



FCC Part 15 Subpart C

TEST REPORT

FOR

Product Name: PulesCheckUp Sensor

Model : JL02

Trade Name : Jinmu Health Technology Co., LTD.

Issued to

JimLab Corp.

2611 Arlington Blvd El Cerrito CA 94530,USA

Issued by

Global Certification Corp.

**No.146, Sec. 2, Xiangzhang Rd., Xizhi Dist.,New Taipei City 221,
Taiwan (R.O.C.)**



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Revision History

Revision	No.	Report Number	Issue Date	Description	Author/ Revised by
1.	9N1206	FR2-9N1206	Feb.07,2020	Original Report	Eason



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1. GENERAL INFORMATION

Applicant : JimLab Corp.

Address : 2611 Arlington Blvd El Cerrito CA 94530,USA

Manufacturer : Acare Technology Co., Ltd.

Address : 5F.-4, No. 24, Wuquan 2nd Rd., Xinzhuang Dist., New Taipei City 242, Taiwan

EUT : PulesCheckUp Sensor

Model No. : JL02

Trade Name : Jinmu Health Technology Co., LTD.

Model Differences : --

Is here with confirmed to comply with the requirements set out in the FCC Rules and Regulations Part 15 Subpart C and the measurement procedures were according to ANSI C63.10-2013. The said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

FCC Part 15 Subpart C 15.247

Tested By:

Approved by:

Feb.07,2020
Date

Kai Yeh

Kai Yeh, Engineer

Feb.07,2020
Date

Eason Hsu

Eason Hsu, Section Chief
Designation Number: TW1640



1.1 DESCRIPTION OF THE TESTED SAMPLES

EUT Name : PulesCheckUp Sensor
Model : JL02
Power From ☒Battery
☒Support Unit PC
Power Rating (Battery) : 3.7 Vdc / 600 mAh
Power Rating (Micro USB) : 5.0Vdc
FCC ID : 2AVKNJL02
Basic Spec : Bluetooth LE
Operate Frequency : 2402 MHz ~ 2480 MHz
RF Output Power : 8.81 dBm (MAX.)
Number of Channels : 40
Step of Channel : ☐N/A ☒ 2 MHz
Modulation Type : DSSS
Antenna Quantity : 1 Tx/Rx
Antenna Type : PCB Antenna
Antenna Gain : 1.0 dBi
EUT Received Date : Nov.12,2019
EUT Test Completed Date : Feb.03,2020

1.3 LIST OF MEASUREMENTS AND EXAMINATIONS

FCC Rule	Description of Test	Result
15.203	Antenna Requirement	Pass
15.207	Conducted Emission	Pass
15.209	Radiated Spurious Emission Radiated Band Edge Measurement	Pass
15.247(a)(2)	6dB Bandwidth Measurement	Pass
15.247(b)(3)	Peak Output Power Measurement	Pass
15.247(d)	Conducted Spurious Emission	Pass
15.247(e)	Power Spectral Density	Pass



2. TEST METHODOLOGY

All testing as described bellowed were performed in accordance with ANSI C63.10:2013 and FCC CFR 47 Part 15 Subpart C.

2.1 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on a wood table, which is at 0.8 m above ground plane acceding to clause 15.207 and requirements of ANSI C63.10:2013. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz are using CISPR Quasi-Peak / Average detectors.

Radiated Emissions

The EUT is a placed on a turn table, which is 1.5 m above ground plane. The turntable was rotated through 360 degrees to determine the position of maximum emission level. The EUT is placed at 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.



2.2 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
10.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.



2.3 DESCRIPTION OF TEST MODES

The EUT was tested under following modes:

Modes:

- 1. Continuous transmitting**

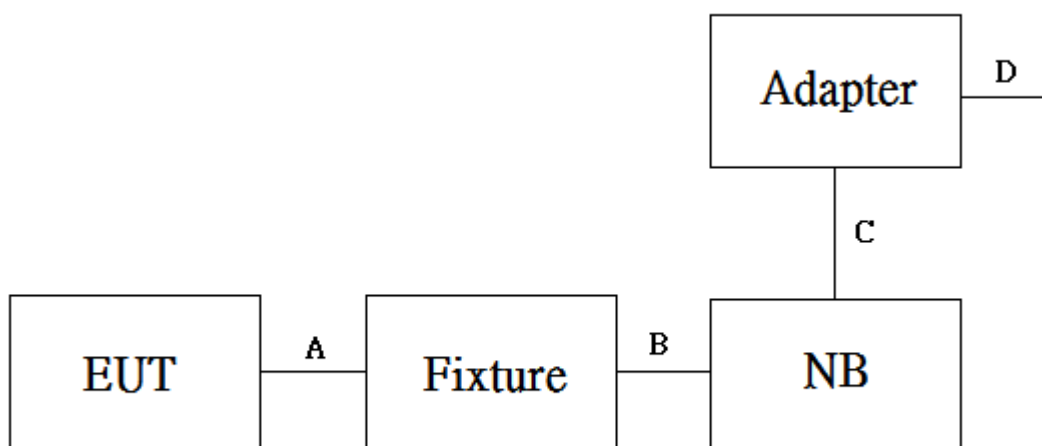
Channels:

- 1. 2.402 GHz (Lowest Channel)**
- 2. 2.440 GHz (Middle Channel)**
- 3. 2.480 GHz (Highest Channel)**



2.4 DESCRIPTION OF THE SUPPORT EQUIPMENTS

Setup Diagram



Cable List			
No.	Item	Length	Type
A.	Dupont Line	0.15 m	Non-Shielded
B.	USB Type A Cable	1.0m	Shielded
C.	Power Cable	1.8m	Non-Shielded
D.	Power Cord	1.8m	Non-Shielded

See test photographs attached in appendix 1 for the actual connections between EUT and support equipment.

Support Equipment

Peripherals Devices:

OUTSIDE SUPPORT EQUIPMENT					
No.	Equipment	Model	Serial No.	FCC ID / BSMI ID	Trade name
1.	NB	ThinkPad S430	--	R33B65	Lenovo
2.	Adapter	ADLX90NCT3A	11S45N030NEELES324AX1	R35737	Lenovo
3.	Fixture	--	--	--	--

Note: All the above equipment /cable were placed in worse case position to maximize emission signals during emission test

Grounding: Grounding was in accordance with the manufacturer's requirement and conditions for the intended use.



Test software Setup Information

Software Name : BGTool
Version : 2.4.2-2500
Transmit Power : 90

RF test mode for regulatory testing

Bluetooth Low Energy

Transmit power: 90 = 9 dBm Set

Note: European Union radio spectrum regulations does not allow transmit power higher than 8 dBm.

Select frequency: 0 = 2402 MHz

Select PHY: ☒ 1M ☐ 2M ☐ 125k Coded ☐ 500k Coded

☒ Low energy transmit

☒ PRBS9 (GFSK)
☐ 11110000
☐ 10101010
☐ Unmodulated carrier
☐ PN9

Packet length: 190

☐ Low energy receive

Log Settings

15:49:06,0299 gecko_cmd_system_set_tx_power power: 90 (0x005a) →

15:49:06,0389 ← gecko_rsp_system_set_tx_power set_power: 90 (0x005a)

BGAPI commands Send Save Clear

view Device Details Connected (COM3)



3. TEST AND MEASUREMENT EQUIPMENT

3.1 CALIBRATION

The measuring equipment utilized to perform the tests documented in the report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

3.2 EQUIPMENT

The following list contains measurement equipment used for testing. The equipment conforms to the requirement of CISPR 16-1, ANSI C63.2 and. Other required standards.

Calibration of all test and measurement, including any accessories that may effect such calibration, is checked frequently to ensure the accuracy. Adjustments are made and correction factors are applied in accordance with the instructions contained in the respective.

TABLE 1 LIST OF TEST AND MEASUREMENT EQUIPMENT

Conducted Emission Measurement (Test Site ID: GCC_CE_01)					
Instrument	Manufacturer	Model No.	Serial No.	Calibration Due Date	Note
LISN #1	SCHWARZBECK	NNLK8121	550213	Jan.09, 2021	For EUT
Digital thermometer and hygrometer	DRTEC	Q-226 WT	DEAC3E-A80408213-000	Oct.11, 2020	
AC POWER SOURCE	APC	AFC-3KB	870311	--	
LISN #2	EMCO	Feb-25	9001-1400	--	For Support Unit
1W 20db Attenuator & Pulse Limiter with Cable	AFJ	PAT20M	PA2005130030	Jan.09, 2021	
Impedance Stabilization	Teseq GmbH	ISNT800	23334	Jan.10, 2021	
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100438	Jan.07, 2021	
Test Software	AUDIX	E3	6.2008-10-2C	--	



966_3m EMC Chamber Radiated Emission Measurement (Test Site ID: GCC_RE_01)					
Instrument	Manufacturer	Model No.	Serial No.	Calibration Due Date	Note
EMC Test Receiver	R&S	FSV40	101088	Oct.13,2020	
Bilog Antenna	SUNOL	JB1	A052204	Mar.12,2020	
Pre-Amplifier	WIRELESS	FPA-6592G	60028	Oct.14,2021	
RF Cable	HUBER + UHNER	RG213/U	Cable-004	Sep.17,2020	
Double Ridged Guide HORN ANTENNA	EST.LINDGREN	3117	119028	Apr.17,2021	
SMA_Cable	HUBER SUHNER	EMC104-SM-SM-1000	170238	Mar.05,2020	
RF Cable	Huber Suhenr	SUCOFLEX 104	293864/4	Mar.05,2020	
Microwave Preamplifier	EMCINSTRUMENT	EMC051845	980059	Apr.16,2021	
TEST SOFTWARE	AUDIX	E3	6.101222	--	
Digital thermometer and hygrometer	DRTEC	Q-226 WT	DEAC3E-A80408213-000	Oct.11,2020	
AC POWER SOURCE	Turn Power	APW-120N	S007	--	

RF Conducted Measurement (Test Site ID: GCC_RE_01)					
Instrument	Manufacturer	Model No.	Serial No.	Calibration Due Date	Note
EMC Test Receiver	R&S	FSV40	101088	Oct.13,2020	
Wideband Peak Power Meter	Anritsu	ML2495A	841006	Dec.18,2020	
Pulse Power Sensor	Anritsu	MA2411B	738428	Dec.18,2020	
SMA_Cable	HUBER SUHNER	EMC104-SM-SM-1000	170238	Mar.05,2020	
Digital thermometer and hygrometer	DRTEC	Q-226 WT	DEAC3E-A80408213-000	Oct.11,2020	

※ Calibration interval of instruments listed above is one year



4. ANTENNA REQUIREMENTS

4.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

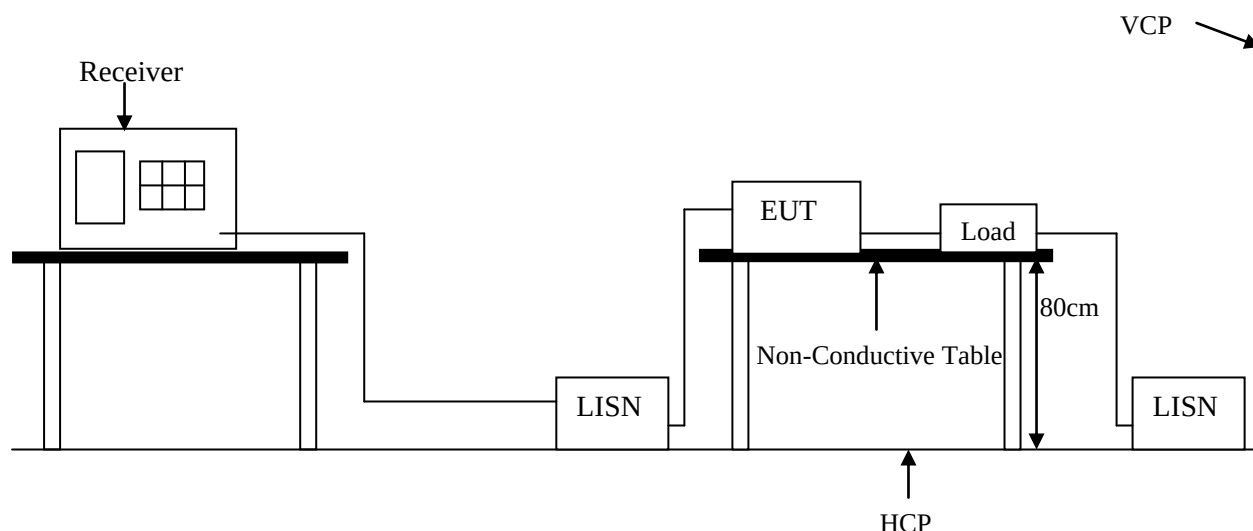
And according to FCC 47 CFR Section 15.247(b), if transmitting antennas of direction gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.2 ANTENNA CONSTRUCTION AND DIRECTIONAL GAIN

Antenna type : PCB Antenna
Antenna Gain: 1.0 dBi

5. CONDUCTED EMISSIONS

5.1 TEST SETUP



5.2 LIMIT

Frequency range (MHz)	CLASS A		CLASS B	
	QP dB(uV)	Average dB(uV)	QP dB(uV)	Average dB(uV)
0.15-0.5	79 dBuV	66 dBuV	66 - 56 dBuV	56 - 46 dBuV
0.5-5.0	73 dBuV	60 dBuV	56 dBuV	46 dBuV
5.0-30.0	73 dBuV	60 dBuV	60 dBuV	50 dBuV

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

5.3 TEST PROCEDURE

The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). It provides a 50 ohm / 50 μ H coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm / 50 μ H coupling impedance with 50 ohm termination. (Please refer to the block diagram of the test setup and photograph.)

