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.	:	AMP001, WiiM Amp Space Gray, WiiM Amp Silver, WiiM Amp Midnight Blue
FCC ID	:	2BABF-AMP001
IC	:	30828-AMP001
Test Standard(s)	:	FCC Rules and Regulations Part 15 Subpart C, RSS-247 Issue 3 August 2023, ANSI C63.10:2013, 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.	:	AMP001, WiiM Amp Space Gray, WiiM Amp Silver, WiiM Amp Midnight Blue
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:

Jacky Huang

Jacky Huang/Engineer

Approved By:

Damon Hu

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) RSS-247 Issue 2 clause 5.2(a)	PASS
Conducted Output Power	FCC Part 15: 15.247(b)(3) RSS-247 Issue 2 clause 5.4(d)	PASS
Power Spectral Density	FCC Part 15:15.247(e) RSS-247 Issue 2 clause 5.2(b)	PASS
Band-edge and Spurious Emissions (Conducted)	FCC Part 15: 15.247(d) RSS-247 Issue 2 clause 5.5	PASS
Radiated Spurious Emissions	FCC Part 15: 15.205 FCC Part 15: 15.209 FCC Part 15: 15.247(d) RSS-247 Issue 2 clause 5.5 RSS-Gen Issue 5 clause 8.9	PASS
Radiated Band Edge Compliance	FCC Part 15: 15.205 FCC Part 15: 15.209 FCC Part 15: 15.247(d) RSS-247 Issue 2 clause 5.5 RSS-Gen Issue 5 clause 8.9	PASS
Power Line Conducted Emission	FCC Part 15: 15.207(a) RSS-Gen Issue 5 clause 8.8	PASS
Antenna requirement	FCC Part 15: 15.203 RSS-Gen Issue 5 clause 6.8	PASS

2. General Test Information

2.1. Description of EUT

EUT Name	:	WiiM Amp
Model Number	:	AMP001, WiiM Amp Space Gray, WiiM Amp Silver, WiiM Amp Midnight Blue
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), WLAN (2.4 GHz): IEEE 802.11b/g/n, WLAN (5 GHz): IEEE 802.11a/n/ac
Operation Frequency	:	Bluetooth (BR/EDR/LE): 2402 MHz-2480 MHz IEEE 802.11b/g/n: 2412 MHz to 2462 MHz, 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 Bluetooth LE: GFSK IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g/a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK) 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

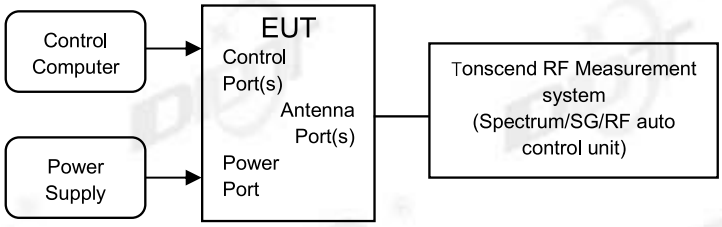
Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum analyzer)	0.86 dB (10 MHz ≤ f < 3.6 GHz);
	1.38 dB (3.6 GHz ≤ f < 8 GHz)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB (10 MHz ≤ f < 3.6 GHz);
	1.38 dB (3.6 GHz ≤ f < 8 GHz)
Frequencies Stability	6.7×10^{-8} (Antenna couple method)
	5.5×10^{-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)	3×10^{-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

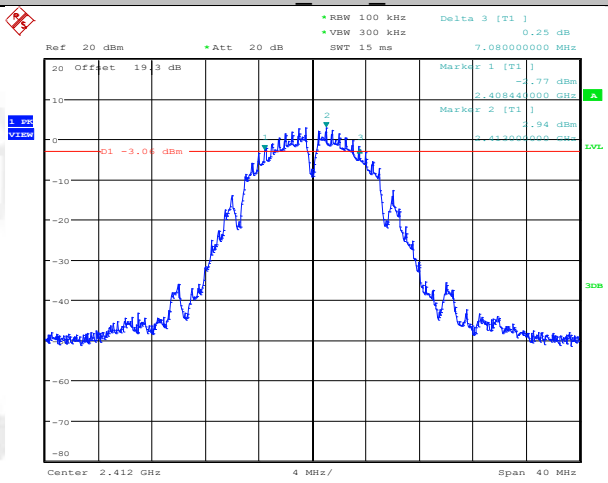
4.4. Test result

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



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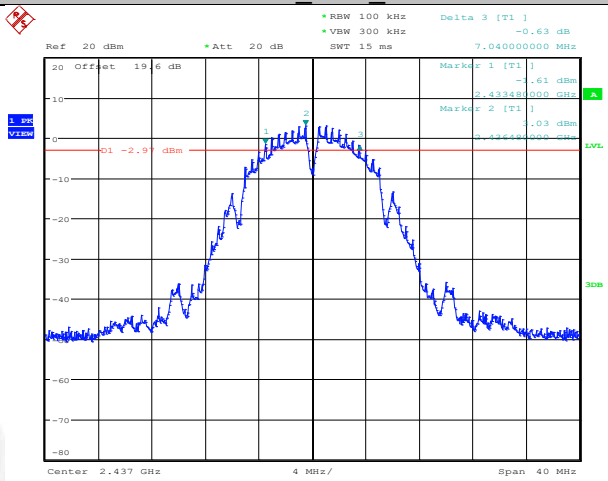

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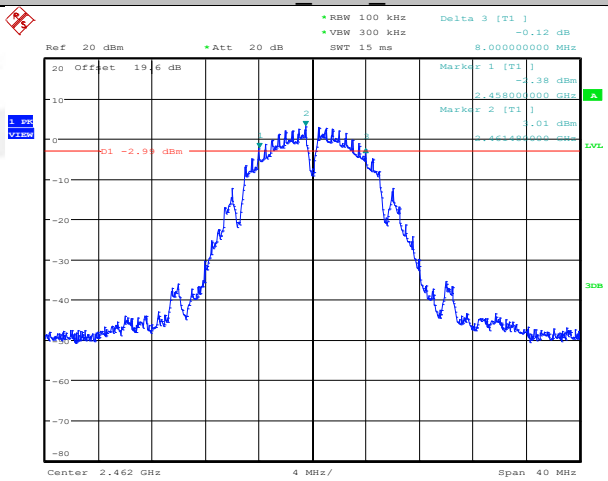

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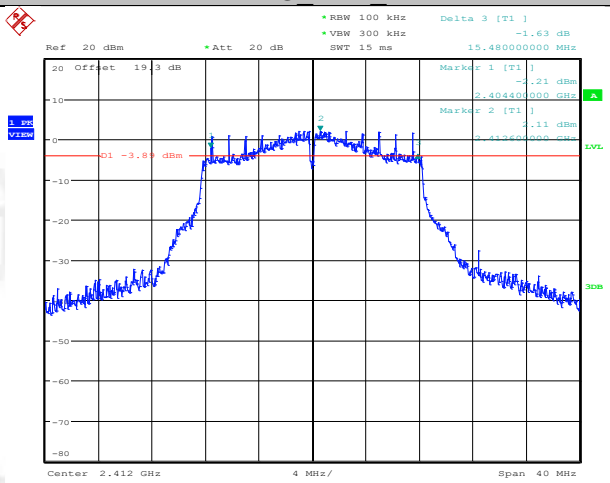

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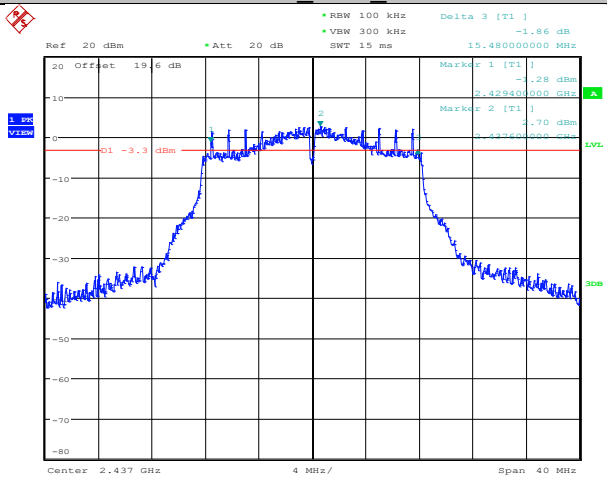

