FCC Test Report

Product Name	：	Heart-Rate Smartband
Trade Name	：	Holux
Model No.	：	Impulse 8060
FCC ID.	：	RJI-IMPULSE8060

Applicant	：	HOLUX Technology, Inc
Address	：	No. 1-1, Innovation Road I, Science-Based Industrial Park, Hsinchu, Taiwan, 30076

Date of Receipt	：	Apr. 19, 2018
Issued Date	：	May 11, 2018
Report No.	：	1840215R-RFUSP01V00
Report Version	：	V1.0

Testing Laboratory
3024

Test Report Certification

Issued Date : May 11, 2018
Report No. : 1840215R-RFUSP01V00

Product Name	:	Heart-Rate Smartband
Applicant	:	HOLUX Technology, Inc
Address	:	No. 1-1, Innovation Road I, Science-Based Industrial Park, Hsinchu, Taiwan, 30076
Manufacturer	:	HOLUX Technology, Inc
Model No.	:	Impulse 8060
FCC ID.	:	RJI-IMPULSE8060
EUT Voltage	:	AC 120V/60Hz (Power by Notebook PC)
Testing Voltage	:	AC 120V/60Hz (Power by Notebook PC)
Trade Name	:	Holux
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2017
Laboratory Name	:	Hsin Chu Laboratory
Address	:	No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 310, Taiwan, R.O.C. TEL: +886-3-582-8001 / FAX: +886-3-582-8958
Test Result	:	Complied

Documented By : Carol Tsai

(Carol Tsai / Senior Engineering Adm. Specialist)

Tested By : Ricky Lee

(Ricky Lee / Senior Engineer)

Approved By : Roy Wang

(Roy Wang / Director)

Revision History

Report No.	Version	Description	Issued Date
1840215R-RFUSP01V00	V1.0	Initial issue of report	May 11, 2018

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1. General Information

1.1. EUT Description

Product Name	Heart-Rate Smartband
Trade Name	Holux
Model No.	Impulse 8060
Frequency Range/Channel Number	2402~2480MHz / 40 Channels
Type of Modulation	BLE (GFSK)

Antenna Information	
MFR. / Model No.	Shanghai Hicling Electronic Technology Co,.Ltd / SZDX1841
Antenna Type	PIFA
Antenna Gain	1.7dBi

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00	2402 MHz	Channel 10	2422 MHz	Channel 20	2442 MHz	Channel 30	2462 MHz
Channel 01	2404 MHz	Channel 11	2424 MHz	Channel 21	2444 MHz	Channel 31	2464 MHz
Channel 02	2406 MHz	Channel 12	2426 MHz	Channel 22	2446 MHz	Channel 32	2466 MHz
Channel 03	2408 MHz	Channel 13	2428 MHz	Channel 23	2448 MHz	Channel 33	2468 MHz
Channel 04	2410 MHz	Channel 14	2430 MHz	Channel 24	2450 MHz	Channel 34	2470 MHz
Channel 05	2412 MHz	Channel 15	2432 MHz	Channel 25	2452 MHz	Channel 35	2472 MHz
Channel 06	2414 MHz	Channel 16	2434 MHz	Channel 26	2454 MHz	Channel 36	2474 MHz
Channel 07	2416 MHz	Channel 17	2436 MHz	Channel 27	2456 MHz	Channel 37	2476 MHz
Channel 08	2418 MHz	Channel 18	2438 MHz	Channel 28	2458 MHz	Channel 38	2478 MHz
Channel 09	2420 MHz	Channel 19	2440 MHz	Channel 29	2460 MHz	Channel 39	2480 MHz

Note:

1. This device is a Heart-Rate Smartband support BLE transmitting and receiving function.
2. Regards to the frequency band operation; the lowest、middle and highest frequency of channel were selected to perform the test, and then shown on this report.

1.2. Test Mode

DEKRA has verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Test Mode	Mode 1: Transmit

Test Items	Modulation	Channel	Result
Conducted Emission	GFSK	19	Complies
Peak Power Output	GFSK	00/19/39	Complies
Radiated Emission	GFSK	00/19/39	Complies
RF antenna conducted test	GFSK	00/19/39	Complies
Radiated Emission Band Edge	GFSK	00/19/39	Complies
Occupied Bandwidth & DTS Bandwidth	GFSK	00/19/39	Complies
Power Density	GFSK	00/19/39	Complies

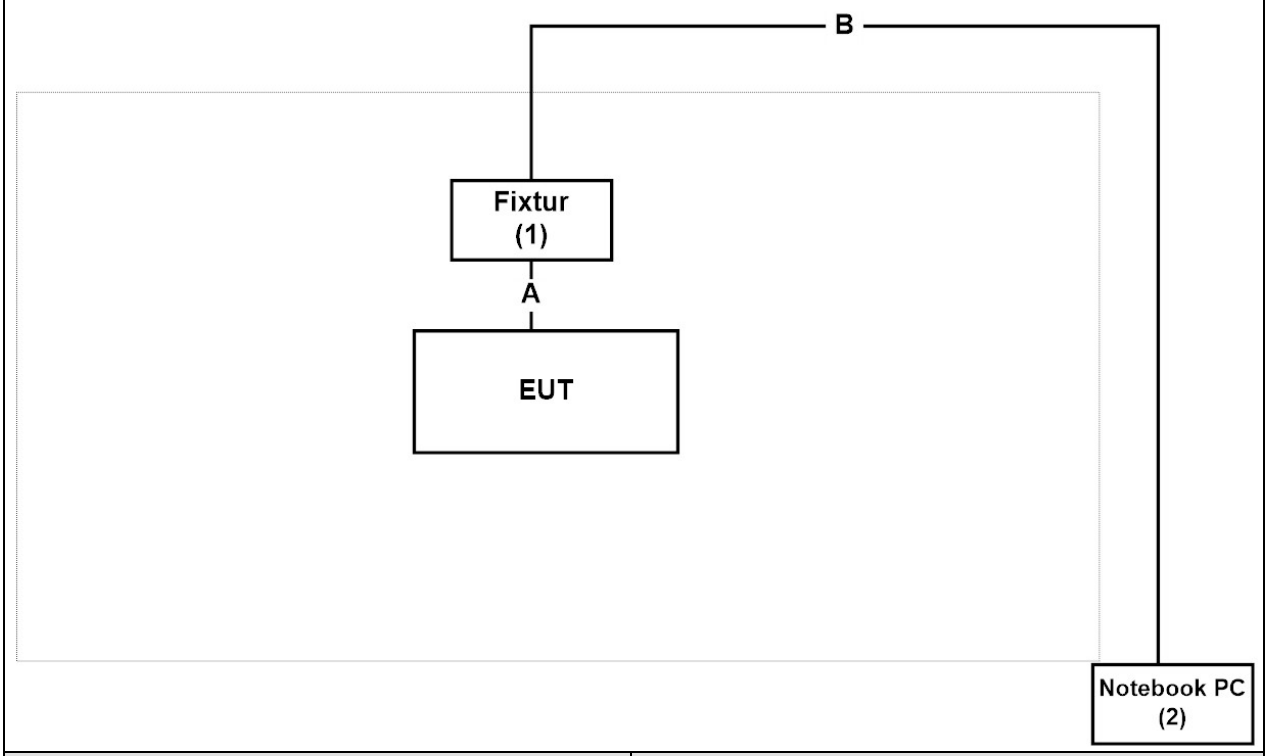
1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Fixtur	HOLUX	N/A	N/A	DoC	--
2	Notebook PC	IBM	Think Pad 570	27L8835	DoC	Non-Shielded, 1.8m, one ferrite core bonded

1.4. Configuration of tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	USB CDD Cable	Shielded, 1.5m

1.5. EUT Exercise Software

1	Setup the EUT as shown in Section 1.4.
2	Execute the “putty” on the laptop.
3	Configure the test mode, the test channel, and the data rate.
4	Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual	Test Site
Temperature (°C)	FCC PART 15 C 15.247 Conducted Emission	15 - 35	24	3
Humidity (%RH)		25 - 75	45	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 C 15.247 Peak Power Output	15 - 35	24	3
Humidity (%RH)		25 - 75	45	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 C 15.247 Radiated Emission	15 - 35	25	2
Humidity (%RH)		25 - 75	54	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 C 15.247 RF antenna conducted test	15 - 35	24	3
Humidity (%RH)		25 - 75	45	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 C 15.247 Band Edge	15 - 35	25	2
Humidity (%RH)		25 - 75	50	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth & DTS Bandwidth	15 - 35	24	3
Humidity (%RH)		25 - 75	45	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 C 15.247 Power Density	15 - 35	24	3
Humidity (%RH)		25 - 75	45	
Barometric pressure (mbar)		860 - 1060	950-1000	

Note: Test site information refers to Laboratory Information.

USA : FCC, Registration Number: TW3024

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site :
http://www.dekra.com.tw/english/about/certificates.aspx?bval=5
The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site : http://www.dekra.com.tw/index_en.aspx

If you have any comments, Please don't hesitate to contact us. Our test sites as below:

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1.7. List of Test Equipment

Conducted Emission / SR9-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Test Receiver	R&S	ESCS 30	836858/023	2018/03/02	2019/03/01
LISN	R&S	ESH3-Z5	836679/021	2017/10/30	2018/10/29
LISN	R&S	ENV216	100096	2017/08/02	2018/08/01
Coaxial Cable	Harbour	RG-400	SR9-H	2017/08/15	2018/08/14
Quietek EMI system	Quietek	Version 2.2	SR9-H	N/A	N/A

Peak Power Output / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2018/01/02	2019/01/01
Pulse Power Sensor	Anritsu	MA2411B	1531043	2018/01/02	2019/01/01
Pulse Power Sensor	Anritsu	MA2411B	1531044	2018/01/02	2019/01/01
Power Meter	Keysight	8990B	MY51000248	2017/06/19	2018/06/18
Power Sensor	Keysight	N1923A	MY57240005	2017/06/19	2018/06/18

Radiated Emission / CB4-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2017/11/21	2018/11/20
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/10	2019/01/09
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2018/03/05	2019/03/04
Bilog Antenna	Teseq	CBL6112D	23191	2017/06/28	2018/06/27
Horn Antenna	Schwarzbeck	BBHA 9120D	639	2017/06/14	2018/06/13
Horn Antenna	Schwarzbeck	BBHA 9170	202	2018/01/31	2019/01/30
Pre-Amplifier	Dekra	AP-025C	201801236	2018/02/26	2019/02/25
Pre-Amplifier	EMCI	EMC11830I	980366	2018/01/08	2019/01/07
Pre-Amplifier	Dekra	AP-400C	201801231	2017/12/13	2018/12/12

RF antenna conducted test / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Keysight	N9030B	MY57140404	2017/06/13	2018/06/12
Spectrum Analyzer	Keysight	N9010B	MY57110159	2017/06/05	2018/06/04
Spectrum Analyzer	Agilent	N9010A	US47140172	2017/07/26	2018/07/25
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/10	2019/01/09

Band Edge / CB4-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2017/11/21	2018/11/20
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/10	2019/01/09
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2018/03/05	2019/03/04
Bilog Antenna	Teseq	CBL6112D	23191	2017/06/28	2018/06/27
Horn Antenna	Schwarzbeck	BBHA 9120D	639	2017/06/14	2018/06/13
Horn Antenna	Schwarzbeck	BBHA 9170	202	2018/01/31	2019/01/30
Pre-Amplifier	Dekra	AP-025C	201801236	2018/02/26	2019/02/25
Pre-Amplifier	EMCI	EMC11830I	980366	2018/01/08	2019/01/07
Pre-Amplifier	Dekra	AP-400C	201801231	2017/12/13	2018/12/12

Occupied Bandwidth & DTS Bandwidth / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Keysight	N9030B	MY57140404	2017/06/13	2018/06/12
Spectrum Analyzer	Keysight	N9010B	MY57110159	2017/06/05	2018/06/04
Spectrum Analyzer	Agilent	N9010A	US47140172	2017/07/26	2018/07/25
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/10	2019/01/09

Power Density / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Keysight	N9030B	MY57140404	2017/06/13	2018/06/12
Spectrum Analyzer	Keysight	N9010B	MY57110159	2017/06/05	2018/06/04
Spectrum Analyzer	Agilent	N9010A	US47140172	2017/07/26	2018/07/25
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/10	2019/01/09

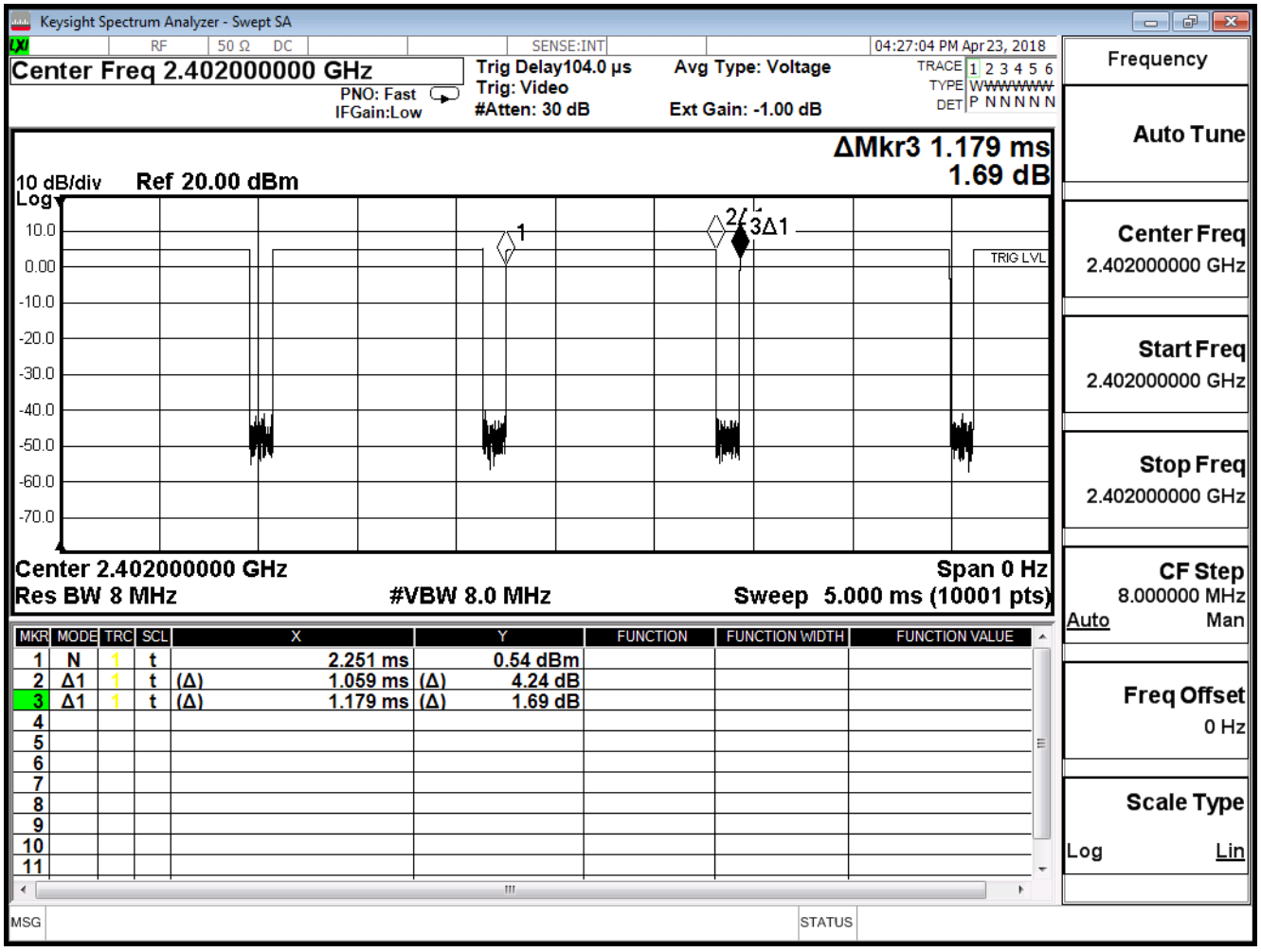
1.8. Measurement Uncertainty

Test Item	Uncertainty
Conducted Emission	± 2.26 dB
Peak Power Output	± 1.27 dB
Radiated Emission (30MHz～1GHz)	± 3.43 dB
Radiated Emission (1GHz～26.5GHz)	± 3.65 dB
RF antenna conducted test	± 1.27 dB
Band Edge	Conducted is defined as ± 1.27 dB Radiated is defined as ± 3.9 dB
Occupied Bandwidth & DTS Bandwidth	± 50 kHz
Power Density	± 1.27 dB

