



Test report No:  
NIE: 61249RRF.004

## Test Report

USA FCC Part 15.247, 15.209  
CANADA RSS-247, RSS-Gen

Radio Frequency Devices. Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz.

Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices.

General Requirements and Information for the Certification of Radio Apparatus.

|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (*) Identification of item tested         | Multimedia System                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| (*) Trademark                             | Continental                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| (*) Model and /or type reference          | NAC EUR 19W2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Other identification of the product       | HW version: D2<br>SW version: 21.08.22.32<br>FCC ID: ZFW-HW19W2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| (*) Features                              | See on page 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Applicant                                 | CONTINENTAL AUTOMOTIVE RAMBOUILLET FRANCE S.A.S.<br>1, rue de Clairefontaine, Rambouillet, 78120, France                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Test method requested, standard           | USA FCC Part 15.247 10-1-18 Edition: Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, and 5725 - 5850 MHz.<br>USA FCC Part 15.209 10-1-18 Edition: Radiated emission limits; general requirements.<br>CANADA RSS-247 Issue 2 (February 2017).<br>CANADA RSS-Gen Issue 5 (April 2018).<br>Guidance for Performing Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid Systems Devices Operating Under Section 15.247 of the FCC Rules. 558074 D01 Meas Guidance v05r02 dated April 2, 2019.<br>ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices. |
| Summary                                   | IN COMPLIANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Approved by (name / position & signature) | Rafael López<br>EMC Consumer & RF Lab. Manager<br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Date of issue                             | 2019-10-23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Report template No                        | FDT08_22<br>(*) "Data provided by the client"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

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## Competences and guarantees

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DEKRA Testing and Certification is a FCC-recognized accredited testing laboratory with appropriate scope of accreditation that include testing performed in this test report.

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In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification S.A.U. has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification S.A.U. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Testing and Certification S.A.U. at the time of performance of the test.

DEKRA Testing and Certification S.A.U. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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## General conditions

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1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification S.A.U.
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## Uncertainty

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Uncertainty (factor  $k=2$ ) was calculated according to the DEKRA Testing and Certification S.A.U. internal document PODT000.

## Data provided by the client

---

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested").
2. The NAC EUR 19W2 is Multimedia Systems and OEM products for PSA.  
This product is connected to the BSI (Boitier de Servitude Intelligent) via a CAN Low Speed BUS.  
Two displays can be connected.
3. Features:
  - BT 3.0
  - WiFi b,g,n, 2.4 GHz only
  - Radio (AM, FM, DAB band III & L)

- Navigation (GPS, GLONASS, GALILEO, SBAS)
- External GMSL colour display, CAN interface to car, Internal Audio Amplifier, USB plug

DEKRA Testing and Certification S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of result.

## Usage of samples

Samples undergoing test have been selected by: The client.

- Sample S/01 is composed of the following elements:

| Control N° | Description                                    | Model        | Serial N°                      | Date of reception |
|------------|------------------------------------------------|--------------|--------------------------------|-------------------|
| 61249D/003 | Multimedia System                              | NAC EUR 19W2 | W2_BS1922000007<br>3_TOP_RF_RE | 2019/07/23        |
| 61249D/034 | CAN Traffic Simulator (C6)                     | --           | 00010                          | 2019/07/23        |
| 61249D/039 | CSR Interface SDIO card                        | --           | 00015                          | 2019/07/23        |
| 61249D/043 | Ultra Light Harness –<br>FAKRA Block Connector | --           | 00019                          | 2019/07/23        |

Sample S/01 has undergone the following test(s): All RADIATED tests indicated in Appendixes A and B.

- Sample S/02 is composed of the following elements:

| Control N° | Description                                    | Model        | Serial N°                      | Date of reception |
|------------|------------------------------------------------|--------------|--------------------------------|-------------------|
| 61249D/002 | Multimedia System                              | NAC EUR 19W2 | W2_BS1922000007<br>3_TOP_RF_RE | 2019/07/23        |
| 61249D/034 | CAN Traffic Simulator (C6)                     | --           | 00010                          | 2019/07/23        |
| 61249D/039 | CSR Interface SDIO card                        | --           | 00015                          | 2019/07/23        |
| 61249D/043 | Ultra Light Harness –<br>FAKRA Block Connector | --           | 00019                          | 2019/07/23        |

Sample S/02 has undergone the following test(s): All CONDUCTED tests indicated in Appendixes A and B.

## Test sample description

| Ports..... : | Port name and description                   | Cable                    |                          |                          |                                   |
|--------------|---------------------------------------------|--------------------------|--------------------------|--------------------------|-----------------------------------|
|              |                                             | Specified max length [m] | Attached during test     | Shielded                 | Coupled to patient <sup>(3)</sup> |
|              | Power Supply<br>(EMC; Safety & RF cables)   | 2                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>          |
|              | CAN LS<br>(EMC; Safety & RF cables)         | 2                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>          |
|              | Loudspeakers<br>(EMC & Safety cables)       | 2                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>          |
|              | Video Input<br>(EMC & Safety cables)        | 2                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>          |
|              | CD Power<br>(EMC & Safety cables)           | 2                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>          |
|              | CD Audio In<br>(EMC & Safety cables)        | 2                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>          |
|              | Line Out Subwoofer<br>(EMC & Safety cables) | 2                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>          |
|              | Line Out Central<br>(EMC & Safety cables)   | 2                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>          |
|              | AUX In Stereo<br>(EMC & Safety cables)      | 2                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>          |
|              | Microphone 1<br>(EMC & Safety cables)       | 2                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>          |

|                                              |                                                                                                                                                                                                  |                                |                          |                          |                          |                          |                          |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                                              | Microphone 2<br>(EMC & Safety cables)                                                                                                                                                            | 2                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                          |                          |
| Supplementary information to the ports.....: | 2 Harness configurations<br>1 <sup>st</sup> configuration is complete and used for the EMC & Safety tests<br>2 <sup>nd</sup> configuration is lighter and used for the RF tests (Power + CAN LS) |                                |                          |                          |                          |                          |                          |
| Rated power supply .....                     | Voltage and Frequency                                                                                                                                                                            |                                | Reference poles          |                          |                          |                          |                          |
|                                              |                                                                                                                                                                                                  |                                | L1                       | L2                       | L3                       | N                        | PE                       |
|                                              | <input type="checkbox"/>                                                                                                                                                                         | AC:                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                                              | <input type="checkbox"/>                                                                                                                                                                         | AC:                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                                              | <input checked="" type="checkbox"/>                                                                                                                                                              | DC: 12 V                       |                          |                          |                          |                          |                          |
|                                              | <input type="checkbox"/>                                                                                                                                                                         | DC:                            |                          |                          |                          |                          |                          |
| Rated Power .....                            | 12 V – 15 A => 180 W                                                                                                                                                                             |                                |                          |                          |                          |                          |                          |
| Clock frequencies .....                      | Max. Frequency = Bluetooth F <sub>max</sub> 2.4835 GHz                                                                                                                                           |                                |                          |                          |                          |                          |                          |
| Other parameters.....:                       | FCC ID: ZFW-HW19W2                                                                                                                                                                               |                                |                          |                          |                          |                          |                          |
| Software version .....                       | 21.08.22.32                                                                                                                                                                                      |                                |                          |                          |                          |                          |                          |
| Hardware version.....:                       | D2                                                                                                                                                                                               |                                |                          |                          |                          |                          |                          |
| Dimensions in cm (W x H x D).....:           | 22 x 5.2 x 16                                                                                                                                                                                    |                                |                          |                          |                          |                          |                          |
| Mounting position.....:                      | <input type="checkbox"/>                                                                                                                                                                         | Table top equipment            |                          |                          |                          |                          |                          |
|                                              | <input type="checkbox"/>                                                                                                                                                                         | Wall/Ceiling mounted equipment |                          |                          |                          |                          |                          |
|                                              | <input type="checkbox"/>                                                                                                                                                                         | Floor standing equipment       |                          |                          |                          |                          |                          |
|                                              | <input type="checkbox"/>                                                                                                                                                                         | Hand-held equipment            |                          |                          |                          |                          |                          |
|                                              | <input checked="" type="checkbox"/>                                                                                                                                                              | Other: Car Dashboard Equipment |                          |                          |                          |                          |                          |
| Modules/parts .....                          | Module/parts of test item                                                                                                                                                                        |                                | Type                     | Manufacturer             |                          |                          |                          |
|                                              |                                                                                                                                                                                                  |                                |                          |                          |                          |                          |                          |
|                                              |                                                                                                                                                                                                  |                                |                          |                          |                          |                          |                          |
|                                              |                                                                                                                                                                                                  |                                |                          |                          |                          |                          |                          |
|                                              |                                                                                                                                                                                                  |                                |                          |                          |                          |                          |                          |
| Accessories (not part of the test            | Description                                                                                                                                                                                      |                                | Type                     | Manufacturer             |                          |                          |                          |

|                                                 |                          |                                        |                        |
|-------------------------------------------------|--------------------------|----------------------------------------|------------------------|
| item) .....                                     | GPS Antenna              | Antenna<br>GPS7 M-<br>Fakra<br>Femelle | HIRSCHMAN<br>N         |
|                                                 | AM/FM/DAB antenna        | RDA 015-<br>1450 RD/S                  | HIRSCHMAN<br>N         |
|                                                 | CAN SIM Box              | C6                                     | RIEDERER<br>ELEKTRONIK |
|                                                 |                          |                                        |                        |
|                                                 |                          |                                        |                        |
|                                                 |                          |                                        |                        |
| Documents as provided by the<br>applicant.....: | Description              | File name                              | Issue date             |
|                                                 | Technical Specifications | HW2019_B<br>T.pdf                      |                        |
|                                                 | Technical Specifications | HW2019_W<br>iFi.pdf                    |                        |

## Identification of the client

CONTINENTAL AUTOMOTIVE RAMBOUILLET FRANCE S.A.S.  
1, rue de Clairefontaine 78120 Rambouillet France

## Testing period and place

|               |                                        |
|---------------|----------------------------------------|
| Test Location | DEKRA Testing and Certification S.A.U. |
| Date (start)  | 2019-07-29                             |
| Date (finish) | 2019-09-06                             |

## Document history

| Report number | Date       | Description   |
|---------------|------------|---------------|
| 61249RRF.004  | 2019-10-23 | First release |

## Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

|                   |                                     |
|-------------------|-------------------------------------|
| Temperature       | Min. = 15 °C<br>Max. = 35 °C        |
| Relative humidity | Min. = 20 %<br>Max. = 75 %          |
| Air pressure      | Min. = 860 mbar<br>Max. = 1060 mbar |

In the semianechoic chamber, the following limits were not exceeded during the test.

|                   |                                     |
|-------------------|-------------------------------------|
| Temperature       | Min. = 15 °C<br>Max. = 35 °C        |
| Relative humidity | Min. = 20 %<br>Max. = 75 %          |
| Air pressure      | Min. = 860 mbar<br>Max. = 1060 mbar |

In the chamber for conducted measurements, the following limits were not exceeded during the test:

|                   |                                     |
|-------------------|-------------------------------------|
| Temperature       | Min. = 15 °C<br>Max. = 35 °C        |
| Relative humidity | Min. = 20 %<br>Max. = 35 %          |
| Air pressure      | Min. = 860 mbar<br>Max. = 1060 mbar |

## Remarks and comments

The tests have been performed by the technical personnel: Miguel Ángel Torres, Ignacio Cabra, José Gabriel Pendón.

Used instrumentation:

### Conducted Measurements:

|                                                                      | Last Calibration | Due Calibration |
|----------------------------------------------------------------------|------------------|-----------------|
| 1. Shielded Room ETS LINDGREN S101                                   | N.A.             | N.A.            |
| 2. Bluetooth Test Set ANRITSU MT8852B                                | N.A.             | N.A.            |
| 3. Spectrum Analyzer PSA 3Hz-26.5 GHz<br>AGILENT TECHNOLOGIES E4440A | 2017/10          | 2019/10         |
| 4. Signal and Spectrum Analyzer ROHDE AND<br>SCHWARZ FSV40           | 2018/02          | 2020/02         |
| 5. DC power supply R&S NGPE 40/40                                    | 2018/02          | 2021/02         |
| 6. Wideband Power Sensor ROHDE AND<br>SCHWARZ Z-81                   | 2017/06          | 2019/06         |

### Radiated Measurements:

|                                                                                  | Last Calibration | Due Calibration |
|----------------------------------------------------------------------------------|------------------|-----------------|
| 1. Semianechoic Absorber Lined Chamber ETS<br>LINDGREN FACT 3 200 STP            | N.A.             | N.A.            |
| 2. EMI Test Receiver ROHDE AND SCHWARZ<br>ESR7                                   | 2018/10          | 2020/10         |
| 3. RF Pre-amplifier 40 dB, 10 MHz-6 GHz BONN<br>ELEKTRONIK BLNA 0160-01N         | 2019/02          | 2020/08         |
| 4. Biconical/Log Antenna ETS LINDGREN<br>3142E                                   | 2017/09          | 2020/09         |
| 5. Signal and Spectrum Analyzer ROHDE AND<br>SCHWARZ FSV40                       | 2018/02          | 2020/02         |
| 6. RF Pre-amplifier 30 dB, 1-18GHz BONN<br>ELEKTRONIK BLMA 0118-3A               | 2019/04          | 2020/04         |
| 7. Broadband Horn antenna 1-18 GHz<br>SCHWARZBECK MESS-ELEKTRONIK BBHA<br>9120 D | 2018/01          | 2021/01         |
| 8. RF Pre-amplifier 30 dB, 18 GHz-40 GHz<br>BONN ELEKTRONIK BLMA 1840-1M         | 2019/02          | 2021/02         |
| 9. Broadband Horn antenna 18-40 GHz<br>SCHWARZBECK BBHA 9170                     | 2018/07          | 2021/07         |

## Testing verdicts

|                 |     |
|-----------------|-----|
| Not applicable: | N/A |
| Pass:           | P   |
| Fail:           | F   |
| Not measured:   | N/M |

## Summary

### 1. Bluetooth EDR

| FCC PART 15 PARAGRAPH / RSS-247                               |                                                  |         |        |
|---------------------------------------------------------------|--------------------------------------------------|---------|--------|
| Requirement – Test case                                       |                                                  | Verdict | Remark |
| Section 15.247 Subclause (a) (1) / RSS-247 5.1. (b)           | 20 dB Bandwidth and Carrier frequency separation | P       |        |
| Section 15.247 Subclause (a)(1)(iii) / RSS-247 Clause 5.1 (d) | Number of hopping channels                       | P       |        |
| Section 15.247 Subclause (a)(1)(iii) / RSS-247 Clause 5.1 (d) | Time of occupancy (Dwell Time)                   | P       |        |
| Section 15.247 Subclause (b) / RSS-247 5.4. (b)               | Maximum peak output power and antenna gain       | P       |        |
| Section 15.247 Subclause (d) / RSS-247 5.5.                   | Band-edge emissions compliance (Transmitter)     | P       |        |
| Section 15.247 Subclause (d) / RSS-247 5.5                    | Emission limitations conducted (Transmitter)     | P       |        |
| Section 15.247 Subclause (d) / RSS-247 5.5.                   | Emission limitations radiated (Transmitter)      | P       |        |
| <u>Supplementary information and remarks:</u><br>None.        |                                                  |         |        |

### 2. Wi-Fi 2.4 GHz (802.11 b/g/n20 1x1).

| FCC PART 15 PARAGRAPH / RSS-247                        |                                              |         |        |
|--------------------------------------------------------|----------------------------------------------|---------|--------|
| Requirement – Test case                                |                                              | Verdict | Remark |
| Section 15.247 Subclause (a) (2) / RSS-247 5.2. (a)    | 6 dB Bandwidth                               | P       |        |
| Section 15.247 Subclause (b) / RSS-247 5.4. (d)        | Maximum output power and antenna gain        | P       |        |
| Section 15.247 Subclause (d) / RSS-247 5.5             | Emission limitations conducted (Transmitter) | P       |        |
| Section 15.247 Subclause (d) / RSS-247 5.5.            | Band-edge emissions compliance (Transmitter) | P       |        |
| Section 15.247 Subclause (e) / RSS-247 5.2. (b)        | Power spectral density                       | P       |        |
| Section 15.247 Subclause (d) / RSS-247 5.5.            | Emission limitations radiated (Transmitter)  | P       |        |
| <u>Supplementary information and remarks:</u><br>None. |                                              |         |        |

## **Appendix A: Test results. Bluetooth EDR (GFSK, Pi/4 DQPSK, 8DPSK)**

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FCC Section 15.247 Subclause (a) (1) / RSS-247 Clause 5.1. (b) 20 dB Bandwidth and Carrier frequency separation. ....16

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FCC Section 15.247 Subclause (a)(1)(iii) / RSS-247 Clause 5.1 (d) Time of occupancy (Dwell Time).....29

FCC Section 15.247 Subclause (b) / RSS-247 Clause 5.4 (b) Maximum peak output power and antenna gain .....35

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FCC Section 15.247 Subclause (d) / RSS-247 Clause 5.5. Emission limitations radiated. (Transmitter) .....57

## TEST CONDITIONS

### POWER SUPPLY (V):

V nominal: 12 Vdc  
Type of Power Supply: External power supply (car battery).  
Type of Antenna: Internal (printed).  
Maximum Declared Antenna Gain: -0.99 dBi.

### TEST FREQUENCIES:

Low Channel: 2402 MHz  
Middle Channel: 2441 MHz  
High Channel: 2480 MHz

### CONDUCTED MEASUREMENTS:

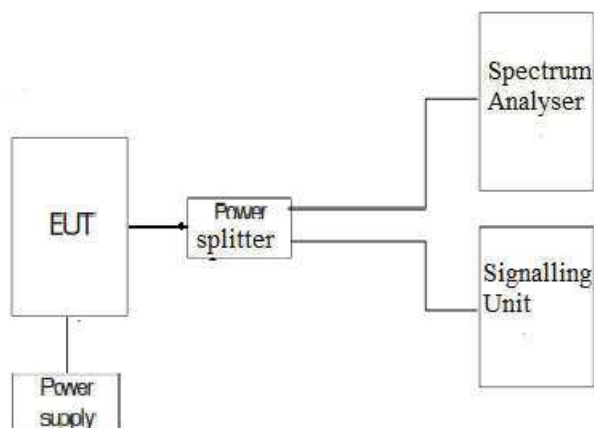
#### Hopping mode OFF:

The equipment under test was set up in a shielded room and it is connected to the spectrum analyser using a low loss RF cable. The reading of the spectrum analyser is corrected taking into account the cable loss.



#### Hopping mode ON:

The equipment under test was set up in a shielded room and it is connected to a Bluetooth signalling unit (Bluetooth test set) and to the spectrum analyzer using a 6 dB power splitter. The reading in the spectrum analyzer is corrected taking into account the power splitter loss.



The DC supply voltage is applied using an external calibrated power supply.

## RADIATED MEASUREMENTS:

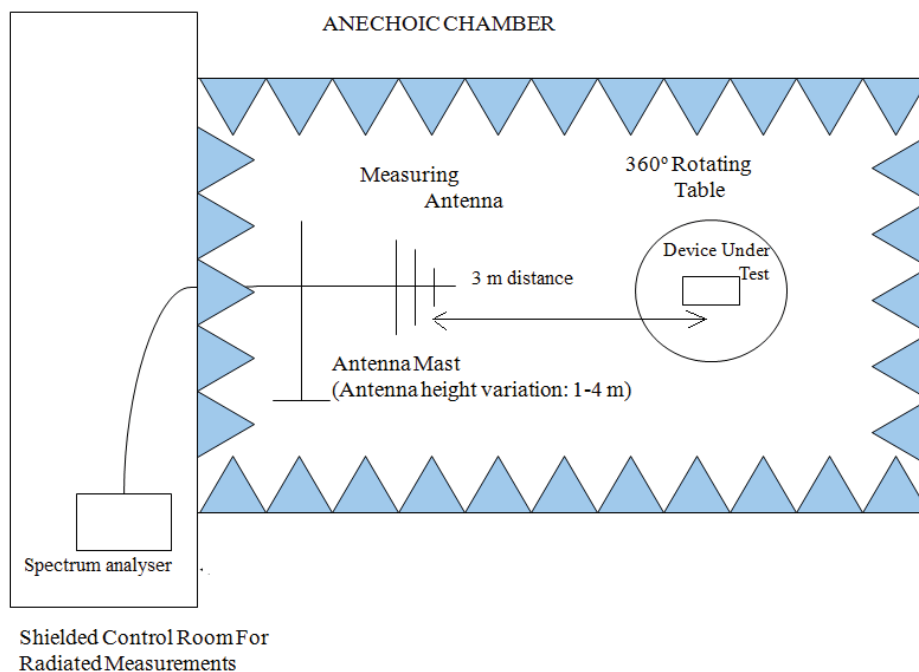
All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Bilog antenna for the range between 30 MHz to 1000 MHz) is situated at a distance of 3 m and at a distance of 1m for the frequency range 1 GHz-26 GHz (1 GHz-18 GHz Double ridge horn antenna and 18 GHz-40 GHz horn antenna).

For radiated emissions in the range 1 GHz-26 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

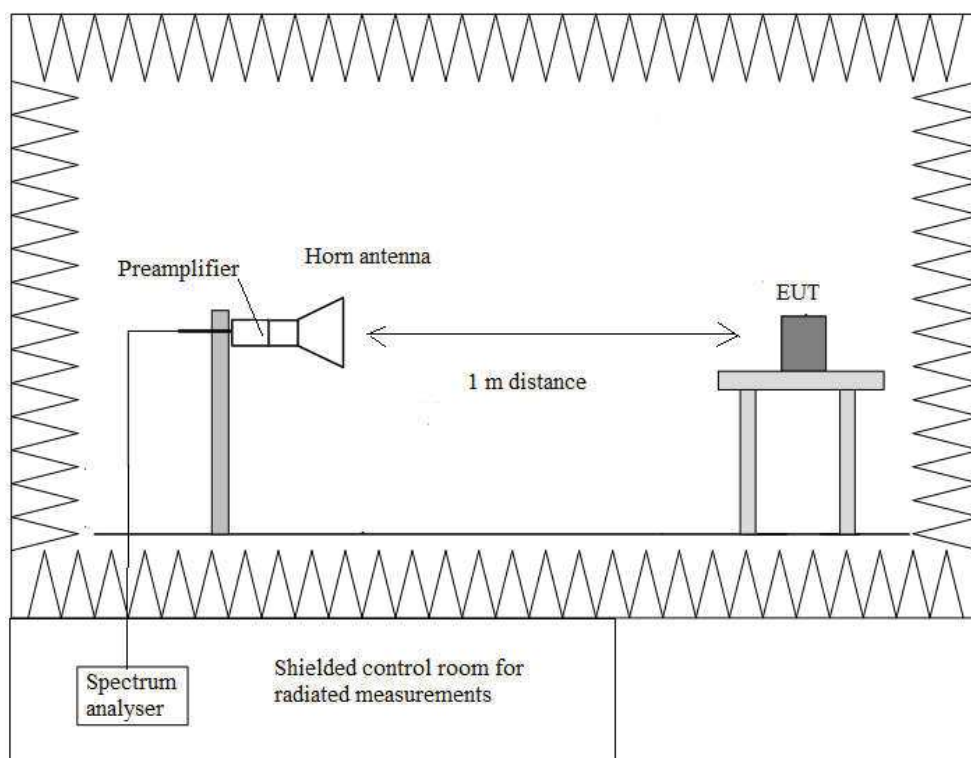
The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height (Bilog antenna and Double ridge horn antenna) was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup  $f > 1$  GHz:



## FCC Section 15.247 Subclause (a) (1) / RSS-247 Clause 5.1. (b) 20 dB Bandwidth and Carrier frequency separation.

### SPECIFICATION:

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. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

### RESULTS:

- GFSK**

|                                | Low Channel<br>2402 MHz | Middle Channel<br>2441 MHz | High Channel<br>2480 MHz |
|--------------------------------|-------------------------|----------------------------|--------------------------|
| 20 dB Spectrum Bandwidth (kHz) | 959.59                  | 962.35                     | 959.36                   |
| 99% Bandwidth (kHz)            | 863.15                  | 867.70                     | 865.12                   |
| Measurement uncertainty (kHz)  | <±5.0                   |                            |                          |

- Pi/4 DQPSK**

|                                | Low Channel<br>2402 MHz | Middle Channel<br>2441 MHz | High Channel<br>2480 MHz |
|--------------------------------|-------------------------|----------------------------|--------------------------|
| 20 dB Spectrum Bandwidth (kHz) | 1291.00                 | 1283.00                    | 1285.00                  |
| 99% Bandwidth (kHz)            | 1178.40                 | 1179.20                    | 1175.40                  |
| Measurement uncertainty (kHz)  | <±5.0                   |                            |                          |

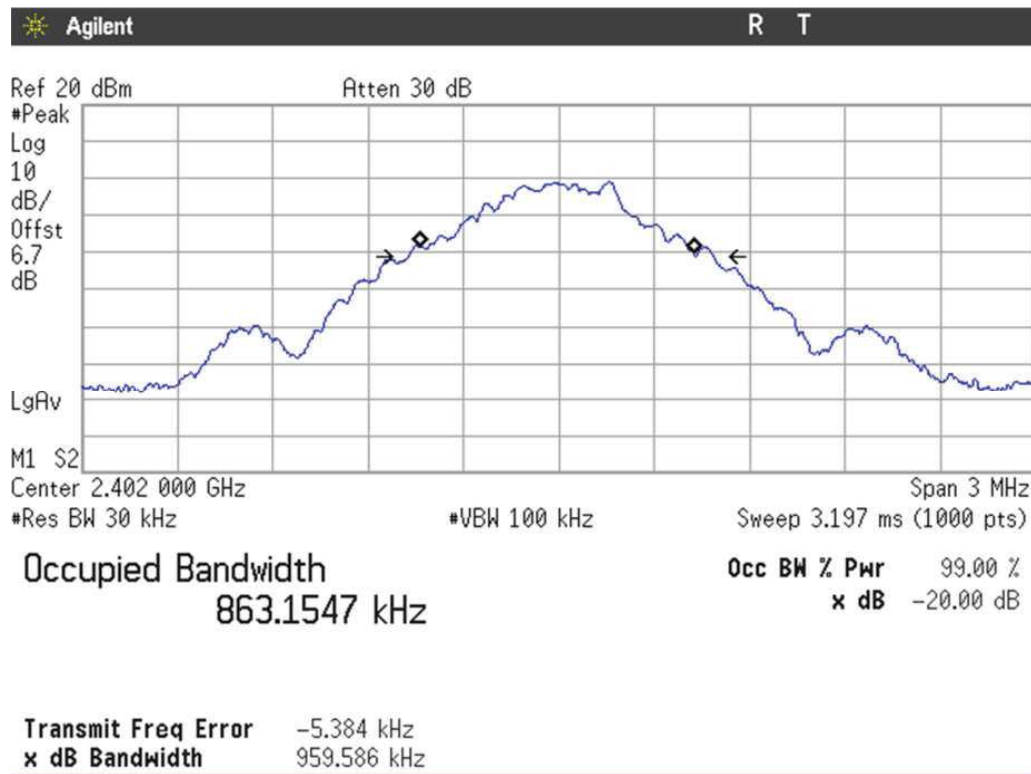
- 8DPSK**

|                                | Low Channel<br>2402 MHz | Middle Channel<br>2441 MHz | High Channel<br>2480 MHz |
|--------------------------------|-------------------------|----------------------------|--------------------------|
| 20 dB Spectrum Bandwidth (kHz) | 1305.00                 | 1299.00                    | 1297.00                  |
| 99% Bandwidth (kHz)            | 1187.60                 | 1184.60                    | 1179.70                  |
| Measurement uncertainty (kHz)  | <±5.0                   |                            |                          |

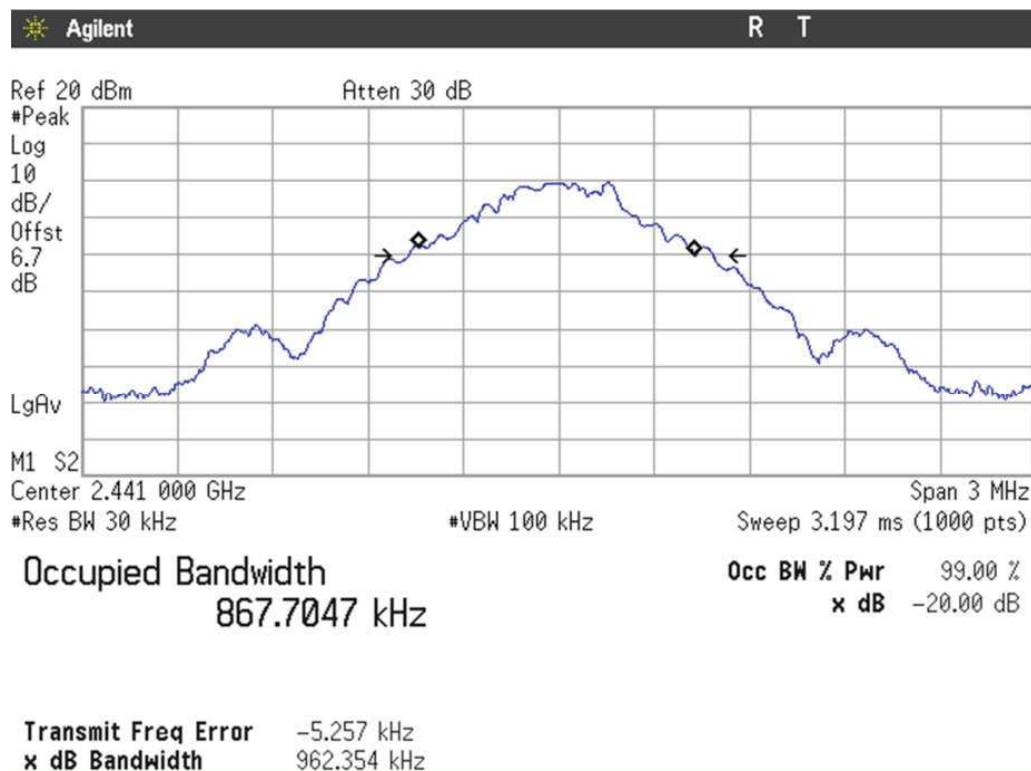
Verdict: PASS

- **GFSK – Bandwidths**

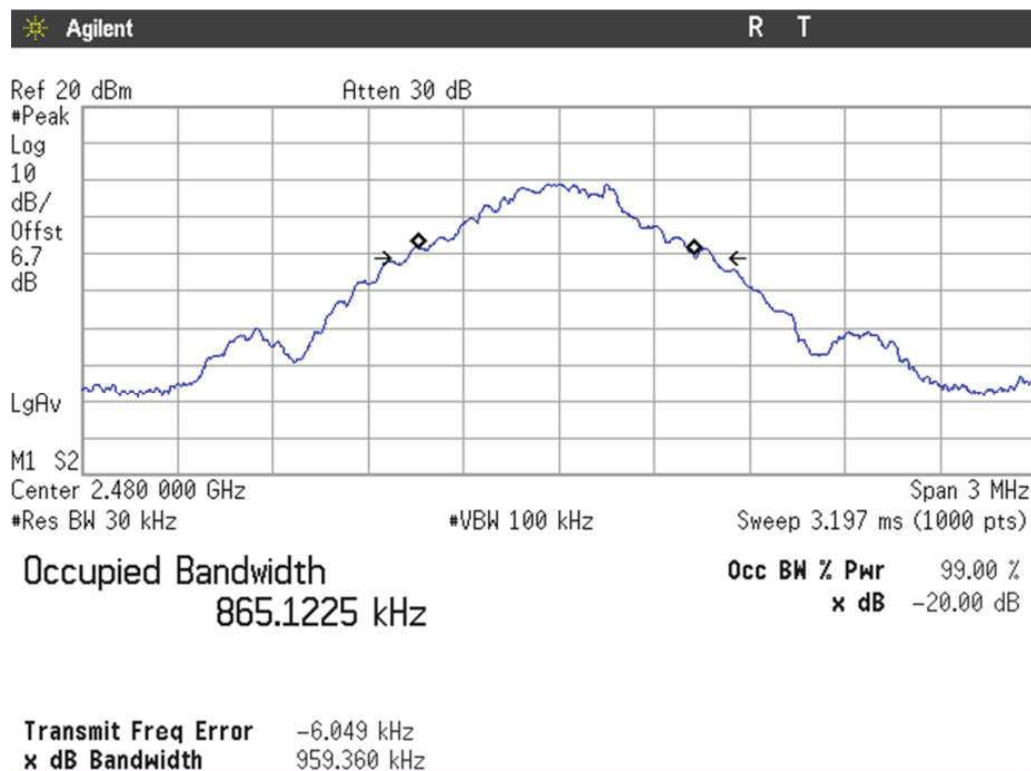
- Low Channel:



- Middle Channel:



- High Channel:

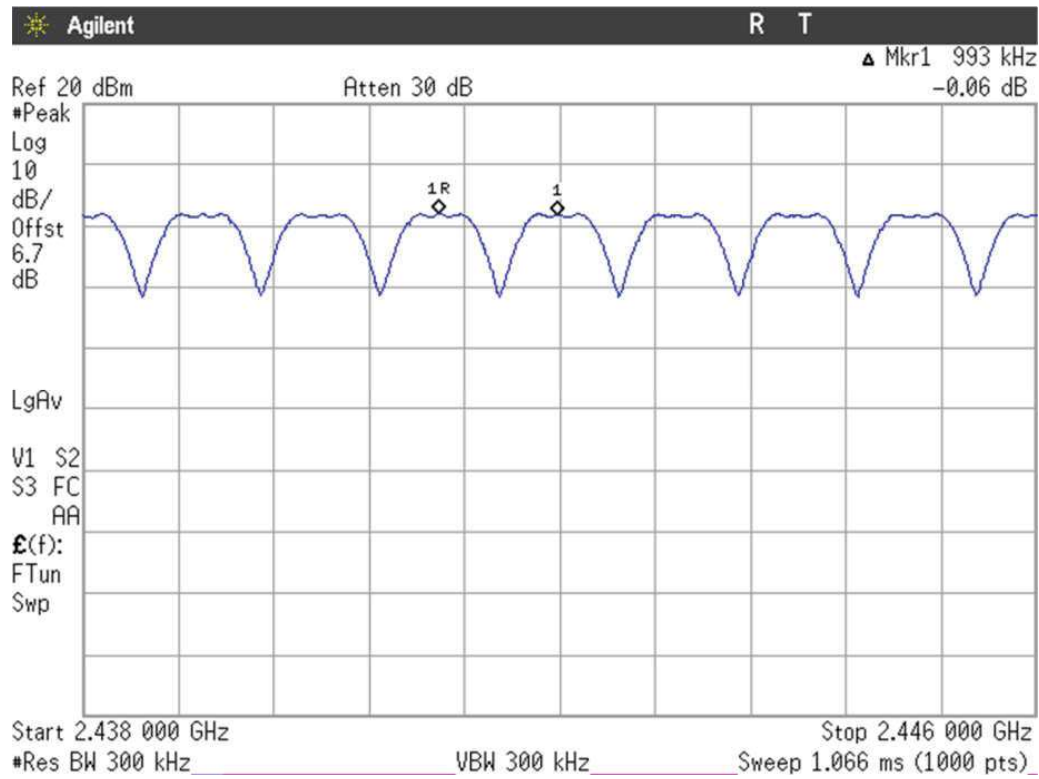


Carrier frequency separation - GFSK

Carrier frequency separation: 

993

 kHz

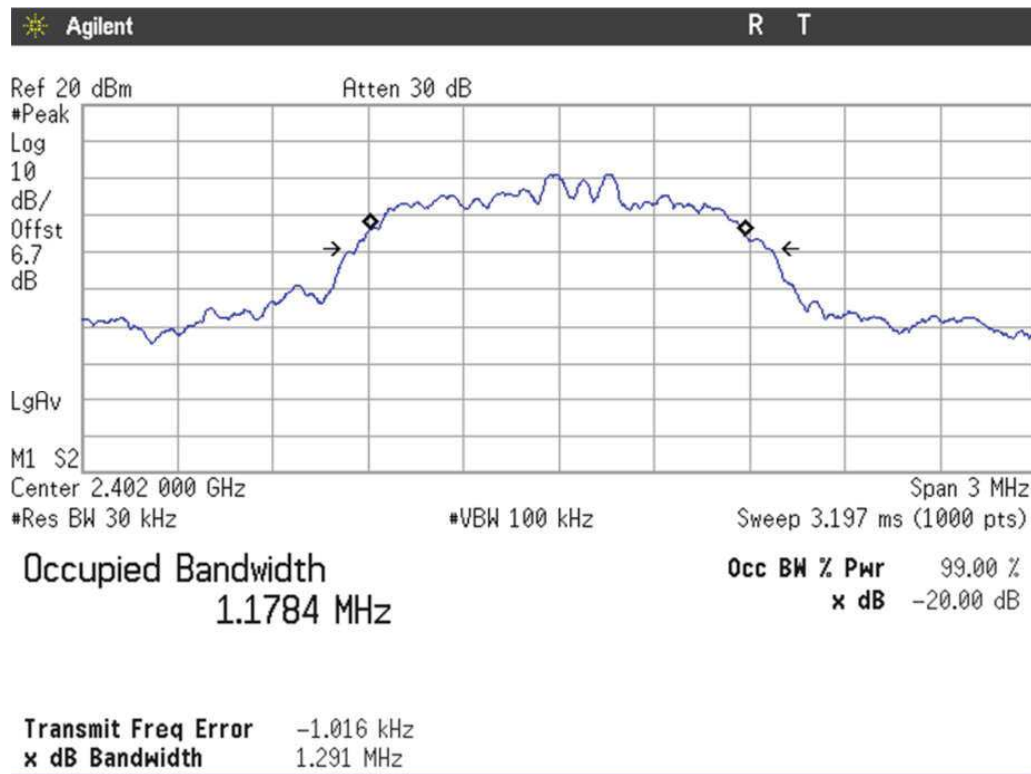


The hopping channel carrier frequencies are separated by a minimum two-thirds of the 20 dB bandwidth of the hopping channel.

