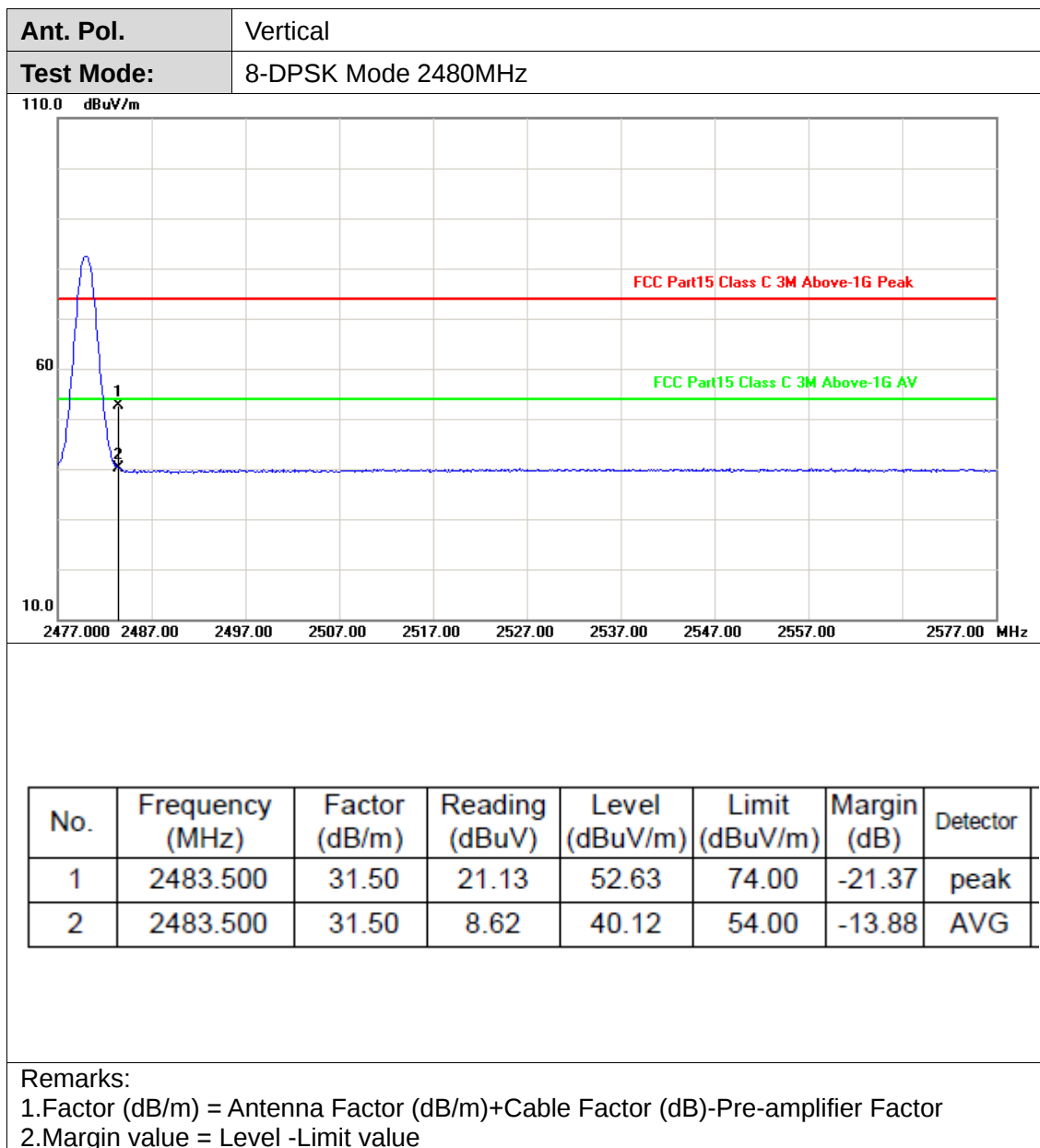






## (2) Conducted Test



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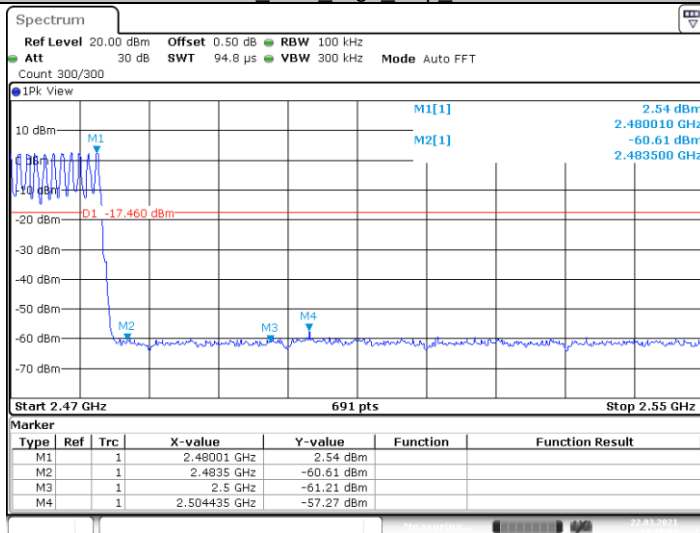
Fax: (86)755-27521011

Http://www.sz-ctc.org.cn

For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : [yz.cnca.cn](http://yz.cnca.cn)

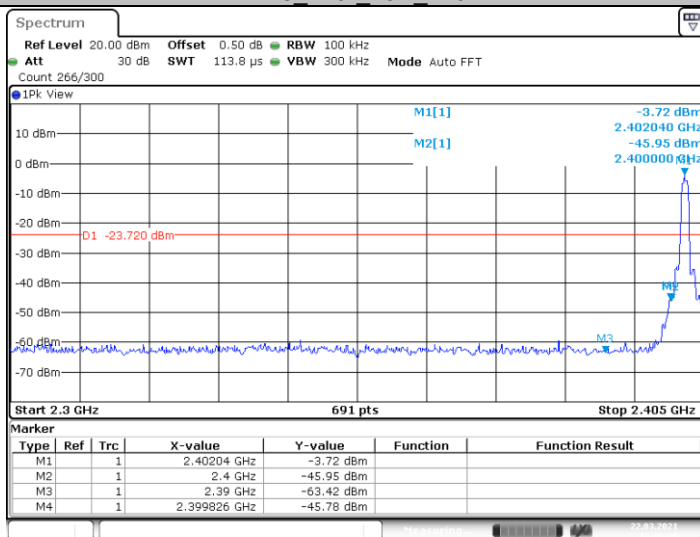


## DH5\_Ant1\_High\_Hop\_2480



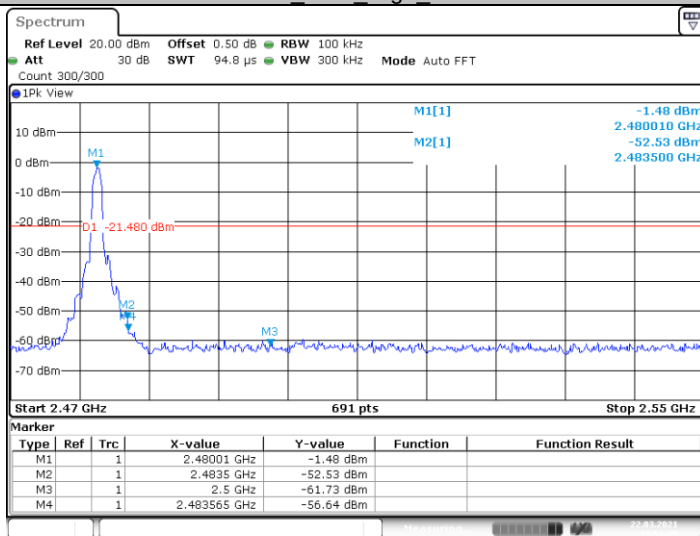
Date: 22.MAR.2021 14:28:03

## 2DH5\_Ant1\_Low\_2402



Date: 22.MAR.2021 13:46:20

## 2DH5\_Ant1\_High\_2480



Date: 22.MAR.2021 13:52:25

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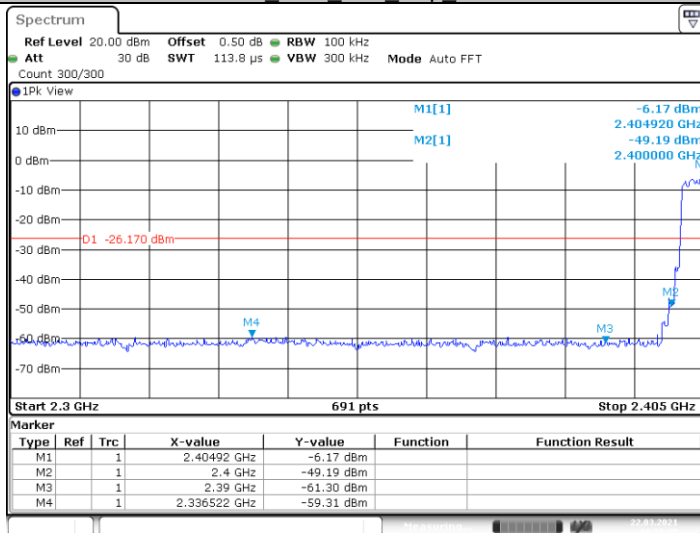
Fax: (86)755-27521011

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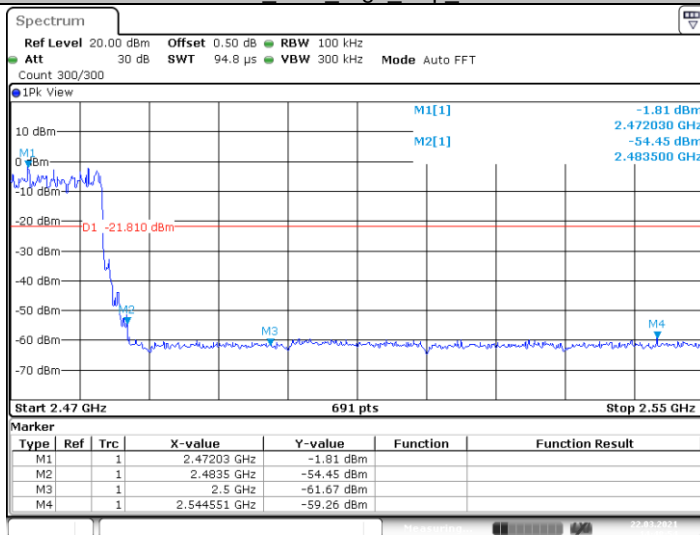


## 2DH5 Ant1 Low Hop 2402



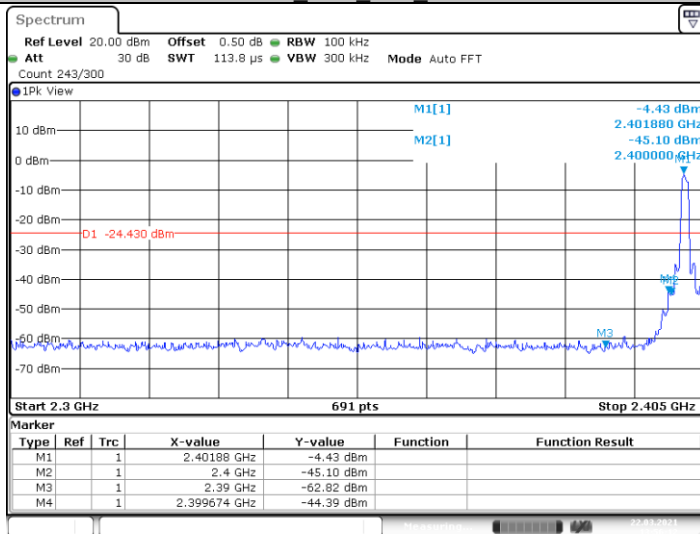
Date: 22.MAR.2021 14:31:37

## 2DH5 Ant1 High Hop 2480



Date: 22.MAR.2021 14:48:53

## 3DH5 Ant1 Low 2402



Date: 22.MAR.2021 13:56:12

CTC Laboratories, Inc.