1.9. Duty cycle

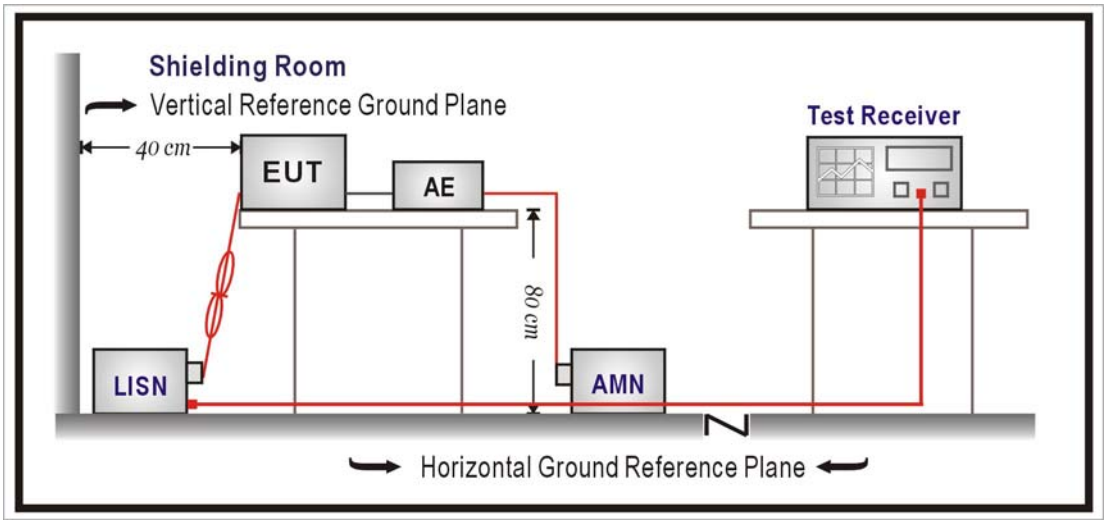
On Time (ms)	ON+Off Time (ms)	Duty Cycle (%)	Off Set (dB)
1.059	1.179	≒90	0.93

Channel 00



2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)		
Frequency MHz	QP	AV
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

2.3. Test Procedure

The EUT was setup according to ANSI C63.10:2013 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs.)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

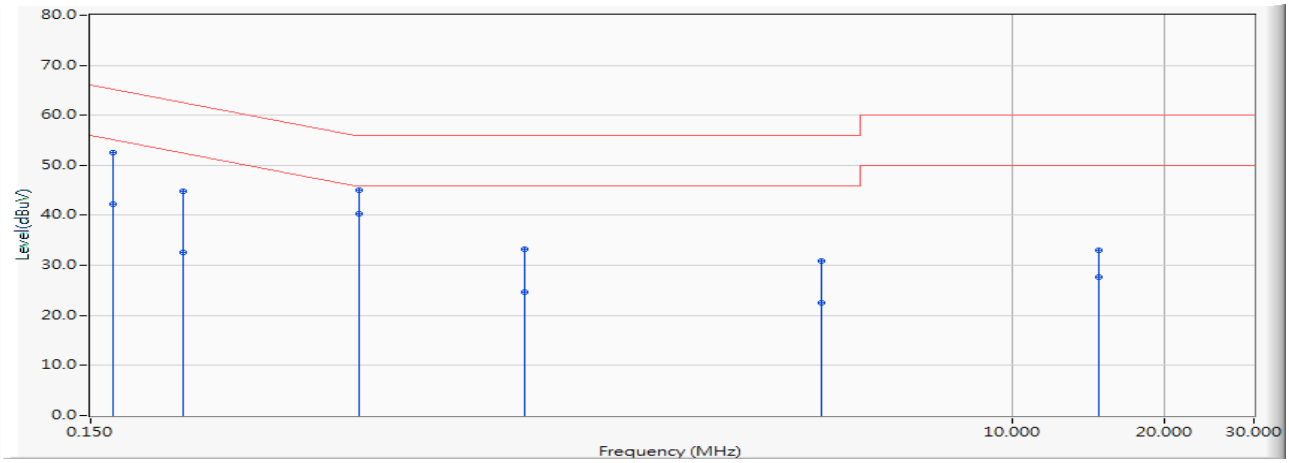
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

2.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.207: 2017

2.5. Test Result

Site : SR9-H	**Time : 2018/05/07**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR9-H_LISN(16A)-6_0823 - Line1	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2440MHz**

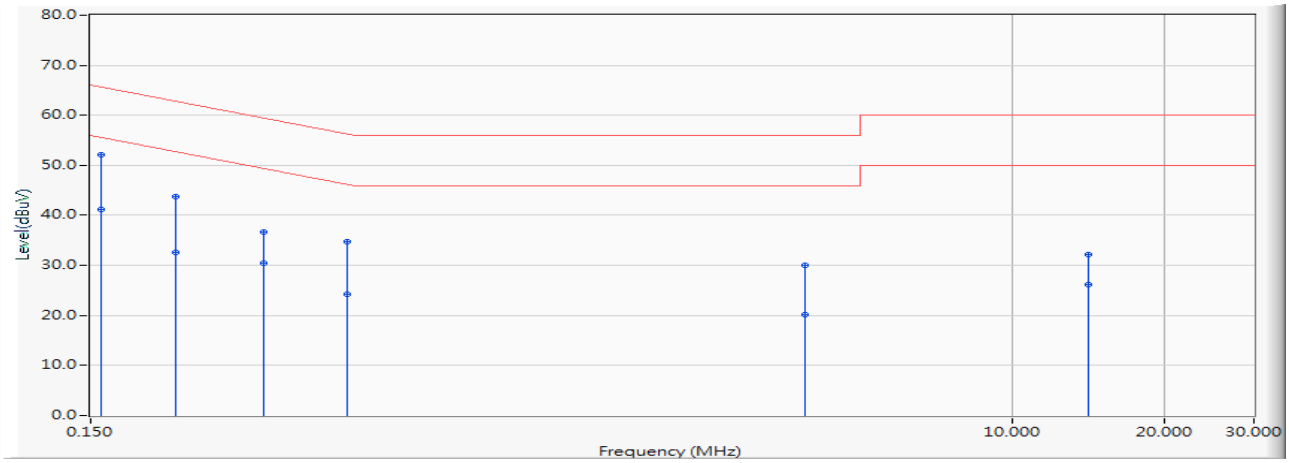


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.166	9.776	42.670	52.446	-12.731	65.177	QUASIPEAK
2		0.166	9.776	32.460	42.236	-12.941	55.177	AVERAGE
3		0.228	9.757	35.030	44.787	-17.731	62.518	QUASIPEAK
4		0.228	9.757	22.880	32.637	-19.881	52.518	AVERAGE
5		0.509	9.742	35.220	44.962	-11.038	56.000	QUASIPEAK
6	*	0.509	9.742	30.670	40.412	-5.588	46.000	AVERAGE
7		1.080	9.880	23.290	33.170	-22.830	56.000	QUASIPEAK
8		1.080	9.880	14.710	24.590	-21.410	46.000	AVERAGE
9		4.197	9.930	21.060	30.990	-25.010	56.000	QUASIPEAK
10		4.197	9.930	12.640	22.570	-23.430	46.000	AVERAGE
11		14.798	10.366	22.740	33.106	-26.894	60.000	QUASIPEAK
12		14.798	10.366	17.260	27.626	-22.374	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR9-H	**Time : 2018/05/07**
Limit : CISPR_B_00M_QP	**Margin : 10**
Probe : SR9-H_LISN(16A)-6_0823 - Line2	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2440MHz**



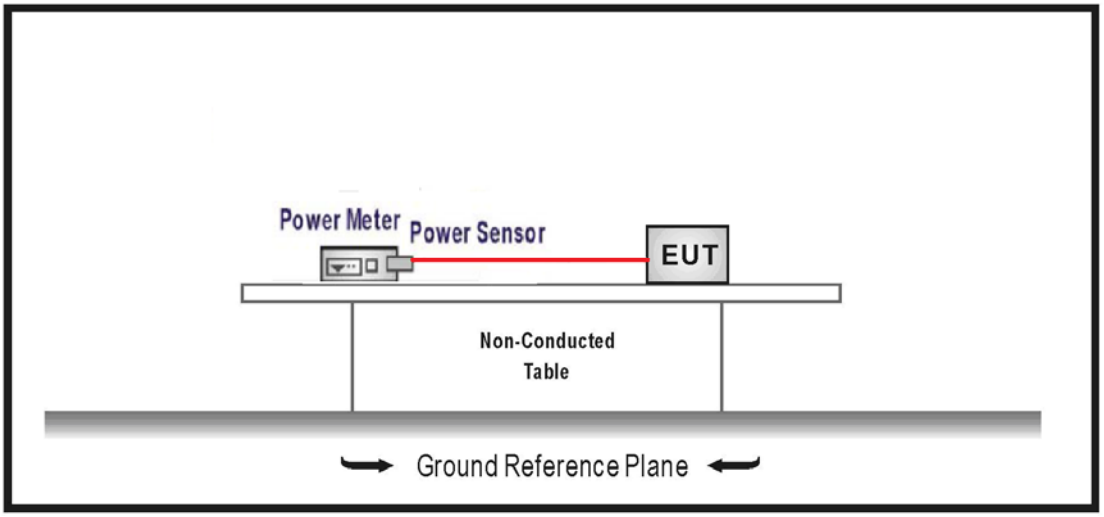
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.158	9.767	42.320	52.087	-13.491	65.578	QUASIPEAK
2		0.158	9.767	31.310	41.077	-14.501	55.578	AVERAGE
3		0.220	9.810	33.970	43.780	-19.027	62.807	QUASIPEAK
4		0.220	9.810	22.890	32.700	-20.107	52.807	AVERAGE
5		0.330	9.800	26.840	36.640	-22.819	59.459	QUASIPEAK
6		0.330	9.800	20.570	30.370	-19.089	49.459	AVERAGE
7		0.482	9.790	25.050	34.840	-21.464	56.304	QUASIPEAK
8		0.482	9.790	14.530	24.320	-21.984	46.304	AVERAGE
9		3.888	9.900	20.220	30.120	-25.880	56.000	QUASIPEAK
10		3.888	9.900	10.280	20.180	-25.820	46.000	AVERAGE
11		14.158	10.313	21.890	32.203	-27.797	60.000	QUASIPEAK
12		14.158	10.313	15.950	26.263	-23.737	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

3. Peak Power Output

3.1. Test Setup



3.2. Test procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB558074 D01V04 for compliance to FCC 47CFR 15.247 requirements.

3.3. Limits

The maximum peak power shall be less 1 Watt.

3.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247.

3.5. Test Result

Product	Heart-Rate Smartband		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2018/04/23	Test Site	SR10-H

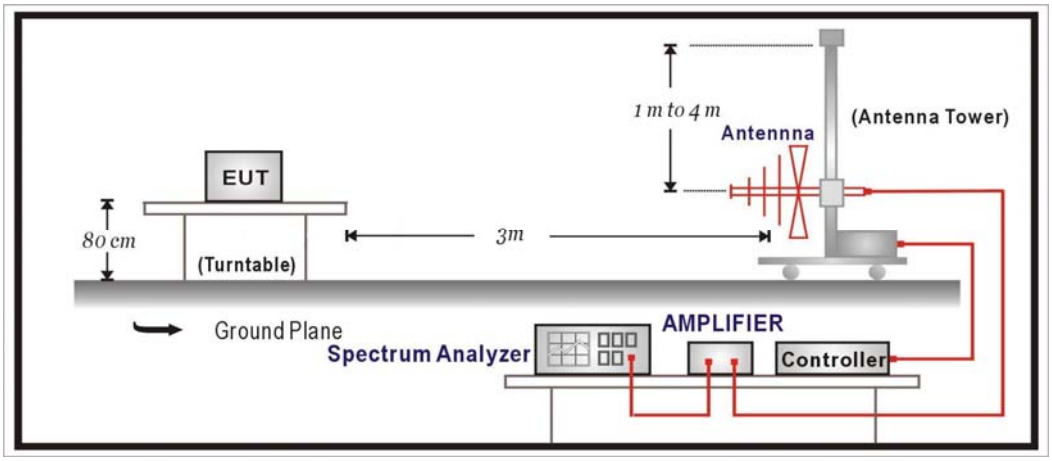
GFSK

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
0	2402	4.400	30	Pass
19	2440	4.410	30	Pass
39	2480	4.390	30	Pass

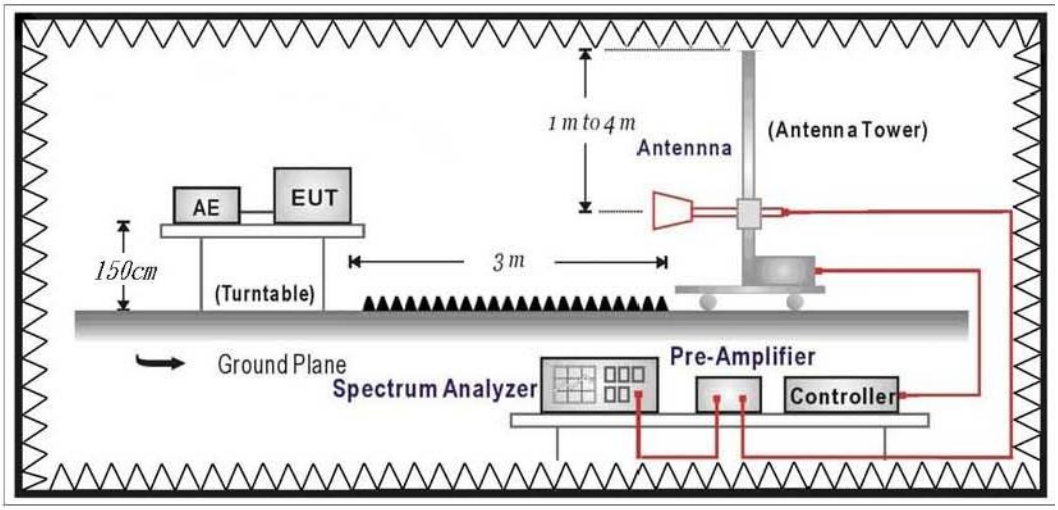
4. Radiated Emission

4.1. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.2. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m	dBuV/m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.3. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB558074 D01V04 for compliance to FCC 47CFR 15.247 requirements.
The EUT and its simulators are placed on a turn table which is 0.8 or 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.
The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.
On any frequency or frequencies form 9KHz(inculde The the lowest oscillator frequency generated within the device up to the 10th harmonic) to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.
The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

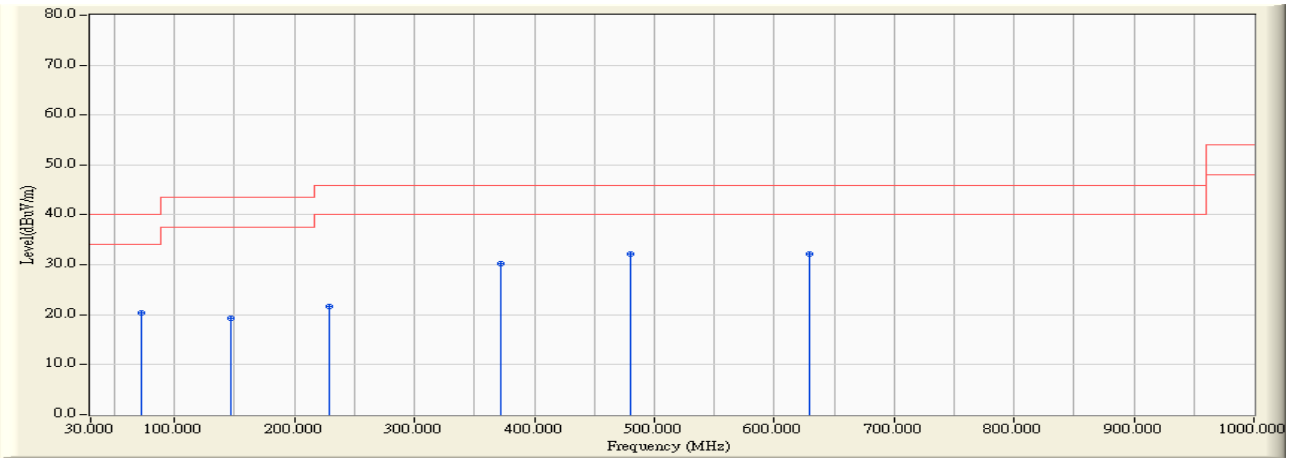
4.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

4.5. Test Result

30MHz-1GHz Spurious

Site : CB4-H	**Time : 2018/04/25**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB4-H_FCC_EFS_S2_30M-1GHz_1116 - HORIZONTAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2440MHz**