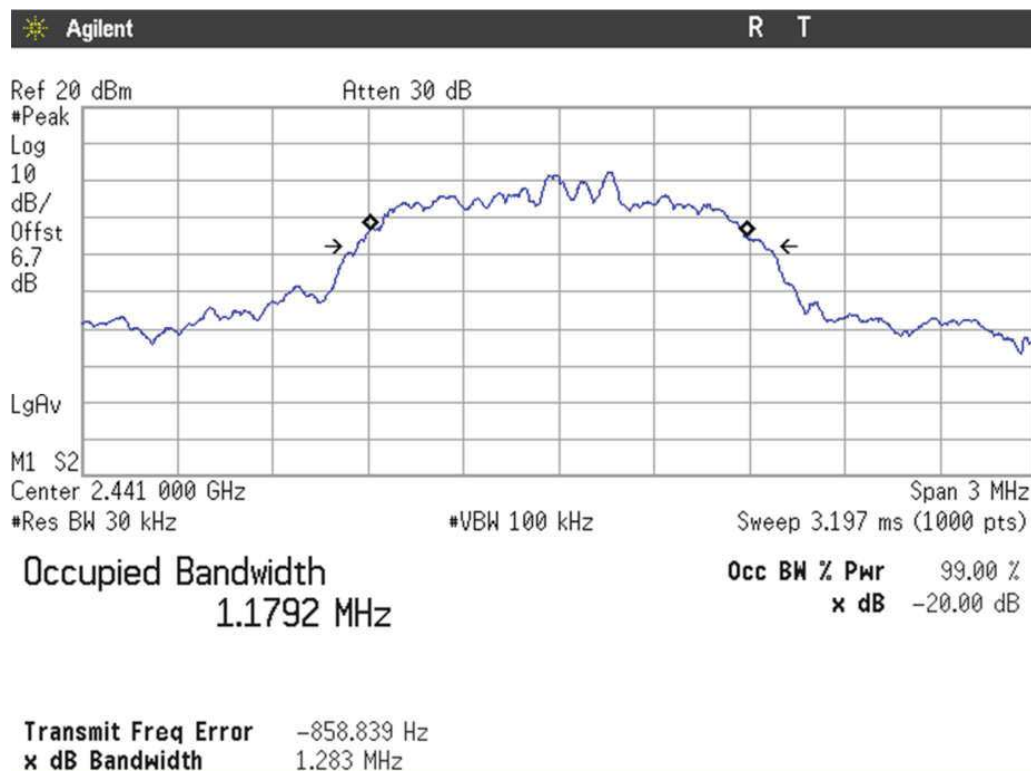
Verdict: PASS

- **Pi/4 DQPSK – Bandwidths**

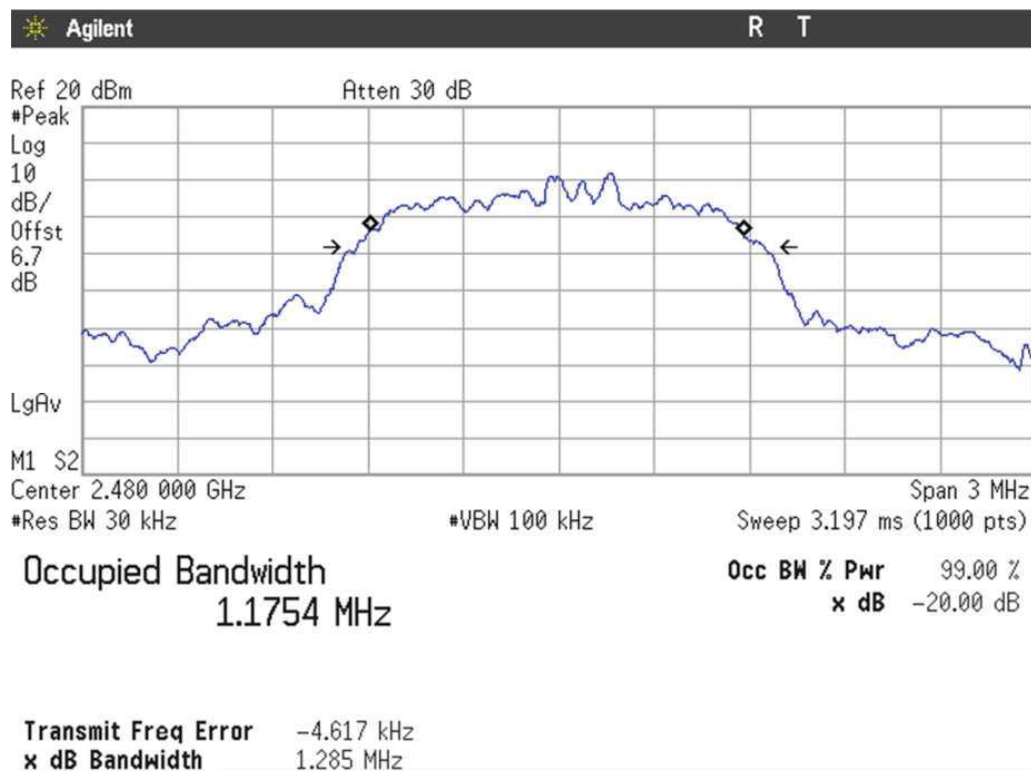
- Low Channel:



- Middle Channel:

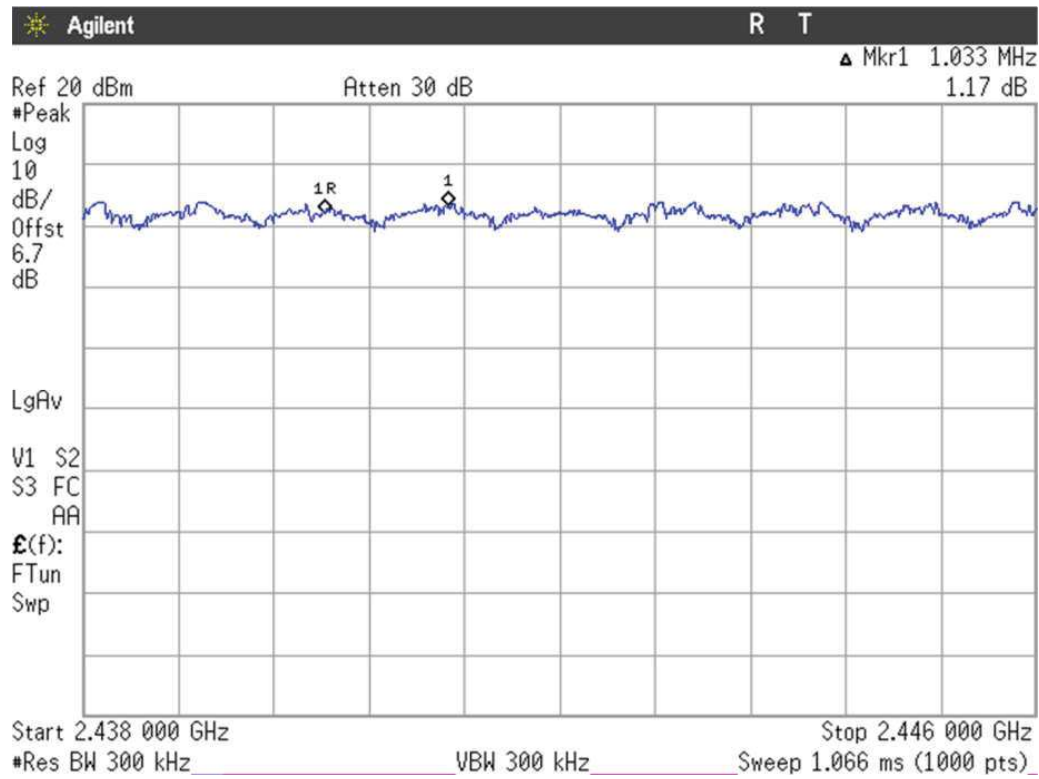


- High Channel:



Carrier frequency separation - Pi/4 DQPSK

Carrier frequency separation: 1033 kHz

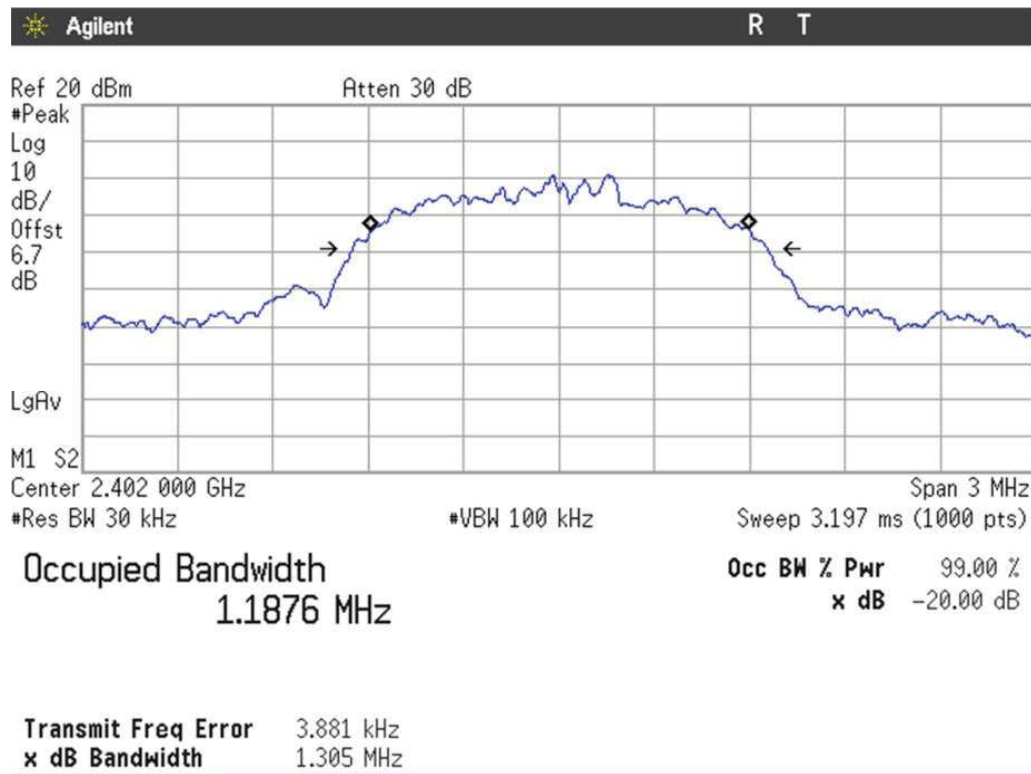


The hopping channel carrier frequencies are separated by a minimum two-thirds of the 20 dB bandwidth of the hopping channel.

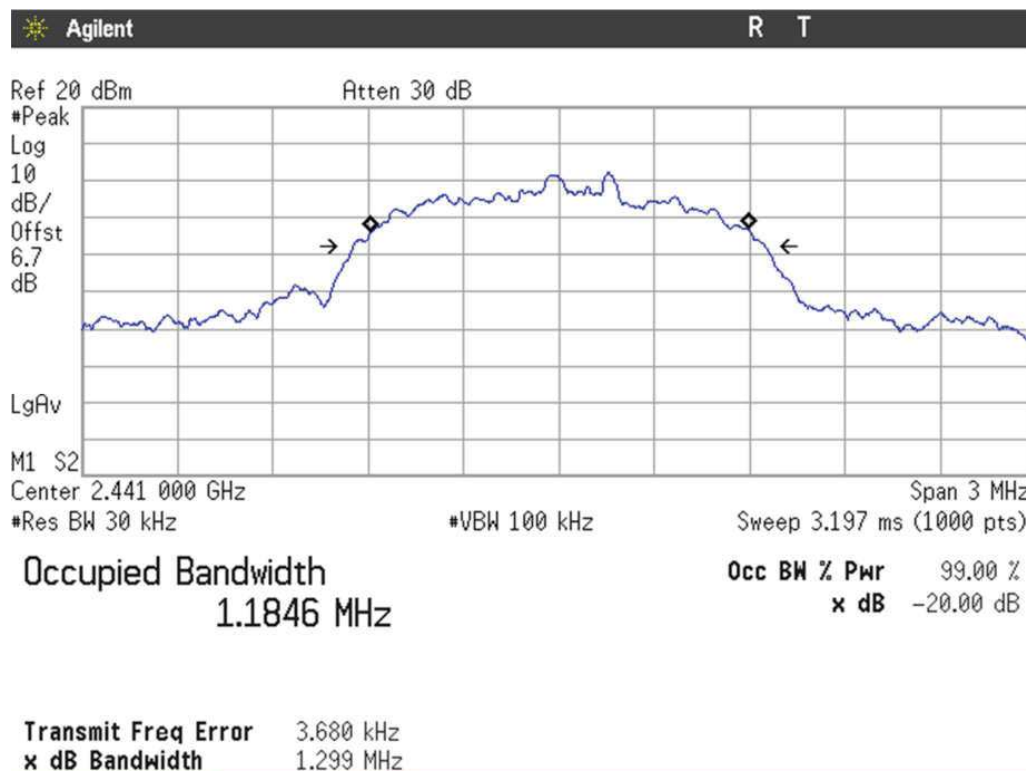
Verdict: PASS

- **8DPSK – Bandwidths**

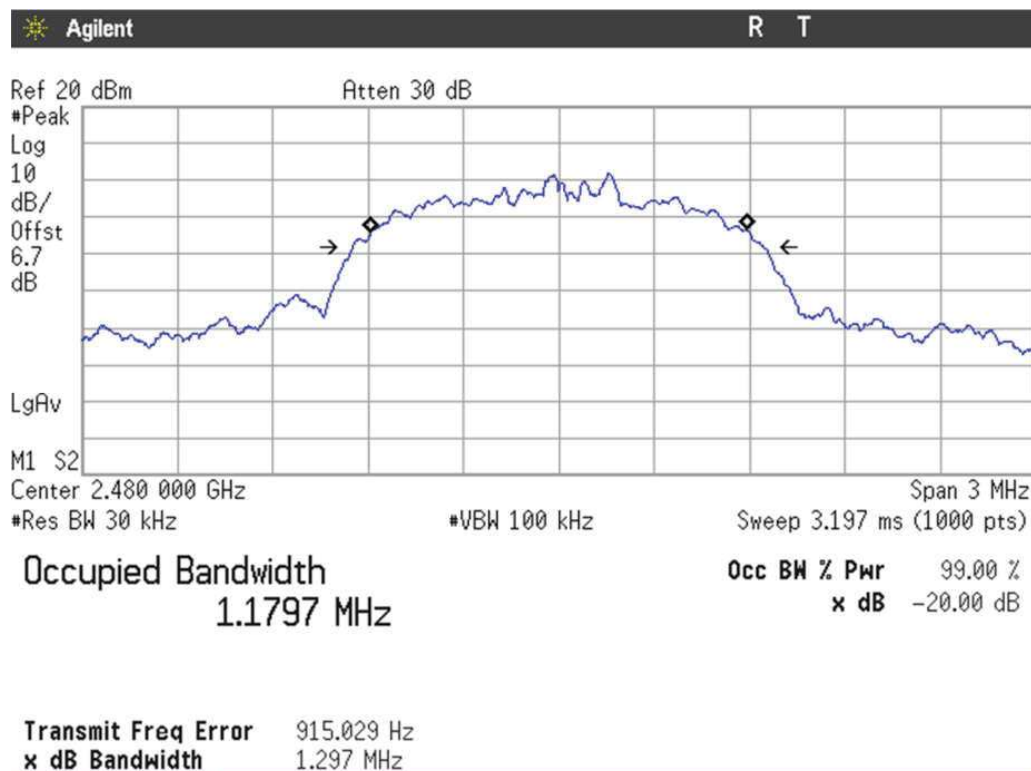
- Low Channel:



- Middle Channel:

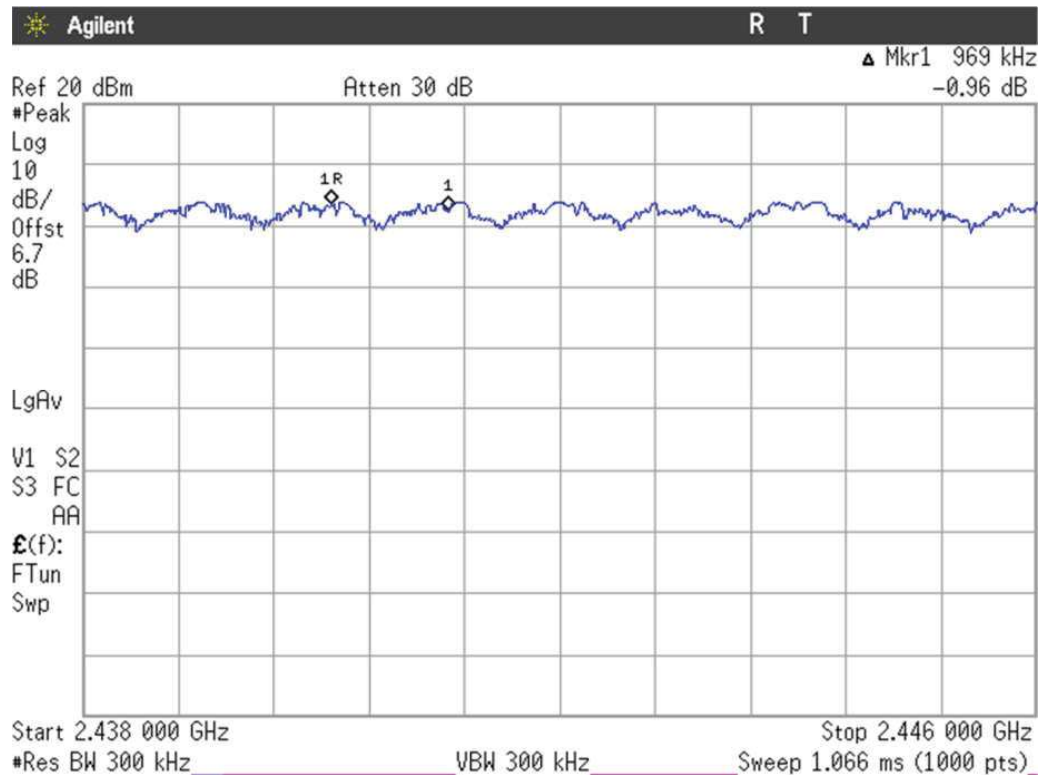


- High Channel:



Carrier frequency separation - 8DPSK

Carrier frequency separation: 969 kHz



The hopping channel carrier frequencies are separated by a minimum two-thirds of the 20 dB bandwidth of the hopping channel.

Verdict: PASS

FCC Section 15.247 Subclause (a)(1)(iii) / RSS-247 Clause 5.1 (d) Number of hopping channels.

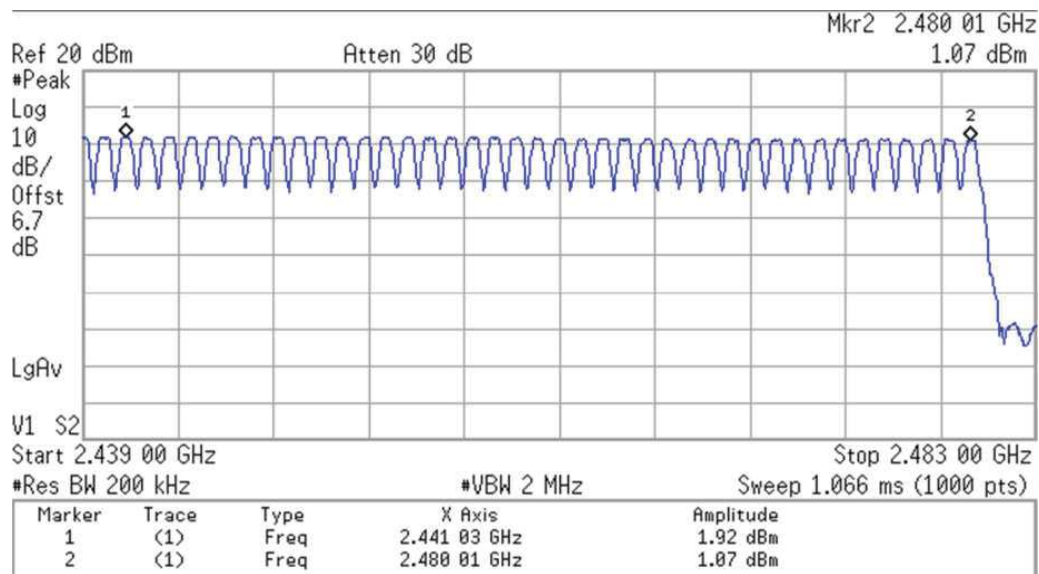
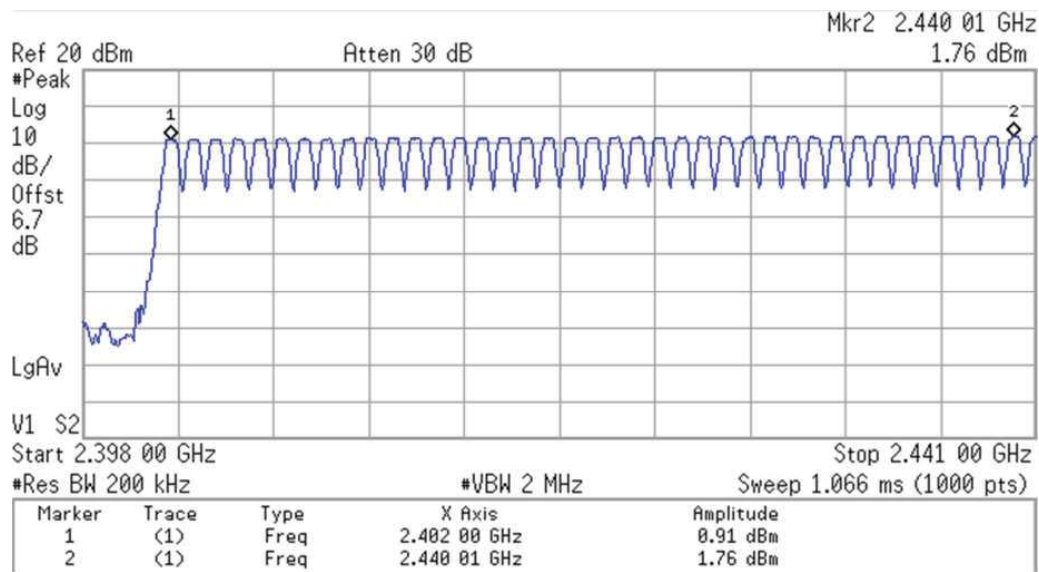
SPECIFICATION:

Frequency hopping system in the 2400-2483.5 MHz band shall use at least 15 channels.

RESULTS:

The number of hopping channels is 79 for all three modes.

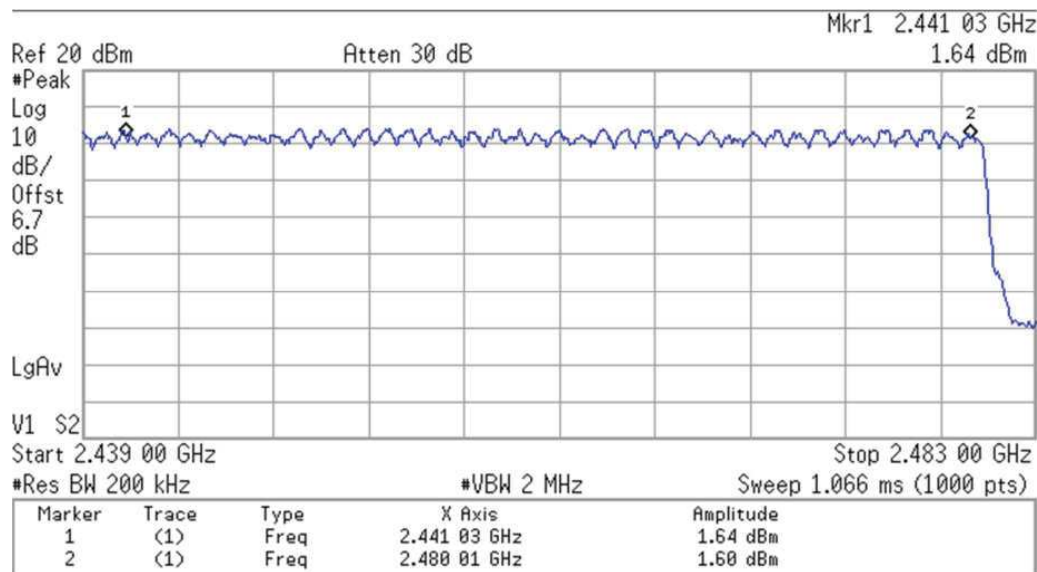
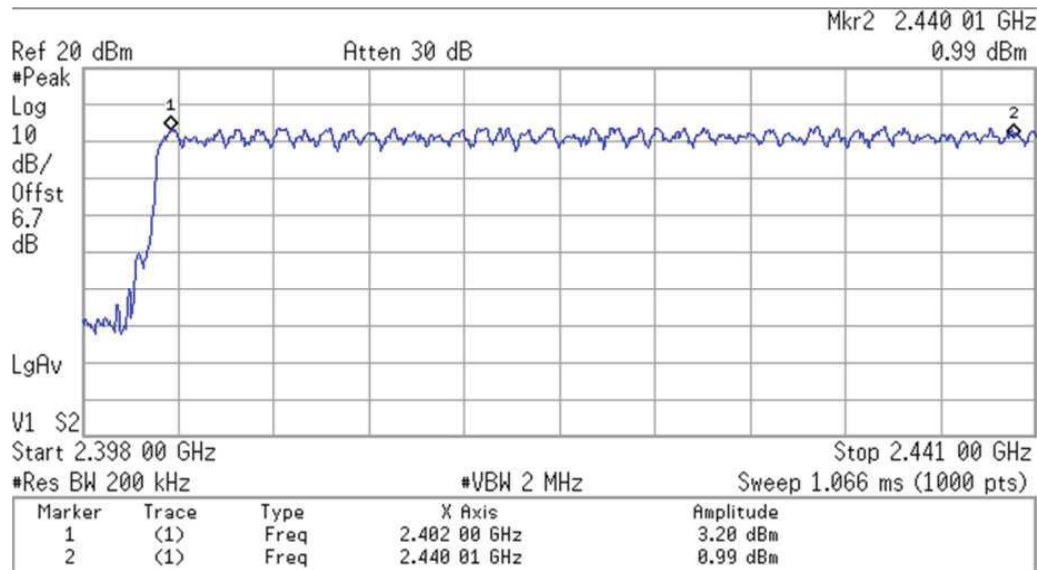
- GFSK – Number of hopping channels



Total number of hopping channels 79

Verdict: PASS

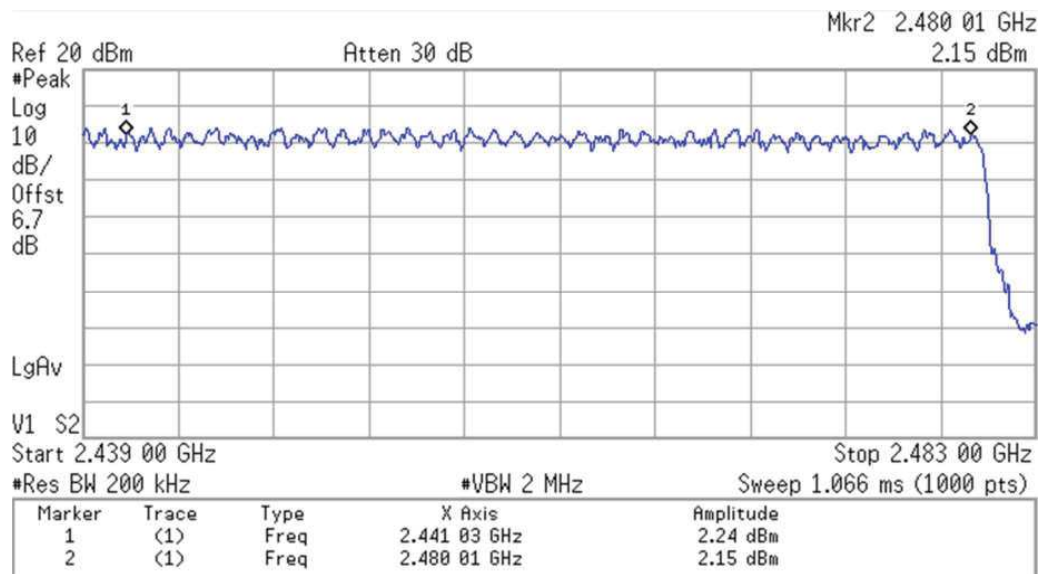
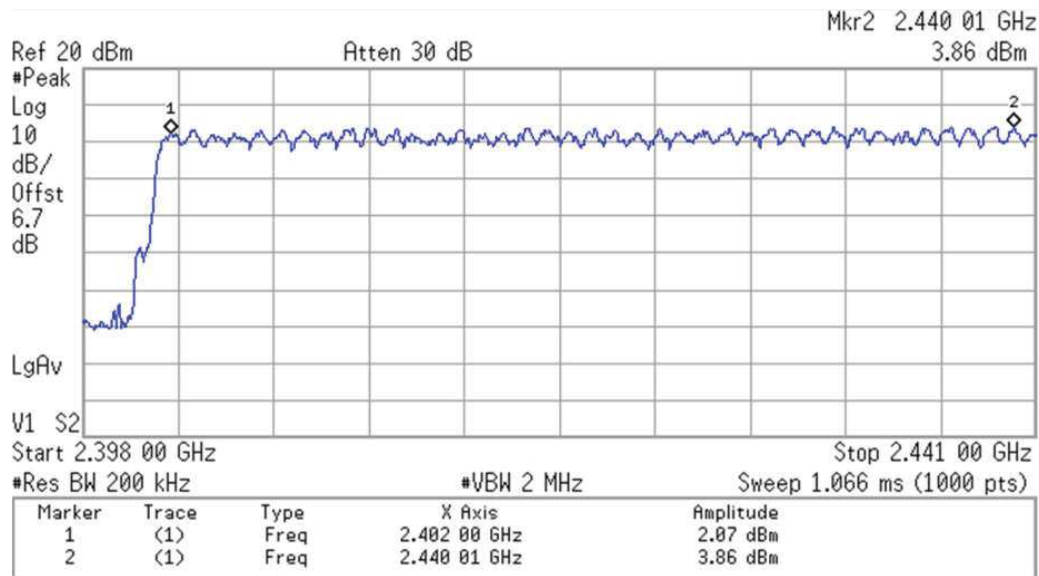
• Pi/4 DQPSK – Number of hopping channels



Total number of hopping channels      79

Verdict: PASS

• 8DPSK – Number of hopping channels



Total number of hopping channels      79

Verdict: PASS

## FCC Section 15.247 Subclause (a)(1)(iii) / RSS-247 Clause 5.1 (d) Time of occupancy (Dwell Time).

### SPECIFICATION:

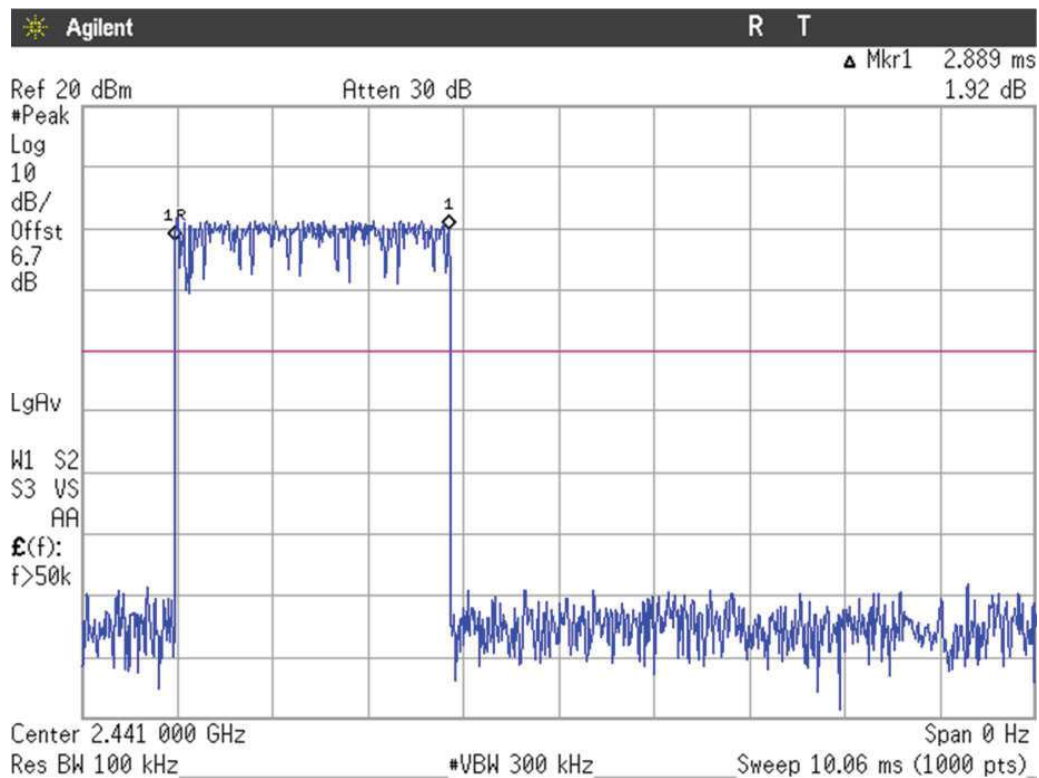
The average time of occupancy on any channel shall not be greater than 0.4 seconds (400 ms) within a period of 0.4 seconds multiplied by the number of hopping channels employed =  $0.4 \times 79 = 31.6$  seconds.

