Prüfbericht - Produkte
Test Report - Products

TÜVRheinland®

Prüfbericht-Nr.: *Test report no.:*	**CN21PU62 001**	**Auftrags-Nr.:** *Order no.:*	168347337	Seite 1 von 23 *Page 1 of 23*
Kunden-Referenz-Nr.: *Client reference no.:*	N/A	**Auftragsdatum:** *Order date:*	2021-11-11	
Auftraggeber: *Client:*	**Hygear Inc.** 3415 South Sepulveda Blvd., Suite 1100, Los Angeles, CA, 90034			
Prüfgegenstand: *Test item:*	Smart Fitness System			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	Gear 1, GEAR GO, Gear Flex, Spider B (Trademark: HYGEAR)			
Auftrags-Inhalt: *Order content:*	FCC and IC approval			
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 CFR47 FCC Part 2.1093	RSS-247 Issue 2 February 2017 RSS-Gen Issue 5 February 2021 RSS-102 Issue 5 February 2021		
Wareneingangsdatum: *Date of sample receipt:*	2021-12-10	Please refer to photo documents		
Prüfmuster-Nr.: *Test sample no.:*	A003180409-001 to 003			
Prüfzeitraum: *Testing period:*	2021-12-14 – 2021-12-23			
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:*	X Alex Lan Signed by: Alex Lan	**genehmigt von:** *authorized by:*	X Winnie Hou Signed by: Winnie Hou	
Datum: *Date:* 2021-01-13		**Ausstellungsdatum:** *Issue date:* 2021-01-13		
Stellung / Position	Senior Project Engineer	**Stellung** / Position	Department Manager	

Sonstiges / *Other:*

FCC ID: 2AV6I-HY100
IC: 26027-HY100 HVIN: Gear 1, GEAR GO, Gear Flex, Spider B

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

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhalt
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specifications(s)		*F(ail) = failed a.m. test specifications(s)*	*N/A = not applicable*	*N/T = not tested*

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.

This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.

V05

Test Summary

5.1.1 ANTENNA REQUIREMENT
RESULT: Pass

5.1.2 MAXIMUM 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 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHZ BANDWIDTH
RESULT: Pass

5.1.7 RADIATED SPURIOUS EMISSION
RESULT: Pass

5.1.8 CONDUCTED EMISSION ON AC MAINS
RESULT: Pass

6.1.1 ELECTROMAGNETIC FIELDS
RESULT: Pass

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1 General Remarks

1.1 Complementary Materials

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

Appendix A: Photographs of the Test Set-up

Appendix B: Test Results of Conducted & Radiated Testing

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

No. 362 Huanguan Road Middle, Longhua District, Shenzhen 518110, People's Republic of China

FCC Registration No.: 694916

IC Registration No.: 25069, CAB identifier: CN0078

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Radio Spectrum Testing				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Wireless Connectivity Tester	R&S	CMW270	101375	2022-08-09
Signal Analyzer	R&S	FSV 40	101441	2022-08-09
Vector Signal Generator	R&S	SMBV100A	263301	2022-08-09
Signal Generator	R&S	SMB100A	115186	2022-08-09
OSP	R&S	OSP 150	101017	2022-12-02
Control PC	DELL	OptiPlex 7050	FTJZ9P2	N/A
Test Software	R&S	WMS32 (V11.00.00)	N/A	N/A
Power Meter	R&S	NRP2	107105	2022-12-02
Power Sensor	R&S	NRP-Z81	105677	2022-08-09
Humid & Temp Programmable Tester	BOST	NTH090-60	19040801	2022-04-02
Shielding Room 8#	Albatross	SR8	APC17151-SR8	2024-06-22
Unwanted Emission Testing				
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Signal Generator	R&S	SMB100A	180840	2022-08-09
Wideband Radio Communication Tester	R&S	CMW500	165339	2022-08-09
Signal Analyzer	R&S	FSV 40	101440	2022-08-09
System Controller Interface	R&S	SCI-100	S10010036	N/A
Filterbank	R&S	GSM	100811	2022-08-09
OSP	R&S	OSP 120	102041	N/A
OSP	R&S	OSP 150	101385	2022-12-09
Pre-amplifier	R&S	SCU08F1	08320030	2022-08-09
Amplifier	R&S	SCU-18F	180079	2022-08-09
Amplifier	R&S	SCU40A	100450	2022-08-09
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	192	2022-08-08
Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218719	2022-08-08
Wideband Ridged Horn Antenna (12-18 GHz)	Steatite	QMS-00208	18312	2022-08-08

Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19066	2022-08-08
Biconical Broadband Antenna (30 MHz - 1 GHz)	Schwarzbeck	VUBA 9117	357	2024-08-08
Double Ridged Broadband Horn Antenna (1 – 18 GHz)	Schwarzbeck	BBHA 9120 D	01760	2024-07-30
Broadband Horn Antenna (15 – 40 GHz)	Schwarzbeck	BBHA 9170	00862	2024-08-02
Test software	R&S	EMC32 (V10.50.40)	N/A	N/A
Control PC	Dell	OptiPlex 7050	36NW9P2	N/A
3m Fully Anechoic Chamber	Albatross	FAC-3m	APC17151-FAC	2024-06-22

Conducted Emission

Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
EMI Test Receiver	R&S	ESR3	102428	2022-08-10
Artificial Mains Network	R&S	ENV216	102333	2022-08-10
Artificial Mains Network	R&S	ENV432	101411	2022-08-10
Impedance Stabilisation Network	R&S	ENY81-CA6	101810	2022-08-11
EMC32 test software	R&S	EMC32(Ver.10.50.00)	N/A	N/A

2.3 Traceability

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

2.4 Calibration

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

2.5 Measurement Uncertainty

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

Item		Extended Uncertainty
Conducted Emission (0.15-30MHz)	Field strength (dBµV)	3dB
Radiated Emission (30-1000MHz)	Field strength (dBµV/m)	4.27dB
Radiated Emission (above 1000MHz)	Field strength (dBµV/m)	4.46dB
Radio Spectrum		± 1.5 dB

2.6 Location of Original Data

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

2.7 Status of Facility Used for Testing

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

3 General Product Information

3.1 Product Function and Intended Use

The EUTs are a Smart Fitness System, it supports Bluetooth Low Energy wireless technology.

All models are identical except the model number, plastic enclosure and accessories (bands/straps).

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	Smart Fitness System
Type Designation	Gear 1, GEAR GO, Gear Flex, Spider B
FCC ID	2AV6I-HY100
IC	26027-HY100
HVIN	Gear 1, GEAR GO, Gear Flex, Spider B
Operating Voltage	DC 3.7V, 300mAh via built-in battery or DC 5V via external adapter
Technical Specification of Bluetooth Low Energy	
Operating Frequency band	2402 – 2480 MHz
Channel Number	40 channels
Channel separation	2 MHz
Data Rate	1Mbps, 2Mbps
Modulation	GFSK
Antenna Type	Ceramic Chip Antenna
Number of Antenna	1
Antenna Gain	2.0 dBi

Table 3: 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, transmitting mode
   1. Low channel
   2. Middle channel
   3. High channel

B. On, Operating

C. On, Charging

D. 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 were applied on model Gear 1.

4.3 Special Accessories and Auxiliary Equipment

Table 4: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N or Rating
Portable Laptop	Lenovo	ThinkPad T480	10Q67059
iPad	Apple	A1893	DMPYN2HZJF8K
AC/DC Adapter	Tenpao	S010BLT0500200	Input: AC 100-240V, 50/60Hz, 0.4A Output: DC 5V, 2A

4.4 Countermeasures to Achieve EMC Compliance

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

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

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

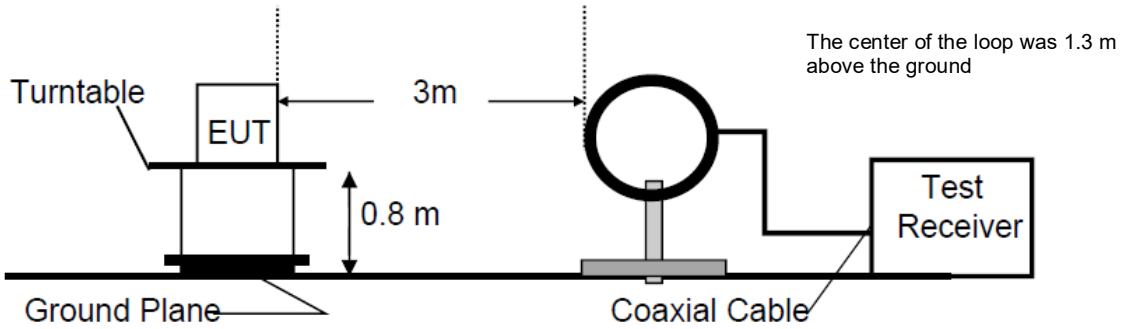


Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

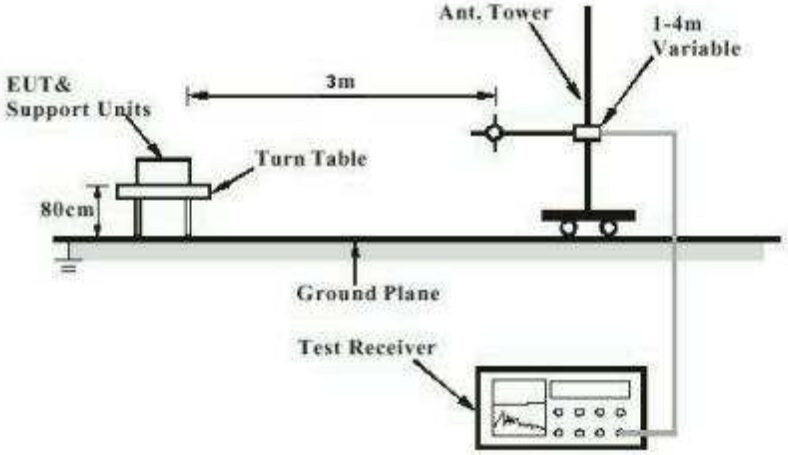


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

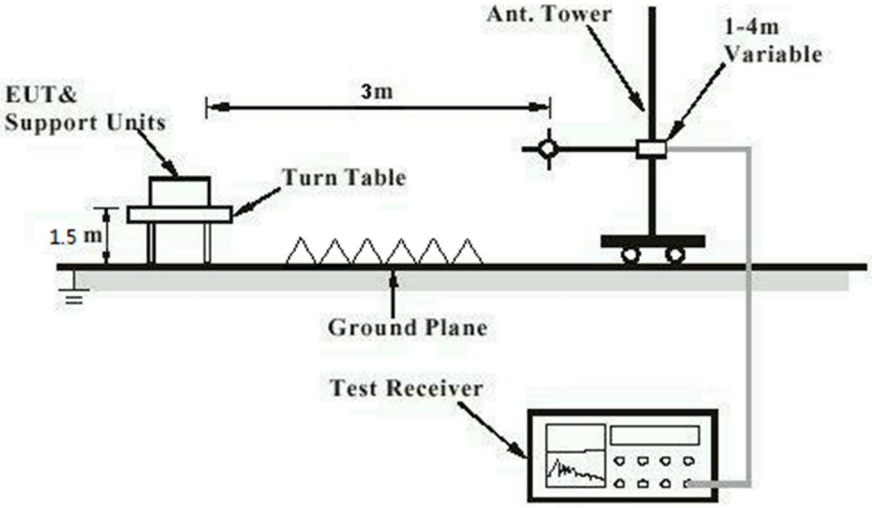


Diagram of Measurement Configuration for Mains Conduction Measurement

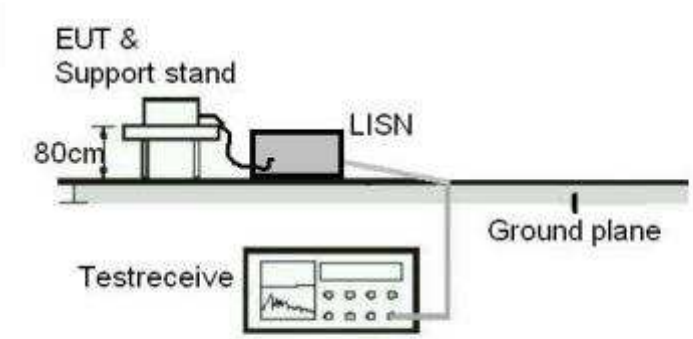
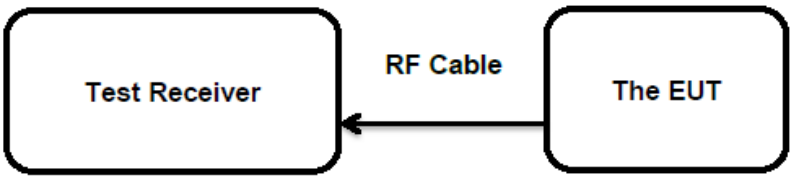


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(b)(4) and Part 15.203 RSS-Gen Clause 6.7
Limit	:	the use of antennas with directional gains that do not exceed 6 dBi

According to the manufacturer declared, the EUT has an ceramic chip antenna , the directional gain of antenna is 2.0 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

5.1.2 Maximum Conducted Output Power

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(b)(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	:	2021-12-17
Input voltage	:	DC 3.7V
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	24.8 ℃
Relative humidity	:	55 %
Atmospheric pressure	:	101 kPa

For details refer to following test result.

Table 5: Test Result of Maximum Conducted Output Power, 1Mbps

Channel	Channel Frequency (MHz)	Conducted Peak Output Power		Limit
		(dBm)	(W)	(W)
Low Channel	2402	-3.4	0.00046	1
Middle Channel	2440	-3.3	0.00047	1
High Channel	2480	-3.6	0.00044	1

Channel	Channel Frequency (MHz)	Conducted Average Output Power		Limit
		(dBm)	(W)	(W)
Low Channel	2402	-3.5	0.00045	1
Middle Channel	2440	-3.5	0.00045	1
High Channel	2480	-3.8	0.00042	1

Table 6: Test Result of Maximum Conducted Output Power, 2Mbps

Channel	Channel Frequency (MHz)	Conducted Peak Output Power		Limit
		(dBm)	(W)	(W)
Low Channel	2402	-3.3	0.00047	1
Middle Channel	2440	-3.4	0.00046	1
High Channel	2480	-3.8	0.00042	1

Channel	Channel Frequency (MHz)	Conducted Average Output Power		Limit
		(dBm)	(W)	(W)
Low Channel	2402	-3.5	0.00045	1
Middle Channel	2440	-3.5	0.00045	1
High Channel	2480	-3.9	0.00041	1

Note: The cable loss is taken into account in results and the e.i.r.p. is -1.3 dBm less than 4W (36 dBm).

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	:	2021-12-17
Input voltage	:	DC 3.7V
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	24.8 ℃
Relative humidity	:	55 %
Atmospheric pressure	:	101 kPa

For details refer to following test result.

Table 7: Test Result of Power Spectral Density, 1Mbps

Channel	Channel Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
Low Channel	2402	-19.47	8
Middle Channel	2440	-19.73	8
High Channel	2480	-20.03	8

Table 8: Test Result of Power Spectral Density, 2Mbps

Channel	Channel Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
Low Channel	2402	-21.94	8
Middle Channel	2440	-22.15	8
High Channel	2480	-22.47	8

Note: The cable loss is taken into account in results.

