

# FCC Radio Test Report FCC ID: XMF-MID1032

# **Original Grant**

Report No.	:	TB-FCC173943		
Applicant	:	Lightcomm Technology Co., Ltd.		
Equipment Under Test (EUT)				
EUT Name	:	TABLET		
Model No.	:	MID1032-MR		
Serial Model No.	:	DL1036		
Brand Name	:			
Sample ID	:	TBBJ-20200630-10-1#& TBBJ-20200630-10-2#		
Receipt Date	:	2020-07-02		
Test Date	:	2020-07-03 to 2020-07-29		
Issue Date	:	2020-07-30		
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		: Jack Deng		
Engineer Supervisor		: Jack Deng : INAN SU : fuy tai.		
Engineer Manager		: four dai. Ray Lai		

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.



# Contents

CON	TENTS	2
1.	GENERAL INFORMATION ABOUT EUT	5
	1.1 Client Information	5
	1.2 General Description of EUT (Equipment Under Test)	5
	1.3 Block Diagram Showing the Configuration of System Tested	
	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	
•	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	14
	6.1 Test Standard and Limit	14
	6.2 Test Setup	
	6.3 Test Procedure	
	6.4 Deviation From Test Standard	17
	6.5 EUT Operating Condition	
	6.6 Test Data	17
7.	RESTRICTED BANDS REQUIREMENT	18
	7.1 Test Standard and Limit	18
	7.2 Test Setup	18
	7.3 Test Procedure	18
	7.4 Deviation From Test Standard	19
	7.5 EUT Operating Condition	19
	7.6 Test Data	19
8.	BANDWIDTH TEST	20
	8.1 Test Standard and Limit	20
	8.2 Test Setup	20
	8.3 Test Procedure	20
	8.4 Deviation From Test Standard	20
	8.5 EUT Operating Condition	20



	8.6 Test Data	20
9.	PEAK OUTPUT POWER TEST	21
	9.1 Test Standard and Limit	21
	9.2 Test Setup	21
	9.3 Test Procedure	21
	9.4 Deviation From Test Standard	21
	9.5 EUT Operating Condition	21
	9.6 Test Data	21
10.	POWER SPECTRAL DENSITY TEST	22
	10.1 Test Standard and Limit	22
	10.2 Test Setup	22
	10.3 Test Procedure	22
	10.4 Deviation From Test Standard	22
	10.5 EUT Operating Condition	22
	10.6 Test Data	22
11.	ANTENNA REQUIREMENT	23
	11.1 Standard Requirement	23
	11.2 Deviation From Test Standard	23
	11.3 Antenna Connected Construction	23
	11.4 Result	23
ATTA	CHMENT A CONDUCTED EMISSION TEST DATA	24
ATTA	CHMENT B RADIATED EMISSION TEST DATA	26
ΑΤΤΑ	CHMENT C RESTRICTED BANDS REQUIREMENT AND BAND EDGE TEST DA	ATA
	·	
ΑΤΤΑ	CHMENT D BANDWIDTH TEST DATA	44
	CHMENT E PEAK OUTPUT POWER TEST DATA	
ΑΤΤΑ	CHMENT F POWER SPECTRAL DENSITY TEST DATA	52



# **Revision History**

Report No.	Version	Description	Issued Date
TB-FCC173943	Rev.01	Initial issue of report	2020-07-30



# 1. General Information about EUT

## 1.1 Client Information

Applicant	:	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	:	TABLET			
Models No.	:	MID1032-MR, DL1036			
Model Different	:	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 4.1(BLE): 2402MHz~2480MHz		
		Number of Channel:	Bluetooth 4.1(BLE): 40 channels see note(3)		
Product		RF Output Power:	BLE:-2.548dBm (Max)		
Description	:	Antenna Gain:	1.15dBi FPC Antenna		
		Modulation Type:	GFSK		
		Bit Rate of Transmitter:	1/2Mbps(GFSK)		
Power Rating	:	Adapter (TEKA012-052000UK) Input: AC 100-240V, 50/60Hz Output: DC 5V 2A DC 3.8V by 5000mAh Li-ion battery			
Software Version	:	Android 10	, , , , , , , , , , , , , , , , , , , ,		
Hardware Version	:	MID1032MR_MT8168_LPDDR4_EMMC_V1_0			
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.

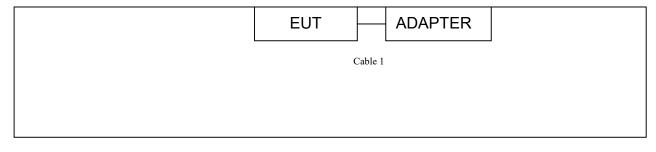


- (1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- (2) Antenna information provided by the applicant.
- (3) Channel List:

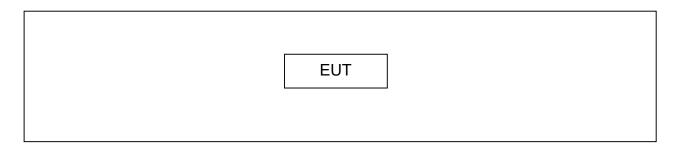
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	14	2430	28	2458
01	2404	15	2432	29	2460
02	2406	16	2434	30	2462
03	2408	17	2436	31	2464
04	2410	18	2438	32	2466
05	2412	19	2440	33	2468
06	2414	20	2442	34	2470
07	2416	21	2444	35	2472
08	2418	22	2446	36	2474
09	2420	23	2448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





## 1.4 Description of Support Units

Equipment Information						
Name	Model	FCC ID/VOC	Manufacturer	Used "√"		
Adapter	TEKA012-052000UK					
	Cable Information					
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.



## 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		LaunchEngmoo	de
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 <sub>Lab</sub> )	
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	$\pm$ 4.50 dB	
Radiated Emission	Level Accuracy: Above 1000MHz	±4.20 dB	



### 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)

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



# 2. Test Summary

FCC Part 15 Subpart C(15.247)/RSS 247 Issue 2					
Standard Section		Teatline			<b>D</b>
FCC	IC	Test Item	Test Sample(s)	Judgment	Remark
15.203		Antenna Requirement	TBBJ-20200630-10-2#	PASS	N/A
15.207(a)	RSS-GEN 7.2.4	Conducted Emission	TBBJ-20200630-10-1#	PASS	N/A
15.205&15.247(d)	RSS-GEN 7.2.2	Band-Edge & Unwanted Emissions into Restricted Frequency	TBBJ-20200630-10-2#	PASS	N/A
15.247(a)(2)	RSS 247 5.2 (1)	6dB Bandwidth	TBBJ-20200630-10-2#	PASS	N/A
15.247(b)(3)	RSS 247 5.4 (4)	Conducted Max Output Power	TBBJ-20200630-10-2#	PASS	N/A
15.247(e)	RSS 247 5.2 (2)	Power Spectral Density	TBBJ-20200630-10-2#	PASS	N/A
15.205, 15.209&15.247(d)	RSS 247 5.5	Transmitter Radiated Spurious &Unwanted Emissions into Restricted Frequency	TBBJ-20200630-10-1# TBBJ-20200630-10-2#	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



# 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. 06, 2020	Jul. 05, 2021
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 06, 2020	Jul. 05, 2021
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 06, 2020	Jul. 05, 2021
LISN	Rohde & Schwarz	ENV216	101131	Jul. 06, 2020	Jul. 05, 2021
Radiation Emission T	est	-	-	-	-
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 06, 2020	Jul. 05, 2021
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 06, 2020	Jul. 05, 2021
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jul. 06, 2020	Jul. 05, 2021
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar.01, 2020	Feb. 28, 2021
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.01, 2020	Feb. 28, 2021
Horn Antenna	ETS-LINDGREN	BBHA 9170	BBHA9170582	Aug.07, 2019	Aug. 06, 2020
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 06, 2020	Jul. 05, 2021
Pre-amplifier	Sonoma	310N	185903	Mar.01, 2020	Feb. 28, 2021
Pre-amplifier	HP	8449B	3008A00849	Mar.01, 2020	Feb. 28, 2021
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar.01, 2020	Feb. 28, 2021
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. 06, 2020	Jul. 05, 2021
Spectrum Analyzer	Rohde & Schwarz	ESCI	100010/007	Jul. 06, 2020	Jul. 05, 2021
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	17100015SNO26	Sep. 16, 2019	Sep. 15, 2020
PE Dowor Sensor	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO29	Sep. 16, 2019	Sep. 15, 2020
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO31	Sep. 16, 2019	Sep. 15, 2020
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO33	Sep. 16, 2019	Sep. 15, 2020



# 5. Conducted Emission Test

- 5.1 Test Standard and Limit
  - 5.1.1Test Standard FCC Part 15.207
  - 5.1.2 Test Limit

Fraguanay	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	

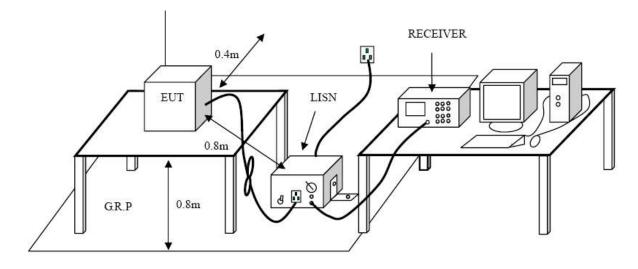
Notes:

(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





### 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.



# 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	

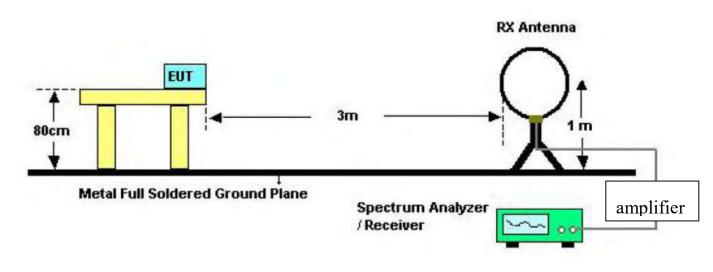
Note:

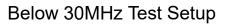
(1) The tighter limit applies at the band edges.

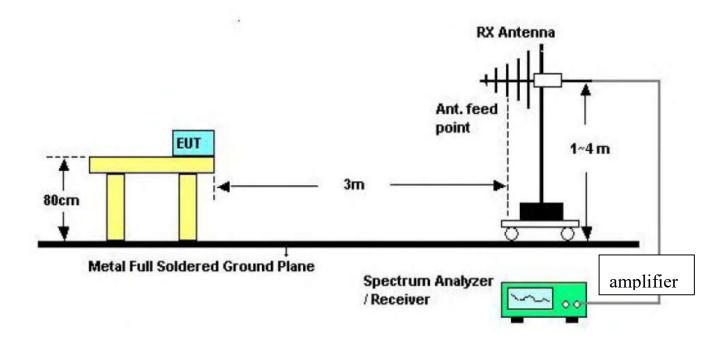
(2) Emission Level (dBuV/m)=20log Emission Level (uV/m)



# 6.2 Test Setup

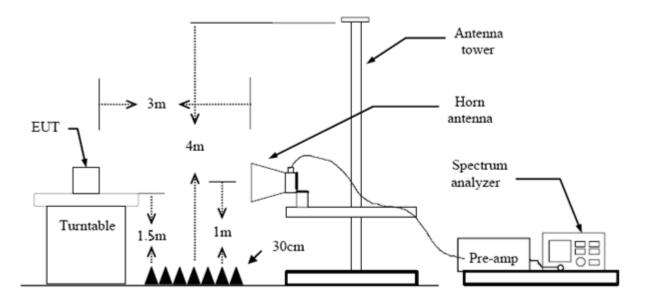






Below 1000MHz Test Setup





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.