### RESULTS:

#### • GFSK (packet type DH5) – Time of Occupancy (Dwell Time)

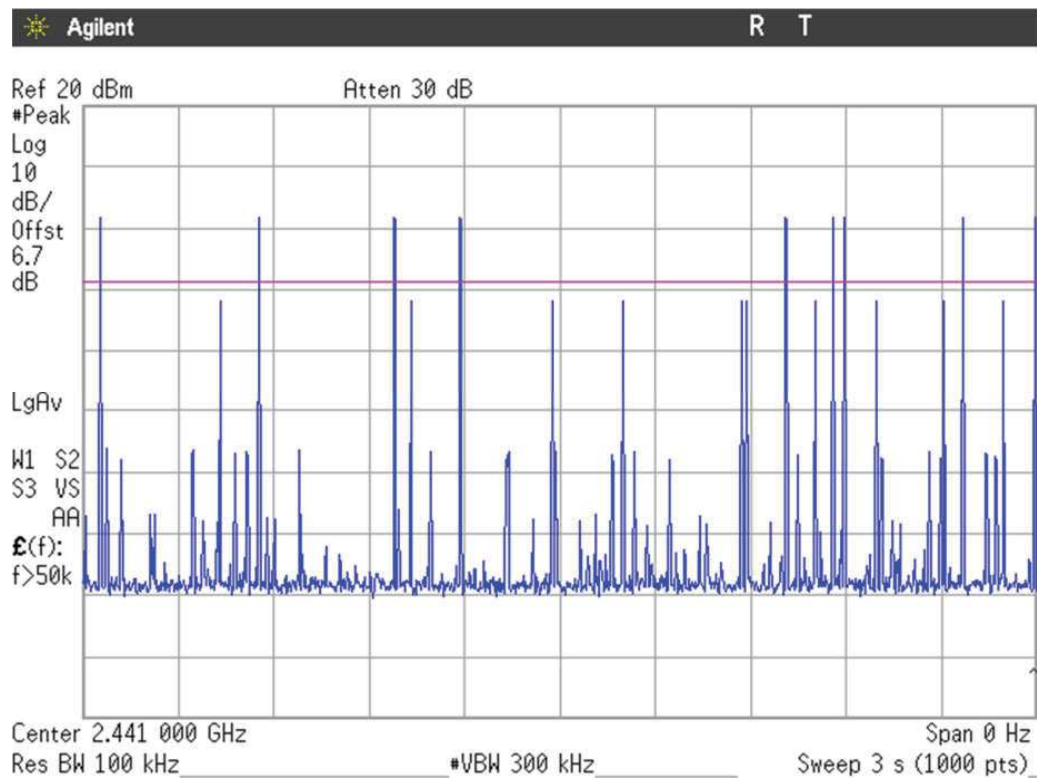
- Transmit Time per Hop:

2.889 ms



Time of Occupancy:

|                                 |             |
|---------------------------------|-------------|
| Nº of hops on spectrum analyzer | 8           |
| Nº of hops over the period      | 94.8        |
| Average Time of Occupancy       | 273.8772 ms |



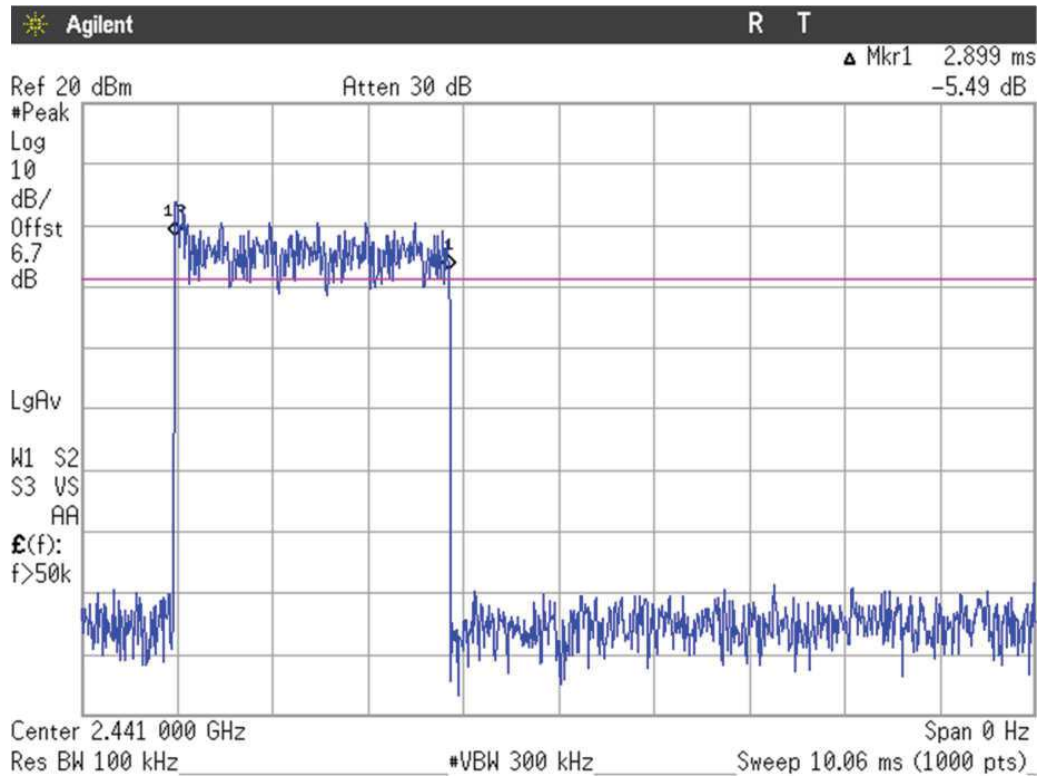
|                             |        |
|-----------------------------|--------|
| Measurement uncertainty (%) | <±0.01 |
|-----------------------------|--------|

Verdict: PASS

• **Pi/4 DQPSK (packet type 2DH5) – Time of Occupancy (Dwell Time)**

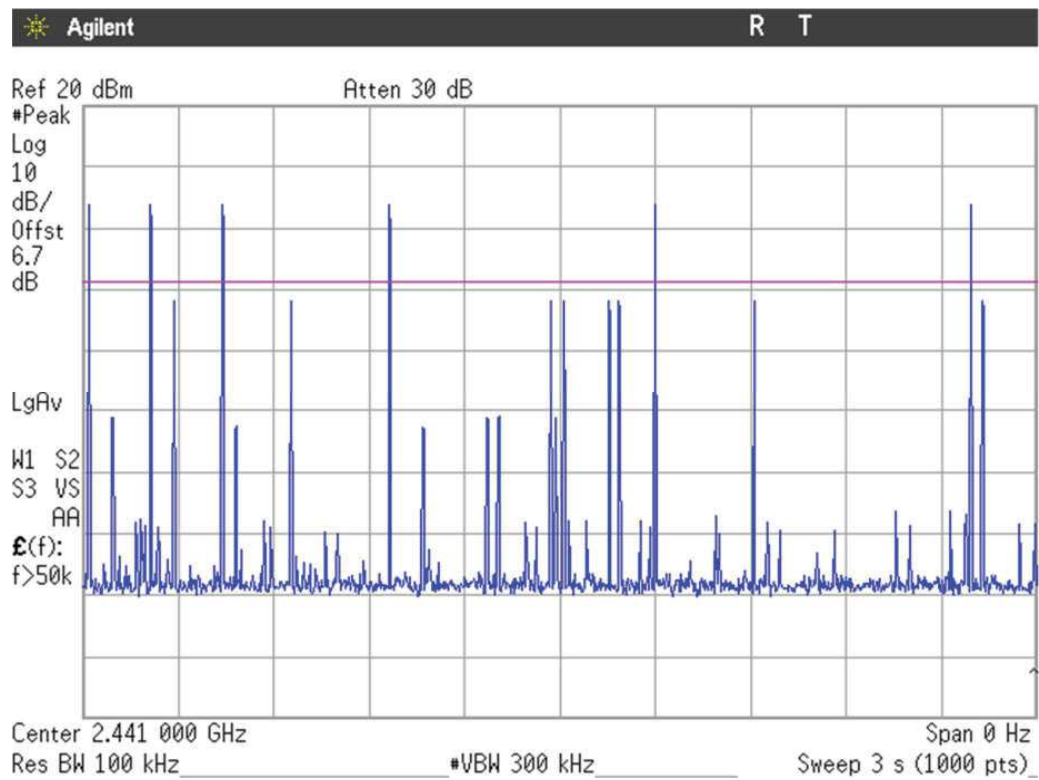
- Transmit Time per Hop:

2.899 ms



Time of Occupancy:

|                                 |             |
|---------------------------------|-------------|
| Nº of hops on spectrum analyzer | 6           |
| Nº of hops over the period      | 63.2        |
| Average Time of Occupancy       | 183.2168 ms |



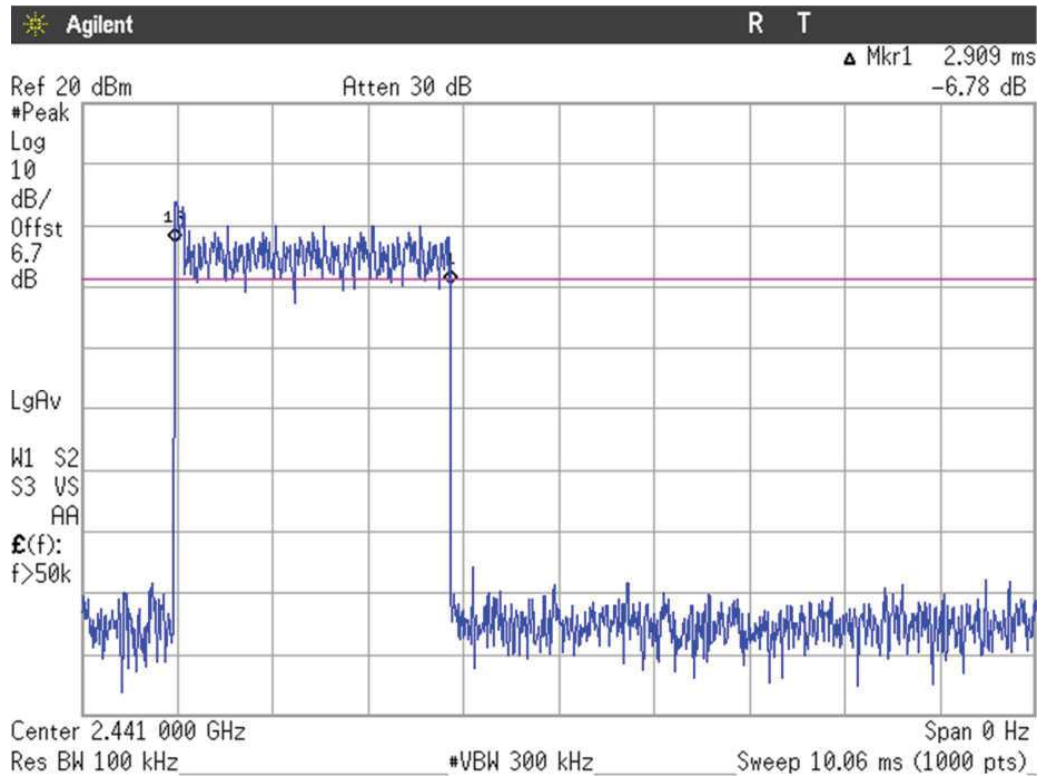
|                             |        |
|-----------------------------|--------|
| Measurement uncertainty (%) | <±0.01 |
|-----------------------------|--------|

Verdict: PASS

• **8DPSK (packet type 3DH5) – Time of Occupancy (Dwell Time)**

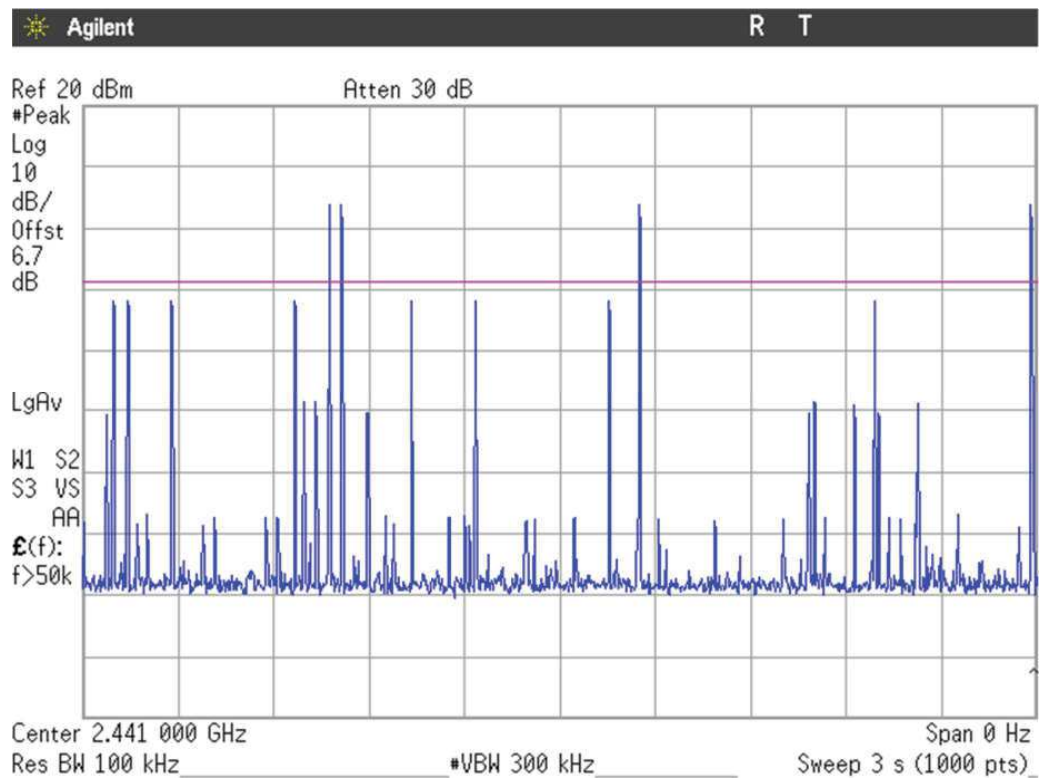
- Transmit Time per Hop:

2.909 ms



Time of Occupancy:

|                                 |             |
|---------------------------------|-------------|
| Nº of hops on spectrum analyzer | 4           |
| Nº of hops over the period      | 42.13       |
| Average Time of Occupancy       | 122.5658 ms |



|                             |        |
|-----------------------------|--------|
| Measurement uncertainty (%) | <±0.01 |
|-----------------------------|--------|

Verdict: PASS

## FCC Section 15.247 Subclause (b) / RSS-247 Clause 5.4 (b) Maximum peak output power and antenna gain

### SPECIFICATION:

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 hopping channels: 1 watt (30 dBm). The e.i.r.p. shall not exceed 4 W (RSS-247).

### RESULTS:

The EIRP power (dBm) is calculated by adding the maximum declared antenna gain to the measured conducted power.

Maximum Declared Antenna Gain: -0.99 dBi

The maximum directional gain of the antenna is less than 6 dBi and therefore the maximum output power is not required to be reduced from the stated values

- GFSK (1 Mbps)**

| Peak Conducted Output Power   | Low Channel<br>2402 MHz | Middle Channel<br>2441 MHz | High Channel<br>2480 MHz |
|-------------------------------|-------------------------|----------------------------|--------------------------|
| Maximum Conducted Power (dBm) | 1.12                    | 1.94                       | 1.25                     |
| Maximum EIRP Power (dBm)      | 0.13                    | 0.95                       | 0.26                     |
| Measurement uncertainty (dB)  | <±0.78                  |                            |                          |

- Pi/4 DQPSK (2 Mbps)**

| Peak Conducted Output Power   | Low Channel<br>2402 MHz | Middle Channel<br>2441 MHz | High Channel<br>2480 MHz |
|-------------------------------|-------------------------|----------------------------|--------------------------|
| Maximum Conducted Power (dBm) | 4.59                    | 5.18                       | 4.72                     |
| Maximum EIRP Power (dBm)      | 3.6                     | 4.19                       | 3.73                     |
| Measurement uncertainty (dB)  | <±0.78                  |                            |                          |

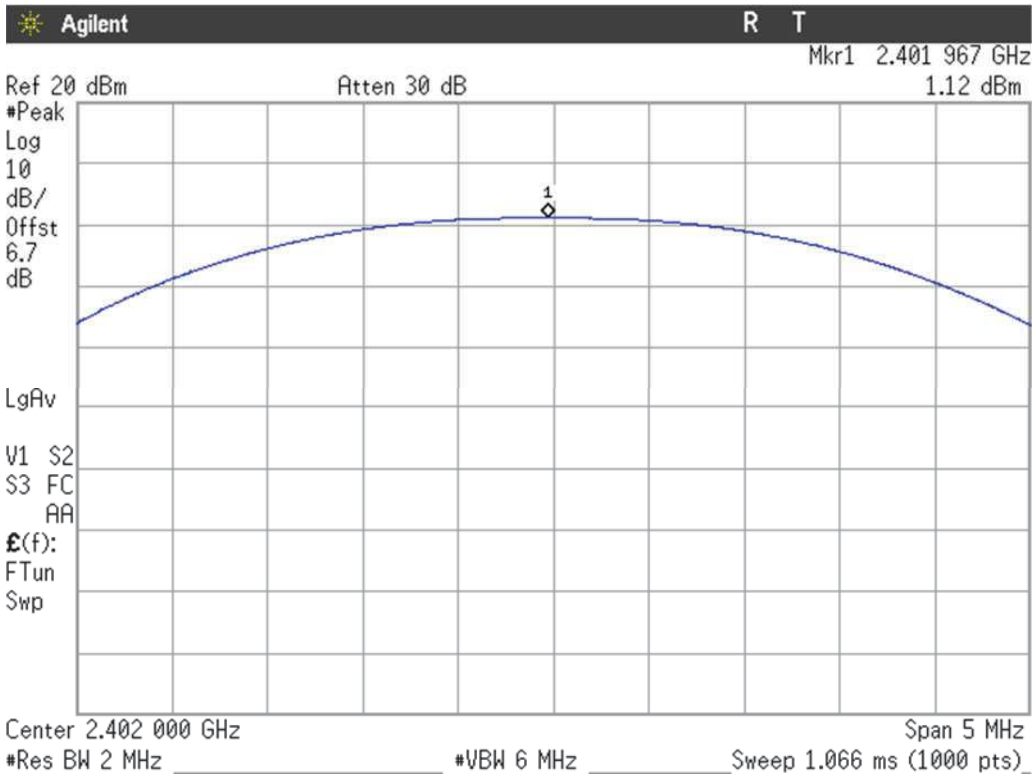
- 8DPSK (3 Mbps)**

| Peak Conducted Output Power   | Low Channel<br>2402 MHz | Middle Channel<br>2441 MHz | High Channel<br>2480 MHz |
|-------------------------------|-------------------------|----------------------------|--------------------------|
| Maximum Conducted Power (dBm) | 5.18                    | 5.8                        | 5.34                     |
| Maximum EIRP Power (dBm)      | 4.19                    | 4.81                       | 4.35                     |
| Measurement uncertainty (dB)  | <±0.78                  |                            |                          |

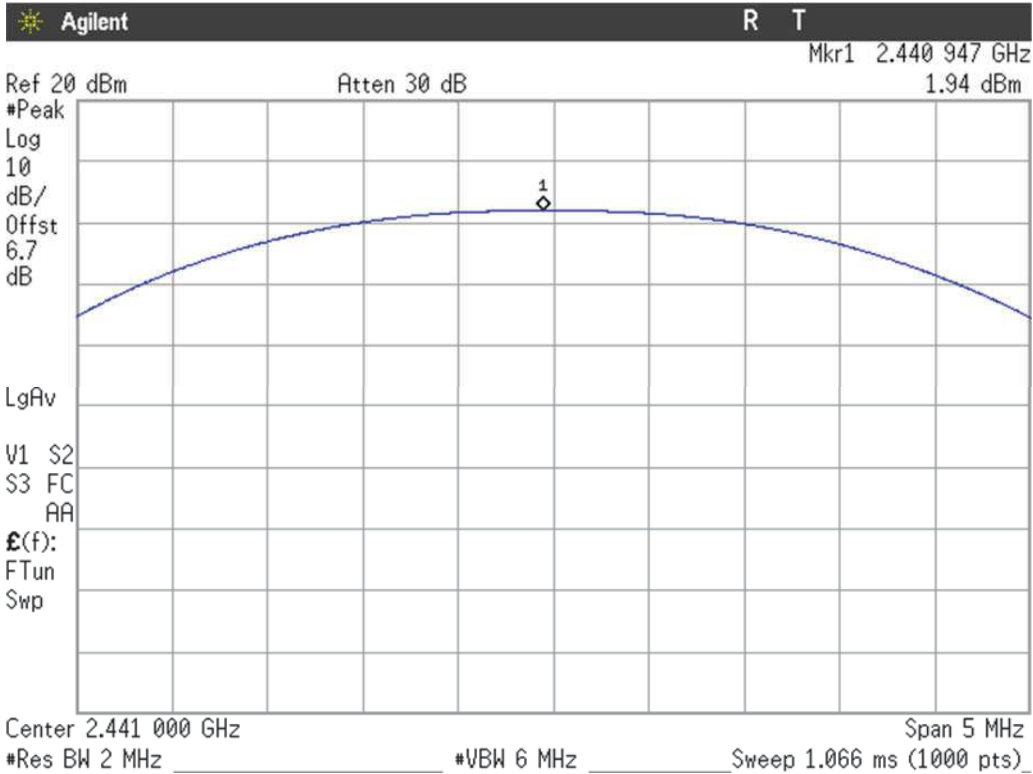
Verdict: PASS

GFSK – Peak Output Power

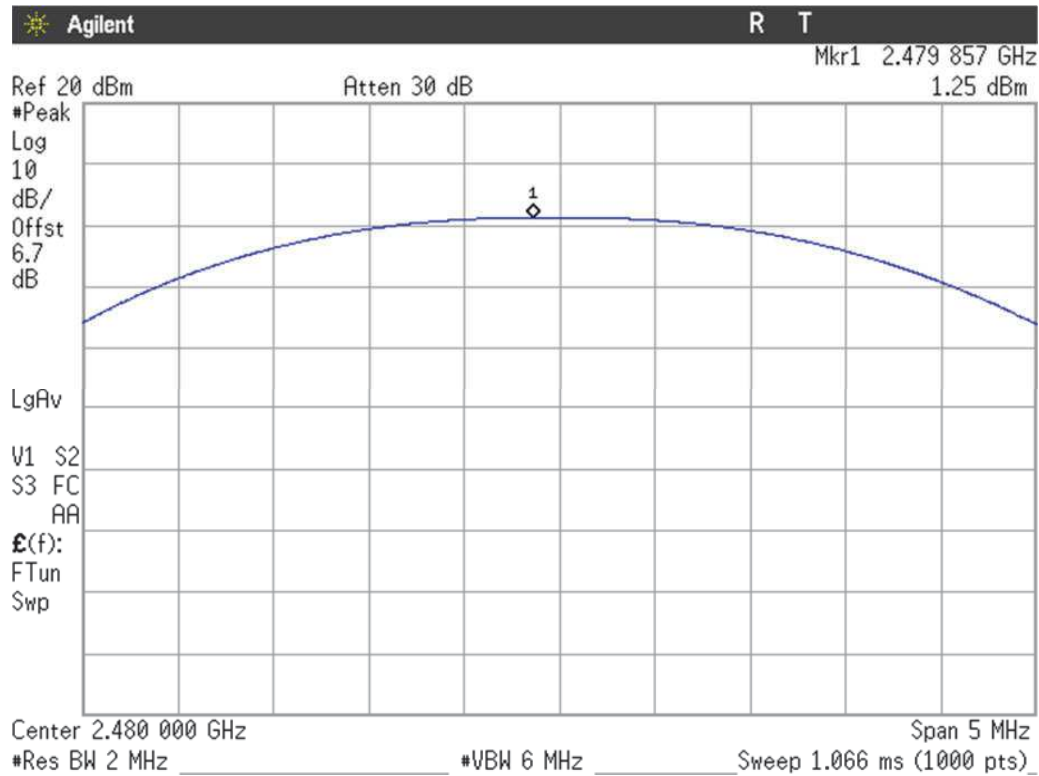
- Low Channel:



- Middle Channel:

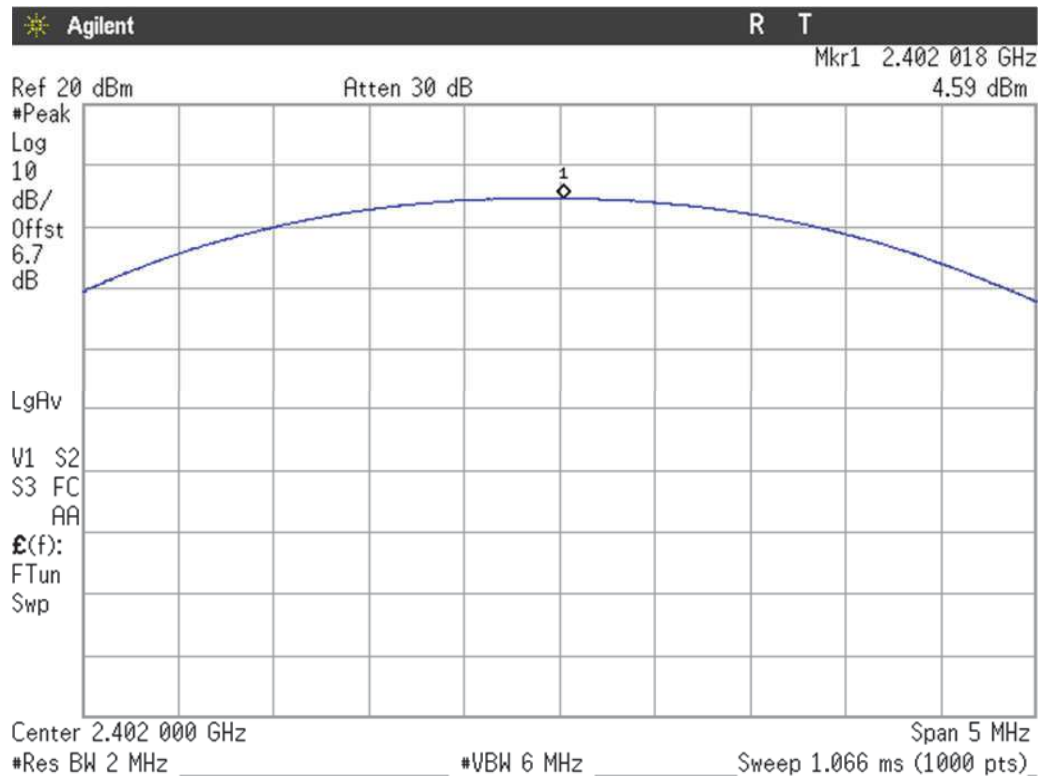


- High Channel:

