



## FCC AND ISCED CERTIFICATION TEST REPORT

|                                |   |                                                                                                                                                                                                                                                    |
|--------------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Applicant</b>               | : | Harman International Industries, Inc.                                                                                                                                                                                                              |
| <b>Address of Applicant</b>    | : | 8500 Balboa Boulevard, Northridge, CA 91329,<br>UNITED STATES                                                                                                                                                                                      |
| <b>Manufacturer</b>            | : | Harman International Industries, Inc.                                                                                                                                                                                                              |
| <b>Address of Manufacturer</b> | : | 8500 Balboa Boulevard, Northridge, CA 91329,<br>UNITED STATES                                                                                                                                                                                      |
| <b>Equipment under Test</b>    | : | Multi-Channel Soundbar with wireless subwoofer                                                                                                                                                                                                     |
| <b>Model No.</b>               | : | BAR 1300XMK2 SURROUND                                                                                                                                                                                                                              |
| <b>FCC ID</b>                  | : | APIBAR1300SUR2                                                                                                                                                                                                                                     |
| <b>IC</b>                      | : | 6132A-BAR1300SUR2                                                                                                                                                                                                                                  |
| <b>Test Standard(s)</b>        | : | FCC Rules and Regulations Part 15 Subpart E,<br>RSS-247 Issue 3 August 2023,<br>ANSI C63.10:2013,<br>789033 D02 General U-NII Test Procedures New<br>Rules v02r01,<br>662911 D01 Multiple Transmitter Output v02r01,<br>RSS-Gen Issue 5 April 2018 |
| <b>Report No.</b>              | : | DDT-RE24111520-1E26                                                                                                                                                                                                                                |
| <b>Issue Date</b>              | : | 2025/03/14                                                                                                                                                                                                                                         |
| <b>Issue By</b>                | : | Guangdong Dongdian Testing Service Co., Ltd.<br>Unit 2, Building 1, No. 17, Zongbu 2nd Road,<br>Songshan Lake Park, Dongguan, Guangdong, China,<br>523808                                                                                          |

# REPORT

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Test Report Declare

|                         |   |                                                            |
|-------------------------|---|------------------------------------------------------------|
| Applicant               | : | Harman International Industries, Inc.                      |
| Address of Applicant    | : | 8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES |
| Equipment under Test    | : | Multi-Channel Soundbar with wireless subwoofer             |
| Model No.               | : | BAR 1300XMK2 SURROUND                                      |
| Manufacturer            | : | Harman International Industries, Inc.                      |
| Address of Manufacturer | : | 8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES |

Test Standard Used:

FCC Rules and Regulations Part 15 Subpart E,  
RSS-247 Issue 3 August 2023,  
ANSI C63.10:2013,  
789033 D02 General U-NII Test Procedures New Rules v02r01,  
662911 D01 Multiple Transmitter Output v02r01,  
RSS-Gen Issue 5 April 2018

We Declare:

The equipment described above is tested by Guangdong Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Guangdong Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

|                  |                     |               |                         |
|------------------|---------------------|---------------|-------------------------|
| Report No.:      | DDT-RE24111520-1E26 |               |                         |
| Date of Receipt: | 2024/11/26          | Date of Test: | 2024/11/26 - 2025/03/14 |

|                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Created: Bobo Chen                                                                  | Reviewed: Ella Gong                                                                 | Approved: Damon Hu                                                                    |
|  |  |  |
| 2025/03/14                                                                          | 2025/03/14                                                                          | 2025/03/14                                                                            |

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Guangdong Dongdian Testing Service Co., Ltd.

Revision History

| Rev. | Revisions     | Issue Date | Revised By |
|------|---------------|------------|------------|
| ---  | Initial issue | 2025/03/14 |            |
|      |               |            |            |

## 1. Summary of Test Results

| No.                                                                                                                                              | Test Parameter                     | Clause No.                                                                      | Condition | Result |
|--------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------------------------------------------------------------------|-----------|--------|
| 1                                                                                                                                                | 6/26db Bandwidth and 99% Bandwidth | FCC 15.407 (e), RSS-247 Clause 6.2, RSS-GEN Clause 6.7                          | /         | Pass   |
| 2                                                                                                                                                | Output Power                       | FCC 15.407 (a) ; RSS-247 Clause 6.2                                             | /         | Pass   |
| 3                                                                                                                                                | Power Spectral Density             | FCC 15.407 (a) ; RSS-247 Clause 6.2                                             | /         | Pass   |
| 4                                                                                                                                                | Frequency Stability Measurement    | FCC 15.407 (g); RSS-247 Clause 6.2; RSS-GEN Clause 8.11                         | /         | Pass   |
| 5                                                                                                                                                | Radiated Emission                  | FCC 15.407 (b); FCC 15.209; FCC 15.205; RSS-247 Clause 6.2; RSS-GEN Clause 8.9  | /         | Pass   |
| 6                                                                                                                                                | Band Edge Compliance               | FCC 15.407 (b); FCC 15.209; FCC 15.205; RSS-247 Clause 6.2; RSS-GEN Clause 8.10 | /         | Pass   |
| 7                                                                                                                                                | Dynamic Frequency Selection        | FCC 15.407 (h); RSS-247 Clause 6.8                                              | /         | Pass   |
| 8                                                                                                                                                | Antenna Requirement                | FCC Part 15: 15.203, RSS-Gen Issue 5 clause 6.8                                 | /         | Pass   |
| 9                                                                                                                                                | Power Line Conducted Emissions     | FCC Part 15: 15.207(a), RSS-Gen Issue 5 clause 8.8                              | /         | Pass   |
| Note: N/A is an abbreviation for Not Applicable, and means this item is not applicable for this device or no need to test according to standard. |                                    |                                                                                 |           |        |

## 2. General Test Information

### 2.1. Description of EUT

|                          |                                                                                                                                                                      |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EUT Name                 | : Multi-Channel Soundbar with wireless subwoofer                                                                                                                     |
| Model Number             | : BAR 1300XMK2 SURROUND                                                                                                                                              |
| EUT Function Description | : Please reference user manual of this device                                                                                                                        |
| Power Supply             | : DC 5V/3.0A, DC 9V/1.6A, DC 12V/1.25V, DC 15V/1.0A, DC 20V/0.75A from external AC Adapter (Type-c port charging)<br>DC 7.2V 4722mAh Polymer Li-ion built-in battery |
| Antenna Type             | : FPC                                                                                                                                                                |
| Max Antenna Gain(dBi)    | : 2.77                                                                                                                                                               |

Note: This EUT support Bluetooth BR/EDR/LE, 5 GHz Wireless, this report only for 5 GHz Wireless.

|                     |                                                                                                                                      |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Radio Technology    | : IEEE 802.11a/ax                                                                                                                    |
| Operation frequency | : U-NII-1: 5180 MHz to 5240 MHz<br>U-NII-2A: 5260 MHz to 5320 MHz<br>U-NII-2C: 5500 MHz to 5720 MHz<br>U-NII-3: 5745 MHz to 5825 MHz |
| Modulation          | : IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK)<br>IEEE 802.11ax: OFDMA (64QAM, 16QAM, QPSK, BPSK)                                   |

|                                                                  |                 |     |                 |     |                 |     |                 |
|------------------------------------------------------------------|-----------------|-----|-----------------|-----|-----------------|-----|-----------------|
| Channel information                                              |                 |     |                 |     |                 |     |                 |
| IEEE 802.11a                                                     |                 |     |                 |     |                 |     |                 |
| IEEE 802.11ax (HE20)                                             |                 |     |                 |     |                 |     |                 |
| UNII-1                                                           |                 |     |                 |     |                 |     |                 |
| CH                                                               | Frequency (MHz) | CH  | Frequency (MHz) | CH  | Frequency (MHz) | CH  | Frequency (MHz) |
| 36                                                               | 5180            | 40  | 5200            | 44  | 5220            | 48  | 5240            |
| UNII-2A                                                          |                 |     |                 |     |                 |     |                 |
| 52                                                               | 5260            | 56  | 5280            | 60  | 5300            | 64  | 5320            |
| UNII-2C                                                          |                 |     |                 |     |                 |     |                 |
| 100                                                              | 5500            | 112 | 5560            | 124 | 5620            | 136 | 5680            |
| 104                                                              | 5520            | 116 | 5580            | 128 | 5640            | 140 | 5700            |
| 108                                                              | 5540            | 120 | 5600            | 132 | 5660            | 144 | 5720            |
| UNII-3                                                           |                 |     |                 |     |                 |     |                 |
| 149                                                              | 5745            | 157 | 5785            | 161 | 5805            | 165 | 5825            |
| 153                                                              | 5765            | /   | /               | /   | /               | /   | /               |
| Note: Band 5600-5650MHz will be disabled when shipped to Canada. |                 |     |                 |     |                 |     |                 |

Note: The above EUT information is declared by manufacturer and for more detailed features description please refer to the manufacturer's specifications or User's Manual. The above Antenna information is declared by manufacturer and for more detailed features description please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

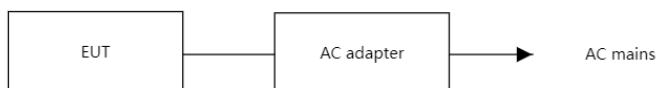
“☑” means to be chosen or applicable; “☐” means don't to be chosen or not applicable; This note applies to entire report.



## 2.2. Accessories of EUT

| Accessories    | Manufacturer | Model number | Description                            |
|----------------|--------------|--------------|----------------------------------------|
| AC cable       | Harman       | N/A          | Length: 150cm                          |
| HDMI cable     | Harman       | N/A          | Length: 120cm, with two magnetic rings |
| Remote control | Harman       | N/A          | N/A                                    |

## 2.3. Block diagram of EUT configuration for test



## 2.4. Decision of final test mode

According pre-test, the worst test modes were reported as below:

Test software: main.exe

The test software was used to control EUT work in Continuous Tx mode, and select test channel, wireless mode as below table.

The pathloss of external cable: 2 dB (According to the manufacturer's claims)

| Tested mode, Tx Power Setting, Data rate, Channel, and Frequency |                  |                                |                 |                 |
|------------------------------------------------------------------|------------------|--------------------------------|-----------------|-----------------|
| Tested mode                                                      | Tx Power Setting | Data rate (Mbps)<br>(see Note) | Test Channel    | Frequency (MHz) |
|                                                                  | ANT1             |                                |                 |                 |
| IEEE 802.11a                                                     | Default          | 6                              | LCH: CH36       | 5180            |
|                                                                  | Default          | 6                              | MCH: CH40       | 5200            |
|                                                                  | Default          | 6                              | HCH: CH48       | 5240            |
|                                                                  | Default          | 6                              | LCH: CH52       | 5260            |
|                                                                  | Default          | 6                              | MCH: CH56       | 5280            |
|                                                                  | Default          | 6                              | HCH: CH64       | 5320            |
|                                                                  | Default          | 6                              | LCH: CH100      | 5500            |
|                                                                  | Default          | 6                              | MCH: CH116      | 5580            |
|                                                                  | 170              | 6                              | HCH: CH140      | 5700            |
|                                                                  | Default          | 6                              | Straddle: CH144 | 5720            |
|                                                                  | Default          | 6                              | LCH: CH149      | 5745            |
|                                                                  | Default          | 6                              | MCH: CH157      | 5785            |
|                                                                  | Default          | 6                              | HCH: CH165      | 5825            |
| IEEE 802.11ax<br>HE20                                            | Default          | MCS 0                          | LCH: CH36       | 5180            |
|                                                                  | Default          | MCS 0                          | MCH: CH40       | 5200            |
|                                                                  | Default          | MCS 0                          | HCH: CH48       | 5240            |
|                                                                  | Default          | MCS 0                          | LCH: CH52       | 5260            |
|                                                                  | Default          | MCS 0                          | MCH: CH56       | 5280            |
|                                                                  | 180              | MCS 0                          | HCH: CH64       | 5320            |

|                                                                                                                                     |       |                 |      |
|-------------------------------------------------------------------------------------------------------------------------------------|-------|-----------------|------|
| Default                                                                                                                             | MCS 0 | LCH: CH100      | 5500 |
| Default                                                                                                                             | MCS 0 | MCH: CH116      | 5580 |
| 170                                                                                                                                 | MCS 0 | HCH: CH140      | 5700 |
| Default                                                                                                                             | MCS 0 | Straddle: CH144 | 5720 |
| Default                                                                                                                             | MCS 0 | LCH: CH149      | 5745 |
| Default                                                                                                                             | MCS 0 | MCH: CH157      | 5785 |
| Default                                                                                                                             | MCS 0 | HCH: CH165      | 5825 |
| Note: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test. |       |                 |      |

## 2.5. Deviations of test standard

No deviation.

## 2.6. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

|                    |                  |
|--------------------|------------------|
| Temperature range: | +15°C to +35 °C  |
| Humidity range:    | 20% to 75%       |
| Pressure range:    | 86 kPa to106 kPa |

Note: The specific temperature and humidity information of each test item refers to the temperature and humidity record in the corresponding test data.

## 2.7. Test laboratory

Guangdong Dongdian Testing Service Co., Ltd.

Add.: Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808.

Tel.: +86-0769-38826678, <http://www.dgddt.com>, Email: [ddt@dgddt.com](mailto:ddt@dgddt.com).

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, R-20240, G-20118

## 2.8. Measurement uncertainty

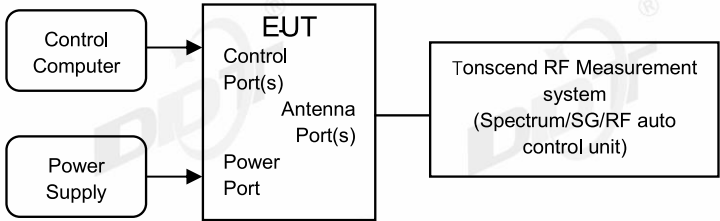
| Test Item                                                                                                                                     | Uncertainty                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bandwidth                                                                                                                                     | 1.1%                                                                                                                                                                    |
| Peak Output Power (Conducted) (Spectrum analyzer)                                                                                             | 0.86 dB ( $10 \text{ MHz} \leq f < 3.6 \text{ GHz}$ );<br>1.38 dB ( $3.6 \text{ GHz} \leq f < 8 \text{ GHz}$ )                                                          |
| Peak Output Power (Conducted) (Power Sensor)                                                                                                  | 0.74 dB                                                                                                                                                                 |
| Power Spectral Density                                                                                                                        | 0.74 dB ( $10 \text{ MHz} \leq f < 3.6 \text{ GHz}$ );<br>1.38 dB ( $3.6 \text{ GHz} \leq f < 8 \text{ GHz}$ )                                                          |
| Frequencies Stability                                                                                                                         | $6.7 \times 10^{-8}$ (Antenna couple method)<br>$5.5 \times 10^{-8}$ (Conducted method)                                                                                 |
| Conducted spurious emissions                                                                                                                  | 0.86 dB ( $10 \text{ MHz} \leq f < 3.6 \text{ GHz}$ );<br>1.40 dB ( $3.6 \text{ GHz} \leq f < 8 \text{ GHz}$ )<br>1.66 dB ( $8 \text{ GHz} \leq f < 26.5 \text{ GHz}$ ) |
| Uncertainty for radio frequency (RBW < 20 kHz)                                                                                                | $3 \times 10^{-8}$                                                                                                                                                      |
| Temperature                                                                                                                                   | 0.4 °C                                                                                                                                                                  |
| Humidity                                                                                                                                      | 2 %                                                                                                                                                                     |
| Uncertainty for Radiation Emission test<br>(9 kHz – 30 MHz)                                                                                   | 3.44 dB                                                                                                                                                                 |
| Uncertainty for Radiation Emission test<br>(30 MHz - 1 GHz)                                                                                   | 4.70 dB (Antenna Polarize: V)<br>4.84 dB (Antenna Polarize: H)                                                                                                          |
| Uncertainty for Radiation Emission test<br>(1 GHz - 40 GHz)                                                                                   | 4.10 dB (1 - 6 GHz)<br>4.40 dB (6 GHz - 18 GHz)<br>3.54 dB (18 GHz - 26 GHz)<br>4.30 dB (26 GHz - 40 GHz)                                                               |
| Uncertainty for Power line conduction emission test                                                                                           | 3.34dB (150KHz-30MHz)<br>3.72dB (9KHz-150KHz)                                                                                                                           |
| Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2. |                                                                                                                                                                         |

3. Equipment Used During Conductive Test

| Equipment                                                                        | Manufacturer | Model No.   | Serial Number | Due Date   |
|----------------------------------------------------------------------------------|--------------|-------------|---------------|------------|
| <input checked="" type="checkbox"/> RF Connected Test (RF Measurement System 1#) |              |             |               |            |
| SIGNAL ANALYZER                                                                  | R&S          | FSQ26       | 101272        | 2025/03/31 |
| Wideband Radio Communication Tester                                              | R&S          | CMW500      | 120259        | 2025/07/08 |
| MXG Vector Signal Generator                                                      | KEYSIGHT     | N5182B      | MY59100192    | 2025/03/31 |
| MXG Vector Signal Generator                                                      | Agilent      | N5182A      | MY19060405    | 2025/03/31 |
| RF Control Unit                                                                  | Tonsend      | JS0806-2    | 158060010     | 2025/03/31 |
| TEMP&HUMI Programmable Chamber                                                   | ZHIXIANG     | ZXGDJS-150L | ZX170110-A    | 2025/04/22 |
| Test Software                                                                    | Tonscend     | JS1120-3    | Ver.3.2.22    | N/A        |

4. 26dB Bandwidth

4.1. Block diagram of test setup



4.2. Limits

| FCC Part15, Subpart E/ RSS-247 |       |                                                            |
|--------------------------------|-------|------------------------------------------------------------|
| Test Item                      | Limit | Frequency Range (MHz)                                      |
| 26 dB Bandwidth                | ---   | 5150 - 5250                                                |
|                                | ---   | 5250 - 5350                                                |
|                                | ---   | For FCC: 5470 - 5725<br>For IC: 5470 - 5600<br>5650 - 5725 |

4.3. Test procedure

Connect EUT's antenna output to spectrum analyzer by RF cable.

|                  |                                                |
|------------------|------------------------------------------------|
| Center Frequency | The center frequency of the channel under test |
| Detector         | Peak                                           |
| RBW              | approximately 1% of the emission bandwidth.    |
| VBW              | > RBW                                          |
| Trace            | Max hold                                       |
| Sweep            | Auto couple                                    |

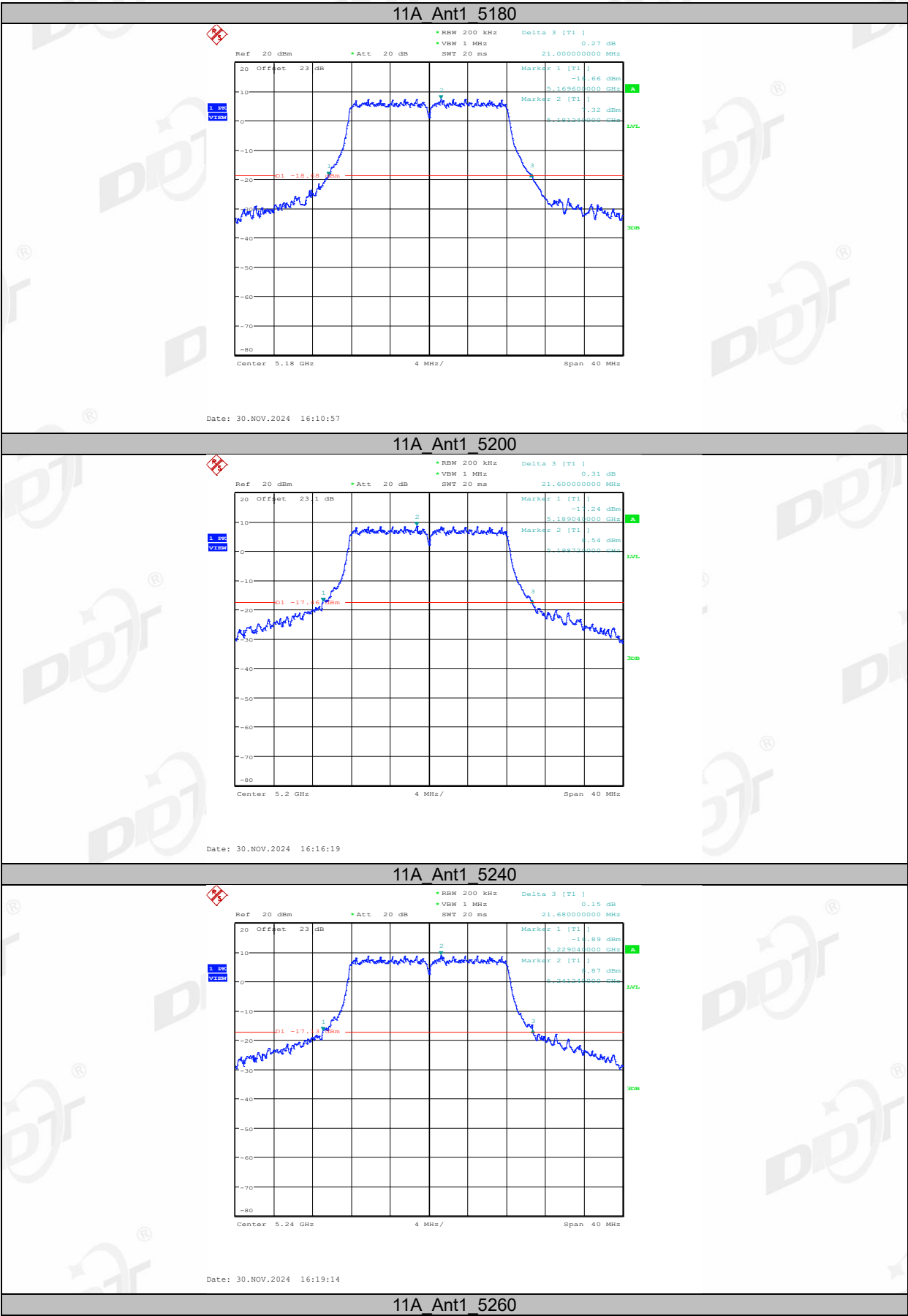
Allow the trace to stabilize, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

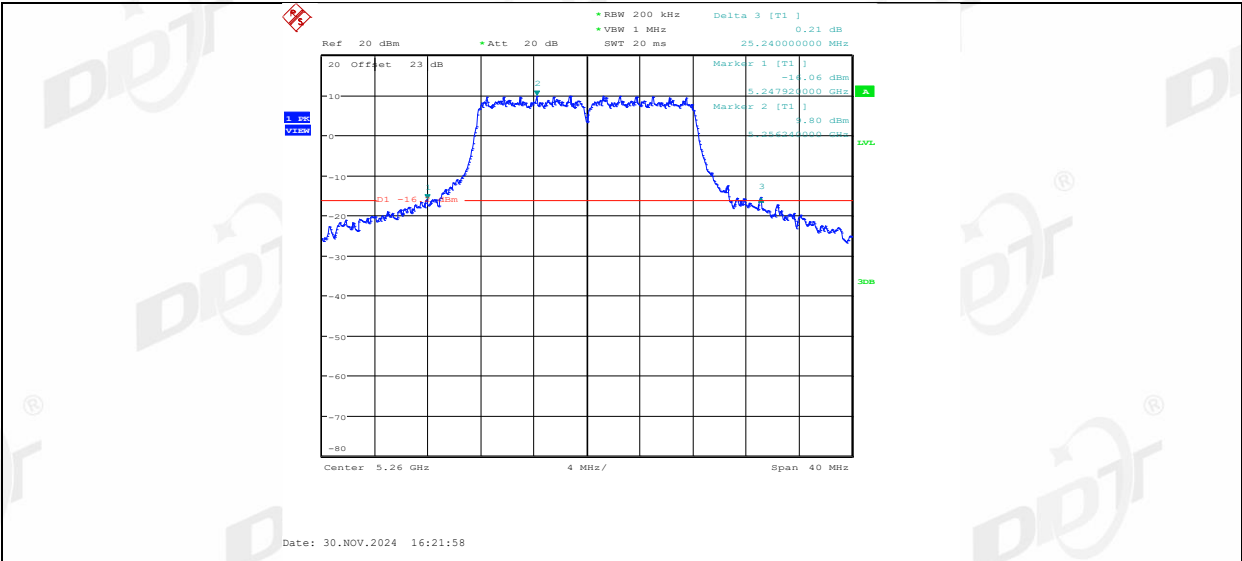
4.4. Test result

|                    |             |                |                          |
|--------------------|-------------|----------------|--------------------------|
| Test Engineer:     | Zora Zhang  | Test Site:     | RF Measurement System 1# |
| Ambient Condition: | 24.3℃,46%RH | Test Date:     | 2024.11.30-2025.01.03    |
| Test Power Supply: | Battery     | Sample Number: | S24111520-011            |

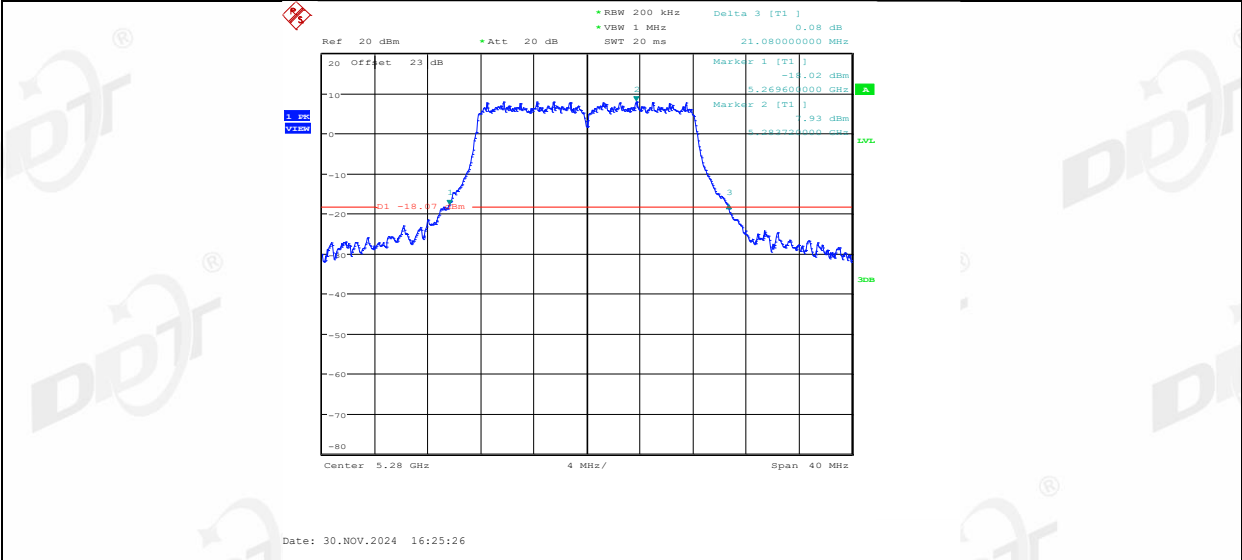
| Test Mode  | Antenna | Frequency[MHz] | 26db EBW [MHz] | FL[MHz] | FH[MHz] | Limit[MHz] | Verdict |
|------------|---------|----------------|----------------|---------|---------|------------|---------|
| 11A        | Ant1    | 5180           | 21.00          | 5169.60 | 5190.60 | ---        | ---     |
|            |         | 5200           | 21.60          | 5189.04 | 5210.64 | ---        | ---     |
|            |         | 5240           | 21.68          | 5229.04 | 5250.72 | ---        | ---     |
|            |         | 5260           | 25.24          | 5247.92 | 5273.16 | ---        | ---     |
|            |         | 5280           | 21.08          | 5269.60 | 5290.68 | ---        | ---     |
|            |         | 5320           | 21.16          | 5309.52 | 5330.68 | ---        | ---     |
|            |         | 5500           | 22.32          | 5489.04 | 5511.36 | ---        | ---     |
|            |         | 5580           | 25.24          | 5567.92 | 5593.16 | ---        | ---     |
|            |         | 5700           | 25.96          | 5687.24 | 5713.20 | ---        | ---     |
|            |         | 5720           | 24.20          | 5708.92 | 5733.12 | ---        | ---     |
|            |         | 5720 UNII-2C   | 16.08          | 5708.92 | 5725    | ---        | ---     |
|            |         | 5720 UNII-3    | 8.12           | 5725    | 5733.12 | ---        | ---     |
|            |         | 5745           | 25.64          | 5732.52 | 5758.16 | ---        | ---     |
|            |         | 5785           | 25.28          | 5772.88 | 5798.16 | ---        | ---     |
|            |         | 5825           | 21.64          | 5814.08 | 5835.72 | ---        | ---     |
| 11AX20SISO | Ant1    | 5180           | 23.20          | 5168.20 | 5191.40 | ---        | ---     |
|            |         | 5200           | 23.72          | 5187.72 | 5211.44 | ---        | ---     |
|            |         | 5240           | 23.60          | 5227.84 | 5251.44 | ---        | ---     |
|            |         | 5260           | 23.76          | 5247.72 | 5271.48 | ---        | ---     |
|            |         | 5280           | 22.44          | 5268.76 | 5291.20 | ---        | ---     |
|            |         | 5320           | 22.40          | 5308.76 | 5331.16 | ---        | ---     |
|            |         | 5500           | 23.52          | 5487.92 | 5511.44 | ---        | ---     |
|            |         | 5580           | 25.00          | 5566.48 | 5591.48 | ---        | ---     |
|            |         | 5700           | 26.96          | 5685.76 | 5712.72 | ---        | ---     |
|            |         | 5720           | 22.56          | 5708.76 | 5731.32 | ---        | ---     |
|            |         | 5720 UNII-2C   | 16.24          | 5708.76 | 5725    | ---        | ---     |
|            |         | 5720 UNII-3    | 6.32           | 5725    | 5731.32 | ---        | ---     |
|            |         | 5745           | 24.96          | 5731.52 | 5756.48 | ---        | ---     |
|            |         | 5785           | 23.68          | 5772.76 | 5796.44 | ---        | ---     |
|            |         | 5825           | 23.24          | 5813.16 | 5836.40 | ---        | ---     |

