

Shenzhen Toby Technology Co., Ltd.

Report No.: TB-FCC155399

1 of 45 Page:

FCC Radio Test Report FCC ID: 2AMJV-1

Original Grant

Report No. TB-FCC155399

California Labs Inc. **Applicant**

Equipment Under Test (EUT)

EUT Name Loop

Model No. Loop-1

Serial Model No. P9701NYR00001

Brand Name Loop

Receipt Date 2017-06-23

2017-06-24 to 2017-07-05 **Test Date**

Issue Date 2017-07-06

FCC Part 15: 2016, Subpart C(15.247) **Standards**

Test Method ANSI C63.10: 2013

Conclusions : PASS

In the configuration tested, the EUT complied with the standards specified above,

Test/Witness

Engineer

the report.

Approved& **Authorized**

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in

TB-RF-074-1.0

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1. General Information about EUT

1.1 Client Information

Applicant: California Labs Inc.

Address: 1540 Market St., Ste. 100, San Francisco, CA 94102

Manufacturer : Shenzhen Zowee Technology Co.,Ltd

Address : Floor 6, Block 5, Science&Technology Industrial Park of Privately

Owned Enterprises, Pingshan, Xili, Nanshan District, Shenzhen,

P.R.C

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	Loop		
Models No.	:	Loop-1, P9701NYR00001		
Model Difference	:	All these models are identical in the same PCB layout and electrical circuit, the only difference is model name for commercial.		
CA VIDE		Operation Frequency:	Bluetooth 4.0(BLE): 2402MHz~2480MHz	
		Number of Channel:	Bluetooth 4.0(BLE): 40 channels see note(3)	
Product		RF Output Power: 2.663 dBm Conducted Power		
Description		Antenna Gain: 5.5 dBi Integral Antenna		
		Modulation Type:	GFSK	
		Bit Rate of Transmitter:	1Mbps(GFSK)	
Power Supply	:	DC Voltage Supplied by Adapter. DC Supply by the Battery.		
Power Rating		Adapter(10FA3-05200U): Input: AC 100-240, 50/60Hz, 0.5-0.3A. Output: DC 5.0V, 2.0A. DC 3.7 V by 4500mAh Li-Lion Battery.		
Connecting I/O Port(S)	:	Please refer to the User		

Note:

This Test Report is FCC Part 15.247 for Bluetooth(BLE), the test procedure follows the FCC KDB 558074 D01 DTS Means Guidance v04.

- (1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- (2) Antenna information provided by the applicant.



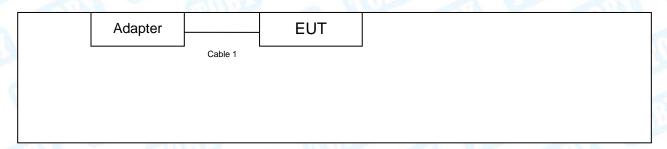
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(3) Channel List:

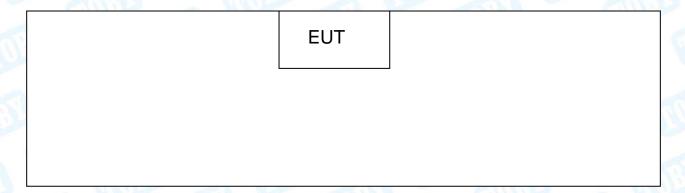
	0/4/6				
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	14	2430	28	2458
01	2404	15	2432	29	2460
02	2406	16	2434	30	2462
03	2408	17	2436	31	2464
04	2410	18	2438	32	2466
05	2412	19	2440	33	2468
06	2414	20	2442	34	2470
07	2416	21	2444	35	2472
08	2418	22	2446	36	2474
09	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	39	2480
12	2426	26	2454		
13	2428	27	2456		

1.3 Block Diagram Showing the Configuration of System Tested

USB Charging Mode



TX Mode





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1.4 Description of Support Units

The EUT has been test as an independent unit.

1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For Conducted Test				
Final Test Mode	Description			
Mode 1	TX Mode			

For Radiated Test				
Final Test Mode	Description			
Mode 2	TX Mode			
Mode 3	TX Mode (Channel 00/20/39)			

Note:

(1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.

According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels, and the worst case data rate as follows:

BLE Mode: GFSK Modulation Transmitting mode.

- (2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.
- (3) The EUT is considered a portable unit; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.



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1.6 Description of Test Software Setting

During testing channel& Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of RF setting.

Test Software Version	Ampak RF Test Tool		ool
Frequency	2402 MHz	2442MHz	2480 MHz
BLE GFSK	DEF	DEF	DEF

1.7 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

Test Item	Parameters	Expanded Uncertainty (U _{Lab})
	Level Accuracy:	
Conducted Emission	9kHz~150kHz	±3.42 dB
	150kHz to 30MHz	±3.42 dB
Redicted Emission	Level Accuracy:	.4.60 dB
Radiated Emission	9kHz to 30 MHz	±4.60 dB
Dedicted Emission	Level Accuracy:	.4.40 dD
Radiated Emission	30MHz to 1000 MHz	±4.40 dB
Redicted Emission	Level Accuracy:	.4.20 dB
Radiated Emission	Above 1000MHz	±4.20 dB



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1.8 Test Facility

The testing was performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at:1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China.

At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

FCC List No.: (811562)

The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number is 811562.

IC Registration No.: (11950A-1)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.



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2. Test Summary

Standard S	Section	Tool Hom		
FCC	IC	Test Item	Judgment	Remark
15.203		Antenna Requirement	PASS	N/A
15.207(a)	RSS-GEN 7.2.4	Conducted Emission	PASS	N/A
15.205&15.247(d)	RSS-GEN 7.2.2	Band-Edge & Unwanted Emissions into Restricted Frequency	PASS	N/A
15.247(a)(2)	RSS 247 5.2 (1)	6dB Bandwidth	PASS	N/A
15.247(b)(3)	RSS 247 5.4 (4)	Conducted Max Output Power	PASS	N/A
15.247(e)	RSS 247 5.2 (2)	Power Spectral Density	PASS	N/A
15.205, RSS 247 15.209&15.247(d) 5.5		Transmitter Radiated Spurious &Unwanted Emissions into Restricted Frequency	PASS	N/A

Note: N/A is an abbreviation for Not Applicable.



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3. Test Equipment

Conducte	d Emission Te	st			
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 22, 2016	Jul. 21, 2017
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 22, 2016	Jul. 21, 2017
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 22, 2016	Jul. 21, 2017
LISN	Rohde & Schwarz	ENV216	101131	Jul. 22, 2016	Jul. 21, 2017
Radiation	Emission Tes	t			
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 22, 2016	Jul. 21, 2017
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 22, 2016	Jul. 21, 2017
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar. 25, 2017	Mar. 24, 2018
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Mar. 25, 2017	Mar. 24, 2018
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 24, 2017	Mar. 23, 2018
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar. 24, 2017	Mar. 23, 201
Loop Antenna	Laplace instrument	RF300	0701	Mar. 25, 2017	Mar. 24, 201
Pre-amplifier	Sonoma	310N	185903	Mar. 24, 2017	Mar. 23, 201
Pre-amplifier	HP	8449B	3008A00849	Mar. 29, 2017	Mar. 28, 201
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar. 29, 2017	Mar. 28, 201
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna C	Conducted Em	ission			
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 22, 2016	Jul. 21, 2017
Spectrum Analyzer	Rohde & Schwarz	ESCI	100010/007	Jul. 22, 2016	Jul. 21, 2017
Power Meter	Anritsu	ML2495A	25406005	Jul. 22, 2016	Jul. 21, 2017
Power Sensor	Anritsu	ML2411B	25406005	Jul. 22, 2016	Jul. 21, 2017



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4. Conducted Emission Test

4.1 Test Standard and Limit

4.1.1Test Standard FCC Part 15.207

4.1.2 Test Limit

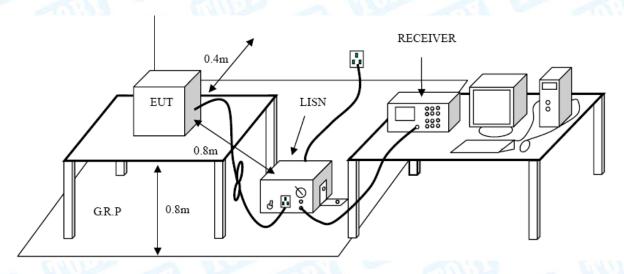
Conducted Emission Test Limit

Eroguanav	Maximum RF Line Voltage (dBμV)		
Frequency	Quasi-peak Level	Average Level	
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *	
500kHz~5MHz	56	46	
5MHz~30MHz	60	50	

Notes:

- (1) *Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2 Test Setup



4.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.



