

Shenzhen Toby Technology Co., Ltd.

Report No.: TB-FCC171376

Page: 1 of 57

FCC Radio Test Report FCC ID: XMF-MID1035

Original Grant

Report No. : TB-FCC171376

Applicant: Lightcomm Technology Co., Ltd.

Equipment Under Test (EUT)

EUT Name : 10.1"Tablet

Model No. : 100003562

Serial Model No. : MID1035

Brand Name : onn

Receipt Date : 2020-01-02

Test Date : 2020-01-03 to 2020-01-14

Issue Date : 2020-01-15

Standards : FCC Part 15, Subpart C 15.247

Test Method : ANSI C63.10: 2013

Conclusions : PASS

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

Test/Witness

Engineer

Engineer Supervisor

Engineer Manager :

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 the report.

TB-RF-074-1.0



Page: 2 of 57

Contents

CON	NIENIS	······ <u>2</u>
1.	GENERAL INFORMATION ABOUT EUT	5
	1.1 Client Information	5
	1.2 General Description of EUT (Equipment Under Test)	
	1.3 Block Diagram Showing the Configuration of System Tested	6
	1.4 Description of Support Units	7
	1.6 Description of Test Software Setting	8
	1.7 Measurement Uncertainty	8
	1.8 Test Facility	9
2.	TEST SUMMARY	10
3.	TEST SOFTWARE	10
4.	TEST EQUIPMENT	11
5.	CONDUCTED EMISSION TEST	
163	5.1 Test Standard and Limit	
	5.2 Test Setup	
	5.3 Test Procedure	
	5.4 Deviation From Test Standard	
	5.5 EUT Operating Mode	
	5.6 Test Data	
6.	RADIATED EMISSION TEST	
	6.1 Test Standard and Limit	
	6.2 Test Setup	
	6.3 Test Procedure	
	6.4 Deviation From Test Standard	17
	6.5 EUT Operating Condition	17
	6.6 Test Data	17
7.	RESTRICTED BANDS REQUIREMENT	18
	7.1 Test Standard and Limit	18
	7.2 Test Setup	
	7.3 Test Procedure	
	7.4 Deviation From Test Standard	
	7.5 EUT Operating Condition	19
	7.6 Test Data	
8.	BANDWIDTH TEST	20
	8.1 Test Standard and Limit	20
	8.2 Test Setup	
	8.3 Test Procedure	
	8.4 Deviation From Test Standard	20
	8.5 EUT Operating Condition	20



Page: 3 of 57

	8.6 Test Data	20
9.	PEAK OUTPUT POWER TEST	21
	9.1 Test Standard and Limit	21
	9.2 Test Setup	
	9.3 Test Procedure	
	9.4 Deviation From Test Standard	21
	9.5 EUT Operating Condition	21
	9.6 Test Data	
10.	POWER SPECTRAL DENSITY TEST	22
	10.1 Test Standard and Limit	
	10.2 Test Setup	
	10.3 Test Procedure	
	10.4 Deviation From Test Standard	
	10.5 EUT Operating Condition	
	10.6 Test Data	
11.	ANTENNA REQUIREMENT	23
	11.1 Standard Requirement	23
	11.2 Deviation From Test Standard	
	11.3 Antenna Connected Construction	23
	11.4 Result	
ATT	ACHMENT A CONDUCTED EMISSION TEST DATA	24
	ACHMENT B RADIATED EMISSION TEST DATA	
	ACHMENT C RESTRICTED BANDS REQUIREMENT AND BAND E	
	ACHMENT D BANDWIDTH TEST DATA	
	ACHMENT E PEAK OUTPUT POWER TEST DATA	
	ACHMENT F POWER SPECTRAL DENSITY TEST DATA	



Page: 4 of 57

Revision History

Report No.	Version	Description	Issued Date
TB-FCC171376	Rev.01	Initial issue of report	2020-01-15
	Wile Control		(I) (I)
3			
TO I			TODY .
WILL STATE	1300		A THE STATE OF THE
100		The same of the sa	0000
a min		THE REAL PROPERTY.	TO TOWN
	1		
A TOWN	33 -	1020	



Page: 5 of 57

1. General Information about EUT

1.1 Client Information

Applicant : Lightcomm Technology Co., Ltd.		Lightcomm Technology Co., Ltd.
Address		UNIT 1306 13/F ARION COMMERCIAL CENTRE, 2-12 QUEEN'S ROAD WEST, SHEUNG WAN HK
Manufacturer		Huizhou Hengdu Electronics Co., Ltd.
Address		No.8 Huitai Road, Huinan High-tech Industrial Park, Huiao Avenue, Huizhou, Guangdong, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name		10.1"Tablet			
Models No.	30	100003562, MID1035			
Model Different	1	All these models are identical in the same PCB, layout and electrical circuit, The only difference is model name for commercial purpose.			
		Operation Frequency:	Bluetooth 5.0(BLE): 2402MHz~2480MHz		
	C.	Number of Channel:	Bluetooth 5.0(BLE): 40 channels see note(3)		
Product		RF Output Power:	BLE:-2.964dBm (Max)		
Description		Antenna Gain:	2.92dBi FPC Antenna		
		Modulation Type:	GFSK		
		Bit Rate of Transmitter:	1/2Mbps(GFSK)		
Power Rating		Adapter (TEKA012-052000UK) Input: AC 100-240V, 50/60Hz, 0.35A Output: DC 5V 2A DC 3.8V by 4500mAh Li-ion battery			
Software Version	3	QP1A.190711.020 relea	QP1A.190711.020 release-keys		
Hardware Version	:	MID1035MQ_MT8768_LPDDR4_DSP_MB-VER1.1			
Connecting I/O Port(S)	•	Please refer to the User's Manual			
Remark			The antenna gain and adapter provided by the applicant, the verified for the RF conduction test provided by TOBY test lab.		

Note:

This Test Report is FCC Part 15.247 for Bluetooth BLE, the test procedure follows the FCC KDB 558074 D01 DTS Means Guidance v05.



Page: 6 of 57

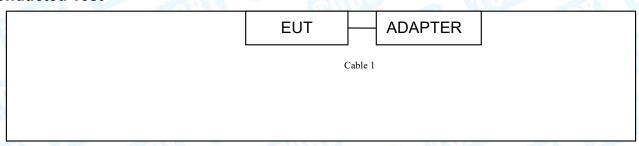
(1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

- (2) Antenna information provided by the applicant.
- (3) Channel List:

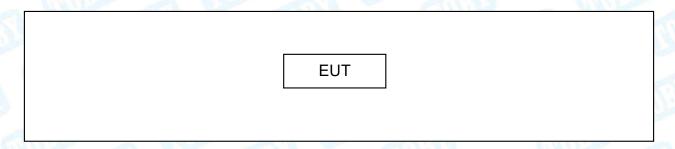
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	14	2430	28	2458
01	2404	15	2432	29	2460
02	2406	16	2434	30	2462
03	2408	17	2436	31	2464
04	2410	18	2438	32	2466
05	2412	19	2440	33	2468
06	2414	20	2442	34	2470
07	2416	21	2444	35	2472
08	2418	22	2446	36	2474
09	2420	23	2448	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

Conducted Test



Radiated Test





Page: 7 of 57

1.4 Description of Support Units

5 1 V2 V 2 CARP				ALM ALL					
	Equipment Information								
Name	Name Model FCC ID/VOC Manufacturer Used "\								
W	C C		30 0	ي المرال					
Cable Information									
Number	Number Shielded Type Ferrite Core Length Note								
Cable 1	Yes	NO	1.0M	Accessory					

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	Charging+TX Mode		

For Radiated Test				
Final Test Mode Description				
Mode 2	TX Mode			
Mode 3	TX 1Mbps Mode (Channel 00/20/39)			
Mode 4	TX 2Mbps 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.



Page: 8 of 57

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	LaunchEngmode		
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})
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	±3.50 dB ±3.10 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	±4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	±4.50 dB
Radiated Emission	Level Accuracy: Above 1000MHz	±4.20 dB



Page: 9 of 57

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.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01. FCC Accredited Test Site Number: 854351.

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.