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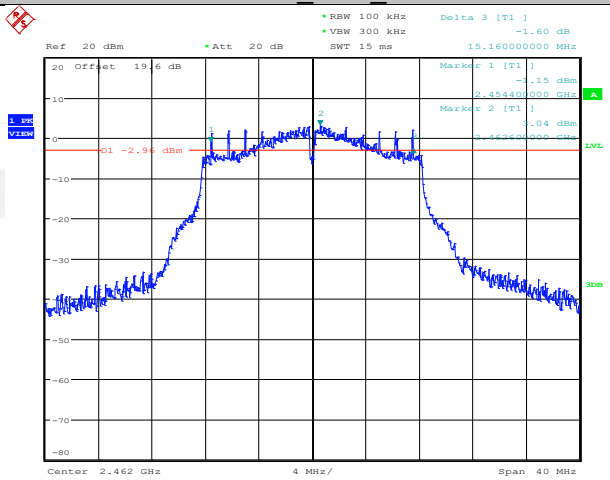

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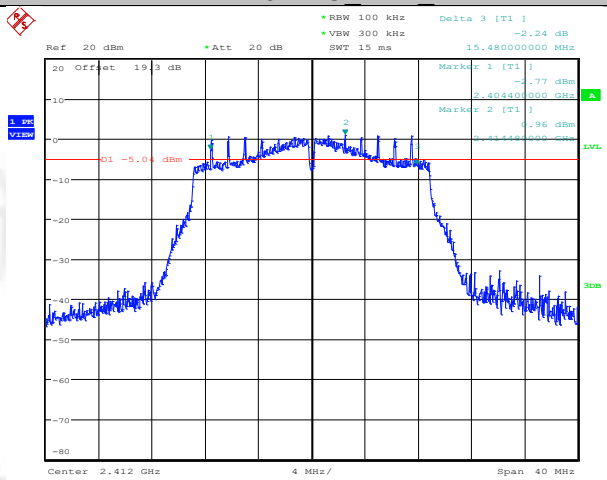

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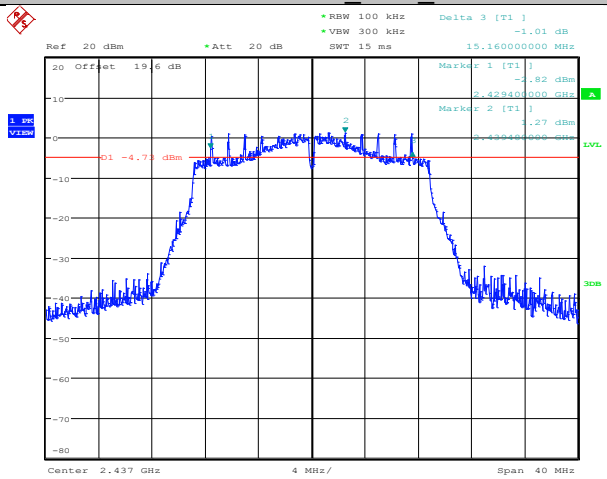

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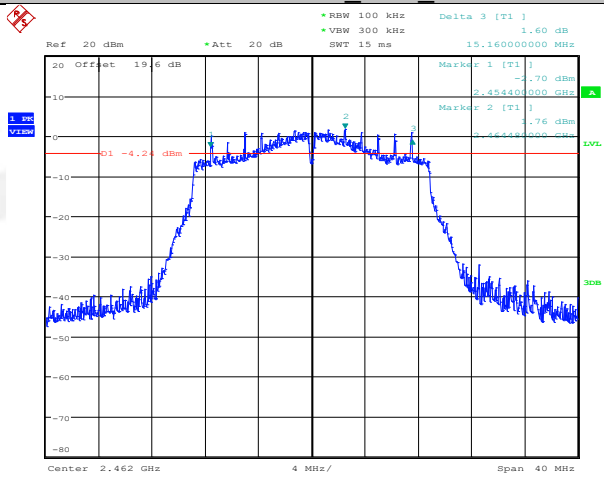

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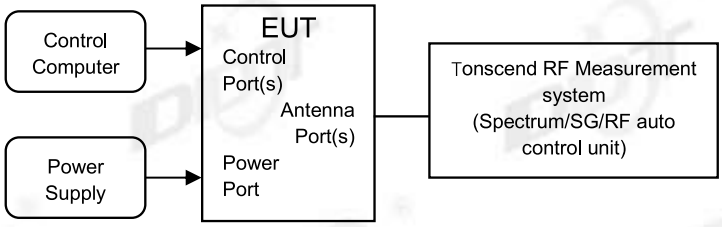
5. 99% Bandwidth

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.

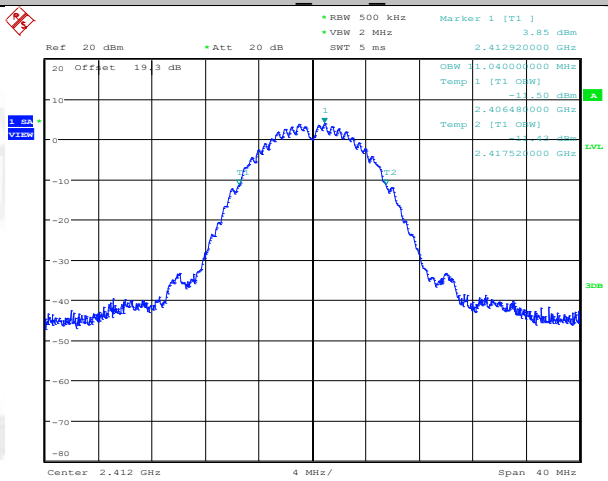
5.4. Test result

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



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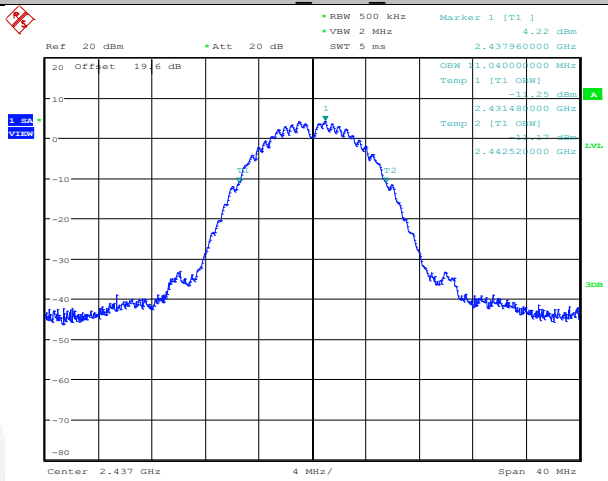

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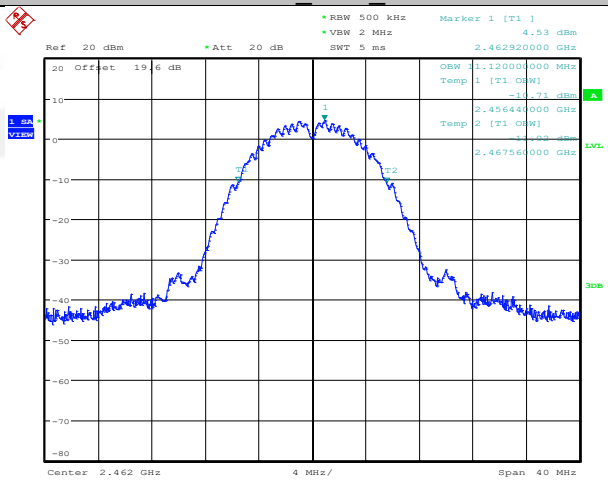

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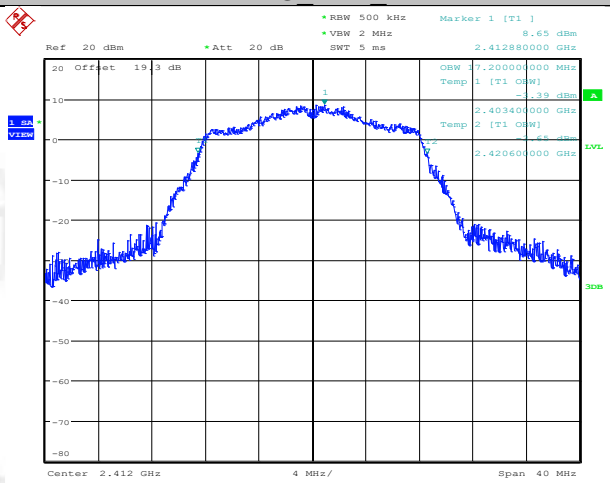

