

Prüfbericht-Nr.: <i>Test report no.:</i>	CN210NSK 001	Auftrags-Nr.: <i>Order no.:</i>	168325439	Seite 1 von 27 <i>Page 1 of 27</i>
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2021-07-02	
Auftraggeber: <i>Client:</i>	BlueAnt Wireless Suite 6 , 861 Doncaster Road, Doncaster East, Victoria 3109, Australia			
Prüfgegenstand: <i>Test item:</i>	BlueAnt X4 speaker			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	X4 (Trademark: BlueAnt)			
Auftrags-Inhalt: <i>Order content:</i>	Type test			
Prüfgrundlage: <i>Test specification:</i>	CFR47 FCC Part 15: Subpart C Section 15.247 RSS-247 Issue 2 February 2017 CFR47 FCC Part 15: Subpart C Section 15.207 RSS-Gen Issue 5 February 2021 CFR47 FCC Part 15: Subpart C Section 15.209 RSS-102 Issue 5 February 2021 CFR47 FCC Part 2.1091			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2021-07-06	Refer to photos document		
Prüfmuster-Nr.: <i>Test sample no.:</i>	A003077934-001. 002			
Prüfzeitraum: <i>Testing period:</i>	2021-07-14 - 2021-08-03			
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von: <i>tested by:</i>	genehmigt von: <i>authorized by:</i>			
Datum: <i>Date:</i> 2021-11-03	 Signed by: Alex Lan		 Signed by: Winnie Hou	
Stellung / Position	Senior Project Engineer	Ausstellungsdatum: <i>Issue date:</i> 2021-11-04	Department Manager	
Sonstiges / Other:	FCC ID: VHF-BLUEANT-X4 IC: 7252A-X4 HVIN: X4			
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged:</i>			
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft 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				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

V05

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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

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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

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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	102680	25.04.2022
Artificial Mains Network	R&S	ENV216	101445	25.04.2022
EMC32 test software	R&S	EMC32(Ver.10.50.01)	N/A	N/A
Radio Spectrum Testing				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Wireless Connectivity Tester	R&S	CMW270	101375	09.08.2022
Signal Analyzer	R&S	FSV 40	101441	09.08.2022
Vector Signal Generator	R&S	SMBV100A	263301	09.08.2022
Signal Generator	R&S	SMB100A	115186	09.08.2022
OSP	R&S	OSP 150	101017	10.12.2021
Control PC	DELL	OptiPlex 7050	FTJZ9P2	N/A
Test Software	R&S	WMS32 (V11.00.00)	N/A	N/A
Power Meter	R&S	NRP2	107105	10.12.2021
Power Sensor	R&S	NRP-Z81	105677	09.08.2022
Humid & Temp Programmable Tester	BOST	NTH090-60	19040801	02.04.2022
Shielding Room 8#	Albatross	SR8	APC17151-SR8	22.06.2024
Unwanted Emission Testing				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
EMI Test Receiver	R&S	ESR 7	102021	10.08.2022
Signal Analyzer	R&S	FSV 40	101439	09.08.2022
System Controller Interface	R&S	SCI-100	S10010038	N/A
Filterbank	R&S	Wlan	100759	09.08.2022
OSP	R&S	OSP 120	102040	N/A
Pre-amplifier	R&S	SCU08F1	08320031	09.08.2022
Amplifier	R&S	SCU-18F	180070	09.08.2022
Amplifier	R&S	SCU40A	100475	09.08.2022
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	08.08.2022
Double-Ridged Antenna (1 - 18 GHz)	ETS-LINDGREN	3117	00218717	08.08.2022
Wideband Ridged Horn Antenna (18-	Steatite	QMS-00880	19067	08.08.2022

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40 GHz)				
Active Loop Antenna	Schwarzbeck	FMZB 1513	302	13.09.2022
Test software	R&S	EMC32 (V10.60.10)	N/A	N/A
Control PC	Dell	OptiPlex 7050	36NV9P2	N/A
3m Semi-Anechoic Chamber	Albatross	SAC-3m	APC17151-SAC	22.06.2024

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 basis 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 (dB μ V/m)	4.27dB
Radiated Emission (above 1000MHz)	Field strength (dB μ V/m)	4.46dB
Radio Spectrum		± 1.5 dB

2.6 Location of Original Data

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

2.7 Status of Facility Used for Testing

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

3 General Product Information

3.1 Product Function and Intended Use

The EUT is a BlueAnt X4 speaker which supports Bluetooth (BDR&EDR) technology.

This product has six different color of enclosure: black, white, pink, yellow, water blue and purple.

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

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment	BlueAnt X4 speaker
Type Designation	X4
Trade Mark	BlueAnt
FCC ID	VHF-BLUEANT-X4
IC	7252A-X4
HVIN	X4
Operating Voltage	DC 12V, 2A via external AC/DC Adapter DC 7.4V, 5000mAh (supplied by internal battery)
AC/DC Adapter	Model: ICP30A-120-2000 Raing Input: AC 100-240V, 50/60Hz, 0.8A Raing Output: DC 12V, 2A
Technical Specification of Bluetooth	
Technical Specification	Value
Operating Frequency	2402 - 2480 MHz
Type of Modulation	GFSK, $\pi/4$ DQPSK, 8DPSK
Channel Number	BDR & EDR mode:79 channels
Channel Separation	BDR & EDR mode:1MHz
Antenna Type	Integral Antenna
Max. Antenna Gain	1.5 dBi

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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	--	--

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

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 4: List of Accessories and Auxiliary Equipment

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

4.4 Countermeasures to Achieve EMC Compliance

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

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 30MHz)

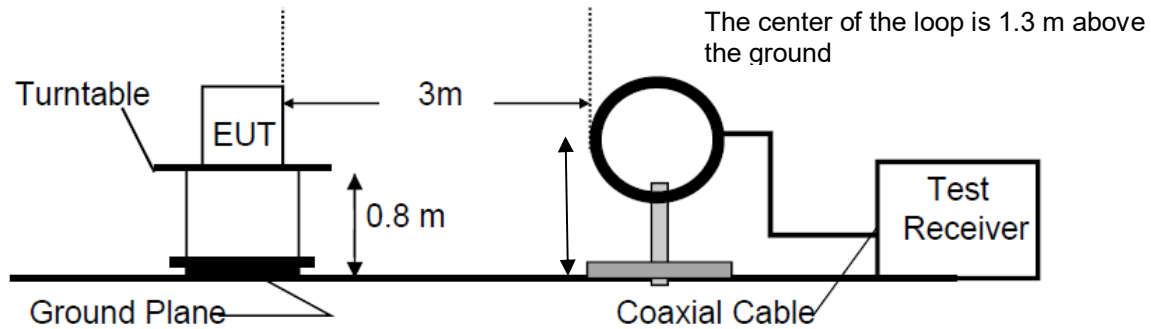


Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

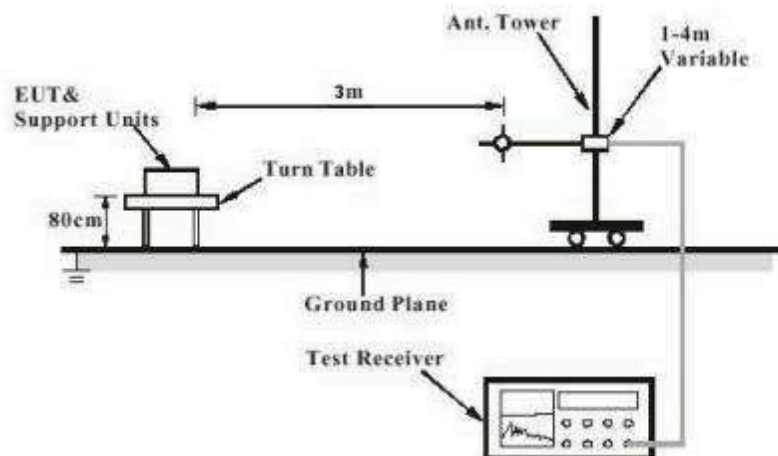


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

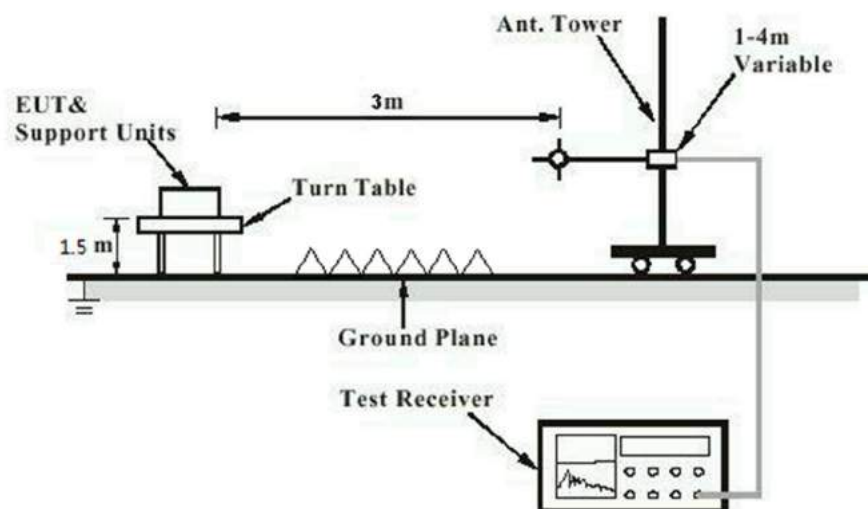


Diagram of Measurement Configuration for Mains Conduction Measurement

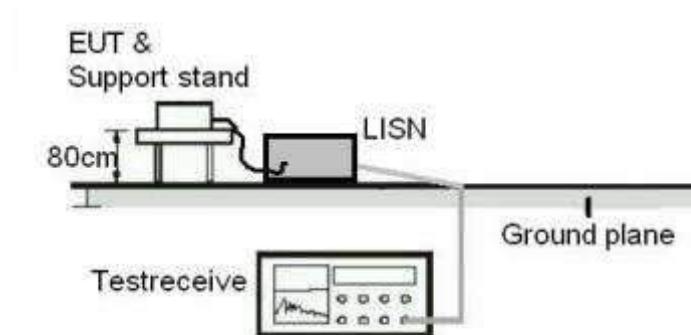
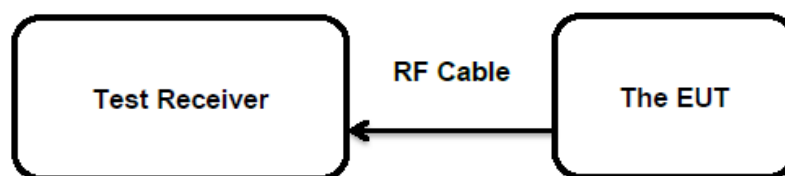


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT:

Pass

Test Specification

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

According to the manufacturer declared, the EUT has an integral antenna, the directional gain of antenna is 1.5 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.

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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
FHSS<0.125W(Maximum peak conducted output
Limits : power)
< 4 W (e.i.r.p.)
Kind of test site : Shielded Room

Test Setup

Date of testing : 14.07.2021
Input voltage : DC 7.4V
Operation mode : A.1
Test channel : Low / Middle / High
Ambient temperature : 25 °C
Relative humidity : 56 %
Atmospheric pressure : 101 kPa

Table 5: Test Result of Maximum Conducted Output Power

Test Mode	Channel Frequency (MHz)	Measured Peak Output Power		Measured Average Output Power		Limit (W)
		(dBm)	(W)	(dBm)	(W)	
BDR	2402	12.5	0.01778	12.2	0.01660	< 0.125
	2441	12.6	0.01820	12.2	0.01660	
	2480	12.8	0.01905	12.5	0.01778	
EDR	2402	12.3	0.01698	10.9	0.01230	< 0.125
	2441	12.3	0.01698	11.0	0.01259	
	2480	12.5	0.01778	11.3	0.01349	

Note: The cable loss is taken into account in results and the maximum e.i.r.p. is 14.3 dBm less than 4W(36dBm).

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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 : 14.07.2021
Input voltage : DC 7.4V
Operation mode : A.1
Test channel : Low / Middle / High
Ambient temperature : 25 °C
Relative humidity : 56 %
Atmospheric pressure : 101 kPa

Table 6: Test Result of 99% Bandwidth

Test Mode	Channel Frequency (MHz)	99% Bandwidth (kHz)	Limit (kHz)
BDR	2402	810	/
	2441	810	
	2480	810	
EDR	2402	1110	/
	2441	1110	
	2480	1120	

For the measurement records, refer to the appendix B

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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	: 14.07.2021
Input voltage	: DC 7.4V
Operation mode	: A.1
Test channel	: Low / Middle / High
Ambient temperature	: 25 °C
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.

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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	: 14.07.2021
Input voltage	: AC 120V, 60Hz
Operation mode	: A.1
Test channel	: Low / Middle / High
Ambient temperature	: 23 °C
Relative humidity	: 55 %
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.

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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 : 14.07.2021
Input voltage : DC 7.4V
Operation mode : A.1
Test channel : Low / Middle / High
Ambient temperature : 25 °C
Relative humidity : 56 %
Atmospheric pressure : 101 kPa

Table 7: Test Result of 20dB Bandwidth

Test Mode	Channel Frequency (MHz)	20dB Bandwidth (kHz)	2/3 of 20dB Bandwidth (kHz)	Limit (MHz)
BDR	2402	710	473.333	/
	2441	710	473.333	
	2480	710	473.333	
EDR	2402	1040	693.333	/
	2441	1040	693.333	
	2480	1040	693.333	

For the measurement records, refer to the appendix B.

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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 : $\geq 25\text{kHz}$ or $2/3$ of 20dB bandwidth, whichever is greater
Kind of test site : Shielded Room

Test Setup

Date of testing : 14.07.2021
Input voltage : DC 7.4V
Operation mode : B
Test channel : Low / Middle / High
Ambient temperature : 25 °C
Relative humidity : 56 %
Atmospheric pressure : 101 kPa

Table 8: Test Result of Carrier Frequency Separation

Test Mode	Channel	Channel Frequency (MHz)	Measured Channel Separation (MHz)	Limit (kHz)	Result
BDR	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			
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	0.980198		Pass
	Adjacency Channel	2479.975248			

Note:

The limit is maximum $2/3$ of the 20 dB bandwidth: 693.333 kHz.

For the measurement records, refer to the appendix B.

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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 : 14.07.2021
Input voltage : DC 7.4V
Operation mode : B
Ambient temperature : 25 °C
Relative humidity : 56 %
Atmospheric pressure : 101 kPa

Table 9: 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.

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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 : 14.07.2021
Input voltage : DC 7.4V
Operation mode : B
Test channel : Low / Middle / High
Ambient temperature : 25 °C
Relative humidity : 56 %
Atmospheric pressure : 101 kPa

Table 10: Test Result of Time of Occupancy

Test Mode	Channel	Data Packet	Pulse width (ms)	Measured Dwell time(s)	Limit (s)
BDR	2441	DH1	0.387	0.124	< 0.4s
		DH3	1.651	0.264	
		DH5	2.917	0.311	
EDR	2441	3DH1	0.394	0.126	< 0.4s
		3DH3	1.660	0.266	
		3DH5	2.894	0.309	

Note:

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

Period = 0.4 x 79 (channel) = 31.6 seconds

Prüfbericht - Nr.: CN210NSK 001
Test report no.

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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	: 14.07.2021 -03.08.2021
Input voltage	: AC 120V, 60Hz
Operation mode	: C
Earthing	: Not connected
Ambient temperature	: 25 °C
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 2.1091
RSS-102 Issue 5 February 2021
FCC KDB Publication 447498 v06
Limit : CFR47 FCC Part 1.1310

RF Exposure Compliance Requirement for FCC

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 KDB 447498 v06

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

Where:

S = power density (mW/cm²)

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:

The peak power of BT: 12.8 dBm

From the peak RF output power, the minimum mobile separation distance, d=20 cm, as well as the antenna gain (Max. 1.5 dBi for BT), the RF power density can be calculated as below:

For BT: $S_{(mW/cm^2)} = PG/4\pi R^2 = 0.05 \text{ mW/cm}^2$

Limits for Maximum Permissible Exposure (MPE) according to FCC Part 1.1310: 1.0 mW/cm²

RF Exposure Compliance Requirement for IC

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 $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz; RF exposure evaluation exempted power : 2.670 W

The nominal maximum conducted output power specified:

The peak power of BT: 12.8dBm

The max. Antenna Gain of BT: 1.5 dBi

The Max. e.i.r.p. of BT: 14.3 dBm = 0.027 W

The e.i.r.p. of BT is less than the RF exposure evaluation exempted power. So RF exposure evaluation is not required.

“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.

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Appendix B

Test Results of Conducted Testing

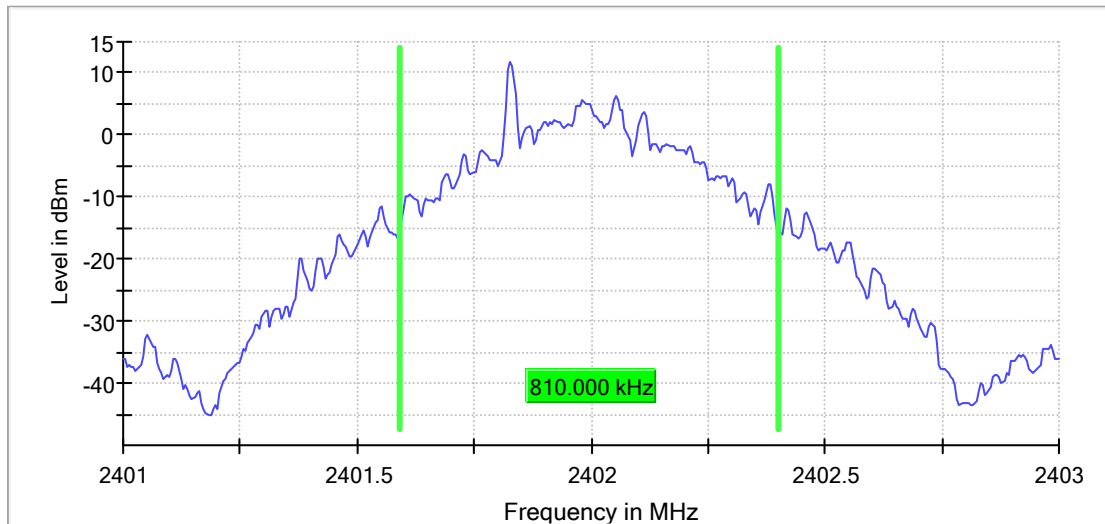
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Appendix B.1: Test Plots of 99% Bandwidth

