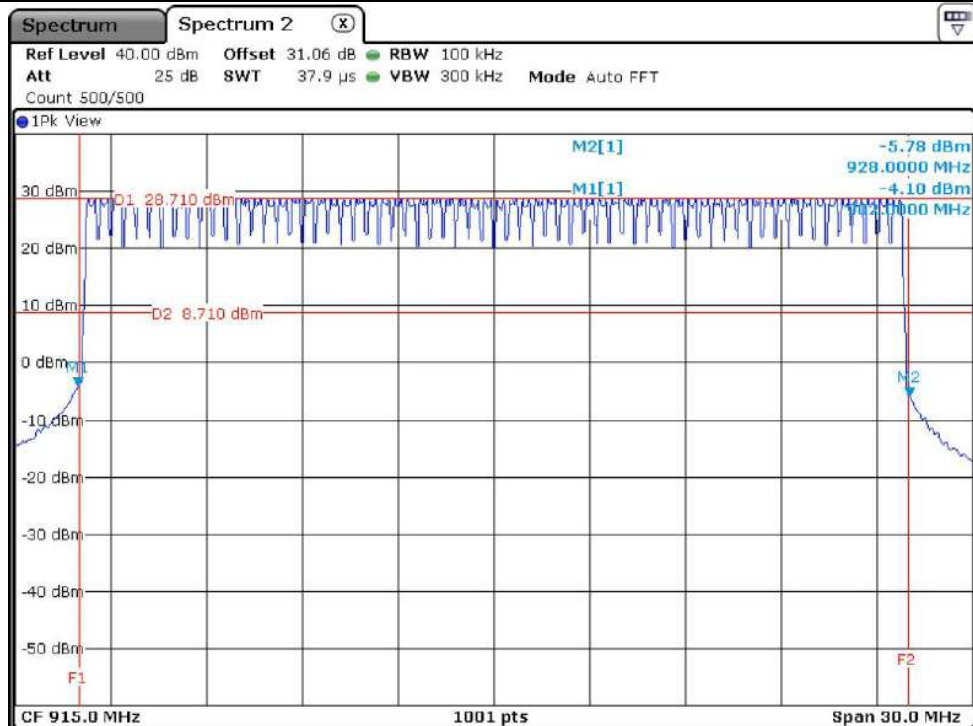
Low Channel



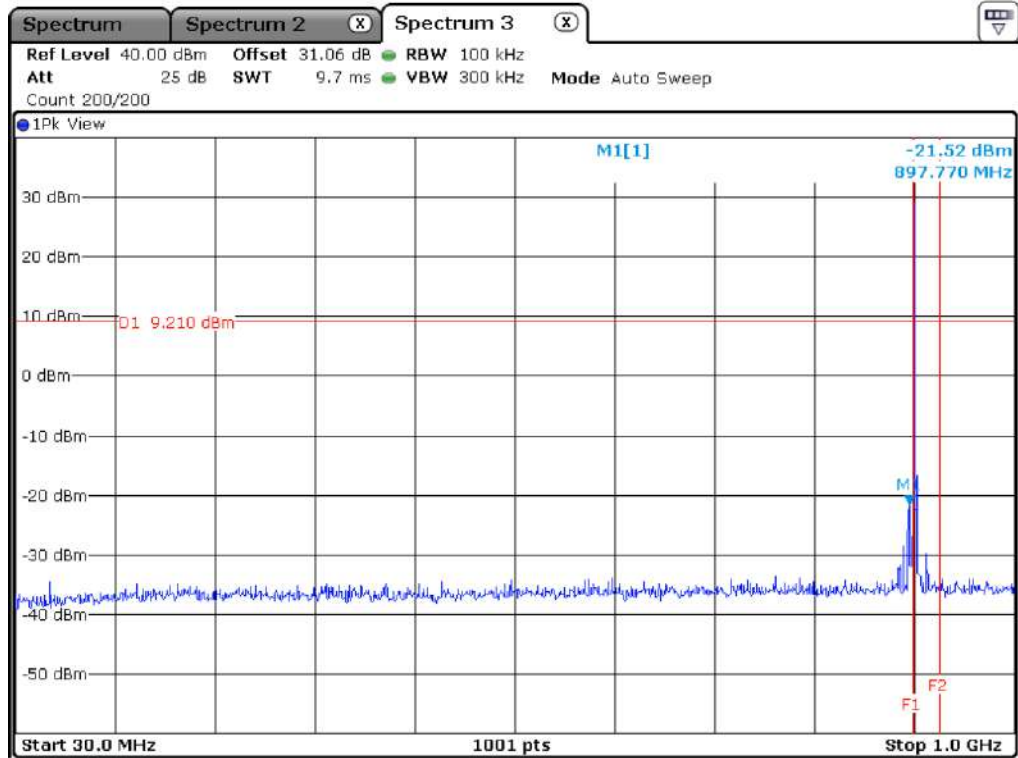
Middle Channel



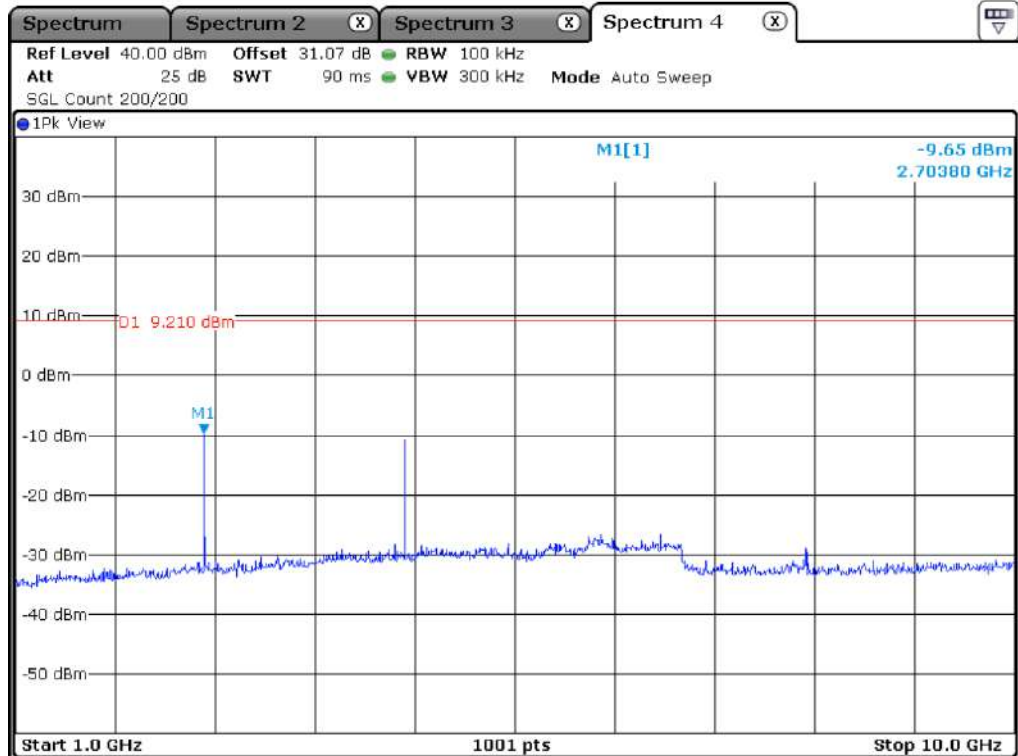
High Channel



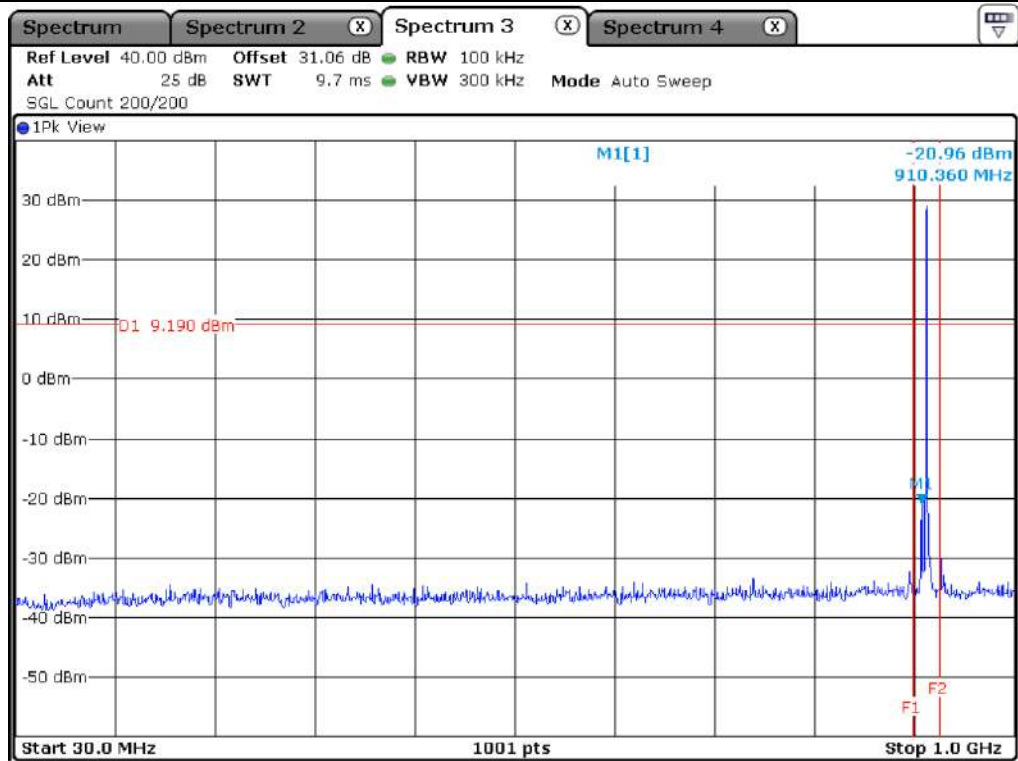
Hopping Channel



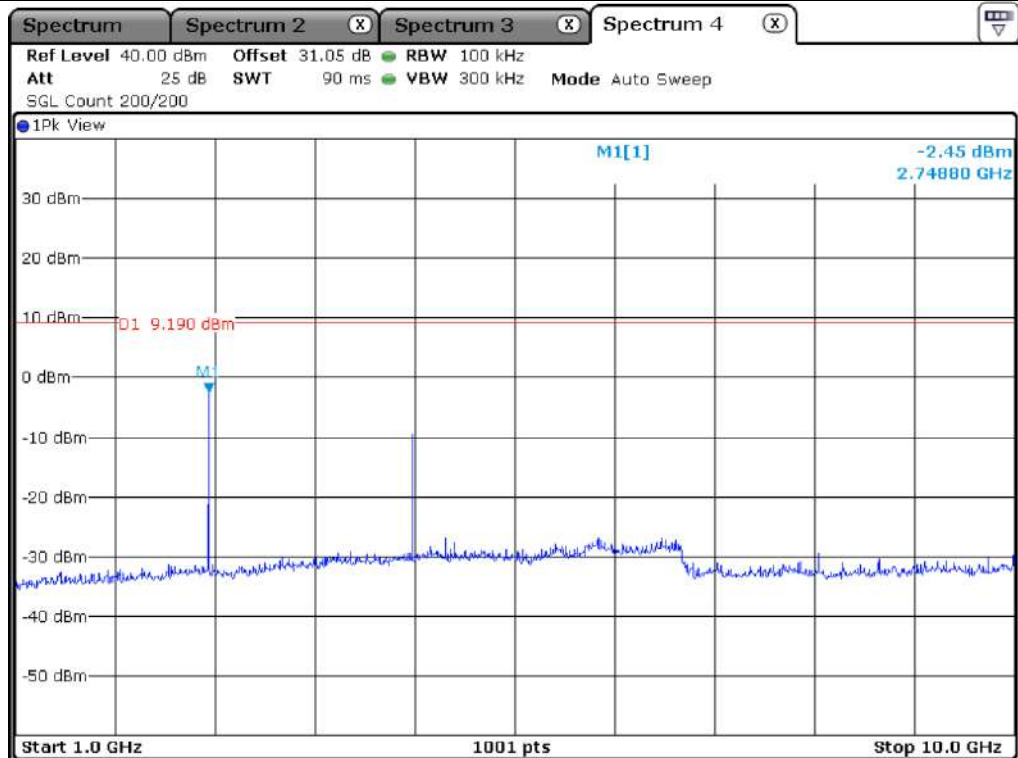
Low Channel



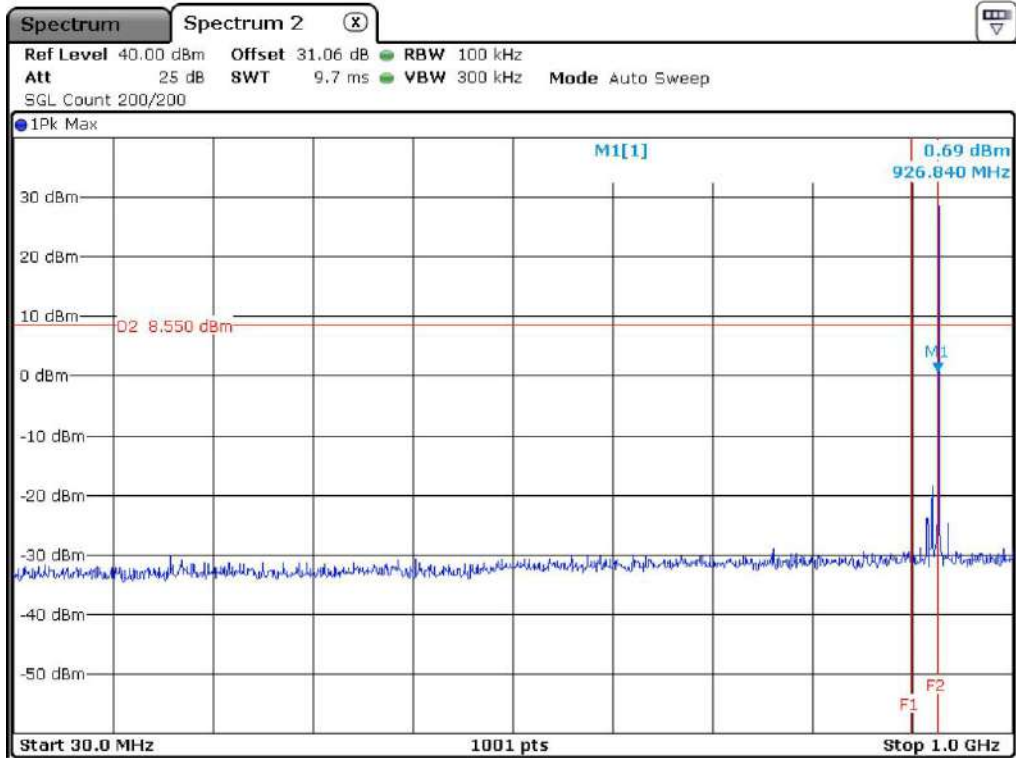
Low Channel



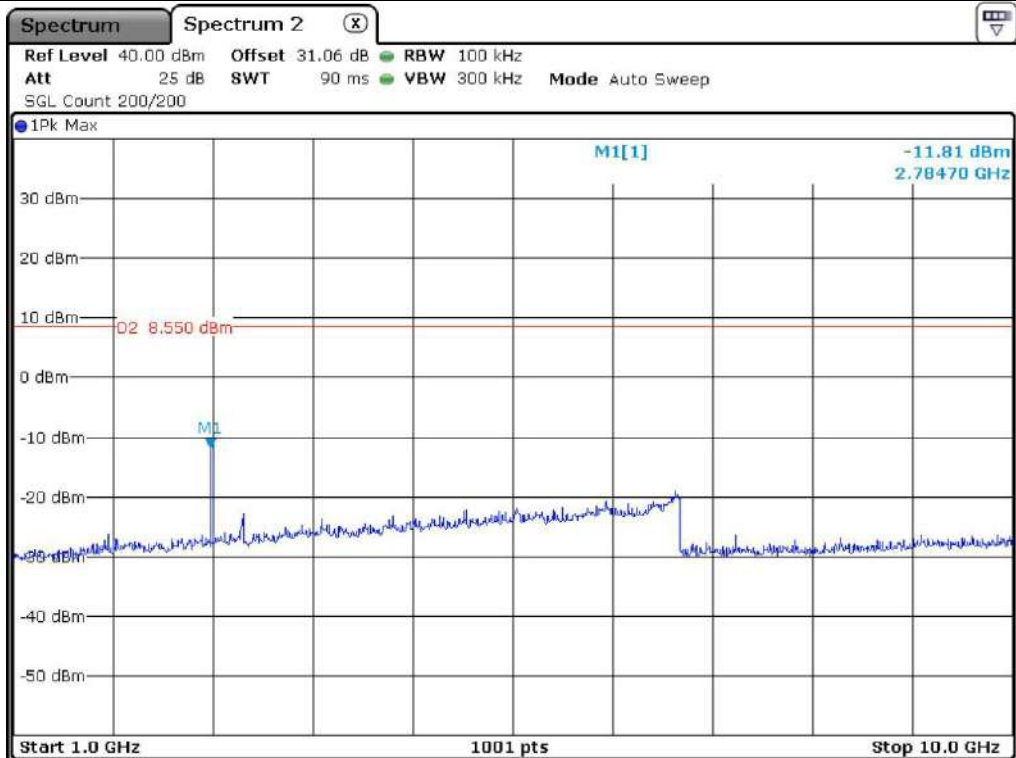
Middle Channel



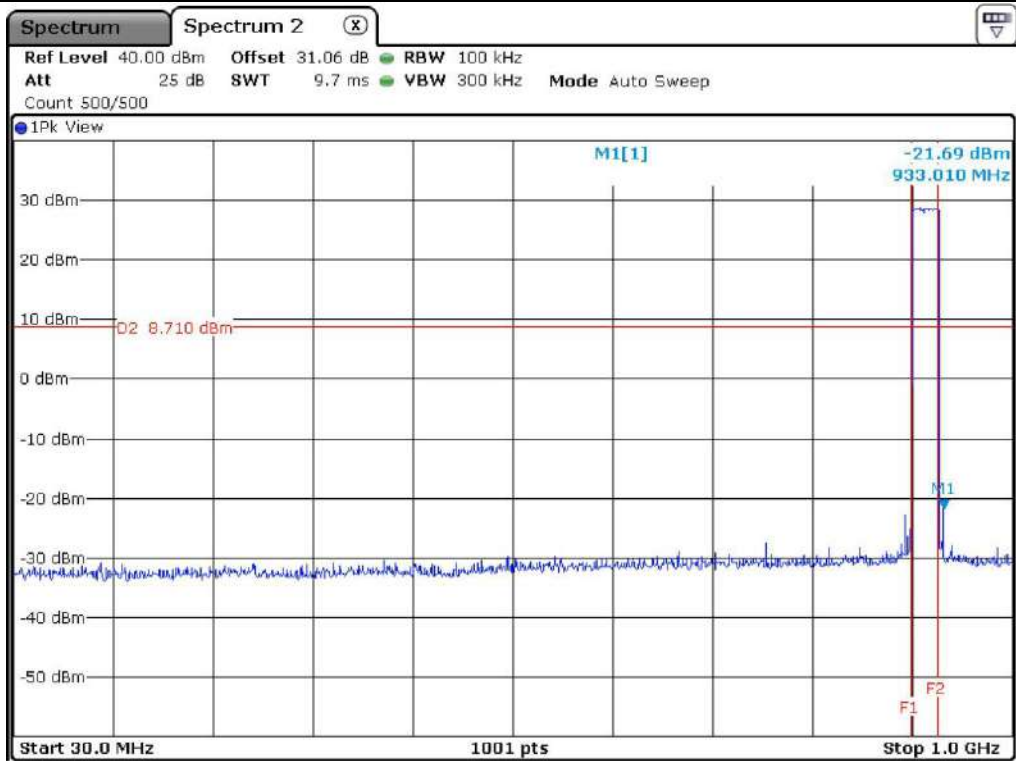
Middle Channel



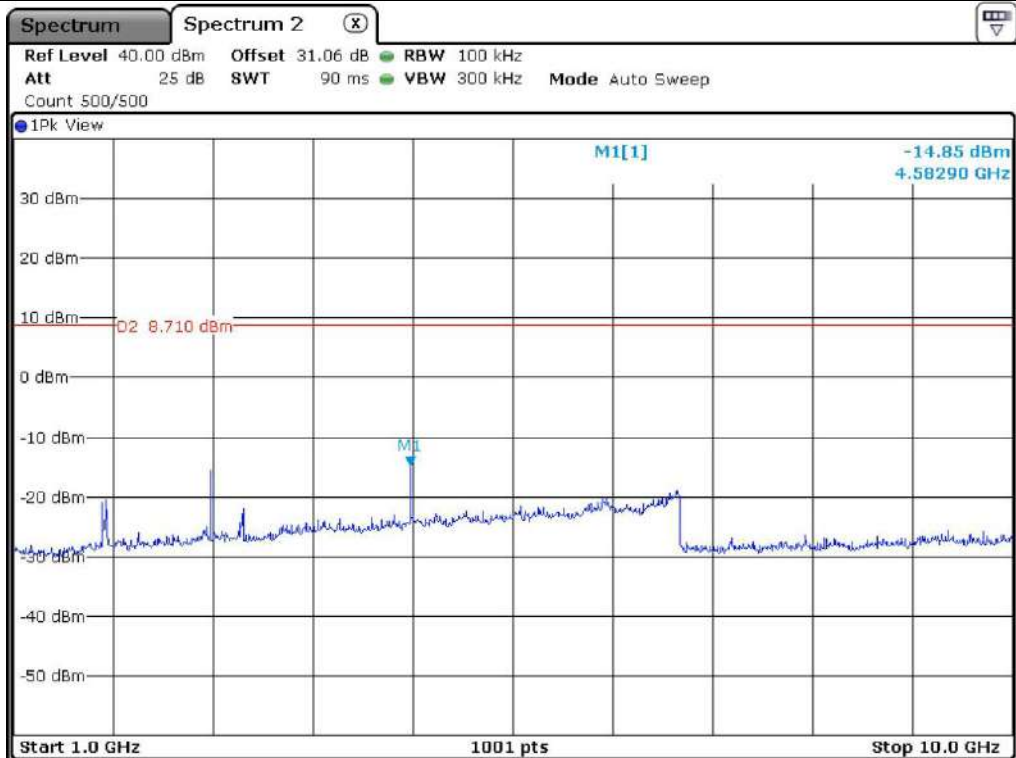
High Channel



High Channel



Hopping Channel



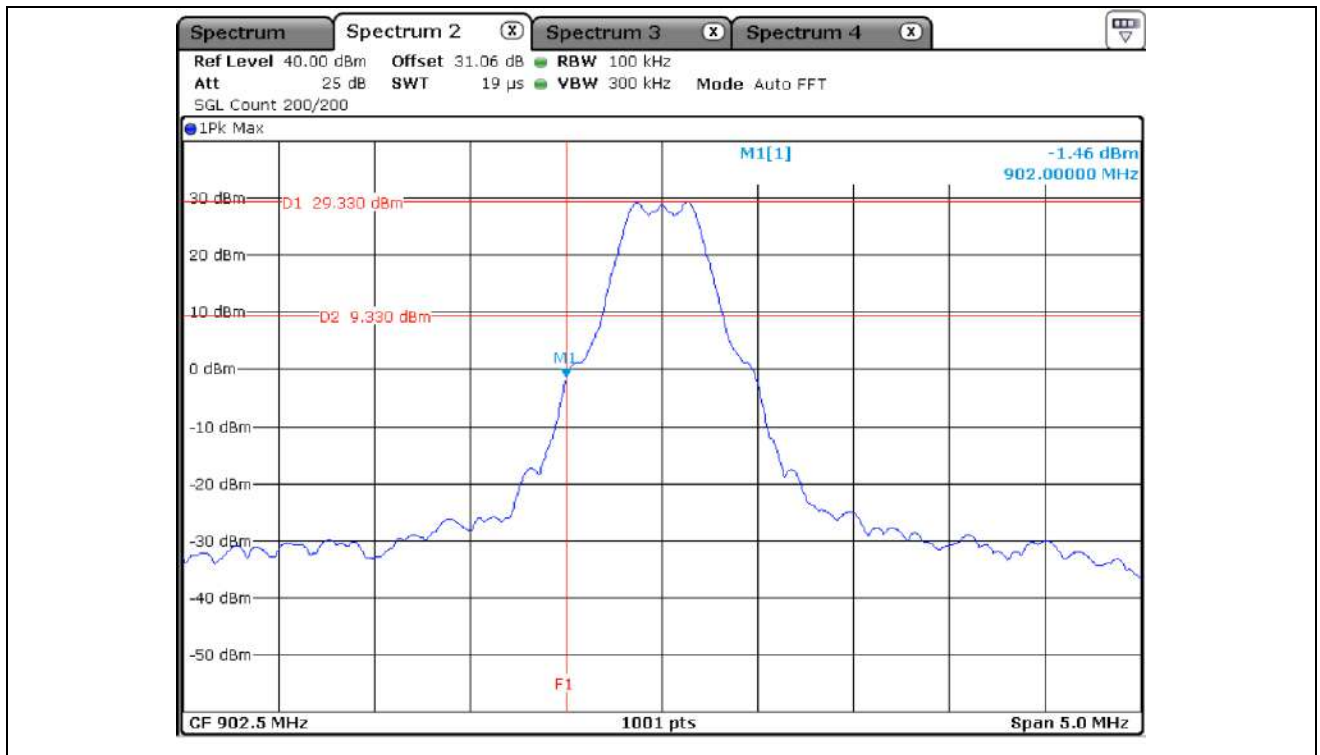
Hopping Channel

### 12.4.3 Test data for Mode 3\_Repeat

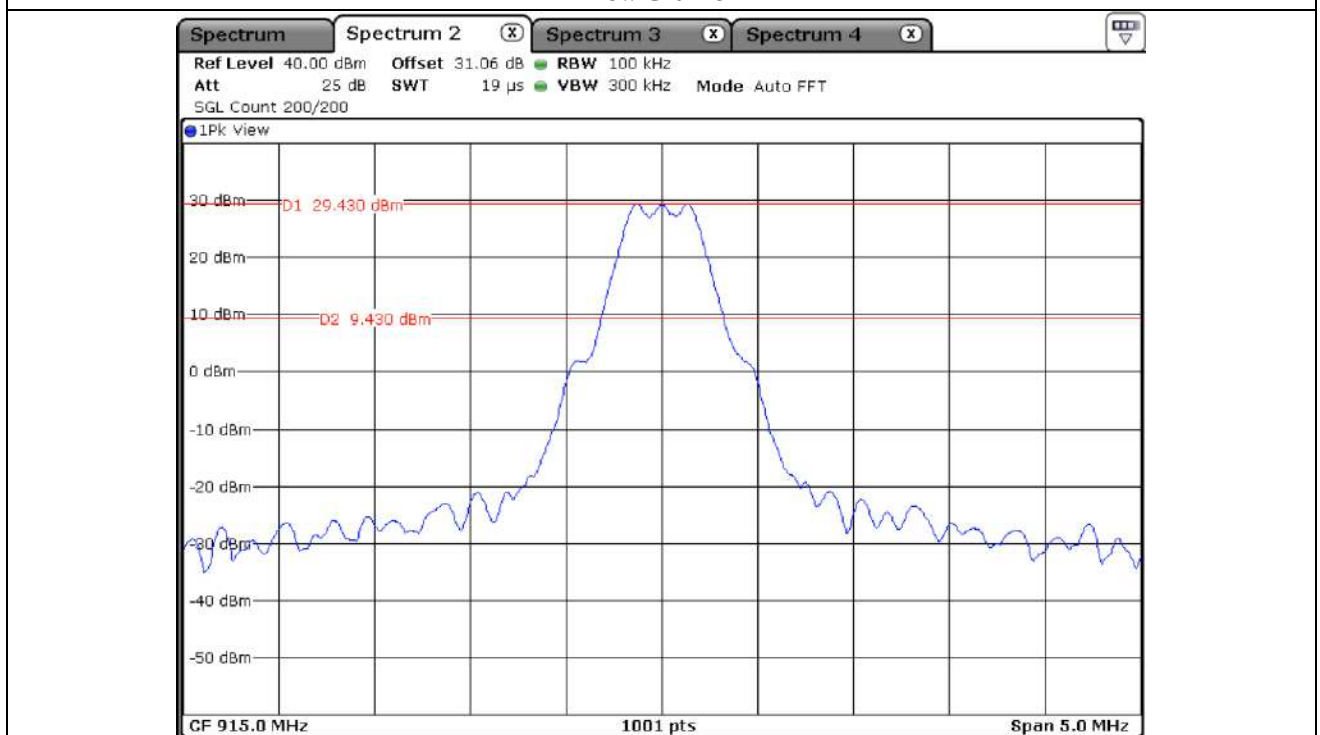
-. Resolution bandwidth : 100 kHz  
 -. Video bandwidth : 300 kHz  
 -. Detector : Peak  
 -. Result : PASS

| Channel | Frequency Range | Measured Value(dBm) | Limit(dBm) | Margin(dB) |
|---------|-----------------|---------------------|------------|------------|
| Low     | 30 M ~ 1 GHz    | -25.86              | 2.11       | 27.97      |
|         | 1 GHz ~ 10 GHz  | -9.58               | 2.11       | 11.69      |
| Middle  | 30 M ~ 1 GHz    | -20.57              | 2.70       | 23.27      |
|         | 1 GHz ~ 10 GHz  | -5.65               | 2.70       | 8.35       |
| High    | 30 M ~ 1 GHz    | -21.24              | 2.06       | 23.30      |
|         | 1 GHz ~ 10 GHz  | -9.87               | 2.06       | 11.93      |