Both sides of AC line are checked for the maximum conducted emission interference. In order to find the maximum emissions, the relating positions of equipment and all of the interference cables must be changed according to EN 55022 regulations: The measurement procedure on conducted emission interference.

The resolution bandwidth of the field strength meter is set at 9 KHz.

5.4 TEST RESULT

PASS



5.5 TEST DATA:

Date:2020-1-17

Site : GCC_CE_01

RBW : 9 KHz VBW : 300 KHz SWT : Auto

EUT : PulseCheckUp Sensor

Mode : Tx Mode

Voltage : From PC USB

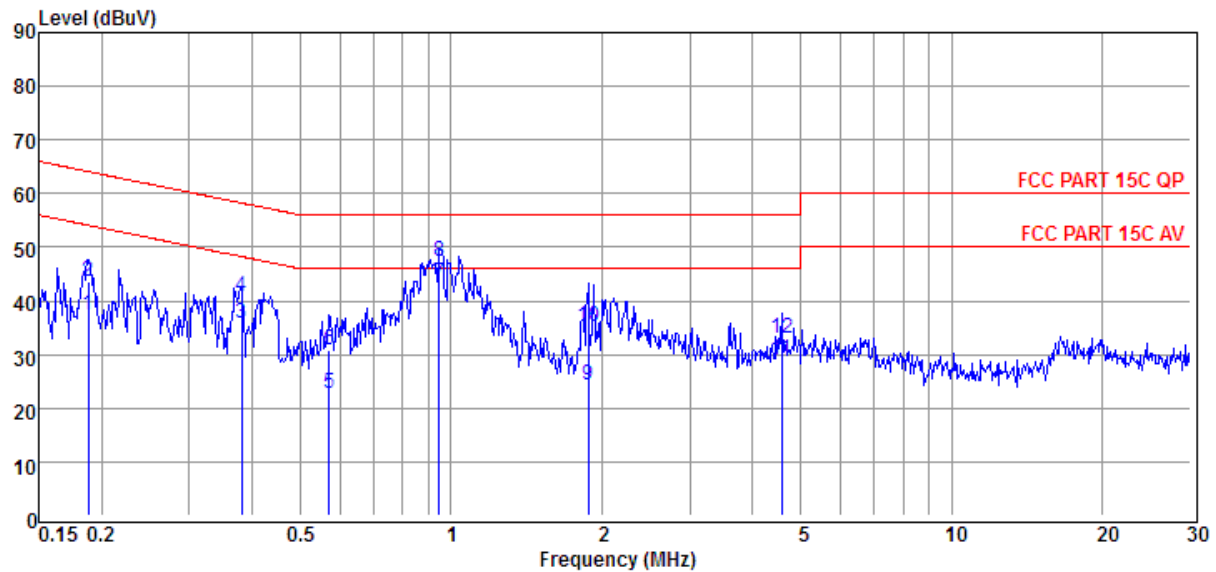
Regulations : FCC PART 15C QP

Phase : LINE

Model : JL02

Temp/Humidity : 19°C / 68%

Memo :



Freq		Meter	System	Cable	LISN	Real Level	Limit	Margin	Remark
MHz		Level	Factor	Loss	Factor		Line		
		dBuV	dB	dB	dB	dBuV	dBuV	dB	
1	0.19	17.19	20.13	20.10	0.03	37.32	54.10	-16.78	Average
2	0.19	23.44	20.13	20.10	0.03	43.57	64.10	-20.53	QP
3	0.38	15.53	20.16	20.13	0.03	35.69	48.25	-12.56	Average
4	0.38	20.49	20.16	20.13	0.03	40.65	58.25	-17.60	QP
5	0.57	2.48	20.20	20.17	0.03	22.68	46.00	-23.32	Average
6	0.57	10.62	20.20	20.17	0.03	30.82	56.00	-25.18	QP
7	0.95	22.88	20.26	20.22	0.04	43.14	46.00	-2.86	Average
8	0.95	27.18	20.26	20.22	0.04	47.44	56.00	-8.56	QP
9	1.88	4.04	20.31	20.26	0.05	24.35	46.00	-21.65	Average
10	1.88	14.79	20.31	20.26	0.05	35.10	56.00	-20.90	QP
11	4.57	8.49	20.47	20.38	0.09	28.96	46.00	-17.04	Average
12	4.57	12.67	20.47	20.38	0.09	33.14	56.00	-22.86	QP

System Factor = Cable Loss + LISN Factor

Cable Loss = Pulse limiter + Cable Insertion Loss

Real Level = Meter Level + System Factor

Margin = Real Level - Limit Line



Date:2020-1-17

Site : GCC_CE_01

RBW : 9 KHz VBW : 300 KHz SWT : Auto

EUT : PulseCheckUp Sensor

Mode : Tx Mode

Voltage : From PC USB

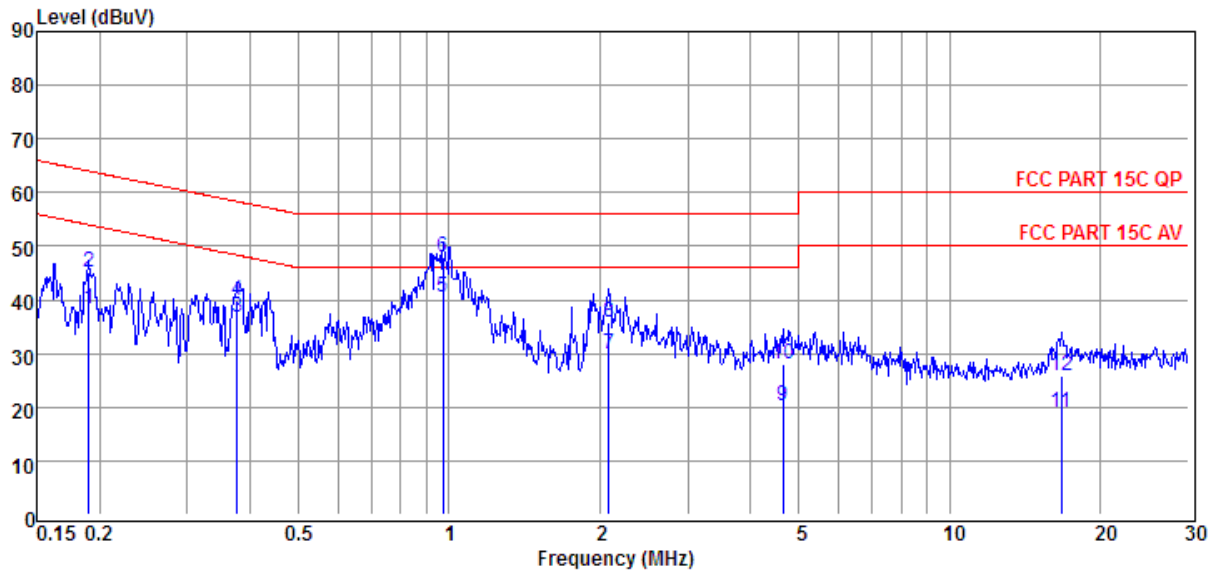
Regulations : FCC PART 15C QP

Phase : NEUTRAL

Model : JL02

Temp/Humidity : 19°C / 68%

Memo :



	Freq	Meter	System	Cable	LISN	Real Level	Limit	Margin	Remark
	MHz	Level	Factor	Loss	Factor	dBuV	Line	dB	
		dBuV	dB	dB	dB		dBuV		
1	0.19	18.17	20.13	20.10	0.03	38.30	54.01	-15.71	Average
2	0.19	25.05	20.13	20.10	0.03	45.18	64.01	-18.83	QP
3	0.38	16.61	20.16	20.13	0.03	36.77	48.34	-11.57	Average
4	0.38	19.59	20.16	20.13	0.03	39.75	58.34	-18.59	QP
5	0.97	20.14	20.26	20.22	0.04	40.40	46.00	-5.60	Average
6	0.97	27.71	20.26	20.22	0.04	47.97	56.00	-8.03	QP
7	2.09	9.70	20.32	20.27	0.05	30.02	46.00	-15.98	Average
8	2.09	15.51	20.32	20.27	0.05	35.83	56.00	-20.17	QP
9	4.65	-0.13	20.46	20.38	0.08	20.33	46.00	-25.67	Average
10	4.65	7.55	20.46	20.38	0.08	28.01	56.00	-27.99	QP
11	16.75	-2.28	21.18	20.98	0.20	18.90	50.00	-31.10	Average
12	16.75	4.82	21.18	20.98	0.20	26.00	60.00	-34.00	QP

System Factor = Cable Loss + LISN Factor

Cable Loss = Pulse limiter + Cable Insertion Loss

Real Level = Meter Level + System Factor

Margin = Real Level - Limit Line



6. PEAK OUTPUT POWER

6.1 TEST SETUP



6.2 LIMIT

The maximum peak output power of the intentional radiator shall not exceed the following:

1. According to § 15.247(b)(3) , for systems using digital modulation in the bands of 902 – 928 MHz , 2400 – 2483.5 MHz: 1 Watt.
2. According to § 15.247(b)(4) , the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section , if transmitting antennas of directional gain greater than 6 dBi are used , the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) , (b)(2) , and (b)(3) of this section , as appropriate , by the amount in dB that directional gain of the antenna exceeds 6 dBi.

6.3 TEST PROCEDURE

1. Peak power is measured using the wideband power meter.
2. Power is integrated over a bandwidth greater than or equal to the 99% bandwidth.

6.4 TEST RESULT

PASS



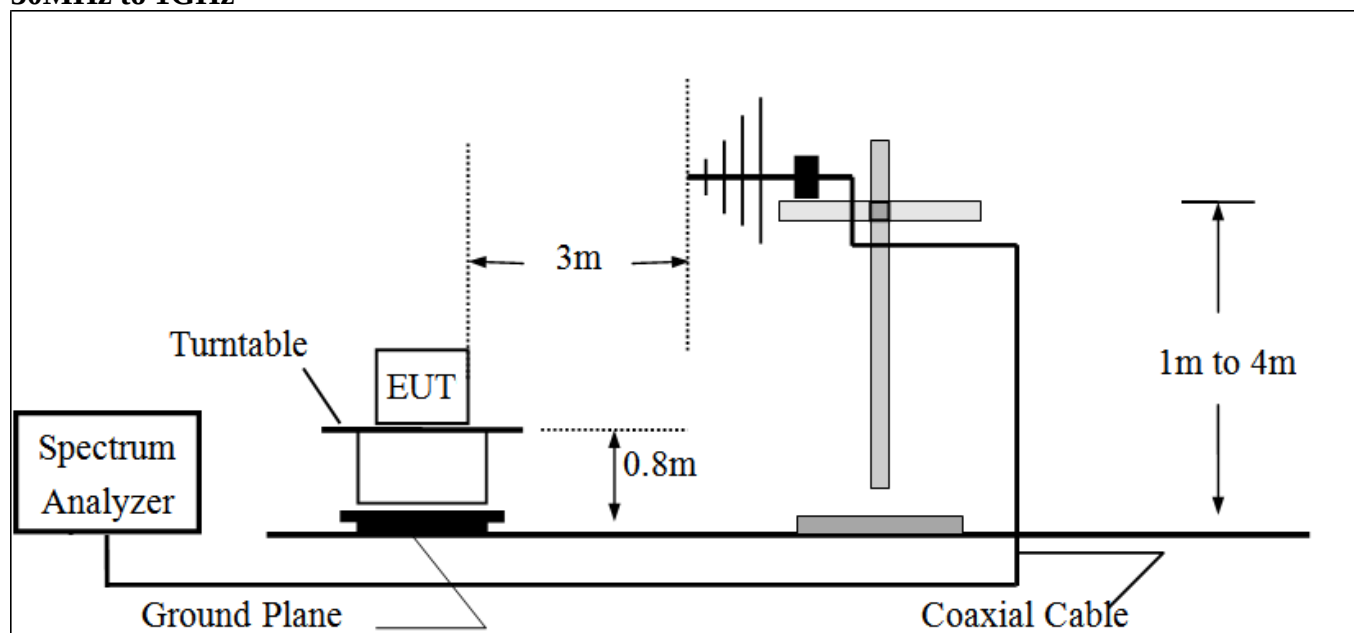
6.5 TEST DATA:

Configuration	Data Rate	Frequency	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)
Bluetooth LE	1 Mbps	2402 MHz	8.81	0.00760326	30.00	1.00
		2440 MHz	8.41	0.00693426	30.00	1.00
		2480 MHz	7.78	0.00599791	30.00	1.00

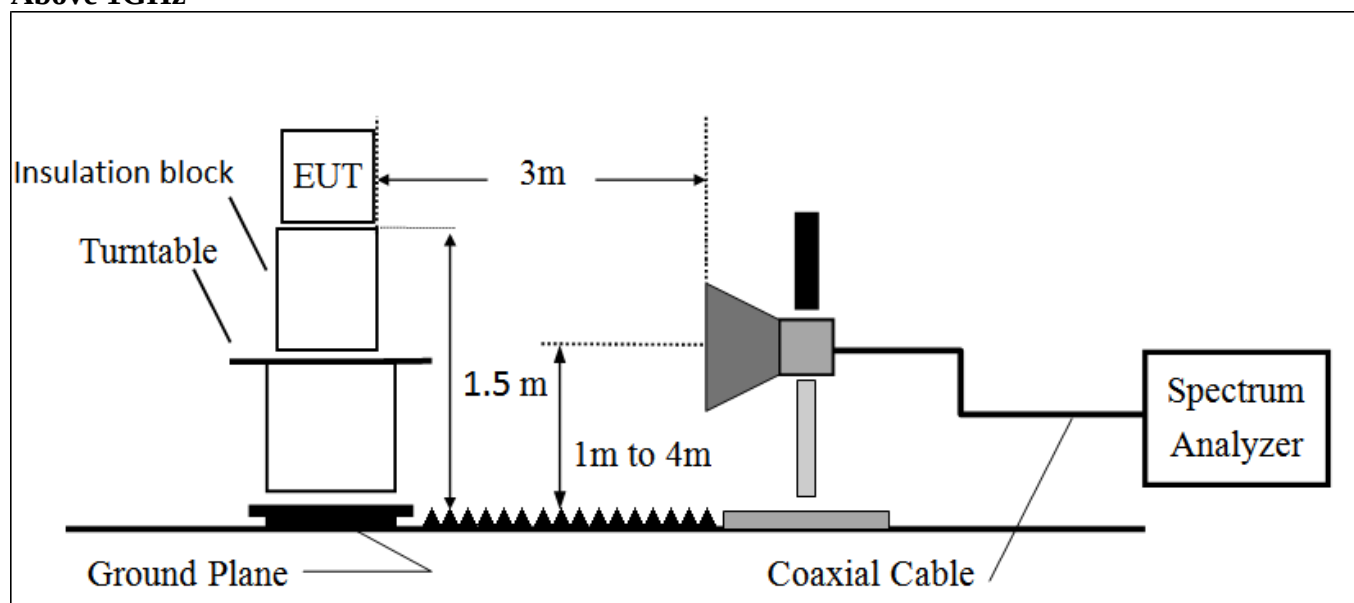
7. RADIATED BAND EDGE

7.1 TEST SETUP

30MHz to 1GHz



Above 1GHz





7.2 LIMIT

Restricted Bands:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

Operation within the bands:

902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz, and 24.0 - 24.25 GHz.

Frequency (Hz)	Field Strength (μ V/m at 3-meter)	Field Strength (dB μ V/m at 3-meter)
0.009-0.490	2400/F(kHz) at 300-meter	--
0.490-1.705	24000/F(kHz) at 30-meter	--
1.705-30	30 at 30-meter	69.54
30-88	100	40
88-216	150	43
216-960	200	46
Above 960	500	54

7.3 TEST RESULT

PASS



7.4 TEST DATA:

Date:2019-12-24

Site : GCC_RE_01

Regulations : FCC 15.247 PK

RBW : 1000 KHz VBW : 1000 KHz Polarity : VERTICAL

SWT:Auto

EUT : PulseCheckUP Sensor

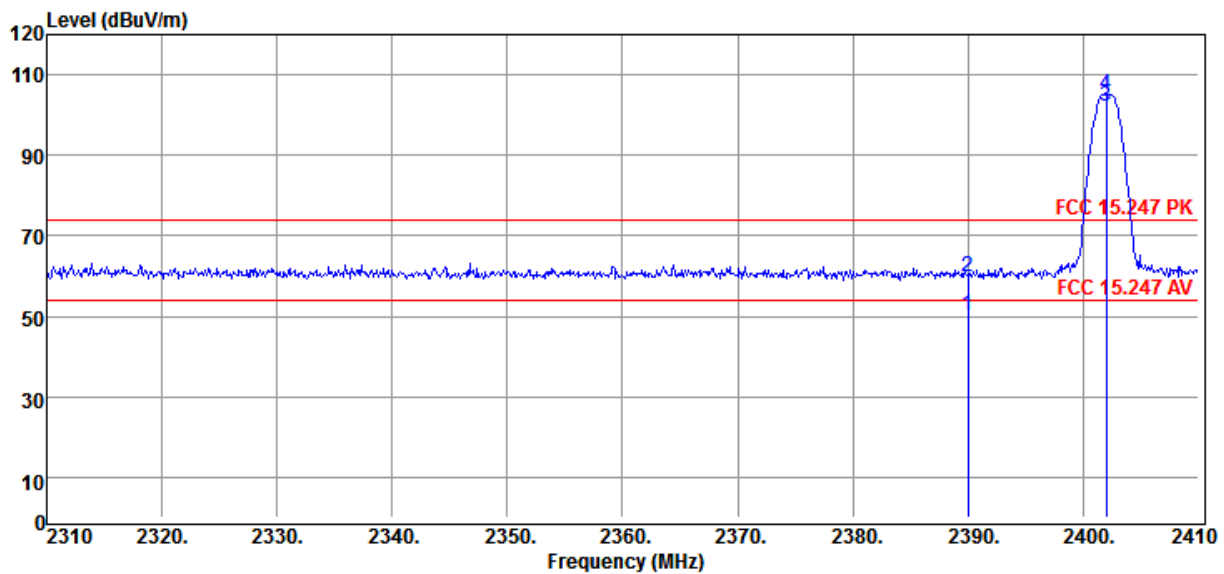
Model : JL02

Mode : Tx Mode BLE Low CH

Temp/Humidity : 23°C / 61%

Voltage : From Battery

Memo : Power Set:90



	Freq MHz	Meter Level dBUV	System Factor dB/m	Cable Loss dB	Antenna Factor dB/m	Preamp Gain dB	Real Level dBUV/m	Limit Line dBUV/m	Margin dB	Remark
1	2390.00	13.70	36.62	4.82	31.80	0.00	50.32	54.00	-3.68	Average
2	2390.00	23.37	36.62	4.82	31.80	0.00	59.99	74.00	-14.01	Peak
3	2402.00	65.44	36.67	4.83	31.84	0.00	102.11	54.00	48.11	Average
4	2402.00	68.52	36.67	4.83	31.84	0.00	105.19	74.00	31.19	Peak

System Factor = Cable Loss + Antenna Factor - Preamp Gain

Real Level = Meter Level + System Factor

Margin = Real Level - Limit Line



Date:2019-12-24

Site : GCC_RE_01

Regulations : FCC 15.247 PK

RBW : 1000 KHz VBW : 1000 KHz Polarity : HORIZONTAL

SWT:Auto

EUT : PulseCheckUP Sensor

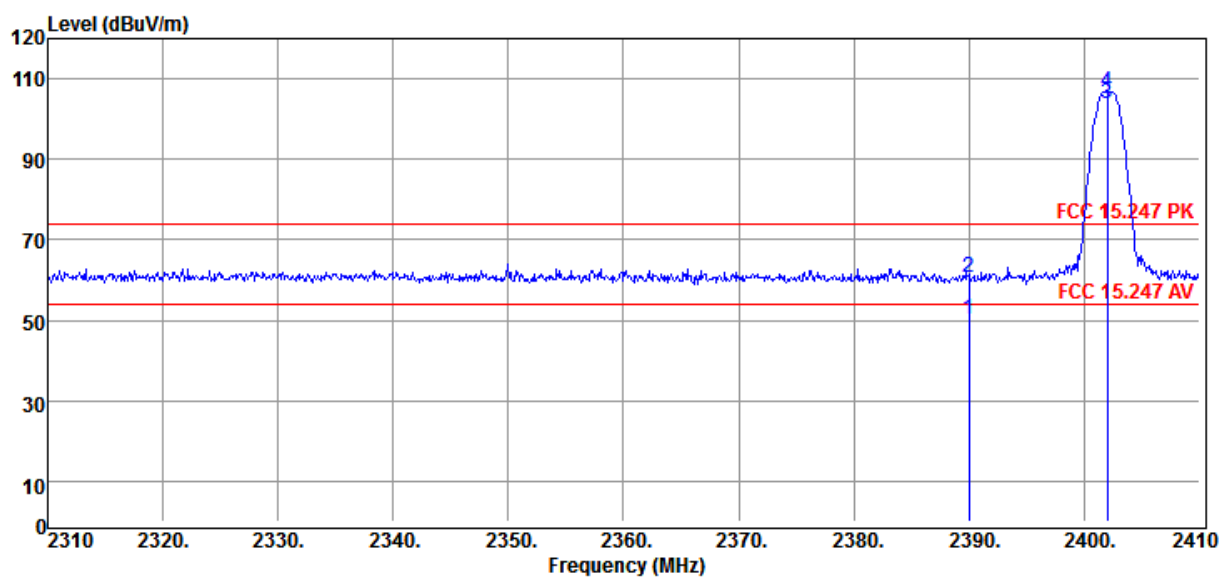
Model : JL02

Mode : Tx Mode BLE Low CH

Temp/Humidity : 23°C / 61%

Voltage : From Battery

Memo : Power Set:90



	Freq MHz	Meter Level dBUV	System Factor dB/m	Cable Loss dB	Antenna Factor dB/m	Preamp Gain dB	Real Level dBUV/m	Limit Line dBUV/m	Margin dB	Remark
1	2390.00	13.71	36.62	4.82	31.80	0.00	50.33	54.00	-3.67	Average
2	2390.00	24.02	36.62	4.82	31.80	0.00	60.64	74.00	-13.36	Peak
3	2402.00	67.04	36.67	4.83	31.84	0.00	103.71	54.00	49.71	Average
4	2402.00	70.16	36.67	4.83	31.84	0.00	106.83	74.00	32.83	Peak

System Factor = Cable Loss + Antenna Factor - Preamp Gain

Real Level = Meter Level + System Factor

Margin = Real Level - Limit Line



Date:2019-12-24

Site : GCC_RE_01

Regulations : FCC 15.247 PK

RBW : 1000 KHz VBW : 1000 KHz Polarity : VERTICAL

SWT:Auto

EUT : PulseCheckUP Sensor

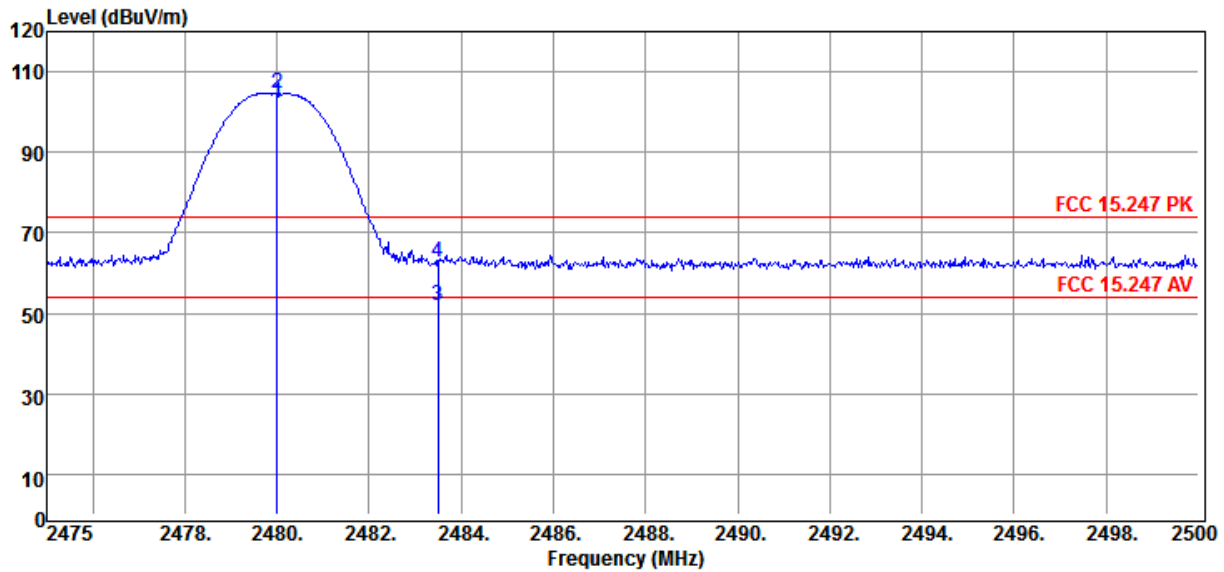
Model : JL02

Mode : Tx Mode BLE High CH

Temp/Humidity : 23°C / 61%

Voltage : From Battery

Memo : Power Set:90



	Freq MHz	Meter Level dBUV	System Factor dB/m	Cable Loss dB	Antenna Factor dB/m	Preamp Gain dB	Real Level dBUV/m	Limit Line dBUV/m	Margin dB	Remark
1	2480.00	64.25	37.77	4.91	32.86	0.00	102.02	54.00	48.02	Average
2	2480.00	66.69	37.77	4.91	32.86	0.00	104.46	74.00	30.46	Peak
3	2483.50	14.31	37.79	4.92	32.87	0.00	52.10	54.00	-1.90	Average
4	2483.50	24.81	37.79	4.92	32.87	0.00	62.60	74.00	-11.40	Peak

System Factor = Cable Loss + Antenna Factor - Preamp Gain

Real Level = Meter Level + System Factor

Margin = Real Level - Limit Line



Date:2019-12-24

Site : GCC_RE_01

Regulations : FCC 15.247 PK

RBW : 1000 KHz VBW : 1000 KHz Polarity : HORIZONTAL

SWT:Auto

EUT : PulseCheckUP Sensor

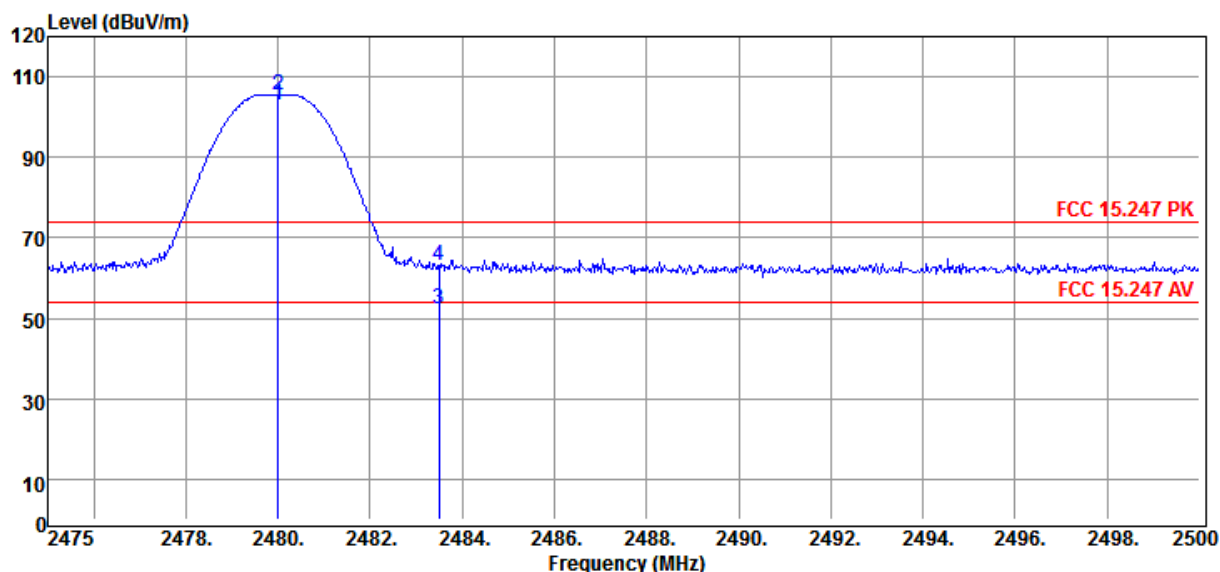
Model : JL02

Mode : Tx Mode BLE High CH

Temp/Humidity : 23°C / 61%

Voltage : From Battery

Memo : Power Set:90



	Freq MHz	Meter Level dBuV	System Factor dB/m	Cable Loss dB	Antenna Factor dB/m	Preamp Gain dB	Real Level dBuV/m	Limit Line dBuV/m	Margin dB	Remark
1	2480.00	65.16	37.77	4.91	32.86	0.00	102.93	54.00	48.93	Average
2	2480.00	67.83	37.77	4.91	32.86	0.00	105.60	74.00	31.60	Peak
3	2483.50	14.53	37.79	4.92	32.87	0.00	52.32	54.00	-1.68	Average
4	2483.50	25.18	37.79	4.92	32.87	0.00	62.97	74.00	-11.03	Peak

System Factor = Cable Loss + Antenna Factor - Preamp Gain

Real Level = Meter Level + System Factor

Margin = Real Level - Limit Line

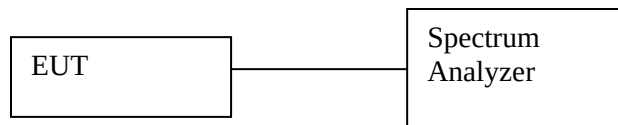
Note:

1. Emission level = Reading level + Correction factor
2. Correction factor : Antenna factor, Cable loss, PreAmp, etc.
3. All emissions as described above were determining by rotating the EUT through three orthogonal axes to maximizing the emissions if the EUT belongs to hand-held or body-worn devices.
4. Measurements above 1000 MHz, Peak detector setting: use a 1 MHz RBW, a 3 MHz VBW.
5. Measurements above 1000 MHz, Average detector setting: 1 MHz RBW with 10 Hz VBW.
6. Peak detector measurement data will represent the worst case results.



8. 6DB BANDWIDTH

8.1 TEST SETUP



8.2 LIMIT

Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

8.3 TEST PROCEDURE

- a. The transmitter output was connected to the spectrum analyzer.
- b. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz.
- c. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

8.4 TEST RESULT

PASS

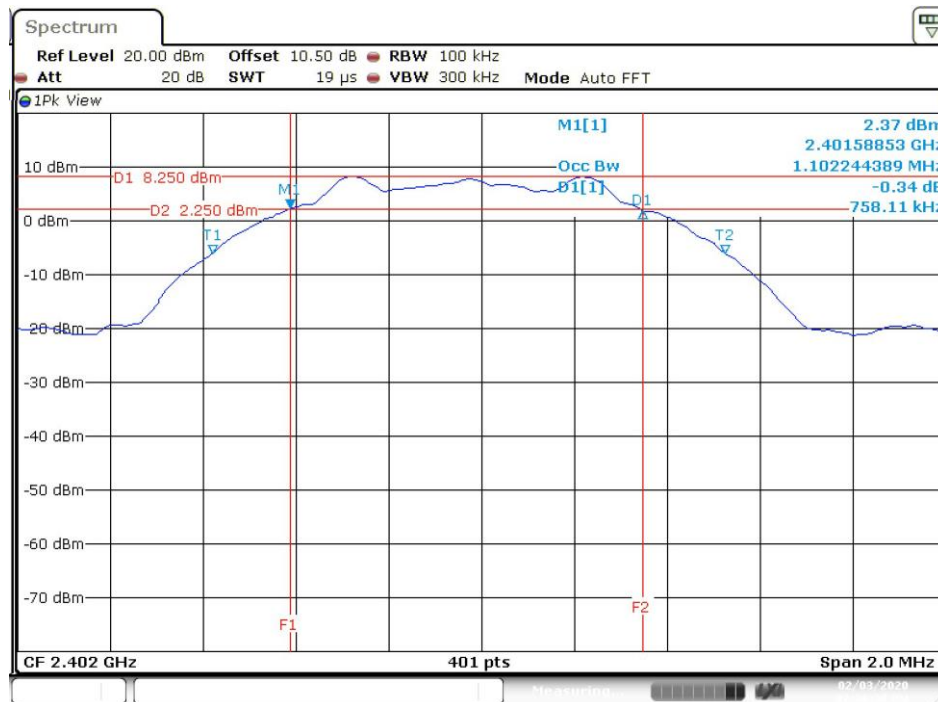


8.5 TEST DATA:

Frequency	6dB Bandwidth (kHz)	Min. Limit (kHz)
2402 MHz	758.11	500
2440 MHz	758.11	500
2480 MHz	753.12	500

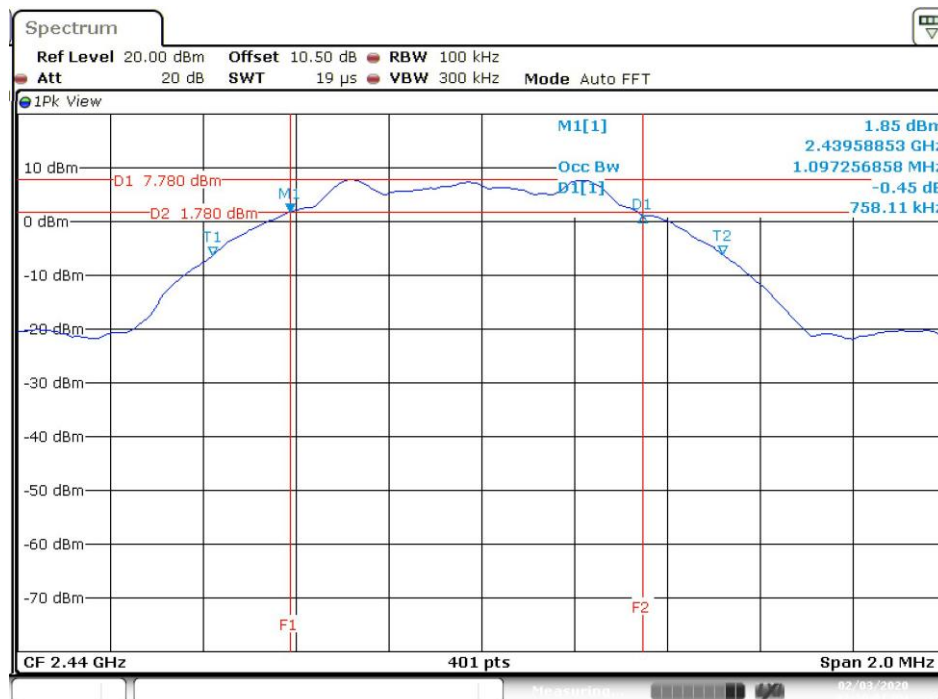


Lowest Channel



Date: 3.FEB.2020 14:36:33

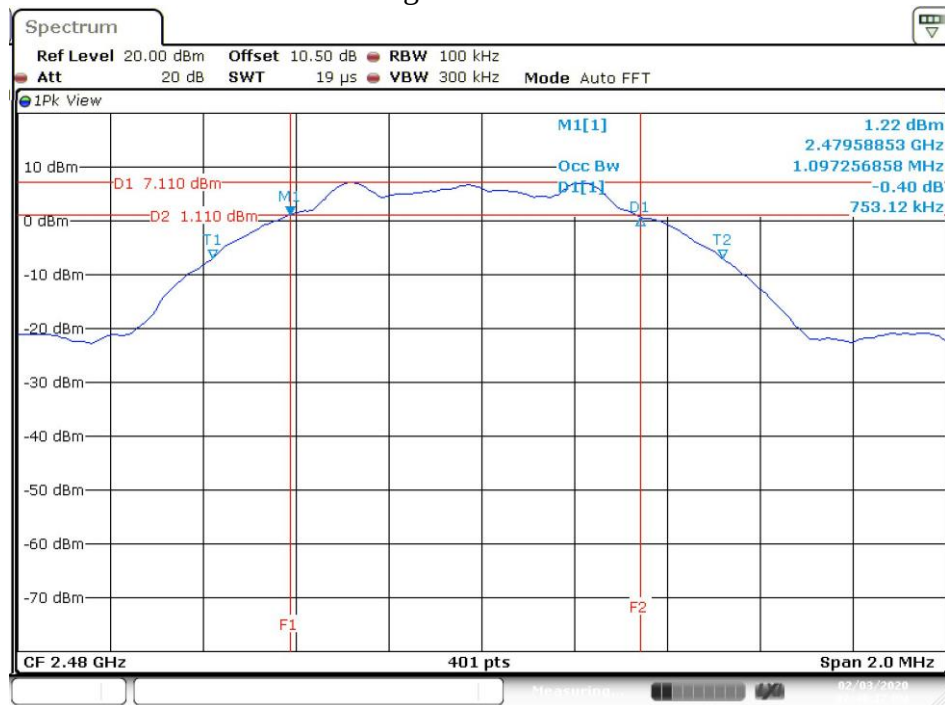
Middle Channel



Date: 3.FEB.2020 14:39:01



Highest Channel

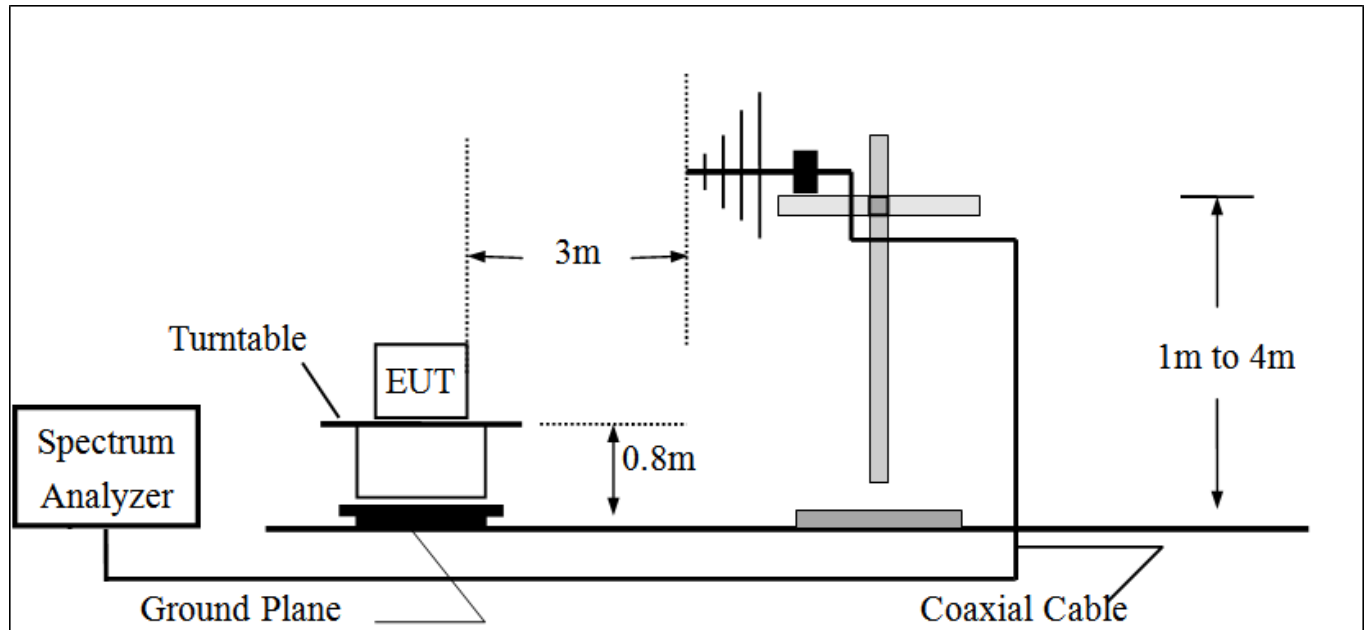


Date: 3.FEB.2020 14:40:17

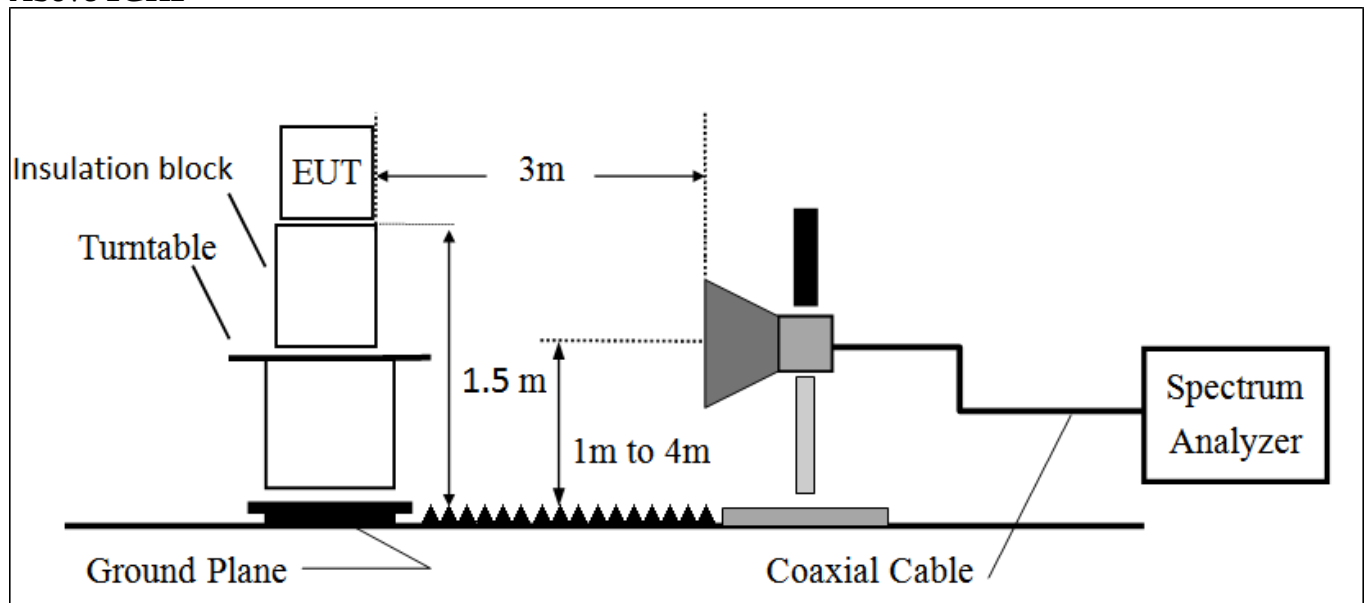
9. RADIATED SPURIOUS EMISSIONS

9.1 TEST SETUP

30MHz to 1GHz



Above 1GHz





9.2 LIMIT

The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209 as below.

Frequency (MHz)	Field Strength (mV/m)	Measurement Distance (m)
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

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.*

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

Frequency (MHz)	Field Strength (μ V/m at 3-meter)	Field Strength (dB μ V/m at 3-meter)
0.009-0.490	2400/F(kHz) at 300-meter	--
0.490-1.705	24000/F(kHz) at 30-meter	--
1.705-30	30 at 30-meter	69.54
30-88	100	40
88-216	150	43
216-960	200	46
Above 960	500	54



9.3 TEST PROCEDURE

1. The EUT was placed on a turntable, which was 0.8m or 1.5m above ground plane.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT was set at 3m away from the receiving antenna, which was varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was maximized by changing the polarization of receiving antenna, both horizontal and vertical.
6. Repeated above procedures until the measurements for all frequencies are completed.

9.4 TEST RESULT

PASS



9.5 TEST DATA:

30MHz ~ 1GMz

Date:2019-12-24

Site : GCC_RE_01

RBW : 100 KHz VBW : 100 KHz SWT:Auto

EUT : PulseCheckUP Sensor

Mode : Tx Mode

Voltage : From Battery

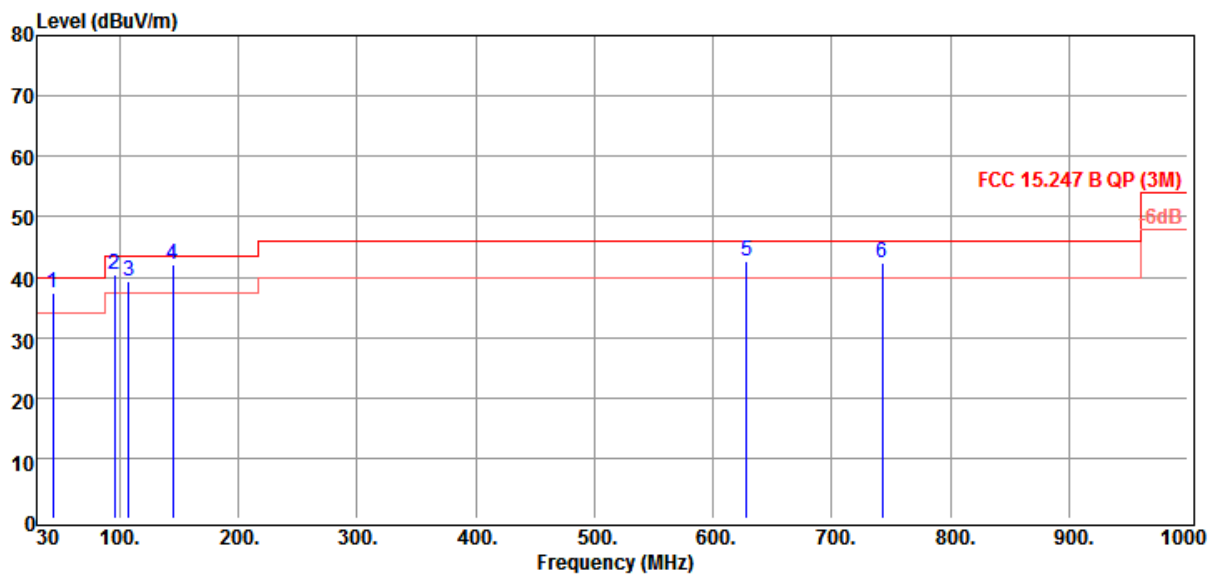
Regulations : FCC 15.247 B QP (3M)

Polarity : VERTICAL

Model : JL02

Temp/Humidity : 23°C / 61%

Memo : Power Set:90



	Freq MHz	Meter Level dBuV	System Factor dB/m	Cable Loss dB	Antenna Factor dB/m	Preamp Gain dB	Real Level dBuV/m	Limit Line dBuV/m	Margin dB	Remark
1	43.58	47.66	-10.18	0.54	18.46	29.18	37.48	40.00	-2.52	QP
2	95.96	51.77	-11.23	0.89	16.41	28.53	40.54	43.50	-2.96	QP
3	107.60	46.97	-7.75	0.95	19.69	28.39	39.22	43.50	-4.28	QP
4	144.46	48.68	-6.71	1.12	20.83	28.66	41.97	43.50	-1.53	QP
5	628.49	38.94	3.76	2.76	28.49	27.49	42.70	46.00	-3.30	QP
6	742.95	35.69	6.77	3.06	30.42	26.71	42.46	46.00	-3.54	QP

System Factor = Cable Loss + Antenna Factor - Preamp Gain

Real Level = Meter Level + System Factor

Margin = Real Level - Limit Line

* Since the electric field strength of 9kHz ~ 30MHz is too small and cannot be recorded, the radiation frequency is measured from 30MHz.



Date:2019-12-24

Site : GCC_RE_01

RBW : 100 KHz VBW : 100 KHz SWT:Auto

EUT : PulseCheckUP Sensor

Mode : Tx Mode

Voltage : From Battery

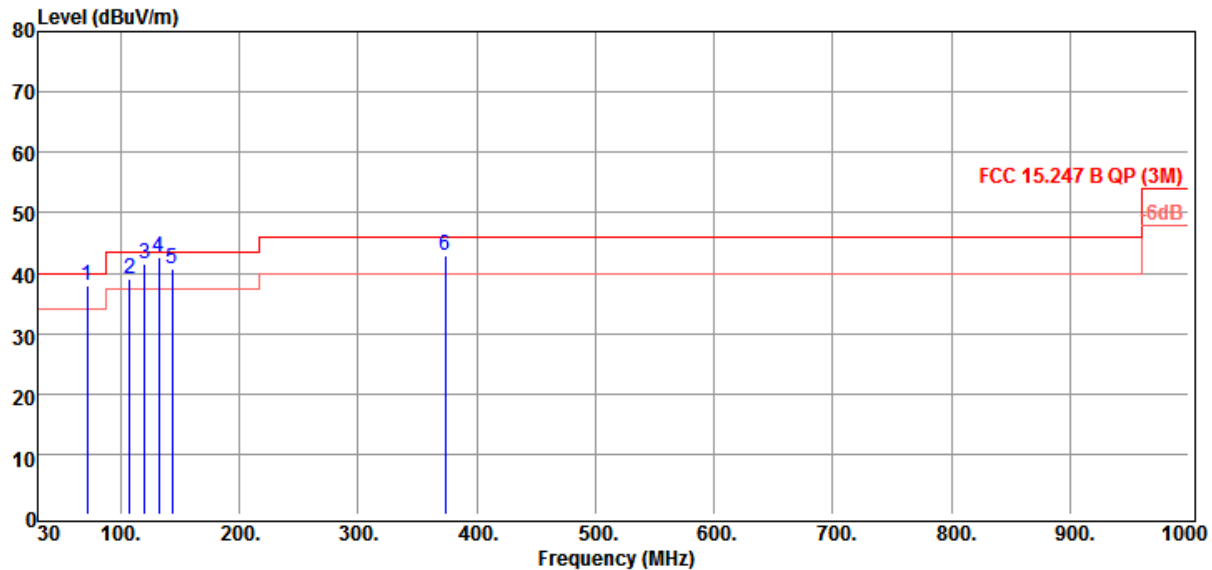
Regulations : FCC 15.247 B QP (3M)

Polarity : HORIZONTAL

Model : JL02

Temp/Humidity : 23°C / 61%

Memo : Power Set:90



	Freq MHz	Meter Level dBuV	System Factor dB/m	Cable Loss dB	Antenna Factor dB/m	Preamp Gain dB	Real Level dBuV/m	Limit Line dBuV/m	Margin dB	Remark
1	71.71	51.17	-13.22	0.73	15.11	29.06	37.95	40.00	-2.05	QP
2	107.60	46.72	-7.75	0.95	19.69	28.39	38.97	43.50	-4.53	QP
3	120.21	47.06	-5.65	1.01	21.82	28.48	41.41	43.50	-2.09	QP
4	131.85	48.34	-5.70	1.06	21.81	28.57	42.64	43.50	-0.86	QP
5	143.49	47.33	-6.65	1.11	20.89	28.65	40.68	43.50	-2.82	QP
6	373.38	45.21	-2.30	2.40	23.83	28.53	42.91	46.00	-3.09	QP

System Factor = Cable Loss + Antenna Factor - Preamp Gain

Real Level = Meter Level + System Factor

Margin = Real Level - Limit Line

* Since the electric field strength of 9kHz ~ 30MHz is too small and cannot be recorded, the radiation frequency is measured from 30MHz.



1GHz ~26.5GHz

Date:2019-12-24

Site : GCC_RE_01

Regulations : FCC 15.247 PK

RBW : 1000 KHz VBW : 1000 KHz Polarity : VERTICAL

SWT:Auto

EUT : PulseCheckUP Sensor

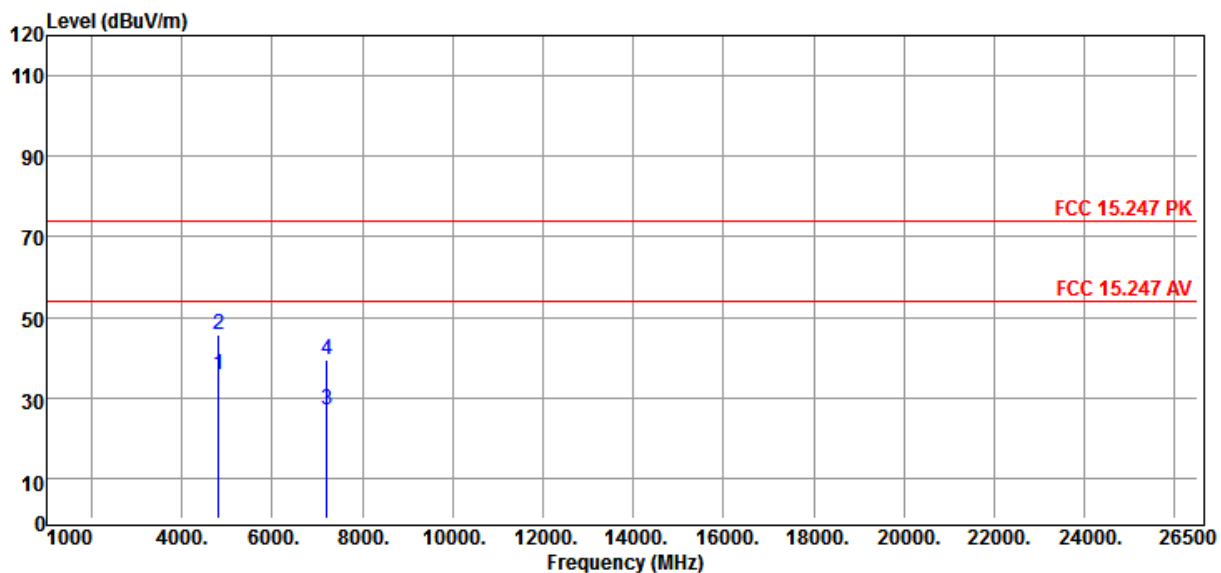
Model : JL02

Mode : Tx Mode BLE Low CH

Temp/Humidity : 23°C / 61%

Voltage : From Battery

Memo : Power Set:90



	Freq MHz	Meter Level dBuV	System Factor dB/m	Cable Loss dB	Antenna Factor dB/m	Preamp Gain dB	Real Level dBuV/m	Limit Line dBuV/m	Margin dB	Remark
1	4804.00	43.58	-7.70	7.04	34.00	48.74	35.88	54.00	-18.12	Average
2	4804.00	53.19	-7.70	7.04	34.00	48.74	45.49	74.00	-28.51	Peak
3	7206.00	30.64	-3.84	8.88	35.40	48.12	26.80	54.00	-27.20	Average
4	7206.00	43.14	-3.84	8.88	35.40	48.12	39.30	74.00	-34.70	Peak

System Factor = Cable Loss + Antenna Factor - Preamp Gain

Real Level = Meter Level + System Factor

Margin = Real Level - Limit Line



Date:2019-12-24

Site : GCC_RE_01

RBW : 1000 KHz VBW : 1000 KHz

SWT:Auto

EUT : PulseCheckUP Sensor

Mode : Tx Mode BLE Low CH

Voltage : From Battery

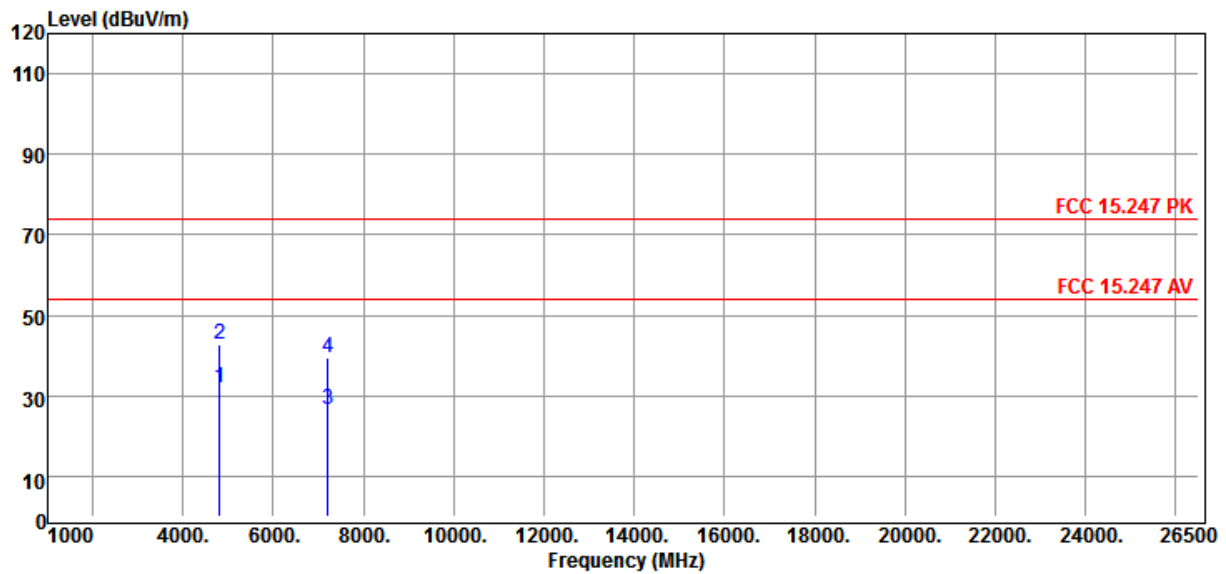
Regulations : FCC 15.247 PK

Polarity : HORIZONTAL

Model : JL02

Temp/Humidity : 23°C / 61%

Memo : Power Set:90



	Freq MHz	Meter Level dBuV	System Factor dB/m	Cable Loss dB	Antenna Factor dB/m	Preamp Gain dB	Real Level dBuV/m	Limit Line dBuV/m	Margin dB	Remark
1	4804.00	39.51	-7.70	7.04	34.00	48.74	31.81	54.00	-22.19	Average
2	4804.00	50.48	-7.70	7.04	34.00	48.74	42.78	74.00	-31.22	Peak
3	7206.00	30.45	-3.84	8.88	35.40	48.12	26.61	54.00	-27.39	Average
4	7206.00	43.25	-3.84	8.88	35.40	48.12	39.41	74.00	-34.59	Peak

System Factor = Cable Loss + Antenna Factor - Preamp Gain

Real Level = Meter Level + System Factor

Margin = Real Level - Limit Line



Date:2019-12-24

Site : GCC_RE_01

RBW : 1000 KHz VBW : 1000 KHz

SWT:Auto

EUT : PulseCheckUP Sensor

Mode : Tx Mode BLE Mid CH

Voltage : From Battery

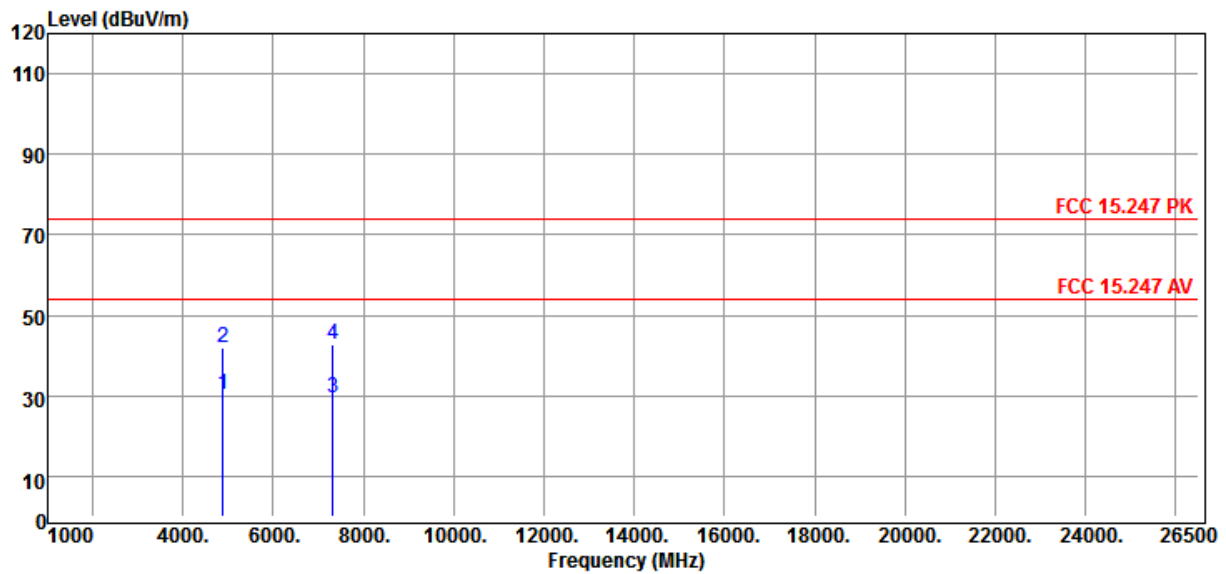
Regulations : FCC 15.247 PK

Polarity : VERTICAL

Model : JL02

Temp/Humidity : 23°C / 61%

Memo : Power Set:90



	Freq MHz	Meter Level dBuV	System Factor dB/m	Cable Loss dB	Antenna Factor dB/m	Preamp Gain dB	Real Level dBuV/m	Limit Line dBuV/m	Margin dB	Remark
1	4880.00	37.89	-7.61	7.11	34.00	48.72	30.28	54.00	-23.72	Average
2	4880.00	49.41	-7.61	7.11	34.00	48.72	41.80	74.00	-32.20	Peak
3	7320.00	33.28	-3.66	8.95	35.46	48.07	29.62	54.00	-24.38	Average
4	7320.00	46.38	-3.66	8.95	35.46	48.07	42.72	74.00	-31.28	Peak

System Factor = Cable Loss + Antenna Factor - Preamp Gain

Real Level = Meter Level + System Factor

Margin = Real Level - Limit Line



Date:2019-12-24

Site : GCC_RE_01

RBW : 1000 KHz VBW : 1000 KHz

SWT:Auto

EUT : PulseCheckUP Sensor

Mode : Tx Mode BLE Mid CH

Voltage : From Battery

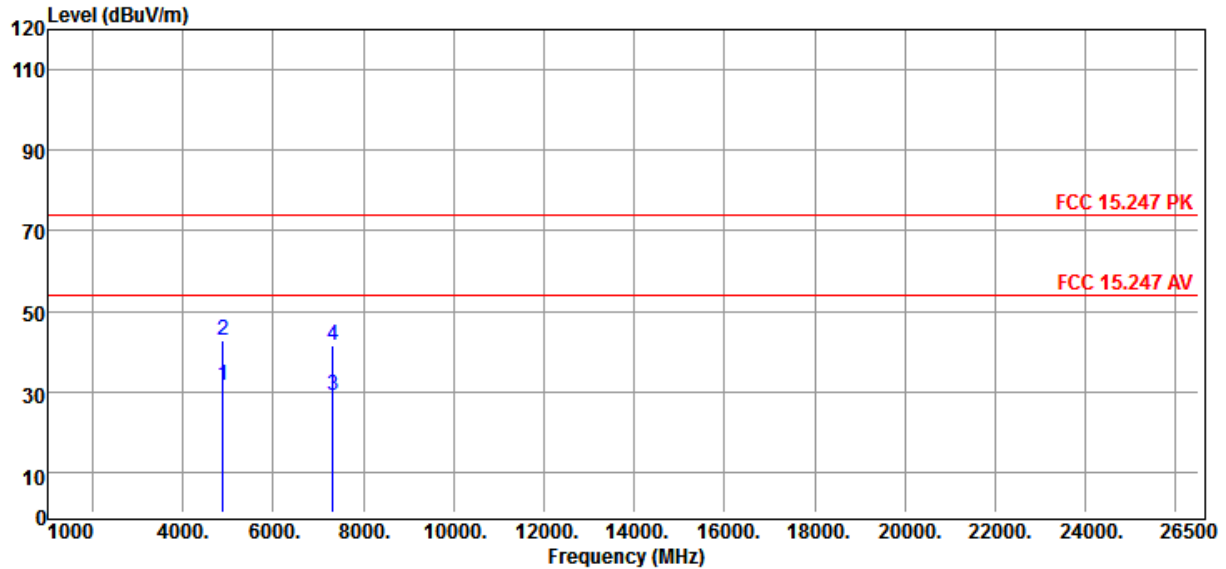
Regulations : FCC 15.247 PK

Polarity : HORIZONTAL

Model : JL02

Temp/Humidity : 23°C / 61%

Memo : Power Set:90



	Freq MHz	Meter Level dBuV	System Factor dB/m	Cable Loss dB	Antenna Factor dB/m	Preamp Gain dB	Real Level dBuV/m	Limit Line dBuV/m	Margin dB	Remark
1	4880.00	39.30	-7.61	7.11	34.00	48.72	31.69	54.00	-22.31	Average
2	4880.00	50.55	-7.61	7.11	34.00	48.72	42.94	74.00	-31.06	Peak
3	7320.00	32.64	-3.66	8.95	35.46	48.07	28.98	54.00	-25.02	Average
4	7320.00	45.18	-3.66	8.95	35.46	48.07	41.52	74.00	-32.48	Peak

System Factor = Cable Loss + Antenna Factor - Preamp Gain

Real Level = Meter Level + System Factor

Margin = Real Level - Limit Line



Date:2019-12-24

Site : GCC_RE_01

RBW : 1000 KHz VBW : 1000 KHz

SWT:Auto

EUT : PulseCheckUP Sensor

Mode : Tx Mode BLE High CH

Voltage : From Battery

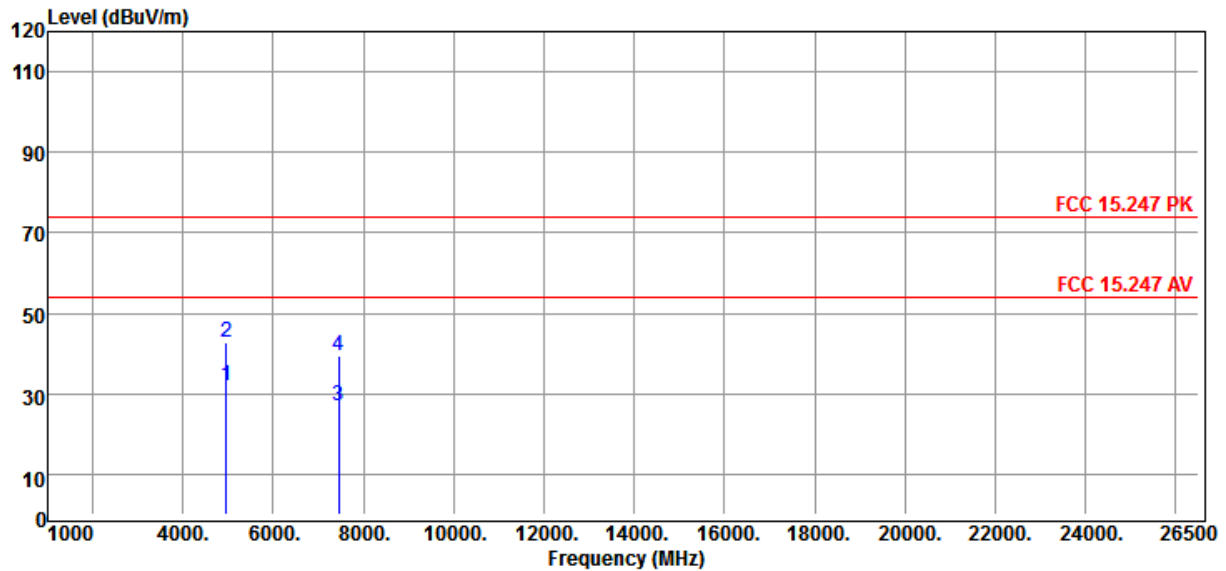
Regulations : FCC 15.247 PK

Polarity : VERTICAL

Model : JL02

Temp/Humidity : 23°C / 61%

Memo : Power Set:90



	Freq MHz	Meter Level dBuV	System Factor dB/m	Cable Loss dB	Antenna Factor dB/m	Preamp Gain dB	Real Level dBuV/m	Limit Line dBuV/m	Margin dB	Remark
1	4960.00	39.24	-7.47	7.18	34.06	48.71	31.77	54.00	-22.23	Average
2	4960.00	50.38	-7.47	7.18	34.06	48.71	42.91	74.00	-31.09	Peak
3	7440.00	29.94	-3.15	9.03	35.84	48.02	26.79	54.00	-27.21	Average
4	7440.00	42.71	-3.15	9.03	35.84	48.02	39.56	74.00	-34.44	Peak

System Factor = Cable Loss + Antenna Factor - Preamp Gain

Real Level = Meter Level + System Factor

Margin = Real Level - Limit Line



Date:2019-12-24

Site : GCC_RE_01

RBW : 1000 KHz VBW : 1000 KHz

SWT:Auto

EUT : PulseCheckUP Sensor

Mode : Tx Mode BLE High CH

Voltage : From Battery

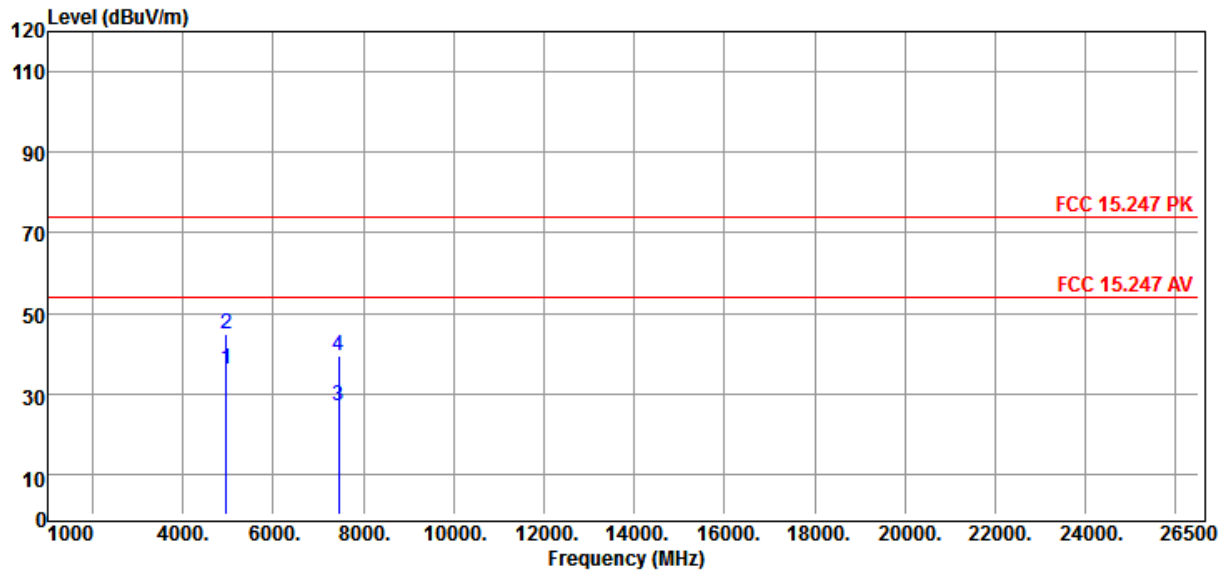
Regulations : FCC 15.247 PK

Polarity : HORIZONTAL

Model : JL02

Temp/Humidity : 23°C / 61%

Memo : Power Set:90



	Freq MHz	Meter Level dBUV	System Factor dB/m	Cable Loss dB	Antenna Factor dB/m	Preamp Gain dB	Real Level dBUV/m	Limit Line dBUV/m	Margin dB	Remark
1	4960.00	43.70	-7.47	7.18	34.06	48.71	36.23	54.00	-17.77	Average
2	4960.00	52.18	-7.47	7.18	34.06	48.71	44.71	74.00	-29.29	Peak
3	7440.00	29.94	-3.15	9.03	35.84	48.02	26.79	54.00	-27.21	Average
4	7440.00	42.45	-3.15	9.03	35.84	48.02	39.30	74.00	-34.70	Peak

System Factor = Cable Loss + Antenna Factor - Preamp Gain

Real Level = Meter Level + System Factor

Margin = Real Level - Limit Line



10. CONDUCTED SPURIOUS EMISSIONS

10.1 TEST SETUP



10.2 LIMIT

According to § 15.247(d), in any 100 kHz bandwidth outside the frequency bands 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, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

10.3 TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer.

The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

10.4 TEST RESULTS

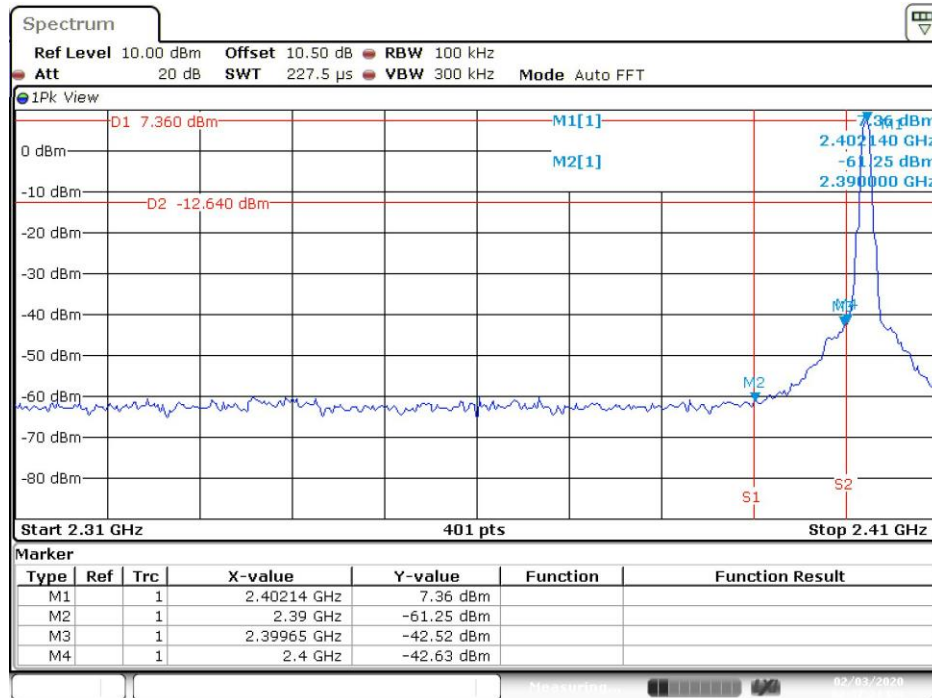
PASS



10.5 TEST DATA:

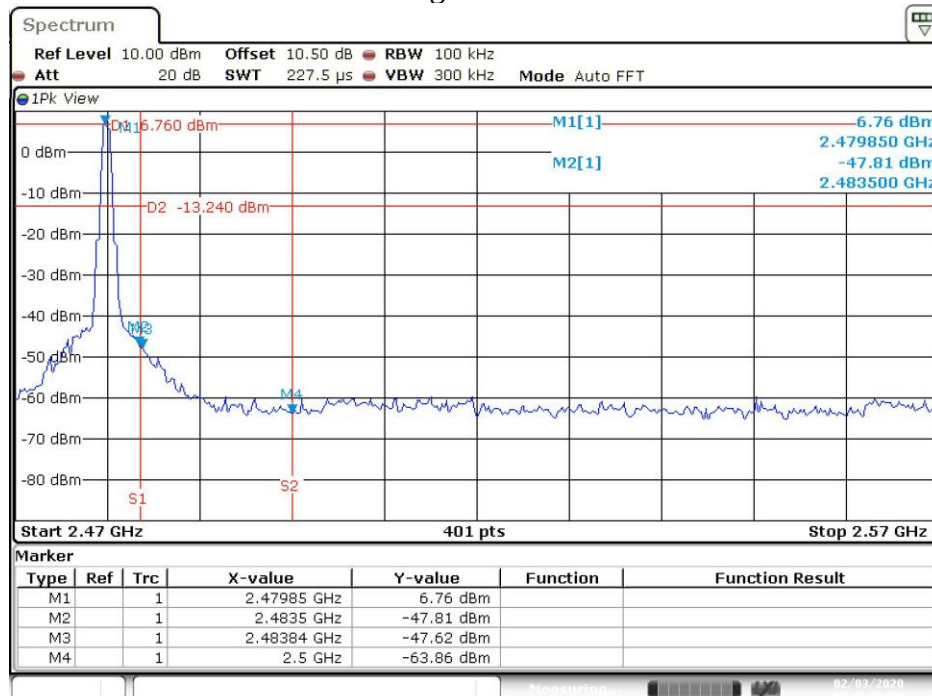
Band Edge

Lowest Channel



Date: 3.FEB.2020 14:37:22

Highest Channel

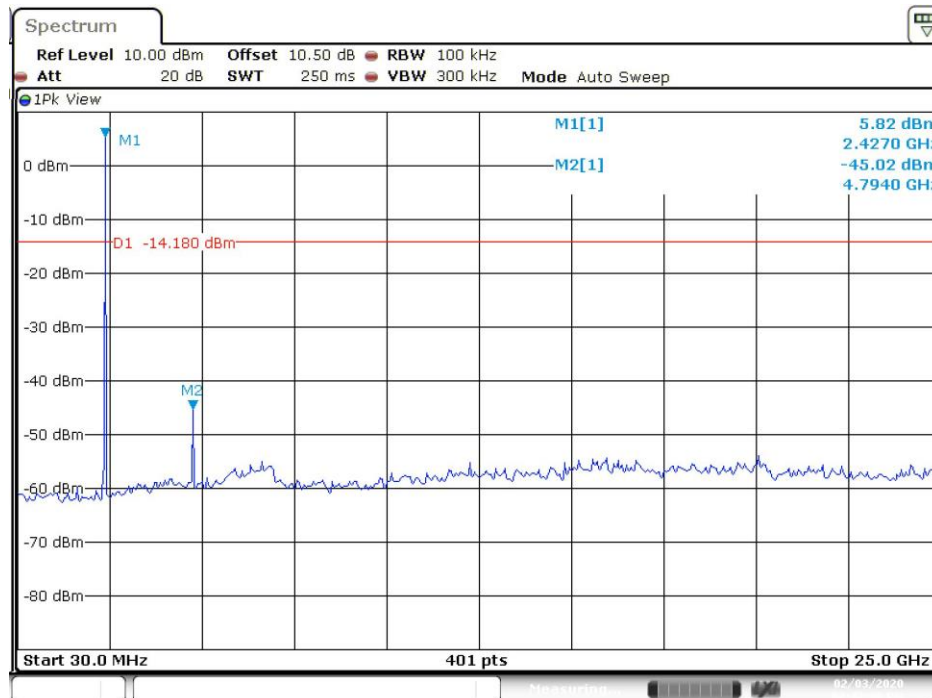


Date: 3.FEB.2020 14:40:32



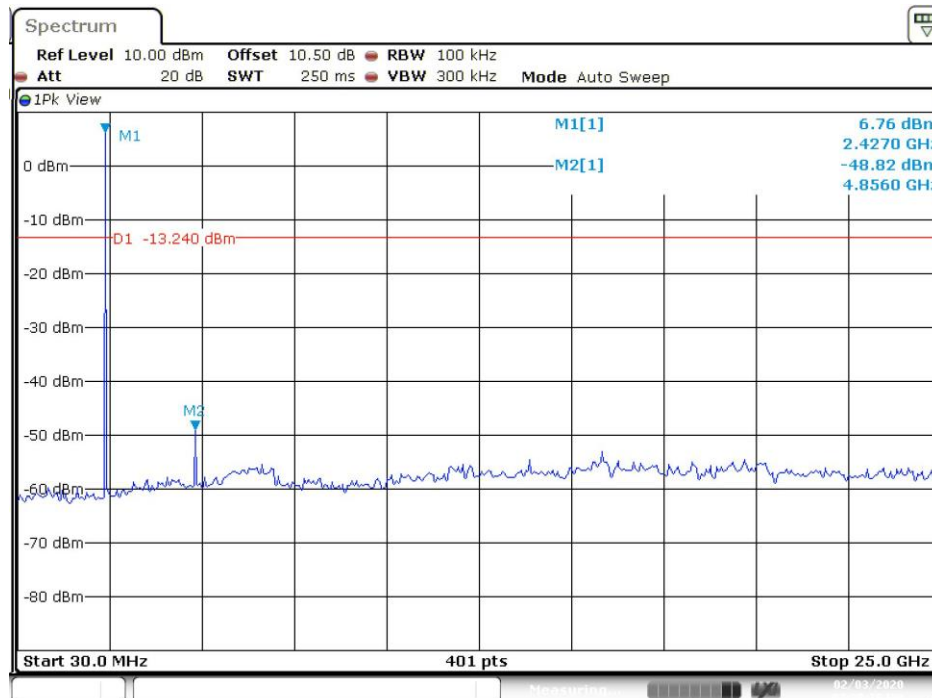
Spurious Emissions

Lowest Channel



Date: 3.FEB.2020 14:42:01

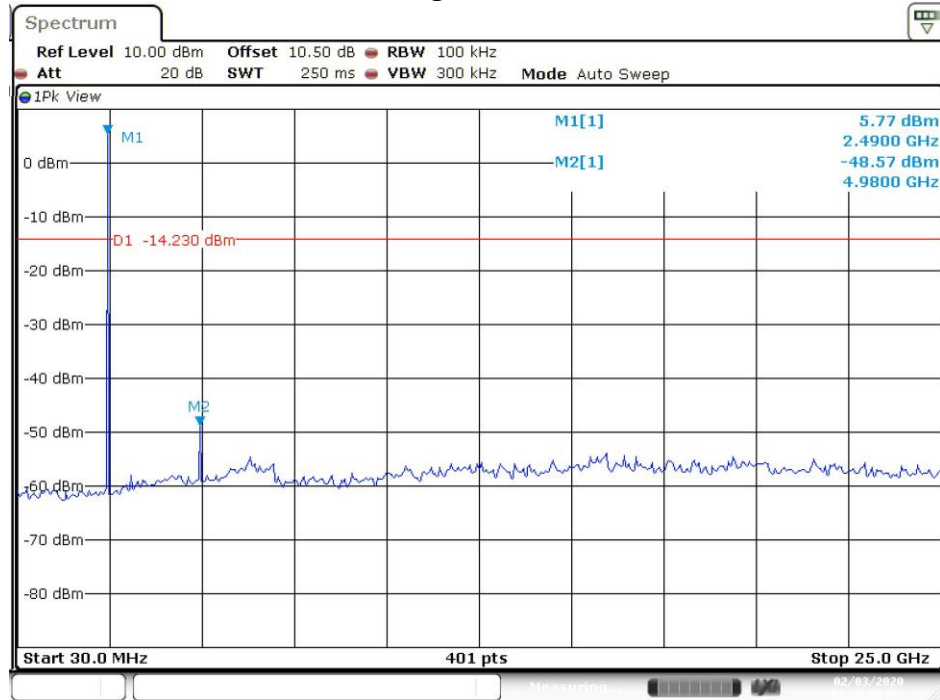
Middle Channel



Date: 3.FEB.2020 14:38:20



Highest Channel



Date: 3.FEB.2020 14:39:56



11. POWER SPECTRAL DENSITY

11.1 TEST SETUP



11.2 LIMIT

According to § 15.247(e) , 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. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

11.3 TEST PROCEDURE

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. RBW is set to 3 kHz and VBW is set to 10 kHz on spectrum analyzer. Set the span to at least 1.5 times the DTS channel bandwidth. Sweep time = auto couple. Trace mode = max hold. The peak power spectral density is recorded.

11.4 TEST RESULTS

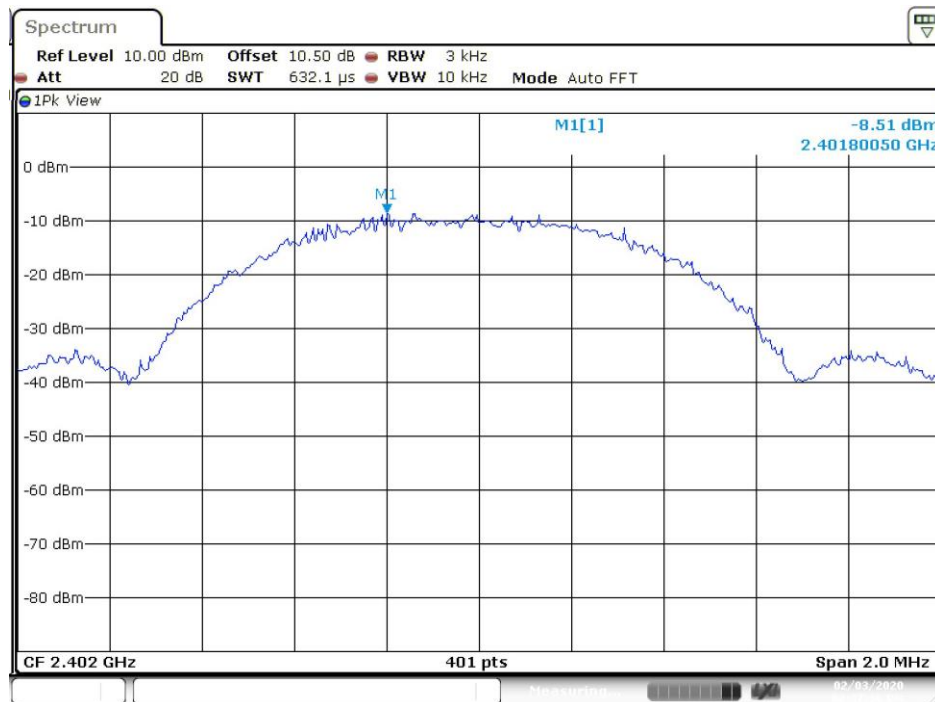
PASS



11.5 TEST DATA:

Frequency	Power Density (dBm)	MAX. Limit (dBm)
2402 MHz	-8.51	8.00
2440 MHz	-9.02	8.00
2480 MHz	-9.65	8.00

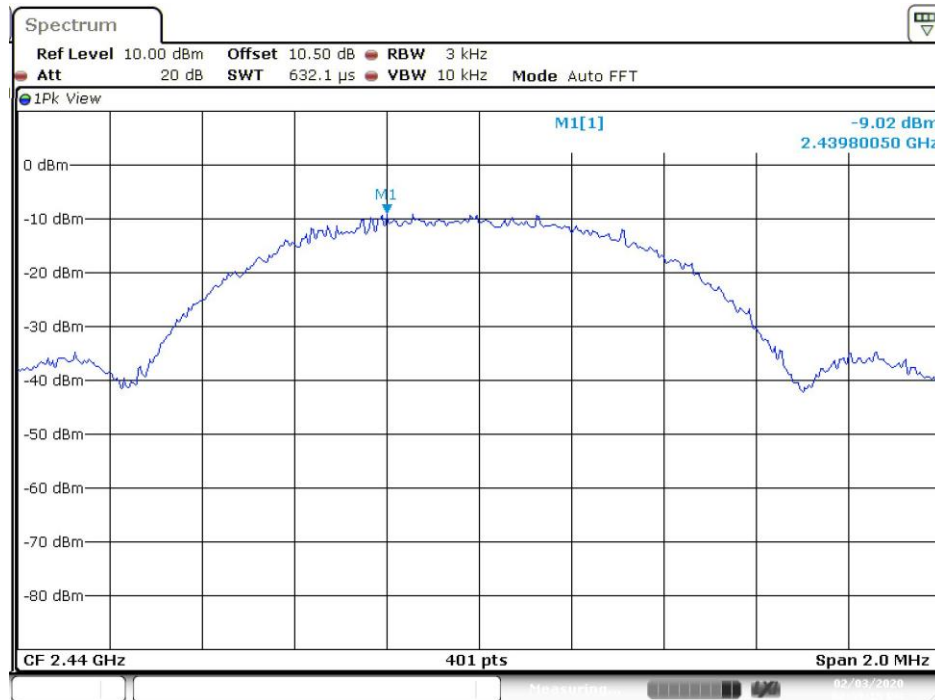
Lowest Channel



Date: 3.FEB.2020 14:37:37

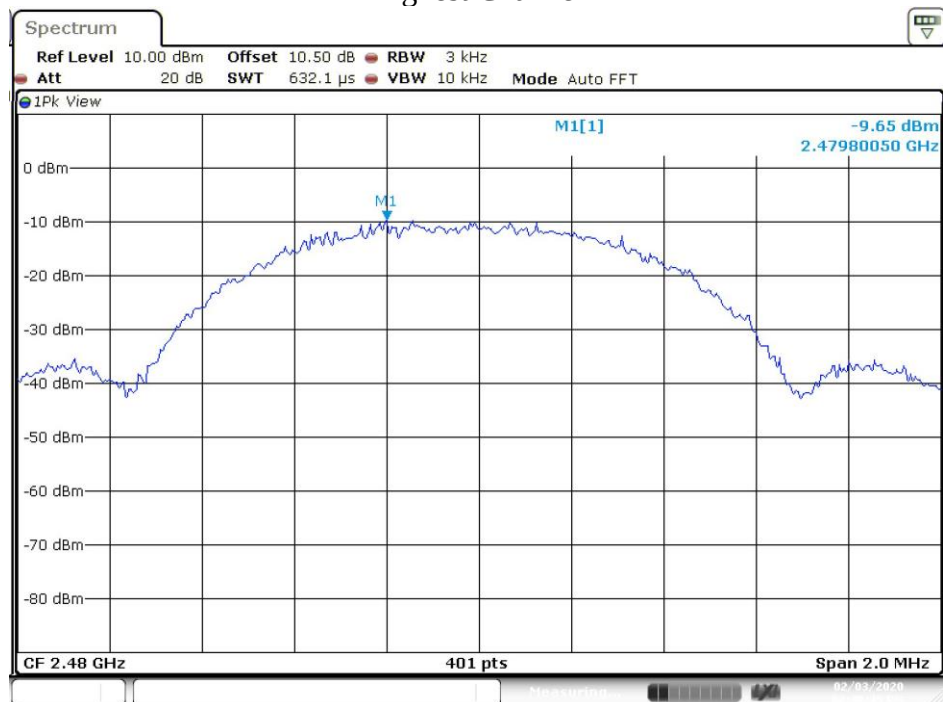


Middle Channel



Date: 3.FEB.2020 14:39:15

Highest Channel



Date: 3.FEB.2020 14:40:45

END