

FCC Test Report

Product Name	Automatic Wrist Blood Pressure Monitor
Model No.	HL158LD
FCC ID.	2ABTAHNL15LD

Applicant	HEALTH & LIFE CO.,LTD.
Address	9F., No.186, Jian Yi Road, Zhonghe District, New Taipei City, Taiwan

Date of Receipt	Oct. 12, 2016
Issued Date	Oct. 24, 2016
Report No.	16A0201R-RFUSP01V00
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

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Test Report

Issued Date: Oct. 24, 2016

Report No.: 16A0201R-RFUSP01V00



Product Name	Automatic Wrist Blood Pressure Monitor
Applicant	HEALTH & LIFE CO.,LTD.
Address	9F., No.186, Jian Yi Road, Zhonghe District, New Taipei City, Taiwan
Manufacturer	HEALTH & LIFE CO.,LTD.
Address	9F., No.186, Jian Yi Road, Zhonghe District, New Taipei City, Taiwan
Name and address of factory (ies) :	#1 Health & Life (Suzhou) Co., Ltd. No.1428 Xiang Jiang Road, Suzhou New District, Suzhou City 215129, Jiangsu Province, China #2 LIVING SCIENCE CO., LTD. No.1428 Xiang Jiang Road, Suzhou New District Suzhou City 215129, Jiangsu Province, China
Model No.	HL158LD
FCC ID.	2ABTAHNL15LD
EUT Rated Voltage	DC 3V by Battery
EUT Test Voltage	DC 3V by Battery
Trade Name	N/A
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2015 ANSI C63.4: 2014, ANSI C63.10: 2013 KDB 558074 D01 DTS Meas Guidance v03r05
Test Result	Complied

Documented By : Rita Huang
(Senior Adm. Specialist / Rita Huang)

Tested By : Anson Lu
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Approved By : Vincent Lin
(Director / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Automatic Wrist Blood Pressure Monitor
Trade Name	N/A
Model No.	HL158LD
FCC ID.	2ABTAHNL15LD
Frequency Range	2402 – 2480MHz
Channel Number	V4.0: 40CH
Type of Modulation	V4.0: GFSK(1Mbps)
Antenna Type	PCB Antenna
Channel Control	Auto
Antenna Gain	Refer to the table “Antenna List”

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	AUDIX	SMD8105-A0X	PCB Antenna	-2.39556dBi for 2.4 GHz

Note: The antenna of EUT is conforming to FCC 15.203.

Center Frequency of Each Channel: (For V4.0)

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

Note:

1. The EUT is a Automatic Wrist Blood Pressure Monitor with a built-in Bluetooth V4.0 transceiver.
2. These tests were conducted on a sample for the purpose of demonstrating compliance of Bluetooth transmitter with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode	Mode 1: Transmit - BLE (GFSK)
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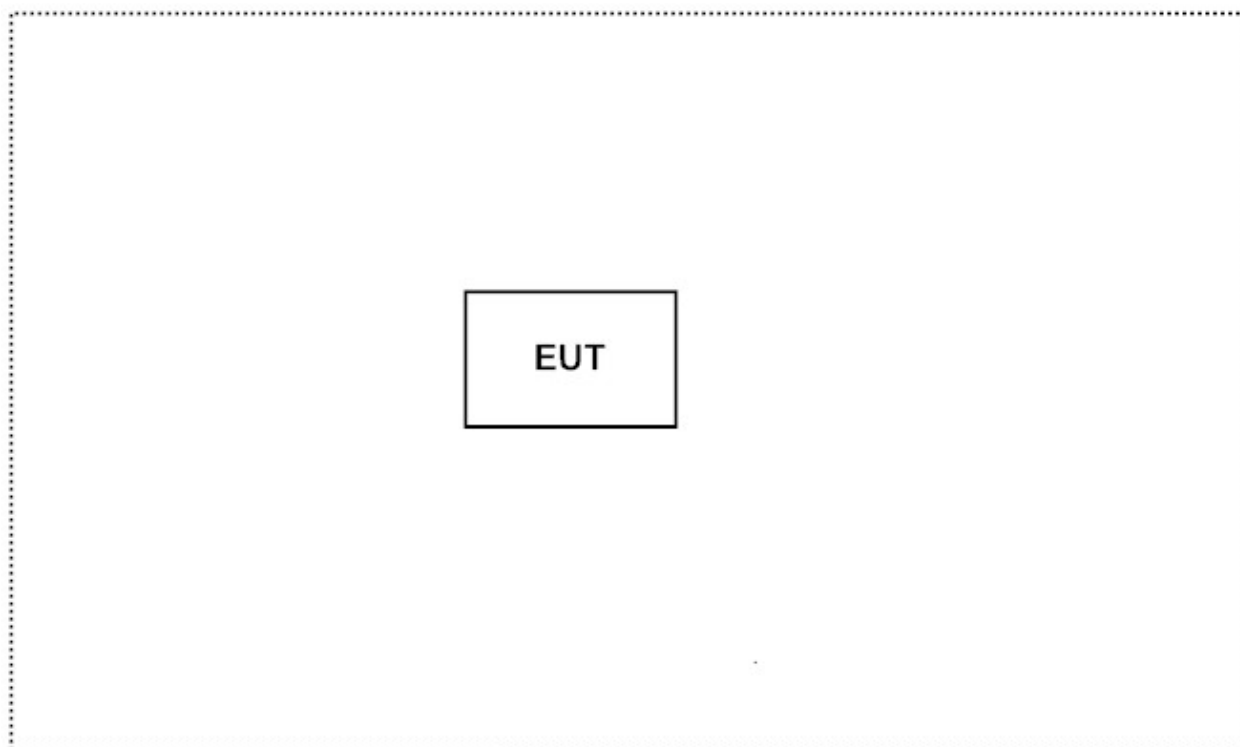
1.3. Tested System Details

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.	Power Cord
N/A				

Signal Cable Type	Signal cable Description
N/A	

1.4. Configuration of Tested System



1.5. EUT Exercise Software

1. Setup the EUT as shown in Section 1.4.
2. Execute continue transmitter on the EUT
3. Check 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	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	30-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site: <http://www.quietek.com/chinese/about/certificates.aspx?bval=5>

The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site: <http://www.quietek.com/>

Site Description: File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 92195

Site Name: Quietek Corporation
Site Address: No.5-22, Ruishukeng,
Linkou Dist. New Taipei City 24451,
Taiwan, R.O.C.
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

1.7. List of Test Equipment

For Conducted measurements /CB3

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
	Temperature Chamber	WIT GROUP	TH-1S-B	EQ-201-0014	2016/10/1	2017/9/29
X	Spectrum Analyzer	Agilent	N9010A	MY48030495	2016/7/22	2017/7/21
	Power Meter	Anritsu	ML2495A	6K00003357	2016/6/23	2017/6/22
X	Power Sensor	Agilent	U2021XA	MY53400007	2015/11/26	2016/11/24
X	Power Sensor	Agilent	U2021XA	MY53400006	2015/11/26	2016/11/24
X	Power Sensor	Agilent	U2021XA	MY53360005	2015/11/26	2016/11/24
X	Power Sensor	Agilent	U2021XA	MY53400008	2015/11/26	2016/11/24
	Signal Generator	Agilent	N5182B	MY53050685	2016/5/31	2017/5/30
	Analog Signal Geator	Agilent	E8257DK/E825	MY44320633	2016/9/13	2017/9/12