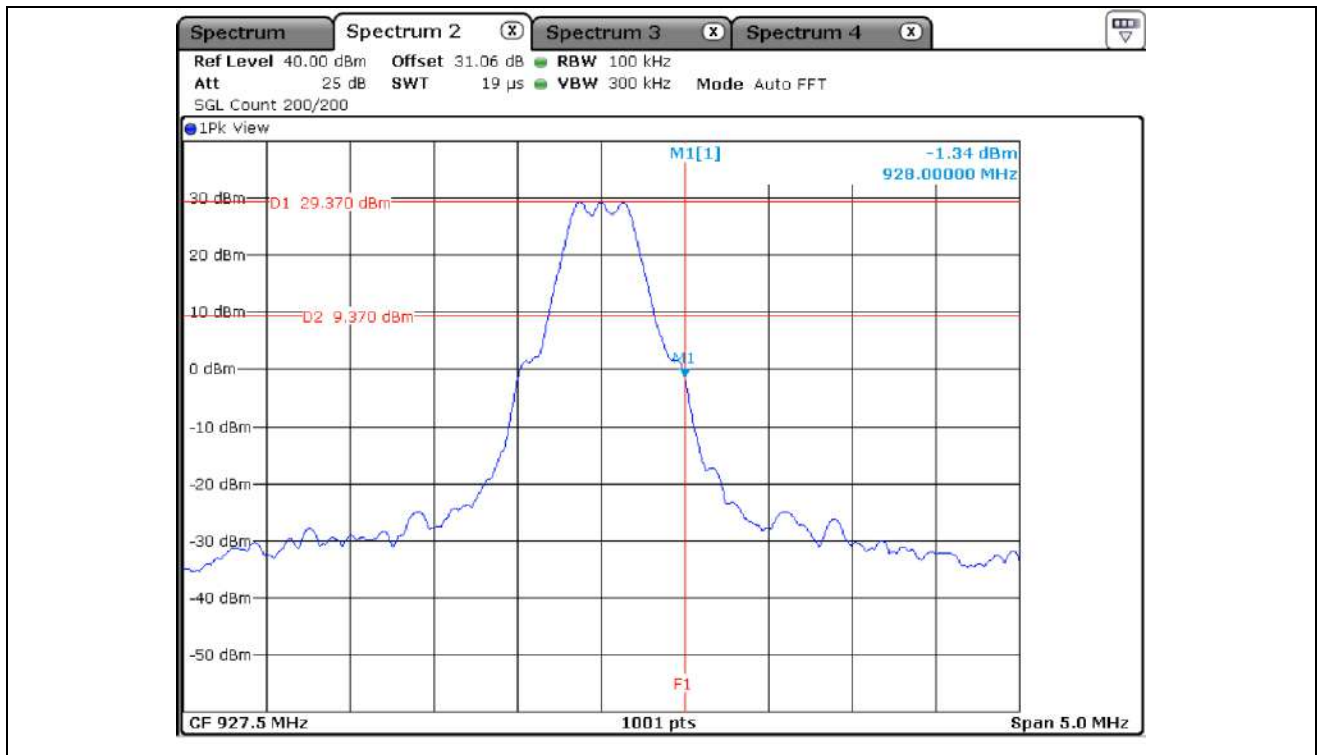
Tabulated test data for Restricted Band



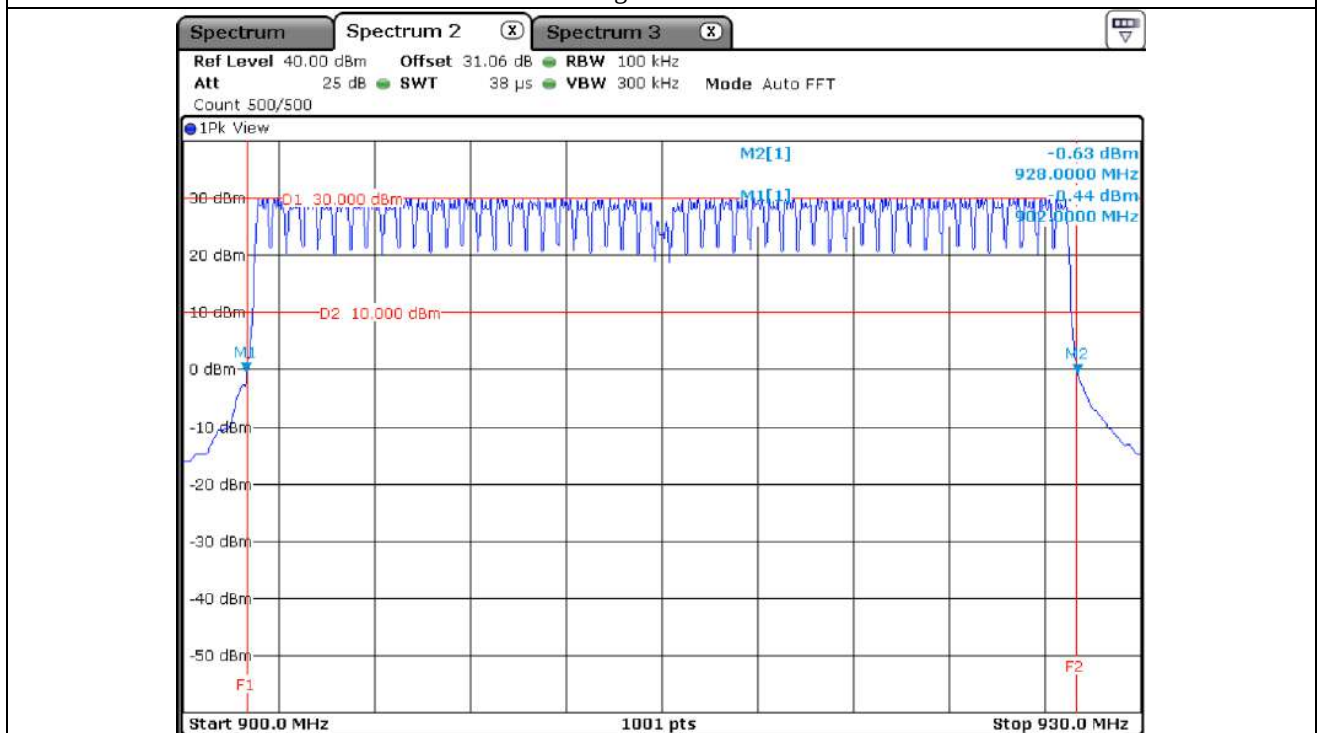
Low Channel



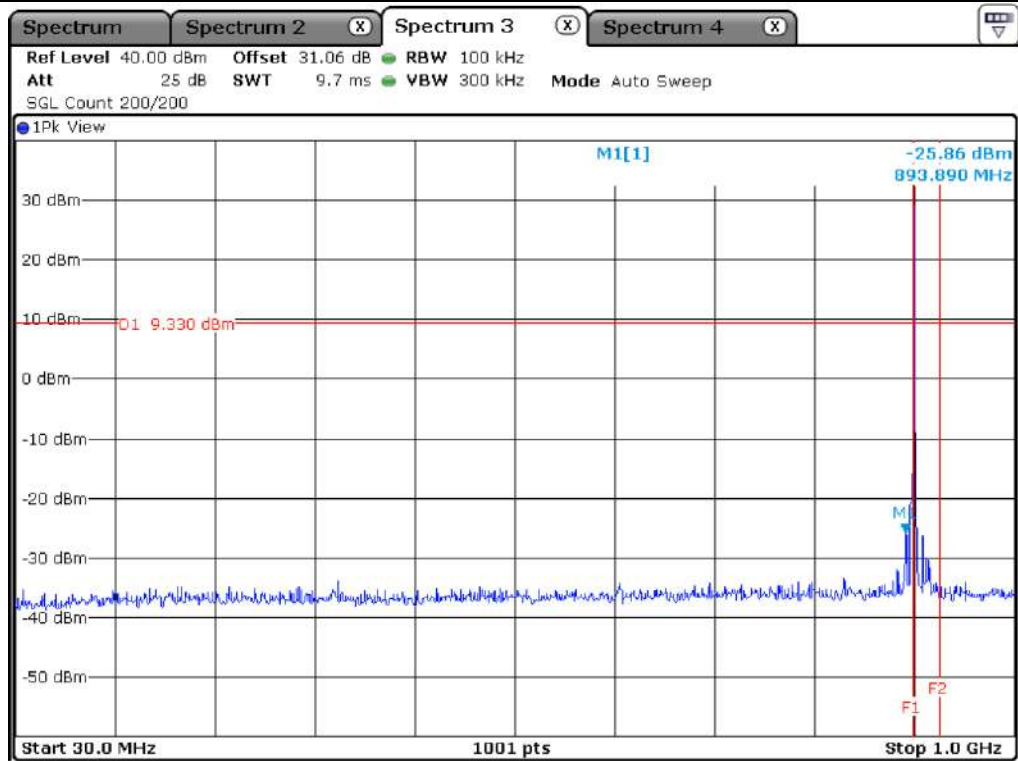
Middle Channel



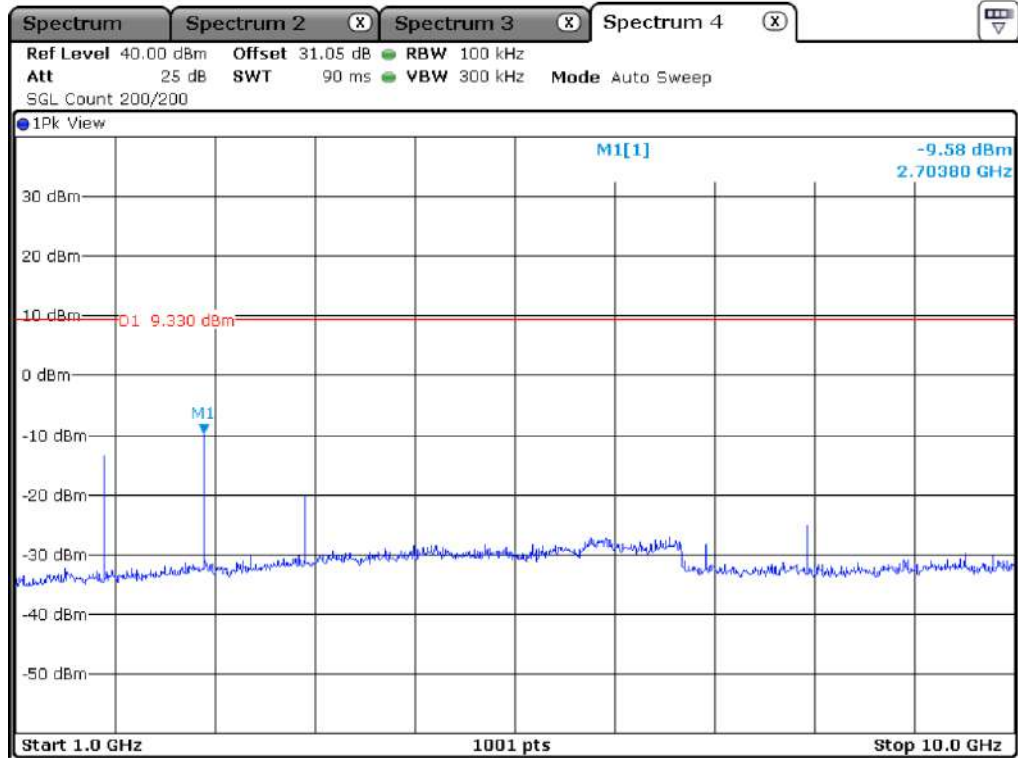
High Channel



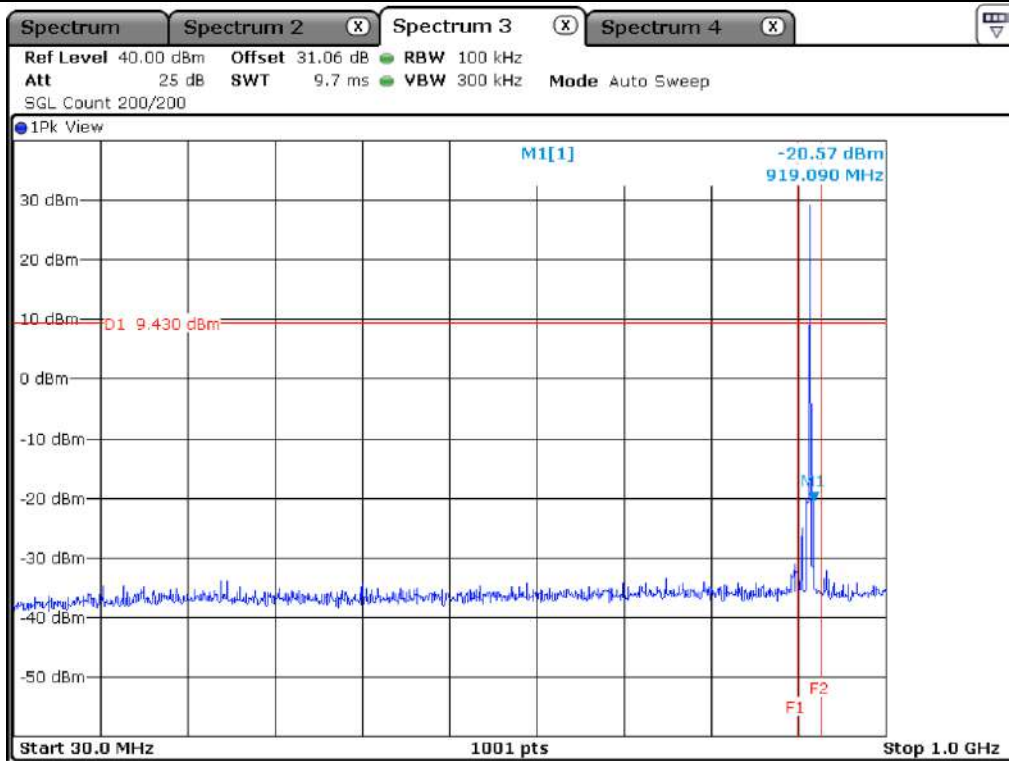
Hopping Channel



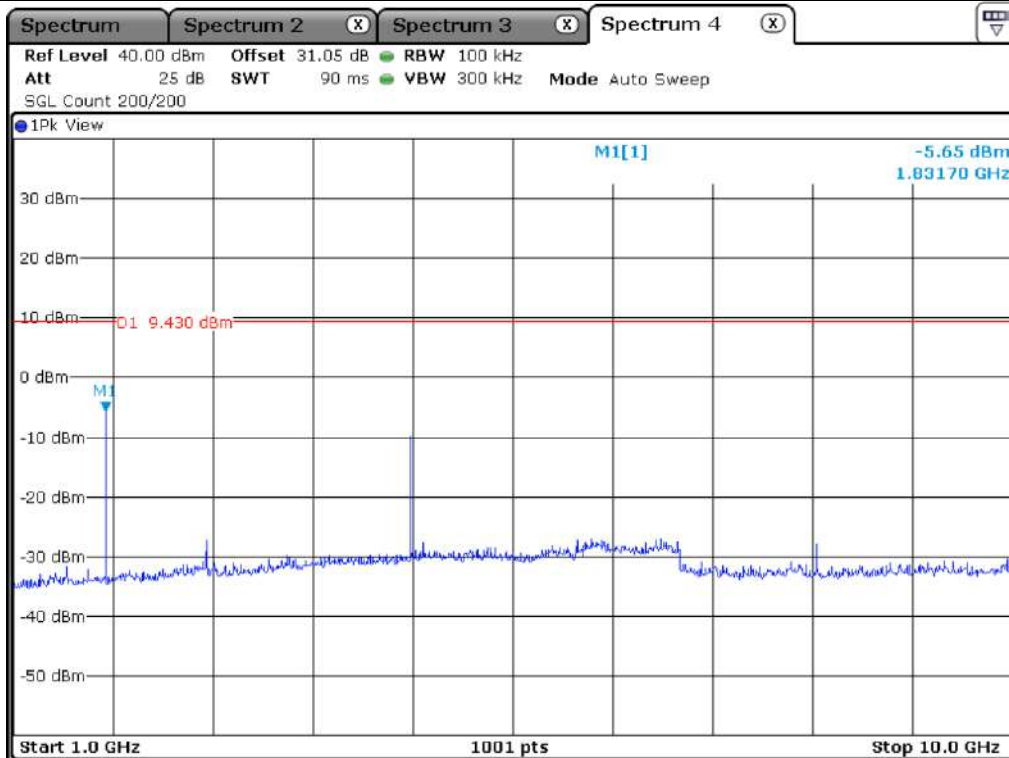
Low Channel



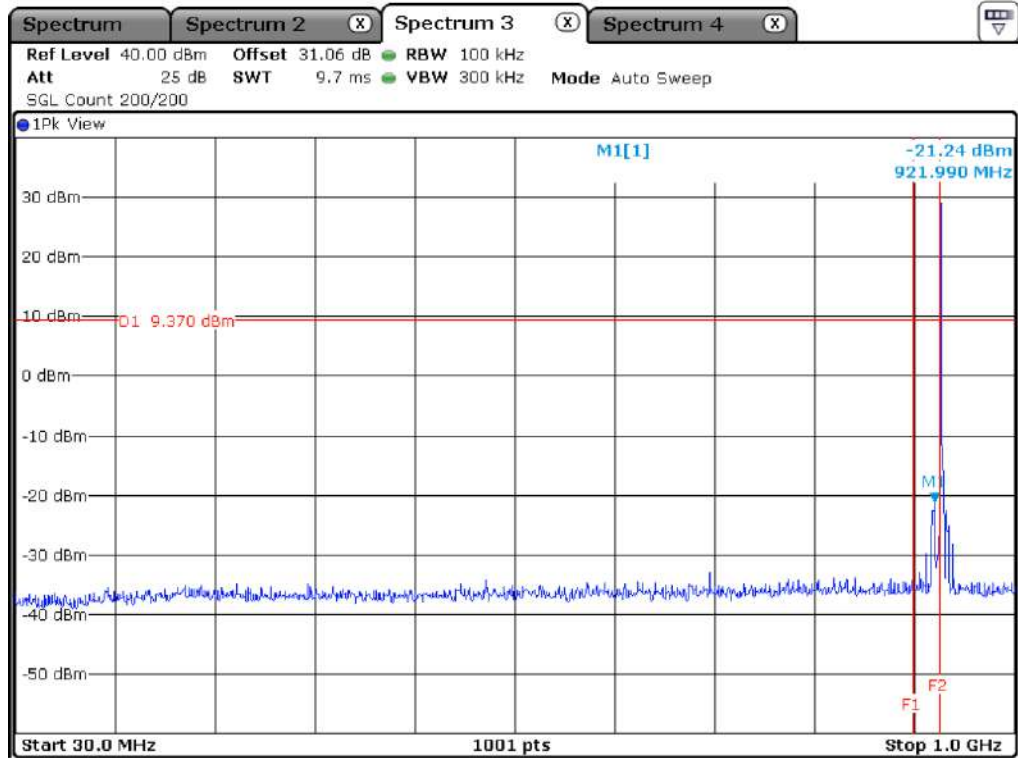
Low Channel



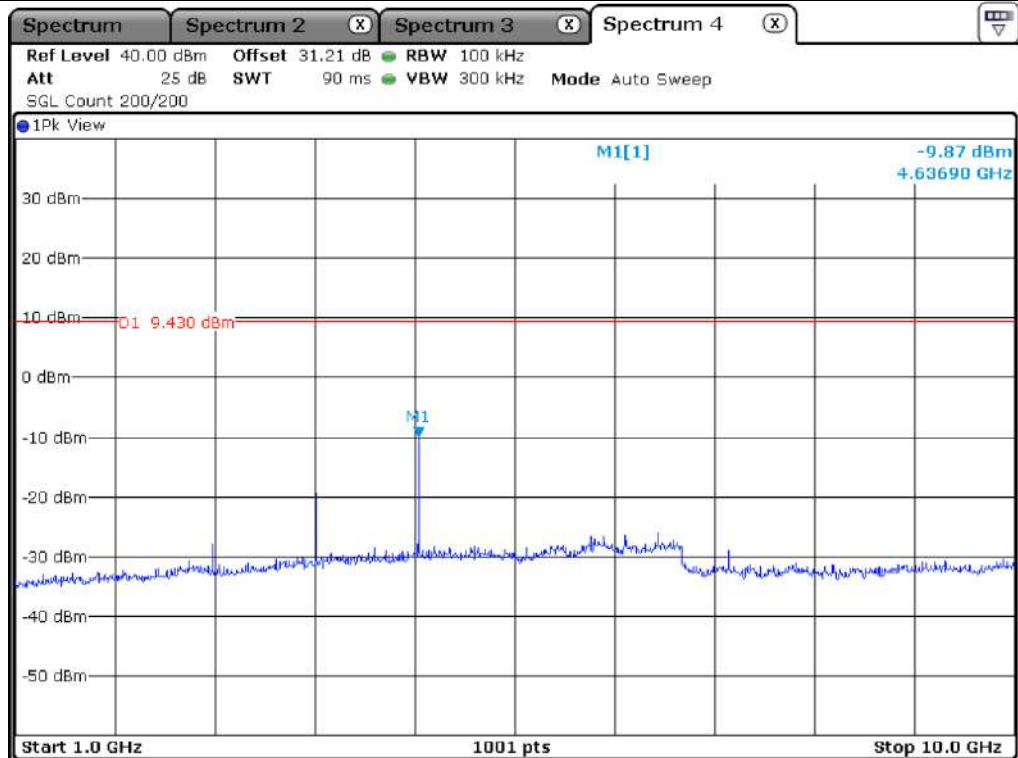
Middle Channel



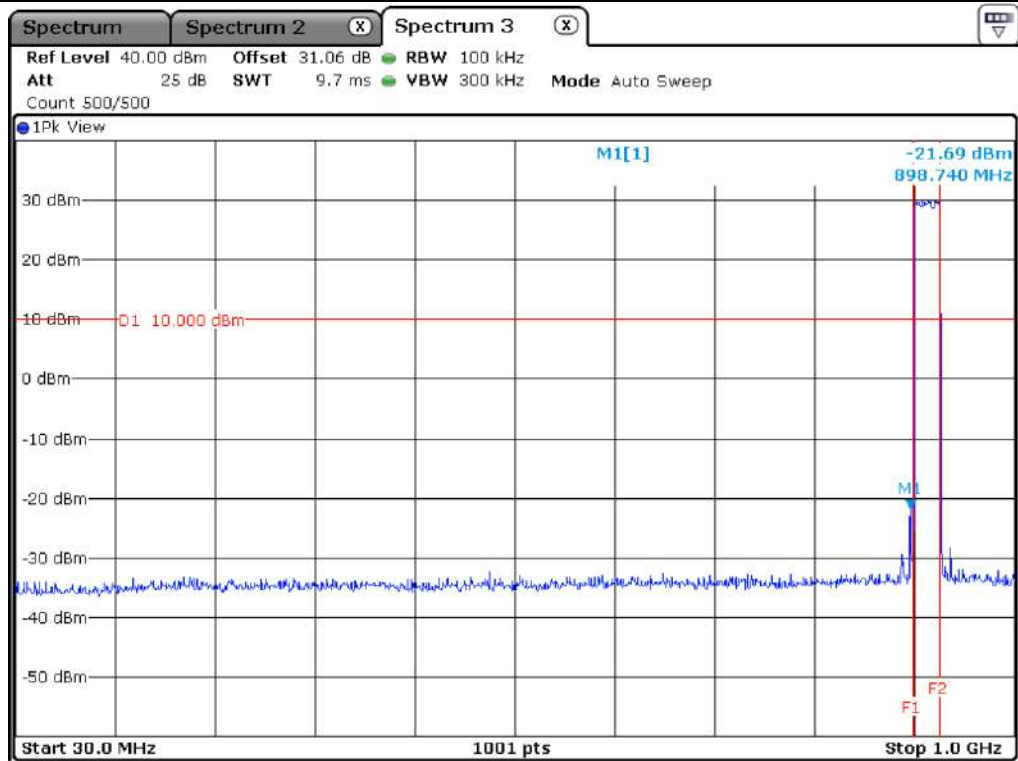
Middle Channel



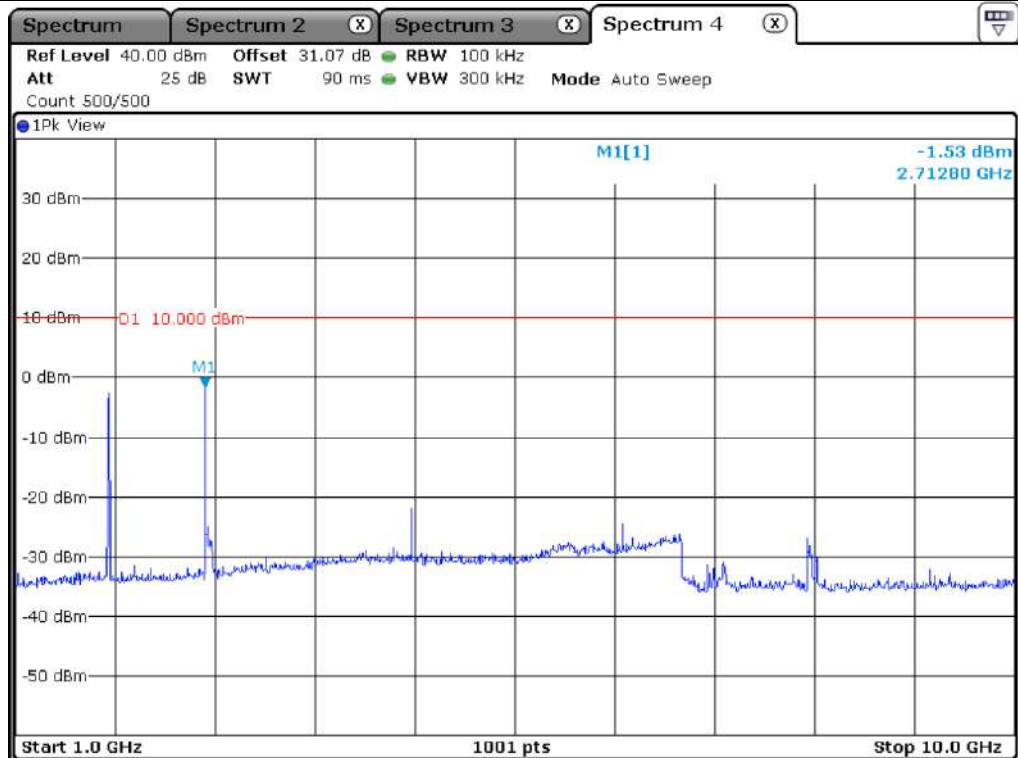
High Channel



High Channel



### Hopping Channel



### Hopping Channel

## 12.5 Test data for Transmitting mode radiated emission (Transmitting Mode)

### 12.5.1 Spurious & Harmonic Radiated Emission above 1 GHz

#### 12.5.1.1 Test data for Mode 1\_Normal

- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 3 MHz for Peak Mode(Peak Detector), 3 MHz for Average Mode(RMS Detector)
- . Frequency range : 1 GHz ~ 10.0 GHz
- . Measurement distance : 3 m
- . Result : PASS

| Channel                | Frequency<br>(MHz) | Reading<br>(dBuV) | Detector<br>Mode | Ant.<br>Pol.<br>(H/V) | Ant.<br>Factor | Cable<br>Loss | Duty<br>Factor | Amp<br>Gain | Total<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) |
|------------------------|--------------------|-------------------|------------------|-----------------------|----------------|---------------|----------------|-------------|-------------------|--------------------|----------------|
| Low ch.<br>Harmonic    | 1 805.00           | 52.52             | Peak             | H                     | 25.10          | 8.50          | -              | 45.10       | 41.02             | 74.00              | 32.98          |
|                        |                    | 40.41             | Average          | H                     | 25.10          | 8.50          | 5.39           | 45.10       | 34.30             | 54.00              | 19.70          |
|                        |                    | 52.04             | Peak             | V                     | 25.10          | 8.50          | -              | 45.10       | 40.54             | 74.00              | 33.46          |
|                        |                    | 39.39             | Average          | V                     | 25.10          | 8.50          | 5.39           | 45.10       | 33.28             | 54.00              | 20.72          |
| Middle ch.<br>Harmonic | 1 830.00           | 52.83             | Peak             | H                     | 25.10          | 8.50          | -              | 45.10       | 41.33             | 74.00              | 32.67          |
|                        |                    | 40.39             | Average          | H                     | 25.10          | 8.50          | 5.39           | 45.10       | 34.28             | 54.00              | 19.72          |
|                        |                    | 51.87             | Peak             | V                     | 25.10          | 8.50          | -              | 45.10       | 40.37             | 74.00              | 33.63          |
|                        |                    | 40.31             | Average          | V                     | 25.10          | 8.50          | 5.39           | 45.10       | 34.20             | 54.00              | 19.80          |
| High ch.<br>Harmonic   | 1 855.00           | 52.42             | Peak             | H                     | 25.30          | 8.50          | -              | 45.10       | 41.12             | 74.00              | 32.88          |
|                        |                    | 40.44             | Average          | H                     | 25.30          | 8.50          | 5.39           | 45.10       | 34.53             | 54.00              | 19.47          |
|                        |                    | 52.52             | Peak             | V                     | 25.30          | 8.50          | -              | 45.10       | 41.22             | 74.00              | 32.78          |
|                        |                    | 40.30             | Average          | V                     | 25.30          | 8.50          | 5.39           | 45.10       | 34.39             | 54.00              | 19.61          |
| Low ch.<br>Harmonic    | 2 707.50           | 51.65             | Peak             | H                     | 28.10          | 9.30          | -              | 44.90       | 44.15             | 74.00              | 29.85          |
|                        |                    | 39.84             | Average          | H                     | 28.10          | 9.30          | 5.39           | 44.90       | 37.73             | 54.00              | 16.27          |
|                        |                    | 51.48             | Peak             | V                     | 28.10          | 9.30          | -              | 44.90       | 43.98             | 74.00              | 30.02          |
|                        |                    | 39.83             | Average          | V                     | 28.10          | 9.30          | 5.39           | 44.90       | 37.72             | 54.00              | 16.28          |
| Middle ch.<br>Harmonic | 2 745.00           | 50.78             | Peak             | H                     | 28.10          | 9.30          | -              | 44.90       | 43.28             | 74.00              | 30.72          |
|                        |                    | 39.18             | Average          | H                     | 28.10          | 9.30          | 5.39           | 44.90       | 37.07             | 54.00              | 16.93          |
|                        |                    | 50.81             | Peak             | V                     | 28.10          | 9.30          | -              | 44.90       | 43.31             | 74.00              | 30.69          |
|                        |                    | 39.35             | Average          | V                     | 28.10          | 9.30          | 5.39           | 44.90       | 37.24             | 54.00              | 16.76          |
| High ch.<br>Harmonic   | 2 782.50           | 50.51             | Peak             | H                     | 28.00          | 9.30          | -              | 44.90       | 42.91             | 74.00              | 31.09          |
|                        |                    | 38.45             | Average          | H                     | 28.00          | 9.30          | 5.39           | 44.90       | 36.24             | 54.00              | 17.76          |
|                        |                    | 50.45             | Peak             | V                     | 28.00          | 9.30          | -              | 44.90       | 42.85             | 74.00              | 31.15          |
