Report No.: DDT-R20032021-1E11

Issued Date: Jun. 19, 2020

FCC AND ISED CERTIFICATION TEST REPORT

FOR

Applicant	:	Harman International Industries, Inc.
Address	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES
Equipment under Test	:	Wireless Speaker
Model No.	:	CITATION 200
Trade Mark	:	harman/kardon
FCC ID	:	APIHKCT200
IC	:	6132A-HKCT200
Manufacturer	:	Harman International Industries, Inc.
Address	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES

Issued By: Dongguan Dongdian Testing Service Co., Ltd.

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808

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REPORT

Table of Contents

Test report declares....4
1. Summary of Test Results.... 6
2. General Test Information 7
2.1. Description of EUT 7
2.2. Accessories of EUT.... 7
2.3. Assistant equipment used for test.... 8
2.4. Block diagram of EUT configuration for test 8
2.5. Deviations of test standard.... 8
2.6. Test environment conditions 8
2.7. Test laboratory.... 9
2.8. Measurement uncertainty.... 9
3. Equipment Used During Test.... 10
4. 6 dB Bandwidth and 99% Bandwidth 12
4.1. Block diagram of test setup.... 12
4.2. Limits 12
4.3. Test procedure 12
4.4. Test result.... 13
4.5. Original test data 14
5. Conducted Peak Output Power.... 32
5.1. Block diagram of test setup.... 32
5.2. Limits 32
5.3. Test procedure 32
5.4. Test result.... 32
6. Power Spectral Density.... 34
6.1. Block diagram of test setup.... 34
6.2. Limits 34
6.3. Test procedure 34
6.4. Test result.... 34
6.5. Original test data 35
7. Band Edge and Spurious Emissions (Conducted).... 44
7.1. Block diagram of test setup.... 44
7.2. Limits 44
7.3. Test procedure 44
7.4. Test result.... 45
7.5. original test data 45
8. Radiated Spurious Emissions 76

8.1. Block diagram of test setup 76
8.2. Limit 77
8.3. Test procedure 78
8.4. Test result 80
9. Radiated Band Edge Compliance 85
9.1. Block diagram of test setup 85
9.2. Limit 85
9.3. Test Procedure 85
9.4. Test result 85
10. Power Line Conducted Emission 102
10.1. Block diagram of test setup 102
10.2. Power line conducted emission limits (Class B) 102
10.3. Test procedure 102
10.4. Test Result 103
11. Antenna Requirements 106
11.1. Limit 106
11.2. Result 106

Test Report Declare

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Trade Mark	:	harman/kardon
Manufacturer	:	Harman International Industries, Inc.
Address	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES

Test Standard Used: FCC Rules and Regulations Part 15 Subpart C, RSS-247 Issue 2 February 2017.

Test procedure used: ANSI C63.10:2013, RSS-Gen Issue 5, Apr. 2018, 558074 D01 15.247 Meas Guidance v05r02

We Declare:

The equipment described above is tested by Dongguan 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 Dongguan 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 FCC&ISED standards.

Report No:	DDT-R20032021-1E11		
Date of Receipt:	Apr. 20, 2020	**Date of Test:**	Apr. 20, 2020 ~ Jun. 19, 2020

Prepared By: ***Approved By:***

Sam Li

Sam Li/Engineer

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 Dongguan Dongdian Testing Service Co., Ltd.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Jun. 19, 2020	

1. Summary of Test Results

The EUT have been tested according to the applicable standards as referenced below.		
Description of Test Item	**Standard**	**Results**
6 dB Bandwidth and 99% Bandwidth	FCC 15.247 (a) (2) RSS-247 Clause 5.2 (a)	PASS
Conducted Output Power	FCC 15.247 (b) (3) RSS-247 Clause 5.4 (e)	PASS
Power Spectral Density	FCC 15.247 (e) RSS-247 Clause 5.2 (b)	PASS
Band-edge and Spurious Emissions (Conducted)	FCC 15.247 (d) RSS-247 Clause 5.5	PASS
Radiated Spurious Emissions	FCC 15.247 (d) FCC 15.209 FCC 15.205 RSS-247 Clause 5.5 RSS-GEN Clause 8.9	PASS
Radiated Band Edge Compliance	FCC 15.247 (d) FCC 15.209 FCC 15.205 RSS-247 Clause 5.5 RSS-GEN Clause 8.9	PASS
Power Line Conducted Emission	FCC 15.207 RSS-GEN Clause 8.8	PASS
Antenna requirement	FCC 15.203 RSS-GEN Clause 8.3	PASS

2. General Test Information

2.1. Description of EUT

EUT* Name	:	Wireless Speaker
Model Number	:	CITATION 200
EUT function description	:	Please reference user manual of this device
Power supply	:	DC 19V from external charging cradle DC 5V from external AC Adapter DC 3.6V Polymer Li-ion built-in battery
Radio Technology	:	IEEE 802.11b/g/n
Operation frequency	:	IEEE 802.11b: 2412 MHz - 2462 MHz IEEE 802.11g: 2412 MHz - 2462 MHz IEEE 802.11n HT20: 2412 MHz - 2462 MHz IEEE 802.11n HT40: 2422 MHz - 2452 MHz
Modulation	:	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20, HT40: OFDM (64QAM, 16QAM, QPSK, BPSK)
Transmitter rate	:	IEEE 802.11b: 1, 2, 5.5, 11 Mbps IEEE 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps IEEE 802.11n HT20: 6.5, 13, 19.5, 26, 39, 52, 58.5, 65 Mbps IEEE 802.11n HT40: 13.5, 27, 40.5, 54, 81, 108, 121.5, 135 Mbps
Antenna Type	:	Antenna 1: Dedicated FPCB antenna, maximum PK gain: 2.74 dBi Antenna 2: Dedicated FPCB antenna, maximum PK gain: 3.17 dBi
Sample Type	:	Series production

Note: EUT is the ab. of equipment under test.

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	/	/

2.2. Accessories of EUT

Description of Accessories	Manufacturer	Model number	Description	Remark
AC cable	N/A	N/A	N/A	Length: 1.80m, unshielded
Charging cradle	harman/kardon	N/A	N/A	Input: 100-240V~ 50/60Hz, 1.5A; Output: DC 19V/3A, 57W
Built-in Battery	ICON ENERGY SYSTEM (SHENZHEN) CO., LTD	IAA031NA	DC3.6V, 4800mAh, 17.28Wh	N/A

2.3. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	EMC Compliance	SN
Notebook	Lenovo Beijing Co. Ltd.	ThinkPad	FCC/CE	TP00015A

2.4. Block diagram of EUT configuration for test

EUT

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

Tested mode, channel, and data rate information				
Mode	Setting Tx Power	data rate (Mbps) (see Note)	Channel	Frequency (MHz)
IEEE 802.11b	13	1	LCH: CH1	2412
	13	1	MCH: CH6	2437
	13	1	HCH: CH11	2462
IEEE 802.11g	14	6	LCH: CH1	2412
	14	6	MCH: CH6	2437
	14	6	HCH: CH11	2462
IEEE 802.11n HT20	14	MCS 0	LCH: CH1	2412
	14	MCS 0	MCH: CH6	2437
	14	MCS 0	HCH: CH11	2462
IEEE 802.11n HT40	12	MCS 0	LCH: CH3	2422
	13	MCS 0	MCH: CH6	2437
	13	MCS 0	HCH: CH9	2452
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:	21-25 ℃
Humidity range:	40-75%
Pressure range:	86-106 kPa

2.7. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808

Tel.: +86-0769-38826678, http://www.dgddt.com, Email: ddt@dgddt.com

CNAS Accreditation No. L6451; A2LA Accreditation No. 3870.01

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

Industry Canada site registration number: 10288A-1

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 < 22 GHz)
Uncertainty for Radio Frequency (RBW < 20 kHz)	3×10^{-8}
Temperature	0.4 ℃
Humidity	2 %
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	3.32 dB (150 kHz - 30 MHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

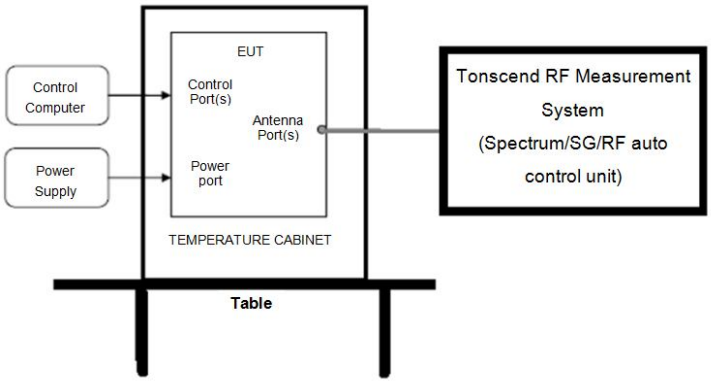
3. Equipment Used During Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
RF Connected Test (Tonscend RF Measurement System)					
Spectrum analyzer	R&S	FSU26	200071	Sep. 29, 2019	1 Year
Wideband Radio Communication tester	R&S	CMW500	117491	Jun. 25, 2019	1 Year
Vector Signal Generator	Agilent	E8267D	US49060192	Sep. 29, 2019	1 Year
Vector Signal Generator	Agilent	N5182A	MY48180737	Jun. 25, 2019	1 Year
Power Sensor	Agilent	U2021XA	MY55150010	Jun. 28, 2019	1 Year
Power Sensor	Agilent	U2021XA	MY55150011	Jun. 28, 2019	1 Year
DC Power Source	MATRIS	MPS-3005L-3	D813058W	Jun. 25, 2019	1 Year
RF Cable	Micable	C10-01-01-1	100309	Sep. 29, 2019	1 Year
Temp&Humi Programmable	ZHIXIANG	ZXGDJS-150L	ZX170110-A	Oct. 21, 2019	1 Year
Test Software	JS Tonscend	JS1120-3	Ver.2.7	N/A	N/A
Radiation 1#chamber					
EMI Test Receiver	R&S	ESU8	100316	Sep. 29, 2019	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	Jun. 25, 2019	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-462	Nov. 15, 2019	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Sep. 29, 2019	1 Year
Double Ridged Horn Antenna	R&S	HF907	100276	Nov. 15, 2019	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	Sep. 29, 2019	1 Year
Pre-amplifier	A.H.	PAM-0118	360	Sep. 29, 2019	1 Year
Pre-amplifier	TERA-MW	TRLA-0040 G35	101303	Sep. 29, 2019	1 Year
RF Cable	HUBSER	CP-X2+ CP-X1	W11.03+ W12.02	Sep. 29, 2019	1 Year
RF Cable	N/A	5m+6m+1m	06270619	Sep. 29, 2019	1 Year
MI Cable	HUBSER	C10-01-01-1 M	1091629	Sep. 29, 2019	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A
Radiation 2#chamber					
EMI Test Receiver	R&S	ESCI	101364	Sep. 29, 2019	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	Jun. 25, 2019	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	9163-994	Nov. 15, 2019	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Sep. 29, 2019	1 Year
Double Ridged Horn Antenna	Schwarzbeck	BBHA9120	02108	Jul. 21, 2019	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	Sep. 29, 2019	1 Year

Pre-amplifier	TERA-MW	TRLA-0040 G35	101303	Sep. 29, 2019	1 Year
RF Cable	N/A	14+1.5m	06270619	Sep. 29, 2019	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A
Power Line Conducted Emissions Test					
EMI Test Receiver	R&S	ESU8	100316	Sep. 29, 2019	1 Year
LISN 1	R&S	ENV216	101109	Sep. 29, 2019	1 Year
LISN 2	R&S	ESH2-Z5	100309	Sep. 29, 2019	1 Year
Pulse Limiter	R&S	ESH3-Z2	101242	Sep. 29, 2019	1 Year
CE Cable 1	HUBSER	N/A	W10.01	Sep. 29, 2019	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A

4. 6 dB Bandwidth and 99% 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) Connect EUT's antenna output to spectrum analyzer by RF cable.

(2) 99% Bandwidth set the spectrum analyzer as follows:

RBW:	500 kHz
VBW:	2 MHz
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

(3) 6 dB Bandwidth set the spectrum analyzer as follows:

RBW:	100 kHz
VBW:	300 kHz
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

(4) 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.

4.4. Test result

Test Mode	Test	Ant	6 dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	2412	Ant1	9.16	0.5	PASS
11B	2412	Ant2	9.16	0.5	PASS
11B	2437	Ant1	9.16	0.5	PASS
11B	2437	Ant2	9.16	0.5	PASS
11B	2462	Ant1	9.16	0.5	PASS
11B	2462	Ant2	9.16	0.5	PASS
11G	2412	Ant1	15.20	0.5	PASS
11G	2412	Ant2	15.20	0.5	PASS
11G	2437	Ant1	15.20	0.5	PASS
11G	2437	Ant2	15.20	0.5	PASS
11G	2462	Ant1	15.20	0.5	PASS
11G	2462	Ant2	15.20	0.5	PASS
11N20SISO	2412	Ant1	15.20	0.5	PASS
11N20SISO	2412	Ant2	15.20	0.5	PASS
11N20SISO	2437	Ant1	15.20	0.5	PASS
11N20SISO	2437	Ant2	15.16	0.5	PASS
11N20SISO	2462	Ant1	15.12	0.5	PASS
11N20SISO	2462	Ant2	15.12	0.5	PASS
11N40SISO	2422	Ant1	35.36	0.5	PASS
11N40SISO	2422	Ant2	35.36	0.5	PASS
11N40SISO	2437	Ant1	35.36	0.5	PASS
11N40SISO	2437	Ant2	35.52	0.5	PASS
11N40SISO	2452	Ant1	35.36	0.5	PASS
11N40SISO	2452	Ant2	35.20	0.5	PASS

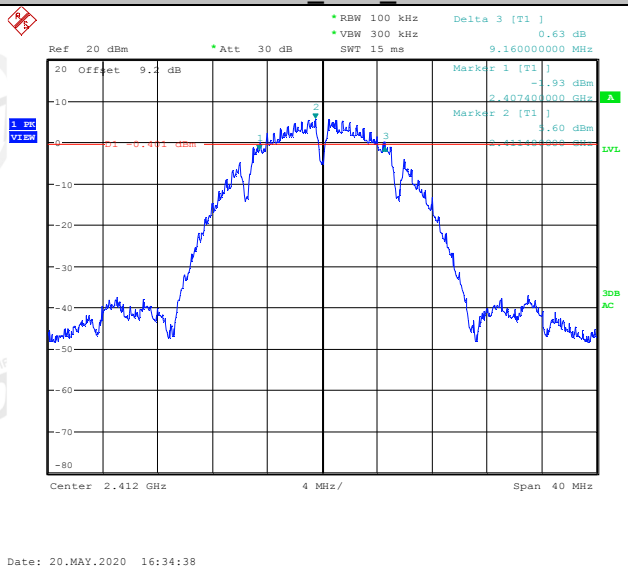
Test Mode	Test	Ant	99% OBW [MHz]	Limit [MHz]	Verdict
11B	2412	Ant1	13.60	---	PASS
11B	2412	Ant2	13.60	---	PASS
11B	2437	Ant1	13.60	---	PASS
11B	2437	Ant2	13.56	---	PASS
11B	2462	Ant1	13.64	---	PASS
11B	2462	Ant2	13.60	---	PASS
11G	2412	Ant1	16.92	---	PASS
11G	2412	Ant2	16.96	---	PASS
11G	2437	Ant1	16.96	---	PASS
11G	2437	Ant2	16.92	---	PASS

11G	2462	Ant1	16.96	---	PASS
11G	2462	Ant2	17.00	---	PASS
11N20SISO	2412	Ant1	18.16	---	PASS
11N20SISO	2412	Ant2	18.12	---	PASS
11N20SISO	2437	Ant1	18.20	---	PASS
11N20SISO	2437	Ant2	18.16	---	PASS
11N20SISO	2462	Ant1	18.24	---	PASS
11N20SISO	2462	Ant2	18.20	---	PASS
11N40SISO	2422	Ant1	36.64	---	PASS
11N40SISO	2422	Ant2	36.64	---	PASS
11N40SISO	2437	Ant1	36.72	---	PASS
11N40SISO	2437	Ant2	36.64	---	PASS
11N40SISO	2452	Ant1	36.80	---	PASS
11N40SISO	2452	Ant2	36.72	---	PASS

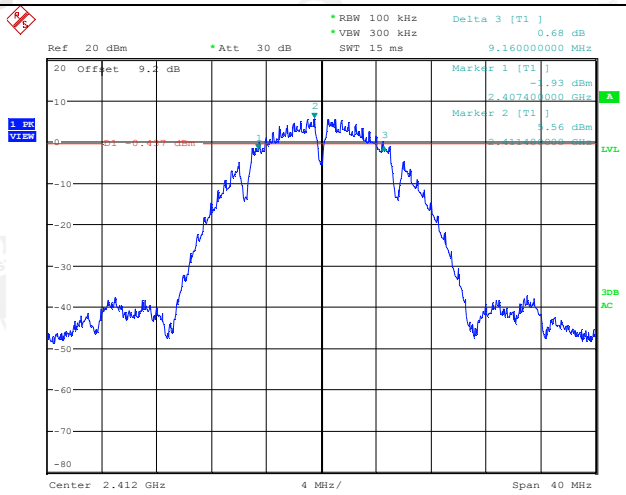
4.5. Original test data

6 dB Bandwidth:

11B_Ant1_2412



11B_Ant2_2412



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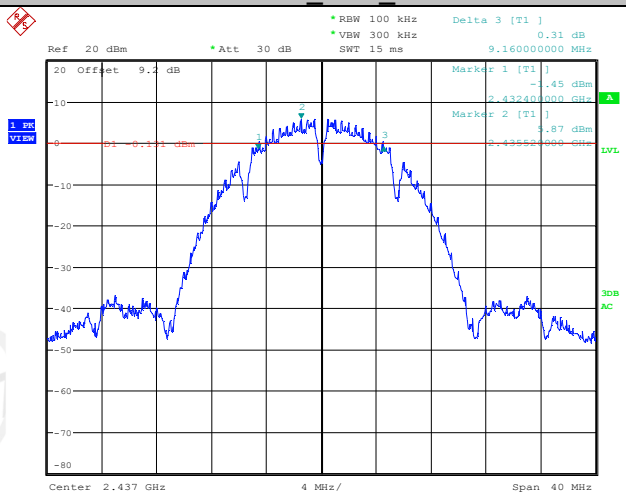

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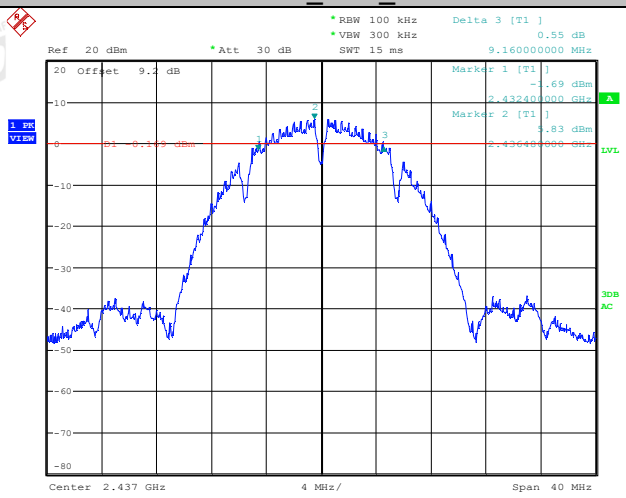

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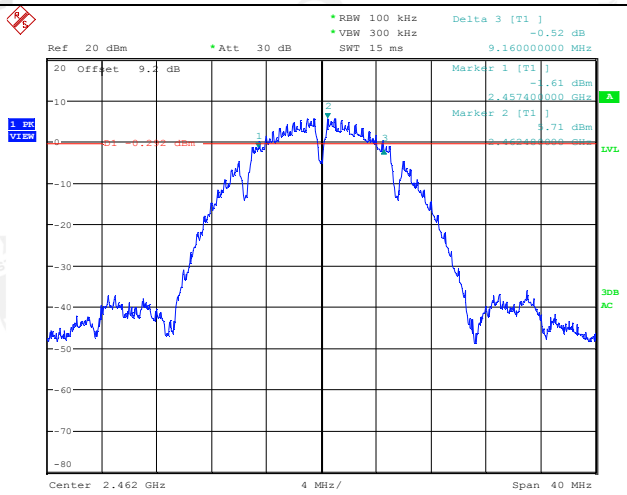

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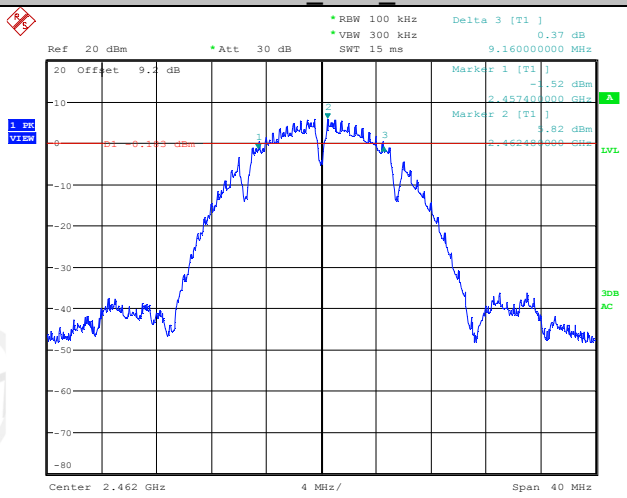

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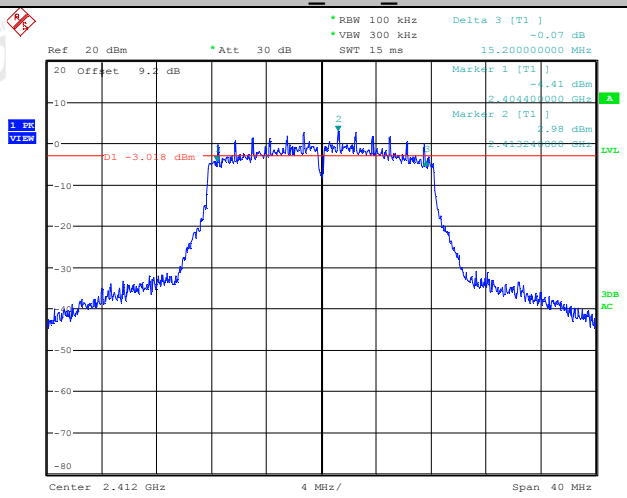

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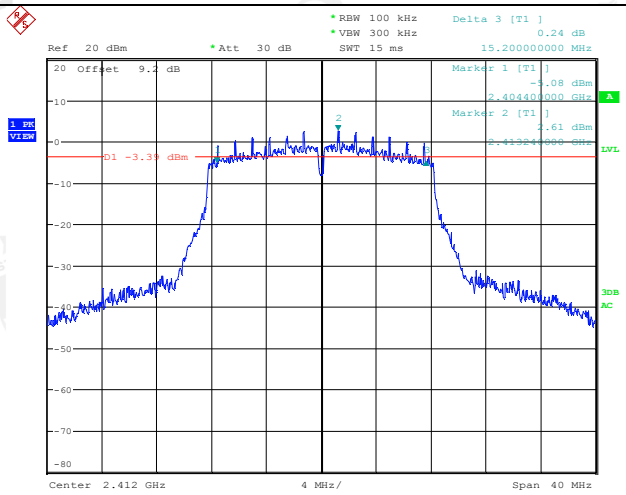

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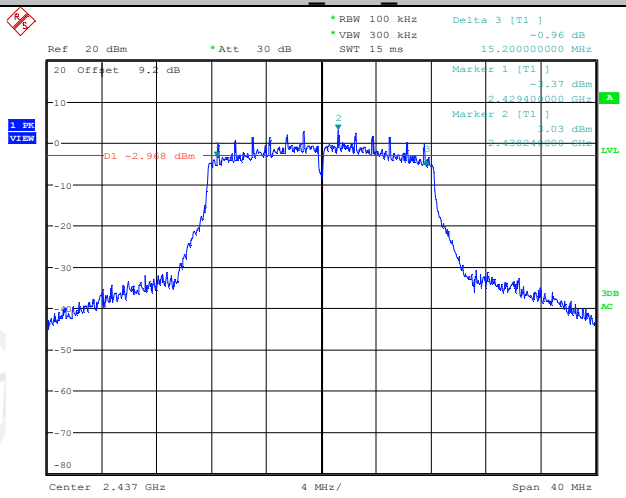

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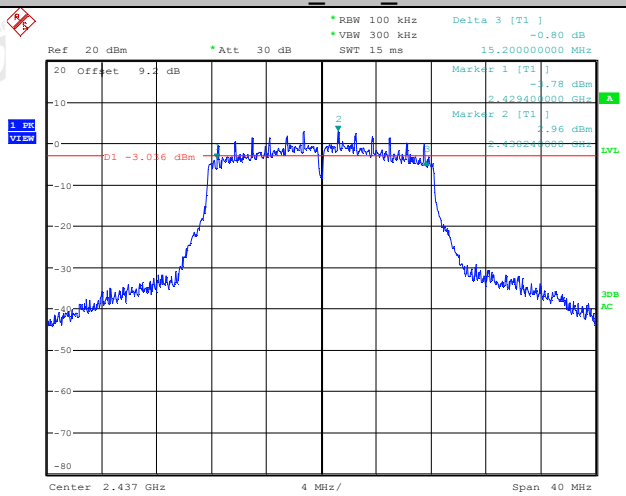

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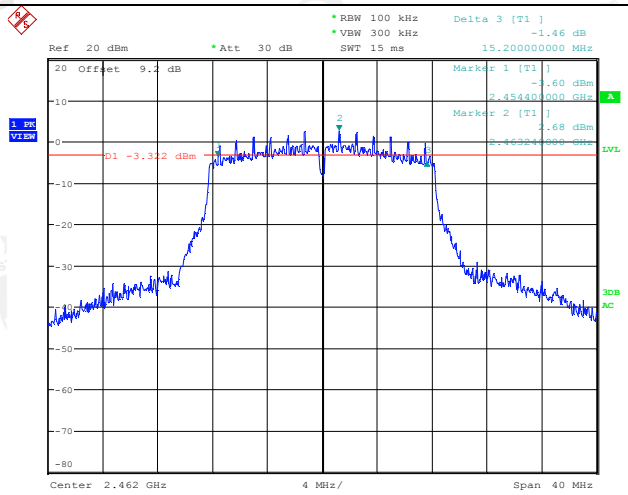

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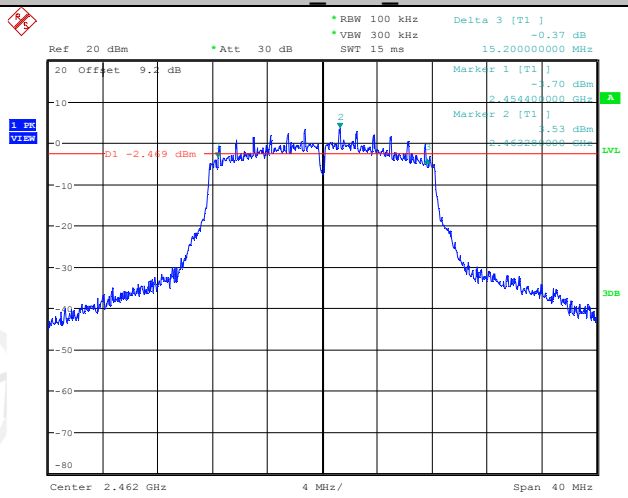

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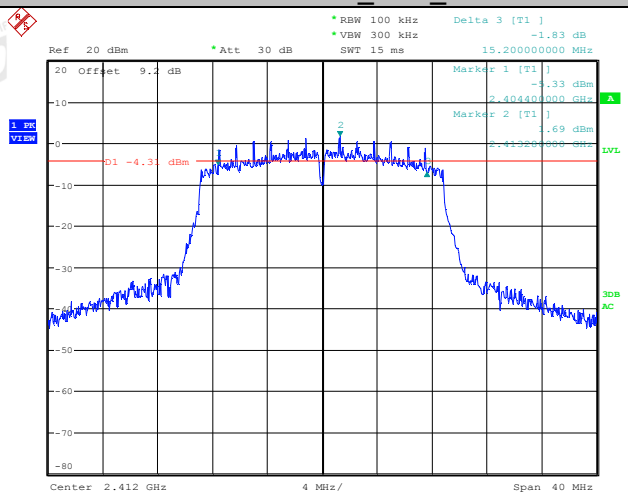

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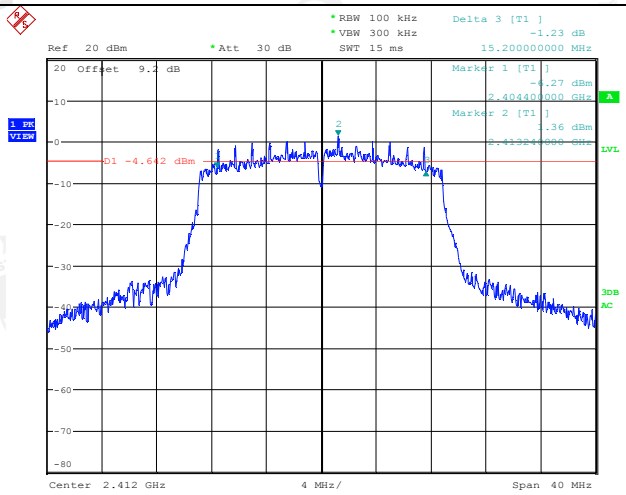
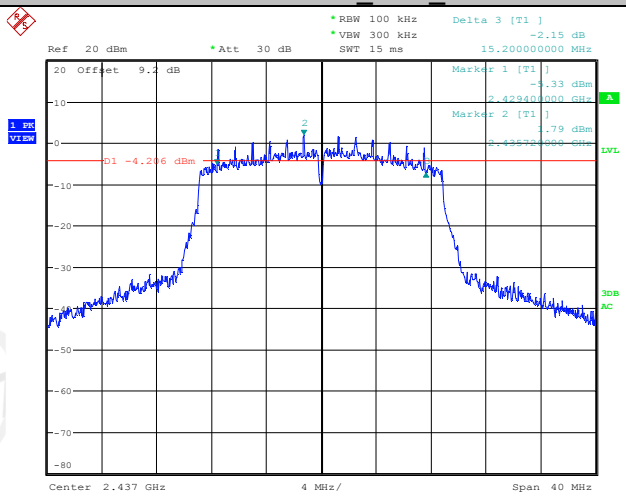


11N20SISO_Ant1_2437



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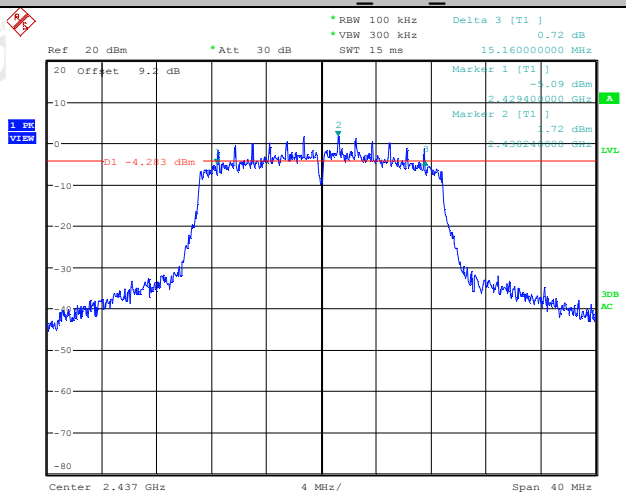

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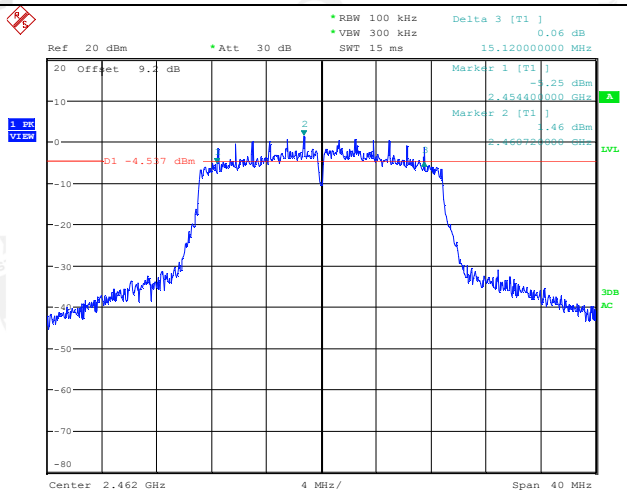

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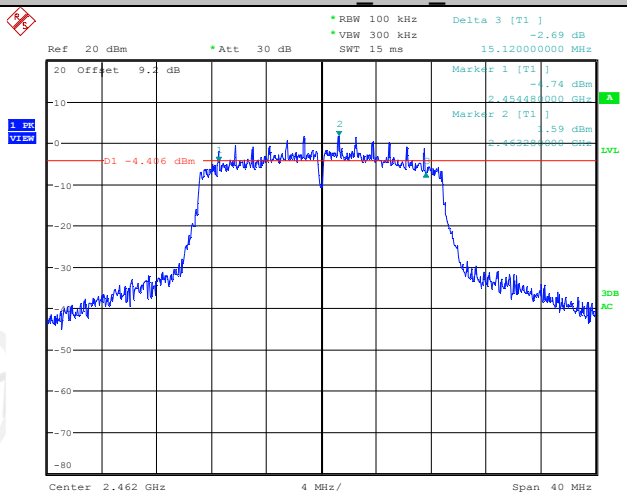

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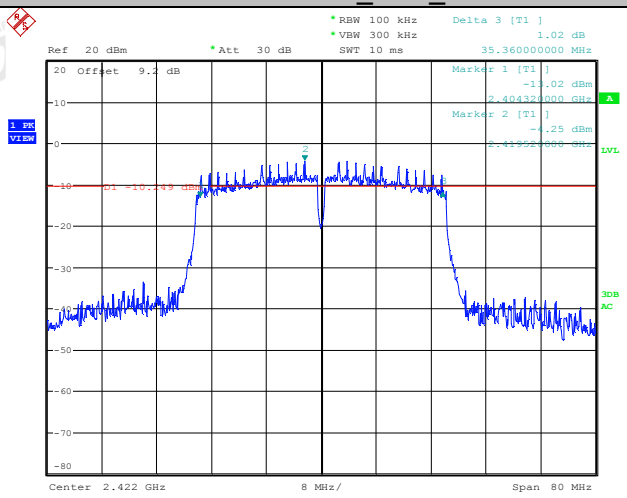