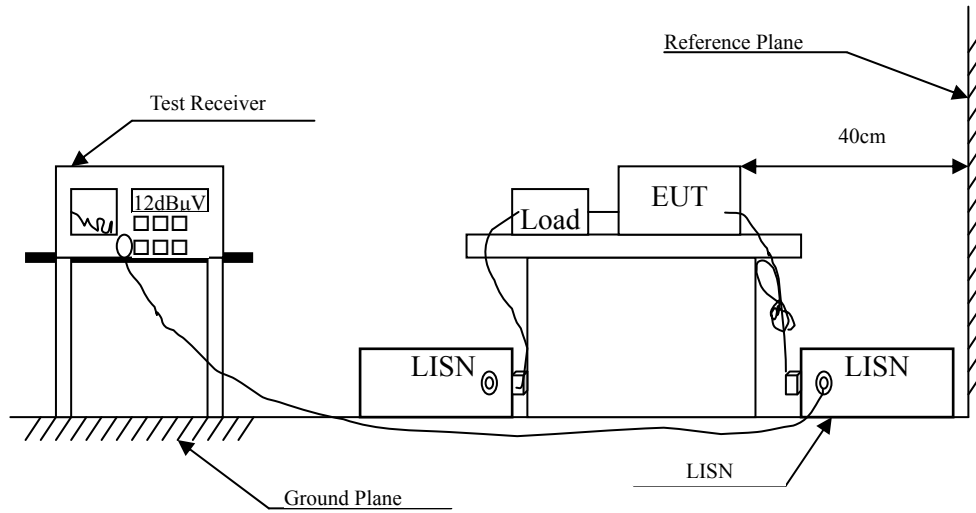
For Radiated measurements /Site3/CB10/CB8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Spectrum Analyzer	R&S	FSP40	100170	2016/1/5	2017/1/3
	Loop Antenna	TESEQ	HLA6121	37133	2016/3/18	2017/3/17
X	Bi-Log Antenna	Schaffner Chase	CBL6112B	2707	2016/6/11	2017/6/10
X	Horn Antenna	ETS-Lindgren	3117	00203761	2015/10/15	2016/10/13
	Horn Antenna	Schwarzbeck	BBHA9170	209	2016/4/14	2017/4/13
X	Pre-Amplifier	QuieTek	QTK-LK-E-I-A	N/A	2016/6/16	2017/6/15
X	Pre-Amplifier	EMCI	EMC012630SE	980210	2016/1/26	2017/1/24
X	Filter	MicroTRON	BRM50701	019	2015/10/20	2016/10/18
	Filter	Microwave Circuits	N0257881	36681	2015/12/7	2016/12/5
X	EMI Test Receiver	R&S	ESCS 30	838251/001	2016/7/21	2017/7/20
X	Coaxial Cable	QTK(Arnist)	RG 214	LC003-RG	2016/6/16	2017/6/15
X	Coaxial signal switch	Anritsu	MP59B	6201415889	2016/6/16	2017/6/15

- Note:
- All equipments are calibrated every one year.
- The test instruments marked with "X" are used to measure the final test results.
- Test Software version : QuieTek EMI 2.0 V2.1.113

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBμV) Limit		
Frequency MHz	Limits	
	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 and Peripherals are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

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

The EUT was setup to ANSI C63.4, 2014; tested to DTS test procedure of FCC KDB-558074 for compliance to FCC 47CFR Subpart C requirements.

2.4. Uncertainty

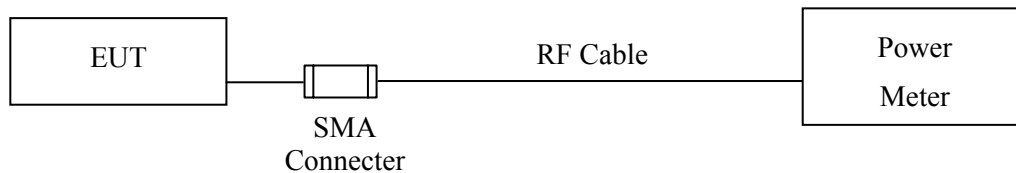
± 2.26 dB

2.5. Test Result of Conducted Emission

The EUT is powered by batteries Owing to the DC operation. This test item is not performed

3. Peak Power Output

3.1. Test Setup



3.2. Limit

The maximum peak power shall be less 1Watt.

3.3. Test Procedure

Tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements. The maximum peak conducted output power using KDB 558074 section 9.1.3 PKPM1 Peak power meter method.

3.4. Uncertainty

± 1.19 dB

3.5. Test Result of Peak Power Output

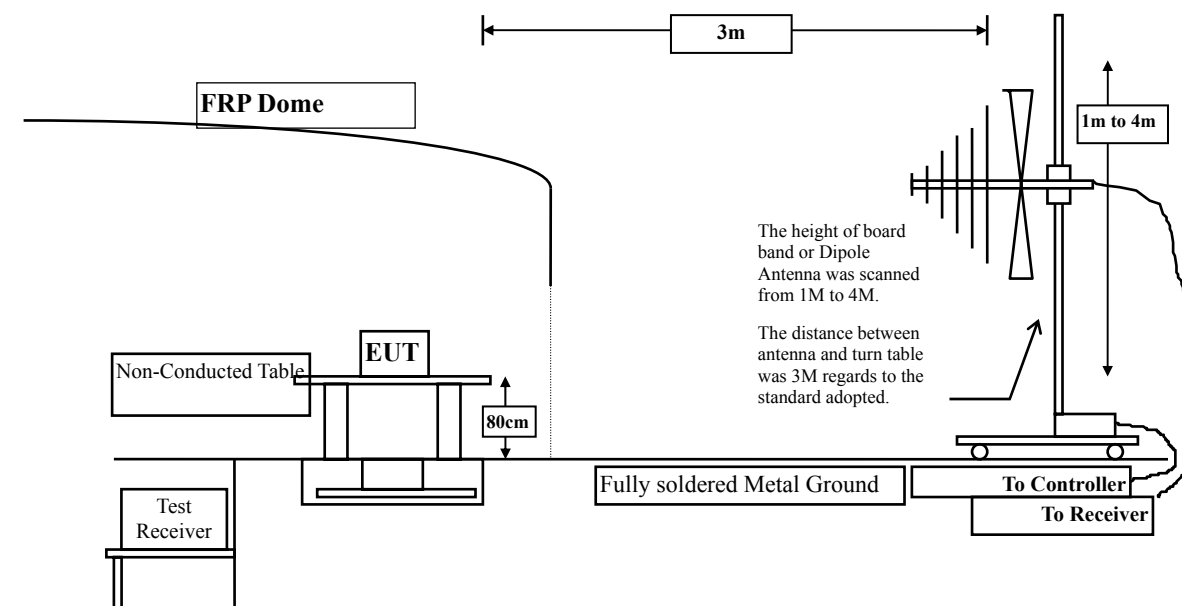
Product : Automatic Wrist Blood Pressure Monitor
 Test Item : Peak Power Output
 Test Site : No.3 OATS
 Test date : 2016/10/20
 Test Mode : Mode 1: Transmit - BLE (GFSK)

Channel No.	Frequency (MHz)	Measurement (dBm)	Required Limit	Result
Channel 00	2402.00	0.05	1 Watt= 30 dBm	Pass
Channel 19	2440.00	0.43	1 Watt= 30 dBm	Pass
Channel 39	2480.00	-0.47	1 Watt= 30 dBm	Pass

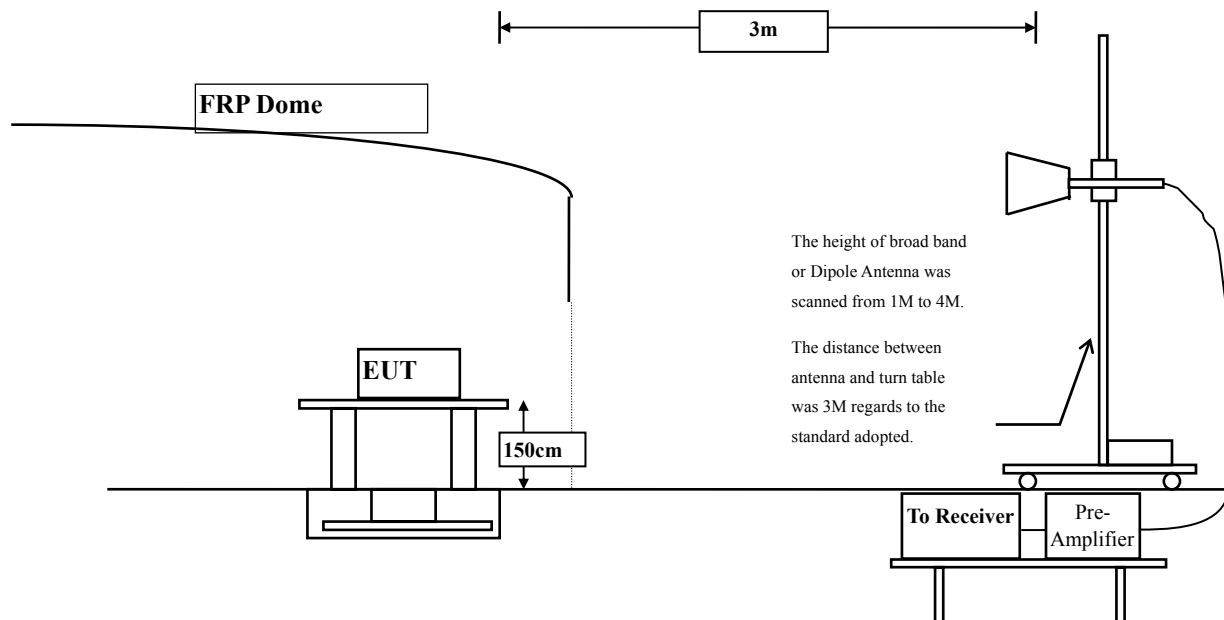
4. Radiated Emission

4.1. Test Setup

Below 1GHz



Above 1GHz



4.2. Limits

➤ General Radiated Emission 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	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

- Remarks:
1. RF Voltage (dBμV) = 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 for compliance to FCC 47CFR 15.247 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 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 is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The measurement frequency range from 9kHz - 10th Harmonic of fundamental was investigated.