|                        |                    | 38.38             | Average          | V                     | 28.00          | 9.30          | 5.39           | 44.90       | 36.17             | 54.00              | 17.83          |

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical, "\*" Frequency fall in restricted band

### 12.5.1.2 Test data for Mode 2\_Long

- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 3 MHz for Peak Mode(Peak Detector), 3 MHz for Average Mode(RMS Detector)
- Frequency range : 1 GHz ~ 10.0 GHz
- Measurement distance : 3 m
- Result : PASS

| Channel                | Frequency<br>(MHz) | Reading<br>(dBuV) | Detector<br>Mode | Ant.<br>Pol.<br>(H/V) | Ant.<br>Factor | Cable<br>Loss | Duty<br>Factor | Amp<br>Gain | Total<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) |
|------------------------|--------------------|-------------------|------------------|-----------------------|----------------|---------------|----------------|-------------|-------------------|--------------------|----------------|
| Low ch.<br>Harmonic    | 1 804.80           | 53.09             | Peak             | H                     | 25.10          | 8.50          | -              | 45.10       | 41.59             | 74.00              | 32.41          |
|                        |                    | 39.53             | Average          | H                     | 25.10          | 8.50          | 3.39           | 45.10       | 31.42             | 54.00              | 22.58          |
|                        |                    | 57.00             | Peak             | V                     | 25.10          | 8.50          | -              | 45.10       | 45.50             | 74.00              | 28.50          |
|                        |                    | 40.70             | Average          | V                     | 25.10          | 8.50          | 3.39           | 45.10       | 32.59             | 54.00              | 21.41          |
| Middle ch.<br>Harmonic | 1 829.60           | 56.90             | Peak             | H                     | 25.10          | 8.50          | -              | 45.10       | 45.40             | 74.00              | 28.60          |
|                        |                    | 42.26             | Average          | H                     | 25.10          | 8.50          | 3.39           | 45.10       | 34.15             | 54.00              | 19.85          |
|                        |                    | 54.74             | Peak             | V                     | 25.10          | 8.50          | -              | 45.10       | 43.24             | 74.00              | 30.76          |
|                        |                    | 45.22             | Average          | V                     | 25.10          | 8.50          | 3.39           | 45.10       | 37.11             | 54.00              | 16.89          |
| High ch.<br>Harmonic   | 1 855.20           | 58.65             | Peak             | H                     | 25.30          | 8.50          | -              | 45.10       | 47.35             | 74.00              | 26.65          |
|                        |                    | 46.13             | Average          | H                     | 25.30          | 8.50          | 3.39           | 45.10       | 38.22             | 54.00              | 15.78          |
|                        |                    | 60.74             | Peak             | V                     | 25.30          | 8.50          | -              | 45.10       | 49.44             | 74.00              | 24.56          |
|                        |                    | 50.65             | Average          | V                     | 25.30          | 8.50          | 3.39           | 45.10       | 42.74             | 54.00              | 11.26          |
| Low ch.<br>Harmonic    | 2 707.20           | 51.73             | Peak             | H                     | 28.10          | 9.30          | -              | 44.90       | 44.23             | 74.00              | 29.77          |
|                        |                    | 39.83             | Average          | H                     | 28.10          | 9.30          | 3.39           | 44.90       | 35.72             | 54.00              | 18.28          |
|                        |                    | 52.05             | Peak             | V                     | 28.10          | 9.30          | -              | 44.90       | 44.55             | 74.00              | 29.45          |
|                        |                    | 39.83             | Average          | V                     | 28.10          | 9.30          | 3.39           | 44.90       | 35.72             | 54.00              | 18.28          |
| Middle ch.<br>Harmonic | 2 744.40           | 50.58             | Peak             | H                     | 28.10          | 9.30          | -              | 44.90       | 43.08             | 74.00              | 30.92          |
|                        |                    | 39.32             | Average          | H                     | 28.10          | 9.30          | 3.39           | 44.90       | 35.21             | 54.00              | 18.79          |
|                        |                    | 51.18             | Peak             | V                     | 28.10          | 9.30          | -              | 44.90       | 43.68             | 74.00              | 30.32          |
|                        |                    | 39.27             | Average          | V                     | 28.10          | 9.30          | 3.39           | 44.90       | 35.16             | 54.00              | 18.84          |
| High ch.<br>Harmonic   | 2 782.80           | 52.72             | Peak             | H                     | 28.00          | 9.30          | -              | 44.90       | 45.12             | 74.00              | 28.88          |
|                        |                    | 41.35             | Average          | H                     | 28.00          | 9.30          | 3.39           | 44.90       | 37.14             | 54.00              | 16.86          |
|                        |                    | 54.67             | Peak             | V                     | 28.00          | 9.30          | -              | 44.90       | 47.07             | 74.00              | 26.93          |
|                        |                    | 43.19             | Average          | V                     | 28.00          | 9.30          | 3.39           | 44.90       | 38.98             | 54.00              | 15.02          |

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical, "\*" Frequency fall in restricted band