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	:	2021-12-17
Input voltage	:	DC 3.7V
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	24.8 ℃
Relative humidity	:	55 %
Atmospheric pressure	:	101 kPa

Table 9: Test Result of 99% Bandwidth, 1Mbps

Channel	Channel Frequency (MHz)	99% Bandwidth (MHz)	Limit (MHz)	Result
Low Channel	2402	1.045	/	Pass
Mid Channel	2440	1.045	/	Pass
High Channel	2480	1.045	/	Pass

Table 10: Test Result of 99% Bandwidth, 2Mbps

Channel	Channel Frequency (MHz)	99% Bandwidth (MHz)	Limit (MHz)	Result
Low Channel	2402	2.04	/	Pass
Mid Channel	2440	2.05	/	Pass
High Channel	2480	2.05	/	Pass

For the measurement records, refer to the appendix B.

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	:	2021-12-17
Input voltage	:	DC 3.7V
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	24.8 ℃
Relative humidity	:	55 %
Atmospheric pressure	:	101 kPa

Table 11: Test Result of 6dB Bandwidth, 1Mbps

Channel	Channel Frequency (MHz)	-6dB Bandwidth (kHz)	Limit (kHz)	Result
Low Channel	2402	732.673	500	Pass
Mid Channel	2440	732.673	500	Pass
High Channel	2480	712.871	500	Pass

Table 12: Test Result of 6dB Bandwidth, 2Mbps

Channel	Channel Frequency (MHz)	-6dB Bandwidth (kHz)	Limit (kHz)	Result
Low Channel	2402	1188	500	Pass
Mid Channel	2440	1188	500	Pass
High Channel	2480	1188	500	Pass

For the measurement records, refer to the appendix B.

5.1.6 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	:	2021-12-17
Input voltage	:	DC 3.7V
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	24.8 ℃
Relative humidity	:	55 %
Atmospheric pressure	:	101 kPa

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to test plots, and compliance is achieved as well.

For the measurement records, refer to the appendix B.

5.1.7 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	:	2021-12-23
Input voltage	:	DC 3.7V
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	22 ℃
Relative humidity	:	52 %
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 B.

5.1.8 Conducted Emission on AC Mains

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.207(a) RSS-Gen Clause 8.8
Basic standard	:	ANSI C63.10: 2013
Frequency range	:	0.15 – 30MHz
Limits	:	FCC Part 15.207(a) RSS-Gen Table 4
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2021-12-14
Input voltage	:	AC 120V/60Hz
Operation mode	:	B+C
Earthing	:	Not connected
Ambient temperature	:	24.8 ℃
Relative humidity	:	55 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B.

6 Safety Human Exposure

6.1 Radio Frequency Exposure Compliance

6.1.1 Electromagnetic Fields

RESULT: **Pass**

Test Specification

Test standard	:	FCC KDB Publication 447498 v06
		CFR47 FCC Part 2: Section 2.1093
		CFR47 FCC Part 1: Section 1.1310
		RSS-102 Issue 5 February 2021

FCC requirement:

The measured maximum conducted output power of the EUT is -3.3dBm ≈ 0.47mW, which is far below the SAR exclusion threshold level 10mW (SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm), hence the EUT is excluded from SAR evaluation according to FCC KDB publication 447498 D01: Mobile and Portable RF Exposure. Guidance v06.

IC requirement:

The measured maximum conducted output power of the EUT is -3.3dBm ≈ 0.47mW and e.i.r.p. is -1.3 dBm ≈ 0.74mW, which is far below the SAR exclusion threshold level 4mW, hence the EUT is excluded from SAR evaluation according to RSS-102 Issue 5 section 2.5.1.

7 Photographs of the Test Set-Up

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

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Appendix B: Test Results

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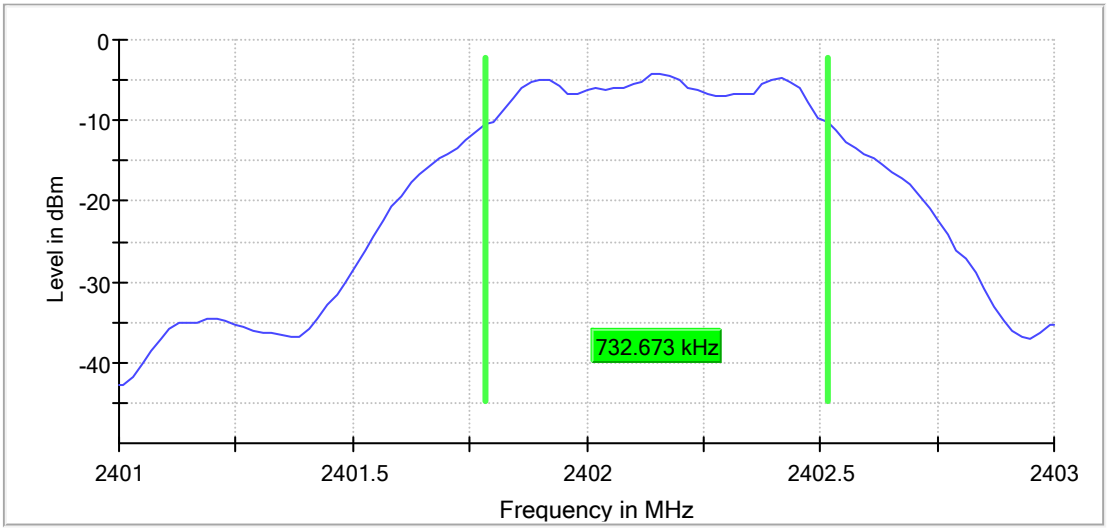
Appendix B.1: 6dB Bandwidth

