Test report no.: *Prüfbericht-Nr.:*	**CN23C9SQ 001**	**Order No.:** *Auftragsnr.:*	168427200	**Page 1 of 24** *Seite 1 von 24*
Client reference no.: *Kunden-Referenz-Nr.:*	N/A	**Order date:** *Auftragsdatum:*	2023-04-11	
Client: *Auftraggeber:*	Harman International Industries, Inc 8500 Balboa Blvd, Northridge, California, 91329, United States			
Test item: *Prüfgegenstand:*	BLUETOOTH HEADSET			
Identification / Type no.: *Bezeichnung / Typ-Nr.:*	JBL VIBE BUDS (Trademark: JBL)			
Order content: *Auftrags-Inhalt*:	Type test			
Test specification *Prüfgrundlage:*	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	

Date of sample receipt: *Wareneingangsdatum:*	2023-04-12	Refer to photos document
Test sample no: *Prüfmuster-Nr.:*	A003478029	
Testing period: *Prüfzeitraum:*	2023-05-18 – 2023-06-05	
Place of testing: *Ort der Prüfung:*	TÜV Rheinland (Shenzhen) Co., Ltd.	
Testing laboratory: *Prüflaboratorium:*	TÜV Rheinland (Shenzhen) Co., Ltd.	
Test result*: *Prüfergebnis*:*	Pass	

tested by: *geprüft von:*	x Signed by: Harry W. C. Wu	**authorized by:** *genehmigt von:*	x Signed by: Alex Lan
Date: 2023-07-10 *Datum:*		**Issue date:** 2023-07-11 *Ausstellungsdatum:*	
Position / *Stellung*:	Project Manager	**Position** / *Stellung*:	Reviewer

Other: *Sonstiges:* FCC ID: APIVIBEBUDSD
IC: 6132A-VIBEBUDSD HVIN: JBL VIBE BUDS

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

* 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
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet

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

Remarks
Anmerkungen

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 FREQUENCY STABILITY
RESULT: Pass

5.1.9 NUMBER OF HOPPING FREQUENCY
RESULT: Pass

5.1.10 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 of left earbud.

Appendix C: Test Results of right earbud.

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
Humid & Temp Programmable Tester	BOST	NTH090-60	19040801	2024-03-15
Shielding Room 8#	Albatross	SR8	APC17151-SR8	2024-06-22
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 & 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 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 EUTs are Bluetooth earbuds, which supports Bluetooth dual mode technology.

There is no difference except the PCB layout of left and right earbuds.

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	BLUETOOTH HEADSET
Type Designation	JBL VIBE BUDS
Trademark	JBL
FCC ID	APIVIBEBUDSD
IC	6132A-VIBEBUDSD
HVIN	JBL VIBE BUDS
Extreme Temperature Range	0ºC to +45ºC
Operating Voltage	DC 3.8V, 47mAh via built-in Li-ion cell battery DC 5V, 100mA via charging case for charging
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	FPC Antenna
Antenna Gain	-1.6 dBi for left earbud -1.6 dBi for right earbud
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
Modulation	GFSK
Antenna Type	FPC Antenna
Antenna Gain	-1.6 dBi for left earbud -1.6 dBi for right earbud

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 JBL VIBE BUDS with left & right earbuds.

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)

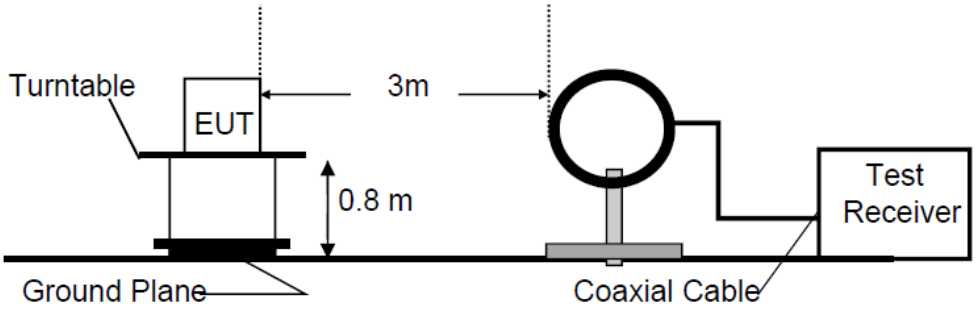


Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

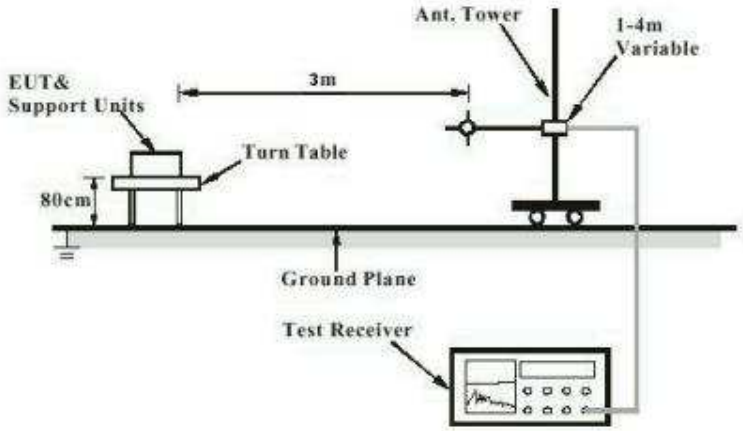


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

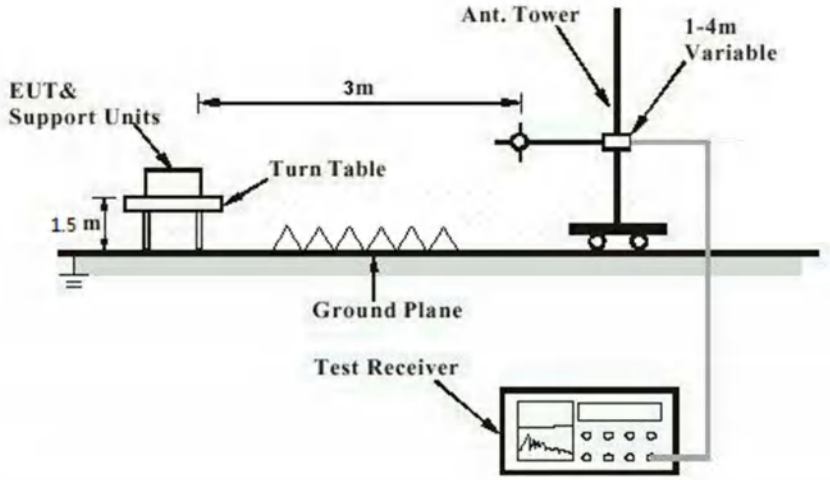
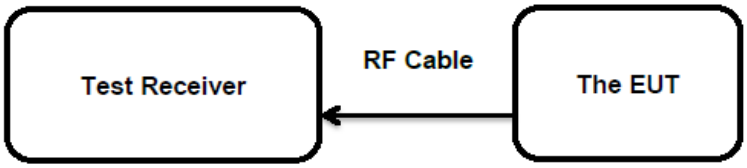


Diagram of Measurement Configuration for Conducted Transmitter Measurement



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 FPC antenna , the directional gain of antennas are -1.6 dBi for left earbud & -1.6 dBi for right earbud , and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

5.1.2 Maximum Conducted Output Power

RESULT: **Pass**

Test Specification

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

Test Setup

Date of testing	2023-05-18 to 2023-06-05
Input voltage	DC 3.8V
Operation mode	A.1
Test channel	Low / Middle / High
Ambient temperature	24.8 ℃
Relative humidity	55 %
Atmospheric pressure	101 kPa

Table 6: Test Result of Maximum Conducted Output Power, left earbud

Test Mode	Channel Frequency (MHz)	Measured Peak Output Power		Limit (W)
		(dBm)	(W)	
BR	2402	11.23	0.01327	< 0.125
	2441	11.60	0.01445	
	2480	12.16	0.01644	
EDR	2402	11.09	0.01285	< 0.125
	2441	11.47	0.01403	
	2480	11.91	0.01552	

Note: The cable loss is taken into account in results and the maximum e.i.r.p. is 10.56 dBm less than 4W(36dBm).

Table 7: Test Result of Maximum Conducted Output Power, right earbud

Test Mode	Channel Frequency (MHz)	Measured Peak Output Power		Limit (W)
		(dBm)	(W)	
BR	2402	11.56	0.01432	< 0.125
	2441	12.02	0.01592	
	2480	12.20	0.01660	
EDR	2402	11.37	0.01371	< 0.125
	2441	11.93	0.01560	
	2480	12.47	0.01766	

Note: The cable loss is taken into account in results and the maximum e.i.r.p. is 10.87 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	:	2023-05-18 to 2023-06-05
Input voltage	:	DC 3.8V
Operation mode	:	A.1
Test channel	:	Low / Middle / High
Ambient temperature	:	24.8 ℃
Relative humidity	:	55 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B & C

Table 8: Test Result of 99% Bandwidth, left earbud

Test Mode	Channel Frequency (MHz)	Measured 99% Bandwidth (MHz)	Limit
BR	2402	0.85371	/
	2441	0.89848	
	2480	0.85084	
EDR	2402	1.1480	/
	2441	1.1575	
	2480	1.1601	

Table 9: Test Result of 99% Bandwidth, right earbud

Test Mode	Channel Frequency (MHz)	Measured 99% Bandwidth (MHz)	Limit
BR	2402	0.84733	/
	2441	0.86040	
	2480	0.84051	
EDR	2402	1.1549	/
	2441	1.1465	
	2480	1.1601	

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	:	2023-05-18 to 2023-06-05
Input voltage	:	DC 3.8V
Operation mode	:	A.1
Test channel	:	Low / Middle / High
Ambient temperature	:	24.8 ℃
Relative humidity	:	55 %
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 & C

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	:	2023-05-18 to 2023-06-05
Input voltage	:	DC 3.8V
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 & C

5.1.6 20dB Bandwidth

RESULT: **Pass**

Test Specification

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

Test Setup

Date of testing	:	2023-05-18 to 2023-06-05
Input voltage	:	DC 3.8V
Operation mode	:	A.1
Test channel	:	Low / Middle / High
Ambient temperature	:	24.8 ℃
Relative humidity	:	55 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B & C

Table 10: Test Result of -20dB Bandwidth, Left earbud

Test Mode	Channel Frequency (MHz)	20dB Bandwidth (MHz)	2/3 of 20dB Bandwidth (MHz)	Limit (MHz)
BR	2402	0.969	0.646	/
	2441	1.017	0.678	
	2480	1.014	0.676	
EDR	2402	1.230	0.820	/
	2441	1.239	0.826	
	2480	1.221	0.814	

Table 11: Test Result of -20dB Bandwidth, Right earbud

Test Mode	Channel Frequency (MHz)	20dB Bandwidth (MHz)	2/3 of 20dB Bandwidth (MHz)	Limit (MHz)
BR	2402	1.041	0.694	/
	2441	1.020	0.680	
	2480	0.921	0.614	
EDR	2402	1.263	0.842	/
	2441	1.239	0.826	
	2480	1.242	0.828	

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	:	2023-05-18 to 2023-06-05
Input voltage	:	DC 3.8V
Operation mode	:	B
Test channel	:	Low / Middle / High
Ambient temperature	:	24.8 ℃
Relative humidity	:	55 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B & C

Table 12: Test Result of Carrier Frequency Separation, Left earbud

Test Mode	Channel	Result[MHz]	Limit[MHz]	Verdict
BR-DH5	Hop	1.004	≥0.678	PASS
EDR-3DH5	Hop	1.008	≥0.826	PASS

Note:

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

Table 13: Test Result of Carrier Frequency Separation, Right earbud

Test Mode	Channel	Result[MHz]	Limit[MHz]	Verdict
BR-DH5	Hop	1.008	≥0.694	PASS
EDR-3DH5	Hop	1.008	≥0.842	PASS

Note:

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

5.1.8 Frequency stability

RESULT: **Pass**

Test Specification

Test standard	:	RSS-247 Clause 8.11
Basic standard	:	ANSI C63.10: 2013
Limits	:	within at least the central 80% of its permitted operating frequency band (2400-2483.5MHz)
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2023-05-18 to 2023-06-05
Input voltage	:	DC 3.8V
Operation mode	:	B
Ambient temperature	:	24.8 ℃
Relative humidity	:	55 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B & C

5.1.9 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	:	2023-05-18 to 2023-06-05
Input voltage	:	DC 3.8V
Operation mode	:	B
Ambient temperature	:	24.8 ℃
Relative humidity	:	55 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B & C.

Table 14: Test Result of Number of Hopping Frequency, Left earbud

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

Table 15: Test Result of Number of Hopping Frequency, Right earbud

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

5.1.10 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	:	2023-05-18 to 2023-06-05
Input voltage	:	DC 3.8V
Operation mode	:	B
Test channel	:	Low / Middle / High
Ambient temperature	:	24.8 ℃
Relative humidity	:	55 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B & C.

