



# FCC PART 15C TEST REPORT

No.25T04Z200152-008

for

**Samsung Electronics Co., Ltd.**

**Tablet with Bluetooth, WLAN**

**SM-X133**

**FCC ID: ZCASM133**

with

**Hardware Version: REV1.0**

**Software Version: X133.001**

**Issued Date: 2025-07-21**

**Note:**

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

**Test Laboratory:**

**CTTL, Telecommunication Technology Labs, CAICT**

No.52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191.

Tel: +86(0)10-62304633-2512, Fax: +86(0)10-62304633-2504

Email: [cttl\\_terminals@caict.ac.cn](mailto:cttl_terminals@caict.ac.cn), website: [www.chinattl.com](http://www.chinattl.com)



## **REPORT HISTORY**

| <b>Report Number</b> | <b>Revision</b> | <b>Description</b> | <b>Issue Date</b> |
|----------------------|-----------------|--------------------|-------------------|
| 25T04Z200152-008     | Rev.0           | 1st edition        | 2025-07-21        |

Note: the latest revision of the test report supersedes all previous version.

## **CONTENTS**

|                                                                         |           |
|-------------------------------------------------------------------------|-----------|
| <b>1. TEST LABORATORY .....</b>                                         | <b>5</b>  |
| 1.1. INTRODUCTION & ACCREDITATION .....                                 | 5         |
| 1.2. TESTING LOCATION .....                                             | 5         |
| 1.3. TESTING ENVIRONMENT .....                                          | 6         |
| 1.4. PROJECT DATA .....                                                 | 6         |
| 1.5. SIGNATURE .....                                                    | 6         |
| <b>2. CLIENT INFORMATION .....</b>                                      | <b>7</b>  |
| 2.1. APPLICANT INFORMATION .....                                        | 7         |
| 2.2. MANUFACTURER INFORMATION .....                                     | 7         |
| <b>3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE) .....</b> | <b>8</b>  |
| 3.1. ABOUT EUT .....                                                    | 8         |
| 3.2. INTERNAL IDENTIFICATION OF EUT .....                               | 8         |
| 3.3. INTERNAL IDENTIFICATION OF AE .....                                | 8         |
| 3.4. NORMAL ACCESSORY SETTING .....                                     | 8         |
| 3.5. GENERAL DESCRIPTION .....                                          | 8         |
| <b>4. REFERENCE DOCUMENTS .....</b>                                     | <b>9</b>  |
| 4.1. DOCUMENTS SUPPLIED BY APPLICANT .....                              | 9         |
| 4.2. REFERENCE DOCUMENTS FOR TESTING .....                              | 9         |
| <b>5. TEST RESULTS .....</b>                                            | <b>10</b> |
| 5.1. SUMMARY OF TEST RESULTS .....                                      | 10        |
| 5.2. STATEMENTS .....                                                   | 10        |
| <b>6. TEST FACILITIES UTILIZED .....</b>                                | <b>11</b> |
| <b>7. MEASUREMENT UNCERTAINTY .....</b>                                 | <b>12</b> |
| 7.1. PEAK OUTPUT POWER - CONDUCTED .....                                | 12        |
| 7.2. FREQUENCY BAND EDGES - CONDUCTED .....                             | 12        |
| 7.3. TRANSMITTER SPURIOUS EMISSION - CONDUCTED .....                    | 12        |
| 7.4. TRANSMITTER SPURIOUS EMISSION - RADIATED .....                     | 12        |
| 7.5. TIME OF OCCUPANCY (DWELL TIME) .....                               | 12        |
| 7.6. 20DB BANDWIDTH .....                                               | 12        |
| 7.7. CARRIER FREQUENCY SEPARATION .....                                 | 13        |
| 7.8. AC POWERLINE CONDUCTED EMISSION .....                              | 13        |
| <b>ANNEX A: EUT PARAMETERS .....</b>                                    | <b>14</b> |
| <b>ANNEX B: DETAILED TEST RESULTS .....</b>                             | <b>15</b> |
| B.1. MEASUREMENT METHOD .....                                           | 15        |
| B.2. PEAK OUTPUT POWER .....                                            | 16        |
| B.3. FREQUENCY BAND EDGES – CONDUCTED .....                             | 18        |



|                                                      |           |
|------------------------------------------------------|-----------|
| B.4. TRANSMITTER SPURIOUS EMISSION - CONDUCTED ..... | 24        |
| B.5. RADIATED UNWANTED EMISSION .....                | 37        |
| B.6. TIME OF OCCUPANCY (DWEIL TIME) .....            | 49        |
| B.7. 20dB BANDWIDTH .....                            | 57        |
| B.8. CARRIER FREQUENCY SEPARATION .....              | 62        |
| B.9. NUMBER OF HOPPING CHANNELS .....                | 65        |
| B.10. AC POWERLINE CONDUCTED EMISSION .....          | 68        |
| B.11. ANTENNA REQUIREMENT .....                      | 72        |
| <b>ANNEX C: ACCREDITATION CERTIFICATE .....</b>      | <b>73</b> |

## **1. Test Laboratory**

### **1.1. Introduction &Accreditation**

**Telecommunication Technology Labs, CAICT** is an ISO/IEC 17025:2017 accredited test laboratory under American Association for Laboratory Accreditation (A2LA) with lab code 7049.01, and is also an FCC accredited test laboratory (CN1349), and ISED accredited test laboratory (CAB identifier:CN0066). The detail accreditation scope can be found on A2LA website

### **1.2. Testing Location**

Conducted testing Location:CTTL(Gaolizhang Road)

Address: Cuihu Cloud Center, No.1, Gaolizhang Road, Wenquan,  
Haidian District, Beijing, China

Radiated testing Location: CTTL (BDA)

Address: No.18A, Kangding Street, Beijing Economic-Technology  
Development Area, Beijing, P. R. China 100176

### 1.3. Testing Environment

Normal Temperature: 20-27℃  
Relative Humidity: 20-50%

### 1.4. Project data

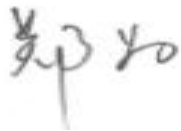
Testing Start Date: 2025-06-06  
Testing End Date: 2025-07-21

### 1.5. Signature



---

Yao Xingyu  
(Prepared this test report)



---

Zheng Wei  
(Reviewed this test report)



---

Pang Shuai  
(Approved this test report)

## **2. Client Information**

### **2.1. Applicant Information**

Company Name: Samsung Electronics Co., Ltd.  
Address: 19 Chapin Rd., Building D Pine Brook, NJ 07058  
Contact: Jenni Chun  
Email: j1.chun@samsung.com  
Telephone: +1-201-937-4203  
Fax: /

### **2.2. Manufacturer Information**

Company Name: Samsung Electronics Co., Ltd.  
Address: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, Republic of Korea  
Contact: Kobe Cho  
Email: ggobi.cho@samsung.com  
Telephone: +82 - 10 - 2722 - 4159  
Fax: /

### 3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

#### 3.1. About EUT

|                    |                             |
|--------------------|-----------------------------|
| Description        | Tablet with Bluetooth, WLAN |
| Model Name         | SM-X133                     |
| FCC ID             | ZCASM133                    |
| Frequency Band     | ISM 2400MHz~2483.5MHz       |
| Type of Modulation | GFSK/ $\pi/4$ DQPSK/8DPSK   |
| Number of Channels | 79                          |
| Power Supply       | 3.82V DC by Battery         |
| Antenna gain       | -0.7dBi                     |

#### 3.2. Internal Identification of EUT

| EUT ID* | SN or IMEI       | HW Version | SW Version | Date of receipt |
|---------|------------------|------------|------------|-----------------|
| UT06a   | 2504Z200152UT06a | REV1.0     | X133.001   | 2025-06-09      |
| UT03a   | 2504200152UT03a  | REV1.0     | X133.001   | 2025-06-06      |

\*EUT ID: is used to identify the test sample in the lab internally.

#### 3.3. Internal Identification of AE

| AE ID* | Name           | Model       | Manufacturer                       |
|--------|----------------|-------------|------------------------------------|
| AE1-1  | Battery        | HQ-3565S    | SCUD(Fujian) Electronics Co., Ltd. |
| AE1-2  | Battery        | HQ-6739SDS  | SCUD(Fujian) Electronics Co., Ltd. |
| AE2*   | Adapter        | EP-T1510    | DongYang                           |
| AE3-1  | Date Cable C-C | EP-DN980BWE | Cresyn                             |
| AE3-2  | Date Cable C-C | EP-DN980BWE | Luxshare                           |

\*AE ID: is used to identify the test sample in the lab internally.

\*AE2 is not the AE for EUT, provided by the client for relevant tests.

#### 3.4. Normal Accessory setting

Fully charged battery is used during the test.

#### 3.5. General Description

The Equipment Under Test (EUT) is a model of Tablet with Bluetooth, WLAN with integrated antenna. It consists of normal options: lithium battery and USB cable. Manual and specifications of the EUT were provided to fulfill the test. Samples undergoing test were selected by the Client.



## 4. Reference Documents

### 4.1. Documents supplied by applicant

EUT parameters, referring to Annex A for detailed information, is supplied by the client or manufacturer, which is the basis of testing.

### 4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

| Reference   | Title                                                                                             | Version   |
|-------------|---------------------------------------------------------------------------------------------------|-----------|
| FCC Part15  | FCC CFR 47, Part 15, Subpart C:                                                                   | 2024      |
|             | 15.205 Restricted bands of operation;                                                             |           |
|             | 15.209 Radiated emission limits, general requirements;                                            |           |
| ANSI C63.10 | 15.247 Operation within the bands 902–928MHz,<br>2400–2483.5 MHz, and 5725–5850 MHz.              | June,2013 |
|             | American National Standard of Procedures for<br>Compliance Testing of Unlicensed Wireless Devices |           |

## 5. Test Results

### 5.1. Summary of Test Results

Abbreviations used in this clause:

**P** Pass, The EUT complies with the essential requirements in the standard.

**F** Fail, The EUT does not comply with the essential requirements in the standard

**NA** Not Applicable, The test was not applicable

**NP** Not Performed, The test was not performed by CTTL

| SUMMARY OF MEASUREMENT RESULTS            | Sub-clause             | Verdict   |
|-------------------------------------------|------------------------|-----------|
| Peak Output Power                         | 15.247 (b)(1)          | <b>P</b>  |
| Frequency Band Edges- Conducted           | 15.247 (d)             | <b>P</b>  |
| Transmitter Spurious Emission - Conducted | 15.247 (d)             | <b>P</b>  |
| Radiated Unwanted Emission                | 15.247, 15.205, 15.209 | <b>P</b>  |
| Time of Occupancy (Dwell Time)            | 15.247 (a) (1)(iii)    | <b>P</b>  |
| 20dB Bandwidth                            | 15.247 (a)(1)          | <b>NA</b> |
| Carrier Frequency Separation              | 15.247 (a)(1)          | <b>P</b>  |
| Number of hopping channels                | 15.247 (a)(iii)        | <b>P</b>  |
| AC Powerline Conducted Emission           | 15.107, 15.207         | <b>P</b>  |
| Antenna Requirement                       | 15.203                 | <b>P</b>  |

Please refer to **ANNEX A** for detail.

The measurement is made according to ANSI C63.10.

