Prüfbericht-Nr.: *Test report No.:*	**50352706 001**	**Auftrags-Nr.:** *Order No.:*	168150298	Seite 1 von 28 *Page 1 of 28*
Kunden-Referenz-Nr.: *Client reference No.:*	N/A	**Auftragsdatum:** *Order date.:*	11.01.2020	
Auftraggeber: *Client:*	**Edifier International Limited** P.O. Box 6264 General Post Office Hong Kong			
Prüfgegenstand: *Test item:*	Active Speaker			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	R1700BTs (Trademark: EDIFIER)			
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 2.1091		RSS-247 Issue 2 February 2017 RSS-Gen Issue 5 April 2015 RSS-102 Issue 5 March 2015	

Wareneingangsdatum: *Date of receipt:*	15.01.2020	Please refer to photo documents
Prüfmuster-Nr.: *Test sample No.:*	A001056906-001	
Prüfzeitraum: *Testing period:*	15.01.2020 - 18.03.2020	
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:*

Datum *Date*	Name/Stellung *Name/Position*	Unterschrift *Signature*
07.04.2020	Alex Lan / Senior Project Engineer	

kontrolliert von / *reviewed by:*

Datum *Date*	Name/Stellung *Name/Position*	Unterschrift *Signature*
07.04.2020	Winnie Hou / Technical Certifier	

Sonstiges / *Other:*

FCC ID: Z9G-EDF99
IC: 10004A-EDF99 HVIN: R1700BTs

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*

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	2020-08-19
Bilog Antenna	TESEQ	CBL6112D	51321	2020-08-29
Conducted Emissions				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
EMI Test Receiver	R&S	ESR3	102428	2020-08-19
Artificial Mains Network	R&S	ENV216	102333	2020-08-19
Radio Spectrum Testing				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Wireless Connectivity Tester	Rohde & Schwarz	CMW270	101375	2020-08-30
Signal Analyzer	Rohde & Schwarz	FSV 40	101441	2020-08-30
Vector Signal Generator	Rohde & Schwarz	SMBV100A	263301	2020-08-30
Signal Generator	Rohde & Schwarz	SMB100A	115186	2020-08-30
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	2020-08-30
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	165339	2020-08-30
Signal Analyzer	Rohde & Schwarz	FSV 40	101440	2020-08-30
System Controller Interface	Rohde & Schwarz	SCI-100	S10010036	N/A
Filterbank	Rohde & Schwarz	CDMA	100751	2020-08-30
Filterbank	Rohde & Schwarz	GSM	100811	2020-08-30
OSP	Rohde & Schwarz	OSP 120	102041	N/A
OSP	Rohde & Schwarz	OSP 150	101385	N/A
Pre-amplifier	Rohde & Schwarz	SCU08F1	08320030	2020-08-30
Amplifier	Rohde & Schwarz	SCU-18F	180079	2020-08-30
Amplifier	Rohde & Schwarz	SCU40A	100450	2020-09-03
Trilog Broadband Antenna (30 MHz - 1 GHz)	Schwarzbeck	VULB9162	192	2020-09-02

Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218719	2020-09-02
Wideband Ridged Horn Antenna (12-18 GHz)	Steatite	QMS-00208	18312	2020-09-02
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19066	2020-09-02
Biconical Broadband Antenna (30 MHz - 1 GHz)	Schwarzbeck	VUBA 9117	357	2020-09-02
Double Ridged Broadband Horn Antenna (1 – 18 GHz)	Schwarzbeck	BBHA 9120 D	01760	2020-09-02
Broadband Horn Antenna (15 – 40 GHz)	Schwarzbeck	BBHA 9170	00862	2020-09-02
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 an Active 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

Technical Specification	Value
Kind of Equipment	Active Speaker
Type Designation	R1700BTs
FCC ID	Z9G-EDF99
IC	10004A-EDF99
HVIN	R1700BTs
Operating Frequency	2402 - 2480 MHz
Operating Voltage	AC 100-240V, 50/60Hz, 300mA
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	2.59 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
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)

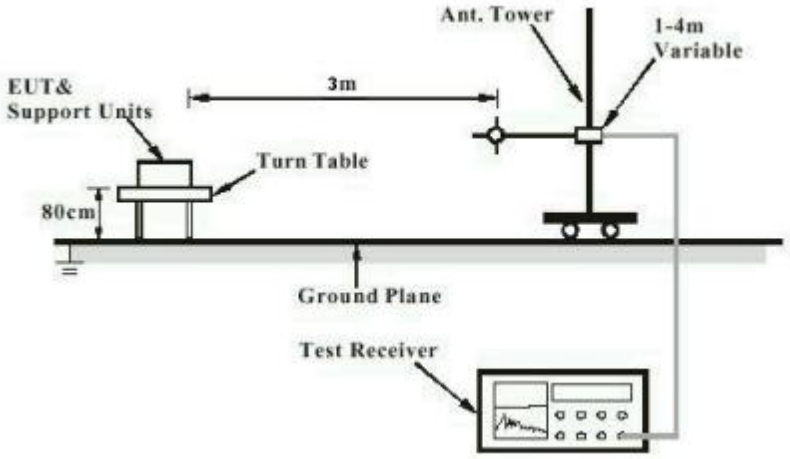


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

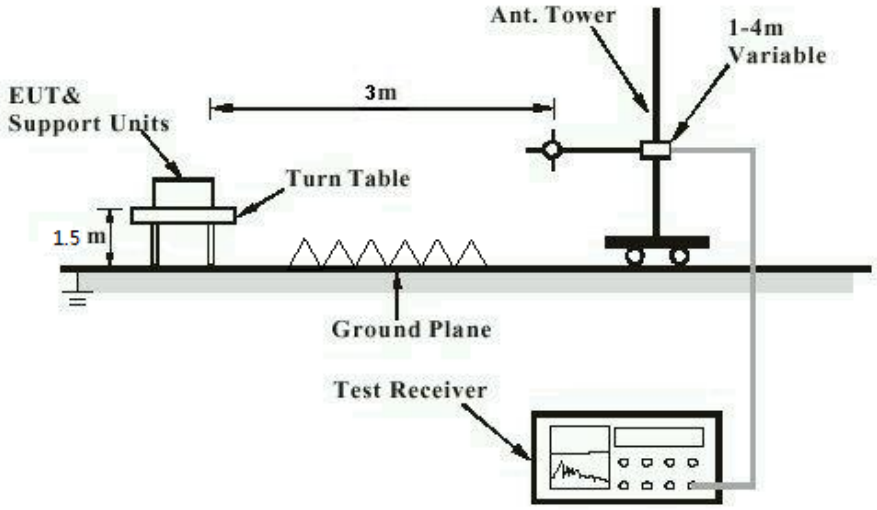


Diagram of Measurement Configuration for Mains Conduction Measurement

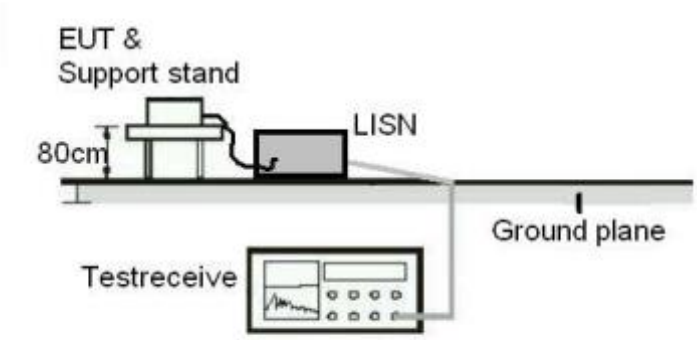
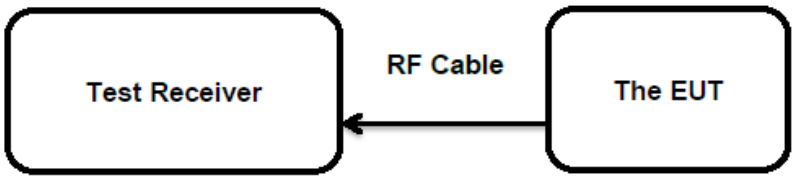


Diagram of Measurement Configuration for Conducted Transmitter Measurement



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 2.59 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	:	26.02.2020
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	5.59	0.00362	< 0.125
	2441	6.07	0.00405	
	2480	6.20	0.00417	
EDR	2402	5.35	0.00343	< 0.125
	2441	6.17	0.00414	
	2480	6.32	0.00429	

Note: The cable loss is taken into account in results and the maximum e.i.r.p. is 8.91 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	:	26.02.2020
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	870	/
	2441	870	
	2480	865	
EDR	2402	740	/
	2441	735	
	2480	730	

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	:	26.02.2020
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	:	20.02.2020 - 26.02.2020
Input voltage	:	AC 120V/60Hz
Operation mode	:	A.1, B
Test channel	:	Low / Middle / High
Ambient temperature	:	23 ℃
Relative humidity	:	42 %
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	:	26.02.2020
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	940	626.667	/
	2441	940	626.667	
	2480	940	626.667	
EDR	2402	540	360.000	/
	2441	540	360.000	
	2480	540	360.000	

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	:	09.08.2019
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	2401.995050	1.009900	≥ 25kHz or 2/3 of 20dB bandwidth	Pass
	Adjacency Channel	2403.004950			
	Middle Channel	2440.995050	1.009900		Pass
	Adjacency Channel	2442.004950			
	High Channel	2478.995050	1.009900		Pass
	Adjacency Channel	2480.004950			
EDR	Low Channel	2401.995050	1.009900	≥ 25kHz or 2/3 of 20dB bandwidth	Pass
	Adjacency Channel	2403.004950			
	Middle Channel	2440.995050	1.009900		Pass
	Adjacency Channel	2442.004950			
	High Channel	2478.995050	1.009900		Pass
	Adjacency Channel	2480.004950			

Note:

The limit is maximum 2/3 of the 20 dB bandwidth: 626.667 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	:	26.02.2020
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	:	26.02.2020
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	0.400	0.128	< 0.4s
		DH3	1.656	0.265	
		DH5	2.904	0.310	
EDR	2441	3DH1	0.399	0.128	< 0.4s
		3DH3	1.658	0.265	
		3DH5	2.909	0.310	

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	:	11.03.2020
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: Section 2.1091
CFR47 FCC Part 1: Section 1.1310
FCC KDB Publication 447498 v06
FCC KDB Publication 865664 D02 v01r02
OET Bulletin 65 (Edition 97-01)
RSS-102 Issue 5 March 2015

➢ **FCC requirements**

FCC requirement: Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 20cm normally can be maintained between the user and the device.

MPE Calculation Method according to OET Bulletin 65

Power Density: $S_{(mW/cm^2)}$= $PG/4\pi R^2$ or $EIRP/4\pi R^2$

Where:

S = power density (mW/cm^2)

P = power input to the antenna (mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (cm)

The nominal maximum conducted output power specified:

Bluetooth: 6.32 dBm

From the peak RF output power, the minimum mobile separation distance, d=20 cm, as well as the antenna gain (Max. 2.59 dBi for Bluetooth), the RF power density can be calculated as below:

For Bluetooth: $\mathbf{S_{(mW/cm^2)}= PG/4\pi R^2 = 0.0015}$ mW/cm^2

Limits for Maximum Permissible Exposure (MPE) according to FCC Part 1.1310:

1.0 mW/cm^2

➢ **IC requirements:** The EUT shall comply with the requirement of RSS-102 section 2.5.2.

Exemption from Routine Evaluation Limits – RF Exposure Evaluation

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1.31 x 10^{-2} $f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;

- RF exposure evaluation exempted power for Bluetooth: 2.736 W

The nominal maximum conducted output power specified:

Bluetooth: 6.32 dBm

Antenna Gain: 2.59 dBi for Bluetooth

The Max. e.i.r.p. for Bluetooth: 8.91 dBm = 0.008 W

e.i.r.p. for the Bluetooth is less than the RF exposure evaluation exempted power. So RF exposure evaluation is not required.

a

"RF Radiation Exposure Statement Caution: This Transmitter must be installed to provide a separation distance of at least 20 cm from all persons."

7 Photographs of the Test Set-Up

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

8 List of Tables

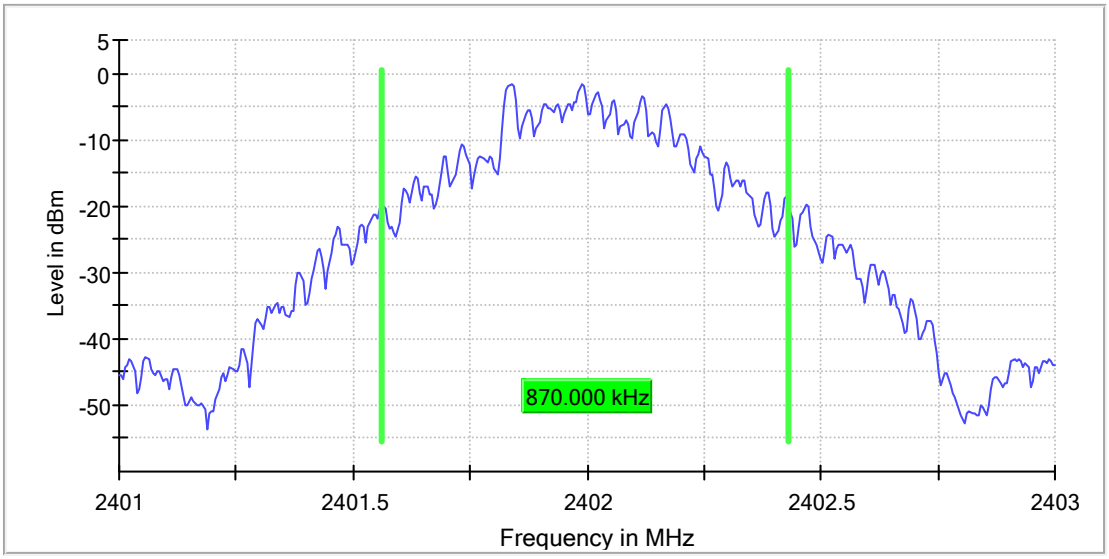
Appendix B

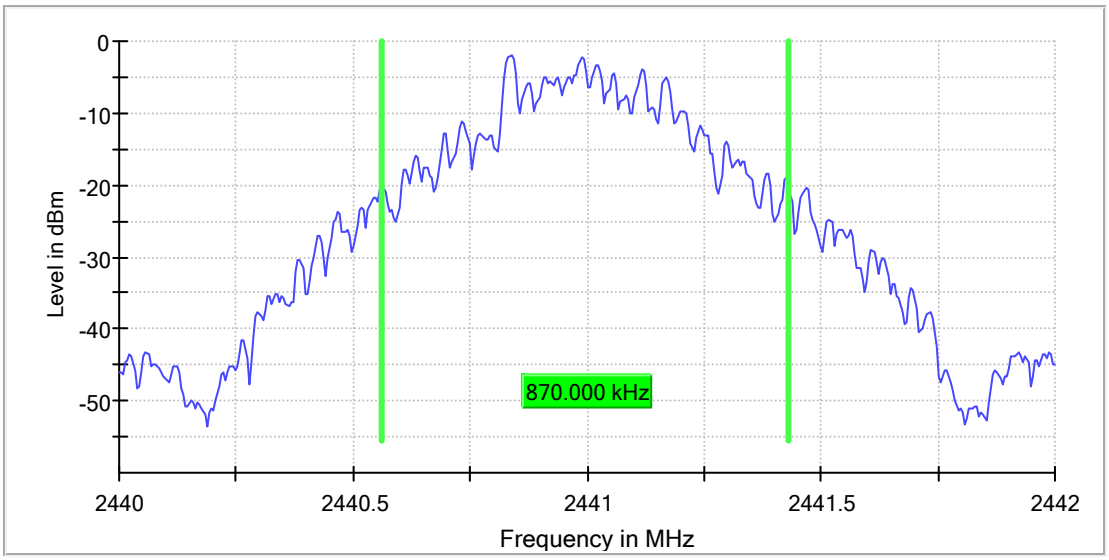
Test Results of Conducted Testing

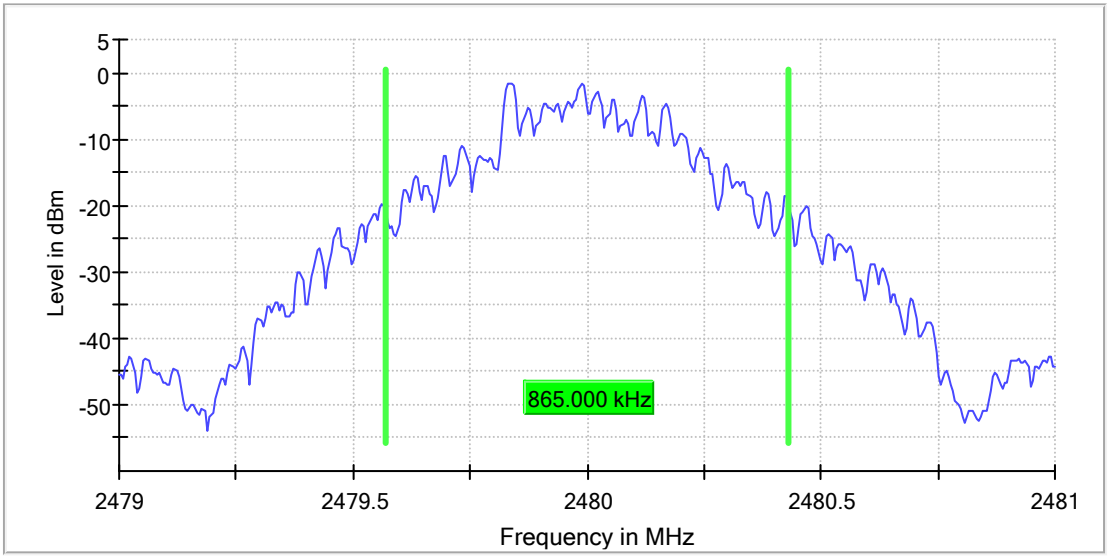
Appendix B.1: Test Plots of 99% Bandwidth

BDR Mode, DH1

RBW=10KHz, VBW=30KHz

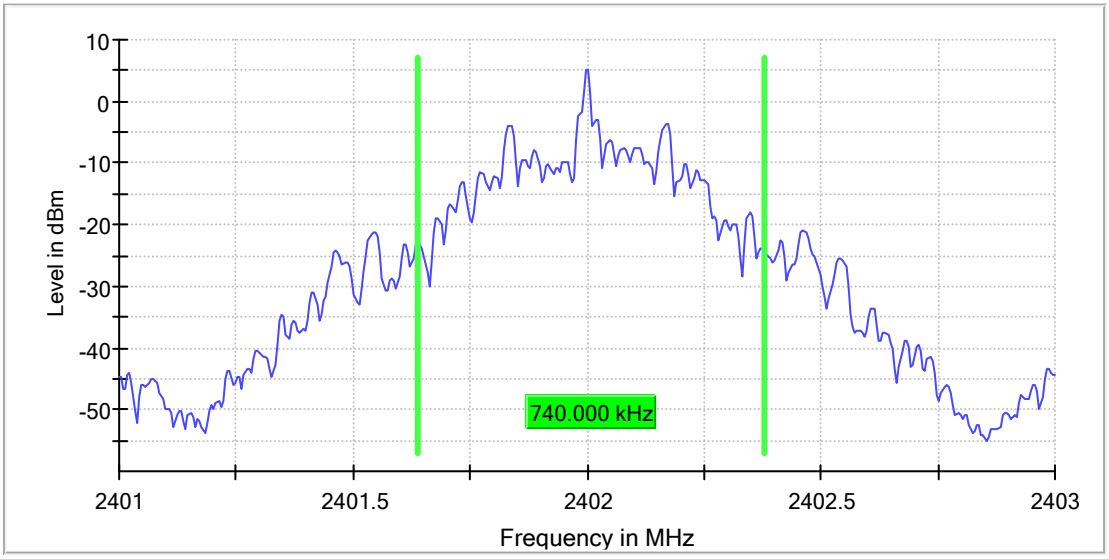


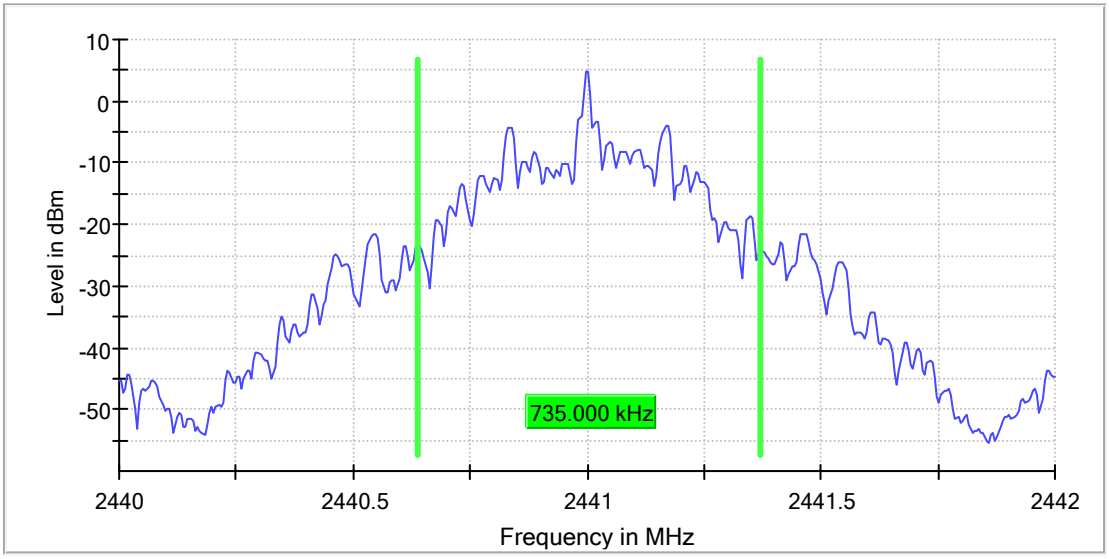


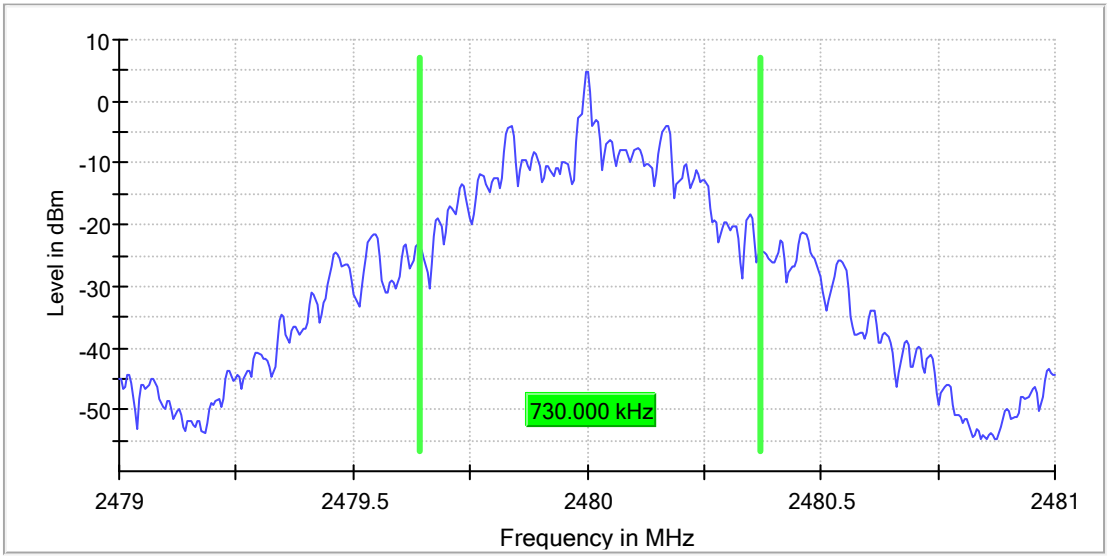


EDR Mode, 3DH1

RBW=10KHz VBW=30KHz



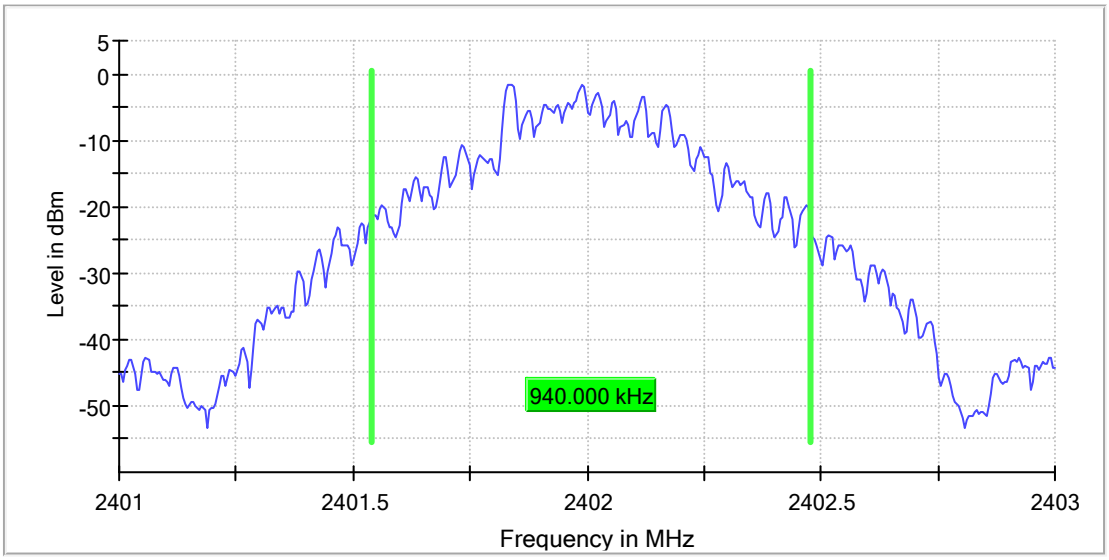

10
0
-10
-20
-30
-40
-50
Level in dBm
735.000 kHz
2440
2440.5
2441
2441.5
2442
Frequency in MHz

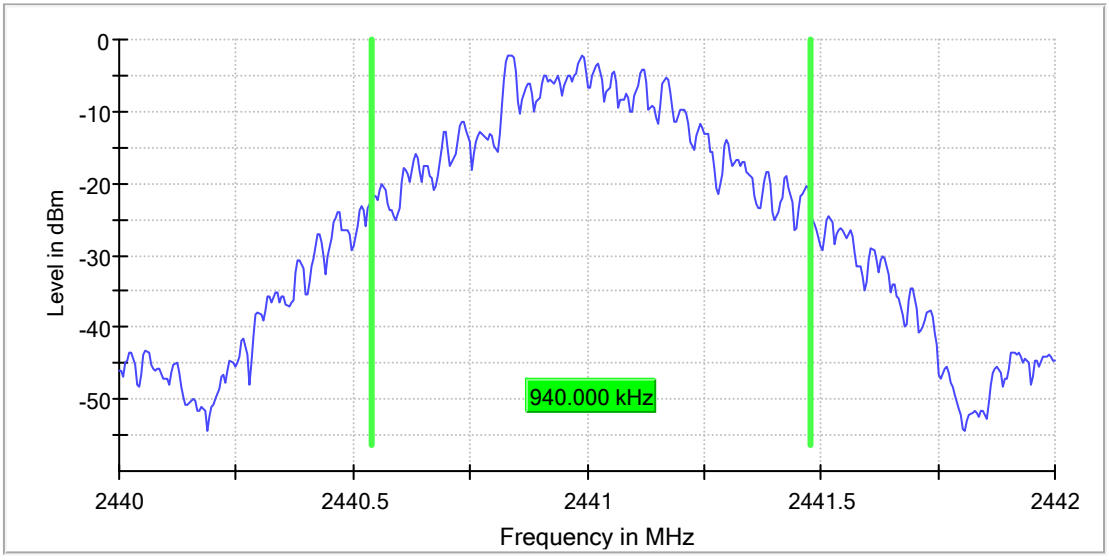

10
0
-10
-20
-30
-40
-50
Level in dBm
730.000 kHz
2479
2479.5
2480
2480.5
2481
Frequency in MHz

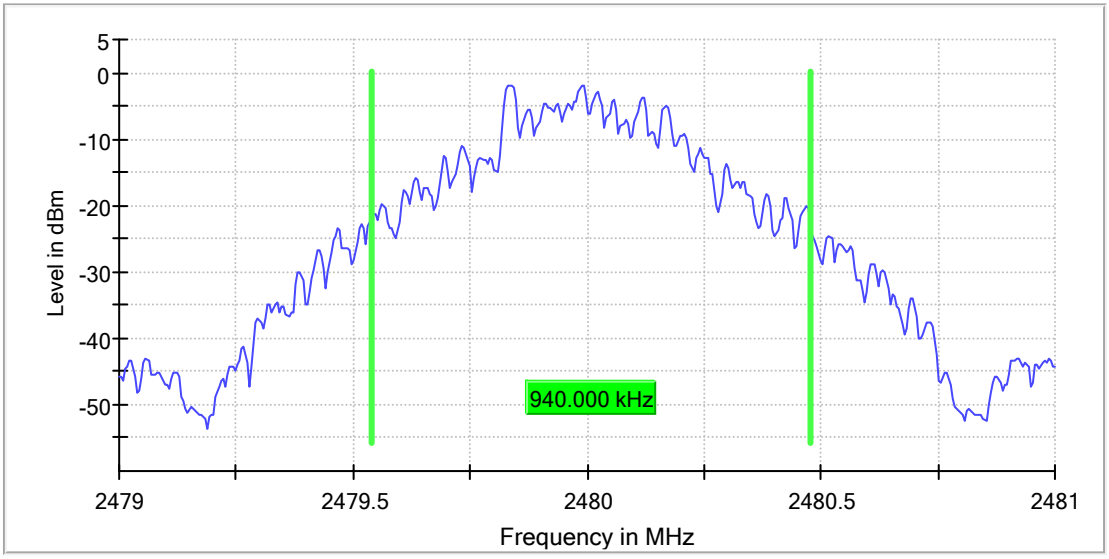
Appendix B.2: Test Plots of 20dB Bandwidth

BDR Mode, DH1

RBW=10KHz VBW=30KHz

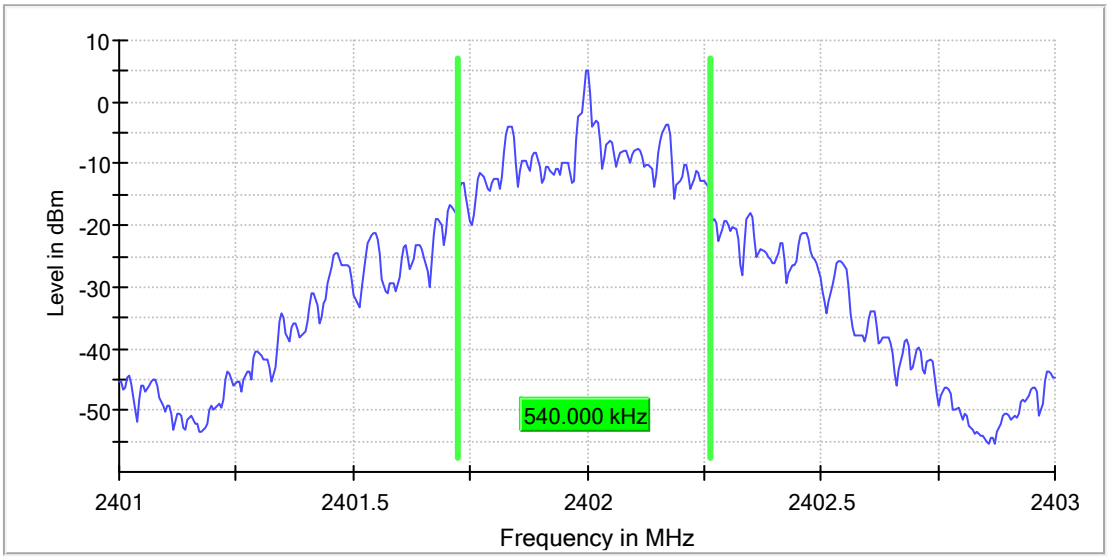


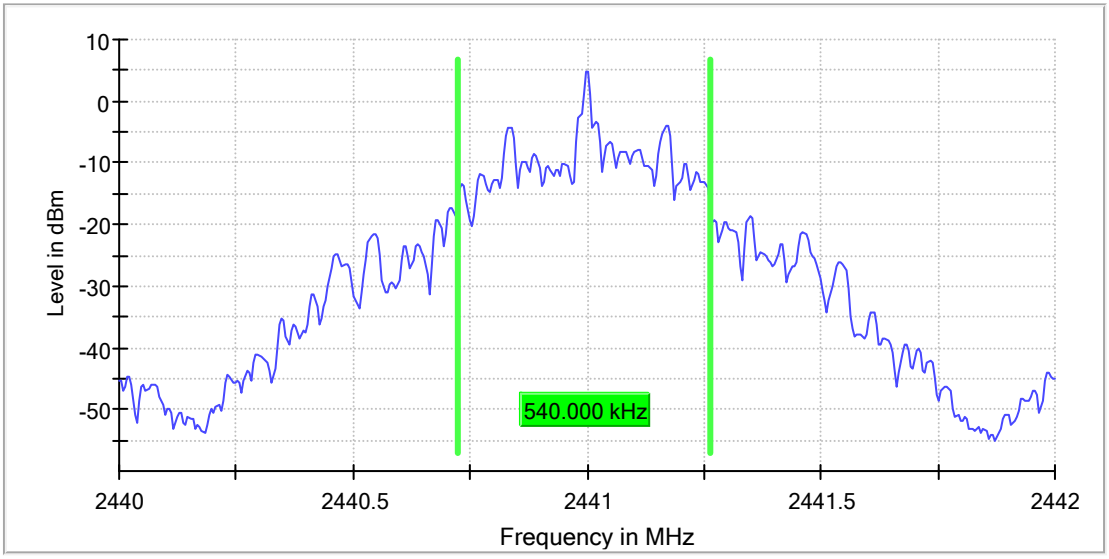


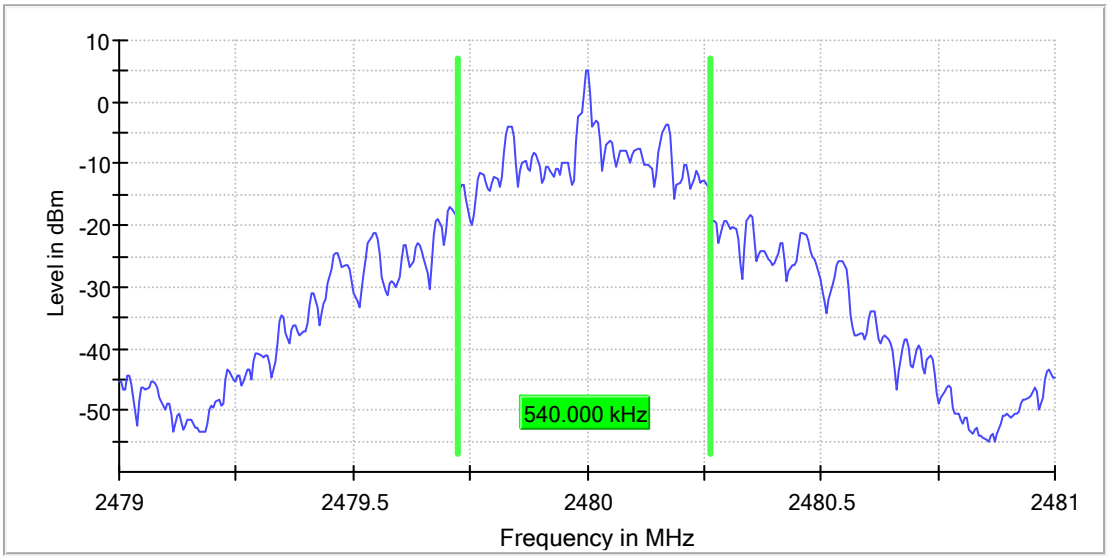


EDR Mode, 3DH1

RBW=10KHz VBW=30KHz

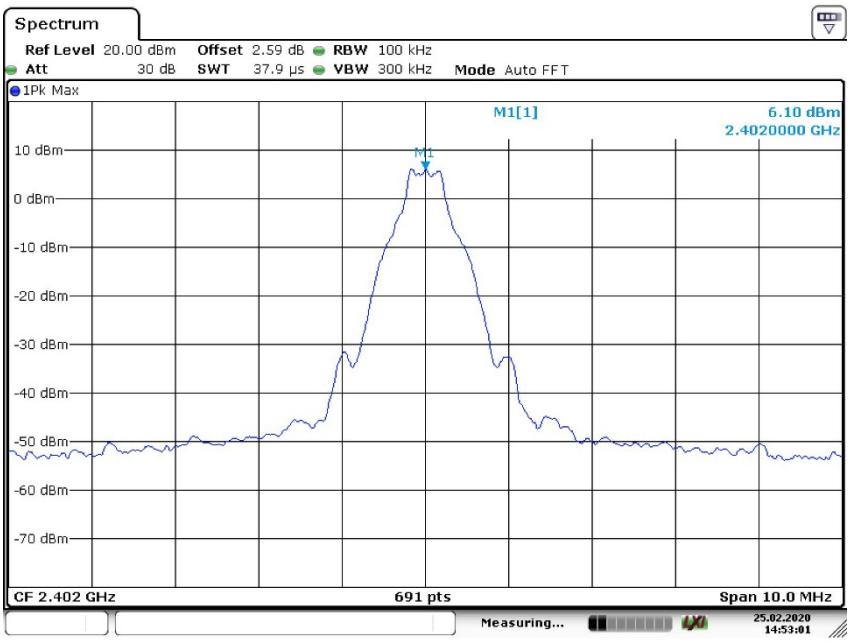



10
0
-10
-20
-30
-40
-50
Level in dBm
540.000 kHz
2440
2440.5
2441
2441.5
2442
Frequency in MHz

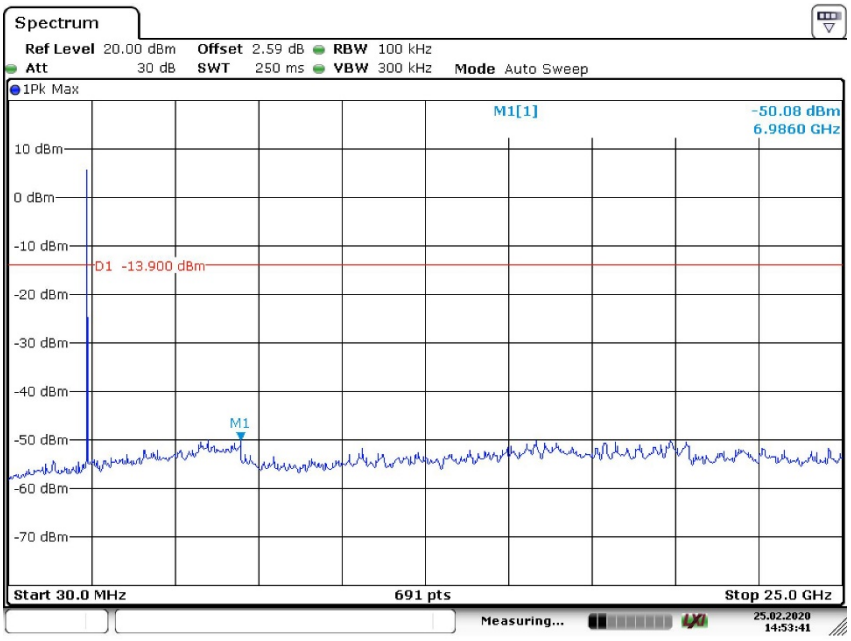

10
0
-10
-20
-30
-40
-50
Level in dBm
540.000 kHz
2479
2479.5
2480
2480.5
2481
Frequency in MHz

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

BDR Mode, Low Channel

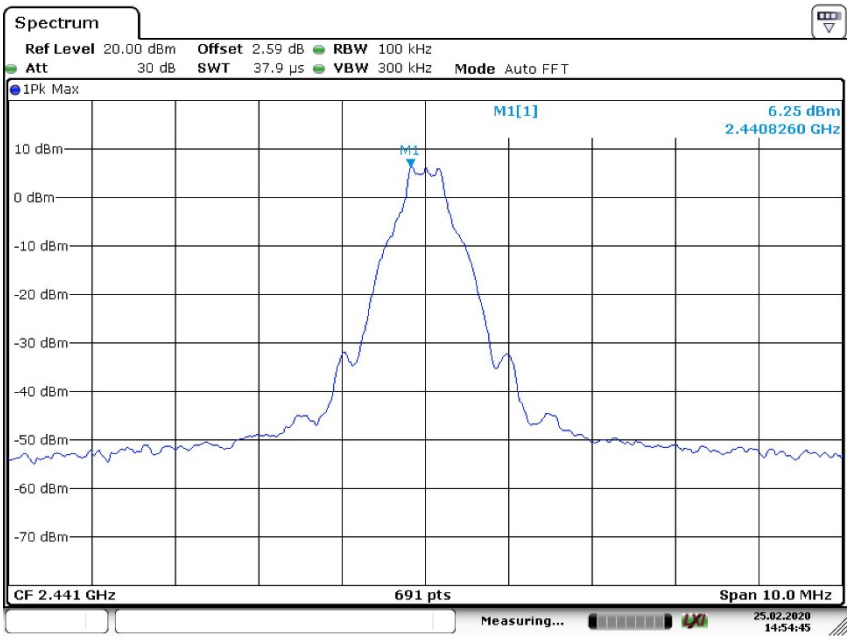


Date: 25.FEB.2020 14:53:01

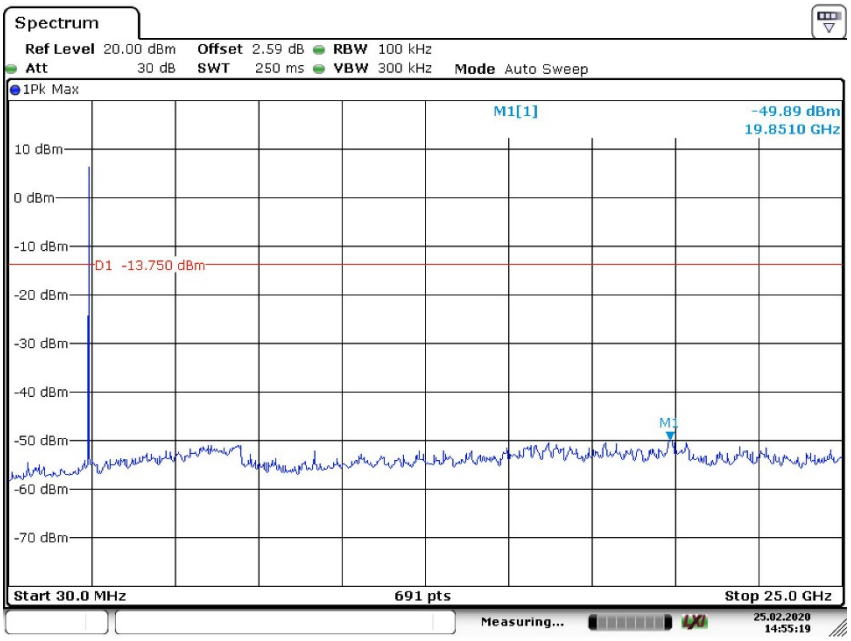


Date: 25.FEB.2020 14:53:41

BDR Mode, Middle Channel

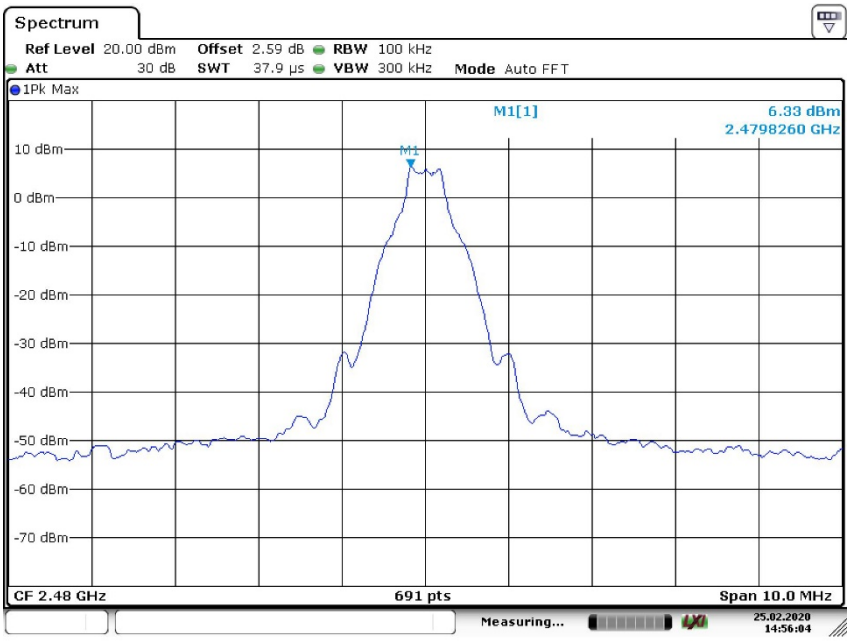


Date: 25.FEB.2020 14:54:45

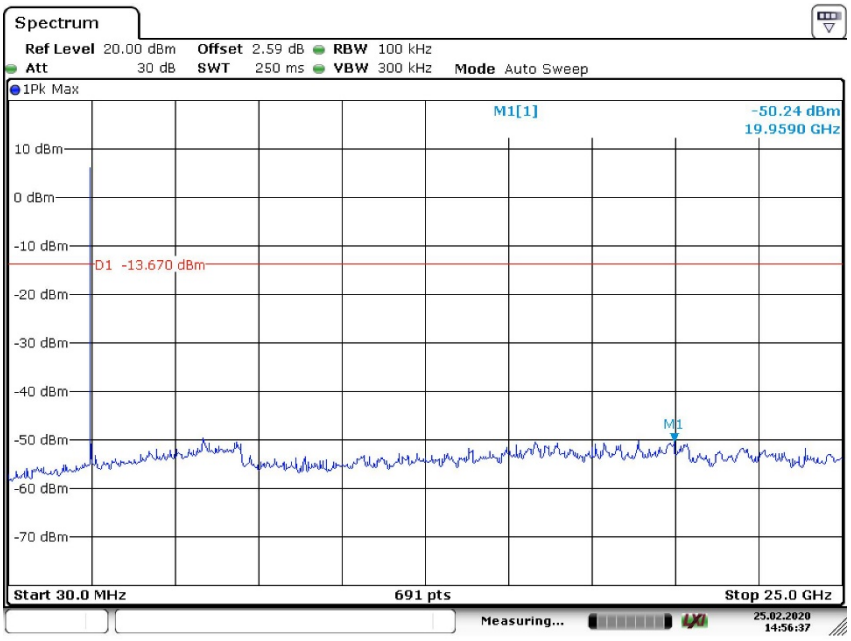


Date: 25.FEB.2020 14:55:19

BDR Mode, High Channel

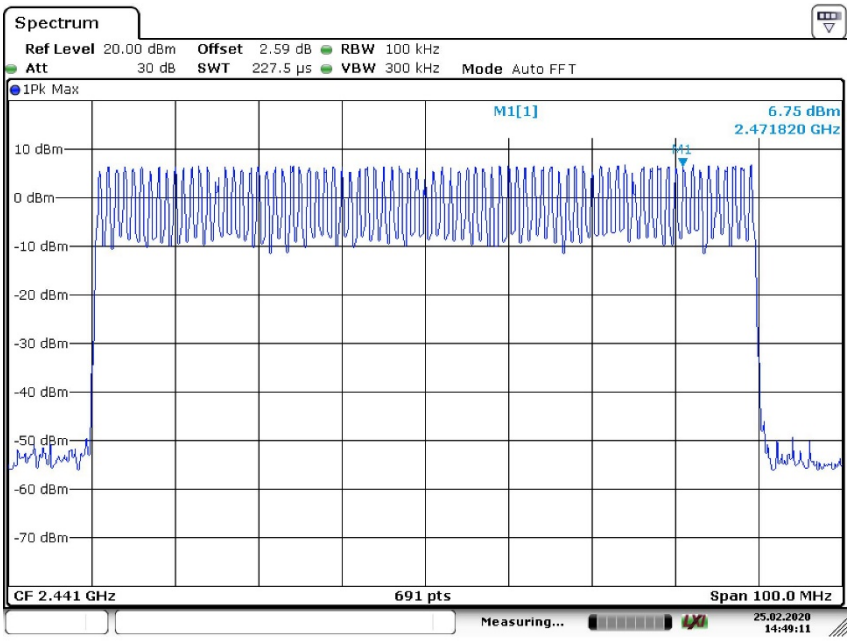


Date: 25.FEB.2020 14:56:04

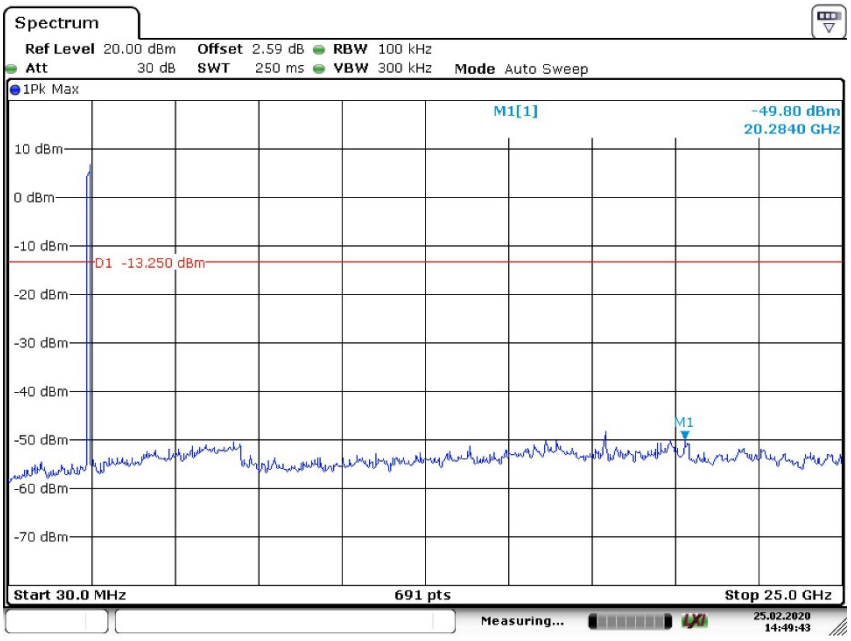


Date: 25.FEB.2020 14:56:38

BDR, Hopping

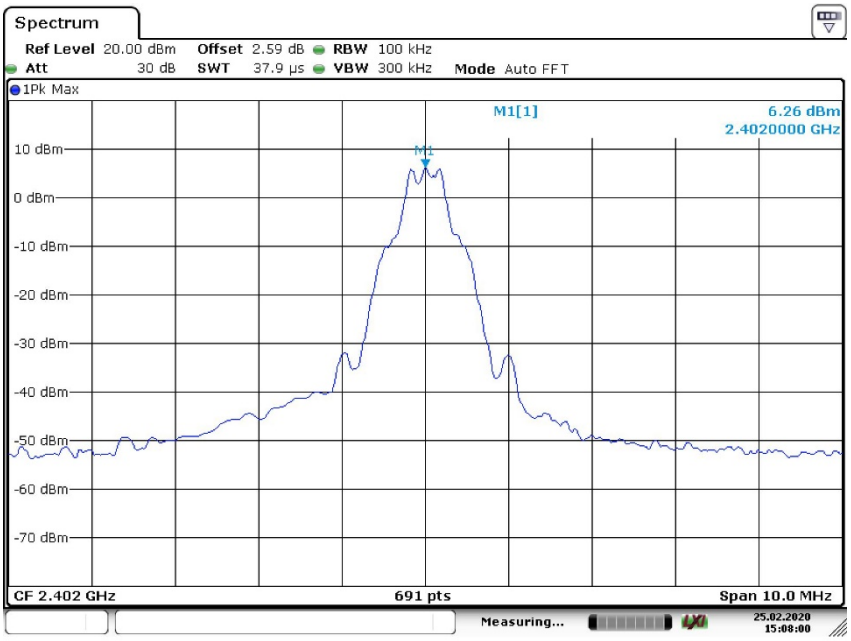


Date: 25.FEB.2020 14:49:11

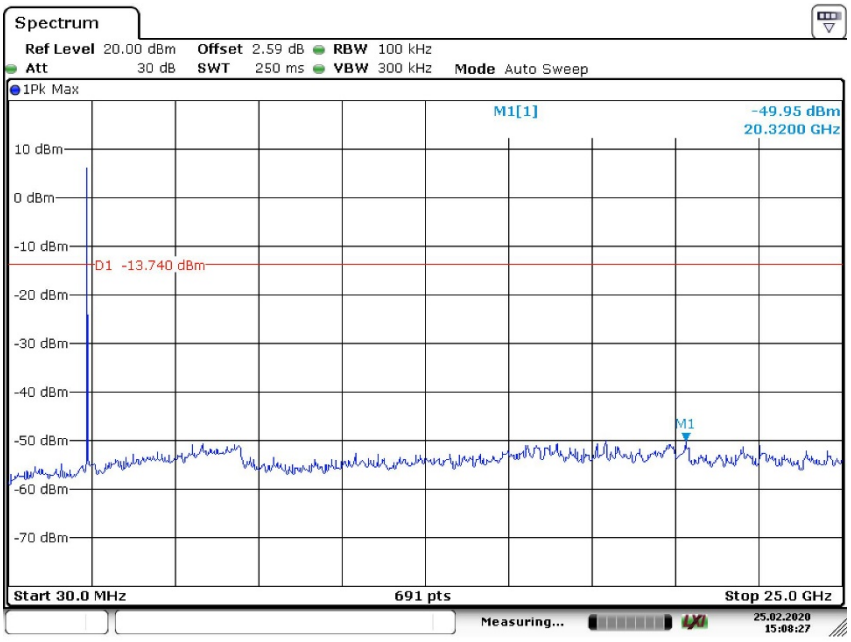


Date: 25.FEB.2020 14:49:43

EDR Mode, Low Channel

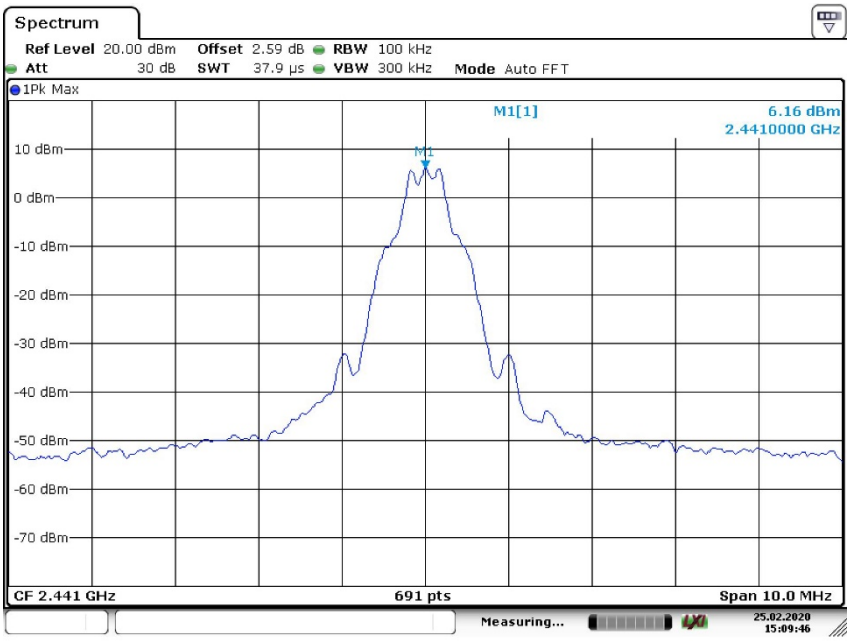


Date: 25.FEB.2020 15:08:00

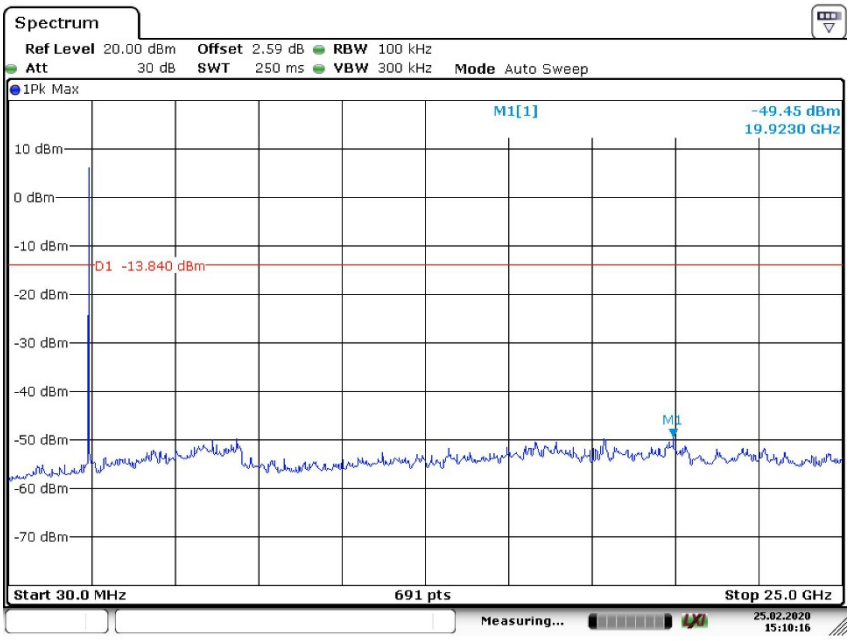


Date: 25.FEB.2020 15:08:27

EDR Mode, Middle Channel

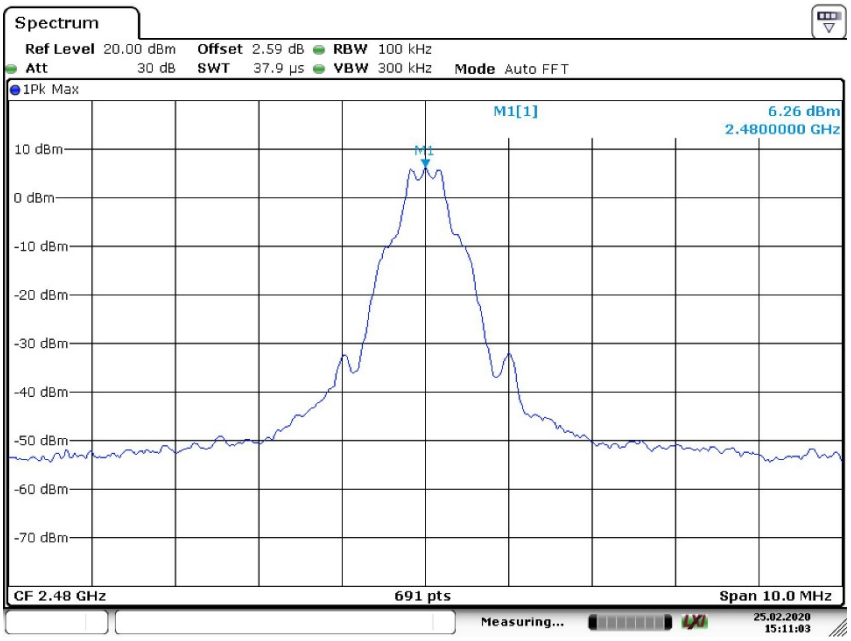


Date: 25.FEB.2020 15:09:46

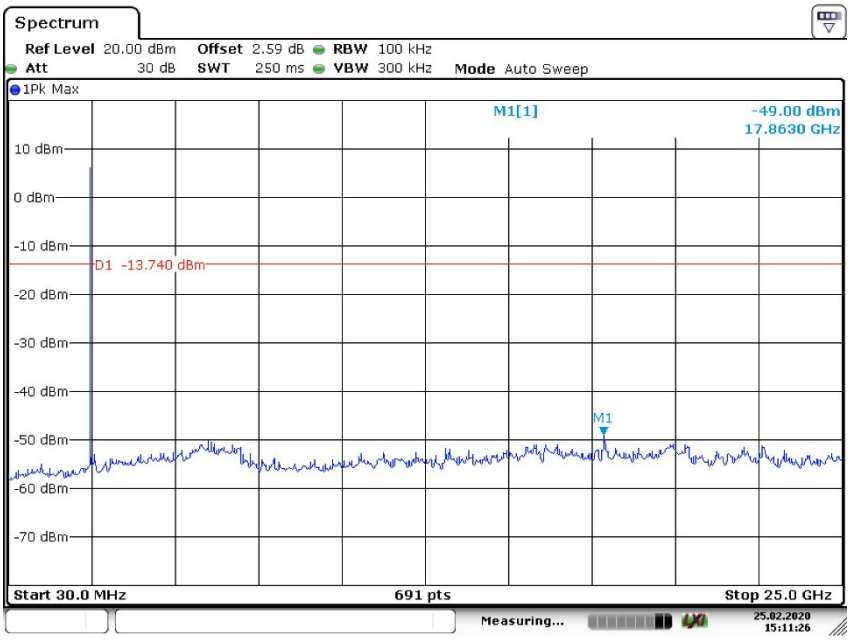


Date: 25.FEB.2020 15:10:16

EDR Mode, High Channel

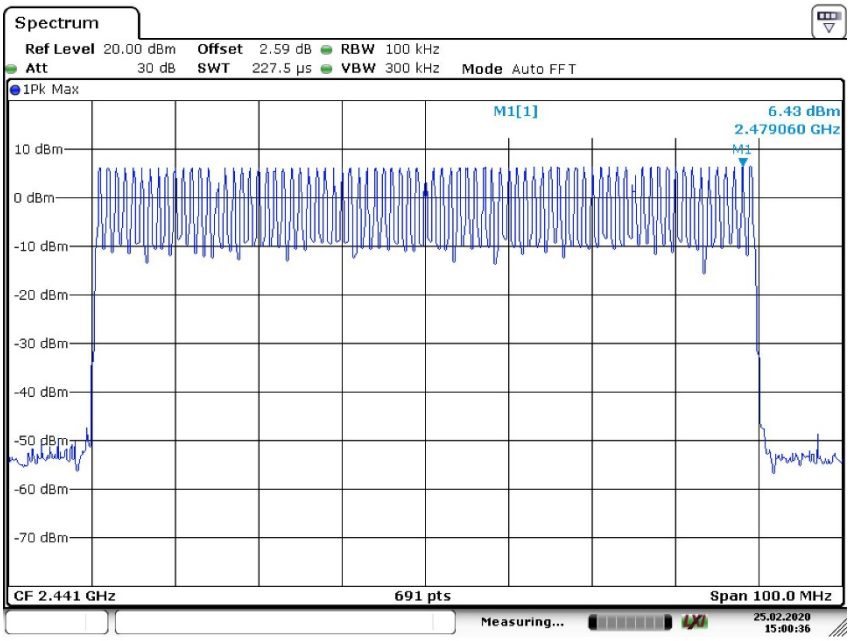


Date: 25.FEB.2020 15:11:03

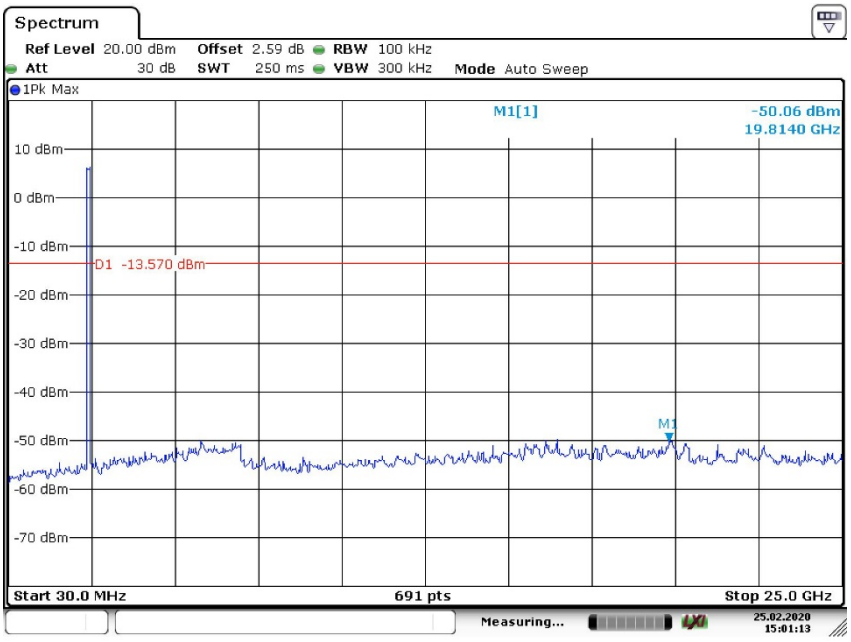


Date: 25.FEB.2020 15:11:26

EDR, Hopping

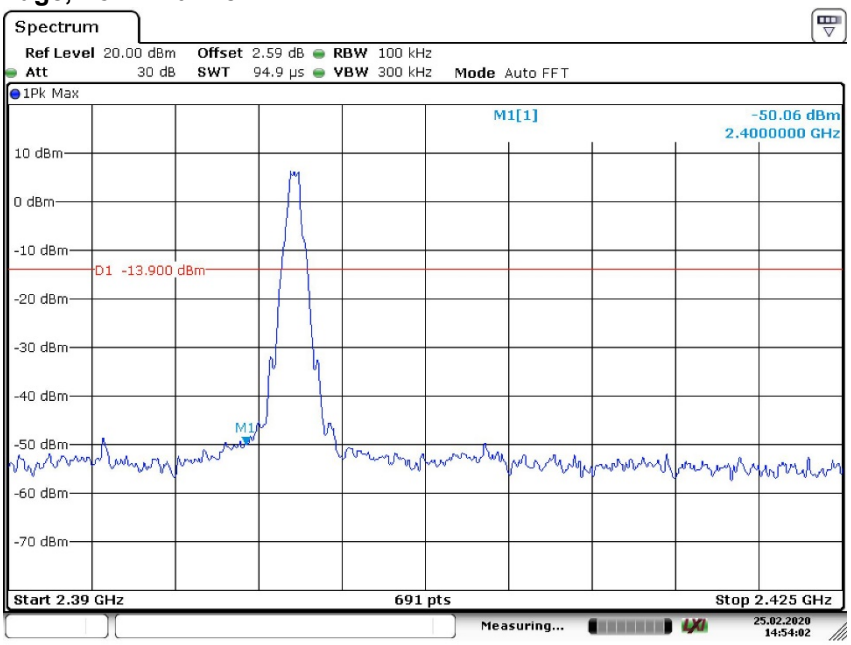


Date: 25.FEB.2020 15:00:36



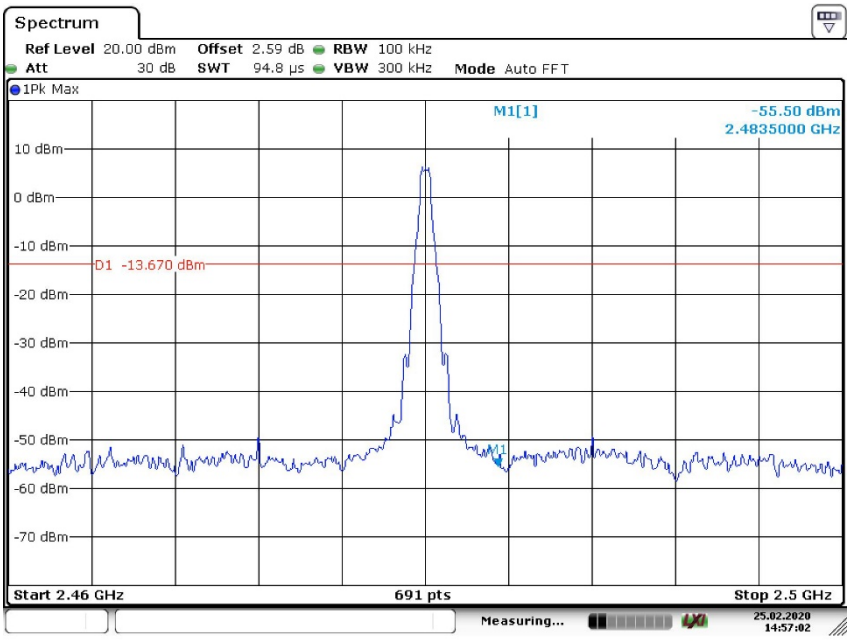
Date: 25.FEB.2020 15:01:13

BDR Mode, Band Edge, Low Channel



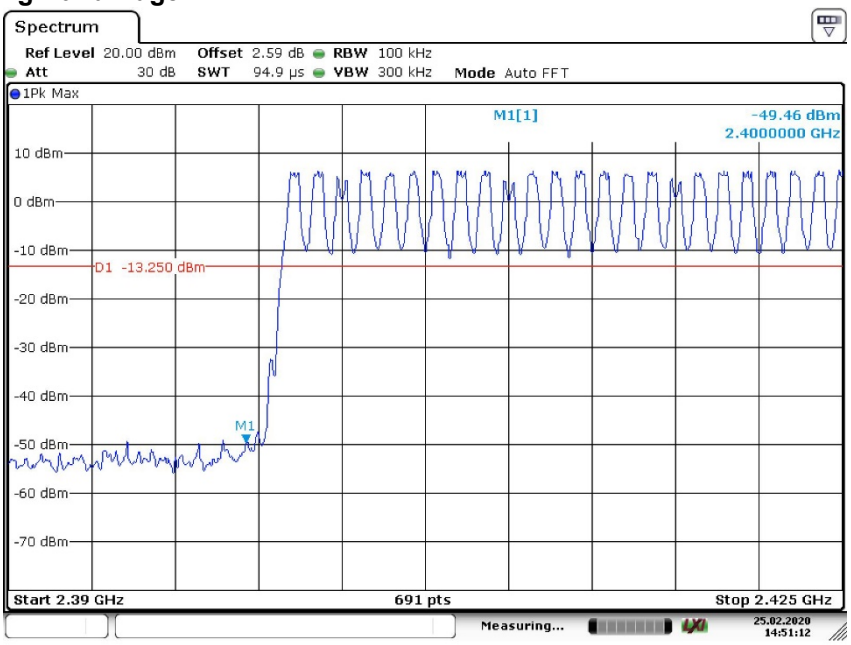
Date: 25.FEB.2020 14:54:02

BDR Mode, Band Edge, High Channel

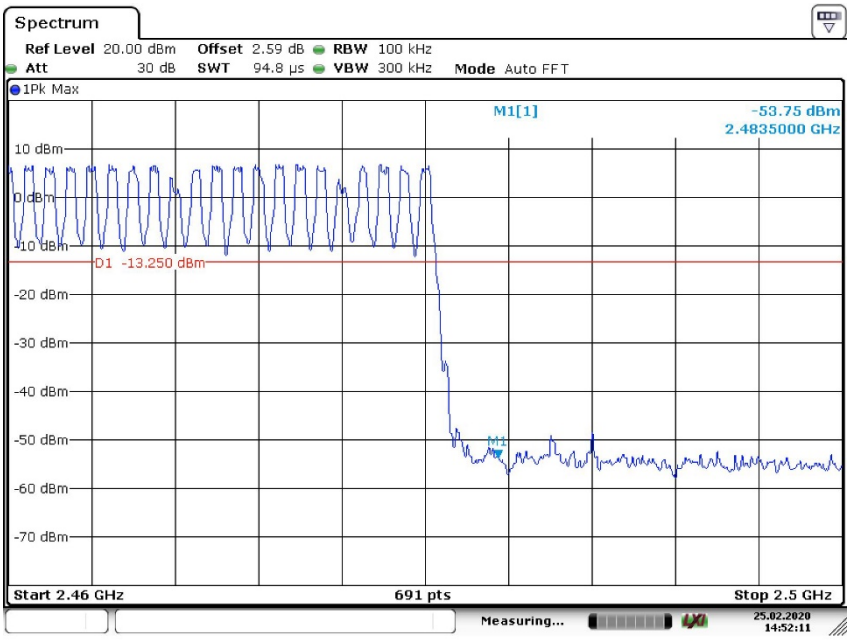


Date: 25.FEB.2020 14:57:02

BDR Mode, Hopping Band Edge

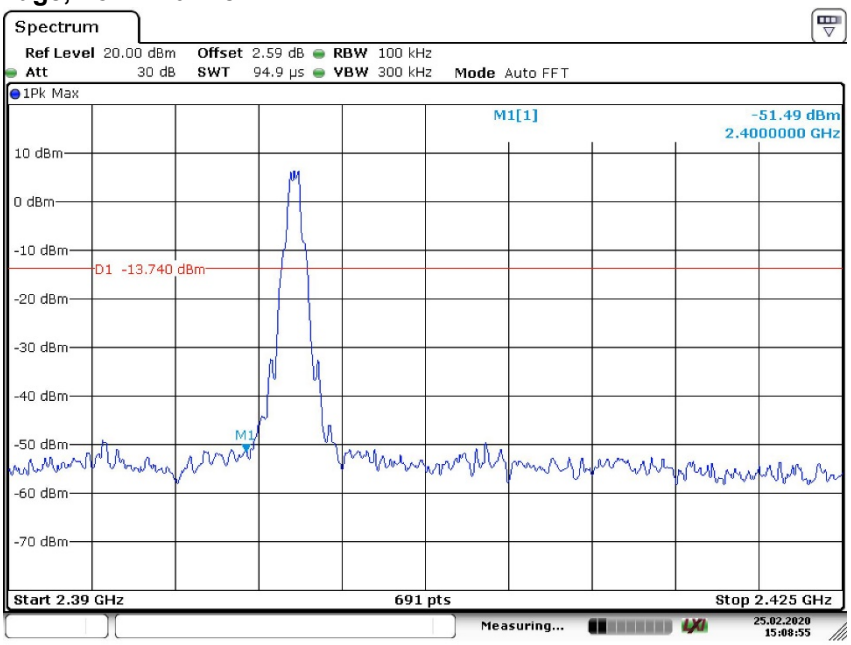


Date: 25.FEB.2020 14:51:12



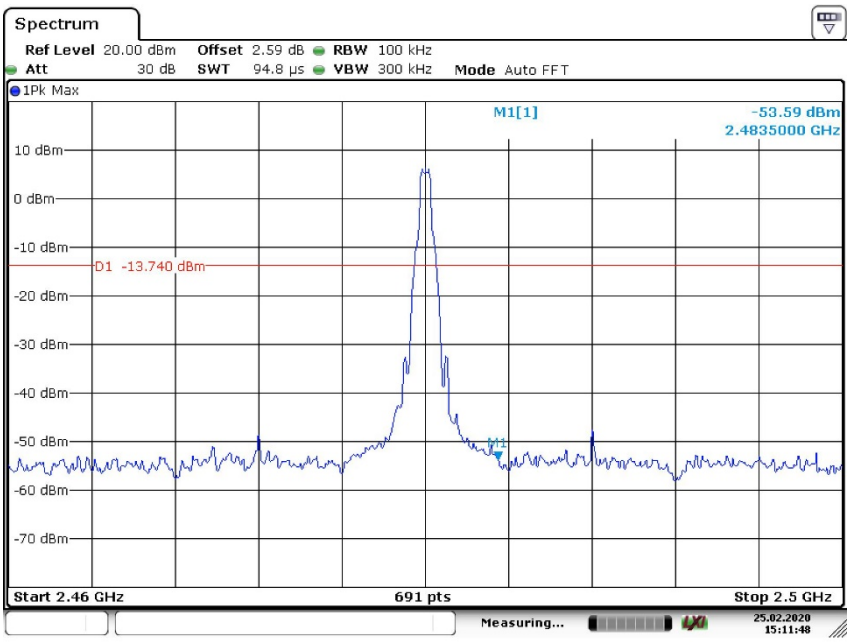
Date: 25.FEB.2020 14:52:11

EDR Mode, Band Edge, Low Channel



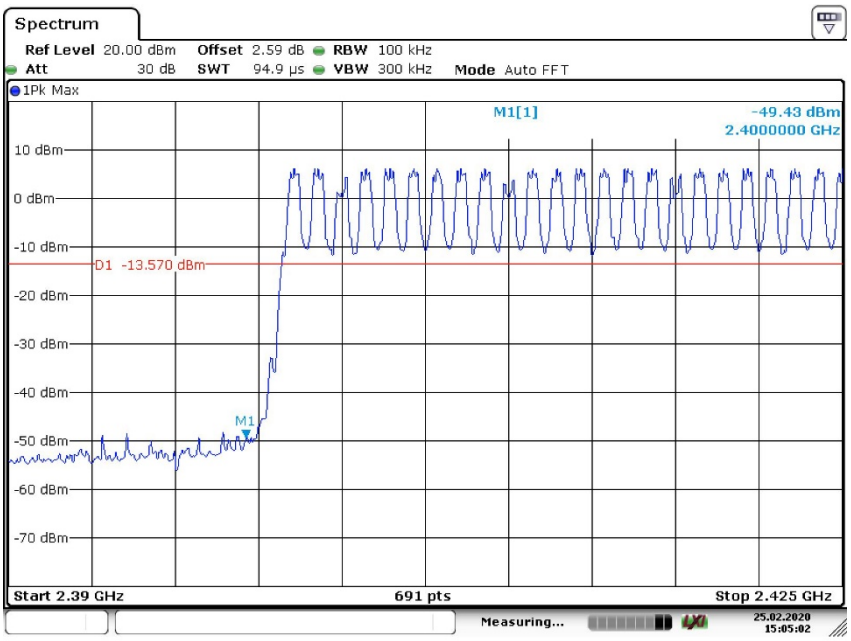
Date: 25.FEB.2020 15:08:55

EDR Mode, Band Edge, High Channel



Date: 25.FEB.2020 15:11:48

EDR Mode, Hopping Band Edge



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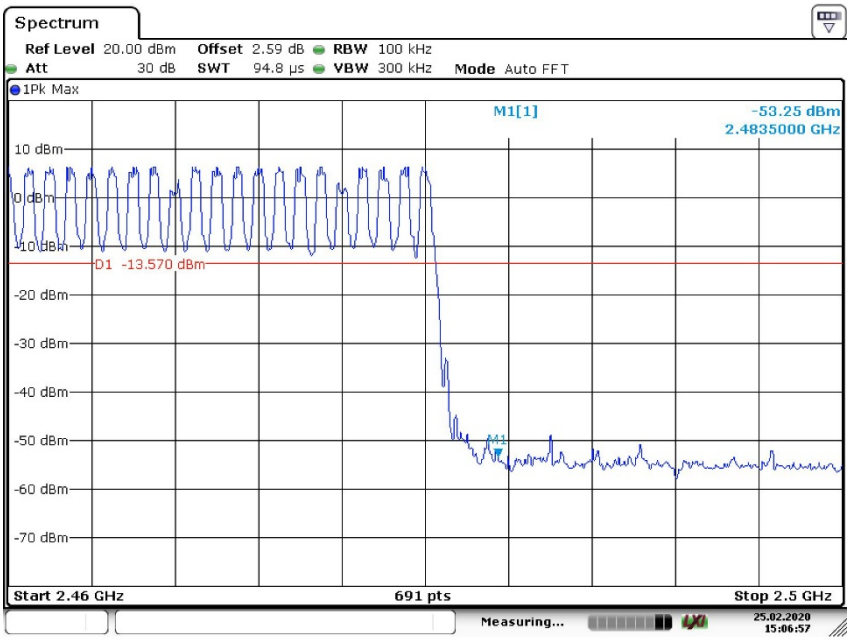
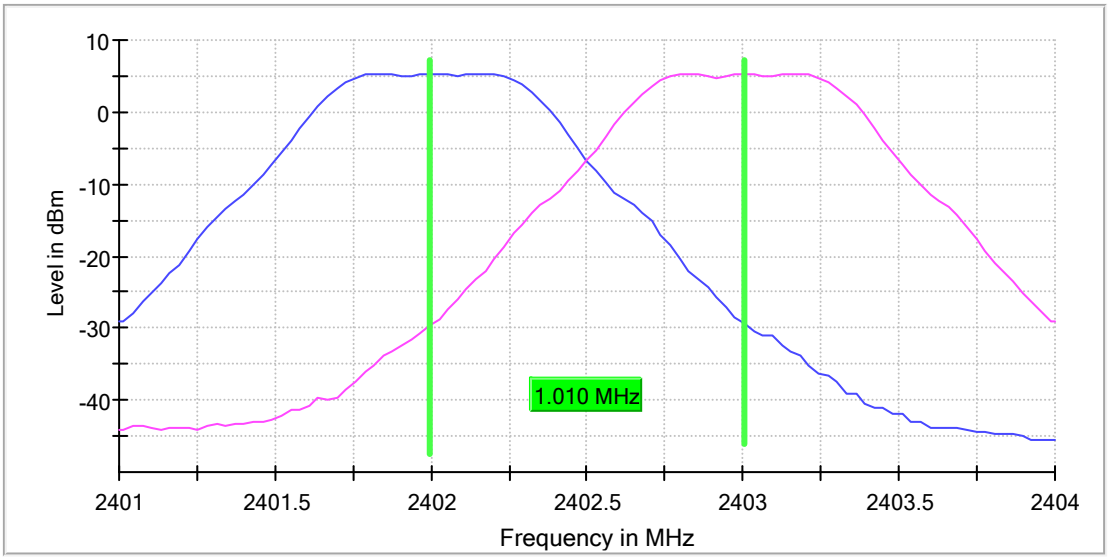


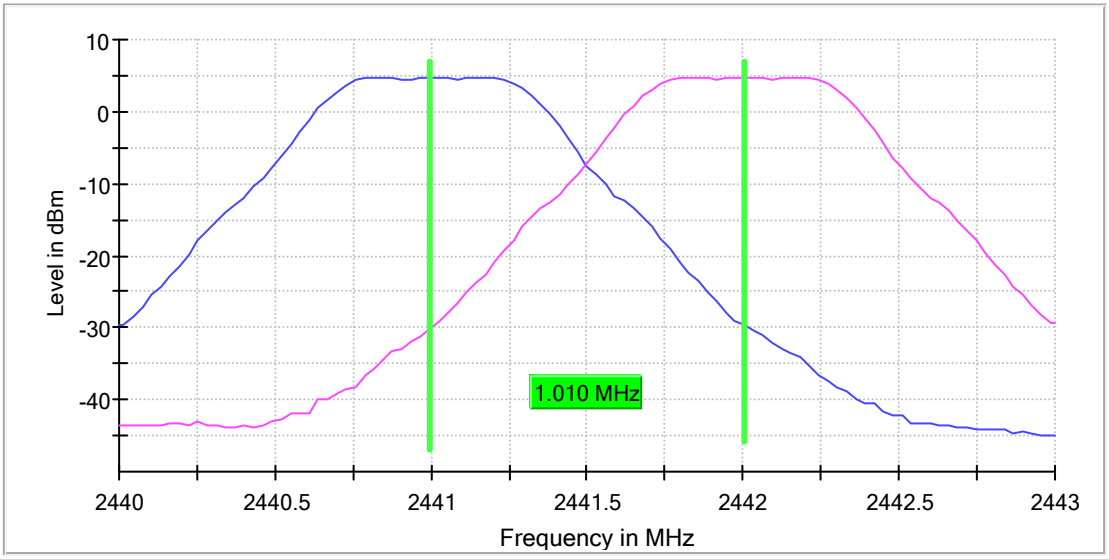
Date: 25.FEB.2020 15:06:57

Appendix B.4: Test Plots of Carrier Frequency Separation

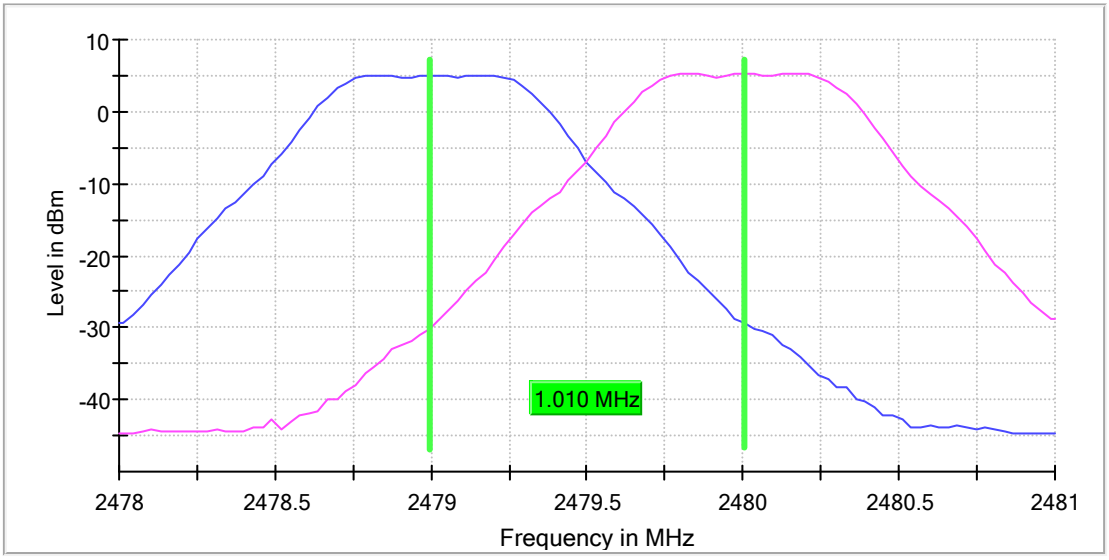
BDR, Low Channel
RBW=300KHz, VBW=300KHz



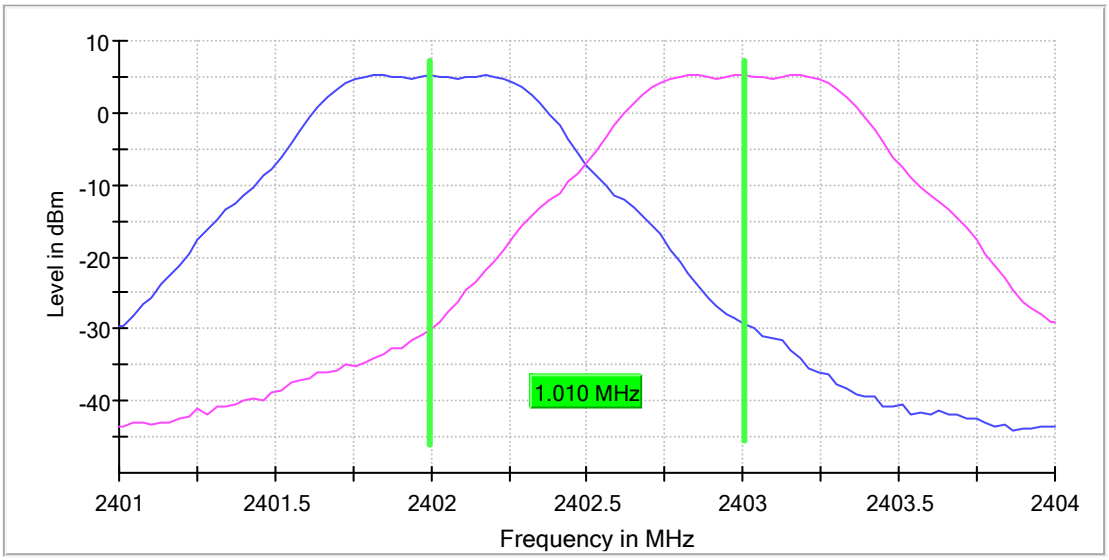
BDR, Middle Channel
RBW=300KHz, VBW=300KHz



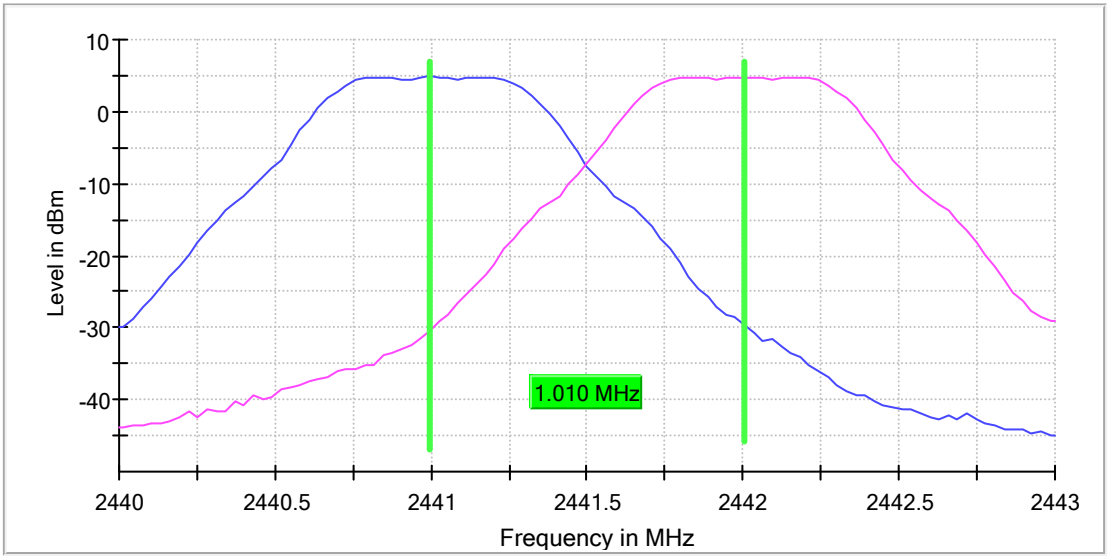
BDR, High Channel
RBW=300KHz, VBW=300KHz



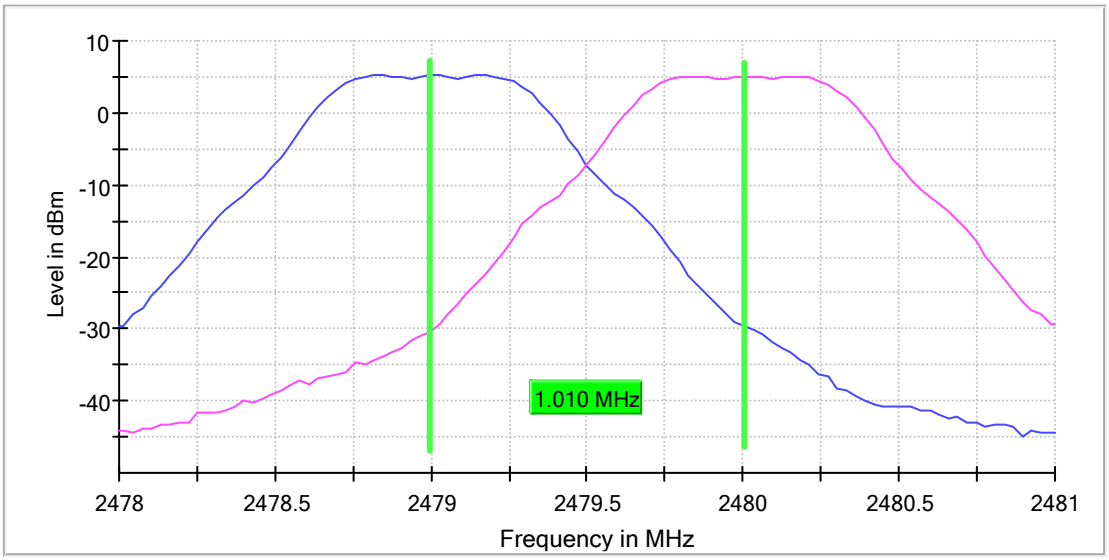
EDR, Low Channel
RBW=300KHz, VBW=300KHz



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

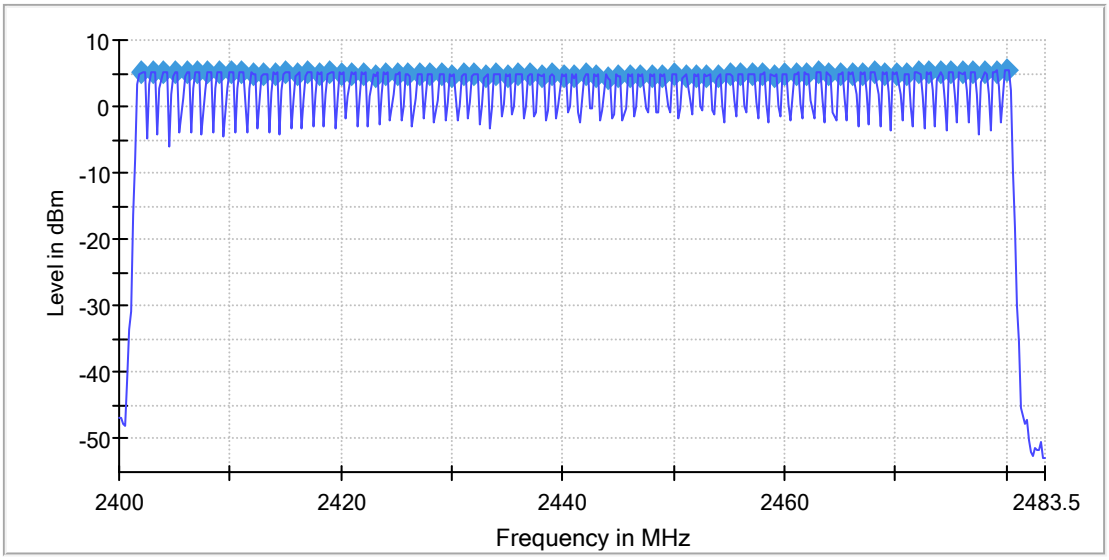


EDR, High Channel
RBW=300KHz, VBW=300KHz

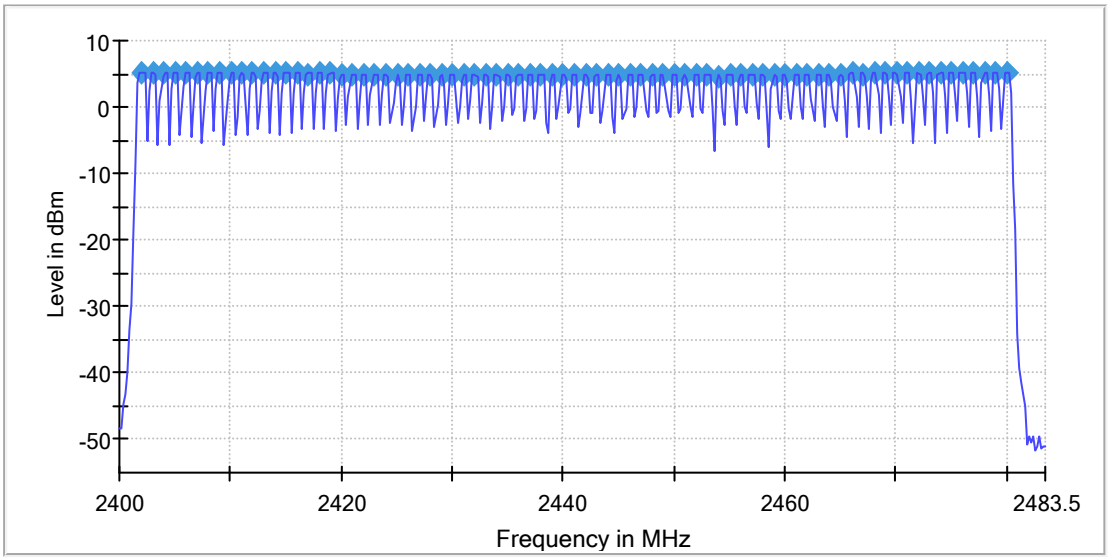


Appendix B.5: Test Plots of Number of Hopping Frequency

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

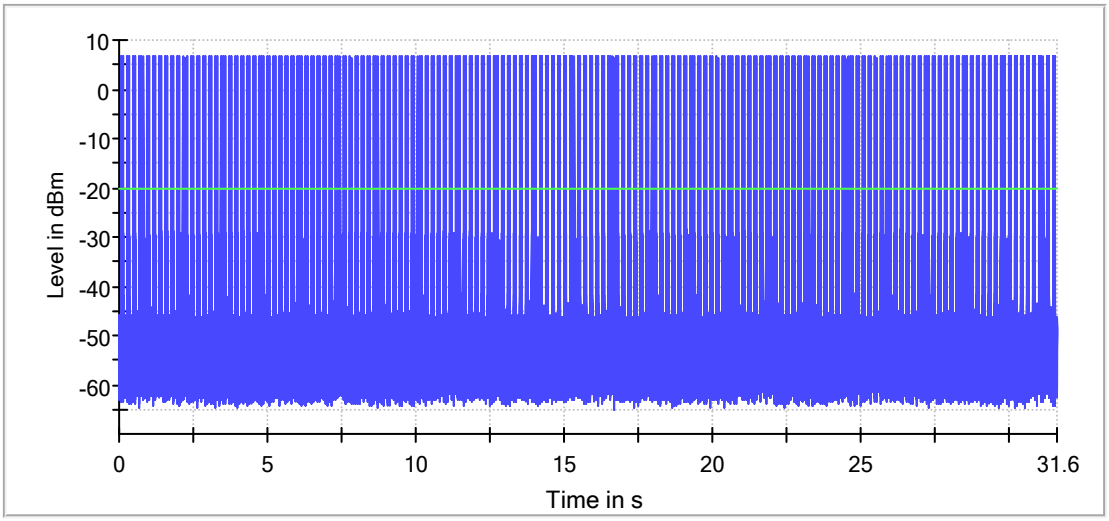


EDR, Hopping
RBW=200KHzM, VBW=200KHz

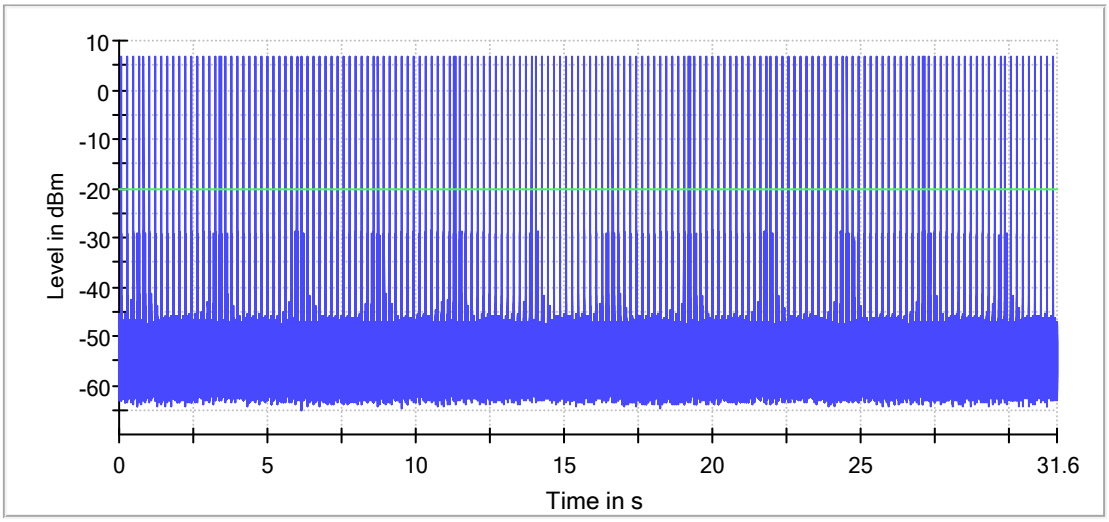


Appendix B.6: Test Plots of Time of Occupancy

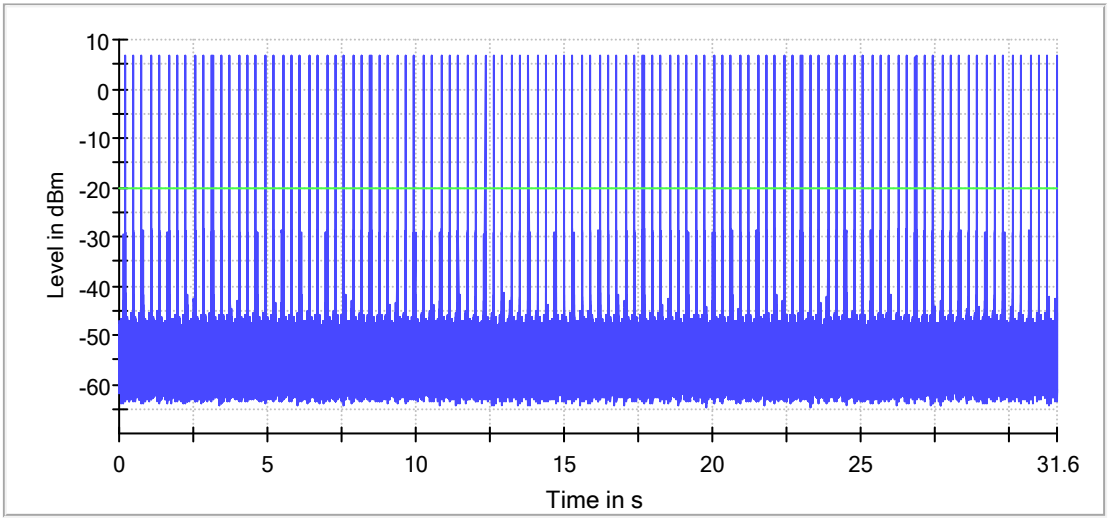
BDR Mode, DH1, Middle Channel
RBW=500KHzM, VBW=1MHz



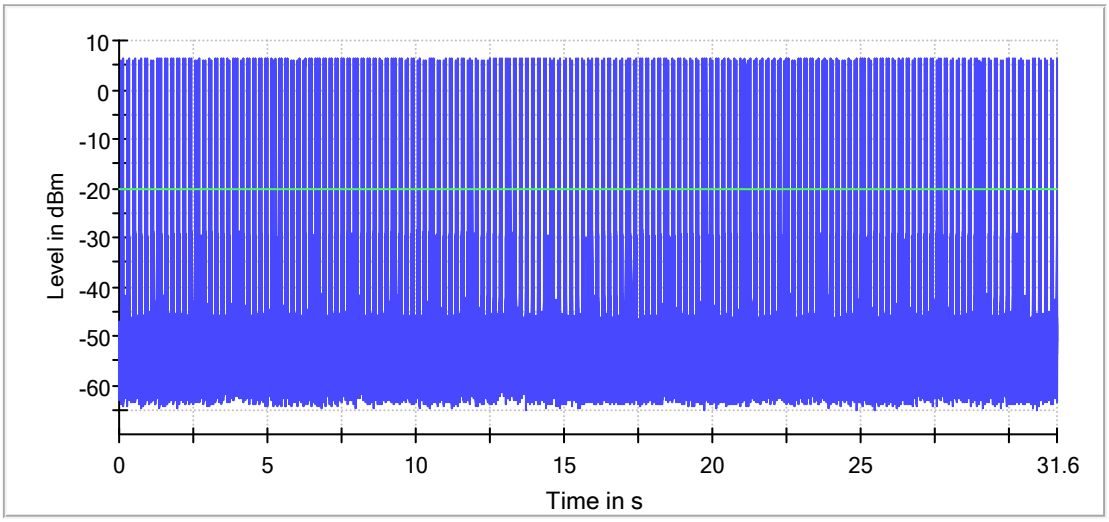
BDR Mode, DH3, Middle Channel
RBW=500KHzM, VBW=1MHz



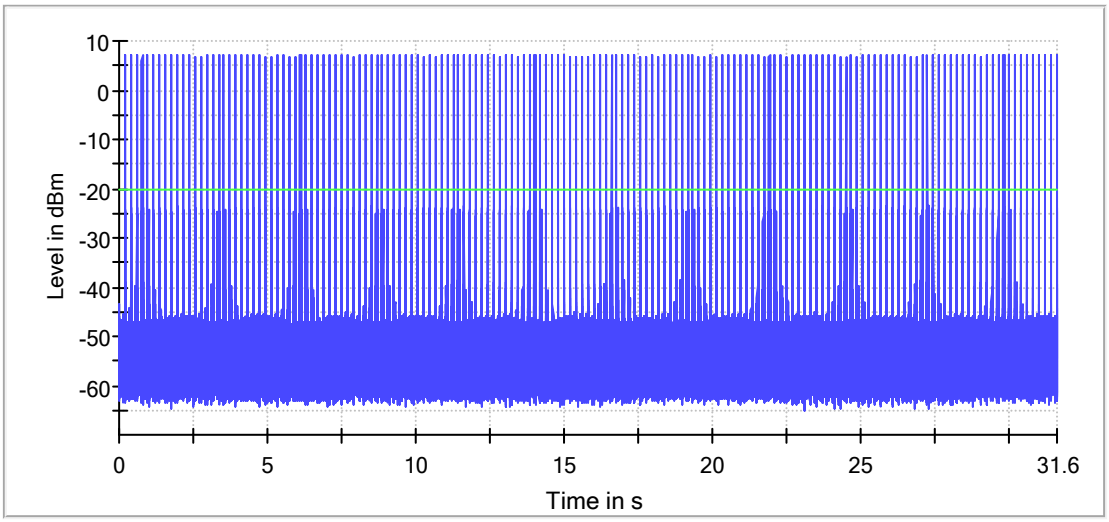
BDR Mode, DH5, Middle Channel
RBW=500KHzM, VBW=1MHz



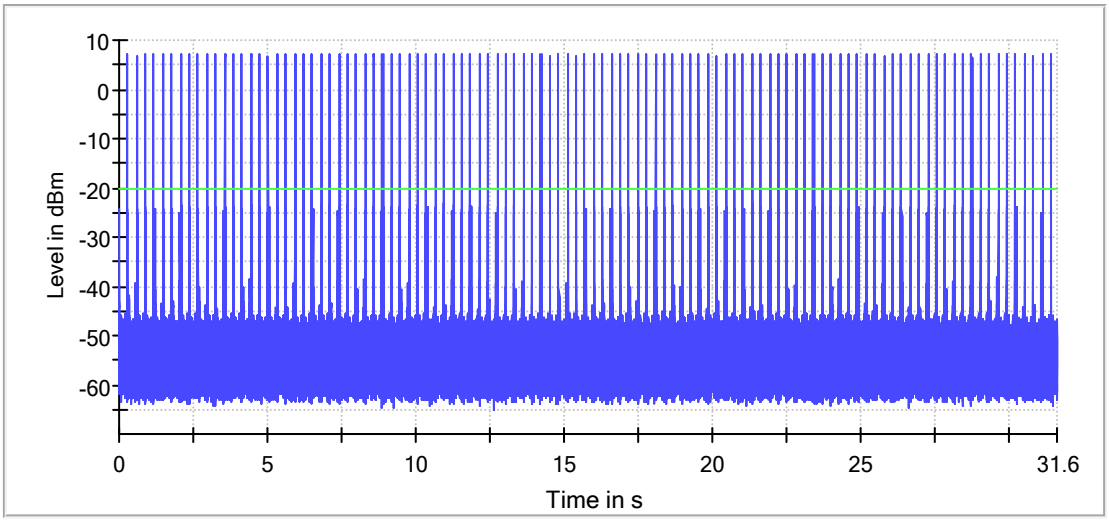
EDR Mode, 3DH1, Middle Channel
RBW=500KHzM, VBW=1MHz



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

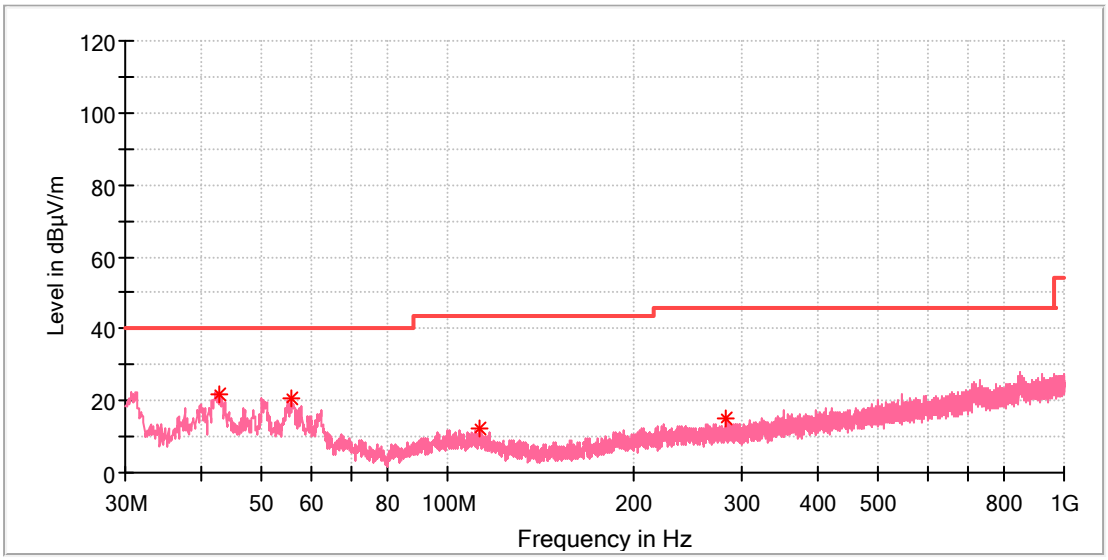
Note: The radiated spurious emission were measured from 9KHz to 26.5GHz, the measurement results below 30MHz and above 18GHz were greater than 20dB below the limit, therefore only the radiated spurious emissions from 30MHz to 18GHz were reported.

Appendix C.1: Test Plots of Radiated Spurious Emission

BDR mode, 30MHz - 1GHz

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_GFSK_TX_Low channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

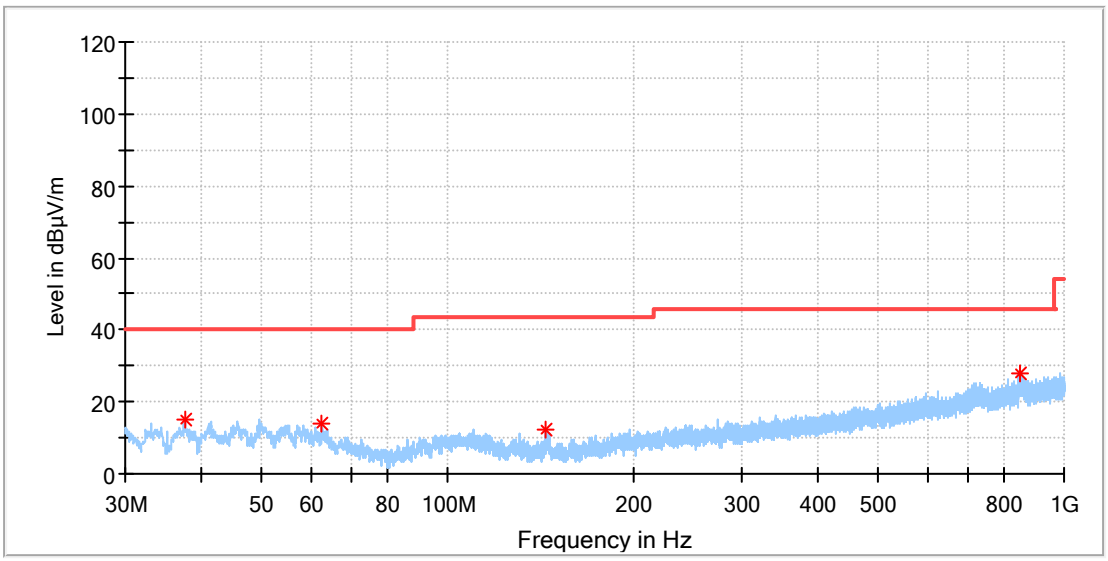


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
42.610000	22.03	---	40.00	17.97	100.0	V	3.0	-19.7
55.705000	20.45	---	40.00	19.55	100.0	V	196.0	-18.8
112.789500	12.32	---	43.50	31.18	100.0	V	299.0	-19.8
282.685000	15.25	---	46.00	30.75	100.0	V	179.0	-17.0

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_GFSK_TX_Low channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

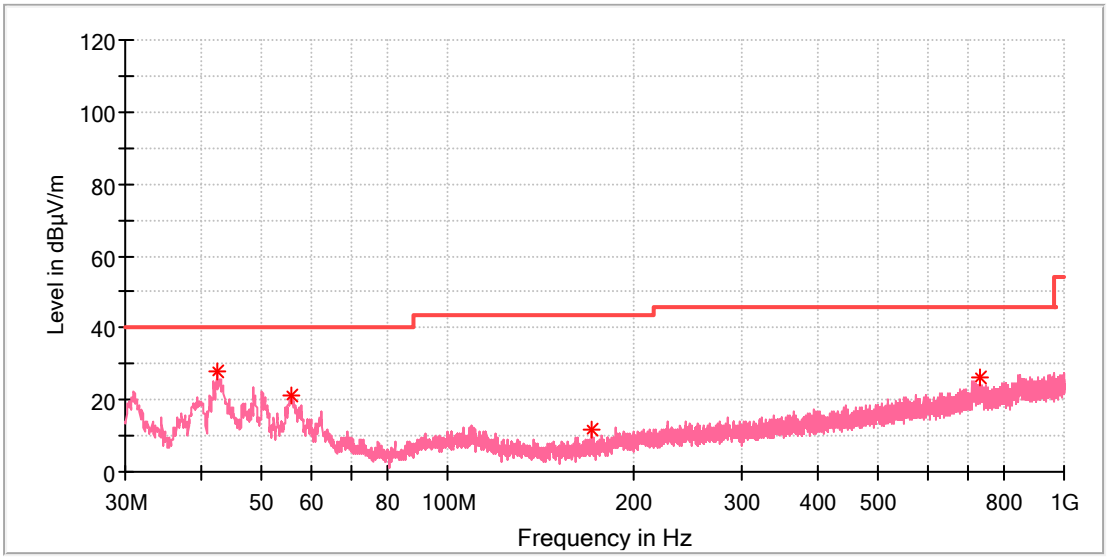


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
37.469000	14.96	---	40.00	25.04	100.0	H	176.0	-21.3
62.640500	13.78	---	40.00	26.22	100.0	H	94.0	-19.9
144.557000	12.01	---	43.50	31.49	100.0	H	94.0	-22.6
845.624500	27.95	---	46.00	18.05	100.0	H	102.0	-6.0

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_GFSK_TX_High channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

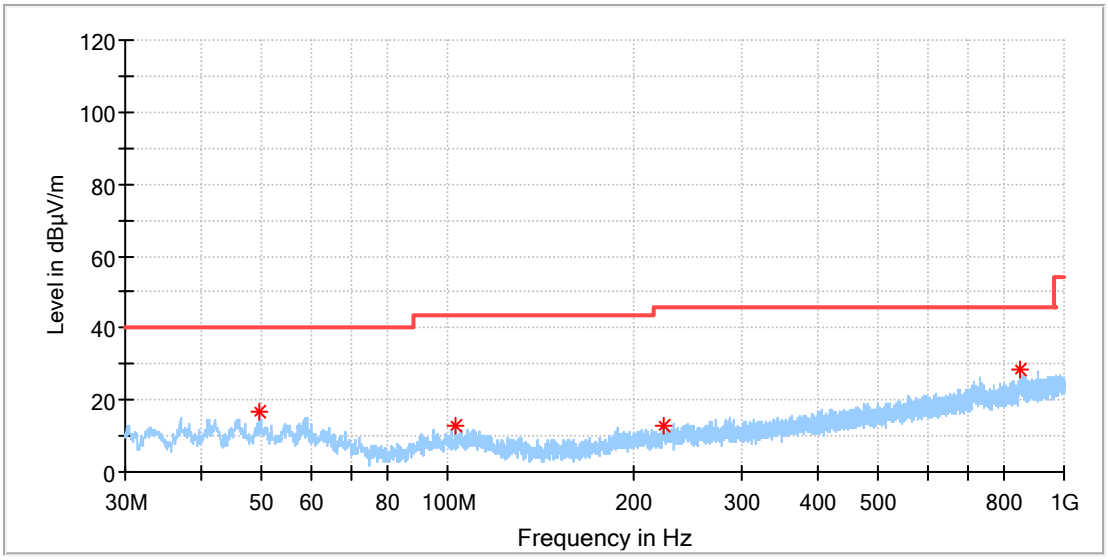


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
42.270500	27.72	---	40.00	12.28	100.0	V	225.0	-19.8
55.753500	21.44	---	40.00	18.56	100.0	V	225.0	-18.8
171.571500	11.85	---	43.50	31.65	100.0	V	0.0	-21.5
729.467000	26.32	---	46.00	19.68	100.0	V	324.0	-7.9

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_GFSK_TX_High channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



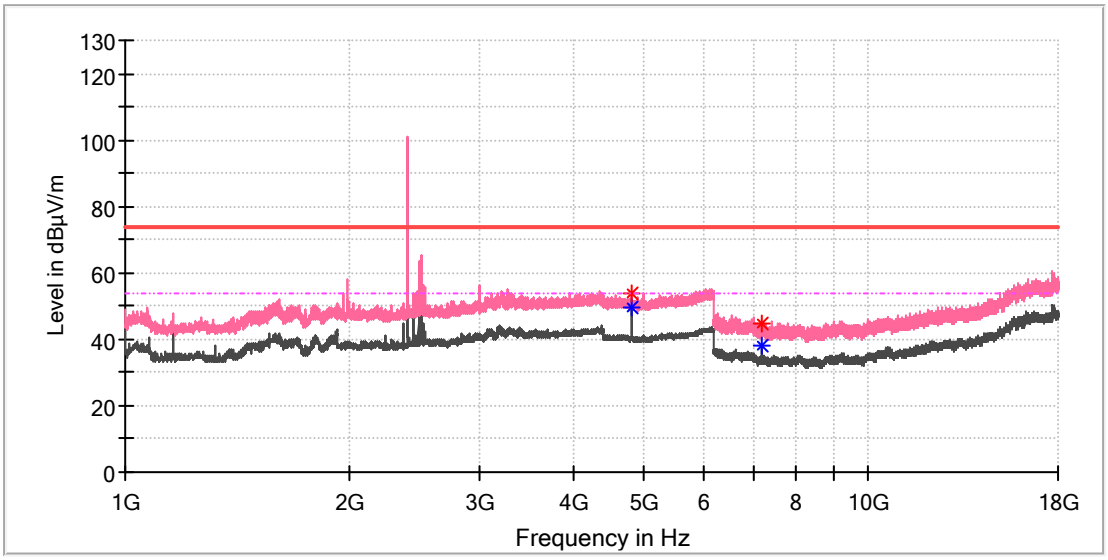
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
49.400000	16.59	---	40.00	23.41	100.0	H	240.0	-18.6
103.089500	12.73	---	43.50	30.77	100.0	H	158.0	-19.2
224.533500	12.97	---	46.00	33.03	100.0	H	60.0	-18.7
846.109500	28.52	---	46.00	17.48	100.0	H	314.0	-6.0

BDR mode, 1GHz - 18GHz

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_GFSK_TX_Low channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

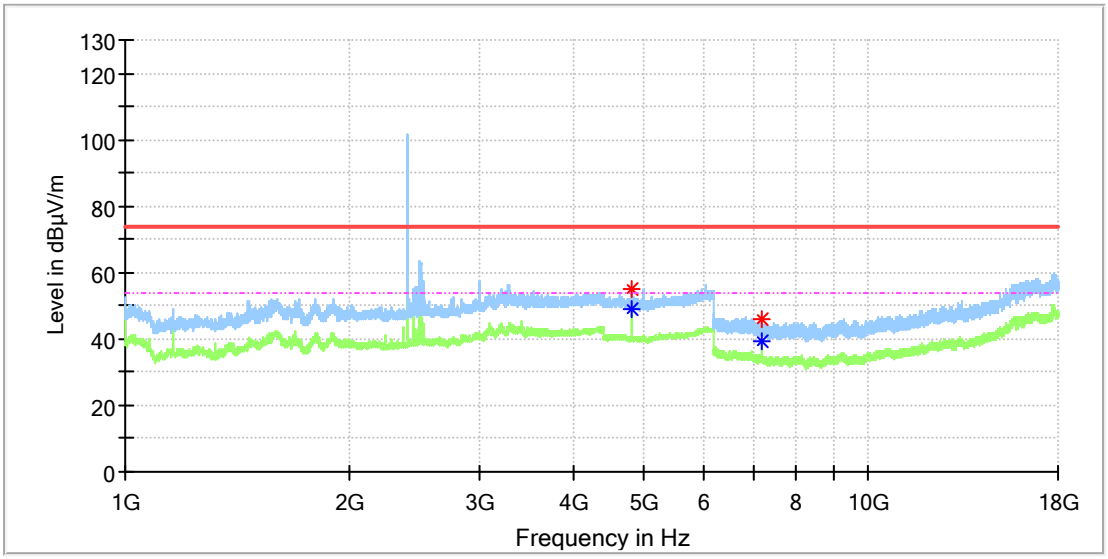


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4803.000000	53.56	---	74.00	20.44	100.0	V	336.0	13.6
4804.000000	---	49.39	54.00	4.61	100.0	V	336.0	13.6
7205.458333	---	37.96	54.00	16.04	100.0	V	316.0	8.8
7205.950000	44.70	---	74.00	29.30	100.0	V	316.0	8.8

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_GFSK_TX_Low channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

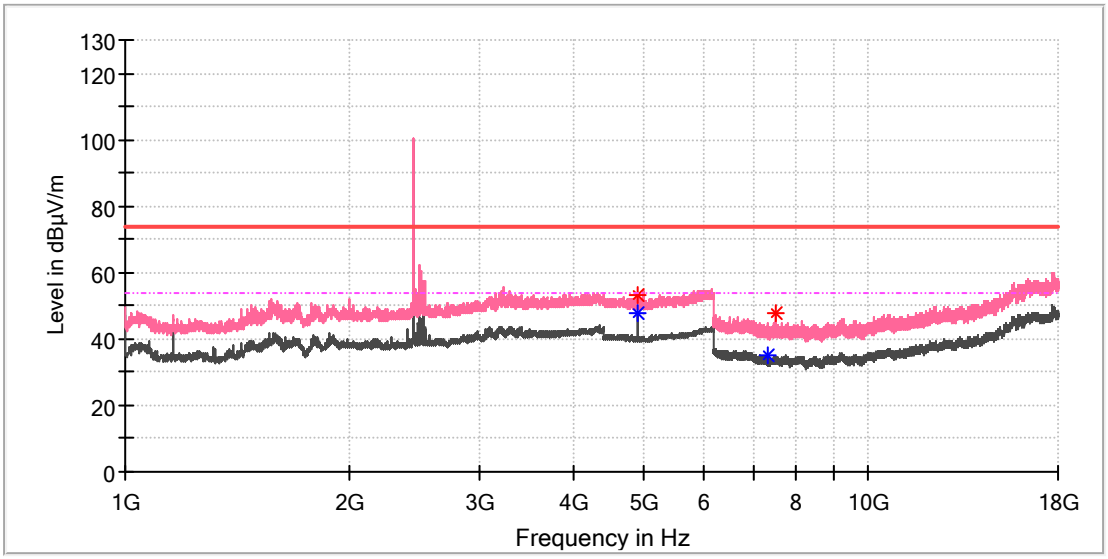


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4803.500000	---	48.78	54.00	5.22	100.0	H	303.0	13.6
4803.500000	54.99	---	74.00	19.01	100.0	H	303.0	13.6
7205.950000	---	39.02	54.00	14.98	100.0	H	320.0	8.8
7205.950000	45.83	---	74.00	28.17	100.0	H	320.0	8.8

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_GFSK_TX_Mid channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

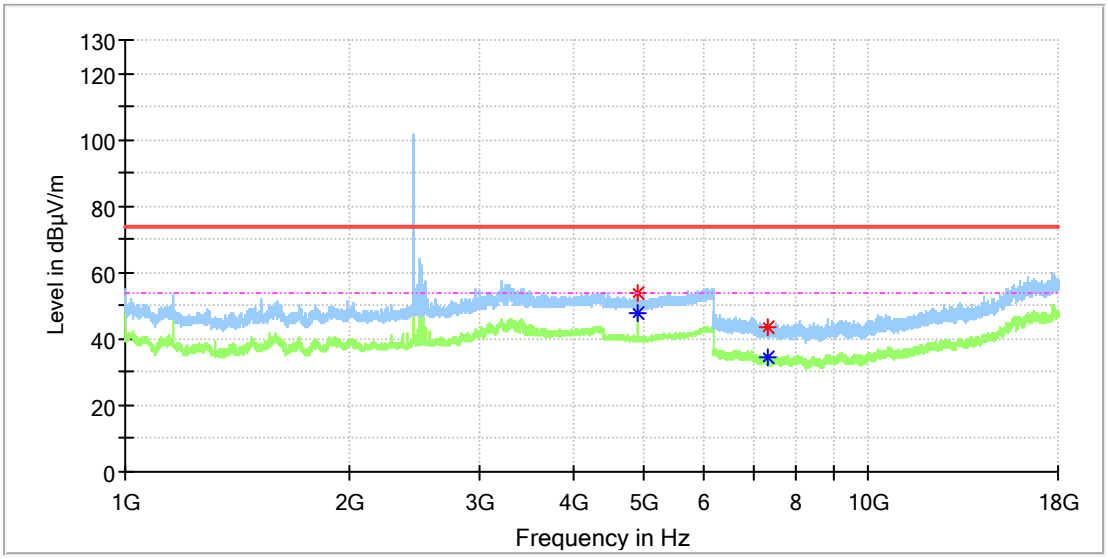


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4881.000000	53.17	---	74.00	20.83	100.0	V	152.0	13.4
4882.000000	---	47.50	54.00	6.50	100.0	V	152.0	13.4
7322.475000	---	35.06	54.00	18.94	100.0	V	274.0	8.2
7487.183333	47.76	---	74.00	26.24	100.0	V	234.0	8.7

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_GFSK_TX_Mid channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

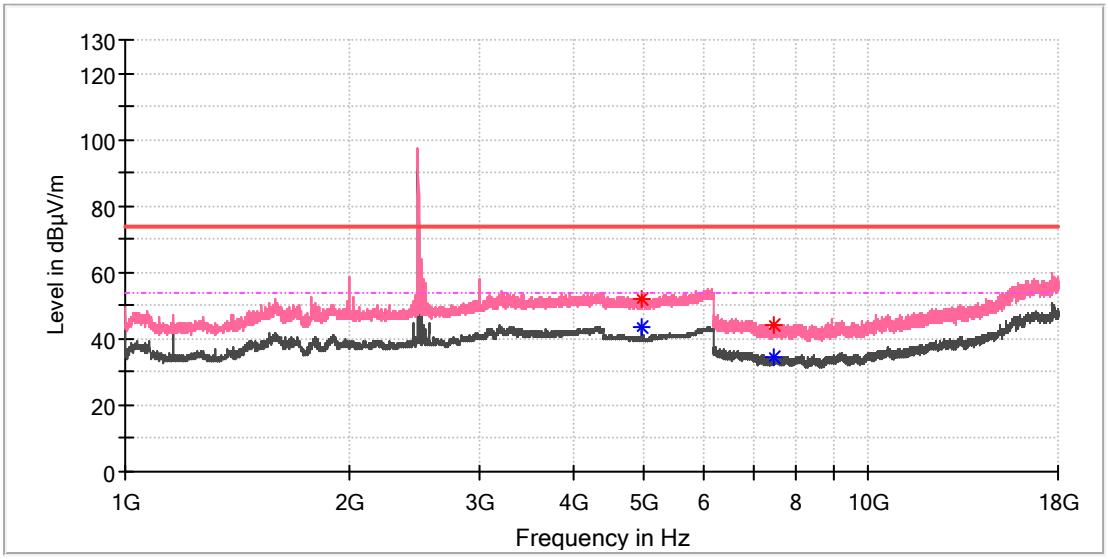


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4881.500000	53.99	---	74.00	20.01	100.0	H	239.0	13.4
4882.000000	---	47.58	54.00	6.42	100.0	H	239.0	13.4
7322.966667	---	34.71	54.00	19.29	100.0	H	321.0	8.2
7327.883333	43.84	---	74.00	30.16	100.0	H	187.0	8.1

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_GFSK_TX_High channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

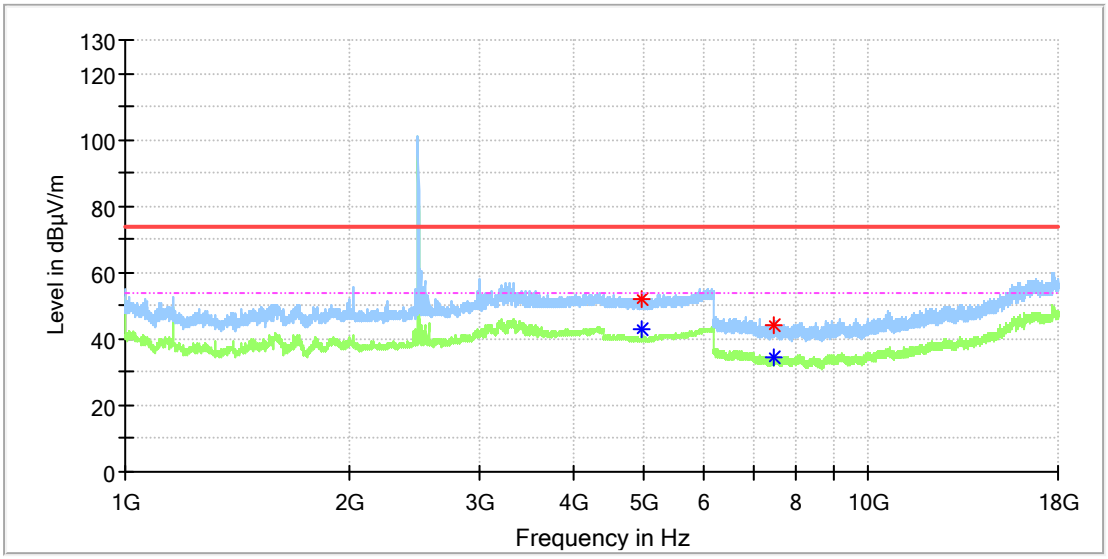


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.000000	52.10	---	74.00	21.90	100.0	V	159.0	13.2
4960.000000	---	43.77	54.00	10.23	100.0	V	159.0	13.2
7464.075000	---	34.40	54.00	19.60	100.0	V	114.0	8.6
7465.058333	44.43	---	74.00	29.57	100.0	V	273.0	8.6

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_GFSK_TX_High channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



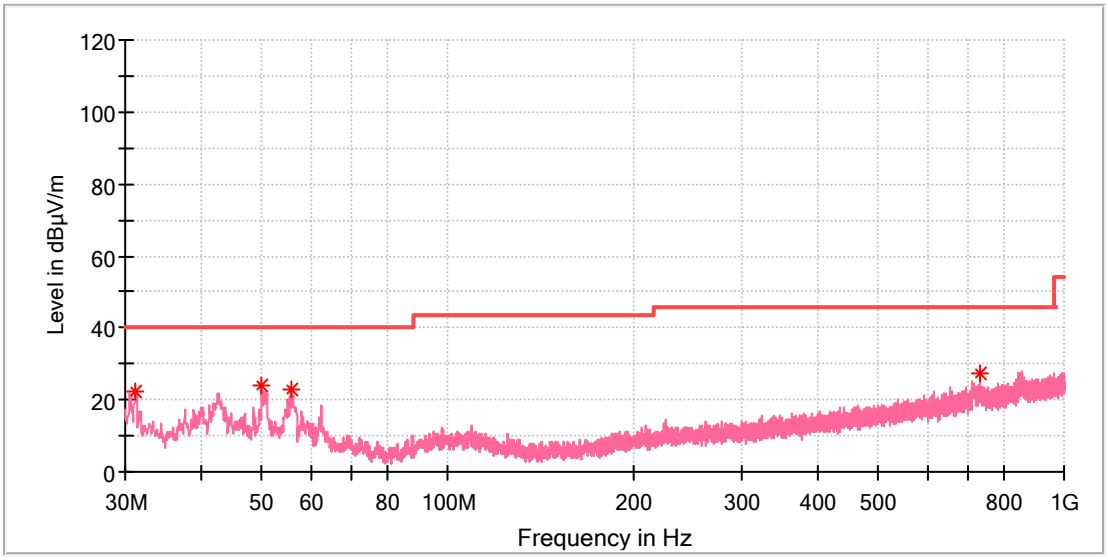
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.000000	51.86	---	74.00	22.14	100.0	H	37.0	13.2
4960.000000	---	43.09	54.00	10.91	100.0	H	37.0	13.2
7441.950000	43.88	---	74.00	30.12	100.0	H	167.0	8.4
7442.441667	---	34.33	54.00	19.67	100.0	H	310.0	8.4

EDR mode, 30MHz - 1GHz

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_8PSK_TX_Low channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

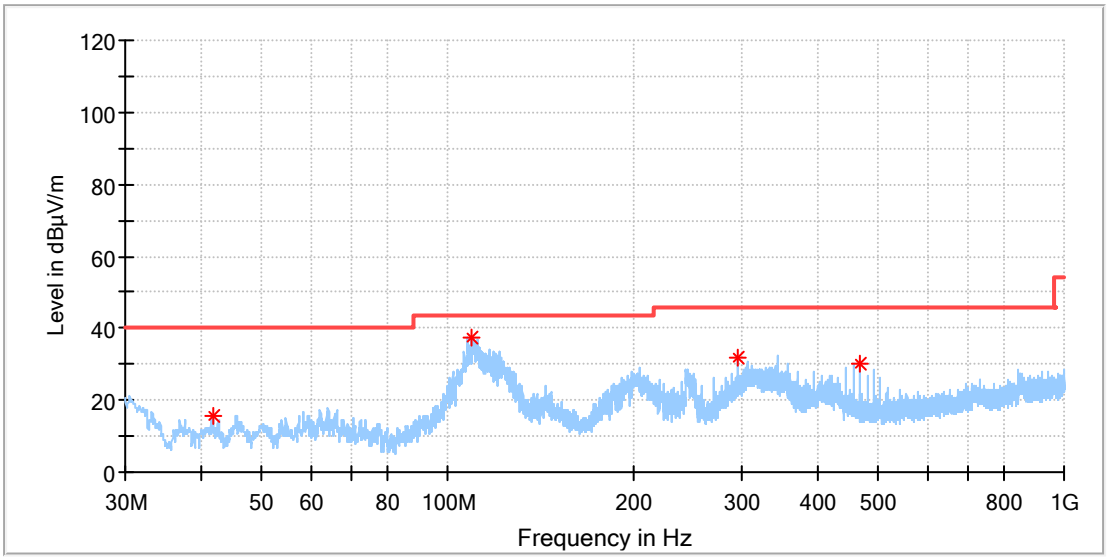


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
31.164000	22.21	---	40.00	17.79	100.0	V	136.0	-23.1
49.982000	23.99	---	40.00	16.01	100.0	V	54.0	-18.6
55.705000	22.65	---	40.00	17.35	100.0	V	103.0	-18.8
728.691000	27.20	---	46.00	18.80	100.0	V	152.0	-7.9

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_8PSK_TX_Low channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

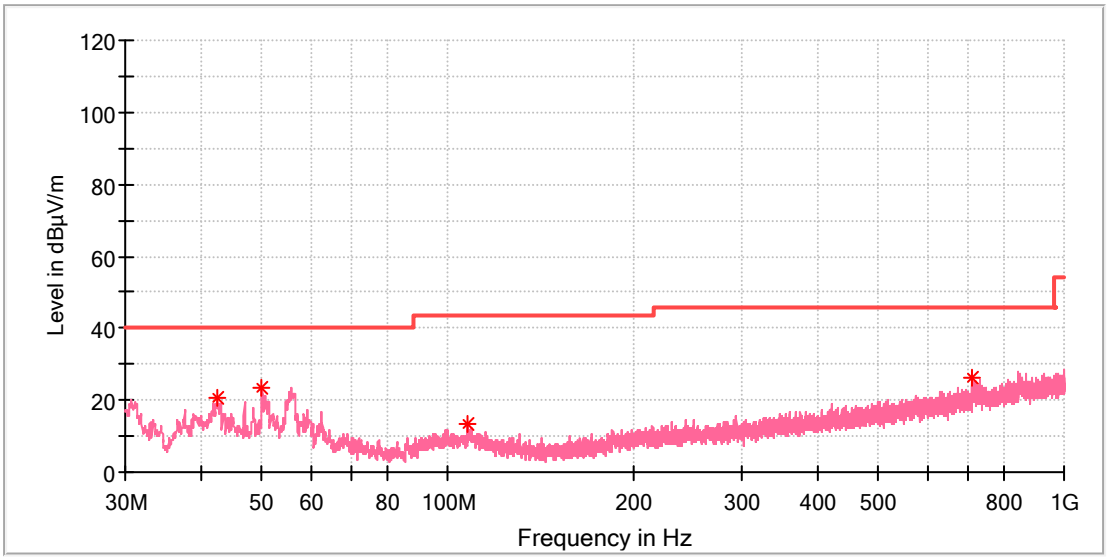


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
41.688500	15.75	---	40.00	24.25	100.0	H	148.0	-20.0
109.637000	37.65	---	43.50	5.85	100.0	H	263.0	-19.4
294.907000	31.77	---	46.00	14.23	100.0	H	205.0	-16.8
466.936500	30.11	---	46.00	15.89	100.0	H	300.0	-12.9

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_8PSK_TX_High channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

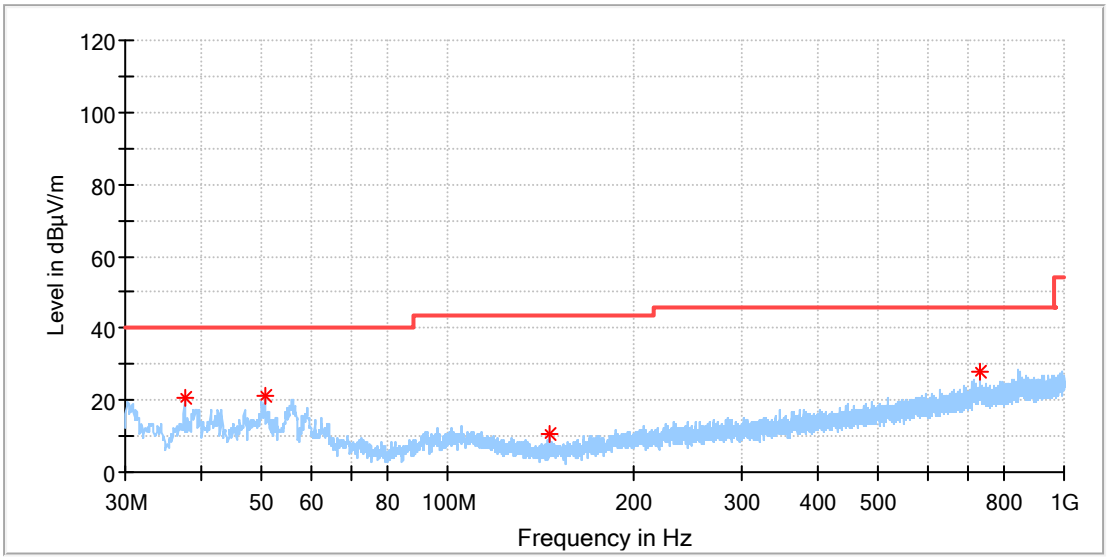


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
42.270500	20.76	---	40.00	19.24	100.0	V	241.0	-19.8
49.982000	23.58	---	40.00	16.42	100.0	V	0.0	-18.6
107.842500	13.14	---	43.50	30.36	100.0	V	93.0	-19.3
710.018500	26.21	---	46.00	19.79	100.0	V	200.0	-8.3

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_8PSK_TX_High channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



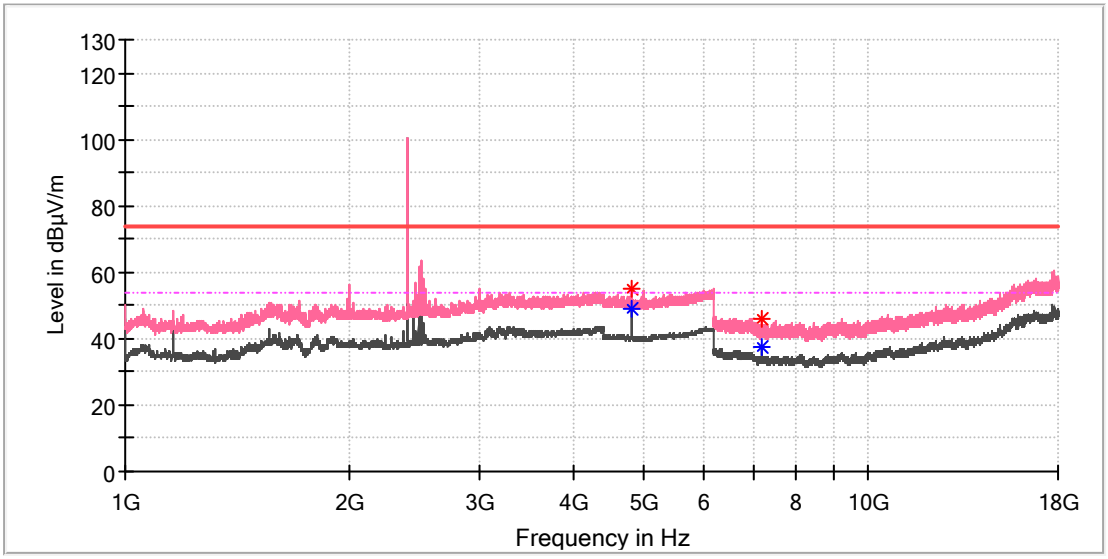
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
37.469000	20.73	---	40.00	19.27	100.0	H	191.0	-21.3
50.564000	21.43	---	40.00	18.57	100.0	H	134.0	-18.6
146.545500	10.62	---	43.50	32.88	100.0	H	11.0	-22.6
729.321500	27.87	---	46.00	18.13	100.0	H	347.0	-7.9

EDR mode, 1GHz - 18GHz

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_8PSK_TX_Low channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

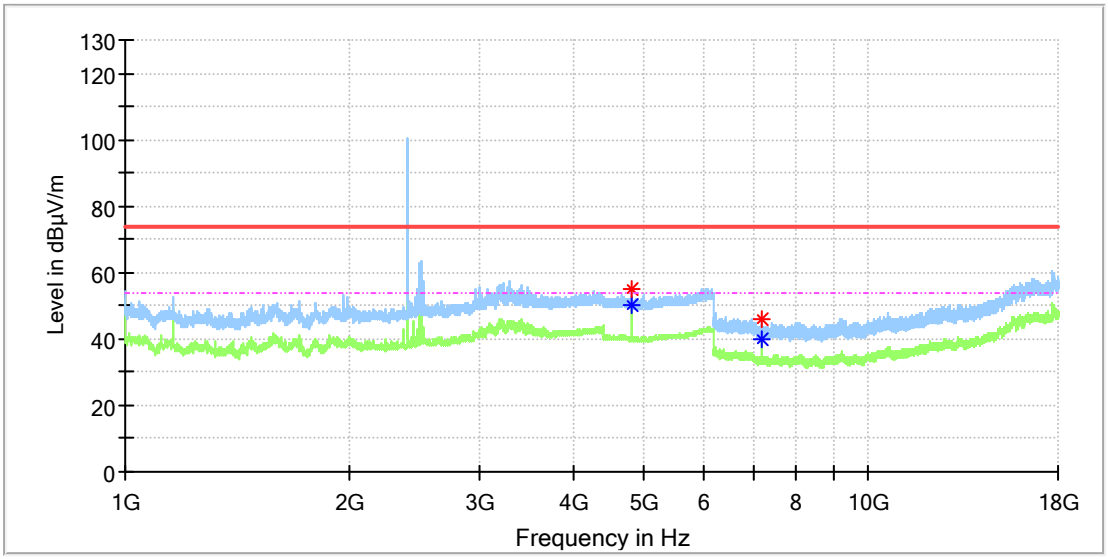


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.000000	---	49.18	54.00	4.82	100.0	V	271.0	13.6
4804.000000	55.13	---	74.00	18.87	100.0	V	271.0	13.6
7205.950000	---	37.44	54.00	16.56	100.0	V	207.0	8.8
7205.950000	46.12	---	74.00	27.88	100.0	V	207.0	8.8

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_8PSK_TX_Low channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

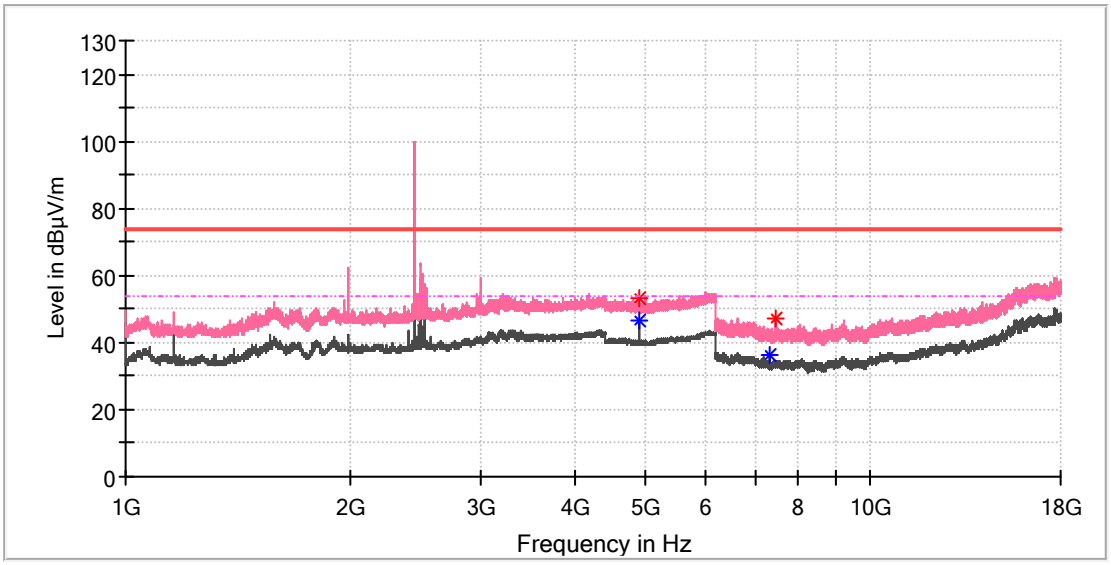


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4803.500000	54.79	---	74.00	19.21	100.0	H	252.0	13.6
4804.000000	---	50.48	54.00	3.52	100.0	H	242.0	13.6
7205.950000	---	40.13	54.00	13.87	100.0	H	281.0	8.8
7205.950000	45.90	---	74.00	28.10	100.0	H	281.0	8.8

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_8PSK_TX_Mid channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

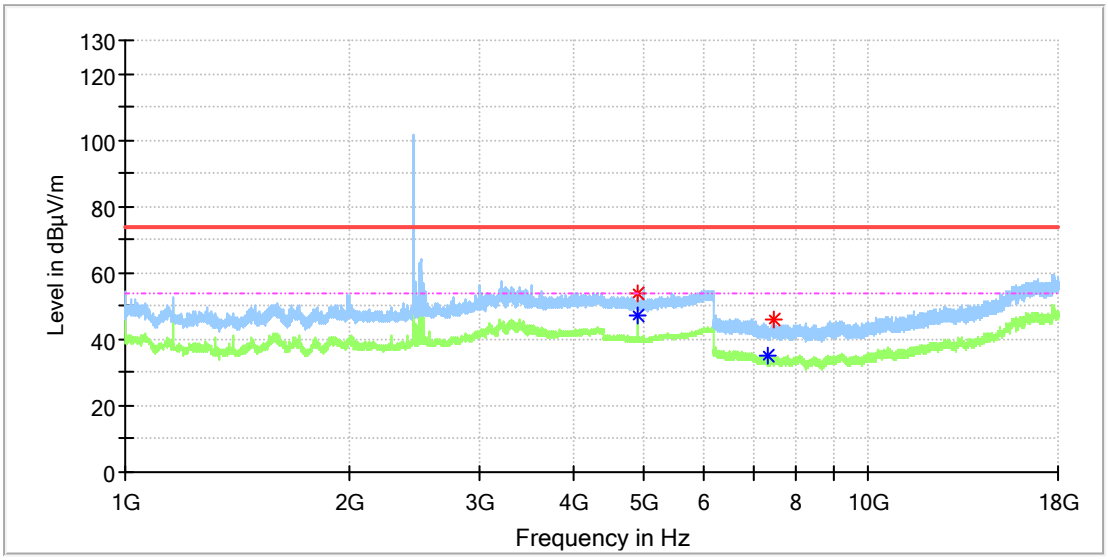


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4882.000000	---	46.51	54.00	7.49	100.0	V	148.0	13.4
4882.000000	53.06	---	74.00	20.94	100.0	V	148.0	13.4
7322.966667	---	36.07	54.00	17.93	100.0	V	273.0	8.2
7467.516667	47.24	---	74.00	26.76	100.0	V	232.0	8.6

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_8PSK_TX_Mid channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

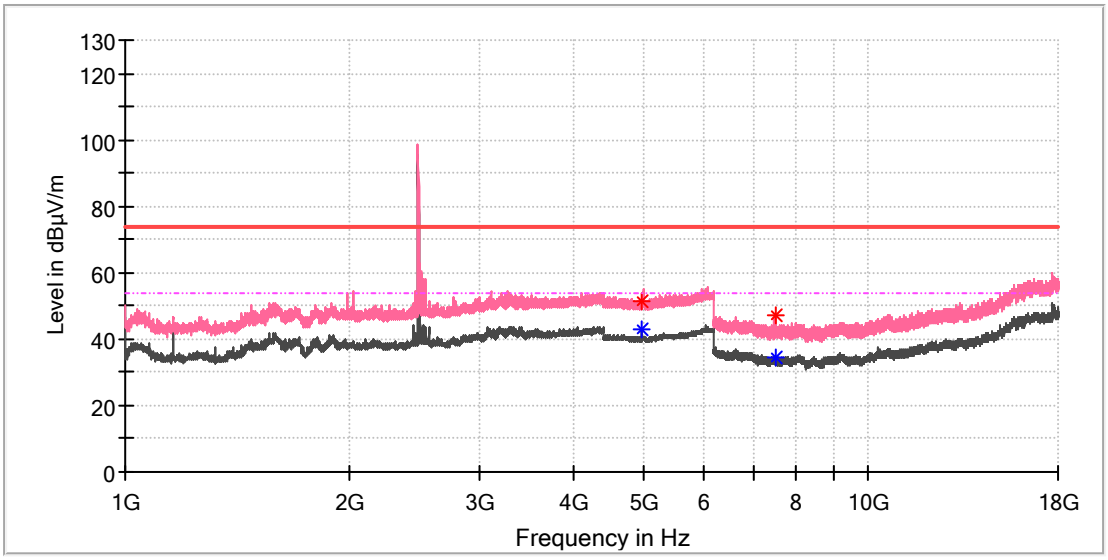


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4881.500000	53.66	---	74.00	20.34	100.0	H	247.0	13.4
4882.000000	---	47.25	54.00	6.75	100.0	H	237.0	13.4
7322.475000	---	35.09	54.00	18.91	100.0	H	305.0	8.2
7482.758333	45.93	---	74.00	28.07	100.0	H	229.0	8.7

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_8PSK_TX_High channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

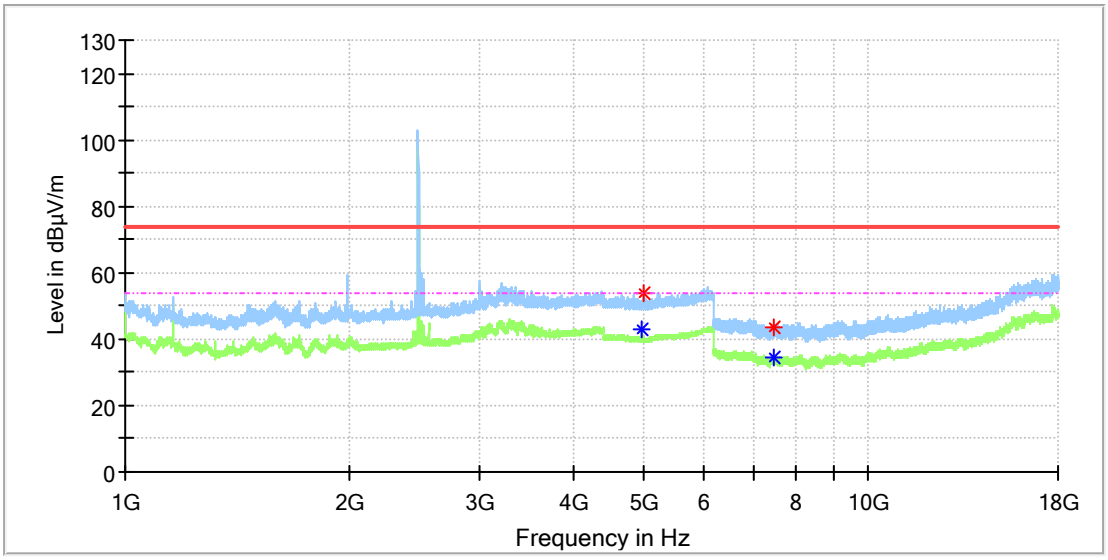


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4959.500000	51.56	---	74.00	22.44	100.0	V	141.0	13.2
4960.000000	---	43.00	54.00	11.00	100.0	V	114.0	13.2
7486.200000	---	34.54	54.00	19.46	100.0	V	19.0	8.7
7490.625000	47.21	---	74.00	26.79	100.0	V	232.0	8.7

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_8PSK_TX_High channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

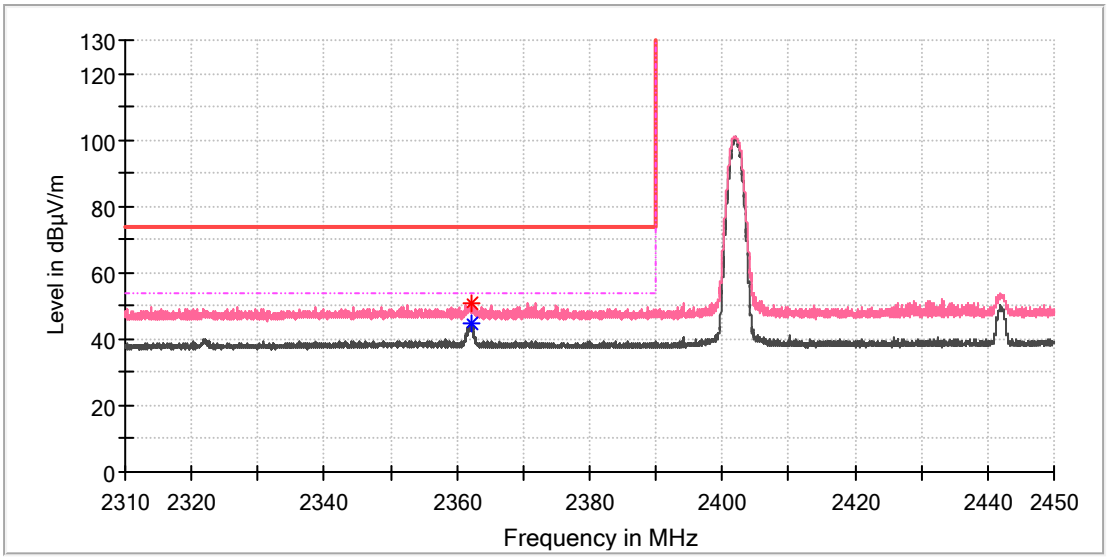
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.000000	---	42.68	54.00	11.32	100.0	H	313.0	13.2
4978.500000	54.04	---	74.00	19.96	100.0	H	68.0	13.2
7450.308333	43.54	---	74.00	30.46	100.0	H	355.0	8.5
7452.275000	---	34.32	54.00	19.68	100.0	H	0.0	8.5

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

BDR mode, Low Channel

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_GFSK_TX_Low channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

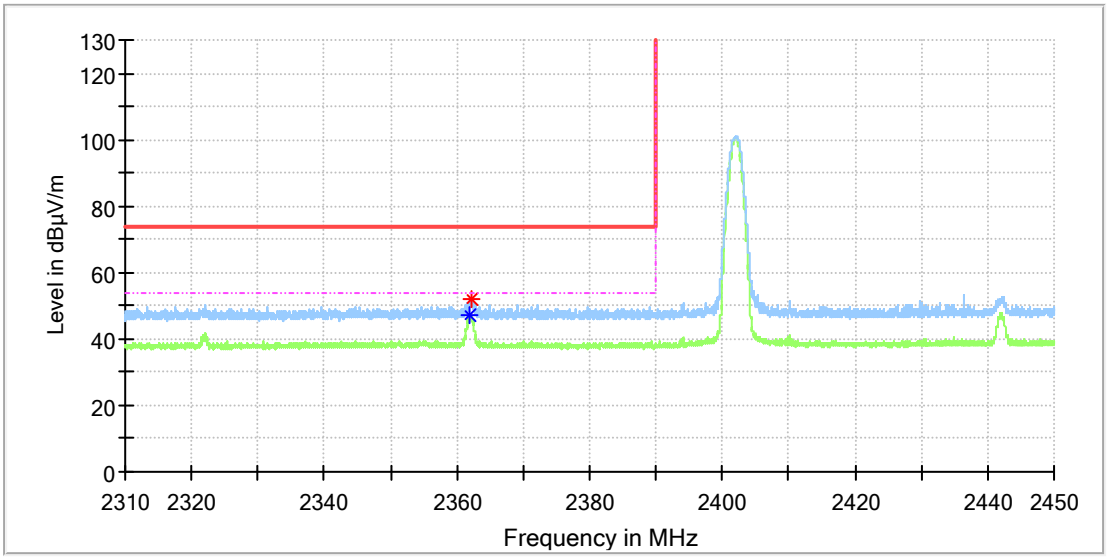


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2362.150000	---	44.62	54.00	9.38	100.0	V	161.0	6.9
2362.252941	51.02	---	74.00	22.98	100.0	V	286.0	6.9

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_GFSK_TX_Low channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



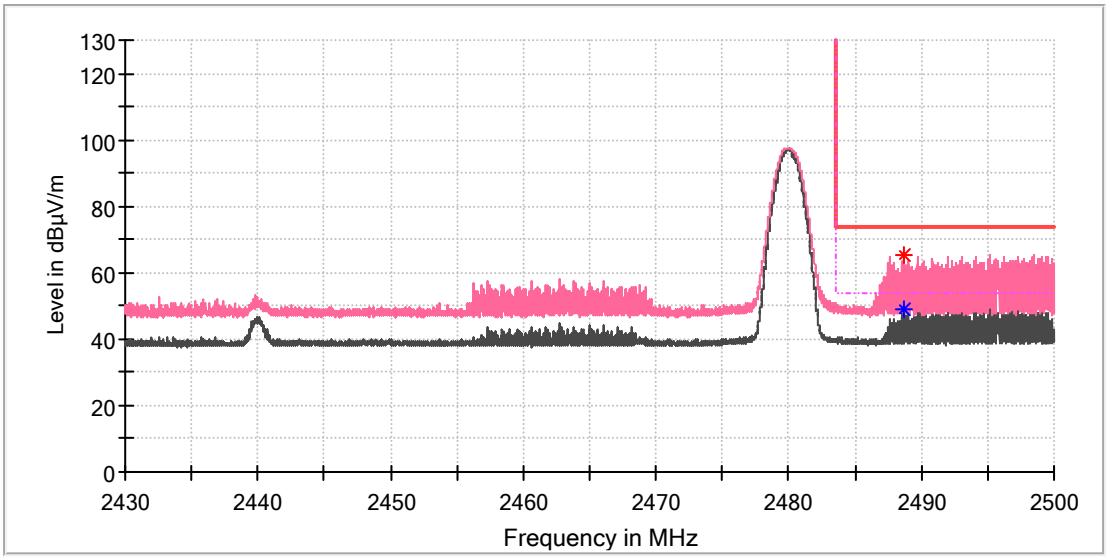
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2362.026471	---	47.13	54.00	6.87	100.0	H	265.0	6.9
2362.067647	51.83	---	74.00	22.17	100.0	H	265.0	6.9

BDR mode, High Channel

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_GFSK_TX_High channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

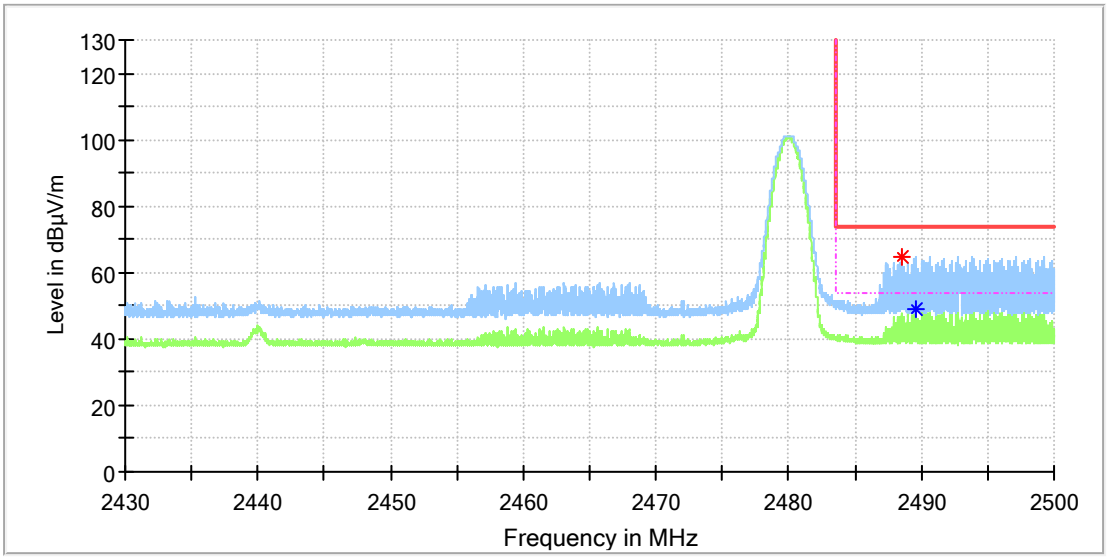


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2488.697059	---	49.24	54.00	4.76	100.0	V	252.0	7.4
2488.697059	65.24	---	74.00	8.76	100.0	V	252.0	7.4

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_GFSK_TX_High channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



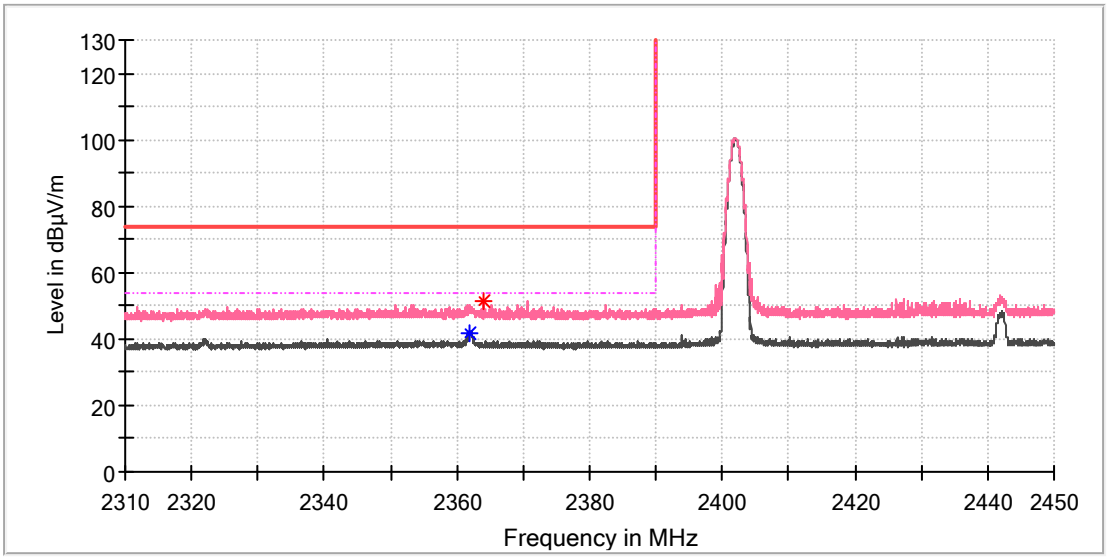
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2488.460294	64.57	---	74.00	9.43	100.0	H	305.0	7.4
2489.541177	---	48.71	54.00	5.29	100.0	H	305.0	7.4

EDR mode, Low Channel

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_8PSK_TX_Low channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

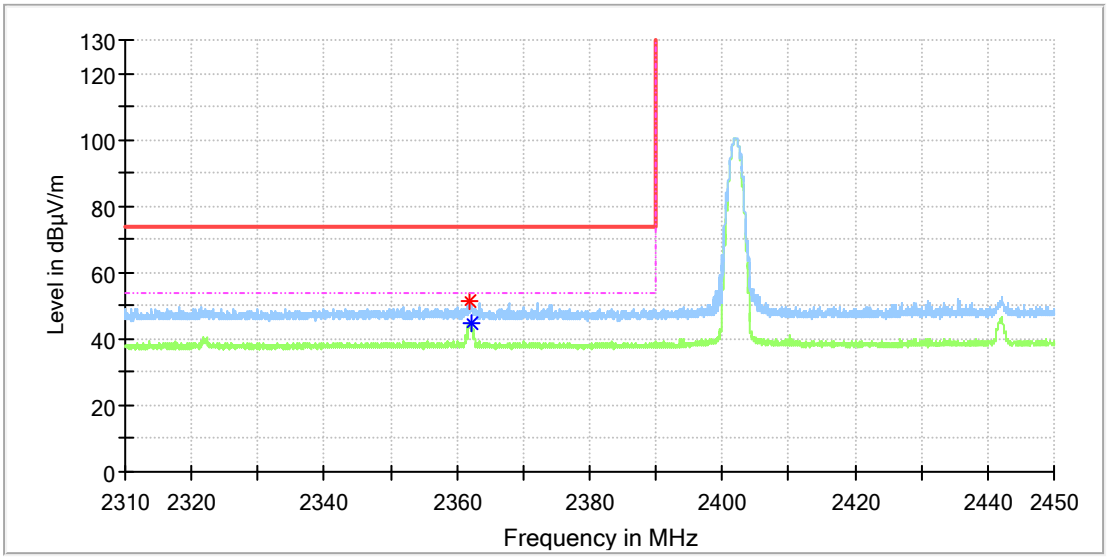


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2361.944118	---	41.95	54.00	12.05	100.0	V	280.0	6.9
2363.920588	51.19	---	74.00	22.81	100.0	V	217.0	6.9

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_8PSK_TX_Low channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



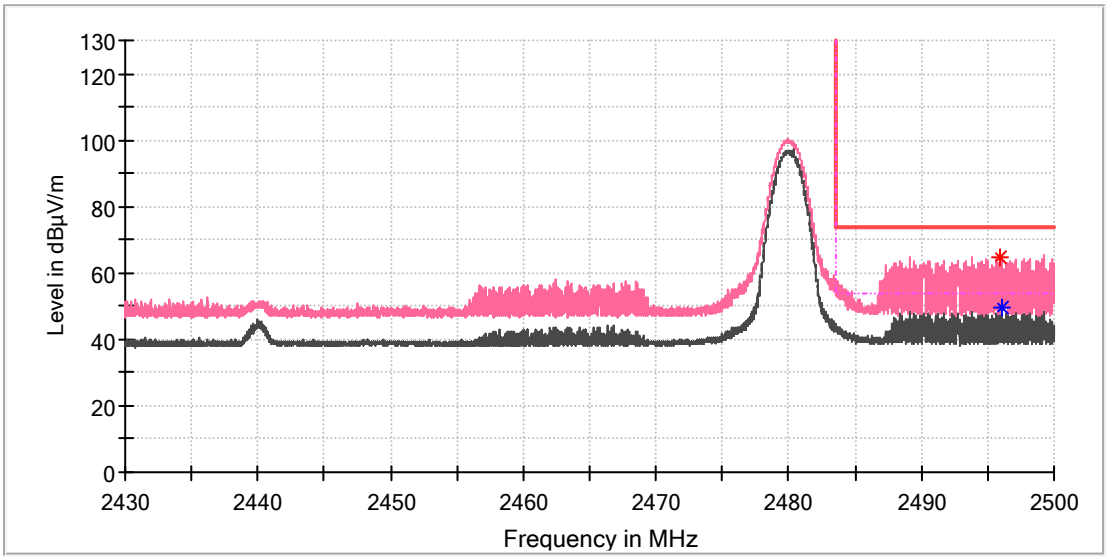
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2361.800000	51.09	---	74.00	22.91	100.0	H	262.0	6.9
2362.067647	---	44.56	54.00	9.44	100.0	H	262.0	6.9

EDR mode, High Channel

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_8PSK_TX_High channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

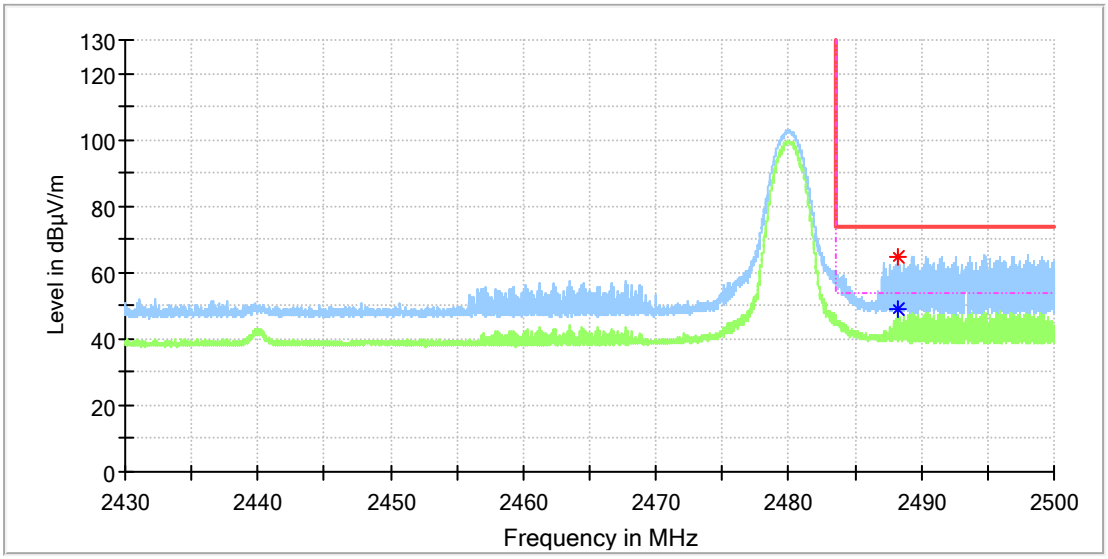


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2495.995588	64.90	---	74.00	9.10	100.0	V	224.0	7.4
2496.005882	---	49.29	54.00	4.71	100.0	V	224.0	7.4

EUT Information

EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT_8PSK_TX_High channel
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 23 Humi:42%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

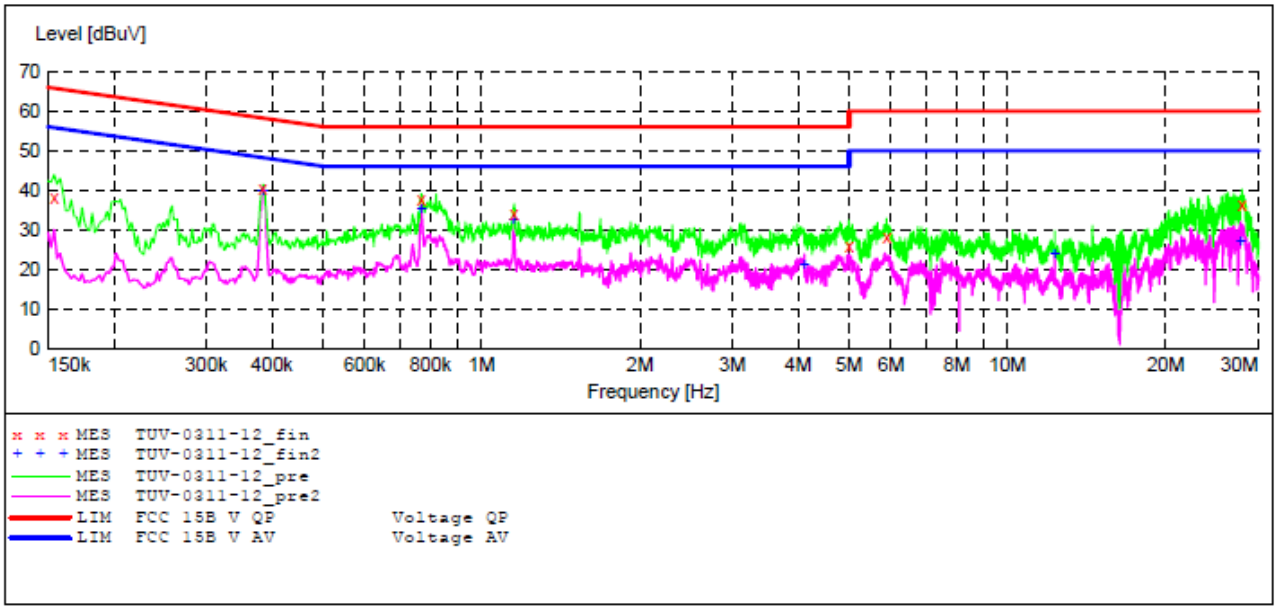


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2488.295588	---	48.86	54.00	5.14	100.0	H	304.0	7.4
2488.295588	64.88	---	74.00	9.12	100.0	H	304.0	7.4

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

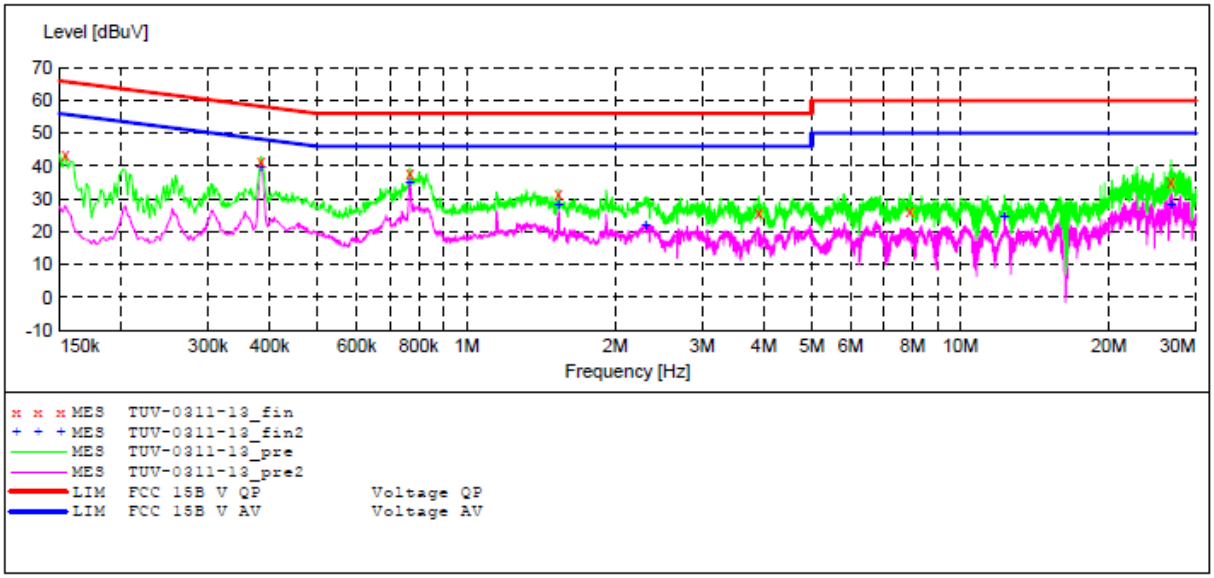
EUT Name:	Active Speaker
Model:	R1700BTs
Test Mode:	BT
Comment:	Line



Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.154000	43.40	10.8	66	22.4	QP	L1	GND
0.384000	41.40	10.9	58	16.8	QP	L1	GND
0.768000	37.70	11.1	56	18.3	QP	L1	GND
1.536000	31.40	11.2	56	24.6	QP	L1	GND
3.910000	25.70	11.4	56	30.3	QP	L1	GND
7.915000	26.20	11.5	60	33.8	QP	L1	GND
26.725000	34.90	11.8	60	25.1	QP	L1	GND

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.384000	40.00	10.9	48	8.2	AV	L1	GND
0.768000	34.90	11.1	46	11.1	AV	L1	GND
1.536000	28.60	11.2	46	17.4	AV	L1	GND
2.305000	22.00	11.3	46	24.0	AV	L1	GND
12.290000	24.50	11.6	50	25.5	AV	L1	GND
26.725000	28.40	11.8	50	21.6	AV	L1	GND

EUT Name: Active Speaker
Model: R1700BTs
Test Mode: BT
Comment: Nature



Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.154000	38.30	10.8	66	27.5	QP	N	GND
0.384000	40.60	10.9	58	17.6	QP	N	GND
0.768000	37.80	11.1	56	18.2	QP	N	GND
1.154000	33.80	11.2	56	22.2	QP	N	GND
4.995000	26.00	11.4	56	30.0	QP	N	GND
5.890000	28.20	11.5	60	31.8	QP	N	GND
27.920000	36.40	11.8	60	23.6	QP	N	GND

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.384000	39.90	10.9	48	8.3	AV	N	GND
0.768000	35.30	11.1	46	10.7	AV	N	GND
1.152000	32.60	11.2	46	13.4	AV	N	GND
4.105000	21.40	11.4	46	24.6	AV	N	GND
12.290000	23.80	11.6	50	26.2	AV	N	GND
27.740000	27.40	11.8	50	22.6	AV	N	GND