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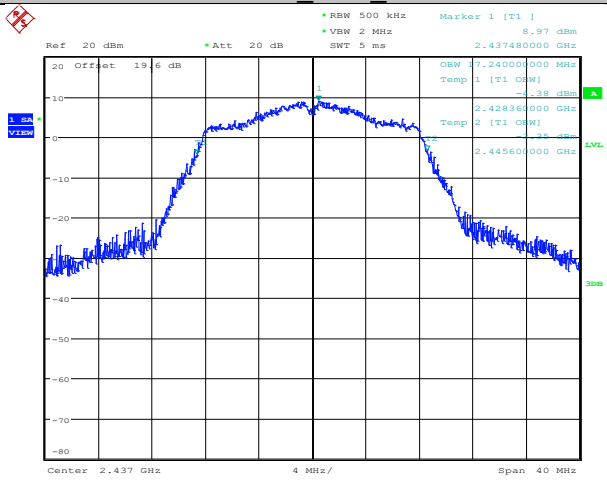

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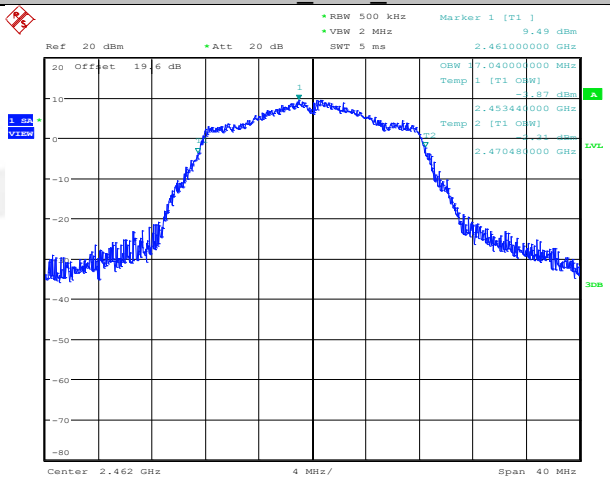

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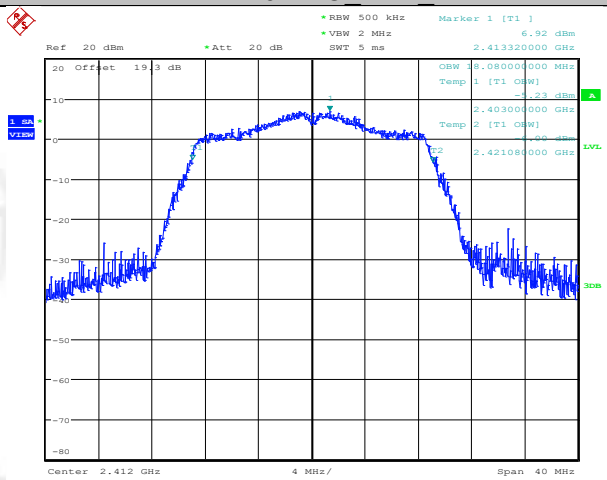
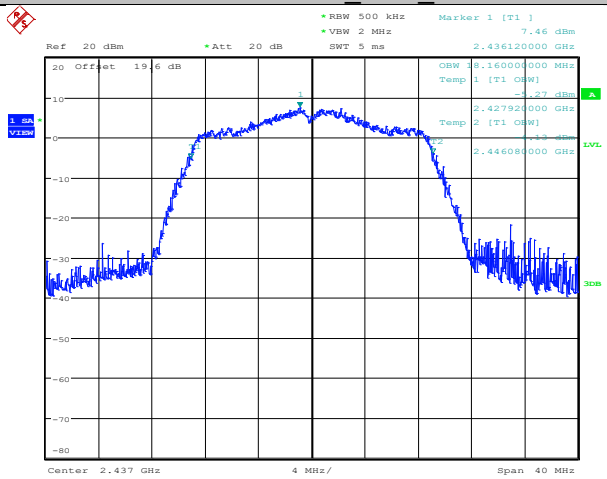
11N20SISO_Ant1_2412



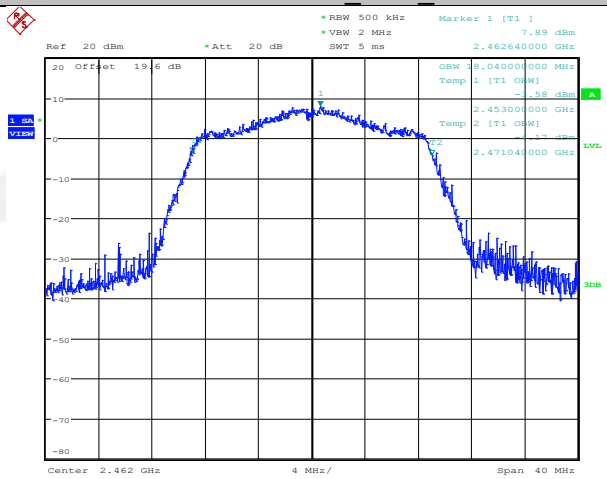
Date: 22.OCT.2023 16:51:53

11N20SISO_Ant1_2437



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

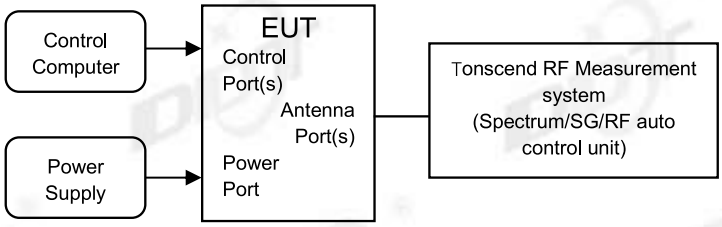
11N20SISO_Ant1_2462



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

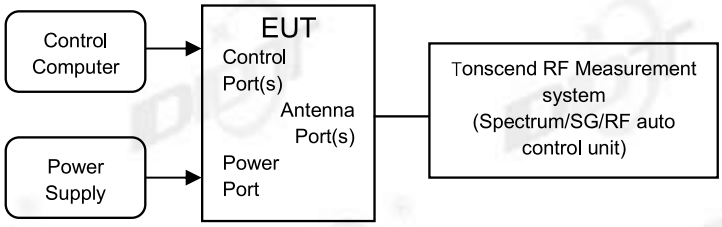
Test Site:	RF Measurement System 1#	Test Date:	2023.10.16-2023.10.23
Ambient Condition:	25.4℃, 46.5 %RH	Test Engineer:	Zora Zhang
Equipment under Test:	WiiM Amp	Model No.:	AMP001
Sample Number:	S23061614-04	Test Power Supply:	AC 230V

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

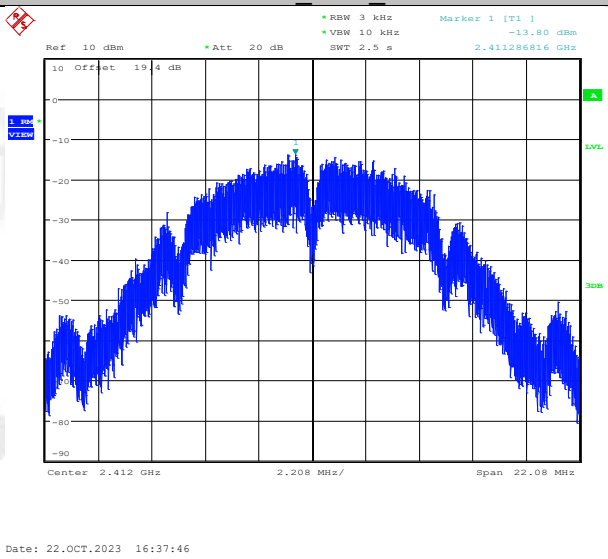
Test Site:	RF Measurement System 1#	Test Date:	2023.10.16-2023.10.23
Ambient Condition:	25.4℃, 46.5 %RH	Test Engineer:	Zora Zhang
Equipment under Test:	WiiM Amp	Model No.:	AMP001
Sample Number:	S23061614-04	Test Power Supply:	AC 230V

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

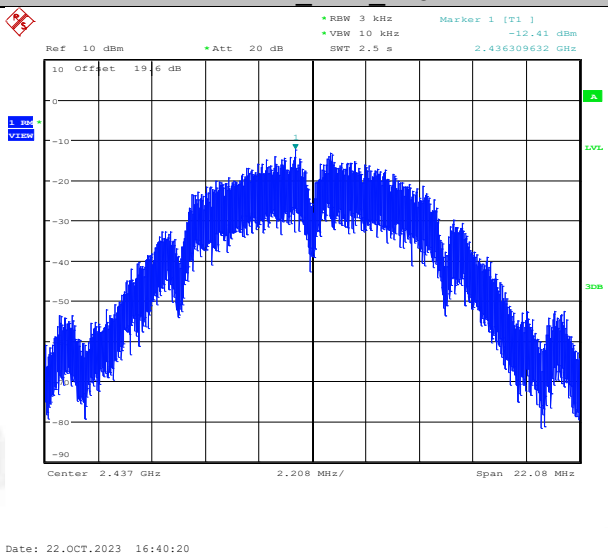
Note：The Duty Cycle Factor is compensated in the graph.