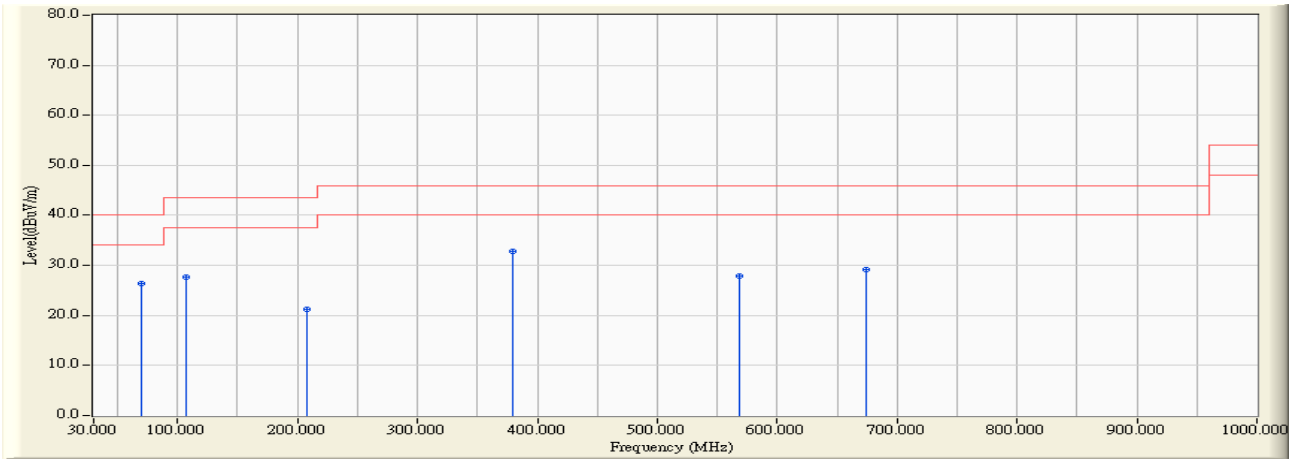


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		72.195	-27.416	47.814	20.399	-19.601	40.000	QUASIPEAK
2		147.370	-21.524	40.869	19.345	-24.155	43.500	QUASIPEAK
3		228.365	-20.543	42.149	21.607	-24.393	46.000	QUASIPEAK
4		371.925	-17.687	47.865	30.178	-15.822	46.000	QUASIPEAK
5	*	480.080	-13.524	45.688	32.165	-13.835	46.000	QUASIPEAK
6		628.975	-11.900	44.058	32.157	-13.843	46.000	QUASIPEAK

Note:

1. All Reading Levels is Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The Emission under 30MHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/04/25**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB4-H_FCC_EFS_S2_30M-1GHz_1116 - VERTICAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2440MHz**



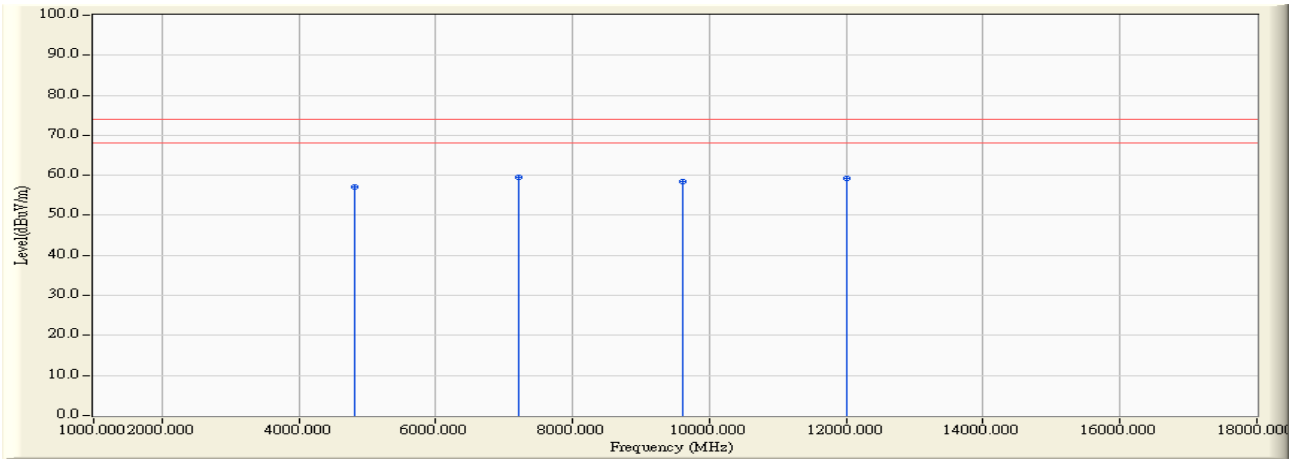
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		70.255	-27.689	53.990	26.301	-13.699	40.000	QUASIPEAK
2		107.600	-21.915	49.549	27.634	-15.866	43.500	QUASIPEAK
3		207.510	-22.123	43.295	21.172	-22.328	43.500	QUASIPEAK
4	*	379.200	-16.475	49.312	32.837	-13.163	46.000	QUASIPEAK
5		568.835	-12.940	40.809	27.868	-18.132	46.000	QUASIPEAK
6		674.565	-10.250	39.507	29.257	-16.743	46.000	QUASIPEAK

Note:

1. All Reading Levels is Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The Emission under 30MHz were not included is because their levels are too low.

Harmonic & Spurious:

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2402MHz**

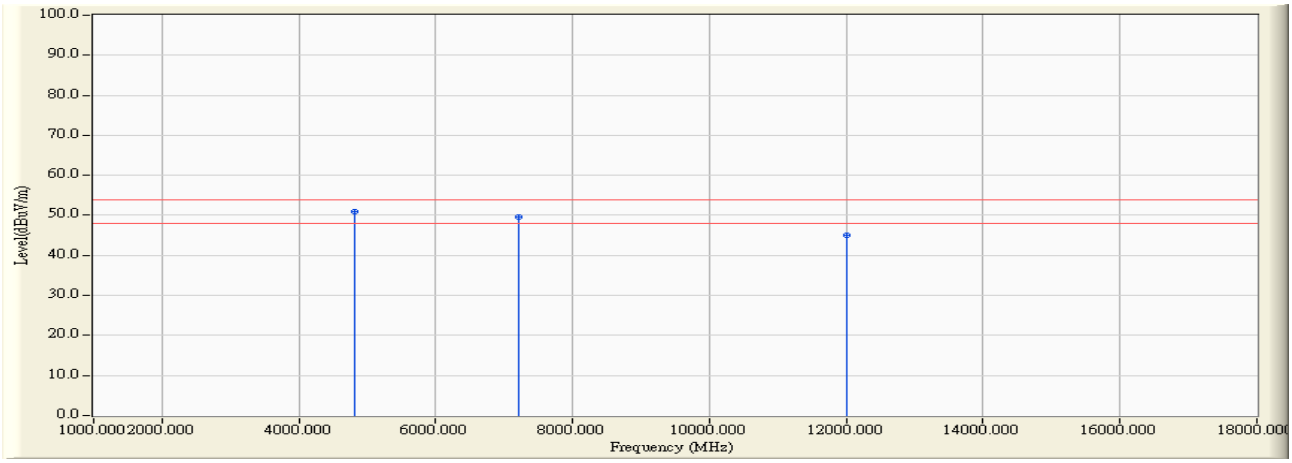


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4804.000	8.252	48.830	57.083	-16.917	74.000	PEAK
2	*	7206.000	16.729	42.870	59.599	-14.401	74.000	PEAK
3		9608.000	23.184	35.330	58.515	-15.485	74.000	PEAK
4		12010.000	26.768	32.470	59.238	-14.762	74.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2402MHz**

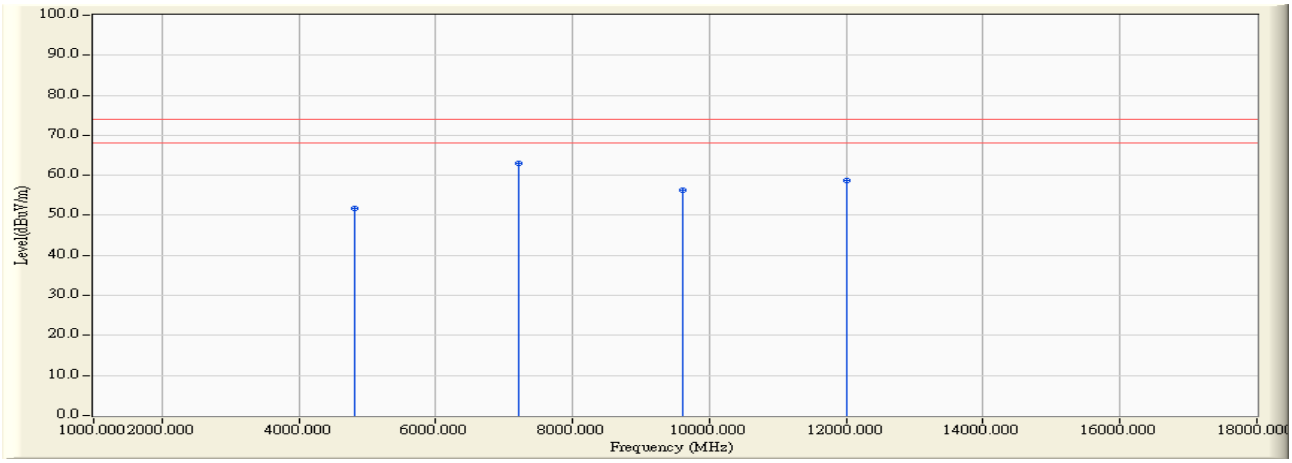


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4804.000	8.252	42.680	50.933	-3.067	54.000	AVERAGE
2		7206.000	16.729	32.750	49.479	-4.521	54.000	AVERAGE
3		12010.000	26.768	18.250	45.018	-8.982	54.000	AVERAGE

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2402MHz**

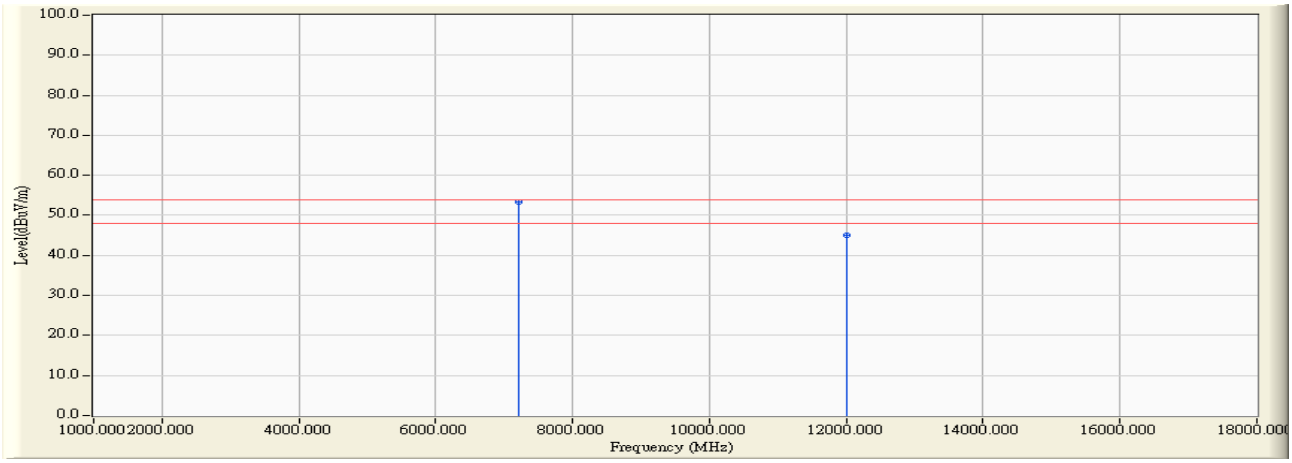


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4804.000	8.252	43.460	51.713	-22.287	74.000	PEAK
2	*	7206.000	16.729	46.230	62.959	-11.041	74.000	PEAK
3		9608.000	23.184	33.210	56.395	-17.605	74.000	PEAK
4		12010.000	26.768	31.930	58.698	-15.302	74.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2402MHz**

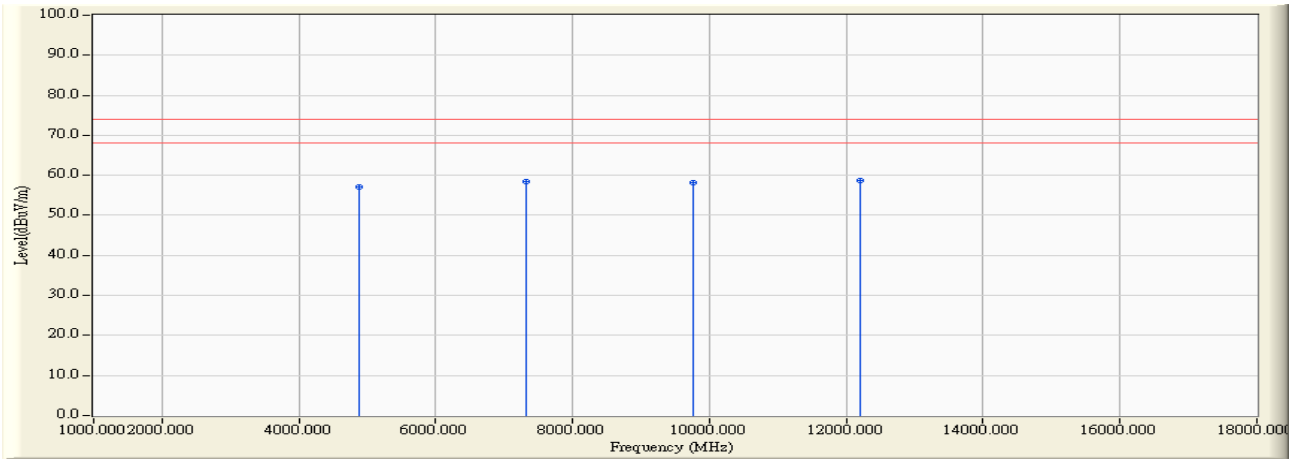


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	7206.000	16.729	36.590	53.319	-0.681	54.000	AVERAGE
2		12010.000	26.768	18.240	45.008	-8.992	54.000	AVERAGE

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2440MHz**

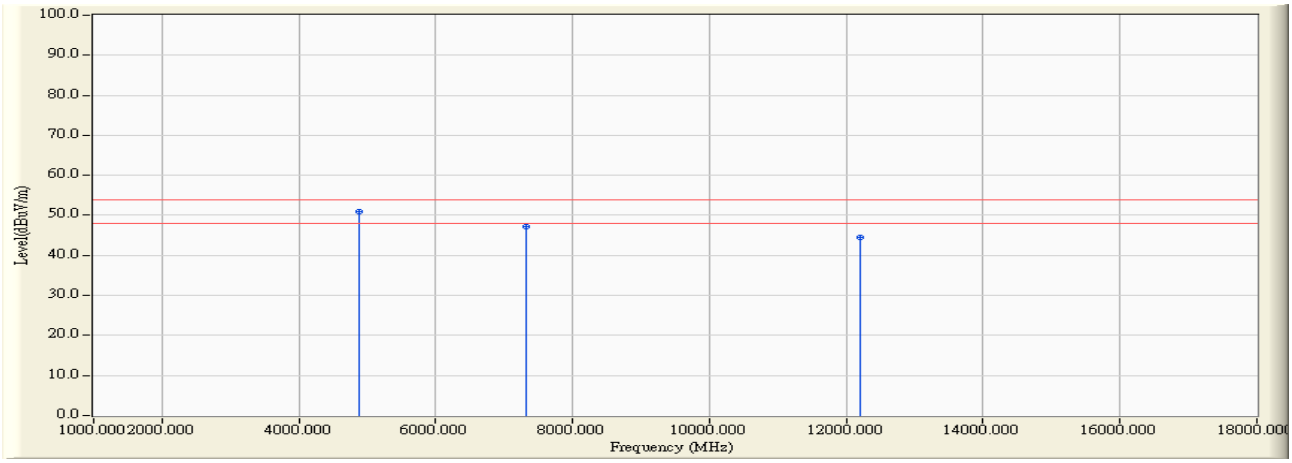


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4880.000	8.404	48.760	57.164	-16.836	74.000	PEAK
2		7320.000	17.096	41.220	58.316	-15.684	74.000	PEAK
3		9760.000	23.225	34.980	58.205	-15.795	74.000	PEAK
4	*	12200.000	26.120	32.510	58.630	-15.370	74.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2440MHz**

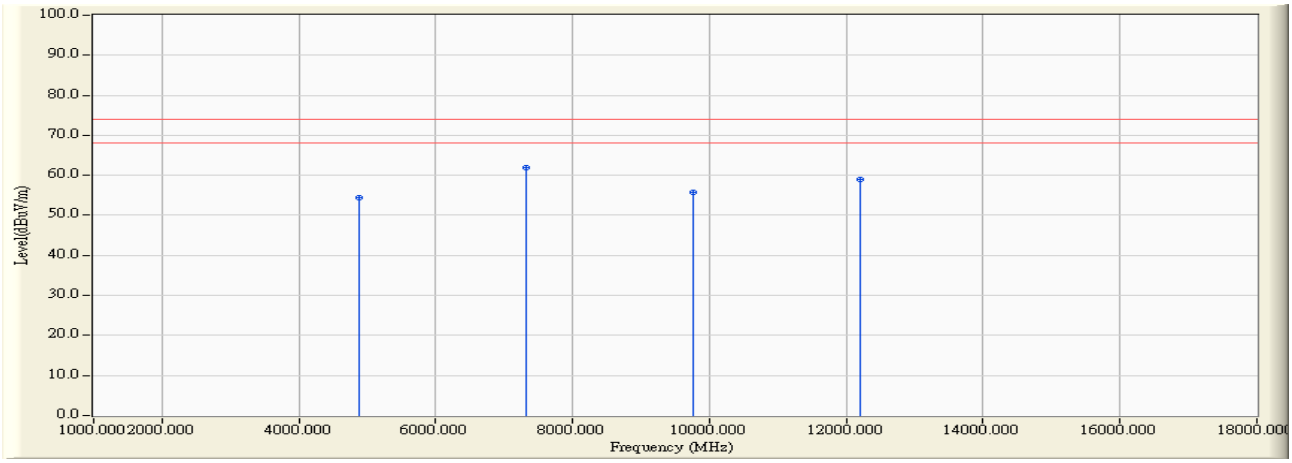


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4880.000	8.404	42.610	51.014	-2.986	54.000	AVERAGE
2		7320.000	17.096	29.960	47.056	-6.944	54.000	AVERAGE
3		12200.000	26.120	18.350	44.470	-9.530	54.000	AVERAGE

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2440MHz**

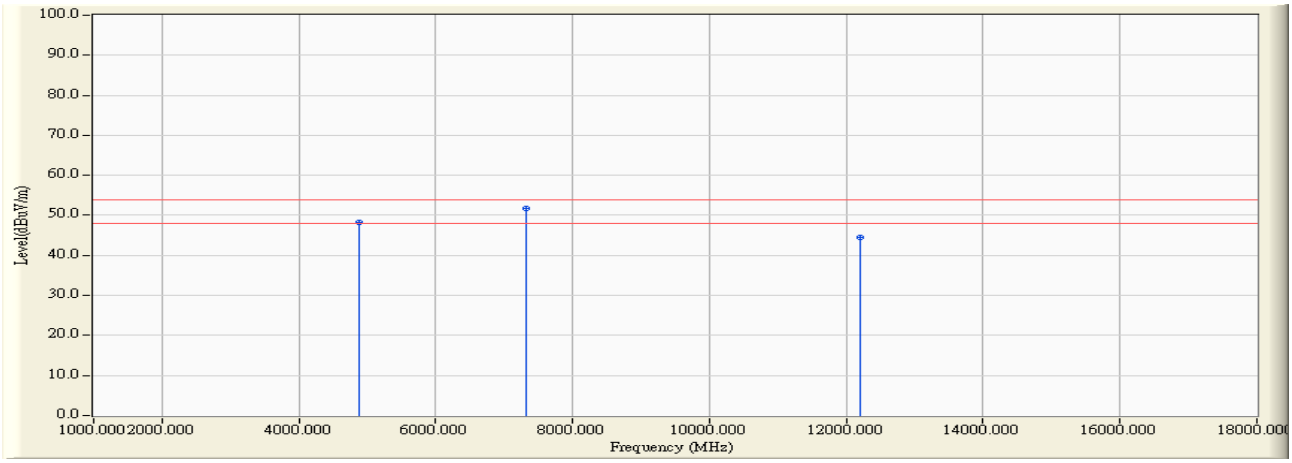


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4880.000	8.404	46.010	54.414	-19.586	74.000	PEAK
2	*	7320.000	17.096	44.780	61.876	-12.124	74.000	PEAK
3		9760.000	23.225	32.660	55.885	-18.115	74.000	PEAK
4		12200.000	26.120	32.950	59.070	-14.930	74.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2440MHz**

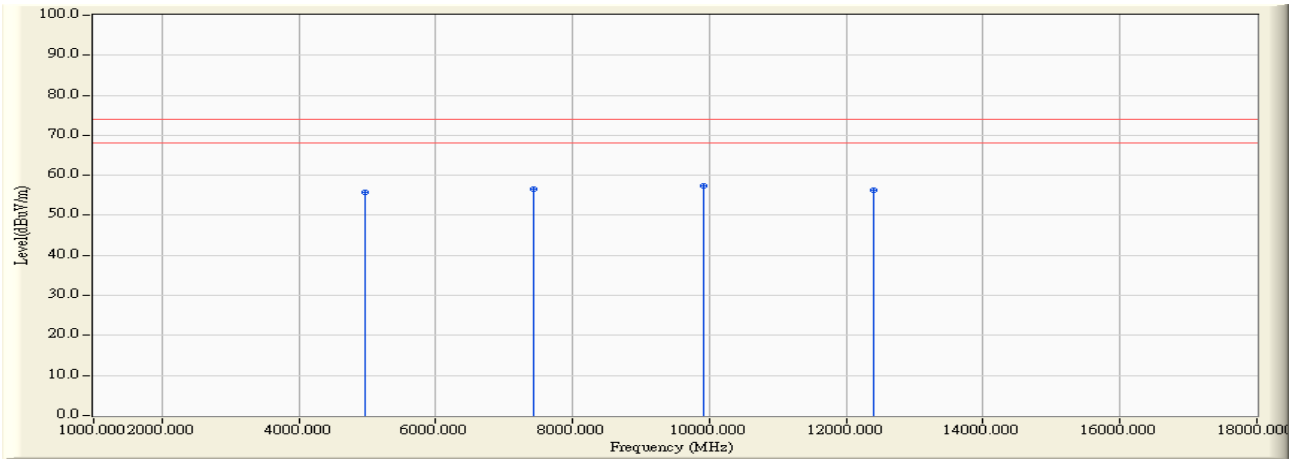


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4880.000	8.404	39.960	48.364	-5.636	54.000	AVERAGE
2	*	7320.000	17.096	34.760	51.856	-2.144	54.000	AVERAGE
3		12200.000	26.120	18.310	44.430	-9.570	54.000	AVERAGE

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2480MHz**

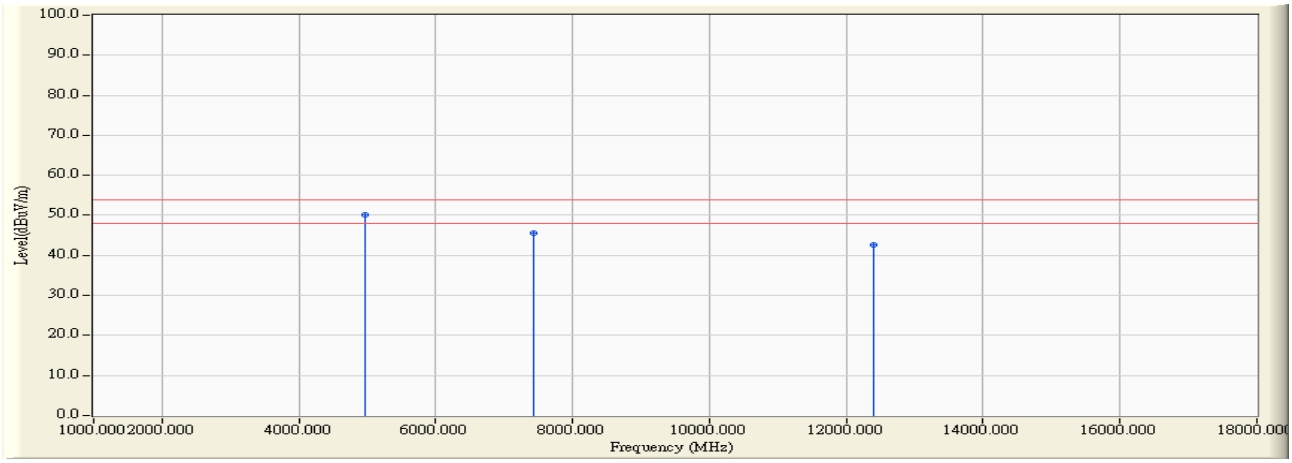


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4960.000	8.607	47.140	55.747	-18.253	74.000	PEAK
2		7440.000	17.822	38.880	56.702	-17.298	74.000	PEAK
3	*	9920.000	23.731	33.620	57.351	-16.649	74.000	PEAK
4		12400.000	25.659	30.640	56.299	-17.701	74.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2480MHz**

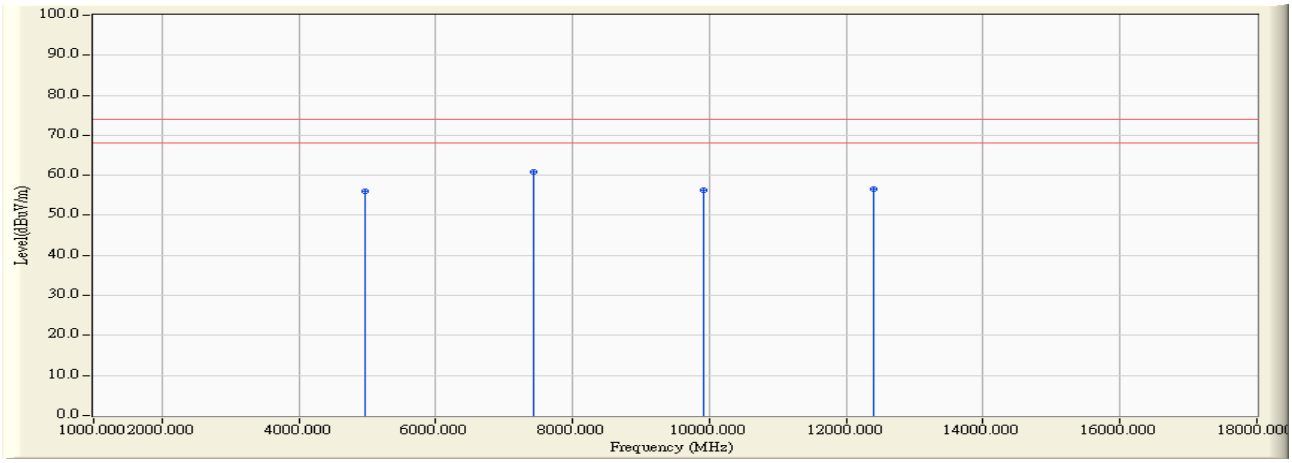


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4960.000	8.607	41.530	50.137	-3.863	54.000	AVERAGE
2		7440.000	17.822	27.790	45.612	-8.388	54.000	AVERAGE
3		12400.000	25.659	16.930	42.589	-11.411	54.000	AVERAGE

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2480MHz**

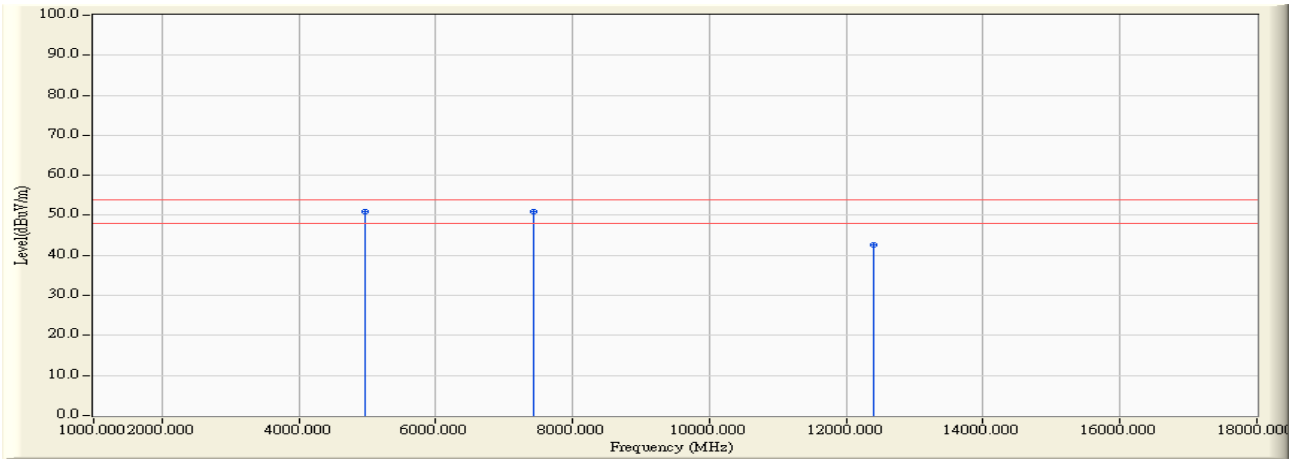


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4960.000	8.607	47.490	56.097	-17.903	74.000	PEAK
2	*	7440.000	17.822	43.090	60.912	-13.088	74.000	PEAK
3		9920.000	23.731	32.450	56.181	-17.819	74.000	PEAK
4		12400.000	25.659	30.830	56.489	-17.511	74.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2480MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4960.000	8.607	42.360	50.967	-3.033	54.000	AVERAGE
2		7440.000	17.822	32.990	50.812	-3.188	54.000	AVERAGE
3		12400.000	25.659	16.910	42.569	-11.431	54.000	AVERAGE

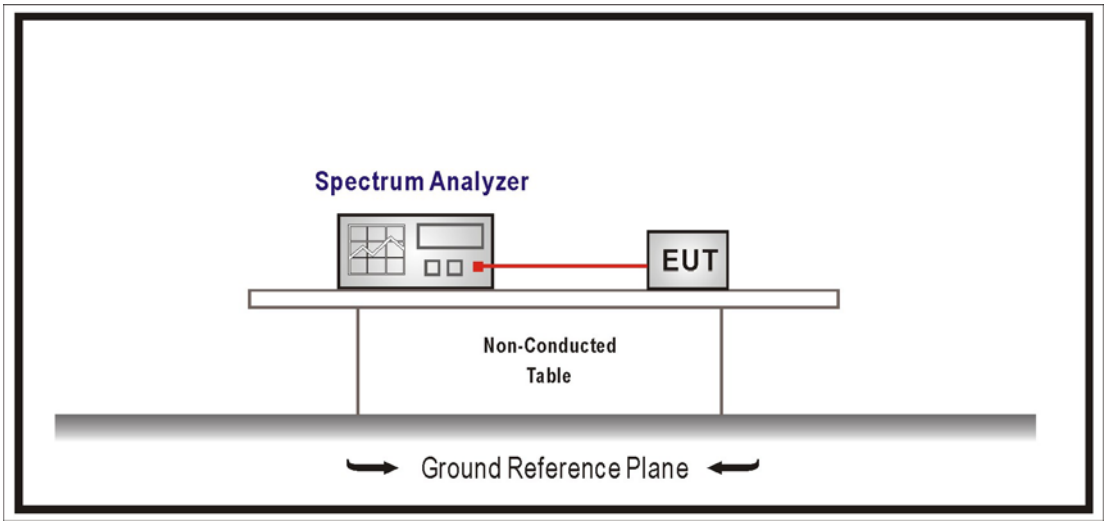
Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

5. RF antenna conducted test

5.1. Test Setup

RF Conducted Measurement:



5.2. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on an RF conducted or radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.3. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB558074 D01V04 for compliance to FCC 47CFR 15.247 requirements. Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

5.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247.

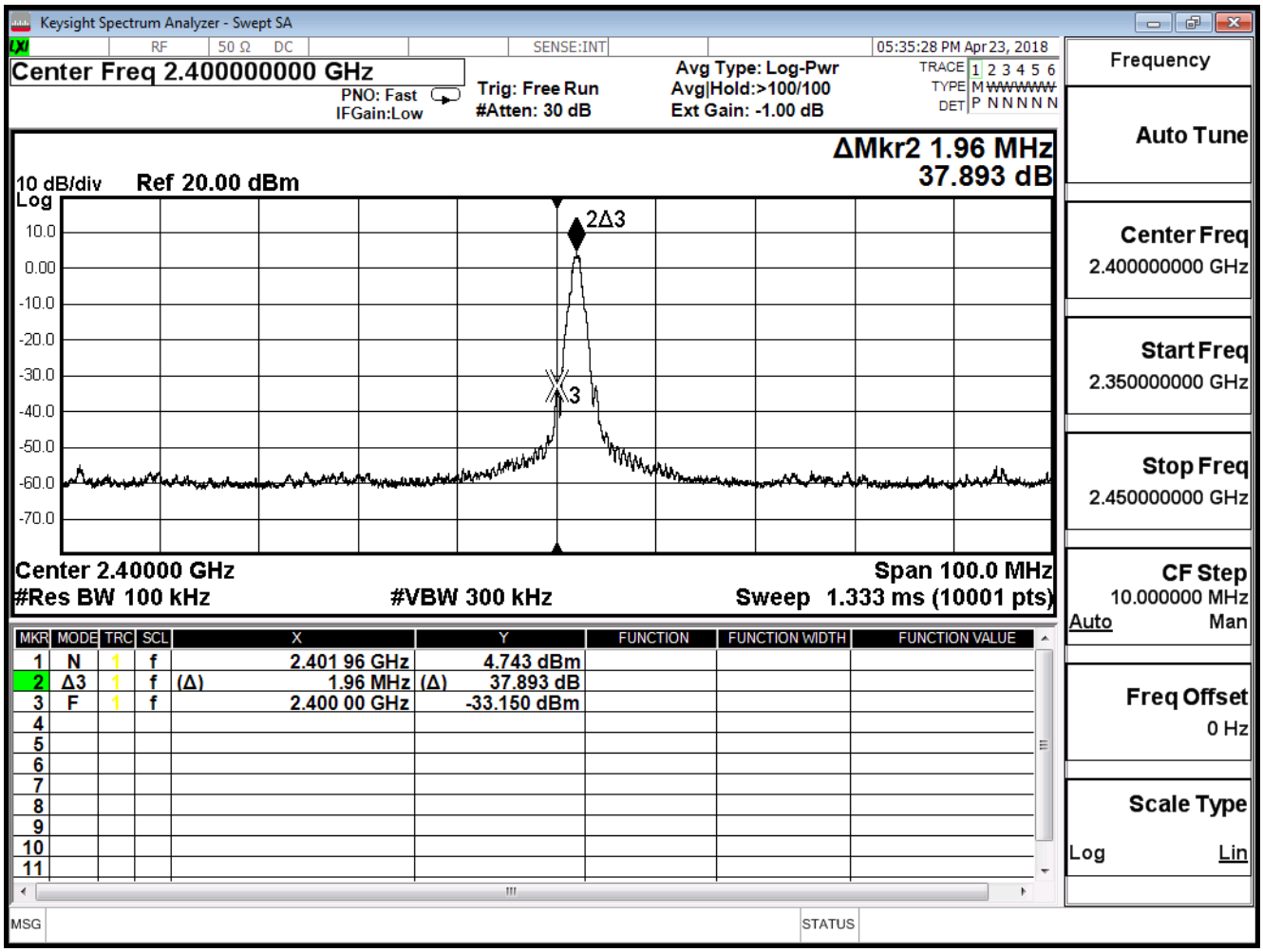
5.5. Test Result

Product	Heart-Rate Smartband		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2018/04/23	Test Site	SR10-H

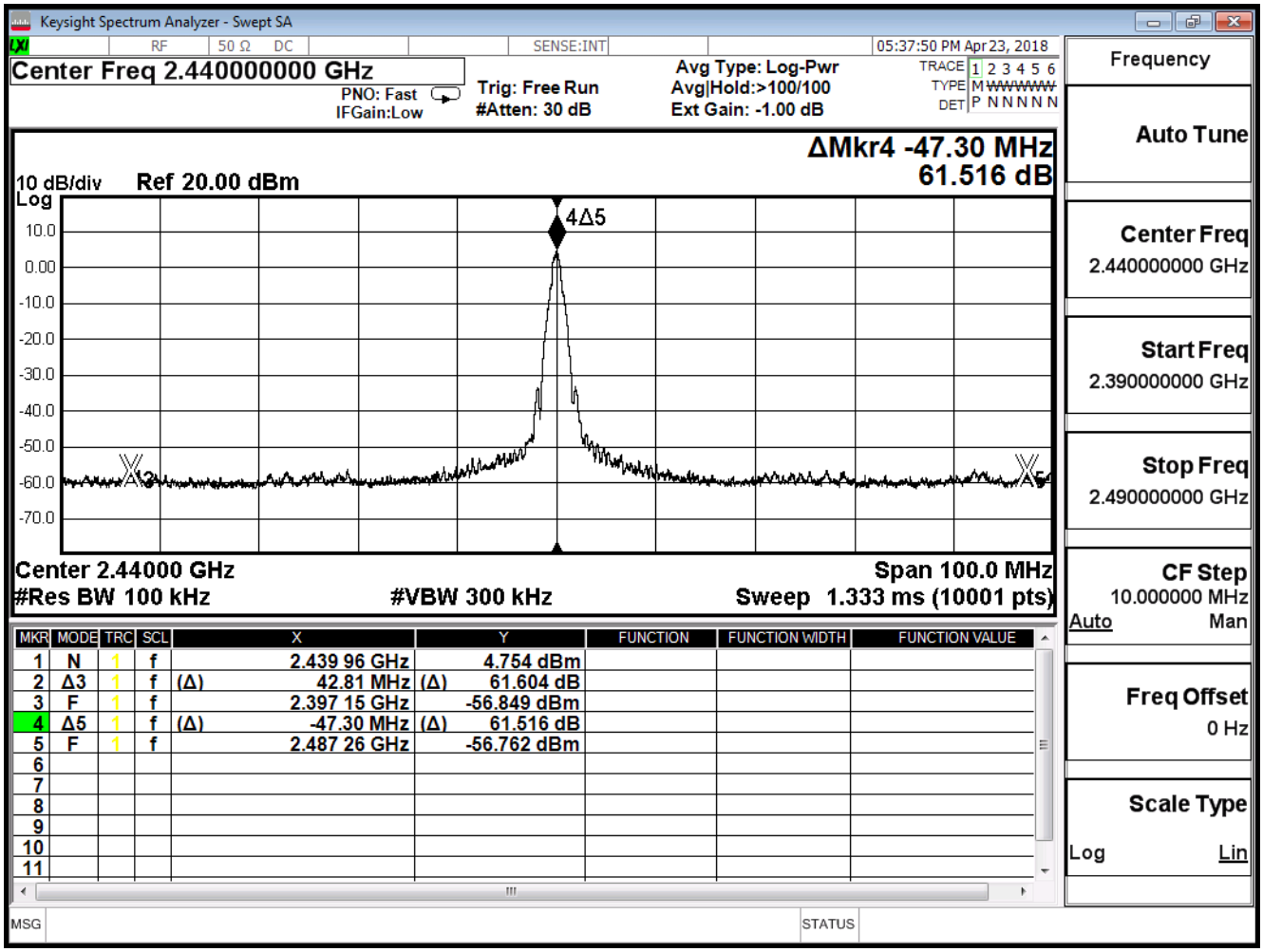
GFSK

Channel	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
0	2402	26.582	≧20	Pass
19	2440	24.006	≧20	Pass
39	2480	24.703	≧20	Pass

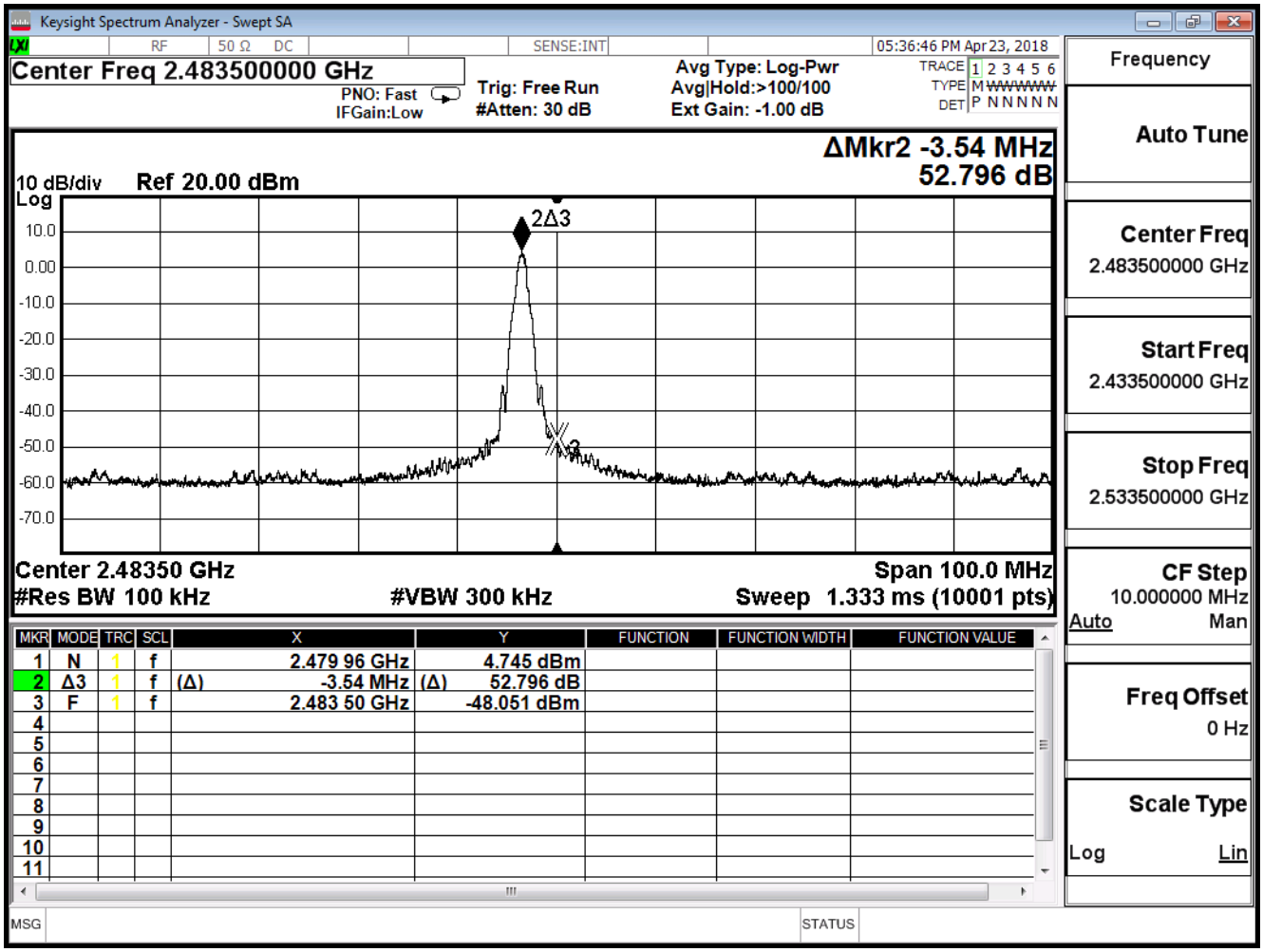
Channel 00



Channel 19

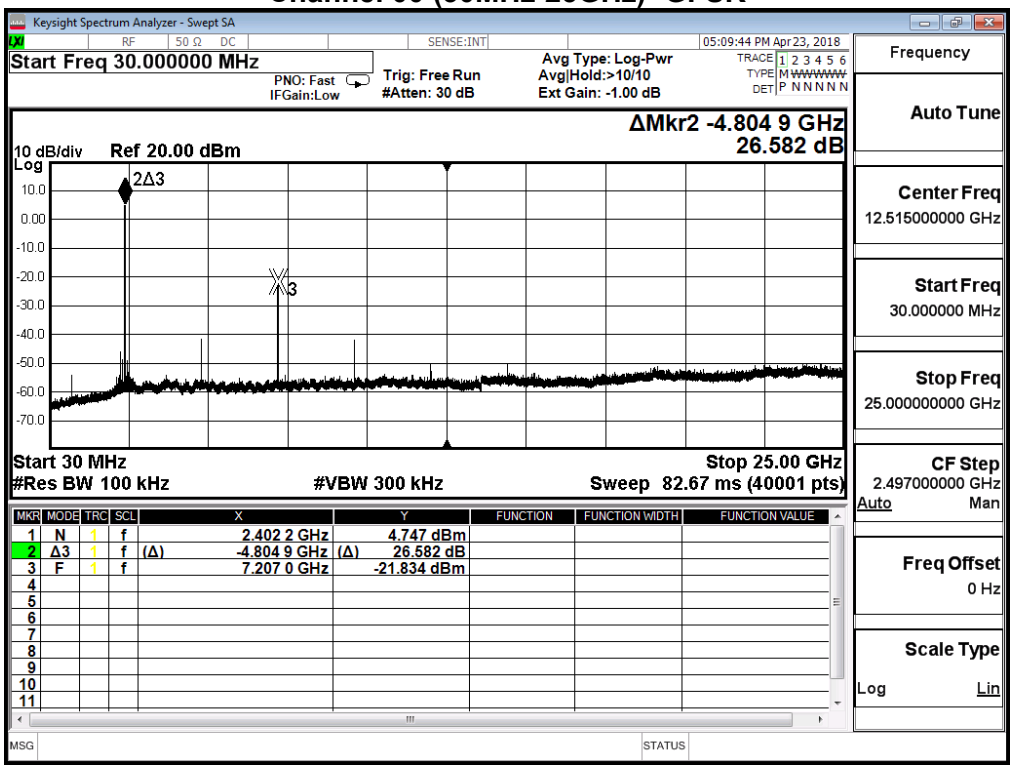

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
05:37:50 PM Apr 23, 2018
Center Freq 2.440000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -1.00 dB
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
ΔMkr4 -47.30 MHz
61.516 dB
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
4Δ5
Center 2.44000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 100.0 MHz
Sweep 1.333 ms (10001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.439 96 GHz 4.754 dBm
2 Δ3 1 f (Δ) 42.81 MHz (Δ) 61.604 dB
3 F 1 f 2.397 15 GHz -56.849 dBm
4 Δ5 1 f (Δ) -47.30 MHz (Δ) 61.516 dB
5 F 1 f 2.487 26 GHz -56.762 dBm
6
7
8
9
10
11
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.440000000 GHz
Start Freq
2.390000000 GHz
Stop Freq
2.490000000 GHz
CF Step
10.000000 MHz
Auto Man
Freq Offset
0 Hz
Scale Type
Log Lin

Channel 39

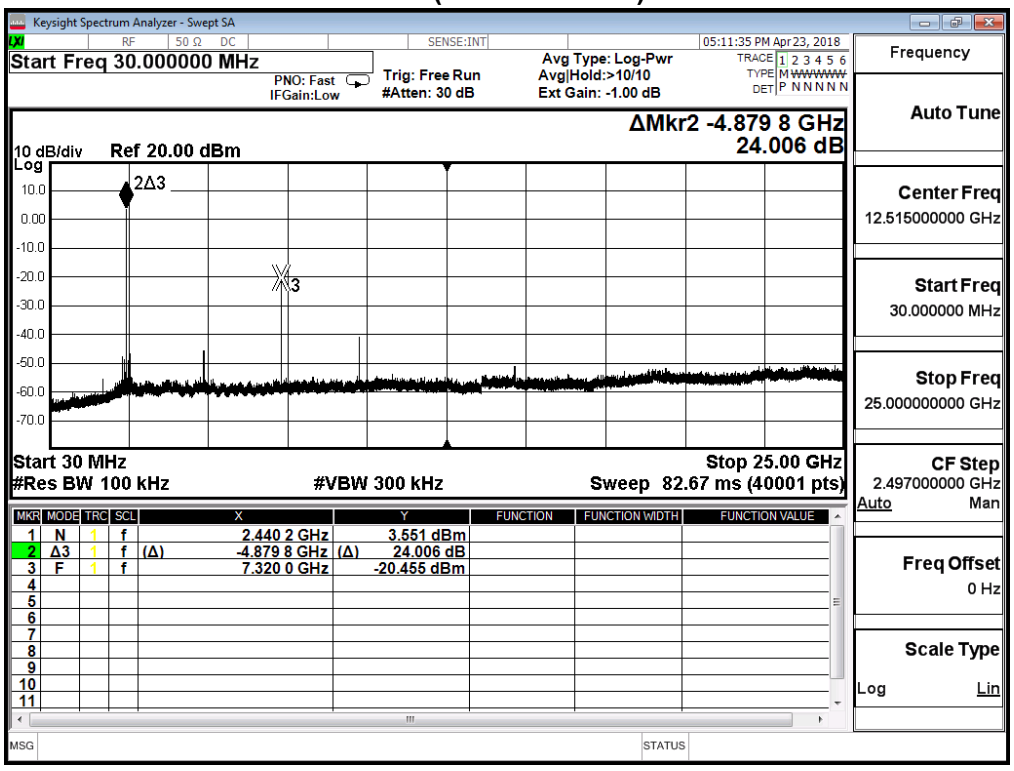

Keysight Spectrum Analyzer - Swept SA
RF
50 Ω
DC
SENSE:INT
05:36:46 PM Apr 23, 2018
Center Freq 2.483500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -1.00 dB
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
ΔMkr2 -3.54 MHz
52.796 dB
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
2Δ3
Center 2.48350 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 100.0 MHz
Sweep 1.333 ms (10001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.479 96 GHz 4.745 dBm
2 Δ3 1 f (Δ) -3.54 MHz (Δ) 52.796 dB
3 F 1 f 2.483 50 GHz -48.051 dBm
4
5
6
7
8
9
10
11
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.483500000 GHz
Start Freq
2.433500000 GHz
Stop Freq
2.533500000 GHz
CF Step
10.000000 MHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

Product	Heart-Rate Smartband		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2018/04/23	Test Site	SR10-H

