# FCC AND ISED CERTIFICATION TEST REPORT

| | | |
|---|---|---|
| **Applicant** | : | Linkplay Technology Inc. |
| **Address of Applicant** | : | 8000 Jarvis Avenue Suite #130, Newark, CA 94560, United States |
| **Manufacturer** | : | DongGuan Tristar Electronic Co.,Ltd |
| **Address of Manufacturer** | : | Building 1 & Building2, NO.196, Tangxia Dongxing Road, Tangxia Town, Dongguan City, Guangdong Province, China |
| **Equipment under Test** | : | WiiM Amp |
| **Model No.** | : | For FCC: AMP001, WiiM Amp Space Gray, WiiM Amp Silver, WiiM Amp Midnight Blue<br>For ISED: AMP001 |
| **FCC ID** | : | 2BABF-AMP001 |
| **IC** | : | 30828-AMP001 |
| **Test Standard(s)** | : | FCC Rules and Regulations Part 15 Subpart C,<br>RSS-247 Issue 3 August 2023,<br>ANSI C63.10:2013,<br>RSS-Gen Issue 5, Apr. 2018, Amendment 2 (February 2021) |
| **Report No.** | : | DDT-RE23061614-2E03 |
| **Issue Date** | : | 2023/11/03 |
| **Issue By** | : | Guangdong Dongdian Testing Service Co., Ltd. |
| **Address of Laboratory** | : | Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808 |

REPORT

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# Test Report Declare

| | | |
|---|---|---|
| **Applicant** | : | Linkplay Technology Inc. |
| **Address of Applicant** | : | 8000 Jarvis Avenue Suite #130, Newark, CA 94560, United States |
| **Equipment under Test** | : | WiiM Amp |
| **Model No.** | : | For FCC: AMP001, WiiM Amp Space Gray, WiiM Amp Silver, WiiM Amp Midnight Blue<br>For ISED: AMP001 |
| **Manufacturer** | : | DongGuan Tristar Electronic Co.,Ltd |
| **Address of Manufacturer** | : | Building 1 & Building2, NO.196, Tangxia Dongxing Road, Tangxia Town, Dongguan City, Guangdong Province, China |

**Test Standard Used:**

FCC Rules and Regulations Part 15 Subpart C, RSS-247 Issue 3 August 2023.

**Test Procedure Used:**

ANSI C63.10:2013, RSS-Gen Issue 5, Apr. 2018, Amendment 2 (February 2021),
558074 D01 15.247 Meas Guidance v05r02, 662911 D01 Multiple Transmitter Output v02r01

**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.

**After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above standards.**

| | | | |
|---|---|---|---|
| **Report No.:** | DDT-RE23061614-2E03 | | |
| **Date of Receipt:** | 2023/09/22 | **Date of Test:** | 2023/09/22-2023/11/03 |

| ***Prepared By:*** | ***Approved By:*** |
|---|---|
| Jacky Huang | Damon Hu |
| ***Jacky Huang/Engineer*** | ***Damon Hu/EMC Manager*** |

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 | 2023/11/03 | |
| | | | |

# 1. Summary of Test Results

| The EUT have been tested according to the applicable standards as referenced below. | | |
|---|---|---|
| **Description of Test Item** | **Standard** | **Results** |
| 6dB Bandwidth and 99% Bandwidth | FCC Part 15: 15.247(a)(2)<br>RSS-247 Issue 2 clause 5.2(a) | PASS |
| Conducted Output Power | FCC Part 15: 15.247(b)(3)<br>RSS-247 Issue 2 clause 5.4(d) | PASS |
| Power Spectral Density | FCC Part 15:15.247(e)<br>RSS-247 Issue 2 clause 5.2(b) | PASS |
| Band-edge and Spurious Emissions (Conducted) | FCC Part 15: 15.247(d)<br>RSS-247 Issue 2 clause 5.5 | PASS |
| Radiated Spurious Emissions | FCC Part 15: 15.205<br>FCC Part 15: 15.209<br>FCC Part 15: 15.247(d)<br>RSS-247 Issue 2 clause 5.5<br>RSS-Gen Issue 5 clause 8.9 | PASS |
| Radiated Band Edge Compliance | FCC Part 15: 15.205<br>FCC Part 15: 15.209<br>FCC Part 15: 15.247(d)<br>RSS-247 Issue 2 clause 5.5<br>RSS-Gen Issue 5 clause 8.9 | PASS |
| Power Line Conducted Emission | FCC Part 15: 15.207(a)<br>RSS-Gen Issue 5 clause 8.8 | PASS |
| Antenna requirement | FCC Part 15: 15.203<br>RSS-Gen Issue 5 clause 6.8 | PASS |

# 2. General Test Information

## 2.1. Description of EUT

| | | |
|---|---|---|
| EUT Name | : | WiiM Amp |
| Model Number | : | For FCC: AMP001, WiiM Amp Space Gray, WiiM Amp Silver, WiiM Amp Midnight Blue<br>For ISED: AMP001 |
| Model Difference | : | Only the model number and the color of the product are different, the test model is AMP001. |
| EUT function description | : | Please reference user manual of this device |
| Power Supply | : | AC 100-240V-50/60Hz, 4A Max. |
| Radio Specification | : | Bluetooth V5.0 (BR/EDR/LE),<br>WLAN (2.4 GHz): IEEE 802.11b/g/n,<br>WLAN (5 GHz): IEEE 802.11a/n/ac |
| Operation Frequency | : | Bluetooth (BR/EDR/LE): 2402 MHz-2480 MHz<br>IEEE 802.11b/g/n: 2412 MHz to 2462 MHz,<br>IEEE 802.11a/n/ac: 5180 MHz to 5240 MHz, 5260 MHz to 5320 MHz, 5500 MHz to 5720 MHz, 5745 MHz to 5825 MHz |
| Modulation | : | Bluetooth BR/EDR: GFSK, π/4-DQPSK, 8DPSK<br>Bluetooth LE: GFSK<br>IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK)<br>IEEE 802.11g/a: OFDM (64QAM, 16QAM, QPSK, BPSK)<br>IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK)<br>IEEE 802.11ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK) |
| Sample Number | : | S23061614-04 for conductive, S23061614-05 for radiation |

Note 1: EUT is the abbreviation of equipment under test.

Note 2: “☒” means to be chosen or applicable; “☐” means don’t to be chosen or not applicable; This note applies to entire report.

Note 3: This report only for WLAN (2.4 GHz): IEEE 802.11b/g/n.

Note 4: Simultaneously transmission condition: N/A.

Note 5: Antenna information:

| WLAN (2.4 GHz) Antenna information | | |
|---|---|---|
| Antenna Type | : | FPC |
| Antenna Gain(dBi) | : | 2.67 |

Note 6: Channel information:

| Channel information | | | | | |
|---|---|---|---|---|---|
| CH | Frequency (MHz) | CH | Frequency (MHz) | CH | Frequency (MHz) |
| 1 | 2412 | 5 | 2432 | 9 | 2452 |
| 2 | 2417 | 6 | 2437 | 10 | 2457 |
| 3 | 2422 | 7 | 2442 | 11 | 2462 |
| 4 | 2427 | 8 | 2447 | / | / |

Note 7: 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.

## 2.2. Accessories of EUT

| Accessories | Manufacturer | Model number | Description |
|---|---|---|---|
| HDMI line | / | / | Length: 1.50m, Unshielded |
| Line in cable | / | / | Length: 1.50m, Unshielded |
| OPT cable | / | / | Length: 1.50m, Unshielded |
| Controller | / | WVR001 | / |

## 2.3. Assistant equipment used for test

| Assistant equipment | Manufacturer | Model number | EMC Compliance | SN |
|---|---|---|---|---|
| Laptop | Lenovo | X201 | N/A | 00154-290-415-484 |

## 2.4. Block diagram of EUT configuration for test

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

The pathloss of external cable: 0.5dB (According to the manufacturer's claims)

| Tested mode, channel, and data rate information | | | | |
|---|---|---|---|---|
| Mode | Setting Tx Power | data rate (Mbps) (see Note) | Channel | Frequency (MHz) |
| IEEE 802.11b | Default | 1 | LCH: CH1 | 2412 |
| | Default | 1 | MCH: CH6 | 2437 |
| | Default | 1 | HCH: CH11 | 2462 |
| IEEE 802.11g | Default | 6 | LCH: CH1 | 2412 |
| | Default | 6 | MCH: CH6 | 2437 |
| | Default | 6 | HCH: CH11 | 2462 |
| IEEE 802.11n HT20 | Default | MCS 0 | LCH: CH1 | 2412 |
| | Default | MCS 0 | MCH: CH6 | 2437 |
| | Default | MCS 0 | HCH: CH11 | 2462 |
| 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

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

## 2.7. Test laboratory

Guangdong Dongdian Testing Service Co., Ltd.

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.

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-20155, G-20118

## 2.8. Measurement uncertainty

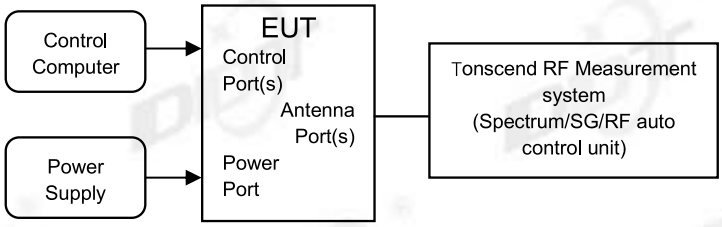
| Test Item | Uncertainty |
|---|---|
| Bandwidth | 1.1% |
| Peak Output Power (Conducted) (Spectrum analyzer) | 0.86 dB (10 MHz ≤ f < 3.6 GHz); |
| | 1.38 dB (3.6 GHz ≤ f < 8 GHz) |
| Peak Output Power (Conducted) (Power Sensor) | 0.74 dB |
| Power Spectral Density | 0.74 dB (10 MHz ≤ f < 3.6 GHz); |
| | 1.38 dB (3.6 GHz ≤ f < 8 GHz) |
| Frequencies Stability | $6.7 \times 10^{-8}$ (Antenna couple method) |
| | $5.5 \times 10^{-8}$ (Conducted method) |
| Conducted spurious emissions | 0.86 dB (10 MHz ≤ f < 3.6 GHz); |
| | 1.40 dB (3.6 GHz ≤ f < 8 GHz) |
| | 1.66 dB (8 GHz ≤ f < 26.5 GHz) |
| Uncertainty for radio frequency (RBW < 20 kHz) | $3\times10^{-8}$ |
| Temperature | 0.4 ℃ |
| Humidity | 2 % |
| Uncertainty for Radiation Emission test (9 kHz – 30 MHz) | 3.44 dB |
| Uncertainty for Radiation Emission test (30 MHz - 1 GHz) | 4.70 dB (Antenna Polarize: V) |
| | 4.84 dB (Antenna Polarize: H) |
| Uncertainty for Radiation Emission test (1 GHz - 40 GHz) | 4.10 dB (1 - 6 GHz) |
| | 4.40 dB (6 GHz - 18 GHz) |
| | 3.54 dB (18 GHz - 26 GHz) |
| | 4.30 dB (26 GHz - 40 GHz) |
| Uncertainty for Power line conduction emission test | 3.34dB (150KHz-30MHz) |
| | 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 | Cal. Interval |
|---|---|---|---|---|---|
| ☒ RF Connected Test (RF Measurement System 1#) | | | | | |
| SIGNAL ANALYZER | R&S | FSQ26 | 101272 | 2024/04/26 | 1 Year |
| Wideband Radio Communication Tester | R&S | CMW500 | 120259 | 2024/07/14 | 1 Year |
| MXG Vector Signal Generator | KEYSIGHT | N5182B | MY59100192 | 2024/04/26 | 1 Year |
| MXG Vector Signal Generator | Agilent | N5182A | MY19060405 | 2024/04/26 | 1 Year |
| RF Control Unit | Tonsend | JS0806-2 | 158060010 | 2024/04/26 | 1 Year |
| TEMP&HUMI Programmable Chamber | ZHIXIANG | ZXGDJS-150L | ZX170110-A | 2024/05/14 | 1 Year |
| Test Software | Tonscend | JS1120-3 | Ver.3.2.22 | N/A | N/A |

# 4. 6dB Bandwidth

## 4.1. Block diagram of test setup




## 4.2. Limits

For direct sequence systems, the minimum 6 dB bandwidth shall be at least 500 kHz

## 4.3. Test procedure

(1) The test according to ANSI C63.10-2013 clause 11.8.