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Tel.: (86)755-27521059

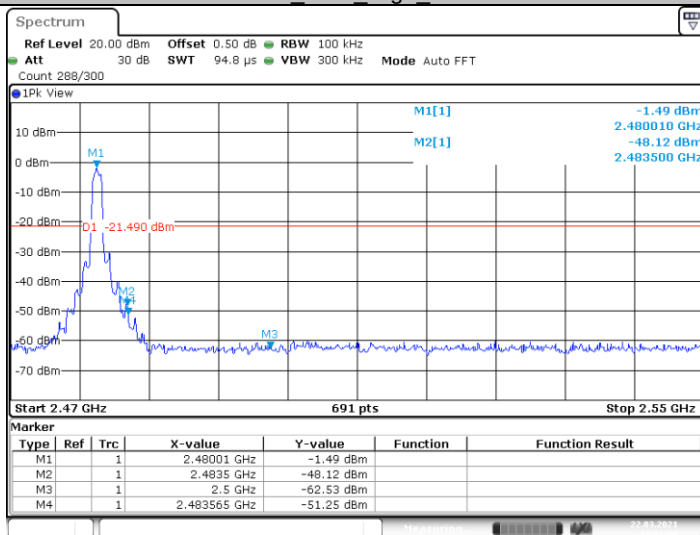
Fax: (86)755-27521011

Http://www.sz-ctc.org.cn

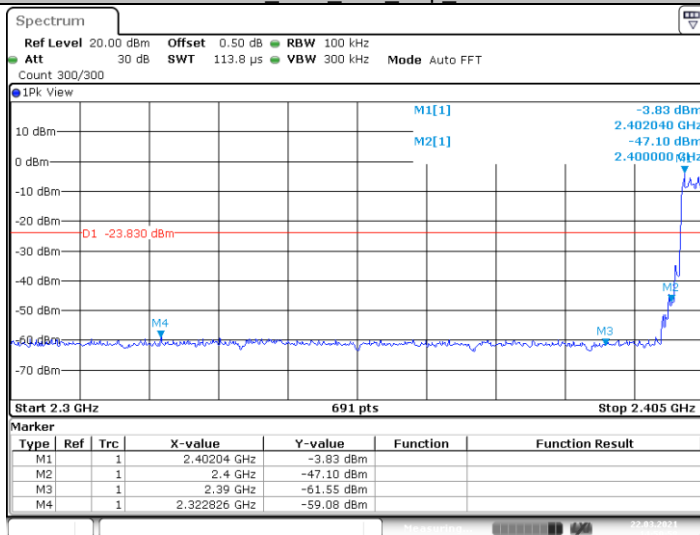
For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : [yz.cnca.cn](http://yz.cnca.cn)



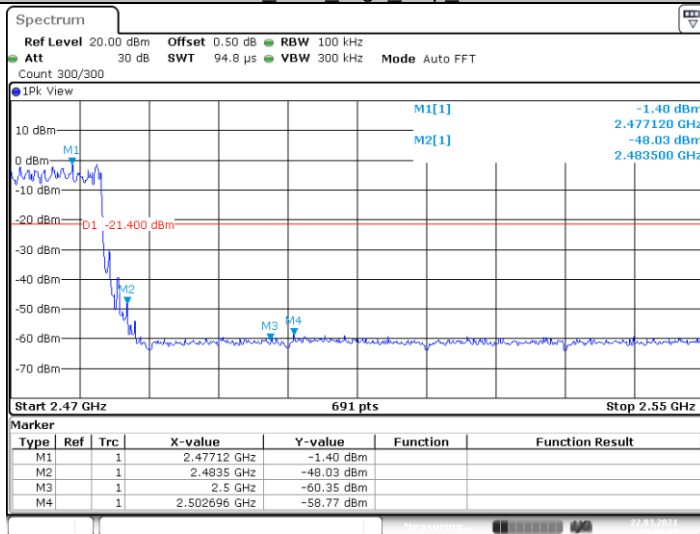
## 3DH5\_Ant1\_High\_2480



## 3DH5\_Ant1\_Low\_Hop\_2402



## 3DH5\_Ant1\_High\_Hop\_2480



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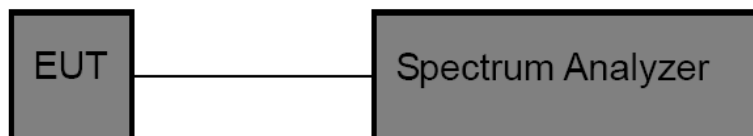


### 3.4. Occupied Channel Bandwidth and 20dB Bandwidth

#### Limit

N/A

#### Test Configuration



#### Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. OCB and 20dB Spectrum Setting:
  - (1) Set RBW = 1% ~ 5% occupied bandwidth.
  - (2) Set the video bandwidth (VBW)  $\geq 3$  RBW.
  - (3) Detector = Peak.
  - (4) Trace mode = Max hold.
  - (5) Sweep = Auto couple.

Note: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

#### Test Mode

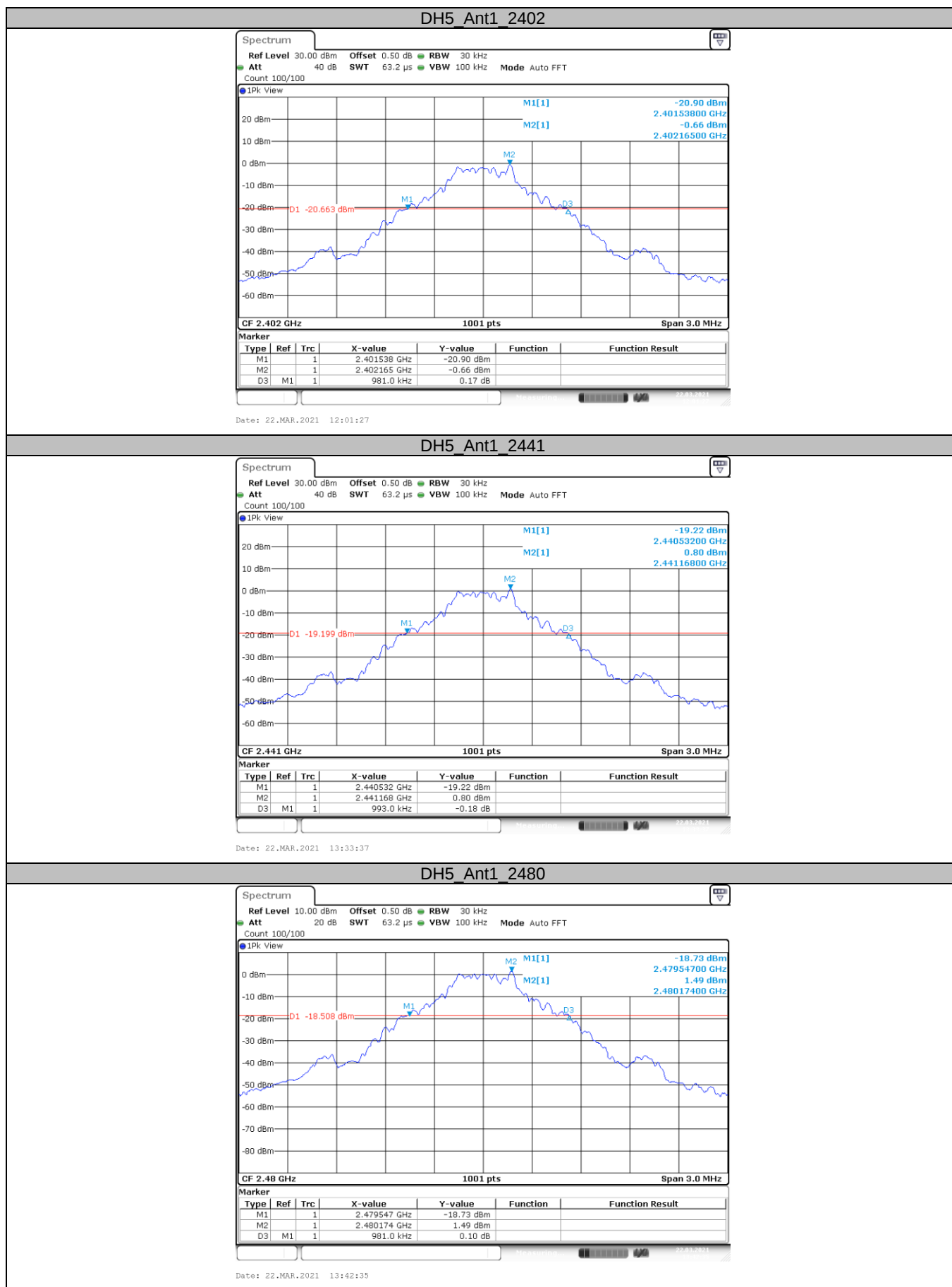
Please refer to the clause 2.3.

#### Test Results

| Modulation type | Channel | 99% Bandwidth (MHz) | 20dB Bandwidth (MHz) | 20dB Bandwidth *2/3 (MHz) |
|-----------------|---------|---------------------|----------------------|---------------------------|
| GFSK            | 00      | 0.896               | 0.981                | 0.654                     |
|                 | 39      | 0.905               | 0.993                | 0.662                     |
|                 | 78      | 0.899               | 0.981                | 0.654                     |
| $\pi/4$ -DQPSK  | 00      | 1.217               | 1.356                | 0.904                     |
|                 | 39      | 1.217               | 1.356                | 0.904                     |
|                 | 78      | 1.217               | 1.359                | 0.906                     |
| 8-DPSK          | 00      | 1.205               | 1.311                | 0.874                     |
|                 | 39      | 1.205               | 1.311                | 0.874                     |
|                 | 78      | 1.208               | 1.314                | 0.876                     |



20dB Bandwidth



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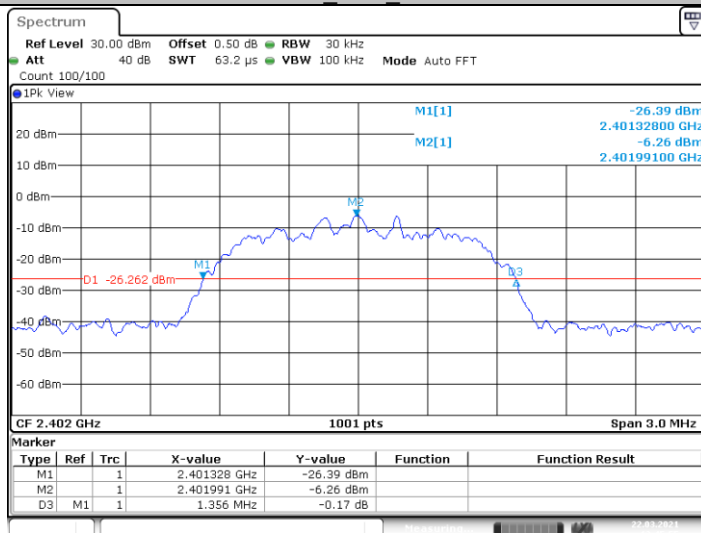
Fax: (86)755-27521011

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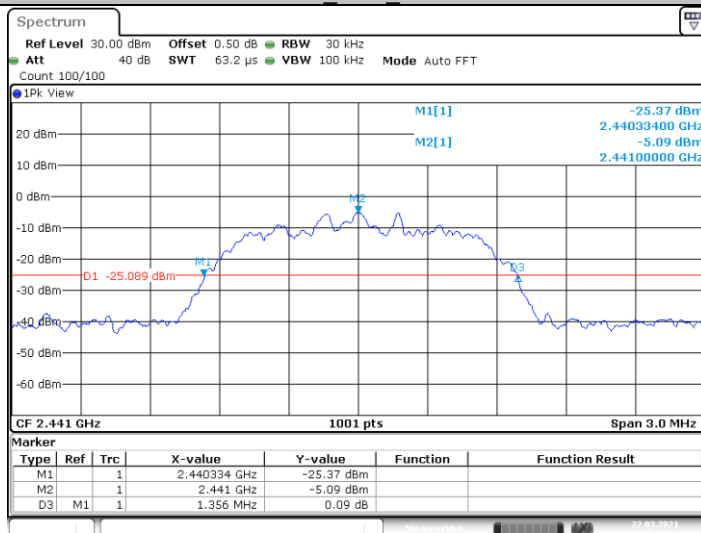


## 2DH5\_Ant1\_2402



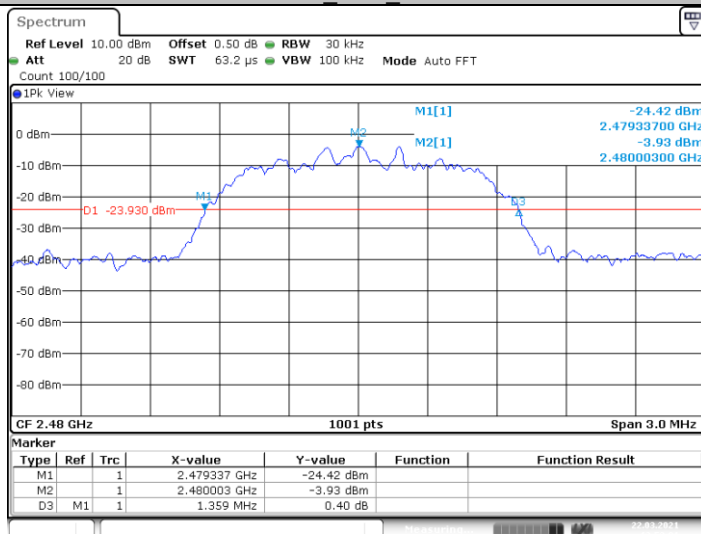
Date: 22.MAR.2021 13:45:55

## 2DH5\_Ant1\_2441



Date: 22.MAR.2021 13:49:39

## 2DH5\_Ant1\_2480



Date: 22.MAR.2021 13:52:00

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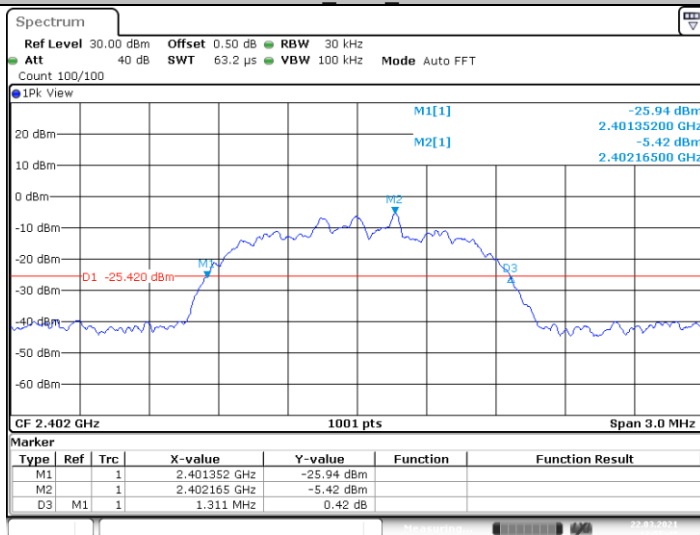
Fax: (86)755-27521011

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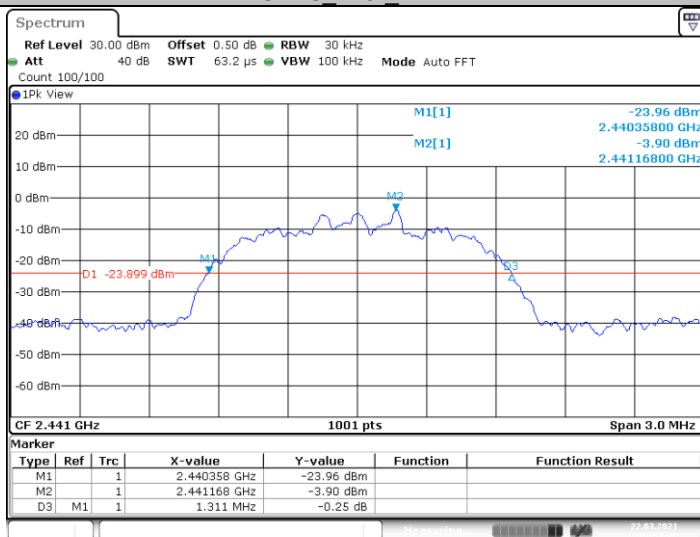
For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : [yz.cnca.cn](http://yz.cnca.cn)



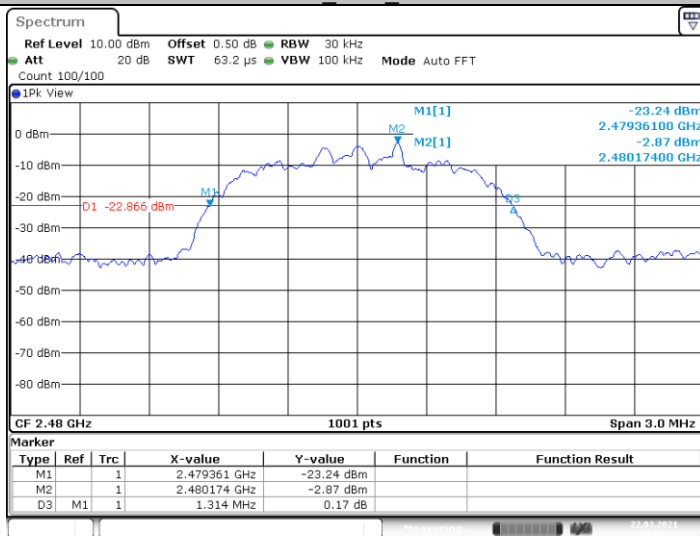
## 3DH5\_Ant1\_2402



## 3DH5\_Ant1\_2441



## 3DH5\_Ant1\_2480



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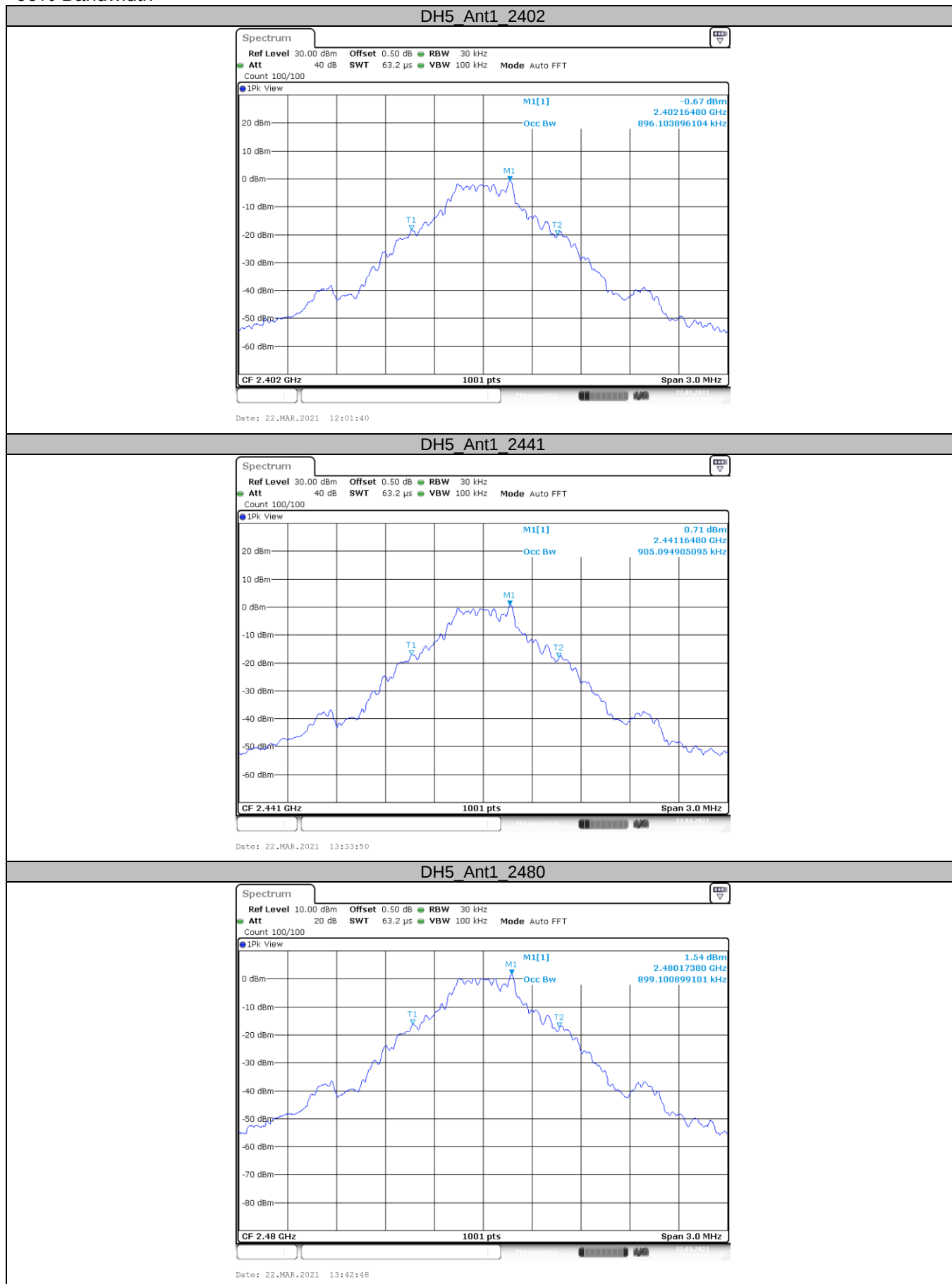
Fax: (86)755-27521011

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## 99% Bandwidth



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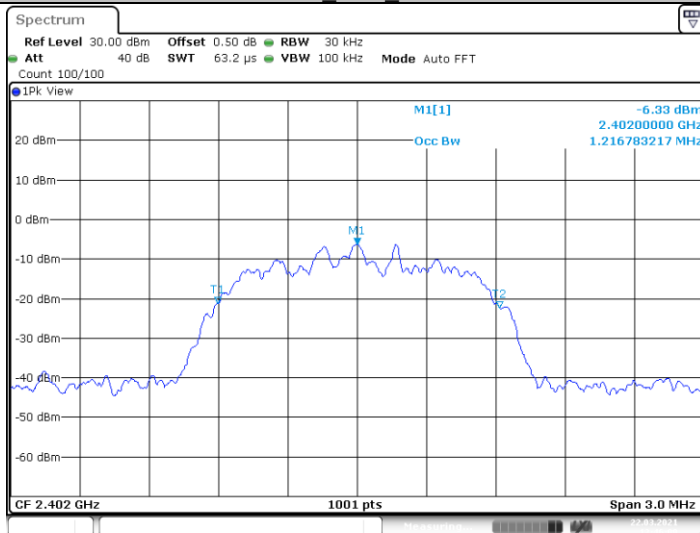
Http://www.sz-ctc.org.cn



For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : [yz.cnca.cn](http://yz.cnca.cn)

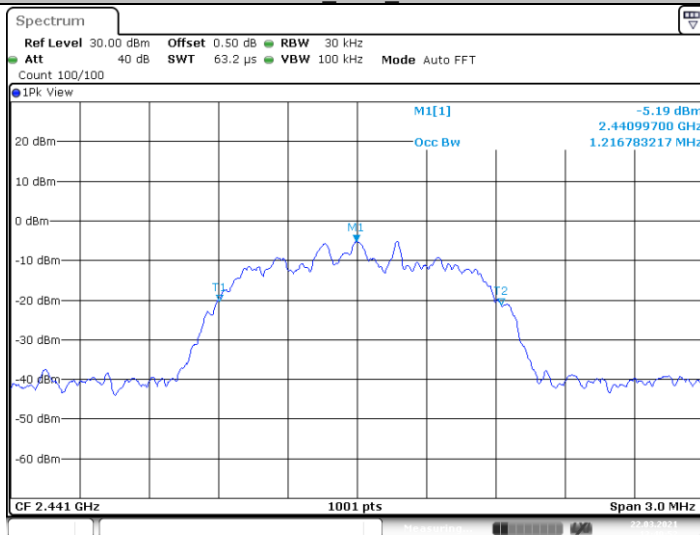


## 2DH5\_Ant1\_2402



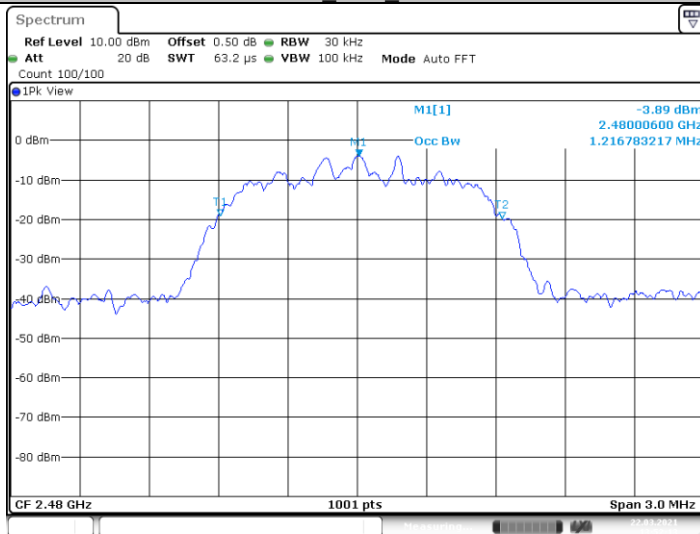
Date: 22.MAR.2021 13:46:08

## 2DH5\_Ant1\_2441



Date: 22.MAR.2021 13:49:52

## 2DH5\_Ant1\_2480



Date: 22.MAR.2021 13:52:14

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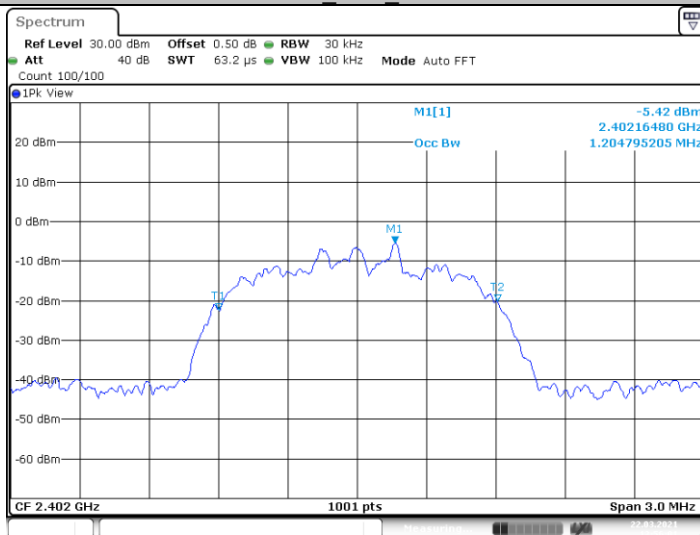
Fax: (86)755-27521011

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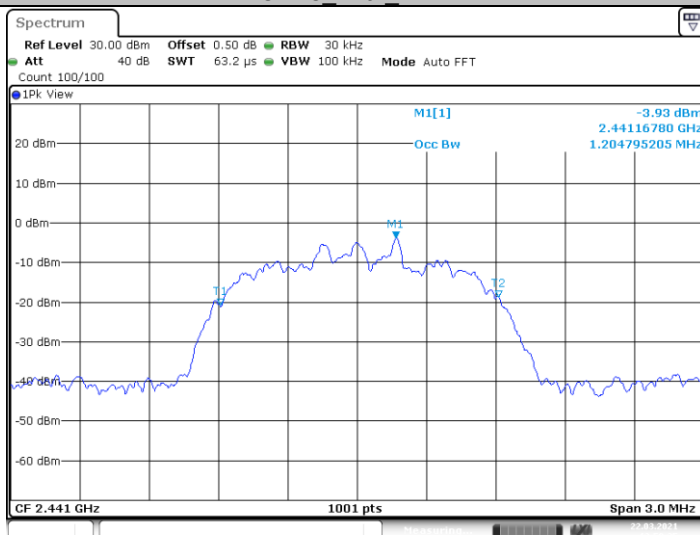


## 3DH5\_Ant1\_2402



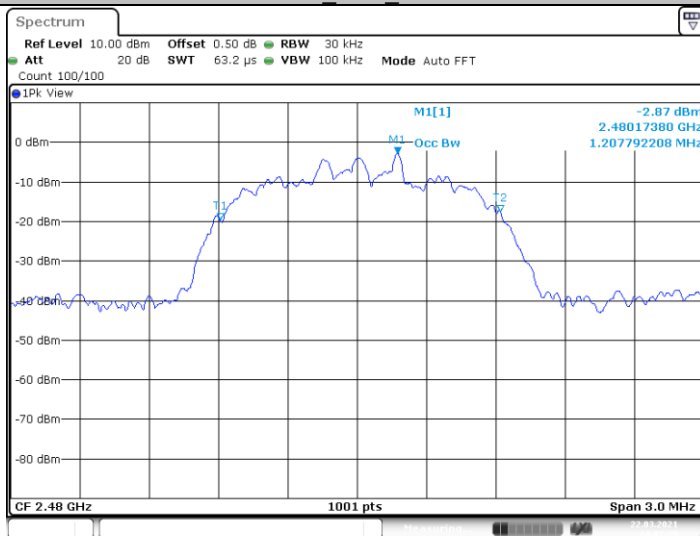
Date: 22.MAR.2021 13:56:01

## 3DH5\_Ant1\_2441



Date: 22.MAR.2021 13:59:35

## 3DH5\_Ant1\_2480



Date: 22.MAR.2021 14:02:25

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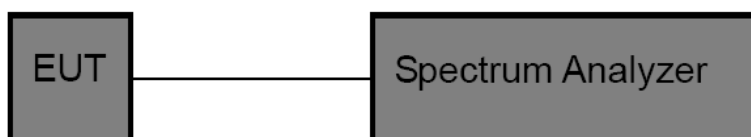
### 3.5. Channel Separation

#### Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(1):

| Test Item          | Limit                                                         | Frequency Range(MHz) |
|--------------------|---------------------------------------------------------------|----------------------|
| Channel Separation | >25KHz or >two-thirds of the 20 dB bandwidth Which is greater | 2400~2483.5          |

#### Test Configuration



#### Test Procedure

3. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
4. Spectrum Setting:
  - (1) Set RBW = 100 kHz.
  - (2) Set the video bandwidth (VBW)  $\geq 3$  RBW.
  - (3) Detector = Peak.
  - (4) Trace mode = Max hold.
  - (5) Sweep = Auto couple.

#### Test Mode

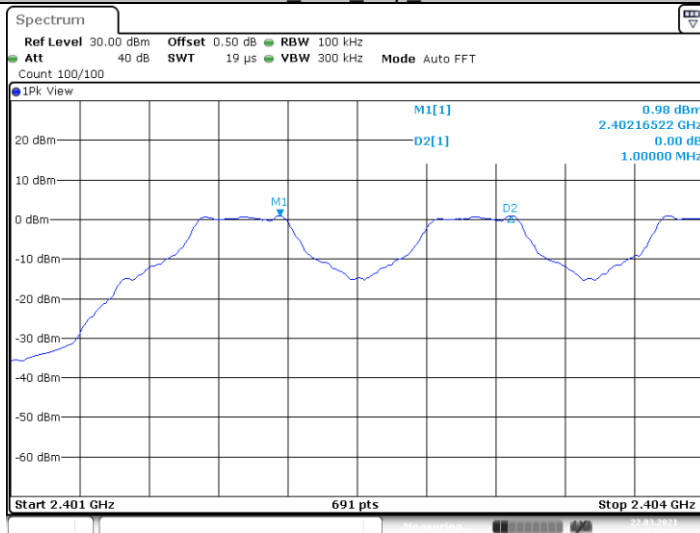
Please refer to the clause 2.3.

**Test Results**

| Modulation type | Channel | Carrier Frequencies Separation (MHz) | Limit (MHz) | Result |
|-----------------|---------|--------------------------------------|-------------|--------|
| GFSK            | 00      | 1.000                                | 0.993       | Pass   |
|                 | 39      | 1.004                                | 0.993       |        |
|                 | 78      | 1.004                                | 0.993       |        |
| $\pi/4$ -DQPSK  | 00      | 1.004                                | 0.906       | Pass   |
|                 | 39      | 1.000                                | 0.906       |        |
|                 | 78      | 1.004                                | 0.906       |        |
| 8-DPSK          | 00      | 1.004                                | 0.876       | Pass   |
|                 | 39      | 1.000                                | 0.876       |        |
|                 | 78      | 1.004                                | 0.876       |        |

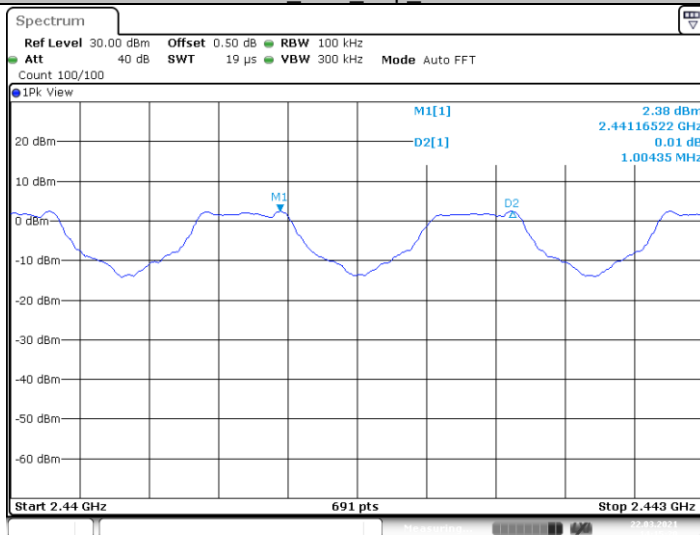


## DH5\_Ant1\_Hop\_2402



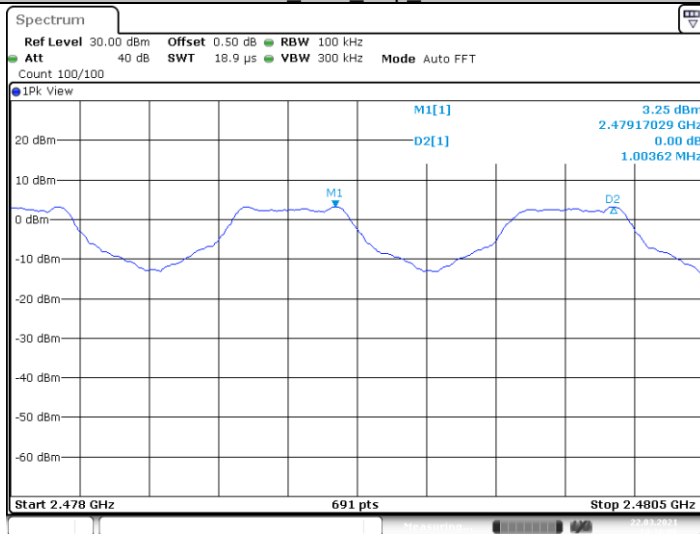
Date: 22.MAR.2021 14:14:05

## DH5\_Ant1\_Hop\_2441



Date: 22.MAR.2021 14:15:19

## DH5\_Ant1\_Hop\_2480



Date: 22.MAR.2021 14:16:05

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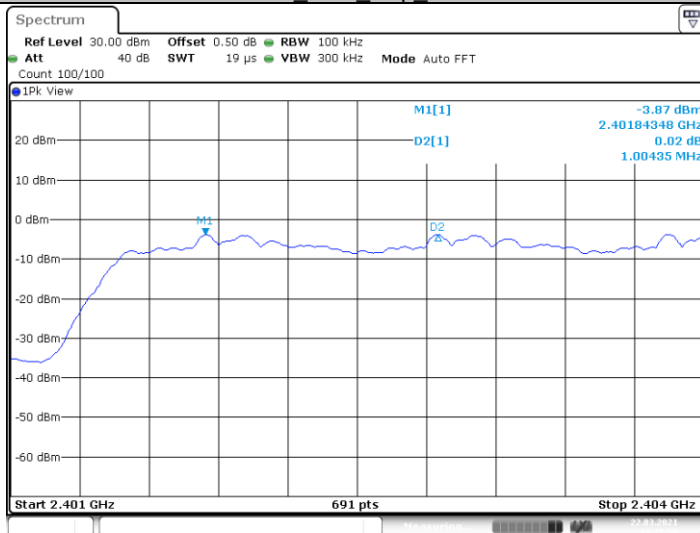
Fax: (86)755-27521011

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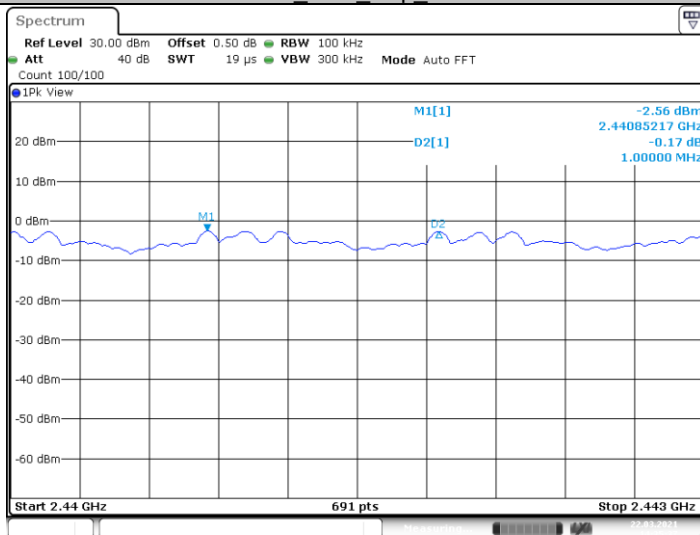


## 2DH5 Ant1 Hop 2402



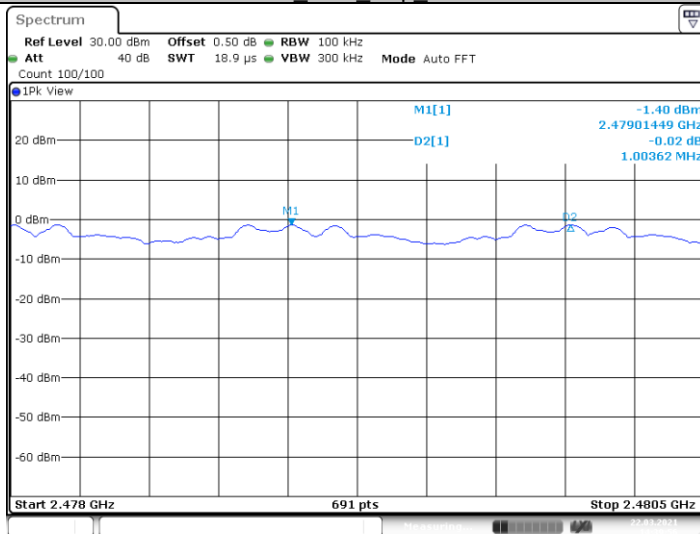
Date: 22.MAR.2021 14:33:56

## 2DH5 Ant1 Hop 2441



Date: 22.MAR.2021 14:35:37

## 2DH5 Ant1 Hop 2480



Date: 22.MAR.2021 14:39:56

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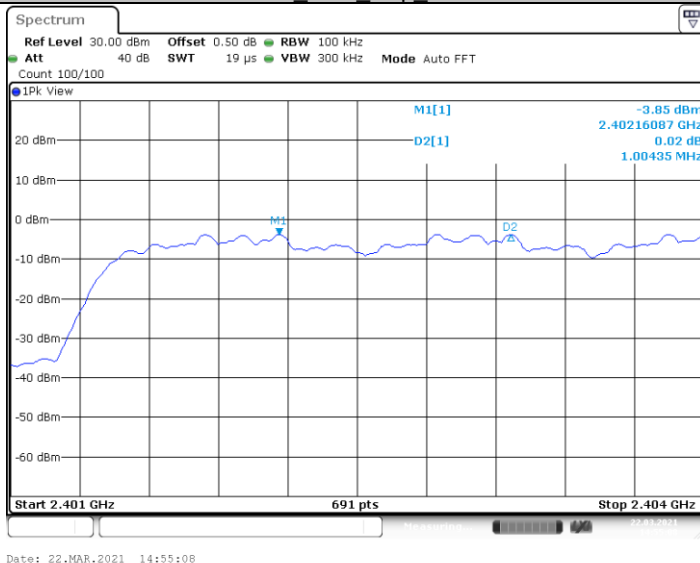
Fax: (86)755-27521011

Http://www.sz-ctc.org.cn

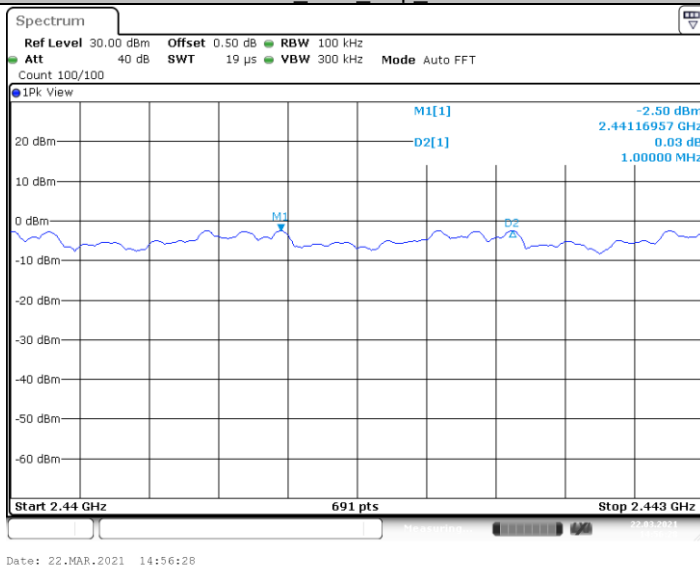
For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : [yz.cnca.cn](http://yz.cnca.cn)



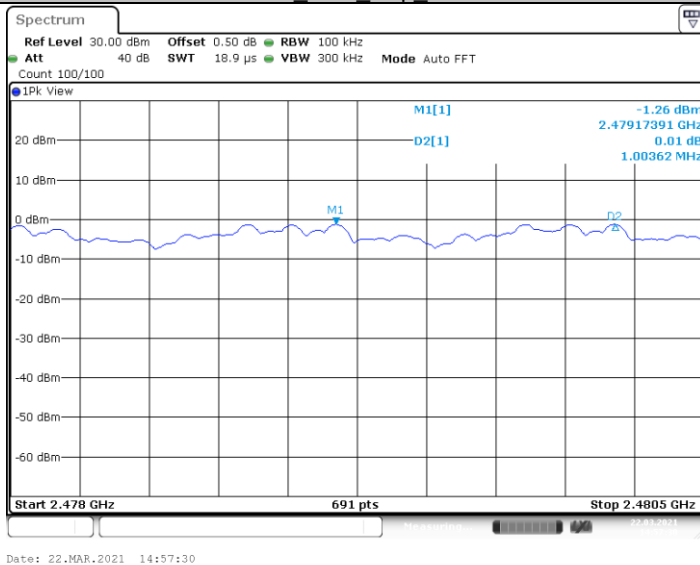
## 3DH5 Ant1 Hop 2402



## 3DH5 Ant1 Hop 2441



## 3DH5 Ant1 Hop 2480



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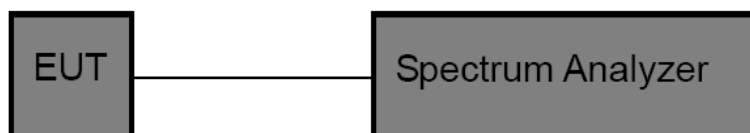
### 3.6. Number of Hopping Channel

#### Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(iii):

| Section         | Test Item                 | Limit |
|-----------------|---------------------------|-------|
| 15.247 (a)(iii) | Number of Hopping Channel | >15   |

#### Test Configuration



#### Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. Spectrum Setting:
  - (1) Peak Detector: RBW=100 kHz, VBW $\geq$ RBW, Sweep time= Auto.

#### Test Mode

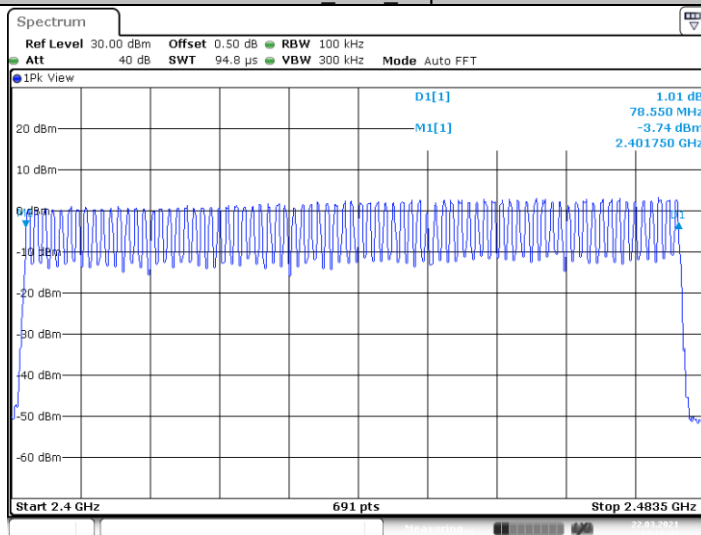
Please refer to the clause 2.3.

#### Test Result

| Modulation type | Channel number | Limit        | Result |
|-----------------|----------------|--------------|--------|
| GFSK            | 79             | $\geq 15.00$ | Pass   |
| $\pi/4$ -DQPSK  | 79             |              |        |
| 8DPSK           | 79             |              |        |

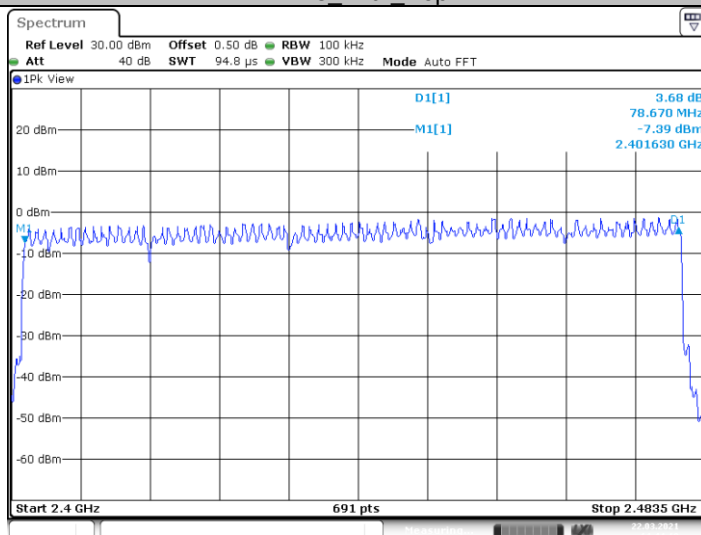


## DH5\_Ant1\_Hop



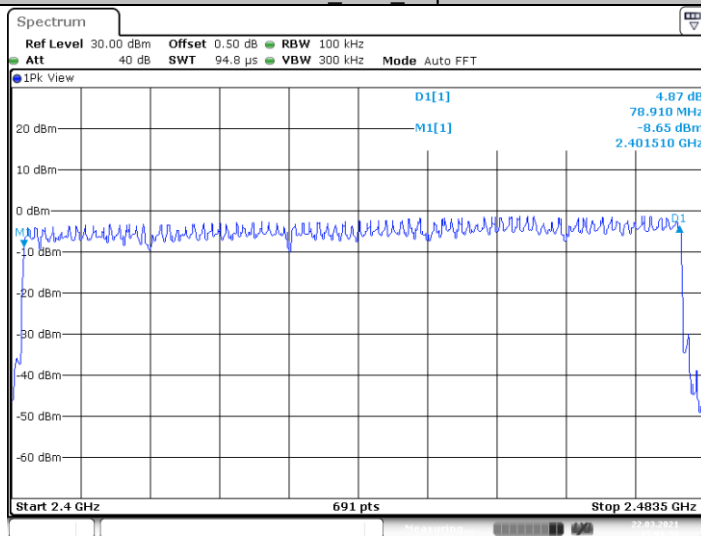
Date: 22.MAR.2021 14:18:42

## 2DH5\_Ant1\_Hop



Date: 22.MAR.2021 14:44:17

## 3DH5\_Ant1\_Hop



Date: 22.MAR.2021 15:01:31

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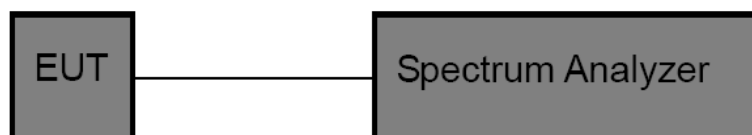


### 3.7. Dwell Time

#### Limit

| Section        | Test Item                 | Limit   |
|----------------|---------------------------|---------|
| 15.247(a)(iii) | Average Time of Occupancy | 0.4 sec |

#### Test Configuration



#### Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. Spectrum Setting:
  - (1) Spectrum Setting: RBW=1MHz, VBW $\geq$ RBW.
  - (2) Use video trigger with the trigger level set to enable triggering only on full pulses.
  - (3) Sweep Time is more than once pulse time.
  - (4) Set the center frequency on any frequency would be measure and set the frequency span to zero.
  - (5) Measure the maximum time duration of one single pulse.
  - (6) Set the EUT for packet transmitting.

#### Test Mode

Please refer to the clause 2.3.

**Test Result**

| Modulation type | Channel | Channel (MHz) | Pulse Time (ms) | Total of Dwell (ms) | Period Time (ms) | Limit (Second) | Result |
|-----------------|---------|---------------|-----------------|---------------------|------------------|----------------|--------|
| GFSK            | DH1     | 2441          | 0.38            | 121.6               | 31.60            | $\leq 0.40$    | Pass   |
|                 | DH3     | 2441          | 1.63            | 260.8               | 31.60            |                |        |
|                 | DH5     | 2441          | 2.91            | 310.4               | 31.60            |                |        |
| $\pi/4$ -DQPSK  | 2DH1    | 2441          | 0.39            | 124.8               | 31.60            | $\leq 0.40$    | Pass   |
|                 | 2DH3    | 2441          | 1.63            | 260.8               | 31.60            |                |        |
|                 | 2DH5    | 2441          | 2.88            | 307.2               | 31.60            |                |        |
| 8-DPSK          | 3DH1    | 2441          | 0.39            | 124.8               | 31.60            | $\leq 0.40$    | Pass   |
|                 | 3DH3    | 2441          | 1.63            | 260.8               | 31.60            |                |        |
|                 | 3DH5    | 2441          | 2.88            | 307.2               | 31.60            |                |        |

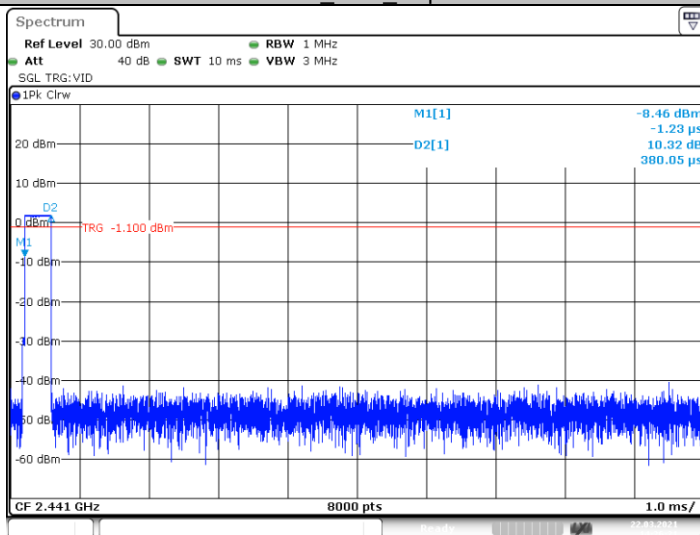
Note: 1DH1/ 2DH1/3DH1 Total of Dwell= Pulse Time\*(1600/2)\*31.6/79

1DH3/2DH3/3DH3 Total of Dwell= Pulse Time\*(1600/4)\*31.6/79

1DH5/2DH5/3DH5 Total of Dwell= Pulse Time\*(1600/6)\*31.6/79

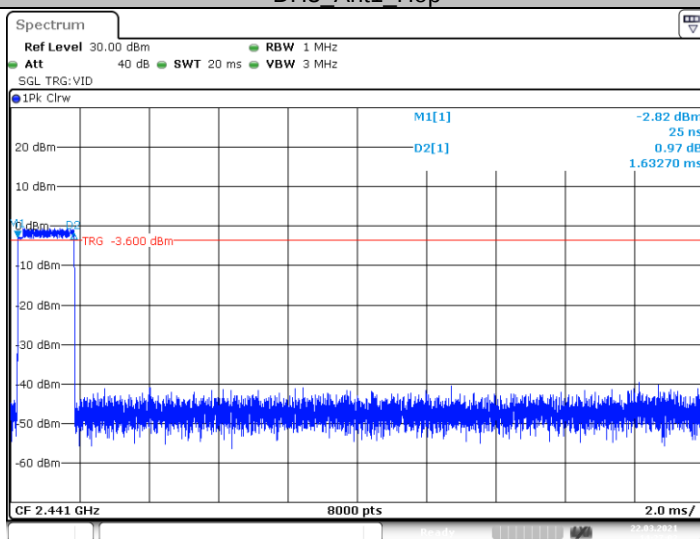


## DH1\_Ant1\_Hop



Date: 22.MAR.2021 14:26:21

## DH3\_Ant1\_Hop



Date: 22.MAR.2021 14:27:03

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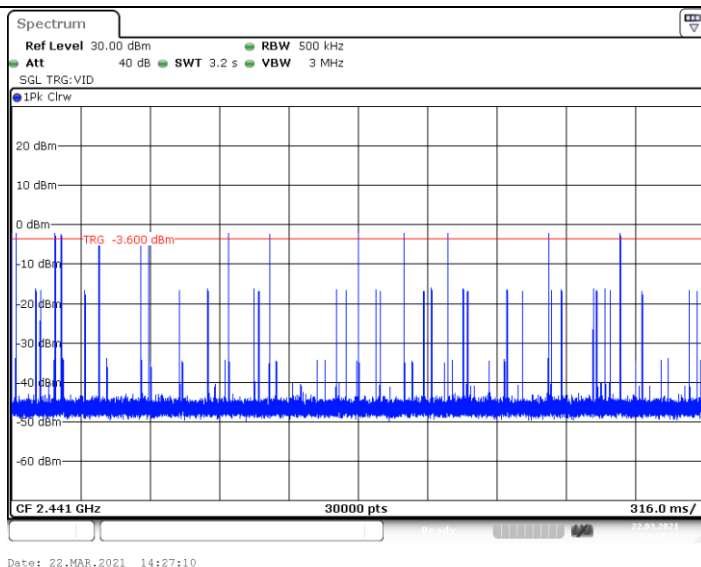
1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

Tel.: (86)755-27521059

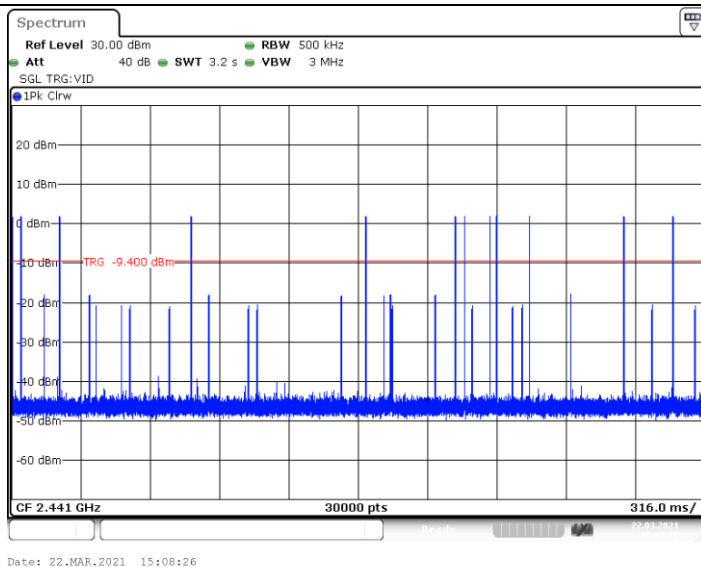
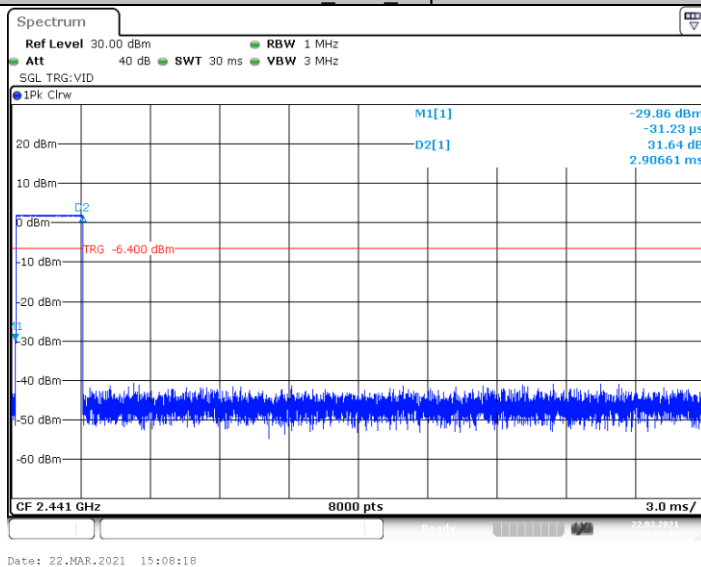
Fax: (86)755-27521011

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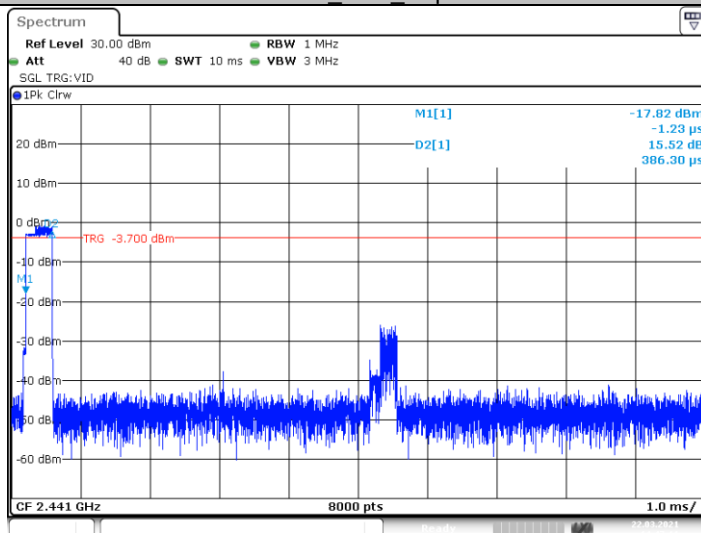


## DH5\_Ant1\_Hop



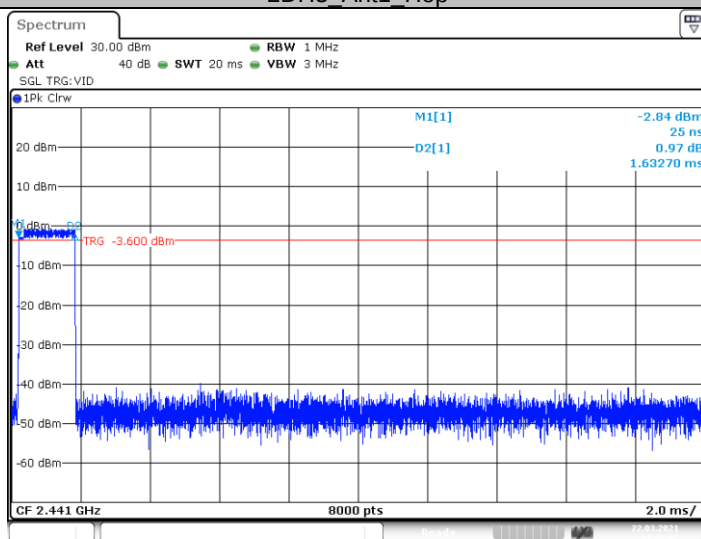


## 2DH1\_Ant1\_Hop



Date: 22.MAR.2021 14:47:11

## 2DH3\_Ant1\_Hop



Date: 22.MAR.2021 14:48:02

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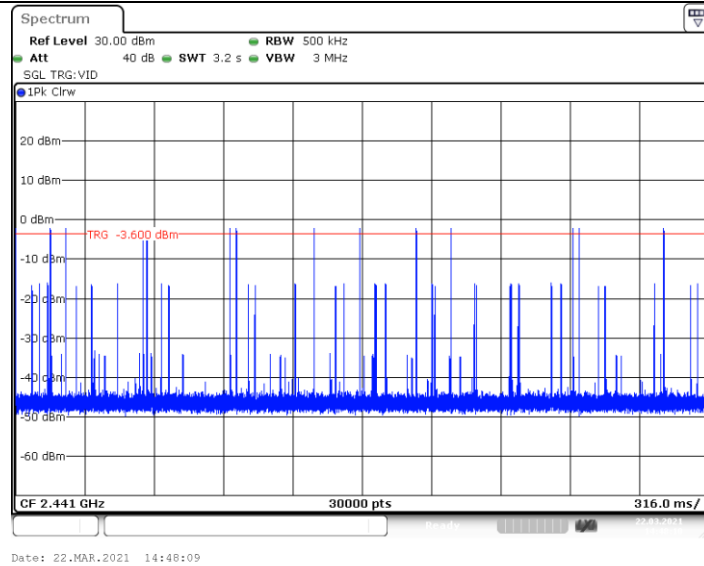
Tel.: (86)755-27521059

Fax: (86)755-27521011

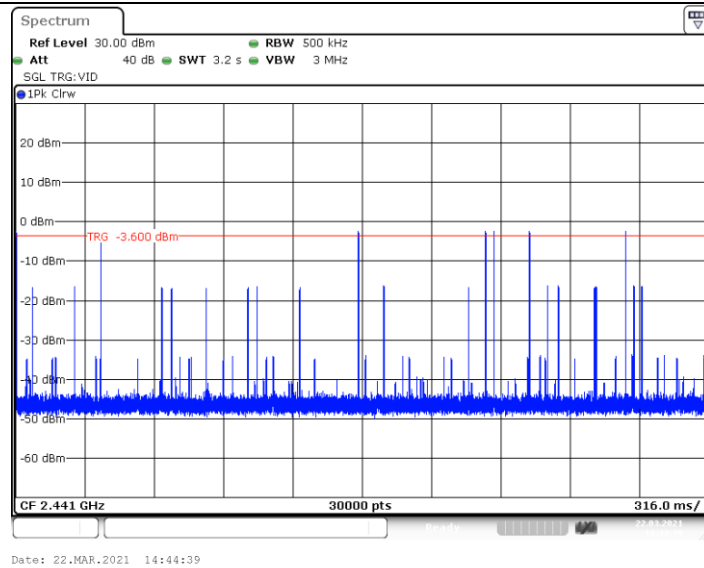
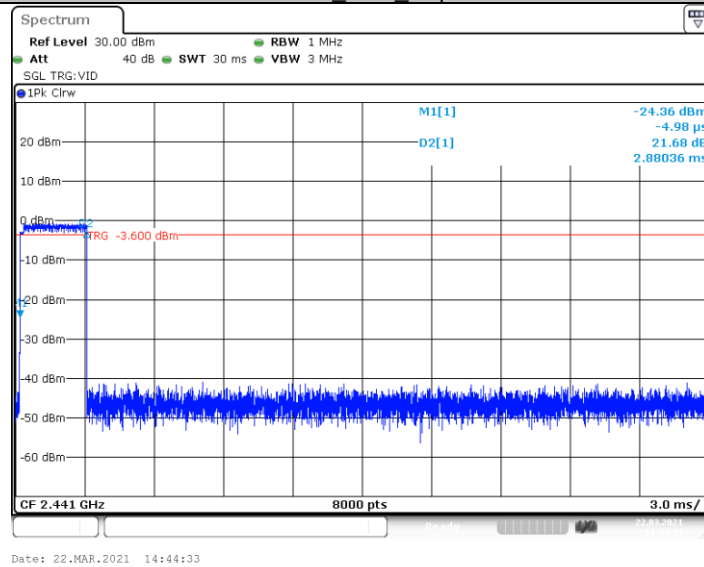
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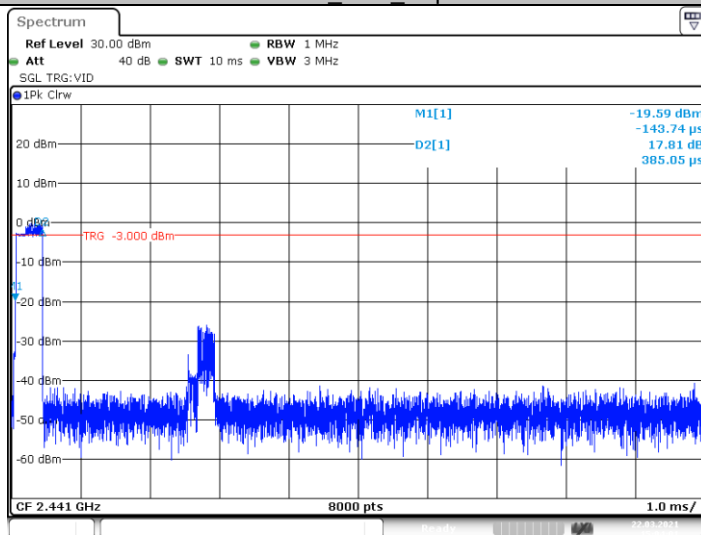


## 2DH5\_Ant1\_Hop



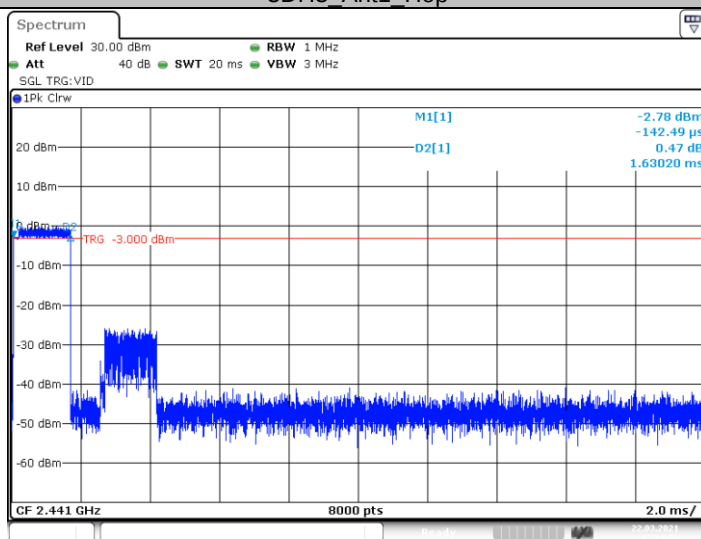


## 3DH1\_Ant1\_Hop



Date: 22.MAR.2021 15:04:01

## 3DH3\_Ant1\_Hop



Date: 22.MAR.2021 15:04:52

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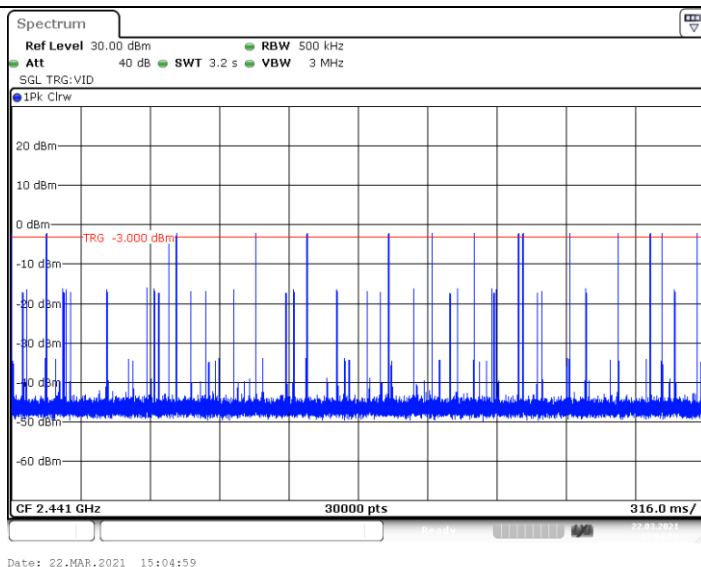
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Tel.: (86)755-27521059

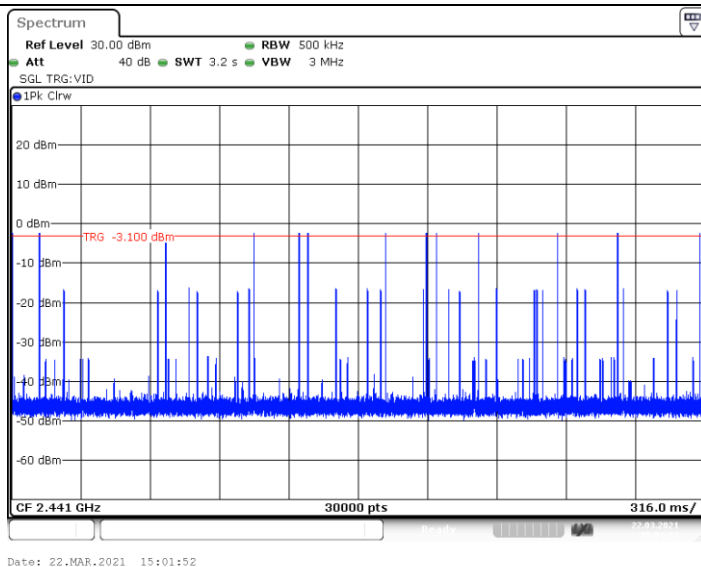
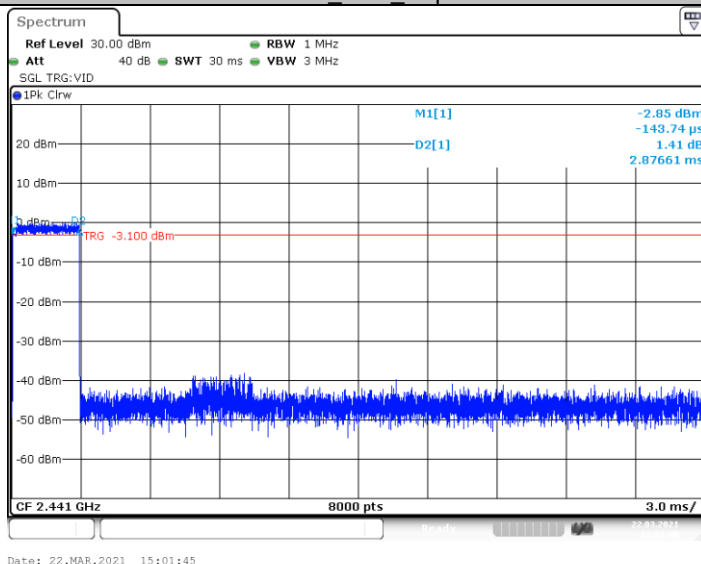
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## 3DH5\_Ant1\_Hop





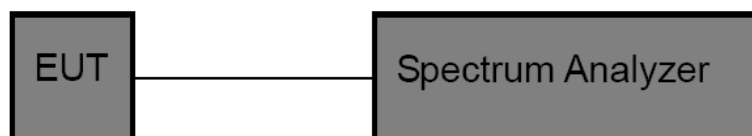
### 3.8. Peak Output Power

#### Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(1)

| Test Item         | Limit                                                         | Frequency Range(MHz) |
|-------------------|---------------------------------------------------------------|----------------------|
| Peak Output Power | Hopping Channels>75<br>Power<1W(30dBm)<br>Other <125mW(21dBm) | 2400~2483.5          |

#### Test Configuration



#### Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. Spectrum Setting:  
Peak Detector: RBW=1 MHz, VBW=3 MHz for bandwidth less than 1MHz.  
RBW=3 MHz, VBW=3 MHz for bandwidth more than 1MHz.

#### Test Mode

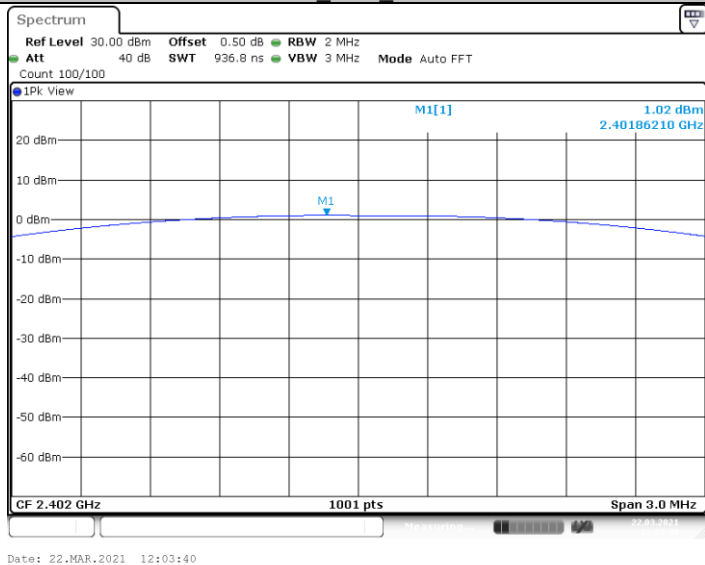
Please refer to the clause 2.3.

#### Test Result

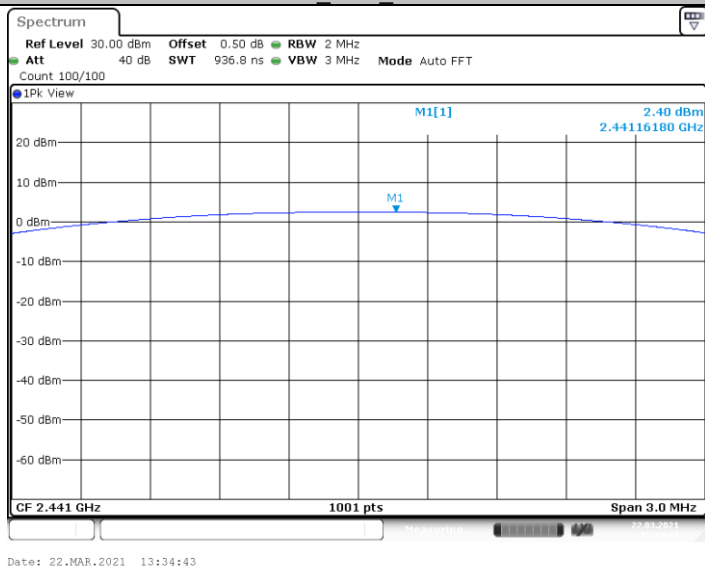
| Modulation type | Channel | Output power (dBm) | Limit (dBm) | Result |
|-----------------|---------|--------------------|-------------|--------|
| GFSK            | 00      | 1.02               | ≤ 30.00     | Pass   |
|                 | 39      | 2.40               |             |        |
|                 | 78      | 3.25               |             |        |
| π/4-DQPSK       | 00      | -0.83              | ≤ 21.00     | Pass   |
|                 | 39      | 0.11               |             |        |
|                 | 78      | 1.28               |             |        |
| 8-DPSK          | 00      | -0.66              | ≤ 21.00     | Pass   |
|                 | 39      | 0.76               |             |        |
|                 | 78      | 1.57               |             |        |



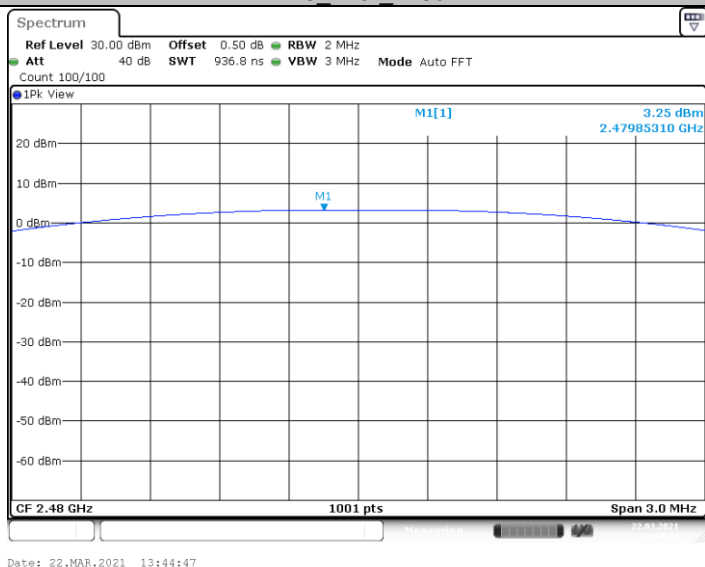
## DH5\_Ant1\_2402



## DH5\_Ant1\_2441



## DH5\_Ant1\_2480



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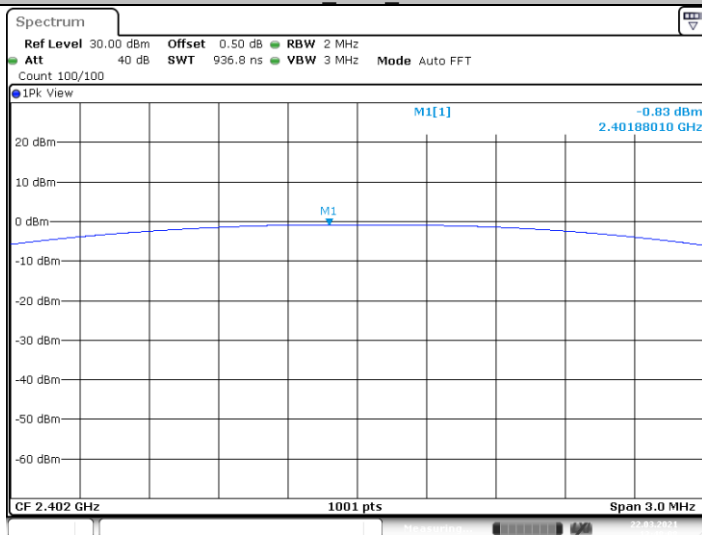
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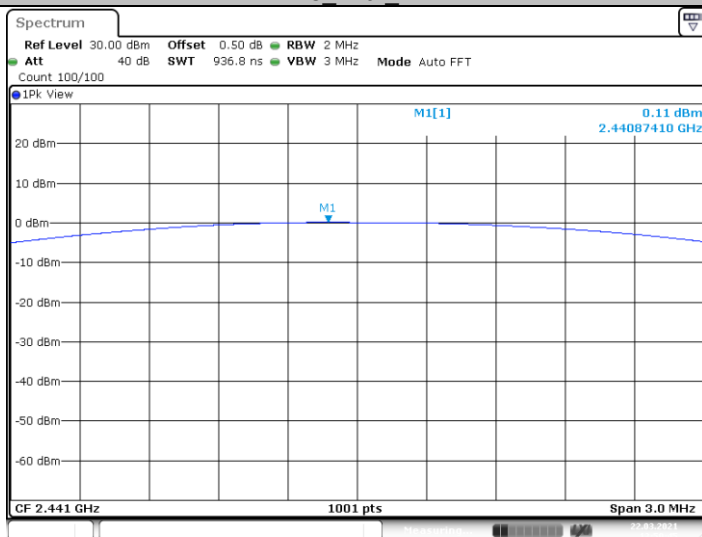


## 2DH5\_Ant1\_2402



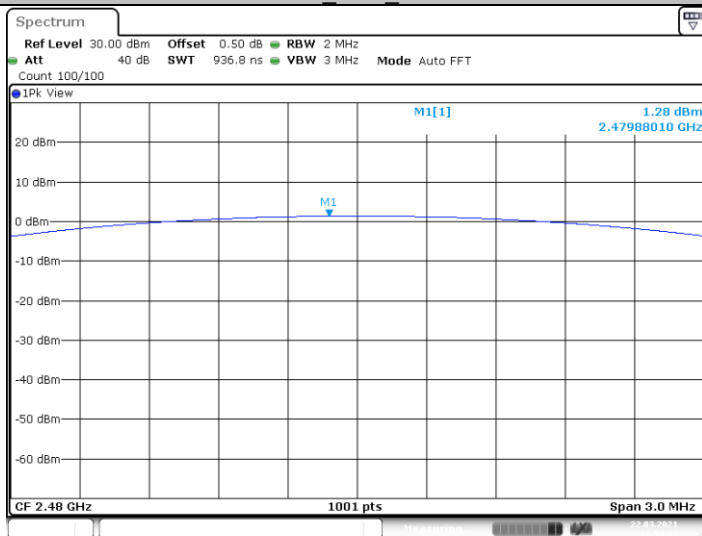
Date: 22.MAR.2021 13:48:08

## 2DH5\_Ant1\_2441



Date: 22.MAR.2021 13:50:45

## 2DH5\_Ant1\_2480



Date: 22.MAR.2021 13:54:13

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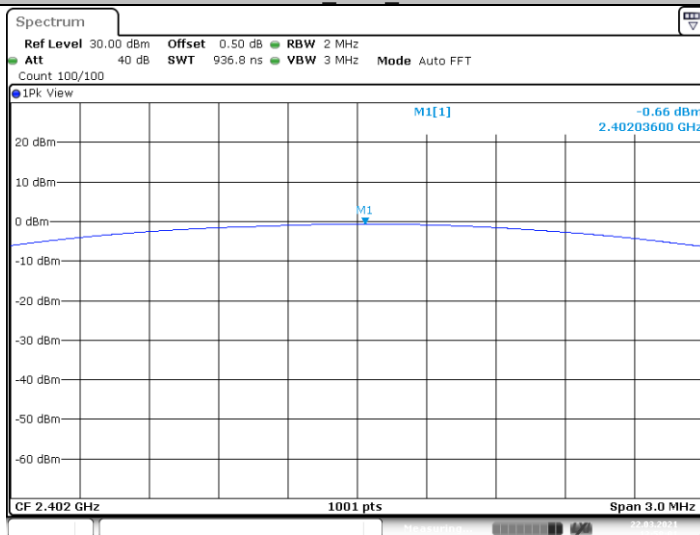
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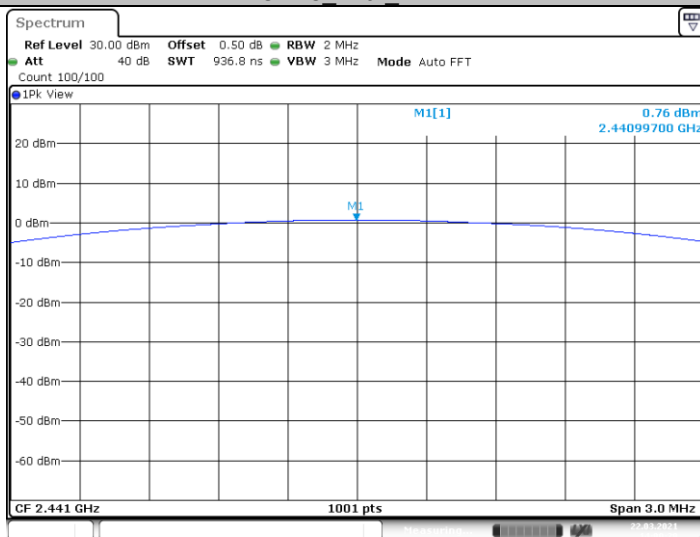


## 3DH5\_Ant1\_2402



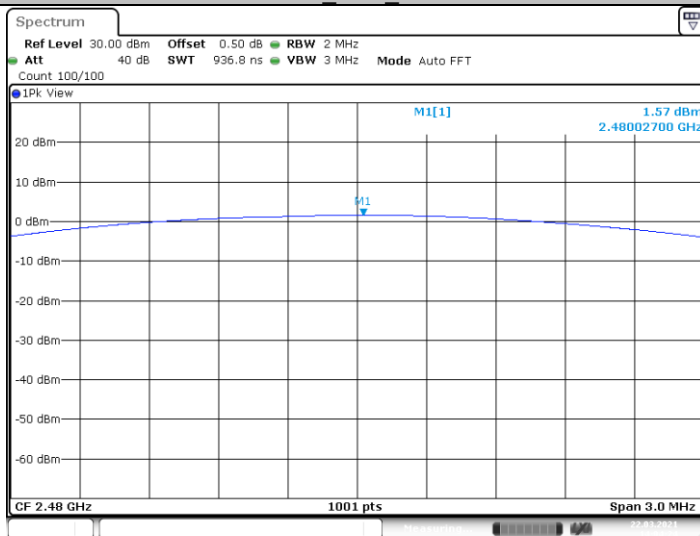
Date: 22.MAR.2021 13:58:01

## 3DH5\_Ant1\_2441



Date: 22.MAR.2021 14:00:28

## 3DH5\_Ant1\_2480



Date: 22.MAR.2021 14:04:24

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### 3.9. Antenna requirement

#### Requirement

##### **FCC CFR Title 47 Part 15 Subpart C Section 15.203:**

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of 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.

##### **FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i):**

(i) Systems operating in the 2400~2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

#### Test Result

The directional gain of the antenna less than 6dBi, please refer to the EUT internal photographs antenna photo.

\*\*\*\*\*THE END\*\*\*\*\*