4.4. Uncertainty

± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

4.5. Test Result of Radiated Emission

Product : Automatic Wrist Blood Pressure Monitor
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test date : 2016/10/20
Test Mode : Mode 1: Transmit - BLE (GFSK)(2402MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4804.000	2.511	50.860	53.370	-20.630	74.000
7206.000	9.511	33.240	42.751	-31.249	74.000
9608.000	10.394	31.050	41.444	-32.556	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4804.000	2.923	48.270	51.192	-22.808	74.000
7206.000	9.988	31.950	41.939	-32.061	74.000
9608.000	10.847	30.728	41.575	-32.425	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are 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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Automatic Wrist Blood Pressure Monitor
 Test Item : Harmonic Radiated Emission
 Test Site : No.3 OATS
 Test date : 2016/10/20
 Test Mode : Mode 1: Transmit - BLE (GFSK) (2440MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dB μ V	dB μ V/m	dB	dB μ V/m
Horizontal					
Peak Detector:					
4880.000	2.038	49.323	51.361	-22.639	74.000
7320.000	9.699	32.543	42.242	-31.758	74.000
9760.000	9.665	30.233	39.898	-34.102	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4880.000	2.499	48.676	51.175	-22.825	74.000
7320.000	10.303	32.014	42.317	-31.683	74.000
9760.000	10.299	29.664	39.964	-34.036	74.000
Average					
Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are 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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Automatic Wrist Blood Pressure Monitor
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test date : 2016/10/20
Test Mode : Mode 1: Transmit - BLE (GFSK) (2480MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4960.000	2.582	47.863	50.445	-23.555	74.000
7440.000	10.555	31.215	41.770	-32.230	74.000
9920.000	10.206	29.875	40.081	-33.919	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4960.000	3.398	45.782	49.181	-24.819	74.000
7440.000	11.214	29.665	40.879	-33.121	74.000
9920.000	11.245	28.341	39.586	-34.414	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are 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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Automatic Wrist Blood Pressure Monitor
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test date : 2016/10/20
 Test Mode : Mode 1: Transmit - BLE (GFSK) (2440MHz)

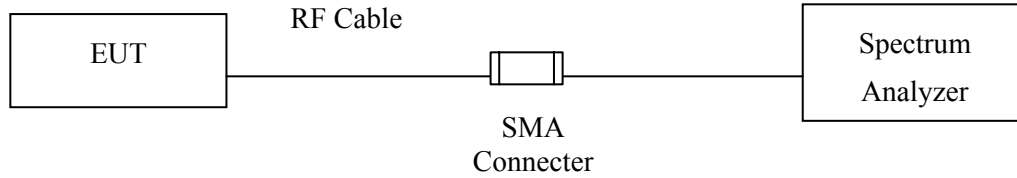
Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
103.720	-8.230	37.157	28.926	-14.574	43.500
381.140	1.386	30.511	31.897	-14.103	46.000
468.440	3.544	30.648	34.192	-11.808	46.000
544.100	4.373	29.321	33.694	-12.306	46.000
827.340	7.361	29.508	36.869	-9.131	46.000
852.560	7.106	29.530	36.636	-9.364	46.000
Vertical					
107.600	-4.027	38.594	34.567	-8.933	43.500
183.260	-3.735	33.883	30.148	-13.352	43.500
538.280	1.996	28.817	30.813	-15.187	46.000
604.240	2.199	29.298	31.498	-14.502	46.000
755.560	2.829	28.273	31.102	-14.898	46.000
827.340	2.711	29.414	32.125	-13.875	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are 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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

5. RF Antenna Conducted Test

5.1. Test Setup



5.2. Limits

According to FCC Section 15.247(d). In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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 either an RF conducted or measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

5.3. Test Procedure

The EUT was tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

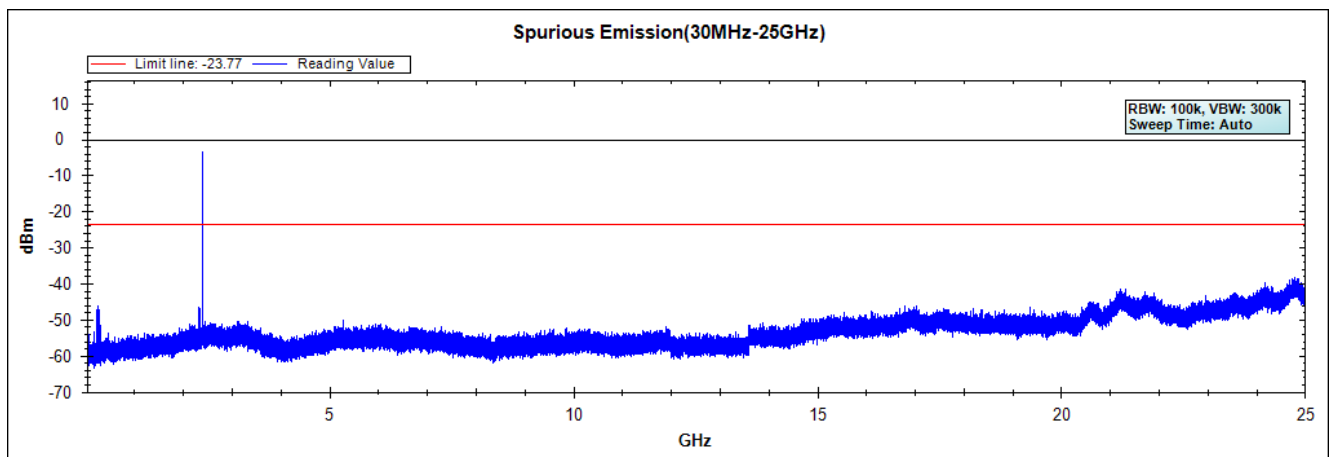
5.4. Uncertainty

$\pm 1.20\text{dB}$

5.5. Test Result of RF Antenna Conducted Test

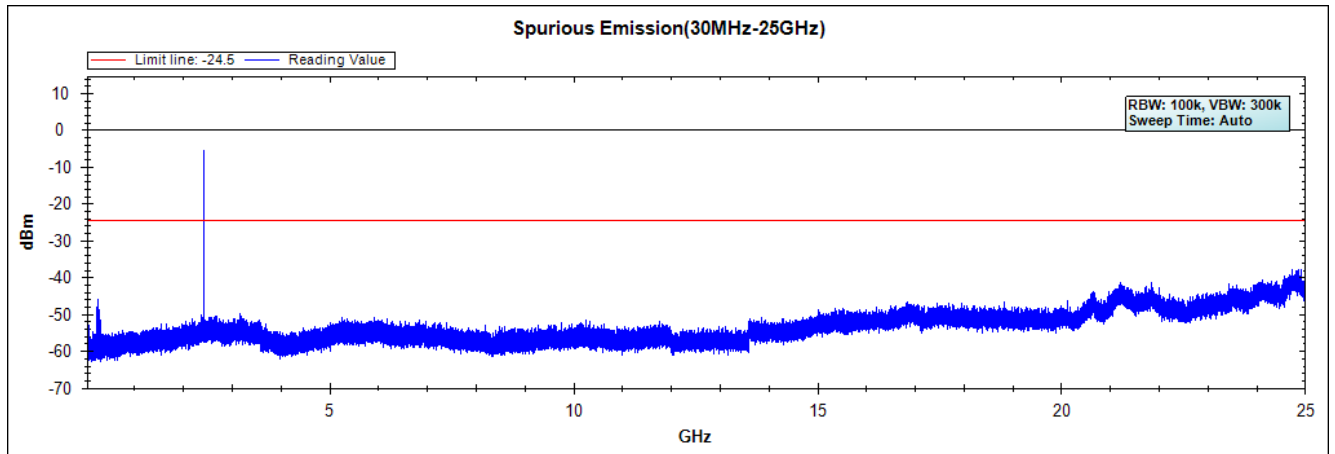
Product : Automatic Wrist Blood Pressure Monitor
 Test Item : RF Antenna Conducted Test
 Test Site : No.3 OATS
 Test date : 2016/10/20
 Test Mode : Mode 1: Transmit - BLE (GFSK)

Figure Channel 00:



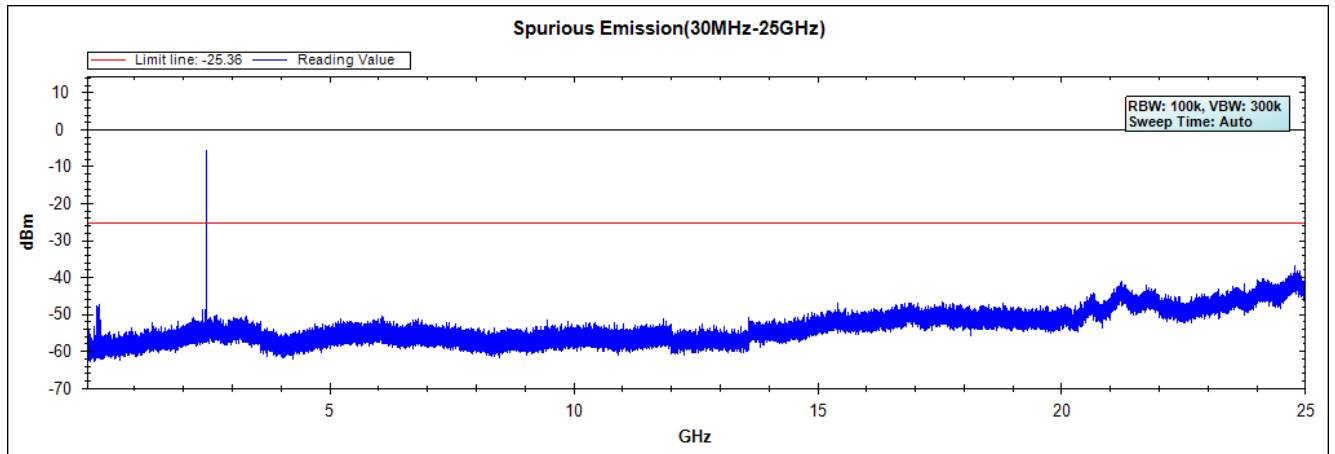
Product : Automatic Wrist Blood Pressure Monitor
 Test Item : RF Antenna Conducted Test
 Test Site : No.3 OATS
 Test date : 2016/10/20
 Test Mode : Mode 1: Transmit - BLE (GFSK)

Figure Channel 19:



Product : Automatic Wrist Blood Pressure Monitor
 Test Item : RF Antenna Conducted Test
 Test Site : No.3 OATS
 Test date : 2016/10/20
 Test Mode : Mode 1: Transmit - BLE (GFSK)

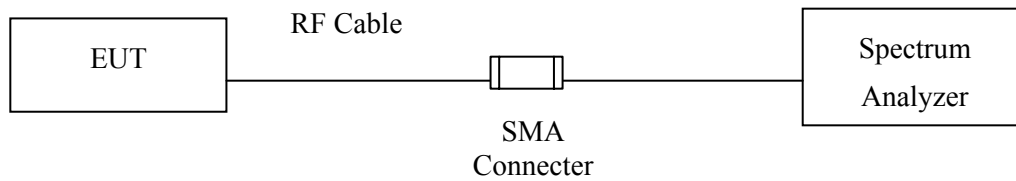
Figure Channel 39:



6. Band Edge

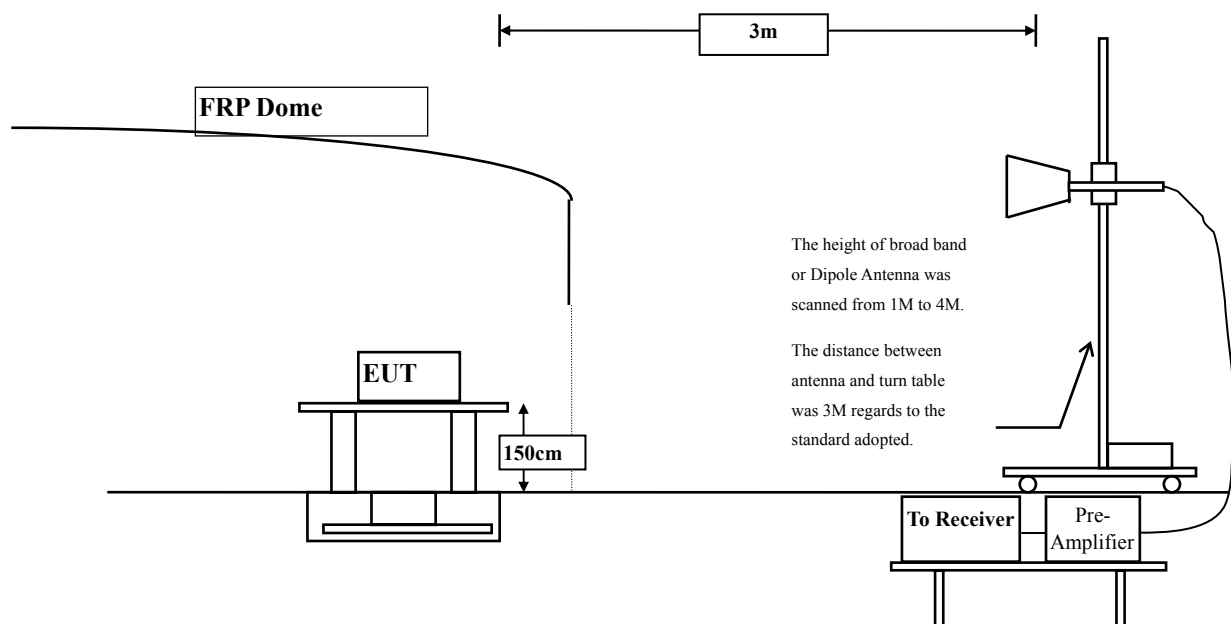
6.1. Test Setup

RF Conducted Measurement



RF Radiated Measurement:

Above 1GHz



6.2. Limit

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 either an RF conducted or a 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)).

6.3. 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 is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 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 is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.

6.4. Uncertainty

± 4.08 dB above 1GHz
± 4.22 dB below 1GHz

6.5. Test Result of Band Edge

Product : Automatic Wrist Blood Pressure Monitor
Test Item : Band Edge
Test Site : No.3 OATS
Test date : 2016/10/20
Test Mode : Mode 1: Transmit - BLE (GFSK)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
00 (Peak)	2374.058	-2.757	47.740	44.983	74.00	54.00	Pass
00 (Peak)	2390.000	-2.687	44.649	41.962	74.00	54.00	Pass
00 (Peak)	2400.000	-2.660	70.642	67.982	74.00	54.00	Pass
00 (Peak)	2402.174	-2.657	100.350	97.693	--	--	--
00 (Average)	2342.029	-2.832	32.239	29.407	74.00	54.00	Pass
00 (Average)	2390.000	-2.687	27.907	25.220	74.00	54.00	Pass
00 (Average)	2400.000	-2.660	43.248	40.588	74.00	54.00	Pass
00 (Average)	2402.029	-2.657	73.344	70.687	--	--	--

Figure Channel 00:

Horizontal (Peak)

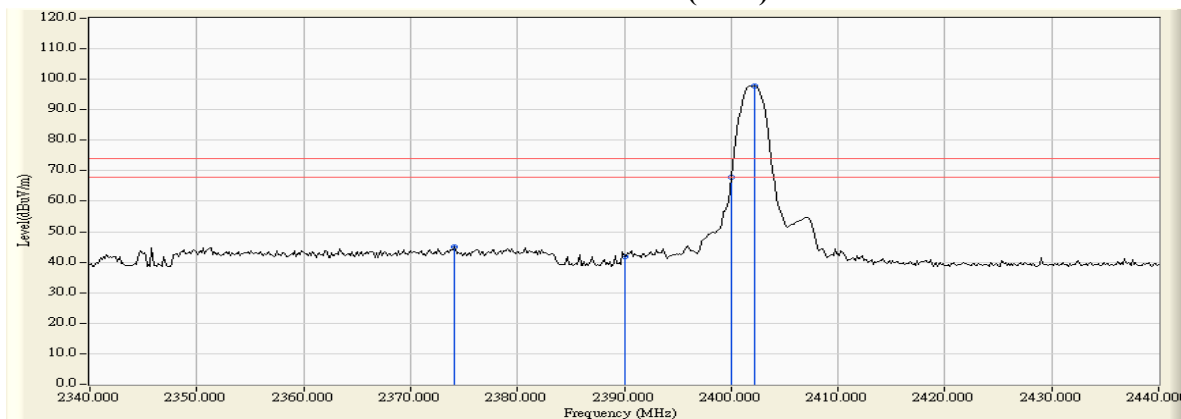
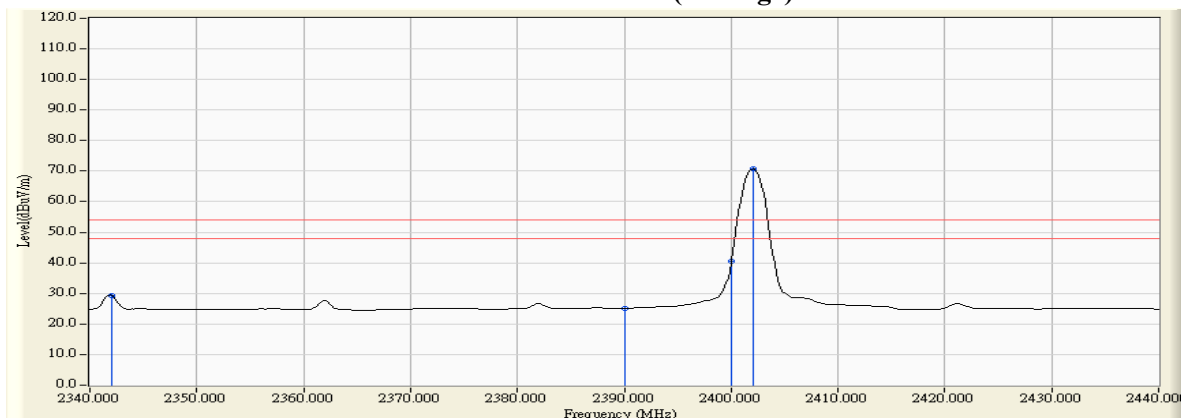


Figure Channel 00:

Horizontal (Average)



Note:

1. All readings above 1GHz are 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.

Product : Automatic Wrist Blood Pressure Monitor
Test Item : Band Edge
Test Site : No.3 OATS
Test date : 2016/10/20
Test Mode : Mode 1: Transmit - BLE (GFSK)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
00 (Peak)	2342.319	-3.933	44.267	40.334	74.00	54.00	Pass
00 (Peak)	2390.000	-4.159	41.875	37.716	74.00	54.00	Pass
00 (Peak)	2400.000	-4.171	71.302	67.131	74.00	54.00	Pass
00 (Peak)	2402.174	-4.171	101.970	97.799	--	--	--
00 (Average)	2342.029	-3.929	32.683	28.753	74.00	54.00	Pass
00 (Average)	2390.000	-4.159	28.062	23.903	74.00	54.00	Pass
00 (Average)	2400.000	-4.171	44.282	40.111	74.00	54.00	Pass
00 (Average)	2402.029	-4.171	74.631	70.460	--	--	--

Figure Channel 00: Vertical (Peak)

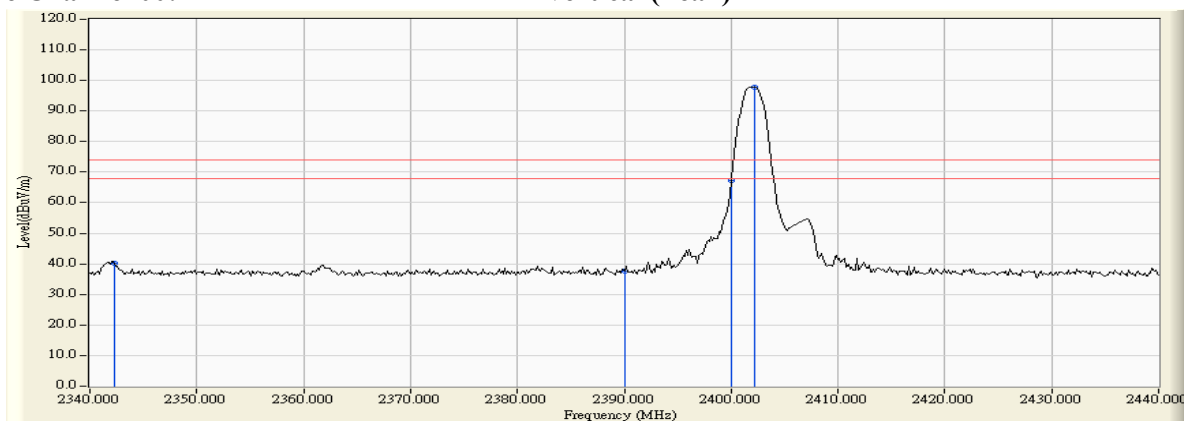
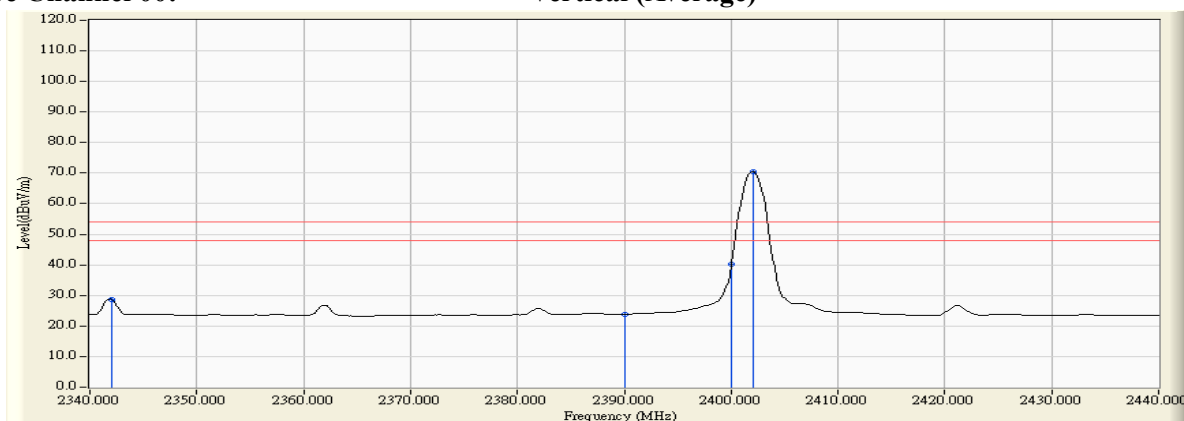


Figure Channel 00: Vertical (Average)



Note:

1. All readings above 1GHz are 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.

Product : Automatic Wrist Blood Pressure Monitor
Test Item : Band Edge
Test Site : No.3 OATS
Test date : 2016/10/20
Test Mode : Mode 1: Transmit - BLE (GFSK)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
39 (Peak)	2480.167	-2.605	102.479	99.874	--	--	--
39 (Peak)	2483.500	-2.601	57.974	55.372	74.00	54.00	Pass
39 (Peak)	2485.094	-2.600	61.378	58.778	74.00	54.00	Pass
39 (Average)	2480.022	-2.605	75.210	72.605	--	--	--
39 (Average)	2483.500	-2.601	32.579	29.977	74.00	54.00	Pass
39 (Average)	2520.022	-2.729	35.765	33.036	74.00	54.00	Pass

Figure Channel 39:

Horizontal (Peak)

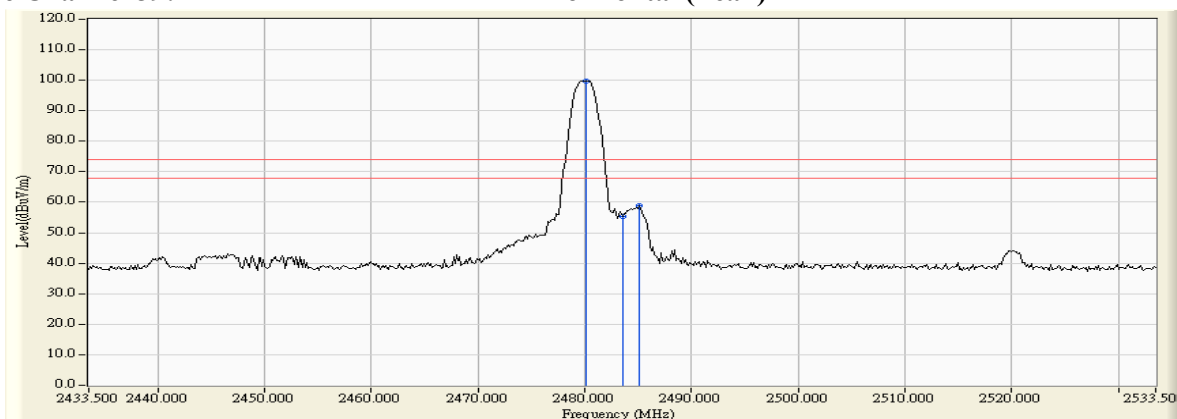
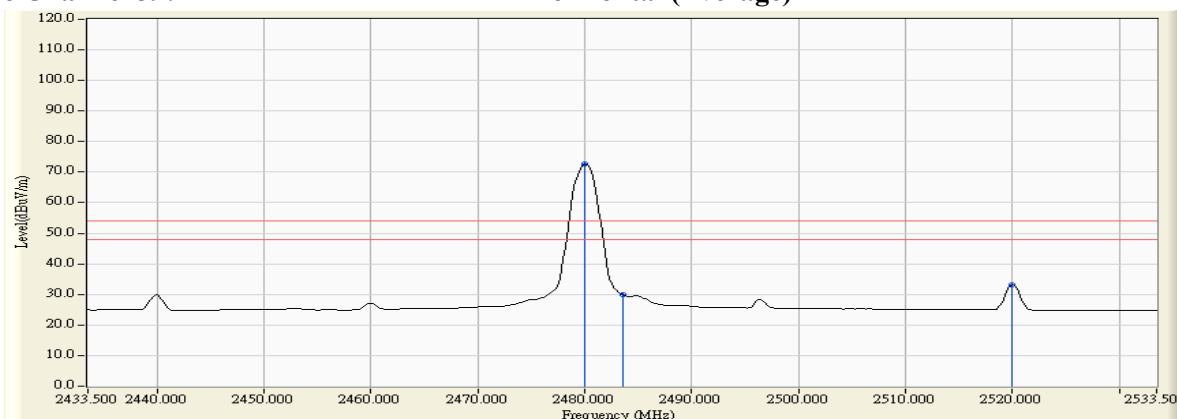


Figure Channel 39:

Horizontal (Average)



Note:

1. All readings above 1GHz are 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.

Product : Automatic Wrist Blood Pressure Monitor
Test Item : Band Edge
Test Site : No.3 OATS
Test date : 2016/10/20
Test Mode : Mode 1: Transmit - BLE (GFSK)

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
39 (Peak)	2480.167	-3.977	104.031	100.054	--	--	--
39 (Peak)	2483.500	-3.966	60.109	56.142	74.00	54.00	Pass
39 (Peak)	2485.094	-3.961	63.286	59.324	74.00	54.00	Pass
39 (Average)	2480.022	-3.978	76.414	72.436	--	--	--
39 (Average)	2483.500	-3.966	33.425	29.458	74.00	54.00	Pass
39 (Average)	2520.167	-3.814	37.157	33.344	74.00	54.00	Pass

Figure Channel 39: Vertical (Peak)

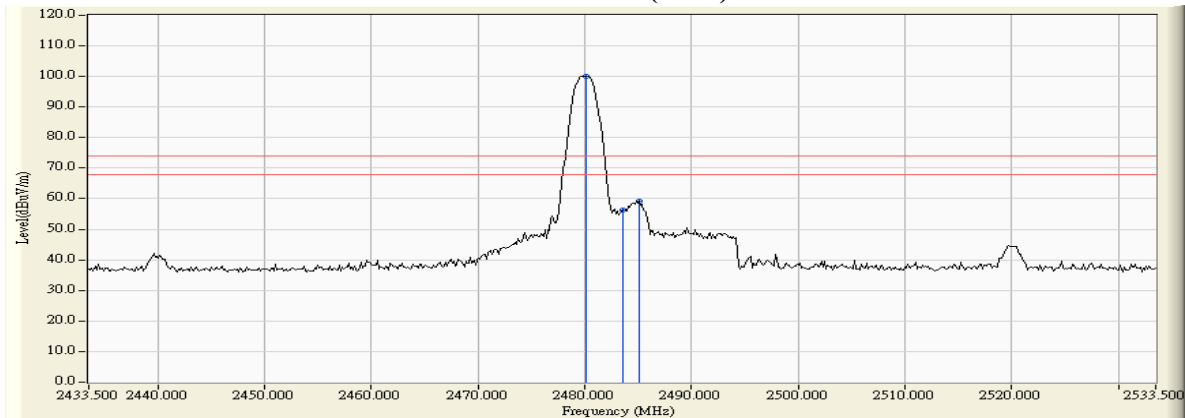
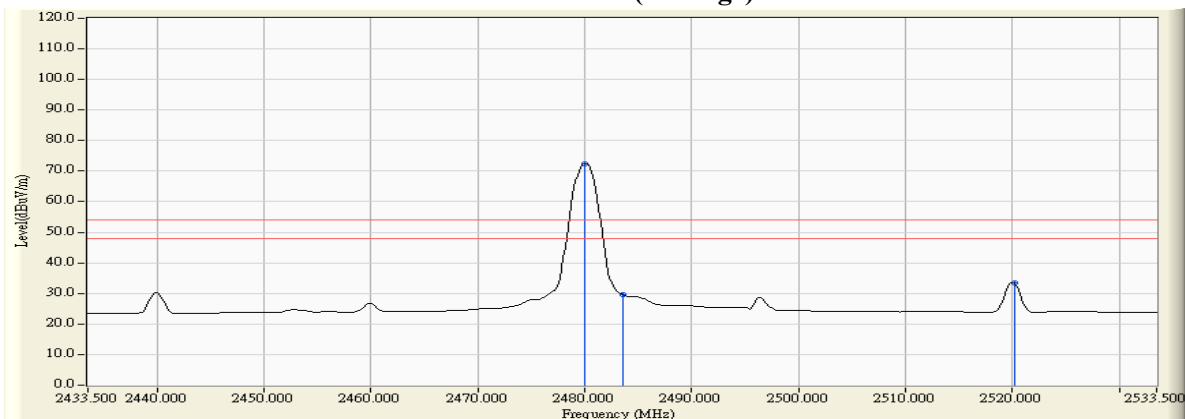


Figure Channel 39: Vertical (Average)

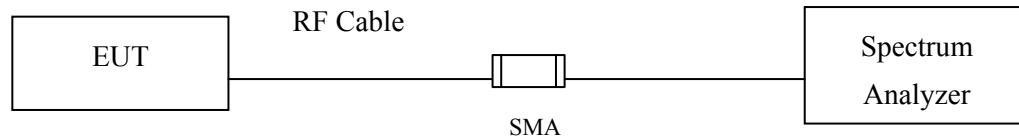


Note:

1. All readings above 1GHz are 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. 6dB Bandwidth

7.1. Test Setup



7.2. Limits

The minimum bandwidth shall be at least 500 kHz.

7.3. Test Procedure

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

Set RBW = 1-5% of the emission bandwidth, $VBW \geq 3 \cdot RBW$

7.4. Uncertainty

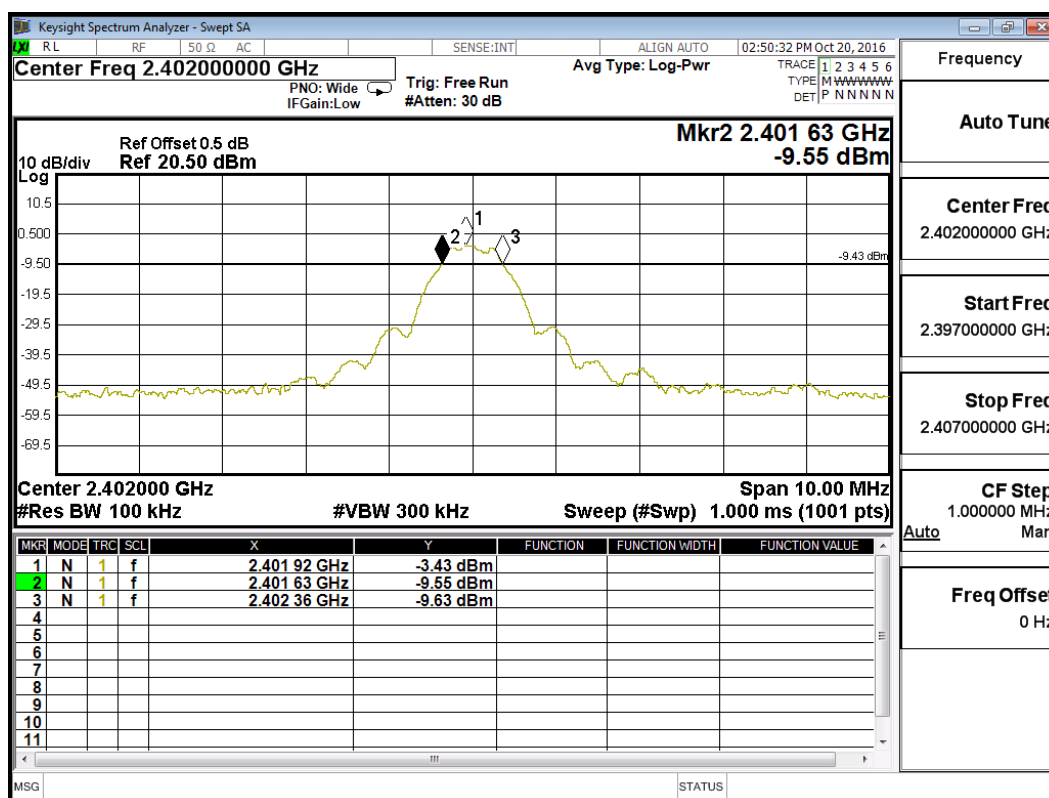
$\pm 283\text{Hz}$

7.5. Test Result of 6dB Bandwidth

Product : Automatic Wrist Blood Pressure Monitor
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - BLE (GFSK) (2402MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	730.0	>500	Pass

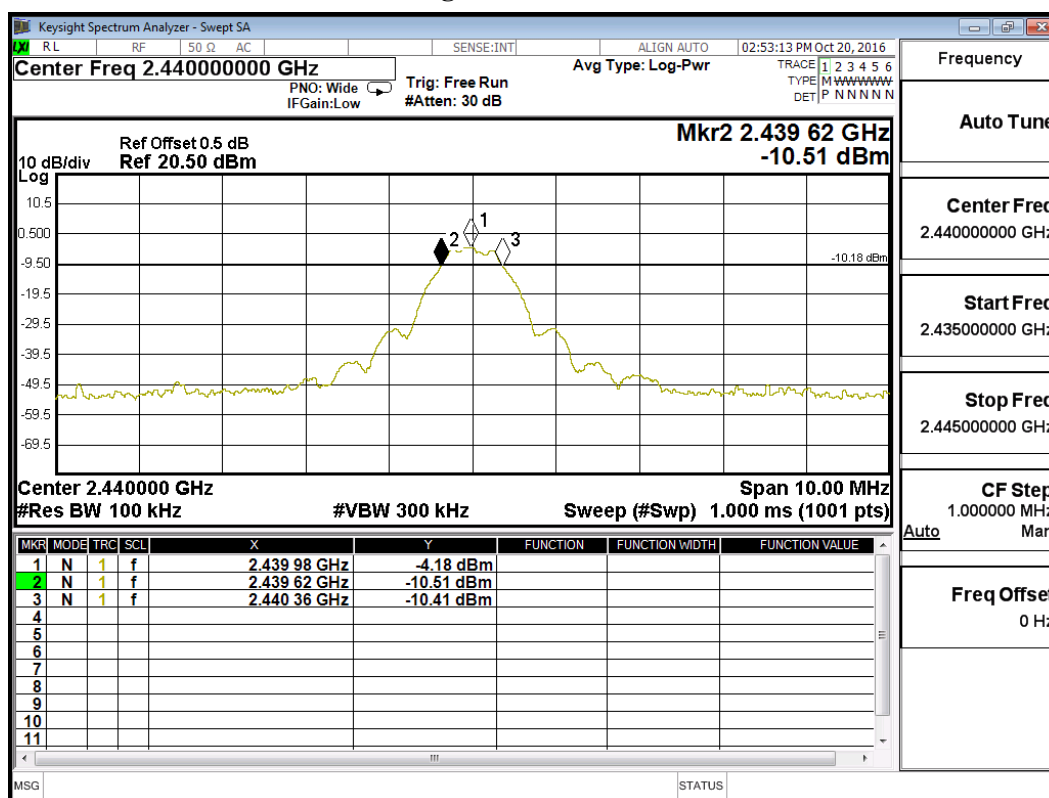
Figure Channel 00:



Product : Automatic Wrist Blood Pressure Monitor
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - BLE (GFSK) (2440MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
19	2440	740.0	>500	Pass

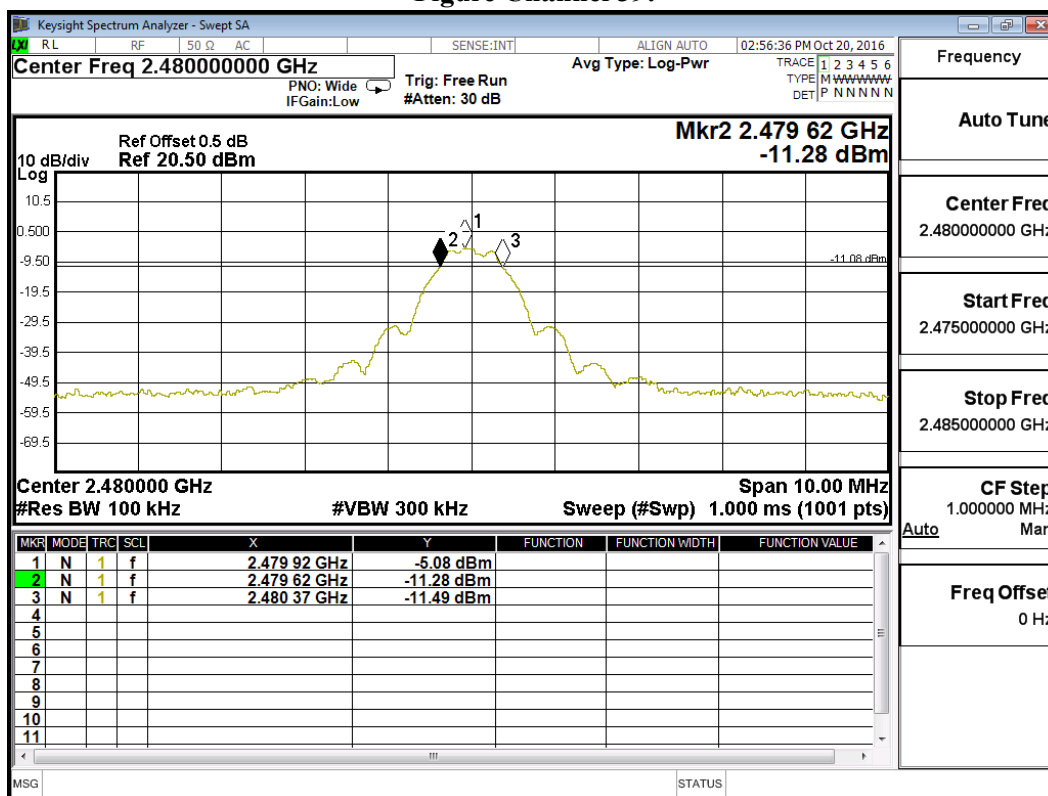
Figure Channel 19:



Product : Automatic Wrist Blood Pressure Monitor
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - BLE (GFSK) (2480MHz)

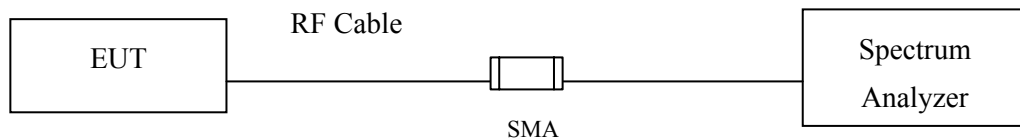
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2480	750.0	>500	Pass

Figure Channel 39:



8. Power Density

8.1. Test Setup



8.2. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

8.3. Test Procedure

The EUT was setup according to ANSI C63.10: 2013, the maximum power spectral density using KDB 558074 section 10.2 PKPSD (peak PSD) method.

8.4. Uncertainty

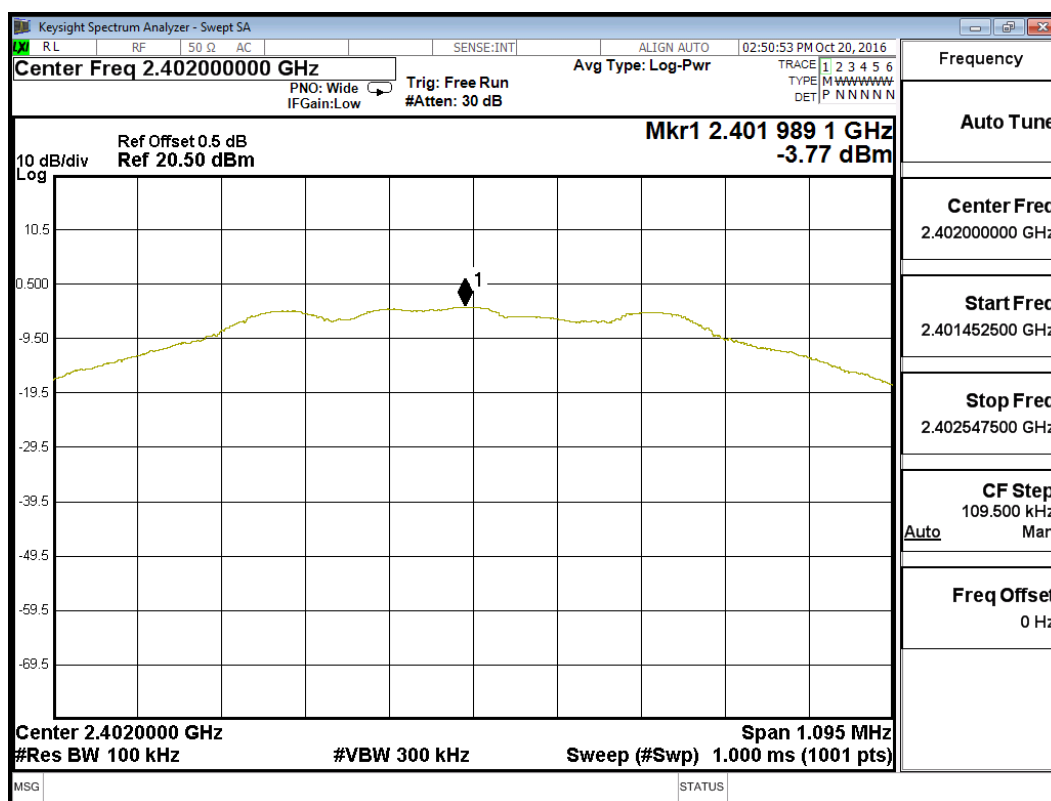
± 1.20 dB

8.5. Test Result of Power Density

Product : Automatic Wrist Blood Pressure Monitor
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - BLE (GFSK) (2402MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	-3.77	≤ 8 dBm	Pass

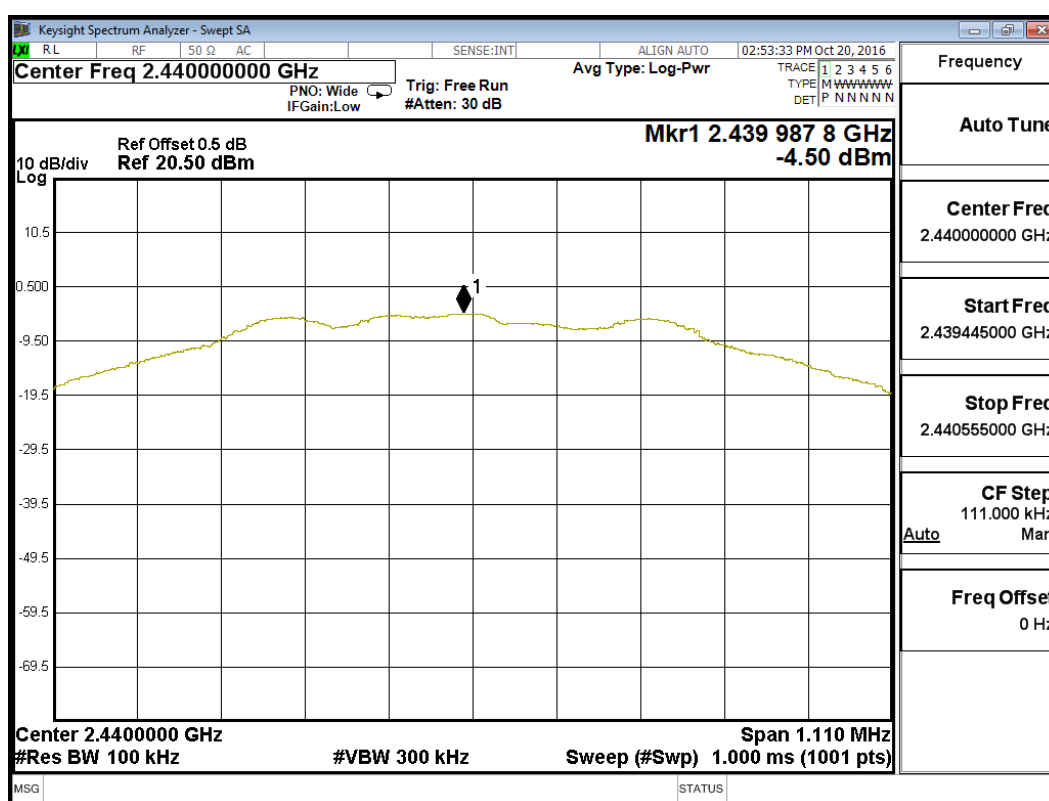
Figure Channel 00:



Product : Automatic Wrist Blood Pressure Monitor
Test Item : Power Density Data
Test Site : No.3OATS
Test Mode : Mode 1: Transmit - BLE (GFSK) (2440MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
19	2440	-4.50	$\leq 8\text{dBm}$	Pass

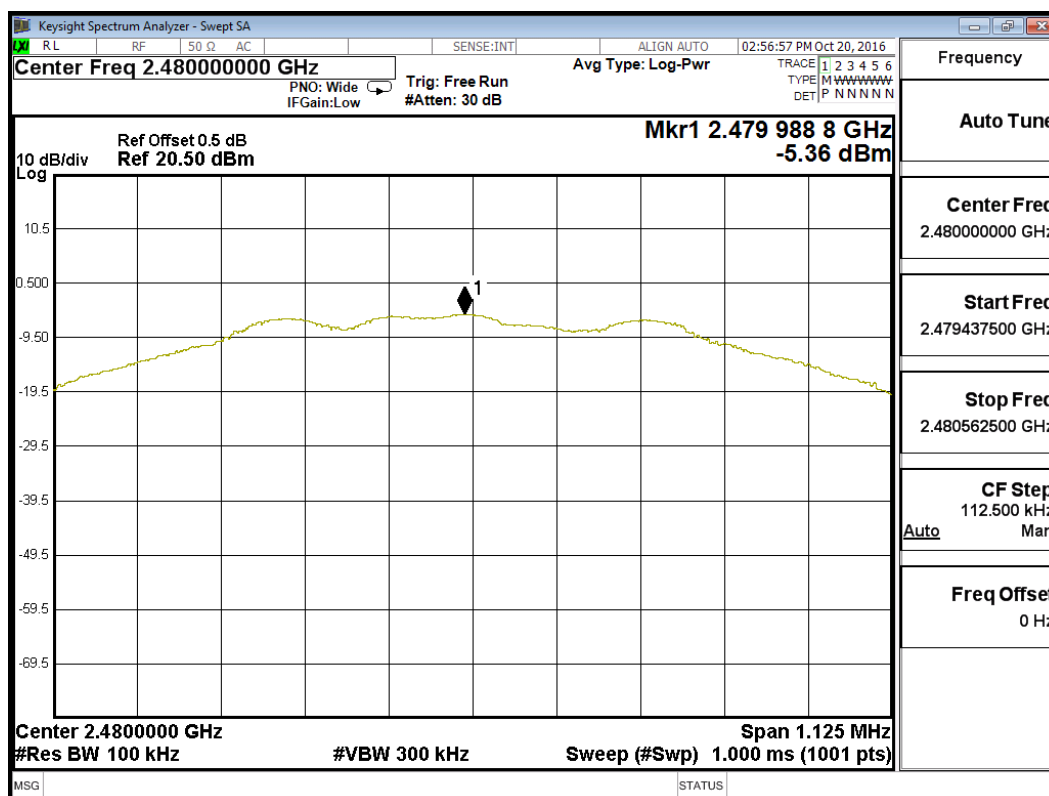
Figure Channel 19:



Product : Automatic Wrist Blood Pressure Monitor
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - BLE (GFSK) (2480MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
39	2480	-5.36	$\leq 8\text{dBm}$	Pass

Figure Channel 39:



9. EMI Reduction Method During Compliance Testing

No modification was made during testing.

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs