

Prüfbericht-Nr.: Test report no.:	CN24IO8I 002	Auftrags-Nr.: Order no.:	168459500	Page 1 of 22 Seite 1 von 22
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 CFR47 FCC Part 15: Subpart C Section 15.207 CFR47 FCC Part 15: Subpart C Section 15.209		RSS-247-Issue 3 August 2023 RSS-Gen Issue 5 March 2019	
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 Signed by: Harry W. C. Wu		Ausstellungsdatum: Issue date:	2024-03-14 Signed by: Alex Lan
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			
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
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

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. <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.</i> <i>Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.</i>
2	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. <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>
3	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. <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>
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. <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>

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Test Summary

5.1.1 ANTENNA REQUIREMENT

RESULT: Pass

5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER

RESULT: Pass

5.1.3 CONDUCTED POWER SPECTRAL DENSITY

RESULT: Pass

5.1.4 99%dB BANDWIDTH

RESULT: Pass

5.1.5 6dB BANDWIDTH

RESULT: Pass

5.1.6 FREQUENCY STABILITY

RESULT: Pass

5.1.7 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHz BANDWIDTH

RESULT: Pass

5.1.8 RADIATED SPURIOUS EMISSION

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 Bluetooth Low Energy_Left Earbud.

Appendix B: Test Results of Bluetooth Low Energy_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.

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

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 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)

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, Bluetooth LE transmitting mode
 - 1. Low channel
 - 2. Middle channel
 - 3. High channel
- B. On, Bluetooth connecting mode
- 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
- FCC/IC Label and Location Info
- Operation Description
- Photo Document
- Schematics
- 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 LIVE BUDS 3.

4.3 Special Accessories and Auxiliary Equipment

Table 5: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N
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)

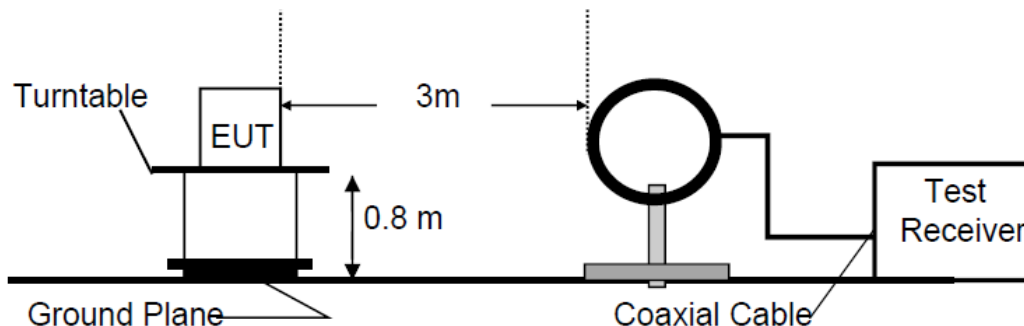


Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

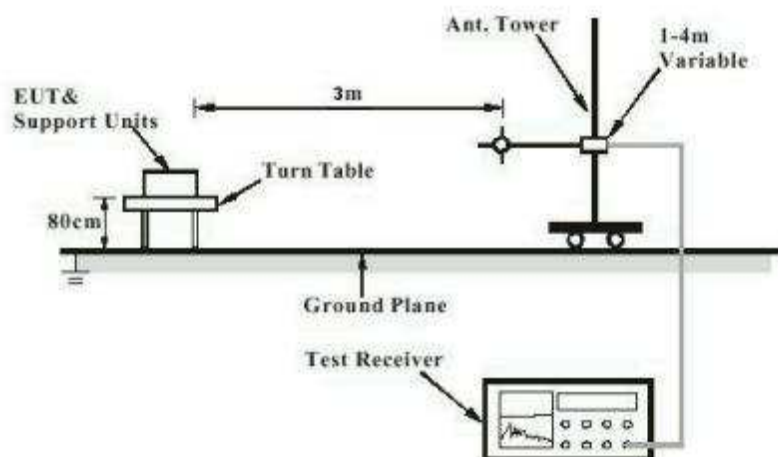


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

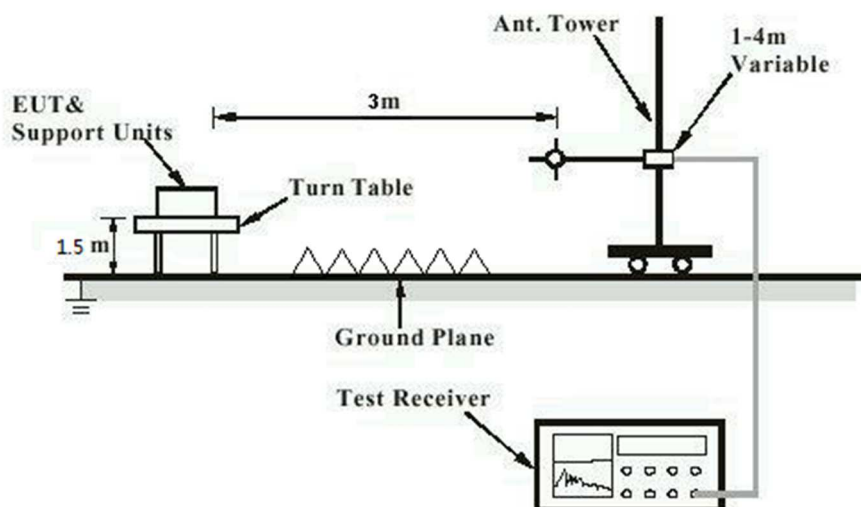
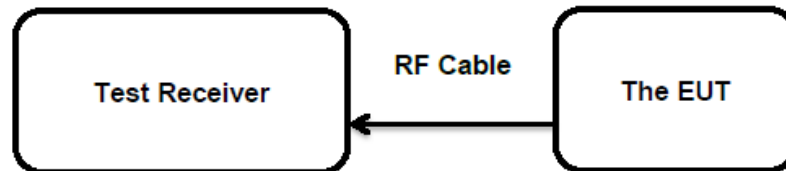


Diagram of Measurement Configuration for Conducted Transmitter Measurement



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 6.7
Limit	:	the use of antennas with directional gains that do not exceed 6 dBi

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 Peak Conducted Output Power

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(b)(3)
 RSS-247 Clause 5.4(d)
 Basic standard : ANSI C63.10: 2013
 Limits : < 1 Watt (Maximum Conducted Peak Power)
 e.i.r.p. <4W
 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
 Test channel : Low / Middle / High
 Ambient temperature : 20.1 °C
 Relative humidity : 50 %
 Atmospheric pressure : 101 kPa

For details refer to following test result.

Table 6: Test Result of Maximum Peak Conducted Output Power

Left earbud:

Data Rate	Test Channel (MHz)	Measured Peak Power		Limit (W)
		(dBm)	(W)	
BLE 1Mbps	2402	10.75	0.0119	< 1.0
	2440	11.02	0.0126	
	2480	11.02	0.0126	
BLE 2Mbps	2404	10.61	0.0115	< 1.0
	2440	10.86	0.0122	
	2478	11.01	0.0126	
Maximum Measured Value		11.02	0.0126	

Note: The cable loss is taken into account in results and the maximum e.i.r.p. is 9.71 dBm less than 4W (36 dBm).

Right earbud:

Data Rate	Test Channel (MHz)	Measured Peak Power		Limit (W)
		(dBm)	(W)	
BLE 1Mbps	2402	10.00	0.0100	< 1.0
	2440	10.18	0.0104	
	2480	10.28	0.0107	
BLE 2Mbps	2404	10.07	0.0102	< 1.0
	2440	10.07	0.0102	
	2478	10.19	0.0104	
Maximum Measured Value		10.28	0.0107	

Note: The cable loss is taken into account in results and the maximum e.i.r.p. is 8.73 dBm less than 4W (36 dBm).

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5.1.3 Conducted Power Spectral Density

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(e)
RSS-247 Clause 5.2(b)
Basic standard : ANSI C63.10: 2013
Limits : 8 dBm / 3kHz
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
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 Conducted Power Spectral Density

Left earbud:

Test Mode	Channel Frequency (MHz)	Conducted Power Spectral Density	Limit
		(dBm / 3kHz)	
BLE 1Mbps	2402	-3.88	8 dBm / 3kHz
	2440	-3.67	
	2480	-3.68	
BLE 2Mbps	2404	-6.48	8 dBm / 3kHz
	2440	-6.17	
	2478	-6.24	

Right earbud:

Test Mode	Channel Frequency (MHz)	Conducted Power Spectral Density	Limit
		(dBm / 3kHz)	
BLE 1Mbps	2402	-3.12	8 dBm / 3kHz
	2440	-2.74	
	2480	-2.88	
BLE 2Mbps	2404	-5.15	8 dBm / 3kHz
	2440	-4.76	
	2478	-4.87	

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5.1.4 99%dB 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
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 99% Bandwidth

Left earbud:

Test Mode	Channel Frequency (MHz)	Measured 99% Bandwidth	Limit
		(MHz)	
BLE 1Mbps	2402	1.0391	/
	2440	1.0403	
	2480	1.0389	
BLE 2Mbps	2404	2.0841	/
	2440	2.0804	
	2478	2.0775	

Right earbud:

Test Mode	Channel Frequency (MHz)	Measured 99% Bandwidth	Limit
		(MHz)	
BLE 1Mbps	2402	1.0368	/
	2440	1.0408	
	2480	1.0365	
BLE 2Mbps	2404	2.0742	/
	2440	2.0774	
	2478	2.0692	

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

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5.1.5 6dB Bandwidth

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(a)(2)
RSS-247 Clause 5.2(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
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 9: Test Result of 6dB Bandwidth

Left earbud:

Test Mode	Channel Frequency (MHz)	Measured 6dB Bandwidth	Limit
		(MHz)	
BLE 1Mbps	2402	0.696	>500kHz
	2440	0.716	
	2480	0.700	
BLE 2Mbps	2404	1.156	>500kHz
	2440	1.248	
	2478	1.224	

Right earbud:

Test Mode	Channel Frequency (MHz)	Measured 6dB Bandwidth	Limit
		(MHz)	
BLE 1Mbps	2402	0.692	>500kHz
	2440	0.680	
	2480	0.692	
BLE 2Mbps	2404	1.160	>500kHz
	2440	1.172	
	2478	1.300	

Prüfbericht-Nr.: CN24IO8I 002
Test report no.:

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5.1.6 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 002
Test report no.:

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5.1.7 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); In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)
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
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 test plots, and compliance is achieved as well.

For the measurement records, refer to the appendix A.

Prüfbericht-Nr.: CN24IO8I 002
Test report no.:

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5.1.8 Radiated Spurious Emission

RESULT:

Pass

Test Specification

Test standard	:	FCC Part 15.247(d) & FCC Part 15.205 RSS-247 Clause 3.3 & 5.5
Basic standard	:	ANSI C63.10: 2013
Limits	:	Refer to 15.209(a) of FCC part 15.247(d) RSS-Gen Table 4 & Table 5
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
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. Only the worst case spurious emissions configuration of the each mode were reported.

For the measurement records, refer to the appendix A.

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 Bluetooth Low Energy_Left Earbud

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Appendix A.1: Test Results of Conducted Power Spectral Density

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-3.88	≤8.00	PASS
		2440	-3.67	≤8.00	PASS
		2480	-3.68	≤8.00	PASS
BLE_2M	Ant1	2404	-6.48	≤8.00	PASS
		2440	-6.17	≤8.00	PASS
		2478	-6.24	≤8.00	PASS

BLE 1M Ant1 2402



BLE 1M Ant1 2440



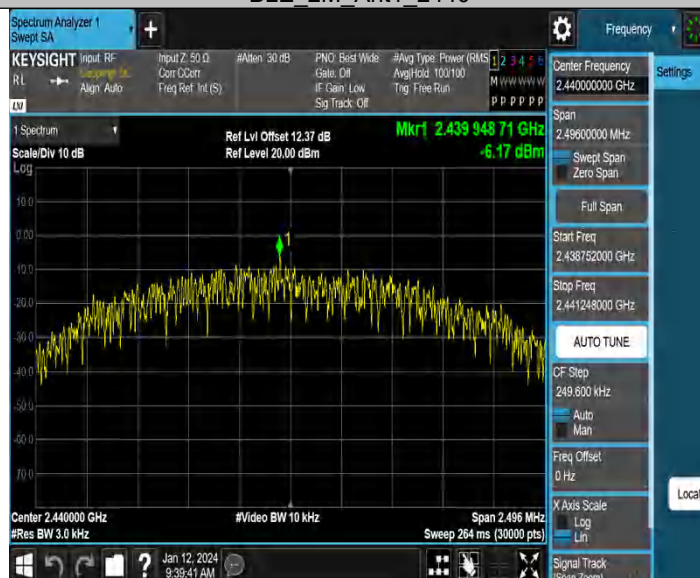
BLE 1M Ant1 2480



BLE 2M Ant1 2404



BLE 2M Ant1 2440





Appendix A.2: Test Results of 6dB Bandwidth

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.696	2401.632	2402.328	0.5	PASS
		2440	0.716	2439.628	2440.344	0.5	PASS
		2480	0.700	2479.640	2480.340	0.5	PASS
BLE_2M	Ant1	2404	1.156	2403.432	2404.588	0.5	PASS
		2440	1.248	2439.344	2440.592	0.5	PASS
		2478	1.224	2477.352	2478.576	0.5	PASS

BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE 1M Ant1 2480



BLE 2M Ant1 2404



BLE 2M Ant1 2440





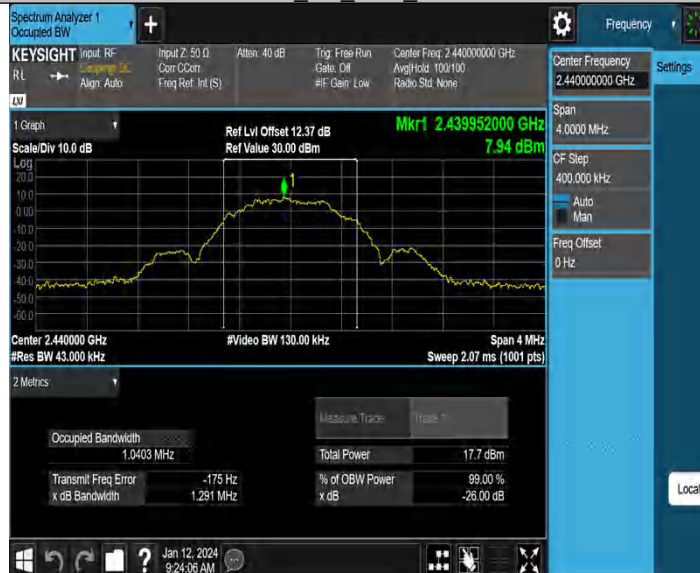
Appendix A.3: Test Results of 99% Bandwidth

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0391	2401.4823	2402.5214	---	---
		2440	1.0403	2439.4797	2440.5200	---	---
		2480	1.0389	2479.4822	2480.5211	---	---
BLE_2M	Ant1	2404	2.0841	2402.9683	2405.0524	---	---
		2440	2.0804	2438.9651	2441.0455	---	---
		2478	2.0775	2476.9672	2479.0447	---	---

BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE 1M Ant1 2480



BLE 2M Ant1 2404



BLE 2M Ant1 2440





Appendix A.4: 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)	2440
-----------------------	------

Test result of frequency tolerance of voltage variation

Voltage	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
DC 3.85V	2439.985	-15	-6.15	10
DC 3.47V	2439.985	-15	-6.15	
DC 4.24V	2439.985	-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	2439.984	-16	-6.56	10
-20	2439.984	-16	-6.56	
-10	2439.984	-16	-6.56	
0	2439.984	-16	-6.56	
10	2439.985	-15	-6.15	
20	2439.985	-15	-6.15	
30	2439.985	-15	-6.15	
40	2439.985	-15	-6.15	
50	2439.986	-14	-5.74	
55	2439.986	-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	2479.984	-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.5: Test Results of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

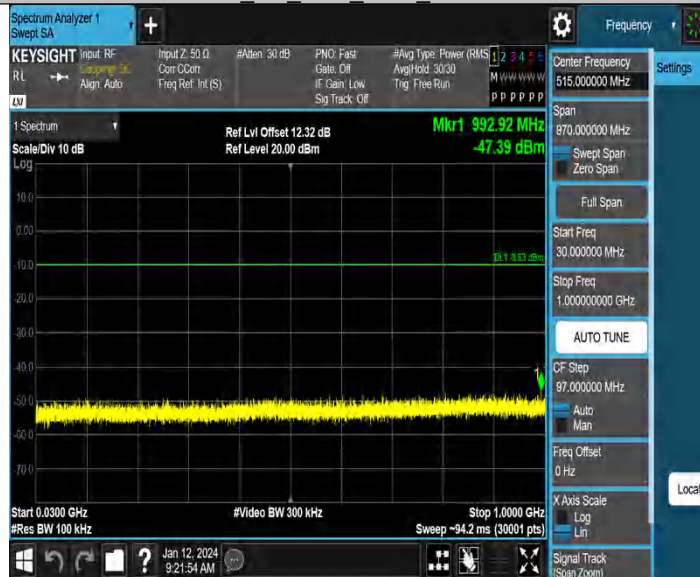
Conducted measurements

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	10.37	10.37	---	PASS
			30~1000	10.37	-47.39	≤-9.63	PASS
			1000~26500	10.37	-38.22	≤-9.63	PASS
		2440	Reference	10.58	10.58	---	PASS
			30~1000	10.58	-47.36	≤-9.42	PASS
			1000~26500	10.58	-37.84	≤-9.42	PASS
		2480	Reference	10.53	10.53	---	PASS
			30~1000	10.53	-47.36	≤-9.47	PASS
			1000~26500	10.53	-38.21	≤-9.47	PASS
BLE_2M	Ant1	2404	Reference	9.52	9.52	---	PASS
			30~1000	9.52	-47.49	≤-10.48	PASS
			1000~26500	9.52	-38.14	≤-10.48	PASS
		2440	Reference	9.89	9.89	---	PASS
			30~1000	9.89	-46.53	≤-10.11	PASS
			1000~26500	9.89	-38.41	≤-10.11	PASS
		2478	Reference	9.83	9.83	---	PASS
			30~1000	9.83	-46.22	≤-10.17	PASS
			1000~26500	9.83	-37.45	≤-10.17	PASS

BLE 1M Ant1 2402 0~Reference



BLE 1M Ant1 2402 30~1000



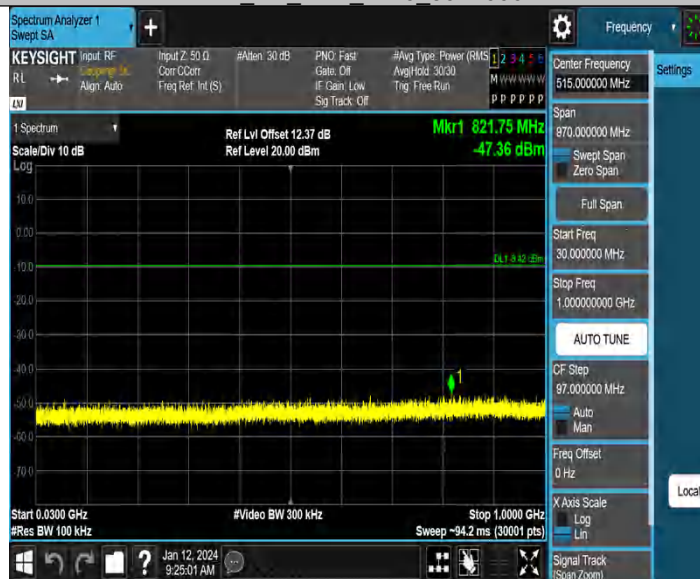
BLE 1M Ant1 2402 1000~26500



BLE 1M Ant1 2440 0~Reference



BLE 1M Ant1 2440 30~1000



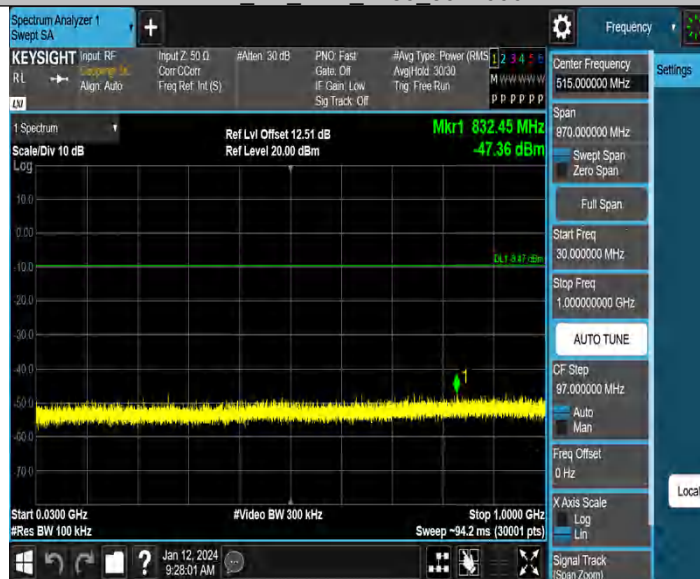
BLE 1M Ant1 2440 1000~26500



BLE 1M Ant1 2480 0~Reference



BLE 1M Ant1 2480 30~1000



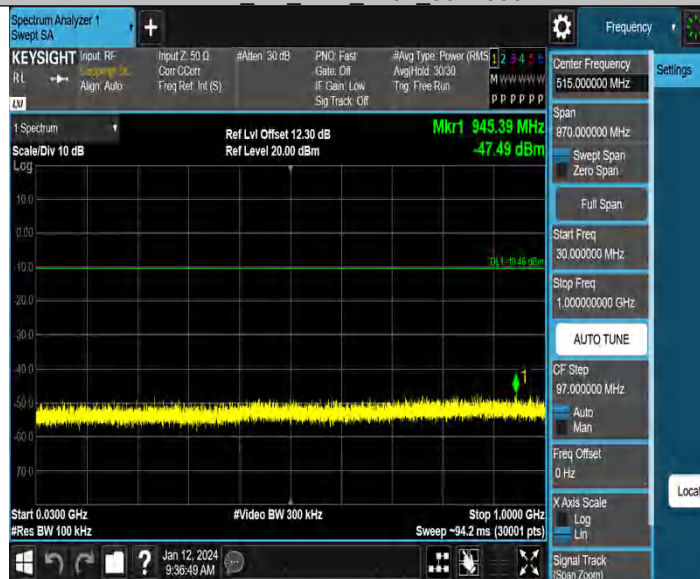
BLE 1M Ant1 2480 1000~26500



BLE 2M Ant1 2404 0~Reference



BLE 2M Ant1 2404 30~1000



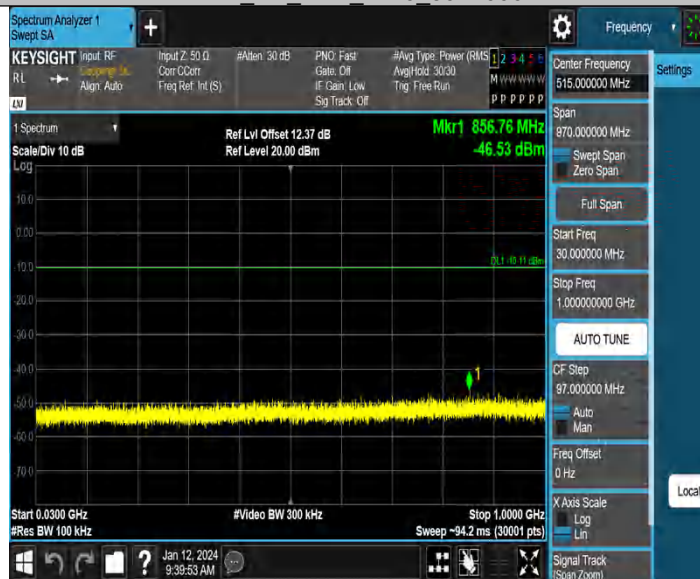
BLE 2M Ant1 2404 1000~26500



BLE 2M Ant1 2440 0~Reference



BLE 2M Ant1 2440 30~1000



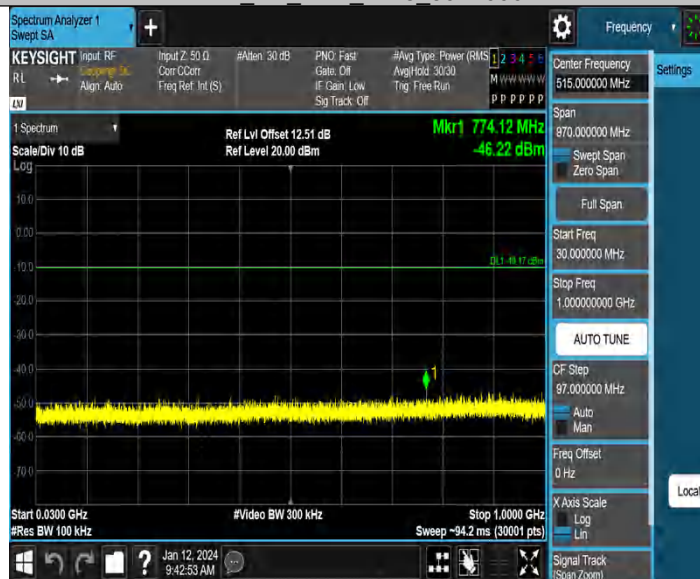
BLE 2M Ant1 2440 1000~26500



BLE 2M Ant1 2478 0~Reference



BLE 2M Ant1 2478 30~1000



BLE 2M Ant1 2478 1000~26500



Band edge measurements

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	10.16	-46.15	≤-9.84	PASS
		High	2480	10.24	-49.03	≤-9.76	PASS
BLE_2M	Ant1	Low	2404	9.089	-49.3	≤-10.91	PASS
		High	2478	8.286	-50.65	≤-11.71	PASS

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



BLE_2M_Ant1_Low_2404



BLE 2M Ant1 High 2478



Appendix A.6: Test Results of Radiated Spurious Emissions

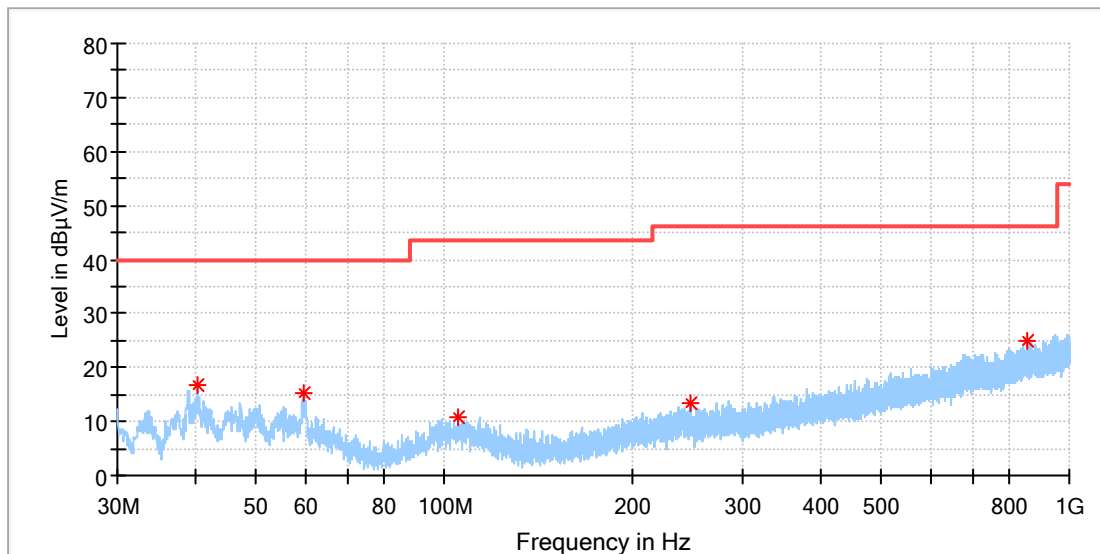
Note:

- 1) This testing was carried out on different modulations, but only the worst case was presented in this report.
- 2) 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.

30 MHz - 1GHz

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

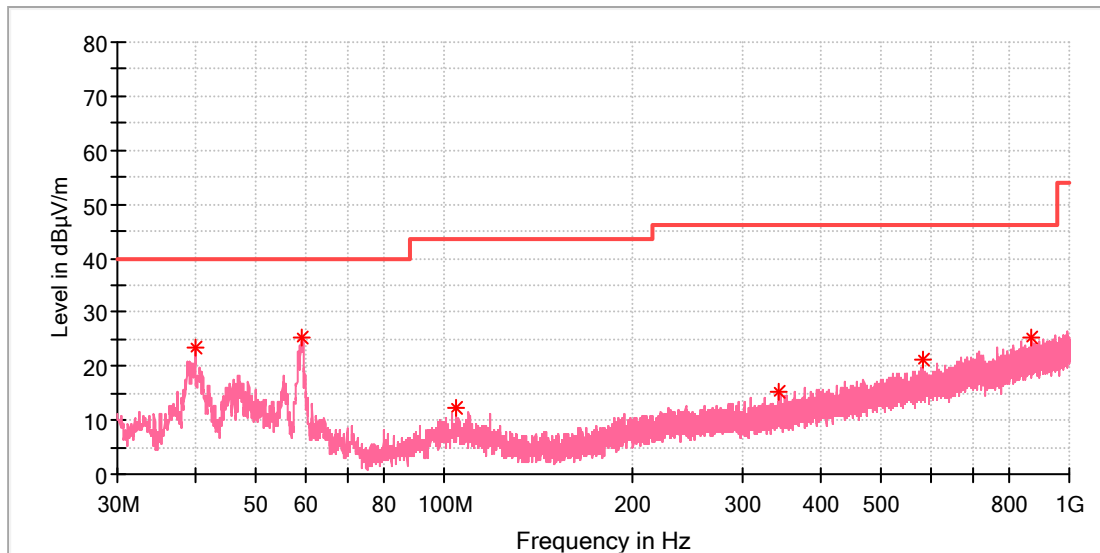


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
40.334231	16.73	40.00	23.27	100.0	H	318.0	-20.3
59.435769	15.42	40.00	24.58	100.0	H	282.0	-19.2
104.988462	10.88	43.50	32.62	100.0	H	318.0	-19.1
247.280000	13.50	46.00	32.50	100.0	H	345.0	-17.8
854.947692	24.96	46.00	21.04	100.0	H	163.0	-5.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

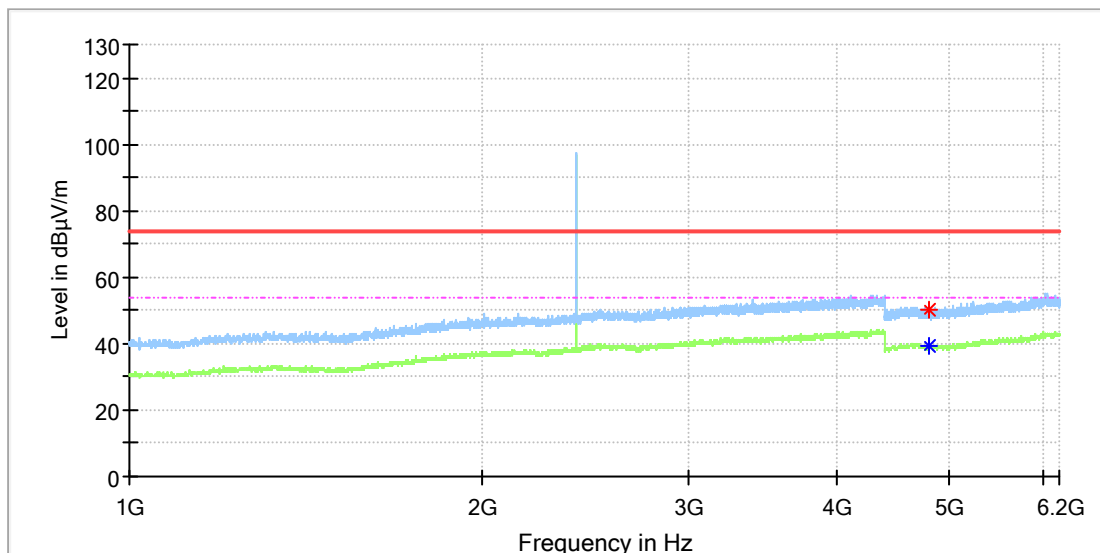
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
39.961154	23.36	40.00	16.64	100.0	V	338.0	-20.4
59.361154	25.25	40.00	14.75	100.0	V	66.0	-19.2
104.354231	12.26	43.50	31.24	100.0	V	0.0	-19.1
342.936923	15.24	46.00	30.76	100.0	V	108.0	-15.3
583.385000	21.25	46.00	24.75	100.0	V	3.0	-10.5
869.833462	25.38	46.00	20.62	100.0	V	282.0	-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:	BLE 1M_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

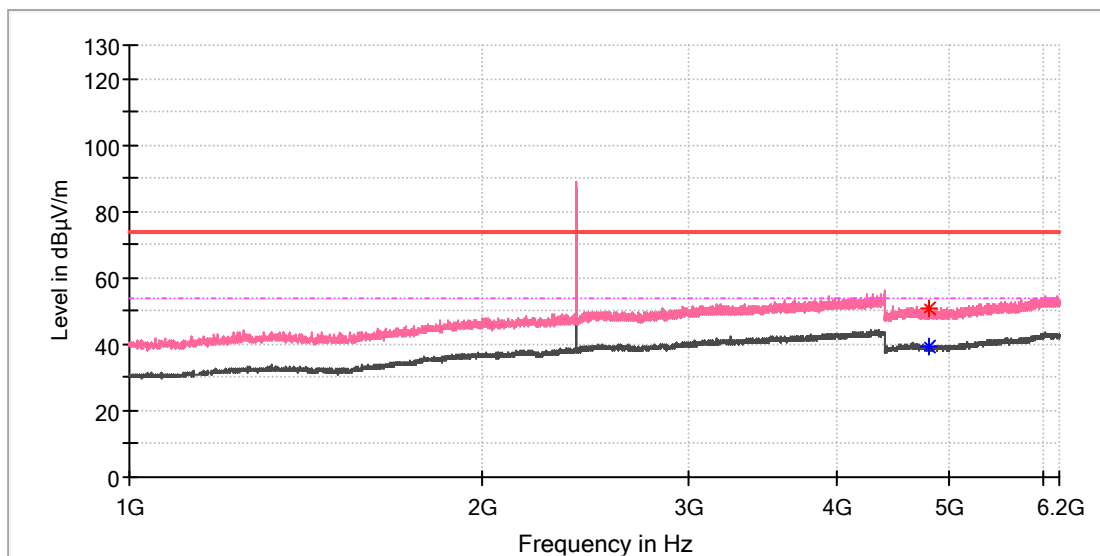


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.000000	---	39.58	54.00	14.42	150.0	H	5.0	11.8
4806.500000	50.24	---	74.00	23.76	150.0	H	103.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

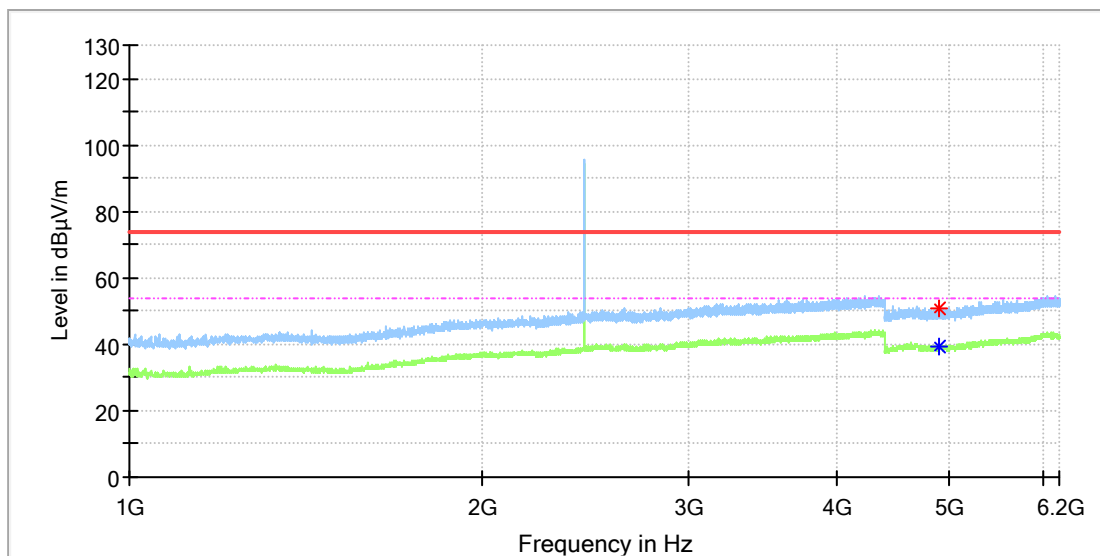


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.000000	---	39.46	54.00	14.54	150.0	V	253.0	11.8
4808.000000	50.54	---	74.00	23.46	150.0	V	53.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

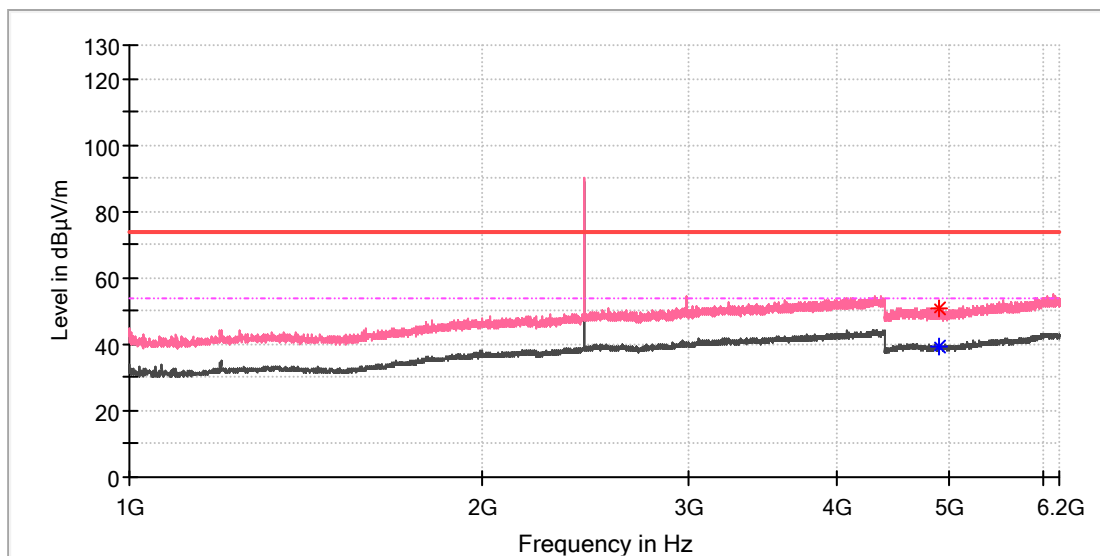


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4896.500000	---	39.36	54.00	14.64	150.0	H	263.0	11.8
4903.000000	50.59	---	74.00	23.41	150.0	H	159.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

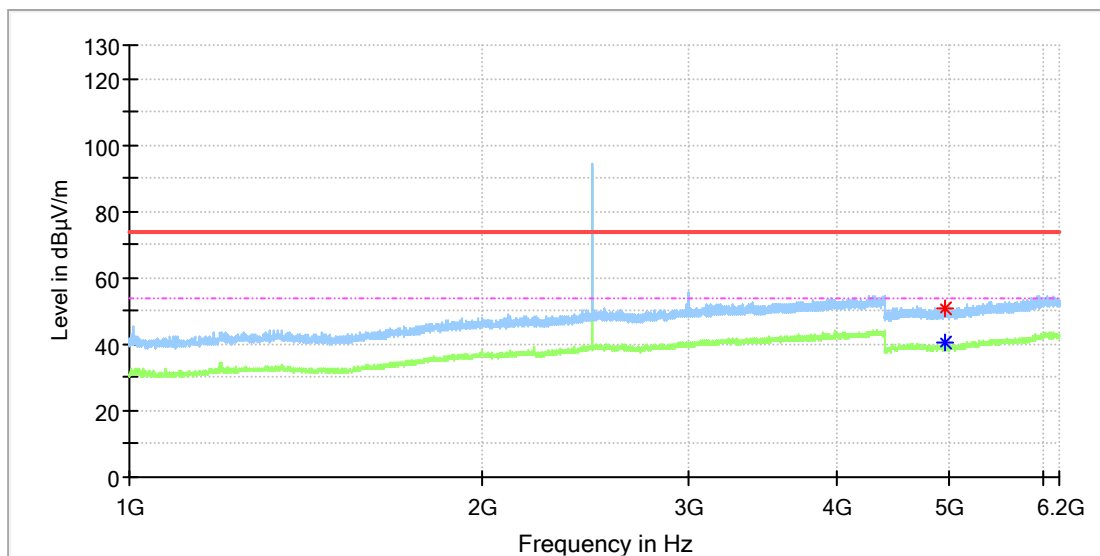


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4906.000000	50.79	---	74.00	23.21	150.0	V	358.0	11.8
4906.500000	---	39.48	54.00	14.52	150.0	V	62.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

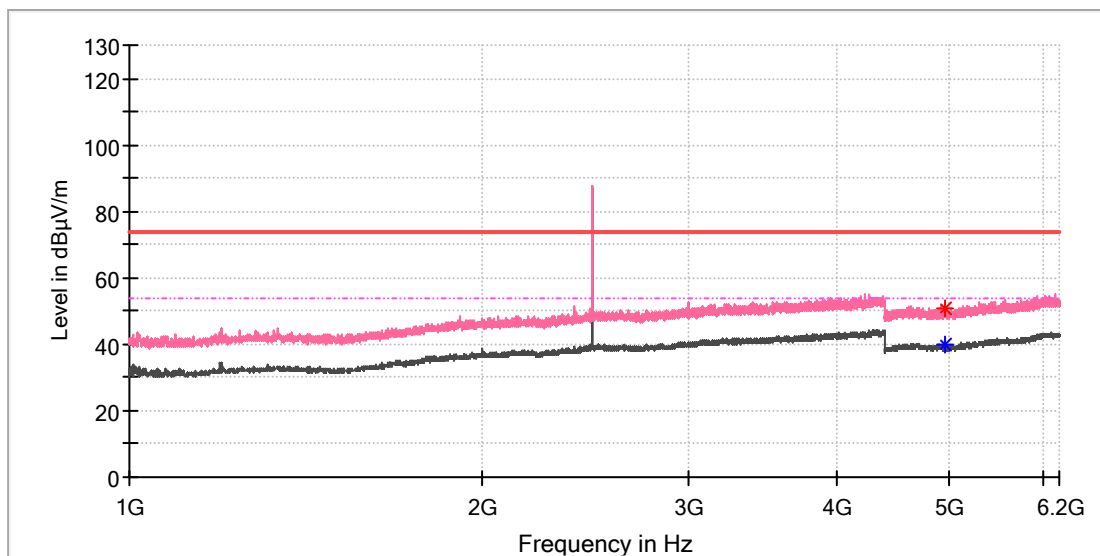


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4955.500000	50.68	---	74.00	23.32	150.0	H	204.0	11.8
4959.500000	---	40.66	54.00	13.34	150.0	H	186.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

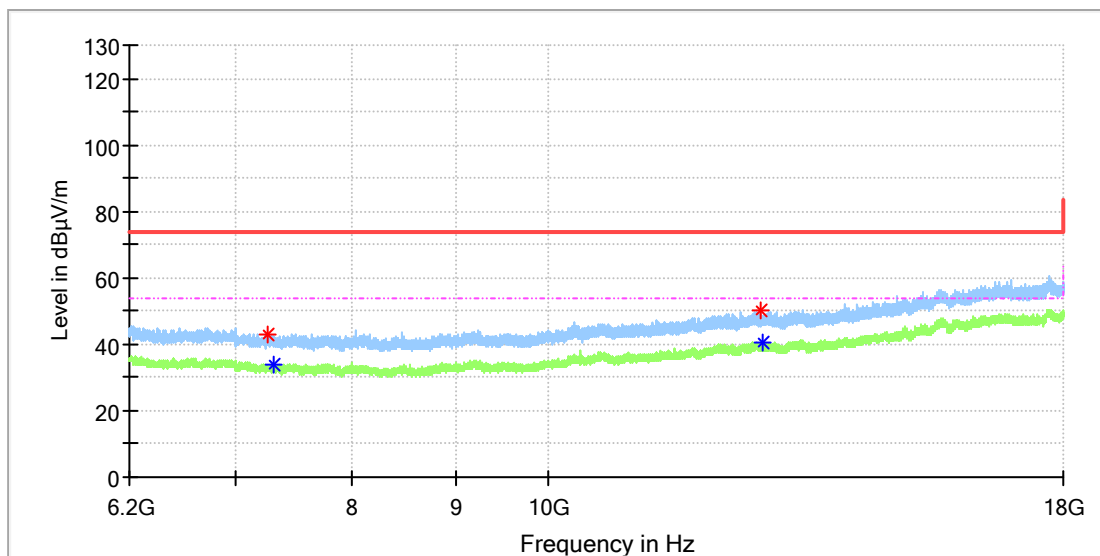


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4952.000000	50.86	---	74.00	23.14	150.0	V	333.0	11.8
4959.500000	---	39.97	54.00	14.03	150.0	V	326.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

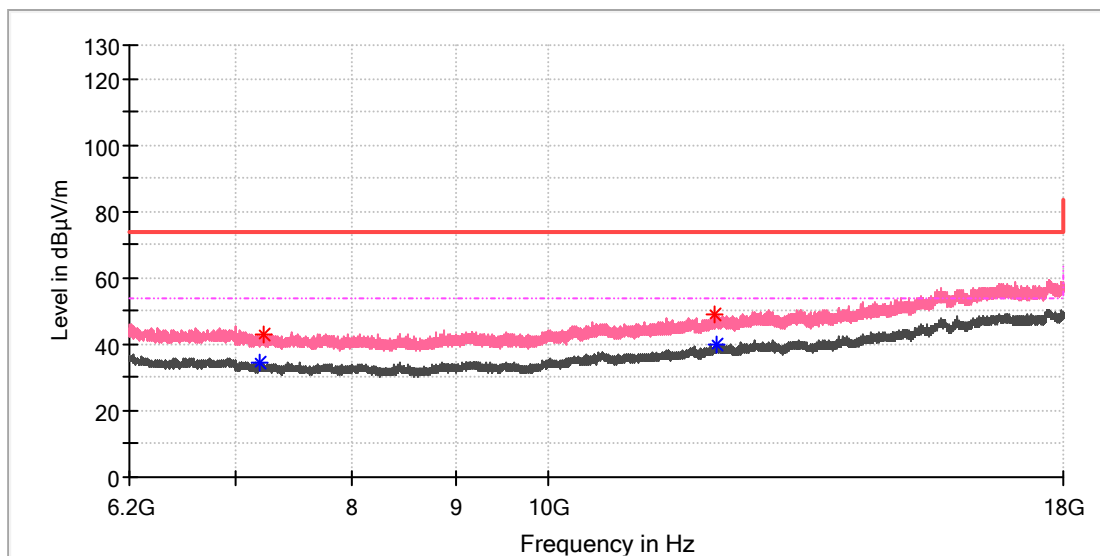


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7256.591667	42.83	---	74.00	31.17	150.0	H	45.0	8.5
7306.250000	---	33.84	54.00	20.16	150.0	H	241.0	8.3
12747.525000	50.30	---	74.00	23.70	150.0	H	329.0	15.2
12772.600000	---	40.51	54.00	13.49	150.0	H	253.0	15.2

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

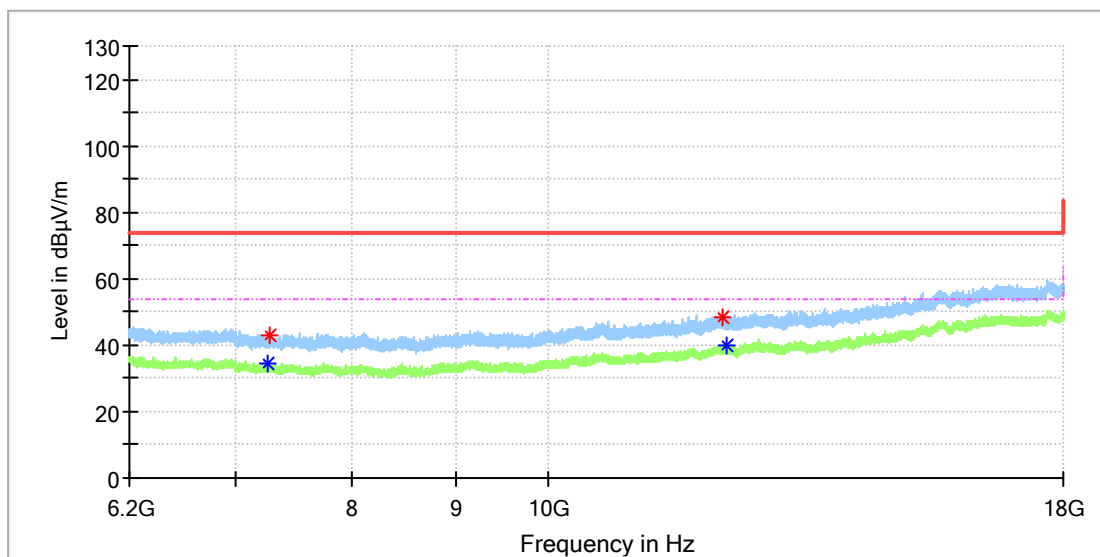


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7186.283333	---	34.67	54.00	19.33	150.0	V	273.0	8.8
7228.075000	43.02	---	74.00	30.98	150.0	V	189.0	8.7
12100.983333	48.73	---	74.00	25.27	150.0	V	200.0	14.2
12118.191667	---	39.91	54.00	14.09	150.0	V	248.0	14.2

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

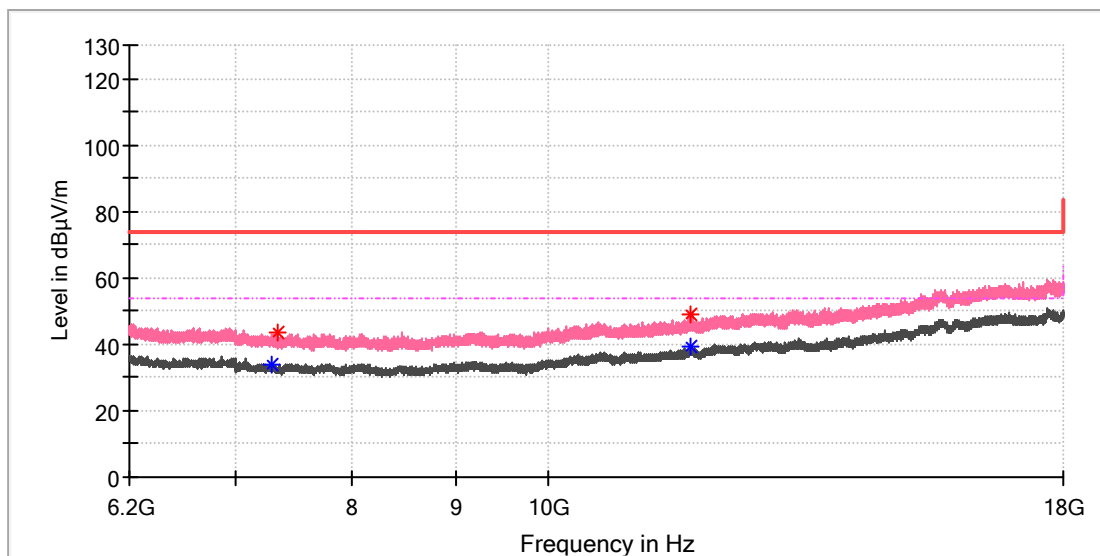


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7260.525000	---	34.47	54.00	19.53	150.0	H	128.0	8.5
7269.375000	42.69	---	74.00	31.31	150.0	H	176.0	8.5
12203.741667	48.54	---	74.00	25.46	150.0	H	0.0	14.7
12249.958333	---	40.04	54.00	13.96	150.0	H	252.0	14.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

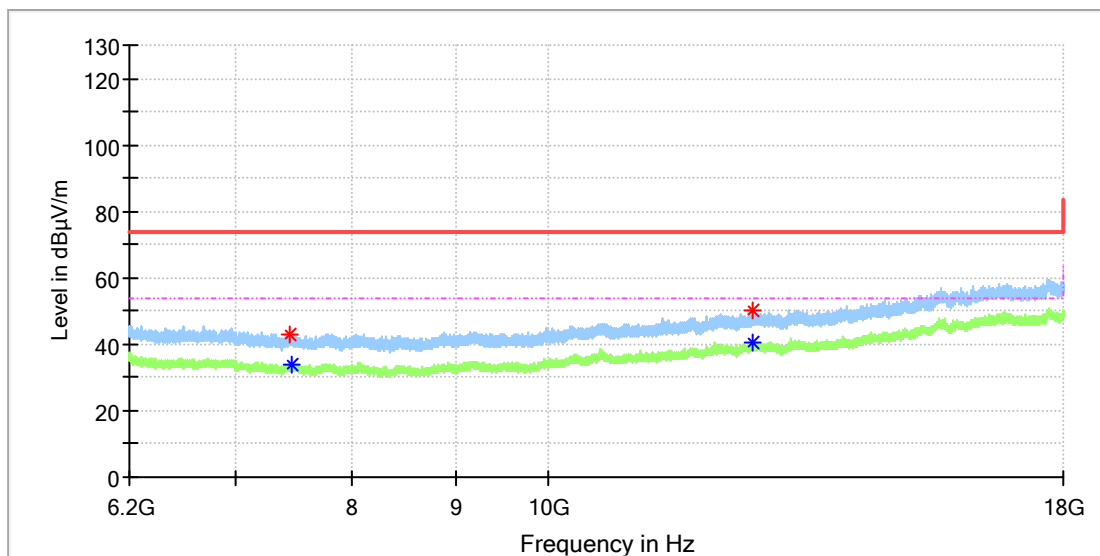


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7291.008333	---	33.71	54.00	20.29	150.0	V	296.0	8.3
7335.750000	43.76	---	74.00	30.24	150.0	V	196.0	8.1
11775.008333	49.13	---	74.00	24.87	150.0	V	125.0	13.4
11775.991667	---	39.08	54.00	14.92	150.0	V	0.0	13.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

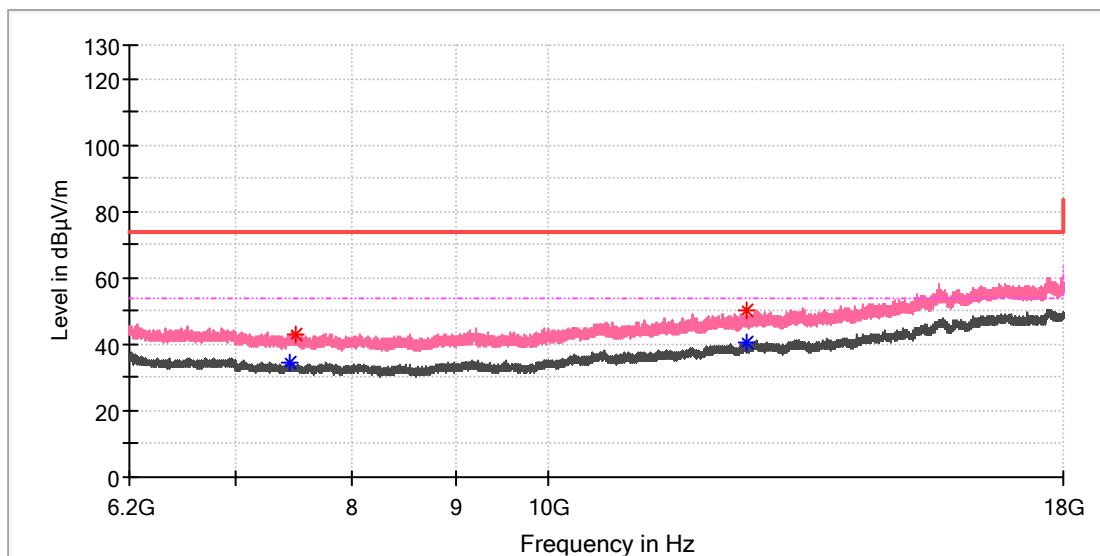


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7450.308333	43.12	---	74.00	30.88	150.0	H	166.0	8.5
7453.750000	---	34.05	54.00	19.95	150.0	H	141.0	8.5
12619.691667	50.12	---	74.00	23.88	150.0	H	102.0	14.9
12626.575000	---	40.66	54.00	13.34	150.0	H	315.0	14.9

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

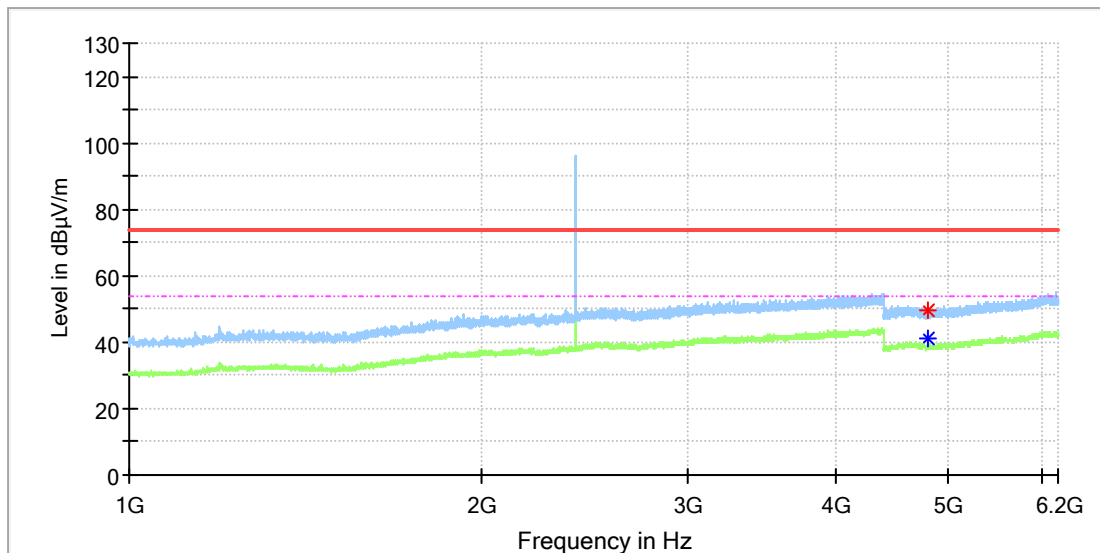


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7452.275000	---	34.53	54.00	19.47	150.0	V	165.0	8.5
7493.083333	43.14	---	74.00	30.86	150.0	V	31.0	8.7
12528.733333	50.25	---	74.00	23.75	150.0	V	93.0	14.7
12528.733333	---	40.31	54.00	13.69	150.0	V	93.0	14.7

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_Low channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

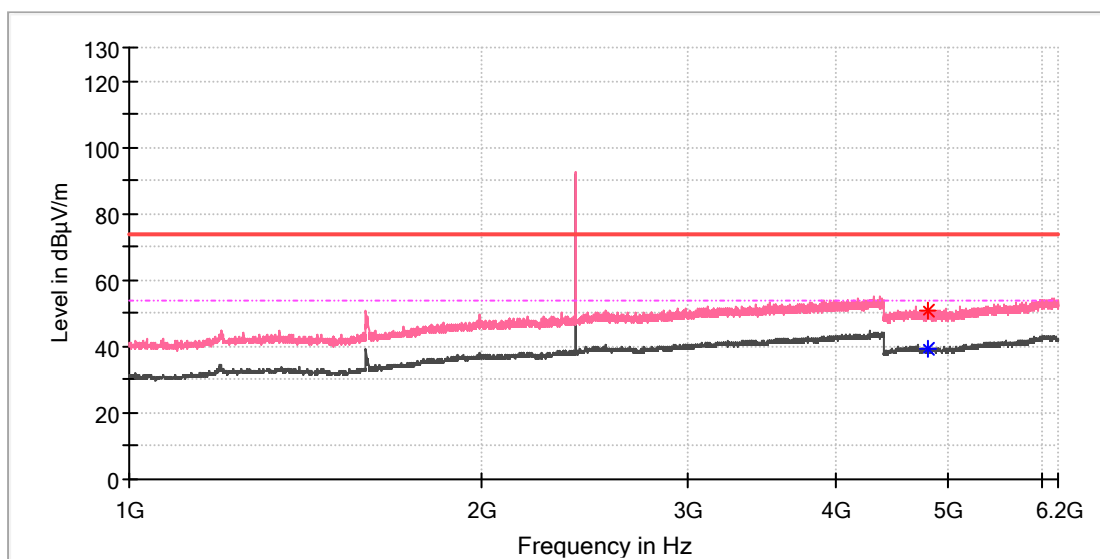


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4803.000000	49.80	---	74.00	24.20	150.0	H	31.0	11.8
4804.000000	---	41.07	54.00	12.93	150.0	H	79.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_Low channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

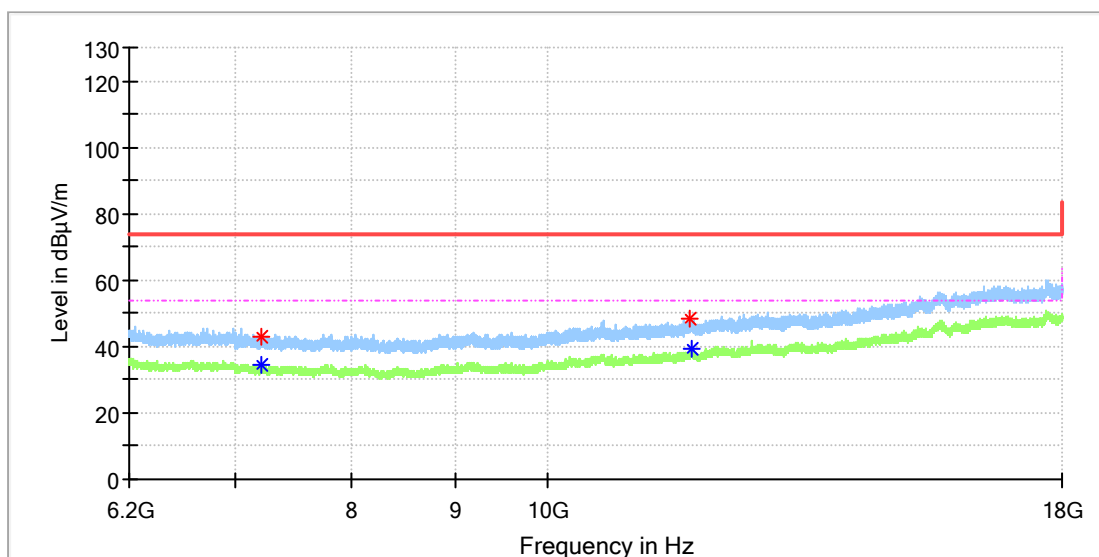


Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4801.000000	51.09	---	74.00	22.91	150.0	V	97.0	11.8
4804.000000	---	39.49	54.00	14.51	150.0	V	166.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_Low channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

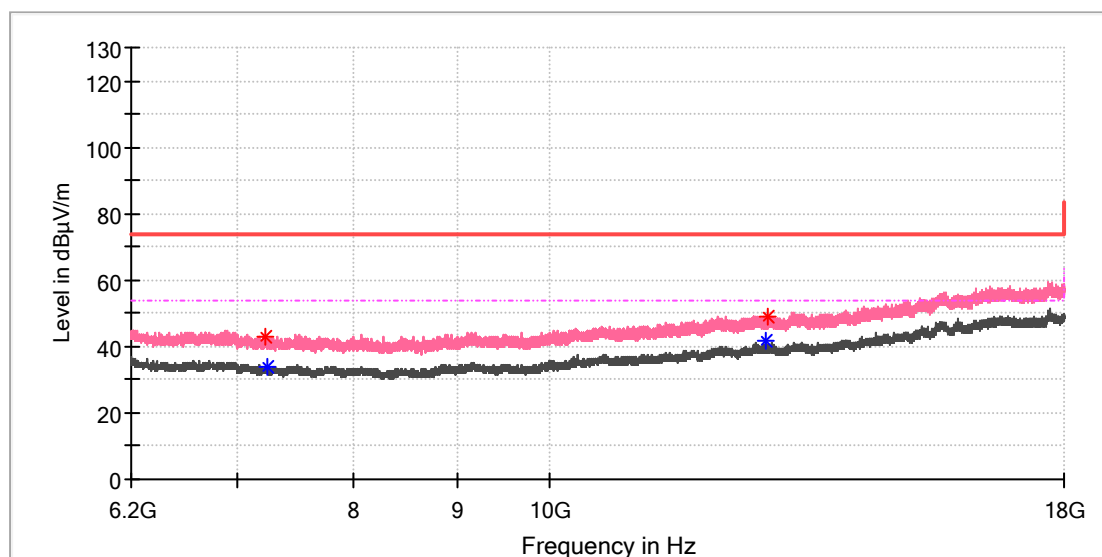


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7202.508333	43.07	---	74.00	30.93	150.0	H	327.0	8.8
7210.866667	---	34.22	54.00	19.78	150.0	H	351.0	8.7
11766.158333	48.47	---	74.00	25.53	150.0	H	338.0	13.4
11802.050000	---	39.16	54.00	14.84	150.0	H	162.0	13.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_Low channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



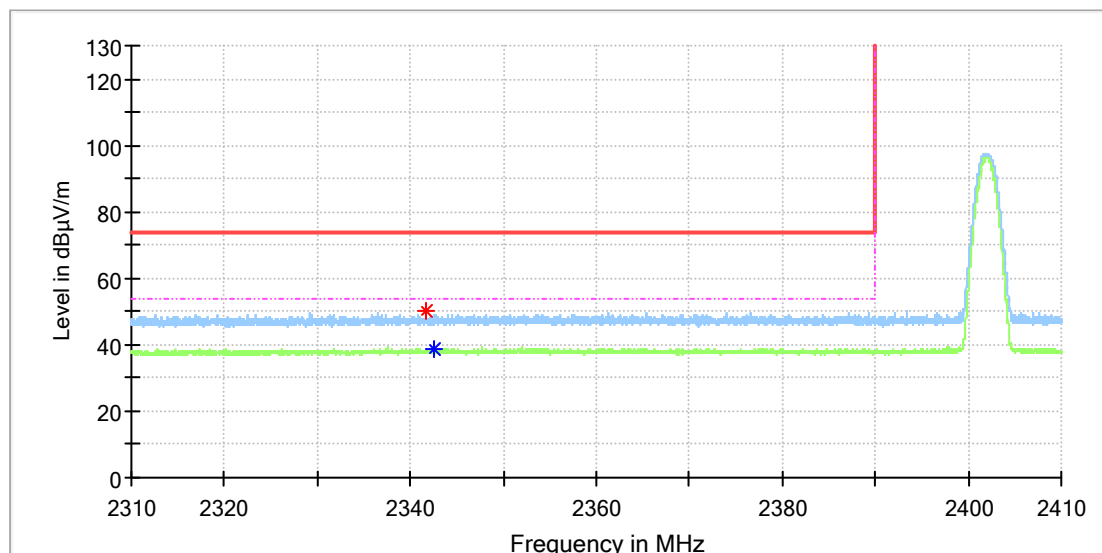
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7220.700000	42.79	---	74.00	31.21	150.0	V	0.0	8.7
7237.908333	---	33.82	54.00	20.18	150.0	V	90.0	8.6
12788.825000	---	41.69	54.00	12.31	150.0	V	186.0	15.3
12830.125000	49.06	---	74.00	24.94	150.0	V	90.0	15.3

Appendix A.7: Test Results of Radiated Emissions in Restricted Bands

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

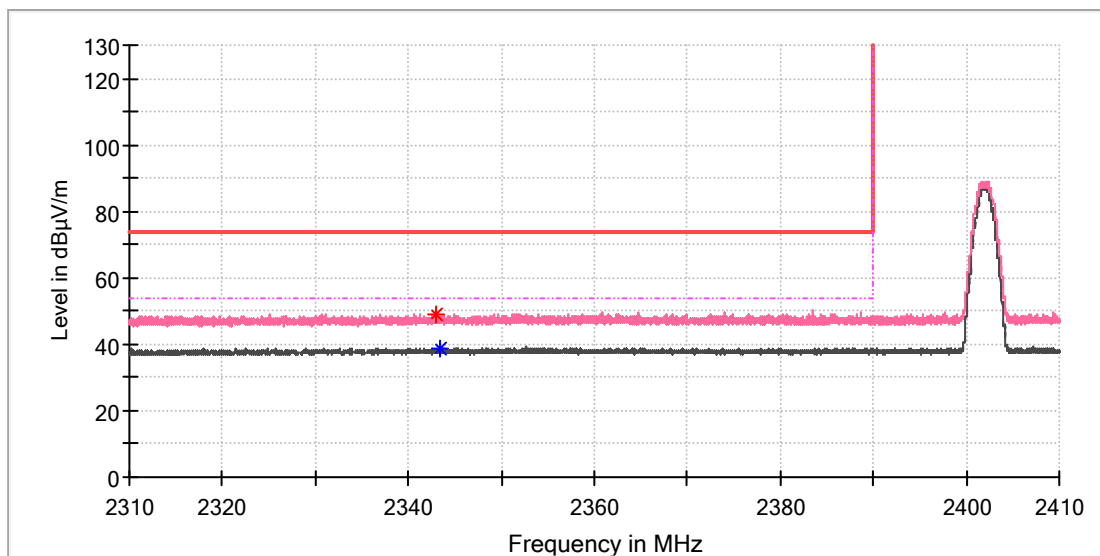


Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2341.676471	49.90	---	74.00	24.10	150.0	H	0.0	6.8
2342.573530	---	38.95	54.00	15.05	150.0	H	13.0	6.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

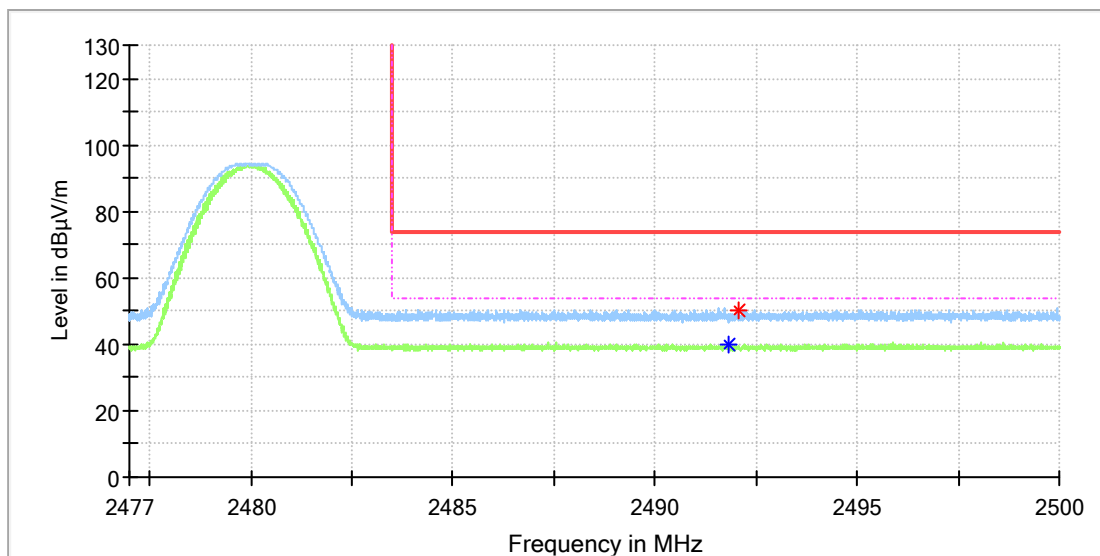


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2342.867647	48.97	---	74.00	25.03	150.0	V	359.0	6.8
2343.323530	---	38.81	54.00	15.19	150.0	V	23.0	6.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

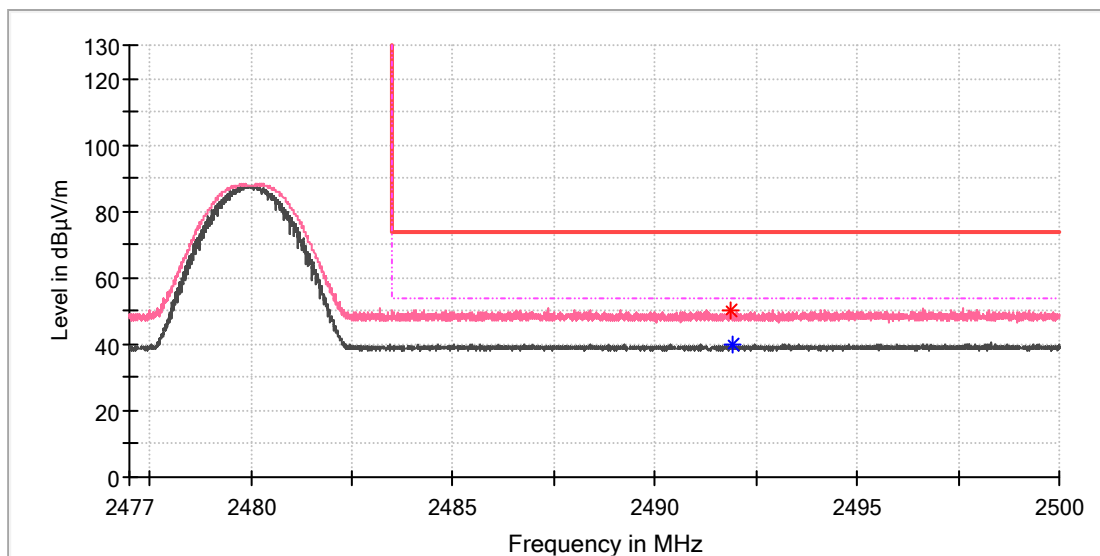


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2491.842647	---	39.78	54.00	14.22	150.0	H	178.0	7.4
2492.054412	50.49	---	74.00	23.51	150.0	H	0.0	7.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

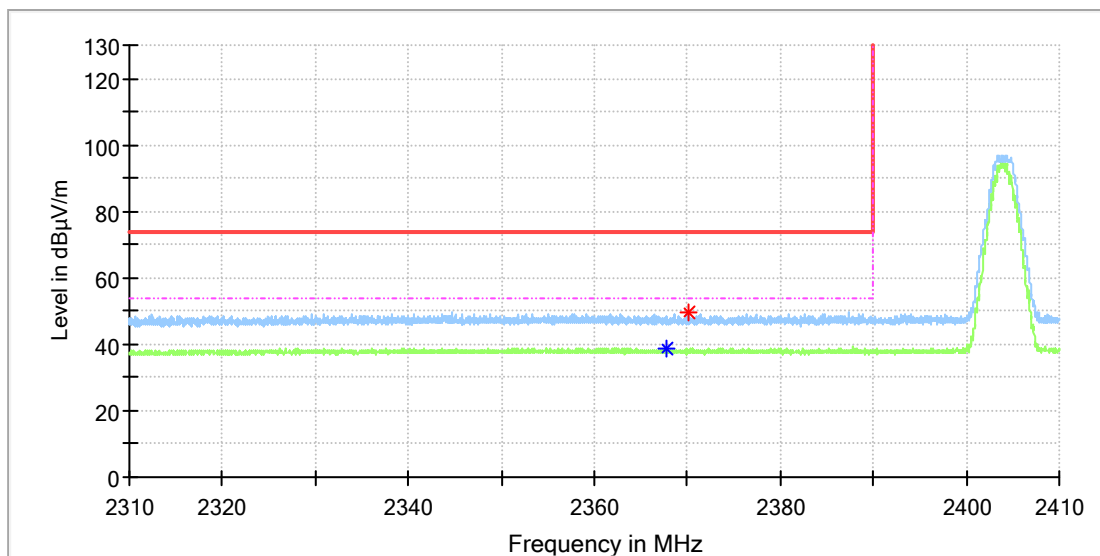


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2491.847059	50.01	---	74.00	23.99	150.0	V	3.0	7.4
2491.917647	---	39.62	54.00	14.38	150.0	V	39.0	7.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 2M_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

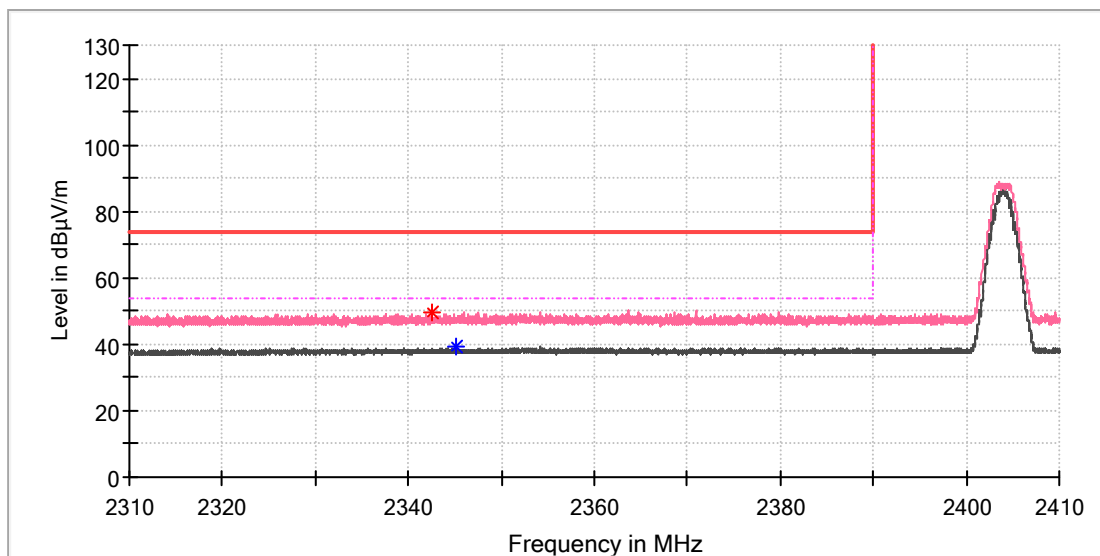


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2367.858824	---	38.79	54.00	15.21	150.0	H	310.0	6.9
2370.211765	49.68	---	74.00	24.32	150.0	H	77.0	6.9

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 2M_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

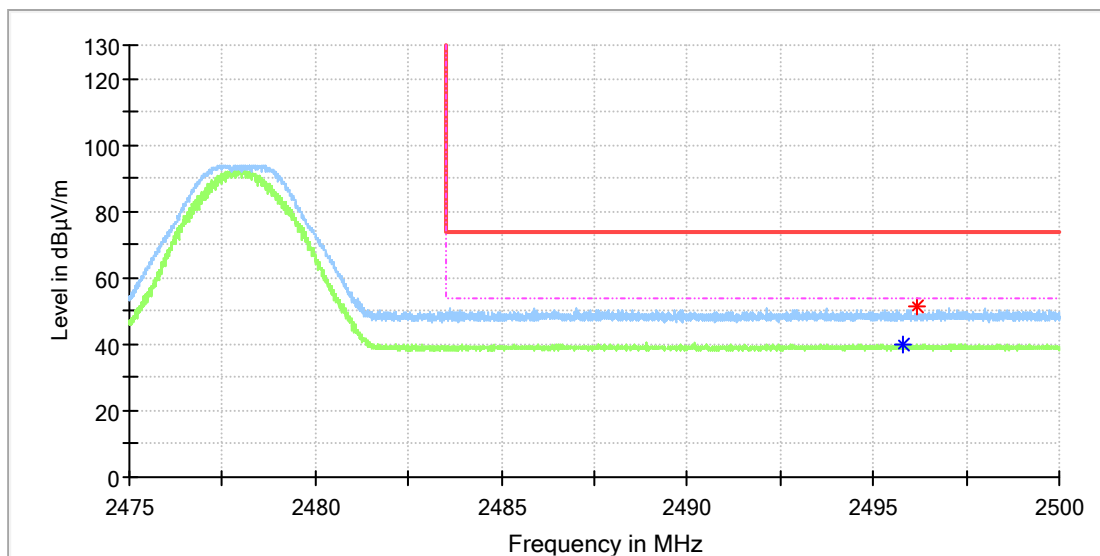


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2342.455882	49.44	---	74.00	24.56	150.0	V	241.0	6.8
2345.117647	---	39.49	54.00	14.51	150.0	V	77.0	6.9

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 2M_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

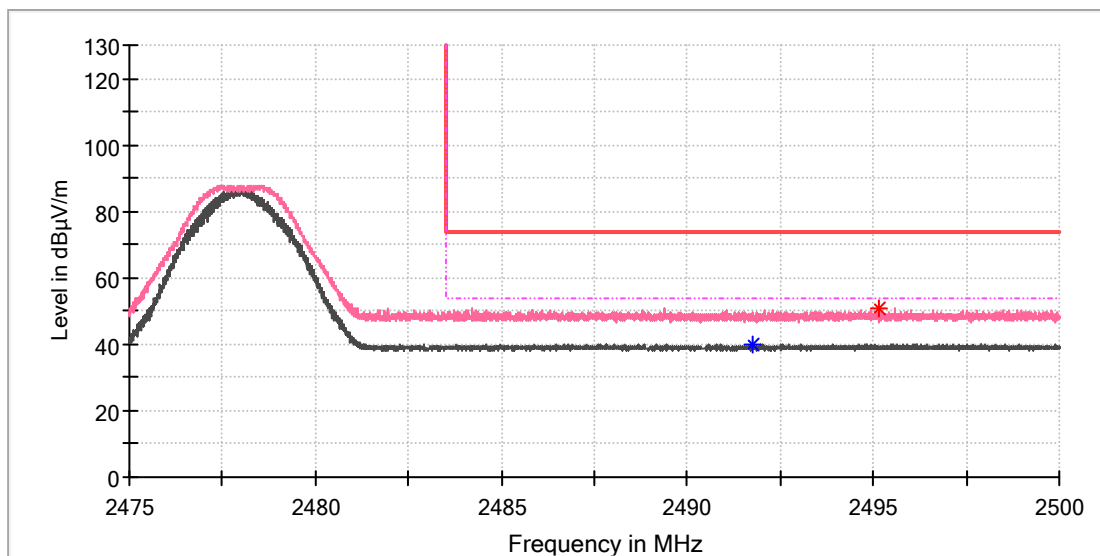


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2495.813235	---	39.64	54.00	14.36	150.0	H	307.0	7.4
2496.179412	51.13	---	74.00	22.87	150.0	H	74.0	7.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 2M_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

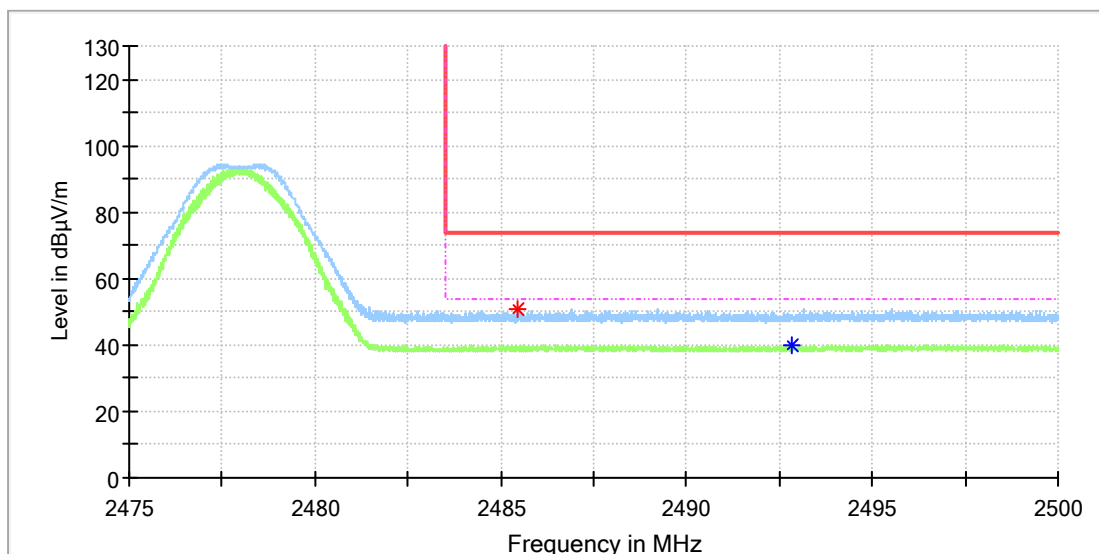


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2491.772059	---	39.90	54.00	14.10	150.0	V	276.0	7.4
2495.160294	50.94	---	74.00	23.06	150.0	V	93.0	7.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 2M_High channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

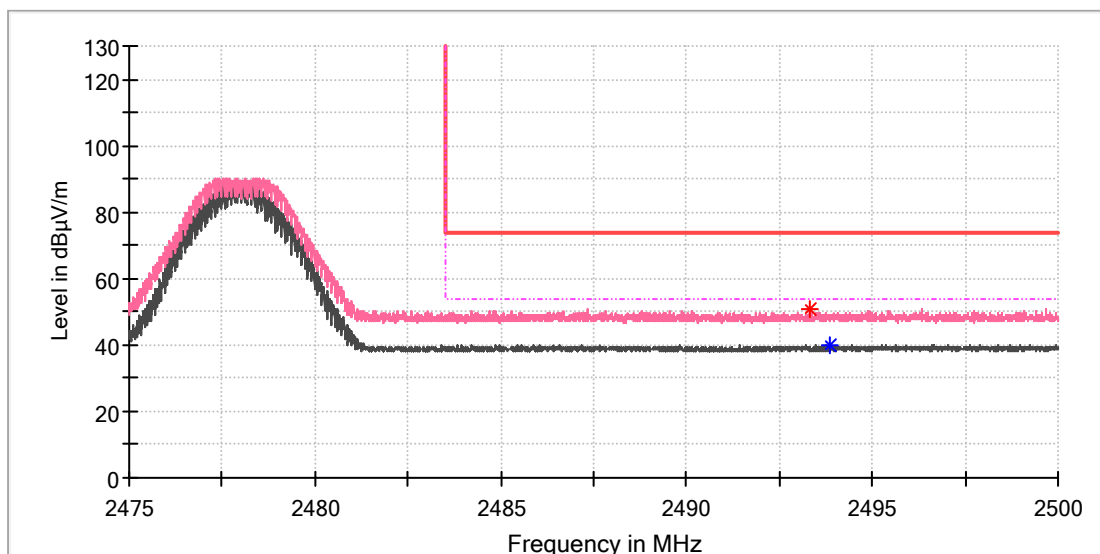


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2485.445588	50.86	---	74.00	23.14	150.0	H	116.0	7.4
2492.808824	---	40.14	54.00	13.86	150.0	H	257.0	7.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 2M_High channel
Order No/Sample No:	168459500/A003630231-003
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)
2493.333824	50.95	---	74.00	23.05	150.0	V	0.0	7.4
2493.863235	---	40.00	54.00	14.00	150.0	V	337.0	7.4

Appendix A: Test Results of Bluetooth Low Energy_Right Earbud

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Appendix A.1: Test Results of Conducted Power Spectral Density

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-3.12	≤8.00	PASS
		2440	-2.74	≤8.00	PASS
		2480	-2.88	≤8.00	PASS
BLE_2M	Ant1	2404	-5.15	≤8.00	PASS
		2440	-4.76	≤8.00	PASS
		2478	-4.87	≤8.00	PASS

BLE 1M Ant1 2402



BLE 1M Ant1 2440



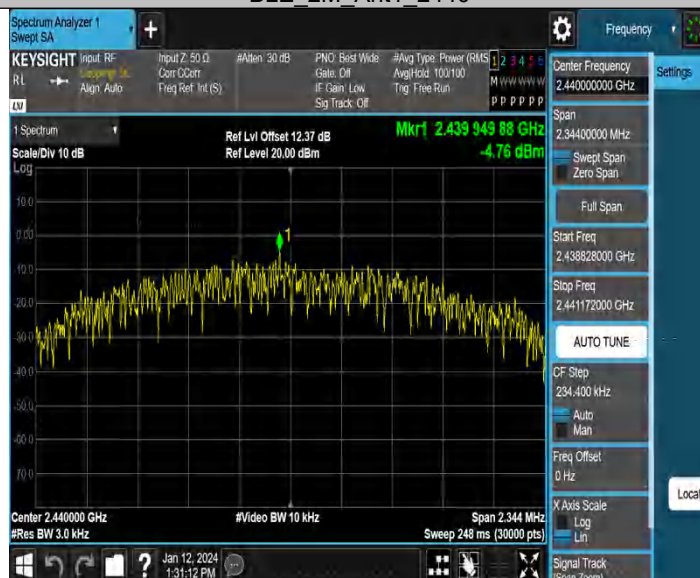
BLE 1M Ant1 2480



BLE 2M Ant1 2404



BLE 2M Ant1 2440





Appendix A.2: Test Results of 6dB Bandwidth

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.692	2401.632	2402.324	0.5	PASS
		2440	0.680	2439.644	2440.324	0.5	PASS
		2480	0.692	2479.640	2480.332	0.5	PASS
BLE_2M	Ant1	2404	1.160	2403.408	2404.568	0.5	PASS
		2440	1.172	2439.412	2440.584	0.5	PASS
		2478	1.300	2477.316	2478.616	0.5	PASS

BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE 1M Ant1 2480



BLE 2M Ant1 2404



BLE 2M Ant1 2440





Appendix A.3: Test Results of 99% Bandwidth

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0368	2401.4816	2402.5184	---	---
		2440	1.0408	2439.4788	2440.5196	---	---
		2480	1.0365	2479.4799	2480.5164	---	---
BLE_2M	Ant1	2404	2.0742	2402.9718	2405.0460	---	---
		2440	2.0774	2438.9724	2441.0498	---	---
		2478	2.0692	2476.9790	2479.0482	---	---

BLE_1M Ant1 2402



BLE_1M Ant1 2440



BLE 1M Ant1 2480



BLE 2M Ant1 2404



BLE 2M Ant1 2440





Appendix A.4: 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)	2440
-----------------------	------

Test result of frequency tolerance of voltage variation

Voltage	Test result (MHz)	Deviation Frequency (KHz)	Test result (ppm)	Limit (ppm)
DC 3.85V	2439.985	-15	-6.15	10
DC 3.47V	2439.985	-15	-6.15	
DC 4.24V	2439.985	-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	2439.984	-16	-6.56	10
-20	2439.984	-16	-6.56	
-10	2439.984	-16	-6.56	
0	2439.984	-16	-6.56	
10	2439.985	-15	-6.15	
20	2439.985	-15	-6.15	
30	2439.985	-15	-6.15	
40	2439.985	-15	-6.15	
50	2439.986	-14	-5.74	
55	2439.986	-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.5: 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
BLE_1M	Ant1	2402	Reference	11.38	11.38	---	PASS
			30~1000	11.38	-46.06	≤-8.62	PASS
			1000~26500	11.38	-37.22	≤-8.62	PASS
		2440	Reference	11.57	11.57	---	PASS
			30~1000	11.57	-46.34	≤-8.43	PASS
			1000~26500	11.57	-37.7	≤-8.43	PASS
		2480	Reference	11.39	11.39	---	PASS
			30~1000	11.39	-45.37	≤-8.61	PASS
			1000~26500	11.39	-37.4	≤-8.61	PASS
BLE_2M	Ant1	2404	Reference	11.07	11.07	---	PASS
			30~1000	11.07	-46.21	≤-8.93	PASS
			1000~26500	11.07	-36.93	≤-8.93	PASS
		2440	Reference	10.09	10.09	---	PASS
			30~1000	10.09	-45.65	≤-9.91	PASS
			1000~26500	10.09	-37.39	≤-9.91	PASS
		2478	Reference	11.14	11.14	---	PASS
			30~1000	11.14	-45.91	≤-8.86	PASS
			1000~26500	11.14	-37.37	≤-8.86	PASS

BLE 1M Ant1 2402 0~Reference



BLE 1M Ant1 2402 30~1000



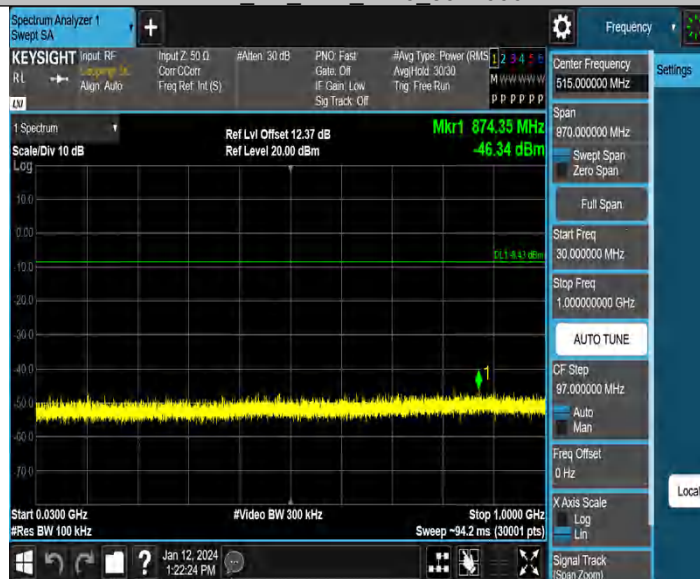
BLE 1M Ant1 2402 1000~26500



BLE 1M Ant1 2440 0~Reference



BLE 1M Ant1 2440 30~1000

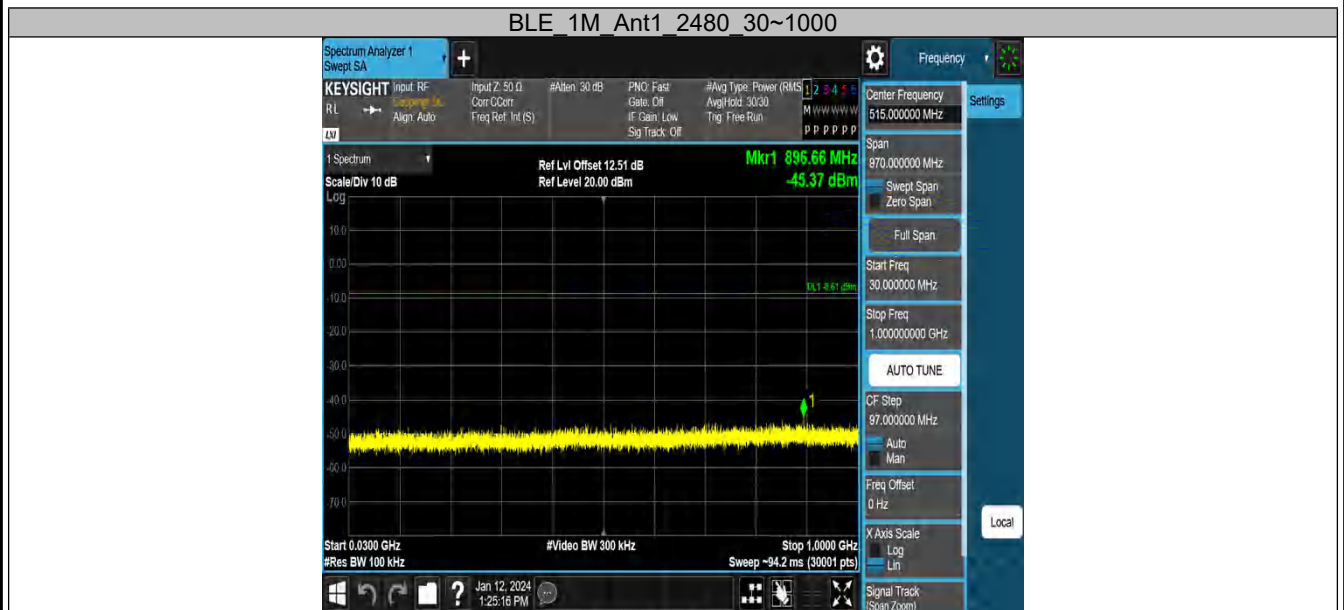


BLE 1M Ant1 2440 1000~26500



BLE 1M Ant1 2480 0~Reference





BLE 2M Ant1 2404 30~1000



BLE 2M Ant1 2404 1000~26500



BLE 2M Ant1 2440 0~Reference



BLE 2M Ant1 2440 30~1000



BLE 2M Ant1 2440 1000~26500



BLE 2M Ant1 2478 0~Reference



BLE 2M Ant1 2478 30~1000



BLE 2M Ant1 2478 1000~26500



Band edge measurements

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	10.92	-48.66	≤-9.08	PASS
		High	2480	11.43	-48.59	≤-8.57	PASS
BLE_2M	Ant1	Low	2404	10.75	-46.93	≤-9.25	PASS
		High	2478	11.01	-48.54	≤-8.99	PASS

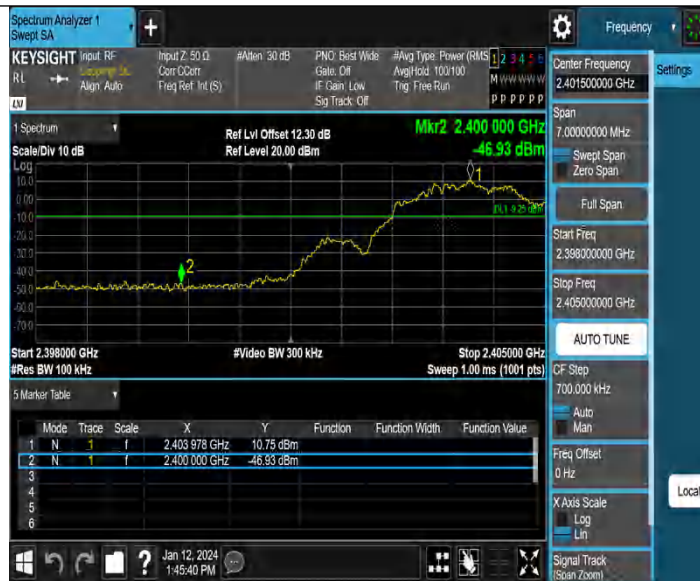
BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



BLE_2M_Ant1_Low_2404



BLE_2M_Ant1_High_2478



Appendix A.6: Test Results of Radiated Spurious Emissions

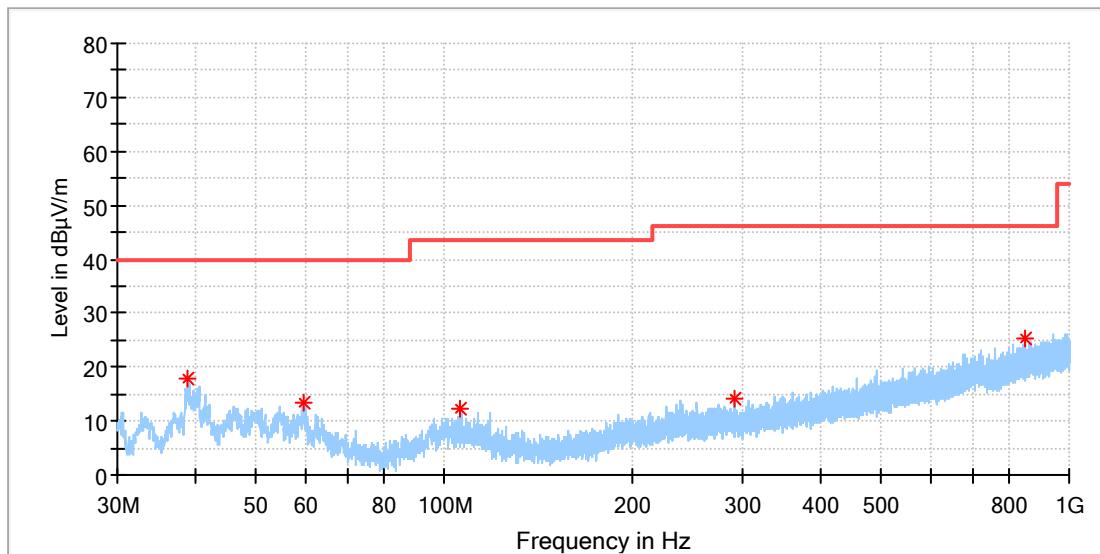
Note:

- 1) This testing was carried out on different modulations, but only the worst case was presented in this report.
- 2) 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.

30 MHz - 1GHz

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

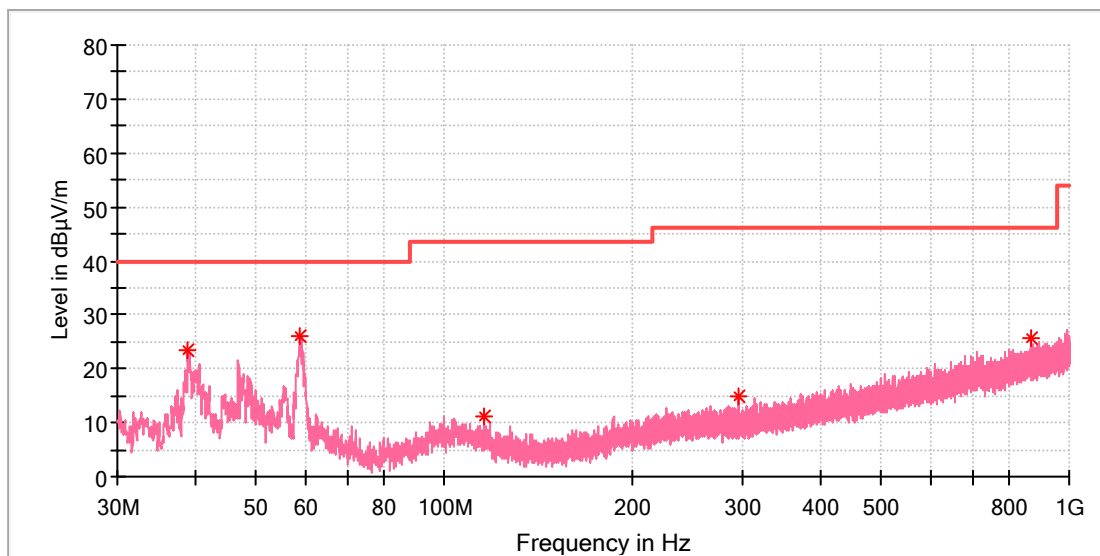


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
38.916539	17.79	40.00	22.21	100.0	H	122.0	-20.8
59.398462	13.37	40.00	26.63	100.0	H	65.0	-19.2
106.368846	12.19	43.50	31.31	100.0	H	17.0	-19.2
290.556923	14.30	46.00	31.70	100.0	H	80.0	-16.9
848.605385	25.12	46.00	20.88	100.0	H	138.0	-5.9

EUT Information

EUT Name: BLUETOOTH HEADSET
Model: LIVE BUDS 3
Test Mode: BLE 1M_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

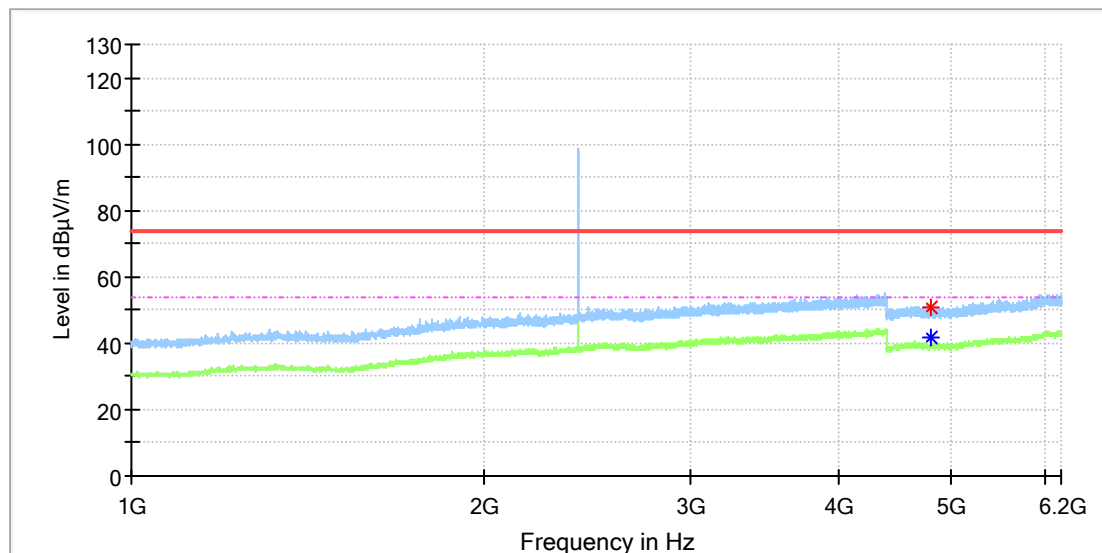
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
38.879231	23.49	40.00	16.51	100.0	V	124.0	-20.8
58.913462	26.04	40.00	13.96	100.0	V	132.0	-19.2
115.621154	11.10	43.50	32.40	100.0	V	199.0	-20.2
294.921923	14.87	46.00	31.13	100.0	V	82.0	-16.8
866.736923	25.81	46.00	20.19	100.0	V	232.0	-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:	BLE 1M_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

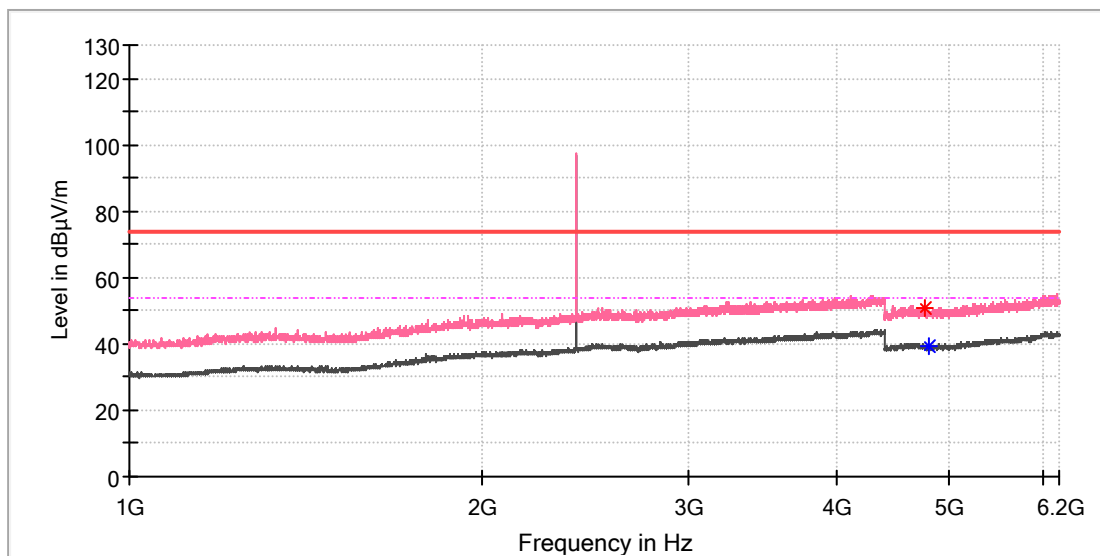


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.000000	50.52	---	74.00	23.48	150.0	H	279.0	11.8
4804.000000	---	41.54	54.00	12.46	150.0	H	279.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

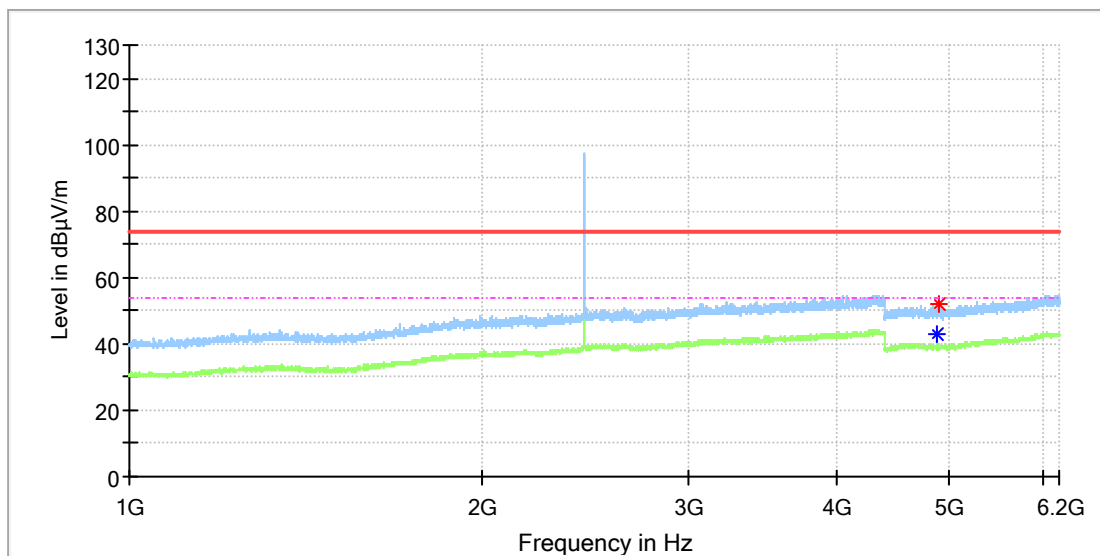


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4769.000000	50.66	---	74.00	23.34	150.0	V	271.0	11.8
4802.000000	---	39.48	54.00	14.52	150.0	V	149.0	11.8

EUT Information

EUT Name: BLUETOOTH HEADSET
Model: LIVE BUDS 3
Test Mode: BLE 1M_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

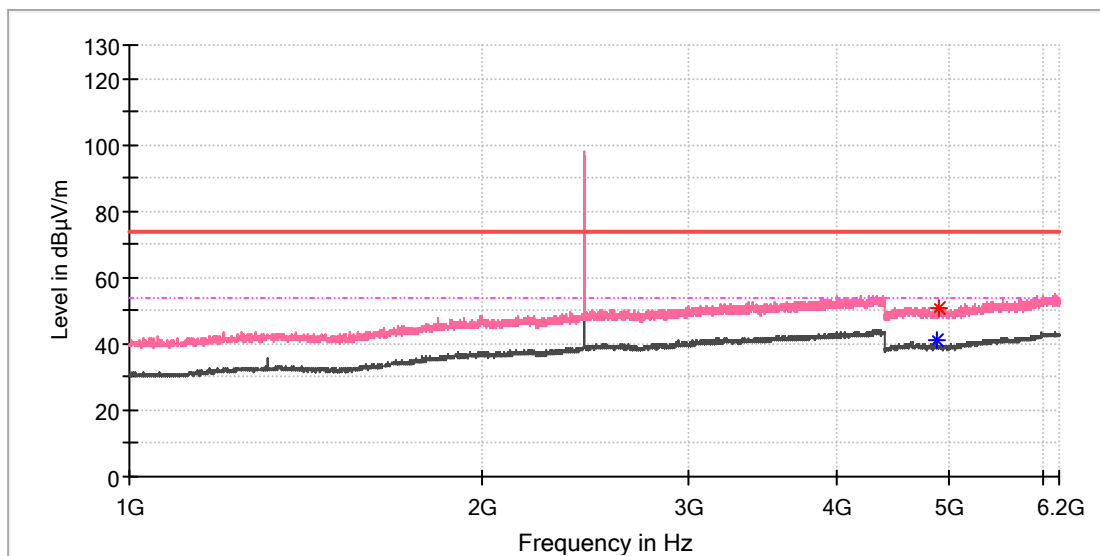


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4879.500000	---	43.07	54.00	10.93	150.0	H	265.0	11.8
4901.000000	51.83	---	74.00	22.17	150.0	H	351.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

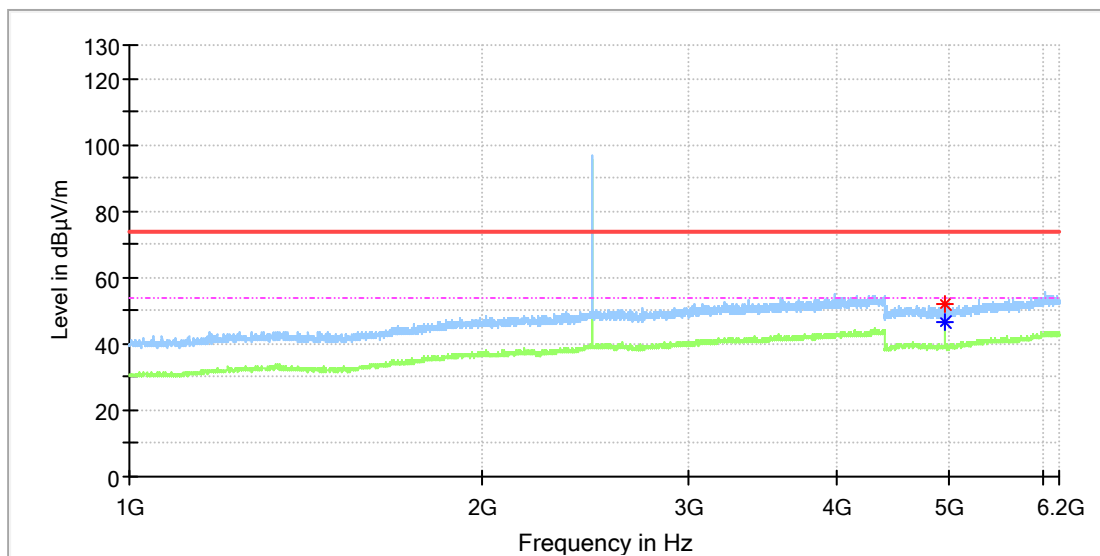


Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4879.500000	---	41.27	54.00	12.73	150.0	V	311.0	11.8
4900.000000	50.88	---	74.00	23.12	150.0	V	293.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

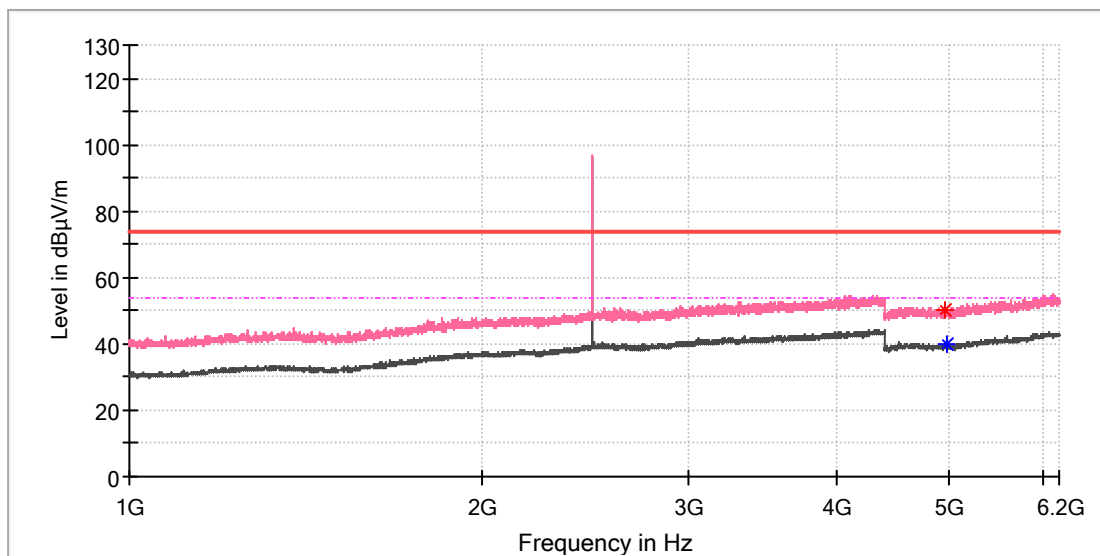


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.000000	---	46.46	54.00	7.54	150.0	H	252.0	11.8
4960.500000	51.90	---	74.00	22.10	150.0	H	252.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

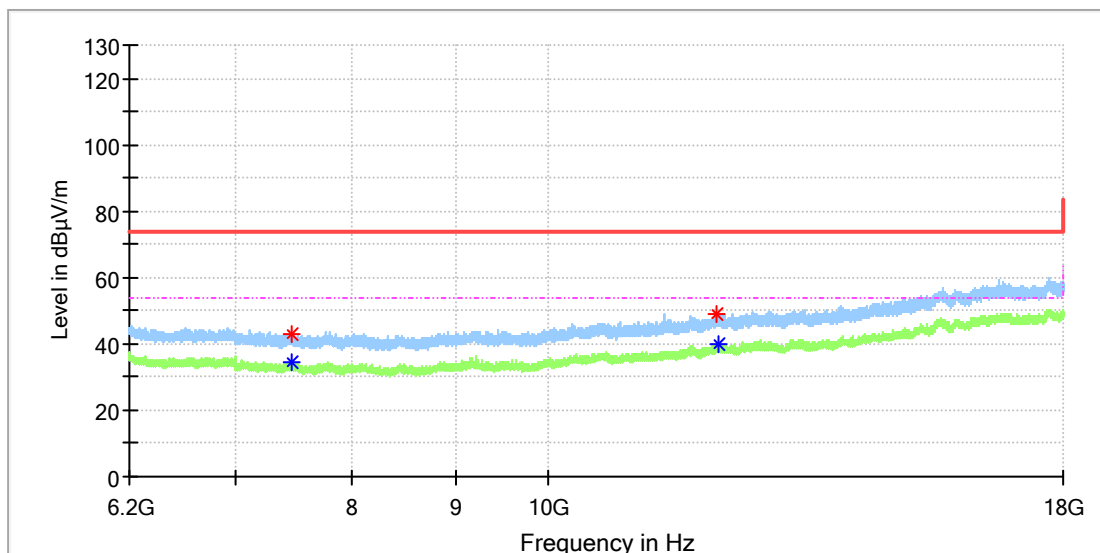


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4950.000000	50.15	---	74.00	23.85	150.0	V	211.0	11.8
4967.500000	---	39.78	54.00	14.22	150.0	V	317.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

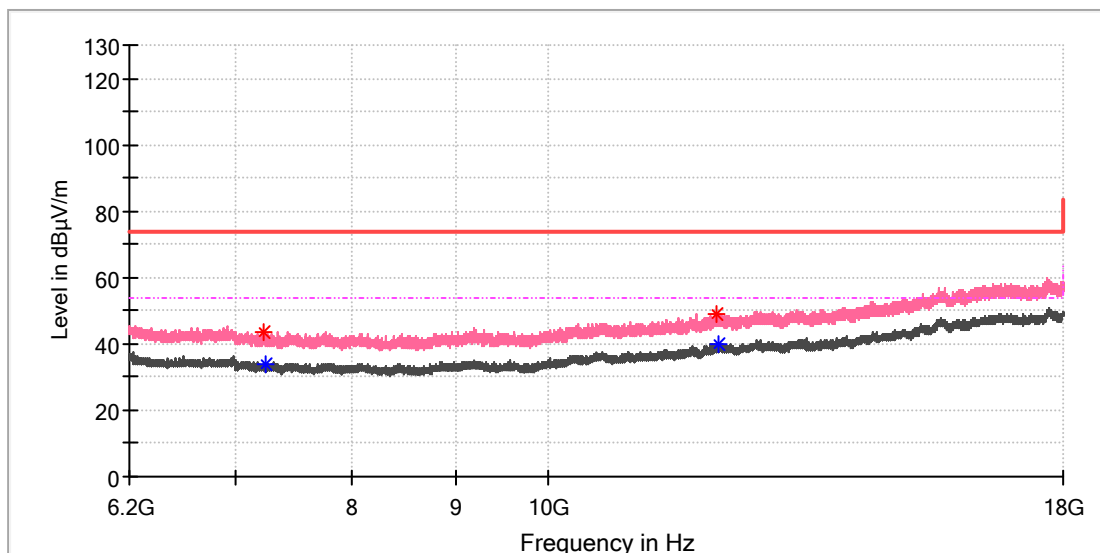


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7456.700000	---	34.17	54.00	19.83	150.0	H	63.0	8.5
7469.975000	43.20	---	74.00	30.80	150.0	H	3.0	8.6
12129.008333	48.85	---	74.00	25.15	150.0	H	13.0	14.3
12156.050000	---	39.97	54.00	14.03	150.0	H	3.0	14.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

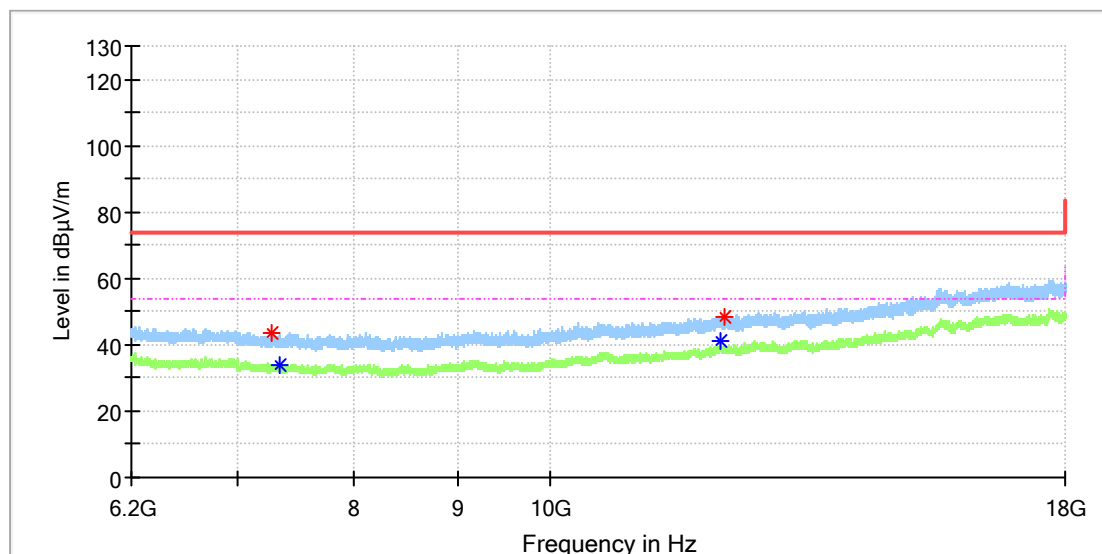


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7228.075000	43.40	---	74.00	30.60	150.0	V	18.0	8.7
7246.266667	---	33.76	54.00	20.24	150.0	V	286.0	8.6
12108.850000	48.96	---	74.00	25.04	150.0	V	252.0	14.2
12148.183333	---	40.08	54.00	13.92	150.0	V	0.0	14.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

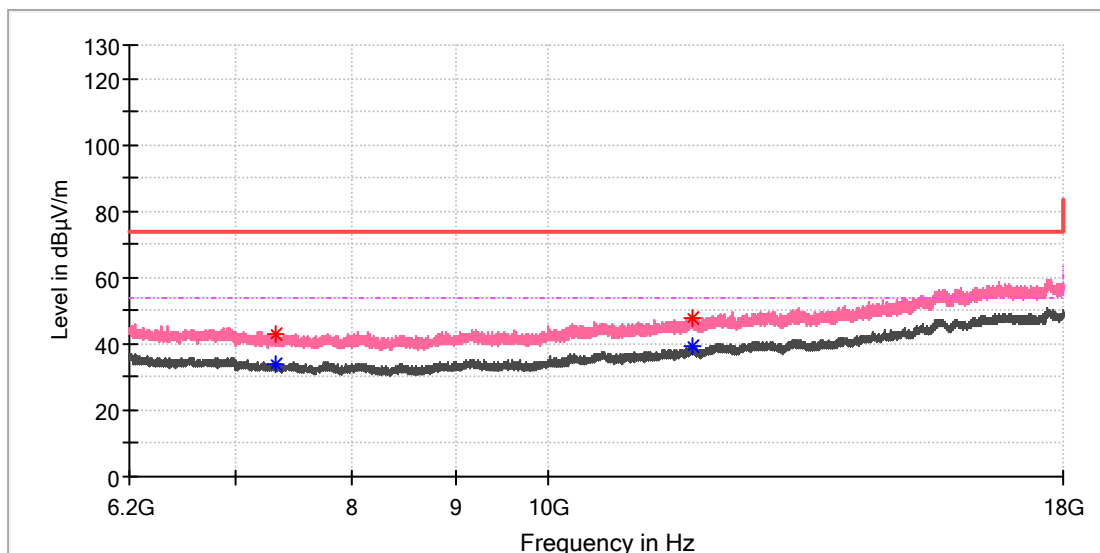


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7283.633333	43.58	---	74.00	30.42	150.0	H	166.0	8.4
7340.666667	---	34.11	54.00	19.89	150.0	H	323.0	8.1
12136.875000	---	40.95	54.00	13.05	150.0	H	286.0	14.3
12195.875000	48.49	---	74.00	25.51	150.0	H	249.0	14.6

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

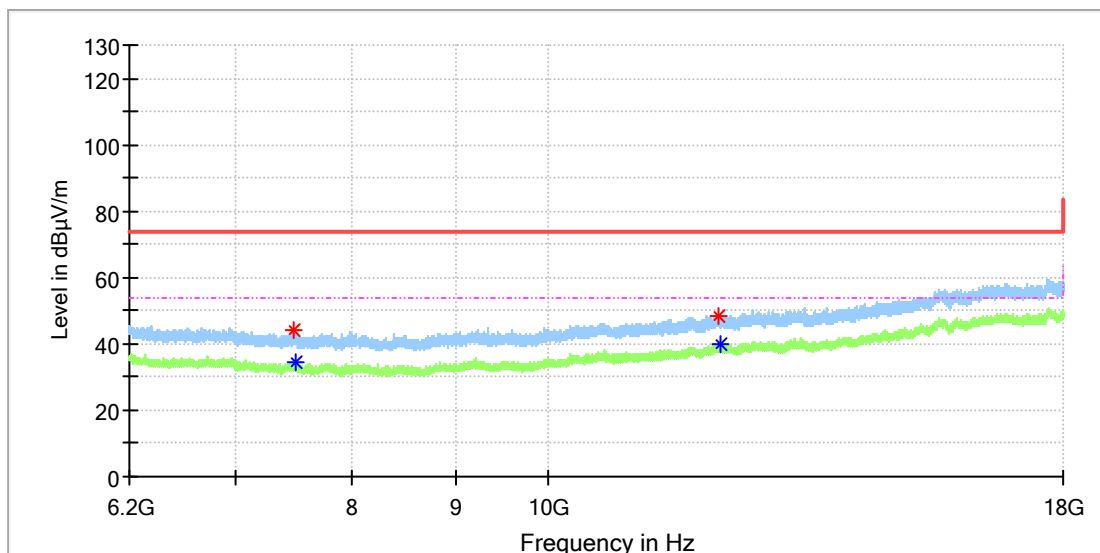


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7319.525000	---	34.07	54.00	19.93	150.0	V	301.0	8.2
7332.800000	42.94	---	74.00	31.06	150.0	V	158.0	8.1
11798.608333	47.89	---	74.00	26.11	150.0	V	146.0	13.4
11802.050000	---	39.48	54.00	14.52	150.0	V	100.0	13.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

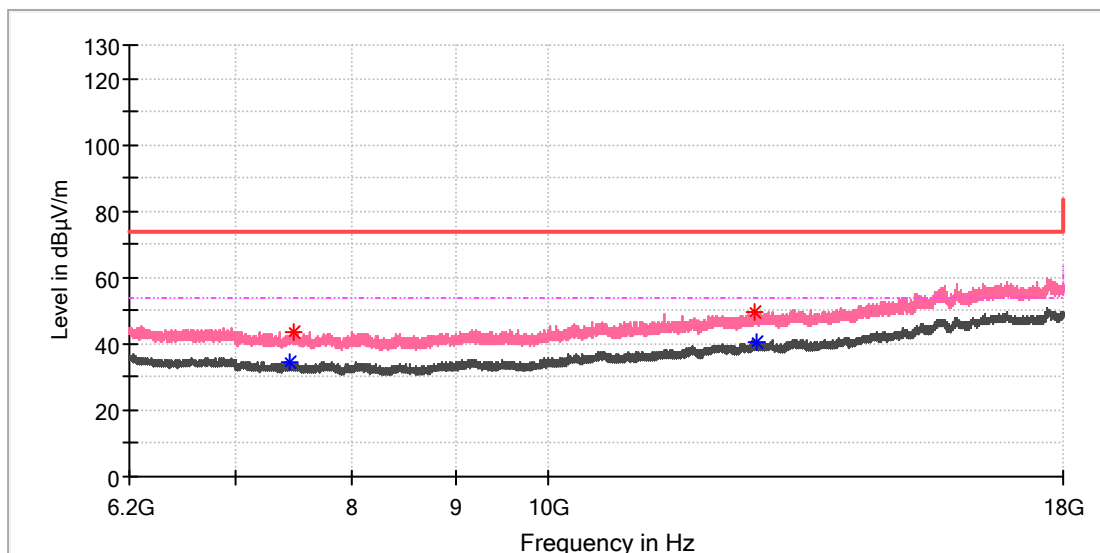


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7478.333333	44.09	---	74.00	29.91	150.0	H	290.0	8.7
7489.150000	---	34.24	54.00	19.76	150.0	H	57.0	8.7
12135.400000	48.66	---	74.00	25.34	150.0	H	358.0	14.3
12169.325000	---	39.63	54.00	14.37	150.0	H	207.0	14.5

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

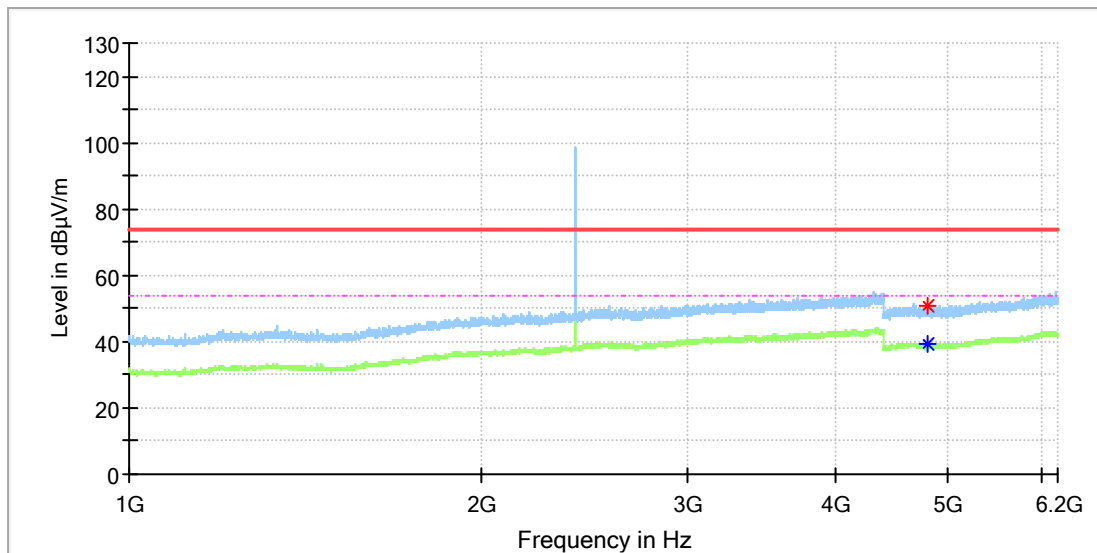


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7438.016667	---	34.62	54.00	19.38	150.0	V	0.0	8.4
7481.283333	43.77	---	74.00	30.23	150.0	V	8.0	8.7
12644.766667	49.47	---	74.00	24.53	150.0	V	278.0	15.0
12684.100000	---	40.45	54.00	13.55	150.0	V	144.0	15.1

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_Low channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

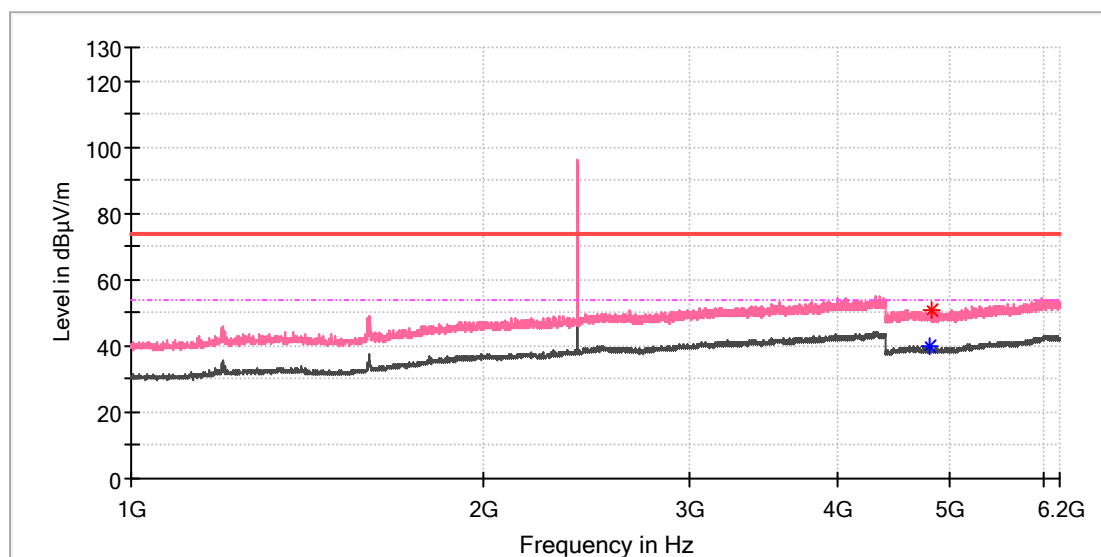


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.000000	---	39.42	54.00	14.58	150.0	H	199.0	11.8
4809.000000	50.60	---	74.00	23.40	150.0	H	57.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_Low channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

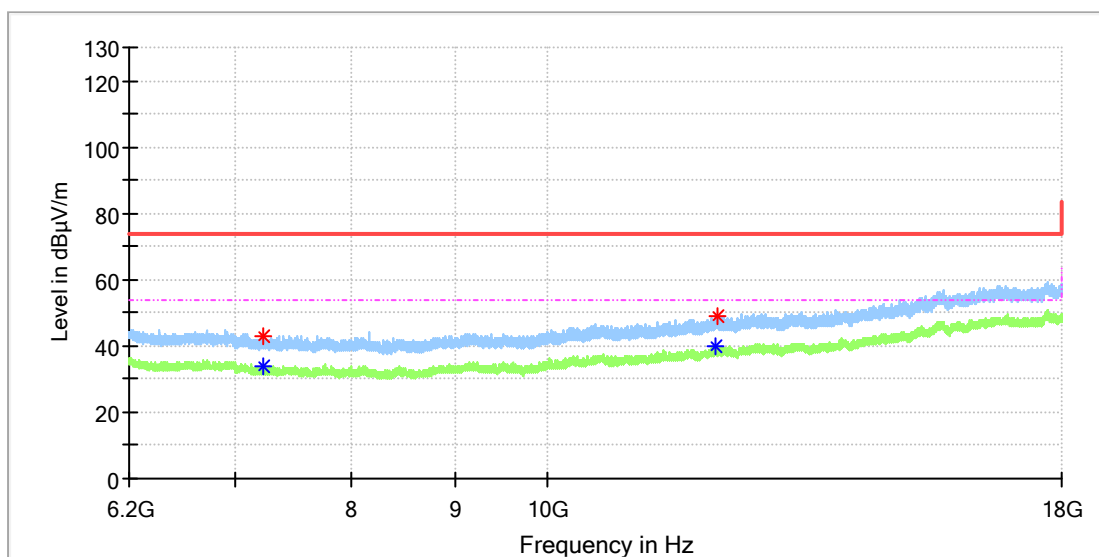


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4803.500000	---	39.68	54.00	14.32	150.0	V	124.0	11.8
4815.000000	50.82	---	74.00	23.18	150.0	V	100.0	11.8

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_Low channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

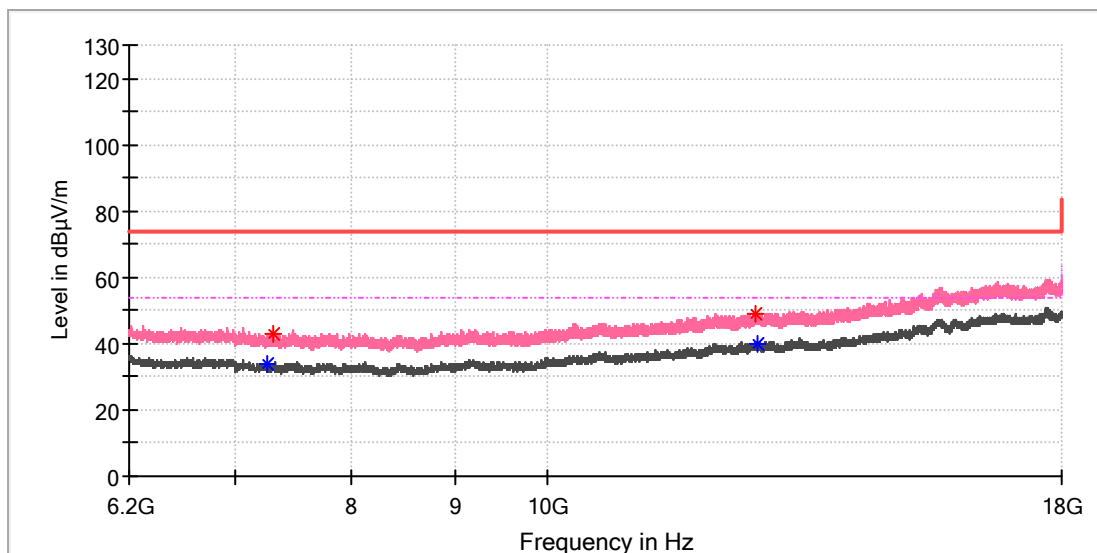


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7230.533333	42.84	---	74.00	31.17	150.0	H	178.0	8.6
7230.533333	---	33.57	54.00	20.43	150.0	H	178.0	8.6
12111.308333	---	40.07	54.00	13.93	150.0	H	0.0	14.2
12156.050000	49.23	---	74.00	24.77	150.0	H	213.0	14.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_Low channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



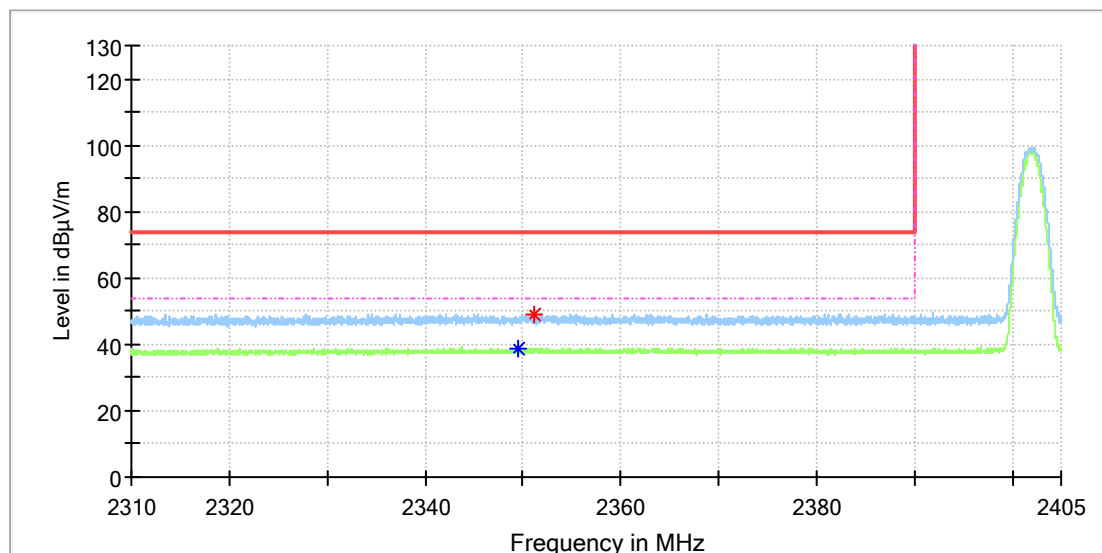
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7264.950000	---	33.75	54.00	20.25	150.0	V	55.0	8.5
7302.316667	43.13	---	74.00	30.87	150.0	V	90.0	8.3
12690.000000	49.05	---	74.00	24.95	150.0	V	234.0	15.1
12707.208333	---	40.14	54.00	13.86	150.0	V	0.0	15.1

Appendix A.7: Test Results of Radiated Emissions in Restricted Bands

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

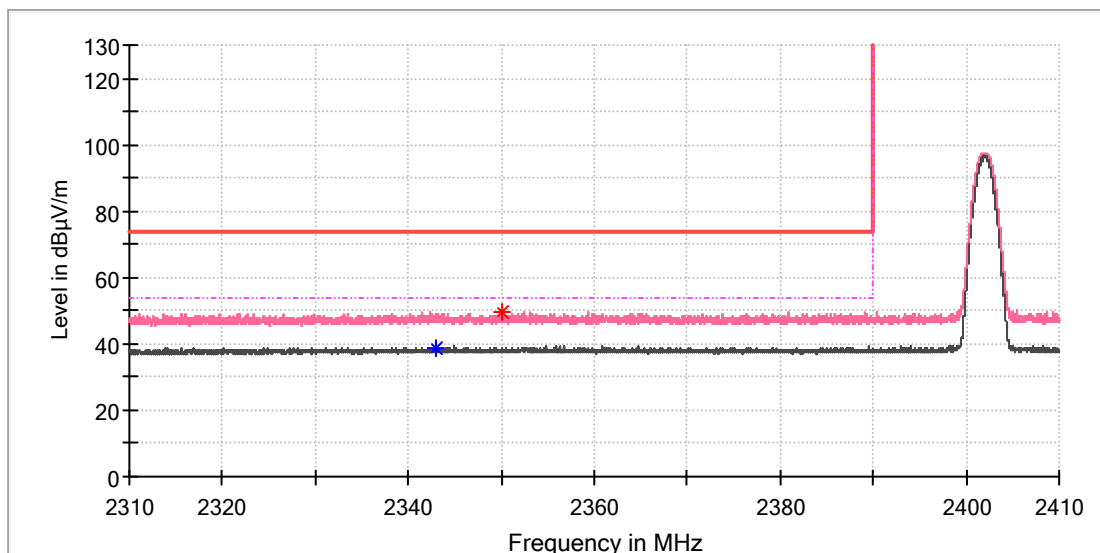


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2349.505882	---	38.87	54.00	15.13	150.0	H	318.0	6.9
2351.223530	49.02	---	74.00	24.98	150.0	H	277.0	6.9

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

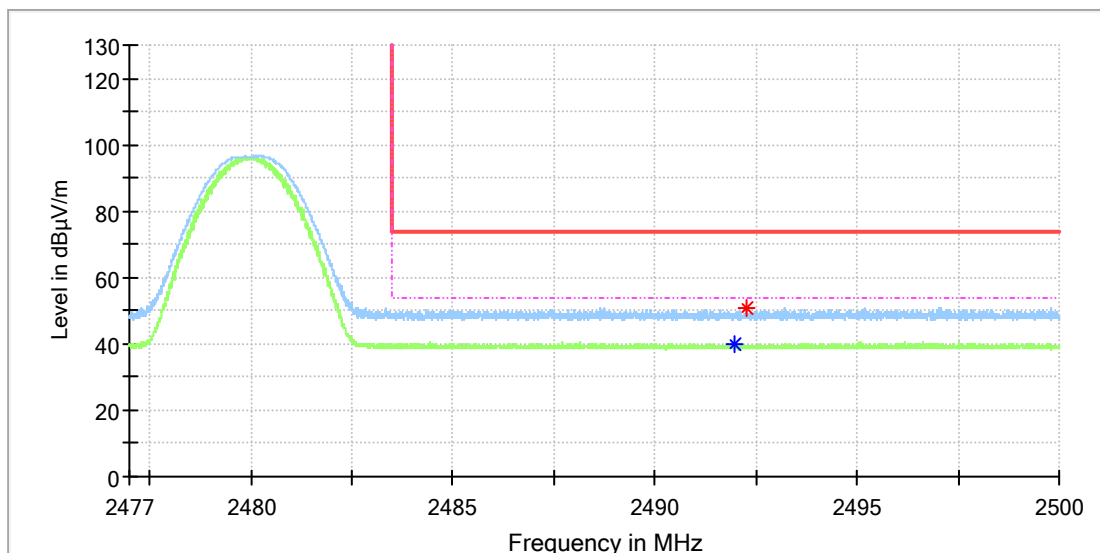


Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2343.073530	---	38.89	54.00	15.11	150.0	V	117.0	6.8
2350.132353	49.54	---	74.00	24.46	150.0	V	125.0	6.9

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

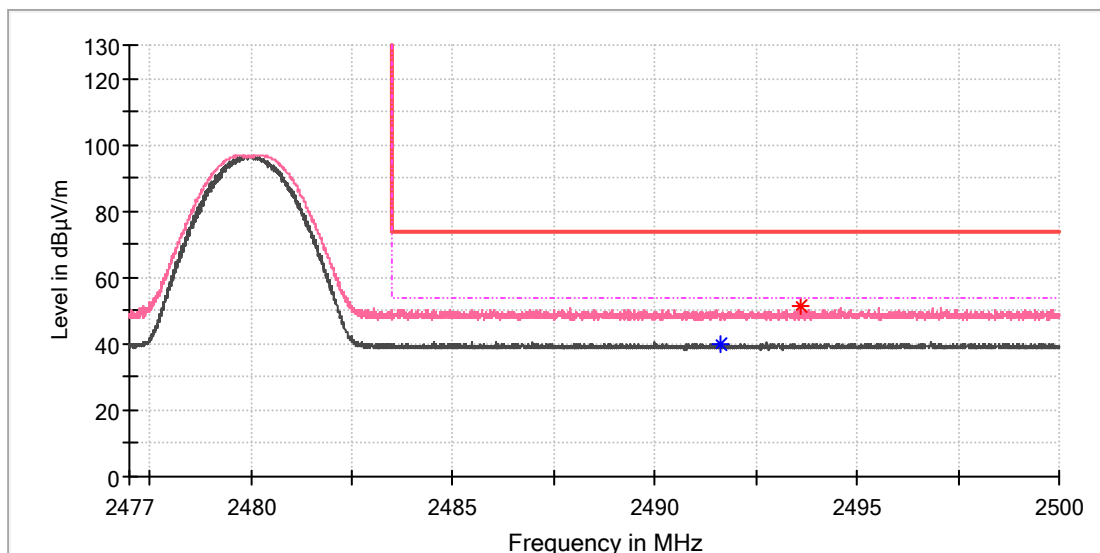


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2491.983824	---	39.95	54.00	14.05	150.0	H	170.0	7.4
2492.257353	51.04	---	74.00	22.96	150.0	H	186.0	7.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 1M_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

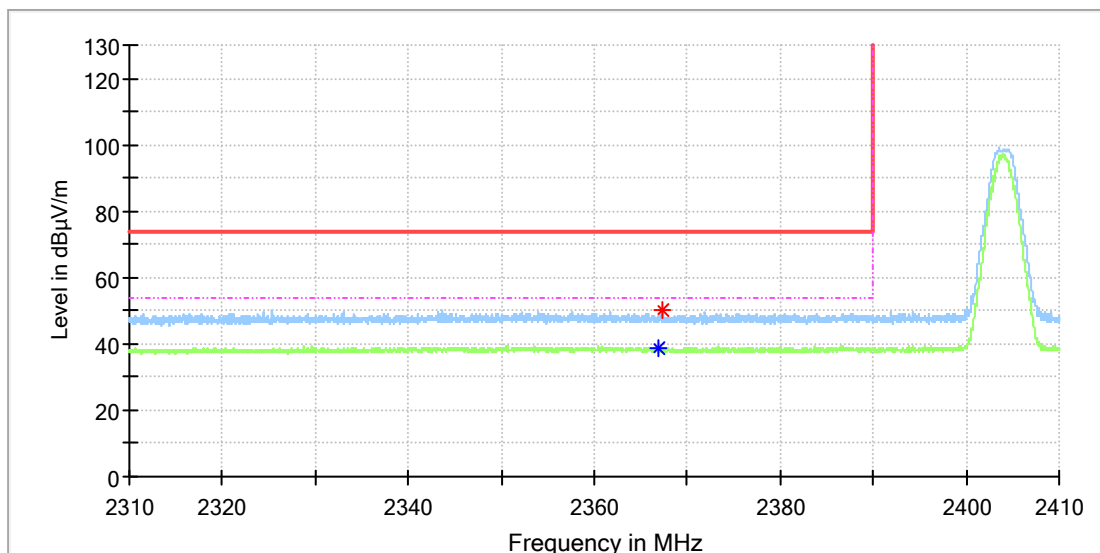


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2491.630882	---	40.11	54.00	13.89	150.0	V	19.0	7.4
2493.625000	51.22	---	74.00	22.78	150.0	V	86.0	7.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 2M_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

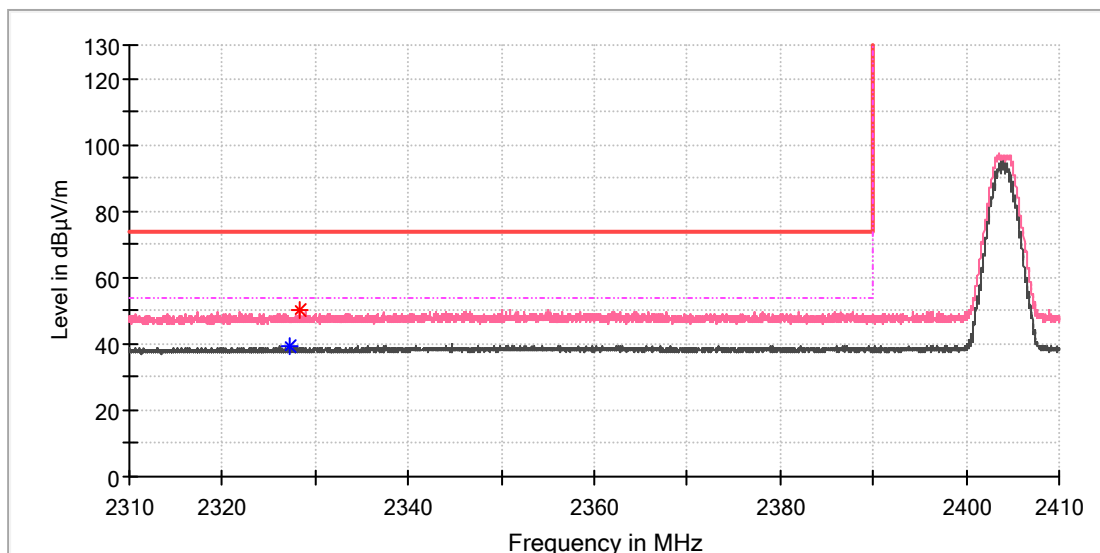


Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2366.917647	---	38.91	54.00	15.09	150.0	H	261.0	6.9
2367.435294	50.04	---	74.00	23.96	150.0	H	155.0	6.9

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 2M_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

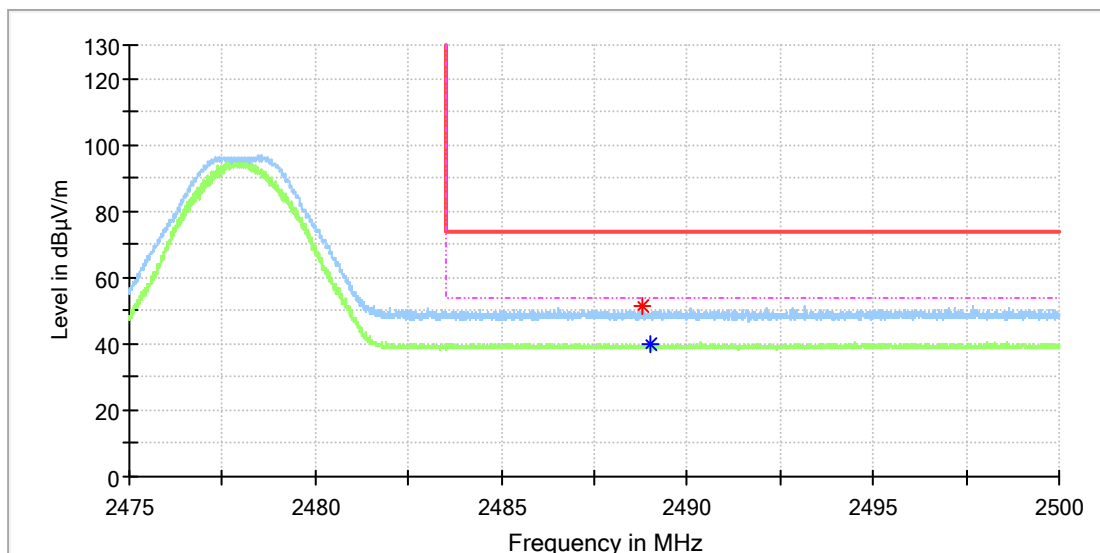


Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2327.308824	---	39.17	54.00	14.83	150.0	V	156.0	6.7
2328.397059	50.19	---	74.00	23.81	150.0	V	172.0	6.7

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 2M_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

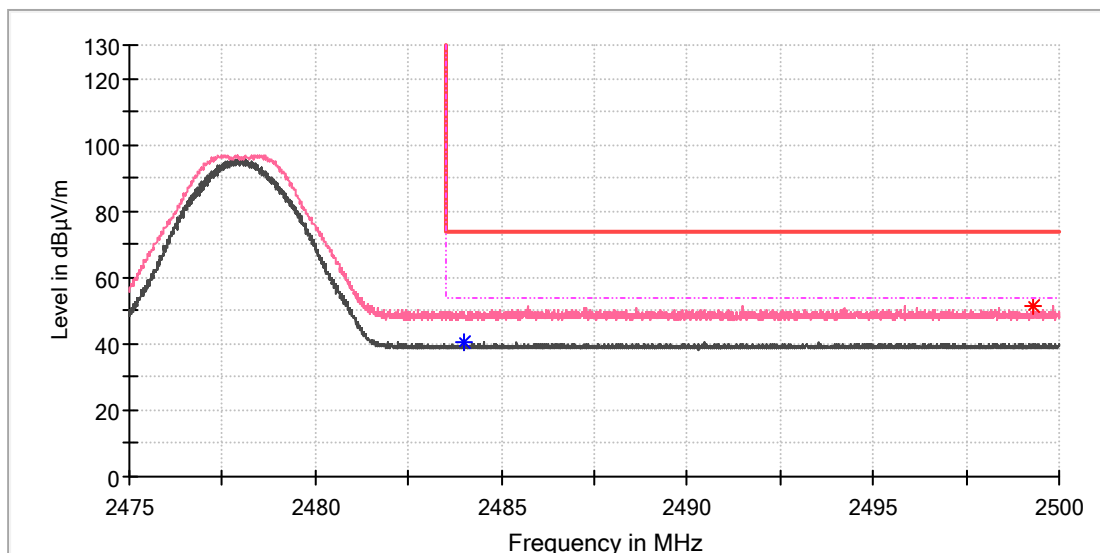


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2488.785294	51.37	---	74.00	22.63	150.0	H	66.0	7.4
2489.001471	---	40.04	54.00	13.96	150.0	H	5.0	7.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 2M_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

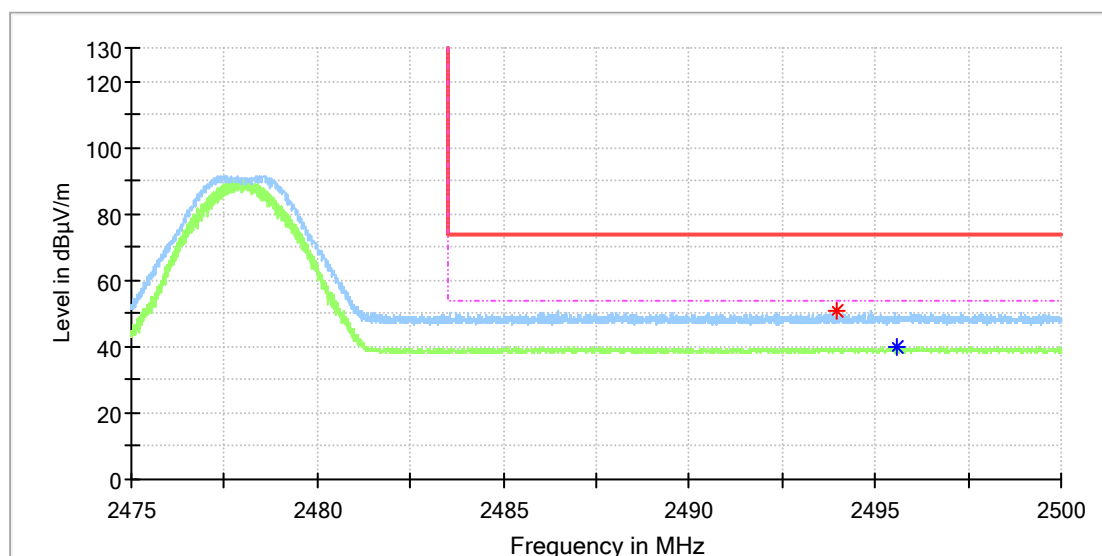


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.985294	---	40.46	54.00	13.54	150.0	V	119.0	7.4
2499.285294	51.42	---	74.00	22.58	150.0	V	0.0	7.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 2M_High channel
Order No/Sample No:	168459500/A003630231-003
Test Voltage::	Battery
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

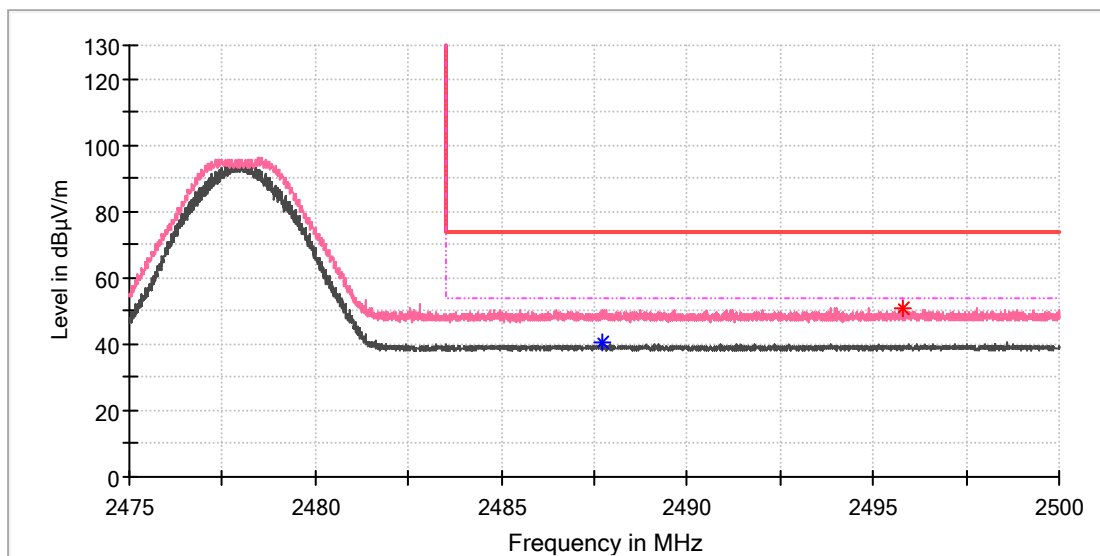


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2493.955882	50.98	---	74.00	23.02	150.0	H	247.0	7.4
2495.597059	---	40.02	54.00	13.98	150.0	H	341.0	7.4

EUT Information

EUT Name:	BLUETOOTH HEADSET
Model:	LIVE BUDS 3
Test Mode:	BLE 2M_High channel
Order No/Sample No:	168459500/A003630231-003
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)
2487.708824	---	40.48	54.00	13.52	150.0	V	50.0	7.4
2495.817647	50.93	---	74.00	23.07	150.0	V	103.0	7.4