Prüfbericht-Nr.: *Test report No.:*	**50323394 001**	**Auftrags-Nr.:** *Order No.:*	168136581	Seite 1 von 27 *Page 1 of 27*
Kunden-Referenz-Nr.: *Client reference No.:*	N/A	**Auftragsdatum:** *Order date:*	18.10.2019	
Auftraggeber: *Client:*	**SHENZHEN FENDA TECHNOLOGY CO., LTD.** Fenda Hi-Tech Park, Zhoushi Road, Shiyan Town, Baoan District, Shenzhen, China			
Prüfgegenstand: *Test item:*	AmazonBasics Bookshelf Speakers with Active Speaker, 40W, 20-20KHz			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	R28BTUS, B07WBS8ML1 (Trademark: amazonbasics)			
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 receipt:*	08.11.2019
Prüfmuster-Nr.: *Test sample No.:*	A001021700-001
Prüfzeitraum: *Testing period:*	18.11.2019 - 02.12.2019
Ort der Prüfung: *Place of testing:*	TÜV Rheinland (Shenzhen) Co., Ltd.
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shenzhen) Co., Ltd.
Prüfergebnis*: *Test result*:*	Pass

Please refer to photo documents

geprüft von / *tested by:*

Datum *Date*	Name/Stellung *Name/Position*	Unterschrift *Signature*
16.04.2020	Alex Lan / Senior Project Engineer	

kontrolliert von / *reviewed by:*

Datum *Date*	Name/Stellung *Name/Position*	Unterschrift *Signature*
16.04.2020	Winnie Hou / Technical Certifier	

Sonstiges / *Other:*

FCC ID: HBOR28BT
IC: 10550A-R28BT HVIN: R28BT

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

Test Summary

5.1.1 ANTENNA REQUIREMENT
RESULT: Pass

5.1.2 MAXIMUM 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.

Conducted Emissions				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
EMI Test Receiver	R&S	ESR3	102428	03.09.2020
Artificial Mains Network	R&S	ENV216	102333	19.08.2020
Artificial Mains Network	R&S	ENV432	101411	19.08.2020
Impedance Stabilisation Network	R&S	ENY81	100323	19.08.2020
Impedance Stabilisation Network	R&S	ENY81-CA6	101810	20.08.2020
Current Probe	R&S	EZ-17	101247	19.08.2020
Voltage Probe	R&S	ESH2-Z3	100557	19.08.2020
Attenuator	R&S	ESH2Z31	100300	19.08.2020
EMC32 test software	R&S	EMC32(Ver.10.50.01)	N/A	N/A
Click test software	R&S	Click Rate Analyzer 2.4.2	N/A	N/A
Radio Spectrum Testing				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Wireless Connectivity Tester	Rohde & Schwarz	CMW270	101375	20.08.2020
Signal Analyzer	Rohde & Schwarz	FSV 40	101441	20.08.2020
Vector Signal Generator	Rohde & Schwarz	SMBV100A	263301	21.08.2020
Signal Generator	Rohde & Schwarz	SMB100A	115186	21.08.2020
OSP	Rohde & Schwarz	OSP 150	101017	20.12.2019
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	20.12.2019
Wideband Power Sensor	Rohde & Schwarz	NRP-Z81	105350	20.12.2019
Humid & Temp Programmable Tester	BOST	NTH090-60	19040801	16.04.2020
Shielding Room 8#	Albatross	SR8	APC17151-SR8	23.07.2020
Unwanted Emission Testing				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Signal Generator	Rohde & Schwarz	SMB100A	180840	20.08.2020
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	165339	20.08.2020

Signal Analyzer	Rohde & Schwarz	FSV 40	101440	21.08.2020
System Controller Interface	Rohde & Schwarz	SCI-100	S10010036	N/A
Filterbank	Rohde & Schwarz	CDMA	100751	30.08.2020
Filterbank	Rohde & Schwarz	GSM	100811	21.08.2020
OSP	Rohde & Schwarz	OSP 120	102041	N/A
OSP	Rohde & Schwarz	OSP 150	101385	20.12.2019
Pre-amplifier	Rohde & Schwarz	SCU08F1	08320030	20.08.2020
Amplifier	Rohde & Schwarz	SCU-18F	180079	20.08.2020
Amplifier	Rohde & Schwarz	SCU40A	100450	02.09.2020
Trilog Broadband Antenna (30 MHz - 1 GHz)	Schwarzbeck	VULB9162	192	02.09.2020
Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218719	02.09.2020
Wideband Ridged Horn Antenna (12-18 GHz)	Steatite	QMS-00208	18312	02.09.2020
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19066	02.09.2020
Biconical Broadband Antenna (30 MHz - 1 GHz)	Schwarzbeck	VUBA 9117	357	02.09.2020
Double Ridged Broadband Horn Antenna (1 – 18 GHz)	Schwarzbeck	BBHA 9120 D	01760	02.09.2020
Broadband Horn Antenna (15 – 40 GHz)	Schwarzbeck	BBHA 9170	00862	02.09.2020
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 AmazonBasics Bookshelf Speakers with Active Speaker, 40W, 20-20KHz which supports Bluetooth 5.0 (BDR&EDR) technology.

Both models are identical except the model name is different.

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

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

Technical Specification	Value
Kind of Equipment	AmazonBasics Bookshelf Speakers with Active Speaker, 40W, 20-20KHz
Type Designation	R28BTUS, B07WBS8ML1
FCC ID	HBOR28BT
IC	10550A-R28BT
HVIN	R28BT
Operating Frequency	2402 - 2480 MHz
Operating Voltage	AC 100-240V, 50/60Hz, 0.3A
Testing Voltage	AC 120V, 60Hz
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	-0.34 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.

According to clause 3.1, all tests were applied on model R28BTUS.

4.3 Special Accessories and Auxiliary Equipment

Table 5: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N
iPhone6S PLUS	Apple	ML6D2 CH/A	C35QJ76JGRWM
DVD Player	KENUO	DVD-966S	2003010805086710
Audio Analyzer	R&S	SB3493	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)

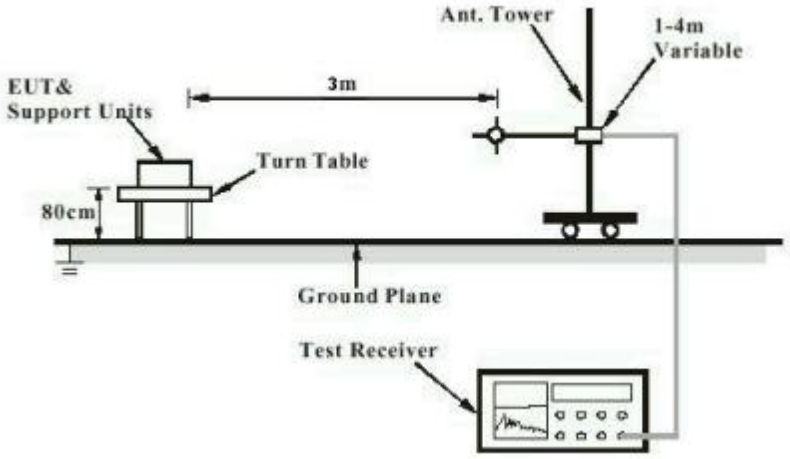


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

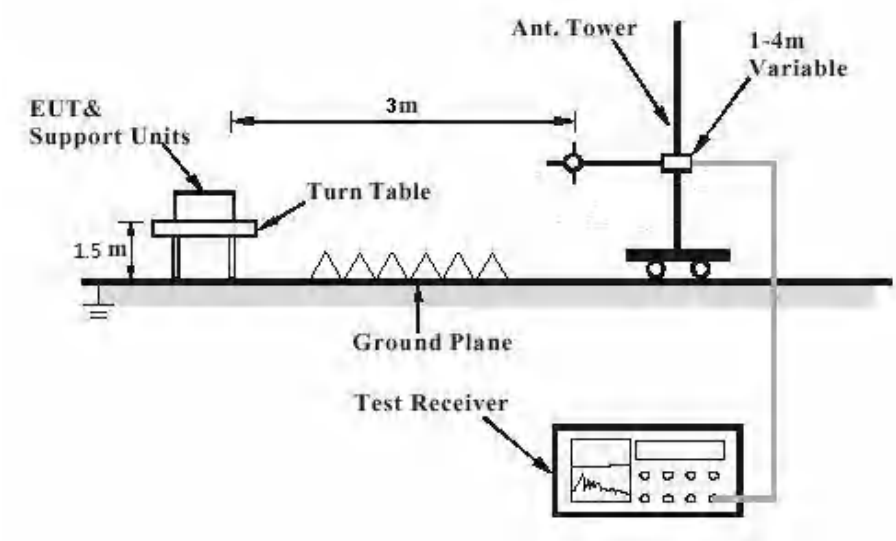


Diagram of Measurement Configuration for Mains Conduction Measurement

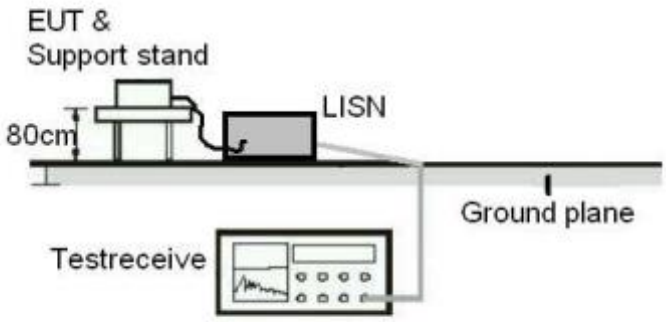
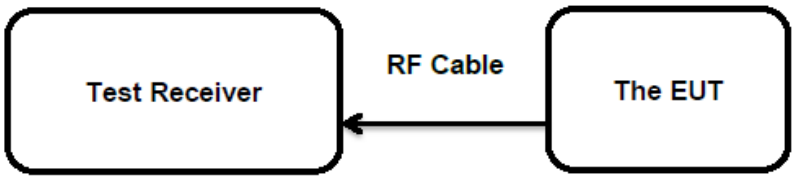


Diagram of Measurement Configuration for Conducted Transmitter Measurement



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 -0.347 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 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	:	27.11.2019
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 Conducted Output Power

Band	Bluetooth(8DPSK)		
Data Rate	3DH5		
Channel	0	39	78
Frequency (MHz)	2402	2441	2480
Peak. Power (dBm)	1.85	3.97	5.29
Avg.Power (dBm)	-2.19	-0.04	1.31
Band	Bluetooth(GFSK)		
Data Rate	DH5		
Channel	0	39	78
Frequency (MHz)	2402	2441	2480
Peak. Power (dBm)	0.69	2.79	4.07
Avg.Power (dBm)	-0.94	1.05	2.38

Note: The cable loss is taken into account in results and the maximum e.i.r.p. is 4.943 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	:	26.11.2019
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	855	
	2480	855	
EDR	2402	1180	/
	2441	1185	
	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	:	26.11.2019
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	:	18.11.2019 - 02.12.2019
Input voltage	:	AC 120V/60Hz
Operation mode	:	A.1, B
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	:	09.08.2019
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	945	630.000	/
	2441	945	630.000	
	2480	1015	676.667	
EDR	2402	1265	843.333	/
	2441	1270	846.667	
	2480	1280	853.333	

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	:	26.11.2019
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	2401.965347	1.009901	≥ 25kHz or 2/3 of 20dB bandwidth	Pass
	Adjacency Channel	2402.975248			
	Middle Channel	2440.965347	1.009901		Pass
	Adjacency Channel	2441.975248			
	High Channel	2478.965347	1.009901		Pass
	Adjacency Channel	2479.975248			
EDR	Low Channel	2401.995050	0.980198	≥ 25kHz or 2/3 of 20dB bandwidth	Pass
	Adjacency Channel	2402.975248			
	Middle Channel	2440.995050	0.980198		Pass
	Adjacency Channel	2441.975248			
	High Channel	2478.995050	0.980198		Pass
	Adjacency Channel	2479.975248			

Note:

The limit is maximum 2/3 of the 20 dB bandwidth: 853.3 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	:	26.11.2019
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	:	27.11.2019
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	0.402	0.129	< 0.4s
		DH3	1.658	0.265	
		DH5	2.906	0.310	
EDR	2441	2DH1	0.411	0.132	< 0.4s
		2DH3	1.663	0.266	
		2DH5	2.913	0.311	

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	:	02.12.2019
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 2019
		FCC KDB Publication 447498 v06
Limit	:	CFR47 FCC Part 1.1310

The separation distance of the EUT should be 5mm.The measured maximum conducted power of the EUT is 5.29dBm ≈ 3.38 mW , which is far below the SAR exclusion threshold level 10mW (Appendix A, 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 separation distance of the EUT should be 5mm.The measured maximum output power of the EUT is 5.29dBm ≈ 3.38 mW, which is 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

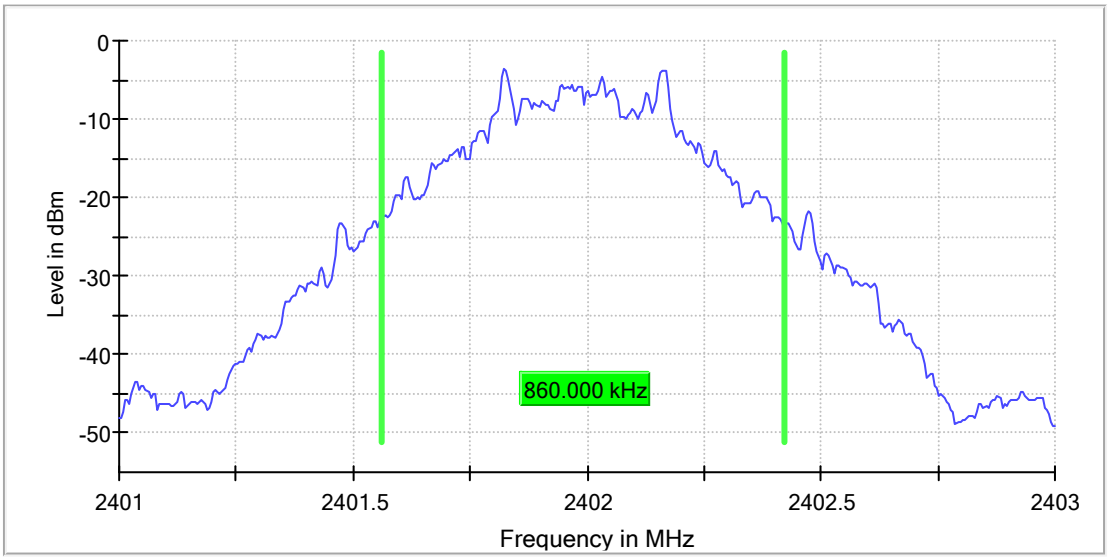
Appendix B

Test Results of Conducted Testing

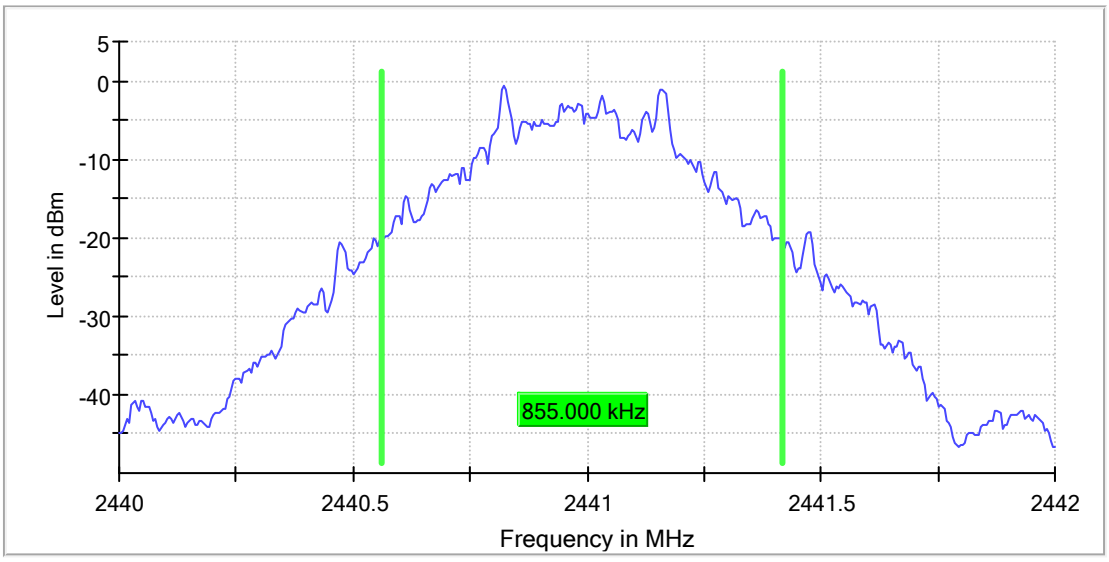
Appendix B.1: Test Plots of 99% Bandwidth

BDR Mode, DH1

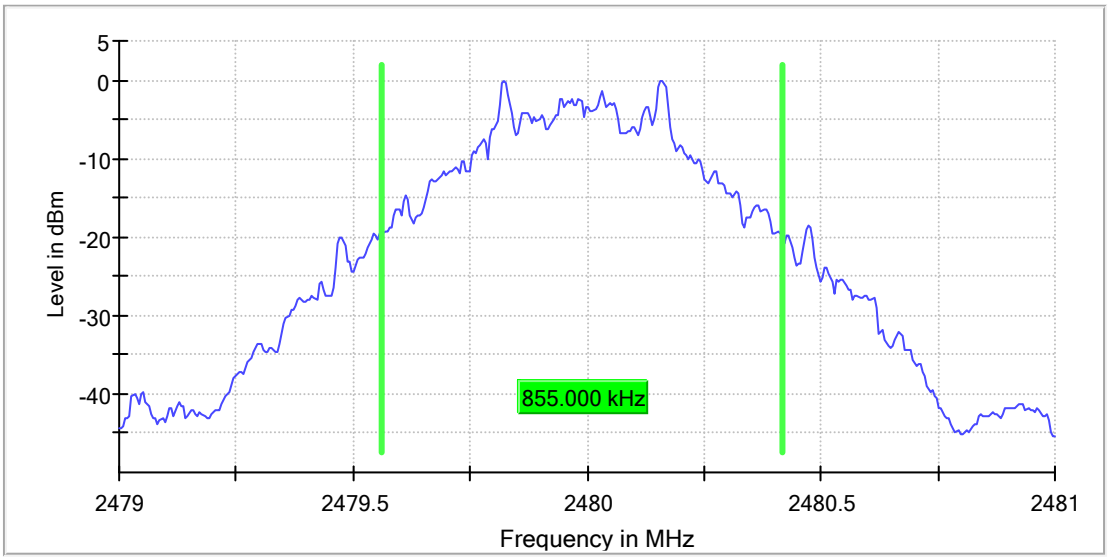
RBW=10KHz, VBW=30KHz



RBW=10KHz, VBW=30KHz

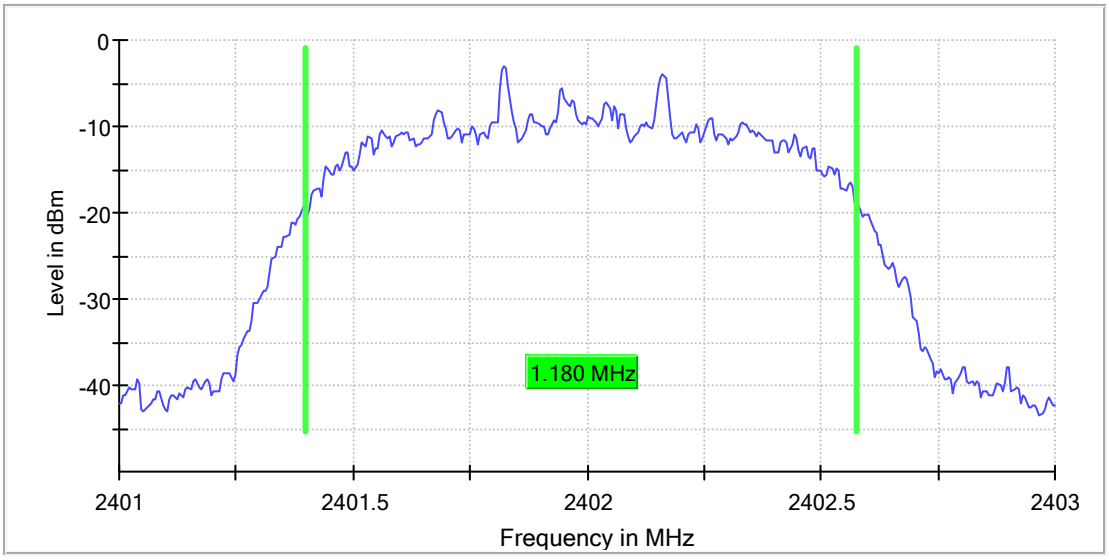


RBW=10KHz, VBW=30KHz

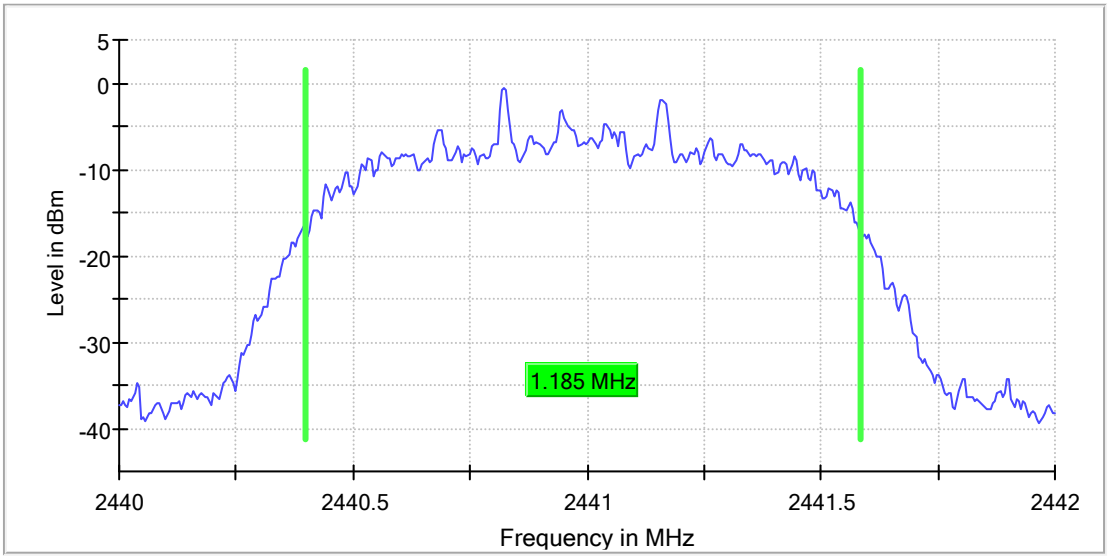


EDR Mode, 3DH1

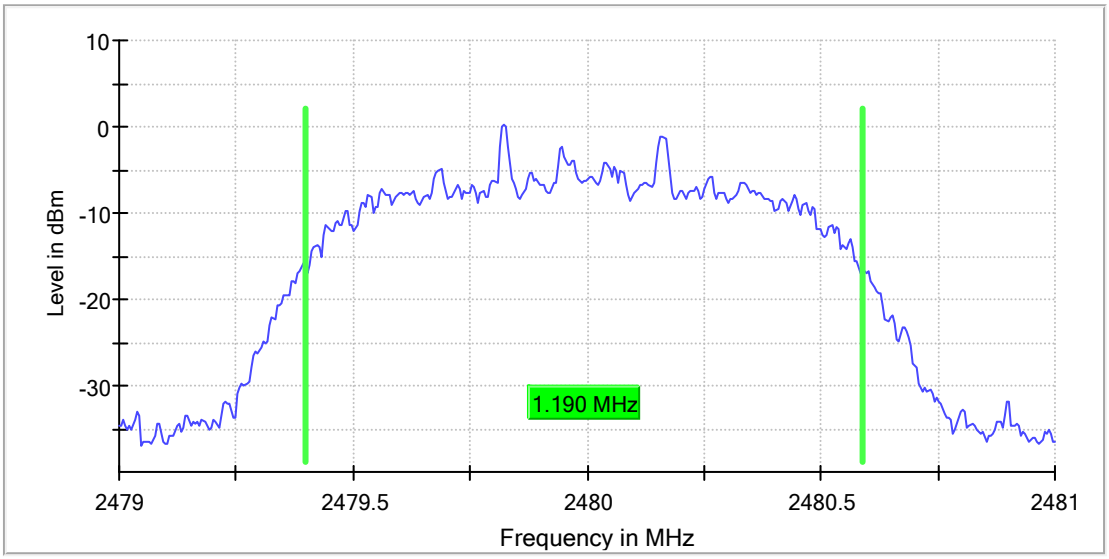
RBW=30KHz VBW=100KHz



RBW=30KHz VBW=100KHz



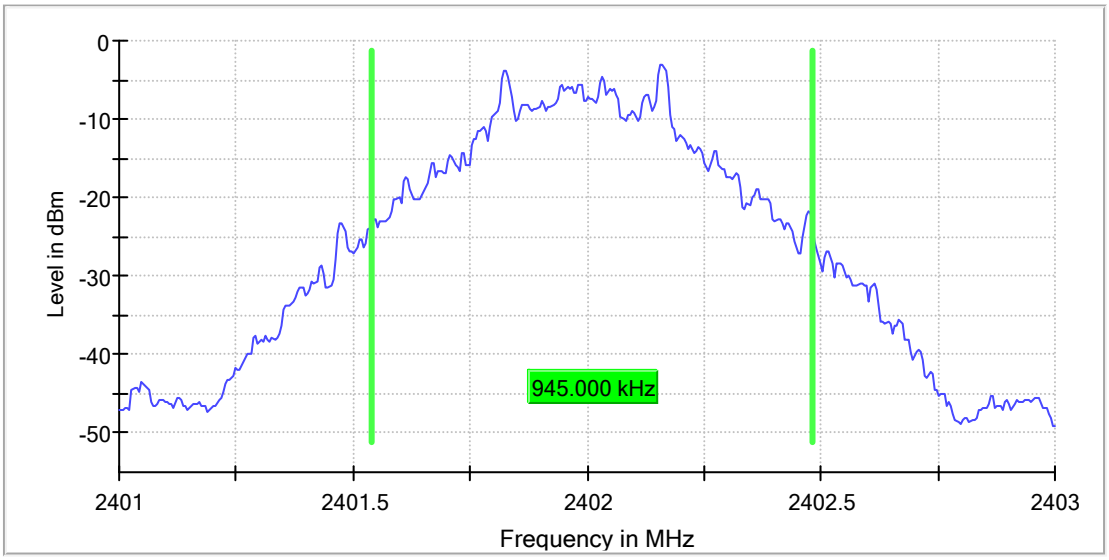
RBW=30KHz VBW=100KHz



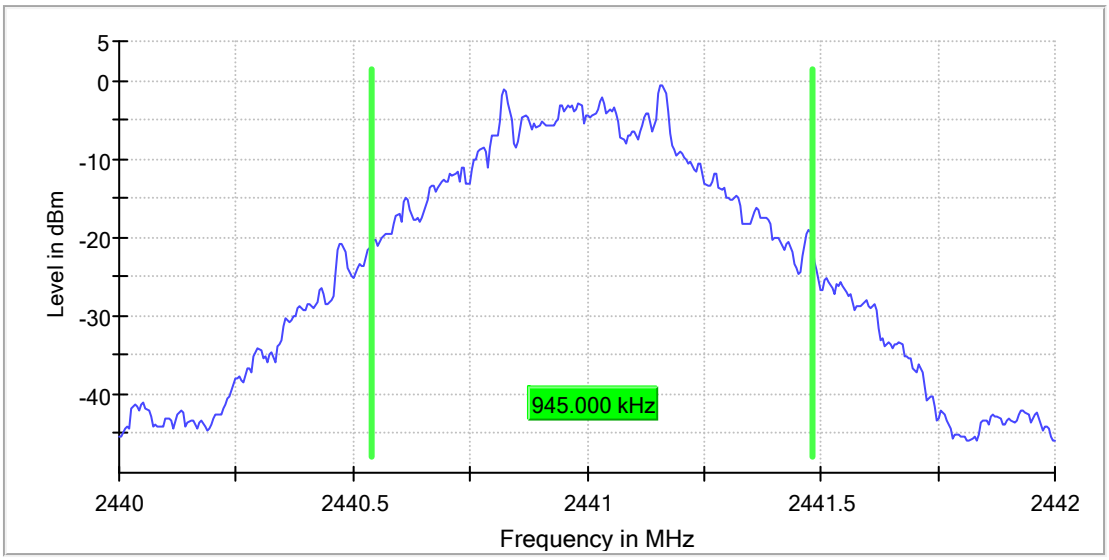
Appendix B.2: Test Plots of 20dB Bandwidth

BDR Mode, DH1

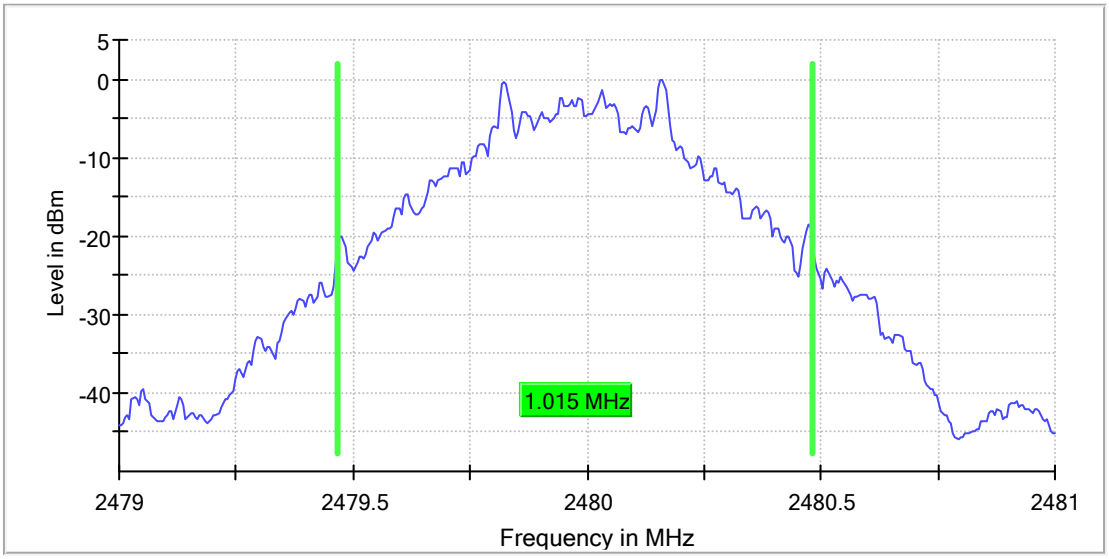
RBW=10KHz VBW=30KHz



RBW=10KHz VBW=30KHz

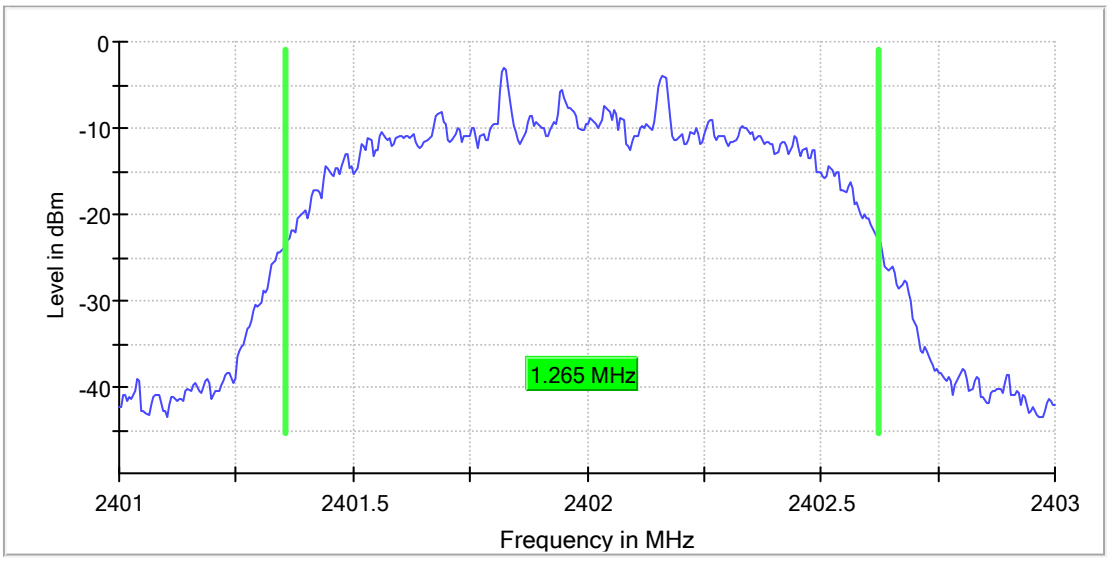


RBW=30KHz VBW=100KHz

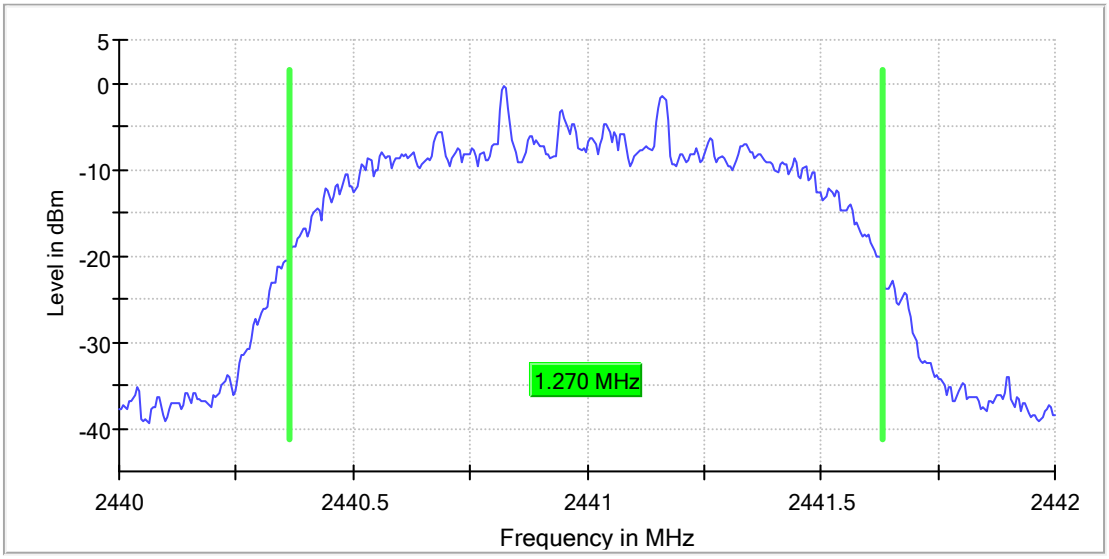


EDR Mode, 3DH1

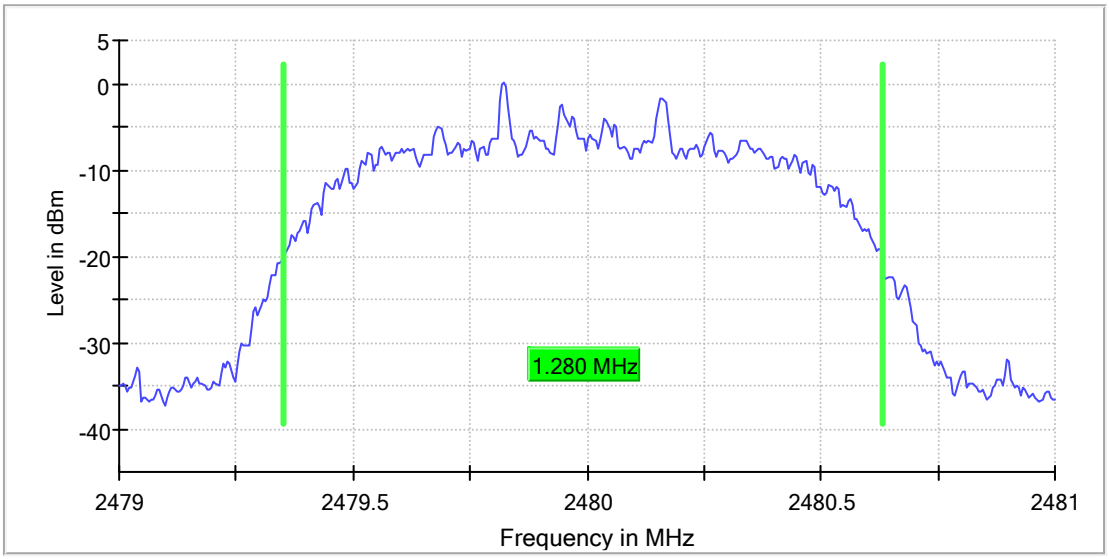
RBW=30KHz VBW=100KHz



RBW=30KHz VBW=100KHz

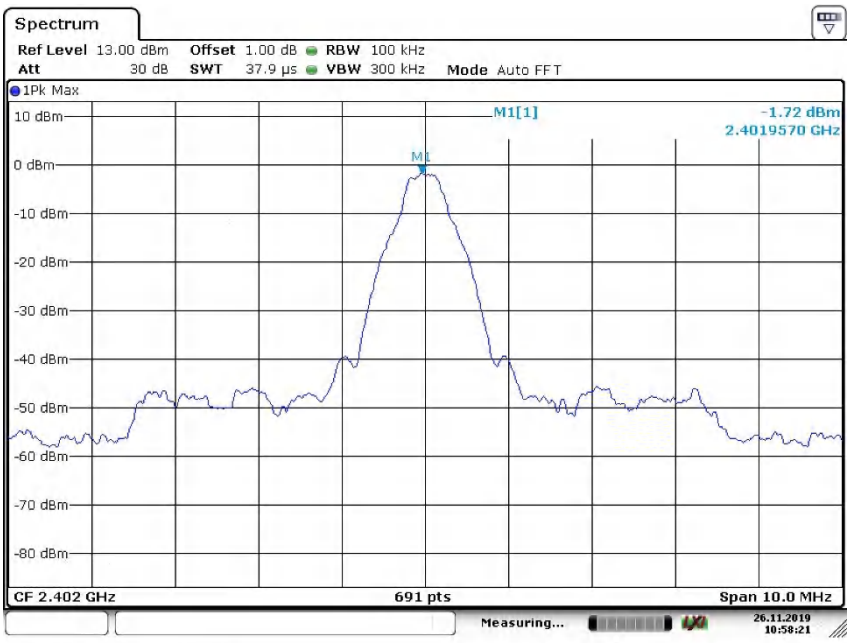


RBW=30KHz VBW=100KHz

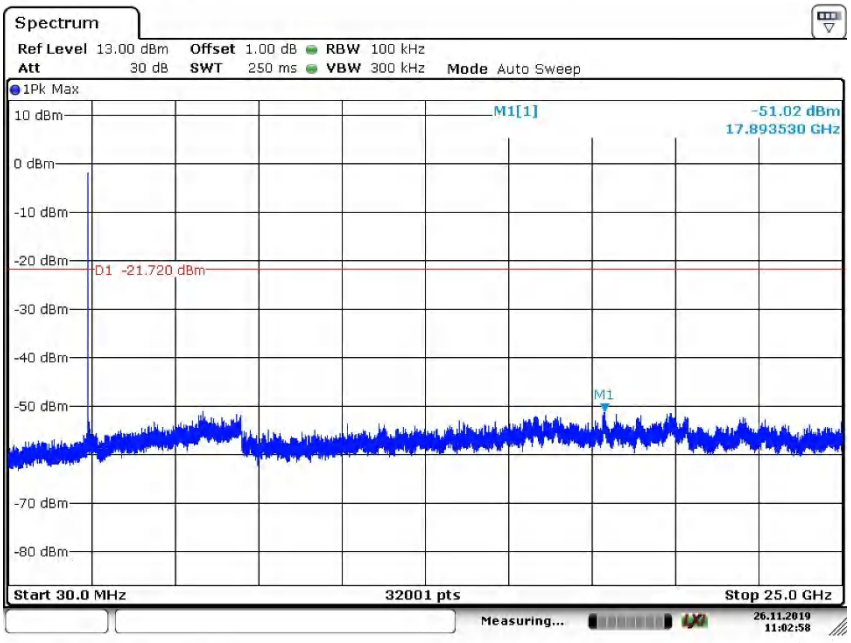


Appendix B.3: Test Plots of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

BDR Mode, Low Channel

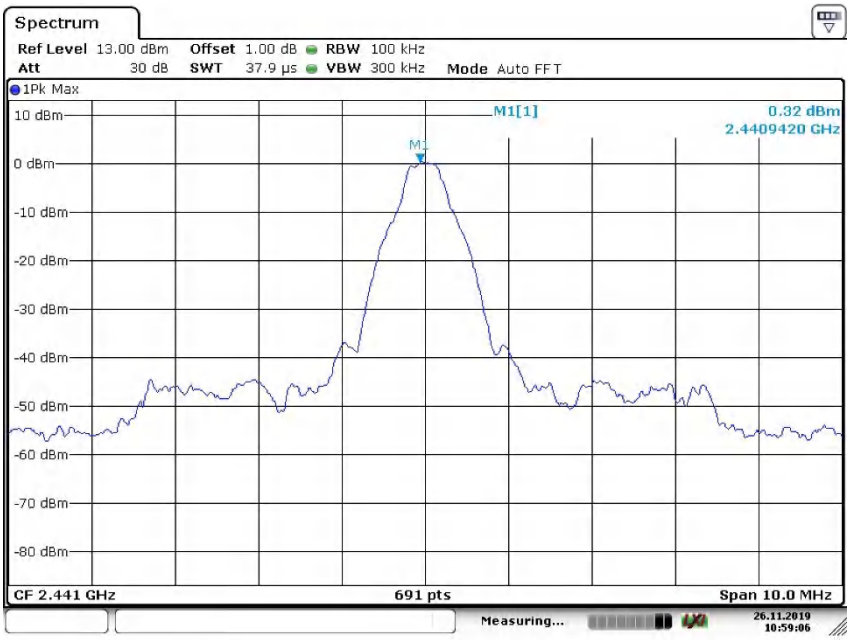


Date: 26.NOV.2019 10:58:22

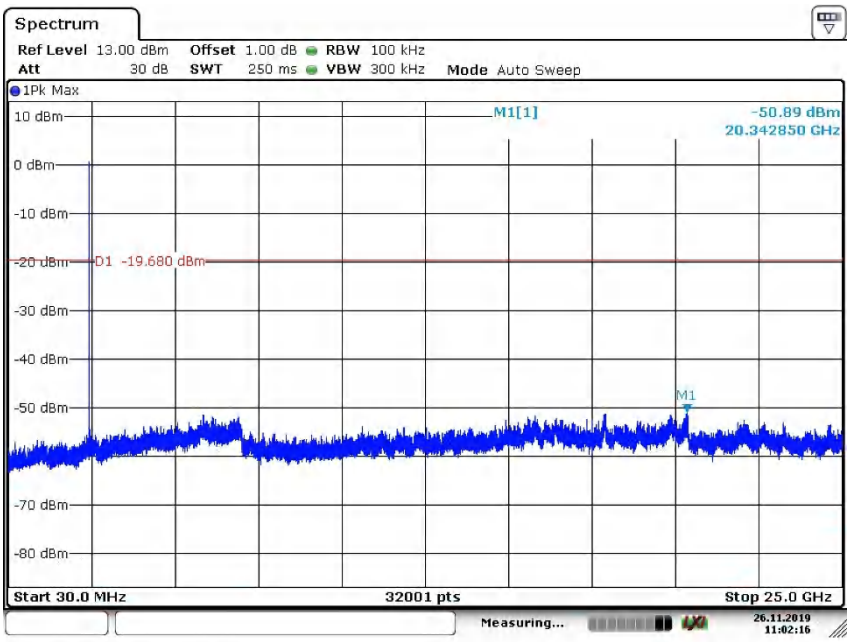


Date: 26.NOV.2019 11:02:59

BDR Mode, Middle Channel

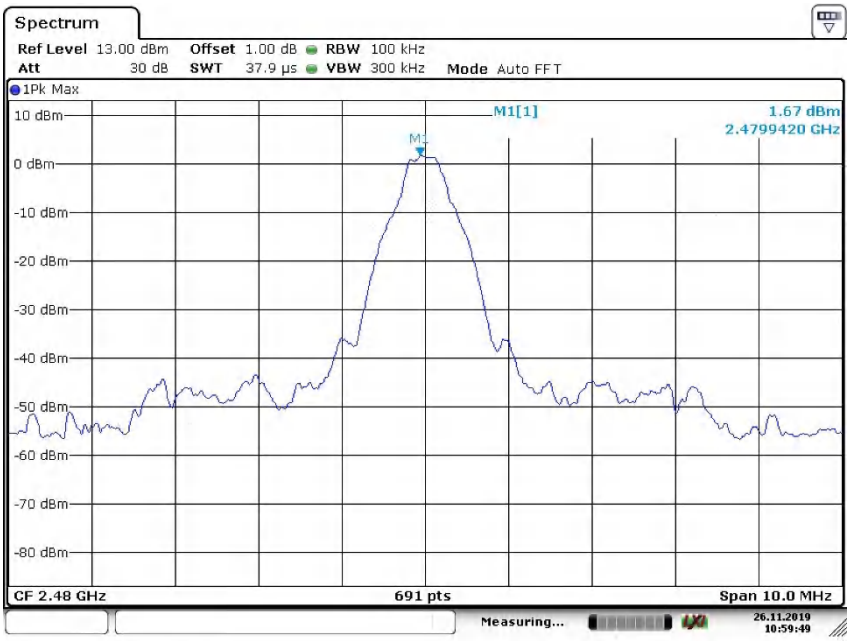


Date: 26.NOV.2019 10:59:07

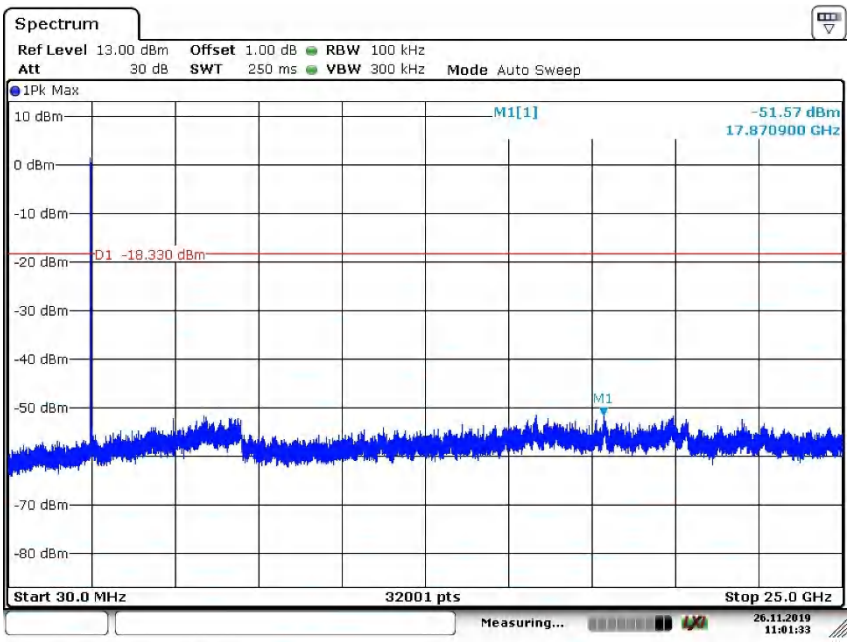


Date: 26.NOV.2019 11:02:16

BDR Mode, High Channel

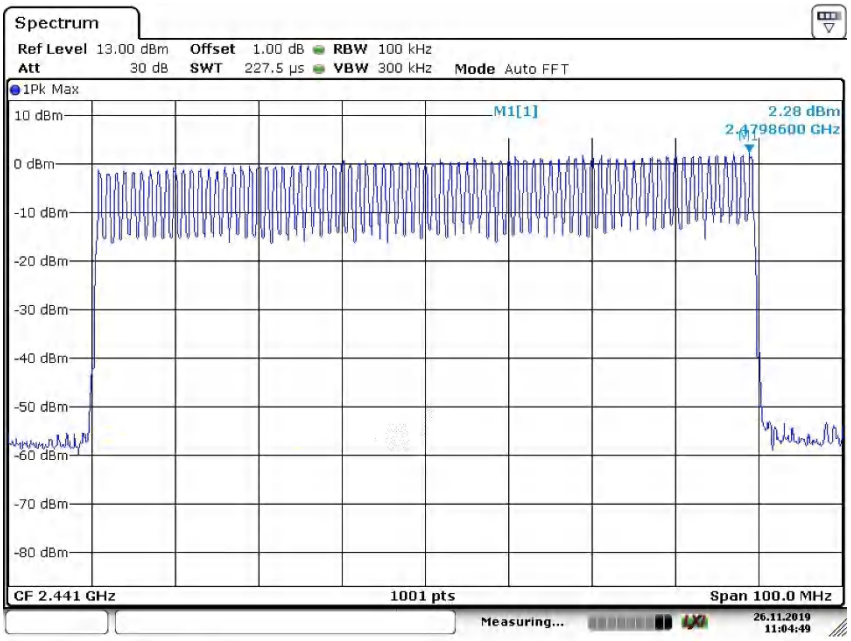


Date: 26.NOV.2019 10:59:49

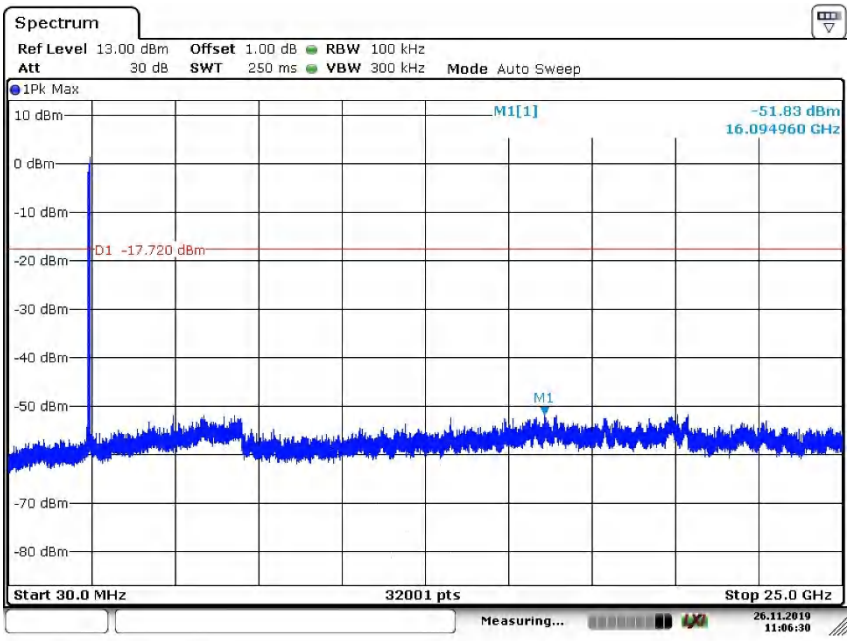


Date: 26.NOV.2019 11:01:34

BDR, Hopping

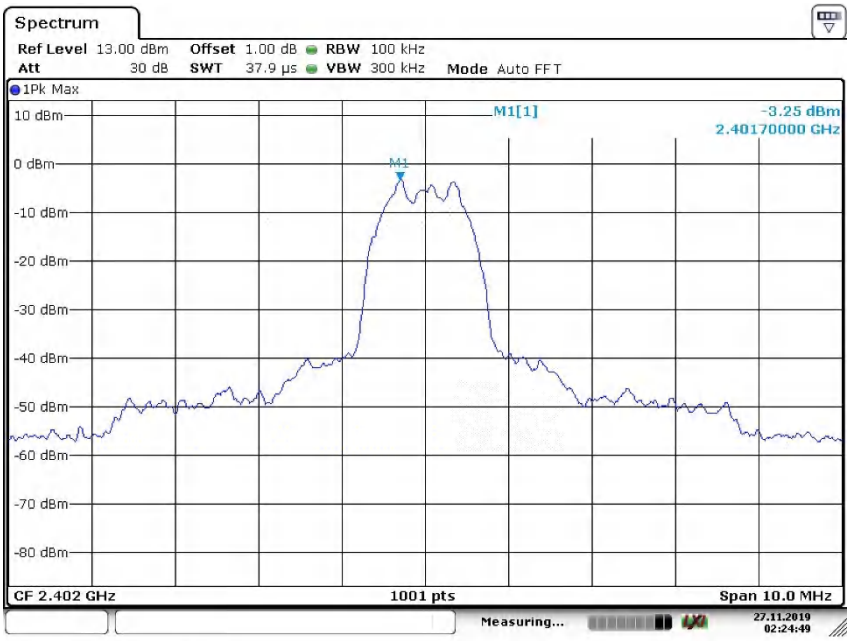


Date: 26.NOV.2019 11:04:49

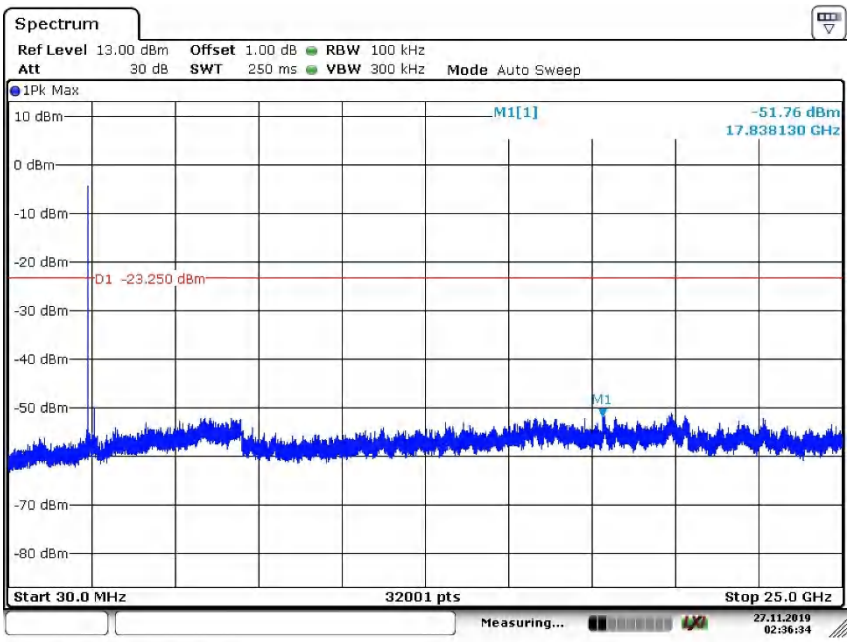


Date: 26.NOV.2019 11:06:31

EDR Mode, Low Channel

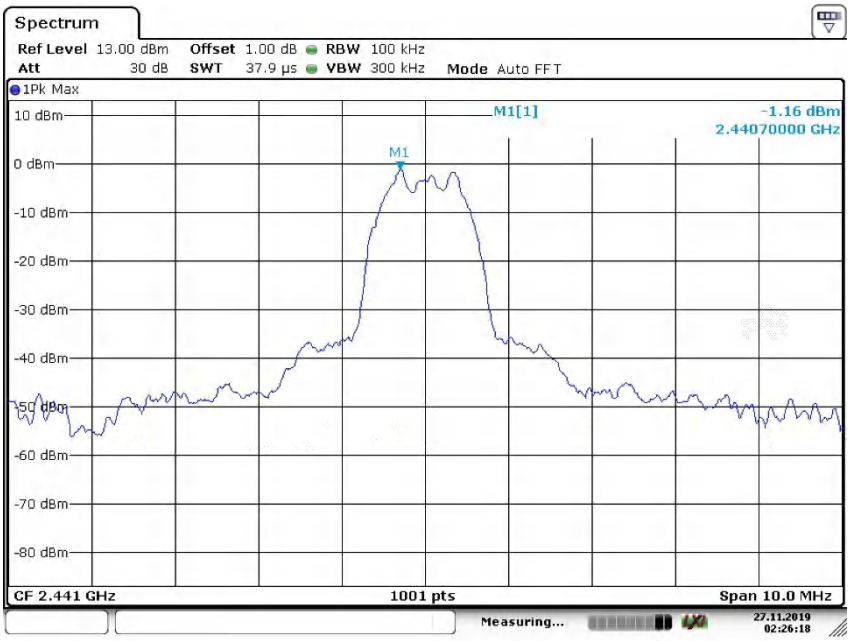


Date: 27.NOV.2019 02:24:50

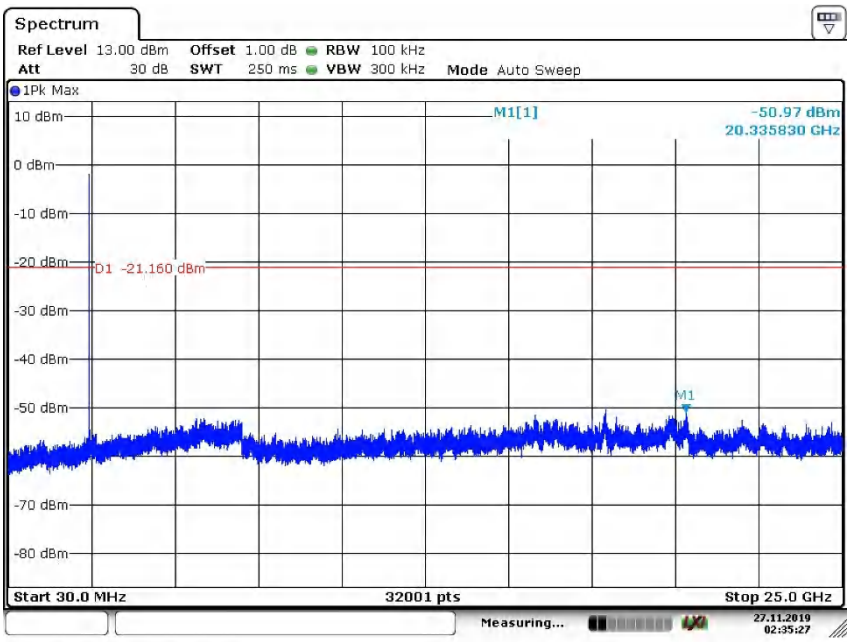


Date: 27.NOV.2019 02:36:34

EDR Mode, Middle Channel

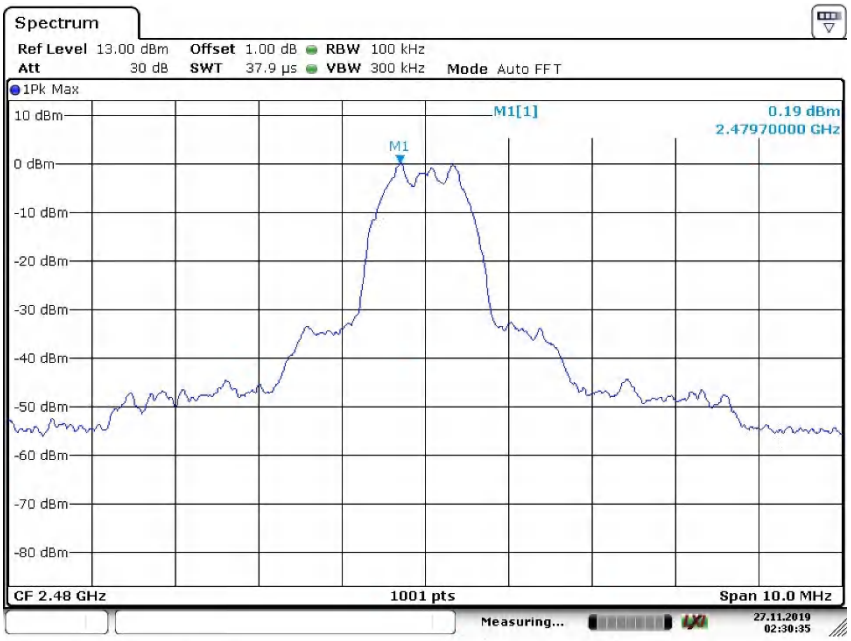


Date: 27.NOV.2019 02:26:18

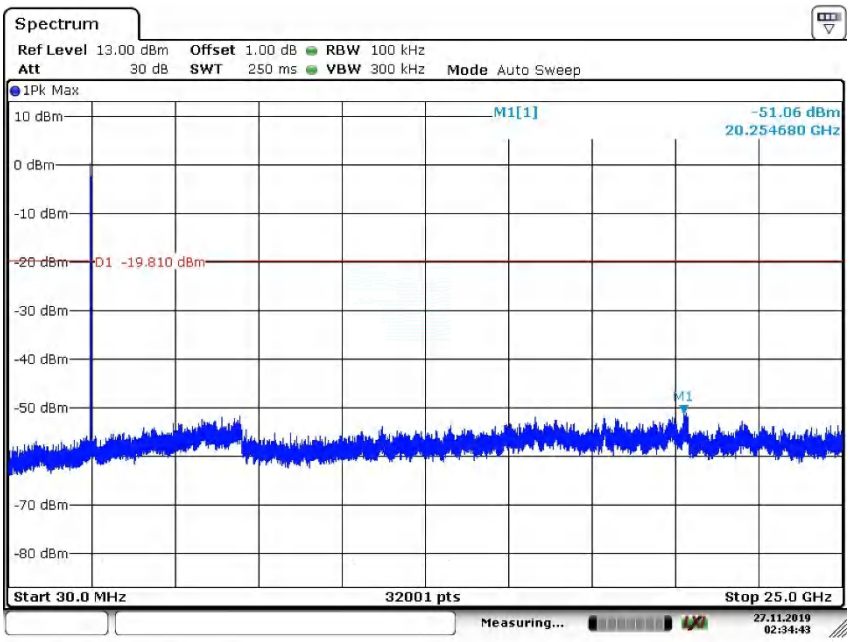


Date: 27.NOV.2019 02:35:28

EDR Mode, High Channel

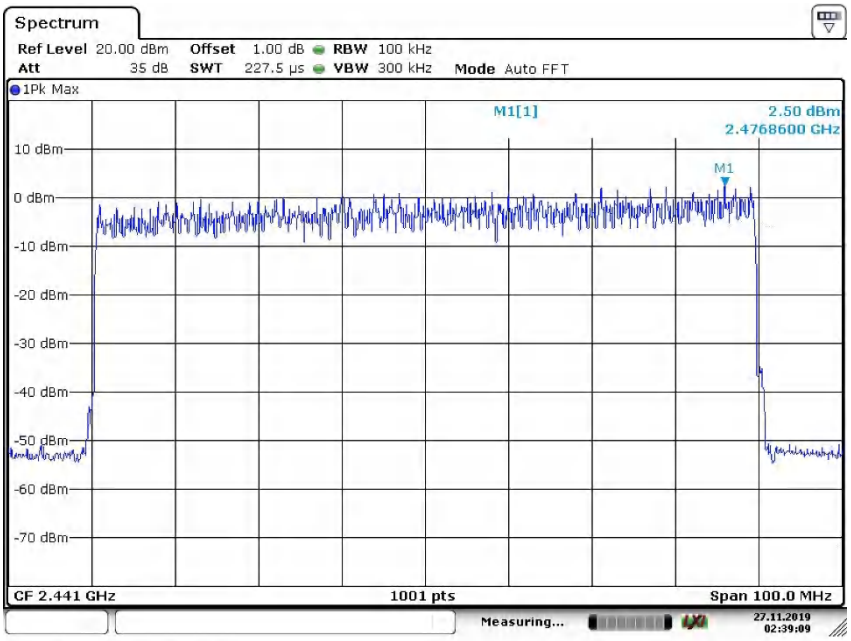


Date: 27.NOV.2019 02:30:35

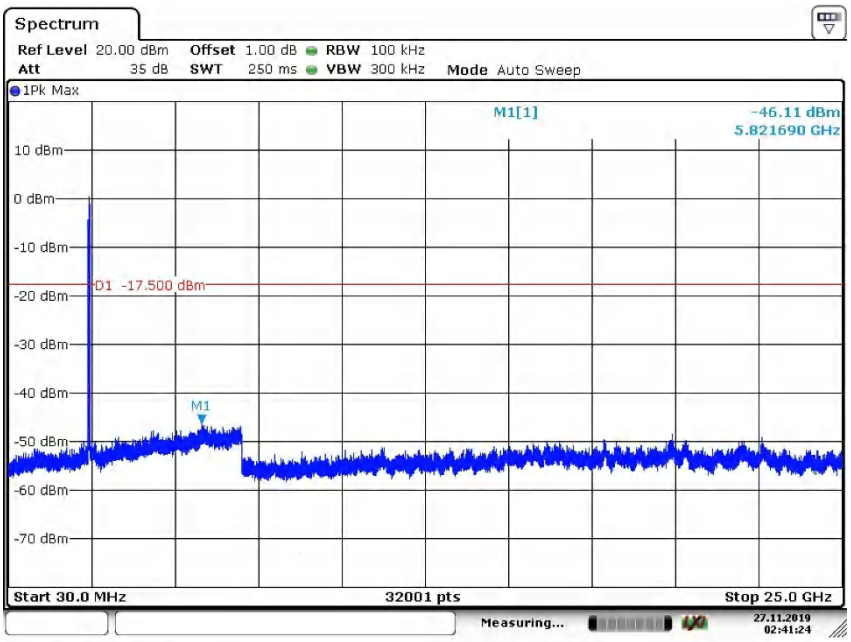


Date: 27.NOV.2019 02:34:43

EDR, Hopping

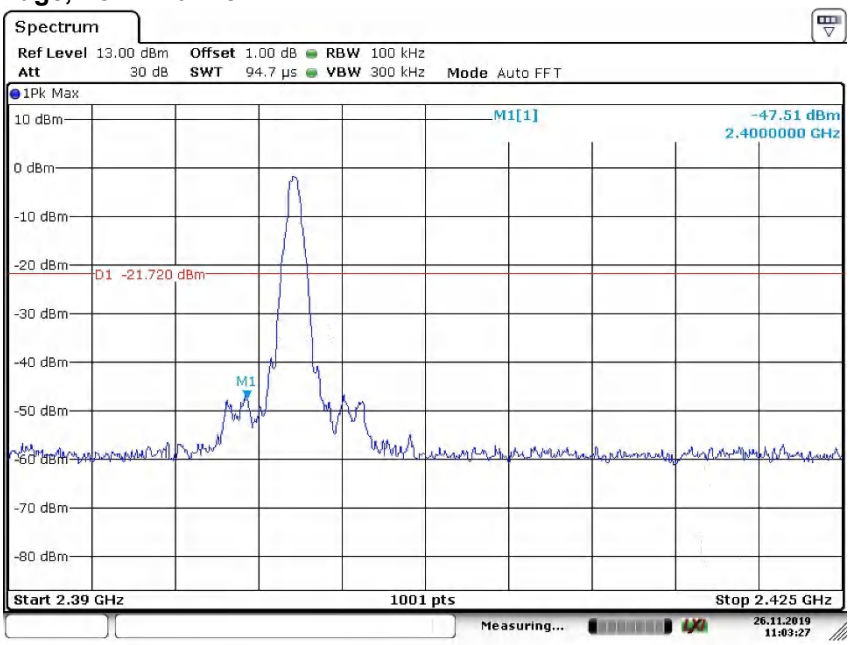


Date: 27.NOV.2019 02:39:10



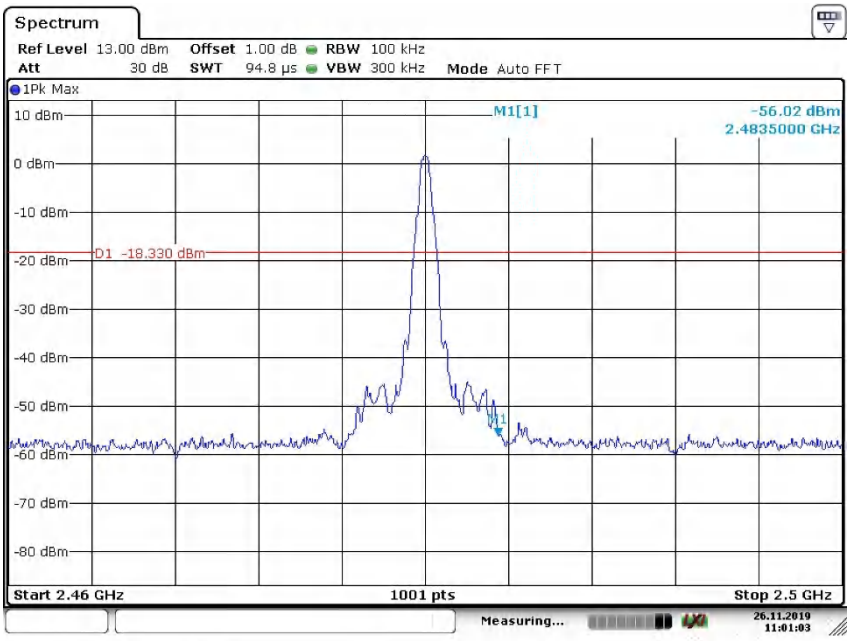
Date: 27.NOV.2019 02:41:25

BDR Mode, Band Edge, Low Channel



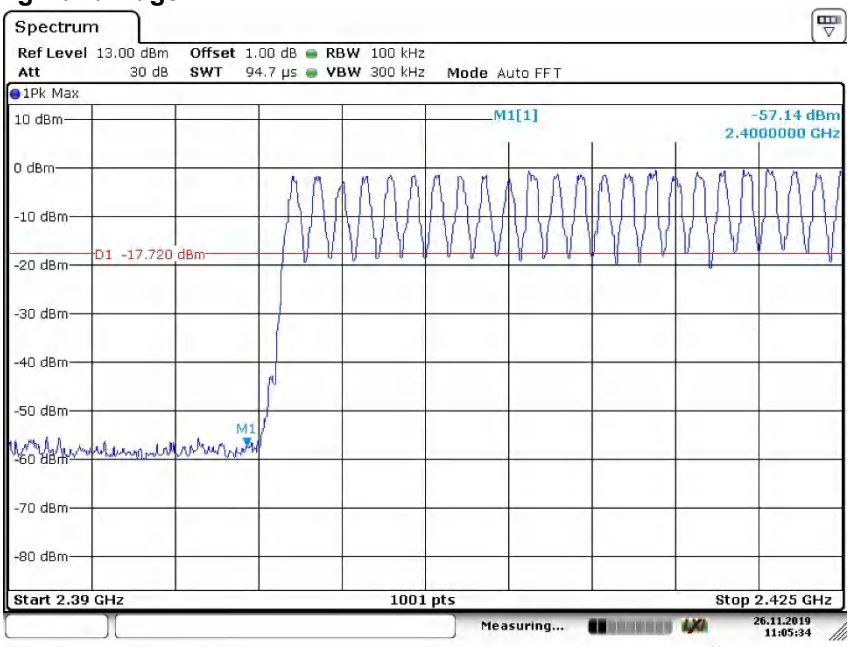
Date: 26.NOV.2019 11:03:28

BDR Mode, Band Edge, High Channel

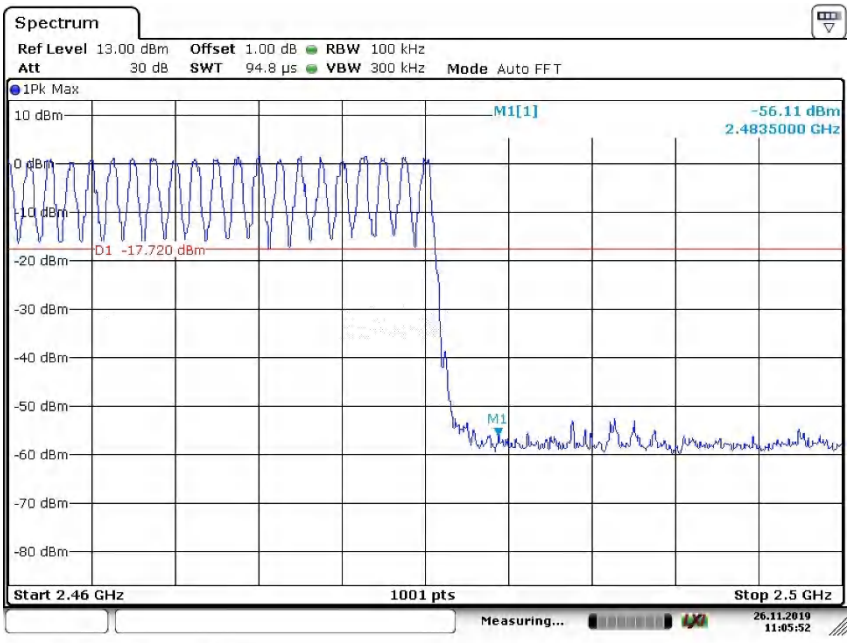


Date: 26.NOV.2019 11:01:03

BDR Mode, Hopping Band Edge

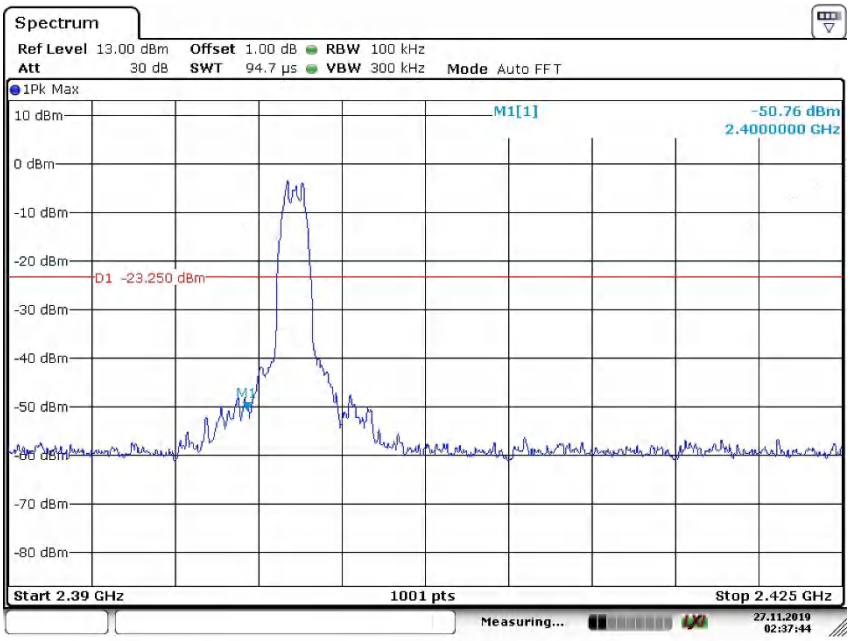


Date: 26.NOV.2019 11:05:34



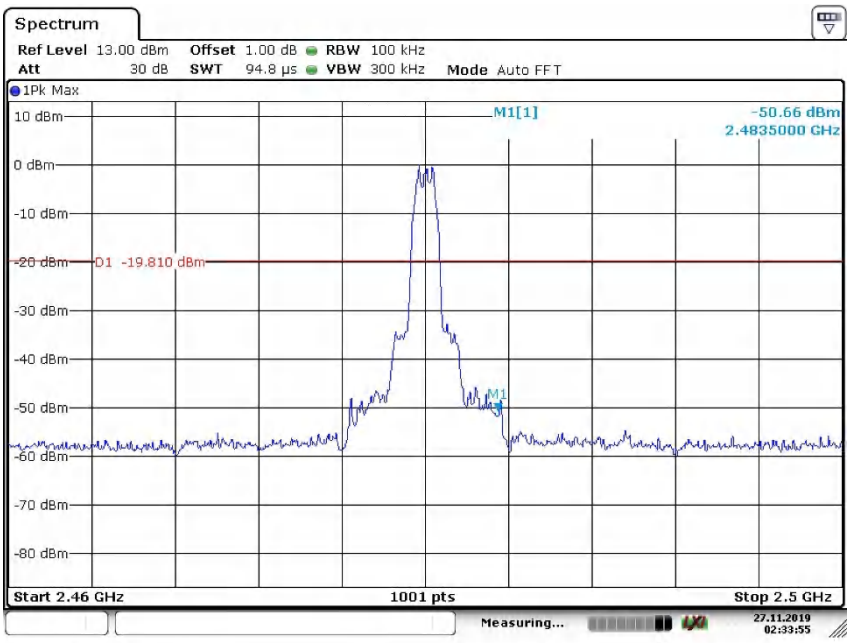
Date: 26.NOV.2019 11:05:53

EDR Mode, Band Edge, Low Channel



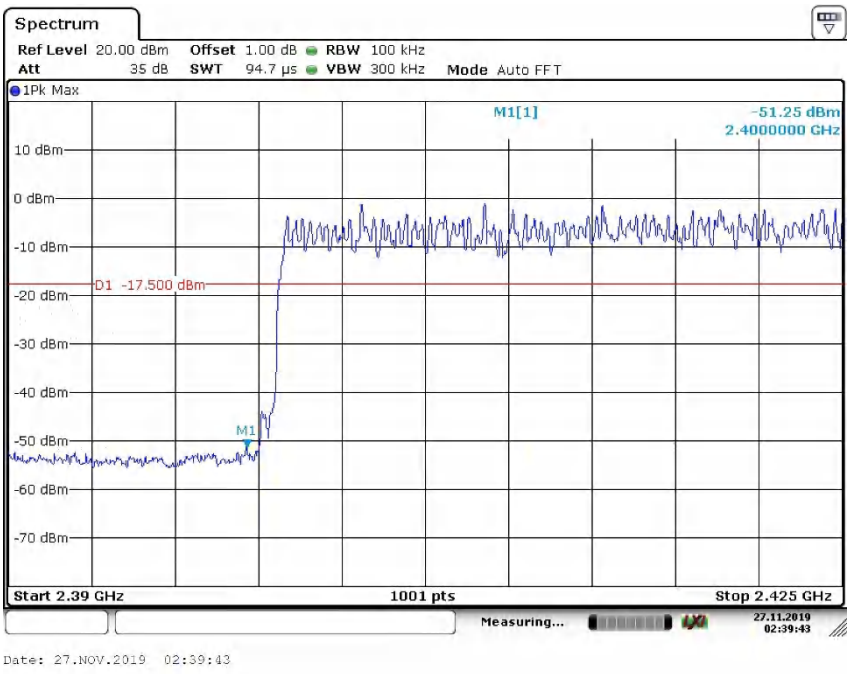
Date: 27.NOV.2019 02:37:44

EDR Mode, Band Edge, High Channel

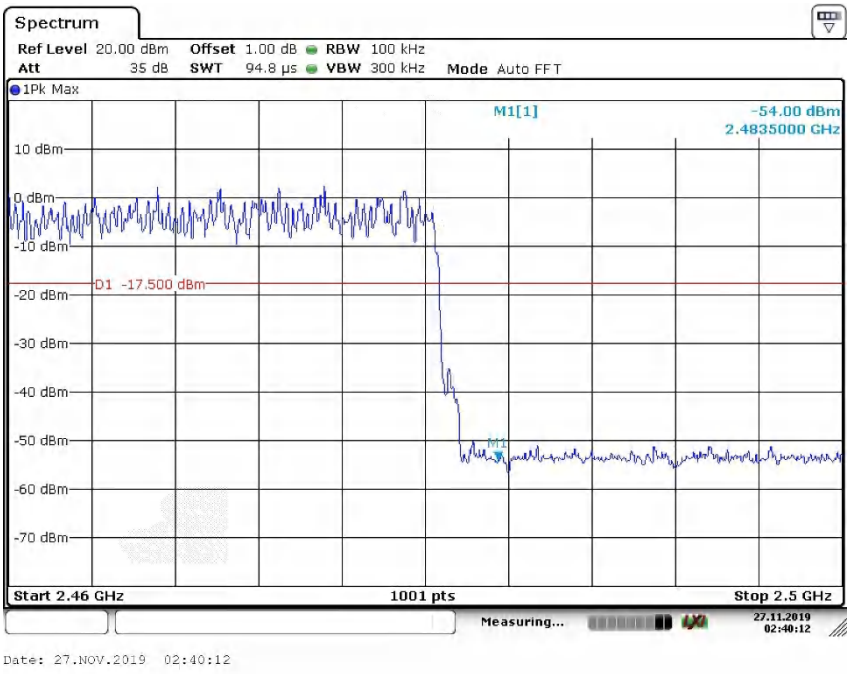


Date: 27.NOV.2019 02:33:55

EDR Mode, Hopping Band Edge



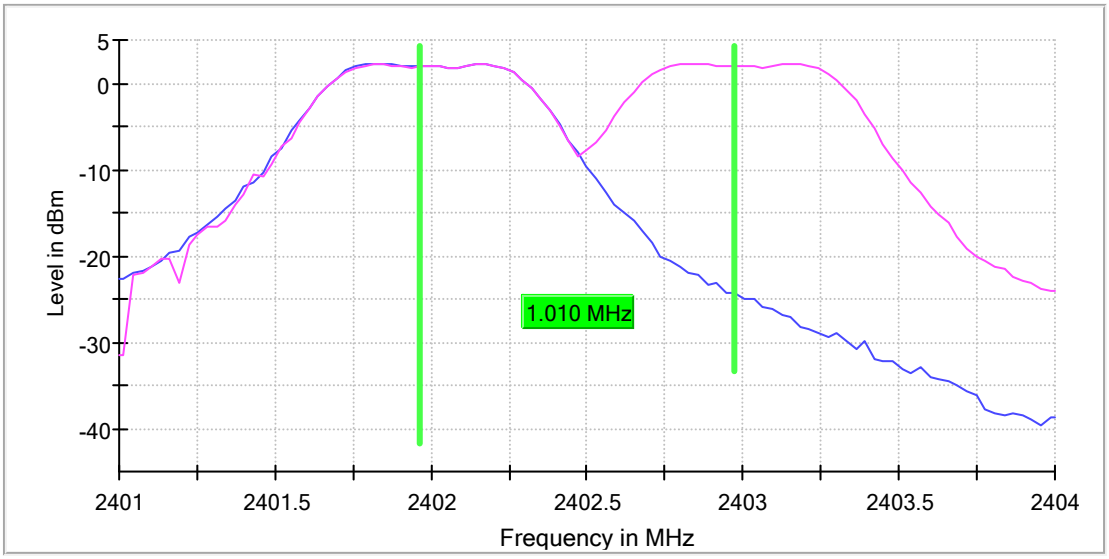
Date: 27.NOV.2019 02:39:43



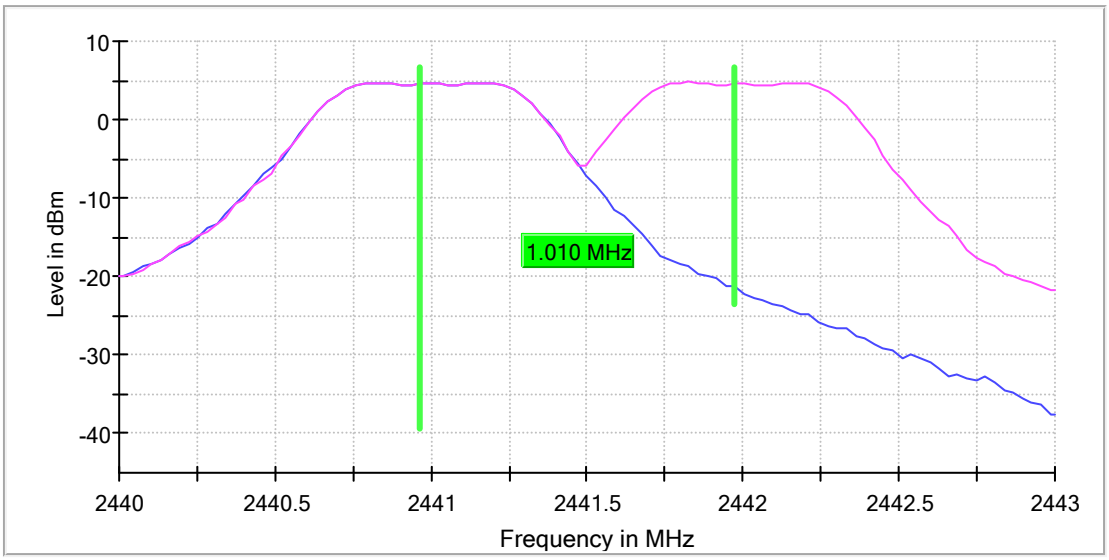
Date: 27.NOV.2019 02:40:12

Appendix B.4: Test Plots of Carrier Frequency Separation

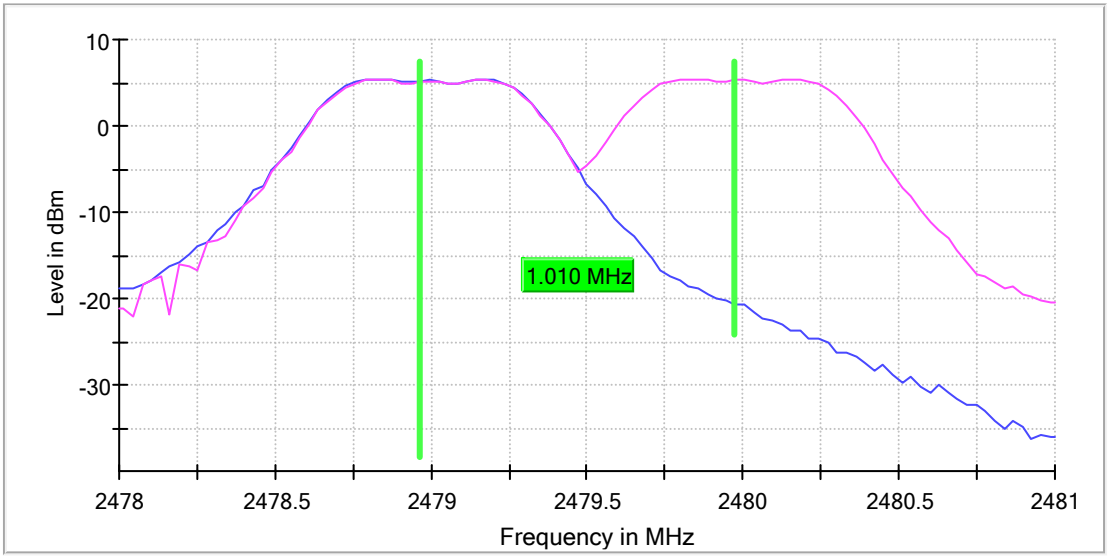
BDR, Low Channel
RBW=300KHz, VBW=300KHz



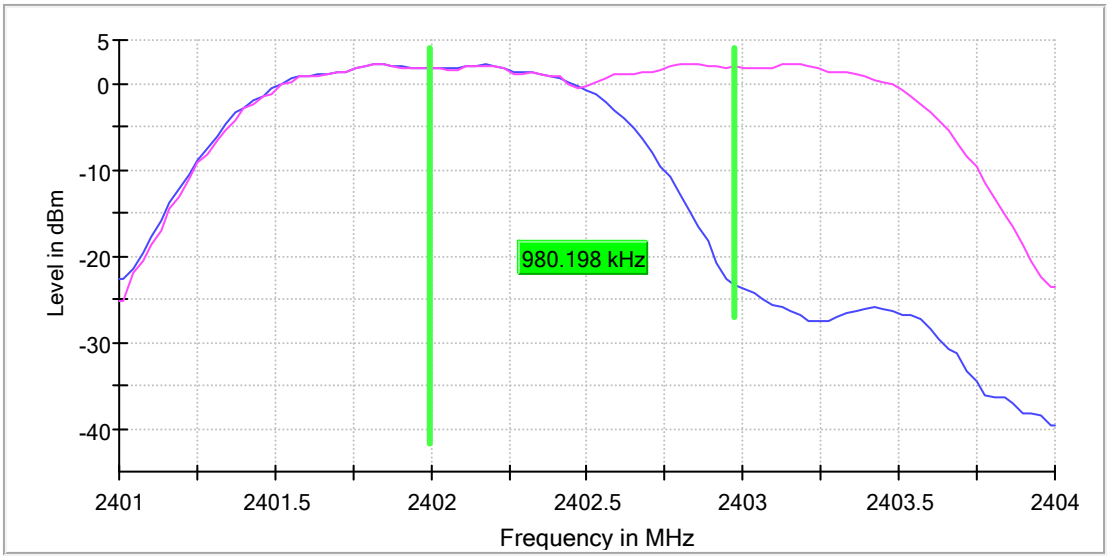
BDR, Middle Channel
RBW=300KHz, VBW=300KHz



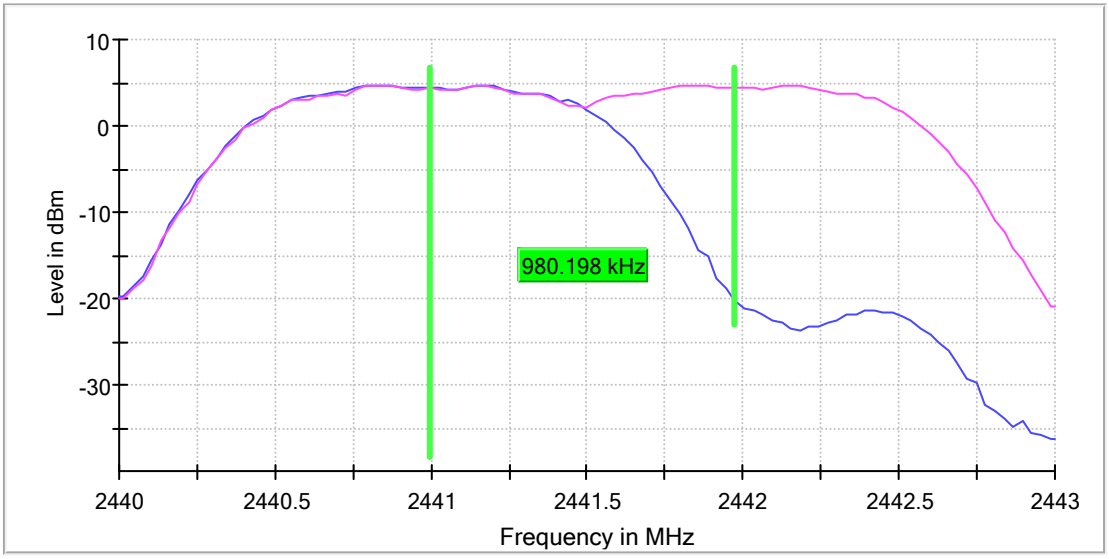
BDR, High Channel
RBW=300KHz, VBW=300KHz



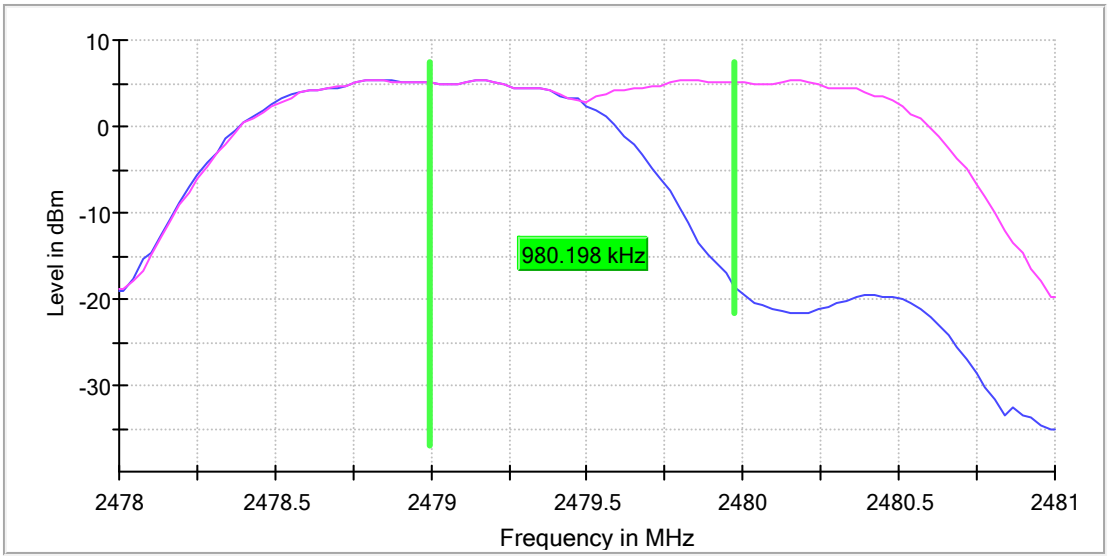
EDR, Low Channel
RBW=300KHz, VBW=300KHz



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

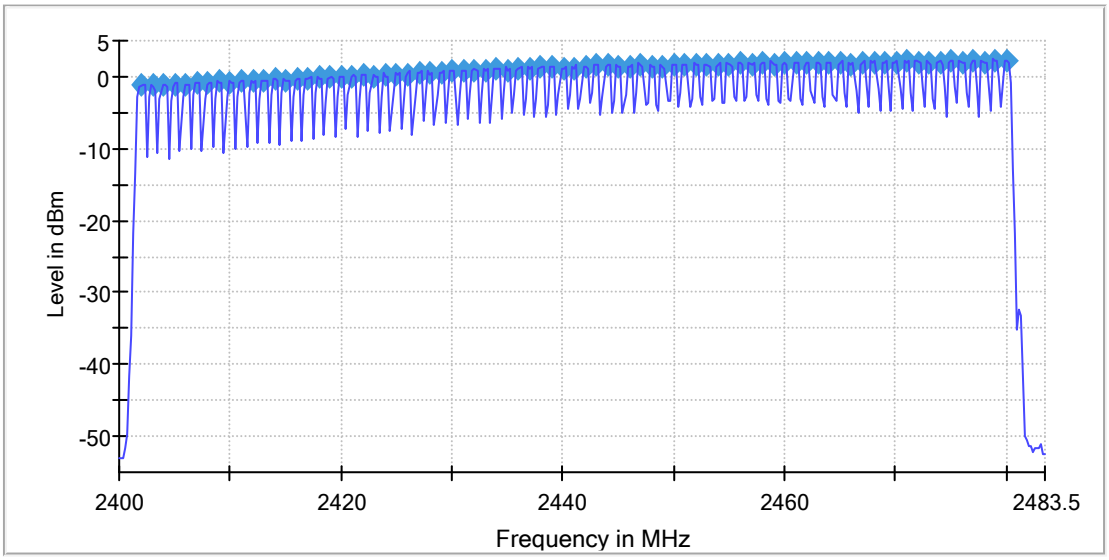


EDR, High Channel
RBW=300KHz, VBW=300KHz

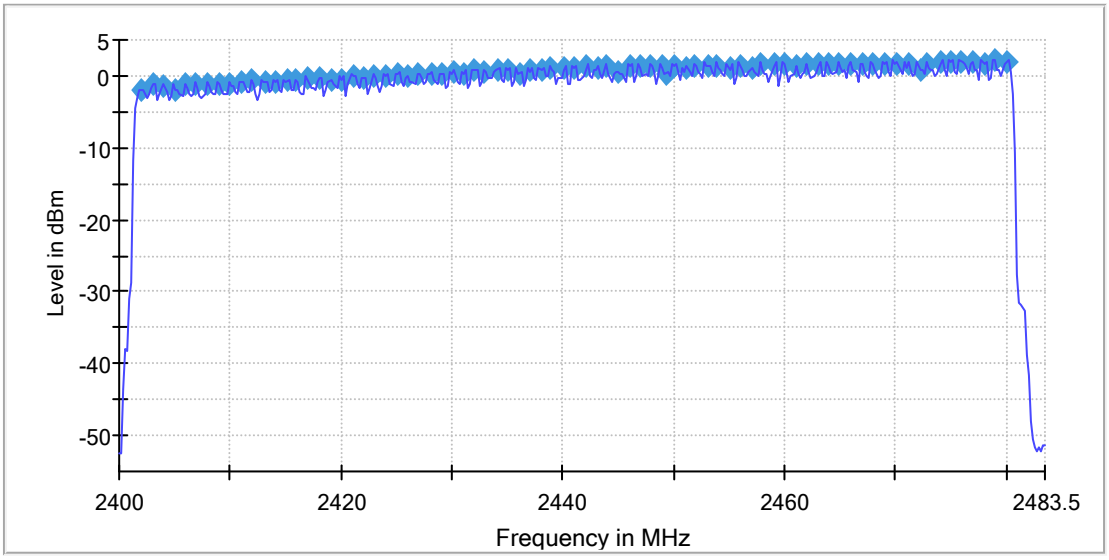


Appendix B.5: Test Plots of Number of Hopping Frequency

BDR, Hopping
RBW=200KHzM, VBW=200KHz

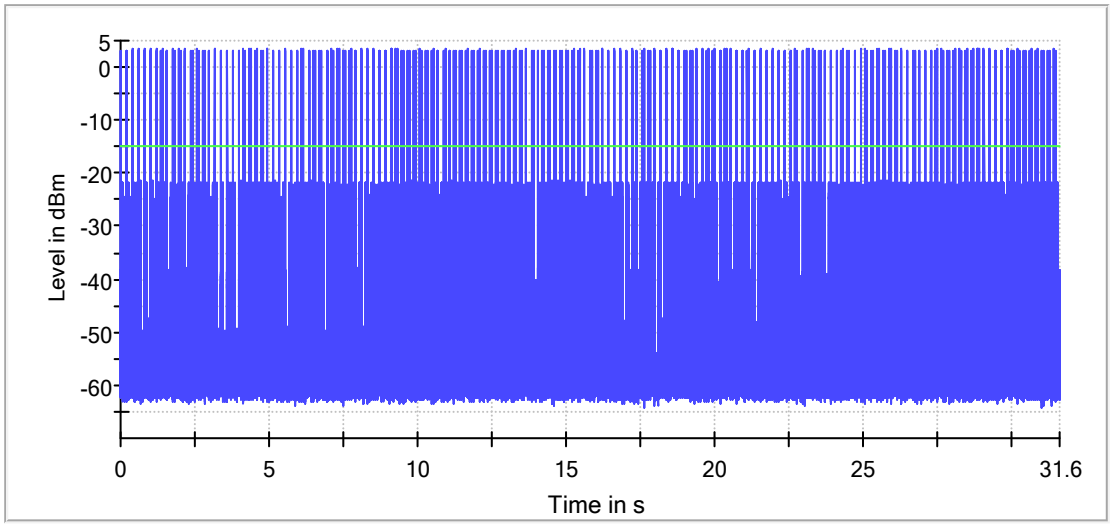


EDR, Hopping
RBW=200KHzM, VBW=200KHz

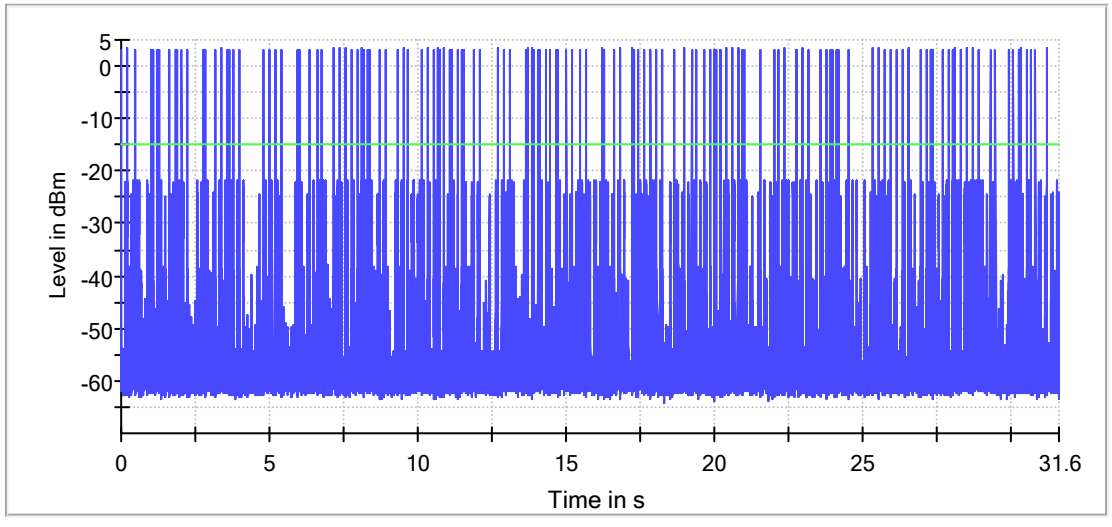


Appendix B.6: Test Plots of Time of Occupancy

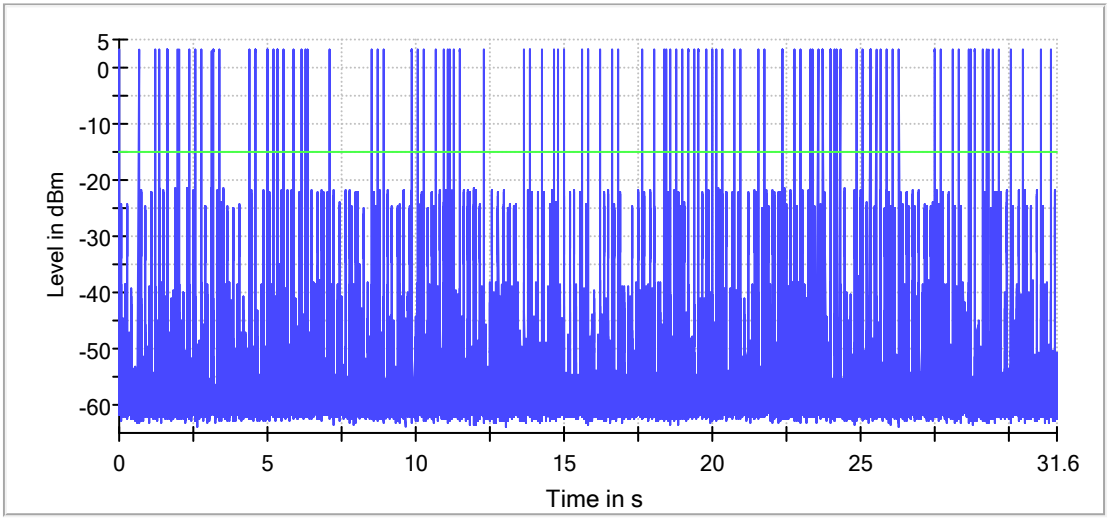
BDR Mode, DH1, Middle Channel
RBW=500KHzM, VBW=1MHz



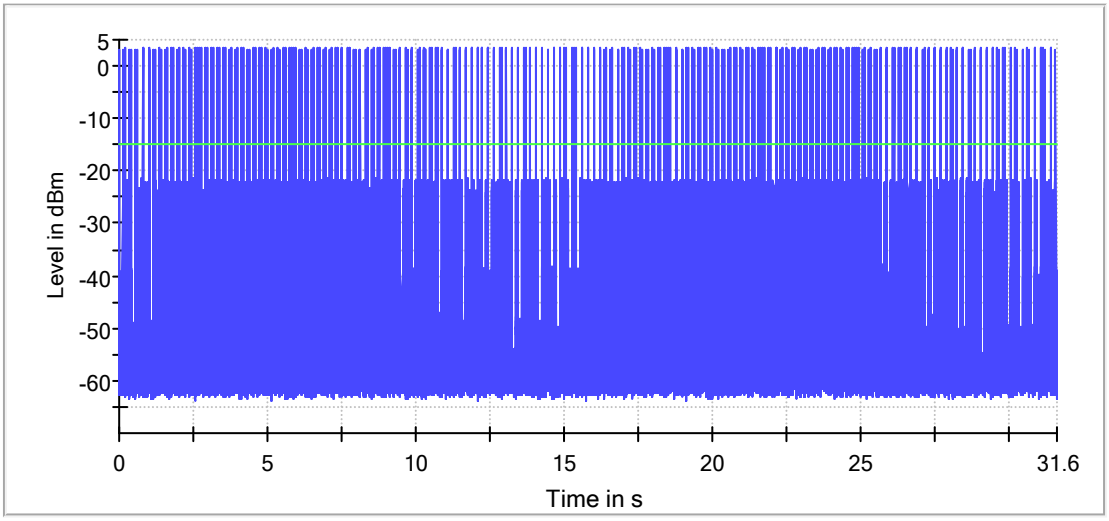
BDR Mode, DH3, Middle Channel
RBW=500KHzM, VBW=1MHz



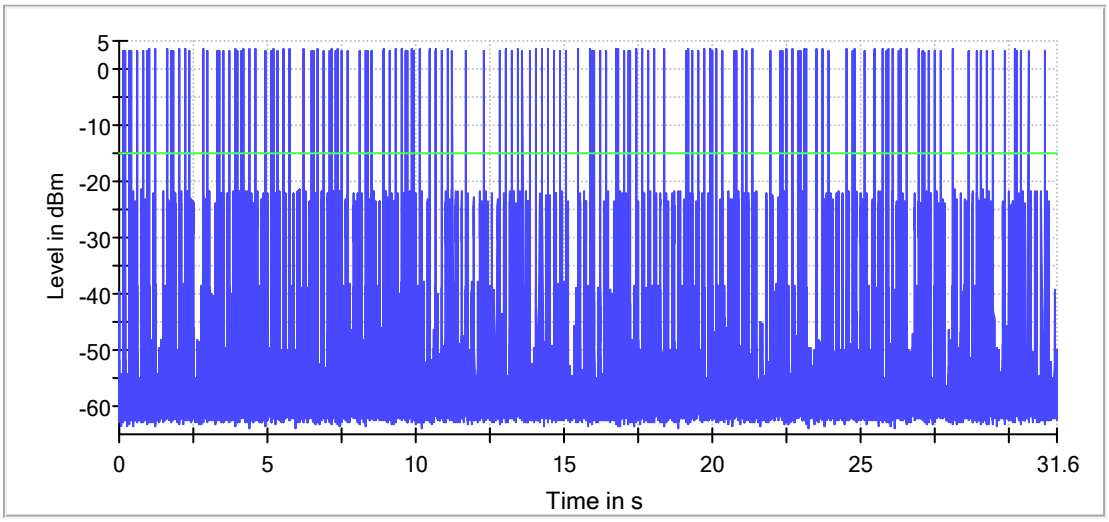
BDR Mode, DH5, Middle Channel
RBW=500KHzM, VBW=1MHz



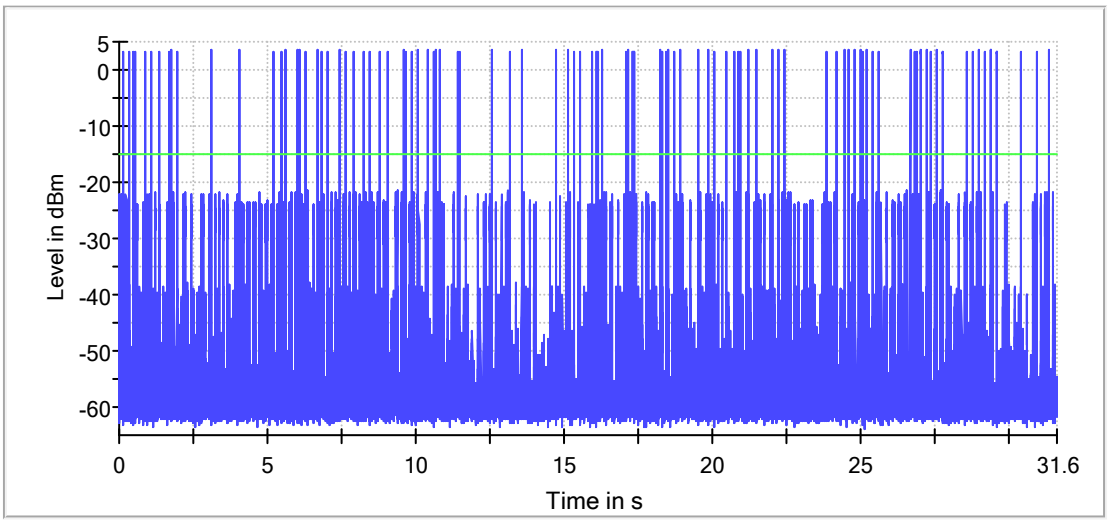
EDR Mode, 3DH1, Middle Channel
RBW=500KHzM, VBW=1MHz



EDR Mode, 3DH3, Middle Channel
RBW=500KHzM, VBW=1MHz



EDR Mode, 3DH5, Middle Channel
RBW=500KHzM, VBW=1MHz



Appendix C

Test Results of Radiated Emission & AC Mains Conducted Emission

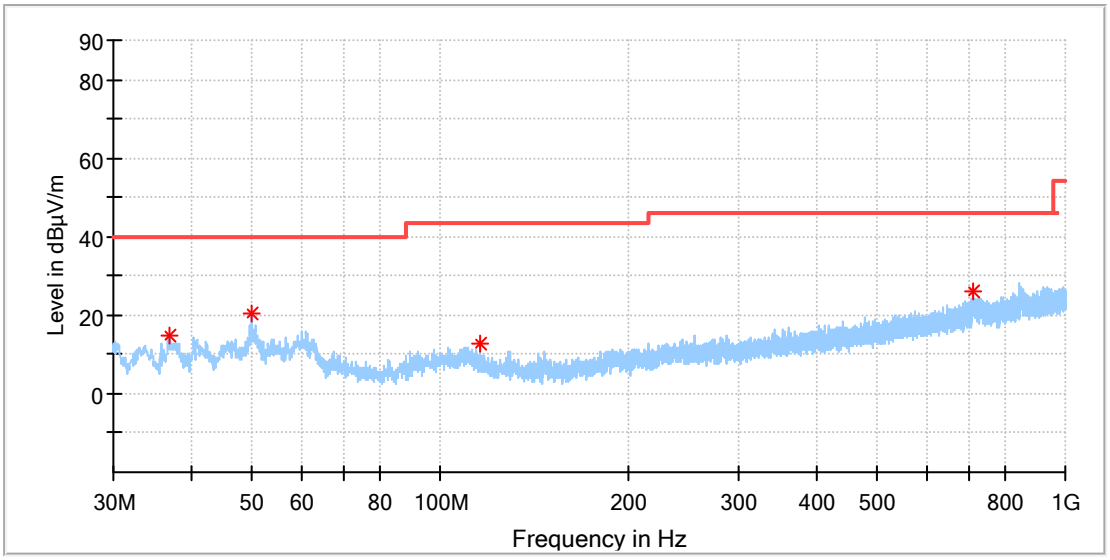
Note: The radiated spurious emission were measured from 9KHz to 26.5GHz, the measurements from 9KHz-30MHz with active loop antenna were greater than 20dB below the limit, so the radiated Spurious Emissions (9kHz – 30MHz) tests were recorded but not showed in the appendix B.

Appendix C.1: Test Plots of Radiated Spurious Emission

BDR mode, 30MHz - 1GHz

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_Low Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

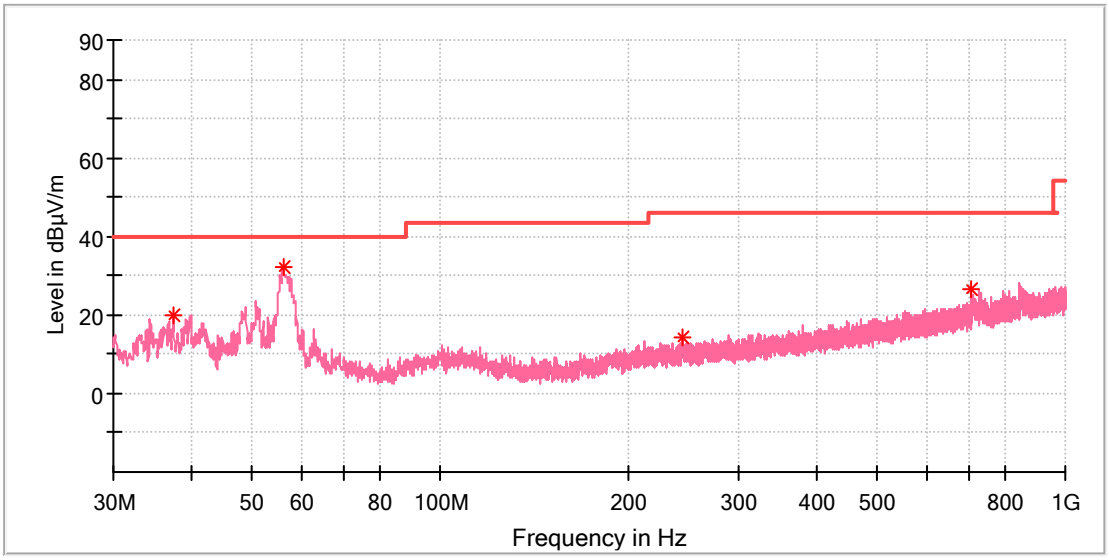


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
36.935500	14.60	---	40.00	25.40	100.0	H	318.0	-21.5
49.982000	20.36	---	40.00	19.64	100.0	H	59.0	-18.6
115.602500	12.84	---	43.50	30.66	100.0	H	296.0	-20.2
710.067000	25.89	---	46.00	20.11	100.0	H	2.0	-8.3

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_Low Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
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)
37.469000	19.67	---	40.00	20.33	100.0	V	0.0	-21.3
56.044500	32.03	---	40.00	7.97	100.0	V	127.0	-18.8
243.594000	14.44	---	46.00	31.56	100.0	V	154.0	-17.9
709.048500	26.39	---	46.00	19.61	100.0	V	63.0	-8.3

EUT Information

EUT Name:	Bookshell Speaker
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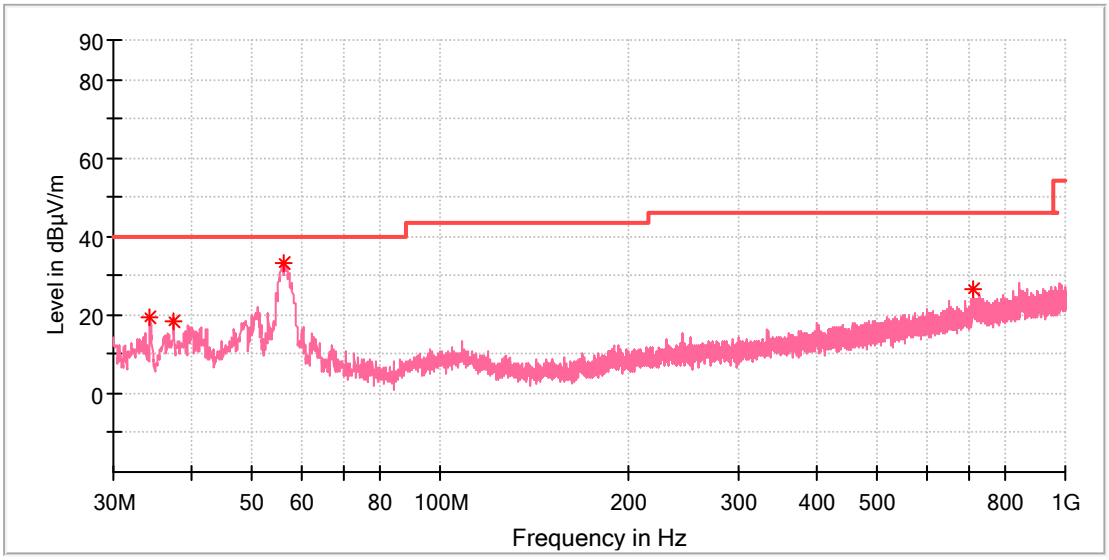
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

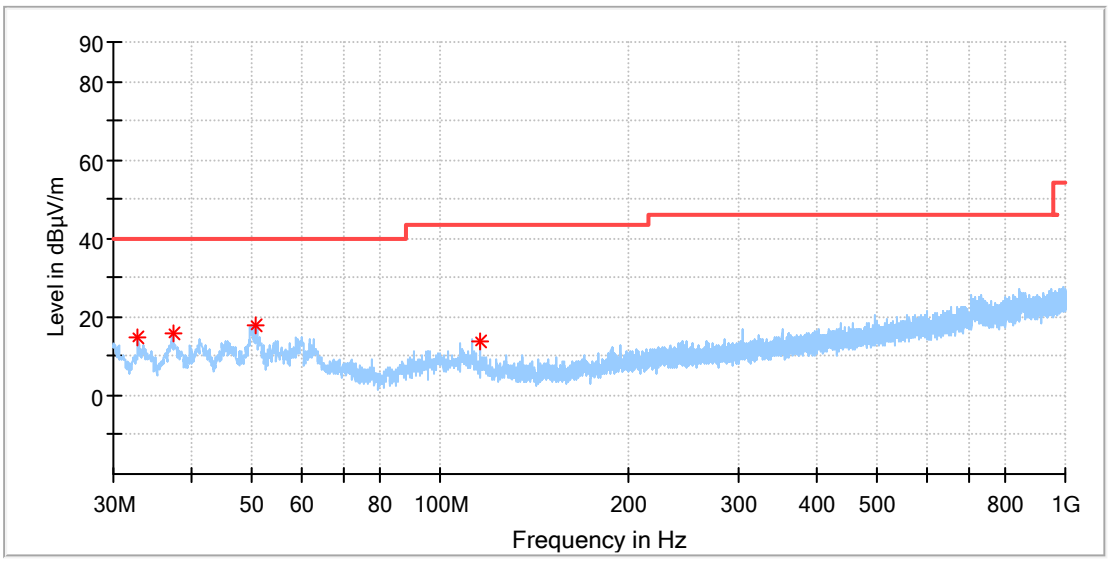


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
34.365000	19.34	---	40.00	20.66	100.0	V	13.0	-22.5
37.420500	18.25	---	40.00	21.75	100.0	V	131.0	-21.3
56.335500	33.21	---	40.00	6.79	100.0	V	307.0	-18.9
712.298000	26.57	---	46.00	19.43	100.0	V	348.0	-8.2

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_High Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



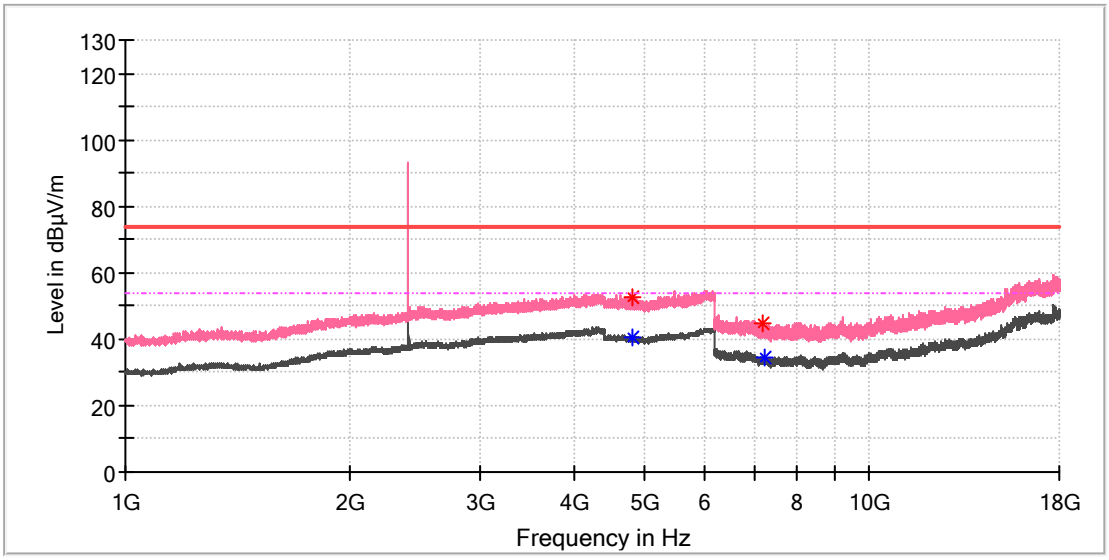
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
32.861500	14.68	---	40.00	25.32	100.0	H	52.0	-22.8
37.372000	15.78	---	40.00	24.22	100.0	H	7.0	-21.3
50.758000	17.86	---	40.00	22.14	100.0	H	250.0	-18.6
115.602500	13.97	---	43.50	29.53	100.0	H	279.0	-20.2

BDR mode, 1GHz - 18GHz

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_Low Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

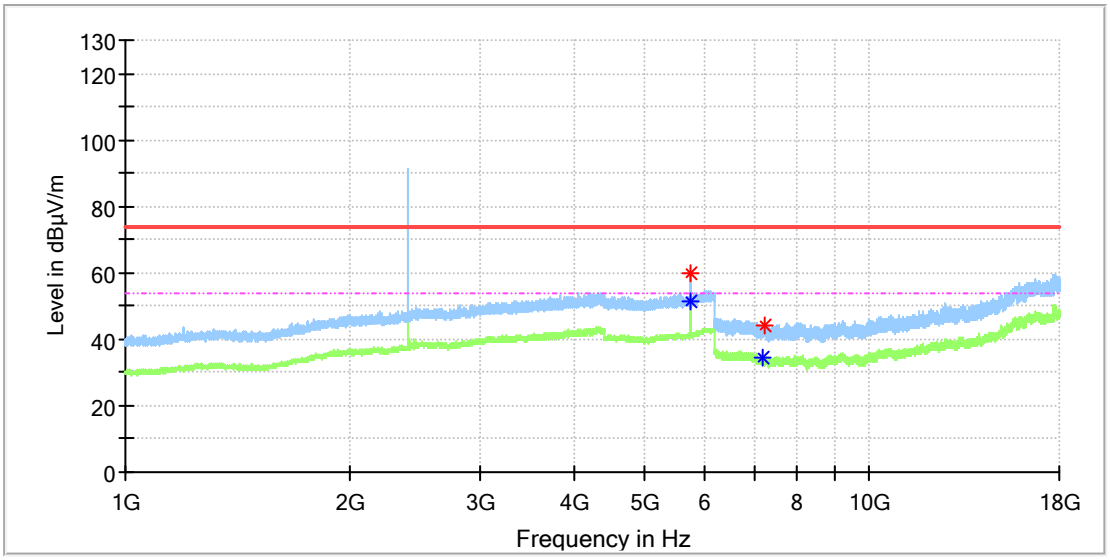


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4805.000000	---	40.50	54.00	13.50	100.0	V	341.0	13.6
4805.000000	52.49	---	74.00	21.51	100.0	V	341.0	13.6
7202.508333	44.78	---	74.00	29.22	100.0	V	4.0	8.8
7228.566667	---	34.54	54.00	19.46	100.0	V	4.0	8.6

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_Low Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

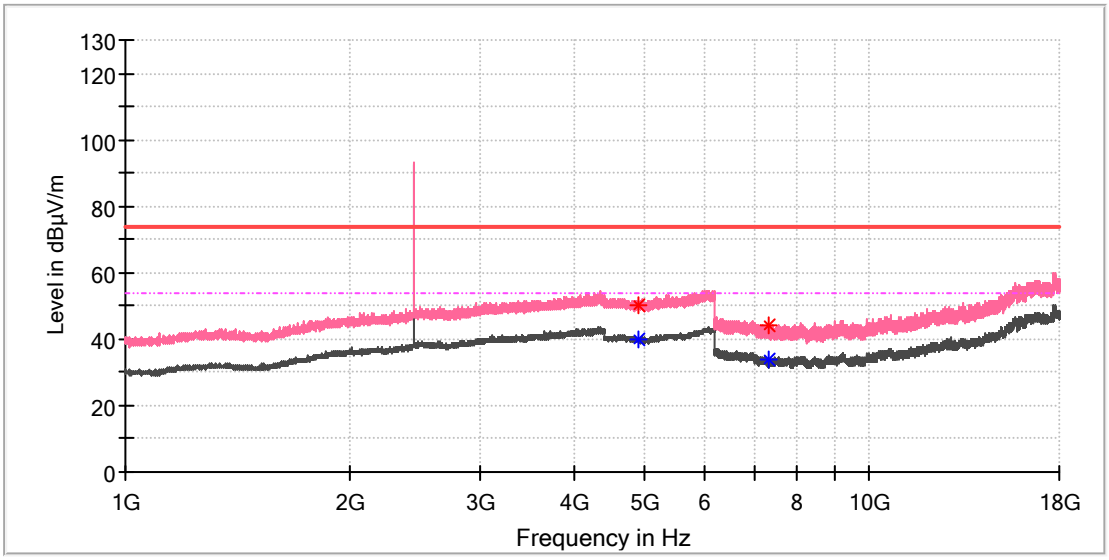


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5747.000000	59.66	---	74.00	14.34	100.0	H	180.0	14.6
5747.500000	---	51.70	54.00	2.30	100.0	H	180.0	14.6
7199.066667	---	34.57	54.00	19.43	100.0	H	301.0	8.8
7211.850000	44.14	---	74.00	29.86	100.0	H	134.0	8.7

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_Mid Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

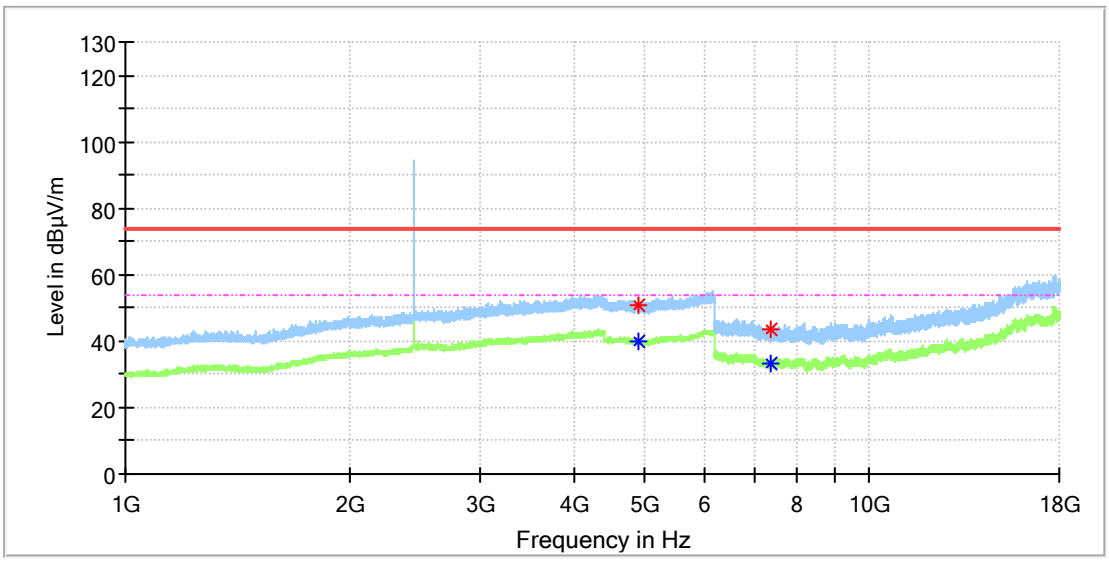


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4879.000000	---	39.74	54.00	14.26	100.0	V	101.0	13.4
4883.000000	50.28	---	74.00	23.72	100.0	V	218.0	13.4
7316.083333	---	33.97	54.00	20.03	100.0	V	21.0	8.2
7322.966667	44.00	---	74.00	30.00	100.0	V	128.0	8.2

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_Mid Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

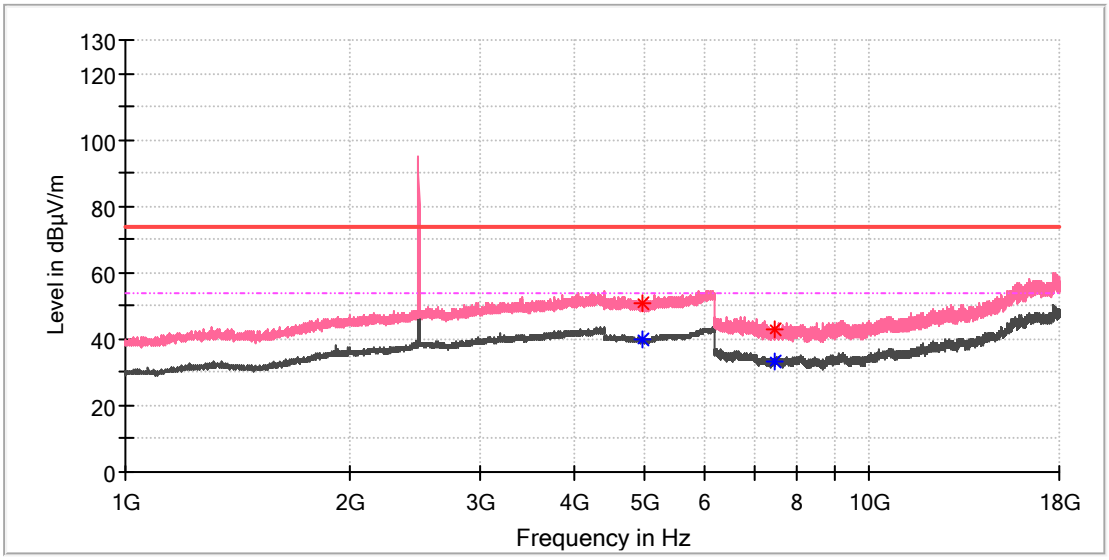


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4880.000000	---	39.68	54.00	14.32	100.0	H	63.0	13.4
4881.500000	50.90	---	74.00	23.10	100.0	H	73.0	13.4
7365.250000	---	33.30	54.00	20.70	100.0	H	347.0	8.2
7367.216667	43.75	---	74.00	30.25	100.0	H	287.0	8.2

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_High Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
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)
4955.000000	50.86	---	74.00	23.14	100.0	V	134.0	13.2
4960.000000	---	40.02	54.00	13.98	100.0	V	328.0	13.2
7442.441667	---	33.48	54.00	20.52	100.0	V	112.0	8.4
7446.866667	42.91	---	74.00	31.09	100.0	V	310.0	8.5

EUT Information

EUT Name:	Bookshell Speaker
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Test Mode:	TX_High Channel
Test Voltage::	AC230V/50Hz
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Test Standard:	FCC 15.247
Tested By:	Kei Zhang
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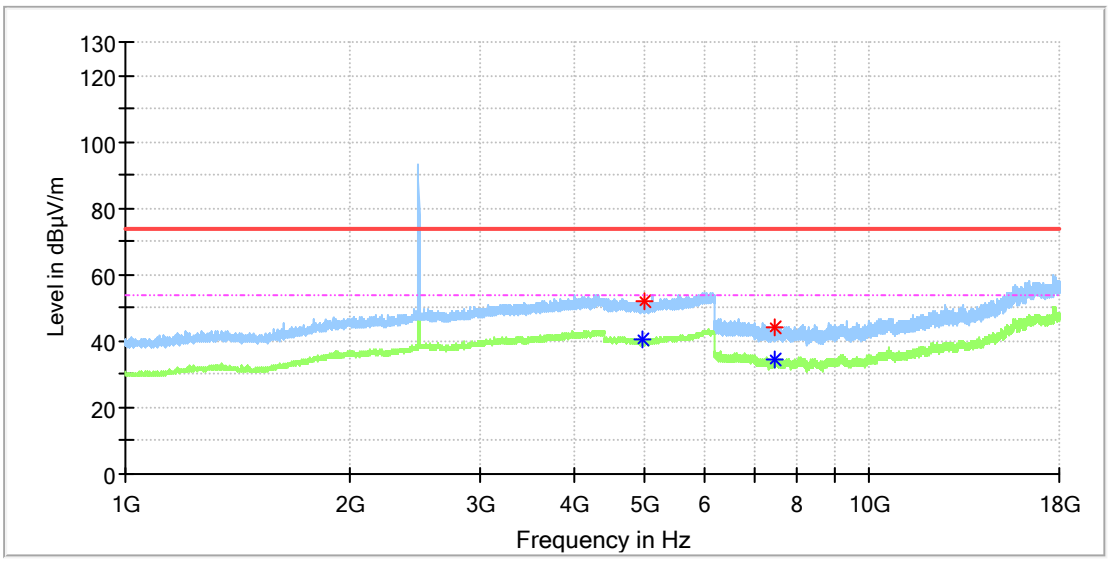


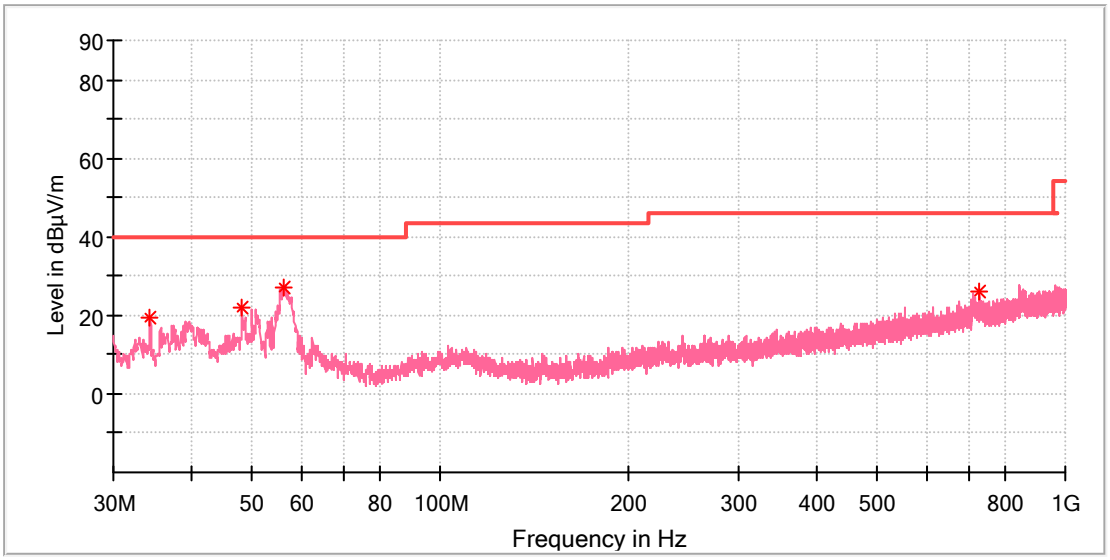
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4966.500000	---	40.44	54.00	13.56	100.0	H	208.0	13.2
4970.000000	52.24	---	74.00	21.76	100.0	H	143.0	13.2
7447.850000	43.88	---	74.00	30.12	100.0	H	267.0	8.5
7474.891667	---	34.41	54.00	19.59	100.0	H	180.0	8.6

EDR mode, 30MHz - 1GHz

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_Low Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

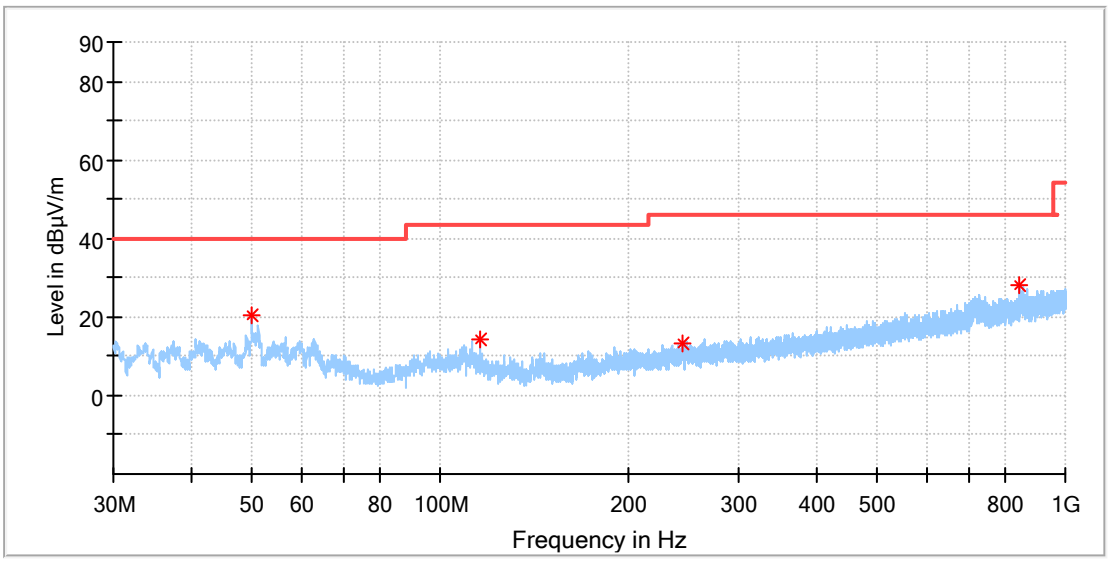


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
34.365000	19.24	---	40.00	20.76	100.0	V	290.0	-22.5
48.236000	22.19	---	40.00	17.81	100.0	V	102.0	-18.7
56.044500	27.13	---	40.00	12.87	100.0	V	0.0	-18.8
728.885000	25.84	---	46.00	20.16	100.0	V	111.0	-7.9

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_Low Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
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)
49.982000	20.25	---	40.00	19.75	100.0	H	284.0	-18.6
115.602500	14.09	---	43.50	29.41	100.0	H	292.0	-20.2
244.806500	13.49	---	46.00	32.51	100.0	H	6.0	-17.9
845.333500	28.15	---	46.00	17.85	100.0	H	13.0	-6.0

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_High Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
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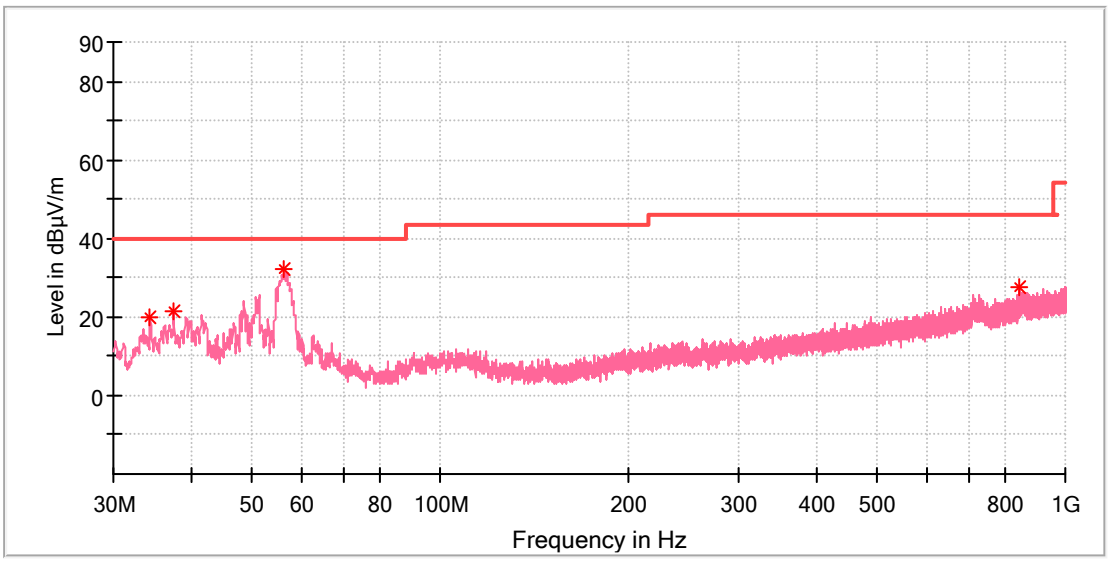

Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
34.365000	19.80	---	40.00	20.20	100.0	V	242.0	-22.5
37.469000	21.27	---	40.00	18.73	100.0	V	0.0	-21.3
56.287000	32.31	---	40.00	7.69	100.0	V	73.0	-18.9
844.994000	27.62	---	46.00	18.38	100.0	V	179.0	-6.0

EUT Information

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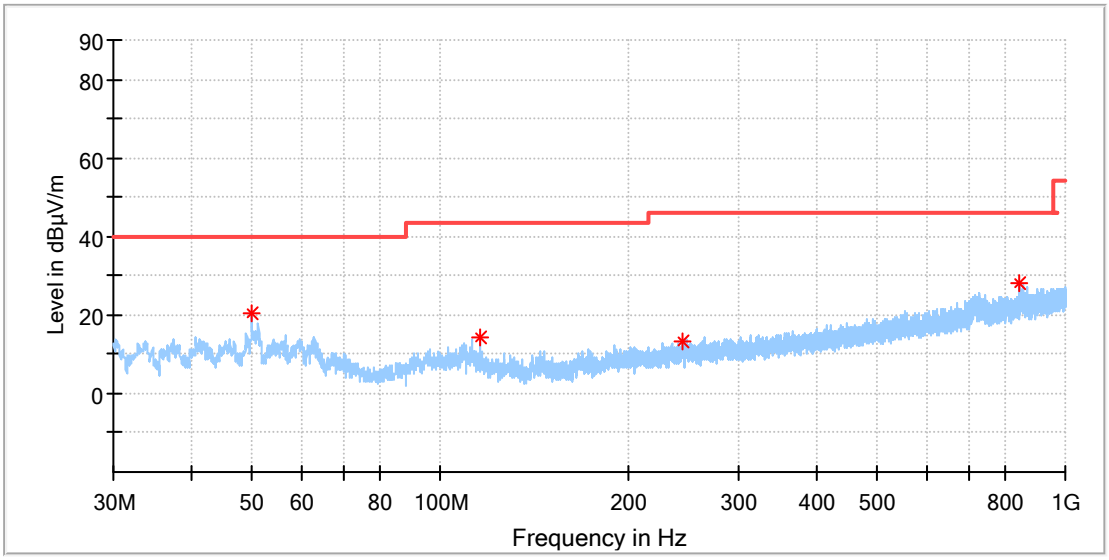

Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
49.978000	20.33	---	40.00	19.64	100.0	H	284.0	-18.6
115.591700	14.01	---	43.50	29.49	100.0	H	292.0	-20.2
244.789100	13.52	---	46.00	32.48	100.0	H	6.0	-17.9
845.345600	28.19	---	46.00	17.81	100.0	H	13.0	-6.0

EDR mode, 1GHz - 18GHz

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_Low Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
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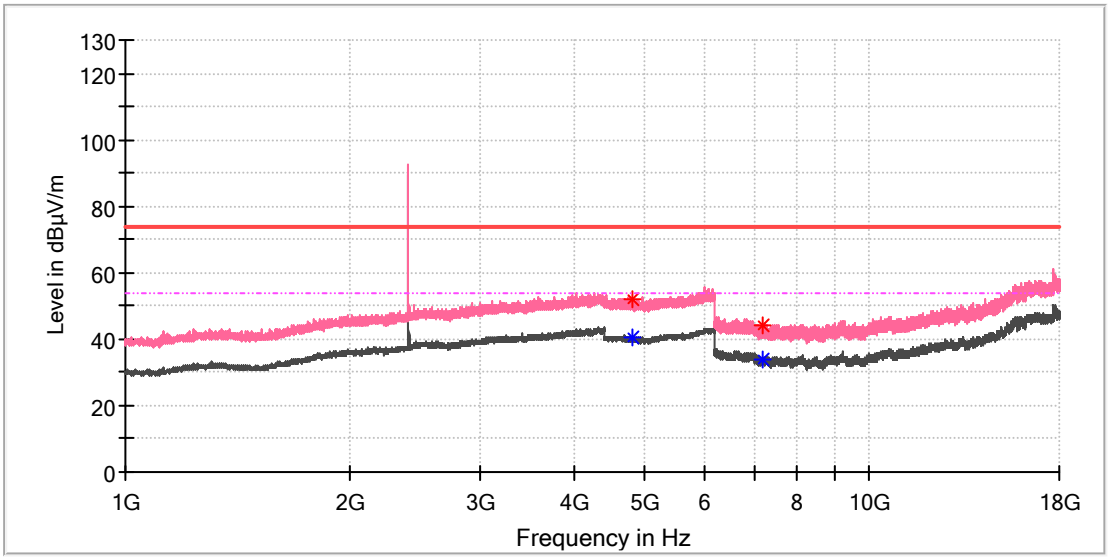

Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4810.000000	---	40.29	54.00	13.71	100.0	V	354.0	13.6
4814.500000	52.10	---	74.00	21.90	100.0	V	176.0	13.6
7203.491667	---	33.89	54.00	20.11	100.0	V	25.0	8.8
7206.933333	44.26	---	74.00	29.74	100.0	V	155.0	8.8

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_Low Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
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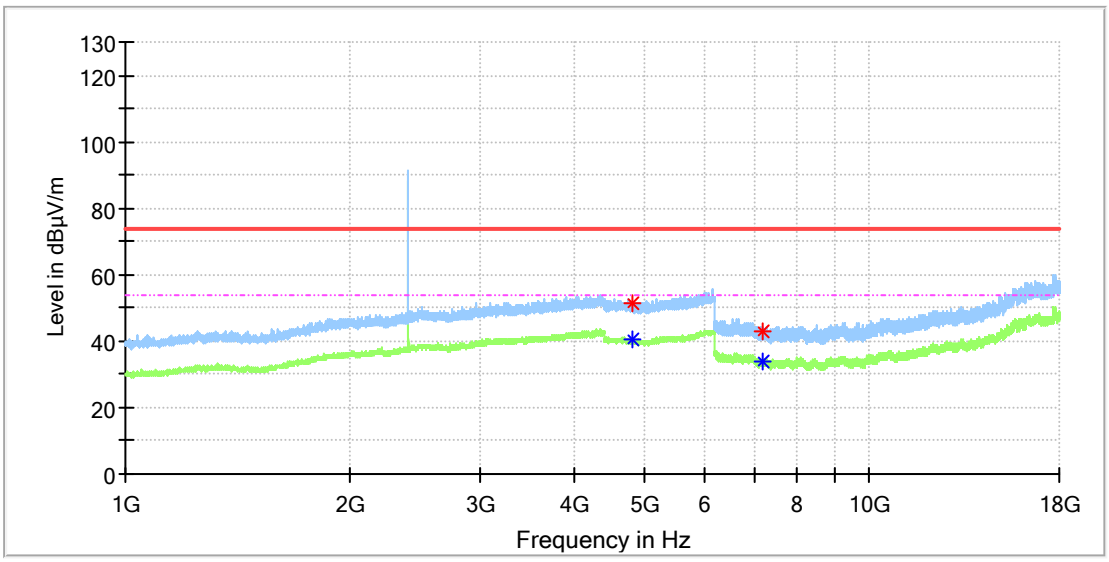

Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4805.000000	---	40.22	54.00	13.78	100.0	H	86.0	13.6
4806.500000	51.33	---	74.00	22.67	100.0	H	182.0	13.6
7203.983333	---	34.07	54.00	19.93	100.0	H	229.0	8.8
7208.408333	42.97	---	74.00	31.03	100.0	H	251.0	8.8

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_Mid Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
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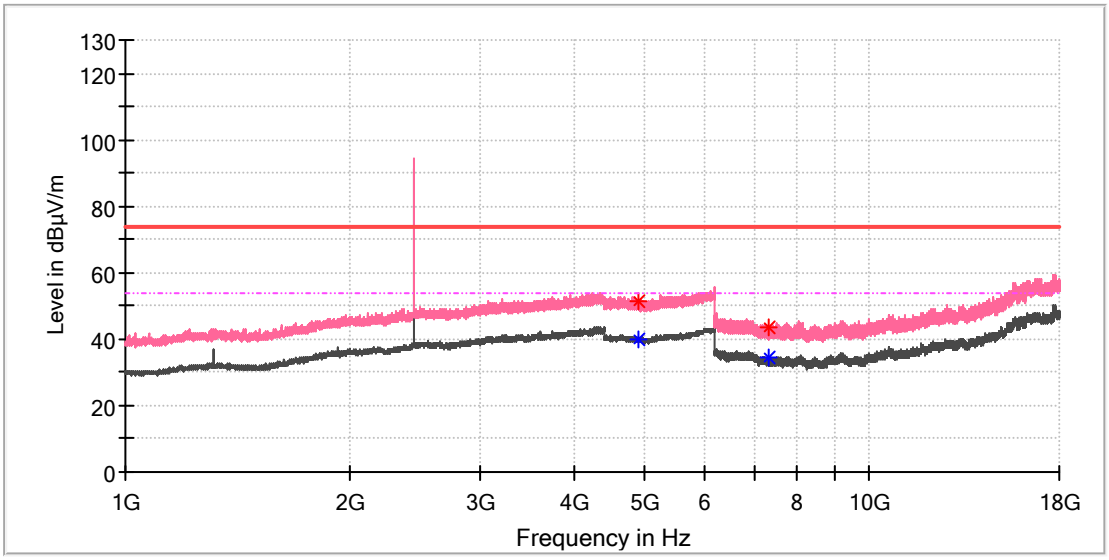

Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4879.500000	51.35	---	74.00	22.65	100.0	V	356.0	13.4
4882.500000	---	39.63	54.00	14.37	100.0	V	298.0	13.4
7316.575000	---	34.26	54.00	19.74	100.0	V	287.0	8.2
7321.000000	43.39	---	74.00	30.61	100.0	V	242.0	8.2

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_Mid Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
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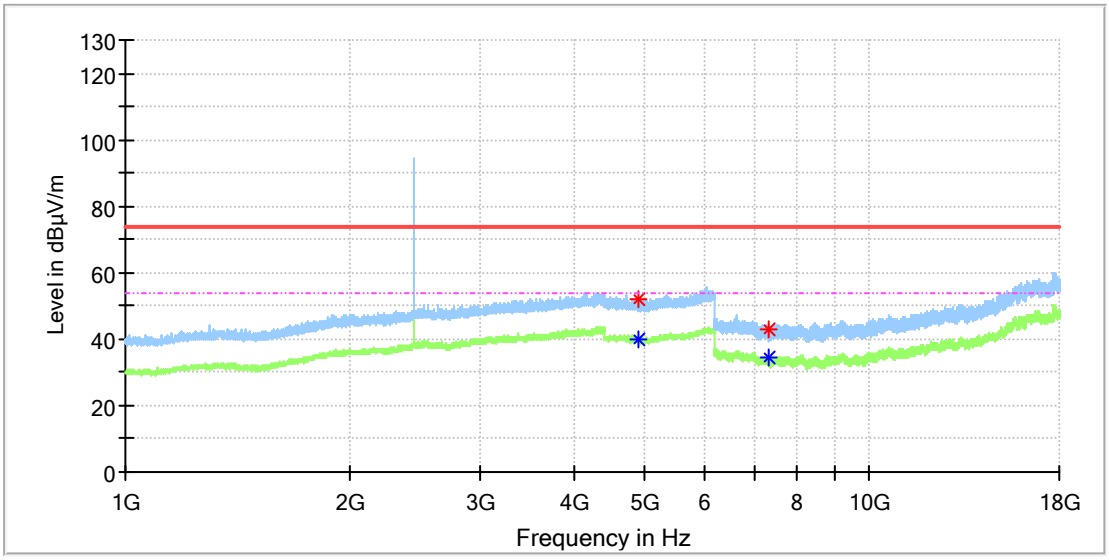

Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4886.000000	---	39.86	54.00	14.14	100.0	H	155.0	13.3
4886.000000	51.72	---	74.00	22.28	100.0	H	155.0	13.3
7314.608333	---	34.28	54.00	19.72	100.0	H	183.0	8.2
7322.966667	42.90	---	74.00	31.10	100.0	H	267.0	8.2

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_High Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
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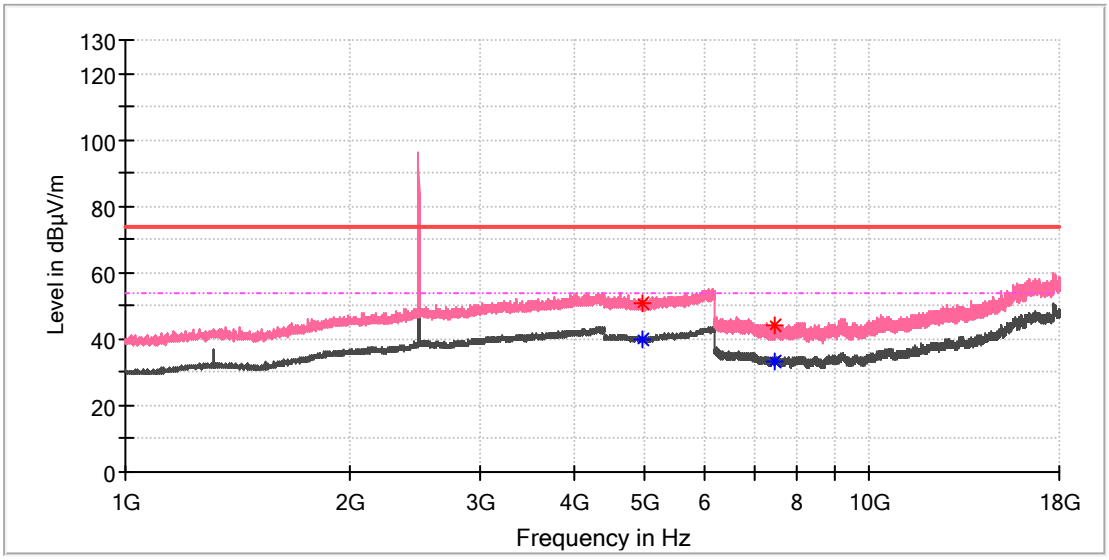
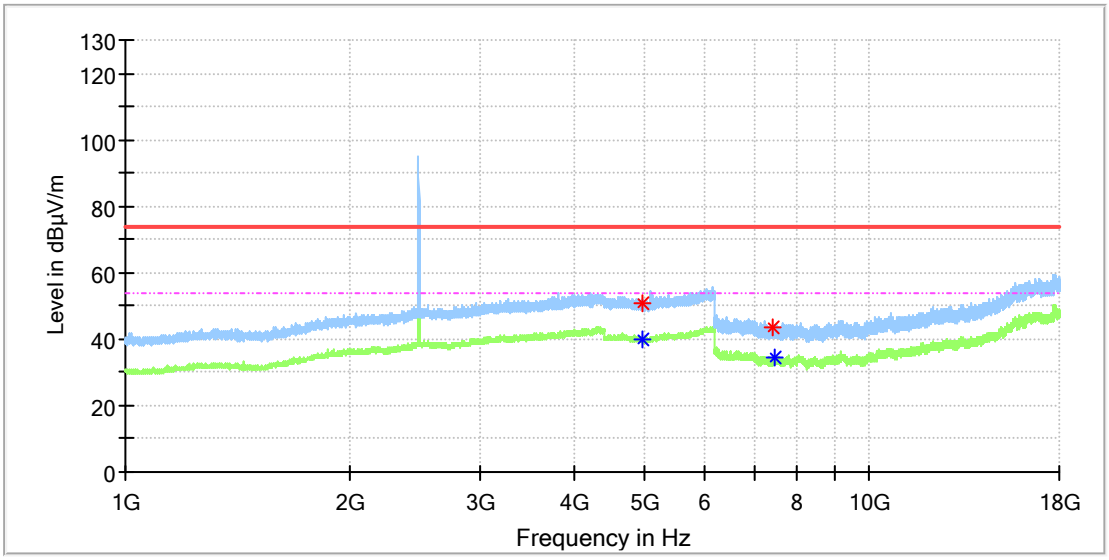


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4964.000000	---	40.13	54.00	13.87	100.0	V	337.0	13.2
4967.500000	50.90	---	74.00	23.10	100.0	V	304.0	13.2
7441.458333	---	33.46	54.00	20.54	100.0	V	216.0	8.4
7445.883333	43.98	---	74.00	30.02	100.0	V	90.0	8.5

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_High Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

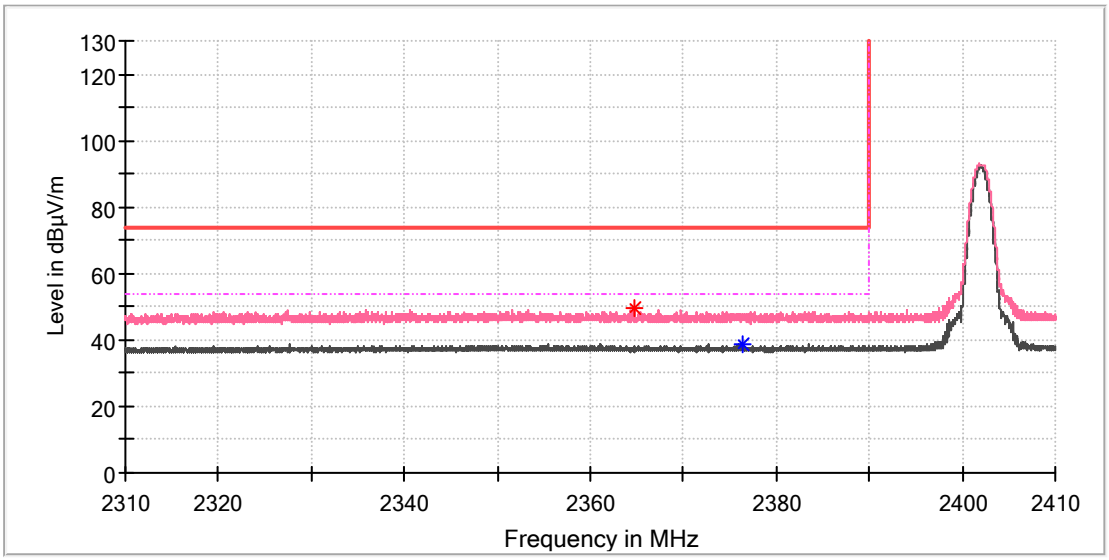
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4959.500000	---	40.06	54.00	13.94	100.0	H	70.0	13.2
4960.000000	50.78	---	74.00	23.22	100.0	H	7.0	13.2
7437.033333	43.77	---	74.00	30.23	100.0	H	0.0	8.4
7444.900000	---	34.25	54.00	19.75	100.0	H	271.0	8.5

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

BDR mode, Low Channel

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_Low Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

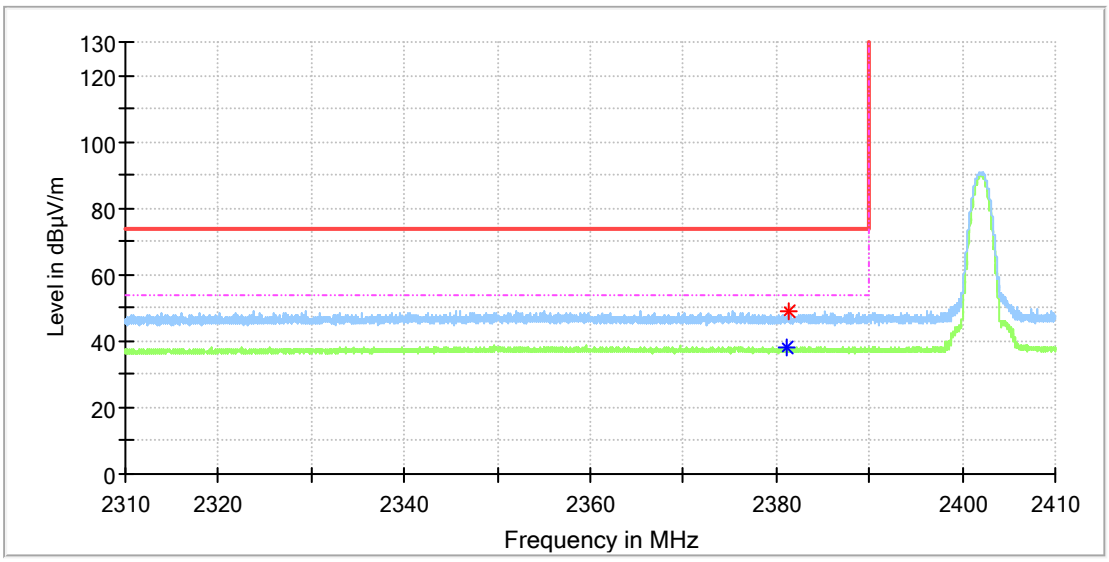


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2364.764706	49.51	---	74.00	24.49	100.0	V	58.0	6.9
2376.338235	---	38.86	54.00	15.14	100.0	V	247.0	6.9

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_Low Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



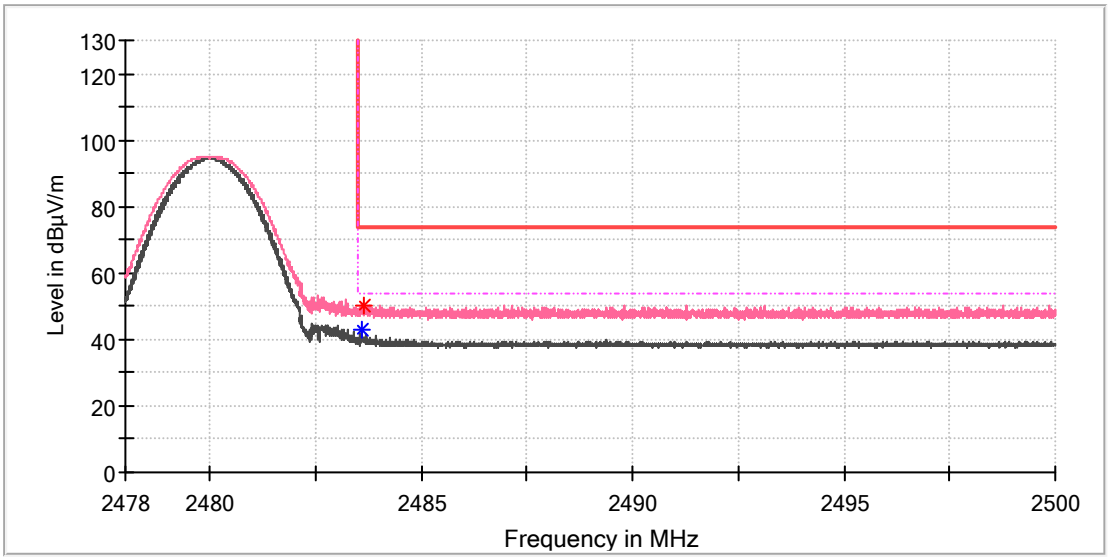
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2381.161765	---	37.80	54.00	16.20	100.0	H	158.0	7.0
2381.235294	48.85	---	74.00	25.15	100.0	H	115.0	7.0

BDR mode, High Channel

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_High Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

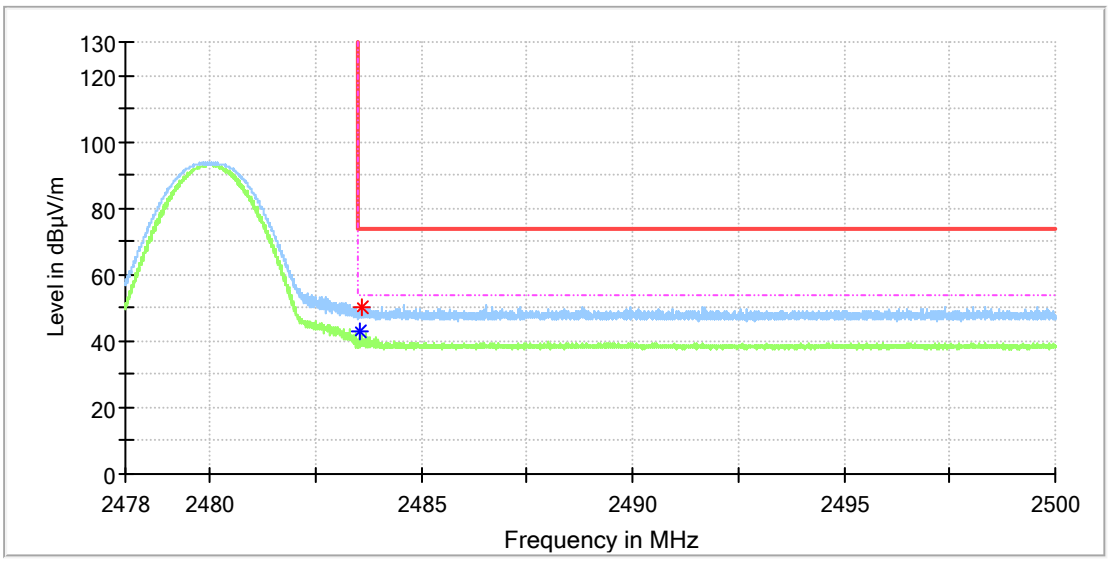


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.590588	---	43.08	54.00	10.92	100.0	V	147.0	7.4
2483.648824	50.47	---	74.00	23.53	100.0	V	147.0	7.4

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_High Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



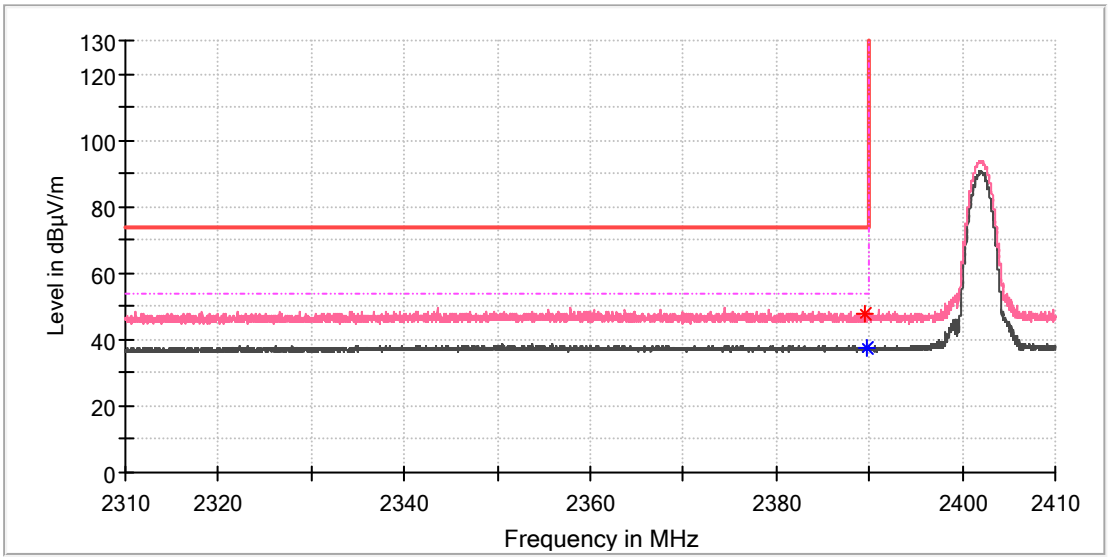
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.561471	---	42.65	54.00	11.35	100.0	H	324.0	7.4
2483.577647	49.94	---	74.00	24.06	100.0	H	324.0	7.4

EDR mode, Low Channel

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_Low Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

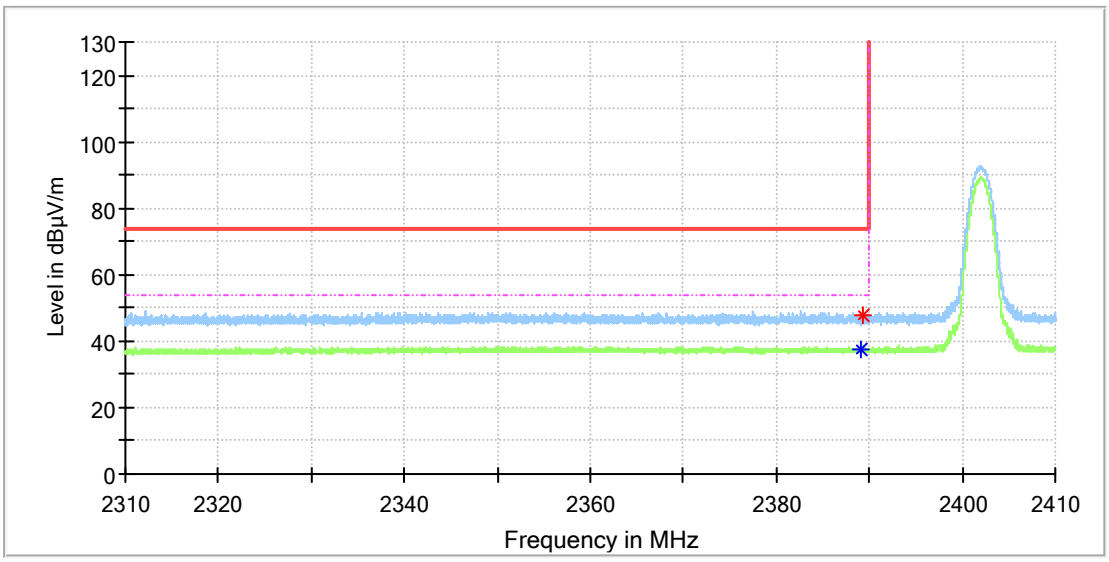


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2389.544118	47.59	---	74.00	26.41	100.0	V	153.0	7.0
2389.691177	---	37.69	54.00	16.31	100.0	V	125.0	7.0

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_Low Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



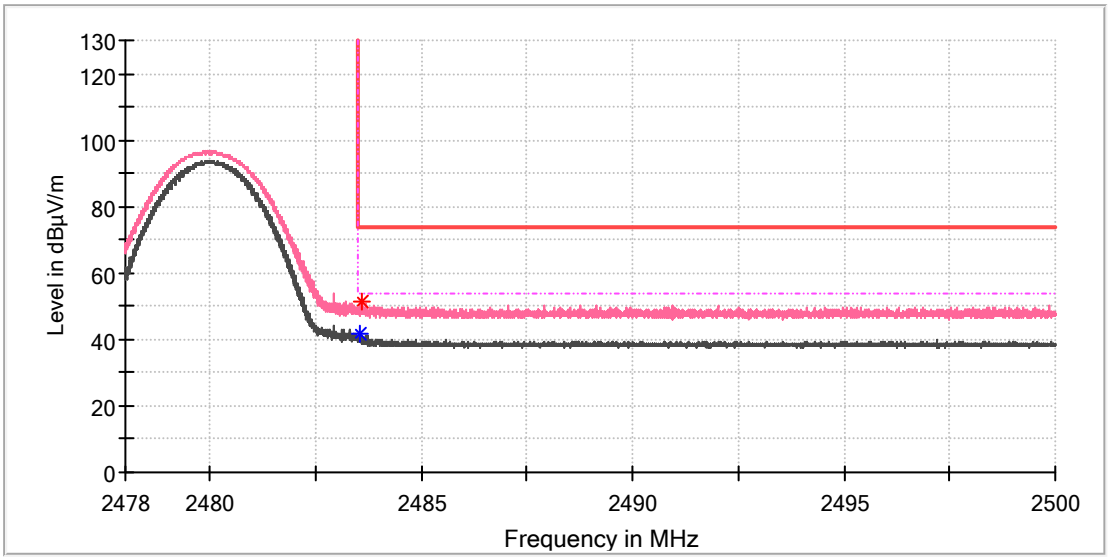
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2389.117647	---	37.78	54.00	16.22	100.0	H	223.0	7.0
2389.294118	47.56	---	74.00	26.44	100.0	H	270.0	7.0

EDR mode, High Channel

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_High Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

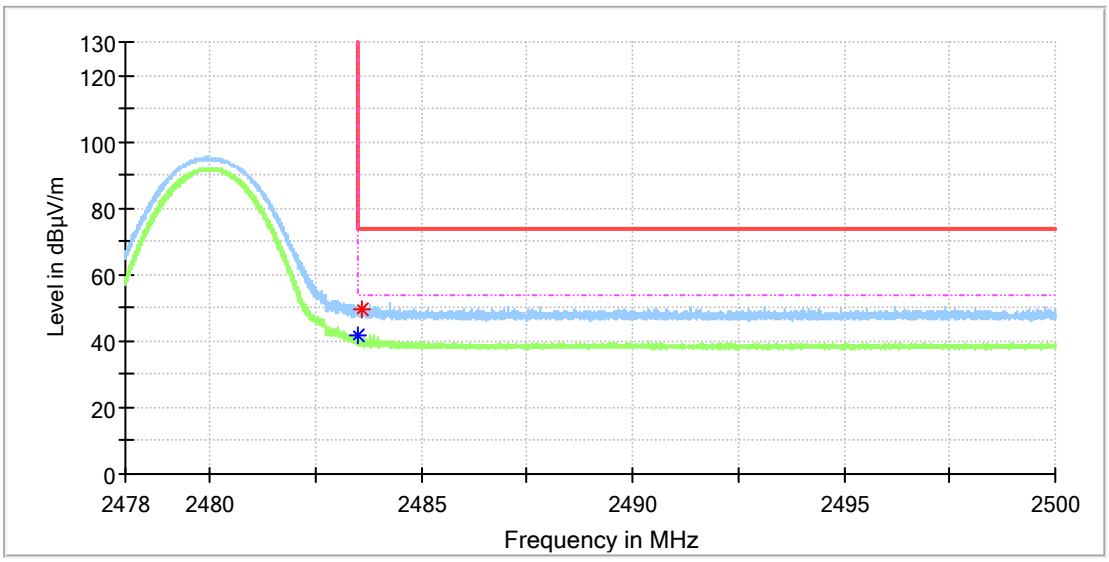


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.564706	---	41.45	54.00	12.55	100.0	V	97.0	7.4
2483.616471	51.65	---	74.00	22.35	100.0	V	97.0	7.4

EUT Information

EUT Name:	Bookshell Speaker
Model:	R28BT
Test Mode:	TX_High Channel
Test Voltage::	AC230V/50Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

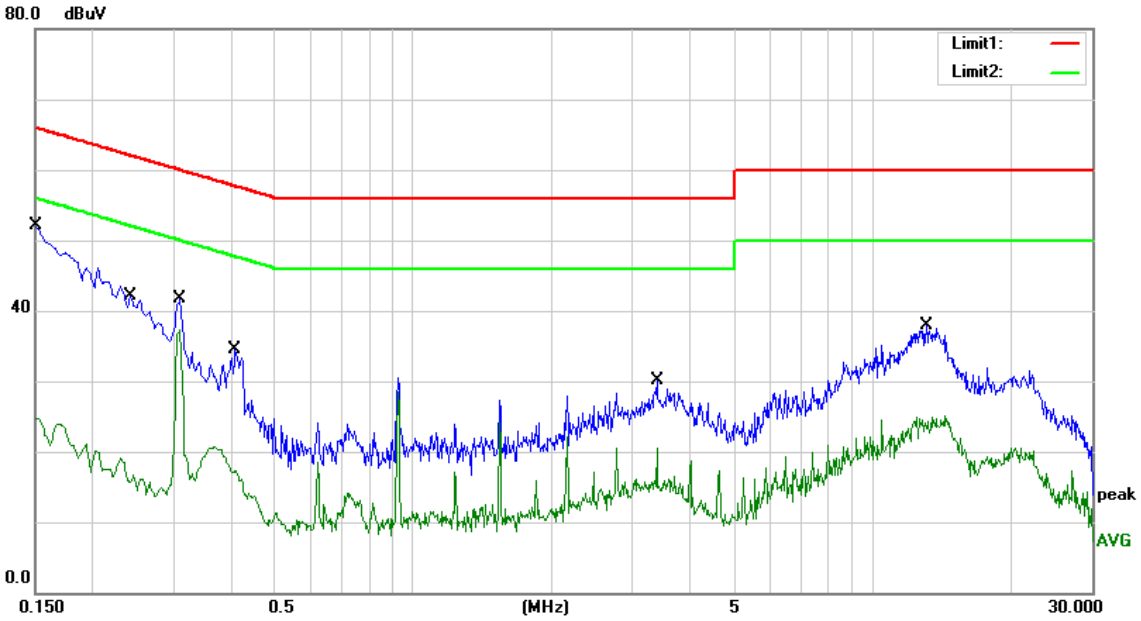


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.503235	---	41.82	54.00	12.18	100.0	H	209.0	7.4
2483.587353	49.88	---	74.00	24.12	100.0	H	209.0	7.4

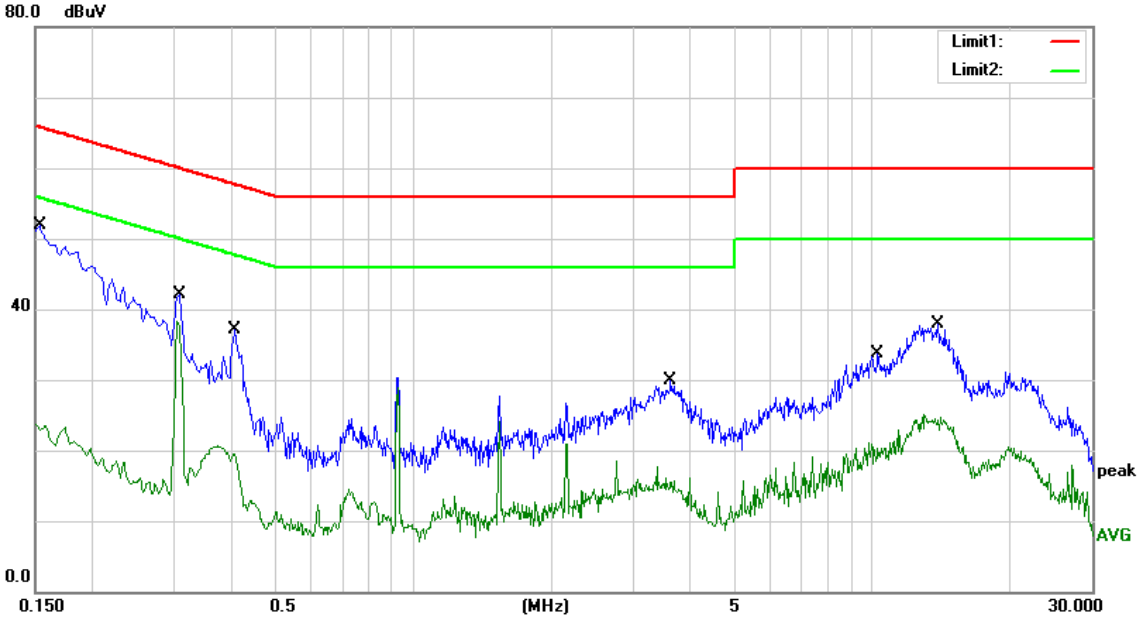
Appendix C.3: Test Plots of AC Mains Conducted Emission

EUT Name: Bookshell Speaker
Model: R28BT
Test Mode: BT
Comment: Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	42.35	9.67	52.02	66.00	-13.98	QP	
2		0.1500	15.03	9.67	24.70	56.00	-31.30	AVG	
3		0.2420	32.61	9.55	42.16	62.03	-19.87	QP	
4		0.2420	9.47	9.55	19.02	52.03	-33.01	AVG	
5		0.3100	32.16	9.56	41.72	59.97	-18.25	QP	
6	*	0.3100	27.76	9.56	37.32	49.97	-12.65	AVG	
7		0.4100	24.89	9.57	34.46	57.65	-23.19	QP	
8		0.4100	7.88	9.57	17.45	47.65	-30.20	AVG	
9		3.3940	20.52	9.63	30.15	56.00	-25.85	QP	
10		3.3940	6.29	9.63	15.92	46.00	-30.08	AVG	
11		13.1260	28.01	9.86	37.87	60.00	-22.13	QP	
12		13.1260	15.06	9.86	24.92	50.00	-25.08	AVG	

EUT Name: Bookshell Speaker
Model: R28BT
Test Mode: BT
Comment: Nature



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	42.27	9.67	51.94	66.00	-14.06	QP	
2		0.1500	14.22	9.67	23.89	56.00	-32.11	AVG	
3		0.3100	32.49	9.56	42.05	59.97	-17.92	QP	
4	*	0.3100	28.71	9.56	38.27	49.97	-11.70	AVG	
5		0.4100	27.60	9.57	37.17	57.65	-20.48	QP	
6		0.4100	11.04	9.57	20.61	47.65	-27.04	AVG	
7		3.6300	20.37	9.63	30.00	56.00	-26.00	QP	
8		3.6300	7.99	9.63	17.62	46.00	-28.38	AVG	
9		10.2460	23.81	9.79	33.60	60.00	-26.40	QP	
10		10.2460	13.09	9.79	22.88	50.00	-27.12	AVG	
11		13.8660	28.08	9.88	37.96	60.00	-22.04	QP	
12		13.8660	14.88	9.88	24.76	50.00	-25.24	AVG	