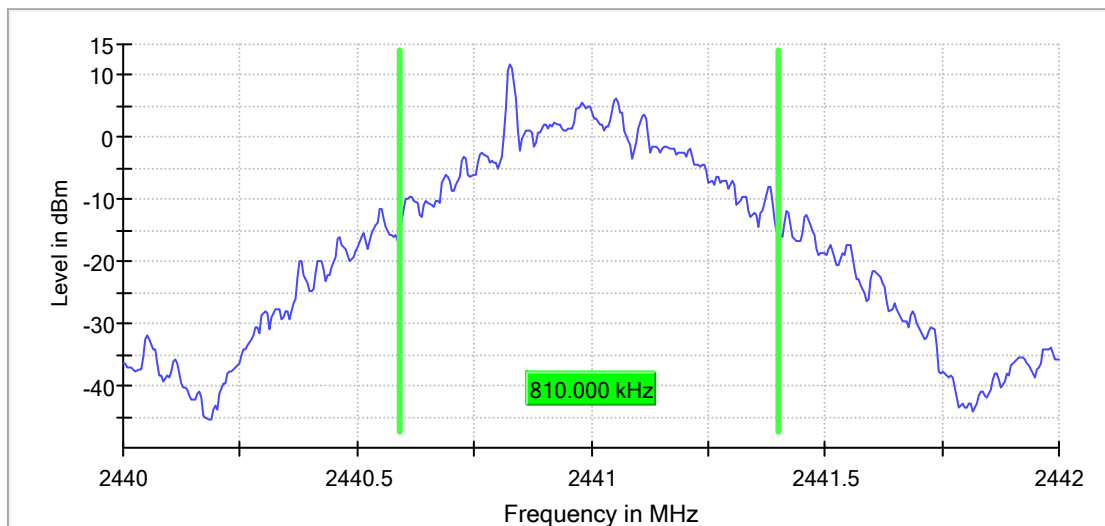
BDR Mode, DH1

RBW=10kHz, VBW=30kHz

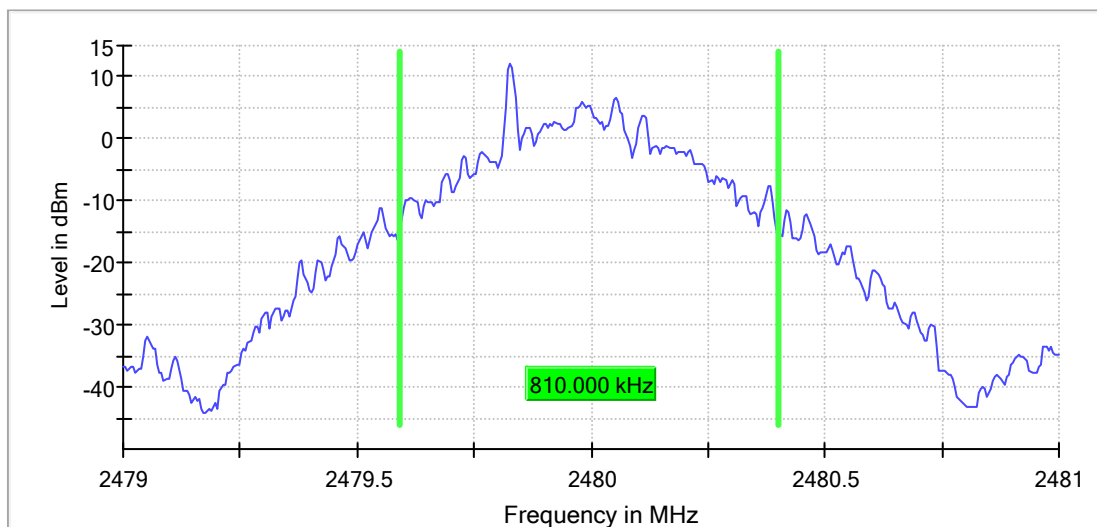
99 % Bandwidth



99 % Bandwidth



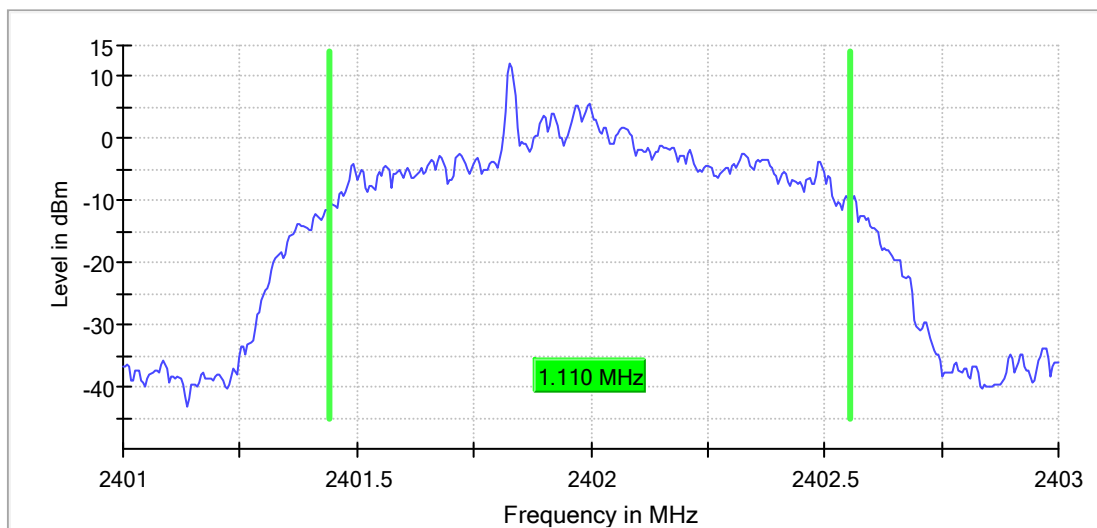
99 % Bandwidth



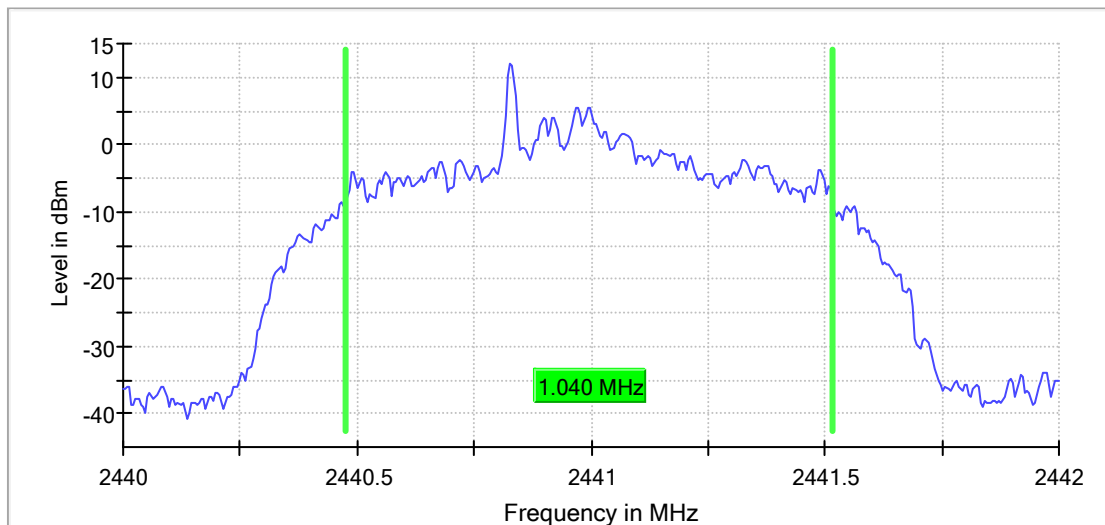
EDR Mode, 3DH1

RBW=30kHz VBW=100kHz

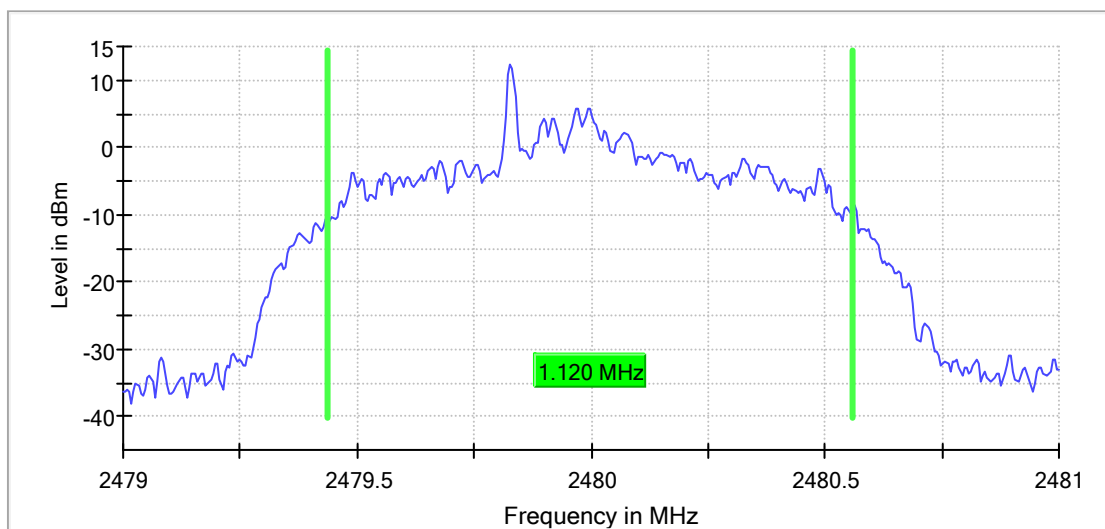
99 % Bandwidth



20 dB Bandwidth



99 % Bandwidth

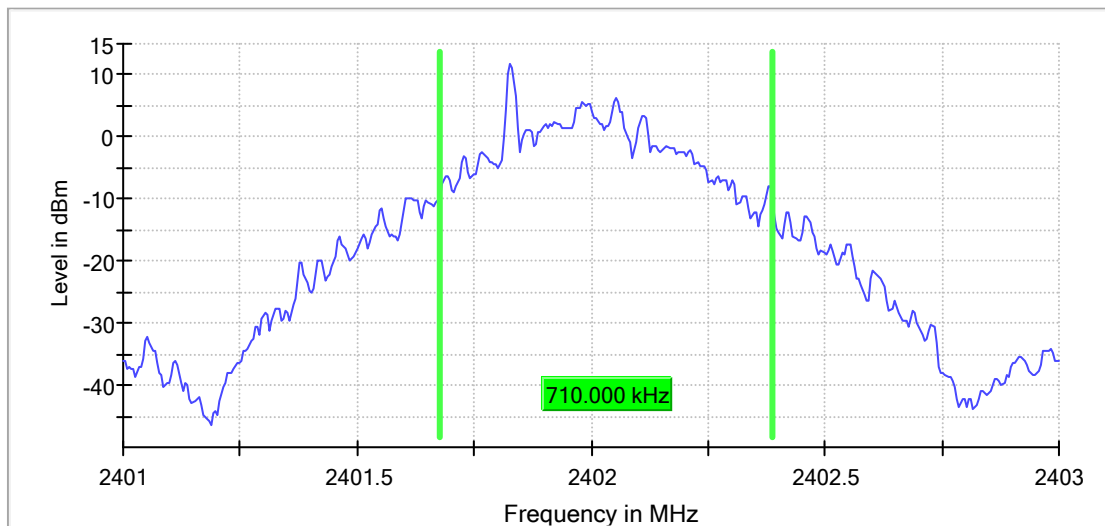


Appendix B.2: Test Plots of 20dB Bandwidth

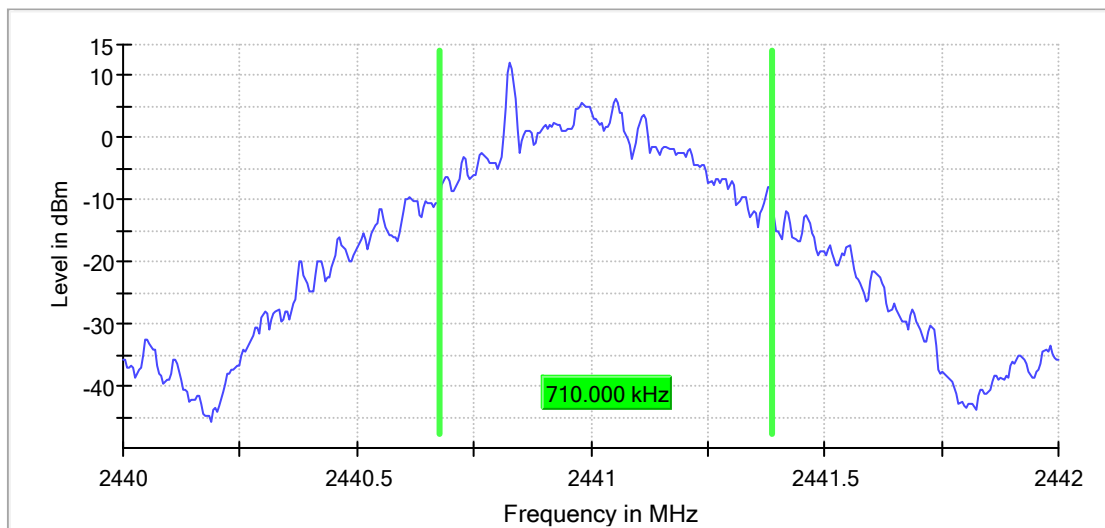
BDR Mode, DH1

RBW=10kHz VBW=30kHz

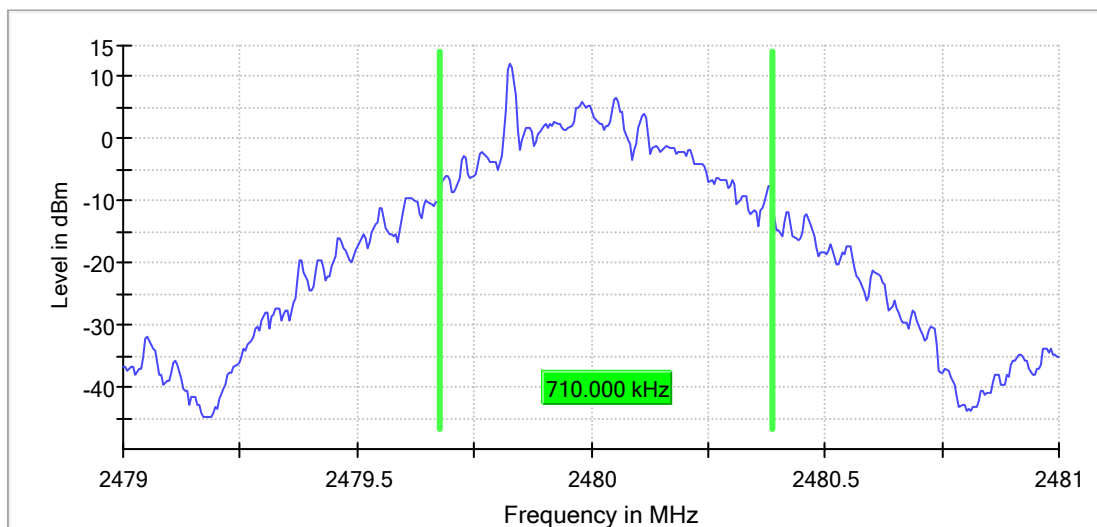
20 dB Bandwidth



20 dB Bandwidth



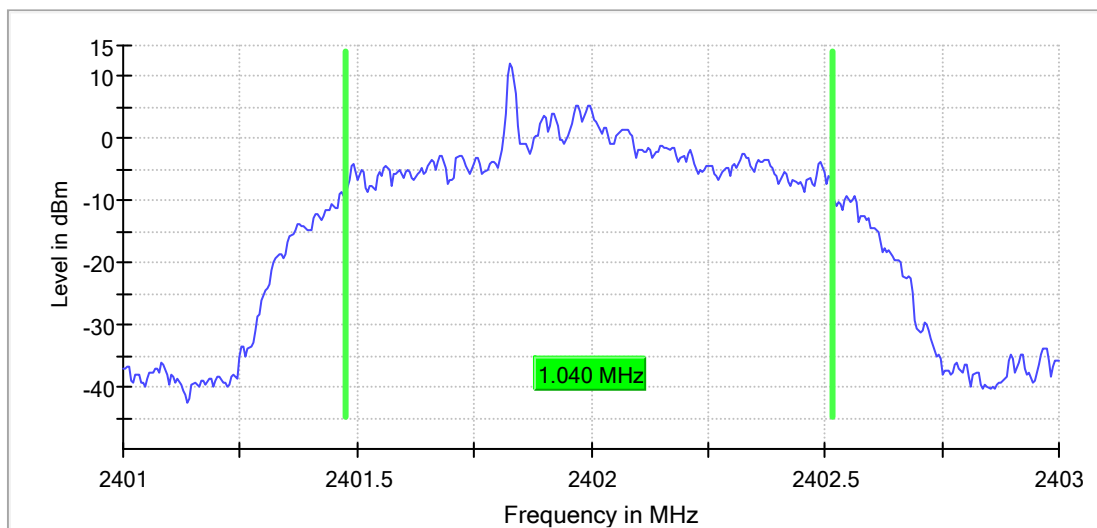
20 dB Bandwidth



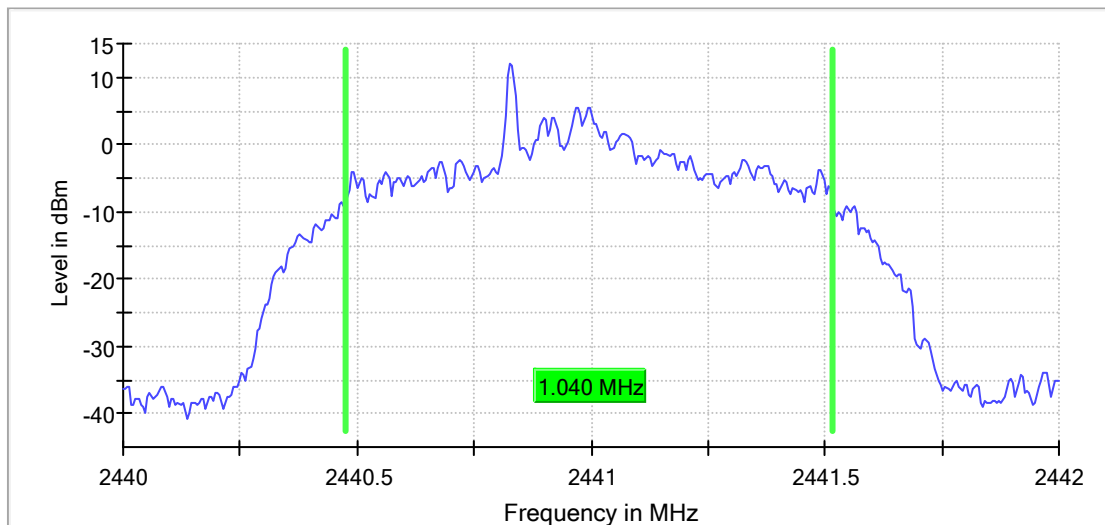
EDR Mode, 3DH1

RBW=30kHz VBW=100kHz

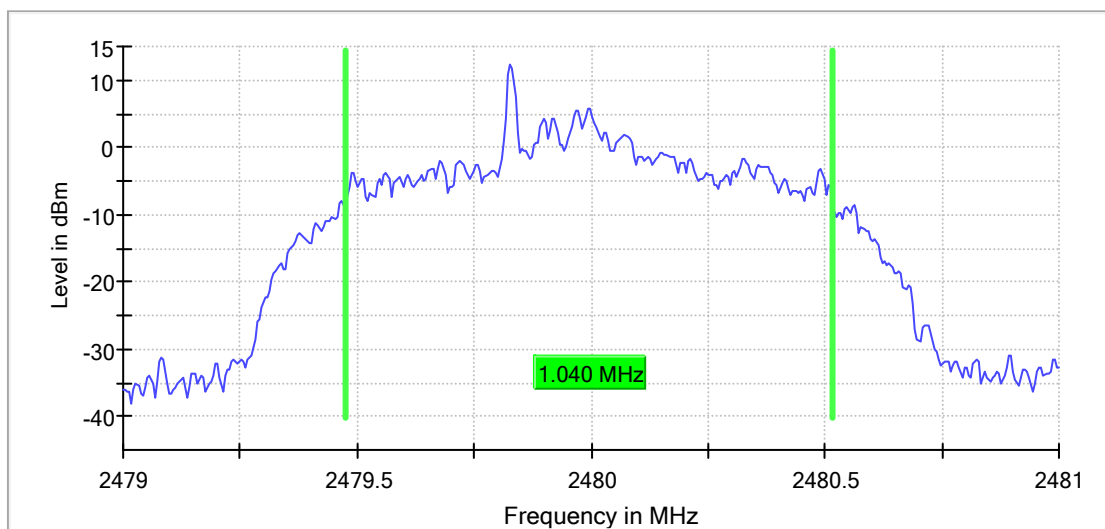
20 dB Bandwidth



20 dB Bandwidth

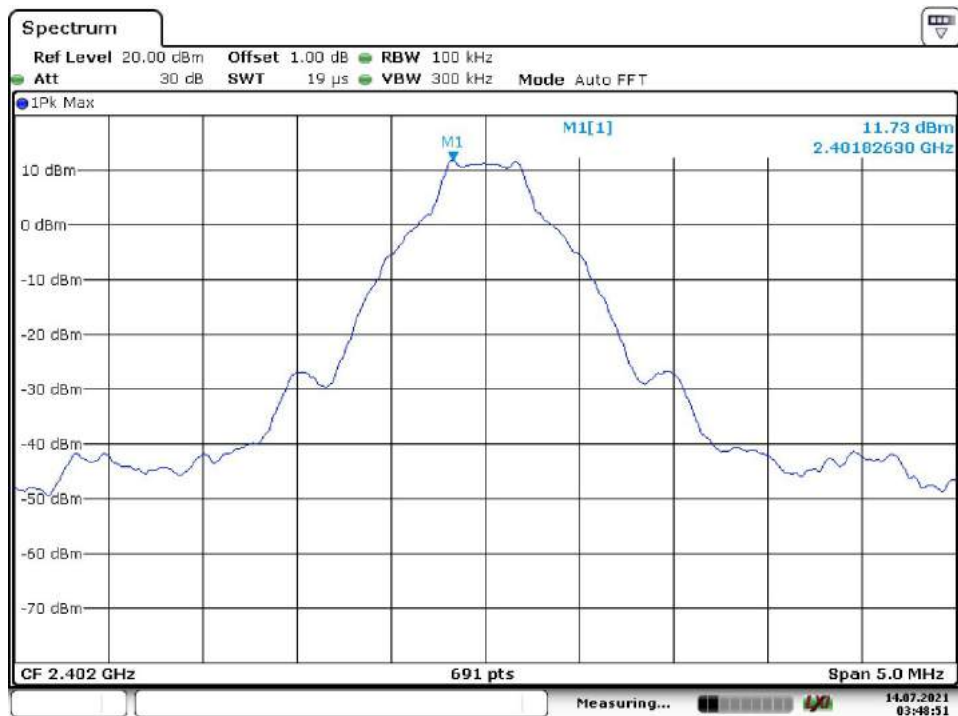


20 dB Bandwidth

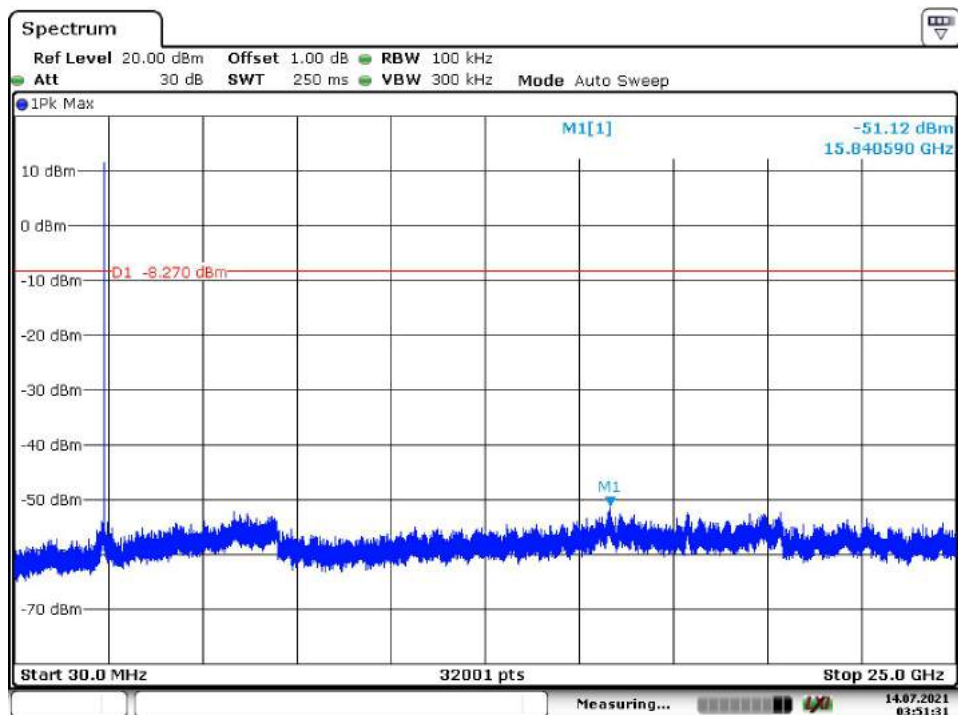