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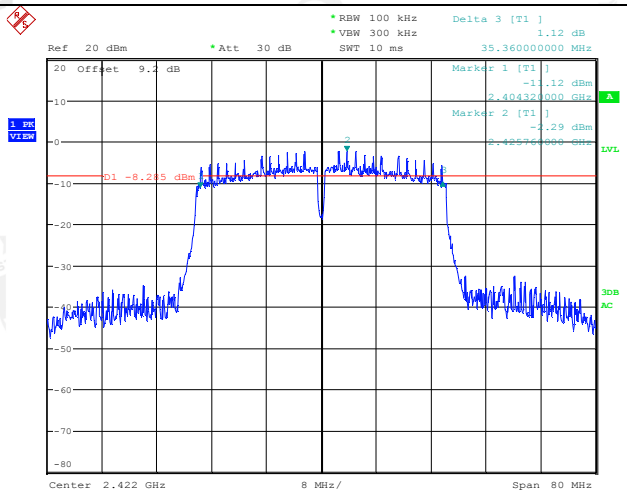

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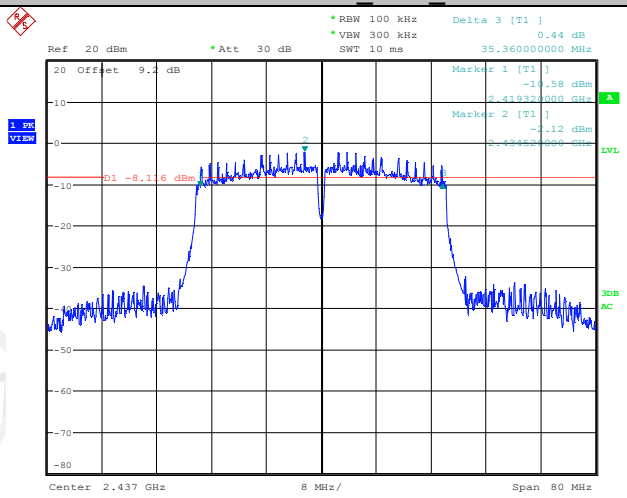

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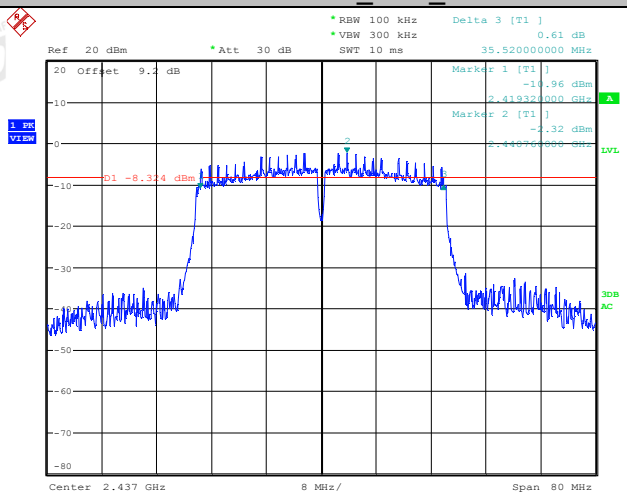

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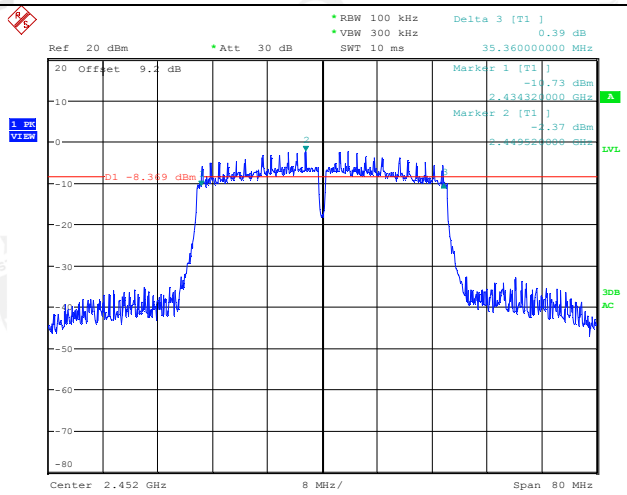

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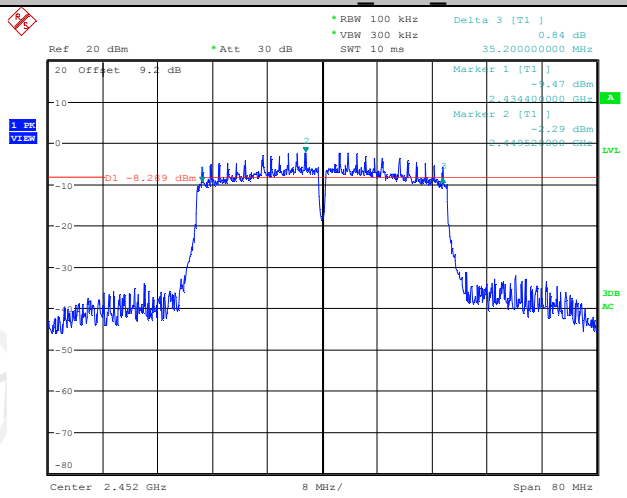

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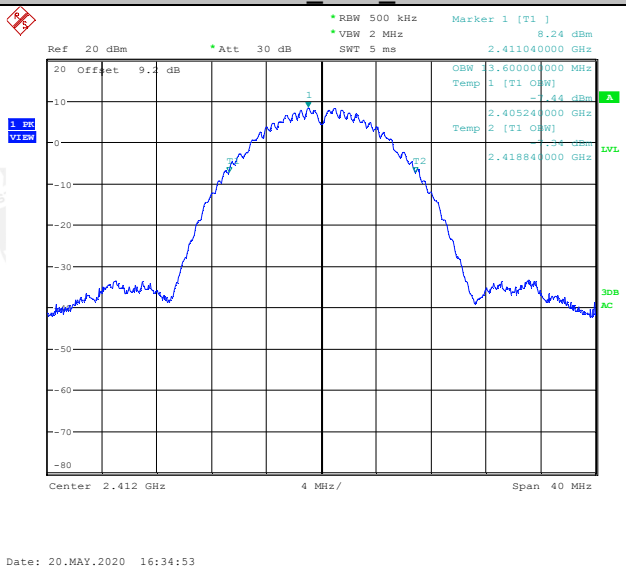

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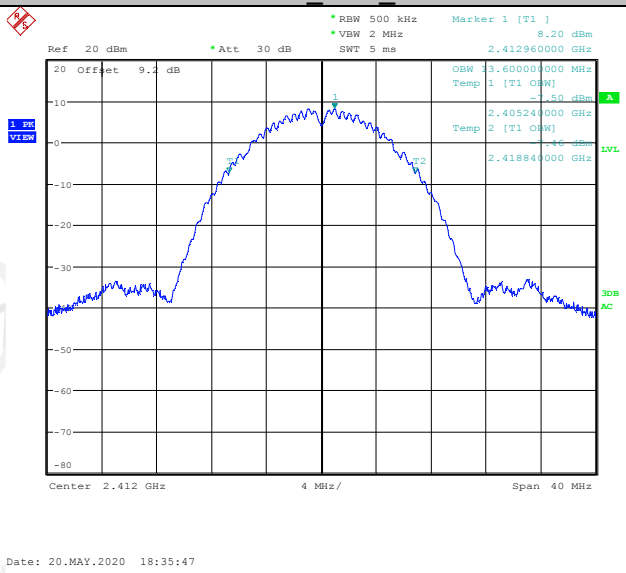

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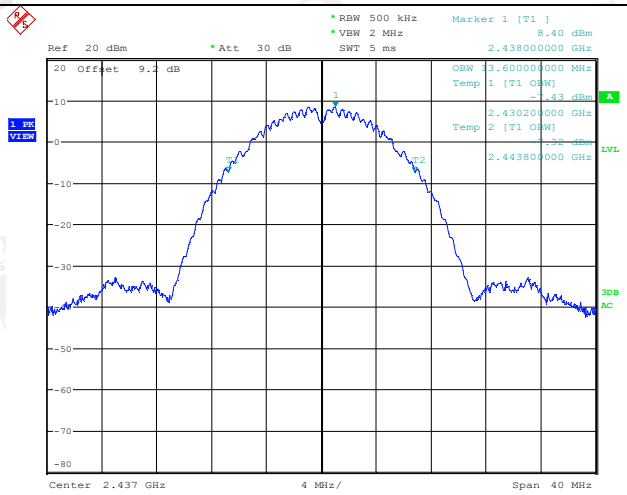

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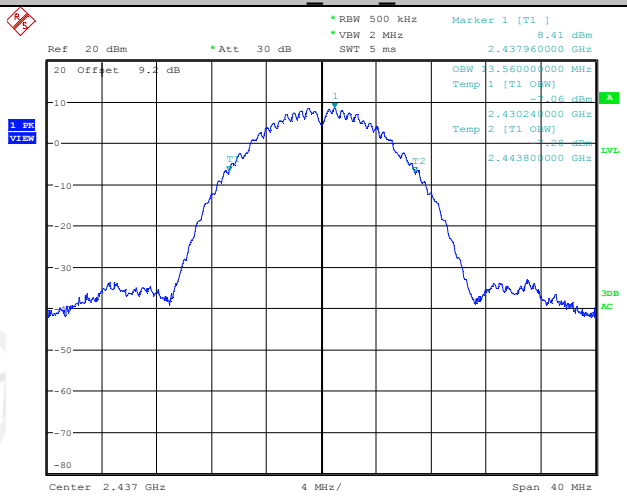

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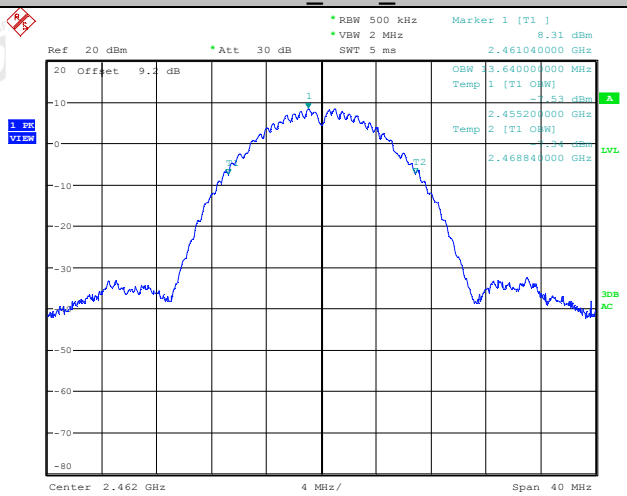

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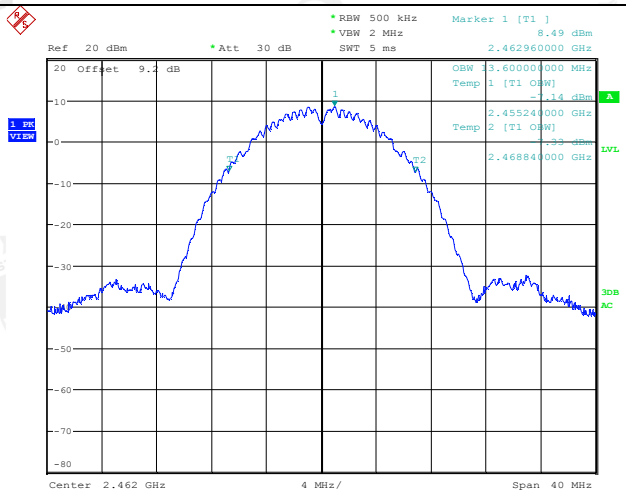

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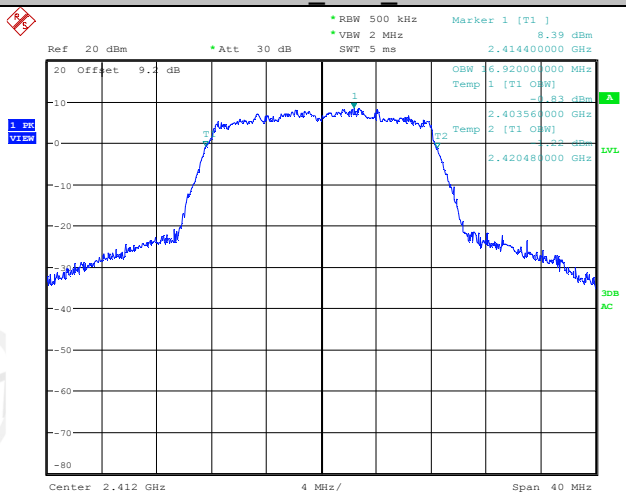

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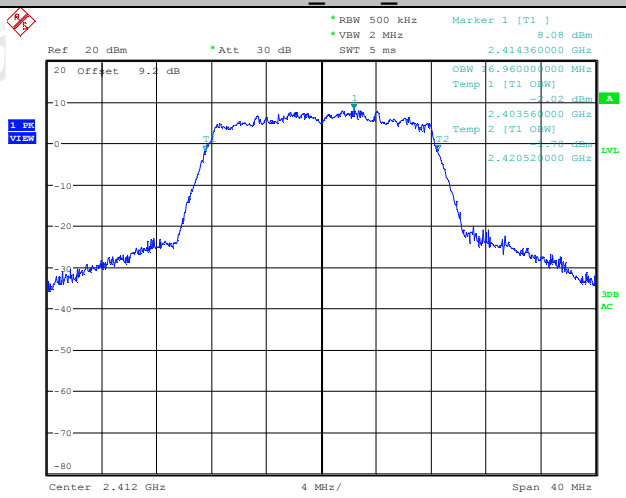

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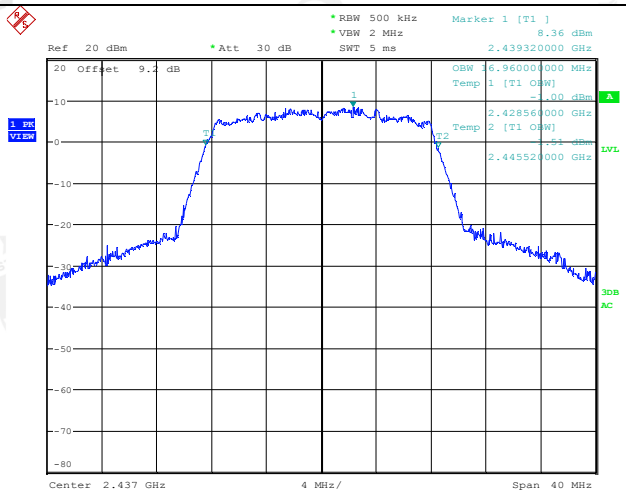

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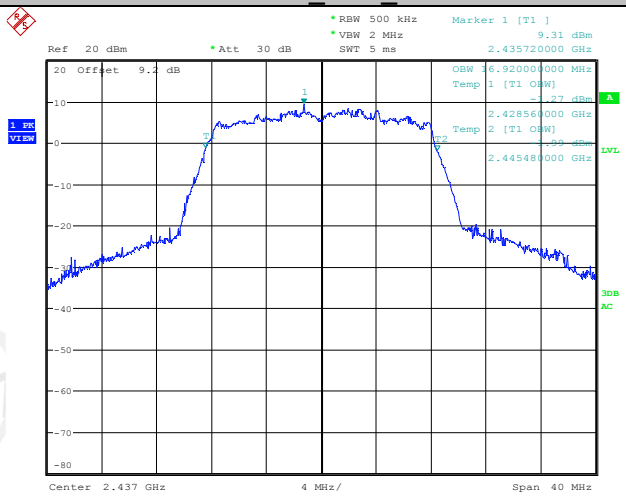

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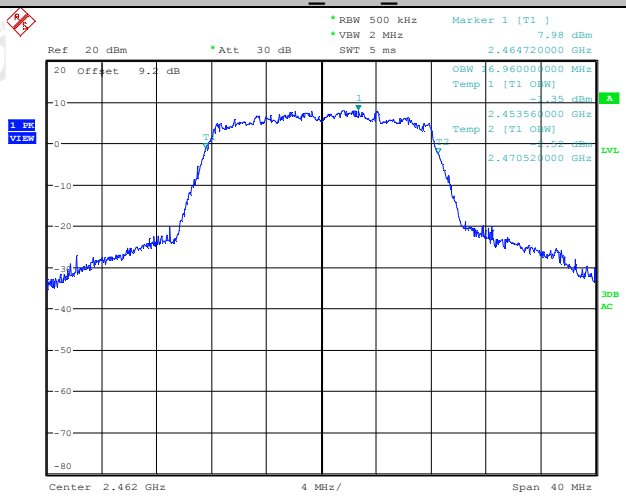

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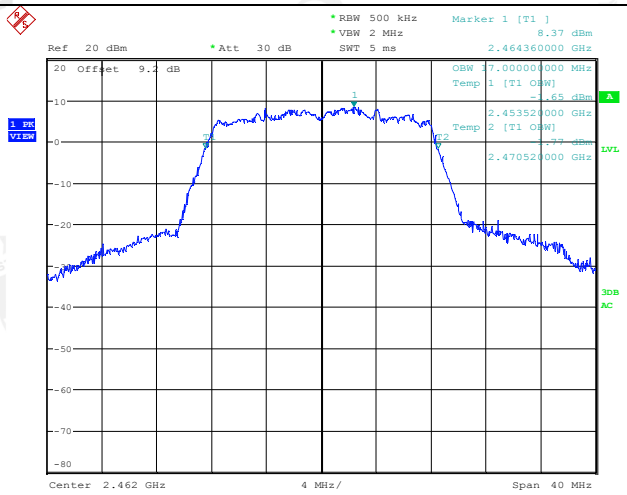

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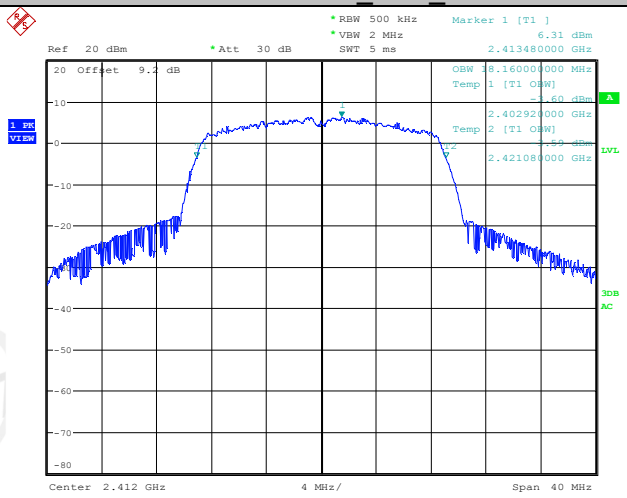

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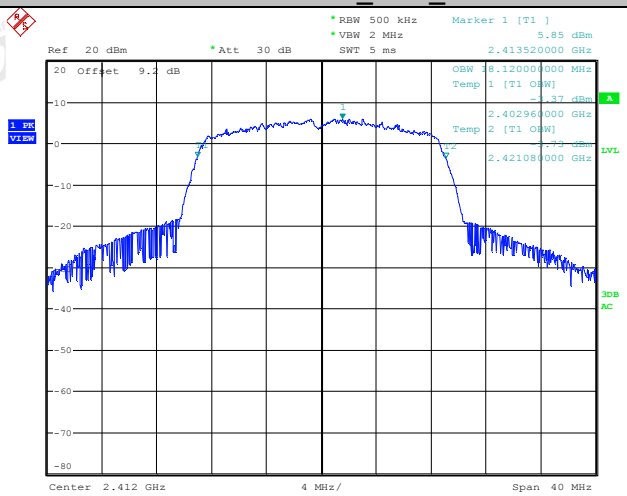

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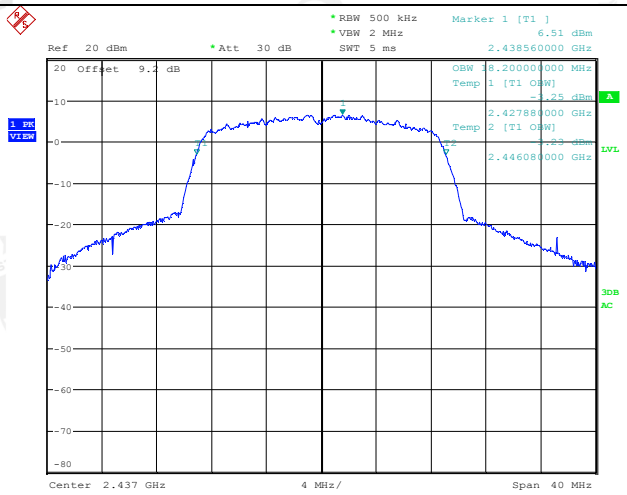

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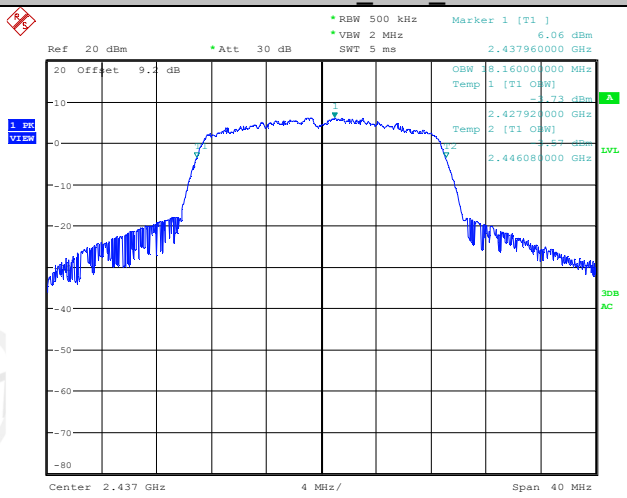

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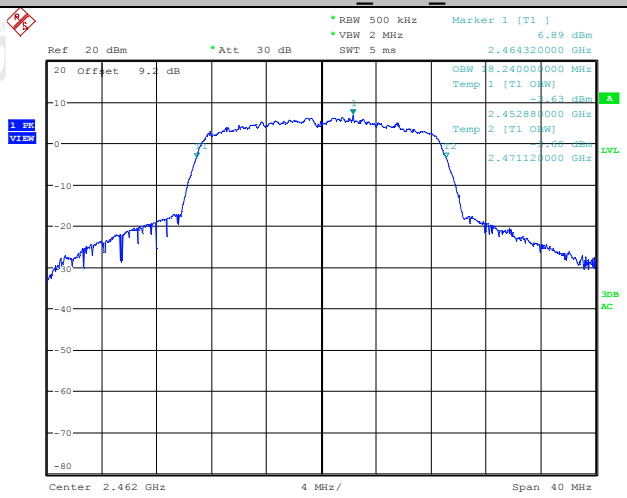

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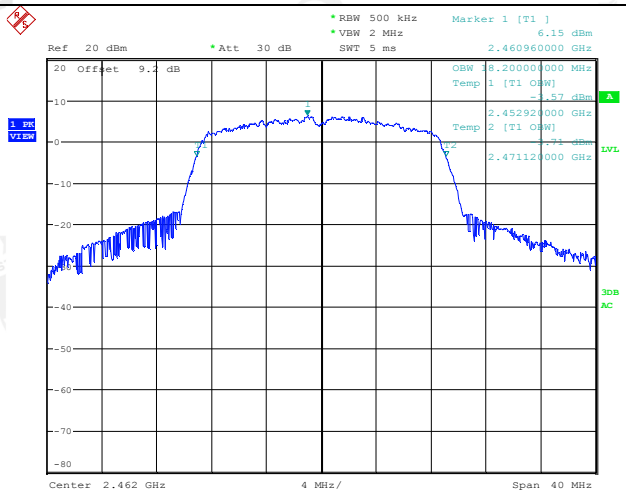

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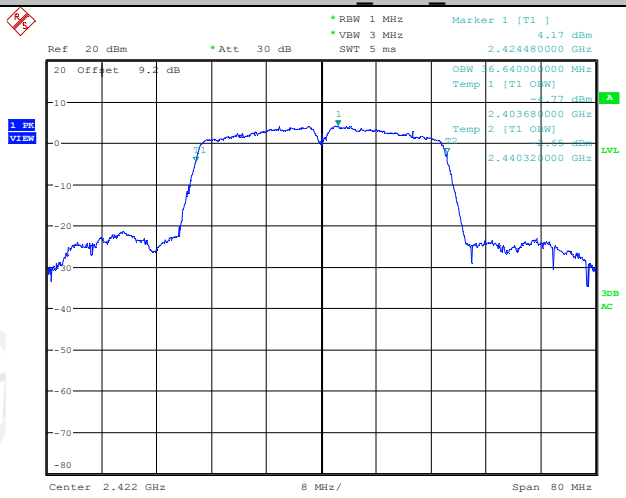

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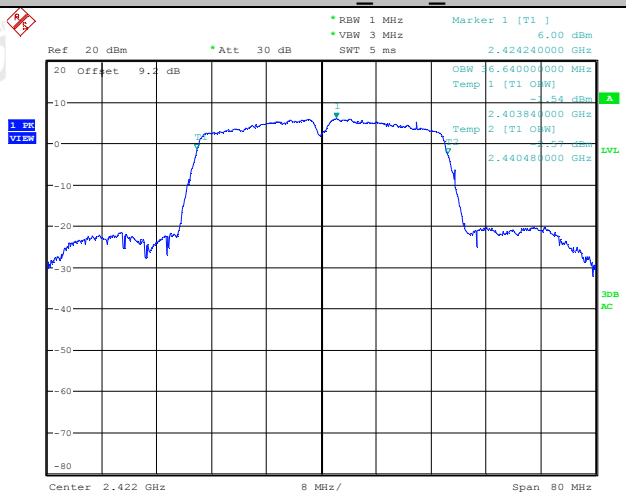

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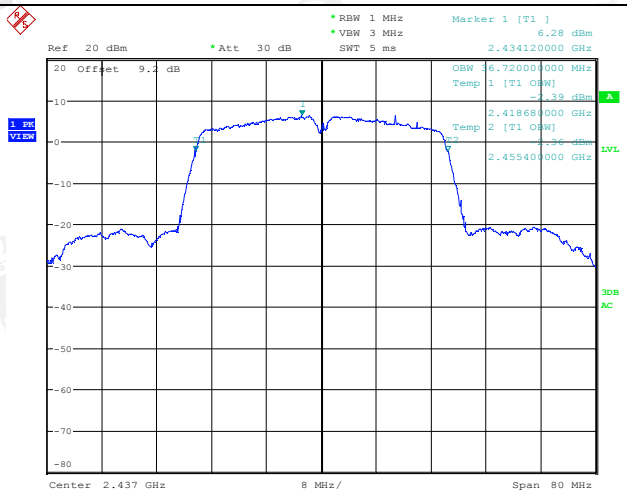

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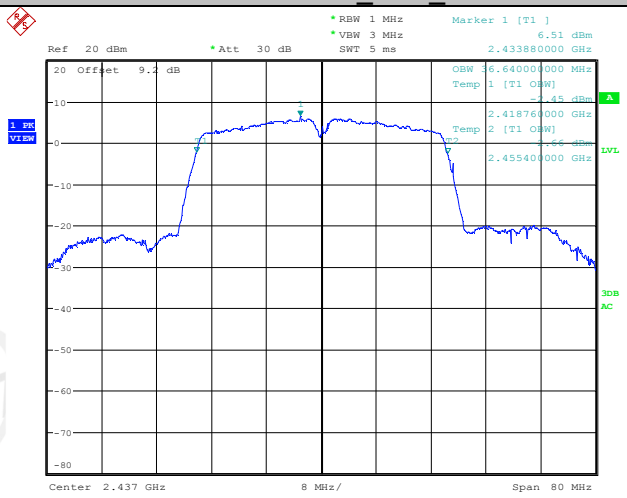

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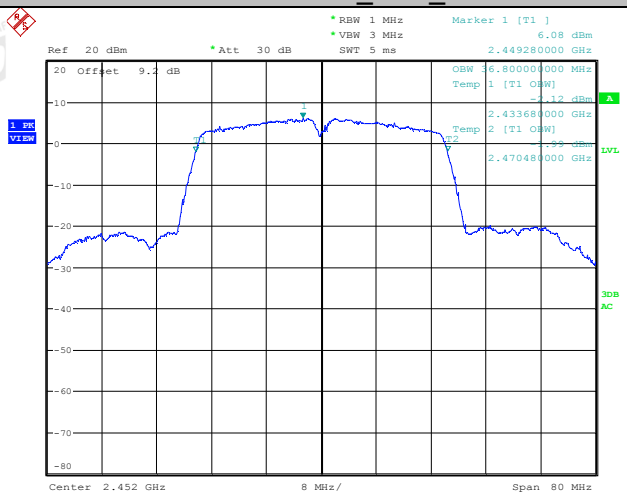

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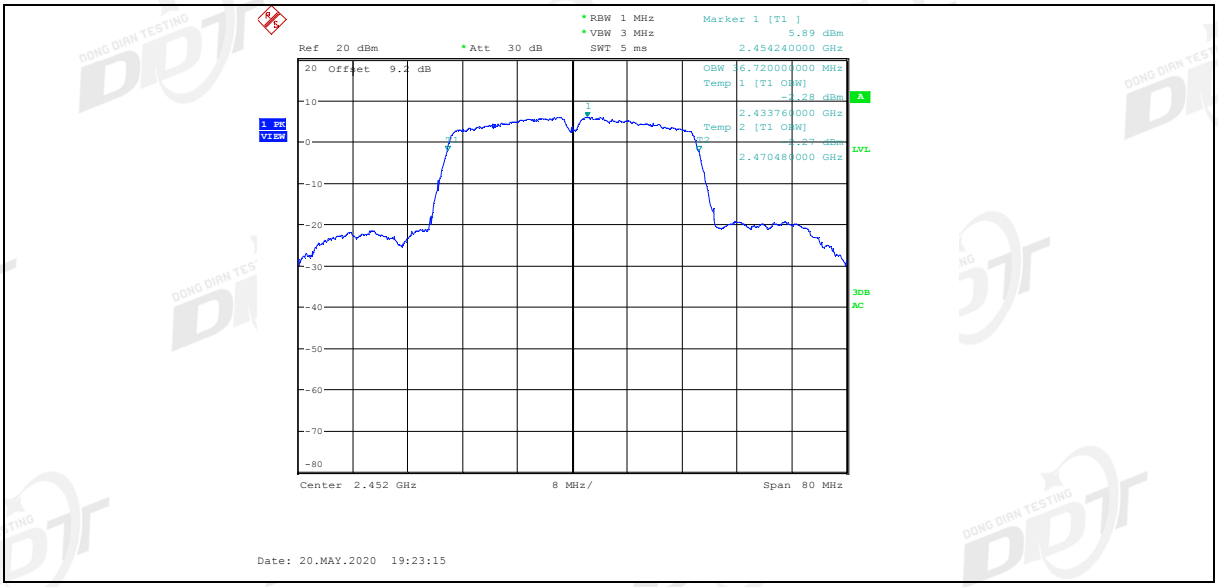

RBW 1 MHz
VBW 3 MHz
SWT 5 ms
Marker 1 [T1]
5.89 dBm
2.454240000 GHz
Ref 20 dBm
Att 30 dB
20 Offset 9.2 dB
OBW 36.720000000 MHz
Temp 1 [T1 OBW]
-1.28 dBm
2.433760000 GHz
Temp 2 [T1 OBW]
-1.27 dBm
2.470480000 GHz
1 PK
VIEW
A
LVL
3DB
AC
Center 2.452 GHz
8 MHz/
Span 80 MHz
Date: 20.MAY.2020 19:23:15

5. Conducted Peak Output Power

5.1. Block diagram of test setup

Same as section 4.1

5.2. 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.

5.3. Test procedure

Connect each EUT's antenna output to power sensor by RF cable and attenuator

Measure the PK output power of each antenna port by power sensor

5.4. Test result

Test Mode	Test Channel	Ant	Power [dBm]	Limit [dBm]	Verdict
11B	2412	ANT1	13.10	30	PASS
11B	2412	ANT2	14.61	30	PASS
11B	2437	ANT1	13.17	30	PASS
11B	2437	ANT2	14.63	30	PASS
11B	2462	ANT1	13.14	30	PASS
11B	2462	ANT2	14.64	30	PASS
11G	2412	ANT1	12.04	30	PASS
11G	2412	ANT2	13.49	30	PASS
11G	2437	ANT1	11.98	30	PASS
11G	2437	ANT2	13.56	30	PASS
11G	2462	ANT1	12.09	30	PASS
11G	2462	ANT2	13.58	30	PASS
11N20SISO	2412	ANT1	11.65	30	PASS
11N20SISO	2412	ANT2	13.33	30	PASS
11N20SISO	2437	ANT1	10.79	30	PASS
11N20SISO	2437	ANT2	12.27	30	PASS
11N20SISO	2462	ANT1	10.72	30	PASS
11N20SISO	2462	ANT2	12.26	30	PASS
11N40SISO	2422	ANT1	11.15	30	PASS
11N40SISO	2422	ANT2	12.75	30	PASS

11N40SISO	2437	ANT1	9.03	30	PASS
11N40SISO	2437	ANT2	10.62	30	PASS
11N40SISO	2452	ANT1	9.13	30	PASS
11N40SISO	2452	ANT2	10.78	30	PASS

6. Power Spectral Density

6.1. Block diagram of test setup

Same as section 4.1

6.2. 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.

6.3. Test procedure

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

(2) Set the spectrum analyzer as follows:

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

(3) Allow the trace to stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.

