Prüfbericht-Nr.: *Test report no.*:	**CN23VFCA 001**	**Auftrags-Nr.:** *Order no.*:	168429638	**Page 1 of 23** *Seite 1 von 23*
Kunden-Referenz-Nr.: *Client reference no.*:	N/A	**Auftragsdatum:** *Order date:*	2023-05-26	
Auftraggeber: *Client*:	**Edifier International Limited** P.O. Box 6264 General Post Office Hong Kong			
Prüfgegenstand: *Test item*:	Wireless Noise Cancellation Over-Ear Headphones			
Bezeichnung / Typ-Nr.: *Identification / Type no.*:	EDF200126 (Trademark: EDIFIER, Xemal)			
Auftrags-Inhalt: *Order content*:	Type test			
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		RSS-247 Issue 2 February 2017 RSS-Gen Issue 5 March 2019	

Wareneingangsdatum: *Date of sample receipt*:	2023-06-07	Refer to photo documents
Prüfmuster-Nr.: *Test sample no:*	A003498734-001, 002	
Prüfzeitraum: *Testing period*:	2023-06-19 – 2023-07-04	
Ort der Prüfung: *Place of testing*:	TÜV Rheinland (Shenzhen) Co., Ltd.	
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Shenzhen) Co., Ltd.	
Prüfergebnis*: *Test result**:	Pass	

geprüft von: tested by:	X Signed by: Harry W. C. Wu	**genehmigt von:** *authorized by*:	X Signed by: Alex Lan
Datum: *Date:* 2023-07-07		**Ausstellungsdatum:** *Issue date:* 2023-07-10	
Stellung / Position:	Project Manager	**Stellung** / Position:	Reviewer

Sonstiges / *Other*:	FCC ID: Z9G-EDF208 IC: 10004A-EDF208 HVIN: EDF200126
Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery*:	Prüfmuster vollständig und unbeschädigt *Test item complete and undamaged*

* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
** Legend:*	*P(ass) = passed a.m. test specification(s)*	*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

TÜV Rheinland (Shenzhen) Co., Ltd. 1601 R&D Room, 1602-1604, 17-18F, Building 7 Site C, Vanke Cloud City Phase I, Xingke First Street, Xili Street, Xili Community, Nanshan District, Shenzhen 518052, P.R. China
Mail: service@de.tuv.com · Web: www.tuv.com

Anmerkungen
Remarks

1	The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request. *Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben.* *Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.*
2	As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged. *Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben.*
3	Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report. Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report. *Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.*
4	The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the “Zero Guard Band Rule” and “Simple Acceptance” in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019. *Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnisen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezueglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.*

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

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.

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

No.362, Huanguan Middle Road, Songyuansha Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China/518110

FCC Registration No.: 694916

IC Registration No.: 25069 and the CAB identifier is CN0078.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Radio Spectrum Testing (TS8997)				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Cal. until**
EXA Signal Analyzer, Multi-touch	Keysight	N9010B	MY60241175	2023-10-10
MXG X-Series RF Vector Signal Generator	Keysight	N5182B	MY61250137	2023-10-10
EXG X-Series Microwave Analog Signal Generator	Keysight	N5173B	MY61250141	2023-10-10
DC Power Supply	Keysight	E3642A	MY61276100	2023-10-10
Wireless Connectivity Tester	R&S	CMW270	102505	2023-10-10
Power Control Unit	Tonscend	JS0806-4ADC	N/A	2023-10-10
Automation Control Unit	Tonscend	JS0806-2	21C8060396	2023-10-10
Test Software	Tonscend	JS1120-3	N/A	N/A
Control PC	Lenovo	TianYi510S-071MB	YLX23JMF	N/A
Unwanted Emission Testing (TS9975)				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Cal. until**
EMI Test Receiver	R&S	ESR 7	102021	2023-08-02
Signal Analyzer	R&S	FSV 40	101439	2023-08-01
System Controller Interface	R&S	SCI-100	S10010038	N/A
Filterbank	R&S	Wlan	100759	2023-08-01
OSP	R&S	OSP 120	102040	N/A
Pre-amplifier	R&S	SCU08F1	08320031	2023-08-02
Amplifier	R&S	SCU-18F	180070	2023-08-02
Amplifier	R&S	SCU40A	100475	2023-08-02
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	2024-08-06
Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218717	2024-08-06
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	2024-08-27
Active Loop Antenna	Schwarzbeck	FMZB 1513	302	2023-08-06
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	2024-06-22

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

Parameter	Uncertainty (k=2)
Occupied Channel Bandwidth	± 2.08 %
RF output power, conducted	± 0.99 dB
RF power density, conducted	± 0.99 dB
Unwanted Emissions, conducted	± 0.89 dB
All emissions, radiated	± 4.17 dB

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B 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 Middle Road, Songyuansha Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China/518110 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 Bluetooth Headset, which supports Bluetooth dual mode technology.
The Classical Bluetooth and Bluetooth low energy can't transmit at the same time.
Alternative two different built-in batteries:

Description	Manufacturer	Model	Rating
Li-ion Polymer Battery	Golden CEL	503035	DC 3.7V, 500mAh
Li-ion Polymer Battery	WeAction	503035	DC 3.7V, 500mAh

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	Wireless Noise Cancellation Over-Ear Headphones
Type Designation	EDF200126
Trademark	EDIFIER, Xemal
FCC ID	Z9G-EDF208
IC	10004A-EDF208
HVIN	EDF200126
Extreme Temperature Range	0°C - +35°C
Operating Voltage	DC 5V, 1A via Type C interface or DC 3.7V, 500mAh via built-in battery
Technical Specification of Classical Bluetooth	
Bluetooth Core Version	Bluetooth 5.3
Operating Frequency band	2402 ~ 2480 MHz
Channel Number	79 channels
Channel separation	1MHz
Modulation	GFSK, π/4DQPSK, 8DPSK
Antenna Type	PCB antenna
Antenna Gain	2.0 dBi (Provided by the Client)
Technical Specification of Bluetooth Low Energy	
Bluetooth Core Version	Bluetooth 5.3
Operating Frequency band	2402 ~ 2480 MHz
Channel Number	40 channels
Channel separation	2MHz
Data rate	1Mbps, 2Mbps
Modulation	GFSK
Antenna Type	PCB antenna
Antenna Gain	2.0 dBi (Provided by the Client)

Table 3: RF Channel and Frequency of Classic 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: RF Channel and Frequency of Bluetooth Low Energy

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
00	**2402.00**	10	2422.00	20	2442.00	30	2462.00
01	2404.00	11	2424.00	21	2444.00	31	2464.00
02	2406.00	12	2426.00	22	2446.00	32	2466.00
03	2408.00	13	2428.00	23	2448.00	33	2468.00
04	2410.00	14	2430.00	24	2450.00	34	2470.00
05	2412.00	15	2432.00	25	2452.00	35	2472.00
06	2414.00	16	2434.00	26	2454.00	36	2474.00
07	2416.00	17	2436.00	27	2456.00	37	2476.00
08	2418.00	18	2438.00	28	2458.00	38	2478.00
09	2420.00	**19**	**2440.00**	29	2460.00	**39**	**2480.00**

3.3 Independent Operation Modes

The basic operation modes are:

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

B. On, Transmitting on Hopping channel

C. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

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

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

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

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

4.2 Test Operation and Test Software

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

According to clause 3.1, all test items were applied on model EDF200126 with Golden CEL Battery.

4.3 Special Accessories and Auxiliary Equipment

Table 5: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N or Rating
Laptop	Lenovo	T480	PF-16A6N8

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)

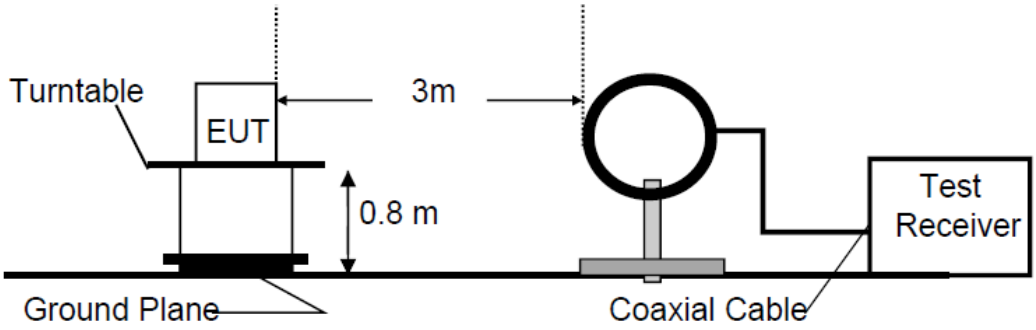


Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

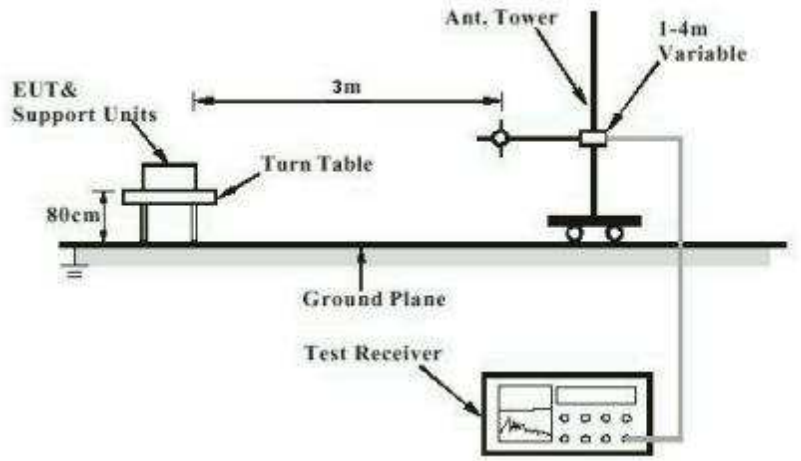


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

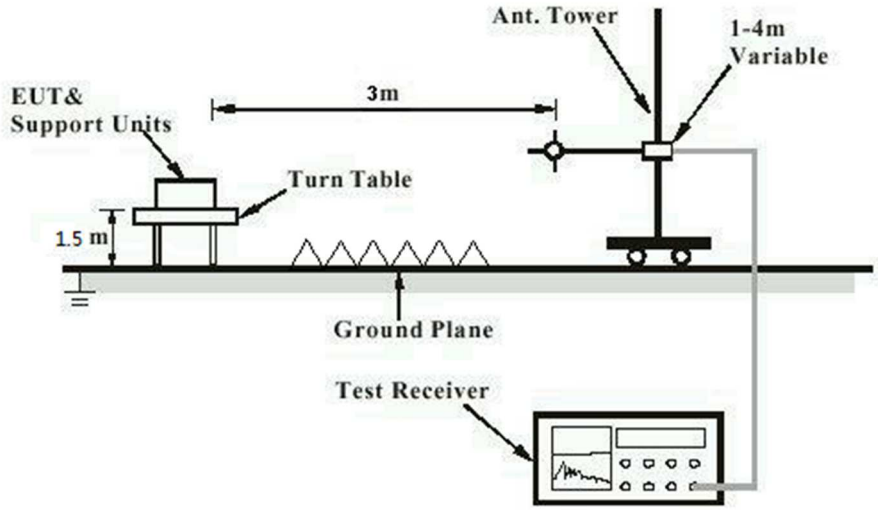
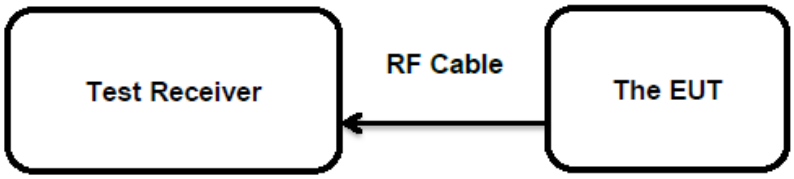