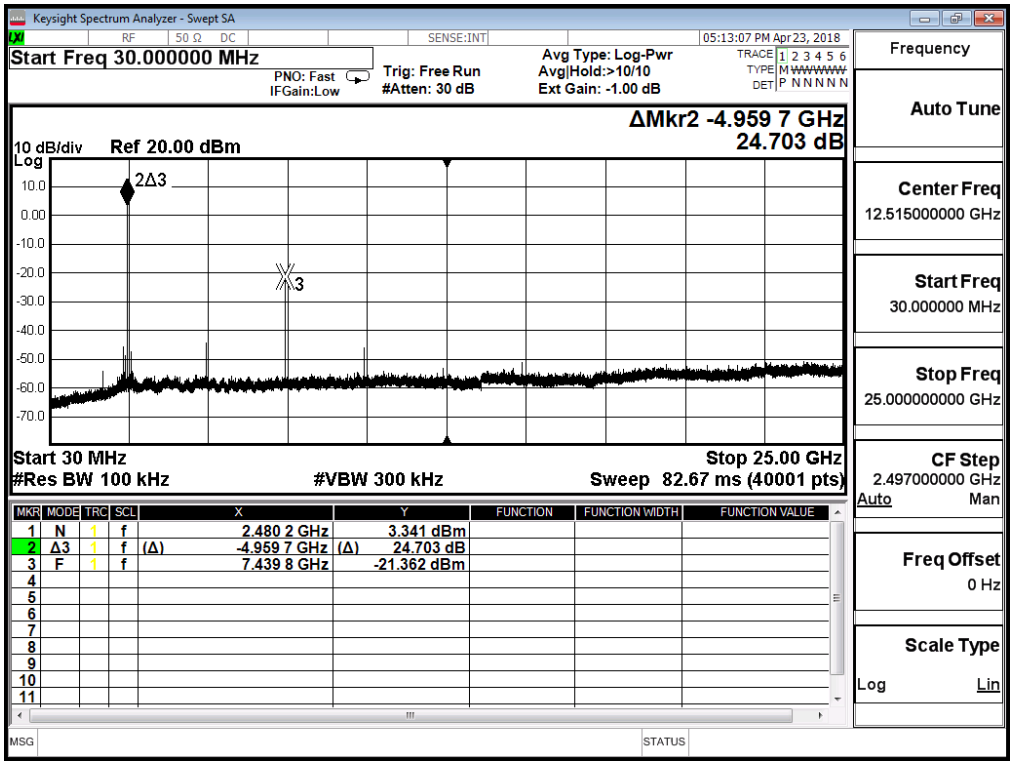
Channel 00 (30MHz-25GHz)- GFSK



Channel 19 (30MHz-25GHz)- GFSK



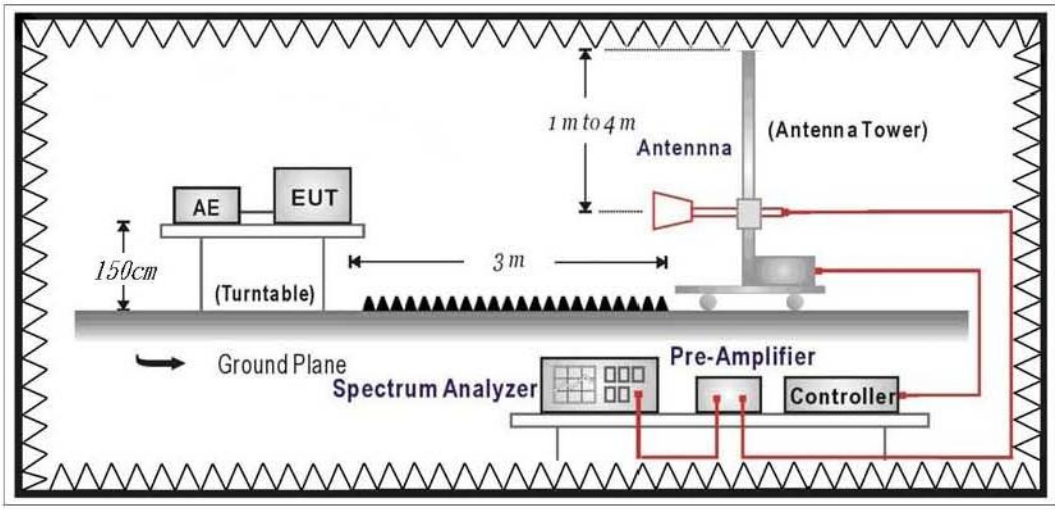
Channel 39 (30MHz-25GHz)- GFSK



6. Band Edge

6.1. Test Setup

RF Radiated Measurement:



6.2. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

6.3. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB558074 D01V04 for compliance to FCC 47CFR 15.247 requirements.

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

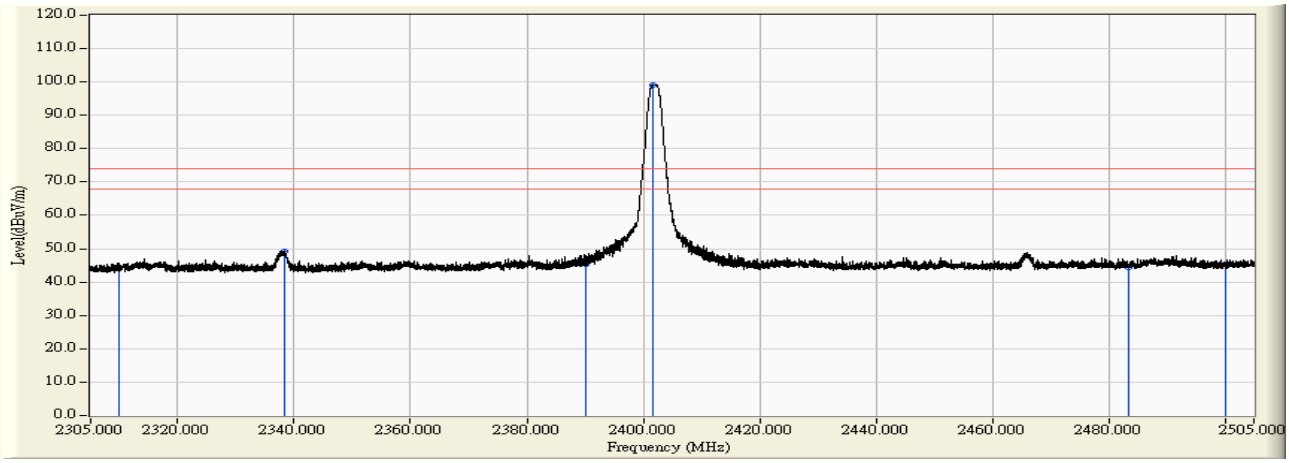
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

6.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247.

6.5. Test Result

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2402MHz**

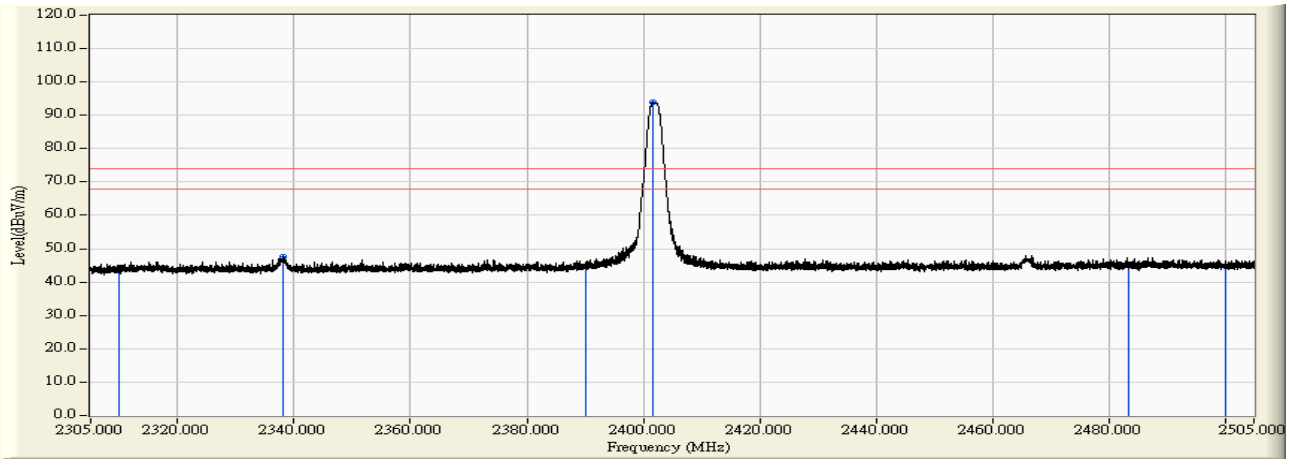


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	14.229	30.088	44.317	-29.683	74.000	PEAK
2		2338.380	14.371	34.888	49.259	-24.741	74.000	PEAK
3		2390.000	14.881	30.545	45.426	-28.574	74.000	PEAK
4	*	2401.640	14.912	84.297	99.209	25.209	74.000	PEAK
5		2483.500	15.408	28.916	44.324	-29.676	74.000	PEAK
6		2500.000	15.434	29.902	45.337	-28.663	74.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.
7. The fundamental for reference only, it’s not restricted by unwanted emission limit.

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2402MHz**

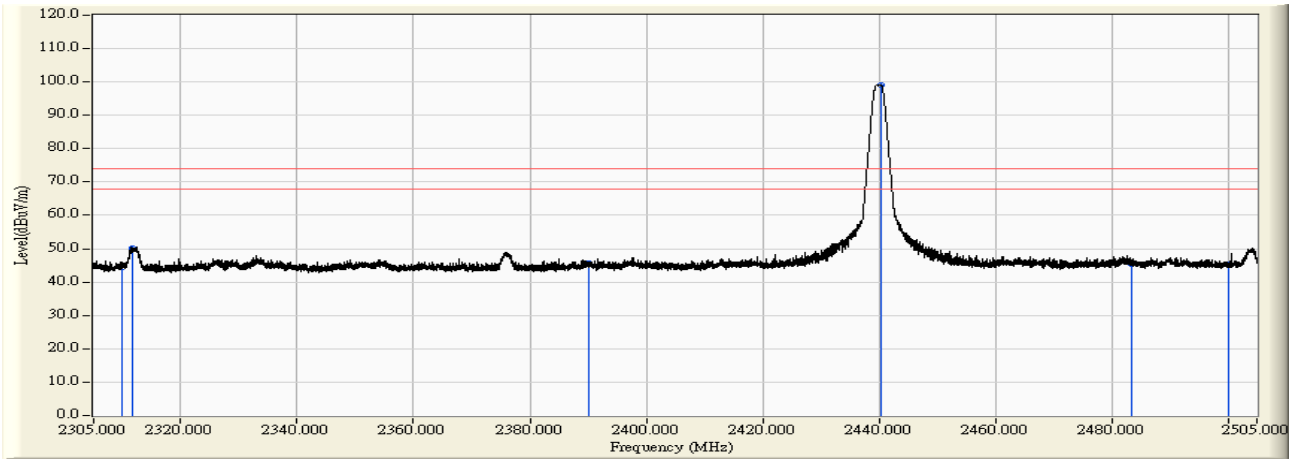


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	14.229	29.221	43.450	-30.550	74.000	PEAK
2		2338.060	14.369	33.330	47.699	-26.301	74.000	PEAK
3		2390.000	14.881	29.798	44.679	-29.321	74.000	PEAK
4	*	2401.640	14.912	78.874	93.786	19.786	74.000	PEAK
5		2483.500	15.408	30.050	45.458	-28.542	74.000	PEAK
6		2500.000	15.434	29.214	44.649	-29.351	74.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.
7. The fundamental for reference only, it’s not restricted by unwanted emission limit.

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2440MHz**

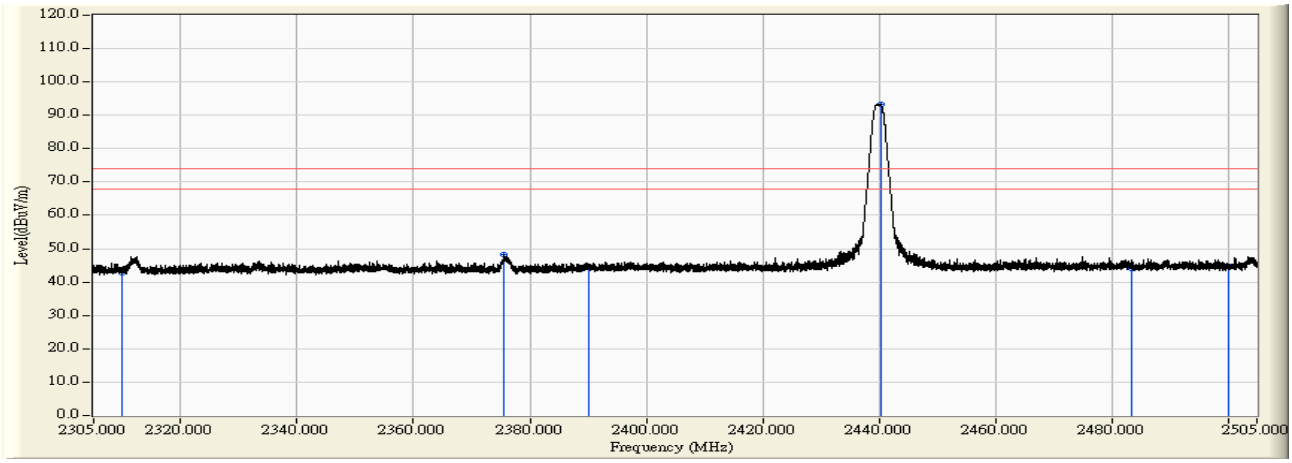


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	14.229	30.259	44.488	-29.512	74.000	PEAK
2		2311.620	14.238	36.096	50.334	-23.666	74.000	PEAK
3		2390.000	14.881	30.959	45.840	-28.160	74.000	PEAK
4	*	2440.280	14.961	84.185	99.145	25.145	74.000	PEAK
5		2483.500	15.408	29.943	45.351	-28.649	74.000	PEAK
6		2500.000	15.434	29.943	45.378	-28.622	74.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.
7. The fundamental for reference only, it’s not restricted by unwanted emission limit.

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2440MHz**

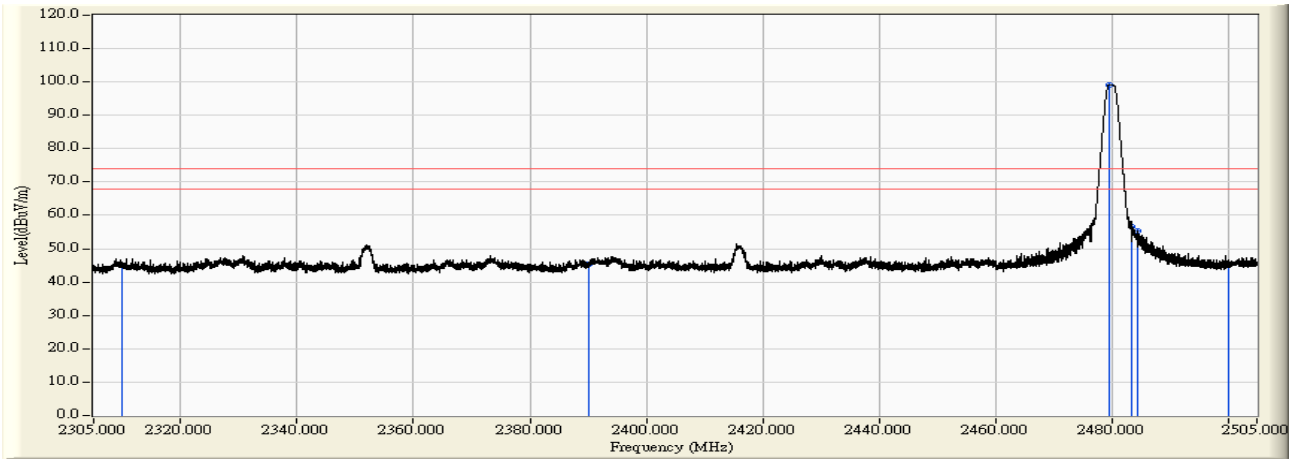


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	14.229	28.689	42.918	-31.082	74.000	PEAK
2		2375.460	14.636	33.541	48.177	-25.823	74.000	PEAK
3		2390.000	14.881	29.476	44.357	-29.643	74.000	PEAK
4	*	2440.280	14.961	78.319	93.279	19.279	74.000	PEAK
5		2483.500	15.408	28.748	44.156	-29.844	74.000	PEAK
6		2500.000	15.434	29.347	44.782	-29.218	74.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.
7. The fundamental for reference only, it’s not restricted by unwanted emission limit.

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2480MHz**

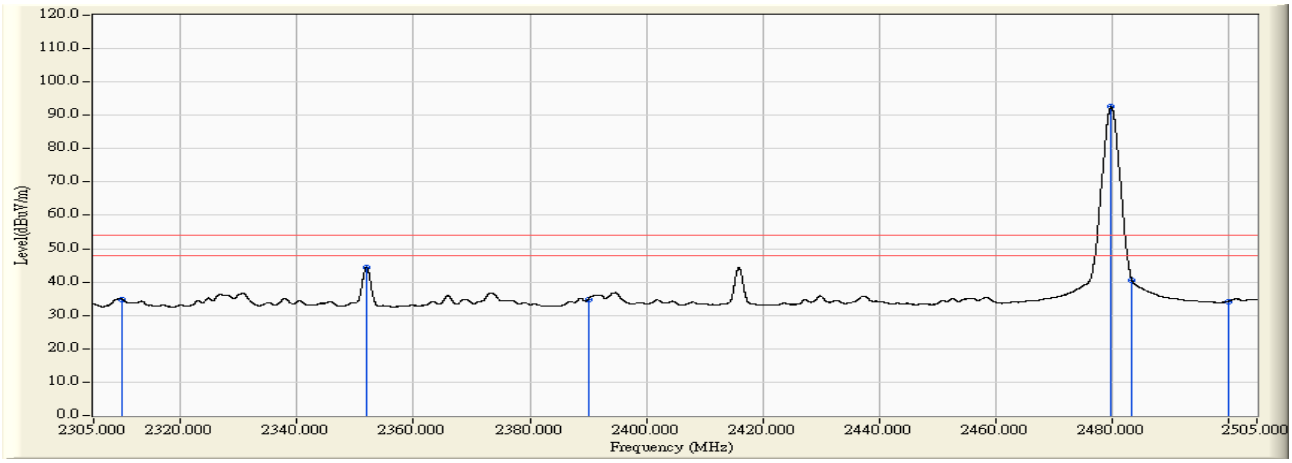


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	14.229	30.712	44.941	-29.059	74.000	PEAK
2		2390.000	14.881	30.559	45.440	-28.560	74.000	PEAK
3	*	2479.620	15.396	83.828	99.225	25.225	74.000	PEAK
4		2483.500	15.408	41.245	56.653	-17.347	74.000	PEAK
5		2484.380	15.412	39.932	55.343	-18.657	74.000	PEAK
6		2500.000	15.434	30.026	45.461	-28.539	74.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.
7. The fundamental for reference only, it’s not restricted by unwanted emission limit.