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I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9 kHz, and the test frequency band is from 0.15MHz to 30MHz.

4.4 EUT Operating Mode

Please refer to the description of test mode.

4.5 Test Da5ta

Test data please refer the following pages.



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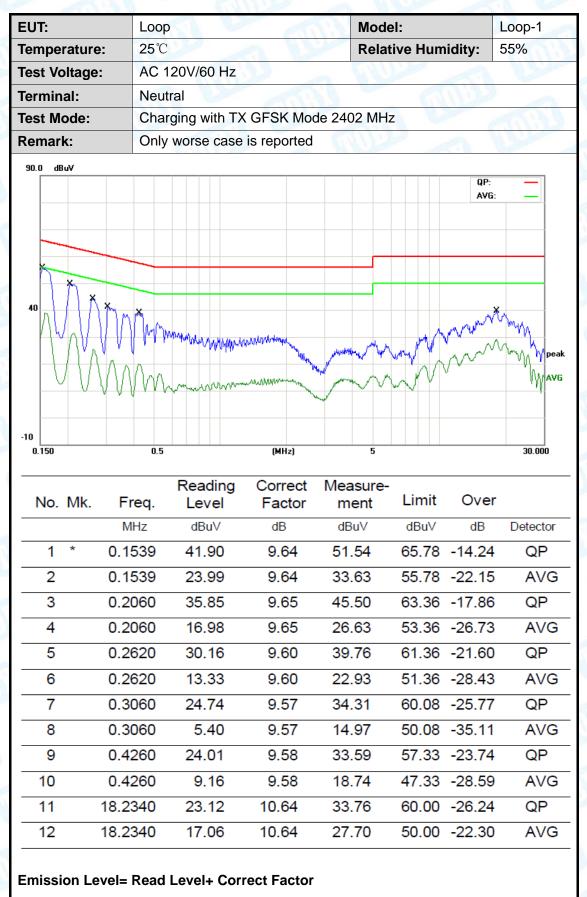
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	М		к	V
		U	D	1
		~	~	

EUT:	Loop		3 W	Mode	el:		Loop-1
Temperature:	25℃	25℃			Relative Humidity:		
Test Voltage:	AC 120	V/60 Hz		18	Call	133	
Terminal:	Line		AHO				
Test Mode:	Chargin	g with TX (GFSK Mode	2402 MHz		a V	I L
Remark:	Only wo	rse case is	reported	Con-			
90.0 dBuV							
						QP: AVG:	
X							
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0.150	0.5		(MHz)	5			30.000
		Dooding	Corroct	Magaura			
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
No. Mk.		_			Limit dBuV	Over	Detector
	Freq.	Level	Factor	ment		dB	Detector QP
1 * 0	Freq.	Level dBuV	Factor dB	ment dBuV	dBuV	dB 15.30	
1 * 0	MHz .1539	dBuV 40.90	Factor dB 9.58	ment dBuV 50.48	dBuV 65.78 -	dB 15.30 23.78	QP
1 * 0 2 0 3 0	Freq. MHz .1539 .1539	dBuV 40.90 22.42	9.58 9.58	ment dBuV 50.48 32.00	dBuV 65.78 - 55.78 -	dB 15.30 23.78 18.88	QP AVG
1 * 0 2 0 3 0 4 0	MHz .1539 .1539 .2060	dBuV 40.90 22.42 34.90	9.58 9.58 9.58	ment dBuV 50.48 32.00 44.48	dBuV 65.78 - 55.78 - 63.36 -	dB 15.30 23.78 18.88 27.17	QP AVG QP
1 * 0 2 0 3 0 4 0 5 0	MHz .1539 .1539 .2060	Level dBuV 40.90 22.42 34.90 16.61	9.58 9.58 9.58 9.58 9.58	ment dBuV 50.48 32.00 44.48 26.19	dBuV 65.78 - 55.78 - 63.36 - 53.36 -	dB 15.30 23.78 18.88 27.17 22.45	QP AVG QP AVG QP
1 * 0 2 0 3 0 4 0 5 0 6 0	MHz .1539 .1539 .2060 .2060 .2580	Level dBuV 40.90 22.42 34.90 16.61 29.45 10.40	9.58 9.58 9.58 9.58 9.59 9.59	ment dBuV 50.48 32.00 44.48 26.19 39.04 19.99	dBuV 65.78 - 55.78 - 63.36 - 53.36 - 61.49 - 51.49 -	dB 15.30 23.78 18.88 27.17 22.45 31.50	QP AVG QP AVG QP AVG
1 * 0 2 0 3 0 4 0 5 0 6 0 7 0	Freq. MHz .1539 .1539 .2060 .2060 .2580 .2580 .3100	Level dBuV 40.90 22.42 34.90 16.61 29.45 10.40 25.94	9.58 9.58 9.58 9.58 9.59 9.59	ment dBuV 50.48 32.00 44.48 26.19 39.04 19.99 35.53	dBuV 65.78 - 55.78 - 63.36 - 53.36 - 61.49 - 51.49 -	dB 15.30 23.78 18.88 27.17 22.45 31.50 24.44	QP AVG QP AVG QP AVG QP
1 * 0 2 0 3 0 4 0 5 0 6 0 7 0 8 0	Freq. MHz .1539 .1539 .2060 .2060 .2580 .2580 .3100	Level dBuV 40.90 22.42 34.90 16.61 29.45 10.40 25.94 9.43	9.58 9.58 9.58 9.58 9.59 9.59 9.59	ment dBuV 50.48 32.00 44.48 26.19 39.04 19.99 35.53 19.02	dBuV 65.78 - 55.78 - 63.36 - 53.36 - 61.49 - 51.49 - 59.97 -	dB 15.30 23.78 18.88 27.17 22.45 31.50 24.44 30.95	QP AVG QP AVG QP AVG QP AVG
1 * 0 2 0 3 0 4 0 5 0 6 0 7 0 8 0 9 4	Freq. MHz .1539 .1539 .2060 .2060 .2580 .2580 .3100 .3100	Level dBuV 40.90 22.42 34.90 16.61 29.45 10.40 25.94 9.43 16.01	9.58 9.58 9.58 9.58 9.59 9.59 9.59 9.73	ment dBuV 50.48 32.00 44.48 26.19 39.04 19.99 35.53 19.02 25.74	dBuV 65.78 - 55.78 - 63.36 - 53.36 - 61.49 - 51.49 - 59.97 - 49.97 - 56.00 -	dB 15.30 23.78 18.88 27.17 22.45 31.50 24.44 30.95 30.26	QP AVG QP AVG QP AVG QP AVG QP
1 * 0 2 0 3 0 4 0 5 0 6 0 7 0 8 0 9 4 10 4	Freq. MHz .1539 .1539 .2060 .2060 .2580 .3100 .3100 .9100	Level dBuV 40.90 22.42 34.90 16.61 29.45 10.40 25.94 9.43 16.01 8.78	9.58 9.58 9.58 9.58 9.59 9.59 9.59 9.73 9.73	ment dBuV 50.48 32.00 44.48 26.19 39.04 19.99 35.53 19.02 25.74 18.51	dBuV 65.78 - 55.78 - 63.36 - 53.36 - 61.49 - 51.49 - 59.97 - 49.97 - 56.00 -	dB 15.30 23.78 18.88 27.17 22.45 31.50 24.44 30.95 30.26 27.49	QP AVG QP AVG QP AVG QP AVG AVG
1 * 0 2 0 3 0 4 0 5 0 6 0 7 0 8 0 9 4 10 4 11 17	Freq. MHz .1539 .1539 .2060 .2060 .2580 .2580 .3100 .3100	Level dBuV 40.90 22.42 34.90 16.61 29.45 10.40 25.94 9.43 16.01	9.58 9.58 9.58 9.58 9.59 9.59 9.59 9.73	ment dBuV 50.48 32.00 44.48 26.19 39.04 19.99 35.53 19.02 25.74	dBuV 65.78 - 55.78 - 63.36 - 53.36 - 61.49 - 51.49 - 59.97 - 49.97 - 56.00 -	dB 15.30 23.78 18.88 27.17 22.45 31.50 24.44 30.95 30.26 27.49 26.21	QP AVG QP AVG QP AVG QP AVG