Page: 10 of 57

2. Test Summary

Standard Section FCC IC		T4 14		Remark
		Test Item	Judgment	
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, 15.209&15.247(d)	RSS 247 5.5	Transmitter Radiated Spurious &Unwanted Emissions into Restricted Frequency	PASS	N/A

Note: N/A is an abbreviation for Not Applicable

3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Conducted Emission	EZ-EMC	EZ	CDI-03A2
Radiation Emission	EZ-EMC	EZ	FA-03A2RE



Page: 11 of 57

4. Test Equipment

Conducted Emission	Test				
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 13, 2019	Jul. 12, 2020
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 13, 2019	Jul. 12, 2020
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 13, 2019	Jul. 12, 2020
LISN	Rohde & Schwarz	ENV216	101131	Jul. 13, 2019	Jul. 12, 2020
Radiation Emission T	est			-	
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 13, 2019	Jul. 12, 2020
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 13, 2019	Jul. 12, 2020
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jan. 31, 2019	Jan. 30, 2020
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Jan. 27, 2019	Jan. 26, 2020
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.03, 2019	Mar. 02, 2020
Horn Antenna	Antenna ETS-LINDGREN		BBHA9170582	Aug.07, 2019	Aug. 06, 2020
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 13, 2019	Jul. 12, 2020
Pre-amplifier	Sonoma	310N	185903	Mar.04, 2019	Mar. 03, 2020
Pre-amplifier	HP	8449B	3008A00849	Mar.03, 2019	Mar. 02, 2020
Pre-amplifier	SKET	LNPA_1840G-50	SK201904032	Jul. 27, 2019	Jul. 26, 2020
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar.03, 2019	Mar. 02, 2020
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna Conducted I	Emission				
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 13, 2019	Jul. 12, 2020
Spectrum Analyzer	Rohde & Schwarz	ESCI	100010/007	Jul. 13, 2019	Jul. 12, 2020
MXA Signal Analyzer	Agilent	N9020A	MY49100060	Sep. 16, 2019	Sep. 15, 2020
Vector Signal Generator	Agilent	N5182A	MY50141294	Sep. 16, 2019	Sep. 15, 2020
Analog Signal Generator	Agilent	N5181A	MY50141953	Sep. 16, 2019	Sep. 15, 2020
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Sep. 16, 2019	Sep. 15, 2020
2000	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Sep. 16, 2019	Sep. 15, 2020
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Sep. 16, 2019	Sep. 15, 2020
	DARE!! Instruments	CALLE	17I00015SNO33	Sep. 16, 2019	Sep. 15, 2020



Page: 12 of 57

5. Conducted Emission Test

5.1 Test Standard and Limit

5.1.1Test Standard FCC Part 15.207

5.1.2 Test Limit

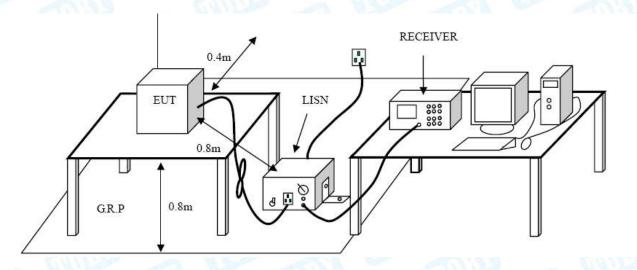
Conducted Emission Test Limit

Fraguena	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.

5.2 Test Setup





Page: 13 of 57

5.3 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.

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.

5.4 Deviation From Test Standard

No deviation

5.5 EUT Operating Mode

Please refer to the description of test mode.

5.6 Test Data

Please refer to the Attachment A.



Page: 14 of 57

6. Radiated Emission Test

6.1 Test Standard and Limit

6.1.1 Test Standard FCC Part 15.247(d)

6.1.2 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		

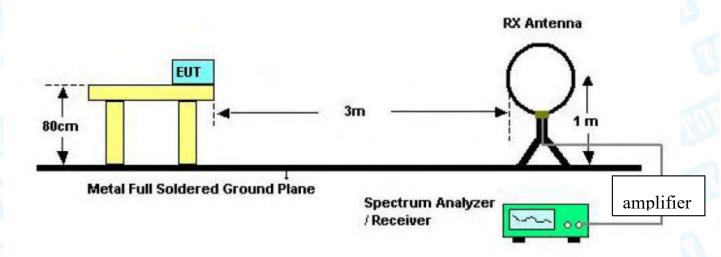
Note:

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

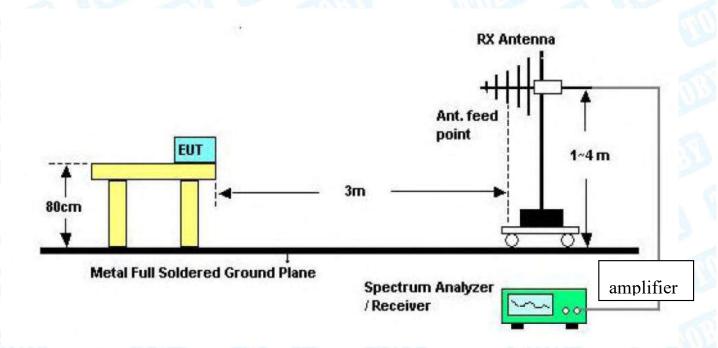


Page: 15 of 57

6.2 Test Setup



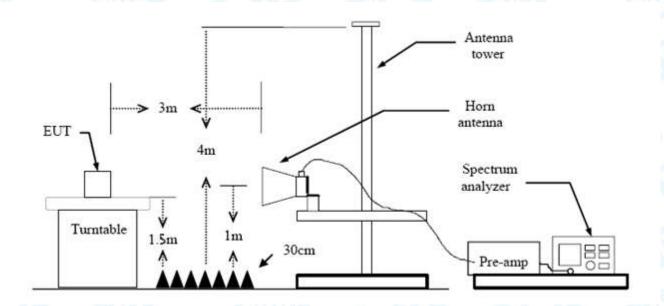
Below 30MHz Test Setup



Below 1000MHz Test Setup



Page: 16 of 57



Above 1GHz 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 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.



Page: 17 of 57

6.4 Deviation From Test Standard

No deviation

6.5 EUT Operating Condition

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

6.6 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.

Please refer to the Attachment B.



Page: 18 of 57

7. Restricted Bands Requirement

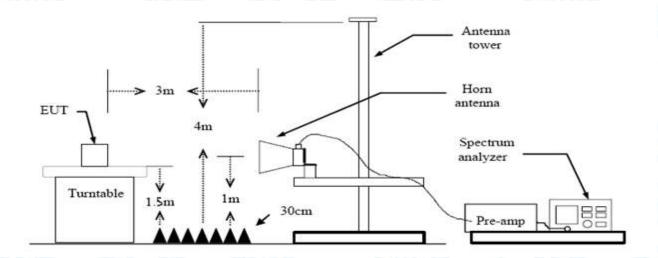
7.1 Test Standard and Limit

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

7.1.2 Test Limit

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

7.2 Test Setup



7.3 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



Page: 19 of 57

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.

7.4 Deviation From Test Standard

No deviation

7.5 EUT Operating Condition

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

7.6 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.

Please refer to the Attachment C.



Page: 20 of 57

8. Bandwidth Test

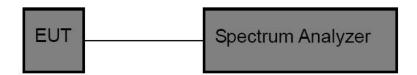
8.1 Test Standard and Limit

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

8.1.2 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				

8.2 Test Setup



8.3 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.

8.4 Deviation From Test Standard

No deviation

8.5 EUT Operating Condition

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

8.6 Test Data

Please refer to the Attachment D.



Page: 21 of 57

9. Peak Output Power Test

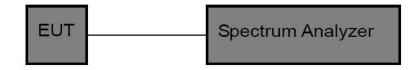
9.1 Test Standard and Limit

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

9.1.2 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			

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 is according to section 9.1.1 of KDB 558074 D01 DTS Meas Guidance v05.

- (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= max hold.
- (7) Allow trace to fully stabilize, and then use peak marker function to determine the peak amplitude level.

9.4 Deviation From Test Standard

No deviation

9.5 EUT Operating Condition

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

9.6 Test Data

Please refer to the Attachment E.



Page: 22 of 57

10. Power Spectral Density Test

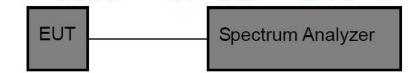
10.1 Test Standard and Limit

10.1.1 Test Standard FCC Part 15.247 (e)

10.1.2 Test Limit

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

10.2 Test Setup



10.3 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 v05.

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Set analyser centre frequency to DTS channel centre frequency.
- (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.

10.4 Deviation From Test Standard

No deviation

10.5 EUT Operating Condition

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

10.6 Test Data

Please refer to the Attachment F.



Page: 23 of 57

11. Antenna Requirement

11.1 Standard Requirement

11.1.1 Standard

FCC Part 15.203

11.1.2 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.