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2480MHz**

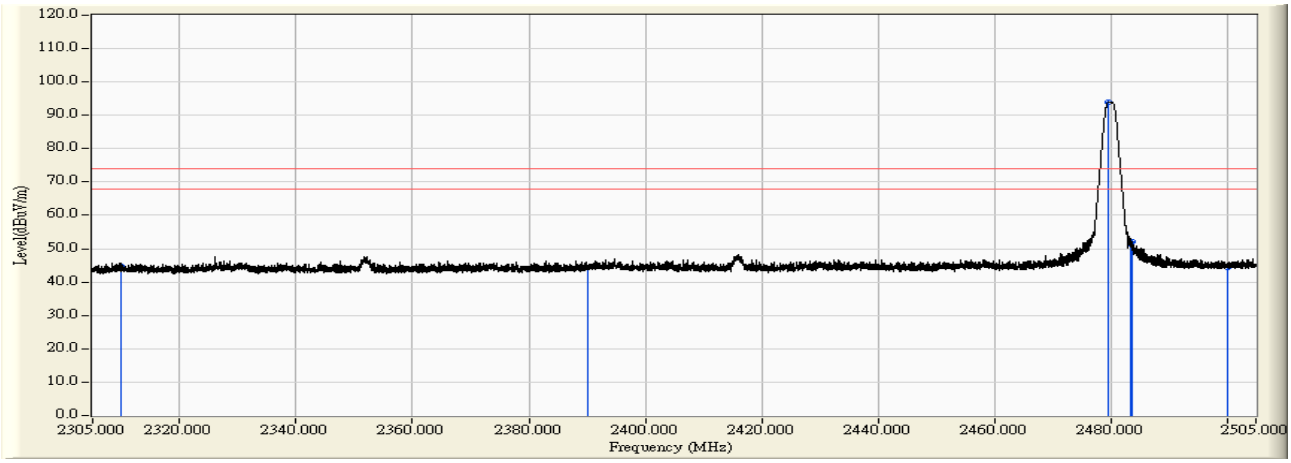


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	14.229	20.445	34.674	-19.326	54.000	AVERAGE
2		2351.800	14.431	29.876	44.308	-9.692	54.000	AVERAGE
3		2390.000	14.881	19.898	34.779	-19.221	54.000	AVERAGE
4	*	2479.900	15.398	77.155	92.553	38.553	54.000	AVERAGE
5		2483.500	15.408	25.161	40.569	-13.431	54.000	AVERAGE
6		2500.000	15.434	18.738	34.173	-19.827	54.000	AVERAGE

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.
7. The fundamental for reference only, it’s not restricted by unwanted emission limit.

Site : CB4-H	**Time : 2018/04/23**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : AC 120V/60Hz (Power by Notebook PC)**
EUT : Heart-Rate Smartband	**Note : 2480MHz**



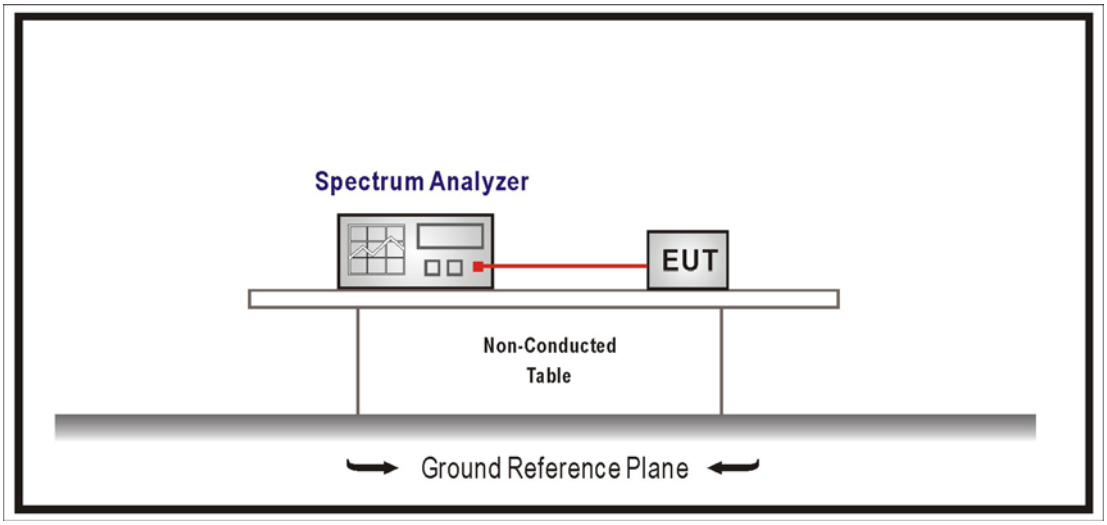
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	14.229	30.405	44.634	-29.366	74.000	PEAK
2		2390.000	14.881	29.631	44.512	-29.488	74.000	PEAK
3	*	2479.640	15.396	78.548	93.945	19.945	74.000	PEAK
4		2483.500	15.408	36.142	51.550	-22.450	74.000	PEAK
5		2483.600	15.409	36.842	52.251	-21.749	74.000	PEAK
6		2500.000	15.434	28.957	44.392	-29.608	74.000	PEAK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.
7. The fundamental for reference only, it’s not restricted by unwanted emission limit.

7. Occupied Bandwidth

7.1. Test Setup



7.2. Limits

The 6 dB bandwidth: ≧ 500 kHz.
Occupied Bandwidth: NA

7.3. Test Procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB558074 D01V04 for compliance to FCC 47CFR 15.247 requirements.
Set RBW = 1% of EBW, Span greater than RBW.

7.4. Test Specification

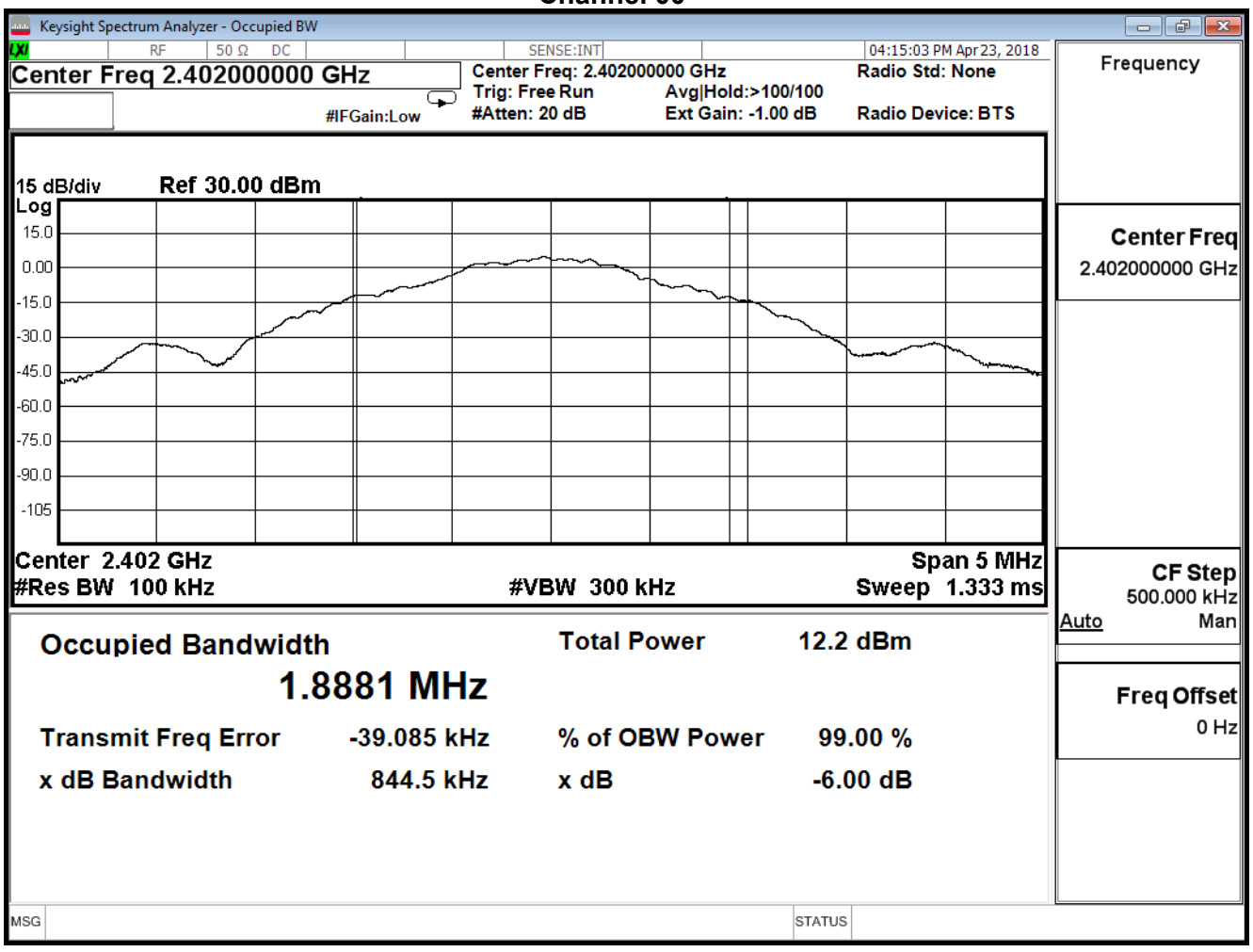
According to FCC Part 15 Subpart C Paragraph 15.247

7.5. Test Result

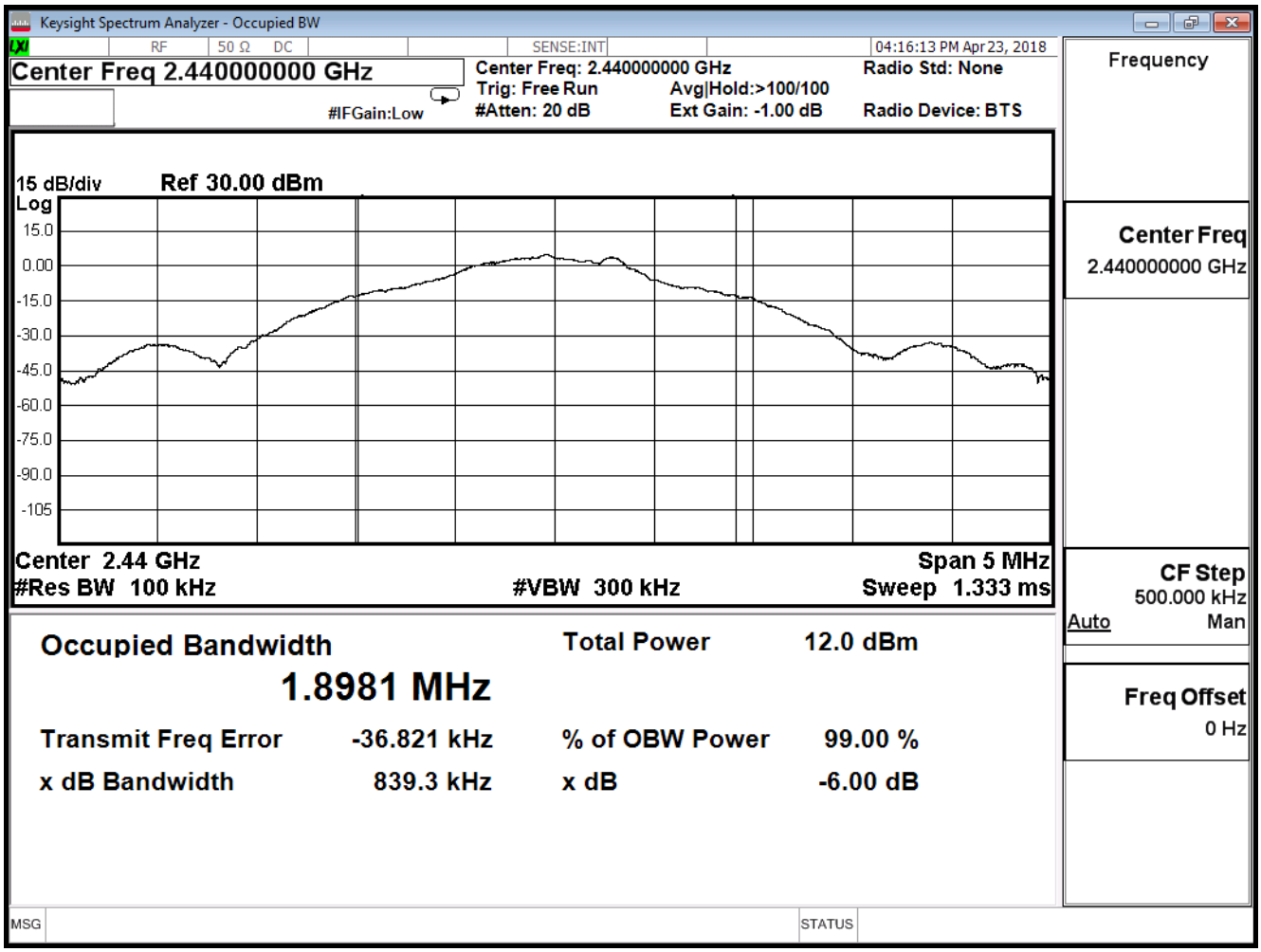
Product	Heart-Rate Smartband		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2018/04/23	Test Site	SR10-H

Channel No.	Frequency (MHz)	Measure Level (KHz)	Limit (KHz)	Result
0	2402	0.845	≧500	Pass
19	2440	0.839	≧500	Pass
39	2480	0.881	≧500	Pass