### 12.5.1.3 Test data for Mode 3\_Repeat

- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 3 MHz for Peak Mode(Peak Detector), 3 MHz for Average Mode(RMS Detector)
- Frequency range : 1 GHz ~ 10.0 GHz
- Measurement distance : 3 m
- Result : PASS

| Channel                | Frequency<br>(MHz) | Reading<br>(dBuV) | Detector<br>Mode | Ant.<br>Pol.<br>(H/V) | Ant.<br>Factor | Cable<br>Loss | Duty<br>Factor | Amp<br>Gain | Total<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) |
|------------------------|--------------------|-------------------|------------------|-----------------------|----------------|---------------|----------------|-------------|-------------------|--------------------|----------------|
| Low ch.<br>Harmonic    | 1 805.00           | 62.20             | Peak             | H                     | 25.10          | 8.50          | -              | 45.10       | 50.70             | 74.00              | 23.30          |
|                        |                    | 48.33             | Average          | H                     | 25.10          | 8.50          | 6.83           | 45.10       | 43.66             | 54.00              | 10.34          |
|                        |                    | 57.66             | Peak             | V                     | 25.10          | 8.50          | -              | 45.10       | 46.16             | 74.00              | 27.84          |
|                        |                    | 43.79             | Average          | V                     | 25.10          | 8.50          | 6.83           | 45.10       | 39.12             | 54.00              | 14.88          |
| Middle ch.<br>Harmonic | 1 830.00           | 57.57             | Peak             | H                     | 25.10          | 8.50          | -              | 45.10       | 46.07             | 74.00              | 27.93          |
|                        |                    | 45.31             | Average          | H                     | 25.10          | 8.50          | 6.83           | 45.10       | 40.64             | 54.00              | 13.36          |
|                        |                    | 57.64             | Peak             | V                     | 25.10          | 8.50          | -              | 45.10       | 46.14             | 74.00              | 27.86          |
|                        |                    | 46.15             | Average          | V                     | 25.10          | 8.50          | 6.83           | 45.10       | 41.48             | 54.00              | 12.52          |
| High ch.<br>Harmonic   | 1 855.00           | 60.75             | Peak             | H                     | 25.30          | 8.50          | -              | 45.10       | 49.45             | 74.00              | 24.55          |
|                        |                    | 51.35             | Average          | H                     | 25.30          | 8.50          | 6.83           | 45.10       | 46.88             | 54.00              | 7.12           |
|                        |                    | 59.91             | Peak             | V                     | 25.30          | 8.50          | -              | 45.10       | 48.61             | 74.00              | 25.39          |
|                        |                    | 49.33             | Average          | V                     | 25.30          | 8.50          | 6.83           | 45.10       | 44.86             | 54.00              | 9.14           |
| Low ch.<br>Harmonic    | 2 707.50           | 50.53             | Peak             | H                     | 28.10          | 9.30          | -              | 44.90       | 43.03             | 74.00              | 30.97          |
|                        |                    | 39.81             | Average          | H                     | 28.10          | 9.30          | 6.83           | 44.90       | 39.14             | 54.00              | 14.86          |
|                        |                    | 51.88             | Peak             | V                     | 28.10          | 9.30          | -              | 44.90       | 44.38             | 74.00              | 29.62          |
|                        |                    | 39.85             | Average          | V                     | 28.10          | 9.30          | 6.83           | 44.90       | 39.18             | 54.00              | 14.82          |
| Middle ch.<br>Harmonic | 2 745.00           | 50.43             | Peak             | H                     | 28.10          | 9.30          | -              | 44.90       | 42.93             | 74.00              | 31.07          |
|                        |                    | 39.27             | Average          | H                     | 28.10          | 9.30          | 6.83           | 44.90       | 38.60             | 54.00              | 15.40          |
|                        |                    | 51.07             | Peak             | V                     | 28.10          | 9.30          | -              | 44.90       | 43.57             | 74.00              | 30.43          |
|                        |                    | 39.29             | Average          | V                     | 28.10          | 9.30          | 6.83           | 44.90       | 38.62             | 54.00              | 15.38          |
| High ch.<br>Harmonic   | 2 782.50           | 50.22             | Peak             | H                     | 28.00          | 9.30          | -              | 44.90       | 42.62             | 74.00              | 31.38          |
|                        |                    | 38.39             | Average          | H                     | 28.00          | 9.30          | 6.83           | 44.90       | 37.62             | 54.00              | 16.38          |
|                        |                    | 50.16             | Peak             | V                     | 28.00          | 9.30          | -              | 44.90       | 42.56             | 74.00              | 31.44          |
|                        |                    | 38.48             | Average          | V                     | 28.00          | 9.30          | 6.83           | 44.90       | 37.71             | 54.00              | 16.29          |

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical, "\*" Frequency fall in restricted band

## 12.6 Test data for Transmitting mode radiated emission (Charging Mode)

### 12.6.1 Spurious & Harmonic Radiated Emission above 1 GHz

#### 12.6.1.1 Test data for Mode 1\_Normal

- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 3 MHz for Peak Mode(Peak Detector), 3 MHz for Average Mode(RMS Detector)
- . Frequency range : 1 GHz ~ 10.0 GHz
- . Measurement distance : 3 m
- . Result : PASS

| Channel                | Frequency<br>(MHz) | Reading<br>(dBuV) | Detector<br>Mode | Ant.<br>Pol.<br>(H/V) | Ant.<br>Factor | Cable<br>Loss | Duty<br>Factor | Amp<br>Gain | Total<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) |
|------------------------|--------------------|-------------------|------------------|-----------------------|----------------|---------------|----------------|-------------|-------------------|--------------------|----------------|
| Low ch.<br>Harmonic    | 1 805.00           | 53.43             | Peak             | H                     | 25.10          | 8.50          | -              | 45.10       | 41.93             | 74.00              | 32.07          |
|                        |                    | 39.83             | Average          | H                     | 25.10          | 8.50          | 5.39           | 45.10       | 33.72             | 54.00              | 20.28          |
|                        |                    | 52.37             | Peak             | V                     | 25.10          | 8.50          | -              | 45.10       | 40.87             | 74.00              | 33.13          |
|                        |                    | 39.48             | Average          | V                     | 25.10          | 8.50          | 5.39           | 45.10       | 33.37             | 54.00              | 20.63          |
| Middle ch.<br>Harmonic | 1 830.00           | 50.30             | Peak             | H                     | 25.10          | 8.50          | -              | 45.10       | 38.80             | 74.00              | 35.20          |
|                        |                    | 40.49             | Average          | H                     | 25.10          | 8.50          | 5.39           | 45.10       | 34.38             | 54.00              | 19.62          |
|                        |                    | 52.52             | Peak             | V                     | 25.10          | 8.50          | -              | 45.10       | 41.02             | 74.00              | 32.98          |
|                        |                    | 40.51             | Average          | V                     | 25.10          | 8.50          | 5.39           | 45.10       | 34.40             | 54.00              | 19.60          |
| High ch.<br>Harmonic   | 1 855.00           | 52.71             | Peak             | H                     | 25.30          | 8.50          | -              | 45.10       | 41.41             | 74.00              | 32.59          |
|                        |                    | 40.21             | Average          | H                     | 25.30          | 8.50          | 5.39           | 45.10       | 34.30             | 54.00              | 19.70          |
|                        |                    | 52.26             | Peak             | V                     | 25.30          | 8.50          | -              | 45.10       | 40.96             | 74.00              | 33.04          |
|                        |                    | 41.04             | Average          | V                     | 25.30          | 8.50          | 5.39           | 45.10       | 35.13             | 54.00              | 18.87          |
| Low ch.<br>Harmonic    | 2 707.50           | 51.94             | Peak             | H                     | 28.10          | 9.30          | -              | 44.90       | 44.44             | 74.00              | 29.56          |
|                        |                    | 39.85             | Average          | H                     | 28.10          | 9.30          | 5.39           | 44.90       | 37.74             | 54.00              | 16.26          |
|                        |                    | 51.34             | Peak             | V                     | 28.10          | 9.30          | -              | 44.90       | 43.84             | 74.00              | 30.16          |
|                        |                    | 39.82             | Average          | V                     | 28.10          | 9.30          | 5.39           | 44.90       | 37.71             | 54.00              | 16.29          |
| Middle ch.<br>Harmonic | 2 745.00           | 51.27             | Peak             | H                     | 28.10          | 9.30          | -              | 44.90       | 43.77             | 74.00              | 30.23          |
|                        |                    | 39.18             | Average          | H                     | 28.10          | 9.30          | 5.39           | 44.90       | 37.07             | 54.00              | 16.93          |
|                        |                    | 50.95             | Peak             | V                     | 28.10          | 9.30          | -              | 44.90       | 43.45             | 74.00              | 30.55          |
|                        |                    | 39.20             | Average          | V                     | 28.10          | 9.30          | 5.39           | 44.90       | 37.09             | 54.00              | 16.91          |
| High ch.<br>Harmonic   | 2 782.50           | 50.27             | Peak             | H                     | 28.00          | 9.30          | -              | 44.90       | 42.67             | 74.00              | 31.33          |
|                        |                    | 38.42             | Average          | H                     | 28.00          | 9.30          | 5.39           | 44.90       | 36.21             | 54.00              | 17.79          |
|                        |                    | 49.93             | Peak             | V                     | 28.00          | 9.30          | -              | 44.90       | 42.33             | 74.00              | 31.67          |
|                        |                    | 38.36             | Average          | V                     | 28.00          | 9.30          | 5.39           | 44.90       | 36.15             | 54.00              | 17.85          |

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical, "\*" Frequency fall in restricted band

### 12.5.1.2 Test data for Mode 2\_Long

- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 3 MHz for Peak Mode(Peak Detector), 3 MHz for Average Mode(RMS Detector)
- Frequency range : 1 GHz ~ 10.0 GHz
- Measurement distance : 3 m
- Result : PASS

| Channel                | Frequency<br>(MHz) | Reading<br>(dBuV) | Detector<br>Mode | Ant.<br>Pol.<br>(H/V) | Ant.<br>Factor | Cable<br>Loss | Duty<br>Factor | Amp<br>Gain | Total<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) |
|------------------------|--------------------|-------------------|------------------|-----------------------|----------------|---------------|----------------|-------------|-------------------|--------------------|----------------|
| Low ch.<br>Harmonic    | 1 804.80           | 52.03             | Peak             | H                     | 25.10          | 8.50          | -              | 45.10       | 40.53             | 74.00              | 33.47          |
|                        |                    | 39.47             | Average          | H                     | 25.10          | 8.50          | 3.39           | 45.10       | 31.36             | 54.00              | 22.64          |
|                        |                    | 56.85             | Peak             | V                     | 25.10          | 8.50          | -              | 45.10       | 45.35             | 74.00              | 28.65          |
|                        |                    | 40.98             | Average          | V                     | 25.10          | 8.50          | 3.39           | 45.10       | 32.87             | 54.00              | 21.13          |
| Middle ch.<br>Harmonic | 1 829.60           | 58.03             | Peak             | H                     | 25.10          | 8.50          | -              | 45.10       | 46.53             | 74.00              | 27.47          |
|                        |                    | 42.29             | Average          | H                     | 25.10          | 8.50          | 3.39           | 45.10       | 34.18             | 54.00              | 19.82          |
|                        |                    | 55.66             | Peak             | V                     | 25.10          | 8.50          | -              | 45.10       | 44.16             | 74.00              | 29.84          |
|                        |                    | 45.51             | Average          | V                     | 25.10          | 8.50          | 3.39           | 45.10       | 37.40             | 54.00              | 16.60          |
| High ch.<br>Harmonic   | 1 855.20           | 54.31             | Peak             | H                     | 25.30          | 8.50          | -              | 45.10       | 43.01             | 74.00              | 30.99          |
|                        |                    | 44.99             | Average          | H                     | 25.30          | 8.50          | 3.39           | 45.10       | 37.08             | 54.00              | 16.92          |
|                        |                    | 59.13             | Peak             | V                     | 25.30          | 8.50          | -              | 45.10       | 47.83             | 74.00              | 26.17          |
|                        |                    | 48.12             | Average          | V                     | 25.30          | 8.50          | 3.39           | 45.10       | 40.21             | 54.00              | 13.79          |
| Low ch.<br>Harmonic    | 2 707.20           | 51.37             | Peak             | H                     | 28.10          | 9.30          | -              | 44.90       | 43.87             | 74.00              | 30.13          |
|                        |                    | 39.86             | Average          | H                     | 28.10          | 9.30          | 3.39           | 44.90       | 35.75             | 54.00              | 18.25          |
|                        |                    | 51.79             | Peak             | V                     | 28.10          | 9.30          | -              | 44.90       | 44.29             | 74.00              | 29.71          |
|                        |                    | 39.89             | Average          | V                     | 28.10          | 9.30          | 3.39           | 44.90       | 35.78             | 54.00              | 18.22          |
| Middle ch.<br>Harmonic | 2 744.40           | 50.96             | Peak             | H                     | 28.10          | 9.30          | -              | 44.90       | 43.46             | 74.00              | 30.54          |
|                        |                    | 39.34             | Average          | H                     | 28.10          | 9.30          | 3.39           | 44.90       | 35.23             | 54.00              | 18.77          |
|                        |                    | 50.94             | Peak             | V                     | 28.10          | 9.30          | -              | 44.90       | 43.44             | 74.00              | 30.56          |
|                        |                    | 39.36             | Average          | V                     | 28.10          | 9.30          | 3.39           | 44.90       | 35.25             | 54.00              | 18.75          |
| High ch.<br>Harmonic   | 2 782.80           | 51.93             | Peak             | H                     | 28.00          | 9.30          | -              | 44.90       | 44.33             | 74.00              | 29.67          |
|                        |                    | 40.36             | Average          | H                     | 28.00          | 9.30          | 3.39           | 44.90       | 36.15             | 54.00              | 17.85          |
|                        |                    | 53.80             | Peak             | V                     | 28.00          | 9.30          | -              | 44.90       | 46.20             | 74.00              | 27.80          |
|                        |                    | 40.88             | Average          | V                     | 28.00          | 9.30          | 3.39           | 44.90       | 36.67             | 54.00              | 17.33          |

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical, "\*" Frequency fall in restricted band

### 12.5.1.3 Test data for Mode 3\_Repeat

- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 3 MHz for Peak Mode(Peak Detector), 3 MHz for Average Mode(RMS Detector)
- Frequency range : 1 GHz ~ 10.0 GHz
- Measurement distance : 3 m
- Result : PASS

| Channel                | Frequency<br>(MHz) | Reading<br>(dBuV) | Detector<br>Mode | Ant.<br>Pol.<br>(H/V) | Ant.<br>Factor | Cable<br>Loss | Duty<br>Factor | Amp<br>Gain | Total<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) |
|------------------------|--------------------|-------------------|------------------|-----------------------|----------------|---------------|----------------|-------------|-------------------|--------------------|----------------|
| Low ch.<br>Harmonic    | 1 805.00           | 62.67             | Peak             | H                     | 25.10          | 8.50          | -              | 45.10       | 51.17             | 74.00              | 22.83          |
|                        |                    | 48.60             | Average          | H                     | 25.10          | 8.50          | 6.83           | 45.10       | 43.93             | 54.00              | 10.07          |
|                        |                    | 57.57             | Peak             | V                     | 25.10          | 8.50          | -              | 45.10       | 46.07             | 74.00              | 27.93          |
|                        |                    | 43.49             | Average          | V                     | 25.10          | 8.50          | 6.83           | 45.10       | 38.82             | 54.00              | 15.18          |
| Middle ch.<br>Harmonic | 1 830.00           | 56.40             | Peak             | H                     | 25.10          | 8.50          | -              | 45.10       | 44.90             | 74.00              | 29.10          |
|                        |                    | 45.15             | Average          | H                     | 25.10          | 8.50          | 6.83           | 45.10       | 40.48             | 54.00              | 13.52          |
|                        |                    | 57.11             | Peak             | V                     | 25.10          | 8.50          | -              | 45.10       | 45.61             | 74.00              | 28.39          |
|                        |                    | 45.85             | Average          | V                     | 25.10          | 8.50          | 6.83           | 45.10       | 41.18             | 54.00              | 12.82          |
| High ch.<br>Harmonic   | 1 855.00           | 60.44             | Peak             | H                     | 25.30          | 8.50          | -              | 45.10       | 49.14             | 74.00              | 24.86          |
|                        |                    | 50.84             | Average          | H                     | 25.30          | 8.50          | 6.83           | 45.10       | 46.37             | 54.00              | 7.63           |
|                        |                    | 59.78             | Peak             | V                     | 25.30          | 8.50          | -              | 45.10       | 48.48             | 74.00              | 25.52          |
|                        |                    | 49.00             | Average          | V                     | 25.30          | 8.50          | 6.83           | 45.10       | 44.53             | 54.00              | 9.47           |
| Low ch.<br>Harmonic    | 2 707.50           | 50.58             | Peak             | H                     | 28.10          | 9.30          | -              | 44.90       | 43.08             | 74.00              | 30.92          |
|                        |                    | 39.84             | Average          | H                     | 28.10          | 9.30          | 6.83           | 44.90       | 39.17             | 54.00              | 14.83          |
|                        |                    | 51.91             | Peak             | V                     | 28.10          | 9.30          | -              | 44.90       | 44.41             | 74.00              | 29.59          |
|                        |                    | 39.88             | Average          | V                     | 28.10          | 9.30          | 6.83           | 44.90       | 39.21             | 54.00              | 14.79          |
| Middle ch.<br>Harmonic | 2 745.00           | 50.48             | Peak             | H                     | 28.10          | 9.30          | -              | 44.90       | 42.98             | 74.00              | 31.02          |
|                        |                    | 39.29             | Average          | H                     | 28.10          | 9.30          | 6.83           | 44.90       | 38.62             | 54.00              | 15.38          |
|                        |                    | 51.12             | Peak             | V                     | 28.10          | 9.30          | -              | 44.90       | 43.62             | 74.00              | 30.38          |
|                        |                    | 39.31             | Average          | V                     | 28.10          | 9.30          | 6.83           | 44.90       | 38.64             | 54.00              | 15.36          |
| High ch.<br>Harmonic   | 2 782.50           | 50.24             | Peak             | H                     | 28.00          | 9.30          | -              | 44.90       | 42.64             | 74.00              | 31.36          |
|                        |                    | 38.42             | Average          | H                     | 28.00          | 9.30          | 6.83           | 44.90       | 37.65             | 54.00              | 16.35          |
|                        |                    | 50.19             | Peak             | V                     | 28.00          | 9.30          | -              | 44.90       | 42.59             | 74.00              | 31.41          |
|                        |                    | 38.50             | Average          | V                     | 28.00          | 9.30          | 6.83           | 44.90       | 37.73             | 54.00              | 16.27          |

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical, "\*" Frequency fall in restricted band

## 13. RADIATED EMISSION TEST

### 13.1 Operating environment

Temperature : 23 °C  
Relative humidity : 41 % R.H.

### 13.2 Test set-up

The radiated emissions measurements were on the 3 m semi anechoic chamber. The EUT and other support equipment were placed on a non-conductive turntable above the ground plane. The interconnecting cables from outside test site were inserted into ferrite clamps at the point where the cables reach the turntable.

The frequency spectrum from 9 kHz to 10.0 GHz was scanned and emission levels maximized at each frequency recorded. The system was rotated 360°, and the antenna was varied in height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

### 13.3 Test Date

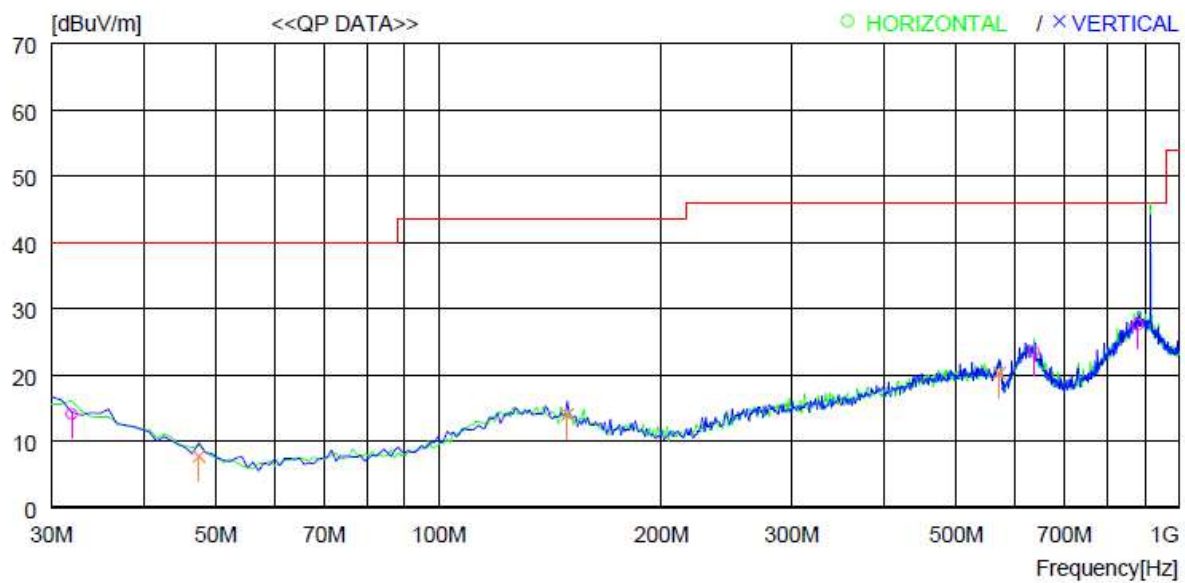
September 17, 2022 ~ November 09, 2022

### 13.4 Test data for Transmitting Mode

#### 13.4.1 Test data for Mode 1\_Normal

##### 13.4.1.1 Test data for 30 MHz ~ 1 000 MHz

- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- The highest value is the fundamental.



