

Shenzhen Toby Technology Co., Ltd.

Report No.: TB-FCC178574

1 of 46

FCC Radio Test Report FCC ID: OIE55853TR

#### **Original Grant**

Report No.	1	TB-FCC178574	
Applicant	1:)	LB Technology Co., Ltd	
Equipment Under T	est	(EUT)	
EUT Name		Baby Monitor	
Model No.		LB55853T	
Series Model No.	÷	JLB55853T,JLB853	
Brand Name	:	LBtech, JLBtech	
Sample ID		20200730-12-1#	
Receipt Date	•	2021-01-25	
Test Date		2021-01-26 to 2021-02-24	
Issue Date	:	2021-02-25	
Standards	2	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, The EUT technically complies with the FCC requirements

**Test/Witness Engineer** 

**Engineer Supervisor** 

**Engineer Manager** 

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

TB-RF-074-1.0



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## **Revision History**

Report No.	Version	Description	Issued Date
TB-FCC178574	Rev.01	Initial issue of report	2021-02-25
C MOBI	601		I Com
AL C	000	Current Curren	MBY
TOPP	3	THE FORM	TOTAL COLD
	603	FOD F	
and a		BI DI	
	1000	A DUCK	
TOB			B TOP
			6000

## 1. General Information about EUT

### **1.1 Client Information**

TOBY

Applicant	:	LB Technology Co., Ltd
Address		No. 5 of Xiaoyang Rd, First Industrial Park, Tanzhou Town, Zhongshan City, Guangdong, China
Manufacturer	~	LB Technology Co., Ltd
Address		No. 5 of Xiaoyang Rd, First Industrial Park, Tanzhou Town, Zhongshan City, Guangdong, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	Baby Monitor		
Models No.	:	LB55853T, JLB55853T, JLB853		
Model Difference	:	All these models are identical in the same PCB, layout and electrical circuit, The only difference is brand name.		
		Operation Frequency:	2406MHz~2475MHz	
Pard at	<	Number of Channel:	24 Channels See Note 2	
Product Description		Max Peak Output Power:	18.267dBm	
Description	2	Antenna Gain:	3dBi FPC Antenna	
BU		Modulation Type:	GFSK (4Mbps)	
Power Rating	-	DC 5V from Adapter(ZD5C050100USW) Input: 100-240V~, 50/60Hz, 0.2A Output: DC 5V 1000mA		
Software Version	:	VC0902		
Hardware Version	:	V1.0.0		
Remark	•	The adapter and antenna gain provided by the applicant, the verified for the RF conduction test provided by TOBY test lab.		

#### Note:

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



#### (2) Channel List:

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2406	09	2430	17	2454
02	2409	10	2433	18	2457
03	2412	11	2436	19	2460
04	2415	12	2439	20	2463
05	2418	13	2442	21	2466
06	2421	14	2445	22	2469
07	2424	15	2448	23	2472
08	2427	16	2451	24	2475

2475 MHz.

(3) The Antenna information about the equipment is provided by the applicant.

#### 1.3 Block Diagram Showing the Configuration of System Tested

#### Adapter & TX Mode

Adapter	EUT

### 1.4 Description of Support Units

The EUT has been tested as an independent unit.



#### 1.5 Description of Test Mode

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

For Conducted Test			
Final Test Mode Description			
Mode 1 Adapter+ TX Mode			

For Radiated Test		
Description		
TX GFSK Mode		
TX Mode(GFSK) Channel 01/13/24		

#### 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. We have pretested all the test modes above.

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:

- TX Mode: GFSK (4Mbps)
- (2) The EUT is considered a Mobile unit; it was pre-tested on the positioned of each 3 axis, X-plane, Y-plane and Z-plane. The worst case was found positioned on X-plane as the normal use. 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 Bluetooth mode.

Test Software Version	Control by pressing the button			
Frequency	2406 MHz	2442 MHz	2475 MHz	
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	±4.50 dB
Radiated Emission	Level Accuracy: Above 1000MHz	±4.20 dB



#### 1.8 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1/F.,Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, 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: 2017 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: 2017 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. Designation Number: CN1223.

#### 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		Toot Kom	Toot Complete)			
FCC	IC	Test Item	Test Sample(s)	Judgment	Remark	
15.203	20	Antenna Requirement	20200730-12-1#	PASS	N/A	
15.207	RSS-GEN 7.2.2	Conducted Emission	20200730-12-1#	PASS	N/A	
15.205	RSS-Gen 7.2.3	Restricted Bands	20200730-12-1#	PASS	N/A	
15.247(a)(1)	RSS 247 5.1 (2)	Hopping Channel Separation	20200730-12-1#	PASS	N/A	
15.247(a)(1)	RSS 247 5.1 (4)	Dwell Time	20200730-12-1#	PASS	N/A	
15.247(b)(1)	RSS 247 5.4 (2)	Peak Output Power	20200730-12-1#	PASS	N/A	
15.247(b)(1)	RSS 247 5.1 (4)	Number of Hopping Frequency	20200730-12-1#	PASS	N/A	
15.247(d)	RSS 247 5.5	Band Edge	20200730-12-1#	PASS	N/A	
15.247(c)& 15.209	RSS 247 5.5	Radiated Spurious Emission	20200730-12-1#	PASS	N/A	
15.247(a)	RSS 247 5.1 (1)	99% Occupied Bandwidth & 20dB Bandwidth	20200730-12-1#	PASS	N/A	

## 3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Conducted Emission	EZ-EMC	EZ	CDI-03A2
Radiation Emission	EZ-EMC	EZ	FA-03A2RE
RF Conducted Measurement	MTS-8310	MWRFtest	V2.0.0.0

## 4. Test Equipment

<b>Conducted Emission</b>	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 1	Test	-	-	-	-
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	FSVR	102197	Jul. 06, 2020	Jul. 05, 2021
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar.01, 2020	Feb. 28, 2022
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.01, 2020	Feb. 28, 2022
Horn Antenna	ETS-LINDGREN	BBHA 9170	BBHA9170582	Mar.01, 2020	Feb. 28, 2022
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 07, 2020	Jul. 06, 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	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. 11, 2020	Sep. 10, 2021
Vector Signal Generator	Agilent	N5182A	MY50141294	Sep. 11, 2020	Sep. 10, 2021
Analog Signal Generator	Agilent	N5181A	MY50141953	Sep. 11, 2020	Sep. 10, 2021
Non and	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO26	Sep. 11, 2020	Sep. 10, 2021
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO29	Sep. 11, 2020	Sep. 10, 2021
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO31	Sep. 11, 2020	Sep. 10, 2021
	DARE!! Instruments	RadiPowerRPR3006W	17100015SNO33	Sep. 11, 2020	Sep. 10, 2021



## 5. Conducted Emission Test

- 5.1 Test Standard and Limit
  - 5.1.1Test Standard FCC Part 15.207/RSS-GEN 8.8
  - 5.1.2 Test Limit

Conducted Emission Test Limit			
Eroquonov	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	

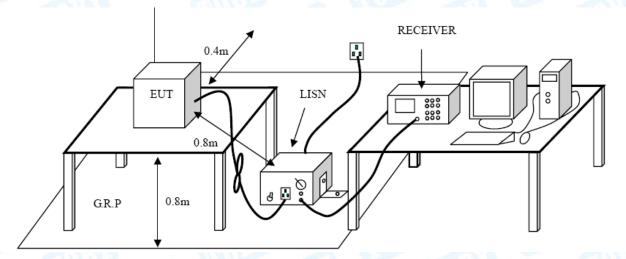
### Notes:

(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 9kHz, 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 15.209/RSS-GEN 8.9
  - 6.1.2 Test Limit

#### Radiated Emission Limit (9 kHz~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

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

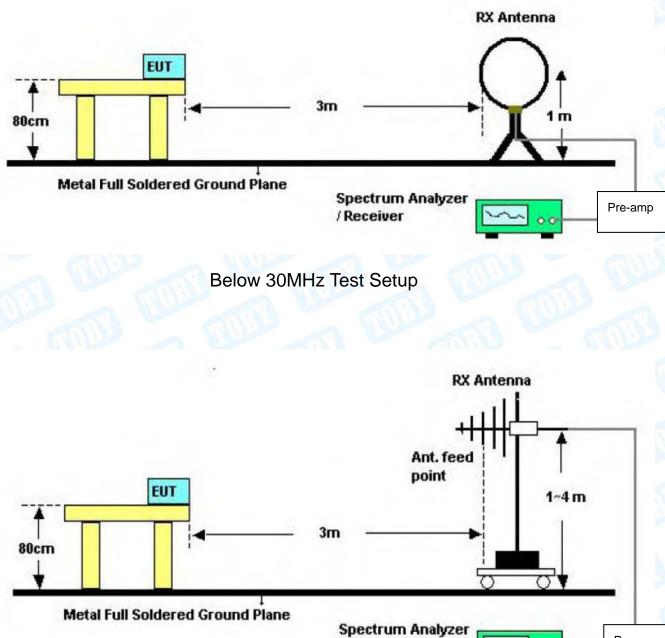
#### Note:

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

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



6.2 Test Setup



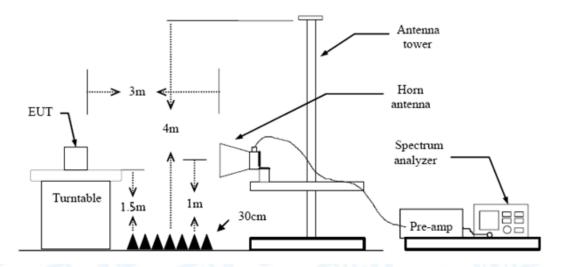
/Receiver

Pre-amp

Below 1000MHz Test Setup

00





Above 1GHz Test Setup

#### 6.3 Test Procedure

- (1) 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.
- (2) Measurements at frequency Below 1GHz. The EUT was placed on a rotating 0.8m 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.

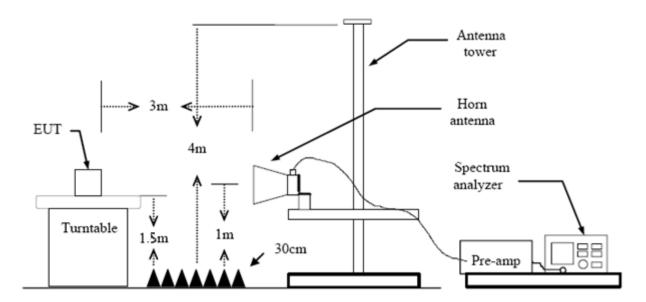


## 7. Restricted Bands and Band-edge test

- 7.1 Test Standard and Limit
  - 7.1.1 Test Standard FCC Part 15.209&15.205 RSS-GEN 8.9&8.10
  - 7.1.2 Test Limit

Restricted Frequency	Distance Meters(at 3m)	
Band (MHz)	Peak	Average
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 AVG 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.

All restriction bands have been tested, only the worst case is reported. Please refer to the Attachment C.

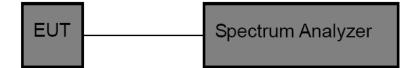


## 8. Number of Hopping Channel

- 8.1 Test Standard and Limit
  - 8.1.1 Test Standard
    - FCC Part 15.247 (a)(1) / RSS 247 5.1(4)
  - 8.1.2 Test Limit

Section	Test Item	Limit
15.247	Number of Hopping Channel	>15

#### 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) Spectrum Setting: RBW=100 KHz, VBW=100 KHz, Sweep time= Auto.
- 8.4 Deviation From Test Standard

No deviation

8.5 EUT Operating Condition

The EUT was set to the Hopping Mode by the Customer.

#### 8.6 Test Data

Please refer to the Attachment D.

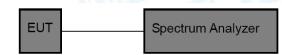


## 9. Average Time of Occupancy

- 9.1 Test Standard and Limit
  - 9.1.1 Test Standard
    - FCC Part 15.247 (a)(1) / RSS 247 5.1(d)
  - 9.1.2 Test Limit

Test Item	Limit
Average Time of Occupancy	0.4 sec

#### 9.2 Test Setup



#### 9.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting: RBW=100KHz, VBW=300KHz.
- (3) Use video trigger with the trigger level set to enable triggering only on full pulses.
- (4) Sweep Time is more than once pulse time.
- (5) Set the center frequency on any frequency would be measure and set the frequency span to zero.
- (6) Measure the maximum time duration of one single pulse.
- (7) Set the EUT for packet transmitting.
- (8) Measure the maximum time duration of one single pulse.

#### 9.4 EUT Operating Condition

The average time of occupancy on any channel within the Period can be calculated with formulas:

The Dwell Time = Burst Width \* Total Hops. The detailed calculations are showed as follows: The duration for dwell time calculation: 0.4 [s] \* hopping number = 0.4 [s] \* 20 [ch] = 8.0 [s\*ch]; The burst width, which is directly measured, refers to the duration on one channel hop.

The maximum number of hopping channels in  $8.0s = 3^{*}(8.0/0.24) = 100$ 

The lowest, middle and highest channels are selected to perform testing to record the dwell time of each occupation measured in this channel, which is called Pulse Time here.

The EUT was set to the Hopping Mode by the Customer.

#### 9.4 Deviation From Test Standard

No deviation

#### 9.5 Test Data

Please refer to the Attachment E.



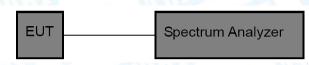
## 10. Channel Separation and Bandwidth Test

10.1 Test Standard and Limit

- 10.1.1 Test Standard
  - FCC Part 15.247/RSS 247 5.1(b)
- 10.1.2 Test Limit

Test Item	Limit	Frequency Range(MHz)
Bandwidth	<=1 MHz (20dB bandwidth)	2400~2483.5
Channel Separation	>25KHz or >two-thirds of the 20 dB bandwidth Which is greater	2400~2483.5

10.2 Test Setup



#### 10.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting:
  Channel Separation: RBW=100 kHz, VBW=100 kHz.
  Bandwidth: RBW=30 kHz, VBW=100 kHz.
- (3) The bandwidth is measured at an amplitude level reduced 20dB 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.
- (4) Measure the channel separation the spectrum analyzer was set to Resolution Bandwidth:30 kHz, and Video Bandwidth:100 kHz. Sweep Time set auto.

#### 10.4 Deviation From Test Standard

No deviation

#### 10.5 EUT Operating Condition

The EUT was set to the Hopping Mode for Channel Separation Test and continuously transmitting for the Bandwidth Test.

#### 10.6 Test Data

Please refer to the Attachment F.

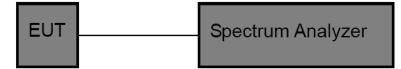


## 11. Peak Output Power Test

- 11.1 Test Standard and Limit
  - 11.1.1 Test Standard
    - FCC Part 15.247 (b) (1)/RSS 247 5.4(b)
  - 11.1.2 Test Limit

Test Item	Limit	Frequency Range(MHz)
Peak Output Power	Hopping Channels>75 Power<1W(30dBm) Other <125 mW(21dBm)	2400~2483.5

11.2 Test Setup



#### 11.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting:
  Peak Detector: RBW=1 MHz, VBW=3 MHz for bandwidth less than 1MHz.
  RBW=3 MHz, VBW=3 MHz for bandwidth more than 1MHz.

#### 11.4 Deviation From Test Standard

No deviation

11.5 EUT Operating Condition

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

11.6 Test Data

Please refer to the Attachment G.



## 12. Antenna Requirement

12.1 Standard Requirement

#### 12.1.1 Standard

FCC Part 15.203

#### 12.1.2 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.

#### 12.2 Deviation From Test Standard

No deviation

#### 12.3 Antenna Connected Construction

The gains of the antenna used for transmitting is 3dBi, and the antenna connector is de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

#### 12.4 Result

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

	Antenna Type
	Permanent attached antenna
110	Unique connector antenna
	Professional installation antenna

## **Attachment A-- Conducted Emission Test Data**

emperature:	<b>23.8</b> ℃		Relative Humidity:	41%
est Voltage:	AC 120V/60H	z	2 0 0	
erminal:	Line			
est Mode:	TX GFSK Mod	de 2406MHz	Can's	THU?
Remark:	All channels h	ave been teste	d and Shows only the w	orst channels.
100.0 dBuV				
				QP: AVG:
40			www.	Marine and a second and a second s

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.5140	26.10	9.70	35.80	56.00	-20.20	QP
2	*	0.5140	16.76	9.70	26.46	46.00	-19.54	AVG
3		0.9420	19.03	9.78	28.81	56.00	-27.19	QP
4		0.9420	10.97	9.78	20.75	46.00	-25.25	AVG
5		1.7380	17.12	9.73	26.85	56.00	-29.15	QP
6		1.7380	9.81	9.73	19.54	46.00	-26.46	AVG
7		5.0100	13.91	9.90	23.81	60.00	-36.19	QP
8		5.0100	7.54	9.90	17.44	50.00	-32.56	AVG
9		11.8580	12.24	9.87	22.11	60.00	-37.89	QP
10		11.8580	6.57	9.87	16.44	50.00	-33.56	AVG
11		24.0020	14.11	10.10	24.21	60.00	-35.79	QP
12		24.0020	9.72	10.10	19.82	50.00	-30.18	AVG

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)

2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)



Temperatur	e: 23.8	°C	y a	Relative Hu	umidity:	41%	
Test Voltage	AC 1	120V/60Hz	A WY			C.S.	200
Terminal:	Neut	tral		1177		-	NUL
Test Mode:	TX C	GFSK Mode 2	2406MHz		100	6.87	
Remark:	All c	hannels have	been teste	d and Shows	only the	worst cha	annels.
100.0 dBuV						0.0	
						QP: AVG:	
40							
40		X. J.					
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mander	way a way of the state of the s	www.apather.apather.apather	- the provide a state to be a state to be a state to be a state of the	astronauthenthermonenthe	which reserves the second	www.www.peak
	Mumme		affer the second state of the second	w-water	·		AVG
-20 0.150	0	.5	(MHz)	5			30.000
		Reading	Correct	Measure-			
No. Mk.	Freq.	Level	Factor	ment	Limit	Over	
	MHz	dBu∨	dB	dBuV	dBuV	dB	Detector
1	0.2300	15.48	9.80	25.28	62.45	-37.17	QP
2	0.2300	10.17	9.80	19.97	52.45	-32.48	AVG
3	0.5140	17.62	9.80	27.42	56.00	-28.58	QP
4 *	0.5140	10.89	9.80	20.69	46.00	-25.31	AVG
5	0.9900	11.15	9.80	20.95	56.00	-35.05	QP
6	0.9900	6.28	9.80	16.08	46.00	-29.92	AVG
7	2.3220	9.93	9.80	19.73	56.00	-36.27	QP
8	2.3220	5.35	9.80	15.15	46.00	-30.85	AVG
9	4.5220	9.93	9.80	19.73	56.00	-36.27	QP
10	4.5220	5.39	9.80	15.19	46.00	-30.81	AVG
11 *	5.2420	8.65	10.00	18.65	60.00	-41.35	QP
	5.2420	4.12	10.00	14.12		-35.88	AVG

2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)



## **Attachment B-- Radiated Emission Test Data**

#### 9KHz~30MHz

From 9KHz to 30MHz: 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

Temperature:	<b>23.2℃</b>	Relative Humidity:	41%					
fest Voltage:	AC 120V/60Hz		1990					
Ant. Pol.	Horizontal	alle a	N.V.					
lest Mode:	TX GFSK Mode 2406MHz							
Remark:	Only worse case is reported							
70.0 dBu¥/m								
20			M Radiation Margin -6 dB					

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		30.8535	33.48	-13.58	19.90	40.00	-20.10	peak
2		192.4183	56.06	-19.83	36.23	43.50	-7.27	peak
3		216.7828	54.78	-19.04	35.74	46.00	-10.26	peak
4	*	289.0020	56.35	-16.50	39.85	46.00	-6.15	peak
5	;	361.7139	51.31	-14.09	37.22	46.00	-8.78	peak
6		675.2078	41.84	-7.36	34.48	46.00	-11.52	peak

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

#### Remark:

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
- 2. QuasiPeak (dB $\mu$ V/m)= Corr. (dB/m)+ Read Level (dB $\mu$ V)
- 3. Margin (dB) = QuasiPeak (dB $\mu$ V/m)-Limit QPK(dB $\mu$ V/m)



Temperature:	<b>23.2</b> °C	Relative Humidity:	41%
Test Voltage:	AC 120V/60Hz	60002	
Ant. Pol.	Vertical		RY -
Test Mode:	TX GFSK Mode 2406	SMHz	
Remark:	Only worse case is re	eported	- FILLE
70.0 dBu∀/m			
20			5C 3M Radiation Margin -6 dB
	- Marrahay (		
-30			
-30			00 600 700 1000.00
30.000 40 50	Reading C	(MHz) 300 400 5 Correct Measure- Factor ment Limit	00 600 700 1000.00 Over
30.000 40 50 No. Mk. F	Reading C req. Level F	correct Measure-	
30.000 40 50 No. Mk. F	Reading C req. Level f /Hz dBuV	Factor Measure-	Over
30.000 40 50 No. Mk. F No. 1 * 528	Reading C req. Level f /Hz dBuV .2458 49.43 -	correct Measure- Factor ment Limit dB/m dBuV/m dBuV/m	Over dB Detect
30.000 40 50 No. Mk. F 1 * 528 2 192	Reading      C        req.      Level      I        /Hz      dBu∨      I        2458      49.43      -        4183      56.09      -	correct Measure- Factor ment Limit dB/m dBuV/m dBuV/m .9.60 39.83 46.00	Over dB Detecto -6.17 peal
30.000 40 50 No. Mk. F 1 * 528 2 192 3 120	Reading    C      req.    Level    I      /Hz    dBu∨    I      2458    49.43    -      4183    56.09    -      2766    56.16    -	Correct      Measure- ment      Limit        dB/m      dBuV/m      dBuV/m        9.60      39.83      46.00        19.83      36.26      43.50	Over dB Detector -6.17 peal -7.24 peal
30.000 40 50 No. Mk. F 1 * 528 2 192 3 120 4 216	Reading    C      req.    Level    I      /Hz    dBu∨    I      2458    49.43    -      4183    56.09    -      2766    56.16    -      7828    52.12    -	CorrectMeasure- mentLimitdB/mdBuV/mdBuV/m9.6039.8346.0019.8336.2643.5022.1733.9943.50	Over dB Detector -6.17 pear -7.24 pear -9.51 pear

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

Remark:

- Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
  QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = QuasiPeak (dBµV/m)-Limit QPK(dBµV/m)

#### Above 1GHz (Only worse case is reported)

				/				
Temperatur	e:	23.2	°C	110 -	Relative H	umidity:	41%	200
Test Voltage	):	AC 1	20V/60Hz	13.	1100	10		NA CON
Ant. Pol. Horizontal								
Test Mode: TX GFSK Mode 2406MHz							1	
Remark:			eport for the cribed limit.	emission w	hich more tha	an 10 dB b	elow the	L'E
No. Mk.	Fr	eq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	M	Hz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1 *	4811	.730	33.86	13.07	46.93	54.00	-7.07	AVG
2	4811	.904	46.84	13.07	59.91	74.00	-14.09	peak
Pomark:								

#### Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)

3. Margin (dB) = Peak/AVG (dBµV/m)-Limit PK/AVG(dBµV/m)

						100		
Temperatu	re:	23.2	°C	-	Relative Hun	nidity:	41%	
Test Voltag	je:	AC 1	20V/60Hz	1990	1200		100	32
Ant. Pol.		Verti	cal		RUL			6
Test Mode:	ode: TX GFSK Mode 2406MHz							
Remark:      No report for the emission which more than 10 dB below t prescribed limit.						below the		
No. Mk.	Fre	q.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	MH	z	dBuV	dB/m	dBuV/m	dBuV/m	n dB	Detector
1	4811.	668	44.68	13.07	57.75	74.00	-16.25	peak
2 *	4811.	764	31.69	13.07	44.76	54.00	-9.24	AVG

#### Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)

3. Margin (dB) = Peak/AVG (dBµV/m)-Limit PK/AVG(dBµV/m)



Temperature:	23.2°	C	- E	<b>Relative Hun</b>	nidity:	41%	
Test Voltage:	AC 1	20V/60Hz		110		-	N. C.
Ant. Pol.  Horizontal    Test Mode:  TX GFSK Mode 2442MHz							
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
No. Mk.	Freq. MHz	•			Limit dBuV/m		Detector
		Level	Factor	ment			Detector peak

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)

3. Margin (dB) = Peak/AVG (dBµV/m)-Limit PK/AVG(dBµV/m)

Temper	ature	<b>:</b>	23.2	°C		Relative H	lumidity:	41%			
Test Voltage: AC 120V/60Hz							and				
Ant. Po	I.		Vertical								
Test Mode: TX GFSK Mode 2442MHz											
Remark	<b>(:</b>		No r	No report for the emission which more than 10 dB below the							
			pres	cribed limit.		1200		and b			
No. I	Mk.	Fre	eq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
		MH	lz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector		
1	4	4883.	602	47.16	13.59	60.75	74.00	-13.25	peak		
2 *	* 2	4883.	878	32.95	13.60	46.55	54.00	-7.45	AVG		

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)

3. Margin (dB) = Peak/AVG (dBµV/m)-Limit PK/AVG(dBµV/m)



Temperature:	23.2	°C		Relative H	lumidity:	41%	
Test Voltage:	AC	120V/60Hz		(In a)	52	~	NU:
Ant. Pol.	Hori	zontal			-0	2.4	
Test Mode:	GFSK Mode	2			5		
Remark:		eport for the cribed limit.	emission w	hich more tha	an 10 dB b	elow the	
No. Mk. F	req.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
N	Hz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detecto
				15.00	54.00	0.70	AVG
1 * 4949	9.838	31.14	14.08	45.22	54.00	-8.78	AVU

2. Peak/AVG (dBµV/m)= Corr. (dB/m)+ Read Level (dBµV)

3. Margin (dB) = Peak/AVG (dBµV/m)-Limit PK/AVG(dBµV/m)

Temperatu	re:	23.2	°C	-	Relative Hu	umidity:	41%	
Test Voltag	je:	AC 1	120V/60Hz	1 yes	120			22
Ant. Pol. Vertical								
Test Mode: TX GFSK Mode 2475MHz								
Remark:			eport for the cribed limit.	emission w	which more the	an 10 dB l	below the	
No. Mk.	Fre	eq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	MH	z	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	4949.	722	46.83	14.08	60.91	74.00	-13.09	peak
2 *	4950.0	038	32.93	14.08	47.01	54.00	-6.99	AVG
-			·	·				

Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)

3. Margin (dB) = Peak/AVG (dBµV/m)-Limit PK/AVG(dBµV/m)

## **Attachment C-- Restricted Bands Requirement Test Data**

diation Tempera		23.2°	0		Relative	Humidity:	41%	<b>V</b> S		
Test Vol			20V/60Hz					-		
Ant. Pol		Horiz			-		60			
Test Mo			TX GFSK Mode 2406MHz							
Remark				se is reported	t	alle		2		
120.0 dB	uV/m									
							3			
							ж Х			
I							$- \uparrow \downarrow \vdash$			
						(RF) FCC P	ART 15C (PEA	K)		
70							Ŧ			
							$\checkmark$			
						1 (RF) FCC X	PART 15C (AV	a) M		
						2		5		
						$\sim$				
20.0										
	0 2329.00	2339.00	2349.00 2	2359.00 2369.00	0 2379.00	2389.00 2399.0	00	2419.0		
			Reading		Measure-	- Limit	Over			
No. N		req.	Level	Factor	ment		Over			
1		lHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Det		
	0000	0.000	50.17	1.28	51.45	74.00	-22.55	р		
1	2390									
1		0.000	40.84	1.28	42.12	54.00	-11.88	Α		
	2390		40.84 99.46	1.28 1.35	42.12 100.81	54.00 Fundamental		A p		

#### Remark:

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = Peak/AVG (dBµV/m)-Limit PK/AVG(dBµV/m)



Temperature:	<b>23.2℃</b>	Relative Humidity:	41%						
Test Voltage:	AC 120V/60Hz	THUR A							
Ant. Pol.	Vertical		123						
Fest Mode:	TX GFSK Mode 240	TX GFSK Mode 2406MHz							
Remark:	Only worse case is r	reported	2 199						
120.0 dBuV/m			3 X X PART 15C (PEAK) C PART 15C (AVG)						
20.0		2 M M M	Mund						

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	51.12	1.28	52.40	74.00	-21.60	peak
2		2390.000	43.24	1.28	44.52	54.00	-9.48	AVG
3	Х	2405.200	102.75	1.35	104.10	Fundamental	Frequency	peak
4	*	2405.400	99.29	1.35	100.64	Fundamental	Frequency	AVG

Remark:

- Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
  Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = Peak/AVG (dBµV/m)-Limit PK/AVG(dBµV/m)



Temperature:	<b>23.2</b> ℃	Relative Humidity: 41%						
Test Voltage:	AC 120V/60Hz							
Ant. Pol.	Horizontal							
Test Mode:	TX GFSK Mode 2475	TX GFSK Mode 2475 MHz						
Remark:	Only worse case is rep	orted						
120.0 dBuV/m								
70		Image: state stat						
N	4	(RF) FCC PART 15C (AVG)						
~~~								
20.0								

N	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2474.200	96.57	1.81	98.38	Fundamenta	I Frequency	AVG
2	Х	2476.000	100.07	1.83	101.90	Fundamenta	Frequency	peak
3		2483.500	60.83	1.88	62.71	74.00	-11.29	peak
4		2483.500	47.03	1.88	48.91	54.00	-5.09	AVG

- Remark: 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) 2. Peak/AVG (dBµV/m)= Corr. (dB/m)+ Read Level (dBµV)
- 3. Margin (dB) = Peak/AVG (dBµV/m)-Limit PK/AVG(dBµV/m)



Temperature:		23.2	C		Relative	Humidity:	41%		
Test \	Voltag	e:	AC 1	20V/60Hz		103	-	NUP	
Ant. I	Pol.		Verti	cal			-	23.4	
Test Mode:			TX G	FSK Mode	2475 MHz	2			5
Rema	ark:		Only	worse case	is reported	CON'S		10	NP-
120.0	dBu∀/m								
Γ									
-		1							
		x X							
		$\square$							
		T j' 4	h						
							(RF) FCC PA	RT 15C (PEA)	9
70			4 3						
		N	X						
-	- A	1	<u> </u>				(RF) FCC F	PART 15C (AVC	i)
	www		×	my -					
	/-			man					
20.0									
245	9.000 24	69.00 2	479.00	2489.00 249	9.00 2509.00	2519.00 2	529.00 2539.00	0 2	2559.00 MH
				Deedine	Correct	Manager			
No	. Mk	Fre	'n	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	. IVIX.		· · ·						
		N/L	7	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detecto
		MH							
1	Х	2474.		102.83	1.81	104.64	Fundamental	Frequency	peak
1 2	X *		000	102.83 99.33	1.81 1.81	104.64 101.14	Fundamental Fundamental		peak AVG

4

Remark: 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB) 2. Peak/AVG (dBµV/m)= Corr. (dB/m)+ Read Level (dBµV/m)

2483.500

- 3. Margin (dB) = Peak/AVG (dBµV/m)-Limit PK/AVG(dBµV/m)

48.77

1.88

-3.35

54.00

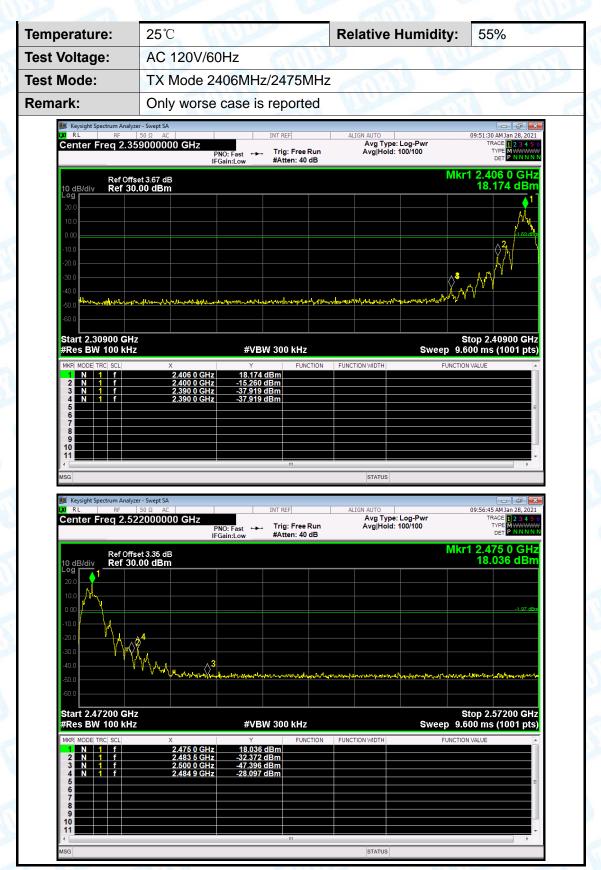
50.65

AVG

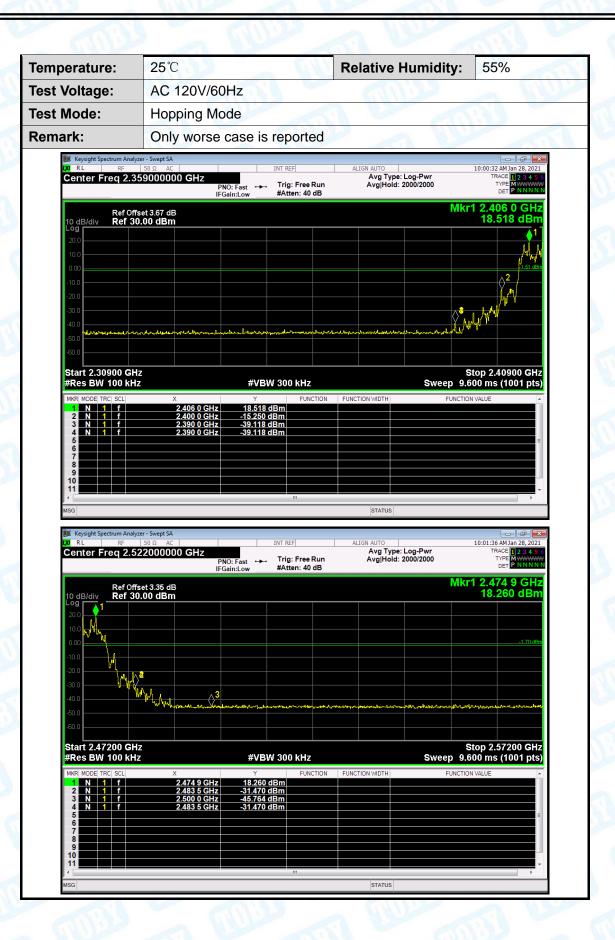




#### (2) Conducted Band Edge Test







## Attachment D-- Number of Hopping Channel Test Data

Temperature:	<b>25</b> ℃	and)	Relative Humidity:	55%
Test Voltage:	AC 1	20V/60Hz		23
Test Mode:	Норр	oing Mode		CE CON
Frequency Ran	ige	Test Mode	Quantity of Hopping Channel	Limit
2406MHz~2475N	ИНz	GFSK	16	>15

#### **GFSK Mode**

2.441750000 Offset 3.61 dB 20.00 dBm	Р	NO: Fast	Trig: F #Atten	iree Run : 30 dB	and the last				2.404 6	
	<sub>ny</sub> Mun Muq	blybbybb	VU JA	Vy	and Work	Marthard		Akr1	2.404 6 -8	.832 dBm
haldalda fh	م <u>را</u> للعر (بالمع	M.M.S.	VU VI	My	-	hallow	Mylaler	M	Wybly	¢ <sup>2</sup>
GHz kHz		#VBV	V 300 k	Hz			Sv	veep	Stop 2 8.000 m	.48350 GHz s (1001 pts)
			lBm	FUNCTION	FUNC	TION WIDTH		FUNC	CTION VALUE	
	(Hz × 2.404 (	(Hz	KHZ #VBW X 2.404 676 0 GHz -8.832 0	X      Y        2.404 676 0 GHz      -8.832 dBm        2.475 901 5 GHz      -5.807 dBm	KHZ #VBW 300 kHz X Y FUNCTION 2.404 676 0 GHz -8.832 dBm	X      Y      FUNCTION      FUNCTION        2.404 676 0 GHz      -8.832 dBm      -	X      Y      FUNCTION      FUNCTION WIDTH        2.404 676 0 GHz      -8.832 dBm      - <td>X      Y      FUNCTION      FUNCTION WIDTH        2.404 676 0 GHz      -8:832 dBm      -8:832 dBm      -8:832 dBm      -8:832 dBm        2.475 901 6 GHz      -8:807 dBm      -9:807 dBm      -9:</td> <td>X      Y      FUNCTION      FUNCTION WIDTH      FUNC        2.404 676 0 GHz      -8.832 dBm      -8.832 dBm      -9.8332 dBm      <td< td=""><td>X      Y      FUNCTION      FUNCTION WIDTH      FUNCTION VALUE        2.404 676 0 GHz      -8.832 dBm      -5.807 dBm      FUNCTION WIDTH      FUNCTION VALUE</td></td<></td>	X      Y      FUNCTION      FUNCTION WIDTH        2.404 676 0 GHz      -8:832 dBm      -8:832 dBm      -8:832 dBm      -8:832 dBm        2.475 901 6 GHz      -8:807 dBm      -9:807 dBm      -9:	X      Y      FUNCTION      FUNCTION WIDTH      FUNC        2.404 676 0 GHz      -8.832 dBm      -8.832 dBm      -9.8332 dBm <td< td=""><td>X      Y      FUNCTION      FUNCTION WIDTH      FUNCTION VALUE        2.404 676 0 GHz      -8.832 dBm      -5.807 dBm      FUNCTION WIDTH      FUNCTION VALUE</td></td<>	X      Y      FUNCTION      FUNCTION WIDTH      FUNCTION VALUE        2.404 676 0 GHz      -8.832 dBm      -5.807 dBm      FUNCTION WIDTH      FUNCTION VALUE

## Attachment E-- Average Time of Occupancy Test Data

Temper	ature:	25°								
Test Vo	Itage:	AC	120V/60Hz			193				
Test Mo	ode:	Нор	oping Mode (GFSk	)						
Remark	:	The	e number of total h	opping frequen	cies up to 24.	1				
Test			Test Chan		Reading Time	Total hops	Test Result	Limit	Result	
Mode			(ms)	(N)	(ms)	(ms)	Result			
GFSK	244	2	0.472	24	51.92	400	PASS			

The Dwell Time = Burst Width \* Total Hops. The detailed calculations are showed as follows:

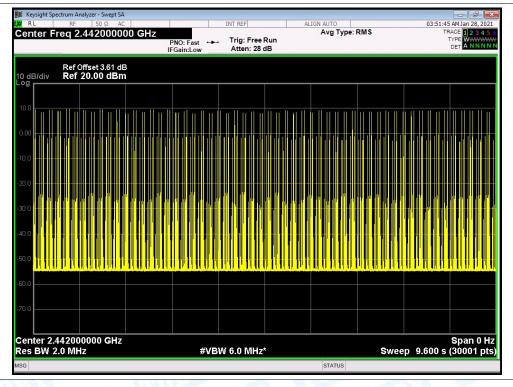
The duration for dwell time calculation: 0.4 [s] \* hopping number = 0.4 [s] \* 24[ch] =9.6[s\*ch];

The burst width, which is directly measured, refers to the duration on one channel hop.

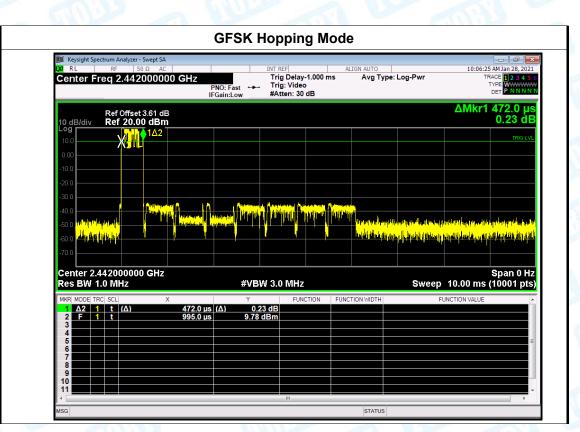
The maximum number of hopping channels in 9.6s is 110.

Reading Time=0.472ms\*110=51.92ms

#### Hopping Channels in 9.6s







# TOBY

## **Attachment F-- Channel Separation and Bandwidth Test**

## Data

F					
	Temperature:	25°	C	Relative Humidity:	55%
	Test Voltage:	AC	: 120V/60Hz		
	Test Mode:	ТΧ	Mode (GFSK)		
	Channel frequei (MHz)	ncy	99% OBW (kHz)	20dB Bandwidth (kHz)	20dB Bandwidth *2/3 (kHz)
	2406		4249.8	4201	2800.67
	2442		4397.5	4446	2964.00
	2475		4255.7	4318	2878.67
			GFSK TX	Mode	

09:51:10 AM Jan 28, 202: Radio Std: None 
 ALIGN AUTO

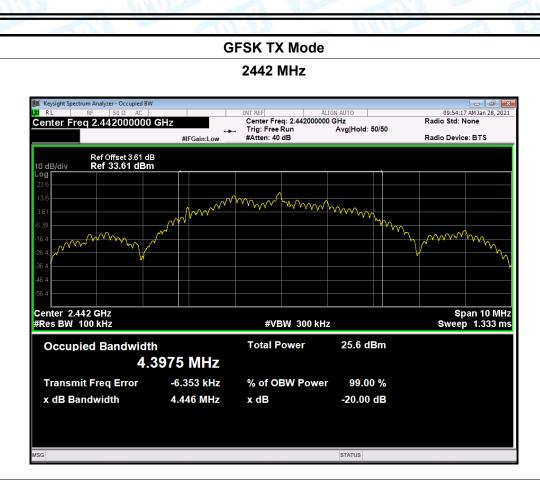
 Center Freq: 2.406000000 GHz

 Trig: Free Run
 Avg|Hold: 50/50

 #Atten: 40 dB
 Center Freq 2.406000000 GH Radio Device: BTS #IFGain:Low Ref Offset 3.67 dB Ref 33.67 dBm and white white  $\sim$ WWW vvvvv www Center 2.406 GHz #Res BW 100 kHz Span 10 MHz Sweep 1.333 ms #VBW 300 kHz **Total Power** 25.3 dBm **Occupied Bandwidth** 4.2498 MHz **Transmit Freq Error** 4.677 kHz % of OBW Power 99.00 % -20.00 dB x dB Bandwidth 4.201 MHz x dB STATUS

2406 MHz





#### **GFSK TX Mode**

2475 MHz

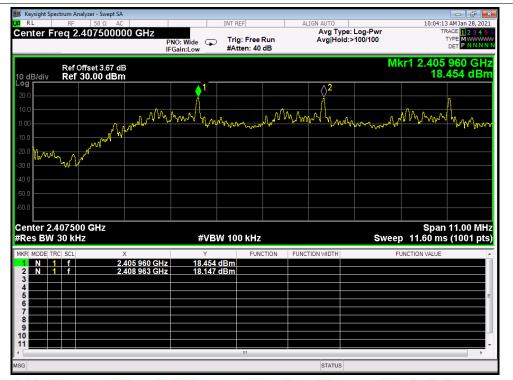


#### **Channel Separation Test data:**

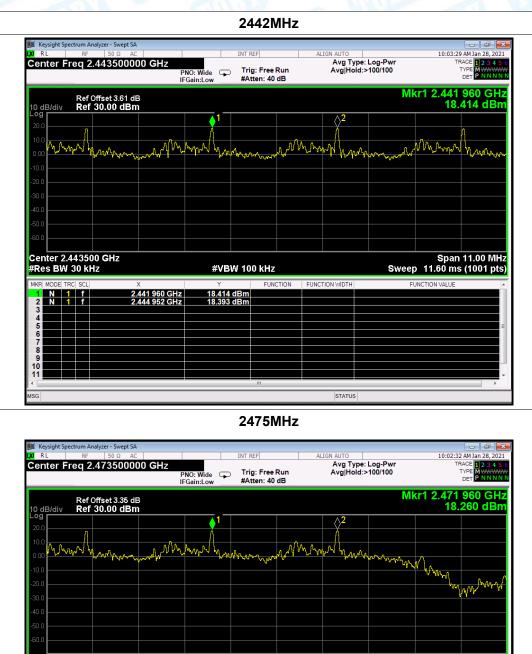
Temperature:	<b>25</b> ℃		<b>Relative Humidit</b>	<b>y</b> : 55%			
Test Voltage:	AC 120V/	60Hz	0002				
Test Mode:	Hopping I	Mode (GFSK)					
Remark:	We test a	I channel and worse case recorded in the report.					
Channel frequ	Jency	Separation Re	Separation Limit				
(MHz)		(kHz)		(kHz)			
2406		3.003		2800.67			
2442 2475		2.992		2964.00			
		2.992		2878.67			

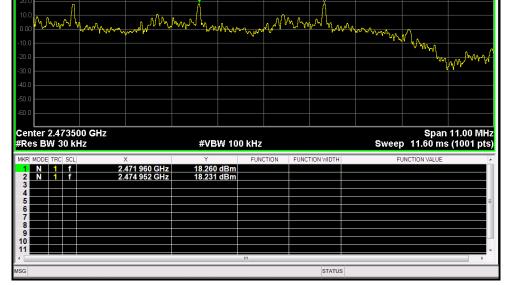
#### Hopping Mode

#### 2406 MHz









TB-RF-074-1.0

## Attachment G-- Peak Output Power Test Data

Voltage: Mode: nnel frequend 2406 2442 2475	AC 120V/0 TX Mode cy (MHz)		. ,	Lin	nit (dBm)
<b>innel frequend</b> 2406 2442		Test Resul	. ,	Lin	ait (dBm)
2406 2442	cy (MHz)		. ,	Lin	ait (dBm)
2442		18.26			iii (ubiii)
			67		
2475			27		30
			32		
	1	GFSK TX	Mode		
		2406 N	1Hz		
Keysight Spectrum Analyzer	- Swept SA 50 Ω AC				09:50:42 AM Jan 28, 2021
Center Freq 2.406		PNO: Fast +++ Trig: Free R IFGain:Low #Atten: 40 c		-Pwr	09:50:42 AMJan 28, 2021 TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N N
Ref Offset 10 dB/div Ref 30.0	: 3.67 dB 10 dBm			Mkr1 2	.404 948 GHz 18.267 dBm
Log		1			
20.0					
10.0	The second s				
0.00					
-10.0					
-20.0					
-30.0					
-40.0					
-50.0					
-60.0					
Center 2.406000 GI					Spop 40.00 Mile
#Res BW 2.0 MHz	12	#VBW 6.0 MHz	STATUS	Sweep 1.33	Span 10.00 MHz 3 ms (10001 pts)

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