(2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results

(3) Set the EUT as maximum power setting and enable the EUT transmit continuously

(4) Use the following spectrum analyzer settings for 6 dB Bandwidth:

| | |
|---|---|
| RBW: | 100 kHz |
| VBW: | ≥ [3 × RBW] |
| Detector Mode: | peak |
| Sweep time: | auto |
| Trace mode | max hold |

(5) Allow the trace to stabilize, measure the 6 dB bandwidth of signal, and record the results in the report. A

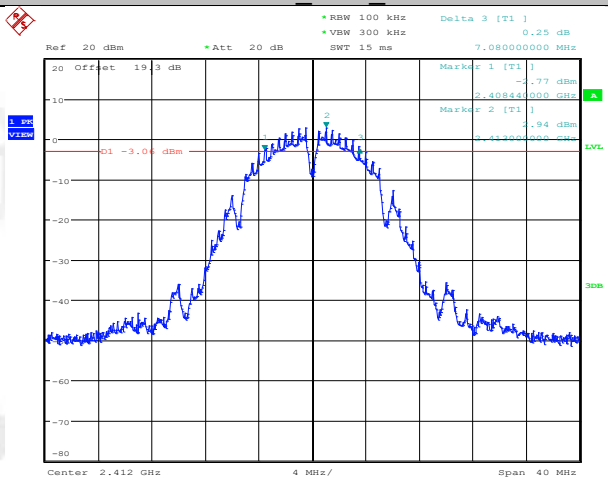
## 4.4. Test result

| | | | |
|---|---|---|---|
| Test Site: | RF Measurement System 1# | Test Date: | 2023.10.16-2023.10.23 |
| Ambient Condition: | 25.4℃, 46.5 %RH | Test Engineer: | Zora Zhang |
| Equipment under Test: | WiiM Amp | Model No.: | AMP001 |
| Sample Number: | S23061614-04 | Test Power Supply: | AC 230V |

| Test Mode | Antenna | Frequency [MHz] | DTS BW [MHz] | FL [MHz] | FH [MHz] | Limit [MHz] | Verdict |
|---|---|---|---|---|---|---|---|
| 11B | Ant1 | 2412 | 7.08 | 2408.44 | 2415.52 | 0.5 | PASS |
| | | 2437 | 7.04 | 2433.48 | 2440.52 | 0.5 | PASS |
| | | 2462 | 8.00 | 2458.00 | 2466.00 | 0.5 | PASS |
| 11G | Ant1 | 2412 | 15.48 | 2404.40 | 2419.88 | 0.5 | PASS |
| | | 2437 | 15.48 | 2429.40 | 2444.88 | 0.5 | PASS |
| | | 2462 | 15.16 | 2454.40 | 2469.56 | 0.5 | PASS |
| 11N20SISO | Ant1 | 2412 | 15.48 | 2404.40 | 2419.88 | 0.5 | PASS |
| | | 2437 | 15.16 | 2429.40 | 2444.56 | 0.5 | PASS |
| | | 2462 | 15.16 | 2454.40 | 2469.56 | 0.5 | PASS |

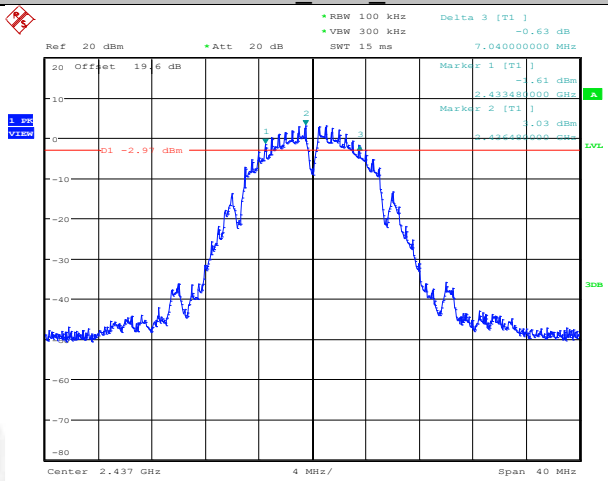
## 4.5. Test graphs

11B_Ant1_2412



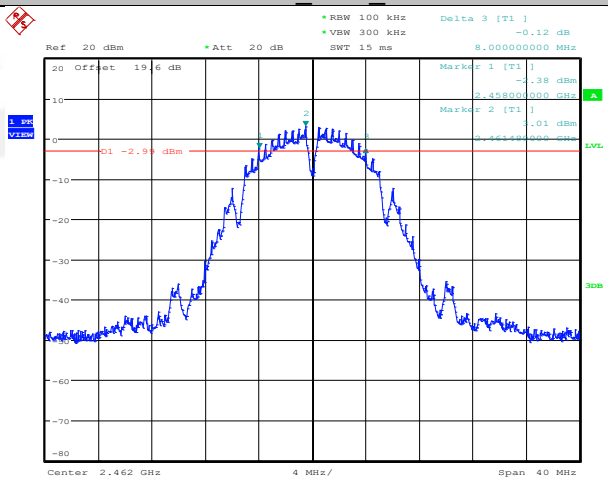

Date: 22.OCT.2023 16:37:09

11B_Ant1_2437



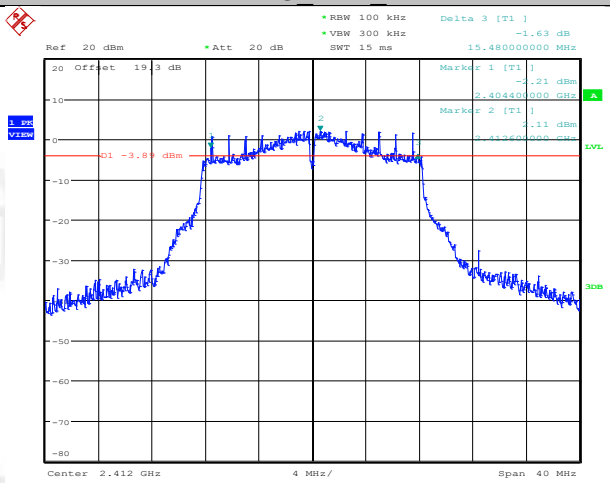

Date: 22.OCT.2023 16:39:43

11B_Ant1_2462




Date: 22.OCT.2023 16:42:17

## 11G_Ant1_2412

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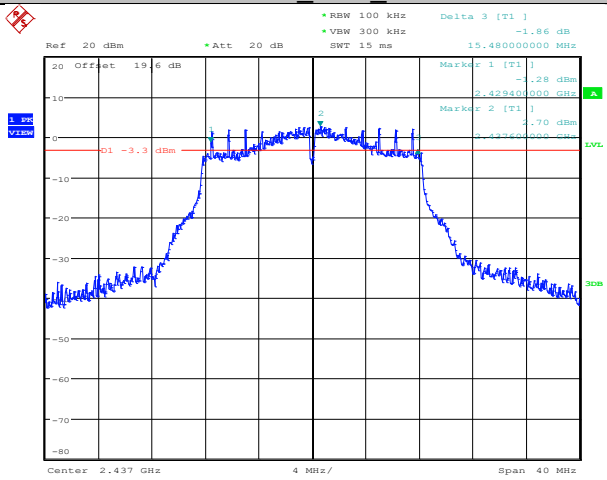
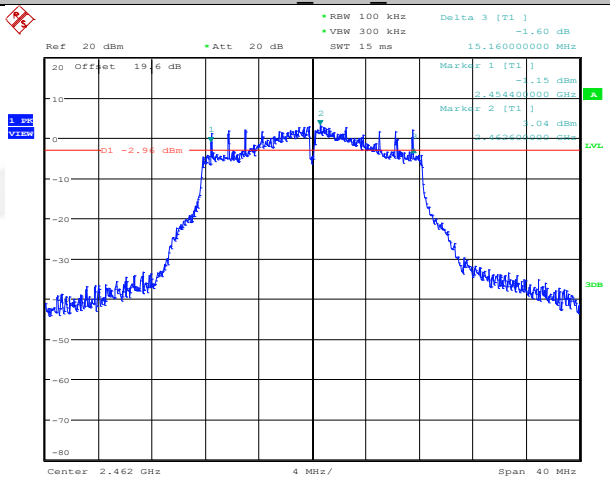
## 11G_Ant1_2437



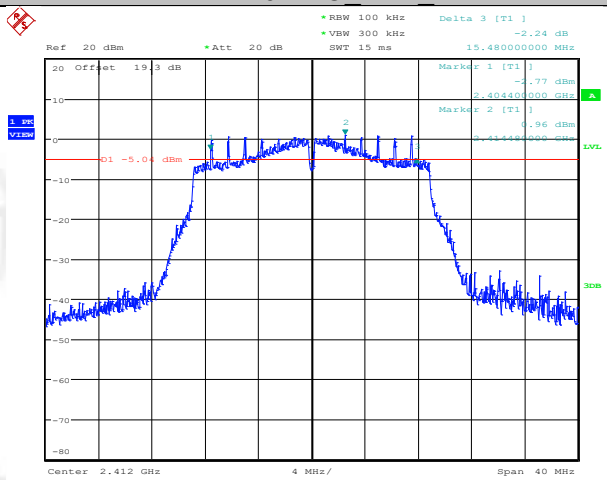

Date: 22.OCT.2023 16:47:00

## 11G_Ant1_2462



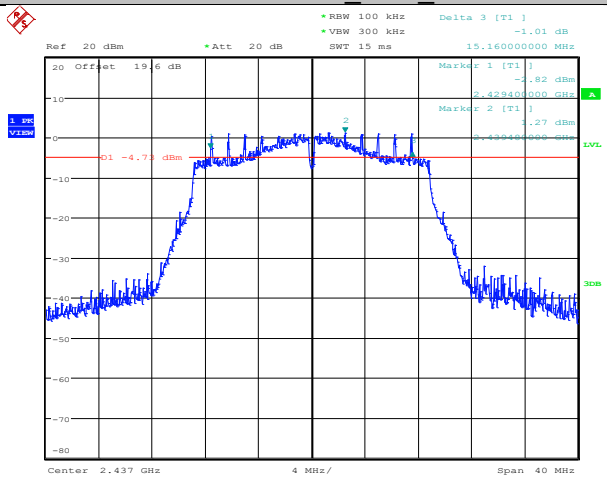

Date: 22.OCT.2023 16:49:10

## 11N20SISO_Ant1_2412



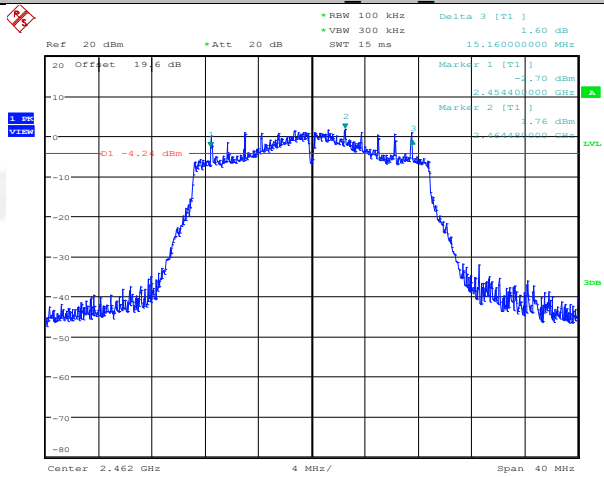

Date: 22.OCT.2023 16:51:39

## 11N20SISO_Ant1_2437




Date: 22.OCT.2023 16:53:58

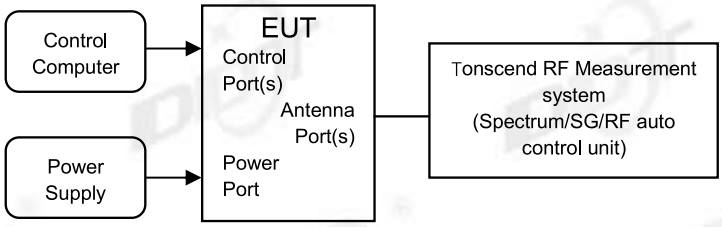
## 11N20SISO_Ant1_2462




Date: 22.OCT.2023 16:56:01

# 5. 99% Bandwidth

## 5.1. Block diagram of test setup




## 5.2. Limits

Just for Report.

## 5.3. Test procedure

(1) The test according to ANSI C63.10-2013 clause 6.9.3.

(2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results

(3) Set the EUT as maximum power setting and enable the EUT transmit continuously

(4) Use the following spectrum analyzer settings for the 99% Bandwidth:

| | |
|---|---|
| RBW: | 1% to 5% of the OBW |
| VBW: | approximately three times RBW |
| Span: | between 1.5 times and 5.0 times the OBW |
| Detector Mode: | peak |
| Sweep time: | auto |
| Trace mode | max hold |

(5) Allow the trace to stabilize, measure the 99% bandwidth of signal, and record the results in the report.

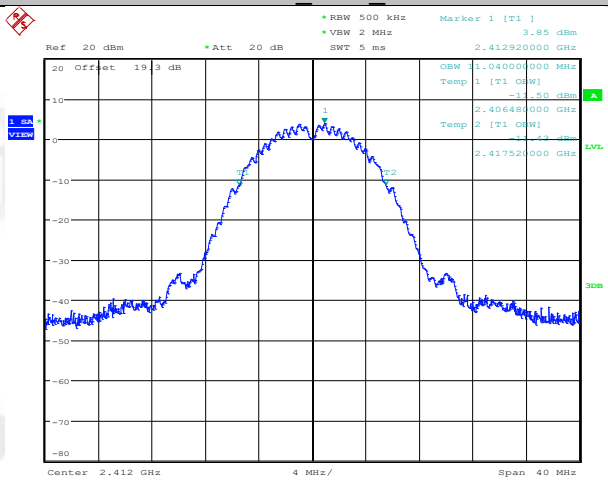
## 5.4. Test result

| | | | |
|---|---|---|---|
| Test Site: | RF Measurement System 1# | Test Date: | 2023.10.16-2023.10.23 |
| Ambient Condition: | 25.4℃, 46.5 %RH | Test Engineer: | Zora Zhang |
| Equipment under Test: | WiiM Amp | Model No.: | AMP001 |
| Sample Number: | S23061614-04 | Test Power Supply: | AC 230V |

| Test Mode | Antenna | Channel Frequency [MHz] | OCB [MHz] | FL [MHz] | FH [MHz] | Limit [MHz] | Verdict |
|---|---|---|---|---|---|---|---|
| 11B | Ant1 | 2412 | 11.04 | 2406.4800 | 2417.5200 | --- | --- |
| | | 2437 | 11.04 | 2431.4800 | 2442.5200 | --- | --- |
| | | 2462 | 11.12 | 2456.4400 | 2467.5600 | --- | --- |
| 11G | Ant1 | 2412 | 17.20 | 2403.4000 | 2420.6000 | --- | --- |
| | | 2437 | 17.24 | 2428.3600 | 2445.6000 | --- | --- |
| | | 2462 | 17.04 | 2453.4400 | 2470.4800 | --- | --- |
| 11N20SISO | Ant1 | 2412 | 18.08 | 2403.0000 | 2421.0800 | --- | --- |
| | | 2437 | 18.16 | 2427.9200 | 2446.0800 | --- | --- |
| | | 2462 | 18.04 | 2453.0000 | 2471.0400 | --- | --- |