11.2 Deviation From Test Standard

No deviation

11.3 Antenna Connected Construction

The gains of the antenna used for transmitting is 2.92 dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

11.4 Result

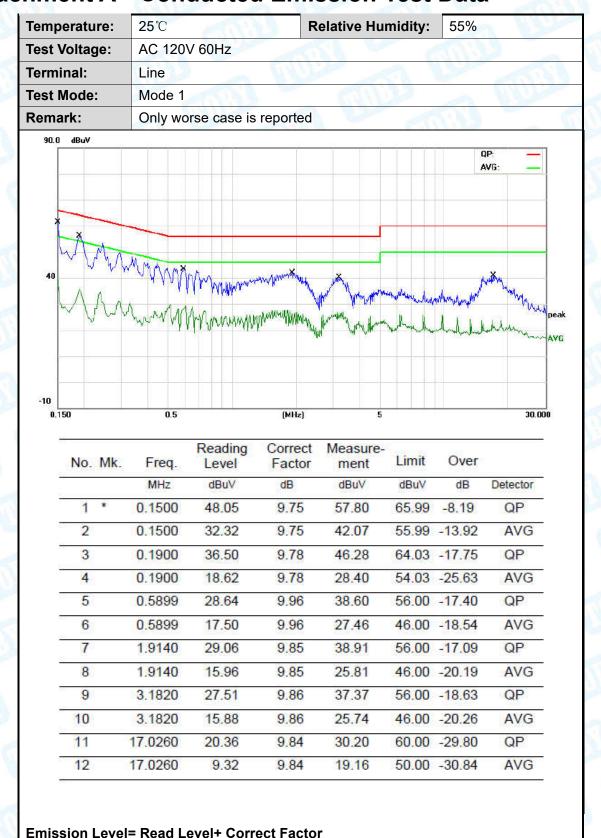
The EUT antenna is a FPC Antenna. It complies with the standard requirement.

	Antenna Type
	Permanent attached antenna
Em .	⊠Unique connector antenna
The state of the s	☐Professional installation antenna



Page: 24 of 57

Attachment A-- Conducted Emission Test Data





Page: 25 of 57

Temperature	e: 25°C		a W	Relative H	lumidity:	55%	AND!
est Voltage	e: AC 1	20V 60Hz			1320		
erminal:	Neuti	ral	-	18	6	1817	
Test Mode:	Mode	e 1	MAGE	-	J R		TARY.
Remark:	Only	worse case	is reported	CAMP		1	A STATE OF THE PARTY OF THE PAR
90.0 dBuV	Many	o () Marina () a	MMMMMMMM.	White will be a second of the	Mphizzondenial	angles of War	pea AV(
0.150	0.5		(MHz)	5			30.000
No. Mk.	50000	Reading Level	Correct Factor	Measure- ment	Limit	Over	
200 200 2007 2008	1008		Correct	Measure-	Limit dBuV	Over	Detector
0 0	Freq.	Level	Correct Factor	Measure- ment			
No. Mk.	Freq.	Level dBuV	Correct Factor	Measure- ment dBuV	dBuV 65.99	dB	Detector
No. Mk.	Freq. MHz 0.1500	dBuV 46.72	Correct Factor dB 9.60	Measure- ment dBuV 56.32	dBuV 65.99 55.99	dB -9.67	Detector QP
No. Mk.	Freq. MHz 0.1500 0.1500	dBuV 46.72 27.04	Correct Factor dB 9.60 9.60	Measure- ment dBuV 56.32 36.64	dBuV 65.99 55.99	dB -9.67 -19.35 -11.08	Detector QP AVG
No. Mk.	Freq. MHz 0.1500 0.1500 0.1940	Level dBuV 46.72 27.04 43.21	Correct Factor dB 9.60 9.60 9.57	Measure- ment dBuV 56.32 36.64 52.78	dBuV 65.99 55.99 63.86	dB -9.67 -19.35 -11.08 -18.75	Detector QP AVG QP
No. Mk.	Freq. MHz 0.1500 0.1500 0.1940 0.1940	Level dBuV 46.72 27.04 43.21 25.54	Correct Factor dB 9.60 9.60 9.57 9.57	Measure- ment dBuV 56.32 36.64 52.78 35.11	dBuV 65.99 55.99 63.86 53.86	dB -9.67 -19.35 -11.08 -18.75 -14.38	Detector QP AVG QP AVG
No. Mk. 1 * 2 3 4 5	Freq. MHz 0.1500 0.1500 0.1940 0.1940 0.2900	Level dBuV 46.72 27.04 43.21 25.54 36.44	Correct Factor dB 9.60 9.60 9.57 9.57 9.70	Measure- ment dBuV 56.32 36.64 52.78 35.11 46.14	dBuV 65.99 55.99 63.86 53.86 60.52	dB -9.67 -19.35 -11.08 -18.75 -14.38 -20.72	Detector QP AVG QP AVG
No. Mk. 1 * 2 3 4 5	Freq. MHz 0.1500 0.1500 0.1940 0.1940 0.2900 0.2900	Level dBuV 46.72 27.04 43.21 25.54 36.44 20.10	Correct Factor dB 9.60 9.60 9.57 9.57 9.70	Measure- ment dBuV 56.32 36.64 52.78 35.11 46.14 29.80	dBuV 65.99 55.99 63.86 53.86 60.52 50.52	dB -9.67 -19.35 -11.08 -18.75 -14.38 -20.72 -14.68	Detector QP AVG QP AVG QP AVG
No. Mk. 1 * 2 3 4 5 6 7 8	Freq. MHz 0.1500 0.1500 0.1940 0.1940 0.2900 0.2900 0.5940 0.5940	Level dBuV 46.72 27.04 43.21 25.54 36.44 20.10 31.53 13.07	Correct Factor dB 9.60 9.60 9.57 9.57 9.70 9.70 9.79	Measure- ment dBuV 56.32 36.64 52.78 35.11 46.14 29.80 41.32 22.86	dBuV 65.99 55.99 63.86 53.86 60.52 50.52 56.00 46.00	dB -9.67 -19.35 -11.08 -18.75 -14.38 -20.72 -14.68 -23.14	Detector QP AVG QP AVG QP AVG QP AVG
No. Mk. 1 * 2 3 4 5 6 7 8	Freq. MHz 0.1500 0.1500 0.1940 0.1940 0.2900 0.2900 0.5940 0.5940 3.1380	Level dBuV 46.72 27.04 43.21 25.54 36.44 20.10 31.53 13.07 27.20	Correct Factor dB 9.60 9.60 9.57 9.57 9.70 9.70 9.79 9.79	Measure- ment dBuV 56.32 36.64 52.78 35.11 46.14 29.80 41.32 22.86 37.06	dBuV 65.99 55.99 63.86 53.86 60.52 50.52 56.00 46.00	dB -9.67 -19.35 -11.08 -18.75 -14.38 -20.72 -14.68 -23.14 -18.94	Detector QP AVG QP AVG QP AVG QP AVG QP AVG
No. Mk. 1 * 2 3 4 5 6 7 8	Freq. MHz 0.1500 0.1500 0.1940 0.1940 0.2900 0.2900 0.5940 0.5940	Level dBuV 46.72 27.04 43.21 25.54 36.44 20.10 31.53 13.07	Correct Factor dB 9.60 9.60 9.57 9.57 9.70 9.70 9.79	Measure- ment dBuV 56.32 36.64 52.78 35.11 46.14 29.80 41.32 22.86	dBuV 65.99 55.99 63.86 53.86 60.52 50.52 56.00 46.00 46.00	dB -9.67 -19.35 -11.08 -18.75 -14.38 -20.72 -14.68 -23.14 -18.94	Detector QP AVG QP AVG QP AVG QP AVG



Page: 26 of 57

Attachment B-- Radiated Emission Test Data

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

emperature:	25℃		ALL DE	Relative Hur	nidity:	55%	
est Voltage:	DC 3.8V	1		de de no		(41)	LAN
nt. Pol.	Horizont	tal		China I	150	4	6
est Mode:	Mode 2	2402MHz	1000	-0 1	BILL		1 1
Remark:	Only wo	rse case is	reported	133		011110	1
80.0 dBuV/m							
					(RF)FCC	15C 3M Radiation	n
					20 20	Margin -6	i dB
				_			
	1				c		
30	Ĭ	2 X	3 A	5 **	6	m mmm	annual
Maria .		A	VV.	Mush my	man m		
Munamur	M N	Munda	*				
	when he						
-20							
30.000 40	50 60 70	80	(MHz)	300	400	500 600 700	1000.000
28							
	<u>177</u> 0	Reading	Correct	Measure-	Lineit	Over	
No. Mk.	Freq.	Level	Factor	ment	Limit	Over	
%E	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1 *	46.6664	52.97	-22.22	30.75	40.00	-9.25	QP
2	79.5209	48.78	-22.60	26.18	40.00	-13.82	QP
0.0000	147.4036	47.36	-21.70	25.66	43.50	. SARAKARAKA	QP
V2508	185.7882	47.35	-19.92	27.43	43.50	S-80/80/910/9	QP
		/1 / 5 15	_ Iuu	11/15	/I 5 POLI	- 16 11/	