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.

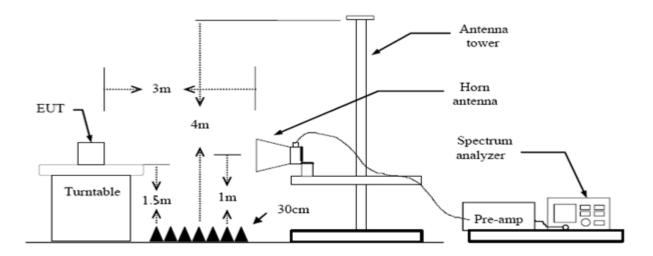


# 7. Restricted Bands Requirement

- 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



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.

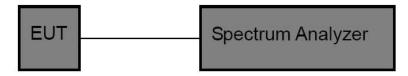


# 8. Bandwidth Test

- 8.1 Test Standard and Limit
  - 8.1.1 Test Standard
    - FCC Part 15.247 (a)(2)
  - 8.1.2 Test Limit

FCC 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.

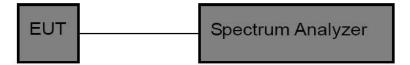


# 9. Peak Output Power Test

- 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.



# **10.** Power Spectral Density Test

### 10.1 Test Standard and Limit

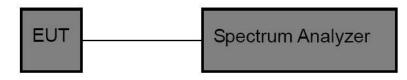
10.1.1 Test Standard

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.



# 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 1.15 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
Unique connector antenna
Professional installation antenna



# Attachment A-- Conducted Emission Test Data

perature:	<b>25</b> ℃			Relative H	umidity	: 55%	D
t Voltage:	AC 12	0V 60Hz					
minal:	Line						
t Mode:	Mode	1					
nark:	Only v	vorse case	is reported	ł			
).0 dBuV							QP:
. MM	Mamm		whole and the state of the stat	× vorget staget strong			
0.150	0.5	Reading	(MHz) Correct	Measure-		Over	
5 <b></b>	0.5 Freq. MHz			Measure- ment dBuV	.*.22.5	Over	Detector
0.150 No. Mk.	Freq.	Reading Level	Correct Factor	ment	Limit dBuV		
No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	ment dBuV	Limit dBuV 64.96	dB	Detector
No. Mk. 1 2	Freq. MHz 0.1700	Reading Level dBuV 39.68	Correct Factor dB 9.79	ment dBuV 49.47	Limit dBuV 64.96 54.96	dB -15.49	Detector
No. Mk. 1 2 3	Freq. MHz 0.1700 0.1700	Reading Level dBuV 39.68 24.82	Correct Factor dB 9.79 9.79	ment dBuV 49.47 34.61	Limit dBuV 64.96 54.96	dB -15.49 -20.35	Detector QP AVG
No. Mk. 1 2 3 4 *	Freq. MHz 0.1700 0.1700 0.6500	Reading Level dBuV 39.68 24.82 32.85	Correct Factor dB 9.79 9.79 9.88	ment dBuV 49.47 34.61 42.73	Limit dBuV 64.96 54.96 56.00 46.00	dB -15.49 -20.35 -13.27	Detector QP AVG QP
No. Mk. 1 2 3 4 * 5	Freq. MHz 0.1700 0.1700 0.6500 0.6500	Reading Level dBuV 39.68 24.82 32.85 28.03	Correct Factor dB 9.79 9.79 9.88 9.88	ment dBuV 49.47 34.61 42.73 37.91	Limit dBuV 64.96 54.96 56.00 46.00 56.00	dB -15.49 -20.35 -13.27 -8.09	Detector QP AVG QP AVG
No. Mk. 1 2 3 4 * 5 6	Freq. MHz 0.1700 0.1700 0.6500 0.6500 2.7980	Reading Level dBuV 39.68 24.82 32.85 28.03 20.65	Correct Factor dB 9.79 9.79 9.88 9.88 9.88	ment dBuV 49.47 34.61 42.73 37.91 30.49	Limit dBuV 64.96 54.96 56.00 46.00 46.00	dB -15.49 -20.35 -13.27 -8.09 -25.51	Detector QP AVG QP AVG QP
No. Mk. 1 2 3 4 * 5 6 7 1	Freq. MHz 0.1700 0.6500 0.6500 2.7980 2.7980	Reading Level dBuV 39.68 24.82 32.85 28.03 20.65 11.55	Correct Factor dB 9.79 9.79 9.88 9.88 9.88 9.84 9.84	ment dBuV 49.47 34.61 42.73 37.91 30.49 21.39	Limit dBuV 64.96 54.96 56.00 46.00 56.00 46.00 60.00	dB -15.49 -20.35 -13.27 -8.09 -25.51 -24.61	Detector QP AVG QP AVG QP AVG
No. Mk. 1 2 3 4 * 5 6 7 1 8 1	Freq. MHz 0.1700 0.6500 0.6500 2.7980 2.7980 2.1459	Reading Level dBuV 39.68 24.82 32.85 28.03 20.65 11.55 17.90	Correct Factor dB 9.79 9.79 9.88 9.88 9.88 9.84 9.84 9.84	ment dBuV 49.47 34.61 42.73 37.91 30.49 21.39 27.72	Limit dBuV 64.96 54.96 56.00 46.00 56.00 46.00 60.00 50.00	dB -15.49 -20.35 -13.27 -8.09 -25.51 -24.61 -32.28	Detector QP AVG QP AVG QP AVG QP
No. Mk. 1 2 3 4 * 5 6 7 1 8 1	Freq. MHz 0.1700 0.6500 0.6500 2.7980 2.7980 2.1459 2.1459	Reading Level dBuV 39.68 24.82 32.85 28.03 20.65 11.55 17.90 9.39 21.81	Correct Factor dB 9.79 9.79 9.88 9.88 9.88 9.84 9.84 9.82 9.82 9.82	ment dBuV 49.47 34.61 42.73 37.91 30.49 21.39 27.72 19.21	Limit dBuV 64.96 54.96 56.00 46.00 56.00 46.00 60.00 50.00	dB -15.49 -20.35 -13.27 -8.09 -25.51 -24.61 -32.28 -30.79 -28.37	Detector QP AVG QP AVG QP AVG QP AVG QP
No. Mk. 1 2 3 4 * 5 6 7 1 8 1 9 1	Freq. MHz 0.1700 0.1700 0.6500 0.6500 2.7980 2.7980 2.1459 2.1459 4.0180	Reading Level dBuV 39.68 24.82 32.85 28.03 20.65 11.55 17.90 9.39	Correct Factor dB 9.79 9.88 9.88 9.88 9.84 9.84 9.82 9.82	ment dBuV 49.47 34.61 42.73 37.91 30.49 21.39 27.72 19.21 31.63	Limit dBuV 64.96 54.96 56.00 46.00 56.00 60.00 50.00 50.00	dB -15.49 -20.35 -13.27 -8.09 -25.51 -24.61 -24.61 -32.28 -30.79	Detector QP AVG QP AVG QP AVG QP AVG



Temperature:	<b>25</b> ℃			Relative Hu	midity:	55%	
Test Voltage:	AC 1	20V 60Hz					
Terminal:	Neut	ral					
Test Mode:	Mode	e 1					
Remark:	Only	worse case	is reported				
-10		MAMMA Manage				QP: AVG:	peak
0.150	0.5	D	(MHz)	5			30.000
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
à.	MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	0.1700	37.65	9.62	47.27	64.96	-17.69	QP
2	0.1700	22.98	9.62	32.60	54.96	-22.36	AVG
3	0.9380	29.87	9.64	39.51	56.00	-16.49	QP
4 *	0.9380	20.58	9.64	30.22	46.00	-15.78	AVG
5	2.8140	17.86	9.86	27.72	56.00	-28.28	QP
6	2.8140	10.65	9.86	20.51	46.00	-25.49	AVG
7 1	2.2060	19.94	9.86	29.80	60.00	-30.20	QP
8 1	2.2060	8.68	9.86	18.54	50.00	-31.46	AVG
9 1	4.0860	24.82	9.86	34.68	60.00	-25.32	QP
10 1	4.0860	11.81	9.86	21.67	50.00	-28.33	AVG
11 1	7.8460	21.55	9.72	31.27	60.00	-28.73	QP
12 1	7.8460	10.76	9.72	20.48	50.00	-29.52	AVG
Emission Leve	el= Read	Level+ Corr	ect Factor				



# 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:	<b>25</b> ℃		F	Relative Hun	nidity:	55%	
est Voltage:	AC 120\	/ 60Hz					
nt. Pol.	Horizont	tal					
est Mode:	Mode 2	2402MHz (´	1Mbps)				
emark:	Only wo	rse case is	reported				
80.0 dBuV/m							
30 30	mand		3 M M	Jan And	(RF)FCC 15C	3M Radiation Margin -6 d	B
-20			7.11.3				
-20 30.000 40 50	0 60 70	80	(MHz)	300	400 500	600 700	1000.000
A. 347-62. 1	0 60 70 Freq.	80 Reading Level	(MHz) Correct Factor	300 Measure- ment	400 500 Limit	600 700 Over	1000.000
30.000 40 5		Reading	Correct	Measure-		. ARRANA GARINAN	1000.000 Detector
30.000 40 5	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
30.000 40 5 No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
30.000 40 50 No. Mk. 1 8 2 14	Freq. MHz 2.9385	Reading Level dBuV 49.60	Correct Factor dB/m -22.29	Measure- ment dBuV/m 27.31	Limit dBuV/m 40.00	Over dB -12.69	Detector
30.000 40 50 No. Mk. 1 8 2 14 3 * 18	Freq. MHz 2.9385 14.3348	Reading Level dBuV 49.60 54.59	Correct Factor dB/m -22.29 -21.93	Measure- ment dBuV/m 27.31 32.66	Limit dBuV/m 40.00 43.50	Over dB -12.69 -10.84	Detector QP QP
30.000         40         50           No.         Mk.           1         8           2         14           3         *           4         28	Freq. MHz 2.9385 14.3348 35.7882	Reading Level dBuV 49.60 54.59 54.94	Correct Factor dB/m -22.29 -21.93 -19.94	Measure- ment dBuV/m 27.31 32.66 35.00	Limit dBuV/m 40.00 43.50 43.50	Over dB -12.69 -10.84 -8.50	Detector QP QP QP