### 5.2. Statements

CTTL has evaluated the test cases requested by the applicant /manufacturer as listed in section 5.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.2

## 6. Test Facilities Utilized

### Conducted test system

| No. | Equipment              | Model  | Serial Number | Manufacturer    | Calibration Period | Calibration Due date |
|-----|------------------------|--------|---------------|-----------------|--------------------|----------------------|
| 1   | Vector Signal Analyzer | FSW67  | 104051        | Rohde & Schwarz | 1 year             | 2026-06-09           |
| 2   | Base Station Simulator | CMW500 | 159384        | Rohde & Schwarz | 1 year             | 2025-11-10           |
| 3   | Shielding Room         | S81    | /             | ETS-Lindgren    | /                  | /                    |

### Radiated emission test system

| No. | Equipment                            | Model                 | Serial Number | Manufacturer | Calibration Period | Calibration Due date |
|-----|--------------------------------------|-----------------------|---------------|--------------|--------------------|----------------------|
| 1   | Test Receiver                        | ESW44                 | 103015        | R&S          | 1 year             | 2026-01-15           |
| 2   | Test Receiver                        | FSV40                 | 101047        | R&S          | 1 year             | 2025-07-28           |
| 3   | Loop Antenna                         | HFH2-Z2               | 829324/007    | R&S          | 2 years            | 2026-01-04           |
| 4   | EMI Antenna                          | VULB9163              | 235           | Schwarzbeck  | 1 year             | 2025-08-27           |
| 5   | EMI Antenna                          | 3117                  | 00058888      | ETS-Lindgren | 1 year             | 2025-09-18           |
| 6   | EMI Antenna                          | LB-180400<br>-25-C-KF | J211060826    | A-INFO       | 1 year             | 2025-08-29           |
| 7   | Universal Radio Communication Tester | CMW500                | 143008        | R&S          | 1 year             | 2026-01-15           |

### AC Power Line Conducted Emission

| No. | Equipment                            | Model  | Serial Number | Manufacturer | Calibration Period | Calibration Due date |
|-----|--------------------------------------|--------|---------------|--------------|--------------------|----------------------|
| 1   | LISN                                 | ENV216 | 101459        | R&S          | 1 year             | 2026-05-07           |
| 2   | Test Receiver                        | ESCI7  | 100948        | R&S          | 1 year             | 2025-12-10           |
| 3   | Universal Radio Communication Tester | CMW500 | 159408        | R&S          | 1 year             | 2026-02-16           |

## 7. Measurement Uncertainty

### 7.1. Peak Output Power - Conducted

**Measurement Uncertainty:**

|                               |        |
|-------------------------------|--------|
| Measurement Uncertainty (k=2) | 0.66dB |
|-------------------------------|--------|

### 7.2. Frequency Band Edges - Conducted

**Measurement Uncertainty:**

|                               |        |
|-------------------------------|--------|
| Measurement Uncertainty (k=2) | 0.66dB |
|-------------------------------|--------|

### 7.3. Transmitter Spurious Emission - Conducted

**Measurement Uncertainty:**

| Frequency Range   | Uncertainty (k=2) |
|-------------------|-------------------|
| 30 MHz ~ 8 GHz    | 1.22dB            |
| 8 GHz ~ 12.75 GHz | 1.51dB            |
| 12.7GHz ~ 26 GHz  | 1.51dB            |

### 7.4. Transmitter Spurious Emission - Radiated

**Measurement Uncertainty:**

| Frequency Range                         | Uncertainty(dBm) (k=2) |
|-----------------------------------------|------------------------|
| 9kHz-30MHz                              | 3.96                   |
| $30\text{MHz} \leq f \leq 1\text{GHz}$  | 5.73                   |
| $1\text{GHz} \leq f \leq 18\text{GHz}$  | 5.62                   |
| $18\text{GHz} \leq f \leq 40\text{GHz}$ | 3.52                   |

### 7.5. Time of Occupancy (Dwell Time)

**Measurement Uncertainty:**

|                               |        |
|-------------------------------|--------|
| Measurement Uncertainty (k=2) | 0.88ms |
|-------------------------------|--------|

### 7.6. 20dB Bandwidth

**Measurement Uncertainty:**

|                               |          |
|-------------------------------|----------|
| Measurement Uncertainty (k=2) | 61.936Hz |
|-------------------------------|----------|

### 7.7. Carrier Frequency Separation

#### Measurement Uncertainty:

|                               |          |
|-------------------------------|----------|
| Measurement Uncertainty (k=2) | 61.936Hz |
|-------------------------------|----------|

### 7.8. AC Powerline Conducted Emission

#### Measurement Uncertainty:

|                               |        |
|-------------------------------|--------|
| Measurement Uncertainty (k=2) | 3.10dB |
|-------------------------------|--------|

## **ANNEX A: EUT parameters**

Disclaimer: The antenna gain provided by the client may affect the validity of the measurement results in this report, and the client shall bear the impact and consequences arising therefrom.

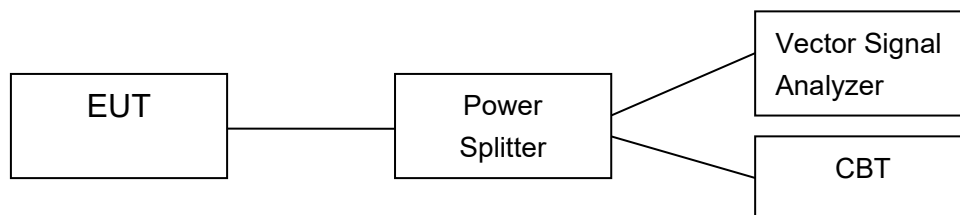
## **ANNEX B: Detailed Test Results**

### **B.1. Measurement Method**

#### **B.1.1. Conducted Measurements**

The measurement is made according to ANSI C63.10.

- 1). Connect the EUT to the test system correctly.
- 2). Set the EUT to the required work mode (Transmitter, receiver or transmitter & receiver).
- 3). Set the EUT to the required channel.
- 4). Set the EUT hopping mode (hopping or hopping off).
- 5). Set the spectrum analyzer to start measurement.
- 6). Record the values. Vector Signal Analyzer



#### **B.1.2. Radiated Emission Measurements**

The measurement is made according to ANSI C63.10

The radiated emission test is performed in semi-anechoic chamber. The EUT was placed on a non-conductive table with 80cm above the ground plane for measurement below 1GHz and 1.5m above the ground plane for measurement above 1GHz. The measurement antenna was placed at a distance of 3 meters from the EUT. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated from 0° to 360° and the measurement antenna is moved from 1m to 4m to get the maximization result. The maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

## B.2. Peak Output Power

### B.2.1. Peak Output Power – Conducted

**Method of Measurement: See ANSI C63.10-clause 7.8.5**

a) Use the following spectrum analyzer settings:

- Span: 6MHz
- RBW: 3MHz
- VBW: 3MHz
- Sweep time: 2.5ms
- Detector function: peak
- Trace: max hold

b) Allow trace to stabilize.

c) Use the marker-to-peak function to set the marker to the peak of the emission.

d) The indicated level is the peak output power.

#### Measurement Limit:

| Standard               | Limits                |               |
|------------------------|-----------------------|---------------|
| FCC Part 15.247 (b)(1) | Bandwidth $\leq$ 1MHz | 30dBm (1W)    |
|                        | Bandwidth $>$ 1MHz    | 21dBm (125mW) |

#### Measurement Results:

##### For GFSK

| Channel                              | Ch 0<br>2402 MHz | Ch 39<br>2441 MHz | Ch 78<br>2480 MHz | Conclusion |
|--------------------------------------|------------------|-------------------|-------------------|------------|
| Peak Conducted<br>Output Power (dBm) | 7.39             | 6.69              | 7.37              | P          |

##### For $\pi/4$ DQPSK

| Channel                              | Ch 0<br>2402 MHz | Ch 39<br>2441 MHz | Ch 78<br>2480 MHz | Conclusion |
|--------------------------------------|------------------|-------------------|-------------------|------------|
| Peak Conducted<br>Output Power (dBm) | 6.38             | 6.23              | 6.96              | P          |

##### For 8DPSK

| Channel                              | Ch 0<br>2402 MHz | Ch 39<br>2441 MHz | Ch 78<br>2480 MHz | Conclusion |
|--------------------------------------|------------------|-------------------|-------------------|------------|
| Peak Conducted<br>Output Power (dBm) | 7.03             | 6.29              | 7.00              | P          |

**Conclusion: PASS**



**B.2.2. E.I.R.P.**

The radiated E.I.R.P. is listed below:

Antenna gain = -0.7dBi

**For GFSK**

| Channel       | Ch 0<br>2402 MHz | Ch 39<br>2441 MHz | Ch 78<br>2480 MHz | Conclusion |
|---------------|------------------|-------------------|-------------------|------------|
| E.I.R.P (dBm) | 6.69             | 5.99              | 6.67              | P          |

**For  $\pi/4$  DQPSK**

| Channel       | Ch 0<br>2402 MHz | Ch 39<br>2441 MHz | Ch 78<br>2480 MHz | Conclusion |
|---------------|------------------|-------------------|-------------------|------------|
| E.I.R.P (dBm) | 5.68             | 5.53              | 6.26              | P          |

**For 8DPSK**

| Channel       | Ch 0<br>2402 MHz | Ch 39<br>2441 MHz | Ch 78<br>2480 MHz | Conclusion |
|---------------|------------------|-------------------|-------------------|------------|
| E.I.R.P (dBm) | 6.33             | 5.59              | 6.30              | P          |

Note: E.I.R.P. are calculated with the antenna gain.

**Conclusion: PASS**

### B.3. Frequency Band Edges – Conducted

#### Method of Measurement: See ANSI C63.10-clause 7.8.6

Connect the spectrum analyzer to the EUT using an appropriate RF cable connected to the EUT output. Configure the spectrum analyzer settings as described below (be sure to enter all losses between the unlicensed wireless device output and the spectrum analyzer).

- Span: 10 MHz
- Resolution Bandwidth: 100 kHz
- Video Bandwidth: 300 kHz
- Sweep Time:Auto
- Detector: Peak
- Trace: max hold

Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel.

Observe the stored trace and measure the amplitude delta between the peak of the fundamental and the peak of the band-edge emission. This is not an absolute field strength measurement; it is only a relative measurement to determine the amount by which the emission drops at the band edge relative to the highest fundamental emission level.

#### Measurement Limit:

| Standard                   | Limit (dBc) |
|----------------------------|-------------|
| FCC 47 CFR Part 15.247 (d) | < -20       |

#### Measurement Result:

| TestMode | ChName | Frequency[MHz] | RefLevel [dBm] | Result [dBm] | Limit [dBm] | Verdict |
|----------|--------|----------------|----------------|--------------|-------------|---------|
| DH5      | Low    | 2402           | 6.64           | -46.05       | ≤-13.36     | PASS    |
|          | High   | 2480           | 6.23           | -45.67       | ≤-13.77     | PASS    |
|          | Low    | Hop_2402       | 6.85           | -46.69       | ≤-13.15     | PASS    |
|          | High   | Hop_2480       | 5.55           | -46.31       | ≤-14.45     | PASS    |
| 2DH5     | Low    | 2402           | 5.81           | -45.8        | ≤-14.19     | PASS    |
|          | High   | 2480           | 5.56           | -45.16       | ≤-14.44     | PASS    |
|          | Low    | Hop_2402       | 4.97           | -46.45       | ≤-15.03     | PASS    |
|          | High   | Hop_2480       | 4.30           | -46.4        | ≤-15.7      | PASS    |
| 3DH5     | Low    | 2402           | 5.93           | -46.26       | ≤-14.07     | PASS    |
|          | High   | 2480           | 5.63           | -46.35       | ≤-14.37     | PASS    |
|          | Low    | Hop_2402       | 4.73           | -46.27       | ≤-15.27     | PASS    |
|          | High   | Hop_2480       | 5.29           | -46.11       | ≤-14.71     | PASS    |

**Conclusion: PASS**

Test graphs as below

DH5\_Low\_2402



12:00:46 16.07.2025

DH5\_High\_2480



12:03:50 16.07.2025

DH5\_Low\_Hop\_2402



12:14:24 16.07.2025

### DH5\_High\_Hop\_2480



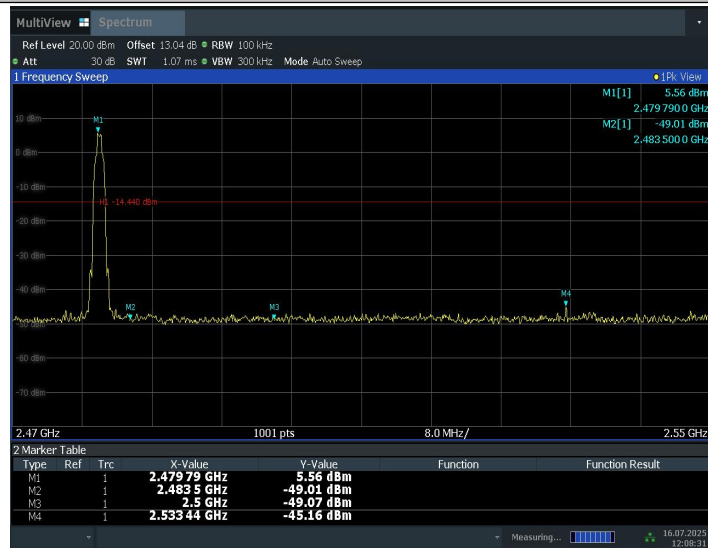
12:15:54 16.07.2025

### 2DH5\_Low\_2402



12:05:28 16.07.2025

## 2DH5\_High\_2480



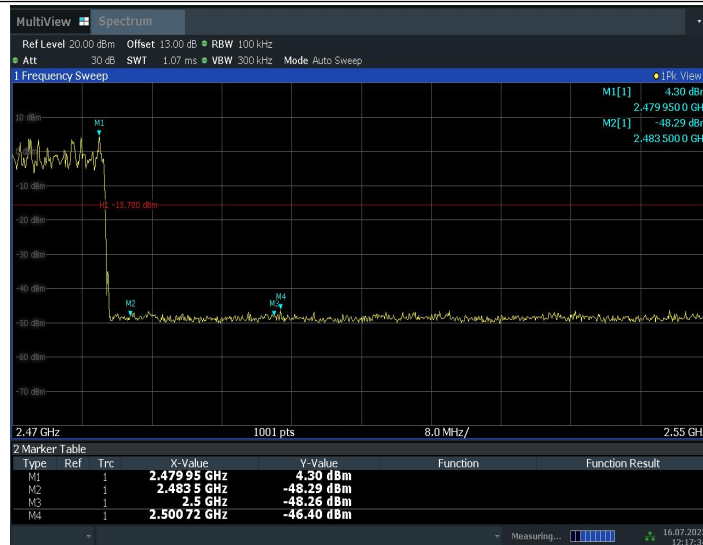
12:08:32 16.07.2025

## 2DH5\_Low\_Hop\_2402



12:16:04 16.07.2025

## 2DH5\_High\_Hop\_2480



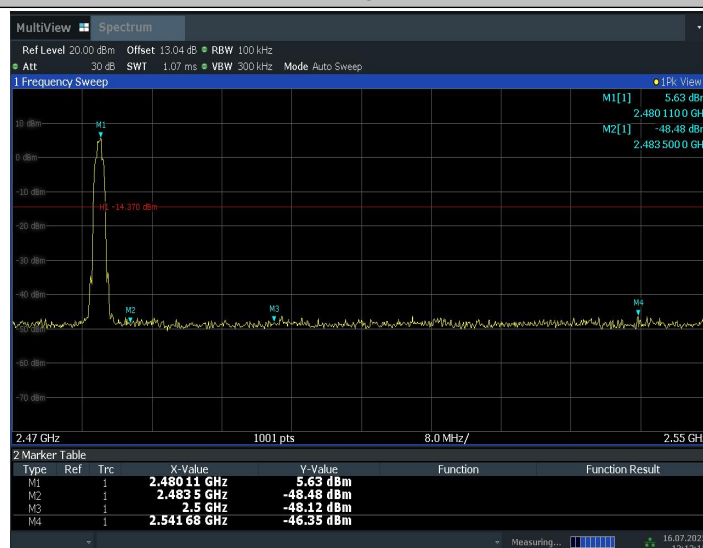
12:17:35 16.07.2025

### 3DH5\_Low\_2402



12:10:09 16.07.2025

### 3DH5\_High\_2480



12:13:16 16.07.2025

### 3DH5\_Low\_Hop\_2402



12:17:45 16.07.2025

### 3DH5\_High\_Hop\_2480



12:19:15 16.07.2025

## B.4. Transmitter Spurious Emission - Conducted

### Method of Measurement: See ANSI C63.10-clause 7.8.8

#### Measurement Procedure – Reference Level

1. Set the RBW = 100 kHz.
2. Set the VBW = 300 kHz.
3. Set the span to 5-30 % greater than the EBW.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW. Next, determine the power in 100 kHz band segments outside of the authorized frequency band using the following measurement:

#### Measurement Procedure - Unwanted Emissions

1. Set RBW = 100 kHz.
2. Set VBW = 300 kHz.
3. Set span to encompass the spectrum to be examined.
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize (this may take some time, depending on the extent of the span).

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified above.

#### Measurement Limit:

| Standard                   | Limit                                             |
|----------------------------|---------------------------------------------------|
| FCC 47 CFR Part 15.247 (d) | 20dB below peak output power in 100 kHz bandwidth |



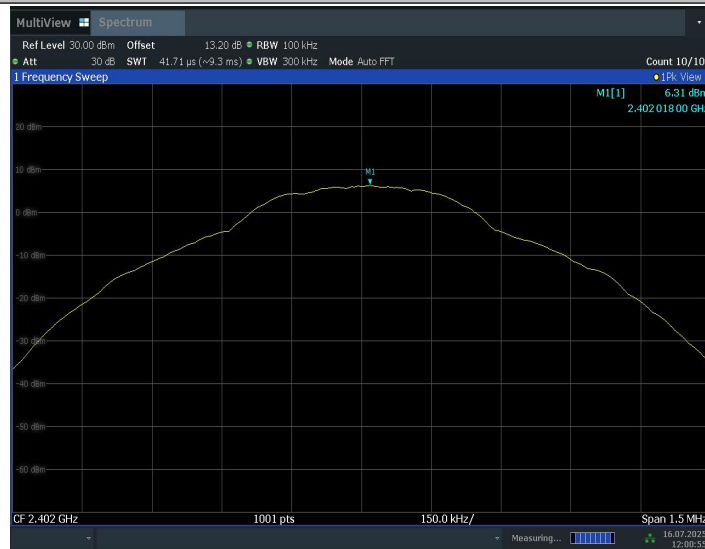
**Measurement Results:**

| TestMode | Frequency[MHz] | FreqRange<br>[MHz] | RefLevel<br>[dBm] | Result<br>[dBm] | Limit<br>[dBm] | Verdict |
|----------|----------------|--------------------|-------------------|-----------------|----------------|---------|
| DH5      | 2402           | Reference          | 6.31              | 6.31            | ---            | PASS    |
|          |                | 30~1000            | 6.31              | -57.09          | ≤-13.69        | PASS    |
|          |                | 1000~26500         | 6.31              | -43.97          | ≤-13.69        | PASS    |
|          | 2441           | Reference          | 5.23              | 5.23            | ---            | PASS    |
|          |                | 30~1000            | 5.23              | -56.78          | ≤-14.77        | PASS    |
|          |                | 1000~26500         | 5.23              | -44.4           | ≤-14.77        | PASS    |
|          | 2480           | Reference          | 5.93              | 5.93            | ---            | PASS    |
|          |                | 30~1000            | 5.93              | -56.82          | ≤-14.07        | PASS    |
|          |                | 1000~26500         | 5.93              | -44.29          | ≤-14.07        | PASS    |
| 2DH5     | 2402           | Reference          | 4.68              | 4.68            | ---            | PASS    |
|          |                | 30~1000            | 4.68              | -57.02          | ≤-15.32        | PASS    |
|          |                | 1000~26500         | 4.68              | -44.07          | ≤-15.32        | PASS    |
|          | 2441           | Reference          | 3.74              | 3.74            | ---            | PASS    |
|          |                | 30~1000            | 3.74              | -55.48          | ≤-16.26        | PASS    |
|          |                | 1000~26500         | 3.74              | -43.75          | ≤-16.26        | PASS    |
|          | 2480           | Reference          | 4.06              | 4.06            | ---            | PASS    |
|          |                | 30~1000            | 4.06              | -56.88          | ≤-15.94        | PASS    |
|          |                | 1000~26500         | 4.06              | -43.98          | ≤-15.94        | PASS    |
| 3DH5     | 2402           | Reference          | 4.26              | 4.26            | ---            | PASS    |
|          |                | 30~1000            | 4.26              | -56.04          | ≤-15.74        | PASS    |
|          |                | 1000~26500         | 4.26              | -43.92          | ≤-15.74        | PASS    |
|          | 2441           | Reference          | 4.17              | 4.17            | ---            | PASS    |
|          |                | 30~1000            | 4.17              | -57.16          | ≤-15.83        | PASS    |
|          |                | 1000~26500         | 4.17              | -43.24          | ≤-15.83        | PASS    |
|          | 2480           | Reference          | 4.38              | 4.38            | ---            | PASS    |
|          |                | 30~1000            | 4.38              | -56.02          | ≤-15.62        | PASS    |
|          |                | 1000~26500         | 4.38              | -44.31          | ≤-15.62        | PASS    |