26.90

27.98

46.00

46.00

-19.10

-18.02

QP

*:Maximum data x:Over limit !:over margin

295.1469

434.0651

43.00

39.85

-16.10

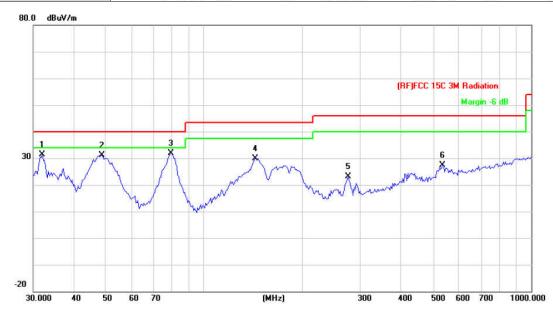
-11.87

5



Page: 27 of 57

Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	DC 3.8V	THE PERSON NAMED IN	
Ant. Pol.	Vertical		
Test Mode:	Mode 2 2402MHz		
Remark:	Only worse case is reporte	ed	A VILLE



	Freq.	Level	Correct Factor	Measure- ment	Limit	Over	
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
	31.9546	45.77	-14.48	31.29	40.00	-8.71	QP
	48.6719	54.08	-22.90	31.18	40.00	-8.82	QP
×	78.9652	54.66	-22.66	32.00	40.00	-8.00	QP
1	143.3261	52.05	-22.14	29.91	43.50	-13.59	QP
į	275.1570	39.71	-16.52	23.19	46.00	-22.81	QP
ļ	535.7073	36.53	-9.26	27.27	46.00	-18.73	QP
	Î	31.9546 48.6719	31.9546 45.77 48.6719 54.08 78.9652 54.66 143.3261 52.05 275.1570 39.71	31.9546 45.77 -14.48 48.6719 54.08 -22.90 78.9652 54.66 -22.66 143.3261 52.05 -22.14 275.1570 39.71 -16.52	31.9546 45.77 -14.48 31.29 48.6719 54.08 -22.90 31.18 78.9652 54.66 -22.66 32.00 143.3261 52.05 -22.14 29.91 275.1570 39.71 -16.52 23.19	31.9546 45.77 -14.48 31.29 40.00 48.6719 54.08 -22.90 31.18 40.00 78.9652 54.66 -22.66 32.00 40.00 143.3261 52.05 -22.14 29.91 43.50 275.1570 39.71 -16.52 23.19 46.00	31.9546 45.77 -14.48 31.29 40.00 -8.71 48.6719 54.08 -22.90 31.18 40.00 -8.82 78.9652 54.66 -22.66 32.00 40.00 -8.00 143.3261 52.05 -22.14 29.91 43.50 -13.59 275.1570 39.71 -16.52 23.19 46.00 -22.81

^{*:}Maximum data x:Over limit !:over margin



Page: 28 of 57

Above 1GHz

Temperature:	25℃	Relative Humidity:	55%			
Test Voltage:	DC 3.8V	DC 3.8V				
Ant. Pol.						
Test Mode:	BLE Mode TX 1Mbps 2402 MHz					
Remark:	No report for the emission w	hich more than 20 dB	below the			
	prescribed limit.	The Calif				

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4804.133	42.65	13.47	56.12	74.00	-17.88	peak
2		4804.135	29.64	13.47	43.11	54.00	-10.89	AVG

Emission Level= Read Level+ Correct Factor

25℃	Relative Humidity:	55%
DC 3.8V		
Vertical		
BLE Mode TX 1Mbps	2402 MHz	
No report for the emis	ssion which more than 20 dB	3 below the
	DC 3.8V Vertical BLE Mode TX 1Mbps No report for the emis	DC 3.8V Vertical BLE Mode TX 1Mbps 2402 MHz No report for the emission which more than 20 dB

No	o. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4804.133	28.66	13.47	42.13	54.00	-11.87	AVG
2	ï	4804.152	42.68	13.47	56.15	74.00	-17.85	peak



Page: 29 of 57

Temperature:	25℃	Relative Humidity:	55%		
Test Voltage:	DC 3.8V	MILES	-0		
Ant. Pol.	Horizontal				
Test Mode:	BLE Mode TX 1Mbps 2442 MHz				
Remark:	No report for the emission v	which more than 20 dB	below the		
	prescribed limit.				

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4884.137	29.98	13.54	43.52	54.00	-10.48	AVG
2		4884.235	43.59	13.54	57.13	74.00	-16.87	peak

Emission Level= Read Level+ Correct Factor

Temperature:	25℃	Relative Humidity:	55%			
Test Voltage: DC 3.8V						
Ant. Pol.	Vertical	/ertical				
Test Mode:	BLE Mode TX 1Mbps 2442	MHz				
Remark:	No report for the emission v	which more than 20 dB	below the			
	prescribed limit.		THE PROPERTY OF			

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4884.125	43.58	13.54	57.12	74.00	-16.88	peak
2	*	4884.133	29.59	13.54	43.13	54.00	-10.87	AVG



Page: 30 of 57

Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:	DC 3.8V	DC 3.8V					
Ant. Pol.	Horizontal						
Test Mode:	BLE Mode TX 1Mbps 2480 MHz						
Remark:	No report for the emission v	which more than 20 dB	below the				
	prescribed limit.						

No	. Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4959.134	43.51	13.62	57.13	74.00	-16.87	peak
2	Ř	4960.131	28.52	13.61	42.13	54.00	-11.87	AVG

Emission Level= Read Level+ Correct Factor

25℃	Relative Humidity:	55%			
DC 3.8V	THE PARTY OF THE P				
Vertical					
BLE Mode TX 1Mbps 2480	BLE Mode TX 1Mbps 2480 MHz				
No report for the emission	No report for the emission which more than 20 dB below the				
prescribed limit.		THE PERSON			
	DC 3.8V Vertical BLE Mode TX 1Mbps 2480 No report for the emission v	DC 3.8V Vertical BLE Mode TX 1Mbps 2480 MHz No report for the emission which more than 20 dB			

No	. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4960.031	29.54	13.61	43.15	54.00	-10.85	AVG
2		4960.131	42.54	13.61	56.15	74.00	-17.85	peak



Page: 31 of 57

Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	DC 3.8V		6.003
Ant. Pol.	Horizontal	OH DE	0
Test Mode:	BLE Mode TX 2Mbps 2402	MHz	1773
Remark:	No report for the emission w	hich more than 20 dB	below the
	prescribed limit.		2 1111

No	. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4804.133	42.65	13.47	56.12	74.00	-17.88	peak
2	*	4804.520	30.04	13.47	43.51	54.00	-10.49	AVG

Emission Level= Read Level+ Correct Factor

Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	DC 3.8V		
Ant. Pol.	Vertical	WU - TO	
Test Mode:	BLE Mode TX 2Mbps 240	2 MHz	
Remark:	No report for the emission	which more than 20 dE	B below the
	prescribed limit.		

No	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4804.123	42.94	13.47	56.41	74.00	-17.59	peak
2	*	4804.135	28.66	13.47	42.13	54.00	-11.87	AVG



Page: 32 of 57

Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:							
Ant. Pol.	Horizontal						
Test Mode:	BLE Mode TX 2Mbps 2442	MHz					
Remark:	No report for the emission v	which more than 20 dB	below the				
	prescribed limit.						

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4884.111	43.59	13.54	57.13	74.00	-16.87	peak
2	*	4884.132	29.67	13.54	43.21	54.00	-10.79	AVG

Emission Level= Read Level+ Correct Factor

Temperature:	25℃	Relative Humidity:	55%		
Test Voltage:	DC 3.8V	William John	Contract of the second		
Ant. Pol.	Vertical				
Test Mode:	BLE Mode TX 2Mbps 2442	MHz			
Remark:	No report for the emission v	which more than 20 dB	below the		
	prescribed limit.		- CHILL		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	980	4883.155	43.61	13.54	57.15	74.00	-16.85	peak
2	*	4884.131	29.58	13.54	43.12	54.00	-10.88	AVG



Page: 33 of 57

Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:							
Ant. Pol.	Horizontal						
Test Mode:	BLE Mode TX 2Mbps 2480	MHz					
Remark:	No report for the emission v	which more than 20 dB	below the				
	prescribed limit.						