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



No. Mk.         Freq.         Reading Level         Correct Factor         Measure- ment         Limit         Over           MHz         dBuV         dB/m         dBuV/m         dBuV/m         dB         Dete           1         30.8535         42.82         -13.58         29.24         40.00         -10.76         Correct           2         48.6719         50.07         -22.62         27.45         40.00         -12.55         Correct           3         82.3588         52.29         -22.32         29.97         40.00         -10.03         Correct           4         144.3348         57.48         -21.93         35.55         43.50         -7.95         Correct           5         *         185.7882         57.19         -19.94         37.25         43.50         -6.25         Correct	emperature:	<b>25</b> ℃		R	elative Humi	dity: 5	5%	
Test Mode:         Mode 2 2402MHz (1Mbps)           Remark:         Only worse case is reported           00 dBuV/m         (InffCC 15C 34 Radiation Margin 6 dB           0         dBuV         (InffCC 15C 34 Radiation Margin 6 dB           0         dBuV         (InffCC 15C 34 Radiation Margin 6 dB           0         dBuV         dBuV         Generation Margin 6 dB           0         0         0         0         0         0         0           20         2         2         2         2         2         300         400         500         60         70         80         (MHz)         300         400         500         600         700         1000           No.         Mk.         Freq.         Reading Level         Correct Factor         Measure- ment         Limit         Over           MHz         dBuV         dB/M         dBuV/m         dBuV/m         dB         Detect           1         30.8535         42.82         -13.58         29.24         40.00         -10.76         Colored           2         48.6719         50.07         -22.62         27.45         40.00         -12.55         Colored         Colored         Colored <t< th=""><th>est Voltage:</th><th>AC 120</th><th>)V 60Hz</th><th></th><th></th><th></th><th></th><th></th></t<>	est Voltage:	AC 120	)V 60Hz					
Remark:         Only worse case is reported           80.0         dBWV/m           0         dBWV           0         dBWV/m           0         dBWV           0         dBWV/m           0         dBWV/m           0         dBWV/m	nt. Pol.	Vertica	l					
80.0       dBuV/m         4       144.3348         5       *         1       30.8578         2       42.2         30       40.0         4       144.3348         57.19       -19.94         37.25       43.50         6       -7.95         7.0       19.07         82.0       19.07         10.00       40.00         10.00       50.07         11.30.8535       42.82         12.30.8535       42.82         13.0.8535       42.82         14.30.8535       57.19         19.00       -10.76         10.00       -10.76         10.00       -10.76         10.00       -10.76         10.00       -10.76         10.00       -10.76         10.00       -10.76         10.00       -10.76         10.00       -10.76         10.00       -10.76         10.00       -10.76         10.00       -10.76         10.00       -10.76         10.00       -10.76         10.00       -10.76	est Mode:	Mode 2	2 2402MHz	(1Mbps)				
No.         Mk.         Freq.         Reading Level         Correct Factor         Measure- ment         Limit         Over           MHz         dBuV         dB/m         dBuV/m         dBuV/m<	emark:	Only w	orse case i	s reported				
Margin 6 dB       Margin 6 dB         30       2       3       4       5       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6       6 </th <th>80.0 dBuV/m</th> <th>1 1 1</th> <th></th> <th></th> <th>1</th> <th></th> <th></th> <th></th>	80.0 dBuV/m	1 1 1			1			
No. Mk.       Freq.       Reading Level       Correct Factor       Measurement       Limit       Over         MHz       dBuV       dB/m       dBuV/m       dBuV/m       dB       Dete         1       30.8535       42.82       -13.58       29.24       40.00       -10.76       G         2       48.6719       50.07       -22.62       27.45       40.00       -10.76       G         3       82.3588       52.29       -22.32       29.97       40.00       -10.03       G         4       144.3348       57.48       -21.93       35.55       43.50       -7.95       G         5       *       185.7882       57.19       -19.94       37.25       43.50       -6.25       G								
No. Mk.       Freq.       Reading Level       Correct Factor       Measurement       Limit       Over         MHz       dBuV       dB/m       dBuV/m       dBuV/m       dB       Dete         1       30.8535       42.82       -13.58       29.24       40.00       -10.76       G         2       48.6719       50.07       -22.62       27.45       40.00       -10.76       G         3       82.3588       52.29       -22.32       29.97       40.00       -10.03       G         4       144.3348       57.48       -21.93       35.55       43.50       -7.95       G         5       *       185.7882       57.19       -19.94       37.25       43.50       -6.25       G								
No. Mk.       Freq.       Reading Level       Correct Factor       Measure-ment       Limit       Over         MHz       dBuV       dB/m       dBuV/m       dBuV/m       dBuV/m       dB       Detect         1       30.8535       42.82       -13.58       29.24       40.00       -10.76       0         2       48.6719       50.07       -22.62       27.45       40.00       -10.76       0         3       82.3588       52.29       -22.32       29.97       40.00       -10.03       0         4       144.3348       57.48       -21.93       35.55       43.50       -7.95       0         5       *       185.7882       57.19       -19.94       37.25       43.50       -6.25       0						(RF)FCC 15		вГ
30       2       3       4       4       4       4       5       60       70       80       (MHz)       300       400       500       600       70       1000         No. Mk.       Freq.       Reading Level       Correct Factor       Measure-ment       Limit       Over       0         MHz       dBuV       dB/m       dBuV/m       dBuV/m       dB       Dete         1       30.8535       42.82       -13.58       29.24       40.00       -10.76       0         2       48.6719       50.07       -22.62       27.45       40.00       -10.03       0         3       82.3588       52.29       -22.32       29.97       40.00       -10.03       0         4       144.3348       57.48       -21.93       35.55       43.50       -7.95       0         5       *       185.7882       57.19       -19.94       37.25       43.50       -6.25       0			· · · · ·	F				
Main       Reading       Correct       Measure-ment       Limit       Over         No. Mk.       Freq.       Reading       Correct       Measure-ment       Limit       Over         MHz       dBuV       dB/m       dBuV/m       dBuV/m       dB       Dete         1       30.8535       42.82       -13.58       29.24       40.00       -10.76       G         2       48.6719       50.07       -22.62       27.45       40.00       -10.76       G         3       82.3588       52.29       -22.32       29.97       40.00       -10.03       G         4       144.3348       57.48       -21.93       35.55       43.50       -7.95       G         5       *       185.7882       57.19       -19.94       37.25       43.50       -6.25       G				m.M			c	
Addition       Addit       Addit       Addit	30 Xum v	2	Ň	for an		1 - 10	~	mint
30.000       40       50       60       70       80       (MHz)       300       400       500       600       700       1000         No.<		My .	N L W	(	Mum hand	whenter		_
30.000       40       50       60       70       80       (MHz)       300       400       500       600       700       1000         No.<		hun	Mund		2000000 C3			
30.000       40       50       60       70       80       (MHz)       300       400       500       600       700       1000         No.<								
30.000       40       50       60       70       80       (MHz)       300       400       500       600       700       1000         No.<								
No. Mk.         Freq.         Reading Level         Correct Factor         Measure- ment         Limit         Over           MHz         dBuV         dB/m         dBuV/m         dBuV/m         dB         Dete           1         30.8535         42.82         -13.58         29.24         40.00         -10.76         Correct           2         48.6719         50.07         -22.62         27.45         40.00         -12.55         Correct           3         82.3588         52.29         -22.32         29.97         40.00         -10.03         Correct           4         144.3348         57.48         -21.93         35.55         43.50         -7.95         Correct           5         *         185.7882         57.19         -19.94         37.25         43.50         -6.25         Correct	-20							
No. Mk.         Freq.         Level         Factor         ment         Limit         Over           MHz         dBuV         dB/m         dBuV/m         dBuV/m         dBuV/m         dB         Dete           1         30.8535         42.82         -13.58         29.24         40.00         -10.76         G           2         48.6719         50.07         -22.62         27.45         40.00         -12.55         G           3         82.3588         52.29         -22.32         29.97         40.00         -10.03         G           4         144.3348         57.48         -21.93         35.55         43.50         -7.95         G           5         *         185.7882         57.19         -19.94         37.25         43.50         -6.25         G	30.000 40	50 60 70	0 80	(MHz)	300	400 50	0 600 700	1000.000
No. Mk.         Freq.         Level         Factor         ment         Limit         Over           MHz         dBuV         dB/m         dBuV/m         dBuV/m         dBuV/m         dB         Dete           1         30.8535         42.82         -13.58         29.24         40.00         -10.76         G           2         48.6719         50.07         -22.62         27.45         40.00         -12.55         G           3         82.3588         52.29         -22.32         29.97         40.00         -10.03         G           4         144.3348         57.48         -21.93         35.55         43.50         -7.95         G           5         *         185.7882         57.19         -19.94         37.25         43.50         -6.25         G			Reading	Correct	Measure-			
1       30.8535       42.82       -13.58       29.24       40.00       -10.76       0         2       48.6719       50.07       -22.62       27.45       40.00       -12.55       0         3       82.3588       52.29       -22.32       29.97       40.00       -10.03       0         4       144.3348       57.48       -21.93       35.55       43.50       -7.95       0         5       *       185.7882       57.19       -19.94       37.25       43.50       -6.25       0	No. Mk. F	req.				Limit	Over	
2       48.6719       50.07       -22.62       27.45       40.00       -12.55       G         3       82.3588       52.29       -22.32       29.97       40.00       -10.03       G         4       144.3348       57.48       -21.93       35.55       43.50       -7.95       G         5       *       185.7882       57.19       -19.94       37.25       43.50       -6.25       G	1	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detecto
3       82.3588       52.29       -22.32       29.97       40.00       -10.03       0         4       144.3348       57.48       -21.93       35.55       43.50       -7.95       0         5       *       185.7882       57.19       -19.94       37.25       43.50       -6.25       0	I 30.	8535	42.82	-13.58	29.24	40.00	-10.76	QP
4       144.3348       57.48       -21.93       35.55       43.50       -7.95       G         5       *       185.7882       57.19       -19.94       37.25       43.50       -6.25       G	2 48.	6719	50.07	-22.62	27.45	40.00	-12.55	QP
5 * 185.7882 57.19 -19.94 37.25 43.50 -6.25 G	82.	3588	52.29	-22.32	29.97	40.00	-10.03	QP
	144	.3348	57.48	-21.93	35.55	43.50	-7.95	QP
6 684.7454 35.64 -7.14 28.50 46.00 -17.50 C	5 * 185	.7882	57.19	-19.94	37.25	43.50	-6.25	QP
	684	.7454	35.64	-7.14	28.50	46.00	-17.50	QP



#### Above 1GHz

empe	ratur	e:	<b>25°</b> ℃			Relative Hu	umidity:	55%	
est Vo	oltage	<b>ə</b> :	DC 3	.8V					
nt. Po	ol.		Horiz	ontal					
est M	ode:		BLE	Mode TX 24	02 MHz (1	Mbps)			
emar	k:			eport for the cribed limit.	emission w	/hich more th	an 20 dB I	pelow the	
No.	Mk.	Fre	eq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
No.	Mk.	·	eq. Iz				Limit dBuV/m	Over dB	Detector
No.	Mk.	·	Hz	Level	Factor	ment	2018 2200	States V	Detector peak

Emission	Levei=	Read	Level+	Correct	Factor

mpera	ature	):	<b>25</b> ℃		F	Relative Hum	nidity:	55%	
st Vol	tage	:	DC 3.8	8V					
nt. Pol	•		Vertica	al					
st Mo	de:		BLE M	/lode TX 240	)2 MHz (1N	lbps)			
mark	:		No rep	port for the e	mission w	nich more tha	an 20 dB	below the	
			prescr	ribed limit.					
No.	Mk.	Fi	prescr eq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
No.	Mk.	5 5535 C2145	·	Reading			Limit dBuV/n		Detector
No.	Mk.	М	eq.	Reading Level	Factor	ment		n dB	Detector



empera	ature	:	<b>25</b> ℃		F	Relative Humi	idity: 5	5%	
est Vol	tage:	:	DC 3.8	3V			H		
nt. Pol			Horizo	ntal					
est Mo	de:		BLE M	lode TX 2442	2 MHz (1Mb	ops)			
emark	:		•	ort for the er ibed limit.	nission whi	ch more than	20 dB be	low the	
No.	Mk.	F	req.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
No.	Mk.	3 1.85.5 690	req. IHz			85	Limit dBuV/m		Detec
No. 1	Mk.	M		Level	Factor	ment		dB	Detec

empe	ratur	e:	<b>25</b> ℃			Relative Hu	umidity:	55%	
est Vo	oltag	e:	DC 3	8.8V		I		1	
nt. Po	ol.		Verti	cal					
est Mode:		BLE	Mode TX 24	42 MHz (1	Mbps)				
lemar	k:		No re	eport for the	emission w	hich more th	an 20 dB l	below the	
			preso	cribed limit.					
No.	Mk.	Fre	preso	Reading Level	Correct Factor	Measure- ment	Limit	Over	
No.	Mk.	Fre	eq.	Reading			Limit dBuV/m	Over dB	Detector
No.	Mk.		eq. Iz	Reading Level	Factor	ment	EXAMPLE AND AND A	Construction Provide	Detector



empe	eratur	e:	<b>25°</b> ℃			Relative Hu	midity:	55%	
est V	/oltage	e:	DC 3	.8V					
nt. P	ol.		Horiz	ontal					
est N	st Mode:		BLE Mode TX 2480 MHz (1Mbps)						
lema	rk:			eport for the cribed limit.	emission w	hich more tha	an 20 dB k	below the	
No	. Mk.	Fr	eq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
No	. Mk.	Fre	2				Limit dBuV/m	Over dB	Detector
No 1	. Mk.		Hz	Level	Factor	ment	-77425250070	1000	Detector peak

empe	ratur	e:	<b>25</b> ℃			Relative Hu	midity:	55%	
est Vo	oltage	<del>)</del> :	DC 3	.8V	L. L				
nt. Po	ol.		Vertic	al					
est M	ode:		BLE N	Mode TX 24	80 MHz (1N	Mbps)			
emar	k:		No re	port for the	emission w	hich more tha	an 20 dB b	pelow the	
			presc	ribed limit.					
No.	. Mk	. Fr	presc eq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
No.	. Mk	SU 50 10		Reading			Limit dBuV/m	Over dB	Detector
No. 1	. Mk	SU 50 10	eq. Hz	Reading Level	Factor	ment		0.000	Detecto



empe	ratur	e:	<b>25°</b> ℃			Relative Hu	imidity:	55%	
est Vo	ltage	<b>:</b>	DC 3	.8V		L			
nt. Po	ol.		Horiz	ontal					
est Mo	ode:		BLE	Mode TX 24	02 MHz (2	Mbps)			
emarl	k:			port for the cribed limit.	emission w	which more the	an 20 dB t	pelow the	
No.	Mk.	Fr	eq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
No.	Mk.		eq. Hz				Limit dBuV/m	Over dB	Detector
No. 1			Hz	Level	Factor	ment	<5+89/20#89	224322242	Detector peak

Femperature: Fest Voltage:		<b>25</b> ℃			<b>Relative Hum</b>	nidity:	55%			
est Vo	ltage	):	DC 3	.8V						
nt. Po	ol.		Vertic	Vertical BLE Mode TX 2402 MHz (2Mbps)						
est Mo	ode:		BLE I							
emarl	k:			port for the c ribed limit.	emission v	vhich more tha	an 20 dB	below the		
Nie	Mk.	Fr	eq.	Reading Level	Correct Factor		Limit	Over		
INO.			ey.	Level	i dotoi	monte				
INO.		22 0	Hz	dBuV	dB/m	dBuV/m	dBuV/n	111200-005	Detecto	
1		М	NG810.43	1277 8323 (37.84) 1776 - 1977	THE PROPERTY.			n <mark>d</mark> B	Detector peak	



Temperature:		25°CRelative Humidity:55%								
est Vo	oltage	e:	DC 3.8V Horizontal							
nt. Po	ol.									
est M	ode:		BLE	Mode TX 24	42 MHz (2	Mbps)				
emar	k:			No report for the emission which more than 20 dB below the prescribed limit.						
No.	Mk.	Fre	eq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
No.	Mk.	Fre	83	-			Limit dBuV/m	Over dB	Detector	
No. 1	Mk.		-Iz	Level	Factor	ment		19292193	Detector peak	

emperation	atur	e:	<b>25</b> ℃			Relative Hu	umidity:	55%	
est Vol	Itage	<b>):</b>	DC 3	.8V				I	
nt. Pol	I.		Vertical						
est Mode: BLE Mode TX 2442 MHz (2Mbps)									
emark	(;			port for the	emission w	hich more th	an zu ub i	selow the	
			presc	ribed limit.					
No.	Mk.	. Fi	presc eq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
No.	Mk.	23 - <b>9</b> 230		Reading	a construction of the second of		Limit dBuV/m	Over dB	Detector
No. 1	Mk.	M	eq.	Reading Level	Factor	ment			Detector



Temperature:		<b>)</b> :	<b>25</b> ℃			<b>Relative Hu</b>	midity:	55%		
est Vo	Itage	:	DC 3	.8V						
nt. Po	I.		Horiz	ontal						
est Mo	ode:		BLE I	BLE Mode TX 2480 MHz (2Mbps)						
emarl	<b>c</b> :			port for the e ribed limit.	emission w	hich more tha	an 20 dB b	elow the		
No.	Mk.	Fi	req.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		M	Hz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detecto	
1		4961	.464	42.30	14.17	56.47	74.00	-17.53	peak	

Temperature:		<b>25</b> ℃			Relative Hu	imidity:	55%			
Test Vo	Itage	):	DC 3	.8V				I		
Ant. Po	J.		Vertic	al						
lest Mo	ode:		BLE I	BLE Mode TX 2480 MHz (2Mbps)						
Remark	<b>(</b> :			port for the cribed limit.	emission w	hich more th	an 20 dB l	pelow the		
<u>.</u>				Reading	Correct	Measure-				
No.	Mk.	Fr	eq.	Level	Factor	ment	Limit	Over		
No.	Mk.		eq. <sub>Hz</sub>				Limit dBuV/m	Over dB	Detector	
No.	Mk.		Hz	Level	Factor	ment	Association and a	A TELOCOMO STACAS	Detector peak	



# Attachment C-- Restricted Bands Requirement and Band

# **Edge Test Data**

### (1) Radiation Test

mpe	erature:	<b>25</b> ℃		Re	lative Hum	idity:	55%	
st V	oltage:	DC 3.8V						
t. P	ol.	Horizont	al					
st M	lode:	BLE Mod	le TX 2402 I	MHz (1Mbp	s)			
mai	rk:	N/A						
00.0	dBuV/m	1	1 1		1	1 12	1	
							\$	
						(RF) FCC P	ART 15C (PEAK)	
						(RF) FCC	PART 15C (AVE)	
50							1	
							× /	$\rightarrow$
						• • • • • • • • • • • • • • • • • • •	×	
-								
0.0								
N	o. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
N	o. Mk.	Freq. MHz					1988-708075-001	Detecto
No 1			Level	Factor	ment	Limit	ı dB	NEW ROCK OF DESCRIPTION
i.	2	MHz	Level dBuV	Factor dB/m	ment dBuV/m	Limit dBuV/m	dB -31.95	peak
1	2	MHz 2390.000	Level dBuV 40.77	Factor dB/m 1.28	ment dBuV/m 42.05	Limit dBuV/m 74.00	dB -31.95 -22.59	Detecto peak AVG AVG



e:	DC 3. Vertic						
	Vertic	al					
	BLE N	/lode TX 24	02 MHz(1N	lbps)			
	N/A						
'm							
					(RF) FCC PAR	T 15C (PEAK) *	
						3	
					(RF) FCC PA	RT 15C (AVG)	
					1 X		
					2		
					~~~~×		
2317.00	2327 00	2337.00	2347.00 2357.00	1 2367.00 2	377.00 2387.00	2407	7.00 MHz
c. F	Freq.	Reading Level			- Limit	Over	
	59	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detecto
239	0.000	40.83	1.28	42.11	74.00	-31.89	peak
239	0.000	29.99	1.28	31.27	54.00	-22.73	AVG
240	2.200	56.55	1.33	57.88	Fundamental F	requency	AVG
240	2.400	73.27	1.33	74.60	Fundamental Fi	requency	peak
2	239 239 240	/m //m 2317.00 2327.00 (. Freq. MHz 2390.000 2390.000 2402.200	/m /m 2317.00 2327.00 2337.00 2 (C. Freq. Reading Level MHz dBuV 2390.000 40.83 2390.000 29.99 2402.200 56.55	Imm       Imm         Imm       I	Imm       Imm       Imm         Imm       Imm       Imm       Imm       Imm         Imm       Imm       Imm       Imm       Imm       Imm         Imm       Imm       Imm       Imm       Imm       Imm       Imm         Imm       Imm       Imm       Imm       Imm       Imm       Imm       Imm         2317.00       2327.00       2337.00       2347.00       2357.00       2367.00       2         2317.00       2327.00       2337.00       2347.00       2357.00       2367.00       2         C       Freq.       Reading Level       Correct Measure ment       Measure ment         MHz       dBuV       dB/m       dBuV/m         2390.000       40.83       1.28       42.11         2390.000       29.99       1.28       31.27         2402.200       56.55       1.33       57.88	Am       (RF) FCC PAR         (RF) FCC PAR       (RE) FCC PAR	Im         (RF) FCC PART 15C (PEAK) 4           (RF) FCC PART 15C (PEAK) 4         (RF) FCC PART 15C (PEAK) 4           (RF) FCC PART 15C (PEAK) 4         1x           (RF) FC



mhei	rature	<b>;</b>	<b>25℃</b>			Relative H	umidity:	55%	
st Vo	ltage	:	DC 3.	.8V					
nt. Po	ol.		Horiz	ontal					
est Mo	ode:		BLE N	Mode TX 24	80 MHz (1I	Mbps)			
emark	k:		N/A						
50		3 X						PART 15C (PEAK) C PART 15C (AVG)	
0.0	1.000 244	B4.00	2494.00	2504.00 251	4.00 2524.00	2534.00 25	44.00 255	4.00 257	74.00 MHz
2474			2494.00 eq.	2504.00 251 Reading Level	4.00 2524.00 Correct Factor	2534.00 25 Measure- ment		4.00 25 Over	74.00 MHz
2474		Fr		Reading	Correct	Measure-		Over	
2474		Fr	eq. Hz	Reading Level	Correct Factor	Measure- ment	Limit dBuV/	Over	Detecto
2474 No.	Mk.	Fr	req. Hz .600	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV// Fundamer	Over m dB	Detecto AVG
2474 No.	Mk.	Fr M 2479	req. Hz .600	Reading Level dBuV 76.73	Correct Factor dB/m 1.85	Measure- ment dBuV/m 78.58	Limit dBuV// Fundamer	Over m dB ntal Frequency ntal Frequency	Detecto AVG peak



empei	ratur	e: 2	<b>25°</b> ℃				Re	elativ	ve Hui	mi	dity:	5	5%		
est Vo	ltage	<b>:</b>	DC 3.8	V											
nt. Po	ol.	`	Vertica	I											
est Mo	ode:	1	BLE M	ode T	X 248	0 MHz	(1MI	ops)							
emarl	<b>K</b> :	1	N/A												
100.0	dBuV/m														_
-															
	2														
	×										(RF) FC	PAR	T 15C (PEAI	9	
	1														
-	Ň						1			_	(RF) FO	C PAI	T 15C (AV	i)	
50	1	3													
		×				_									
~	/ \	4					m			_					~
-							1					-			
0.0 2474.0	000 248	4.00	2494.00	2504.0	0 251	4.00 252	4.00	2534	4.00 2	2544	.00 255	4.00		2574.00	MHz
No.	Mk.	Fr	eq.		ding vel	Corre Fact			asure nent	)-	Limit		Over		
2		M	Hz	dB	luV	dB/m	ı	dE	BuV/m		dBuV/	m	dB	De	etecto
1	*	2479	.600	60	.88	1.85		6	2.73		Fundam	ental	Frequenc	y 🖡	VG
2	Х	2480	.200	77	.00	1.85	5	7	8.85		Fundam	ental	Frequence	sy 🖡	eak
3		2483	.500	41	.95	1.88	3	4	3.83		74.0	0	-30.17	r F	eak
4		2483	.500	30	.85	1.88	}	3	2.73		54.0	0	-21.27	1	٩VG
2 -						rect Fac									



empe	rature	<b>25</b> ℃			R	elative Hun	nidity:	55%	
est Vo	ltage	: DC 3	.8V						
nt. Po	ol.	Horiz	ontal						
est Mo	ode:	BLE	Mode	e TX 2402	MHz (2Mb	ps)			
emar	k:	N/A							
100.0	dBuV/m	1			1				
								4 ×	
-							(RF) FCC P/	ART 15C (PEAK)	
								Λ	
							(RF) FCC I	PART 15C (AVG)	
50									
								2	
								·	_
-									_
-									_
0.0	.000 231	8.00 2328.	00 2	338.00 234	8.00 2358.00	2368.00 23	78.00 2388.0	0 2400	8.00 MHz
No.	Mk.	Freq.		Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz		dBuV	dB/m	dBuV/m	dBuV/n	n dB	Detecto
1		2390.00	0	40.05	1.28	41.33	74.00	-32.67	peak
2		2390.00	0	30.08	1.28	31.36	54.00	-22.64	AVG
3	Х	2402.00	0	68.08	1.33	69.41	Fundamenta	I Frequency	AVG
4	*	2402.60	0	89.42	1.33	90.75	Fundamen	tal Frequency	peak
missi	on Le	vel= Rea	ad Le	vel+ Cori	rect Factor	r	-		



ature	:	25°	С					R	elat	ive H	umio	dity:		55%			
ltage	:	DC	3.8\	/									·				
Ι.		Ver	tical														
de:		BLE	E Mo	de T	TX 2	2402	2 MF	łz (2N	1bps	)							
		N/A	1														
dBu¥/m			1														7
												(R	F) FCC F	ART 15	ic (peak	) <mark>4</mark> X	
												U	RF) FCC	PART	ISC (AVG	3 X	
														1		Λ	
										_					-1	+	÷
	-					·								×.		L.	
															_		
000 00	7.00	000	1.00	0007			7.00	0057.0		007.00	007	7.00	2007	0.0		107.00	
000 23	17.00	2321		2337	.00	234	7.00	2557.0	0 2	507.00	2371	7.00	2307.3	000	2	407.00	MIL
				Rei	adir	ng	Co	orrect	М	easu	e-						
Mk.	F	Freq	-	Le	eve		F	actor		ment		Lin	nit	0	ver		
		MHz		d	BuV		d	B/m	(	dBuV/r	n	dB	uV/m	(	dΒ	Dete	ecto
	239	0.00	00	39	9.99	)	1	.28	8	41.27	1	74	.00	-3	2.73	pe	eak
	239	0.00	00	29	9.85	5	1	.28	j j	31.13	3	54	.00	-2	2.87	A	VG
Х	240	1.80	00	52	2.76	6	1	.33		54.09	) F	unda	menta	l Freq	uency	A	VG
*	240	2.60	00	73	3.57	7	1	.33	8	74.90	) Fu	ndam	ental F	reque	ency	pe	eak
	Itage I. ode: : dBuV/m	ode: dBuV/m dBuV/m 000 2317.00 Mk. F 239 239 239 X 240	Itage:       DC         I.       Ver         ode:       BLE          N/A         dBuV/m          dBuV/m          000       2317.00       2323         Mk.       Freq         MHz       2390.00         2390.00       X       2401.80	Itage:       DC 3.8\         I.       Vertical         I.       BLE Mo         I.       N/A         dBuV/m       I.         dBuV/	Itage:       DC 3.8V         I.       Vertical         ode:       BLE Mode         abuV/m       N/A         abuV/m       Image:         abu	Itage:       DC 3.8V         I.       Vertical         ode:       BLE Mode TX 2         abuV/m       N/A         dBuV/m       I.         abuV/m       I.         abuV       I.         abuV	Itage:       DC 3.8V         I.       Vertical         ode:       BLE Mode TX 2402         :       N/A         dBuV/m       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Itage:       DC 3.8V         I.       Vertical         ode:       BLE Mode TX 2402 MH         BLE Mode TX 2402 MH       M/A         dBuV/m       I.       I.         dBuV/m       I.       I.       I.         dBuV/m       I.       I.       I.       I.       I.         000       2317.00       2327.00       2337.00       2347.00         MHz       MHz       BuV       I.       I.         MHz       dBuV       I.       I.       I.         X       2401.800       52.76       I.	Itage:       DC 3.8V         I.       Vertical         I.       Vertical         I.       N/A         de:       BLE Mode TX 2402 MHz (2M         BLE Mode TX 2402 MHz (2M         dBuV/m         II.       N/A         II.       N/A         II.       N/A         II.       N/A         II.       N/A         II.       II.         II.       N/A         II.       N/A         II.       II.         II.       II.         III.       II.         III.       III.         III.       III.         III.       III.         III.       III.         III.       III.         III.       III.       III.         III.       III.       III.       IIII.         III.       III.       III.       III.         III.       III.       IIII.       IIII.         III.       IIII.       IIII.       IIII.         IIII.       IIII.       IIII.       IIIII.         IIII.       IIII. <thiiii.< th=""> <thiiii.< th="">       IIIII</thiiii.<></thiiii.<>	Itage:       DC 3.8V         I.       Vertical         ode:       BLE Mode TX 2402 MHz (2Mbps)         N/A       M/A         dBuV/m       I.       I.         I.       N/A         I.       N/A         I.       N/A         I.       N/A         I.       I.         I.       N/A         I.       I.         I.       I.       I.         I.       N/A         I.       I.       I.         I.       I.       I.         I.       I.       I.         I.       I.       I.       I.         I.       I.       I.       I.         II.       I.       I.       I.         II.       I.       I.       I.         II.       II.       II. <thii.< th="">       II.         II.       II.       II.       II.       II.         III.       III.       III.       III.       III.         III.       III.       III.       III.       IIII.         III.       III.       III.       <thiii.< th=""> <thiii.< th="">       IIIII</thiii.<></thiii.<></thii.<>	Itage:       DC 3.8V         I.       Vertical         BLE Mode TX 2402 MHz (2Mbps)         II.       N/A         de:       BLE Mode TX 2402 MHz (2Mbps)         II.       N/A         de:       N/A       N/A         de:       N/A       N/A         de:       N/A       N/A <td>Itage:       DC 3.8V         I.       Vertical         I.       Vertical         I.       Vertical         I.       N/A         dB:       BLE Mode TX 2402 MHz (2Mbps)         :       N/A         dBuv/m       I.         I.       I.         I.       N/A         II.       II.         II.       II.         III.       III.         III.       III.         III.       III.       III.         III.       Reading       Correct       Measure- ment         MHz       dBuV       dB/m       dBuV/m         2390.000       39.99       1.28       31.13         X       2401.800       52.76       1.33       54.09       F</td> <td>Itage:         DC 3.8V           I.         Vertical           ode:         BLE Mode TX 2402 MHz (2Mbps)           I.         N/A           dBuW/m         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII</td> <td>Itage:         DC 3.8V           I.         Vertical           Ide:         BLE Mode TX 2402 MHz (2Mbps)           I:         N/A           dBuV/m         (RF) FCC F           Image:         Image:         (RF) FCC F           Image:         Image:         Image:         Image:           Image:         Image:         Image:         Image:           Image:         Image:         Image:         Image:         Image:           Image:         Image:         Image:         Image:         Image:         Image:           Image:         Image:         Image:         Image:         Image:         Image:         Image:           Image:         Image:         Image:         Image:         Image:         Image:         Image:           Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         <th< td=""><td>Itage:         DC 3.8V           I.         Vertical           I.         Vertical           I.         Vertical           I.         I.           I.         I.           I.         Vertical           I.         I.           I.         I.      &lt;</td><td>Itage:         DC 3.8V           I.         Vertical           Ide:         BLE Mode TX 2402 MHz (2Mbps)           Image:         N/A           dBuV/m         Image:           Image:         N/A           Image:         N/A           Image:         N/A           Image:         Image:           Image:         N/A           Image:         N/A           Image:         Image:           Image:</td><td>Itage:       DC 3.8V         I.       Vertical         Ide:       BLE Mode TX 2402 MHz (2Mbps)         N/A       Image: Market and the state and the st</td></th<></td>	Itage:       DC 3.8V         I.       Vertical         I.       Vertical         I.       Vertical         I.       N/A         dB:       BLE Mode TX 2402 MHz (2Mbps)         :       N/A         dBuv/m       I.         I.       I.         I.       N/A         II.       II.         II.       II.         III.       III.         III.       III.         III.       III.       III.         III.       Reading       Correct       Measure- ment         MHz       dBuV       dB/m       dBuV/m         2390.000       39.99       1.28       31.13         X       2401.800       52.76       1.33       54.09       F	Itage:         DC 3.8V           I.         Vertical           ode:         BLE Mode TX 2402 MHz (2Mbps)           I.         N/A           dBuW/m         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Itage:         DC 3.8V           I.         Vertical           Ide:         BLE Mode TX 2402 MHz (2Mbps)           I:         N/A           dBuV/m         (RF) FCC F           Image:         Image:         (RF) FCC F           Image:         Image:         Image:         Image:           Image:         Image:         Image:         Image:           Image:         Image:         Image:         Image:         Image:           Image:         Image:         Image:         Image:         Image:         Image:           Image:         Image:         Image:         Image:         Image:         Image:         Image:           Image:         Image:         Image:         Image:         Image:         Image:         Image:           Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image:         Image: <th< td=""><td>Itage:         DC 3.8V           I.         Vertical           I.         Vertical           I.         Vertical           I.         I.           I.         I.           I.         Vertical           I.         I.           I.         I.      &lt;</td><td>Itage:         DC 3.8V           I.         Vertical           Ide:         BLE Mode TX 2402 MHz (2Mbps)           Image:         N/A           dBuV/m         Image:           Image:         N/A           Image:         N/A           Image:         N/A           Image:         Image:           Image:         N/A           Image:         N/A           Image:         Image:           Image:</td><td>Itage:       DC 3.8V         I.       Vertical         Ide:       BLE Mode TX 2402 MHz (2Mbps)         N/A       Image: Market and the state and the st</td></th<>	Itage:         DC 3.8V           I.         Vertical           I.         Vertical           I.         Vertical           I.         I.           I.         I.           I.         Vertical           I.         I.           I.         I.      <	Itage:         DC 3.8V           I.         Vertical           Ide:         BLE Mode TX 2402 MHz (2Mbps)           Image:         N/A           dBuV/m         Image:           Image:         N/A           Image:         N/A           Image:         N/A           Image:         Image:           Image:         N/A           Image:         N/A           Image:         Image:           Image:	Itage:       DC 3.8V         I.       Vertical         Ide:       BLE Mode TX 2402 MHz (2Mbps)         N/A       Image: Market and the state and the st



mpore	ature		<b>25°</b> ℃						Rela	ative	Hui	midit	y:	55%	6		
est Vol	tage:		DC 3	8.8V													
nt. Pol	•		Horiz	zontal													
est Mo	de:		BLE	Mode	TX 2	2480	MH	z (21	/bps	)							
emark:	:		N/A														
100.0 dl	2 2 2 2 2 2													RT 15C (F ART 15C			
0.0	00 2484	.00 2	2494.00	2504.0	DO 2	2514.00	0 2	524.00	2534	4.00	2544.	.00	2554.00		25	74.00	MHz
		.00 2 Fre		Rea	nding vel		Corr Fac	ect	Mea	4.00 asure ent			Wat)	Ove	(54)(73	74.00	MHz
2474.00		961 6094 1915 - 523	eq.	Rea Le	ding		Corr	ect tor	Mea	asure			it	2028	ər	74.00 Dete	
2474.00	Mk.	Fre	eq. Iz	Rea Le dE	iding vel		Corr Fac	ect tor	Mea m dB	asure ient	-	Lim	it V/m	Ove	er	Dete	ecto
2474.00 No.	Mk. * 2	Fre	eq. Iz 600	Rea Le dE 93	iding vel BuV		Corr Fac dB/r	ect tor n 5	Mea m dB 98	asure ient <sup>BuV/m</sup>		Lim dBu <sup>1</sup>	it V/m ental F	Ove dB Frequen	er	Dete	ecto eak
2474.00 No.	Mk. * 2 X 2	Fre МН 2479.	eq. Iz 600 600	Rea Le dE 93 72	uding vel 3uV .61		Corr Fac dB/r 1.8	ect tor n 5	Mea m dB 9!	asure ient <sup>BuV/m</sup> 5.46		Lim dBu <sup>1</sup>	it V/m ental F ental F	Ove	er Icy Icy	Dete pe	



emperature:	<b>25</b> ℃		R	elative Hum	idity:	55%	
est Voltage:	DC 3.8	8V					
nt. Pol.	Vertica	l					
est Mode:	BLE M	ode TX 248	30 MHz (2N	lbps)			
emark:	N/A						
100.0 dBuV/m			1		1		
1 X							
X					(RF) FCC PA	RT 15C (PEAK)	
			-				
2					(RF) FCC F	ART 15C (AVG)	
50 3							
×							
			mmm	*******			
0.0 2474.000 2484.1	00 2494.00	2504.00 25	14.00 2524.00	2534.00 254	44.00 2554.00	) 25	74.00 MHz
		Reading	Correct	Measure-			
No. Mk.	Freq.	Level	Factor	ment	Limit	Over	
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detecto
1 * 2	479.600	77.77	1.85	79.62	Fundamenta	al Frequency	peak
2 X 2	479.600	56.75	1.85	58.60	Fundamenta	al Frequency	AVG
3 2	483.500	43.23	1.88	45.11	74.00	-28.89	peak
4 2	483.500	30.66	1.88	32.54	54.00	-21.46	AVG



## (2) Conducted Test

Temperature:	<b>25</b> ℃	<b>Relative Humidity:</b>	55%
Test Voltage:	DC 3.8V		
Test Mode:	BLE Mode TX 2402MHz	/ BLE Mode TX 2480MH	z(1Mbps)
Remark:	The EUT is programed in	o continuously transmittir	ig mode
Keysight Spectrum A (X RL RF Center Freq 2	nalyzer - Swept SA 50 Ω AC 2.3560000000 GHz PNO: Fast → Trig: Fre IFGaint.ow #Atten: 3	ALIGN AUTO Avg Type: Log-Pwr se Run Avg Hold: 100/100 30 dB	07:11:25 PM Jul 06, 2020 TRACE 0.24 5 6 TYPE M.WWWW DET P.N.N.N.N.
Ref 10 dB/div Ref	Offset 4.29 dB 20.00 dBm	Mk	r1 2.401 8 GHz -3.079 dBm
Log 10.0 -0.00 -10.0 -20.0 -30.0			
-40.0 -50.0 -60.0		ek U. hall rail may the market was for a provide when the market was the second of the market was the second of	3 2 marine marine
-70.0 Start 2.306000 #Res BW 100 I			Stop 2.40600 GHz 600 ms (1001 pts)
MKR         MODE         TRC         SCL           1         N         1         f           2         N         1         f           3         N         1         f           4         N         1         f           5         6         7         7           8         9         9         10           10         11         1         1	X Y FL 2.401 8 GHz -3.079 dBm 2.400 0 GHz -56.129 dBm 2.390 0 GHz -57.439 dBm 2.318 8 GHz -53.239 dBm	UNCTION   FUNCTION WIDTH   FUNCTI	E E
	50 Ω AC SENSE:INT .526000000 GHz PNO: Fast IFGain:Low #Atten: 3	30 dB	07:15:34 PM JU 06, 2020 TRACE 12 24 5 6 TYPE NANN N DET P NNNN T1 2:479 8 GH2
Ref 10 dB/div <b>Ref</b> Log	Offset 4.26 dB 20.00 dBm		-2.766 dBm
0.00 -10.0 -20.0 -20.0 -20.0 -20.0 -40.0 -60.0 -60.0 -60.0 -70.0 Start 2.47600 0 #Res BW 100 I	GHz KHz #VBW 300 KH	Iz Sweep 9	تقدیم بر استان از میرون بر استان از میرون مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مربو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مراو مرم مرما مرمو مرما م م م م مرما م مر م م مر م مر م
-10.0 -20.0 -20.0 -20.0 -20.0 -20.0 -40.0 -40.0 -60.0 -70.0 Start 2.47600 0	GHz KHz #VBW 300 KH	Iz Sweep 9	Stop 2.57600 GHz 600 ms (1001 pts)



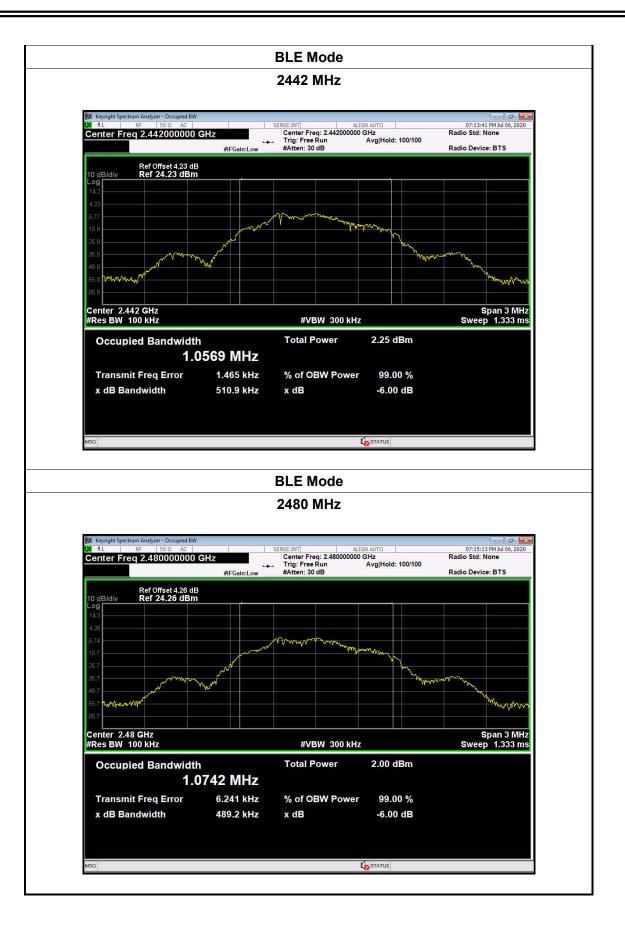
Temperature:	<b>25</b> ℃	<b>Relative Humidity:</b>	55%
Test Voltage:	DC 3.8V	-	
Test Mode:	BLE Mode TX 2402MHz	/ BLE Mode TX 2480MH	Iz(2Mbps)
Remark:	The EUT is programed in	continuously transmittir	ng mode
🎉 Keysight Spectrum A			
Center Freq 2	2.356000000 GHz		07:24:29 PM Jul 06, 2020 TRACE 1 2 3 4 5 6 TYPE M
Ref	IFGain:Low #Atten:		r1 2.401 5 GHz
10 dB/div Ret	f 20.00 dBm		-4.045 dBm
0.00			
-10.0			
-30.0			A Sist and
-50.0	r Mundhalam, handerskiller, 160° im nyetholewedralysti-tousel benytick-down	weedenryalipases for some provide system with the style of the style o	3
-70.0			
Start 2.30600 #Res BW 100		z Sweep 9	Stop 2.40600 GHz .600 ms (1001 pts)
MKR MODE TRC SCL	2.401 5 GHz -4.045 dBm	INCTION FUNCTION WIDTH FUNCT	ON VALUE
2 N 1 f 3 N 1 f 4 N 1 f	2.400 0 GHz -35.620 dBm 2.390 0 GHz -56.403 dBm 2.313 7 GHz -53.288 dBm		
9			
	Ш		
10 MSG	m.	<b>E</b> STATUS	
10 MSG Keysight Spectrum / 02 RL RF		ALIGN AUTO Avg Type: Log-Pwr e Run Avg Hold: 100/100	07:19:08 PM JU 06, 2020 TRACE 2 2 4 5 6 TYPE PM WWWWW
10 11 Keysight Spectrum // MR RL RF Center Freq // Ref	50 Ω AC SENSE:INT 2.526000000 GHz PNO: Fast → Trig: From the test of te	ALIGN AUTO Avg Type: Log-Pwr e Run Avg Hold: 100/100 0 dB	07:19:08 PM Jul 06, 2020 TRACE 1 2 3 4 5 6
10 11 Keysight Spectrum / M RL RF Center Freq / Ref	2.526000000 GHz PN0: Fast IFGain:Low Profiset 4.26 dB	ALIGN AUTO Avg Type: Log-Pwr e Run Avg Hold: 100/100 0 dB	07:19:08 PM Jul 06, 2020 TRACE 12:2:4:5:6 TYPE MWWWW DET MININNN TT 2.480 0 GHz
10 11 MSG MSG MRL BF Center Freq 2 10 dB/div Ref 10 dB/div Ref 10 dB/div Ref	2.526000000 GHz PN0: Fast IFGain:Low Profiset 4.26 dB	ALIGN AUTO Avg Type: Log-Pwr e Run Avg Hold: 100/100 0 dB	07:19:08 PM Jul 06, 2020 TRACE 12:2:4:5:6 TYPE MWWWW DET MININNN TT 2.480 0 GHz
10 11 MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO	2.526000000 GHz PN0: Fast IFGain:Low Profiset 4.26 dB	ALIGN AUTO Avg Type: Log-Pwr e Run Avg Hold: 100/100 0 dB	07:19:08 PM Jul 06, 2020 TRACE 12 2 4 5 6 TYPE MWWWW DET MININNN TT 2.480 0 GHz
10 11 NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG NISG	2.526000000 GHz 2.526000000 GHz PNO: Fast IFGain:Low 00ffset 4.26 dB f 20.00 dBm	ALIGN AUTO Avg Type: Log-Pwr e Run Avg Hold: 100/100 0 dB	07:19:08 PM Jul 06, 2020 TRACE 12.2 4 5 6 TYPE MWWWW DET MWWWW DET MWWWWW DET MWWWWW DET MWWWWW
10 11 MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO MISO	2.526000000 GHz PNO: Fast IFGain:Low Pro: Fast #Atten: 20ffset 4.26 dB f 20.00 dBm	ALIGN AUTO Avg Type: Log-Pwr e Run Avg Hold: 100/100 10 dB	07:19:08 PM Jul 06, 2020 TRACE 12.2 4 5 6 TYPE MWWWW DET MWWWW DET MWWWWW DET MWWWWW DET MWWWWW
10 11 11 12 13 14 15 15 10 10 10 10 10 10 10 10 10 10	2.526000000 GHz PNO: Fast IFGain:Low Offset 4.26 dB F 20.00 dBm	ALIGN AUTO Avg Type: Log-Pwr e Run Avg Hold: 100/100 00 dB	07:19:08 PM Jul (6), 2020 TRACE [] 2:34:5 TYPE [] 2:34:5 TYPE [] 2:34:5 PM N N N N r1 2:480 0 GHz -3.695 dBm -33:55 utm
10 11 11 10 11 10 10 10 10 10	2.526000000 GHz PNO: Fast IFGain:Low  Trig: Fri #Atten: Offset 4.26 dB 7 20.00 dBm 43 43 GHz KHz #VBW 300 kH	z Sweep 9	07:19:08 PM Jul (6, 2020) TRACE [] 2 3 4 5 TYPE [] WWWWWW DET [] N N N N r1 2.480 0 GHz -3.695 dBm -35:05 uBm -35:05 uBm Stop 2.57600 GHz .600 ms (1001 pts)
10 11 11 12 13 14 15 16 10 10 10 10 10 10 10 10 10 10	2.526000000 GHz PNO: Fast IFGain:Low Offset 4 26 dB 7 20.00 dBm	z Sweep 9	07:19:08 PM Jul (6, 2020) TRACE [] 2 3 4 5 TYPE MININAL PET PININAL T1 2.480 0 GHz -3.695 dBm -35:55 dBm
10 10 10 10 10 10 10 10 10 10	2.526000000 GHz PNO: Fast IFGain:Low PNO: Fast PNO: Fast PNO: Fast F 20.00 dBm Coffset 4.26 dB F 20.00 dBm F 20.00 dBm Coffset 4.26 dB F 20.00 dBm F 20.00 d	z Sweep 9	07:19:08 PM Jul (6, 2020) TRACE [] 2 3 4 5 TYPE [] WWWWWW DET [] N N N N r1 2.480 0 GHz -3.695 dBm -35:05 uBm -35:05 uBm Stop 2.57600 GHz .600 ms (1001 pts)
10 11 11 12 13 14 15 10 10 10 10 10 10 10 10 10 10	2.526000000 GHz PNO: Fast IFGain:Low PNO: Fast PNO: Fast PNO: Fast F 20.00 dBm Coffset 4.26 dB F 20.00 dBm F 20.00 dBm Coffset 4.26 dB F 20.00 dBm F 20.00 d	z Sweep 9	07:19:08 PM Jul (6, 2020) TRACE [] 2 3 4 5 TYPE [] WWWWWW DET [] N N N N r1 2.480 0 GHz -3.695 dBm -35:05 uBm -35:05 uBm Stop 2.57600 GHz .600 ms (1001 pts)
10 10 10 10 10 10 10 10 10 10	2.526000000 GHz PNO: Fast IFGain:Low PNO: Fast PNO: Fast PNO: Fast F 20.00 dBm Coffset 4.26 dB F 20.00 dBm F 20.00 dBm Coffset 4.26 dB F 20.00 dBm F 20.00 d	z Sweep 9	07:19:08 PM Jul (6, 0200 TRACE [] 3 3 4 5 TYPE P N N N N per P N N N N r1 2.480 0 GHz -3.695 dBm -35:05 00m -35:05 00m Stop 2.57600 GHz .600 ms (1001 pts)



## Attachment D-- Bandwidth Test Data

nperature:	<b>25</b> ℃		Relative Humidity:	55%
t Voltage:	DC 3.	8V		
t Mode:	BLE 1	X Mode(1 Mbps)		
nannel freque	ency	6dB Bandwidth	99% Bandwidth	Limit
(MHz)		(kHz)	(kHz)	(kHz)
2402		499.7	1077.2	
2442		510.9	1056.9	>=500
2480		489.2	1074.2	
	1	BLE	Mode	
		2402	MHz	
Center Fred	RF 50 Ω			07:10:45 PM Jul 06, 2020 dio Std: None
Contor i roc	12.402000	Trig: Free		
		↔ Trig: Free #FGain:Low #Atten: 3		dio Device: BTS
10 dB/div Log	Ref Offset 4.2 Ref 24.29	↔ Trig: Free #FGain:Low #Atten: 3		
10 dB/div		↔ Trig: Free #FGain:Low #Atten: 3		
10 dB/div Log		↔ Trig: Free #FGain:Low #Atten: 3		
10 dB/div Log 14.3 4.29 -5.71 -15.7 -25.7	Ref Offset 4.2 Ref 24.29	#IFGain:Low #Atten: 3	0 dB Rat	
10 dB/div Log 14.3 4.29 -5.71 -5.7 -25.7 -35.7 -45.7	Ref Offset 4.2 Ref 24.29	#IFGein:Low #Atten: 3 Bm	0 dB Rat	dio Device: BTS
10 dB/div Log 14.3 4.29 5.71 -15.7 -25.7 -35.7	Ref Offset 4.2 Ref 24.29	#IFGain:Low #Atten: 3	0 dB Rat	
10 dB/div Log 14.3 4.29 5.71 15.7 -25.7 -35.7 -45.7 -65.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -45.7 -4	Ref Offset 42 Ref 24.29 of	#FGein:Low #Atten: 3	0 dB Rat	dio Device: BTS
10 dB/div Log 14.3 4.29 5.71 5.7 25.7 55.7 55.7 55.7 55.7 55.7 55.7	Ref Offset 42 Ref 24.29 of 2 GHz 200 kHz	#FGain:Low #Atten: 3	0 dB Rat	dio Device: BTS
10 dB/div Log 14.3 4.29 5.71 5.7 25.7 55.7 55.7 55.7 55.7 55.7 55.7	Ref Offset 4.2 Ref 24.29 of 2 GHz 20 KHz ed Bandw	#FGain:Low #Atten: 3	0 dB Rat	dio Device: BTS
10 dB/div Log 14.3 4.29 5.71 15.7 25.7 35.7 45.7 45.7 Center 2.40 #Res BW 10 Occupie Transmit	Ref Offset 42 Ref 24.29 of 2 GHz 20 KHz ed Bandw	idth 7.790 kHz % of C	O dB     Rat       Image: Constraint of the second s	dio Device: BTS
10 dB/div Log 14.3 4.29 5.71 55.7 55.7 55.7 55.7 55.7 55.7 55.7	Ref Offset 42 Ref 24.29 of 2 GHz 20 KHz ed Bandw	#FGain:Low Trig: Free #FGain:Low #Atten: 3 BBM #U #V idth Total 1 1.07772 MHz	O dB     Rat       Image: Constraint of the second s	dio Device: BTS
10 dB/div Log 14.3 4.29 5.71 15.7 25.7 35.7 45.7 45.7 Center 2.40 #Res BW 10 Occupie Transmit	Ref Offset 42 Ref 24.29 of 2 GHz 20 KHz ed Bandw	idth 7.790 kHz % of C	O dB     Rat       Image: Constraint of the second s	dio Device: BTS

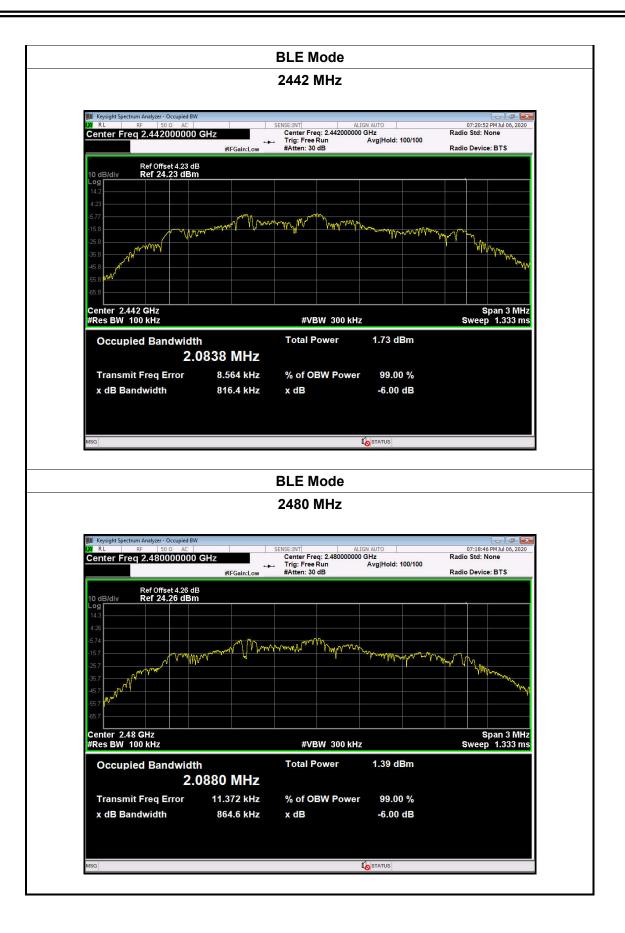






nperature:	<b>25</b> ℃		Relative Humidity:	55%
st Voltage:	DC 3	.8V		
st Mode:	BLE -	TX Mode (2Mbps)		
nannel freque	ency	6dB Bandwidth	99% Bandwidth	Limi
(MHz)		(kHz)	(kHz)	(kHz
2402		835.5	2086.9	
2442		816.4	2083.8	>=50
2480		864.6	2088.0	
		BLE N	lode	
		2402	MHz	
🎉 Keysight Spectrur				
		#IFGain:Low #Atten: 30	dB Ra	dio Device: BTS
10 dB/div 14.3 4.29 5.71 15.7 25.7 45.7 55.7 56.7	Ref Offset 4. Ref 24.29		dB Ra	
Log 14.3 4.29 5.71 -5.7 -25.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7 -5.7	2 GHz		marth for the second of the se	Span 3 MHz
Log 14.3 4.29 5.71 15.7 25.7 35.7 45.7 Center 2.40 #Res BW 10 Occupie	2 GHz 20 KHz ed Bandw Freq Erro	29 dB dBm www.www.www.www.www.www.www.www.www.ww	аларана и порти и порти В 300 kHz	
Log 14.3 4.29 5.71 15.7 25.7 45.7 45.7 Center 2.400 #Res BW 10 Occupie Transmit	2 GHz 20 KHz ed Bandw Freq Erro	29 dB dBm 	w 300 kHz ower 1.21 dBm BW Power 999.00 %	Span 3 MHz



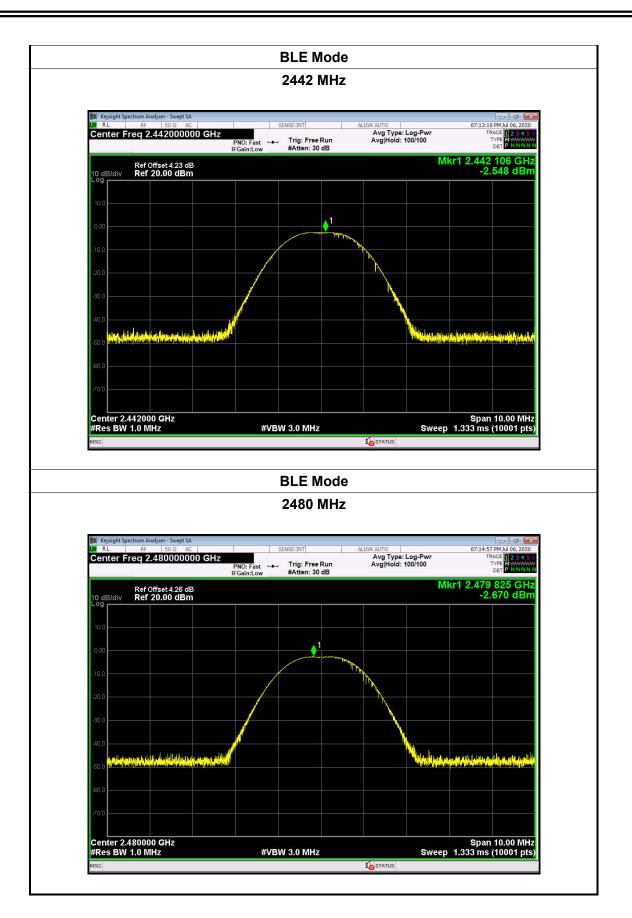




## Attachment E-- Peak Output Power Test Data

perature:	<b>25</b> ℃		<b>Relative Hum</b>	nidity: 55%
Voltage:	DC 3.8V			
Mode:	BLE TX M	lode (1Mbps)		
innel frequen	cy (MHz)	Test Resu	ult (dBm)	Limit (dBn
2402		-2.9	)12	
2442		-2.5	548	30
2480		-2.6	570	
	<b>I</b>	BLE	Node	
		2402	MHz	
💓 Keysight Spectrum An	alvzer - Swept SA			
LXI RL RF	50 Ω AC 402000000 GHz		ALIGN AUTO Avg Type: L e Run Avg Hold: 1	07:08:22 PM Jul 06, 2020 .og-Pwr TRACE 1 2 3 4 5
		PNO: Fast 🔸 Trig: Fre IFGain:Low #Atten: 3		DET PNNNN
				Mkr1 2 401 737 GH
Ref O 10 dB/div Ref 2 Log	offset 4.29 dB 20.00 dBm			Mkr1 2.401 737 GH: -2.912 dBn
10 dB/div Ref 2	offset 4.29 dB 20.00 dBm			
Log	offset 4.29 dB 20.00 dBm			
10.0 0.00	iffset 4.29 dB 20.00 dBm			
10.0 0.00 -10.0	iffset 4.29 dB 20.00 dBm			
Log 10.0 .00 10.0 20.0	iffset 4.29 dB 20.00 dBm			
Log 10.0 -10.0 -20.0 -30.0	iffset 4.29 dB 20.00 dBm			
Log 10.0 -10.0 -20.0 -30.0 -40.0 Log Log	1 da 1 a			-2.912 dBn
Log 10.0 -10.0 -20.0 -30.0 -40.0 Log Log	iffset 4.29 dB 20.00 dBm			-2.912 dBn
Log 10.0 -10.0 -20.0 -30.0 -40.0 Log -40.0	1 da 1 a			-2.912 dBn
Log 10.0 -10.0 -20.0 -20.0 -40.0 -50.0 -50.0 -50.0	1 da			-2.912 dBn
Log 10.0 -10.0 -20.0 -20.0 -20.0 -40.0 -50.0 -60.0		#VBW 3.0 MH		-2.912 dBn

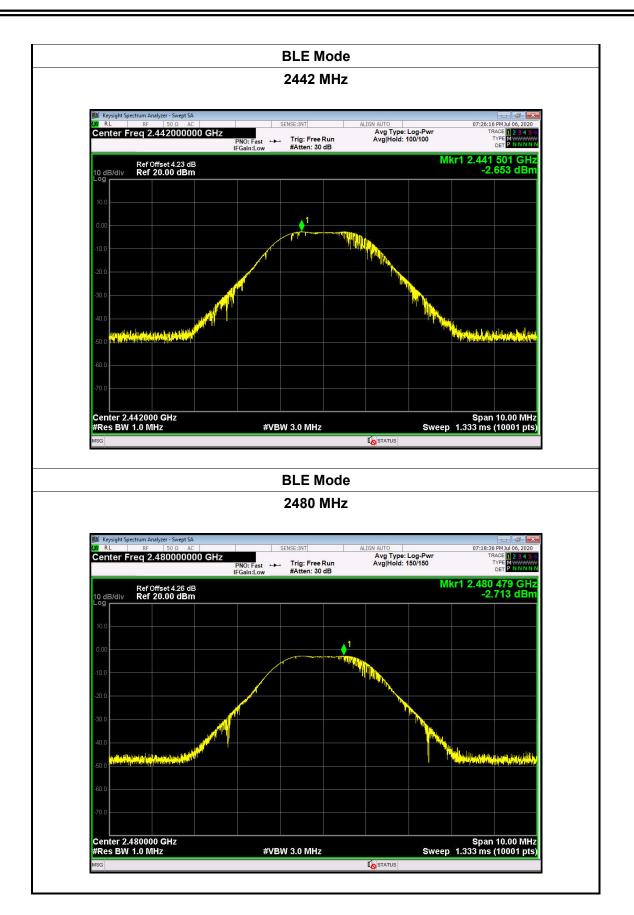






mperature:	<b>25</b> ℃		<b>Relative Hum</b>	nidity: 55	5%
st Voltage:	DC 3.8V				
st Mode:	BLE TX M	ode(2Mbps)			
hannel frequen	ncy (MHz)	Test Resu	ult (dBm)	Lim	nit (dBm)
2402		-3.0	)26		
2442		-2.6	353		30
2480		-2.7	'13		
		BLE	Node		
		2402	MHz		
💓 Keysight Spectrum A	analyzer - Swept SA				
LXI RL RF		PNO: East ↔ Trig: Fre	ALIGN AUTO Avg Type: L e Run Avg Hold: 1	Log-Pwr	04 PM Jul 06, 2020 TRACE 1 2 3 4 5 6 TYPE M
	Offerent 4 20 all	PNO: Fast ↔ Trig: Fre IFGain:Low #Atten: 3	0 dB	Mkr1 2.40	1 478 GHz
10 dB/div Ref	Offset 4.29 dB 20.00 dBm				3.026 dBm
10.0					
10.0		¢'			
0.00		•1-			
10.0 0.00 -10.0					
10.0 0.00 -10.0 -20.0					
10.0					
10.0					
10.0 0.00 -10.0 -20.0 -30.0 -40.0 -60.0					
10.0 0.00 -10.0 -20.0 -30.0 -40.0 -60.0 -20.0 -20.0 -30.0 -40.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.0 -20.					
10.0 0.00 -10.0 -20.0 -30.0 -40.0 -60.0	00 GHz	#VBW 3.0 MH			n 10.00 MHz



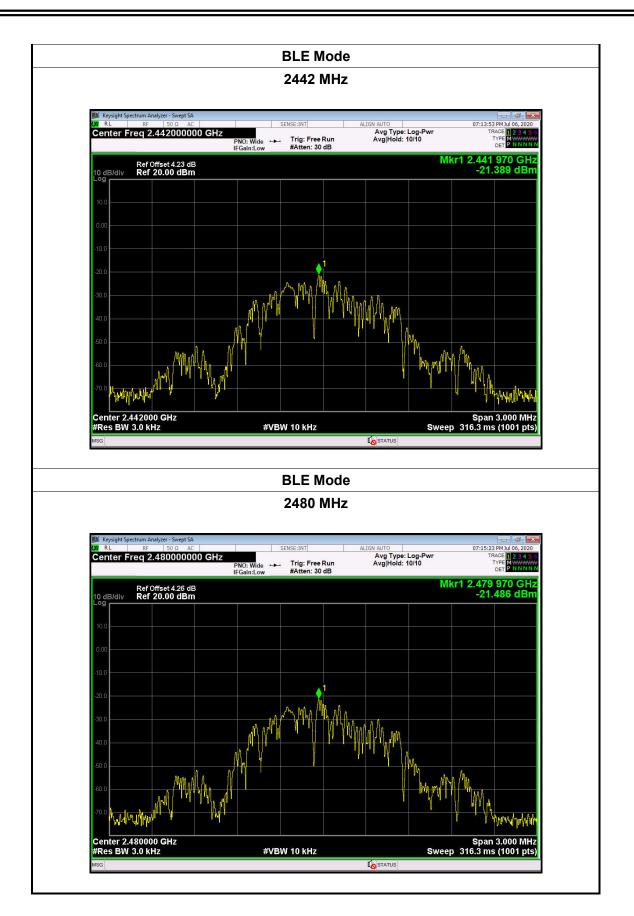




## **Attachment F-- Power Spectral Density Test Data**

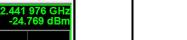
Test Voltage:	<b>BA A A</b> (		Relative Hu	-		
	DC 3.8V					
Test Mode:	BLE TX M	lode(1Mbps)				
Channel Frequ	uency	Power D	-	Limi		Result
(MHz)		(dBm/3		(dBm/3l	kHz)	
2402		-21.8	01			
2442		-21.3	89	8		PASS
2480		-21.4	86			
		BLE N	lode			
		2402	MHz			
<b>W</b> Keysight Spectrum Ana	alyzer - Swept SA 50 Ω AC	SENSE:INT	ALIGN AUTO		📼 🕞	
	402000000 GHz	PNO: Wide +++ Trig: Free IFGain:Low #Atten: 30	Avg Type: I Run Avg Hold: 1	og-Pwr 5/15	TRACE 1 2 3 TYPE MWW DET P N N	4 5 6 WWW N N N
Ref_O	ffset 4.29 dB 20.00 dBm	IPGain.Low #Attent of		Mkr1 2.	.401 970 G -21.801 d	Hz
10 dB/div Ref 2	20.00 dBm				-21.801 u	
10.0						
0.00						
-10.0						
-20.0			1			
-30.0		m mn				
-40.0						
-50.0			чн н <u>М</u>	Vh.		
-60.0	MM MA.	<u> </u>		Mr. Mr. Mr.		
	MU THINK	, N	l l	. W. W. W.	Mr	
องสถาวได้จะเห็นให				Ŷ	" Ruby	h-d-4411
Center 2.402000 #Res BW 3.0 kH	0 GHz Iz	#VBW 10 kHz		Sweep 316	Span 3.000 M .3 ms (1001	∜Hz pts)
MSG			STATUS			



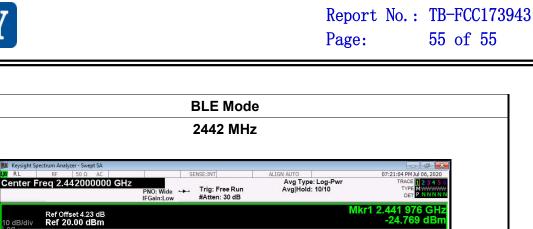




Temperature:	<b>25</b> ℃		<b>Relative Hu</b>	ve Humidity: 55%		
Test Voltage:	DC 3.8V					
Test Mode:	BLE TX M	lode (2Mbps)				
Channel Frequency (MHz)		Power Density (dBm/3kHz)		Limit (dBm/3kHz)		Result
2442		-24.769				
2480		-24.876				
		BLE N	lode			
		2402 I	MHz			
	nalyzer - Swept SA 50 Ω AC 4020000000 GHz Dffset 4.29 dB 20.00 dBm	PNO: Wide Trig: Free IFGein:Low #Atten: 30	ALIGN AUTO Avg Type: L Run Avg Hold: 1 dB		07:22:27 PM Jul 06 TRACE 1 2 TYPE MW DET P N .401 976 -25.226 (	5, 2020 34 5 6 WWWW NNNN
10.0 0.00 -10.0						
-20.0		A AMMAMMAA M				
		#VBW 10 kHz		Sweep 310	Span 3.000	MHz 1 pts)

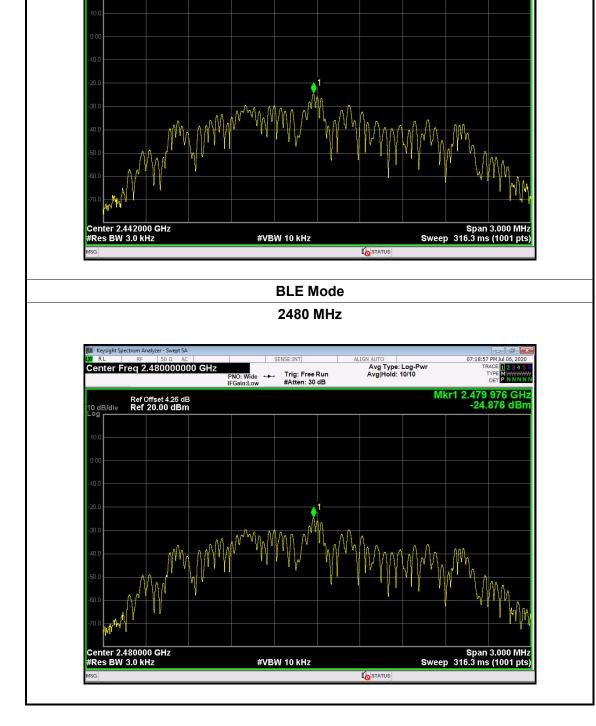


55 of 55



TOBY

B/div



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