**Conclusion: PASS**

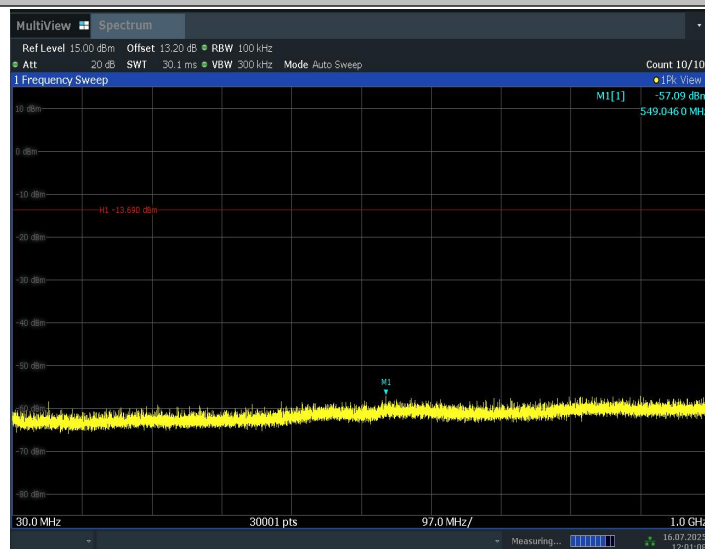
Test graphs as below

DH5\_2402\_0~Reference



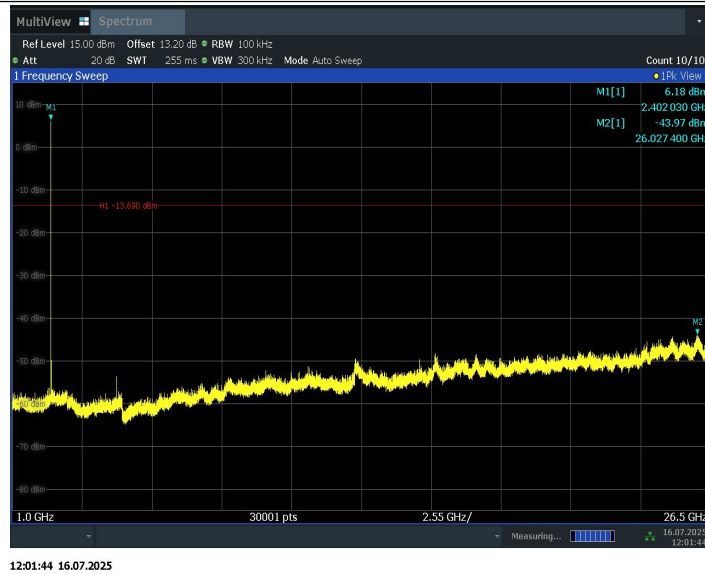
12:00:55 16.07.2025

DH5\_2402\_30~1000



12:01:08 16.07.2025

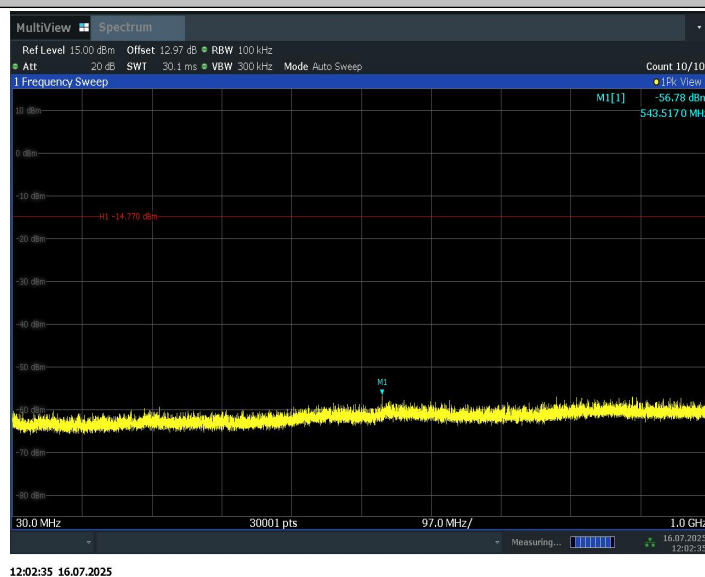
DH5\_2402\_1000~26500



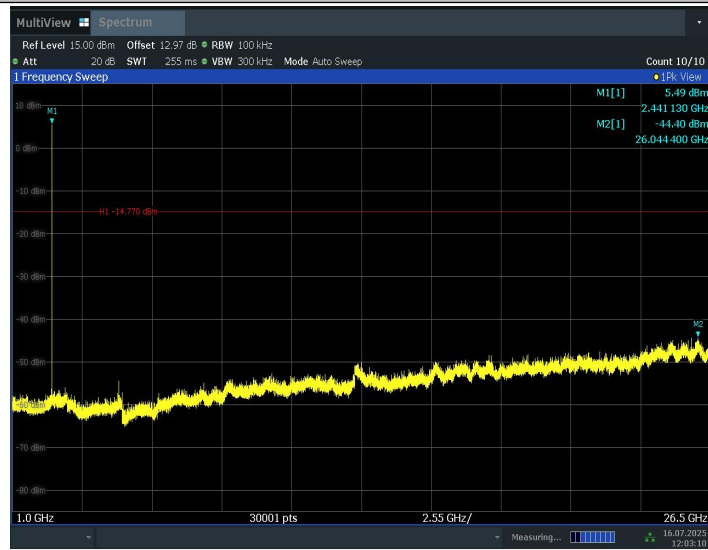
### DH5\_2441\_0~Reference



### DH5\_2441\_30~1000



### DH5\_2441\_1000~26500



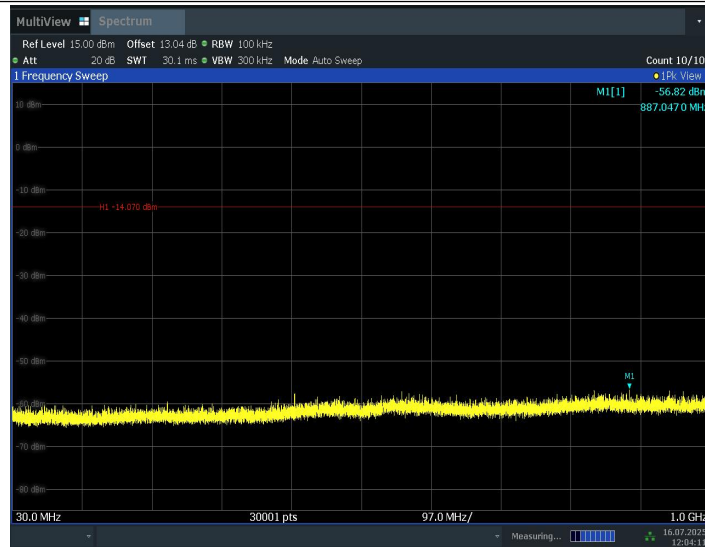
12:03:11 16.07.2025

### DH5\_2480\_0~Reference



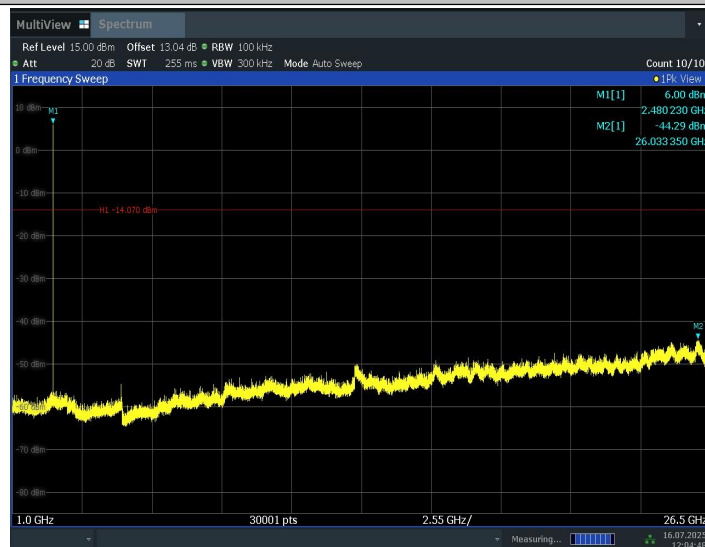
12:03:59 16.07.2025

### DH5\_2480\_30~1000



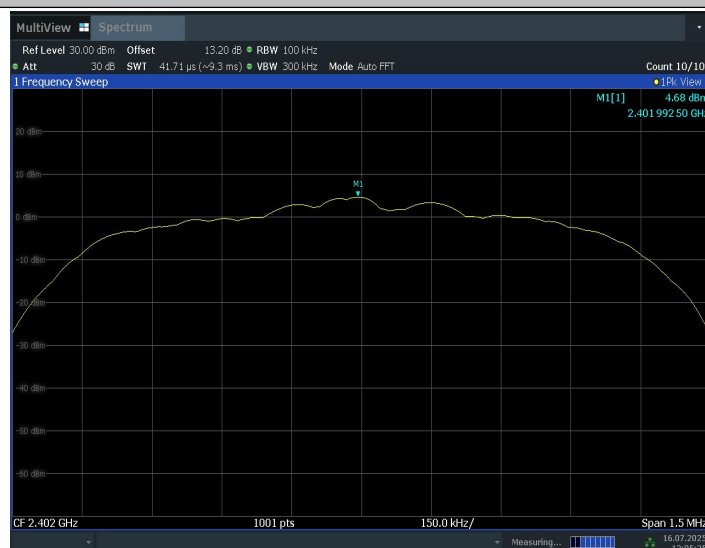
12:04:12 16.07.2025

### DH5\_2480\_1000~26500



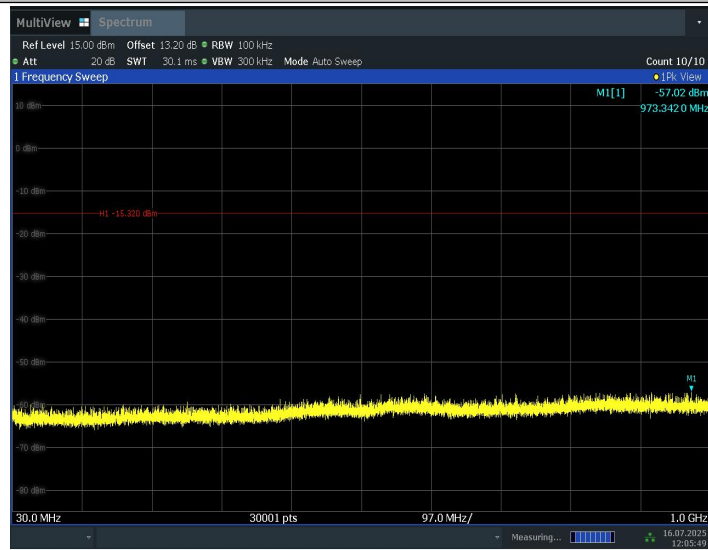
12:04:48 16.07.2025

### 2DH5\_2402\_0~Reference



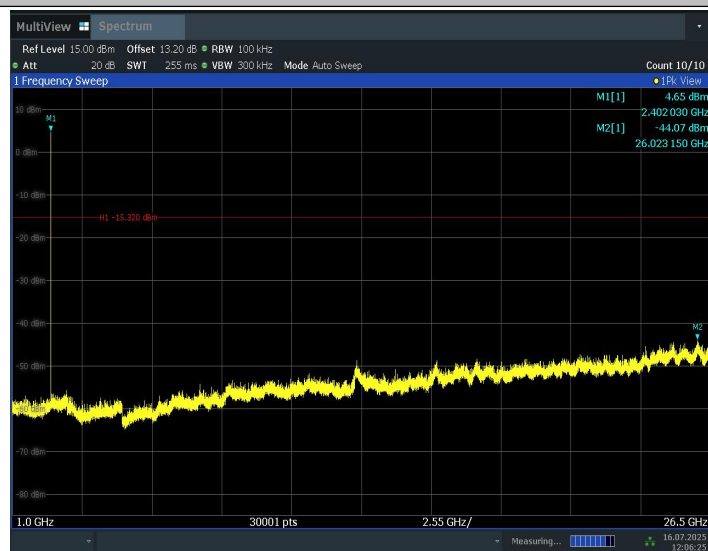
12:05:36 16.07.2025

2DH5\_2402\_30~1000



12:05:49 16.07.2025

2DH5\_2402\_1000~26500

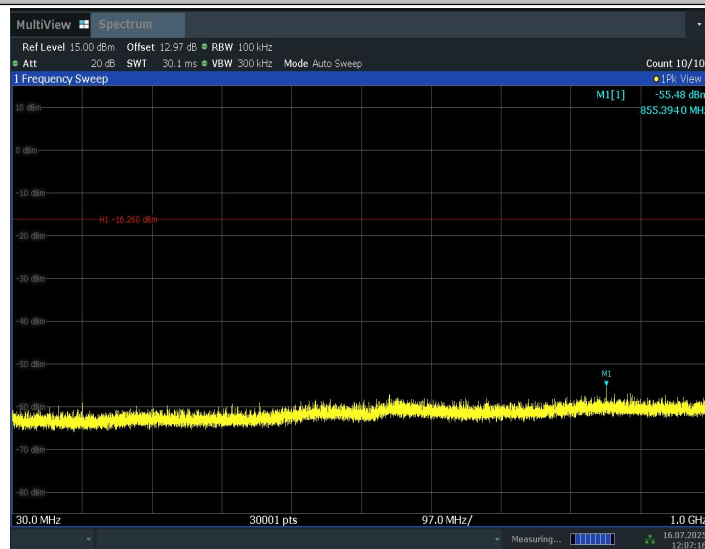


12:06:26 16.07.2025

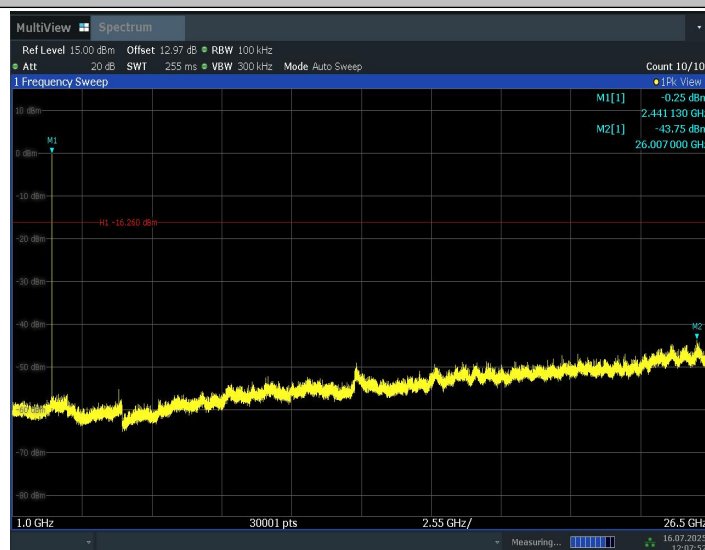
2DH5\_2441\_0~Reference



### 2DH5\_2441\_30~1000



### 2DH5\_2441\_1000~26500

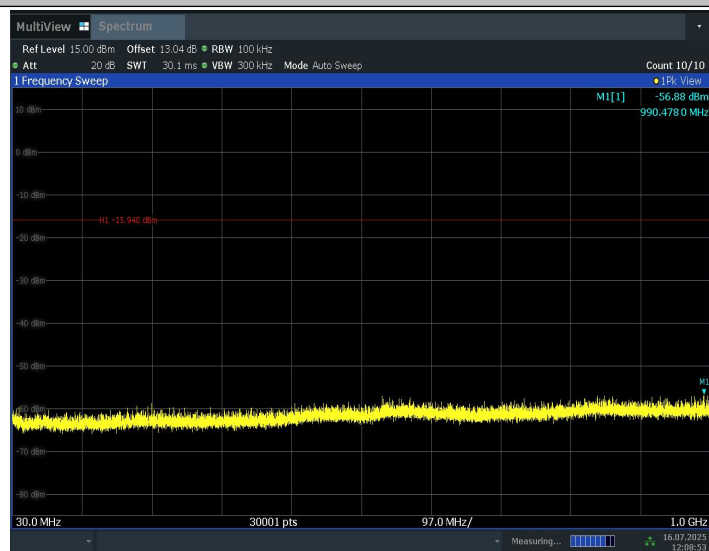


2DH5\_2480\_0~Reference



12:08:41 16.07.2025

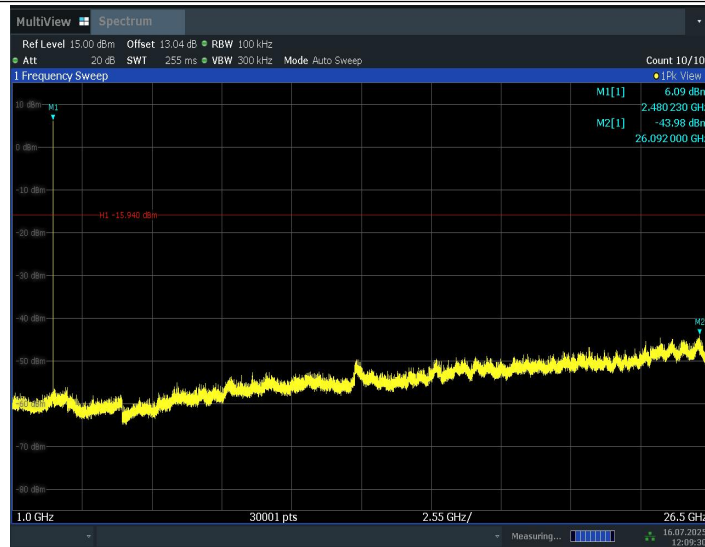
2DH5\_2480\_30~1000



12:08:54 16.07.2025

2DH5\_2480\_1000~26500

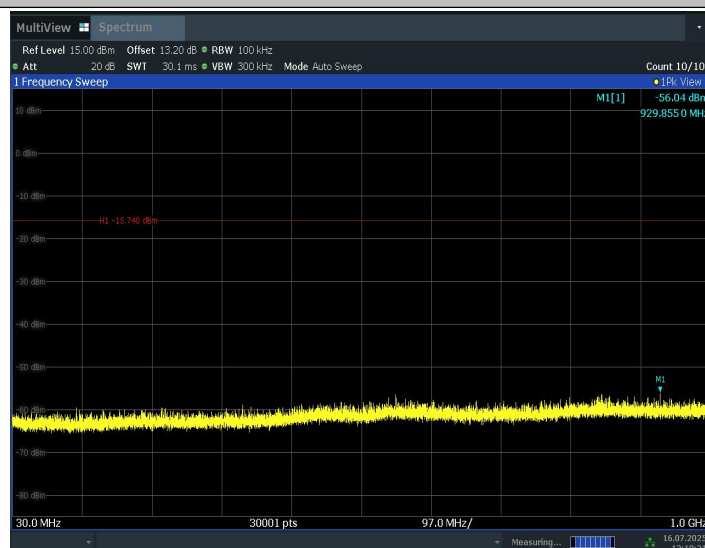




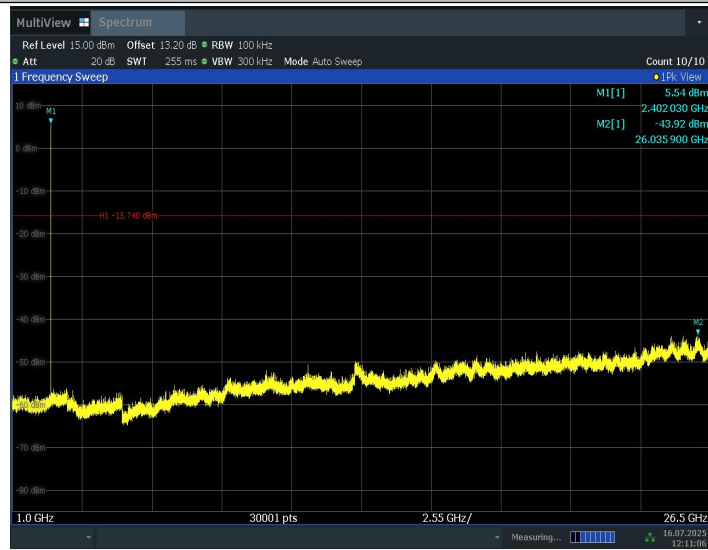
### 3DH5\_2402\_0~Reference



### 3DH5\_2402\_30~1000

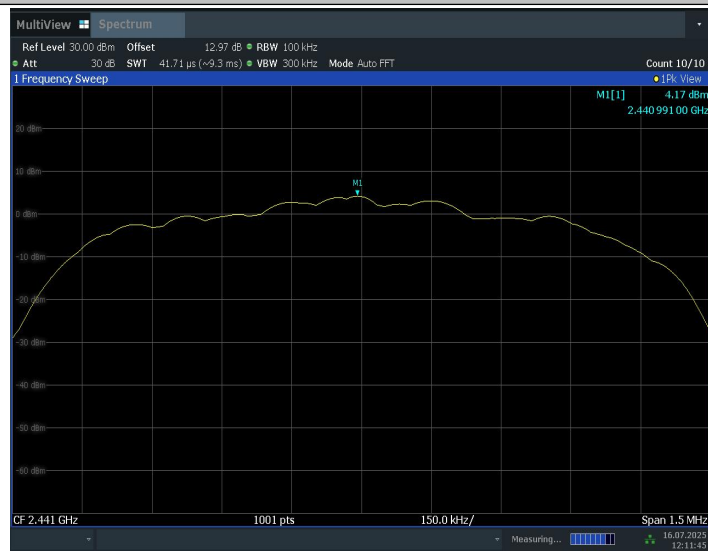


## 3DH5\_2402\_1000~26500



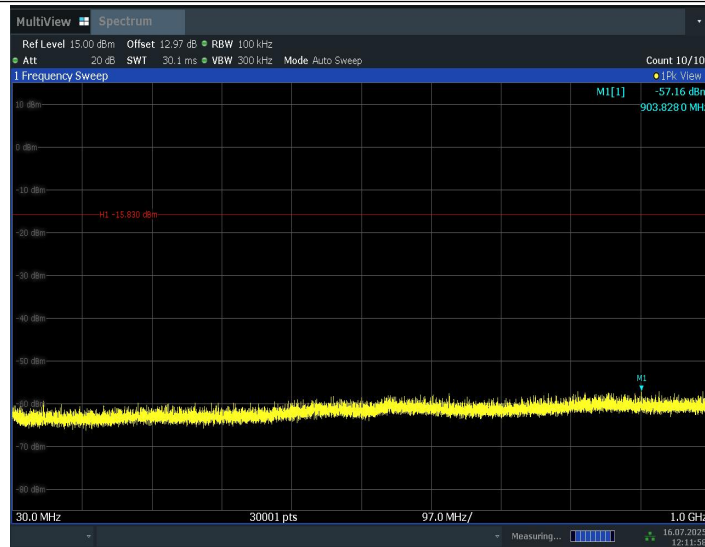
12:11:07 16.07.2025

## 3DH5\_2441\_0~Reference

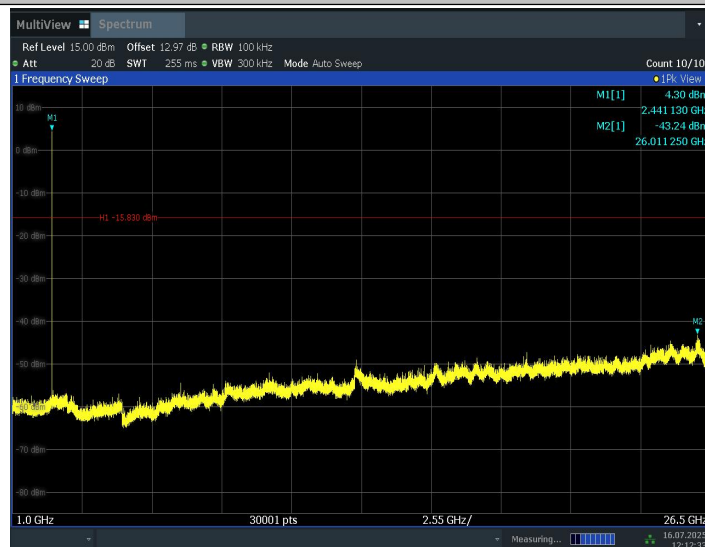


12:11:45 16.07.2025

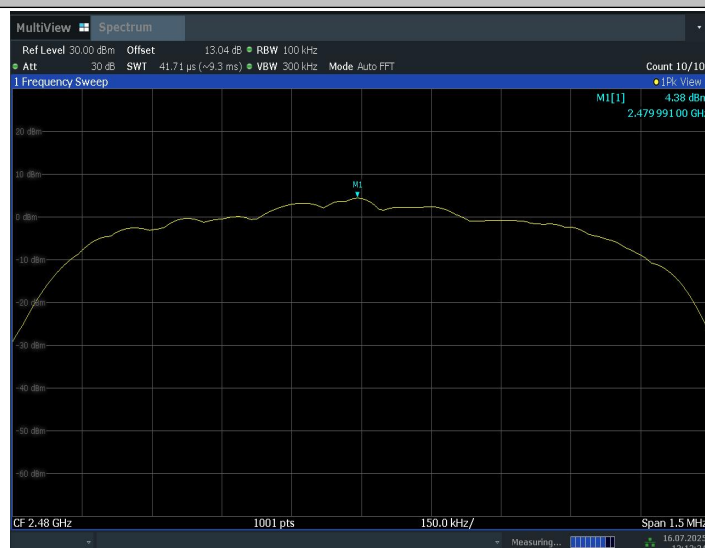
## 3DH5\_2441\_30~1000



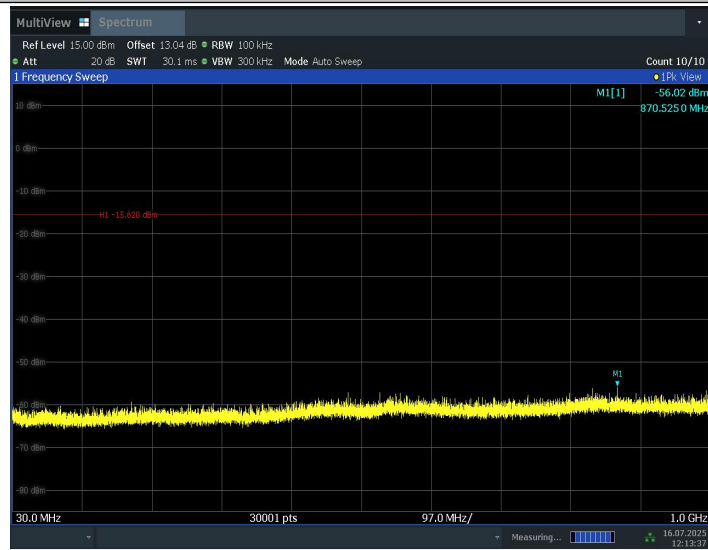
3DH5\_2441\_1000~26500



3DH5\_2480\_0~Reference

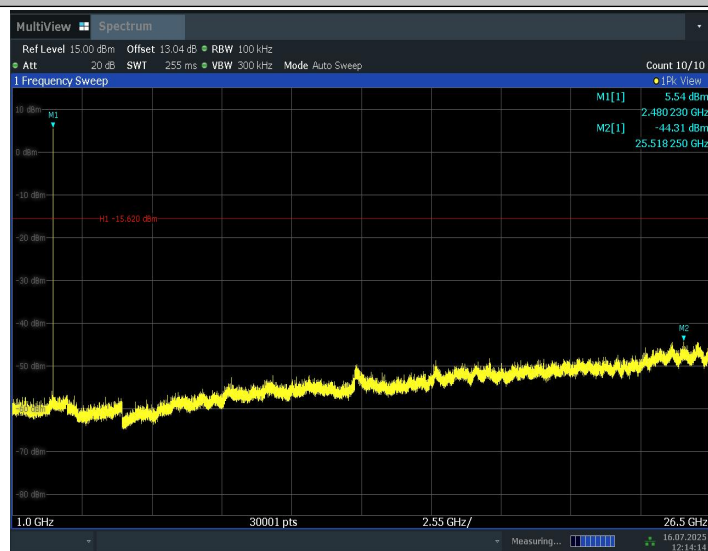


### 3DH5\_2480\_30~1000



12:13:37 16.07.2025

### 3DH5\_2480\_1000~26500



12:14:14 16.07.2025

## B.5. Radiated Unwanted Emission

### Limits

#### Measurement Limit

| Standard                               | Limit                        |
|----------------------------------------|------------------------------|
| FCC 47 CFR Part 15.247, 15.205, 15.209 | 20dB below peak output power |

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)).