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

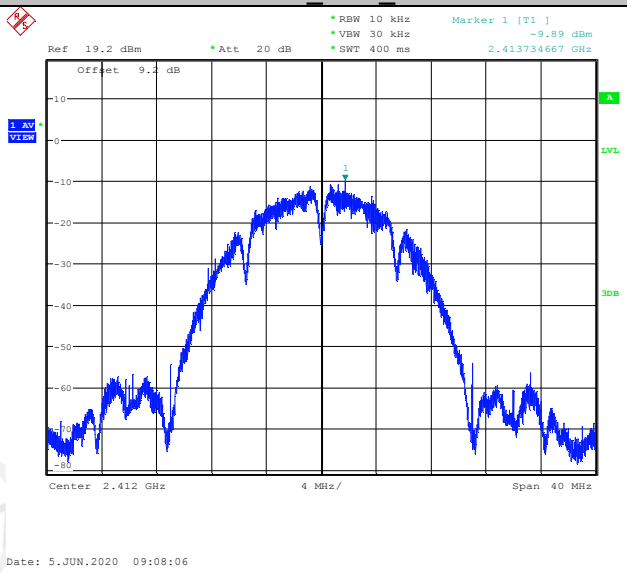
6.4. Test result

Test Mode	Antenna	Channel [MHz]	Result [dBm/ 10 kHz]	Limit [dBm/ 3 kHz]	Verdict
11B	ANT1	2412	-9.89	8	PASS
11B	ANT2	2412	-10.47	8	PASS
11B	ANT1	2437	-10.85	8	PASS
11B	ANT2	2437	-10.99	8	PASS
11B	ANT1	2462	-10.38	8	PASS
11B	ANT2	2462	-10.64	8	PASS
11G	ANT1	2412	-13.38	8	PASS
11G	ANT2	2412	-14.36	8	PASS
11G	ANT1	2437	-13.36	8	PASS
11G	ANT2	2437	-13.94	8	PASS
11G	ANT1	2462	-13.37	8	PASS
11G	ANT2	2462	-13.81	8	PASS
11N20SISO	ANT1	2412	-14.34	8	PASS
11N20SISO	ANT2	2412	-15.03	8	PASS
11N20SISO	ANT1	2437	-15.26	8	PASS

11N20SISO	ANT2	2437	-14.85	8	PASS
11N20SISO	ANT1	2462	-13.79	8	PASS
11N20SISO	ANT2	2462	-15.40	8	PASS
11N40SISO	ANT1	2422	-20.47	8	PASS
11N40SISO	ANT2	2422	-20.54	8	PASS
11N40SISO	ANT1	2437	-19.07	8	PASS
11N40SISO	ANT2	2437	-19.20	8	PASS
11N40SISO	ANT1	2452	-17.80	8	PASS
11N40SISO	ANT2	2452	-18.09	8	PASS

6.5. Original test data

11B_Ant1_2412



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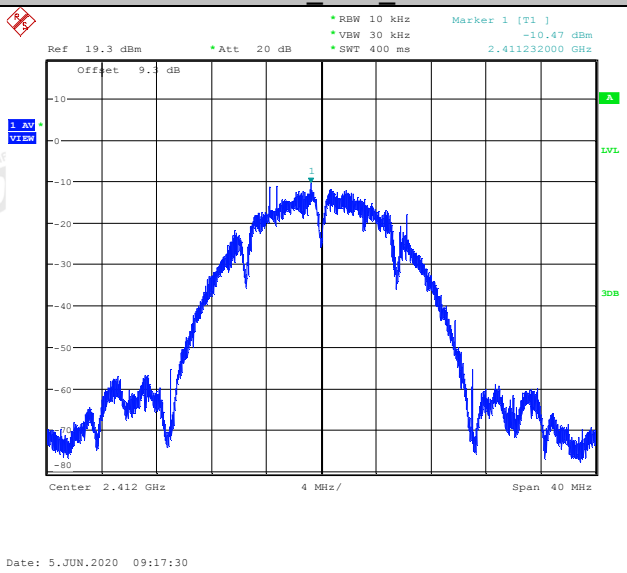

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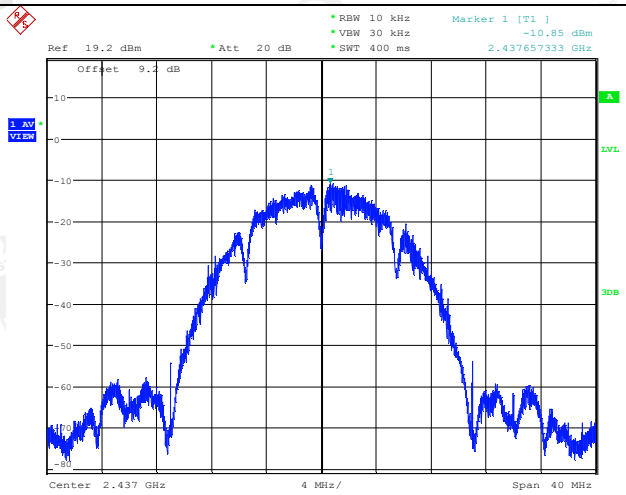

Date: 5.JUN.2020 09:09:31

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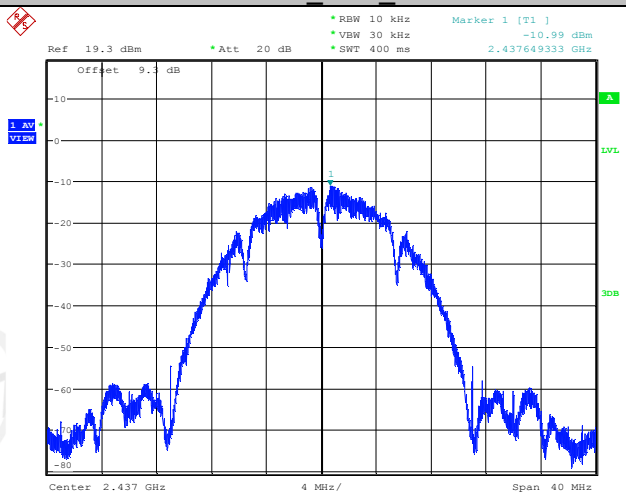

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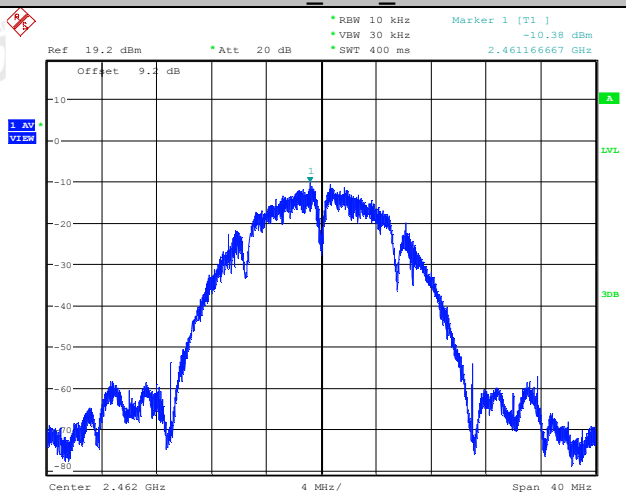

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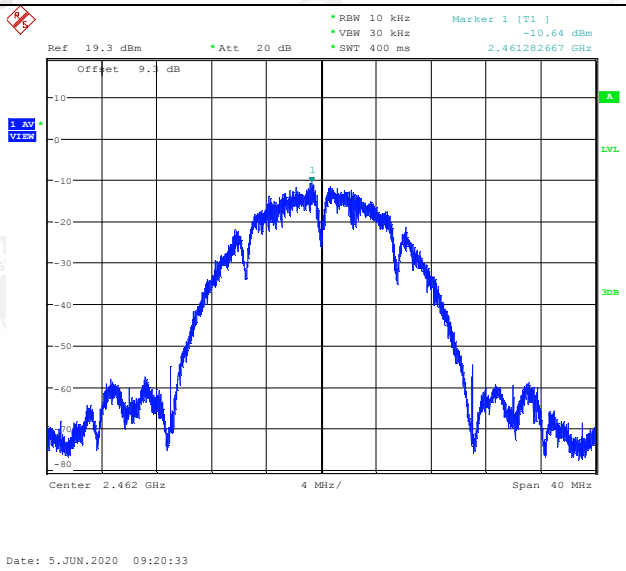
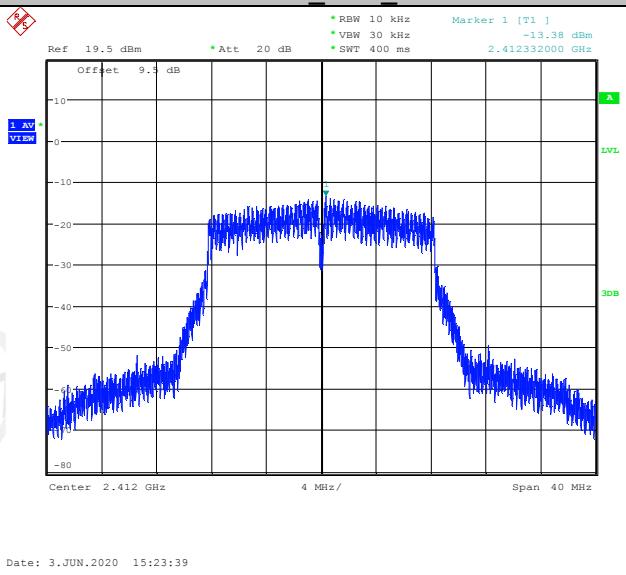


11G_Ant1_2412



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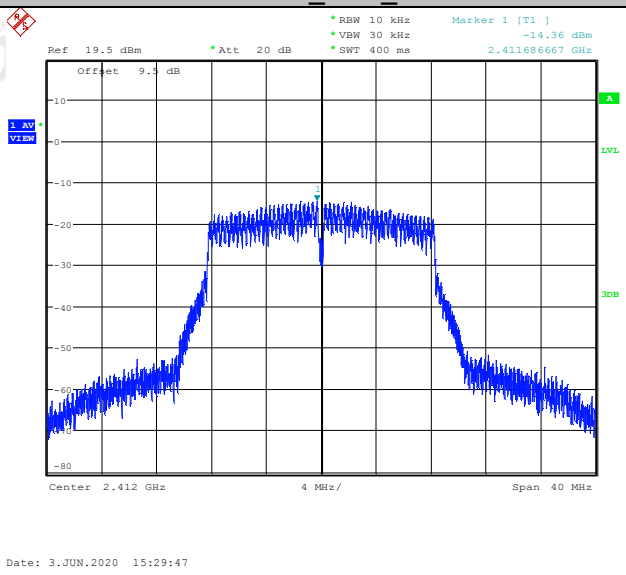

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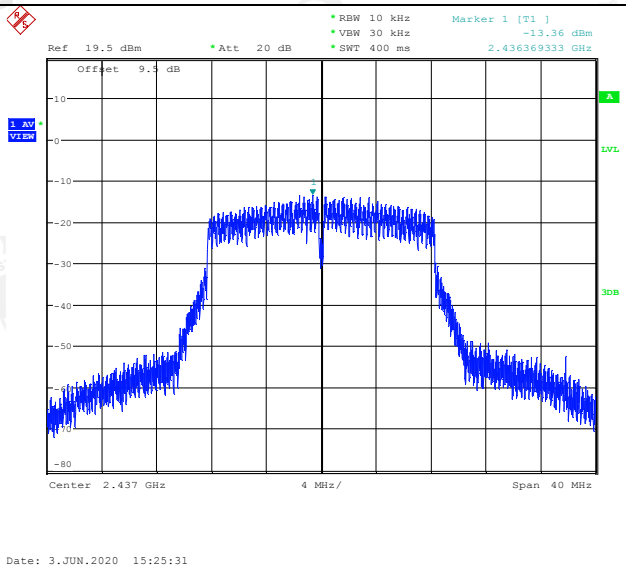

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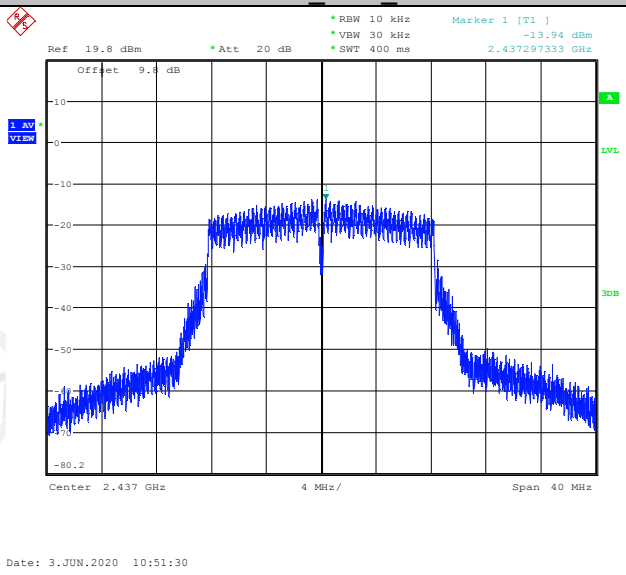

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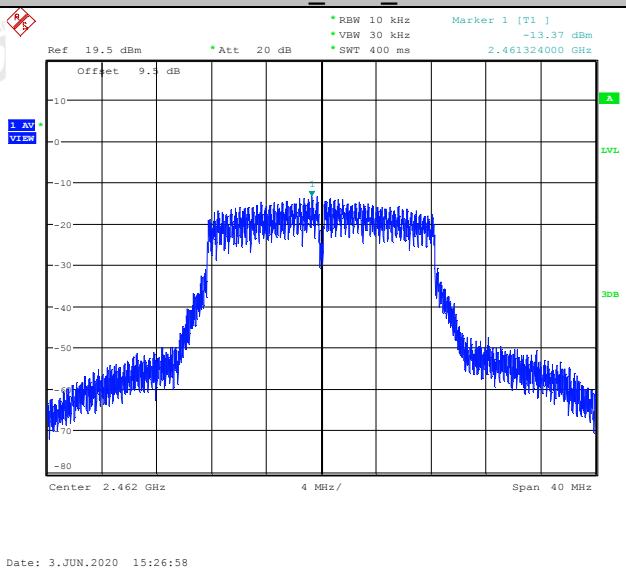

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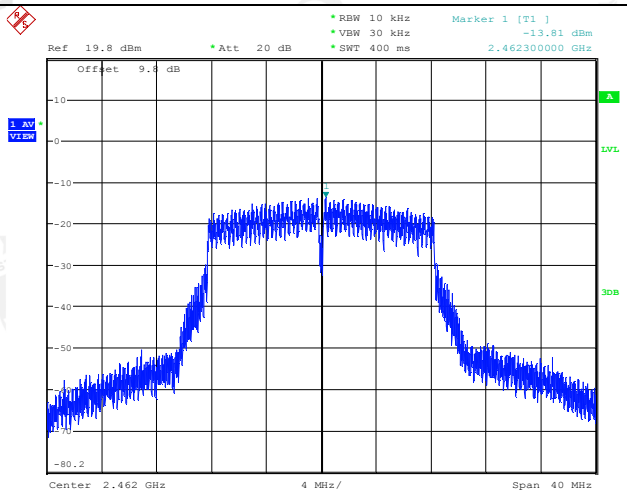

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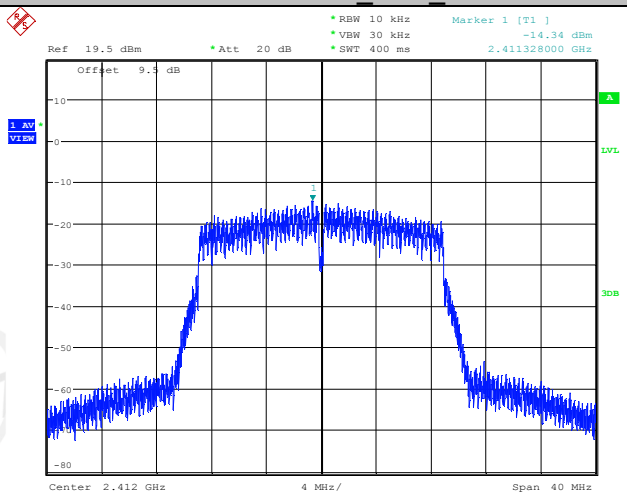

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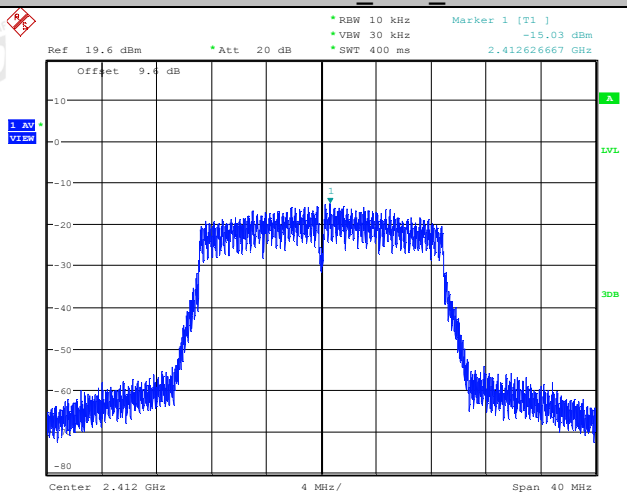

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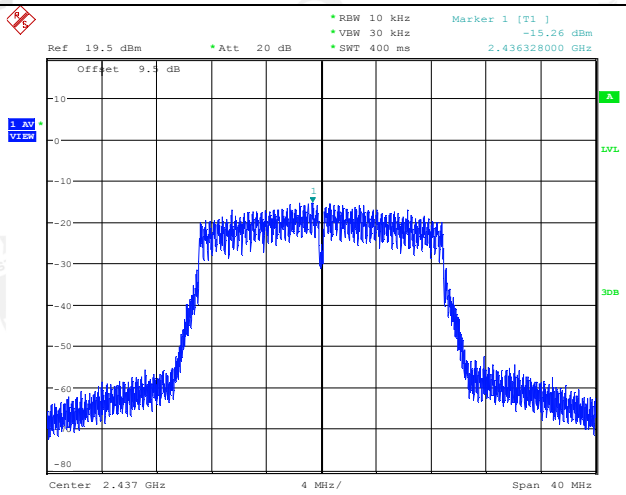

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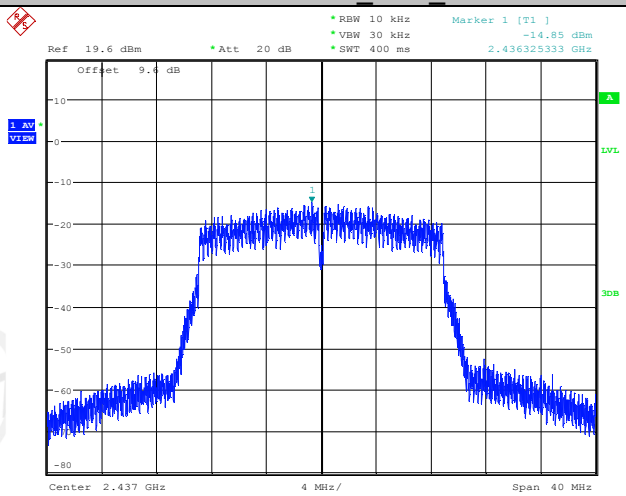

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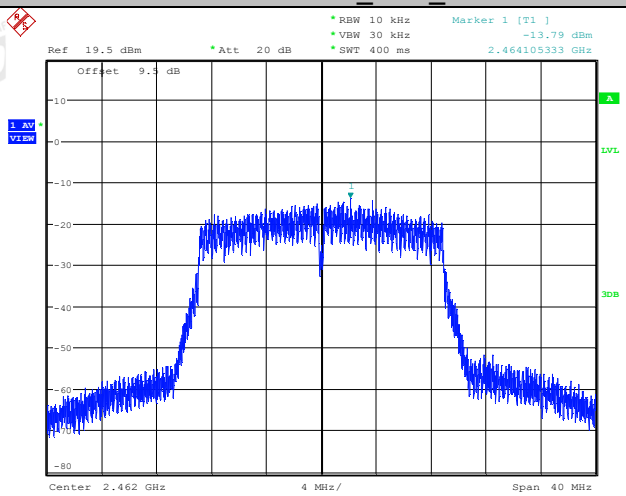

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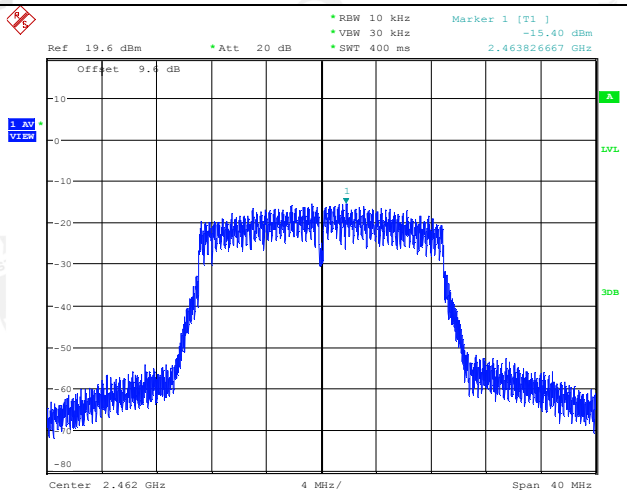

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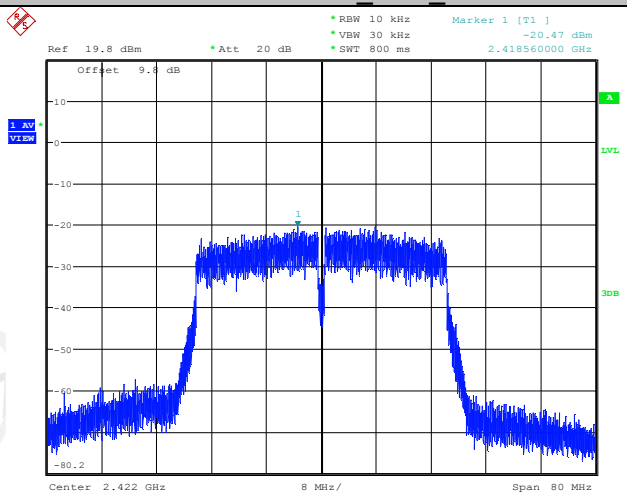

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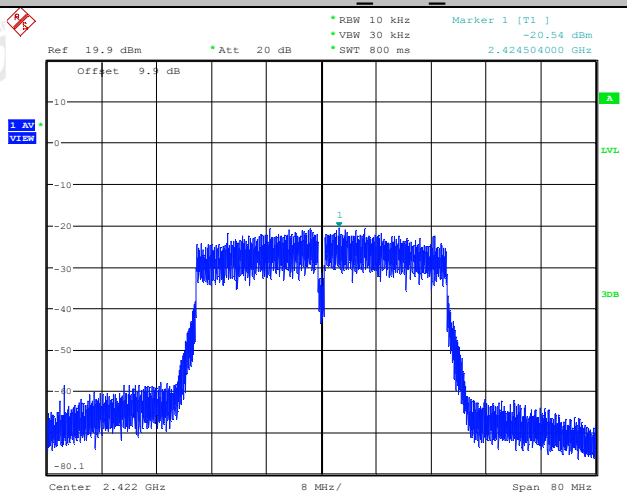

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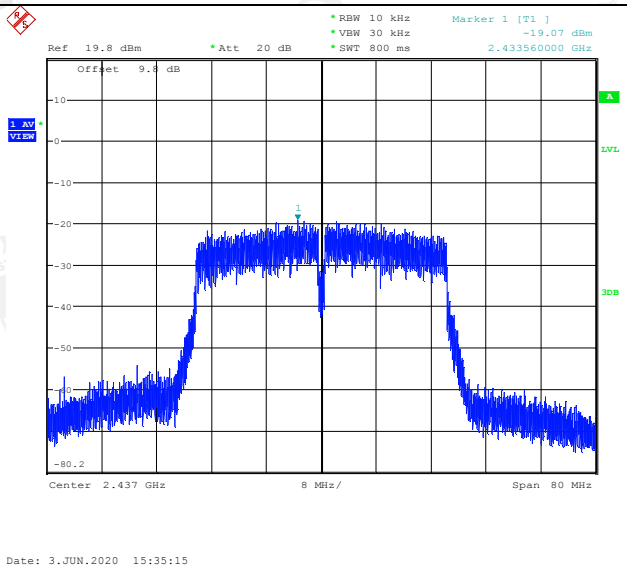

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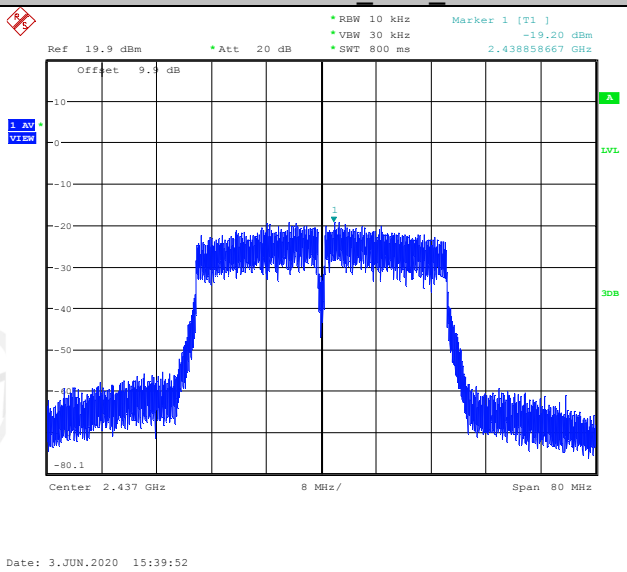

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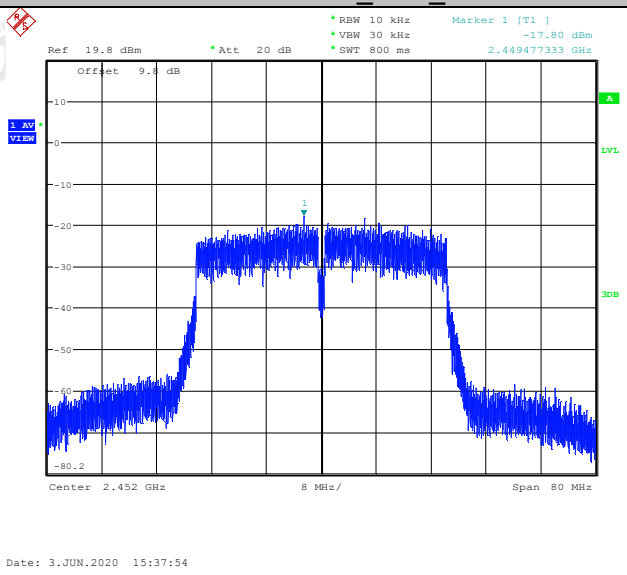

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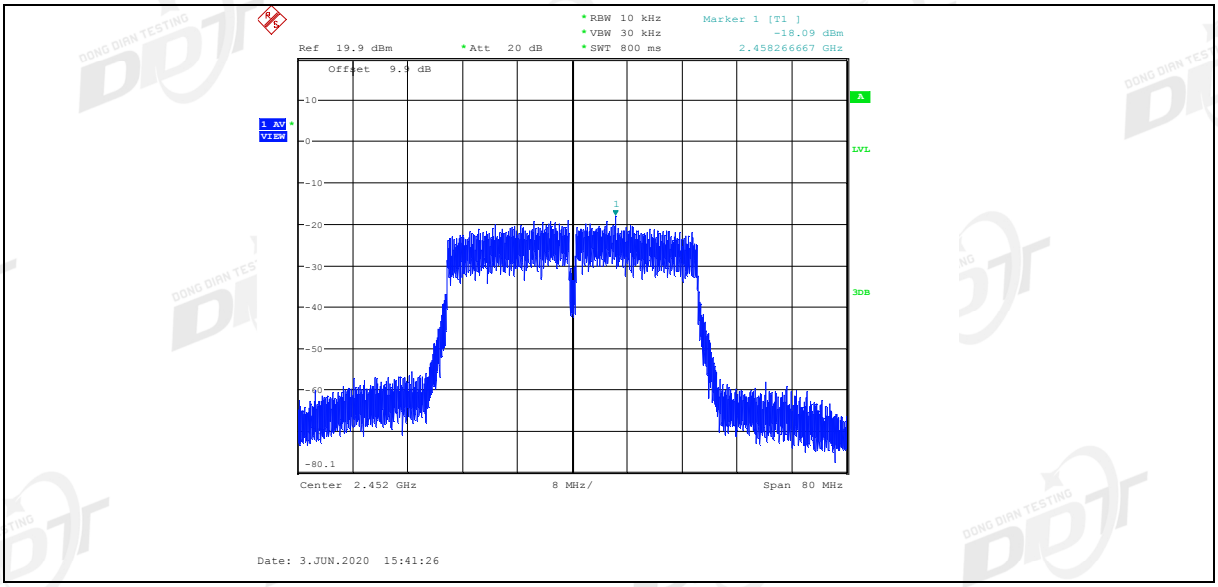

RBW 10 kHz
VBW 30 kHz
SWT 800 ms
Marker 1 [T1]
-18.09 dBm
2.458266667 GHz
Ref 19.9 dBm
Att 20 dB
Offset 9.9 dB
1 AV
VIEW
A
LVL
3DB
10
0
-10
-20
-30
-40
-50
-60
-80.1
Center 2.452 GHz
8 MHz/
Span 80 MHz
Date: 3.JUN.2020 15:41:26

7. Band Edge and Spurious Emissions (Conducted)

7.1. Block diagram of test setup

Same as section 4.1

7.2. 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.

7.3. 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	DTS Channel center frequency
RBW:	100 kHz
VBW:	300 kHz
Span	1.5 times the DTS bandwidth
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

7.4. Test result

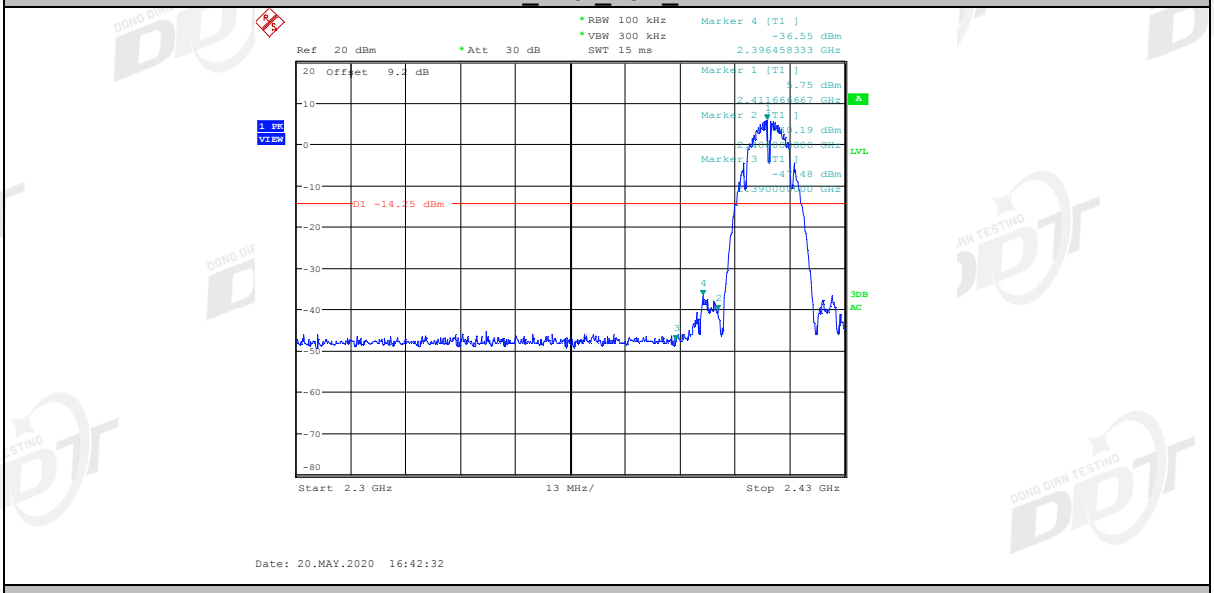
EUT Set Mode	CH or Frequency	Ant1 Result (dBm)	EUT Set Mode	CH or Frequency	Ant1 Result (dBm)
11b	CH1	PASS	11n HT 20	CH1	PASS
	CH6	PASS		CH6	PASS
	CH11	PASS		CH11	PASS
11g	CH1	PASS	11n HT 40	CH3	PASS
	CH6	PASS		CH6	PASS
	CH11	PASS		CH9	PASS

EUT Set Mode	CH or Frequency	Ant2 Result (dBm)	EUT Set Mode	CH or Frequency	Ant2 Result (dBm)
11b	CH1	PASS	11n HT 20	CH1	PASS
	CH6	PASS		CH6	PASS
	CH11	PASS		CH11	PASS
11g	CH1	PASS	11n HT 40	CH3	PASS
	CH6	PASS		CH6	PASS
	CH11	PASS		CH9	PASS

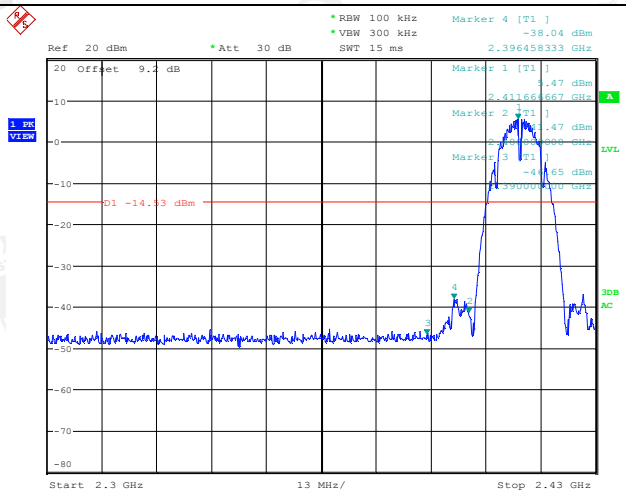
7.5. original test data

Band Edge:

11B_Ant1_Low_2412

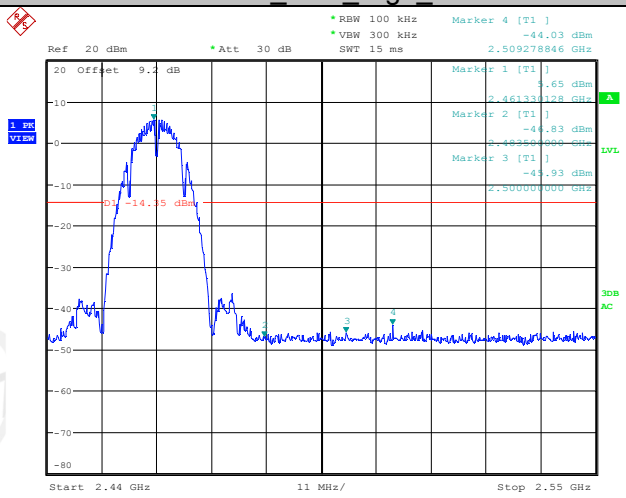


11B_Ant2_Low_2412



Date: 20.MAY.2020 18:36:42

11B_Ant1_High_2462



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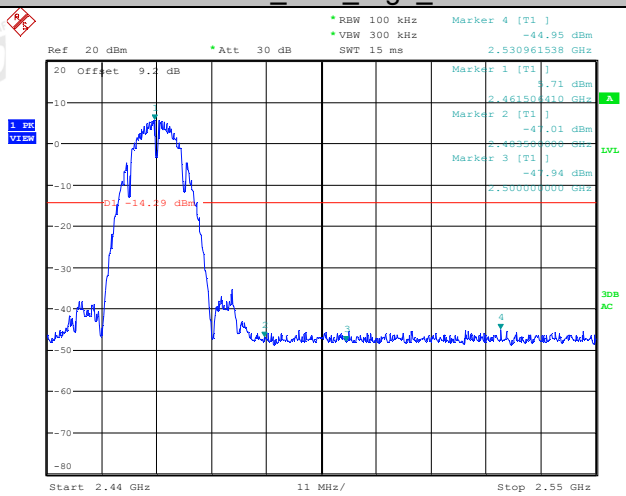

