


Prüfbericht-Nr.: Test report no.:	CN24IO8I 001	Auftrags-Nr.: Order no.:	168459500	Page 1 of 24 Seite 1 von 24
Kunden-Referenz-Nr.: Client reference no.:	N/A	Auftragsdatum: Order date:	2023-12-18	
Auftraggeber: Client:	Harman International Industries, Incorporated 8500 Balboa Blvd, Northridge, California, 91329, United States			
Prüfgegenstand: Test item:	BLUETOOTH HEADSET			
Bezeichnung / Typ-Nr.: Identification / Type no.:	LIVE BUDS 3 (Trademark: JBL)			
Auftrags-Inhalt: Order content:	Type test			
Prüfgrundlage: Test specification:	CFR47 FCC Part 15: Subpart C Section 15.247 RSS-247-Issue 3 August 2023 CFR47 FCC Part 15: Subpart C Section 15.207 RSS-Gen Issue 5 March 2019 CFR47 FCC Part 15: Subpart C Section 15.209			
Wareneingangsdatum: Date of sample receipt:	2023-12-27	Refer to photos document		
Prüfmuster-Nr.: Test sample no.:	A003630231-002, A003630231-003			
Prüfzeitraum: Testing period:	2023-12-27 – 2024-01-23			
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:		genehmigt von: authorized by:		
Datum: Date:	2024-03-14 <small>Signed by: Harry W. C. Wu</small>	Ausstellungsdatum: Issue date:	2024-03-14 <small>Signed by: Alex Lan</small>	
Stellung / Position:	Project Manager	Stellung / Position:	Reviewer	
Sonstiges / Other:	FCC ID: APILIVEBUDS3 IC: 6132A-LIVEBUDS3 HVIN: LIVE BUDS 3			
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
<small>* Legende:</small>	<small>P(ass) = entspricht o.g. Prüfgrundlage(n)</small>	<small>F(ail) = entspricht nicht o.g. Prüfgrundlage(n)</small>	<small>N/A = nicht anwendbar</small>	<small>N/T = nicht getestet</small>
<small>* Legend:</small>	<small>P(ass) = passed a.m. test specification(s)</small>	<small>F(ail) = failed a.m. test specification(s)</small>	<small>N/A = not applicable</small>	<small>N/T = not tested</small>
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

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Remarks
Anmerkungen

<p>1</p>	<p>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.</p> <p><i>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.</i></p>
<p>2</p>	<p>As contractually agreed, this document has been signed digitally only. TÜV 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, TÜV 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.</p> <p><i>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.</i></p>
<p>3</p>	<p>Test clauses with remark of * are subcontracted to qualified subcontractors and described 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.</p> <p><i>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.</i></p>
<p>4</p>	<p>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.</p> <p><i>Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen 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 bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.</i></p>

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Test Summary

5.1.1 ANTENNA REQUIREMENT

RESULT: Pass

5.1.2 MAXIMUM CONDUCTED OUTPUT POWER

RESULT: Pass

5.1.3 99% BANDWIDTH

RESULT: Pass

5.1.4 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHz BANDWIDTH

RESULT: Pass

5.1.5 RADIATED SPURIOUS EMISSION

RESULT: Pass

5.1.6 20dB BANDWIDTH

RESULT: Pass

5.1.7 CARRIER FREQUENCY SEPARATION

RESULT: Pass

5.1.8 FREQUENCY STABILITY

RESULT: Pass

5.1.9 NUMBER OF HOPPING FREQUENCY

RESULT: Pass

5.1.10 TIME OF OCCUPANCY

RESULT: Pass

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1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Test Results of Classical Bluetooth_Left Earbud.

Appendix B: Test Results of Classical Bluetooth_Right Earbud.

Appendix C: Photographs of the Test Set-up.

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.

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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	21.09.2024
MXG X-Series RF Vector Signal Generator	Keysight	N5182B	MY61250137	21.09.2024
EXG X-Series Microwave Analog Signal Generator	Keysight	N5173B	MY61250141	21.09.2024
DC Power Supply	Keysight	E3642A	MY61276100	21.09.2024
Wireless Connectivity Tester	R&S	CMW270	102505	21.09.2024
Power Control Unit	Tonscend	JS0806-4ADC	N/A	21.09.2024
Automation Control Unit	Tonscend	JS0806-2	21C8060396	21.09.2024
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	25.07.2024
Signal Analyzer	R&S	FSV 40	101439	25.07.2024
System Controller Interface	R&S	SCI-100	S10010038	N/A
Filterbank	R&S	Wlan	100759	25.07.2024
OSP	R&S	OSP 120	102040	N/A
Pre-amplifier	R&S	SCU08F1	08320031	25.07.2024
Amplifier	R&S	SCU-18F	180070	25.07.2024
Amplifier	R&S	SCU40A	100475	25.07.2024
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	06.08.2024
Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218717	06.08.2024
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	27.08.2024
Active Loop Antenna	Schwarzbeck	FMZB 1513	302	06.08.2024
Test software	R&S	EMC32 (V10.60.10)	N/A	N/A
Control PC	Dell	OptiPlex 7050	36NV9P2	N/A
3m Semi-Anechoic Chamber	Albatross	SAC-3m	APC17151-SAC	22.06.2024

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2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table

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.

The earbuds have two versions which are identical in electrical circuit design and PCB layout except the electrical circuit design and PCB layout of Sensor IC part. One version was tested fully in the report. The other version was tested Radiated Spurious Emission only in the report.

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	LIVE BUDS 3
Trademark	JBL
FCC ID	APILIVEBUDS3
IC	6132A-LIVEBUDS3
HVIN	LIVE BUDS 3
Extreme Temperature Range	0°C to +45°C
Operating Voltage	DC 3.85V, 60mAh via built-in lithium-ion 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, $\pi/4$ DQPSK, 8DPSK
Antenna Type	LDS Antenna
Antenna Gain	-1.31 dBi for left earbud -1.55 dBi for right earbud (Provided by the Client)
Technical Specification of Bluetooth Low Energy	
Bluetooth Core Version	Bluetooth 5.3
Operating Frequency band	2402 ~ 2480 MHz for 1Mbps 2404 ~ 2478 MHz for 2Mbps
Channel Number	40 channels for 1Mbps 38 channels for 2Mbps
Channel separation	2MHz
Data rate	1Mbps, 2Mbps
Modulation	GFSK
Antenna Type	LDS Antenna
Antenna Gain	-1.31 dBi for left earbud -1.55 dBi for right earbud (Provided by the Client)

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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

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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 LIVE BUDS 3.

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)

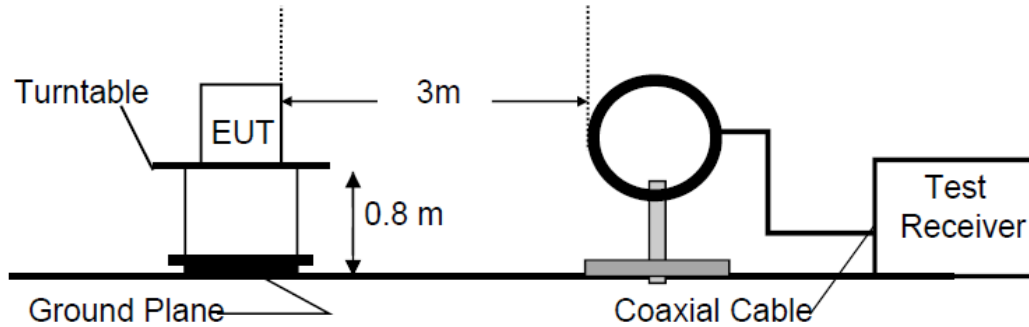


Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

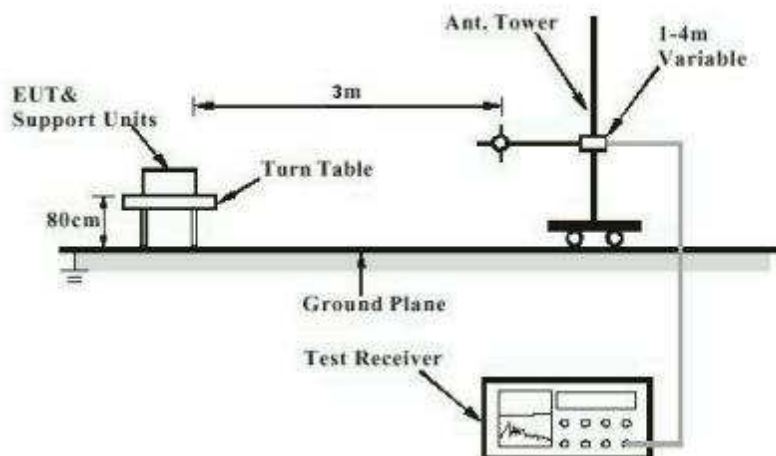
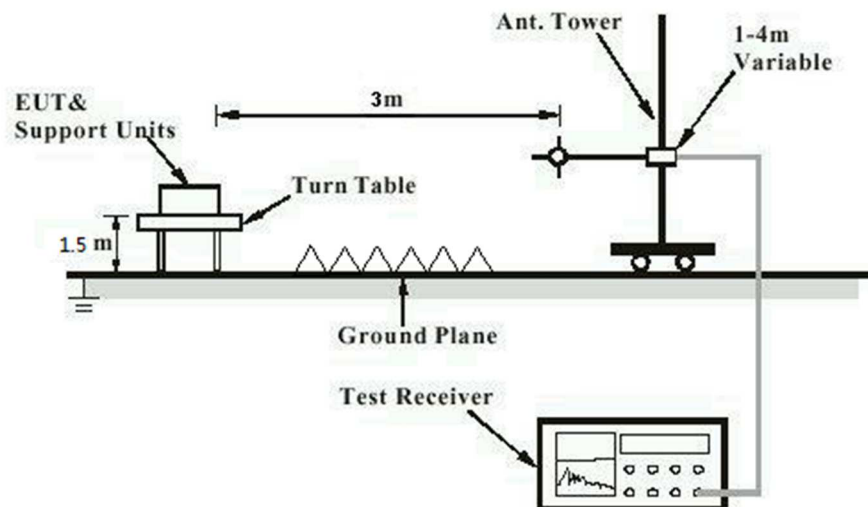


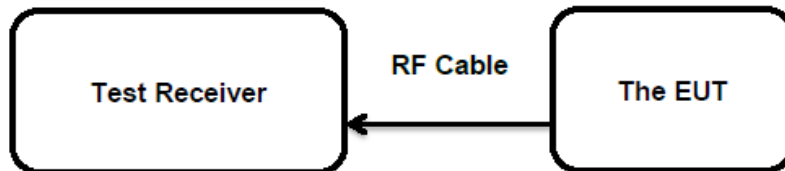
Diagram of Measurement Configuration for Radiation Test (Above 1GHz)



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Diagram of Measurement Configuration for Conducted Transmitter Measurement



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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 two LDS antenna , the directional gain of antennas: Left earbuds: -1.31dBi, Right earbuds: -1.55dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

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5.1.2 Maximum Conducted Output Power

RESULT: **Pass**
Test Specification

Test standard	FCC Part 15.247(b)(1) RSS-247 Clause 5.4(b)
Basic standard	ANSI C63.10: 2013
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	2023-12-27 to 2024-01-23
Input voltage	DC 3.85V
Operation mode	A.1
Test channel	Low / Middle / High
Ambient temperature	20.1 °C
Relative humidity	50 %
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	10.61	0.01151	< 0.125
	2441	10.86	0.01219	
	2480	10.98	0.01253	
EDR	2402	10.85	0.01216	< 0.125
	2441	11.01	0.01262	
	2480	10.85	0.01216	

Note: The cable loss is taken into account in results and the maximum e.i.r.p. is 9.7 dBm less than 4W(36dBm).

Right earbud:

Test Mode	Channel Frequency (MHz)	Measured Peak Output Power		Limit (W)
		(dBm)	(W)	
BR	2402	10.21	0.01050	< 0.125
	2441	10.23	0.01054	
	2480	10.23	0.01054	
EDR	2402	10.28	0.01067	< 0.125
	2441	10.35	0.01084	
	2480	10.25	0.01059	

Note: The cable loss is taken into account in results and the maximum e.i.r.p. is 8.8 dBm less than 4W(36dBm).

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5.1.3 99% Bandwidth

RESULT: **Pass**
Test Specification

 Test standard : RSS-Gen Clause 6.7
 Basic standard : ANSI C63.10: 2013
 Kind of test site : Shielded Room

Test Setup

 Date of testing : 2023-12-27 to 2024-01-23
 Input voltage : DC 3.85V
 Operation mode : A.1
 Test channel : Low / Middle / High
 Ambient temperature : 20.1 °C
 Relative humidity : 50 %
 Atmospheric pressure : 101 kPa

For the measurement records, refer to the appendix A

Table 7: Test Result of 99% Bandwidth

Left earbud:

Test Mode	Channel Frequency (MHz)	Measured 99% Bandwidth	Limit
		(MHz)	
BR	2402	0.87568	/
	2441	0.88602	
	2480	0.88387	
EDR	2402	1.1788	/
	2441	1.1820	
	2480	1.2007	

Right earbud:

Test Mode	Channel Frequency (MHz)	Measured 99% Bandwidth	Limit
		(MHz)	
BR	2402	0.88970	/
	2441	0.88752	
	2480	0.89104	
EDR	2402	1.1682	/
	2441	1.1774	
	2480	1.1789	

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

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5.1.4 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

RESULT: Pass**Test Specification**

Test standard : FCC Part 15.247(d)
RSS-247 Clause 5.5

Basic standard : ANSI C63.10: 2013

Limits : 20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power);

Kind of test site : Shielded Room

Test Setup

Date of testing : 2023-12-27 to 2024-01-23

Input voltage : DC 3.85V

Operation mode : A.1

Test channel : Low / Middle / High

Ambient temperature : 20.1 °C

Relative humidity : 50 %

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 A

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Test report no.:Seite 18 von 24
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5.1.5 Radiated Spurious Emission

RESULT:**Pass****Test Specification**

Test standard : FCC Part 15.247(d) & FCC Part 15.205
RSS-247 Clause 3.3

Basic standard : ANSI C63.10: 2013

Limits : Refer to 15.209(a) of FCC part 15.247(d)
RSS-Gen Table 6 & Table 7

Kind of test site : 3m Semi-anechoic Chamber

Test Setup

Date of testing : 2023-12-27 to 2024-01-23

Input voltage : DC 3.85V

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:

Testing was carried out within frequency range 9kHz to the tenth harmonics.

For the measurement records, refer to the appendix A

Prüfbericht-Nr.: CN24IO8I 001
Test report no.:

Seite 19 von 24
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5.1.6 20dB Bandwidth

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(a)(1)
RSS-247 Clause 5.1(a)

Basic standard : ANSI C63.10: 2013

Kind of test site : Shielded Room

Test Setup

Date of testing : 2023-12-27 to 2024-01-23

Input voltage : DC 3.85V

Operation mode : A.1

Test channel : Low / Middle / High

Ambient temperature : 20.1 °C

Relative humidity : 50 %

Atmospheric pressure : 101 kPa

For the measurement records, refer to the appendix A

Table 8: Test Result of -20dB Bandwidth

Left earbud:

Test Mode	Channel Frequency (MHz)	20dB Bandwidth (kHz)	2/3 of 20dB Bandwidth (kHz)	Limit (MHz)
BR	2402	948	632.000	/
	2441	942	628.000	
	2480	951	634.000	
EDR	2402	1272	848.000	/
	2441	1266	844.000	
	2480	1299	866.000	

Left earbud:

Test Mode	Channel Frequency (MHz)	20dB Bandwidth (kHz)	2/3 of 20dB Bandwidth (kHz)	Limit (MHz)
BR	2402	942	628.000	/
	2441	948	632.000	
	2480	948	632.000	
EDR	2402	1263	842.000	/
	2441	1272	848.000	
	2480	1281	854.000	

Prüfbericht-Nr.: CN24IO8I 001
Test report no.:Seite 20 von 24
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5.1.7 Carrier Frequency Separation

RESULT: **Pass****Test Specification**

Test standard : FCC Part 15.247(a)(1)
RSS-247 Clause 5.1(b)

Basic standard : ANSI C63.10: 2013

Limits : $\geq 25\text{kHz}$ or $2/3$ of 20dB bandwidth, whichever is greater

Kind of test site : Shielded Room

Test Setup

Date of testing : 2023-12-27 to 2024-01-23

Input voltage : DC 3.85V

Operation mode : B

Test channel : Low / Middle / High

Ambient temperature : 20.1 °C

Relative humidity : 50 %

Atmospheric pressure : 101 kPa

For the measurement records, refer to the appendix A

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Test report no.:Seite 21 von 24
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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 : 2023-12-27 to 2024-01-23
Input voltage : DC 3.85V
Operation mode : B
Ambient temperature : 20.1 °C
Relative humidity : 50 %
Atmospheric pressure : 101 kPa

For the measurement records, refer to the appendix A

Prüfbericht-Nr.: CN24IO8I 001
Test report no.:Seite 22 von 24
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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 : 2023-12-27 to 2024-01-23

Input voltage : DC 3.85V

Operation mode : B

Ambient temperature : 20.1 °C

Relative humidity : 50 %

Atmospheric pressure : 101 kPa

For the measurement records, refer to the appendix A.

Prüfbericht-Nr.: CN24IO8I 001
Test report no.:Seite 23 von 24
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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 : 2023-12-27 to 2024-01-23

Input voltage : DC 3.85V

Operation mode : B

Test channel : Low / Middle / High

Ambient temperature : 20.1 °C

Relative humidity : 50 %

Atmospheric pressure : 101 kPa

For the measurement records, refer to the appendix A.

Prüfbericht-Nr.: CN24IO8I 001
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6 Photographs of the Test Set-Up

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

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Appendix A: Test Results of Classical Bluetooth_Left Earbud

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Appendix A.1: Test Results of 99% Bandwidth

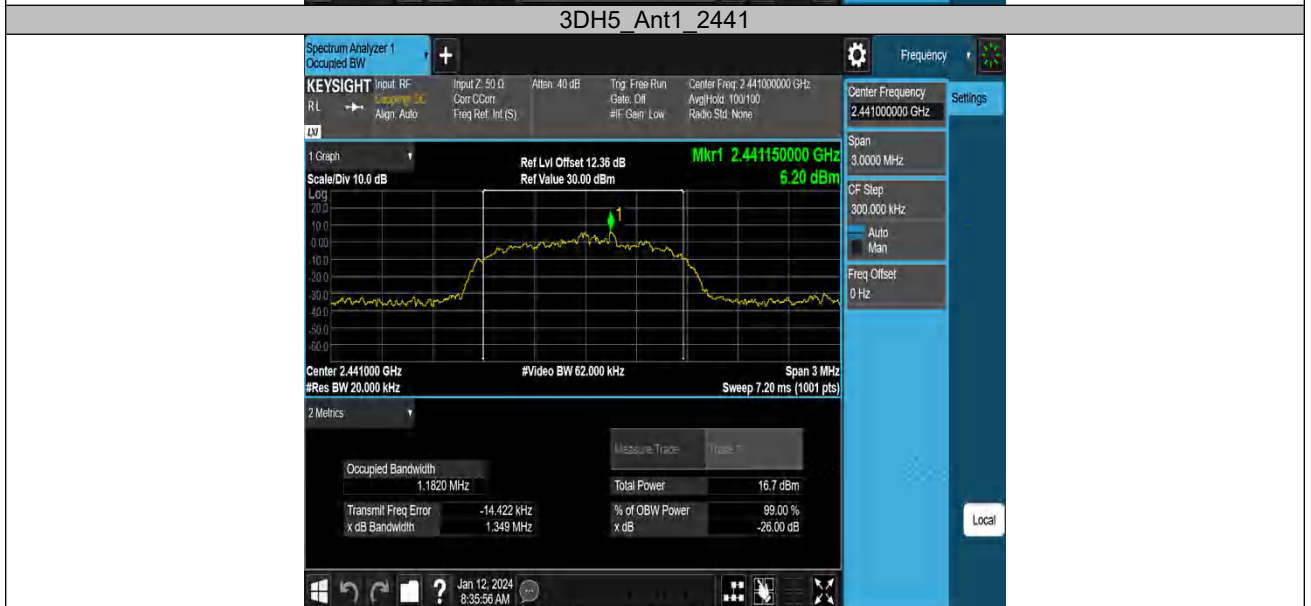
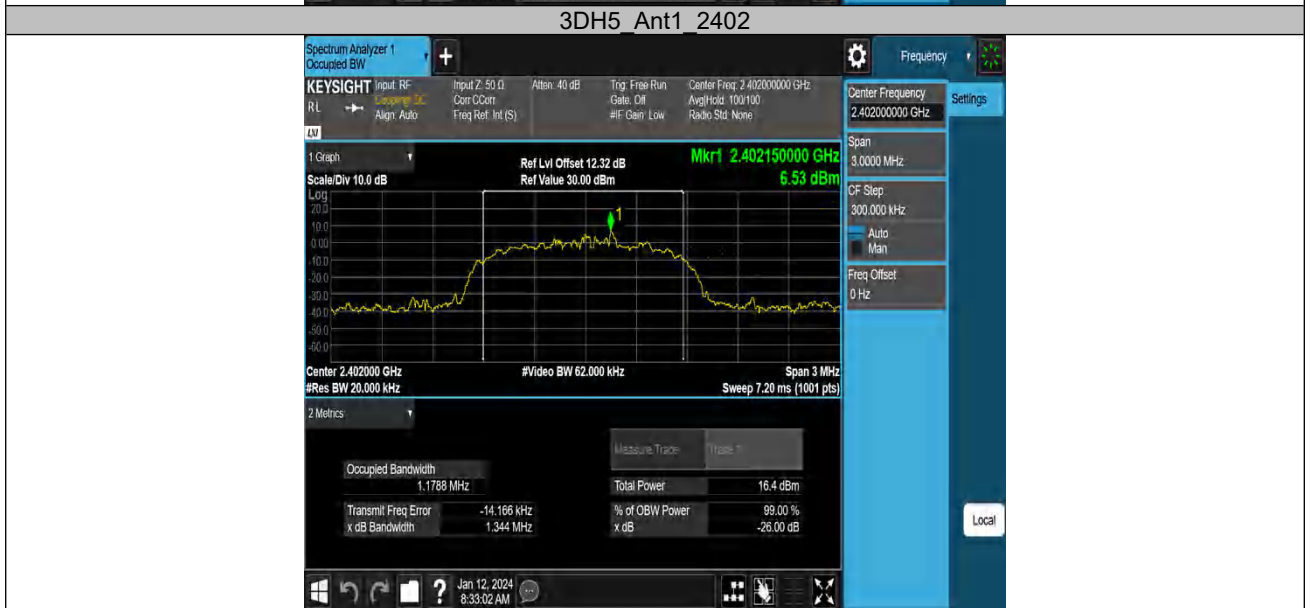
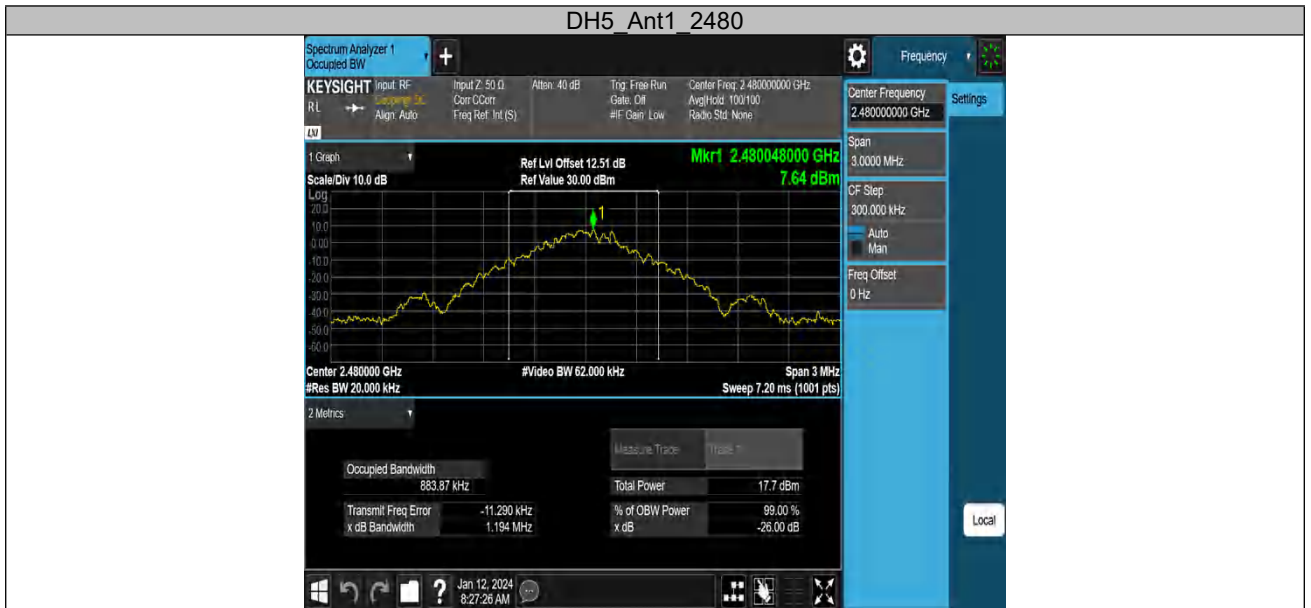
TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.87568	2401.5517	2402.4274	---	---
		2441	0.88602	2440.5497	2441.4357	---	---
		2480	0.88387	2479.5468	2480.4306	---	---
3DH5	Ant1	2402	1.1788	2401.3964	2402.5752	---	---
		2441	1.1820	2440.3946	2441.5766	---	---
		2480	1.2007	2479.3830	2480.5837	---	---

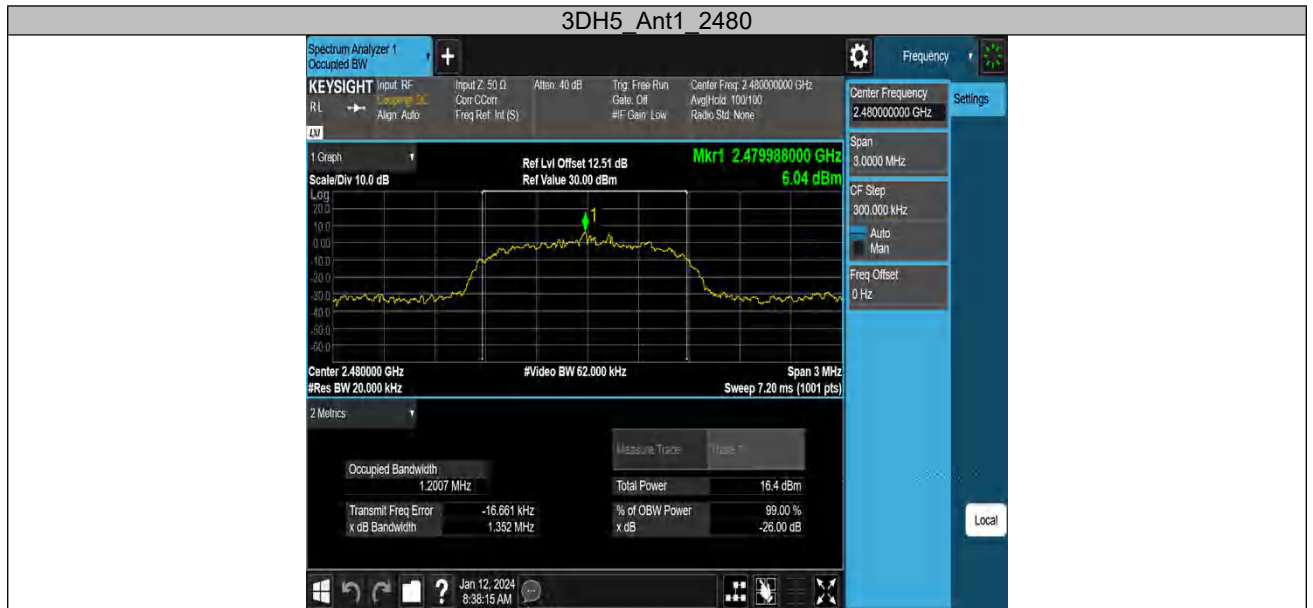
DH5 Ant1 2402



DH5 Ant1 2441







Appendix A.2: Test Results of 20dB Bandwidth

TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.948	2401.526	2402.474	---	---
		2441	0.942	2440.532	2441.474	---	---
		2480	0.951	2479.526	2480.477	---	---
3DH5	Ant1	2402	1.272	2401.343	2402.615	---	---
		2441	1.266	2440.349	2441.615	---	---
		2480	1.299	2479.340	2480.639	---	---

DH5 Ant1 2402



DH5 Ant1 2441



DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441





Appendix A.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 3.85V	2401.988	-12	-5.00	10
DC 3.47V	2401.988	-12	-5.00	
DC 4.24V	2401.988	-12	-5.00	

Test result of frequency tolerance of temperature variation

Temperature (°C)	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
-30	2401.986	-14	-5.83	10
-20	2401.987	-13	-5.41	
-10	2401.987	-13	-5.41	
0	2401.988	-12	-5.00	
10	2401.987	-13	-5.41	
20	2401.988	-12	-5.00	
30	2401.988	-12	-5.00	
40	2401.989	-11	-4.58	
50	2401.990	-10	-4.16	
55	2401.990	-10	-4.16	

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 3.85V	2440.985	-15	-6.15	10
DC 3.47V	2440.986	-14	-5.74	
DC 4.24V	2440.986	-14	-5.74	

Test result of frequency tolerance of temperature variation

Temperature (°C)	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
-30	2440.984	-16	-6.55	10
-20	2440.986	-14	-5.74	
-10	2440.988	-12	-4.92	
0	2440.987	-13	-5.33	
10	2440.987	-13	-5.33	
20	2440.986	-14	-5.74	
30	2440.986	-14	-5.74	
40	2440.985	-15	-6.15	
50	2440.986	-14	-5.74	
55	2440.987	-13	-5.33	

Test Channel (MHz)	2480
--------------------	------

Test result of frequency tolerance of voltage variation

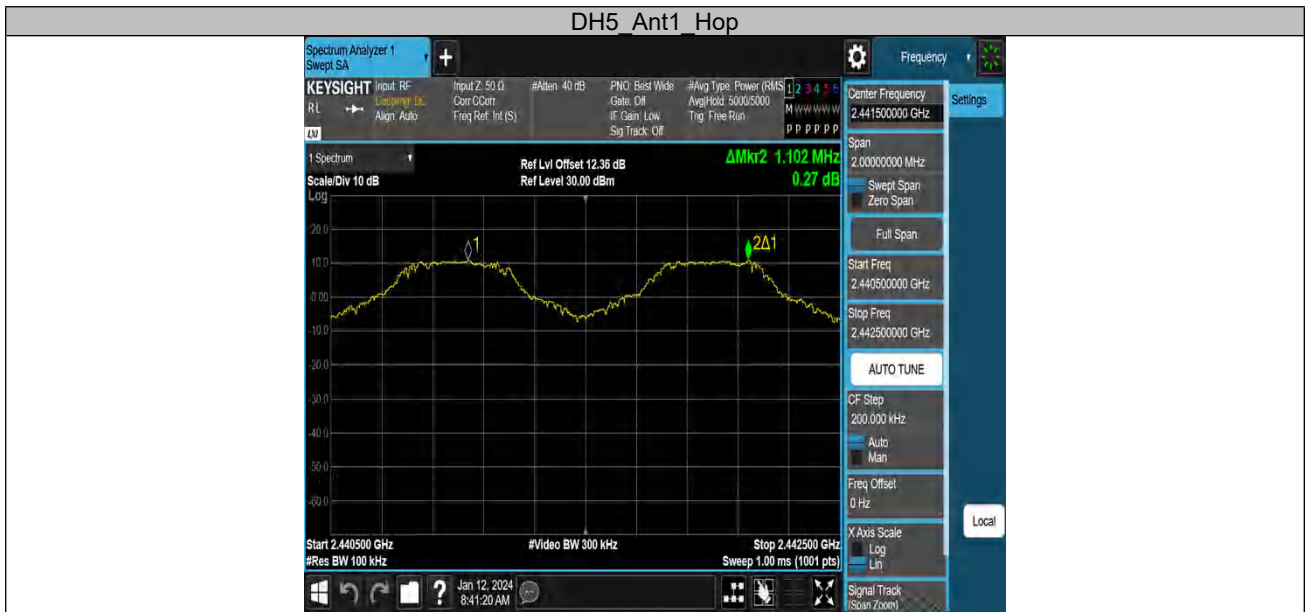
Voltage	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
DC 3.85V	2479.984	-16	-6.45	10
DC 3.47V	2479.985	-15	-6.05	
DC 4.24V	2479.984	-16	-6.45	

Test result of frequency tolerance of temperature variation

Temperature (°C)	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
-30	2479.985	-15	-6.05	10
-20	2479.985	-15	-6.05	
-10	2479.986	-14	-5.65	
0	2479.984	-16	-6.45	
10	2479.986	-14	-5.65	
20	2479.984	-16	-6.45	
30	2479.986	-14	-5.65	
40	2479.984	-16	-6.45	
50	2479.985	-15	-6.05	
55	2479.986	-14	-5.65	

Appendix A.4: Test Results of Carrier Frequency Separation

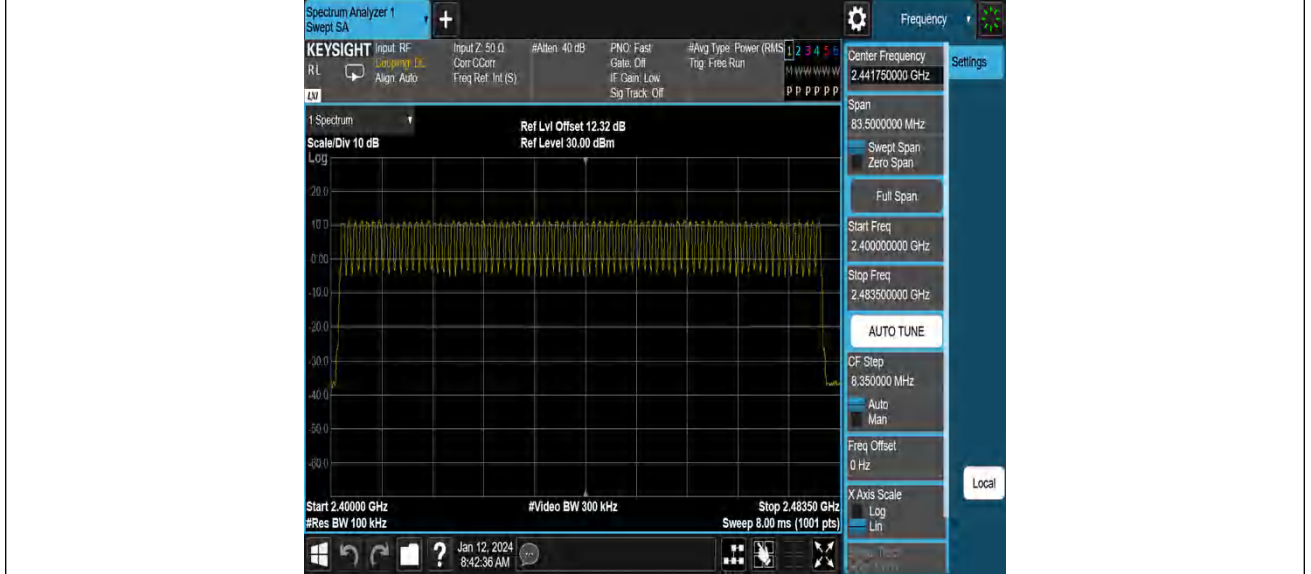
TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.102	≥0.951	PASS
3DH5	Ant1	Hop	1.132	≥0.866	PASS



Appendix A.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

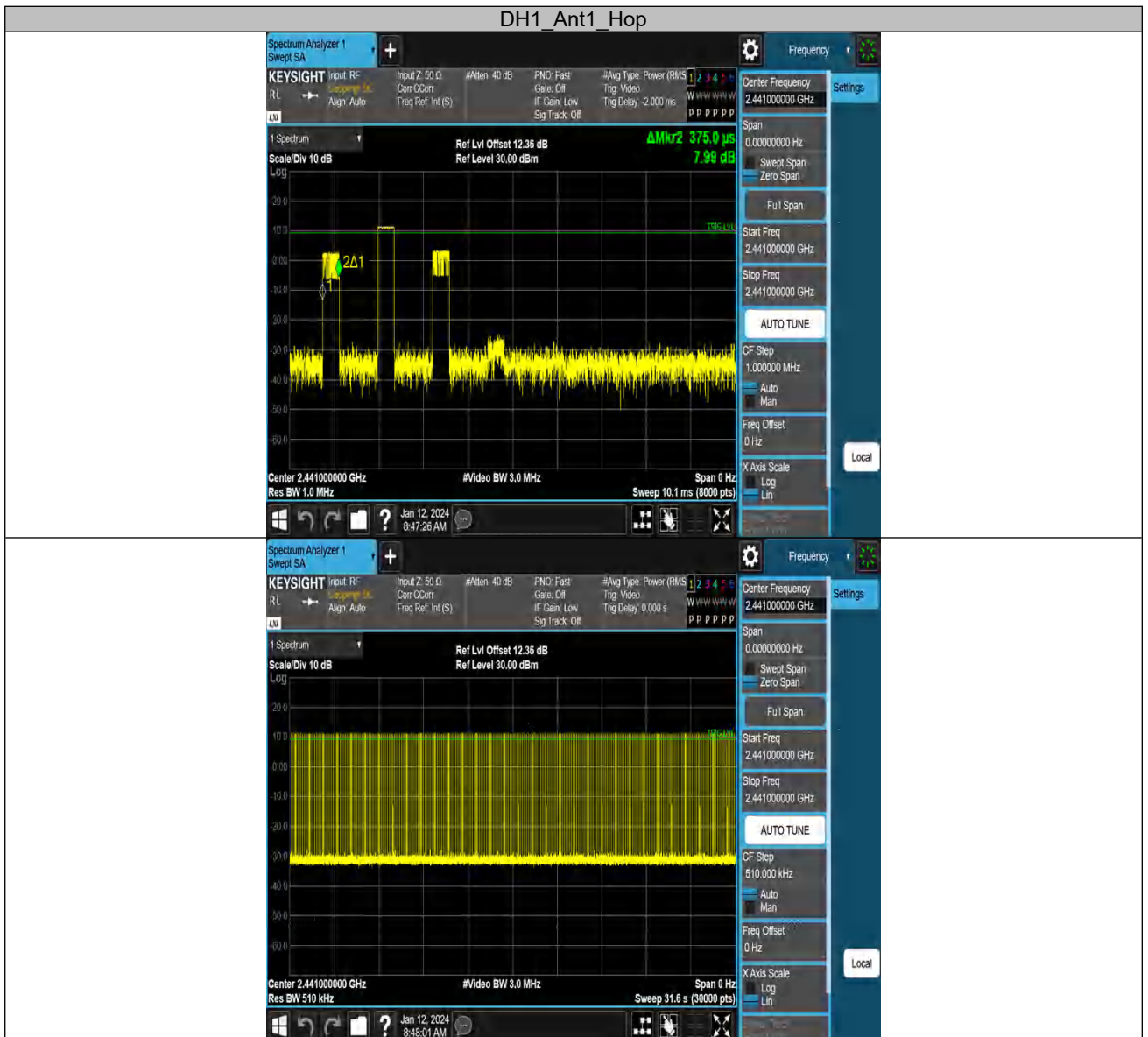


3DH5_Ant1_Hop

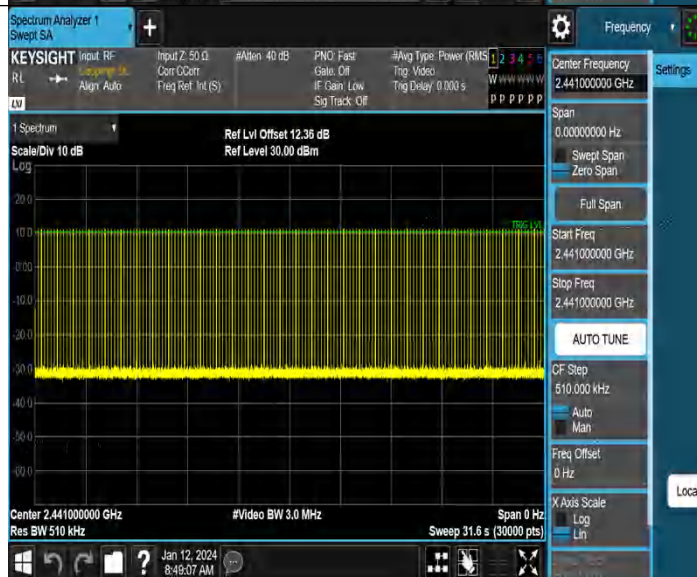


Appendix A.6: Test Results of Time of Occupancy

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.375	319	0.120	≤0.4	PASS
DH3	Ant1	Hop	1.631	159	0.259	≤0.4	PASS
DH5	Ant1	Hop	2.880	107	0.308	≤0.4	PASS
3DH1	Ant1	Hop	0.380	319	0.121	≤0.4	PASS
3DH3	Ant1	Hop	1.631	159	0.259	≤0.4	PASS
3DH5	Ant1	Hop	2.882	107	0.308	≤0.4	PASS



DH3 Ant1 Hop



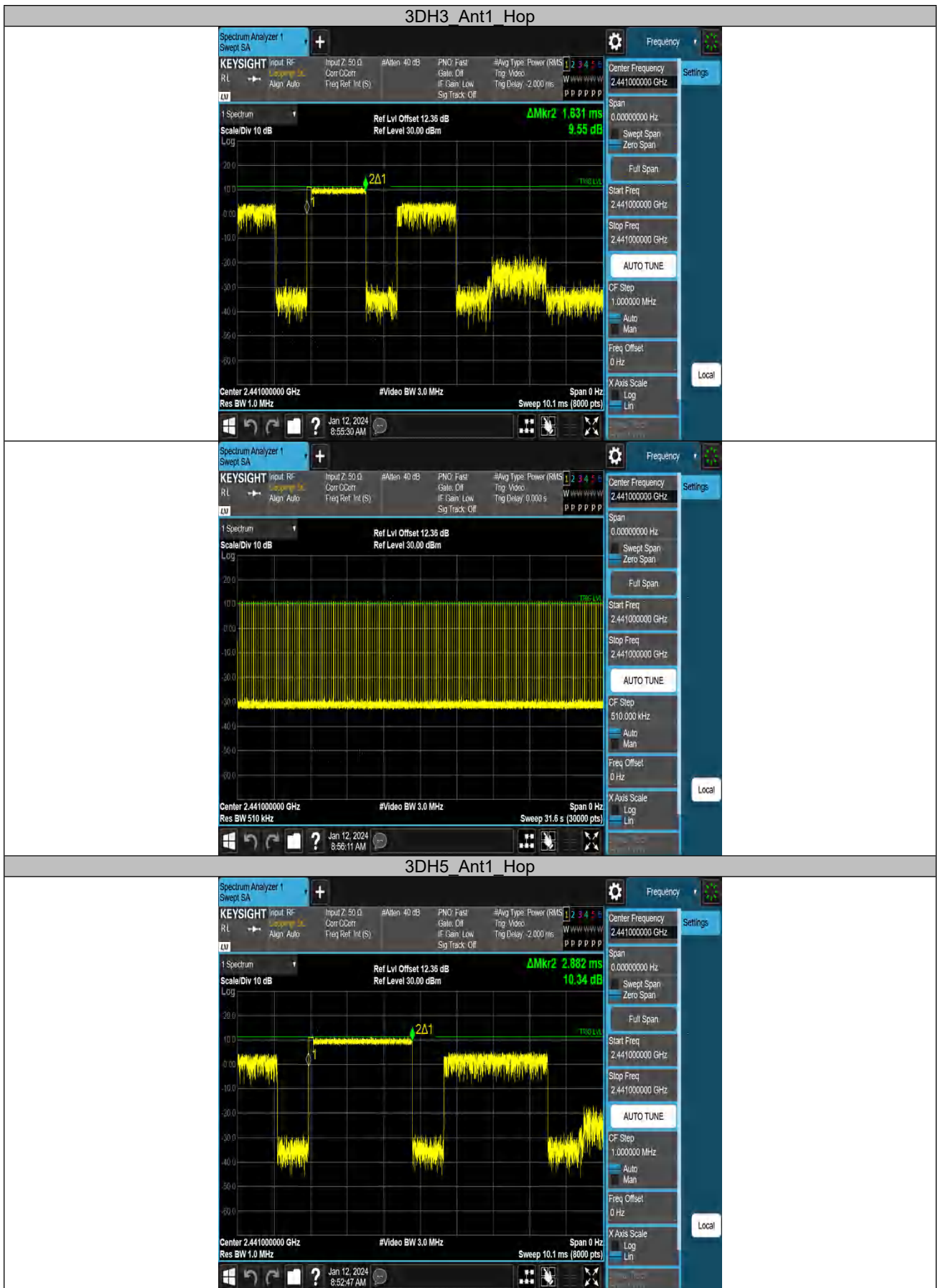
DH5 Ant1 Hop

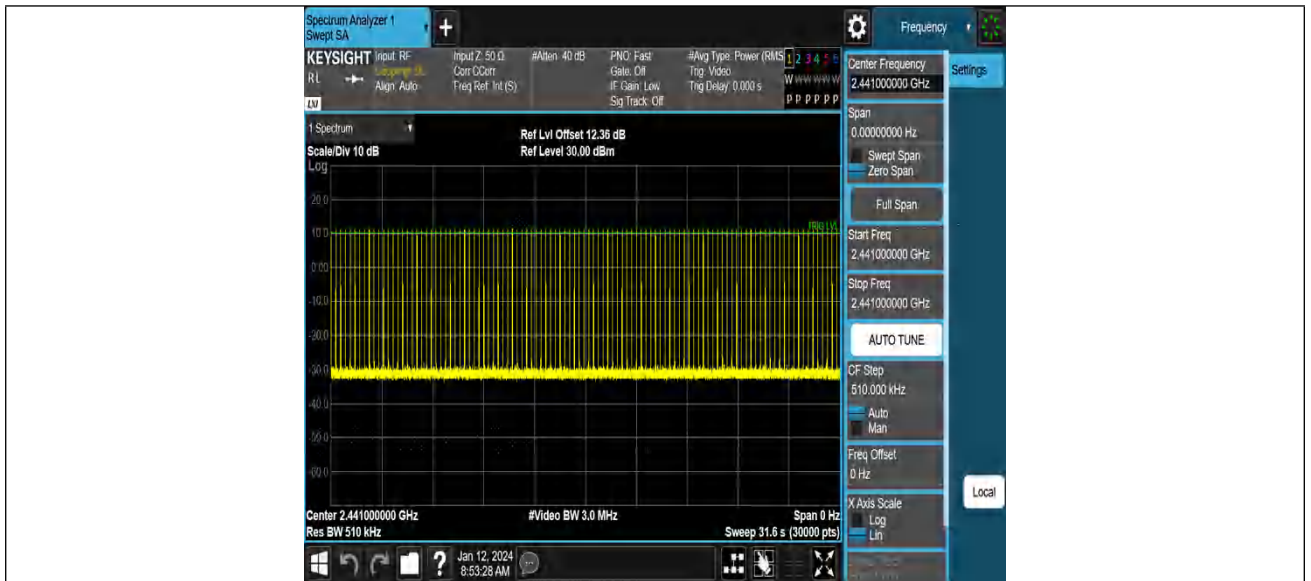




3DH1 Ant1 Hop



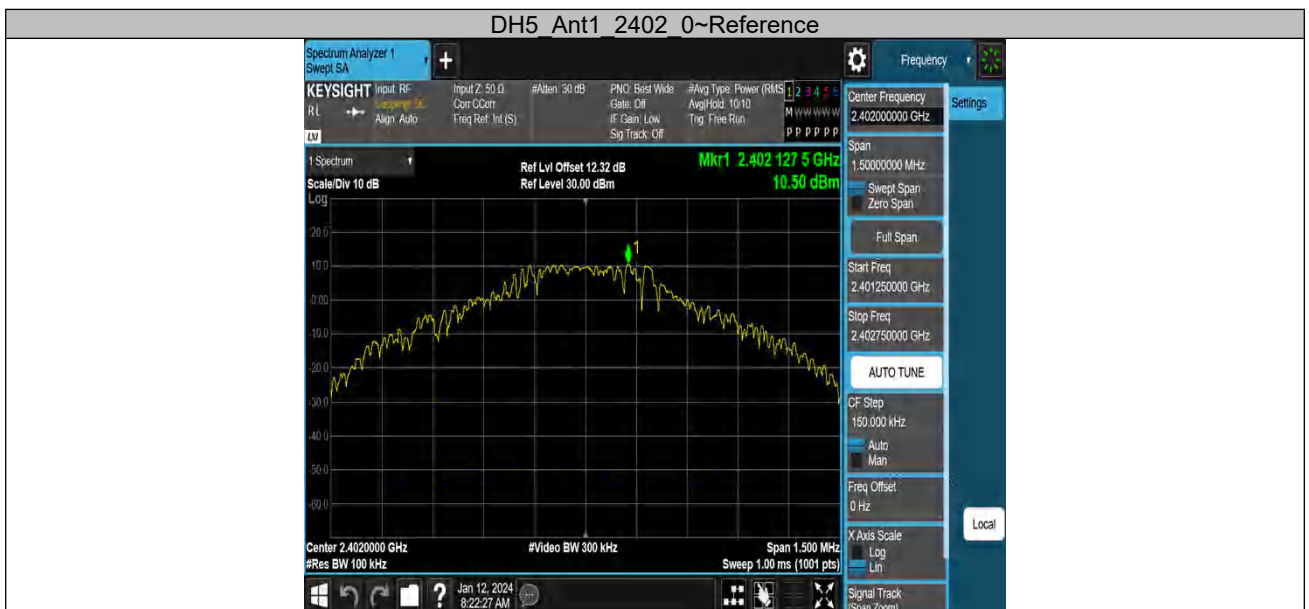




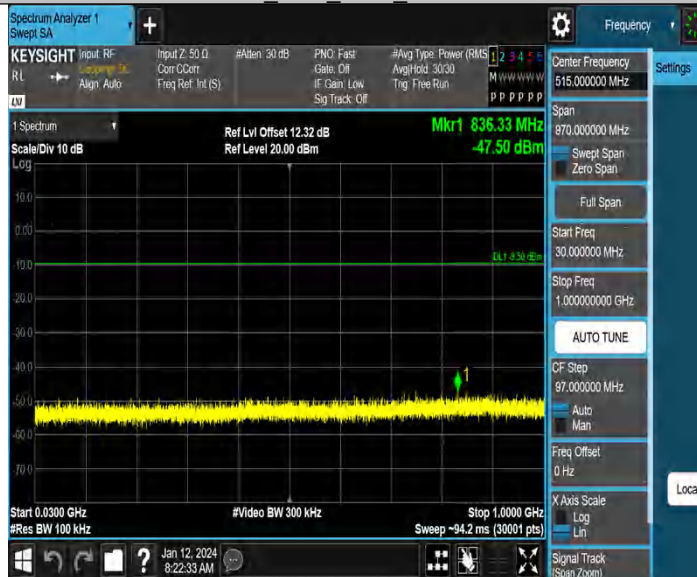
Appendix A.7: Test Results of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

Conducted measurements

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	10.50	10.50	---	PASS
			30~1000	10.50	-47.5	≤-9.5	PASS
			1000~26500	10.50	-37.73	≤-9.5	PASS
		2441	Reference	10.66	10.66	---	PASS
			30~1000	10.66	-47.49	≤-9.34	PASS
			1000~26500	10.66	-38.07	≤-9.34	PASS
		2480	Reference	11.02	11.02	---	PASS
			30~1000	11.02	-47.23	≤-8.98	PASS
			1000~26500	11.02	-38.04	≤-8.98	PASS
3DH5	Ant1	2402	Reference	6.67	6.67	---	PASS
			30~1000	6.67	-46.79	≤-13.33	PASS
			1000~26500	6.67	-37.73	≤-13.33	PASS
		2441	Reference	7.16	7.16	---	PASS
			30~1000	7.16	-47.73	≤-12.84	PASS
			1000~26500	7.16	-38	≤-12.84	PASS
		2480	Reference	7.51	7.51	---	PASS
			30~1000	7.51	-46.83	≤-12.49	PASS
			1000~26500	7.51	-38.4	≤-12.49	PASS



DH5_Ant1_2402_30~1000



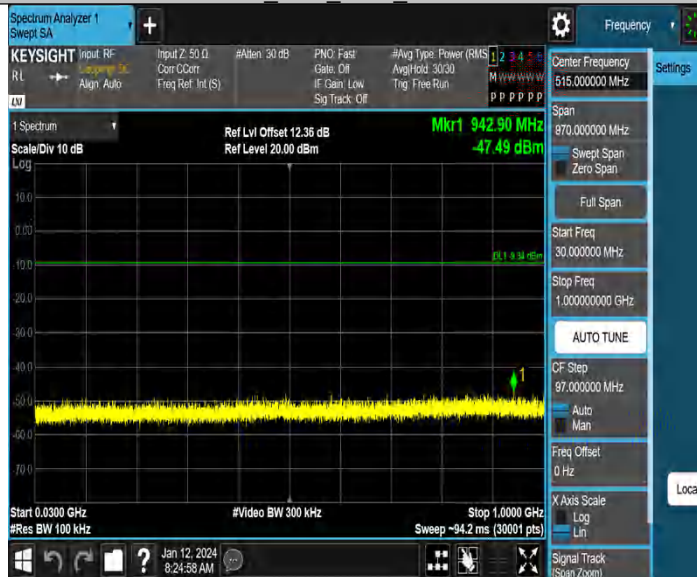
DH5_Ant1_2402_1000~26500



DH5_Ant1_2441_0~Reference



DH5_Ant1_2441_30~1000



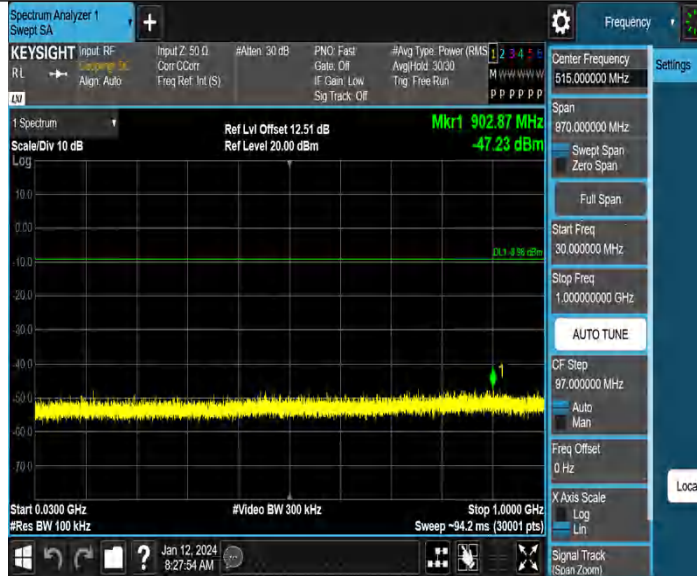
DH5_Ant1_2441_1000~26500



DH5_Ant1_2480_0~Reference



DH5 Ant1 2480 30~1000



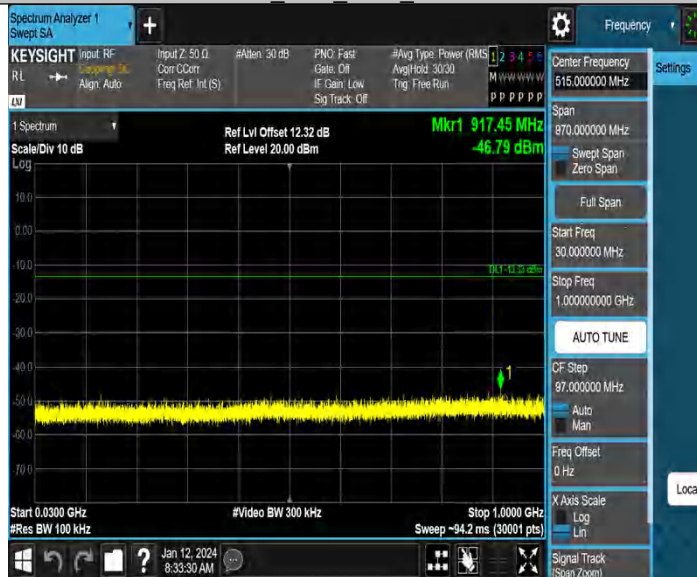
DH5 Ant1 2480 1000~26500



3DH5 Ant1 2402 0~Reference



3DH5_Ant1_2402_30~1000



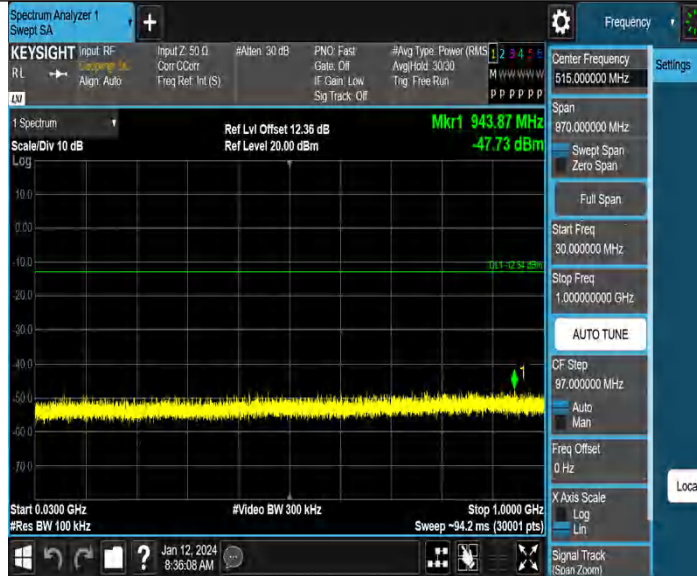
3DH5_Ant1_2402_1000~26500



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

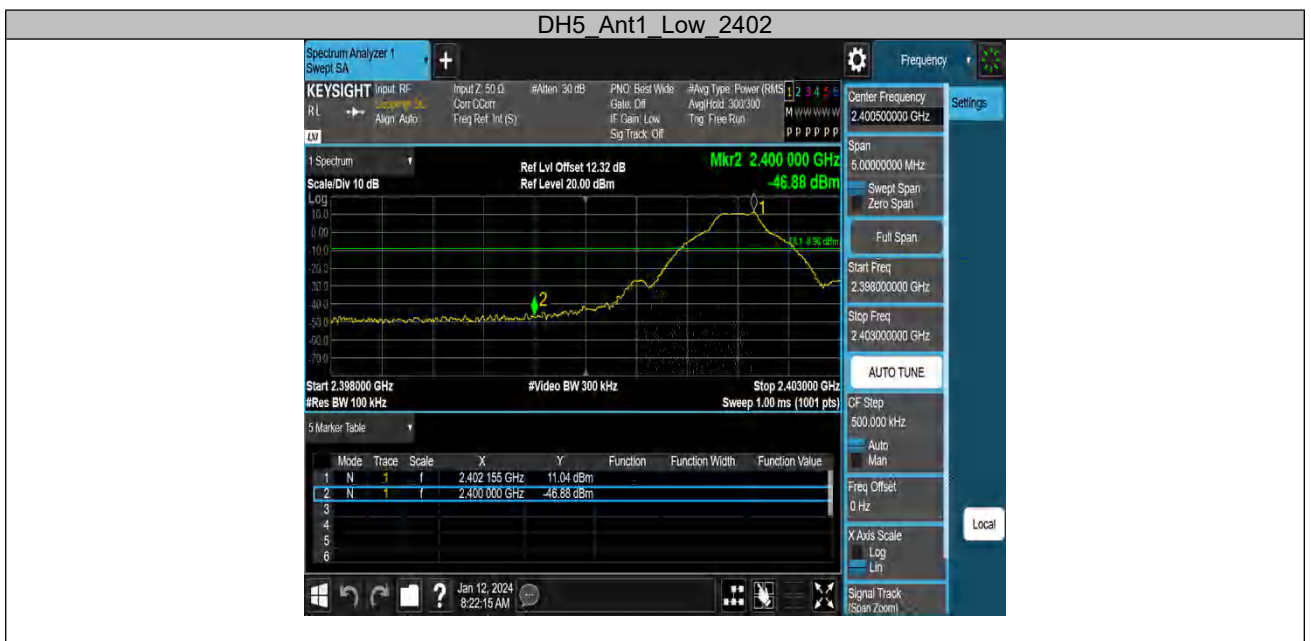


3DH5_Ant1_2480_1000~26500



Band edge measurements

TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	11.04	-46.88	≤-8.96	PASS
		High	2480	11.13	-49.04	≤-8.87	PASS
3DH5	Ant1	Low	2402	11.05	-42.7	≤-8.95	PASS
		High	2480	11.17	-47.93	≤-8.83	PASS
DH5	Ant1	Hopping	2402	10.89	-48.72	≤-9.11	PASS
		Hopping	2480	9.646	-49.45	≤-10.35	PASS
3DH5	Ant1	Hopping	2402	6.513	-46.85	≤-13.49	PASS
		Hopping	2480	10.83	-49.21	≤-9.17	PASS



3DH5 Ant1 Low 2402



3DH5 Ant1 High 2480



DH5 Ant1 Hopping 2402



DH5 Ant1 Hopping 2480



3DH5 Ant1 Hopping 2402



3DH5 Ant1 Hopping 2480



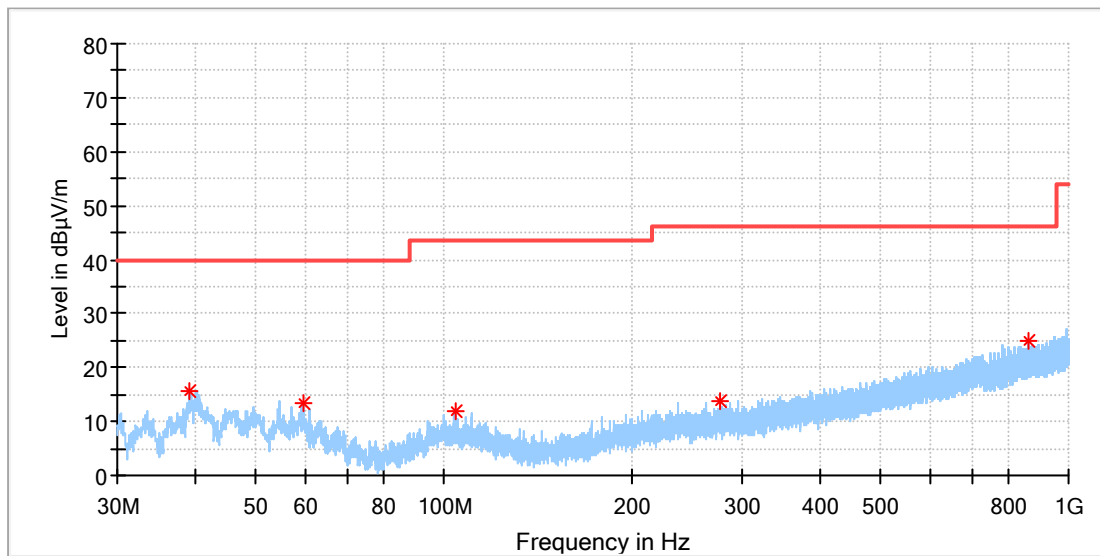
Appendix A.8: Test Results of Radiated Spurious Emissions

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:	LIVE BUDS 3
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

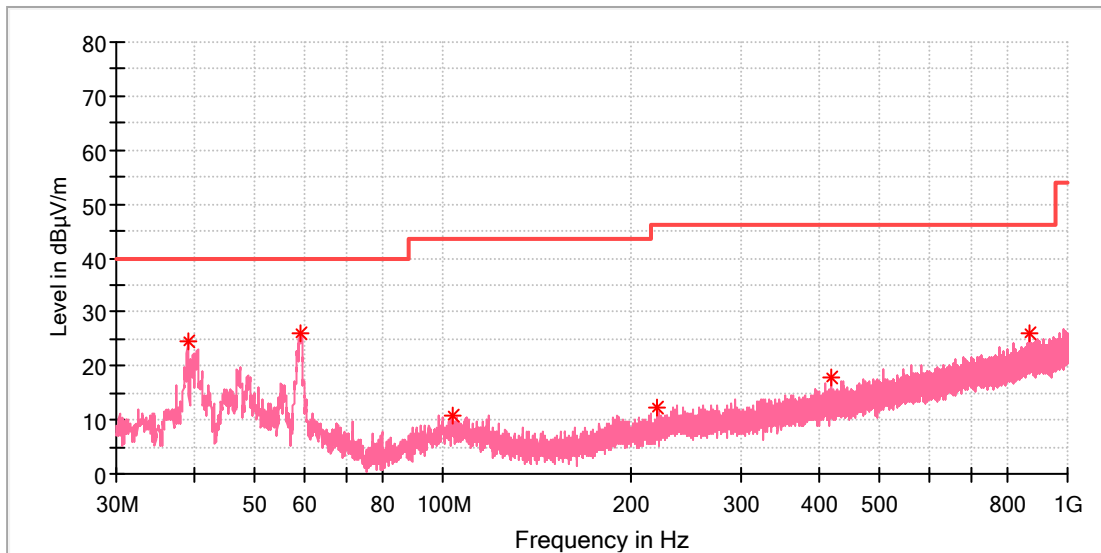


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
39.140385	15.75	40.00	24.25	100.0	H	38.0	-20.7
59.435769	13.53	40.00	26.47	100.0	H	298.0	-19.2
104.093077	11.74	43.50	31.76	100.0	H	72.0	-19.1
276.454615	13.78	46.00	32.22	100.0	H	307.0	-17.1
859.611154	25.10	46.00	20.90	100.0	H	148.0	-5.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

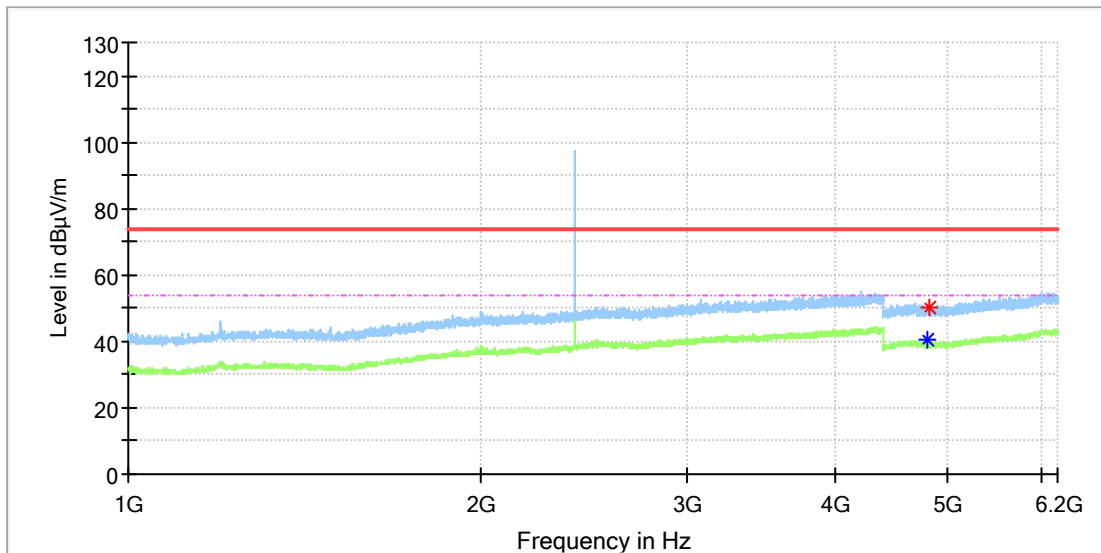
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
39.028462	24.69	40.00	15.31	100.0	V	282.0	-20.7
59.323846	25.87	40.00	14.13	100.0	V	282.0	-19.2
103.906539	10.80	43.50	32.70	100.0	V	335.0	-19.1
219.709615	12.43	46.00	33.57	100.0	V	195.0	-18.9
419.940000	17.74	46.00	28.26	100.0	V	265.0	-13.7
871.698846	26.21	46.00	19.79	100.0	V	290.0	-5.7

1GHz - 18GHz

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

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

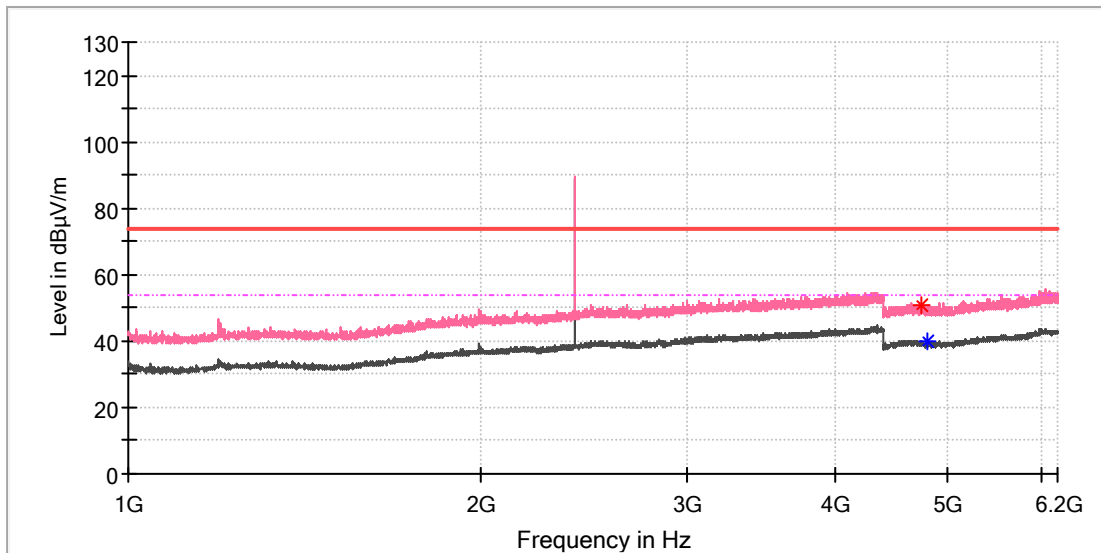


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.000000	---	40.64	54.00	13.36	150.0	H	275.0	11.8
4821.500000	50.46	---	74.00	23.54	150.0	H	243.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

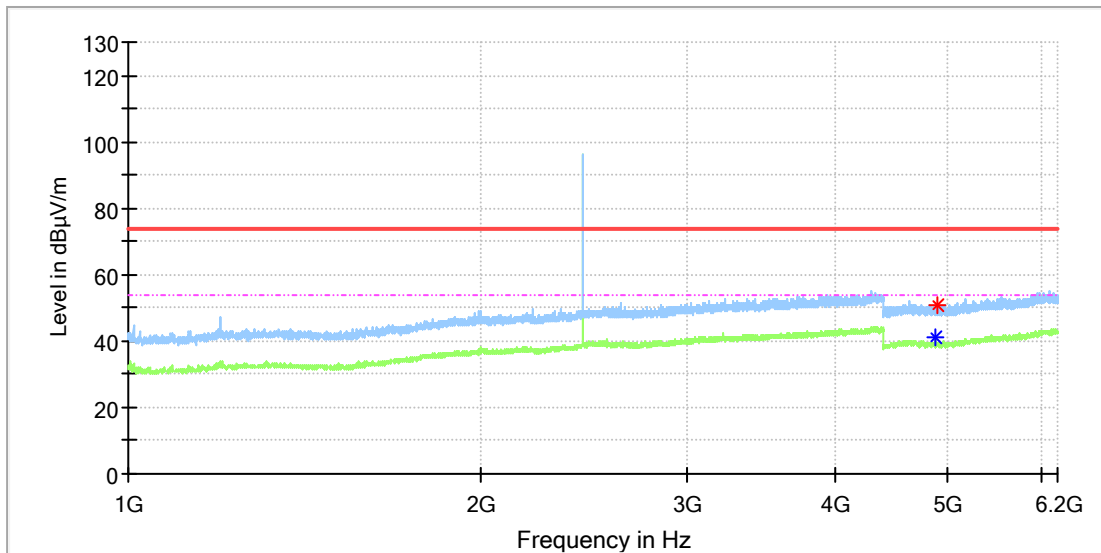


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4748.000000	50.73	---	74.00	23.27	150.0	V	125.0	11.9
4808.500000	---	39.68	54.00	14.32	150.0	V	238.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

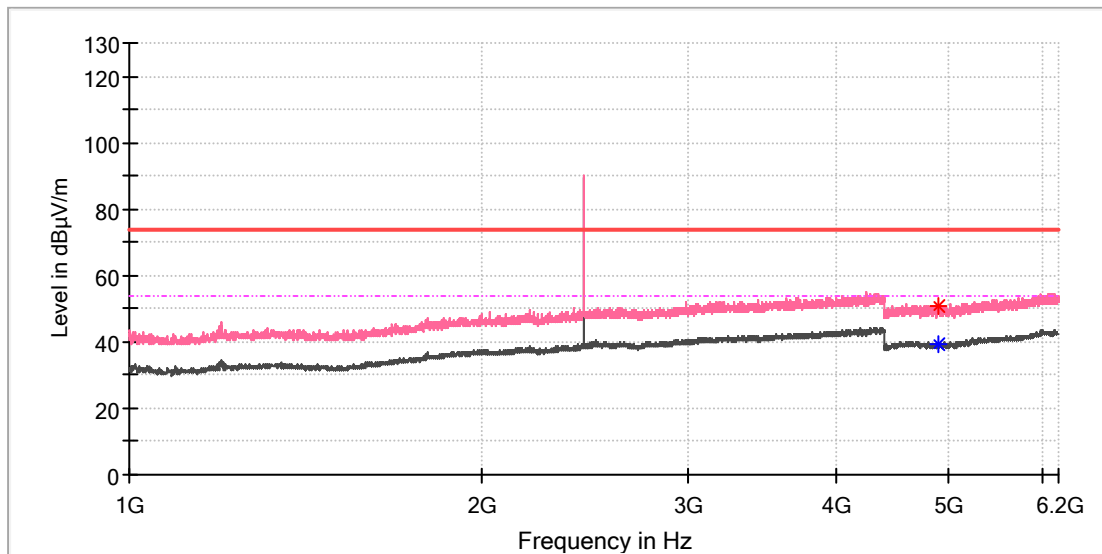


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4882.000000	---	40.86	54.00	13.14	150.0	H	198.0	11.8
4896.000000	50.52	---	74.00	23.48	150.0	H	212.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

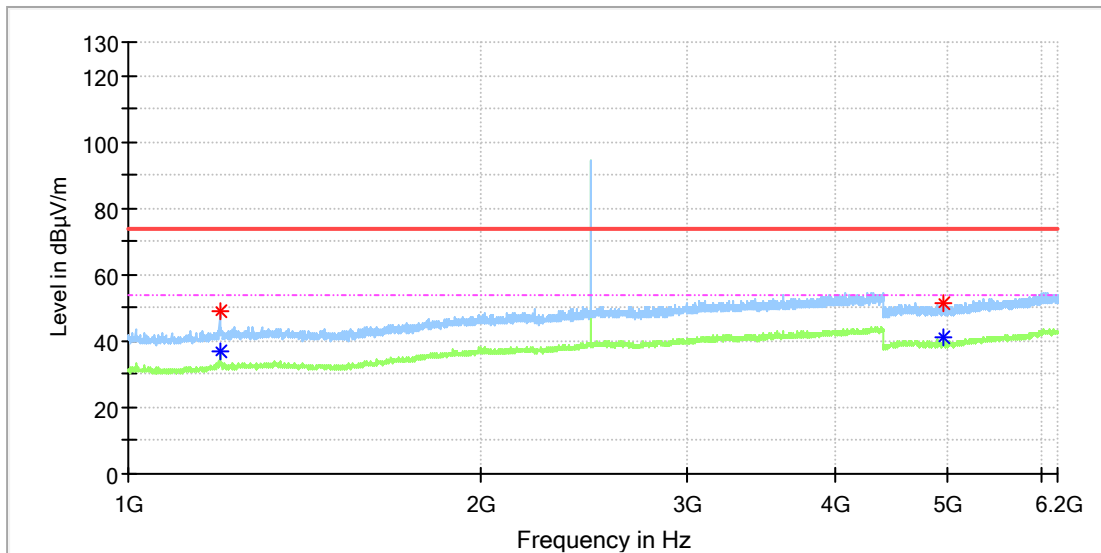


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4892.000000	50.57	---	74.00	23.43	150.0	V	317.0	11.8
4896.500000	---	39.44	54.00	14.56	150.0	V	330.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

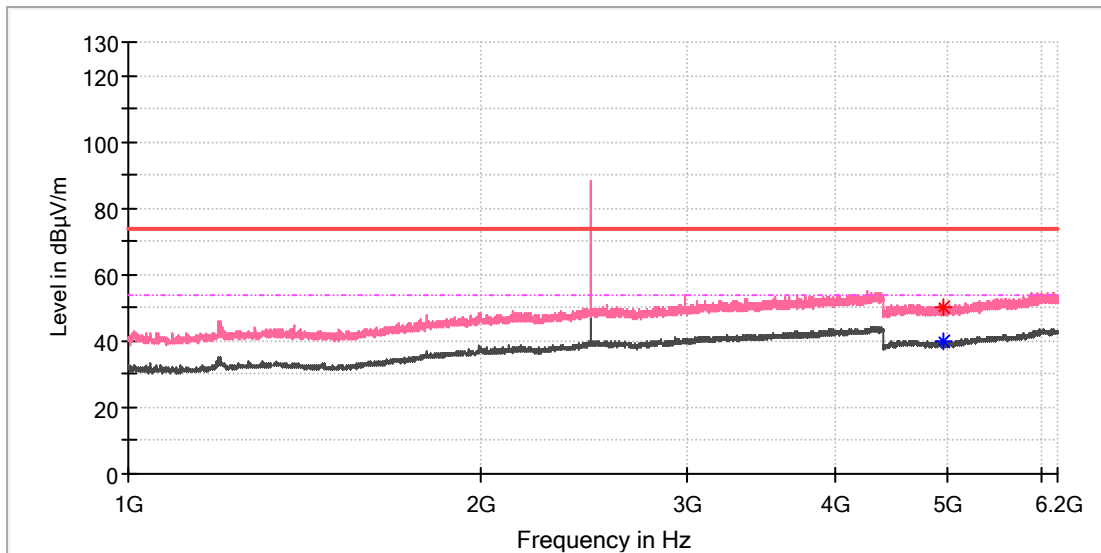


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1196.500000	---	36.77	54.00	17.23	150.0	H	0.0	1.1
1197.000000	49.20	---	74.00	24.80	150.0	H	0.0	1.1
4959.000000	51.13	---	74.00	22.87	150.0	H	202.0	11.8
4960.000000	---	41.22	54.00	12.78	150.0	H	202.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

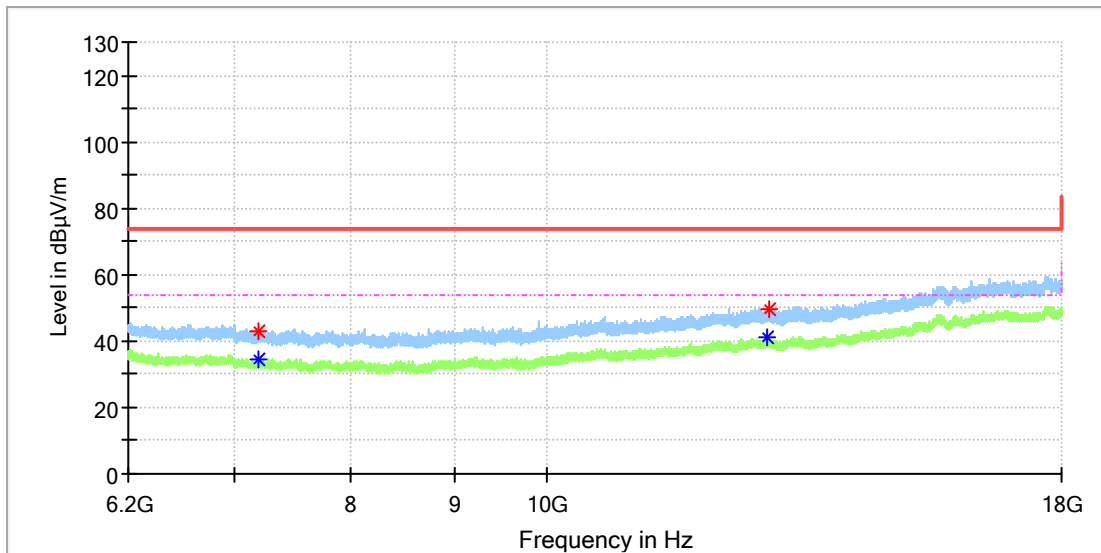


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4953.000000	50.39	---	74.00	23.61	150.0	V	270.0	11.8
4960.000000	---	40.07	54.00	13.93	150.0	V	286.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

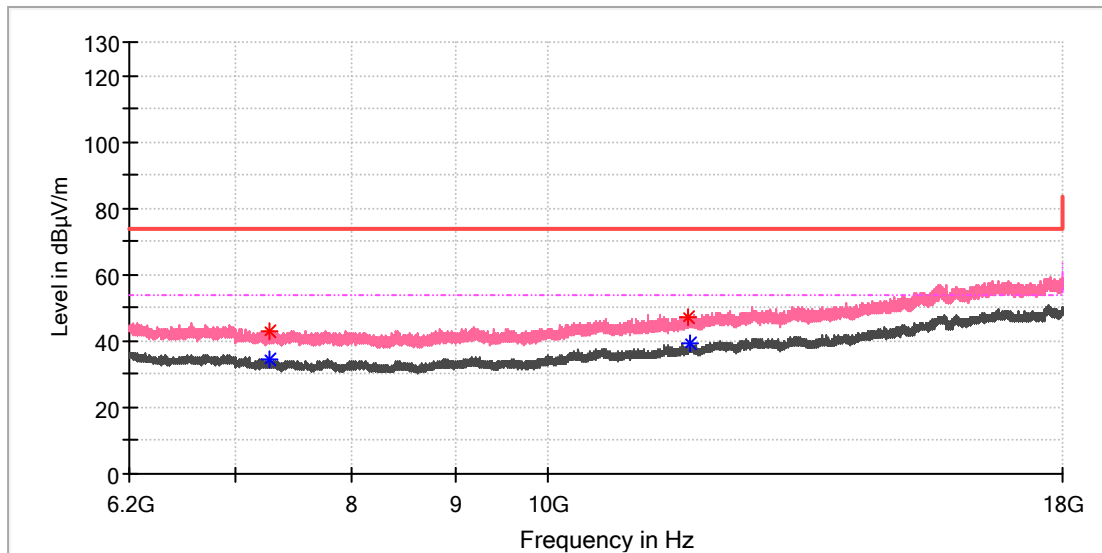


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7189.233333	---	34.34	54.00	19.66	150.0	H	235.0	8.8
7199.066667	42.71	---	74.00	31.29	150.0	H	0.0	8.8
12864.541667	---	40.94	54.00	13.06	150.0	H	19.0	15.4
12902.891667	49.80	---	74.00	24.20	150.0	H	66.0	15.5

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

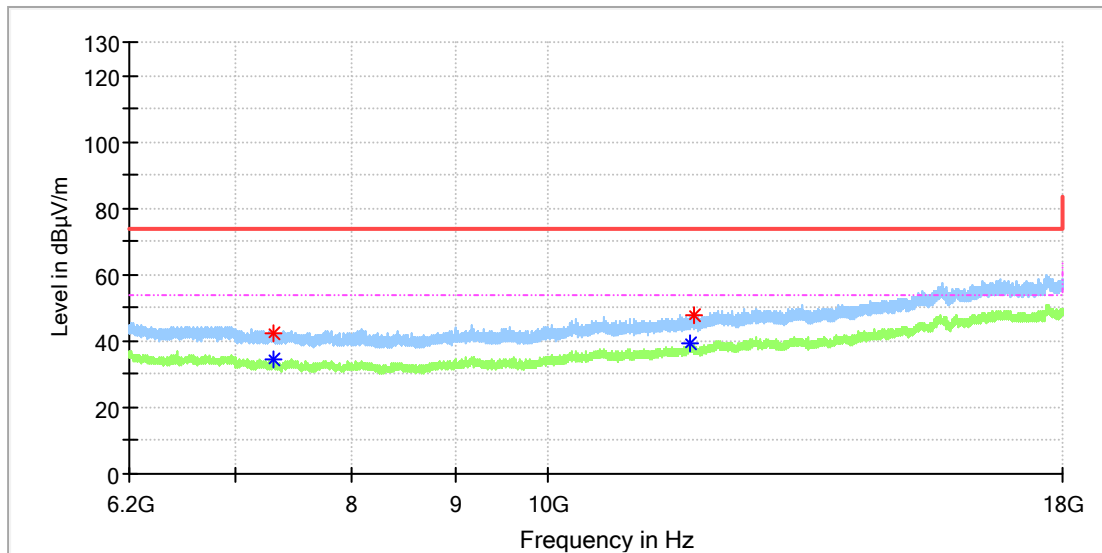


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7281.175000	---	34.57	54.00	19.43	150.0	V	0.0	8.4
7283.141667	43.02	---	74.00	30.98	150.0	V	271.0	8.4
11737.150000	47.25	---	74.00	26.75	150.0	V	0.0	13.3
11769.600000	---	39.38	54.00	14.62	150.0	V	97.0	13.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

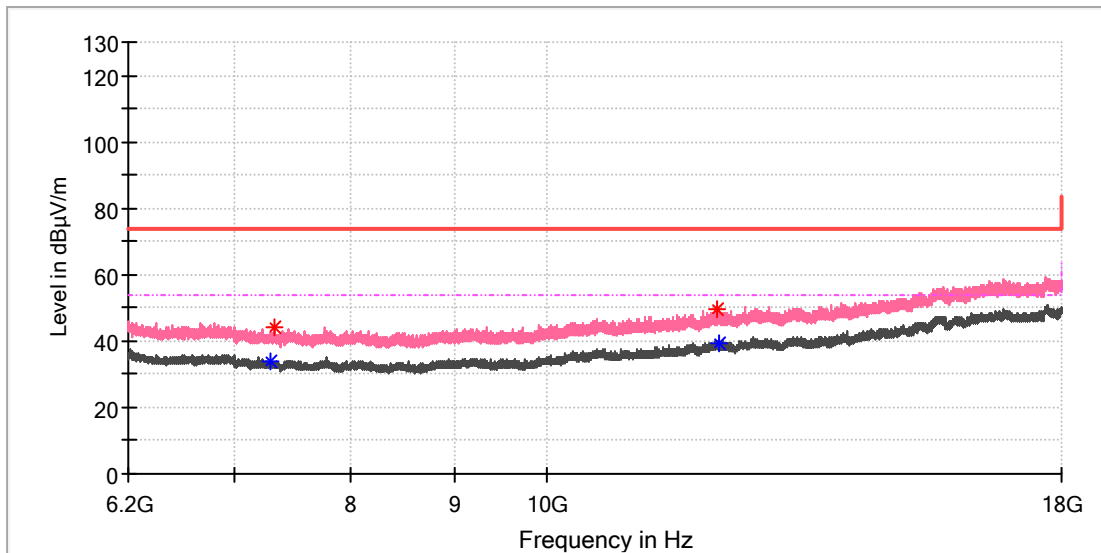


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7310.675000	42.28	---	74.00	31.72	150.0	H	89.0	8.2
7313.625000	---	34.17	54.00	19.83	150.0	H	172.0	8.2
11750.425000	---	39.06	54.00	14.94	150.0	H	50.0	13.3
11811.883333	47.81	---	74.00	26.19	150.0	H	203.0	13.5

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

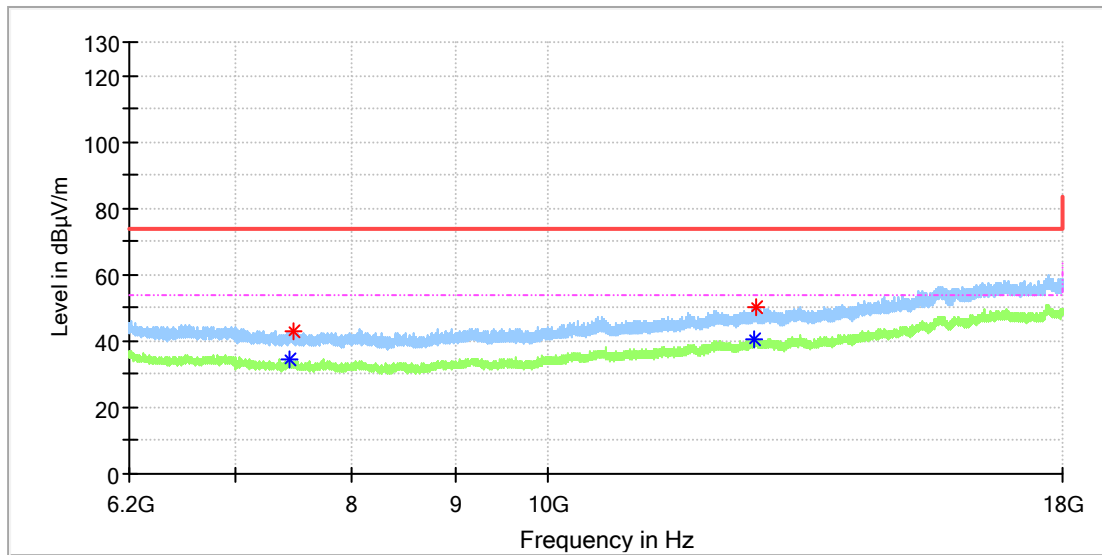


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7298.383333	---	33.98	54.00	20.02	150.0	V	119.0	8.3
7321.983333	44.25	---	74.00	29.75	150.0	V	294.0	8.2
12150.641667	49.38	---	74.00	24.62	150.0	V	317.0	14.4
12162.933333	---	39.58	54.00	14.42	150.0	V	359.0	14.5

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

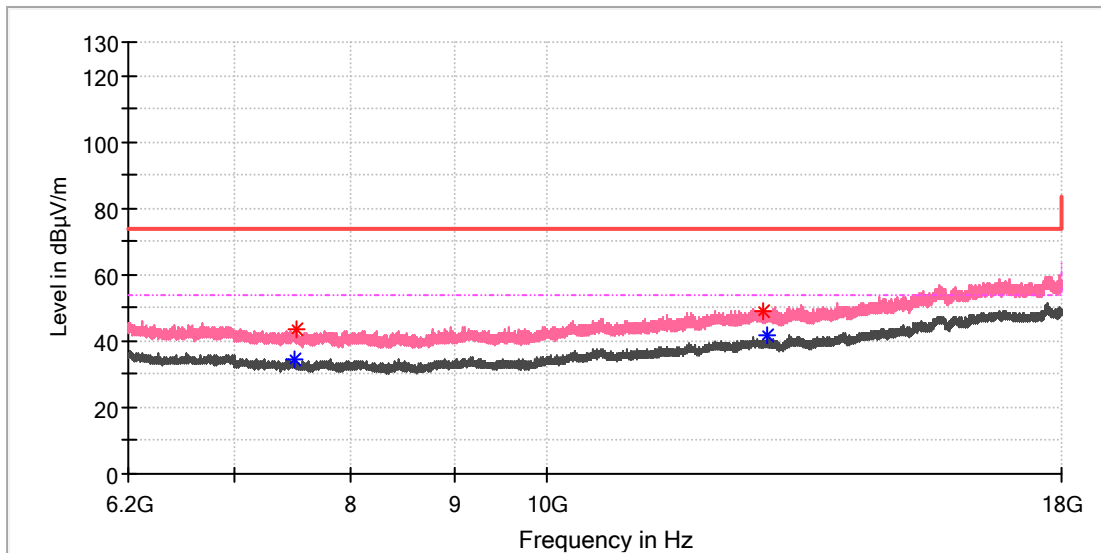


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7452.275000	---	34.72	54.00	19.28	150.0	H	335.0	8.5
7475.875000	43.16	---	74.00	30.84	150.0	H	143.0	8.6
12664.925000	---	40.57	54.00	13.43	150.0	H	78.0	15.0
12684.591667	50.04	---	74.00	23.96	150.0	H	52.0	15.1

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

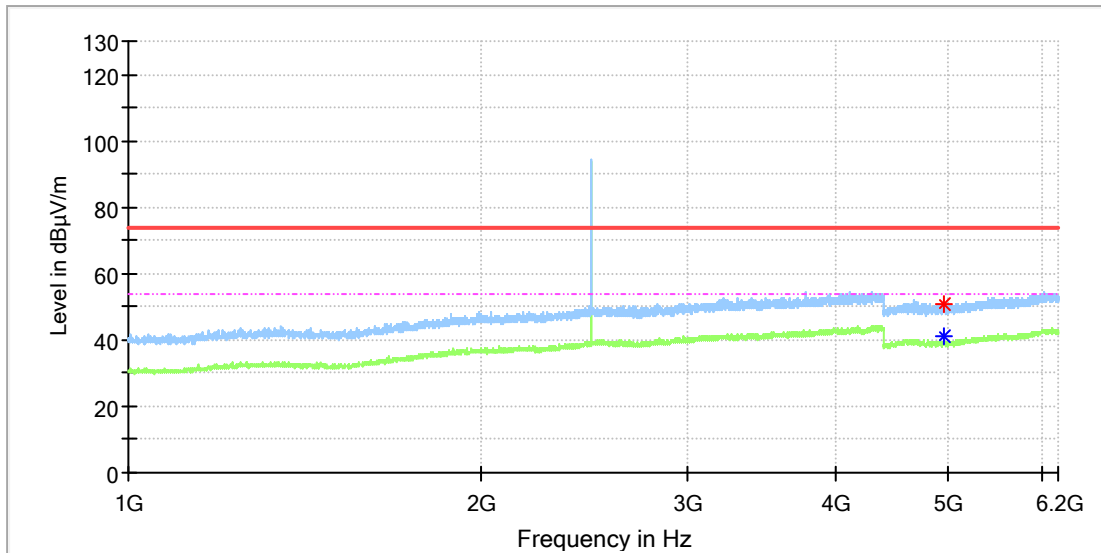


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7502.916667	---	34.69	54.00	19.31	150.0	V	188.0	8.7
7520.616667	43.75	---	74.00	30.25	150.0	V	115.0	8.7
12803.083333	49.24	---	74.00	24.76	150.0	V	236.0	15.3
12863.066667	---	41.44	54.00	12.56	150.0	V	211.0	15.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

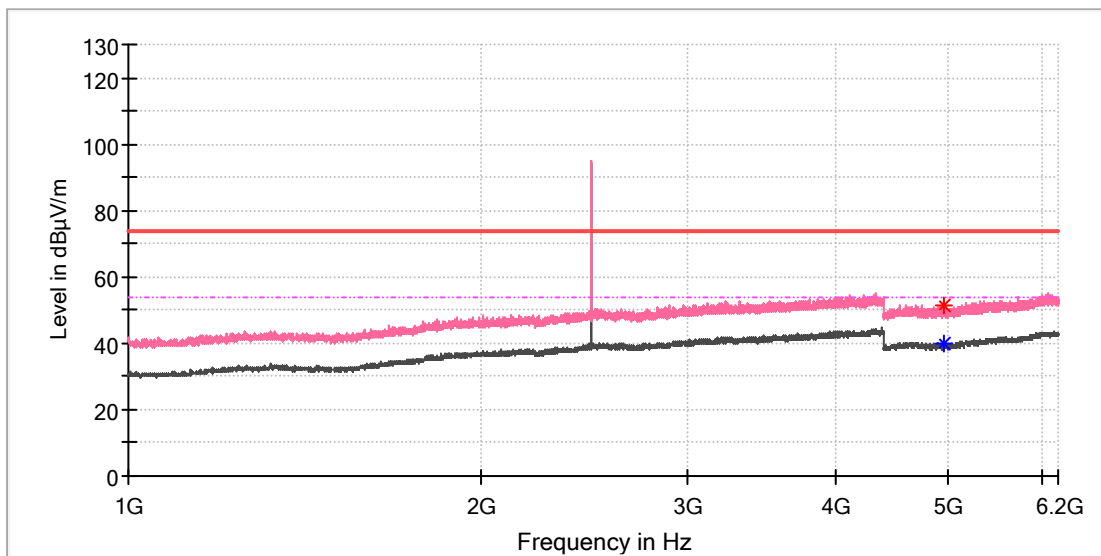


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4950.000000	51.00	---	74.00	23.00	150.0	H	335.0	11.8
4960.000000	---	40.89	54.00	13.11	150.0	H	357.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

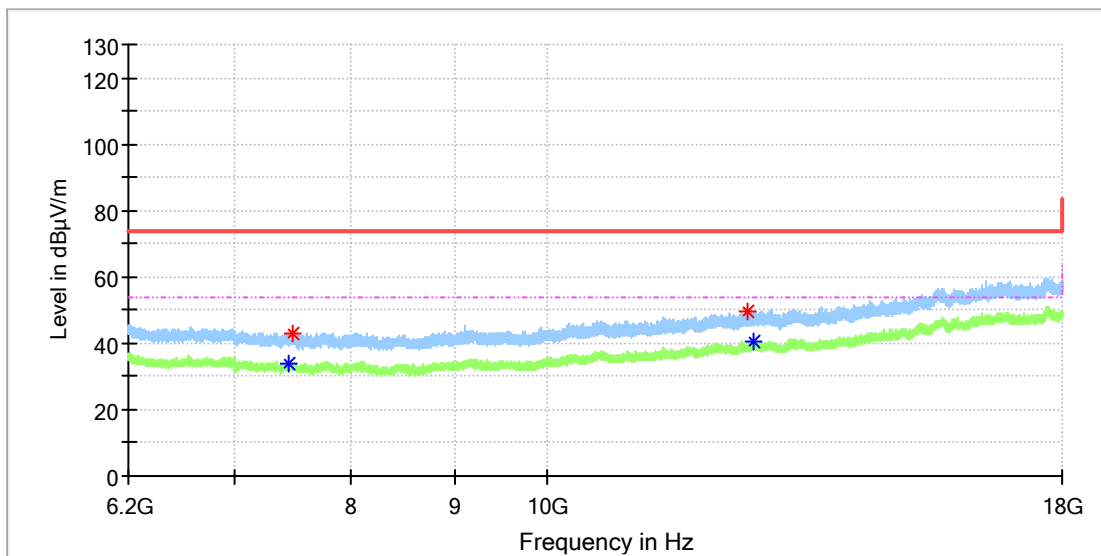


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4952.000000	---	39.78	54.00	14.22	150.0	V	225.0	11.8
4962.000000	51.69	---	74.00	22.31	150.0	V	213.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

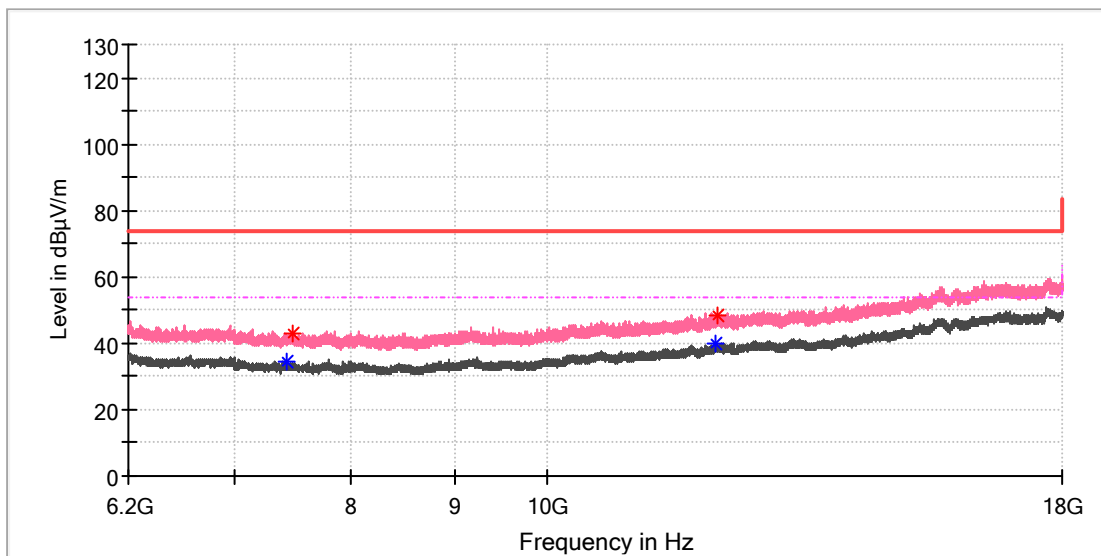


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7439.491667	---	34.04	54.00	19.96	150.0	H	168.0	8.4
7477.841667	43.18	---	74.00	30.82	150.0	H	131.0	8.6
12574.458333	49.56	---	74.00	24.44	150.0	H	0.0	14.8
12652.633333	---	40.65	54.00	13.35	150.0	H	312.0	15.0

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



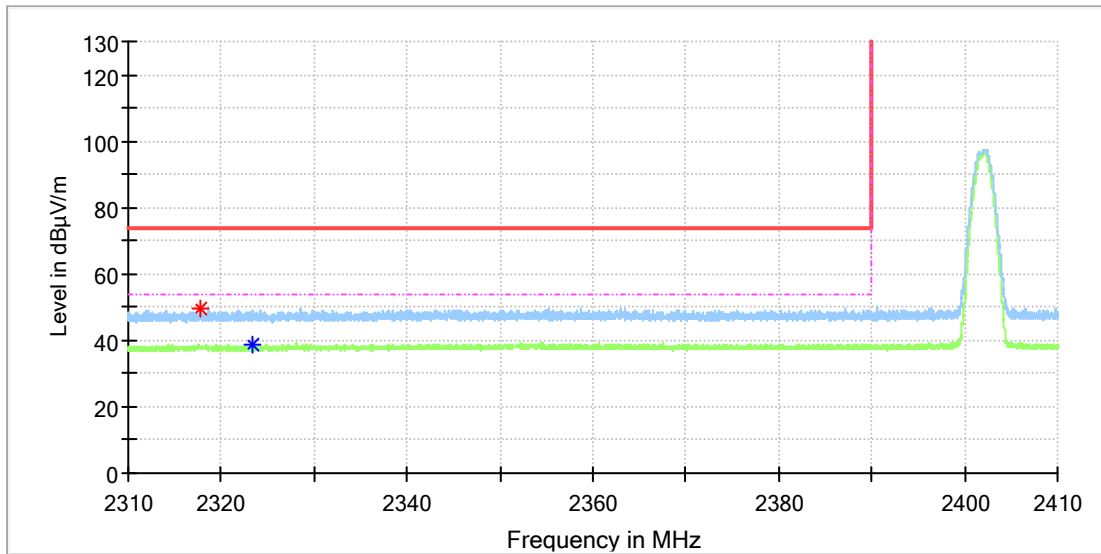
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7423.266667	---	34.56	54.00	19.44	150.0	V	0.0	8.4
7476.858333	43.00	---	74.00	31.00	150.0	V	236.0	8.6
12109.833333	---	39.87	54.00	14.13	150.0	V	24.0	14.2
12138.350000	48.63	---	74.00	25.37	150.0	V	212.0	14.4

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

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

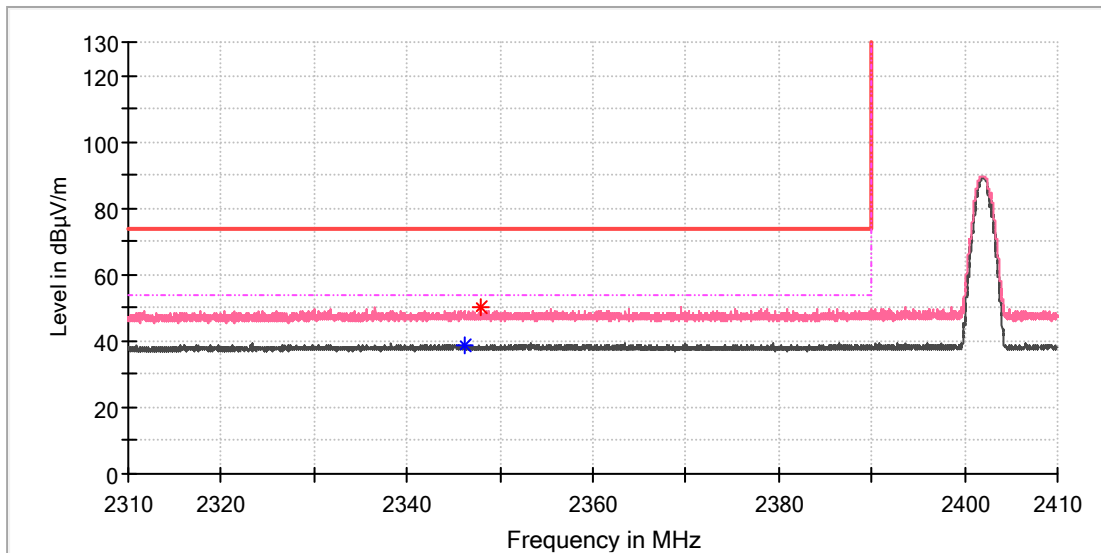


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2317.720588	49.59	---	74.00	24.41	150.0	H	145.0	6.6
2323.382353	---	38.97	54.00	15.03	150.0	H	186.0	6.6

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

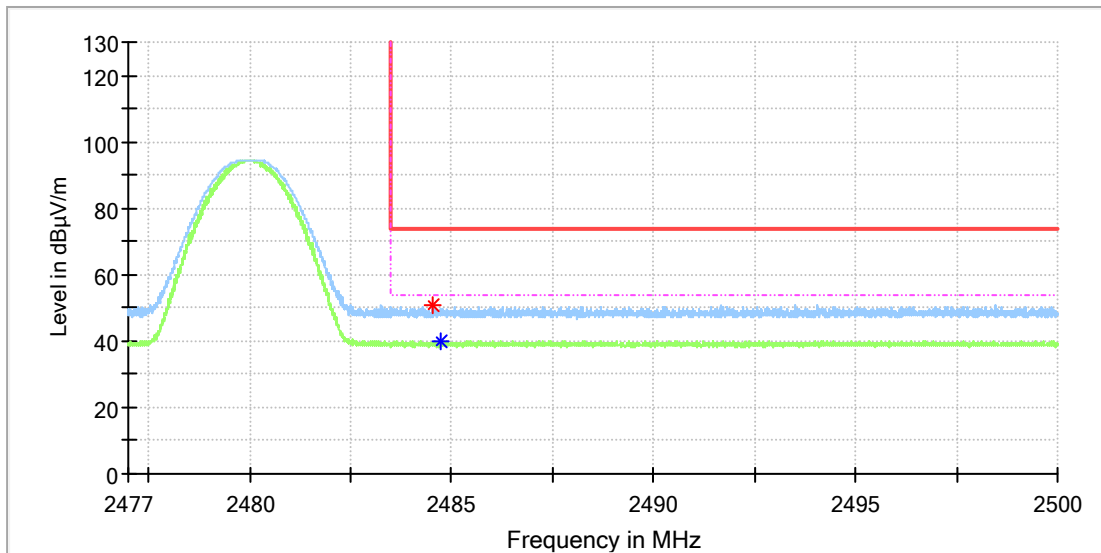


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2346.308824	---	38.83	54.00	15.17	150.0	V	0.0	6.9
2347.823530	49.90	---	74.00	24.10	150.0	V	0.0	6.9

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

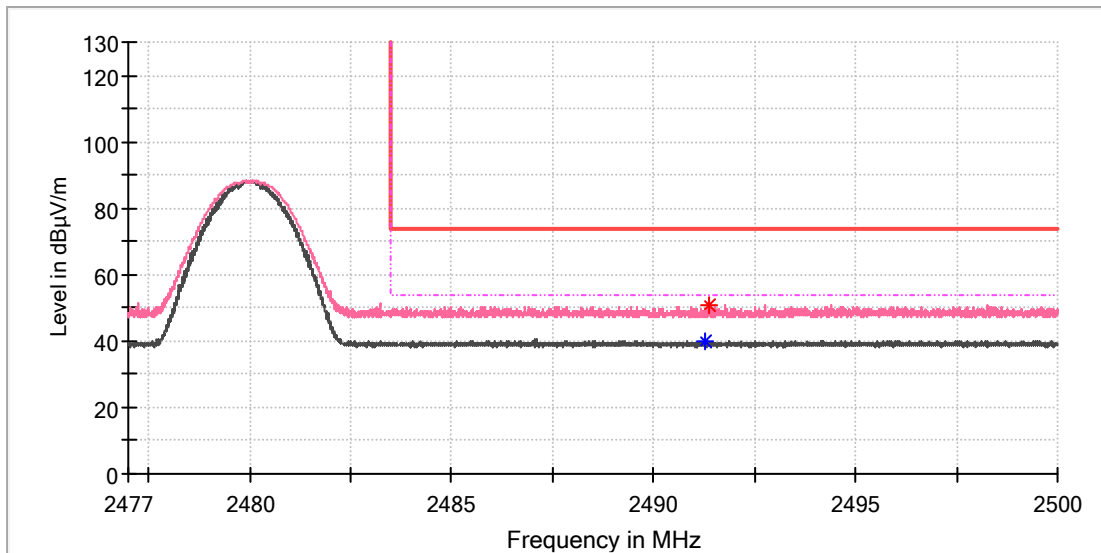


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2484.527941	51.04	---	74.00	22.96	150.0	H	265.0	7.4
2484.744118	---	40.16	54.00	13.84	150.0	H	286.0	7.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

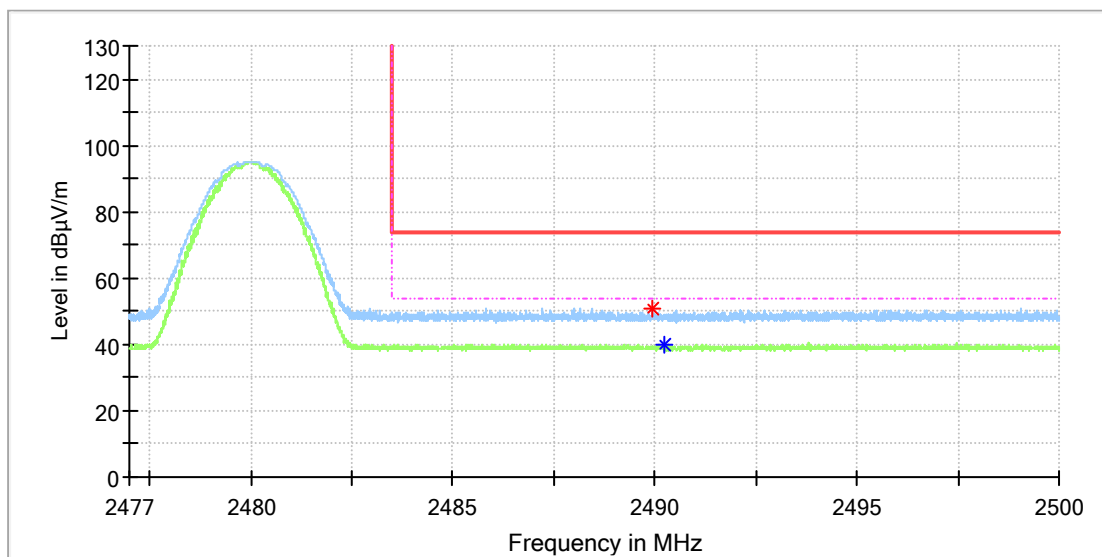


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2491.277941	---	39.79	54.00	14.21	150.0	V	108.0	7.4
2491.388235	50.95	---	74.00	23.05	150.0	V	137.0	7.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

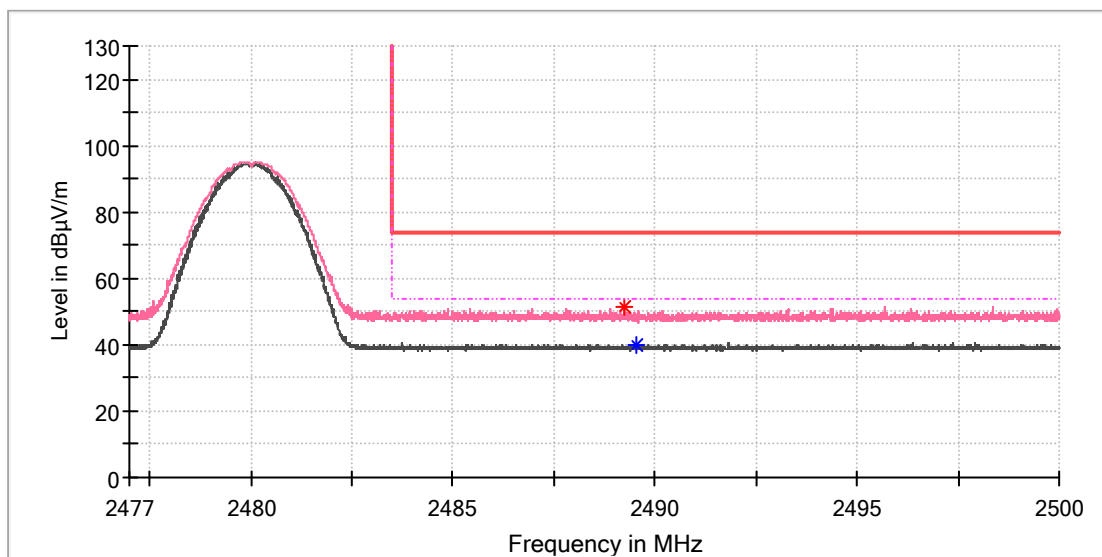


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2489.936765	50.73	---	74.00	23.27	150.0	H	133.0	7.4
2490.241177	---	39.91	54.00	14.09	150.0	H	0.0	7.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
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)
2489.248529	51.36	---	74.00	22.64	150.0	V	123.0	7.4
2489.535294	---	40.07	54.00	13.93	150.0	V	44.0	7.4

Appendix A: Test Results of Classical Bluetooth_Right Earbud

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Appendix A.1: Test Results of 99% Bandwidth

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.88970	2401.5432	2402.4329	---	---
		2441	0.88752	2440.5442	2441.4317	---	---
		2480	0.89104	2479.5438	2480.4349	---	---
3DH5	Ant1	2402	1.1682	2401.4030	2402.5712	---	---
		2441	1.1774	2440.3973	2441.5747	---	---
		2480	1.1789	2479.3946	2480.5735	---	---

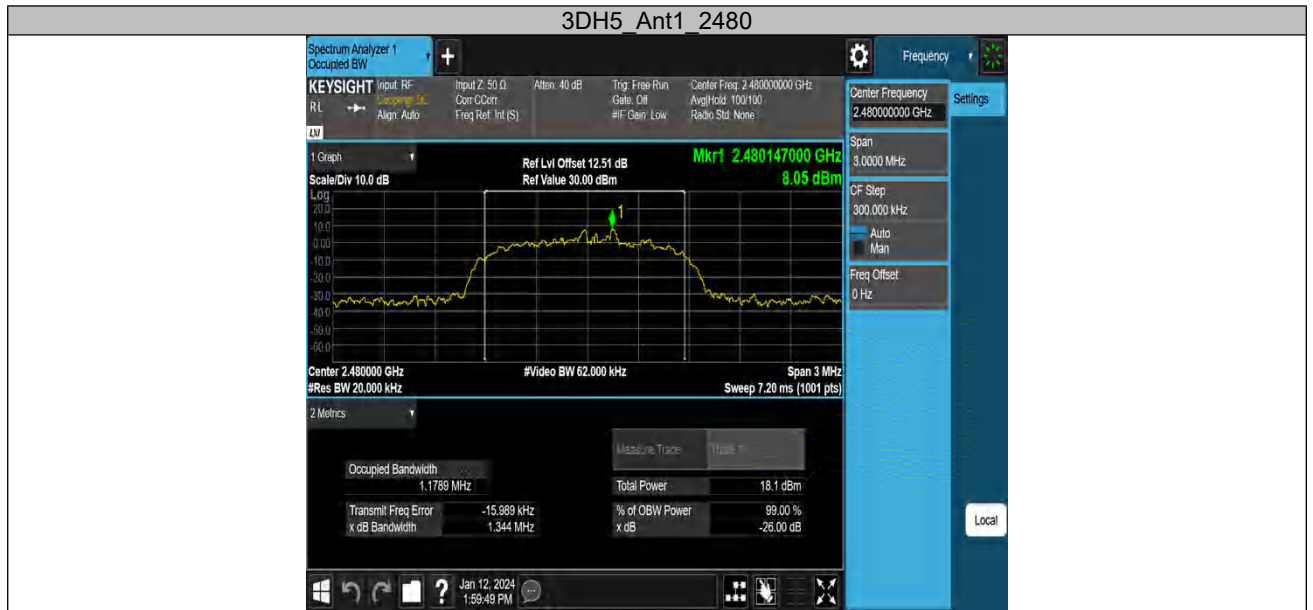
DH5 Ant1 2402



DH5 Ant1 2441







Appendix A.2: Test Results of 20dB Bandwidth

TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.942	2401.529	2402.471	---	---
		2441	0.948	2440.526	2441.474	---	---
		2480	0.948	2479.526	2480.474	---	---
3DH5	Ant1	2402	1.263	2401.346	2402.609	---	---
		2441	1.272	2440.340	2441.612	---	---
		2480	1.281	2479.340	2480.621	---	---

DH5 Ant1 2402



DH5 Ant1 2441



DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441





Appendix A.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 3.85V	2401.986	-14	-5.83	10
DC 3.47V	2401.987	-13	-5.41	
DC 4.24V	2401.988	-12	-5.00	

Test result of frequency tolerance of temperature variation

Temperature (°C)	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
-30	2401.985	-15	-6.24	10
-20	2401.986	-14	-5.83	
-10	2401.984	-16	-6.66	
0	2401.986	-14	-5.83	
10	2401.985	-15	-6.24	
20	2401.986	-14	-5.83	
30	2401.986	-14	-5.83	
40	2401.987	-13	-5.41	
50	2401.987	-13	-5.41	
55	2401.987	-13	-5.41	

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 3.85V	2440.986	-14	-5.74	10
DC 3.47V	2440.985	-15	-6.15	
DC 4.24V	2440.985	-15	-6.15	

Test result of frequency tolerance of temperature variation

Temperature (°C)	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
-30	2440.983	-17	-6.96	10
-20	2440.984	-16	-6.55	
-10	2440.983	-17	-6.96	
0	2440.985	-15	-6.15	
10	2440.985	-15	-6.15	
20	2440.986	-14	-5.74	
30	2440.986	-14	-5.74	
40	2440.986	-14	-5.74	
50	2440.986	-14	-5.74	
55	2440.986	-14	-5.74	

Test Channel (MHz)	2480
--------------------	------

Test result of frequency tolerance of voltage variation

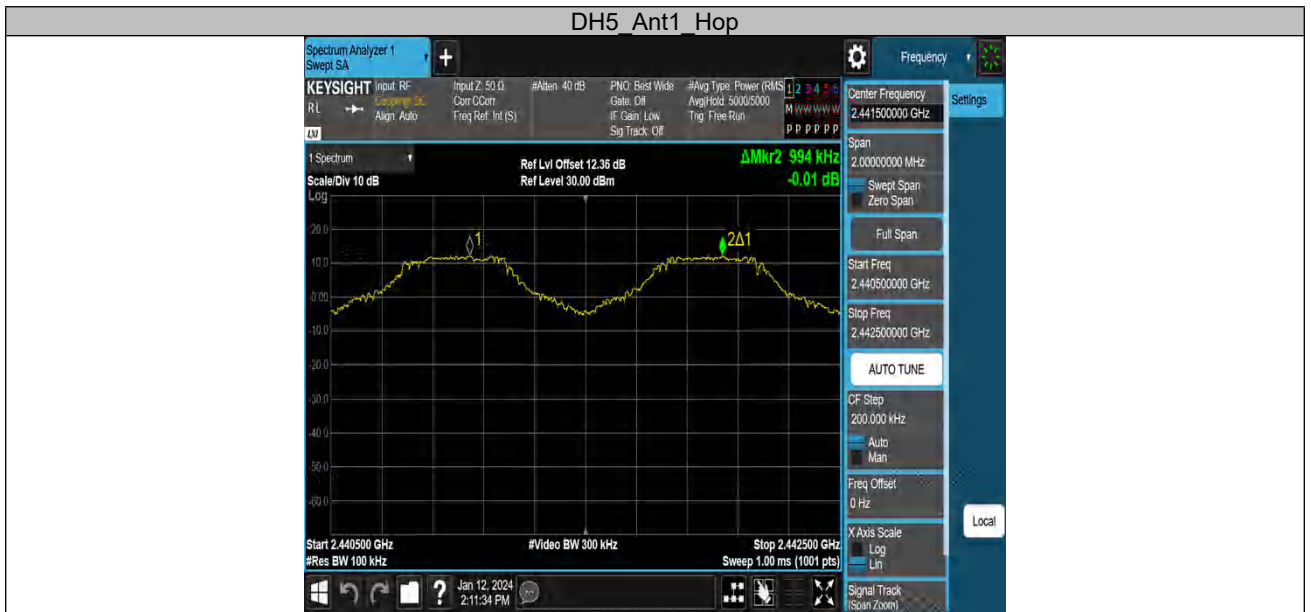
Voltage	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
DC 3.85V	2479.983	-17	-6.85	10
DC 3.47V	2479.982	-18	-7.26	
DC 4.24V	2479.983	-17	-6.85	

Test result of frequency tolerance of temperature variation

Temperature (°C)	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
-30	2479.982	-18	-7.26	10
-20	2479.982	-18	-7.26	
-10	2479.983	-17	-6.85	
0	2479.984	-16	-6.45	
10	2479.984	-16	-6.45	
20	2479.984	-16	-6.45	
30	2479.983	-17	-6.85	
40	2479.983	-17	-6.85	
50	2479.984	-16	-6.45	
55	2479.984	-16	-6.45	

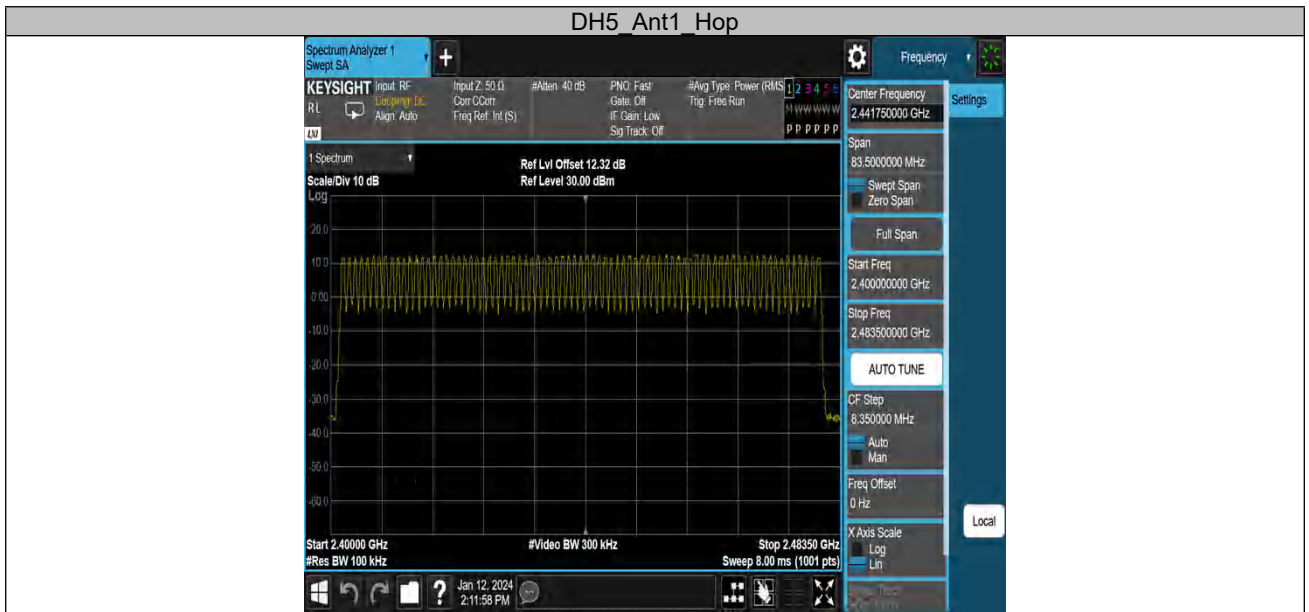
Appendix A.4: Test Results of Carrier Frequency Separation

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.994	≥0.948	PASS
3DH5	Ant1	Hop	0.98	≥0.854	PASS



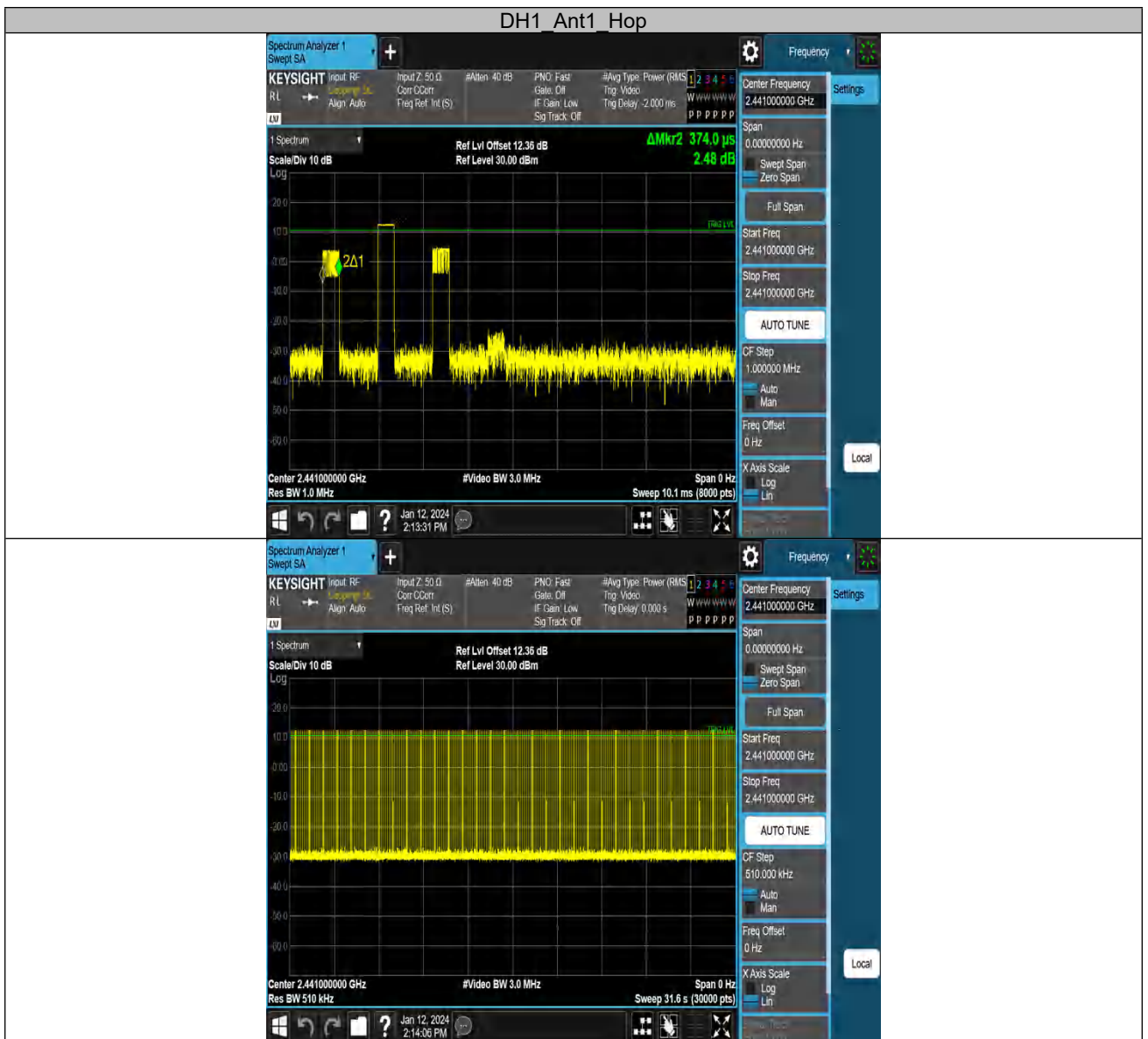
Appendix A.5: Test Results of Number of Hopping Frequency

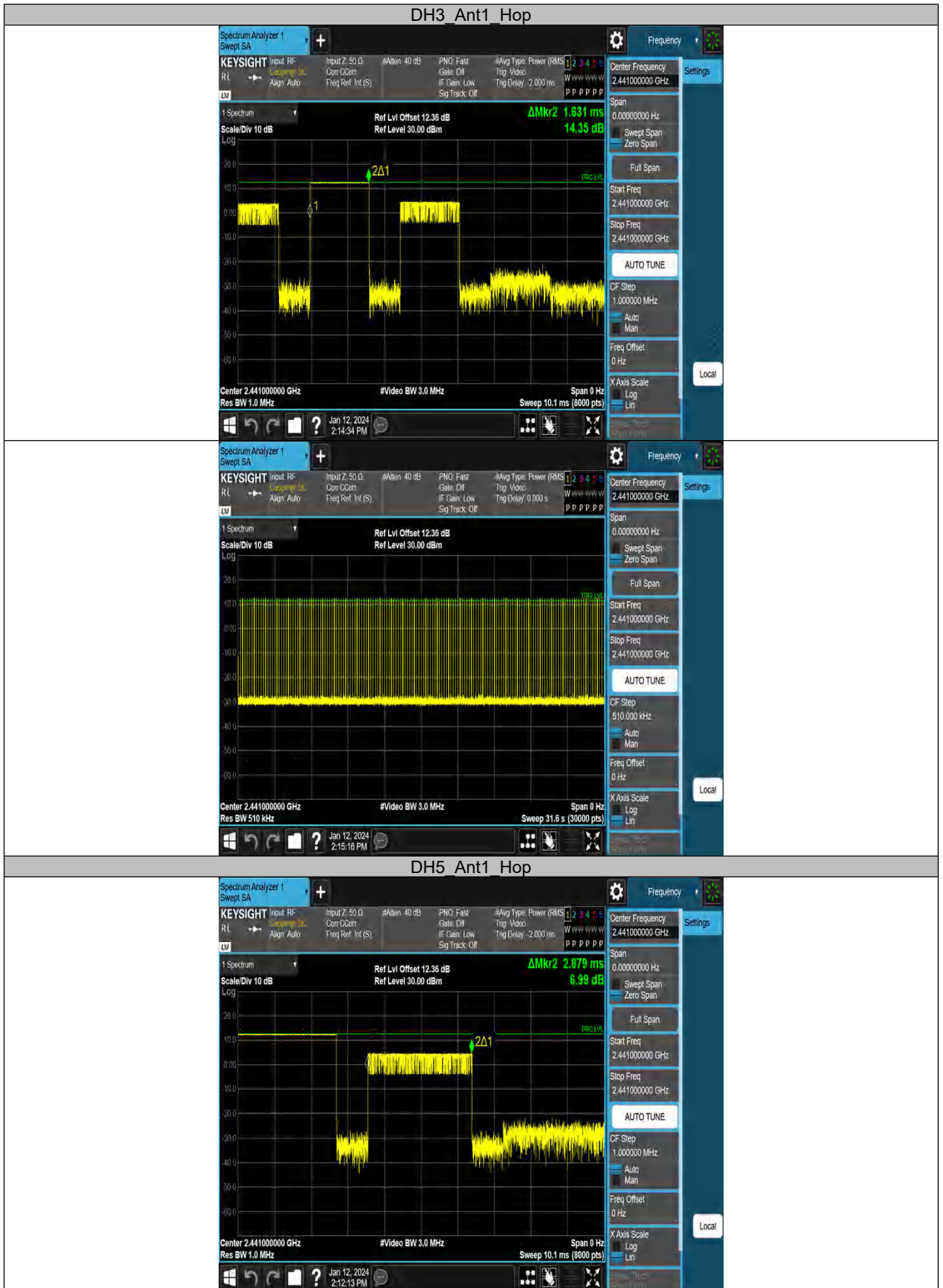
TestMode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS



Appendix A.6: Test Results of Time of Occupancy

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.374	319	0.119	≤0.4	PASS
DH3	Ant1	Hop	1.631	159	0.259	≤0.4	PASS
DH5	Ant1	Hop	2.879	107	0.308	≤0.4	PASS
3DH1	Ant1	Hop	0.380	319	0.121	≤0.4	PASS
3DH3	Ant1	Hop	1.630	159	0.259	≤0.4	PASS
3DH5	Ant1	Hop	2.882	107	0.308	≤0.4	PASS







3DH1 Ant1 Hop



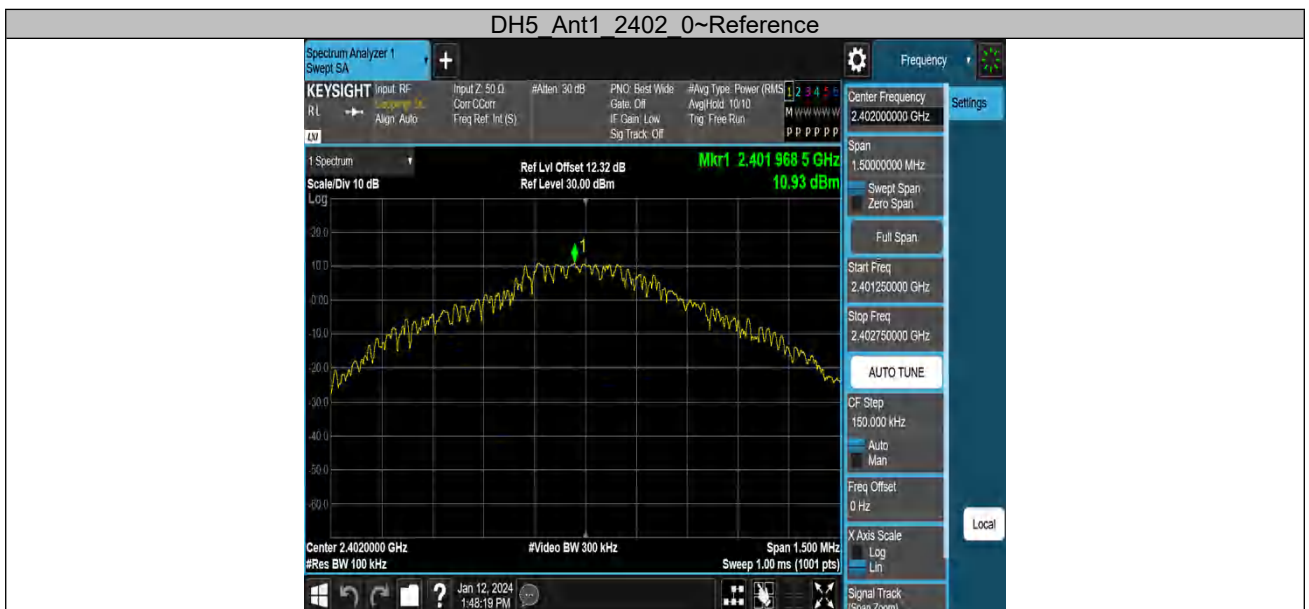




Appendix A.7: Test Results of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

Conducted measurements

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	10.93	10.93	---	PASS
			30~1000	10.93	-46.78	≤-9.07	PASS
			1000~26500	10.93	-37.76	≤-9.07	PASS
		2441	Reference	11.49	11.49	---	PASS
			30~1000	11.49	-46.09	≤-8.51	PASS
			1000~26500	11.49	-36.74	≤-8.51	PASS
		2480	Reference	11.47	11.47	---	PASS
			30~1000	11.47	-45.18	≤-8.53	PASS
			1000~26500	11.47	-37.24	≤-8.53	PASS
3DH5	Ant1	2402	Reference	10.52	10.52	---	PASS
			30~1000	10.52	-45.82	≤-9.48	PASS
			1000~26500	10.52	-37.7	≤-9.48	PASS
		2441	Reference	7.47	7.47	---	PASS
			30~1000	7.47	-45.77	≤-12.53	PASS
			1000~26500	7.47	-37.35	≤-12.53	PASS
		2480	Reference	12.17	12.17	---	PASS
			30~1000	12.17	-46.27	≤-7.83	PASS
			1000~26500	12.17	-37.15	≤-7.83	PASS



DH5_Ant1_2402_30~1000



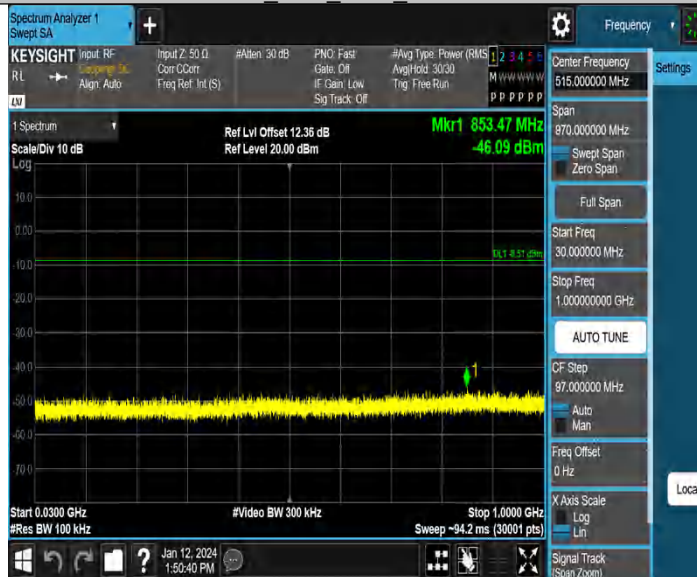
DH5_Ant1_2402_1000~26500



DH5_Ant1_2441_0~Reference



DH5_Ant1_2441_30~1000



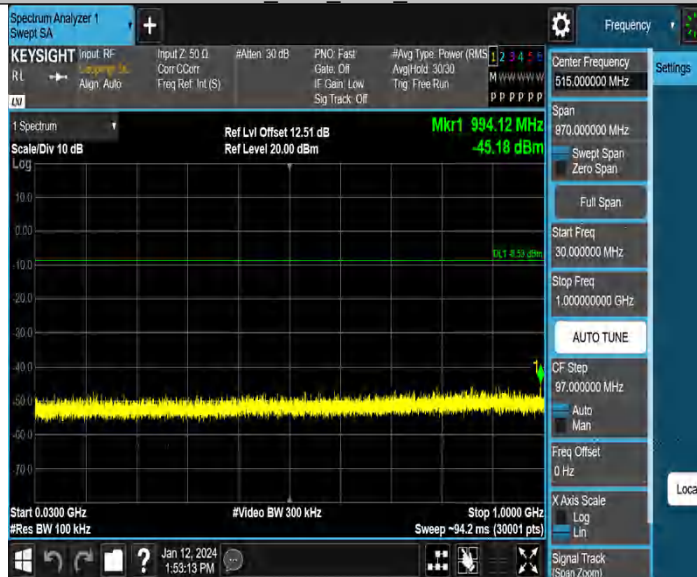
DH5_Ant1_2441_1000~26500



DH5_Ant1_2480_0~Reference



DH5_Ant1_2480_30~1000



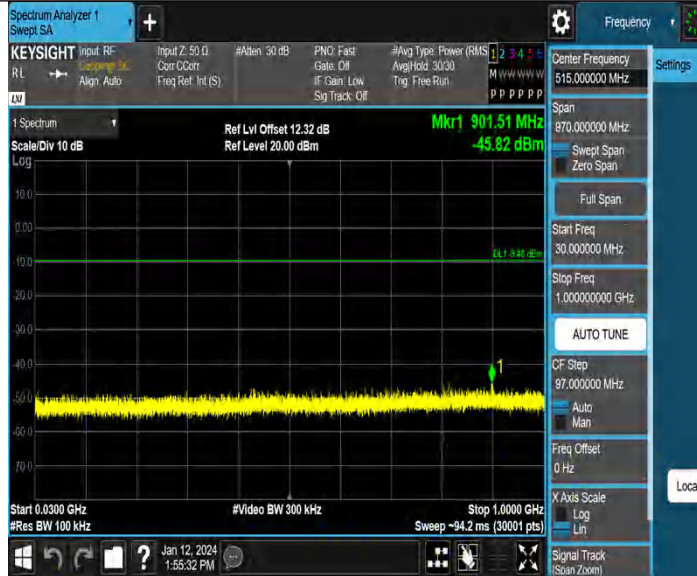
DH5_Ant1_2480_1000~26500



3DH5_Ant1_2402_0~Reference



3DH5_Ant1_2402_30~1000



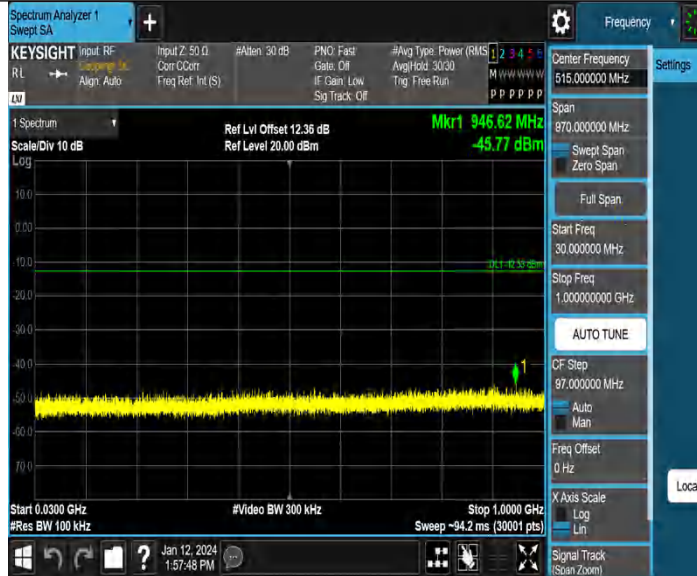
3DH5_Ant1_2402_1000~26500



3DH5_Ant1_2441_0~Reference



3DH5_Ant1_2441_30~1000



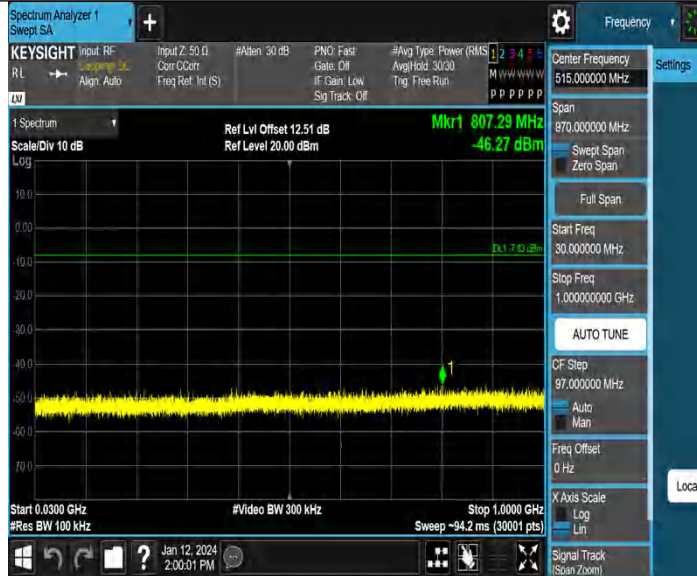
3DH5_Ant1_2441_1000~26500



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	11.83	-45.41	≤-8.17	PASS
		High	2480	12.29	-46.96	≤-7.71	PASS
3DH5	Ant1	Low	2402	11.81	-43.29	≤-8.19	PASS
		High	2480	12.29	-46.81	≤-7.71	PASS
DH5	Ant1	Hopping	2402	11.23	-49	≤-8.77	PASS
		Hopping	2480	10.29	-46.31	≤-9.71	PASS
3DH5	Ant1	Hopping	2402	6.098	-47.75	≤-13.9	PASS
		Hopping	2480	7.282	-49.55	≤-12.72	PASS

DH5 Ant1 Low 2402



DH5 Ant1 High 2480



3DH5 Ant1 Low 2402



3DH5 Ant1 High 2480



DH5 Ant1 Hopping 2402



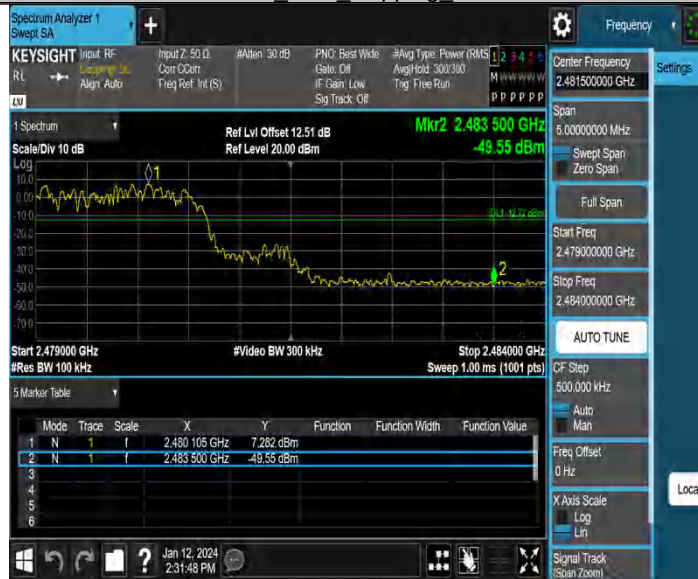
DH5 Ant1 Hopping 2480



3DH5 Ant1 Hopping 2402



3DH5 Ant1 Hopping 2480



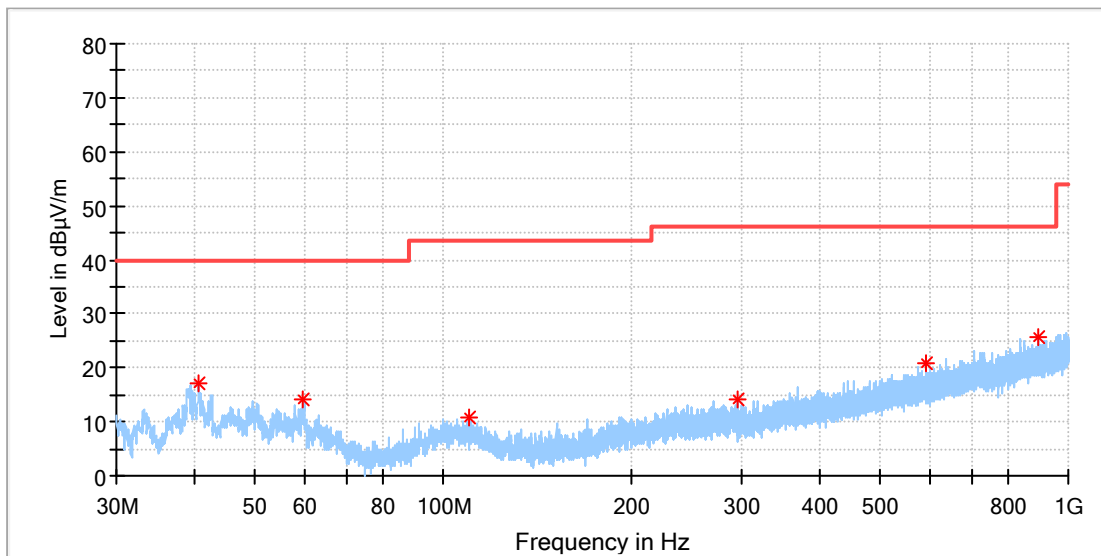
Appendix A.8: Test Results of Radiated Spurious Emissions

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:	LIVE BUDS 3
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

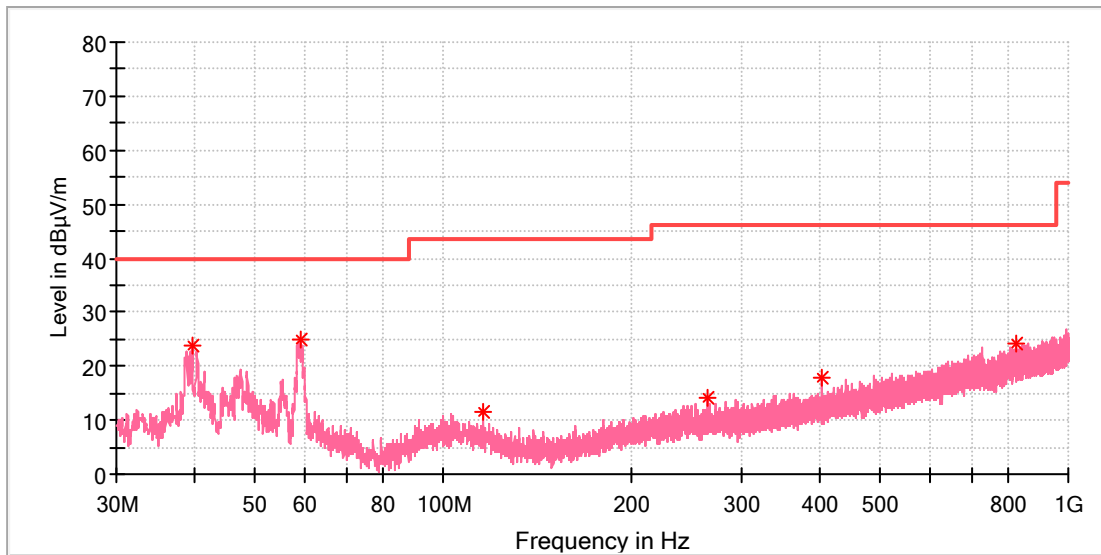


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
40.670000	17.23	40.00	22.77	100.0	H	148.0	-20.2
59.771539	14.23	40.00	25.77	100.0	H	157.0	-19.3
109.950385	10.70	43.50	32.80	100.0	H	2.0	-19.4
295.220385	14.23	46.00	31.77	100.0	H	269.0	-16.8
593.122308	20.98	46.00	25.02	100.0	H	213.0	-10.3
896.023462	25.55	46.00	20.45	100.0	H	64.0	-5.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

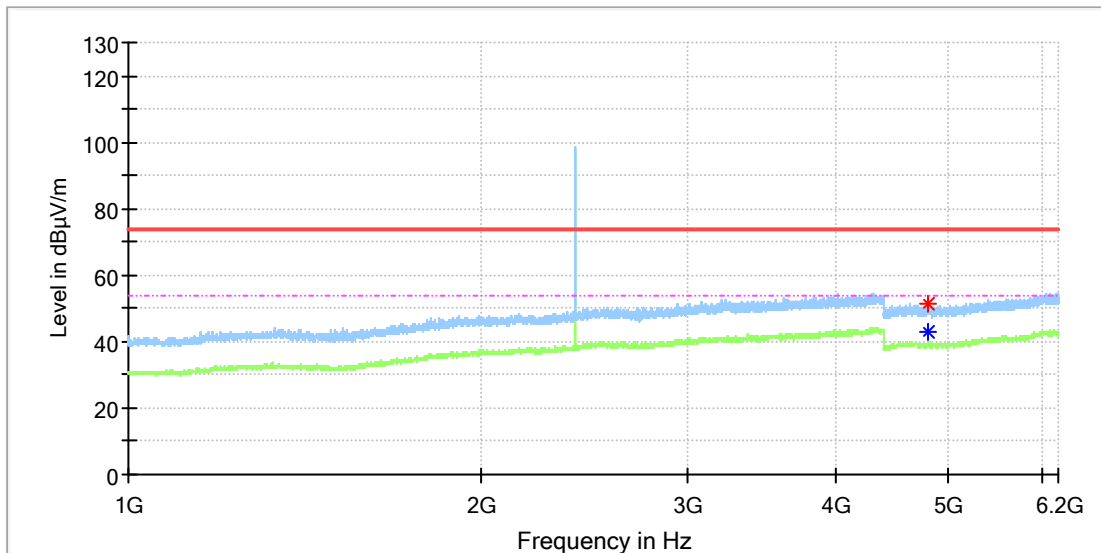
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
39.700000	23.67	40.00	16.33	100.0	V	8.0	-20.5
58.988077	24.87	40.00	15.13	100.0	V	105.0	-19.2
115.621154	11.47	43.50	32.03	100.0	V	183.0	-20.2
263.956539	14.32	46.00	31.68	100.0	V	23.0	-17.4
403.561923	17.92	46.00	28.08	100.0	V	2.0	-14.0
825.250769	24.21	46.00	21.79	100.0	V	115.0	-6.3

1GHz - 18GHz

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

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

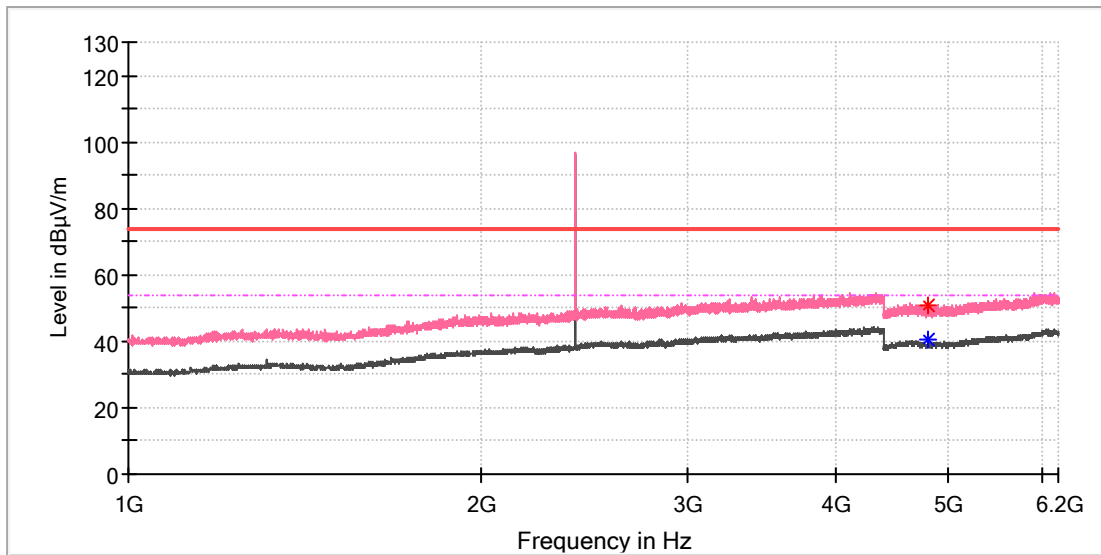


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4803.500000	51.13	---	74.00	22.87	150.0	H	258.0	11.8
4803.500000	---	42.93	54.00	11.07	150.0	H	258.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

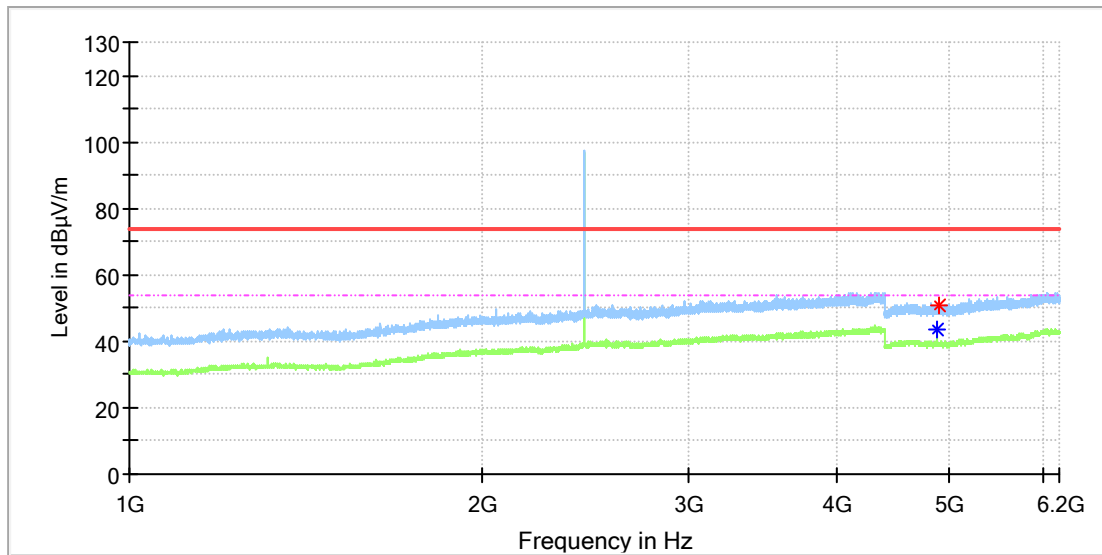


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4803.500000	---	40.26	54.00	13.74	150.0	V	49.0	11.8
4806.500000	50.89	---	74.00	23.11	150.0	V	193.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

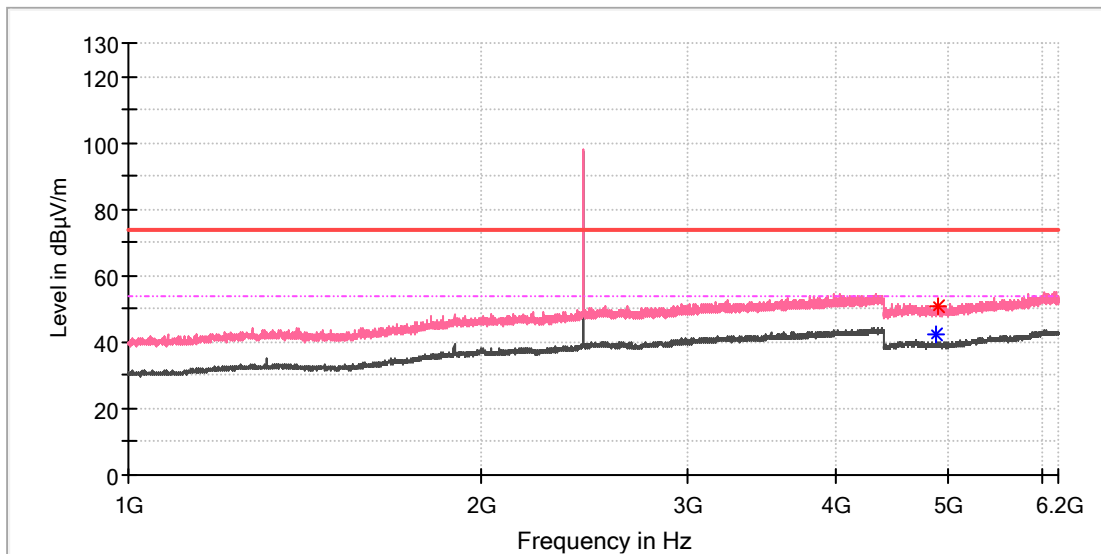


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4881.500000	---	43.23	54.00	10.77	150.0	H	257.0	11.8
4904.000000	50.68	---	74.00	23.32	150.0	H	157.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

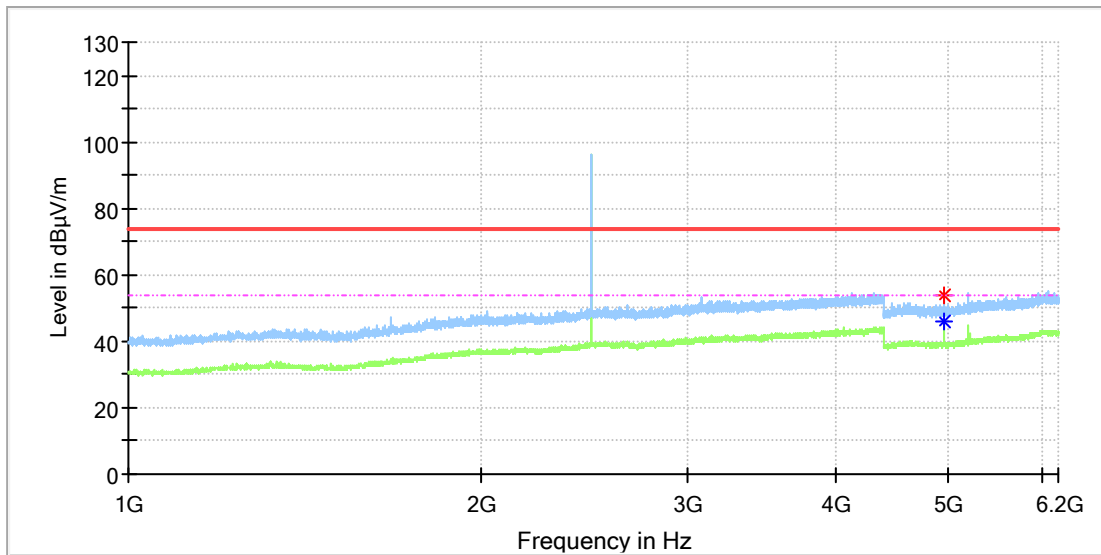


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4882.000000	---	42.59	54.00	11.41	150.0	V	310.0	11.8
4902.000000	50.87	---	74.00	23.13	150.0	V	102.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

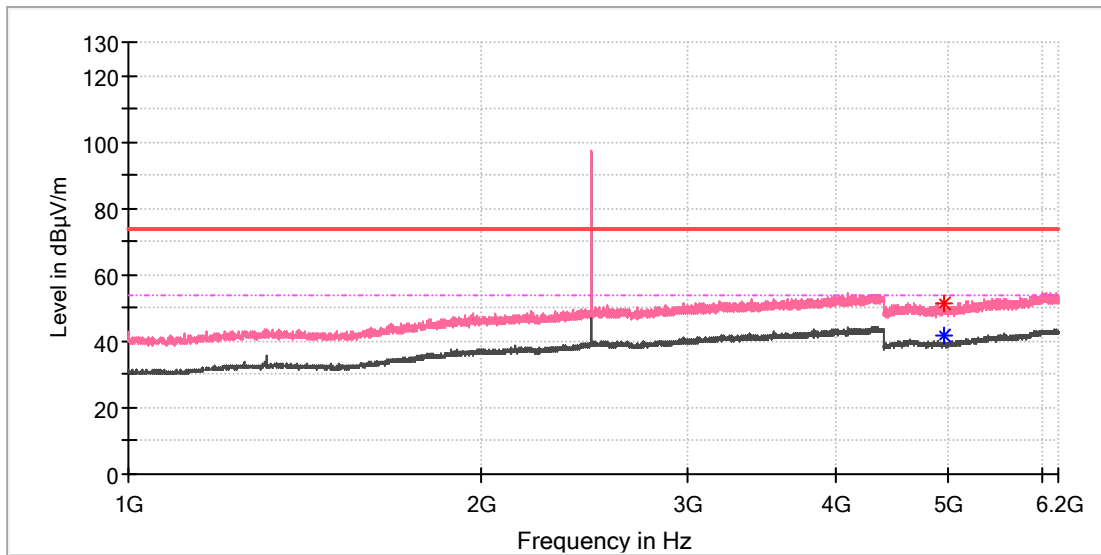


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.000000	53.81	---	74.00	20.19	150.0	H	263.0	11.8
4960.000000	---	45.71	54.00	8.29	150.0	H	263.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

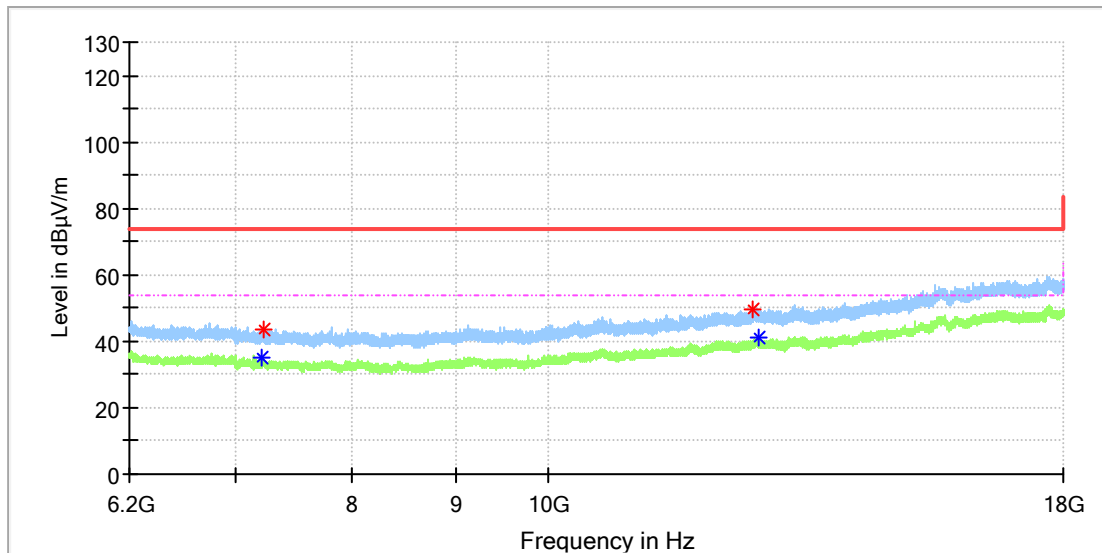


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.000000	---	42.01	54.00	11.99	150.0	V	312.0	11.8
4960.500000	51.28	---	74.00	22.72	150.0	V	280.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

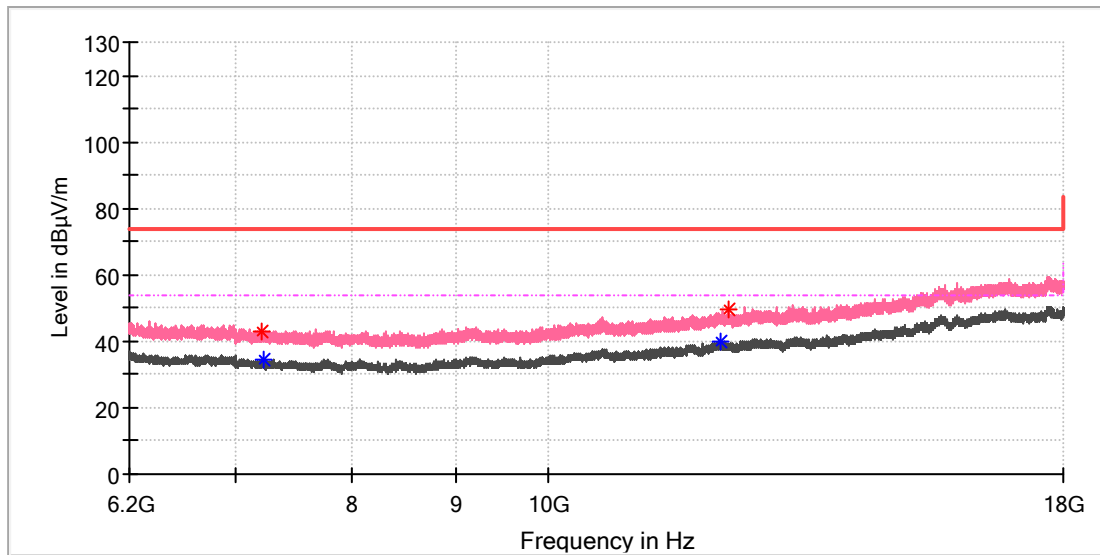


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7206.441667	---	34.79	54.00	19.21	150.0	H	357.0	8.8
7229.058333	43.39	---	74.00	30.61	150.0	H	24.0	8.6
12630.508333	49.82	---	74.00	24.18	150.0	H	262.0	15.0
12700.816667	---	41.22	54.00	12.78	150.0	H	324.0	15.1

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

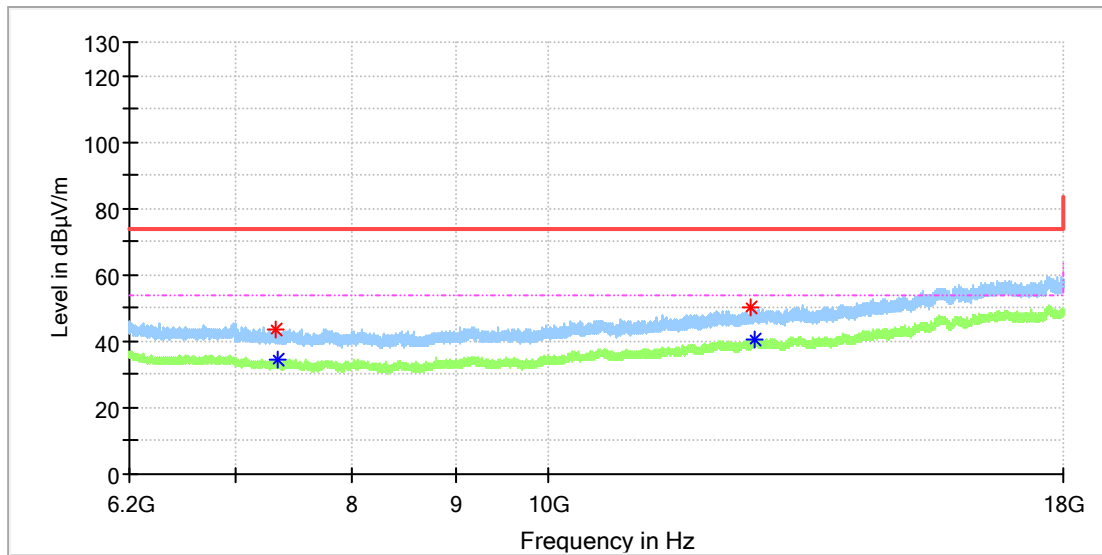


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7204.475000	42.95	---	74.00	31.05	150.0	V	225.0	8.8
7232.500000	---	34.42	54.00	19.58	150.0	V	142.0	8.6
12160.966667	---	39.90	54.00	14.10	150.0	V	96.0	14.5
12271.591667	49.32	---	74.00	24.68	150.0	V	286.0	14.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

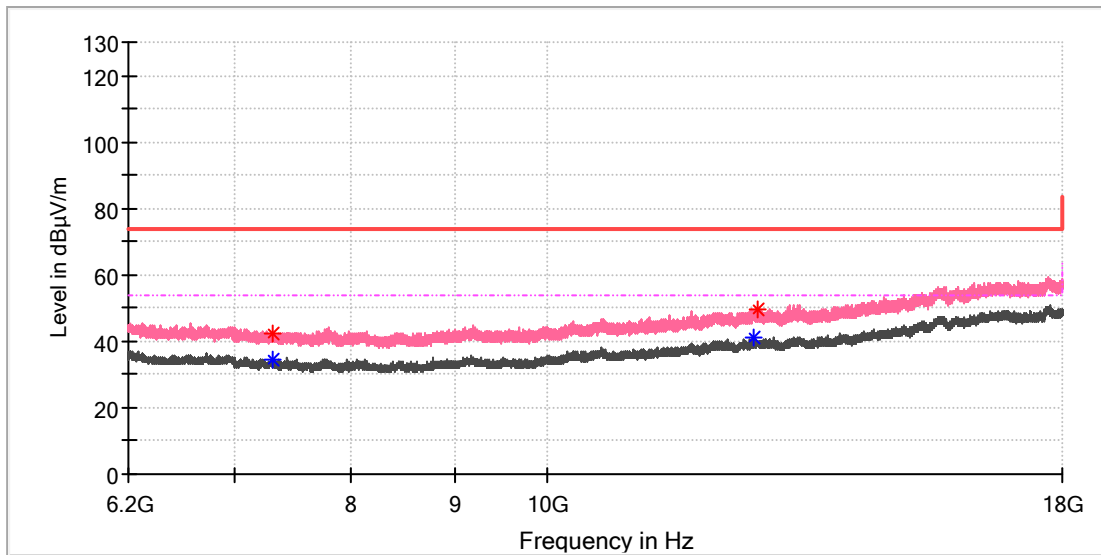


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7322.475000	43.52	---	74.00	30.48	150.0	H	186.0	8.2
7341.650000	---	34.25	54.00	19.75	150.0	H	261.0	8.1
12599.533333	49.94	---	74.00	24.06	150.0	H	66.0	14.9
12645.750000	---	40.42	54.00	13.58	150.0	H	223.0	15.0

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Mid channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

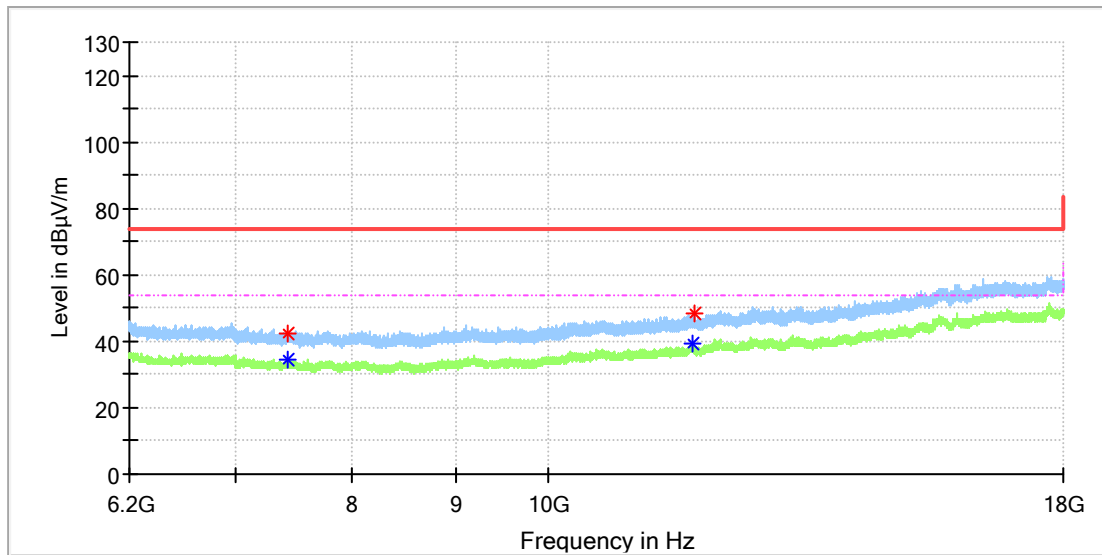


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7301.825000	---	34.60	54.00	19.40	150.0	V	259.0	8.3
7310.675000	42.46	---	74.00	31.54	150.0	V	283.0	8.2
12660.008333	---	41.41	54.00	12.59	150.0	V	343.0	15.0
12703.275000	49.46	---	74.00	24.54	150.0	V	171.0	15.1

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

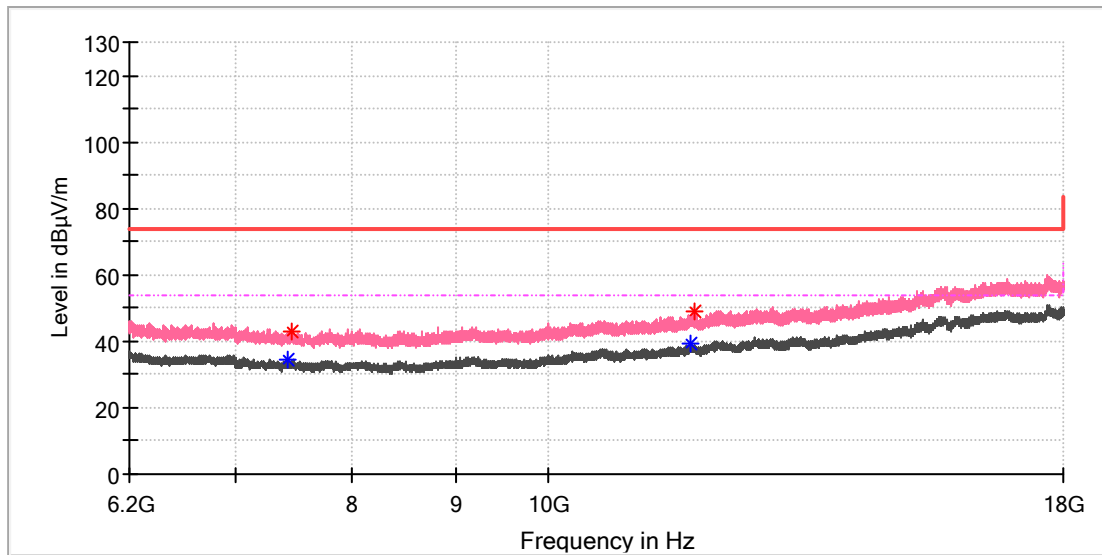


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7424.250000	42.33	---	74.00	31.67	150.0	H	276.0	8.4
7431.133333	---	34.30	54.00	19.70	150.0	H	288.0	8.4
11798.116667	---	39.09	54.00	14.91	150.0	H	130.0	13.4
11804.016667	48.62	---	74.00	25.38	150.0	H	194.0	13.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

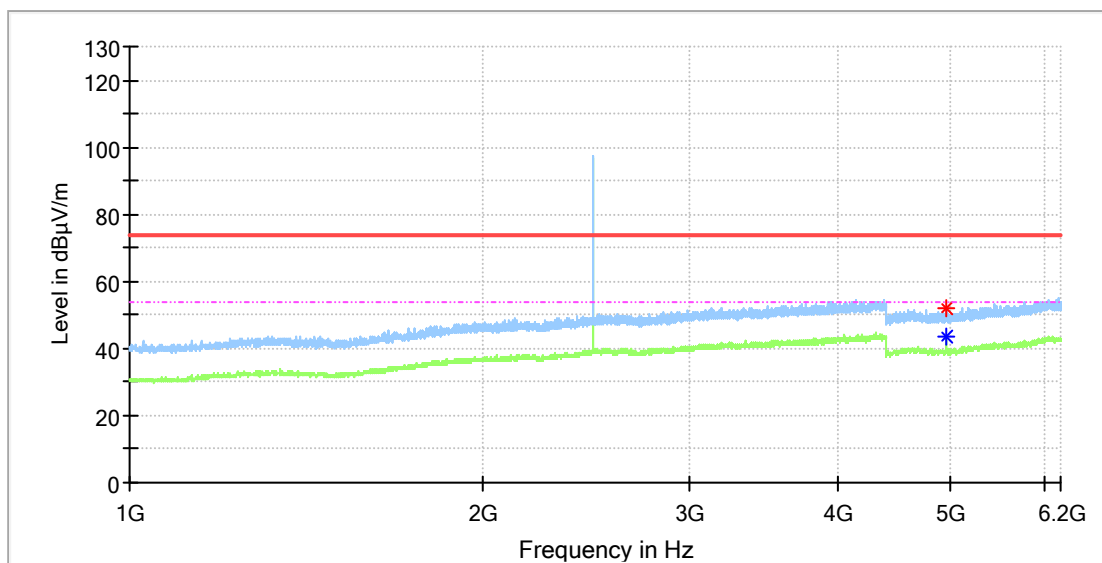


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7420.808333	---	34.20	54.00	19.80	150.0	V	120.0	8.4
7461.125000	43.06	---	74.00	30.94	150.0	V	32.0	8.5
11751.408333	---	39.60	54.00	14.40	150.0	V	286.0	13.3
11807.950000	48.72	---	74.00	25.28	150.0	V	214.0	13.5

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

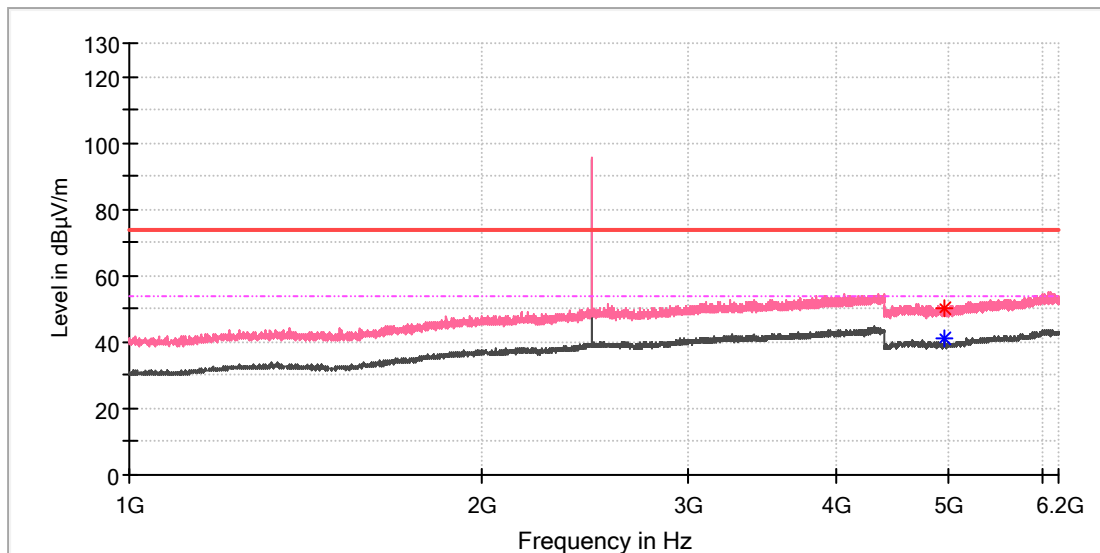


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.000000	51.92	---	74.00	22.08	150.0	H	274.0	11.8
4960.000000	---	43.82	54.00	10.18	150.0	H	274.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No./Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

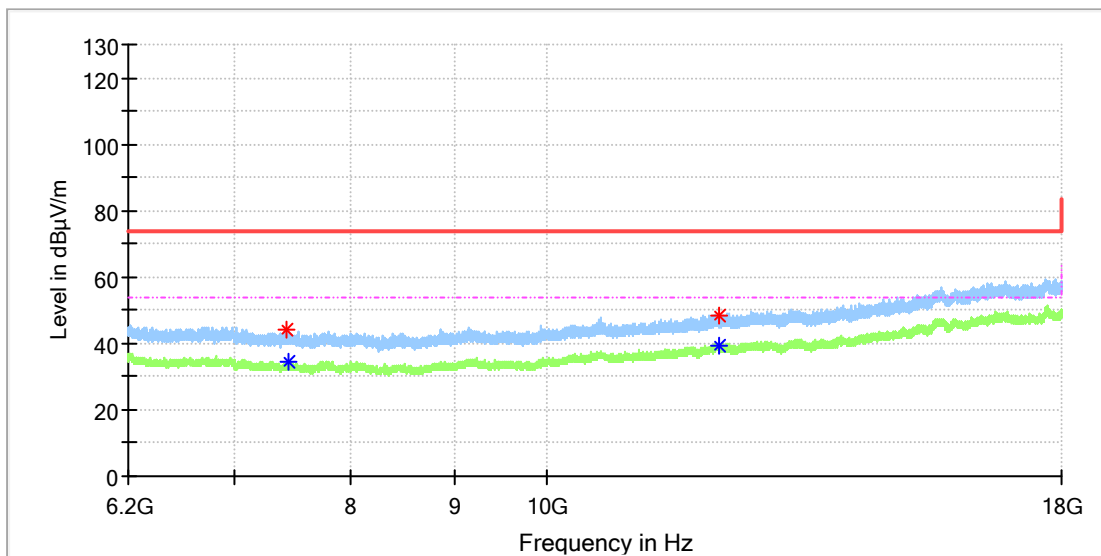


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4947.500000	50.44	---	74.00	23.56	150.0	V	144.0	11.8
4959.500000	---	40.83	54.00	13.17	150.0	V	240.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

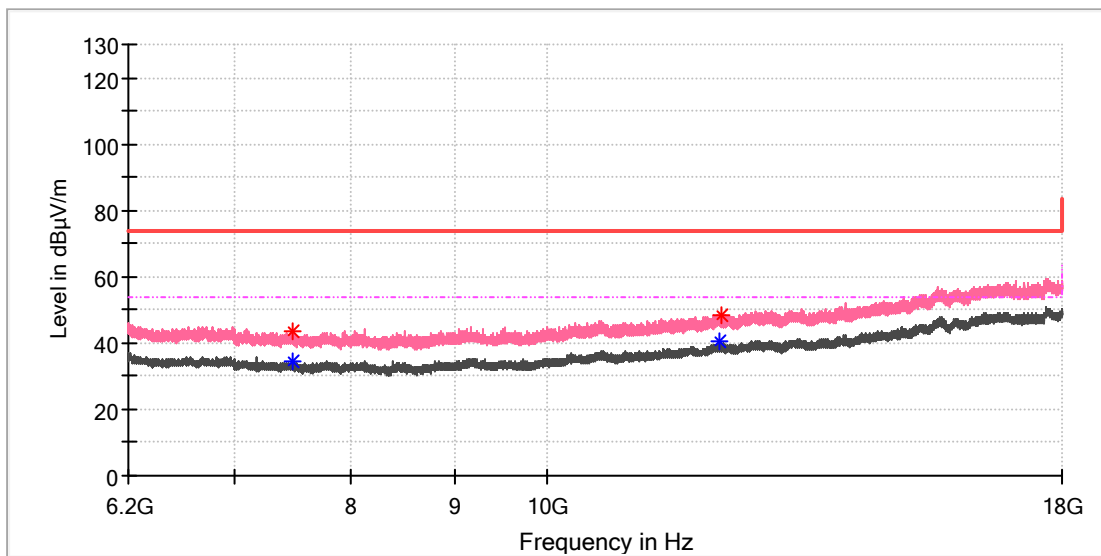


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7431.133333	44.03	---	74.00	29.97	150.0	H	42.0	8.4
7438.016667	---	34.19	54.00	19.81	150.0	H	218.0	8.4
12165.883333	---	39.48	54.00	14.52	150.0	H	2.0	14.5
12173.750000	48.36	---	74.00	25.64	150.0	H	19.0	14.5

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



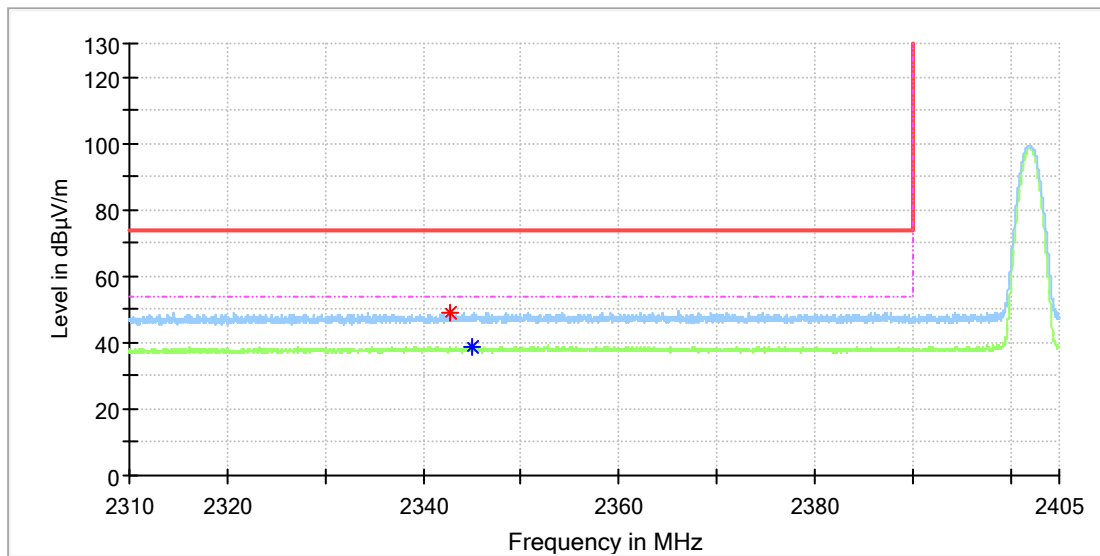
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7481.283333	---	34.31	54.00	19.69	150.0	V	289.0	8.7
7482.758333	43.57	---	74.00	30.43	150.0	V	337.0	8.7
12181.616667	---	40.44	54.00	13.56	150.0	V	137.0	14.6
12207.675000	48.53	---	74.00	25.47	150.0	V	172.0	14.7

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

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Low channel
Order No./Sample No.:	168459500/A003630231-002
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

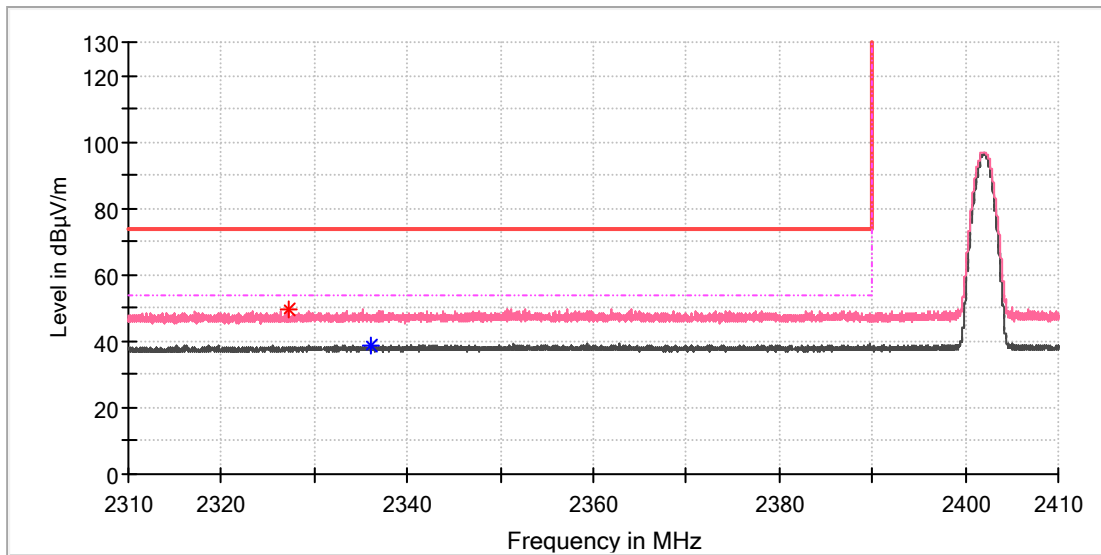


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2342.800000	49.17	---	74.00	24.83	150.0	H	140.0	6.8
2345.011765	---	38.73	54.00	15.27	150.0	H	126.0	6.9

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_Low channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

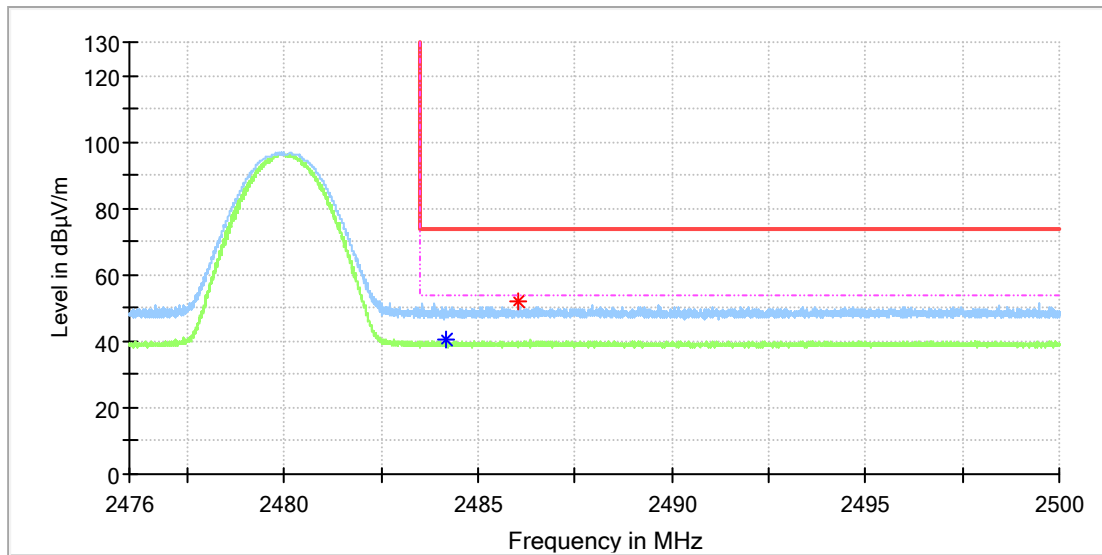


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2327.235294	49.79	---	74.00	24.21	150.0	V	92.0	6.7
2336.161765	---	38.64	54.00	15.36	150.0	V	275.0	6.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

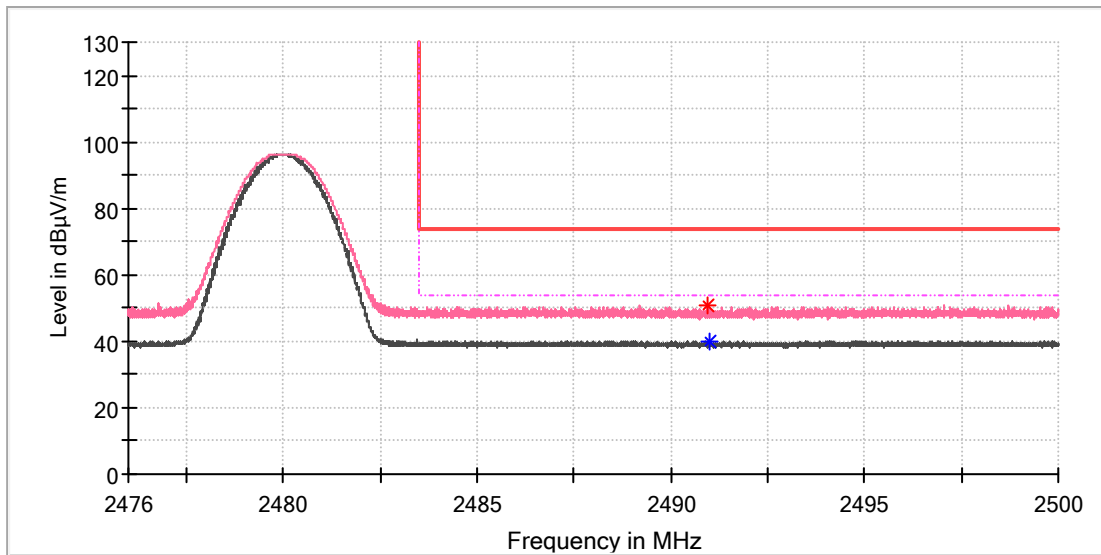


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2484.188235	---	40.43	54.00	13.57	150.0	H	166.0	7.4
2486.023530	51.86	---	74.00	22.14	150.0	H	340.0	7.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-002
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

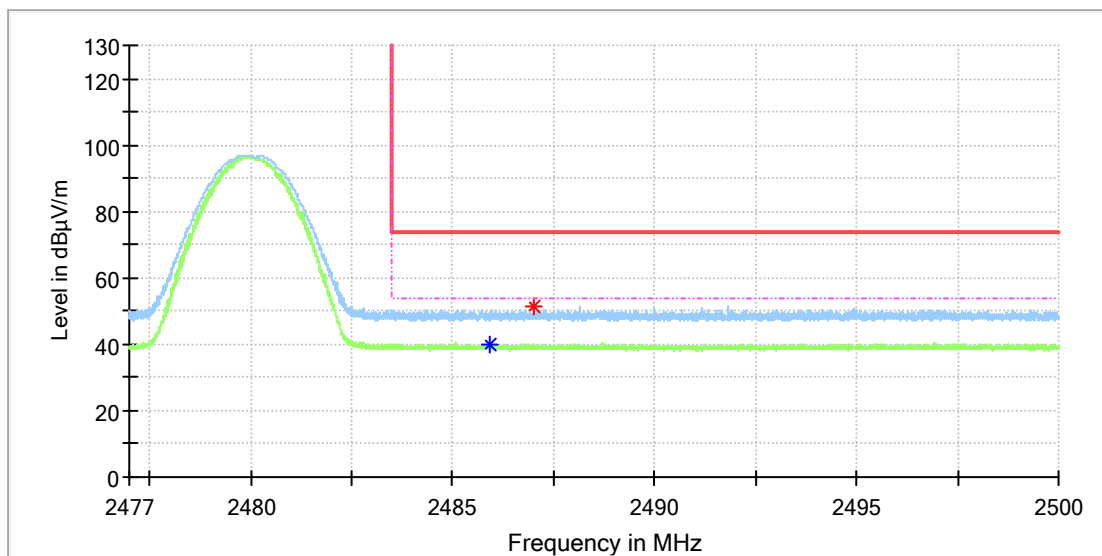


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2490.932941	50.60	---	74.00	23.40	150.0	V	67.0	7.4
2490.982353	---	40.07	54.00	13.93	150.0	V	130.0	7.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage:::	Battery
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

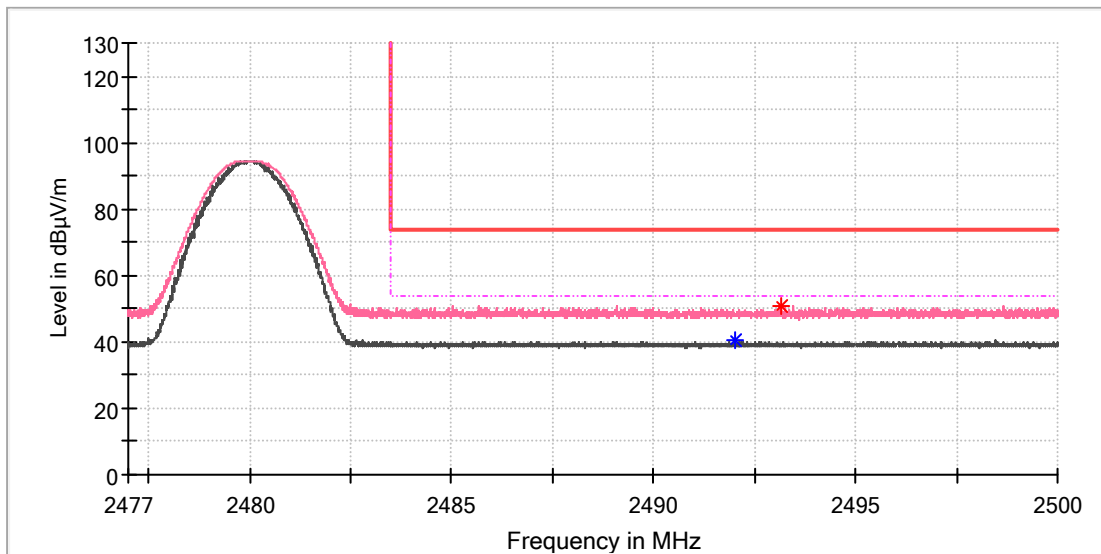


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2485.922059	---	40.09	54.00	13.91	150.0	H	226.0	7.4
2487.033824	51.15	---	74.00	22.85	150.0	H	60.0	7.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BR_DH5_High channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 24 Humi:50%
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)
2492.032353	---	40.29	54.00	13.71	150.0	V	124.0	7.4
2493.135294	50.81	---	74.00	23.19	150.0	V	94.0	7.4