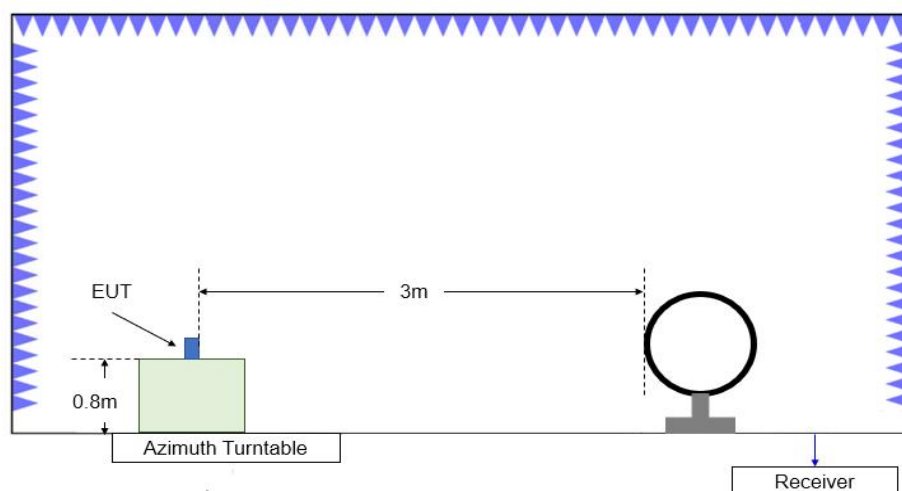
#### Limit in restricted band

| Frequency (MHz) | Field strength( $\mu\text{V/m}$ ) | Measurement distance (m) |
|-----------------|-----------------------------------|--------------------------|
| 0.009 - 0.490   | $2400/F(\text{kHz})$              | 300                      |
| 0.490 - 1.705   | $24000/F(\text{kHz})$             | 30                       |
| 1.705 – 30.0    | 30                                | 30                       |

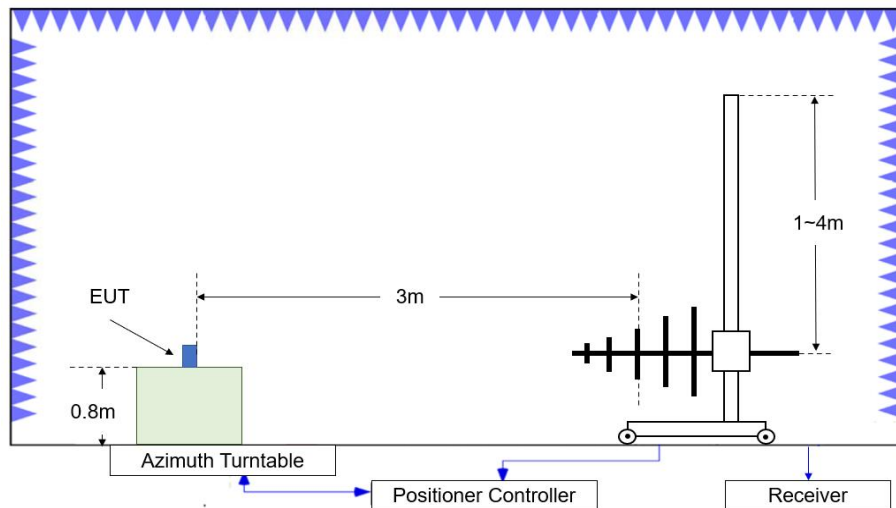
| Frequency of emission (MHz) | Field strength ( $\mu\text{V/m}$ ) | Field strength (dBuV/m) | Measurement distance (m) |
|-----------------------------|------------------------------------|-------------------------|--------------------------|
| 30-88                       | 100                                | 40                      | 3                        |
| 88-216                      | 150                                | 43.5                    | 3                        |
| 216-960                     | 200                                | 46                      | 3                        |
| Above 960                   | 500                                | 54                      | 3                        |

Note: When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor.

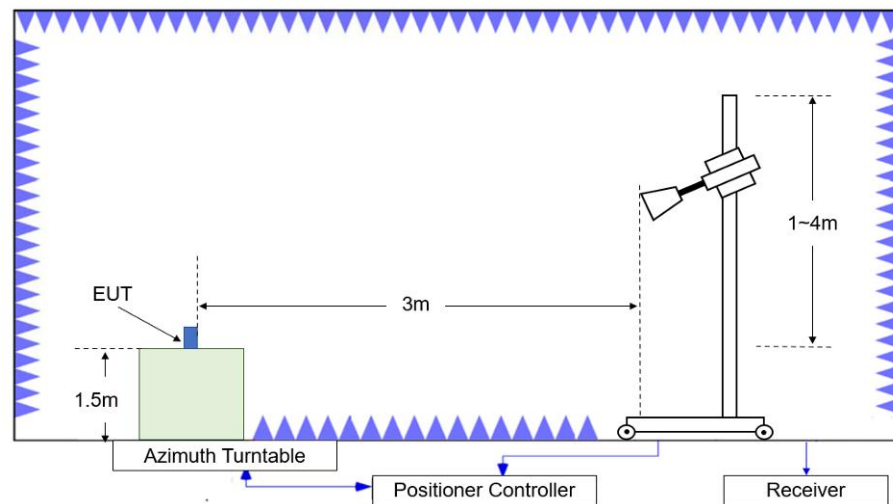
### Test setup



**Figure B.5.1. Test Site Diagram (9kHz-30MHz)**



**Figure B.5.2. Test Site Diagram (30MHz-1GHz)**



**Figure B.5.3. Test Site Diagram (1GHz-40GHz)**

### Test Procedures

Radiated unwanted emissions from the EUT were measured according to ANSI C63.10.

Test setting

| Frequency of emission (MHz) | RBW/VBW       | Sweep Time(s) |
|-----------------------------|---------------|---------------|
| 30-1000                     | 100kHz/300kHz | 5             |
| 1000-3000                   | 1MHz/3MHz     | 15            |
| 3000-18000                  | 1MHz/3MHz     | 40            |
| 18000-26500                 | 1MHz/3MHz     | 20            |

### Sample Calculation

A "reference path loss" is established and the  $A_{Rpl}$  is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

$P_{Mea}$  is the field strength recorded from the instrument.

The measurement results are obtained as described below:

Result= $P_{Mea}+A_{Rpl}= P_{Mea}+Cable\ Loss+Antenna\ Factor$

### Test note

1. Investigation has been done on all modes and modulations/data rates. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.
2. Spurious emissions for all channels were investigated and almost the same below 1GHz. According to FCC 47 CFR §15.31, emission levels are not report much lower than the limit by over 20dB
3. Measurement frequencies were performed from 9 kHz to the 10<sup>th</sup> harmonic of highest fundamental frequency.

### Test Result

**EUT ID: UT03a**

#### Peak Measurement results

##### GFSK Ch 0

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 2379.700        | 53.19                       | -23.5           | 31.9                  | 44.72                   | 74.0           | 20.8        | V                  |
| 2388.350        | 52.72                       | -23.6           | 32.0                  | 44.33                   | 74.0           | 21.3        | H                  |
| 4803.500        | 46.46                       | -32.0           | 34.3                  | 44.18                   | 74.0           | 27.5        | V                  |
| 7206.000        | 41.34                       | -29.7           | 35.6                  | 35.46                   | 74.0           | 32.7        | H                  |
| 9608.000        | 43.80                       | -27.1           | 36.7                  | 34.16                   | 74.0           | 30.2        | V                  |
| 12010.000       | 46.56                       | -23.7           | 38.6                  | 31.66                   | 74.0           | 27.4        | H                  |

##### GFSK Ch 39

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 2432.800        | 53.34                       | -23.6           | 32.1                  | 44.81                   | 74.0           | 20.7        | V                  |
| 2448.800        | 52.71                       | -23.0           | 32.2                  | 43.54                   | 74.0           | 21.3        | H                  |
| 4881.500        | 47.00                       | -32.0           | 34.2                  | 44.78                   | 74.0           | 27.0        | H                  |
| 7323.000        | 41.23                       | -30.0           | 35.8                  | 35.44                   | 74.0           | 32.8        | V                  |
| 9764.000        | 42.89                       | -27.4           | 37.1                  | 33.21                   | 74.0           | 31.1        | V                  |
| 12205.000       | 45.41                       | -23.4           | 38.7                  | 30.10                   | 74.0           | 28.6        | V                  |

##### GFSK Ch 78

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 2483.700        | 53.88                       | -23.2           | 32.2                  | 44.85                   | 74.0           | 20.1        | H                  |
| 2484.850        | 54.11                       | -23.1           | 32.2                  | 45.06                   | 74.0           | 19.9        | V                  |
| 4960.000        | 47.25                       | -31.3           | 34.1                  | 44.45                   | 74.0           | 26.7        | H                  |
| 7440.000        | 40.55                       | -29.3           | 35.7                  | 34.12                   | 74.0           | 33.5        | H                  |
| 9920.000        | 43.62                       | -27.2           | 37.3                  | 33.47                   | 74.0           | 30.4        | V                  |
| 12400.000       | 47.17                       | -23.8           | 38.7                  | 32.31                   | 74.0           | 26.8        | H                  |

#### $\pi/4$ DQPSK Ch 0

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 2386.550        | 52.89                       | -23.6           | 31.9                  | 44.53                   | 74.0           | 21.1        | V                  |
| 2388.300        | 52.39                       | -23.6           | 32.0                  | 44.01                   | 74.0           | 21.6        | H                  |
| 4804.500        | 43.40                       | -32.0           | 34.3                  | 41.12                   | 74.0           | 30.6        | V                  |
| 7206.000        | 40.71                       | -29.7           | 35.6                  | 34.83                   | 74.0           | 33.3        | V                  |
| 9608.000        | 44.31                       | -27.1           | 36.7                  | 34.67                   | 74.0           | 29.7        | V                  |
| 12010.000       | 46.06                       | -23.7           | 38.6                  | 31.17                   | 74.0           | 27.9        | H                  |

#### $\pi/4$ DQPSK Ch 39

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 2432.400        | 52.20                       | -23.6           | 32.1                  | 43.68                   | 74.0           | 21.8        | H                  |
| 2450.000        | 53.25                       | -22.9           | 32.2                  | 43.98                   | 74.0           | 20.8        | V                  |
| 4882.000        | 43.54                       | -32.0           | 34.2                  | 41.30                   | 74.0           | 30.5        | H                  |
| 7323.000        | 41.53                       | -30.0           | 35.8                  | 35.74                   | 74.0           | 32.5        | H                  |
| 9764.000        | 43.48                       | -27.4           | 37.1                  | 33.80                   | 74.0           | 30.5        | V                  |
| 12205.000       | 46.36                       | -23.4           | 38.7                  | 31.05                   | 74.0           | 27.6        | V                  |

#### $\pi/4$ DQPSK Ch 78

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 2483.550        | 53.66                       | -23.2           | 32.2                  | 44.64                   | 74.0           | 20.3        | H                  |
| 2484.050        | 53.55                       | -23.2           | 32.2                  | 44.51                   | 74.0           | 20.5        | H                  |
| 4960.000        | 44.78                       | -31.3           | 34.1                  | 41.98                   | 74.0           | 29.2        | V                  |
| 7440.000        | 41.30                       | -29.3           | 35.7                  | 34.87                   | 74.0           | 32.7        | H                  |
| 9920.000        | 43.13                       | -27.2           | 37.3                  | 32.98                   | 74.0           | 30.9        | V                  |
| 12400.000       | 48.10                       | -23.8           | 38.7                  | 33.24                   | 74.0           | 25.9        | V                  |



