Prüfbericht - Produkte
Test Report - Products

TÜVRheinland®

Prüfbericht-Nr.: *Test report no.:*	**60417921 001**	**Auftrags-Nr.:** *Order no.:*	168281739	Seite 1 von 27 *Page 1 of 27*
Kunden-Referenz-Nr.: *Client reference no.:*	N/A	**Auftragsdatum:** *Order date:*	2020-09-10	
Auftraggeber: *Client:*	**BlueAnt Wireless** Suite 6 , 861 Doncaster Road, Doncaster East, Victoria 3109, Australia			
Prüfgegenstand: *Test item:*	BlueAnt X5 Powerful Bluetooth speaker			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	X5 (Trademark: BlueAnt)			
Auftrags-Inhalt: *Order content:*	FCC and IC approval			
Prüfgrundlage: *Test specification:*	CFR47 FCC Part 15: Subpart C Section 15.247 CFR47 FCC Part 15: Subpart C Section 15.207 CFR47 FCC Part 15: Subpart C Section 15.209 CFR47 FCC Part 2.1093		RSS-247 Issue 2 February 2017 RSS-Gen Issue 5 March 2019 RSS-102 Issue 5 March 2015	

Wareneingangsdatum: *Date of sample receipt:*	2020-09-11	Please refer to photo documents
Prüfmuster-Nr.: *Test sample no.:*	A002883872-001	
Prüfzeitraum: *Testing period:*	2020-09-16 – 2020-09-29	
Ort der Prüfung: *Place of testing:*	TÜV Rheinland (Shenzhen) Co., Ltd.	
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shenzhen) Co., Ltd.	
Prüfergebnis*: *Test result*:*	Pass	

geprüft von: *tested by:*	X Alex Lan	**genehmigt von:** *authorized by:*	X Winnie Hou
Datum: *Date:* 2021-02-04	Signed by: Alex Lan	**Ausstellungsdatum:** *Issue date:* 2021-02-04	Signed by: Winnie Hou
Stellung / Position	Senior Project Engineer	**Stellung** / Position	Department Manager

Sonstiges / *Other:*

FCC ID: VHF-BLUEANT-X5
IC: 7252A-X5 HVIN: X5

Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery:*	Prüfmuster vollständig und unbeschädigt *Test item complete and undamaged:*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhalt
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specifications(s)		*F(ail) = failed a.m. test specifications(s)*	*N/A = not applicable*	*N/T = not tested*

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Test Summary

5.1.1 ANTENNA REQUIREMENT
RESULT: Pass

5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER
RESULT: Pass

5.1.3 99% BANDWIDTH
RESULT: Pass

5.1.4 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHZ BANDWIDTH
RESULT: Pass

5.1.5 RADIATED SPURIOUS EMISSION
RESULT: Pass

5.1.6 20DB BANDWIDTH
RESULT: Pass

5.1.7 CARRIER FREQUENCY SEPARATION
RESULT: Pass

5.1.8 NUMBER OF HOPPING FREQUENCY
RESULT: Pass

5.1.9 TIME OF OCCUPANCY
RESULT: Pass

5.1.10 CONDUCTED EMISSION ON AC MAINS
RESULT: Pass

6.1.1 ELECTROMAGNETIC FIELDS
RESULT: Pass

Contents

1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Photographs of the Test Set-up

Appendix B: Test Results of Conducted Testing

Appendix C: Test Results of Radiated Testing & AC Mains Conducted Emission

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

No. 362 Huanguan Road Middle, Longhua District, Shenzhen 518110, People's Republic of China

FCC Registration No.: 694916

IC Registration No.: 25069

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

TÜV Rheinland (Shenzhen) Co., Ltd.

Radiated Emission				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
EMI Test Receiver	R&S	ESR7	102022	2021-08-19
Bilog Antenna	TESEQ	CBL6112D	51321	2021-08-29
Conducted Emissions				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
EMI Test Receiver	R&S	ESR3	102428	2021-08-19
Artificial Mains Network	R&S	ENV216	102333	2021-08-19
Radio Spectrum Testing				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Wireless Connectivity Tester	Rohde & Schwarz	CMW270	101375	2021-08-30
Signal Analyzer	Rohde & Schwarz	FSV 40	101441	2021-08-30
Vector Signal Generator	Rohde & Schwarz	SMBV100A	263301	2021-08-30
Signal Generator	Rohde & Schwarz	SMB100A	115186	2021-08-30
OSP	Rohde & Schwarz	OSP 150	101017	2020-12-20
Control PC	DELL	OptiPlex 7050	FTJZ9P2	N/A
Test Software	Rohde & Schwarz	WMS32 (V10.40.10)	N/A	N/A
Power Meter	Rohde & Schwarz	NRP2	107105	2020-12-20
Wideband Power Sensor	Rohde & Schwarz	NRP-Z81	105350	2020-12-20
Unwanted Emission Testing				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Signal Generator	Rohde & Schwarz	SMB100A	180840	2021-08-30
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	165339	2021-08-30
Signal Analyzer	Rohde & Schwarz	FSV 40	101440	2021-08-30
System Controller Interface	Rohde & Schwarz	SCI-100	S10010036	N/A
Filterbank	Rohde & Schwarz	CDMA	100751	2021-08-30
Filterbank	Rohde & Schwarz	GSM	100811	2021-08-30
OSP	Rohde & Schwarz	OSP 120	102041	N/A
OSP	Rohde & Schwarz	OSP 150	101385	N/A
Pre-amplifier	Rohde & Schwarz	SCU08F1	08320030	2021-08-30
Amplifier	Rohde & Schwarz	SCU-18F	180079	2021-08-30
Amplifier	Rohde & Schwarz	SCU40A	100450	2021-09-03
Trilog Broadband Antenna (30 MHz - 1 GHz)	Schwarzbeck	VULB9162	192	2021-09-02

Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218719	2021-09-02
Wideband Ridged Horn Antenna (12-18 GHz)	Steatite	QMS-00208	18312	2021-09-02
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19066	2021-09-02
Biconical Broadband Antenna (30 MHz - 1 GHz)	Schwarzbeck	VUBA 9117	357	2021-09-02
Double Ridged Broadband Horn Antenna (1 – 18 GHz)	Schwarzbeck	BBHA 9120 D	01760	2021-09-02
Broadband Horn Antenna (15 – 40 GHz)	Schwarzbeck	BBHA 9170	00862	2021-09-02
Test software	Rohde & Schwarz	EMC32 (V10.40.00)	N/A	N/A
Control PC	Dell	OptiPlex 7050	36NW9P2	N/A

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basics using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table

Item		**Extended Uncertainty**
Conducted Emission		± 2.74 dB
Radiated Emission (30-1000MHz)	Field strength (dBμV/m)	4.27dB
Radiated Emission (above 1000MHz)	Field strength (dBμV/m)	4.46dB
Radio Spectrum		± 1.5 dB

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B & C of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at No. 362 Huanguan Road Middle, Longhua District, Shenzhen 518110, People's Republic of China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is a BlueAnt X5 Powerful Bluetooth speaker which supports Bluetooth 5.0 (BDR&EDR) technology.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

General Information of EUT	**Value**
Kind of Equipment	BlueAnt X5 Powerful Bluetooth speaker
Type Designation	X5
Trade Mark	BlueAnt
FCC ID	VHF-BLUEANT-X5
IC	7252A-X5
HVIN	X5
Operating Voltage	DC 9V, 2A via AC/DC Adapter or DC 7.4V, 5200mAh, 38.48Wh by internal Lithium-ion battery
Testing Voltage	AC 120V, 60Hz
AC/DC Adapter	Model: SUN-0900200-090 Rated Input: AC 100-240V, 50/60Hz, 0.5A Rated Output: DC 9V, 2A 18.0W
Technical Specification of Bluetooth	
Technical Specification	**Value**
Operating Frequency	2402 - 2480 MHz
Type of Modulation	GFSK, π/4DQPSK, 8DPSK
Channel Number	BDR & EDR mode:79 channels
Channel Separation	BDR & EDR mode:1MHz
Wireless Technology	Bluetooth 5.0
Antenna Type	Integral Antenna
Max. Antenna Gain	1.20 dBi

Table 3: RF Channel and Frequency of Bluetooth

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
00	**2402.00**	20	2422.00	40	2442.00	60	2462.00
01	2403.00	21	2423.00	41	2443.00	61	2463.00
02	2404.00	22	2424.00	42	2444.00	62	2464.00
03	2405.00	23	2425.00	43	2445.00	63	2465.00
04	2406.00	24	2426.00	44	2446.00	64	2466.00
05	2407.00	25	2427.00	45	2447.00	65	2467.00
06	2408.00	26	2428.00	46	2448.00	66	2468.00
07	2409.00	27	2429.00	47	2449.00	67	2469.00
08	2410.00	28	2430.00	48	2450.00	68	2470.00
09	2411.00	29	2431.00	49	2451.00	69	2471.00
10	2412.00	30	2432.00	50	2452.00	70	2472.00
11	2413.00	31	2433.00	51	2453.00	71	2473.00
12	2414.00	32	2434.00	52	2454.00	72	2474.00
13	2415.00	33	2435.00	53	2455.00	73	2475.00
14	2416.00	34	2436.00	54	2456.00	74	2476.00
15	2417.00	35	2437.00	55	2457.00	75	2477.00
16	2418.00	36	2438.00	56	2458.00	76	2478.00
17	2419.00	37	2439.00	57	2459.00	77	2479.00
18	2420.00	38	2440.00	58	2460.00	**78**	**2480.00**
19	2421.00	**39**	**2441.00**	59	2461.00	--	--

Table 4: Frequency Hopping Information

Technical Specification	Description
Hopping Range	Hereby we declare that the frequency range of this device is 2402-2480MHz. This is according the Bluetooth Core Specification V5.0 for devices which will be operated in the USA. This was checked during the Bluetooth Qualification tests.
Hopping Sequence	Example of a 79 hopping sequence in data mode: 33,04,21,44,23,42,53,46,55,48,40,59,72,29,76,31,08,73, 07,75,09,45,60,39,58,13,47,11,77,52,35,50,65,54,67,56, 69,62,71,64, 7,25,27,66,57,70,74,61,78,63,10,41,05,43, 15,44,64,68,02,70,06,01,51,03,55,05,03,66,53,49,36,47..
Receiver input bandwidth	The input bandwidth of the receiver is 1MHz. In every connection one Bluetooth device is the master and the other one is the slave. The master determines the hopping sequence. The slave follows this sequence. Both devices shift between RX and TX time slot according to the clock of the master. Additionally the type of connection is set up at the beginning of the connection. The master adapts its hopping frequency and its TX/RX timing according to the packet type of the connection. Also the slave of the connection will use these settings. Repeating of a packer has no influence on the hopping sequence. The hopping sequence generated by the master of the connection will be followed in any case. That means a repeated packet will not be send on the same frequency, it is send on the next frequency of the hopping sequence.

3.3 Independent Operation Modes

The basic operation modes are:

A. On
   1. Bluetooth transmitting mode (BDR & EDR mode)
      a) Low Channel
      b) Middle Channel
      c) High Channel

B. On, Transmitting on Hopping channel

C. On, Bluetooth connecting mode

D. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Application Form
- Block Diagram
- Schematics
- Technical Description
- FCC/IC Label and Location Info
- Photo Document
- User Manual

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in ANSI C63.10: 2013.

4.3 Special Accessories and Auxiliary Equipment

Table 5: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N
Mobile Phone	HTC	D626w	N/A
Notebook	Lenovo	ThinkPad X260	N/A

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

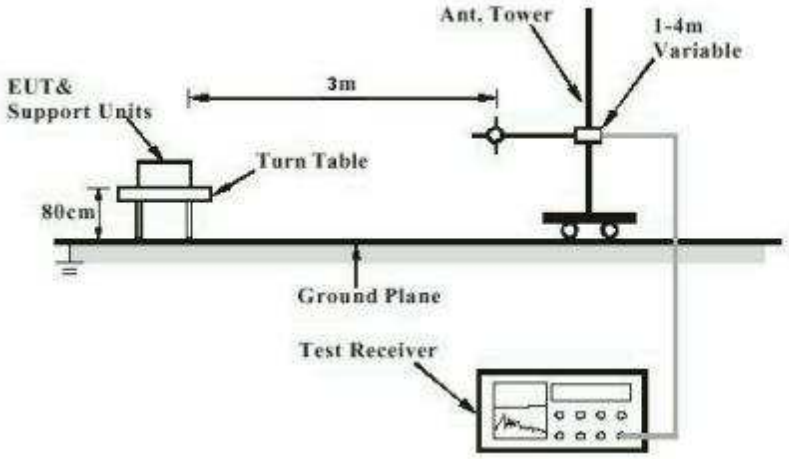


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

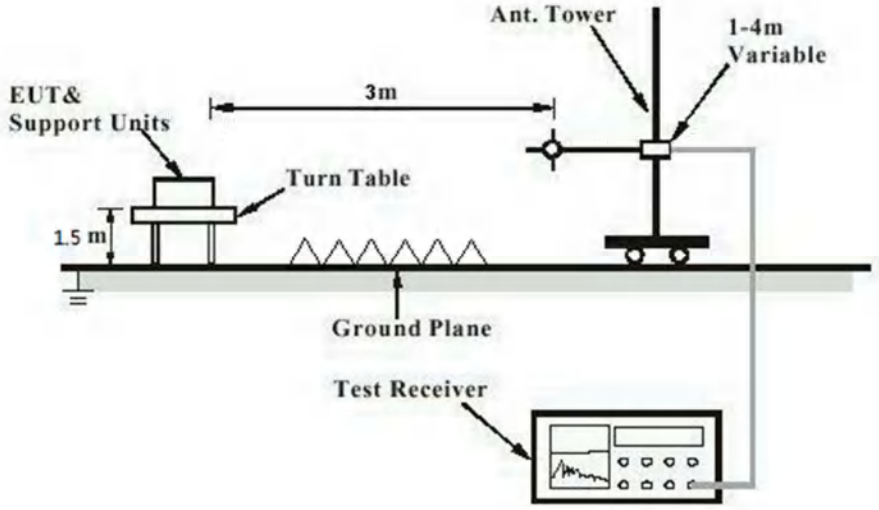


Diagram of Measurement Configuration for Mains Conduction Measurement

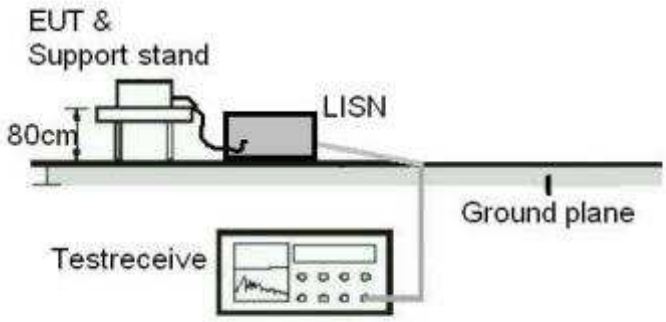
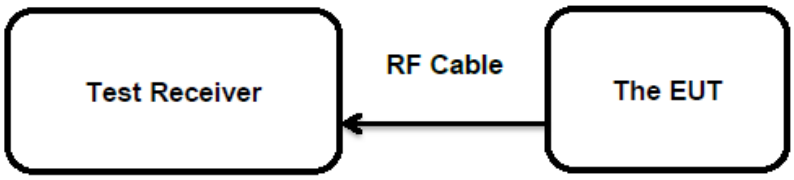


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT: **Pass**

Test Specification

Test standard : FCC Part 15.247(b)(4) and Part 15.203
RSS-Gen Clause 8.3

According to the manufacturer declared, the EUT has an integral antenna, the directional gain of antenna is 1.2 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

5.1.2 Maximum Peak Conducted Output Power

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(b)(1) RSS-247 Clause 5.4(b)
Basic standard	:	ANSI C63.10: 2013
Limits	:	FHSS<0.125W(Maximum peak conducted output power) < 4 W (e.i.r.p.)
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	16.09.2020
Input voltage	:	AC 120V, 60Hz
Operation mode	:	A.1
Test channel	:	Low / Middle / High
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Table 6: Test Result of Maximum Peak Conducted Output Power

Test Mode	Channel Frequency (MHz)	Measured Peak Output Power		Limit (W)
		(dBm)	(W)	
BDR	2402	-0.6	0.00087	< 0.125
	2441	-0.3	0.00093	
	2480	0.4	0.00110	
EDR	2402	2.2	0.00166	< 0.125
	2441	2.6	0.00182	
	2480	3.5	0.00224	

Note: The cable loss is taken into account in results and the maximum e.i.r.p. is 4.7 dBm less than 4W(36dBm).

5.1.3 99% Bandwidth

RESULT: **Pass**

Test Specification

Test standard	:	RSS-Gen Clause 6.7
Basic standard	:	ANSI C63.10: 2013
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	16.09.2020
Input voltage	:	AC 120V, 60Hz
Operation mode	:	A.1
Test channel	:	Low / Middle / High
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Table 7: Test Result of 99% Bandwidth

Test Mode	Channel Frequency (MHz)	99% Bandwidth (kHz)	Limit (kHz)
BDR	2402	860	/
	2441	860	
	2480	865	
EDR	2402	1185	/
	2441	1190	
	2480	1190	

For the measurement records, refer to the appendix B

5.1.4 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(d) RSS-247 Clause 5.5
Basic standard	:	ANSI C63.10: 2013
Limits	:	20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power);
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	16.09.2020
Input voltage	:	AC 120V, 60Hz
Operation mode	:	A.1
Test channel	:	Low / Middle / High
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to following test plot, and compliance is achieved as well.

For the measurement records, refer to the appendix B.

5.1.5 Radiated Spurious Emission

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(d) & FCC Part 15.205 RSS-247 Clause 3.3
Basic standard	:	ANSI C63.10: 2013
Limits	:	Refer to 15.209(a) of FCC part 15.247(d) RSS-Gen Table 6 & Table 7
Kind of test site	:	3m Semi-anechoic Chamber

Test Setup

Date of testing	:	16.09.2020 - 28.09.2020
Input voltage	:	AC 120V, 60Hz
Operation mode	:	A.1
Test channel	:	Low / Middle / High
Ambient temperature	:	23 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Remark:
During the pretest the EUT was rotated through three orthogonal axes to determine the attitude that maximizes the emissions. After that the EUT was manually handled to find the orientation that has the maximum emission, which is the orientation shown in the test set-up photos.

Testing was carried out within frequency range 9kHz to the tenth harmonics.

For the measurement records, refer to the appendix C.

5.1.6 20dB Bandwidth

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(a)(1) RSS-247 Clause 5.1(a)
Basic standard	:	ANSI C63.10: 2013
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	16.09.2020
Input voltage	:	AC 120V, 60Hz
Operation mode	:	A.1
Test channel	:	Low / Middle / High
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Table 8: Test Result of 20dB Bandwidth

Test Mode	Channel Frequency (MHz)	20dB Bandwidth (kHz)	2/3 of 20dB Bandwidth (kHz)	Limit (MHz)
BDR	2402	930	620.000	/
	2441	930	620.000	
	2480	930	620.000	
EDR	2402	1270	846.667	/
	2441	1270	846.667	
	2480	1270	846.667	

For the measurement records, refer to the appendix B.

5.1.7 Carrier Frequency Separation

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(a)(1) RSS-247 Clause 5.1(b)
Basic standard	:	ANSI C63.10: 2013
Limits	:	≥ 25kHz or 2/3 of 20dB bandwidth, whichever is greater
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	16.09.2020
Input voltage	:	AC 120V, 60Hz
Operation mode	:	B
Test channel	:	Low / Middle / High
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Table 9: Test Result of Carrier Frequency Separation

Test Mode	Channel	Channel Frequency (MHz)	Measured Channel Separation (MHz)	Limit (kHz)	Result
BDR	Low Channel	2401.935644	1.009901	≥ 25kHz or 2/3 of 20dB bandwidth	Pass
	Adjacency Channel	2402.945545			
	Middle Channel	2440.935644	1.009901		Pass
	Adjacency Channel	2441.945545			
	High Channel	2478.935644	1.009901		Pass
	Adjacency Channel	2479.945545			
EDR	Low Channel	2401.935644	1.039604	≥ 25kHz or 2/3 of 20dB bandwidth	Pass
	Adjacency Channel	2402.975248			
	Middle Channel	2440.935644	1.039604		Pass
	Adjacency Channel	2441.975248			
	High Channel	2478.935644	1.039604		Pass
	Adjacency Channel	2479.975248			

Note:

The limit is maximum 2/3 of the 20 dB bandwidth: 846.667 KHz.

For the measurement records, refer to the appendix B.

5.1.8 Number of Hopping Frequency

RESULT: **Pass**

Test Specification

Test standard	:	FCC part 15.247(a)(1)(iii) RSS-247 Clause 5.1(d)
Basic standard	:	ANSI C63.10: 2013
Limits	:	≥ 15 non-overlapping channels
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	16.09.2020
Input voltage	:	AC 120V, 60Hz
Operation mode	:	B
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Table 10: Test Result of Number of Hopping Frequency

Frequency Range	Measured Quantity of Hopping Channel	Limit	Result
2402 to 2480 MHz	79	≥15	Pass

For the measurement records, refer to the appendix B.

5.1.9 Time of Occupancy

RESULT: **Pass**

Test Specification

Test standard	:	FCC part 15.247(a)(1)(iii) RSS-247 Clause 5.1(d)
Basic standard	:	ANSI C63.10: 2013
Limits	:	< 0.4s
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	16.09.2020
Input voltage	:	AC 120V, 60Hz
Operation mode	:	B
Test channel	:	Low / Middle / High
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

Table 11: Test Result of Time of Occupancy

Test Mode	Channel	Data Packet	Pulse width (ms)	Measured Dwell time(s)	Limit (s)
BDR	2441	DH1	0.435	0.139	< 0.4s
		DH3	1.696	0.271	
		DH5	2.957	0.315	
EDR	2441	2DH1	0.435	0.139	< 0.4s
		2DH3	1.681	0.269	
		2DH5	2.957	0.315	

Note:

Dwell time = Pulse width x (Hopping rate / Number of channels) x Period

Period = 0.4 x 79 (channel) = 31.6 seconds

5.1.10 Conducted Emission on AC Mains

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.207(a) RSS-Gen Clause 8.8
Basic standard	:	ANSI C63.10: 2013
Frequency range	:	0.15 – 30MHz
Limits	:	FCC Part 15.207(a) RSS-Gen Table 4
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	29.09.2020
Input voltage	:	AC 120V/60Hz
Operation mode	:	C
Earthing	:	Not connected
Ambient temperature	:	25 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix C.

6 Safety Human Exposure

6.1 Radio Frequency Exposure Compliance

6.1.1 Electromagnetic Fields

RESULT: **Pass**

Test Specification

Test standard	:	CFR47 FCC Part 2.1093
		RSS-102 Issue 5 March 2015
		FCC KDB Publication 447498 v06
Limit	:	CFR47 FCC Part 1.1310

The measured maximum conducted output power of the EUT is 3.5dBm ≈ 2.24 mW, which is far below the SAR exclusion threshold level 10mW (SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm), hence the EUT is excluded from SAR evaluation according to FCC KDB publication 447498 D01: Mobile and Portable RF Exposure. Guidance v06.

The measured maximum specified e.i.r.p of the EUT is 4.7dBm ≈ 2.95mW, which is far below the SAR exclusion threshold level 4mW, hence the EUT is excluded from SAR evaluation according to RSS-102 Issue 5 section 2.5.1.

7 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix A.

8 List of Tables

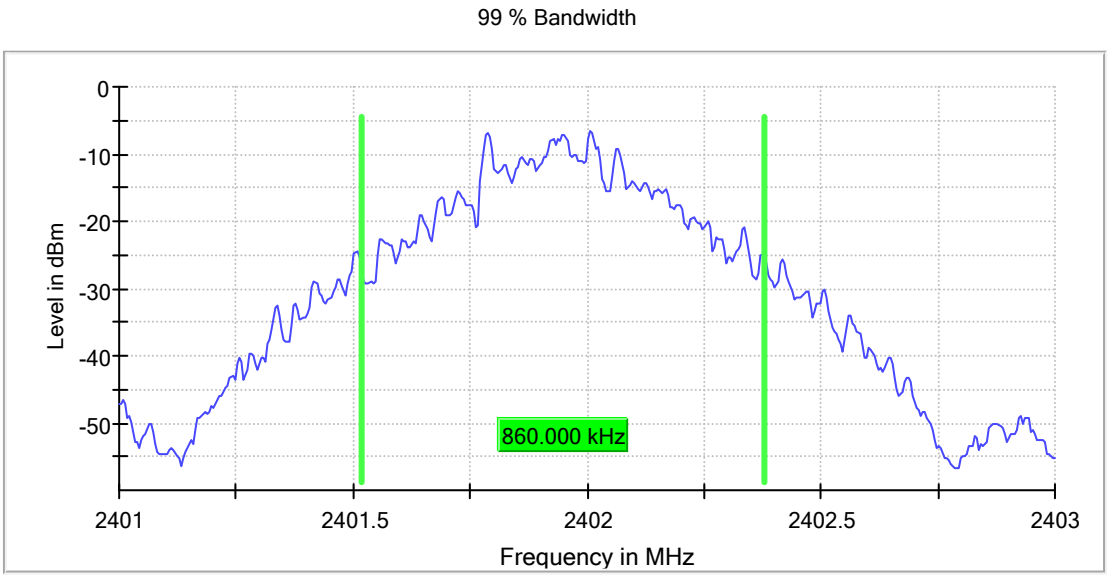
Appendix B

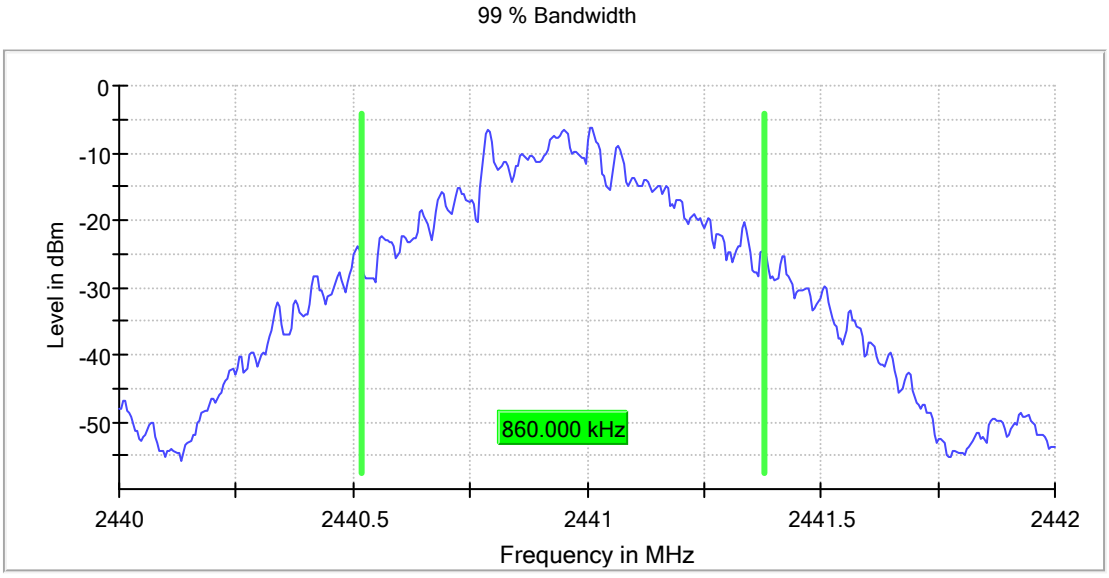
Test Results of Conducted Testing

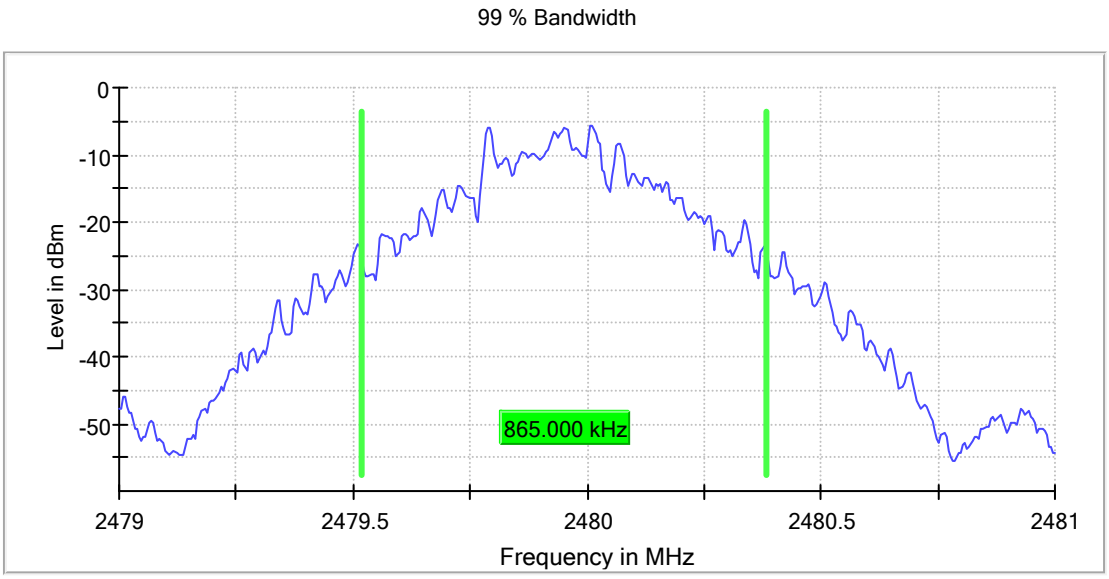
Appendix B.1: Test Plots of 99% Bandwidth

BDR Mode, DH1

RBW=10KHz, VBW=30KHz

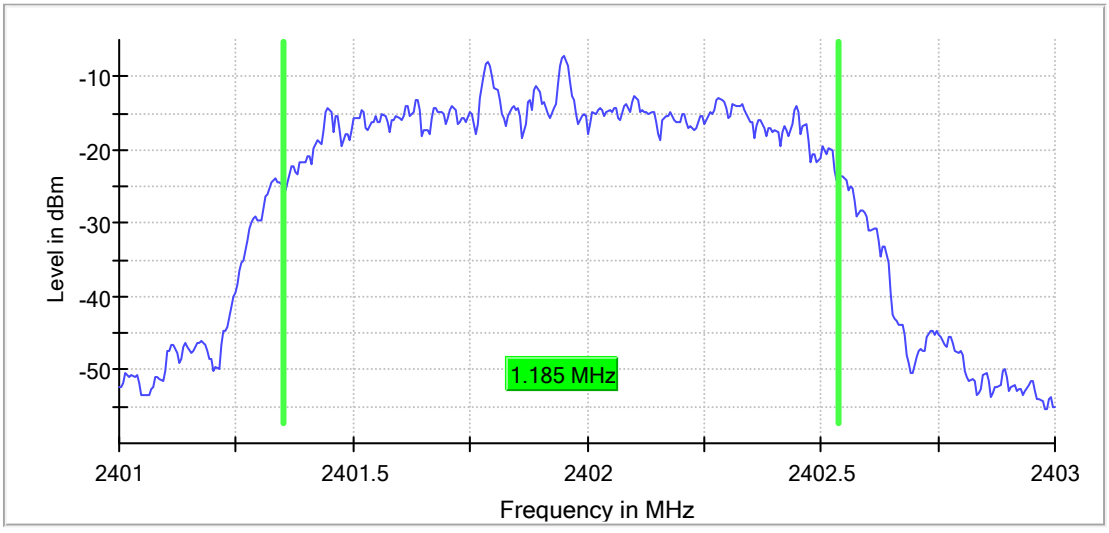




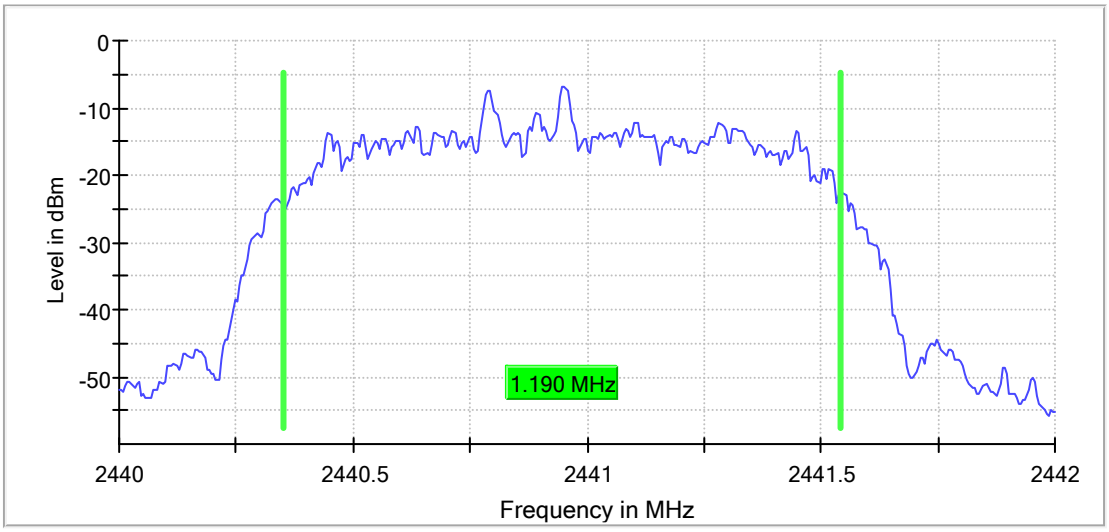


EDR Mode, 3DH1

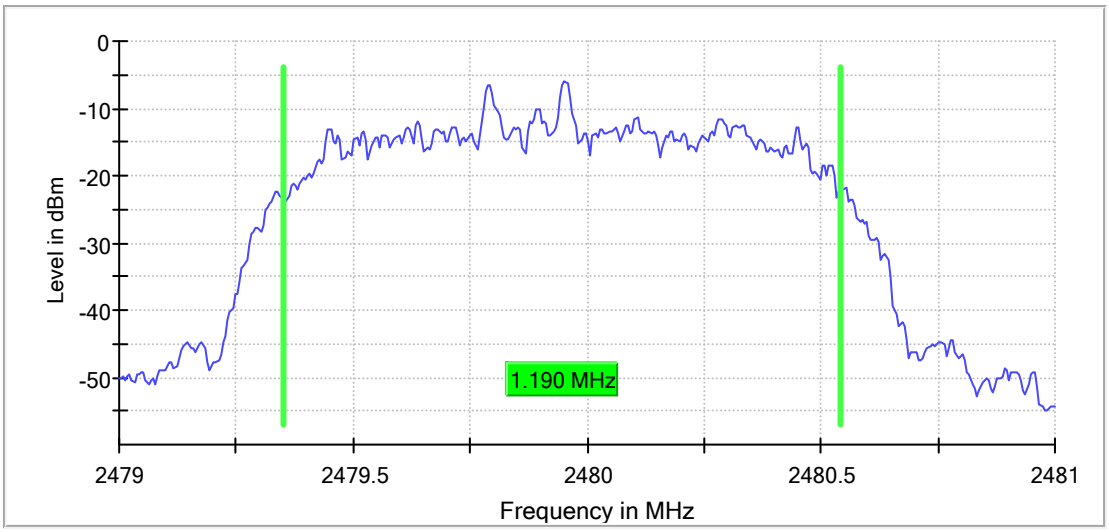
RBW=30KHz VBW=100KHz



99 % Bandwidth



99 % Bandwidth

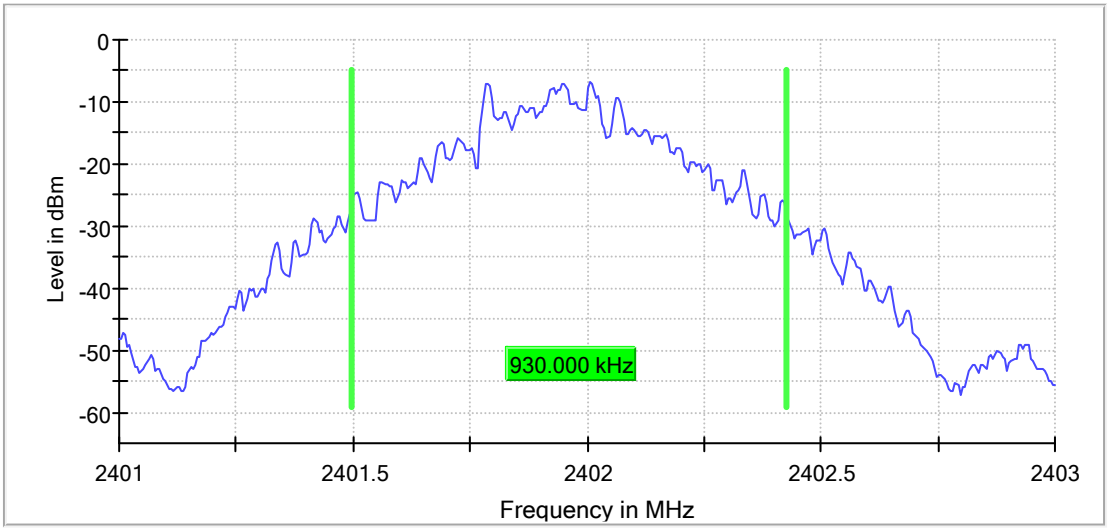


Appendix B.2: Test Plots of 20dB Bandwidth

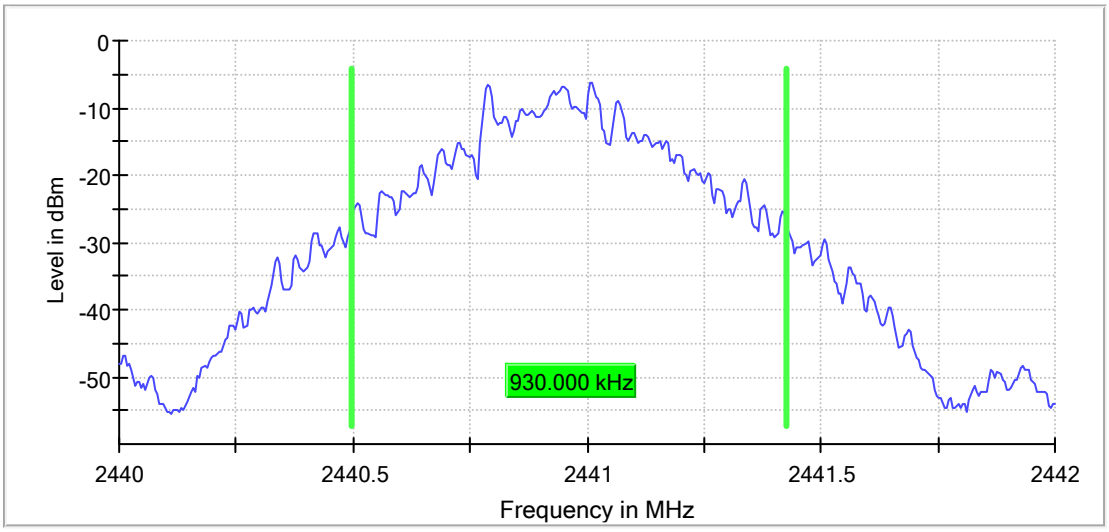
BDR Mode, DH1

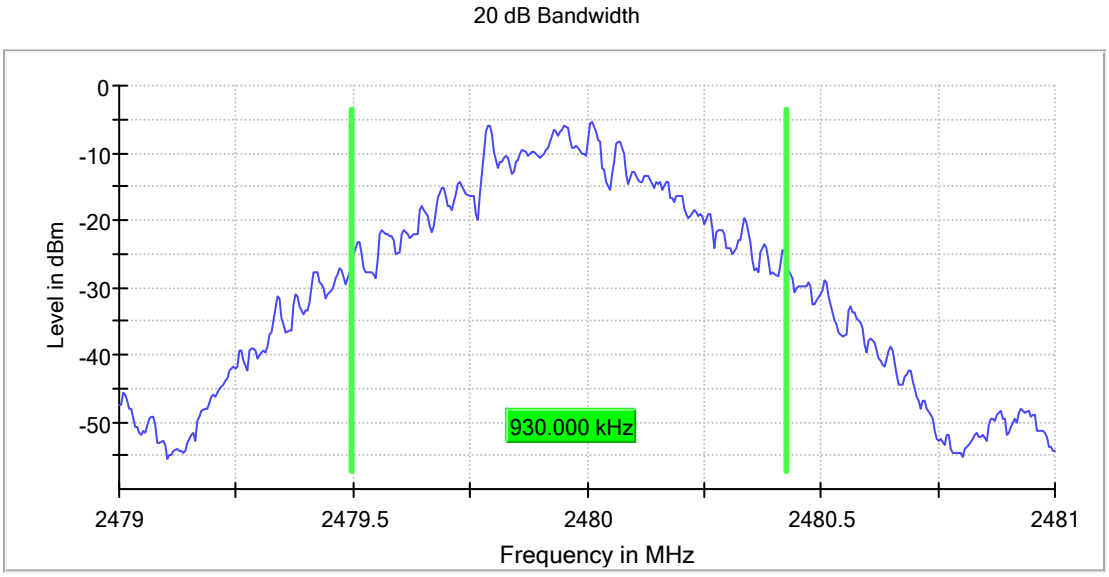
RBW=10KHz VBW=30KHz

20 dB Bandwidth



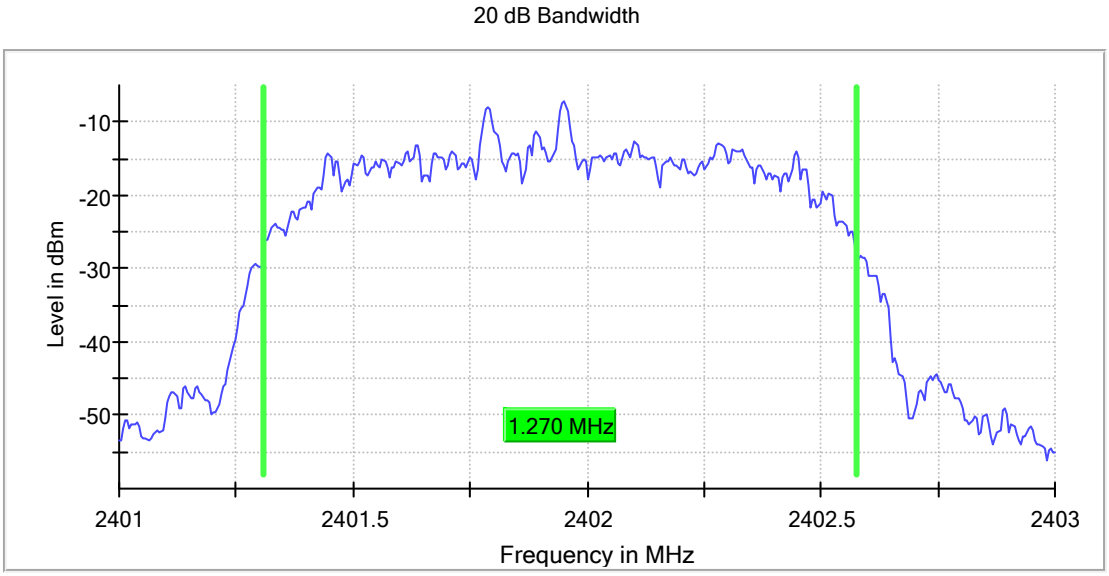
20 dB Bandwidth



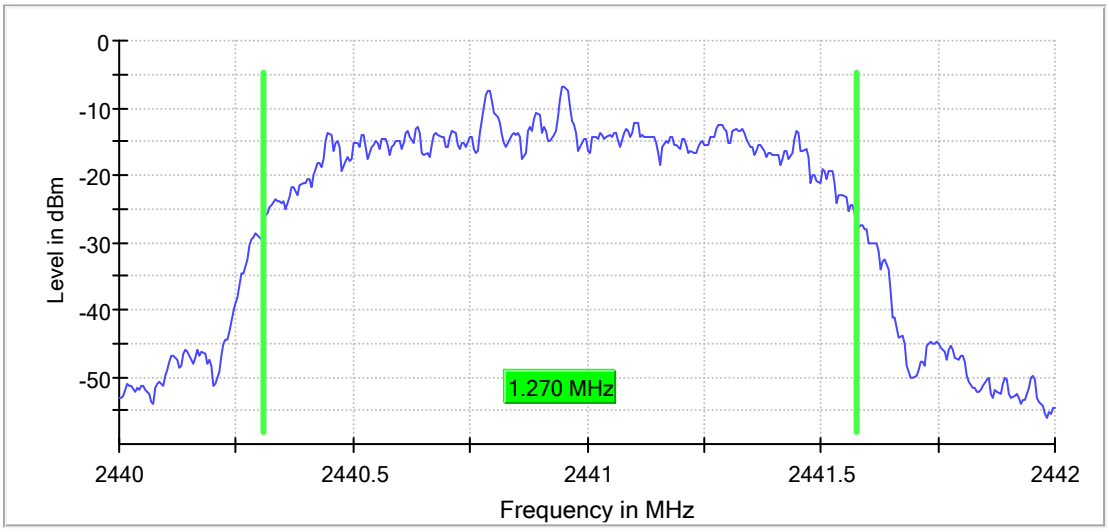


EDR Mode, 3DH1

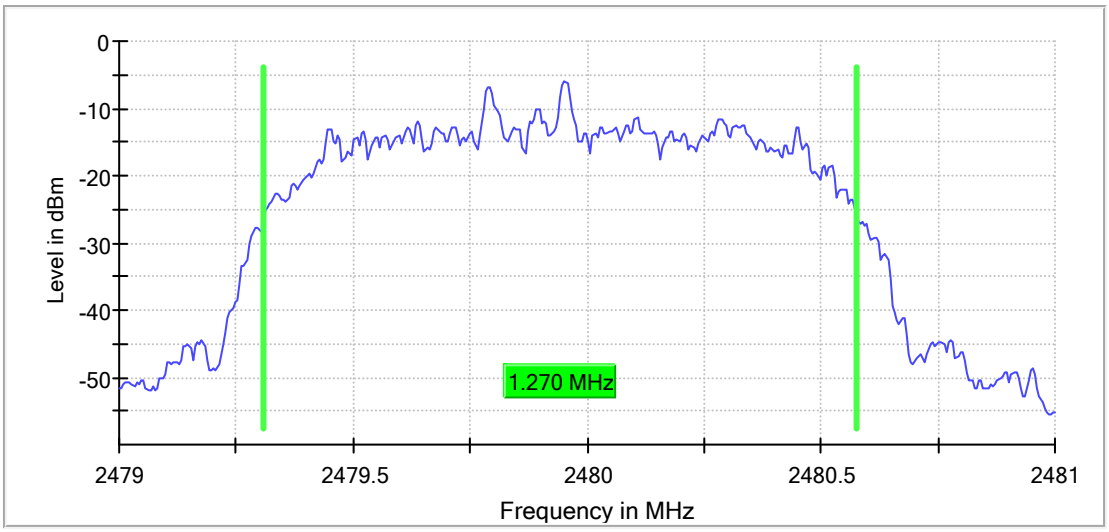
RBW=30KHz VBW=100KHz



20 dB Bandwidth

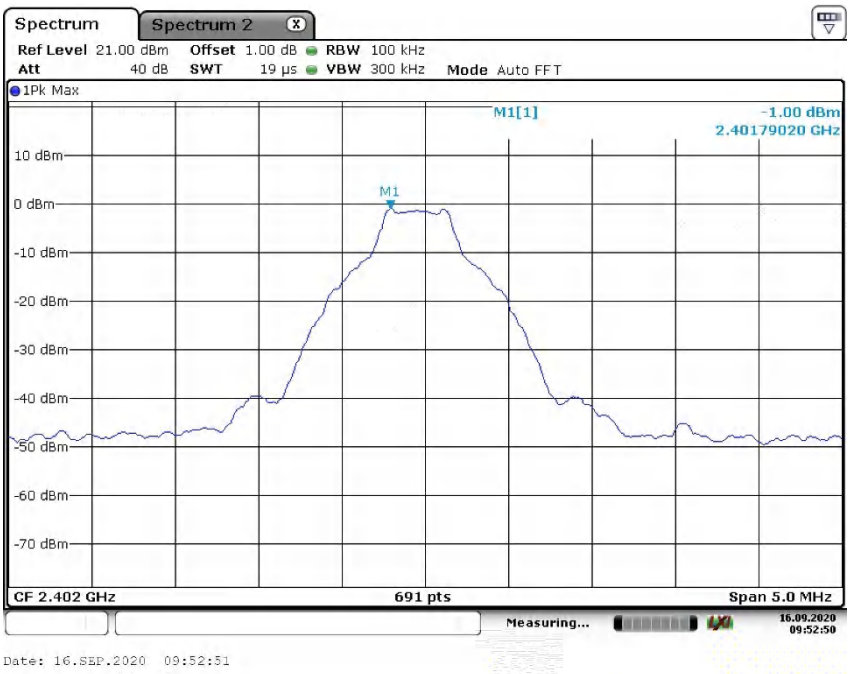


20 dB Bandwidth

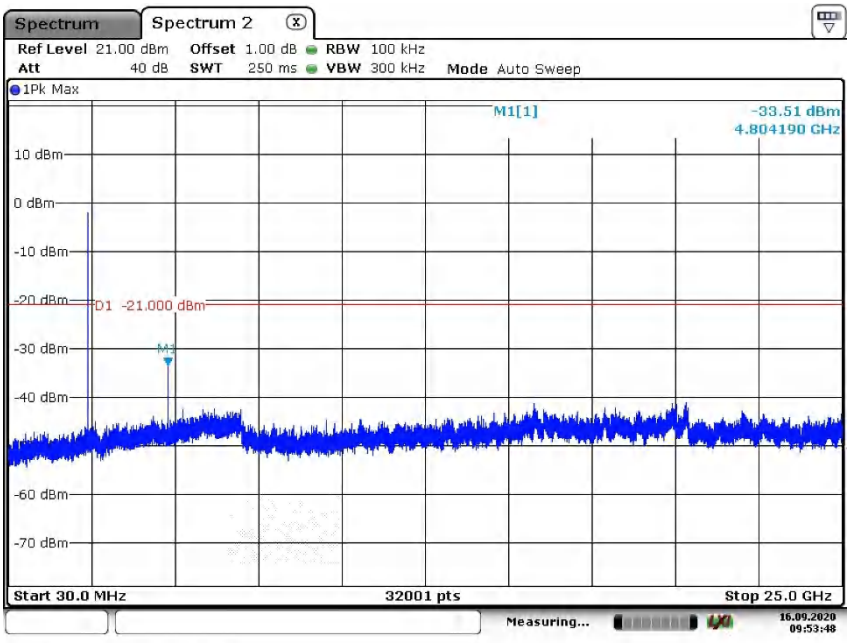


Appendix B.3: Test Plots of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

BDR Mode, Low Channel

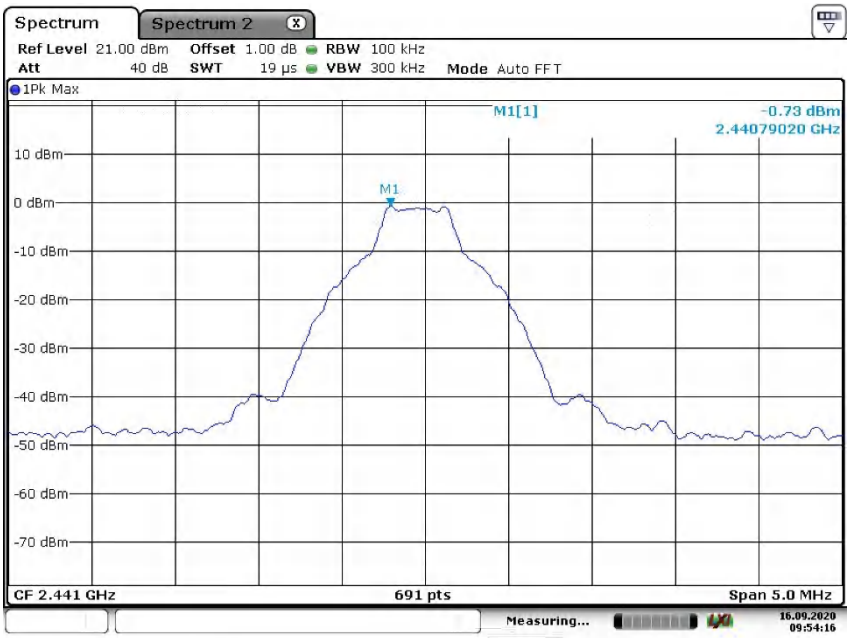


Date: 16.SEP.2020 09:52:51

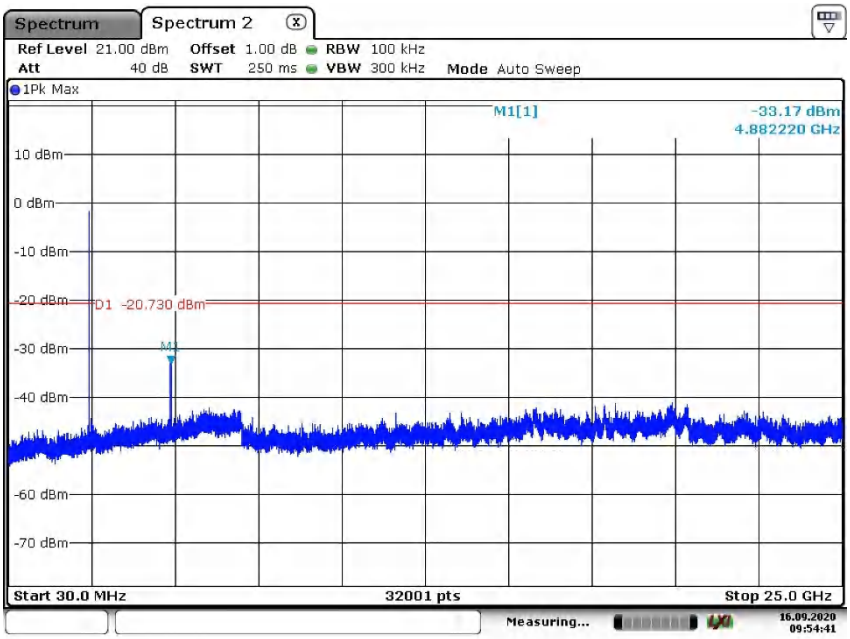


Date: 16.SEP.2020 09:53:48

BDR Mode, Middle Channel

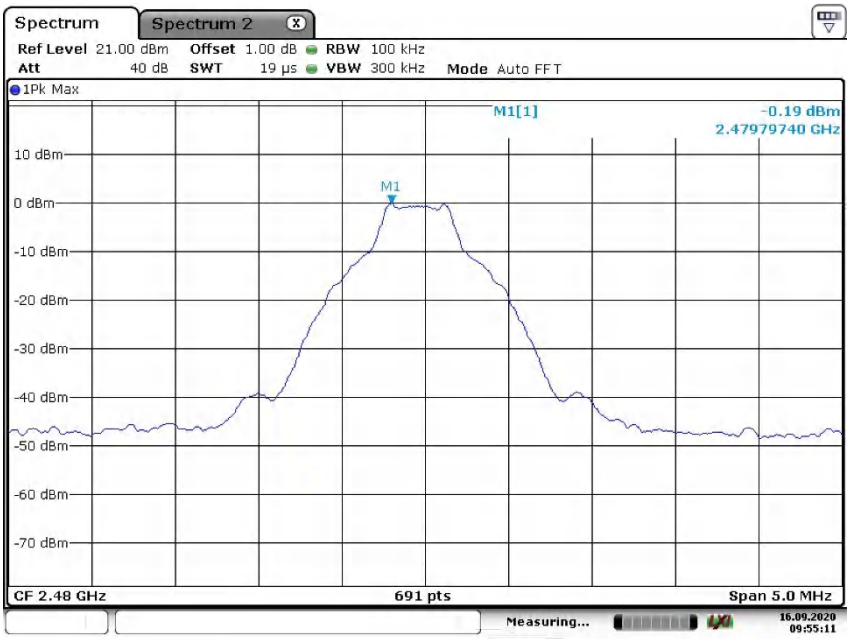


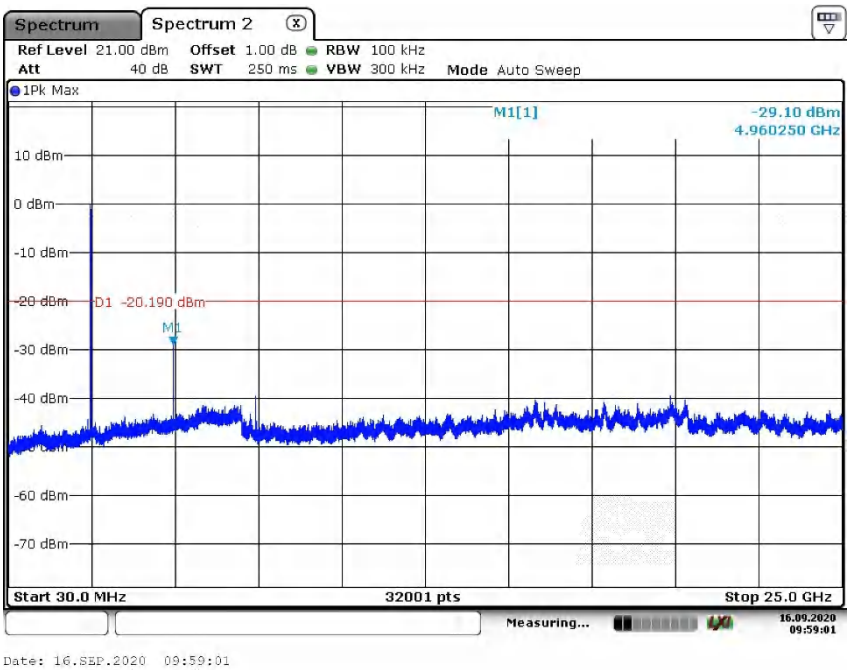
Date: 16.SEP.2020 09:54:16



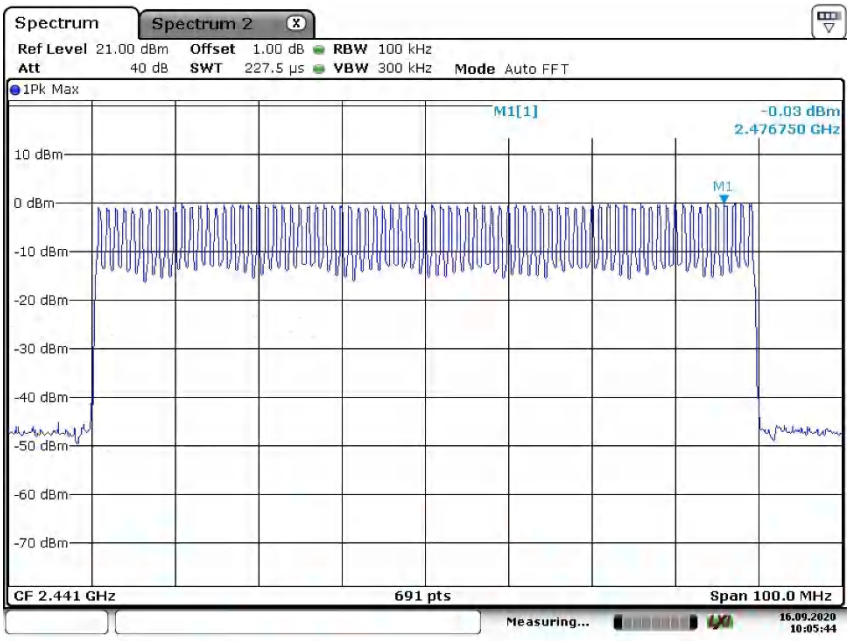