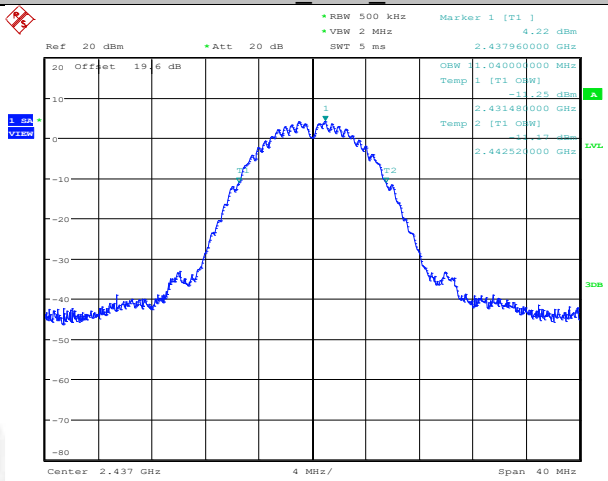
## 5.5. Test graphs

11B_Ant1_2412



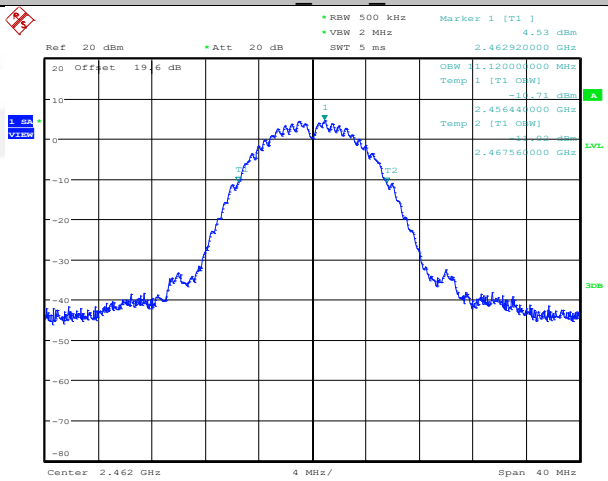

Date: 22.OCT.2023 16:37:24

11B_Ant1_2437



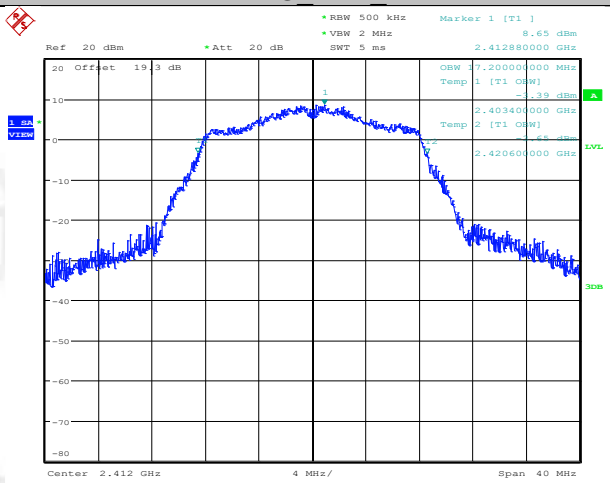

Date: 22.OCT.2023 16:39:58

11B_Ant1_2462



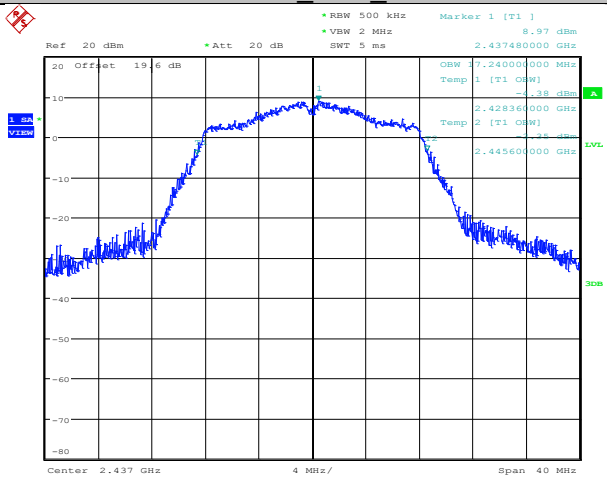

Date: 22.OCT.2023 16:42:32

## 11G_Ant1_2412



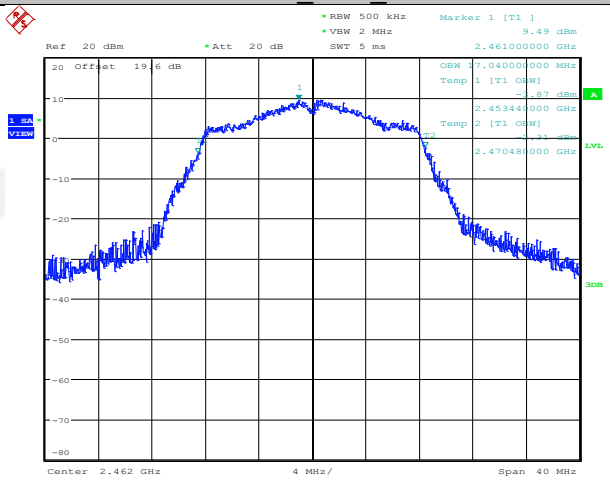

Date: 22.OCT.2023 16:44:47

## 11G_Ant1_2437



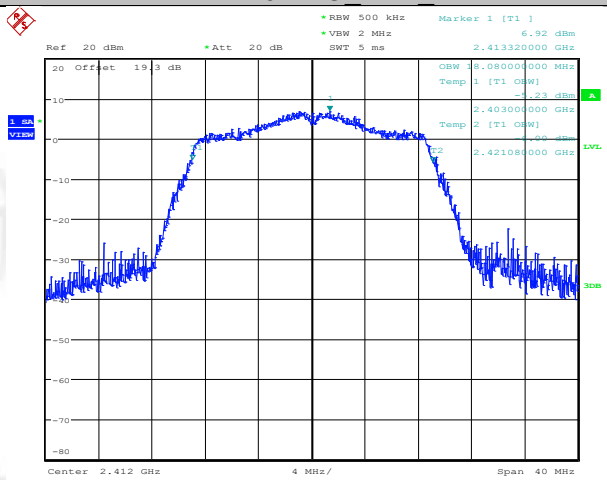

Date: 22.OCT.2023 16:47:14

## 11G_Ant1_2462



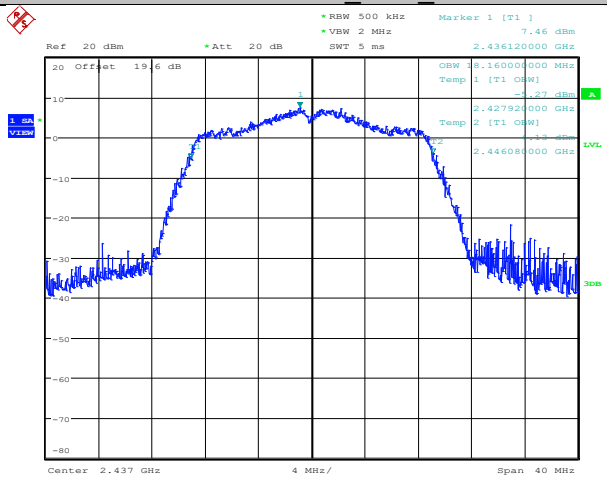

Date: 22.OCT.2023 16:49:25

## 11N20SISO_Ant1_2412



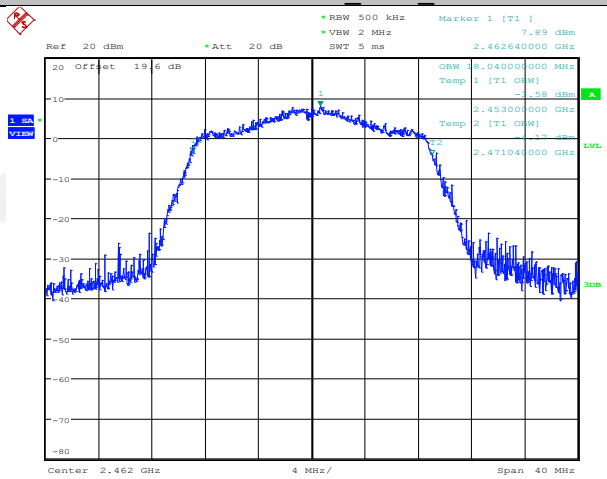

Date: 22.OCT.2023 16:51:53

## 11N20SISO_Ant1_2437




Date: 22.OCT.2023 16:54:12

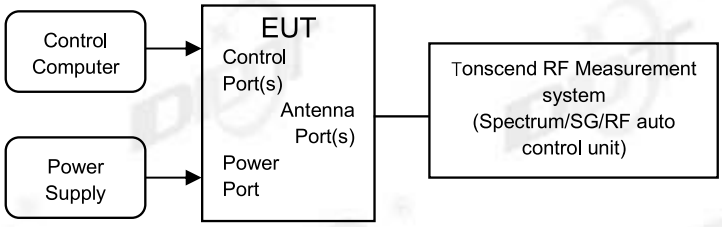
## 11N20SISO_Ant1_2462




Date: 22.OCT.2023 16:56:16

# 6. Conducted Output Power

## 6.1. Block diagram of test setup




## 6.2. Limits

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

## 6.3. Test procedure

(1) The test according to ANSI C63.10-2013 clause 11.9.2.3.

(2) Connect EUT's antenna output to RF power meter by RF cable, the path loss was compensated to the results.

(3) Set the EUT as maximum power setting and enable the EUT transmit continuously, If the transmitter does not transmit continuously, measure the duty cycle, D, of the transmitter output signal.

(4) Measure the average power of the transmitter. This measurement is an average over both the ON and OFF periods of the transmitter.

(5) Adjust the measurement in dBm by adding [10 log (1 / D)], where D is the duty cycle.

(6) Record the RF average power of each antenna port.

## 6.4. Test result

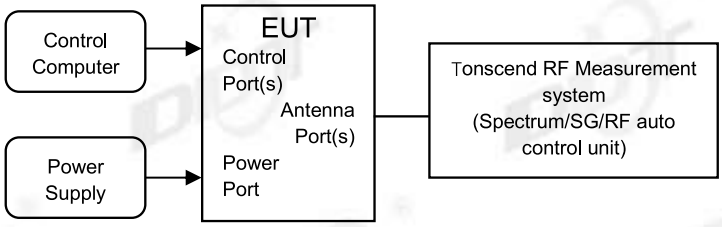
| | | | |
|---|---|---|---|
| Test Site: | RF Measurement System 1# | Test Date: | 2023.10.16-2023.10.23 |
| Ambient Condition: | 25.4℃, 46.5 %RH | Test Engineer: | Zora Zhang |
| Equipment under Test: | WiiM Amp | Model No.: | AMP001 |
| Sample Number: | S23061614-04 | Test Power Supply: | AC 230V |

| Test Mode | Antenna | Frequency [MHz] | Average power [dBm] | Duty Cycle [%] | DC Factor [dBm] | Result [dBm] | Limit [dBm] | EIRP [dBm] | EIRP Limit [dBm] | Verdict |
|---|---|---|---|---|---|---|---|---|---|---|
| 11B | Ant1 | 2412 | 10.54 | 98.94 | 0.05 | 10.59 | ≤30.00 | 13.26 | ≤36.00 | PASS |
| | | 2437 | 10.70 | 98.94 | 0.05 | 10.75 | ≤30.00 | 13.42 | ≤36.00 | PASS |
| | | 2462 | 11.11 | 98.71 | 0.06 | 11.17 | ≤30.00 | 13.84 | ≤36.00 | PASS |
| 11G | Ant1 | 2412 | 13.28 | 92.72 | 0.33 | 13.61 | ≤30.00 | 16.28 | ≤36.00 | PASS |
| | | 2437 | 13.67 | 93.38 | 0.30 | 13.97 | ≤30.00 | 16.64 | ≤36.00 | PASS |
| | | 2462 | 13.86 | 93.38 | 0.30 | 14.16 | ≤30.00 | 16.83 | ≤36.00 | PASS |
| 11N20SISO | Ant1 | 2412 | 11.77 | 92.96 | 0.32 | 12.09 | ≤30.00 | 14.76 | ≤36.00 | PASS |
| | | 2437 | 12.08 | 92.96 | 0.32 | 12.40 | ≤30.00 | 15.07 | ≤36.00 | PASS |
| | | 2462 | 12.06 | 92.96 | 0.32 | 12.38 | ≤30.00 | 15.05 | ≤36.00 | PASS |

Note: EIRP (dBm)=Conducted Output Power (dBm)+ Antenna Gain (dBi)

# 7. Power Spectral Density

## 7.1. Block diagram of test setup




## 7.2. Limits

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

## 7.3. Test procedure

(1) The test according to ANSI C63.10-2013 clause 11.10.5.

(2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results.

(3) Set the EUT as maximum power setting and enable the EUT transmit continuously.

(4) Use the following spectrum analyzer settings for Power Spectral Density measurement:

| | |
|---|---|
| Center frequency | DTS Channel center frequency |
| RBW: | 3 kHz ≤ RBW ≤ 100 kHz |
| VBW: | ≥ 3RBW |
| Span | 1.5 times the DTS bandwidth |
| Detector Mode: | RMS |
| Sweep time: | auto |
| Trace mode: | max hold |
| Trace: | Employ trace averaging (rms) mode over a minimum of 100 traces. |

(5) Add [10 log (1 / D)], where D is the duty cycle measured in step a), to the measured PSD to compute the average PSD during the actual transmission time.

If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

## 7.4. Test result

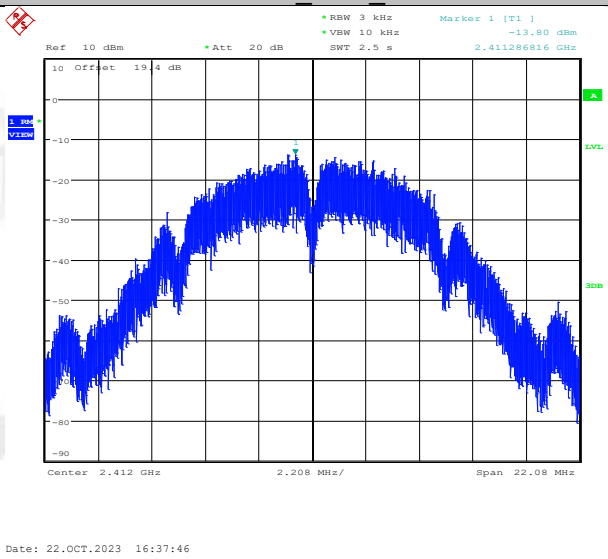
| | | | |
|---|---|---|---|
| Test Site: | RF Measurement System 1# | Test Date: | 2023.10.16-2023.10.23 |
| Ambient Condition: | 25.4℃, 46.5 %RH | Test Engineer: | Zora Zhang |
| Equipment under Test: | WiiM Amp | Model No.: | AMP001 |
| Sample Number: | S23061614-04 | Test Power Supply: | AC 230V |

| Test Mode | Antenna | Frequency [MHz] | Result [dBm/3-100kHz] | Limit [dBm/3kHz] | Verdict |
|---|---|---|---|---|---|
| 11B | Ant1 | 2412 | -13.80 | ≤8.00 | PASS |
| | | 2437 | -12.41 | ≤8.00 | PASS |
| | | 2462 | -12.75 | ≤8.00 | PASS |
| 11G | Ant1 | 2412 | -10.49 | ≤8.00 | PASS |
| | | 2437 | -9.48 | ≤8.00 | PASS |
| | | 2462 | -9.33 | ≤8.00 | PASS |
| 11N20SISO | Ant1 | 2412 | -11.59 | ≤8.00 | PASS |
| | | 2437 | -11.66 | ≤8.00 | PASS |
| | | 2462 | -12.25 | ≤8.00 | PASS |

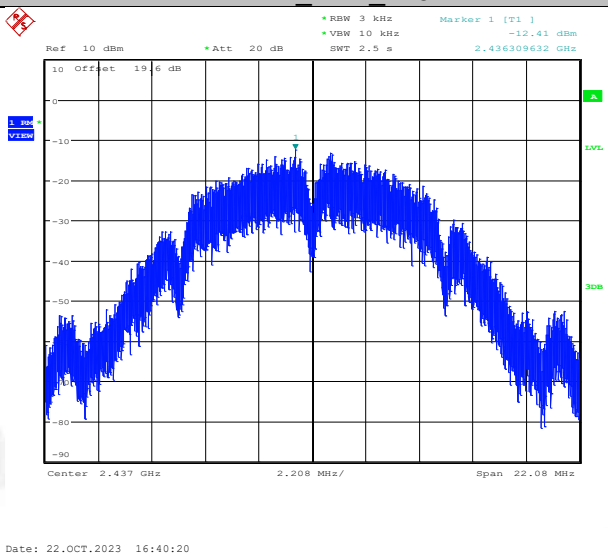
Note：The Duty Cycle Factor is compensated in the graph.

## 7.5. Test graphs

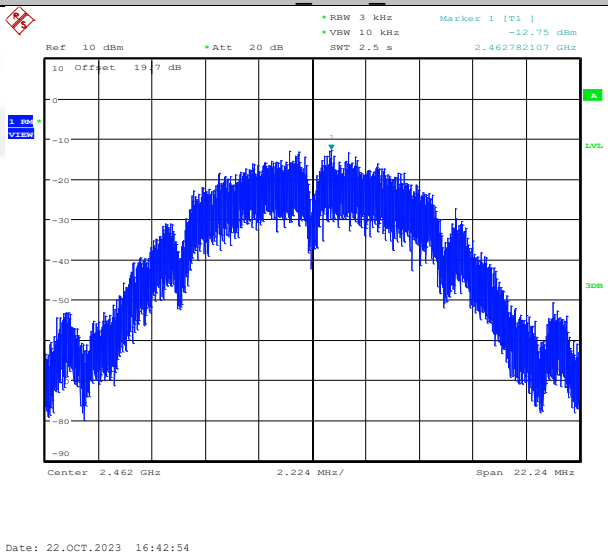
11B_Ant1_2412



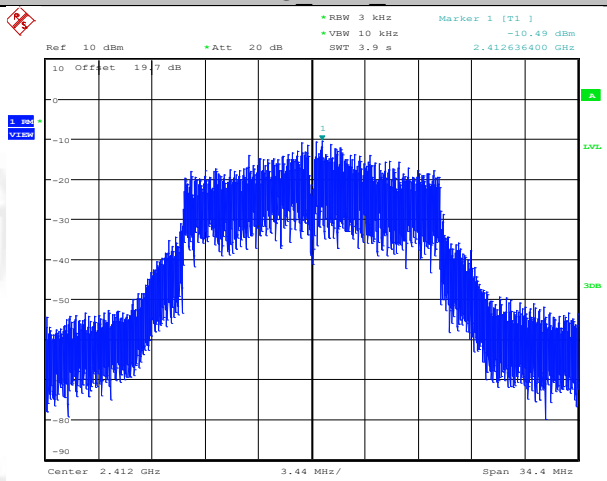

11B_Ant1_2437




11B_Ant1_2462

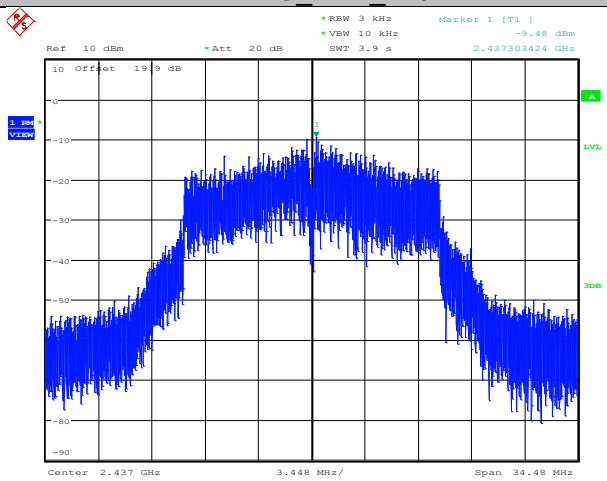


## 11G_Ant1_2412



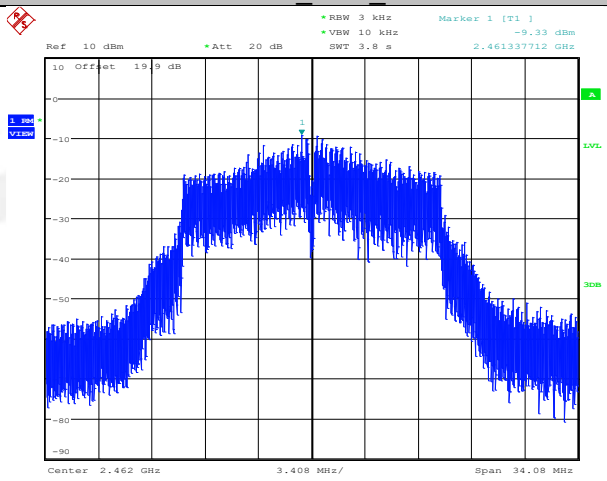

Date: 22.OCT.2023 16:45:09

## 11G_Ant1_2437



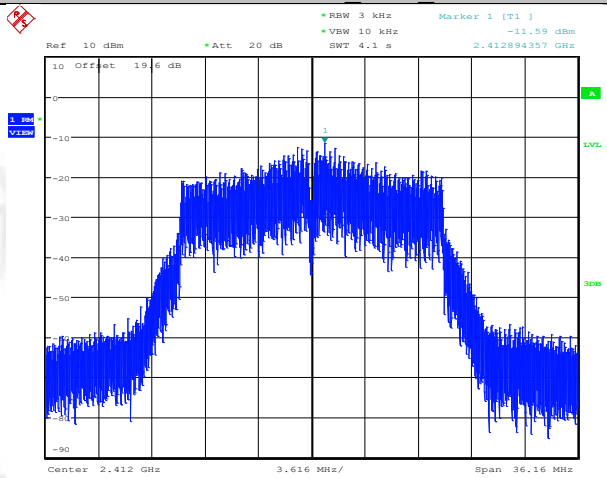

Date: 22.OCT.2023 16:47:36

## 11G_Ant1_2462



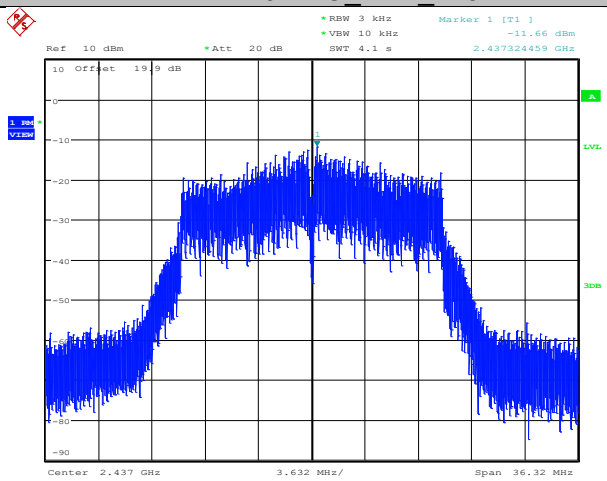

Date: 22.OCT.2023 16:49:47

## 11N20SISO_Ant1_2412



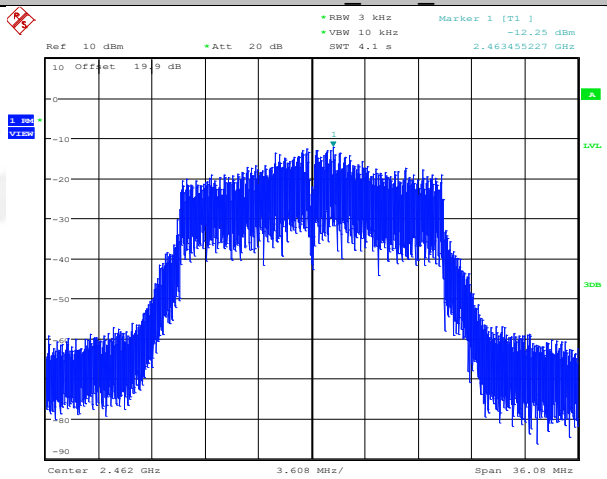

Date: 22.OCT.2023 16:52:15

## 11N20SISO_Ant1_2437




Date: 22.OCT.2023 16:54:35

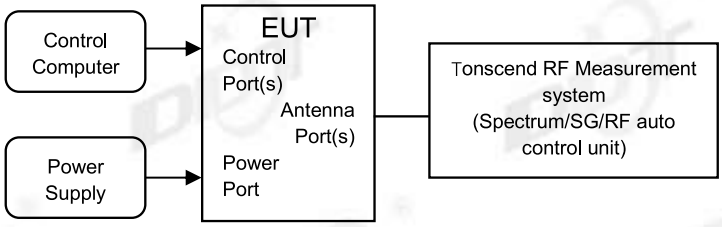
## 11N20SISO_Ant1_2462




Date: 22.OCT.2023 16:56:38

# 8. Band Edge Compliance (Conducted Method)

## 8.1. Block diagram of test setup




## 8.2. Limits

In any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

## 8.3. Test procedure

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

(2) Establish a reference level by using the following procedure:

| | |
|---|---|
| RBW: | 100 kHz |
| VBW: | 300 kHz |
| Span | Encompass frequency range to be measured |
| Detector Mode: | Peak |
| Sweep time: | auto |
| Trace mode | Max hold |

(3) Allow the trace to stabilize, use the peak marker function to determine the maximum peak power level to establish the reference level.

(4) Then mark the maximum amplitude of all unwanted emissions outside of the authorized frequency band.

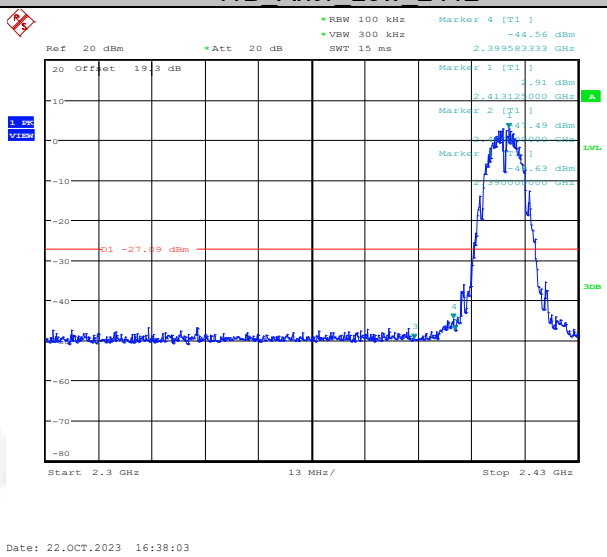
## 8.4. Test result

| | | | |
|---|---|---|---|
| Test Site: | RF Measurement System 1# | Test Date: | 2023.10.16-2023.10.23 |
| Ambient Condition: | 25.4℃, 46.5 %RH | Test Engineer: | Zora Zhang |
| Equipment under Test: | WiiM Amp | Model No.: | AMP001 |
| Sample Number: | S23061614-04 | Test Power Supply: | AC 230V |

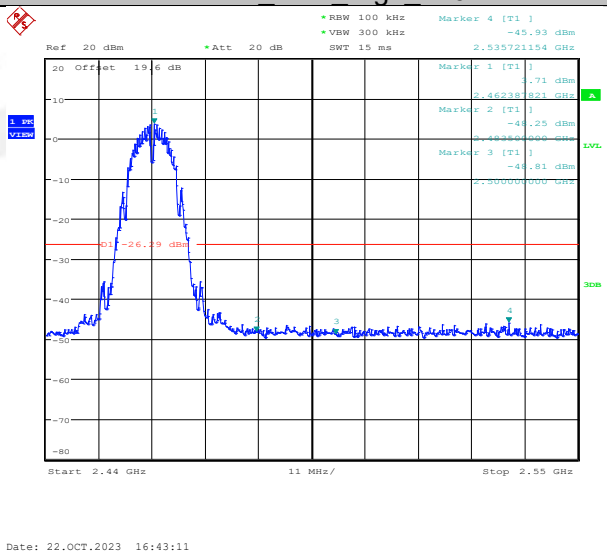
| EUT Set Mode | CH or Frequency | Result (dBm) | EUT Set Mode | CH or Frequency | Result (dBm) |
|---|---|---|---|---|---|
| 11b | CH1 | Pass | 11g | CH1 | Pass |
| | CH11 | Pass | | CH11 | Pass |
| 11n HT 20 | CH1 | Pass | / | | |
| | CH11 | Pass | | | |

## 8.5. Test graphs

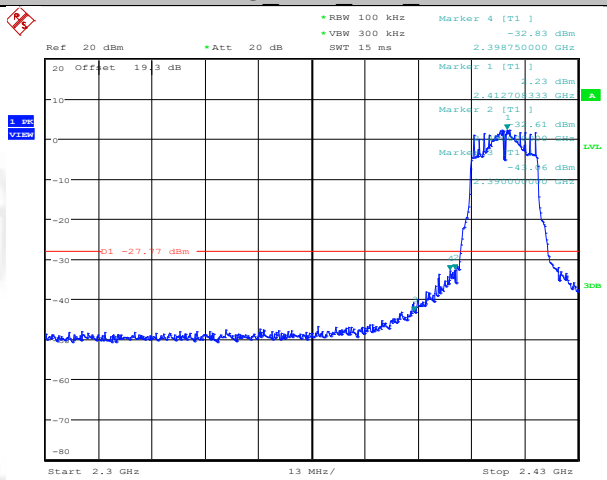
11B_Ant1_Low_2412




11B_Ant1_High_2462

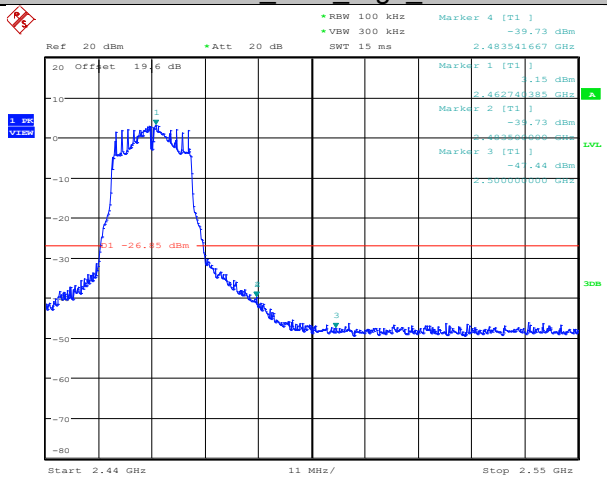


## 11G_Ant1_Low_2412



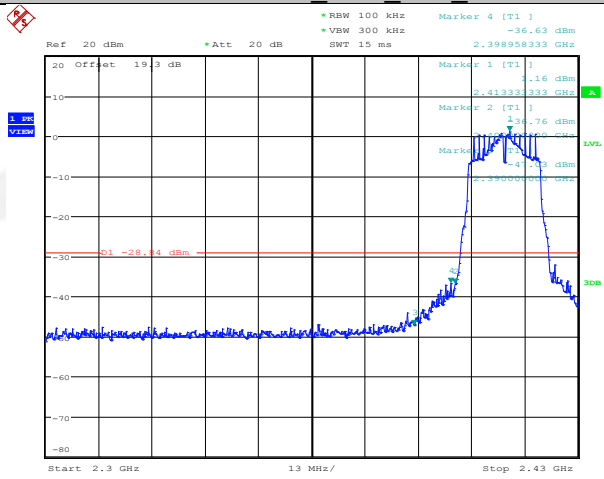

Date: 22.OCT.2023 16:45:26

## 11G_Ant1_High_2462



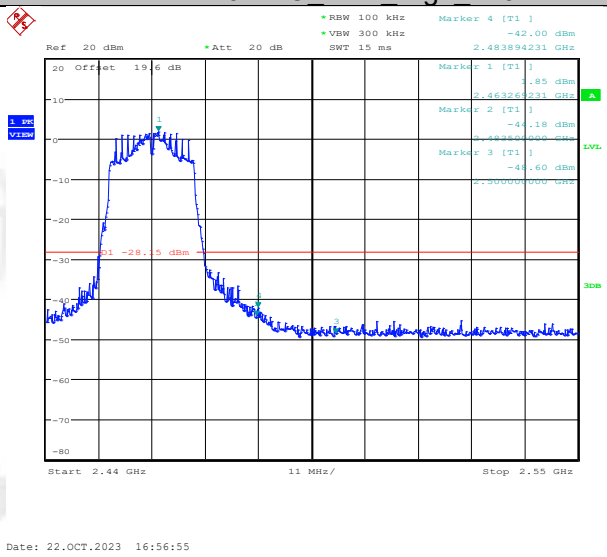

Date: 22.OCT.2023 16:50:04

## 11N20SISO_Ant1_Low_2412



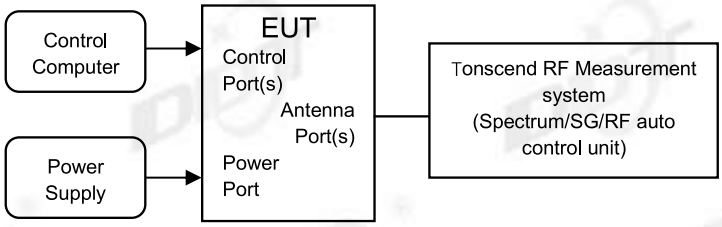

Date: 22.OCT.2023 16:52:32

11N20SISO_Ant1_High_2462



# 9. RF Conducted Spurious Emissions

## 9.1. Block diagram of test setup




## 9.2. Limits

In any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

## 9.3. Test procedure

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

(2) Establish a reference level by using the following procedure:

| | |
|---|---|
| Center frequency | Test frequency |
| RBW: | 100 kHz |
| VBW: | 300 kHz |
| Span | Wide enough to capture the peak level of the in-band emission |
| Detector Mode: | Peak |
| Sweep time: | auto |
| Trace mode | Max hold |

(3) Allow the trace to stabilize, use the peak marker function to determine the maximum peak power level to establish the reference level.

(4) Set the spectrum analyzer as follows:

| | |
|---|---|
| RBW: | 100 kHz |
| VBW: | 300 kHz |
| Span | Encompass frequency range to be measured |
| Number of measurement points | ≥Span/RBW |
| Detector Mode: | Peak |
| Sweep time: | auto |
| Trace mode | Max hold |

(5) Allow the trace to stabilize, use the peak marker function to determine the maximum amplitude of all unwanted emissions outside of the authorized frequency band

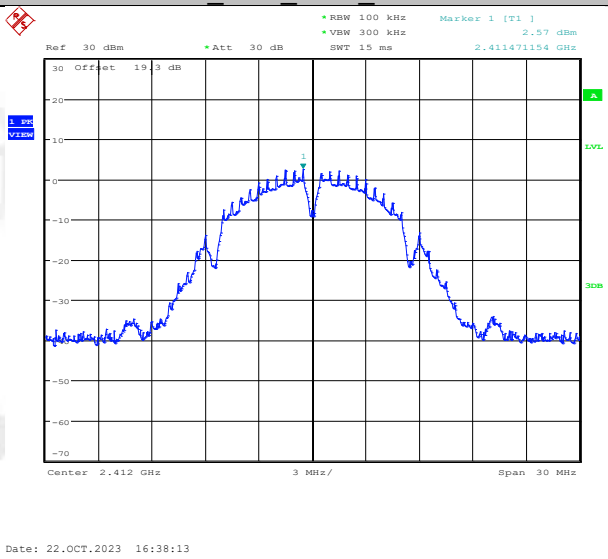
## 9.4. Test result

| | | | |
|---|---|---|---|
| Test Site: | RF Measurement System 1# | Test Date: | 2023.10.16-2023.10.23 |
| Ambient Condition: | 25.4℃, 46.5 %RH | Test Engineer: | Zora Zhang |
| Equipment under Test: | WiiM Amp | Model No.: | AMP001 |
| Sample Number: | S23061614-04 | Test Power Supply: | AC 230V |

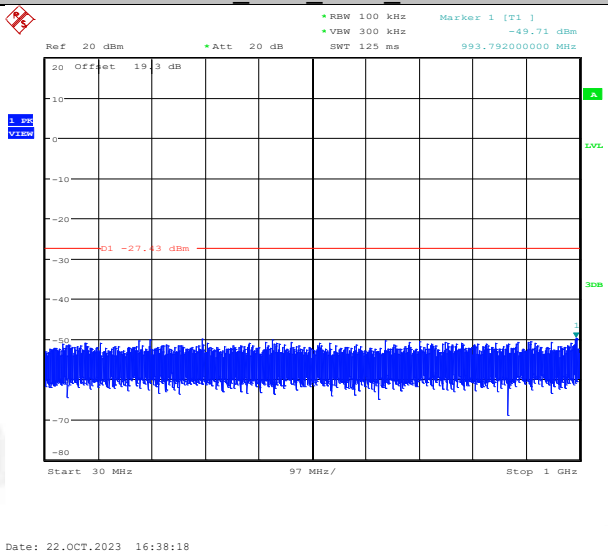
| EUT Set Mode | CH or Frequency | Result (dBm) | EUT Set Mode | CH or Frequency | Result (dBm) |
|---|---|---|---|---|---|
| 11b | CH1 | Pass | 11g | CH1 | Pass |
| | CH11 | Pass | | CH11 | Pass |
| 11n HT 20 | CH1 | Pass | / | | |
| | CH11 | Pass | | | |

## 9.5. Test graphs

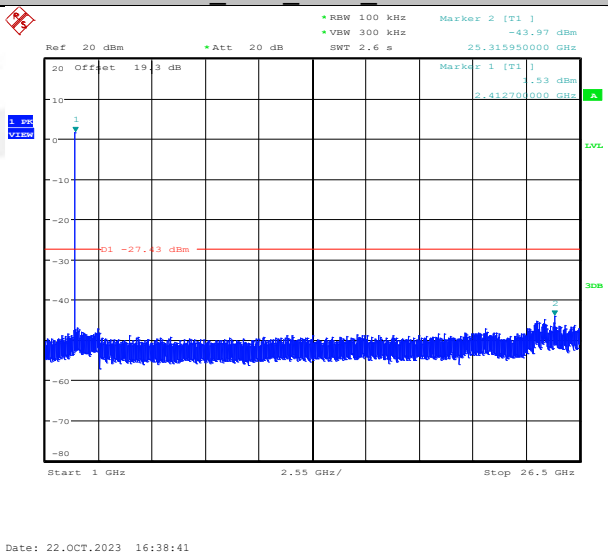
11B_Ant1_2412_0~Reference



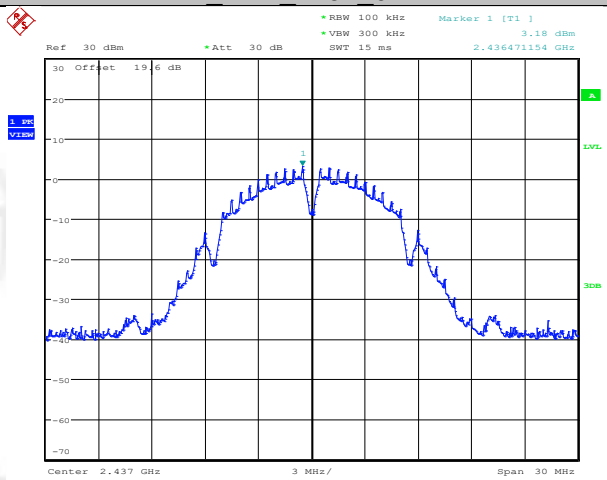

11B_Ant1_2412_30~1000




11B_Ant1_2412_1000~26500

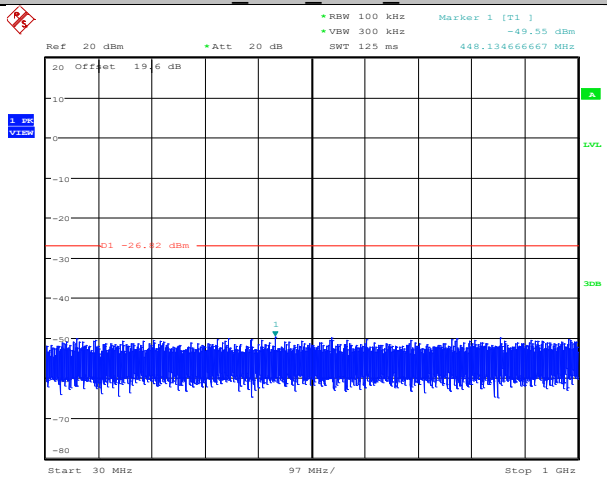


## 11B_Ant1_2437_0~Reference



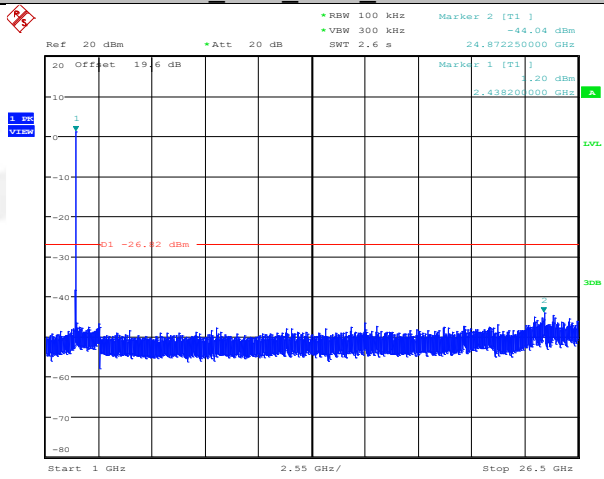

Date: 22.OCT.2023 16:40:29

## 11B_Ant1_2437_30~1000



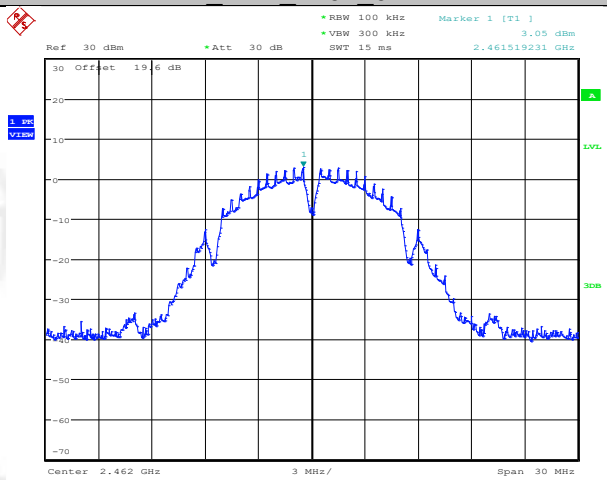

Date: 22.OCT.2023 16:40:34

## 11B_Ant1_2437_1000~26500



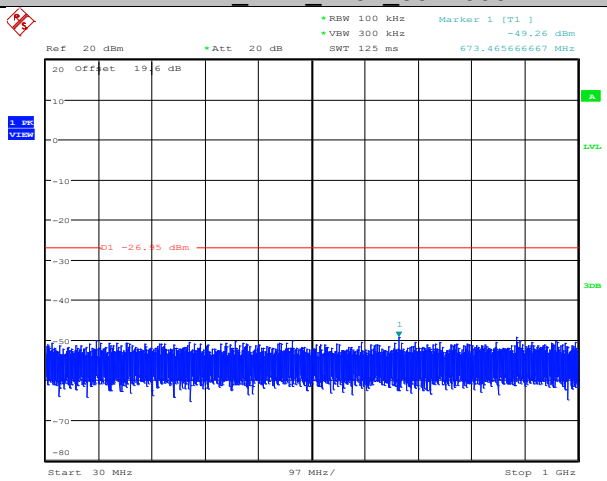

Date: 22.OCT.2023 16:40:57

## 11B_Ant1_2462_0~Reference



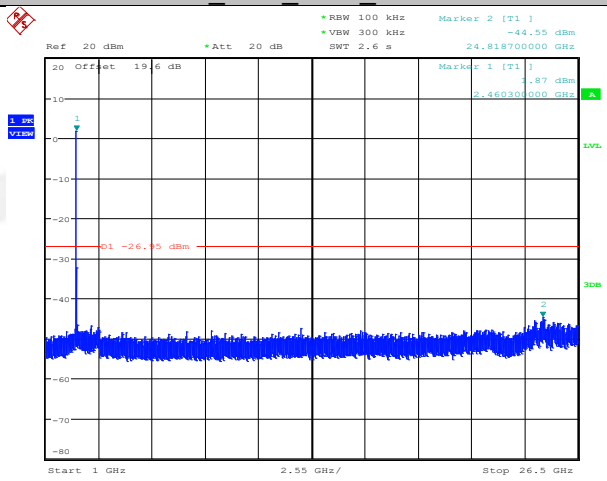

Date: 22.OCT.2023 16:43:21

## 11B_Ant1_2462_30~1000



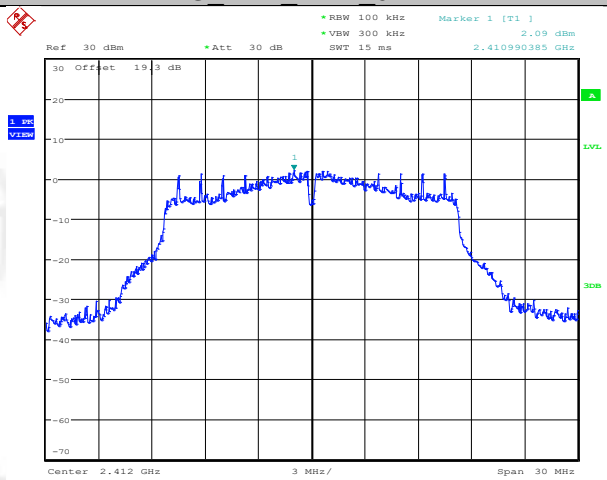

Date: 22.OCT.2023 16:43:26

## 11B_Ant1_2462_1000~26500



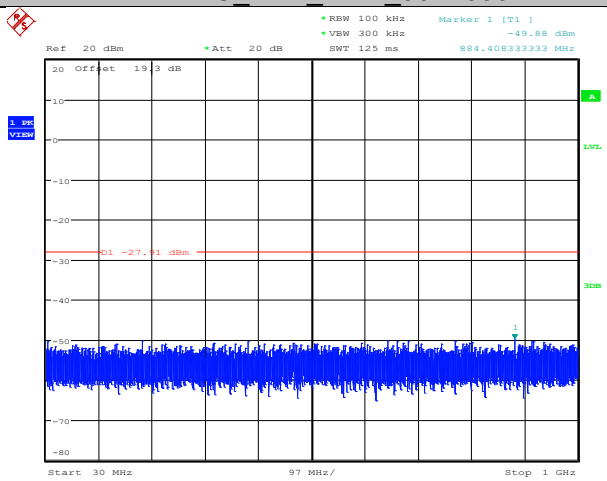

Date: 22.OCT.2023 16:43:49

## 11G_Ant1_2412_0~Reference



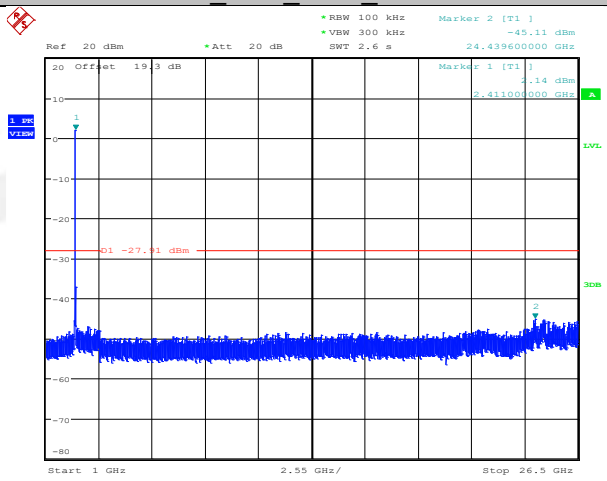

Date: 22.OCT.2023 16:45:35

## 11G_Ant1_2412_30~1000



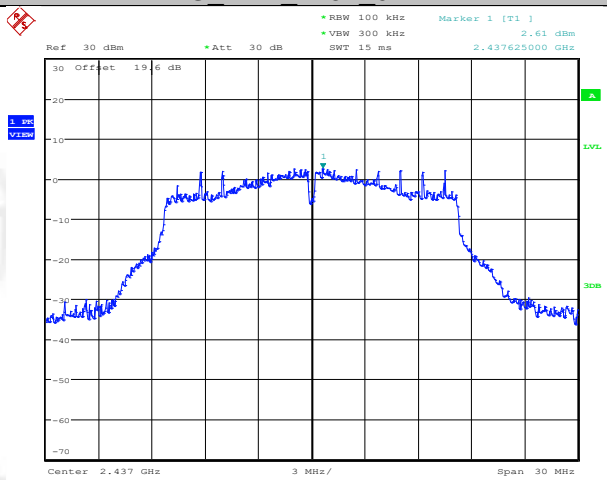

Date: 22.OCT.2023 16:45:40

## 11G_Ant1_2412_1000~26500



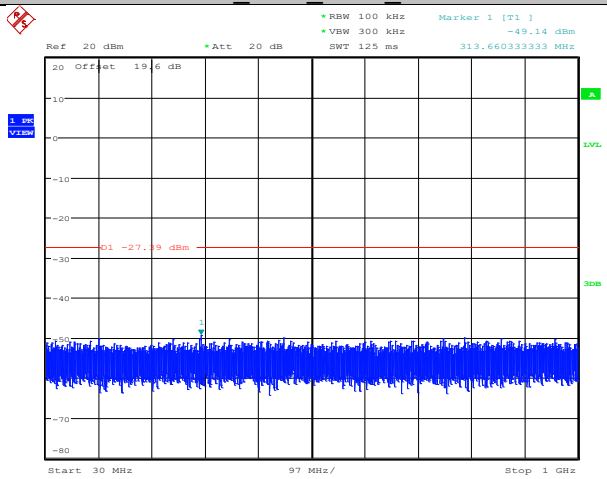

Date: 22.OCT.2023 16:46:03

## 11G_Ant1_2437_0~Reference



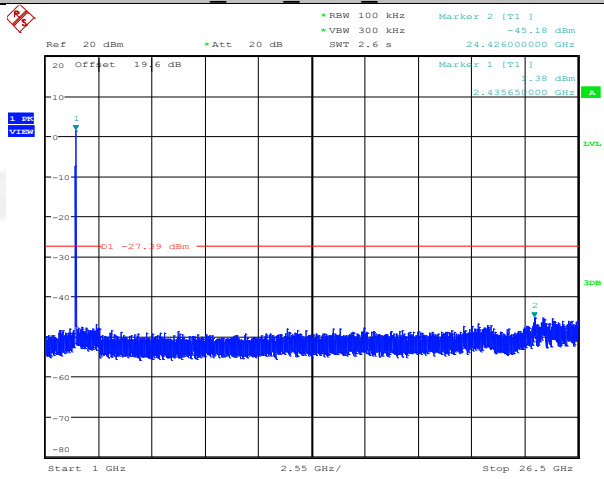

Date: 22.OCT.2023 16:47:46

## 11G_Ant1_2437_30~1000



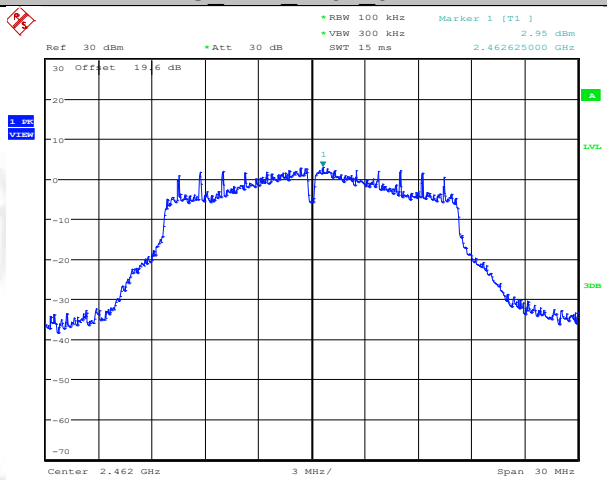