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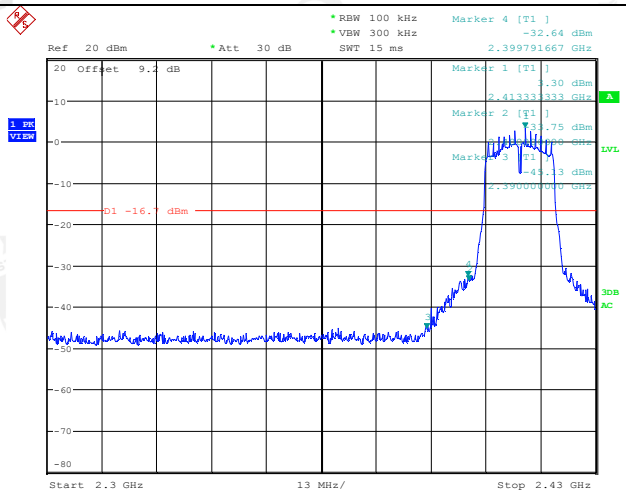

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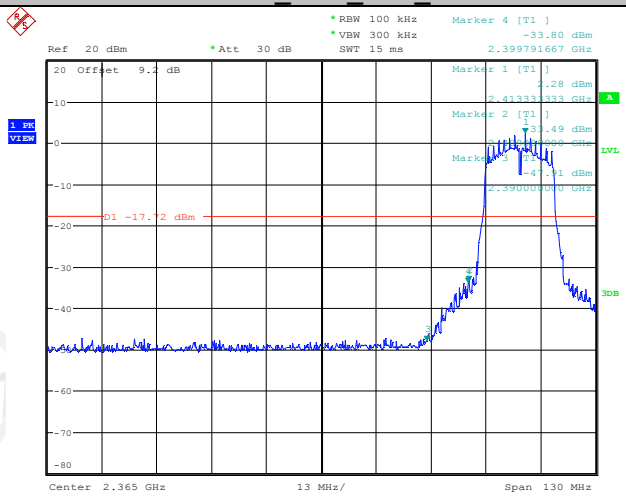

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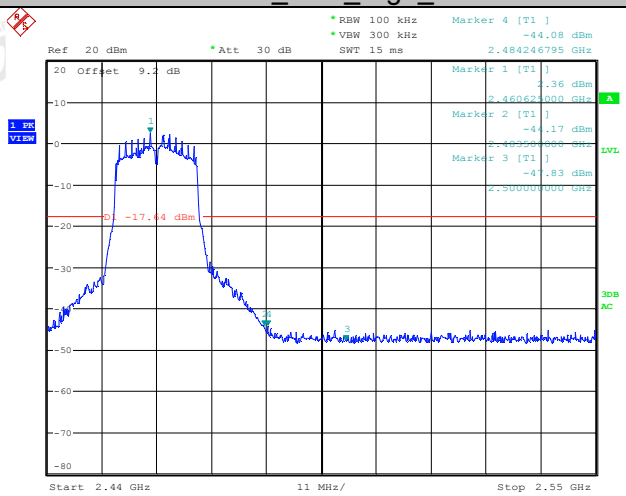
11G_Ant1_High_2462



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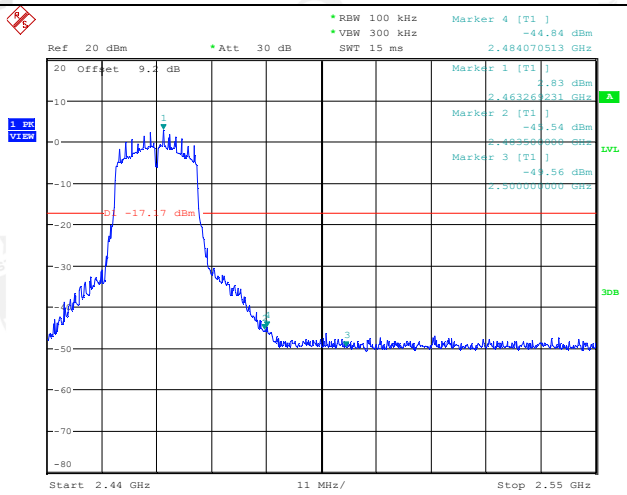

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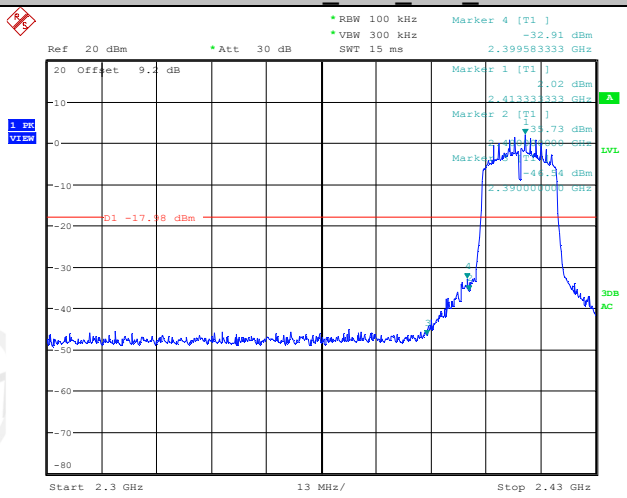

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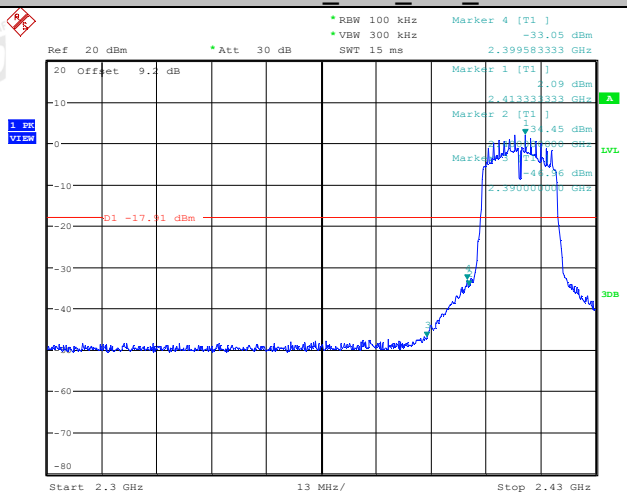

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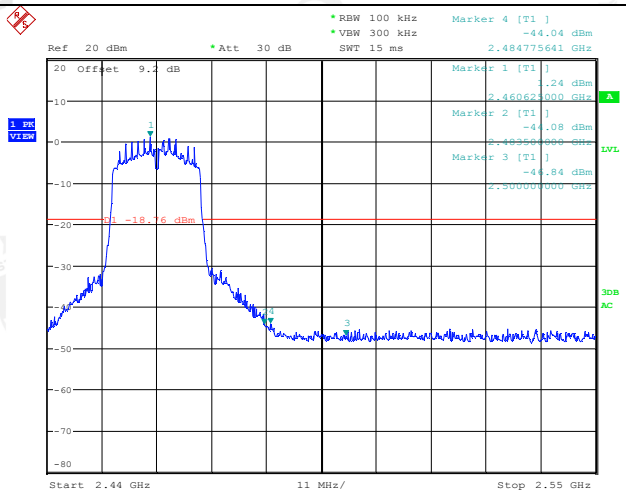

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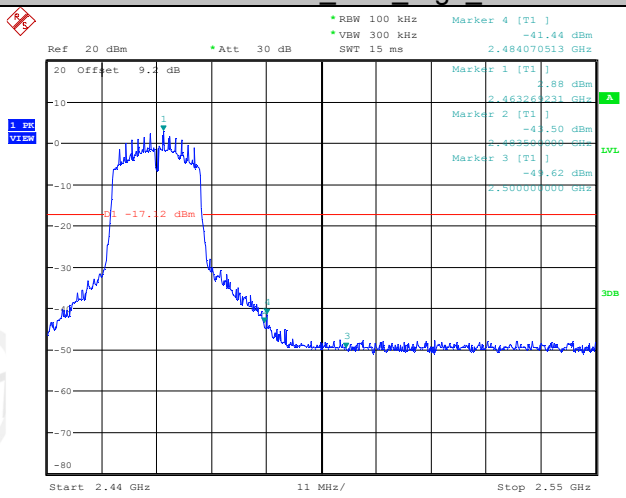

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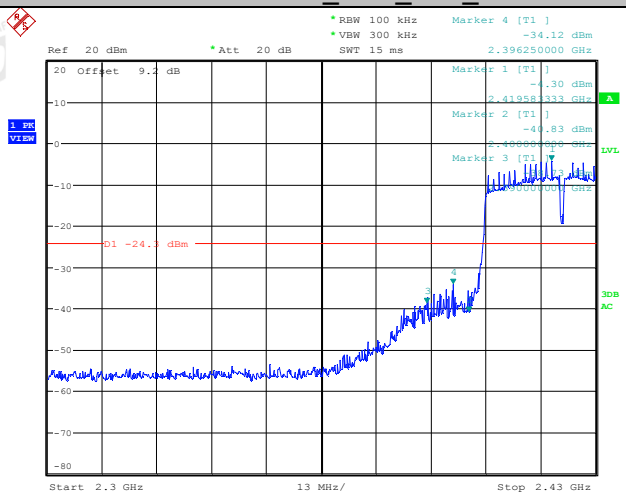

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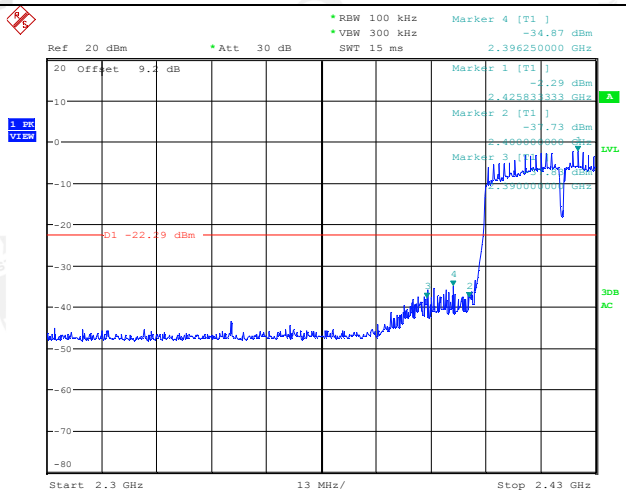

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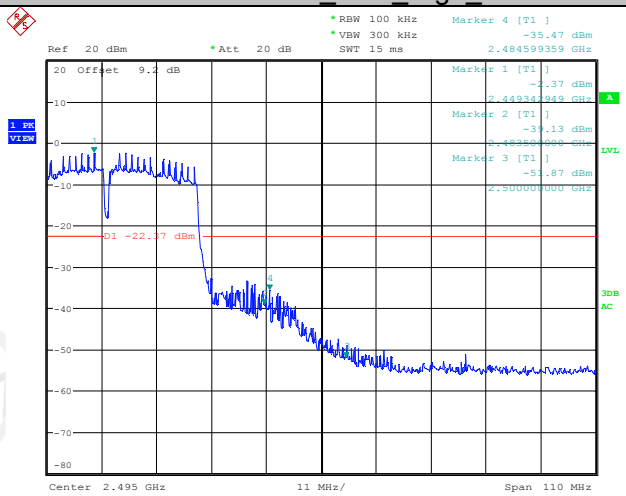

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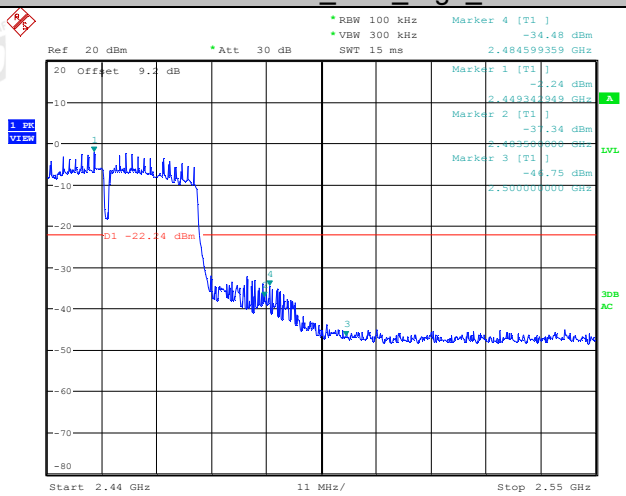

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Spurious Emissions:

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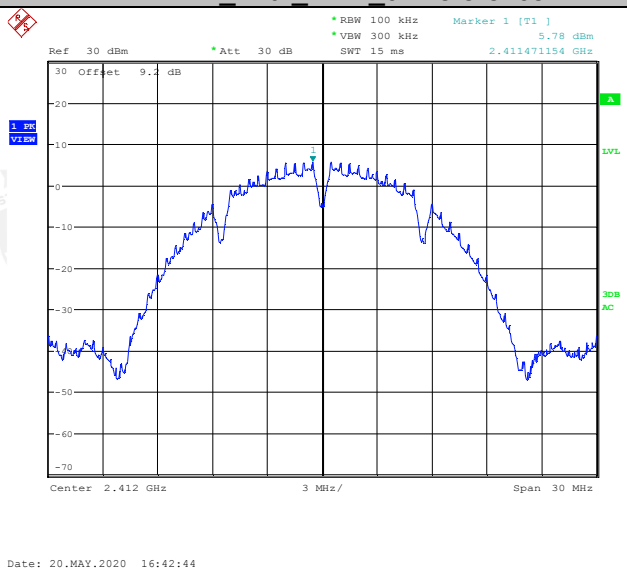

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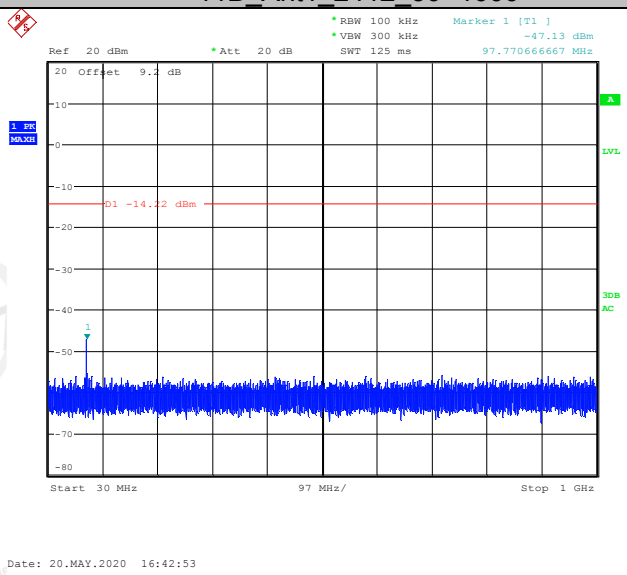

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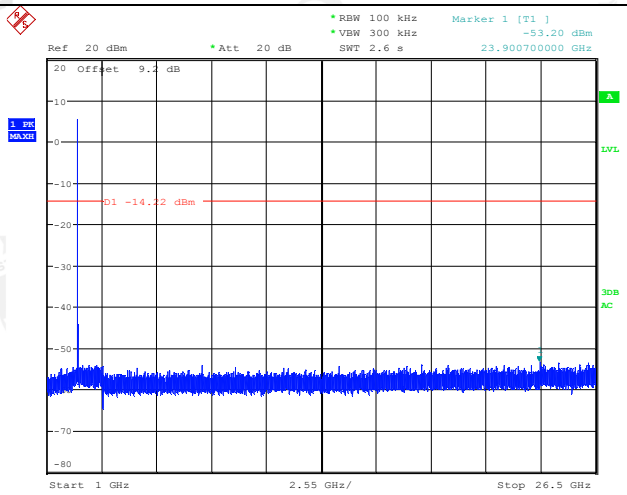

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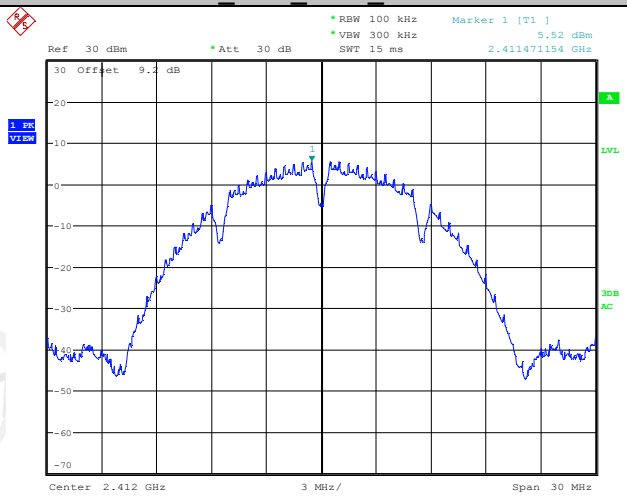

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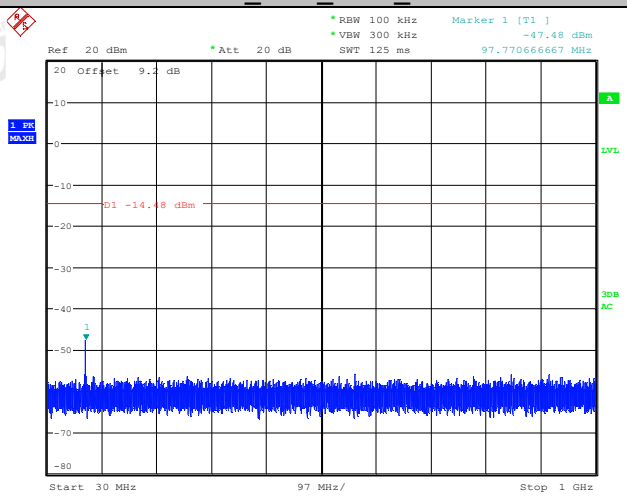

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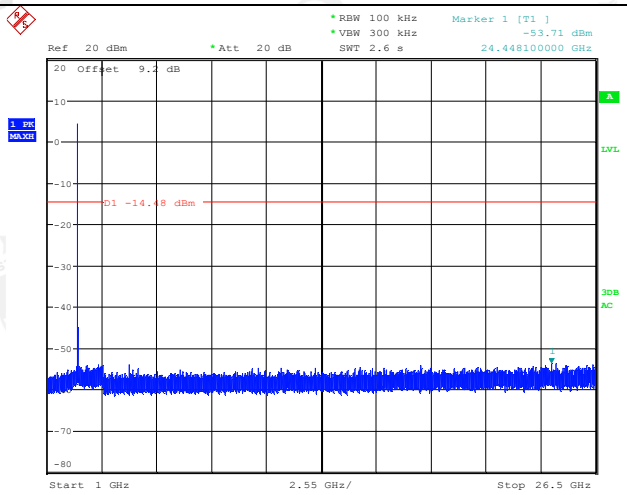

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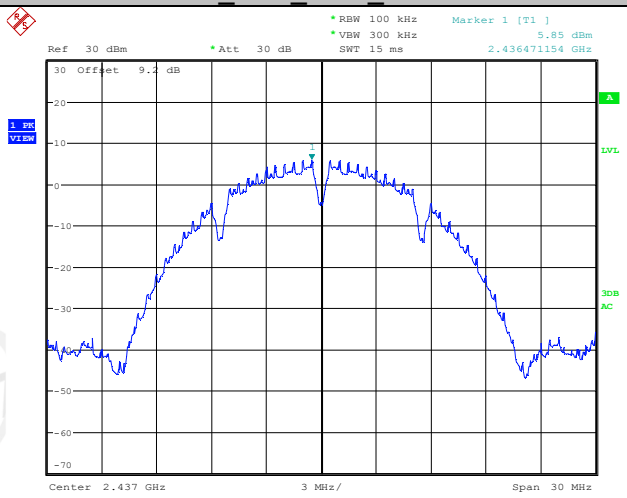

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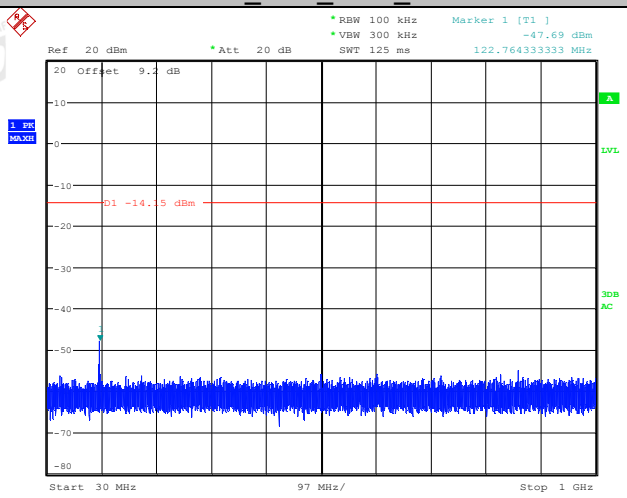

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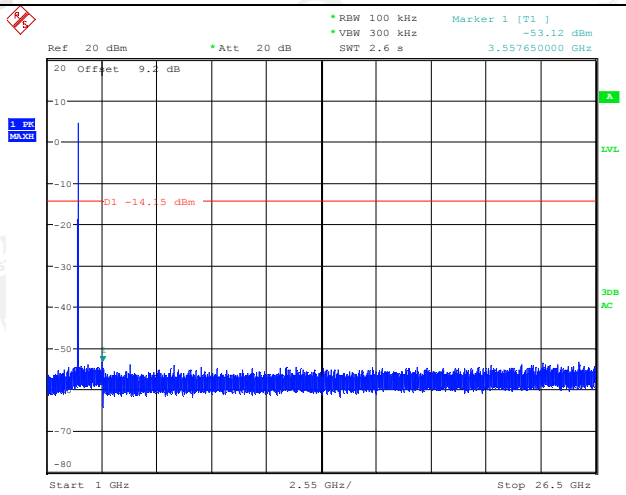

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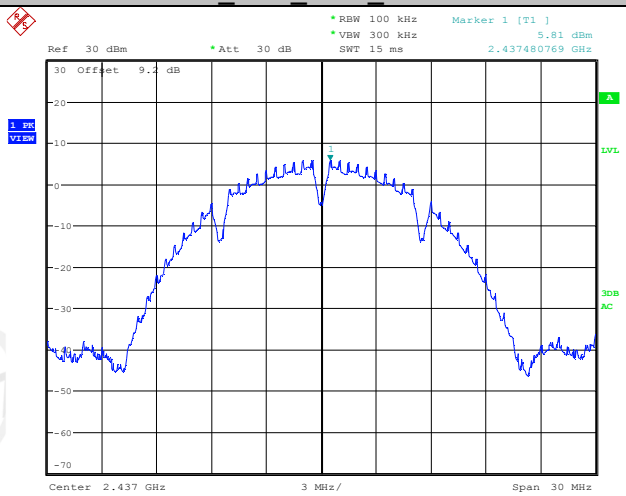

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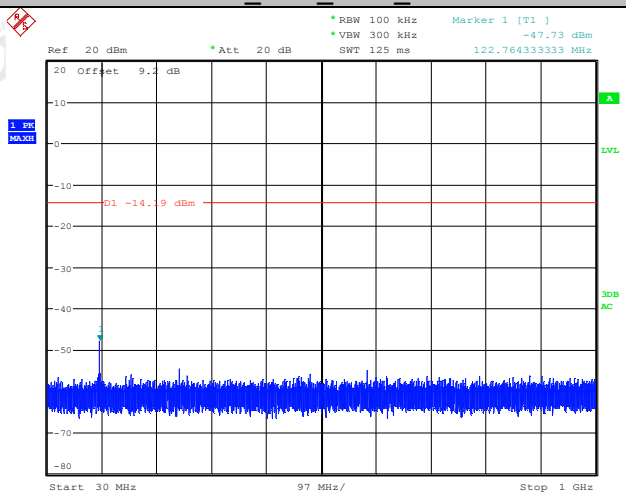

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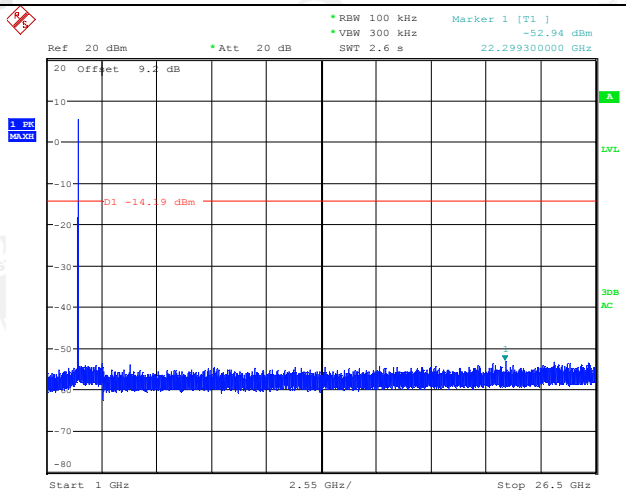

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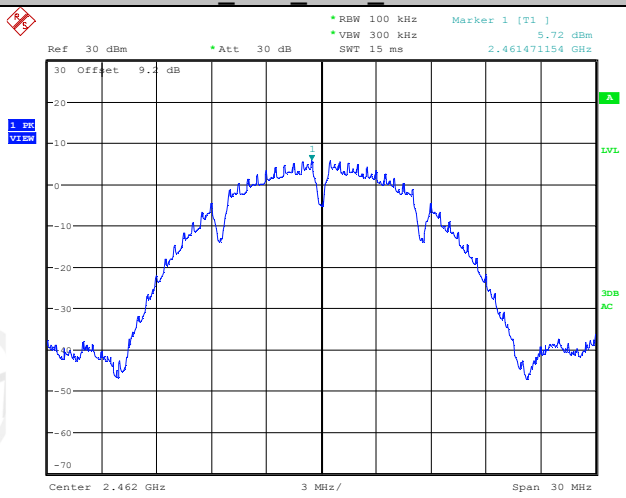

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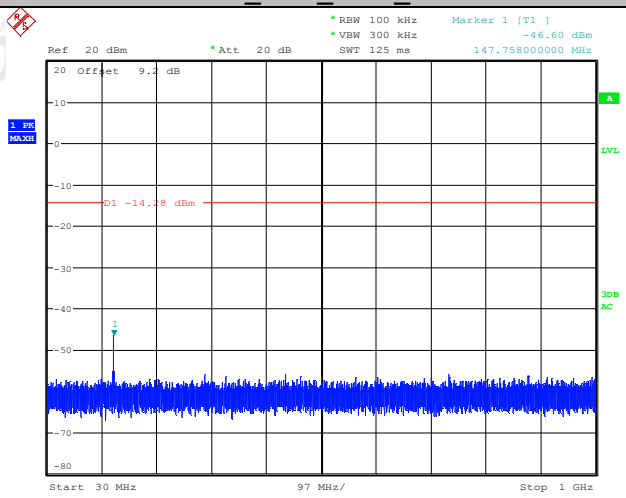

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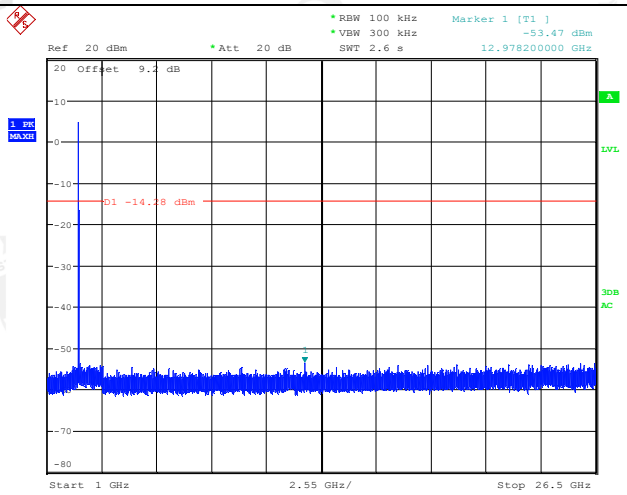

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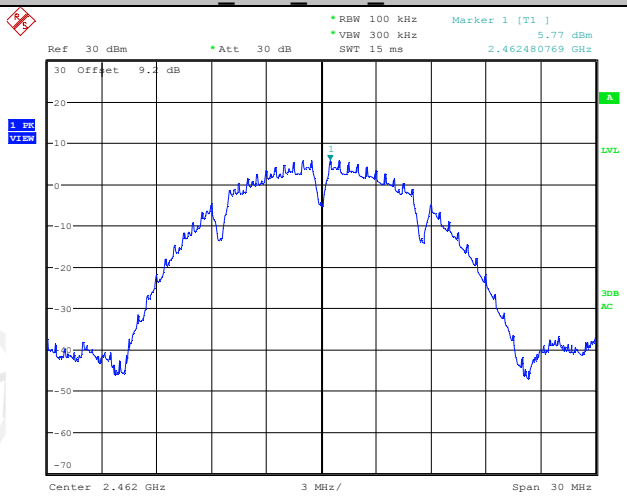

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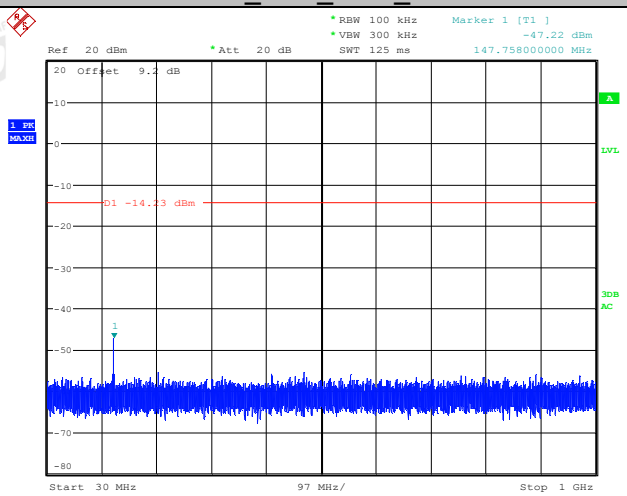

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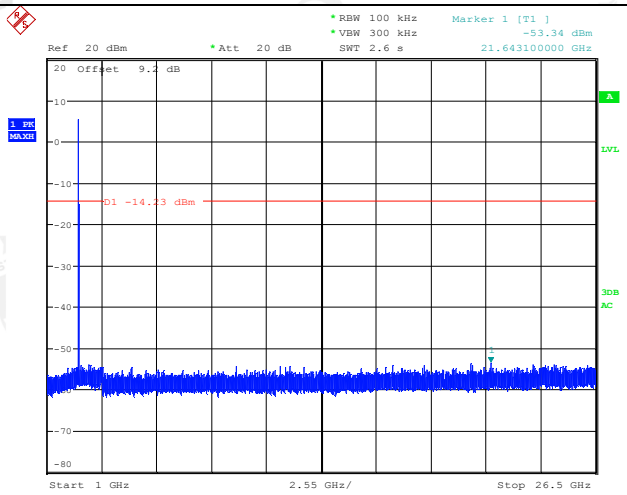

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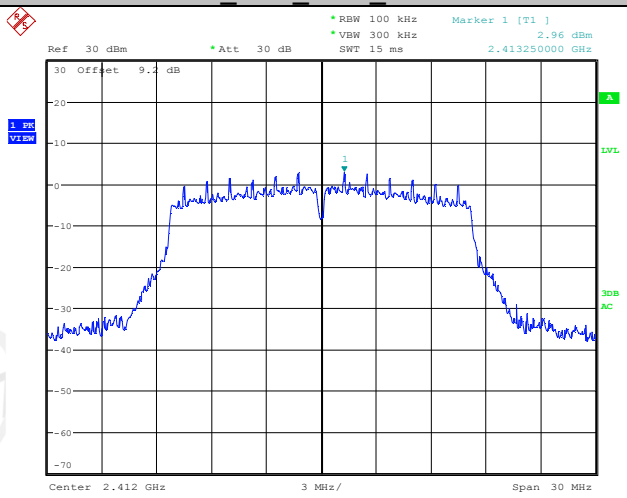
11G_Ant1_2412_0~Reference



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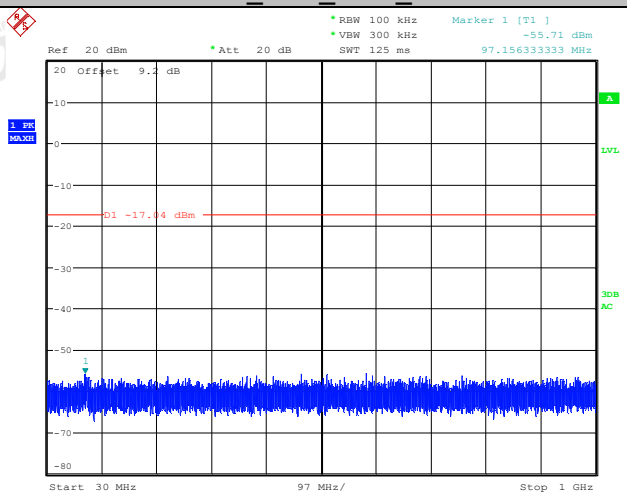

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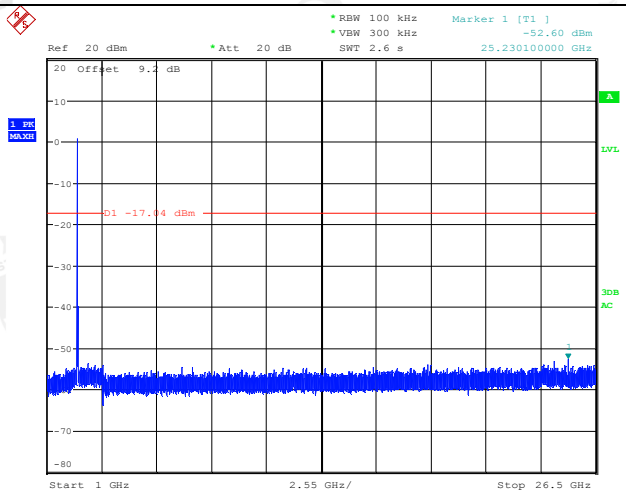