Diagram of Measurement Configuration for Conducted Transmitter Measurement



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 one PCB Layout antenna, the directional gain of antennas is 2 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

5.1.2 Maximum 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 conducted output power) < 4 W (e.i.r.p.)
Kind of test site	Shielded Room

Test Setup

Date of testing	2023-06-19 to 2023-07-04
Input voltage	DC 3.7V
Operation mode	A.1
Test channel	Low / Middle / High
Ambient temperature	25.8 ℃
Relative humidity	63 %
Atmospheric pressure	101 kPa

Table 6: Test Result of Maximum Conducted Output Power

Test Mode	Channel Frequency (MHz)	Measured Average Output Power		Limit
		(dBm)	(W)	(W)
BR	2402	4.01	0.00252	< 0.125
	2441	3.35	0.00216	
	2480	3.96	0.00249	
EDR	2402	1.63	0.00146	
	2441	0.29	0.00107	
	2480	0.90	0.00123	
Maximum Measured Value		4.01	0.00252	

Note: The cable loss is taken into account in results and the maximum e.i.r.p. is 6.01 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	:	2023-06-19 to 2023-07-04
Input voltage	:	DC 3.7V
Operation mode	:	A.1
Test channel	:	Low / Middle / High
Ambient temperature	:	25.8 ℃
Relative humidity	:	63 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

Table 7: Test Result of 99% Bandwidth

Test Mode	Channel Frequency (MHz)	Measured 99% Bandwidth (MHz)	Limit
BR	2402	0.83738	/
	2441	0.90680	
	2480	0.90490	
EDR	2402	1.1498	/
	2441	1.1506	
	2480	1.1599	

Note: The fundamental emissions stay within the allocated band 2400-2483.5MHz.

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	:	2023-06-19 to 2023-07-04
Input voltage	:	DC 3.7V
Operation mode	:	A.1
Test channel	:	Low / Middle / High
Ambient temperature	:	25.8 ℃
Relative humidity	:	63 %
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	:	2023-06-19 to 2023-07-04
Input voltage	:	DC 3.7V
Operation mode	:	A.1
Test channel	:	Low / Middle / High
Ambient temperature	:	Refer to test result
Relative humidity	:	Refer to test result
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 B.

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	:	2023-06-19 to 2023-07-04
Input voltage	:	DC 3.7V
Operation mode	:	A.1
Test channel	:	Low / Middle / High
Ambient temperature	:	25.8 ℃
Relative humidity	:	63 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

Table 8: Test Result of -20dB Bandwidth

Test Mode	Channel Frequency (MHz)	20dB Bandwidth (kHz)	2/3 of 20dB Bandwidth (kHz)	Limit (MHz)
BR	2402	939	626.000	/
	2441	1017	678.000	
	2480	1002	668.000	
EDR	2402	1251	834.000	/
	2441	1233	822.000	
	2480	1179	786.000	

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	:	2023-06-19 to 2023-07-04
Input voltage	:	DC 3.7V
Operation mode	:	B
Test channel	:	Low / Middle / High
Ambient temperature	:	25.8 ℃
Relative humidity	:	63 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

Table 9: Test Result of Carrier Frequency Separation

Test Mode	Channel	Result[MHz]	Limit[MHz]	Verdict
BR-DH5	Hop	0.994	≥0.678	PASS
EDR-3DH5	Hop	1.05	≥0.834	PASS

Note:

The limit is maximum 2/3 of the 20 dB bandwidth: 834KHz.

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	:	2023-06-19 to 2023-07-04
Input voltage	:	DC 3.7V
Operation mode	:	B
Ambient temperature	:	25.8 ℃
Relative humidity	:	63 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

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

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	:	2023-06-19 to 2023-07-04
Input voltage	:	DC 3.7V
Operation mode	:	B
Test channel	:	Low / Middle / High
Ambient temperature	:	25.8 ℃
Relative humidity	:	63 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

6 Photographs of the Test Set-Up

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

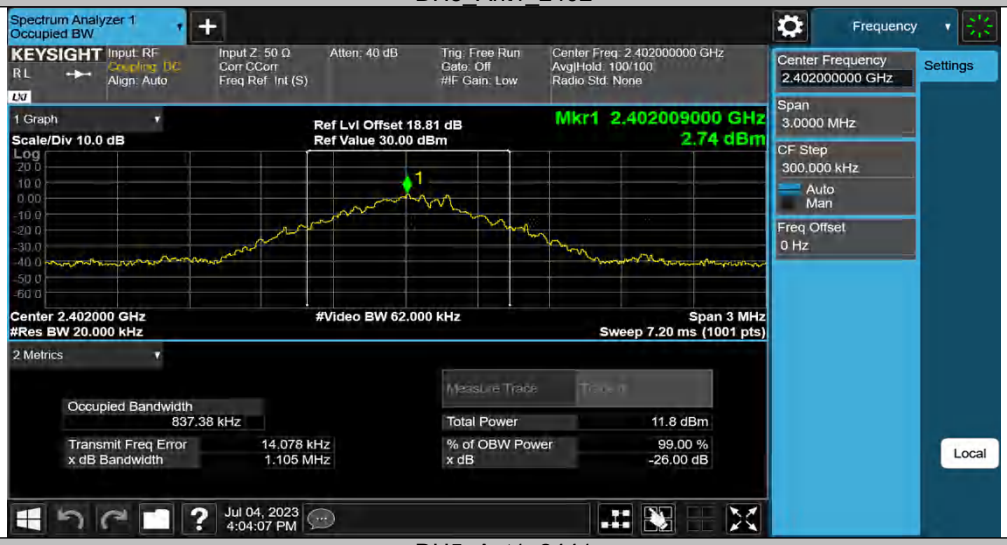
7 List of Tables

Appendix B: Test Results

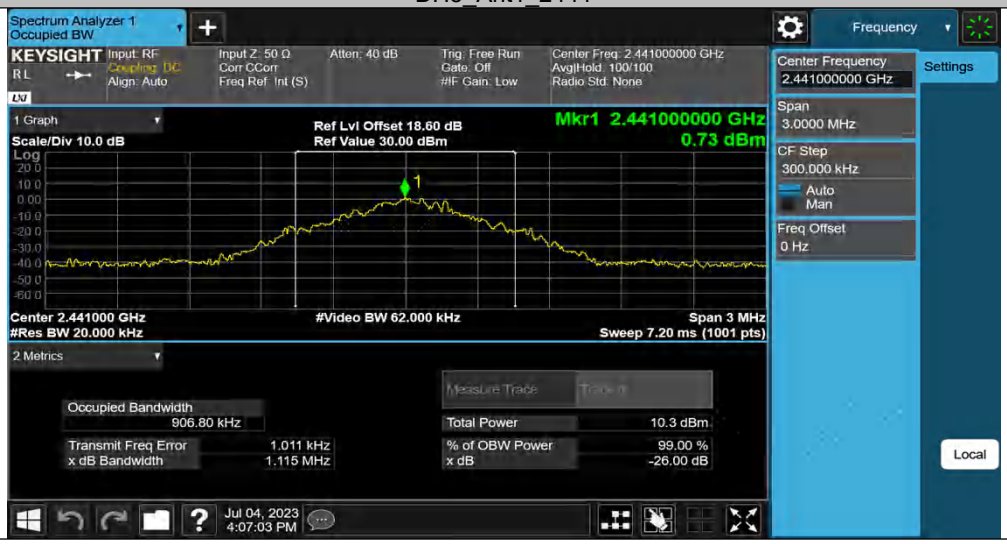
Appendix B.1: Test Results of 99% Bandwidth

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.83738	2401.5954	2402.4328	---	---
		2441	0.90680	2440.5476	2441.4544	---	---
		2480	0.90490	2479.5430	2480.4479	---	---
3DH5	Ant1	2402	1.1498	2401.4371	2402.5869	---	---
		2441	1.1506	2440.4344	2441.5850	---	---
		2480	1.1599	2479.4337	2480.5936	---	---