No	. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	- 1	4959.134	43.51	13.62	57.13	74.00	-16.87	peak
2	×	4960.131	28.52	13.61	42.13	54.00	-11.87	AVG

Emission Level= Read Level+ Correct Factor

25℃	Relative Humidity:	55%			
DC 3.8V					
Vertical					
BLE Mode TX 2Mbps 2480 MHz					
No report for the emission which more than 20 dB below the					
prescribed limit.					
	DC 3.8V Vertical BLE Mode TX 2Mbps 2480 No report for the emission v	DC 3.8V Vertical BLE Mode TX 2Mbps 2480 MHz No report for the emission which more than 20 dB			

No.	. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
,	-	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4960.114	41.52	13.61	55.13	74.00	-18.87	peak
2	*	4960.135	28.92	13.61	42.53	54.00	-11.47	AVG

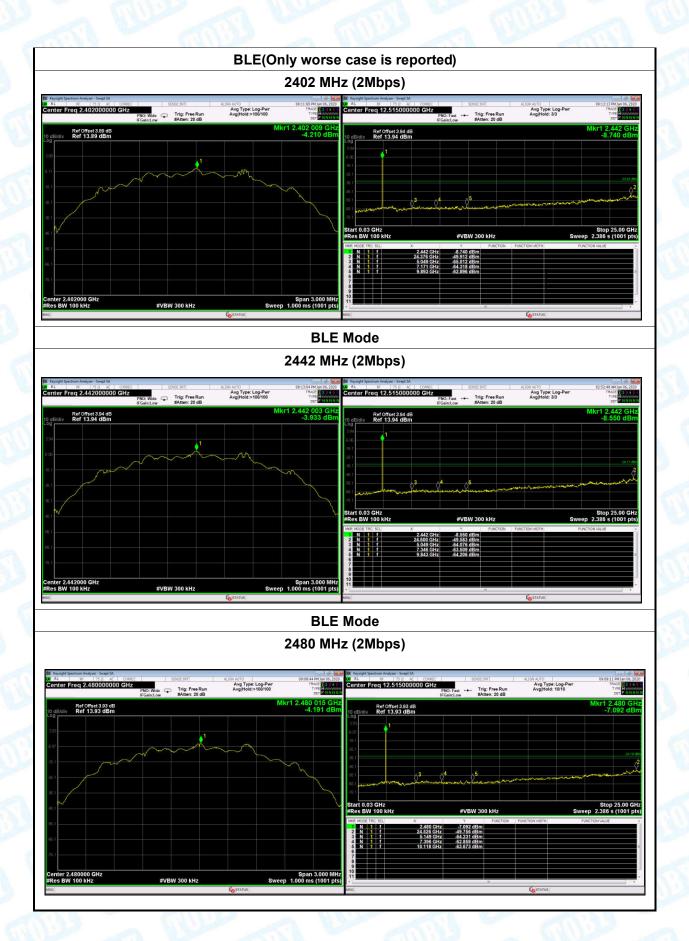


Page: 34 of 57





Page: 35 of 57

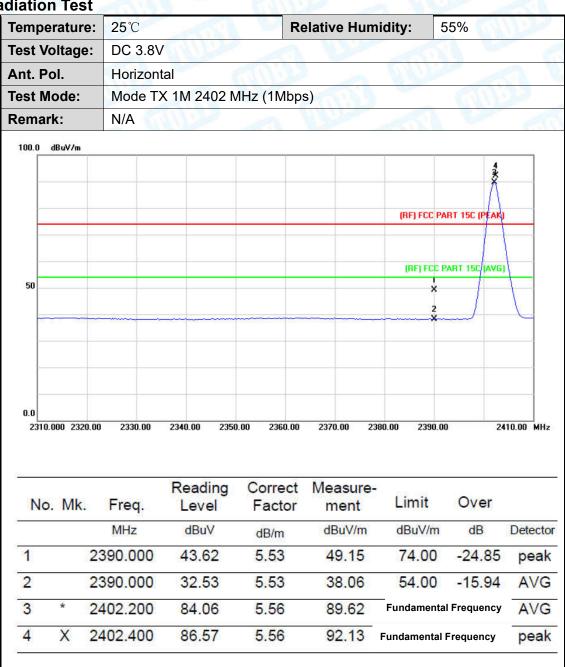




36 of 57 Page:

Attachment C-- Restricted Bands Requirement and Band **Edge Test Data**

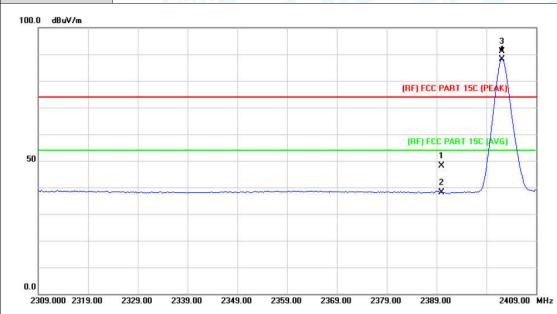
(1) Radiation Test





Page: 37 of 57

١	Temperature:	25℃ Relative Humidity: 55%					
	Test Voltage:	DC 3.8V					
	Ant. Pol.	Vertical					
	Test Mode:	1Mbps)					
	Remark:	N/A	CHILD ST	A VILLE			

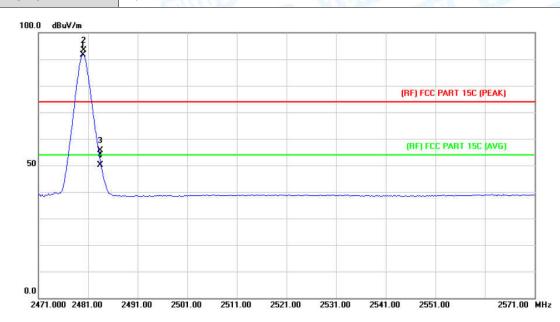


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	- Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	42.60	5.53	48.13	74.00	-25.87	peak
2		2390.000	32.71	5.53	38.24	54.00	-15.76	AVG
3	X	2402.200	85.57	5.56	91.13	Fundamental Frequency		peak
4	*	2402.200	82.61	5.56	88.17	Fundamental Frequency		AVG



Page: 38 of 57

Temperature:	25℃	Relative Humidity:	55%			
Test Voltage:	DC 3.8V		1			
Ant. Pol.	Horizontal					
Test Mode:	BLE Mode TX 2480 MHz (1	Mbps)				
Remark:	N/A	MILLER	M. W. Lawrence			

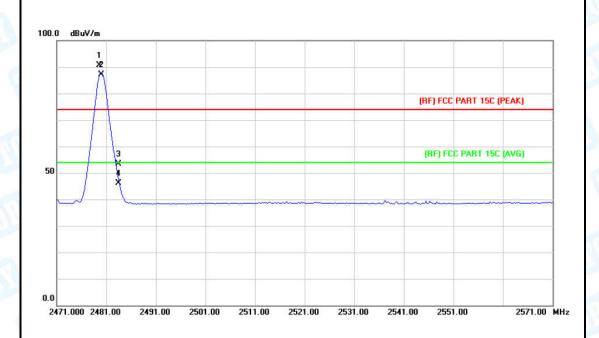


No	. Mk.	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2480.000	85.89	5.74	91.63	Fundamental Frequency		AVG
2	X	2480.200	87.65	5.74	93.39	Fundamental Frequency		peak
3		2483.500	49.80	5.75	55.55	74.00	-18.45	peak
4		2483.500	44.44	5.75	50.19	54.00	-3.81	AVG



Page: 39 of 57

Temperature:	25℃	Relative Humidity:	55%			
Test Voltage:	DC 3.8V					
Ant. Pol.	Vertical					
Test Mode:	BLE Mode TX 2480 MHz (
Remark:	N/A	MILL	A HILL			