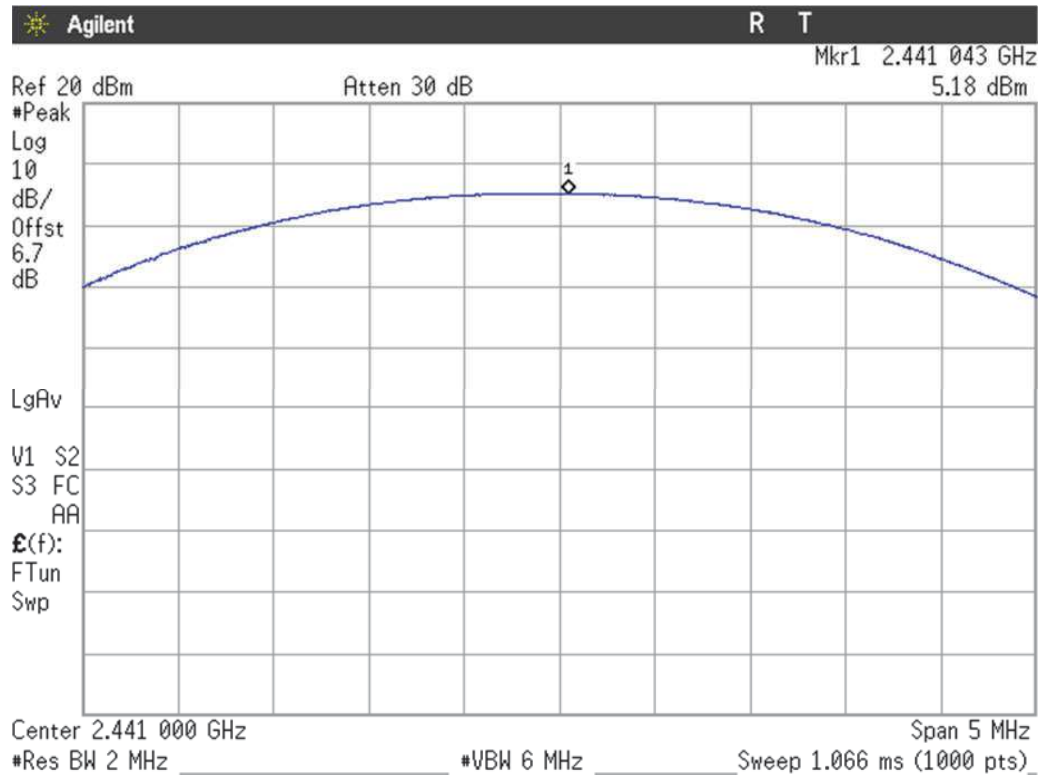


• Pi/4 DQPSK – Peak Output Power

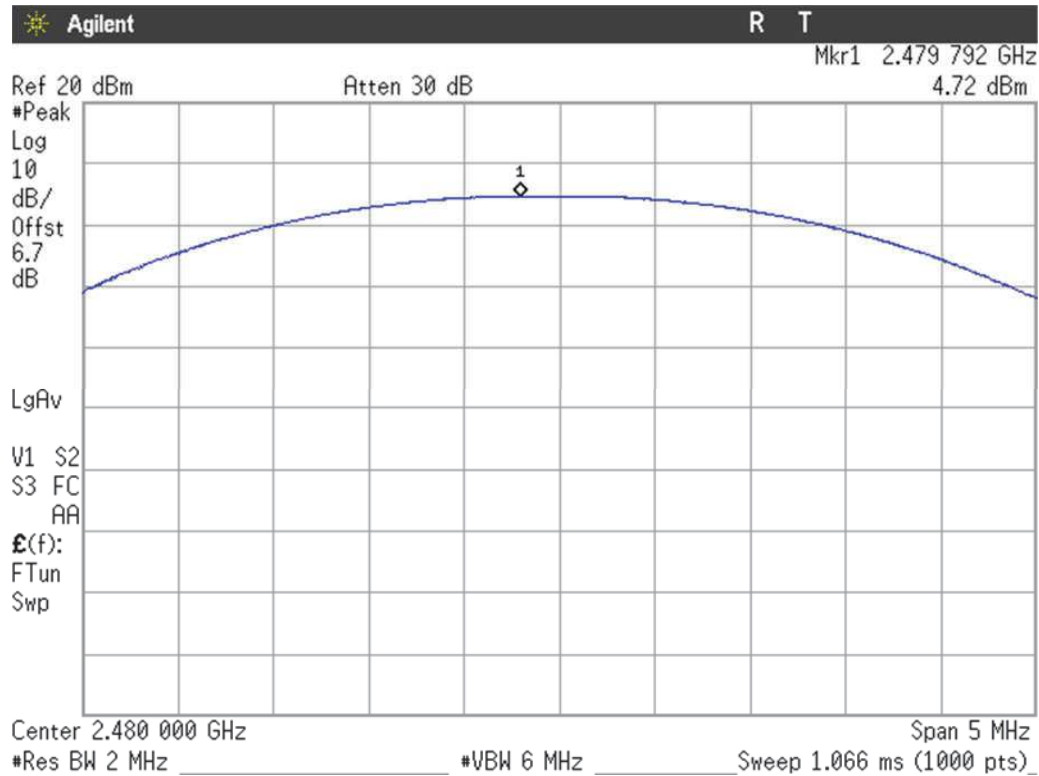
- Low Channel:



- Middle Channel:

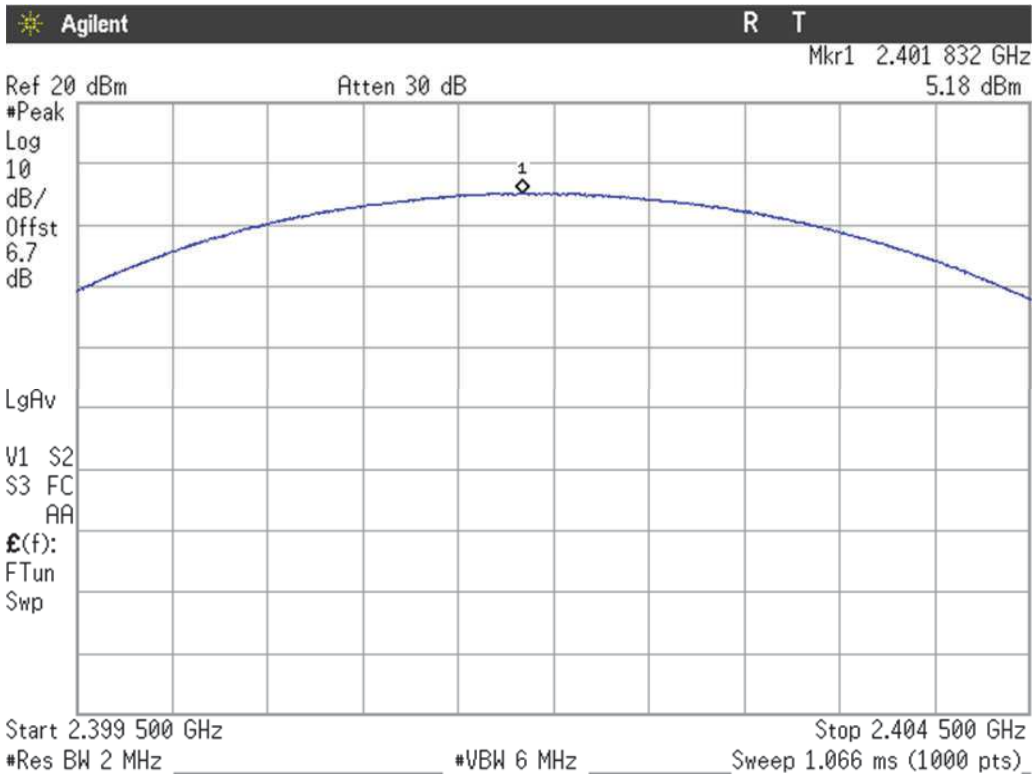


- High Channel:

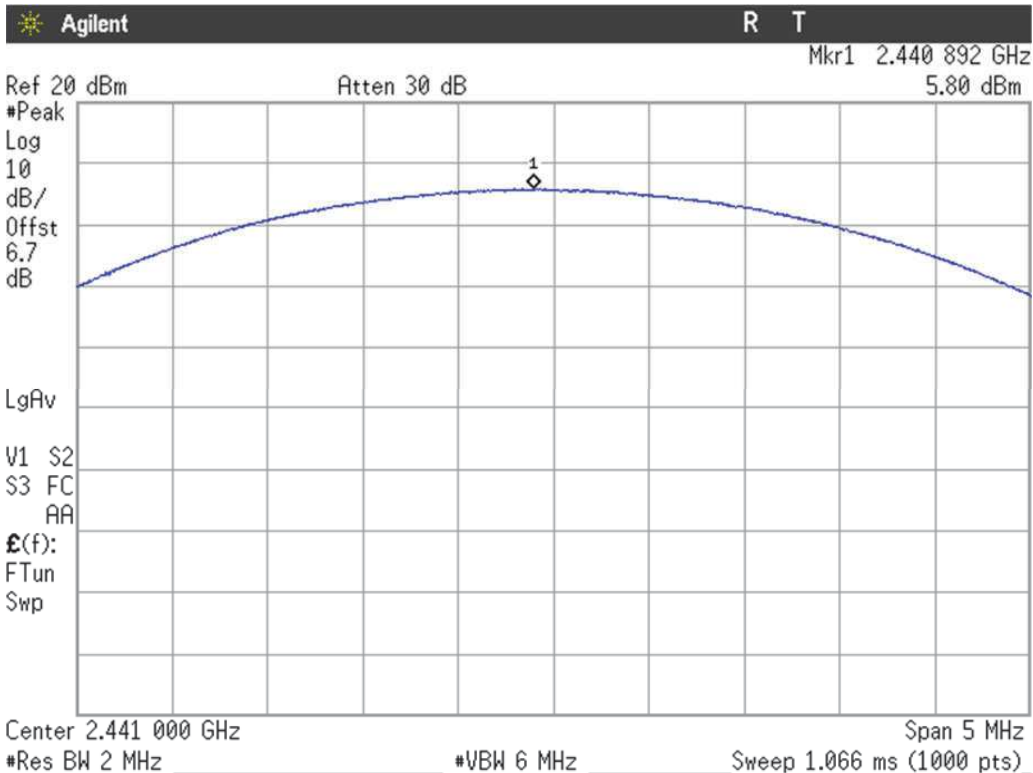


• 8DPSK – Peak Output Power

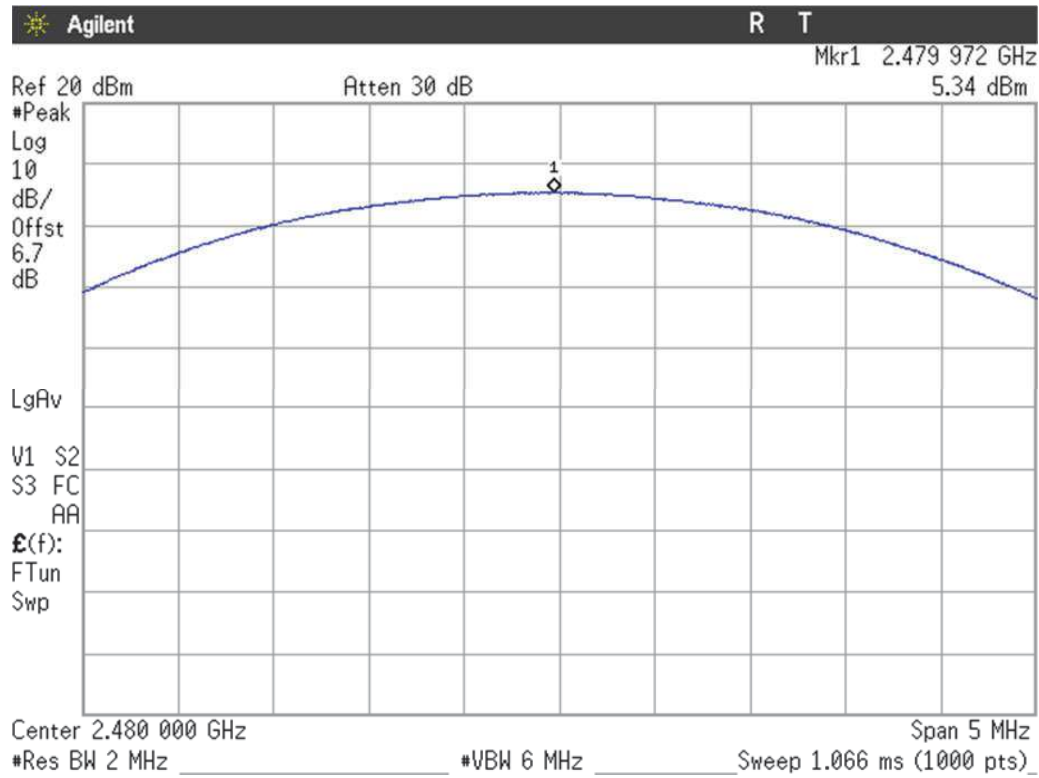
- Low Channel:



- Middle Channel:



- High Channel:



## FCC Section 15.247 Subclause (d) / RSS-247 Clause 5.5. Emission limitations conducted (Transmitter)

### SPECIFICATION:

In any 100 kHz bandwidths outside the frequency band in which the 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, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

### RESULTS:

- **GFSK:**

|                                   | Low Channel<br>2402 MHz | Middle Channel<br>2440 MHz | High Channel<br>2480 MHz |
|-----------------------------------|-------------------------|----------------------------|--------------------------|
| Reference Level Measurement (dBm) | 0.70                    | 1.65                       | 0.63                     |
| Measurement uncertainty (dB)      | <±0.78                  |                            |                          |

- Low Channel:

No spurious peaks found at less than 20 dB below the limit.

- Middle Channel:

No spurious peaks found at less than 20 dB below the limit.

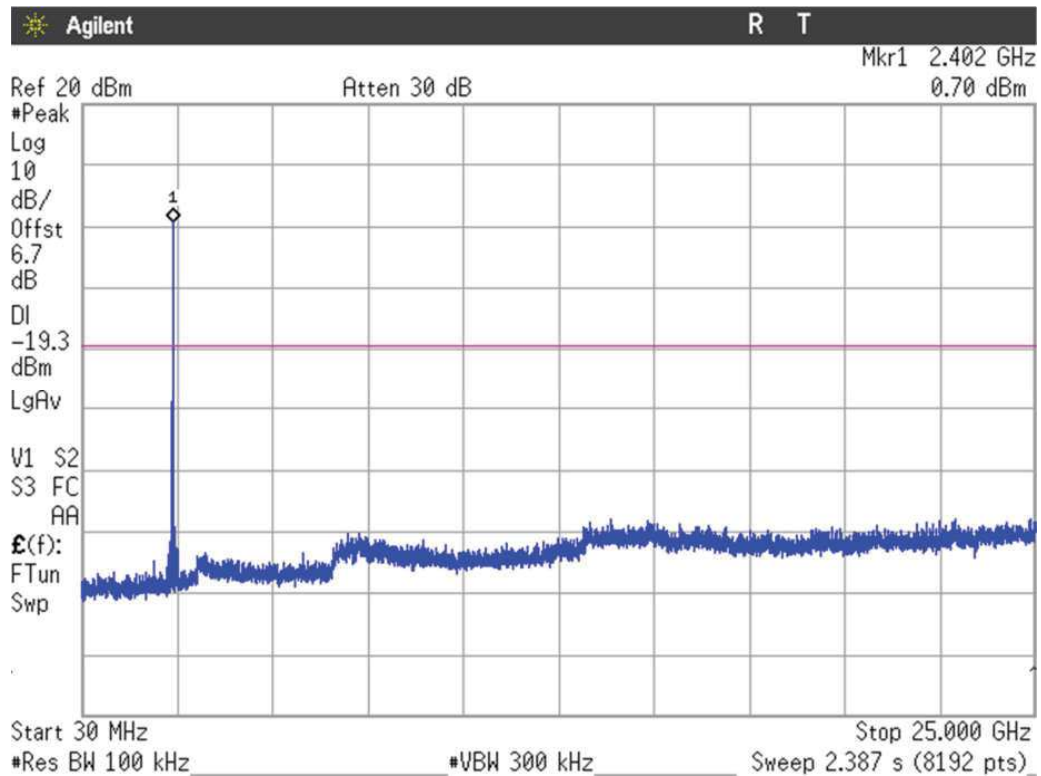
- High Channel:

No spurious peaks found at less than 20 dB below the limit.

|                              |        |
|------------------------------|--------|
| Measurement uncertainty (dB) | <±2.03 |
|------------------------------|--------|

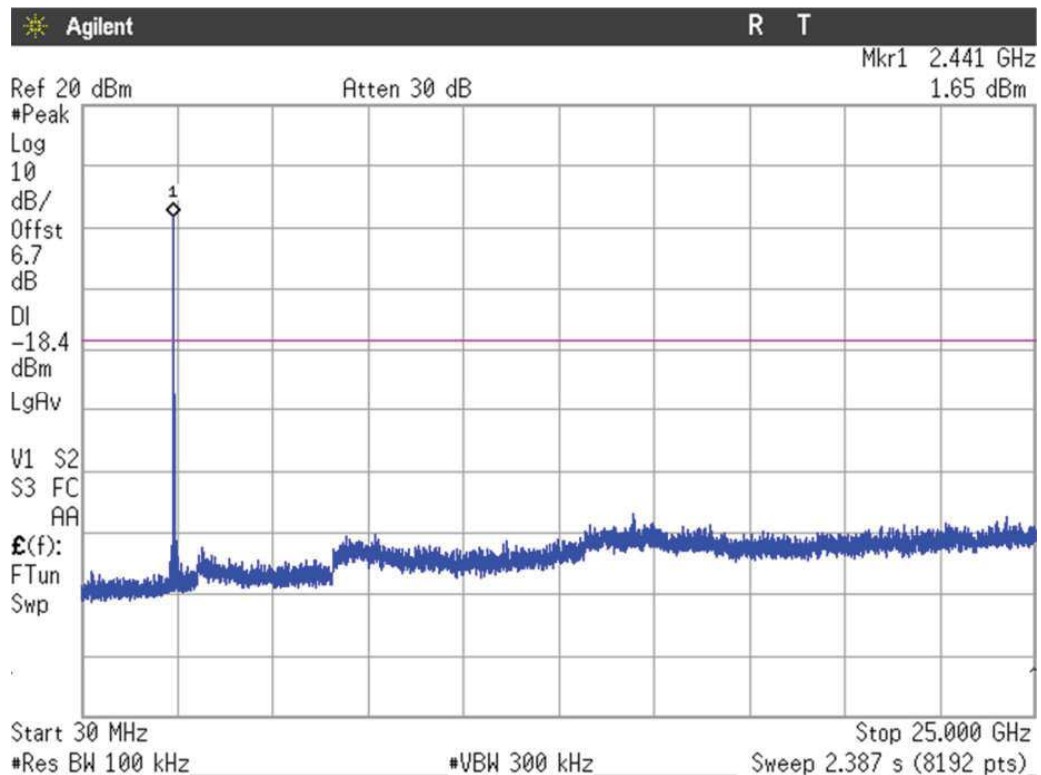
Verdict: PASS

- Low Channel:



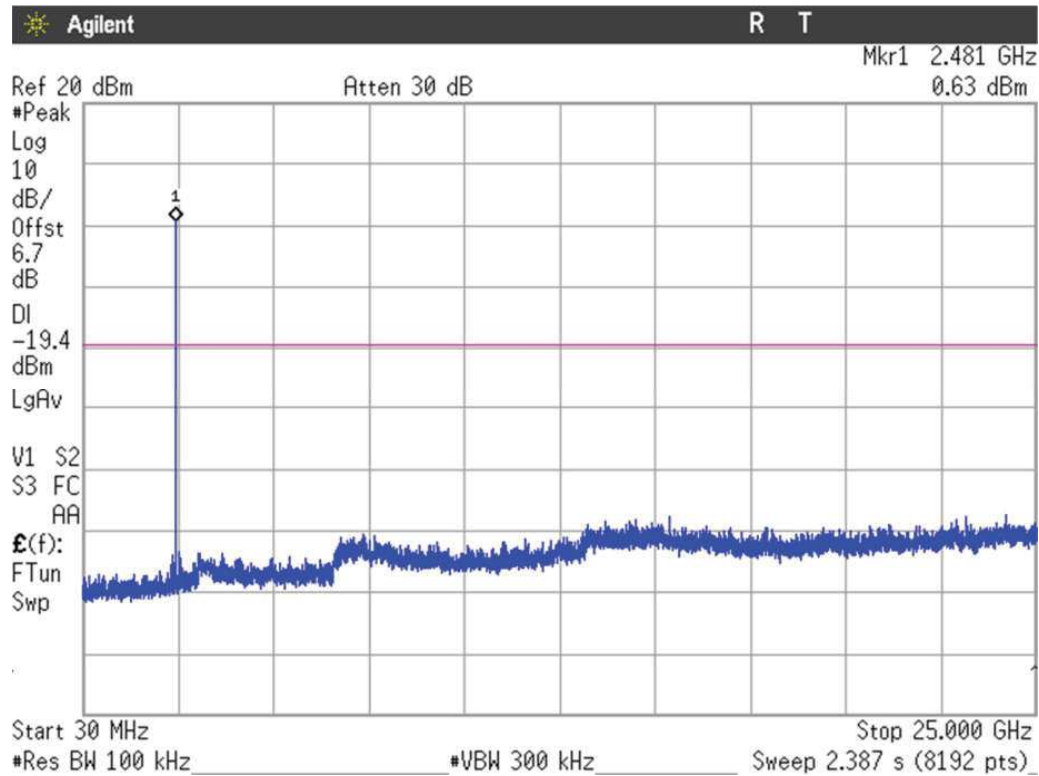
The peak shown in the plot above the limit is the carrier frequency.

- Middle Channel:



The peak shown in the plot above the limit is the carrier frequency.

- High Channel:



The peak shown in the plot above the limit is the carrier frequency.

• **PI/4 DQPSK:**

|                                   | Low Channel<br>2402 MHz | Middle Channel<br>2440 MHz | High Channel<br>2480 MHz |
|-----------------------------------|-------------------------|----------------------------|--------------------------|
| Reference Level Measurement (dBm) | 0.64                    | 0.7                        | 2.77                     |
| Measurement uncertainty (dB)      | <±0.78                  |                            |                          |

- Low Channel:

No spurious peaks found at less than 20 dB below the limit.

- Middle Channel:

No spurious peaks found at less than 20 dB below the limit.

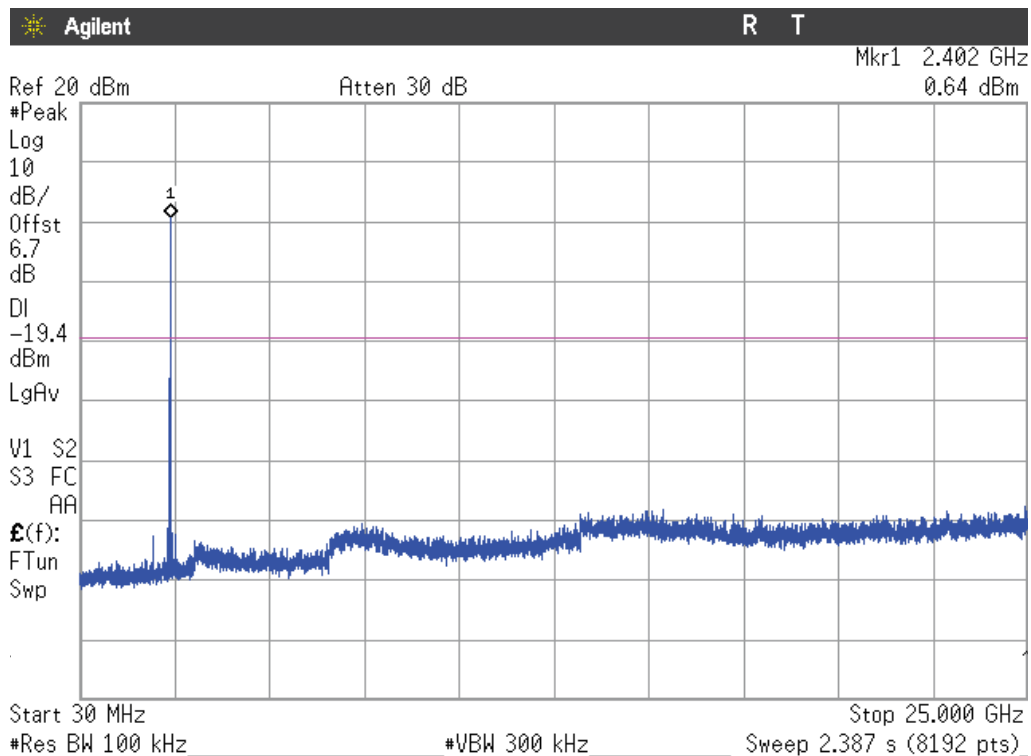
- High Channel:

No spurious peaks found at less than 20 dB below the limit.

|                              |        |
|------------------------------|--------|
| Measurement uncertainty (dB) | <±2.03 |
|------------------------------|--------|

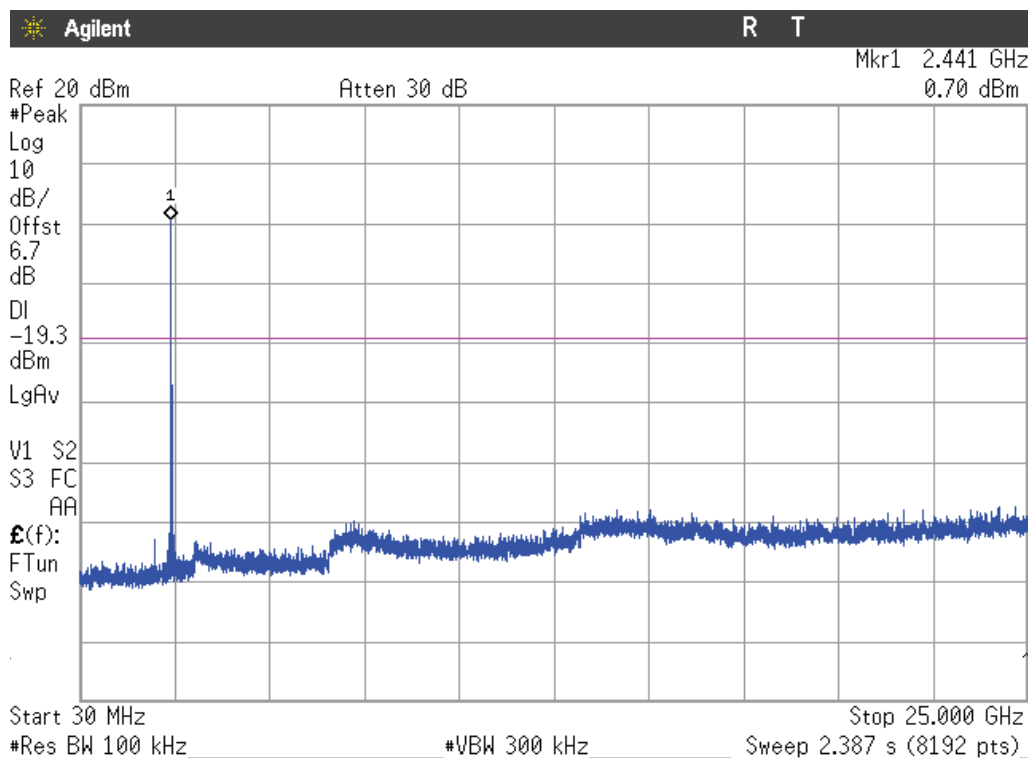
Verdict: PASS

- Low Channel:



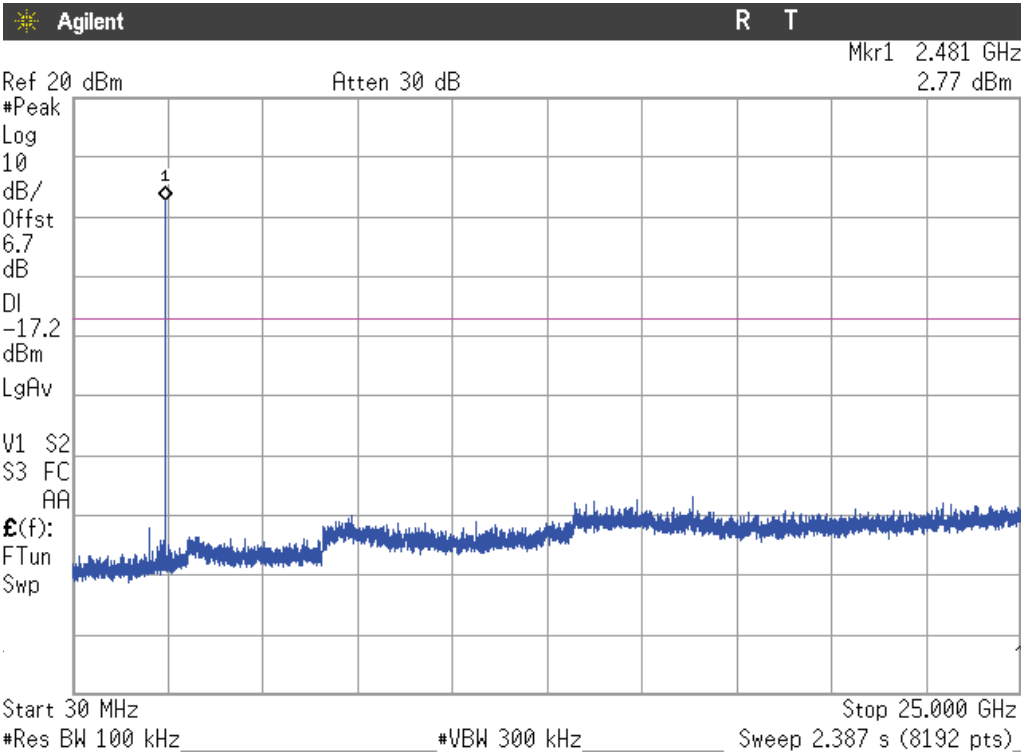
The peak shown in the plot above the limit is the carrier frequency.

- Middle Channel:



The peak shown in the plot above the limit is the carrier frequency.

- High Channel:



The peak shown in the plot above the limit is the carrier frequency.

• **8DPSK:**

|                                   | Low Channel<br>2402 MHz | Middle Channel<br>2440 MHz | High Channel<br>2480 MHz |
|-----------------------------------|-------------------------|----------------------------|--------------------------|
| Reference Level Measurement (dBm) | 0.89                    | 3.69                       | 1.04                     |
| Measurement uncertainty (dB)      | <±0.78                  |                            |                          |

- Low Channel:

No spurious peaks found at less than 20 dB below the limit.

- Middle Channel:

No spurious peaks found at less than 20 dB below the limit.

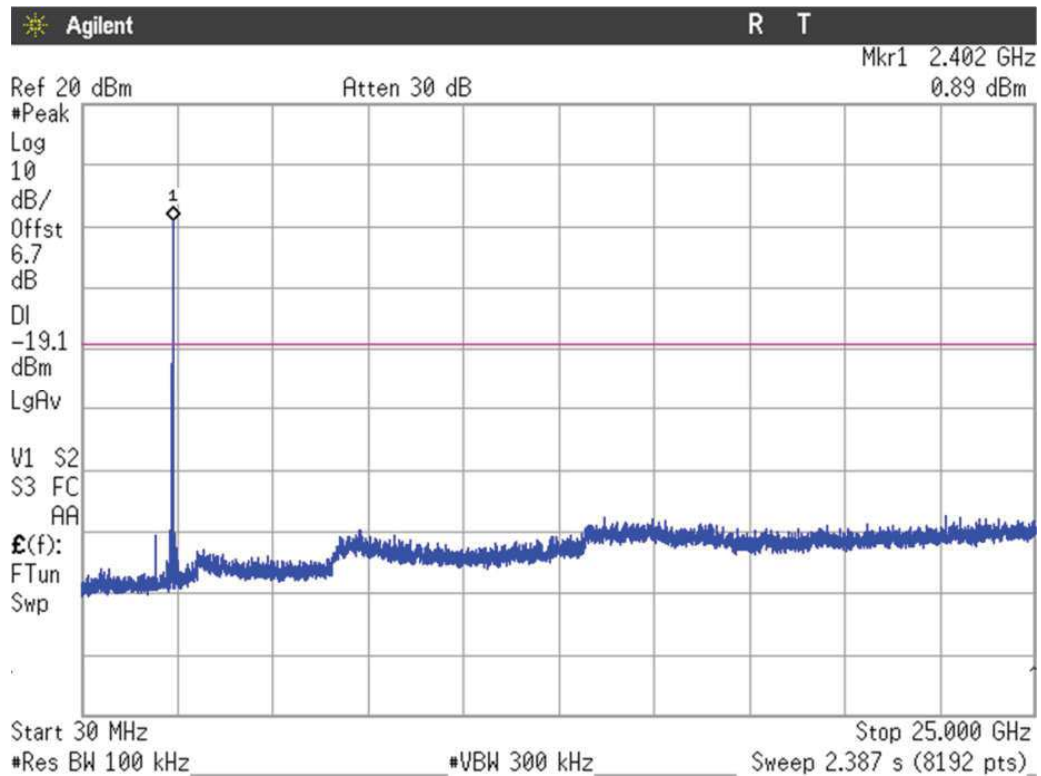
- High Channel:

No spurious peaks found at less than 20 dB below the limit.

|                              |        |
|------------------------------|--------|
| Measurement uncertainty (dB) | <±2.03 |
|------------------------------|--------|

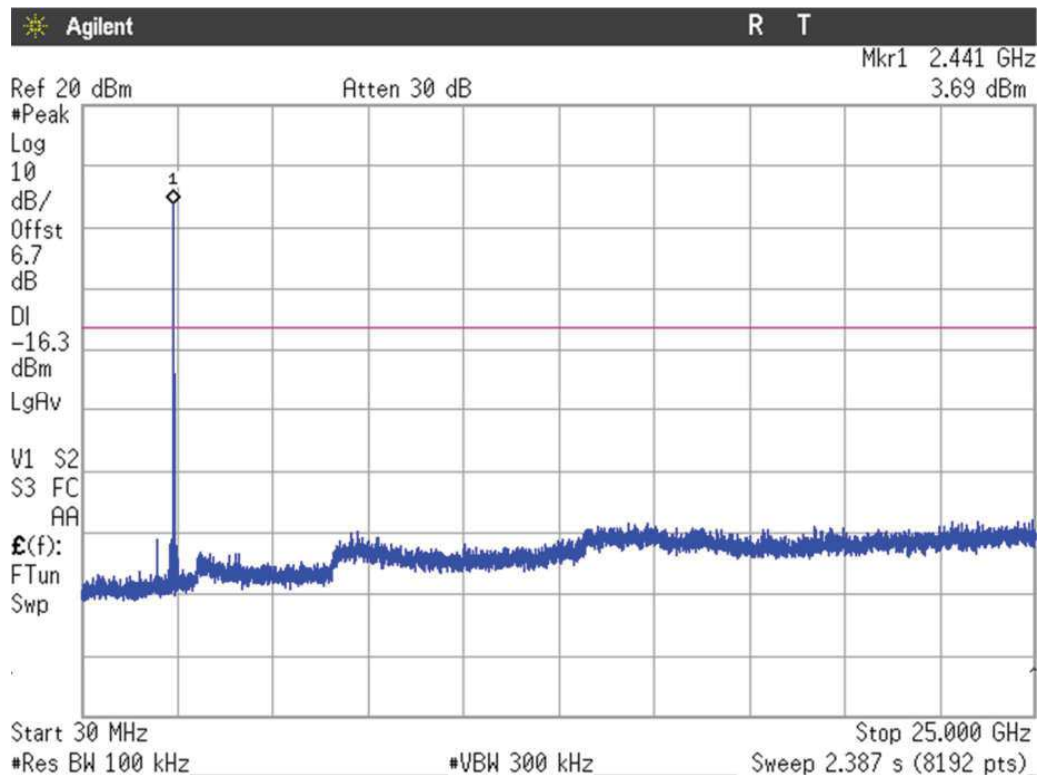
Verdict: PASS

- Low Channel:



The peak shown in the plot above the limit is the carrier frequency.

- Middle Channel:



The peak shown in the plot above the limit is the carrier frequency.



## FCC Section 15.247 Subclause (d) / RSS-247 Clause 5.5. Band-edge emissions compliance (Transmitter) (conducted)

### SPECIFICATION:

Emissions outside the frequency band in which the intentional radiator is operating shall be at least 20 dB below the highest level of the desired power.

### RESULTS:

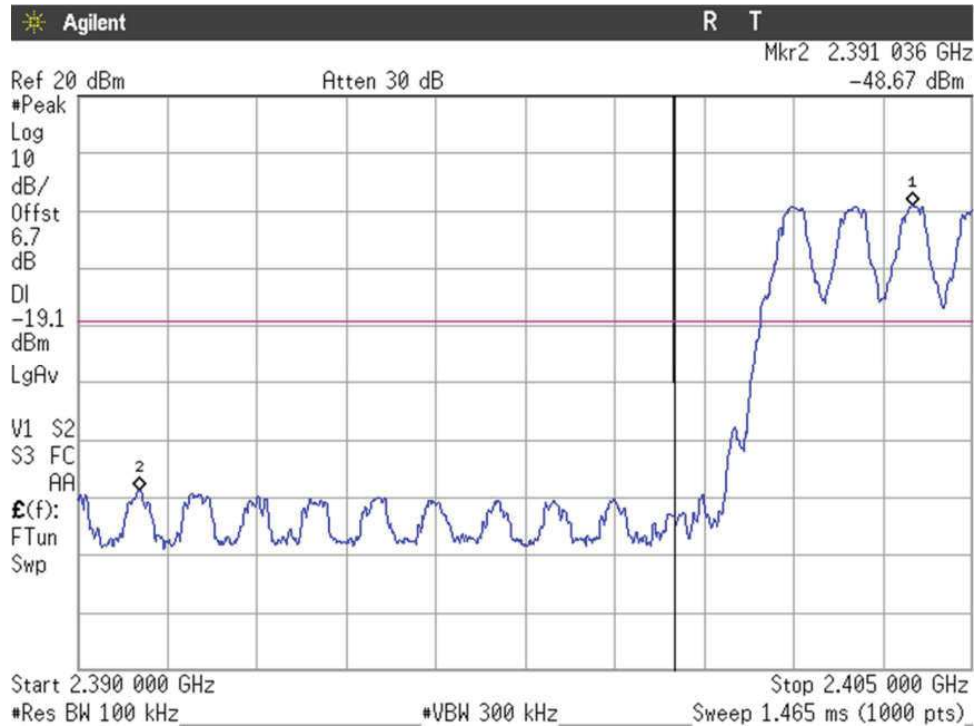
Radiated measurements were used to show compliance with the limits in the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz.

|                              |        |
|------------------------------|--------|
| Measurement uncertainty (dB) | <±2.03 |
|------------------------------|--------|

- **GFSK – Band-edge emissions compliance**

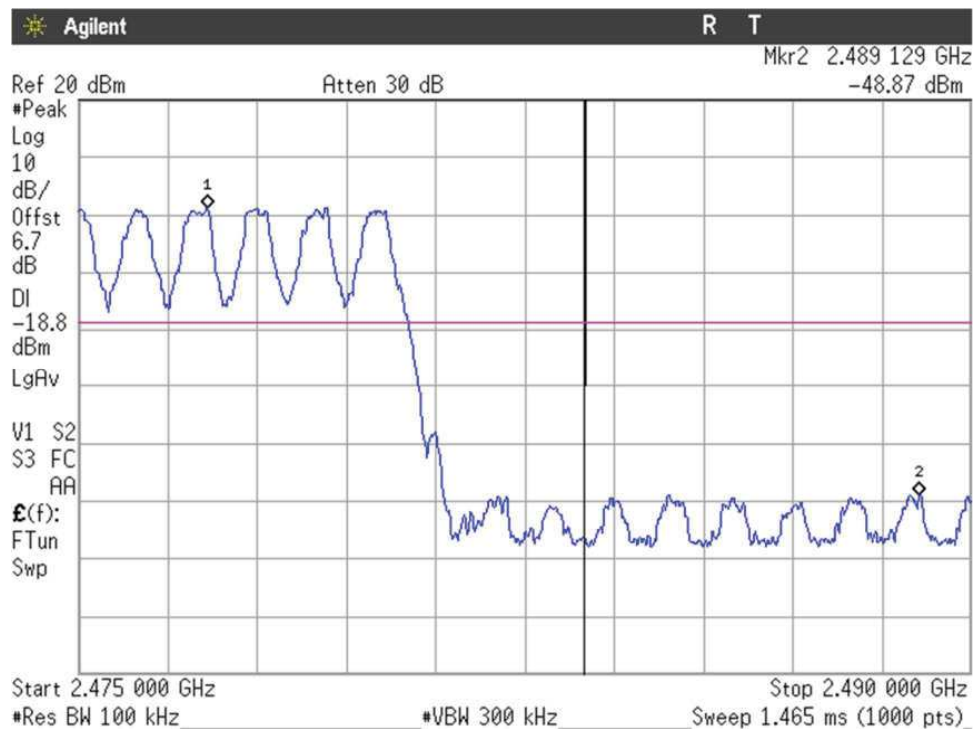
- ❖ HOPPING ON:

- Low Frequency Section 2402 MHz:



Verdict: PASS

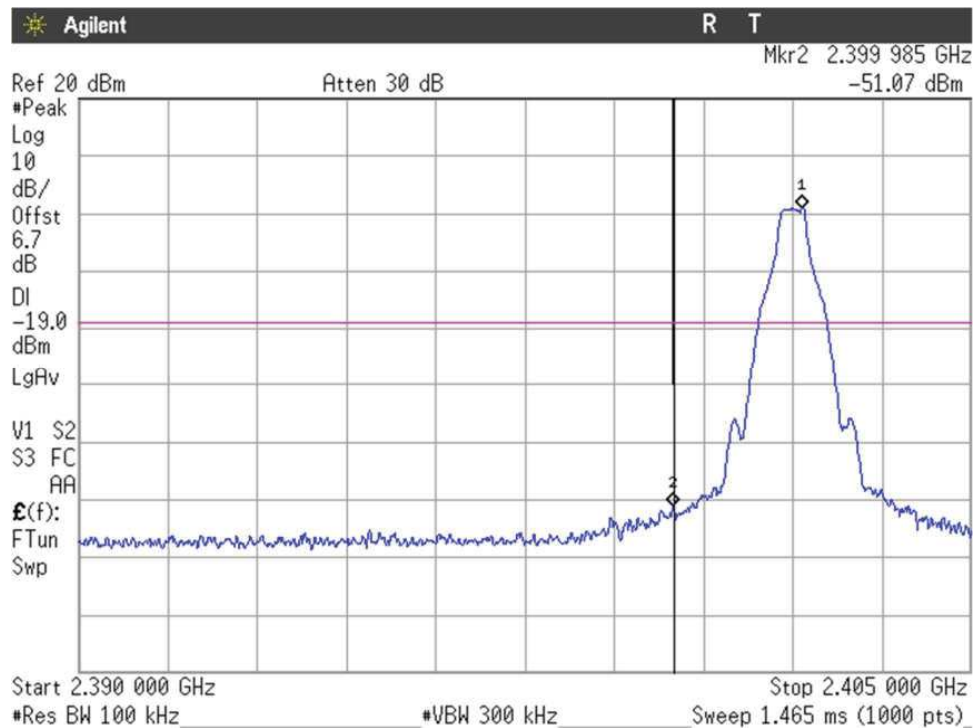
- High Frequency Section 2480 MHz:



Verdict: PASS

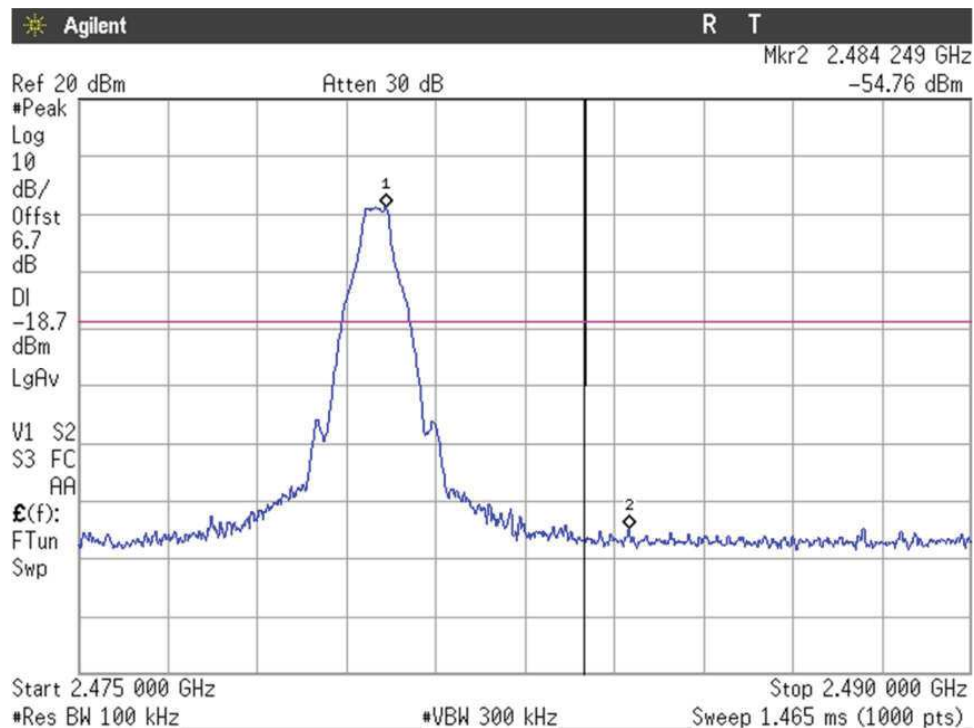
❖ HOPPING OFF:

- Low Frequency Section 2402 MHz:



Verdict: PASS

- High Frequency Section 2480 MHz:

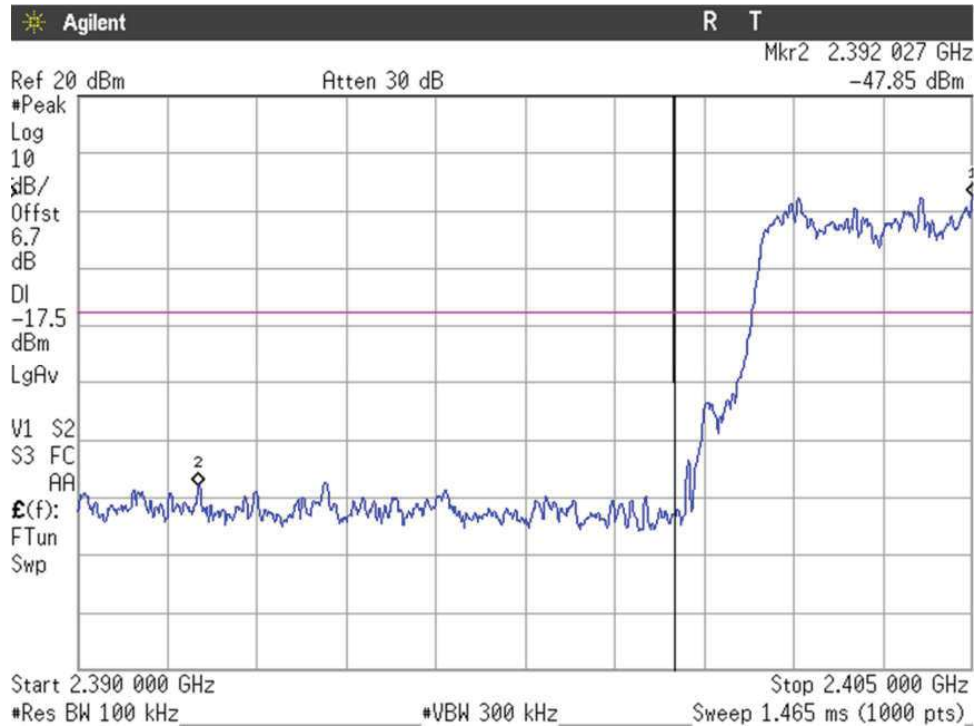


Verdict: PASS

• **PI/4 DQPSK – Band-edge emissions compliance**

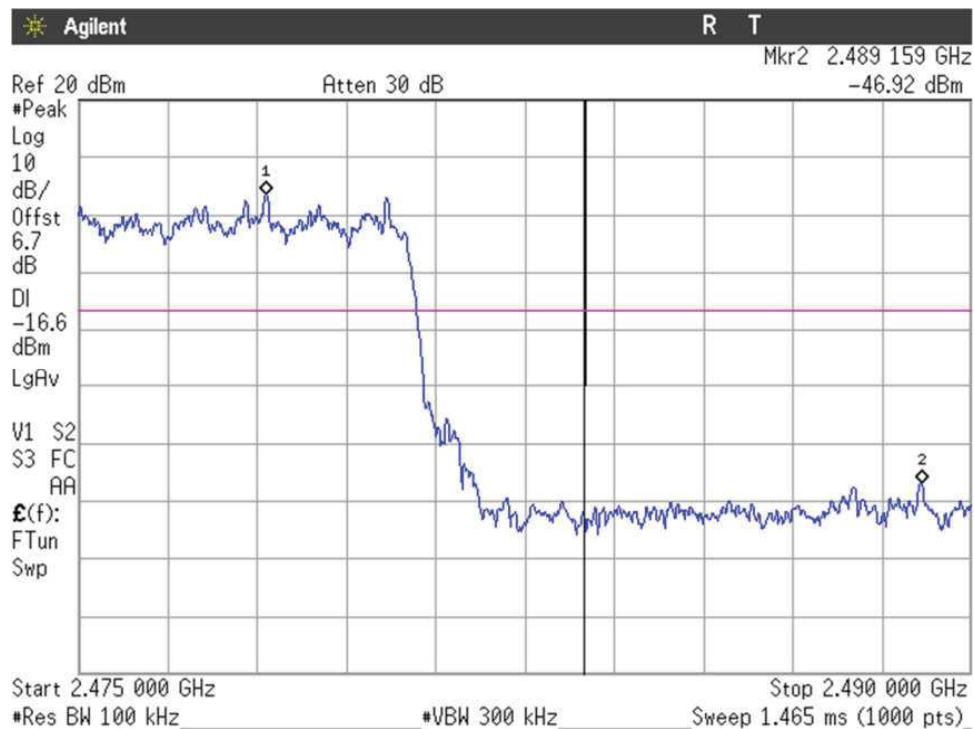
❖ **HOPPING ON:**

- Low Frequency Section 2402 MHz:



Verdict: PASS

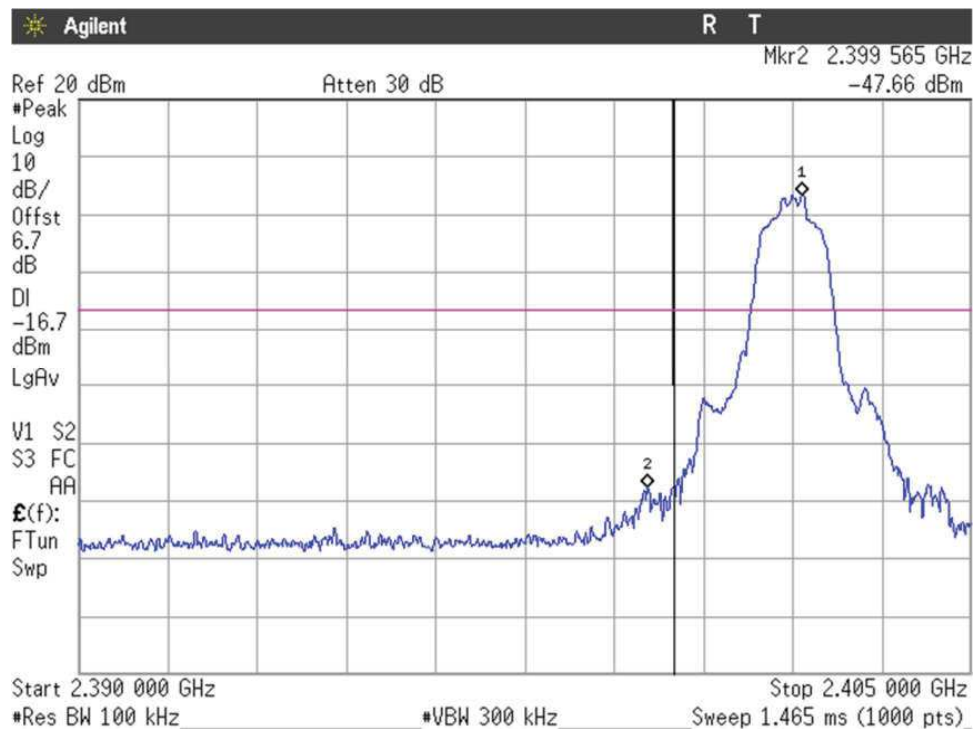
- High Frequency Section 2480 MHz:



Verdict: PASS

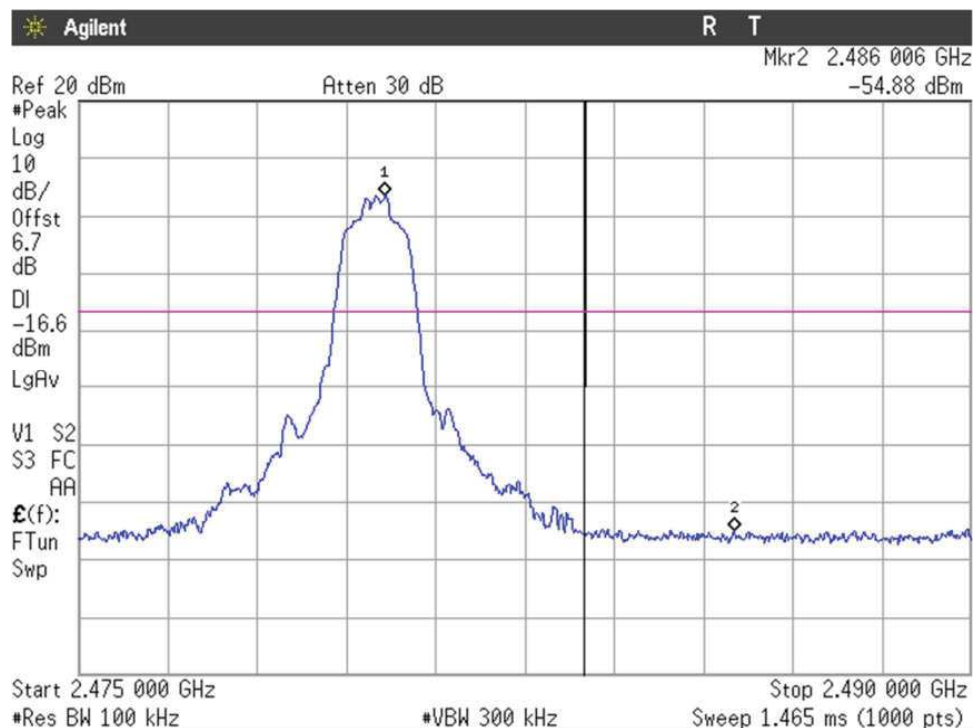
❖ HOPPING OFF:

- Low Frequency Section 2402 MHz:



Verdict: PASS

- High Frequency Section 2480 MHz:

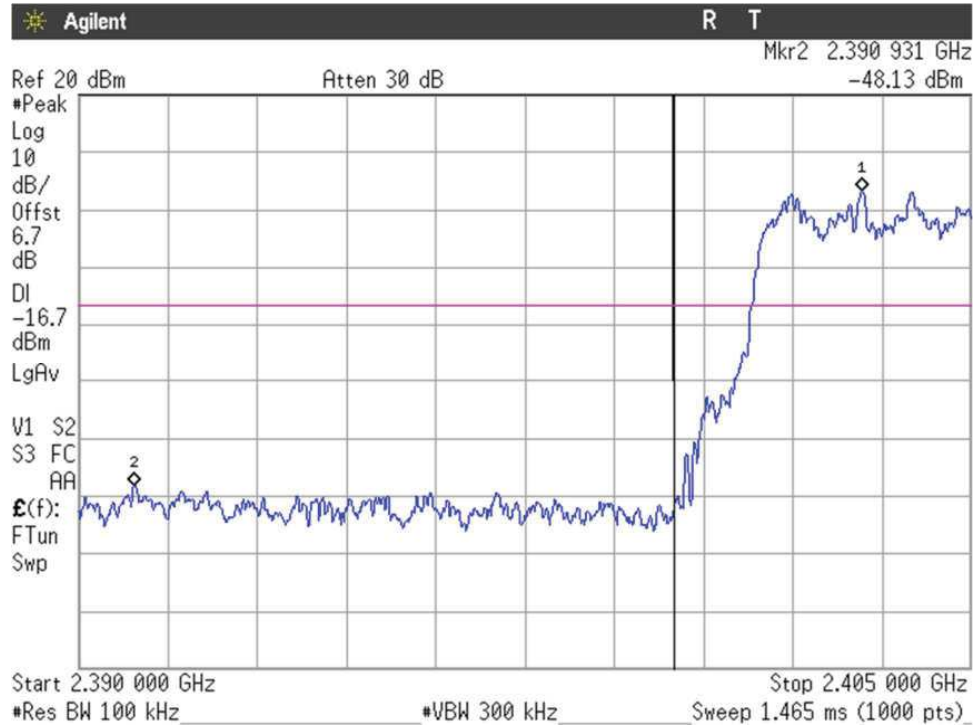


Verdict: PASS

• **8DPSK – Band-edge emissions compliance**

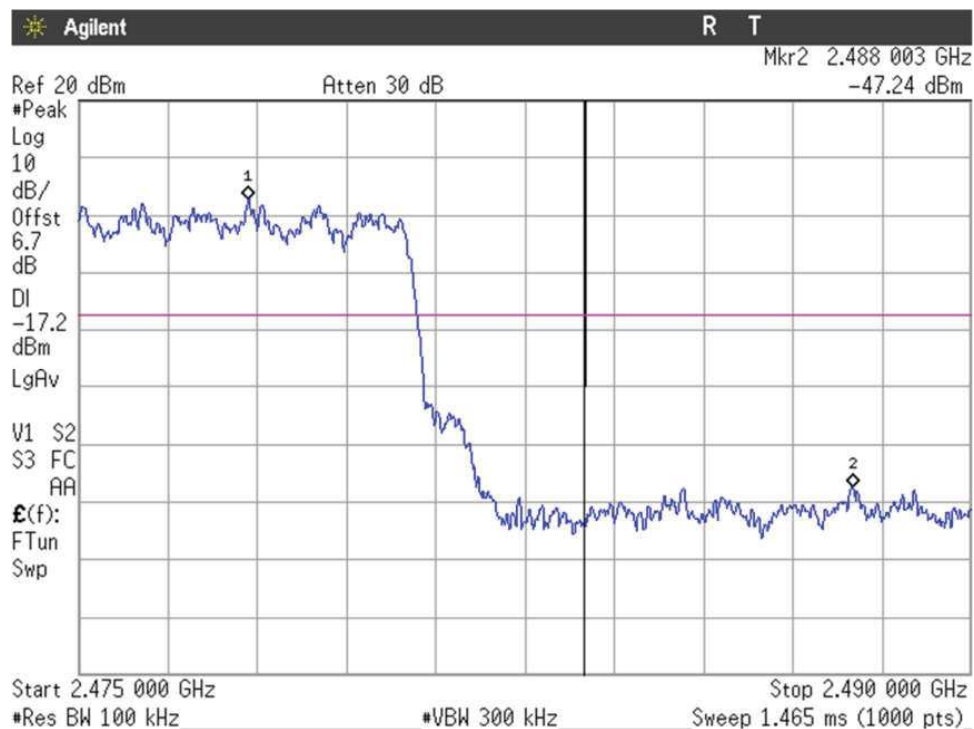
❖ **HOPPING ON:**

- Low Frequency Section 2402 MHz:



Verdict: PASS

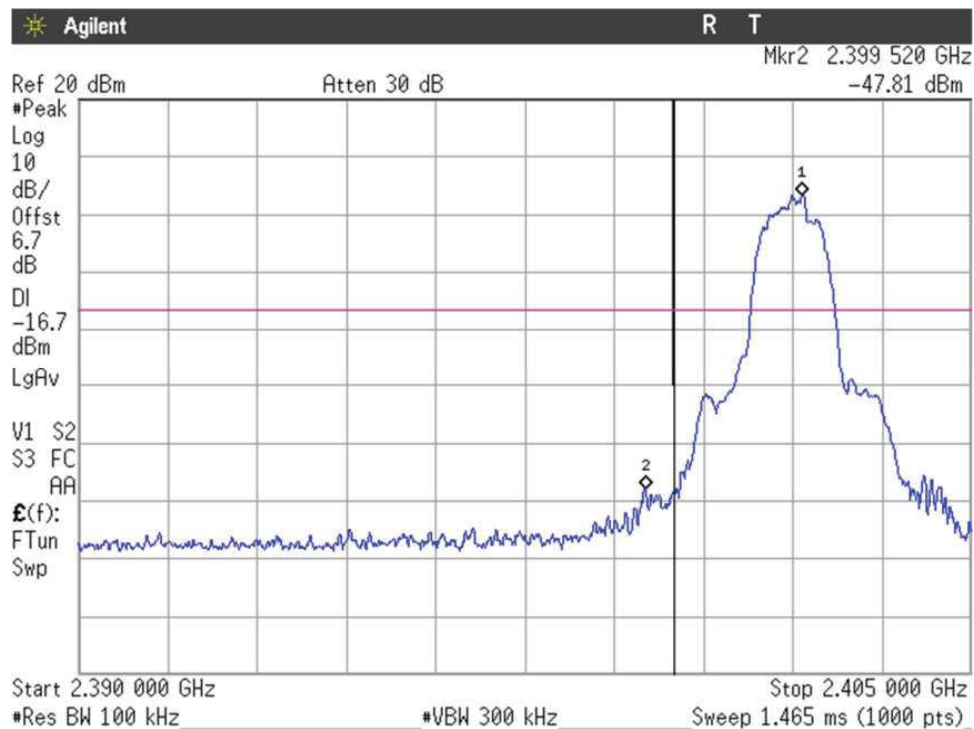
- High Frequency Section 2480 MHz:



Verdict: PASS

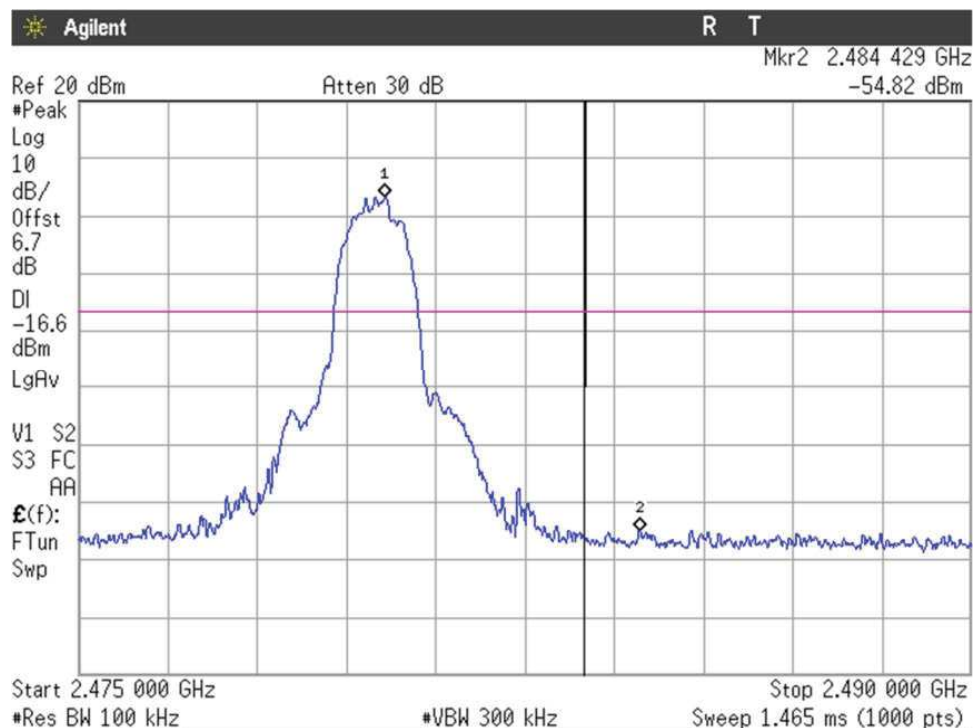
❖ HOPPING OFF:

- Low Frequency Section 2402 MHz:



Verdict: PASS

- High Frequency Section 2480 MHz:



Verdict: PASS

## FCC Section 15.247 Subclause (d) / RSS-247 Clause 5.5. Emission limitations radiated. (Transmitter)

### SPECIFICATION:

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)/RSS-Gen):

| Frequency Range (MHz) | Field strength ( $\mu\text{V/m}$ ) | Field strength ( $\text{dB}\mu\text{V/m}$ ) | Measurement distance (m) |
|-----------------------|------------------------------------|---------------------------------------------|--------------------------|
| 0.009-0.490           | 2400/F(kHz)                        | -                                           | 300                      |
| 0.490-1.705           | 24000/F(kHz)                       | -                                           | 30                       |
| 1.705 - 30.0          | 30                                 | -                                           | 30                       |
| 30 - 88               | 100                                | 40                                          | 3                        |
| 88 - 216              | 150                                | 43.5                                        | 3                        |
| 216 - 960             | 200                                | 46                                          | 3                        |
| 960 - 25000           | 500                                | 54                                          | 3                        |

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

RSS-247. Attenuation below the general field strength limits specified in RSS-Gen is not required.

### RESULTS:

The situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

All tests were performed in a semi-anechoic chamber at a distance of 3 m for the frequency range 30 MHz-1000 MHz and at distance of 1m for the frequency range 1 GHz-25 GHz.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

### Frequency range 30 MHz - 1 GHz:

The spurious emissions below 1 GHz do not depend neither on the operating channel nor the modulation mode selected in the EUT.

Spurious frequencies operating (radiated) at less than 20 dB below limit:

| Spurious frequency (MHz) | Detector   | Emission Level (dBμV/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|------------|-------------------------|--------------|------------------------------|
| 62.188                   | Quasi peak | 34.7                    | V            | <± 2.07                      |
| 408.025                  | Quasi peak | 28.1                    | H            | <± 2.07                      |
| 519.996                  | Quasi peak | 31.7                    | V            | <± 2.07                      |

### Frequency range 1 - 26 GHz:

The results in the next tables show the maximum measured levels in the 1-26 GHz range including the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz.

Spurious signals with peak levels above the average limit (54 dBμV/m at 3 m) are measured with average detector for checking compliance with the average limit.

- Modulation: GFSK (DH5)**

- Low Channel (2402 MHz). Spurious frequencies operating (radiated) at less than 20 dB below limit:

| Spurious frequency (GHz) | Detector | Emission Level (dBμV/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|----------|-------------------------|--------------|------------------------------|
| 2.32232                  | Peak     | 51.91                   | V            | <± 4.88                      |
| 2.52203                  | Peak     | 51.40                   | V            | <± 4.88                      |
| 3.27837                  | Peak     | 42.37                   | V            | <± 4.88                      |
| 3.46410                  | Peak     | 44.58                   | H            | <± 4.88                      |
| 4.80390                  | Peak     | 45.00                   | V            | <± 4.88                      |
| 7.20537 (*)              | Peak     | 60.43                   | V            | <± 4.88                      |
|                          | Average  | 55.23                   |              | <± 4.88                      |
| 9.60730                  | Peak     | 50.97                   | V            | <± 4.88                      |
| 12.00923                 | Peak     | 50.05                   | H            | <± 4.88                      |

(\*): This spurious frequency is outside the restricted bands as defined in §15.205(a). The measured maximum carrier level at 3 m was 103.40 dBμV/m (Peak) so the spurious level is more than 20 dB below the carrier level.