Appendix B.3: Test Plots of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

BDR Mode, Low Channel



Date: 14.JUL.2021 03:48:51

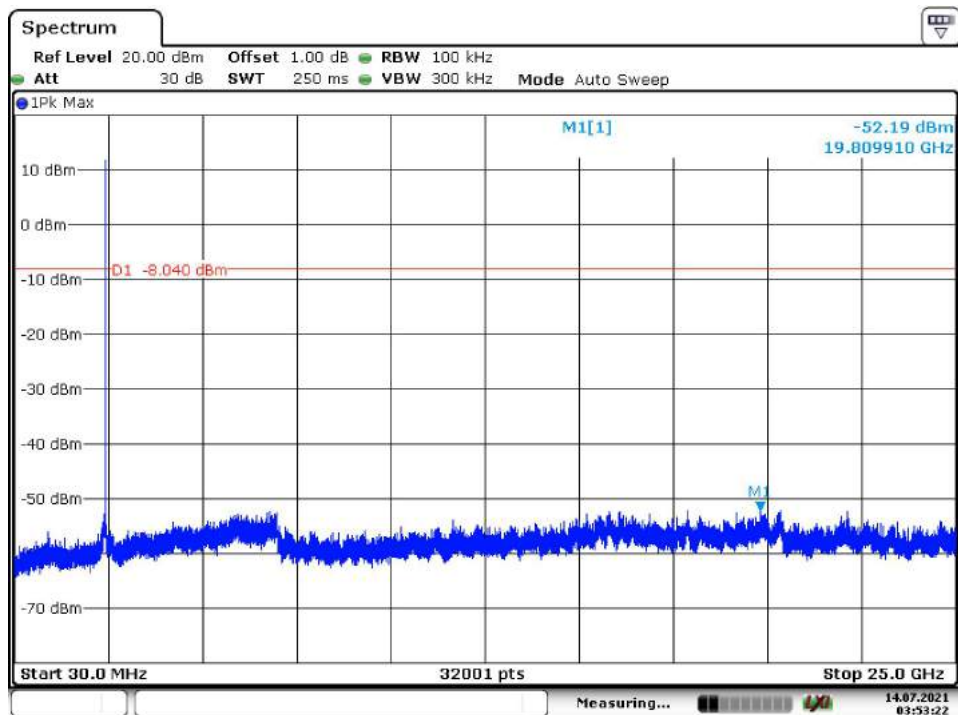


Date: 14.JUL.2021 03:51:31

BDR Mode, Middle Channel

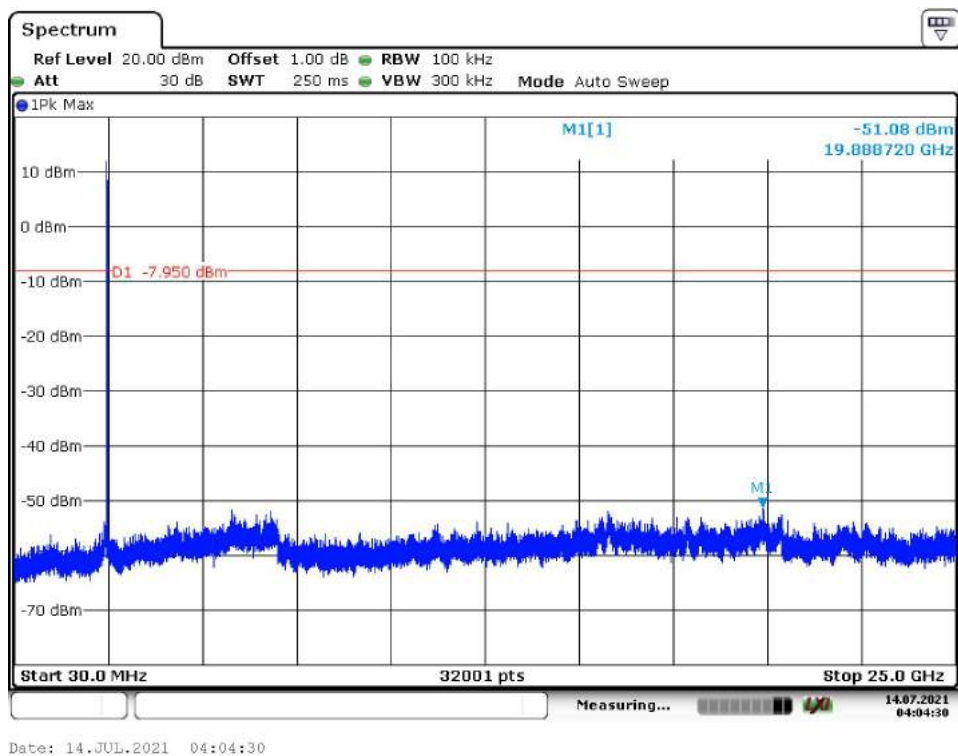


Date: 14.JUL.2021 03:52:24

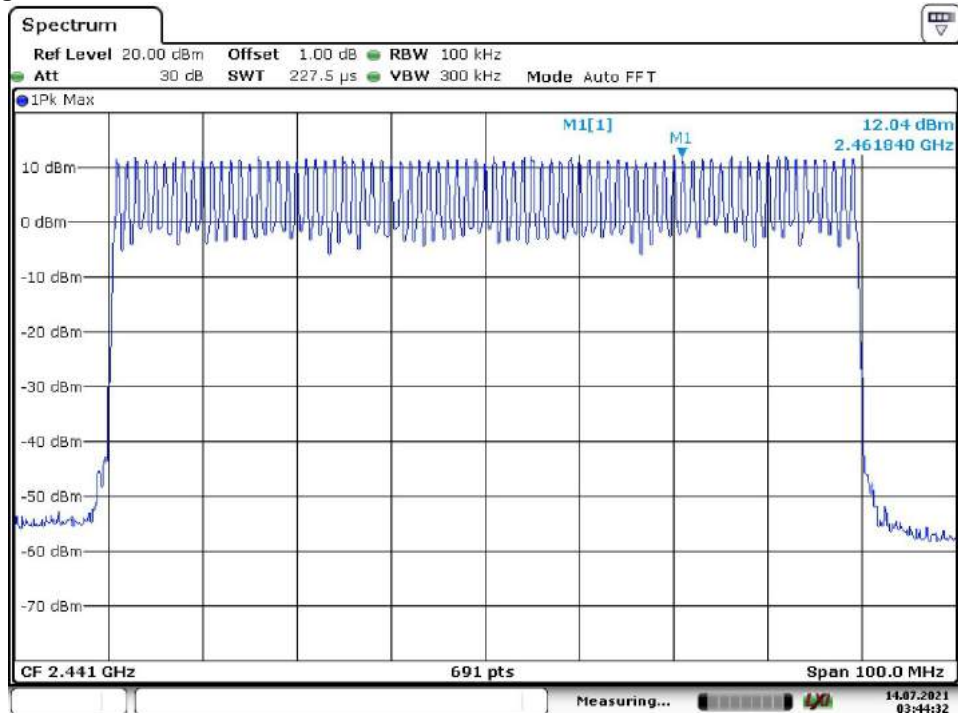


Date: 14.JUL.2021 03:53:22

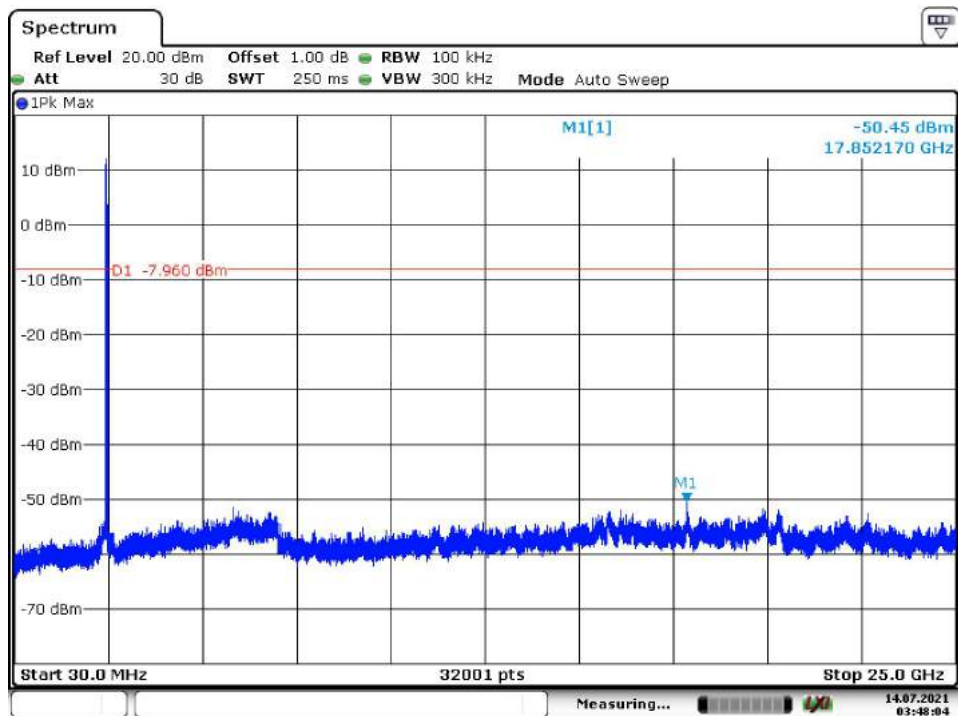
BDR Mode, High Channel



BDR, Hopping



Date: 14.JUL.2021 03:44:32

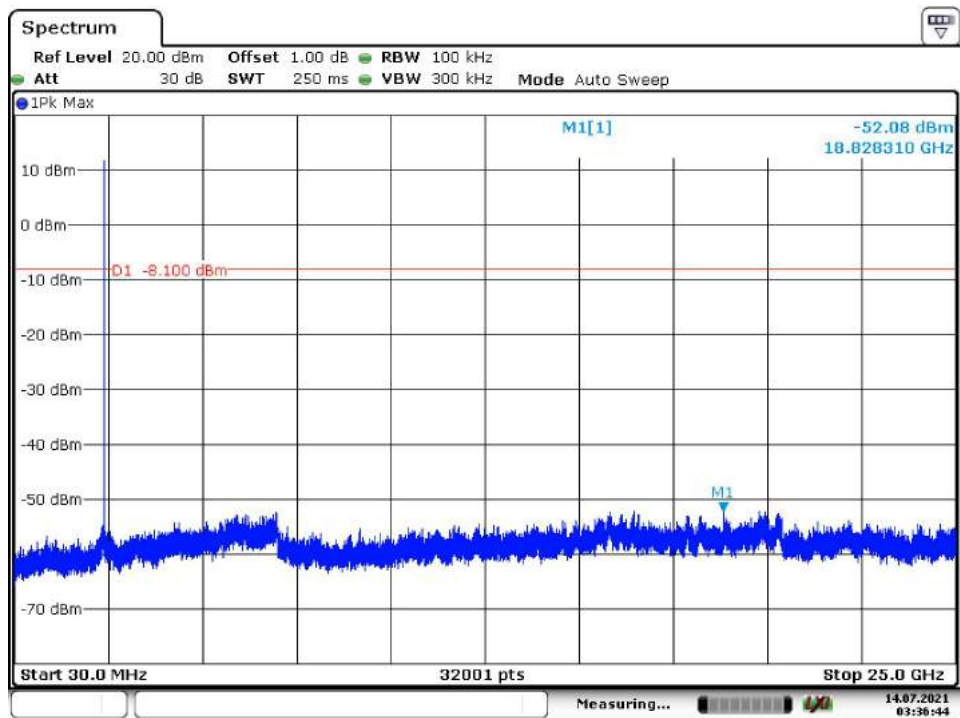


Date: 14.JUL.2021 03:48:04

EDR Mode, Low Channel

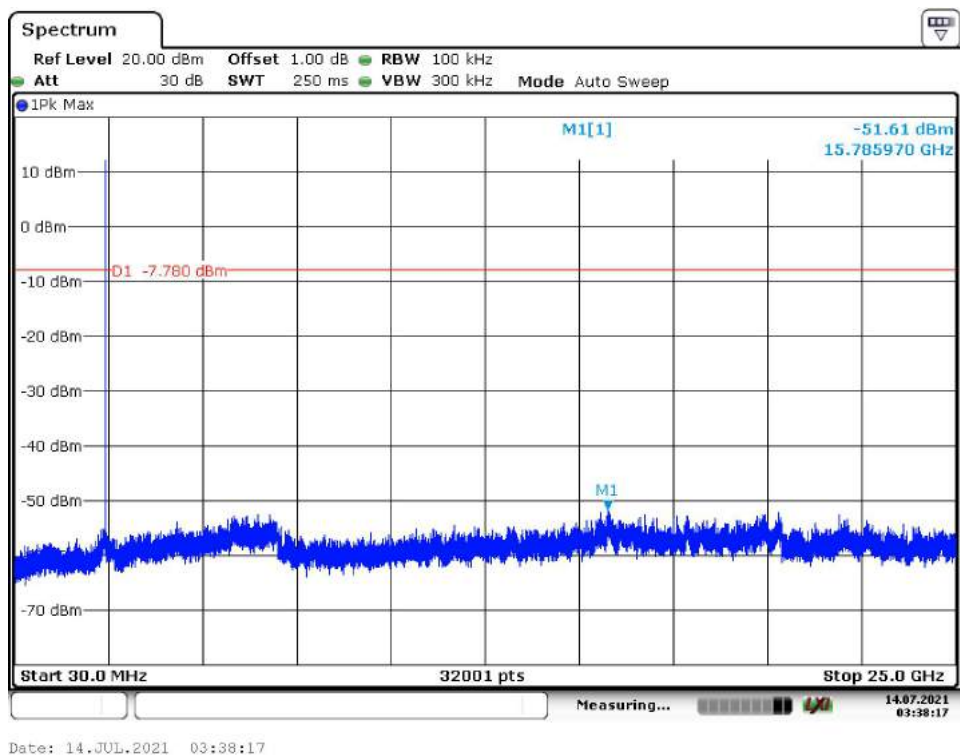


Date: 14.JUL.2021 03:35:18



Date: 14.JUL.2021 03:36:44

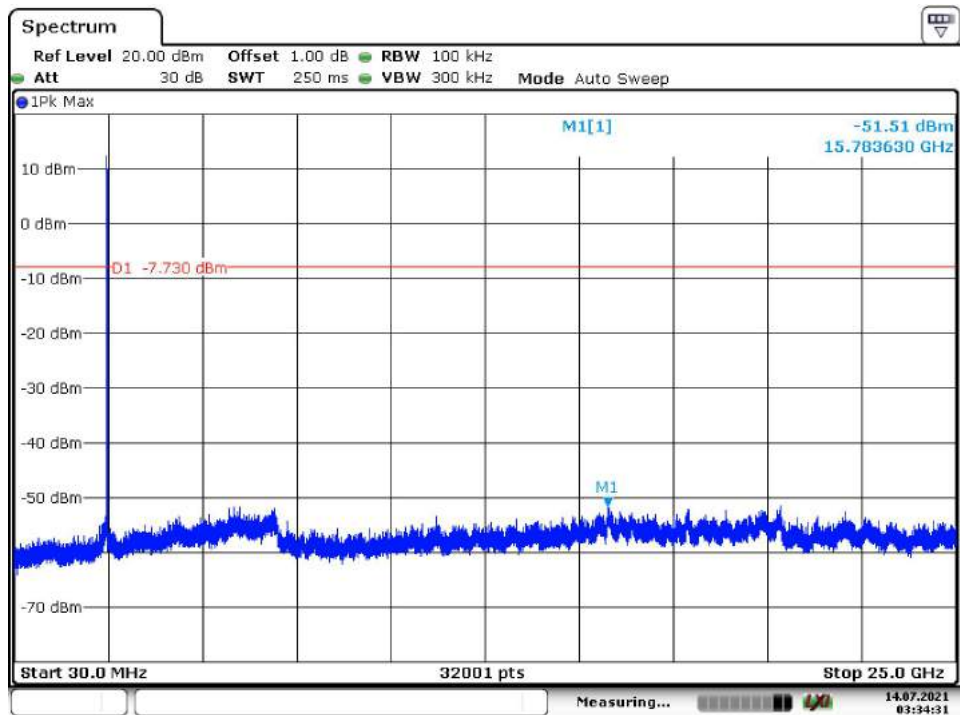
EDR Mode, Middle Channel



EDR Mode, High Channel

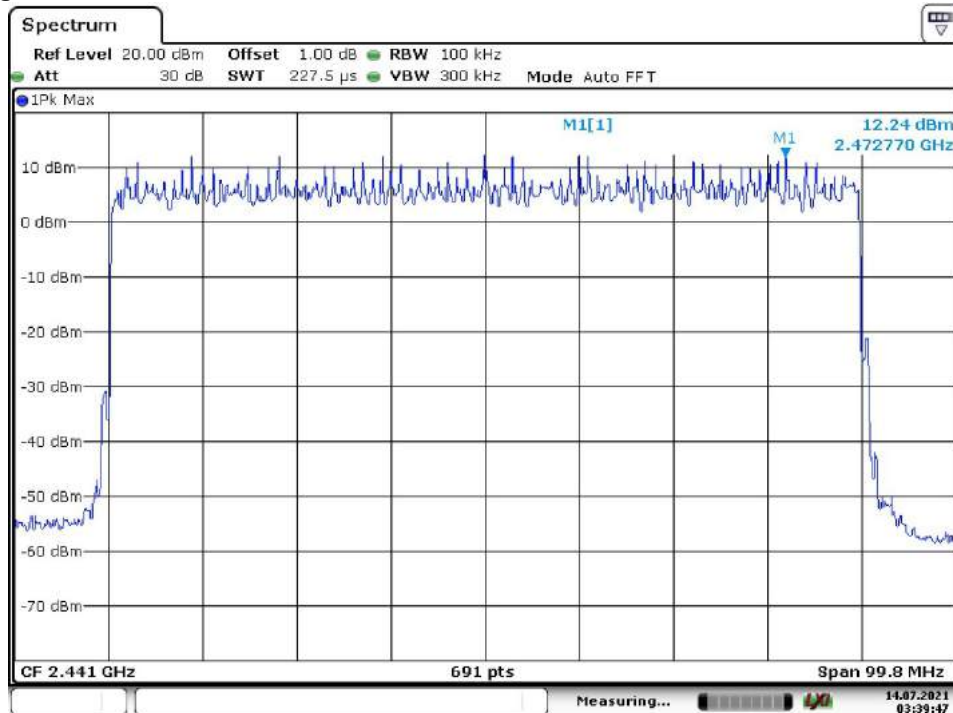


Date: 14.JUL.2021 03:31:43

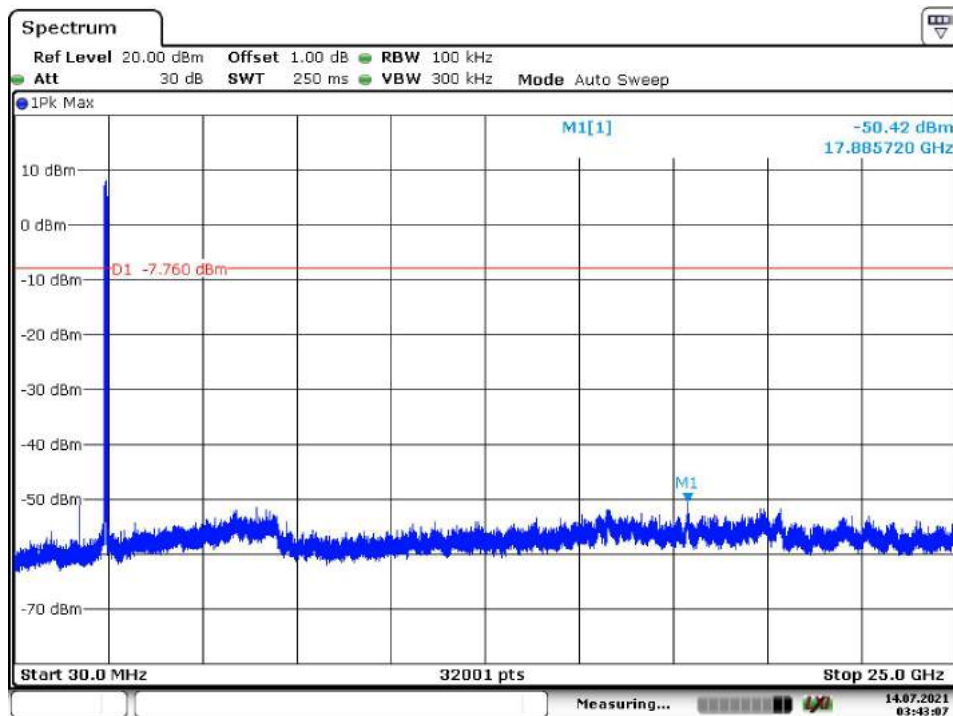


Date: 14.JUL.2021 03:34:31