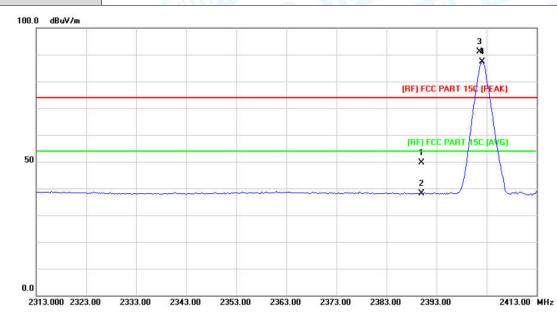


No	. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Χ	2479.600	84.78	5.74	90.52	Fundamental Frequency		peak
2	*	2480.000	81.51	5.74	87.25	– Fundamenta	I Frequency	AVG
3		2483.500	47.71	5.75	53.46	74.00	-20.54	peak
4		2483.500	40.49	5.75	46.24	54.00	-7.76	AVG



Page: 40 of 57

1	05%	5	550/				
Temperature:	25 C	Relative Humidity:	55%				
Test Voltage:	DC 3.8V	DC 3.8V					
Ant. Pol.	Horizontal						
Test Mode:	BLE Mode TX 2402 MHz (2	BLE Mode TX 2402 MHz (2Mbps)					
Remark: N/A							

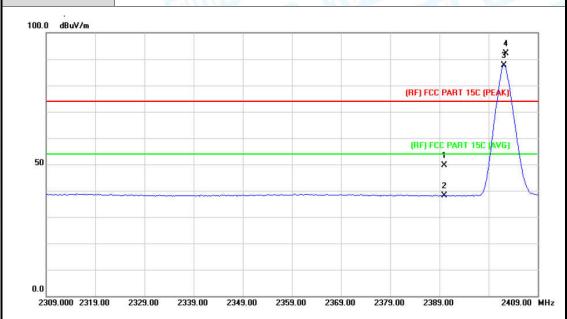


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	43.99	5.53	49.52	74.00	-24.48	peak
2		2390.000	32.59	5.53	38.12	54.00	-15.88	AVG
3	X	2401.600	85.59	5.56	91.15	Fundamental Frequency		peak
4	*	2402.200	81.79	5.56	87.35	Fundamental Frequency		AVG



Page: 41 of 57

Temperature:	25℃ Relative Humidity: 55%						
Test Voltage:	DC 3.8V						
Ant. Pol.	Vertical						
Test Mode:	BLE Mode TX 2402 MHz (BLE Mode TX 2402 MHz (2Mbps)					
Remark:	N/A						

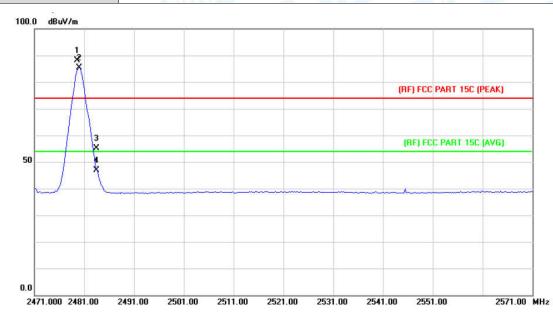


Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	- Limit	Over	
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
	2390.000	44.13	5.53	49.66	74.00	-24.34	peak
	2390.000	32.70	5.53	38.23	54.00	-15.77	AVG
*	2402.200	82.04	5.56	87.60	Fundamental Frequency		AVG
X	2402.600	86.57	5.56	92.13	Fundamental Frequency		peak
	*	MHz 2390.000 2390.000 * 2402.200	Mk. Freq. Level MHz dBuV 2390.000 44.13 2390.000 32.70 * 2402.200 82.04	Mk. Freq. Level Factor MHz dBuV dB/m 2390.000 44.13 5.53 2390.000 32.70 5.53 * 2402.200 82.04 5.56	Mk. Freq. Level Factor ment MHz dBuV dBuV/m dBuV/m 2390.000 44.13 5.53 49.66 2390.000 32.70 5.53 38.23 * 2402.200 82.04 5.56 87.60	Mk. Freq. Level Factor ment Limit MHz dBuV dBuV dBuV/m dBuV/m 2390.000 44.13 5.53 49.66 74.00 2390.000 32.70 5.53 38.23 54.00 * 2402.200 82.04 5.56 87.60 Fundamental	Mk. Freq. Level Factor ment Limit Over MHz dBuV dB/m dBuV/m dBuV/m dB 2390.000 44.13 5.53 49.66 74.00 -24.34 2390.000 32.70 5.53 38.23 54.00 -15.77 * 2402.200 82.04 5.56 87.60 Fundamental Frequency



Page: 42 of 57

	Temperature:	25℃	Relative Humidity:	55%			
ì	Test Voltage:	DC 3.8V					
	Ant. Pol.	Horizontal					
	Test Mode:	BLE Mode TX 2480 MHz (2	BLE Mode TX 2480 MHz (2Mbps)				
	Remark:	N/A		M. A. C.			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2479.600	82.41	5.74	88.15	Fundamental Frequency		peak
2	*	2480.000	79.61	5.74	85.35	— Fundamental Frequency		AVG
3		2483.500	49.40	5.75	55.15	74.00	-18.85	peak
4		2483.500	41.18	5.75	46.93	54.00	-7.07	AVG



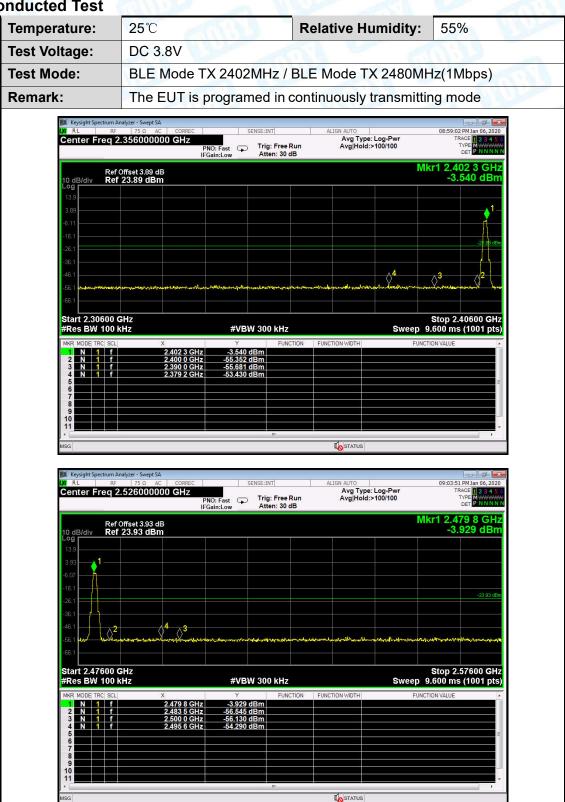
Page: 43 of 57

emperature:	25℃		Relativ	e Humidity:	55%	
est Voltage:	DC 3.8V	COLLINS.		CHILL ST		
nt. Pol.	Vertical	1300	Barrer.		111513	
est Mode:	BLE Mode	e TX 2480 M	MHz (2Mbps)			
lemark:	N/A	(MA)		MA	A W	A STATE OF THE PARTY OF THE PAR
100.0 dBuV/m						
1 22 X	3 ×				FCC PART 15C (PEAK)	
50	*			W		
0.0 2470.000 2480.00	2490.00 2	2500.00 2510.00	0 2520.00 25	30.00 2540.00 2	2550.00 29	570.00 MH
				sure-	Over	
No. Mk.	req. L	evel F	actor m	ent Limit	Over	
	in .			ent Limit uV/m dBuV/	a september.	Detector
1	MHz	dBuV (dB/m dBi	uV/m dBuV/	a september.	KD5-70-90-100
1 X 247	MHz 9.600 8	dBuV (dB/m dBi	uV/m dBuV/	m dB I	#26/20/20 to
1 X 247 2 * 248	MHz '9.600 8 80.000 7	dBuV (33.41 579.23 5	dB/m dB 5.74 89 5.74 84	uV/m dBuV/	m dB I	.ii