Date: 16.SEP.2020 09:54:41

BDR Mode, High Channel

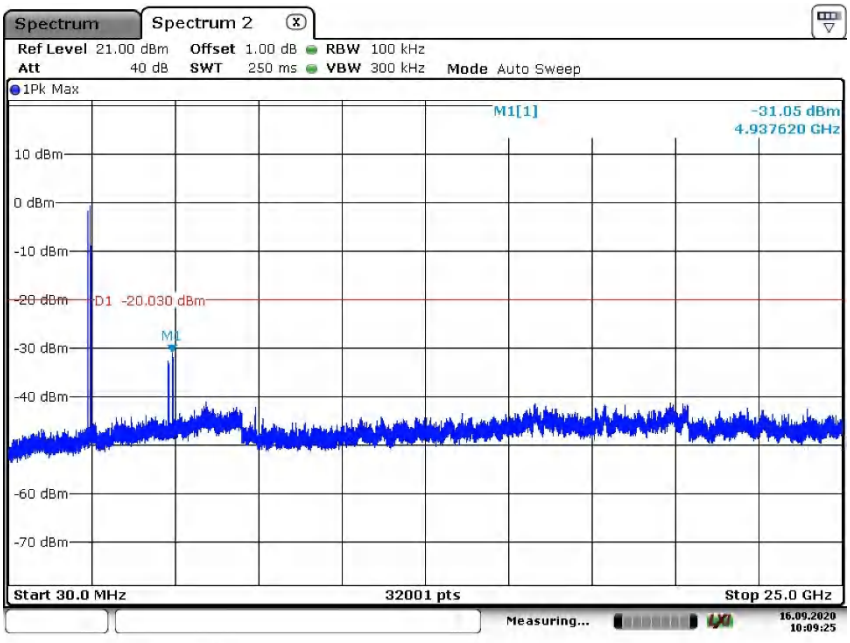




BDR, Hopping

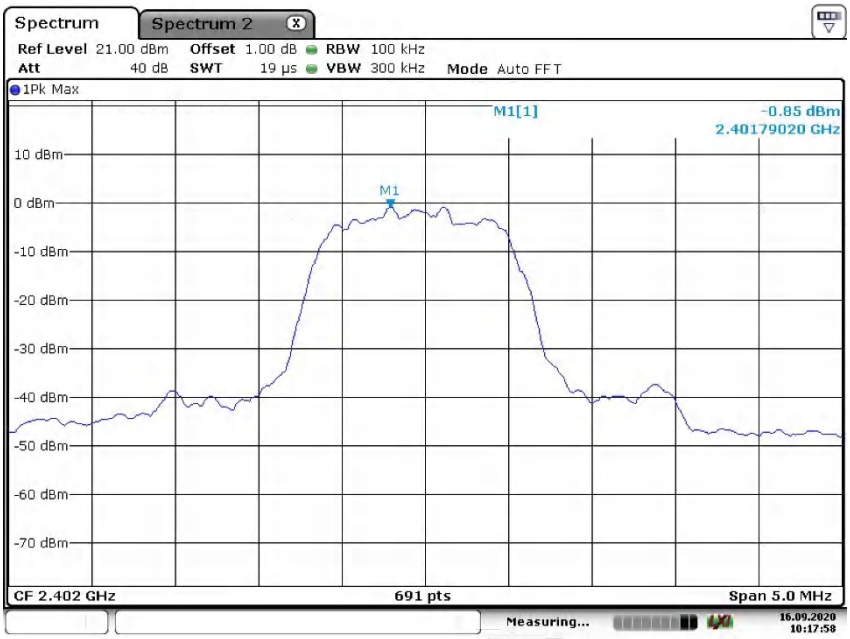


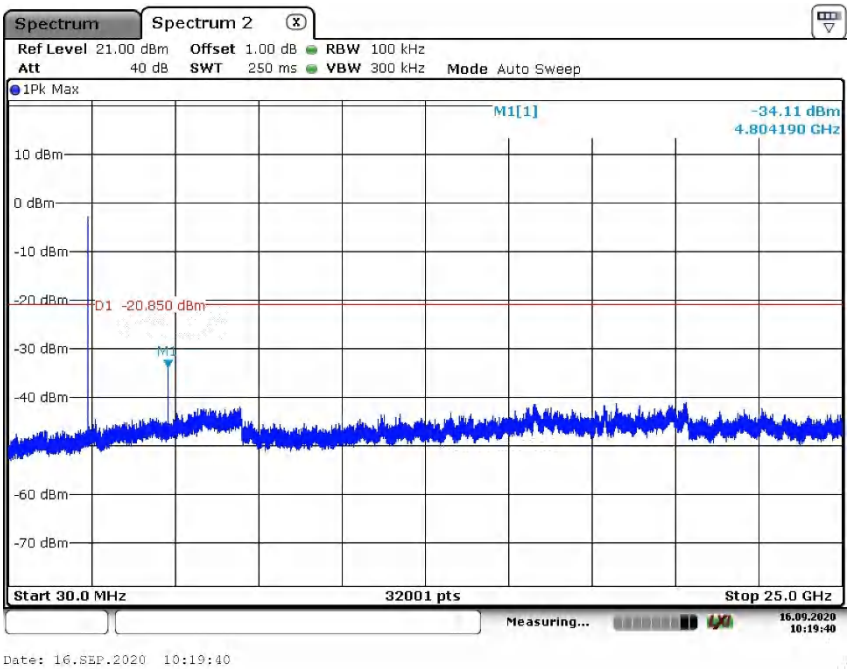
Date: 16.SEP.2020 10:05:44



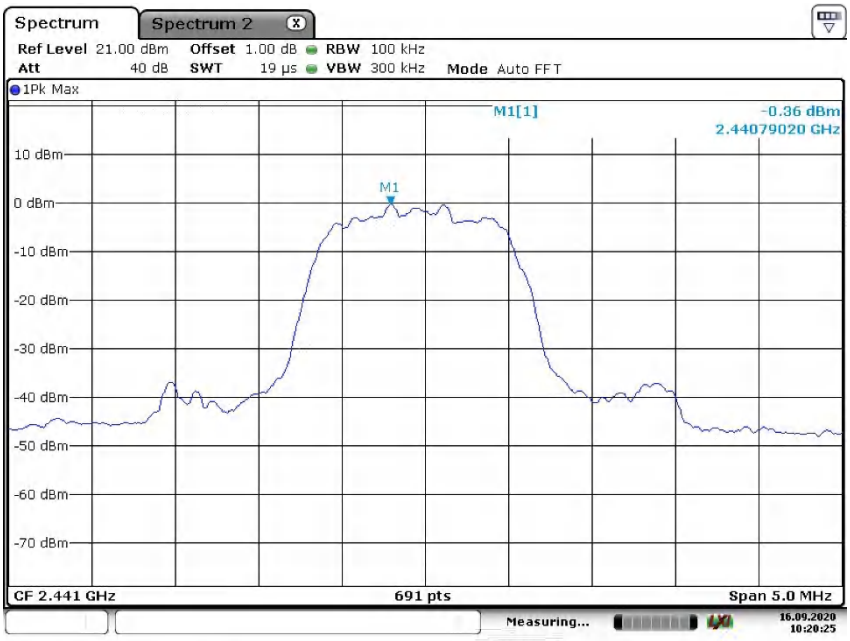
Date: 16.SEP.2020 10:09:25

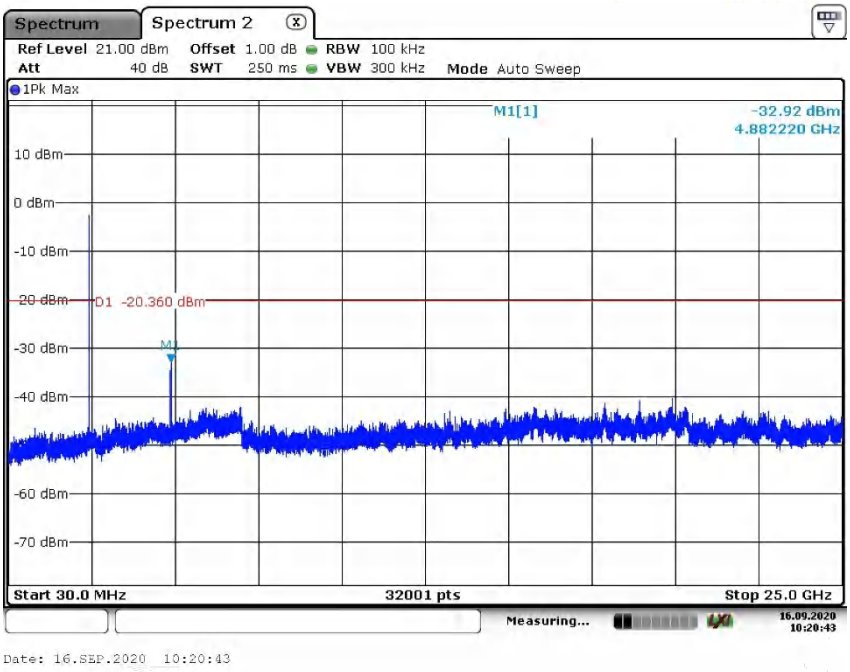
EDR Mode, Low Channel



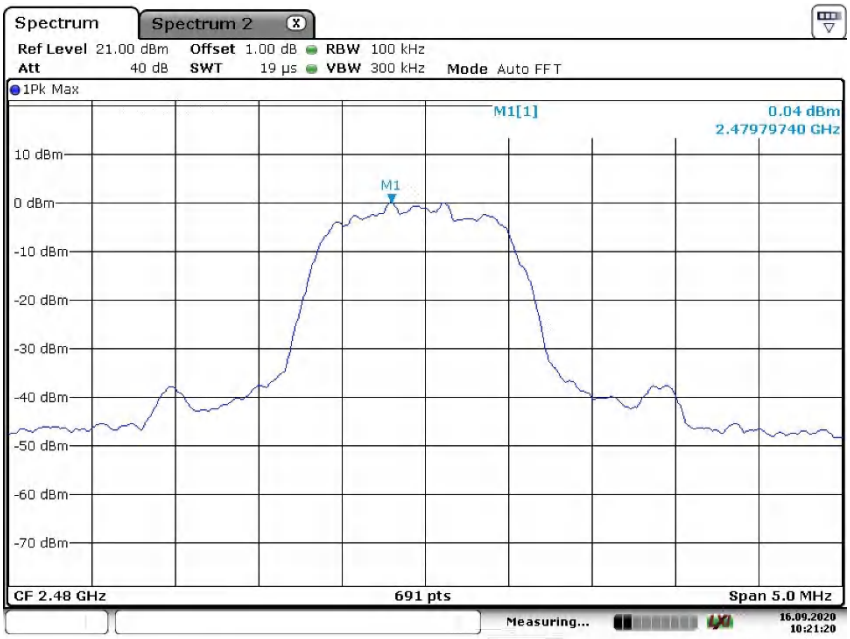


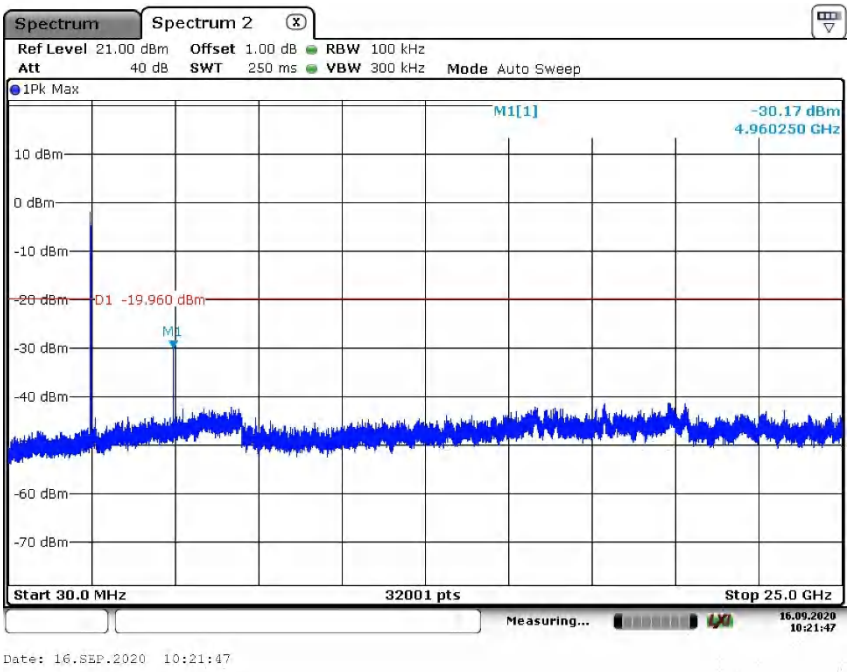
EDR Mode, Middle Channel



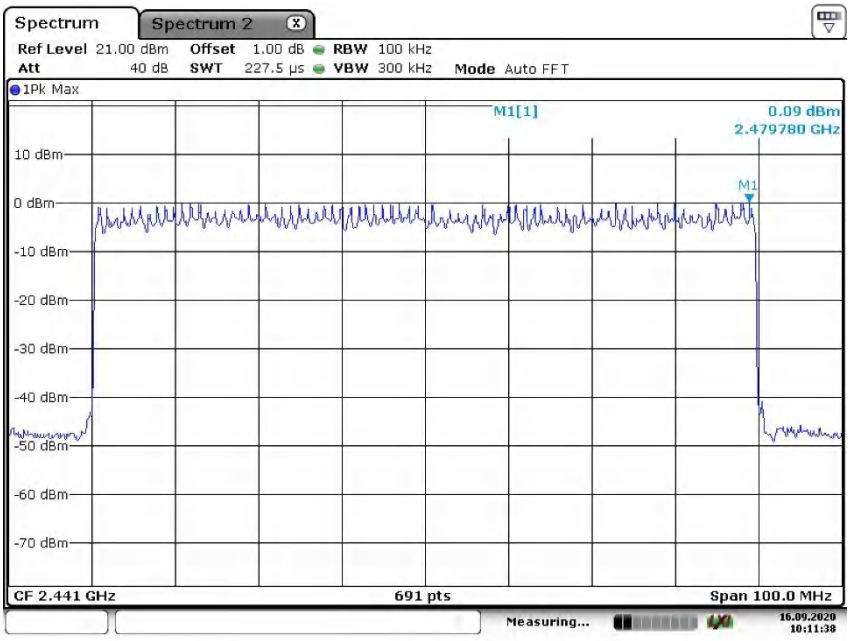


EDR Mode, High Channel

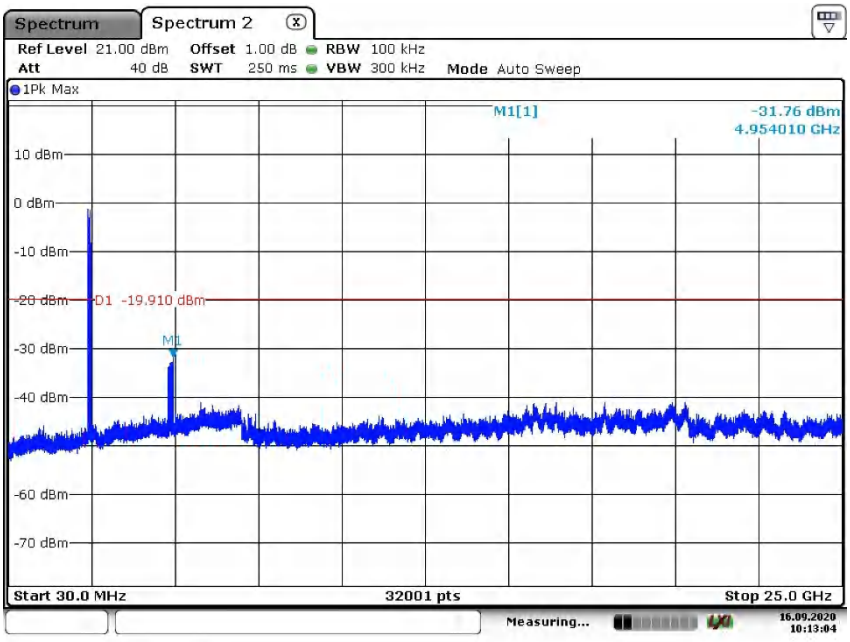




EDR, Hopping

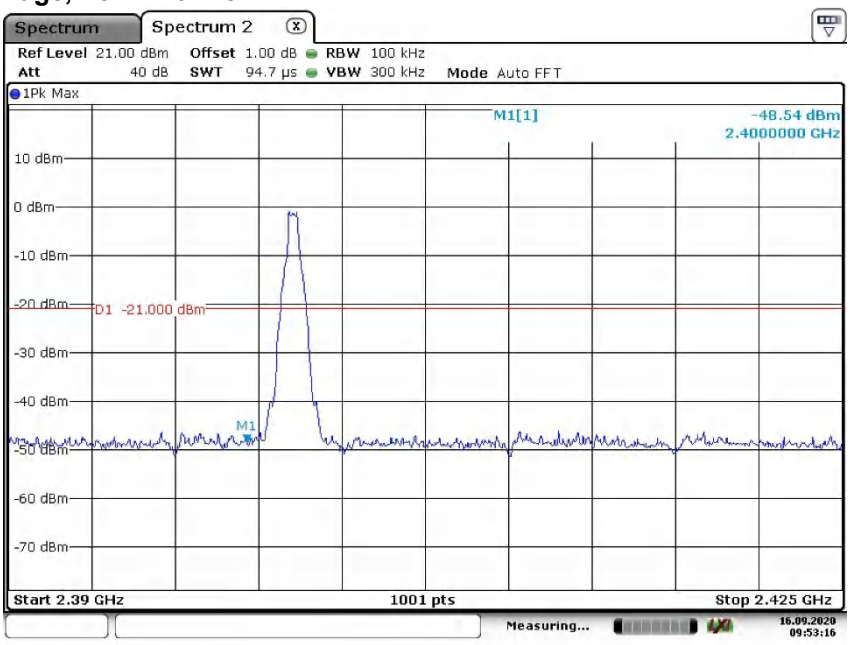


Date: 16.SEP.2020 10:11:38



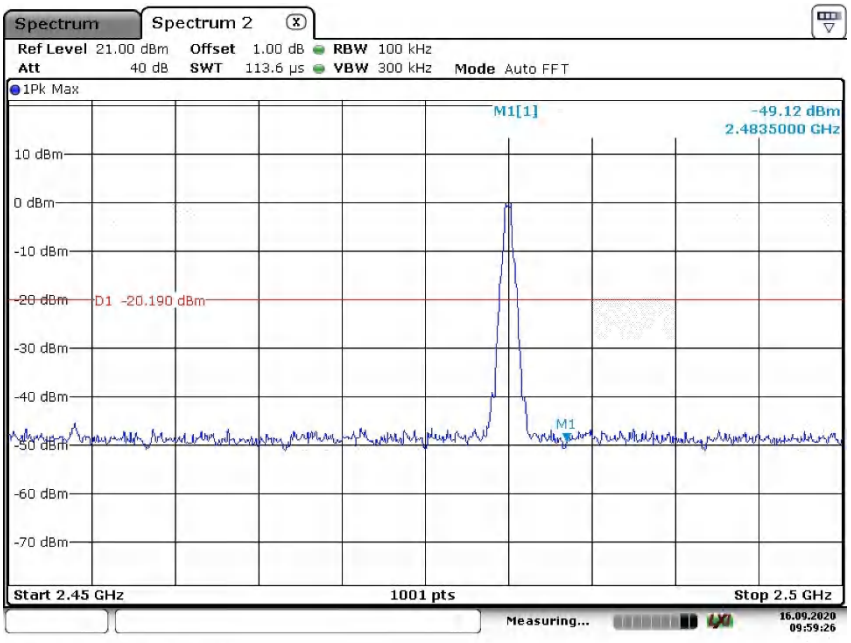
Date: 16.SEP.2020 10:13:04

BDR Mode, Band Edge, Low Channel



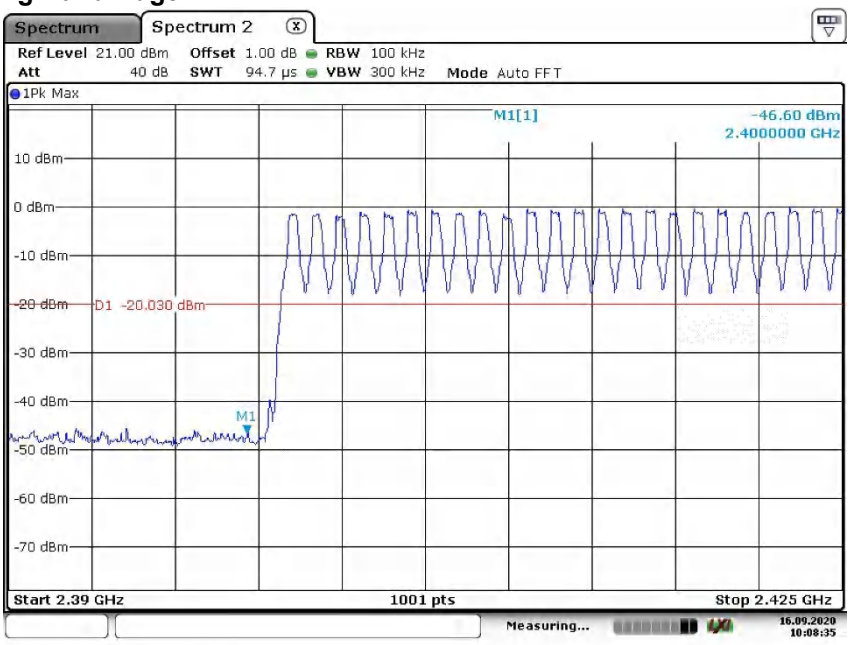
Date: 16.SEP.2020 09:53:16

BDR Mode, Band Edge, High Channel

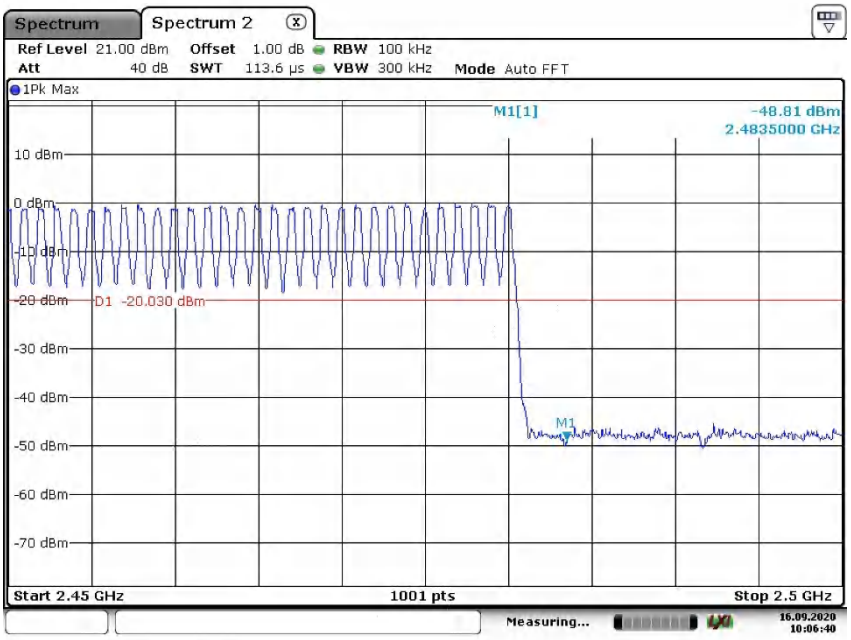


Date: 16.SEP.2020 09:59:26

BDR Mode, Hopping Band Edge

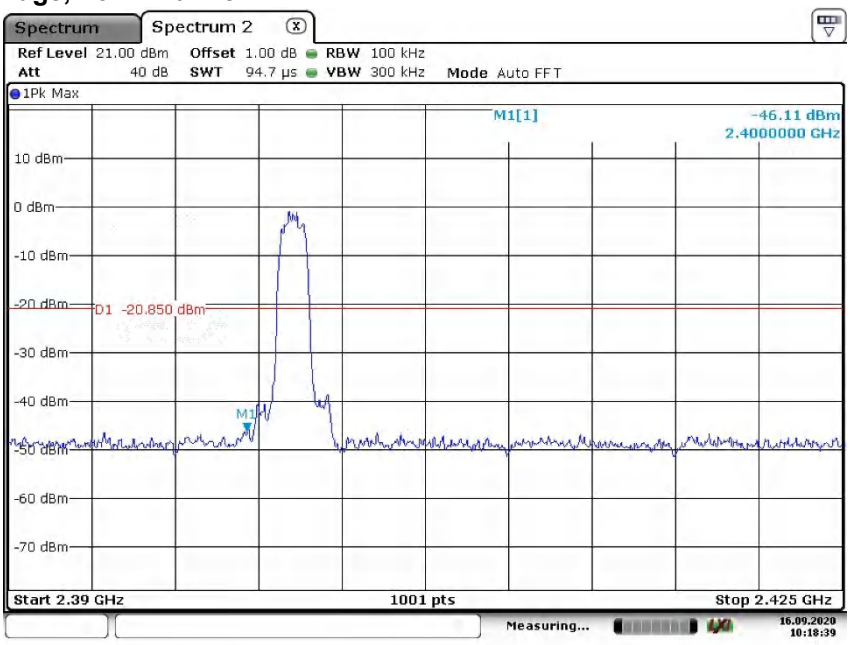


Date: 16.SEP.2020 10:08:35



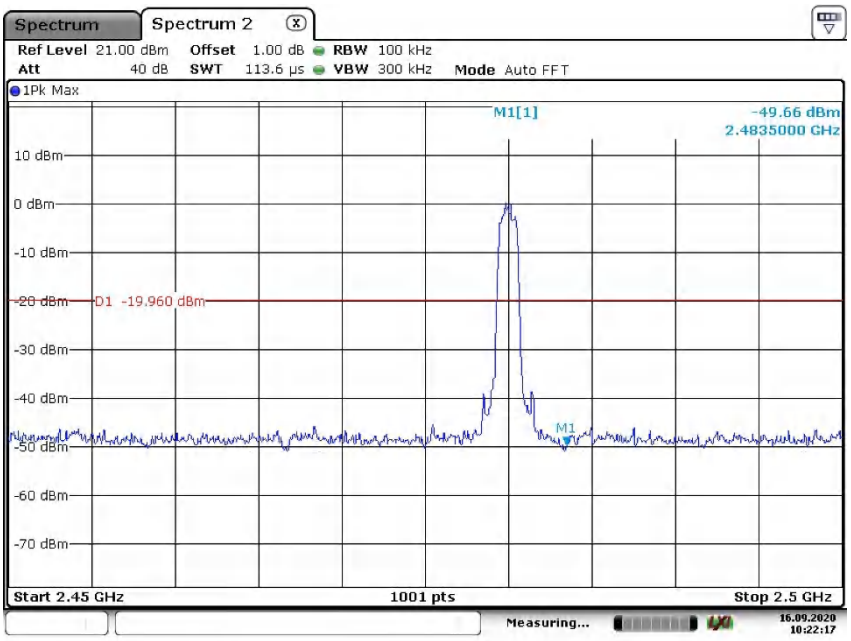
Date: 16.SEP.2020 10:06:40

EDR Mode, Band Edge, Low Channel