4.5. Test graphs

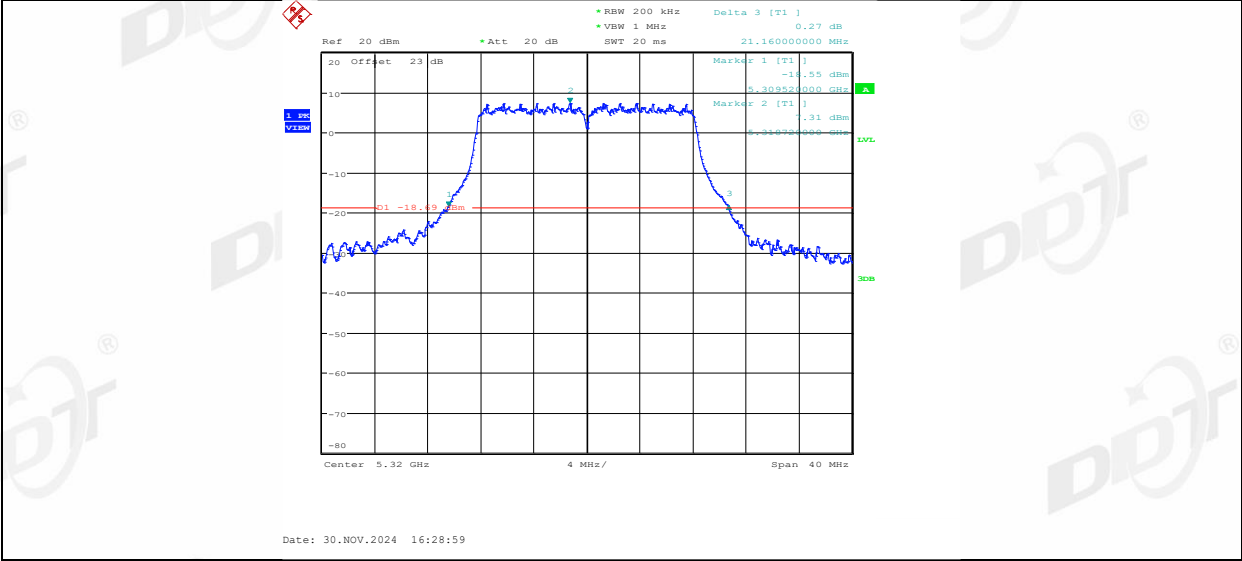




11A\_Ant1\_5280

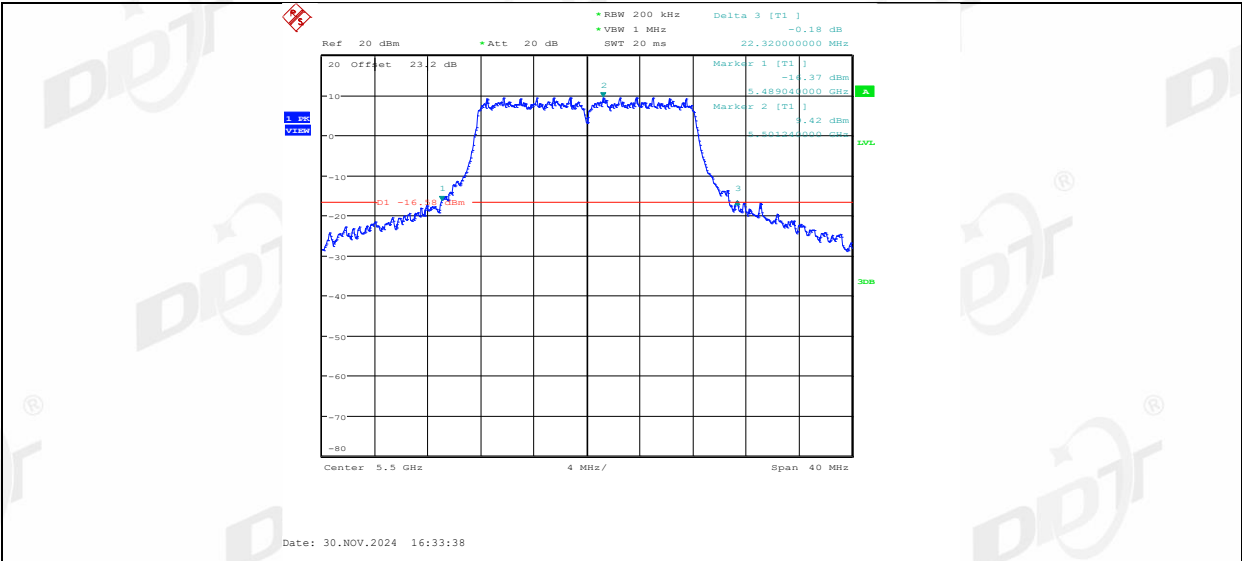


11A\_Ant1\_5320

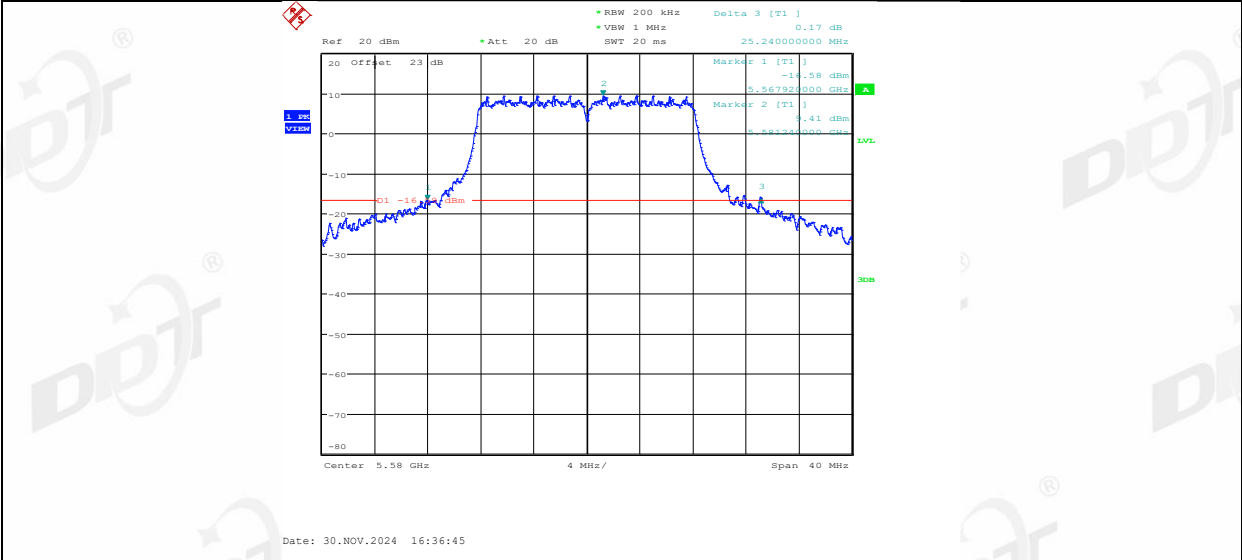


11A\_Ant1\_5500

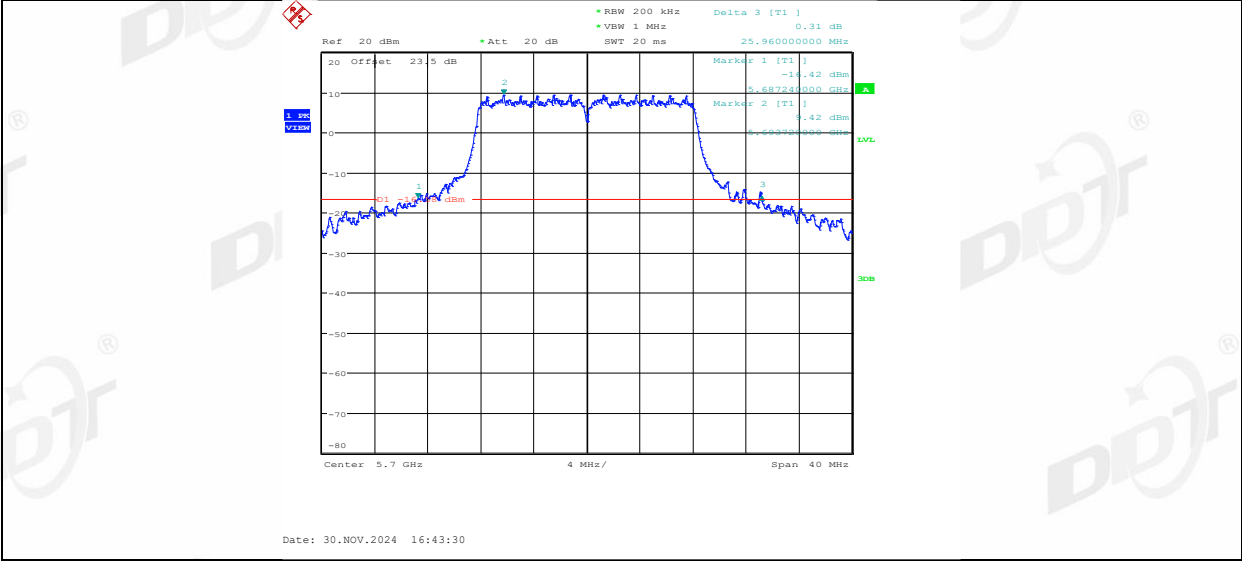




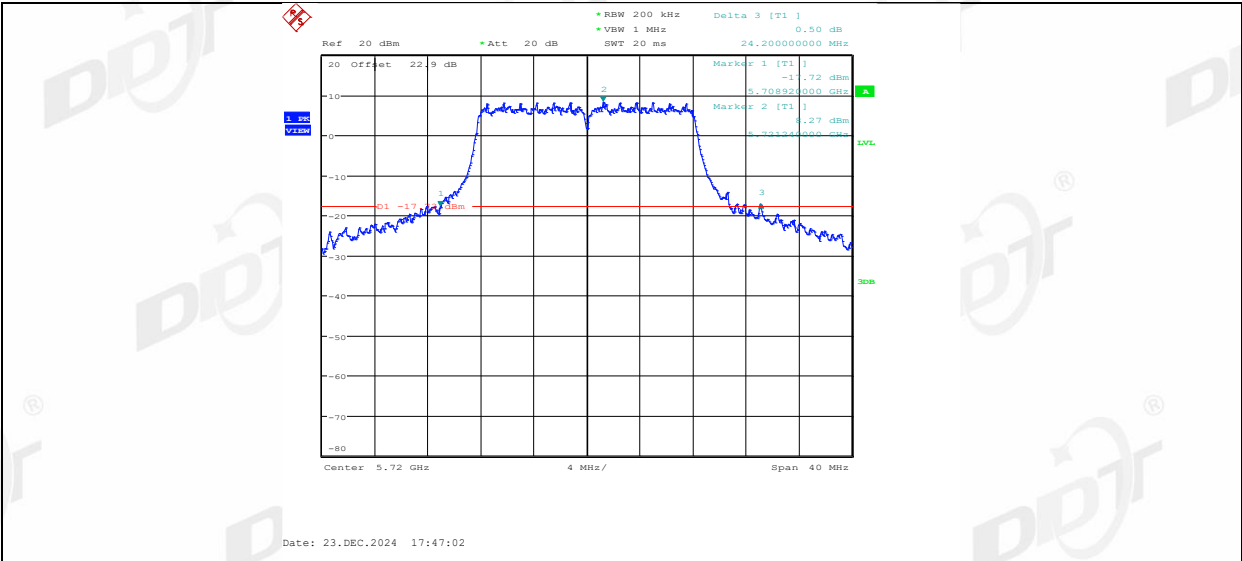
11A\_Ant1\_5580



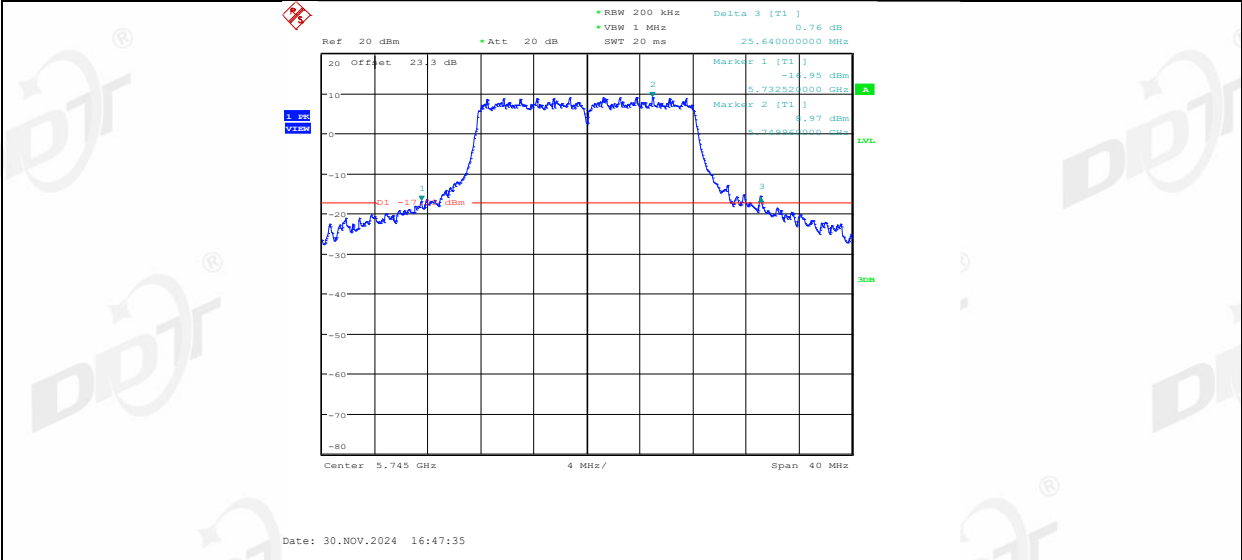
11A\_Ant1\_5700



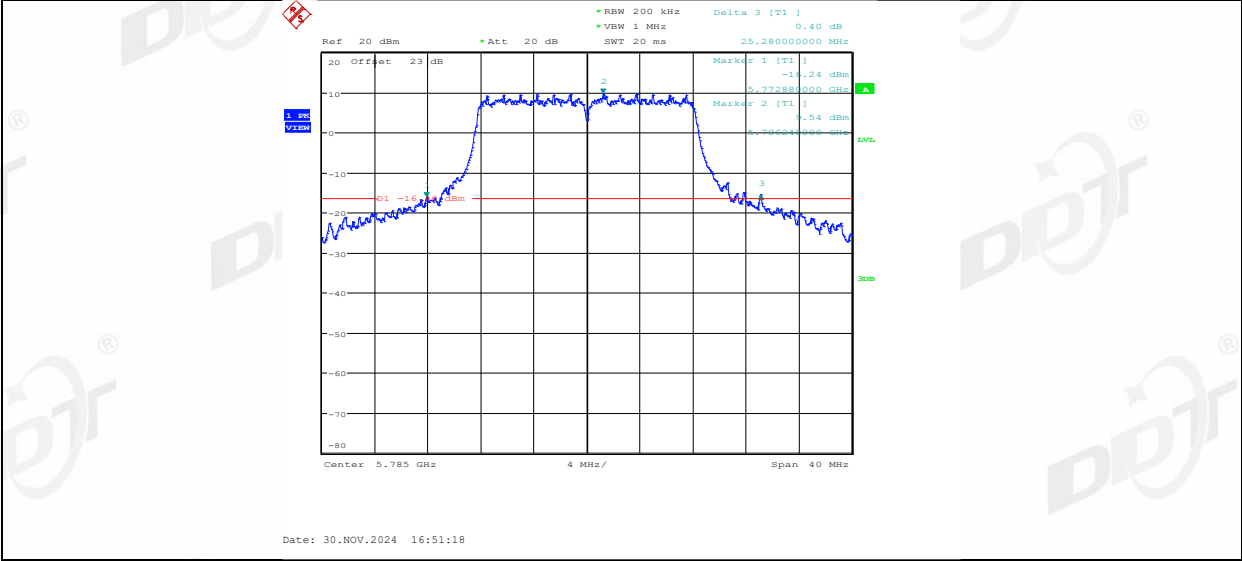
11A\_Ant1\_5720



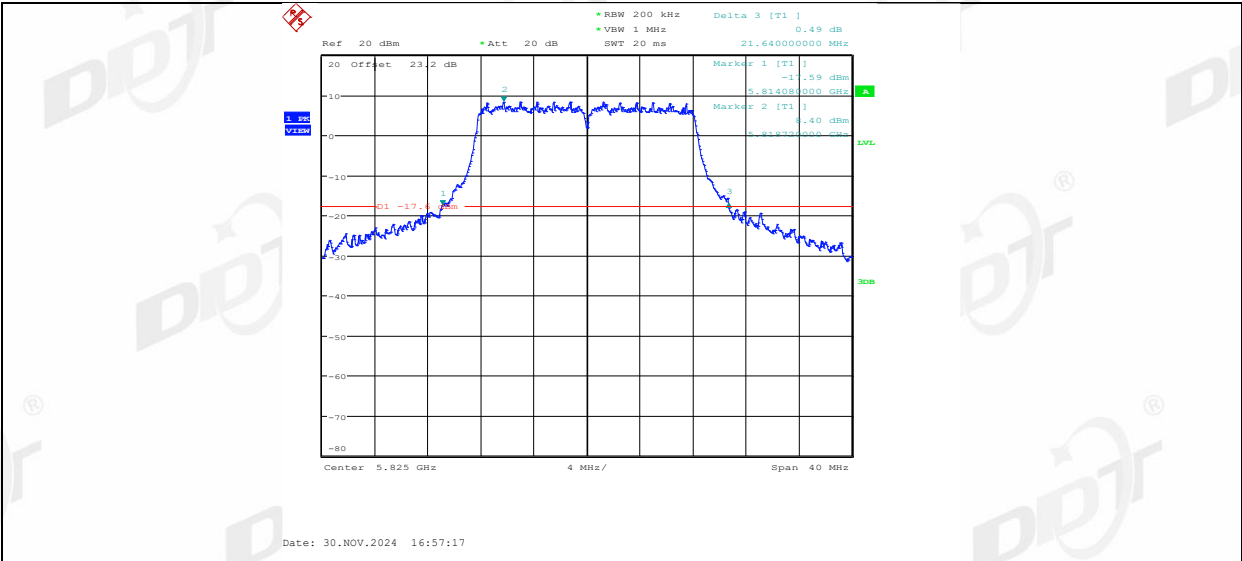
11A\_Ant1\_5745



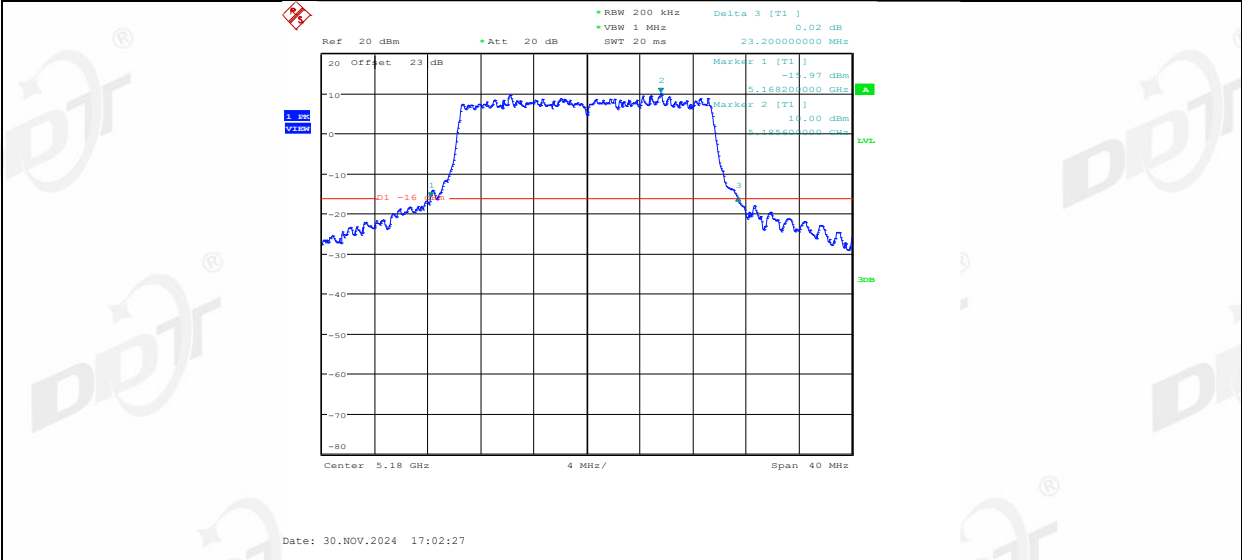
11A\_Ant1\_5785



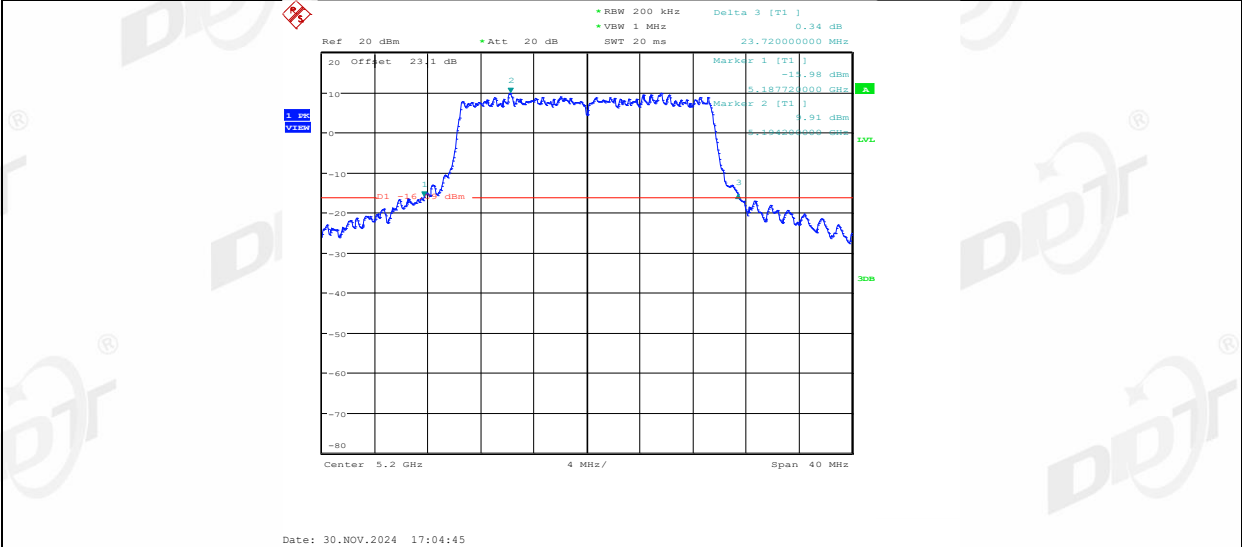
11A\_Ant1\_5825



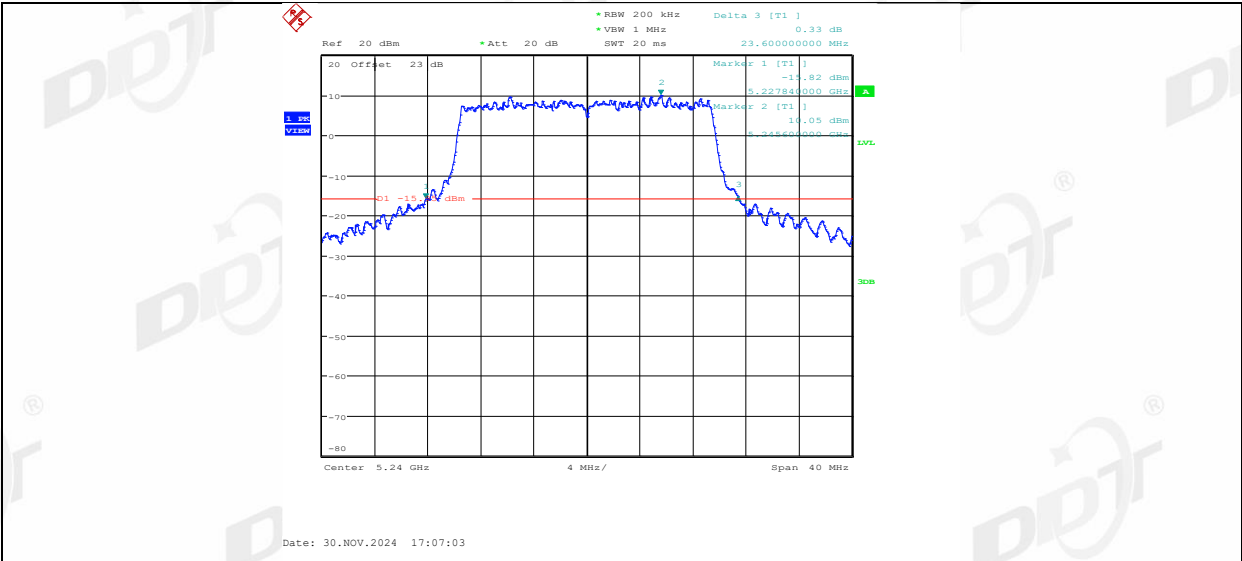
11AX20SISO\_Ant1\_5180



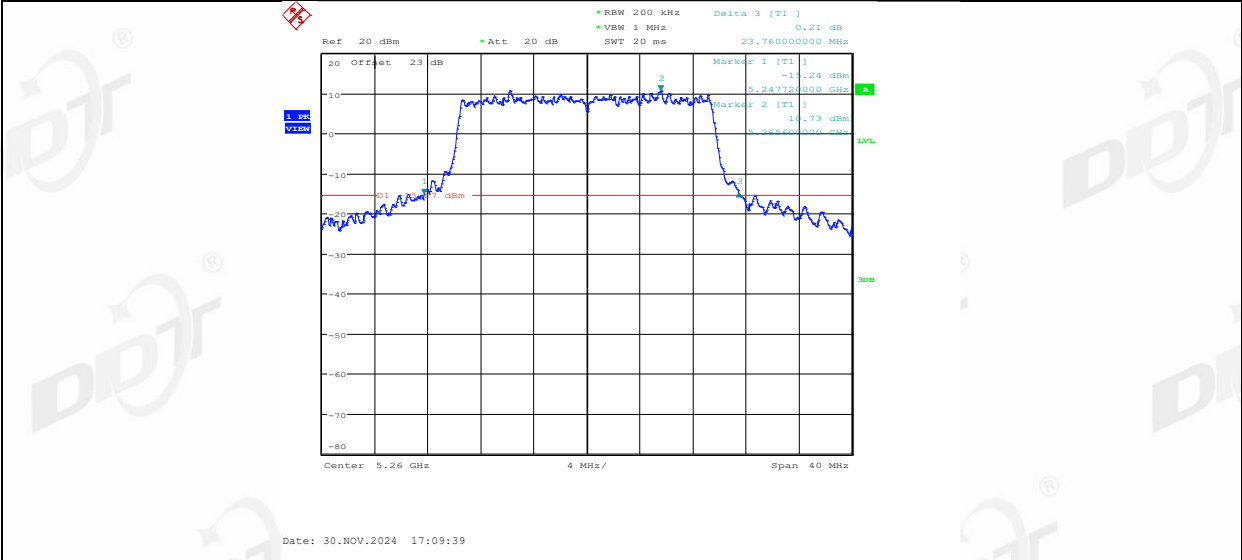
11AX20SISO\_Ant1\_5200



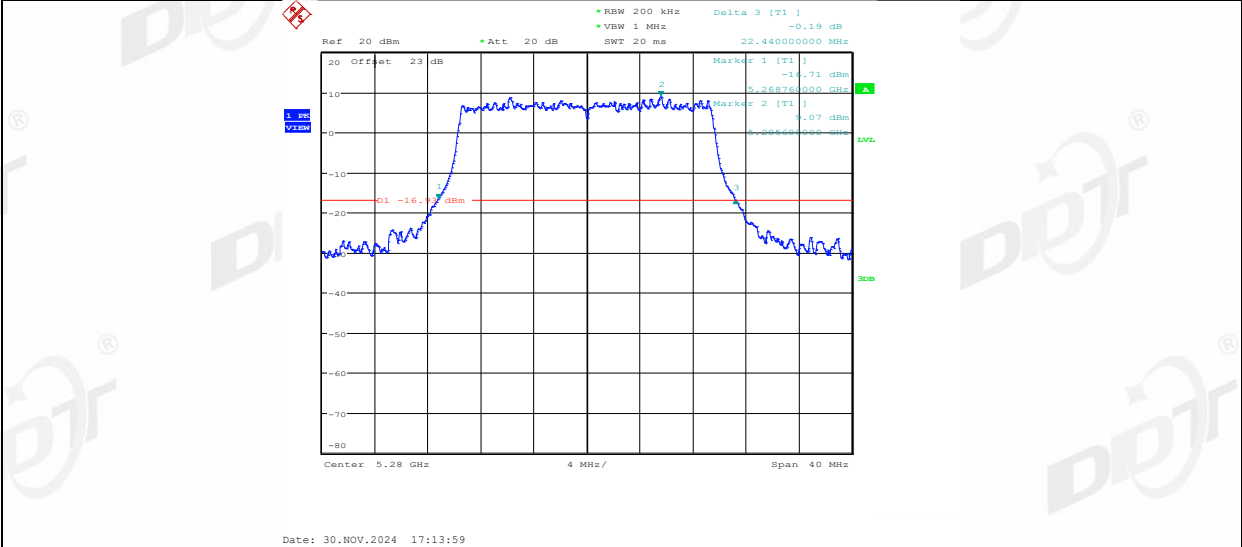
11AX20SISO\_Ant1\_5240



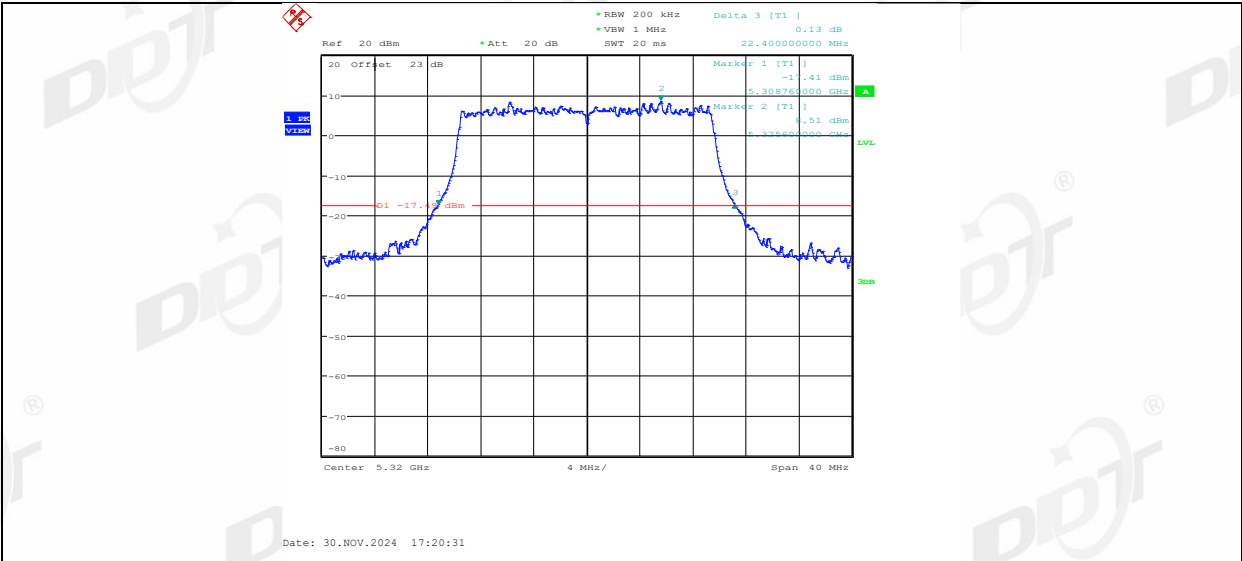
11AX20SISO\_Ant1\_5260



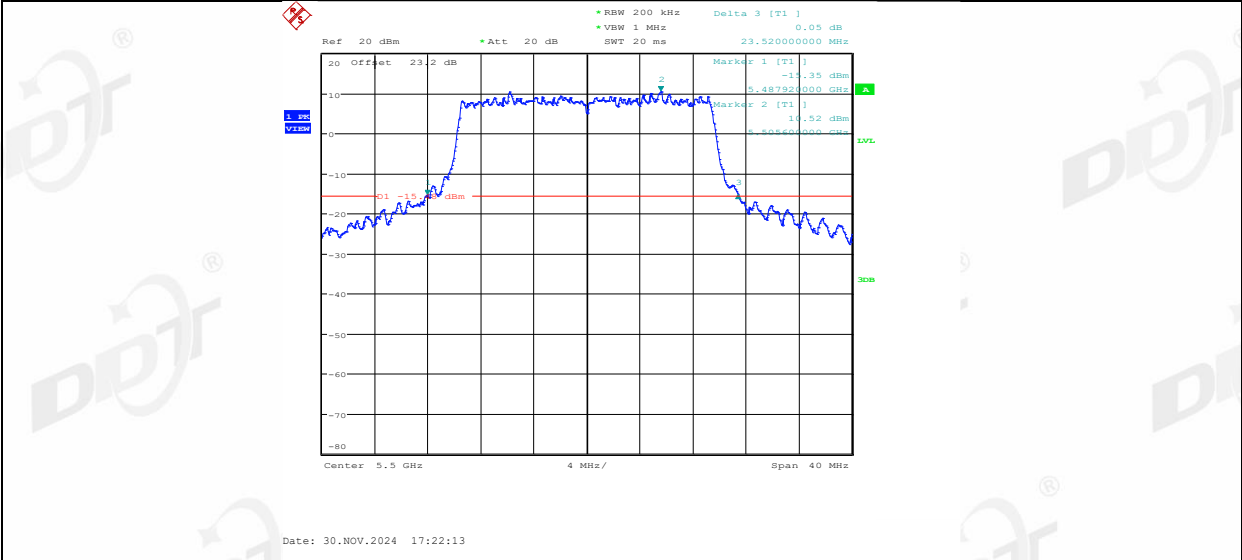
11AX20SISO\_Ant1\_5280



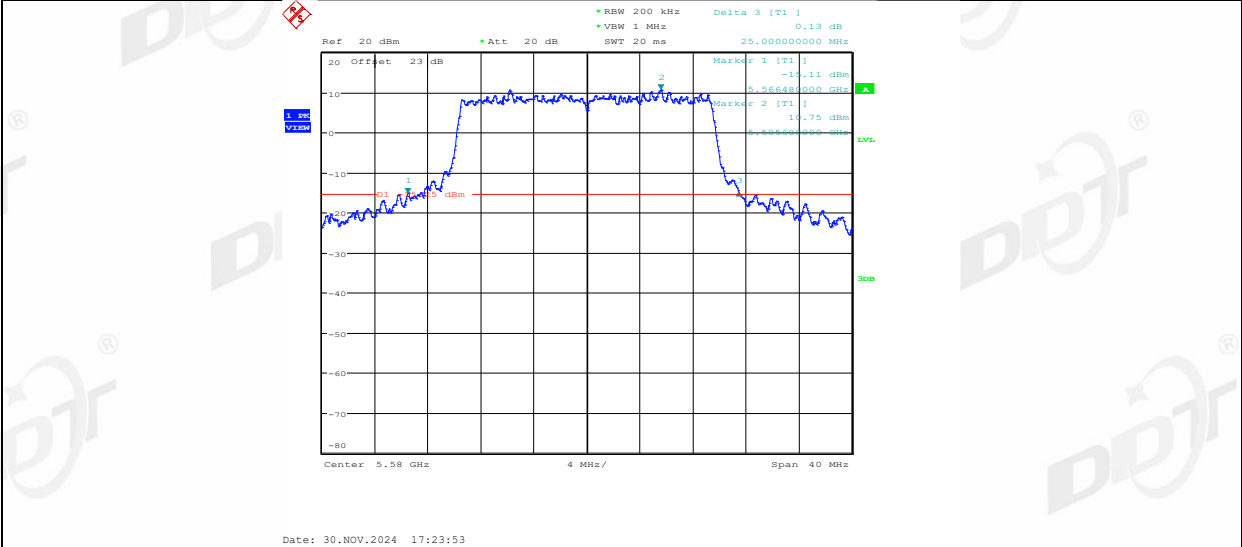
11AX20SISO\_Ant1\_5320



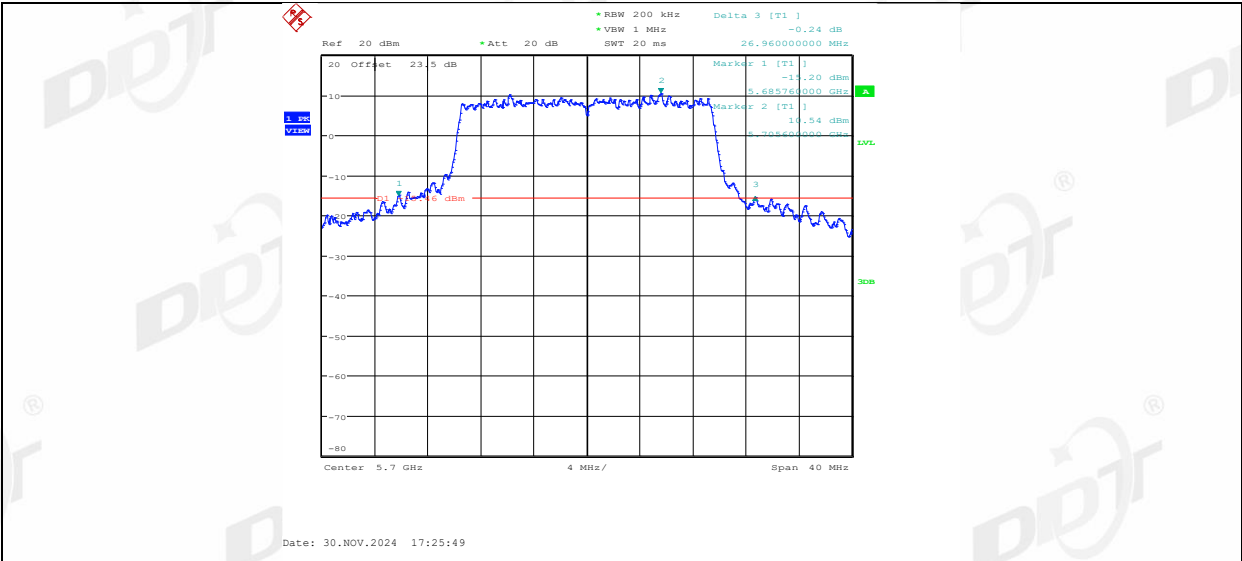
11AX20SISO\_Ant1\_5500



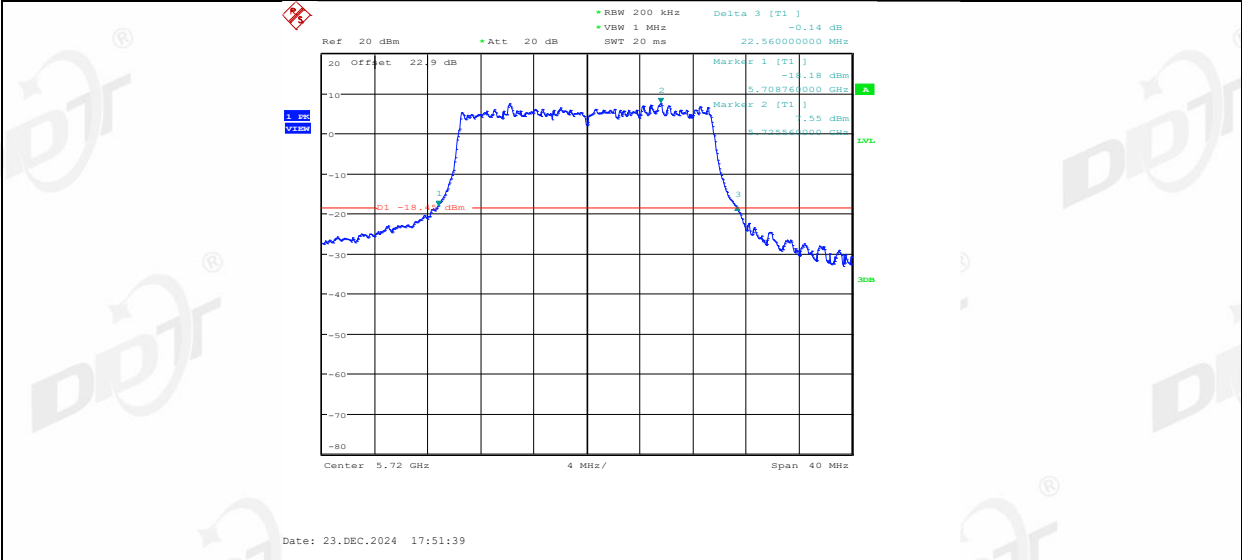
11AX20SISO\_Ant1\_5580



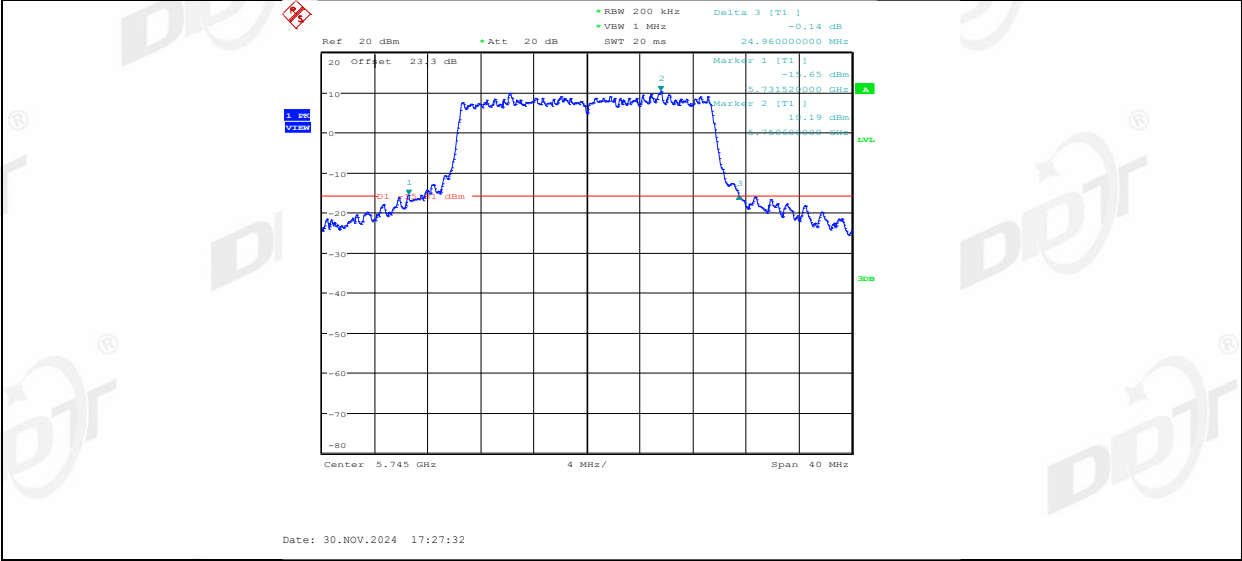
11AX20SISO\_Ant1\_5700



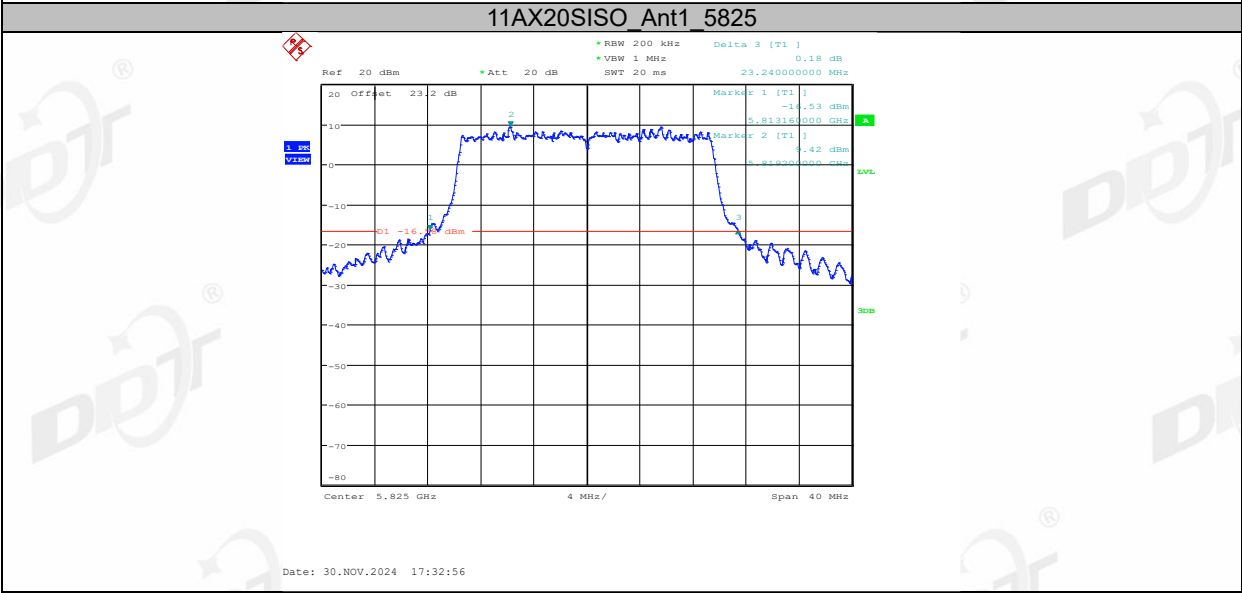
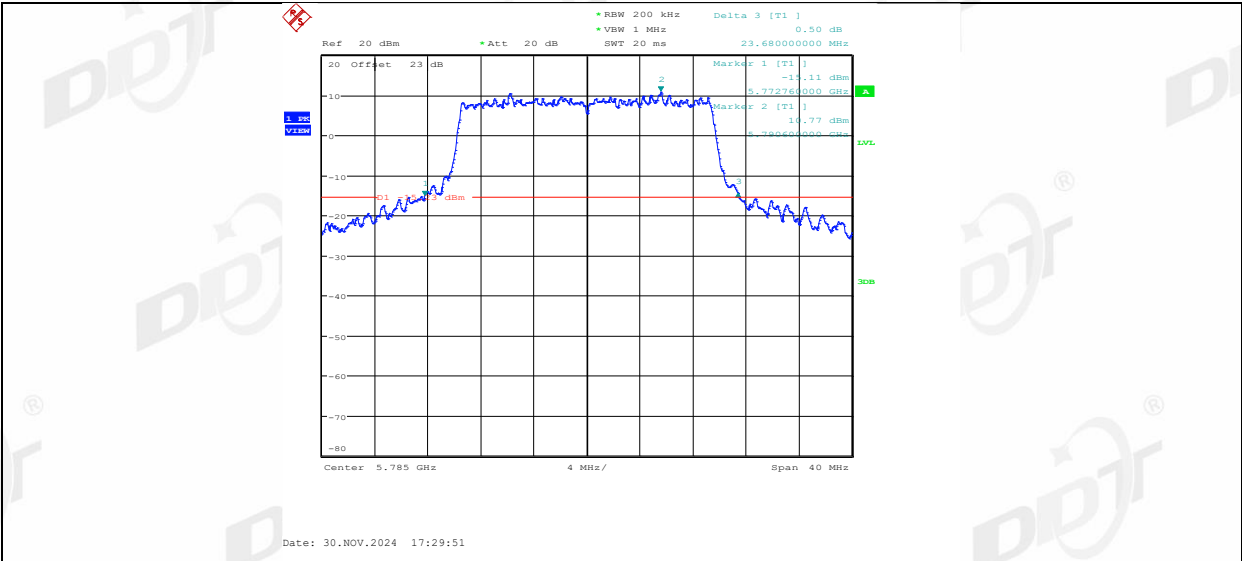
11AX20SISO\_Ant1\_5720



11AX20SISO\_Ant1\_5745

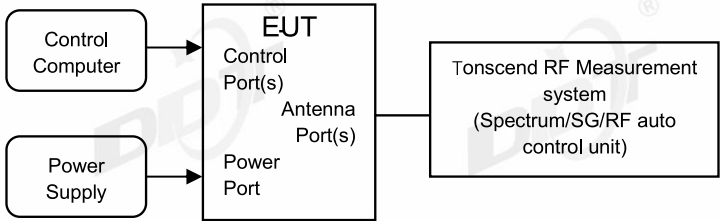


11AX20SISO\_Ant1\_5785



5. 6dB Bandwidth

5.1. Block diagram of test setup



5.2. Limits

| FCC Part15, Subpart E/ RSS-247 |                 |                       |
|--------------------------------|-----------------|-----------------------|
| Test Item                      | Limit           | Frequency Range (MHz) |
| 6 dB Bandwidth                 | Minimum 500 kHz | 5725 - 5850           |

5.3. Test procedure

Connect EUT's antenna output to spectrum analyzer by RF cable.

|                  |                                                                                                     |
|------------------|-----------------------------------------------------------------------------------------------------|
| Center Frequency | The center frequency of the channel under test                                                      |
| Detector         | Peak                                                                                                |
| RBW              | For 6 dB Bandwidth: RBW=100 kHz<br>For 26 dB Bandwidth: approximately 1% of the emission bandwidth. |
| VBW              | For 6 dB Bandwidth: VBW=300 kHz<br>For 26 dB Bandwidth: >3 RBW                                      |
| Trace            | Max hold                                                                                            |
| Sweep            | Auto couple                                                                                         |

Allow the trace to stabilize, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

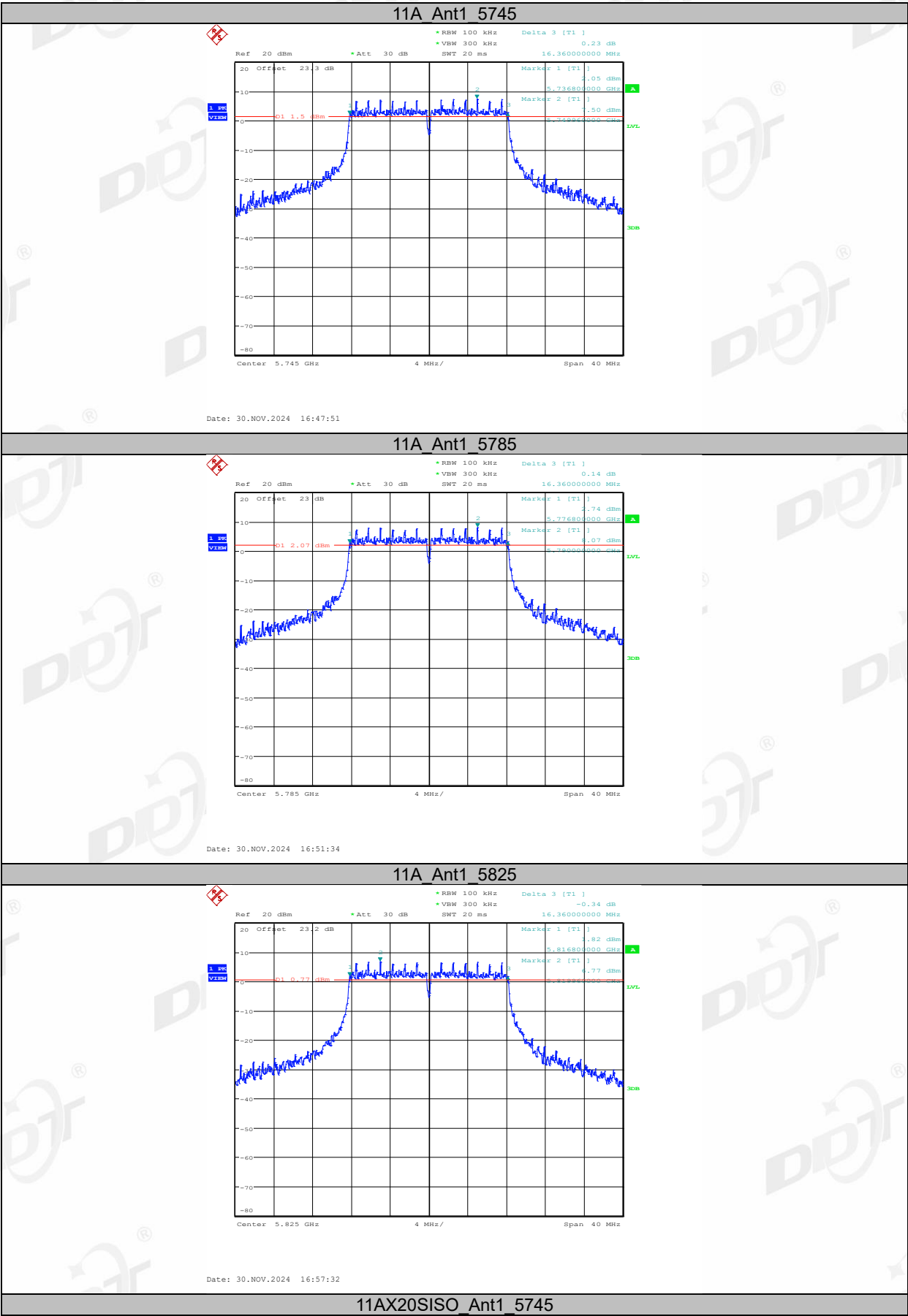


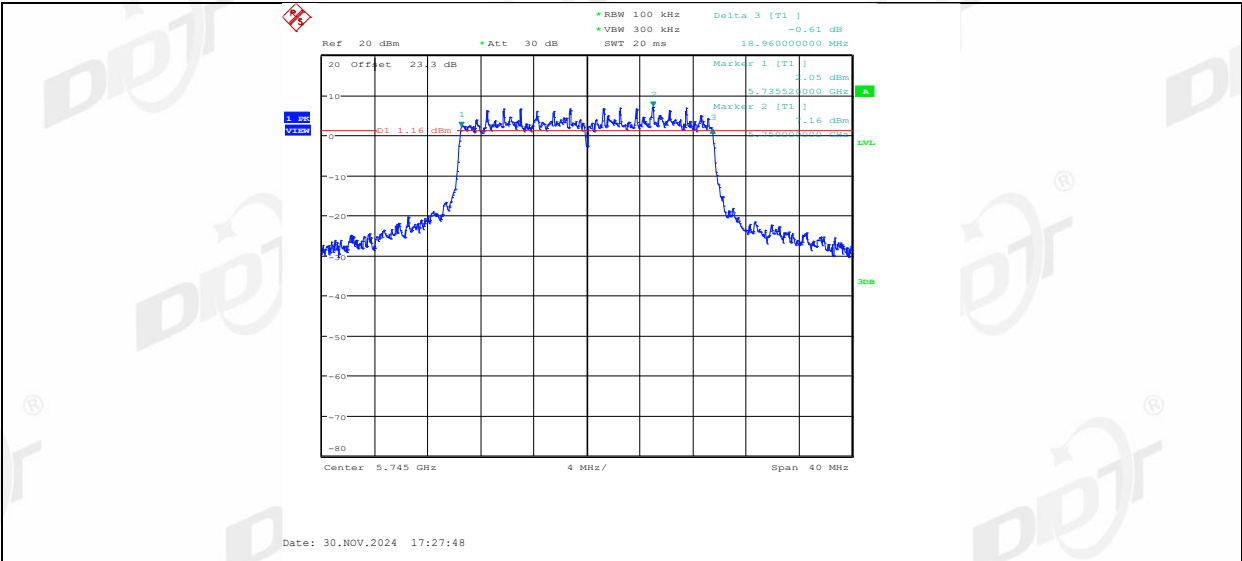
5.4. Test result B4

|                    |             |                |                          |
|--------------------|-------------|----------------|--------------------------|
| Test Engineer:     | Zora Zhang  | Test Site:     | RF Measurement System 1# |
| Ambient Condition: | 24.3℃,46%RH | Test Date:     | 2024.11.30-2025.01.03    |
| Test Power Supply: | Battery     | Sample Number: | S24111520-011            |

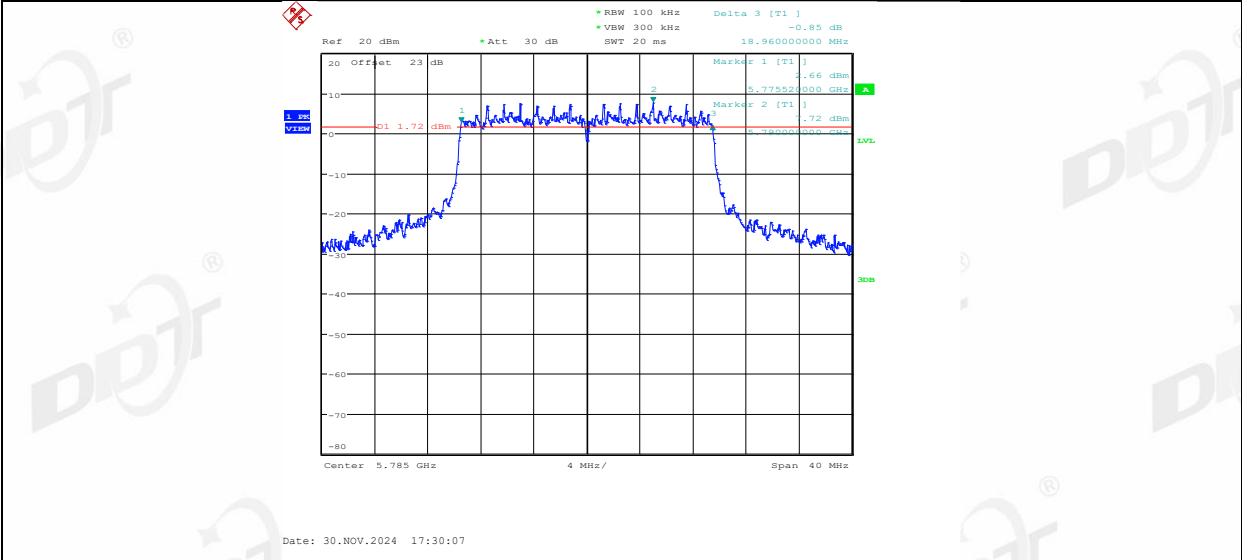
| Test Mode  | Antenna | Frequency[MHz] | 6db EBW [MHz] | FL[MHz] | FH[MHz] | Limit[MHz] | Verdict |
|------------|---------|----------------|---------------|---------|---------|------------|---------|
| 11A        | Ant1    | 5745           | 16.36         | 5736.80 | 5753.16 | 0.5        | PASS    |
|            |         | 5785           | 16.36         | 5776.80 | 5793.16 | 0.5        | PASS    |
|            |         | 5825           | 16.36         | 5816.80 | 5833.16 | 0.5        | PASS    |
| 11AX20SISO | Ant1    | 5745           | 18.96         | 5735.52 | 5754.48 | 0.5        | PASS    |
|            |         | 5785           | 18.96         | 5775.52 | 5794.48 | 0.5        | PASS    |
|            |         | 5825           | 19.00         | 5815.48 | 5834.48 | 0.5        | PASS    |

5.5. Test graphs B4

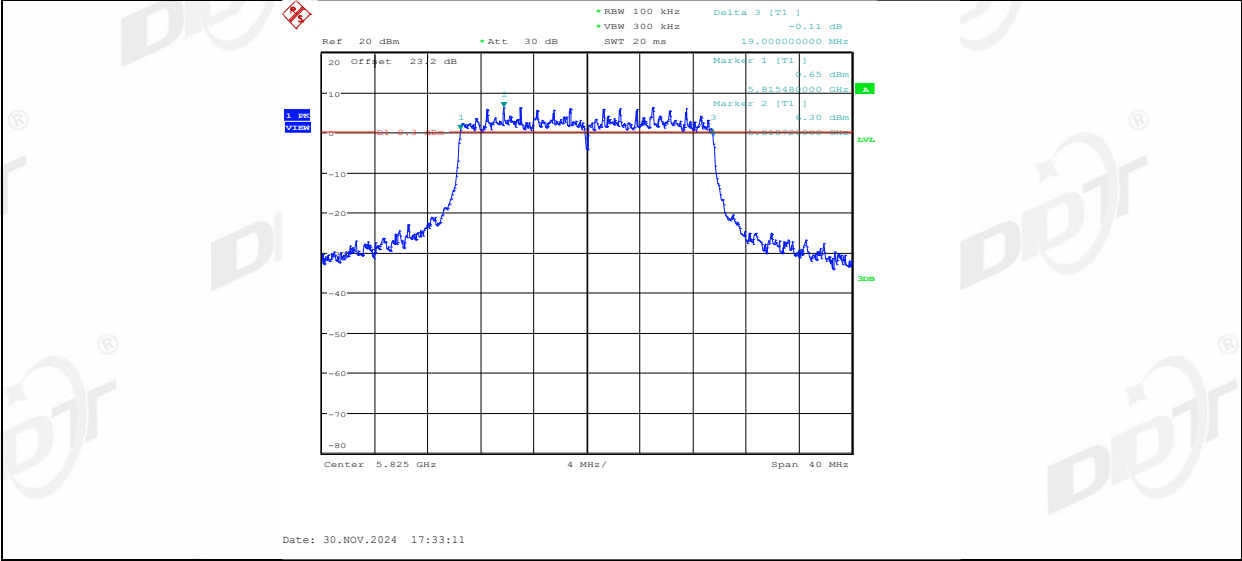




11AX20SISO\_Ant1\_5785

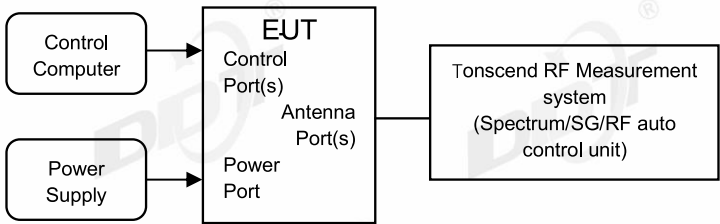


11AX20SISO\_Ant1\_5825



6. 99% Bandwidth

6.1. Block diagram of test setup



6.2. Limits

Just for Report.

6.3. Test procedure

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

|                  |                                                |
|------------------|------------------------------------------------|
| Center Frequency | The center frequency of the channel under test |
| Detector         | Peak                                           |
| RBW              | 1% to 5% of the OBW                            |
| VBW              | approximately three times the RBW              |
| Trace            | Max hold                                       |

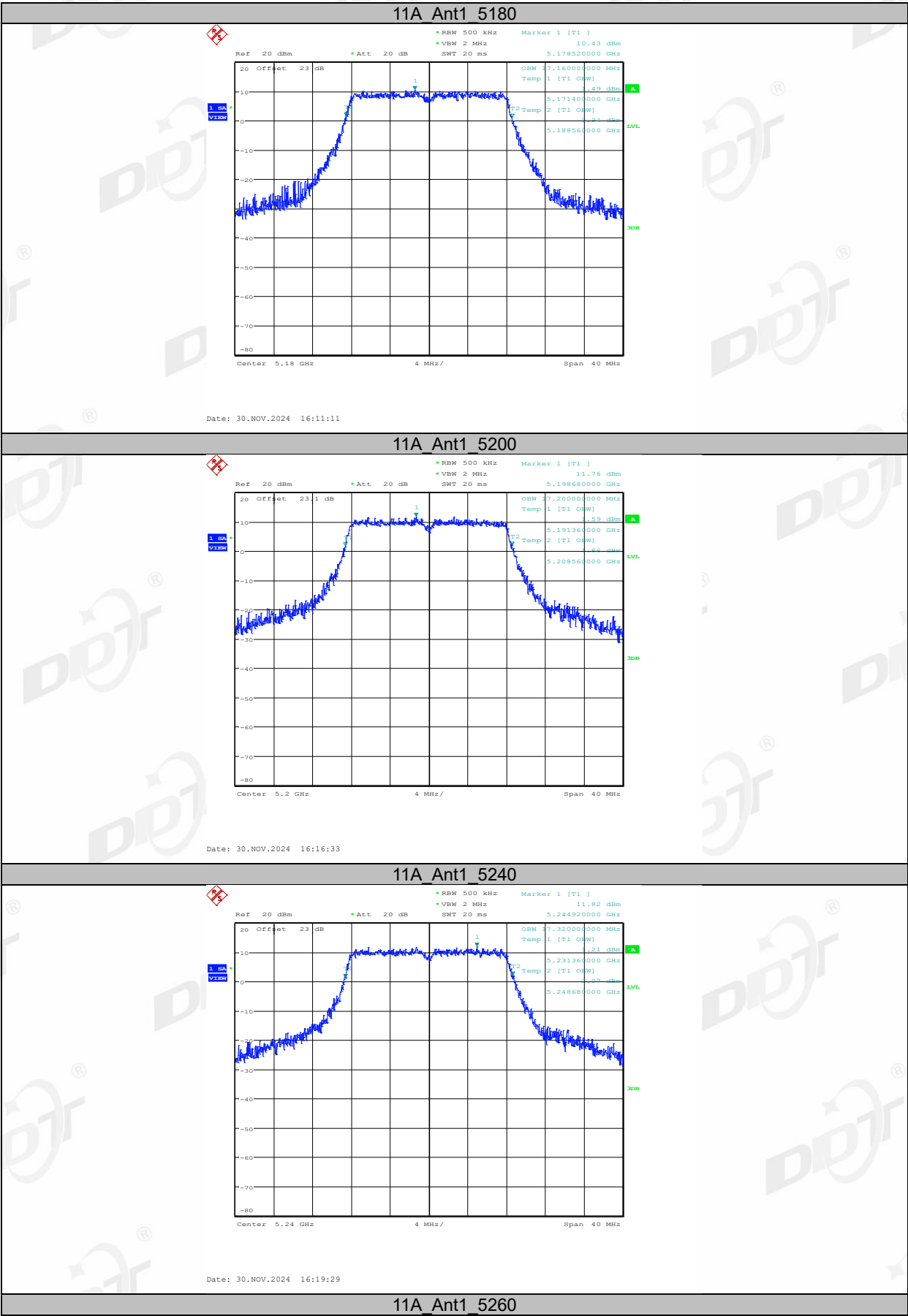
Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

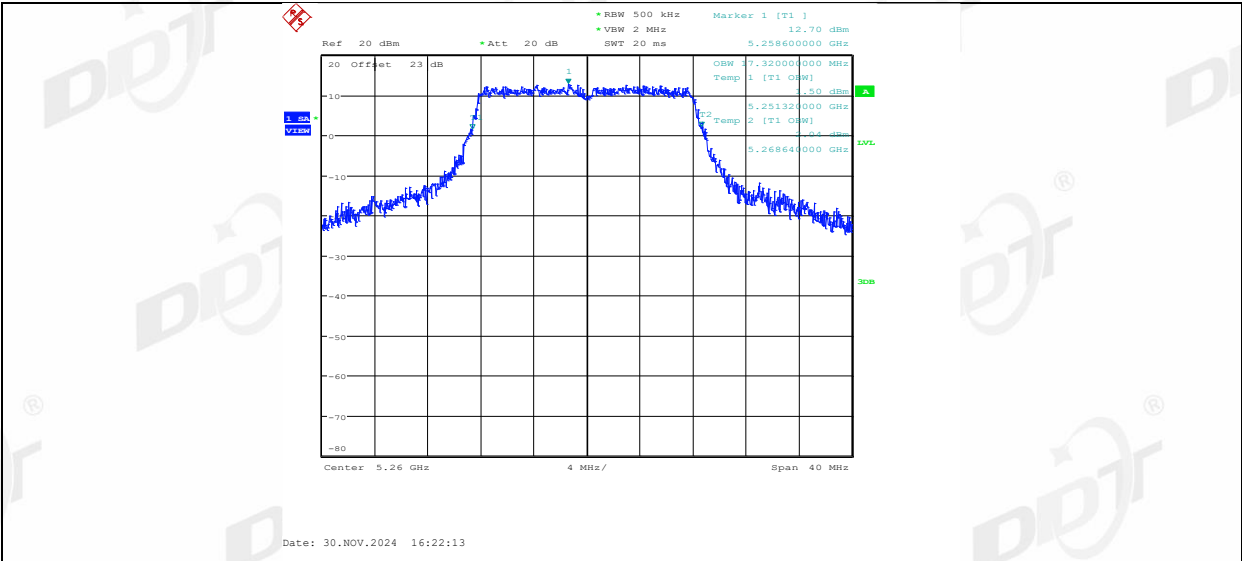
6.4. Test result

|                    |             |                |                          |
|--------------------|-------------|----------------|--------------------------|
| Test Engineer:     | Zora Zhang  | Test Site:     | RF Measurement System 1# |
| Ambient Condition: | 24.3℃,46%RH | Test Date:     | 2024.11.30-2025.01.03    |
| Test Power Supply: | Battery     | Sample Number: | S24111520-011            |

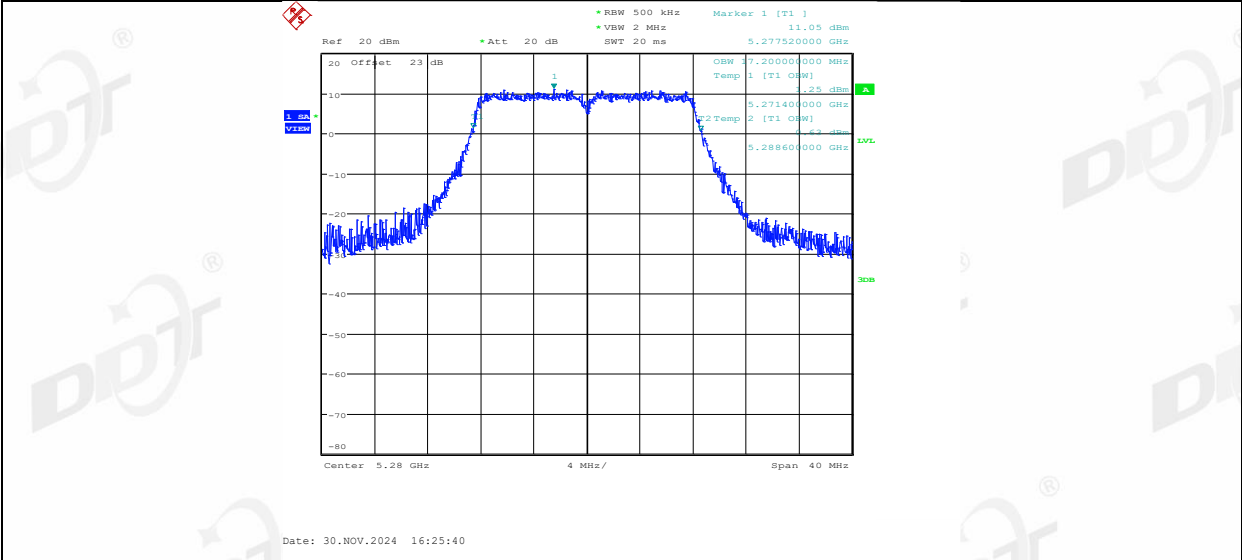
| Test Mode  | Antenna | Frequency [MHz] | OCB [MHz] | FL[MHz]   | FH[MHz]   | Limit[MHz] | Verdict |
|------------|---------|-----------------|-----------|-----------|-----------|------------|---------|
| 11A        | Ant1    | 5180            | 17.16     | 5171.4000 | 5188.5600 | ---        | ---     |
|            |         | 5200            | 17.2      | 5191.3600 | 5208.5600 | ---        | ---     |
|            |         | 5240            | 17.32     | 5231.3600 | 5248.6800 | ---        | ---     |
|            |         | 5260            | 17.32     | 5251.3200 | 5268.6400 | ---        | ---     |
|            |         | 5280            | 17.2      | 5271.4000 | 5288.6000 | ---        | ---     |
|            |         | 5320            | 17.2      | 5311.3600 | 5328.5600 | ---        | ---     |
|            |         | 5500            | 17.32     | 5491.3200 | 5508.6400 | ---        | ---     |
|            |         | 5580            | 17.28     | 5571.3600 | 5588.6400 | ---        | ---     |
|            |         | 5700            | 17.44     | 5691.2800 | 5708.7200 | ---        | ---     |
|            |         | 5720            | 17.36     | 5711.3200 | 5728.6800 | ---        | ---     |
|            |         | 5720 UNII-2C    | 13.68     | 5711.3200 | 5725      | ---        | ---     |
|            |         | 5720 UNII-3     | 3.68      | 5725      | 5728.6800 | ---        | ---     |
|            |         | 5745            | 17.44     | 5736.3200 | 5753.7600 | ---        | ---     |
|            |         | 5785            | 17.32     | 5776.3600 | 5793.6800 | ---        | ---     |
|            |         | 5825            | 17.28     | 5816.3200 | 5833.6000 | ---        | ---     |
| 11AX20SISO | Ant1    | 5180            | 19.36     | 5170.2800 | 5189.6400 | ---        | ---     |
|            |         | 5200            | 19.44     | 5190.2000 | 5209.6400 | ---        | ---     |
|            |         | 5240            | 19.4      | 5230.2800 | 5249.6800 | ---        | ---     |
|            |         | 5260            | 19.48     | 5250.2000 | 5269.6800 | ---        | ---     |
|            |         | 5280            | 19.36     | 5270.2800 | 5289.6400 | ---        | ---     |
|            |         | 5320            | 19.36     | 5310.2800 | 5329.6400 | ---        | ---     |
|            |         | 5500            | 19.44     | 5490.2000 | 5509.6400 | ---        | ---     |
|            |         | 5580            | 19.48     | 5570.2000 | 5589.6800 | ---        | ---     |
|            |         | 5700            | 19.44     | 5690.2000 | 5709.6400 | ---        | ---     |
|            |         | 5720            | 19.36     | 5710.2800 | 5729.6400 | ---        | ---     |
|            |         | 5720 UNII-2C    | 14.72     | 5710.2800 | 5725      | ---        | ---     |
|            |         | 5720 UNII-3     | 4.64      | 5725      | 5729.6400 | ---        | ---     |
|            |         | 5745            | 19.44     | 5735.2400 | 5754.6800 | ---        | ---     |
|            |         | 5785            | 19.44     | 5775.2400 | 5794.6800 | ---        | ---     |
|            |         | 5825            | 19.4      | 5815.2400 | 5834.6400 | ---        | ---     |

6.5. Test graphs

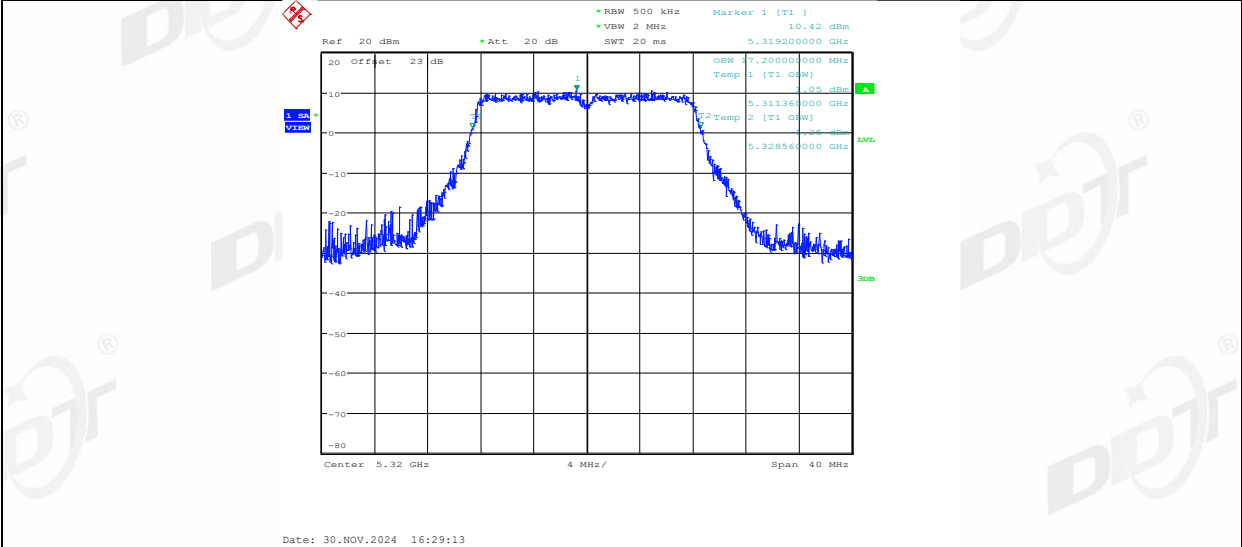




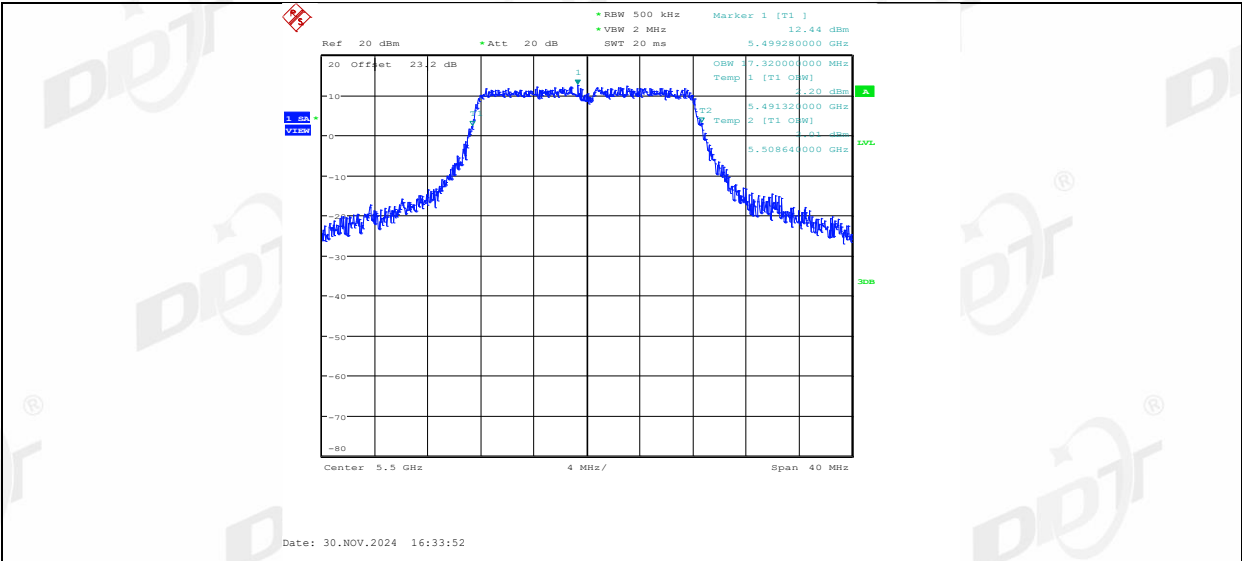
11A\_Ant1\_5280



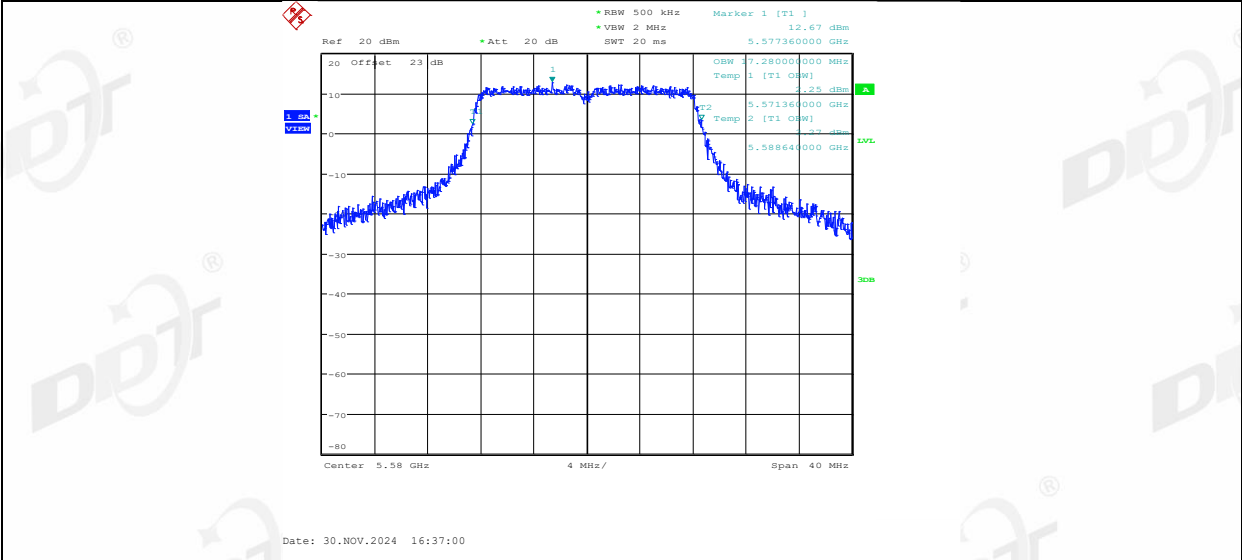
11A\_Ant1\_5320



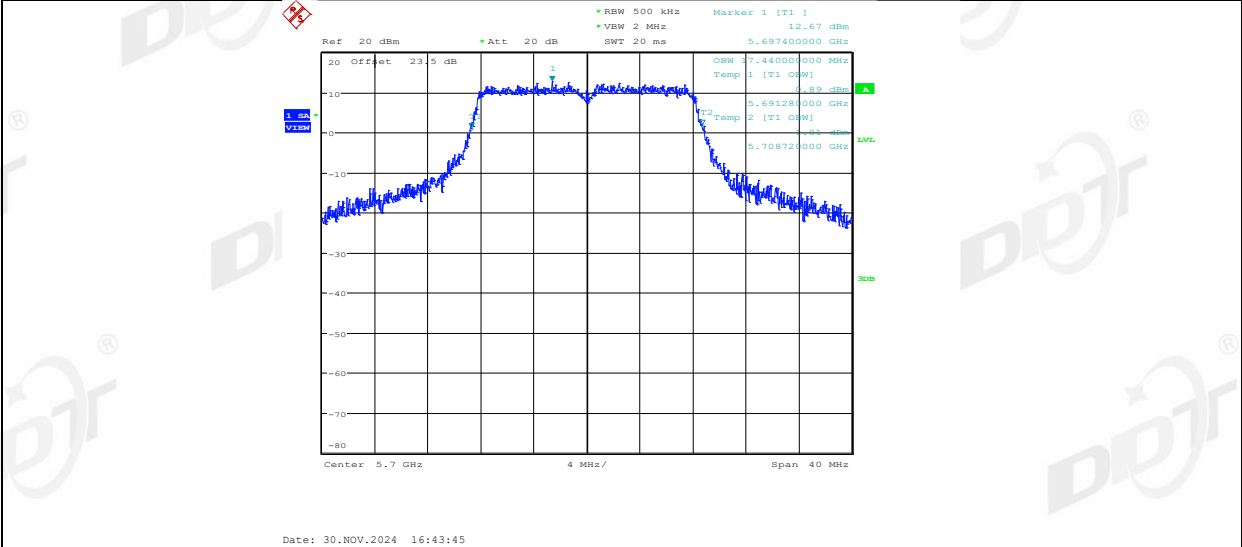
11A\_Ant1\_5500



11A\_Ant1\_5580

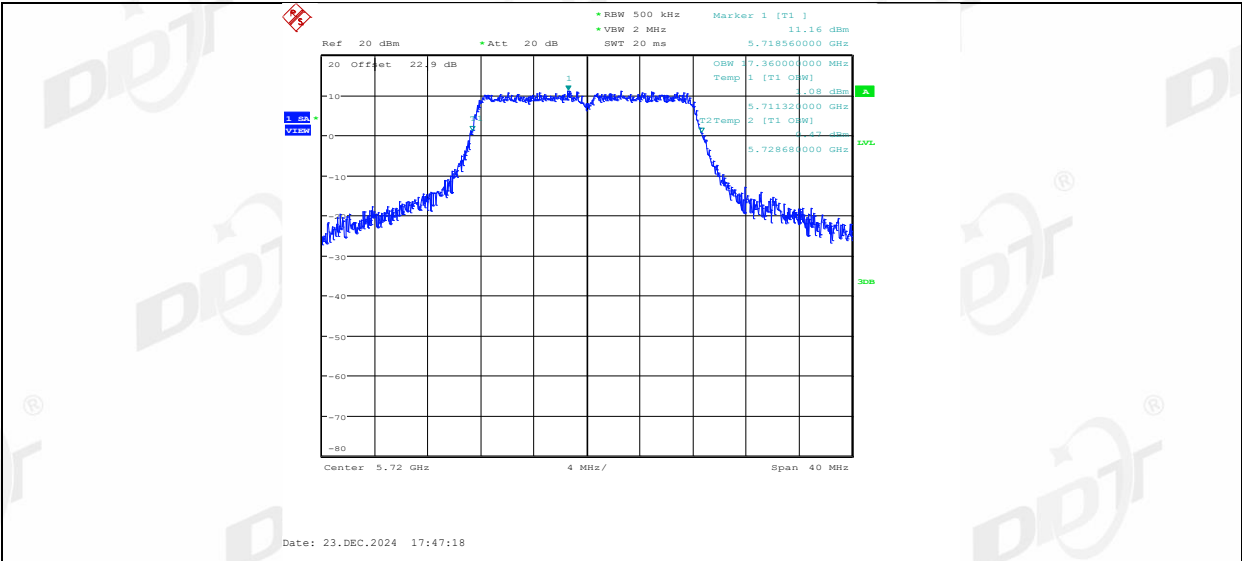


11A\_Ant1\_5700

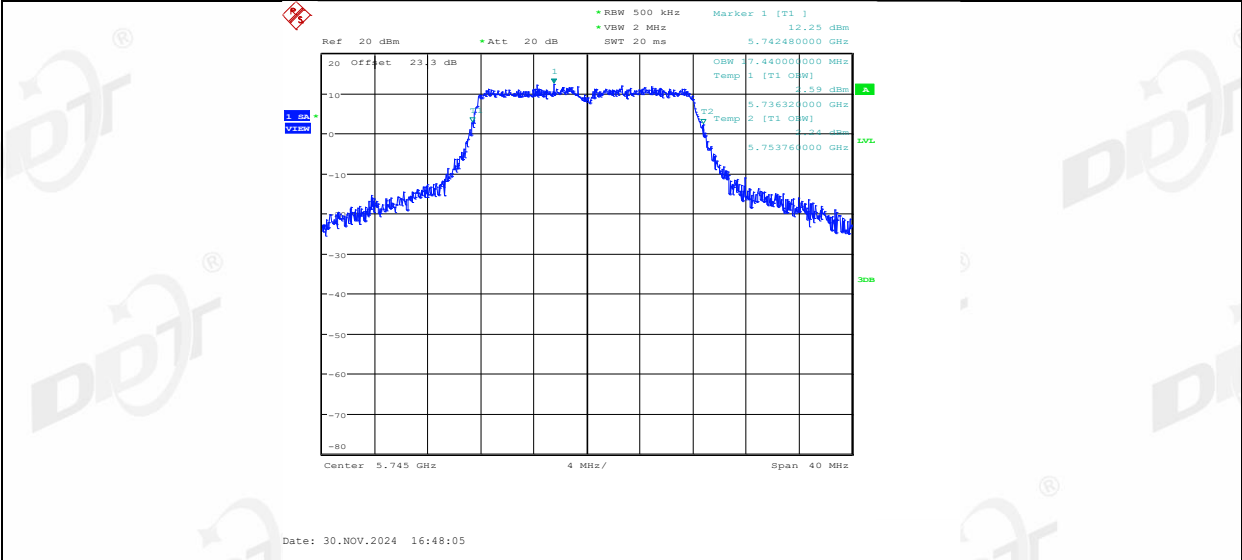


11A\_Ant1\_5720

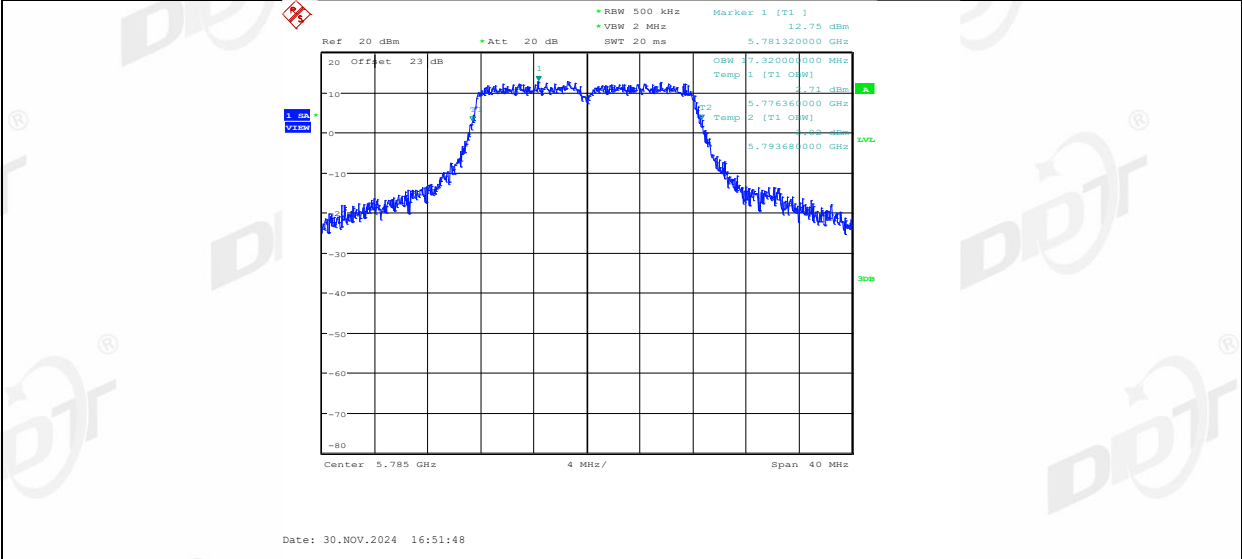




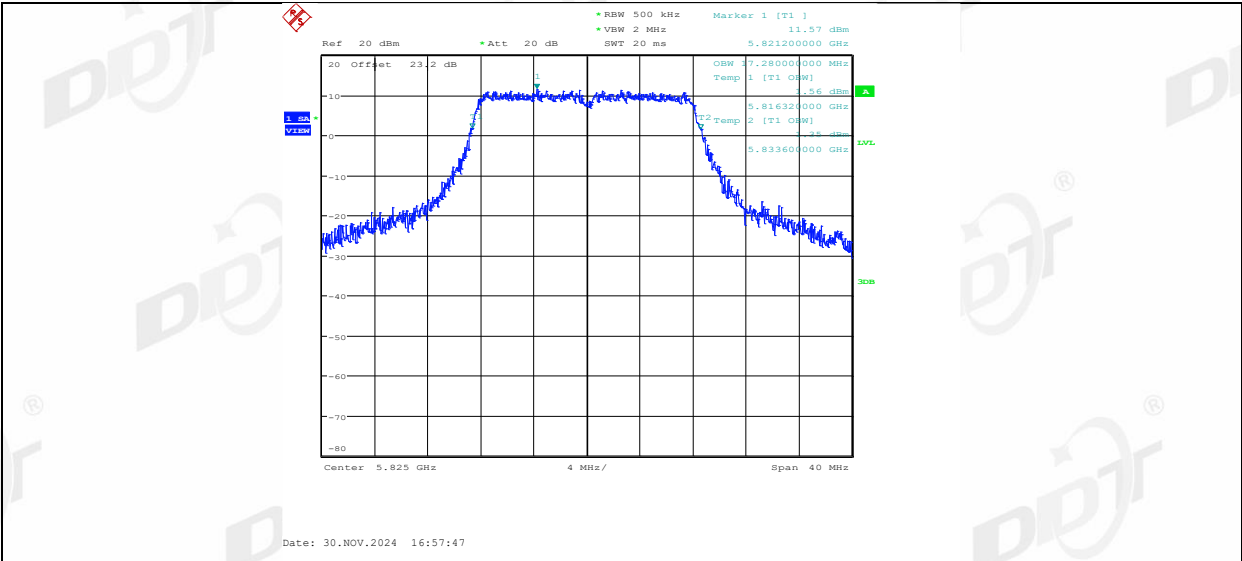
11A\_Ant1\_5745



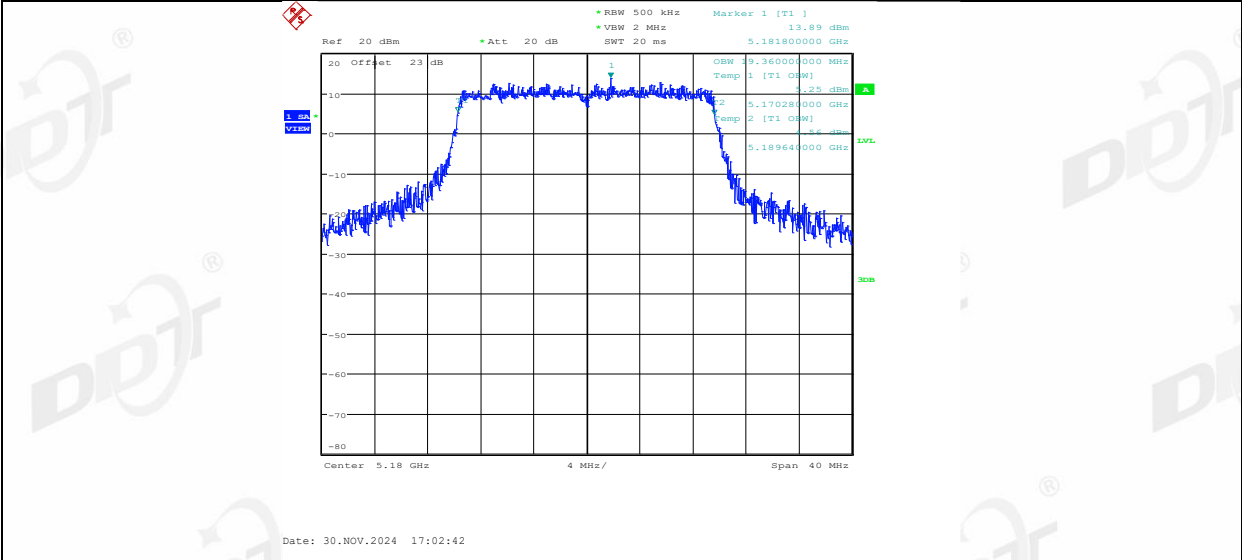
11A\_Ant1\_5785



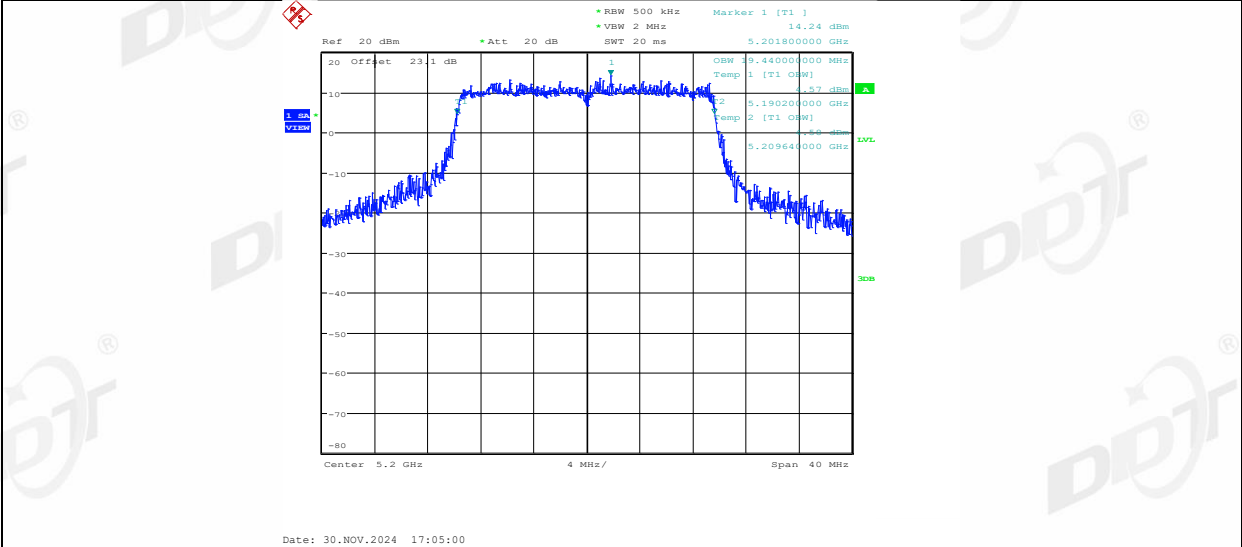
11A\_Ant1\_5825



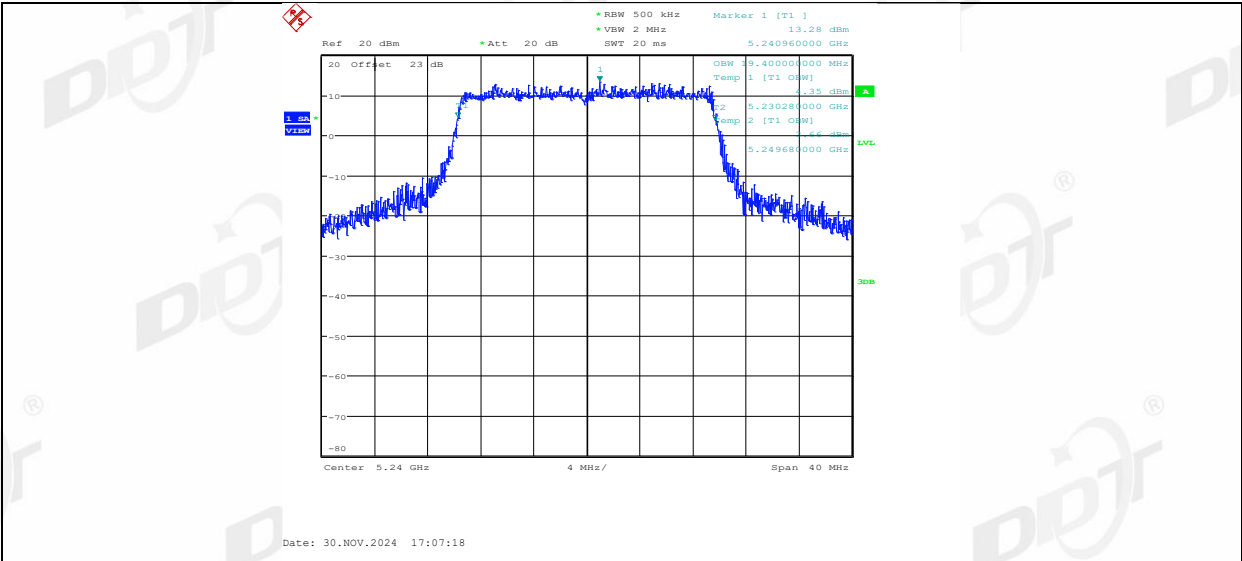
11AX20SISO\_Ant1\_5180



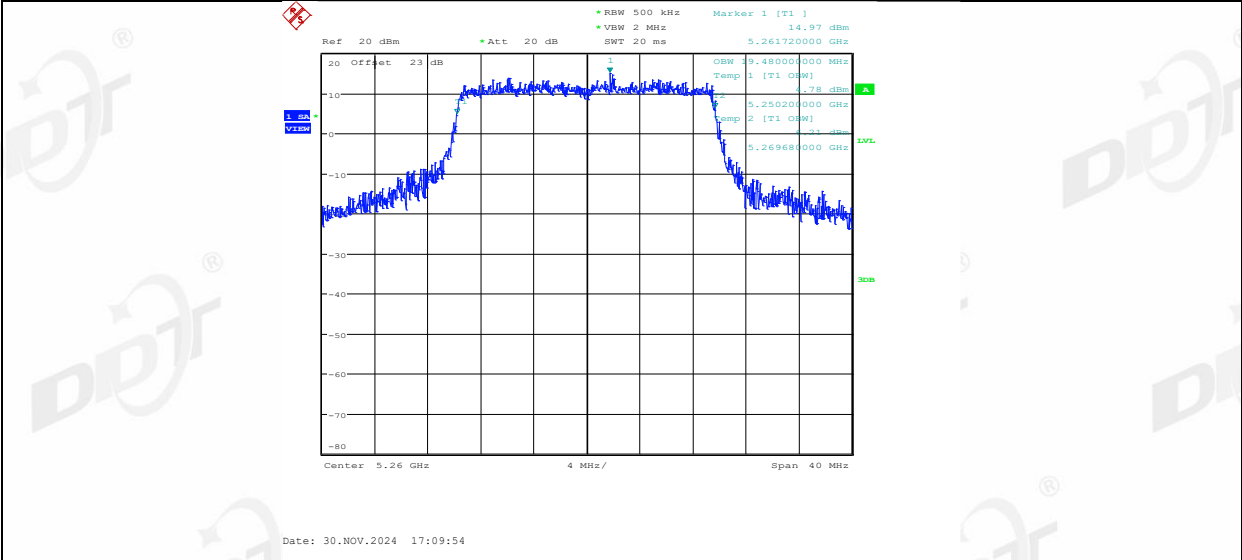
11AX20SISO\_Ant1\_5200



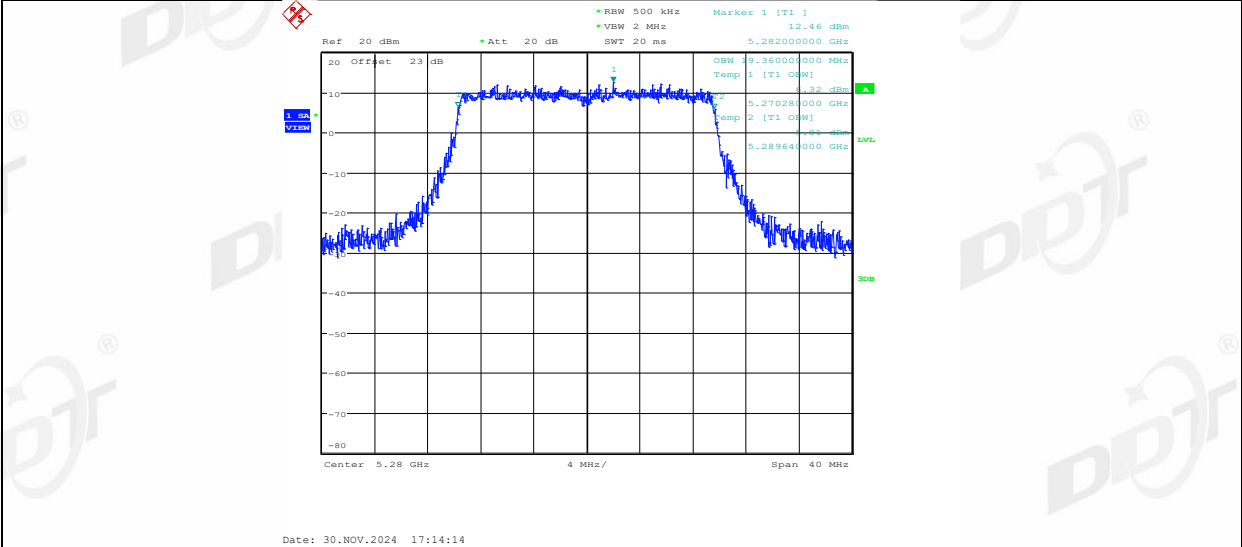
11AX20SISO\_Ant1\_5240



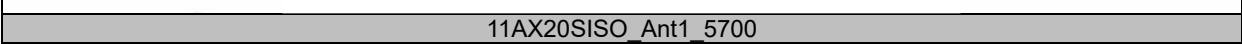
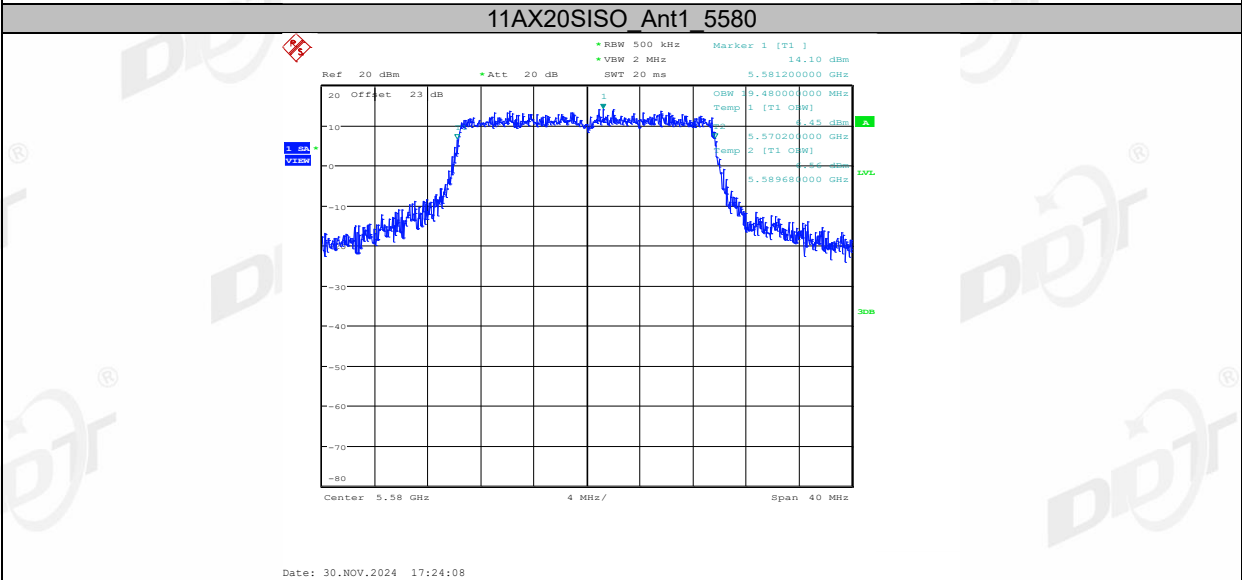
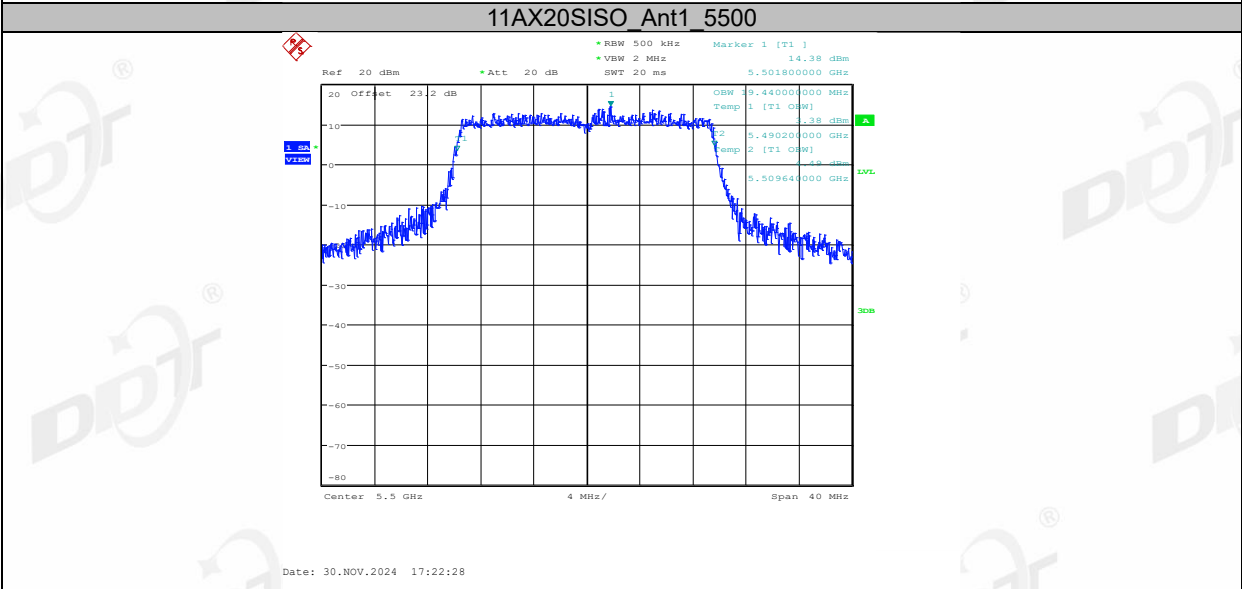
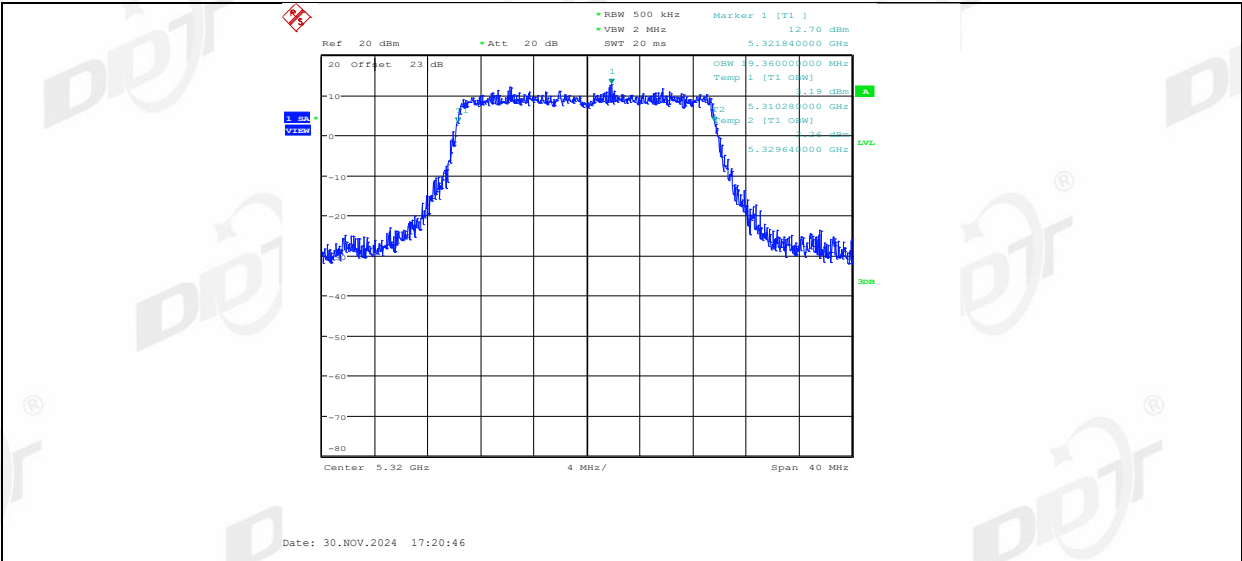
11AX20SISO\_Ant1\_5260

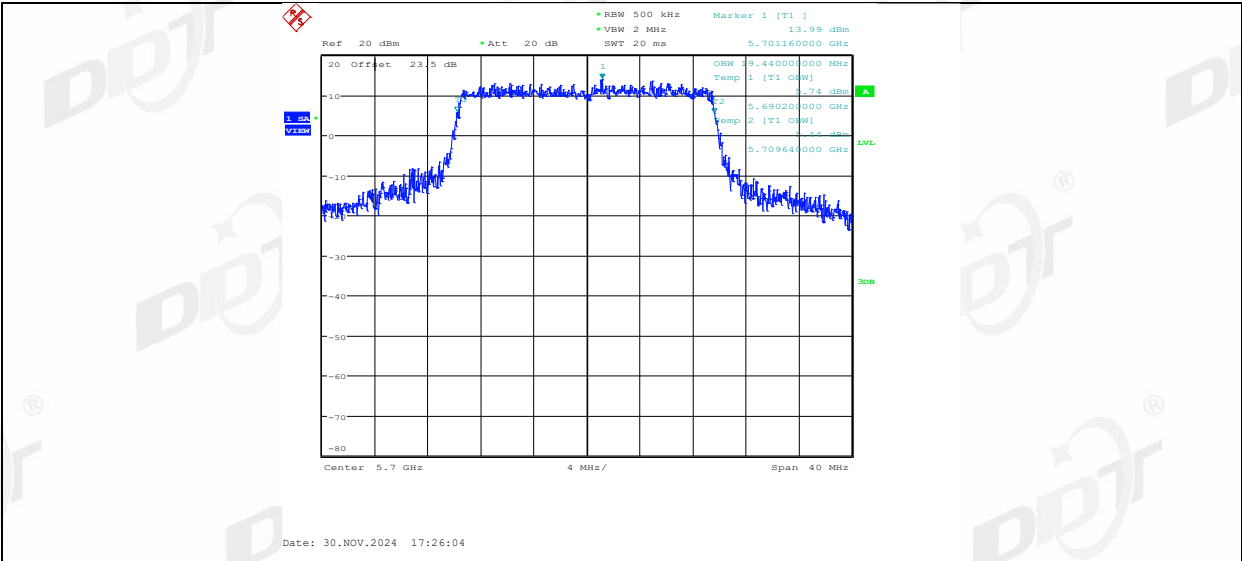


11AX20SISO\_Ant1\_5280

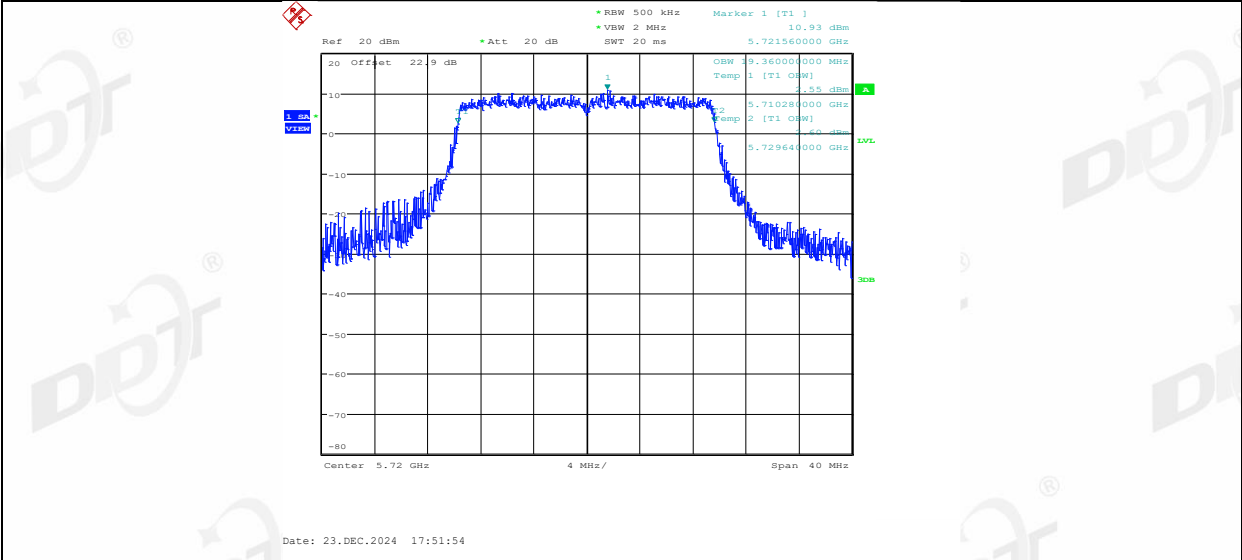


11AX20SISO\_Ant1\_5320

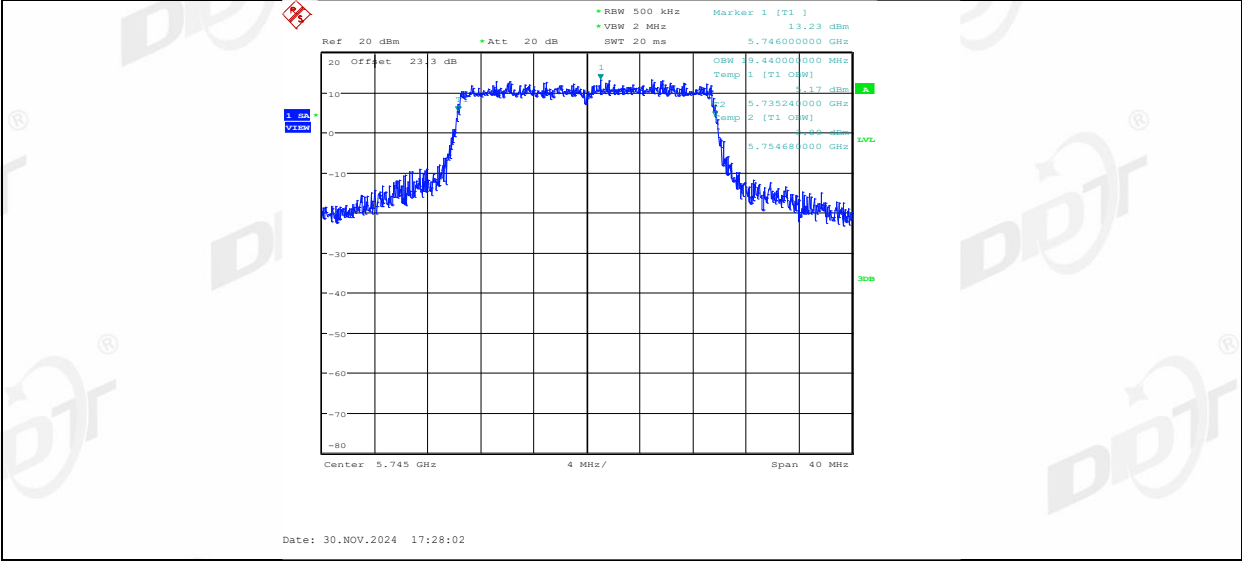




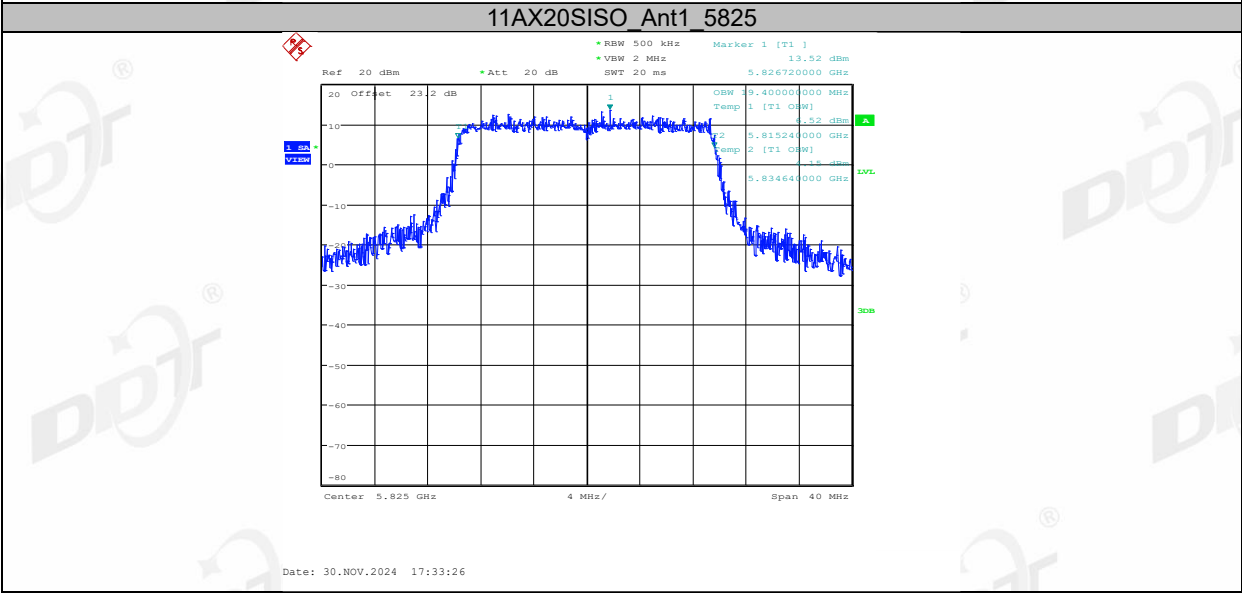
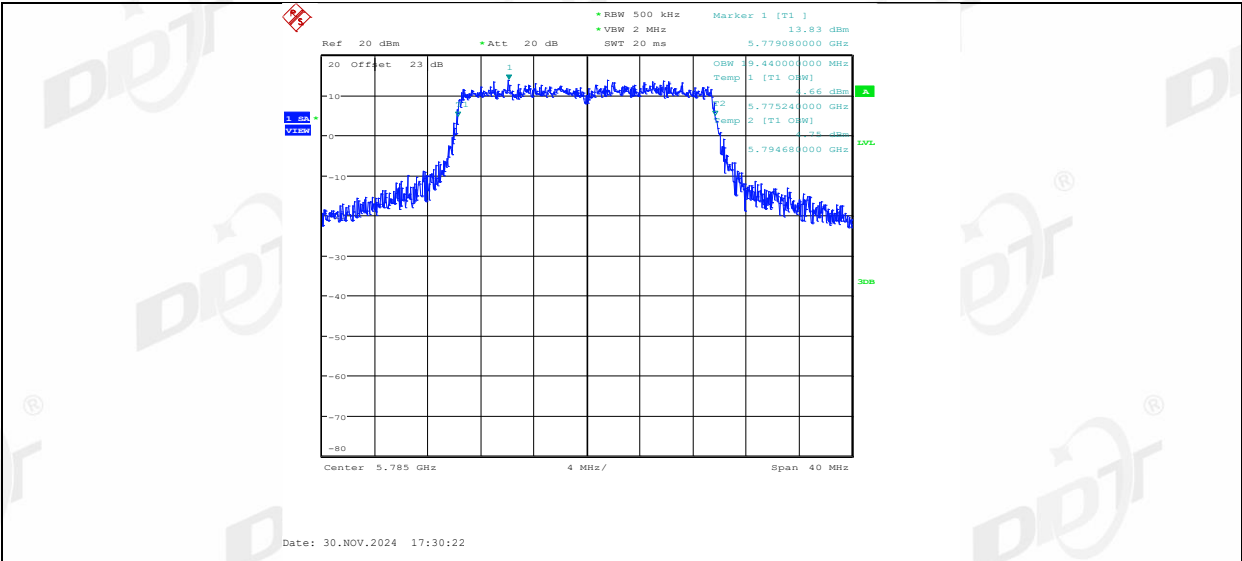
11AX20SISO\_Ant1\_5720



11AX20SISO\_Ant1\_5745

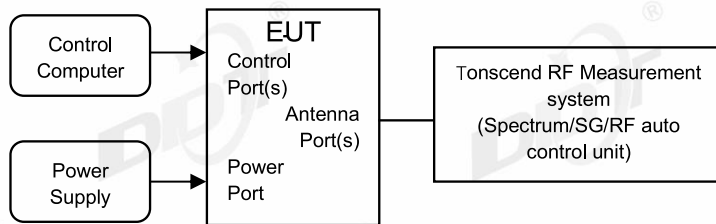


11AX20SISO\_Ant1\_5785



## 7. Duty Cycle

### 7.1. Block diagram of test setup



### 7.2. Limit

Just for Report.

### 7.3. Test procedure

- (1) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, The cable loss and attenuator loss have been put into spectrum analyzer as amplitude offset.  
set the Spectrum Analyzer as below:  
Centre Frequency: The centre frequency of the middle hopping channel.  
Resolution BW: 10 MHz.  
Video BW: 10 MHz.  
Span: Zero span.  
Detector: Peak.  
Trace Mode: Clear Write.  
Sweep: Video Trigger
- (2) When the trace is complete, measure the sending time of 1 burst and the duty cycle of 1 burst cycle.
- (3) Calculate dwell time follow below formula:  
Duty cycle= Pulse's on time / Burst cycle

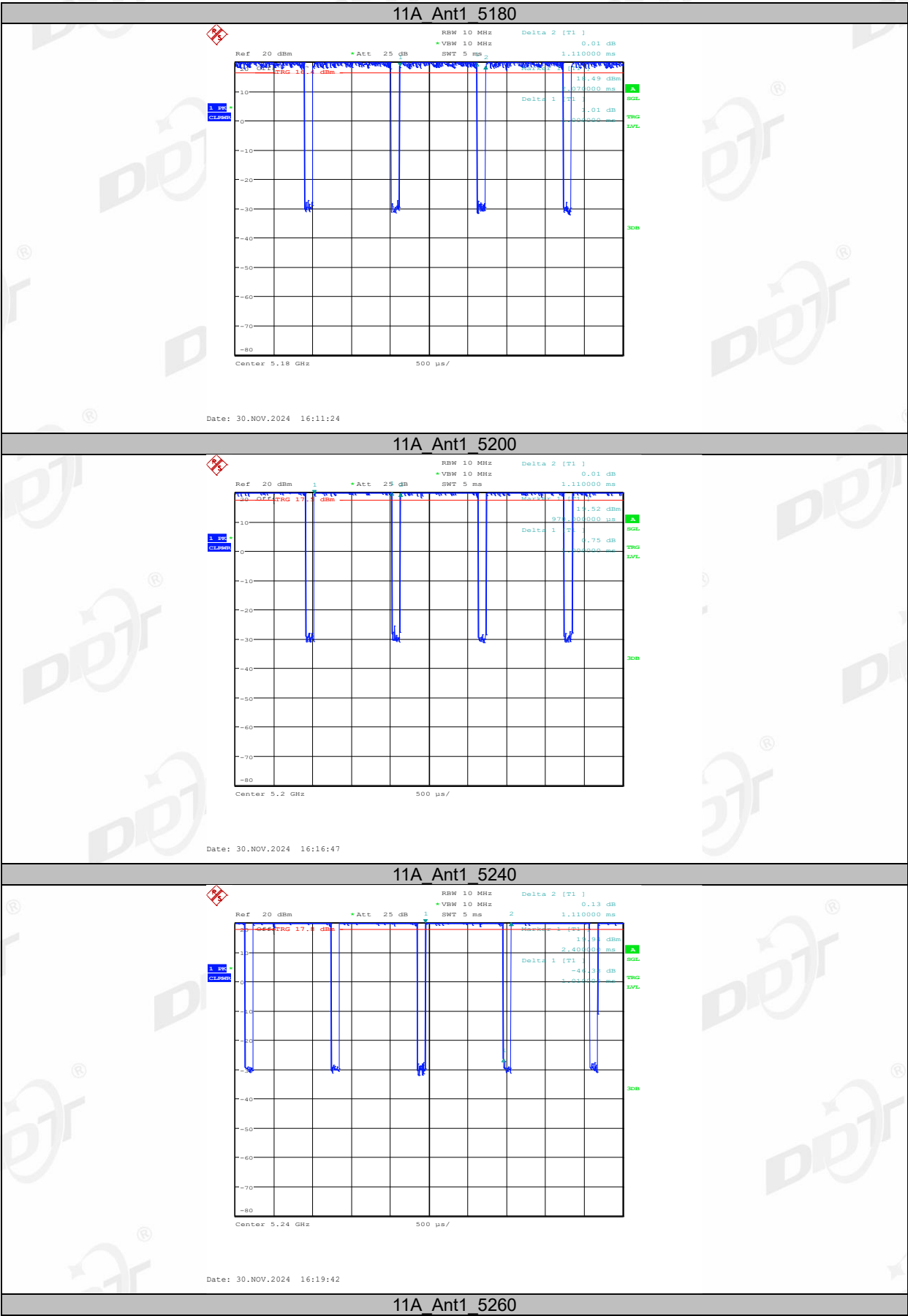
7.4. Test result

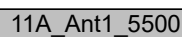
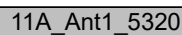
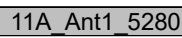
|                    |             |                |                          |
|--------------------|-------------|----------------|--------------------------|
| Test Engineer:     | Zora Zhang  | Test Site:     | RF Measurement System 1# |
| Ambient Condition: | 24.3℃,46%RH | Test Date:     | 2024.11.30-2025.01.03    |
| Test Power Supply: | Battery     | Sample Number: | S24111520-011            |

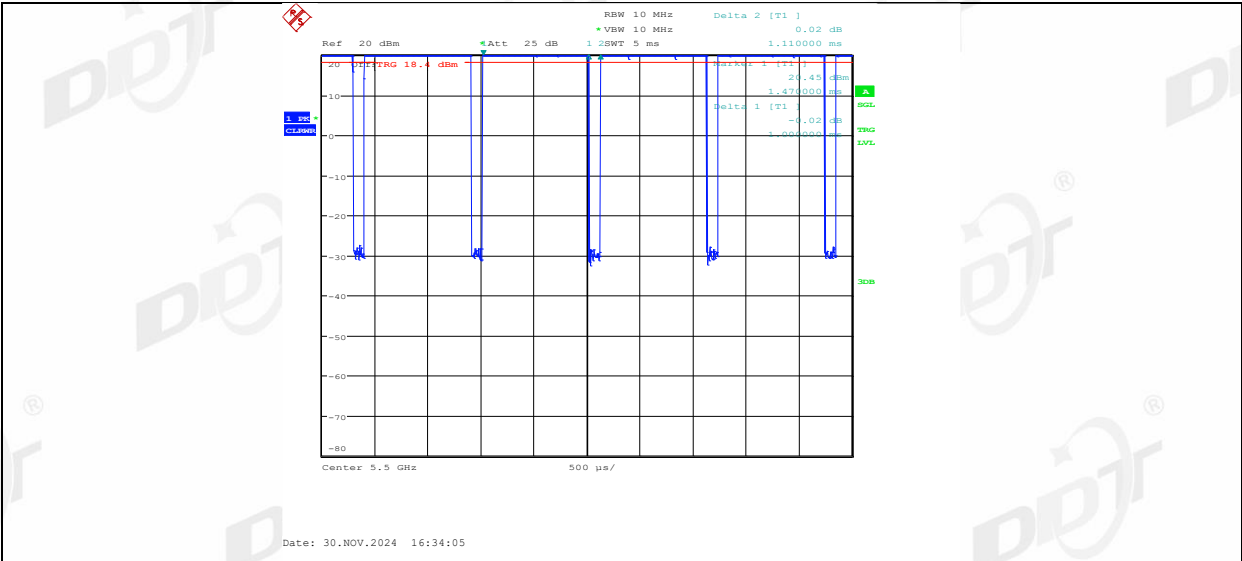
| Test Mode  | Antenna | Frequency[MHz] | Transmission Duration [ms] | Transmission Period [ms] | Duty Cycle [%] |
|------------|---------|----------------|----------------------------|--------------------------|----------------|
| 11A        | Ant1    | 5180           | 1.00                       | 1.11                     | 90.09          |
|            |         | 5200           | 1.00                       | 1.11                     | 90.09          |
|            |         | 5240           | 1.01                       | 1.11                     | 90.99          |
|            |         | 5260           | 1.00                       | 1.11                     | 90.09          |
|            |         | 5280           | 1.00                       | 1.11                     | 90.09          |
|            |         | 5320           | 1.01                       | 1.11                     | 90.99          |
|            |         | 5500           | 1.00                       | 1.11                     | 90.09          |
|            |         | 5580           | 1.00                       | 1.11                     | 90.09          |
|            |         | 5700           | 1.01                       | 1.11                     | 90.99          |
|            |         | 5720           | 1.00                       | 1.11                     | 90.09          |
|            |         | 5745           | 1.01                       | 1.11                     | 90.99          |
|            |         | 5785           | 1.01                       | 1.11                     | 90.99          |
|            |         | 5825           | 1.00                       | 1.11                     | 90.09          |
| 11AX20SISO | Ant1    | 5180           | 1.01                       | 1.11                     | 90.99          |
|            |         | 5200           | 1.00                       | 1.11                     | 90.09          |
|            |         | 5240           | 1.00                       | 1.11                     | 90.09          |
|            |         | 5260           | 1.01                       | 1.11                     | 90.99          |
|            |         | 5280           | 1.01                       | 1.11                     | 90.99          |
|            |         | 5320           | 1.00                       | 1.11                     | 90.09          |
|            |         | 5500           | 1.00                       | 1.11                     | 90.09          |
|            |         | 5580           | 1.01                       | 1.11                     | 90.99          |
|            |         | 5700           | 1.01                       | 1.11                     | 90.99          |
|            |         | 5720           | 1.00                       | 1.11                     | 90.09          |
|            |         | 5745           | 1.00                       | 1.11                     | 90.09          |
|            |         | 5785           | 1.01                       | 1.11                     | 90.99          |
|            |         | 5825           | 1.00                       | 1.11                     | 90.09          |



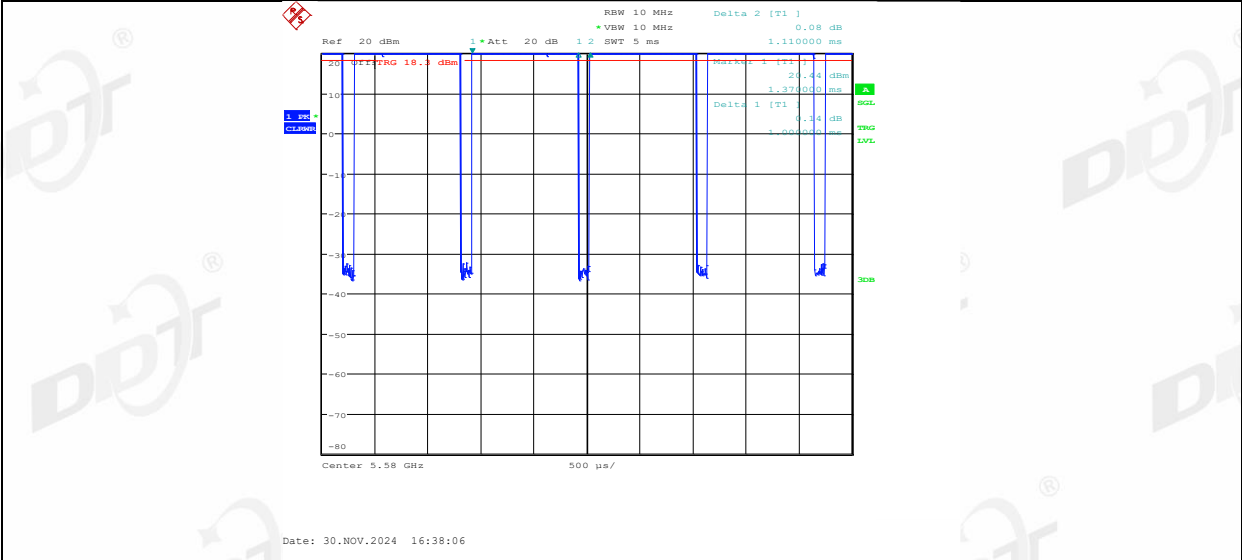
7.5. Test graphs



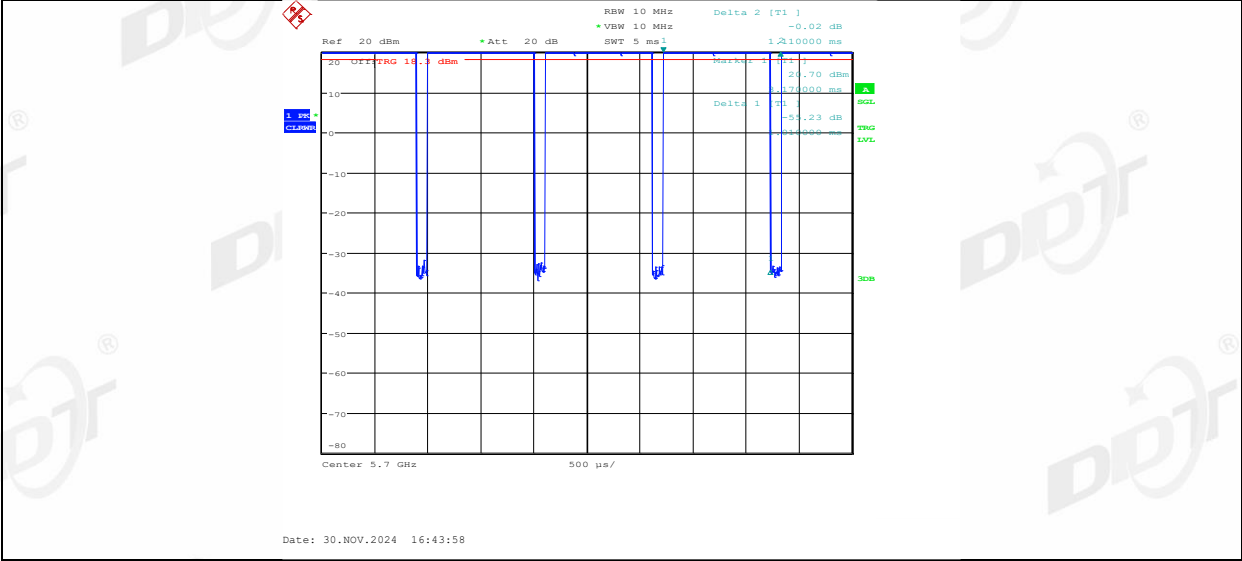




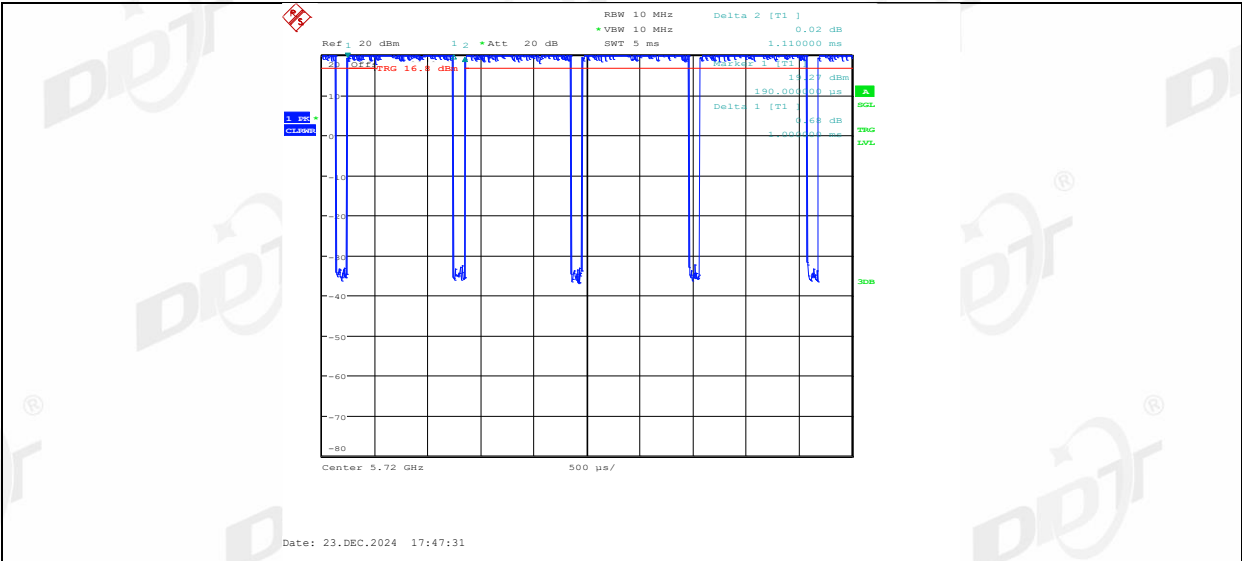
11A\_Ant1\_5580



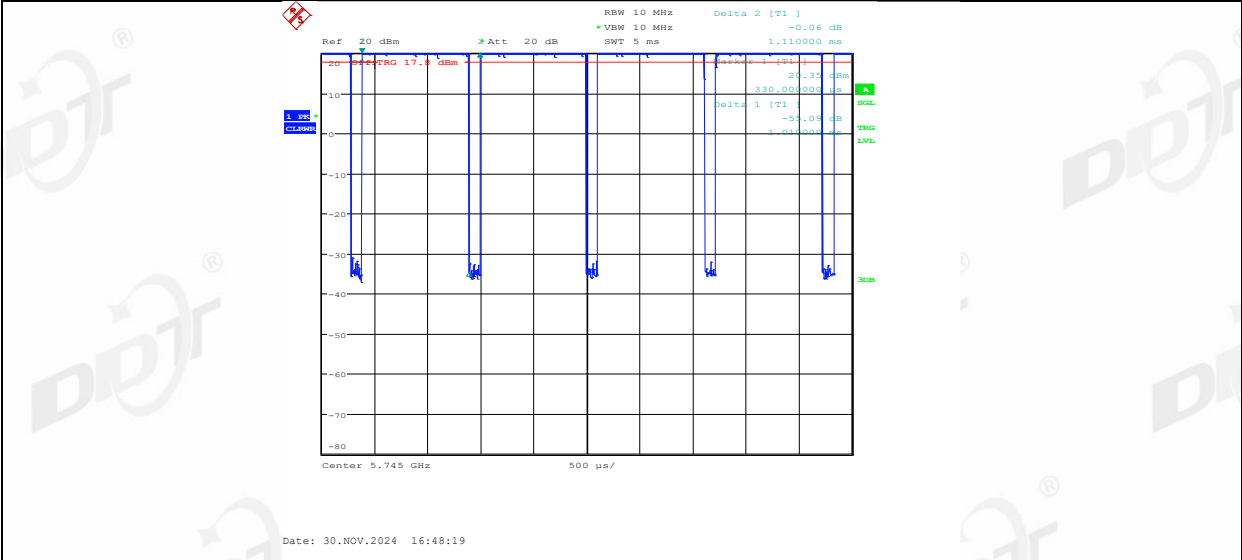
11A\_Ant1\_5700



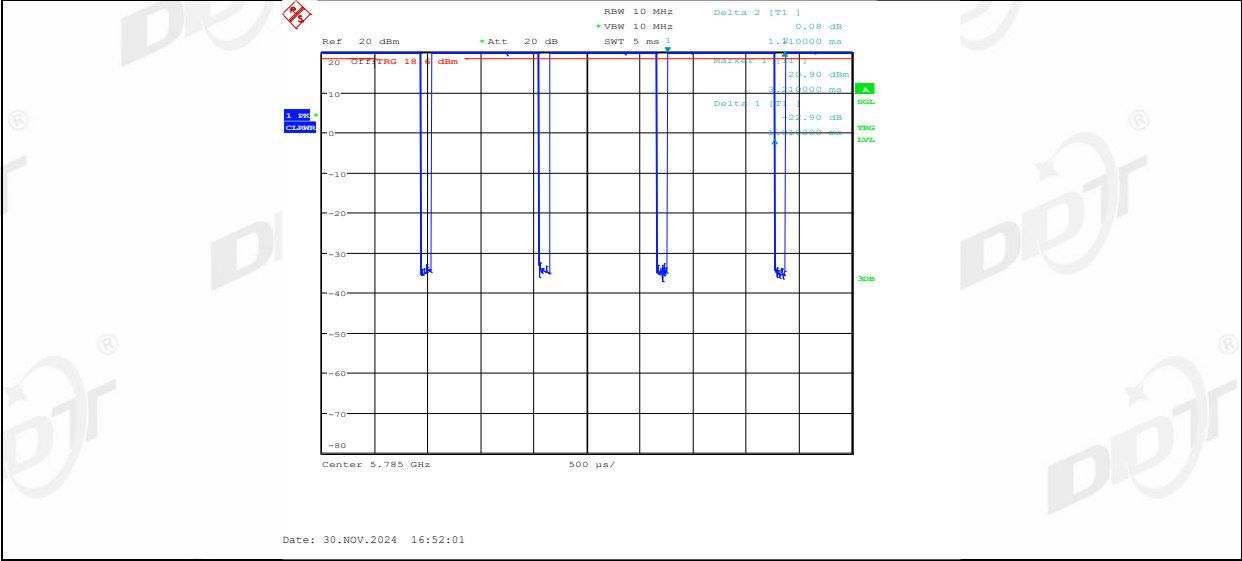
11A\_Ant1\_5720



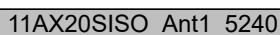
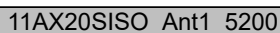
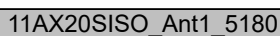
11A\_Ant1\_5745

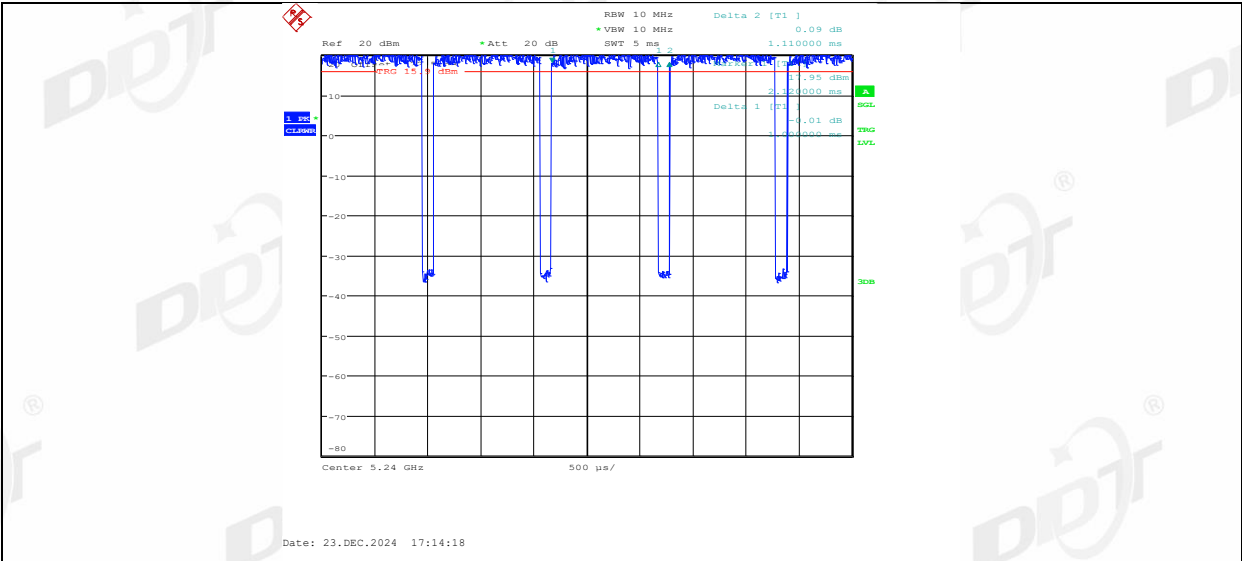


11A\_Ant1\_5785

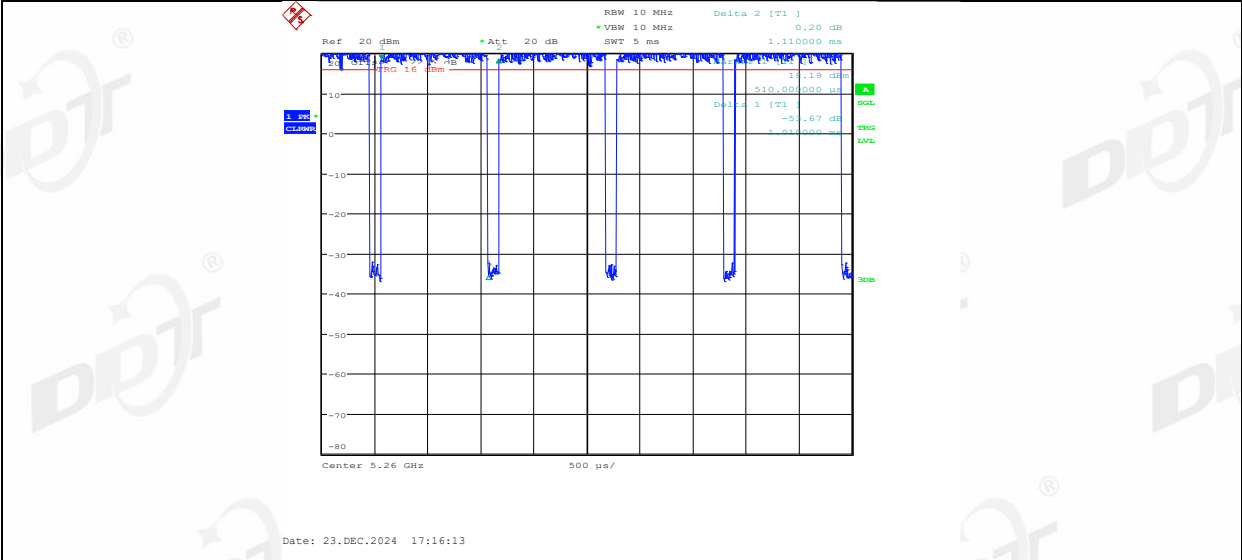


11A\_Ant1\_5825

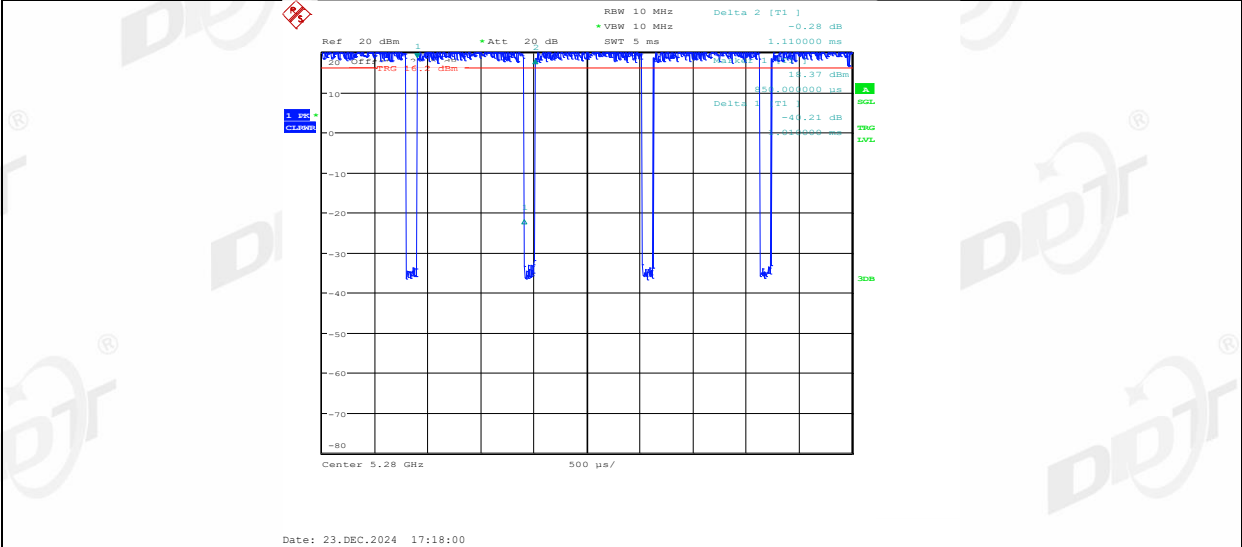




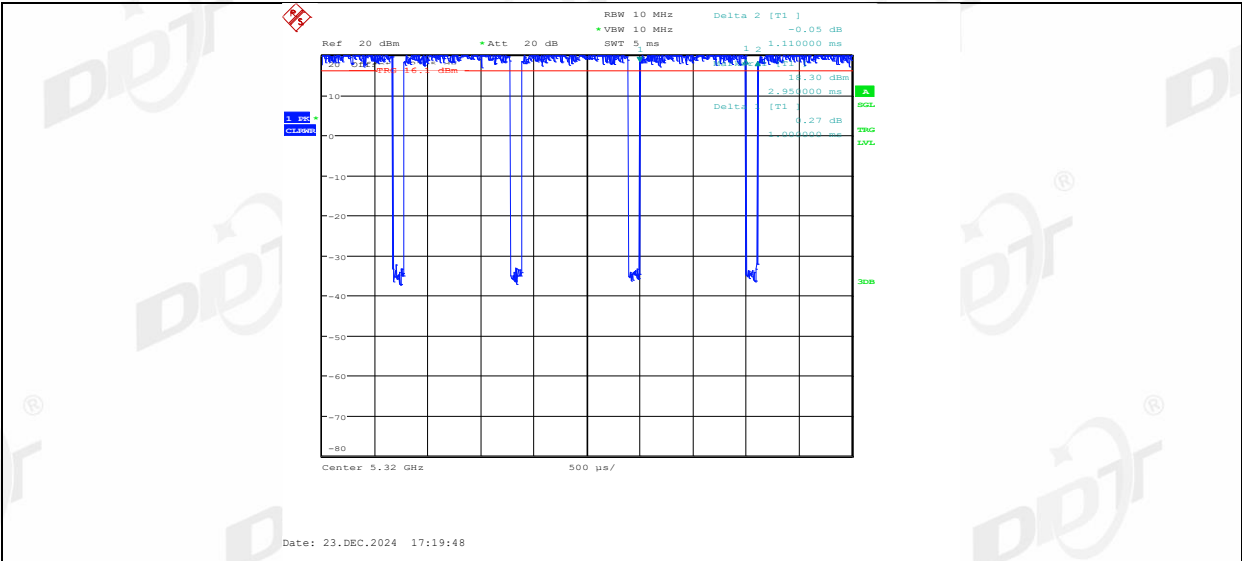
11AX20SISO\_Ant1\_5260



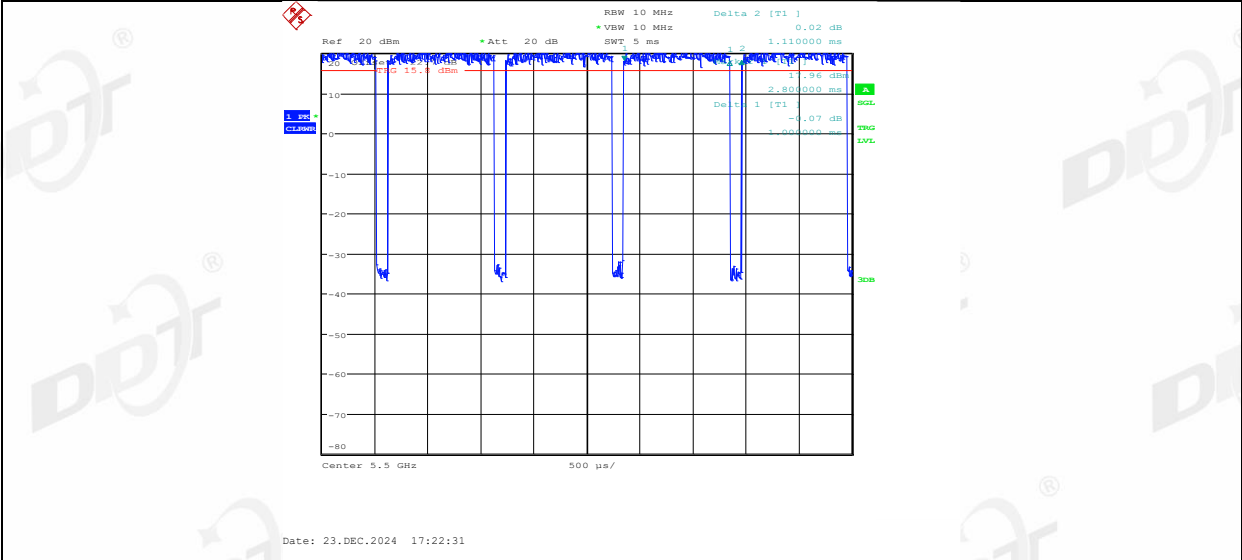
11AX20SISO\_Ant1\_5280



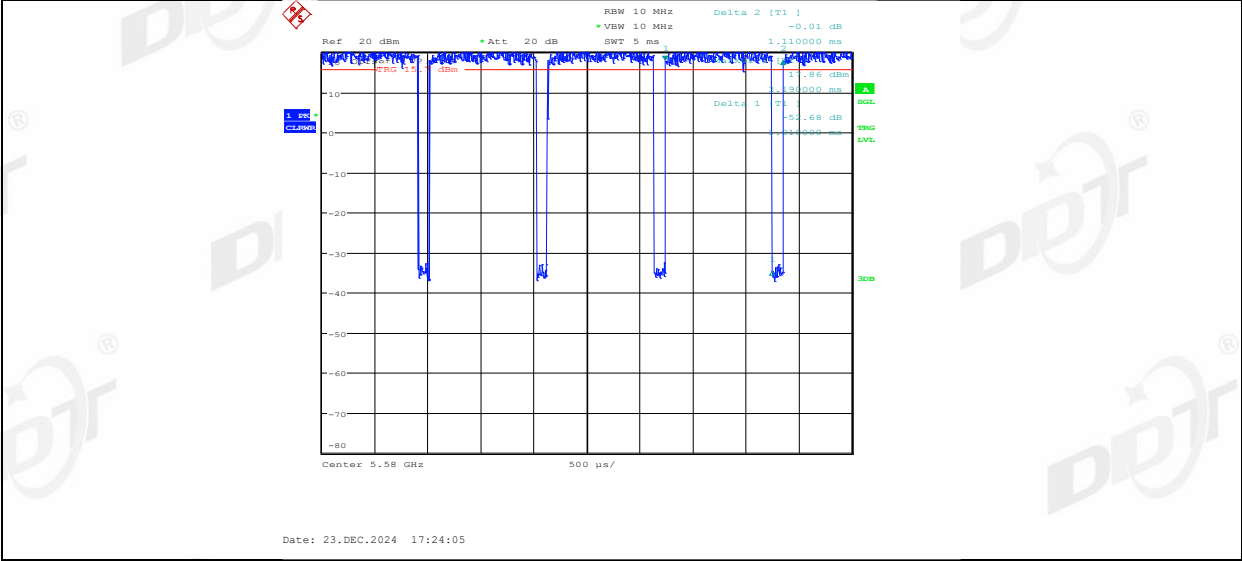
11AX20SISO\_Ant1\_5320



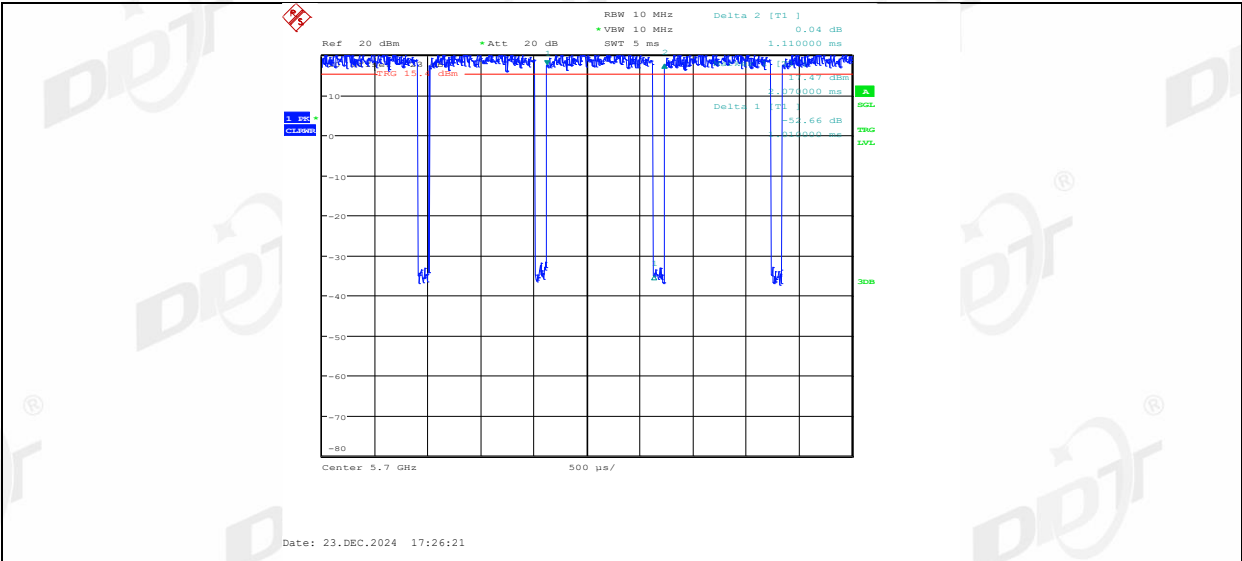
11AX20SISO\_Ant1\_5500



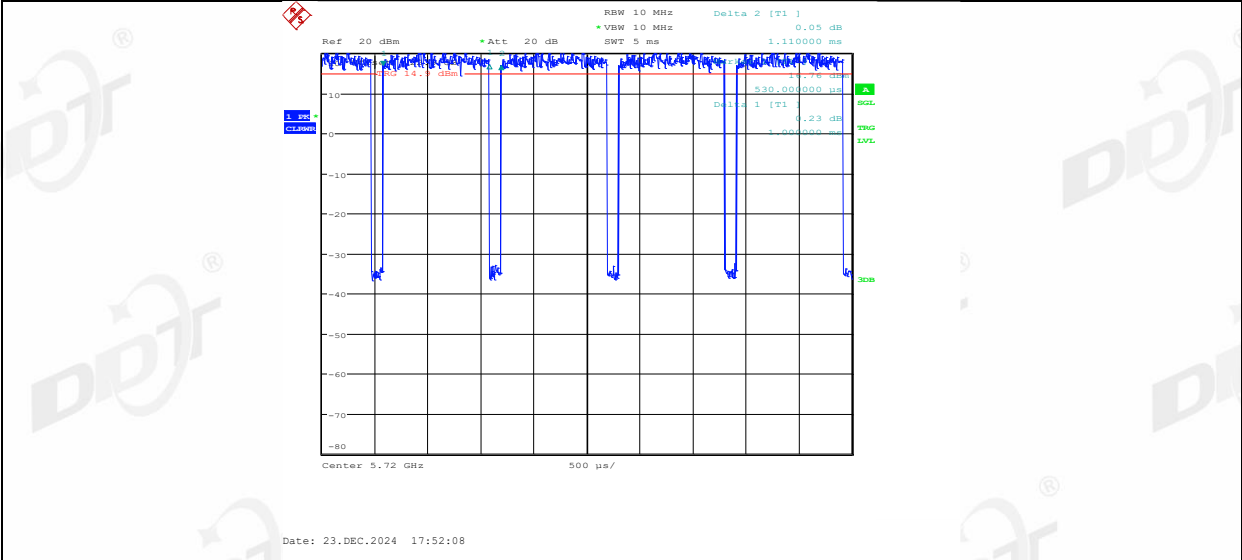
11AX20SISO\_Ant1\_5580



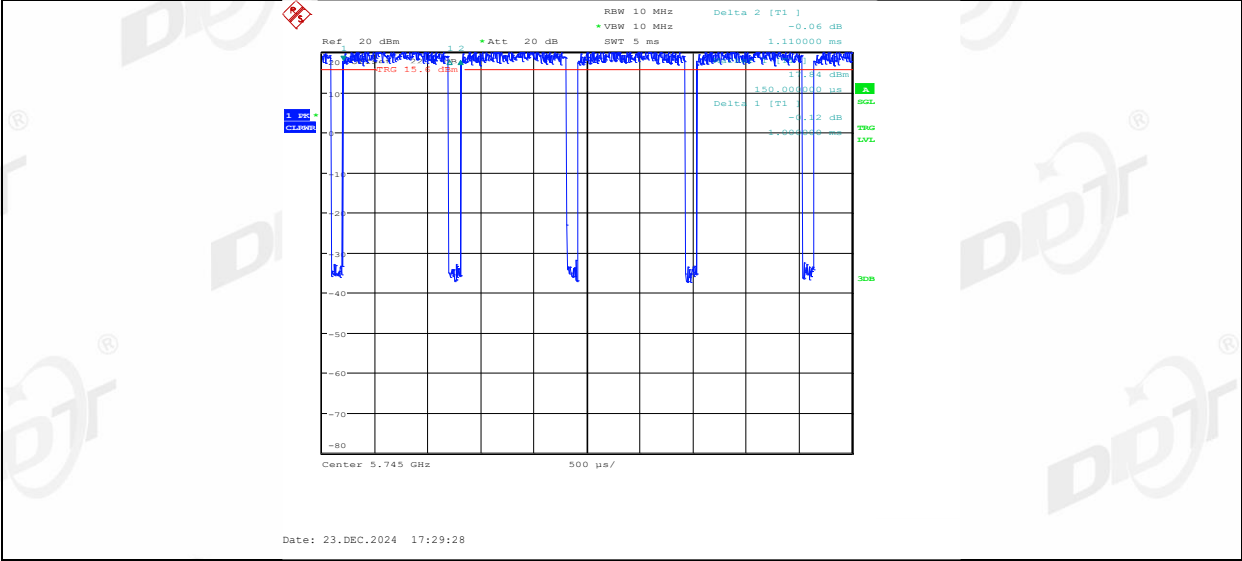
11AX20SISO\_Ant1\_5700



11AX20SISO\_Ant1\_5720

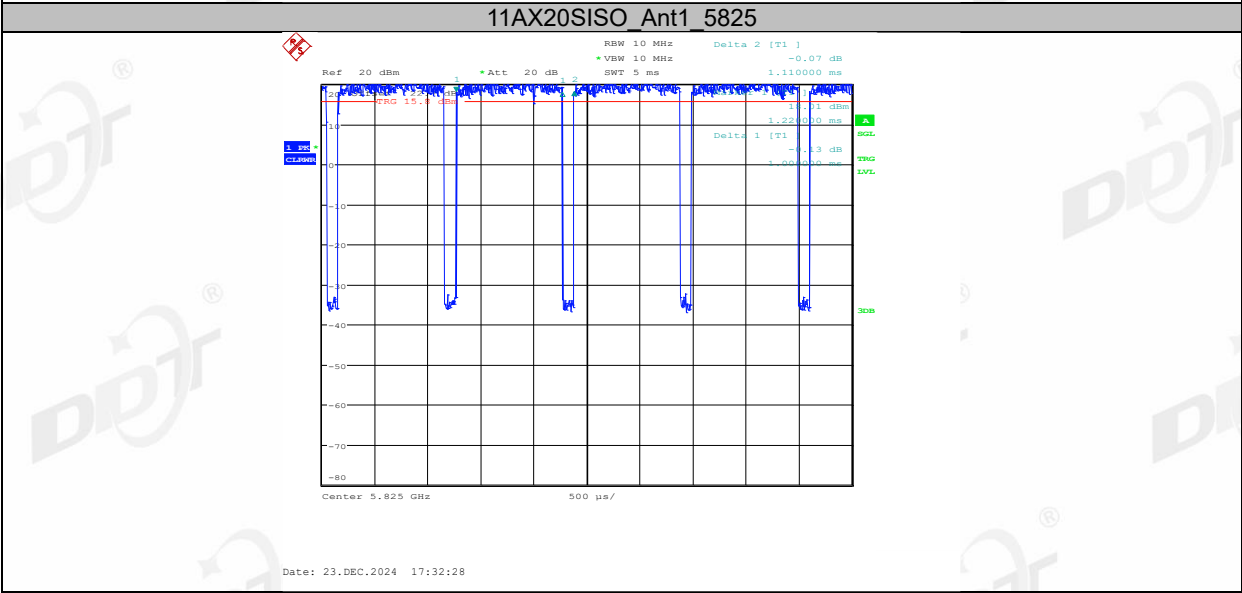
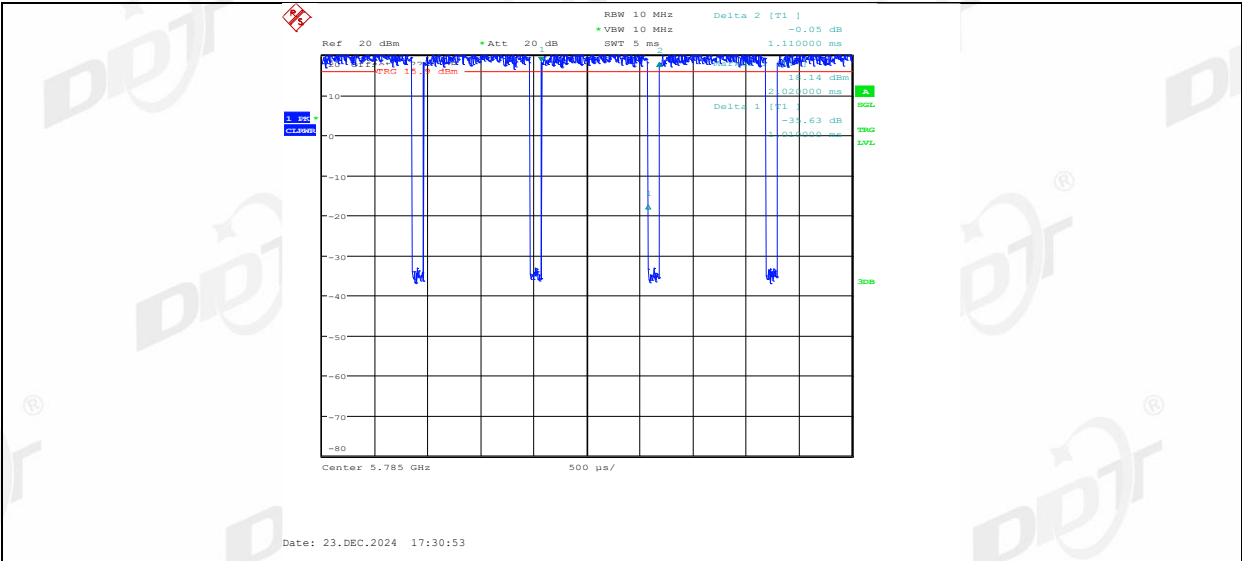


11AX20SISO\_Ant1\_5745



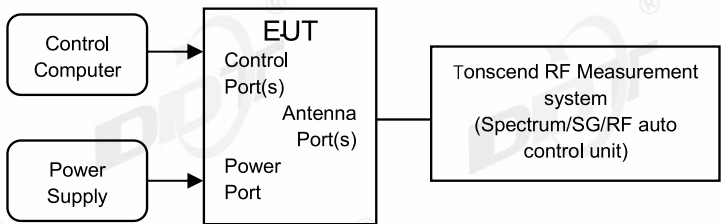
11AX20SISO\_Ant1\_5785





8. Maximum Output Power

8.1. Block diagram of test setup



8.2. Limits

| FCC Part15, Subpart E/ RSS-247                            |                                                                                                                                                                    |                                           |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| Test Item                                                 | Limit                                                                                                                                                              | Frequency Range (MHz)                     |
| Maximum Output Power                                      | For FCC: outdoor access point: 1 W(30 dBm)<br>indoor access point: 1 W(30 dBm)<br>fixed point-to-point access points1 W(30 dBm)<br>client devices: 250 mW (24 dBm) | 5150-5250                                 |
|                                                           | For RSS: e.i.r.p. power:<br>not exceed 200 mW (23 dBm) or $10 + 10 \log_{10} B$                                                                                    |                                           |
|                                                           | For FCC: 250 mW (24 dBm) or $11 + 10 \log_{10} B$                                                                                                                  |                                           |
|                                                           | For RSS: For conducted output power:<br>250 mW (24 dBm) or $11 + 10 \log_{10} B$                                                                                   | 5250-5350                                 |
|                                                           | For RSS: e.i.r.p. power:<br>not exceed 1.0 W (30 dBm) or $17 + 10 \log_{10} B$                                                                                     |                                           |
|                                                           | For FCC: 250 mW (24 dBm) or $11 + 10 \log_{10} B$                                                                                                                  |                                           |
|                                                           | For RSS: For conducted output power:<br>250 mW (24 dBm) or $11 + 10 \log_{10} B$                                                                                   | For FCC:5470 - 5725<br>For IC:5470 - 5600 |
|                                                           | For RSS: e.i.r.p. power:<br>not exceed 1.0 W (30 dBm) or $17 + 10 \log_{10} B$                                                                                     | 5650 - 5725                               |
| 1 Watt (30 dBm)                                           |                                                                                                                                                                    | 5725-5850                                 |
| Note: For FCC: B=26 bandwidth; For ISDE: B=99% bandwidth. |                                                                                                                                                                    |                                           |

8.3. Test procedure

Connect each EUT's antenna output to power sensor by RF cable and attenuator  
Measure the output power of each antenna port by power sensor.

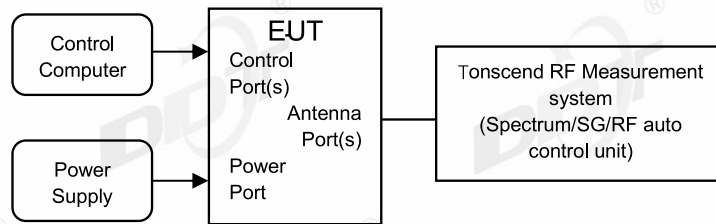
8.4. Test result channel power

|                    |             |                |                          |
|--------------------|-------------|----------------|--------------------------|
| Test Engineer:     | Zora Zhang  | Test Site:     | RF Measurement System 1# |
| Ambient Condition: | 24.3℃,46%RH | Test Date:     | 2024.11.30-2025.01.03    |
| Test Power Supply: | Battery     | Sample Number: | S24111520-011            |

| Test Mode  | Antenna | Freq (MHz) | Channel Power [dBm] | Duty Cycle [%] | DC Factor [dBm] | Conducted Output Power [dBm] | Conducted FCC Limit [dBm] | Conducted RSS Limit [dBm] | EIRP RSS [dBm] | EIRP RSS Limit [dBm] | Verdict |
|------------|---------|------------|---------------------|----------------|-----------------|------------------------------|---------------------------|---------------------------|----------------|----------------------|---------|
| 11A        | Ant1    | 5180       | 17.70               | 90.09          | 0.45            | 18.15                        | 24                        | ---                       | 20.92          | 22.35                | PASS    |
|            |         | 5200       | 18.67               | 90.09          | 0.45            | 19.12                        | 24                        | ---                       | 21.89          | 22.35                | PASS    |
|            |         | 5240       | 18.57               | 90.99          | 0.41            | 18.98                        | 24                        | ---                       | 21.75          | 22.35                | PASS    |
|            |         | 5260       | 19.11               | 90.09          | 0.45            | 19.56                        | 24                        | 23.36                     | 22.33          | 29.36                | PASS    |
|            |         | 5280       | 18.87               | 90.09          | 0.45            | 19.32                        | 24                        | 23.36                     | 22.09          | 29.36                | PASS    |
|            |         | 5320       | 18.62               | 90.99          | 0.41            | 19.03                        | 24                        | 23.36                     | 21.80          | 29.36                | PASS    |
|            |         | 5500       | 18.69               | 90.09          | 0.45            | 19.14                        | 24                        | 23.38                     | 21.91          | 29.38                | PASS    |
|            |         | 5580       | 18.97               | 90.09          | 0.45            | 19.42                        | 24                        | 23.38                     | 22.19          | 29.38                | PASS    |
|            |         | 5700       | 17.50               | 90.99          | 0.41            | 17.91                        | 24                        | 23.38                     | 20.68          | 29.38                | PASS    |
|            |         | 5720       | 19.20               | 90.09          | 0.45            | 19.65                        | 24                        | 23.38                     | 22.42          | 29.38                | PASS    |
|            |         | 5745       | 19.25               | 90.99          | 0.41            | 19.66                        | 30                        | 30                        | 22.43          | ---                  | PASS    |
|            |         | 5785       | 19.10               | 90.99          | 0.41            | 19.51                        | 30                        | 30                        | 22.28          | ---                  | PASS    |
|            |         | 5825       | 19.22               | 90.09          | 0.45            | 19.67                        | 30                        | 30                        | 22.44          | ---                  | PASS    |
| 11AX20SISO | Ant1    | 5180       | 18.06               | 90.99          | 0.41            | 18.47                        | 24                        | ---                       | 21.24          | 22.87                | PASS    |
|            |         | 5200       | 18.35               | 90.09          | 0.45            | 18.80                        | 24                        | ---                       | 21.57          | 22.87                | PASS    |
|            |         | 5240       | 18.24               | 90.09          | 0.45            | 18.69                        | 24                        | ---                       | 21.46          | 22.87                | PASS    |
|            |         | 5260       | 19.08               | 90.99          | 0.41            | 19.49                        | 24                        | 23.87                     | 22.26          | 29.87                | PASS    |
|            |         | 5280       | 19.04               | 90.99          | 0.41            | 19.45                        | 24                        | 23.87                     | 22.22          | 29.87                | PASS    |
|            |         | 5320       | 17.58               | 90.09          | 0.45            | 18.03                        | 24                        | 23.87                     | 20.80          | 29.87                | PASS    |
|            |         | 5500       | 18.68               | 90.09          | 0.45            | 19.13                        | 24                        | 23.89                     | 21.90          | 29.89                | PASS    |
|            |         | 5580       | 18.78               | 90.99          | 0.41            | 19.19                        | 24                        | 23.89                     | 21.96          | 29.89                | PASS    |
|            |         | 5700       | 17.58               | 90.99          | 0.41            | 17.99                        | 24                        | 23.89                     | 20.76          | 29.89                | PASS    |
|            |         | 5720       | 19.07               | 90.09          | 0.45            | 19.52                        | 24                        | 23.89                     | 22.29          | 29.89                | PASS    |
|            |         | 5745       | 19.04               | 90.09          | 0.45            | 19.49                        | 30                        | 30                        | 22.26          | ---                  | PASS    |
|            |         | 5785       | 18.89               | 90.99          | 0.41            | 19.30                        | 30                        | 30                        | 22.07          | ---                  | PASS    |
|            |         | 5825       | 19.21               | 90.09          | 0.45            | 19.66                        | 30                        | 30                        | 22.43          | ---                  | PASS    |

## 9. Power Spectral Density

### 9.1. Block diagram of test setup



### 9.2. Limits

| FCC Part15, Subpart E/ RSS-247 |                                                                                                                                 |                                                              |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| Test Item                      | Limit                                                                                                                           | Frequency Range (MHz)                                        |
| Power Spectral Density         | For FCC: Other than Mobile and portable:17 dBm/MHz<br>Mobile and portable client devices:11 dBm/MHz<br>For RSS eirp: 10 dBm/MHz | 5150-5250                                                    |
|                                | 11 dBm/MHz                                                                                                                      | 5250-5350                                                    |
|                                | 11 dBm/MHz                                                                                                                      | For FCC: 5470 - 5725<br>For ISDE: 5470 - 5600<br>5650 - 5725 |
|                                | 30 dBm/500 kHz                                                                                                                  | 5725-5850                                                    |

### 9.3. Test procedure

The transmitter output was connected to a spectrum analyzer. Power density was measured by spectrum analyzer with 1MHz RBW and 3MHz VBW.

Connect the UUT to the spectrum analyser and use the following settings:

5150 MHz~5250 MHz, 5250 MHz~5350 MHz, 5470 MHz~5725 MHz

|                  |                                                              |
|------------------|--------------------------------------------------------------|
| Center Frequency | The centre frequency of the channel under test               |
| Detector         | RMS                                                          |
| RBW              | 1MHz                                                         |
| VBW              | $\geq 3 \times \text{RBW}$                                   |
| Span             | Encompass the entire emissions bandwidth (EBW) of the signal |
| Trace            | Max hold                                                     |
| Sweep time       | Auto                                                         |

5725 MHz-5850 MHz

|                  |                                                |
|------------------|------------------------------------------------|
| Center Frequency | The centre frequency of the channel under test |
| Detector         | RMS                                            |
| RBW              | 500 kHz                                        |

|            |                                                              |
|------------|--------------------------------------------------------------|
| VBW        | $\geq 3 \times \text{RBW}$                                   |
| Span       | Encompass the entire emissions bandwidth (EBW) of the signal |
| Trace      | Max hold                                                     |
| Sweep time | Auto                                                         |

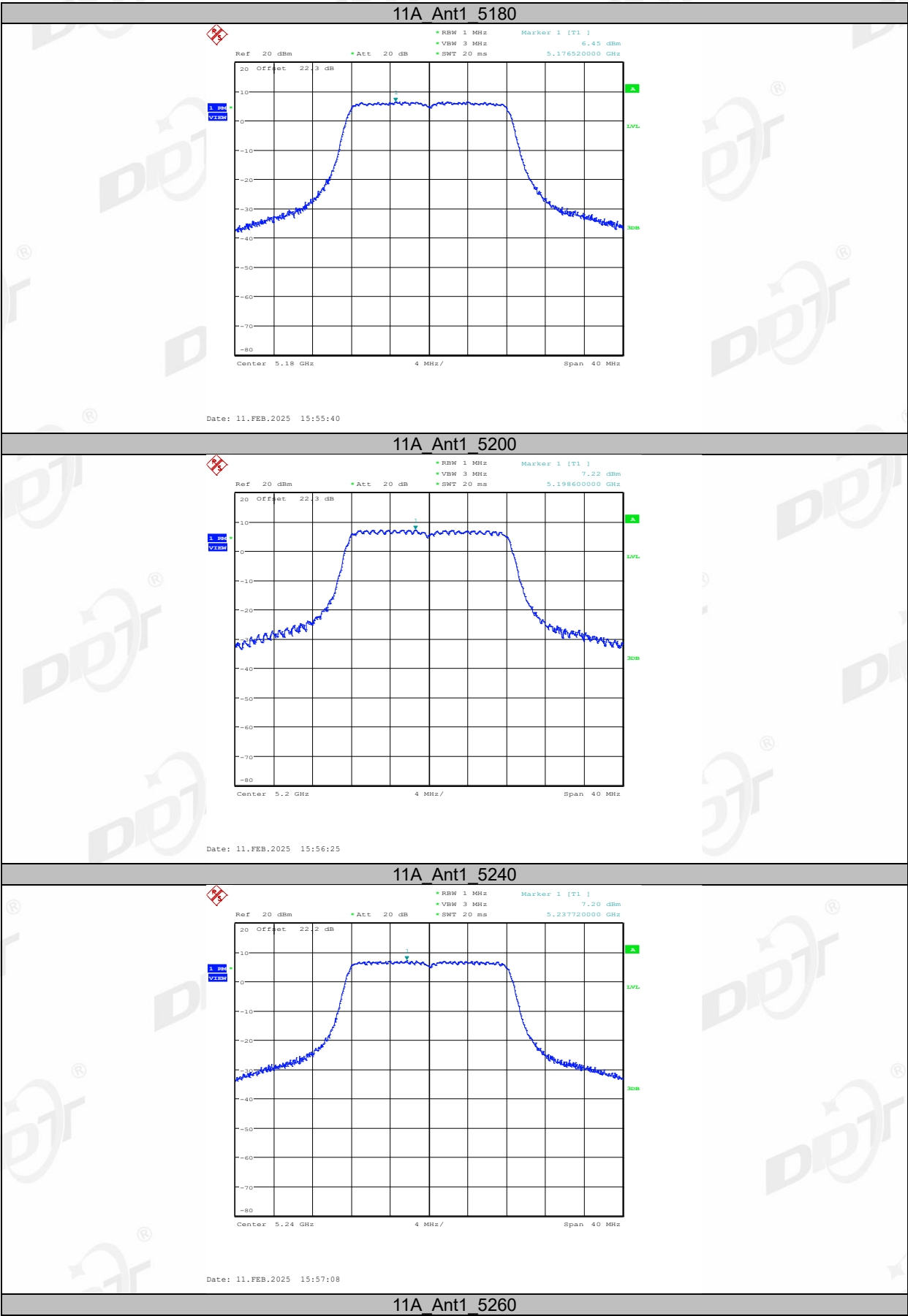
9.4. Test result

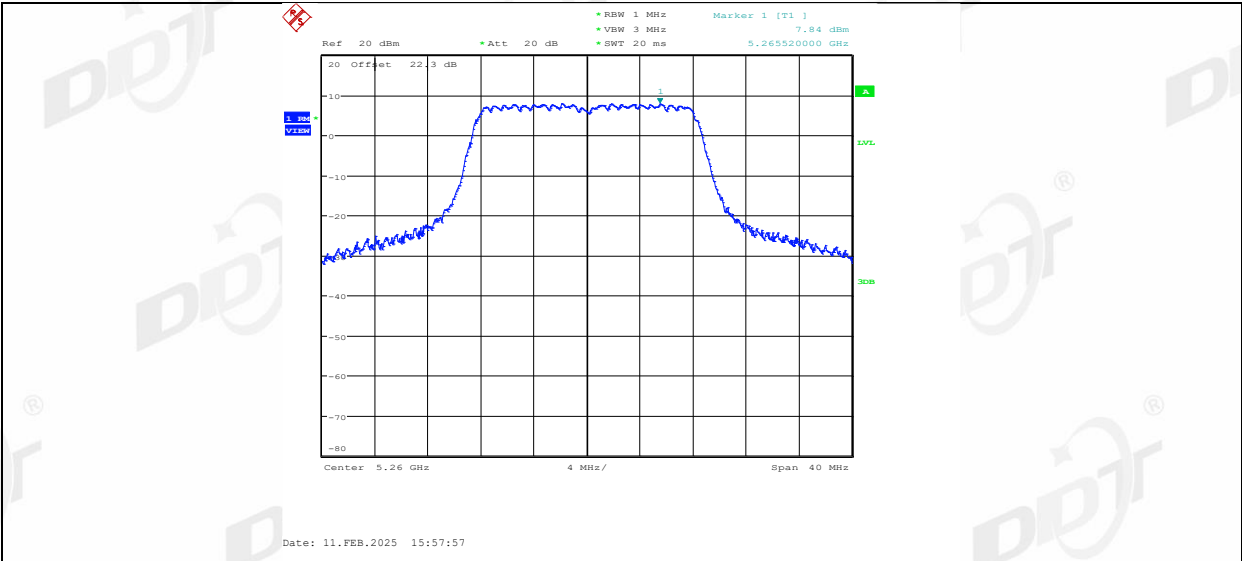
|                    |             |                |                          |
|--------------------|-------------|----------------|--------------------------|
| Test Engineer:     | Zora Zhang  | Test Site:     | RF Measurement System 1# |
| Ambient Condition: | 24.3℃,46%RH | Test Date:     | 2024.11.30-2025.01.03    |
| Test Power Supply: | Battery     | Sample Number: | S24111520-011            |

| Test Mode  | Antenna | Freq (MHz)   | Result [dBm/MHz] | Limit [dBm/MHz] | EIRP [dBm/MHz] | RSS EIRP Limit [dBm/MHz] | Verdict |
|------------|---------|--------------|------------------|-----------------|----------------|--------------------------|---------|
| 11A        | Ant1    | 5180         | 6.45             | ≤11.00          | 9.22           | ≤10.00                   | PASS    |
|            |         | 5200         | 7.22             | ≤11.00          | 9.99           | ≤10.00                   | PASS    |
|            |         | 5240         | 7.20             | ≤11.00          | 9.97           | ≤10.00                   | PASS    |
|            |         | 5260         | 7.84             | ≤11.00          | 10.61          | ---                      | PASS    |
|            |         | 5280         | 7.77             | ≤11.00          | 10.54          | ---                      | PASS    |
|            |         | 5320         | 7.17             | ≤11.00          | 9.94           | ---                      | PASS    |
|            |         | 5500         | 7.86             | ≤11.00          | 10.63          | ---                      | PASS    |
|            |         | 5580         | 7.65             | ≤11.00          | 10.42          | ---                      | PASS    |
|            |         | 5700         | 6.64             | ≤11.00          | 9.41           | ---                      | PASS    |
|            |         | 5720 UNII-2C | 7.98             | ≤11.00          | 10.75          | ---                      | PASS    |
|            |         | 5720 UNII-3  | 4.24             | ≤30.00          | 7.01           | ---                      | PASS    |
|            |         | 5745         | 5.39             | ≤30.00          | 8.16           | ---                      | PASS    |
|            |         | 5785         | 4.96             | ≤30.00          | 7.73           | ---                      | PASS    |
|            |         | 5825         | 5.04             | ≤30.00          | 7.81           | ---                      | PASS    |
| 11AX20SISO | Ant1    | 5180         | 6.36             | ≤11.00          | 9.13           | ≤10.00                   | PASS    |
|            |         | 5200         | 6.42             | ≤11.00          | 9.19           | ≤10.00                   | PASS    |
|            |         | 5240         | 6.49             | ≤11.00          | 9.26           | ≤10.00                   | PASS    |
|            |         | 5260         | 7.16             | ≤11.00          | 9.93           | ---                      | PASS    |
|            |         | 5280         | 7.44             | ≤11.00          | 10.21          | ---                      | PASS    |
|            |         | 5320         | 5.73             | ≤11.00          | 8.50           | ---                      | PASS    |
|            |         | 5500         | 7.42             | ≤11.00          | 10.19          | ---                      | PASS    |
|            |         | 5580         | 6.93             | ≤11.00          | 9.70           | ---                      | PASS    |
|            |         | 5700         | 6.24             | ≤11.00          | 9.01           | ---                      | PASS    |
|            |         | 5720 UNII-2C | 7.12             | ≤11.00          | 9.89           | ---                      | PASS    |
|            |         | 5720 UNII-3  | 3.52             | ≤30.00          | 6.29           | ---                      | PASS    |
|            |         | 5745         | 4.69             | ≤30.00          | 7.46           | ---                      | PASS    |
|            |         | 5785         | 4.14             | ≤30.00          | 6.91           | ---                      | PASS    |
|            |         | 5825         | 4.58             | ≤30.00          | 7.35           | ---                      | PASS    |

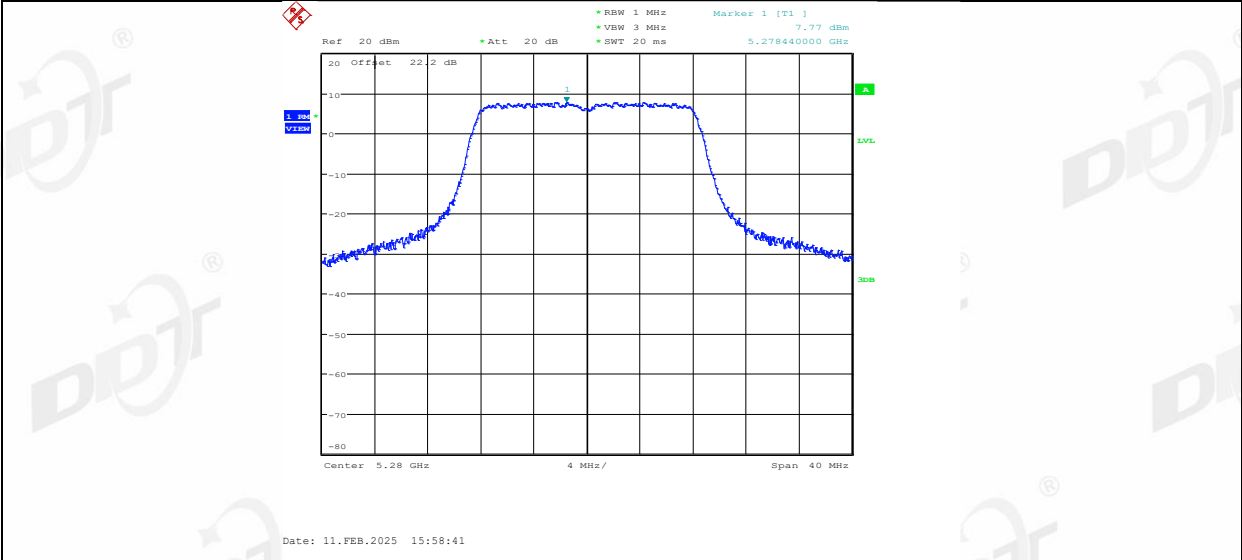
Note: 1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.  
2.The Duty Cycle Factor is compensated in the graph.

9.5. Test graphs

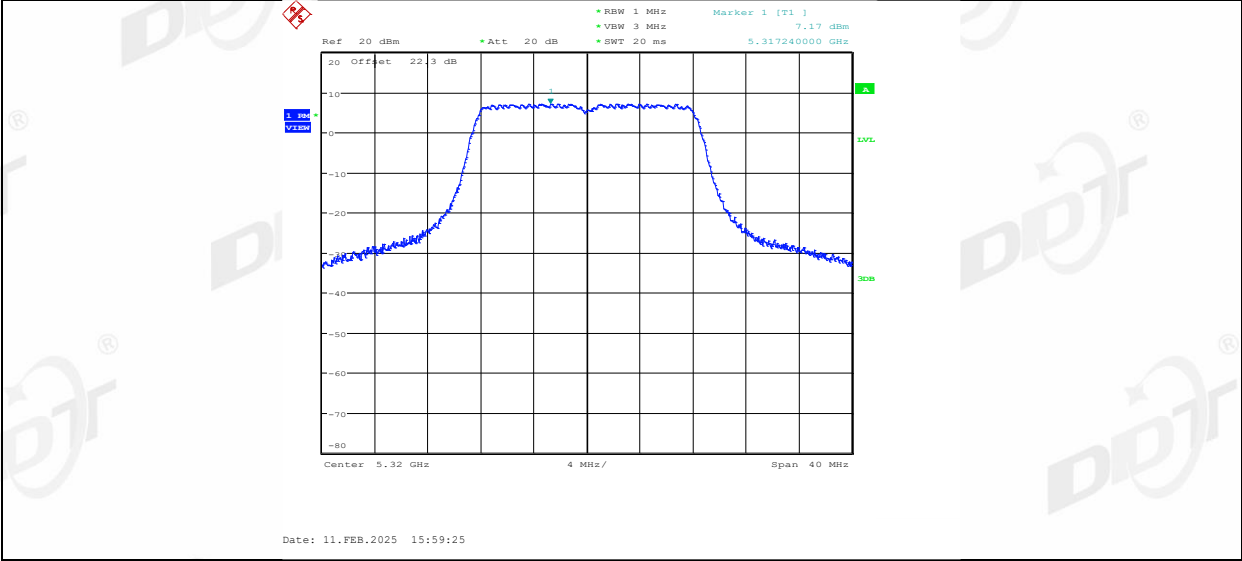




11A\_Ant1\_5280

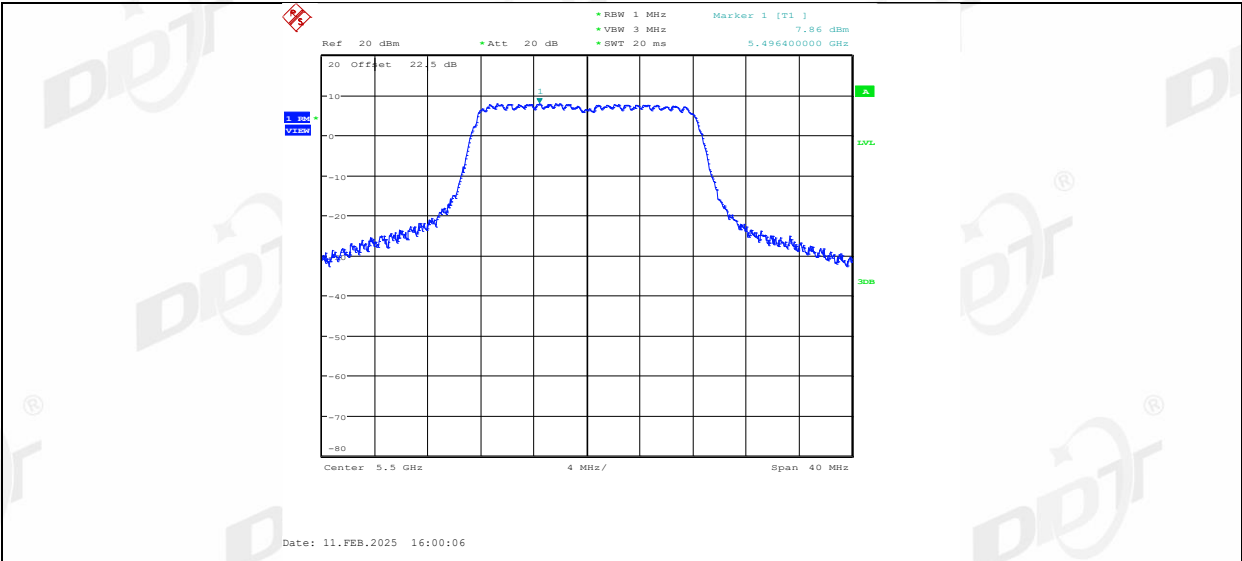


11A\_Ant1\_5320

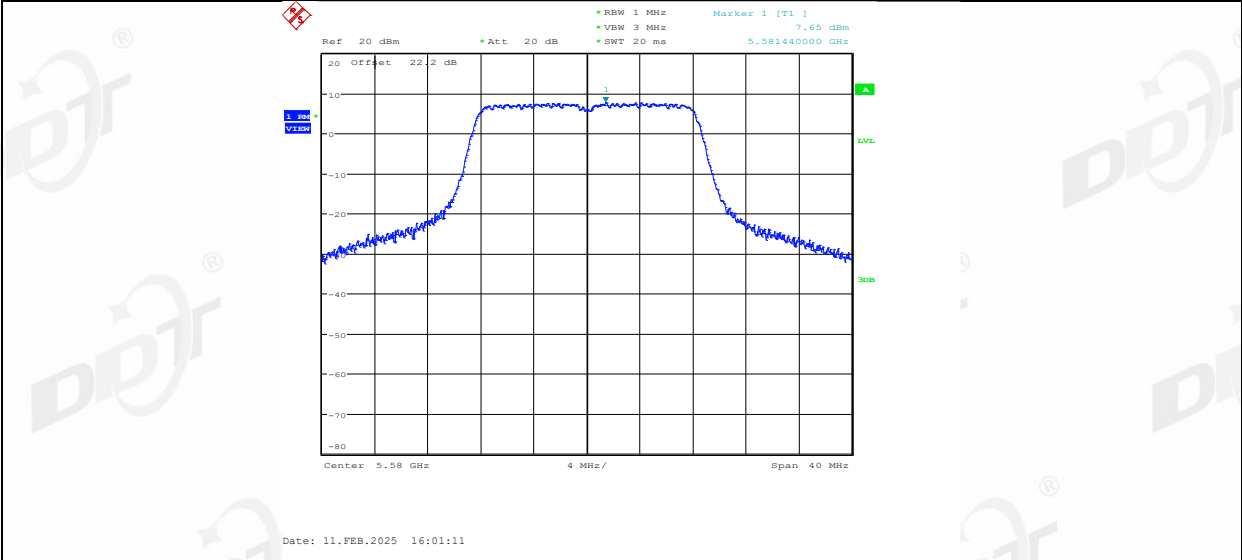


11A\_Ant1\_5500

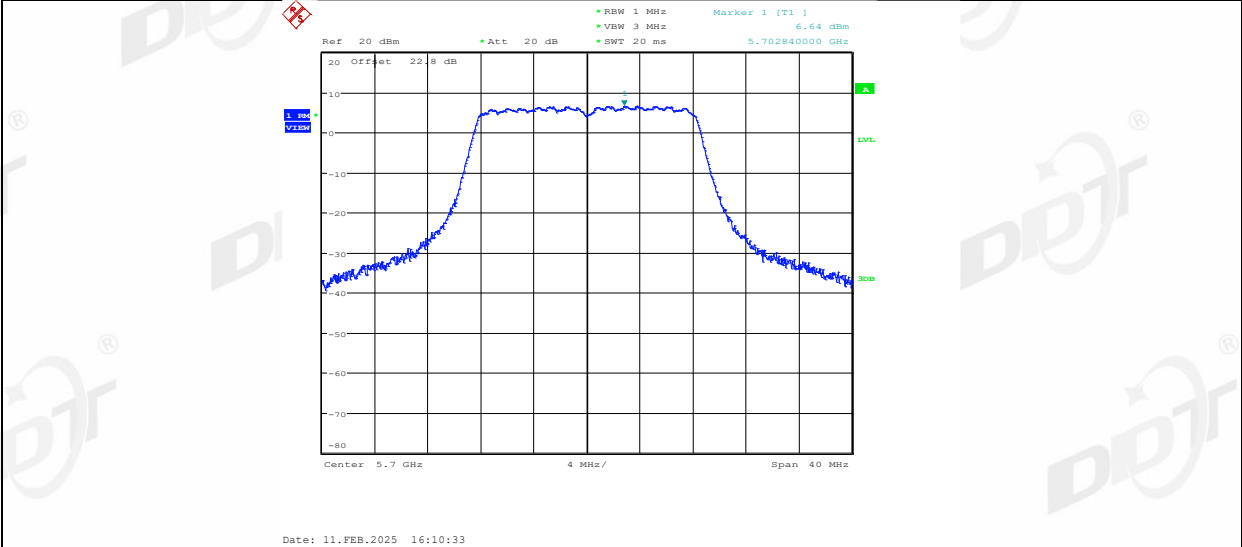




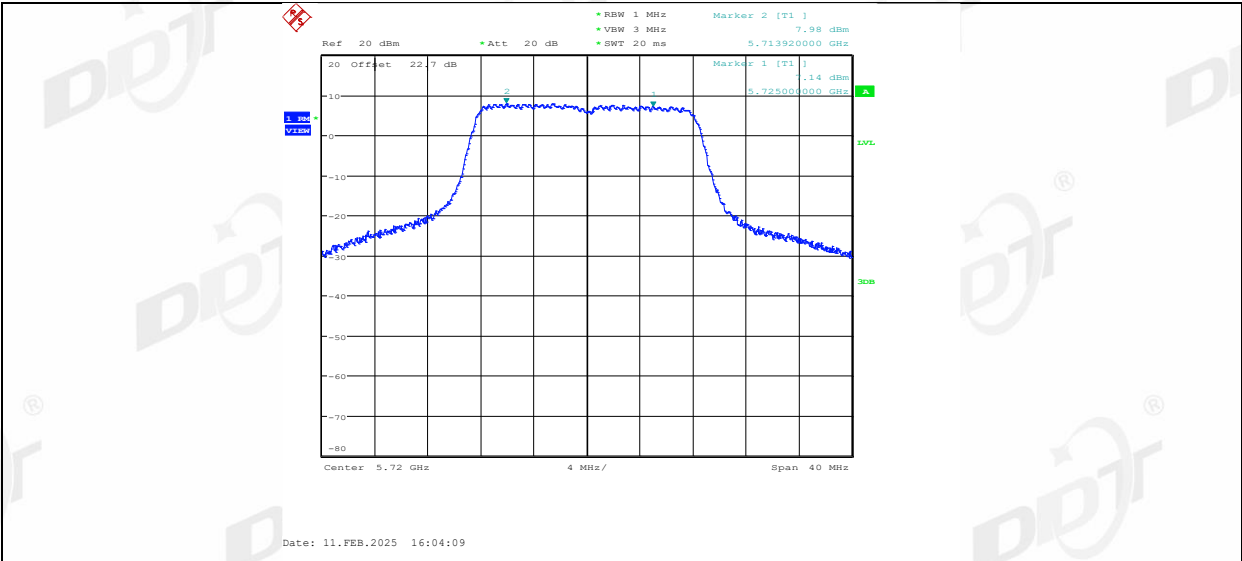
11A\_Ant1\_5580



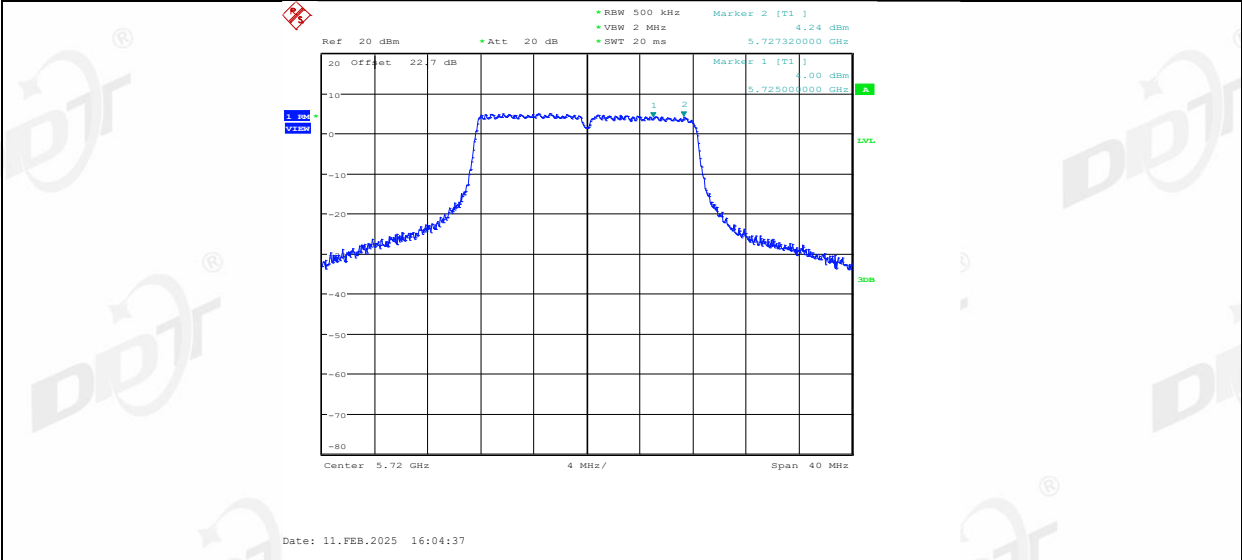
11A\_Ant1\_5700



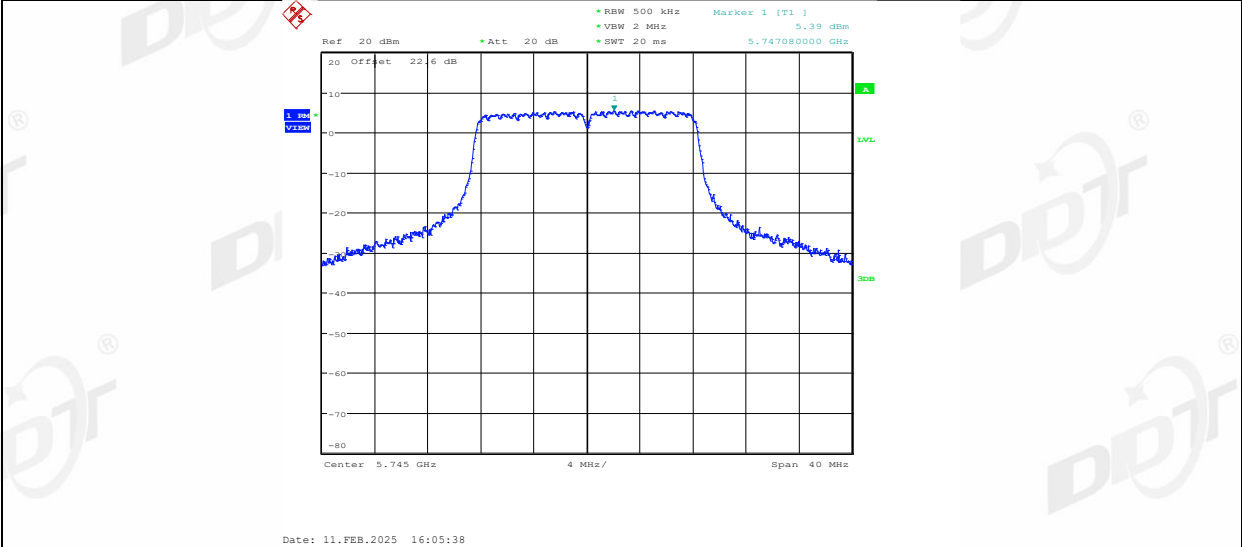
11A\_Ant1\_5720\_UNII-2C



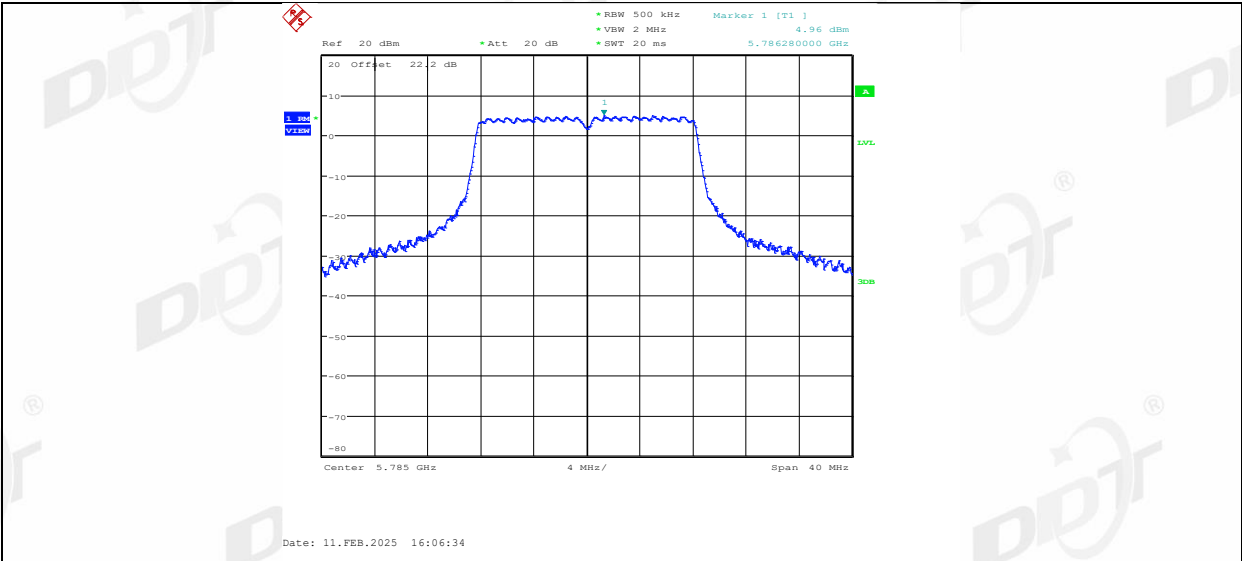
11A Ant1\_5720\_UNII-3



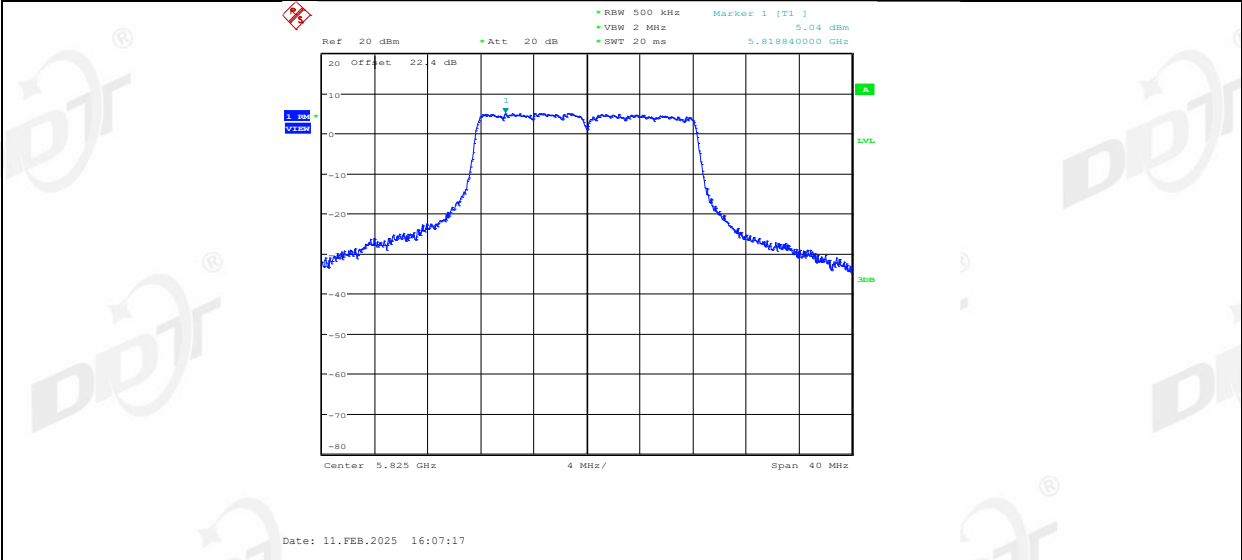
11A Ant1\_5745



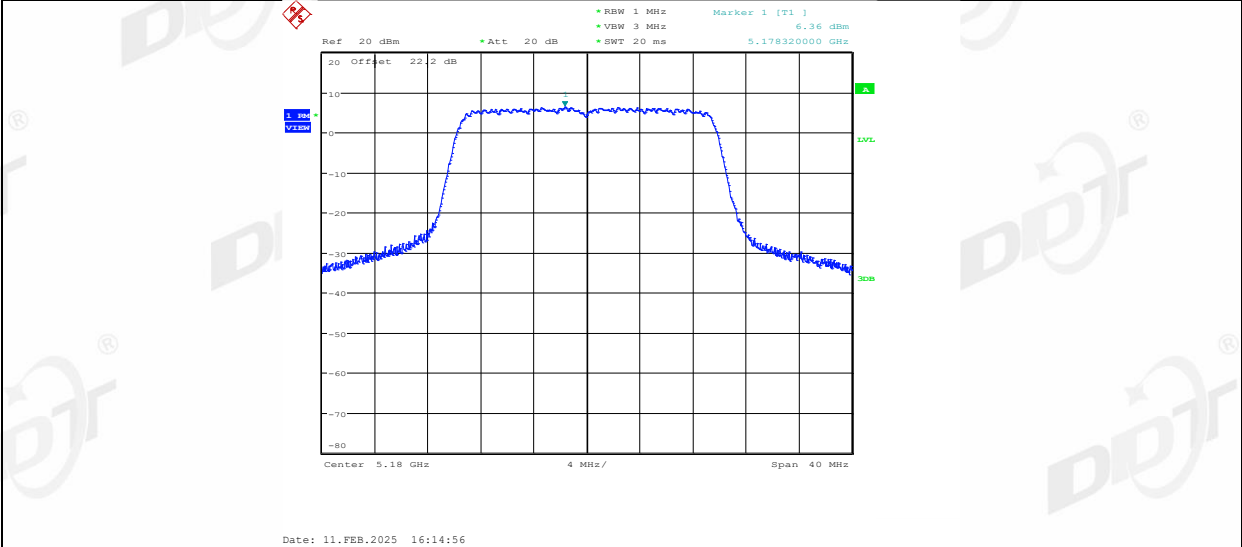
11A Ant1\_5785



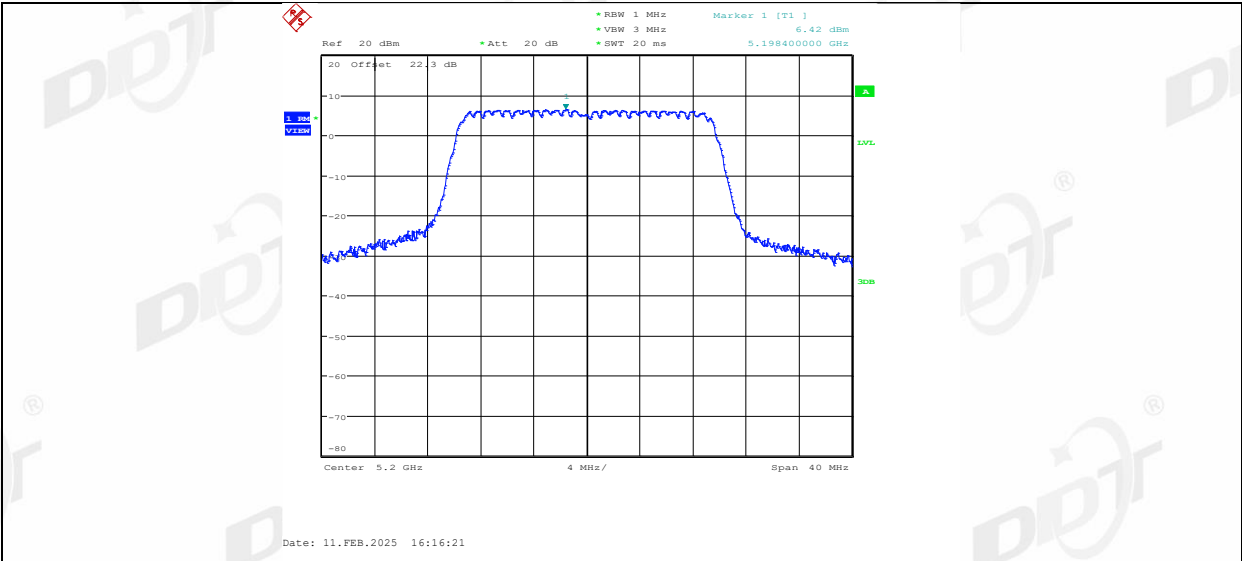
11A\_Ant1\_5825



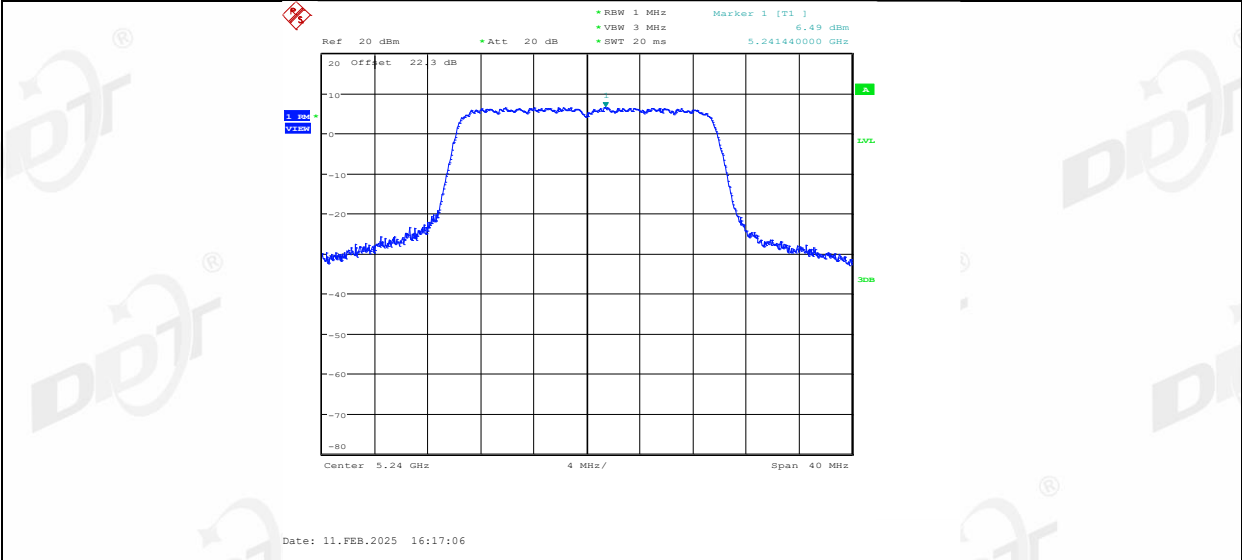
11AX20SISO\_Ant1\_5180



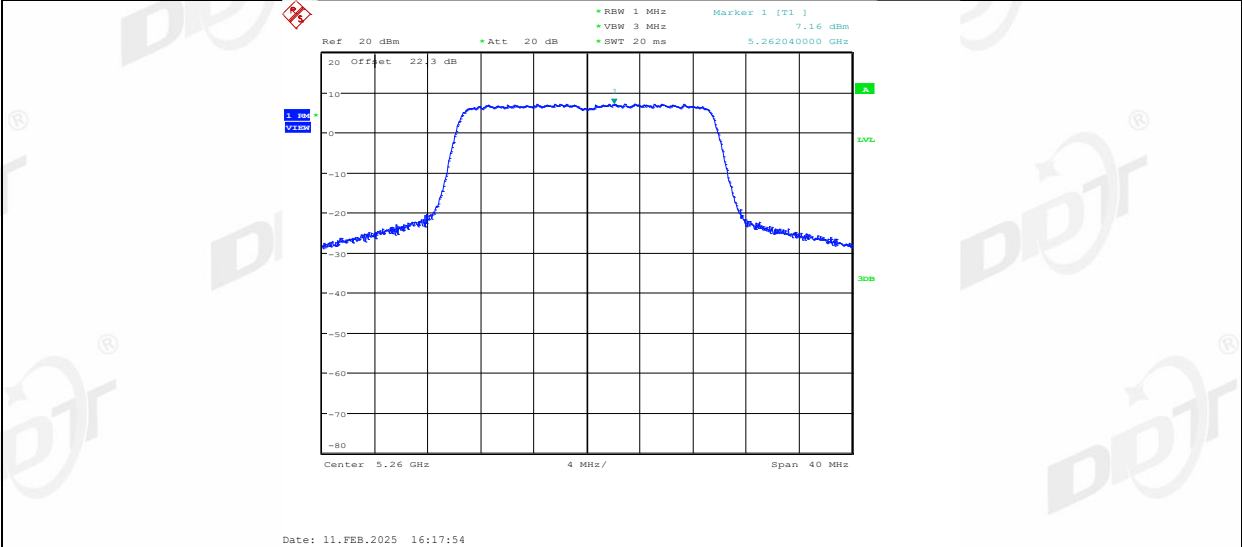
11AX20SISO\_Ant1\_5200



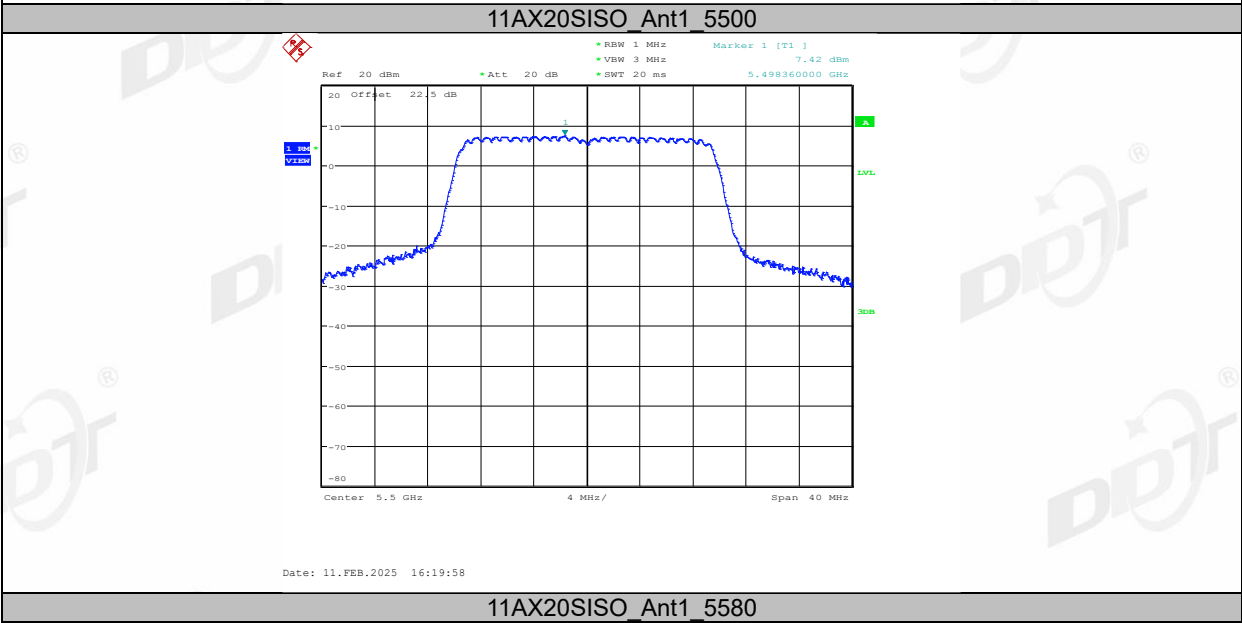
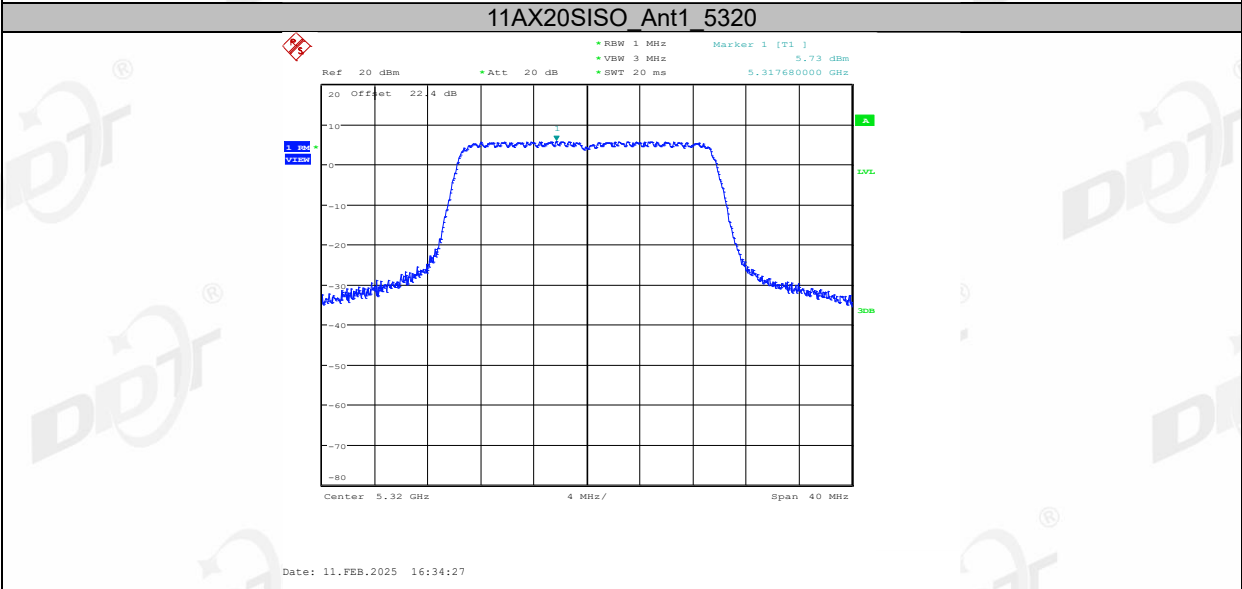
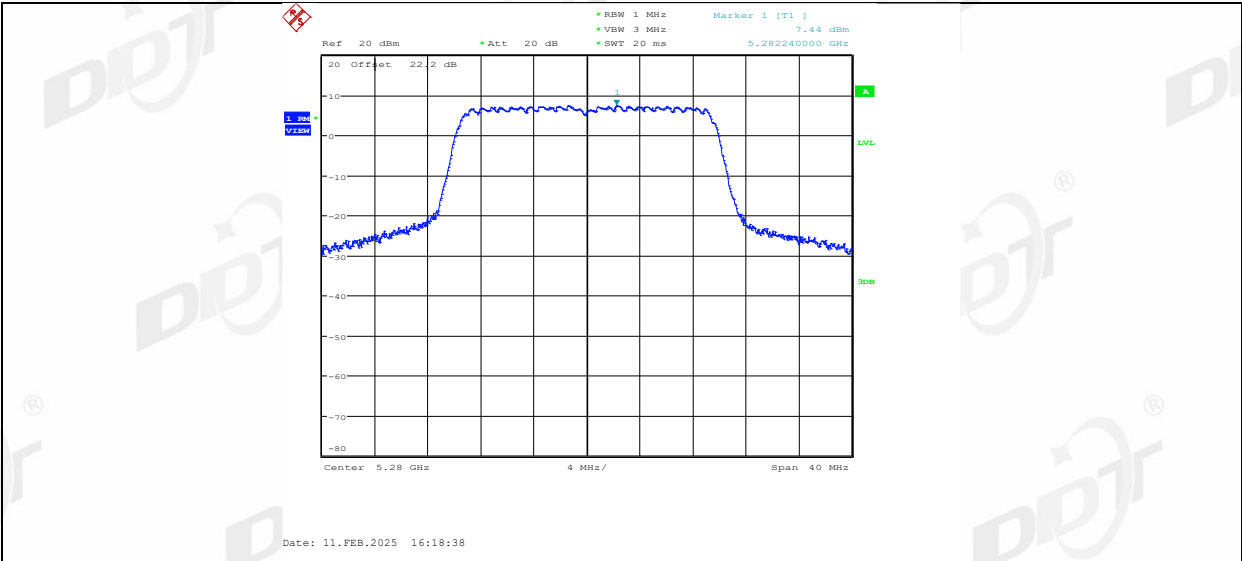
11AX20SISO\_Ant1\_5240

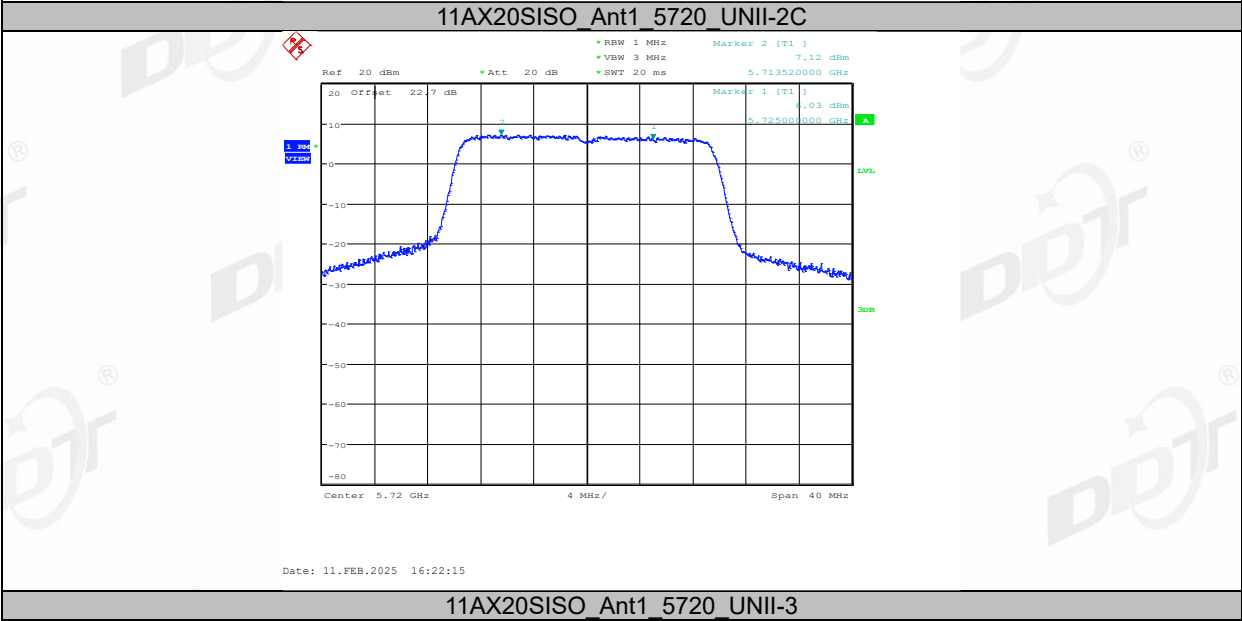
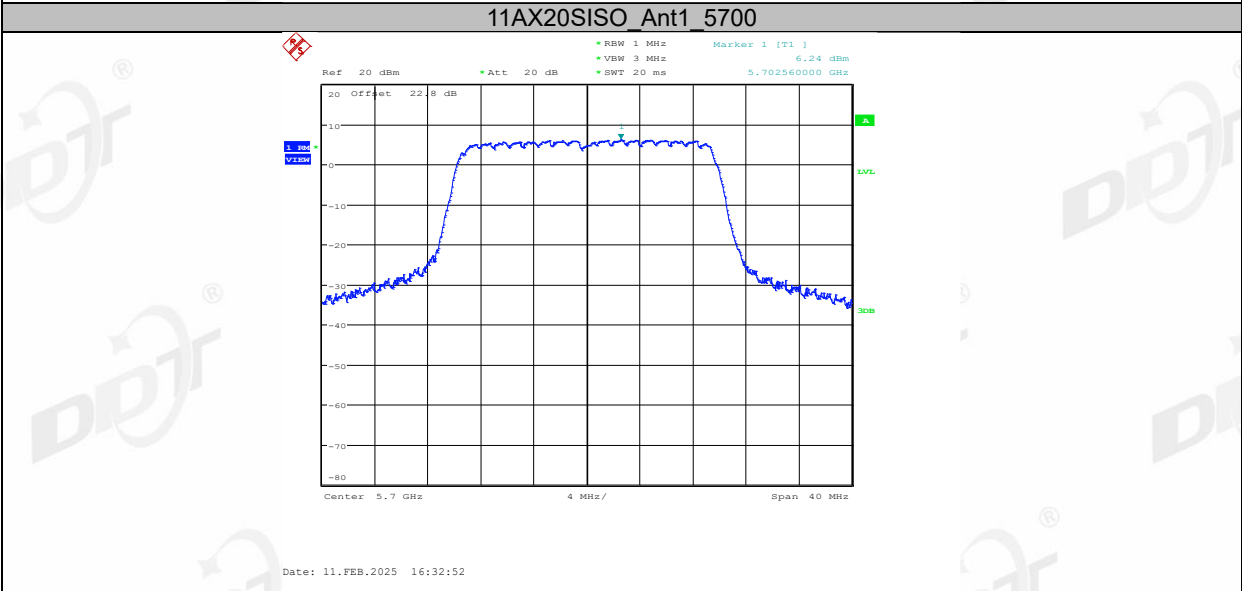
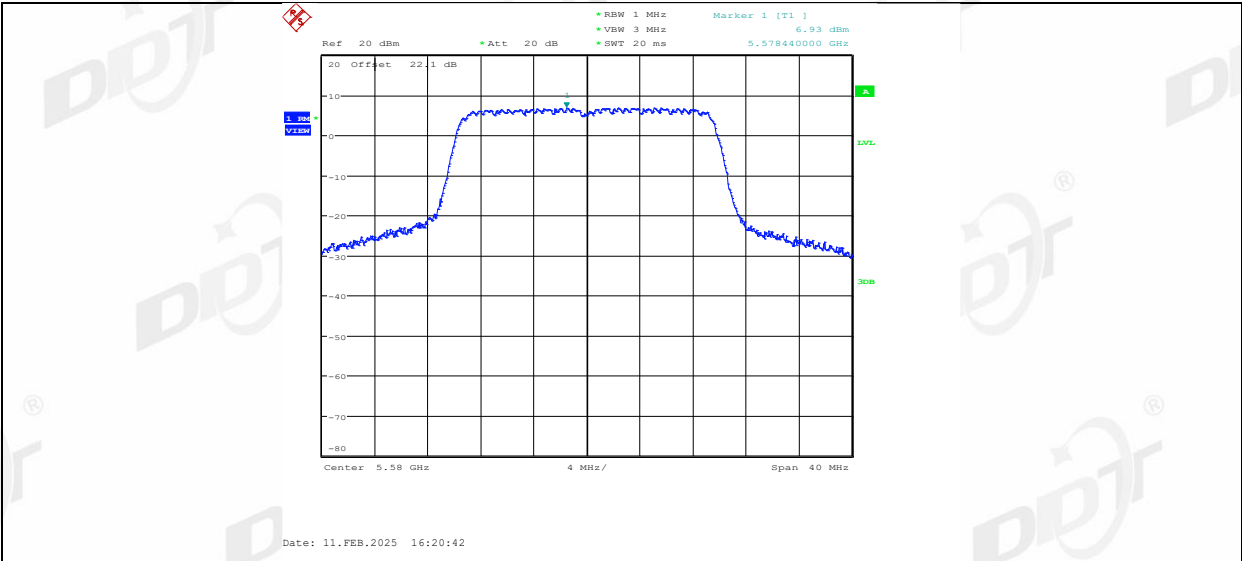


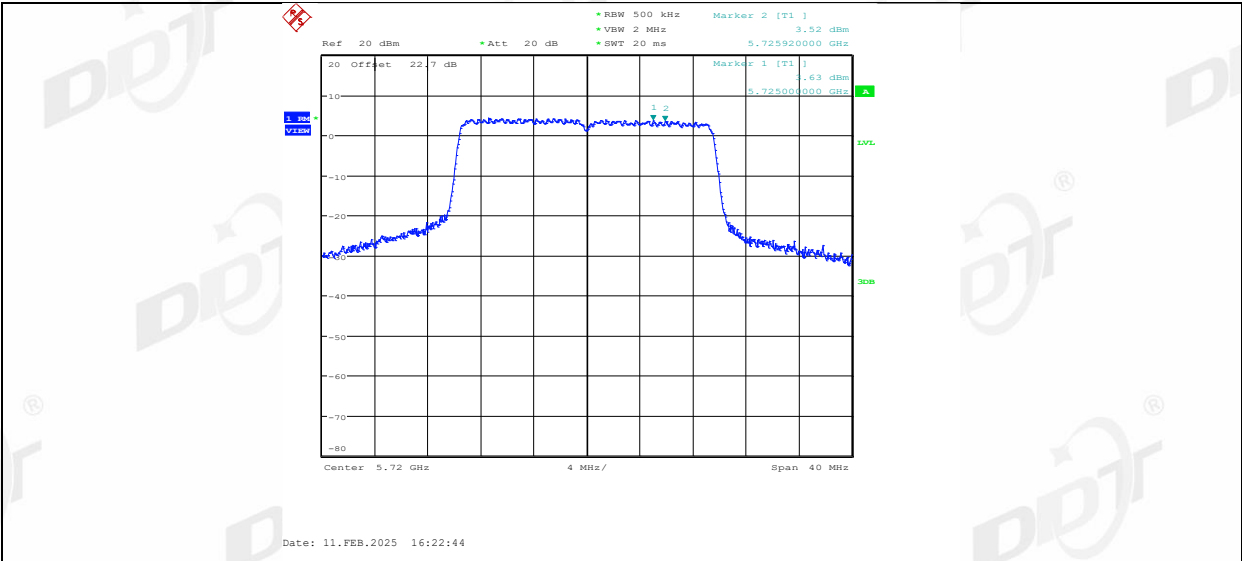
11AX20SISO\_Ant1\_5260



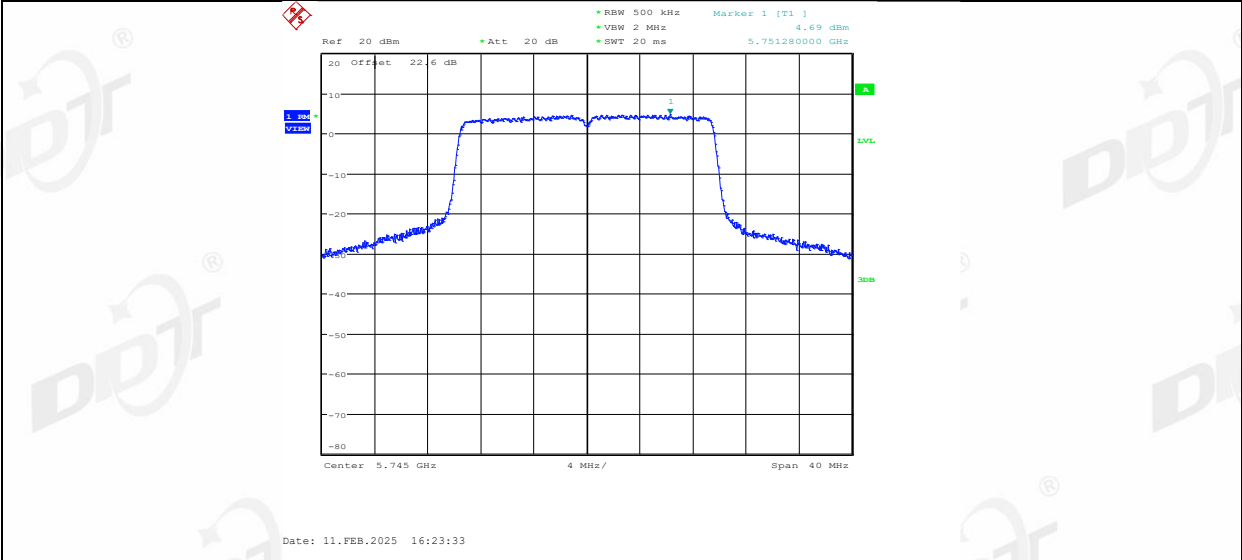
11AX20SISO\_Ant1\_5280



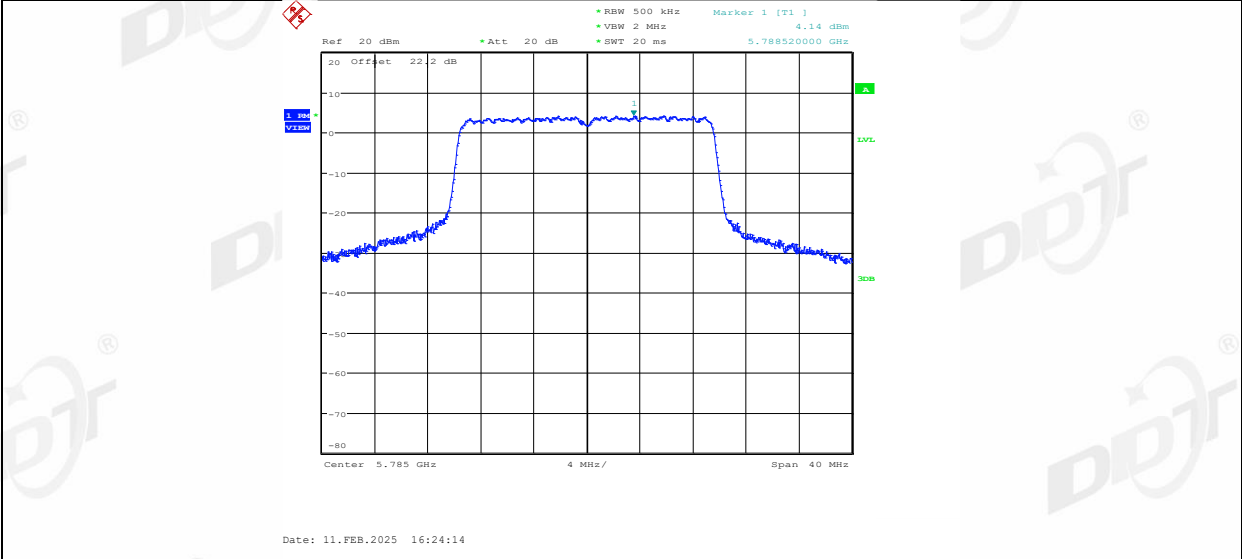




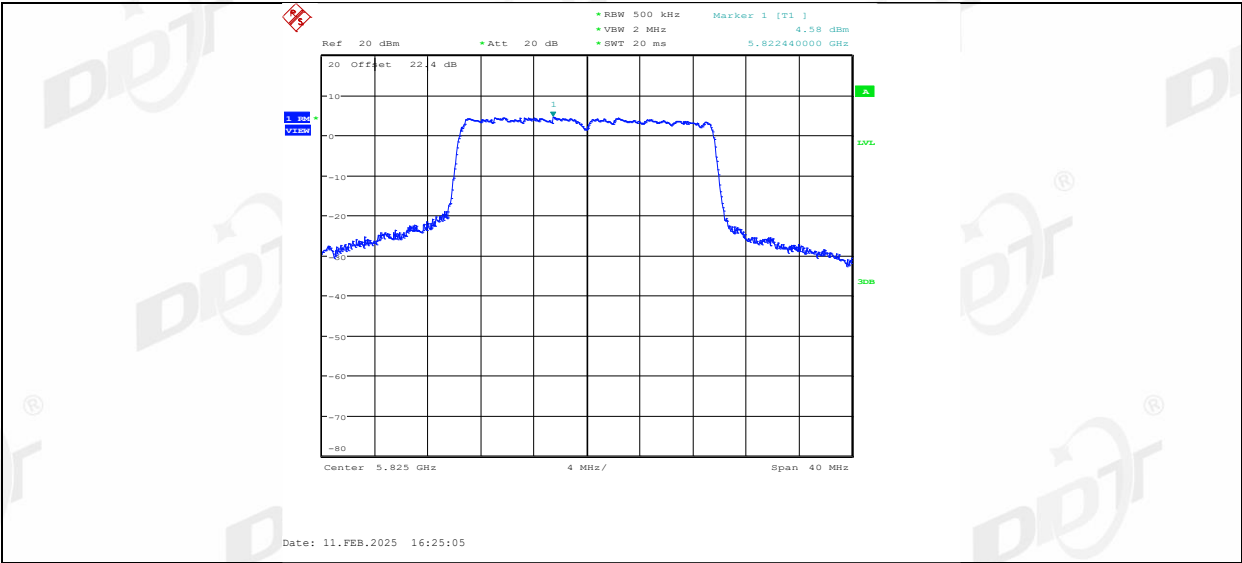
11AX20SISO\_Ant1\_5745



11AX20SISO\_Ant1\_5785



11AX20SISO\_Ant1\_5825





## 10. Frequency Stability Measurement

### 10.1. Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user’s manual.

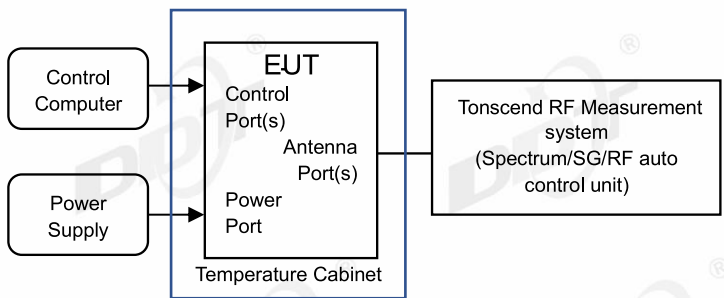
### 10.2. Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

### 10.3. Test procedures

- (1) To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
- (2) The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10 dB lower than the measured peak value.
- (3) The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

### 10.4. Test setup



10.5. Test result

|                    |             |                |                          |
|--------------------|-------------|----------------|--------------------------|
| Test Engineer:     | Zora Zhang  | Test Site:     | RF Measurement System 1# |
| Ambient Condition: | 24.3℃,46%RH | Test Date:     | 2024.11.30-2025.01.03    |
| Test Power Supply: | Battery     | Sample Number: | S24111520-011            |

| Voltage     |         |                 |               |                 |                |                 |             |         |
|-------------|---------|-----------------|---------------|-----------------|----------------|-----------------|-------------|---------|
| Test Mode   | Antenna | Frequency [MHz] | Voltage [Vdc] | Temperature (℃) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| 11A         | Ant1    | 5180            | NV            | NT              | -20000.00      | -3.861004       | 20          | PASS    |
|             |         |                 | LV            | NT              | -20000.00      | -3.861004       | 20          | PASS    |
|             |         |                 | HV            | NT              | -20000.00      | -3.861004       | 20          | PASS    |
|             |         | 5200            | NV            | NT              | -20000.00      | -3.846154       | 20          | PASS    |
|             |         |                 | LV            | NT              | 0.00           | 0.000000        | 20          | PASS    |
|             |         |                 | HV            | NT              | 0.00           | 0.000000        | 20          | PASS    |
|             |         | 5240            | NV            | NT              | -40000.00      | -7.633588       | 20          | PASS    |
|             |         |                 | LV            | NT              | -20000.00      | -3.816794       | 20          | PASS    |
|             |         |                 | HV            | NT              | -20000.00      | -3.816794       | 20          | PASS    |
|             |         | 5260            | NV            | NT              | -20000.00      | -3.802281       | 20          | PASS    |
|             |         |                 | LV            | NT              | -20000.00      | -3.802281       | 20          | PASS    |
|             |         |                 | HV            | NT              | -40000.00      | -7.604563       | 20          | PASS    |
|             |         | 5280            | NV            | NT              | 0.00           | 0.000000        | 20          | PASS    |
|             |         |                 | LV            | NT              | 0.00           | 0.000000        | 20          | PASS    |
|             |         |                 | HV            | NT              | -20000.00      | -3.787879       | 20          | PASS    |
|             |         | 5320            | NV            | NT              | -40000.00      | -7.518797       | 20          | PASS    |
|             |         |                 | LV            | NT              | -20000.00      | -3.759398       | 20          | PASS    |
|             |         |                 | HV            | NT              | -20000.00      | -3.759398       | 20          | PASS    |
|             |         | 5500            | NV            | NT              | -20000.00      | -3.636364       | 20          | PASS    |
|             |         |                 | LV            | NT              | 0.00           | 0.000000        | 20          | PASS    |
|             |         |                 | HV            | NT              | 0.00           | 0.000000        | 20          | PASS    |
|             |         | 5580            | NV            | NT              | 0.00           | 0.000000        | 20          | PASS    |
|             |         |                 | LV            | NT              | -20000.00      | -3.584229       | 20          | PASS    |
|             |         |                 | HV            | NT              | 0.00           | 0.000000        | 20          | PASS    |
|             |         | 5700            | NV            | NT              | -20000.00      | -3.508772       | 20          | PASS    |
|             |         |                 | LV            | NT              | -20000.00      | -3.508772       | 20          | PASS    |
|             |         |                 | HV            | NT              | -20000.00      | -3.508772       | 20          | PASS    |
|             |         | 5720            | NV            | NT              | -20000.00      | -3.496503       | 20          | PASS    |
|             |         |                 | LV            | NT              | -20000.00      | -3.496503       | 20          | PASS    |
|             |         |                 | HV            | NT              | -20000.00      | -3.496503       | 20          | PASS    |
|             |         | 5745            | NV            | NT              | -20000.00      | -3.481288       | 20          | PASS    |
|             |         |                 | LV            | NT              | -20000.00      | -3.481288       | 20          | PASS    |
|             |         |                 | HV            | NT              | -20000.00      | -3.481288       | 20          | PASS    |
|             |         | 5785            | NV            | NT              | -20000.00      | -3.457217       | 20          | PASS    |
|             |         |                 | LV            | NT              | 0.00           | 0.000000        | 20          | PASS    |
|             |         |                 | HV            | NT              | 0.00           | 0.000000        | 20          | PASS    |
|             |         | 5825            | NV            | NT              | -40000.00      | -6.866953       | 20          | PASS    |
|             |         |                 | LV            | NT              | 0.00           | 0.000000        | 20          | PASS    |
|             |         |                 | HV            | NT              | -40000.00      | -6.866953       | 20          | PASS    |
| 11AX20S ISO | Ant1    | 5785            | NV            | NT              | -20000.00      | -3.457217       | 20          | PASS    |
|             |         |                 | LV            | NT              | -20000.00      | -3.457217       | 20          | PASS    |
|             |         |                 | HV            | NT              | -20000.00      | -3.457217       | 20          | PASS    |

| Temperature |         |                 |               |                 |                |                 |             |         |
|-------------|---------|-----------------|---------------|-----------------|----------------|-----------------|-------------|---------|
| Test Mode   | Antenna | Frequency [MHz] | Voltage [Vdc] | Temperature (℃) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| 11A         | Ant1    | 5180            | NV            | -30             | -40000.00      | -7.722008       | 20          | PASS    |
|             |         |                 | NV            | -20             | -40000.00      | -7.722008       | 20          | PASS    |
|             |         |                 | NV            | -10             | -40000.00      | -7.722008       | 20          | PASS    |
|             |         |                 | NV            | 0               | -20000.00      | -3.861004       | 20          | PASS    |
|             |         |                 | NV            | 10              | 0.00           | 0.000000        | 20          | PASS    |
|             |         |                 | NV            | 20              | -20000.00      | -3.861004       | 20          | PASS    |
|             |         |                 | NV            | 30              | -40000.00      | -7.722008       | 20          | PASS    |
|             |         |                 | NV            | 40              | -20000.00      | -3.861004       | 20          | PASS    |
|             |         |                 | NV            | 40              | -20000.00      | -3.861004       | 20          | PASS    |

|  |  |      |    |     |           |           |    |      |
|--|--|------|----|-----|-----------|-----------|----|------|
|  |  |      | NV | 50  | -20000.00 | -3.861004 | 20 | PASS |
|  |  |      | NV | -30 | -40000.00 | -7.692308 | 20 | PASS |
|  |  |      | NV | -20 | -20000.00 | -3.846154 | 20 | PASS |
|  |  |      | NV | -10 | -20000.00 | -3.846154 | 20 | PASS |
|  |  |      | NV | 0   | -40000.00 | -7.692308 | 20 | PASS |
|  |  |      | NV | 10  | -20000.00 | -3.846154 | 20 | PASS |
|  |  |      | NV | 20  | 0.00      | 0.000000  | 20 | PASS |
|  |  |      | NV | 30  | -40000.00 | -7.692308 | 20 | PASS |
|  |  |      | NV | 40  | -20000.00 | -3.846154 | 20 | PASS |
|  |  |      | NV | 50  | 0.00      | 0.000000  | 20 | PASS |
|  |  | 5240 | NV | -30 | -20000.00 | -3.816794 | 20 | PASS |
|  |  |      | NV | -20 | -40000.00 | -7.633588 | 20 | PASS |
|  |  |      | NV | -10 | -20000.00 | -3.816794 | 20 | PASS |
|  |  |      | NV | 0   | -20000.00 | -3.816794 | 20 | PASS |
|  |  |      | NV | 10  | -40000.00 | -7.633588 | 20 | PASS |
|  |  |      | NV | 20  | 0.00      | 0.000000  | 20 | PASS |
|  |  |      | NV | 30  | -20000.00 | -3.816794 | 20 | PASS |
|  |  |      | NV | 40  | -20000.00 | -3.816794 | 20 | PASS |
|  |  |      | NV | 50  | -20000.00 | -3.816794 | 20 | PASS |
|  |  | 5260 | NV | -30 | 0.00      | 0.000000  | 20 | PASS |
|  |  |      | NV | -20 | -40000.00 | -7.604563 | 20 | PASS |
|  |  |      | NV | -10 | -20000.00 | -3.802281 | 20 | PASS |
|  |  |      | NV | 0   | -20000.00 | -3.802281 | 20 | PASS |
|  |  |      | NV | 10  | 0.00      | 0.000000  | 20 | PASS |
|  |  |      | NV | 20  | 0.00      | 0.000000  | 20 | PASS |
|  |  |      | NV | 30  | -20000.00 | -3.802281 | 20 | PASS |
|  |  |      | NV | 40  | -40000.00 | -7.604563 | 20 | PASS |
|  |  |      | NV | 50  | -20000.00 | -3.802281 | 20 | PASS |
|  |  | 5280 | NV | -30 | -20000.00 | -3.787879 | 20 | PASS |
|  |  |      | NV | -20 | -20000.00 | -3.787879 | 20 | PASS |
|  |  |      | NV | -10 | -20000.00 | -3.787879 | 20 | PASS |
|  |  |      | NV | 0   | -20000.00 | -3.787879 | 20 | PASS |
|  |  |      | NV | 10  | -40000.00 | -7.575758 | 20 | PASS |
|  |  |      | NV | 20  | -40000.00 | -7.575758 | 20 | PASS |
|  |  |      | NV | 30  | -20000.00 | -3.787879 | 20 | PASS |
|  |  |      | NV | 40  | -20000.00 | -3.787879 | 20 | PASS |
|  |  |      | NV | 50  | 0.00      | 0.000000  | 20 | PASS |
|  |  | 5320 | NV | -30 | -20000.00 | -3.759398 | 20 | PASS |
|  |  |      | NV | -20 | -20000.00 | -3.759398 | 20 | PASS |
|  |  |      | NV | -10 | -20000.00 | -3.759398 | 20 | PASS |
|  |  |      | NV | 0   | 0.00      | 0.000000  | 20 | PASS |
|  |  |      | NV | 10  | -40000.00 | -7.518797 | 20 | PASS |
|  |  |      | NV | 20  | -40000.00 | -7.518797 | 20 | PASS |
|  |  |      | NV | 30  | -20000.00 | -3.759398 | 20 | PASS |
|  |  |      | NV | 40  | -20000.00 | -3.759398 | 20 | PASS |
|  |  |      | NV | 50  | -20000.00 | -3.759398 | 20 | PASS |
|  |  | 5500 | NV | -30 | -20000.00 | -3.636364 | 20 | PASS |
|  |  |      | NV | -20 | -20000.00 | -3.636364 | 20 | PASS |
|  |  |      | NV | -10 | 0.00      | 0.000000  | 20 | PASS |
|  |  |      | NV | 0   | -20000.00 | -3.636364 | 20 | PASS |
|  |  |      | NV | 10  | 0.00      | 0.000000  | 20 | PASS |
|  |  |      | NV | 20  | -20000.00 | -3.636364 | 20 | PASS |
|  |  |      | NV | 30  | 0.00      | 0.000000  | 20 | PASS |
|  |  |      | NV | 40  | -20000.00 | -3.636364 | 20 | PASS |
|  |  |      | NV | 50  | 0.00      | 0.000000  | 20 | PASS |
|  |  | 5580 | NV | -30 | 0.00      | 0.000000  | 20 | PASS |
|  |  |      | NV | -20 | -20000.00 | -3.584229 | 20 | PASS |
|  |  |      | NV | -10 | -20000.00 | -3.584229 | 20 | PASS |
|  |  |      | NV | 0   | 0.00      | 0.000000  | 20 | PASS |
|  |  |      | NV | 10  | 0.00      | 0.000000  | 20 | PASS |
|  |  |      | NV | 20  | -40000.00 | -7.168459 | 20 | PASS |
|  |  |      | NV | 30  | 0.00      | 0.000000  | 20 | PASS |
|  |  |      | NV | 40  | 0.00      | 0.000000  | 20 | PASS |
|  |  |      | NV | 50  | 0.00      | 0.000000  | 20 | PASS |

|                |      |      |    |     |           |           |    |      |
|----------------|------|------|----|-----|-----------|-----------|----|------|
|                |      | 5700 | NV | -30 | 0.00      | 0.000000  | 20 | PASS |
|                |      |      | NV | -20 | 0.00      | 0.000000  | 20 | PASS |
|                |      |      | NV | -10 | -20000.00 | -3.508772 | 20 | PASS |
|                |      |      | NV | 0   | -20000.00 | -3.508772 | 20 | PASS |
|                |      |      | NV | 10  | -20000.00 | -3.508772 | 20 | PASS |
|                |      |      | NV | 20  | -20000.00 | -3.508772 | 20 | PASS |
|                |      |      | NV | 30  | 20000.00  | 3.508772  | 20 | PASS |
|                |      |      | NV | 40  | -20000.00 | -3.508772 | 20 | PASS |
|                |      | 5720 | NV | 50  | -20000.00 | -3.508772 | 20 | PASS |
|                |      |      | NV | -30 | -20000.00 | -3.496503 | 20 | PASS |
|                |      |      | NV | -20 | -40000.00 | -6.993007 | 20 | PASS |
|                |      |      | NV | -10 | 0.00      | 0.000000  | 20 | PASS |
|                |      |      | NV | 0   | -20000.00 | -3.496503 | 20 | PASS |
|                |      |      | NV | 10  | -20000.00 | -3.496503 | 20 | PASS |
|                |      |      | NV | 20  | -40000.00 | -6.993007 | 20 | PASS |
|                |      |      | NV | 30  | 0.00      | 0.000000  | 20 | PASS |
|                |      | 5745 | NV | 40  | -40000.00 | -6.993007 | 20 | PASS |
|                |      |      | NV | 50  | 0.00      | 0.000000  | 20 | PASS |
|                |      |      | NV | -30 | 0.00      | 0.000000  | 20 | PASS |
|                |      |      | NV | -20 | -20000.00 | -3.481288 | 20 | PASS |
|                |      |      | NV | -10 | 0.00      | 0.000000  | 20 | PASS |
|                |      |      | NV | 0   | -20000.00 | -3.481288 | 20 | PASS |
|                |      |      | NV | 10  | 0.00      | 0.000000  | 20 | PASS |
|                |      |      | NV | 20  | 0.00      | 0.000000  | 20 | PASS |
|                |      | 5785 | NV | 30  | -20000.00 | -3.481288 | 20 | PASS |
|                |      |      | NV | 40  | 0.00      | 0.000000  | 20 | PASS |
|                |      |      | NV | 50  | -20000.00 | -3.481288 | 20 | PASS |
|                |      |      | NV | -30 | 0.00      | 0.000000  | 20 | PASS |
|                |      |      | NV | -20 | 0.00      | 0.000000  | 20 | PASS |
|                |      |      | NV | -10 | 0.00      | 0.000000  | 20 | PASS |
|                |      |      | NV | 0   | -20000.00 | -3.457217 | 20 | PASS |
|                |      |      | NV | 10  | 0.00      | 0.000000  | 20 | PASS |
|                |      | 5825 | NV | 20  | -20000.00 | -3.457217 | 20 | PASS |
|                |      |      | NV | 30  | 0.00      | 0.000000  | 20 | PASS |
|                |      |      | NV | 40  | 0.00      | 0.000000  | 20 | PASS |
|                |      |      | NV | 50  | -20000.00 | -3.457217 | 20 | PASS |
|                |      |      | NV | -30 | -20000.00 | -3.433476 | 20 | PASS |
|                |      |      | NV | -20 | -20000.00 | -3.433476 | 20 | PASS |
|                |      |      | NV | -10 | -20000.00 | -3.433476 | 20 | PASS |
|                |      |      | NV | 0   | 0.00      | 0.000000  | 20 | PASS |
| 11AX20S<br>ISO | Ant1 | 5785 | NV | 10  | -40000.00 | -6.866953 | 20 | PASS |
|                |      |      | NV | 20  | 0.00      | 0.000000  | 20 | PASS |
|                |      |      | NV | 30  | 0.00      | 0.000000  | 20 | PASS |
|                |      |      | NV | 40  | -20000.00 | -3.433476 | 20 | PASS |
|                |      |      | NV | 50  | -20000.00 | -3.433476 | 20 | PASS |
|                |      |      | NV | -30 | -20000.00 | -3.457217 | 20 | PASS |
|                |      |      | NV | -20 | -20000.00 | -3.457217 | 20 | PASS |
|                |      |      | NV | -10 | -20000.00 | -3.457217 | 20 | PASS |
|                |      |      | NV | 0   | -20000.00 | -3.457217 | 20 | PASS |
|                |      |      | NV | 10  | -20000.00 | -3.457217 | 20 | PASS |
|                |      |      | NV | 20  | -20000.00 | -3.457217 | 20 | PASS |
|                |      |      | NV | 30  | -20000.00 | -3.457217 | 20 | PASS |
|                |      |      | NV | 40  | -20000.00 | -3.457217 | 20 | PASS |
|                |      |      | NV | 50  | -20000.00 | -3.457217 | 20 | PASS |

## 11. Dynamic Frequency Selection

### 11.1. Applicability of DFS requirements

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

| Requirement                     | Operational Mode                |                                                                    |                                                      |
|---------------------------------|---------------------------------|--------------------------------------------------------------------|------------------------------------------------------|
|                                 | <input type="checkbox"/> Master | <input checked="" type="checkbox"/> Client Without Radar Detection | <input type="checkbox"/> Client with Radar Detection |
| Non-Occupancy Period            | Yes                             | Not required                                                       | Yes                                                  |
| DFS Detection Threshold         | Yes                             | Not required                                                       | Yes                                                  |
| Channel Availability Check Time | Yes                             | Not required                                                       | Not required                                         |
| U-NII Detection Bandwidth       | Yes                             | Not required                                                       | Yes                                                  |

Table 2: Applicability of DFS requirements during normal operation

| Requirement                       | Operational Mode                                                      |                                                                    |
|-----------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------|
|                                   | <input type="checkbox"/> Master Device or Client with Radar Detection | <input checked="" type="checkbox"/> Client Without Radar Detection |
| DFS Detection Threshold           | Yes                                                                   | Not required                                                       |
| Channel Closing Transmission Time | Yes                                                                   | Yes                                                                |
| Channel Move Time                 | Yes                                                                   | Yes                                                                |
| U-NII Detection Bandwidth         | Yes                                                                   | Not required                                                       |

|                                                                   |                                                                       |                                                                    |
|-------------------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------|
| Additional requirements for devices with multiple bandwidth modes | <input type="checkbox"/> Master Device or Client with Radar Detection | <input checked="" type="checkbox"/> Client Without Radar Detection |
| U-NII Detection Bandwidth and Statistical Performance Check       | All BW modes must be tested                                           | Not required                                                       |
| Channel Move Time and Channel Closing Transmission Time           | Test using widest BW mode available                                   | Test using the widest BW mode available for the link               |
| All other tests                                                   | Any single BW mode                                                    | Not required                                                       |

Note: Frequencies selected for statistical performance check should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.

## 11.2. Limit

### (1) DFS Detection Thresholds

Table 3: DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

| Maximum Transmit Power                                                         | Value (See Notes 1, 2, and 3) |
|--------------------------------------------------------------------------------|-------------------------------|
| EIRP $\geq$ 200 milliwatt                                                      | -64 dBm                       |
| EIRP $<$ 200 milliwatt and power spectral density $<$ 10 dBm/MHz               | -62 dBm                       |
| EIRP $<$ 200 milliwatt that do not meet the power spectral density requirement | -64 dBm                       |

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.

Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

### (2) DFS Response Requirements

Table 4: DFS Response Requirement Values

| Parameter                         | Value                                                                                                     |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------|
| Non-occupancy period              | Minimum 30 minutes                                                                                        |
| Channel Availability Check Time   | 60 seconds                                                                                                |
| Channel Move Time                 | 10 seconds<br>See Note 1.                                                                                 |
| Channel Closing Transmission Time | 200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period.<br>See Notes 1 and 2. |
| U-NII Detection Bandwidth         | Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.                                   |

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required facilitating a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

## 11.3. Parameters of radar test waveforms

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

Table 5 Short Pulse Radar Test Waveforms

| Radar Type                                                                                                                                                                                                                                                                                                                                                                                         | Pulse Width (μsec) | PRI (μsec) | Number of Pulses                                                                                                              | Minimum Percentage of Successful Detection | Minimum Number of Trials |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|--------------------------|
| 0                                                                                                                                                                                                                                                                                                                                                                                                  | 1                  | 1428       | 18                                                                                                                            | See Note 1                                 | See Note 1               |
| 1                                                                                                                                                                                                                                                                                                                                                                                                  | 1                  | Test A     | Roundup $\left\{ \left( \frac{1}{360} \right) \cdot \left( \frac{19 \cdot 10^6}{\text{PRI}_{\mu\text{sec}}} \right) \right\}$ | 60%                                        | 30                       |
|                                                                                                                                                                                                                                                                                                                                                                                                    |                    | Test B     |                                                                                                                               |                                            |                          |
| 2                                                                                                                                                                                                                                                                                                                                                                                                  | 1-5                | 150-230    | 23-29                                                                                                                         | 60%                                        | 30                       |
| 3                                                                                                                                                                                                                                                                                                                                                                                                  | 6-10               | 200-500    | 16-18                                                                                                                         | 60%                                        | 30                       |
| 4                                                                                                                                                                                                                                                                                                                                                                                                  | 11-20              | 200-500    | 12-16                                                                                                                         | 60%                                        | 30                       |
| Aggregate (Radar Types 1-4)                                                                                                                                                                                                                                                                                                                                                                        |                    |            |                                                                                                                               | 80%                                        | 120                      |
| Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.<br>Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a<br>Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A |                    |            |                                                                                                                               |                                            |                          |

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B. Test aggregate is average of the percentage of successful detections of short pulse radar types 1-4

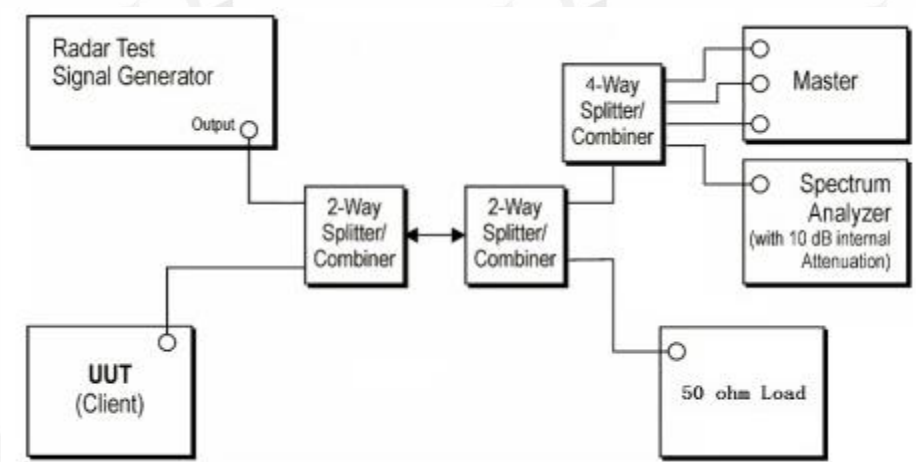
#### 11.4. Calibration of radar waveform

Radar Waveform Calibration Procedure:

- (1) A 50 ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to place of the master
- (2) The interference Radar Detection Threshold Level is  $-62\text{dBm} + 2.77\text{dBi} = -59.23\text{dBm}$  that had been taken into account the output power range and antenna gain.
- (3) The following equipment setup was used to calibrate the conducted radar waveform. A vector signal generator was utilized to establish the test signal level for radar type 0. During this process there were no transmissions by either the master or client device. The spectrum analyzer was switched to the zero spans (time domain) at the frequency of the radar waveform generator. Peak detection was used. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3 MHz.
- (4) The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was  $-62\text{dBm} + 2.77\text{dBi} = -59.23\text{dBm}$ . Capture the spectrum analyzer plots on short pulse radar waveform.

Conducted Calibration Setup:

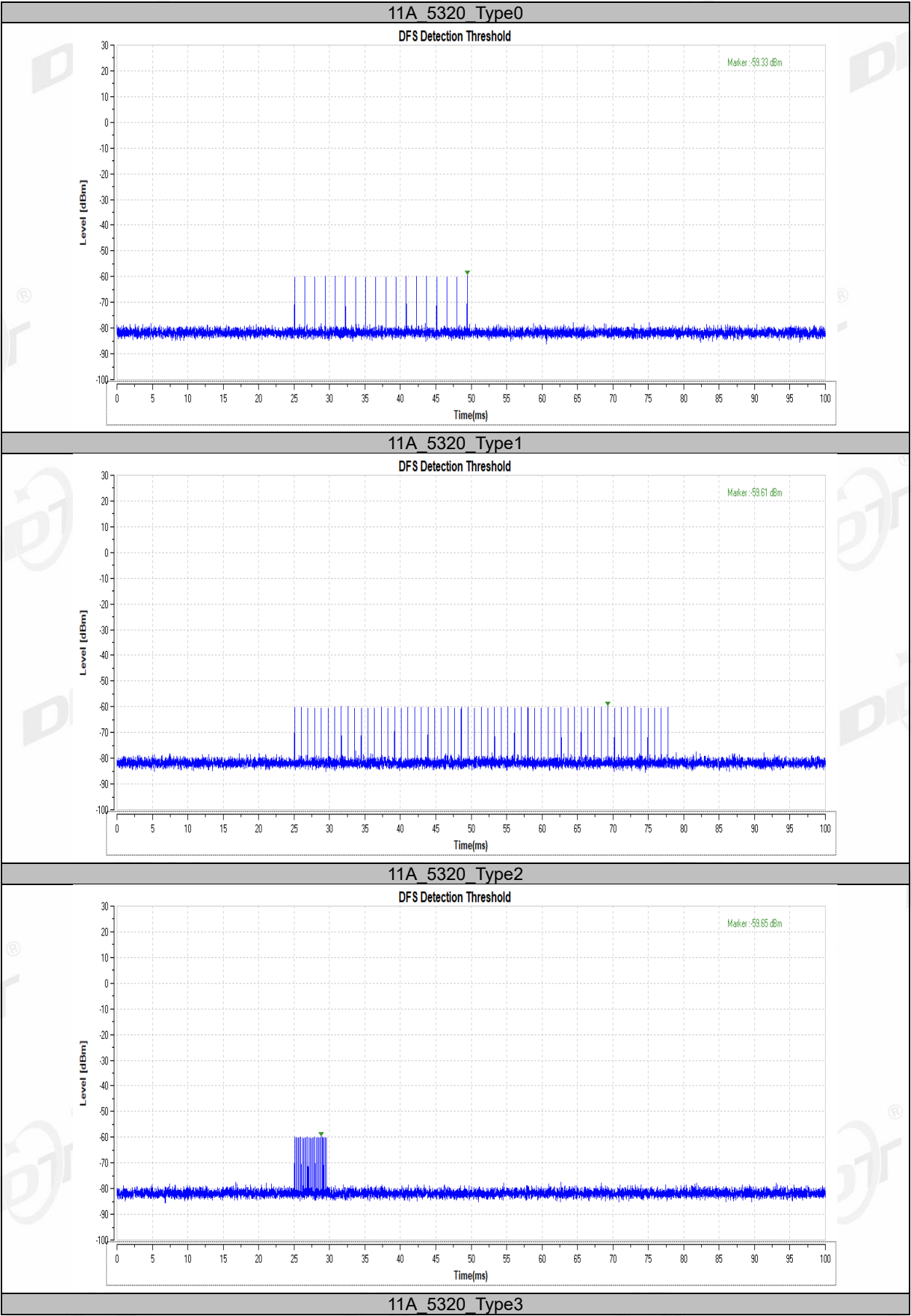


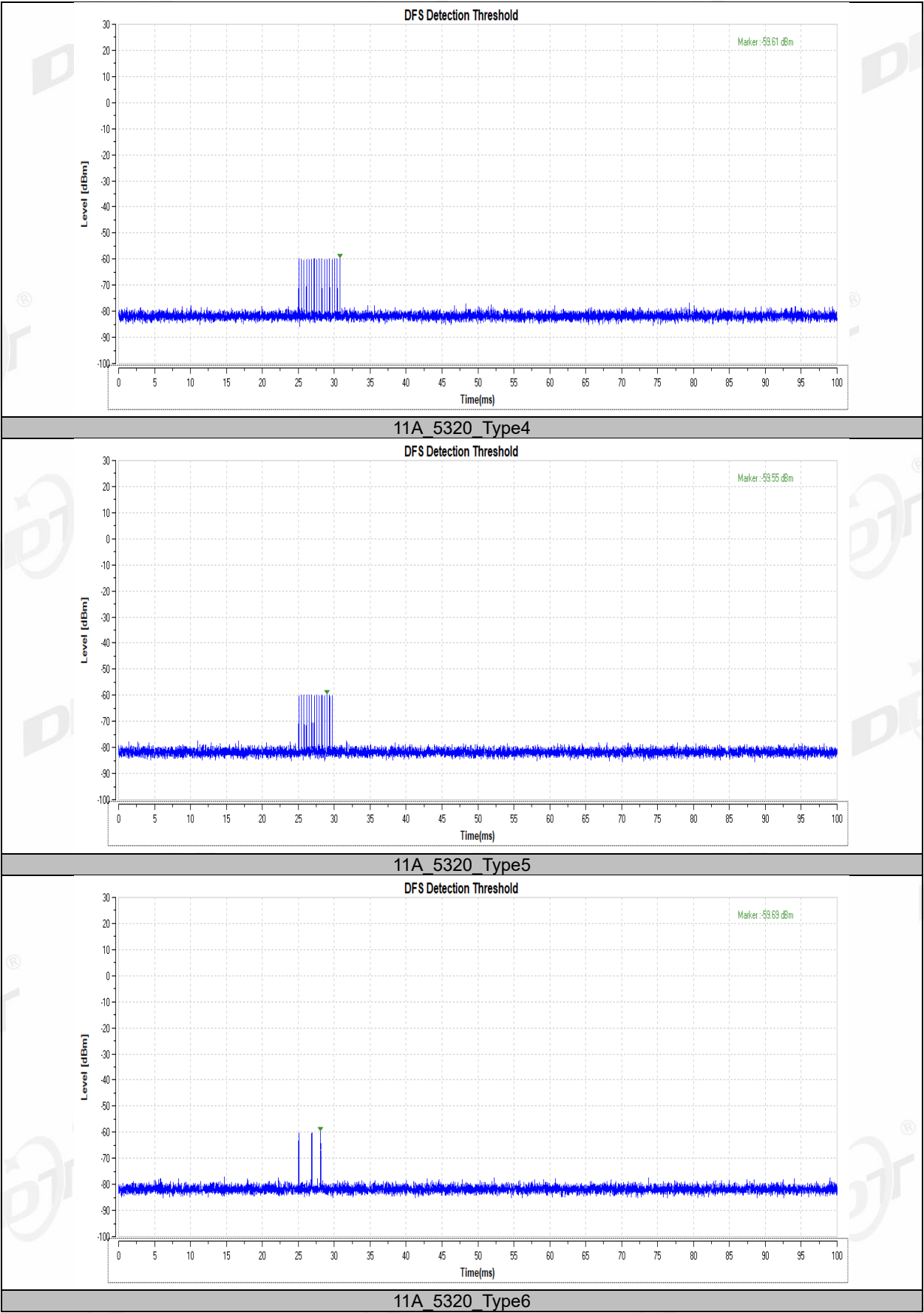


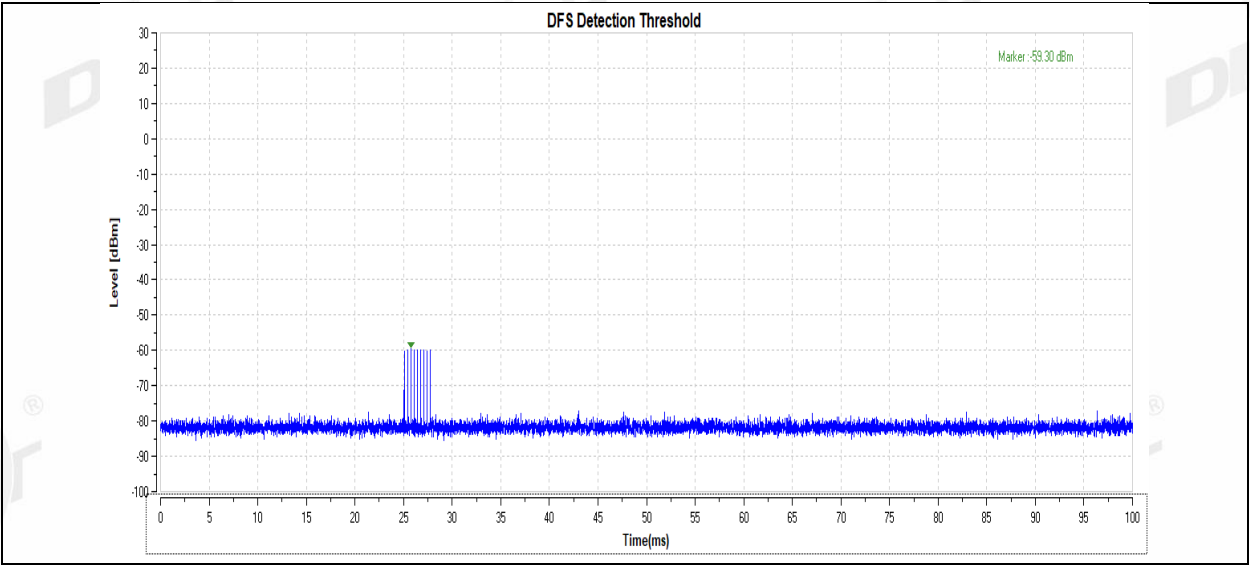
Note: 1. Use the software "Web" to set the frequency channel.  
2. EUT is not support TPC and not with Radar detection.  
Radar Waveform Calibration Result:

| Test Mode | Frequency [MHz] | Radar Type | Result | Limit[dbm] | Verdict |
|-----------|-----------------|------------|--------|------------|---------|
| 11A       | 5320            | Type0      | -59.33 | -59.23     | PASS    |
|           |                 | Type1      | -59.61 | -59.23     | PASS    |
|           |                 | Type2      | -59.65 | -59.23     | PASS    |
|           |                 | Type3      | -59.61 | -59.23     | PASS    |
|           |                 | Type4      | -59.55 | -59.23     | PASS    |
|           |                 | Type5      | -59.69 | -59.23     | PASS    |
|           |                 | Type6      | -59.30 | -59.23     | PASS    |









### 11.5. Channel closing transmission time, channel move time and non-occupancy period

Block diagram of test setup Test Procedure:

- (1) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.
- (2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.
- (3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
- (4) EUT will associate with the master at channel. The file "iperf.exe" specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Test Software in order to properly load the network for the entire period of the test.
- (5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.
- (6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.
- (7) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the
- (8) spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by:  $Dwell (0.3ms) = S (12000ms) / B (4000)$ ; where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by:  $C (ms) = N \times Dwell (0.3ms)$ ; where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.

Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

### 11.6. Test setup

Setup for Client with injection at the Master