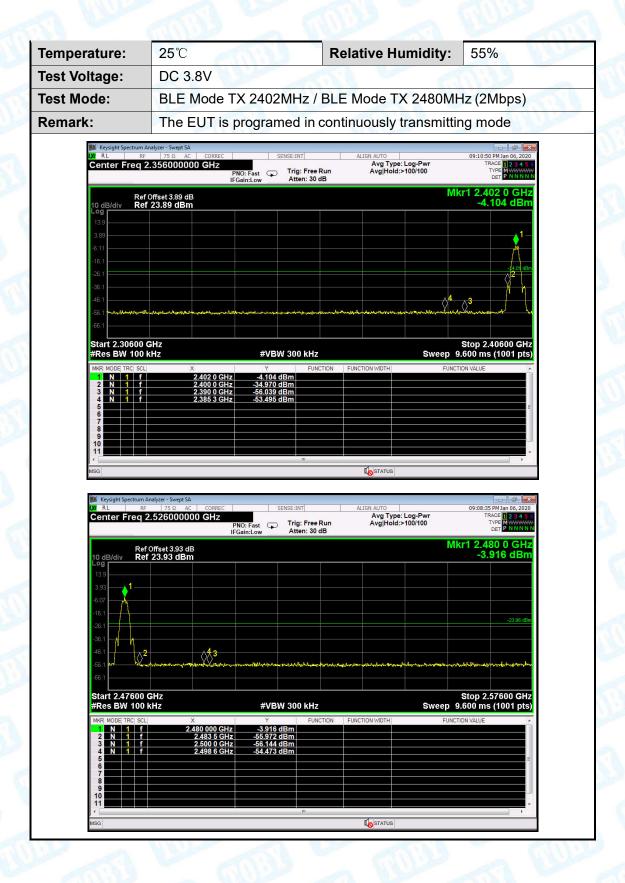
Page: 44 of 57

(2) Conducted Test





Page: 45 of 57



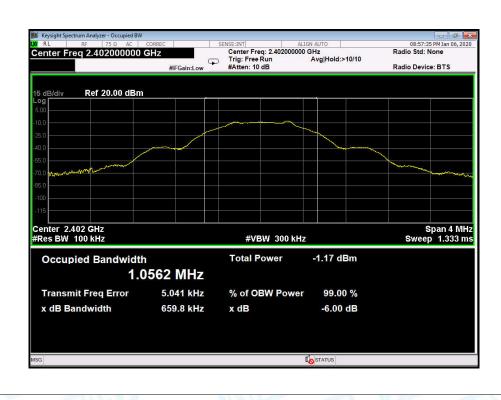


Page: 46 of 57

Attachment D-- Bandwidth Test Data

Temperature:	25 ℃		Relative Humidity:	55%
Test Voltage:	DC 3	.8V		
Test Mode:	BLE	TX Mode (1Mbps)	THE REAL PROPERTY.	
Channel freque	ency	6dB Bandwidth	99% Bandwidth	Limit
(MHz)		(kHz)	(kHz)	(kHz)
2402		659.8	1056.2	
2442		668.3	1054.2	>=500
2480		665.3	1048.0	
	Test Voltage: Test Mode: Channel freque (MHz) 2402 2442	Test Voltage: DC 3 Test Mode: BLE Channel frequency (MHz) 2402 2442	Test Voltage: DC 3.8V Test Mode: BLE TX Mode (1Mbps) Channel frequency (MHz) (kHz) 2402 659.8 2442 668.3	Test Voltage: DC 3.8V Test Mode: BLE TX Mode (1Mbps) Channel frequency (MHz) 6dB Bandwidth (kHz) 99% Bandwidth (kHz) 2402 659.8 1056.2 2442 668.3 1054.2

BLE Mode





Page: 47 of 57



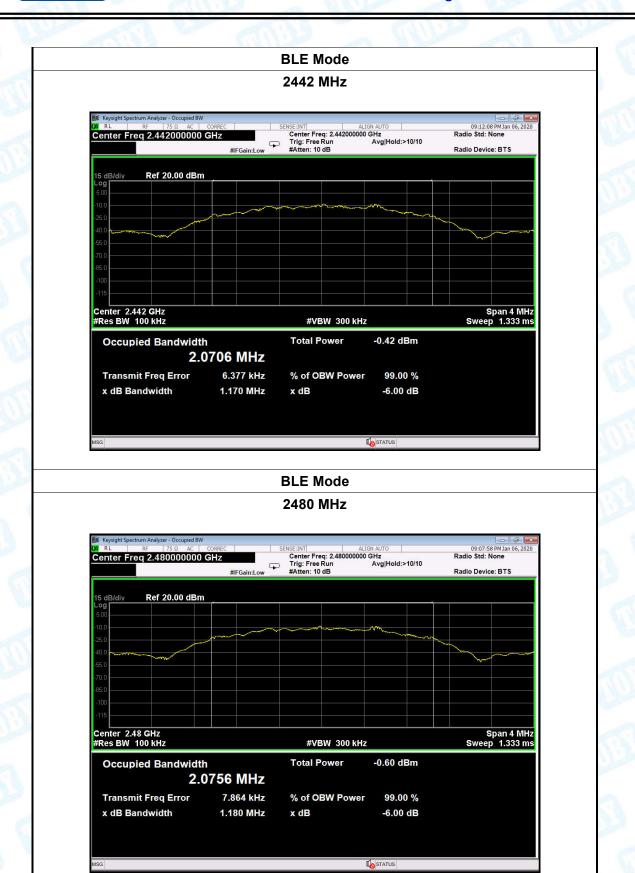


Page: 48 of 57

Temperature:	25℃	Relative Humidity:	55%	
Test Voltage:	DC 3.8V		A 1987	
Test Mode:	BLE TX Mode (2Mbps)	Will A V		
Channel freque	ency 6dB Bandwidt	h 99% Bandwidth	Limit	
(MHz)	(kHz)	(kHz)	(kHz)	
2402	1147	2066.8		
2442	1170	2070.6	>=500	
2480	1180	2075.6		
	BL	E Mode	,	
	24	02 MHz		
	n Analyzer - Occupied BW	W	09:10:15 PMJan 06, 2020	
		INT ALIGN AUTO		
LXI RL F			adio Std: None	



Page: 49 of 57





Center 2.402000 GHz #Res BW 3.0 MHz Report No.: TB-FCC171376

Page: 50 of 57

Span 10.00 MHz Sweep 1.333 ms (10001 pts)

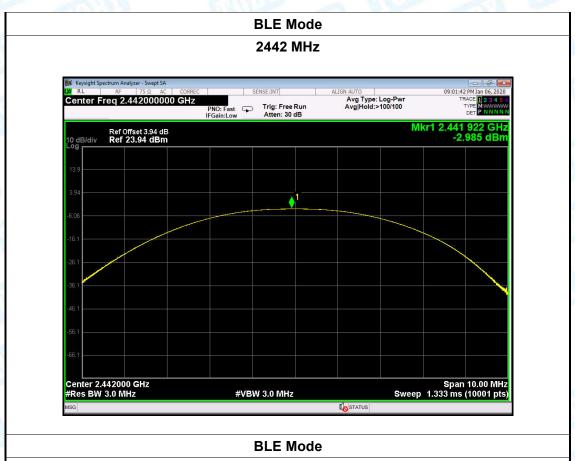
Attachment E-- Peak Output Power Test Data

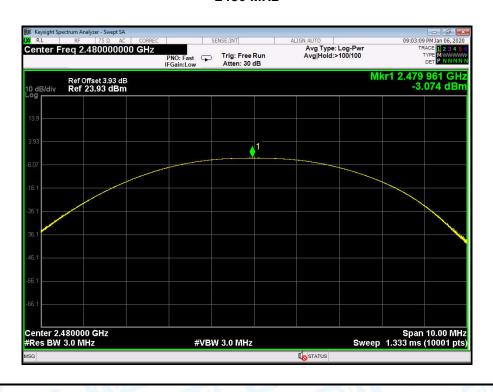
Temperature:	25℃		Relative Humidity	: 55%
Test Voltage:	DC 3.8V	The same of	TOTAL STATE OF THE PARTY OF THE	STATE OF
Test Mode:	BLE TX M	ode (1Mbps)	ULL AND	The same of
Channel frequer	ncy (MHz)	Test Re	esult (dBm)	Limit (dBm)
2402		-3	3.301	
2442		-2	2.985	30
2480		-3	3.074	
		BLI	Mode	
		240)2 MHz	
		PNO: Fast Irig	: Free Run Avg Hold:>100/100 n: 30 dB	TYPE MWWWWWW
Ref	Offset 3.89 dB		n: 30 dB	Mkr1 2.402 129 GHz
10 dB/div Ref	Offset 3.89 dB 23.89 dBm		n: 30 dB	
10 dB/div Ref	Offset 3.89 dB 23.89 dBm		n: 30 dB	Mkr1 2.402 129 GHz
10 dB/div Ref	Offset 3.89 dB 23.89 dBm		n: 30 dB	Mkr1 2.402 129 GHz
10 dB/div Ref	Offset 3.89 dB 23.89 dBm		n: 30 dB	Mkr1 2.402 129 GHz
10 dB/div Ref	Offset 3.89 dB 23.89 dBm		n: 30 dB	Mkr1 2.402 129 GHz
13.9 13.9 -6.11	Offset 3.89 dB 23.89 dBm		n: 30 dB	Mkr1 2.402 129 GHz
10 dB/div Ref	Offset 3.89 dB 23.89 dBm		n: 30 dB	Mkr1 2.402 129 GHz
13.9 13.9 16.11 1.16.1	Offset 3.89 dB 23.89 dBm		n: 30 dB	Mkr1 2.402 129 GHz
10 dB/div Ref	Offset 3.89 dB 23.89 dBm		n: 30 dB	Mkr1 2.402 129 G