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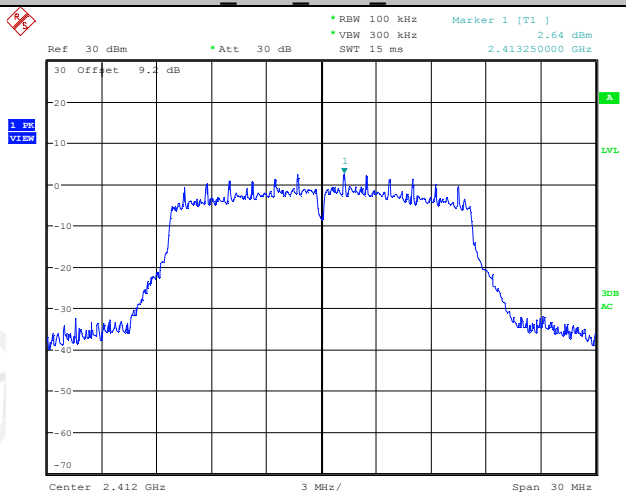

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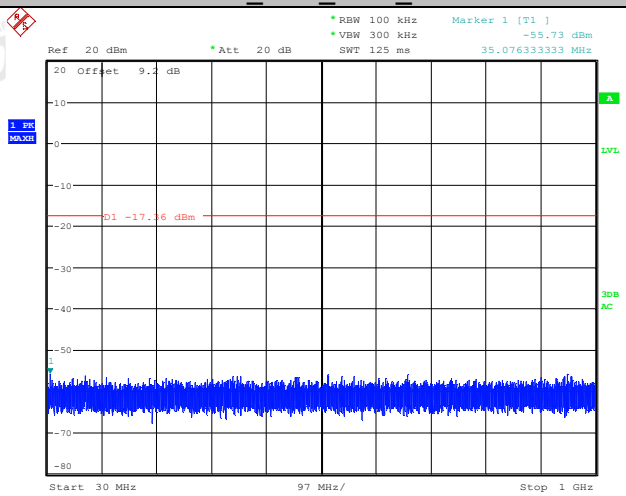

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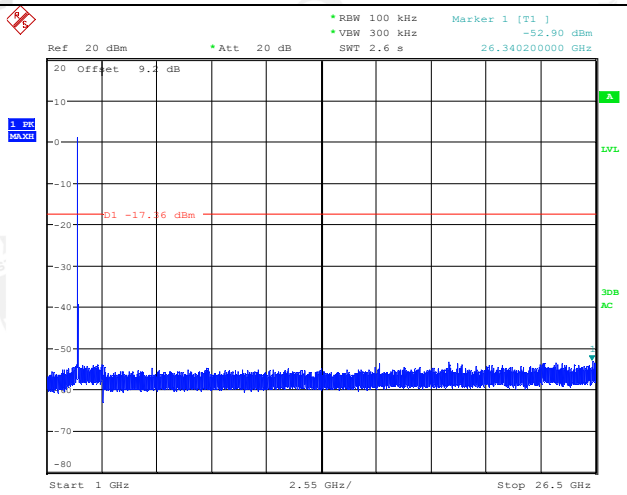

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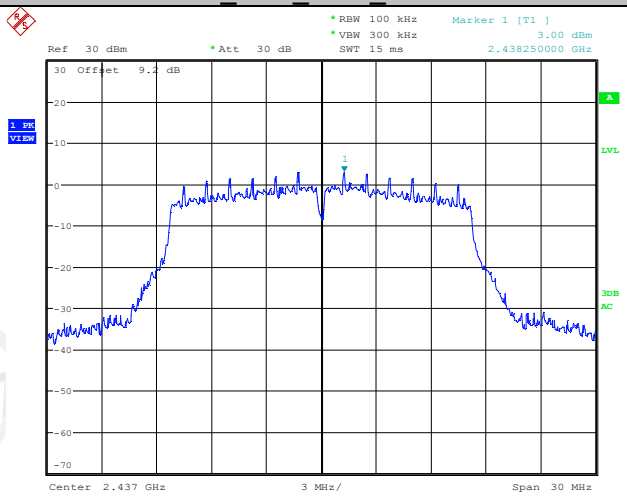

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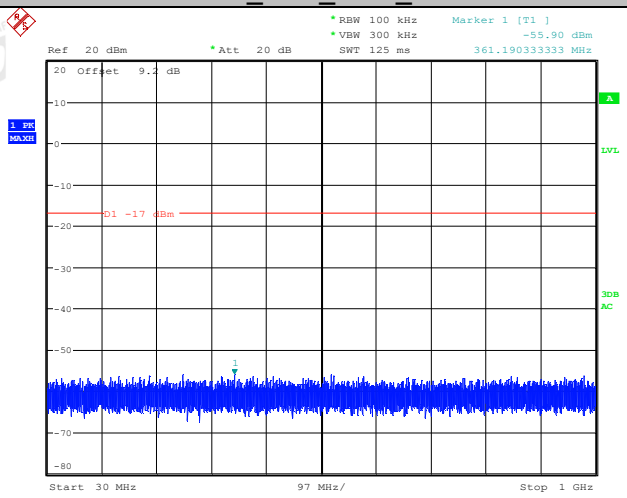

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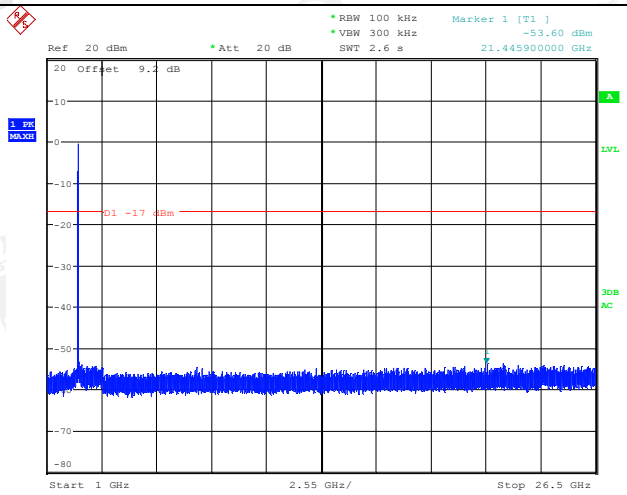

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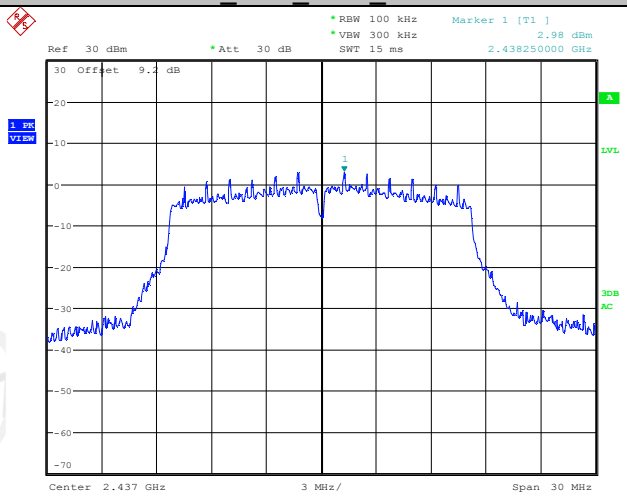

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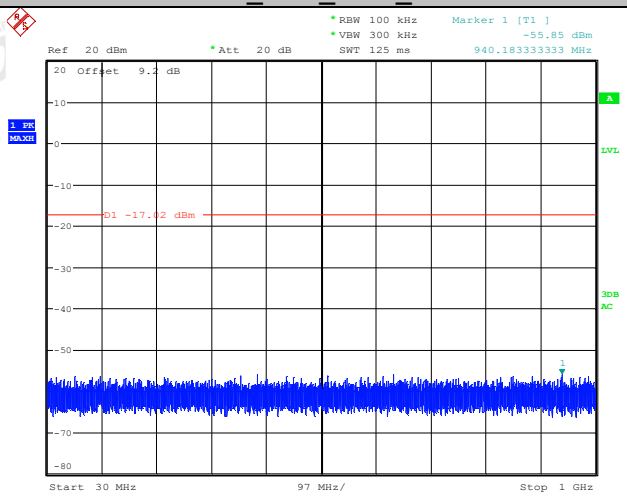

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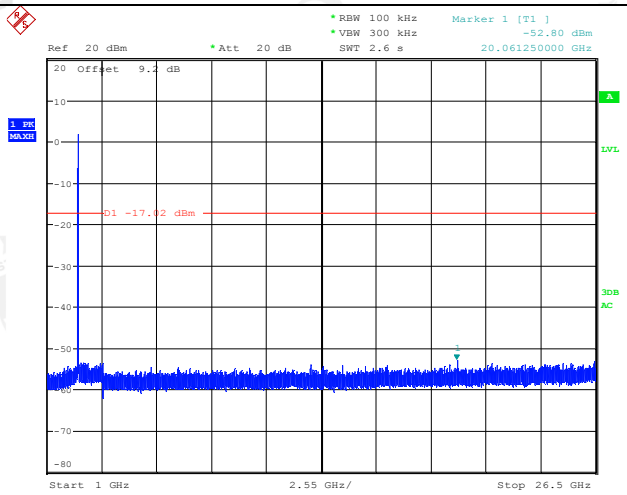

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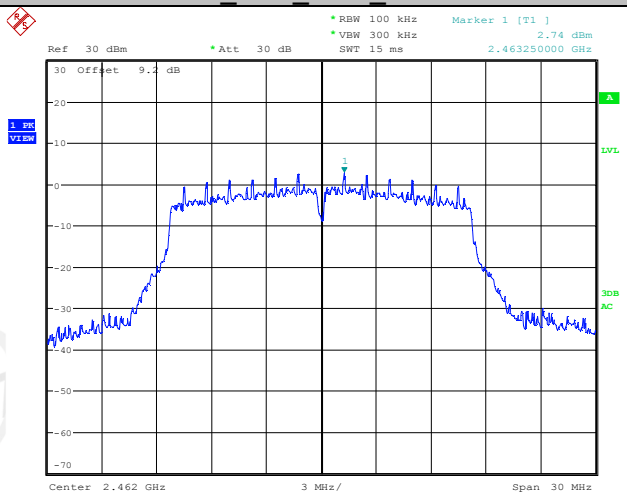

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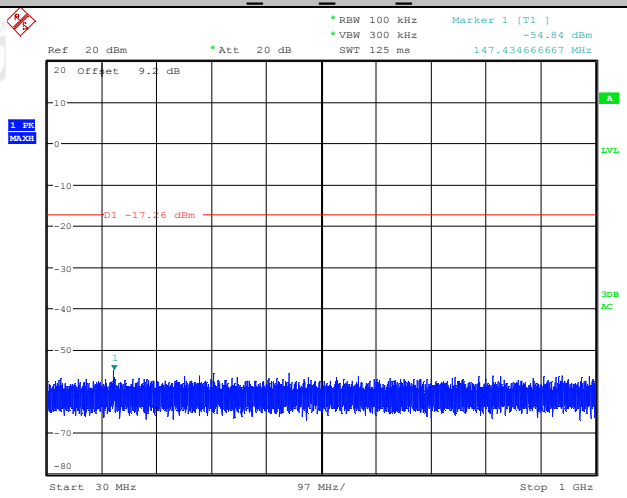

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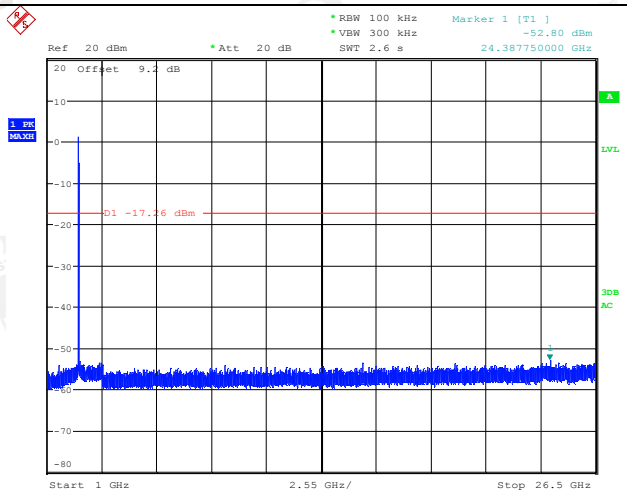

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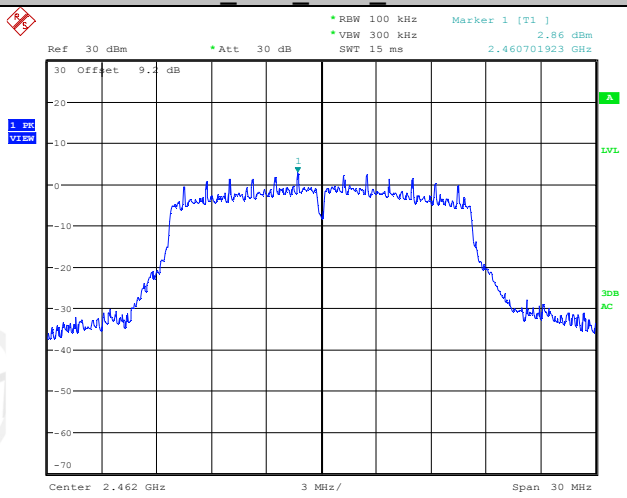

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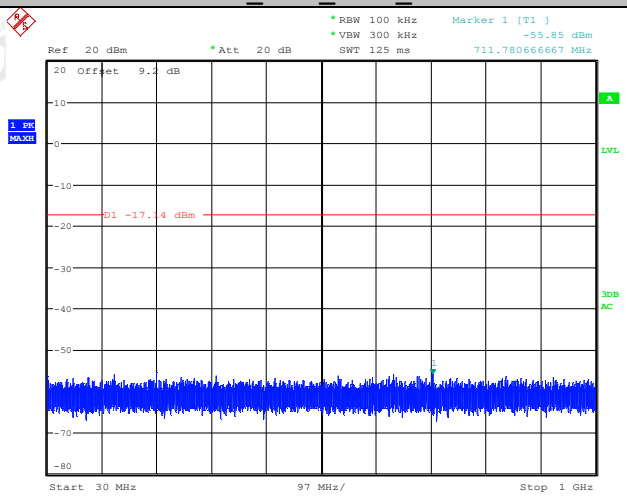

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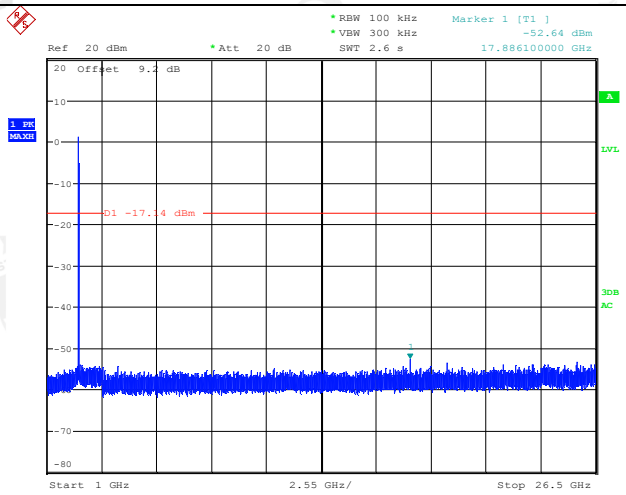

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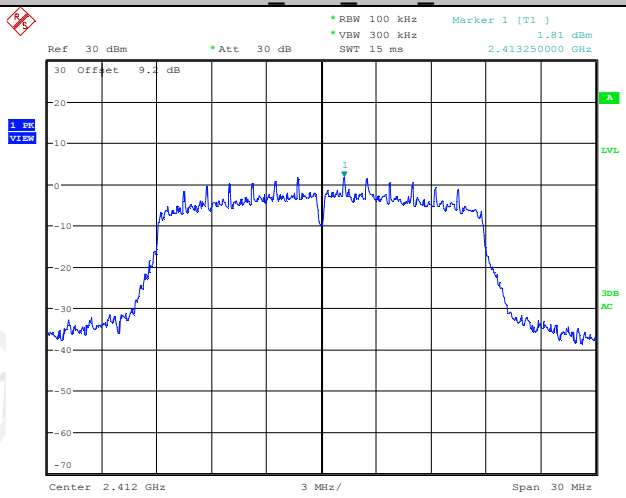

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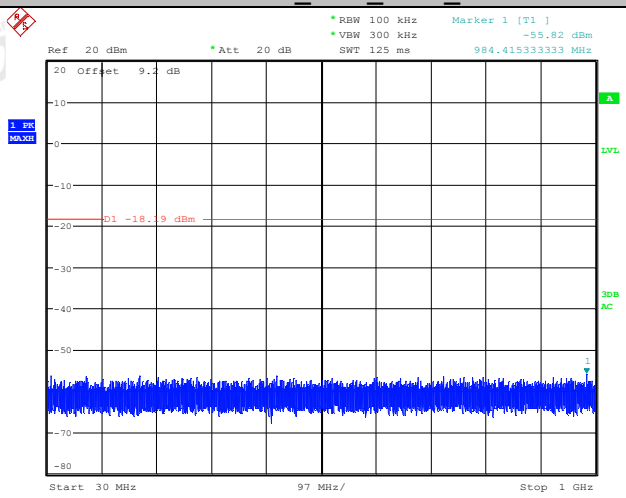

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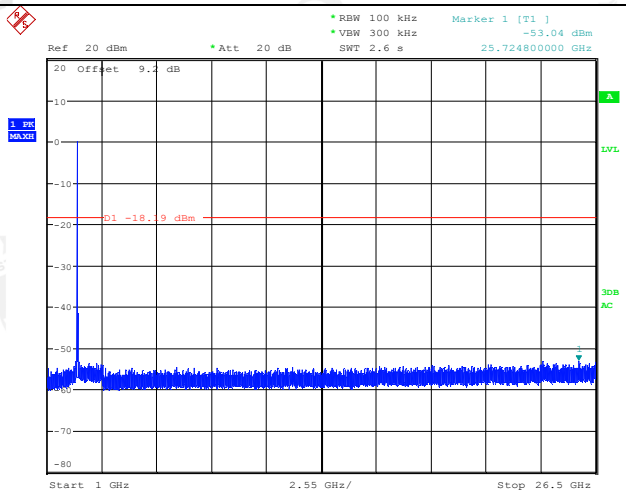

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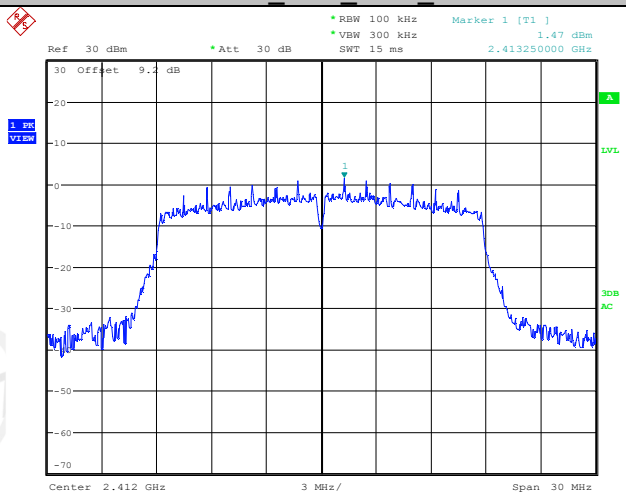

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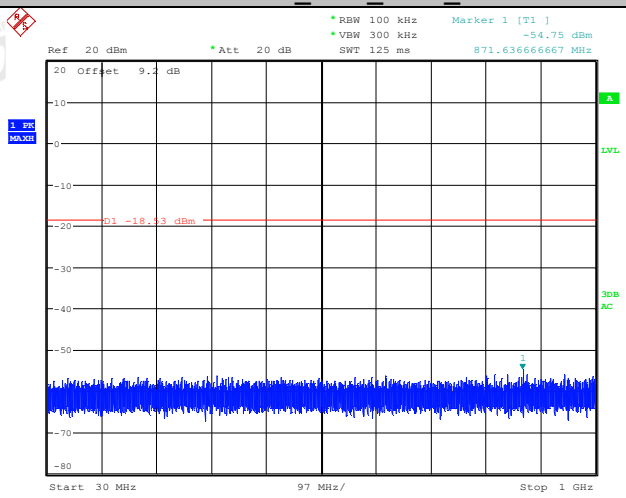

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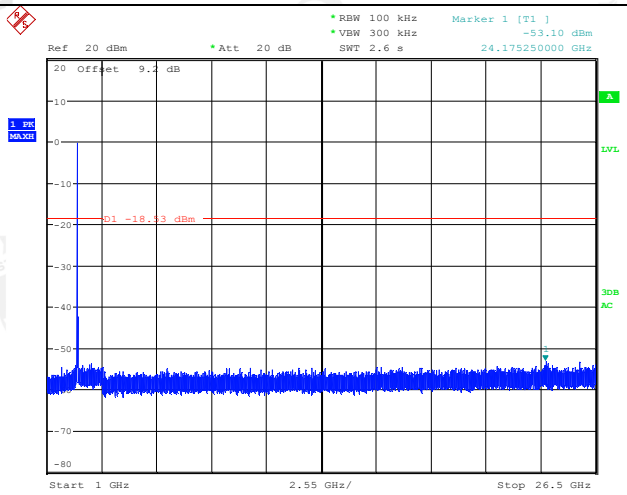

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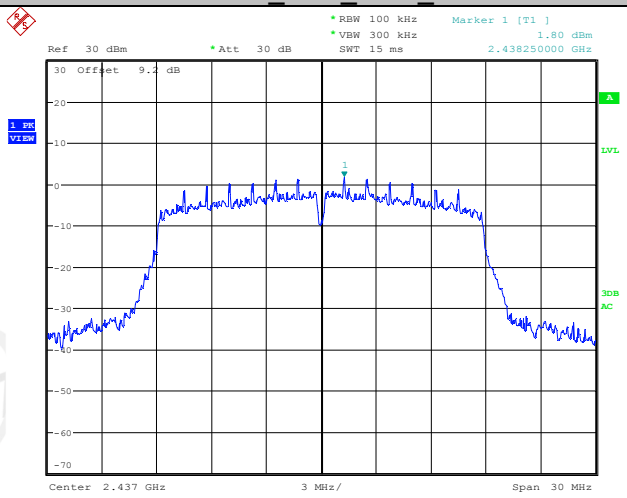

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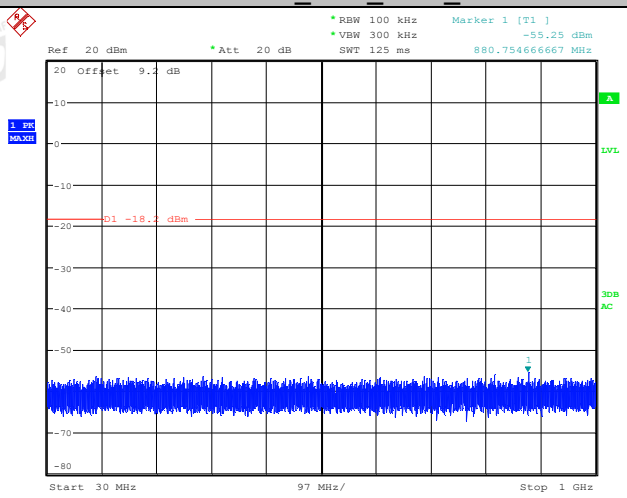

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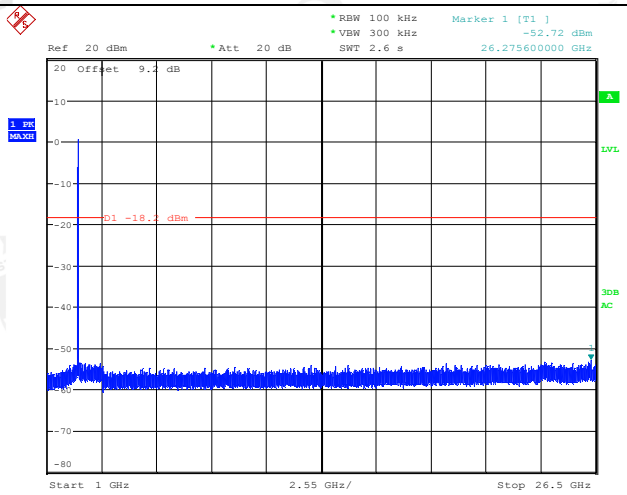

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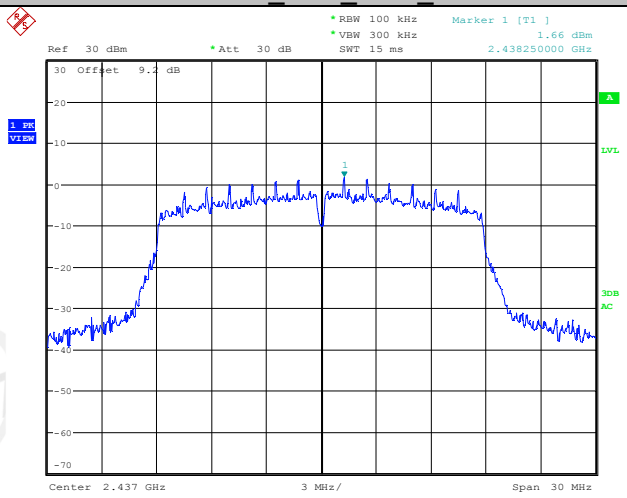

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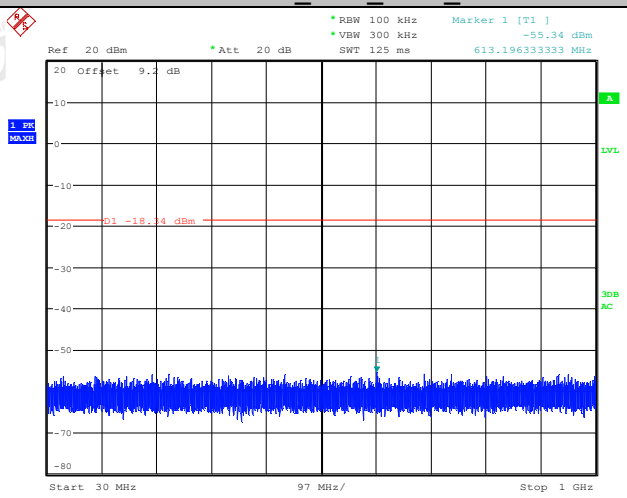

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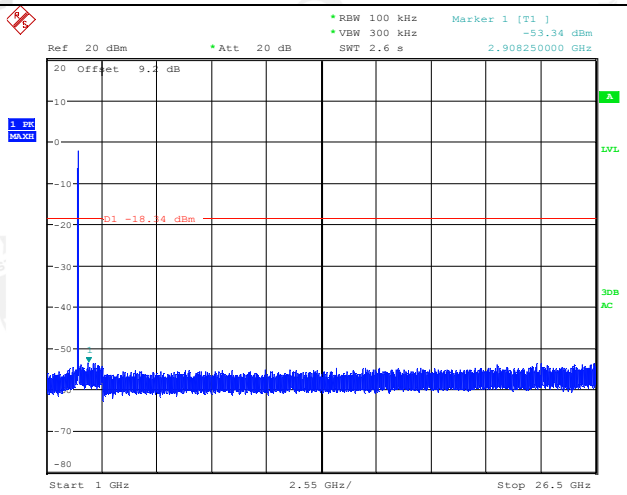

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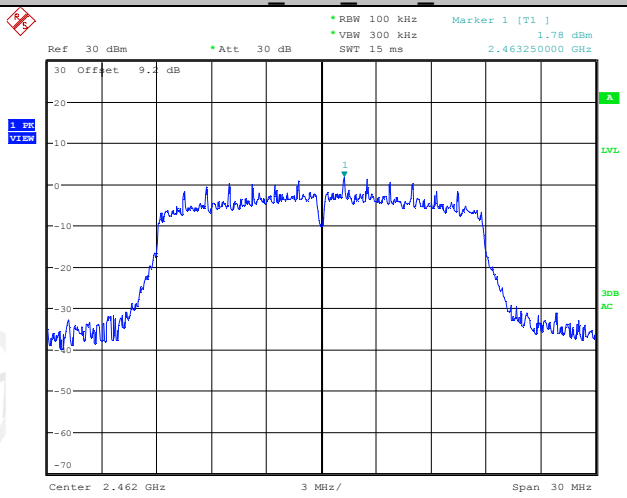

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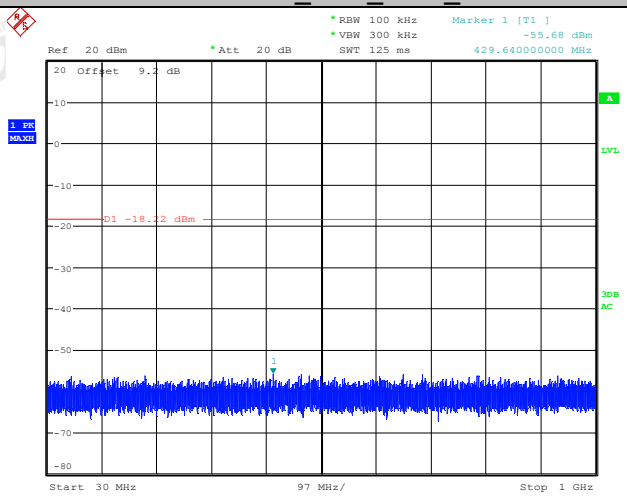

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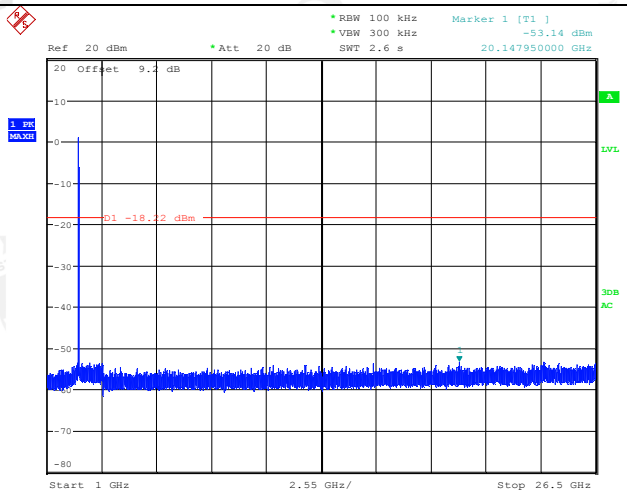

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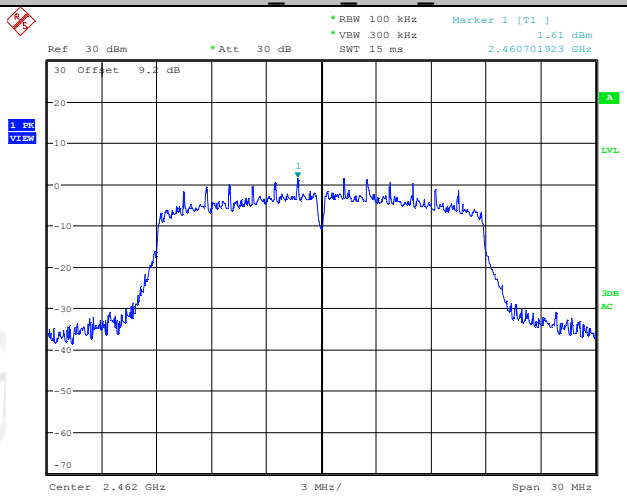

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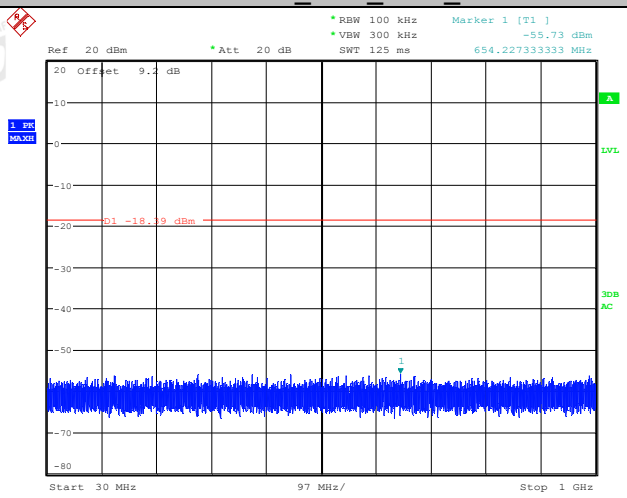

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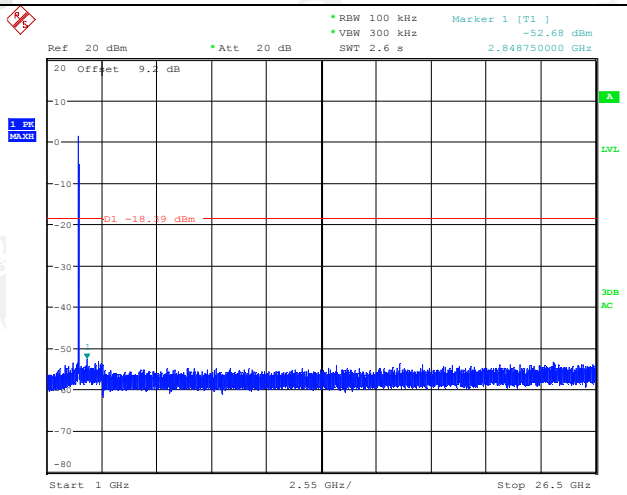

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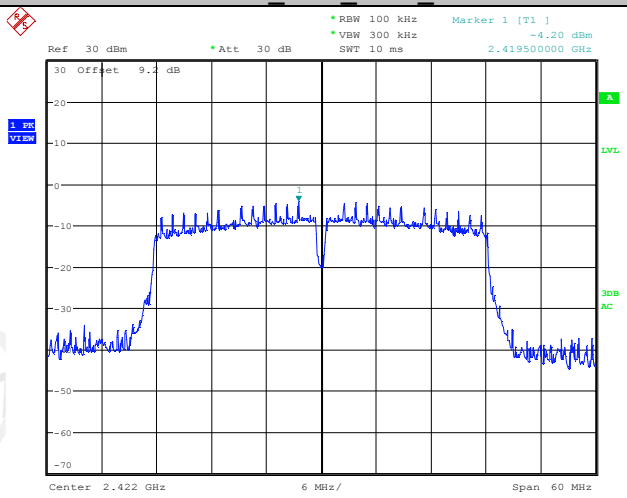

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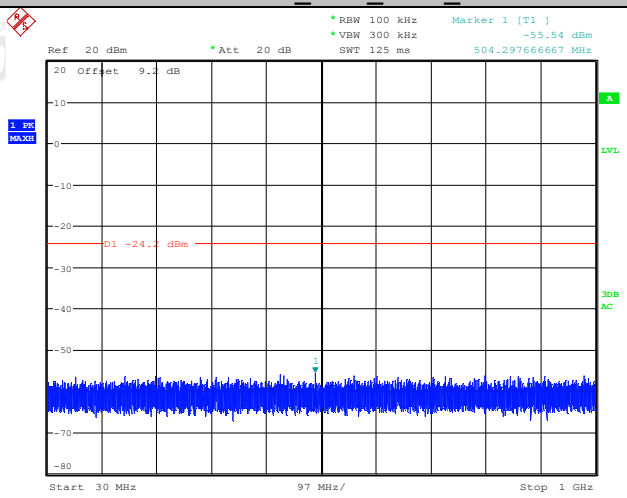