- Middle Channel (2441 MHz). Spurious frequencies operating (radiated) at less than 20 dB below limit:

| Spurious frequency (GHz) | Detector | Emission Level (dB $\mu$ V/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|----------|-------------------------------|--------------|------------------------------|
| 2.36138                  | Peak     | 52.17                         | V            | < $\pm$ 4.88                 |
| 3.2625                   | Peak     | 43.34                         | V            | < $\pm$ 4.88                 |
| 3.33297                  | Peak     | 44.42                         | H            | < $\pm$ 4.88                 |
| 4.88183                  | Peak     | 48.41                         | V            | < $\pm$ 4.88                 |
| 7.32343                  | Peak     | 56.55                         | H            | < $\pm$ 4.88                 |
|                          | Average  | 53.76                         |              | < $\pm$ 4.88                 |
| 9.76457                  | Peak     | 48.66                         | H            | < $\pm$ 4.88                 |

- High Channel (2480 MHz). Spurious frequencies operating (radiated) at less than 20 dB below limit:

| Spurious frequency (GHz) | Detector | Emission Level (dB $\mu$ V/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|----------|-------------------------------|--------------|------------------------------|
| 1.93670                  | Peak     | 53.76                         | H            | < $\pm$ 4.88                 |
| 2.35986                  | Peak     | 51.28                         | V            | < $\pm$ 4.88                 |
| 2.48350                  | Peak     | 53.54                         | V            | < $\pm$ 4.88                 |
| 3.31337                  | Peak     | 45.04                         | H            | < $\pm$ 4.88                 |
| 3.71983                  | Peak     | 43.02                         | V            | < $\pm$ 4.88                 |
| 4.95977                  | Peak     | 48.14                         | V            | < $\pm$ 4.88                 |
| 7.44010                  | Peak     | 55.58                         | V            | < $\pm$ 4.88                 |
|                          | Average  | 53.39                         |              | < $\pm$ 4.88                 |

Verdict: PASS

• **Modulation PI/4-DQPSK (2DH5)**

- Low Channel (2402 MHz). Spurious frequencies operating (radiated) at less than 20 dB below limit:

| Spurious frequency (GHz) | Detector | Emission Level (dBμV/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|----------|-------------------------|--------------|------------------------------|
| 2.32234                  | Peak     | 52.02                   | V            | <± 4.88                      |
| 3.25270                  | Peak     | 45.23                   | H            | <± 4.88                      |
| 3.33903                  | Peak     | 43.76                   | V            | <± 4.88                      |
| 4.80483                  | Peak     | 46.34                   | V            | <± 4.88                      |
| 7.20630 (*)              | Peak     | 59.62                   | H            | <± 4.88                      |
|                          | Average  | 56.09                   |              | <± 4.88                      |
| 9.60870                  | Peak     | 51.07                   | H            | <± 4.88                      |

(\*): This spurious frequency is outside the restricted bands as defined in §15.205(a). The measured maximum carrier level at 3 m was 94.82 dBμV/m (Peak) so the spurious level is more than 20 dB below the carrier level.

- Middle Channel (2441 MHz). Spurious frequencies operating (radiated) at less than 20 dB below limit:

| Spurious frequency (GHz) | Detector | Emission Level (dBμV/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|----------|-------------------------|--------------|------------------------------|
| 2.36096                  | Peak     | 52.79                   | V            | <± 4.88                      |
| 2.36103                  | Peak     | 53.28                   | V            | <± 4.88                      |
| 3.15377                  | Peak     | 42.90                   | V            | <± 4.88                      |
| 3.32317                  | Peak     | 43.61                   | H            | <± 4.88                      |
| 4.88230                  | Peak     | 52.87                   | V            | <± 4.88                      |
| 7.32343                  | Peak     | 58.06                   | V            | <± 4.88                      |
|                          | Average  | 53.91                   |              | <± 4.88                      |
| 9.76457                  | Peak     | 49.15                   | V            | <± 4.88                      |

- High Channel (2480 MHz). Spurious frequencies operating (radiated) at less than 20 dB below limit:

| Spurious frequency (GHz) | Detector | Emission Level (dBμV/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|----------|-------------------------|--------------|------------------------------|
| 2.48353                  | Peak     | 53.54                   | V            | <± 4.88                      |
| 3.29143                  | Peak     | 45.08                   | H            | <± 4.88                      |
| 3.41277                  | Peak     | 43.89                   | V            | <± 4.88                      |
| 4.96023                  | Peak     | 47.04                   | H            | <± 4.88                      |
| 7.44057                  | Peak     | 54.70                   | V            | <± 4.88                      |
|                          | Average  | 49.54                   |              | <± 4.88                      |

Verdict: PASS

• **Modulation: 8-DPSK (3DH5)**

- Low Channel (2402 MHz). Spurious frequencies operating (radiated) at less than 20 dB below limit:

| Spurious frequency (GHz) | Detector | Emission Level (dBμV/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|----------|-------------------------|--------------|------------------------------|
| 2.32199                  | Peak     | 52.77                   | V            | <± 4.88                      |
| 2.52203                  | Peak     | 52.71                   | V            | <± 4.88                      |
| 3.41277                  | Peak     | 45.59                   | H            | <± 4.88                      |
| 3.60317                  | Peak     | 43.04                   | V            | <± 4.88                      |
| 4.80390                  | Peak     | 42.73                   | V            | <± 4.88                      |
| 7.20537(*)               | Peak     | 59.36                   | V            | <± 4.88                      |
|                          | Average  | 54.53                   |              | <± 4.88                      |
| 9.60730                  | Peak     | 47.57                   | V            | <± 4.88                      |

(\*): This spurious frequency is outside the restricted bands as defined in §15.205(a). The measured maximum carrier level at 3 m was 100.62 dBμV/m (Peak) so the spurious level is more than 20 dB below the carrier level.

- Middle Channel (2441 MHz). Spurious frequencies operating (radiated) at less than 20 dB below limit:

| Spurious frequency (GHz) | Detector | Emission Level (dBμV/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|----------|-------------------------|--------------|------------------------------|
| 3.27510                  | Peak     | 42.55                   | V            | <± 4.88                      |
| 3.31383                  | Peak     | 45.26                   | H            | <± 4.88                      |
| 4.88183                  | Peak     | 49.82                   | V            | <± 4.88                      |
| 7.32297                  | Peak     | 56.37                   | V            | <± 4.88                      |
|                          | Average  | 51.22                   |              | <± 4.88                      |
| 9.76363                  | Peak     | 47.95                   | H            | <± 4.88                      |

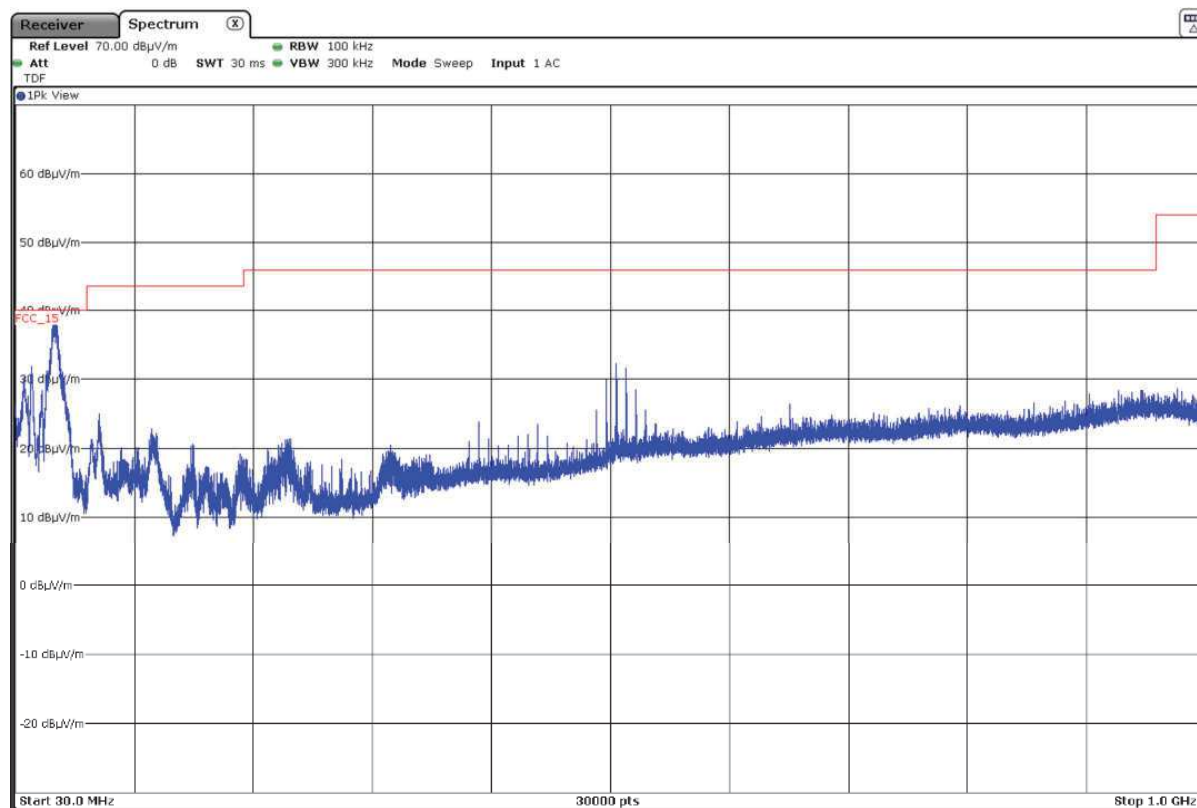
- High Channel (2480 MHz). Spurious frequencies operating (radiated) at less than 20 dB below limit:

| Spurious frequency (GHz) | Detector | Emission Level (dBμV/m) | Polarization | Measurement Uncertainty (dB) |
|--------------------------|----------|-------------------------|--------------|------------------------------|
| 2.48352                  | Peak     | 54.47                   | V            | <± 4.88                      |
|                          | Average  | 40.94                   |              | <± 4.88                      |
| 3.06417                  | Peak     | 44.13                   | H            | <± 4.88                      |
| 3.31057                  | Peak     | 42.71                   | V            | <± 4.88                      |
| 4.95977                  | Peak     | 48.92                   | V            | <± 4.88                      |
| 7.43963                  | Peak     | 56.56                   | V            | <± 4.88                      |
|                          | Average  | 52.09                   |              | <± 4.88                      |

Verdict: PASS

## FREQUENCY RANGE 30 MHz - 1 GHz:

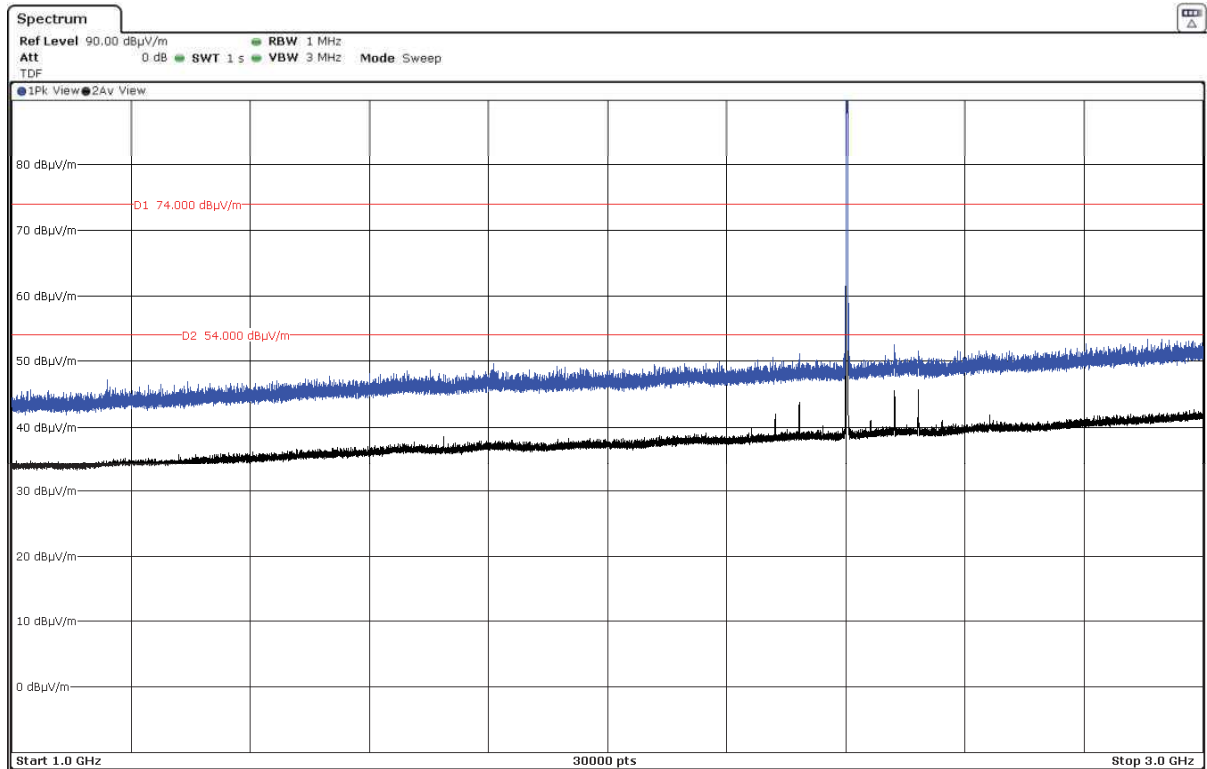
This plot is valid for the Low, Middle and High Channels and all modulation modes.



## FREQUENCY RANGE 1 - 3 GHz:

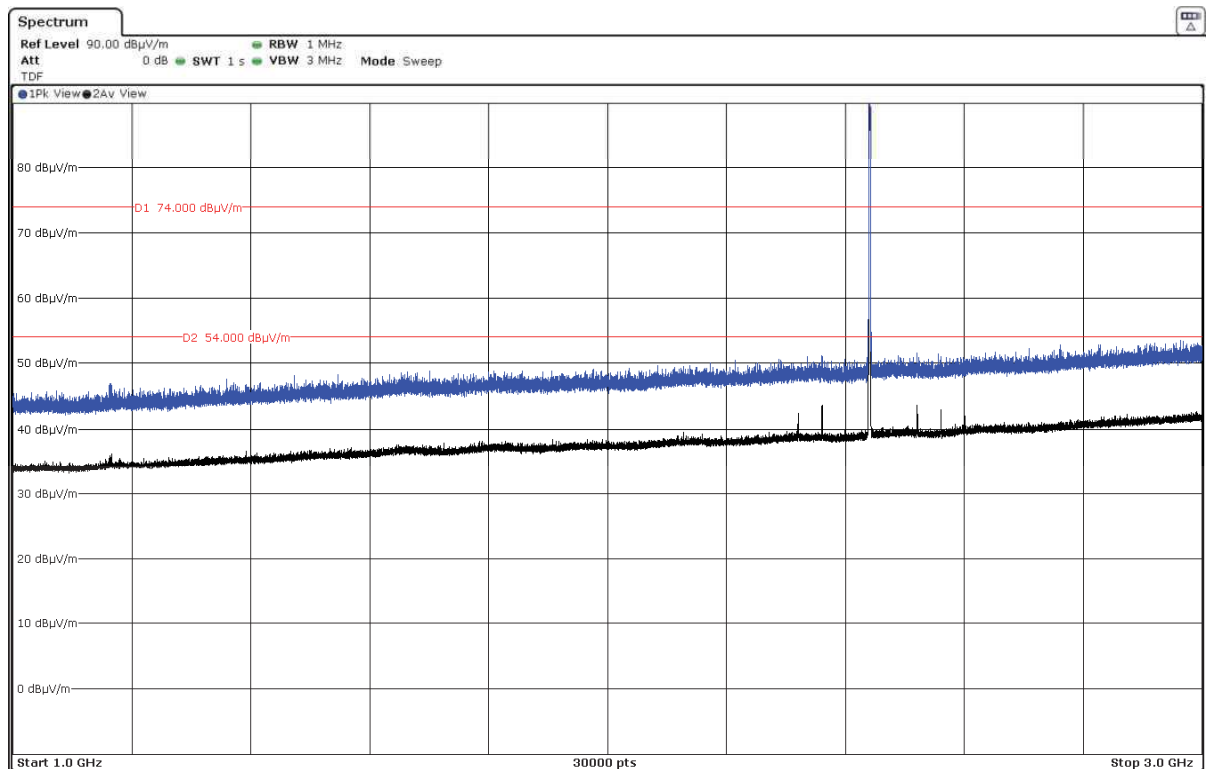
- **Modulation: GFSK (DH5)**

- Low Channel (2402 MHz):



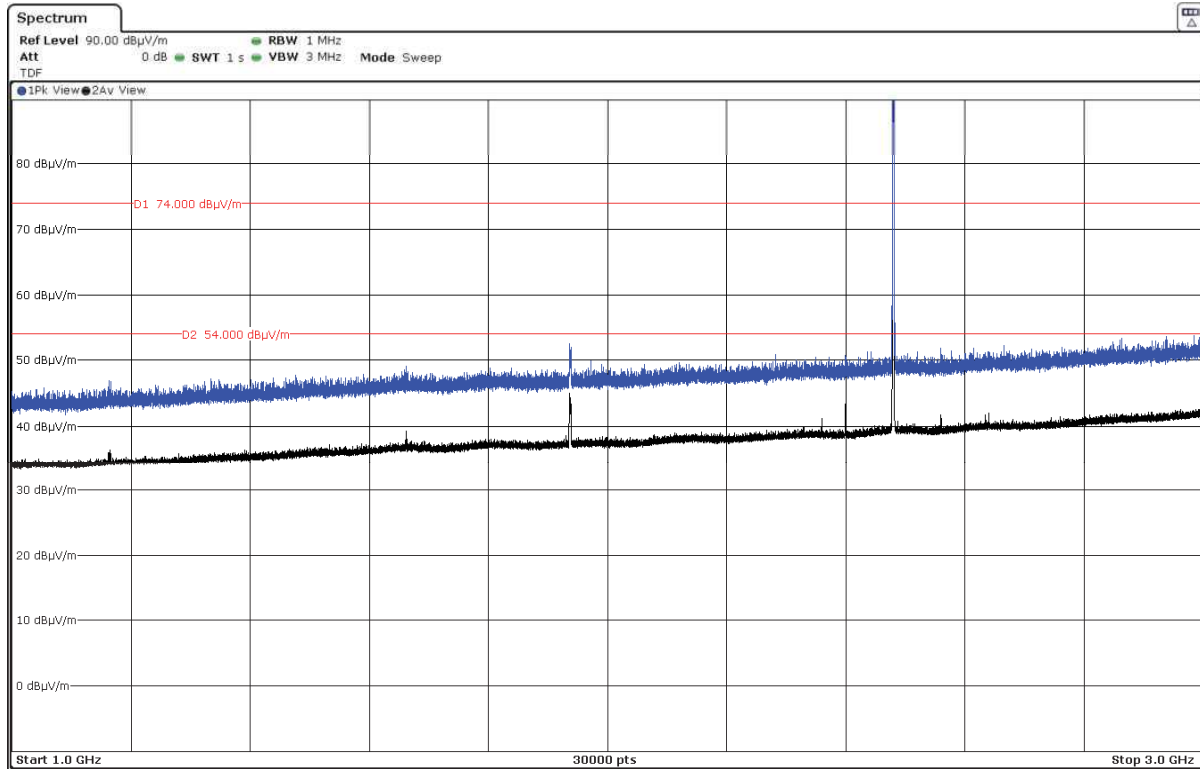
The peak above the limit is the carrier frequency.

- Middle Channel (2441 MHz):



The peak above the limit is the carrier frequency.

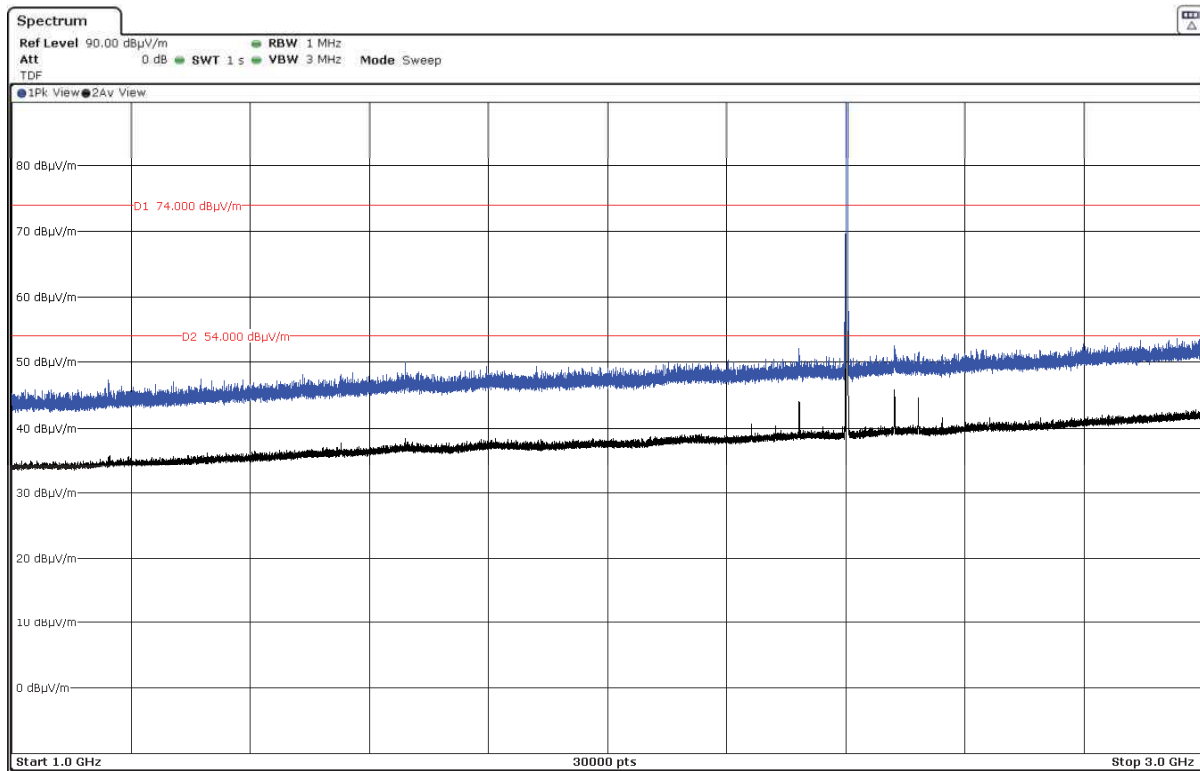
- High Channel (2480 MHz):



The peak above the limit is the carrier frequency.

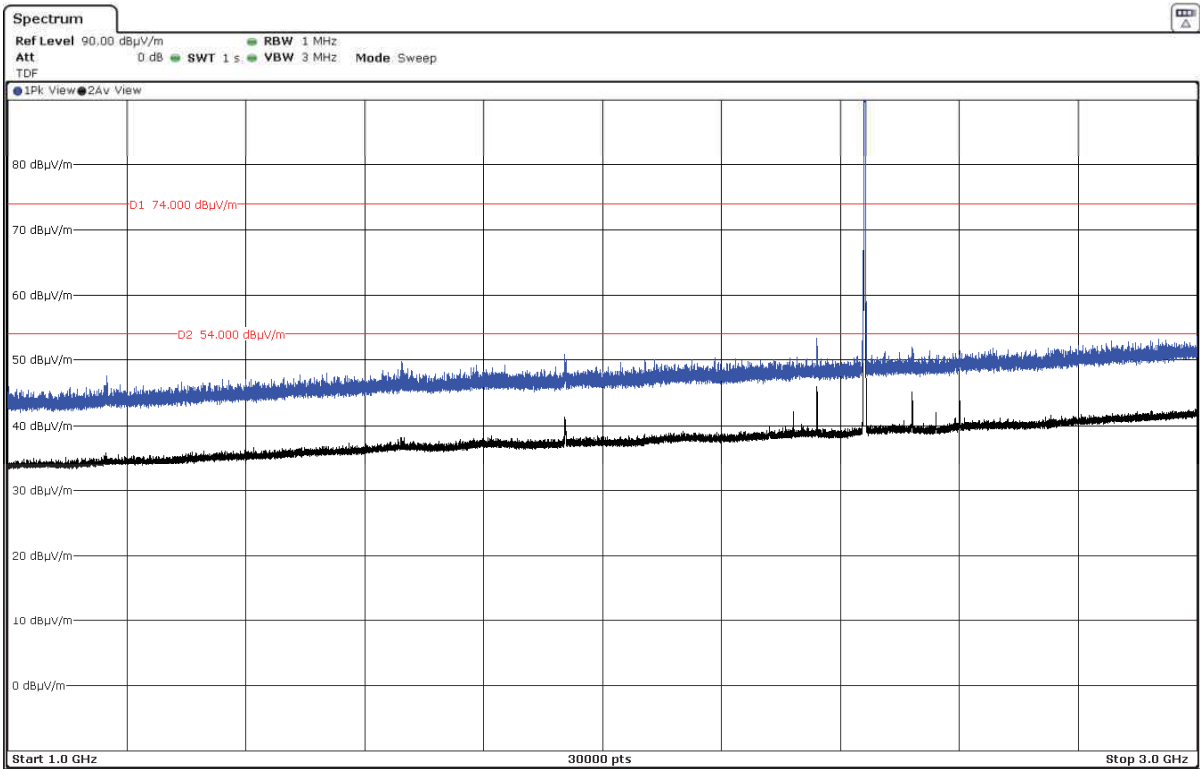
• Modulation: PI/4-DQPSK (2DH5)

- Low Channel (2402 MHz):



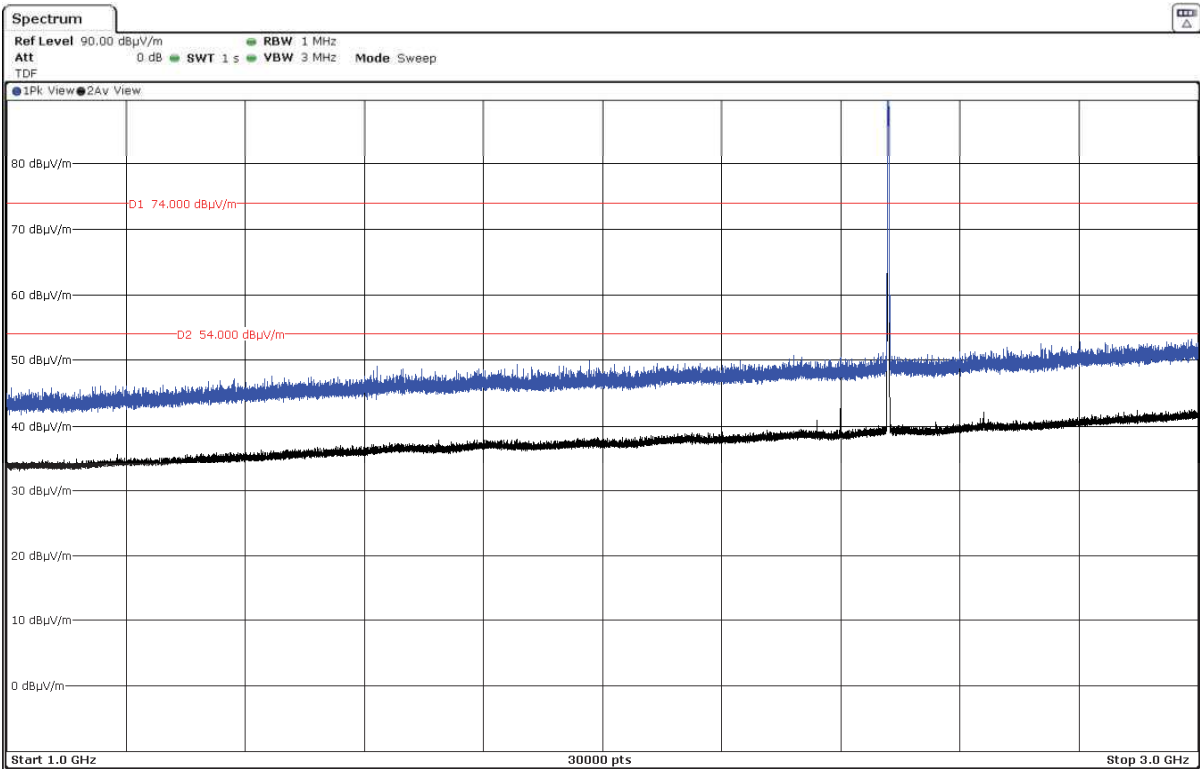
The peak above the limit is the carrier frequency.

- Middle Channel (2441 MHz):



The peak above the limit is the carrier frequency.

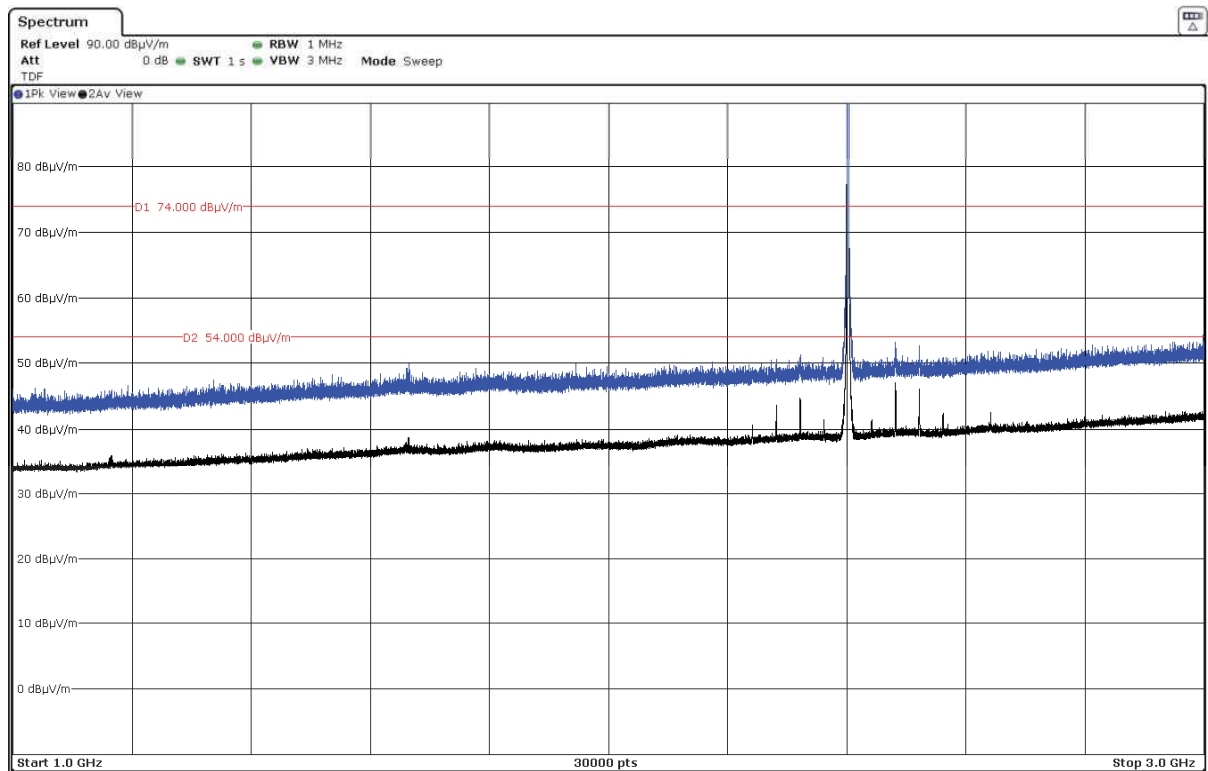
- High Channel (2480 MHz):



The peak above the limit is the carrier frequency.

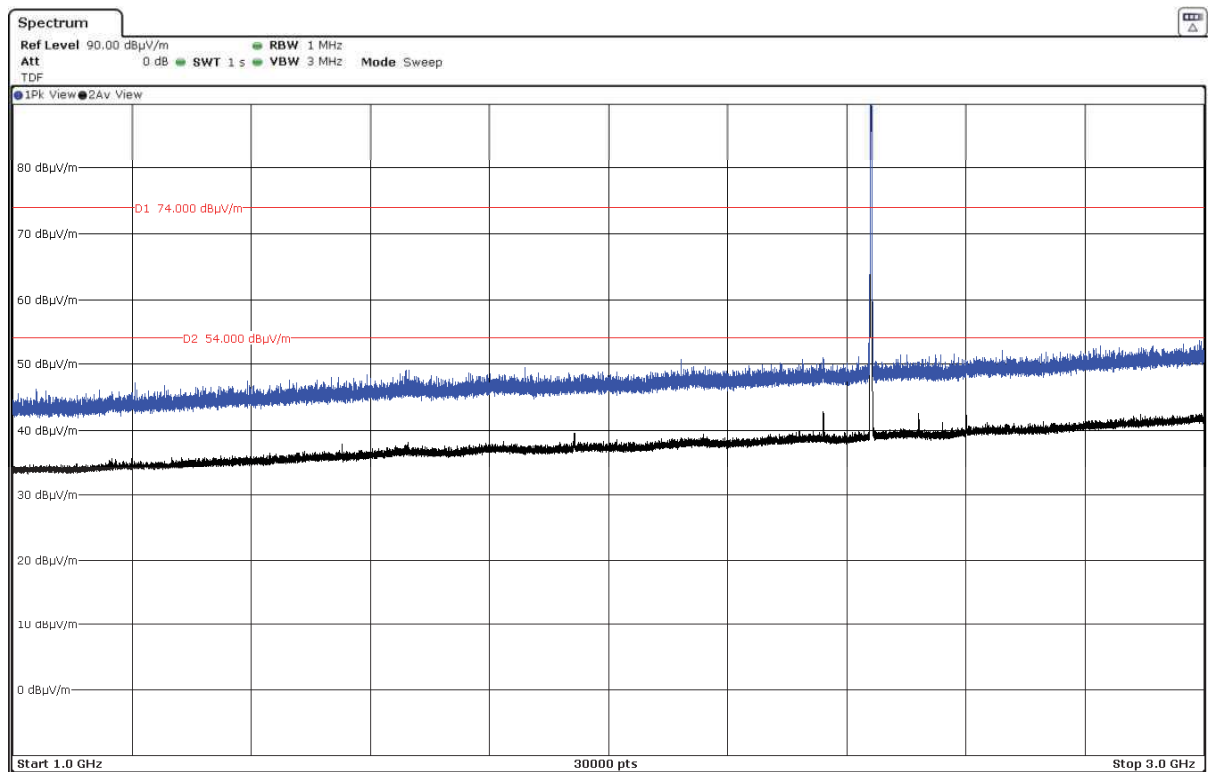
- **Modulation: 8-DPSK (3DH5)**

- Low Channel (2402 MHz):



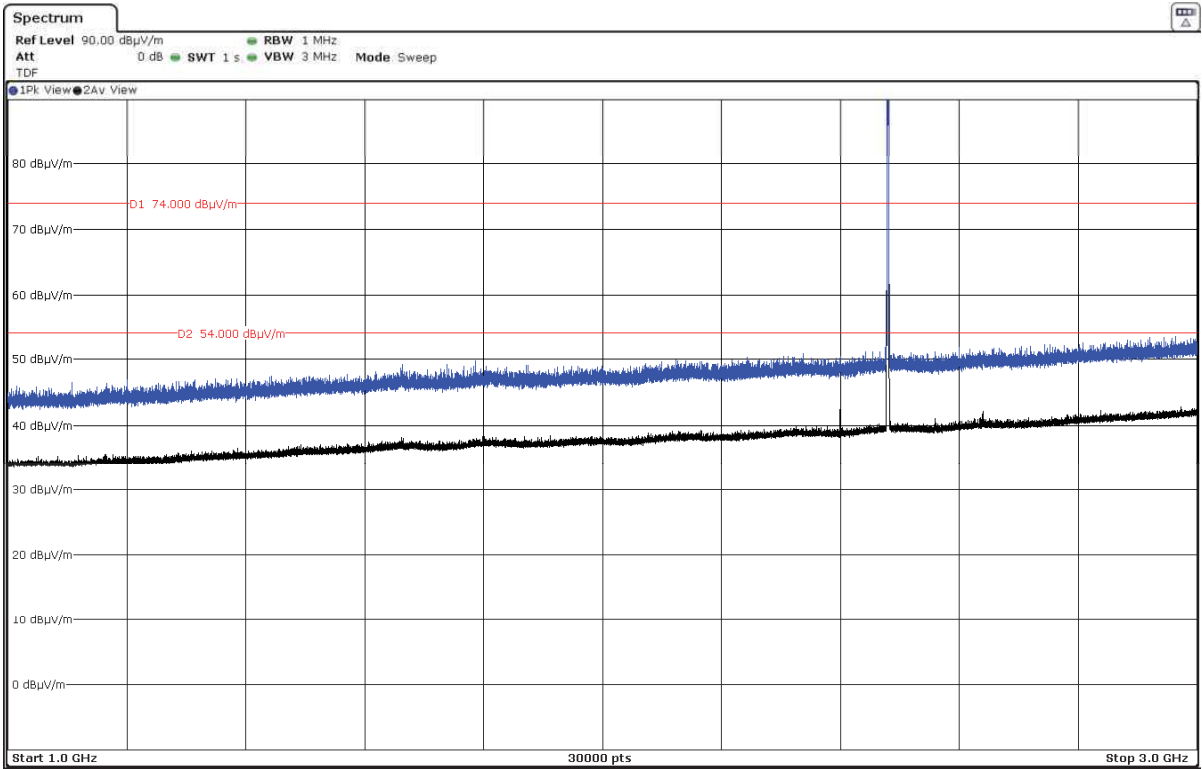
The peak above the limit is the carrier frequency.

- Middle Channel (2441 MHz):



The peak above the limit is the carrier frequency.

- High Channel (2480 MHz):

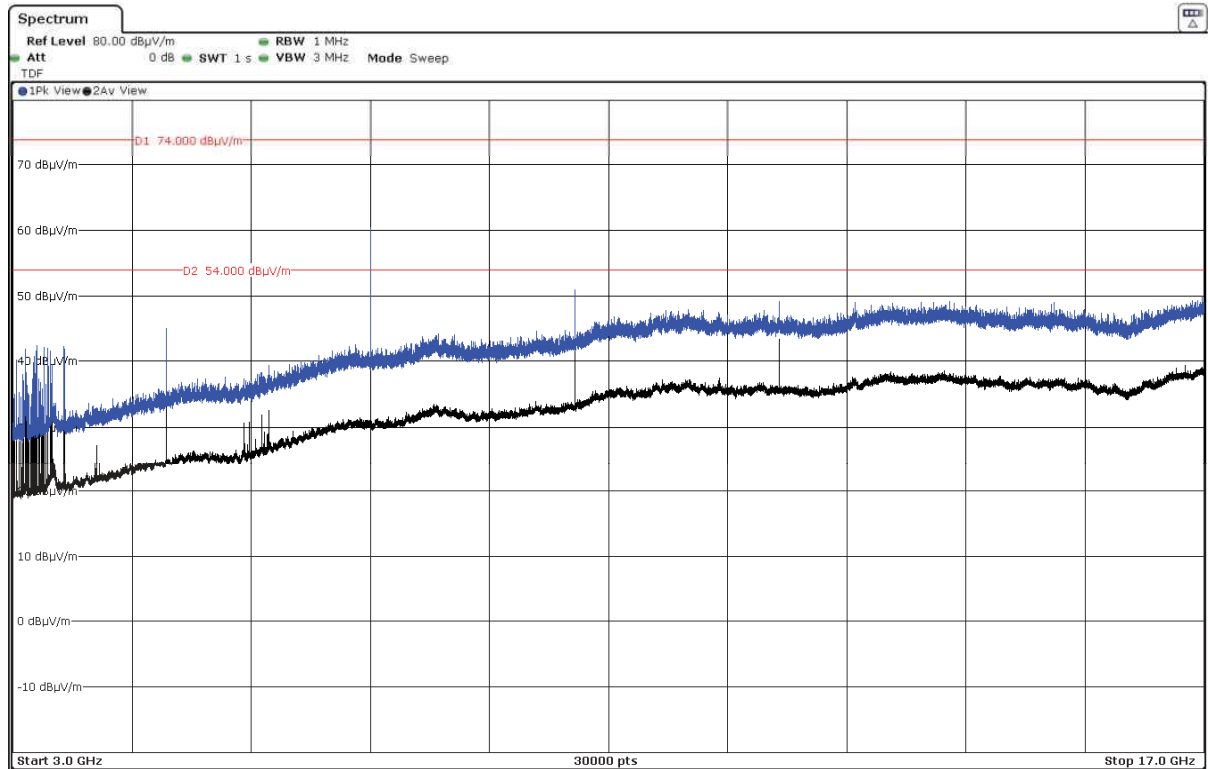


The peak above the limit is the carrier frequency.

## FREQUENCY RANGE 3 - 17 GHz:

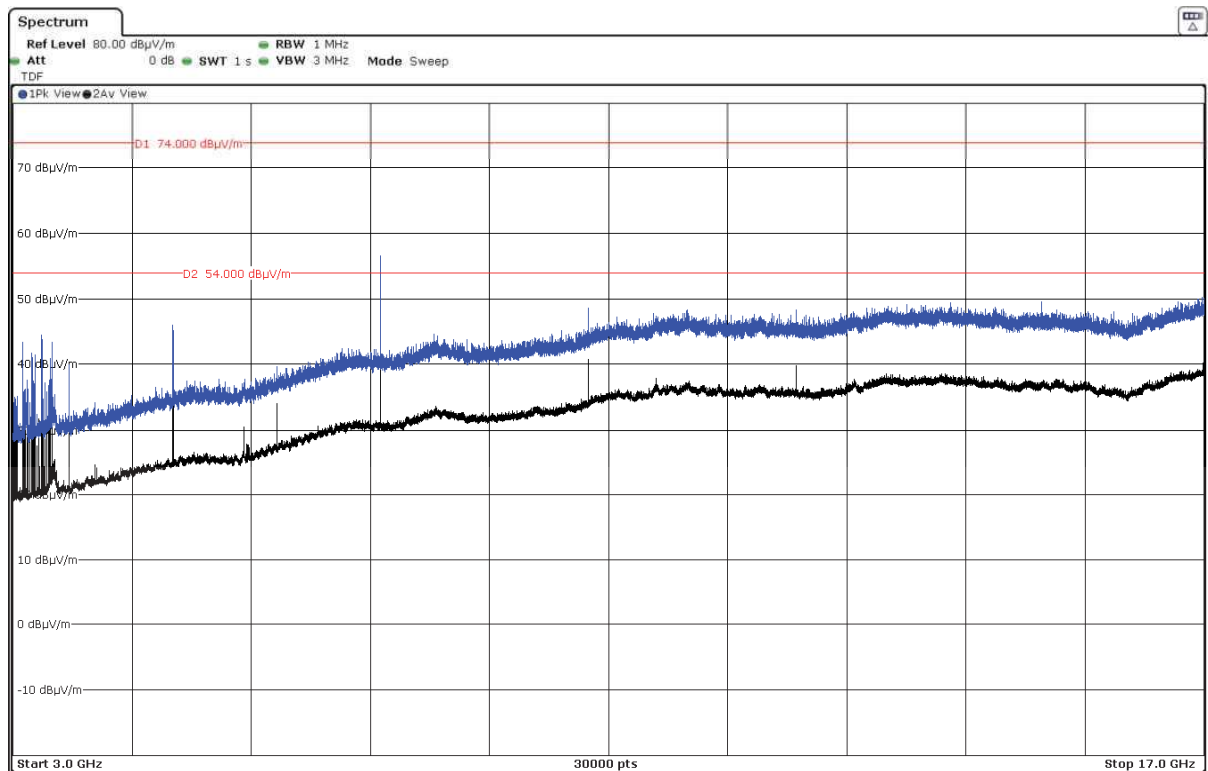
- **Modulation: GFSK (DH5)**

- Low Channel (2402 MHz):



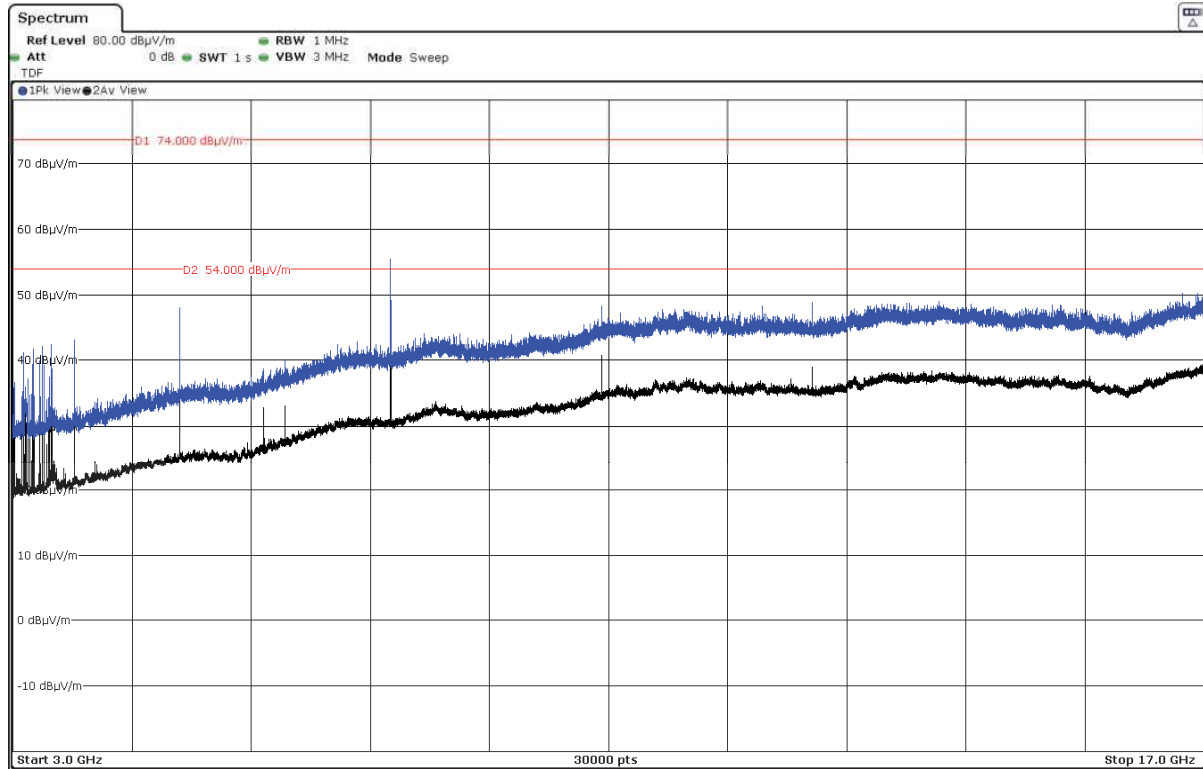
The peak above the limit is the carrier frequency.

- Middle Channel (2441 MHz):



The peak above the limit is the carrier frequency.

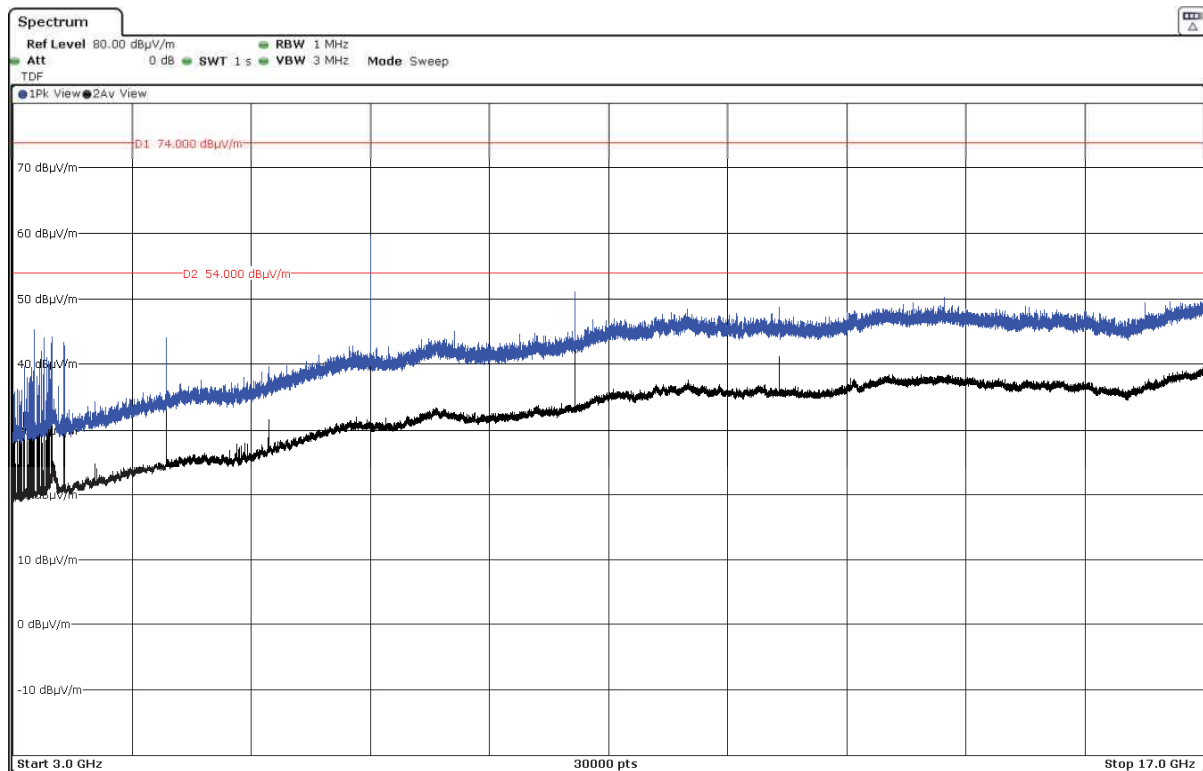
- High Channel (2480 MHz):



The peak above the limit is the carrier frequency.

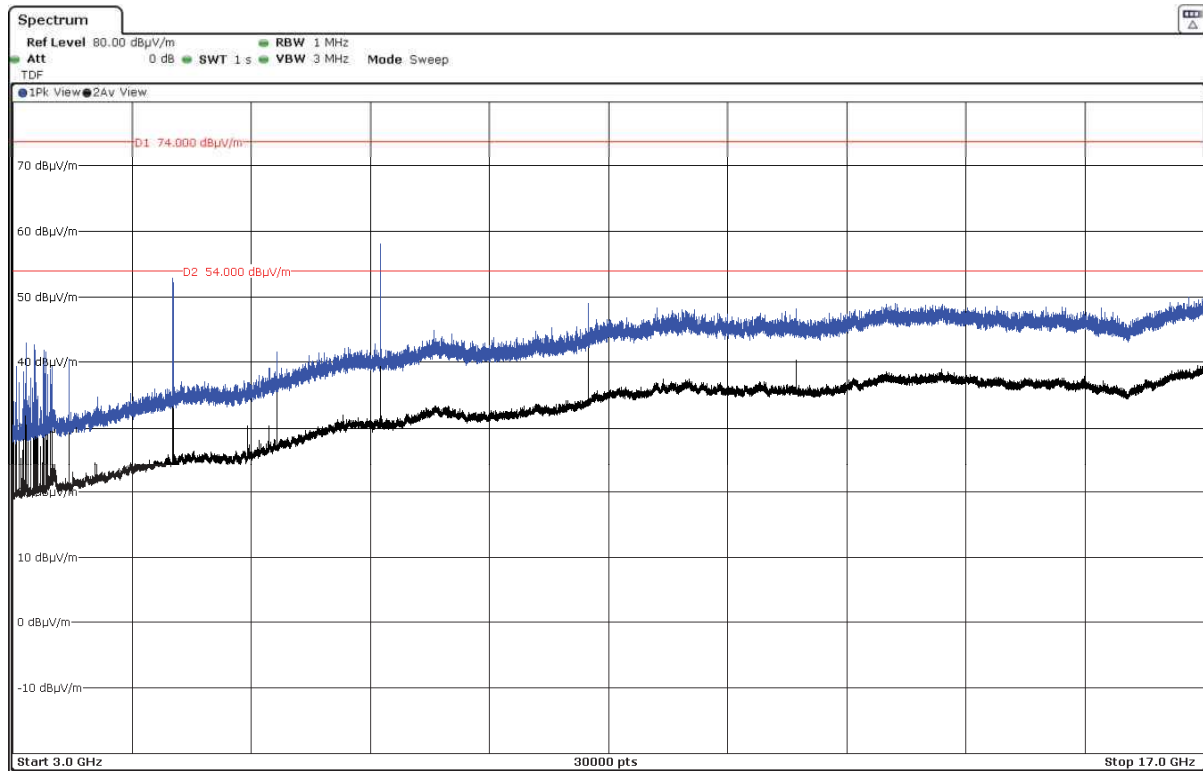
- **Modulation: PI/4-DQPSK (2DH5)**

- Low Channel (2402 MHz):



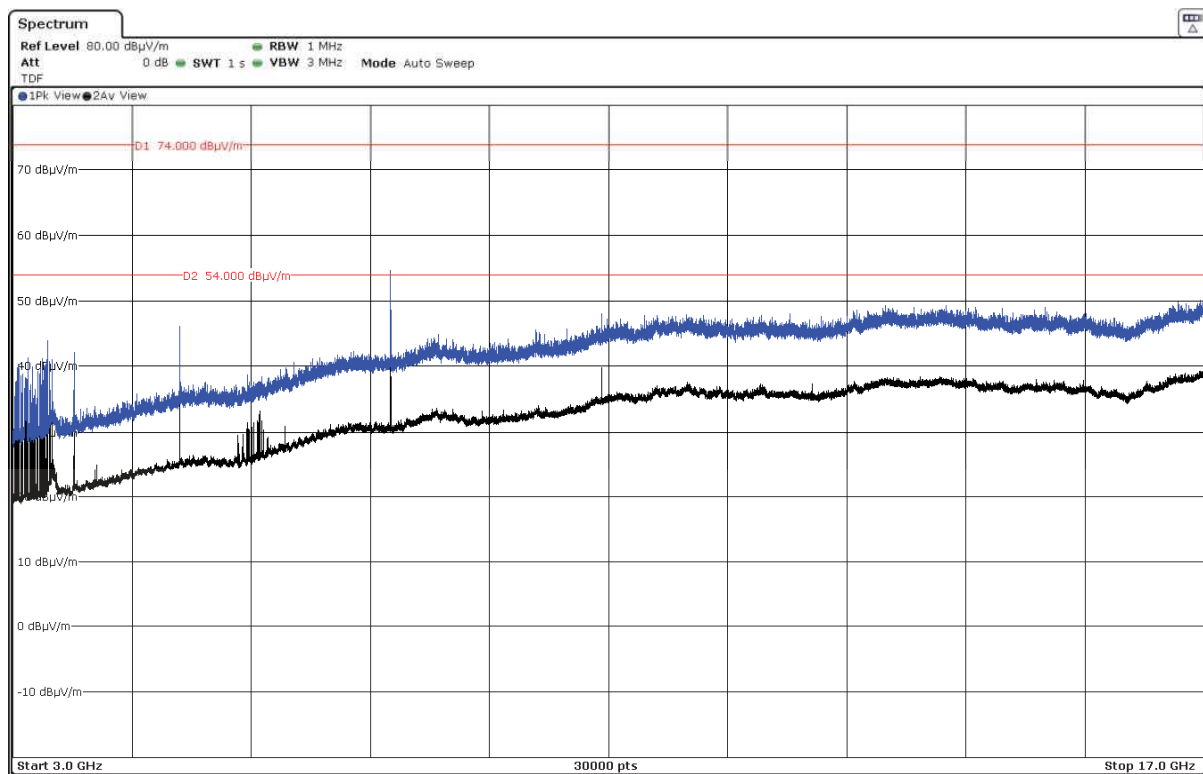
The peak above the limit is the carrier frequency.

- Middle Channel (2441 MHz):



The peak above the limit is the carrier frequency.

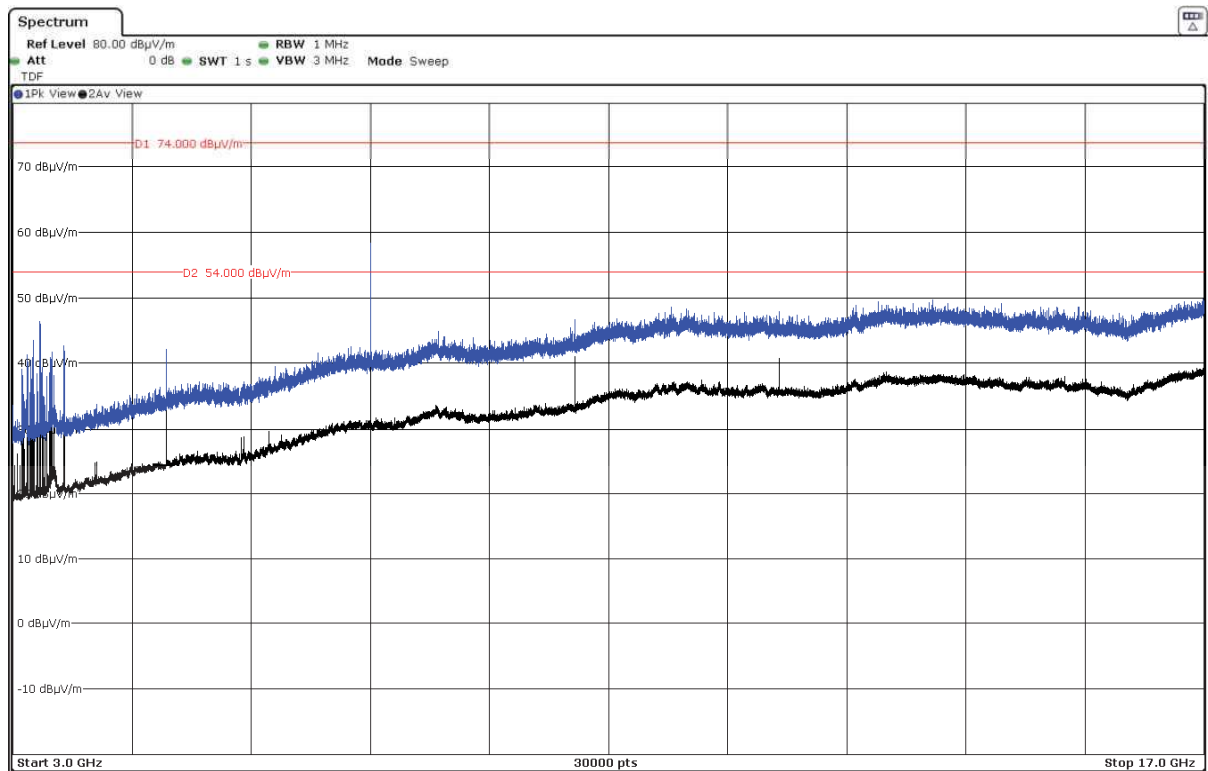
- High Channel (2480 MHz):



The peak above the limit is the carrier frequency.

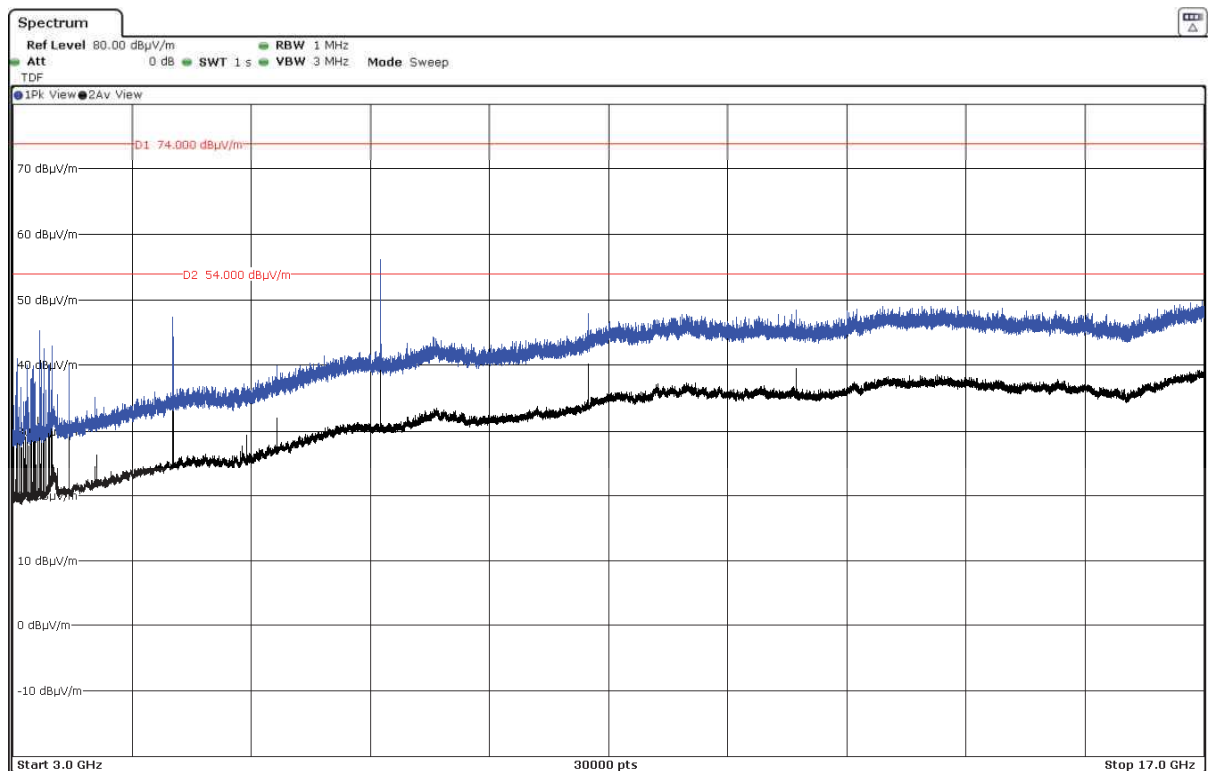
- **Modulation: 8-DPSK (3DH5)**

- Low Channel (2402 MHz):



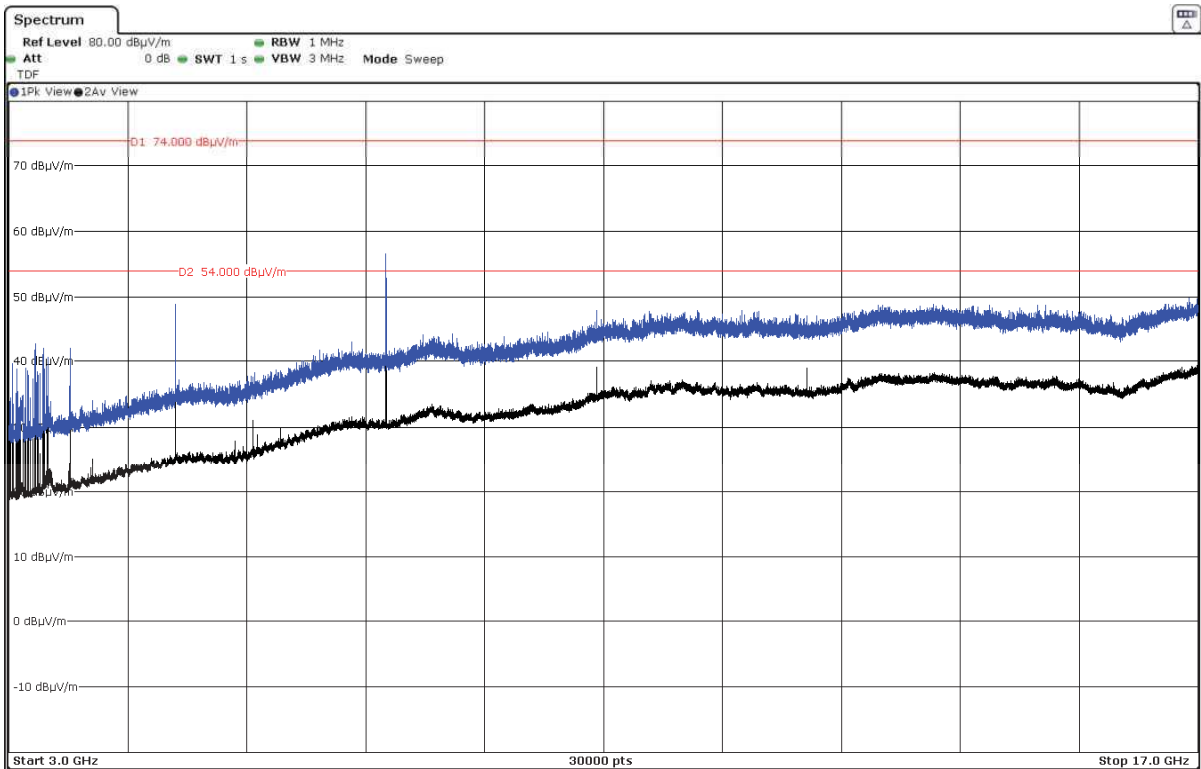
The peak above the limit is the carrier frequency.

- Middle Channel (2441 MHz):



The peak above the limit is the carrier frequency.

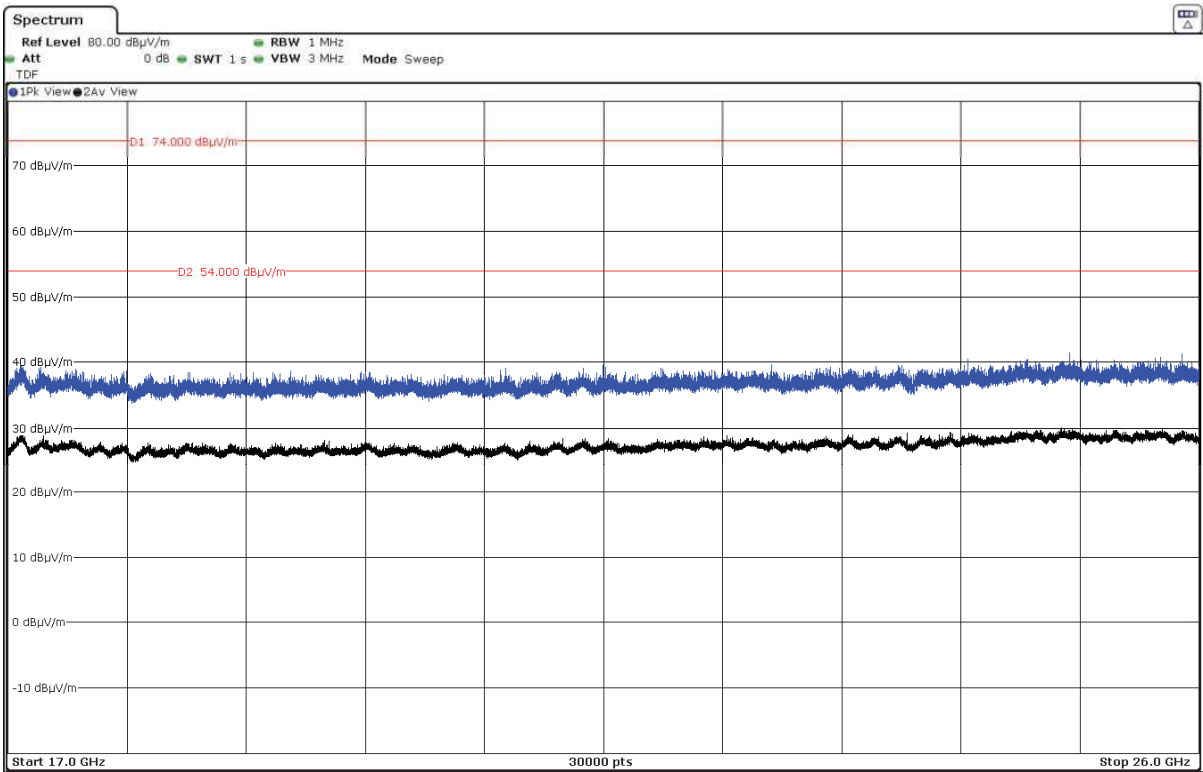
- High Channel (2480 MHz):



The peak above the limit is the carrier frequency.