EDR, Hopping

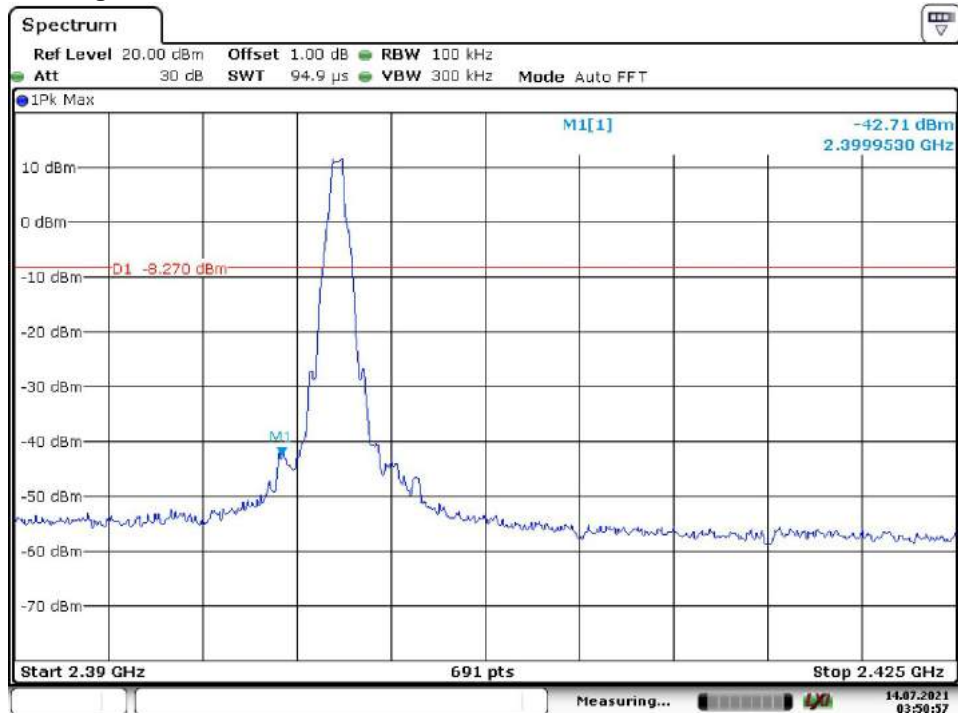


Date: 14.JUL.2021 03:39:46



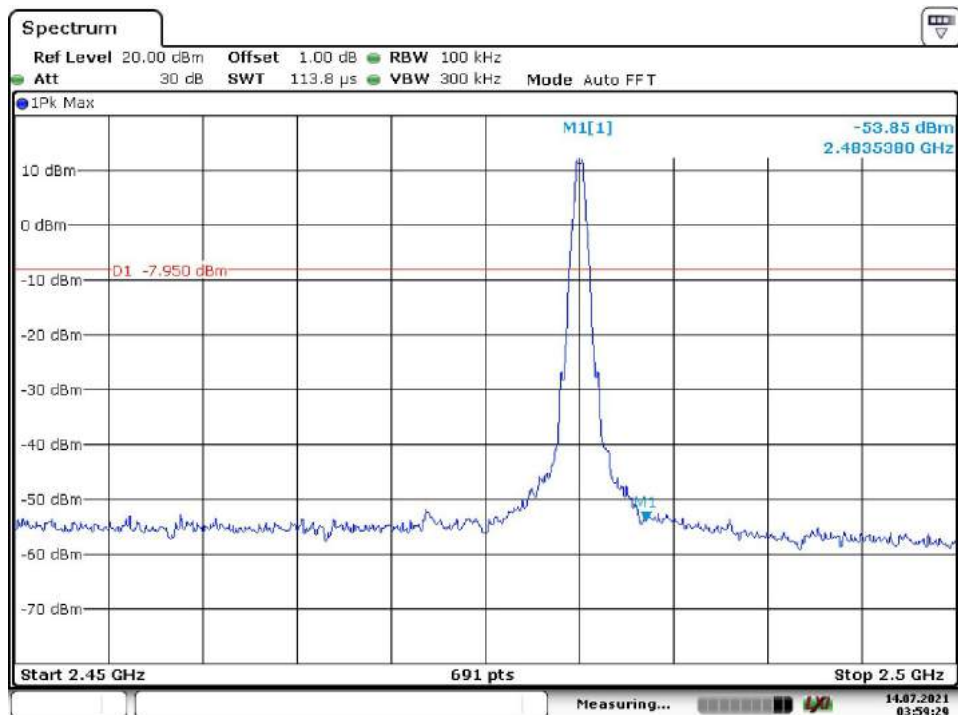
Date: 14.JUL.2021 03:43:07

BDR Mode, Band Edge, Low Channel



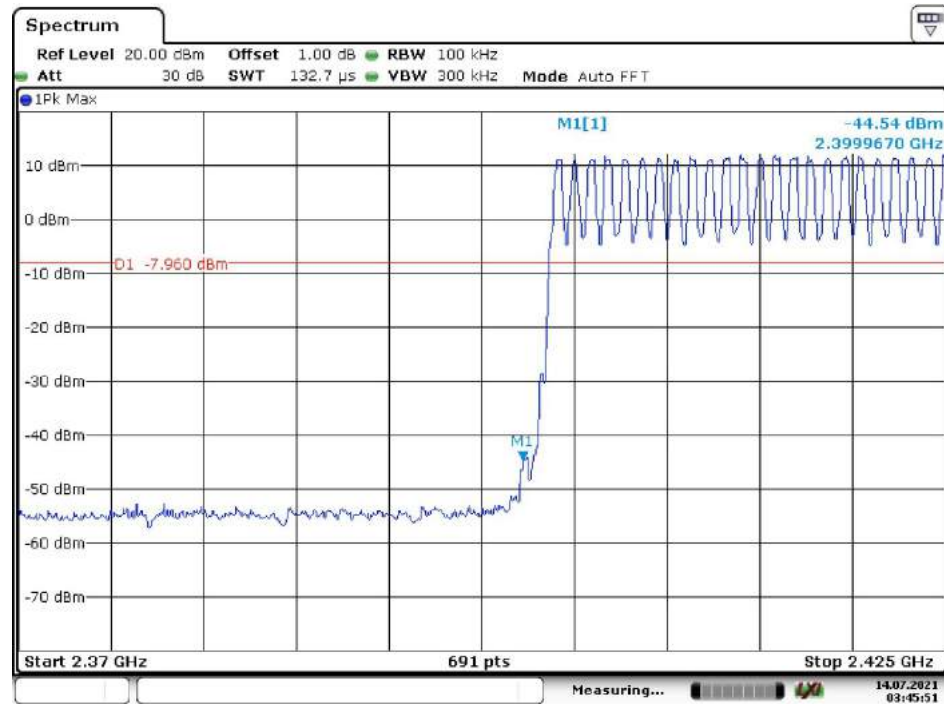
Date: 14.JUL.2021 03:50:57

BDR Mode, Band Edge, High Channel

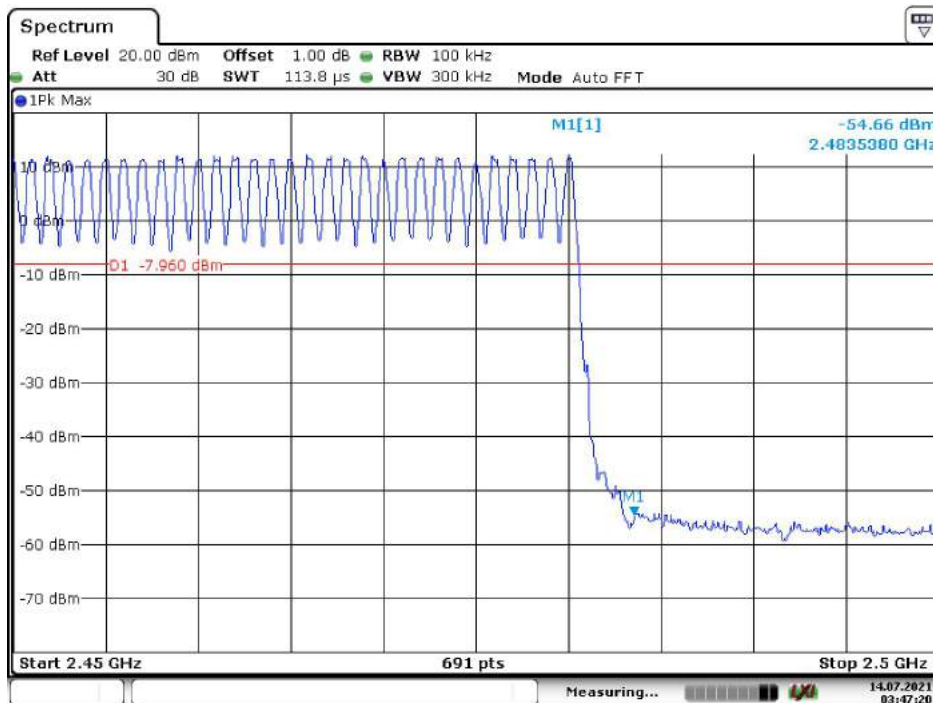


Date: 14.JUL.2021 03:59:29

BDR Mode, Hopping Band Edge

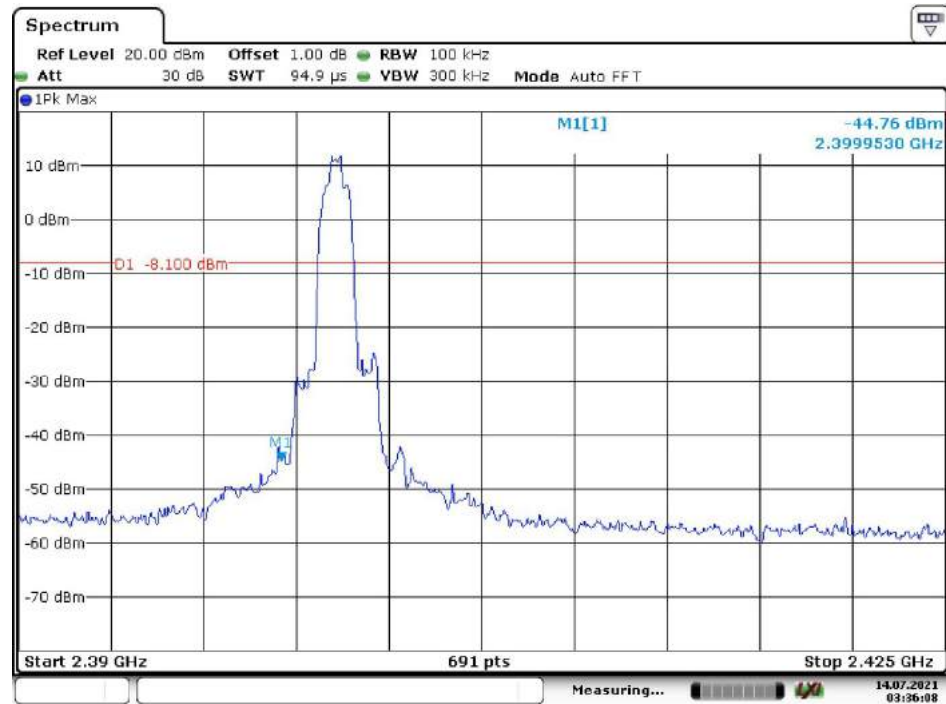


Date: 14.JUL.2021 03:45:51



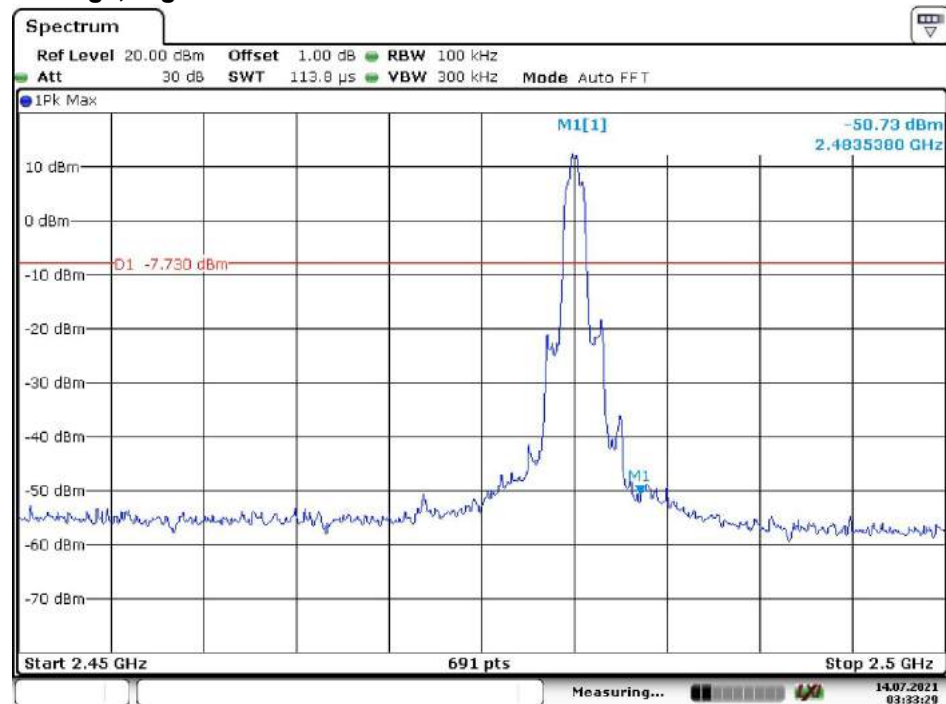
Date: 14.JUL.2021 03:47:20

EDR Mode, Band Edge, Low Channel



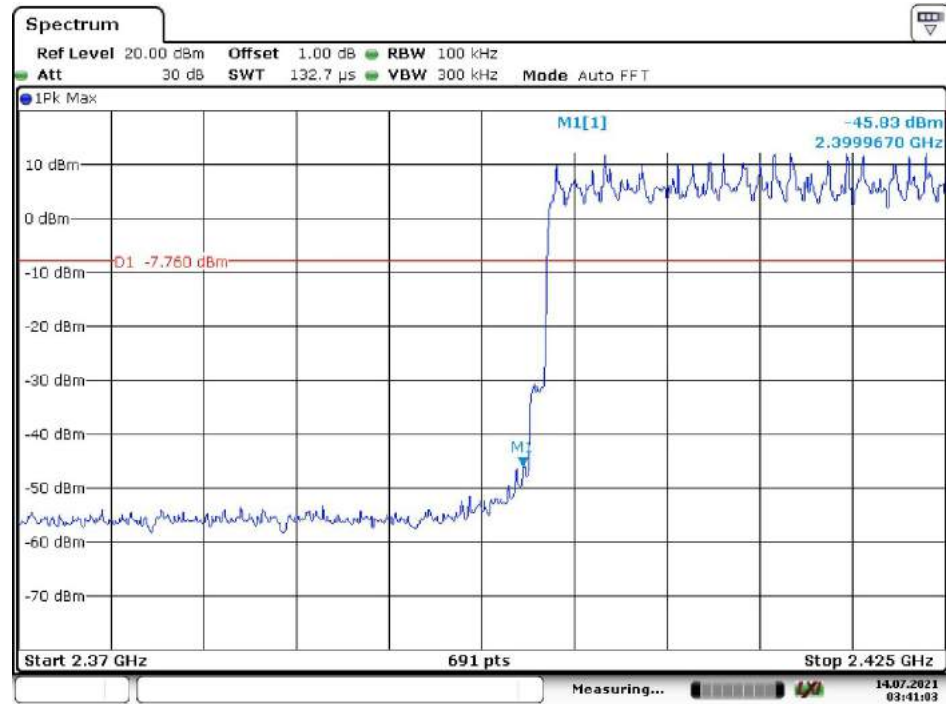
Date: 14.JUL.2021 03:36:07

EDR Mode, Band Edge, High Channel



Date: 14.JUL.2021 03:33:29

EDR Mode, Hopping Band Edge



Date: 14.JUL.2021 03:41:03

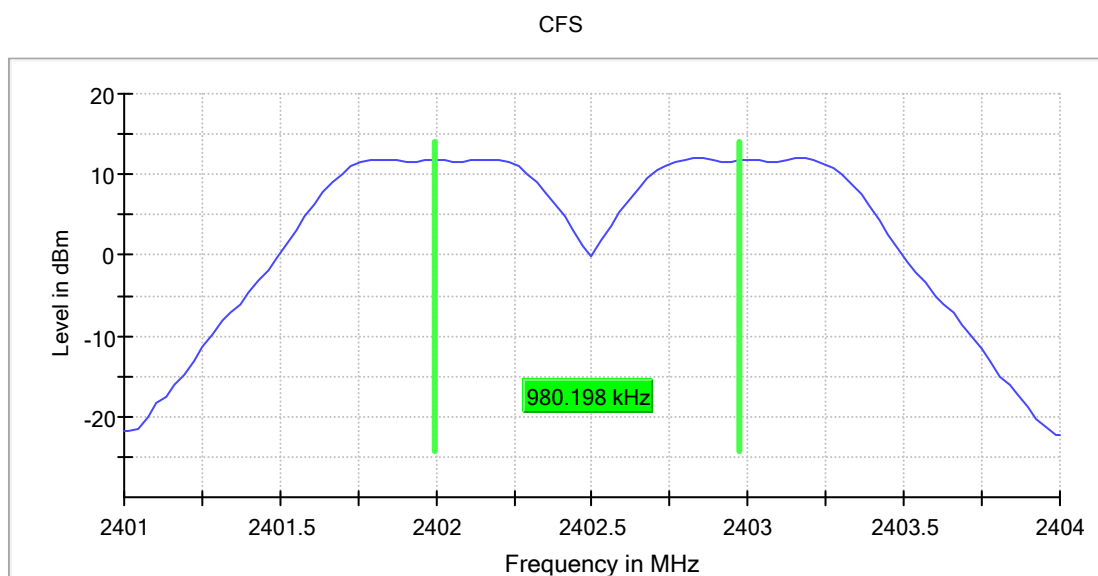


Date: 14.JUL.2021 03:42:15

Appendix B.4: Test Plots of Carrier Frequency Separation

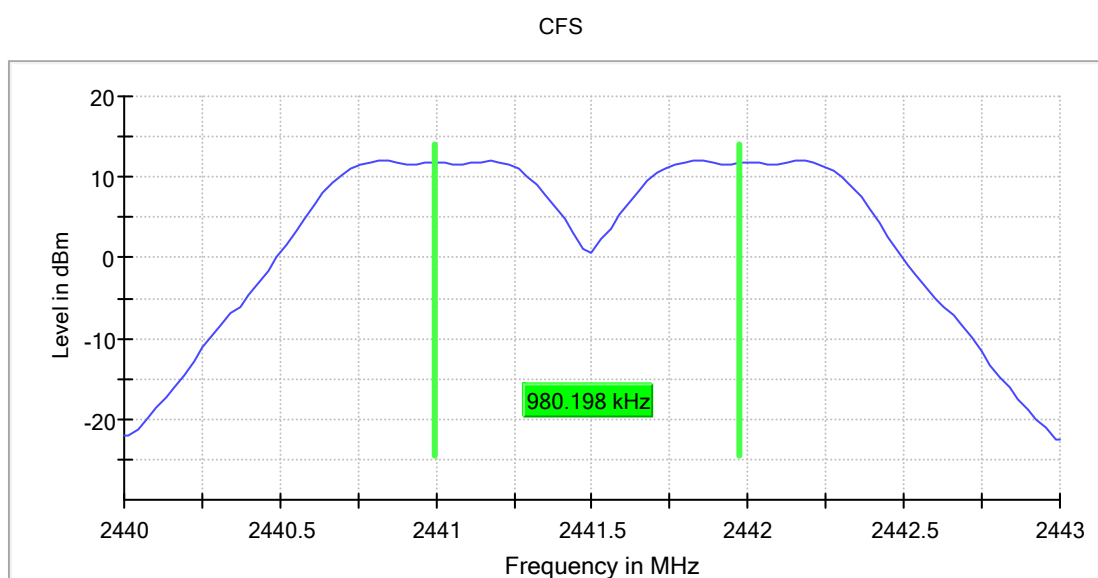
BDR, Low Channel

RBW=300kHz, VBW=300kHz



BDR, Middle Channel

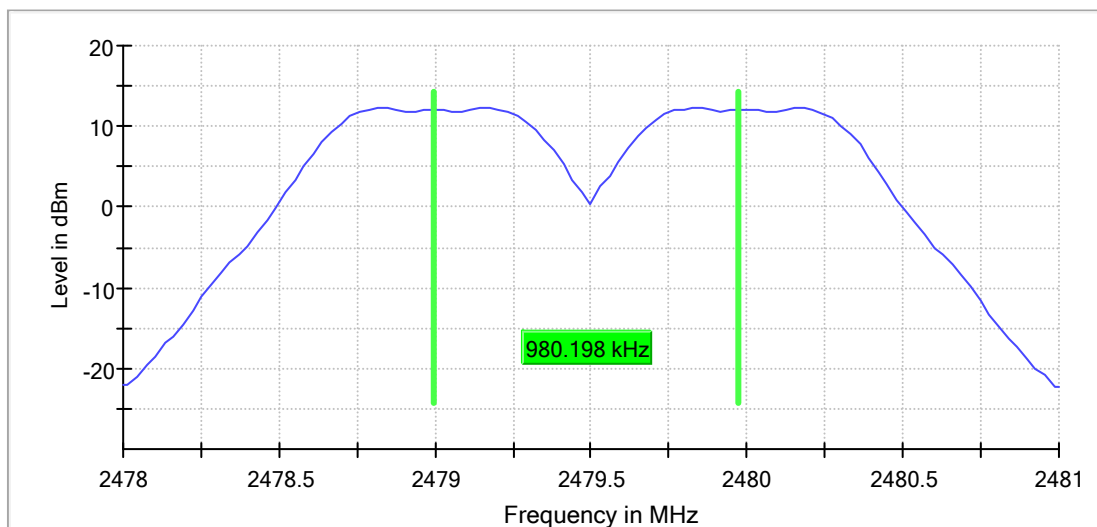
RBW=300kHz, VBW=300kHz



BDR, High Channel

RBW=300kHz, VBW=300kHz

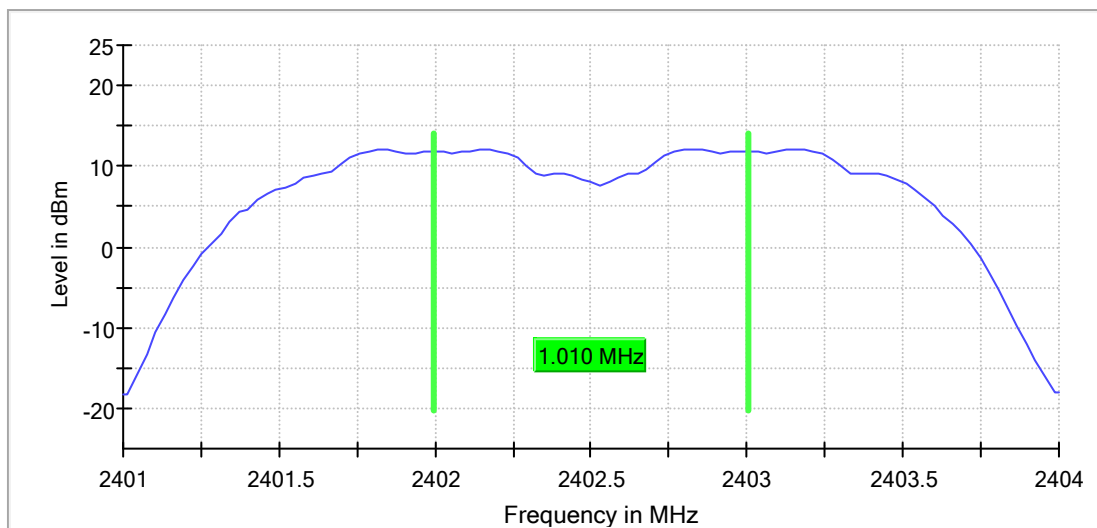
CFS



EDR, Low Channel

RBW=300kHz, VBW=300kHz

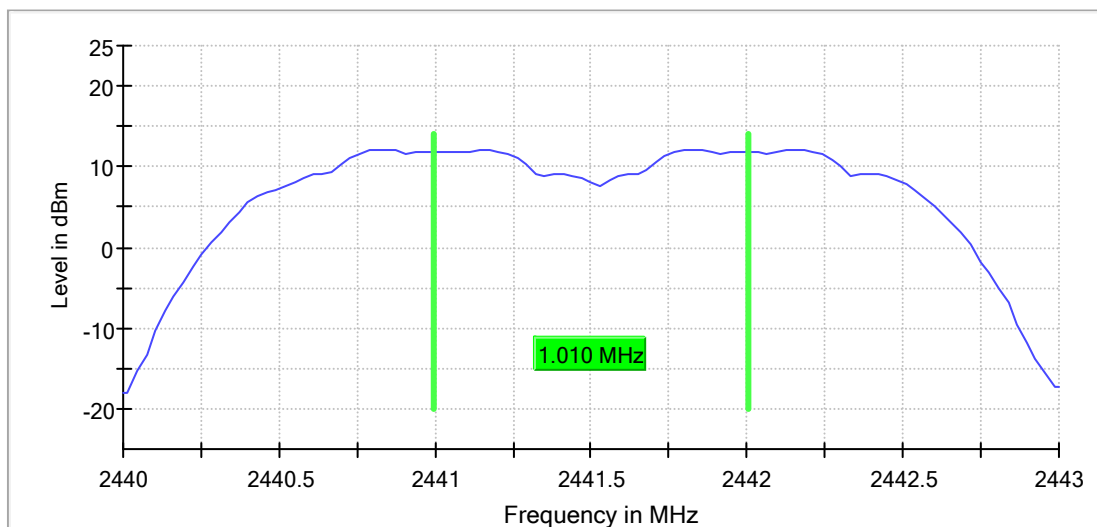
CFS



EDR, Middle Channel

RBW=300kHz, VBW=300kHz

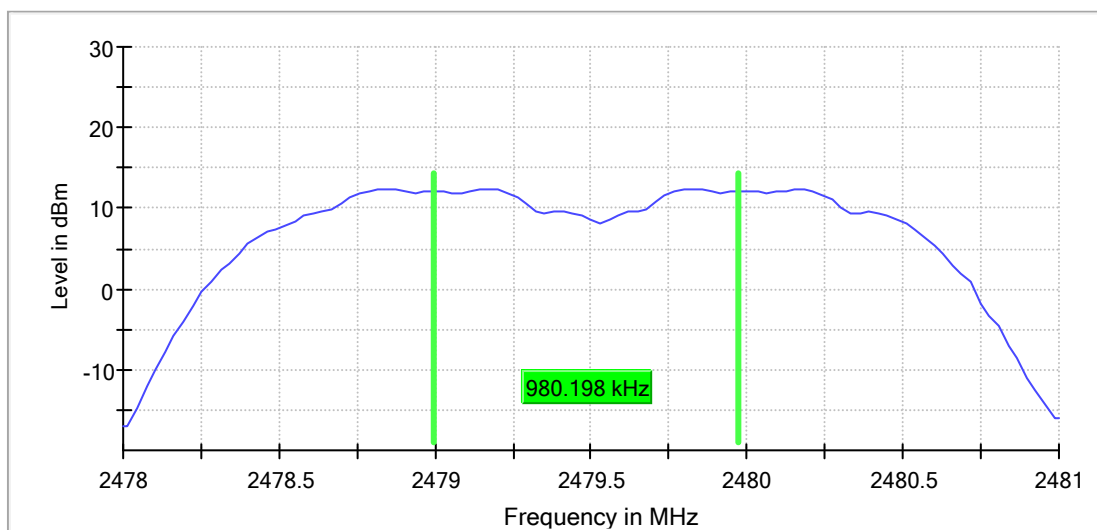
CFS



EDR, High Channel

RBW=300kHz, VBW=300kHz

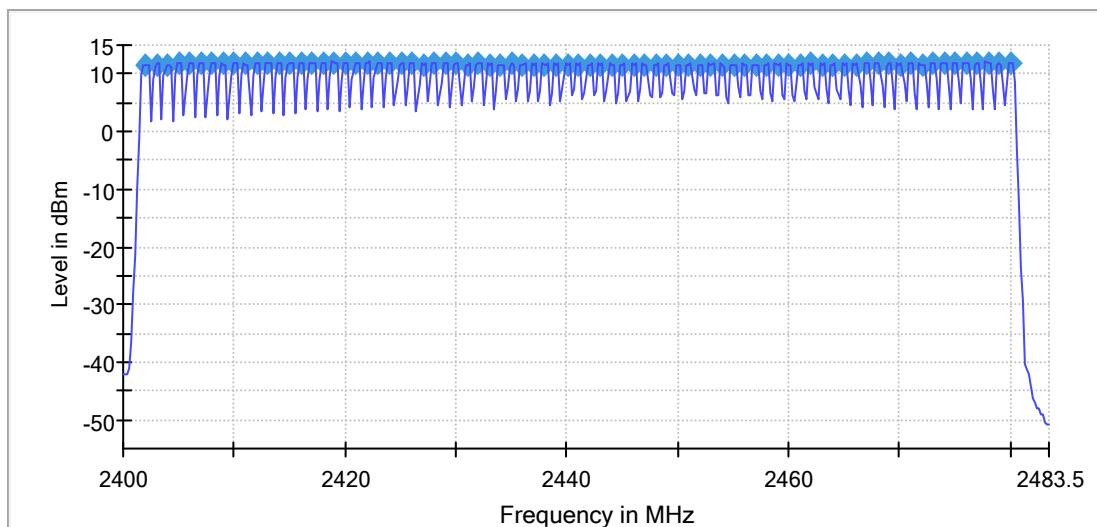
CFS



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

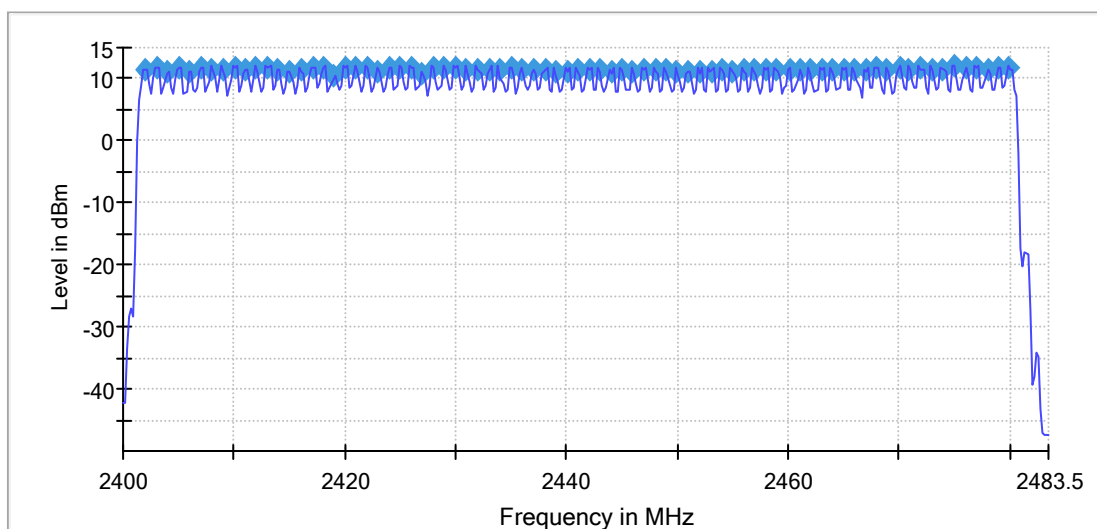
BDR, Hopping

Sequence



EDR, Hopping

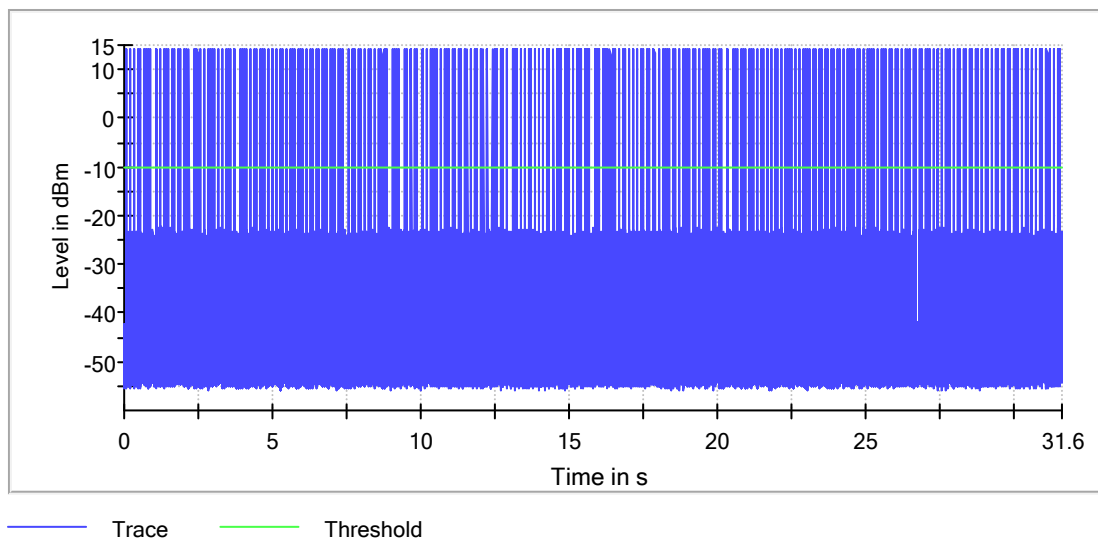
Sequence



Appendix B.6: Test Plots of Time of Occupancy

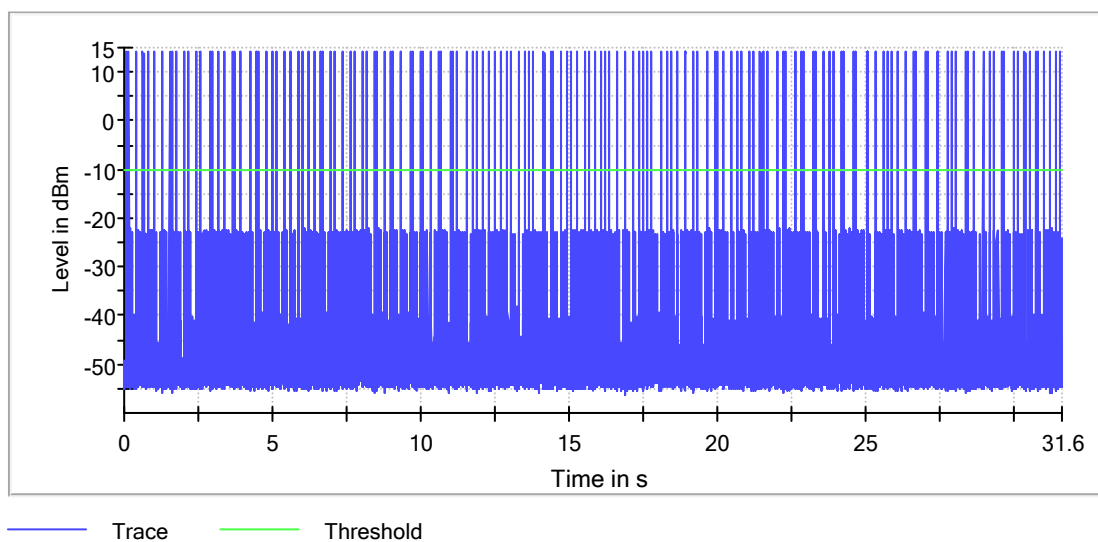
BDR Mode, DH1, Middle Channel

Time of Channel Occupancy



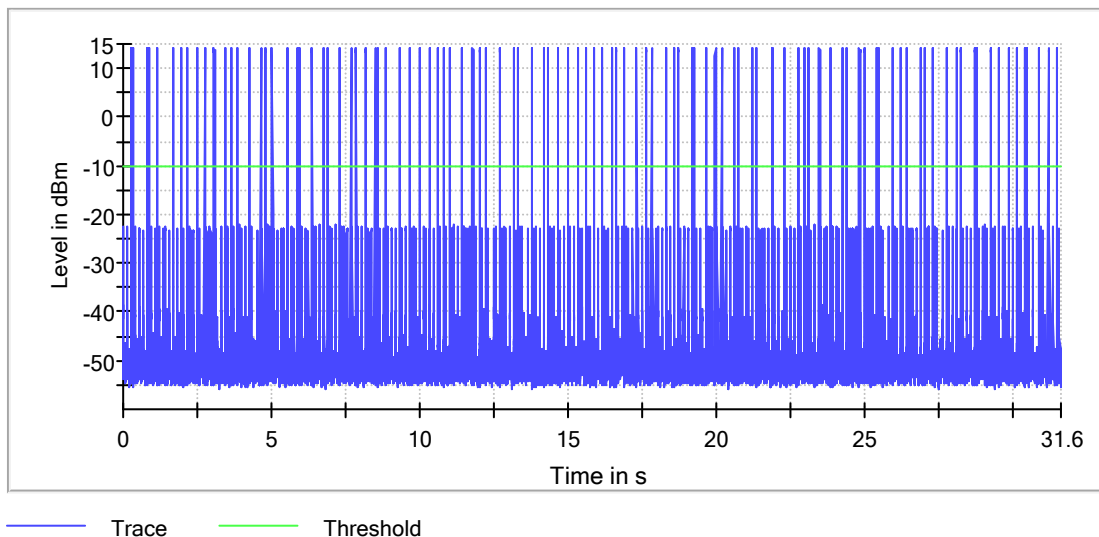
BDR Mode, DH3, Middle Channel

Time of Channel Occupancy(2)



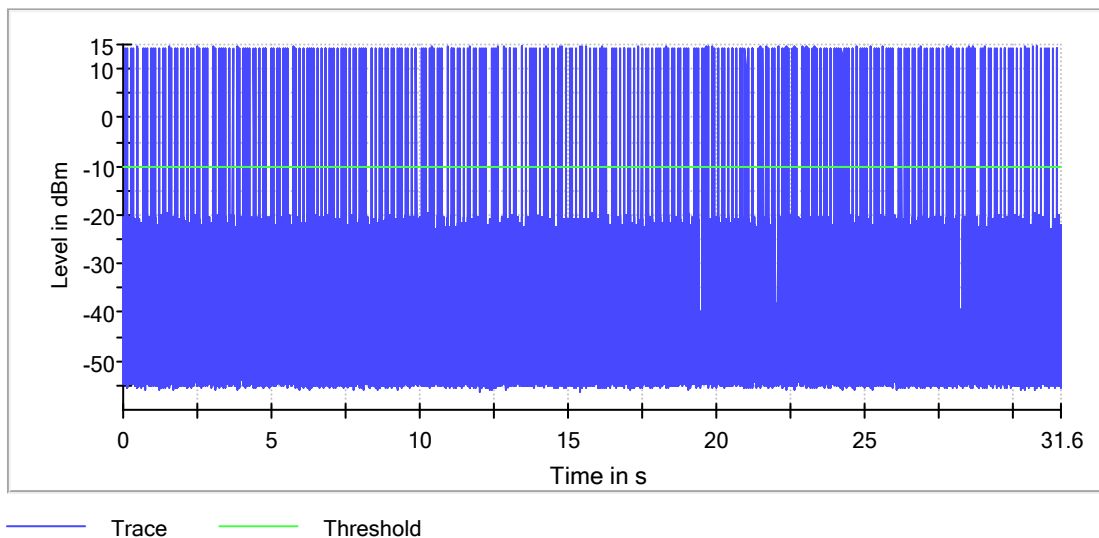
BDR Mode, DH5, Middle Channel

Time of Channel Occupancy(3)



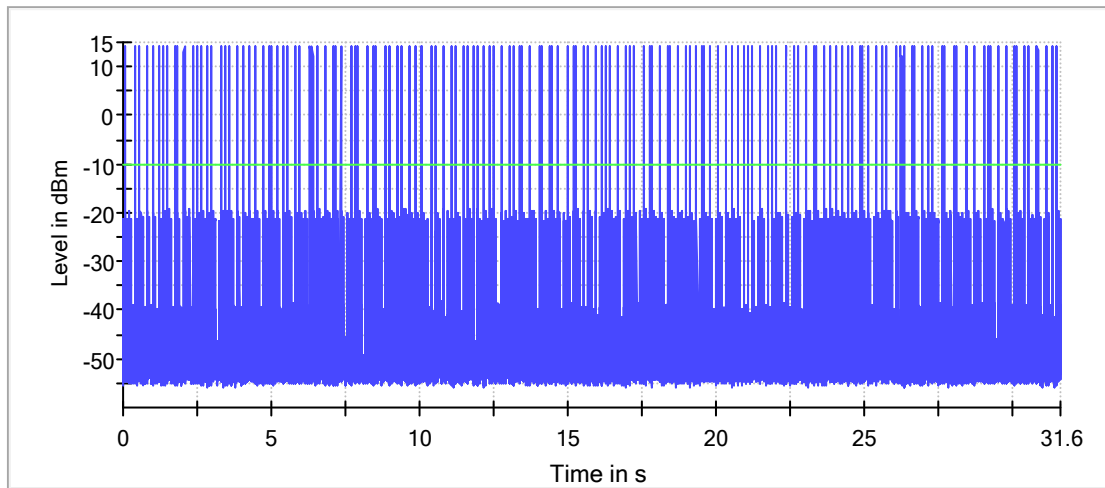
EDR Mode, 3DH1, Middle Channel

Time of Channel Occupancy



EDR Mode, 3DH3, Middle Channel

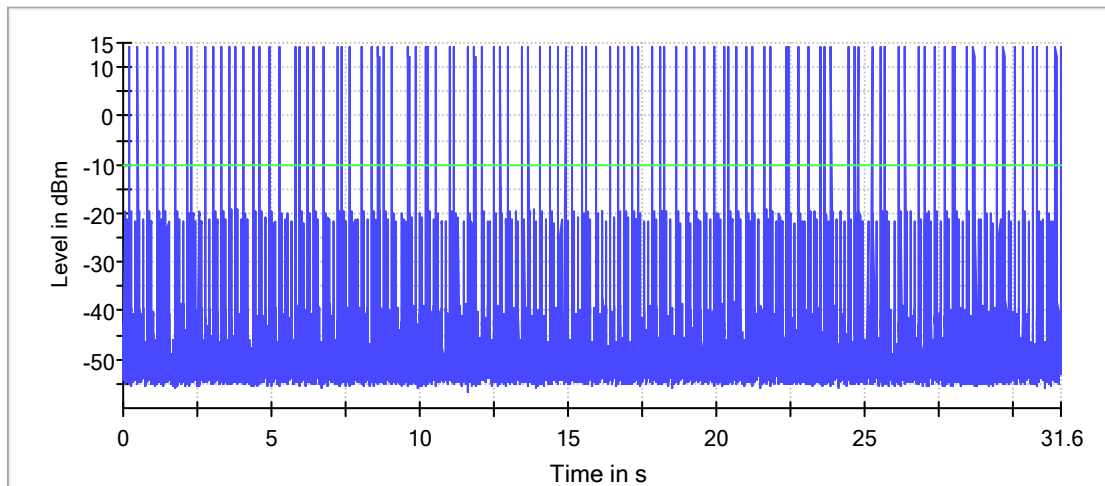
Time of Channel Occupancy(2)



Trace Threshold

EDR Mode, 3DH5, Middle Channel

Time of Channel Occupancy(3)



Trace Threshold

Appendix C

Test Results of Radiated Emission & AC Mains Conducted Emission

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<i>BDR mode, Low Channel</i>	18
<i>BDR mode, High Channel</i>	20
APPENDIX C.3: TEST PLOTS OF AC MAINS CONDUCTED EMISSION	22

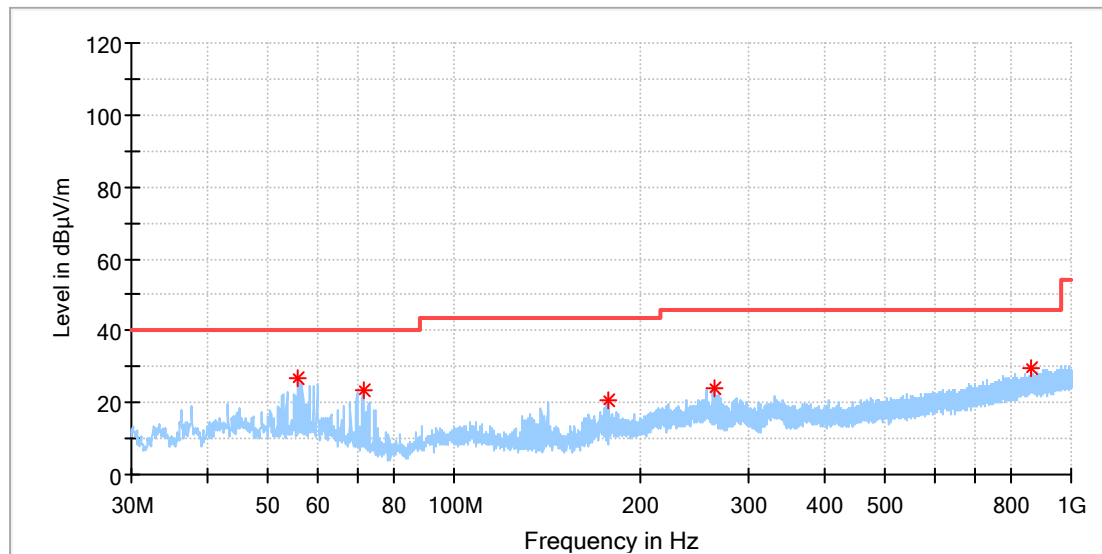
Note: The radiated spurious emission were measured from 9kHz to 25GHz, the measurement results below 30MHz and above 18GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

Appendix C.1: Test Plots of Radiated Spurious Emission

BDR mode, 30MHz - 1GHz

EUT Information

EUT Name:	Bluetooth Speaker
Model:	X4
Test Mode:	BT_DH5_Low CH
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

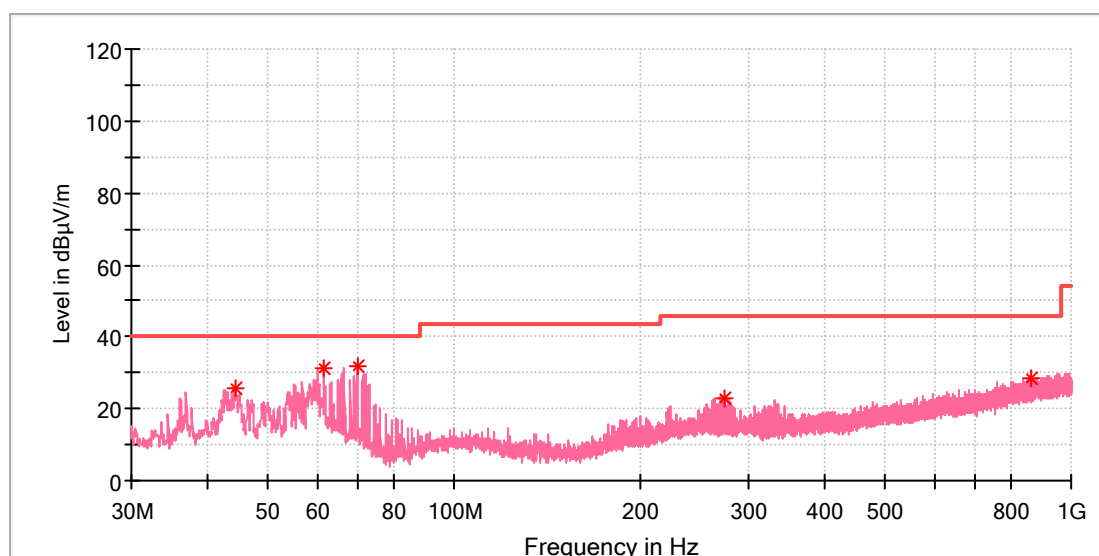


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
55.996000	26.55	40.00	13.45	100.0	H	0.0	-18.6
71.176500	23.33	40.00	16.67	100.0	H	0.0	-22.2
178.410000	20.61	43.50	22.89	100.0	H	289.0	-20.6
264.788500	23.77	46.00	22.23	100.0	H	0.0	-17.0
863.569500	29.48	46.00	16.52	100.0	H	33.0	-5.3

EUT Information

EUT Name:	Bluetooth Speaker
Model:	X4
Test Mode:	BT_DH5_Low CH
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

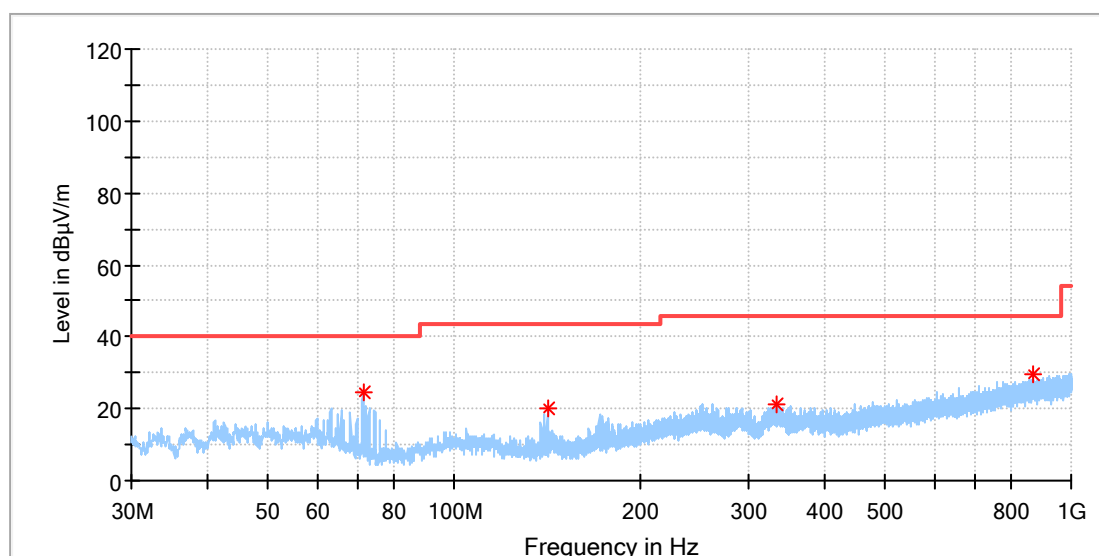


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
44.307500	25.60	40.00	14.40	100.0	V	0.0	-19.0
61.573500	31.50	40.00	8.50	100.0	V	23.0	-19.3
69.624500	32.03	40.00	7.97	100.0	V	23.0	-21.7
274.391500	23.05	46.00	22.95	100.0	V	209.0	-16.8
858.234500	28.65	46.00	17.35	100.0	V	209.0	-5.4

EUT Information

EUT Name: Bluetooth Speaker
Model: X4
Test Mode: BT_DH5_High CH
Test Voltage:: AC 120V, 60Hz
Remark: Temp 24 Humi:47%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin

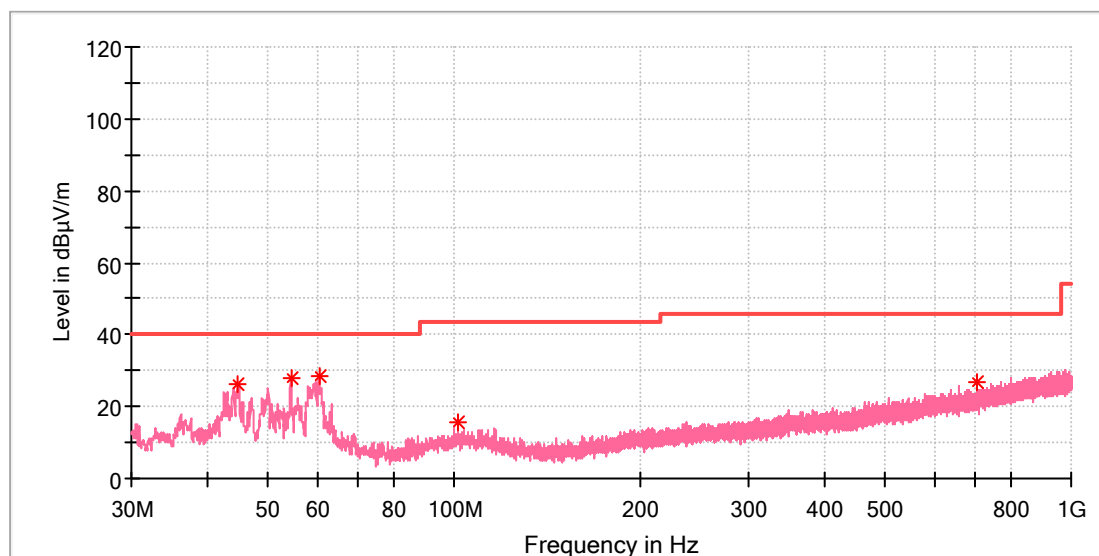


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
71.176500	24.69	40.00	15.31	100.0	H	356.0	-22.2
141.598500	20.13	43.50	23.37	100.0	H	244.0	-22.2
333.464500	21.40	46.00	24.60	100.0	H	29.0	-15.3
864.636500	29.35	46.00	16.65	100.0	H	318.0	-5.3

EUT Information

EUT Name: Bluetooth Speaker
Model: X4
Test Mode: BT_DH5_High CH
Test Voltage:: AC 120V, 60Hz
Remark: Temp 24 Humi:47%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



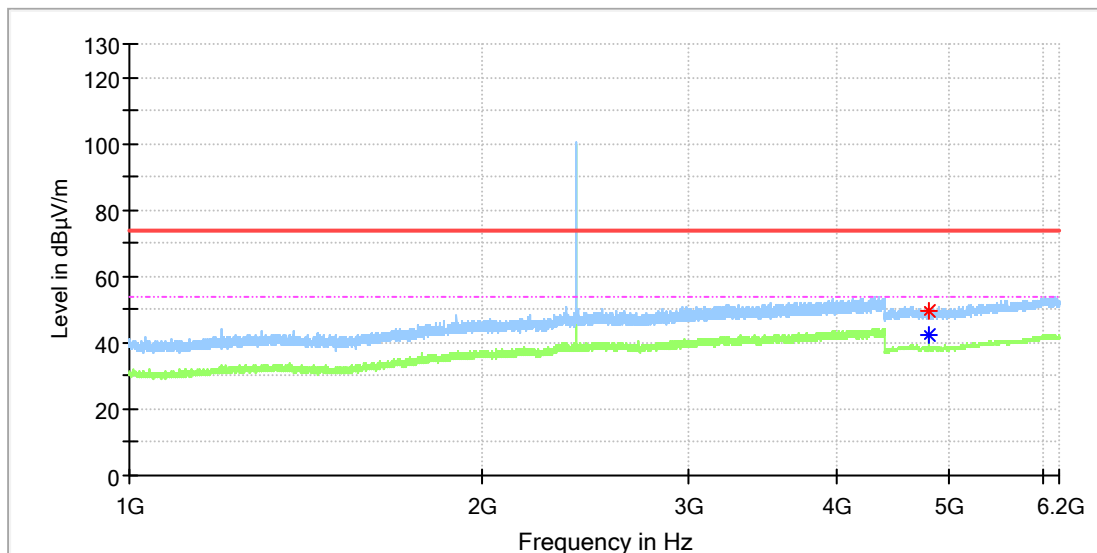
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
44.744000	26.05	40.00	13.95	100.0	V	117.0	-18.9
54.444000	27.91	40.00	12.09	100.0	V	124.0	-18.4
60.409500	28.48	40.00	11.52	100.0	V	268.0	-19.1
101.392000	15.43	43.50	28.07	100.0	V	279.0	-18.9
703.180000	26.67	46.00	19.33	100.0	V	331.0	-8.0

BDR mode, 1GHz - 6.2GHz

EUT Information

EUT Name:	Bluetooth Speaker
Model:	X4
Test Mode:	BT_DH5_Low CH
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