### 8DPSK Ch 0

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 2386.300        | 52.26                       | -23.6           | 31.9                  | 43.91                   | 74.0           | 21.7        | V                  |
| 2388.700        | 52.98                       | -23.6           | 32.0                  | 44.58                   | 74.0           | 21.0        | V                  |
| 4803.000        | 43.41                       | -32.0           | 34.3                  | 41.13                   | 74.0           | 30.6        | V                  |
| 7206.000        | 41.75                       | -29.7           | 35.6                  | 35.88                   | 74.0           | 32.2        | V                  |
| 9608.000        | 43.26                       | -27.1           | 36.7                  | 33.62                   | 74.0           | 30.7        | V                  |
| 12010.000       | 46.08                       | -23.7           | 38.6                  | 31.18                   | 74.0           | 27.9        | V                  |

### 8DPSK Ch 39

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 2434.800        | 53.00                       | -23.6           | 32.1                  | 44.47                   | 74.0           | 21.0        | H                  |
| 2450.400        | 53.15                       | -22.9           | 32.2                  | 43.86                   | 74.0           | 20.9        | H                  |
| 4882.000        | 43.68                       | -32.0           | 34.2                  | 41.44                   | 74.0           | 30.3        | H                  |
| 7323.000        | 42.33                       | -30.0           | 35.8                  | 36.54                   | 74.0           | 31.7        | H                  |
| 9764.000        | 43.57                       | -27.4           | 37.1                  | 33.90                   | 74.0           | 30.4        | H                  |
| 12205.000       | 46.59                       | -23.4           | 38.7                  | 31.28                   | 74.0           | 27.4        | V                  |

### 8DPSK Ch 78

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 2484.200        | 53.50                       | -23.2           | 32.2                  | 44.46                   | 74.0           | 20.5        | H                  |
| 2484.600        | 53.65                       | -23.2           | 32.2                  | 44.61                   | 74.0           | 20.3        | V                  |
| 4959.500        | 45.03                       | -31.3           | 34.1                  | 42.22                   | 74.0           | 29.0        | H                  |
| 7440.000        | 41.39                       | -29.3           | 35.7                  | 34.97                   | 74.0           | 32.6        | V                  |
| 9920.000        | 43.01                       | -27.2           | 37.3                  | 32.86                   | 74.0           | 31.0        | H                  |
| 12400.000       | 45.87                       | -23.8           | 38.7                  | 31.01                   | 74.0           | 28.1        | V                  |

## Average Measurement results

### GFSK Ch 0

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 2374.000        | 41.58                       | -23.5           | 31.9                  | 33.17                   | 54.0           | 12.4        | V                  |
| 2388.000        | 41.95                       | -23.6           | 32.0                  | 33.57                   | 54.0           | 12.0        | V                  |
| 4804.000        | 43.46                       | -32.0           | 34.3                  | 41.17                   | 54.0           | 10.5        | V                  |
| 7206.000        | 32.63                       | -29.7           | 35.6                  | 26.76                   | 54.0           | 21.4        | V                  |
| 9608.000        | 34.20                       | -27.1           | 36.7                  | 24.57                   | 54.0           | 19.8        | V                  |
| 12010.000       | 38.13                       | -23.7           | 38.6                  | 23.23                   | 54.0           | 15.9        | V                  |

### GFSK Ch 39

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 2436.000        | 43.02                       | -23.6           | 32.1                  | 34.48                   | 54.0           | 11.0        | V                  |
| 2446.400        | 43.56                       | -23.2           | 32.2                  | 34.55                   | 54.0           | 10.4        | V                  |
| 4882.000        | 43.98                       | -32.0           | 34.2                  | 41.74                   | 54.0           | 10.0        | V                  |
| 7323.000        | 32.21                       | -30.0           | 35.8                  | 26.42                   | 54.0           | 21.8        | H                  |
| 9764.000        | 33.92                       | -27.4           | 37.1                  | 24.25                   | 54.0           | 20.1        | V                  |
| 12205.000       | 36.72                       | -23.4           | 38.7                  | 21.41                   | 54.0           | 17.3        | H                  |

### GFSK Ch 78

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 2484.800        | 44.21                       | -23.1           | 32.2                  | 35.15                   | 54.0           | 9.8         | V                  |
| 2487.200        | 44.00                       | -23.1           | 32.2                  | 34.87                   | 54.0           | 10.0        | V                  |
| 4960.000        | 45.15                       | -31.3           | 34.1                  | 42.34                   | 54.0           | 8.9         | V                  |
| 7440.000        | 31.86                       | -29.3           | 35.7                  | 25.44                   | 54.0           | 22.1        | H                  |
| 9920.000        | 33.57                       | -27.2           | 37.3                  | 23.43                   | 54.0           | 20.4        | H                  |
| 12400.000       | 36.51                       | -23.8           | 38.7                  | 21.65                   | 54.0           | 17.5        | V                  |

#### $\pi/4$ DQPSK Ch 0

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 2381.600        | 41.97                       | -23.5           | 31.9                  | 33.55                   | 54.0           | 12.0        | V                  |
| 2390.000        | 41.87                       | -23.5           | 32.0                  | 33.45                   | 54.0           | 12.1        | V                  |
| 4804.000        | 41.38                       | -32.0           | 34.3                  | 39.10                   | 54.0           | 12.6        | V                  |
| 7206.000        | 32.25                       | -29.7           | 35.6                  | 26.37                   | 54.0           | 21.8        | V                  |
| 9608.000        | 34.26                       | -27.1           | 36.7                  | 24.62                   | 54.0           | 19.7        | H                  |
| 12010.000       | 37.25                       | -23.7           | 38.6                  | 22.36                   | 54.0           | 16.7        | V                  |

#### $\pi/4$ DQPSK Ch 39

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 2434.800        | 42.96                       | -23.6           | 32.1                  | 34.43                   | 54.0           | 11.0        | V                  |
| 2449.200        | 43.76                       | -23.0           | 32.2                  | 34.55                   | 54.0           | 10.2        | V                  |
| 4882.000        | 41.89                       | -32.0           | 34.2                  | 39.65                   | 54.0           | 12.1        | V                  |
| 7323.000        | 32.21                       | -30.0           | 35.8                  | 26.42                   | 54.0           | 21.8        | H                  |
| 9764.000        | 34.32                       | -27.4           | 37.1                  | 24.65                   | 54.0           | 19.7        | V                  |
| 12205.000       | 37.15                       | -23.4           | 38.7                  | 21.83                   | 54.0           | 16.9        | H                  |

#### $\pi/4$ DQPSK Ch 78

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 2485.600        | 43.52                       | -23.1           | 32.2                  | 34.45                   | 54.0           | 10.5        | V                  |
| 2492.800        | 43.95                       | -22.9           | 32.2                  | 34.70                   | 54.0           | 10.1        | V                  |
| 4960.000        | 43.13                       | -31.3           | 34.1                  | 40.32                   | 54.0           | 10.9        | V                  |
| 7440.000        | 31.56                       | -29.3           | 35.7                  | 25.13                   | 54.0           | 22.4        | V                  |
| 9920.000        | 33.47                       | -27.2           | 37.3                  | 23.33                   | 54.0           | 20.5        | V                  |
| 12400.000       | 36.43                       | -23.8           | 38.7                  | 21.57                   | 54.0           | 17.6        | V                  |

### 8DPSK Ch 0

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 2380.400        | 42.12                       | -23.5           | 31.9                  | 33.67                   | 54.0           | 11.9        | V                  |
| 2387.600        | 42.06                       | -23.6           | 32.0                  | 33.69                   | 54.0           | 11.9        | V                  |
| 4804.000        | 38.21                       | -32.0           | 34.3                  | 35.92                   | 54.0           | 15.8        | V                  |
| 7206.000        | 32.50                       | -29.7           | 35.6                  | 26.62                   | 54.0           | 21.5        | V                  |
| 9608.000        | 34.83                       | -27.1           | 36.7                  | 25.19                   | 54.0           | 19.2        | H                  |
| 12010.000       | 37.42                       | -23.7           | 38.6                  | 22.53                   | 54.0           | 16.6        | V                  |

### 8DPSK Ch 39

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 2435.200        | 42.90                       | -23.6           | 32.1                  | 34.36                   | 54.0           | 11.1        | V                  |
| 2447.200        | 43.26                       | -23.1           | 32.2                  | 34.20                   | 54.0           | 10.7        | V                  |
| 4882.000        | 41.03                       | -32.0           | 34.2                  | 38.79                   | 54.0           | 13.0        | V                  |
| 7323.000        | 31.92                       | -30.0           | 35.8                  | 26.13                   | 54.0           | 22.1        | V                  |
| 9764.000        | 34.14                       | -27.4           | 37.1                  | 24.46                   | 54.0           | 19.9        | H                  |
| 12205.000       | 36.46                       | -23.4           | 38.7                  | 21.14                   | 54.0           | 17.5        | V                  |

### 8DPSK Ch 78

| Frequency (MHz) | Measurement Result (dBuV/m) | Cable Loss (dB) | Antenna Factor (dB/m) | Receiver Reading (dBuV) | Limit (dBuV/m) | Margin (dB) | Antenna Pol. (H/V) |
|-----------------|-----------------------------|-----------------|-----------------------|-------------------------|----------------|-------------|--------------------|
| 2484.800        | 43.84                       | -23.1           | 32.2                  | 34.78                   | 54.0           | 10.2        | V                  |
| 2485.600        | 43.38                       | -23.1           | 32.2                  | 34.31                   | 54.0           | 10.6        | V                  |
| 4960.000        | 42.91                       | -31.3           | 34.1                  | 40.11                   | 54.0           | 11.1        | H                  |
| 7440.000        | 31.73                       | -29.3           | 35.7                  | 25.31                   | 54.0           | 22.3        | V                  |
| 9920.000        | 33.18                       | -27.2           | 37.3                  | 23.04                   | 54.0           | 20.8        | V                  |
| 12400.000       | 36.38                       | -23.8           | 38.7                  | 21.52                   | 54.0           | 17.6        | V                  |

### Conclusion: Pass

Note: the spurious emission above 18G is noise only and did not show on the report.

### Band edge compliance

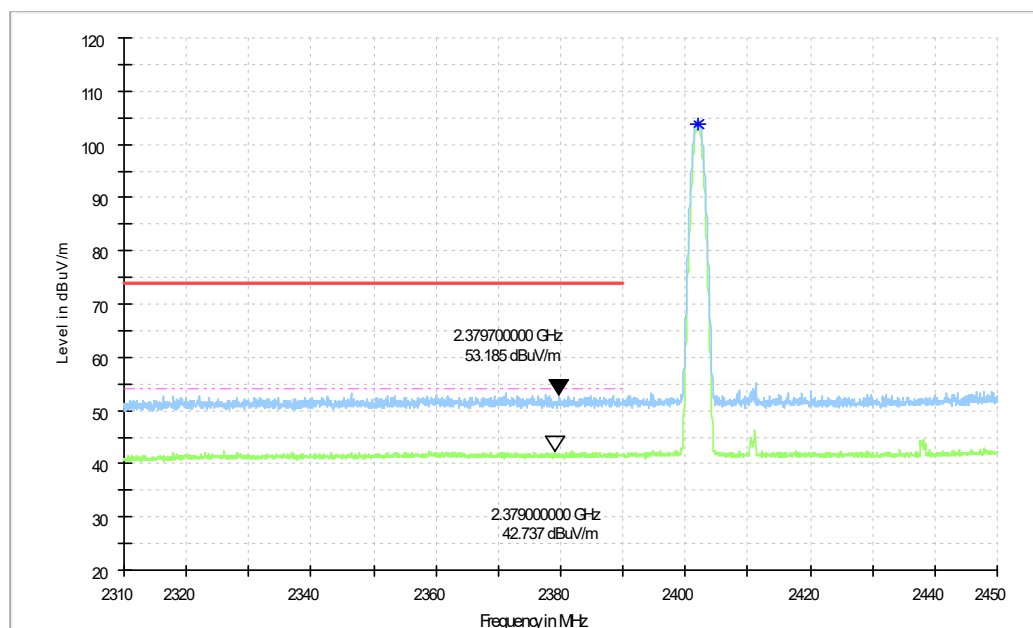
| Mode | Channel | Frequency Range  | Test Results | Conclusion |
|------|---------|------------------|--------------|------------|
| GFSK | 0       | 2.31GHz ~2.43GHz | Fig.1        | P          |
|      | 78      | 2.45GHz ~2.5GHz  | Fig.2        | P          |

| Mode          | Channel | Frequency Range  | Test Results | Conclusion |
|---------------|---------|------------------|--------------|------------|
| $\pi/4$ DQPSK | 0       | 2.31GHz ~2.43GHz | Fig.3        | P          |
|               | 78      | 2.45GHz ~2.5GHz  | Fig.4        | P          |