DH5_Ant1_2402

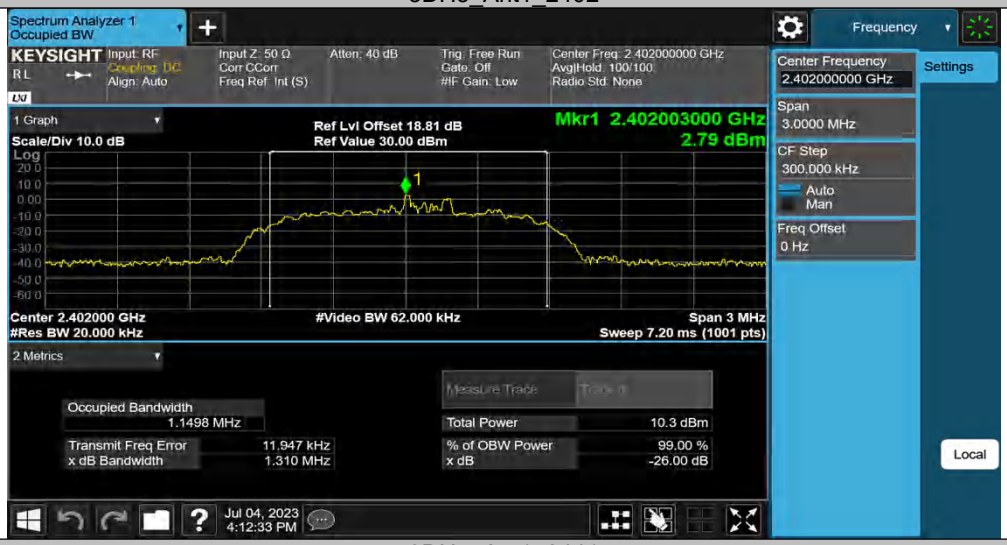


DH5_Ant1_2441



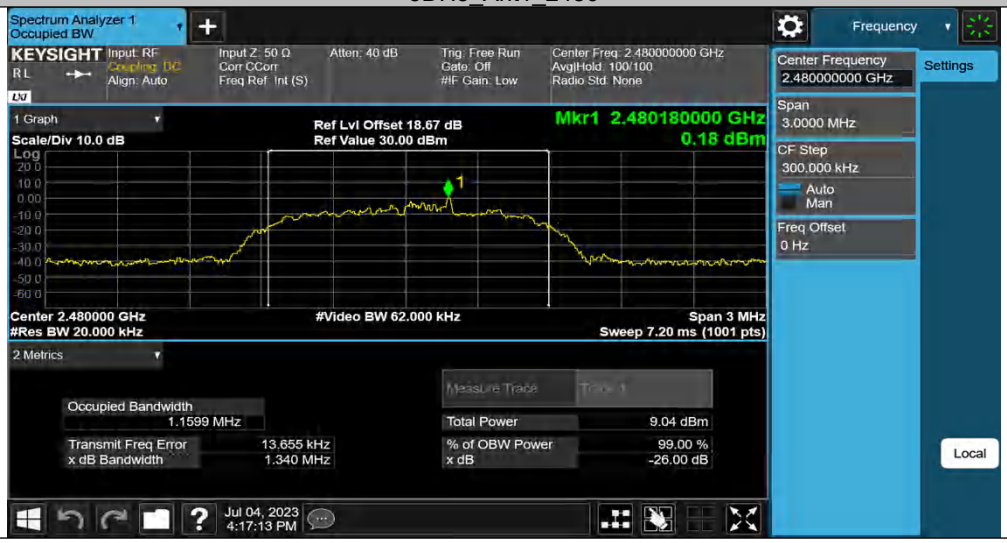
DH5_Ant1_2480

3DH5_Ant1_2402



3DH5_Ant1_2441

3DH5_Ant1_2480



Appendix B.2: Test Results of 20dB Bandwidth

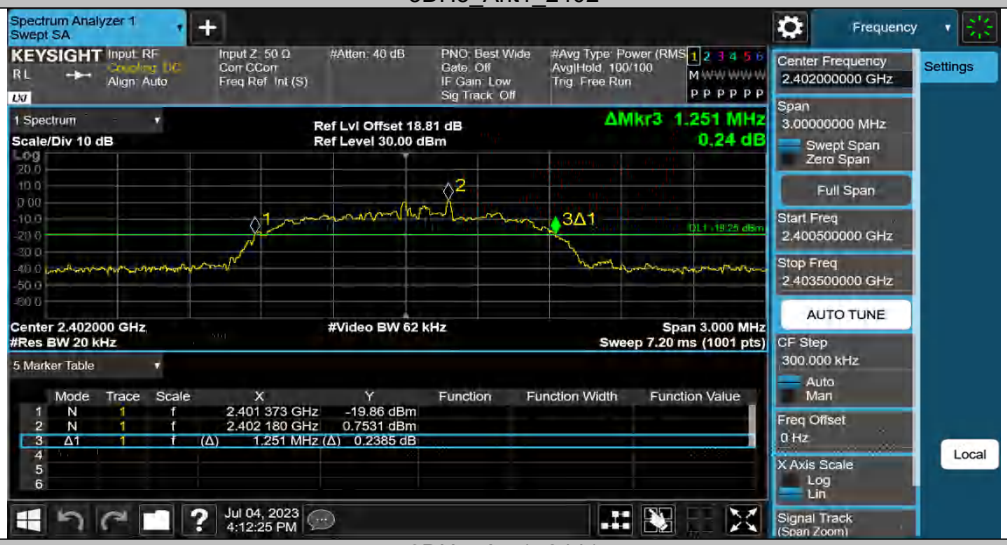
TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.939	2401.505	2402.444	---	---
		2441	1.017	2440.496	2441.513	---	---
		2480	1.002	2479.508	2480.510	---	---
3DH5	Ant1	2402	1.251	2401.373	2402.624	---	---
		2441	1.233	2440.382	2441.615	---	---
		2480	1.179	2479.427	2480.606	---	---

DH5_Ant1_2402

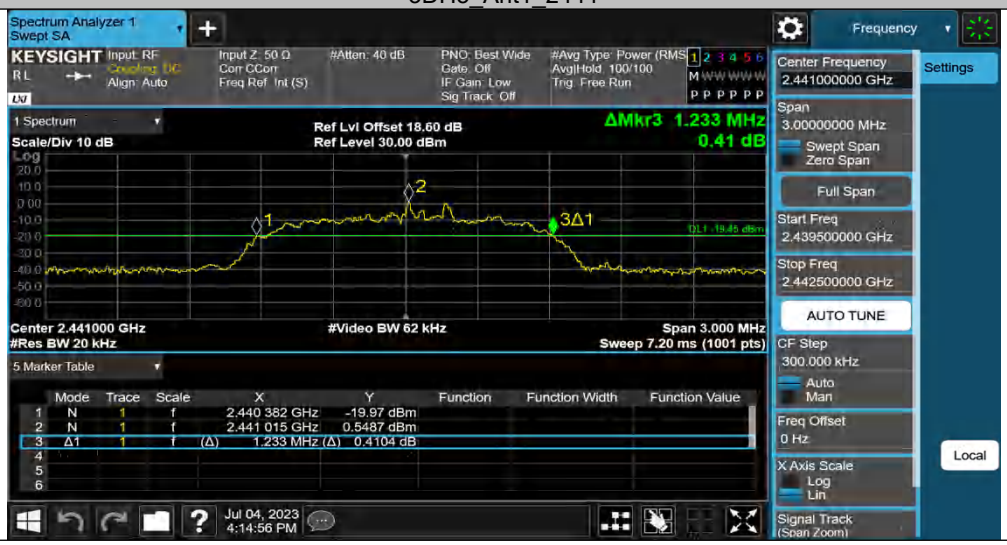
DH5_Ant1_2441

DH5_Ant1_2480

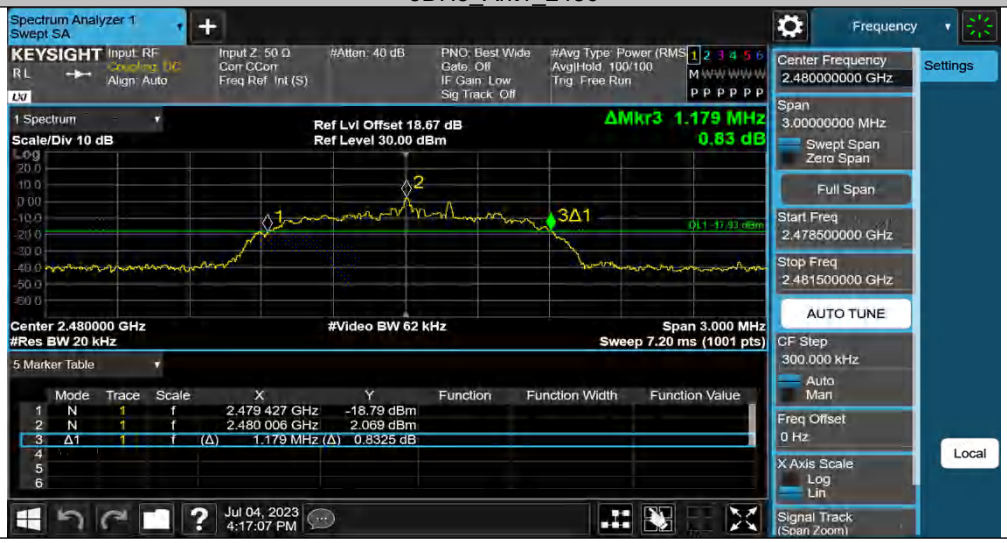
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480



Appendix B.3: Test Results of Carrier Frequency Separation

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.994	≥0.678	PASS
3DH5	Ant1	Hop	1.05	≥0.834	PASS

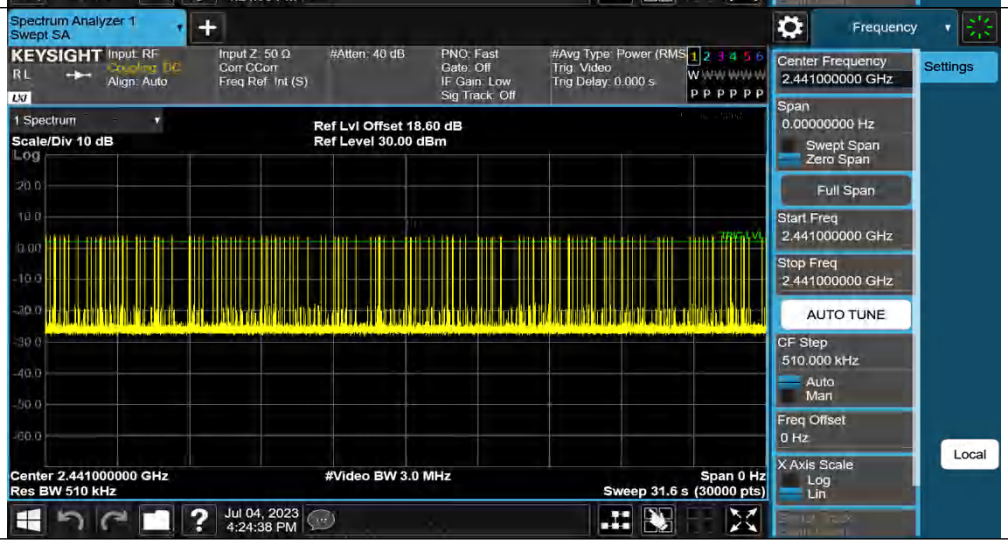
DH5_Ant1_Hop

3DH5_Ant1_Hop

Appendix B.4: Test Results of Number of Hopping Frequency

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.380	153	0.058	≤0.4	PASS
DH3	Ant1	Hop	1.637	109	0.178	≤0.4	PASS
DH5	Ant1	Hop	2.884	90	0.26	≤0.4	PASS
3DH1	Ant1	Hop	0.390	169	0.066	≤0.4	PASS
3DH3	Ant1	Hop	1.639	96	0.157	≤0.4	PASS
3DH5	Ant1	Hop	2.892	72	0.208	≤0.4	PASS