6 Photographs of the Test Set-Up

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

7 List of Tables

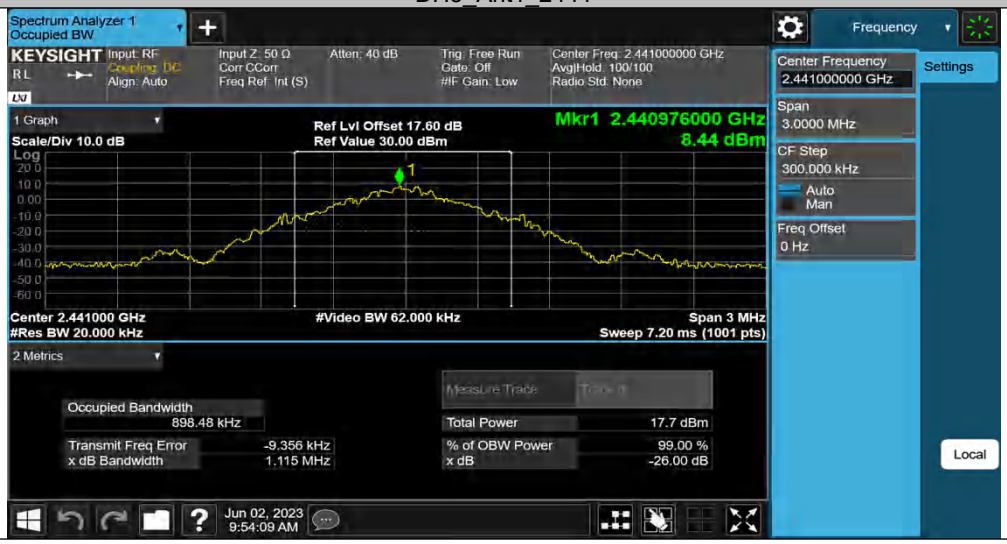
Appendix B: Test Results of Left earbud

Appendix B.1: Test Results of 99% Bandwidth

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.85371	2401.5471	2402.4008	---	---
		2441	0.89848	2440.5414	2441.4399	---	---
		2480	0.85084	2479.5526	2480.4035	---	---
3DH5	Ant1	2402	1.1480	2401.4157	2402.5637	---	---
		2441	1.1575	2440.4089	2441.5664	---	---
		2480	1.1601	2479.4079	2480.5680	---	---

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	0.969	2401.532	2402.501	---	---
		2441	1.017	2440.487	2441.504	---	---
		2480	1.014	2479.475	2480.489	---	---
3DH5	Ant1	2402	1.230	2401.364	2402.594	---	---
		2441	1.239	2440.355	2441.594	---	---
		2480	1.221	2479.367	2480.588	---	---

DH5_Ant1_2402

DH5_Ant1_2441

DH5_Ant1_2480

3DH5_Ant1_2402

3DH5_Ant1_2441

3DH5_Ant1_2480

Appendix B.3: Test Results of Frequency stability

Test Channel (MHz)	2402

Test result of frequency tolerance of voltage variation

Voltage	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
DC 3.8V	2401.995	5	2.08	10
DC 4.18V	2401.996	4	1.67	
DC 3.42V	2401.995	5	2.08	

Test result of frequency tolerance of temperature variation

Temperature (℃)	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
-30	2401.989	11	4.58	10
-20	2401.989	11	4.58	
-10	2401.990	10	4.16	
0	2401.992	5	2.08	
10	2401.995	5	2.08	
20	2401.995	5	2.08	
30	2401.995	5	2.08	
40	2401.994	6	2.50	
50	2401.994	6	2.50	
55	2401.995	5	2.08	

Test Channel (MHz)	2441

Test result of frequency tolerance of voltage variation

Voltage	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
DC 3.8V	2440.996	-4	-1.64	10
DC 4.18V	2440.995	-5	-2.05	
DC 3.42V	2440.996	-4	-1.64	

Test result of frequency tolerance of temperature variation

Temperature (℃)	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
-30	2440.993	-7	-2.87	10
-20	2440.994	-6	-2.46	
-10	2440.995	-5	-2.05	
0	2440.996	-4	-1.64	
10	2440.996	-4	-1.64	
20	2440.996	-4	-1.64	
30	2440.996	-4	-1.64	
40	2440.995	-5	-2.05	
50	2440.993	-7	-2.87	
55	2440.994	-6	-2.46	

Test Channel (MHz)	2480

Test result of frequency tolerance of voltage variation

Voltage	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
DC 3.8V	2479.997	-3	-1.21	10
DC 4.18V	2479.998	-2	-0.81	
DC 3.42V	2479.997	-3	-1.21	

Test result of frequency tolerance of temperature variation

Temperature (℃)	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
-30	2479.995	-5	-2.02	10
-20	2479.995	-5	-2.02	
-10	2479.993	-7	-2.82	
0	2479.996	-4	-1.61	
10	2479.997	-3	-1.21	
20	2479.995	-5	-2.02	
30	2479.996	-4	-1.61	
40	2479.996	-4	-1.61	
50	2479.995	-5	-2.02	
55	2479.994	-6	-2.42	

Appendix B.4: Test Results of Carrier Frequency Separation

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.004	≥0.678	PASS
3DH5	Ant1	Hop	1.008	≥0.826	PASS

DH5_Ant1_Hop

3DH5_Ant1_Hop

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

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 Time of Occupancy

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.386	316	0.122	≤0.4	PASS
DH3	Ant1	Hop	1.643	164	0.269	≤0.4	PASS
DH5	Ant1	Hop	2.892	96	0.278	≤0.4	PASS
3DH1	Ant1	Hop	0.395	316	0.125	≤0.4	PASS
3DH3	Ant1	Hop	1.647	170	0.28	≤0.4	PASS
3DH5	Ant1	Hop	2.897	94	0.272	≤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 17.60 dB
Ref Level 30.00 dBm
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
Center 2.441000000 GHz
Res BW 510 kHz
#Video BW 3.0 MHz
Span 0 Hz
Sweep 31.6 s (30000 pts)
Jun 02, 2023
10:28:30 AM
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.7: 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	10.14	10.14	---	PASS
			30~1000	10.14	-42.3	≤-9.86	PASS
			1000~26500	10.14	-33.35	≤-9.86	PASS
		2441	Reference	10.68	10.68	---	PASS
			30~1000	10.68	-42.21	≤-9.32	PASS
			1000~26500	10.68	-33.55	≤-9.32	PASS
		2480	Reference	10.73	10.73	---	PASS
			30~1000	10.73	-42.31	≤-9.27	PASS
			1000~26500	10.73	-33.61	≤-9.27	PASS
3DH5	Ant1	2402	Reference	9.58	9.58	---	PASS
			30~1000	9.58	-41.67	≤-10.42	PASS
			1000~26500	9.58	-33.14	≤-10.42	PASS
		2441	Reference	6.27	6.27	---	PASS
			30~1000	6.27	-41.74	≤-13.73	PASS
			1000~26500	6.27	-32.66	≤-13.73	PASS
		2480	Reference	9.53	9.53	---	PASS
			30~1000	9.53	-42.38	≤-10.47	PASS
			1000~26500	9.53	-33.17	≤-10.47	PASS

DH5_Ant1_2402_0~Reference

DH5_Ant1_2402_30~1000

DH5_Ant1_2402_1000~26500

DH5_Ant1_2441_0~Reference

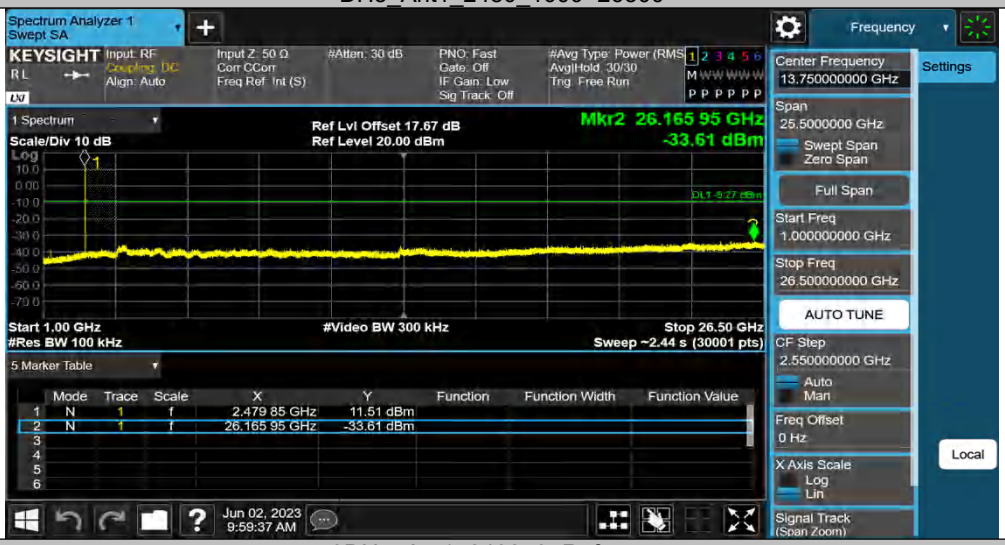
DH5_Ant1_2441_30~1000

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

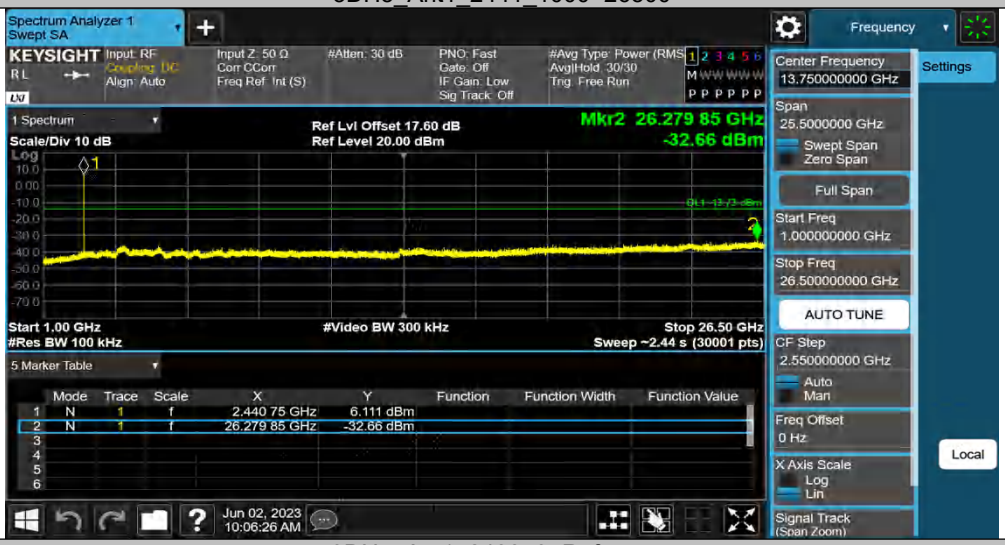
3DH5_Ant1_2402_30~1000

3DH5_Ant1_2402_1000~26500

3DH5_Ant1_2441_0~Reference

3DH5_Ant1_2441_30~1000

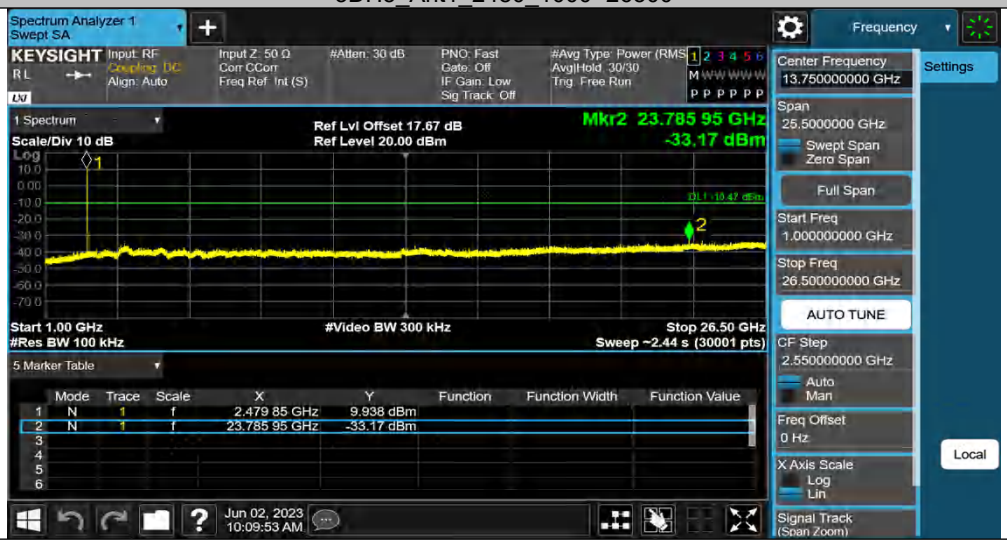
3DH5_Ant1_2441_1000~26500



3DH5_Ant1_2480_0~Reference

3DH5_Ant1_2480_30~1000

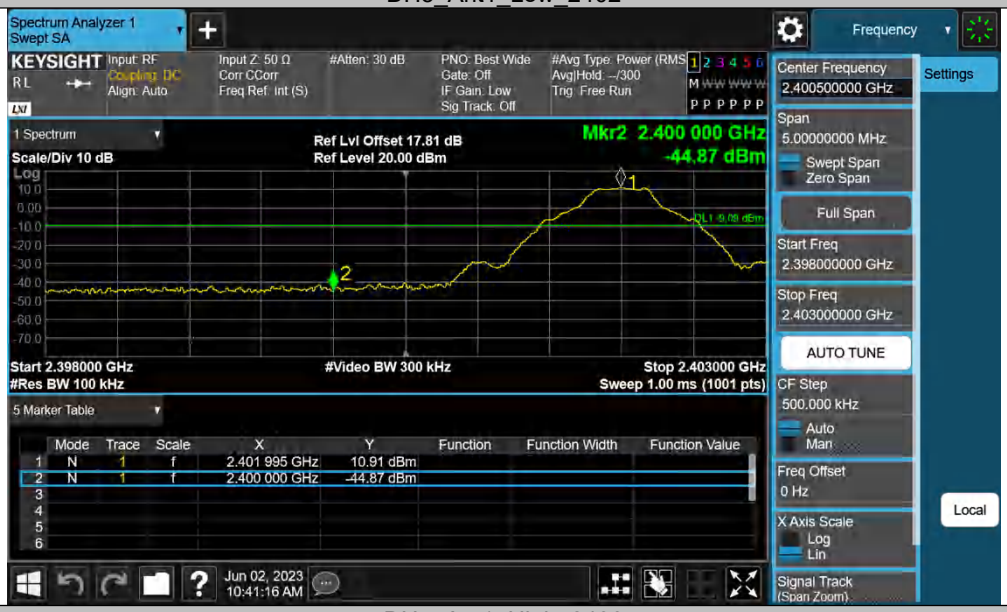
3DH5_Ant1_2480_1000~26500



Band edge measurements

TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	10.91	-44.87	≤-9.09	PASS
DH5	Ant1	High	2480	11.68	-44.86	≤-8.32	PASS
3DH5	Ant1	High	2402	10.92	-43.31	≤-9.08	PASS
3DH5	Ant1	High	2480	11.71	-43.37	≤-8.29	PASS
DH5	Ant1	Hopping	2402	10.21	-43.19	≤-9.79	PASS
DH5	Ant1	Hopping	2480	9.796	-43.72	≤-10.20	PASS
3DH5	Ant1	Hopping	2402	5.557	-42.22	≤-14.44	PASS
3DH5	Ant1	Hopping	2480	6.158	-44.99	≤-13.84	PASS

DH5_Ant1_Low_2402



DH5_Ant1_High_2480

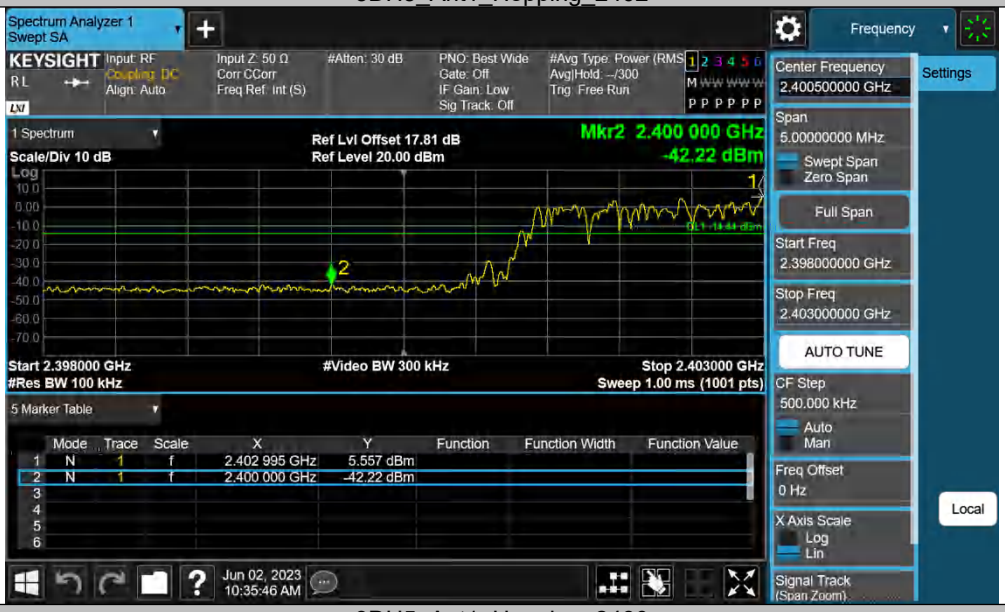
3DH5_Ant1_Low_2402

3DH5_Ant1_High_2480

DH5_Ant1_Hopping_2402

DH5_Ant1_Hopping_2480

3DH5_Ant1_Hopping_2402



3DH5_Ant1_Hopping_2480

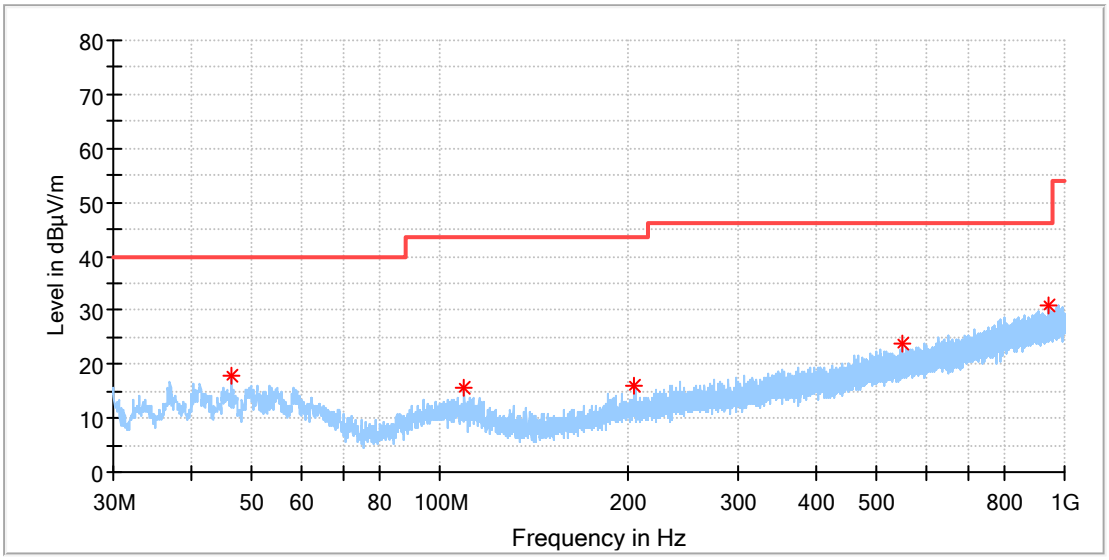
Appendix B.8: Test Results of Radiated Spurious Emissions

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:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

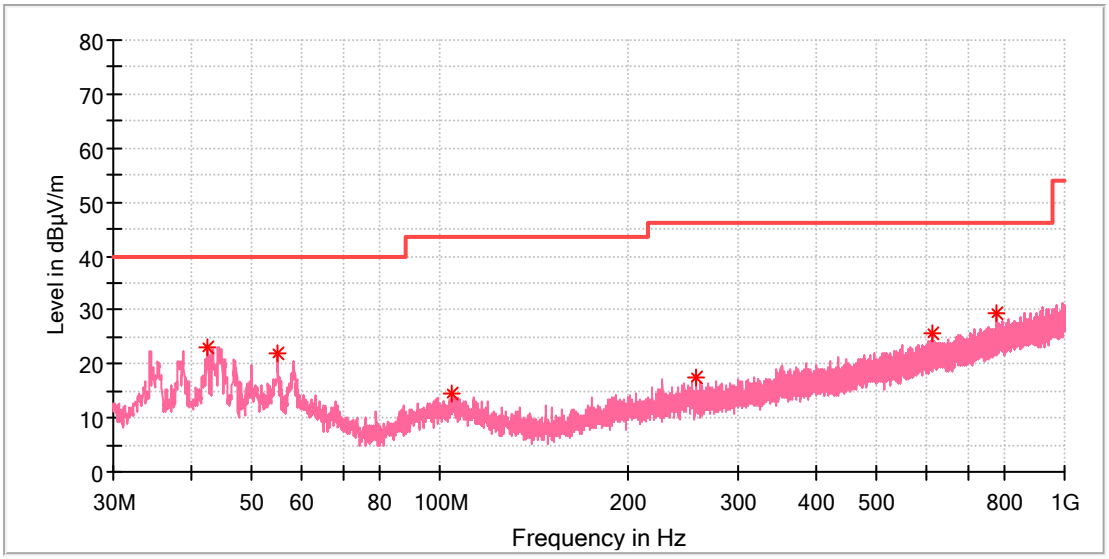


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
46.344500	17.83	40.00	22.17	100.0	H	174.0	-18.6
109.540000	15.58	43.50	27.92	100.0	H	0.0	-19.0
205.230500	16.00	43.50	27.50	100.0	H	195.0	-18.9
549.289500	23.87	46.00	22.13	100.0	H	134.0	-11.0
944.031000	30.97	46.00	15.03	100.0	H	161.0	-4.5

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

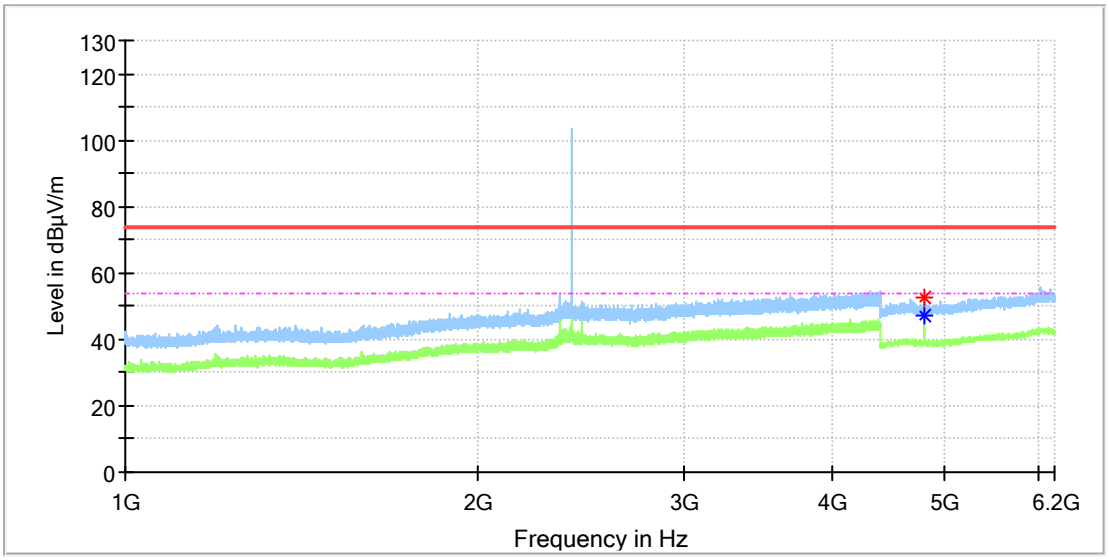
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
42.416000	23.17	40.00	16.83	100.0	V	259.0	-19.5
54.977500	21.95	40.00	18.05	100.0	V	354.0	-18.4
104.690000	14.37	43.50	29.13	100.0	V	0.0	-18.8
256.349500	17.48	46.00	28.52	100.0	V	251.0	-17.1
614.328000	25.71	46.00	20.29	100.0	V	23.0	-9.6
775.687500	29.36	46.00	16.64	100.0	V	60.0	-6.8

1GHz - 18GHz

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

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

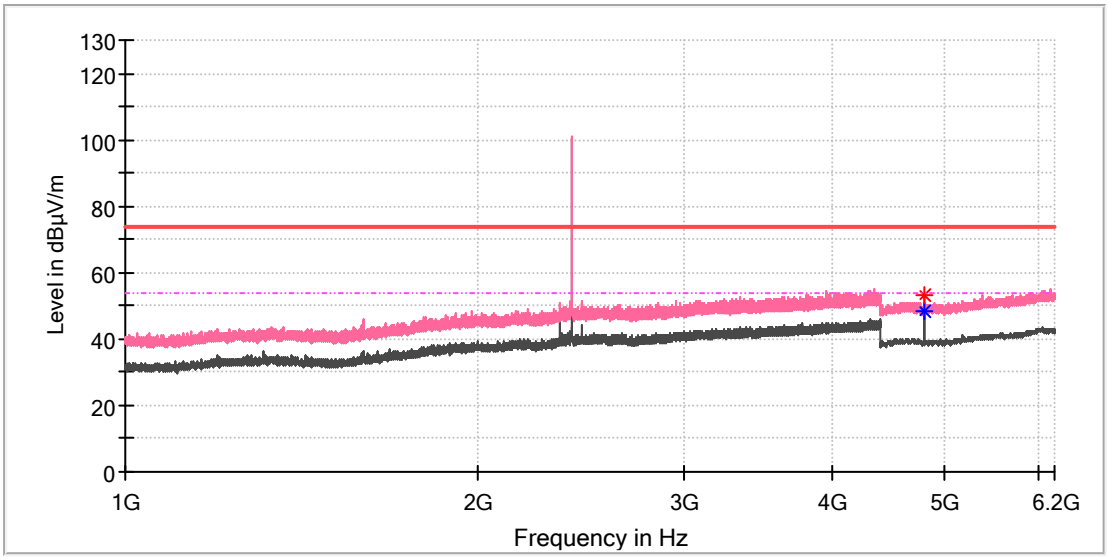


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.000000	52.88	---	74.00	21.12	150.0	H	198.0	11.8
4804.000000	---	47.08	54.00	6.92	150.0	H	198.0	11.8

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

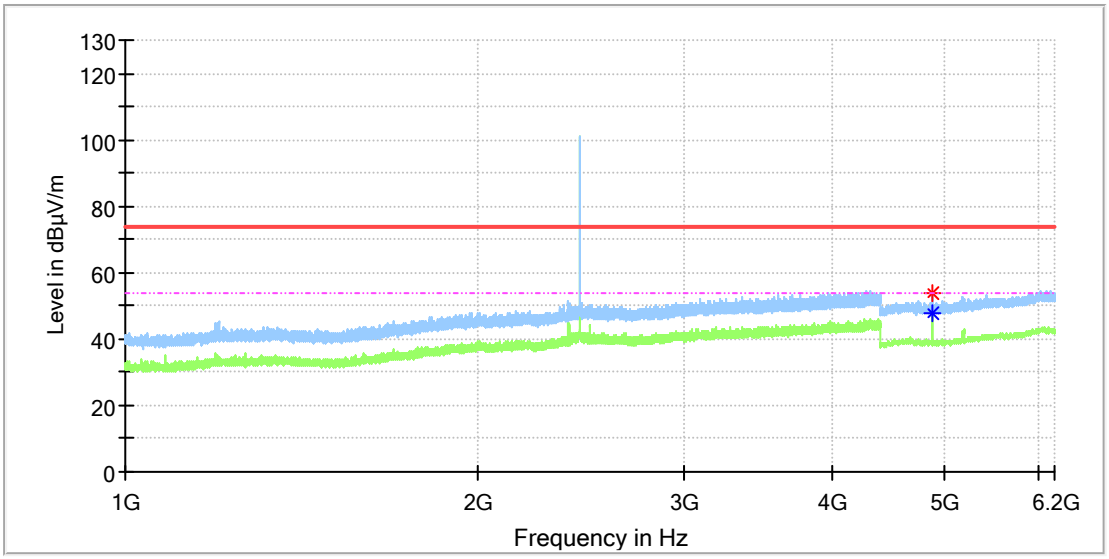


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4803.500000	53.19	---	74.00	20.81	150.0	V	67.0	11.8
4804.000000	---	48.28	54.00	5.72	150.0	V	67.0	11.8

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

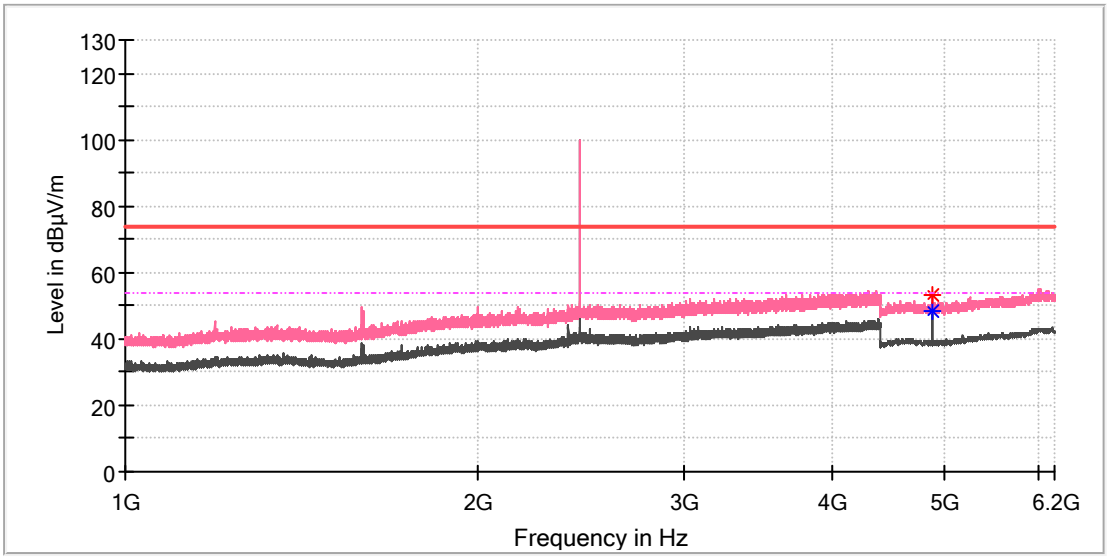


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4882.000000	53.72	---	74.00	20.28	150.0	H	193.0	11.8
4882.000000	---	47.69	54.00	6.31	150.0	H	193.0	11.8

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

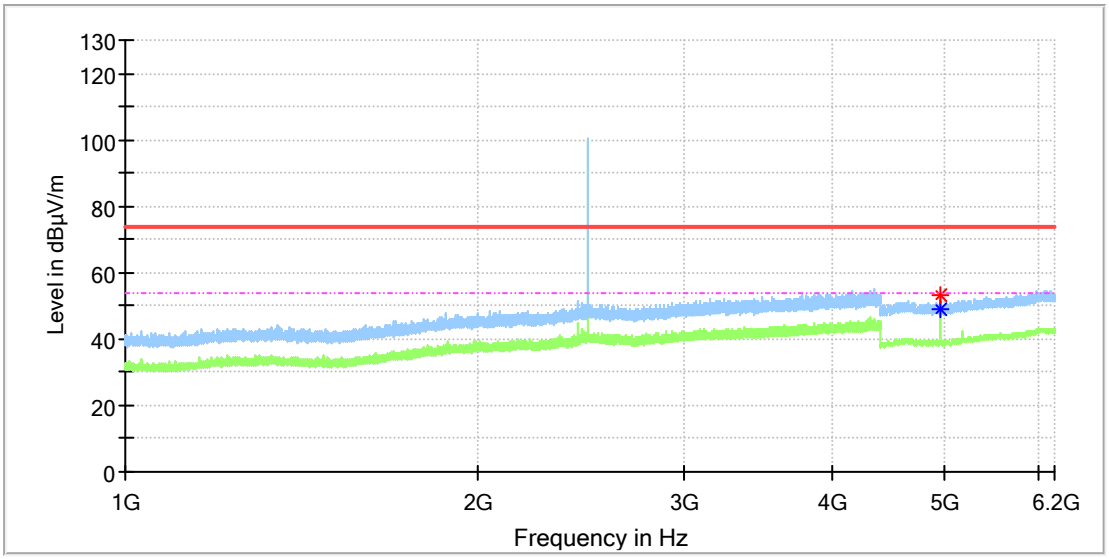


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4882.000000	---	48.11	54.00	5.89	150.0	V	68.0	11.8
4882.000000	53.37	---	74.00	20.63	150.0	V	68.0	11.8

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

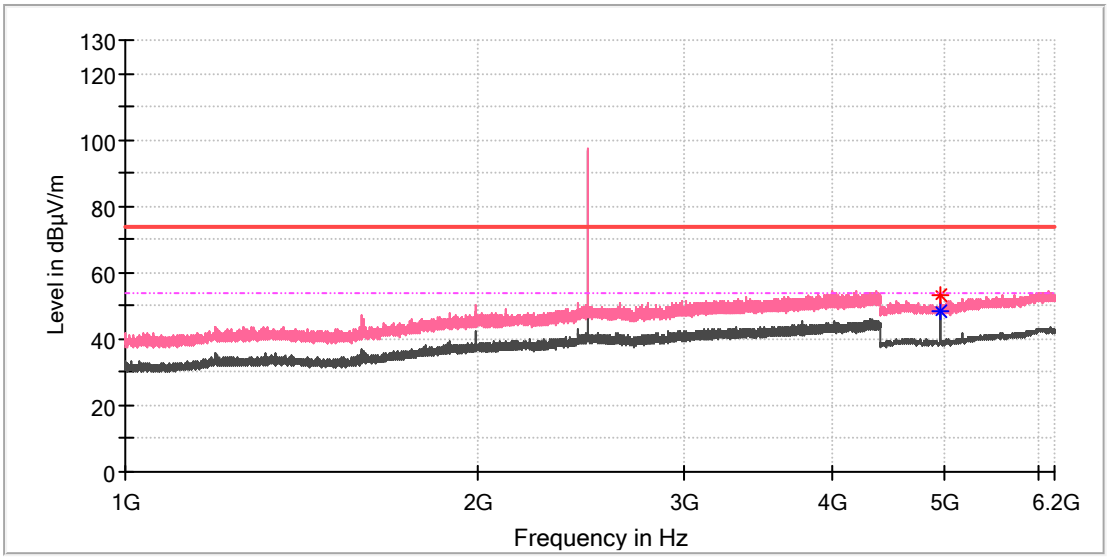


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.000000	53.38	---	74.00	20.62	150.0	H	195.0	11.8
4960.000000	---	48.84	54.00	5.16	150.0	H	195.0	11.8

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

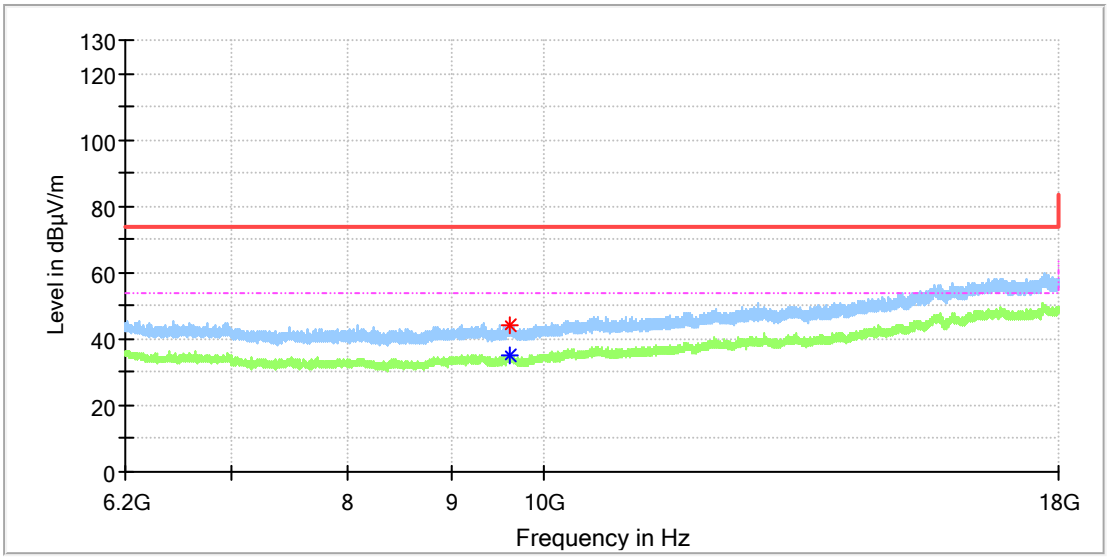


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4959.500000	53.34	---	74.00	20.66	150.0	V	69.0	11.8
4960.000000	---	48.14	54.00	5.86	150.0	V	132.0	11.8

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

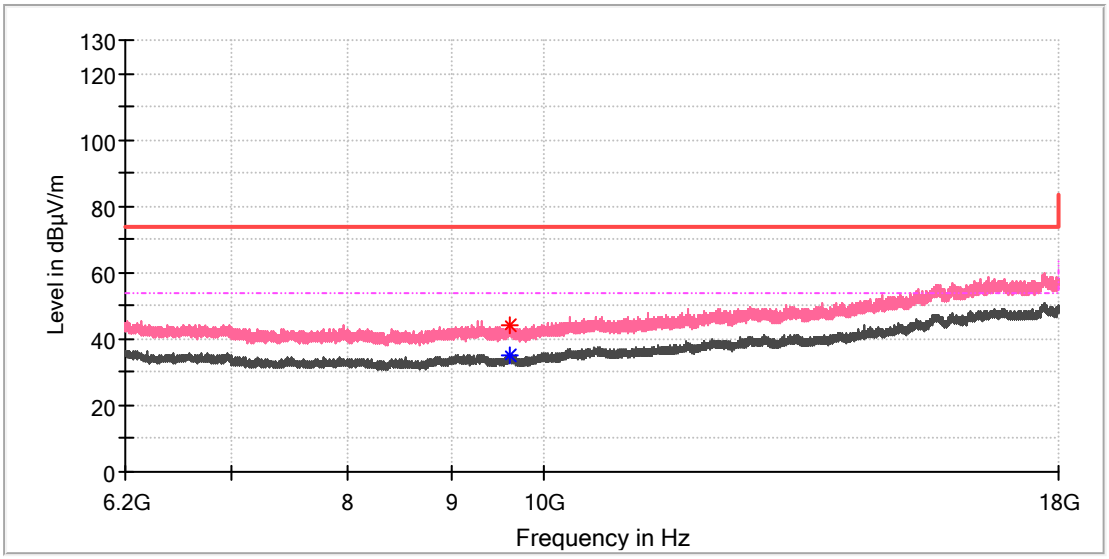


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
9622.000000	44.06	---	74.00	29.94	150.0	H	227.0	10.4
9622.000000	---	35.35	54.00	18.65	150.0	H	227.0	10.4

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

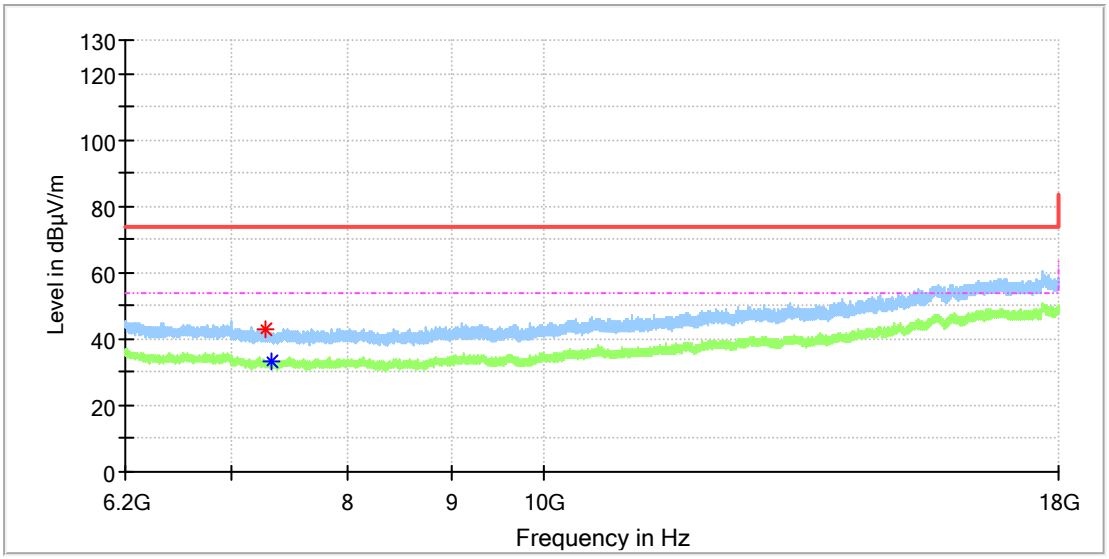


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
9624.458333	43.87	---	74.00	30.13	150.0	V	106.0	10.4
9625.441667	---	35.35	54.00	18.65	150.0	V	93.0	10.4

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

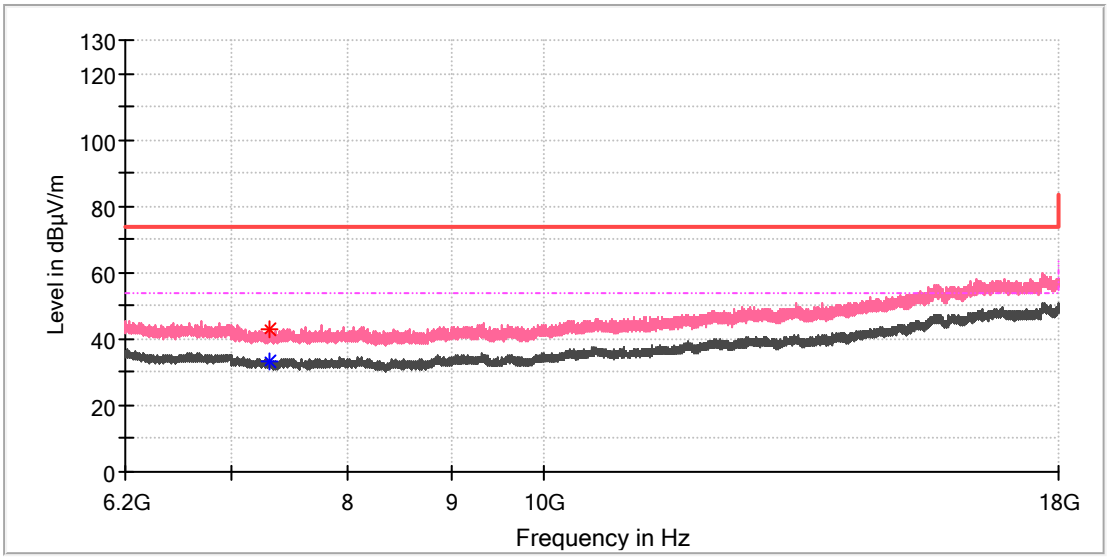


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7281.175000	42.84	---	74.00	31.16	150.0	H	269.0	8.4
7324.933333	---	33.43	54.00	20.57	150.0	H	258.0	8.2

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

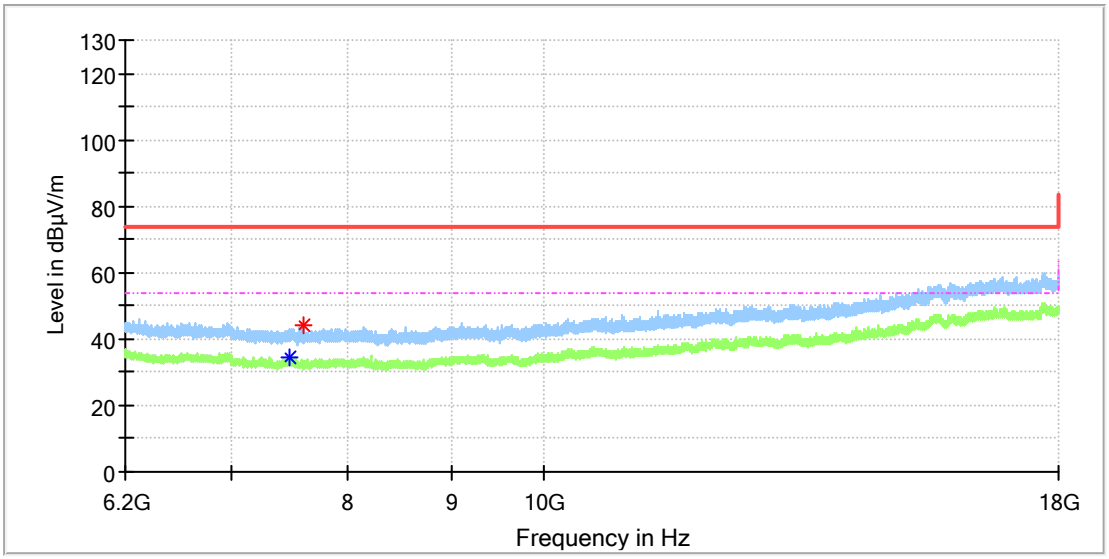


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7305.266667	---	33.23	54.00	20.77	150.0	V	135.0	8.3
7306.250000	42.65	---	74.00	31.35	150.0	V	259.0	8.3

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

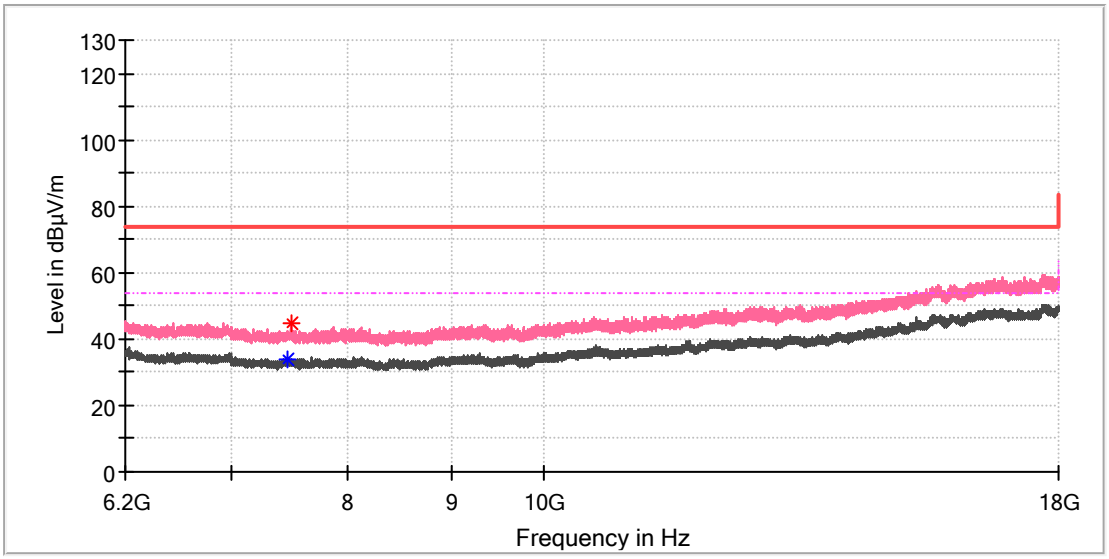


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7487.183333	---	34.32	54.00	19.68	150.0	H	95.0	8.7
7595.841667	43.85	---	74.00	30.15	150.0	H	10.0	8.7

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



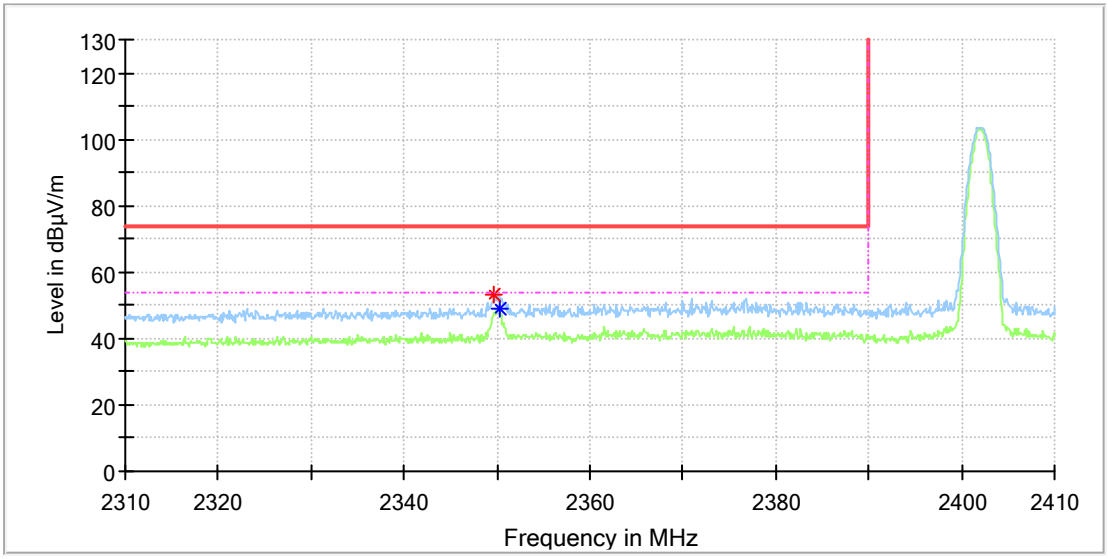
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7466.533333	---	34.09	54.00	19.91	150.0	V	227.0	8.6
7487.675000	44.94	---	74.00	29.06	150.0	V	227.0	8.7

Appendix B.9: Test Results of Radiated Emissions in Restricted Bands

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

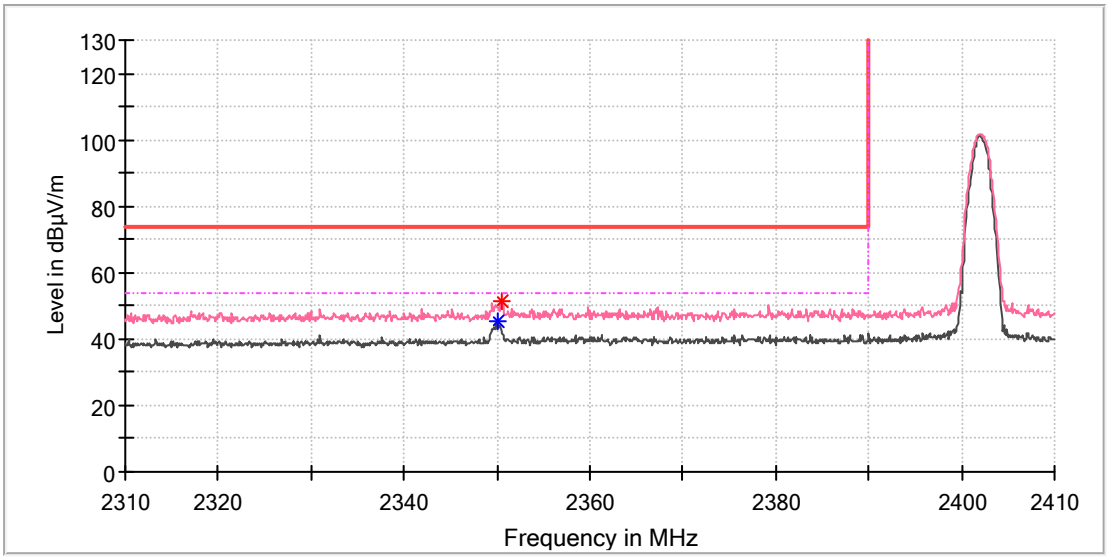


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2349.700000	53.02	---	74.00	20.98	150.0	H	201.0	6.9
2350.200000	---	48.99	54.00	5.01	150.0	H	166.0	6.9

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

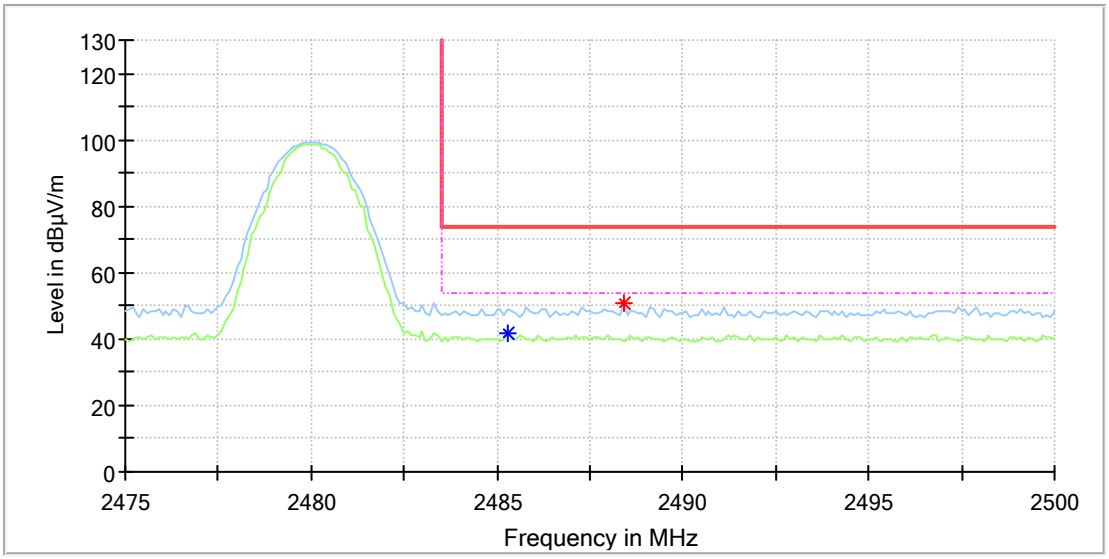


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2350.000000	---	45.14	54.00	8.86	150.0	V	203.0	6.9
2350.600000	51.44	---	74.00	22.56	150.0	V	250.0	6.9

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

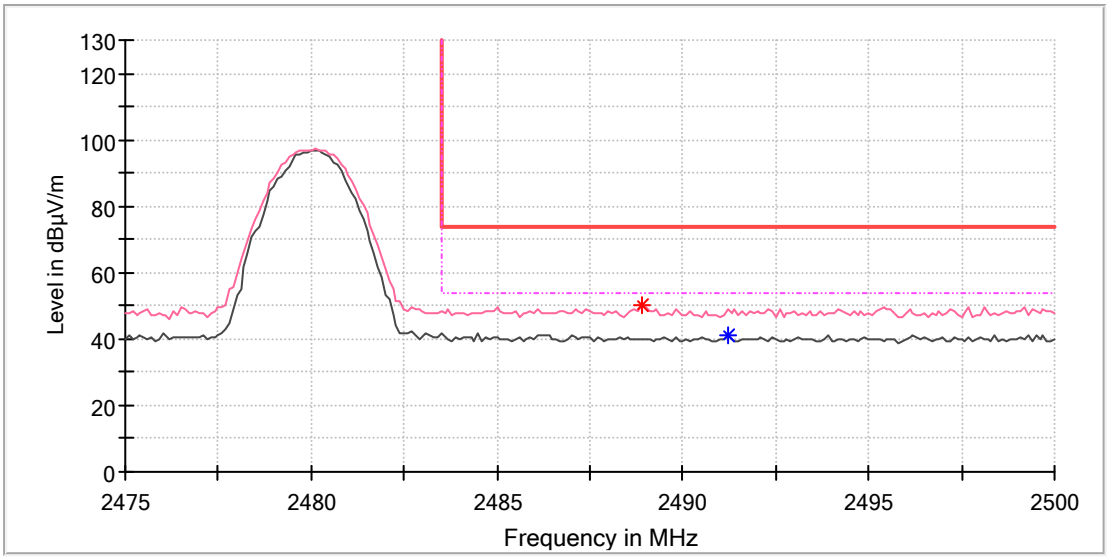


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2485.300000	---	41.95	54.00	12.05	150.0	H	37.0	7.4
2488.400000	50.59	---	74.00	23.41	150.0	H	236.0	7.4

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2488.900000	49.94	---	74.00	24.06	150.0	V	102.0	7.4
2491.200000	---	41.37	54.00	12.63	150.0	V	168.0	7.4

Appendix C: Test Results of Right earbud

Appendix C.1: Test Results of 99% Bandwidth

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.84733	2401.5774	2402.4247	---	---
		2441	0.86040	2440.5577	2441.4181	---	---
		2480	0.84051	2479.5558	2480.3963	---	---
3DH5	Ant1	2402	1.1549	2401.4145	2402.5694	---	---
		2441	1.1465	2440.4200	2441.5665	---	---
		2480	1.1601	2479.4125	2480.5726	---	---

DH5_Ant1_2402

DH5_Ant1_2441

DH5_Ant1_2480

3DH5_Ant1_2402

3DH5_Ant1_2441

3DH5_Ant1_2480

Appendix C.2: Test Results of 20dB Bandwidth

TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	1.041	2401.475	2402.516	---	---
		2441	1.020	2440.484	2441.504	---	---
		2480	0.921	2479.478	2480.399	---	---
3DH5	Ant1	2402	1.263	2401.349	2402.612	---	---
		2441	1.239	2440.361	2441.600	---	---
		2480	1.242	2479.358	2480.600	---	---

DH5_Ant1_2402

DH5_Ant1_2441

DH5_Ant1_2480

3DH5_Ant1_2402

3DH5_Ant1_2441

3DH5_Ant1_2480

Appendix C.3: Test Results of Frequency stability

Test Channel (MHz)	2402

Test result of frequency tolerance of voltage variation

Voltage	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
DC 3.8V	2401.996	4	1.67	10
DC 4.18V	2401.995	5	2.08	
DC 3.42V	2401.996	4	1.67	

Test result of frequency tolerance of temperature variation

Temperature (℃)	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
-30	2401.988	12	5.00	10
-20	2401.988	12	5.00	
-10	2401.989	11	4.58	
0	2401.993	4	1.67	
10	2401.996	4	1.67	
20	2401.996	4	1.67	
30	2401.996	4	1.67	
40	2401.995	5	2.08	
50	2401.993	7	2.91	
55	2401.994	6	2.50	

Test Channel (MHz)	2441

Test result of frequency tolerance of voltage variation

Voltage	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
DC 3.8V	2440.995	-5	-2.05	10
DC 4.18V	2440.995	-5	-2.05	
DC 3.42V	2440.994	-6	-2.46	

Test result of frequency tolerance of temperature variation

Temperature (℃)	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
-30	2440.992	-8	-3.28	10
-20	2440.991	-9	-3.69	
-10	2440.995	-5	-2.05	
0	2440.995	-5	-2.05	
10	2440.995	-5	-2.05	
20	2440.995	-5	-2.05	
30	2440.992	-8	-3.28	
40	2440.991	-9	-3.69	
50	2440.990	-10	-4.10	
55	2440.990	-10	-4.10	

Test Channel (MHz)	2480

Test result of frequency tolerance of voltage variation

Voltage	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
DC 3.8V	2479.994	-6	-2.42	10
DC 4.18V	2479.994	-6	-2.42	
DC 3.42V	2479.992	-8	-3.23	

Test result of frequency tolerance of temperature variation

Temperature (℃)	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
-30	2479.992	-8	-3.23	10
-20	2479.991	-9	-3.63	
-10	2479.992	-8	-3.23	
0	2479.992	-8	-3.23	
10	2479.994	-6	-2.42	
20	2479.994	-6	-2.42	
30	2479.993	-7	-2.82	
40	2479.992	-8	-3.23	
50	2479.991	-9	-3.63	
55	2479.992	-8	-3.23	

Appendix C.4: Test Results of Carrier Frequency Separation

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.008	≥0.694	PASS
3DH5	Ant1	Hop	1.008	≥0.842	PASS

DH5_Ant1_Hop

3DH5_Ant1_Hop

Appendix C.5: Test Results of Number of Hopping Frequency

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 C.6: Test Results of Time of Occupancy

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.386	313	0.121	≤0.4	PASS
DH3	Ant1	Hop	1.642	168	0.276	≤0.4	PASS
DH5	Ant1	Hop	2.891	117	0.338	≤0.4	PASS
3DH1	Ant1	Hop	0.395	315	0.124	≤0.4	PASS
3DH3	Ant1	Hop	1.647	153	0.252	≤0.4	PASS
3DH5	Ant1	Hop	2.897	93	0.269	≤0.4	PASS

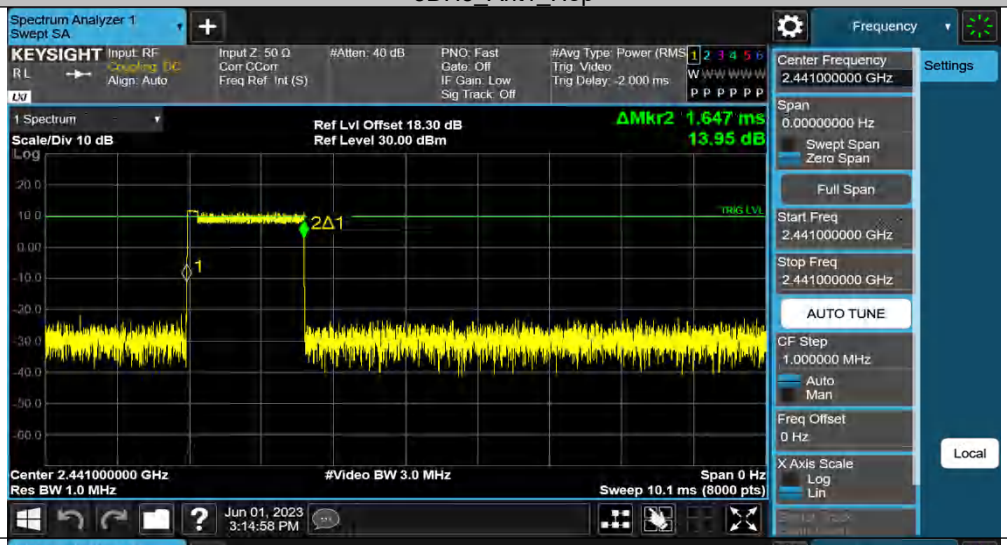
DH1_Ant1_Hop

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 18.30 dB
Ref Level 30.00 dBm
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
Center 2.441000000 GHz
Res BW 510 kHz
#Video BW 3.0 MHz
Span 0 Hz
Sweep 31.6 s (30000 pts)
Jun 01, 2023
3:09:55 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 C.7: 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	10.18	10.18	---	PASS
			30~1000	10.18	-41.4	≤-9.82	PASS
			1000~26500	10.18	-32.46	≤-9.82	PASS
		2441	Reference	10.99	10.99	---	PASS
			30~1000	10.99	-41.9	≤-9.01	PASS
			1000~26500	10.99	-32.62	≤-9.01	PASS
		2480	Reference	12.05	12.05	---	PASS
			30~1000	12.05	-42.05	≤-7.95	PASS
			1000~26500	12.05	-31.82	≤-7.95	PASS
3DH5	Ant1	2402	Reference	5.82	5.82	---	PASS
			30~1000	5.82	-41	≤-14.18	PASS
			1000~26500	5.82	-32.55	≤-14.18	PASS
		2441	Reference	6.96	6.96	---	PASS
			30~1000	6.96	-41.9	≤-13.04	PASS
			1000~26500	6.96	-32.79	≤-13.04	PASS
		2480	Reference	12.15	12.15	---	PASS
			30~1000	12.15	-41.41	≤-7.85	PASS
			1000~26500	12.15	-32.48	≤-7.85	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

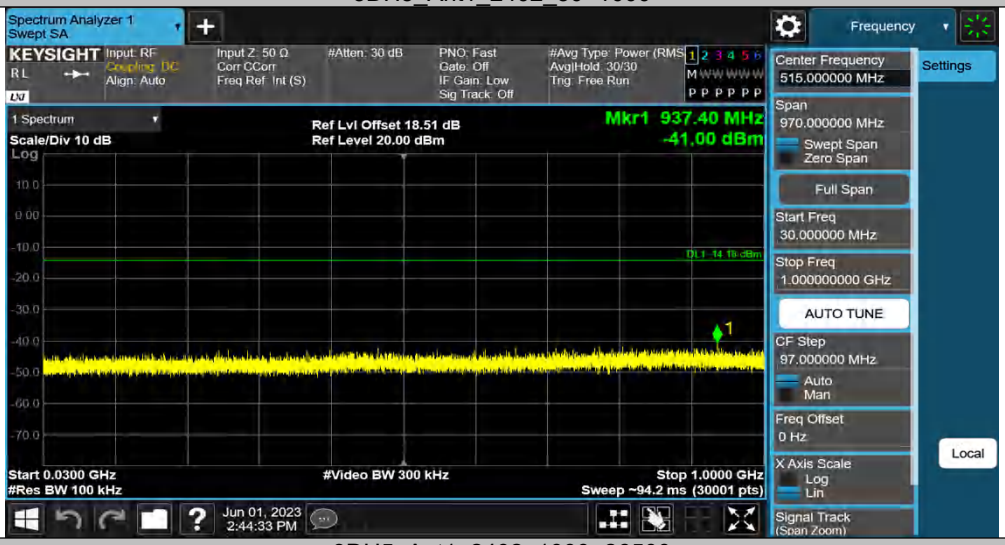
DH5_Ant1_2480_0~Reference

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	11.17	-43.72	≤-8.83	PASS
DH5	Ant1	High	2480	12.24	-43.72	≤-7.76	PASS
3DH5	Ant1	Low	2402	11.32	-43.17	≤-8.68	PASS
3DH5	Ant1	High	2480	12.24	-43.56	≤-7.76	PASS
DH5	Ant1	Hopping	2402	9.839	-42.65	≤-10.16	PASS
DH5	Ant1	Hopping	2480	11.54	-43.88	≤-8.46	PASS
3DH5	Ant1	Hopping	2402	11.18	-43.70	≤-8.82	PASS
3DH5	Ant1	Hopping	2480	12.23	-43.99	≤-7.77	PASS

DH5_Ant1_Low_2480

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

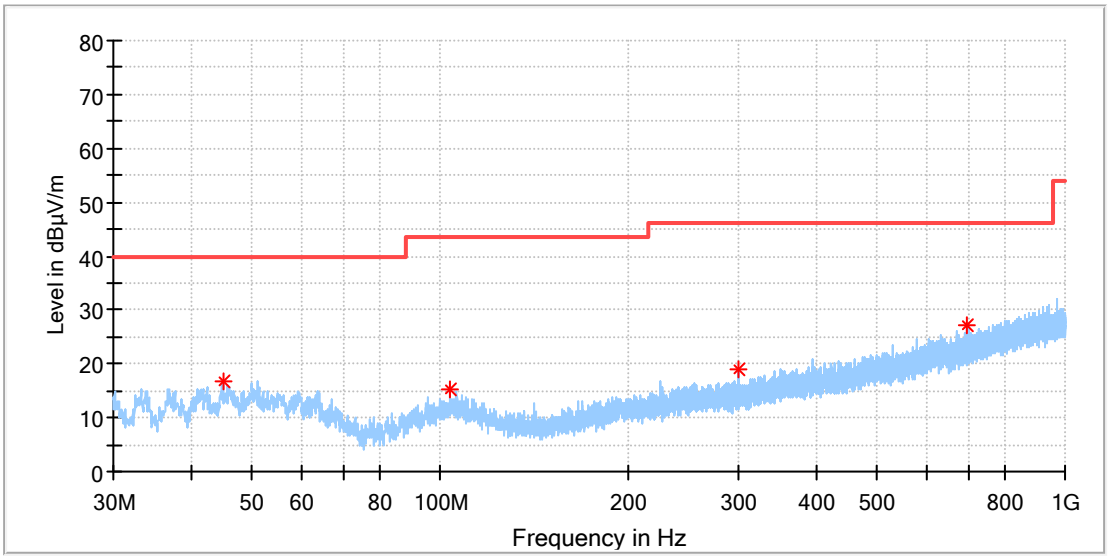
Appendix C.8: Test Results of Radiated Spurious Emissions

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:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

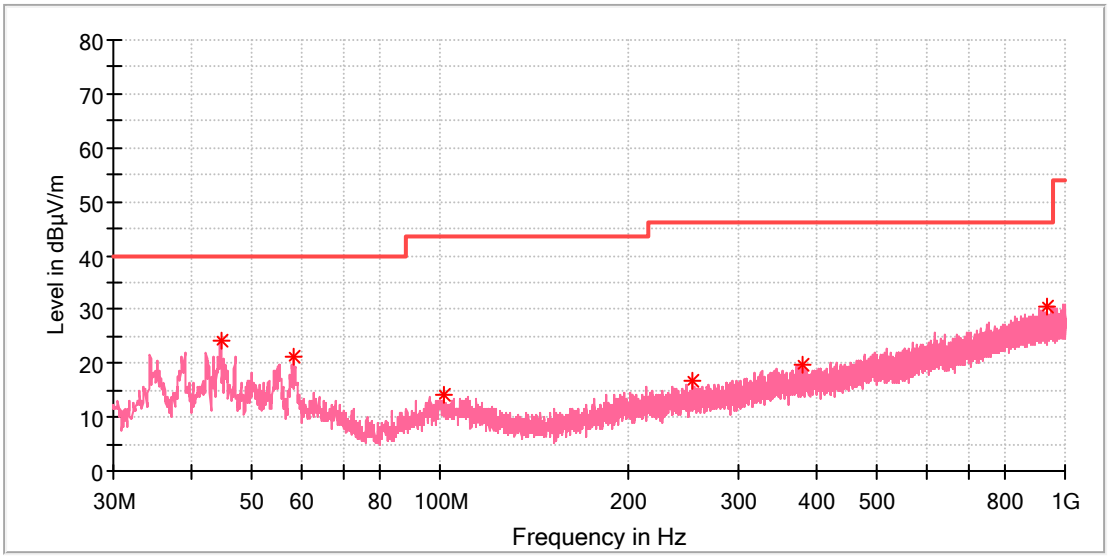


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
44.889500	16.67	40.00	23.33	100.0	H	0.0	-18.9
103.720000	15.28	43.50	28.22	100.0	H	60.0	-18.8
300.096500	19.06	46.00	26.94	100.0	H	31.0	-16.3
697.990500	27.09	46.00	18.91	100.0	H	209.0	-8.1

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

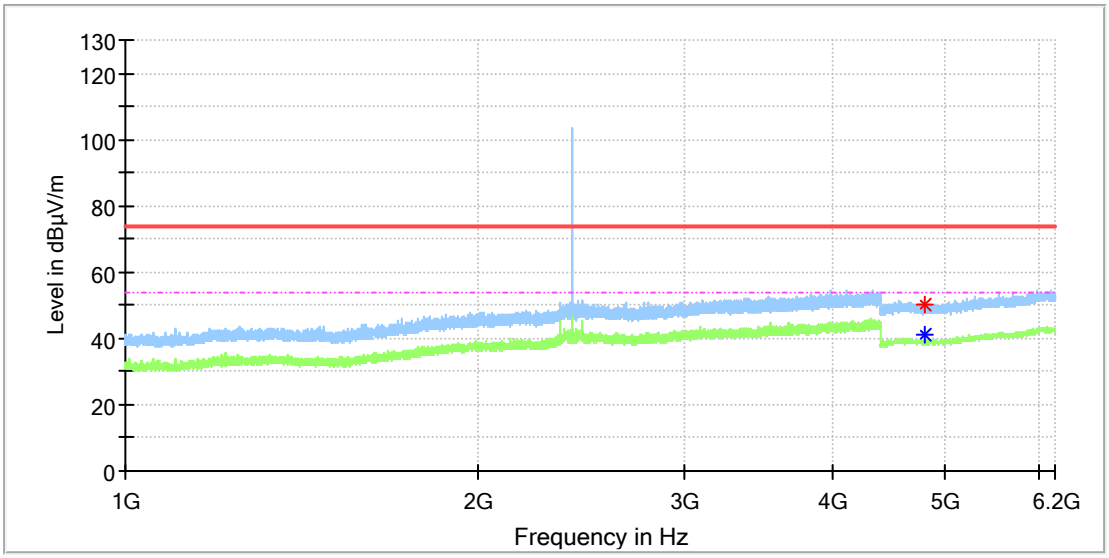
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
44.550000	24.05	40.00	15.95	100.0	V	272.0	-18.9
58.275500	21.33	40.00	18.67	100.0	V	1.0	-18.8
101.149500	14.13	43.50	29.37	100.0	V	223.0	-18.9
253.730500	16.66	46.00	29.34	100.0	V	55.0	-17.2
378.860500	19.89	46.00	26.11	100.0	V	203.0	-14.3
937.920000	30.57	46.00	15.43	100.0	V	354.0	-4.6

1GHz - 18GHz

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

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

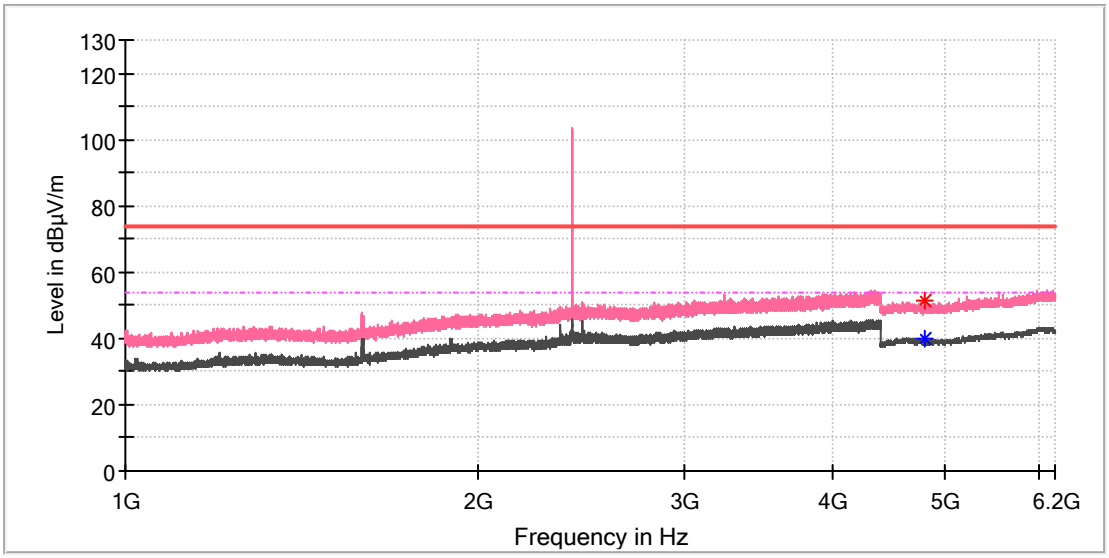


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.000000	50.16	---	74.00	23.84	150.0	H	210.0	11.8
4804.000000	---	41.03	54.00	12.97	150.0	H	210.0	11.8

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

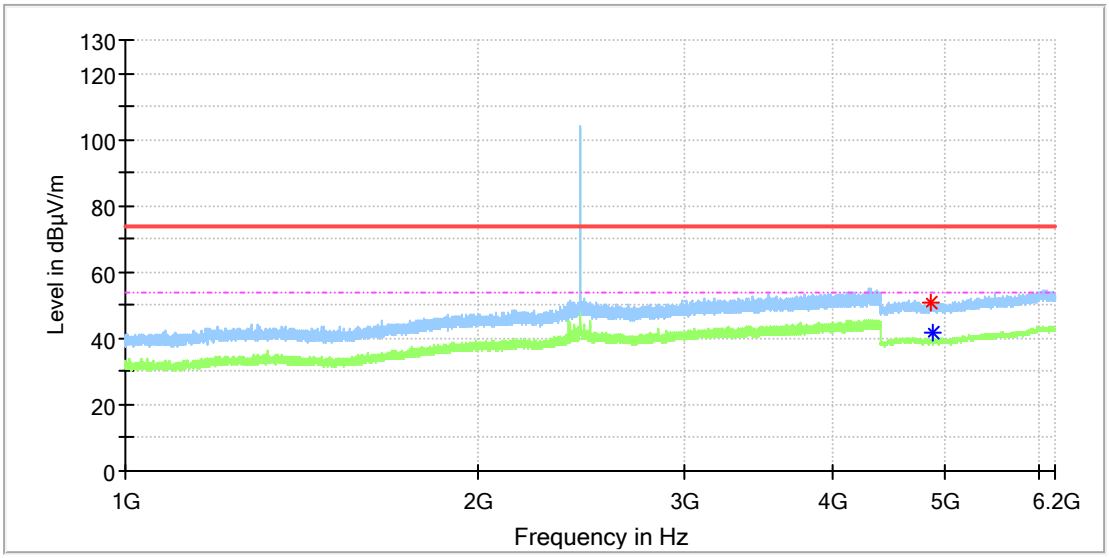


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4807.000000	---	39.74	54.00	14.26	150.0	V	221.0	11.8
4810.500000	51.11	---	74.00	22.89	150.0	V	135.0	11.8

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

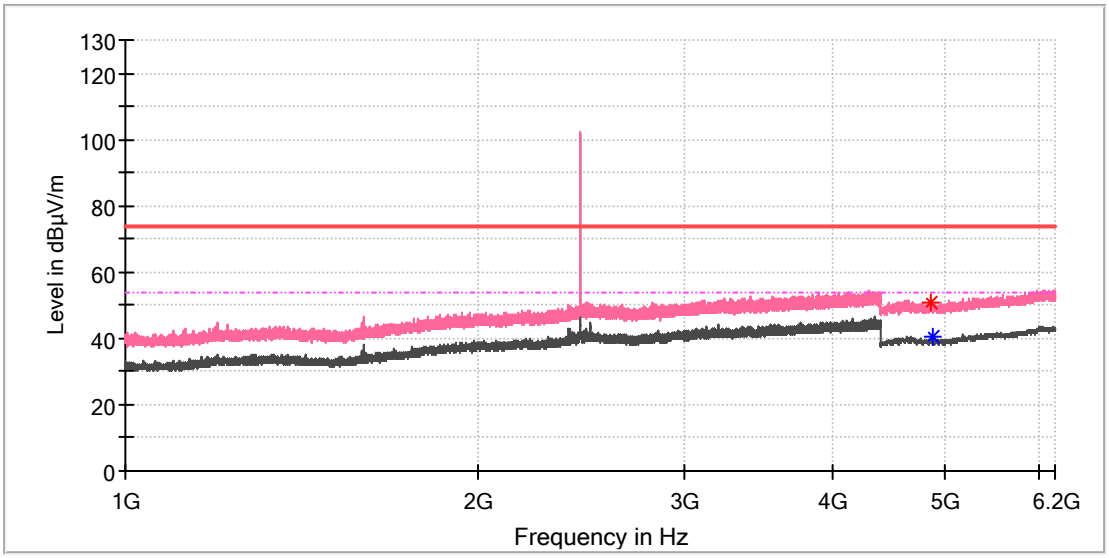


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4859.500000	50.92	---	74.00	23.08	150.0	H	355.0	11.8
4882.000000	---	41.60	54.00	12.40	150.0	H	234.0	11.8

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

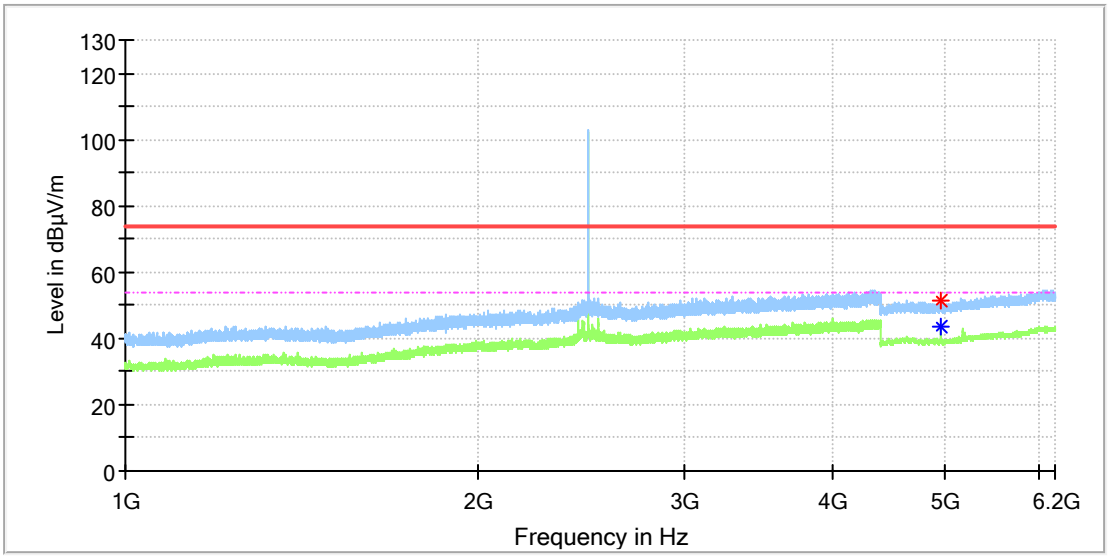


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4856.500000	50.96	---	74.00	23.04	150.0	V	303.0	11.8
4882.000000	---	40.23	54.00	13.77	150.0	V	202.0	11.8

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

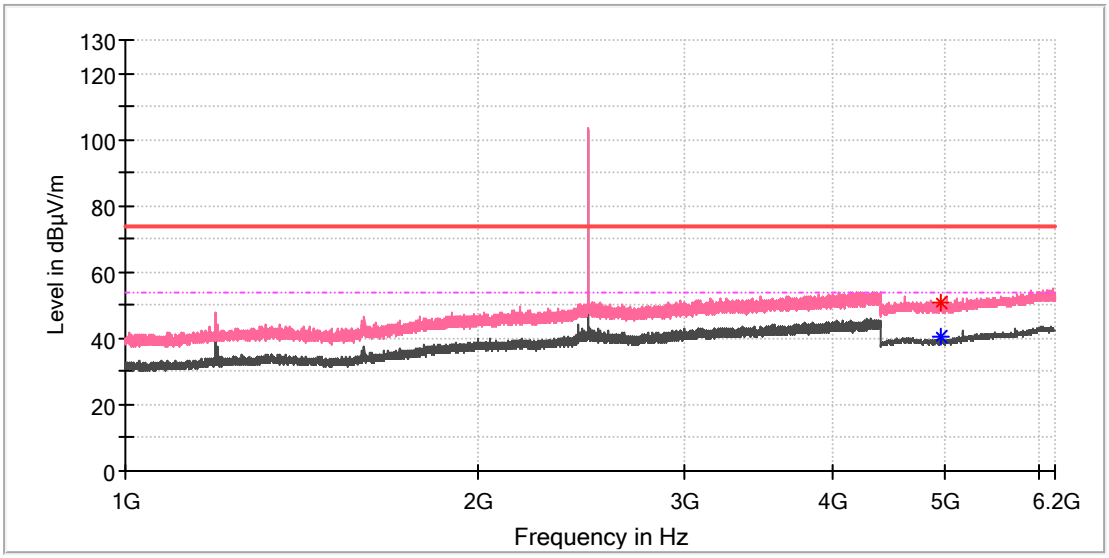


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.000000	51.38	---	74.00	22.62	150.0	H	235.0	11.8
4960.000000	---	43.69	54.00	10.31	150.0	H	235.0	11.8

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

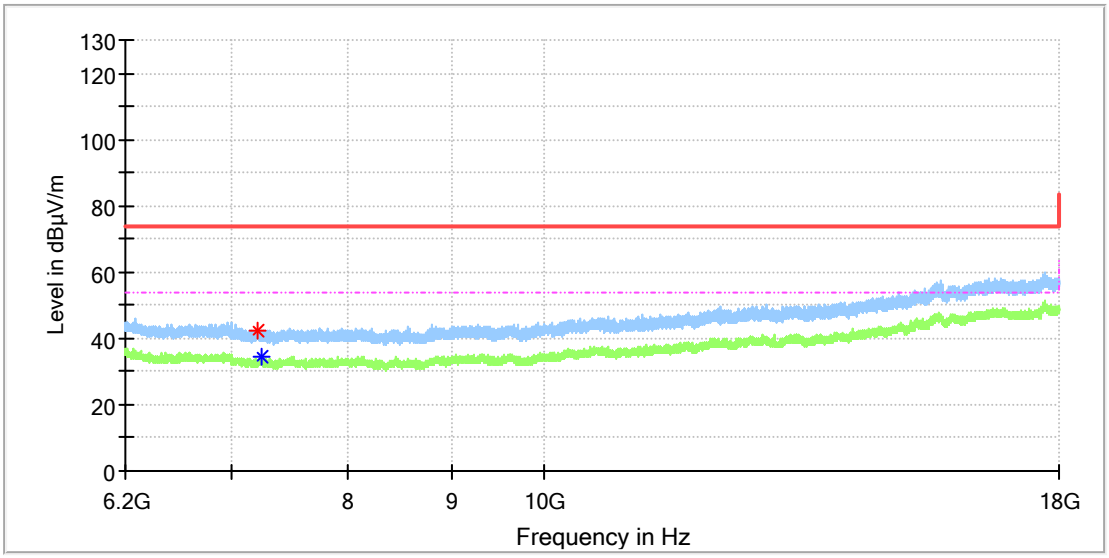


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.000000	---	40.33	54.00	13.67	150.0	V	171.0	11.8
4962.500000	50.63	---	74.00	23.37	150.0	V	141.0	11.8

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

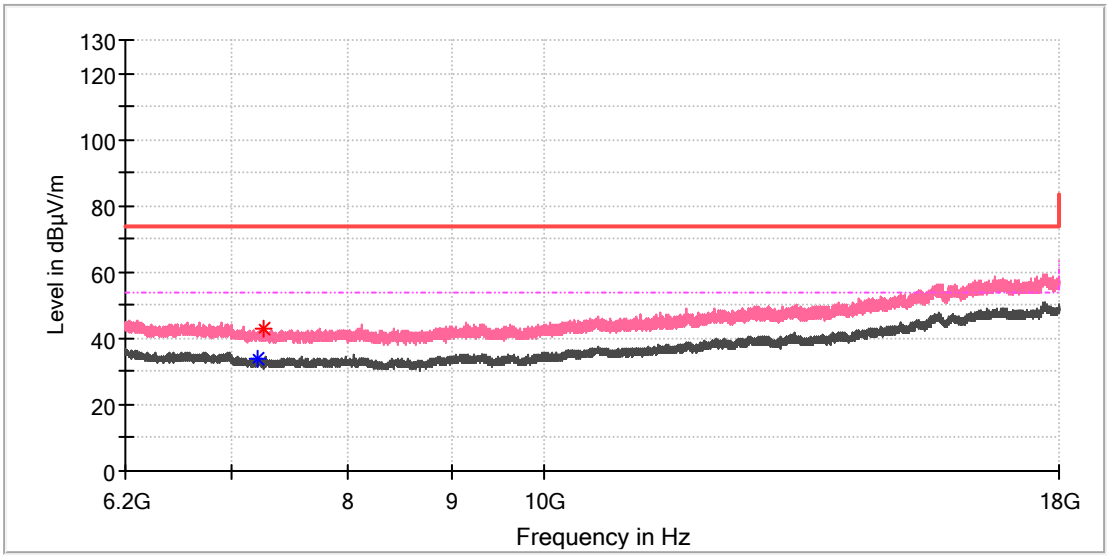


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7209.883333	42.50	---	74.00	31.50	150.0	H	306.0	8.7
7246.266667	---	34.22	54.00	19.78	150.0	H	293.0	8.6

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

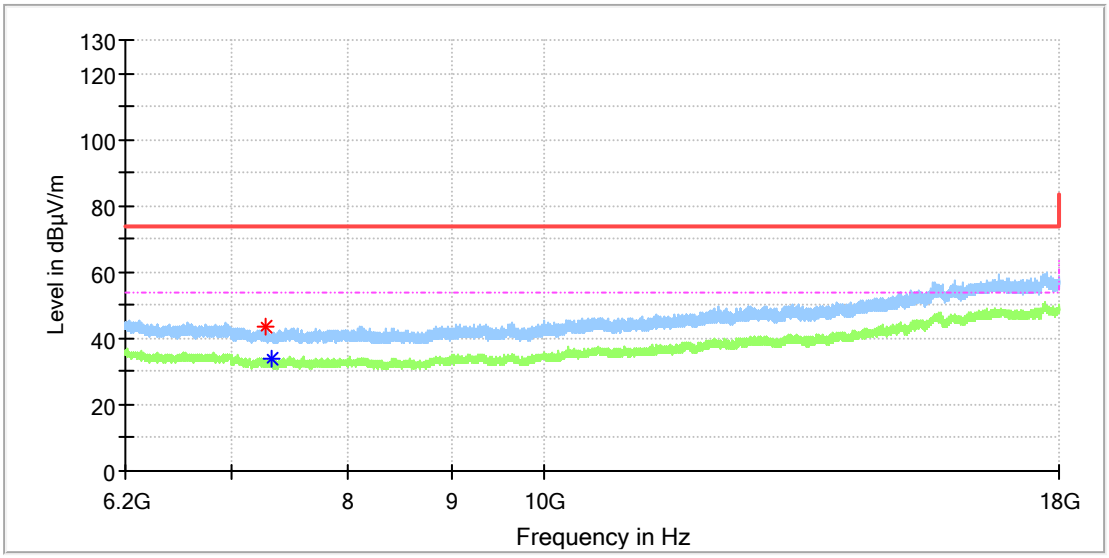


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7205.950000	---	33.68	54.00	20.32	150.0	V	120.0	8.8
7256.591667	43.10	---	74.00	30.90	150.0	V	69.0	8.5

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

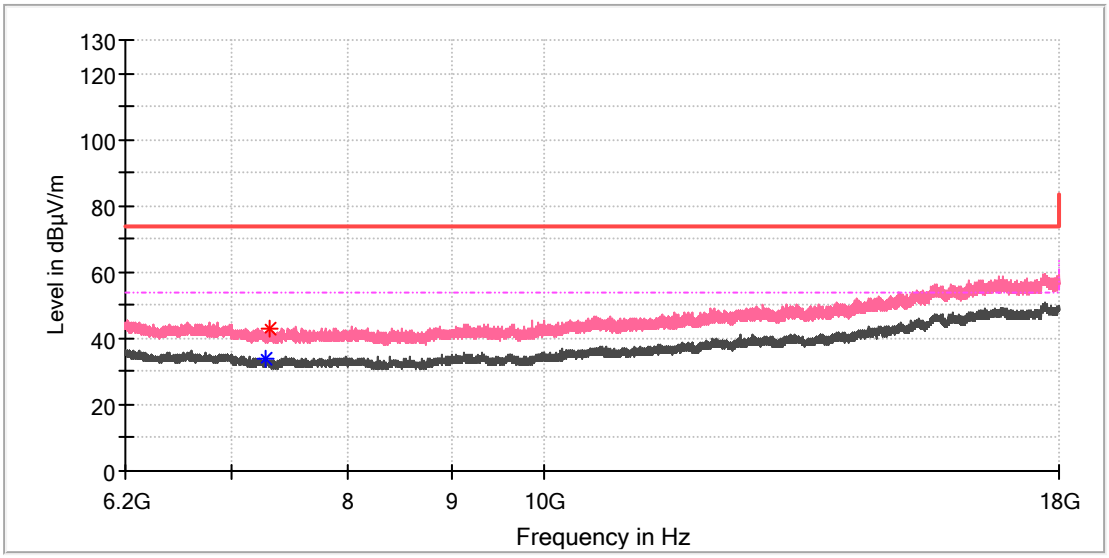


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7271.341667	43.61	---	74.00	30.39	150.0	H	1.0	8.5
7320.508333	---	33.56	54.00	20.44	150.0	H	127.0	8.2

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

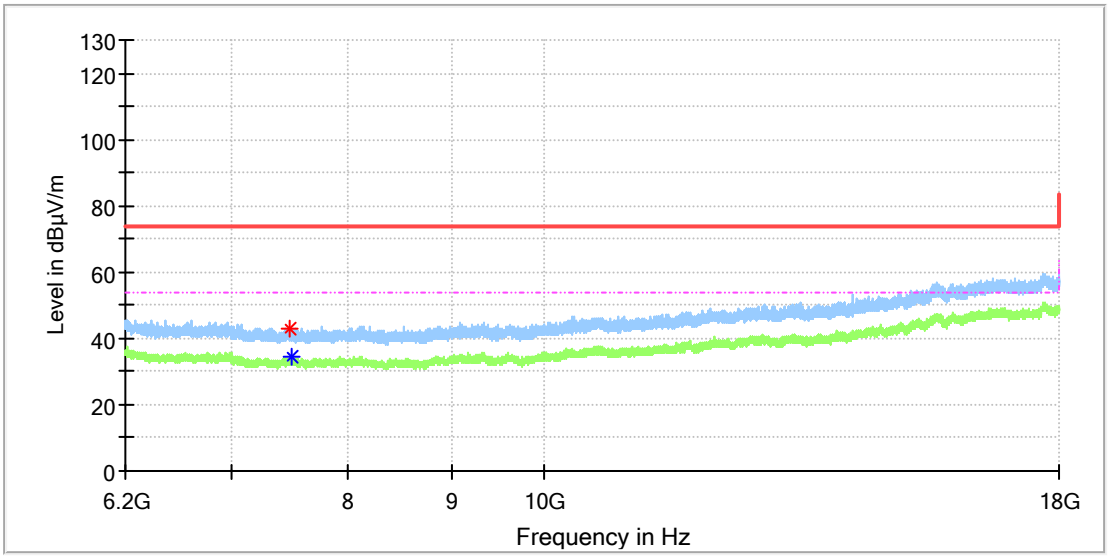


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7274.291667	---	33.73	54.00	20.27	150.0	V	313.0	8.4
7303.300000	42.77	---	74.00	31.23	150.0	V	0.0	8.3

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

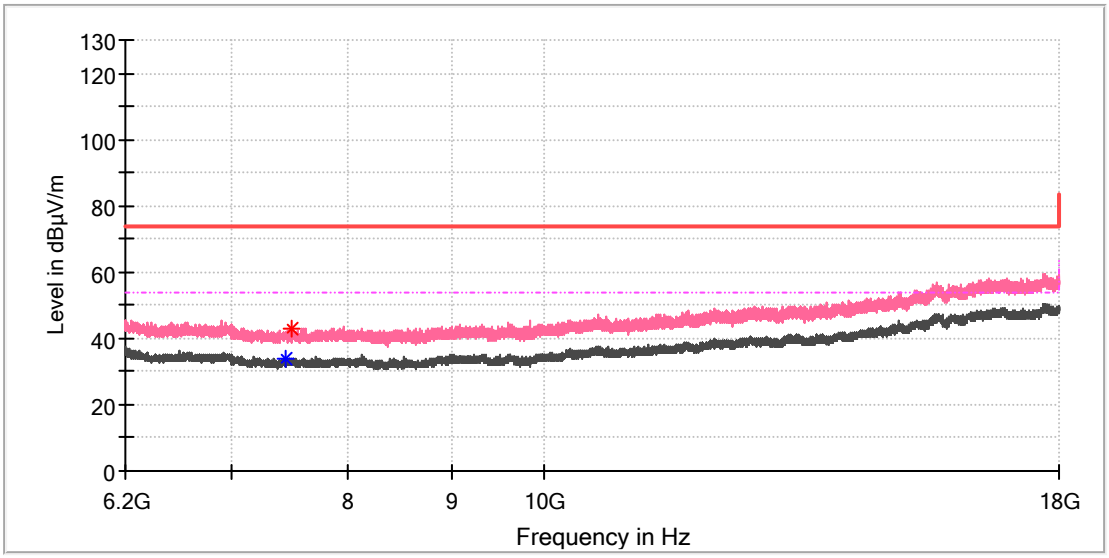


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7477.350000	43.11	---	74.00	30.89	150.0	H	267.0	8.6
7503.900000	---	34.41	54.00	19.59	150.0	H	117.0	8.7

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



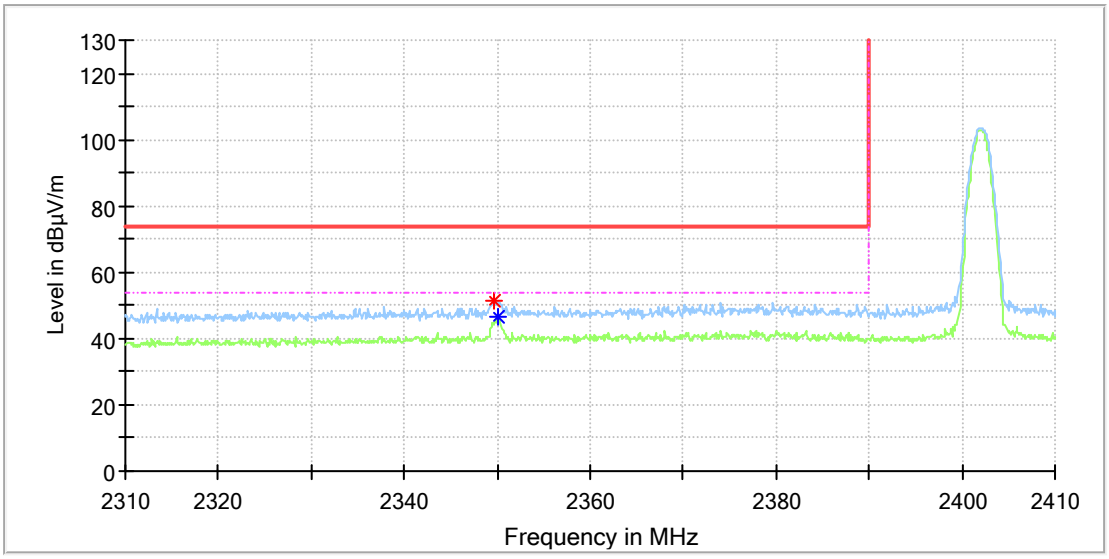
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7440.966667	---	33.96	54.00	20.04	150.0	V	100.0	8.4
7503.408333	42.76	---	74.00	31.24	150.0	V	211.0	8.7

Appendix C.9: Test Results of Radiated Emissions in Restricted Bands

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

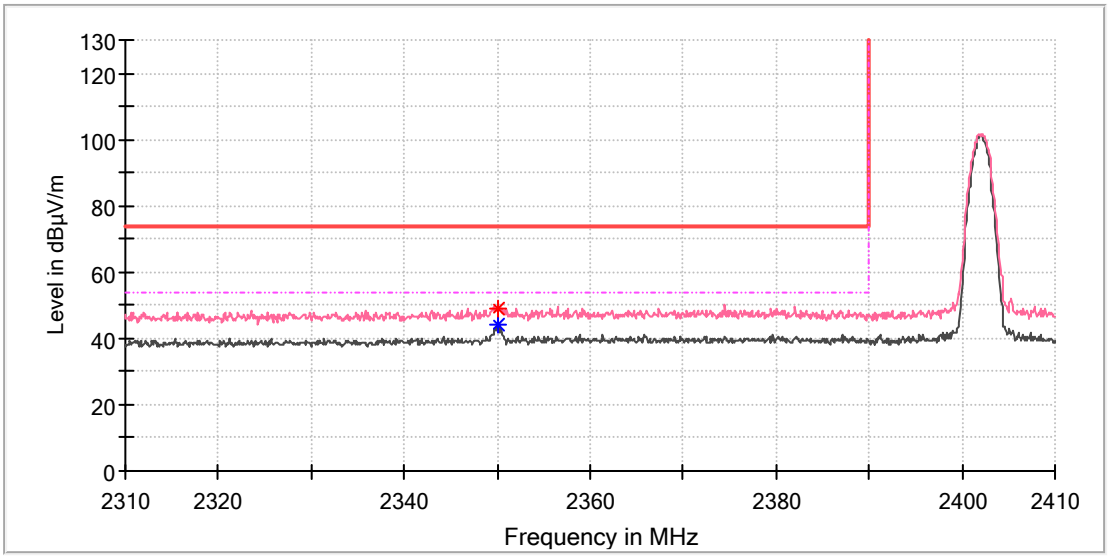


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2349.700000	51.14	---	74.00	22.86	150.0	H	307.0	6.9
2350.100000	---	46.44	54.00	7.56	150.0	H	307.0	6.9

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

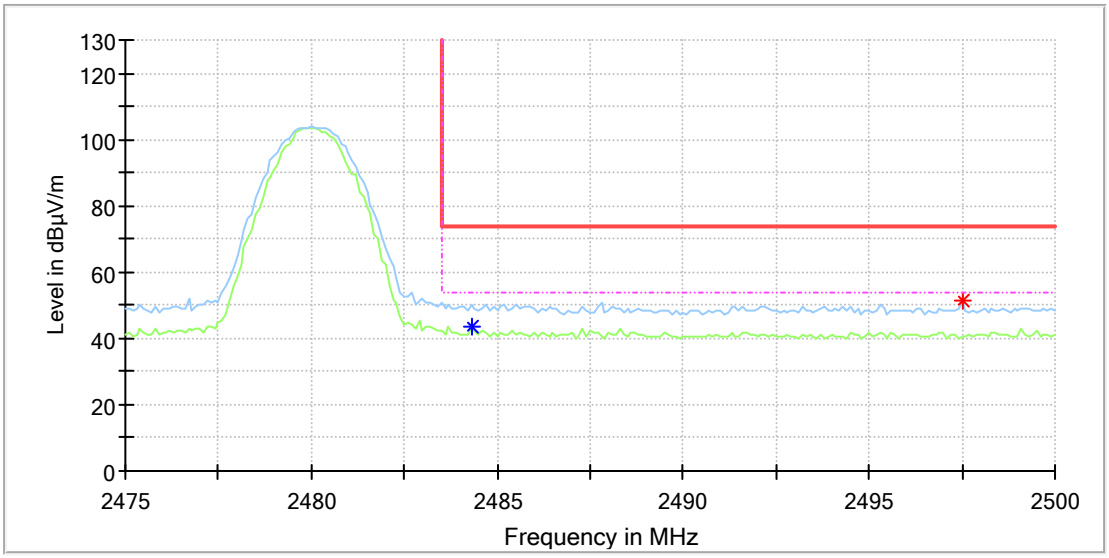


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2350.000000	49.07	---	74.00	24.93	150.0	V	75.0	6.9
2350.000000	---	44.28	54.00	9.72	150.0	V	75.0	6.9

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

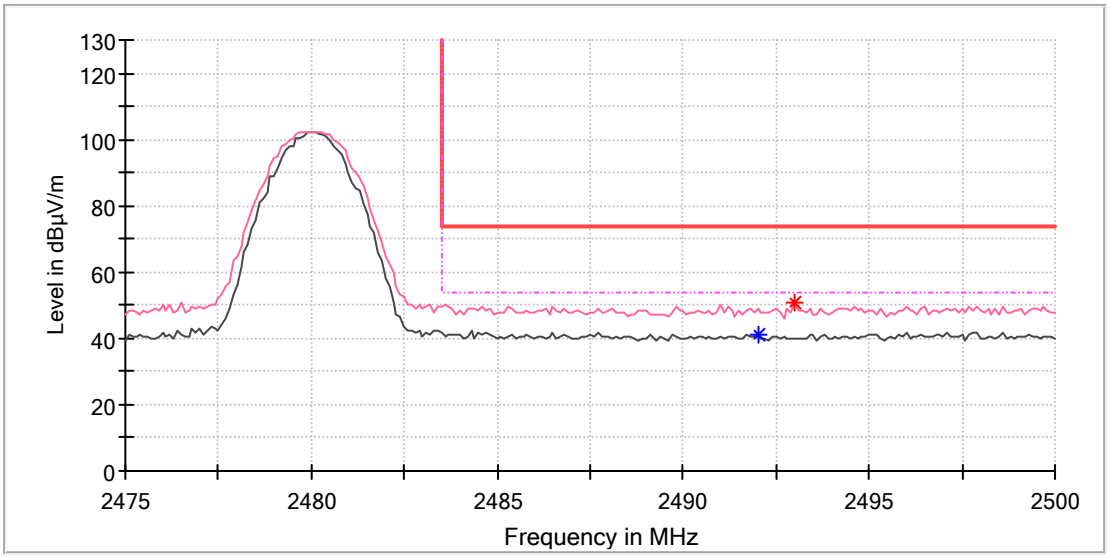


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2484.300000	---	43.67	54.00	10.33	150.0	H	108.0	7.4
2497.500000	51.43	---	74.00	22.57	150.0	H	90.0	7.4

EUT Information

EUT Name:	Bluetooth Headset
Model:	JBL WAVE BUDS
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168427200/A003478029-002
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
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)
2492.000000	---	41.39	54.00	12.61	150.0	V	124.0	7.4
2493.000000	50.75	---	74.00	23.25	150.0	V	133.0	7.4