

## Test Report

**Report No. :** CQASZ20210100047E-01  
**Applicant:** KINGTA TECHNOLOGY CO., LTD  
**Address of Applicant:** 4F, Building 2, HaoJingDa Science Park, Shangmugu, Shenzhen China  
**Equipment Under Test (EUT):**  
**EUT Name:** BLUETOOTH SPEAKER  
**Model No.:** B28, SP694, SP694-ASST  
**Test Model No.:** B28  
**Brand Name:** N/A  
**FCC ID:** N7KB28  
**Standards:** 47 CFR Part 15, Subpart C  
**Date of Receipt:** 2021-01-18  
**Date of Test:** 2021-01-18 to 2021-02-05  
**Date of Issue:** 2021-02-05  
**Test Result :** **PASS\***

\* In the configuration tested, the EUT complied with the standards specified above

**Tested By:**

*Tiny You*

(Tiny You)

**Reviewed By:**

*Ares Liu*

(Ares Liu)

**Approved By:**

*Sheek Luo*

(Sheek Luo)



## 1 Version

### Revision History Of Report

| Report No.           | Version | Description    | Issue Date |
|----------------------|---------|----------------|------------|
| CQASZ20210100047E-01 | Rev.01  | Initial report | 2021-02-05 |

## 2 Test Summary

| Test Item                                                         | Test Requirement                                                                | Test method        | Result |
|-------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------|--------|
| Antenna Requirement                                               | 47 CFR Part 15, Subpart C Section 15.203/15.247 (c)                             | ANSI C63.10 (2013) | PASS   |
| AC Power Line Conducted Emission                                  | 47 CFR Part 15, Subpart C Section 15.207                                        | ANSI C63.10 (2013) | PASS   |
| Conducted Peak Output Power                                       | 47 CFR Part 15, Subpart C Section 15.247 (b)(1)                                 | ANSI C63.10 (2013) | PASS   |
| 20dB Occupied Bandwidth                                           | 47 CFR Part 15, Subpart C Section 15.247 (a)(1)                                 | ANSI C63.10 (2013) | PASS   |
| Carrier Frequencies Separation                                    | 47 CFR Part 15, Subpart C Section 15.247 (a)(1)                                 | ANSI C63.10 (2013) | PASS   |
| Hopping Channel Number                                            | 47 CFR Part 15, Subpart C Section 15.247 (a)(1)                                 | ANSI C63.10 (2013) | PASS   |
| Dwell Time                                                        | 47 CFR Part 15, Subpart C Section 15.247 (a)(1)                                 | ANSI C63.10 (2013) | PASS   |
| Pseudorandom Frequency Hopping Sequence                           | 47 CFR Part 15, Subpart C Section 15.247(b)(4)&TCB Exclusion List (7 July 2002) | ANSI C63.10 (2013) | PASS   |
| Band-edge for RF Conducted Emissions                              | 47 CFR Part 15, Subpart C Section 15.247(d)                                     | ANSI C63.10 (2013) | PASS   |
| RF Conducted Spurious Emissions                                   | 47 CFR Part 15, Subpart C Section 15.247(d)                                     | ANSI C63.10 (2013) | PASS   |
| Radiated Spurious emissions                                       | 47 CFR Part 15, Subpart C Section 15.205/15.209                                 | ANSI C63.10 (2013) | PASS   |
| Restricted bands around fundamental frequency (Radiated Emission) | 47 CFR Part 15, Subpart C Section 15.205/15.209                                 | ANSI C63.10 (2013) | PASS   |

N/A: When the EUT charging, BT will not work , So Not Applicable

Model No.: B28, SP694, SP694-ASST

Only the model B28 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, Only the Model number is different.

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## 4 General Information

### 4.1 Client Information

|                          |                                                                   |
|--------------------------|-------------------------------------------------------------------|
| Applicant:               | KINGTA TECHNOLOGY CO., LTD                                        |
| Address of Applicant:    | 4F, Building 2, HaoJingDa Science Park, Shangmugu, Shenzhen China |
| Manufacturer:            | KINGTA TECHNOLOGY CO., LTD                                        |
| Address of Manufacturer: | 4F, Building 2, HaoJingDa Science Park, Shangmugu, Shenzhen China |
| Factory:                 | KINGTA TECHNOLOGY CO., LTD                                        |
| Address of Factory:      | 4F, Building 2, HaoJingDa Science Park, Shangmugu, Shenzhen China |

### 4.2 General Description of EUT

|                       |                                                                                                                    |
|-----------------------|--------------------------------------------------------------------------------------------------------------------|
| Product Name:         | BLUETOOTH SPEAKER                                                                                                  |
| All Model No.:        | B28, SP694, SP694-ASST                                                                                             |
| Test Model No.:       | B28                                                                                                                |
| Trade Mark:           | N/A                                                                                                                |
| Hardware Version:     | B28-3265-8105-FM-MAIN V1                                                                                           |
| Software Version:     | e21d                                                                                                               |
| Operation Frequency:  | 2402MHz~2480MHz                                                                                                    |
| Bluetooth Version:    | V5.0                                                                                                               |
| Modulation Technique: | Frequency Hopping Spread Spectrum(FHSS)                                                                            |
| Modulation Type:      | GFSK, $\pi/4$ DQPSK, 8DPSK                                                                                         |
| Transfer Rate:        | 1Mbps/2Mbps/3Mbps                                                                                                  |
| Number of Channel:    | 79                                                                                                                 |
| Hopping Channel Type: | Adaptive Frequency Hopping systems                                                                                 |
| Product Type:         | <input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable <input type="checkbox"/> Fix Location |
| Test Software of EUT: | BK32xx RF Test_V1.8 (manufacturer declare )                                                                        |
| Antenna Type:         | Monopole antenna                                                                                                   |
| Antenna Gain:         | 0dBi                                                                                                               |
| Power Supply:         | lithium battery:DC3.7V, Charge by DC5.0V                                                                           |

| Operation Frequency each of channel |           |         |           |         |           |         |           |
|-------------------------------------|-----------|---------|-----------|---------|-----------|---------|-----------|
| Channel                             | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 0                                   | 2402MHz   | 20      | 2422MHz   | 40      | 2442MHz   | 60      | 2462MHz   |
| 1                                   | 2403MHz   | 21      | 2423MHz   | 41      | 2443MHz   | 61      | 2463MHz   |
| 2                                   | 2404MHz   | 22      | 2424MHz   | 42      | 2444MHz   | 62      | 2464MHz   |
| 3                                   | 2405MHz   | 23      | 2425MHz   | 43      | 2445MHz   | 63      | 2465MHz   |
| 4                                   | 2406MHz   | 24      | 2426MHz   | 44      | 2446MHz   | 64      | 2466MHz   |
| 5                                   | 2407MHz   | 25      | 2427MHz   | 45      | 2447MHz   | 65      | 2467MHz   |
| 6                                   | 2408MHz   | 26      | 2428MHz   | 46      | 2448MHz   | 66      | 2468MHz   |
| 7                                   | 2409MHz   | 27      | 2429MHz   | 47      | 2449MHz   | 67      | 2469MHz   |
| 8                                   | 2410MHz   | 28      | 2430MHz   | 48      | 2450MHz   | 68      | 2470MHz   |
| 9                                   | 2411MHz   | 29      | 2431MHz   | 49      | 2451MHz   | 69      | 2471MHz   |
| 10                                  | 2412MHz   | 30      | 2432MHz   | 50      | 2452MHz   | 70      | 2472MHz   |
| 11                                  | 2413MHz   | 31      | 2433MHz   | 51      | 2453MHz   | 71      | 2473MHz   |
| 12                                  | 2414MHz   | 32      | 2434MHz   | 52      | 2454MHz   | 72      | 2474MHz   |
| 13                                  | 2415MHz   | 33      | 2435MHz   | 53      | 2455MHz   | 73      | 2475MHz   |
| 14                                  | 2416MHz   | 34      | 2436MHz   | 54      | 2456MHz   | 74      | 2476MHz   |
| 15                                  | 2417MHz   | 35      | 2437MHz   | 55      | 2457MHz   | 75      | 2477MHz   |
| 16                                  | 2418MHz   | 36      | 2438MHz   | 56      | 2458MHz   | 76      | 2478MHz   |
| 17                                  | 2419MHz   | 37      | 2439MHz   | 57      | 2459MHz   | 77      | 2479MHz   |
| 18                                  | 2420MHz   | 38      | 2440MHz   | 58      | 2460MHz   | 78      | 2480MHz   |
| 19                                  | 2421MHz   | 39      | 2441MHz   | 59      | 2461MHz   |         |           |

Note:

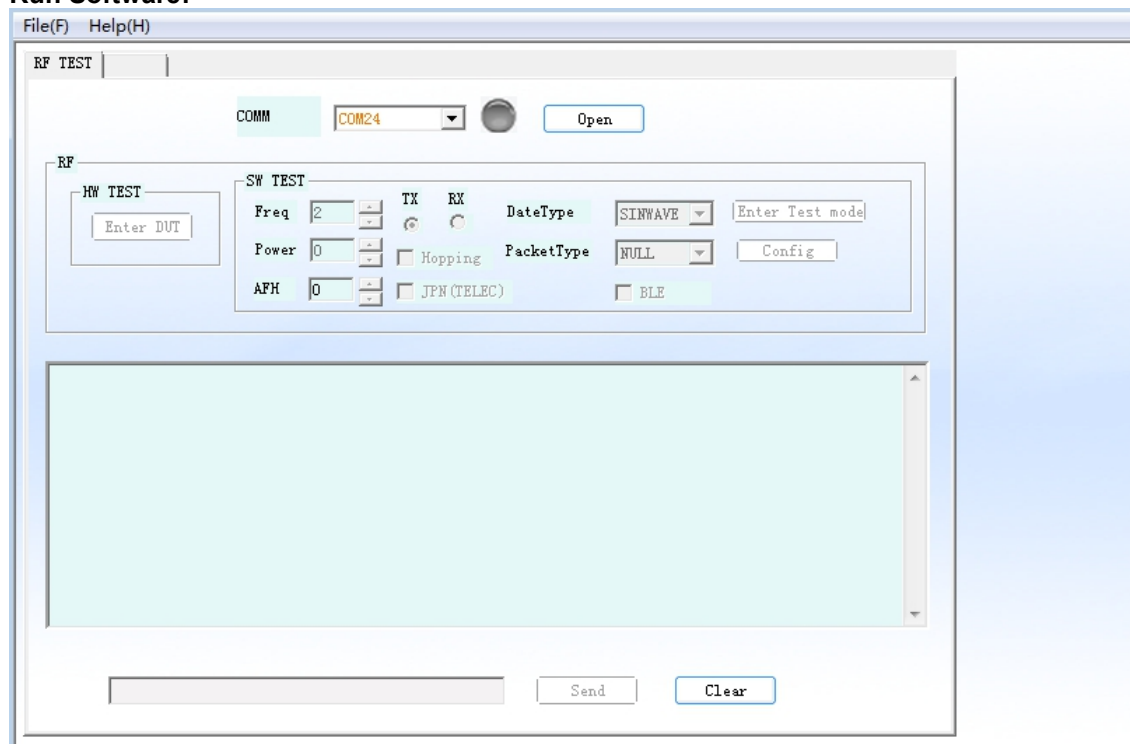
In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

| Channel             | Frequency |
|---------------------|-----------|
| The Lowest channel  | 2402MHz   |
| The Middle channel  | 2441MHz   |
| The Highest channel | 2480MHz   |

### 4.3 Additional Instructions

| EUT Test Software Settings:                                                                                                 |                                                                                                                                                                                      |                |
|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Mode:                                                                                                                       | <input checked="" type="checkbox"/> Special software is used.<br><input type="checkbox"/> Through engineering command into the engineering mode.<br>engineering command: **3646633** |                |
| EUT Power level:                                                                                                            | Class2 (Power level is built-in set parameters and cannot be changed and selected)                                                                                                   |                |
| Use test software to set the lowest frequency, the middle frequency and the highest frequency keep transmitting of the EUT. |                                                                                                                                                                                      |                |
| Mode                                                                                                                        | Channel                                                                                                                                                                              | Frequency(MHz) |
| DH1/DH3/DH5                                                                                                                 | CH0                                                                                                                                                                                  | 2402           |
|                                                                                                                             | CH39                                                                                                                                                                                 | 2441           |
|                                                                                                                             | CH78                                                                                                                                                                                 | 2480           |
| 2DH1/2DH3/2DH5                                                                                                              | CH0                                                                                                                                                                                  | 2402           |
|                                                                                                                             | CH39                                                                                                                                                                                 | 2441           |
|                                                                                                                             | CH78                                                                                                                                                                                 | 2480           |
| 3DH1/3DH3/3DH5                                                                                                              | CH0                                                                                                                                                                                  | 2402           |
|                                                                                                                             | CH39                                                                                                                                                                                 | 2441           |
|                                                                                                                             | CH78                                                                                                                                                                                 | 2480           |

### Run Software:



#### 4.4 Test Environment

|                                                            |                                                                                                                             |
|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Operating Environment:</b>                              |                                                                                                                             |
| <b>Radiated Emissions:</b>                                 |                                                                                                                             |
| Temperature:                                               | 20.5 °C                                                                                                                     |
| Humidity:                                                  | 57 % RH                                                                                                                     |
| Atmospheric Pressure:                                      | 1009mbar                                                                                                                    |
| <b>Conducted Emissions:</b>                                |                                                                                                                             |
| Temperature:                                               | 25.5 °C                                                                                                                     |
| Humidity:                                                  | 53 % RH                                                                                                                     |
| Atmospheric Pressure:                                      | 1009mbar                                                                                                                    |
| <b>Radio conducted item test (RF Conducted test room):</b> |                                                                                                                             |
| Temperature:                                               | 25.3 °C                                                                                                                     |
| Humidity:                                                  | 54 % RH                                                                                                                     |
| Atmospheric Pressure:                                      | 1009mbar                                                                                                                    |
| <b>Test mode:</b>                                          |                                                                                                                             |
| Test Mode:                                                 | Use test software to set the lowest frequency, the middle frequency and the highest frequency keep transmitting of the EUT. |

#### 4.5 Description of Support Units

The EUT has been tested with associated equipment below.

1) Support equipment

| Description | Manufacturer | Model No.       | Certification | Supplied by |
|-------------|--------------|-----------------|---------------|-------------|
| PC          | Lenovo       | ThinkPad E450c  | -             | CQA         |
| Adaptor     | HUAWEI       | LPL-C010050200Z | -             | CQA         |

#### 4.6 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate.

The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities.

The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the **Shenzhen Huaxia Testing Technology Co., Ltd.** quality system acc. to DIN EN ISO/IEC 17025.

Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CQA laboratory is reported:

| No. | Item                               | Uncertainty        | Notes |
|-----|------------------------------------|--------------------|-------|
| 1   | Radiated Emission (Below 1GHz)     | 5.12dB             | (1)   |
| 2   | Radiated Emission (Above 1GHz)     | 4.60dB             | (1)   |
| 3   | Conducted Disturbance (0.15~30MHz) | 3.34dB             | (1)   |
| 4   | Radio Frequency                    | $3 \times 10^{-8}$ | (1)   |
| 5   | Duty cycle                         | 0.6 %.             | (1)   |
| 6   | Occupied Bandwidth                 | 1.1%               | (1)   |
| 7   | RF conducted power                 | 0.86dB             | (1)   |
| 8   | RF power density                   | 0.74               | (1)   |
| 9   | Conducted Spurious emissions       | 0.86dB             | (1)   |
| 10  | Temperature test                   | 0.8℃               | (1)   |
| 11  | Humidity test                      | 2.0%               | (1)   |
| 12  | Supply voltages                    | 0.5 %.             | (1)   |
| 13  | Frequency Error                    | 5.5 Hz             | (1)   |

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

## 4.7 Test Location

**Shenzhen Huaxia Testing Technology Co., Ltd,**

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

## 4.8 Test Facility

- **A2LA (Certificate No. 4742.01)**

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

- **FCC Registration No.: 522263**

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.:522263

## 4.9 Abnormalities from Standard Conditions

None.

## 4.10 Other Information Requested by the Customer

None.

## 4.11 Equipment List

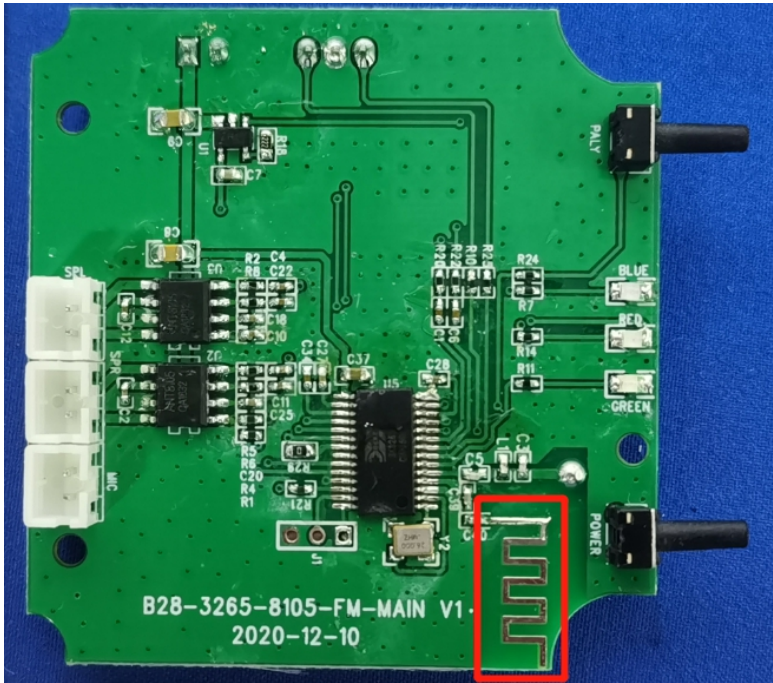
| Test Equipment             | Manufacturer | Model No.              | Instrument No. | Calibration Date | Calibration Due Date |
|----------------------------|--------------|------------------------|----------------|------------------|----------------------|
| EMI Test Receiver          | R&S          | ESR7                   | CQA-005        | 2020/10/25       | 2021/10/24           |
| Spectrum analyzer          | R&S          | FSU26                  | CQA-038        | 2020/10/25       | 2021/10/24           |
| Preamplifier               | MITEQ        | AMF-6D-02001800-29-20P | CQA-036        | 2020/10/25       | 2021/10/24           |
| Loop antenna               | Schwarzbeck  | FMZB1516               | CQA-060        | 2020/10/21       | 2021/10/20           |
| Bilog Antenna              | R&S          | HL562                  | CQA-011        | 2020/9/26        | 2021/9/25            |
| Horn Antenna               | R&S          | HF906                  | CQA-012        | 2020/9/26        | 2021/9/25            |
| Horn Antenna               | Schwarzbeck  | BBHA 9170              | CQA-088        | 2020/9/25        | 2021/9/24            |
| Coaxial Cable (Above 1GHz) | CQA          | N/A                    | C007           | 2020/9/26        | 2021/9/25            |
| Coaxial Cable (Below 1GHz) | CQA          | N/A                    | C013           | 2020/9/26        | 2021/9/25            |
| Antenna Connector          | CQA          | RFC-01                 | CQA-080        | 2020/9/26        | 2021/9/25            |
| RF cable(9KHz~40GHz)       | CQA          | RF-01                  | CQA-079        | 2020/9/26        | 2021/9/25            |
| Power divider              | MIDWEST      | PWD-2533-02-SMA-79     | CQA-067        | 2020/9/26        | 2021/9/25            |
| LISN                       | R&S          | ENV216                 | CQA-003        | 2020/10/23       | 2021/10/22           |
| Coaxial cable              | CQA          | N/A                    | CQA-C009       | 2020/9/26        | 2021/9/25            |
| DC power                   | KEYSIGHT     | E3631A                 | CQA-028        | 2020/9/26        | 2021/9/25            |

Note:

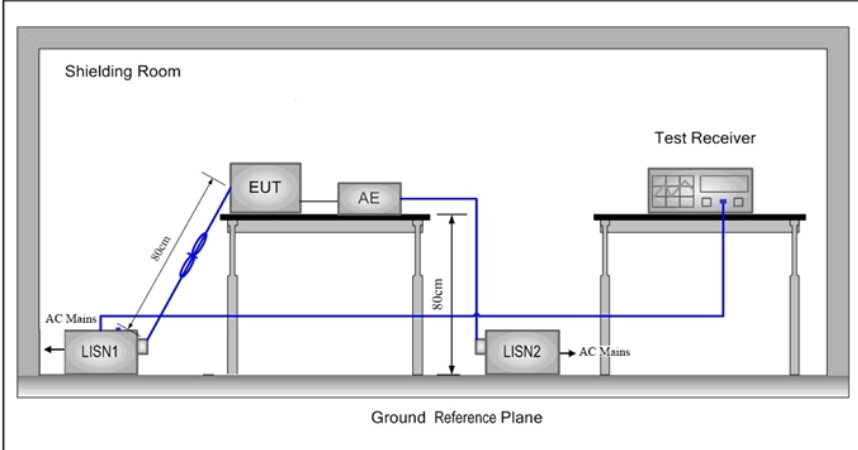
The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

## 5 Test results and Measurement Data

### 5.1 Antenna Requirement

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Standard requirement:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 47 CFR Part 15C Section 15.203 /247(c)                                              |
| <p>15.203 requirement:<br/>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</p> <p>15.247(b) (4) requirement:<br/>The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.</p> |                                                                                     |
| <b>EUT Antenna:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |
| The antenna is Monopole antenna. The best case gain of the antenna is 0dBi.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                     |

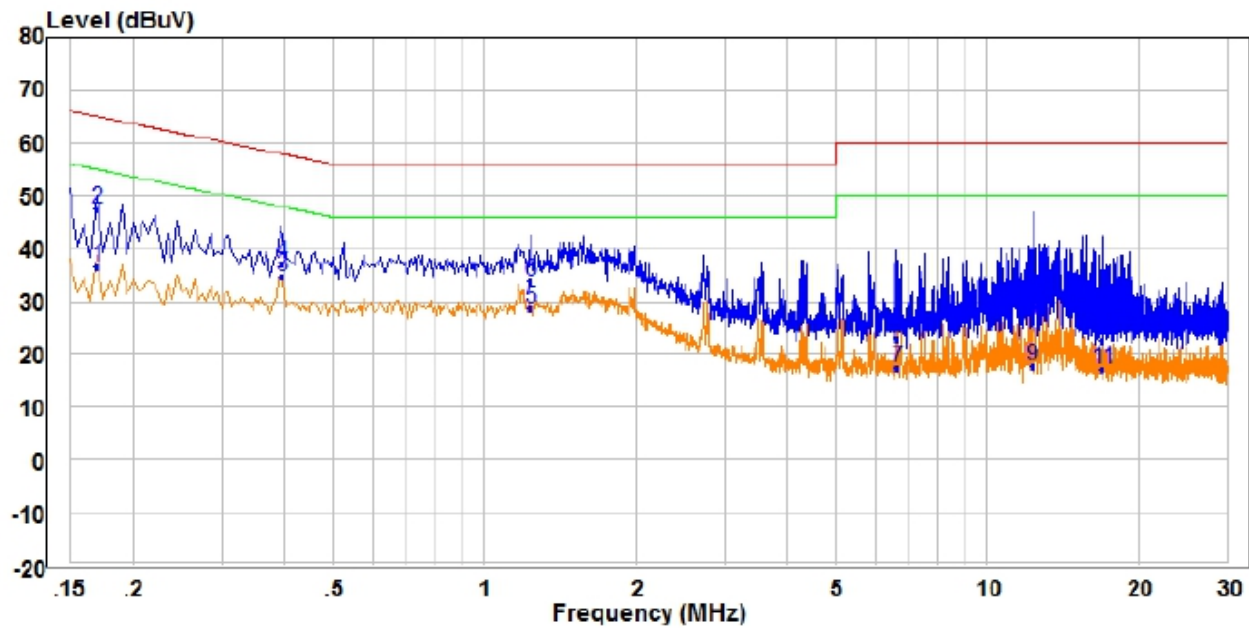
## 5.2 Conducted Emissions

|                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |           |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------|
| Test Requirement:                                | 47 CFR Part 15C Section 15.207                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |           |
| Test Method:                                     | ANSI C63.10: 2013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              |           |
| Test Frequency Range:                            | 150kHz to 30MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |           |
| Limit:                                           | Frequency range (MHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Limit (dBuV) |           |
|                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Quasi-peak   | Average   |
|                                                  | 0.15-0.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 66 to 56*    | 56 to 46* |
|                                                  | 0.5-5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 56           | 46        |
|                                                  | 5-30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 60           | 50        |
| * Decreases with the logarithm of the frequency. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |           |
| Test Procedure:                                  | <ol style="list-style-type: none"> <li>1) The mains terminal disturbance voltage test was conducted in a shielded room.</li> <li>2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a <math>50\Omega/50\mu\text{H} + 5\Omega</math> linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.</li> <li>3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,</li> <li>4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.</li> <li>5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.</li> </ol> |              |           |
| Test Setup:                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |           |

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Exploratory Test Mode: | Non-hopping transmitting mode with all kind of modulation and all kind of data type at the lowest, middle, high channel.                                      |
| Final Test Mode:       | Through Pre-scan, find the 3DH5 of data type and 8DPSK modulation at the highest channel is the worst case.<br>Only the worst case is recorded in the report. |
| Test Voltage:          | AC 120V/60Hz                                                                                                                                                  |
| Test Results:          | Pass                                                                                                                                                          |

**Measurement Data**

Live line:

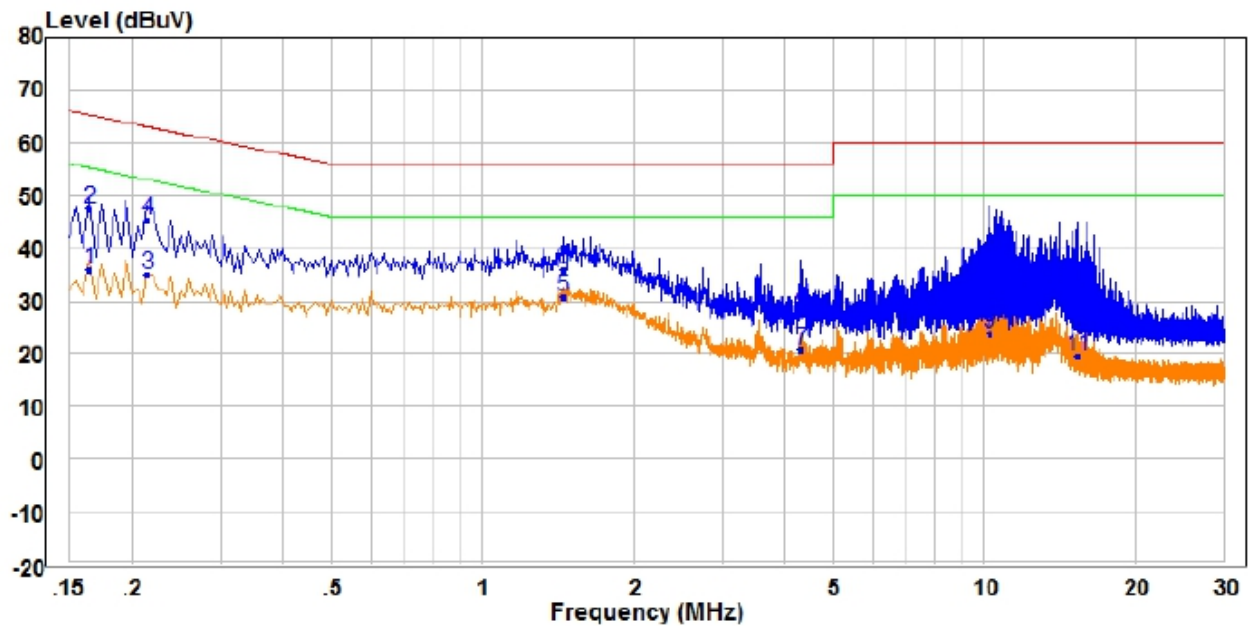


|    |          | Read  |        | Limit | Over  |        |           |
|----|----------|-------|--------|-------|-------|--------|-----------|
|    | Freq     | Level | Factor | Level | Line  | Limit  | Remark    |
|    | MHz      | dBuV  | dB     | dBuV  | dBuV  | dB     | Pol/Phase |
| 1  | 0.170    | 26.93 | 9.49   | 36.42 | 54.96 | -18.54 | Average   |
| 2  | QP 0.170 | 37.95 | 9.49   | 47.44 | 64.96 | -17.52 | QP        |
| 3  | PP 0.395 | 25.22 | 9.51   | 34.73 | 47.96 | -13.23 | Average   |
| 4  | 0.395    | 27.78 | 9.51   | 37.29 | 57.96 | -20.67 | QP        |
| 5  | 1.235    | 19.27 | 9.52   | 28.79 | 46.00 | -17.21 | Average   |
| 6  | 1.235    | 24.39 | 9.52   | 33.91 | 56.00 | -22.09 | QP        |
| 7  | 6.615    | 7.79  | 9.70   | 17.49 | 50.00 | -32.51 | Average   |
| 8  | 6.615    | 13.06 | 9.70   | 22.76 | 60.00 | -37.24 | QP        |
| 9  | 12.315   | 7.77  | 9.86   | 17.63 | 50.00 | -32.37 | Average   |
| 10 | 12.315   | 16.26 | 9.86   | 26.12 | 60.00 | -33.88 | QP        |
| 11 | 17.000   | 7.17  | 9.97   | 17.14 | 50.00 | -32.86 | Average   |
| 12 | 17.000   | 12.53 | 9.97   | 22.50 | 60.00 | -37.50 | QP        |

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

Neutral line:

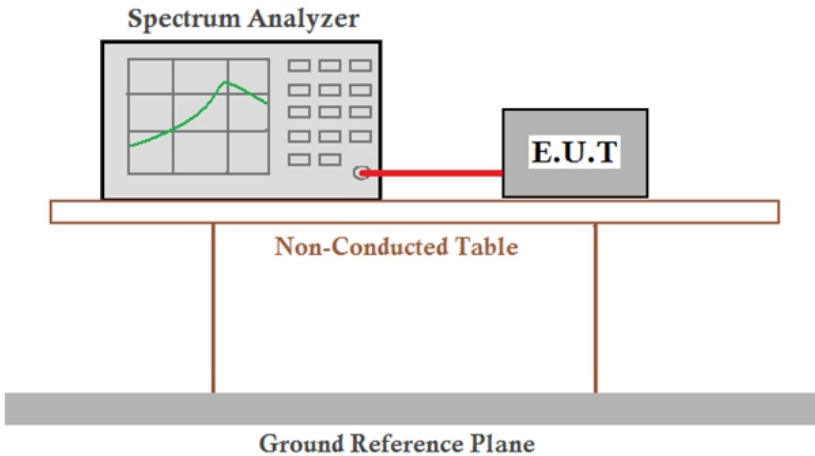


|      | Freq   | Read  |        | Limit | Over  |        |           |
|------|--------|-------|--------|-------|-------|--------|-----------|
|      | MHz    | Level | Factor | Level | Line  | Limit  | Remark    |
|      | MHz    | dBuV  | dB     | dBuV  | dBuV  | dB     | Pol/Phase |
| 1    | 0.165  | 26.49 | 9.48   | 35.97 | 55.21 | -19.24 | Average   |
| 2    | 0.165  | 38.12 | 9.48   | 47.60 | 65.21 | -17.61 | QP        |
| 3    | 0.215  | 25.56 | 9.48   | 35.04 | 53.01 | -17.97 | Average   |
| 4 QP | 0.215  | 36.02 | 9.48   | 45.50 | 63.01 | -17.51 | QP        |
| 5 PP | 1.450  | 20.92 | 9.71   | 30.63 | 46.00 | -15.37 | Average   |
| 6    | 1.450  | 26.12 | 9.71   | 35.83 | 56.00 | -20.17 | QP        |
| 7    | 4.320  | 10.90 | 9.80   | 20.70 | 46.00 | -25.30 | Average   |
| 8    | 4.320  | 17.72 | 9.80   | 27.52 | 56.00 | -28.48 | QP        |
| 9    | 10.270 | 13.88 | 9.95   | 23.83 | 50.00 | -26.17 | Average   |
| 10   | 10.270 | 26.29 | 9.95   | 36.24 | 60.00 | -23.76 | QP        |
| 11   | 15.370 | 9.73  | 9.93   | 19.66 | 50.00 | -30.34 | Average   |
| 12   | 15.370 | 23.83 | 9.93   | 33.76 | 60.00 | -26.24 | QP        |

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

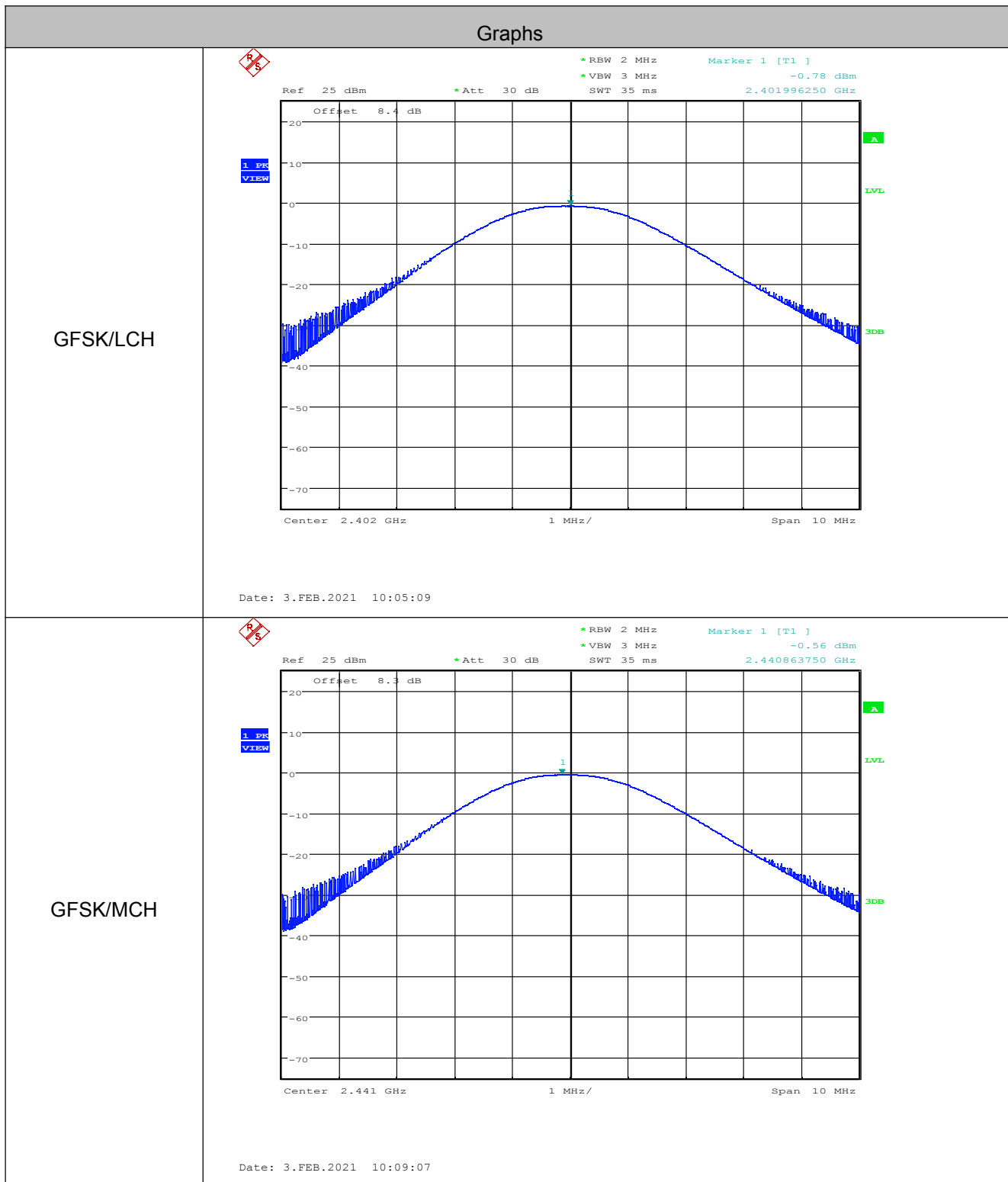
### 5.3 Conducted Peak Output Power

|                        |                                                                                                                                                                                                                                                                                |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement:      | 47 CFR Part 15C Section 15.247 (b)(1)                                                                                                                                                                                                                                          |
| Test Method:           | ANSI C63.10:2013                                                                                                                                                                                                                                                               |
| Test Setup:            |  <p>Remark: Offset=Cable loss+ attenuation factor.</p>                                                                                                                                       |
| Limit:                 | 21dBm                                                                                                                                                                                                                                                                          |
| Exploratory Test Mode: | Non-hopping transmitting with all kind of modulation and all kind of data type                                                                                                                                                                                                 |
| Final Test Mode:       | Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of $\pi/4$ DQPSK modulation type, 3-DH5 of data type is the worst case of 8DPSK modulation type.<br>Only the worst case is recorded in the report. |
| Test Results:          | Pass                                                                                                                                                                                                                                                                           |

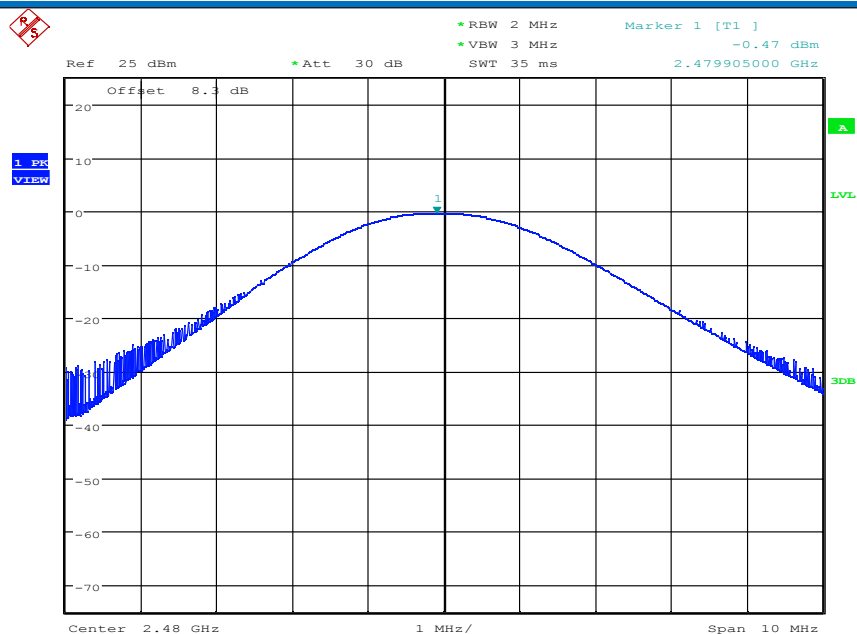
**Measurement Data**

| GFSK mode          |                         |             |        |
|--------------------|-------------------------|-------------|--------|
| Test channel       | Peak Output Power (dBm) | Limit (dBm) | Result |
| Lowest             | -0.780                  | 21.00       | Pass   |
| Middle             | -0.560                  | 21.00       | Pass   |
| Highest            | -0.470                  | 21.00       | Pass   |
| $\pi/4$ DQPSK mode |                         |             |        |
| Test channel       | Peak Output Power (dBm) | Limit (dBm) | Result |
| Lowest             | 0.700                   | 21.00       | Pass   |
| Middle             | 0.880                   | 21.00       | Pass   |
| Highest            | 0.940                   | 21.00       | Pass   |
| 8DPSK mode         |                         |             |        |
| Test channel       | Peak Output Power (dBm) | Limit (dBm) | Result |
| Lowest             | 1.060                   | 21.00       | Pass   |
| Middle             | 1.210                   | 21.00       | Pass   |
| Highest            | 1.270                   | 21.00       | Pass   |

Test plot as follows:

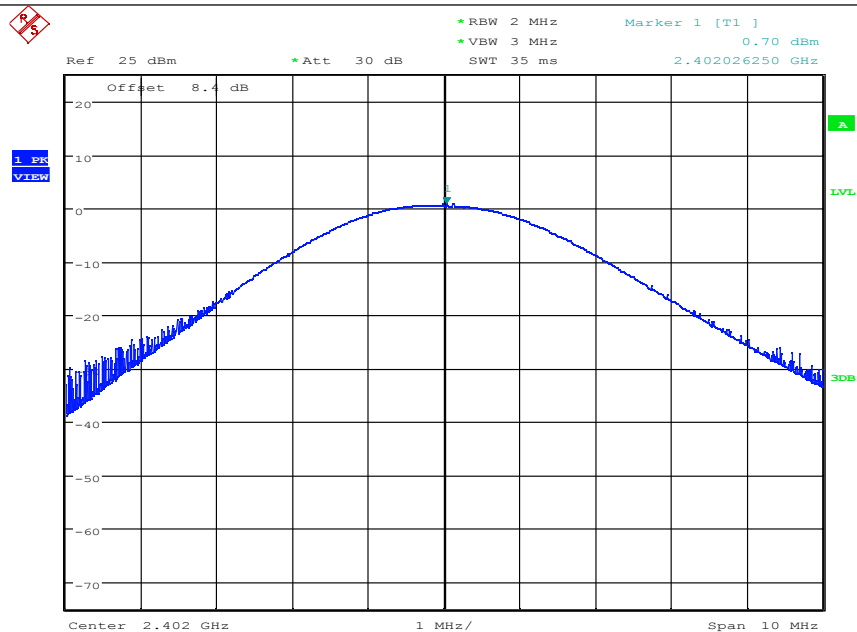


GFSK/HCH



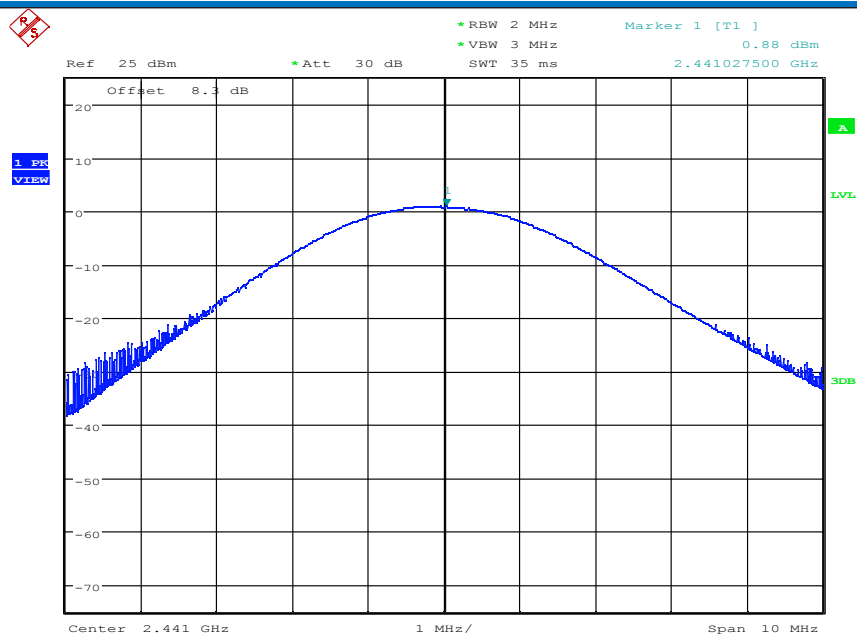
Date: 3.FEB.2021 10:12:06

$\pi/4$ DQPSK/LCH



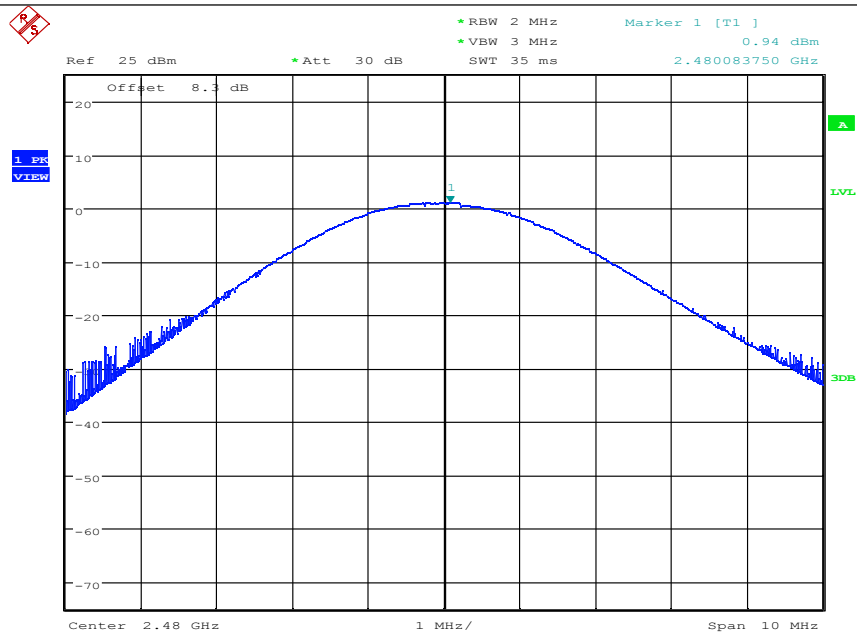
Date: 3.FEB.2021 10:15:52

$\pi/4$ DQPSK/MCH



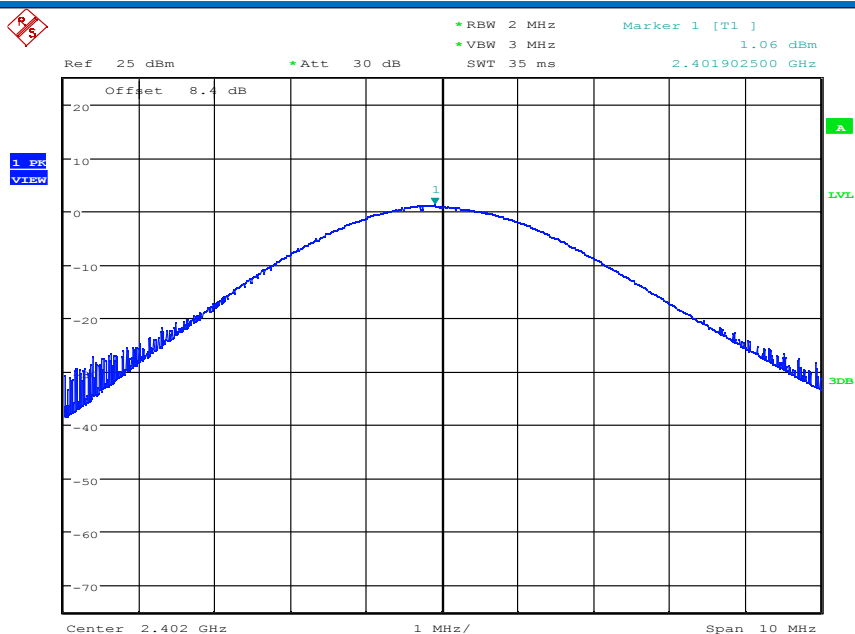
Date: 3.FEB.2021 10:19:14

$\pi/4$ DQPSK/HCH



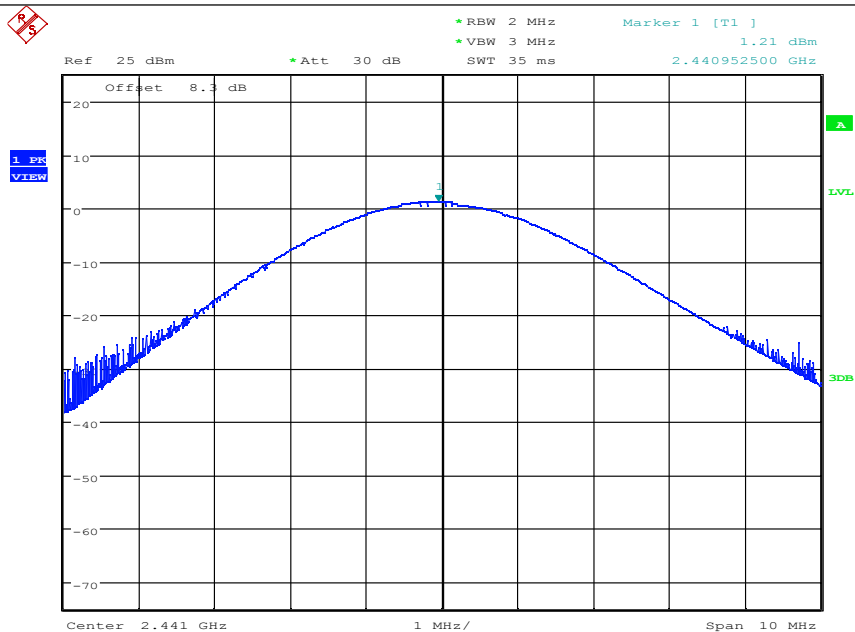
Date: 3.FEB.2021 10:22:07

8DPSK/LCH



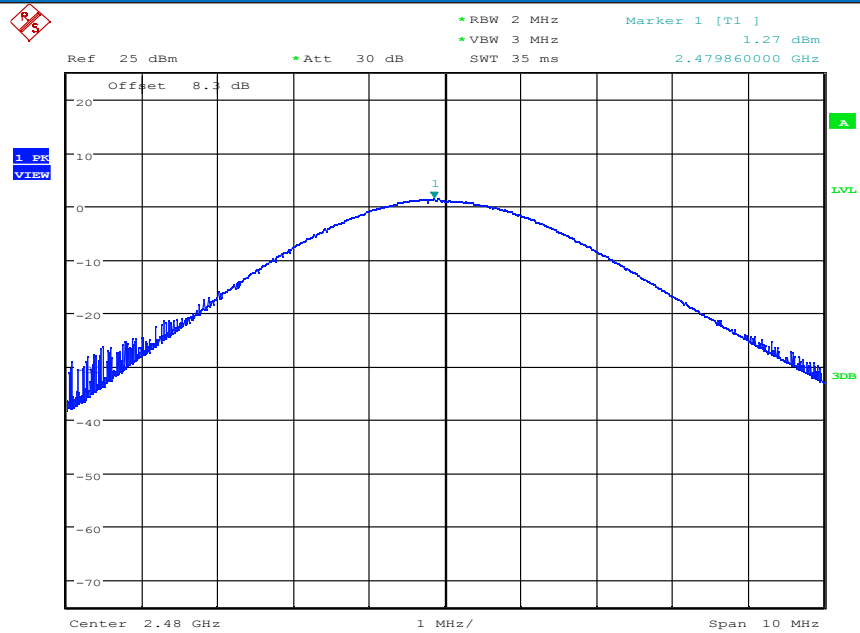
Date: 3.FEB.2021 10:26:03

8DPSK/MCH



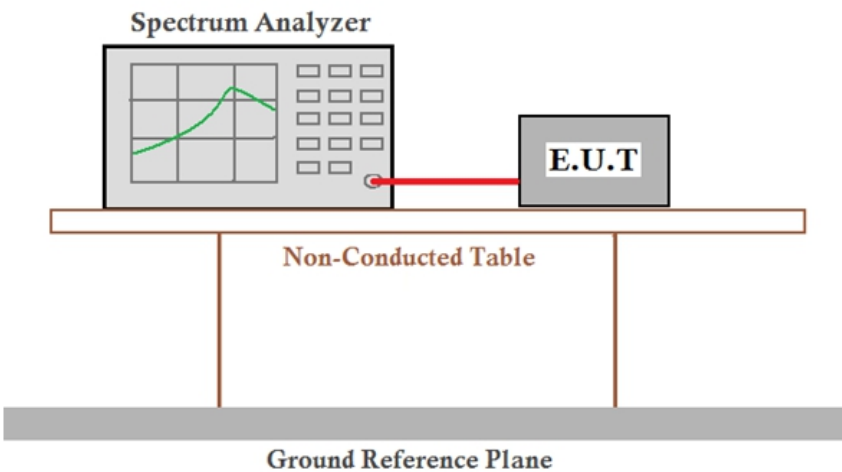
Date: 3.FEB.2021 10:29:30

8DPSK/HCH



Date: 3.FEB.2021 10:32:16

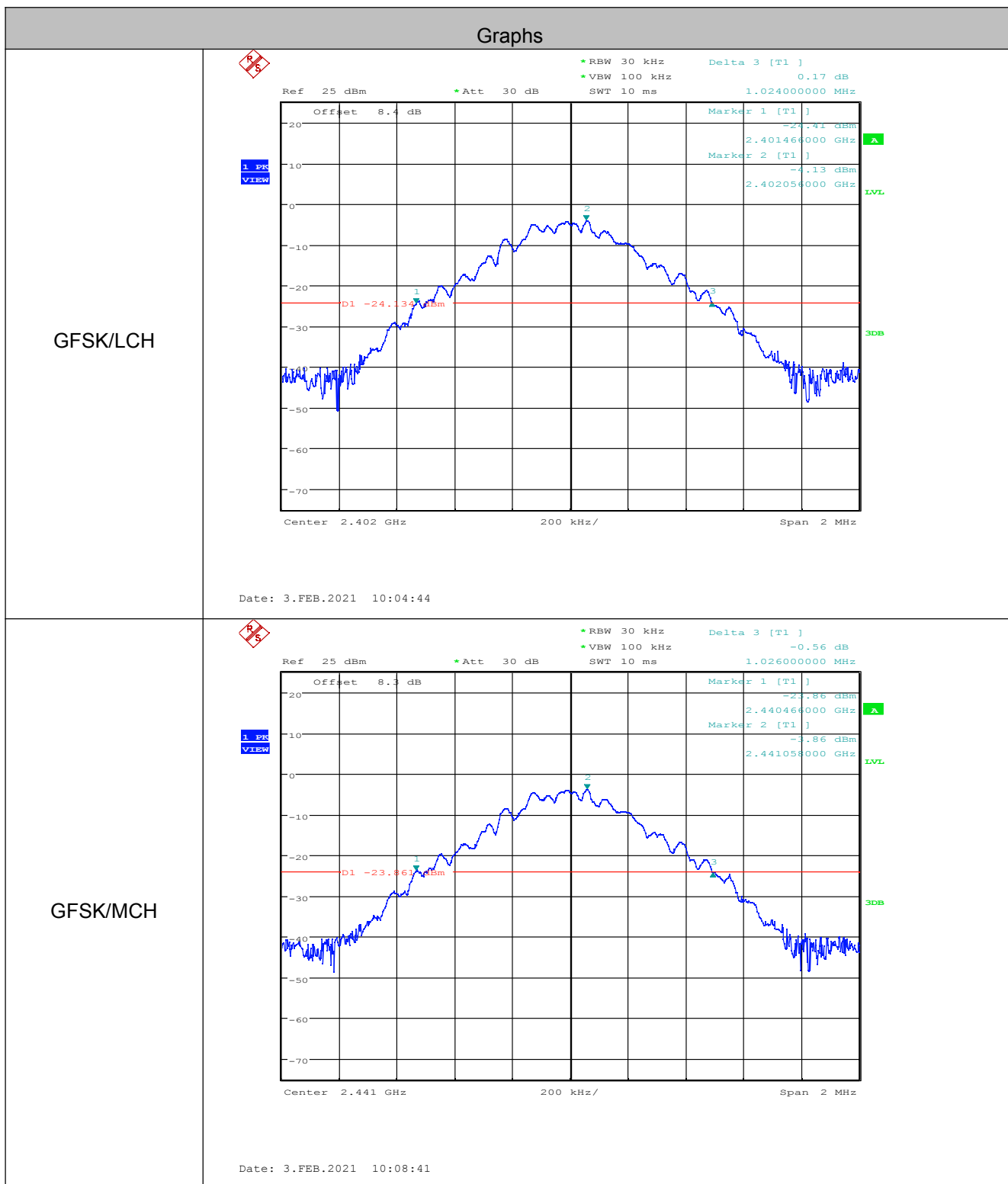
## 5.4 20dB Occupy Bandwidth

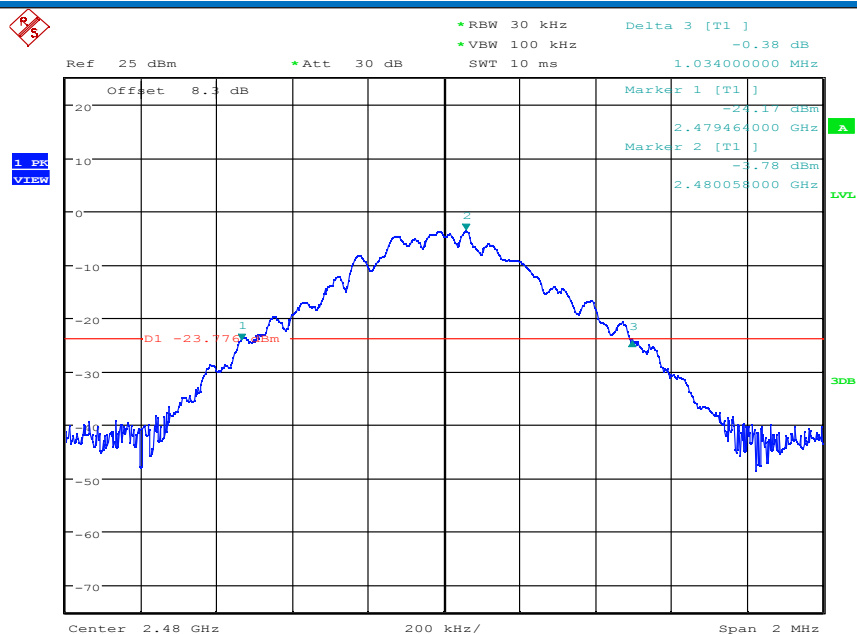
|                        |                                                                                                                                                                                                                                                                                |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement:      | 47 CFR Part 15C Section 15.247 (a)(1)                                                                                                                                                                                                                                          |
| Test Method:           | ANSI C63.10:2013                                                                                                                                                                                                                                                               |
| Test Setup:            |  <p>Remark: Offset=Cable loss+ attenuation factor.</p>                                                                                                                                       |
| Limit:                 | NA                                                                                                                                                                                                                                                                             |
| Exploratory Test Mode: | Non-hopping transmitting with all kind of modulation and all kind of data type                                                                                                                                                                                                 |
| Final Test Mode:       | Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of $\pi/4$ DQPSK modulation type, 3-DH5 of data type is the worst case of 8DPSK modulation type.<br>Only the worst case is recorded in the report. |
| Test Results:          | Pass                                                                                                                                                                                                                                                                           |

### Measurement Data

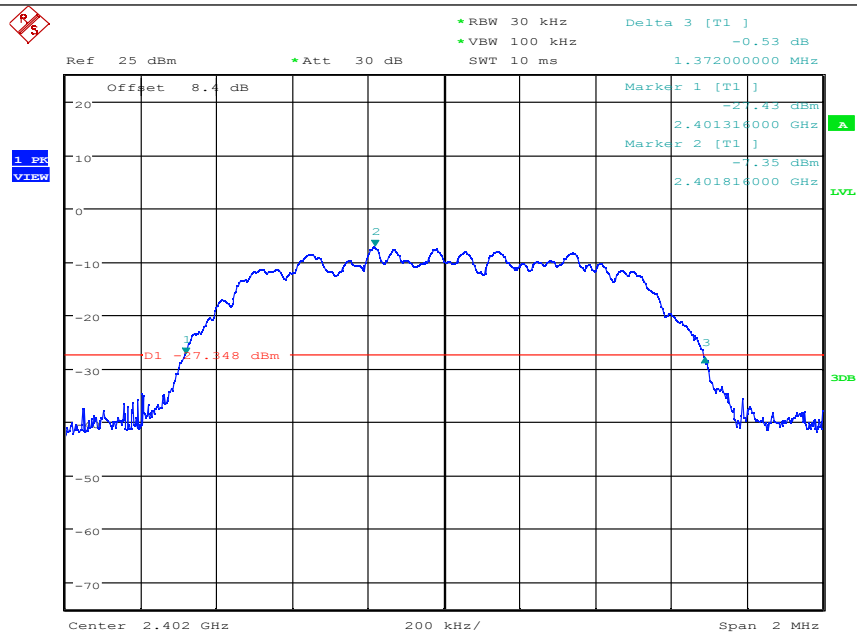
| Test channel | 20dB Occupy Bandwidth (MHz) |               |       |
|--------------|-----------------------------|---------------|-------|
|              | GFSK                        | $\pi/4$ DQPSK | 8DPSK |
| Lowest       | 1.024                       | 1.372         | 1.360 |
| Middle       | 1.026                       | 1.370         | 1.360 |
| Highest      | 1.034                       | 1.374         | 1.362 |

Test plot as follows:





Date: 3.FEB.2021 10:11:40

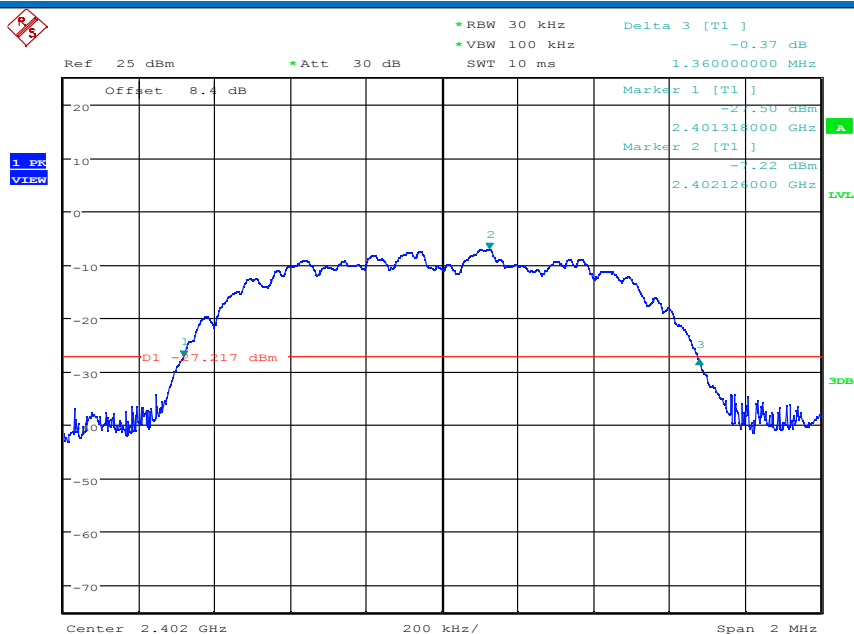


Date: 3.FEB.2021 10:15:28

Date: 3.FEB.2021 10:18:49

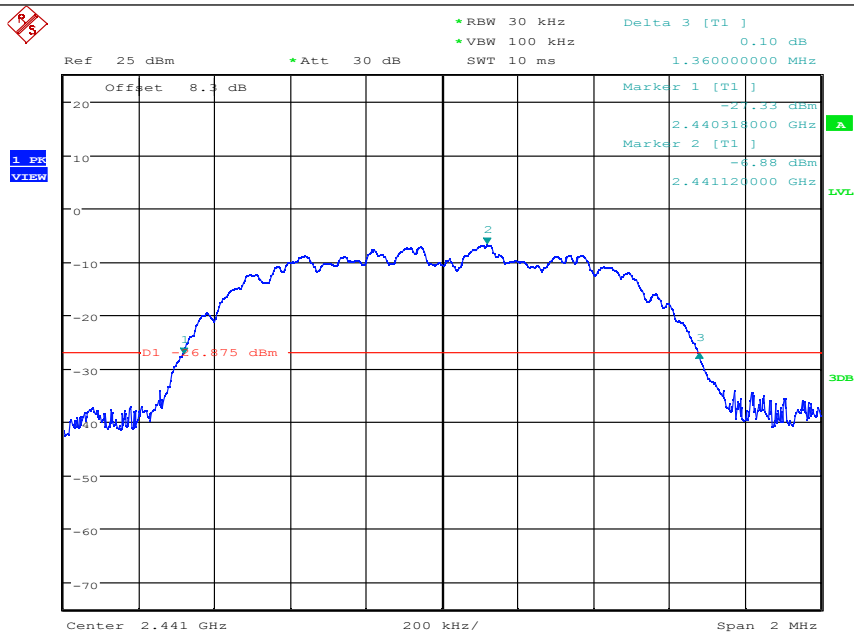
Date: 3.FEB.2021 10:21:42

8DPSK/LCH



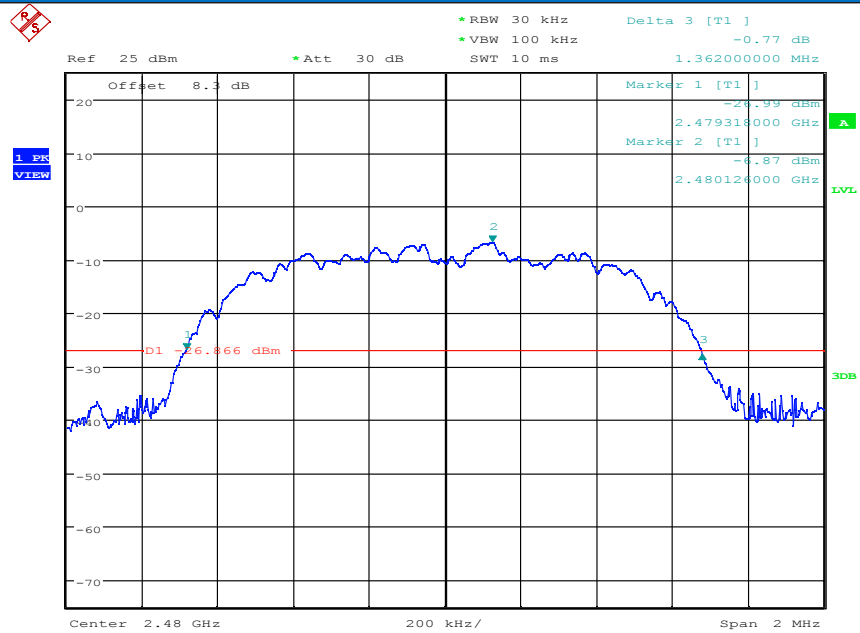
Date: 3.FEB.2021 10:25:38

8DPSK/MCH



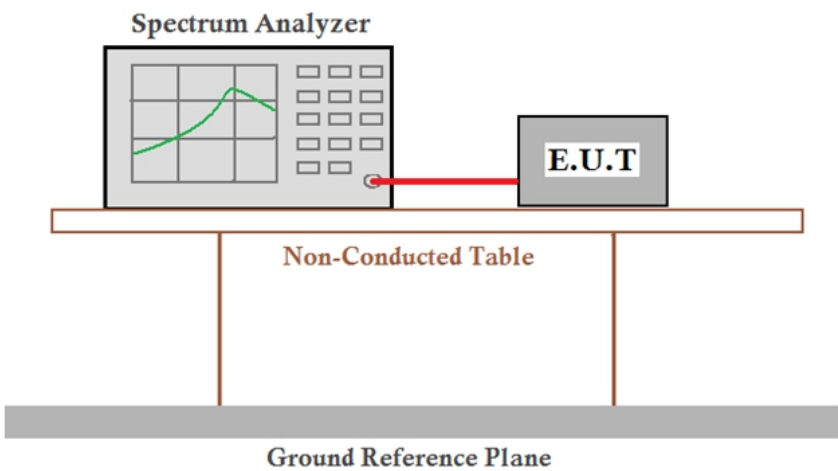
Date: 3.FEB.2021 10:29:05

8DPSK/HCH



Date: 3.FEB.2021 10:31:51

## 5.5 Carrier Frequencies Separation

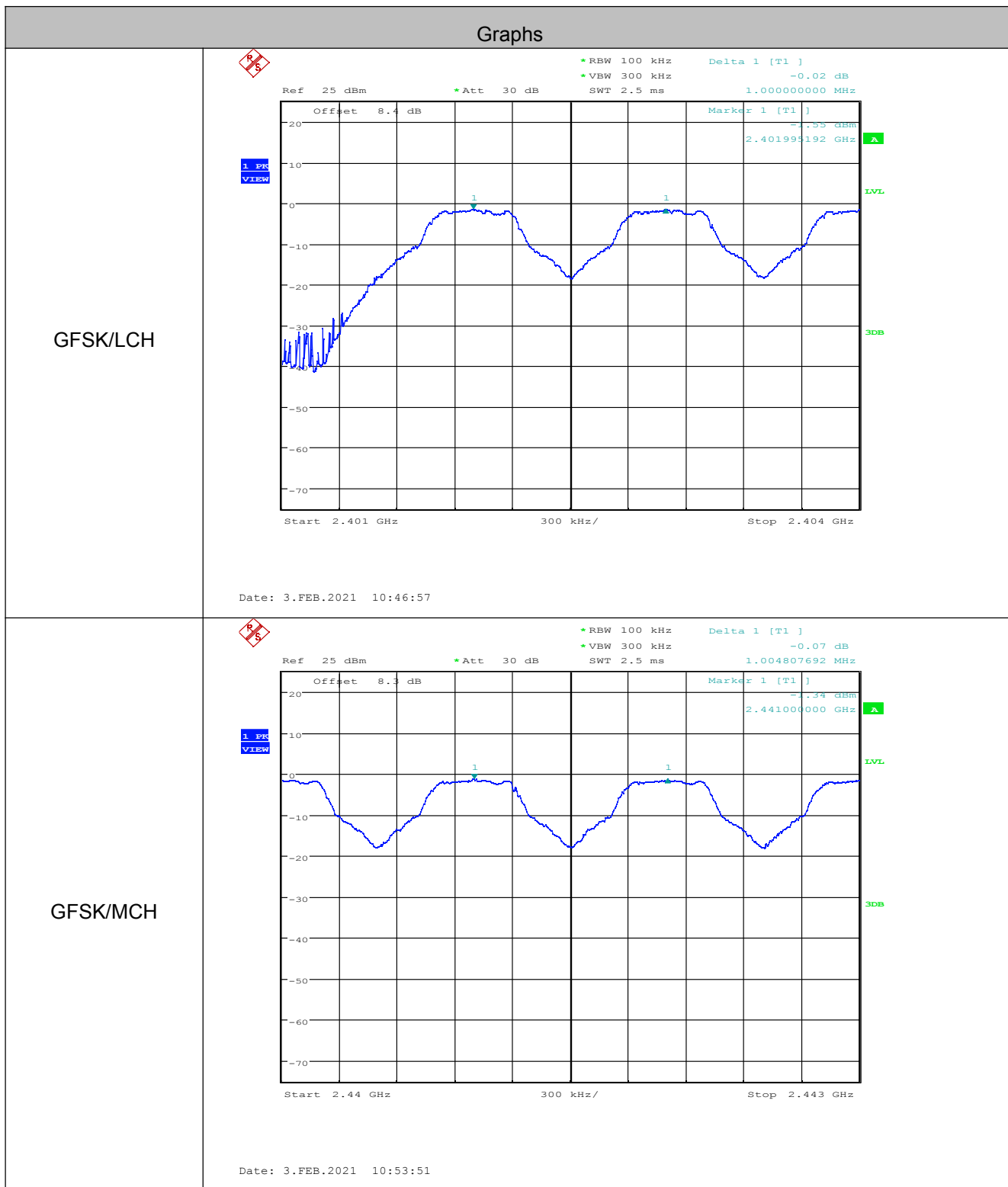
|                        |                                                                                                                                                                                                                                                                                |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement:      | 47 CFR Part 15C Section 15.247 (a)(1)                                                                                                                                                                                                                                          |
| Test Method:           | ANSI C63.10:2013                                                                                                                                                                                                                                                               |
| Test Setup:            |  <p>Remark: Offset=Cable loss+ attenuation factor.</p>                                                                                                                                       |
| Limit:                 | 2/3 of the 20dB bandwidth                                                                                                                                                                                                                                                      |
|                        | Remark: the transmission power is less than 0.125W.                                                                                                                                                                                                                            |
| Exploratory Test Mode: | Hopping transmitting with all kind of modulation and all kind of data type                                                                                                                                                                                                     |
| Final Test Mode:       | Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of $\pi/4$ DQPSK modulation type, 3-DH5 of data type is the worst case of 8DPSK modulation type.<br>Only the worst case is recorded in the report. |
| Test Results:          | Pass                                                                                                                                                                                                                                                                           |

Measurement Data

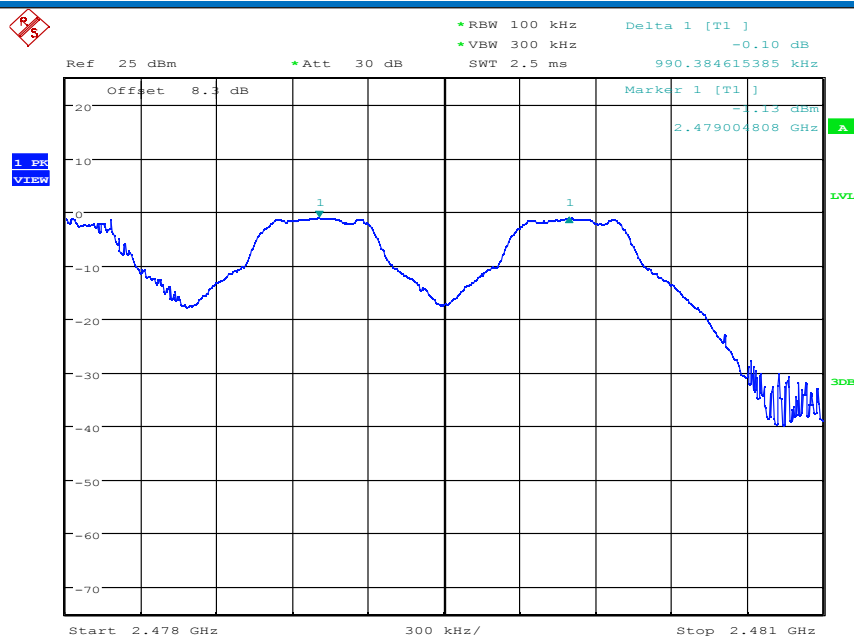
| GFSK mode          |                                      |              |        |
|--------------------|--------------------------------------|--------------|--------|
| Test channel       | Carrier Frequencies Separation (MHz) | Limit (MHz)  | Result |
| Lowest             | 1.000                                | $\geq 0.689$ | Pass   |
| Middle             | 1.005                                | $\geq 0.689$ | Pass   |
| Highest            | 0.990                                | $\geq 0.689$ | Pass   |
| $\pi/4$ DQPSK mode |                                      |              |        |
| Test channel       | Carrier Frequencies Separation (MHz) | Limit (MHz)  | Result |
| Lowest             | 1.000                                | $\geq 0.916$ | Pass   |
| Middle             | 0.995                                | $\geq 0.916$ | Pass   |
| Highest            | 1.000                                | $\geq 0.916$ | Pass   |
| 8DPSK mode         |                                      |              |        |
| Test channel       | Carrier Frequencies Separation (MHz) | Limit (MHz)  | Result |
| Lowest             | 0.995                                | $\geq 0.908$ | Pass   |
| Middle             | 1.010                                | $\geq 0.908$ | Pass   |
| Highest            | 1.000                                | $\geq 0.908$ | Pass   |

| Mode          | 20dB bandwidth (MHz)<br>(worse case) | Limit (MHz)<br>(Carrier Frequencies Separation) |
|---------------|--------------------------------------|-------------------------------------------------|
| GFSK          | 1.034                                | 0.689                                           |
| $\pi/4$ DQPSK | 1.374                                | 0.916                                           |
| 8DPSK         | 1.362                                | 0.908                                           |

Test plot as follows:

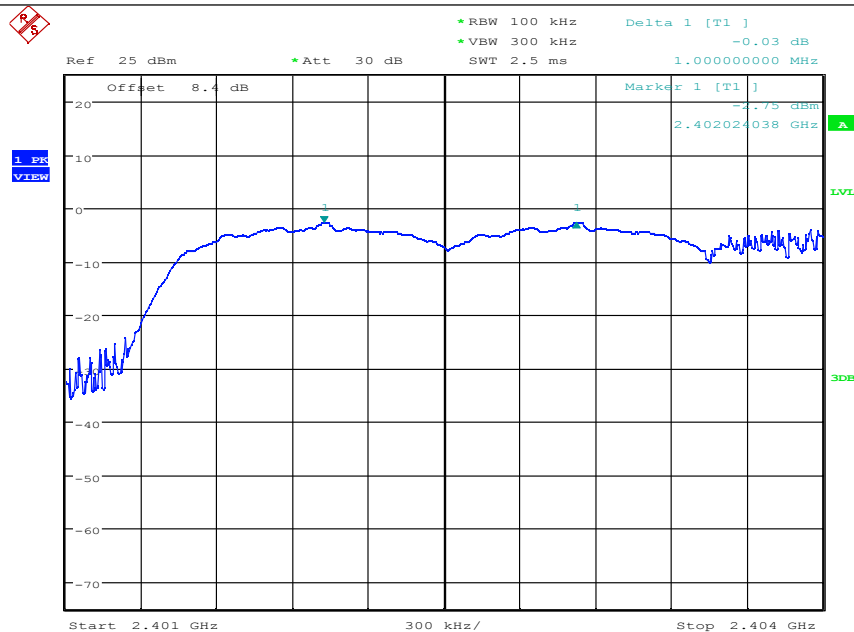


GFSK/HCH



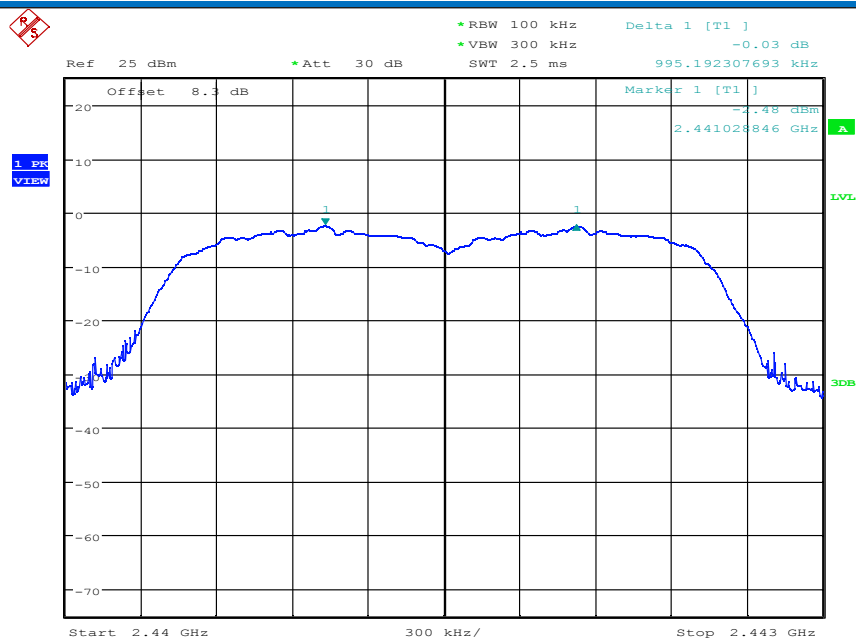
Date: 3.FEB.2021 10:56:20

$\pi/4$ DQPSK/LCH



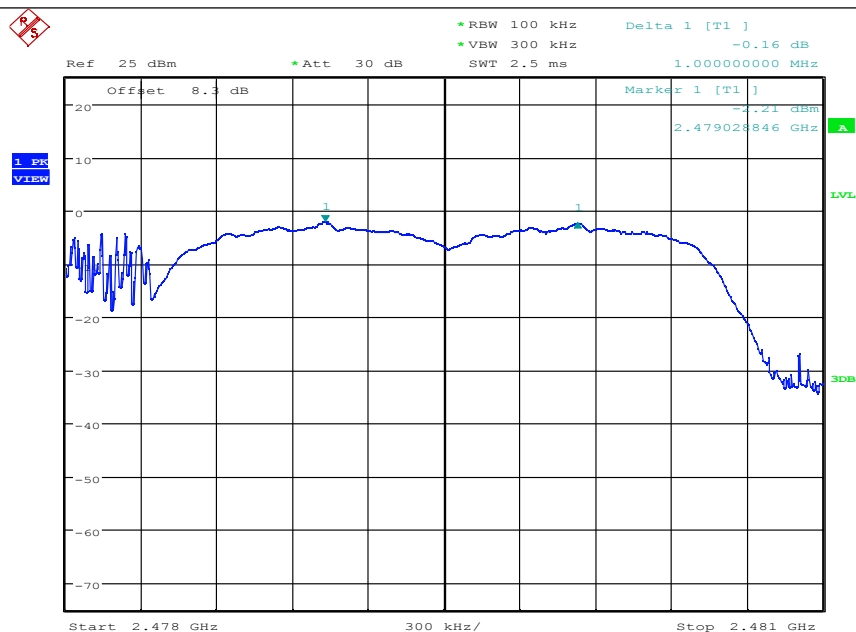
Date: 3.FEB.2021 12:58:04

$\pi/4$ DQPSK/MCH



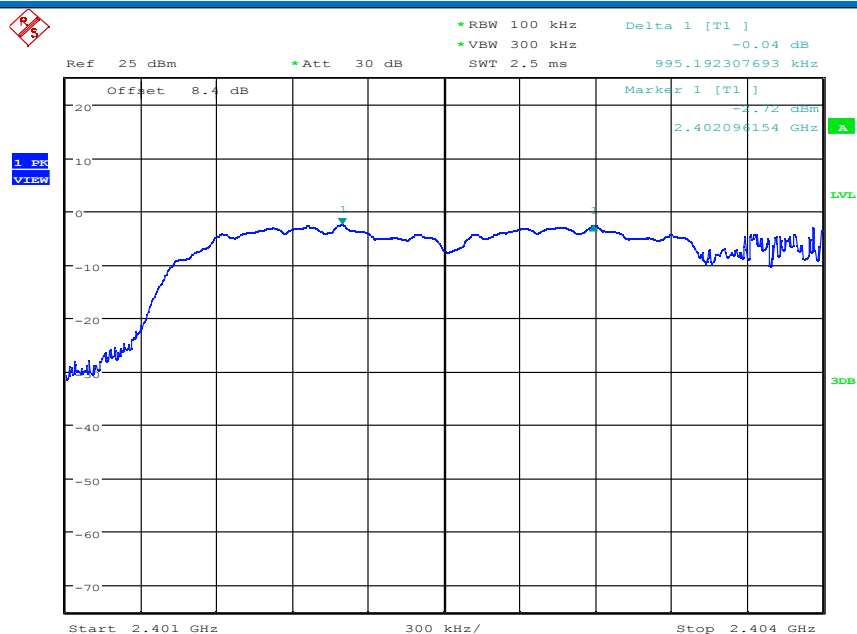
Date: 3.FEB.2021 13:00:28

$\pi/4$ DQPSK/HCH



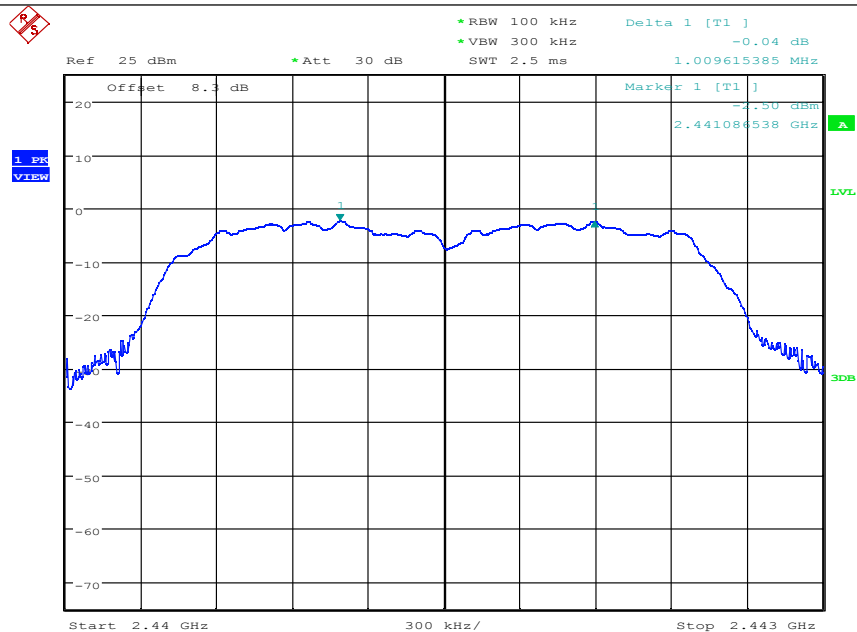
Date: 3.FEB.2021 13:03:52

8DPSK/LCH



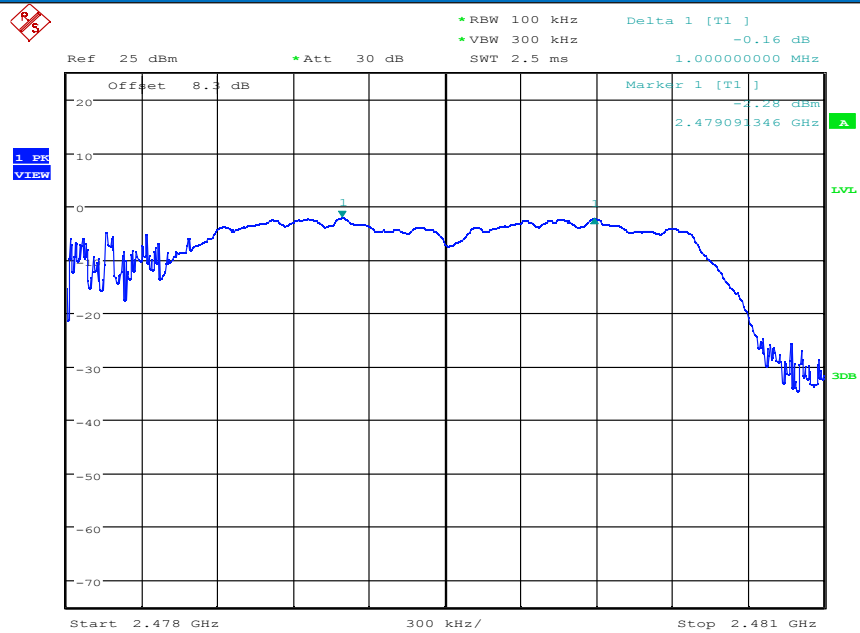
Date: 3.FEB.2021 13:18:53

8DPSK/MCH



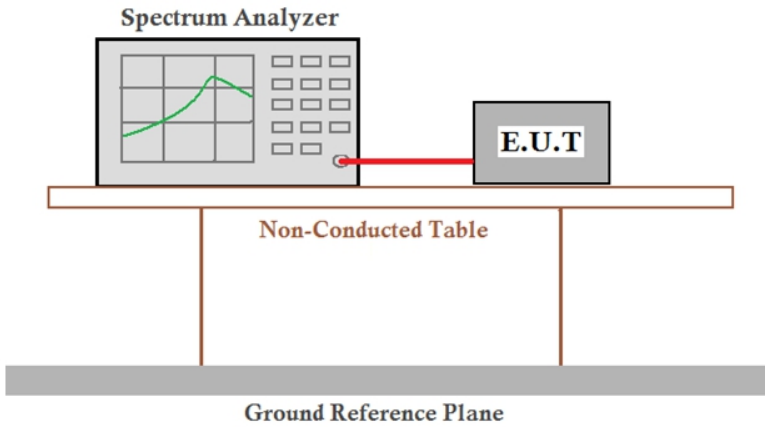
Date: 3.FEB.2021 13:23:37

8DPSK/HCH



Date: 3.FEB.2021 13:25:12

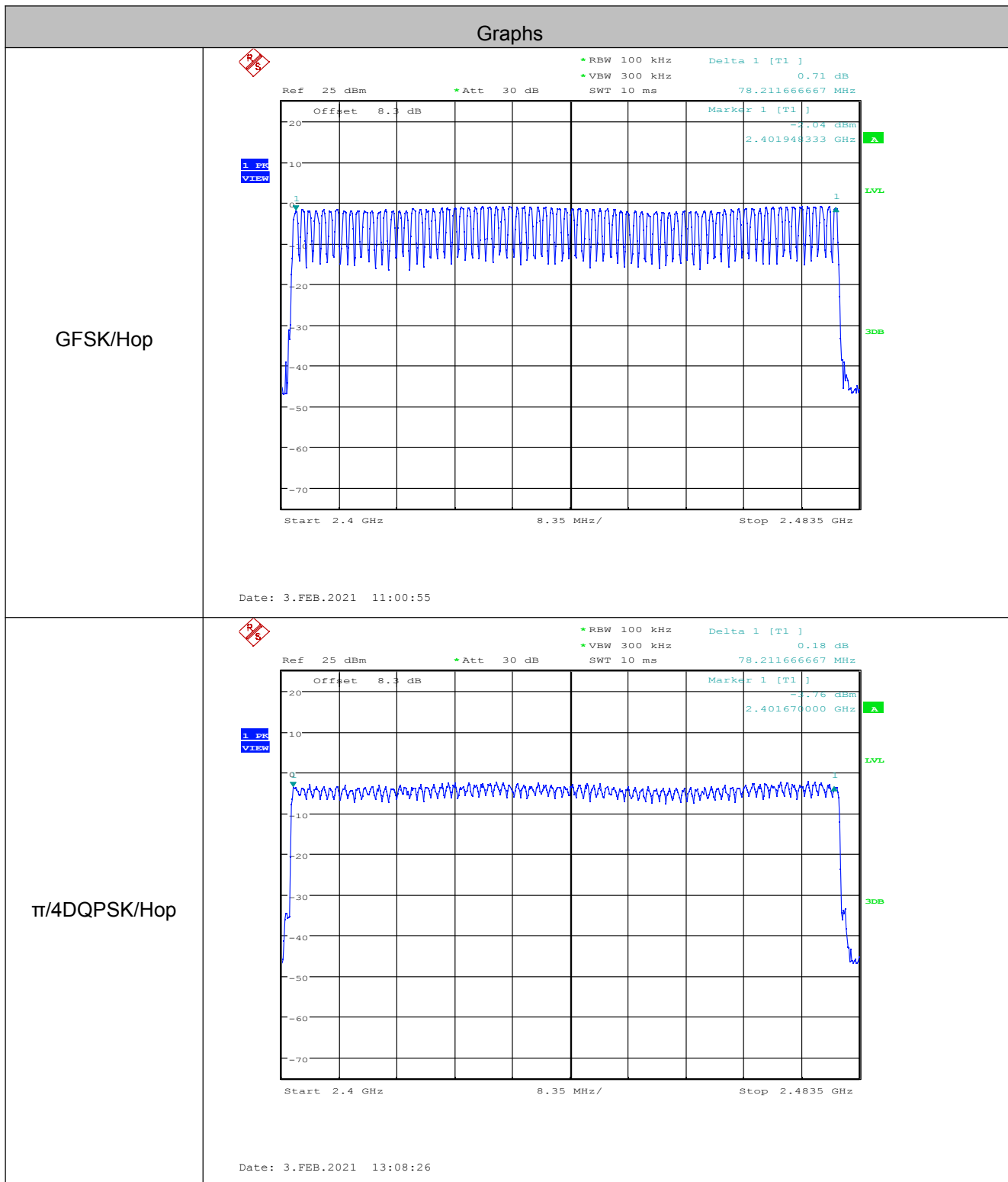
## 5.6 Hopping Channel Number

|                        |                                                                                                                                                                                                                                                                                |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement:      | 47 CFR Part 15C Section 15.247 (a)(1)                                                                                                                                                                                                                                          |
| Test Method:           | ANSI C63.10:2013                                                                                                                                                                                                                                                               |
| Test Setup:            |  <p>Remark: Offset=Cable loss+ attenuation factor.</p>                                                                                                                                       |
| Limit:                 | At least 15 channels                                                                                                                                                                                                                                                           |
| Exploratory Test Mode: | hopping transmitting with all kind of modulation and all kind of data type                                                                                                                                                                                                     |
| Final Test Mode:       | Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of $\pi/4$ DQPSK modulation type, 3-DH5 of data type is the worst case of 8DPSK modulation type.<br>Only the worst case is recorded in the report. |
| Test Results:          | Pass                                                                                                                                                                                                                                                                           |

### Measurement Data

| Mode          | Hopping channel numbers | Limit     |
|---------------|-------------------------|-----------|
| GFSK          | 79                      | $\geq 15$ |
| $\pi/4$ DQPSK | 79                      | $\geq 15$ |
| 8DPSK         | 79                      | $\geq 15$ |

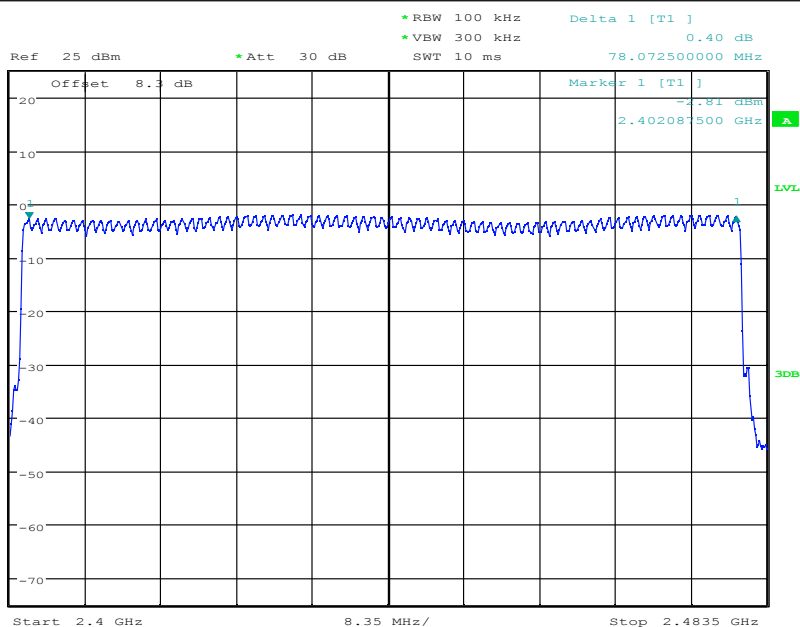
Test plot as follows:



8DPSK/Hop

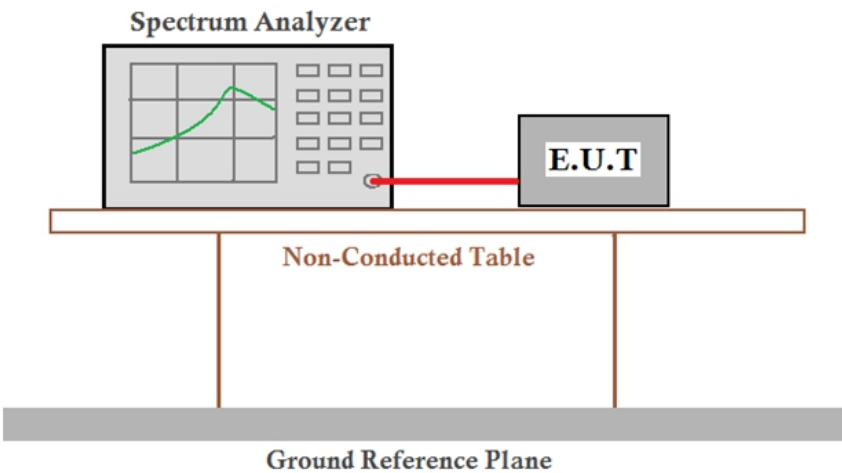


1 FREQ  
VIEW



Date: 3.FEB.2021 14:08:35

## 5.7 Dwell Time

|                   |                                                                                                                                                 |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | 47 CFR Part 15C Section 15.247 (a)(1)                                                                                                           |
| Test Method:      | ANSI C63.10:2013                                                                                                                                |
| Test Setup:       |  <p><i>Remark: Offset=Cable loss+ attenuation factor.</i></p> |
| Test Mode:        | Hopping transmitting with all kind of modulation and all kind of data type.                                                                     |
| Limit:            | 0.4 Second                                                                                                                                      |
| Test Results:     | Pass                                                                                                                                            |

Measurement Data

| Mode     | Packet | Channel | Burst Width<br>[ms/hop/ch] | Dwell Time[s] | Limit (second) |
|----------|--------|---------|----------------------------|---------------|----------------|
| GFSK     | DH1    | LCH     | 0.39                       | 0.125         | ≤0.4           |
| GFSK     | DH1    | MCH     | 0.38                       | 0.122         | ≤0.4           |
| GFSK     | DH1    | HCH     | 0.38                       | 0.122         | ≤0.4           |
| π/4DQPSK | 2DH1   | LCH     | 0.39                       | 0.125         | ≤0.4           |
| π/4DQPSK | 2DH1   | MCH     | 0.38                       | 0.122         | ≤0.4           |
| π/4DQPSK | 2DH1   | HCH     | 0.38                       | 0.122         | ≤0.4           |
| 8DPSK    | 3DH1   | LCH     | 0.39                       | 0.125         | ≤0.4           |
| 8DPSK    | 3DH1   | MCH     | 0.38                       | 0.122         | ≤0.4           |
| 8DPSK    | 3DH1   | HCH     | 0.38                       | 0.122         | ≤0.4           |
| GFSK     | DH3    | LCH     | 1.65                       | 0.264         | ≤0.4           |
| GFSK     | DH3    | MCH     | 1.66                       | 0.266         | ≤0.4           |
| GFSK     | DH3    | HCH     | 1.65                       | 0.264         | ≤0.4           |
| π/4DQPSK | 2DH3   | LCH     | 1.65                       | 0.264         | ≤0.4           |
| π/4DQPSK | 2DH3   | MCH     | 1.67                       | 0.267         | ≤0.4           |
| π/4DQPSK | 2DH3   | HCH     | 1.67                       | 0.267         | ≤0.4           |
| 8DPSK    | 3DH3   | LCH     | 1.67                       | 0.267         | ≤0.4           |
| 8DPSK    | 3DH3   | MCH     | 1.65                       | 0.264         | ≤0.4           |
| 8DPSK    | 3DH3   | HCH     | 1.67                       | 0.267         | ≤0.4           |
| GFSK     | DH5    | LCH     | 2.93                       | 0.313         | ≤0.4           |
| GFSK     | DH5    | MCH     | 2.93                       | 0.313         | ≤0.4           |
| GFSK     | DH5    | HCH     | 2.92                       | 0.312         | ≤0.4           |
| π/4DQPSK | 2DH5   | LCH     | 2.92                       | 0.312         | ≤0.4           |
| π/4DQPSK | 2DH5   | MCH     | 2.93                       | 0.313         | ≤0.4           |
| π/4DQPSK | 2DH5   | HCH     | 2.93                       | 0.313         | ≤0.4           |
| 8DPSK    | 3DH5   | LCH     | 2.93                       | 0.313         | ≤0.4           |
| 8DPSK    | 3DH5   | MCH     | 2.93                       | 0.313         | ≤0.4           |
| 8DPSK    | 3DH5   | HCH     | 2.93                       | 0.313         | ≤0.4           |

Remark:

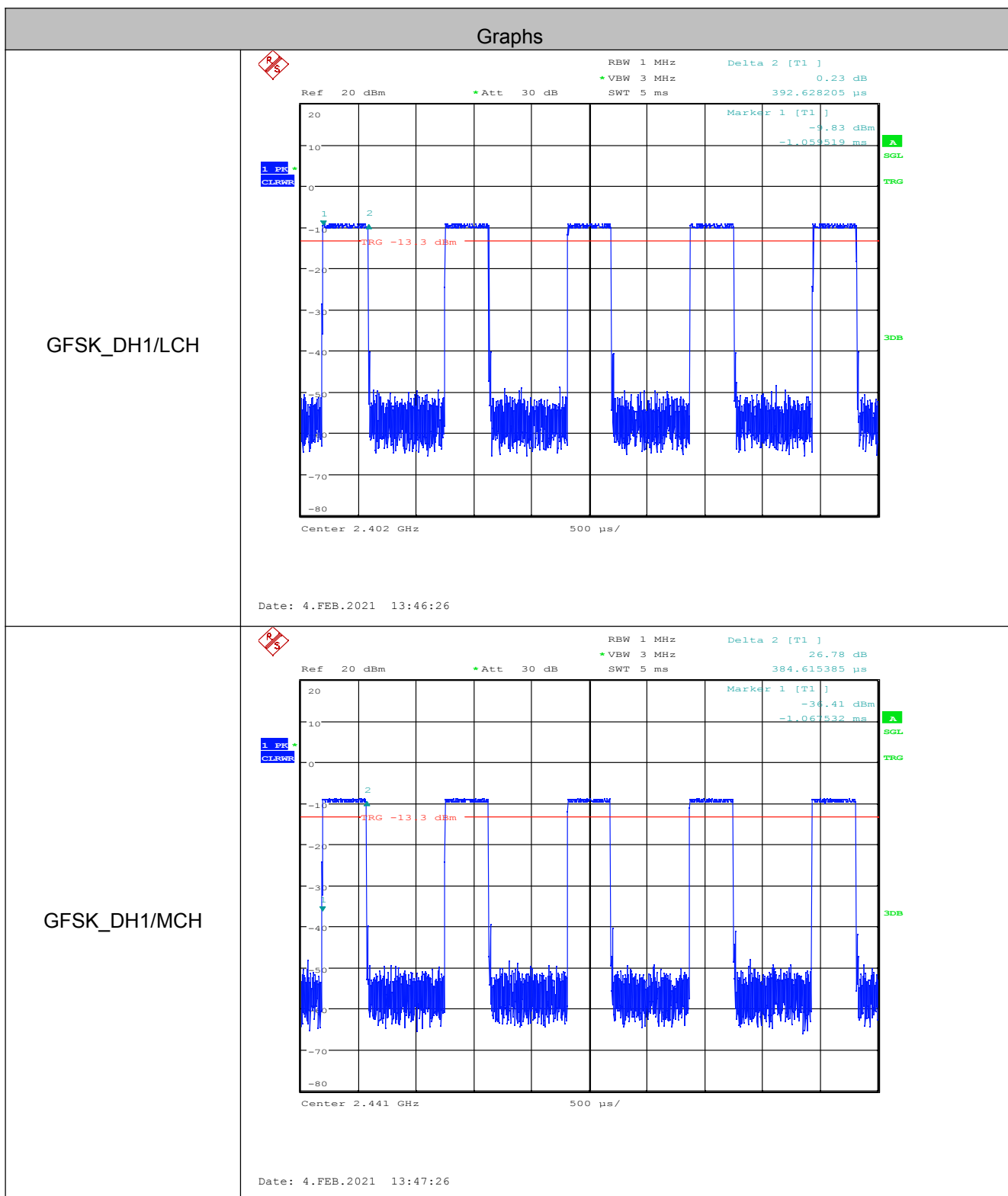
The test period:  $T = 0.4 \text{ Second/Channel} \times 79 \text{ Channel} = 31.6 \text{ s}$

DH1/2DH1/3DH1 Dwell time = Burst Width(ms)\*(1600/(2\*79))\*31.6

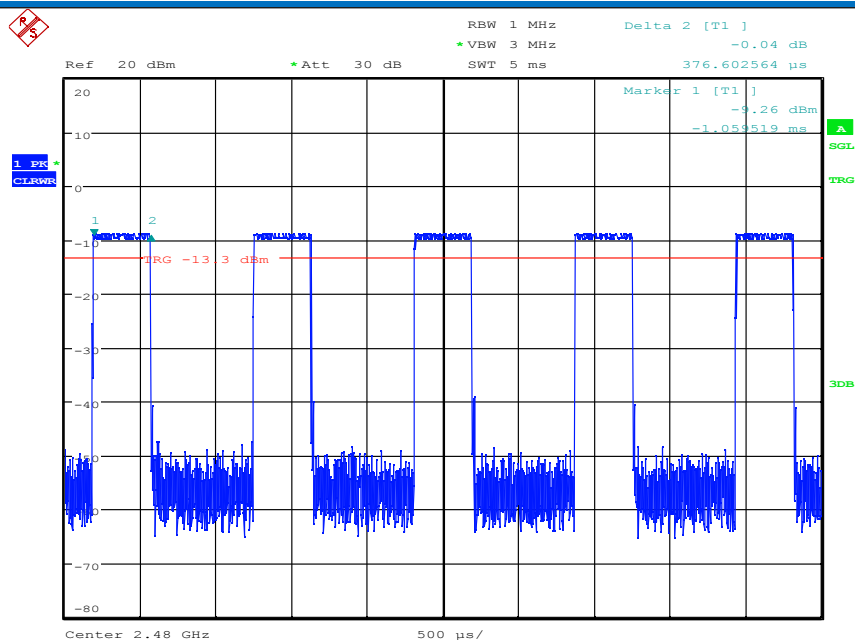
DH3/2DH3/3DH3 Dwell time = Burst Width (ms)\*(1600/(4\*79))\*31.6

DH5/2DH5/3DH5 Dwell time = Burst Width (ms)\*(1600/(6\*79))\*31.6

Test plot as follows:

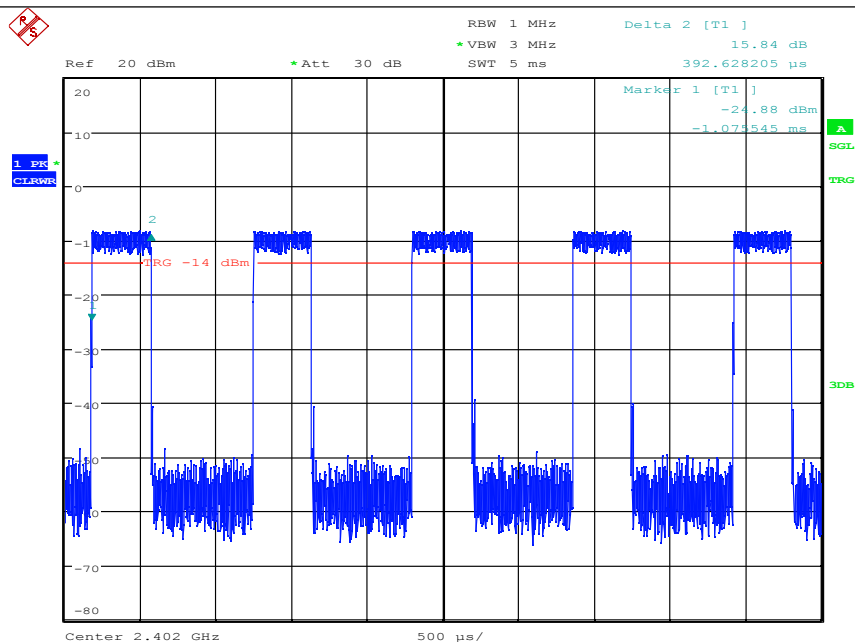


GFSK\_DH1/HCH



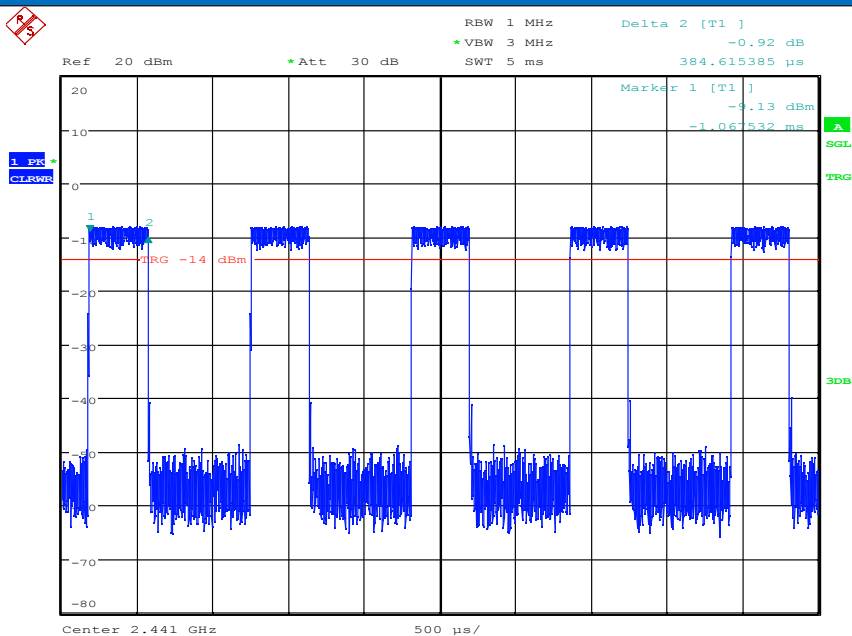
Date: 4.FEB.2021 13:47:57

$\pi$ /4DQPSK  
\_2DH1/LCH



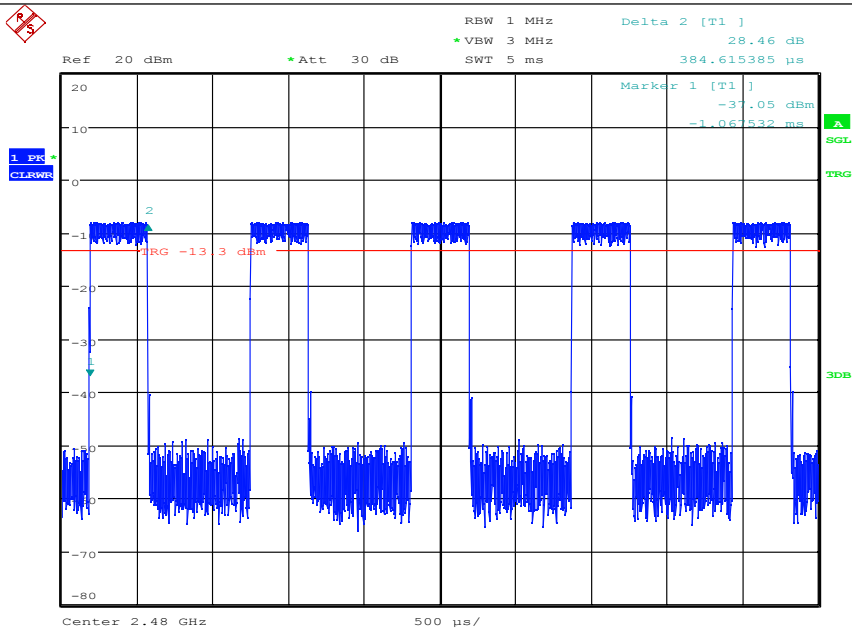
Date: 4.FEB.2021 13:50:50

$\pi/4$ DQPSK  
\_2DH1/MCH



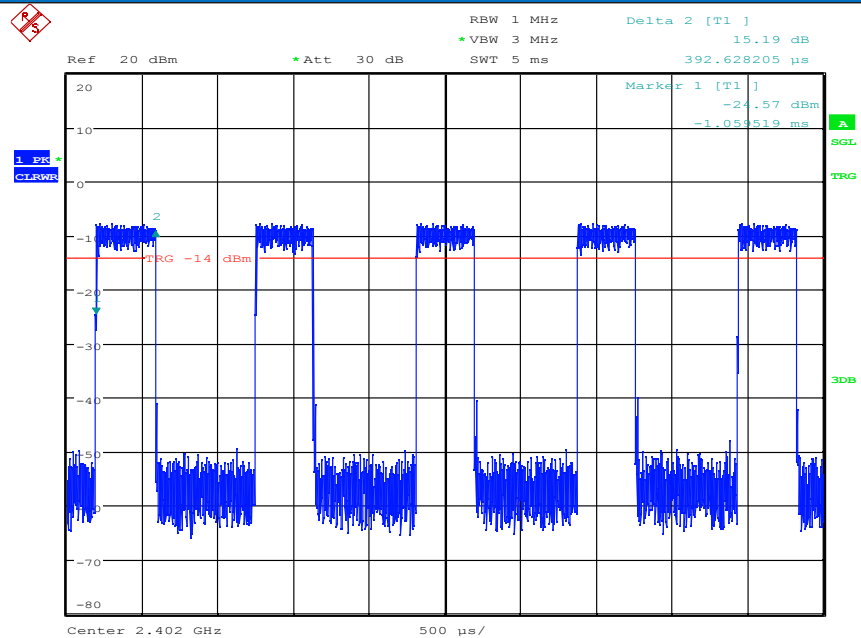
Date: 4.FEB.2021 13:50:08

$\pi/4$ DQPSK  
\_2DH1/HCH



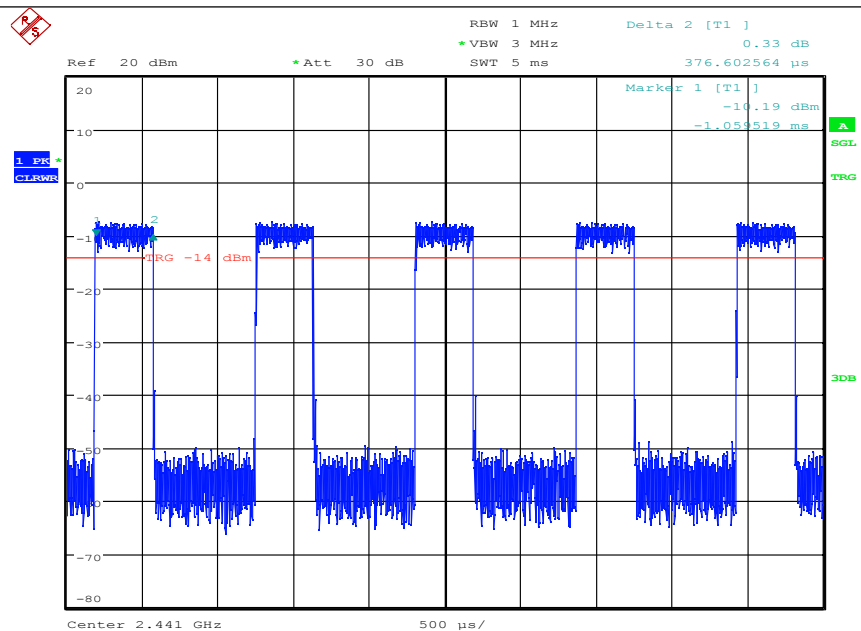
Date: 4.FEB.2021 13:48:41

8DPSK\_3DH1/LCH



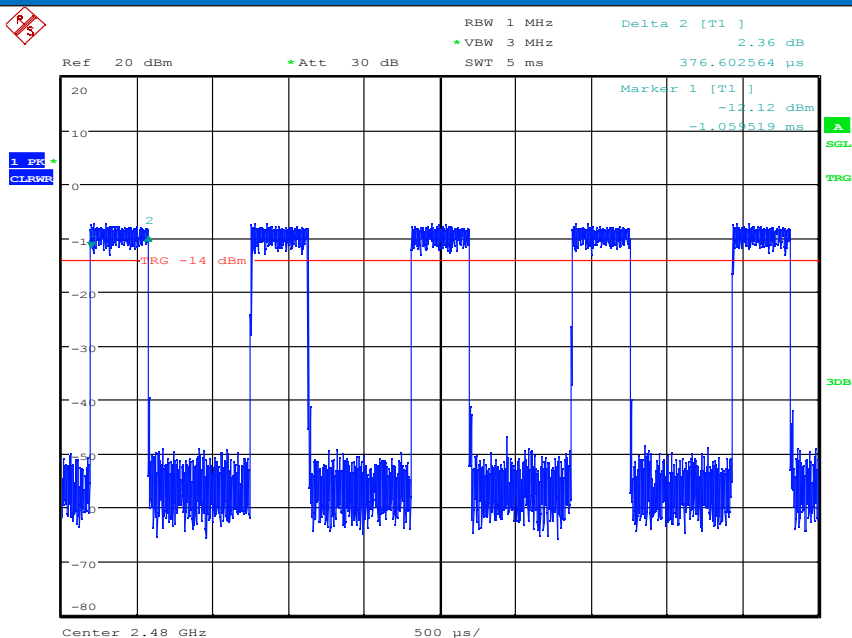
Date: 4.FEB.2021 13:51:43

8DPSK\_3DH1/MCH



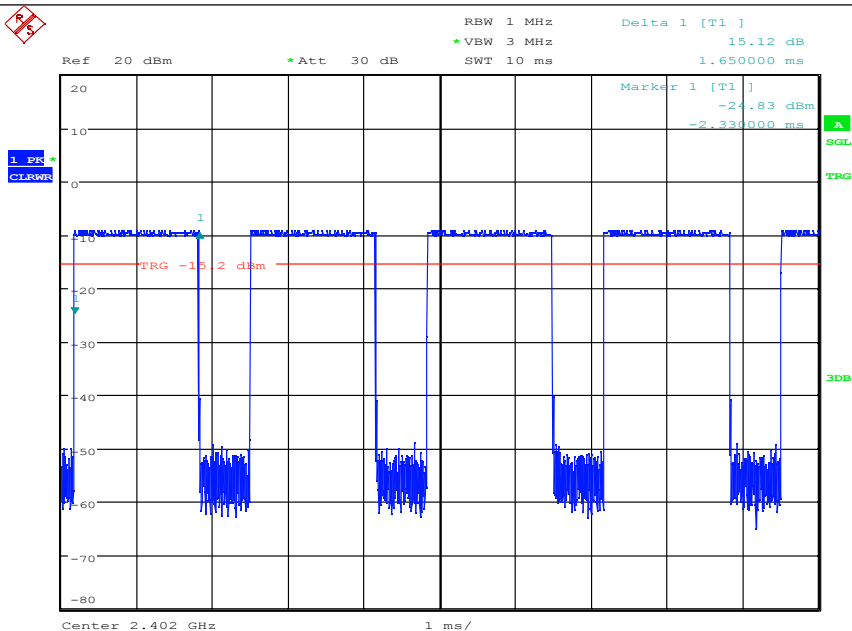
Date: 4.FEB.2021 13:53:16

8DPSK\_3DH1/HCH



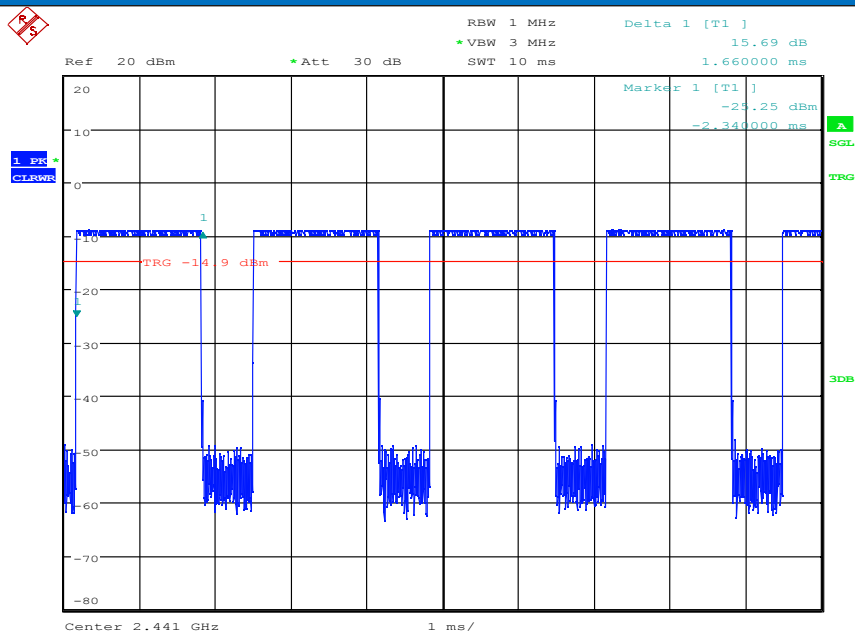
Date: 4.FEB.2021 13:53:51

GFSK\_DH3/LCH



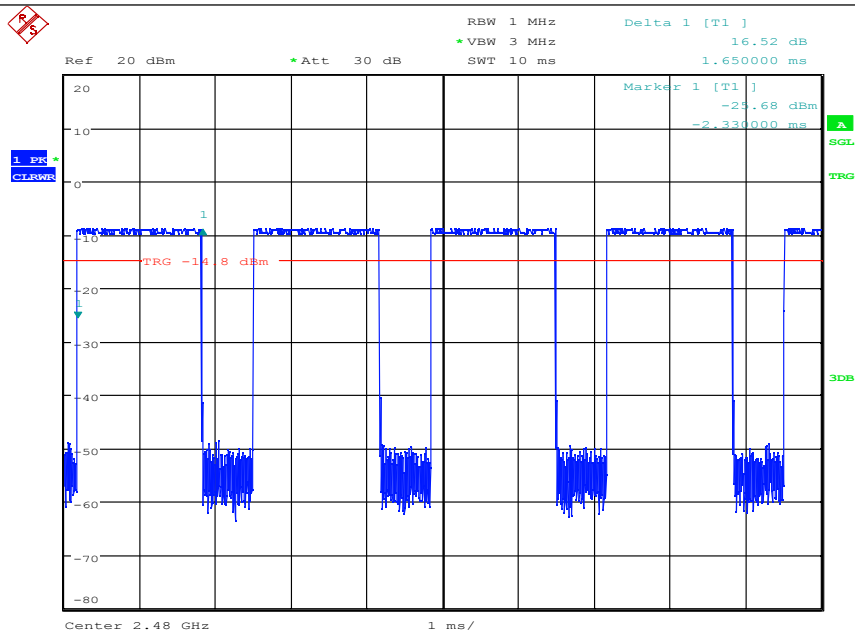
Date: 4.FEB.2021 13:23:16

GFSK\_DH3/MCH



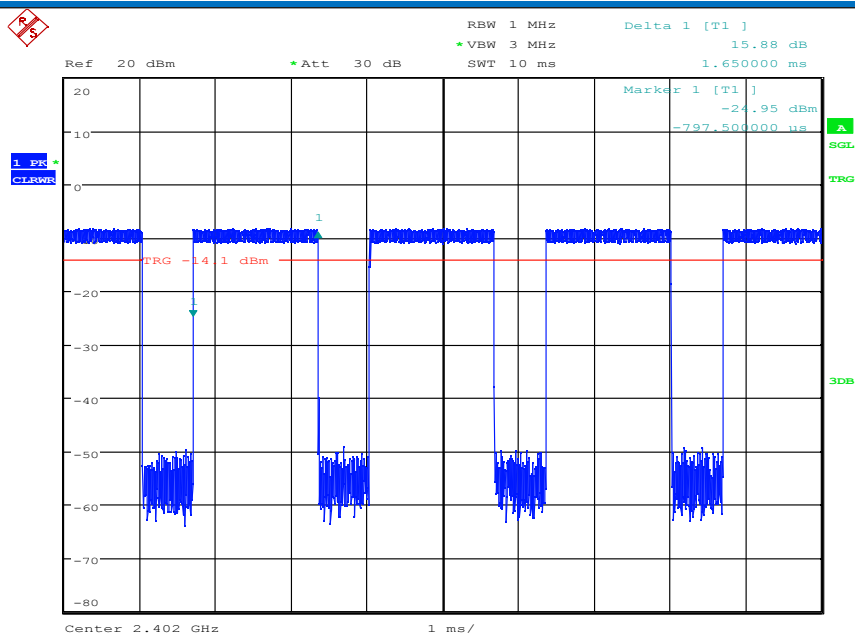
Date: 4.FEB.2021 13:23:59

GFSK\_DH3/HCH



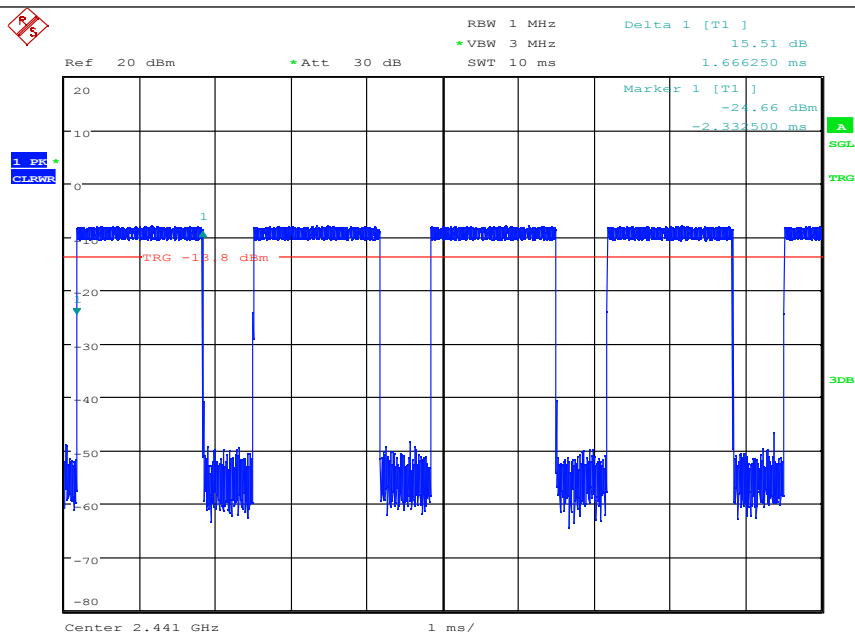
Date: 4.FEB.2021 13:24:32

$\pi/4$ DQPSK  
\_2DH3/LCH



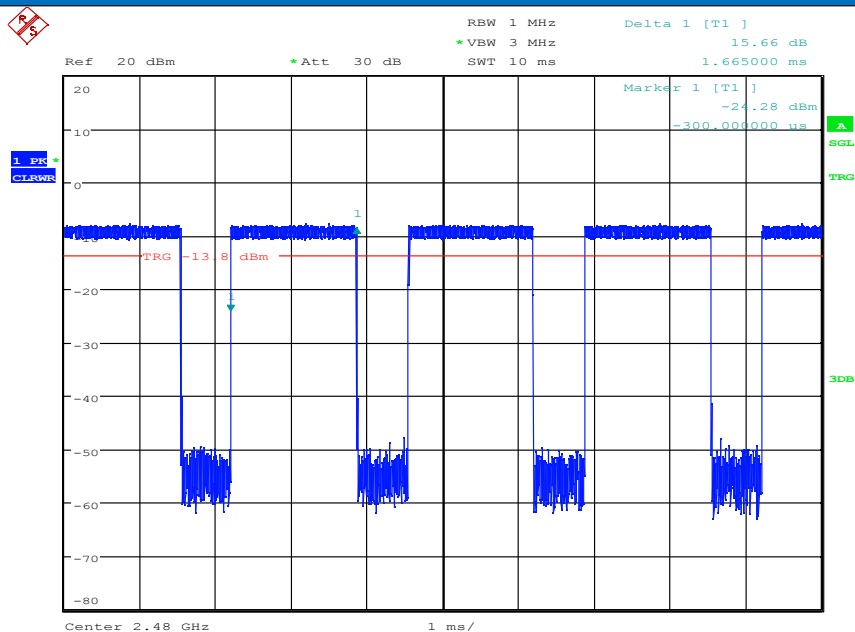
Date: 4.FEB.2021 13:27:12

$\pi/4$ DQPSK  
\_2DH3/MCH



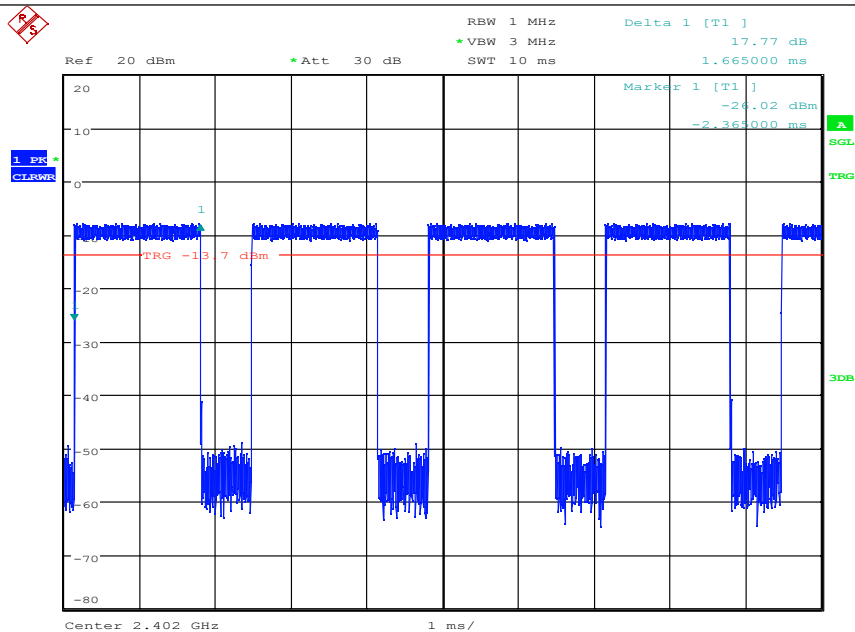
Date: 4.FEB.2021 13:28:27

$\pi/4$ DQPSK  
\_2DH3/HCH



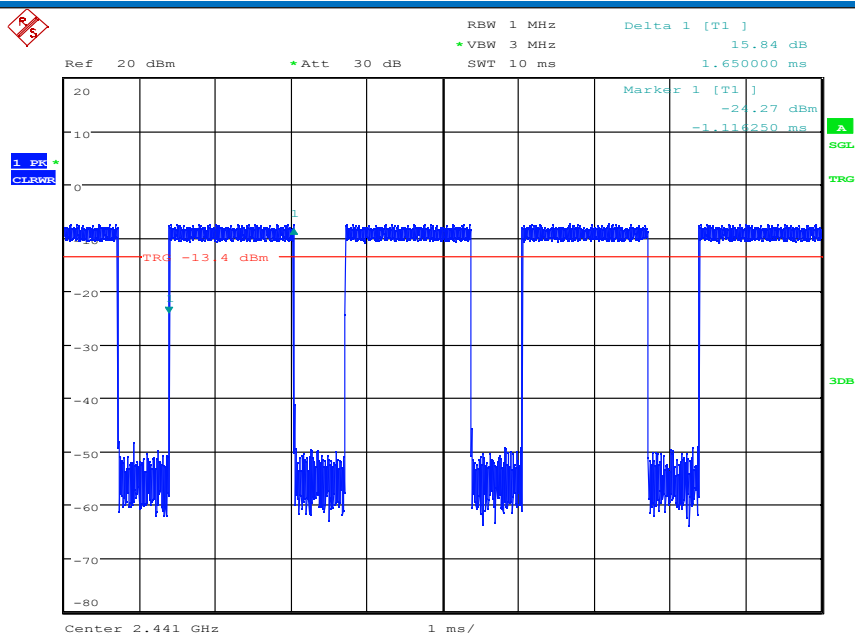
Date: 4.FEB.2021 13:29:25

8DPSK\_3DH3/LCH



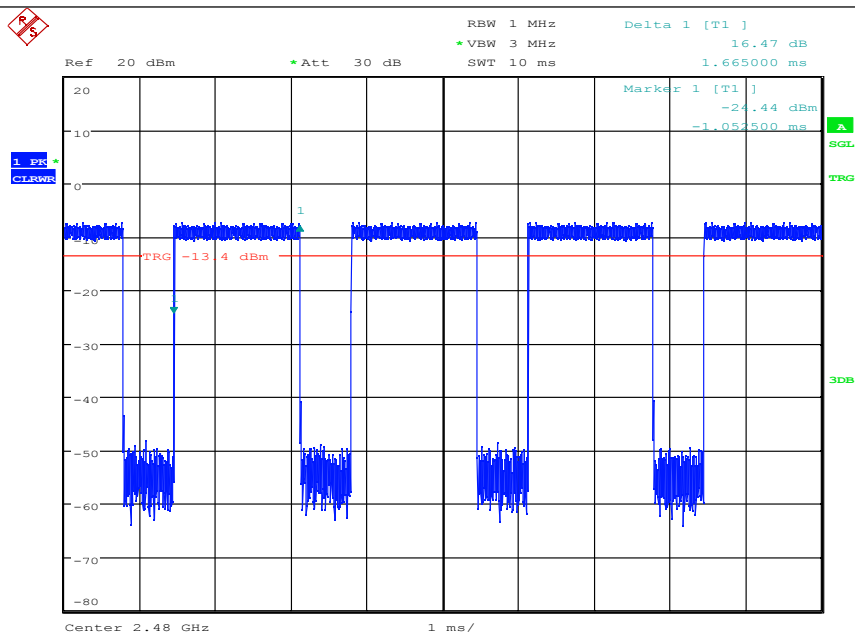
Date: 4.FEB.2021 13:36:01

8DPSK\_3DH3/MCH

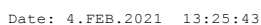
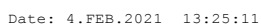


Date: 4.FEB.2021 13:36:30

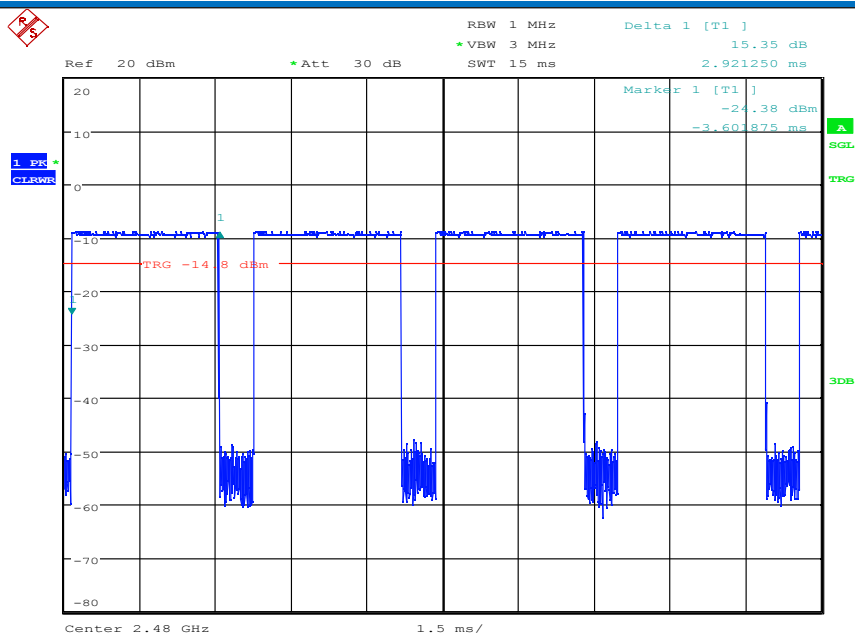
8DPSK\_3DH3/HCH



Date: 4.FEB.2021 13:37:03

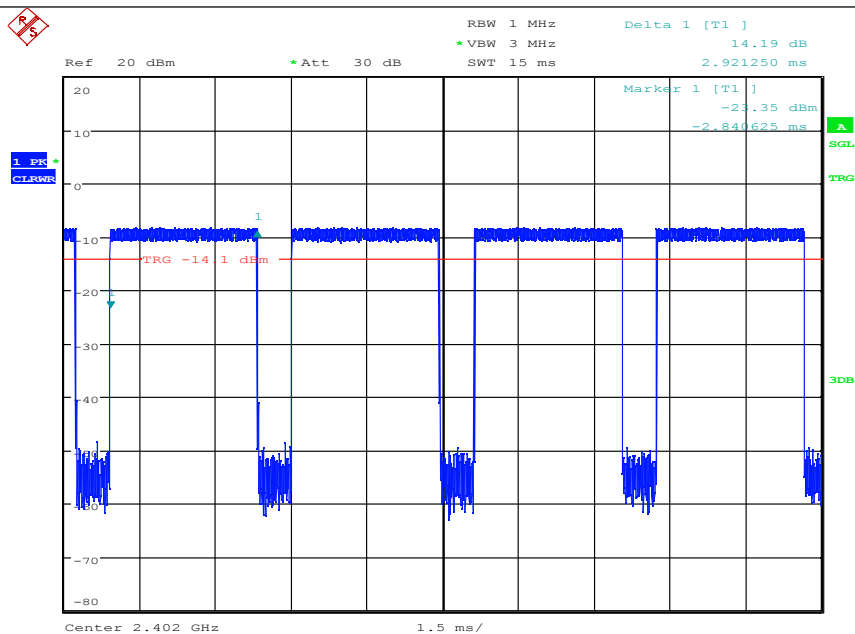


GFSK\_DH5/HCH



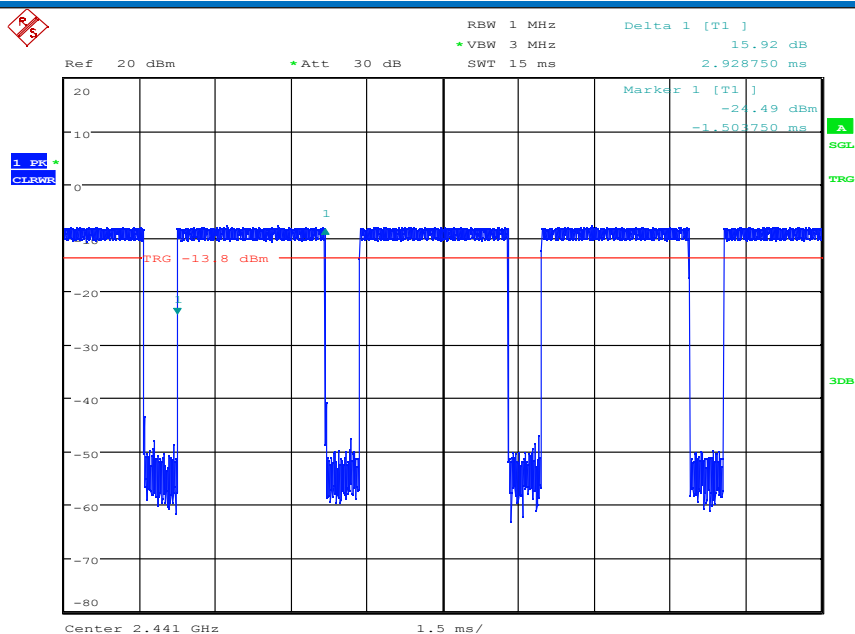
Date: 4.FEB.2021 13:26:27

$\pi/4$ DQPSK  
\_2DH5/LCH

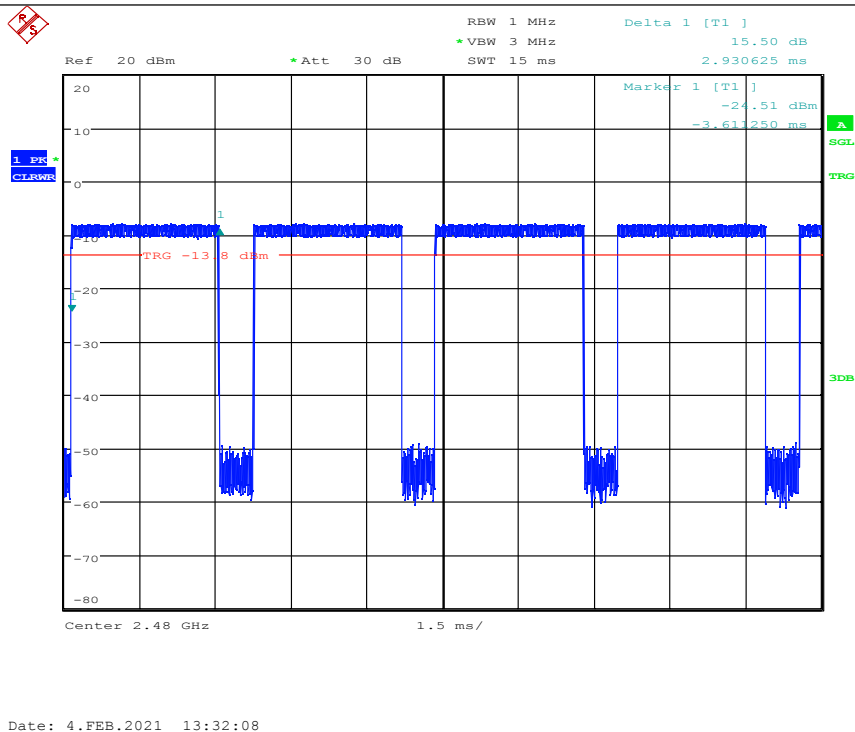


Date: 4.FEB.2021 13:30:04

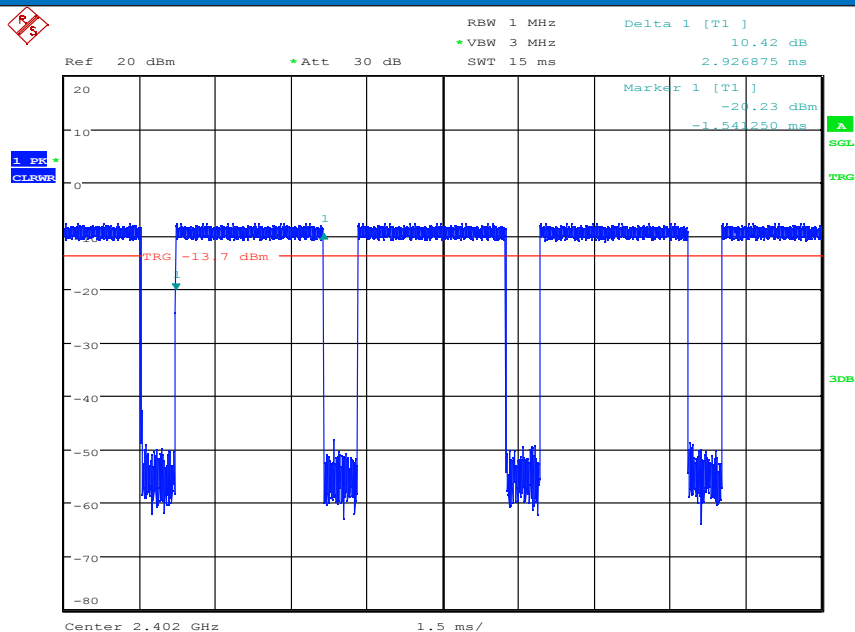
$\pi/4$ DQPSK  
\_2DH5/MCH



$\pi/4$ DQPSK  
\_2DH5/HCH

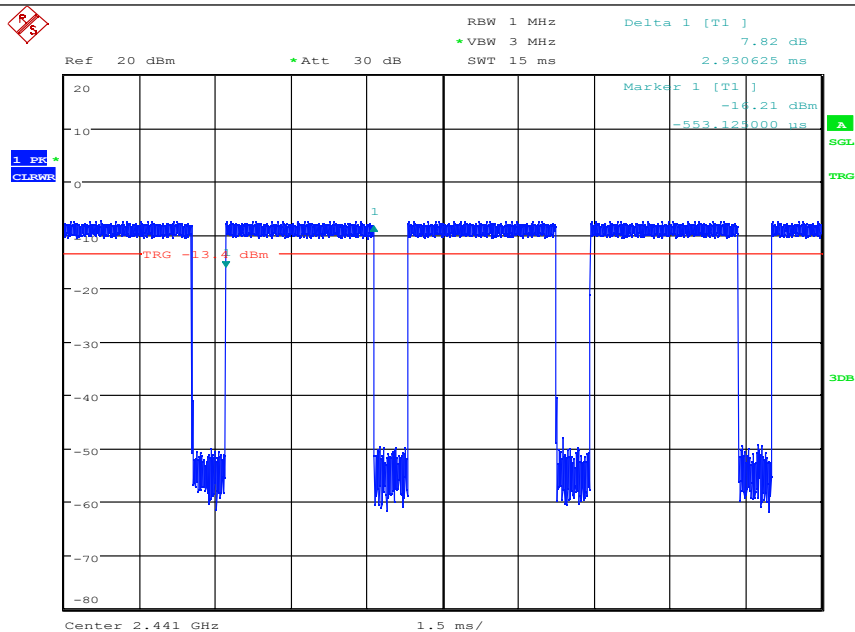


8DPSK\_3DH5/LCH



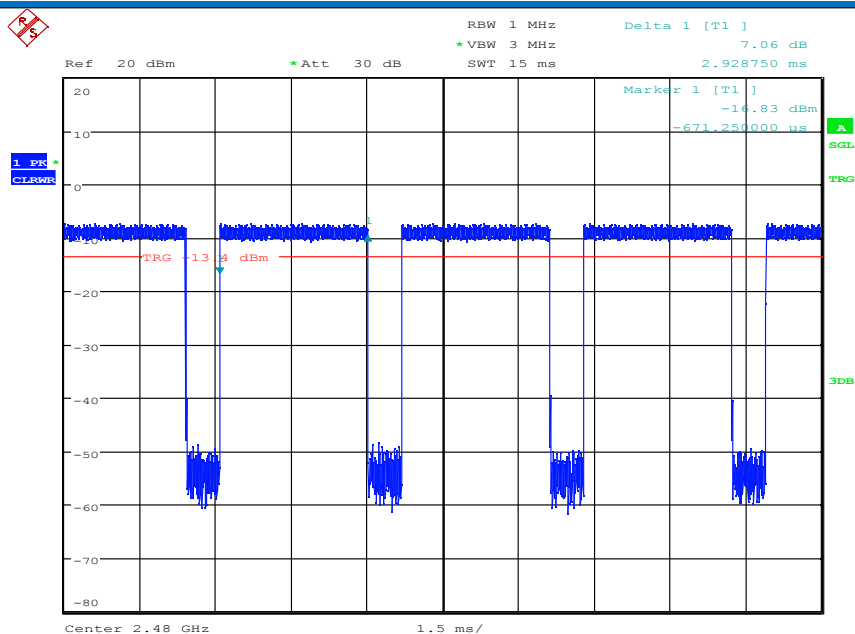
Date: 4.FEB.2021 13:37:38

8DPSK\_3DH5/MCH



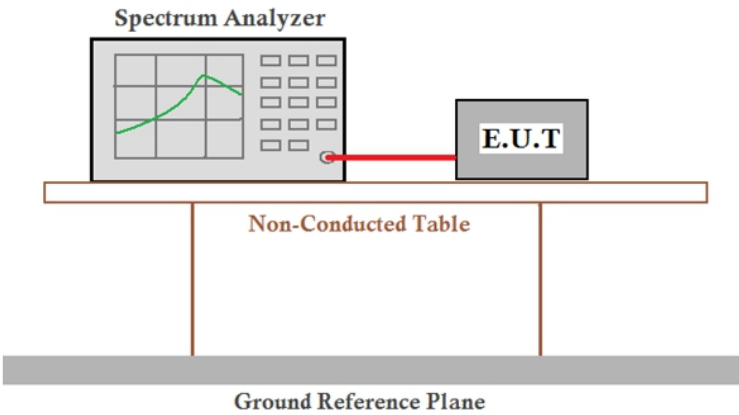
Date: 4.FEB.2021 13:38:11

8DPSK\_3DH5/HCH



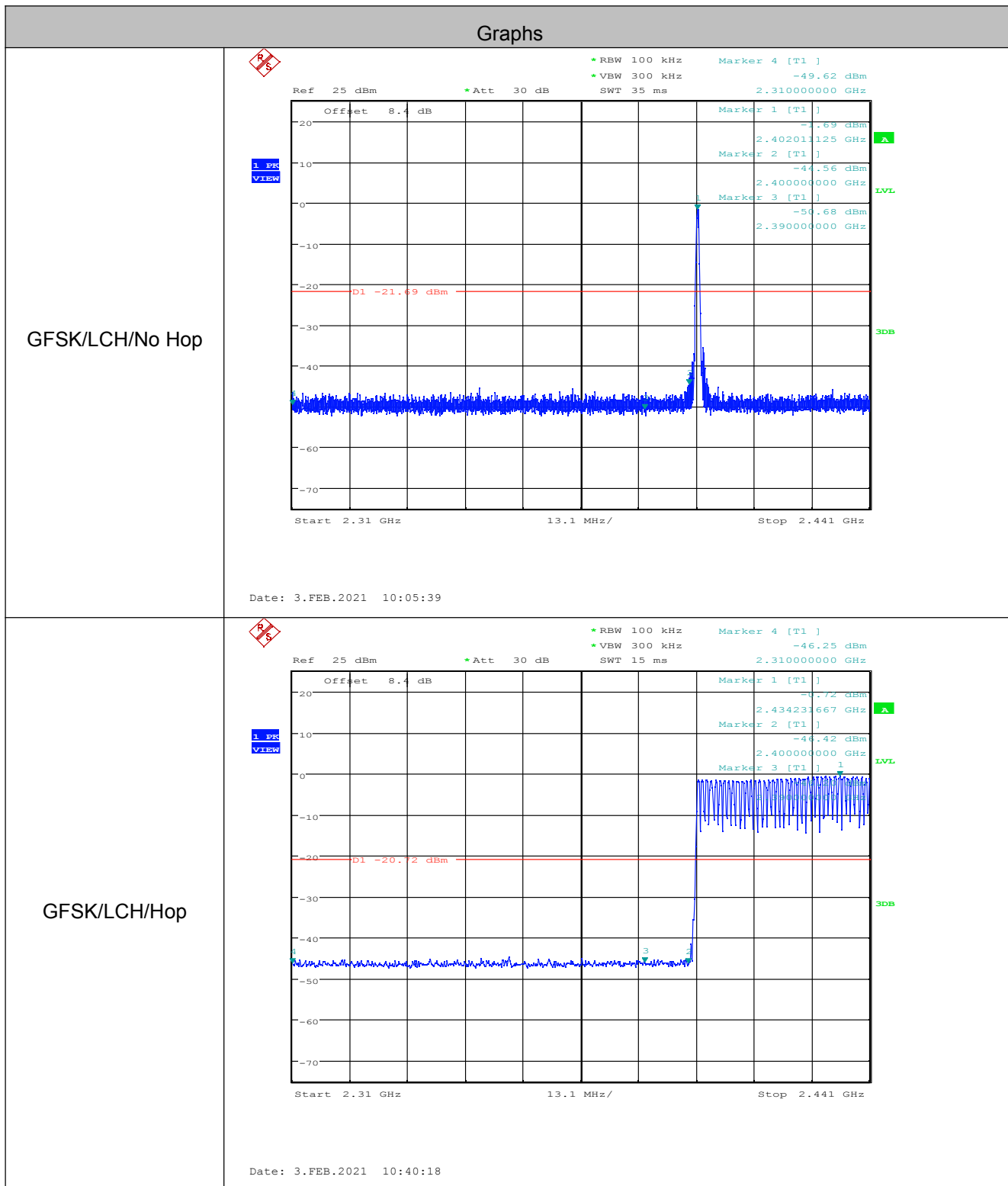
Date: 4.FEB.2021 13:39:29

## 5.8 Band-edge for RF Conducted Emissions

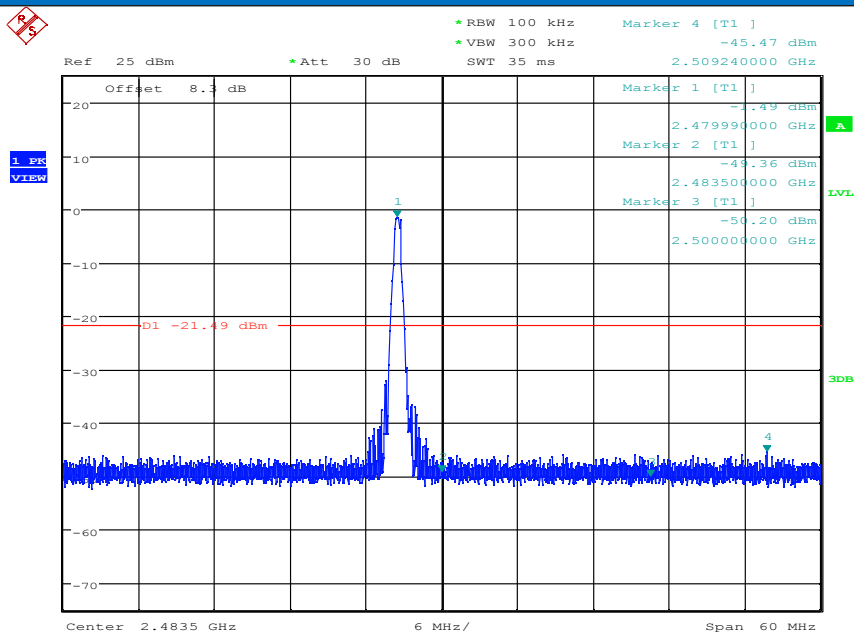
|                        |                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement:      | 47 CFR Part 15C Section 15.247 (d)                                                                                                                                                                                                                                                                                                                                                      |
| Test Method:           | ANSI C63.10:2013                                                                                                                                                                                                                                                                                                                                                                        |
| Test Setup:            |  <p><i>Remark: Offset=cable loss+ attenuation factor.</i></p>                                                                                                                                                                                                                                         |
| Limit:                 | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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. |
| Exploratory Test Mode: | Hopping and Non-hopping transmitting with all kind of modulation and all kind of data type                                                                                                                                                                                                                                                                                              |
| Final Test Mode:       | Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of $\pi/4$ DQPSK modulation type, 3-DH5 of data type is the worst case of 8DPSK modulation type.<br>Only the worst case is recorded in the report.                                                                                                          |
| Test Results:          | Pass                                                                                                                                                                                                                                                                                                                                                                                    |

| Mode          | Test Channel | Frequency [MHz] | Frequency Hopping | Emission Level [dBm] | Limit [dBm] | Result |
|---------------|--------------|-----------------|-------------------|----------------------|-------------|--------|
| GFSK          | LCH          | 2400            | Off               | -44.560              | -21.69      | PASS   |
|               |              |                 | On                | -46.20               | -20.72      | PASS   |
| GFSK          | HCH          | 2483.5          | Off               | -49.360              | -21.49      | PASS   |
|               |              |                 | On                | -45.72               | -21.05      | PASS   |
| $\pi/4$ DQPSK | LCH          | 2400            | Off               | -47.750              | -23.01      | PASS   |
|               |              |                 | On                | -46.34               | -22.17      | PASS   |
| $\pi/4$ DQPSK | HCH          | 2483.5          | Off               | -48.270              | -22.7       | PASS   |
|               |              |                 | On                | -46.17               | -22.32      | PASS   |
| 8DPSK         | LCH          | 2400            | Off               | -46.740              | -23.02      | PASS   |
|               |              |                 | On                | -47.49               | -21.99      | PASS   |
| 8DPSK         | HCH          | 2483.5          | Off               | -47.510              | -22.49      | PASS   |
|               |              |                 | On                | -46.14               | -22.18      | PASS   |

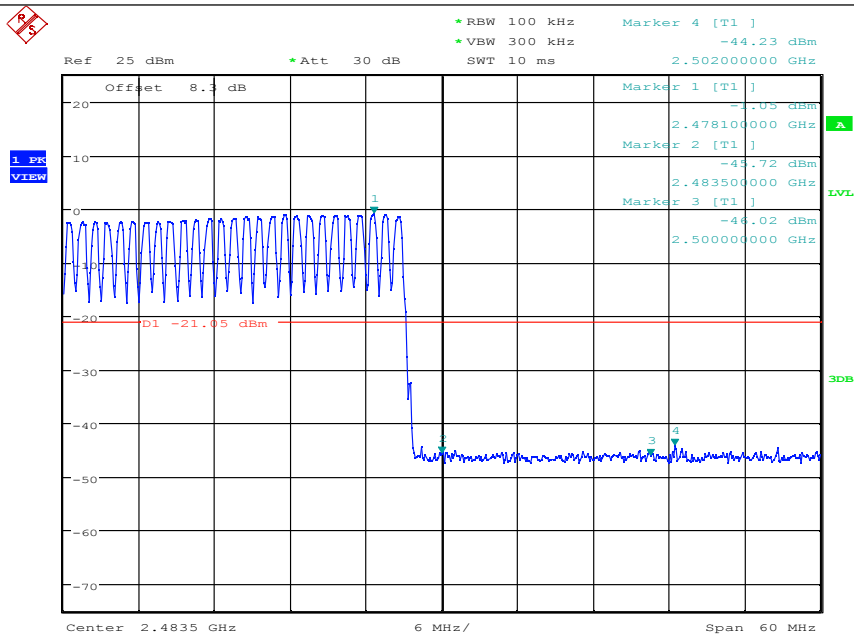
Test plot as follows:



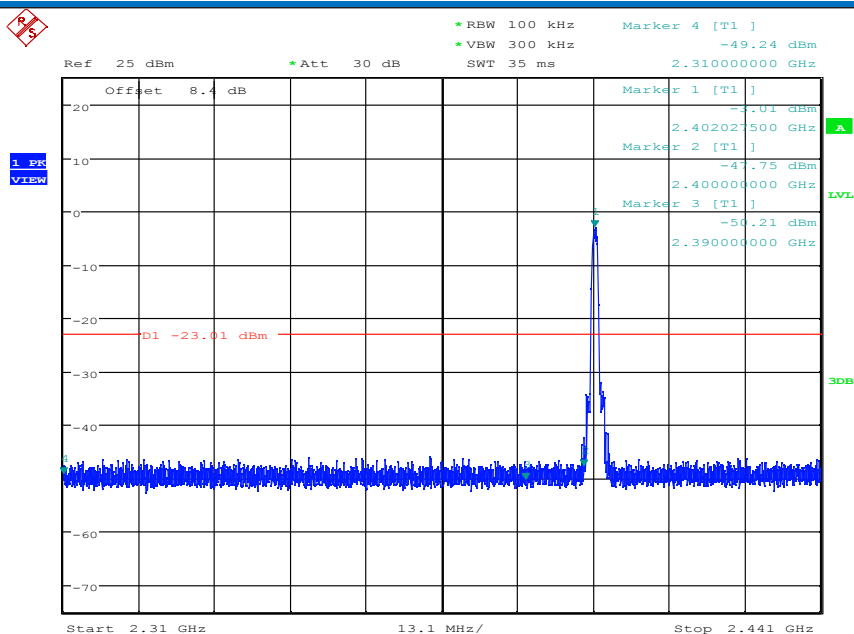
GFSK/HCH/No Hop



GFSK/HCH/Hop

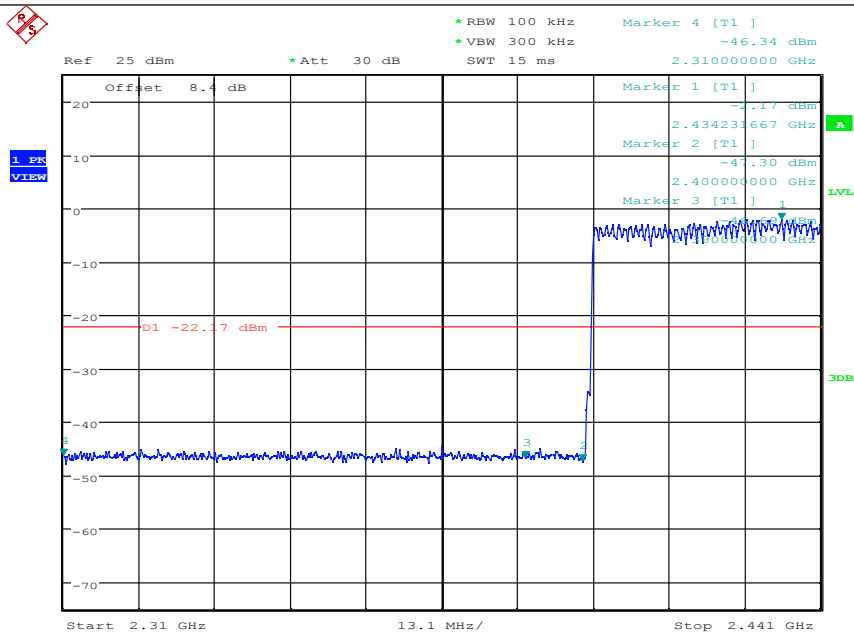


$\pi/4$ DQPSK/LCH/No  
Hop



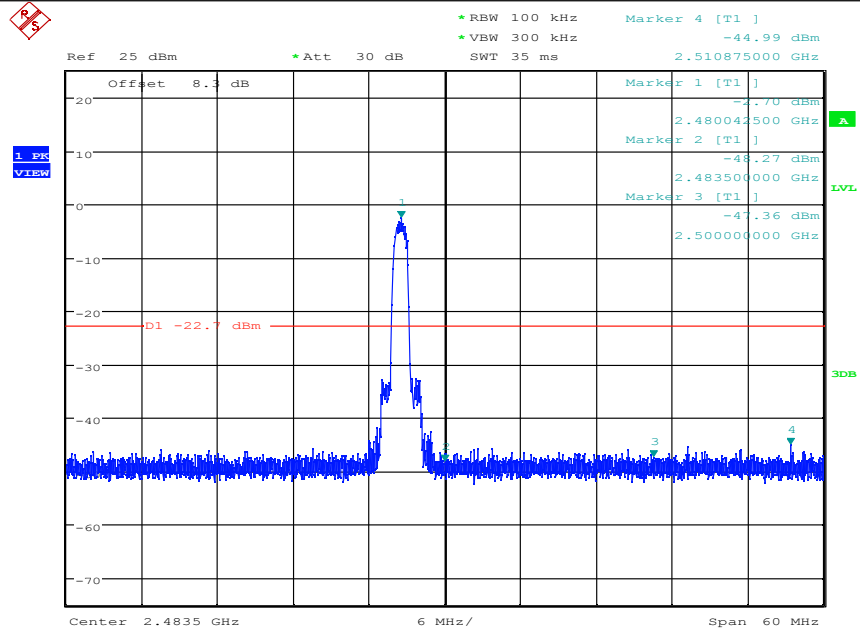
Date: 3.FEB.2021 10:16:23

$\pi/4$ DQPSK/LCH/Hop



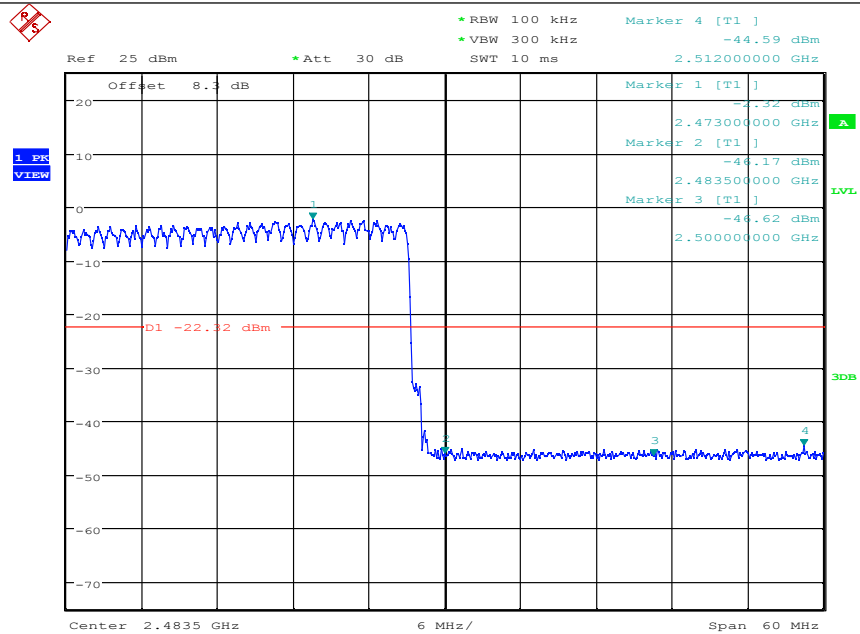
Date: 3.FEB.2021 11:09:32

$\pi/4$ DQPSK/HCH/No  
Hop



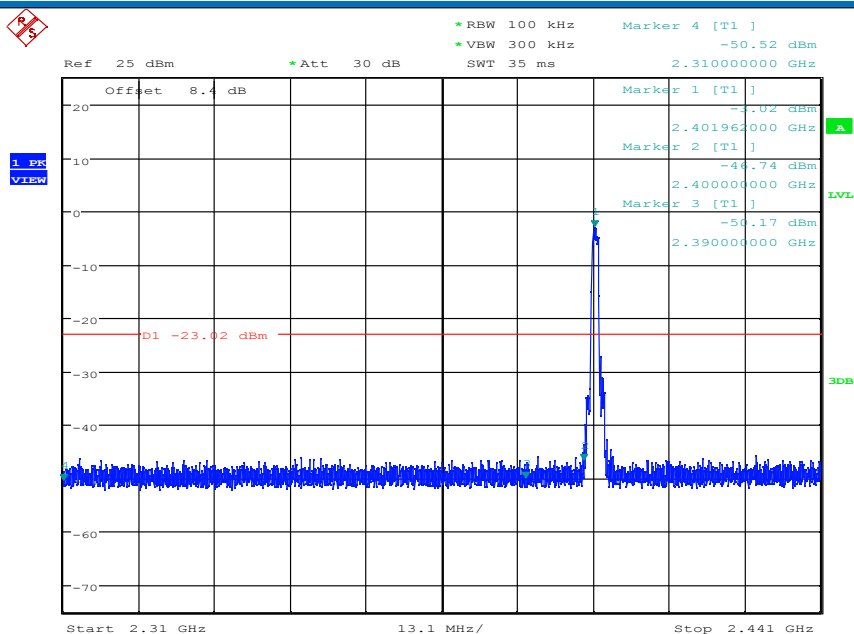
Date: 3.FEB.2021 10:22:33

$\pi/4$ DQPSK/HCH/Hop



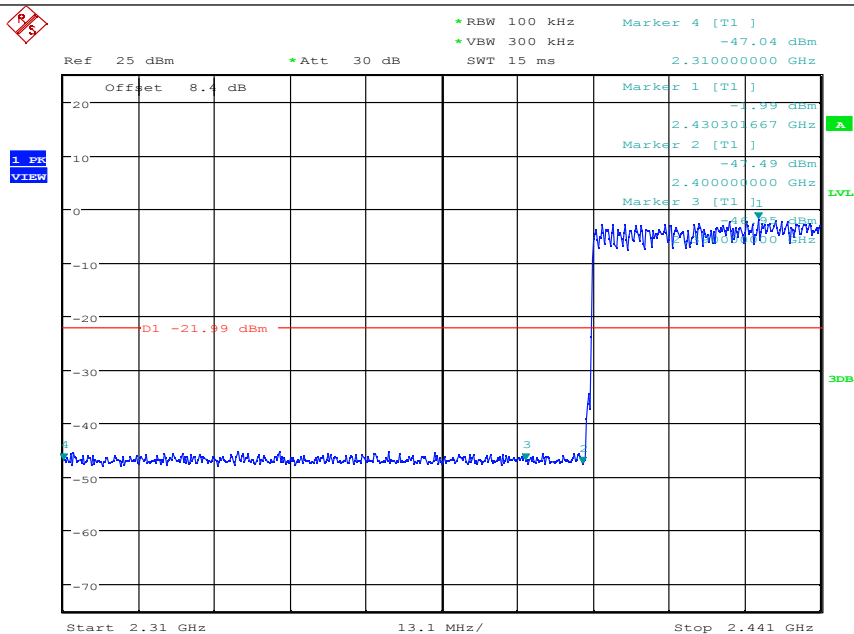
Date: 3.FEB.2021 13:12:03

8DPSK/LCH/No Hop



Date: 3.FEB.2021 10:26:34

8DPSK/LCH/Hop



Date: 3.FEB.2021 13:14:42