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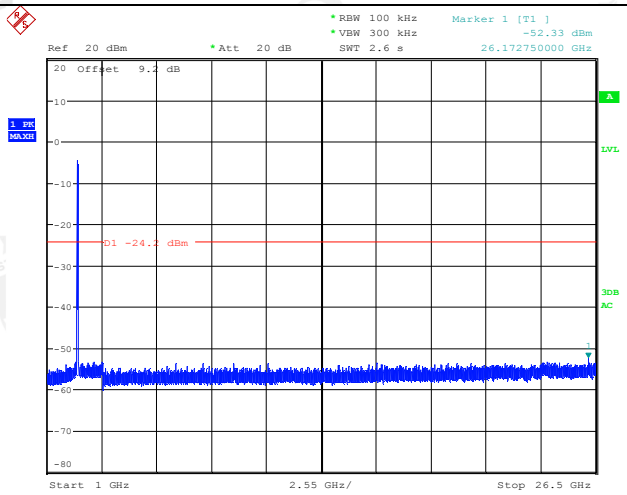

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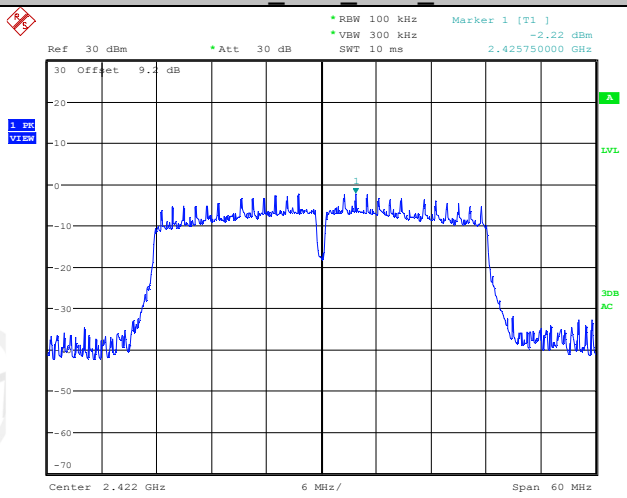

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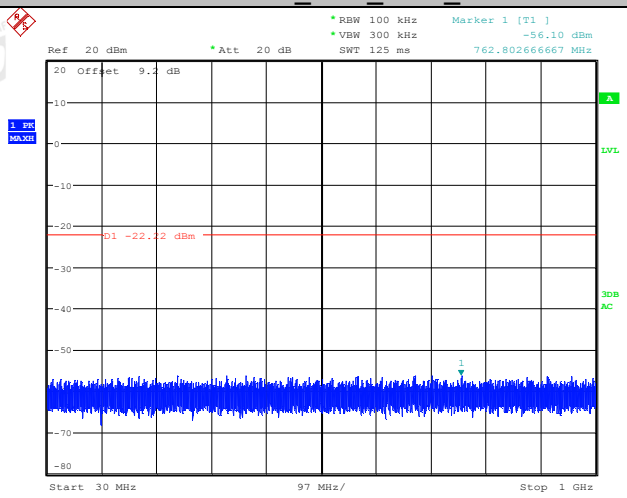

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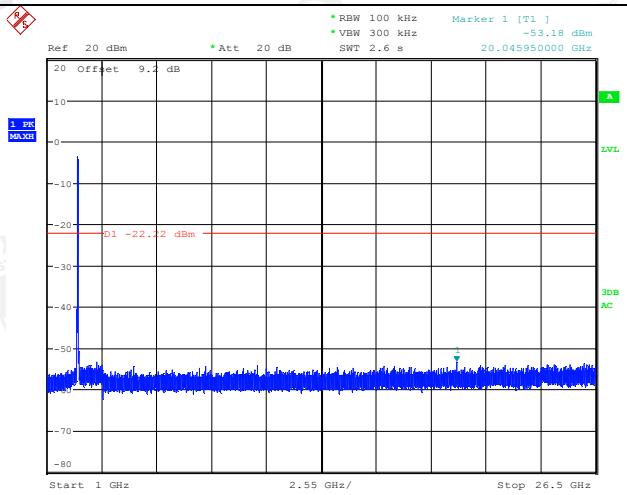

Date: 20.MAY.2020 19:17:56

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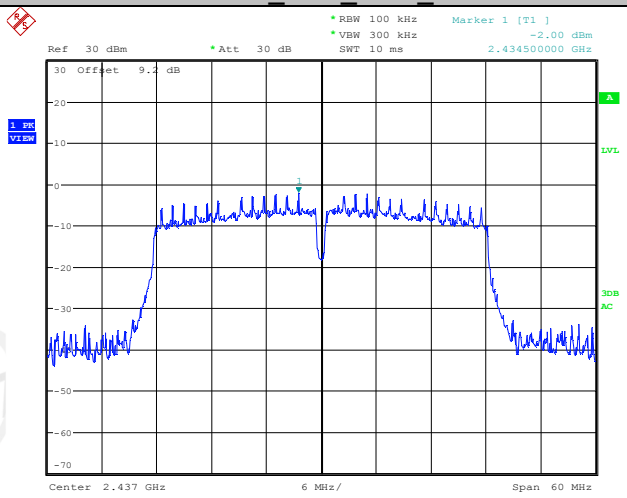

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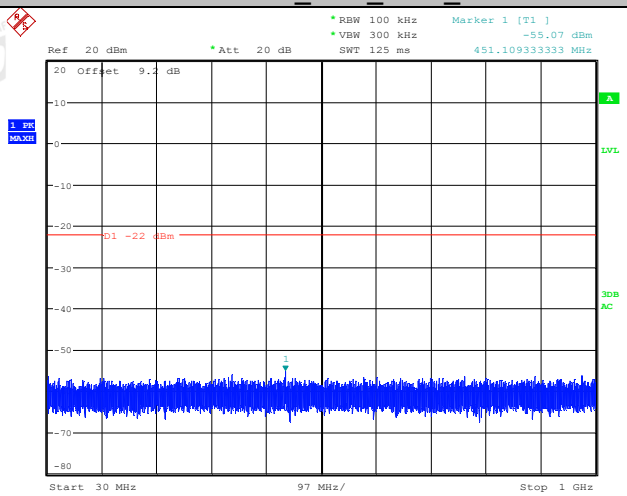
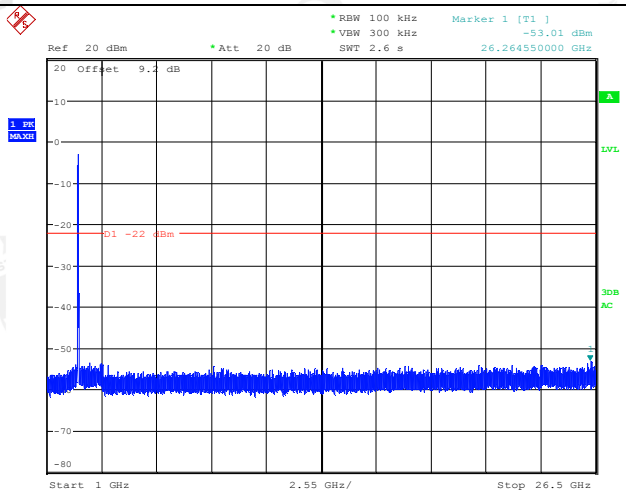


Date: 20.MAY.2020 18:23:26

11N40SISO_Ant1_2437_1000~26500



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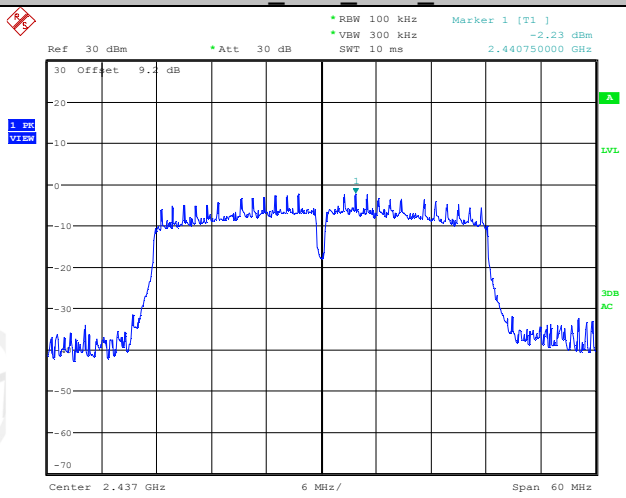
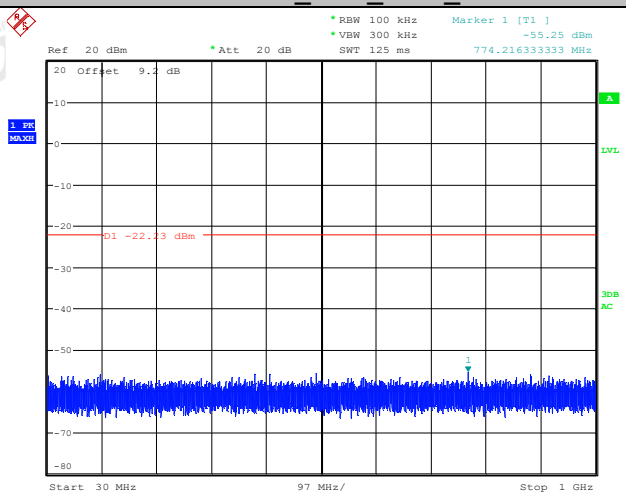
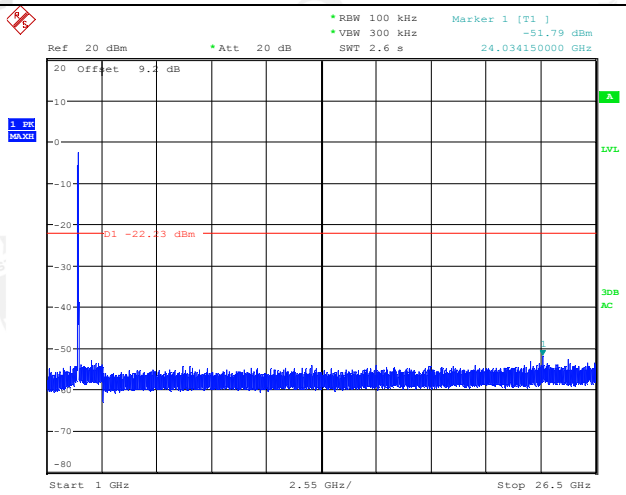


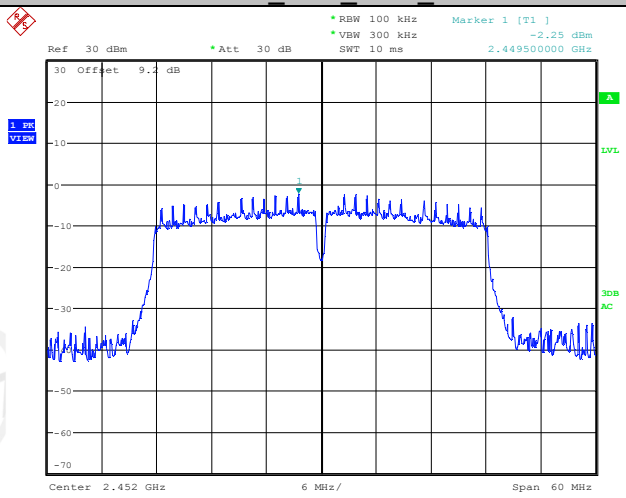
11N40SISO_Ant2_2437_30~1000



11N40SISO_Ant2_2437_1000~26500



11N40SISO_Ant1_2452_0~Reference



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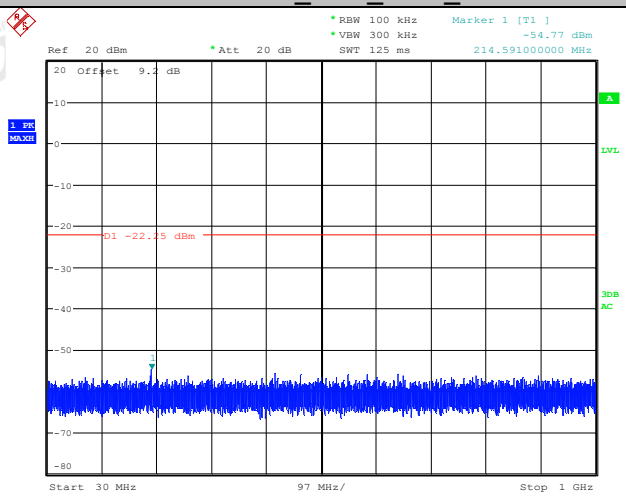

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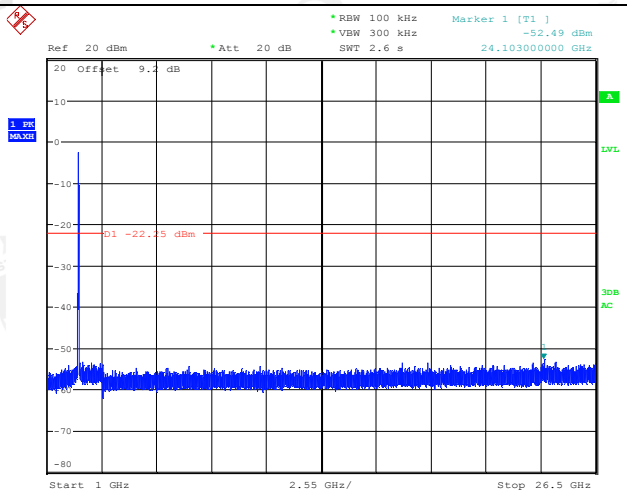

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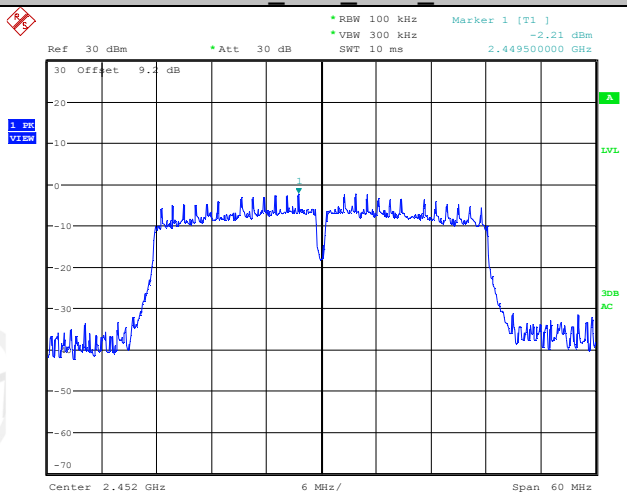
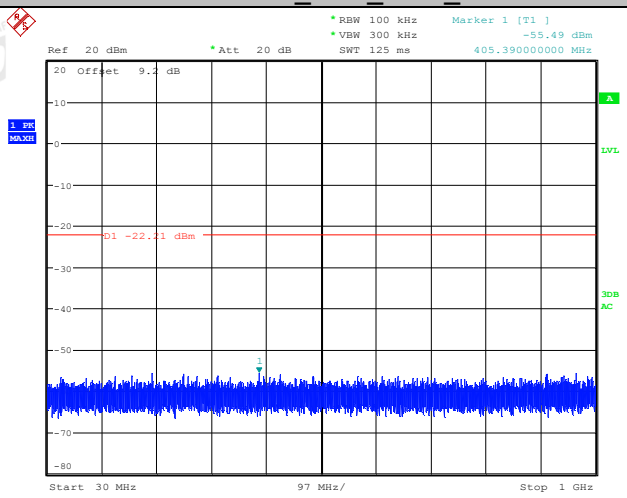
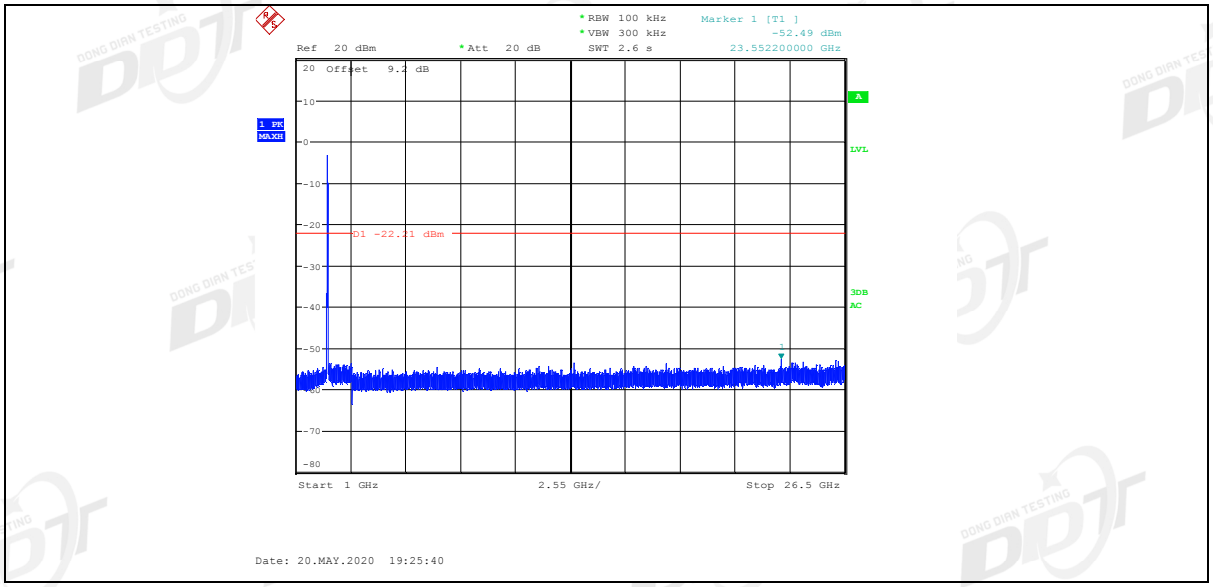


11N40SISO_Ant2_2452_30~1000



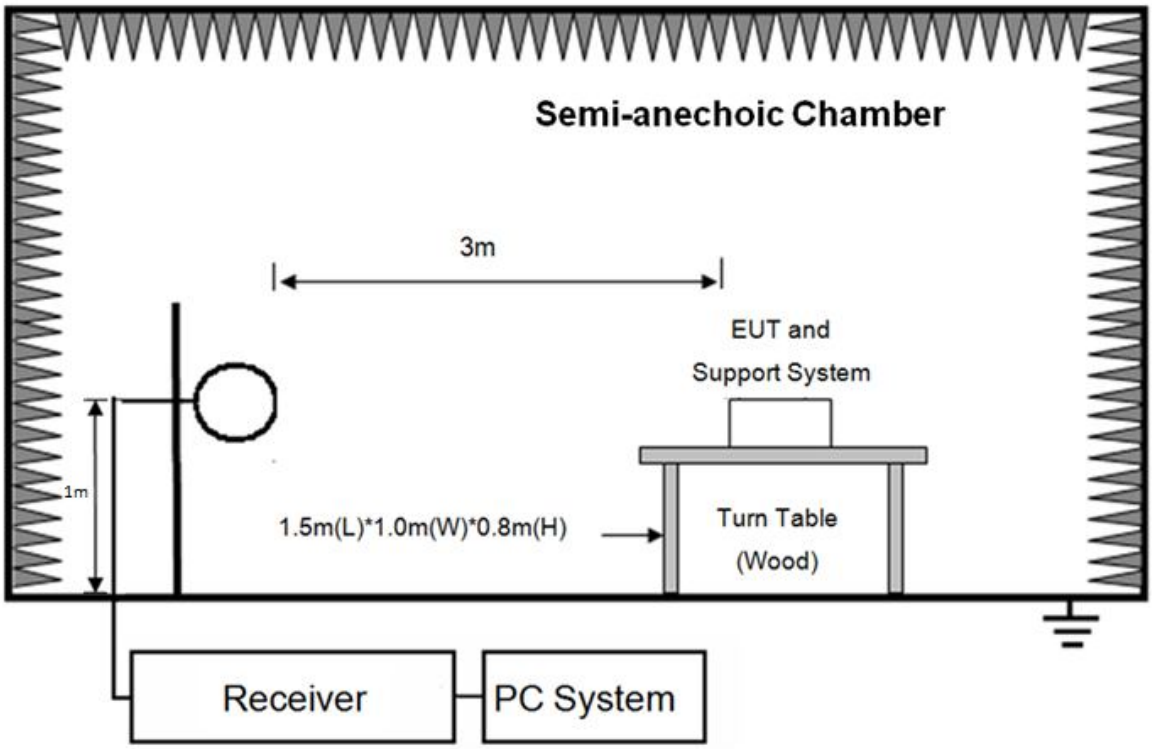
11N40SISO_Ant2_2452_1000~26500


RBW 100 kHz
VBW 300 kHz
SWT 2.6 s
Marker 1 [T1]
-52.49 dBm
23.552200000 GHz
Ref 20 dBm
Att 20 dB
Offset 9.2 dB
1 PK
MAXH
D1 -22.21 dBm
A
LVL
3DB
AC
Start 1 GHz
2.55 GHz/
Stop 26.5 GHz
Date: 20.MAY.2020 19:25:40

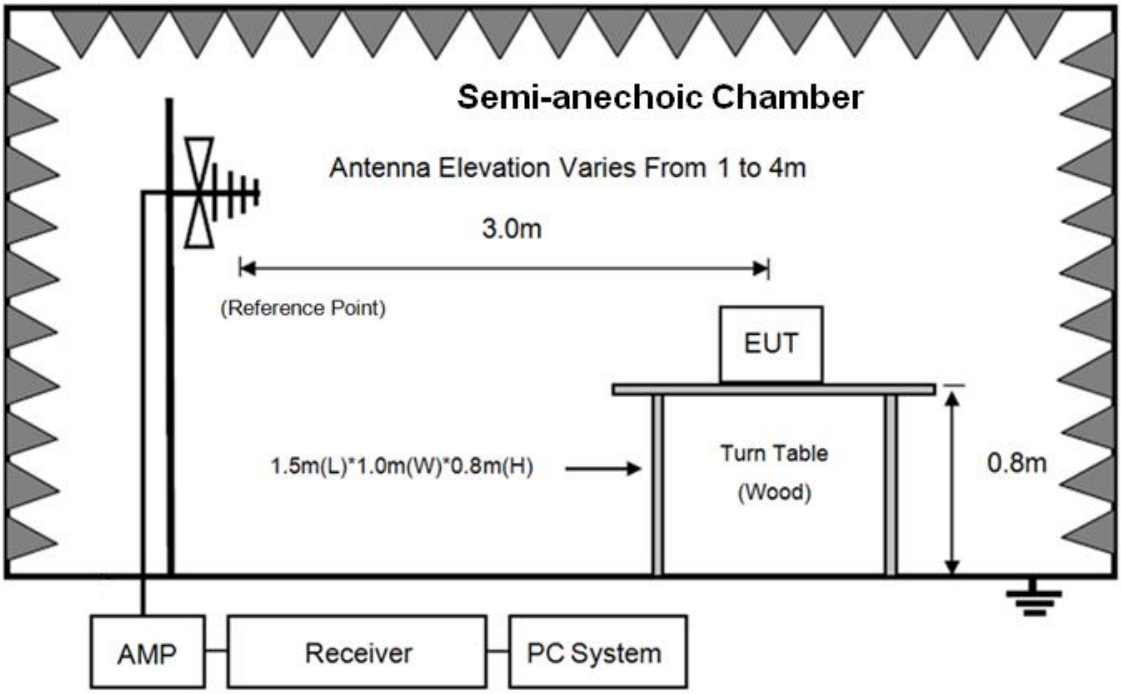
8. Radiated Spurious Emissions

8.1. Block diagram of test setup

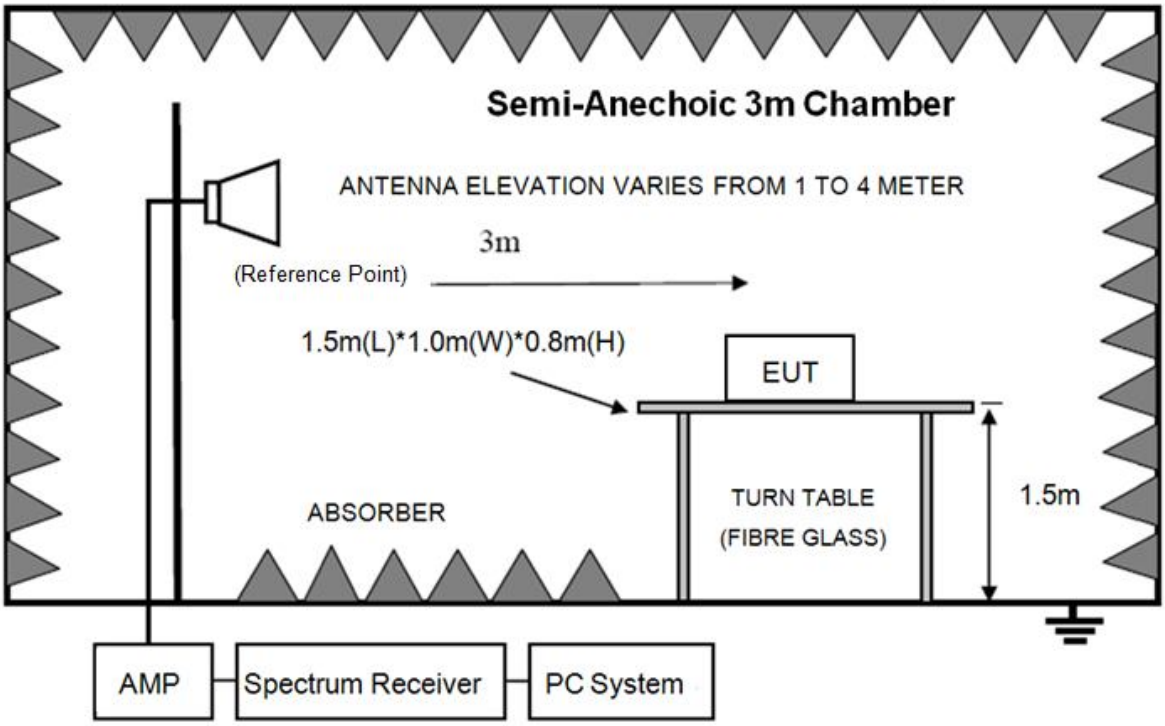
In 3 m Anechoic Chamber Test Setup Diagram for 9 kHz - 30 MHz



In 3 m Anechoic Chamber Test Setup Diagram for 30 MHz - 1 GHz



In 3 m Anechoic Chamber Test Setup Diagram for frequency above 1 GHz



Note: For harmonic emissions test an appropriate high pass filter was inserted in the input port of AMP.

8.2. Limit

8.2.1 FCC 15.205 Restricted frequency band

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.1772&4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.2072&4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

[1]Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2]Above 38.6

8.2.2 FCC 15.209 Limit.

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
0.009 ~ 0.490	300	2400/F(kHz)	67.6-20log(F)
0.490 ~ 1.705	30	24000/F(kHz)	87.6-20log(F)
1.705 ~ 30.0	30	30	29.54
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Note: (1) The emission limits shown in the above table are based on measurements employing a CISPR QP detector except for the frequency bands 9 - 90 kHz, 110 - 490 kHz and above 1000 MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector.

(2) At frequencies below 30 MHz, measurement may be performed at a distance closer than that specified, and the limit at closer measurement distance can be extrapolated by below formula:

$$Limit_{3m}(dBuV/m) = Limit_{30m}(dBuV/m) + 40Log(30m/3m)$$

8.2.3 Limit for this EUT

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20 dB below the fundamental emissions or comply with 15.209 limits.

8.3. Test procedure

(1) EUT height should be 0.8 m for below 1 GHz at a semi‐anechoic chamber while EUT height should be 1.5 m for above 1 GHz at full chamber or semi‐anechoic chamber ground with absorbers.

(2) The antenna used as below table.

Test frequency range	Test antenna used	Measuring distance
9 kHz - 30 MHz	Active Loop antenna	3 m
30 MHz - 1 GHz	Trilog Broadband Antenna	3 m
1 GHz - 18 GHz	Double Ridged Horn Antenna (1 GHz - 18 GHz)	3 m
18 GHz - 40 GHz	Horn Antenna (18 GHz - 40 GHz)	1 m

According ANSI C63.10:2013 clause 6.4.4.2 and 6,5.3, for measurements below 30 MHz, the loop antenna was positioned with its plane vertical from the EUT and rotated about its vertical

axis for maximum response at each azimuth position around the EUT. And the loop antenna also is positioned with its plane horizontal at the specified distance from the EUT. The center of the loop is 1 m above the ground. For measurement above 30 MHz, the Trilog Broadband Antenna or Horn Antenna was located 3 m from EUT, Measurements were made with the antenna positioned in both the horizontal and vertical planes of Polarization, and the measurement antenna was varied from 1 m to 4 m. in height above the reference ground plane to obtain the maximum signal strength.

(3) Below pre-scan procedure was first performed in order to find prominent frequency spectrum radiated emissions from 9 kHz to 25 GHz:

(a) Scanning the peak frequency spectrum with the antenna specified in step (3), and the EUT was rotated 360 degree, the antenna height was varied from 1 m to 4 m (Except loop antenna, it's fixed 1 m above ground.)

(b) Change work frequency or channel of device if practicable.

(c) Change modulation type of device if practicable.

(d) Change power supply range from 85% to 115% of the rated supply voltage

(e) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions.

Spectrum frequency from 9 kHz to 25 GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 18 GHz to 25 GHz, so below final test was performed with frequency range from 9 kHz to 18 GHz.

(4) For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1 m and 4 m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10:2013 on Radiated Emission test.

(5) The emissions from 9 kHz to 1 GHz were measured based on CISPR QP detector except for the frequency bands 9 - 90 kHz, 110 - 490 kHz, for emissions from 9 kHz - 90 kHz, 110 kHz - 490 kHz and above 1 GHz were measured based on average detector, for emissions above 1 GHz, peak emissions also be measured and need comply with Peak limit.

(6) The emissions from 9 kHz to 1 GHz, QP or average values were measured with EMI receiver with below RBW:

Frequency band	RBW
9 kHz - 150 kHz	200 Hz
150 kHz - 30 MHz	9 kHz
30 MHz - 1 GHz	120 kHz

(7) For emissions above 1 GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1 MHz, VBW is set at 3 MHz for Peak measure; About

Average measure refer to ANSI C63.10:2013 clause 4.2.3.2.3 procedure.

(8) X axis, Y axis, Z axis are tested, and worse setup X axis is reported.

8.4. Test result

PASS. (See below detailed test result)

All the emissions except fundamental emission from 9 kHz to 25 GHz were comply with 15.209 limit.

Note1: According exploratory test, the emission levels are 20 dB below the limit detected from 9 kHz to 30 MHz and 18 GHz to 25 GHz, so the final test was performed with frequency range from 30 MHz to 18 GHz and recorded in below.

Note2: For emissions below 1 GHz, according exploratory explorer test, when change Tx mode and channel, have no distinct influence on emissions level, so for emissions below 1 GHz, the final test was only performed with EUT working in 11b, Tx CH11 ANT 2 mode.

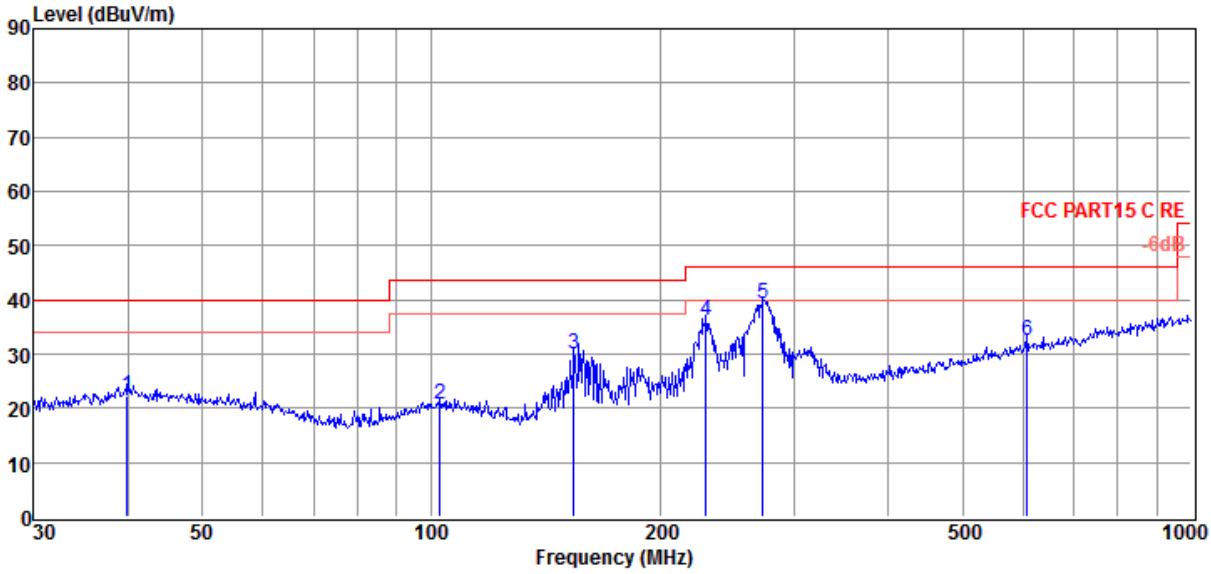
Note3: For emissions above 1 GHz. If peak results comply with AV limit, AV Result is deemed to comply with AV limit.

Radiated Emission test (below 1 GHz)

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 2#	E:\2020 RE2# Report Data\Q20032021-1E HK-Citation 200\FCC BELOW1G.EM6	
Test Date	: 2020-06-03	**Tested By**	: Kennys
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5°C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 VULB 9163 2#/3m/HORIZONTAL
Memo	:		

Data: 5



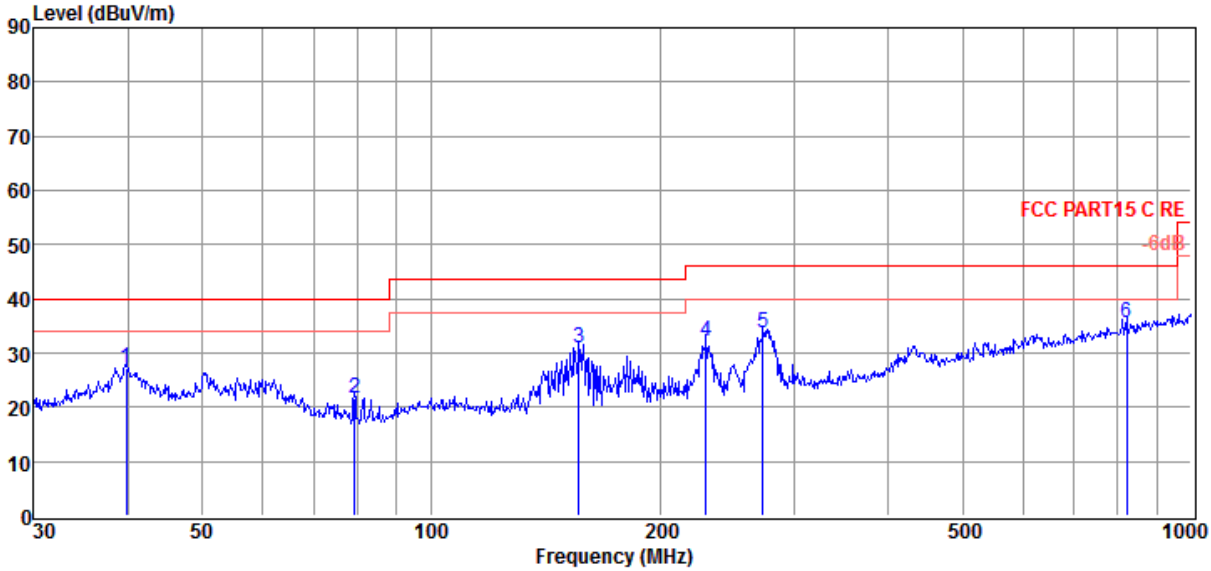
Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	39.85	4.18	14.47	3.70	22.35	40.00	-17.65	QP	HORIZONTAL
2	102.72	4.84	11.67	4.22	20.73	43.50	-22.77	QP	HORIZONTAL
3	154.28	16.88	8.45	4.57	29.90	43.50	-13.60	QP	HORIZONTAL
4	230.10	18.74	12.30	5.02	36.06	46.00	-9.94	QP	HORIZONTAL
5	273.23	20.50	13.40	5.25	39.15	46.00	-6.85	QP	HORIZONTAL
6	607.79	6.39	19.35	6.80	32.54	46.00	-13.46	QP	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 2#	E:\2020 RE2# Report Data\Q20032021-1E HK-Citation 200\FCC BELOW1G.EM6	
Test Date	: 2020-06-03	**Tested By**	: Kennys
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5°C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 VULB 9163 2#/3m/VERTICAL
Memo	:		

Data: 6



Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	39.72	9.02	14.44	3.70	27.16	40.00	-12.84	QP	VERTICAL
2	79.24	8.81	8.73	4.03	21.57	40.00	-18.43	QP	VERTICAL
3	156.46	17.81	8.62	4.58	31.01	43.50	-12.49	QP	VERTICAL
4	230.10	14.99	12.30	5.02	32.31	46.00	-13.69	QP	VERTICAL
5	273.23	14.98	13.40	5.25	33.63	46.00	-12.37	QP	VERTICAL
6	821.71	6.43	21.40	7.63	35.46	46.00	-10.54	QP	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

Radiated Emission test (above 1 GHz)

Freq. (MHz)	Read level (dBμV)	Antenna Factor (dB/m)	PRM Factor(dB)	Cable Loss (dB)	Result Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector type	Polarization
11b CH1									
4824.00	54.55	32.25	43.48	6.17	49.49	74.00	-24.51	Peak	HORIZONTAL
6899.00	44.84	36.66	42.95	7.50	46.05	74.00	-27.95	Peak	HORIZONTAL
10010.00	43.15	39.51	42.40	9.38	49.64	74.00	-24.36	Peak	HORIZONTAL
12645.00	43.39	38.89	41.62	10.64	51.30	74.00	-22.70	Peak	HORIZONTAL
14430.00	41.53	40.81	40.25	11.24	53.33	74.00	-20.67	Peak	HORIZONTAL
16283.00	40.95	39.65	40.09	11.80	52.31	74.00	-21.69	Peak	HORIZONTAL
4824.00	59.51	32.25	43.48	6.17	54.45	74.00	-19.55	Peak	VERTICAL
4824.00	57.00	32.25	43.48	6.17	51.94	54.00	-2.06	Average	VERTICAL
7154.00	44.83	37.09	42.92	7.73	46.73	74.00	-27.27	Peak	VERTICAL
10180.00	43.13	39.75	42.39	9.37	49.86	74.00	-24.14	Peak	VERTICAL
12101.00	43.38	39.00	42.19	10.56	50.75	74.00	-23.25	Peak	VERTICAL
13274.00	41.77	39.98	40.99	10.76	51.52	74.00	-22.48	Peak	VERTICAL
11b CH6									
4874.00	53.04	32.32	43.46	6.20	48.10	74.00	-25.90	Peak	HORIZONTAL
7375.00	44.25	37.22	42.88	7.98	46.57	74.00	-27.43	Peak	HORIZONTAL
9925.00	43.05	39.44	42.41	9.32	49.40	74.00	-24.60	Peak	HORIZONTAL
12645.00	43.56	38.89	41.62	10.64	51.47	74.00	-22.53	Peak	HORIZONTAL
14430.00	41.27	40.81	40.25	11.24	53.07	74.00	-20.93	Peak	HORIZONTAL
16385.00	41.56	40.09	40.08	11.90	53.47	74.00	-20.53	Peak	HORIZONTAL
4874.00	58.66	32.32	43.46	6.20	53.72	74.00	-20.28	Peak	VERTICAL
8055.00	43.40	37.97	42.79	8.69	47.27	74.00	-26.73	Peak	VERTICAL
10656.00	42.95	40.26	42.37	9.33	50.17	74.00	-23.83	Peak	VERTICAL
13546.00	41.23	40.36	40.73	10.82	51.68	74.00	-22.32	Peak	VERTICAL
14430.00	40.68	40.81	40.25	11.24	52.48	74.00	-21.52	Peak	VERTICAL
16249.00	41.54	39.50	40.09	11.77	52.72	74.00	-21.28	Peak	VERTICAL
11b CH11									
4910.00	53.34	32.37	43.45	6.22	48.48	74.00	-25.52	Peak	HORIZONTAL
7936.00	44.63	37.91	42.81	8.62	48.35	74.00	-25.65	Peak	HORIZONTAL
10180.00	43.15	39.75	42.39	9.37	49.88	74.00	-24.12	Peak	HORIZONTAL
11829.00	44.55	39.31	42.31	10.34	51.89	74.00	-22.11	Peak	HORIZONTAL
14719.00	41.27	40.45	40.22	11.45	52.95	74.00	-21.05	Peak	HORIZONTAL
16249.00	41.68	39.50	40.09	11.77	52.86	74.00	-21.14	Peak	HORIZONTAL
4924.00	58.64	32.39	43.44	6.23	53.82	74.00	-20.18	Peak	VERTICAL
7154.00	46.21	37.09	42.92	7.73	48.11	74.00	-25.89	Peak	VERTICAL
10129.00	43.51	39.68	42.39	9.37	50.17	74.00	-23.83	Peak	VERTICAL
11761.00	43.54	39.39	42.31	10.25	50.87	74.00	-23.13	Peak	VERTICAL
12645.00	44.42	38.89	41.62	10.64	52.33	74.00	-21.67	Peak	VERTICAL
14651.00	41.38	40.56	40.23	11.40	53.11	74.00	-20.89	Peak	VERTICAL
Result: Pass									

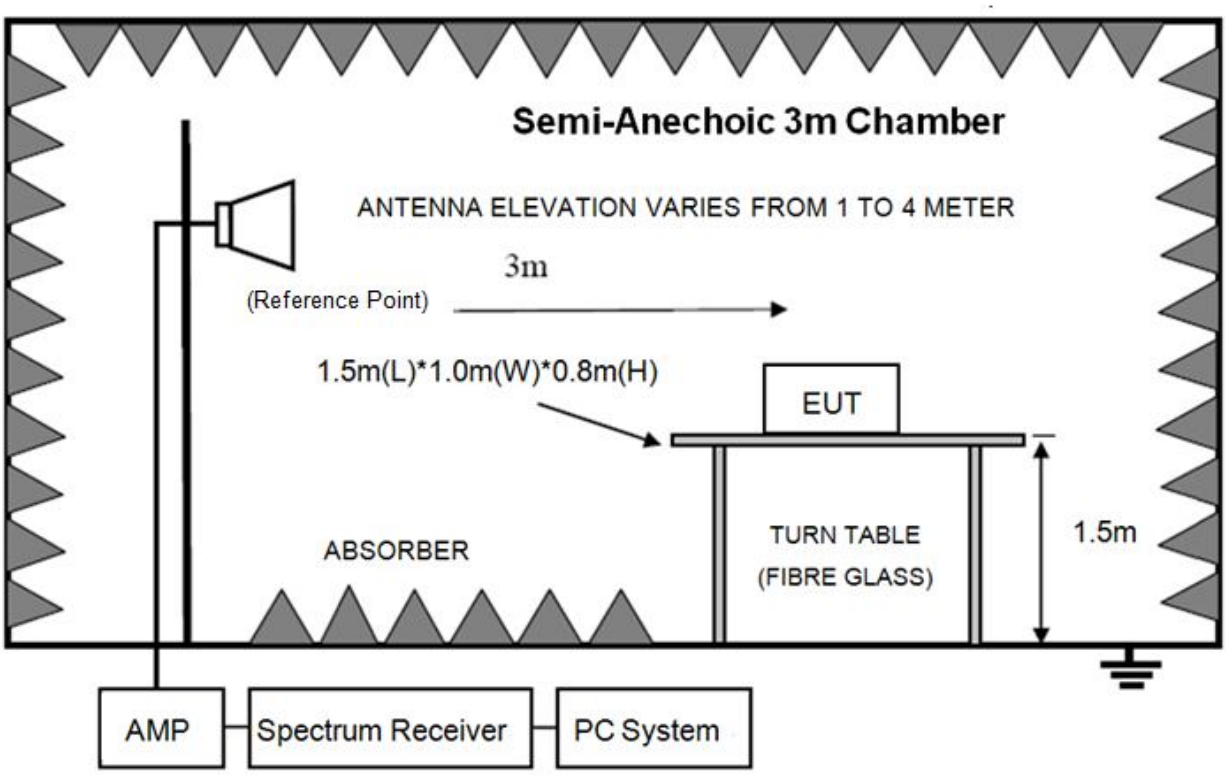
Note: 1.30 MHz ~ 25GHz: (Scan with 11b mode, 11g mode, 11n HT20 mode, 11n HT40 mode ANT 1 and ANT 2, the worst case is 11b ANT 2 mode)

2. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. For emissions above 1 GHz. If peak results comply with AV limit, AV Result is deemed to comply with

AV limit.

9. Radiated Band Edge Compliance

9.1. Block diagram of test setup



9.2. Limit

All restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400 MHz to 2483.5 MHz shall be at least 20 dB below the fundamental emissions or comply with RSS-Gen Issue 3 clause 7.2.5 (Same as FCC 15.209) limits.

9.3. Test Procedure

Same with clause 8.3 except change investigated frequency range from 2310 MHz to 2430 MHz and 2445 MHz to 2500 MHz, 2310 MHz to 2450 MHz and 2425 MHz to 2500 MHz.
Remark: All restriction band have been tested, and only the worst case is shown in report.

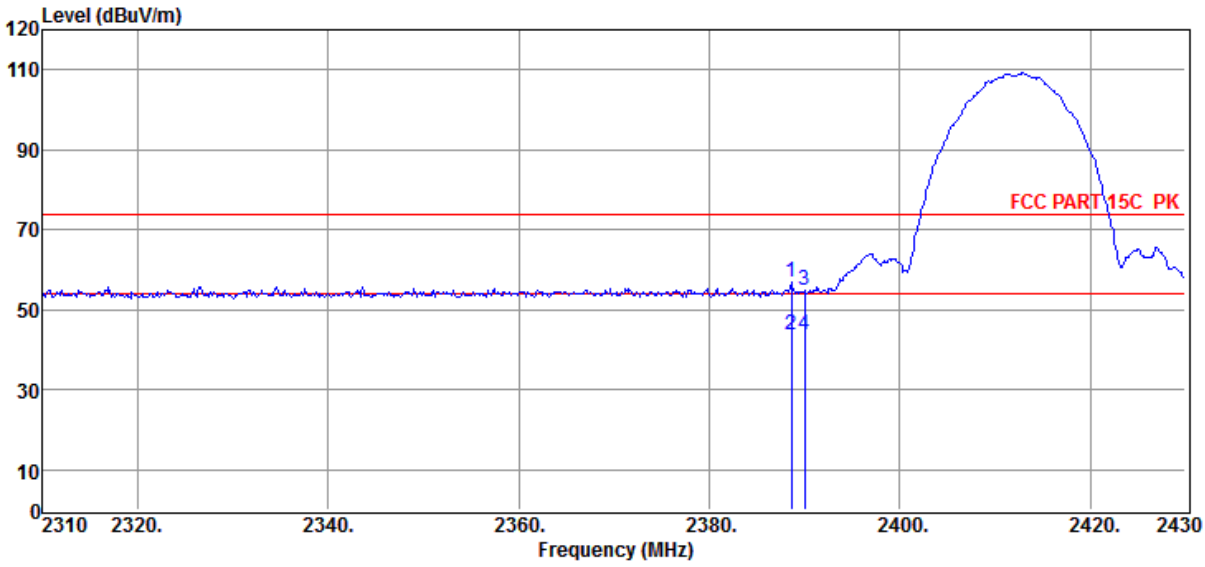
9.4. Test result

PASS. (See below detailed test result)
Note: ANT 1 and ANT 2 mode both have been tested, ANT 2 mode is worse case and reported only.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 2#	E:\2020 RE2# Report Data\Q20032021-1E HK-Citation 200\FCC ABOVE 1G.EM6	
Test Date	: 2020-05-31	**Tested By**	: Jacky
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 BBHA9120D/3m/VERTICAL
Memo	: 11B 2412		

Data: 87



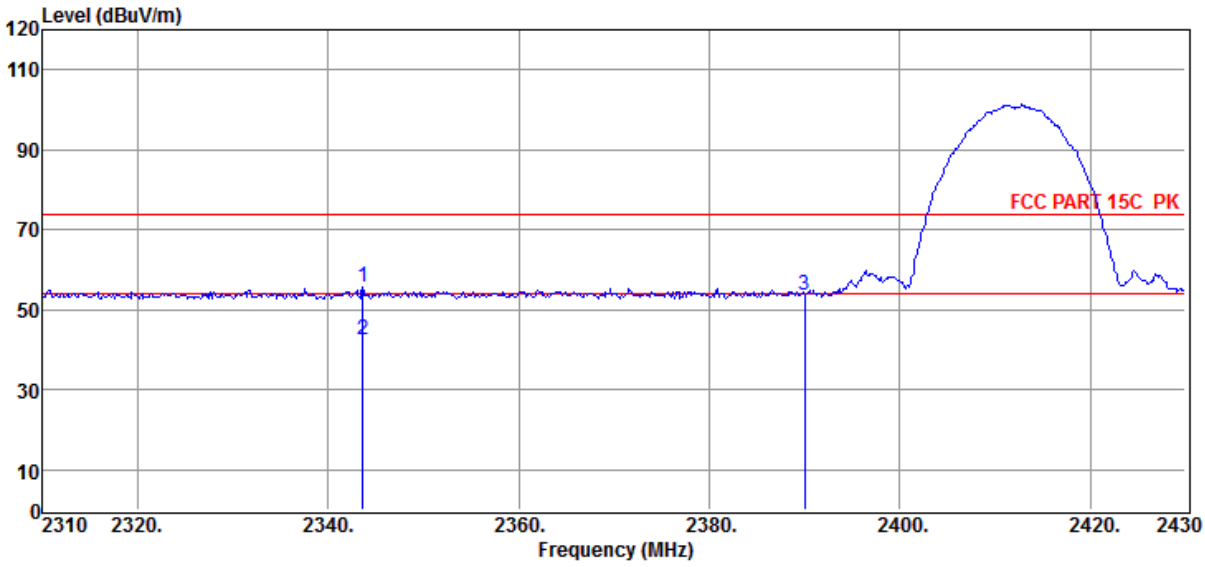
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2388.60	25.28	27.48	0.00	4.03	56.79	74.00	-17.21	Peak	VERTICAL
2	2388.60	12.00	27.48	0.00	4.03	43.51	54.00	-10.49	Average	VERTICAL
3	2390.00	23.22	27.48	0.00	4.03	54.73	74.00	-19.27	Peak	VERTICAL
4	2390.00	12.30	27.48	0.00	4.03	43.81	54.00	-10.19	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 2#	E:\2020 RE2# Report Data\Q20032021-1E HK-Citation 200\FCC ABOVE 1G.EM6	
Test Date	: 2020-05-31	**Tested By**	: Jacky
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 BBHA9120D/3m/HORIZONTAL
Memo	: 11B 2412		

Data: 88



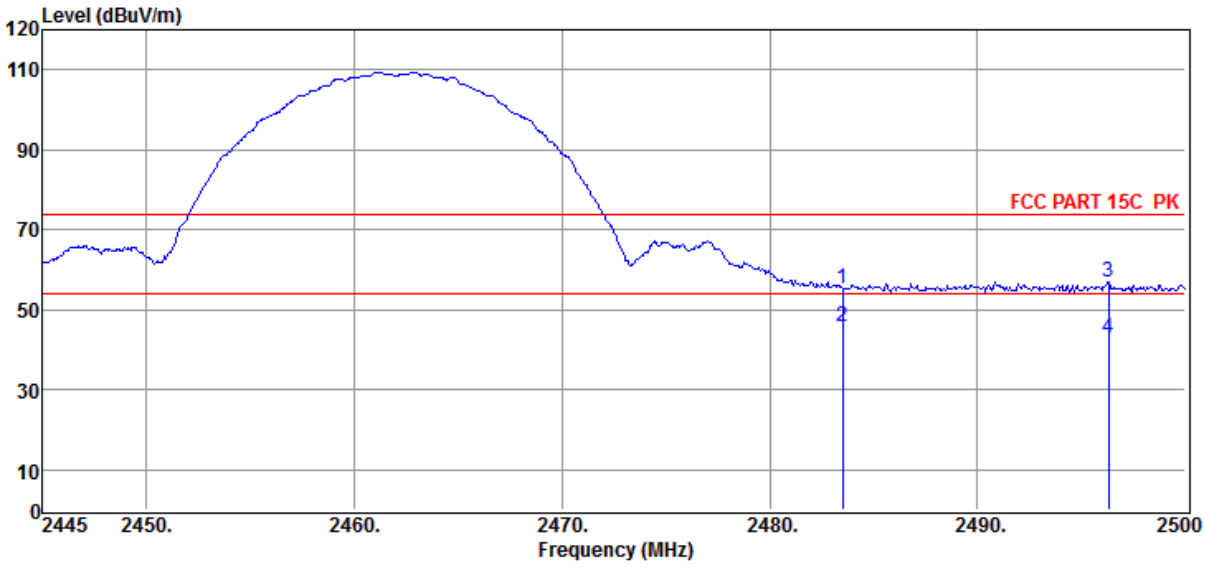
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2343.60	24.14	27.39	0.00	3.99	55.52	74.00	-18.48	Peak	HORIZONTAL
2	2343.60	11.00	27.39	0.00	3.99	42.38	54.00	-11.62	Average	HORIZONTAL
3	2390.00	22.25	27.48	0.00	4.03	53.76	74.00	-20.24	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 2#	E:\2020 RE2# Report Data\Q20032021-1E HK-Citation 200\FCC ABOVE 1G.EM6	
Test Date	: 2020-05-31	**Tested By**	: Jacky
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 BBHA9120D/3m/VERTICAL
Memo	: 11B 2462		

Data: 91



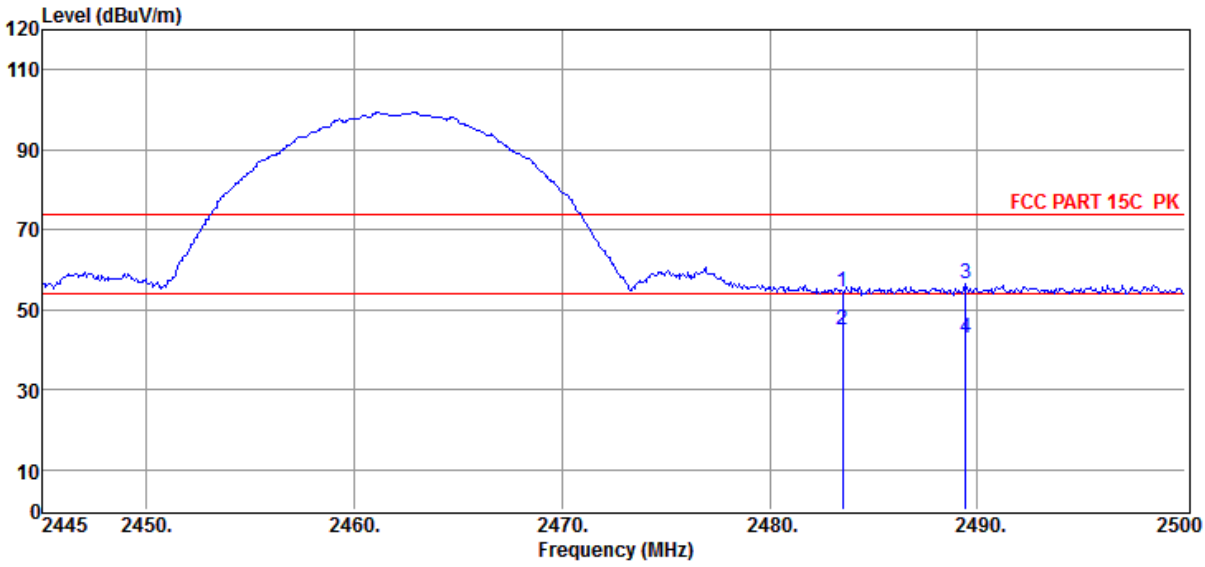
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	23.63	27.67	0.00	4.12	55.42	74.00	-18.58	Peak	VERTICAL
2	2483.50	13.88	27.67	0.00	4.12	45.67	54.00	-8.33	Average	VERTICAL
3	2496.32	25.05	27.69	0.00	4.14	56.88	74.00	-17.12	Peak	VERTICAL
4	2496.32	11.20	27.69	0.00	4.14	43.03	54.00	-10.97	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 2#	E:\2020 RE2# Report Data\Q20032021-1E HK-Citation 200\FCC ABOVE 1G.EM6	
Test Date	: 2020-05-31	**Tested By**	: Jacky
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 BBHA9120D/3m/HORIZONTAL
Memo	: 11B 2462		

Data: 92



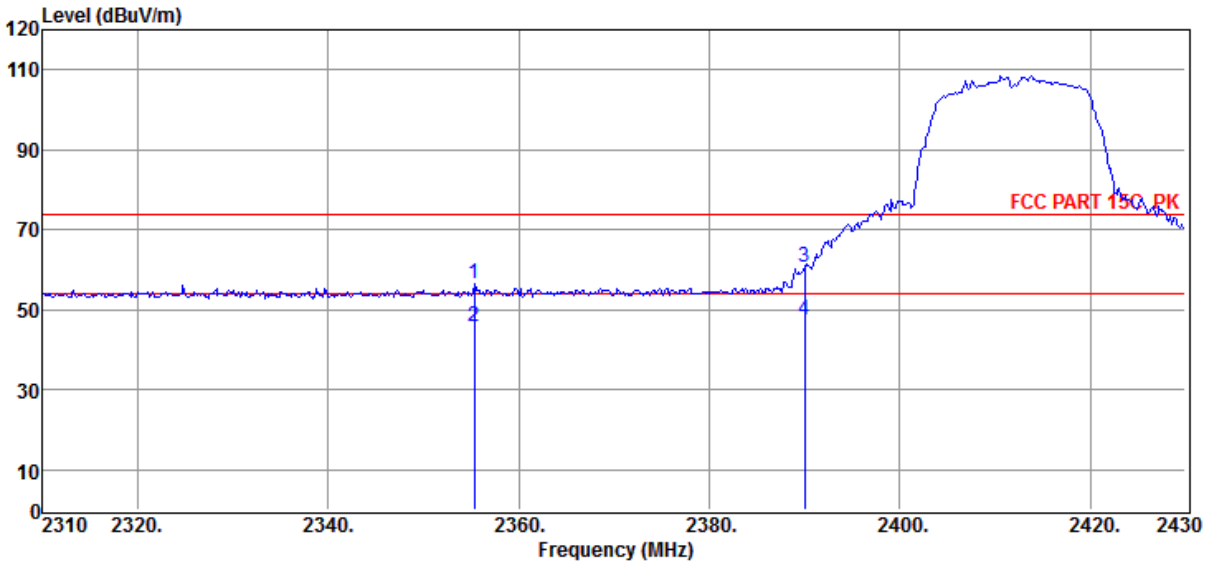
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	22.78	27.67	0.00	4.12	54.57	74.00	-19.43	Peak	HORIZONTAL
2	2483.50	13.10	27.67	0.00	4.12	44.89	54.00	-9.11	Average	HORIZONTAL
3	2489.44	24.75	27.68	0.00	4.13	56.56	74.00	-17.44	Peak	HORIZONTAL
4	2489.44	11.20	27.68	0.00	4.13	43.01	54.00	-10.99	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 2#	E:\2020 RE2# Report Data\Q20032021-1E HK-Citation 200\FCC ABOVE 1G.EM6	
Test Date	: 2020-06-08	**Tested By**	: Jacky
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 BBHA9120D/3m/VERTICAL
Memo	: 11G 2412		

Data: 95



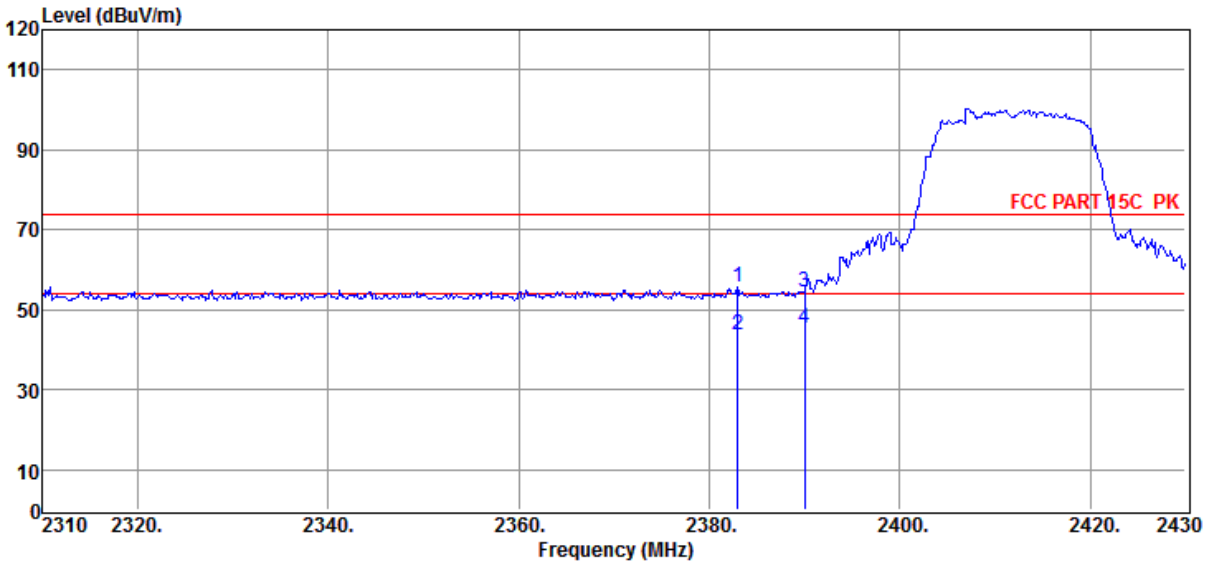
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2355.36	24.97	27.41	0.00	4.00	56.38	74.00	-17.62	Peak	VERTICAL
2	2355.36	14.36	27.41	0.00	4.00	45.77	54.00	-8.23	Average	VERTICAL
3	2390.04	29.20	27.48	0.00	4.03	60.71	74.00	-13.29	Peak	VERTICAL
4	2390.04	15.80	27.48	0.00	4.03	47.31	54.00	-6.69	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 2#	E:\2020 RE2# Report Data\Q20032021-1E HK-Citation 200\FCC ABOVE 1G.EM6	
Test Date	: 2020-05-31	**Tested By**	: Jacky
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 BBHA9120D/3m/HORIZONTAL
Memo	: 11G 2412		

Data: 96



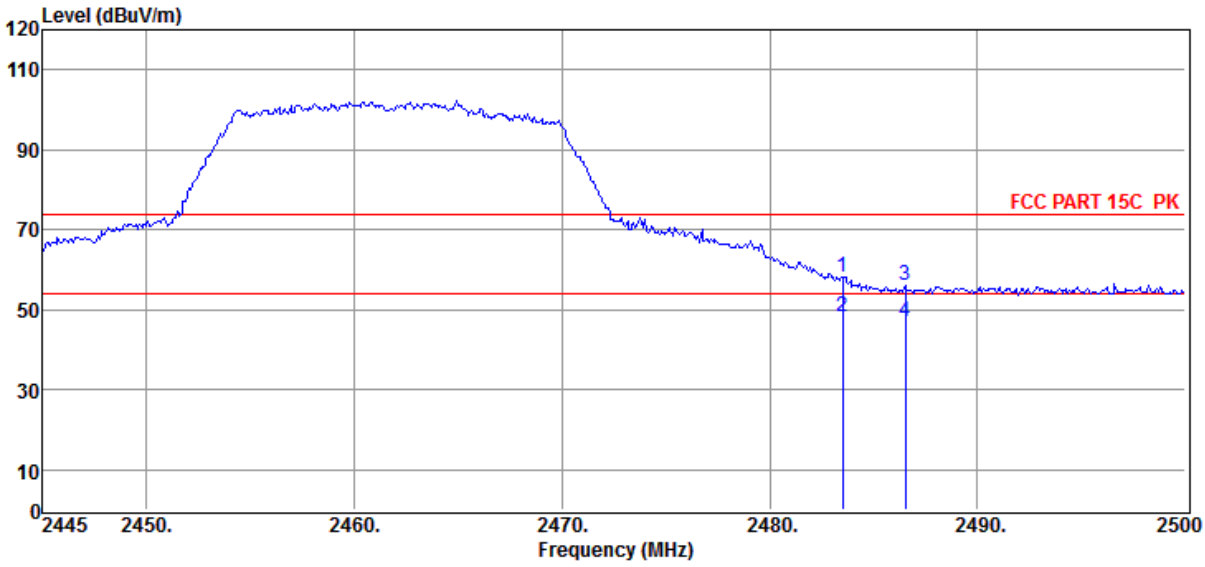
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2382.96	23.98	27.47	0.00	4.03	55.48	74.00	-18.52	Peak	HORIZONTAL
2	2382.96	12.09	27.47	0.00	4.03	43.59	54.00	-10.41	Average	HORIZONTAL
3	2390.00	22.88	27.48	0.00	4.03	54.39	74.00	-19.61	Peak	HORIZONTAL
4	2390.00	14.00	27.48	0.00	4.03	45.51	54.00	-8.49	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 2#	E:\2020 RE2# Report Data\Q20032021-1E HK-Citation 200\FCC ABOVE 1G.EM6	
Test Date	: 2020-05-31	**Tested By**	: Jacky
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 BBHA9120D/3m/HORIZONTAL
Memo	: 11G 2462		

Data: 99



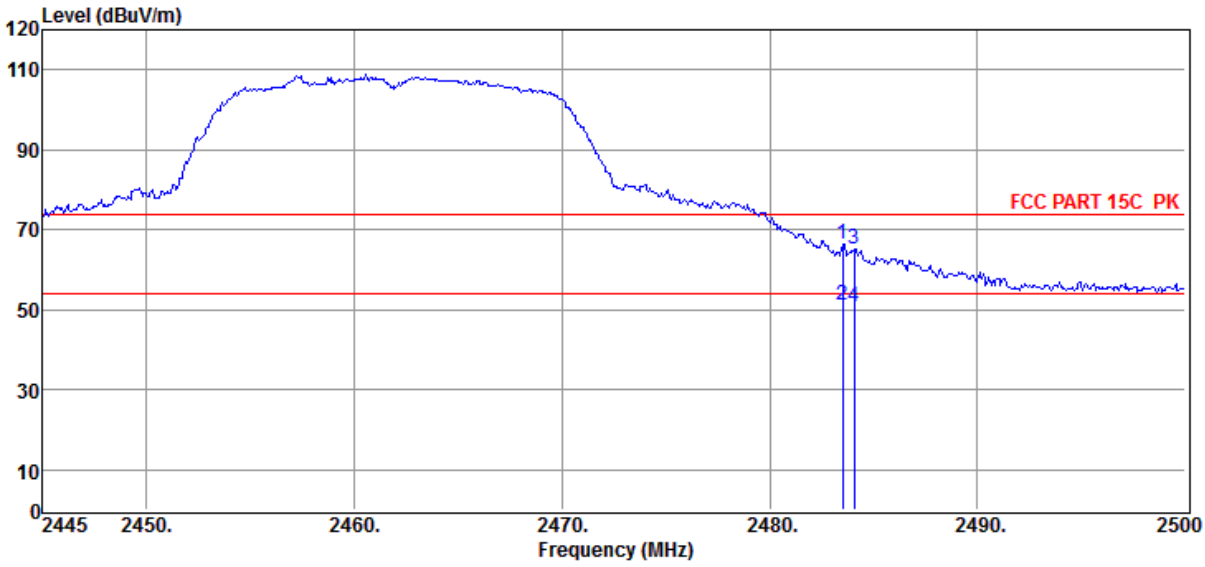
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	26.53	27.67	0.00	4.12	58.32	74.00	-15.68	Peak	HORIZONTAL
2	2483.50	16.41	27.67	0.00	4.12	48.20	54.00	-5.80	Average	HORIZONTAL
3	2486.53	24.35	27.67	0.00	4.13	56.15	74.00	-17.85	Peak	HORIZONTAL
4	2486.53	15.39	27.67	0.00	4.13	47.19	54.00	-6.81	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 2#	E:\2020 RE2# Report Data\Q20032021-1E HK-Citation 200\FCC ABOVE 1G.EM6	
Test Date	: 2020-05-31	**Tested By**	: Jacky
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 BBHA9120D/3m/VERTICAL
Memo	: 11G 2462		

Data: 100



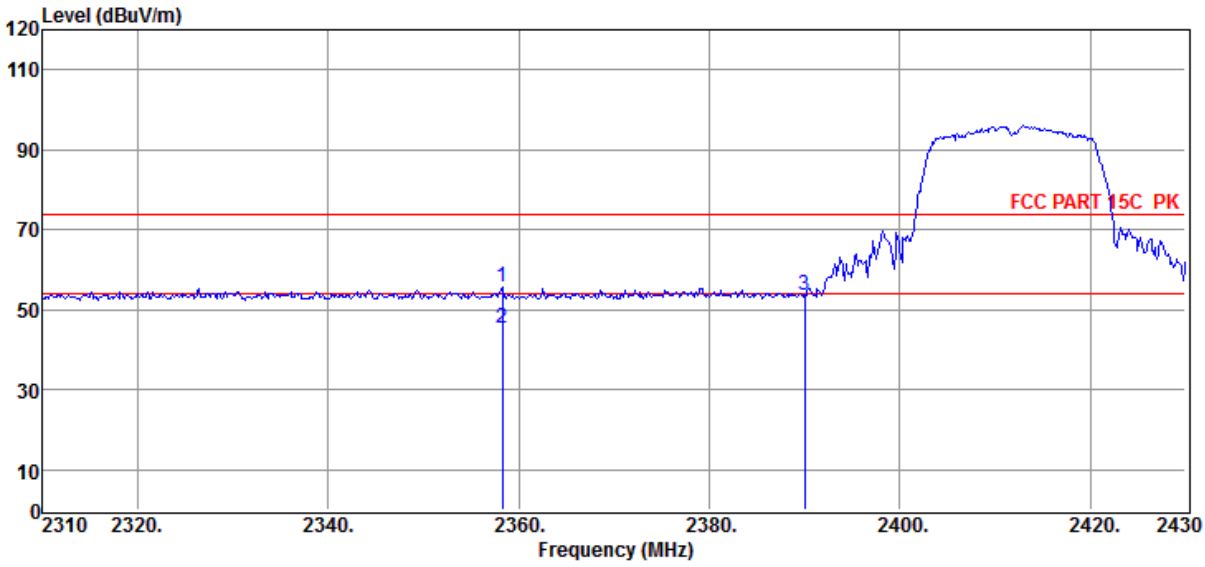
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	34.56	27.67	0.00	4.12	66.35	74.00	-7.65	Peak	VERTICAL
2	2483.50	19.30	27.67	0.00	4.12	51.09	54.00	-2.91	Average	VERTICAL
3	2484.05	33.37	27.67	0.00	4.12	65.16	74.00	-8.84	Peak	VERTICAL
4	2484.05	19.00	27.67	0.00	4.12	50.79	54.00	-3.21	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 2#		E:\2020 RE2# Report Data\Q20032021-1E HK-Citation 200\FCC ABOVE 1G.EM6
Test Date	: 2020-06-08	**Tested By**	: Jacky
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 BBHA9120D/3m/HORIZONTAL
Memo	: 11N20 2412		

Data: 103



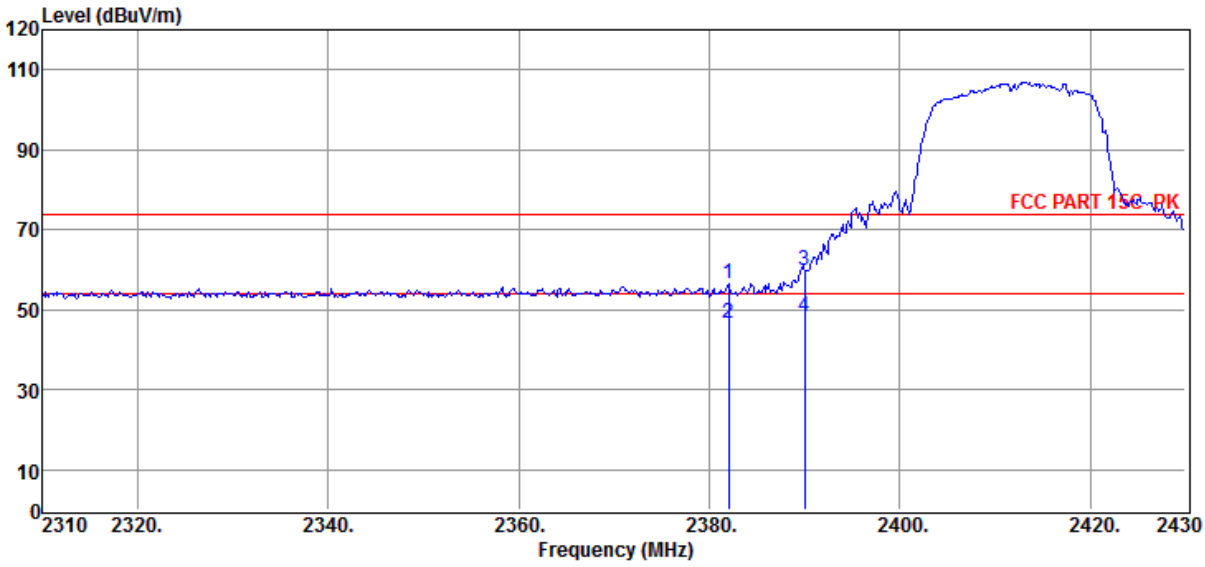
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2358.24	24.19	27.42	0.00	4.00	55.61	74.00	-18.39	Peak	HORIZONTAL
2	2358.24	13.87	27.42	0.00	4.00	45.29	54.00	-8.71	Average	HORIZONTAL
3	2390.04	21.99	27.48	0.00	4.03	53.50	74.00	-20.50	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 2#	E:\2020 RE2# Report Data\Q20032021-1E HK-Citation 200\FCC ABOVE 1G.EM6	
Test Date	: 2020-06-08	**Tested By**	: Jacky
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 BBHA9120D/3m/VERTICAL
Memo	: 11N20 2412		

Data: 104



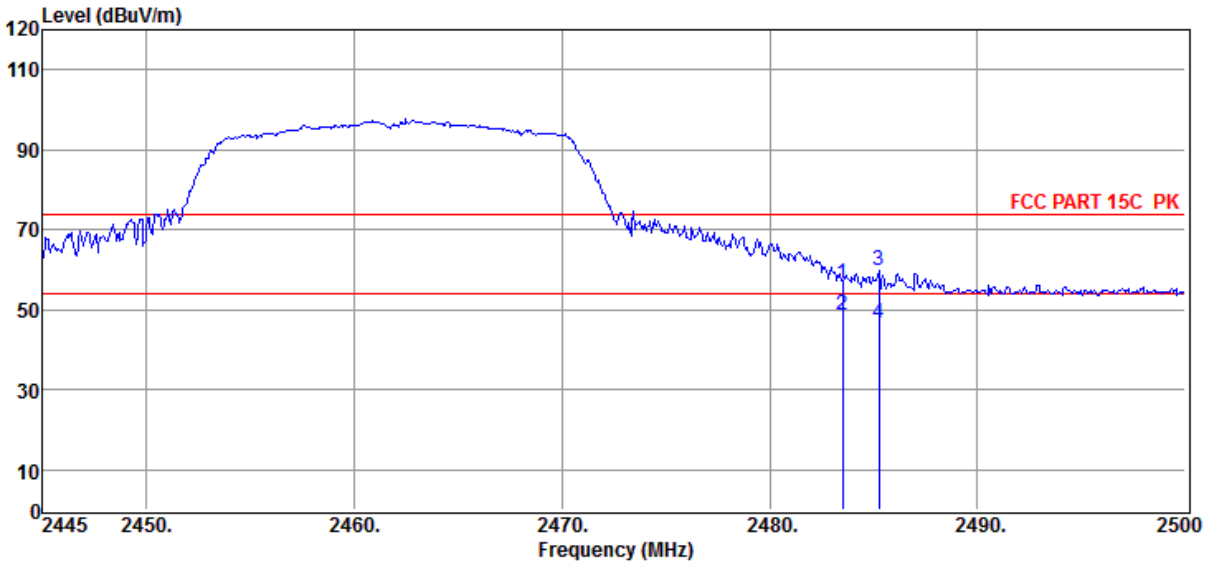
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2382.00	25.00	27.46	0.00	4.03	56.49	74.00	-17.51	Peak	VERTICAL
2	2382.00	14.97	27.46	0.00	4.03	46.46	54.00	-7.54	Average	VERTICAL
3	2390.00	28.15	27.48	0.00	4.03	59.66	74.00	-14.34	Peak	VERTICAL
4	2390.00	16.87	27.48	0.00	4.03	48.38	54.00	-5.62	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 2#	E:\2020 RE2# Report Data\Q20032021-1E HK-Citation 200\FCC ABOVE 1G.EM6	
Test Date	: 2020-05-31	**Tested By**	: Jacky
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 BBHA9120D/3m/HORIZONTAL
Memo	: 11N20 2462		

Data: 107



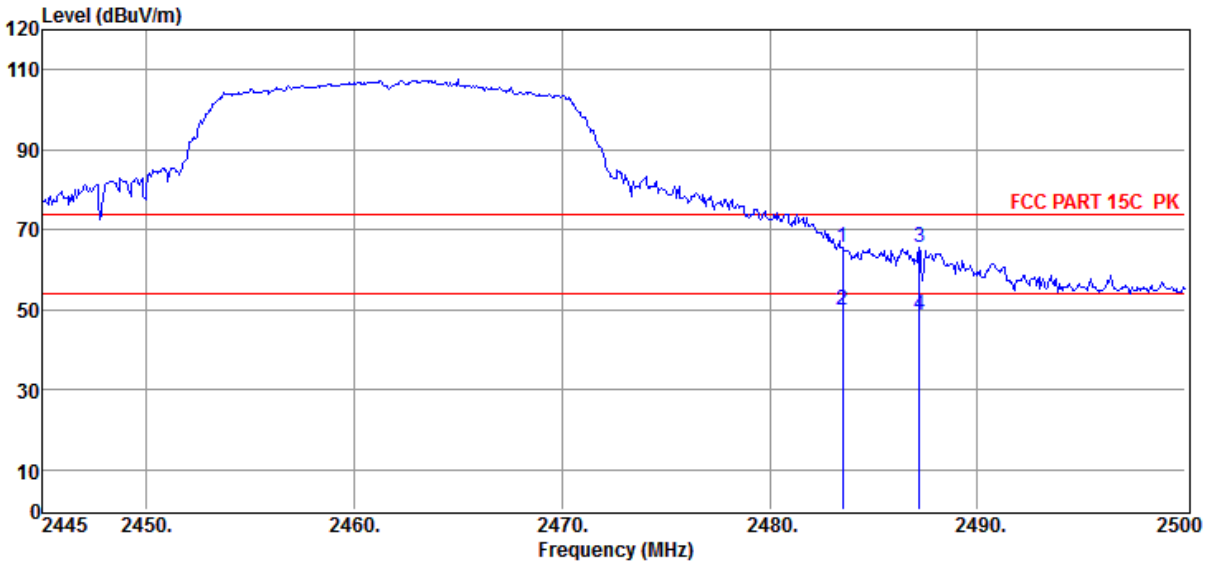
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	24.91	27.67	0.00	4.12	56.70	74.00	-17.30	Peak	HORIZONTAL
2	2483.50	16.87	27.67	0.00	4.12	48.66	54.00	-5.34	Average	HORIZONTAL
3	2485.26	28.05	27.67	0.00	4.13	59.85	74.00	-14.15	Peak	HORIZONTAL
4	2485.26	14.89	27.67	0.00	4.13	46.69	54.00	-7.31	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 2#	E:\2020 RE2# Report Data\Q20032021-1E HK-Citation 200\FCC ABOVE 1G.EM6	
Test Date	: 2020-05-31	**Tested By**	: Jacky
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 BBHA9120D/3m/VERTICAL
Memo	: 11N20 2462		

Data: 108



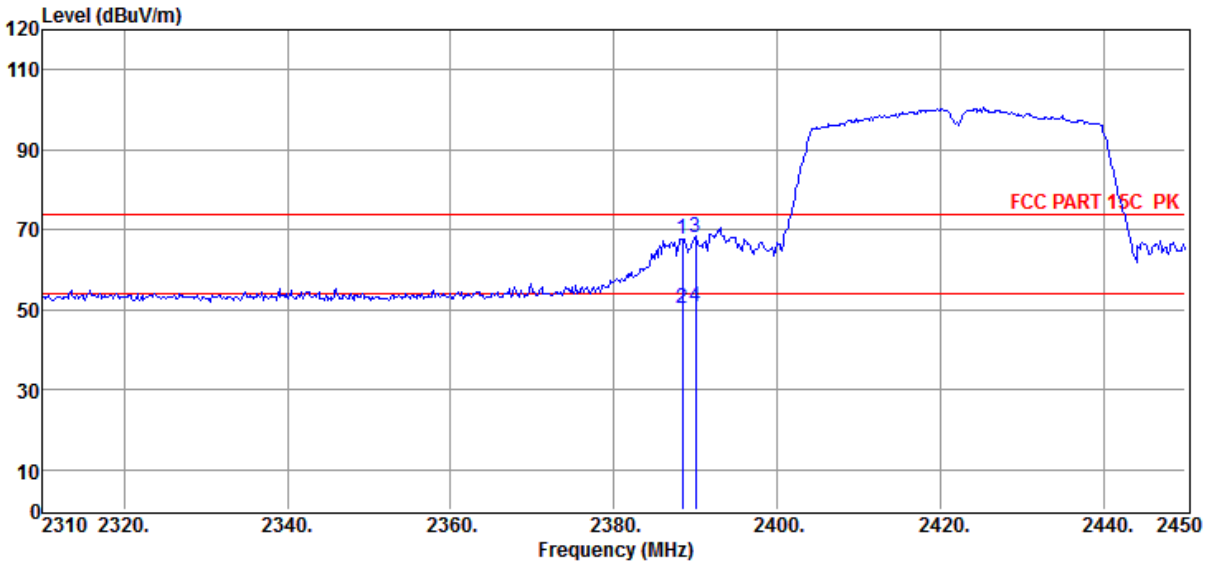
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	33.78	27.67	0.00	4.12	65.57	74.00	-8.43	Peak	VERTICAL
2	2483.50	18.00	27.67	0.00	4.12	49.79	54.00	-4.21	Average	VERTICAL
3	2487.19	33.86	27.67	0.00	4.13	65.66	74.00	-8.34	Peak	VERTICAL
4	2487.19	17.00	27.67	0.00	4.13	48.80	54.00	-5.20	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 2#	E:\2020 RE2# Report Data\Q20032021-1E HK-Citation 200\FCC ABOVE 1G.EM6	
Test Date	: 2020-05-31	**Tested By**	: Jacky
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 BBHA9120D/3m/VERTICAL
Memo	: 11N40 2422		

Data: 111



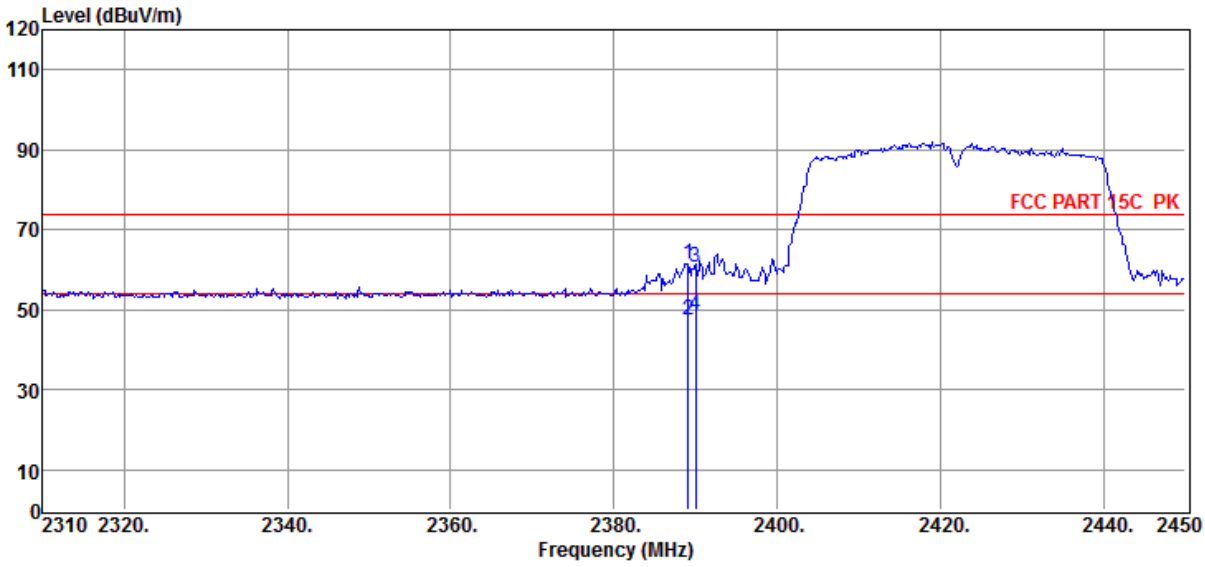
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2388.40	36.27	27.48	0.00	4.03	67.78	74.00	-6.22	Peak	VERTICAL
2	2388.40	19.00	27.48	0.00	4.03	50.51	54.00	-3.49	Average	VERTICAL
3	2390.00	36.55	27.48	0.00	4.03	68.06	74.00	-5.94	Peak	VERTICAL
4	2390.00	19.30	27.48	0.00	4.03	50.81	54.00	-3.19	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 2#	E:\2020 RE2# Report Data\Q20032021-1E HK-Citation 200\FCC ABOVE 1G.EM6	
Test Date	: 2020-05-31	**Tested By**	: Jacky
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 BBHA9120D/3m/HORIZONTAL
Memo	: 11N40 2422		

Data: 112



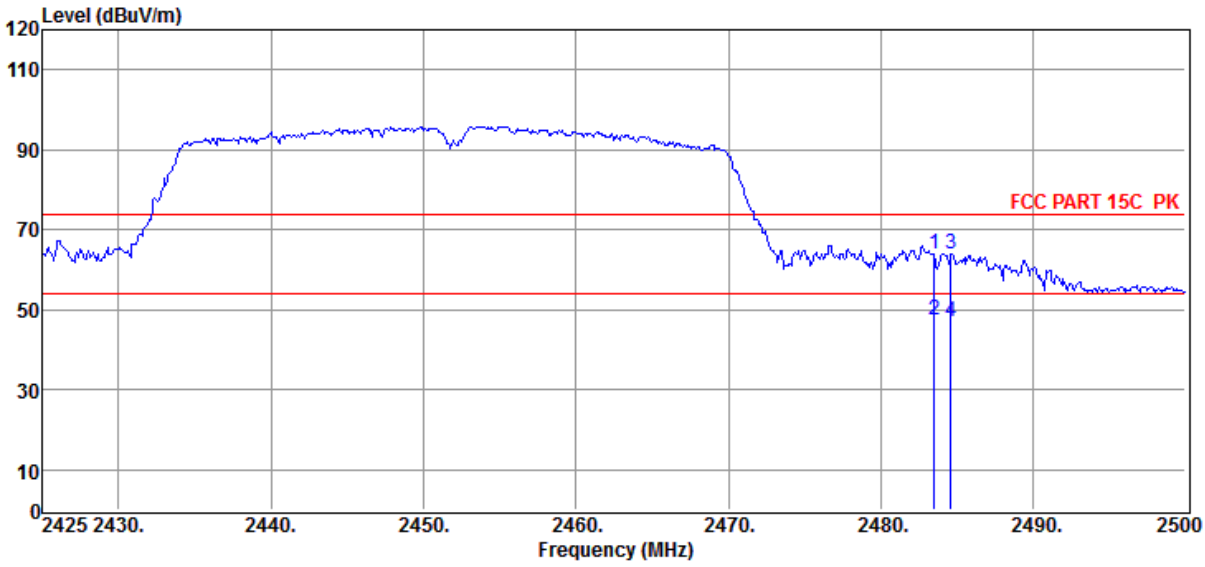
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2389.10	30.02	27.48	0.00	4.03	61.53	74.00	-12.47	Peak	HORIZONTAL
2	2389.10	16.00	27.48	0.00	4.03	47.51	54.00	-6.49	Average	HORIZONTAL
3	2390.00	29.25	27.48	0.00	4.03	60.76	74.00	-13.24	Peak	HORIZONTAL
4	2390.00	17.30	27.48	0.00	4.03	48.81	54.00	-5.19	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 2#	E:\2020 RE2# Report Data\Q20032021-1E HK-Citation 200\FCC ABOVE 1G.EM6	
Test Date	: 2020-05-31	**Tested By**	: Jacky
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 BBHA9120D/3m/HORIZONTAL
Memo	: 11N40 2452		

Data: 115



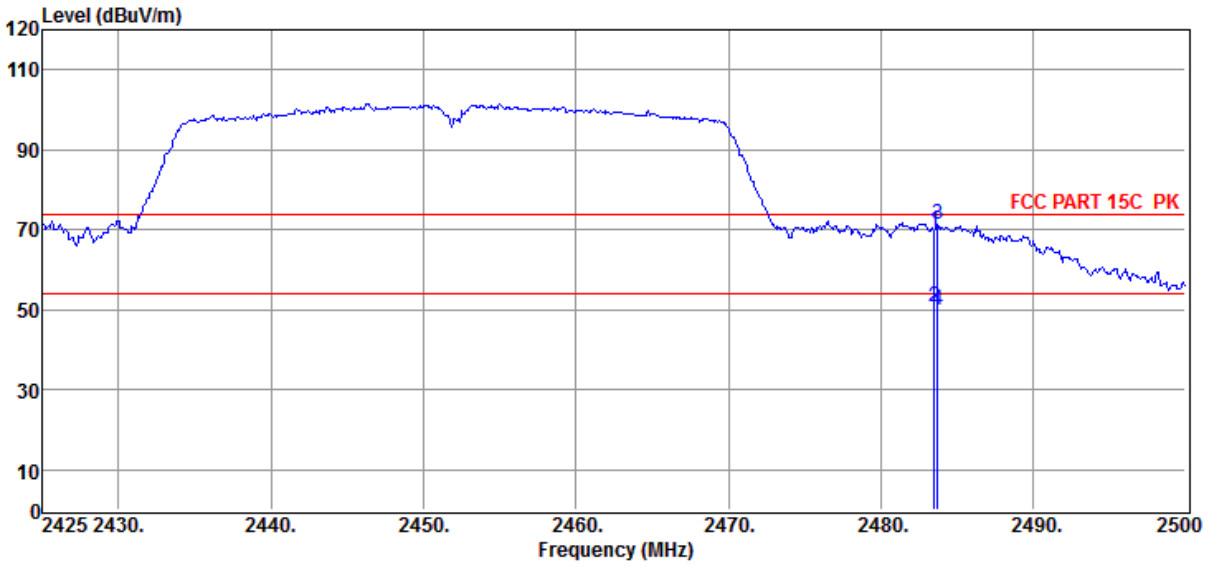
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	32.20	27.67	0.00	4.12	63.99	74.00	-10.01	Peak	HORIZONTAL
2	2483.50	15.54	27.67	0.00	4.12	47.33	54.00	-6.67	Average	HORIZONTAL
3	2484.63	32.10	27.67	0.00	4.13	63.90	74.00	-10.10	Peak	HORIZONTAL
4	2484.63	15.09	27.67	0.00	4.13	46.89	54.00	-7.11	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 2#	E:\2020 RE2# Report Data\Q20032021-1E HK-Citation 200\FCC ABOVE 1G.EM6	
Test Date	: 2020-05-31	**Tested By**	: Jacky
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: Battery	**Test Mode**	: Tx mode
Condition	: Temp:24.5'C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: 2019 BBHA9120D/3m/VERTICAL
Memo	: 11N40 2452		

Data: 116

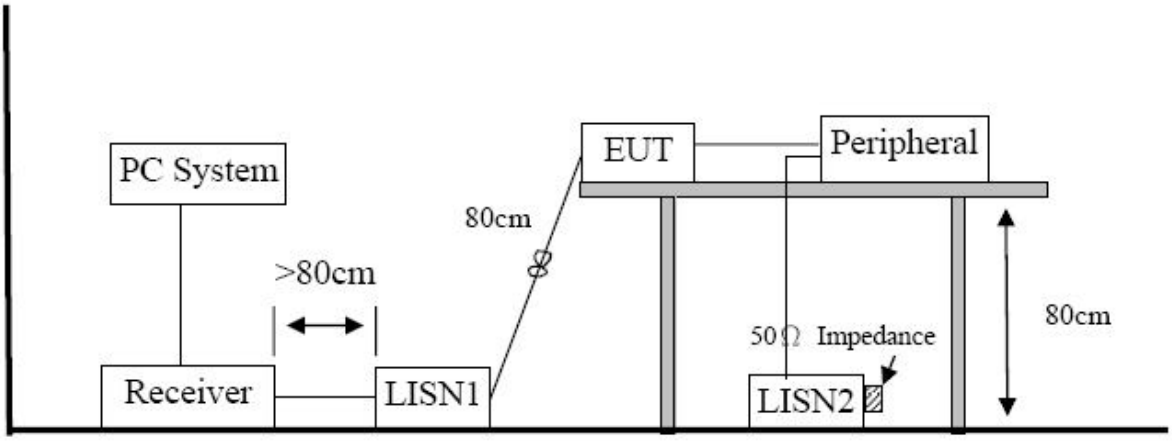


Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	37.80	27.67	0.00	4.12	69.59	74.00	-4.41	Peak	VERTICAL
2	2483.50	18.80	27.67	0.00	4.12	50.59	54.00	-3.41	Average	VERTICAL
3	2483.73	39.67	27.67	0.00	4.12	71.46	74.00	-2.54	Peak	VERTICAL
4	2483.73	18.00	27.67	0.00	4.12	49.79	54.00	-4.21	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

10. Power Line Conducted Emission

10.1. Block diagram of test setup



10.2. Power line conducted emission limits (Class B)

Frequency	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150 kHz ~ 500 kHz	66 ~ 56*	56 ~ 46*
500 kHz ~ 5 MHz	56	46
5 MHz ~ 30 MHz	60	50

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

10.3. Test procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30 MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 kHz.

10.4. Test Result

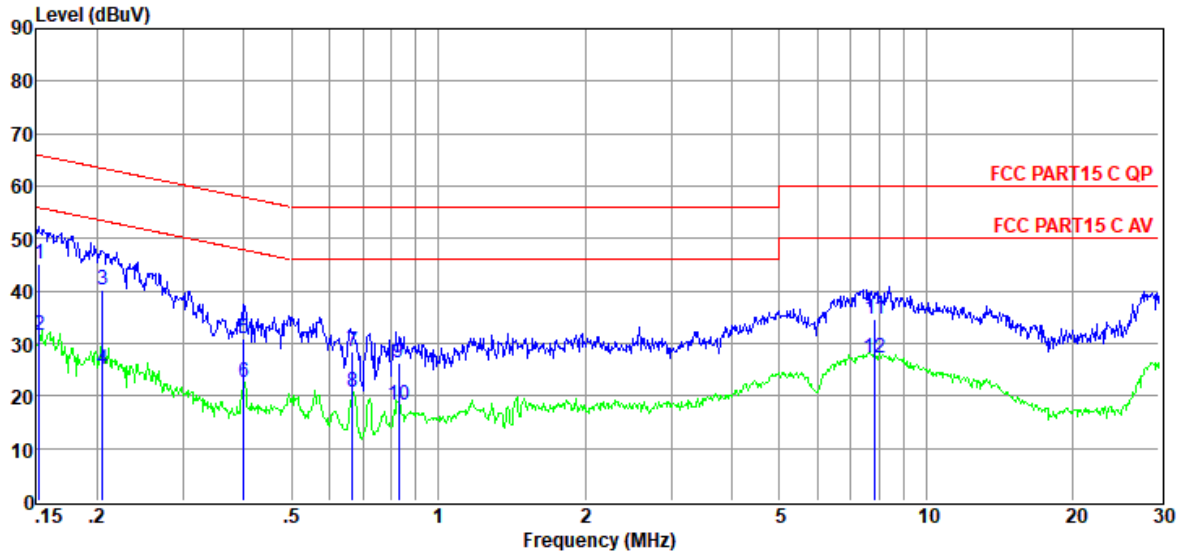
PASS. (See below detailed test result)

Note1: All emissions not reported below are too low against the prescribed limits.
Note2: "-----" means peak detection; "-----" means average detection
Note3: Pre-test AC conducted emission at both voltage AC 120V/60Hz and AC 240V/50Hz, recorded worse case.

TR-4-E-010 Conducted Emission Test Result

Test Site	: DDT 1# Shield Room	D:\2020 CE report data\Q20032021-1E\FCC PART15 C CE.EM6	
Test Date	: 2020-04-26	**Tested By**	: Lori Mi
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: AC 120V/60Hz	**Test Mode**	: Tx mode
Condition	: TEMP:24.5℃, RH:55%, BP:101.4kPa	**LISN**	: 2019 ENV216 1#/NEUTRAL
Memo	:		

Data: 18



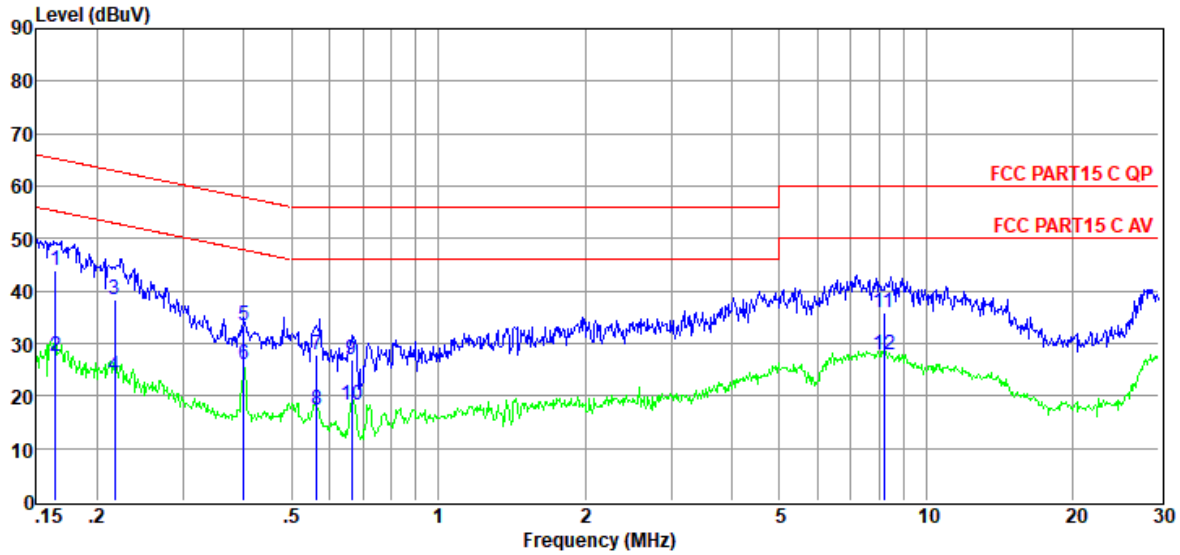
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBµV)	Limit Line (dBµV)	Over Limit (dB)	Detector	Phase
1	0.15	25.82	9.60	0.01	9.86	45.29	65.87	-20.58	QP	NEUTRAL
2	0.15	12.05	9.60	0.01	9.86	31.52	55.87	-24.35	Average	NEUTRAL
3	0.21	20.84	9.60	0.02	9.86	40.32	63.40	-23.08	QP	NEUTRAL
4	0.21	5.47	9.60	0.02	9.86	24.95	53.40	-28.45	Average	NEUTRAL
5	0.40	11.46	9.60	0.02	9.86	30.94	57.86	-26.92	QP	NEUTRAL
6	0.40	2.95	9.60	0.02	9.86	22.43	47.86	-25.43	Average	NEUTRAL
7	0.67	8.85	9.60	0.03	9.86	28.34	56.00	-27.66	QP	NEUTRAL
8	0.67	1.24	9.60	0.03	9.86	20.73	46.00	-25.27	Average	NEUTRAL
9	0.83	6.90	9.60	0.03	9.86	26.39	56.00	-29.61	QP	NEUTRAL
10	0.83	-1.20	9.60	0.03	9.86	18.29	46.00	-27.71	Average	NEUTRAL
11	7.85	15.02	9.60	0.10	9.88	34.60	60.00	-25.40	QP	NEUTRAL
12	7.85	7.70	9.60	0.10	9.88	27.28	50.00	-22.72	Average	NEUTRAL

Note: 1. Result Level = Read Level +LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site	: DDT 1# Shield Room	D:\2020 CE report data\Q20032021-1E\FCC PART15 C CE.EM6	
Test Date	: 2020-04-26	**Tested By**	: Lori Mi
EUT	: Wireless Speaker	**Model Number**	: CITATION 200
Power Supply	: AC 120V/60Hz	**Test Mode**	: Tx mode
Condition	: TEMP:24.5℃, RH:55%, BP:101.4kPa	**LISN**	: 2019 ENV216 1#/LINE
Memo	:		

Data: 20



Item (Mark)	Freq. (MHz)	Read Level (dBµV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBµV)	Limit Line (dBµV)	Over Limit (dB)	Detector	Phase
1	0.16	24.30	9.60	0.01	9.86	43.77	65.25	-21.48	QP	LINE
2	0.16	8.03	9.60	0.01	9.86	27.50	55.25	-27.75	Average	LINE
3	0.22	18.98	9.60	0.02	9.86	38.46	62.92	-24.46	QP	LINE
4	0.22	4.18	9.60	0.02	9.86	23.66	52.92	-29.26	Average	LINE
5	0.40	13.84	9.60	0.02	9.86	33.32	57.86	-24.54	QP	LINE
6	0.40	6.35	9.60	0.02	9.86	25.83	47.86	-22.03	Average	LINE
7	0.56	8.37	9.60	0.03	9.86	27.86	56.00	-28.14	QP	LINE
8	0.56	-2.30	9.60	0.03	9.86	17.19	46.00	-28.81	Average	LINE
9	0.66	7.45	9.60	0.03	9.86	26.94	56.00	-29.06	QP	LINE
10	0.66	-1.19	9.60	0.03	9.86	18.30	46.00	-27.70	Average	LINE
11	8.19	16.17	9.60	0.10	9.88	35.75	60.00	-24.25	QP	LINE
12	8.19	8.32	9.60	0.10	9.88	27.90	50.00	-22.10	Average	LINE

Note: 1. Result Level = Read Level +LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

11. Antenna Requirements

11.1. Limit

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

11.2. Result

The antennas used for this product are Dedicated FPCB antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain is 3.17 dBi.

END OF REPORT