| No.                    | FREQ    | READING | ANT    | LOSS | GAIN | RESULT   | LIMIT    | MARGIN | ANTENNA | TABLE |
|------------------------|---------|---------|--------|------|------|----------|----------|--------|---------|-------|
|                        | [MHz]   | [dBuV]  | FACTOR | [dB] | [dB] | [dBuV/m] | [dBuV/m] | [dB]   | [cm]    | [DEG] |
| ----- Horizontal ----- |         |         |        |      |      |          |          |        |         |       |
| 1                      | 31.940  | 25.5    | 20.7   | 1.0  | 33.1 | 14.1     | 40.0     | 25.9   | 300     | 246   |
| 2                      | 637.217 | 27.1    | 24.8   | 5.0  | 33.4 | 23.5     | 46.0     | 22.5   | 100     | 359   |
| 3                      | 879.710 | 26.9    | 27.6   | 5.8  | 32.7 | 27.6     | 46.0     | 18.4   | 400     | 214   |
| ----- Vertical -----   |         |         |        |      |      |          |          |        |         |       |
| 4                      | 47.460  | 25.4    | 14.1   | 1.3  | 33.1 | 7.7      | 40.0     | 32.3   | 300     | 0     |
| 5                      | 149.310 | 26.1    | 18.6   | 2.3  | 33.0 | 14.0     | 43.5     | 29.5   | 200     | 359   |
| 6                      | 572.229 | 24.6    | 24.1   | 4.8  | 33.2 | 20.3     | 46.0     | 25.7   | 100     | 203   |

#### 13.4.1.2 Test data for Below 30 MHz

- . Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- . Frequency range : 9 kHz ~ 30 MHz
- . Measurement distance : 3 m

| Frequency<br>(MHz)                                                             | Reading<br>(dBμV) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) |
|--------------------------------------------------------------------------------|-------------------|--------------------|-----------------------|---------------|-------------|---------------------------|--------------------|----------------|
| Emission from the EUT more than 20 dB below the limit in each frequency range. |                   |                    |                       |               |             |                           |                    |                |

#### 13.4.1.3 Test data for above 1 GHz

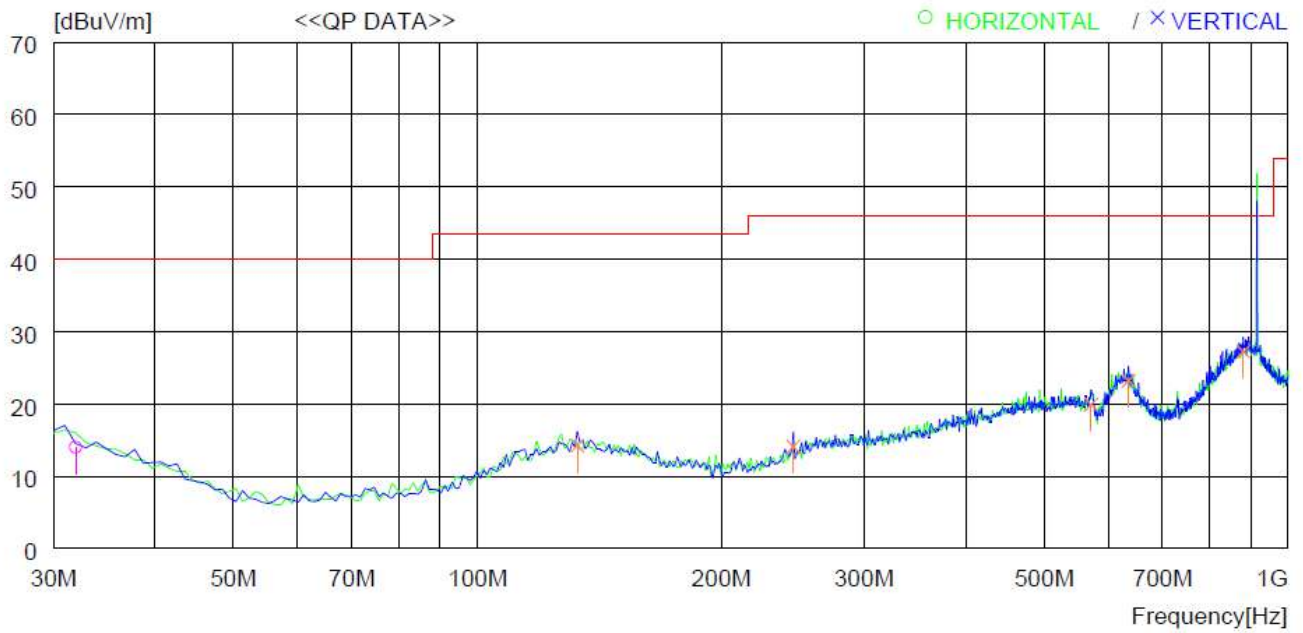
- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- . Frequency range : 1 GHz ~ 10.0 GHz
- . Measurement distance : 3 m

| Frequency<br>(MHz)                                                             | Reading<br>(dBμV) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) |
|--------------------------------------------------------------------------------|-------------------|--------------------|-----------------------|---------------|-------------|---------------------------|--------------------|----------------|
| Emission from the EUT more than 20 dB below the limit in each frequency range. |                   |                    |                       |               |             |                           |                    |                |

### 13.4.2 Test data for Mode 2\_Long

#### 13.4.2.1 Test data for 30 MHz ~ 1 000 MHz

- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- The highest value is the fundamental.



| No.                    | FREQ    | READING | ANT    | LOSS | GAIN | RESULT   | LIMIT    | MARGIN | ANTENNA | TABLE |
|------------------------|---------|---------|--------|------|------|----------|----------|--------|---------|-------|
|                        | [MHz]   | [dBuV]  | FACTOR | [dB] | [dB] | [dBuV/m] | [dBuV/m] | [dB]   | [cm]    | [DEG] |
| ----- Horizontal ----- |         |         |        |      |      |          |          |        |         |       |
| 1                      | 31.940  | 25.4    | 20.7   | 1.0  | 33.1 | 14.0     | 40.0     | 26.0   | 200     | 239   |
| ----- Vertical -----   |         |         |        |      |      |          |          |        |         |       |
| 2                      | 132.820 | 25.6    | 19.4   | 2.2  | 33.0 | 14.2     | 43.5     | 29.3   | 300     | 0     |
| 3                      | 245.340 | 26.7    | 17.3   | 3.1  | 33.0 | 14.1     | 46.0     | 31.9   | 400     | 359   |
| 4                      | 571.259 | 24.3    | 24.0   | 4.8  | 33.2 | 19.9     | 46.0     | 26.1   | 200     | 288   |
| 5                      | 635.277 | 26.8    | 24.8   | 5.0  | 33.4 | 23.2     | 46.0     | 22.8   | 200     | 359   |
| 6                      | 880.679 | 26.4    | 27.6   | 5.8  | 32.6 | 27.2     | 46.0     | 18.8   | 100     | 288   |

### 13.4.2.2 Test data for Below 30 MHz

- . Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- . Frequency range : 9 kHz ~ 30 MHz
- . Measurement distance : 3 m

| Frequency<br>(MHz)                                                             | Reading<br>(dBμV) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) |
|--------------------------------------------------------------------------------|-------------------|--------------------|-----------------------|---------------|-------------|---------------------------|--------------------|----------------|
| Emission from the EUT more than 20 dB below the limit in each frequency range. |                   |                    |                       |               |             |                           |                    |                |

### 13.4.2.3 Test data for above 1 GHz

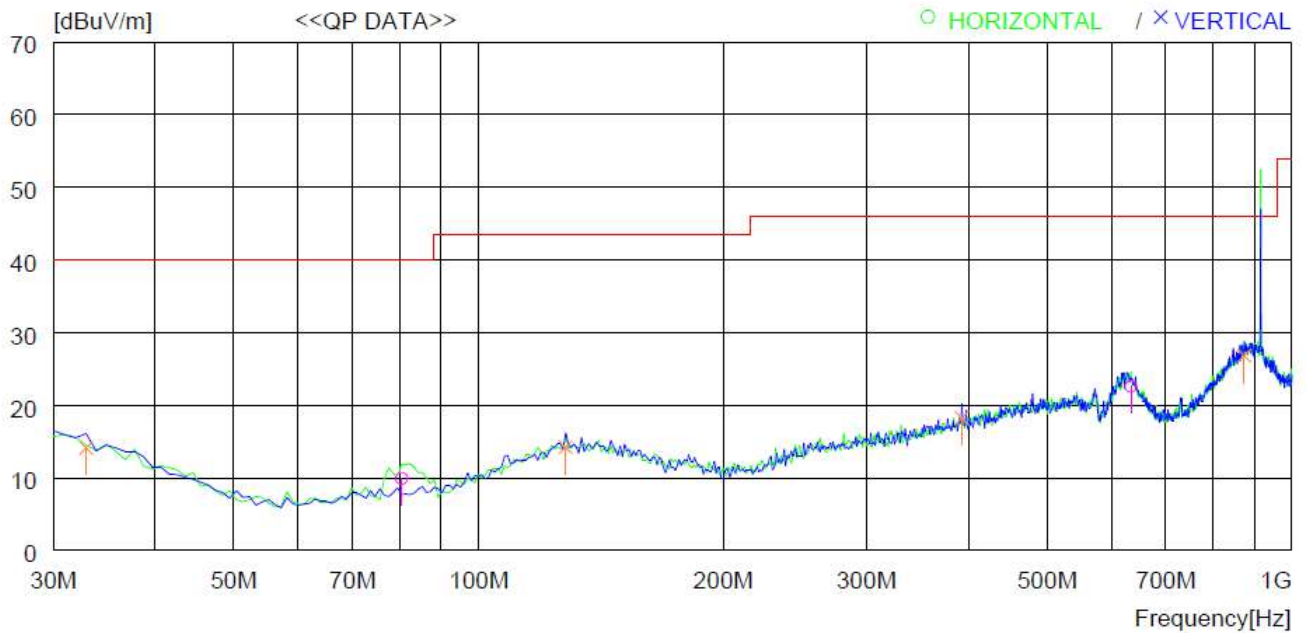
- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- . Frequency range : 1 GHz ~ 10.0 GHz
- . Measurement distance : 3 m

| Frequency<br>(MHz)                                                             | Reading<br>(dBμV) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) |
|--------------------------------------------------------------------------------|-------------------|--------------------|-----------------------|---------------|-------------|---------------------------|--------------------|----------------|
| Emission from the EUT more than 20 dB below the limit in each frequency range. |                   |                    |                       |               |             |                           |                    |                |

### 13.4.3 Test data for Mode 3\_Repeat

#### 13.4.3.1 Test data for 30 MHz ~ 1 000 MHz

- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- The highest value is the fundamental.



| No.                    | FREQ    | READING | ANT    | LOSS | GAIN | RESULT   | LIMIT    | MARGIN | ANTENNA | TABLE |
|------------------------|---------|---------|--------|------|------|----------|----------|--------|---------|-------|
|                        | [MHz]   | [dBuV]  | FACTOR | [dB] | [dB] | [dBuV/m] | [dBuV/m] | [dB]   | [cm]    | [DEG] |
| ----- Horizontal ----- |         |         |        |      |      |          |          |        |         |       |
| 1                      | 80.440  | 28.0    | 13.3   | 1.7  | 33.1 | 9.9      | 40.0     | 30.1   | 300     | 359   |
| 2                      | 634.307 | 26.2    | 24.7   | 5.0  | 33.3 | 22.6     | 46.0     | 23.4   | 400     | 0     |
| ----- Vertical -----   |         |         |        |      |      |          |          |        |         |       |
| 3                      | 32.910  | 25.9    | 20.2   | 1.1  | 33.1 | 14.1     | 40.0     | 25.9   | 400     | 284   |
| 4                      | 127.970 | 25.7    | 19.3   | 2.2  | 33.0 | 14.2     | 43.5     | 29.3   | 100     | 306   |
| 5                      | 392.780 | 26.1    | 21.1   | 3.9  | 32.9 | 18.2     | 46.0     | 27.8   | 300     | 4     |
| 6                      | 873.890 | 26.2    | 27.5   | 5.8  | 32.7 | 26.8     | 46.0     | 19.2   | 100     | 0     |

### 13.4.3.2 Test data for Below 30 MHz

- . Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- . Frequency range : 9 kHz ~ 30 MHz
- . Measurement distance : 3 m

| Frequency<br>(MHz)                                                             | Reading<br>(dBμV) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) |
|--------------------------------------------------------------------------------|-------------------|--------------------|-----------------------|---------------|-------------|---------------------------|--------------------|----------------|
| Emission from the EUT more than 20 dB below the limit in each frequency range. |                   |                    |                       |               |             |                           |                    |                |

### 13.4.3.3 Test data for above 1 GHz

- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- . Frequency range : 1 GHz ~ 10.0 GHz
- . Measurement distance : 3 m

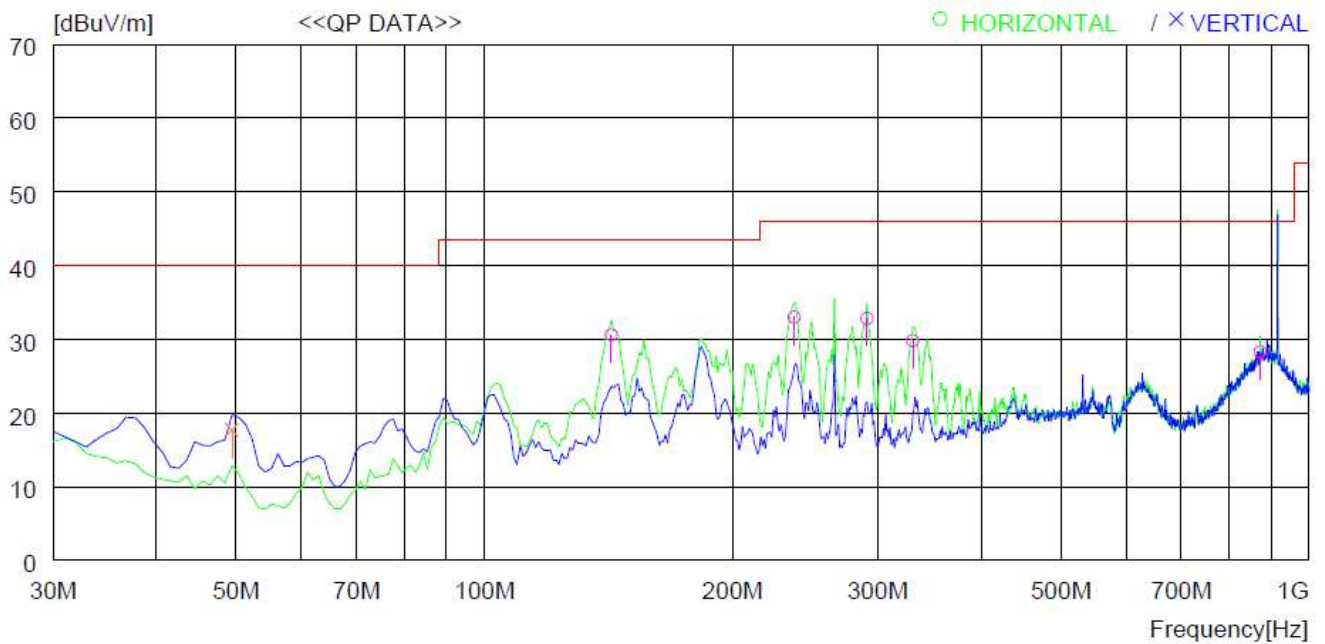
| Frequency<br>(MHz)                                                             | Reading<br>(dBμV) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) |
|--------------------------------------------------------------------------------|-------------------|--------------------|-----------------------|---------------|-------------|---------------------------|--------------------|----------------|
| Emission from the EUT more than 20 dB below the limit in each frequency range. |                   |                    |                       |               |             |                           |                    |                |

### 13.5 Test data for Charging Mode

#### 13.5.1 Test data for Mode 1\_Normal

##### 13.5.1.1 Test data for 30 MHz ~ 1 000 MHz

- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- The highest value is the fundamental.



| No.                    | FREQ    | READING | ANT    | LOSS | GAIN | RESULT   | LIMIT    | MARGIN | ANTENNA | TABLE |
|------------------------|---------|---------|--------|------|------|----------|----------|--------|---------|-------|
|                        | [MHz]   | [dBuV]  | FACTOR | [dB] | [dB] | [dBuV/m] | [dBuV/m] | [dB]   | [cm]    | [DEG] |
| ----- Horizontal ----- |         |         |        |      |      |          |          |        |         |       |
| 1                      | 142.520 | 42.3    | 19.1   | 2.2  | 33.0 | 30.6     | 43.5     | 12.9   | 200     | 0     |
| 2                      | 237.580 | 46.2    | 16.8   | 3.0  | 33.0 | 33.0     | 46.0     | 13.0   | 100     | 359   |
| 3                      | 290.930 | 43.2    | 19.2   | 3.3  | 32.9 | 32.8     | 46.0     | 13.2   | 100     | 359   |
| 4                      | 330.700 | 39.3    | 19.9   | 3.6  | 33.0 | 29.8     | 46.0     | 16.2   | 100     | 62    |
| 5                      | 871.950 | 27.8    | 27.5   | 5.8  | 32.8 | 28.3     | 46.0     | 17.7   | 100     | 227   |
| ----- Vertical -----   |         |         |        |      |      |          |          |        |         |       |
| 6                      | 49.400  | 36.2    | 13.4   | 1.2  | 33.1 | 17.7     | 40.0     | 22.3   | 100     | 0     |

### 13.5.1.2 Test data for Below 30 MHz

- . Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- . Frequency range : 9 kHz ~ 30 MHz
- . Measurement distance : 3 m

| Frequency<br>(MHz)                                                             | Reading<br>(dBμV) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) |
|--------------------------------------------------------------------------------|-------------------|--------------------|-----------------------|---------------|-------------|---------------------------|--------------------|----------------|
| Emission from the EUT more than 20 dB below the limit in each frequency range. |                   |                    |                       |               |             |                           |                    |                |

### 13.5.1.3 Test data for above 1 GHz

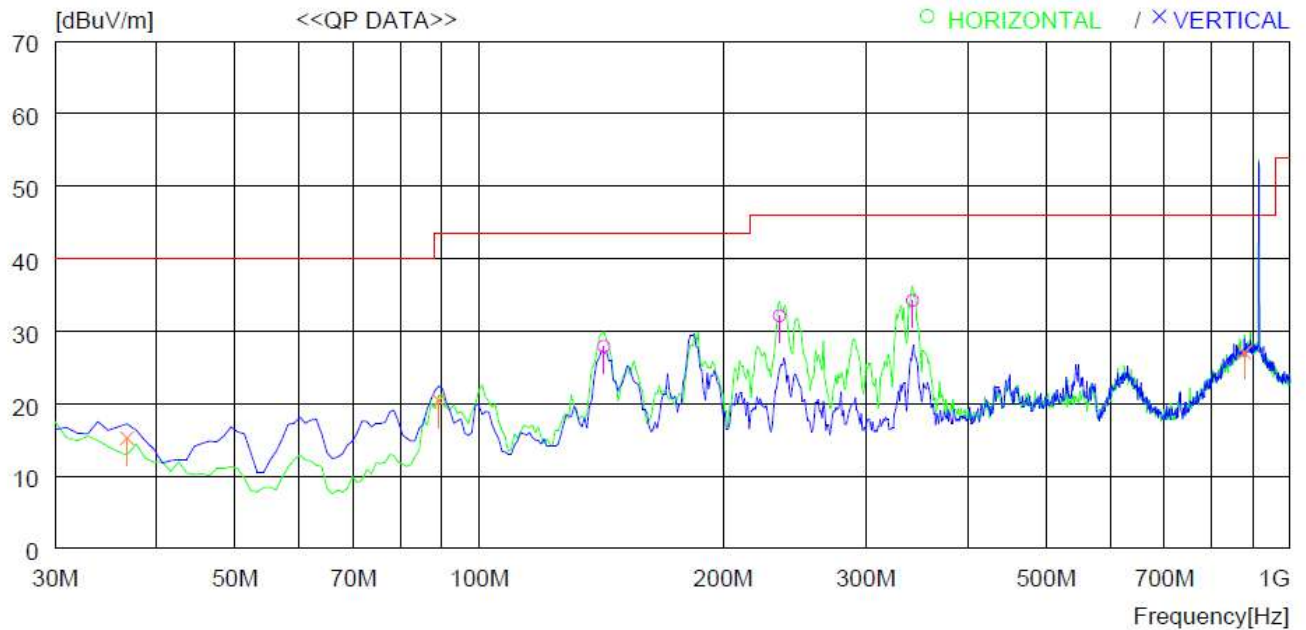
- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- . Frequency range : 1 GHz ~ 10.0 GHz
- . Measurement distance : 3 m

| Frequency<br>(MHz)                                                             | Reading<br>(dBμV) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) |
|--------------------------------------------------------------------------------|-------------------|--------------------|-----------------------|---------------|-------------|---------------------------|--------------------|----------------|
| Emission from the EUT more than 20 dB below the limit in each frequency range. |                   |                    |                       |               |             |                           |                    |                |

### 13.5.2 Test data for Mode 2\_Long

#### 13.5.2.1 Test data for 30 MHz ~ 1 000 MHz

- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- The highest value is the fundamental.



| No.                    | FREQ    | READING | ANT    | LOSS | GAIN | RESULT   | LIMIT    | MARGIN | ANTENNA | TABLE |
|------------------------|---------|---------|--------|------|------|----------|----------|--------|---------|-------|
|                        | [MHz]   | [dBuV]  | FACTOR | [dB] | [dB] | [dBuV/m] | [dBuV/m] | [dB]   | [cm]    | [DEG] |
| ----- Horizontal ----- |         |         |        |      |      |          |          |        |         |       |
| 1                      | 142.520 | 39.6    | 19.1   | 2.2  | 33.0 | 27.9     | 43.5     | 15.6   | 200     | 0     |
| 2                      | 234.670 | 45.6    | 16.6   | 2.9  | 33.0 | 32.1     | 46.0     | 13.9   | 100     | 168   |
| 3                      | 342.340 | 43.5    | 20.1   | 3.6  | 33.0 | 34.2     | 46.0     | 11.8   | 100     | 359   |
| ----- Vertical -----   |         |         |        |      |      |          |          |        |         |       |
| 4                      | 36.790  | 28.6    | 18.6   | 1.1  | 33.1 | 15.2     | 40.0     | 24.8   | 100     | 166   |
| 5                      | 89.170  | 38.0    | 13.7   | 1.8  | 33.1 | 20.4     | 43.5     | 23.1   | 100     | 0     |
| 6                      | 877.770 | 26.3    | 27.6   | 5.8  | 32.7 | 27.0     | 46.0     | 19.0   | 400     | 213   |

### 13.5.2.2 Test data for Below 30 MHz

- . Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- . Frequency range : 9 kHz ~ 30 MHz
- . Measurement distance : 3 m

| Frequency<br>(MHz)                                                             | Reading<br>(dBμV) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) |
|--------------------------------------------------------------------------------|-------------------|--------------------|-----------------------|---------------|-------------|---------------------------|--------------------|----------------|
| Emission from the EUT more than 20 dB below the limit in each frequency range. |                   |                    |                       |               |             |                           |                    |                |

### 13.5.2.3 Test data for above 1 GHz

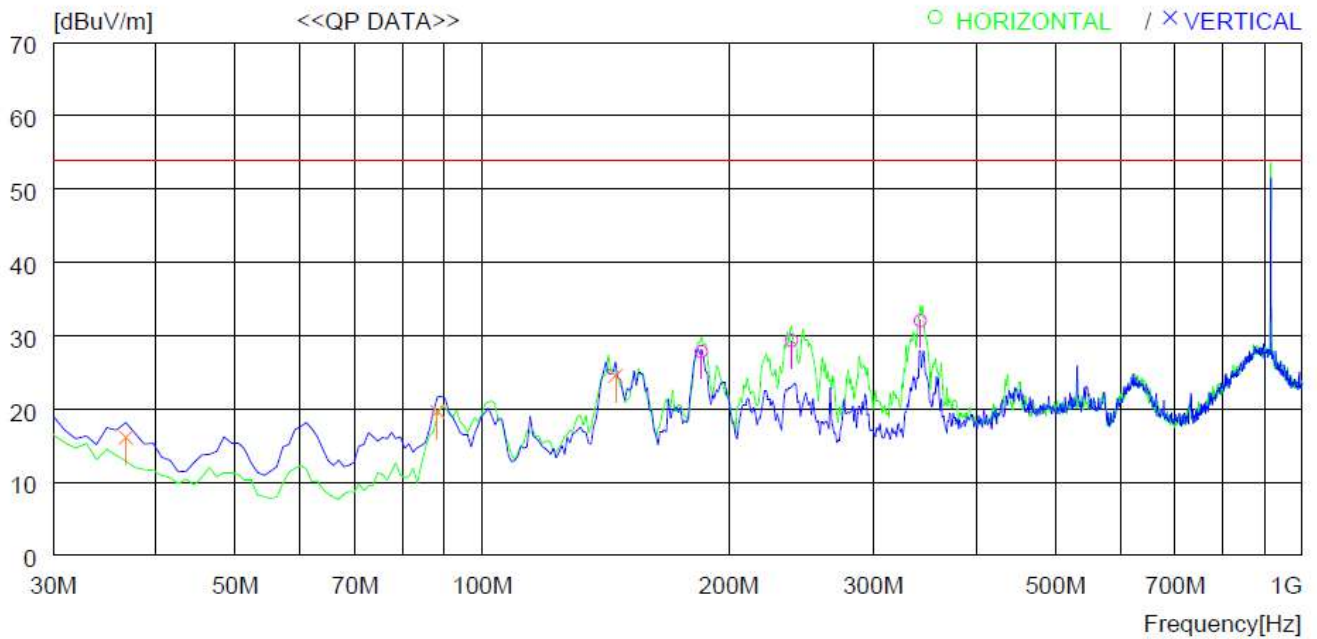
- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- . Frequency range : 1 GHz ~ 10.0 GHz
- . Measurement distance : 3 m

| Frequency<br>(MHz)                                                             | Reading<br>(dBμV) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) |
|--------------------------------------------------------------------------------|-------------------|--------------------|-----------------------|---------------|-------------|---------------------------|--------------------|----------------|
| Emission from the EUT more than 20 dB below the limit in each frequency range. |                   |                    |                       |               |             |                           |                    |                |

### 13.5.3 Test data for Mode 3\_Repeat

#### 13.5.3.1 Test data for 30 MHz ~ 1 000 MHz

- Resolution bandwidth : 120 kHz
- Frequency range : 30 MHz ~ 1 000 MHz
- Measurement distance : 3 m
- The highest value is the fundamental.



| No.                    | FREQ    | READING | ANT    | LOSS | GAIN | RESULT   | LIMIT    | MARGIN | ANTENNA | TABLE |
|------------------------|---------|---------|--------|------|------|----------|----------|--------|---------|-------|
|                        | [MHz]   | [dBuV]  | FACTOR | [dB] | [dB] | [dBuV/m] | [dBuV/m] | [dB]   | [cm]    | [DEG] |
| ----- Horizontal ----- |         |         |        |      |      |          |          |        |         |       |
| 1                      | 185.200 | 41.8    | 16.4   | 2.6  | 33.0 | 27.8     | 54.0     | 26.2   | 100     | 81    |
| 2                      | 238.550 | 42.5    | 16.8   | 3.0  | 33.0 | 29.3     | 54.0     | 24.7   | 100     | 90    |
| 3                      | 342.340 | 41.3    | 20.1   | 3.6  | 33.0 | 32.0     | 54.0     | 22.0   | 100     | 307   |
| ----- Vertical -----   |         |         |        |      |      |          |          |        |         |       |
| 4                      | 36.790  | 29.5    | 18.6   | 1.1  | 33.1 | 16.1     | 54.0     | 37.9   | 100     | 143   |
| 5                      | 88.200  | 37.2    | 13.7   | 1.8  | 33.1 | 19.6     | 54.0     | 34.4   | 100     | 0     |
| 6                      | 145.430 | 36.3    | 18.9   | 2.3  | 33.0 | 24.5     | 54.0     | 29.5   | 100     | 0     |

### 13.5.3.2 Test data for Below 30 MHz

- . Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- . Frequency range : 9 kHz ~ 30 MHz
- . Measurement distance : 3 m

| Frequency<br>(MHz)                                                             | Reading<br>(dBμV) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) |
|--------------------------------------------------------------------------------|-------------------|--------------------|-----------------------|---------------|-------------|---------------------------|--------------------|----------------|
| Emission from the EUT more than 20 dB below the limit in each frequency range. |                   |                    |                       |               |             |                           |                    |                |

### 13.5.3.3 Test data for above 1 GHz

- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- . Frequency range : 1 GHz ~ 10.0 GHz
- . Measurement distance : 3 m

| Frequency<br>(MHz)                                                             | Reading<br>(dBμV) | Ant. Pol.<br>(H/V) | Ant. Factor<br>(dB/m) | Cable<br>Loss | Amp<br>Gain | Emission<br>Level(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) |
|--------------------------------------------------------------------------------|-------------------|--------------------|-----------------------|---------------|-------------|---------------------------|--------------------|----------------|
| Emission from the EUT more than 20 dB below the limit in each frequency range. |                   |                    |                       |               |             |                           |                    |                |

## 14. CONDUCTED EMISSION TEST

### 14.1 Operating environment

Temperature : 23 °C  
Relative humidity : 45 % R.H.

### 14.2 Test set-up

The EUT was placed on a wooden table, 0.8 m height above the floor. Power was fed to the EUT through a  $50\ \Omega$  /  $50\ \mu\text{H}$  +  $5\ \Omega$  Artificial Mains Network (AMN). The ground plane was electrically bonded to the reference ground system and all power lines were filtered from ambient.

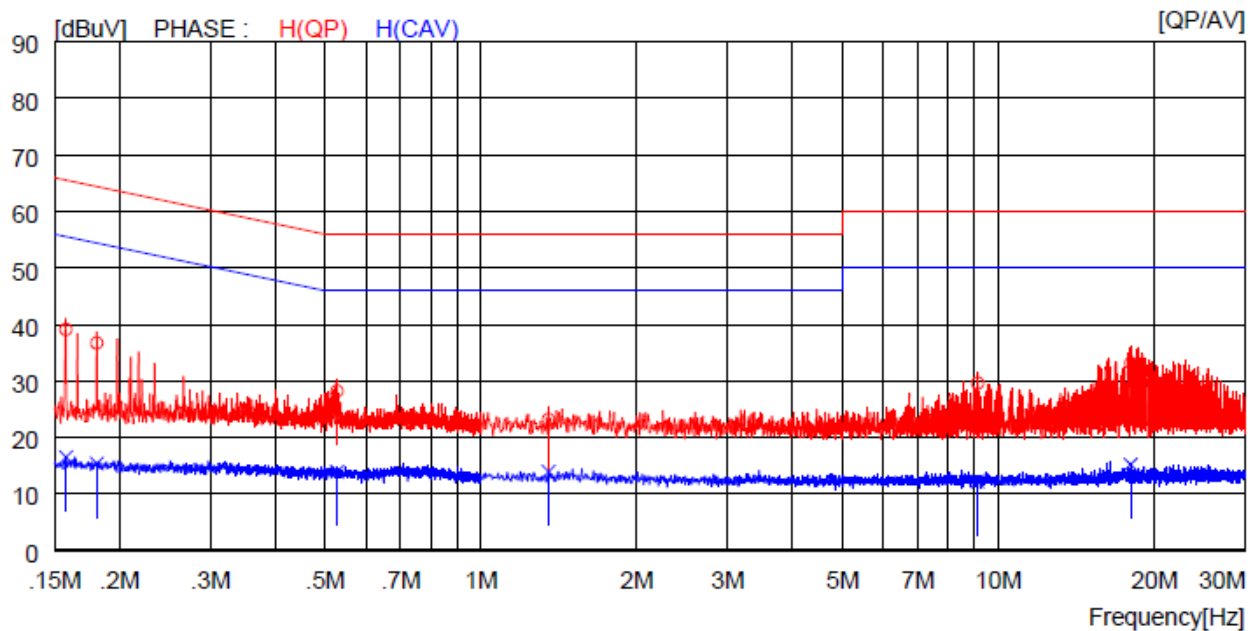
### 14.3 Test Date

November 03, 2020 ~ November 06, 2020

## 14.4 Test Data for Trasmitting Mode

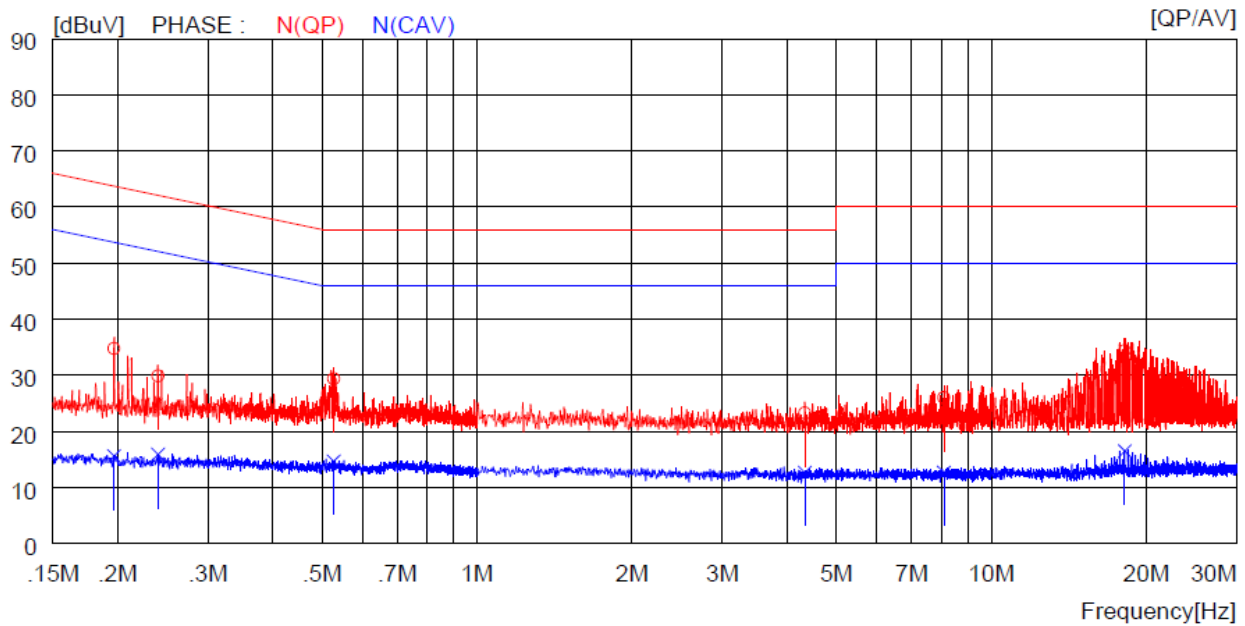
### 14.4.1 Test data for Mode 1\_Normal

- . Resolution bandwidth : 9 kHz
- . Frequency range : 0.15 MHz ~ 30 MHz
- . Tested Line : HOT LINE



| NO | FREQ<br>[MHz] | READING      |              | C.FACTOR<br>[dB] | RESULT       |              | LIMIT        |              | MARGIN       |              | PHASE   |
|----|---------------|--------------|--------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------|
|    |               | QP<br>[dBuV] | AV<br>[dBuV] |                  | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] |         |
| 1  | 0.15800       | 29.1         | ----         | 10.0             | 39.1         | ----         | 65.6         | ----         | 26.5         | ----         | H (QP)  |
| 2  | 0.18100       | 26.7         | ----         | 10.0             | 36.7         | ----         | 64.4         | ----         | 27.7         | ----         | H (QP)  |
| 3  | 0.52800       | 18.2         | ----         | 10.0             | 28.2         | ----         | 56.0         | ----         | 27.8         | ----         | H (QP)  |
| 4  | 1.35200       | 13.1         | ----         | 10.1             | 23.2         | ----         | 56.0         | ----         | 32.8         | ----         | H (QP)  |
| 5  | 9.12500       | 19.4         | ----         | 10.2             | 29.6         | ----         | 60.0         | ----         | 30.4         | ----         | H (QP)  |
| 6  | 18.04000      | 22.7         | ----         | 10.4             | 33.1         | ----         | 60.0         | ----         | 26.9         | ----         | H (QP)  |
| 7  | 0.15800       | ----         | 6.5          | 10.0             | ----         | 16.5         | ----         | 55.6         | ----         | 39.1         | H (CAV) |
| 8  | 0.18100       | ----         | 5.4          | 10.0             | ----         | 15.4         | ----         | 54.4         | ----         | 39.0         | H (CAV) |
| 9  | 0.52800       | ----         | 3.9          | 10.0             | ----         | 13.9         | ----         | 46.0         | ----         | 32.1         | H (CAV) |
| 10 | 1.35200       | ----         | 3.8          | 10.1             | ----         | 13.9         | ----         | 46.0         | ----         | 32.1         | H (CAV) |
| 11 | 9.12500       | ----         | 2.0          | 10.2             | ----         | 12.2         | ----         | 50.0         | ----         | 37.8         | H (CAV) |
| 12 | 18.04000      | ----         | 4.8          | 10.4             | ----         | 15.2         | ----         | 50.0         | ----         | 34.8         | H (CAV) |

-. Tested Line : NEUTRAL LINE



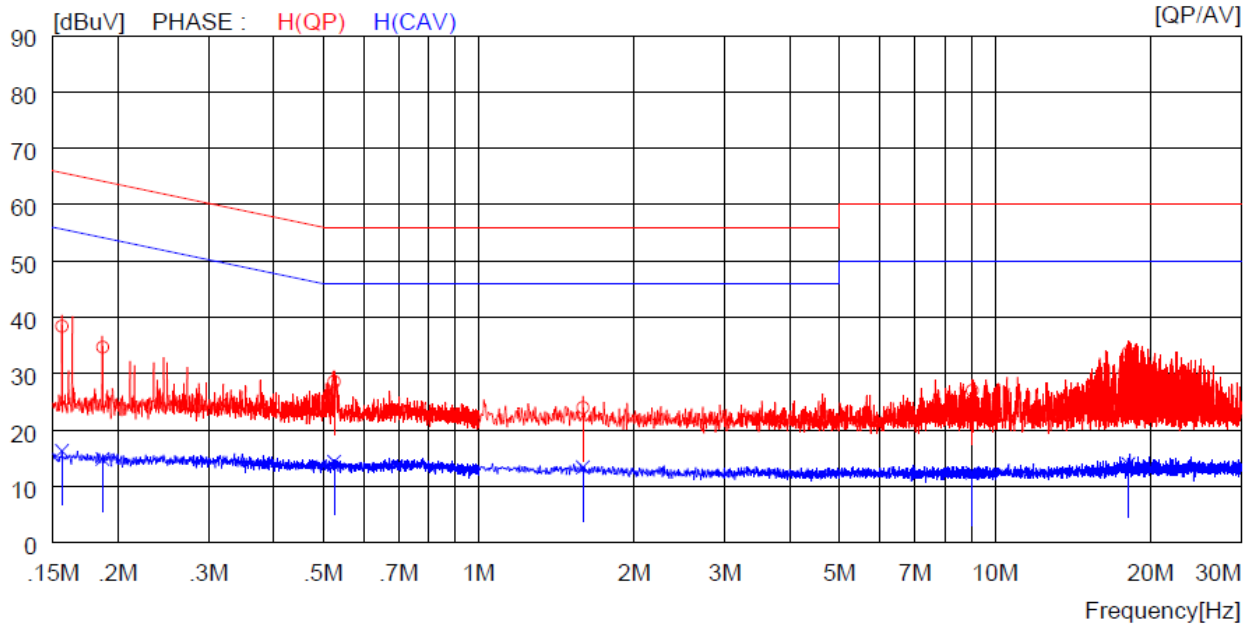
| NO | FREQ<br>[MHz] | READING      |              | C.FACTOR<br>[dB] | RESULT       |              | LIMIT        |              | MARGIN       |              | PHASE   |
|----|---------------|--------------|--------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------|
|    |               | QP<br>[dBuV] | AV<br>[dBuV] |                  | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] |         |
| 1  | 0.19700       | 24.8         | ----         | 10.0             | 34.8         | ----         | 63.7         | ----         | 28.9         | ----         | N (QP)  |
| 2  | 0.24000       | 19.9         | ----         | 10.0             | 29.9         | ----         | 62.1         | ----         | 32.2         | ----         | N (QP)  |
| 3  | 0.52700       | 19.4         | ----         | 10.0             | 29.4         | ----         | 56.0         | ----         | 26.6         | ----         | N (QP)  |
| 4  | 4.34000       | 13.2         | ----         | 10.1             | 23.3         | ----         | 56.0         | ----         | 32.7         | ----         | N (QP)  |
| 5  | 8.09000       | 15.8         | ----         | 10.2             | 26.0         | ----         | 60.0         | ----         | 34.0         | ----         | N (QP)  |
| 6  | 18.19000      | 24.0         | ----         | 10.4             | 34.4         | ----         | 60.0         | ----         | 25.6         | ----         | N (QP)  |
| 7  | 0.19700       | ----         | 5.6          | 10.0             | ----         | 15.6         | ----         | 53.7         | ----         | 38.1         | N (CAV) |
| 8  | 0.24000       | ----         | 5.9          | 10.0             | ----         | 15.9         | ----         | 52.1         | ----         | 36.2         | N (CAV) |
| 9  | 0.52700       | ----         | 4.7          | 10.0             | ----         | 14.7         | ----         | 46.0         | ----         | 31.3         | N (CAV) |
| 10 | 4.34000       | ----         | 2.6          | 10.1             | ----         | 12.7         | ----         | 46.0         | ----         | 33.3         | N (CAV) |
| 11 | 8.09000       | ----         | 2.5          | 10.2             | ----         | 12.7         | ----         | 50.0         | ----         | 37.3         | N (CAV) |
| 12 | 18.19000      | ----         | 6.1          | 10.4             | ----         | 16.5         | ----         | 50.0         | ----         | 33.5         | N (CAV) |

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN),  
cable loss and attenuator.