#VBW 3.0 MHz



Page: 51 of 57





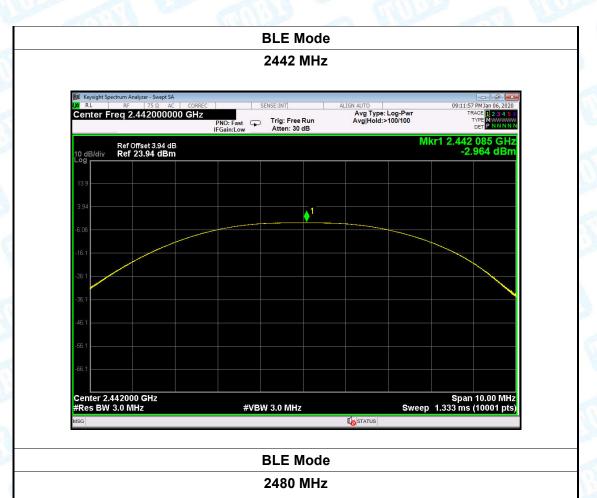


Page: 52 of 57

VOHACIE	DC 3.8V	N AV			
t Voltage:		1l - (ON 11)	31111	- CILL	1.00
t Mode:		lode(2Mbps)	1		
annel frequen	cy (MHz)	Test Res	sult (dBm)	Lim	it (dBm
2402		-3.	202		
2442		-2.	964		30
2480		-3.	047		
		BLE	Mode		
		2402	2 MHz		
		_			
Keysight Spectrum Ar					
Center Freq 2	75 Ω AC CORRE .402000000 GHz	EC SENSE:INT	ALIGN AUTO Avg Type: L ree Run Avg Hold:>1	og-Pwr	5 PM Jan 06, 2020 RACE 1 2 3 4 5 6 TYPE M WWWWW
-		PNO: Fast Trig: Fi IFGain:Low Atten:	30 dB	- Marie Control	DET P N N N N N
10 dB/div Ref	Offset 3.89 dB 23.89 dBm			Mkr1 2.401 -3	202 dBm
10 dB/div Ref	Offset 3.89 dB 23.89 dBm				
10 dB/div Ref	offset 3.89 dB 23.89 dBm				
10 dB/div Ref	offset 3.89 dB 23.89 dBm		1		
10 dB/div Ref	Offset 3.89 dB 23.89 dBm		1		
10 dB/div Ref	Offset 3.89 dB 23.89 dBm		1		
10 dB/div Ref	offset 3.89 dB 23.89 dBm		1		
10 dB/div Ref	offset 3.89 dB 23.89 dBm		1		
10 dB/div Ref 13.9 3.69 -6.11 -16.1 -36.1	offset 3.89 dB 23.89 dBm		1		
10 dB/div Ref 13.9 3.89 46.11 -46.1	offset 3.89 dB 23.89 dBm		1		
10 dB/div Ref 13.9 3.69 -6.11 -16.1 -36.1	offset 3.89 dB 23.89 dBm				
10 dB/div Ref 13.9 3.89 46.11 -46.1	Jiffset 3.89 dB 23.89 dBm		1		
10 dB/div Ref 13.9 3.89 -6.11 -16.1 -36.1 -46.1	23.89 dBm			-3	



Page: 53 of 57







Page: 54 of 57

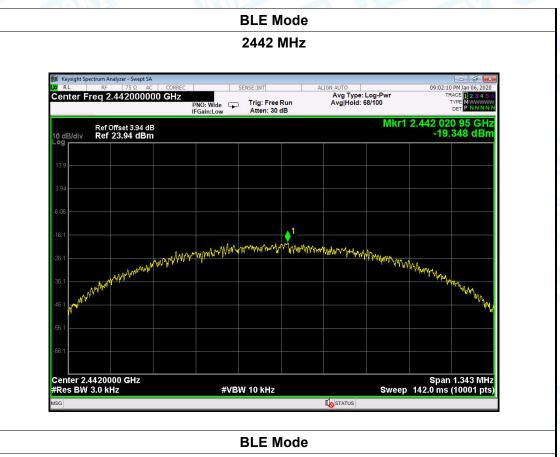
Attachment F-- Power Spectral Density Test Data

	Temperature:	25℃ Relati			lumidity:	55%	A MAIN
	Test Voltage:	DC 3.8V					
	Test Mode:	BLE TX N	Mode (1Mbps)	المانية	er v		
	Channel Frequency (MHz)		•		Lim	it	Result
					(dBm/3	(dBm/3kHz)	
	2402		-19.6	00			
	2442		-19.3	48	8		PASS
	2480		-19.3	54			
			BLE M	lode	•		





Page: 55 of 57





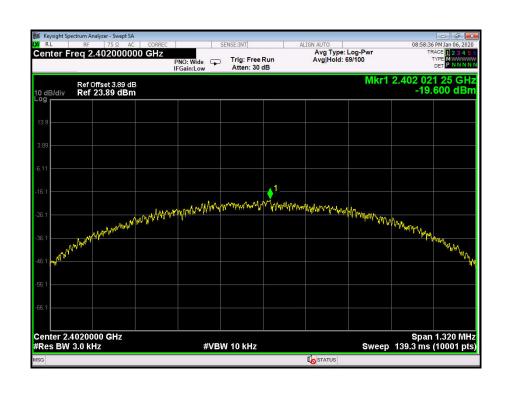


Page: 56 of 57

Temperature:	25 ℃	6	Relative H	lumidity:	55%	18	_
Test Voltage:	DC 3.8V		Marie Land			6	
Test Mode:	BLE TX N	Node (2Mbps)	- G1	1111	-	67	
Channel Freq	uency	Power	Density	Limi	it	_	

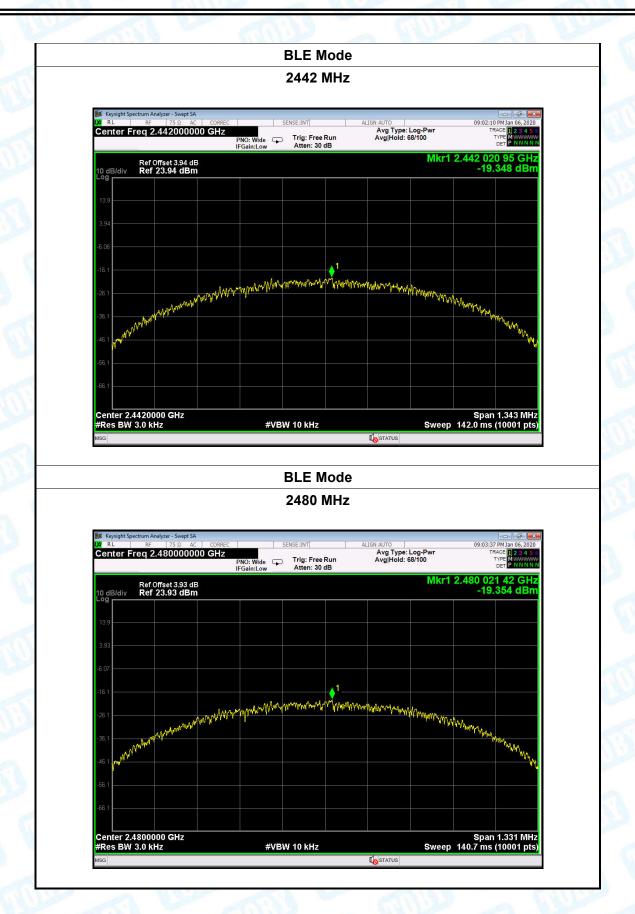
Channel Frequency	Power Density	Limit	Result	
(MHz)	(dBm/3kHz)	(dBm/3kHz)	Result	
2402	-19.600			
2442	-19.348	8	PASS	
2480	-19.354			

BLE Mode





Page: 57 of 57



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