Date: 22.OCT.2023 16:47:51

## 11G_Ant1_2437_1000~26500



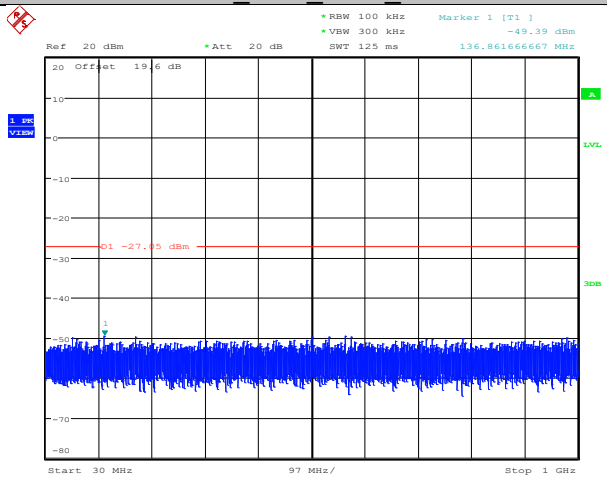

Date: 22.OCT.2023 16:48:14

## 11G_Ant1_2462_0~Reference



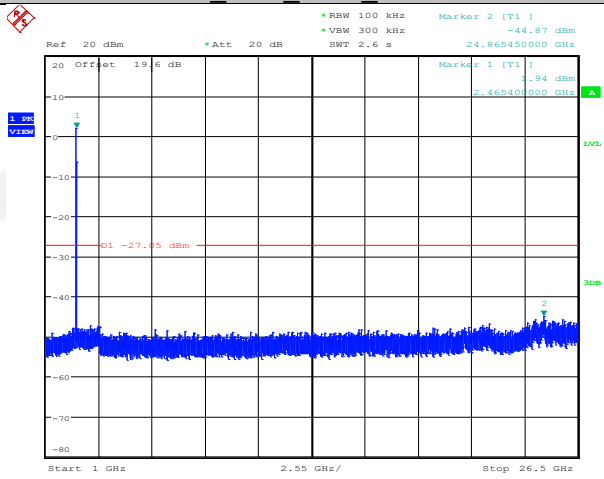

Date: 22.OCT.2023 16:50:14

## 11G_Ant1_2462_30~1000



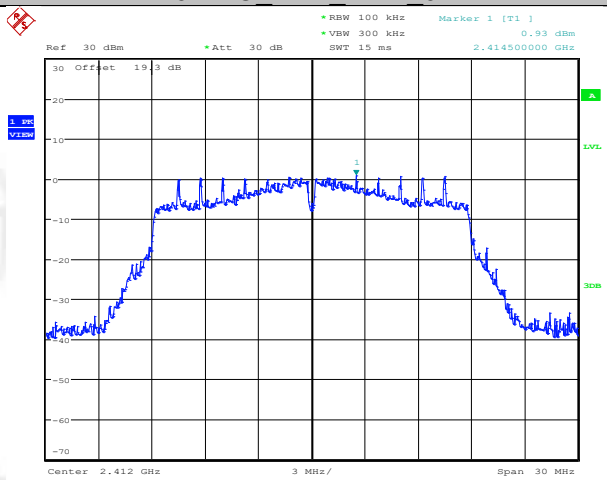

Date: 22.OCT.2023 16:50:19

## 11G_Ant1_2462_1000~26500



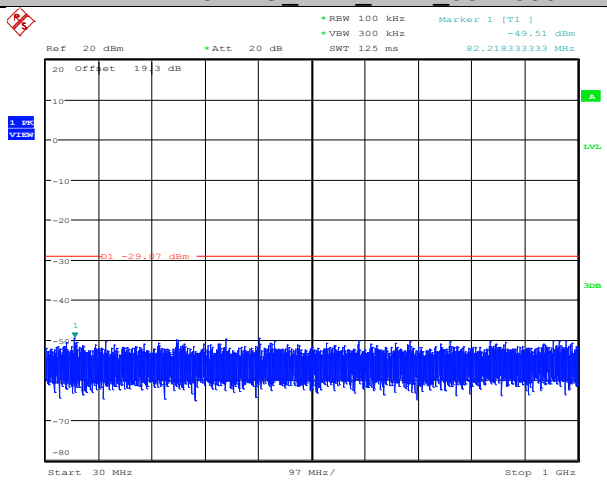

Date: 22.OCT.2023 16:50:42

## 11N20SISO_Ant1_2412_0~Reference



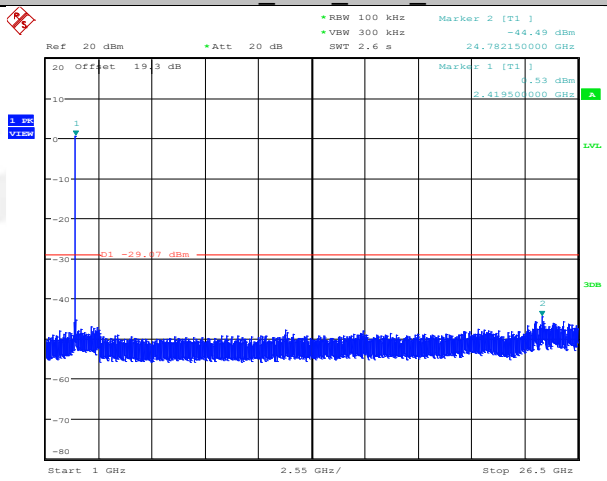

Date: 22.OCT.2023 16:52:42

## 11N20SISO_Ant1_2412_30~1000




Date: 22.OCT.2023 16:52:47

## 11N20SISO_Ant1_2412_1000~26500

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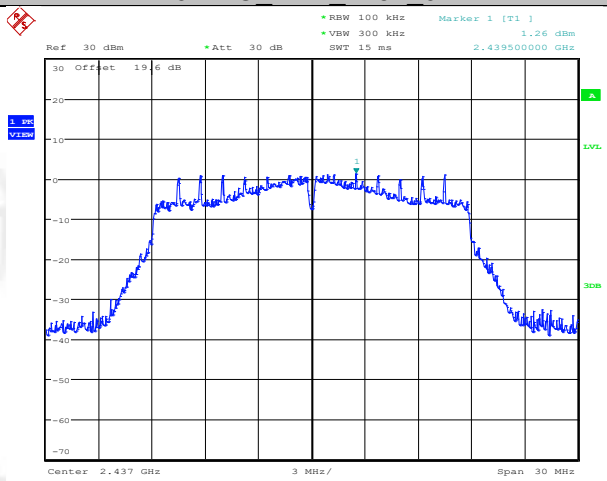
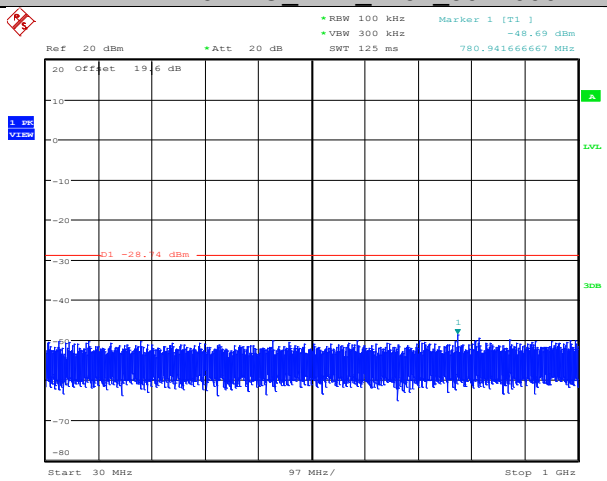
## 11N20SISO_Ant1_2437_0~Reference




Date: 22.OCT.2023 16:54:45

## 11N20SISO_Ant1_2437_30~1000

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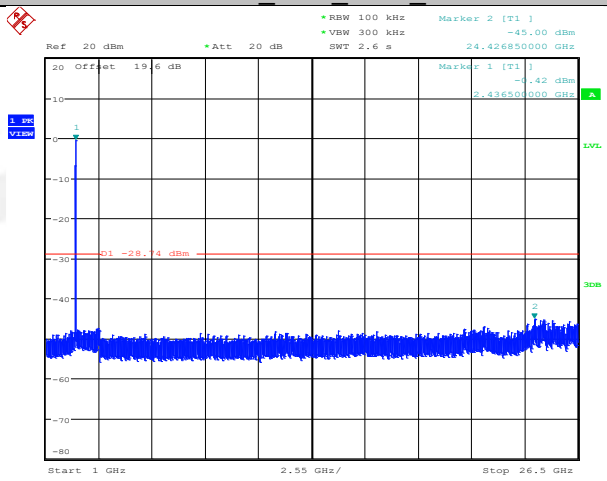
## 11N20SISO_Ant1_2437_1000~26500

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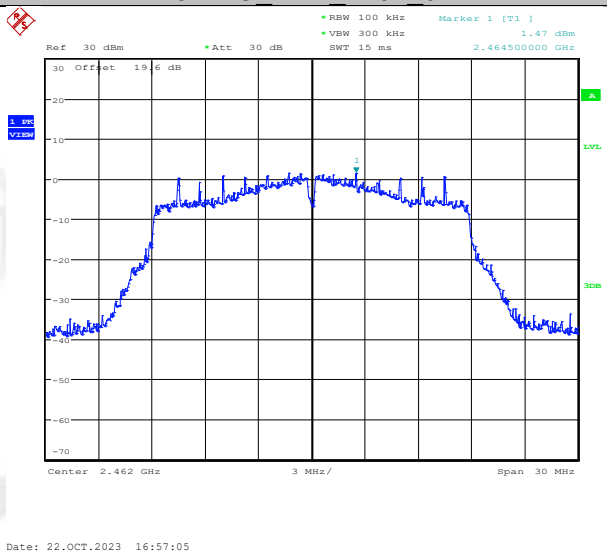
## 11N20SISO_Ant1_2462_0~Reference

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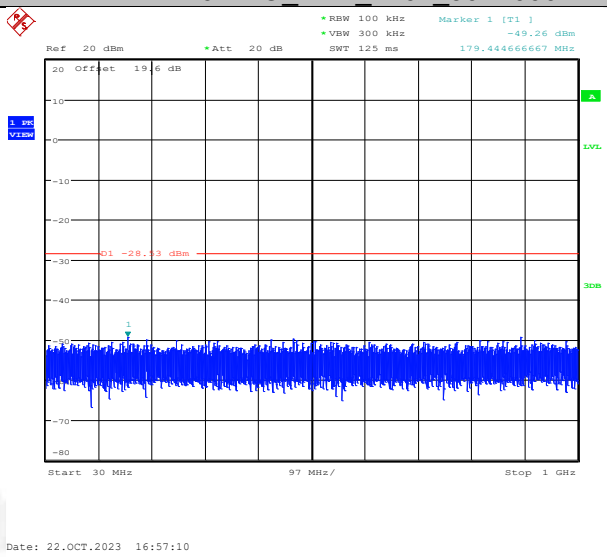

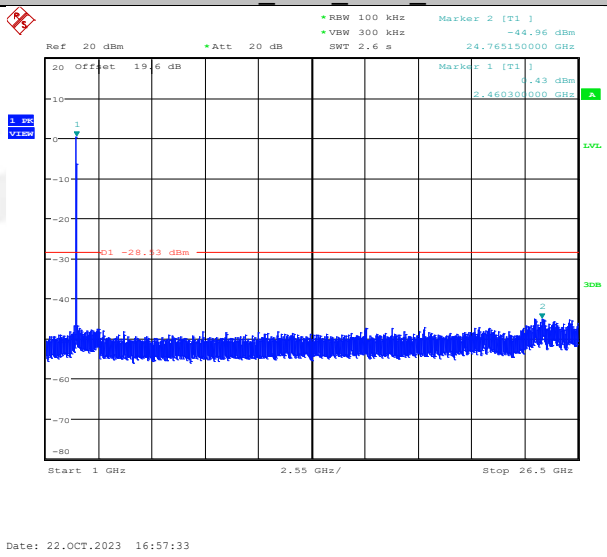
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