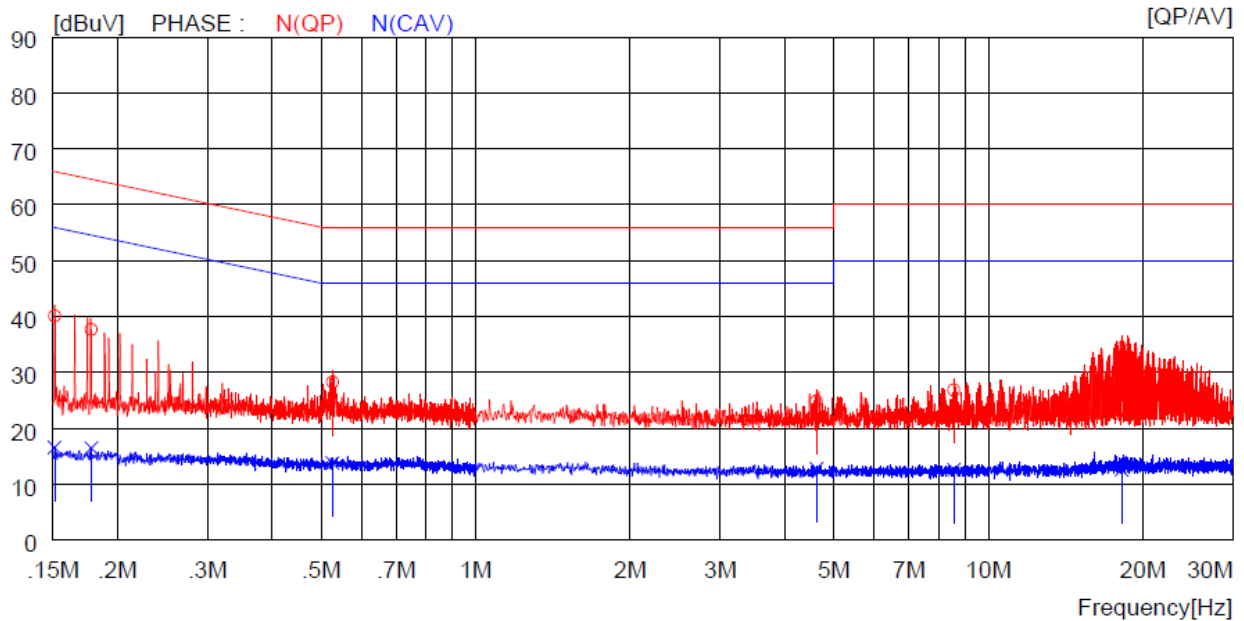
#### 14.4.2 Test data for Mode 2\_Long

- Resolution bandwidth : 9 kHz
- Frequency range : 0.15 MHz ~ 30 MHz
- Tested Line : HOT LINE



| NO | FREQ<br>[MHz] | READING      |              | C.FACTOR<br>[dB] | RESULT       |              | LIMIT        |              | MARGIN       |              | PHASE   |
|----|---------------|--------------|--------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------|
|    |               | QP<br>[dBuV] | AV<br>[dBuV] |                  | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] |         |
| 1  | 0.15600       | 28.4         | ----         | 10.0             | 38.4         | ----         | 65.7         | ----         | 27.3         | ----         | H (QP)  |
| 2  | 0.18700       | 24.7         | ----         | 10.0             | 34.7         | ----         | 64.2         | ----         | 29.5         | ----         | H (QP)  |
| 3  | 0.52500       | 18.6         | ----         | 10.0             | 28.6         | ----         | 56.0         | ----         | 27.4         | ----         | H (QP)  |
| 4  | 1.59200       | 13.9         | ----         | 10.1             | 24.0         | ----         | 56.0         | ----         | 32.0         | ----         | H (QP)  |
| 5  | 9.04500       | 16.8         | ----         | 10.2             | 27.0         | ----         | 60.0         | ----         | 33.0         | ----         | H (QP)  |
| 6  | 18.12000      | 23.3         | ----         | 10.4             | 33.7         | ----         | 60.0         | ----         | 26.3         | ----         | H (QP)  |
| 7  | 0.15600       | ----         | 6.3          | 10.0             | ----         | 16.3         | ----         | 55.7         | ----         | 39.4         | H (CAV) |
| 8  | 0.18700       | ----         | 4.9          | 10.0             | ----         | 14.9         | ----         | 54.2         | ----         | 39.3         | H (CAV) |
| 9  | 0.52500       | ----         | 4.4          | 10.0             | ----         | 14.4         | ----         | 46.0         | ----         | 31.6         | H (CAV) |
| 10 | 1.59200       | ----         | 3.3          | 10.1             | ----         | 13.4         | ----         | 46.0         | ----         | 32.6         | H (CAV) |
| 11 | 9.04500       | ----         | 2.2          | 10.2             | ----         | 12.4         | ----         | 50.0         | ----         | 37.6         | H (CAV) |
| 12 | 18.12000      | ----         | 3.6          | 10.4             | ----         | 14.0         | ----         | 50.0         | ----         | 36.0         | H (CAV) |

-. Tested Line : NEUTRAL LINE



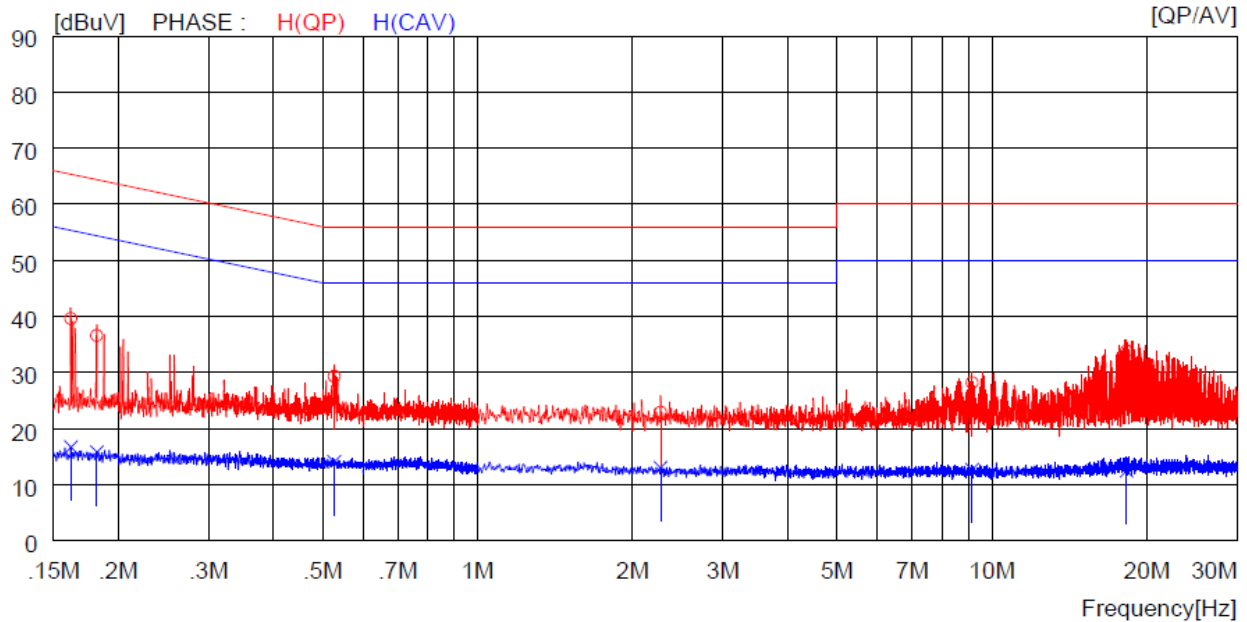
| NO | FREQ<br>[MHz] | READING      |              | C. FACTOR<br>[dB] | RESULT       |              | LIMIT        |              | MARGIN       |              | PHASE   |
|----|---------------|--------------|--------------|-------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------|
|    |               | QP<br>[dBuV] | AV<br>[dBuV] |                   | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] |         |
| 1  | 0.15100       | 30.1         | ----         | 10.0              | 40.1         | ----         | 65.9         | ----         | 25.8         | ----         | N (QP)  |
| 2  | 0.17800       | 27.7         | ----         | 10.0              | 37.7         | ----         | 64.6         | ----         | 26.9         | ----         | N (QP)  |
| 3  | 0.52600       | 18.3         | ----         | 10.0              | 28.3         | ----         | 56.0         | ----         | 27.7         | ----         | N (QP)  |
| 4  | 4.62400       | 14.8         | ----         | 10.1              | 24.9         | ----         | 56.0         | ----         | 31.1         | ----         | N (QP)  |
| 5  | 8.57000       | 16.7         | ----         | 10.2              | 26.9         | ----         | 60.0         | ----         | 33.1         | ----         | N (QP)  |
| 6  | 18.21000      | 24.0         | ----         | 10.4              | 34.4         | ----         | 60.0         | ----         | 25.6         | ----         | N (QP)  |
| 7  | 0.15100       | ----         | 6.6          | 10.0              | ----         | 16.6         | ----         | 55.9         | ----         | 39.3         | N (CAV) |
| 8  | 0.17800       | ----         | 6.5          | 10.0              | ----         | 16.5         | ----         | 54.6         | ----         | 38.1         | N (CAV) |
| 9  | 0.52600       | ----         | 3.8          | 10.0              | ----         | 13.8         | ----         | 46.0         | ----         | 32.2         | N (CAV) |
| 10 | 4.62400       | ----         | 2.7          | 10.1              | ----         | 12.8         | ----         | 46.0         | ----         | 33.2         | N (CAV) |
| 11 | 8.57000       | ----         | 2.4          | 10.2              | ----         | 12.6         | ----         | 50.0         | ----         | 37.4         | N (CAV) |
| 12 | 18.21000      | ----         | 2.2          | 10.4              | ----         | 12.6         | ----         | 50.0         | ----         | 37.4         | N (CAV) |

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

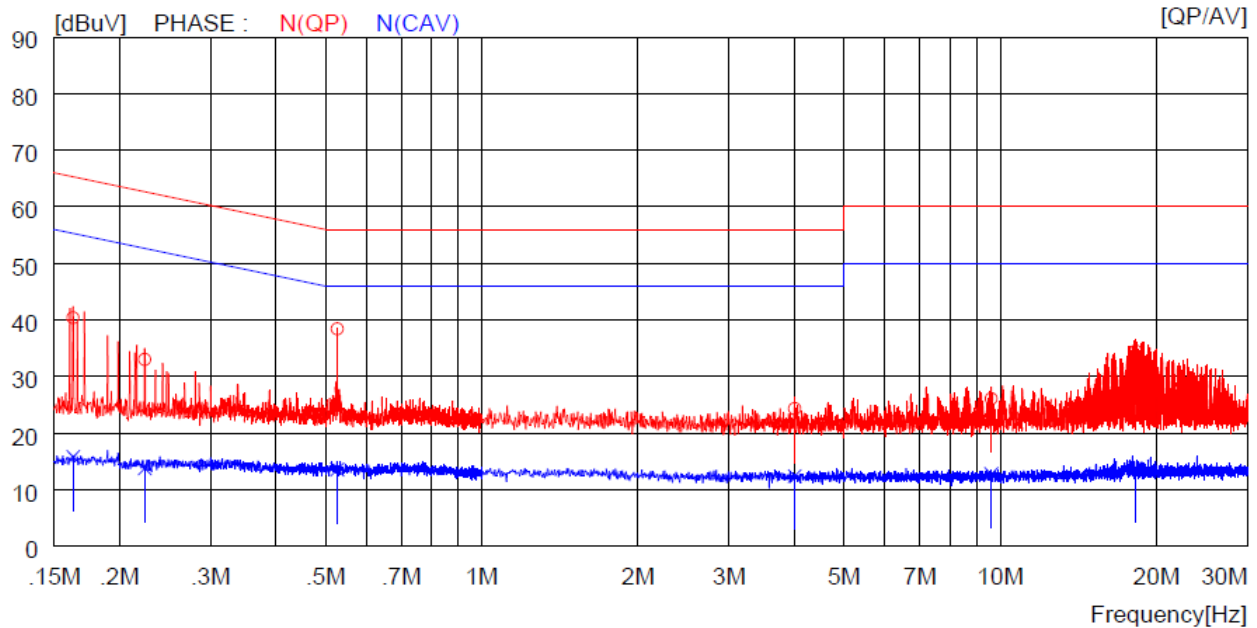
### 14.4.3 Test data for Mode 3\_Repeat

- . Resolution bandwidth : 9 kHz
- . Frequency range : 0.15 MHz ~ 30 MHz
- . Tested Line : HOT LINE



| NO | FREQ<br>[MHz] | READING      |              | C. FACTOR<br>[dB] | RESULT       |              | LIMIT        |              | MARGIN       |              | PHASE   |
|----|---------------|--------------|--------------|-------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------|
|    |               | QP<br>[dBuV] | AV<br>[dBuV] |                   | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] |         |
| 1  | 0.16200       | 29.6         | ----         | 10.0              | 39.6         | ----         | 65.4         | ----         | 25.8         | ----         | H (QP)  |
| 2  | 0.18200       | 26.6         | ----         | 10.0              | 36.6         | ----         | 64.4         | ----         | 27.8         | ----         | H (QP)  |
| 3  | 0.52700       | 19.3         | ----         | 10.0              | 29.3         | ----         | 56.0         | ----         | 26.7         | ----         | H (QP)  |
| 4  | 2.26800       | 12.8         | ----         | 10.1              | 22.9         | ----         | 56.0         | ----         | 33.1         | ----         | H (QP)  |
| 5  | 9.16000       | 18.0         | ----         | 10.2              | 28.2         | ----         | 60.0         | ----         | 31.8         | ----         | H (QP)  |
| 6  | 18.27000      | 23.4         | ----         | 10.4              | 33.8         | ----         | 60.0         | ----         | 26.2         | ----         | H (QP)  |
| 7  | 0.16200       | ----         | 6.7          | 10.0              | ----         | 16.7         | ----         | 55.4         | ----         | 38.7         | H (CAV) |
| 8  | 0.18200       | ----         | 5.8          | 10.0              | ----         | 15.8         | ----         | 54.4         | ----         | 38.6         | H (CAV) |
| 9  | 0.52700       | ----         | 4.1          | 10.0              | ----         | 14.1         | ----         | 46.0         | ----         | 31.9         | H (CAV) |
| 10 | 2.26800       | ----         | 2.9          | 10.1              | ----         | 13.0         | ----         | 46.0         | ----         | 33.0         | H (CAV) |
| 11 | 9.16000       | ----         | 2.5          | 10.2              | ----         | 12.7         | ----         | 50.0         | ----         | 37.3         | H (CAV) |
| 12 | 18.27000      | ----         | 2.1          | 10.4              | ----         | 12.5         | ----         | 50.0         | ----         | 37.5         | H (CAV) |

-. Tested Line : NEUTRAL LINE



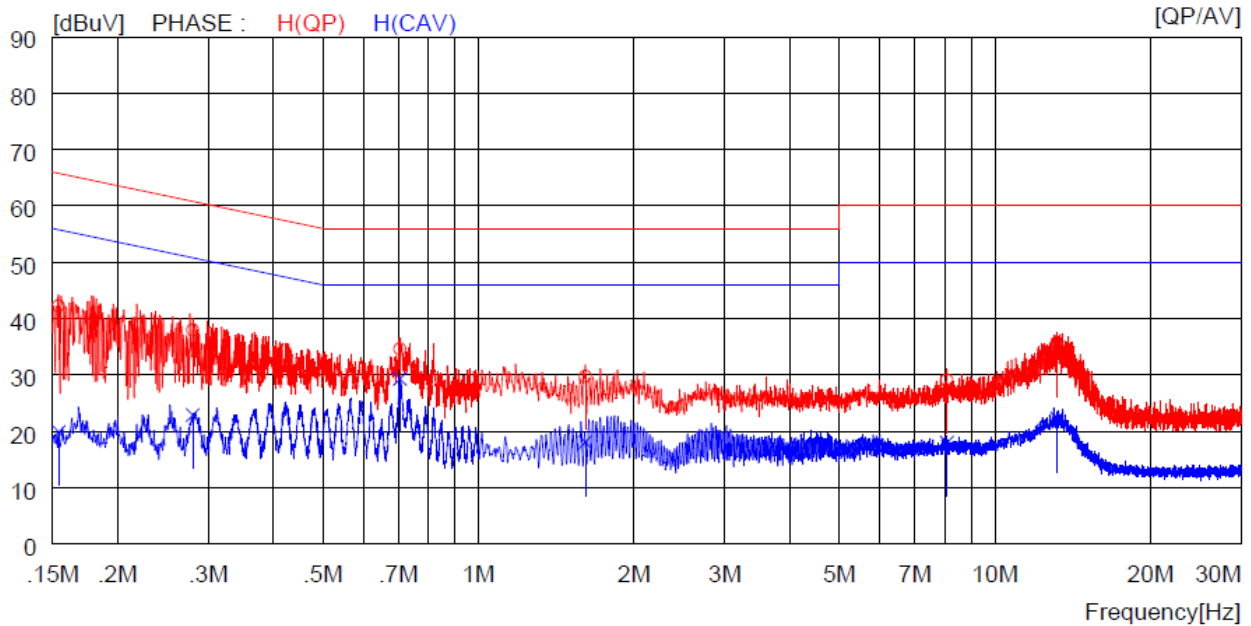
Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

## 14.5 Test Data for Charging Mode

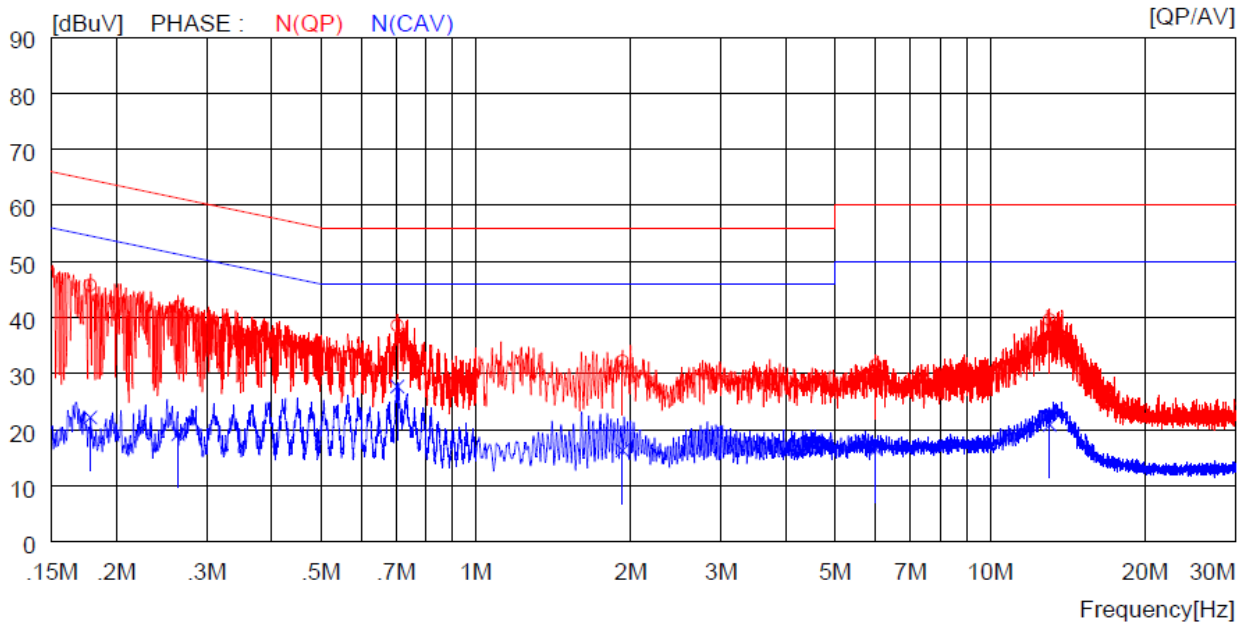
### 14.5.1 Test data for Mode 1\_Normal

- . Resolution bandwidth : 9 kHz
- . Frequency range : 0.15 MHz ~ 30 MHz
- . Tested Line : HOT LINE



| NO | FREQ<br>[MHz] | READING      |              | C.FACTOR<br>[dB] | RESULT       |              | LIMIT        |              | MARGIN       |              | PHASE  |
|----|---------------|--------------|--------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------|
|    |               | QP<br>[dBuV] | AV<br>[dBuV] |                  | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] |        |
| 1  | 0.15400       | 32.3         | ----         | 10.0             | 42.3         | ----         | 65.8         | ----         | 23.5         | ----         | H(QP)  |
| 2  | 0.28000       | 28.0         | ----         | 10.0             | 38.0         | ----         | 60.8         | ----         | 22.8         | ----         | H(QP)  |
| 3  | 0.70500       | 24.6         | ----         | 10.0             | 34.6         | ----         | 56.0         | ----         | 21.4         | ----         | H(QP)  |
| 4  | 1.61200       | 19.7         | ----         | 10.1             | 29.8         | ----         | 56.0         | ----         | 26.2         | ----         | H(QP)  |
| 5  | 8.07500       | 18.9         | ----         | 10.2             | 29.1         | ----         | 60.0         | ----         | 30.9         | ----         | H(QP)  |
| 6  | 13.19000      | 25.4         | ----         | 10.3             | 35.7         | ----         | 60.0         | ----         | 24.3         | ----         | H(QP)  |
| 7  | 0.15400       | ----         | 9.9          | 10.0             | ----         | 19.9         | ----         | 55.8         | ----         | 35.9         | H(CAV) |
| 8  | 0.28000       | ----         | 12.9         | 10.0             | ----         | 22.9         | ----         | 50.8         | ----         | 27.9         | H(CAV) |
| 9  | 0.70500       | ----         | 19.3         | 10.0             | ----         | 29.3         | ----         | 46.0         | ----         | 16.7         | H(CAV) |
| 10 | 1.61200       | ----         | 8.0          | 10.1             | ----         | 18.1         | ----         | 46.0         | ----         | 27.9         | H(CAV) |
| 11 | 8.07500       | ----         | 7.8          | 10.2             | ----         | 18.0         | ----         | 50.0         | ----         | 32.0         | H(CAV) |
| 12 | 13.19000      | ----         | 12.0         | 10.3             | ----         | 22.3         | ----         | 50.0         | ----         | 27.7         | H(CAV) |

-. Tested Line : NEUTRAL LINE



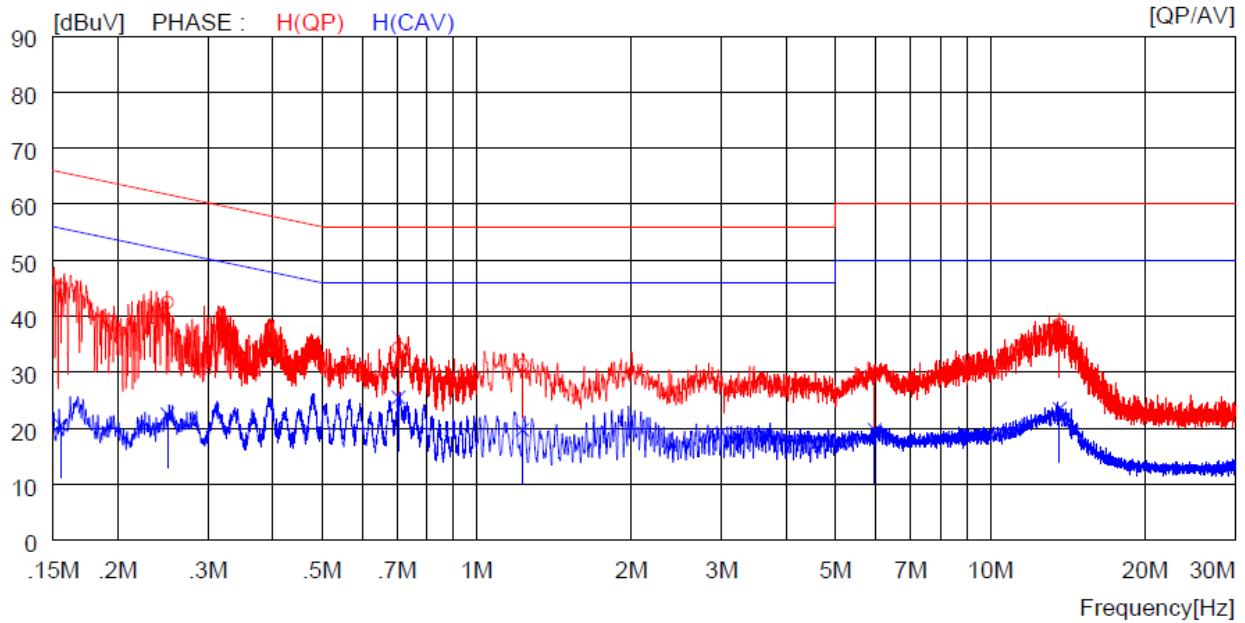
| NO | FREQ<br>[MHz] | READING      |              | C.FACTOR<br>[dB] | RESULT       |              | LIMIT        |              | MARGIN       |              | PHASE  |
|----|---------------|--------------|--------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------|
|    |               | QP<br>[dBuV] | AV<br>[dBuV] |                  | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] |        |
| 1  | 0.17800       | 35.8         | ----         | 10.0             | 45.8         | ----         | 64.6         | ----         | 18.8         | ----         | N(QP)  |
| 2  | 0.26400       | 31.9         | ----         | 10.0             | 41.9         | ----         | 61.3         | ----         | 19.4         | ----         | N(QP)  |
| 3  | 0.70400       | 28.6         | ----         | 10.0             | 38.6         | ----         | 56.0         | ----         | 17.4         | ----         | N(QP)  |
| 4  | 1.92800       | 22.1         | ----         | 10.1             | 32.2         | ----         | 56.0         | ----         | 23.8         | ----         | N(QP)  |
| 5  | 5.99500       | 21.3         | ----         | 10.2             | 31.5         | ----         | 60.0         | ----         | 28.5         | ----         | N(QP)  |
| 6  | 13.06000      | 29.3         | ----         | 10.3             | 39.6         | ----         | 60.0         | ----         | 20.4         | ----         | N(QP)  |
| 7  | 0.17800       | ----         | 12.2         | 10.0             | ----         | 22.2         | ----         | 54.6         | ----         | 32.4         | N(CAV) |
| 8  | 0.26400       | ----         | 9.2          | 10.0             | ----         | 19.2         | ----         | 51.3         | ----         | 32.1         | N(CAV) |
| 9  | 0.70400       | ----         | 17.7         | 10.0             | ----         | 27.7         | ----         | 46.0         | ----         | 18.3         | N(CAV) |
| 10 | 1.92800       | ----         | 6.2          | 10.1             | ----         | 16.3         | ----         | 46.0         | ----         | 29.7         | N(CAV) |
| 11 | 5.99500       | ----         | 6.3          | 10.2             | ----         | 16.5         | ----         | 50.0         | ----         | 33.5         | N(CAV) |
| 12 | 13.06000      | ----         | 10.6         | 10.3             | ----         | 20.9         | ----         | 50.0         | ----         | 29.1         | N(CAV) |