DH1_Ant1_Hop



DH3_Ant1_Hop

DH5_Ant1_Hop

3DH1_Ant1_Hop

3DH3_Ant1_Hop

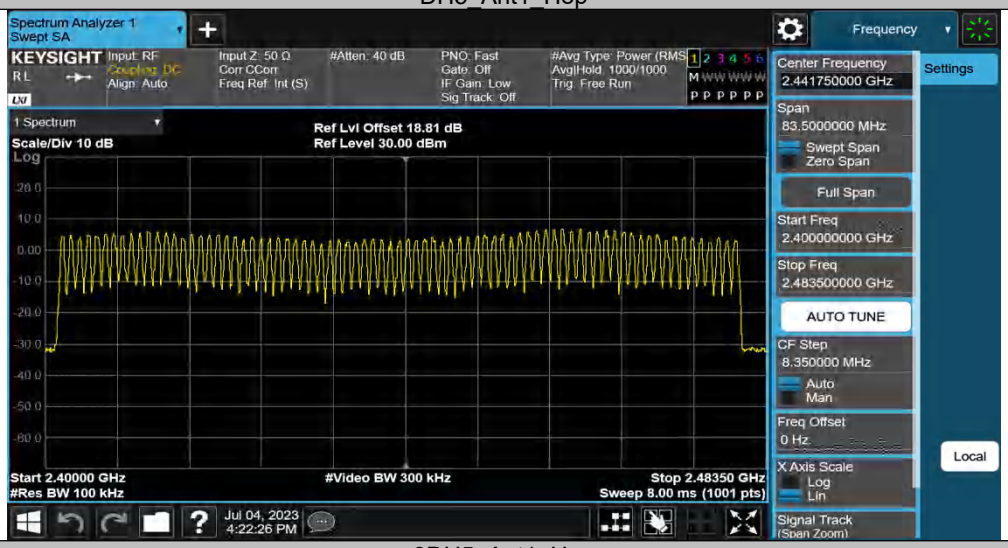
3DH5_Ant1_Hop


Spectrum Analyzer 1
Swept SA
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corr CCorr
Freq Ref: Int (S)
#Atten: 40 dB
PNO: Fast
Gate: Off
IF Gain: Low
Sig Track: Off
#Avg Type: Power (RMS)
Trig: Video
Trig Delay: 0.000 s
1 Spectrum
Scale/Div 10 dB
Log
Ref Lvl Offset 18.60 dB
Ref Level 30.00 dBm
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
TRIG LVL
Center 2.441000000 GHz
Res BW 510 kHz
#Video BW 3.0 MHz
Span 0 Hz
Sweep 31.6 s (30000 pts)
Jul 04, 2023
4:29:12 PM
Frequency
Center Frequency
2.441000000 GHz
Span
0.00000000 Hz
Swept Span
Zero Span
Full Span
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
AUTO TUNE
CF Step
510.000 kHz
Auto
Man
Freq Offset
0 Hz
X Axis Scale
Log
Lin
Settings
Local

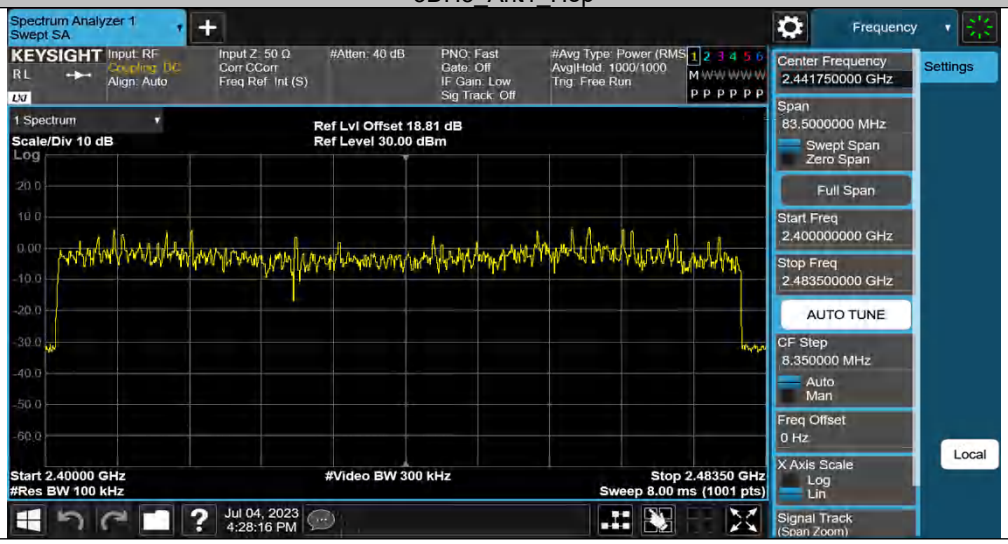
Appendix B.5: Test Results of Time of Occupancy

TestMode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

DH5_Ant1_Hop



3DH5_Ant1_Hop



Appendix B.6: Test Results of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

Conducted measurements

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	4.39	4.39	---	PASS
			30~1000	4.39	-41.23	≤-15.61	PASS
			1000~26500	4.39	-32.29	≤-15.61	PASS
		2441	Reference	3.52	3.52	---	PASS
			30~1000	3.52	-41.78	≤-16.48	PASS
			1000~26500	3.52	-31.6	≤-16.48	PASS
		2480	Reference	3.63	3.63	---	PASS
			30~1000	3.63	-40.76	≤-16.37	PASS
			1000~26500	3.63	-32.46	≤-16.37	PASS
3DH5	Ant1	2402	Reference	0.62	0.62	---	PASS
			30~1000	0.62	-40.64	≤-19.38	PASS
			1000~26500	0.62	-32.4	≤-19.38	PASS
		2441	Reference	-0.20	-0.20	---	PASS
			30~1000	-0.20	-41.79	≤-20.2	PASS
			1000~26500	-0.20	-32.45	≤-20.2	PASS
		2480	Reference	4.01	4.01	---	PASS
			30~1000	4.01	-41.29	≤-15.99	PASS
			1000~26500	4.01	-32.64	≤-15.99	PASS

DH5_Ant1_2402_0~Reference

DH5_Ant1_2402_30~1000

DH5_Ant1_2402_1000~26500

DH5_Ant1_2441_0~Reference

DH5_Ant1_2441_30~1000

DH5_Ant1_2441_1000~26500

DH5_Ant1_2480_0~Reference

DH5_Ant1_2480_30~1000

DH5_Ant1_2480_1000~26500

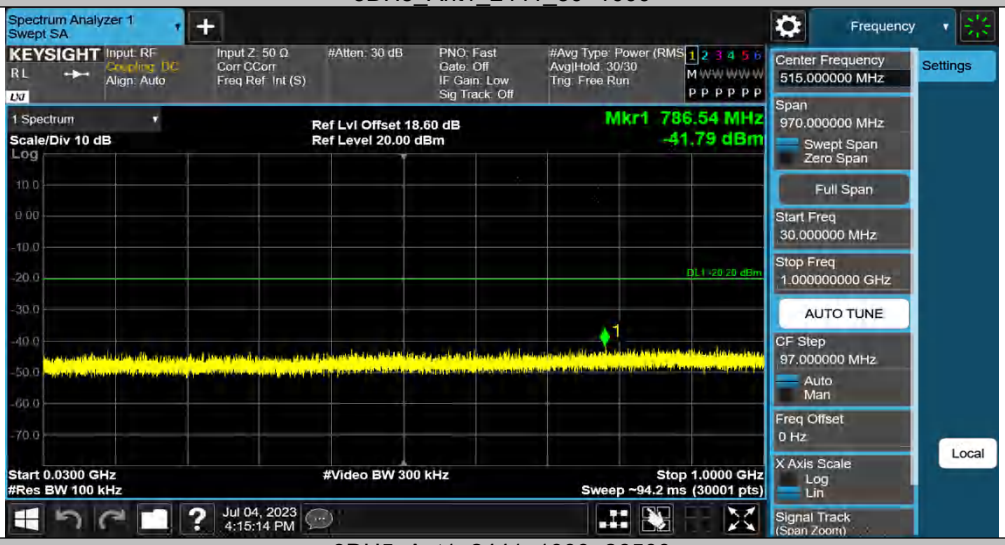
3DH5_Ant1_2402_0~Reference

3DH5_Ant1_2402_30~1000

3DH5_Ant1_2402_1000~26500

3DH5_Ant1_2441_0~Reference

3DH5_Ant1_2441_30~1000

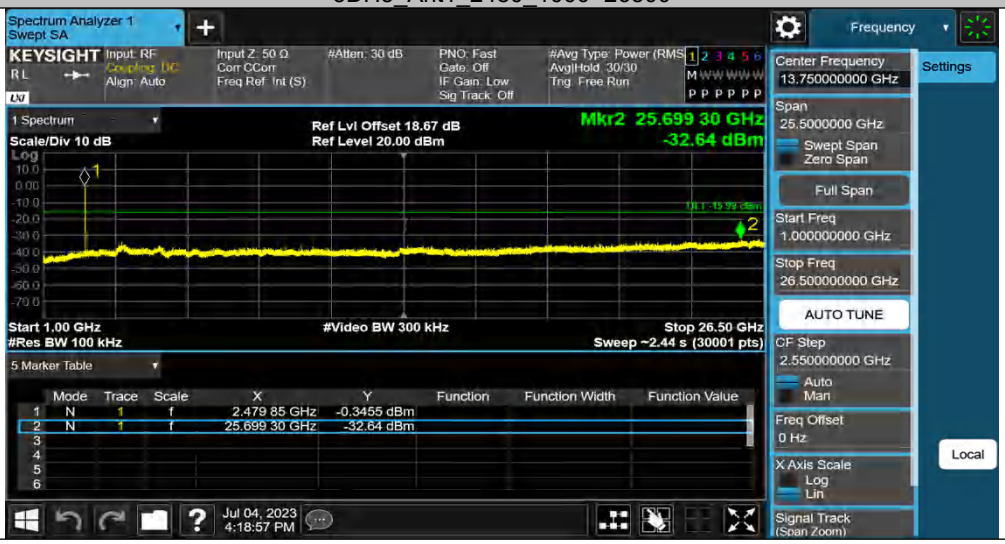


3DH5_Ant1_2441_1000~26500

3DH5_Ant1_2480_0~Reference

3DH5_Ant1_2480_30~1000

3DH5_Ant1_2480_1000~26500



Band edge measurements

TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	4.61	-43.56	≤-15.39	PASS
		High	2480	3.93	-42.78	≤-16.07	PASS
3DH5	Ant1	Low	2402	4.91	-42.75	≤-15.09	PASS
		High	2480	4.01	-43.75	≤-15.99	PASS
DH5	Ant1	Hopping	2402	3.23	-43.53	≤-16.77	PASS
		Hopping	2480	3.63	-41.97	≤-16.37	PASS
3DH5	Ant1	Hopping	2402	-3.20	-44.83	≤-23.2	PASS
		Hopping	2480	1.85	-42.74	≤-18.15	PASS

DH5_Ant1_Low_2402

DH5_Ant1_High_2480

3DH5_Ant1_Low_2402

3DH5_Ant1_High_2480

DH5_Ant1_Hopping_2402

DH5_Ant1_Hopping_2480

3DH5_Ant1_Hopping_2402

3DH5_Ant1_Hopping_2480

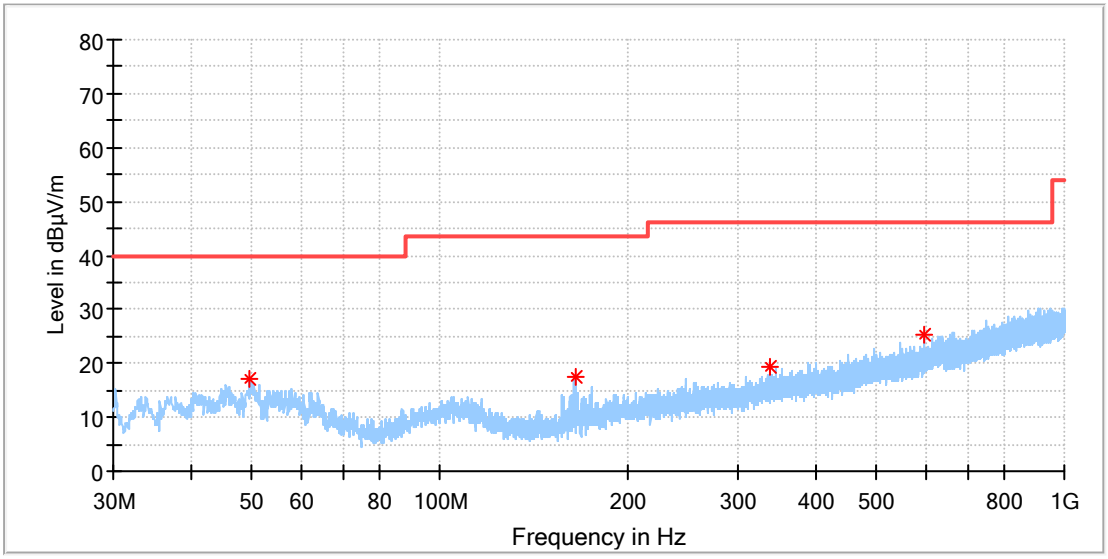
Appendix B.7: Test Results of Radiated Spurious Emissions

Note: 1. Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and 18GHz - 26.5GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported. 2. This testing was carried out on different modulations, but only the worst case (GFSK) was presented in this report.

30MHz - 1GHz

EUT Information

EUT Name:	Wireless Noise Cancellation Over-Ear Headphones
Model:	EDF200126
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168429638/A003502949-001
Test Voltage::	Battery
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

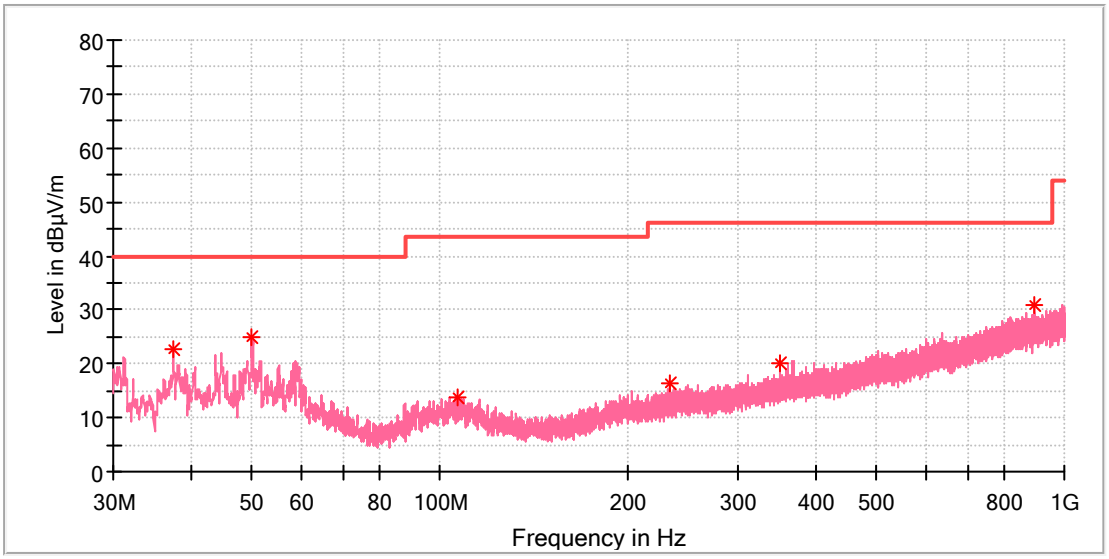


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
49.497000	16.98	40.00	23.02	100.0	H	323.0	-18.3
164.733000	17.47	43.50	26.03	100.0	H	41.0	-21.5
338.848000	19.25	46.00	26.75	100.0	H	55.0	-15.0
598.420000	25.47	46.00	20.53	100.0	H	83.0	-9.9

EUT Information

EUT Name:	Wireless Noise Cancellation Over-Ear Headphones
Model:	EDF200126
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168429638/A003502949-001
Test Voltage::	Battery
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

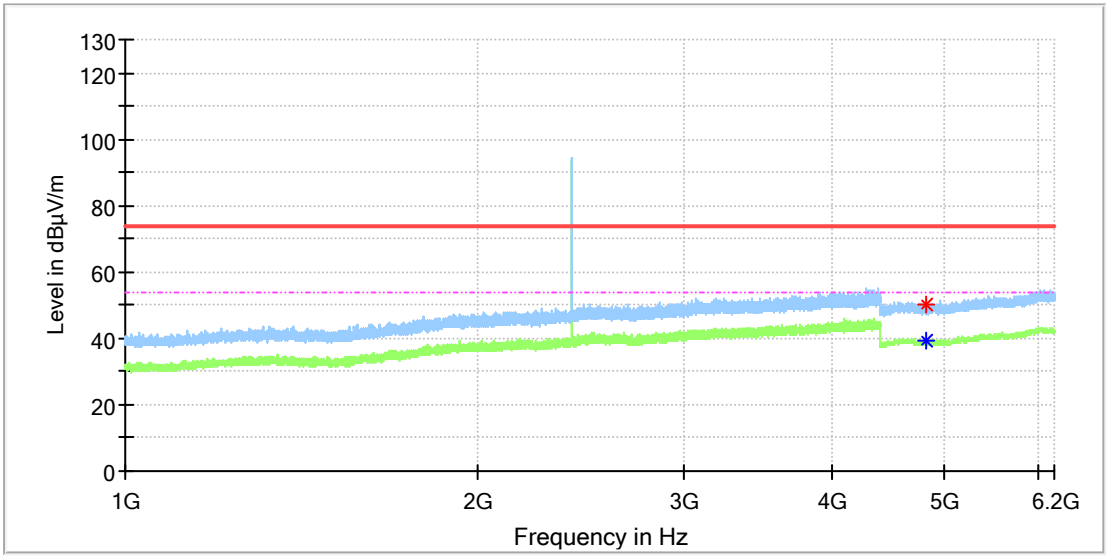
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
37.469000	22.58	40.00	17.42	100.0	V	116.0	-21.0
49.982000	24.84	40.00	15.16	100.0	V	7.0	-18.3
107.163500	13.73	43.50	29.77	100.0	V	217.0	-18.9
232.924000	16.45	46.00	29.55	100.0	V	130.0	-17.9
349.615000	20.22	46.00	25.78	100.0	V	94.0	-14.8
894.173000	30.84	46.00	15.16	100.0	V	130.0	-5.0

1GHz - 18GHz

Note: The highest waveform in the figure is Bluetooth Fundamental.

EUT Information

EUT Name:	Wireless Noise Cancellation Over-Ear Headphones
Model:	EDF200126
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168429638/A003502949-001
Test Voltage::	Battery
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

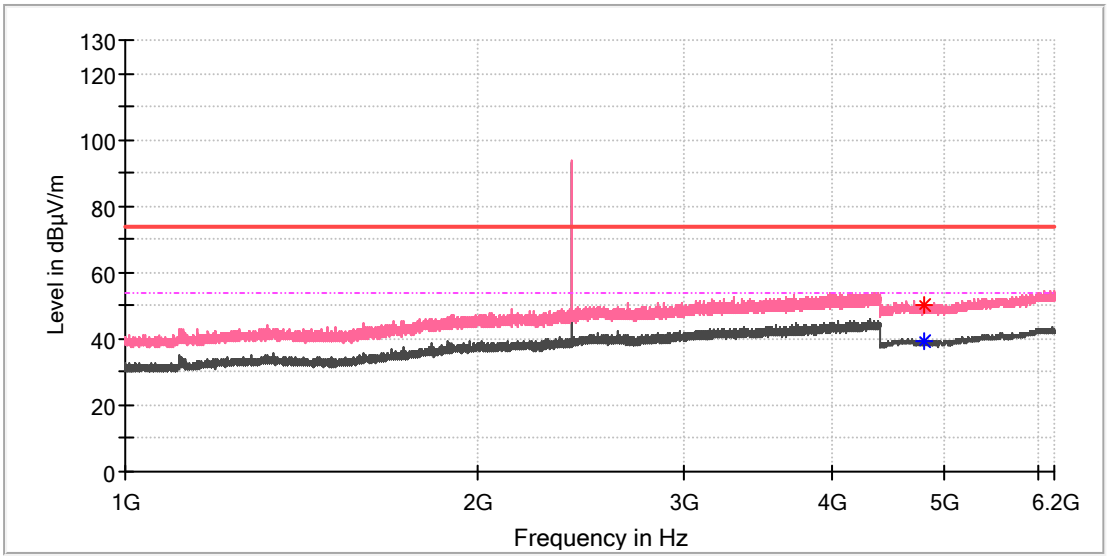


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4823.000000	50.38	---	74.00	23.62	150.0	H	334.0	11.8
4824.500000	---	39.30	54.00	14.70	150.0	H	65.0	11.8

EUT Information

EUT Name:	Wireless Noise Cancellation Over-Ear Headphones
Model:	EDF200126
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168429638/A003502949-001
Test Voltage::	Battery
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

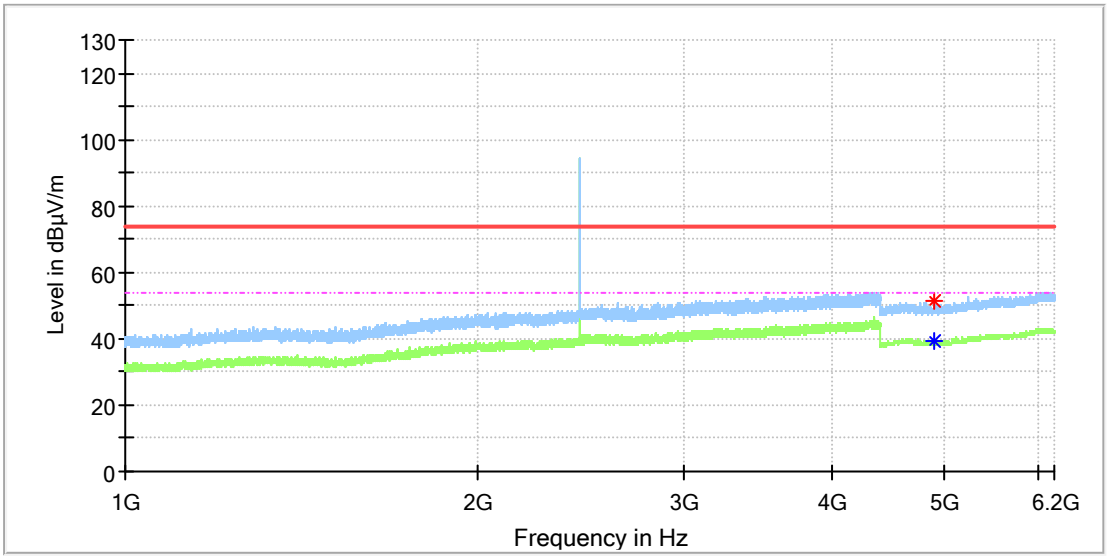


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4800.000000	50.21	---	74.00	23.79	150.0	V	221.0	11.8
4808.000000	---	39.59	54.00	14.41	150.0	V	257.0	11.8

EUT Information

EUT Name:	Wireless Noise Cancellation Over-Ear Headphones
Model:	EDF200126
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168429638/A003502949-001
Test Voltage::	Battery
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

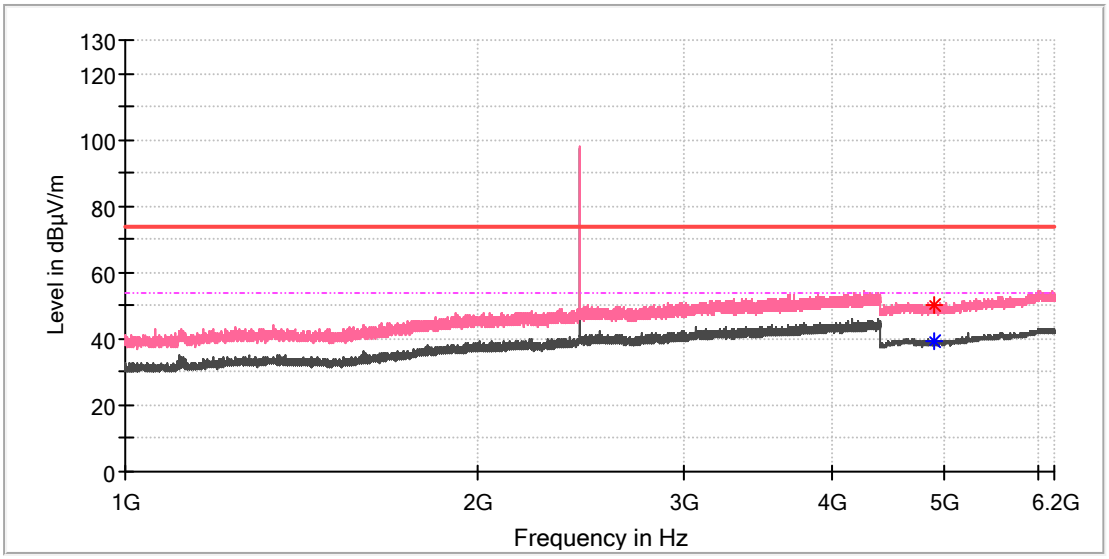


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4893.500000	51.10	---	74.00	22.90	150.0	H	98.0	11.8
4905.500000	---	39.09	54.00	14.91	150.0	H	86.0	11.8

EUT Information

EUT Name:	Wireless Noise Cancellation Over-Ear Headphones
Model:	EDF200126
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168429638/A003502949-001
Test Voltage::	Battery
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

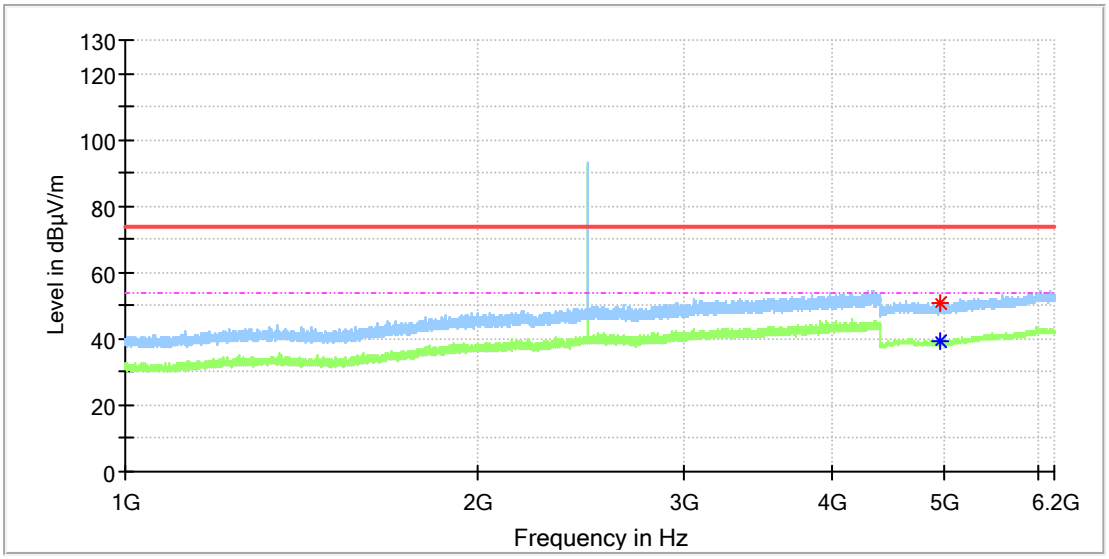


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4899.500000	---	39.27	54.00	14.73	150.0	V	315.0	11.8
4900.500000	50.40	---	74.00	23.60	150.0	V	170.0	11.8

EUT Information

EUT Name:	Wireless Noise Cancellation Over-Ear Headphones
Model:	EDF200126
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168429638/A003502949-001
Test Voltage::	Battery
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

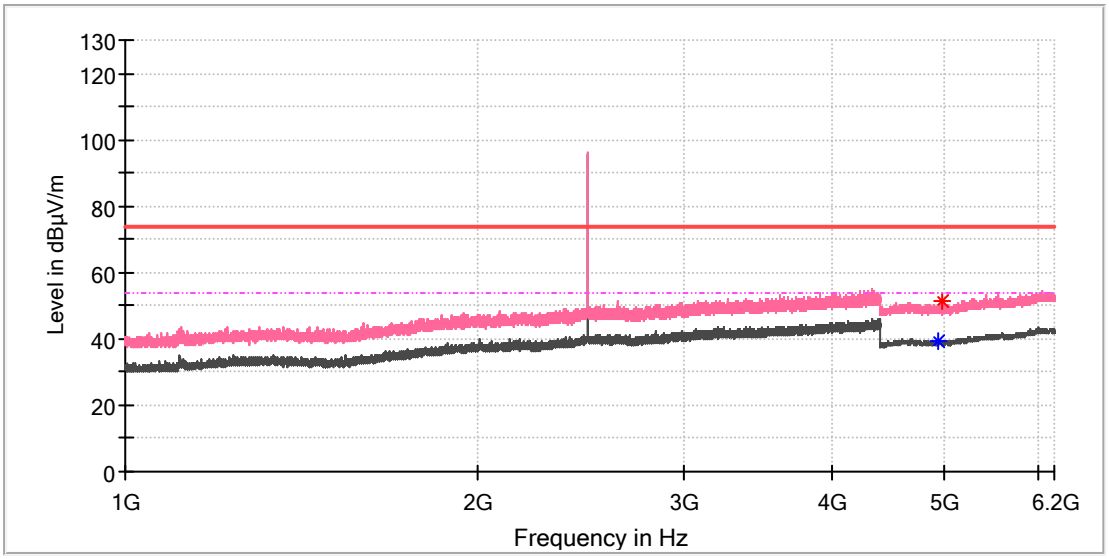


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4956.000000	---	39.20	54.00	14.80	150.0	H	274.0	11.8
4962.500000	50.75	---	74.00	23.25	150.0	H	305.0	11.8

EUT Information

EUT Name:	Wireless Noise Cancellation Over-Ear Headphones
Model:	EDF200126
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168429638/A003502949-001
Test Voltage::	Battery
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

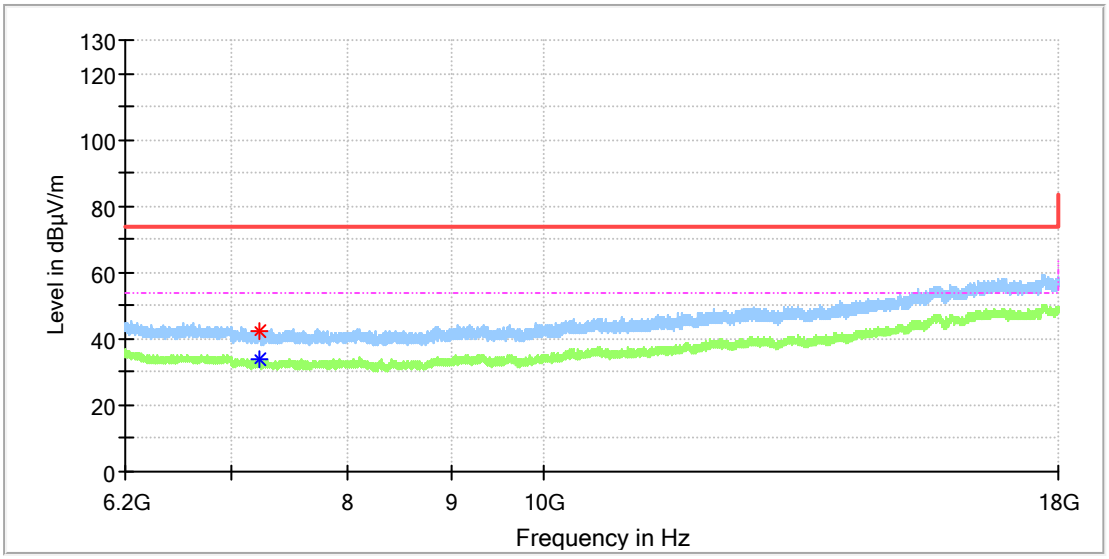


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4944.000000	---	39.05	54.00	14.95	150.0	V	250.0	11.8
4966.000000	51.35	---	74.00	22.65	150.0	V	122.0	11.8

EUT Information

EUT Name:	Wireless Noise Cancellation Over-Ear Headphones
Model:	EDF200126
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168429638/A003502949-001
Test Voltage::	Battery
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

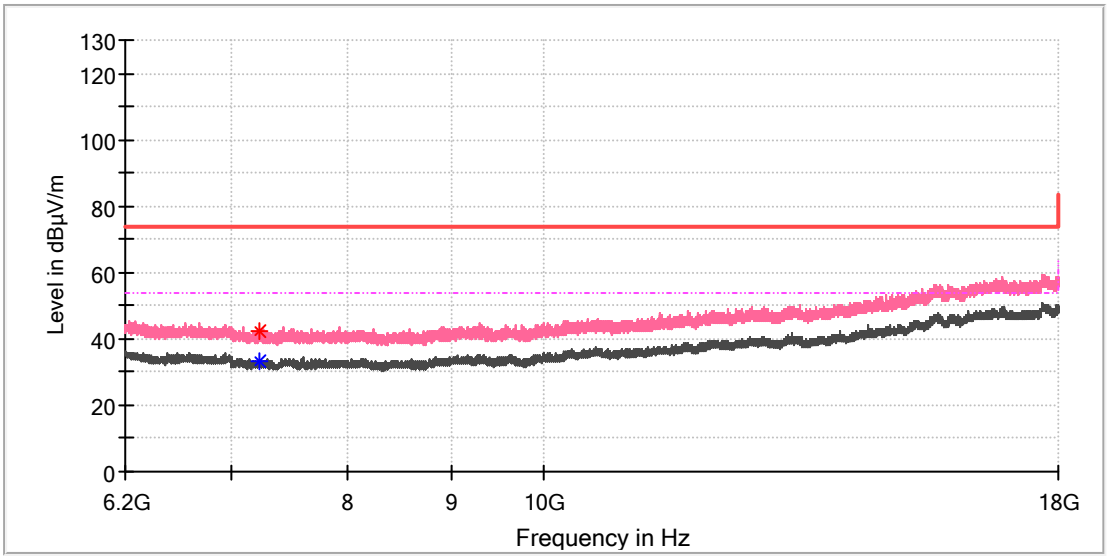


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7225.616667	42.11	---	74.00	31.89	150.0	H	171.0	8.7
7228.075000	---	33.64	54.00	20.36	150.0	H	0.0	8.7

EUT Information

EUT Name:	Wireless Noise Cancellation Over-Ear Headphones
Model:	EDF200126
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168429638/A003502949-001
Test Voltage::	Battery
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

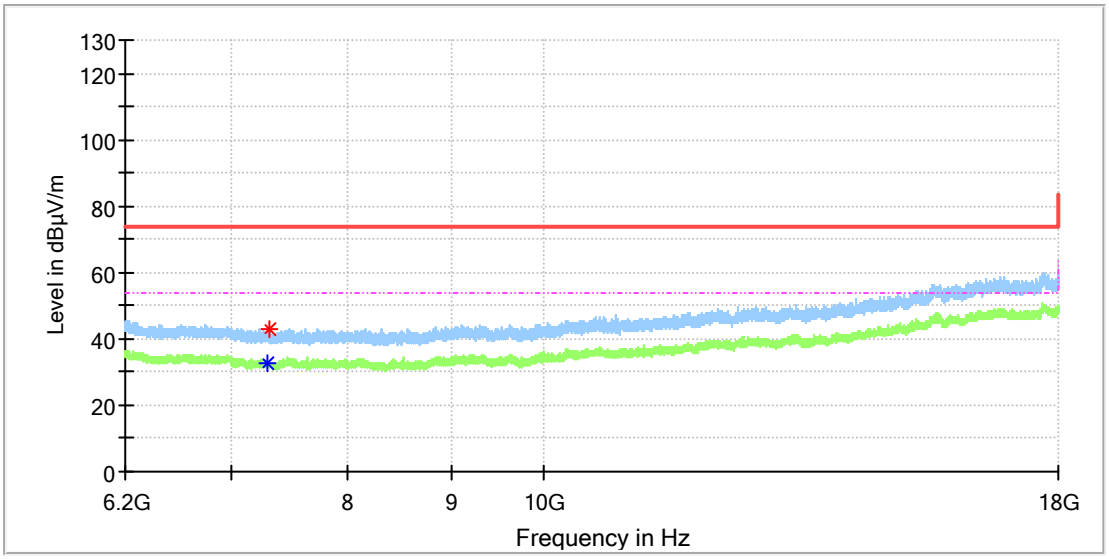


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7219.225000	42.32	---	74.00	31.68	150.0	V	63.0	8.7
7219.225000	---	33.52	54.00	20.48	150.0	V	63.0	8.7

EUT Information

EUT Name:	Wireless Noise Cancellation Over-Ear Headphones
Model:	EDF200126
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168429638/A003502949-001
Test Voltage::	Battery
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

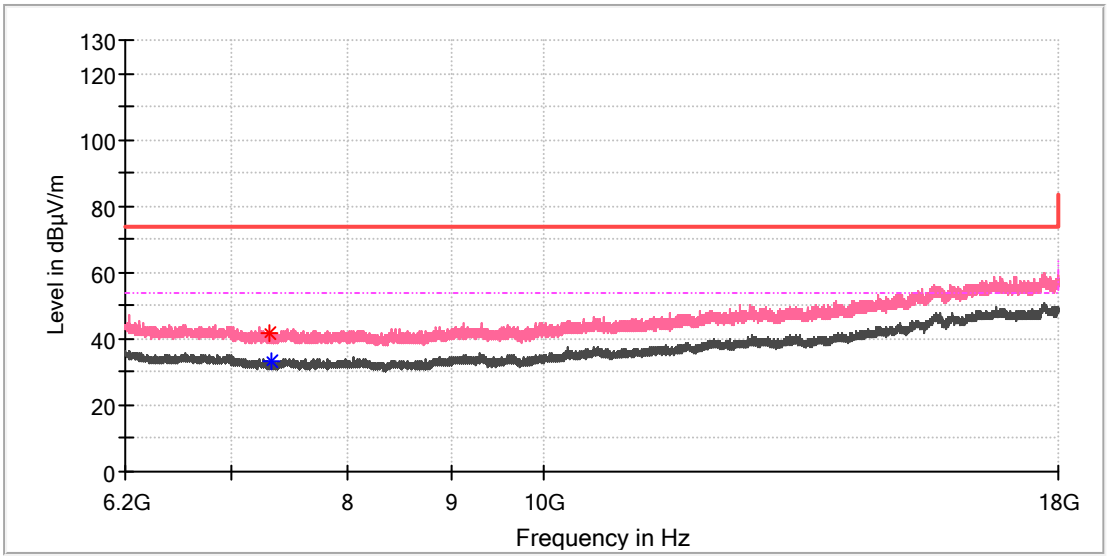


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7301.333333	---	32.92	54.00	21.08	150.0	H	0.0	8.3
7304.283333	42.88	---	74.00	31.12	150.0	H	187.0	8.3

EUT Information

EUT Name:	Wireless Noise Cancellation Over-Ear Headphones
Model:	EDF200126
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168429638/A003502949-001
Test Voltage::	Battery
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

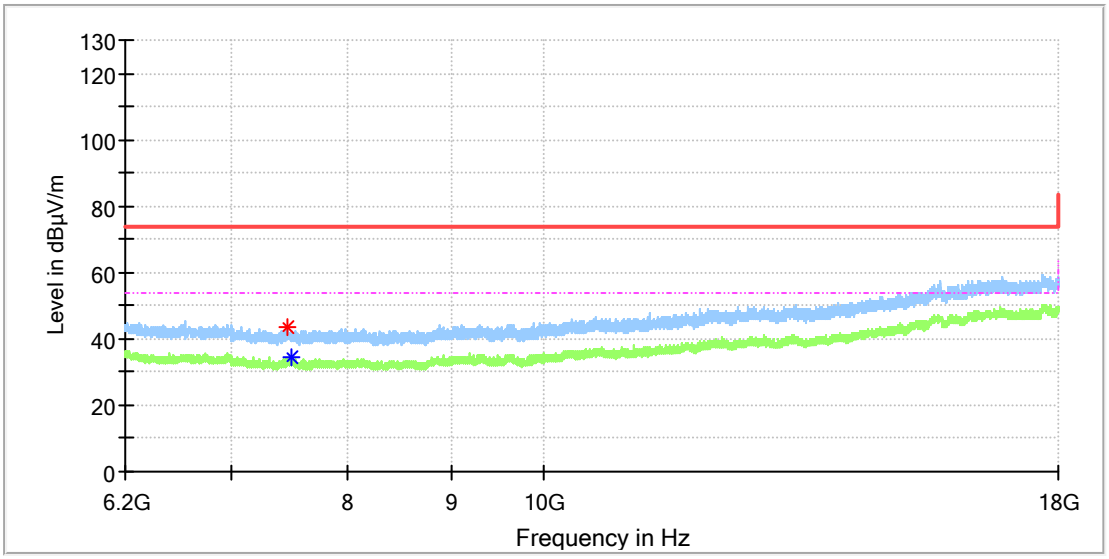


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7310.183333	41.82	---	74.00	32.18	150.0	V	19.0	8.2
7326.900000	---	33.37	54.00	20.63	150.0	V	261.0	8.1

EUT Information

EUT Name:	Wireless Noise Cancellation Over-Ear Headphones
Model:	EDF200126
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168429638/A003502949-001
Test Voltage::	Battery
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

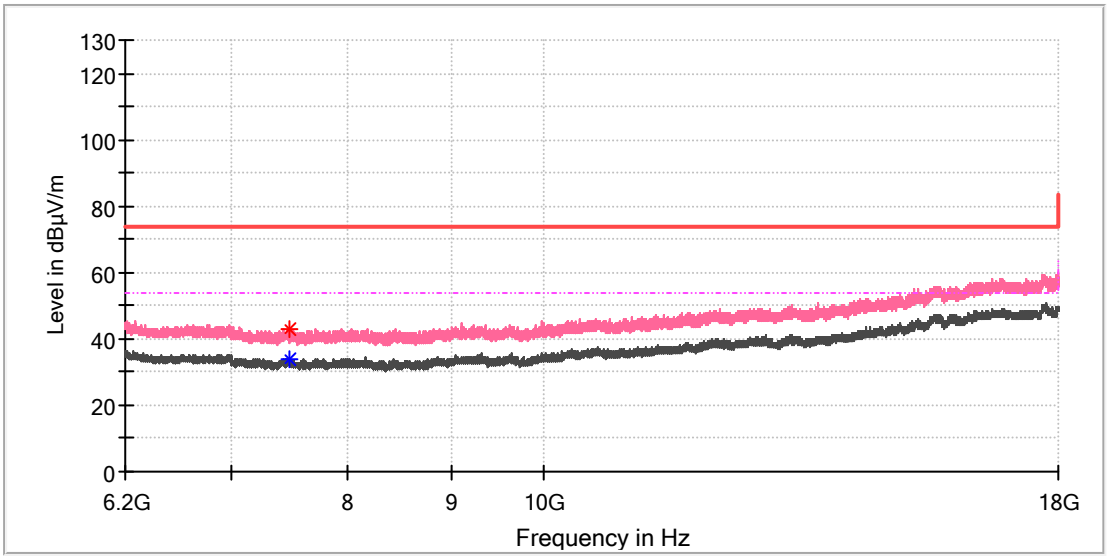


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7469.483333	43.73	---	74.00	30.27	150.0	H	165.0	8.6
7498.491667	---	34.74	54.00	19.26	150.0	H	239.0	8.7

EUT Information

EUT Name:	Wireless Noise Cancellation Over-Ear Headphones
Model:	EDF200126
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168429638/A003502949-001
Test Voltage::	Battery
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



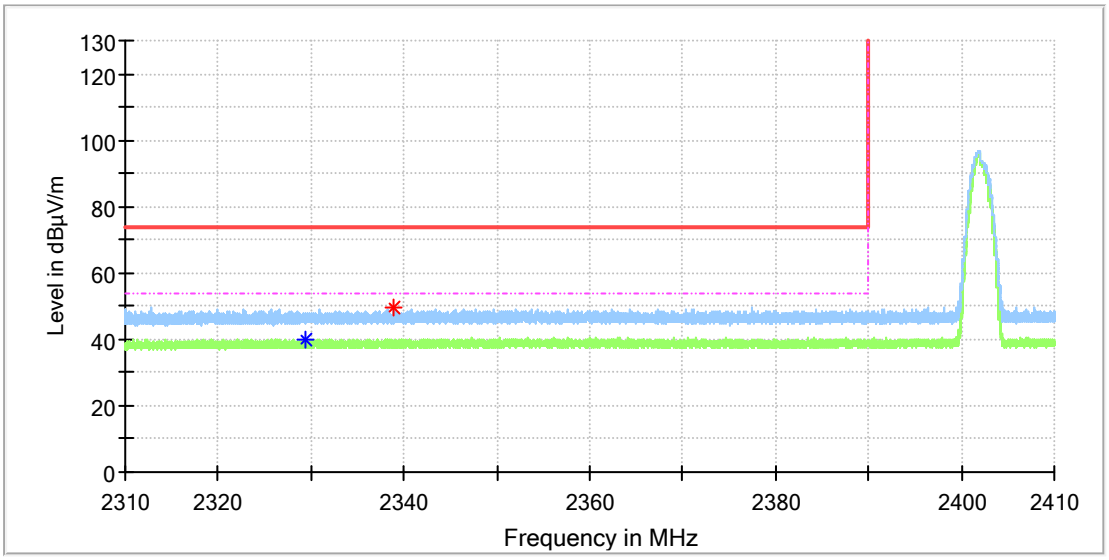
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7474.400000	---	33.78	54.00	20.22	150.0	V	168.0	8.6
7485.216667	42.95	---	74.00	31.05	150.0	V	192.0	8.7

Appendix B.8: Test Results of Radiated Emissions in Restricted Bands

EUT Information

EUT Name:	Wireless Noise Cancellation Over-Ear Headphones
Model:	EDF200126
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168429638/A003502949-001
Test Voltage::	Battery
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

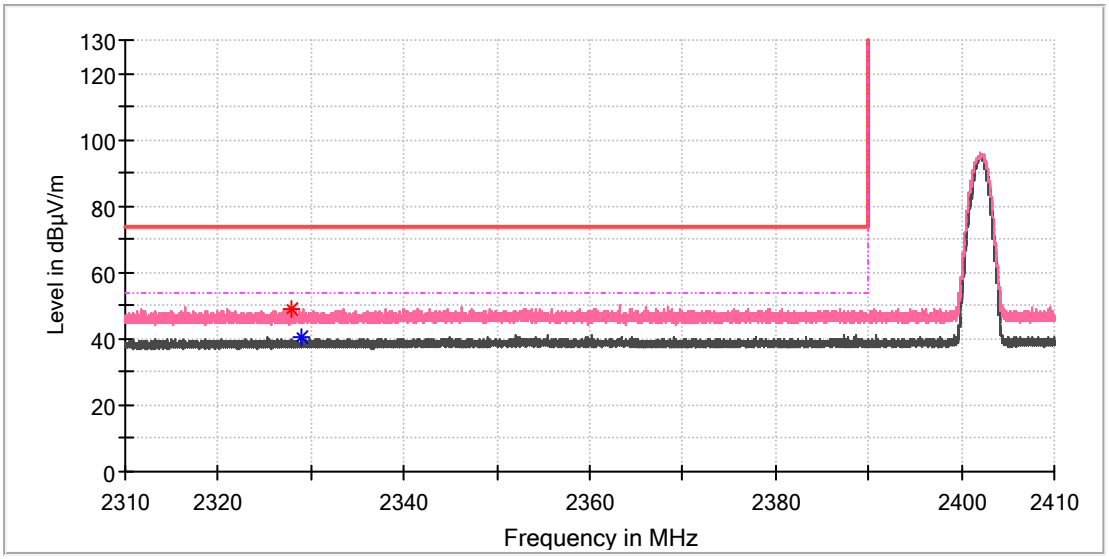


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2329.300000	---	39.84	54.00	14.16	150.0	H	0.0	6.7
2338.920000	49.30	---	74.00	24.70	150.0	H	288.0	6.8

EUT Information

EUT Name:	Wireless Noise Cancellation Over-Ear Headphones
Model:	EDF200126
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168429638/A003502949-001
Test Voltage::	Battery
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

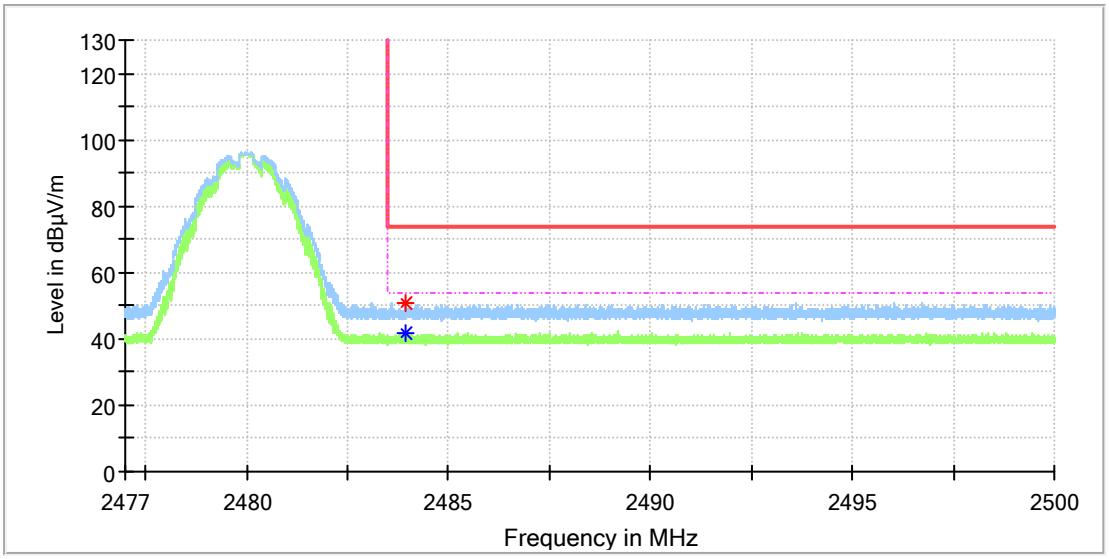


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2327.935000	49.26	---	74.00	24.74	150.0	V	177.0	6.7
2329.000000	---	40.46	54.00	13.54	150.0	V	41.0	6.7

EUT Information

EUT Name:	Wireless Noise Cancellation Over-Ear Headphones
Model:	EDF200126
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168429638/A003502949-001
Test Voltage::	Battery
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

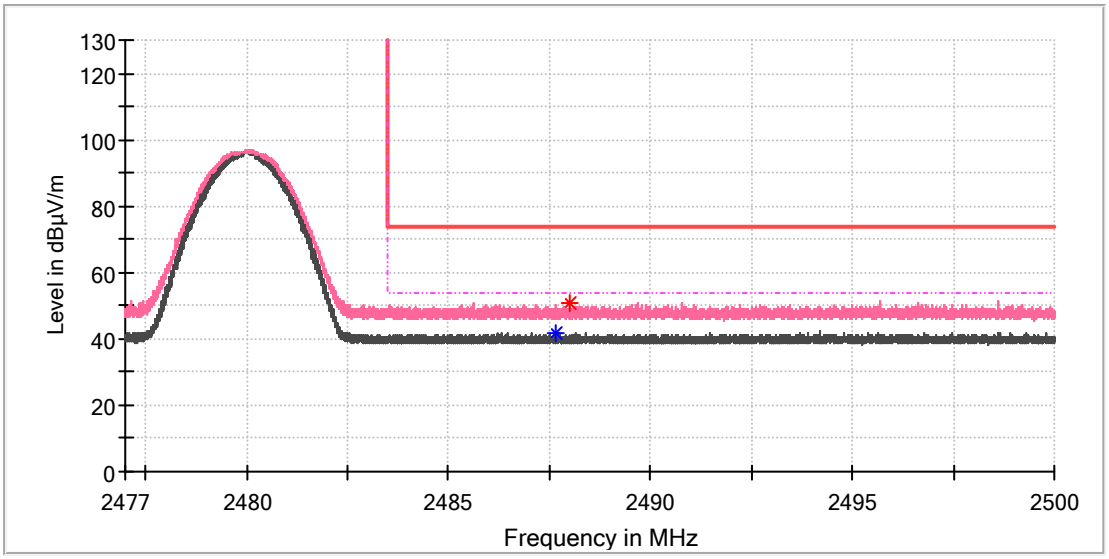


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.952900	---	41.68	54.00	12.32	150.0	H	13.0	7.4
2483.954050	50.70	---	74.00	23.30	150.0	H	244.0	7.4

EUT Information

EUT Name:	Wireless Noise Cancellation Over-Ear Headphones
Model:	EDF200126
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168429638/A003502949-001
Test Voltage::	Battery
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2487.632900	---	41.57	54.00	12.43	150.0	V	225.0	7.4
2487.985950	50.82	---	74.00	23.18	150.0	V	26.0	7.4