BLE, 1Mbps
Low Channel

RBW=100KHz, VBW=300KHz

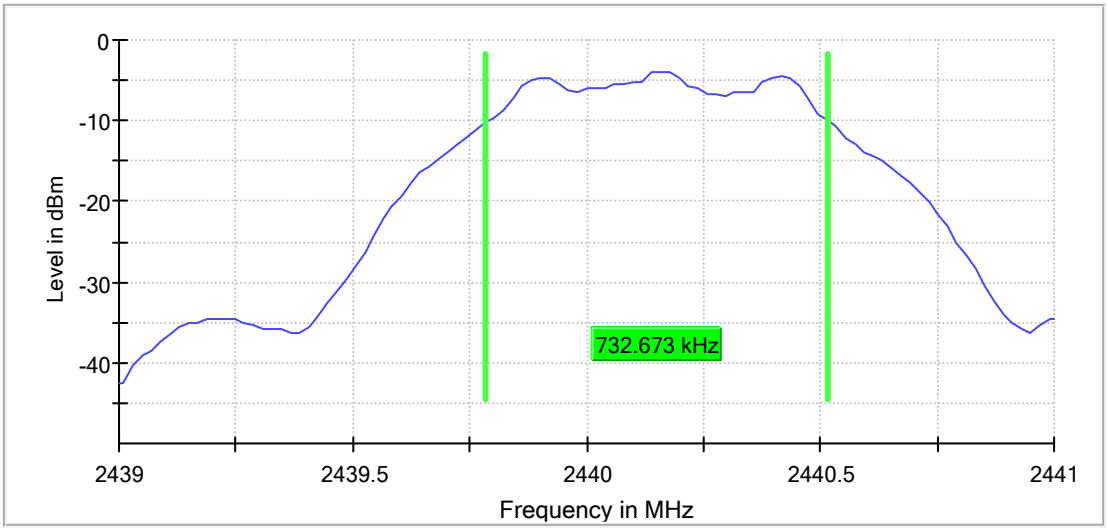
6 dB Bandwidth



Middle Channel

RBW=100KHz, VBW=300KHz

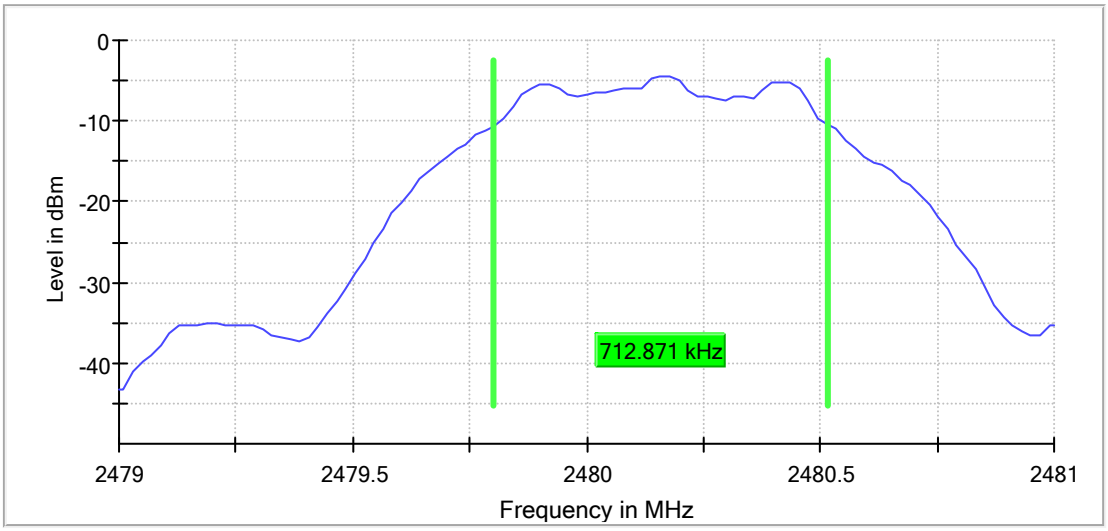
6 dB Bandwidth



High Channel

RBW=100KHz, VBW=300KHz

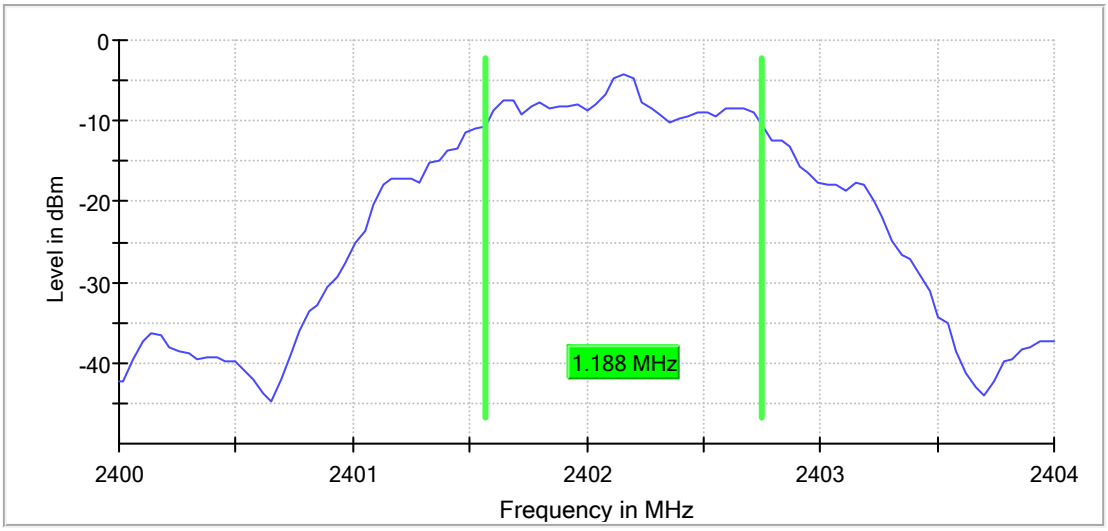
6 dB Bandwidth



BLE, 2Mbps
Low Channel

RBW=100KHz, VBW=300KHz

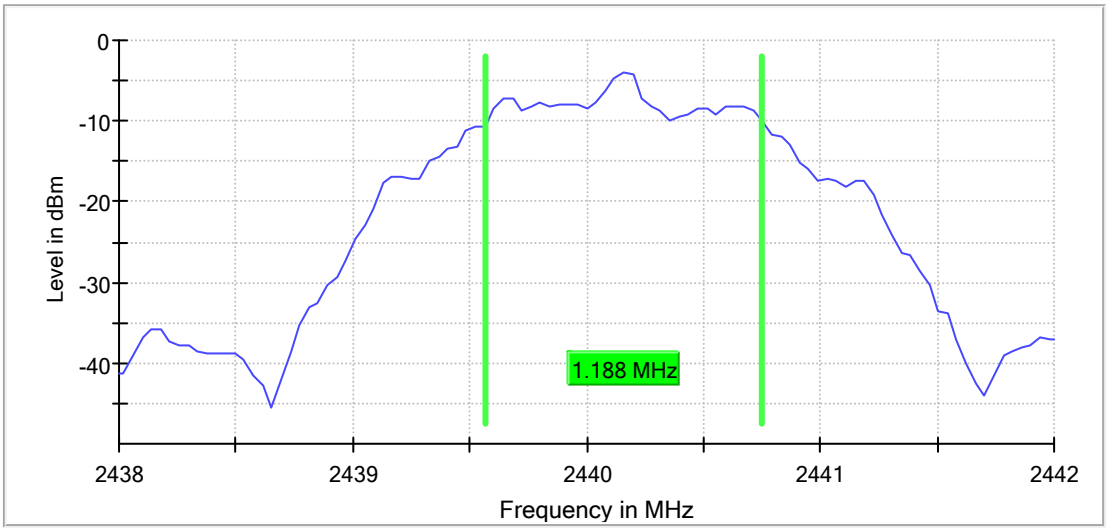
6 dB Bandwidth



Middle Channel

RBW=100KHz, VBW=300KHz

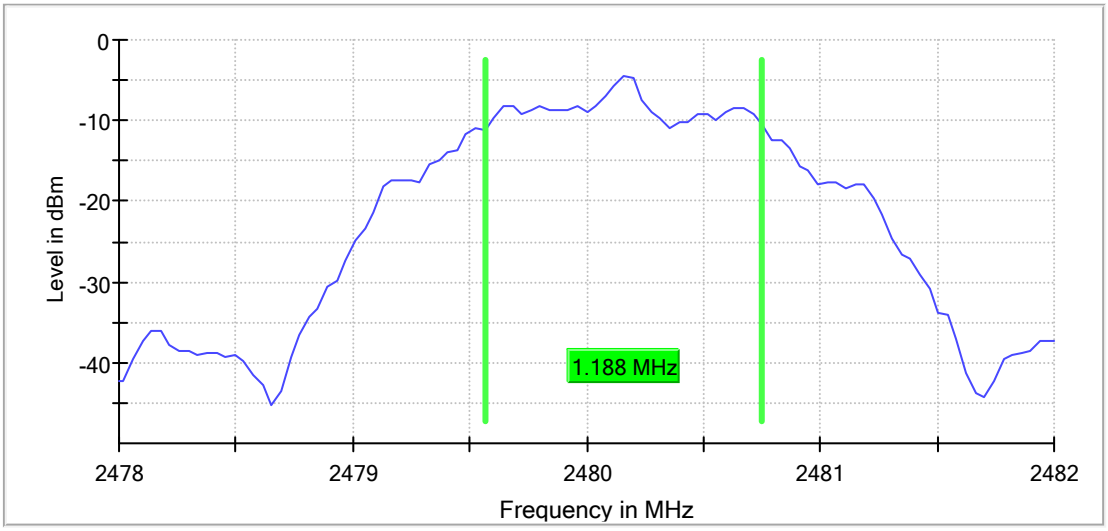
6 dB Bandwidth



High Channel

RBW=100KHz, VBW=300KHz

6 dB Bandwidth

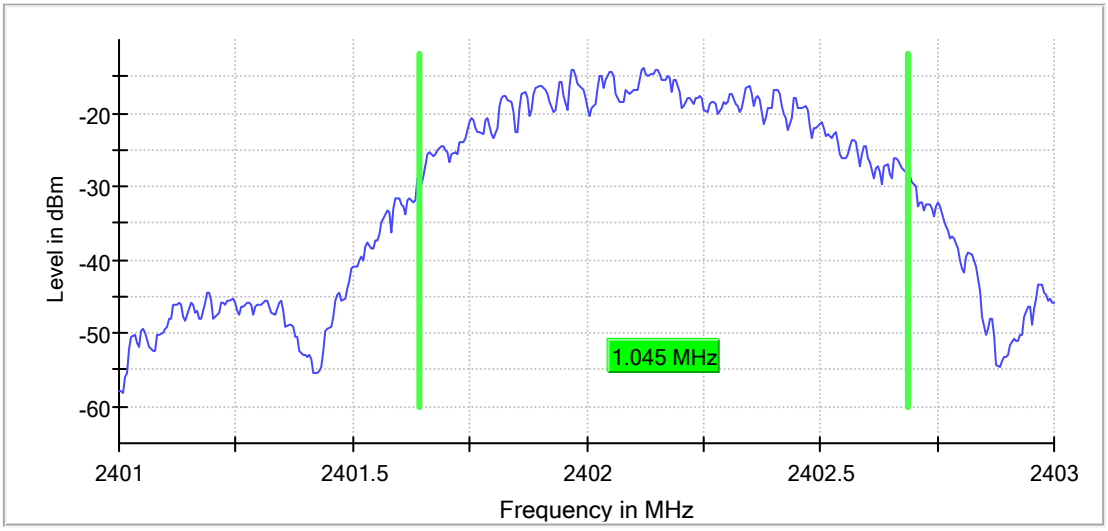


Appendix B.2: 99% Bandwidth

BLE, 1Mbps
Low Channel

RBW=30KHz, VBW=100KHz

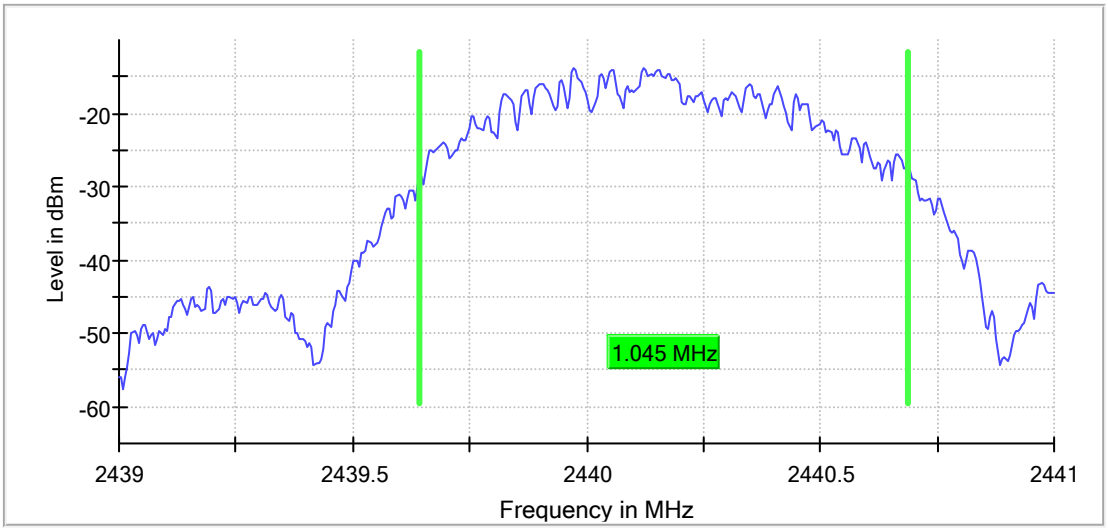
99 % Bandwidth



Middle Channel

RBW=30KHz, VBW=100KHz

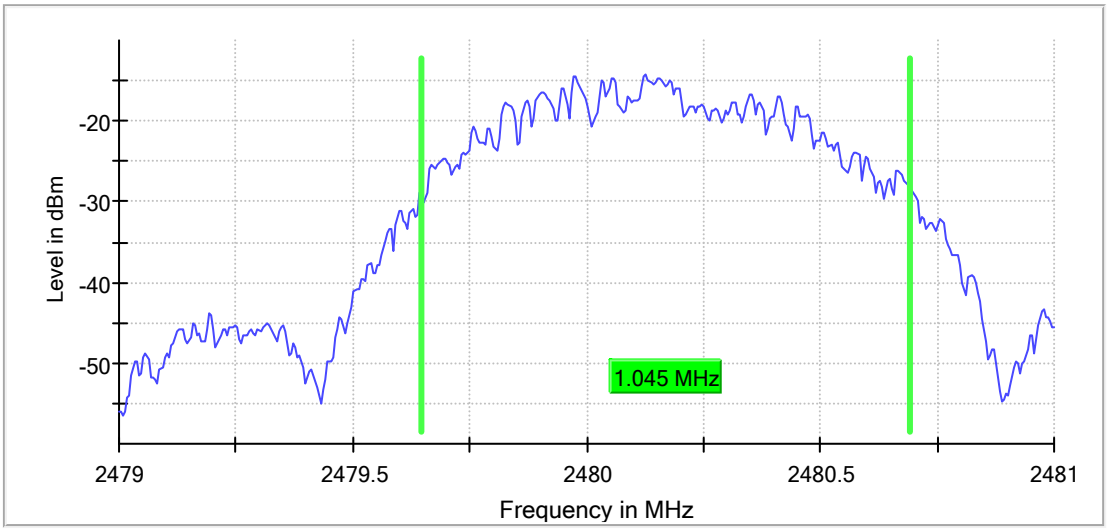
99 % Bandwidth



High Channel

RBW=30KHz, VBW=100KHz

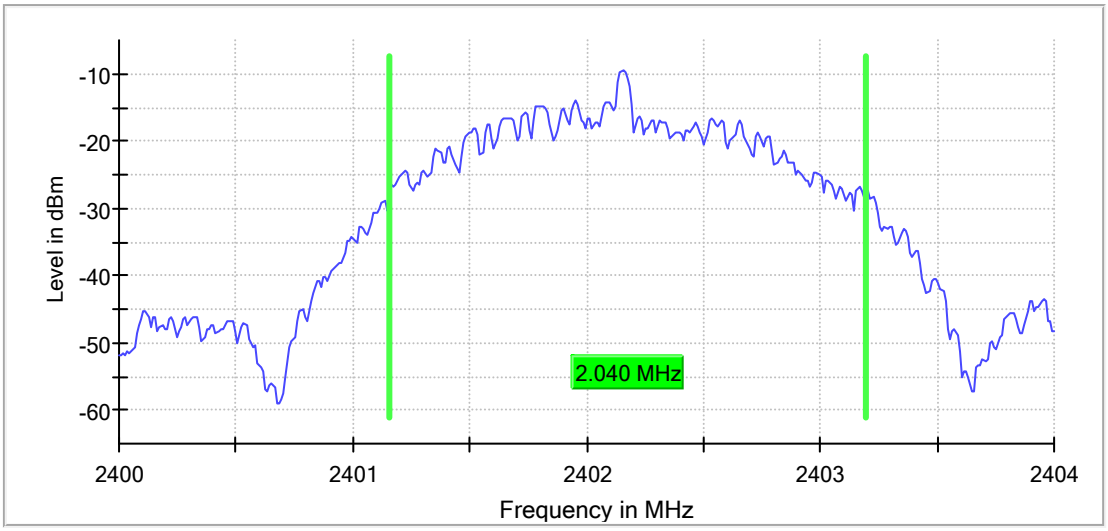
99 % Bandwidth



BLE, 2Mbps
Low Channel

RBW=30KHz, VBW=100KHz

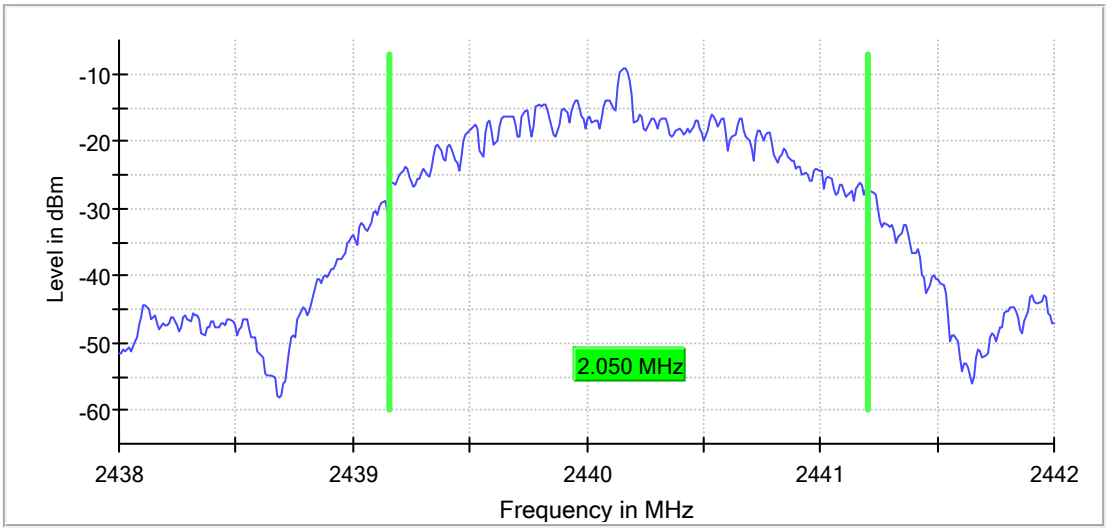
99 % Bandwidth



Middle Channel

RBW=30KHz, VBW=100KHz

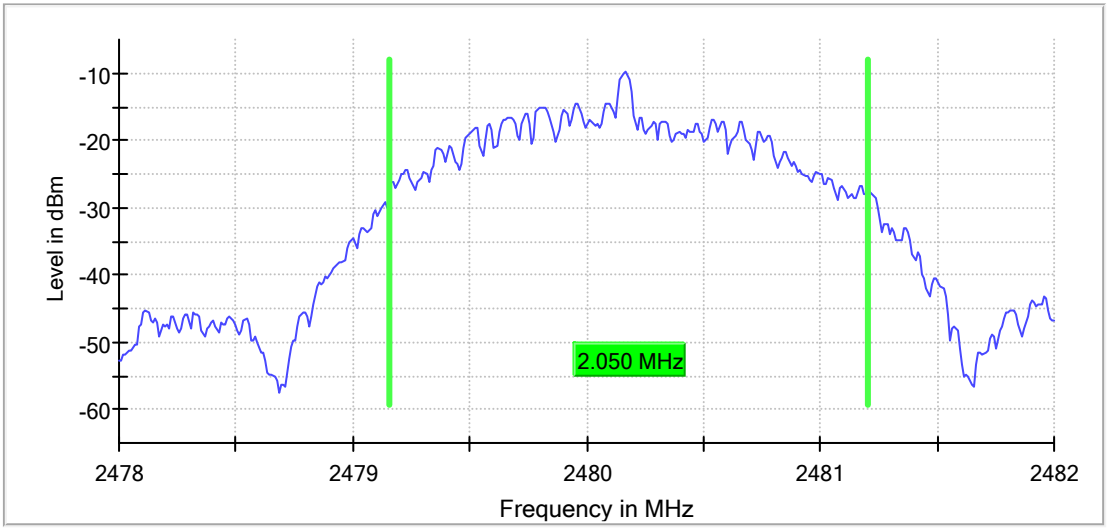
99 % Bandwidth



High Channel

RBW=30KHz, VBW=100KHz

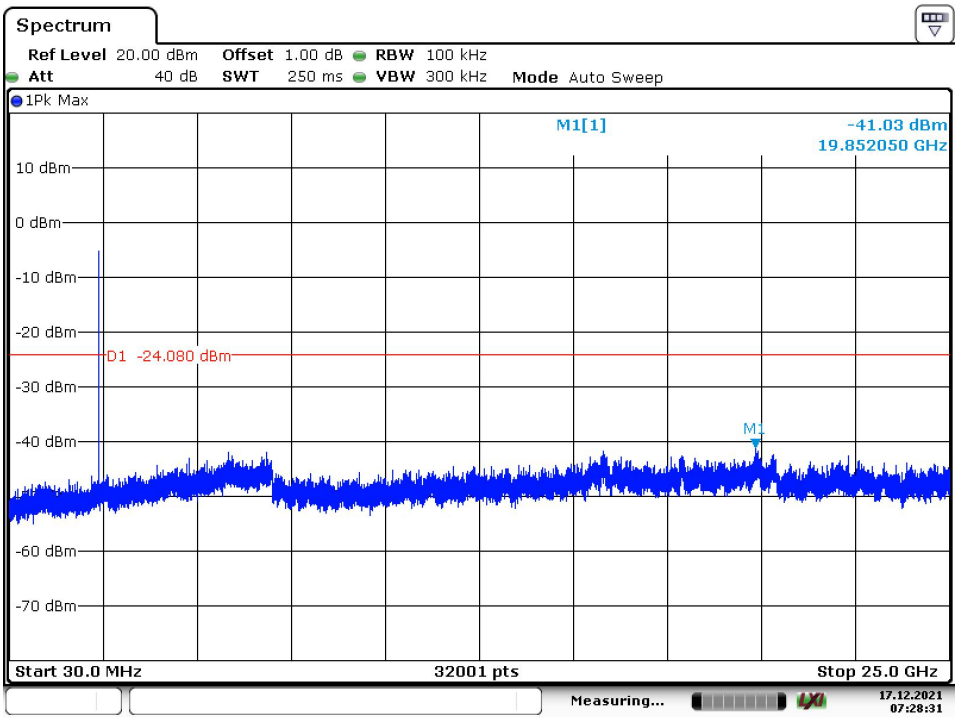
99 % Bandwidth



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

BLE, 1Mbps
Low Channel

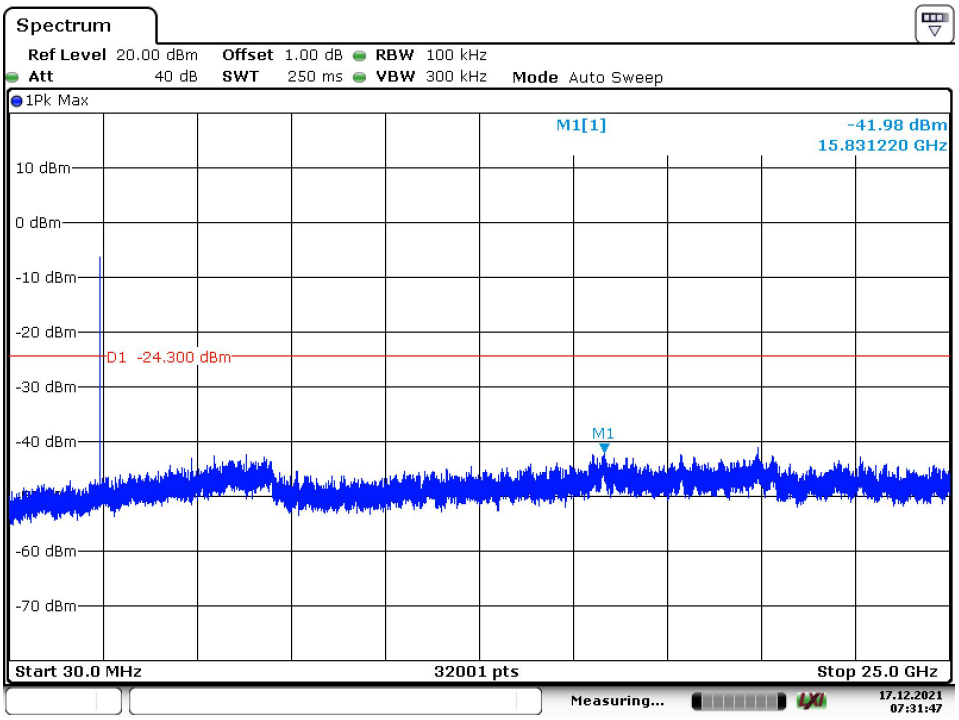
Date: 17.DEC.2021 07:26:27



Date: 17.DEC.2021 07:28:32

Middle Channel

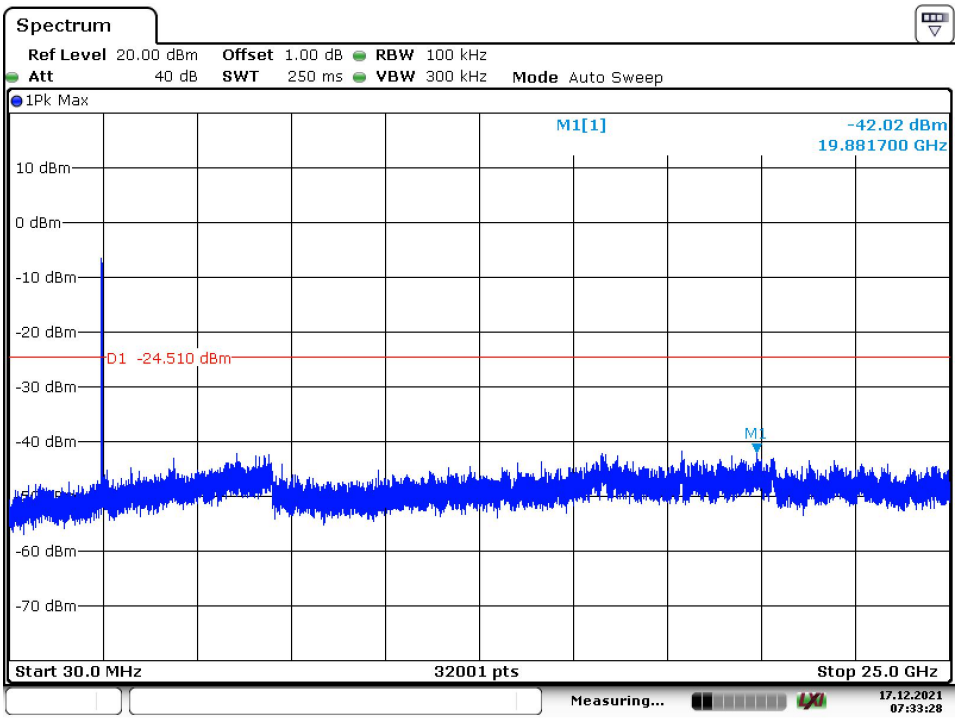
Date: 17.DEC.2021 07:31:22



Date: 17.DEC.2021 07:31:47

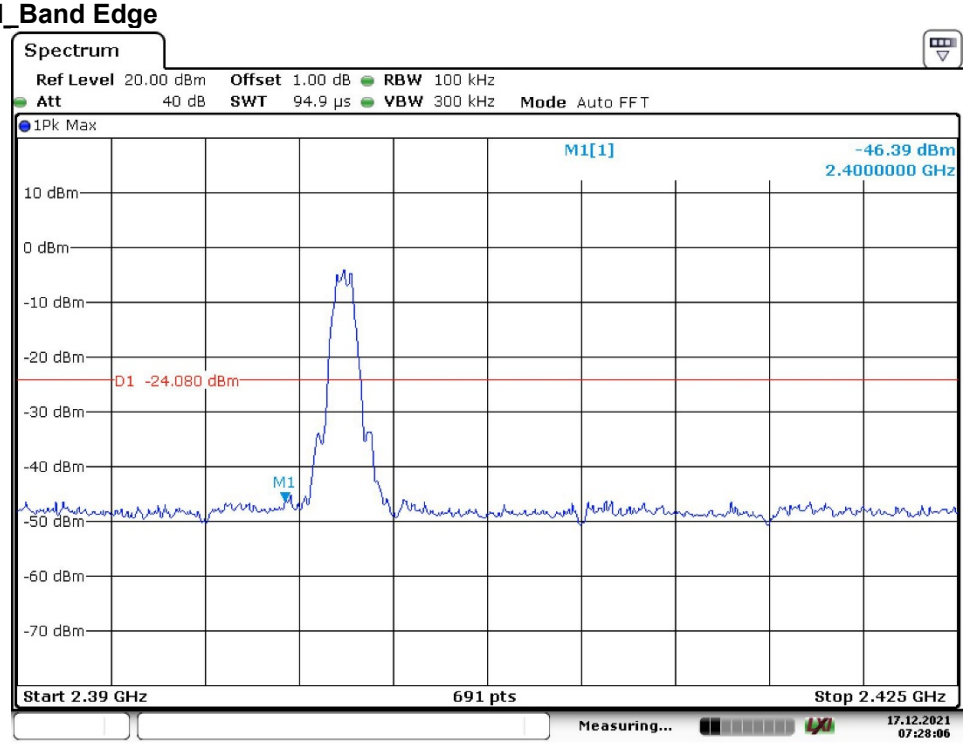
High Channel

Date: 17.DEC.2021 07:32:40



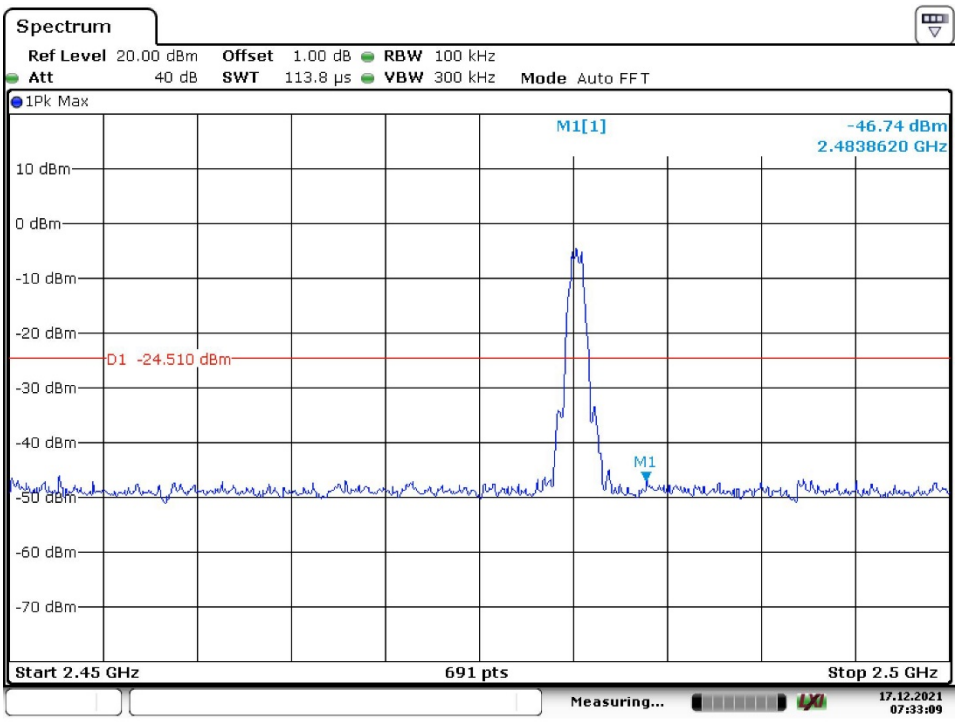
Date: 17.DEC.2021 07:33:28

Low Channel_Band Edge



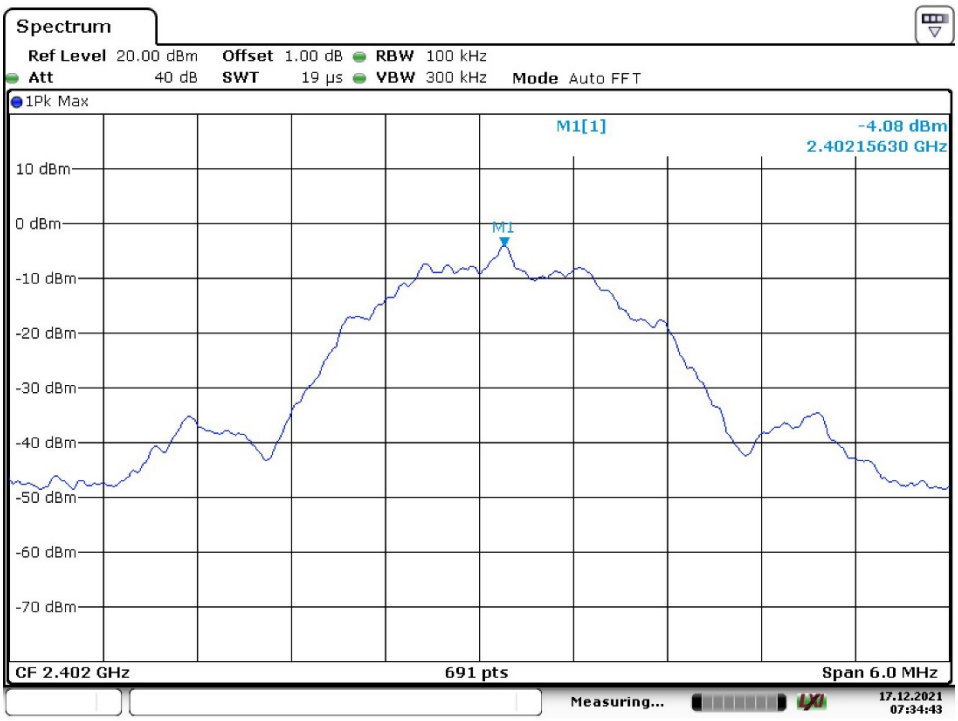
Date: 17.DEC.2021 07:28:07

High Channel_Band Edge



Date: 17.DEC.2021 07:33:08

BLE, 2Mbps
Low Channel



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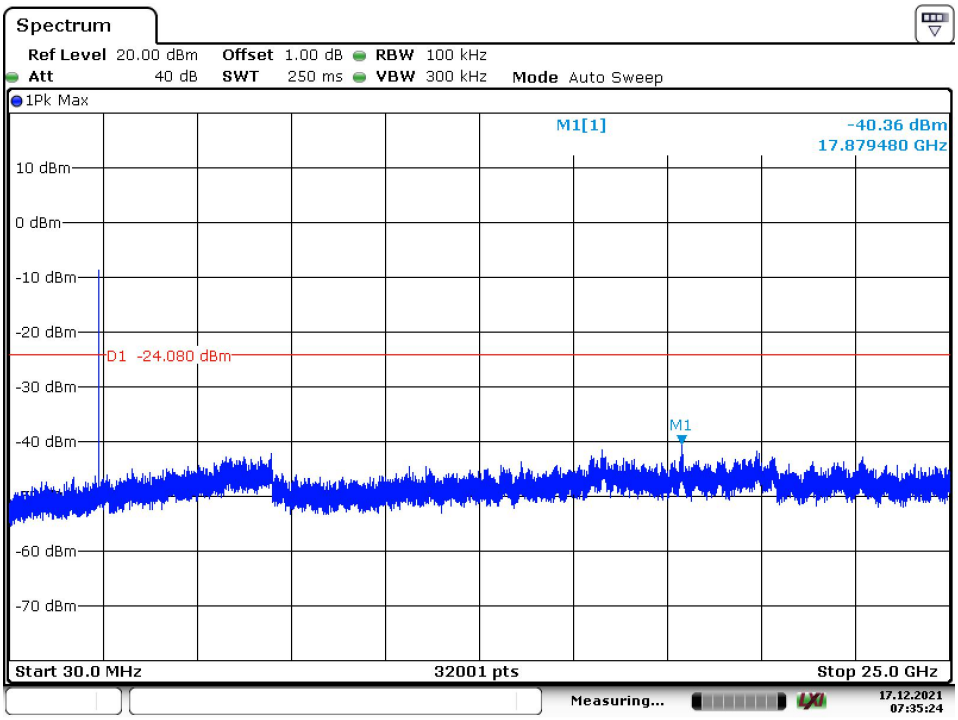
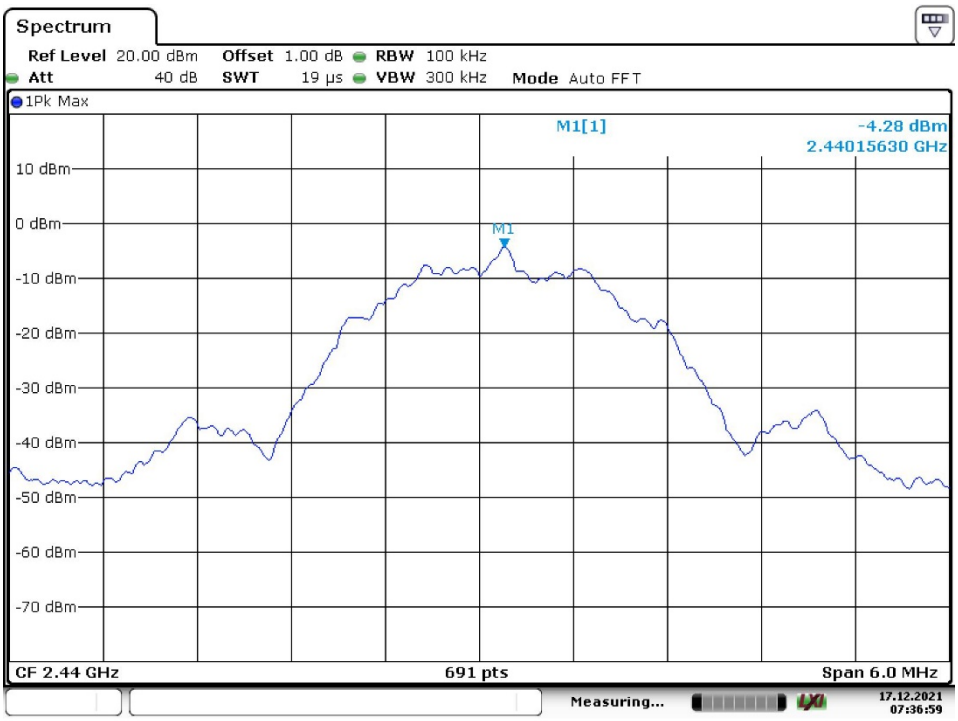


Date: 17.DEC.2021 07:35:24

Middle Channel



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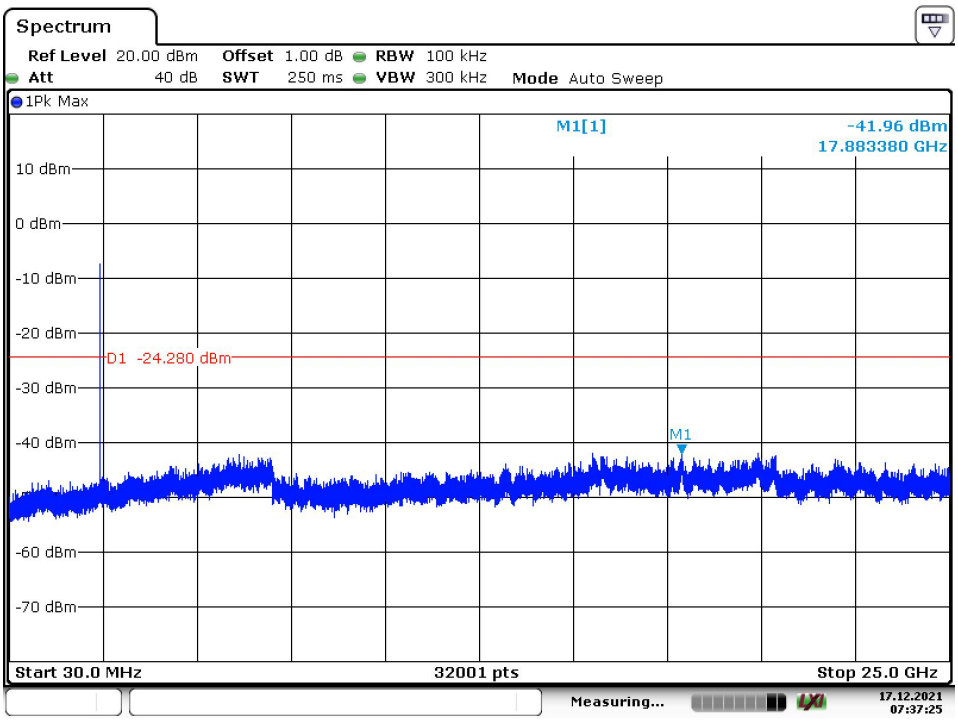
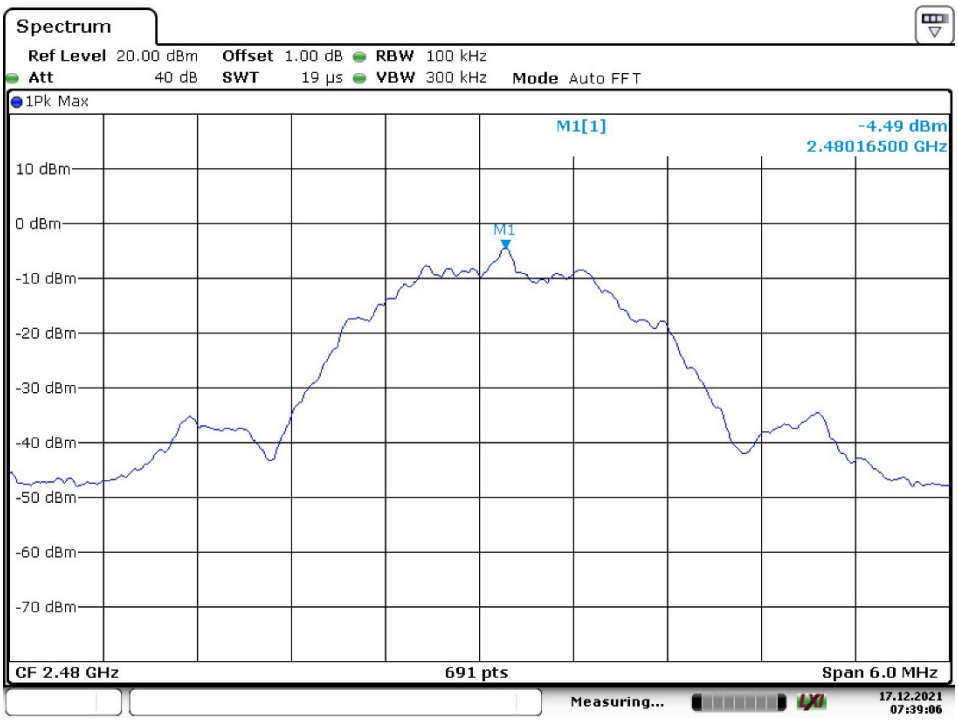


Date: 17.DEC.2021 07:37:26

High Channel



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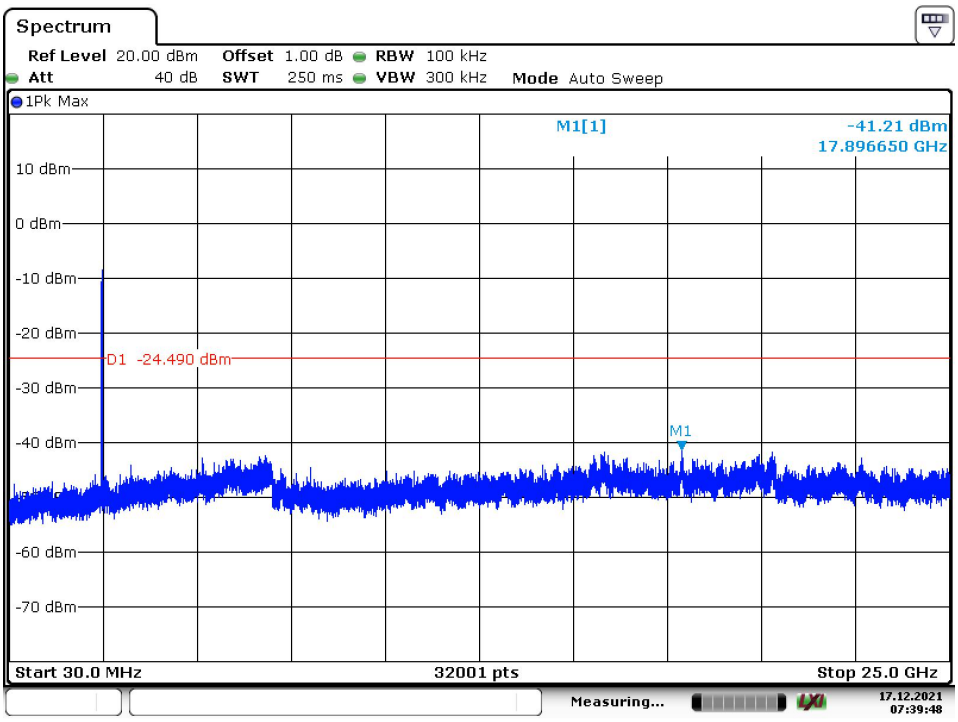
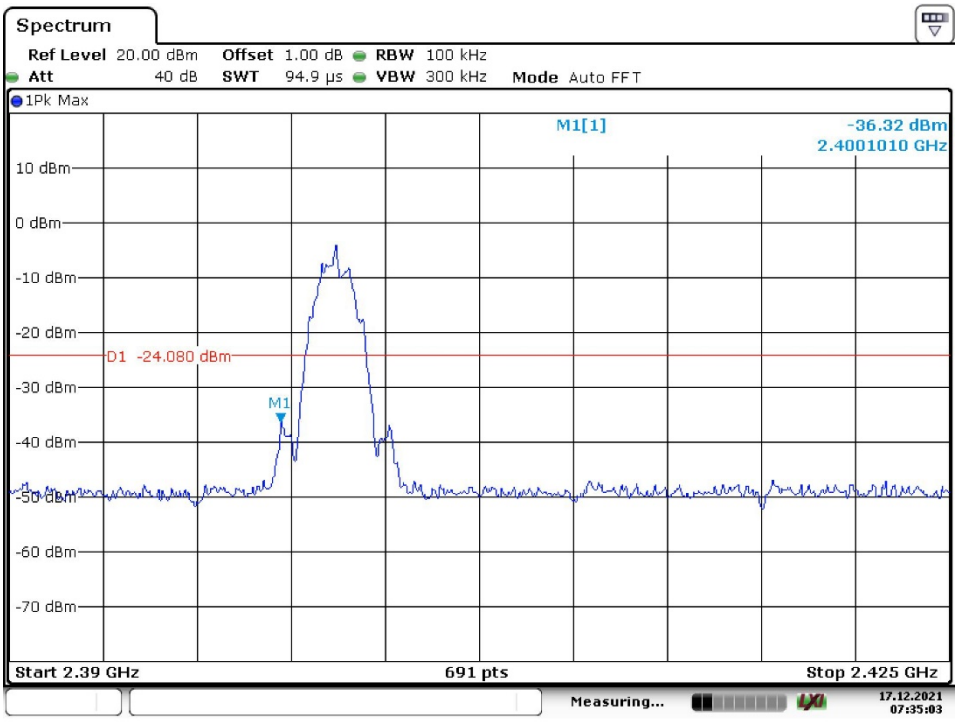


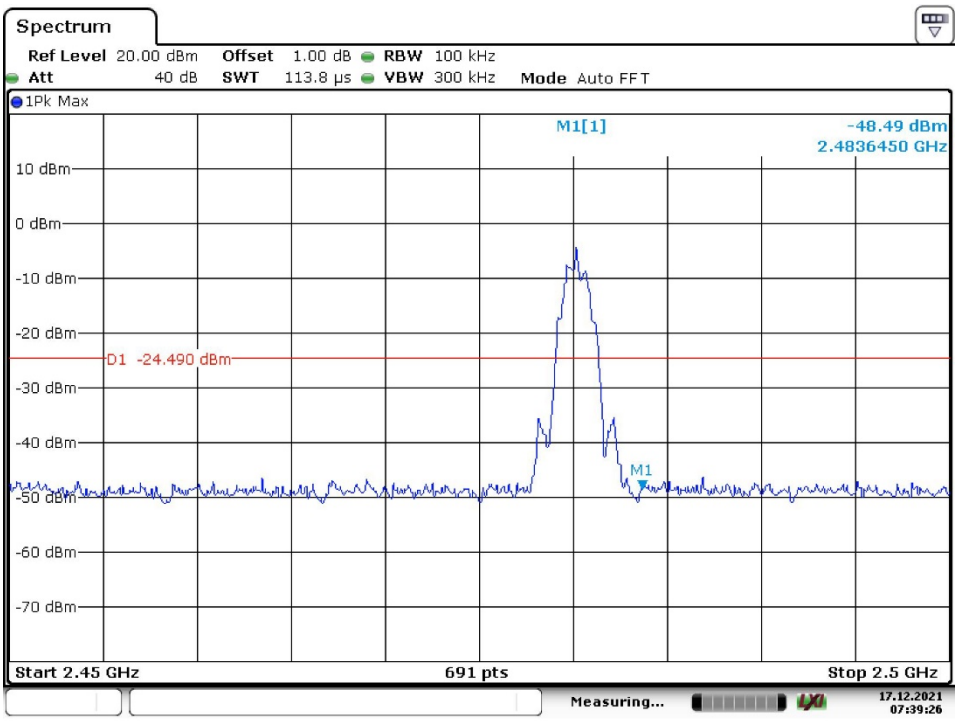
Date: 17.DEC.2021 07:39:48

Low Channel_Band Edge



Date: 17.DEC.2021 07:35:03

High Channel_Band Edge



Date: 17.DEC.2021 07:39:26

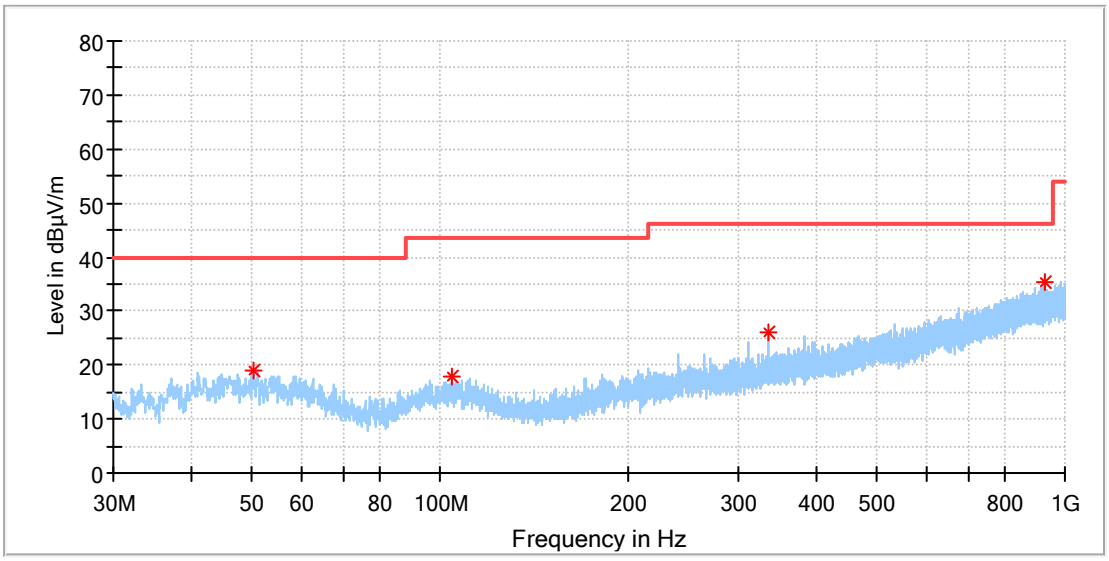
Appendix B.4: Test Results of Radiated Spurious Emissions

Note 1: Testing was carried out within frequency range 9 kHz to the tenth harmonics. The measurement results below 30MHz and above 18GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

BLE, 1Mbps

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_Low channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

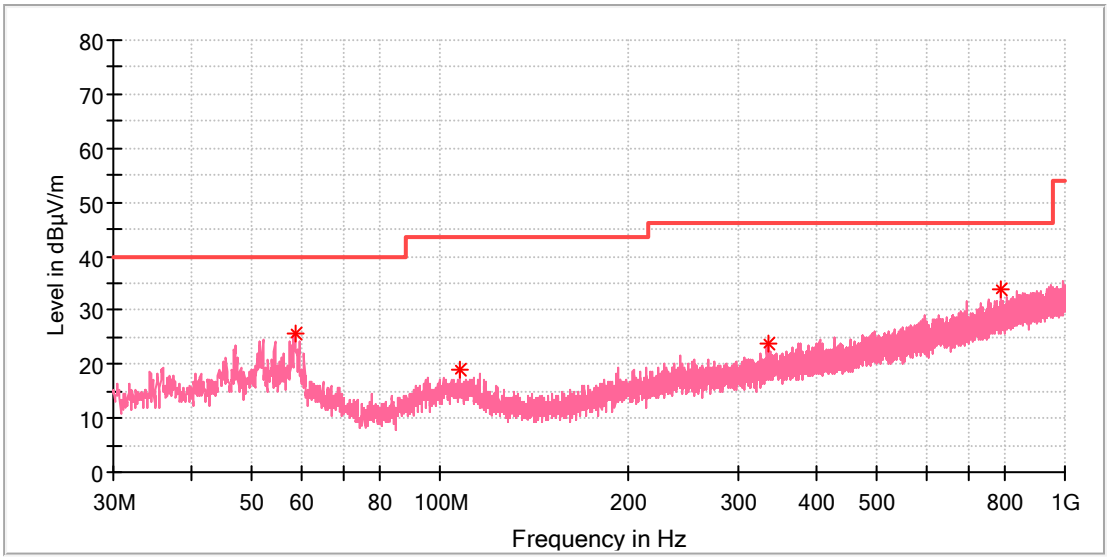


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
50.224500	19.12	40.00	20.88	100.0	H	105.0	-18.3
104.544500	17.70	43.50	25.80	100.0	H	32.0	-18.8
336.035000	26.10	46.00	19.90	100.0	H	262.0	-15.2
931.615000	35.19	46.00	10.81	100.0	H	0.0	-4.7

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_Low channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

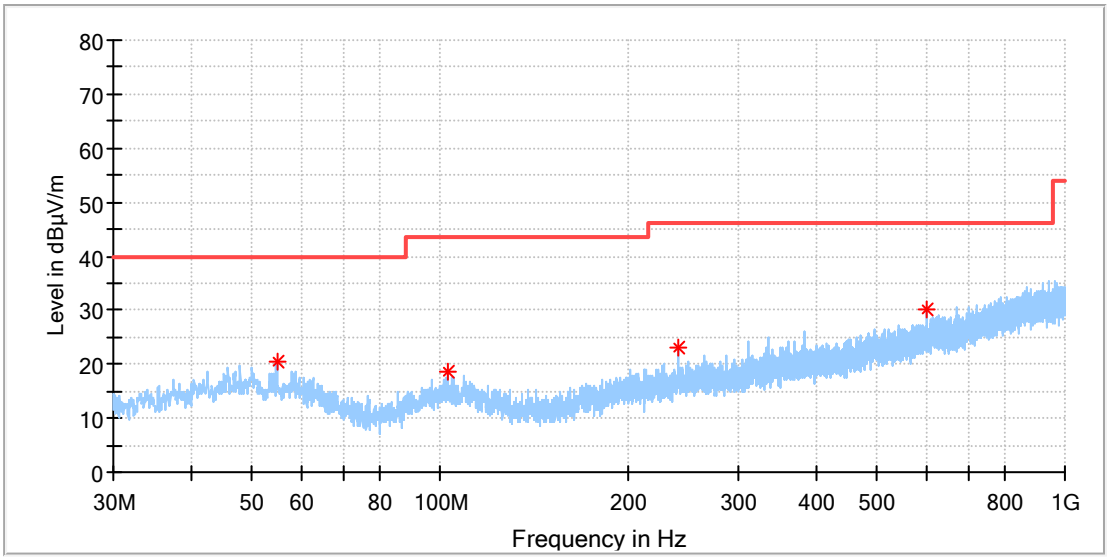


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
58.518000	25.85	40.00	14.15	100.0	V	18.0	-18.8
107.697000	19.14	43.50	24.36	100.0	V	34.0	-18.9
336.277500	23.70	46.00	22.30	100.0	V	214.0	-15.2
790.528500	33.72	46.00	12.28	100.0	V	232.0	-6.5

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_High channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

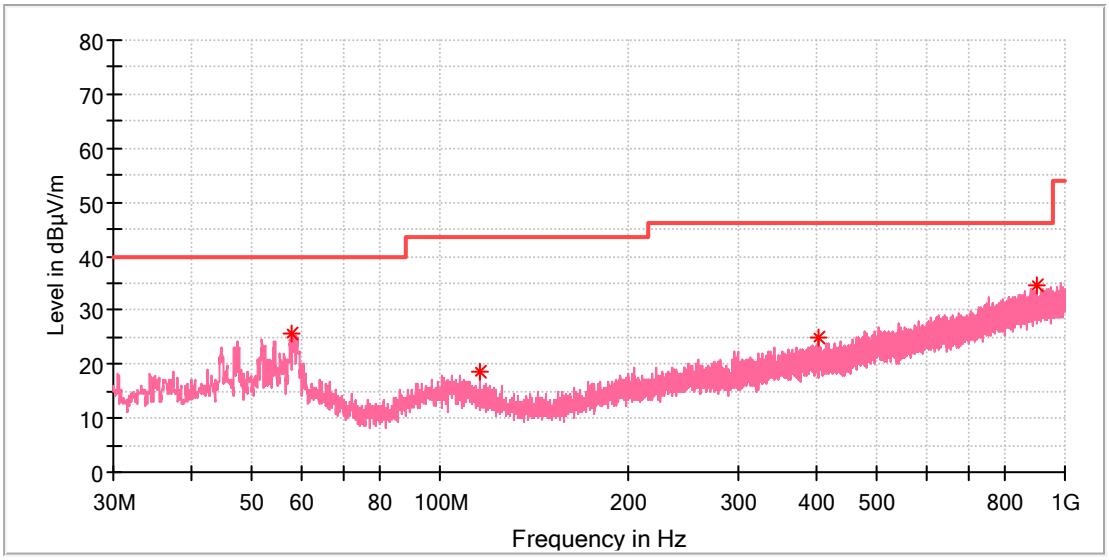


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
54.783500	20.58	40.00	19.42	100.0	H	205.0	-18.4
102.944000	18.51	43.50	24.99	100.0	H	20.0	-18.8
240.005000	22.95	46.00	23.05	100.0	H	273.0	-17.7
600.651000	30.32	46.00	15.68	100.0	H	227.0	-9.8

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_High channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

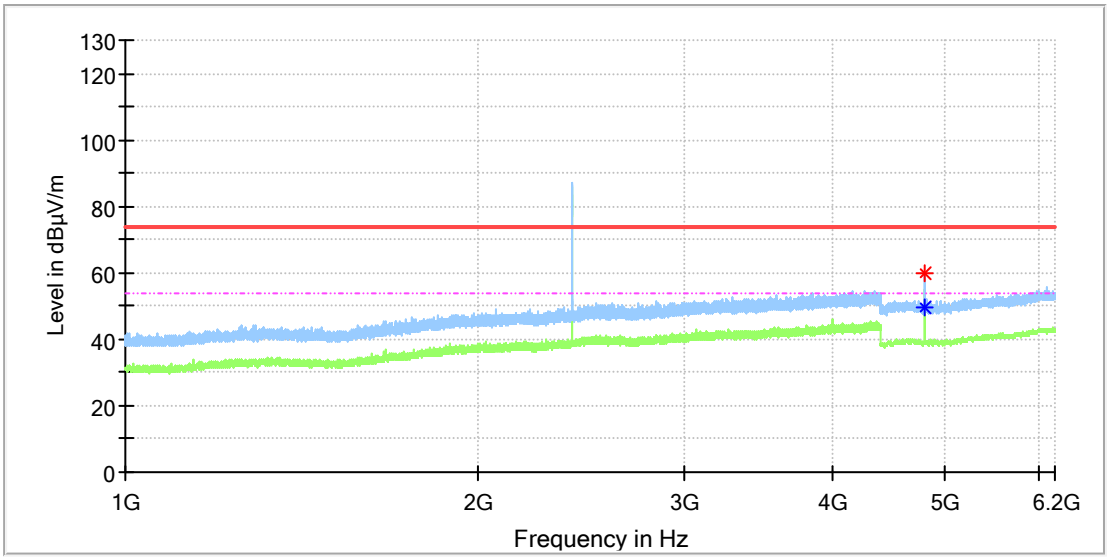


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
57.984500	25.75	40.00	14.25	100.0	V	241.0	-18.8
115.602500	18.68	43.50	24.82	100.0	V	86.0	-19.9
402.819500	24.85	46.00	21.15	100.0	V	22.0	-13.6
902.175500	34.74	46.00	11.26	100.0	V	3.0	-5.0

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_Low channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

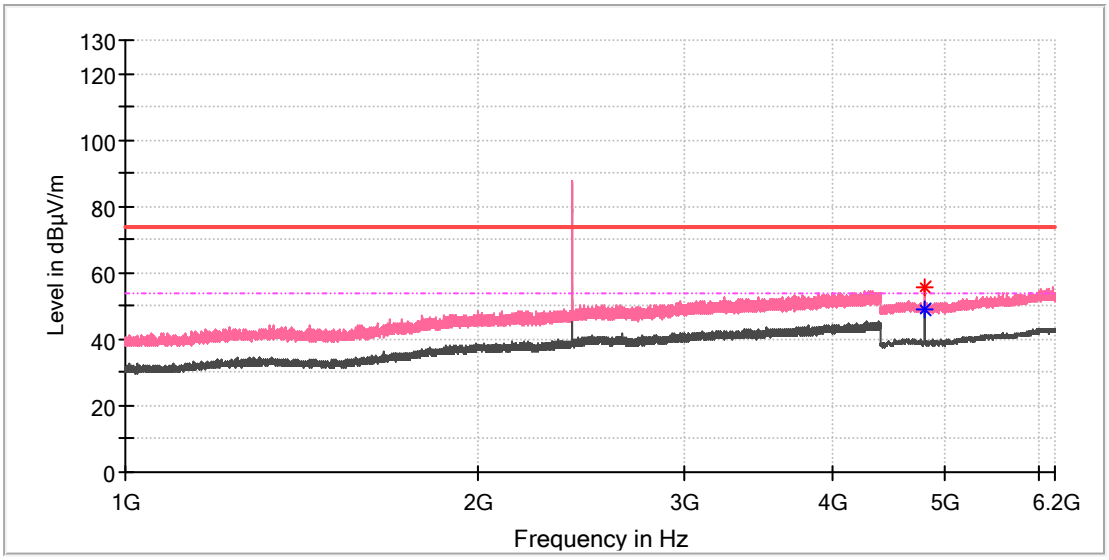


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.000000	59.72	---	74.00	14.28	100.0	H	65.0	11.8
4805.000000	---	49.30	54.00	4.70	100.0	H	57.0	11.8

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_Low channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

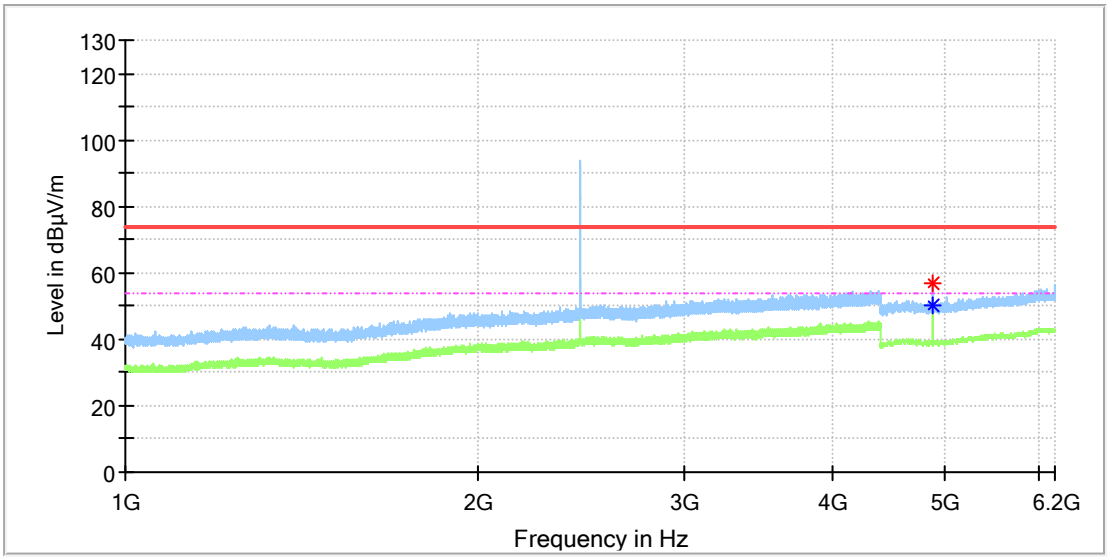


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.000000	55.58	---	74.00	18.42	100.0	V	155.0	11.8
4804.000000	---	48.76	54.00	5.24	100.0	V	155.0	11.8

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_Mid channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

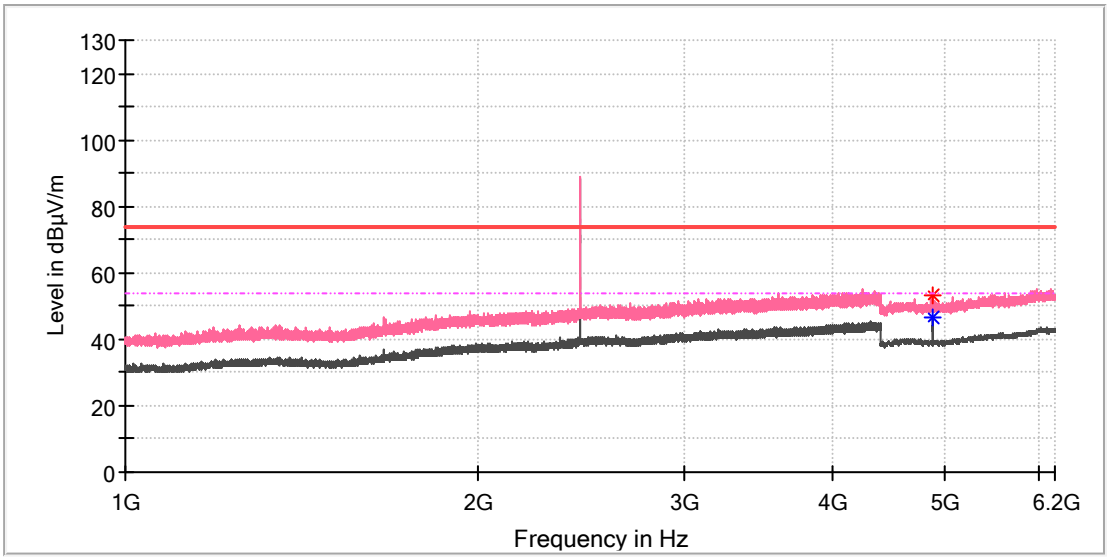


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4880.000000	56.66	---	74.00	17.34	100.0	H	128.0	11.8
4880.500000	---	50.02	54.00	3.98	100.0	H	128.0	11.8

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_Mid channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

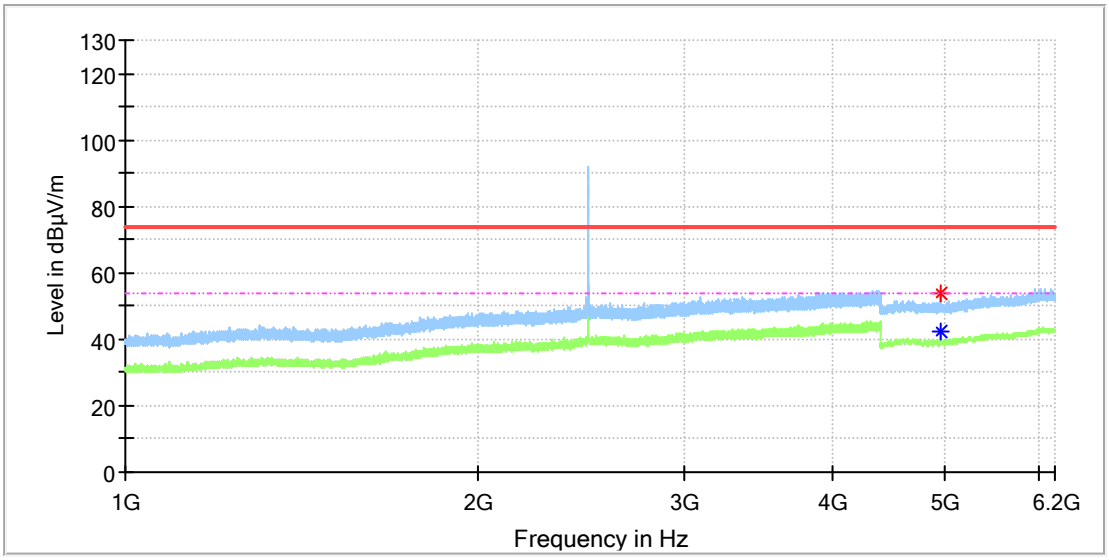


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4879.500000	53.14	---	74.00	20.86	100.0	V	76.0	11.8
4880.000000	---	46.53	54.00	7.47	100.0	V	67.0	11.8

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_High channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

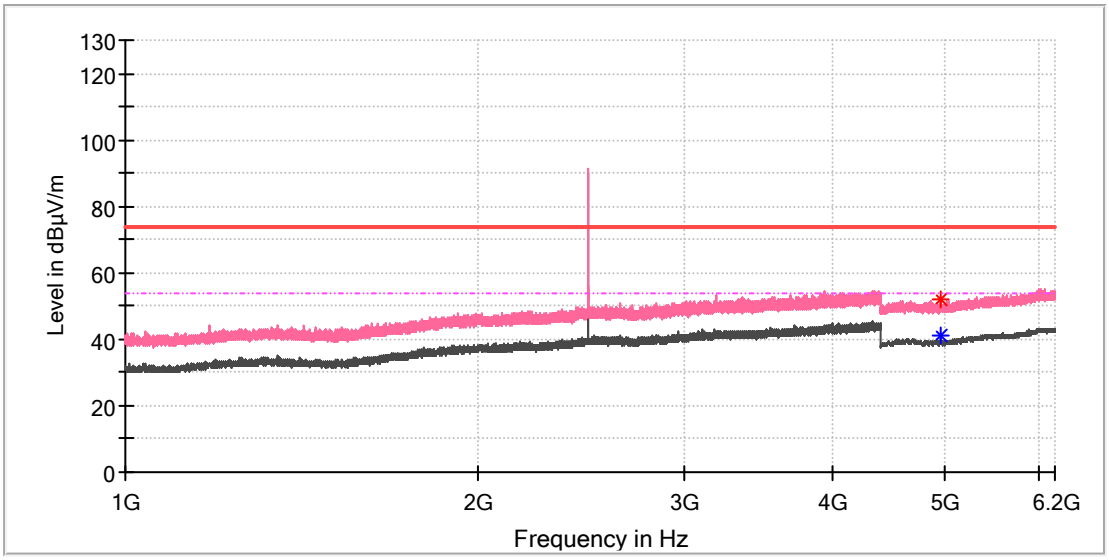


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.500000	53.81	---	74.00	20.19	100.0	H	124.0	11.8
4960.500000	---	42.15	54.00	11.85	100.0	H	124.0	11.8

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_High channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

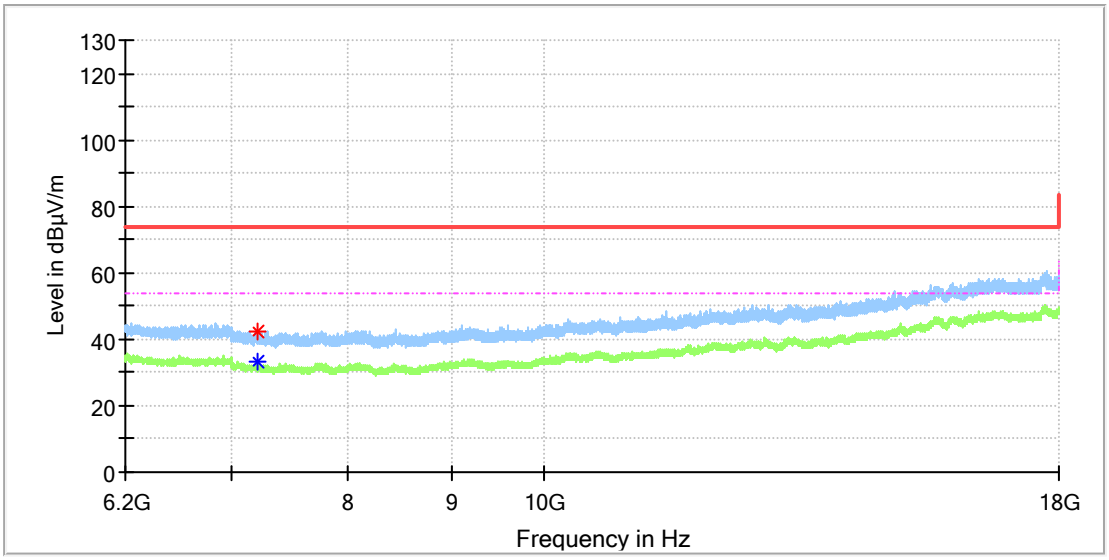


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.000000	51.85	---	74.00	22.15	100.0	V	196.0	11.8
4960.500000	---	41.40	54.00	12.60	100.0	V	196.0	11.8

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_Low channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

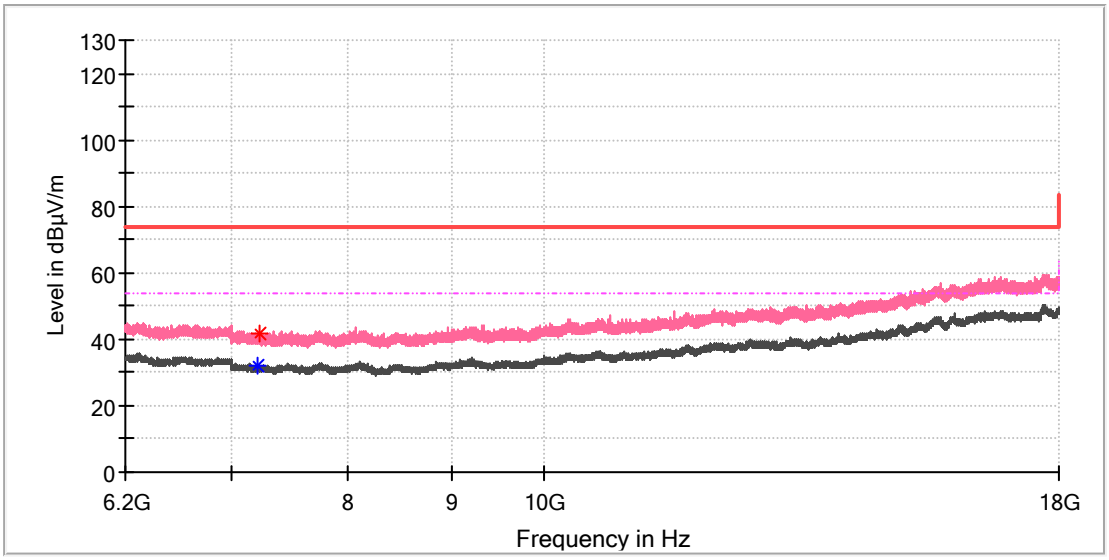


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7204.966667	42.16	---	74.00	31.84	100.0	H	0.0	8.8
7205.950000	---	32.99	54.00	21.01	100.0	H	203.0	8.8

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_Low channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

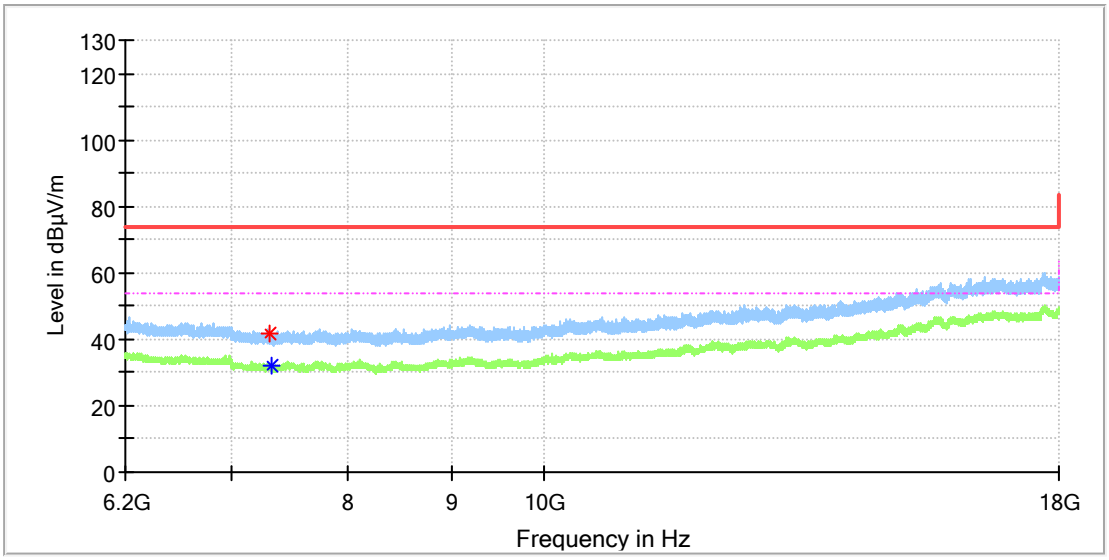


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7203.000000	---	32.08	54.00	21.92	100.0	V	68.0	8.8
7218.733333	41.68	---	74.00	32.32	100.0	V	149.0	8.7

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_Mid channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

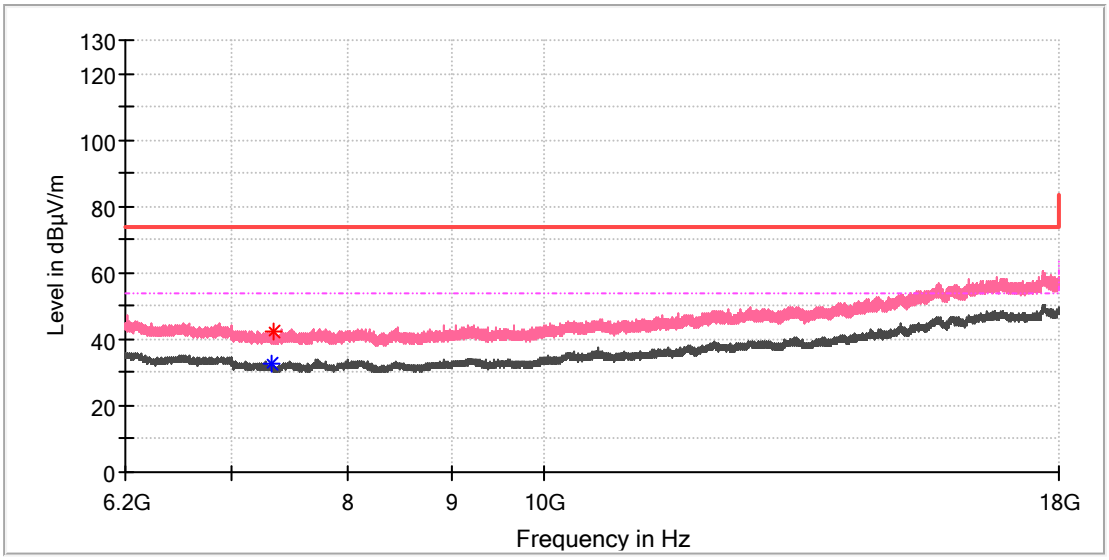


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7306.250000	42.00	---	74.00	32.00	100.0	H	32.0	8.3
7319.033333	---	32.31	54.00	21.69	100.0	H	74.0	8.2

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_Mid channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

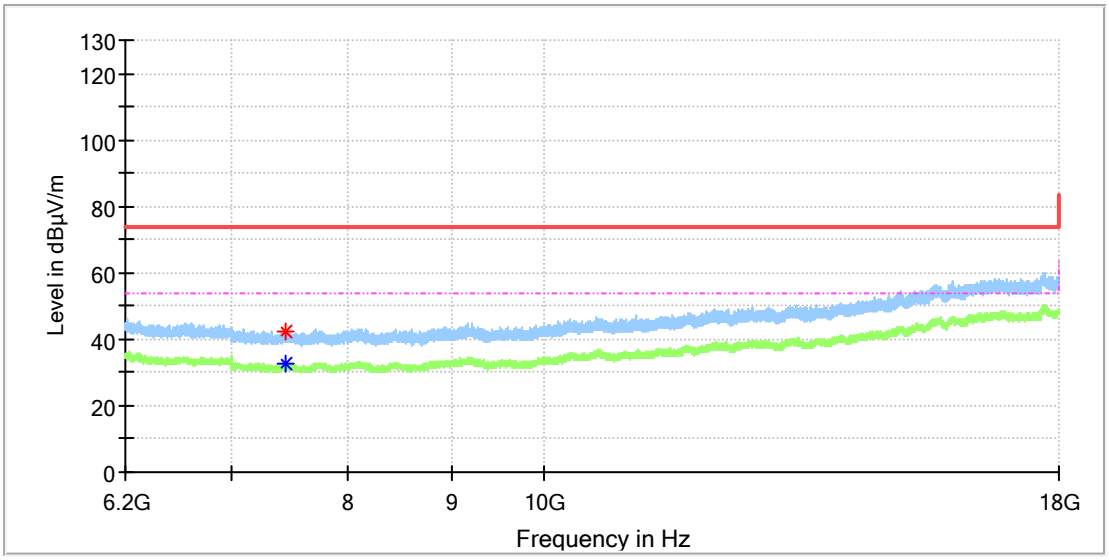


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7319.525000	---	32.71	54.00	21.29	100.0	V	313.0	8.2
7335.258333	42.31	---	74.00	31.69	100.0	V	186.0	8.1

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_High channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

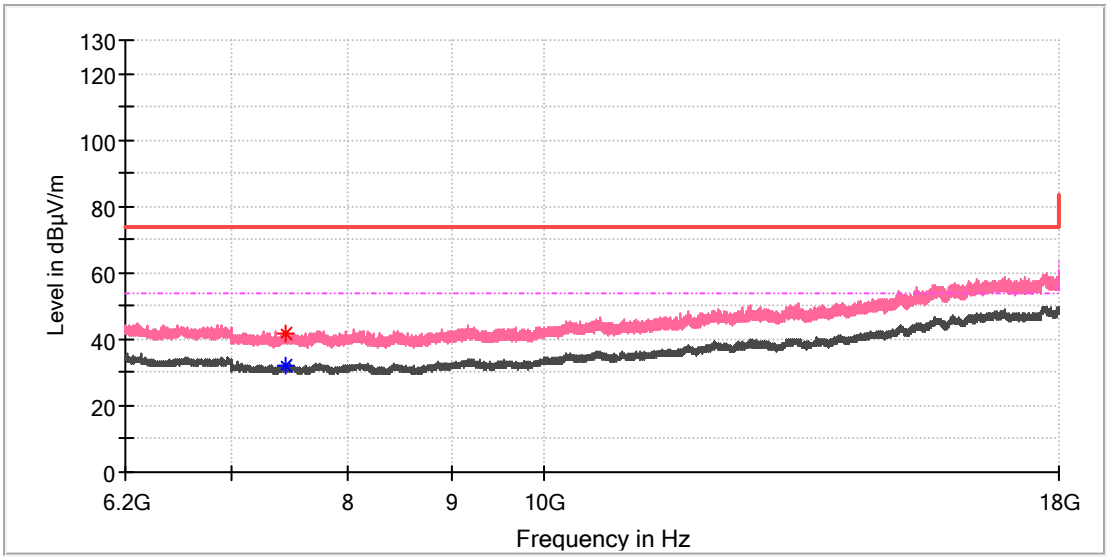


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7439.491667	---	32.68	54.00	21.32	100.0	H	0.0	8.4
7443.425000	42.54	---	74.00	31.46	100.0	H	310.0	8.5

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_High channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

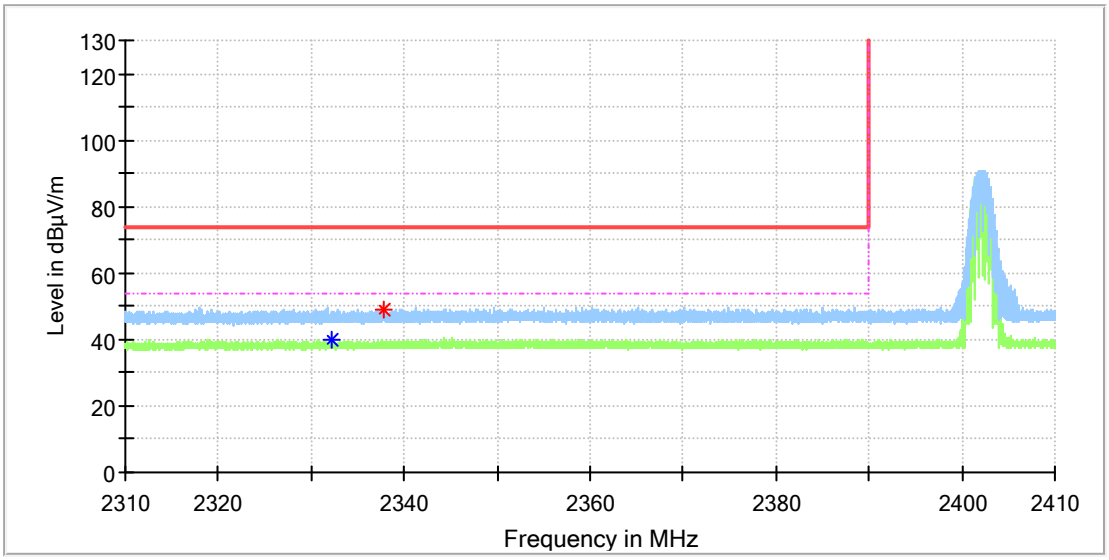
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7440.475000	---	32.30	54.00	21.70	100.0	V	244.0	8.4
7447.358333	41.98	---	74.00	32.02	100.0	V	188.0	8.5

Appendix B.5: Test Results of Radiated Emissions in Restricted Bands

BLE, 1Mbps

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_Low channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

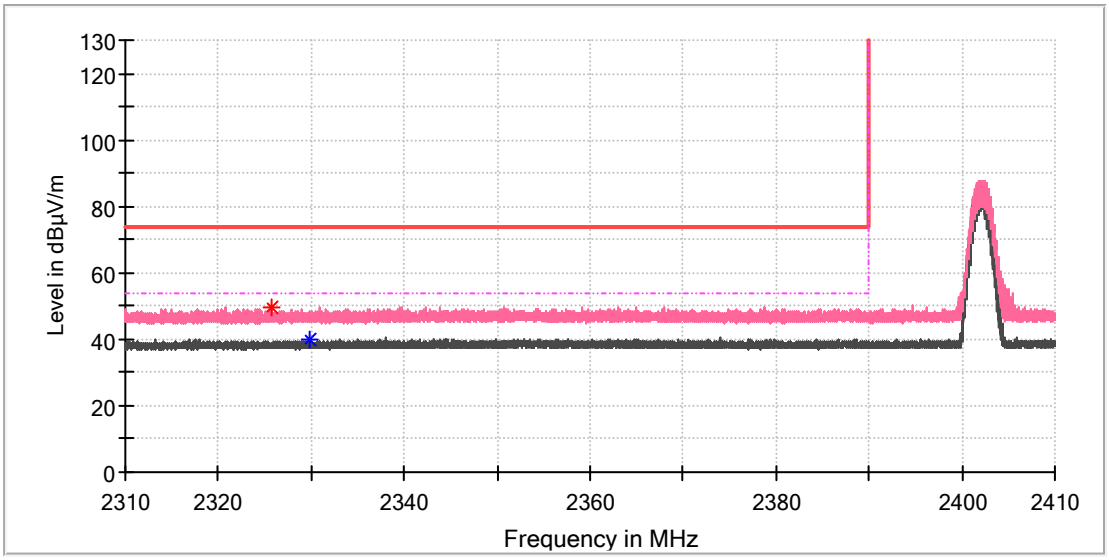


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2332.185000	---	39.63	54.00	14.37	100.0	H	151.0	6.7
2337.795000	48.81	---	74.00	25.19	100.0	H	322.0	6.8

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_Low channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

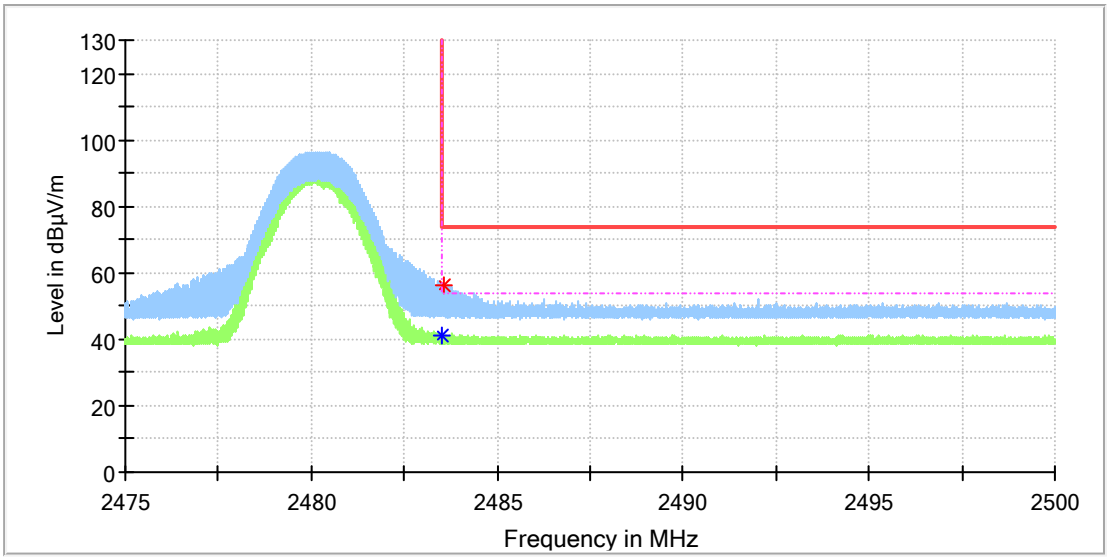


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2325.770000	49.63	---	74.00	24.37	100.0	V	160.0	6.7
2329.850000	---	39.72	54.00	14.28	100.0	V	206.0	6.7

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_High channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

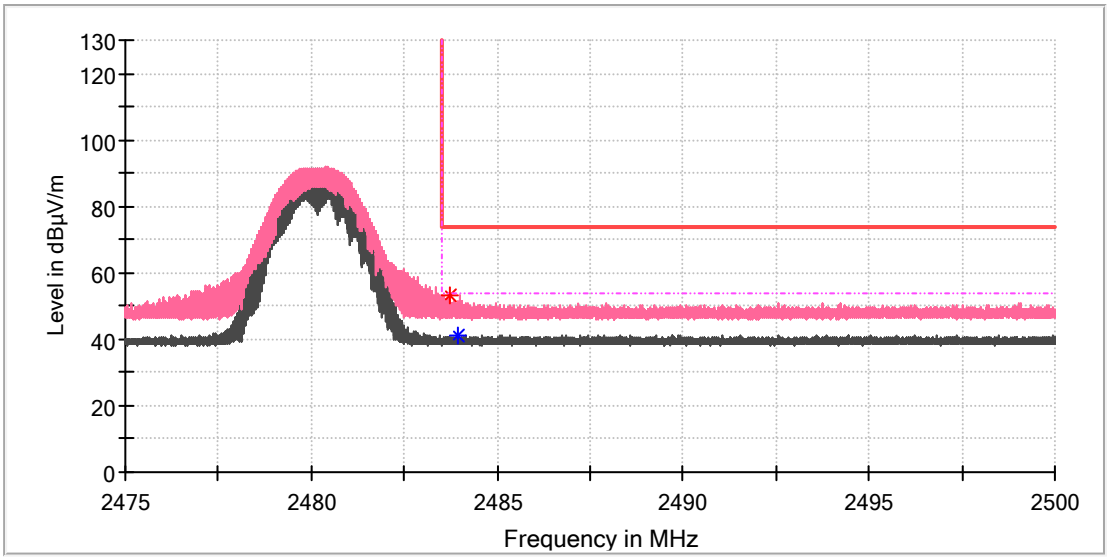


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.513750	---	41.40	54.00	12.60	100.0	H	302.0	7.4
2483.588750	56.20	---	74.00	17.80	100.0	H	292.0	7.4

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test Mode:	BLE_High channel
Order No/Sample No:	168347337/A003180409-002
Test Voltage::	Battery
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



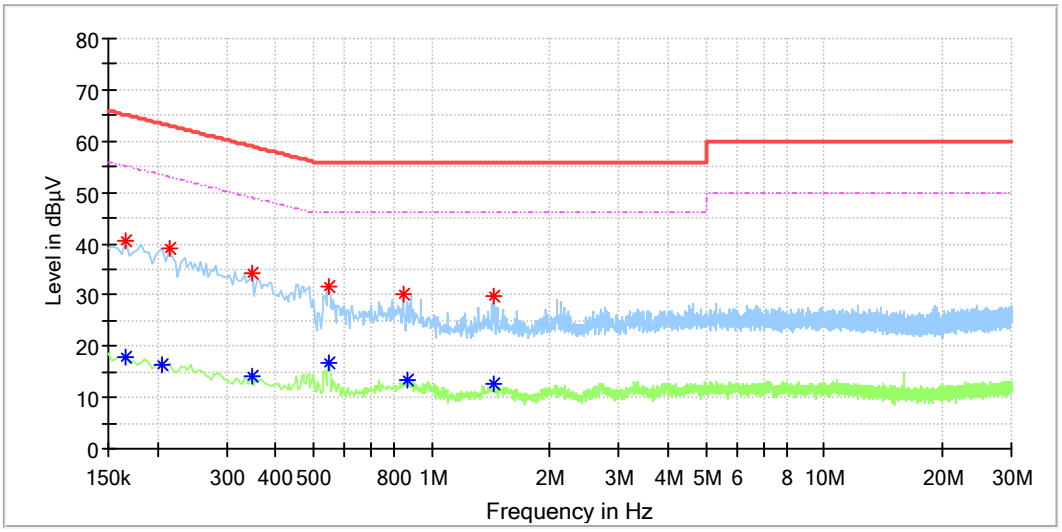
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.747500	53.12	---	74.00	20.88	100.0	V	132.0	7.4
2483.967500	---	41.06	54.00	12.94	100.0	V	293.0	7.4

Appendix B.6: Test Results of Conducted Emissions on AC Mains

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test mode:	Wireless on
Test Voltage:	DC 5V
Test By:	Charlie Zha
Review By:	Gary Chen
Remark:	SR2

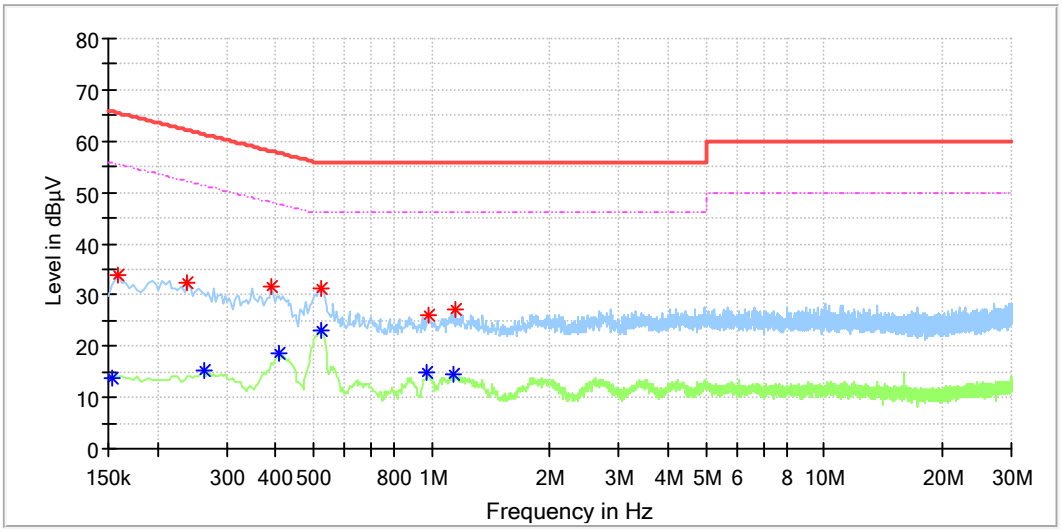


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.166000	---	17.75	55.16	37.41	L1	9.9
0.166000	40.66	---	65.16	24.50	L1	9.9
0.206000	---	16.43	53.37	36.94	L1	9.9
0.214000	39.01	---	63.05	24.04	L1	9.9
0.350000	---	14.12	48.96	34.84	L1	9.9
0.350000	34.12	---	58.96	24.85	L1	9.9
0.546000	---	16.93	46.00	29.07	L1	10.0
0.546000	31.58	---	56.00	24.42	L1	10.0
0.846000	29.99	---	56.00	26.01	L1	10.0
0.866000	---	13.45	46.00	32.55	L1	10.0
1.446000	29.90	---	56.00	26.10	L1	10.1
1.446000	---	12.76	46.00	33.24	L1	10.1

EUT Information

EUT Name:	Smart Fitness System
Model:	Gear1
Test mode:	Wireless on
Test Voltage:	DC 5V
Test By:	Charlie Zha
Review By:	Gary Chen
Remark:	SR2



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.154000	---	13.91	55.78	41.87	N	9.8
0.158000	33.73	---	65.57	31.83	N	9.8
0.238000	32.30	---	62.17	29.86	N	9.8
0.262000	---	15.13	51.37	36.24	N	9.8
0.390000	31.45	---	58.06	26.61	N	9.8
0.410000	---	18.48	47.65	29.17	N	9.8
0.522000	31.32	---	56.00	24.68	N	9.8
0.522000	---	23.22	46.00	22.78	N	9.8
0.974000	---	15.02	46.00	30.98	N	9.8
0.982000	26.14	---	56.00	29.86	N	9.8
1.134000	---	14.61	46.00	31.39	N	9.8
1.150000	27.01	---	56.00	28.99	N	9.8