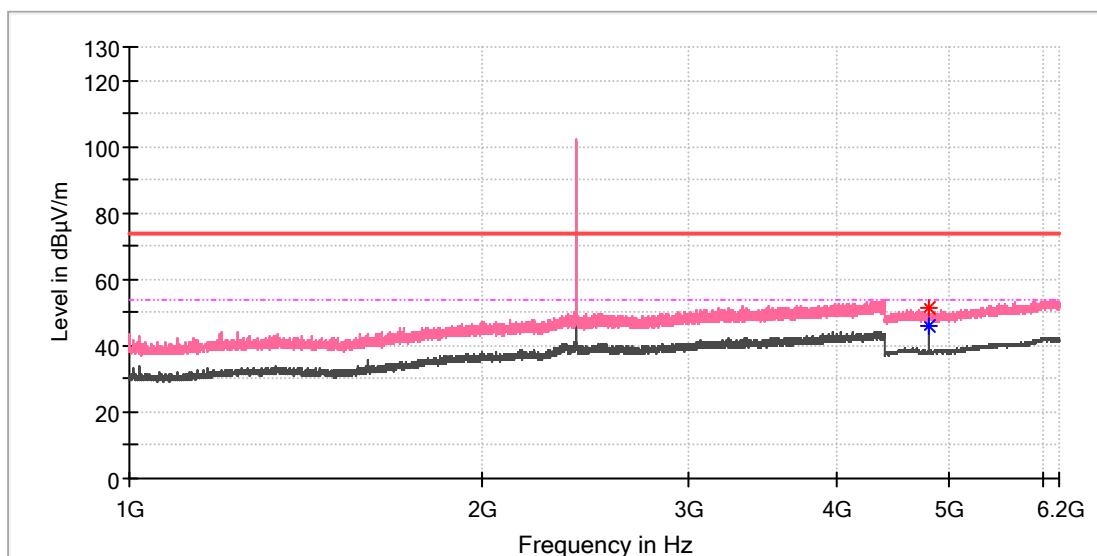


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.000000	49.77	---	74.00	24.23	150.0	H	300.0	11.8
4804.000000	---	42.14	54.00	11.86	150.0	H	71.0	11.8

EUT Information

EUT Name: Bluetooth Speaker
Model: X4
Test Mode: BT_DH5_Low CH
Test Voltage:: AC 120V, 60Hz
Remark: Temp 24 Humi:47%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin

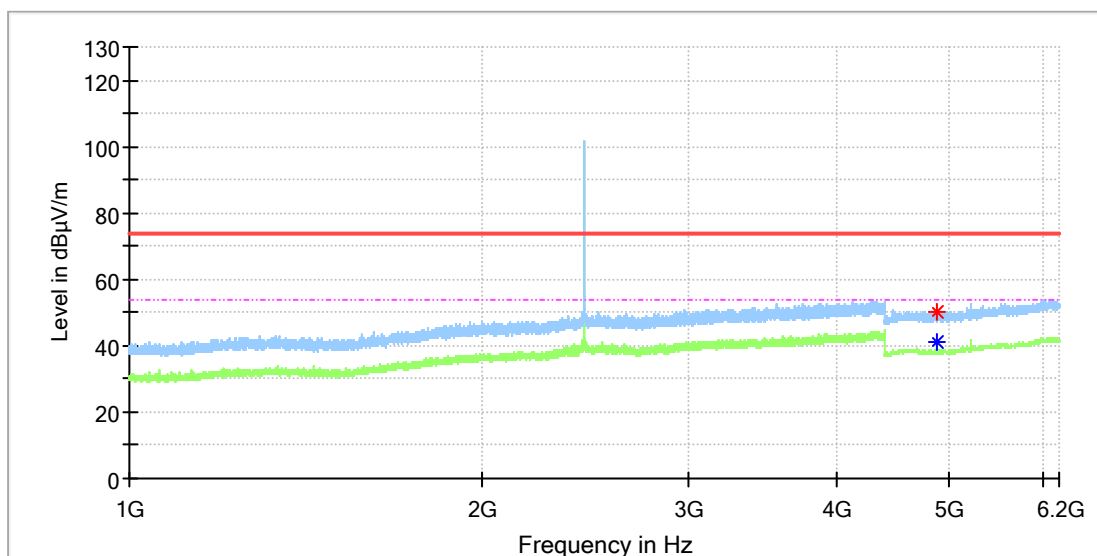


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.000000	---	45.72	54.00	8.28	150.0	V	308.0	11.8
4804.000000	51.68	---	74.00	22.32	150.0	V	308.0	11.8

EUT Information

EUT Name: Bluetooth Speaker
Model: X4
Test Mode: BT_DH5_Mid CH
Test Voltage:: AC 120V, 60Hz
Remark: Temp 24 Humi:47%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin

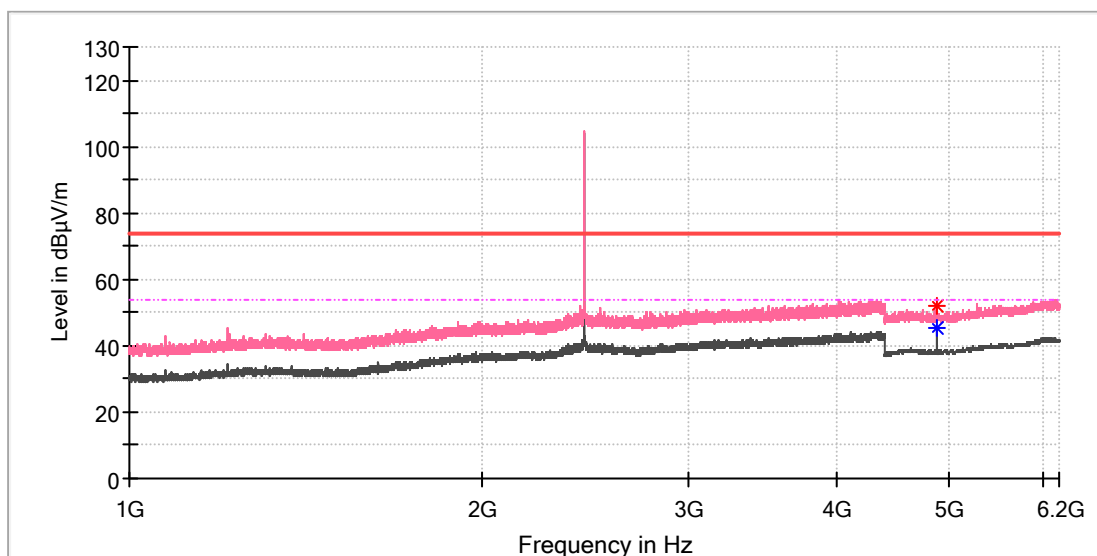


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4882.000000	---	41.00	54.00	13.00	150.0	H	317.0	11.8
4882.000000	50.35	---	74.00	23.65	150.0	H	317.0	11.8

EUT Information

EUT Name: Bluetooth Speaker
Model: X4
Test Mode: BT_DH5_Mid CH
Test Voltage:: AC 120V, 60Hz
Remark: Temp 24 Humi:47%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin

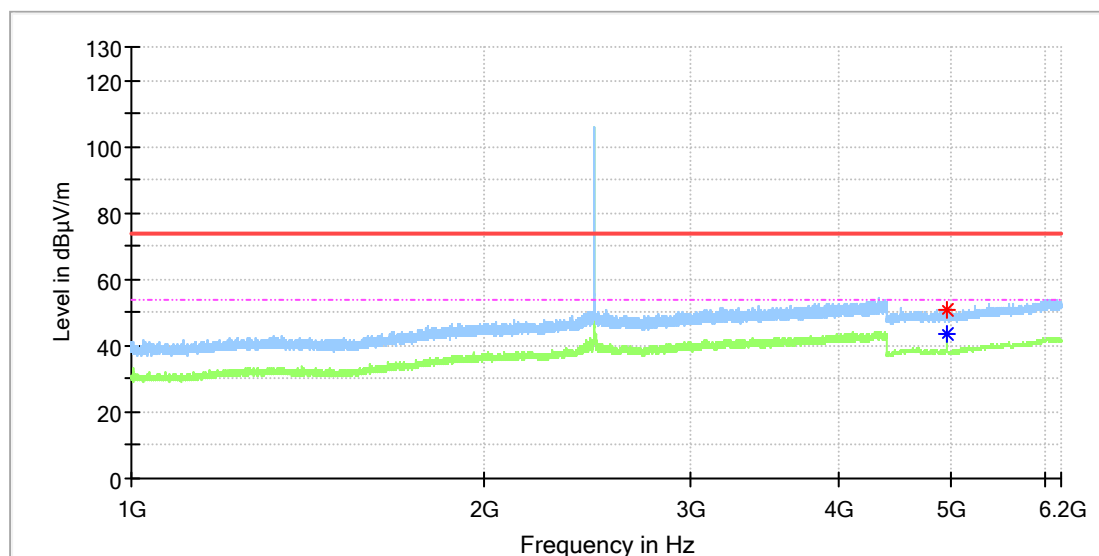


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4882.000000	---	45.62	54.00	8.38	150.0	V	284.0	11.8
4882.000000	51.92	---	74.00	22.08	150.0	V	314.0	11.8

EUT Information

EUT Name: Bluetooth Speaker
Model: X4
Test Mode: BT_DH5_High CH
Test Voltage:: AC 120V, 60Hz
Remark: Temp 24 Humi:47%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin

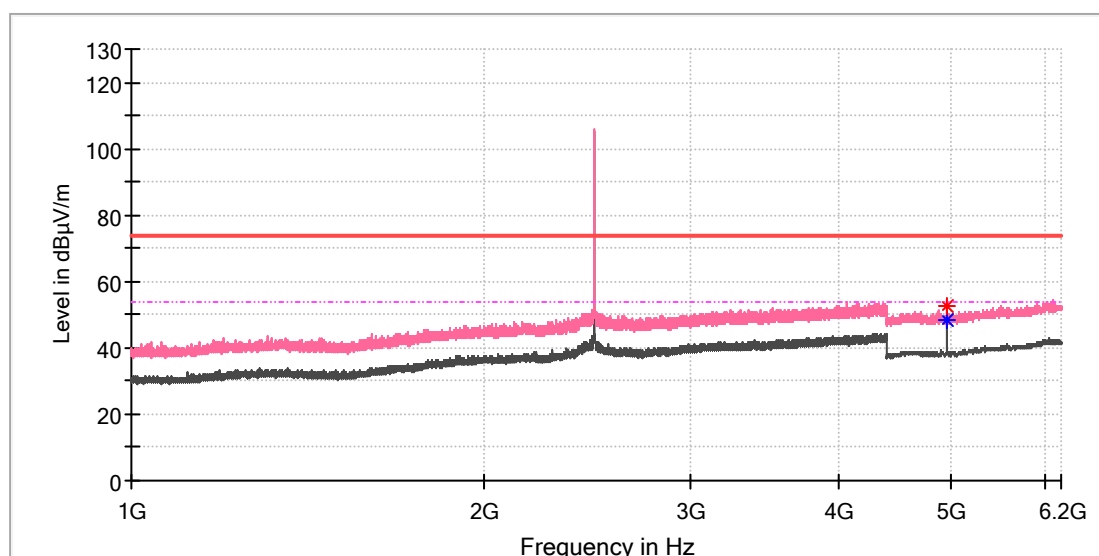


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.000000	50.70	---	74.00	23.30	150.0	H	268.0	11.8
4960.000000	---	43.70	54.00	10.30	150.0	H	268.0	11.8

EUT Information

EUT Name:	Bluetooth Speaker
Model:	X4
Test Mode:	BT_DH5_High CH
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



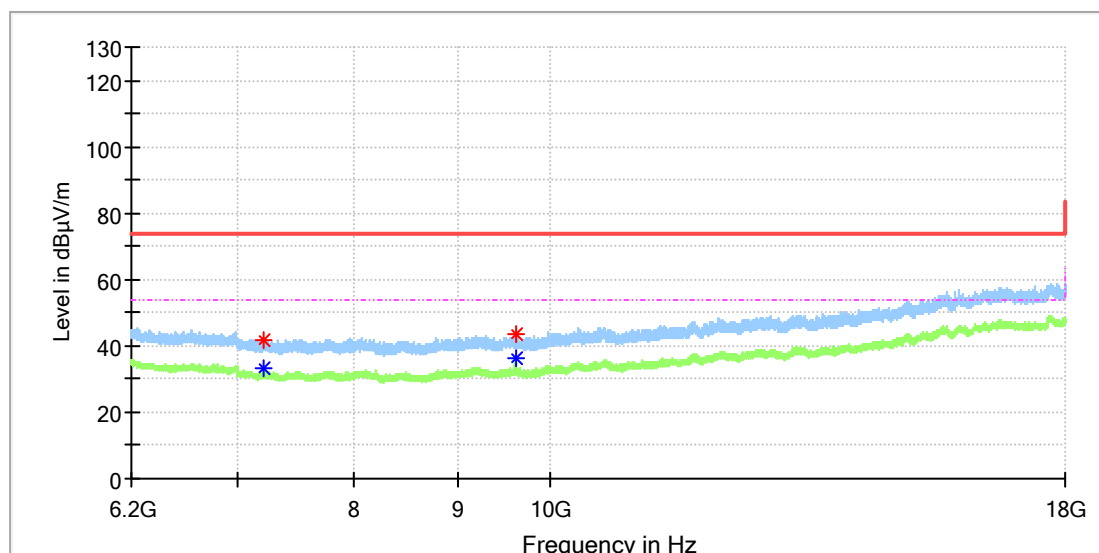
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.000000	52.56	---	74.00	21.44	150.0	V	262.0	11.8
4960.000000	---	48.08	54.00	5.92	150.0	V	262.0	11.8

BDR mode, 6.2GHz - 18GHz

EUT Information

EUT Name: Bluetooth Speaker
Model: X4
Test Mode: BT_DH5_Low CH
Test Voltage:: AC 120V, 60Hz
Remark: Temp 24 Humi:47%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin

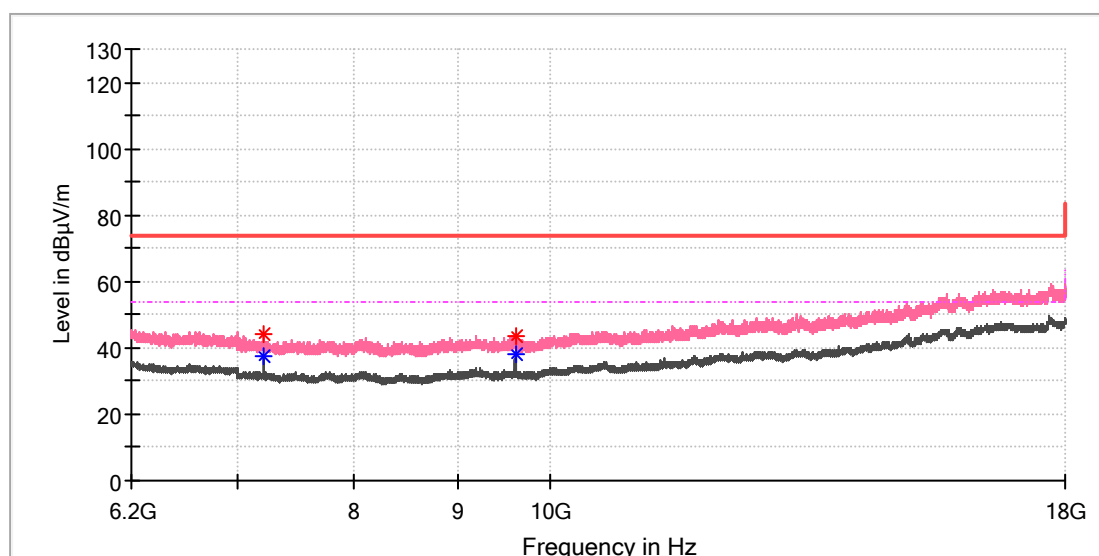


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7205.458333	---	33.32	54.00	20.68	150.0	H	264.0	8.8
7206.441667	41.79	---	74.00	32.21	150.0	H	307.0	8.8
9607.741667	---	36.47	54.00	17.53	150.0	H	334.0	10.4
9608.725000	43.40	---	74.00	30.60	150.0	H	334.0	10.4

EUT Information

EUT Name: Bluetooth Speaker
Model: X4
Test Mode: BT_DH5_Low CH
Test Voltage:: AC 120V, 60Hz
Remark: Temp 24 Humi:47%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin

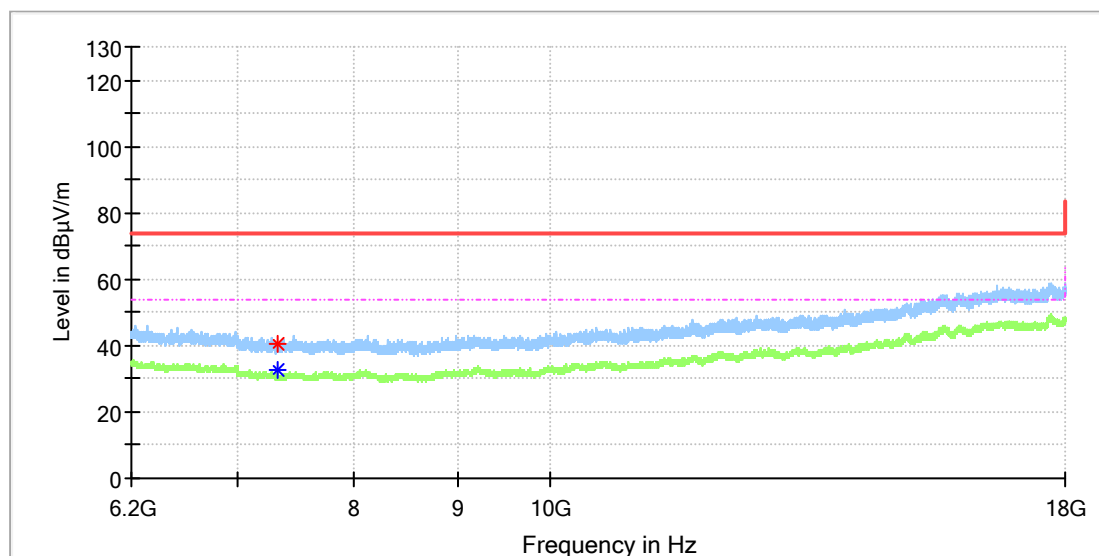


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7205.458333	43.94	---	74.00	30.06	150.0	V	69.0	8.8
7205.950000	---	37.78	54.00	16.22	150.0	V	69.0	8.8
9607.741667	43.76	---	74.00	30.24	150.0	V	280.0	10.4
9608.233333	---	38.16	54.00	15.84	150.0	V	280.0	10.4

EUT Information

EUT Name: Bluetooth Speaker
Model: X4
Test Mode: BT_DH5_Mid CH
Test Voltage:: AC 120V, 60Hz
Remark: Temp 24 Humi:47%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin

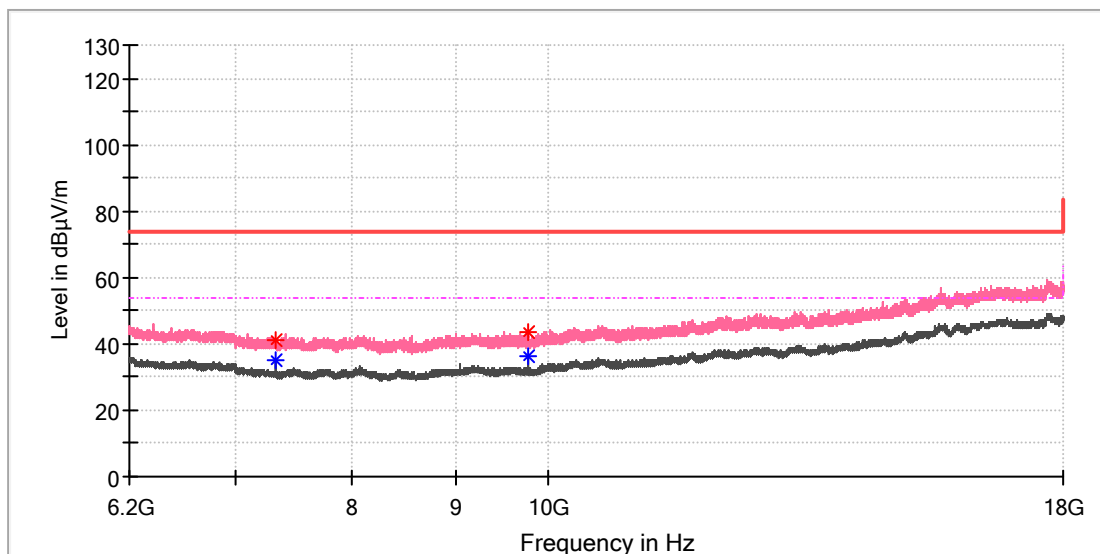


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7322.966667	---	32.81	54.00	21.19	150.0	H	259.0	8.2
7327.883333	40.78	---	74.00	33.22	150.0	H	163.0	8.1

EUT Information

EUT Name: Bluetooth Speaker
Model: X4
Test Mode: BT_DH5_Mid CH
Test Voltage:: AC 120V, 60Hz
Remark: Temp 24 Humi:47%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin

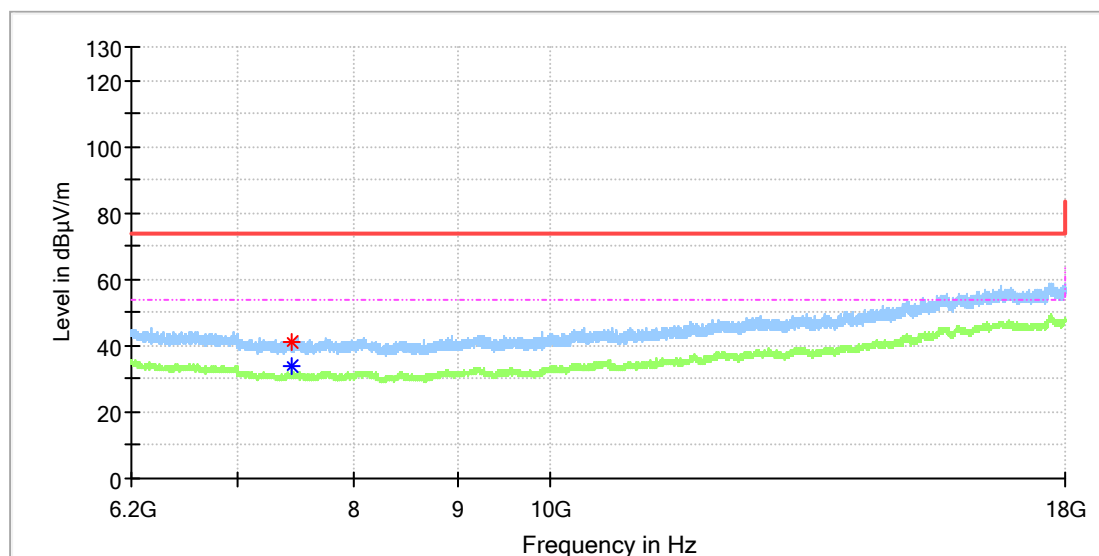


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7322.475000	---	34.83	54.00	19.17	150.0	V	68.0	8.2
7324.933333	41.27	---	74.00	32.73	150.0	V	282.0	8.2
9763.108333	43.35	---	74.00	30.65	150.0	V	81.0	10.4
9763.600000	---	36.07	54.00	17.93	150.0	V	252.0	10.4

EUT Information

EUT Name: Bluetooth Speaker
Model: X4
Test Mode: BT_DH5_High CH
Test Voltage:: AC 120V, 60Hz
Remark: Temp 24 Humi:47%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin

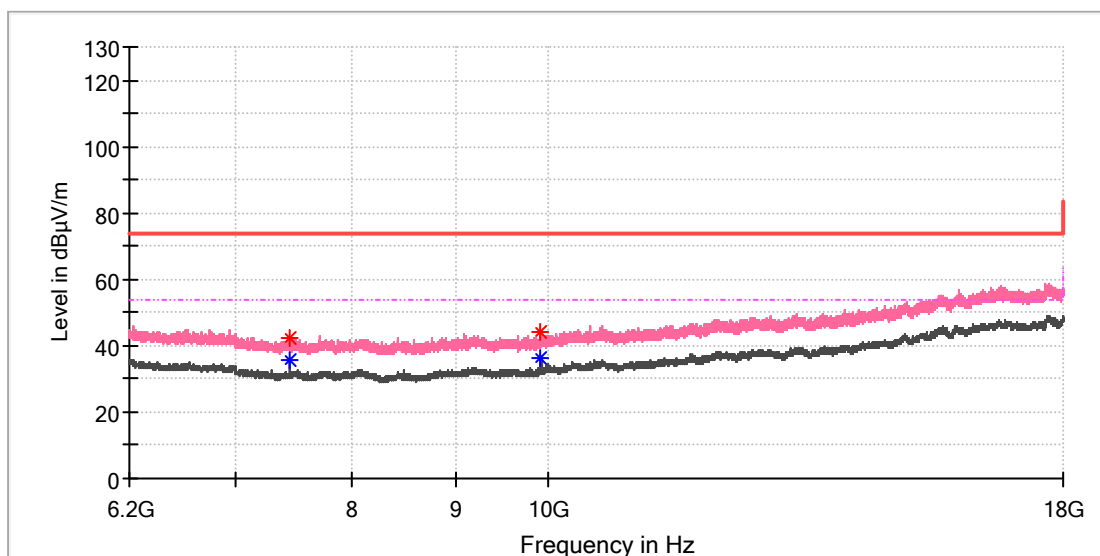


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7439.491667	---	33.87	54.00	20.13	150.0	H	65.0	8.4
7440.475000	41.08	---	74.00	32.92	150.0	H	65.0	8.4

EUT Information

EUT Name: Bluetooth Speaker
Model: X4
Test Mode: BT_DH5_High CH
Test Voltage:: AC 120V, 60Hz
Remark: Temp 24 Humi:47%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

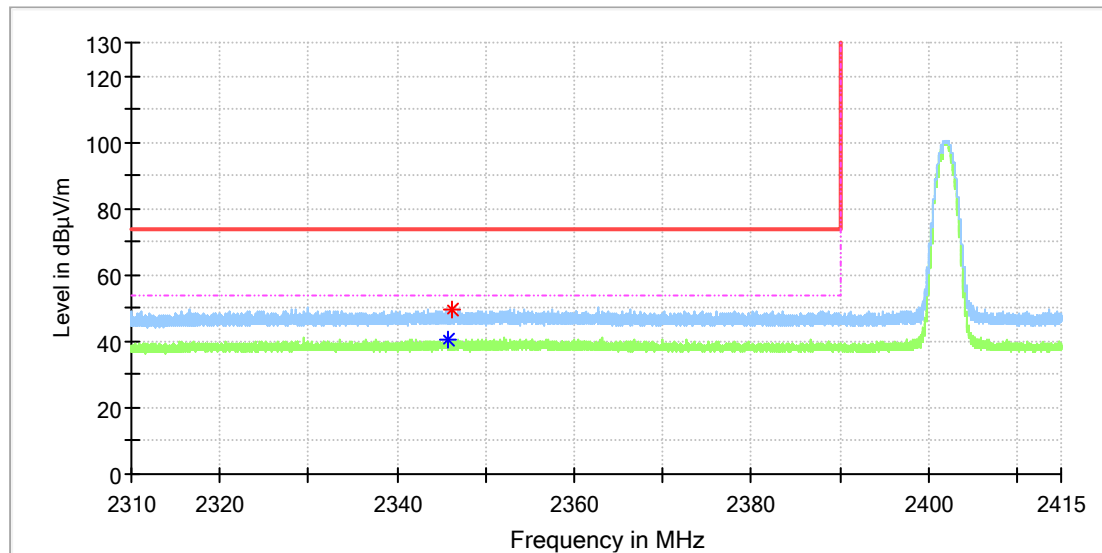
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7439.983333	---	35.90	54.00	18.10	150.0	V	260.0	8.4
7439.983333	42.60	---	74.00	31.40	150.0	V	92.0	8.5
9919.950000	44.12	---	74.00	29.88	150.0	V	274.0	10.8
9919.950000	---	36.17	54.00	17.83	150.0	V	274.0	10.8

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

BDR mode, Low Channel

EUT Information

EUT Name:	Bluetooth Speaker
Model:	X4
Test Mode:	BT_DH5_Low CH
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

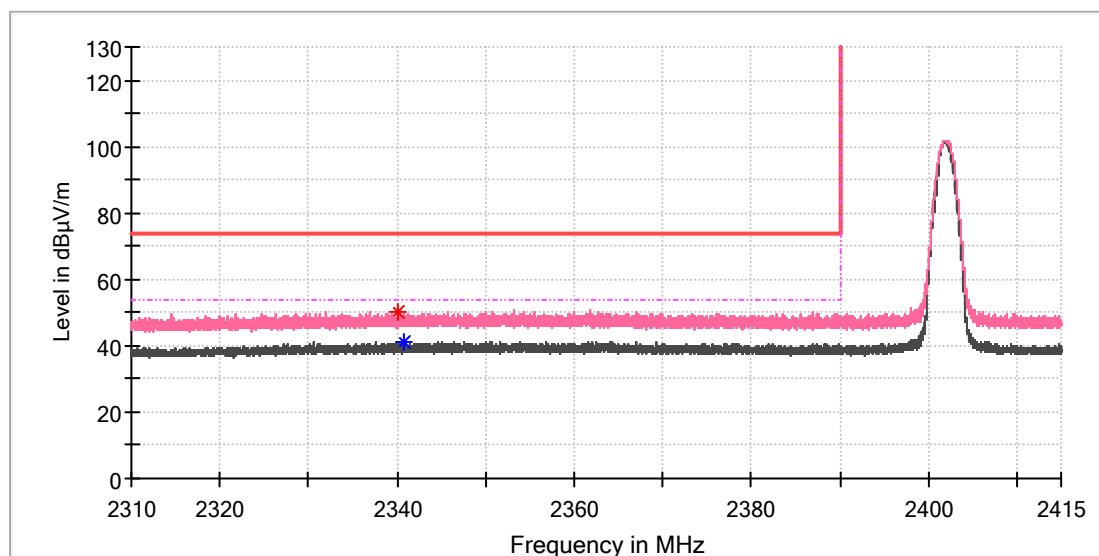


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2345.757750	---	40.28	54.00	13.72	150.0	H	70.0	6.9
2346.230250	49.69	---	74.00	24.31	150.0	H	59.0	6.9

EUT Information

EUT Name: Bluetooth Speaker
Model: X4
Test Mode: BT_DH5_Low CH
Test Voltage:: AC 120V, 60Hz
Remark: Temp 24 Humi:47%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



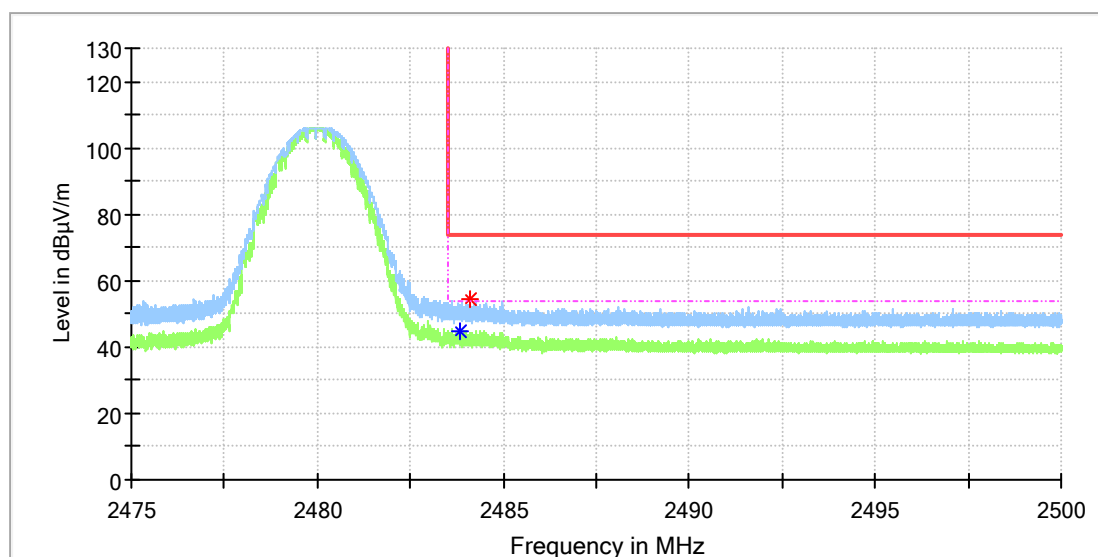
Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2340.208500	50.24	---	74.00	23.76	150.0	V	213.0	6.8
2340.681000	---	40.99	54.00	13.01	150.0	V	0.0	6.8

BDR mode, High Channel

EUT Information

EUT Name:	Bluetooth Speaker
Model:	X4
Test Mode:	BT_DH5_High CH
Test Voltage::	AC 120V, 60Hz
Remark:	Temp 24 Humi:47%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

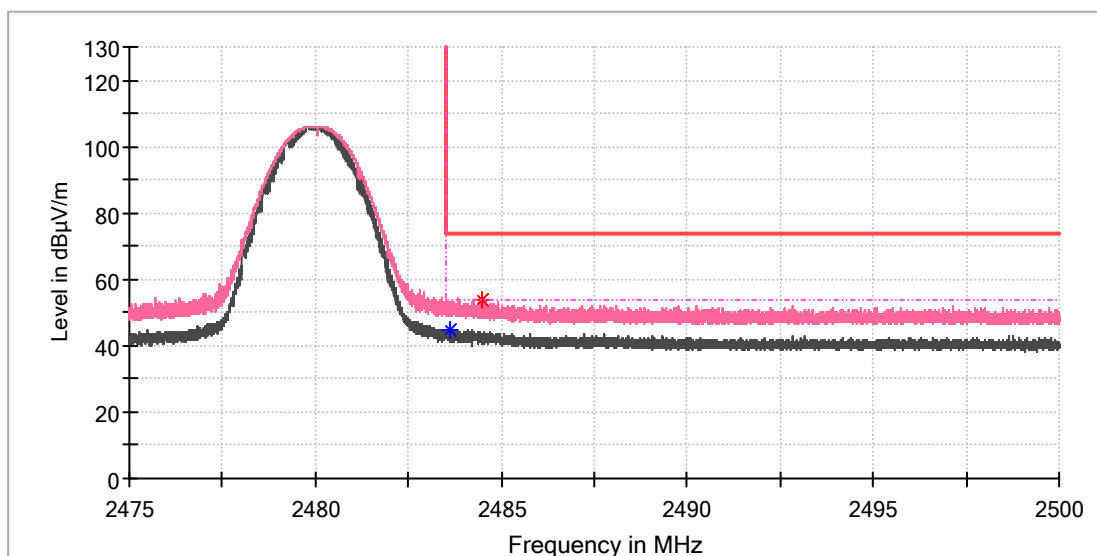


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.821250	---	45.00	54.00	9.00	150.0	H	309.0	7.4
2484.130000	54.54	---	74.00	19.46	150.0	H	309.0	7.4

EUT Information

EUT Name: Bluetooth Speaker
Model: X4
Test Mode: BT_DH5_High CH
Test Voltage:: AC 120V, 60Hz
Remark: Temp 24 Humi:47%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



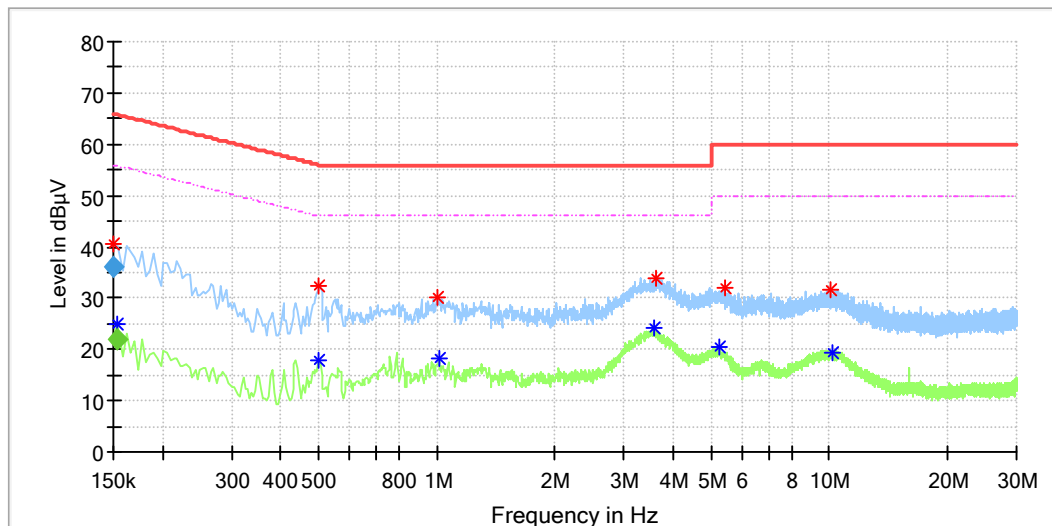
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.625000	---	44.68	54.00	9.32	150.0	V	250.0	7.4
2484.507500	53.73	---	74.00	20.27	150.0	V	250.0	7.4

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

EUT Information

EUT Name: Bluetooth speaker
Order No: 168307454 item 100
Model: X2
Test Model: Charging+BT Playing
Test Voltage: DC 5V by Adapter
Test By: PerLe Xia
Review By: Gary Chen
Remark: SR2



Critical_Freqs

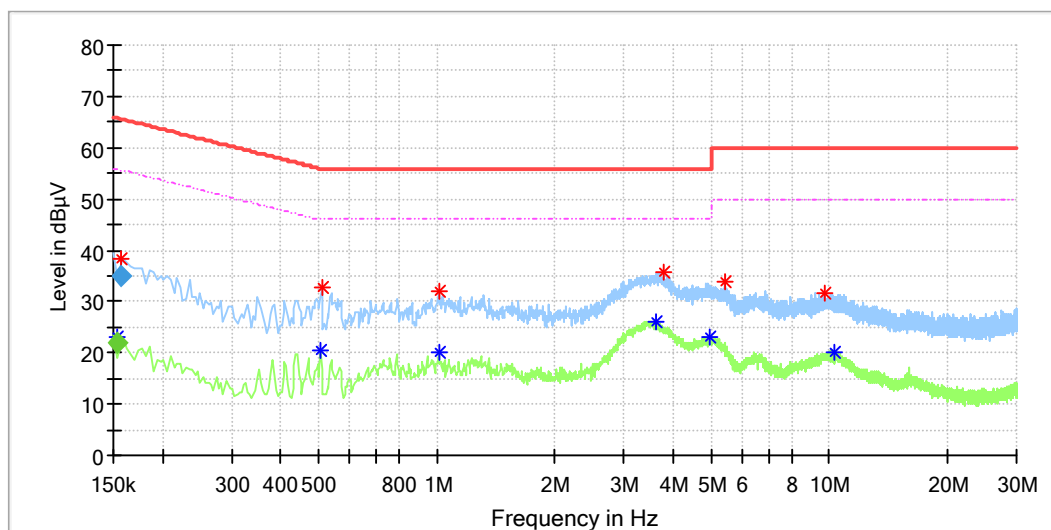
Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line
0.150000	40.68	---	65.78	25.10	---	L1
0.154000	---	25.10	55.78	30.68	---	L1
0.498000	---	18.01	46.03	28.02	---	L1
0.502000	32.39	---	56.00	23.61	---	L1
1.002000	30.26	---	56.00	25.74	---	L1
1.014000	---	18.33	46.00	27.67	---	L1
3.566000	---	24.07	46.00	21.93	---	L1
3.634000	33.99	---	56.00	22.01	---	L1
5.258000	---	20.32	50.00	29.68	---	L1
5.422000	31.87	---	60.00	28.13	---	L1
10.114000	31.46	---	60.00	28.54	---	L1
10.214000	---	19.52	50.00	30.48	---	L1

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line
0.150000	36.02	---	66.00	29.98	1000.0	9.000	L1
0.154000	---	22.07	55.78	33.72	1000.0	9.000	L1

EUT Information

EUT Name: Bluetooth speaker
Order No: 168307454 item 100
Model: X2
Test Model: Charging+BT Playing
Test Voltage: DC 5V by Adapter
Test By: PerLe Xia
Review By: Gary Chen
Remark: SR2



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line
0.153500	---	23.13	55.57	32.43	---	N
0.157500	38.24	---	65.57	27.33	---	N
0.506000	---	20.39	46.00	25.61	---	N
0.510000	32.77	---	56.00	23.23	---	N
1.010000	---	20.19	46.00	25.81	---	N
1.010000	31.84	---	56.00	24.16	---	N
3.602000	---	26.06	46.00	19.94	---	N
3.790000	35.63	---	56.00	20.37	---	N
4.958000	---	22.96	46.00	23.04	---	N
5.398000	33.75	---	60.00	26.25	---	N
9.726000	31.69	---	60.00	28.31	---	N
10.286000	---	20.19	50.00	29.81	---	N

Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line
0.153500	---	21.86	55.81	33.95	1000.0	9.000	N
0.157500	34.99	---	65.60	30.60	1000.0	9.000	N