FREQUENCY RANGE 17 - 26 GHz:

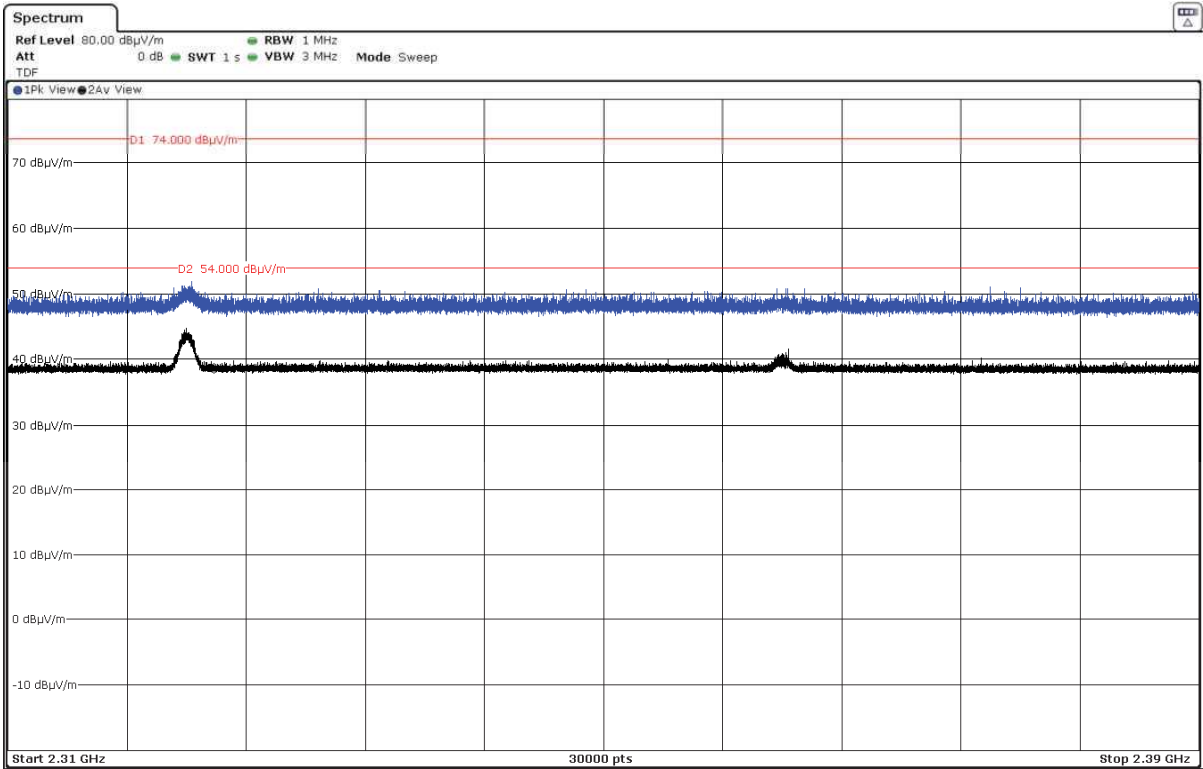
This plot is valid for the Low, Middle and High Channels and all modulation modes.



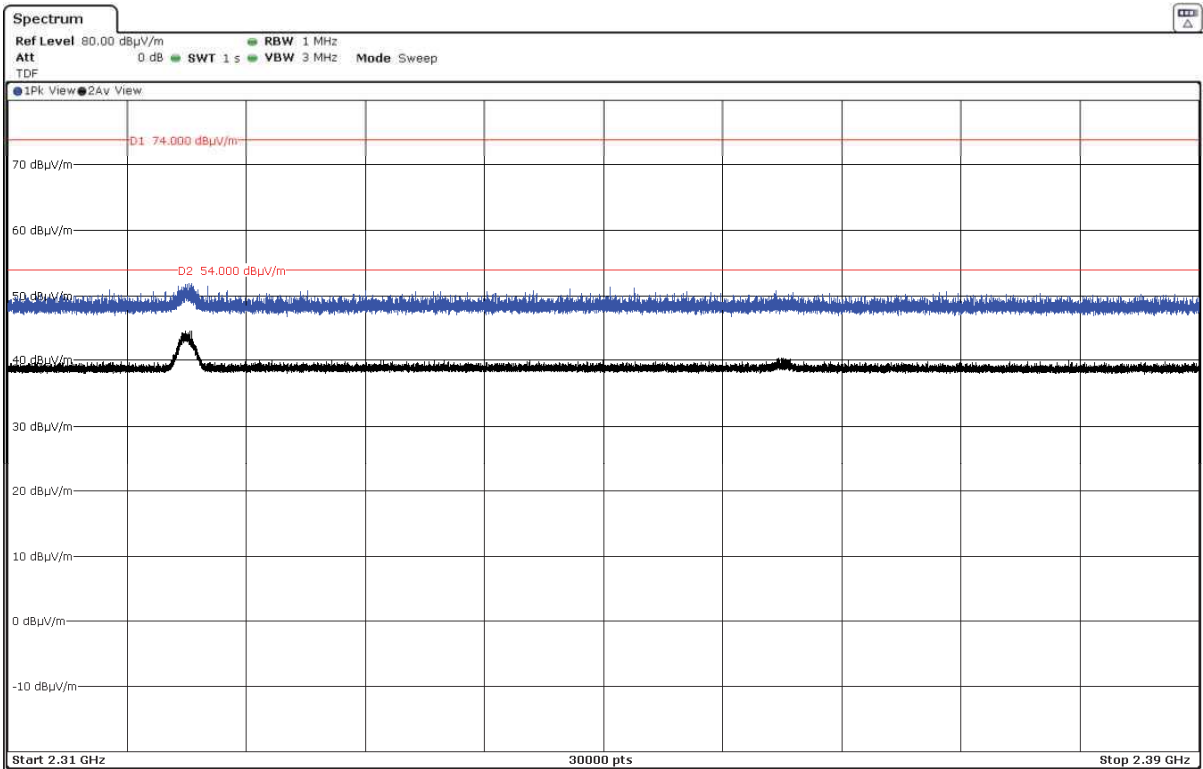
FREQUENCY RANGE 2.31-2.39 GHz (Restricted Band 1):

- Low Channel (2402 MHz):

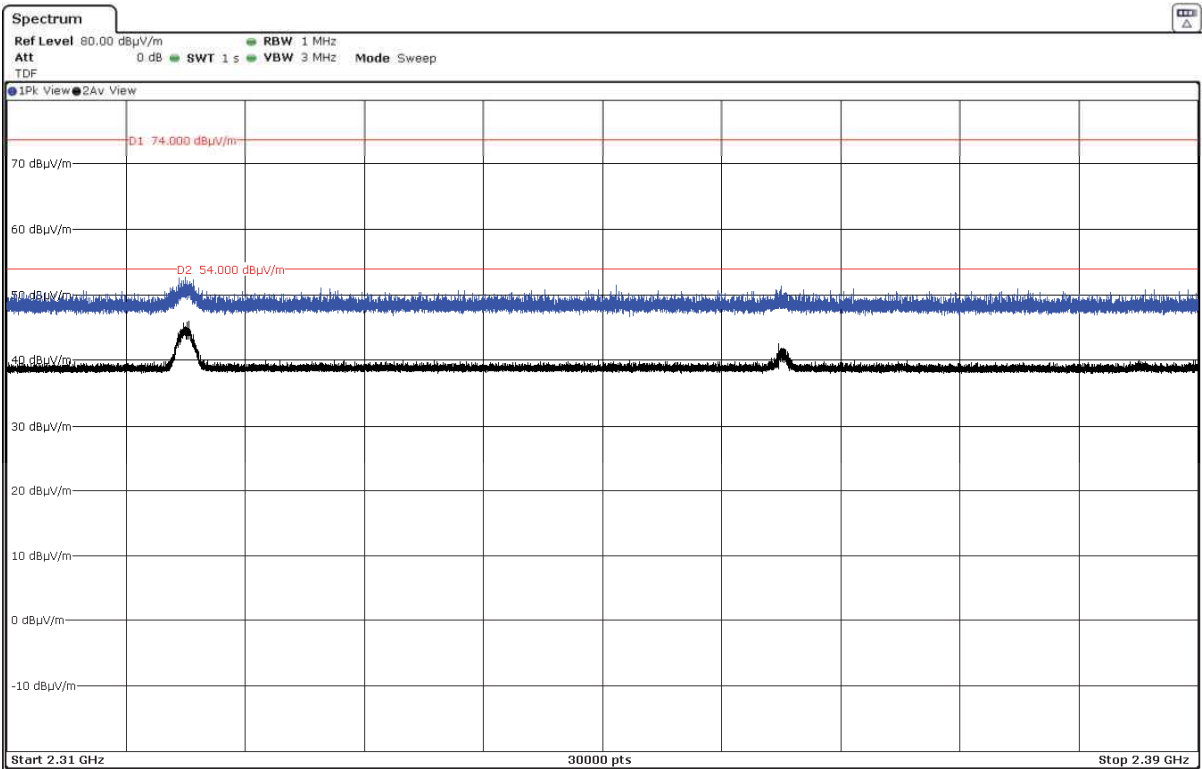
- Modulation: GFSK (DH5)



- Modulation: PI/4-DQPSK (2DH5)

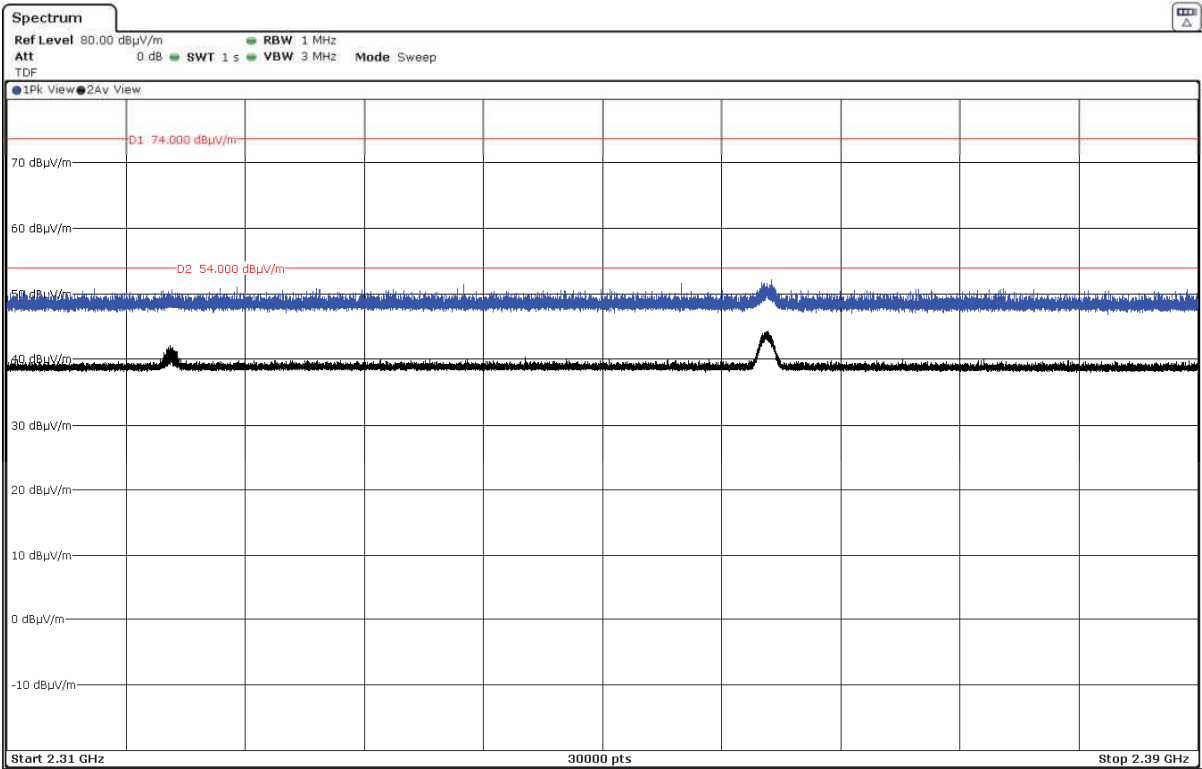


• Modulation: 8-DPSK (3DH5)

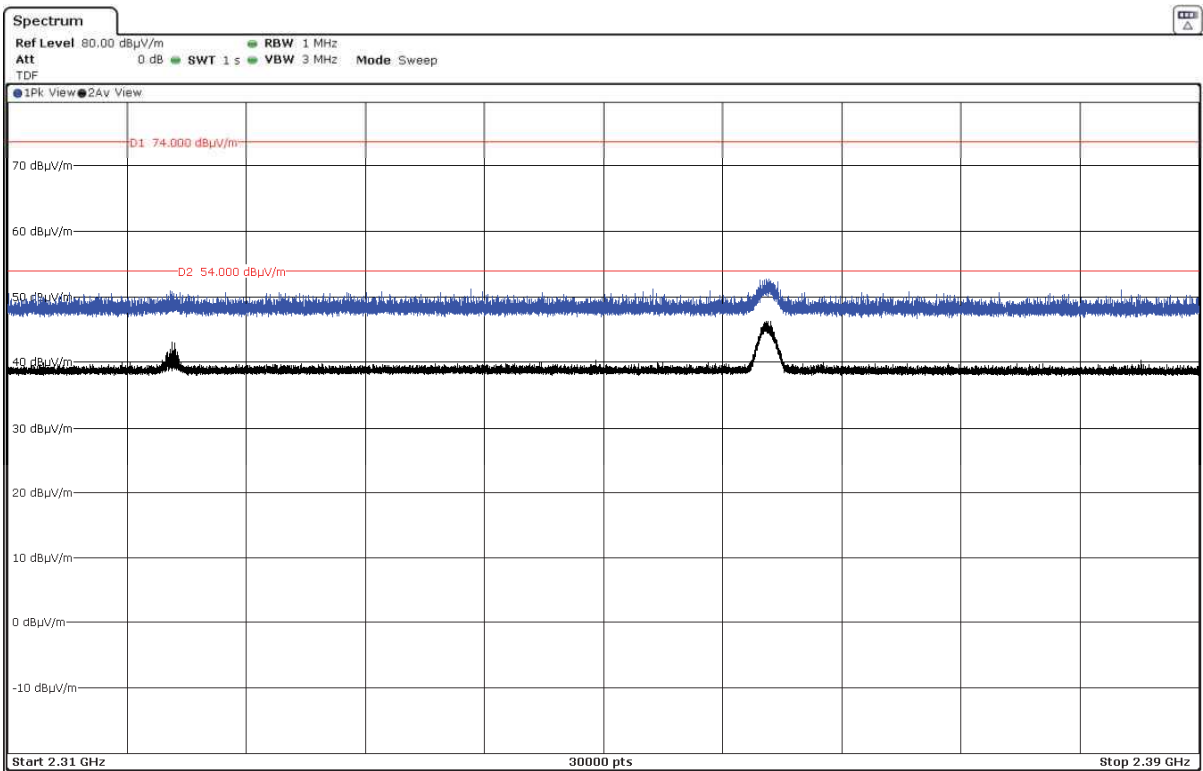


- Middle Channel (2441 MHz):

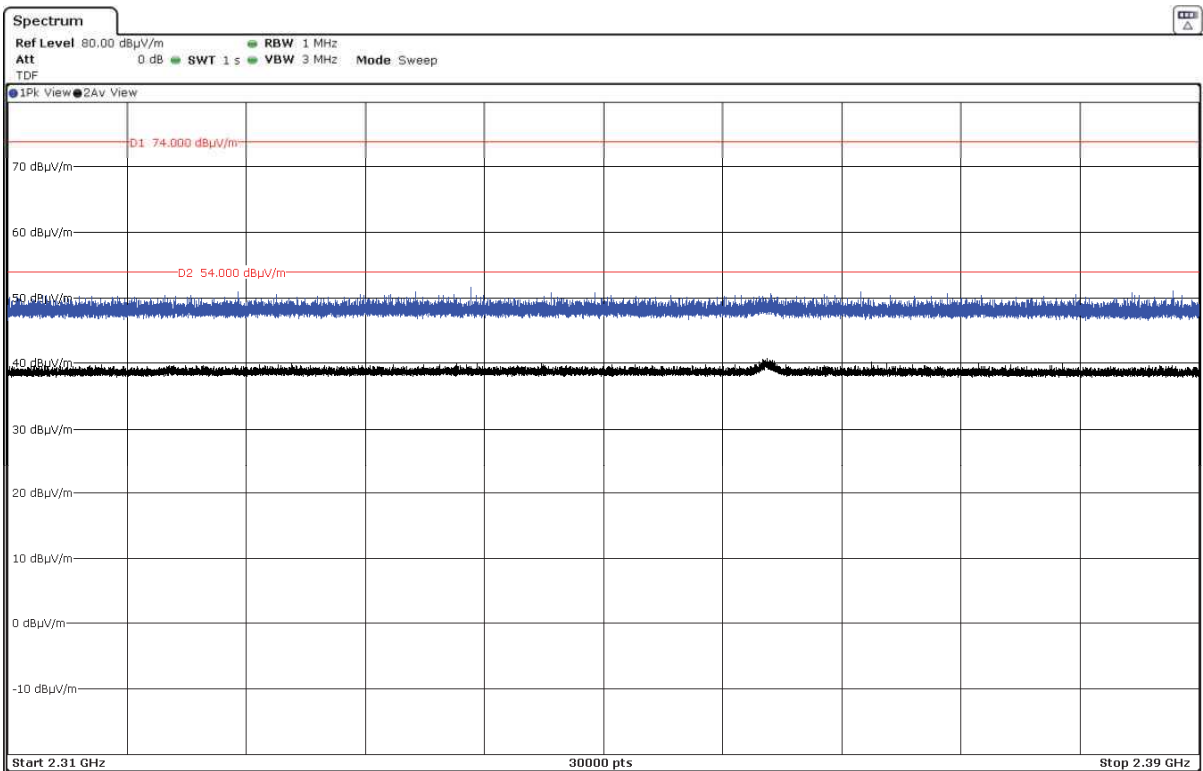
• Modulation: GFSK (DH5)



• Modulation: PI/4-DQPSK (2DH5)

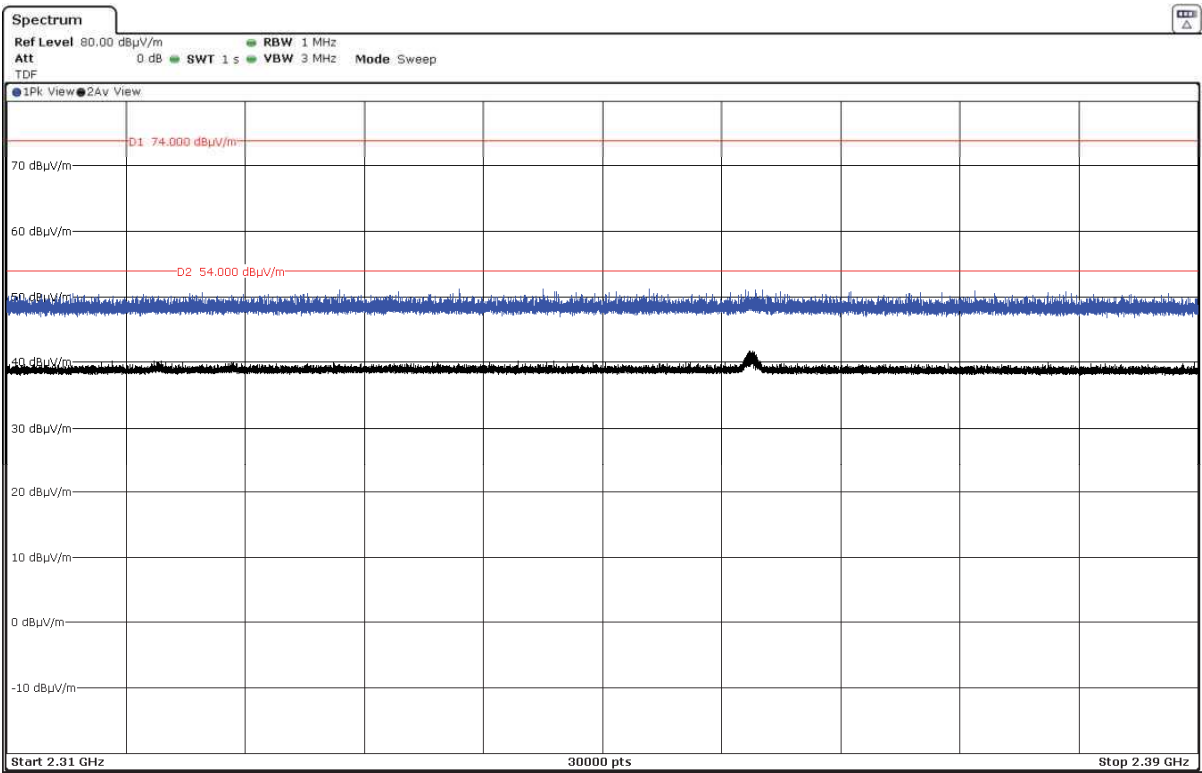


• Modulation: 8-DPSK (3DH5)

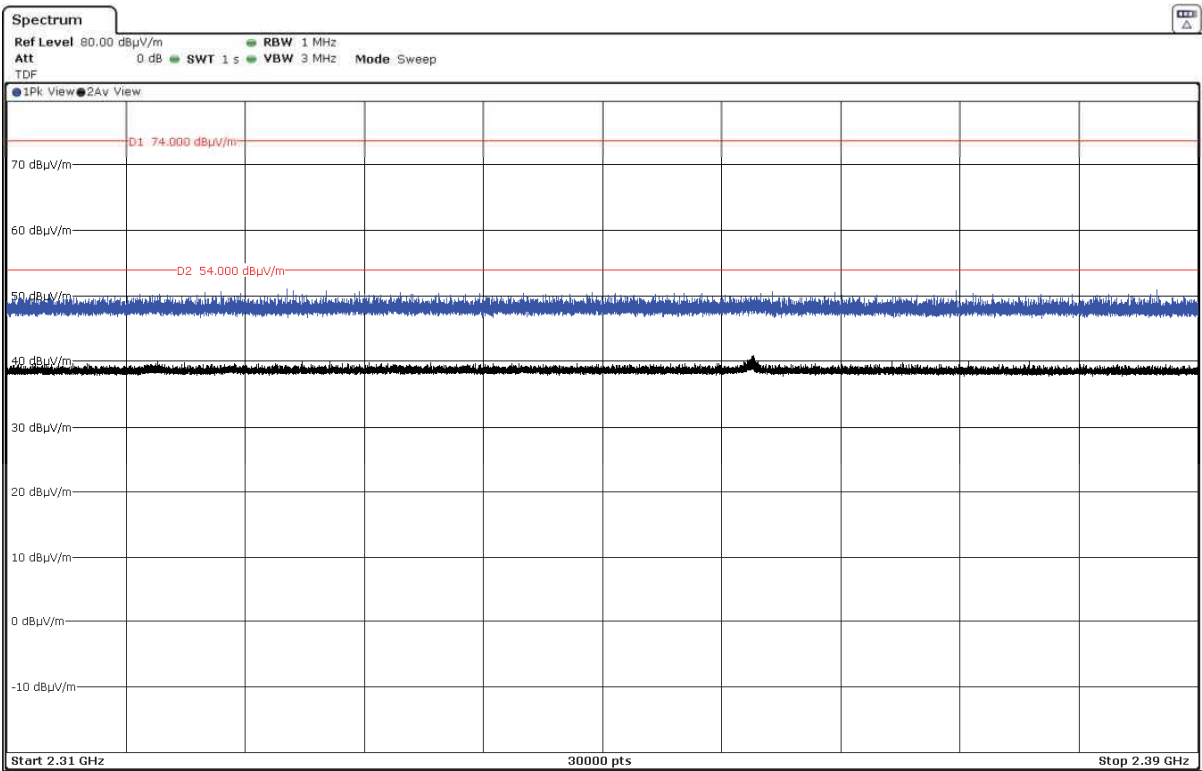


- High Channel (2480 MHz):

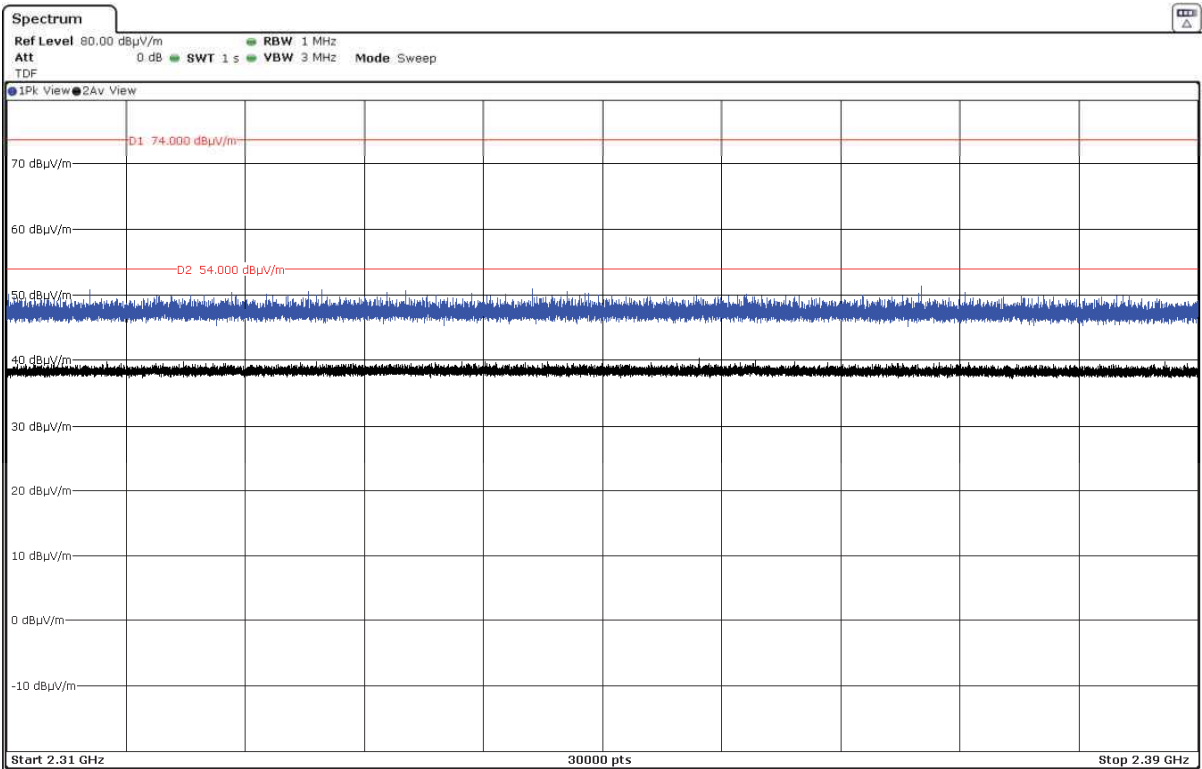
- Modulation: GFSK (DH5)



- Modulation: PI/4-DQPSK (2DH5)



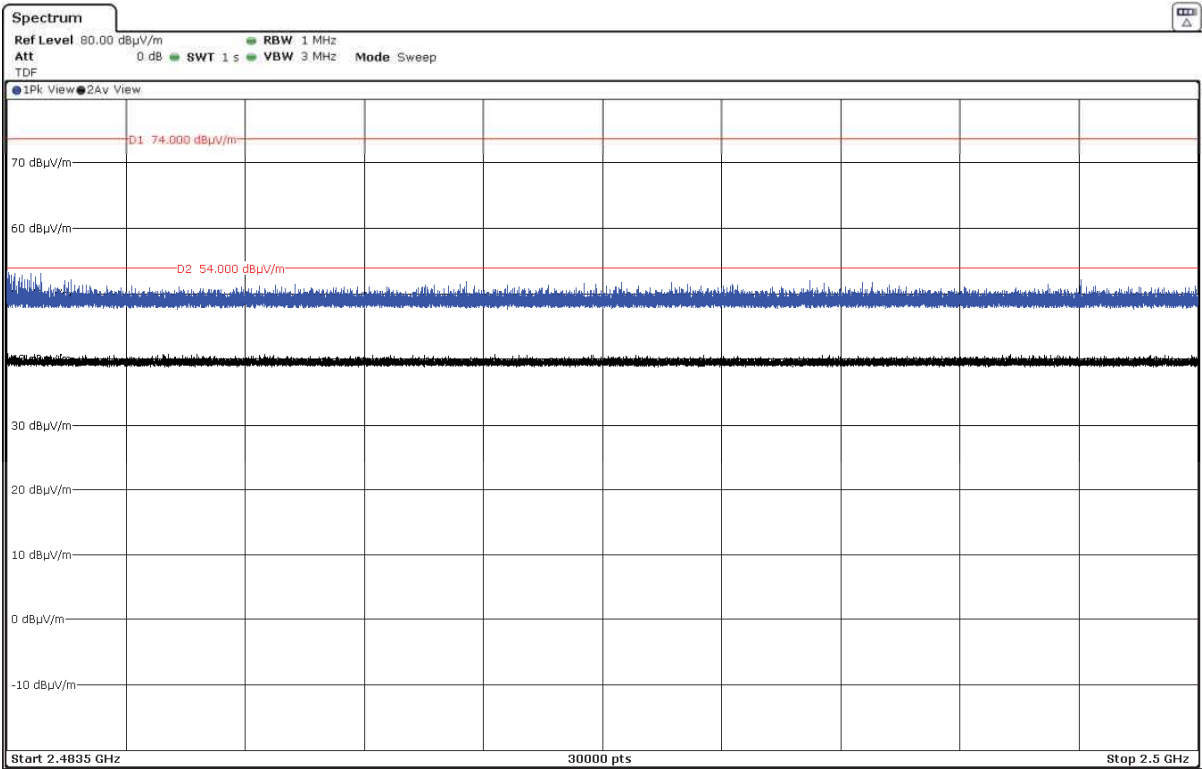
• Modulation: 8-DPSK (3DH5)



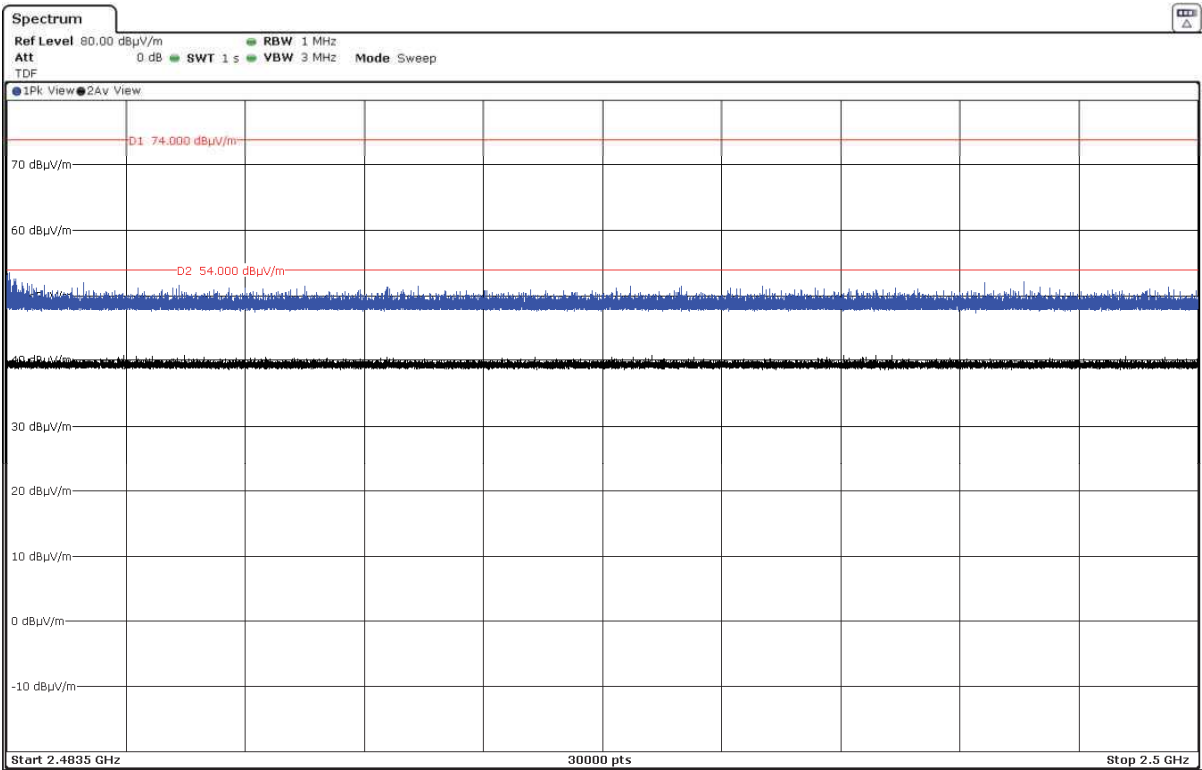
FREQUENCY RANGE 2.4835-2.5 GHz:

- High Channel (2480 MHz):

- Modulation: GFSK (DH5)



- Modulation: PI/4-DQPSK (2DH5)



• Modulation: 8-DPSK (3DH5)