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

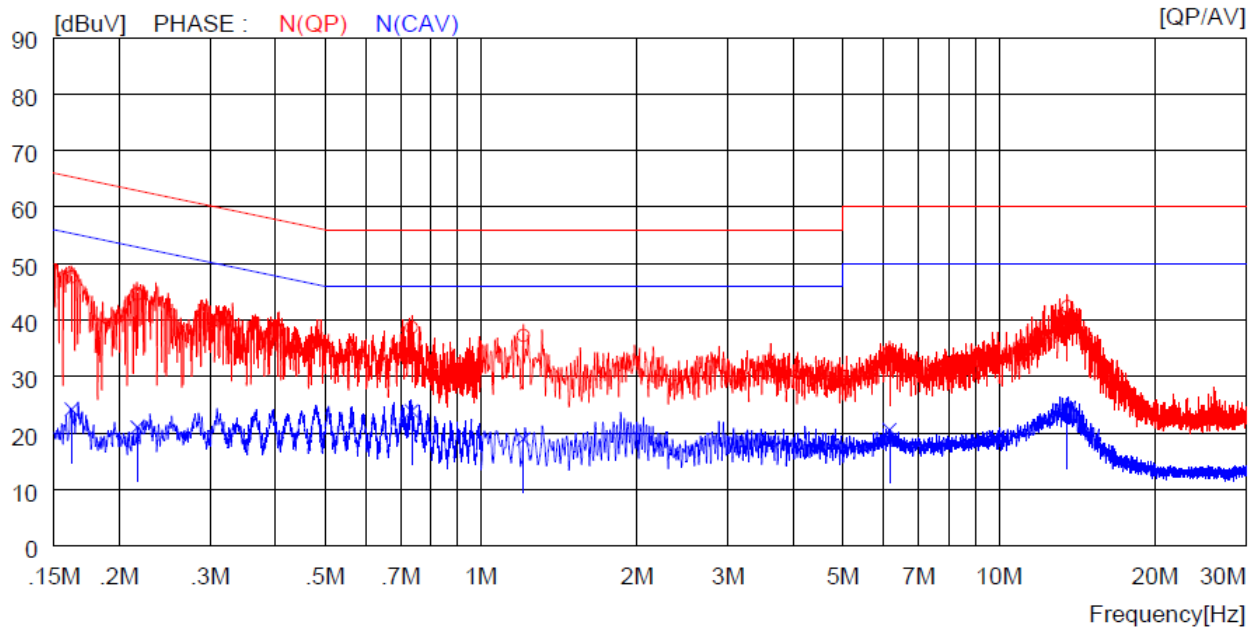
### 14.5.2 Test data for Mode 2\_Long

- Resolution bandwidth : 9 kHz
- Frequency range : 0.15 MHz ~ 30 MHz
- Tested Line : HOT LINE



| NO | FREQ<br>[MHz] | READING      |              | C.FACTOR<br>[dB] | RESULT       |              | LIMIT        |              | MARGIN       |              | PHASE  |
|----|---------------|--------------|--------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------|
|    |               | QP<br>[dBuV] | AV<br>[dBuV] |                  | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] |        |
| 1  | 0.15500       | 34.9         | ----         | 10.0             | 44.9         | ----         | 65.7         | ----         | 20.8         | ----         | H(QP)  |
| 2  | 0.25000       | 32.5         | ----         | 10.0             | 42.5         | ----         | 61.8         | ----         | 19.3         | ----         | H(QP)  |
| 3  | 0.70500       | 24.4         | ----         | 10.0             | 34.4         | ----         | 56.0         | ----         | 21.6         | ----         | H(QP)  |
| 4  | 1.22800       | 21.2         | ----         | 10.1             | 31.3         | ----         | 56.0         | ----         | 24.7         | ----         | H(QP)  |
| 5  | 5.96000       | 19.3         | ----         | 10.2             | 29.5         | ----         | 60.0         | ----         | 30.5         | ----         | H(QP)  |
| 6  | 13.64000      | 28.2         | ----         | 10.3             | 38.5         | ----         | 60.0         | ----         | 21.5         | ----         | H(QP)  |
| 7  | 0.15500       | ----         | 10.6         | 10.0             | ----         | 20.6         | ----         | 55.7         | ----         | 35.1         | H(CAV) |
| 8  | 0.25000       | ----         | 12.5         | 10.0             | ----         | 22.5         | ----         | 51.8         | ----         | 29.3         | H(CAV) |
| 9  | 0.70500       | ----         | 15.5         | 10.0             | ----         | 25.5         | ----         | 46.0         | ----         | 20.5         | H(CAV) |
| 10 | 1.22800       | ----         | 9.6          | 10.1             | ----         | 19.7         | ----         | 46.0         | ----         | 26.3         | H(CAV) |
| 11 | 5.96000       | ----         | 9.5          | 10.2             | ----         | 19.7         | ----         | 50.0         | ----         | 30.3         | H(CAV) |
| 12 | 13.64000      | ----         | 13.2         | 10.3             | ----         | 23.5         | ----         | 50.0         | ----         | 26.5         | H(CAV) |

-. Tested Line : NEUTRAL LINE



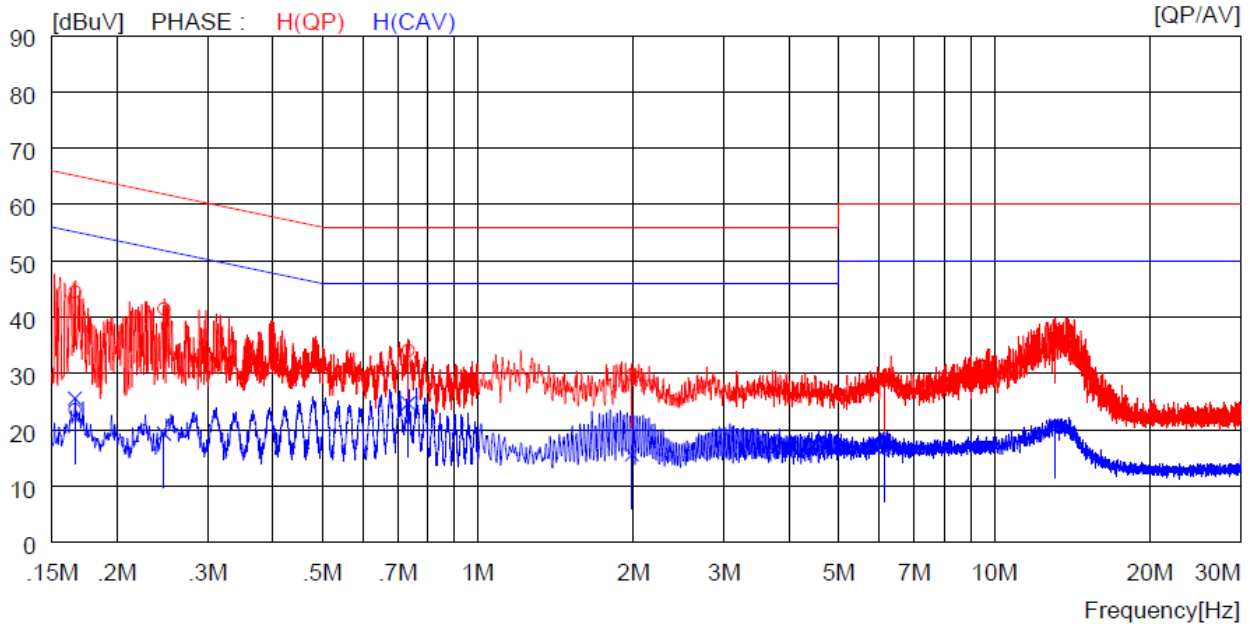
| NO | FREQ<br>[MHz] | READING      |              | C. FACTOR<br>[dB] | RESULT       |              | LIMIT        |              | MARGIN       |              | PHASE   |
|----|---------------|--------------|--------------|-------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------|
|    |               | QP<br>[dBuV] | AV<br>[dBuV] |                   | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] |         |
| 1  | 0.16200       | 37.6         | ----         | 10.0              | 47.6         | ----         | 65.4         | ----         | 17.8         | ----         | N (QP)  |
| 2  | 0.21700       | 34.6         | ----         | 10.0              | 44.6         | ----         | 62.9         | ----         | 18.3         | ----         | N (QP)  |
| 3  | 0.73500       | 28.7         | ----         | 10.0              | 38.7         | ----         | 56.0         | ----         | 17.3         | ----         | N (QP)  |
| 4  | 1.20800       | 27.2         | ----         | 10.1              | 37.3         | ----         | 56.0         | ----         | 18.7         | ----         | N (QP)  |
| 5  | 6.15000       | 24.1         | ----         | 10.2              | 34.3         | ----         | 60.0         | ----         | 25.7         | ----         | N (QP)  |
| 6  | 13.56000      | 32.1         | ----         | 10.3              | 42.4         | ----         | 60.0         | ----         | 17.6         | ----         | N (QP)  |
| 7  | 0.16200       | ----         | 14.2         | 10.0              | ----         | 24.2         | ----         | 55.4         | ----         | 31.2         | N (CAV) |
| 8  | 0.21700       | ----         | 11.0         | 10.0              | ----         | 21.0         | ----         | 52.9         | ----         | 31.9         | N (CAV) |
| 9  | 0.73500       | ----         | 13.9         | 10.0              | ----         | 23.9         | ----         | 46.0         | ----         | 22.1         | N (CAV) |
| 10 | 1.20800       | ----         | 8.9          | 10.1              | ----         | 19.0         | ----         | 46.0         | ----         | 27.0         | N (CAV) |
| 11 | 6.15000       | ----         | 10.4         | 10.2              | ----         | 20.6         | ----         | 50.0         | ----         | 29.4         | N (CAV) |
| 12 | 13.56000      | ----         | 12.9         | 10.3              | ----         | 23.2         | ----         | 50.0         | ----         | 26.8         | N (CAV) |

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

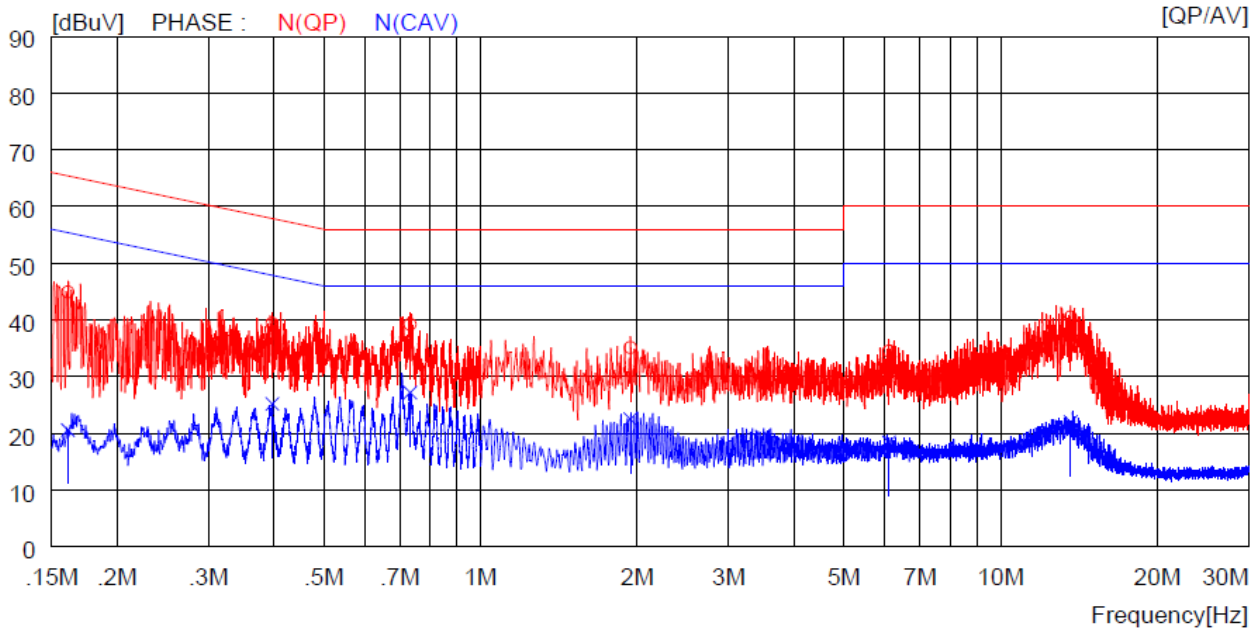
### 14.5.3 Test data for Mode 3\_Repeat

- . Resolution bandwidth : 9 kHz
- . Frequency range : 0.15 MHz ~ 30 MHz
- . Tested Line : HOT LINE



| NO | FREQ<br>[MHz] | READING      |              | C. FACTOR<br>[dB] | RESULT       |              | LIMIT        |              | MARGIN       |              | PHASE   |
|----|---------------|--------------|--------------|-------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------|
|    |               | QP<br>[dBuV] | AV<br>[dBuV] |                   | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] |         |
| 1  | 0.16600       | 34.5         | ----         | 10.0              | 44.5         | ----         | 65.2         | ----         | 20.7         | ----         | H (QP)  |
| 2  | 0.24700       | 31.5         | ----         | 10.0              | 41.5         | ----         | 61.9         | ----         | 20.4         | ----         | H (QP)  |
| 3  | 0.73400       | 24.1         | ----         | 10.0              | 34.1         | ----         | 56.0         | ----         | 21.9         | ----         | H (QP)  |
| 4  | 1.98800       | 19.7         | ----         | 10.1              | 29.8         | ----         | 56.0         | ----         | 26.2         | ----         | H (QP)  |
| 5  | 6.14000       | 18.7         | ----         | 10.2              | 28.9         | ----         | 60.0         | ----         | 31.1         | ----         | H (QP)  |
| 6  | 13.15000      | 27.5         | ----         | 10.3              | 37.8         | ----         | 60.0         | ----         | 22.2         | ----         | H (QP)  |
| 7  | 0.16600       | 13.6         | 15.6         | 10.0              | 23.6         | 25.6         | 65.2         | 55.2         | 41.6         | 29.6         | H (CAV) |
| 8  | 0.24700       | ----         | 9.3          | 10.0              | ----         | 19.3         | ----         | 51.9         | ----         | 32.6         | H (CAV) |
| 9  | 0.73400       | ----         | 14.7         | 10.0              | ----         | 24.7         | ----         | 46.0         | ----         | 21.3         | H (CAV) |
| 10 | 1.98800       | ----         | 5.5          | 10.1              | ----         | 15.6         | ----         | 46.0         | ----         | 30.4         | H (CAV) |
| 11 | 6.14000       | ----         | 6.6          | 10.2              | ----         | 16.8         | ----         | 50.0         | ----         | 33.2         | H (CAV) |
| 12 | 13.15000      | ----         | 10.6         | 10.3              | ----         | 20.9         | ----         | 50.0         | ----         | 29.1         | H (CAV) |

-. Tested Line : NEUTRAL LINE



| NO | FREQ<br>[MHz] | READING      |              | C.FACTOR<br>[dB] | RESULT       |              | LIMIT        |              | MARGIN       |              | PHASE   |
|----|---------------|--------------|--------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------|
|    |               | QP<br>[dBuV] | AV<br>[dBuV] |                  | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] |         |
| 1  | 0.16100       | 34.9         | ----         | 10.0             | 44.9         | ----         | 65.4         | ----         | 20.5         | ----         | N (QP)  |
| 2  | 0.39800       | 29.4         | ----         | 10.0             | 39.4         | ----         | 57.9         | ----         | 18.5         | ----         | N (QP)  |
| 3  | 0.73300       | 29.2         | ----         | 10.0             | 39.2         | ----         | 56.0         | ----         | 16.8         | ----         | N (QP)  |
| 4  | 1.94400       | 25.0         | ----         | 10.1             | 35.1         | ----         | 56.0         | ----         | 20.9         | ----         | N (QP)  |
| 5  | 6.10500       | 24.3         | ----         | 10.2             | 34.5         | ----         | 60.0         | ----         | 25.5         | ----         | N (QP)  |
| 6  | 13.64000      | 30.2         | ----         | 10.3             | 40.5         | ----         | 60.0         | ----         | 19.5         | ----         | N (QP)  |
| 7  | 0.16100       | ----         | 10.6         | 10.0             | ----         | 20.6         | ----         | 55.4         | ----         | 34.8         | N (CAV) |
| 8  | 0.39800       | ----         | 15.2         | 10.0             | ----         | 25.2         | ----         | 47.9         | ----         | 22.7         | N (CAV) |
| 9  | 0.73300       | ----         | 17.2         | 10.0             | ----         | 27.2         | ----         | 46.0         | ----         | 18.8         | N (CAV) |
| 10 | 1.94400       | ----         | 12.4         | 10.1             | ----         | 22.5         | ----         | 46.0         | ----         | 23.5         | N (CAV) |
| 11 | 6.10500       | ----         | 8.2          | 10.2             | ----         | 18.4         | ----         | 50.0         | ----         | 31.6         | N (CAV) |
| 12 | 13.64000      | ----         | 11.7         | 10.3             | ----         | 22.0         | ----         | 50.0         | ----         | 28.0         | N (CAV) |

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

## 15. LIST OF TEST EQUIPMENT

| Model Number     | Manufacturer      | Description                     | Serial Number | Last Cal.(Interval) |
|------------------|-------------------|---------------------------------|---------------|---------------------|
| FSVA40           | Rohde & Schwarz   | Signal Analyzer                 | 101598        | Apr. 19, 2022 (1Y)  |
| ESR              | Rohde & Schwarz   | EMI Test Receiver               | 101470        | Oct. 18, 2021 (1Y)  |
| 310N             | Sonoma Instrument | Pre-Amplifier                   | 312544        | Mar. 15, 2022 (1Y)  |
| SCU18            | Rohde & Schwarz   | Signal Conditioning unit        | 102266        | Jul. 12, 2022 (1Y)  |
| DT3000-3t        | Innco System      | Turn Table                      | DT3000/093    | N/A                 |
| MA-4000XPET      | Innco System      | Tilt Antenna Master             | MA4000/509    | N/A                 |
| HLP-2008         | TDK RF Solutions  | Hybrid Antenna                  | 131313        | Fed. 21, 2022 (1Y)  |
| BBHA9120D        | Schwarzbeck       | Horn Antenna                    | 295           | Mar. 02, 2022 (1Y)  |
| 89-30-11         | WEINSCHTEL        | Fixed Coaxial Attenuator(30 dB) | 687           | Jan. 06, 2022 (1Y)  |
| 10 dB Attenuator | Rohde & Schwarz   | 10 dB Attenuator                | 14100882-3    | Jul. 14, 2022 (1Y)  |
| HPF 1.5GHz       | Rohde & Schwarz   | High Pass Filter                | N/A           | Jan. 19, 2022 (1Y)  |
| N/A              | PHILCOM.CO        | Band Reject Filter              | N/A           | Jan. 18, 2022 (1Y)  |
| 3825/2           | EMCO              | LISN(AMN)                       | 9109-1869     | Mar. 15, 2022 (1Y)  |
| ESH3-Z2          | Rohde & Schwarz   | Pulse Limiter                   | 100655        | Mar. 14, 2022 (1Y)  |
| ESCI             | Rohde & Schwarz   | Test Receiver                   | 101012        | Oct. 20, 2021 (1Y)  |
| NSLK8128         | SCHWARZ BECK      | V - LISN ( 4*32/50A)            | 8128216       | Oct. 13, 2021 (1Y)  |
| SMB100A          | Rohde & Schwarz   | SIGNAL GENERATOR                | 177648        | Jan. 17, 2022 (1Y)  |
| SH-242           | ESPEC             | Temperature & Humidity Chamber  | 0093001589    | Mar. 18, 2022 (1Y)  |
| FMZB 1513        | Schwarzbeck       | Loop Antenna                    | 1513-235      | Mar. 24, 2022 (1Y)  |