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	1
IKY	
TU	
	BI

UT:	Loop		a W	Mode	el:	Loop-1
emperature:	25℃		7	Rela	tive Humidity	55%
est Voltage:	AC 24	0V/60 Hz			Call!	19
Terminal:	Line		Alle		1 630	
Test Mode:	Chargi	ng with TX (GFSK Mode	2402 MHz		AMILE
Remark:	Only w	orse case is	reported	6		
90.0 dBuV						
						QP: — AVG: —
X						
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		Reading	Correct	Measure-		
No. Mk.	Freq.	Level	Factor	ment		ver
	MHz	dBuV	dB	dBuV	dBuV d	IB Detector
1 *						
	0.1539	34.86	9.58	44.44	65.78 -21.	.34 QP
2			9.58 9.58	44.44 26.29	65.78 -21. 55.78 -29.	
	0.1539	34.86				.49 AVG
2	0.1539 0.1539	34.86 16.71	9.58	26.29 40.30	55.78 -29.	.49 AVG
2 3 4	0.1539 0.1539 0.2060 0.2060	34.86 16.71 30.72 13.57	9.58 9.58 9.58	26.29 40.30 23.15	55.78 -29. 63.36 -23. 53.36 -30.	.49 AVG .06 QP .21 AVG
2 3 4 5	0.1539 0.1539 0.2060 0.2060 0.2700	34.86 16.71 30.72 13.57 27.68	9.58 9.58 9.58 9.59	26.29 40.30 23.15 37.27	55.78 -29. 63.36 -23. 53.36 -30. 61.12 -23.	.49 AVG .06 QP .21 AVG
2 3 4 5 6	0.1539 0.1539 0.2060 0.2060 0.2700 0.2700	34.86 16.71 30.72 13.57 27.68 16.20	9.58 9.58 9.58 9.59 9.59	26.29 40.30 23.15 37.27 25.79	55.78 -29. 63.36 -23. 53.36 -30. 61.12 -23. 51.12 -25.	.49 AVG .06 QP .21 AVG .85 QP
2 3 4 5 6 7	0.1539 0.1539 0.2060 0.2060 0.2700 0.2700 0.3100	34.86 16.71 30.72 13.57 27.68 16.20 23.98	9.58 9.58 9.58 9.59 9.59 9.59	26.29 40.30 23.15 37.27 25.79 33.57	55.78 -29. 63.36 -23. 53.36 -30. 61.12 -23. 51.12 -25. 59.97 -26.	.49 AVG .06 QP .21 AVG .85 QP .33 AVG
2 3 4 5 6 7 8	0.1539 0.1539 0.2060 0.2060 0.2700 0.2700 0.3100 0.3100	34.86 16.71 30.72 13.57 27.68 16.20 23.98 7.84	9.58 9.58 9.58 9.59 9.59 9.59 9.59	26.29 40.30 23.15 37.27 25.79 33.57 17.43	55.78 -29. 63.36 -23. 53.36 -30. 61.12 -23. 51.12 -25. 59.97 -26. 49.97 -32.	.49 AVG .06 QP .21 AVG .85 QP .33 AVG .40 QP
2 3 4 5 6 7 8 9	0.1539 0.1539 0.2060 0.2060 0.2700 0.2700 0.3100 0.3100 5.3780	34.86 16.71 30.72 13.57 27.68 16.20 23.98 7.84 20.72	9.58 9.58 9.58 9.59 9.59 9.59 9.76	26.29 40.30 23.15 37.27 25.79 33.57 17.43 30.48	55.78 -29. 63.36 -23. 53.36 -30. 61.12 -23. 51.12 -25. 59.97 -26. 49.97 -32. 60.00 -29.	.49 AVG .06 QP .21 AVG .85 QP .33 AVG .40 QP .54 AVG
2 3 4 5 6 7 8 9	0.1539 0.1539 0.2060 0.2060 0.2700 0.2700 0.3100 0.3100 5.3780 5.3780	34.86 16.71 30.72 13.57 27.68 16.20 23.98 7.84 20.72 14.53	9.58 9.58 9.58 9.59 9.59 9.59 9.76 9.76	26.29 40.30 23.15 37.27 25.79 33.57 17.43 30.48 24.29	55.78 -29. 63.36 -23. 53.36 -30. 61.12 -23. 51.12 -25. 59.97 -26. 49.97 -32. 60.00 -29. 50.00 -25.	.49 AVG .06 QP .21 AVG .85 QP .33 AVG .40 QP .54 AVG
2 3 4 5 6 7 8 9	0.1539 0.1539 0.2060 0.2060 0.2700 0.2700 0.3100 0.3100 5.3780	34.86 16.71 30.72 13.57 27.68 16.20 23.98 7.84 20.72	9.58 9.58 9.58 9.59 9.59 9.59 9.76	26.29 40.30 23.15 37.27 25.79 33.57 17.43 30.48	55.78 -29. 63.36 -23. 53.36 -30. 61.12 -23. 51.12 -25. 59.97 -26. 49.97 -32. 60.00 -29.	.49 AVG .06 QP .21 AVG .85 QP .33 AVG .40 QP .54 AVG .52 QP



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EUT:	Loop	818		Mode	l:		Loop-1
Temperature:	25℃	25℃			Relative Humidity:		
Test Voltage:	AC 2	40V/60 Hz		ON THE		-	A Brown
Terminal:	Neutr	al			GU	Will S	
Test Mode:	Char	ging with T	GFSK Mod	e 2402 MHz			MILL
Remark:	Only	worse case	is reported	MILLION.		a V	N. Carlot
90.0 dBuV							
						QP: AVG:	
×							
40 * * *	×				, and	Mayne	MA AD
	MAKA	romatation in the	Markethy way	- Markey of	AND AND	\(\frac{\lambda}{\lambda}\)	~\v\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
1/2/1/1/1	7 7 7 7 7 7	Ande Holleller .	"was	~~~	M _ M _ M _ M _ M _ M _ M _ M _ M _ M _	Van and a co	MM pe
	MAAM	Yadran Kalender Hadriga (Marka Kalender)	proceedings produced the second contraction of the second contraction	" marky	\nearrow		· WMAY
				7.7			
V V	VVV	100		٧			
	A A A A			V			
0.150	0.5		(MHz)	5			30.000
0.150	0.5						30.000
0.150	0.5	Reading Level	(MHz) Correct Factor	Measure- ment	Limit	Over	30.000
0.150		Reading	Correct	Measure-	Limit	Over	30.000 Detector
0.150 No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	dBu∀		
0.150 No. Mk.	Freq. MHz .1539	Reading Level dBuV 34.59	Correct Factor dB	Measure- ment dBuV 44.23	dBu√ 65.78	dB -21.55	Detector QP
0.150 No. Mk. 1 * 0 2 0	Freq. MHz .1539	Reading Level dBuV 34.59 19.42	Correct Factor dB 9.64 9.64	Measure- ment dBuV 44.23 29.06	dBu∨ 65.78 55.78	dB -21.55 -26.72	Detector QP AVG
0.150 No. Mk. 1 * 0 2 0 3 0	Freq. MHz .1539 .1539	Reading Level dBuV 34.59 19.42 30.24	Correct Factor dB 9.64 9.64 9.65	Measure- ment dBuV 44.23 29.06 39.89	dBuV 65.78 55.78 63.36	dB -21.55 -26.72 -23.47	Detector QP AVG QP
0.150 No. Mk. 1 * 0 2 0 3 0 4 0	Freq. MHz .1539 .1539 .2060	Reading Level dBuV 34.59 19.42 30.24 12.96	Correct Factor dB 9.64 9.64 9.65 9.65	Measure- ment dBuV 44.23 29.06 39.89 22.61	dBuV 65.78 55.78 63.36 53.36	dB -21.55 -26.72 -23.47 -30.75	Detector QP AVG QP AVG
0.150 No. Mk. 1 * 0 2 0 3 0 4 0 5 0	Freq. MHz .1539 .1539 .2060 .2060	Reading Level dBuV 34.59 19.42 30.24 12.96 27.12	Correct Factor dB 9.64 9.64 9.65 9.65 9.60	Measure- ment dBuV 44.23 29.06 39.89 22.61 36.72	dBuV 65.78 55.78 63.36 53.36 61.49	dB -21.55 -26.72 -23.47 -30.75 -24.77	Detector QP AVG QP AVG
0.150 No. Mk. 1 * 0. 2 0. 3 0. 4 0. 5 0. 6 0.	Freq. MHz .1539 .1539 .2060 .2060 .2580	Reading Level dBuV 34.59 19.42 30.24 12.96 27.12 9.50	Correct Factor dB 9.64 9.64 9.65 9.65 9.60 9.60	Measure- ment dBuV 44.23 29.06 39.89 22.61 36.72 19.10	dBuV 65.78 55.78 63.36 53.36 61.49 51.49	dB -21.55 -26.72 -23.47 -30.75 -24.77 -32.39	Detector QP AVG QP AVG
0.150 No. Mk. 1 * 0. 2 0. 3 0. 4 0. 5 0. 6 0.	Freq. MHz .1539 .1539 .2060 .2060	Reading Level dBuV 34.59 19.42 30.24 12.96 27.12	Correct Factor dB 9.64 9.64 9.65 9.65 9.60	Measure- ment dBuV 44.23 29.06 39.89 22.61 36.72	dBuV 65.78 55.78 63.36 53.36 61.49 51.49	dB -21.55 -26.72 -23.47 -30.75 -24.77	Detector QP AVG QP AVG
0.150 No. Mk. 1 * 0. 2 0. 3 0. 4 0. 5 0. 6 0. 7 0.	Freq. MHz .1539 .1539 .2060 .2060 .2580	Reading Level dBuV 34.59 19.42 30.24 12.96 27.12 9.50	Correct Factor dB 9.64 9.64 9.65 9.65 9.60 9.60	Measure- ment dBuV 44.23 29.06 39.89 22.61 36.72 19.10	dBuV 65.78 55.78 63.36 53.36 61.49 51.49 59.97	dB -21.55 -26.72 -23.47 -30.75 -24.77 -32.39	Detector QP AVG QP AVG
0.150 No. Mk. 1 * 0. 2 0. 3 0. 4 0. 5 0. 6 0. 7 0. 8 0.	Freq. MHz .1539 .1539 .2060 .2060 .2580 .2580 .3100	Reading Level dBuV 34.59 19.42 30.24 12.96 27.12 9.50 23.61	Correct Factor dB 9.64 9.64 9.65 9.65 9.60 9.60 9.57	Measure- ment dBuV 44.23 29.06 39.89 22.61 36.72 19.10 33.18	dBuV 65.78 55.78 63.36 53.36 61.49 51.49 59.97 49.97	dB -21.55 -26.72 -23.47 -30.75 -24.77 -32.39 -26.79	Detector QP AVG QP AVG QP AVG
0.150 No. Mk. 1 * 0 2 0 3 0 4 0 5 0 6 0 7 0 8 0 9 0	Freq. MHz .1539 .1539 .2060 .2060 .2580 .2580 .3100	Reading Level dBuV 34.59 19.42 30.24 12.96 27.12 9.50 23.61 4.12	Correct Factor dB 9.64 9.65 9.65 9.60 9.60 9.57 9.57	Measure-ment dBuV 44.23 29.06 39.89 22.61 36.72 19.10 33.18 13.69	dBuV 65.78 55.78 63.36 53.36 61.49 51.49 59.97 49.97	dB -21.55 -26.72 -23.47 -30.75 -24.77 -32.39 -26.79 -36.28 -27.29	Detector QP AVG QP AVG QP AVG
0.150 No. Mk. 1 * 0 2 0 3 0 4 0 5 0 6 0 7 0 8 0 9 0 10 0	Freq. MHz .1539 .1539 .2060 .2060 .2580 .3100 .3100 .3740	Reading Level dBuV 34.59 19.42 30.24 12.96 27.12 9.50 23.61 4.12 21.54	Correct Factor dB 9.64 9.65 9.65 9.60 9.57 9.57 9.58	Measure-ment dBuV 44.23 29.06 39.89 22.61 36.72 19.10 33.18 13.69 31.12	dBuV 65.78 55.78 63.36 53.36 61.49 51.49 59.97 49.97 58.41	dB -21.55 -26.72 -23.47 -30.75 -24.77 -32.39 -26.79 -36.28 -27.29	Detector QP AVG QP AVG QP AVG QP AVG



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5. Radiated Emission Test

5.1 Test Standard and Limit

5.1.1 Test Standard FCC Part 15.247(d)

5.1.2 Test Limit

Radiated Emission Limits (9kHz~1000MHz)

Frequency (MHz	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Radiated Emission Limit (Above 1000MHz)

Frequency	Distance Meters(at 3m)		
(MHz)	Peak (dBuV/m)	Average (dBuV/m)	
Above 1000	74	54	

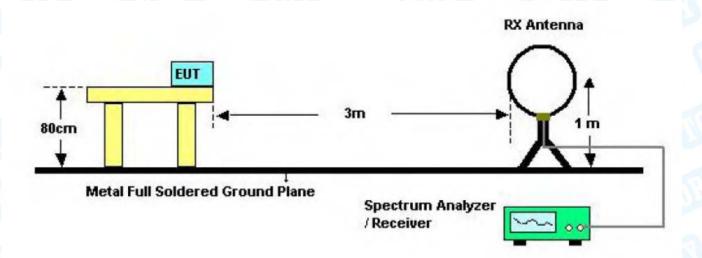
Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission Level (dBuV/m)=20log Emission Level (uV/m)

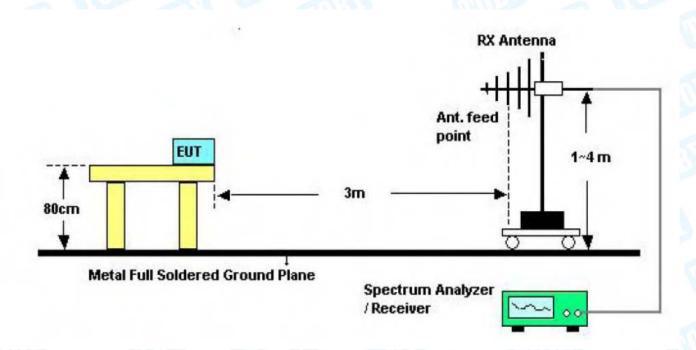


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5.2 Test Setup



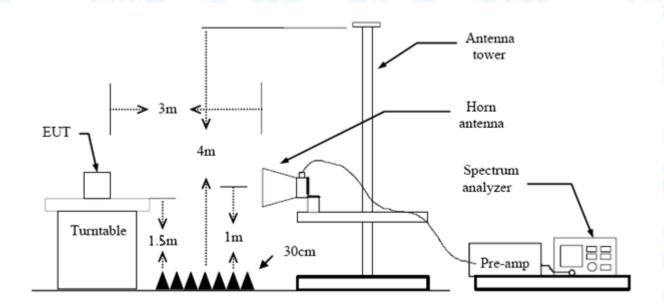
Below 30MHz Test Setup



Below 1000MHz Test Setup



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Above 1GHz Test Setup

5.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.



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5.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

5.5 Test Data

Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

Test data please refer the following pages.



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9 KHz~30 MHz

From 9 KHz to 30 MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB

below the permissible value has no need to be reported.

30MHz~1GHz

25℃ DC 3.7V	6.11	Rela	tive Humidity:	55%
			tive mannaty.	55%
		المالية	3 13	
Horizontal	33	CALL!		MACH
BLE TX 24	02 Mode			
Only worse	case is repo	orted	Allin	
	3 XX		(RF)FCC 15C	S 3M Radiation Margin -6 dB
60 70 80			300 400 500	600 700 1000.0
	-		1 2 24	Over
lHz d	BuV dB	/m dBuV/	m dBuV/m	dB Detect
3173 42	2.10 -13	.97 28.1	3 40.00	-11.87 pea
3814 44	1.48 -17	.68 26.8	0 40.00	-13.20 pea
2965 47	7.41 -21	.71 25.7	0 43.50	-17.80 pea
1791 42	2.51 -12	.07 30.4	4 46.00	-15.56 pea
2458 49	9.45 -9.	30 40.1	5 46.00	-5.85 pea
		25 39.9	3 46.00	-6.07 pea
	Only worse Freq. Real Real Real Real Real Real Real Real	Only worse case is reported to the second se	Only worse case is reported Reading Correct Measured. Level Factor men IHz dBuV dB/m dBuV/ 3173 42.10 -13.97 28.1 3814 44.48 -17.68 26.8 2965 47.41 -21.71 25.7 1791 42.51 -12.07 30.4	Only worse case is reported (REJECC 150 (R



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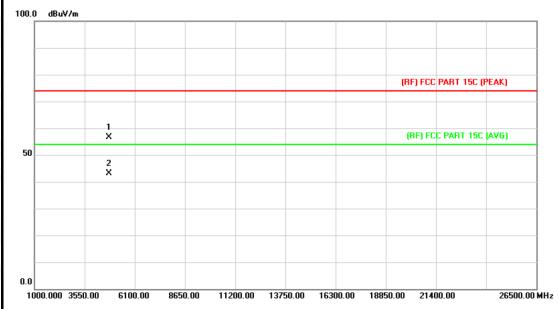
EUT:	Loop		Model:		Loop-	1
Temperature:	25℃	130	Relative H	umidity:	55%	The same
Test Voltage:	DC 3.7V	1000		CITE :	33	
Ant. Pol.	Vertical	A PROPERTY.		630		
Test Mode:	BLE TX 2402 Mo	de	WW DE		18	
Remark:	Only worse case	is reported		THE STATE		
80.0 dBuV/m						
30	3	4	portunitiva de la companya de la com	(RF)FCC 15C :	Margin -6	
-20 30.000 40 50	60 70 80	(MHz)	300	400 500	600 700	1000.00
No. Mk. F	Reading req. Level	Correct Factor	Measure- ment	Limit (Over	
N	⁄lHz dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1 * 30.8	8535 50.36	-14.30	36.06	40.00	-3.94	peak
2 43.5	5057 55.25	-21.36	33.89	40.00	-6.11	peak
3 74.6	6569 55.15	-23.11	32.04	40.00	-7.96	peak
4 132.	2206 56.78	-21.69	35.09	43.50	-8.41	peak
5 ! 530.	1014 50.67	-9.30	41.37	46.00	-4.63	peak
6 ! 556.	7744 49.45	-9.25	40.20	46.00	-5.80	peak



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Above 1GHz

EUT:	Loop	Model:	Loop-1					
Temperature:	25℃	Relative Humidity:	55%					
Test Voltage:	DC 3.7V	DC 3.7V						
Ant. Pol.	Horizontal		CIII DE					
Test Mode:	BLE Mode TX 2402 MHz							
Remark:	No report for the emission which prescribed limit.	No report for the emission which more than 10 dB below the						

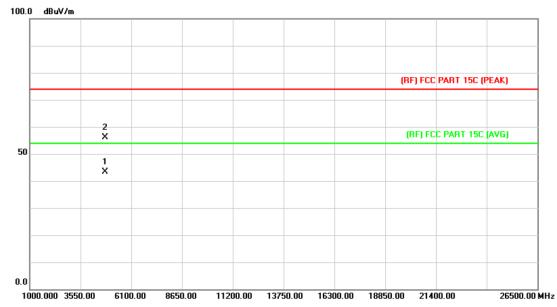


No	. Mk	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4803.881	43.23	13.44	56.67	74.00	-17.33	peak
2	*	4803.941	29.74	13.44	43.18	54.00	-10.82	AVG



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EUT:	Loop	Model:	Loop-1				
Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V	DC 3.7V					
Ant. Pol.	Vertical	Vertical					
Test Mode:	BLE Mode TX 2402 MHz		A ROLL				
Remark:	No report for the emission which	No report for the emission which more than 10 dB below the					
	prescribed limit.						

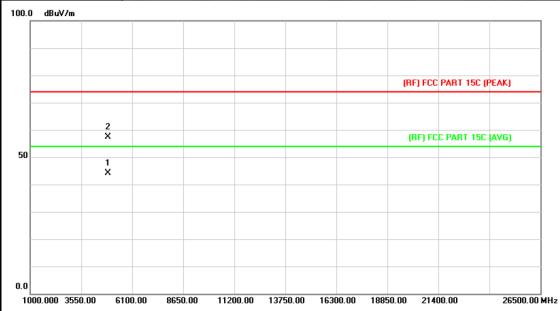


No	. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4803.555	29.84	13.44	43.28	54.00	-10.72	AVG
2		4803.911	42.77	13.44	56.21	74.00	-17.79	peak



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EUT:	Loop	Model:	Loop-1				
Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V	DC 3.7V					
Ant. Pol.	Horizontal						
Test Mode:	BLE Mode TX 2442 MHz		MARIE				
Remark:	No report for the emission which more than 10 dB below the prescribed limit.						
100.0 dp.4//-	prescribed littit.						

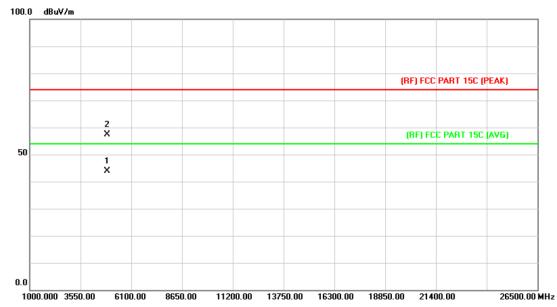


No	. Mk	. Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4884.104	30.09	13.92	44.01	54.00	-9.99	AVG
2		4884.459	43.56	13.92	57.48	74.00	-16.52	peak



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EUT:	Loop	Model:	Loop-1				
Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V	DC 3.7V					
Ant. Pol.	Vertical						
Test Mode:	BLE Mode TX 2442 MHz		HILL				
Remark:	No report for the emission which	No report for the emission which more than 10 dB below the					
	prescribed limit.						

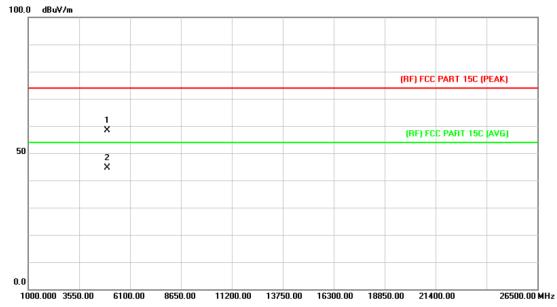


No	o. Mk	. Freq.			Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4884.199	29.87	13.92	43.79	54.00	-10.21	AVG
2		4884.333	43.37	13.92	57.29	74.00	-16.71	peak



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EUT:	Loop	Model:	Loop-1				
Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V	DC 3.7V					
Ant. Pol.	Horizontal						
Test Mode:	BLE Mode TX 2480 MHz		HILL				
Remark:	No report for the emission which prescribed limit.	No report for the emission which more than 10 dB below the					

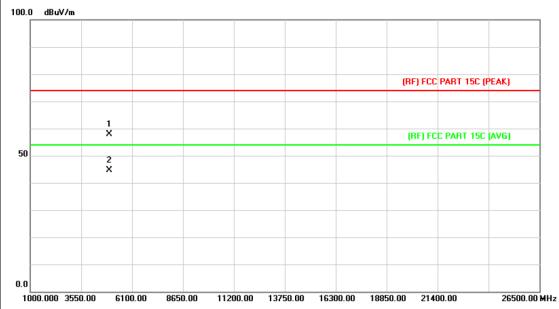


No	. Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4959.770	43.90	14.36	58.26	74.00	-15.74	peak
2	*	4960.099	30.26	14.36	44.62	54.00	-9.38	AVG



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EUT:	Loop	Model:	Loop-1				
Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V	OC 3.7V					
Ant. Pol.	Vertical						
Test Mode:	BLE Mode TX 2480 MHz		HILL				
Remark:	No report for the emission which prescribed limit.	more than 10 dB below	w the				
100.0 10.111							



-	No.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
			MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1			4960.044	43.40	14.36	57.76	74.00	-16.24	peak
2		*	4960.392	30.29	14.36	44.65	54.00	-9.35	AVG



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6. Restricted Bands Requirement

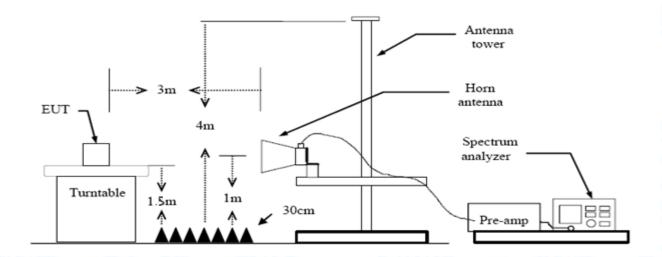
6.1 Test Standard and Limit

6.1.1 Test Standard FCC Part 15.247(d) FCC Part 15.205

6.1.2 Test Limit

Restricted Frequency	Distance Me	eters(at 3m)
Band (MHz)	Peak (dBuV/m)	Average (dBuV/m)
2310 ~2390	74	54
2483.5 ~2500	74	54

6.2 Test Setup



6.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector



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mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

6.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

6.5 Test Data

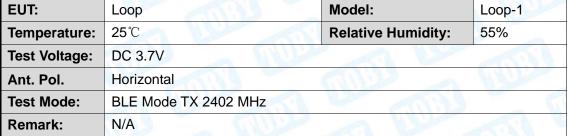
Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

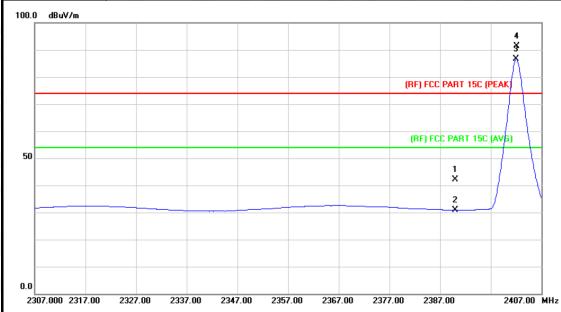
Test data please refer the following pages.



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(1) Radiation Test





No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	41.45	0.77	42.22	74.00	-31.78	peak
2		2390.000	30.05	0.77	30.82	54.00	-23.18	AVG
3	*	2402.000	85.84	0.82	86.66	Fundamenta	I Frequency	AVG
4	Χ	2402.200	90.68	0.82	91.50	Fundamenta	I Frequency	peak



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EUT:	Loop		Model:	Loop-1
Temperature:	25℃	'N	Relative Humidity:	55%
Test Voltage:	DC 3.7V		The state of the s	339
Ant. Pol.	Vertical	A PAGE		
Test Mode:	BLE Mode TX 24	02 MHz		ARTIC
Remark:	N/A			
100.0 dBuV/m				
			(RF) FCC PAR	4 3' X 1T 15C (PEAK)
50			(RF) FCC PA	RT 15C (AVG)
			2	
0.0 2310.000 2320.00	2330.00 2340.00 23	50.00 2360.00	2370.00 2380.00 2390.00	2410.00 MHz
No. Mk.	Reading Freq. Level	Correct M Factor	leasure- ment Limit	Over
	MHz dBuV	dB/m	dBuV/m dBuV/m	dB Detector
1 23	90.000 42.00	0.77	42.77 74.00	-31.23 peak
2 23	90.000 29.48	0.77	30.25 54.00	-23.75 AVG
3 * 24	02.000 86.76	0.82	87.58 Fundamental Fr	requency AVG
4 X 24	02.300 91.27	0.82	92.09 Fundamental Fr	equency peak

Emission Level= Read Level+ Correct Factor



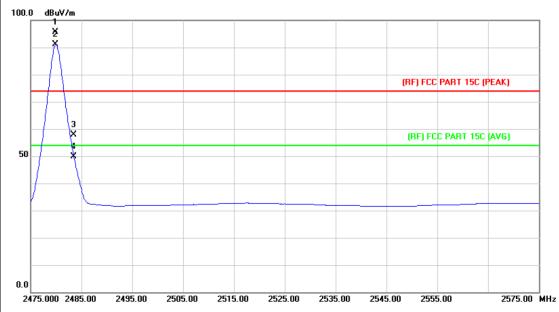
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EUT:		Loop	189		110	A SECTION AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON AND ADDRESS OF THE PERSO	Mode	el:	Lo	op-1
Temperat	ure:	25 ℃	61	TIME			Relat	tive Humid	lity: 55	%
Test Volta	ge:	DC 3	.7V		1	818				
Ant. Pol.		Horiz	ontal	9	Mile		1	100		MI.
Test Mode) :	BLE	Mode TX	(2480 N	ЛHz					Messe
Remark:		N/A	MA			1				_ (
100.0 dBuV/	m									
	3 X								ART 15C (PEA	
0.0										
2475.000 2	485.00	2495.00	2505.00	2515.00	2525.00	2535	.00 25	6 45.00 2555.0	10	2575.00 MHz
No. M	k. Fı	req.	Readir Leve		orrect actor		sure- ent	Limit	Over	
	M	lHz	dBu∀	d	IB/m	dB	uV/m	dBuV/m	dB	Detector
1 X	2479	9.700	95.14	1 1	.15	96	5.29	Fundamental	Frequency	peak
2 *	2479	9.900	90.20) 1	.15	91	.35	Fundamental		AVG
3	2483	3.500	57.44	1 1	.17	58	3.61	74.00	-15.39	peak
4		3.500	49.10		.17).27	54.00	-3.73	AVG



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EUT:	Loop	Model:	Loop-1		
Temperature:	25℃	Relative Humidity:	55%		
Test Voltage:	DC 3.7V				
Ant. Pol.	Vertical				
Test Mode:	BLE Mode TX 2480 MHz				
Remark:	N/A	(III)			



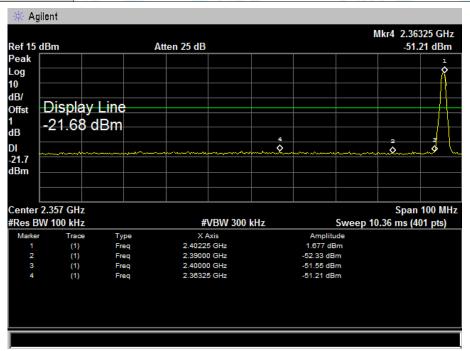
No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBu∀/m	dBuV/m	dB	Detector
1	Χ	2479.800	94.53	1.15	95.68	Fundamental I	Frequency	peak
2	*	2479.900	89.87	1.15	91.02	Fundamental I	Frequency	AVG
3		2483.500	56.63	1.17	57.80	74.00	-16.20	peak
4		2483.500	48.77	1.17	49.94	54.00	-4.06	AVG

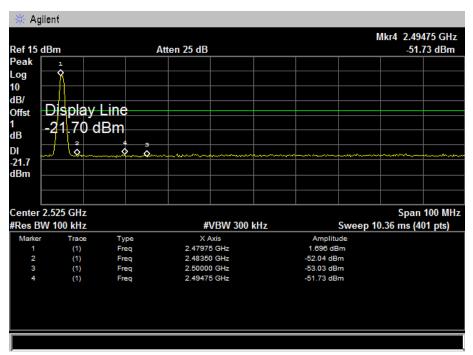


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(2) Conducted Test

EUT:	Loop	Model:	Loop-1			
Temperature:	25℃	Relative Humidity:	55%			
Test Voltage:	DC 3.7V					
Test Mode:	BLE Mode TX 2402MHz / BLE Mode TX 2480MHz					
Remark:	The EUT is programed in continuously transmitting mode					







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7. Bandwidth Test

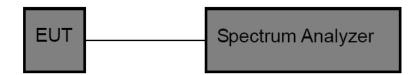
7.1 Test Standard and Limit

7.1.1 Test Standard FCC Part 15.247 (a)(2)

7.1.2 Test Limit

FCC P	FCC Part 15 Subpart C(15.247)/RSS-247				
Test Item	Limit	Frequency Range(MHz)			
Bandwidth	>=500 KHz (6dB bandwidth)	2400~2483.5			

7.2 Test Setup



7.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) The bandwidth is measured at an amplitude level reduced 6dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.
- (3)Measure the channel separation the spectrum analyzer was set to Resolution Bandwidth:100 kHz, and Video Bandwidth:300 kHz, Detector: Peak, Sweep Time set auto.

7.4 EUT Operating Condition

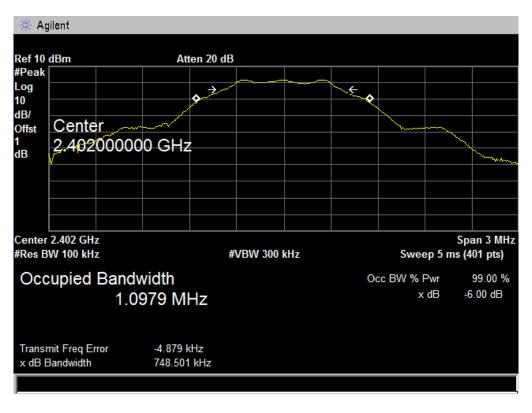
The EUT was set to continuously transmitting in each mode and low, middle and high channel for the test.



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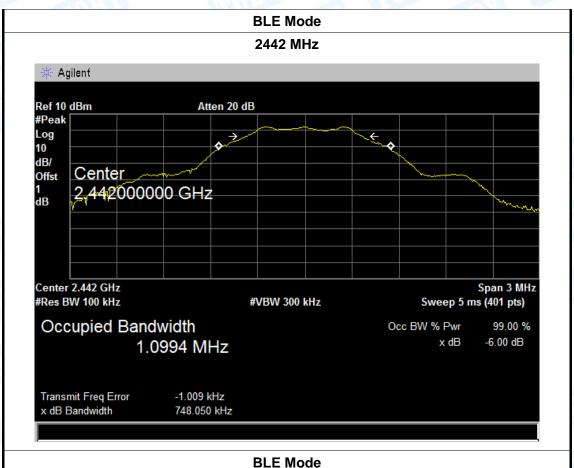
7.5 Test Data

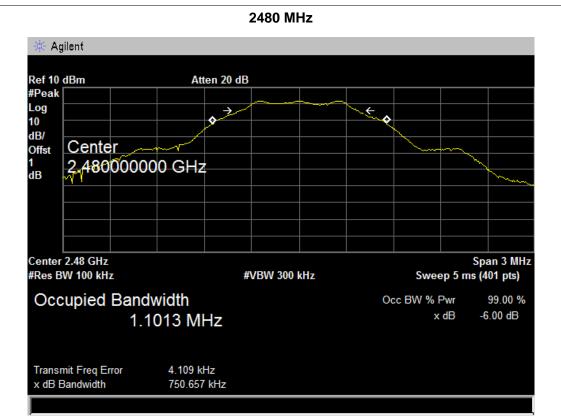
ALCOHOLD TO THE REAL PROPERTY.	_	NI WILLIAM		111	
EUT:	Loop		Model:	Loop-1	
Temperature:	25℃		Relative Humidity:	55%	
Test Voltage:	DC 3	.7V	THE PARTY OF THE P	ABOVE	
Test Mode:	BLE	BLE TX Mode			
Channel freque	ency	6dB Bandwidth	99% Bandwidth	Limit	
(MHz)		(kHz)	(kHz)	(kHz)	
2402		748.501	1097.90		
2442		748.050	1099.40	>=500	
2480		750.657	1101.30		
BLE Mode					
		2402 MHz			





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8. Peak Output Power Test

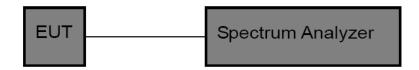
8.1 Test Standard and Limit

8.1.1 Test Standard FCC Part 15.247 (b)(3)

8.1.2 Test Limit

FCC Part 15 Subpart C(15.247)/RSS-247			
Test Item	Limit	Frequency Range(MHz)	
Peak Output Power	1 Watt or 30 dBm	2400~2483.5	

8.2 Test Setup



8.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement is according to section 9.1.1 of KDB 558074 D01 DTS Meas Guidance v04.

- (1) Set the RBW≥DTS Bandwidth
- (2) Set VBW≥3*RBW
- (3) Set Span≥3*RBW
- (4) Sweep time=auto
- (5) Detector= peak
- (6) Trace mode= maxhold.
- (7) Allow trace to fully stabilize, and then use peak marker function to determine the peak amplitude level.

8.4 EUT Operating Condition

The EUT was set to continuously transmitting in the max power during the test.

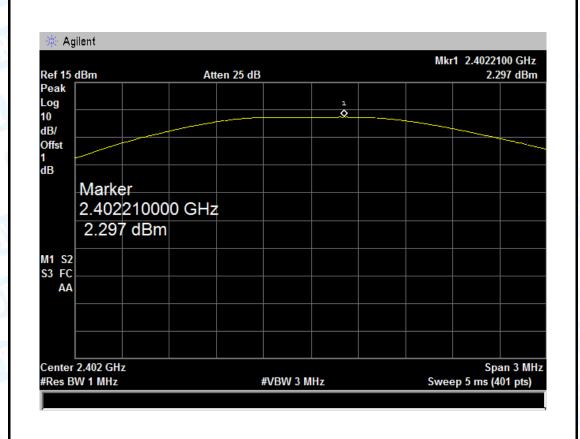


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8.5 Test Data

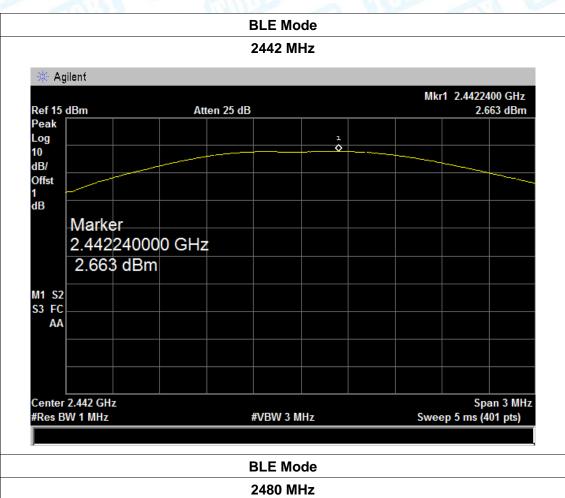
Loop		Mode	l:	Loop-1	
25℃		Relati	ve Humidity:	55%	
DC 3.7V		1110		A STATE OF	
BLE TX M	1ode			1	
cy (MHz)	Test Result (dBm)		Limit (dBm)		
	2.297				
2442			30		
	2.254				
BLE Mode					
	25°C DC 3.7V BLE TX M	25°C DC 3.7V BLE TX Mode cy (MHz)	25℃ Relati DC 3.7V BLE TX Mode cy (MHz) Test Result (dBm) 2.297 2.663 2.254	25℃ Relative Humidity: DC 3.7V BLE TX Mode cy (MHz) Test Result (dBm) Limit (days) 2.297 2.663 2.254	

2402 MHz





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Agilent Mkr1 2.4801875 GHz 2.254 dBm Ref 15 dBm Atten 25 dB Peak Log 10 dB/ Offst 1 dB Marker 2.480187500 GHz 2.254 dBm M1 S2 S3 FC AA Center 2.48 GHz Span 3 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 5 ms (401 pts)



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9. Power Spectral Density Test

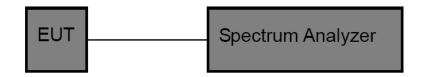
9.1 Test Standard and Limit

9.1.1 Test Standard FCC Part 15.247 (e)

9.1.2 Test Limit

FCC Part 15 Subpart C(15.247)				
Test Item Limit Frequency Range(MH				
Power Spectral Density	8dBm(in any 3 kHz)	2400~2483.5		

9.2 Test Setup



9.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v04.

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Set analyser center frequency to DTS channel center frequenyc.
- (3) Set the span to 1.5 times the DTS bandwidth.
- (4) Set the RBW to: 3 kHz(5) Set the VBW to: 10 kHz
- (6) Detector: peak(7) Sweep time: auto
- (8) Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

9.4 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, Midle and high channel for the test.



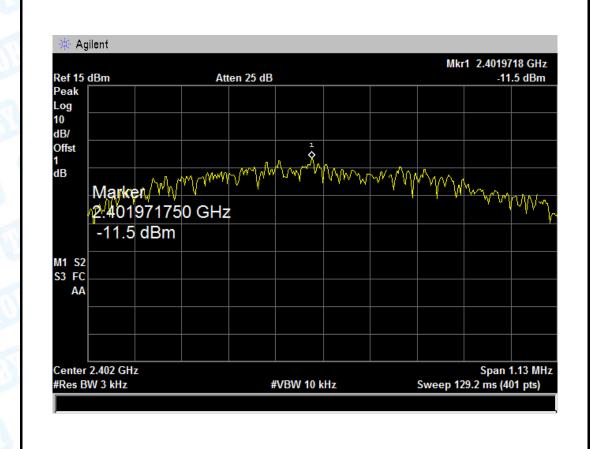
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9.5 Test Data

EUT:	Loop		Model:	Loop-1
Temperature:	25℃		Relative Humidity:	55%
Test Voltage:	DC 3.7V			
Test Mode:	BLE TX M	lode		Charles and
Channel Freq	uency	Power Density	Limit	Result
(MHz)		(dBm)	(dBm)	Result
2402		-11.50		
2442		-11.20		PASS
2480		-11.55		
		DIE Mada	•	

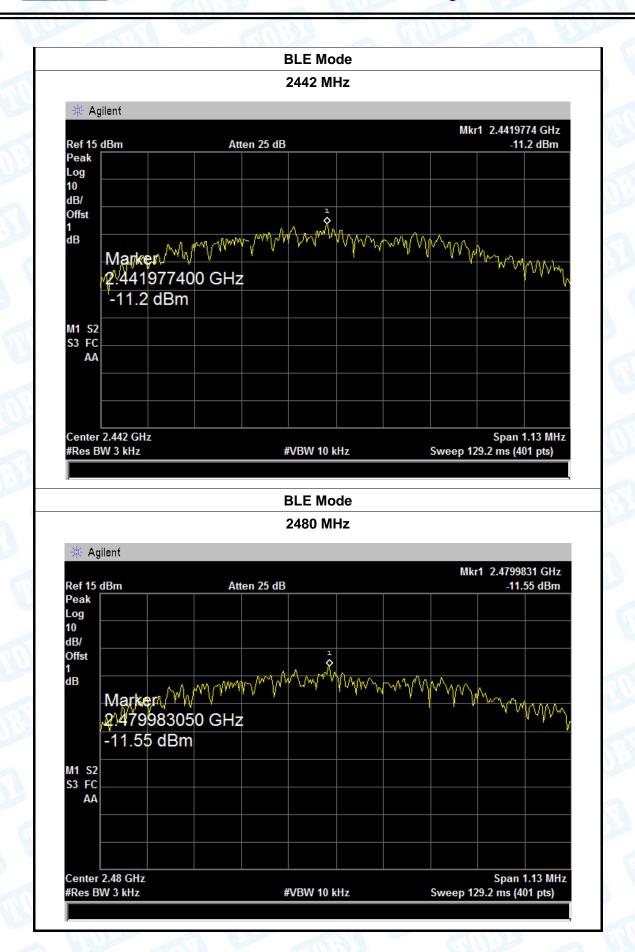
BLE Mode

2402 MHz





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10. Antenna Requirement

10.1 Standard Requirement

10.1.1 Standard FCC Part 15.203

10.1.2 Requirement

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

10.2 Antenna Connected Construction

The directional gains of the antenna used for transmitting is 5.5dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

10.3 Result

The EUT antenna is a Integral Antenna. It complies with the standard requirement.

	Antenna Type
	□ Permanent attached antenna
0.00	▼ Unique connector antenna
	□ Professional installation antenna

----END OF REPORT-----