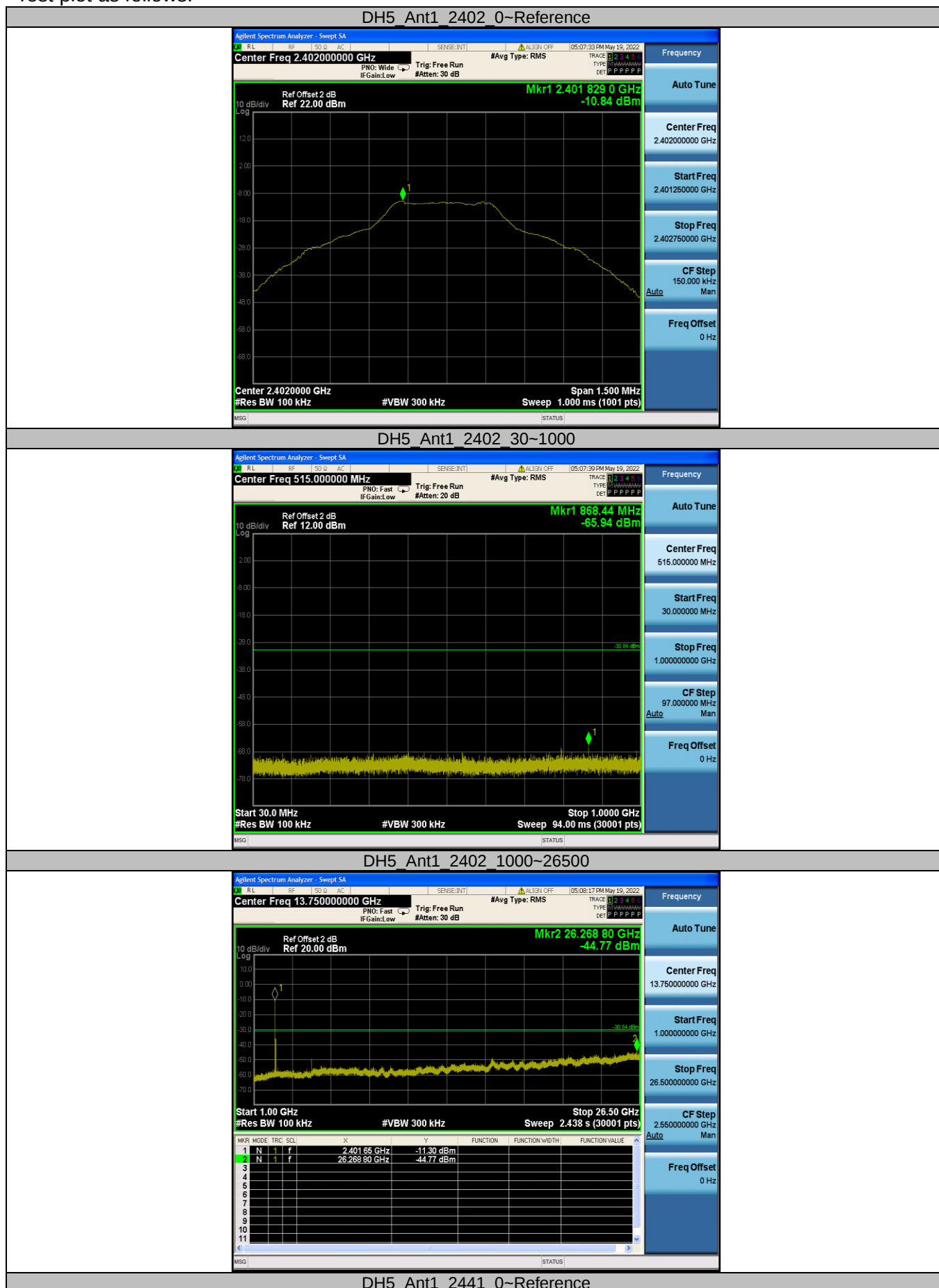


**(2) Conducted Spurious Emissions Test**

| Test Mode | Antenna | Frequency<br>(MHz) | FreqRange<br>[MHz] | RefLevel<br>[dBm] | Result<br>[dBm] | Limit<br>[dBm] | Verdict |
|-----------|---------|--------------------|--------------------|-------------------|-----------------|----------------|---------|
| DH5       | Ant1    | 2402               | Reference          | -10.84            | -10.84          | ---            | PASS    |
|           |         |                    | 30~1000            | -10.84            | -65.94          | $\leq -30.84$  | PASS    |
|           |         |                    | 1000~26500         | -10.84            | -44.77          | $\leq -30.84$  | PASS    |
|           |         | 2441               | Reference          | -10.37            | -10.37          | ---            | PASS    |
|           |         |                    | 30~1000            | -10.37            | -64.07          | $\leq -30.37$  | PASS    |
|           |         |                    | 1000~26500         | -10.37            | -42.72          | $\leq -30.37$  | PASS    |
|           |         | 2480               | Reference          | -8.83             | -8.83           | ---            | PASS    |
|           |         |                    | 30~1000            | -8.83             | -65.36          | $\leq -28.83$  | PASS    |
|           |         |                    | 1000~26500         | -8.83             | -44.19          | $\leq -28.83$  | PASS    |
| 2DH5      | Ant1    | 2402               | Reference          | -11.02            | -11.02          | ---            | PASS    |
|           |         |                    | 30~1000            | -11.02            | -66.13          | $\leq -31.02$  | PASS    |
|           |         |                    | 1000~26500         | -11.02            | -44.20          | $\leq -31.02$  | PASS    |
|           |         | 2441               | Reference          | -10.60            | -10.60          | ---            | PASS    |
|           |         |                    | 30~1000            | -10.60            | -65.24          | $\leq -30.60$  | PASS    |
|           |         |                    | 1000~26500         | -10.60            | -43.46          | $\leq -30.60$  | PASS    |
|           |         | 2480               | Reference          | -8.91             | -8.91           | ---            | PASS    |
|           |         |                    | 30~1000            | -8.91             | -64.64          | $\leq -28.91$  | PASS    |
|           |         |                    | 1000~26500         | -8.91             | -44.59          | $\leq -28.91$  | PASS    |
| 3DH5      | Ant1    | 2402               | Reference          | -10.79            | -10.79          | ---            | PASS    |
|           |         |                    | 30~1000            | -10.79            | -64.55          | $\leq -30.79$  | PASS    |
|           |         |                    | 1000~26500         | -10.79            | -45.11          | $\leq -30.79$  | PASS    |
|           |         | 2441               | Reference          | -10.54            | -10.54          | ---            | PASS    |
|           |         |                    | 30~1000            | -10.54            | -66.60          | $\leq -30.54$  | PASS    |
|           |         |                    | 1000~26500         | -10.54            | -45.02          | $\leq -30.54$  | PASS    |
|           |         | 2480               | Reference          | -9.05             | -9.05           | ---            | PASS    |
|           |         |                    | 30~1000            | -9.05             | -64.51          | $\leq -29.05$  | PASS    |
|           |         |                    | 1000~26500         | -9.05             | -44.68          | $\leq -29.05$  | PASS    |



Test plot as follows:



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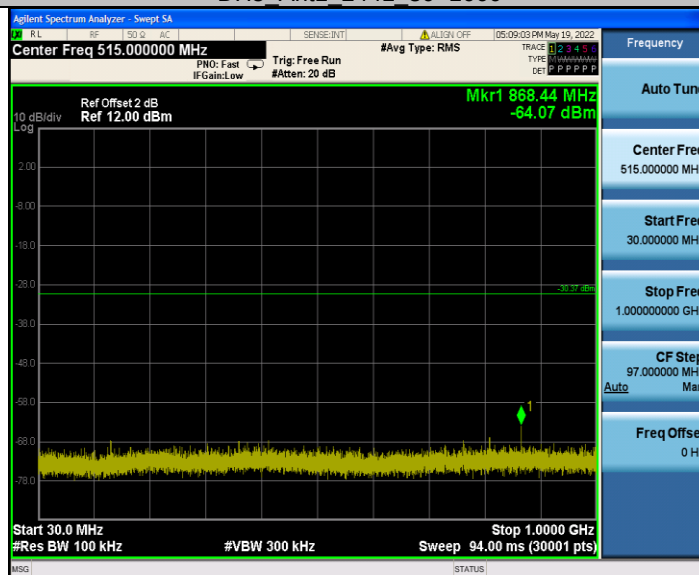
Fax: (86)755-27521011

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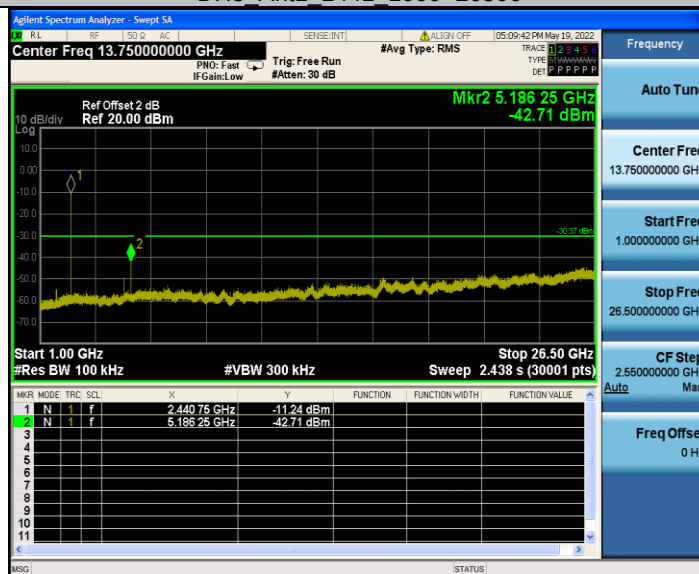
For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : [yz.cnca.cn](http://yz.cnca.cn)



DH5 Ant1 2441 30~1000



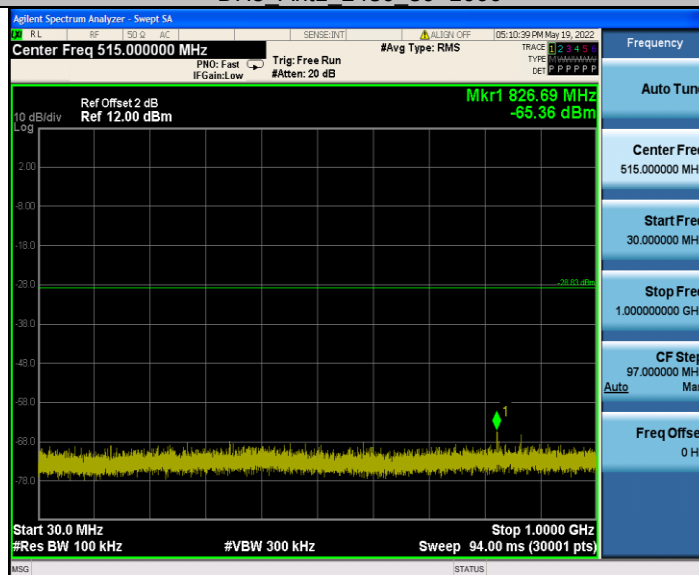
DH5 Ant1 2441 1000~26500



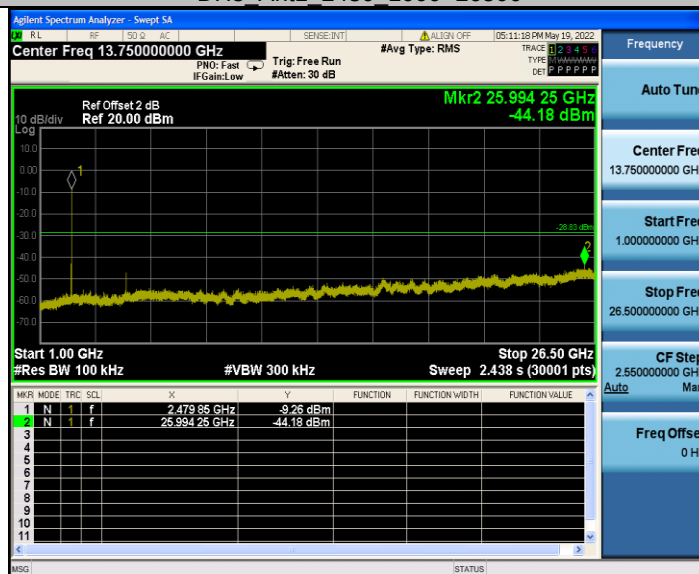
DH5 Ant1 2480 0~Reference



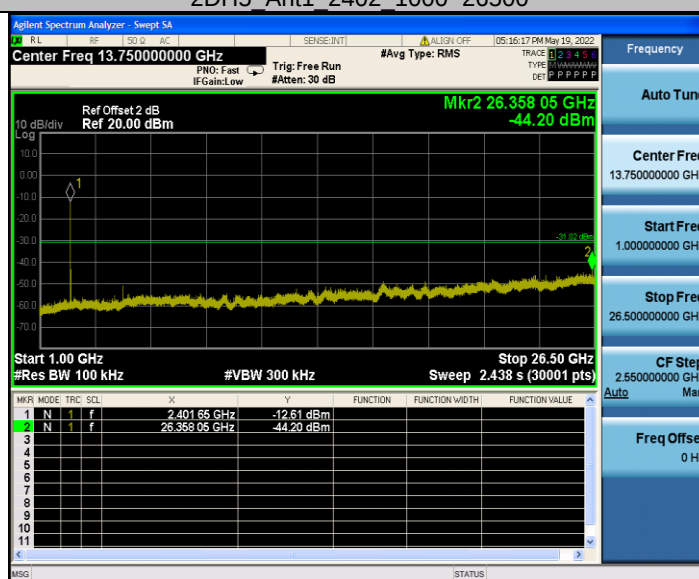
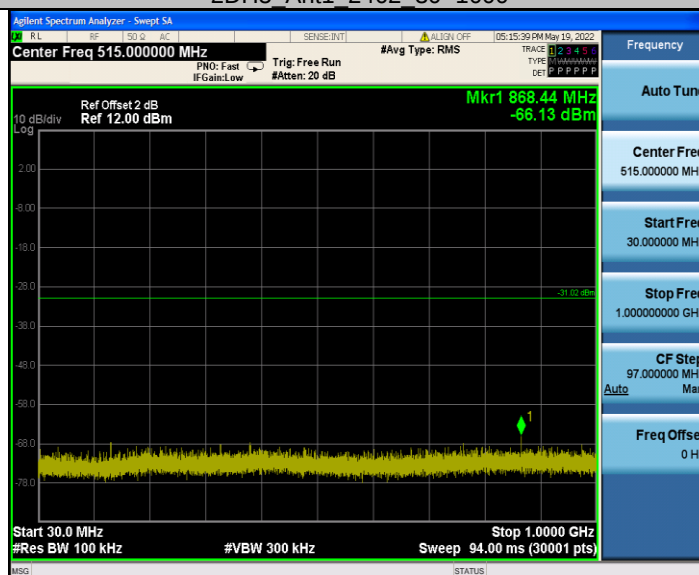
DH5 Ant1 2480 30~1000



DH5 Ant1 2480 1000~26500

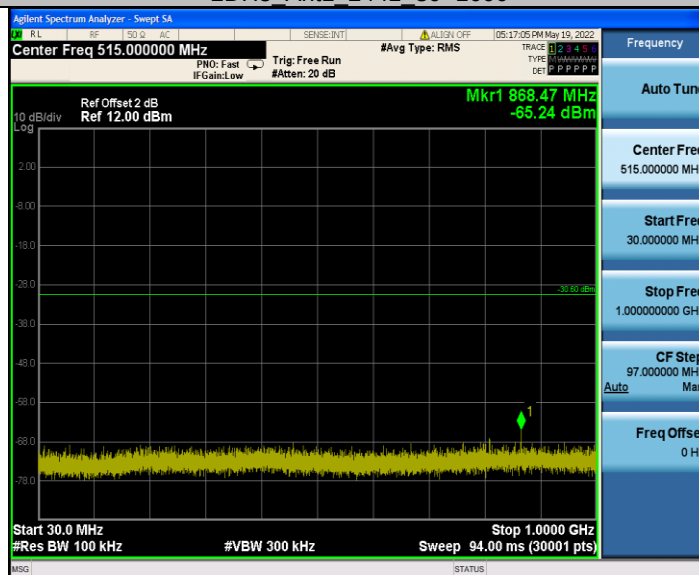


2DH5 Ant1 2402 0~Reference

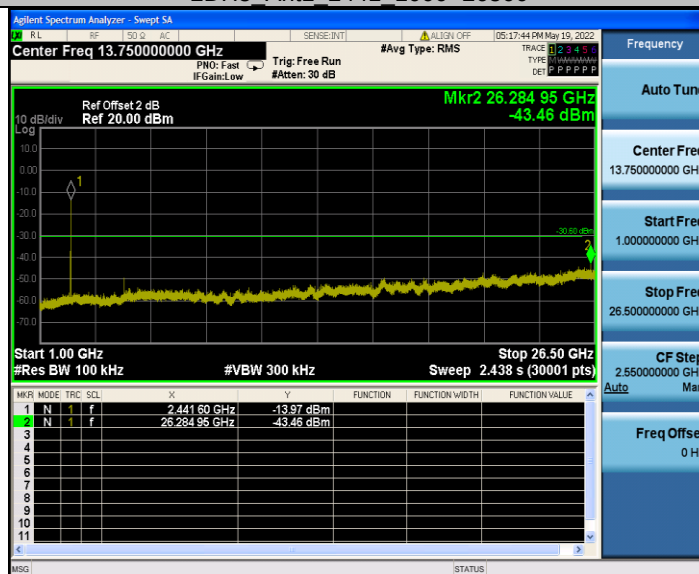




2DH5\_Ant1\_2441\_30~1000



2DH5\_Ant1\_2441\_1000~26500



2DH5\_Ant1\_2480\_0~Reference

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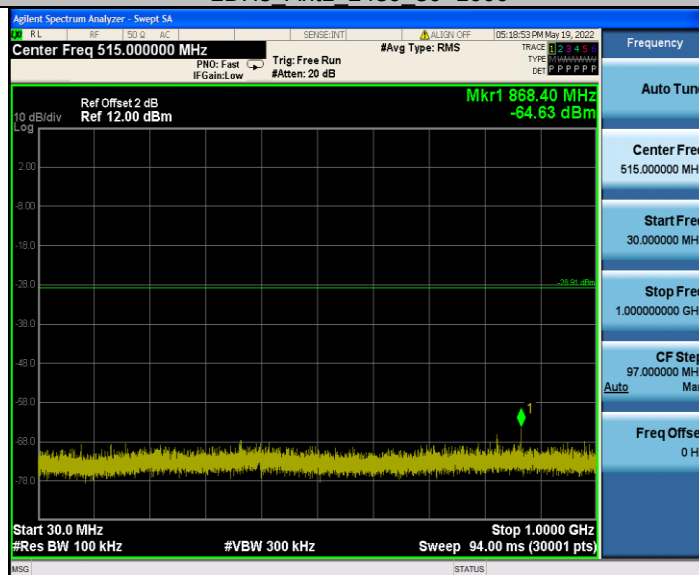
Fax: (86)755-27521011

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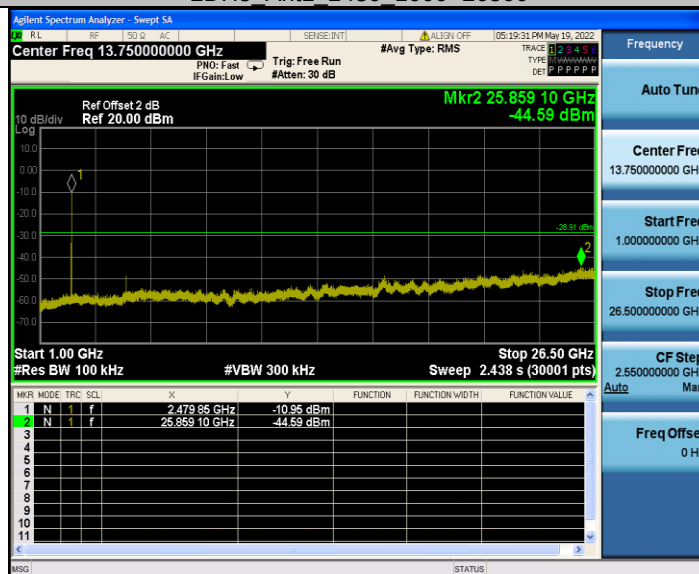
For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : [yz.cnca.cn](http://yz.cnca.cn)



2DH5\_Ant1\_2480\_30~1000



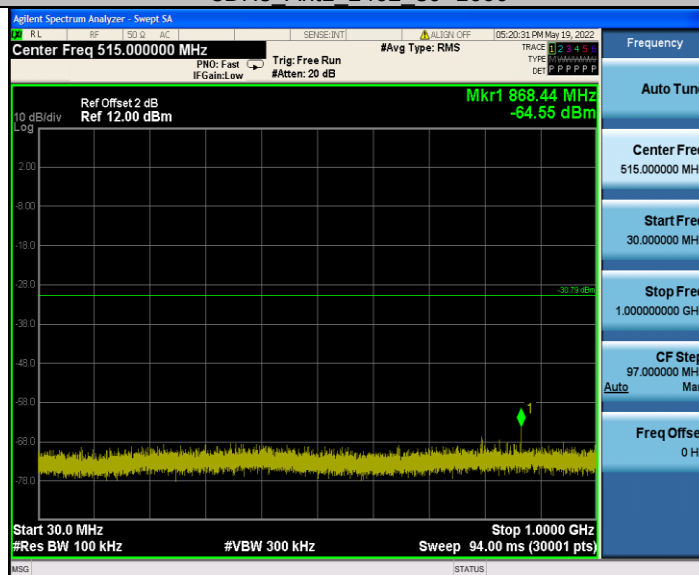
2DH5\_Ant1\_2480\_1000~26500



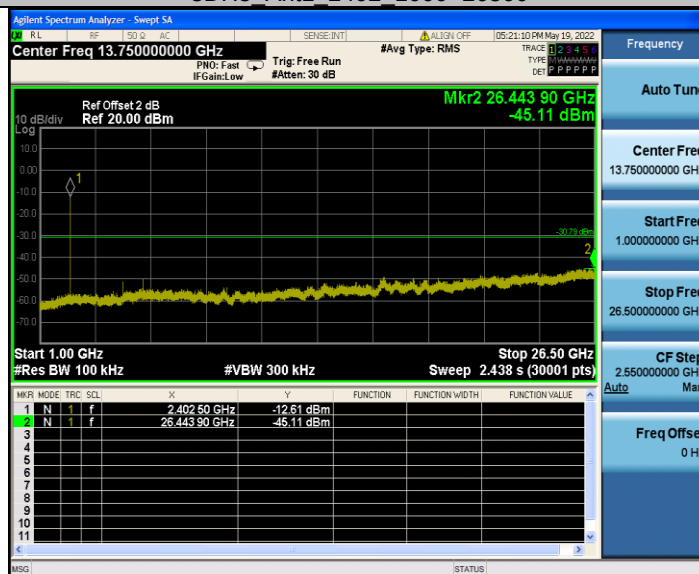
3DH5\_Ant1\_2402\_0~Reference



3DH5\_Ant1\_2402\_30~1000



3DH5\_Ant1\_2402\_1000~26500



3DH5\_Ant1\_2441\_0~Reference

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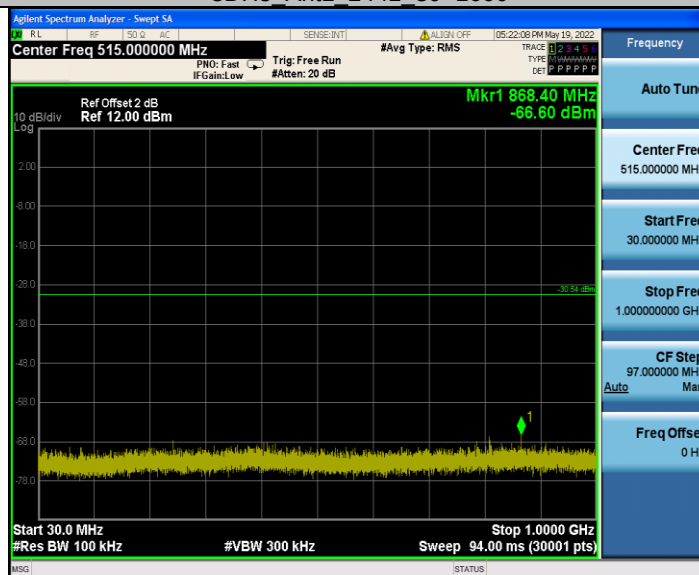
Fax: (86)755-27521011

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

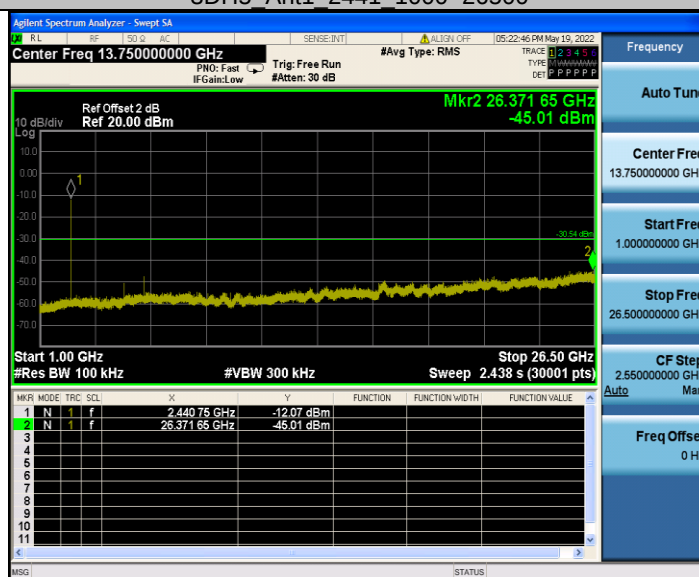
For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : [yz.cnca.cn](http://yz.cnca.cn)



3DH5\_Ant1\_2441\_30~1000



3DH5\_Ant1\_2441\_1000~26500



3DH5\_Ant1\_2480\_0~Reference

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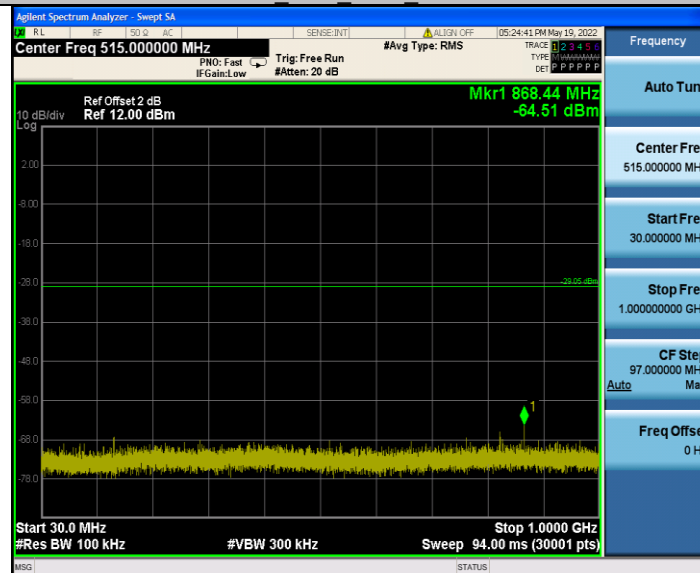
Fax: (86)755-27521011

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

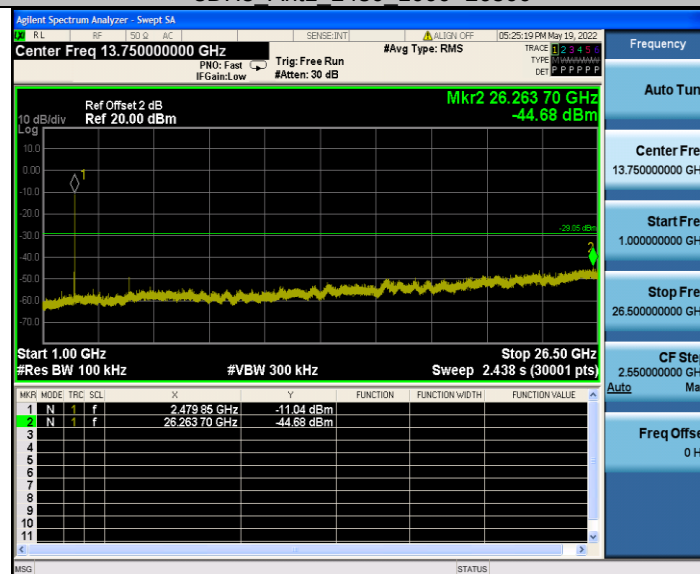
For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : [yz.cnca.cn](http://yz.cnca.cn)



3DH5 Ant1 2480 30~1000



3DH5 Ant1 2480 1000~26500



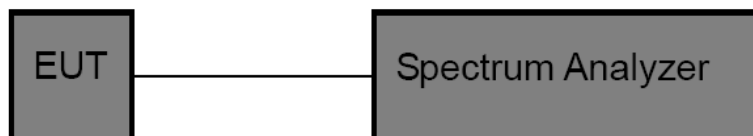


### 3.5. Bandwidth

#### 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 2.4.

#### Test Results

| Modulation type | Channel | Occupied Bandwidth (MHz) | 20dB Bandwidth (MHz) | 20dB Bandwidth *2/3 (MHz) |
|-----------------|---------|--------------------------|----------------------|---------------------------|
| GFSK            | 00      | 0.860                    | 1.116                | 0.744                     |
|                 | 39      | 0.891                    | 1.107                | 0.738                     |
|                 | 78      | 0.863                    | 1.110                | 0.740                     |
| $\pi/4$ -DQPSK  | 00      | 1.188                    | 1.392                | 0.928                     |
|                 | 39      | 1.208                    | 1.398                | 0.932                     |
|                 | 78      | 1.188                    | 1.401                | 0.934                     |
| 8-DPSK          | 00      | 1.194                    | 1.392                | 0.928                     |
|                 | 39      | 1.184                    | 1.392                | 0.928                     |
|                 | 78      | 1.189                    | 1.392                | 0.928                     |



Occupied Bandwidth:



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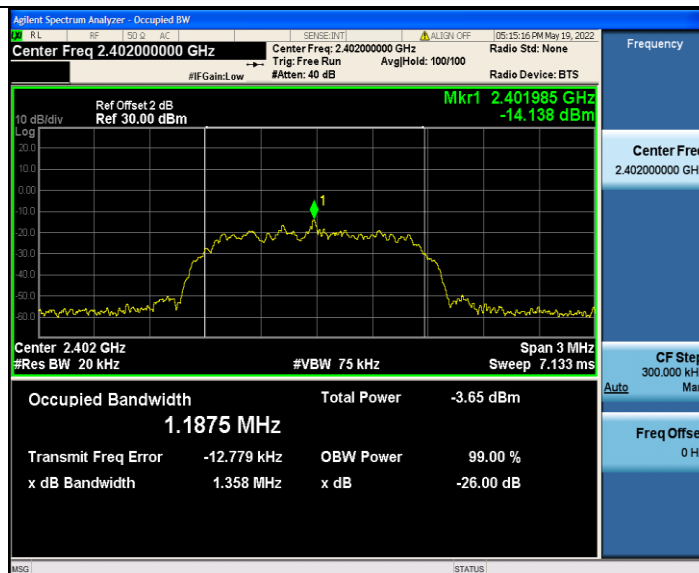
1-2/F, Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

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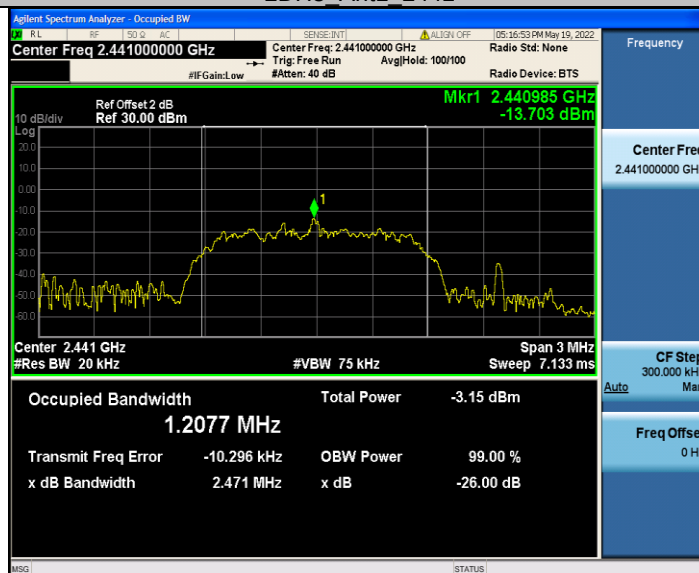
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2DH5 Ant1 2441



2DH5 Ant1 2480



3DH5 Ant1 2402

CTC Laboratories, Inc.

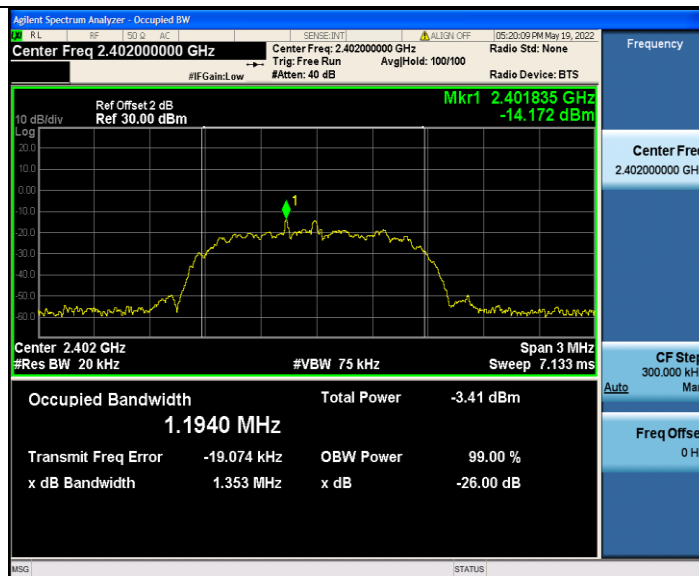
1-2/F, Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

Tel.: (86)755-27521059

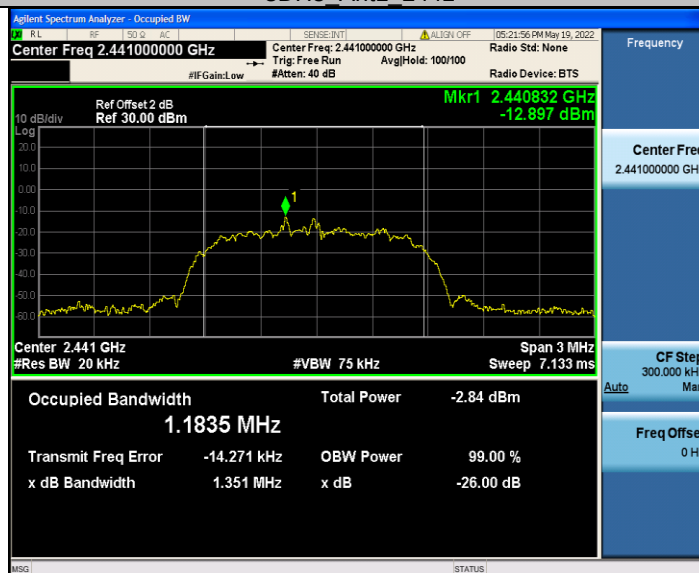
Fax: (86)755-27521011

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

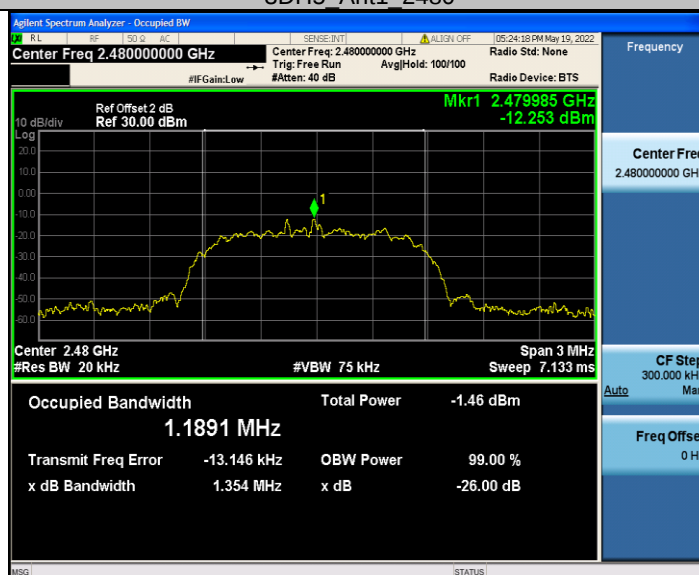
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3DH5 Ant1 2441



3DH5 Ant1 2480



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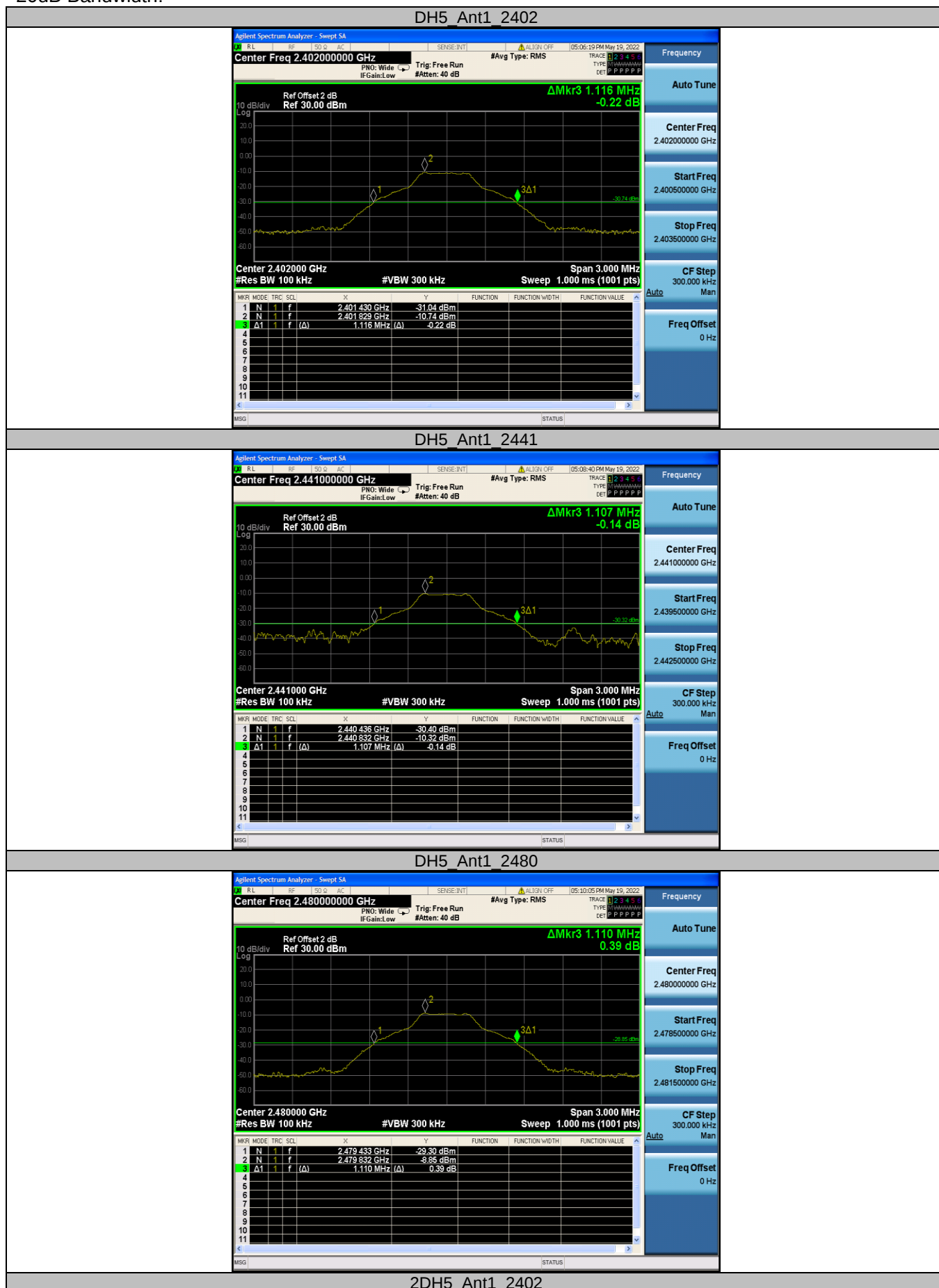
Fax: (86)755-27521011

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20dB Bandwidth:



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2DH5 Ant1 2441



2DH5 Ant1 2480



3DH5 Ant1 2402

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3DH5 Ant1 2441



3DH5 Ant1 2480



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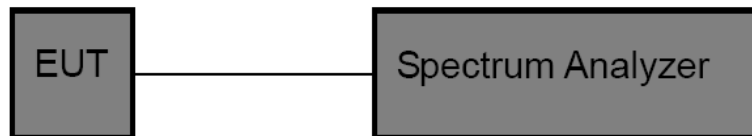
### 3.6. Channel Separation

#### Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(1)/ RSS-247 5.1 b :

| 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

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) 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 2.4.

#### Test Results

| Modulation type | Channel | Carrier Frequencies Separation (MHz) | Limit (MHz) | Result |
|-----------------|---------|--------------------------------------|-------------|--------|
| GFSK            | 38-39   | 1.002                                | 0.738       | Pass   |
| $\pi/4$ -DQPSK  | 38-39   | 1.006                                | 0.932       | Pass   |
| 8-DPSK          | 38-39   | 1.000                                | 0.928       | Pass   |



Test plot as follows:



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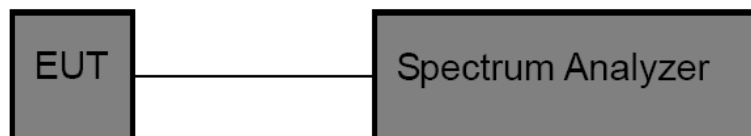
### 3.7. Number of Hopping Channel

#### Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(iii)/ RSS-247 5.1 d:

| Section                         | Test Item                 | Limit |
|---------------------------------|---------------------------|-------|
| 15.247 (a)(iii)/ RSS-247 5.1 d: | 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

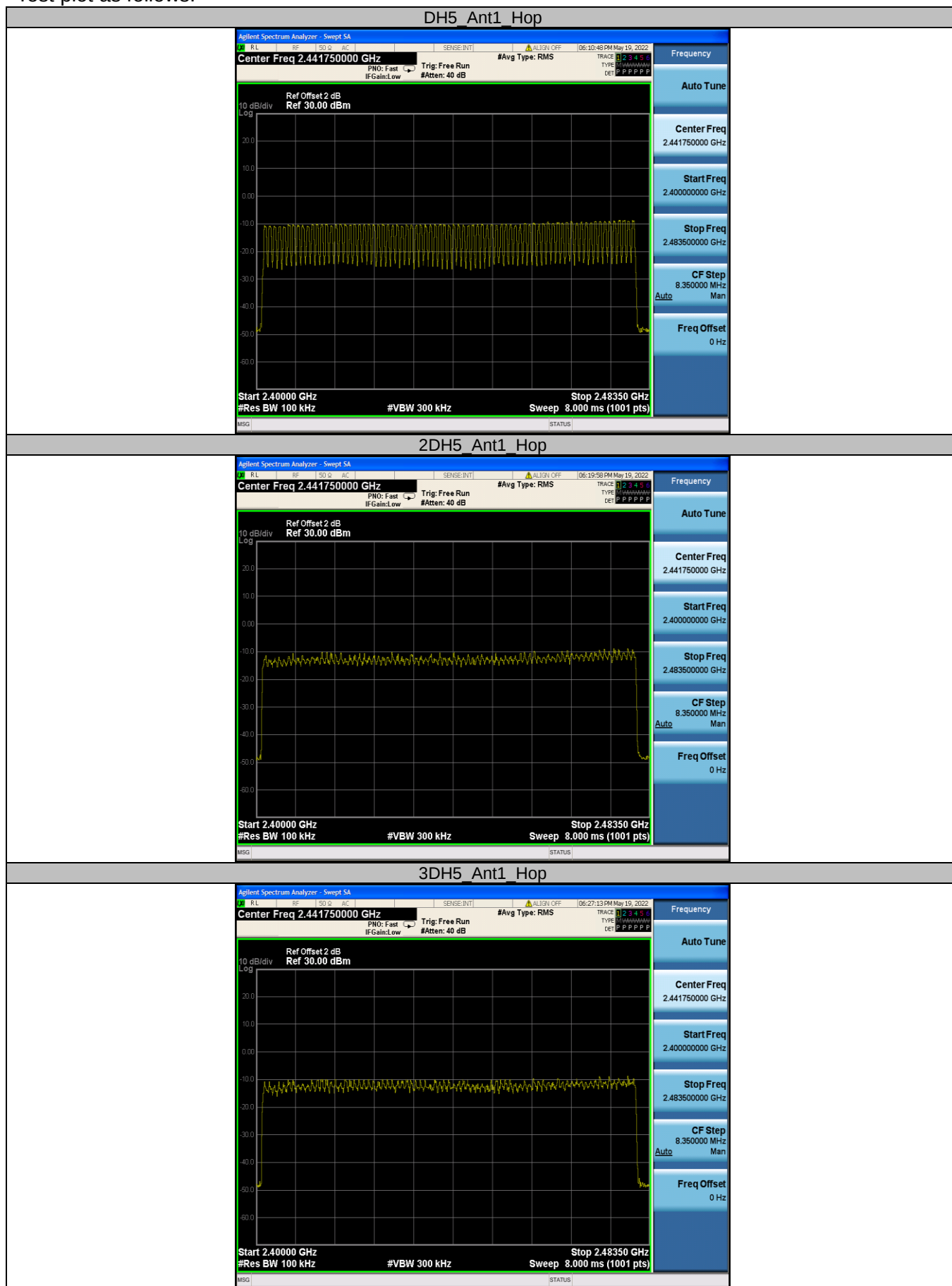
Please refer to the clause 2.4.

#### Test Result

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



Test plot as follows:



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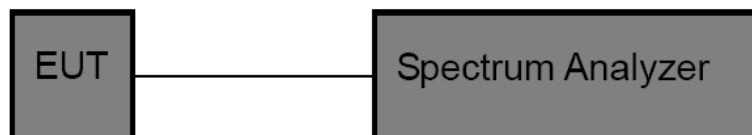
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### 3.8. Dwell Time

#### Limit

| Section                       | Test Item                 | Limit   |
|-------------------------------|---------------------------|---------|
| 15.247(a)(iii)/ RSS-247 5.1 d | 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 2.4.

**Test Result**

| Modulation type    | Channel | Frequency (MHz) | Pulse Time (ms) | Total of Dwell (ms) | Period Time (ms) | Limit (Second) | Result |
|--------------------|---------|-----------------|-----------------|---------------------|------------------|----------------|--------|
| GFSK               | DH1     | 2441            | 0.37            | 118.40              | 31.60            | $\leq 0.40$    | Pass   |
|                    | DH3     | 2441            | 1.63            | 260.80              | 31.60            |                |        |
|                    | DH5     | 2441            | 2.88            | 307.20              | 31.60            |                |        |
| $\pi$ /<br>4-DQPSK | 2DH1    | 2441            | 0.38            | 121.60              | 31.60            | $\leq 0.40$    | Pass   |
|                    | 2DH3    | 2441            | 1.64            | 262.40              | 31.60            |                |        |
|                    | 2DH5    | 2441            | 2.88            | 307.20              | 31.60            |                |        |
| 8-DPSK             | 3DH1    | 2441            | 0.39            | 124.80              | 31.60            | $\leq 0.40$    | Pass   |
|                    | 3DH3    | 2441            | 1.64            | 262.40              | 31.60            |                |        |
|                    | 3DH5    | 2441            | 2.89            | 308.27              | 31.60            |                |        |

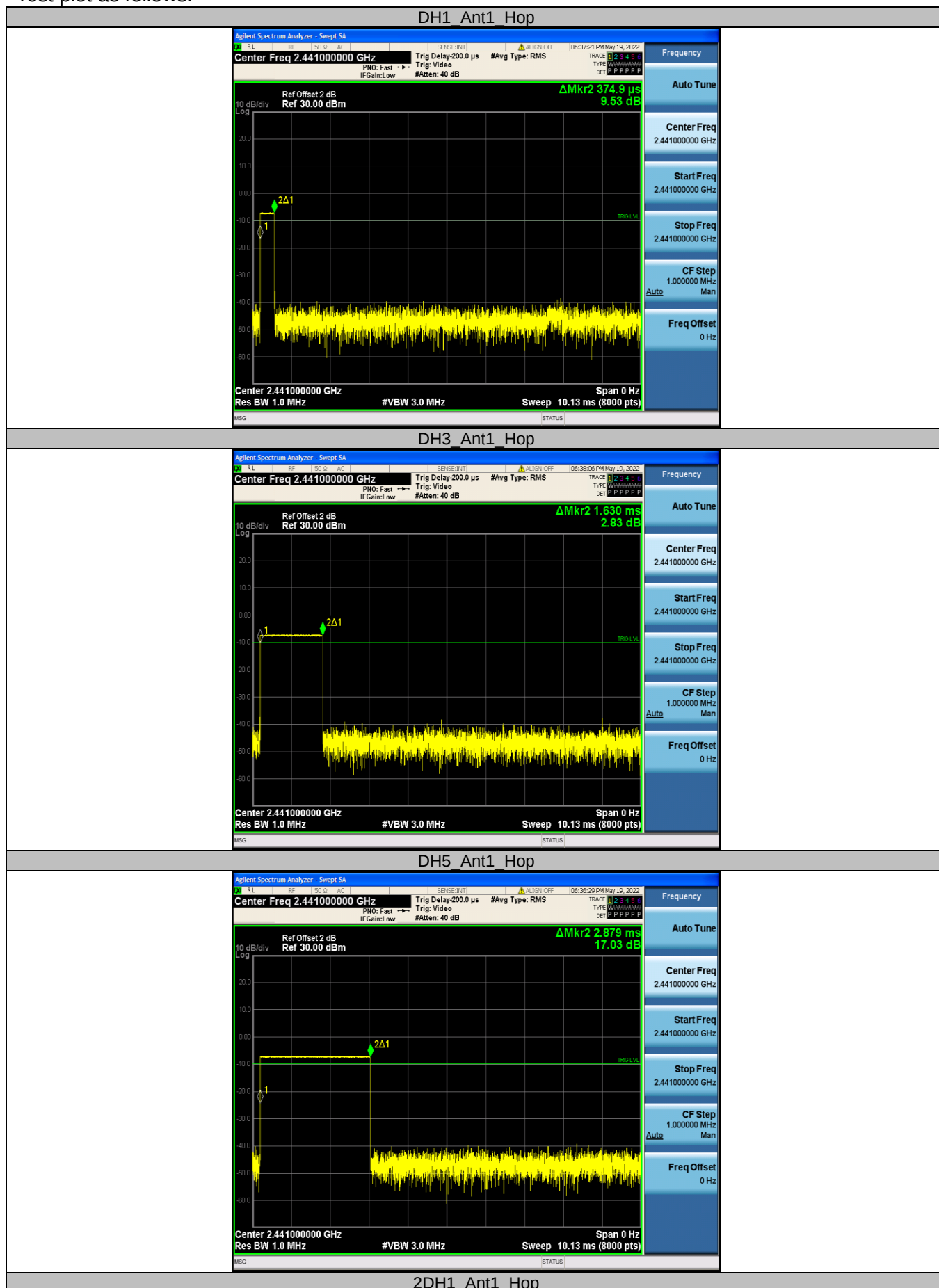
Note: 1DH1/2DH1/3DH1 Total of Dwell = Pulse Time\*(1600/2)\*31.6/79

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



Test plot as follows:



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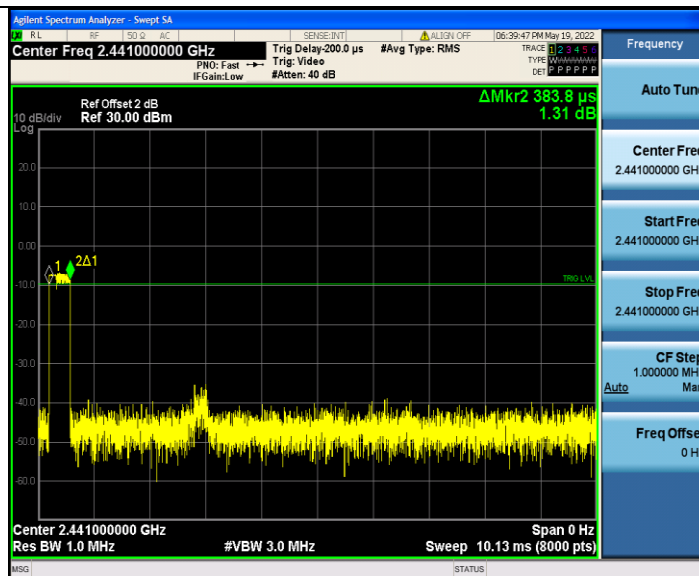
1-2/F, Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

Tel.: (86)755-27521059

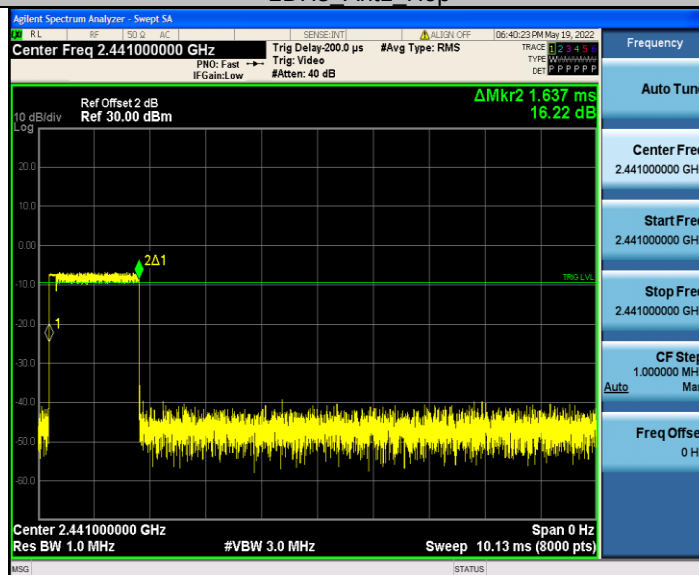
Fax: (86)755-27521011

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

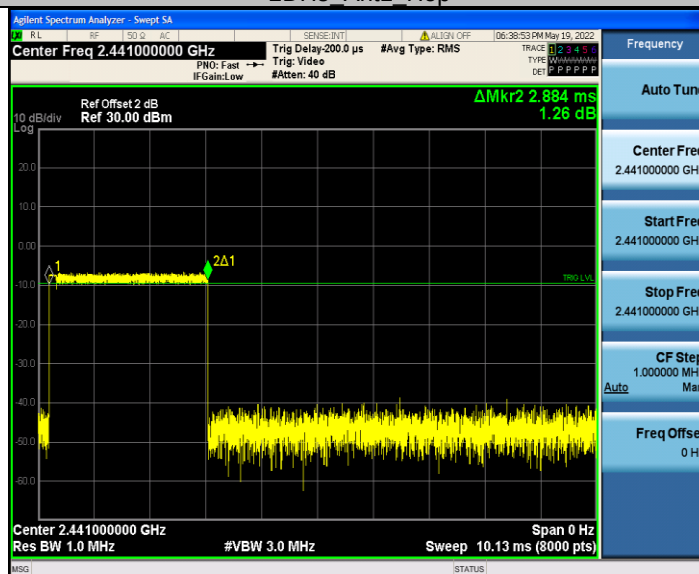
For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : [yz.cnca.cn](http://yz.cnca.cn)



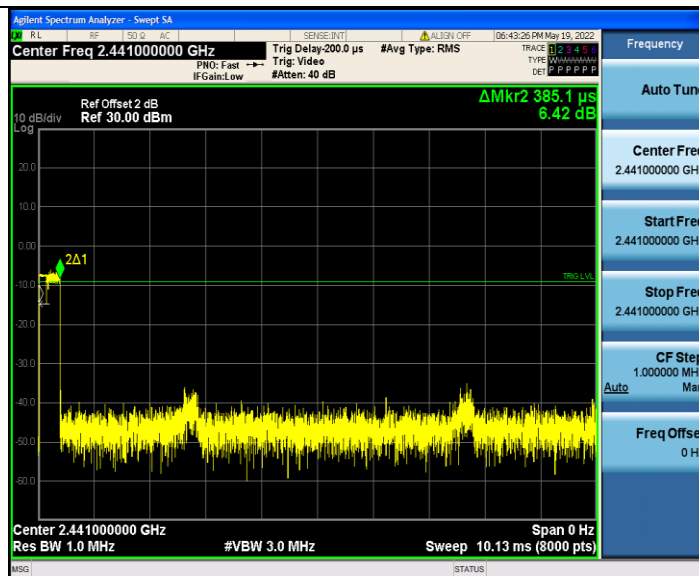
2DH3\_Ant1\_Hop



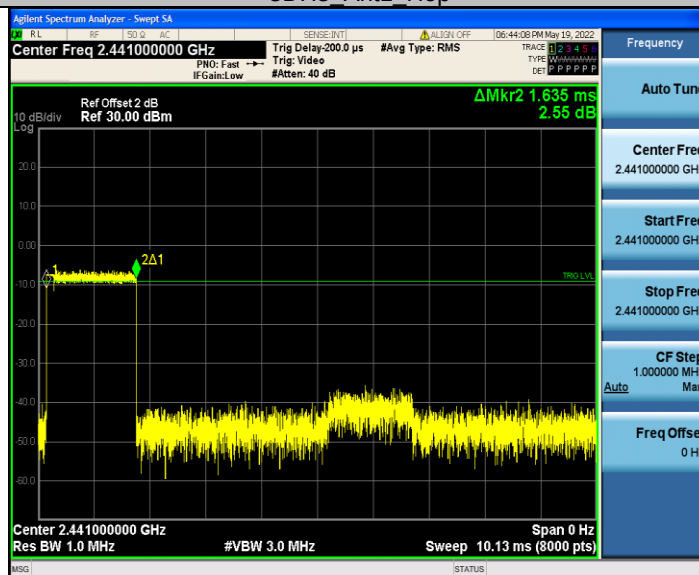
2DH5\_Ant1\_Hop



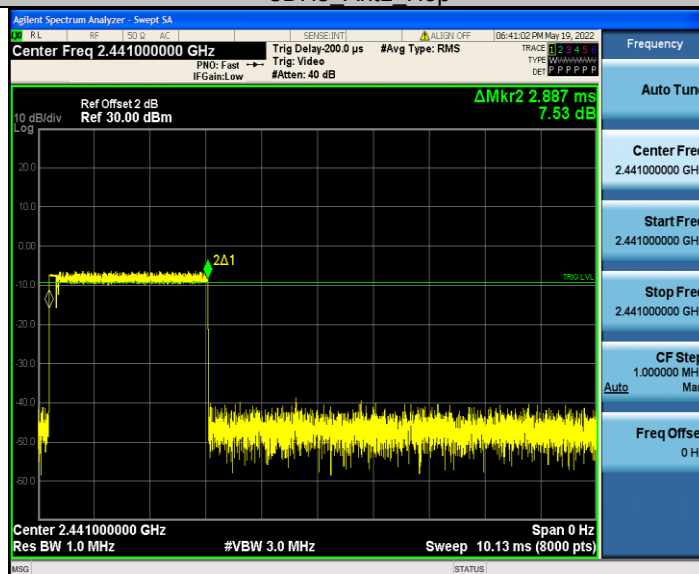
3DH1\_Ant1\_Hop



3DH3 Ant1 Hop



3DH5 Ant1 Hop





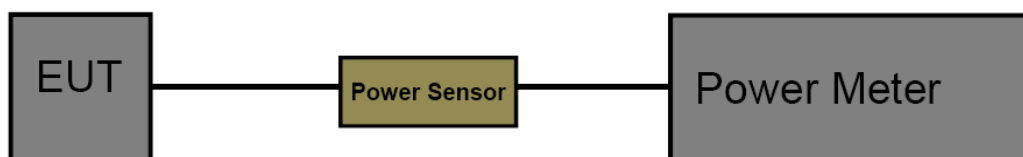
### 3.9. Peak Output Power

#### Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(1) / RSS-247 5.4 b:

| 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 maximum conducted output power may be measured using a broadband Peak RF power meter.
2. Peak power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor.
3. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.
4. Record the measurement data.

#### Test Mode

Please refer to the clause 2.4.

#### Test Result

| Modulation type | Channel | Output power (dBm) | Limit (dBm) | Result |
|-----------------|---------|--------------------|-------------|--------|
| GFSK            | 00      | -5.93              | < 21.00     | Pass   |
|                 | 39      | -5.55              |             |        |
|                 | 78      | -4.08              |             |        |
| $\pi/4$ -DQPSK  | 00      | -3.21              | < 21.00     | Pass   |
|                 | 39      | -2.63              |             |        |
|                 | 78      | -1.13              |             |        |
| 8-DPSK          | 00      | -2.65              | < 21.00     | Pass   |
|                 | 39      | -2.17              |             |        |
|                 | 78      | -0.54              |             |        |



### 3.10. 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\*\*\*\*\*