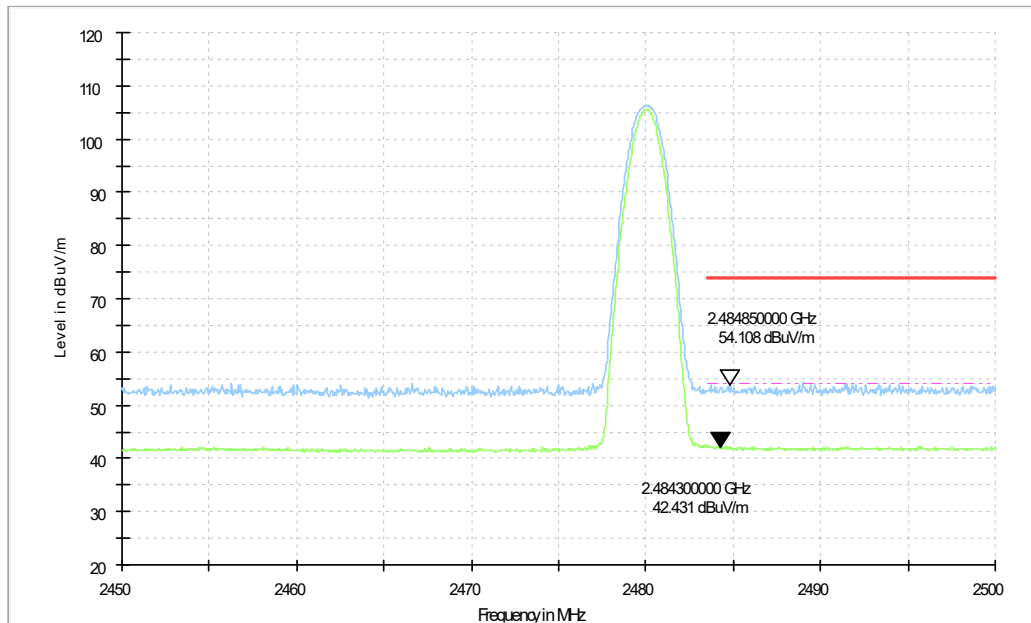
| Mode  | Channel | Frequency Range  | Test Results | Conclusion |
|-------|---------|------------------|--------------|------------|
| 8DPSK | 0       | 2.31GHz ~2.43GHz | Fig.5        | P          |
|       | 78      | 2.45GHz ~2.5GHz  | Fig.6        | P          |

**Conclusion: PASS**

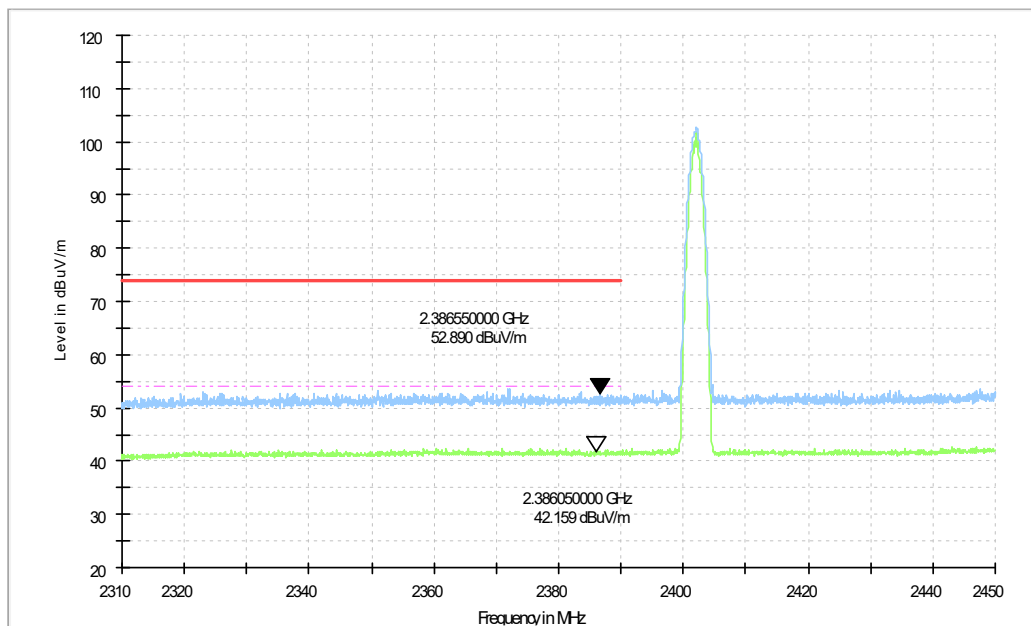
**Test graphs as below**



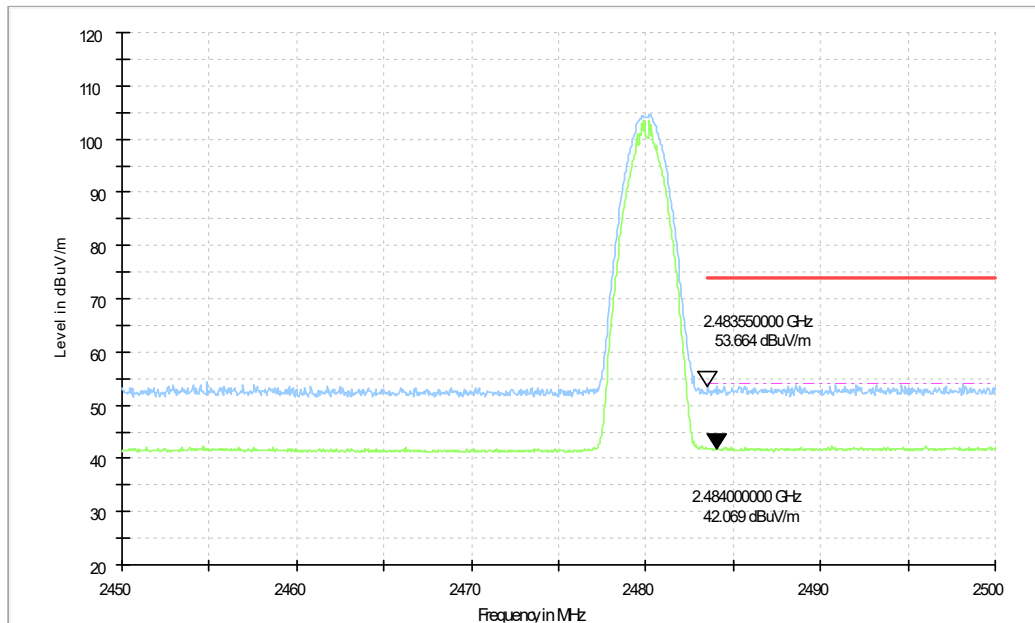
**Fig.1. Frequency Band Edges: GFSK, Channel 0, Hopping Off, 2.31 GHz – 2.45GHz**



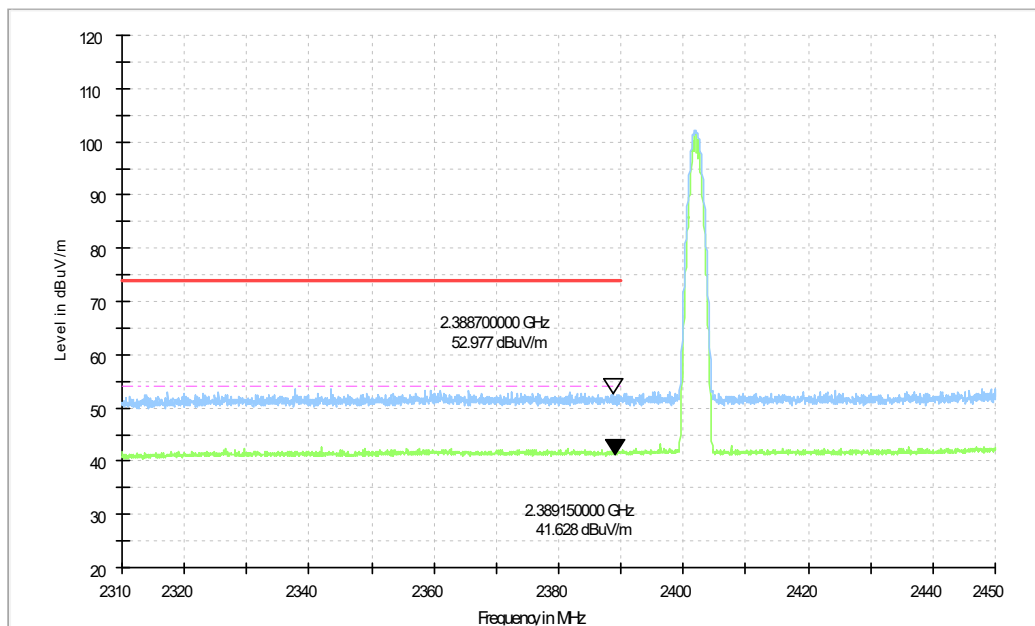
**Fig.2. Frequency Band Edges: GFSK, Channel 78, Hopping Off, ch11, 2.45 GHz - 2.50GHz**



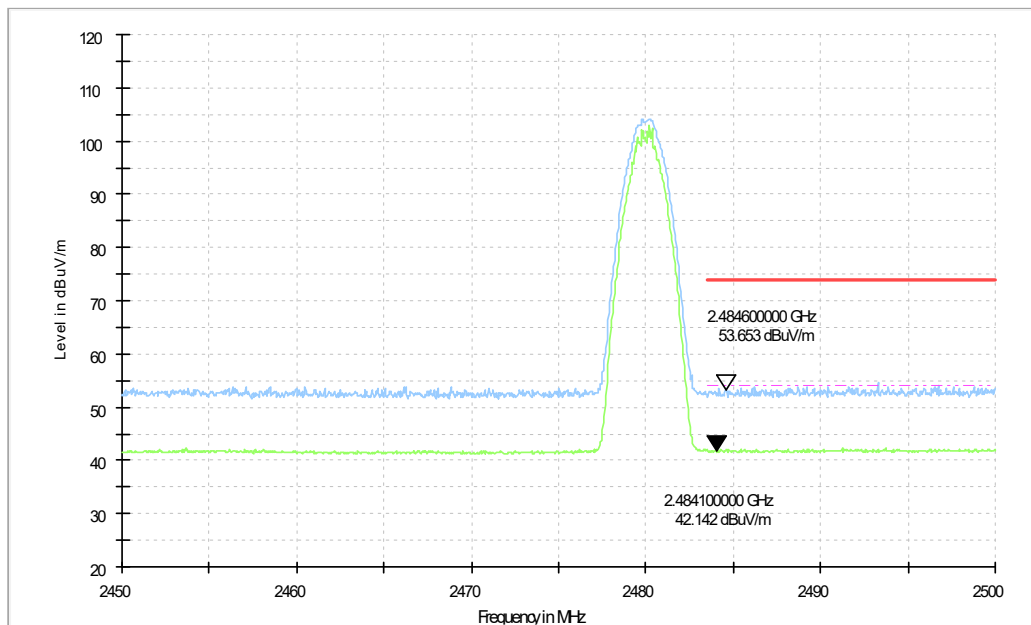
**Fig.3. Frequency Band Edges:  $\pi/4$  DQPSK, Channel 0, Hopping Off, 2.31 GHz - 2.45GHz**



**Fig.4. Frequency Band Edges:  $\pi/4$  DQPSK, Channel 78, Hopping Off, 2.45 GHz - 2.50GHz**



**Fig.5. Frequency Band Edges: 8DPSK, Channel 0, Hopping Off, 2.31 GHz - 2.45GHz**



**Fig.6. Frequency Band Edges: 8DPSK, Channel 78, Hopping Off, 2.45 GHz - 2.50GHz**