7.5. Test graphs

11B_Ant1_2412



11B_Ant1_2437



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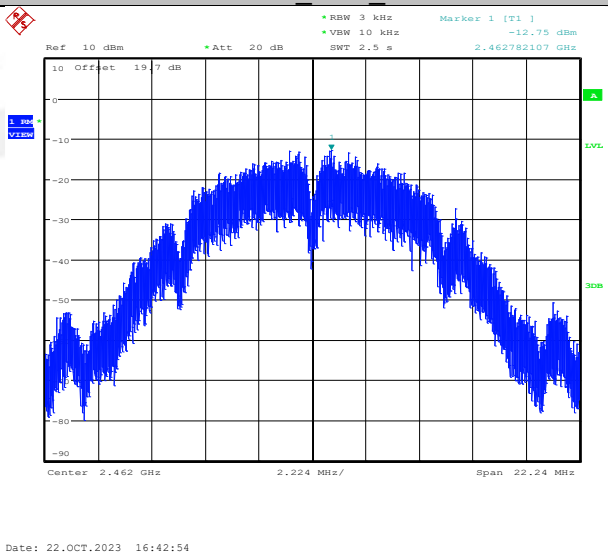

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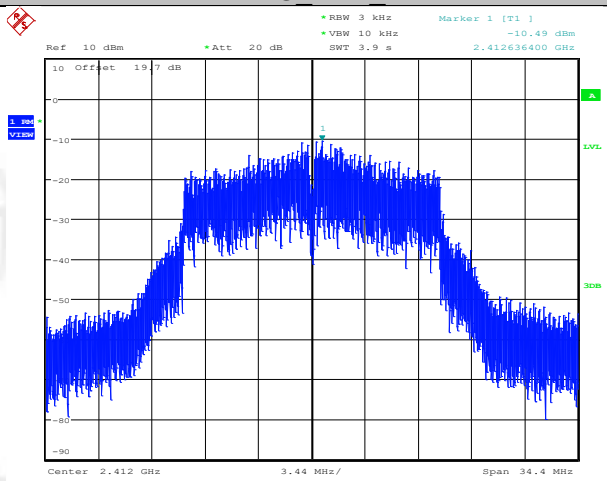

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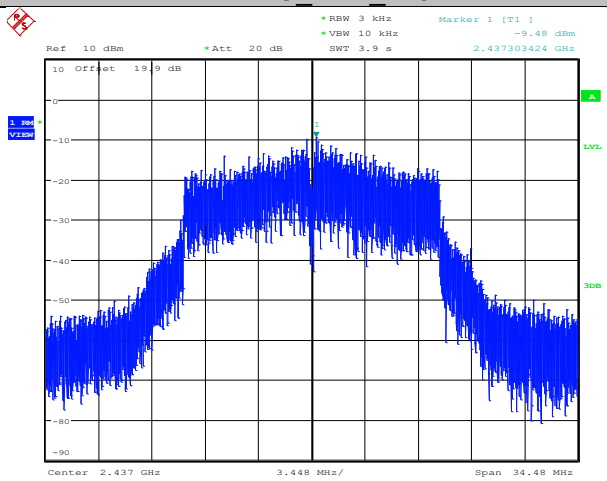

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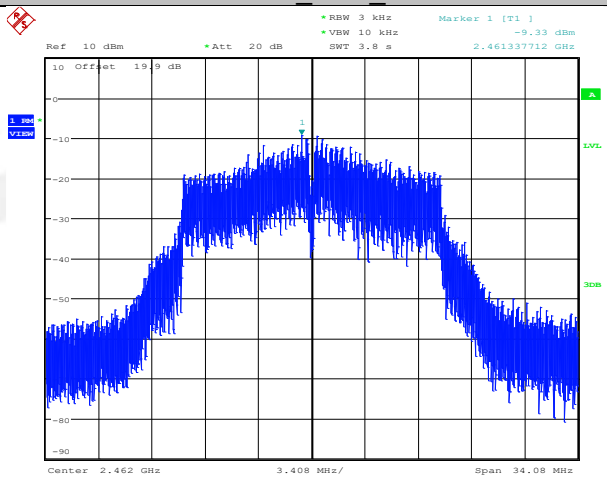

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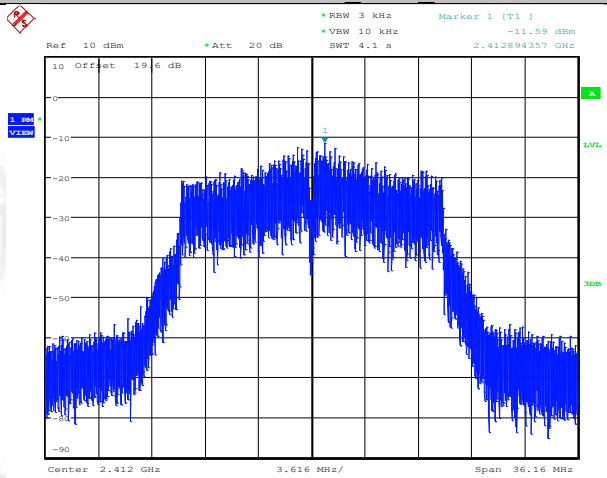
11N20SISO_Ant1_2412



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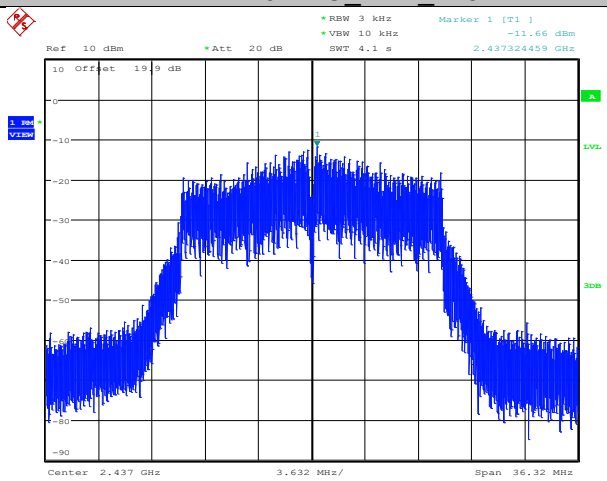

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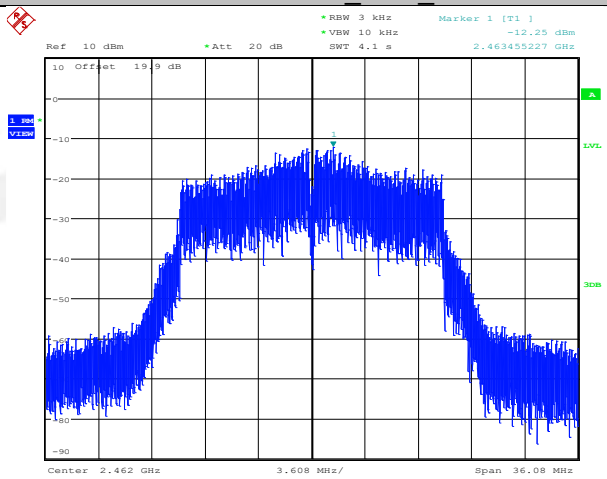
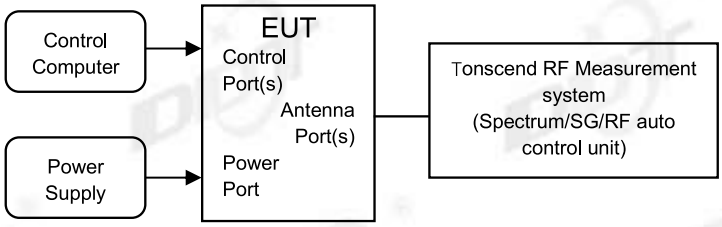


Date: 22.OCT.2023 16:56:38

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.

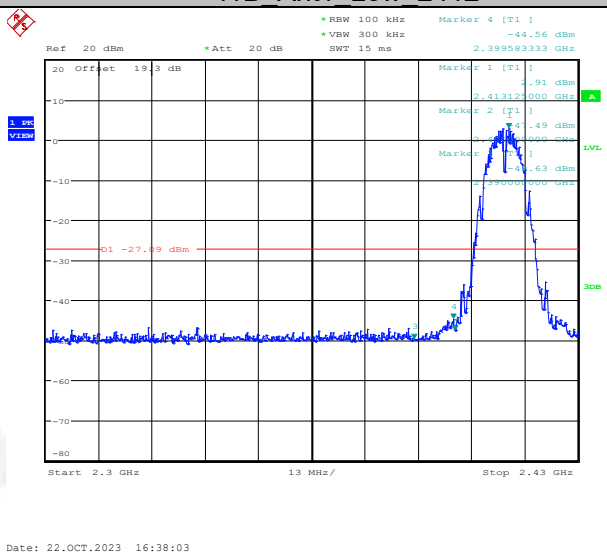
8.4. Test result

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



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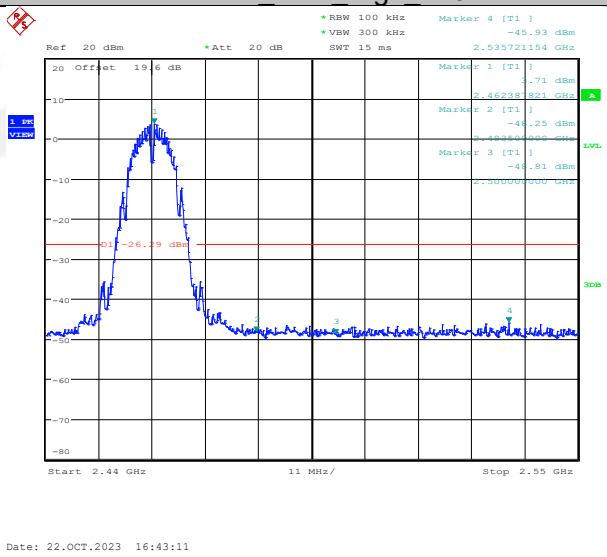

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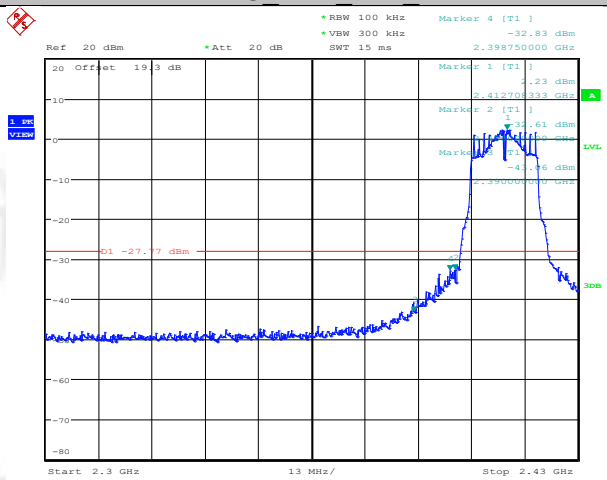

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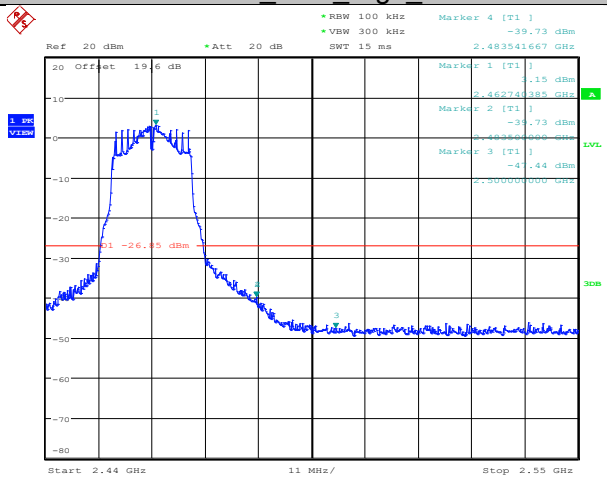

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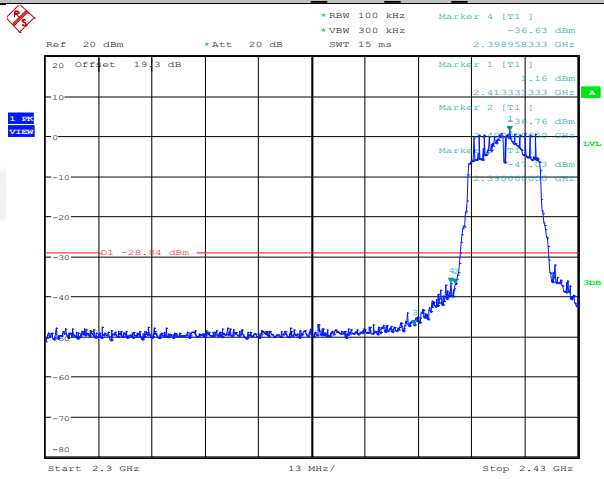

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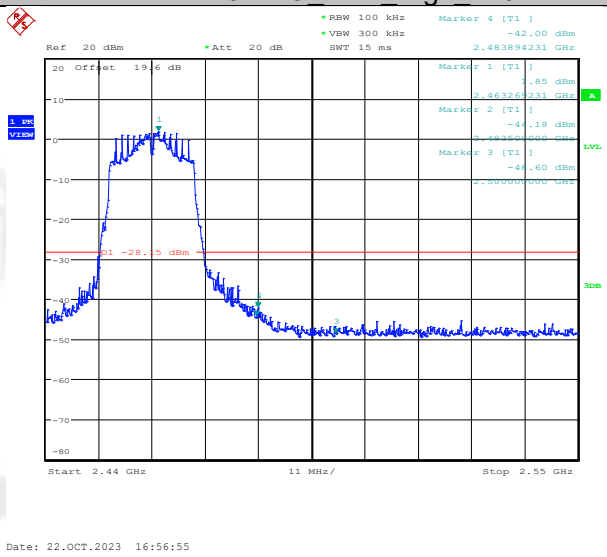
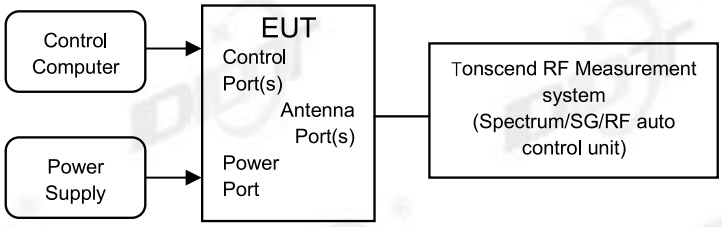


9. RF Conducted Spurious Emissions

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

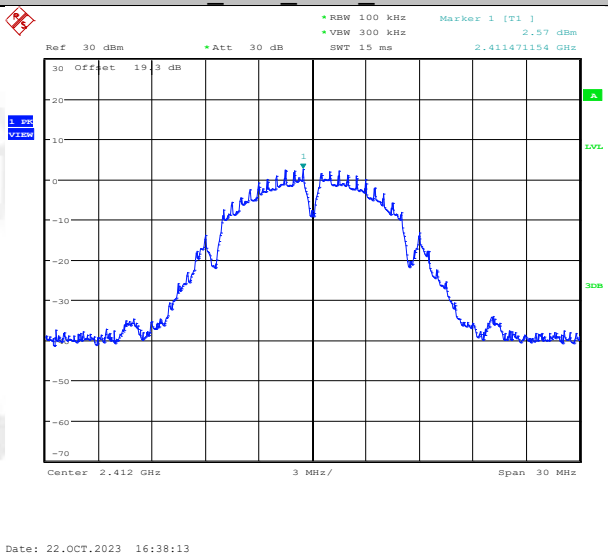
9.4. Test result

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



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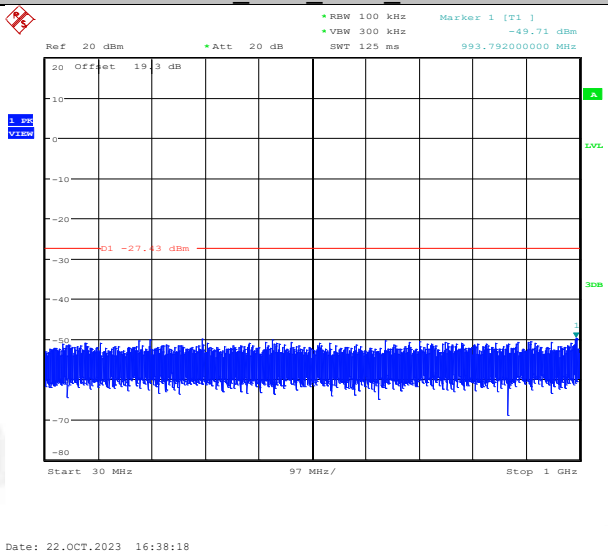
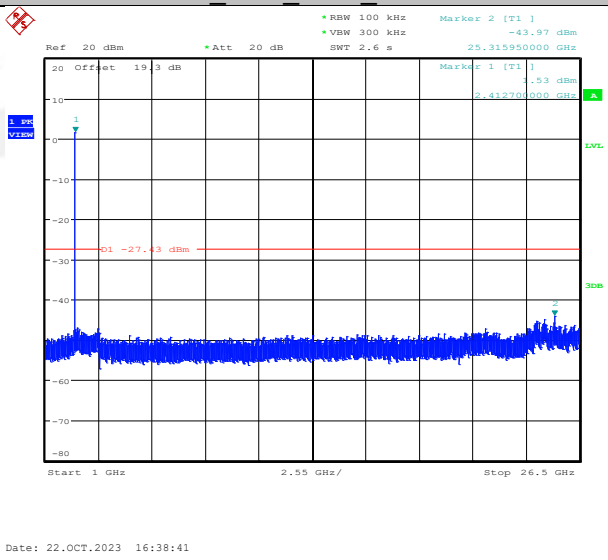


11B_Ant1_2412_1000~26500



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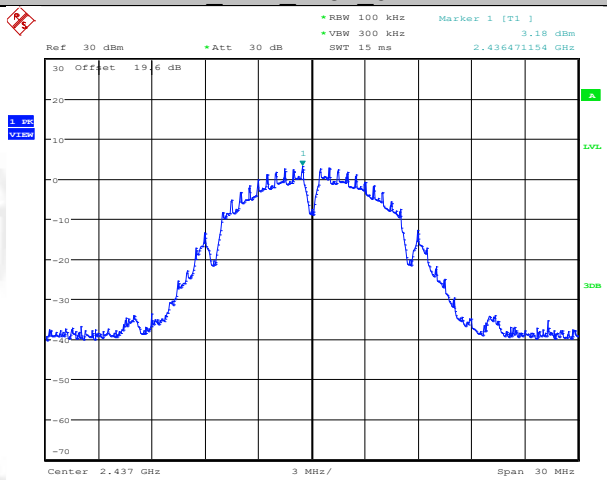

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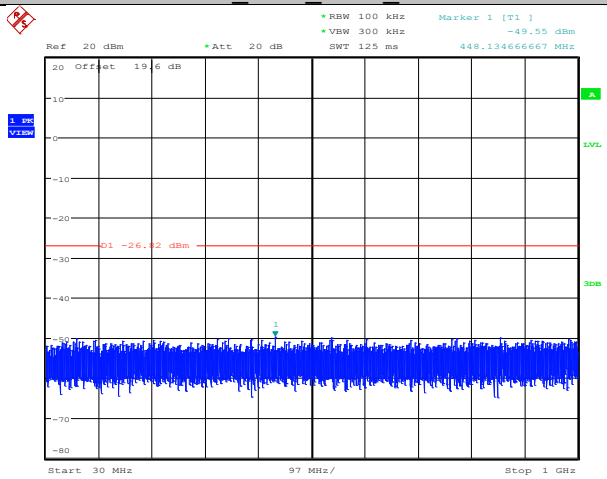
11B_Ant1_2437_30~1000



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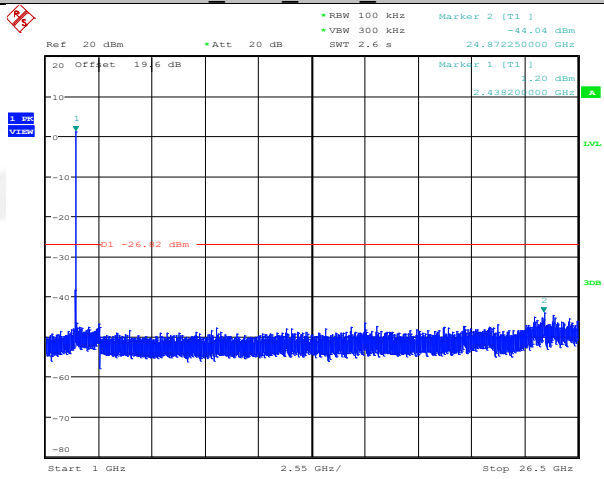

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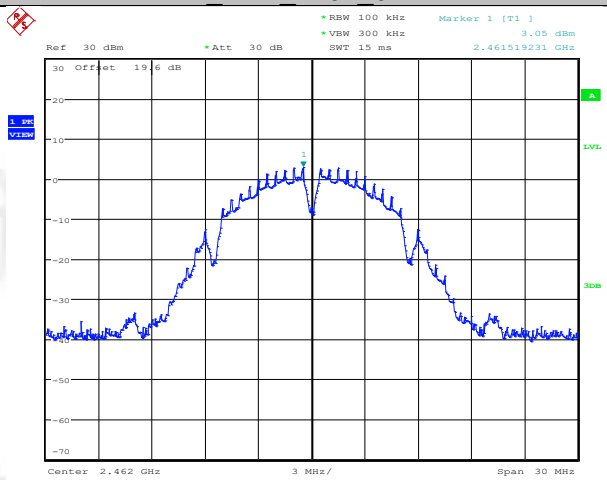

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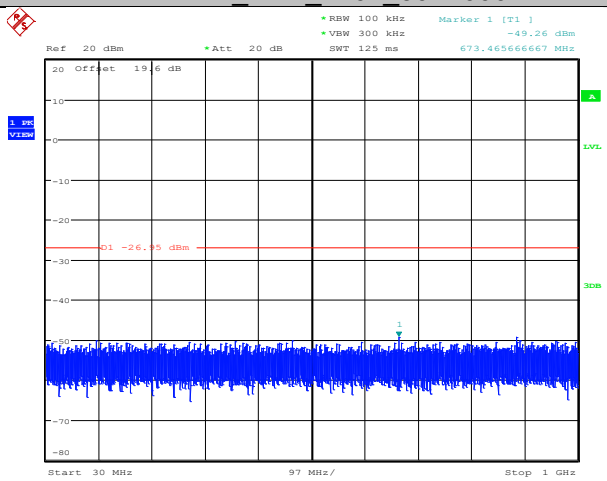

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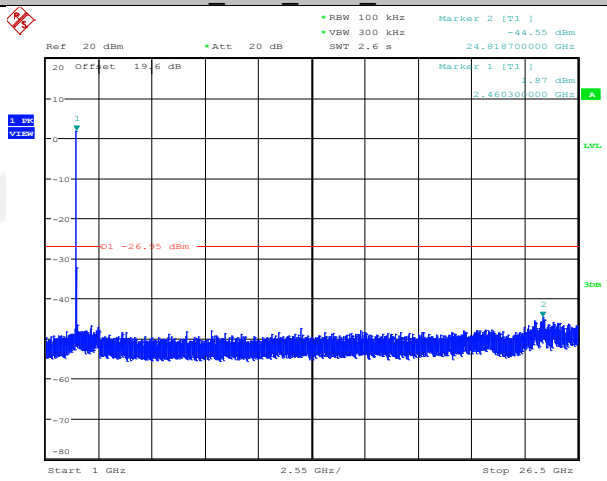
11B_Ant1_2462_1000~26500



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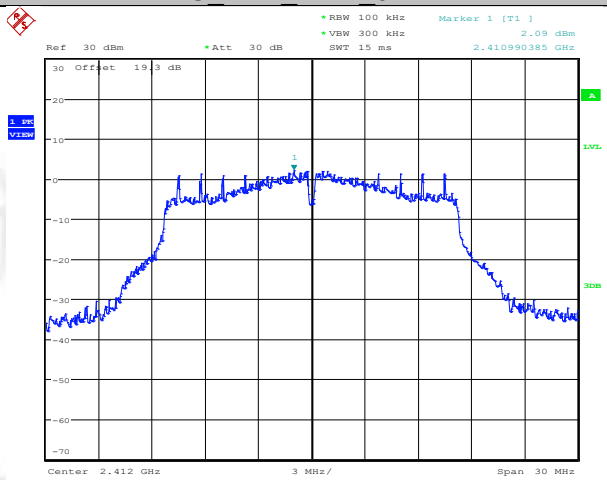

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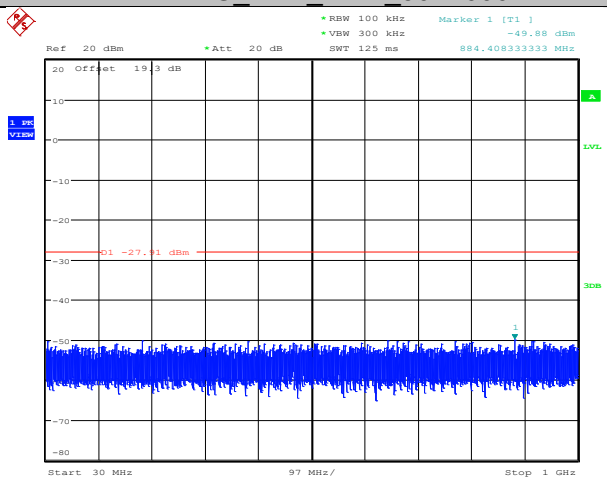
11G_Ant1_2412_30~1000



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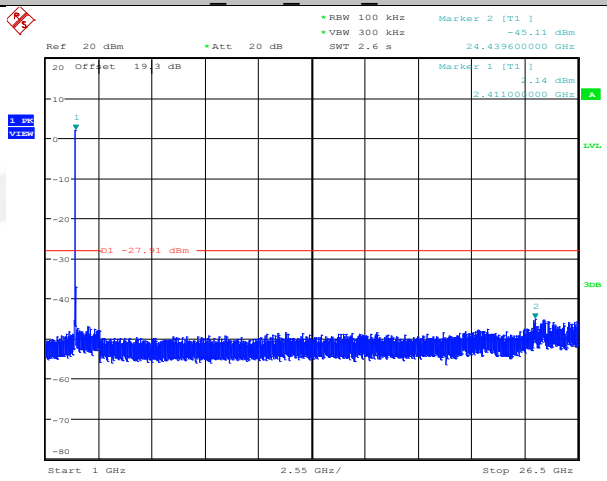

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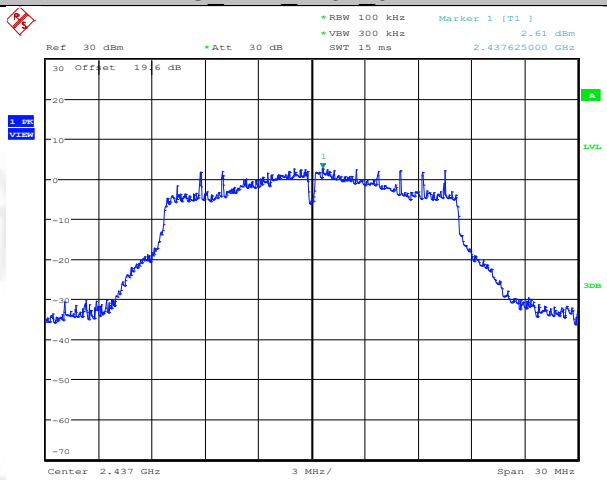

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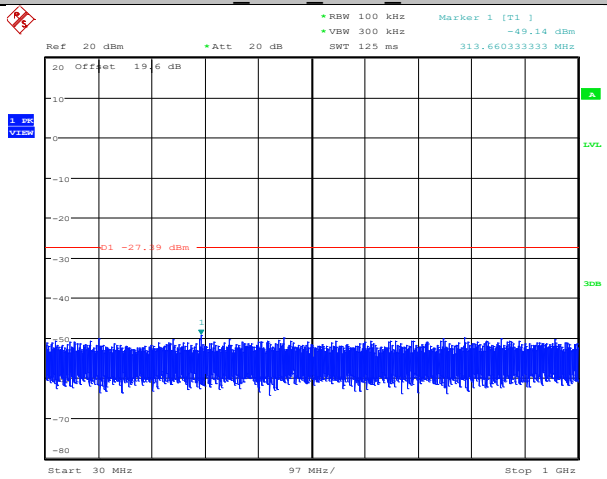
11G_Ant1_2437_30~1000



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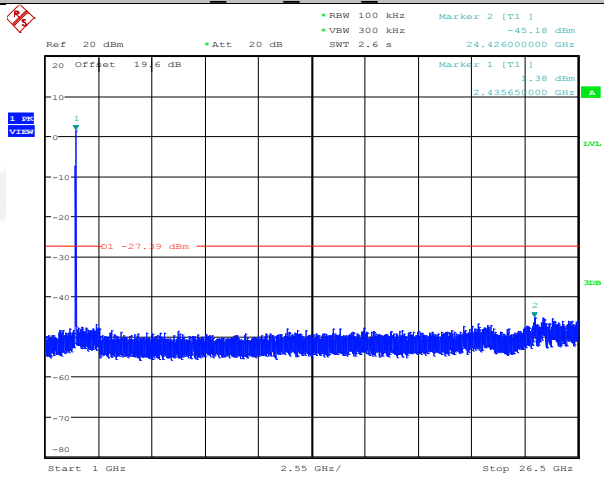
11G_Ant1_2437_1000~26500



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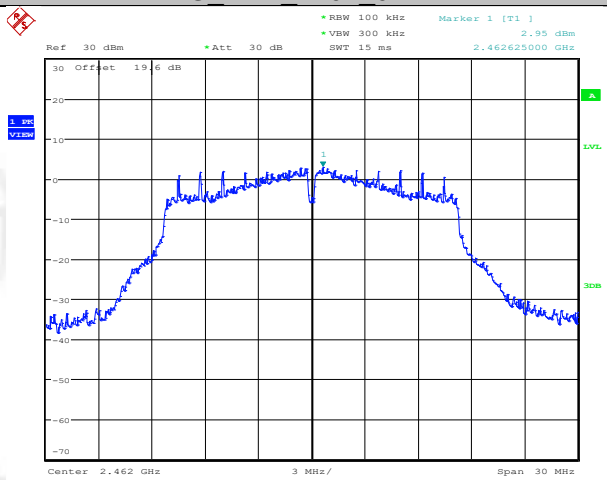
11G_Ant1_2462_0~Reference



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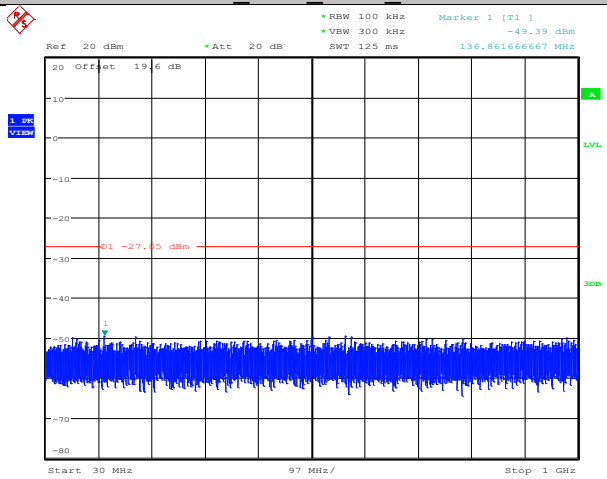

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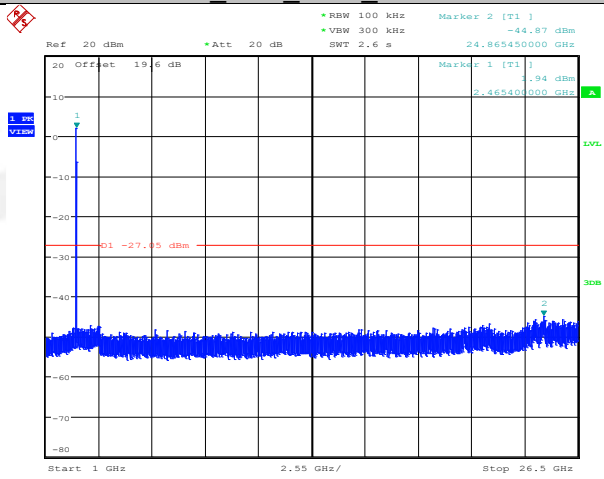

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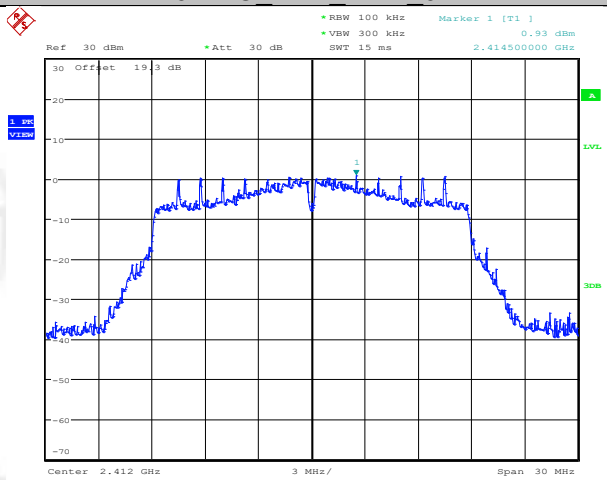
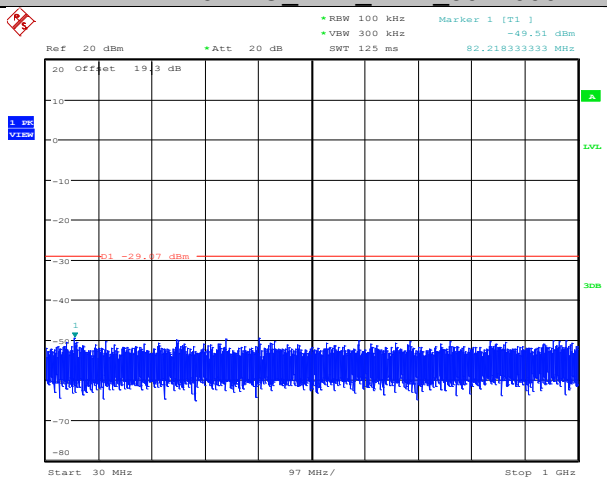
11N20SISO_Ant1_2412_0~Reference



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

11N20SISO_Ant1_2412_30~1000



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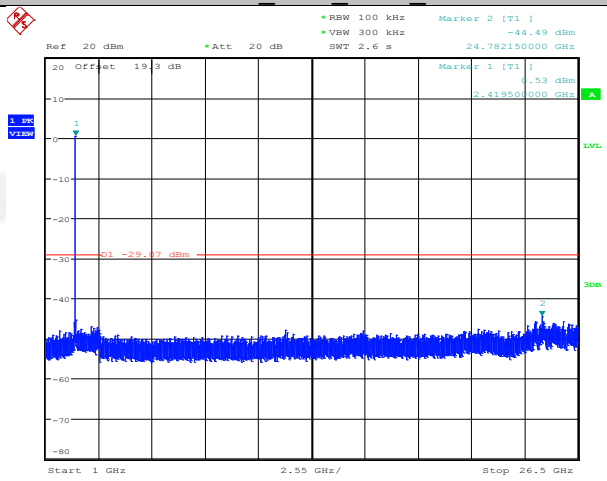

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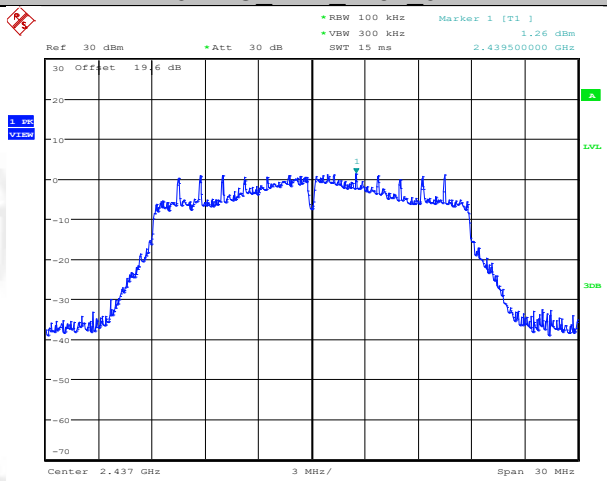

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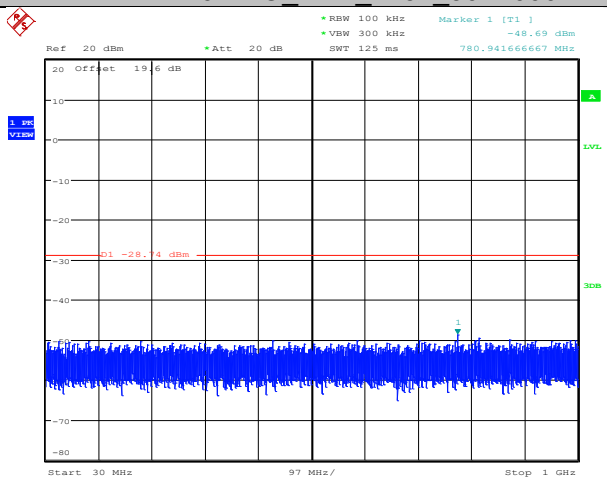
11N20SISO_Ant1_2437_30~1000



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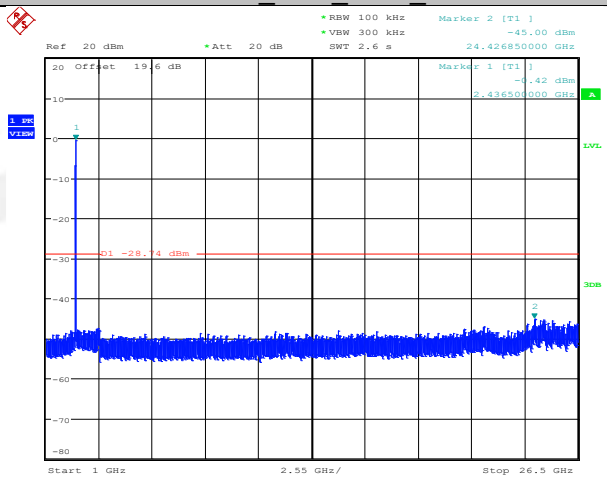

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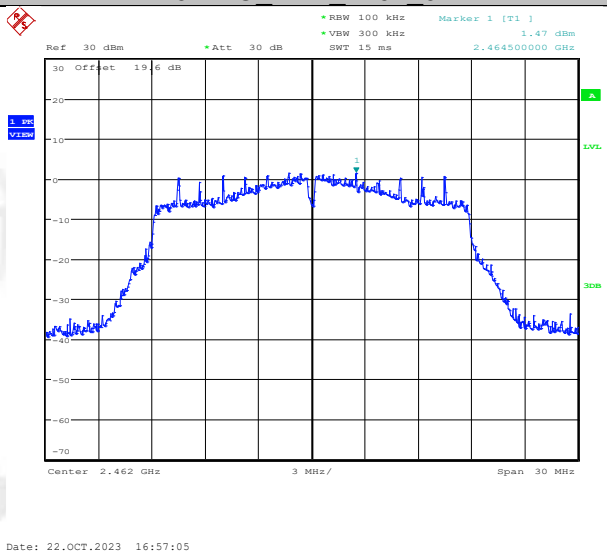

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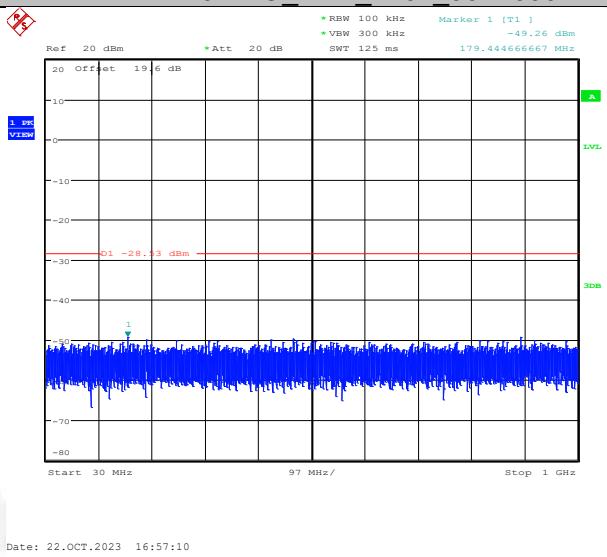
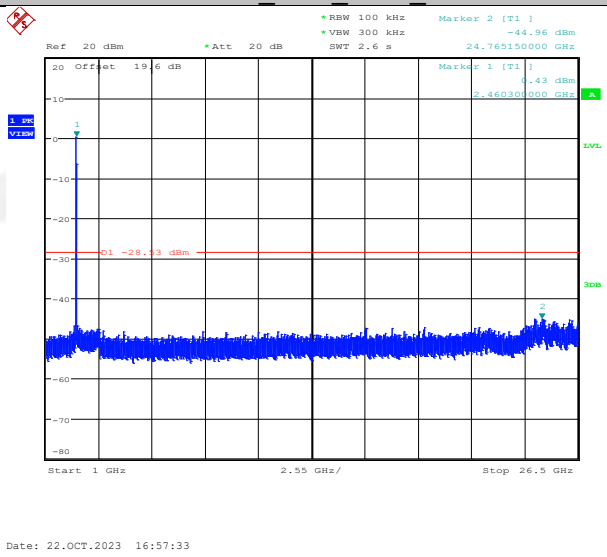
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