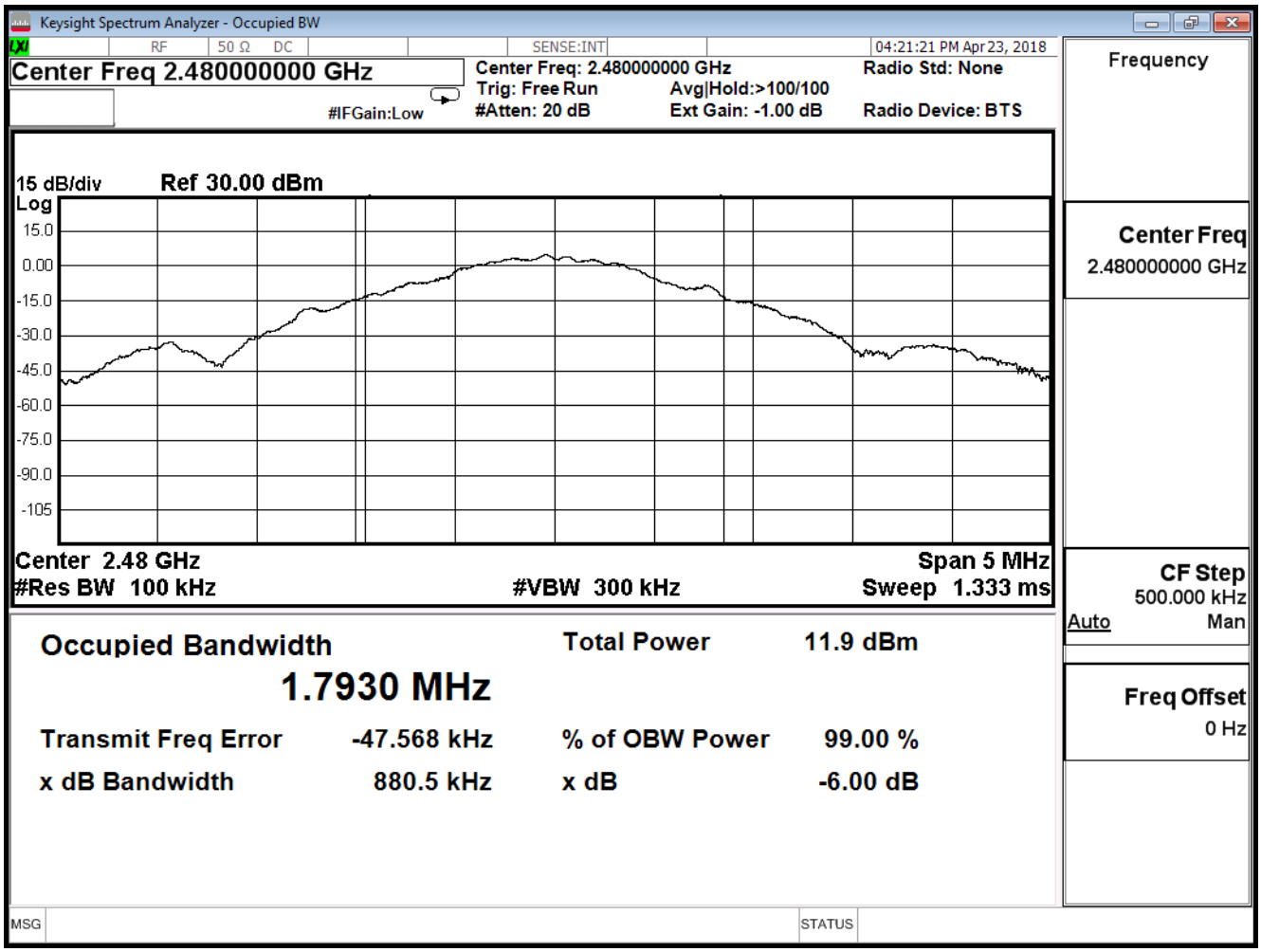
Channel 00



Channel 19

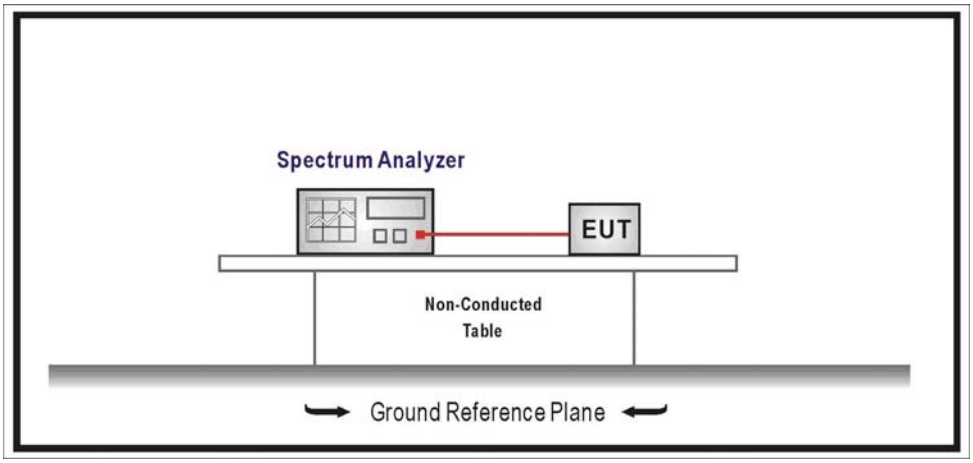

Keysight Spectrum Analyzer - Occupied BW
RF
50 Ω DC
SENSE:INT
04:16:13 PM Apr 23, 2018
Center Freq 2.440000000 GHz
Center Freq: 2.440000000 GHz
Trig: Free Run
Avg|Hold:>100/100
#IFGain:Low
#Atten: 20 dB
Ext Gain: -1.00 dB
Radio Std: None
Radio Device: BTS
Frequency
15 dB/div
Ref 30.00 dBm
Log
15.0
0.00
-15.0
-30.0
-45.0
-60.0
-75.0
-90.0
-105
Center Freq
2.440000000 GHz
Center 2.44 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 5 MHz
Sweep 1.333 ms
CF Step
500.000 kHz
Auto
Man
Occupied Bandwidth
1.8981 MHz
Total Power
12.0 dBm
Freq Offset
0 Hz
Transmit Freq Error
-36.821 kHz
% of OBW Power
99.00 %
x dB Bandwidth
839.3 kHz
x dB
-6.00 dB
MSG
STATUS

Channel 39


Keysight Spectrum Analyzer - Occupied BW
RF
50 Ω DC
SENSE:INT
04:21:21 PM Apr 23, 2018
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold:>100/100
#IFGain:Low
#Atten: 20 dB
Ext Gain: -1.00 dB
Radio Std: None
Radio Device: BTS
Frequency
15 dB/div
Ref 30.00 dBm
Log
15.0
0.00
-15.0
-30.0
-45.0
-60.0
-75.0
-90.0
-105
Center Freq
2.480000000 GHz
Center 2.48 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 5 MHz
Sweep 1.333 ms
CF Step
500.000 kHz
Auto
Man
Occupied Bandwidth
1.7930 MHz
Total Power
11.9 dBm
Freq Offset
0 Hz
Transmit Freq Error
-47.568 kHz
% of OBW Power
99.00 %
x dB Bandwidth
880.5 kHz
x dB
-6.00 dB
MSG
STATUS

8. Power Density

8.1. Test Setup



8.2. Limits

The peak power spectral density conducted from the intentional radiated to the antenna shall not be greater than +8dBm in any 3kHz band during any time interval of continuous transmission.

8.3. Test Procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB558074 D01V04 for compliance to FCC 47CFR 15.247 requirements.

8.4. Test Specification

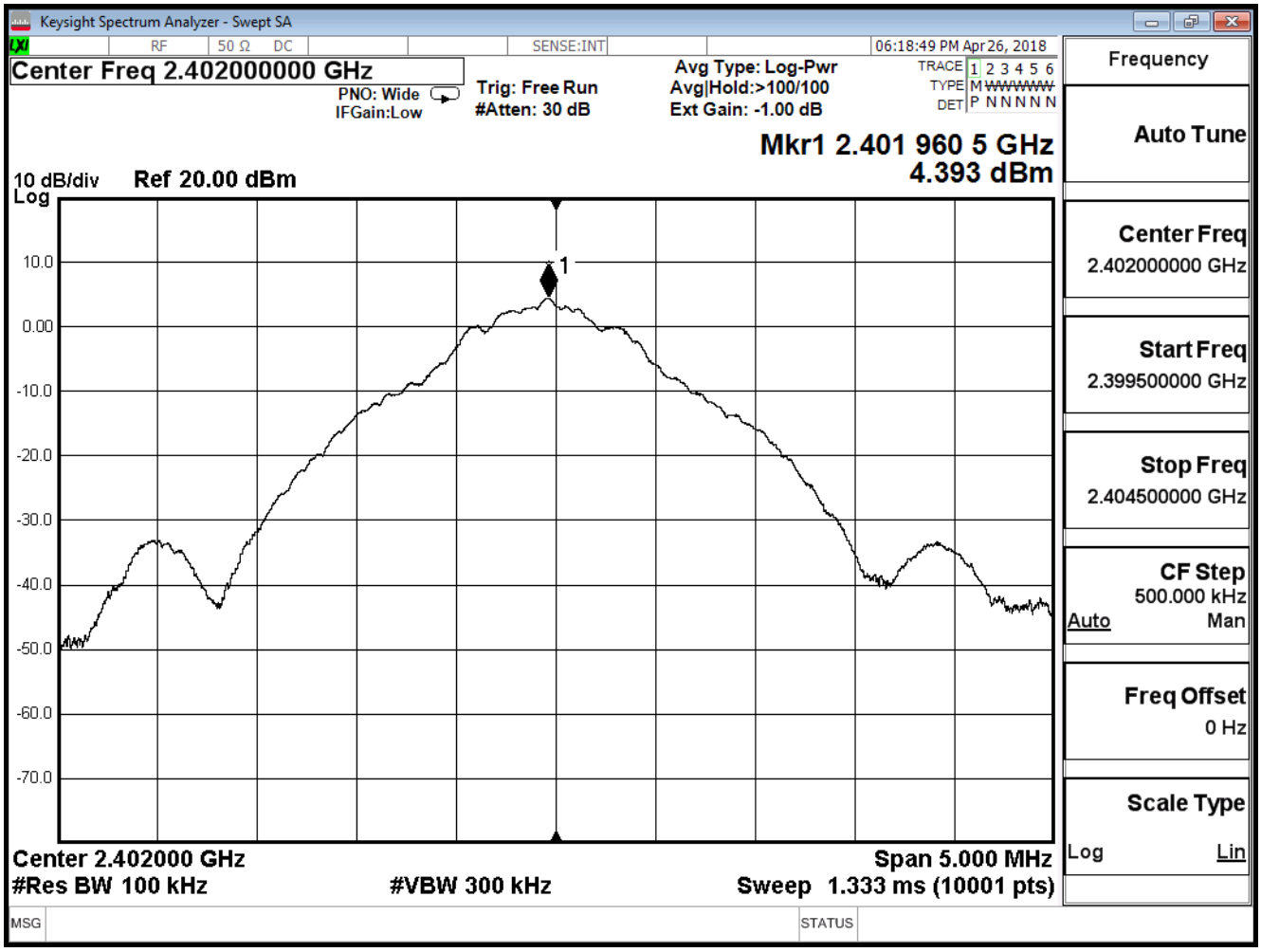
According to FCC Part 15 Subpart C Paragraph 15.247

8.5. Test Result

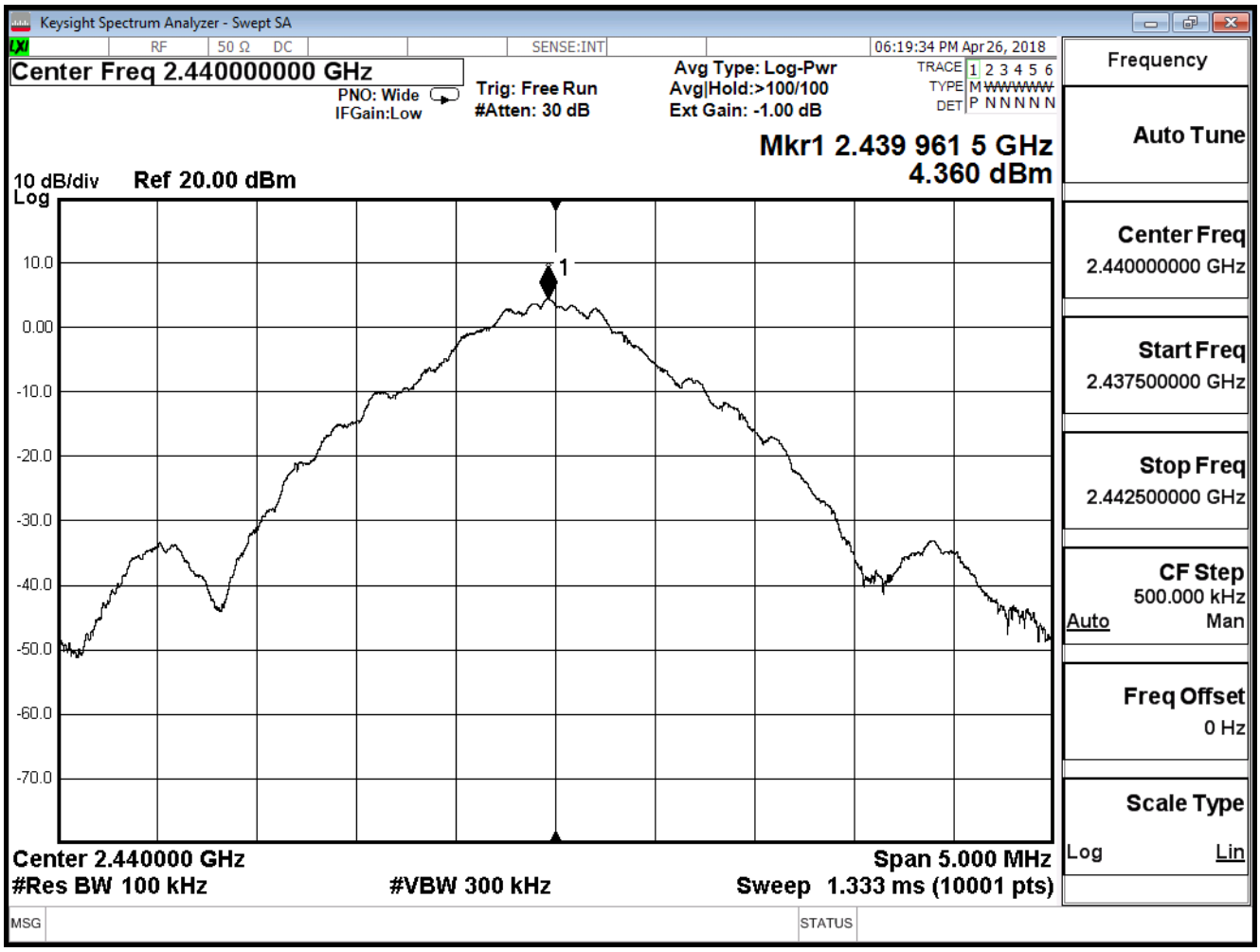
Product	Heart-Rate Smartband		
Test Item	Power Density		
Test Mode	Mode 1: Transmit		
Date of Test	2018/04/26	Test Site	SR7

Channel No.	Frequency (MHz)	Measure Level (dBm/3kHz)	Limit (dBm/3kHz)	Result
0	2402	4.393	≦8	Pass
19	2440	4.360	≦8	Pass
39	2480	4.329	≦8	Pass

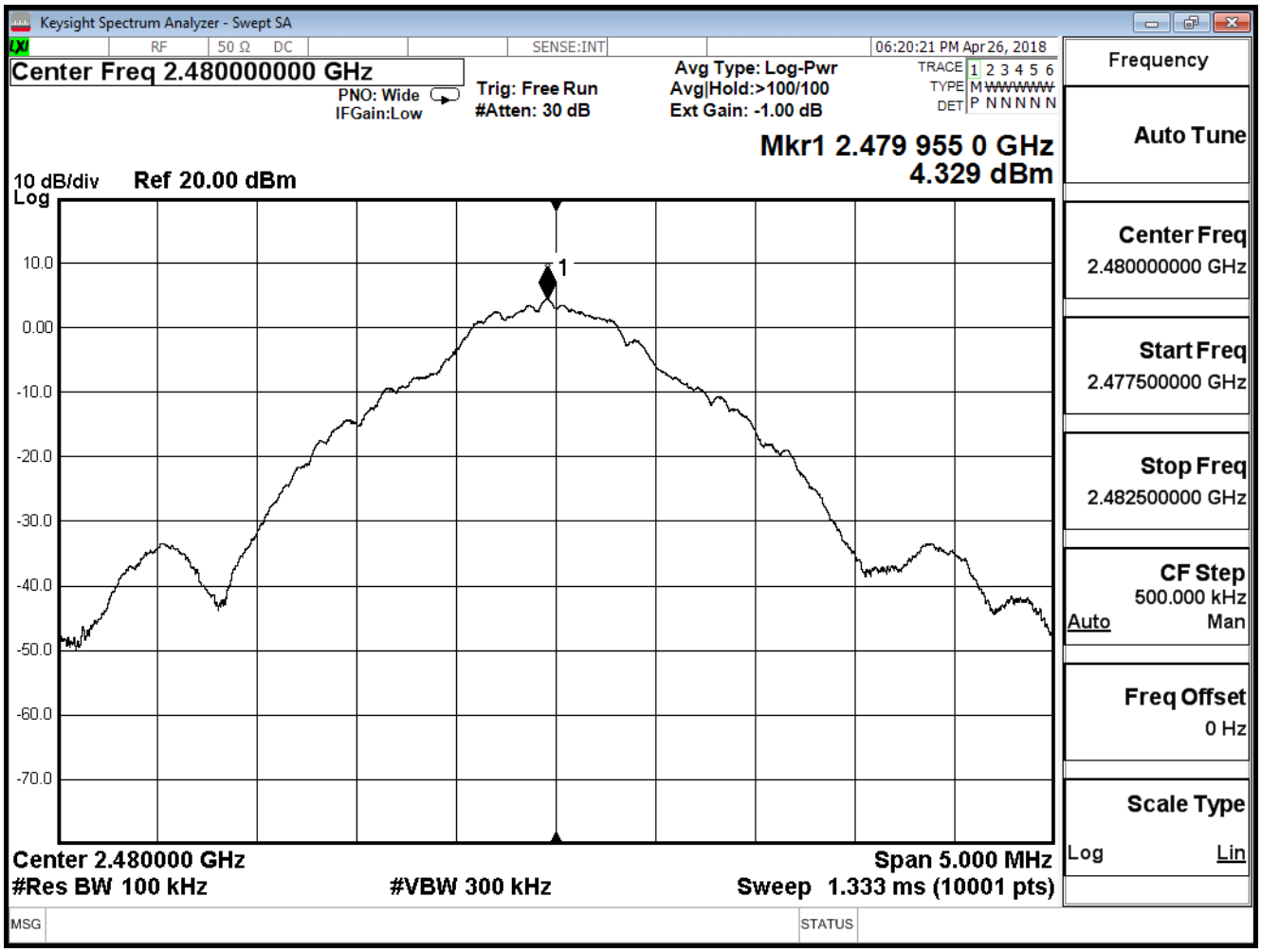
Channel 00



Channel 19


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:INT
06:19:34 PM Apr 26, 2018
Center Freq 2.440000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -1.00 dB
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Mkr1 2.439 961 5 GHz
4.360 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.440000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 5.000 MHz
Sweep 1.333 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.440000000 GHz
Start Freq
2.437500000 GHz
Stop Freq
2.442500000 GHz
CF Step
500.000 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

Channel 39


Keysight Spectrum Analyzer - Swept SA
RF
50 Ω DC
SENSE:INT
06:20:21 PM Apr 26, 2018
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -1.00 dB
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Mkr1 2.479 955 0 GHz
4.329 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Center 2.480000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 5.000 MHz
Sweep 1.333 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.477500000 GHz
Stop Freq
2.482500000 GHz
CF Step
500.000 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin