

47 CFR FCC Part 15 Subpart C

Section 15.247

Test Report

Product : **Wrist Type Blood Pressure Monitor**

Trade Name : N/A

Model Number : BPM13B

FCC ID : UV3BPW-2113B

Prepared for

AVITA Corporation

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Prepared by

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Remark:

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The test result in this report is only subjected to the test sample.

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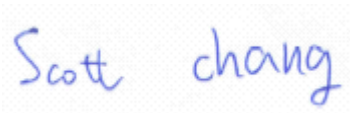
Statement of Compliance

Applicant: AViTA Corporation
Manufacturer: 1. AViTA Corporation
2. AViTA (Wujiang) Co., Ltd.
Product: Wrist Type Blood Pressure Monitor
Model No.: BPM13B
Tested Power Voltage: DC 3V (2 * 1.5V AAA batteries)
Date of Final Test: Jan. 10, 2022
Configuration of Measurements and Standards Used :
FCC Rules and Regulations Part 15 Subpart C Section 15.247

I HEREBY CERTIFY THAT: The data shown in this report were made in accordance with the procedures given in ANSI C63.10, and the energy emitted by the device was founded to be within the limits applicable. I assume full responsibility for accuracy and completeness of these data.

Note: 1. The result of the testing report relate only to the item tested.
2. This report shall not be partial reproduced without written approval by Interocean EMC Technology Corporation.
3. Judgment of conformity is based on test result, regardless of measurement uncertainty.

Report Issued: 2022/03/10

Prepared by: 
Scott Chang

Approved: 
Jerry Chang

1 General Information

1.1 Description of Equipment Under Test

Product	: Wrist Type Blood Pressure Monitor
Model Number	: BPM13B
Applicant	: AViTA Corporation 9F., No. 78, Sec. 1, Kwang-Fu Rd., San-Chung District., New Taipei City, Taiwan 24158
Manufacturer	: 1. AViTA Corporation 9F., No. 78, Sec. 1, Kwang-Fu Rd., San-Chung District., New Taipei City, Taiwan 24158 2. AViTA (Wujiang) Co., Ltd. No. 858, Jiao Tong Road, Wujiang Economic Development Zone, Jiangsu Province, P.R. China
Power Supply	: DC 3V (Powered by 2 * 1.5V AAA batteries)
Operating Frequency	: 2402 MHz - 2480 MHz
Output Power	: -3.26 dBm
Channel Number	: 40 channels
Type of Modulation	: GFSK
Antenna Description	: PCB Antenna. maximum Peak gain: 0dBi.
Measurement Software	: e3; Ver: 8.120803a7-2
Receipt Date of EUT	: Dec. 27, 2021
Date of Test	: Jan. 10, 2022
Additional Description	: 1) The test model is " BPM13B " and included in this report. 2) Compliant with Bluetooth Ver 4.0. 3) For more detailed specification about EUT, please refer to the user's manual.

1.2 Table for Channel Frequencies

Bluetooth 4.0

Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402 MHz	14	2430 MHz	28	2458 MHz
1	2404 MHz	15	2432 MHz	29	2460 MHz
2	2406 MHz	16	2434 MHz	30	2462 MHz
3	2408 MHz	17	2436 MHz	31	2464 MHz
4	2410 MHz	18	2438 MHz	32	2466 MHz
5	2412 MHz	19	2440 MHz	33	2468 MHz
6	2414 MHz	20	2442 MHz	34	2470 MHz
7	2416 MHz	21	2444 MHz	35	2472 MHz
8	2418 MHz	22	2446 MHz	36	2474 MHz
9	2420 MHz	23	2448 MHz	37	2476 MHz
10	2422 MHz	24	2450 MHz	38	2478 MHz
11	2424 MHz	25	2452 MHz	39	2480 MHz
12	2426 MHz	26	2454 MHz		
13	2428 MHz	27	2456 MHz		

1.3 Test Equipment

Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100127	2022/10/18
RF Cable	IETC	CBL68	CBL68	2022/01/22
Pulse Limiter	R&S	ESH3-Z2	8360836/026	2022/01/22
L.I.S.N.	Schwarzbeck	NNLK8121	8121417	2022/03/08
L.I.S.N.	Schaffner	MN2050D	1598	2022/08/10
Spectrum Analyzer	R&S	FSP40	100478	2022/08/01
EMI Test Receiver	Rohde & Schwarz	ESI7	830154/002	2022/05/03
Loop Antenna	Electro-Metrics	EM-6879	261	2022/09/01
Bilog Antenna with 5 dB Pad	ETC & JYEBAO	MCTD 2786B & FAT-NM5NF5T3G2W5	BLB17S04020 & JB-5-020	2022/05/13
Horn Antenna	Schwarzbeck	BBHA9120	9120D-1051	2022/08/31
Horn Antenna	Schwarzbeck	BBHA9170	BBHA9170213	2022/06/07
Pre-Amplifier	EMCI	EMC001150	980130	2022/08/24
Pre-Amplifier	EMCI	EMC 051845	980110	2022/07/12
Pre-Amplifier	Agilent	83050A	3950M00225	2022/02/04
RF Cable	HARBOUR	27478LL142	CBL65	2022/01/22
RF Cable	Marvelous Microwave	MCBL-LL266.50	CBL70	2022/01/22
RF Cable	Junkosha	MWX241	CBL58	2022/09/22

Note: The above equipments are within the valid calibration period.

1.4 Measurement Uncertainty

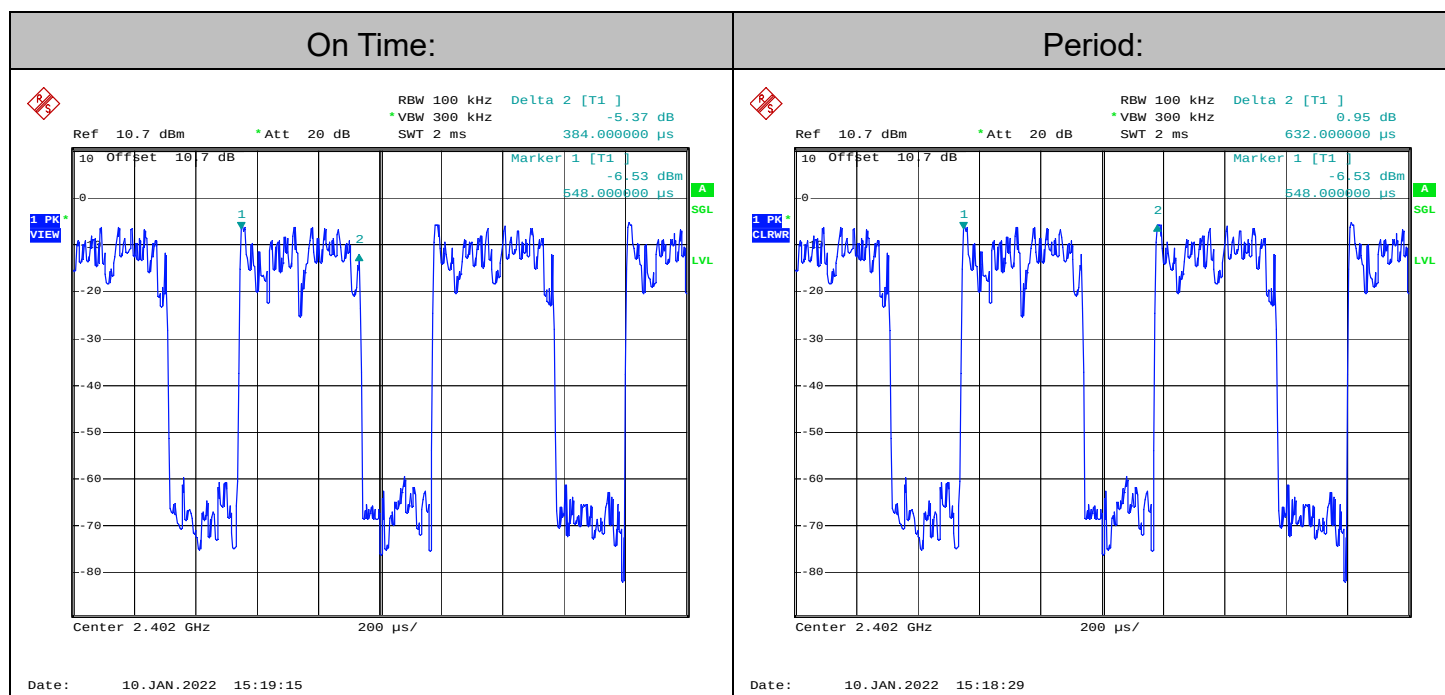
Items	Measurement Items	Expanded Uncertainty					Estimation
		Frequency 9 kHz to 30 MHz	Frequency 30 MHz to 1000 MHz	Frequency 1 GHz to 18 GHz	Frequency 18 GHz to 26.5 GHz	Frequency 26.5 GHz to 40 GHz	
1.	Power-Line Conducted Emissions (dB μ V)	± 2.120	-----	-----	-----	-----	LAB34
2.	Radiation Power (dB μ V/m)	± 3.336	± 3.170	± 2.284	± 2.140	± 2.140	LAB34
3.	Output Power (dB)	± 1.109	± 1.109	± 1.970	± 1.970	± 1.970	ETSI TR 100 028
4.	E.I.R.P (dB)	± 4.319	± 4.319	± 4.319	± 4.319	± 4.319	
5.	Spurious Emissions (dB)	± 4.090	± 4.090	± 4.111	± 4.111	± 4.111	
6.	Conducted RF Band Edge (dB)	± 4.090	± 4.090	± 4.111	± 4.111	± 4.111	
7.	Conducted Spurious Emissions (dB)	± 4.090	± 4.090	± 4.111	± 4.111	± 4.111	
8.	Radiation Spurious Emissions (dB)	± 2.125	± 3.419	± 3.419	± 3.419	± 3.419	
9.	Operating Frequency (Hz)	$\pm 1.36 \times 10^{-8}$	$\pm 1.36 \times 10^{-8}$	$\pm 7.55 \times 10^{-8}$	$\pm 6.60 \times 10^{-8}$	$\pm 6.60 \times 10^{-8}$	
10.	Frequency Stability (Hz)	± 33.965	± 48.779	± 631.398	± 928.835	± 928.835	
11.	Frequency Stability of Input Voltage (Hz)	± 33.965	± 48.779	± 631.398	± 928.835	± 928.835	
12.	Frequency Deviation (%)	± 1.296	± 1.296	± 1.296	± 1.296	± 1.296	
13.	Channel Bandwidth (Hz)	± 33.951	± 35.786	± 206.505	± 301.800	± 301.800	
14.	6dB Channel Bandwidth (Hz)	± 33.951	-----	± 206.505	-----	-----	
15.	20dB Channel Bandwidth (Hz)	-----	± 35.786	± 206.505	-----	-----	
16.	Output Peak Power (dB)	± 0.654	± 0.654	± 0.654	± 0.654	± 0.654	
17.	Power Density (dB)	± 1.109	± 1.109	± 0.105	± 1.970	± 1.970	
18.	Number of Hopping Channel	-----	-----	-----	-----	-----	
19.	Hopping Channel Separation (Hz)	-----	-----	± 206.505	-----	-----	
20.	Dwell Time (ms)	± 2.225	± 2.225	± 2.225	± 2.225	± 2.225	
21.	ACLR (Adjacent Channel Leakage Ratio) (dB)	± 1.442	± 1.442	± 1.442	± 1.443	± 1.443	
22.	Frequency Response (%)	± 5.246	± 5.246	± 5.246	± 5.246	± 5.246	
23.	Max Modulation (%)	± 1.296	± 1.296	± 1.296	± 1.296	± 1.296	
24.	Harmonic Attenuation (dB)	± 4.090	± 4.090	± 4.111	± 4.111	± 4.111	

1.5 Duty Cycle

According to KDB 558074 D01 15.247 Meas Guidance v05:

All measurements are to be performed with the EUT transmitting at 100% duty cycle at its maximum power control level; however, if 100% duty cycle cannot be achieved, measurements of duty cycle, x, and maximum power transmission duration, T, are required for each tested mode of operation.

Configuration	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Factor (dB)
BT4.0	0.384	0.632	60.76	-2.16



1.6 Summary of Measurement

Report Clause	Test Parameter	Reference Document 47 CFR Part15	Results
2	RF Radiated Spurious Emission	§15.205, 15.209	Pass
3	RF Conducted Spurious Emission	§15.247(d)	Pass
4	Maximum Peak Output Power	§15.247(b)	Pass
5	6dB Bandwidth	§15.247(a)(2)	Pass
6	Power Spectral Density	§15.247(e)	Pass
7	Emission on the Band Edge	§15.247(d)	Pass
	AC Power Line Conducted Emission	§15.207	N/A

1.7 Test Step of EUT

- 1.7.1 Set the fixture to EUT for power supplying.
- 1.7.2 Turn on the power of all equipments.
- 1.7.3 Let the EUT continuous transmission.
- 1.7.4 Execute the test.

2 RF Radiated Spurious Emission

2.1 Limit

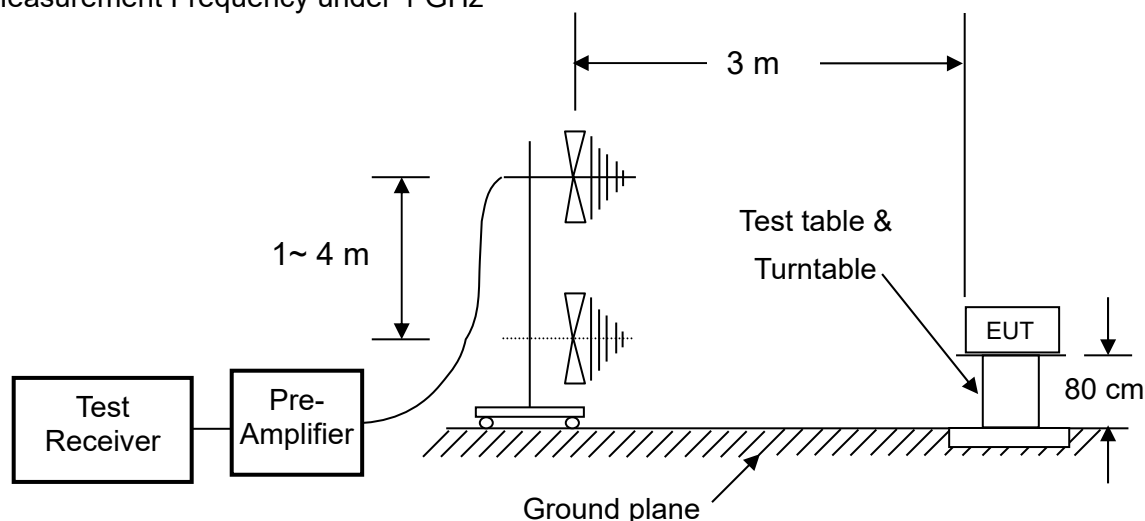
For intentional radiator, the radiated emission shall comply with §15.209(a).

For intentional radiators, according to §15.247 (a), operation under this provision is limited to frequency hopping and direct sequence spread spectrum, and the out band emission shall be comply with §15.247 (d)

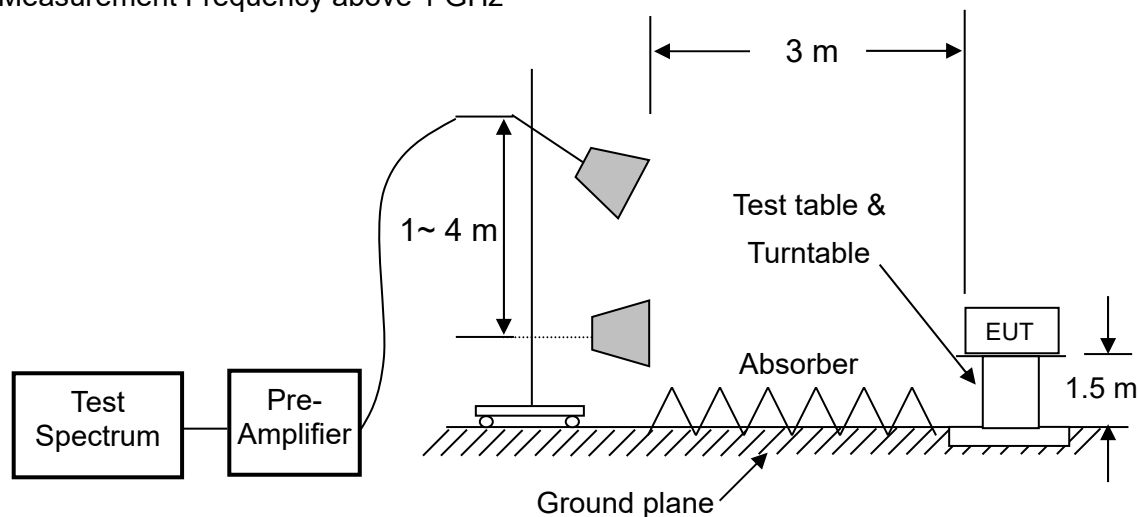
Frequency (MHz)	Field strength dB(μ V/m)	Measurement distance (meters)
1.705 - 30.0	29.5	30
30 - 88	40	3
88 - 216	43.5	3
216 - 960	46	3
Above 960	54	3

2.2 Configuration of Measurement

Measurement Frequency under 1 GHz



Measurement Frequency above 1 GHz



2.3 Test Procedure

The EUT was setup to ANSI C63.10, 2013; tested to DTS test procedure of August 24, 2018 KDB558074 D01 for compliance to FCC 47CFR 15.247 requirements.

Radiated emission measurements were performed from 30 MHz to 25 GHz. Spectrum Analyzer set as below: For frequency range from 30 MHz to 1 GHz: RBW=100 kHz or greater. For frequencies above 1 GHz: set RBW=VBW=1 MHz for peak detector and RBW=1 MHz, VBW=10 Hz for average detector.

The EUT for testing is arranged on a turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meter and down to 1 meter.

The frequency range from 9 kHz to 30 MHz was pre-scanned and the results was 20 dB lower than the limit line which according to FCC 15.31(o) needs not be recorded.

2.4 Test Result

PASS.

The final test data is shown on as following pages.

Radiated Spurious Emission

Radiated Emission Below 1 GHz

CLIENT: AVITA Corporation

EUT: Wrist Type Blood Pressure Monitor

MODEL: BPM13B

RATING: DC 3V

COMMENT:

Data:2

OPERATOR : Scott

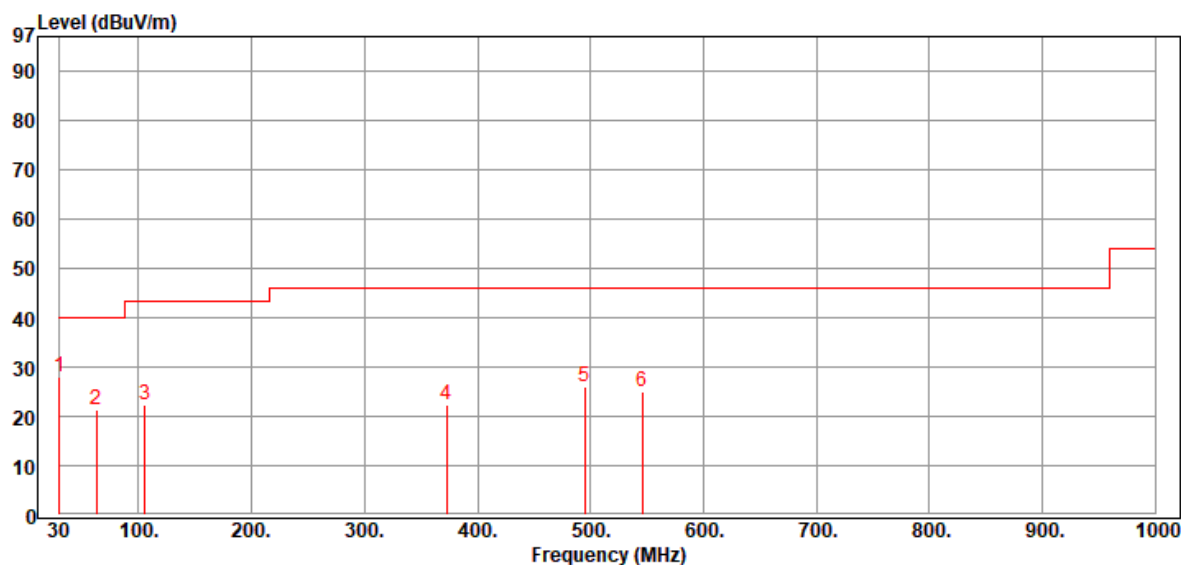
TEST SITE : Chamber 3

TEST DISTANCE : 3 m

POLARIZATION : HORIZONTAL

TEMP/HUM : 24.1°C/52%

2022-01-10



Item Mark	Freq. MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark
1	30.000	60.39	-32.30	28.09	40.00	-11.91	QP
2	62.980	58.08	-36.67	21.41	40.00	-18.59	QP
3	105.660	53.90	-31.41	22.49	43.50	-21.01	QP
4	372.410	50.84	-28.47	22.37	46.02	-23.65	QP
5	494.630	52.59	-26.61	25.98	46.02	-20.04	QP
6	546.040	51.36	-26.39	24.97	46.02	-21.05	QP

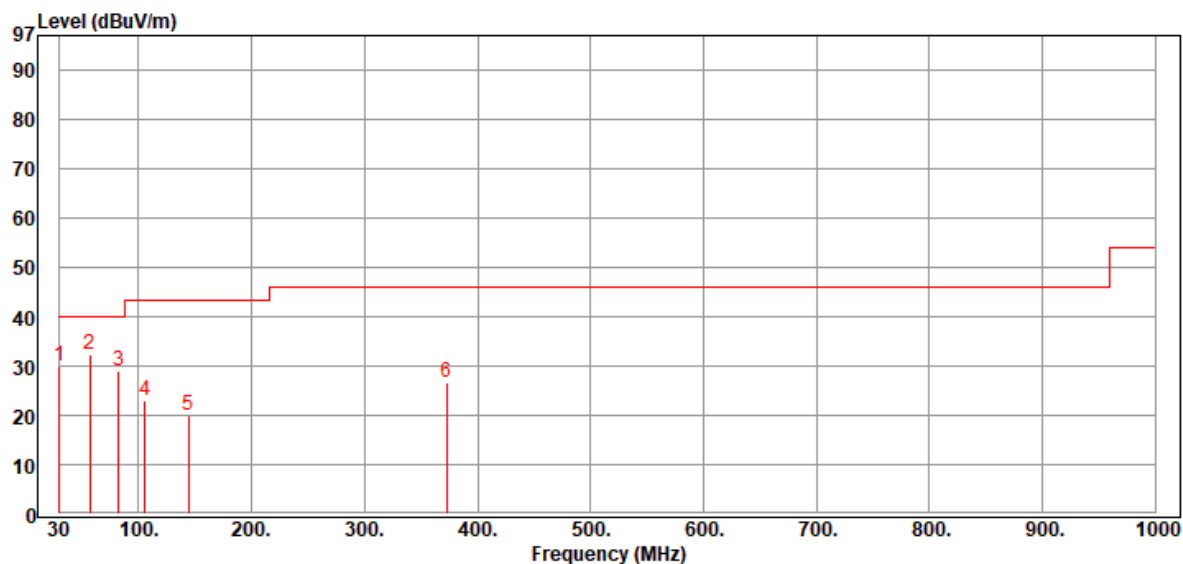
Remark : Result Level = Reading + Factor

Factor = Antenna Factor + Cable Loss - Preamp

Margin = Result Level - Limits

CLIENT: AViTA Corporation
EUT: Wrist Type Blood Pressure Monitor
MODEL: BPM13B
RATING: DC 3V
COMMENT:
Data:1

OPERATOR : Scott
TEST SITE : Chamber 3
TEST DISTANCE : 3 m
POLARIZATION : VERTICAL
TEMP/HUM : 24.1°C/52%
2022-01-10



Item Mark	Freq. MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark
1	30.000	62.40	-32.30	30.10	40.00	-9.90	QP
2	57.160	68.13	-35.71	32.42	40.00	-7.58	QP
3	82.380	67.71	-38.77	28.94	40.00	-11.06	QP
4	105.660	54.58	-31.41	23.17	43.50	-20.33	QP
5	144.460	50.94	-30.98	19.96	43.50	-23.54	QP
6	372.410	55.23	-28.47	26.76	46.02	-19.26	QP

Remark : Result Level = Reading + Factor
Factor = Antenna Factor + Cable Loss - Preamp
Margin = Result Level - Limits

Radiated Emission Above 1 GHz

CLIENT: AVITA Corporation

EUT: Wrist Type Blood Pressure Monitor

MODEL: BPM13B

RATING: DC 3V

COMMENT: Low Channel

Data:21

OPERATOR : Scott

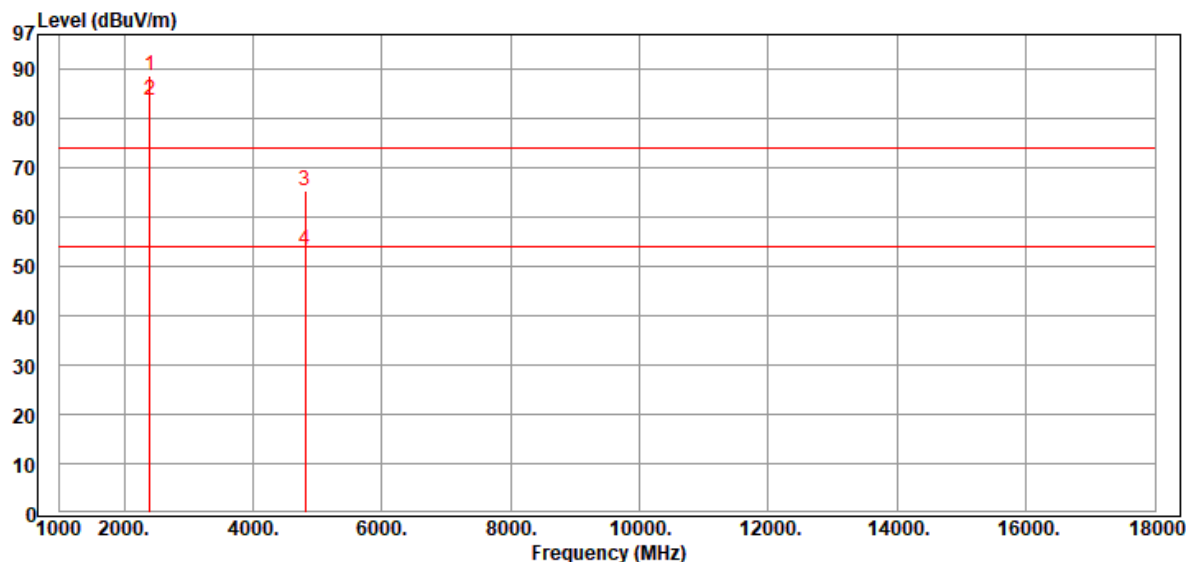
TEST SITE : Chamber 3

TEST DISTANCE : 3 m

POLARIZATION : HORIZONTAL

TEMP/HUM : 24.1°C/52%

2022-01-10



Item Mark	Freq. MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark
1	2405.000	104.40	-15.78	88.62			Peak
2	2405.000	99.30	-15.78	83.52			Average
3	4810.000	74.05	-8.62	65.43	74.00	-8.57	Peak
4	4810.000	61.98	-8.62	53.36	54.00	-0.64	Average

Remark : Result Level = Reading + Factor

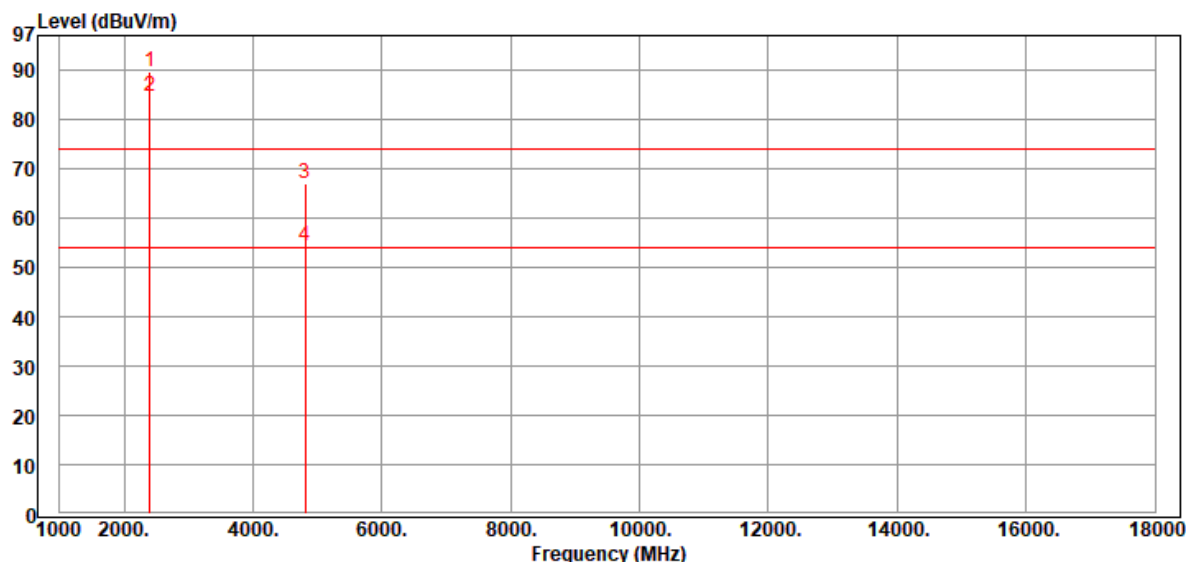
Factor = Antenna Factor + Cable Loss - Preamp

Margin = Result Level - Limits

Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.

CLIENT: AViTA Corporation
EUT: Wrist Type Blood Pressure Monitor
MODEL: BPM13B
RATING: DC 3V
COMMENT: Low Channel
Data:22

OPERATOR : Scott
TEST SITE : Chamber 3
TEST DISTANCE : 3 m
POLARIZATION : VERTICAL
TEMP/HUM : 24.1°C/52%
2022-01-10



Item Mark	Freq. MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark
1	2405.000	105.28	-15.78	89.50			Peak
2	2405.000	100.39	-15.78	84.61			Average
3	4810.000	75.46	-8.62	66.84	74.00	-7.16	Peak
4	4810.000	62.81	-8.62	53.19	54.00	-0.81	Average

Remark : Result Level = Reading + Factor

Factor = Antenna Factor + Cable Loss - Preamp

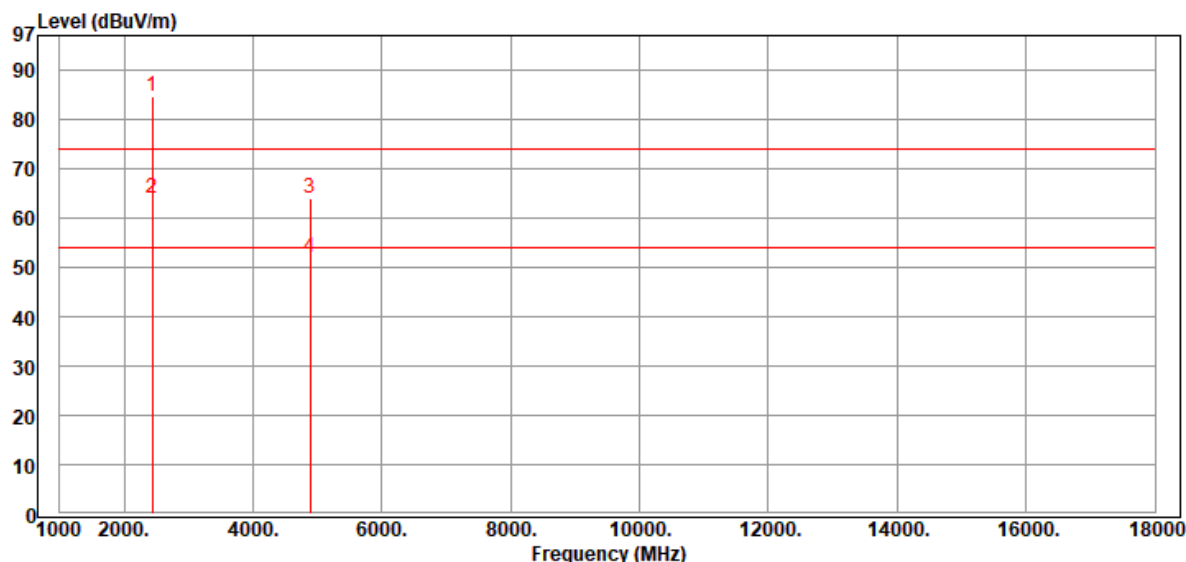
Margin = Result Level - Limits

Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.

CLIENT: AViTA Corporation
EUT: Wrist Type Blood Pressure Monitor
MODEL: BPM13B
RATING: DC 3V
COMMENT: Mid Channel
Data:23

OPERATOR : Scott
TEST SITE : Chamber 3
TEST DISTANCE : 3 m
POLARIZATION : HORIZONTAL
TEMP/HUM : 24.1°C/52%
2022-01-10



Item	Freq.	Reading	Factor	Level	Limit	Margin	Remark
Mark	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2445.000	100.58	-15.79	84.79			Peak
2	2445.000	79.66	-15.79	63.87			Average
3	4890.000	72.73	-8.66	64.07	74.00	-9.93	Peak
4	4890.000	60.71	-8.66	52.05	54.00	-1.95	Average

Remark : Result Level = Reading + Factor

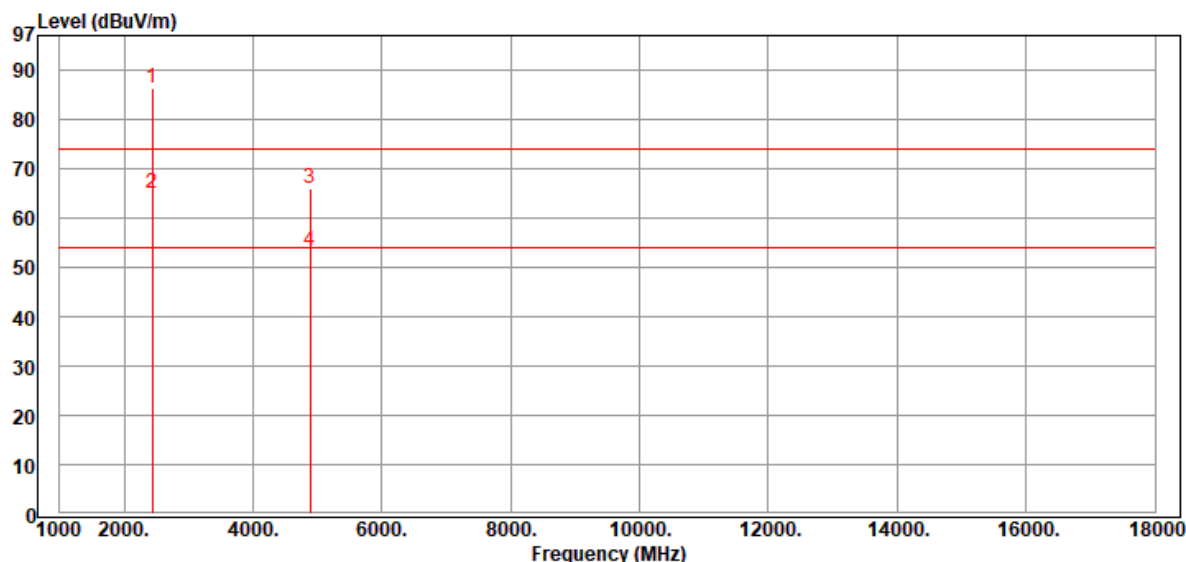
Factor = Antenna Factor + Cable Loss - Preamp

Margin = Result Level - Limits

Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.

CLIENT: AViTA Corporation
EUT: Wrist Type Blood Pressure Monitor
MODEL: BPM13B
RATING: DC 3V
COMMENT: Mid Channel
Data:24

OPERATOR : Scott
TEST SITE : Chamber 3
TEST DISTANCE : 3 m
POLARIZATION : VERTICAL
TEMP/HUM : 24.1°C/52%
2022-01-10



Item	Freq.	Reading	Factor	Level	Limit	Margin	Remark
Mark	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2445.000	102.29	-15.79	86.50			Peak
2	2445.000	80.92	-15.79	65.13			Average
3	4890.000	74.50	-8.66	65.84	74.00	-8.16	Peak
4	4890.000	61.87	-8.66	53.21	54.00	-0.79	Average

Remark : Result Level = Reading + Factor

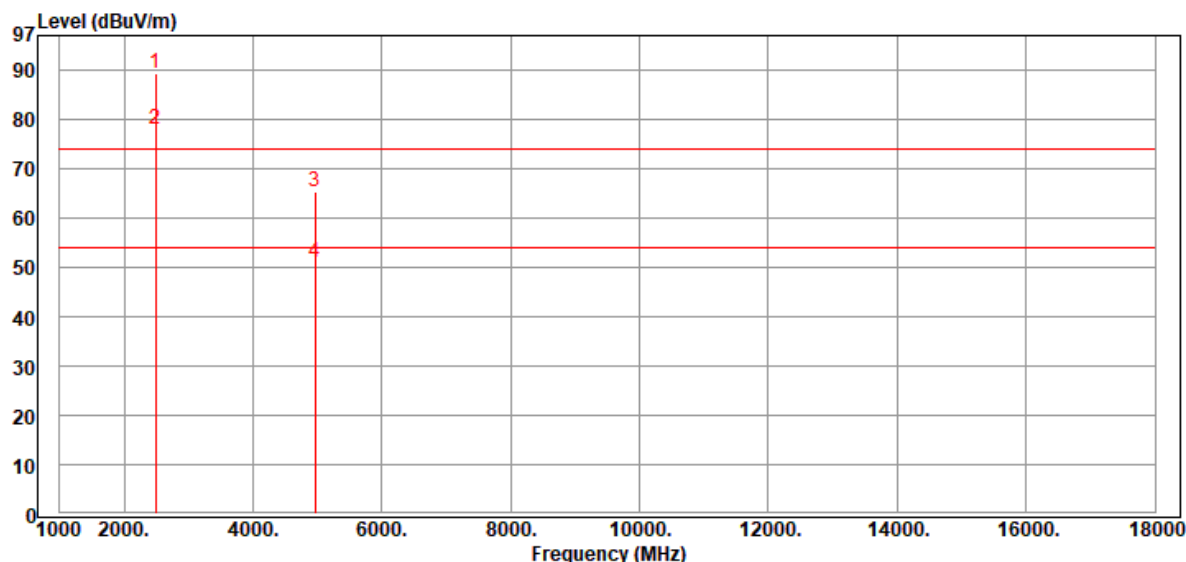
Factor = Antenna Factor + Cable Loss - Preamp

Margin = Result Level - Limits

Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.

CLIENT: AViTA Corporation
EUT: Wrist Type Blood Pressure Monitor
MODEL: BPM13B
RATING: DC 3V
COMMENT: High Channel
Data:19

OPERATOR : Scott
TEST SITE : Chamber 3
TEST DISTANCE : 3 m
POLARIZATION : HORIZONTAL
TEMP/HUM : 24.1°C/52%
2022-01-10



Item Mark	Freq. MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark
1	2485.000	105.19	-15.80	89.39			Peak
2	2485.000	93.96	-15.80	78.16			Average
3	4970.000	73.60	-8.42	65.18	74.00	-8.82	Peak
4	4970.000	59.40	-8.42	50.98	54.00	-3.02	Average

Remark : Result Level = Reading + Factor

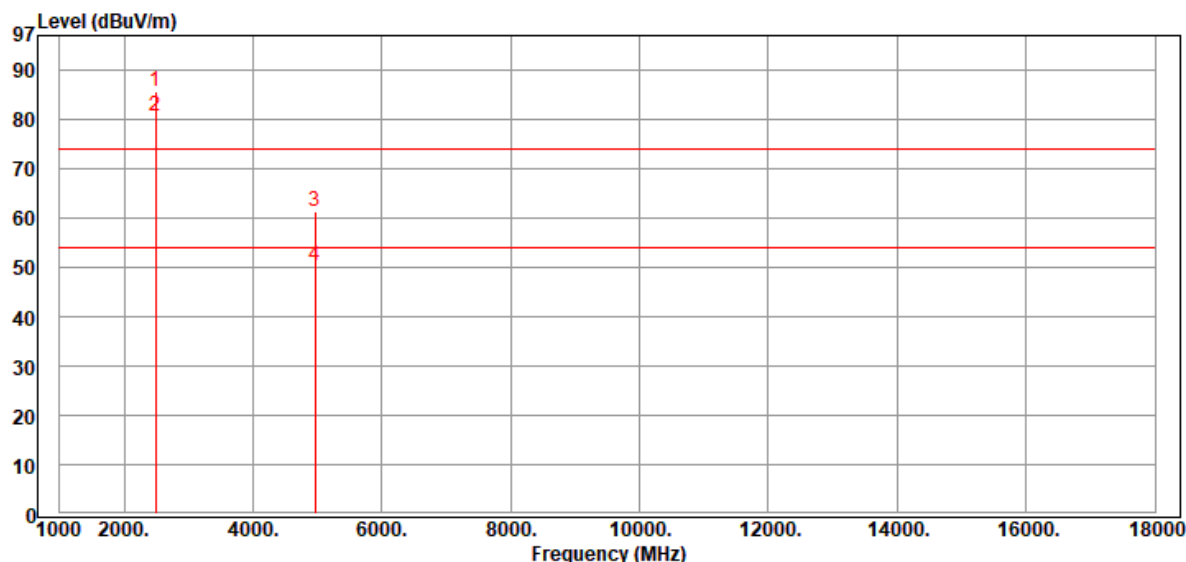
Factor = Antenna Factor + Cable Loss - Preamp

Margin = Result Level - Limits

Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.

CLIENT: AViTA Corporation
EUT: Wrist Type Blood Pressure Monitor
MODEL: BPM13B
RATING: DC 3V
COMMENT: High Channel
Data:20

OPERATOR : Scott
TEST SITE : Chamber 3
TEST DISTANCE : 3 m
POLARIZATION : VERTICAL
TEMP/HUM : 24.1°C/52%
2022-01-10



Item	Freq.	Reading	Factor	Level	Limit	Margin	Remark
Mark	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2485.000	101.41	-15.80	85.61			Peak
2	2485.000	96.36	-15.80	80.56			Average
3	4970.000	69.75	-8.42	61.33	74.00	-12.67	Peak
4	4970.000	58.66	-8.42	50.24	54.00	-3.76	Average

Remark : Result Level = Reading + Factor

Factor = Antenna Factor + Cable Loss - Preamp

Margin = Result Level - Limits

Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.

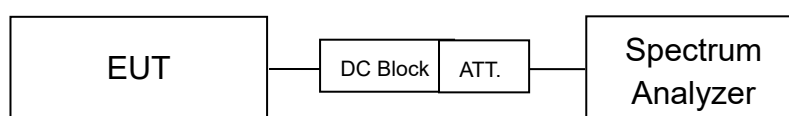
3 RF Conducted Spurious Emission

3.1 Limit

According to 15.247(d) requirement :

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 a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

3.2 Configuration of Measurement



3.3 Test Procedure

The EUT was setup to ANSI C63.10, 2013; tested to DTS test procedure of August 24, 2018 KDB558074 D01 for compliance to FCC 47CFR 15.247 requirements.

The measurements were performed from 30MHz to 25GHz RF antenna conducted per FCC 15.247 (c) was measured from the EUT antenna port using a 50ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set $\geq$ RBW.

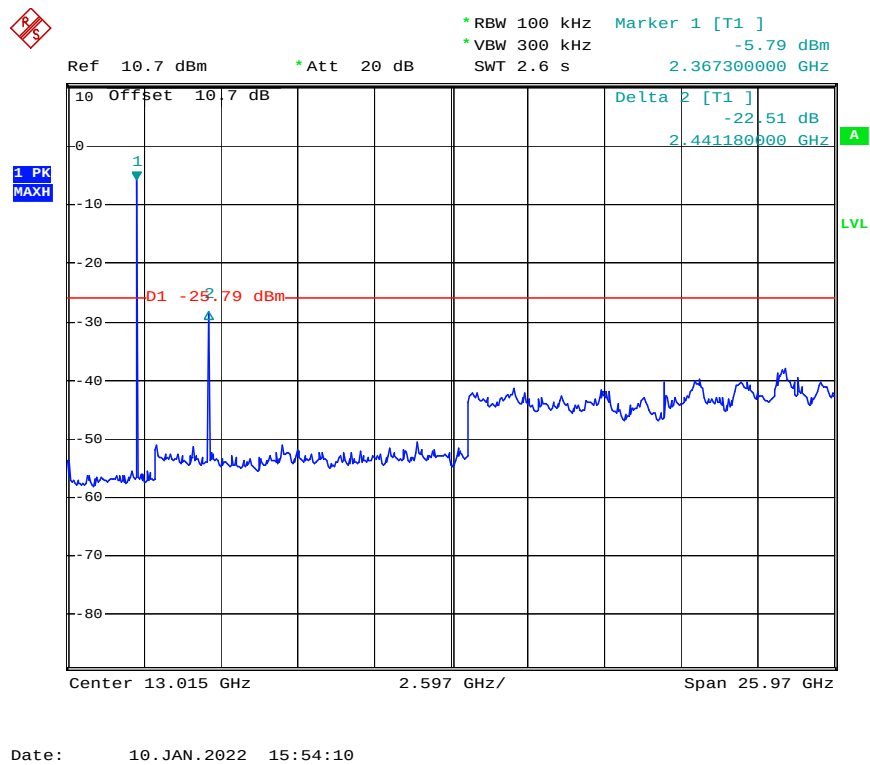
Harmonics and spurious noise must be at least 20dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW. The table below is the results from the highest emission for each channel within the authorized band. This table was used to determine the spurious limit for each channel.

3.4 Test Result

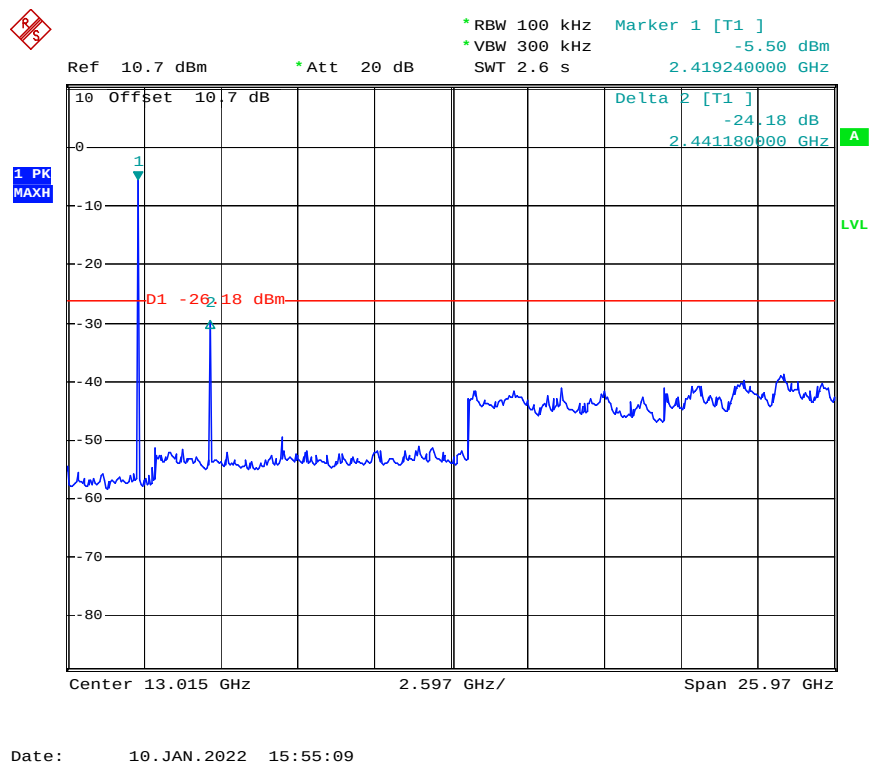
PASS.

Conducted Spurious Emission

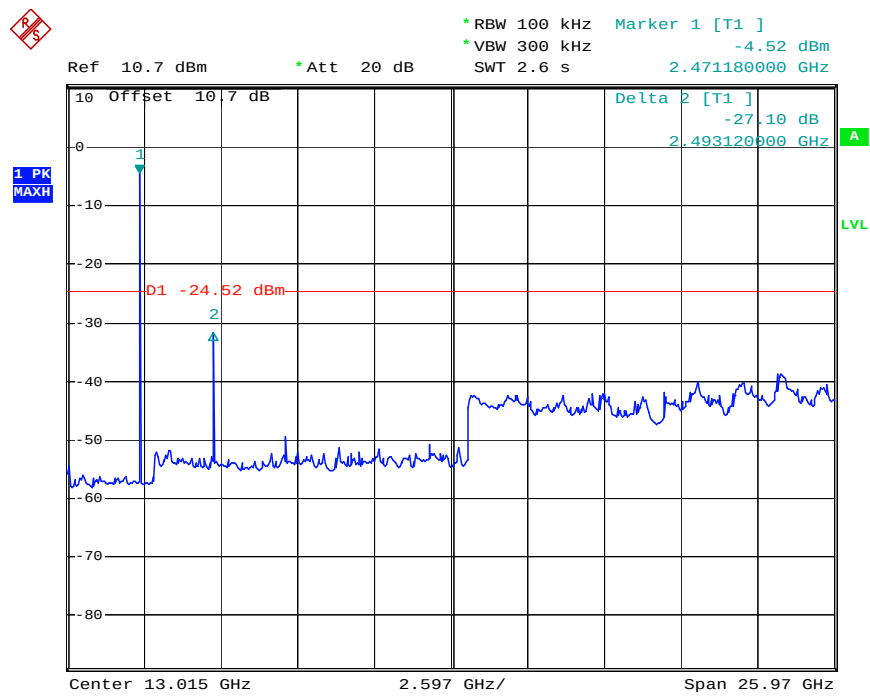
Low Channel



Mid Channel



High Channel



Date: 10.JAN.2022 15:55:48

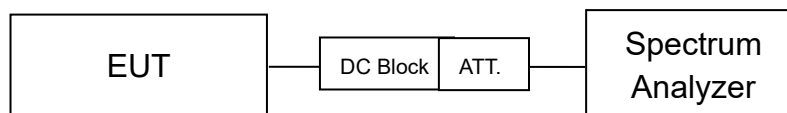
4 Maximum Peak Output Power

4.1 Limit

According to FCC Part 15.247 (b)(3) requirement :

For systems using digital modulation in the 902–928 MHz bands: The maximum conducted output power shall be less than 1Watt.

4.2 Configuration of Measurement



4.3 Test Procedure

The EUT was setup to ANSI C63.10, 2013; tested to DTS test procedure of August 24, 2018 KDB558074 D01 for compliance to FCC 47CFR 15.247 requirements.

For FCC §15.247(b) the power output was measured on the EUT using a 50 ohm SMA cable connected to Spectrum Analyzer. Peak output power was read directly from Spectrum Analyzer.

Set :

- (1) $RBW \geq$ DTS bandwidth, $VBW \geq 3 \times RBW$
- (2) $Span \geq 3 \times EBW$
- (3) Detector = peak, trace mode = max hold
- (4) All trace to fully stabilize
- (5) Use peak marker function to determine the peak amplitude

4.4 Test Result

PASS.

The final test data is shown on as following pages.

Remark:

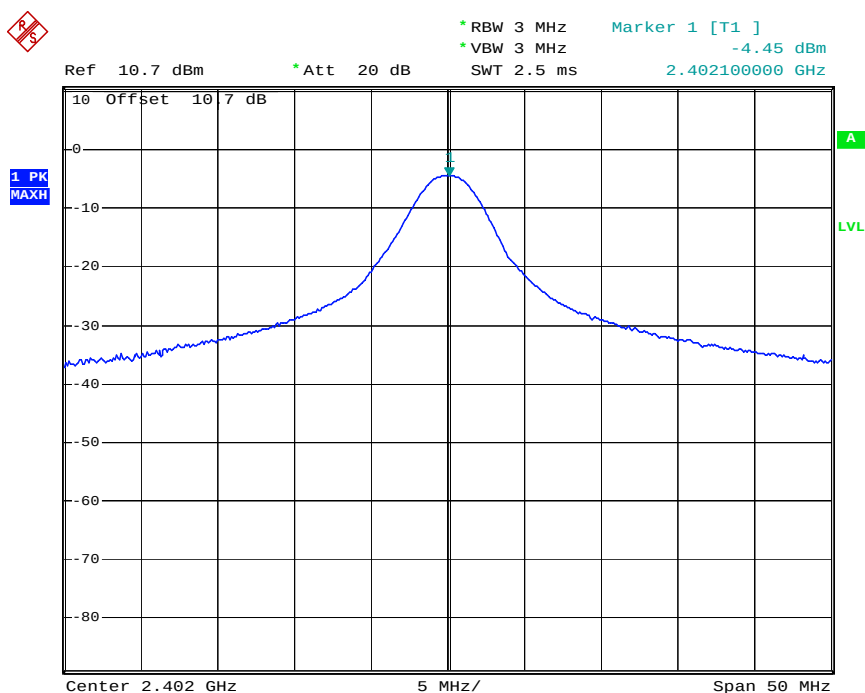
- 1. Output power = Reading + factor
- 2. Margin = Output power - Limit

Maximum Output Power

Freq. (MHz)	Output Power (dBm)	Output Power (mW)	LIMIT (dBm)	Margin (dB)
2402	-4.45	0.36	30	-34.45
2440	-3.87	0.41	30	-33.87
2480	-3.26	0.47	30	-33.26

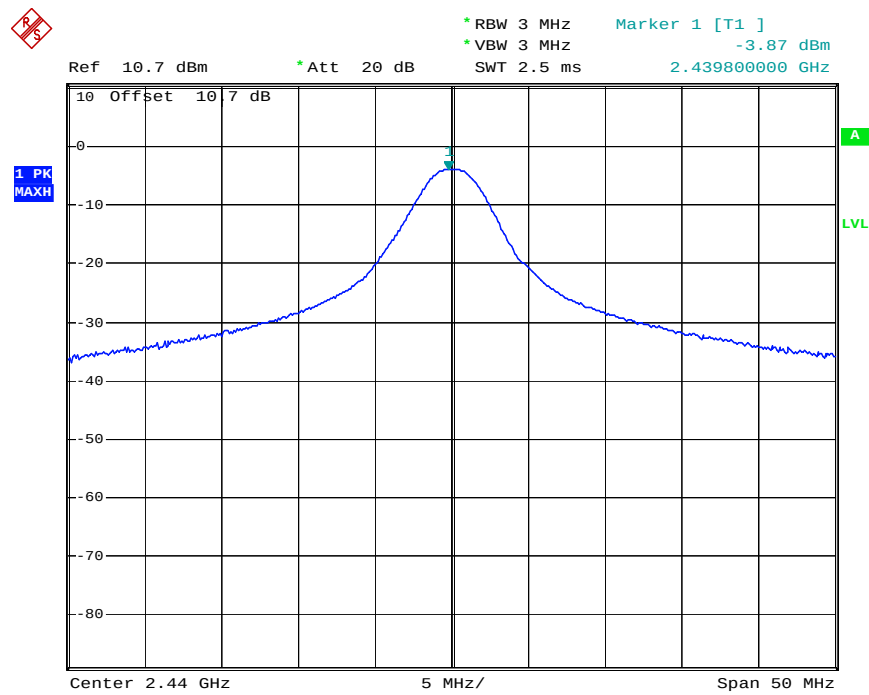
Plot:

Low Channel:



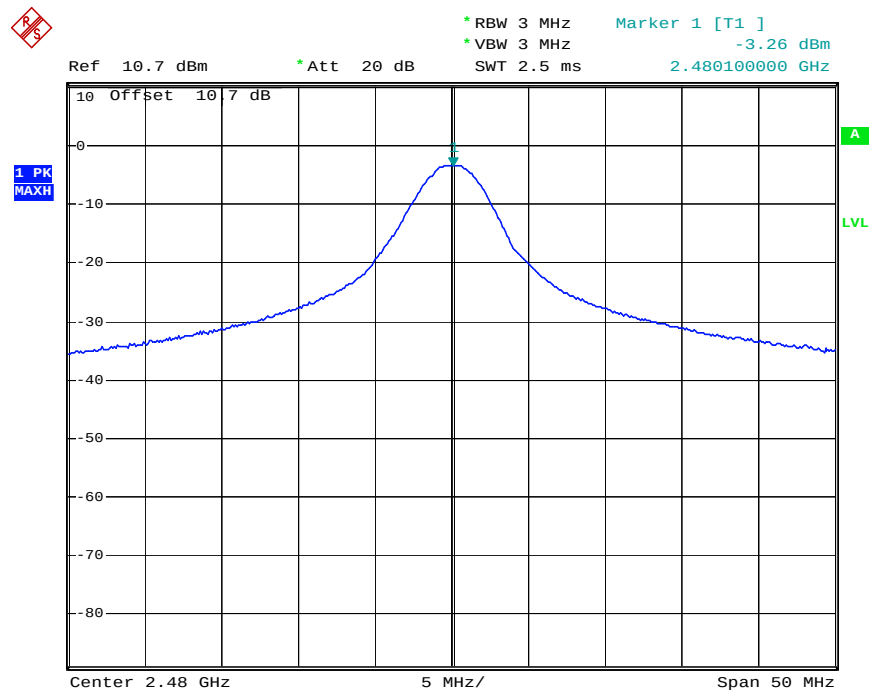
Date: 10.JAN.2022 15:15:33

Mid Channel:



Date: 10. JAN. 2022 15:16:39

High Channel:



Date: 10. JAN. 2022 15:14:15

Maximum Average Power

Duty cycle factor in dB = $20 \log (\text{duty cycle}) = 20 \log (\text{Ton}/\text{Tp})$

The duration of one cycle = 0.384 ms

The transmission time of one cycle = 0.632 ms

Duty Cycle = $0.384 \text{ ms} / 0.632 \text{ ms} = 0.61$

Therefore, the duty cycle factor is found by $20 \log 0.61 = -2.16 \text{ dB}$

Freq. (MHz)	Output Power (dBm)	Duty Factor (dB)	Average Power (dBm)	Average Power (mW)	LIMIT (dBm)	Margin (dB)
2402	-4.45	-2.16	-6.61	0.22	30	-36.61
2440	-3.87	-2.16	-6.03	0.25	30	-36.03
2480	-3.26	-2.16	-5.42	0.29	30	-35.42

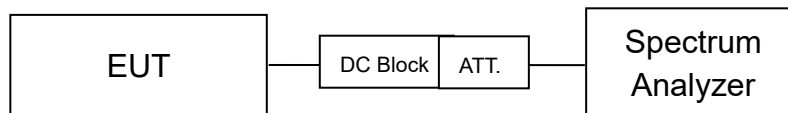
5 6dB Bandwidth

5.1 Limit

According to FCC Part 15.247 (a)(2) requirement :

Systems using digital modulation techniques may operate in the 902–928 MHz, The minimum 6dB bandwidth shall be at least 500 kHz.

5.2 Configuration of Measurement



5.3 Test Procedure

The minimum 6dB bandwidth was measured using a 50 ohm spectrum analyzer.

- (1) RBW = 100 kHz
- (2) VBW $\geq$ 3 x RBW
- (3) Detector = Peak
- (4) Trace mode = Max hold
- (5) Sweep = auto couple
- (6) All trace to fully stabilize
- (7) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6dB relative to the maximum level measured in the fundamental emission.

5.4 Test Result

PASS.

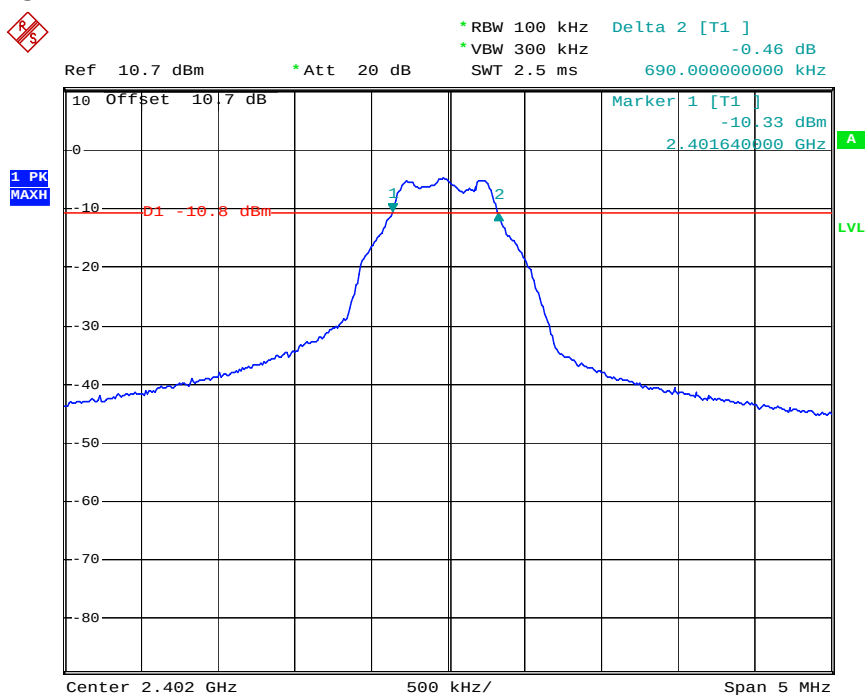
The final test data is shown on as following pages.

6dB Bandwidth

Freq. (MHz)	6dB Bandwidth (kHz)	LIMIT (kHz)	Result
2402	690.00	>500	PASS
2440	700.00	>500	PASS
2480	700.00	>500	PASS

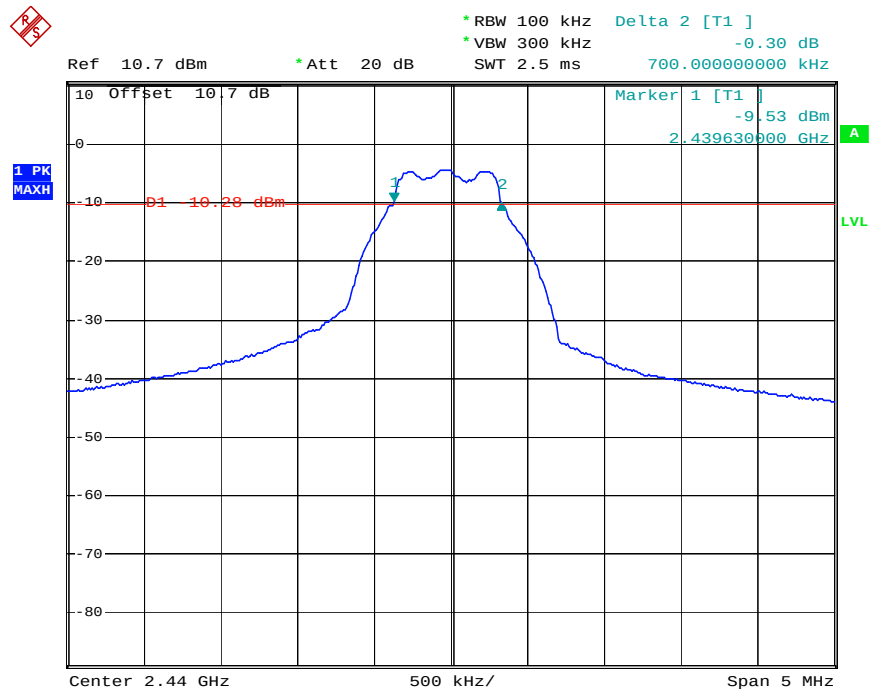
Plot:

Low Channel:



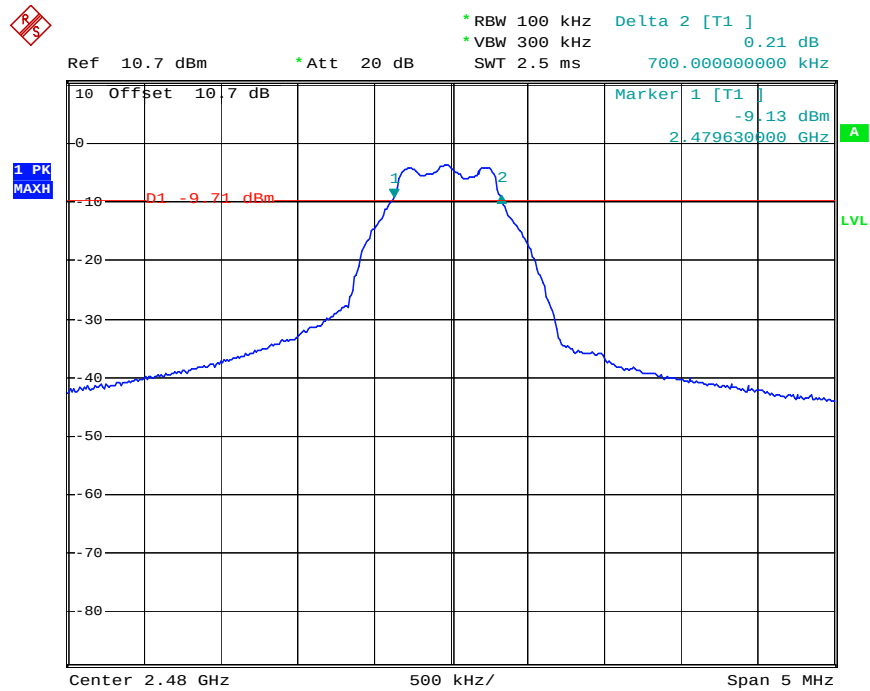
Date: 10.JAN.2022 15:20:35

Mid Channel:



Date: 10.JAN.2022 15:44:32

High Channel:



Date: 10.JAN.2022 15:45:38

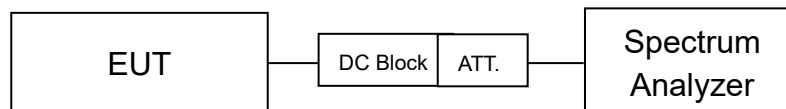
6 Power Spectral Density

6.1 Limit

According to FCC Part 15.247 (e) requirement :

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

6.2 Configuration of Measurement



6.3 Test Procedure

The EUT was setup to ANSI C63.10, 2013; tested to DTS test procedure of August 24, 2018 KDB558074 D01 for compliance to FCC 47CFR 15.247 requirements.

Set:

- (1) Analyzer center frequency to DTS channel center frequency
- (2) The span to 1.5 times the DTS bandwidth
- (3) $3\text{kHz} \leq \text{RBW} \leq 100\text{kHz}$
- (4) $\text{VBW} \geq 3 \times \text{RBW}$
- (5) Detector = Peak
- (6) Trace mode = Max hold
- (7) Sweep = auto couple
- (8) All trace to fully stabilize
- (9) Use the peak marker function to determine the maximum amplitude level within the RBW
- (10) If measured value exceeds limit, reduce RBW (no less than 3kHz) and repeat

6.4 Test Result

PASS.

The final test data is shown on as following pages.

Remark:

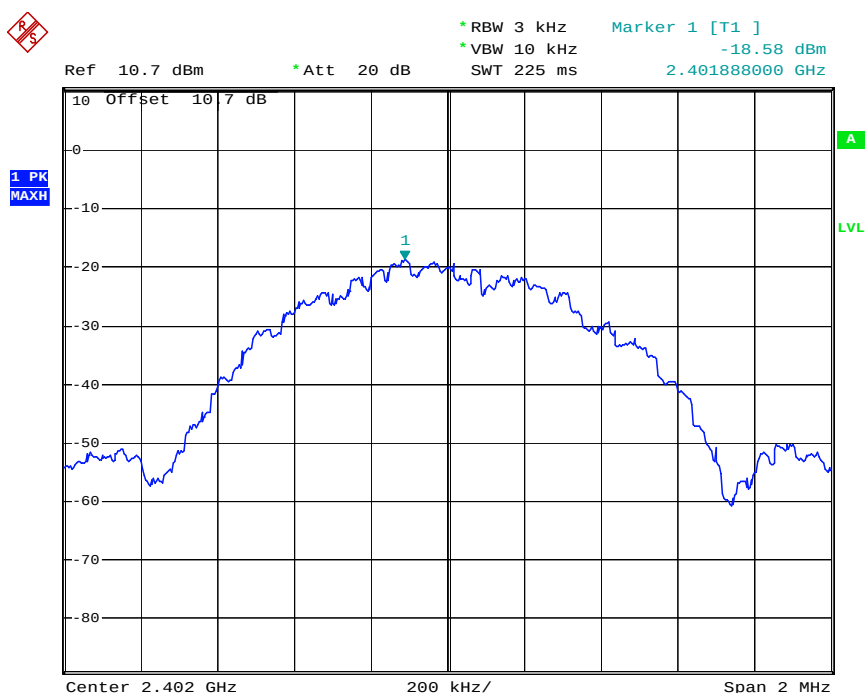
1. $\text{PSD} = \text{Reading} + \text{factor}$
2. $\text{Margin} = \text{Output power} - \text{Limit}$

Power Spectral Density

Freq. (MHz)	PSD (dBm/3kHz)	LIMIT (dBm/3kHz)	Result
2402	-18.58	8	PASS
2440	-18.27	8	PASS
2480	-17.62	8	PASS

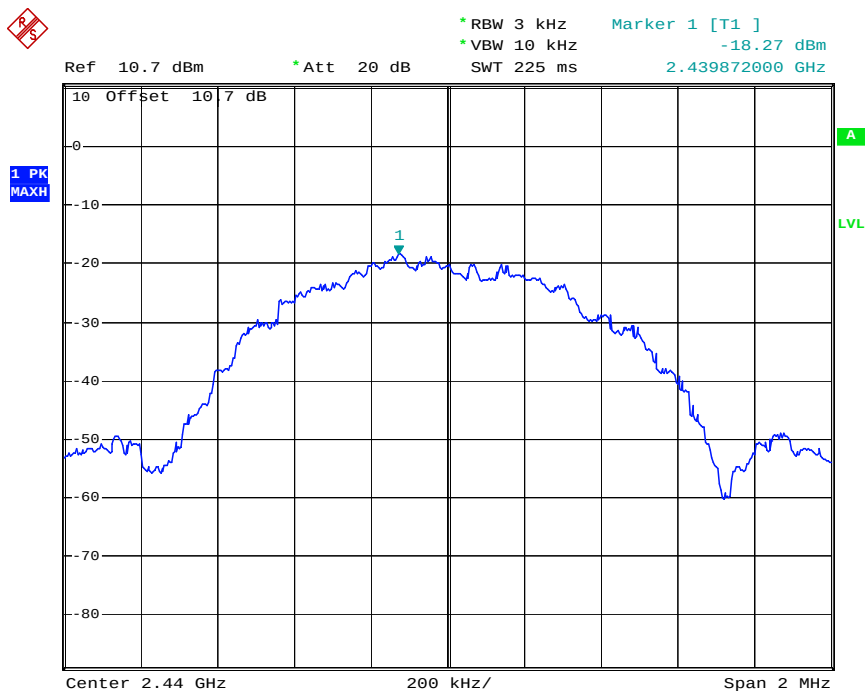
Plot:

Low Channel:



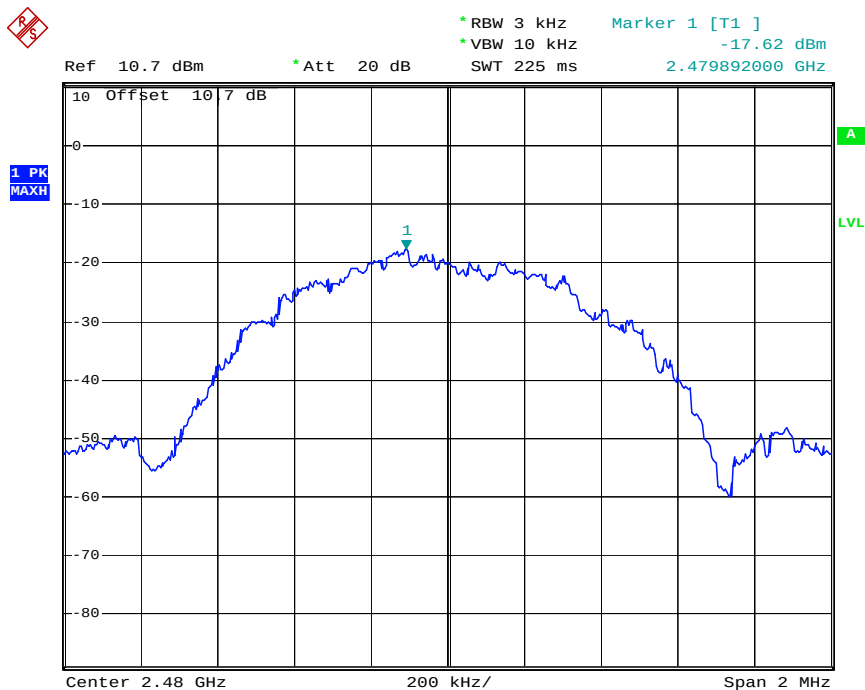
Date: 10.JAN.2022 15:52:28

Mid Channel:



Date: 10. JAN. 2022 15:50:16

High Channel:



Date: 10. JAN. 2022 15:51:02

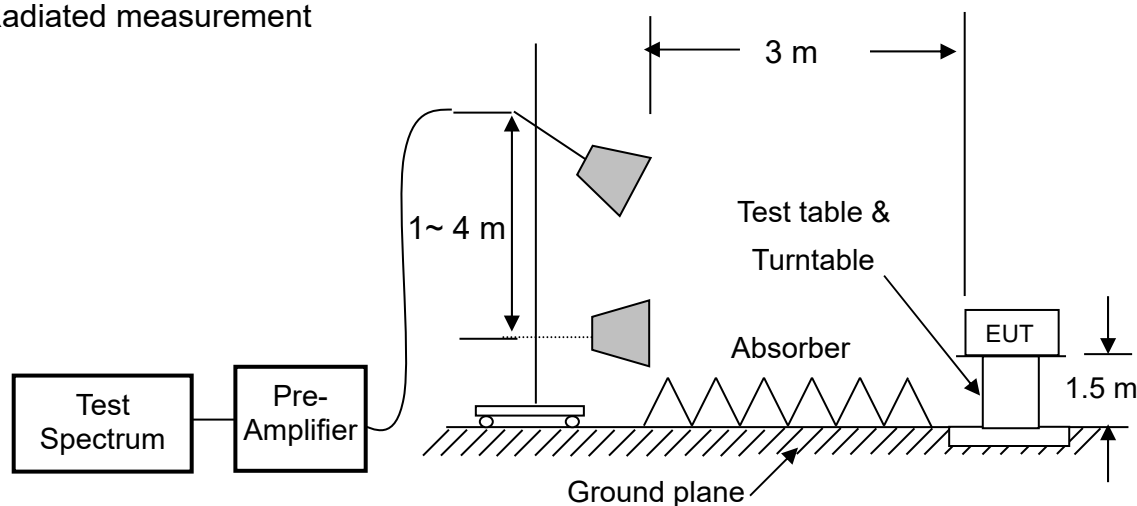
7 Emission on the Band Edge

7.1 Limit

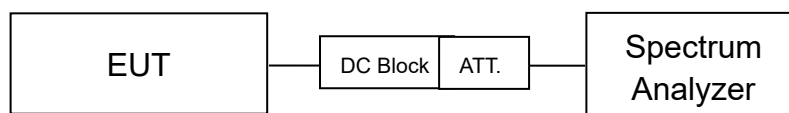
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 KHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

7.2 Configuration of Measurement

Radiated measurement



Conducted measurement



7.3 Test Procedure

The EUT was setup to ANSI C63.10, 2013; tested to DTS test procedure of August 24, 2018 KDB558074 D01 for compliance to FCC 47CFR 15.247 requirements.

Set RBW =1MHz, VBW= RBW for peak, and RBW =1MHz, VBW=10Hz for average.

The EUT for testing is arranged on a wooden turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meter and down to 1 meter.

7.4 Test Result

PASS.

The final test data is shown on as following pages.

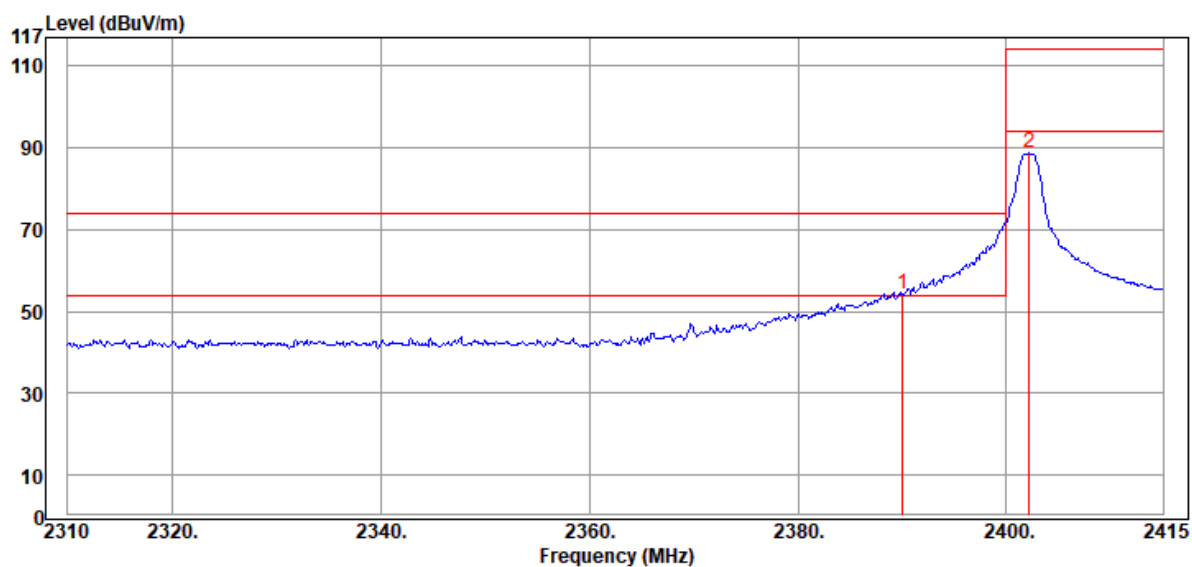
Band Edge Radiated

CLIENT: AViTA Corporation
EUT: Wrist Type Blood Pressure Monitor
MODEL: BPM13B
RATING: DC 3V
COMMENT: Band Edge-Low

OPERATOR : Scott
TEST SITE : Chamber 3
TEST DISTANCE : 3 m
POLARIZATION : HORIZONTAL
TEMP/HUM : 24.1°C/52%

Data:3

2022-01-10



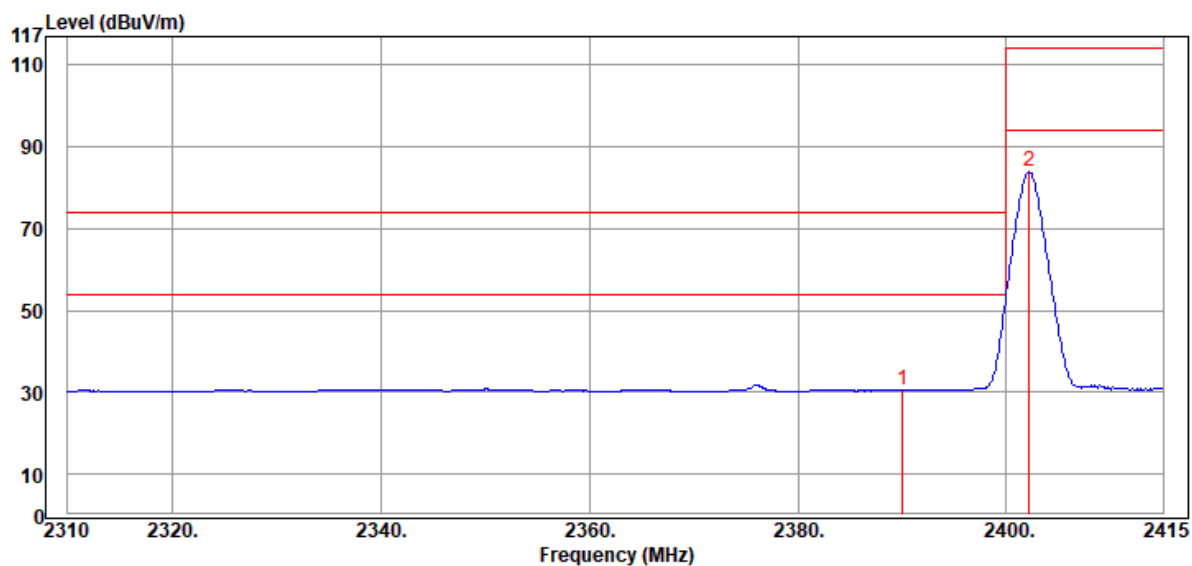
Item	Freq.	Reading	Factor	Level	Limit	Margin	Remark
Mark	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	2390.010	69.92	-15.78	54.14	74.00	-19.86	Peak
2	2402.190	104.45	-15.78	88.67	114.00	-25.33	Peak

CLIENT: AViTA Corporation
EUT: Wrist Type Blood Pressure Monitor
MODEL: BPM13B
RATING: DC 3V
COMMENT: Band Edge-Low

OPERATOR : Scott
TEST SITE : Chamber 3
TEST DISTANCE : 3 m
POLARIZATION : HORIZONTAL
TEMP/HUM : 24.1°C/52%

Data:4

2022-01-10



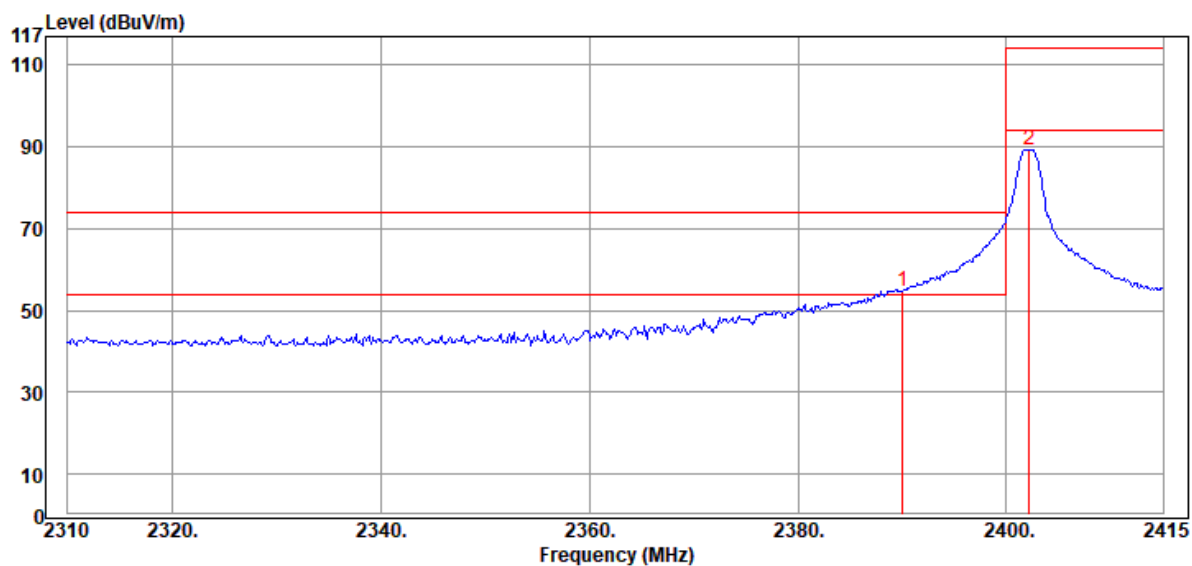
Item Mark	Freq. MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark
1	2390.010	46.24	-15.78	30.46	54.00	-23.54	Average
2	2402.190	99.80	-15.78	84.02	94.00	-9.98	Average

CLIENT: AViTA Corporation
EUT: Wrist Type Blood Pressure Monitor
MODEL: BPM13B
RATING: DC 3V
COMMENT: Band Edge-Low

OPERATOR : Scott
TEST SITE : Chamber 3
TEST DISTANCE : 3 m
POLARIZATION : VERTICAL
TEMP/HUM : 24.1°C/52%

Data:5

2022-01-10



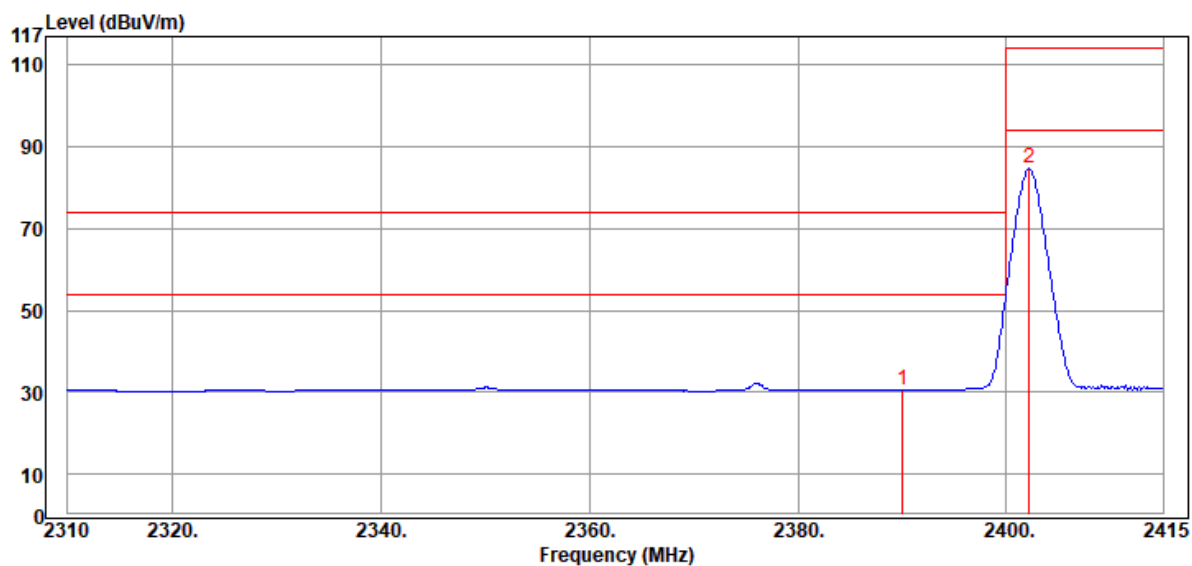
Item Mark	Freq. MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark
1	2390.010	70.29	-15.78	54.51	74.00	-19.49	Peak
2	2402.190	105.19	-15.78	89.41	114.00	-24.59	Peak

CLIENT: AViTA Corporation
EUT: Wrist Type Blood Pressure Monitor
MODEL: BPM13B
RATING: DC 3V
COMMENT: Band Edge-Low

OPERATOR : Scott
TEST SITE : Chamber 3
TEST DISTANCE : 3 m
POLARIZATION : VERTICAL
TEMP/HUM : 24.1°C/52%

Data:6

2022-01-10



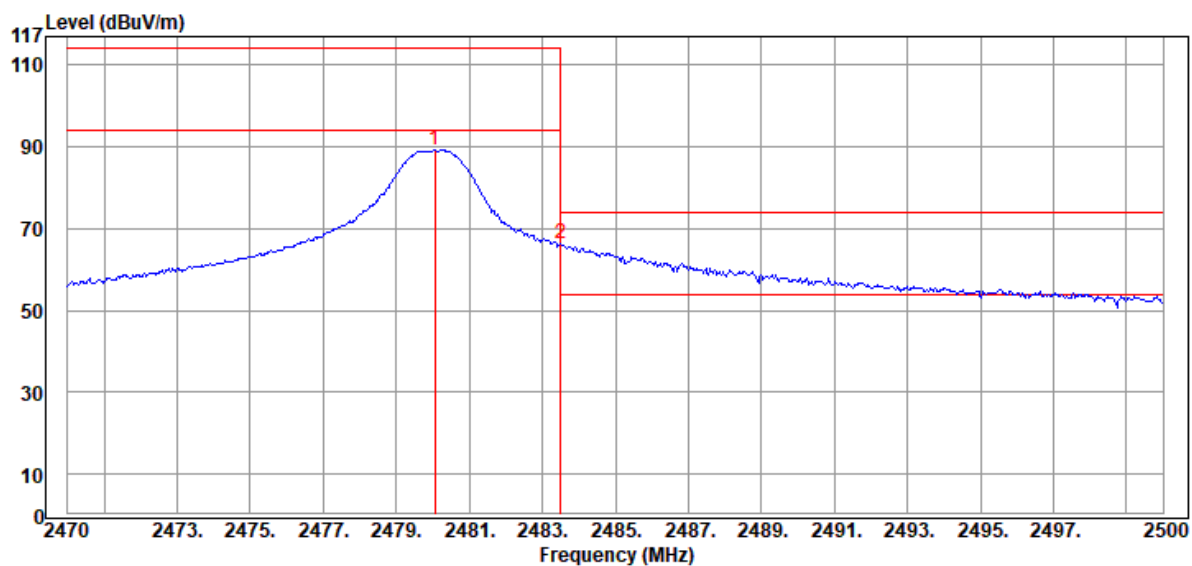
Item Mark	Freq. MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark
1	2390.010	46.40	-15.78	30.62	54.00	-23.38	Average
2	2402.190	100.54	-15.78	84.76	94.00	-9.24	Average

CLIENT: AViTA Corporation
EUT: Wrist Type Blood Pressure Monitor
MODEL: BPM13B
RATING: DC 3V
COMMENT: Band Edge-High

OPERATOR : Scott
TEST SITE : Chamber 3
TEST DISTANCE : 3 m
POLARIZATION : HORIZONTAL
TEMP/HUM : 24.1°C/52%

Data:15

2022-01-10



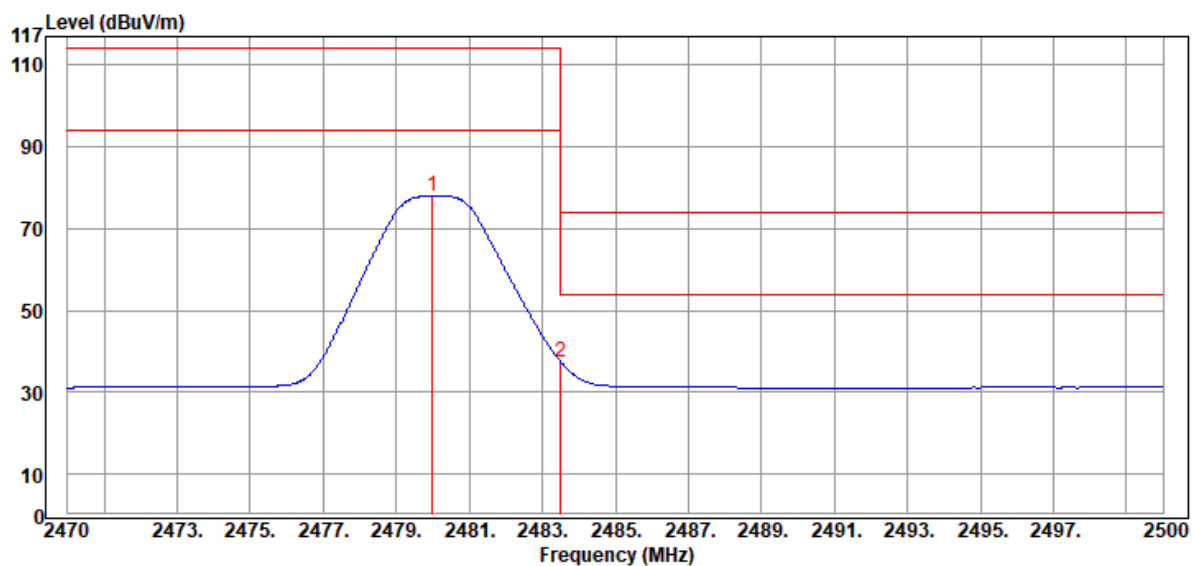
Item Mark	Freq. MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark
1	2480.050	104.91	-15.79	89.12	114.00	-24.88	Peak
2	2483.500	82.05	-15.80	66.25	74.00	-7.75	Peak

CLIENT: AViTA Corporation
EUT: Wrist Type Blood Pressure Monitor
MODEL: BPM13B
RATING: DC 3V
COMMENT: Band Edge-High

OPERATOR : Scott
TEST SITE : Chamber 3
TEST DISTANCE : 3 m
POLARIZATION : HORIZONTAL
TEMP/HUM : 24.1°C/52%

Data:16

2022-01-10



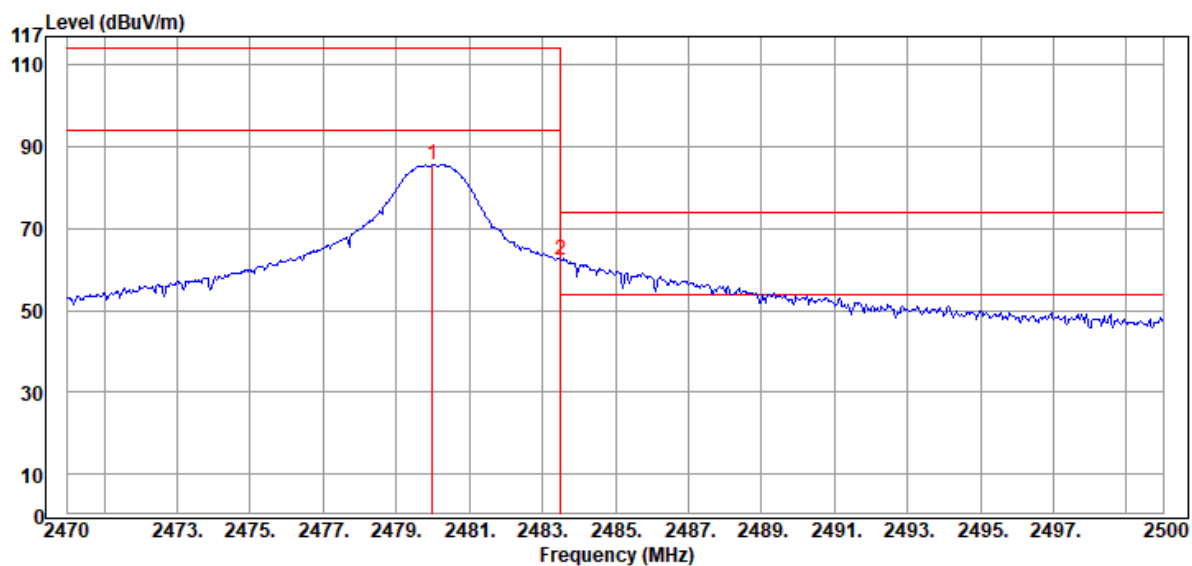
Item Mark	Freq. MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark
1	2479.990	93.61	-15.79	77.82	94.00	-16.18	Average
2	2483.500	53.25	-15.80	37.45	54.00	-16.55	Average

CLIENT: AViTA Corporation
EUT: Wrist Type Blood Pressure Monitor
MODEL: BPM13B
RATING: DC 3V
COMMENT: Band Edge-High

OPERATOR : Scott
TEST SITE : Chamber 3
TEST DISTANCE : 3 m
POLARIZATION : VERTICAL
TEMP/HUM : 24.1°C/52%

Data:17

2022-01-10



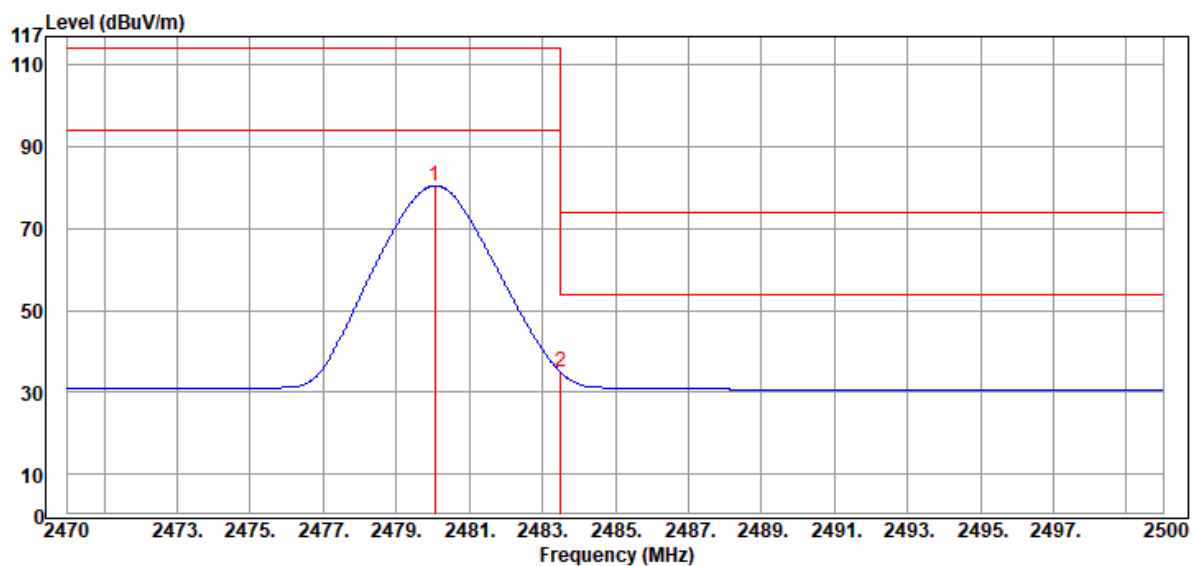
Item Mark	Freq. MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark
1	2479.990	101.26	-15.79	85.47	114.00	-28.53	Peak
2	2483.500	78.14	-15.80	62.34	74.00	-11.66	Peak

CLIENT: AViTA Corporation
EUT: Wrist Type Blood Pressure Monitor
MODEL: BPM13B
RATING: DC 3V
COMMENT: Band Edge-High

OPERATOR : Scott
TEST SITE : Chamber 3
TEST DISTANCE : 3 m
POLARIZATION : VERTICAL
TEMP/HUM : 24.1°C/52%

Data:18

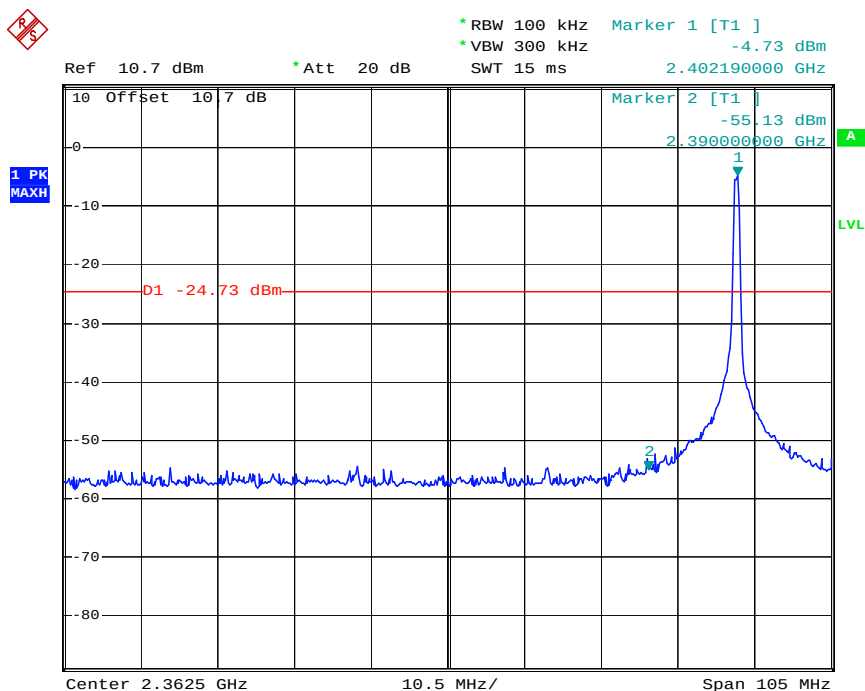
2022-01-10



Item Mark	Freq. MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark
1	2480.050	96.40	-15.79	80.61	94.00	-13.39	Average
2	2483.500	50.66	-15.80	34.86	54.00	-19.14	Average

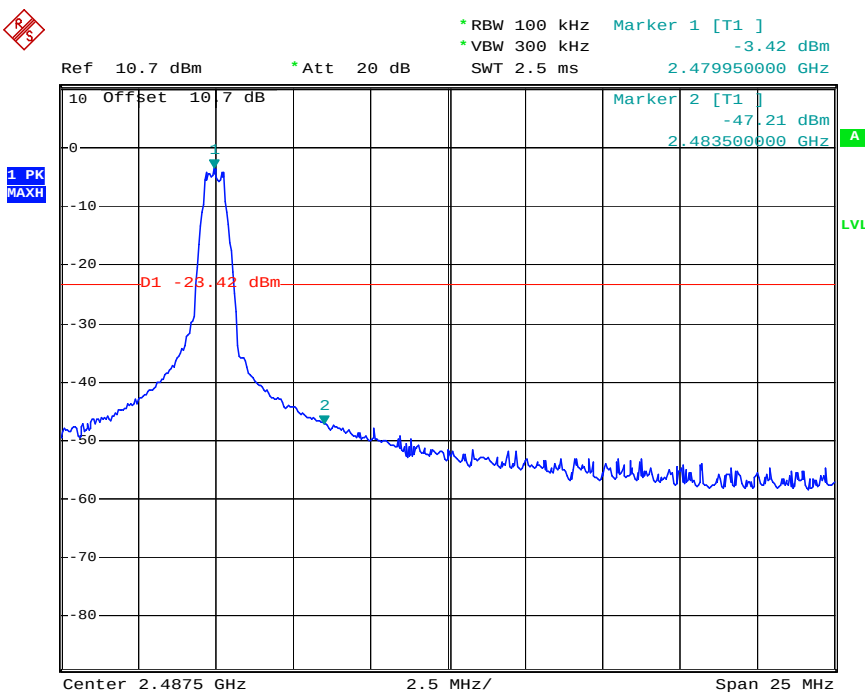
Band Edge Conducted

Low Channel:



Date: 10.JAN.2022 15:58:55

High Channel:



Date: 10.JAN.2022 16:00:01