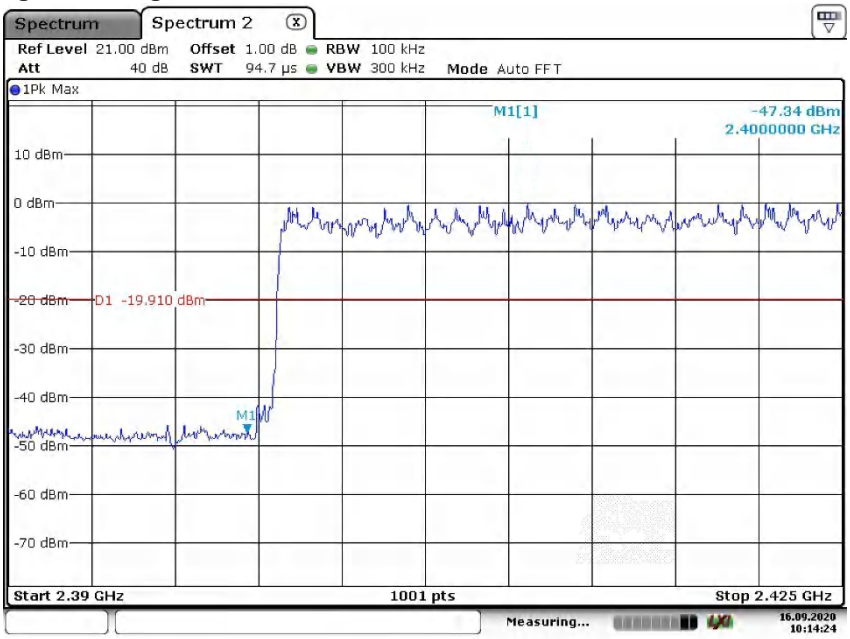
Date: 16.SEP.2020 10:18:39

EDR Mode, Band Edge, High Channel

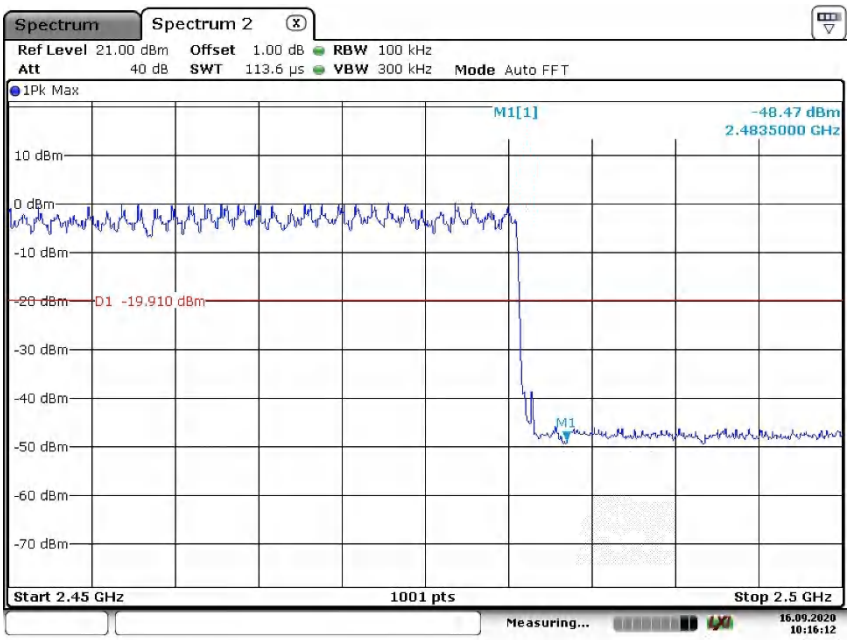


Date: 16.SEP.2020 10:22:17

EDR Mode, Hopping Band Edge



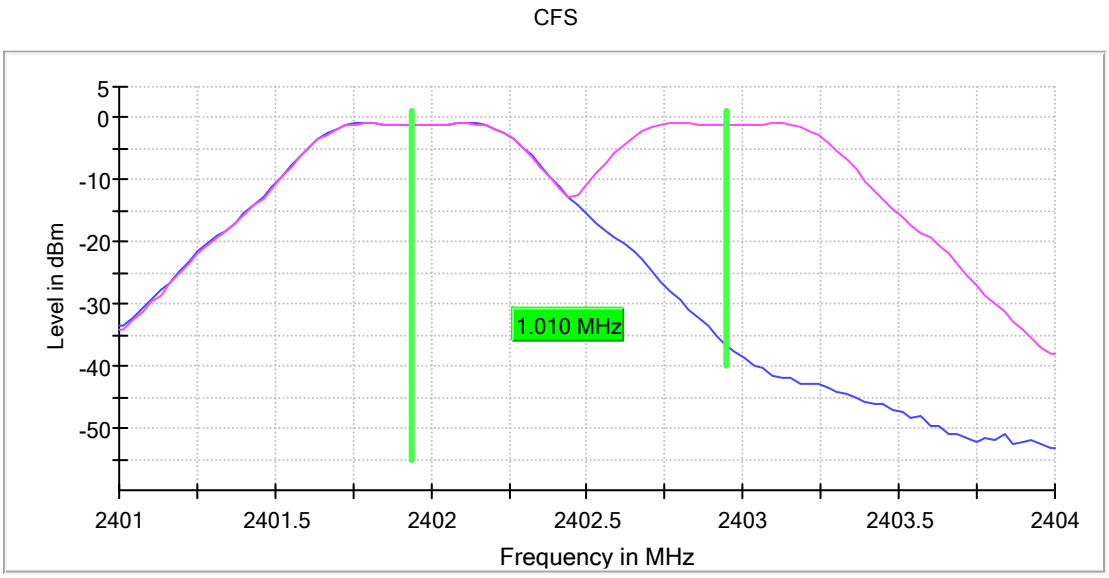
Date: 16.SEP.2020 10:14:24



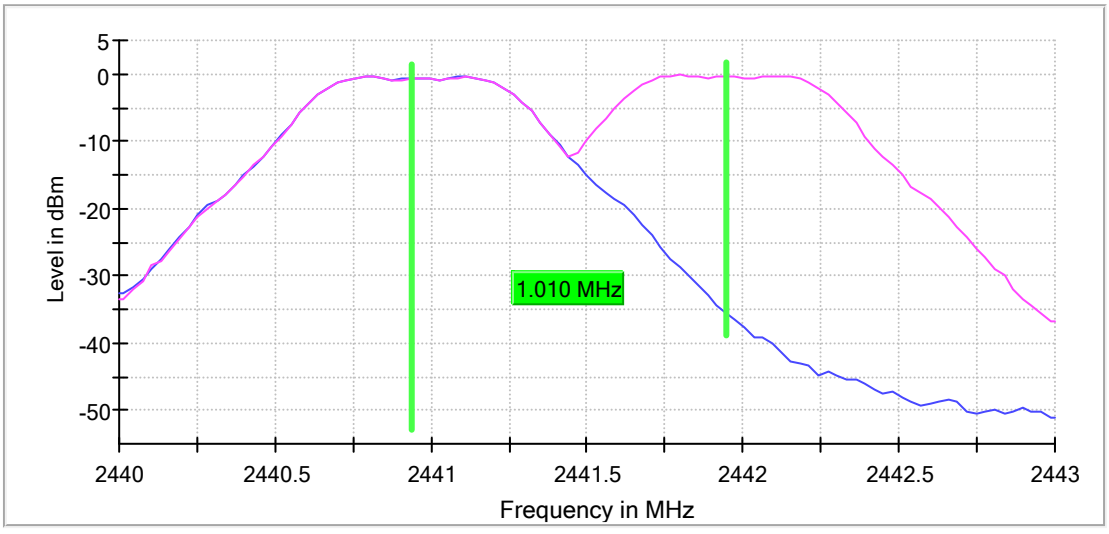
Date: 16.SEP.2020 10:16:12

Appendix B.4: Test Plots of Carrier Frequency Separation

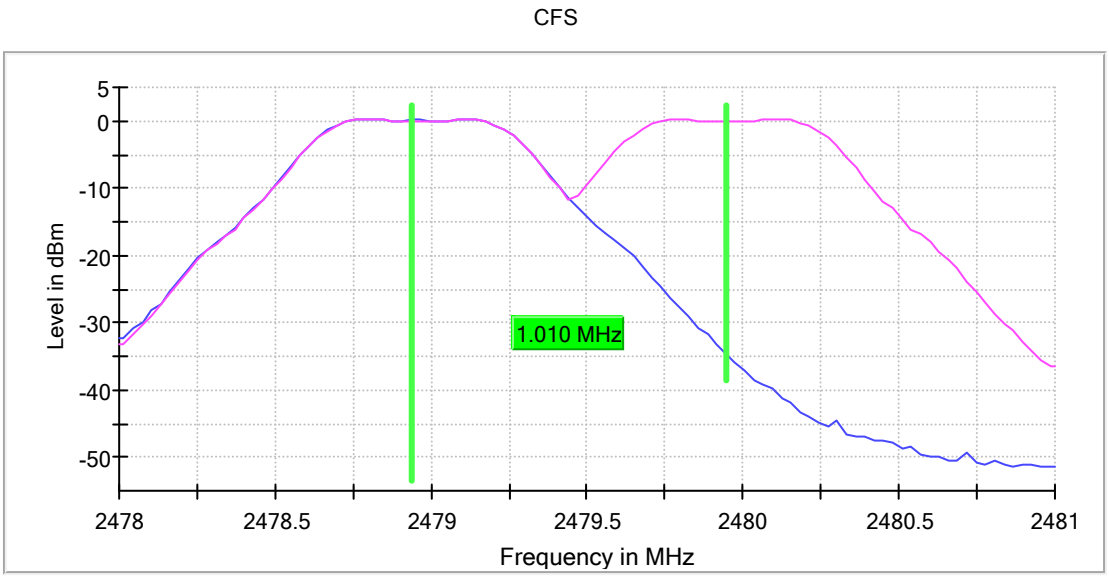
BDR, Low Channel
RBW=300KHz, VBW=300KHz



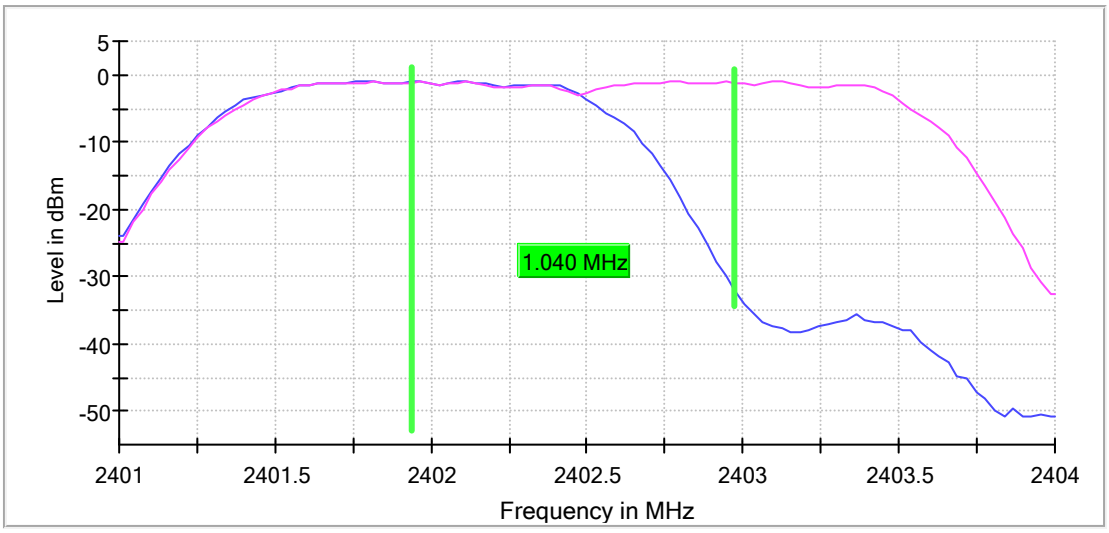
BDR, Middle Channel
RBW=300KHz, VBW=300KHz



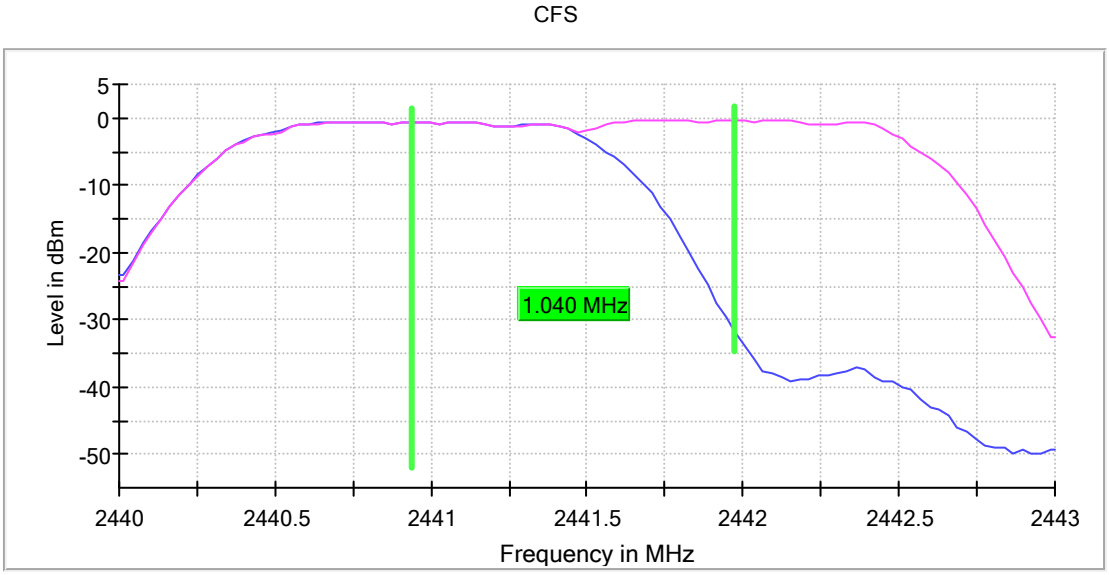
BDR, High Channel
RBW=300KHz, VBW=300KHz



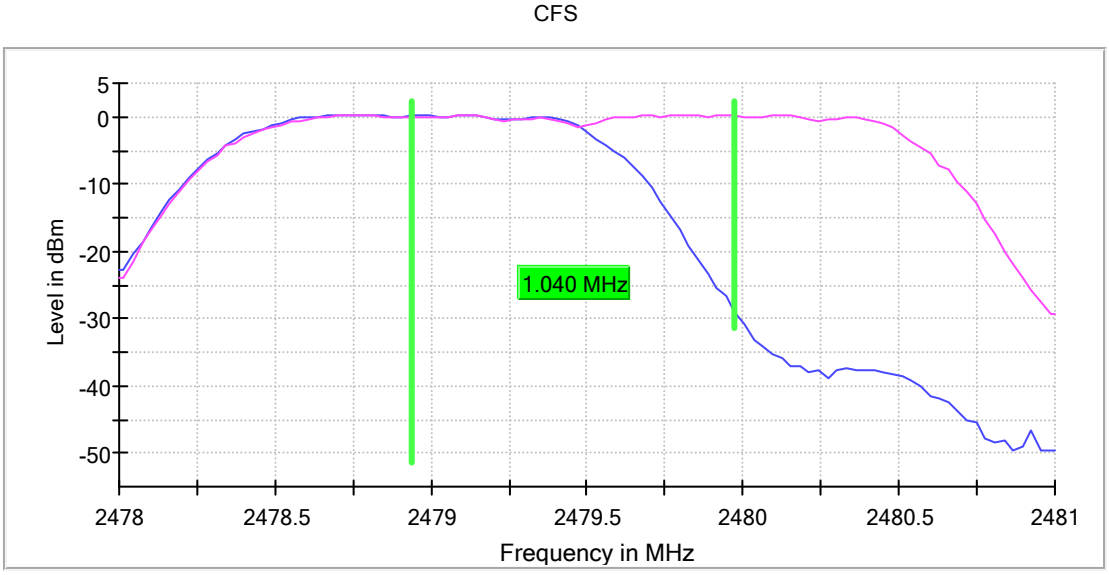
EDR, Low Channel
RBW=300KHz, VBW=300KHz



EDR, Middle Channel
RBW=300KHz, VBW=300KHz

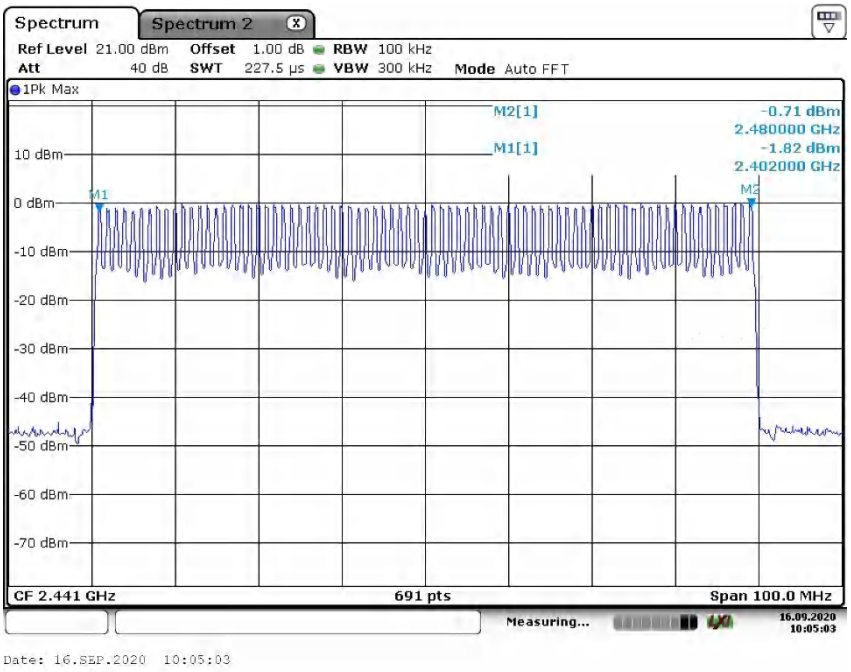


EDR, High Channel
RBW=300KHz, VBW=300KHz



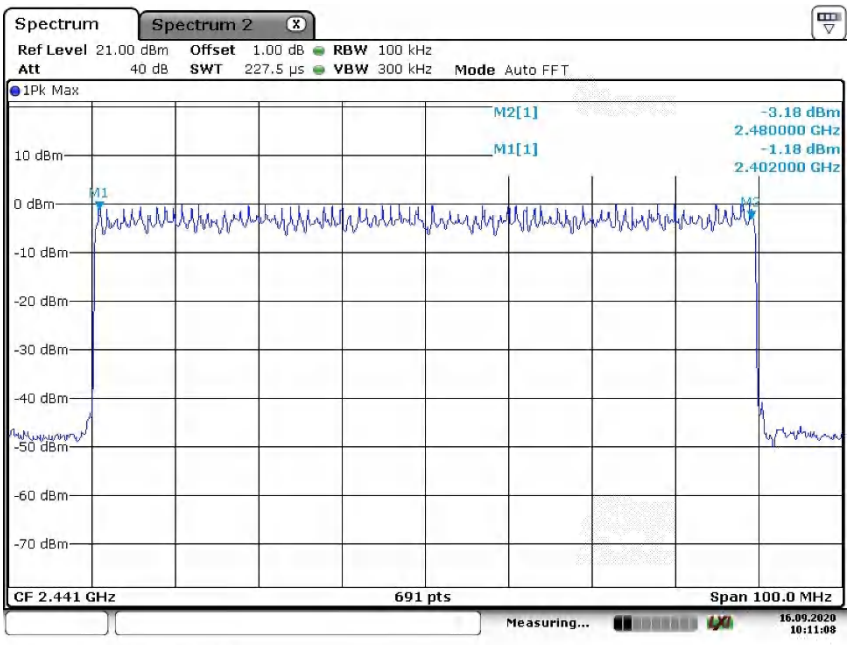
Appendix B.5: Test Plots of Number of Hopping Frequency

BDR, Hopping



Date: 16.SEP.2020 10:05:03

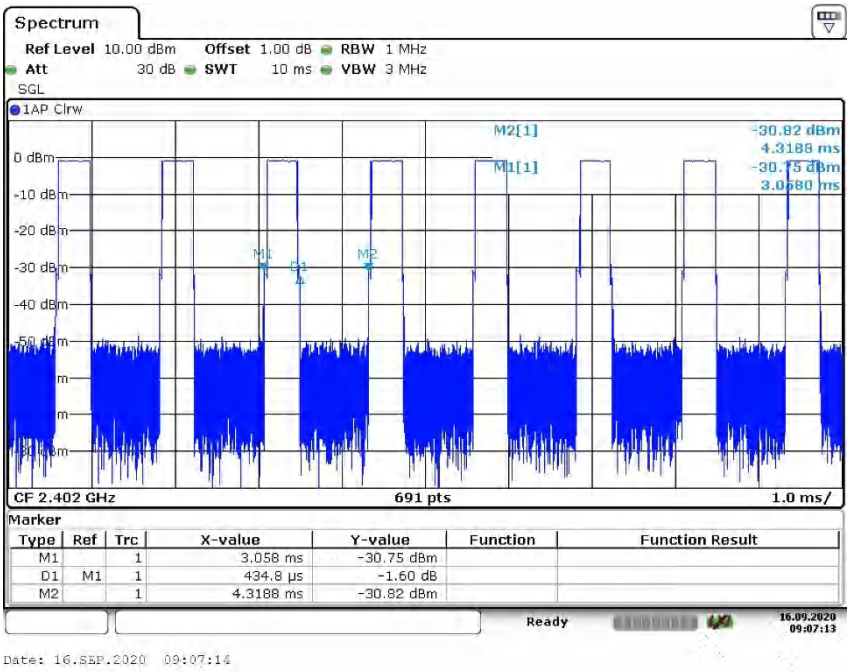
EDR, Hopping



Date: 16.SEP.2020 10:11:08

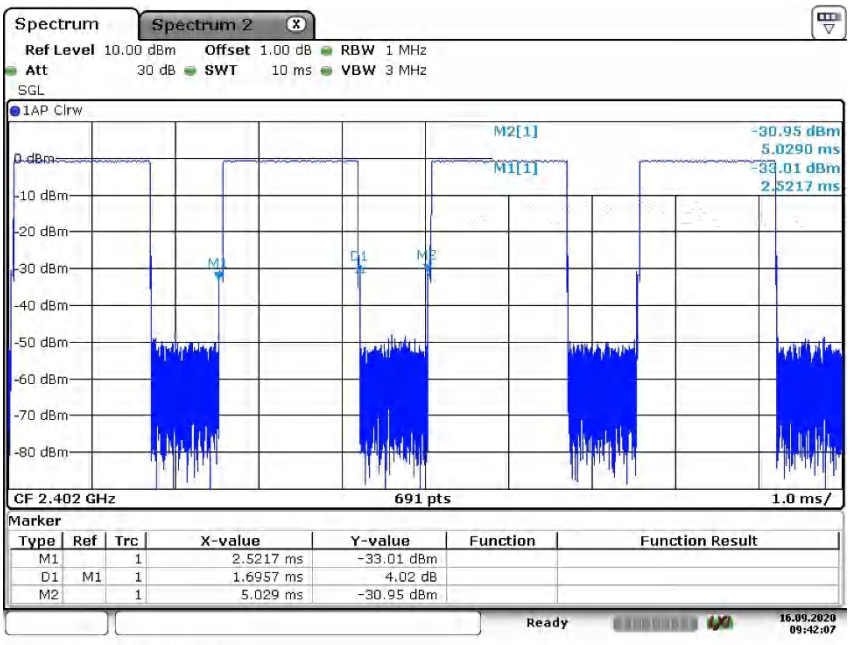
Appendix B.6: Test Plots of Time of Occupancy

BDR Mode, DH1, Middle Channel



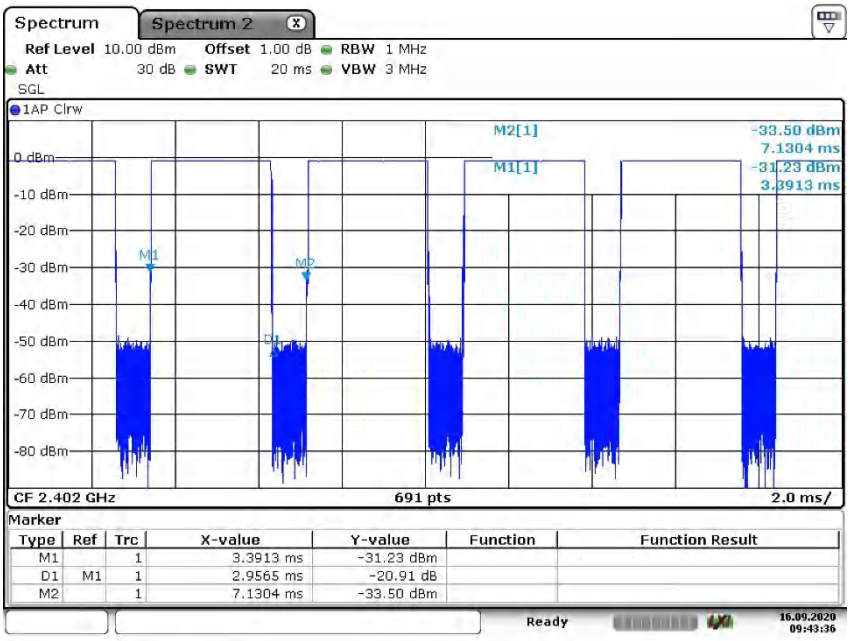
Date: 16.SEP.2020 09:07:14

BDR Mode, DH3, Middle Channel



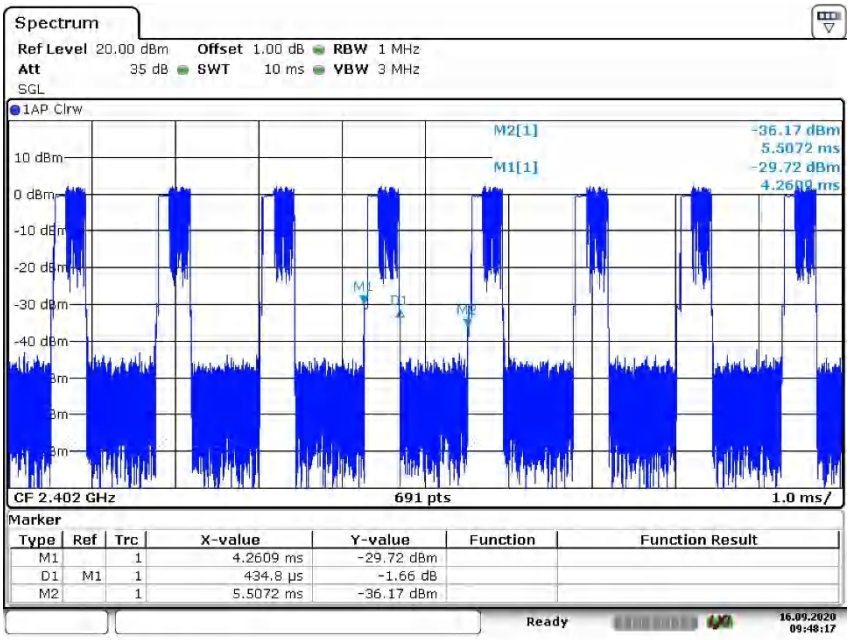
Date: 16.SEP.2020 09:42:07

BDR Mode, DH5, Middle Channel



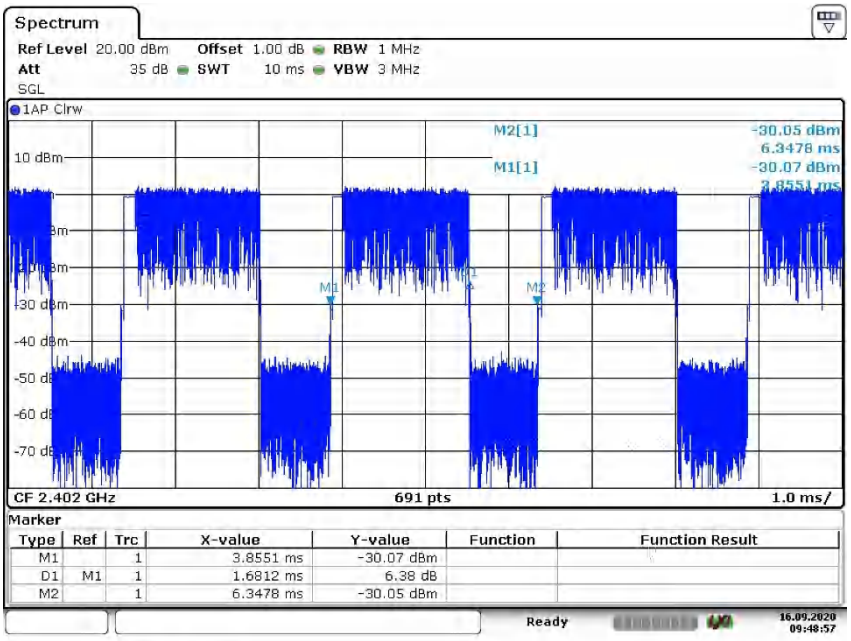
Date: 16.SEP.2020 09:43:37

EDR Mode, 3DH1, Middle Channel



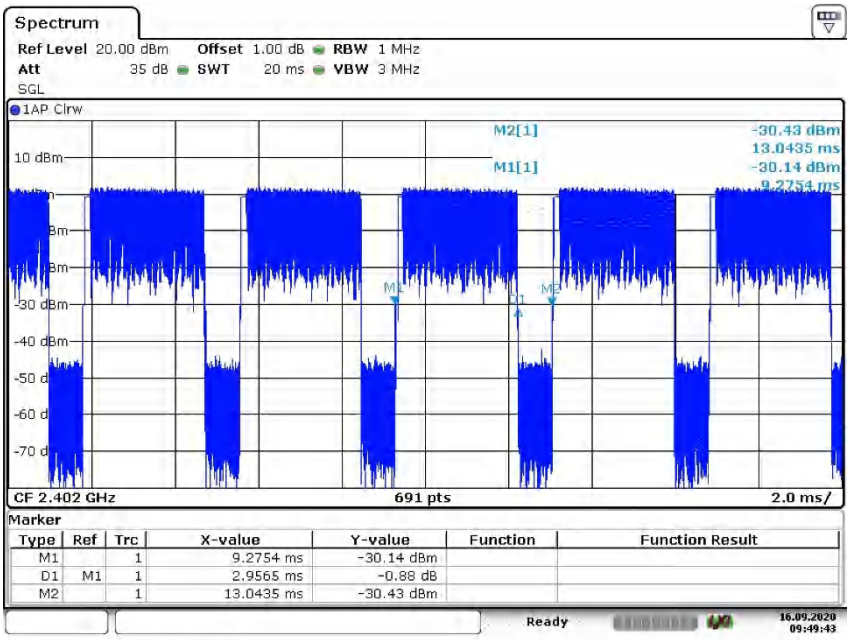
Date: 16.SEP.2020 09:48:17

EDR Mode, 3DH3, Middle Channel



Date: 16.SEP.2020 09:48:57

EDR Mode, 3DH5, Middle Channel



Date: 16.SEP.2020 09:49:43

Appendix C

Test Results of Radiated Emission & AC Mains Conducted Emission

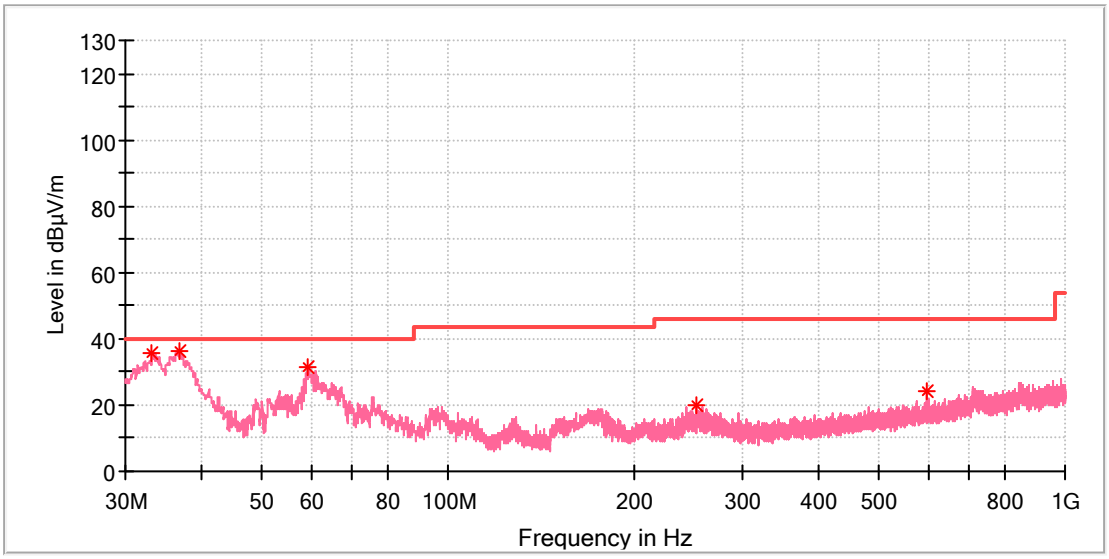
Note: The radiated spurious emission were measured from 9KHz to 26.5GHz, the measurement results below 30MHz and above 18GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

Appendix C.1: Test Plots of Radiated Spurious Emission

BDR mode, 30MHz - 1GHz

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_DH5_Low CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

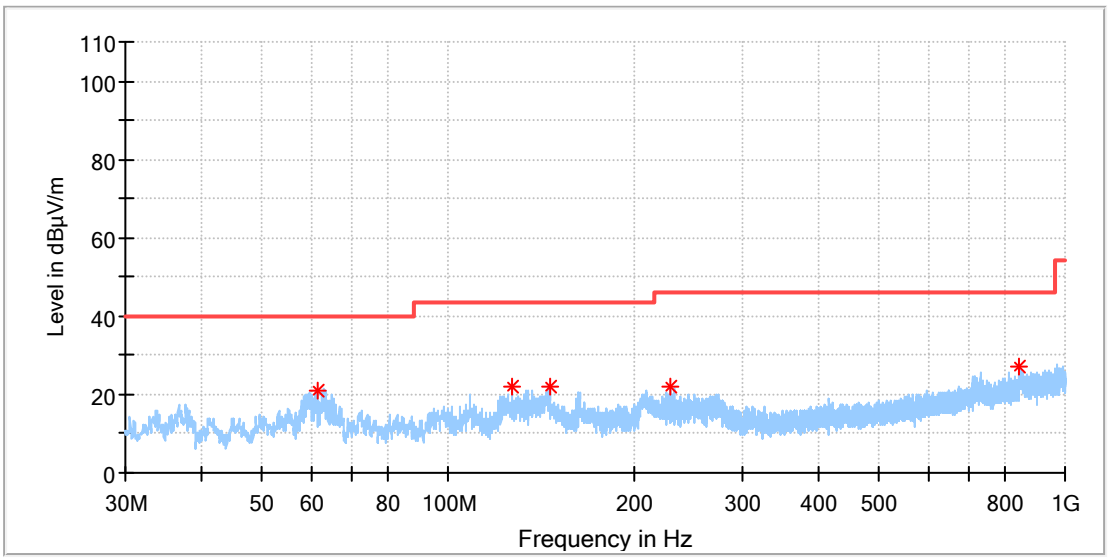


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
33.152500	35.66	40.00	4.34	100.0	V	0.0	-22.8
36.790000	35.99	40.00	4.01	100.0	V	33.0	-21.5
59.391000	31.21	40.00	8.79	100.0	V	141.0	-19.2
253.342500	20.18	46.00	25.82	100.0	V	300.0	-17.6
597.353000	23.95	46.00	22.05	100.0	V	189.0	-10.3

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_DH5_Low CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

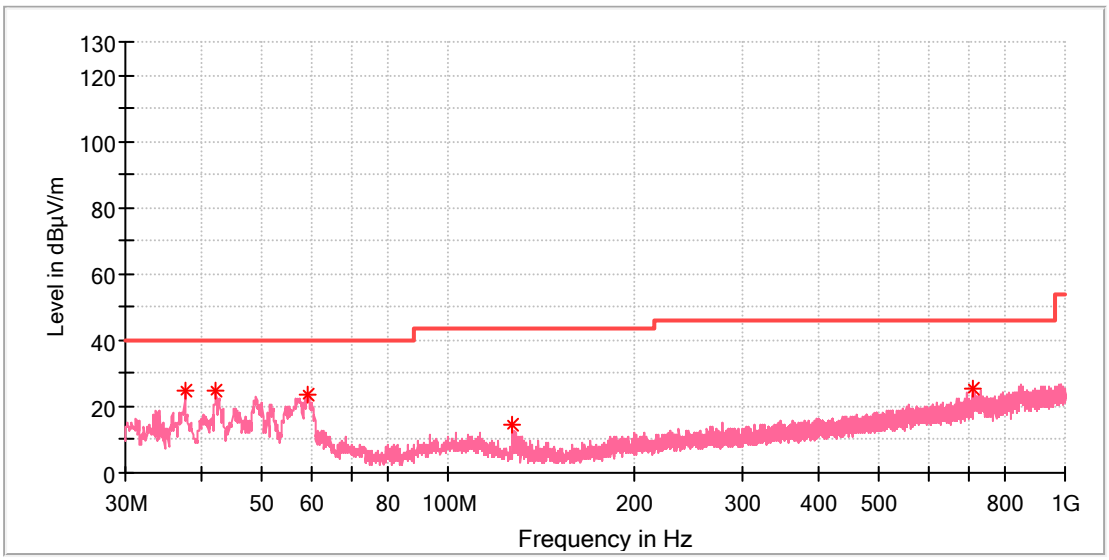


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
61.282500	20.97	40.00	19.03	100.0	H	204.0	-19.6
127.097000	21.99	43.50	21.51	100.0	H	256.0	-21.9
145.963500	21.91	43.50	21.59	100.0	H	267.0	-22.6
229.092500	21.95	46.00	24.05	100.0	H	267.0	-18.5
845.091000	27.23	46.00	18.77	100.0	H	194.0	-6.0

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_DH5_High CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

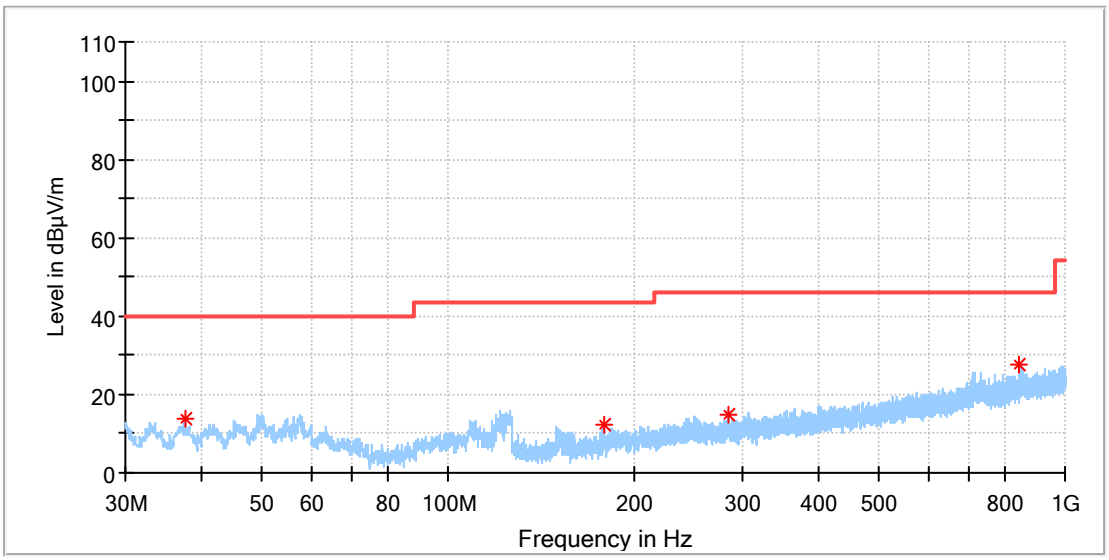


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
37.469000	24.92	40.00	15.08	100.0	V	0.0	-21.3
42.028000	24.59	40.00	15.41	100.0	V	316.0	-19.9
59.051500	23.86	40.00	16.14	100.0	V	284.0	-19.2
127.000000	14.29	43.50	29.21	100.0	V	237.0	-21.9

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_DH5_High CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



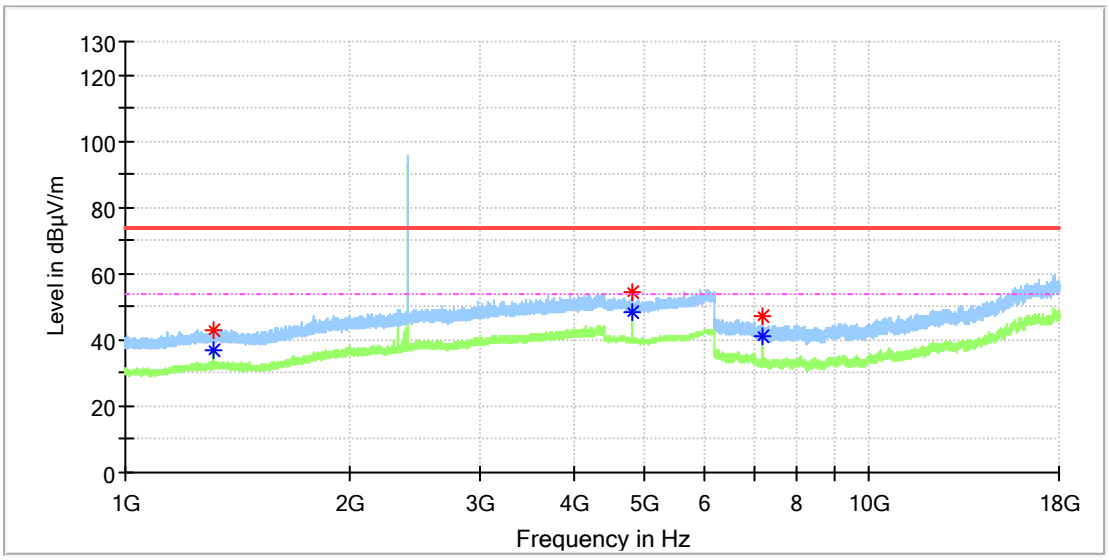
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
37.420500	13.90	40.00	26.10	100.0	H	76.0	-21.3
178.652500	12.12	43.50	31.38	100.0	H	105.0	-20.9
285.304000	14.66	46.00	31.34	100.0	H	164.0	-17.0
844.994000	27.86	46.00	18.14	100.0	H	0.0	-6.0

BDR mode, 1GHz - 18GHz

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_DH5_Low CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

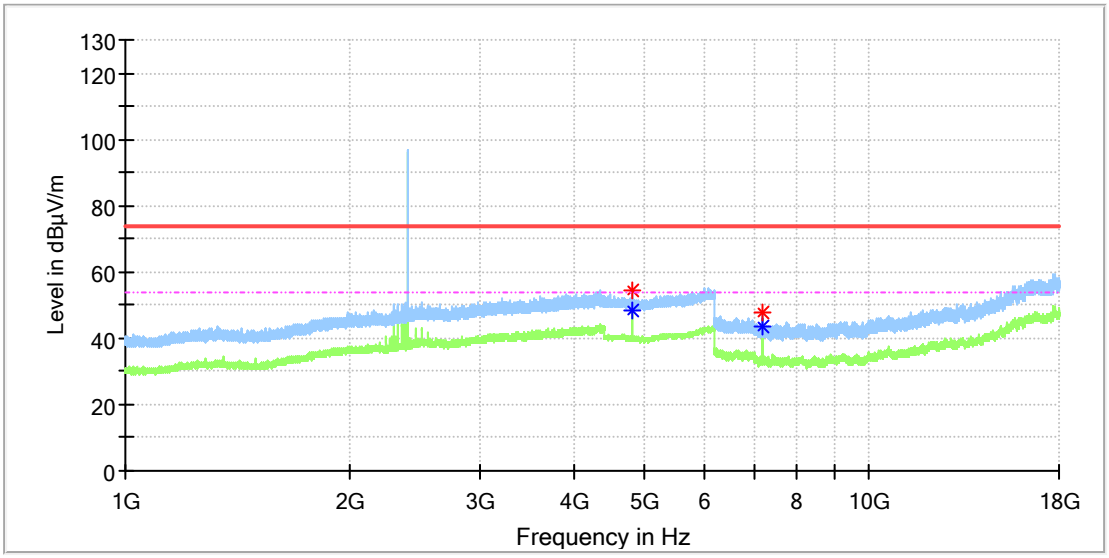


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1312.587500	---	37.03	54.00	16.97	100.0	V	165.0	2.0
1312.800000	42.76	---	74.00	31.24	100.0	V	165.0	2.0
4803.500000	54.24	---	74.00	19.76	100.0	V	62.0	13.6
4804.000000	---	48.57	54.00	5.43	100.0	V	53.0	13.6
7205.950000	47.39	---	74.00	26.61	100.0	V	66.0	8.8
7205.950000	---	41.06	54.00	12.94	100.0	V	66.0	8.8

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_DH5_Low CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

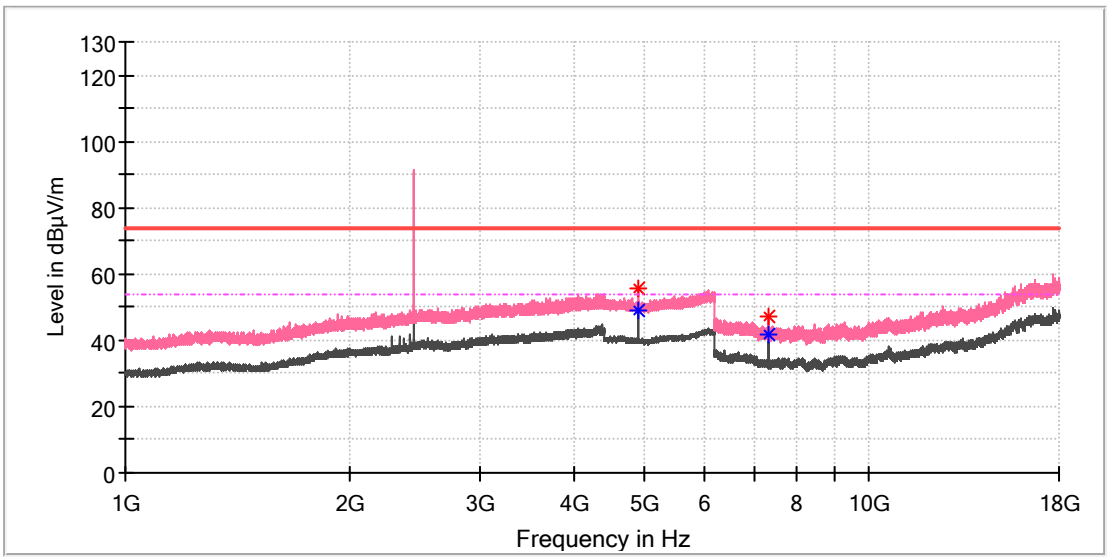


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4803.500000	54.40	---	74.00	19.60	100.0	H	153.0	13.6
4804.000000	---	48.43	54.00	5.57	100.0	H	153.0	13.6
7205.458333	47.70	---	74.00	26.30	100.0	H	172.0	8.8
7205.950000	---	43.40	54.00	10.60	100.0	H	172.0	8.8

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_DH5_Mid CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

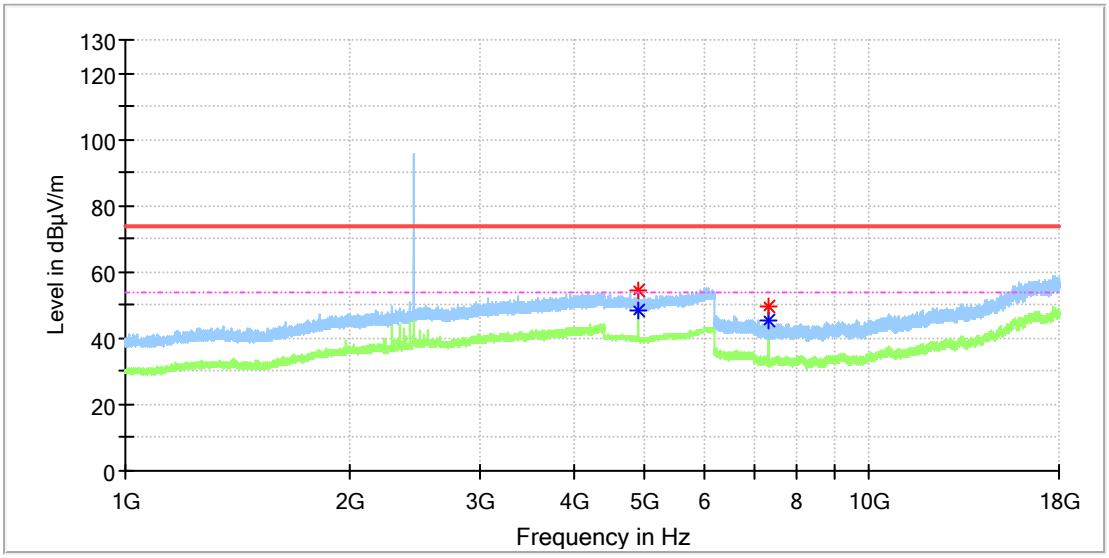


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4881.500000	55.40	---	74.00	18.60	100.0	V	91.0	13.4
4881.500000	---	49.17	54.00	4.83	100.0	V	91.0	13.4
7321.983333	47.40	---	74.00	26.60	100.0	V	262.0	8.2
7322.475000	---	41.58	54.00	12.42	100.0	V	262.0	8.2

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_DH5_Mid CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

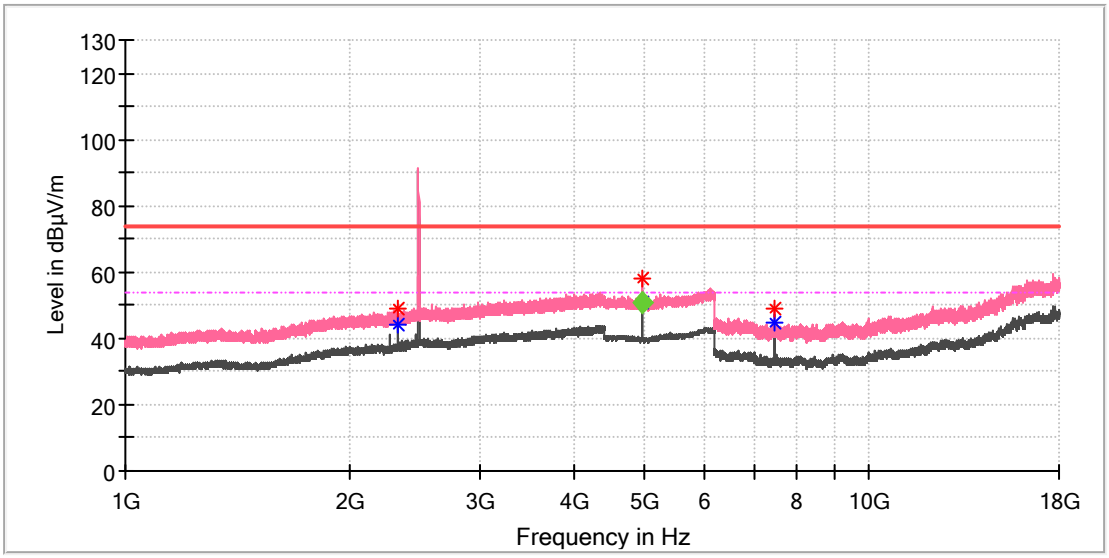


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4882.000000	54.17	---	74.00	19.83	100.0	H	223.0	13.4
4882.000000	---	48.57	54.00	5.43	100.0	H	223.0	13.4
7322.966667	49.70	---	74.00	24.30	100.0	H	121.0	8.2
7322.966667	---	45.53	54.00	8.47	100.0	H	121.0	8.2

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_DH5_High CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

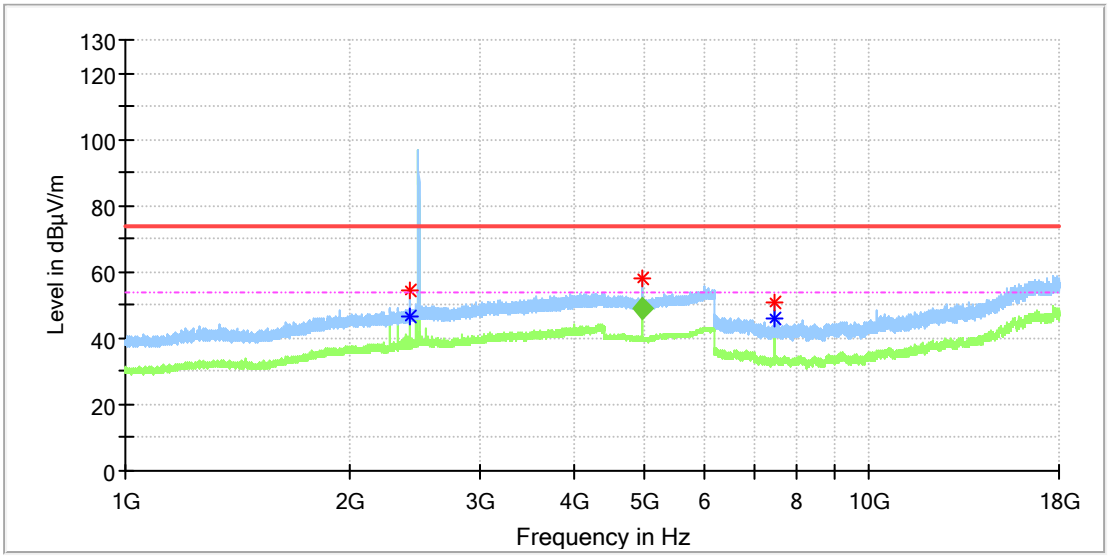
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2323.450000	49.12	---	74.00	24.88	100.0	V	244.0	6.6
2323.875000	---	43.86	54.00	10.14	100.0	V	244.0	6.6
4960.055556	58.10	---	74.00	15.90	100.0	V	52.0	13.2
7439.491667	48.74	---	74.00	25.26	100.0	V	140.0	8.4
7439.491667	---	44.75	54.00	9.25	100.0	V	140.0	8.4

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4959.938889	---	50.93	54.00	3.07	100.0	V	57.0	13.2

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_DH5_High CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2411.637500	---	46.84	54.00	7.16	100.0	H	0.0	7.1
2411.850000	54.43	---	74.00	19.57	100.0	H	0.0	7.1
4959.702778	58.28	---	74.00	15.72	100.0	H	220.0	13.2
7439.983333	---	45.82	54.00	8.18	100.0	H	166.0	8.4
7440.475000	50.52	---	74.00	23.48	100.0	H	208.0	8.4

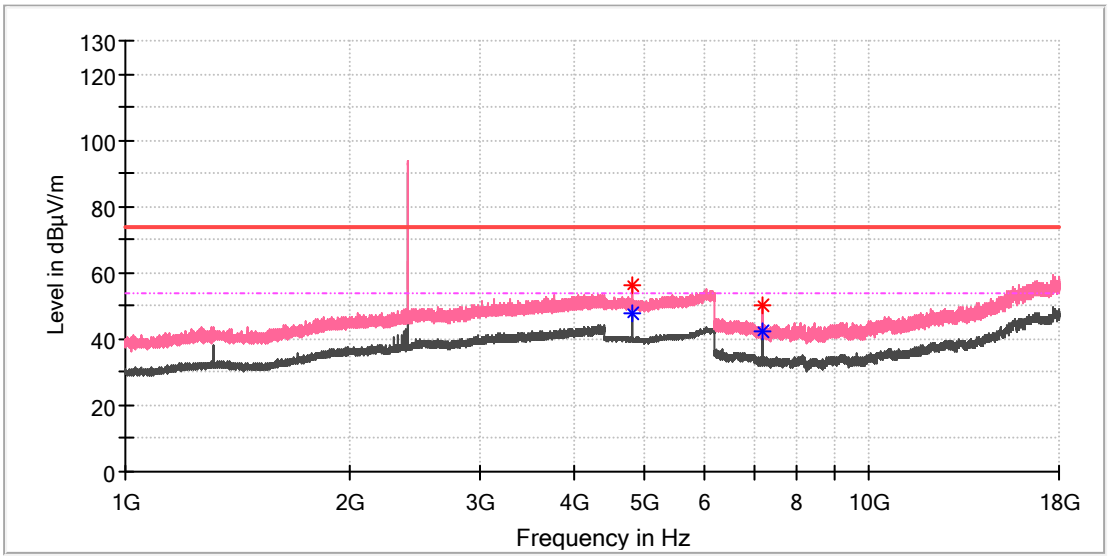
Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4959.900000	---	49.26	54.00	4.74	104.0	H	226.0	13.2

EDR mode, 1GHz - 18GHz

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_3DH5_Low CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

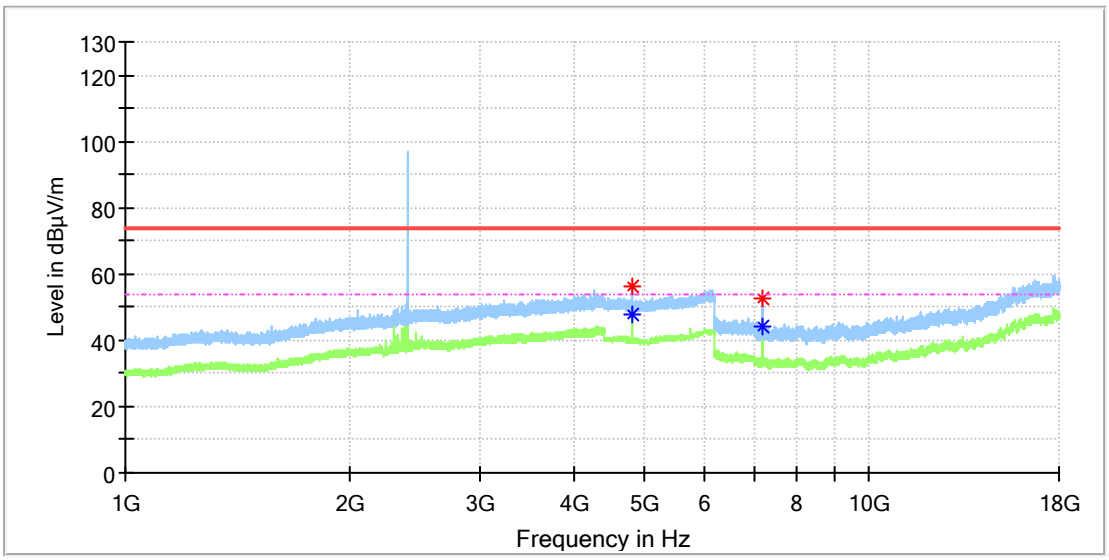


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.000000	55.95	---	74.00	18.05	100.0	V	83.0	13.6
4804.000000	---	47.62	54.00	6.38	100.0	V	83.0	13.6
7205.458333	---	42.05	54.00	11.95	100.0	V	180.0	8.8
7205.950000	50.05	---	74.00	23.95	100.0	V	125.0	8.8

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_3DH5_Low CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

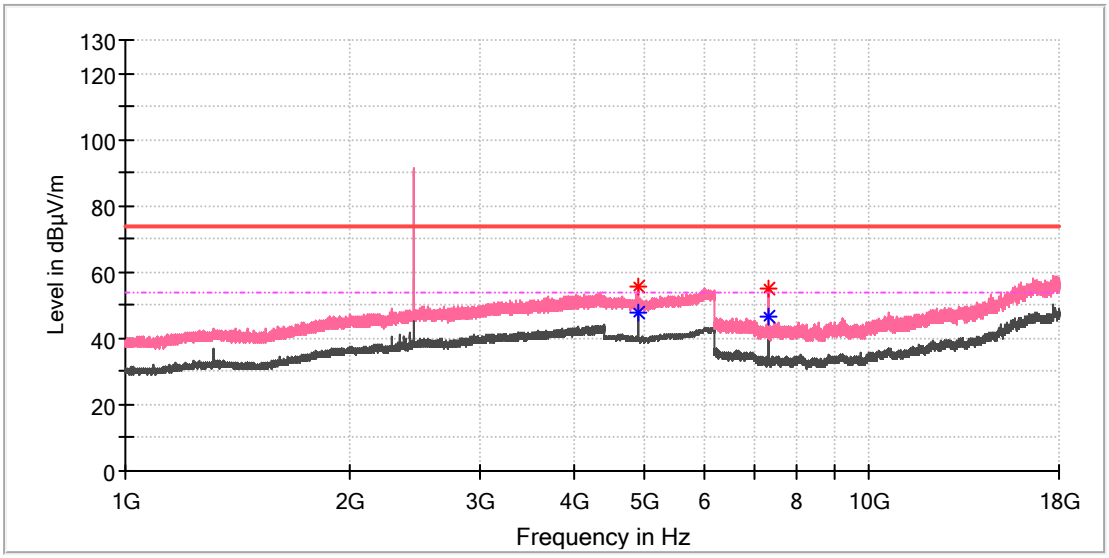


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4803.500000	56.37	---	74.00	17.63	100.0	H	193.0	13.6
4803.500000	---	47.77	54.00	6.23	100.0	H	193.0	13.6
7205.458333	52.72	---	74.00	21.28	100.0	H	210.0	8.8
7205.950000	---	44.22	54.00	9.78	100.0	H	210.0	8.8

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_3DH5_Mid CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

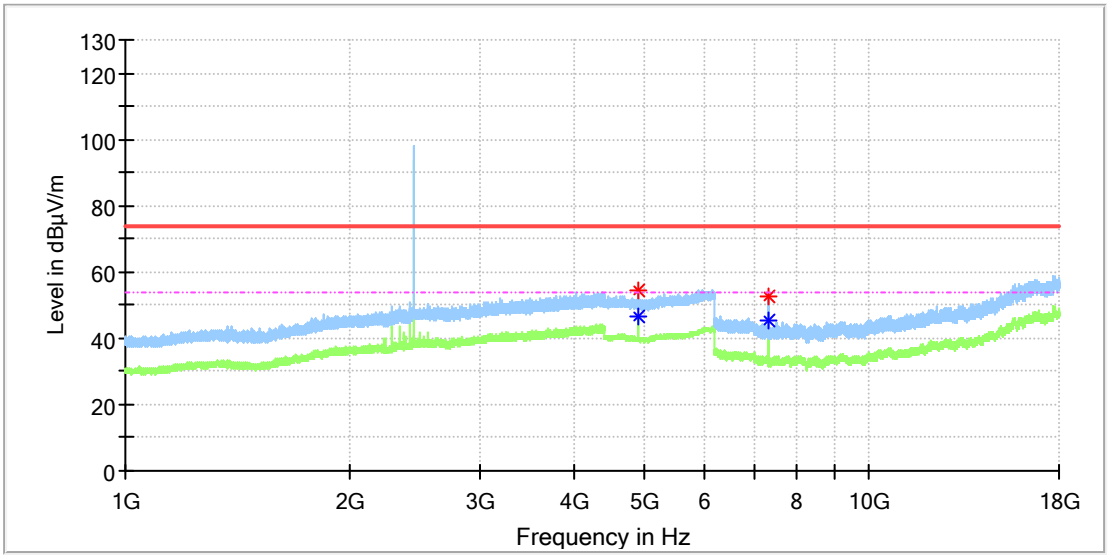


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4881.500000	55.64	---	74.00	18.36	100.0	V	94.0	13.4
4881.500000	---	47.70	54.00	6.30	100.0	V	94.0	13.4
7322.966667	54.92	---	74.00	19.08	100.0	V	221.0	8.2
7322.966667	---	46.50	54.00	7.50	100.0	V	221.0	8.2

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_3DH5_Mid CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

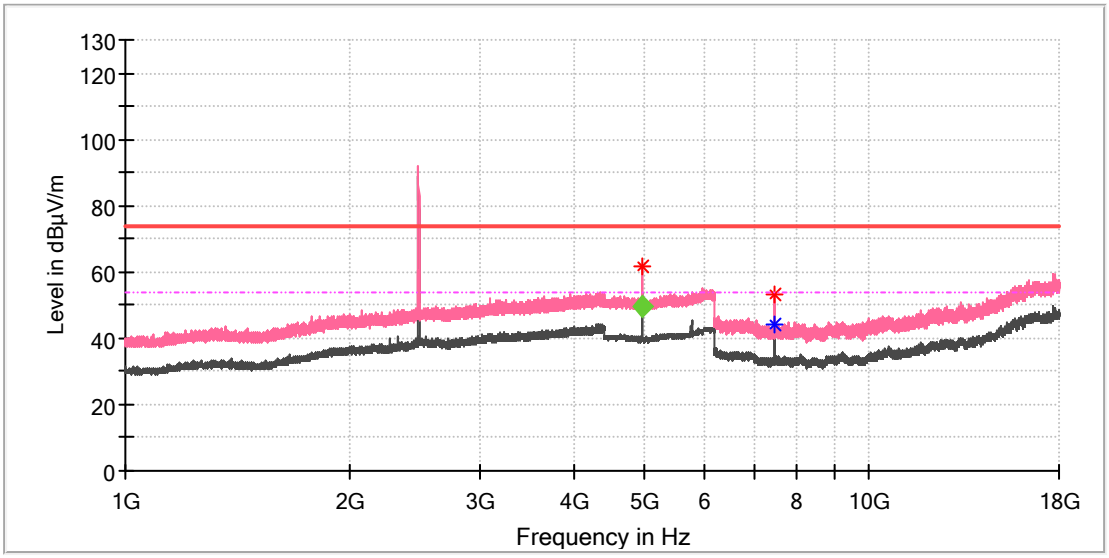


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4881.500000	---	46.39	54.00	7.61	100.0	H	216.0	13.4
4882.000000	54.57	---	74.00	19.43	100.0	H	189.0	13.4
7322.475000	52.54	---	74.00	21.46	100.0	H	118.0	8.2
7322.475000	---	45.18	54.00	8.82	100.0	H	118.0	8.2

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_3DH5_High CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

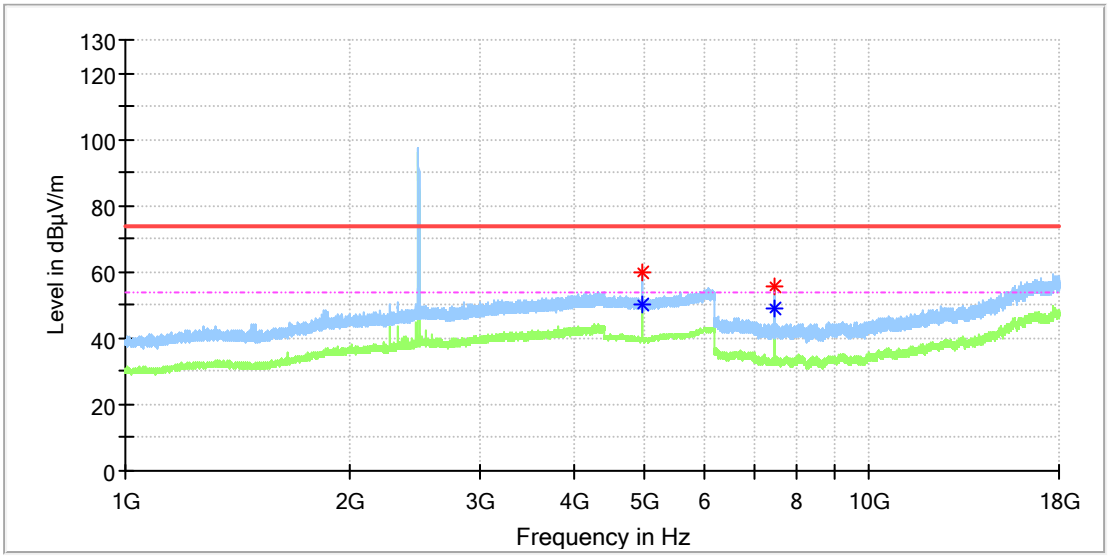
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.000000	61.53	---	74.00	12.47	100.0	V	86.0	13.2
7439.000000	53.44	---	74.00	20.56	100.0	V	221.0	8.4
7439.491667	---	44.07	54.00	9.93	100.0	V	115.0	8.4

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.005556	---	49.45	54.00	4.55	100.0	V	90.0	13.2

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_3DH5_High CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

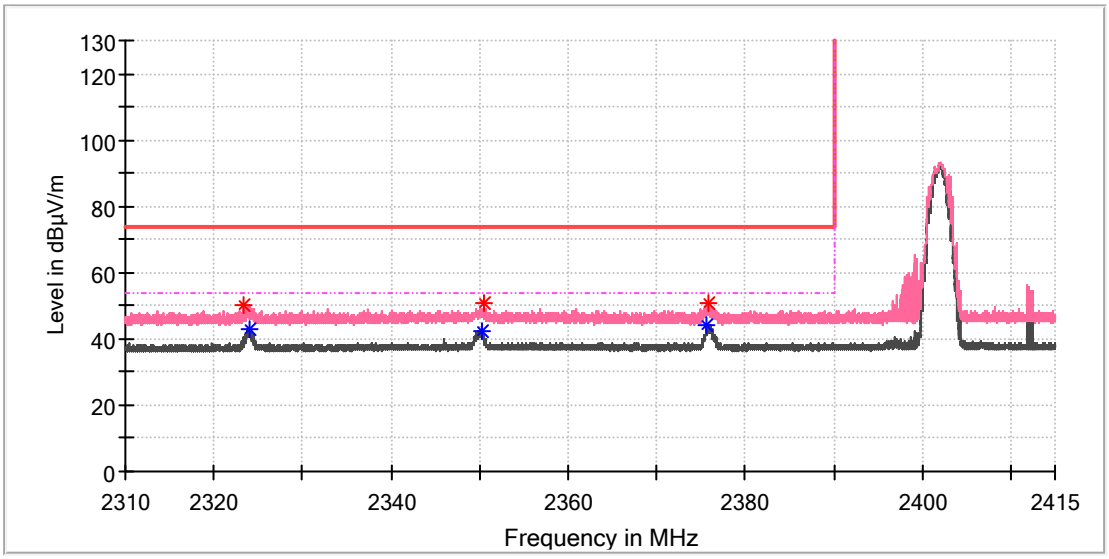
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.008333	59.65	---	74.00	14.35	100.0	H	221.0	13.2
4960.500000	---	50.08	54.00	3.92	100.0	H	221.0	13.2
7439.491667	55.56	---	74.00	18.44	100.0	H	144.0	8.4
7439.491667	---	49.05	54.00	4.95	100.0	H	144.0	8.4

Appendix C.2: Test Plots of Band Edge (Radiated)

BDR mode, Low Channel

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_DH5_Low CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

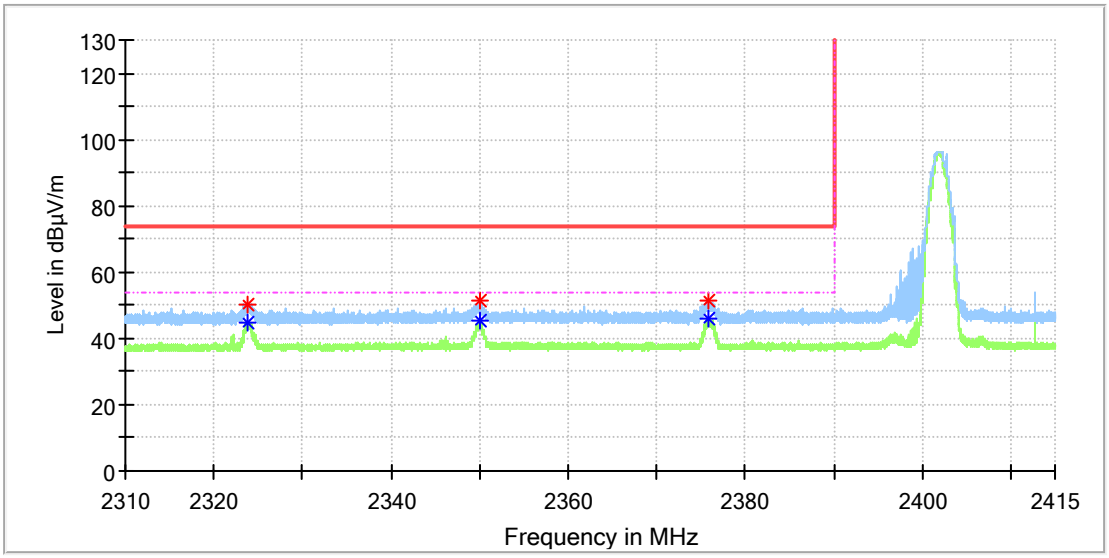


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2323.413750	50.47	---	74.00	23.53	100.0	V	245.0	6.6
2324.037188	---	42.81	54.00	11.19	100.0	V	245.0	6.6
2350.175625	---	42.22	54.00	11.78	100.0	V	108.0	6.9
2350.490625	50.75	---	74.00	23.25	100.0	V	108.0	6.9
2375.710313	---	43.99	54.00	10.01	100.0	V	234.0	6.9
2375.887500	50.68	---	74.00	23.32	100.0	V	108.0	6.9

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_DH5_Low CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



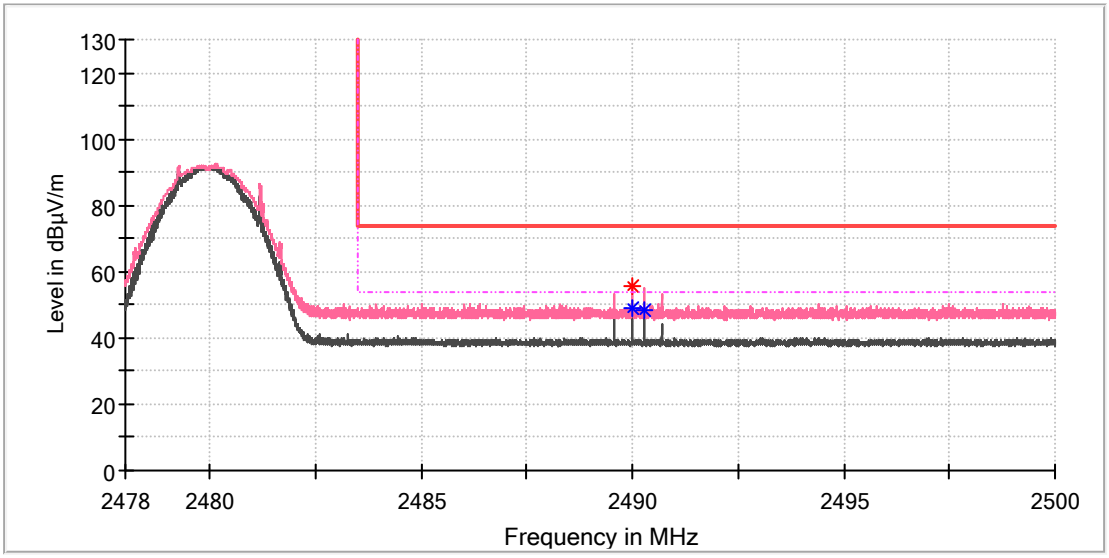
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2323.755000	50.25	---	74.00	23.75	100.0	H	199.0	6.6
2323.846875	---	44.85	54.00	9.15	100.0	H	224.0	6.6
2349.952500	---	45.36	54.00	8.64	100.0	H	224.0	6.9
2350.050938	51.65	---	74.00	22.35	100.0	H	199.0	6.9
2375.854688	51.16	---	74.00	22.84	100.0	H	199.0	6.9
2375.854688	---	45.81	54.00	8.19	100.0	H	199.0	6.9

BDR mode, High Channel

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_DH5_High CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

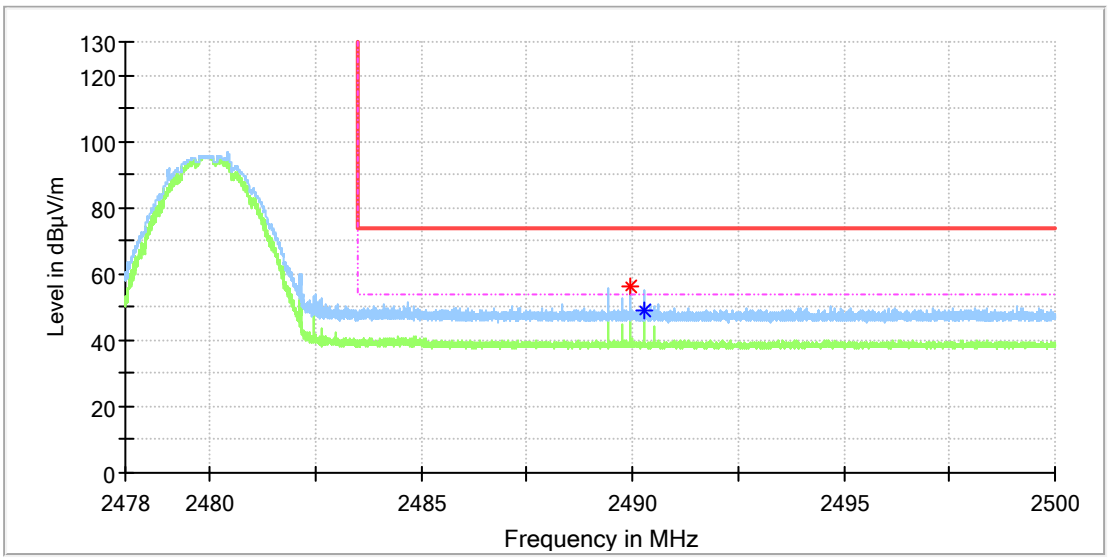


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2489.994375	55.64	---	74.00	18.36	100.0	V	354.0	7.4
2489.994375	---	49.25	54.00	4.75	100.0	V	354.0	7.4
2490.283125	---	48.36	54.00	5.64	100.0	V	0.0	7.4

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_DH5_High CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



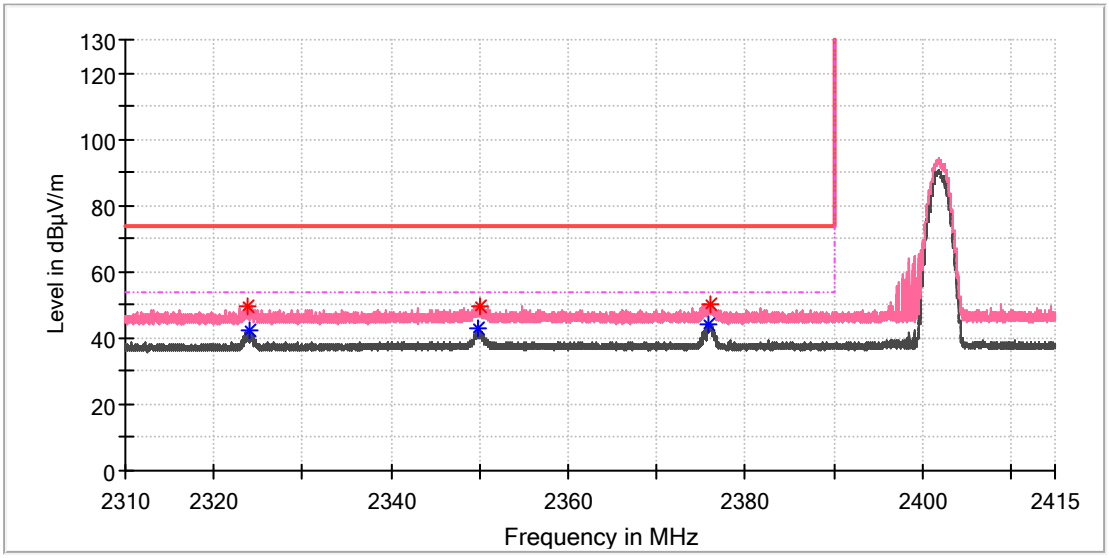
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2489.961563	56.14	---	74.00	17.86	100.0	H	7.0	7.4
2490.291875	---	49.16	54.00	4.84	100.0	H	233.0	7.4

EDR mode, Low Channel

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_3DH5_Low CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

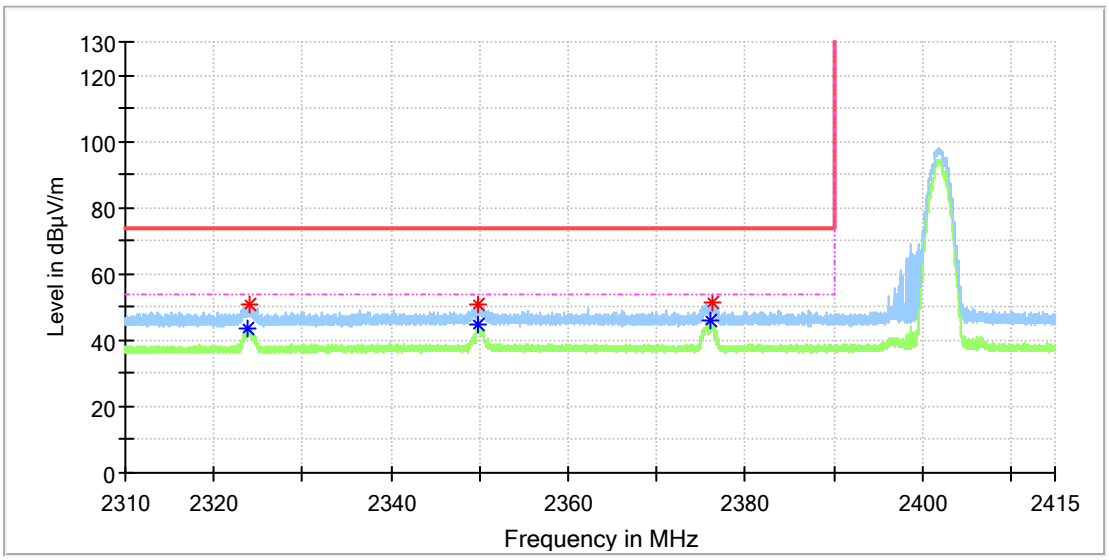


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2323.873125	49.29	---	74.00	24.71	100.0	V	273.0	6.6
2324.070000	---	42.19	54.00	11.81	100.0	V	151.0	6.6
2349.827813	---	42.90	54.00	11.10	100.0	V	273.0	6.9
2349.985313	49.48	---	74.00	24.52	100.0	V	284.0	6.9
2375.933438	---	44.38	54.00	9.62	100.0	V	273.0	6.9
2376.077813	50.15	---	74.00	23.85	100.0	V	273.0	6.9

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_3DH5_Low CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



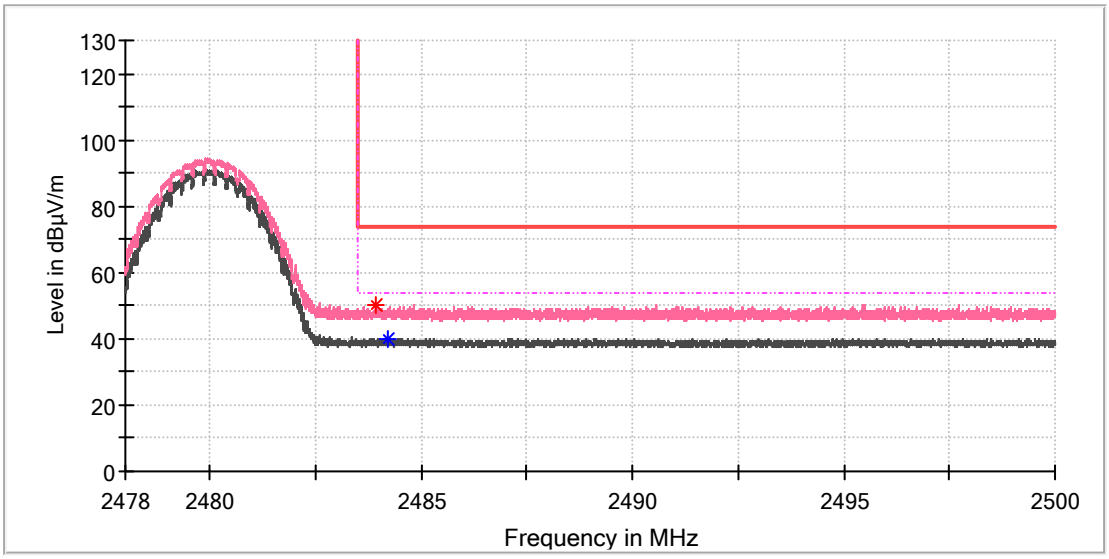
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2323.728750	---	43.58	54.00	10.42	100.0	H	265.0	6.6
2324.056875	50.86	---	74.00	23.14	100.0	H	265.0	6.6
2349.827813	50.99	---	74.00	23.01	100.0	H	265.0	6.9
2349.880313	---	44.45	54.00	9.55	100.0	H	265.0	6.9
2376.097500	---	45.77	54.00	8.23	100.0	H	265.0	6.9
2376.268125	51.44	---	74.00	22.57	100.0	H	265.0	6.9

EDR mode, High Channel

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_3DH5_High CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

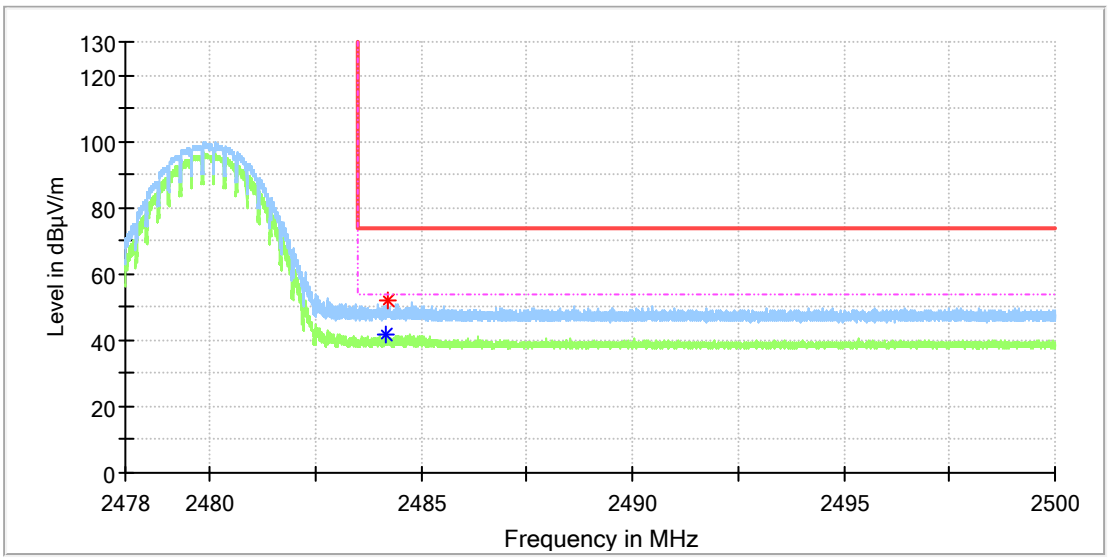


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.940000	50.26	---	74.00	23.74	100.0	V	173.0	7.4
2484.187500	---	40.03	54.00	13.97	100.0	V	226.0	7.4

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	TX_BT_3DH5_High CH
Test Voltage::	230V/50Hz
Remark:	Temp 23 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



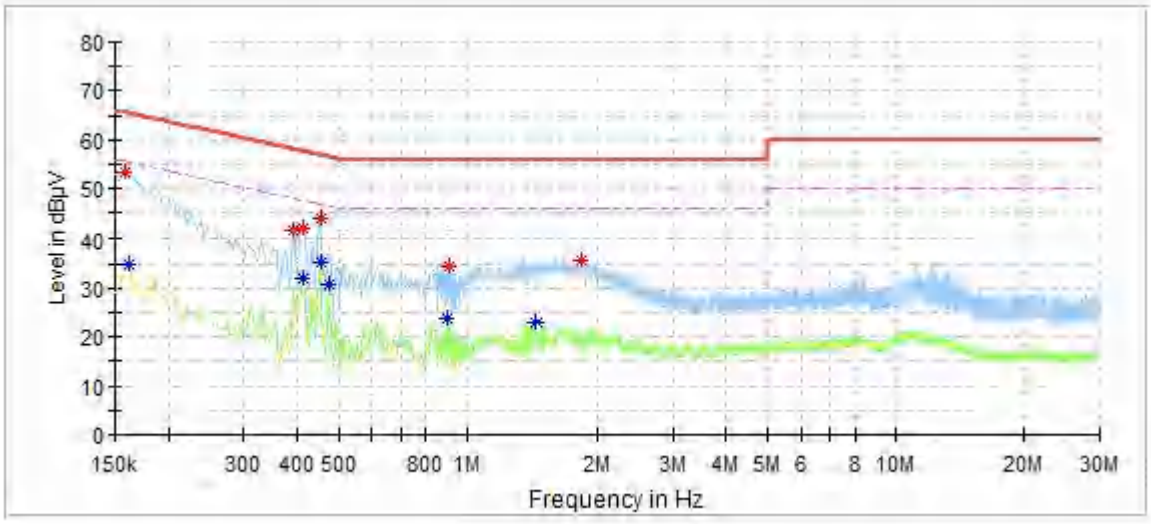
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2484.140750	---	41.85	54.00	12.15	100.0	H	277.0	7.4
2484.190250	52.02	---	74.00	21.98	100.0	H	277.0	7.4

Appendix C.3: Test Plots of AC Mains Conducted Emission

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	BT Playing
Test Voltage:	AC 120V/60Hz
Test By:	Ouyang Wang
Review By:	Gary Chen
Remark:	

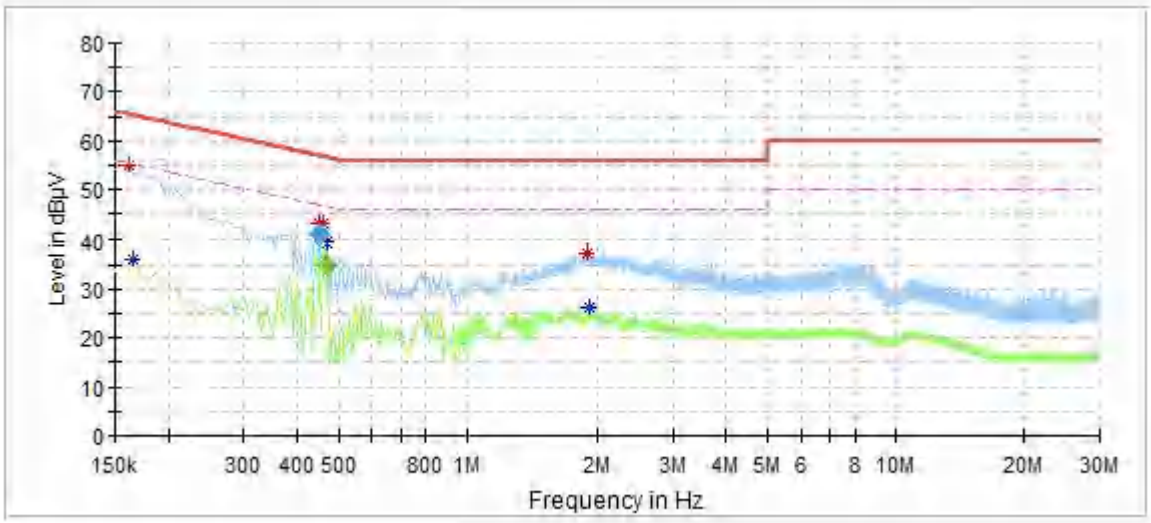


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.158000	53.22	---	65.57	12.35	L1	9.6
0.162000	---	34.99	55.36	20.37	L1	9.6
0.394000	41.34	---	57.98	16.64	L1	9.7
0.414000	41.71	---	57.57	15.86	L1	9.7
0.414000	---	31.91	47.57	15.66	L1	9.7
0.454000	---	35.25	46.80	11.55	L1	9.7
0.454000	43.92	---	56.80	12.89	L1	9.7
0.474000	---	30.58	46.44	15.86	L1	9.7
0.904000	---	23.96	46.00	22.04	L1	9.7
0.908000	34.58	---	56.00	21.42	L1	9.7
1.448000	---	22.89	46.00	23.11	L1	9.7
1.828000	35.79	---	56.00	20.21	L1	9.7

EUT Information

EUT Name:	Powerful Bluetooth speaker
Model:	X5
Test Mode:	BT Playing
Test Voltage:	AC 120V/60Hz
Test By:	Ouyang Wang
Review By:	Gary Chen
Remark:	



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.162000	54.82	---	65.36	10.54	N	9.6
0.166000	---	36.11	55.16	19.05	N	9.6
0.448500	43.04	---	56.66	13.62	N	9.7
0.462000	43.04	---	56.66	13.62	N	9.7
0.468500	---	39.32	46.59	7.27	N	9.7
1.904000	37.15	---	56.00	18.85	N	9.7
1.920000	---	26.27	46.00	19.73	N	9.7

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.448500	41.07	---	56.90	15.83	200.0	9.000	N	9.7
0.468500	---	34.93	46.54	11.61	200.0	9.000	N	9.7