

Shenzhen Toby Technology Co., Ltd.

Report No.: TB-FCC177239

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FCC Radio Test Report FCC ID: 2AX96-Y16-T

Original Grant

Report No. TB-FCC177239

ACCUTIME WATCH CORPORATION **Applicant**

Equipment Under Test (EUT)

KESSARIS WEARABLE TECHNOLOGY INTERCHANGEABLE **EUT Name**

STRAP WATCH

Model No. Y16-T

N/A Series Model No.

Brand Name KESSARIS

TBBJ-20201106-11-1# Sample ID

2020-11-18 **Receipt Date**

Test Date 2020-11-19 to 2020-12-20

Issue Date 2020-12-20

Standards FCC Part 15, Subpart C 15.247

ANSI C63.10: 2013 **Test Method**

Conclusions PASS

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

Test/Witness Engineer

Engineer Supervisor

Engineer Manager

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

TB-RF-074-1.0

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Revision History

Report No.	Version	Description	Issued Date
TB-FCC177239	Rev.01	Initial issue of report	2020-12-20
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1. General Information about EUT

1.1 Client Information

Applicant		ACCUTIME WATCH CORPORATION
Address	:	1001 AVE. OF THE AMERICAS 6TH FLOOR NY, NY 10018 USA
Manufacturer		ShenZhen KY Technology Co., Ltd
Address	e	4th Floor, Building A4, Anle Industrial Zone, NO.172, Hangcheng
Addioos		Road, Xixiang Town, Baoan District,ShenZhen.China

1.2 General Description of EUT (Equipment Under Test)

EUT Name		KESSARIS WEARABLE TECHNOLOGY INTERCHANGEABLE STRAP WATCH			
Model(s) No.		Y16-T			
Model Different					
0,000		Operation Frequency:	Bluetooth 4.2(BLE): 2402MHz~2480MHz		
		Number of Channel:	Bluetooth 4.2(BLE): 40 channels see note(3)		
Product		RF Output Power:	-0.838 dBm (Max)		
Description		Antenna Gain:	0.6 dBi Internal Antenna		
MUDE		Modulation Type:	GFSK		
033		Bit Rate of Transmitter:	1Mbps		
Power Rating	5	Input: DC 5V DC 3.7V 170mAh by Li-ion battery			
Software Version		V5.12			
Hardware Version	3	V1.0 Please refer to the User's Manual			
Connecting I/O Port(S)					

Note:

This Test Report is FCC Part 15.247 for Bluetooth, the test procedure follows the FCC KDB 558074 D01 DTS Means Guidance v05r02.

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



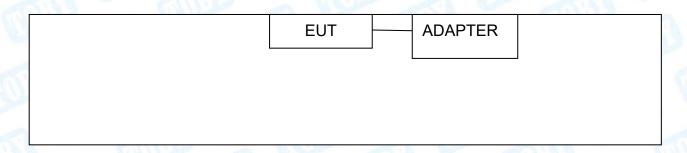
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(3) Channel List:

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





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1.4 Description of Support Units

Equipment Information						
Name	Model	FCC ID/VOC	Manufacturer	Used "√"		
ADAPTER			HUAWEI	√		
Cable Information						
Number	Shielded Type	Ferrite Core	Length	Note		
- TO 14		THILL STATE OF THE PARTY OF THE	- A			

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)				
Note : The antenna gain provided by the applicant, the verified for the RF conduction test and adapter provided by TOBY test lab.					

Note:

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

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

BLE Mode: GFSK Modulation Transmitting mode.

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



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1.6 Description of Test Software Setting

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

Test Software Version	Million	nRFgo Studio	
Frequency	2402 MHz	2442MHz	2480 MHz
BLE GFSK	DEF	DEF	DEF

1.7 Measurement Uncertainty

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

Test Item	Parameters	Expanded Uncertainty (U _{Lab})	
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	±3.50 dB ±3.10 dB	
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	±4.60 dB	
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	±4.50 dB	
Radiated Emission	Level Accuracy: Above 1000MHz	±4.20 dB	



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1.8 Test Facility

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

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

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 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.

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.



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2. Test Summary

	FCC Pa	rt 15 Subpart C(15.2	47)/RSS 247 Issue 2		
Standard So	ection	Took Itoms	Toot Commission	les al arma a má	Damada
FCC	IC	Test Item	Test Sample(s)	Judgment	Remark
15.203	an O	Antenna Requirement	TBBJ-20201106-11-2#	PASS	N/A
15.207(a)	RSS-GEN 7.2.4	Conducted Emission	TBBJ-20201106-11-1#	PASS	N/A
15.205&15.247(d)	RSS-GEN 7.2.2	Band-Edge & Unwanted Emissions into Restricted Frequency	TBBJ-20201106-11-2#	PASS	N/A
15.247(a)(2)	RSS 247 5.2 (1)	6dB Bandwidth	TBBJ-20201106-11-2#	PASS	N/A
15.247(b)(3)	RSS 247 5.4 (4)	Conducted Max Output Power	TBBJ-20201106-11-2#	PASS	N/A
15.247(e)	RSS 247 5.2 (2)	Power Spectral Density	TBBJ-20201106-11-2#	PASS	N/A
15.205, 15.209&15.247(d)	RSS 247 5.5	Transmitter Radiated Spurious &Unwanted Emissions into Restricted Frequency	TBBJ-20201106-11-2#	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



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4. Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 06, 2020	Jul. 05, 2021
EIVII Test Receiver	Compliance	ESCI	100321	Jul. 00, 2020	Jul. 05, 2021
RF Switching Unit	Direction Systems	RSU-A4	34403	Jul. 06, 2020	Jul. 05, 2021
Tit Ownorming Offic	Inc	1100714	04400	oui. 00, 2020	oui. 00, 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	FSV40-N	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
_oop 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
Pre-amplifier	SKET	LNPA_1840G-50	SK201904032	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	ESPI	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
1	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Sep. 11, 2020	Sep. 10, 2021
DE Dower Sones	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Sep. 11, 2020	Sep. 10, 2021
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Sep. 11, 2020	Sep. 10, 2021
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO33	Sep. 11, 2020	Sep. 10, 2021



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6. Conducted Emission Test

5.1 Test Standard and Limit

5.1.1Test Standard FCC Part 15.207

5.1.2 Test Limit

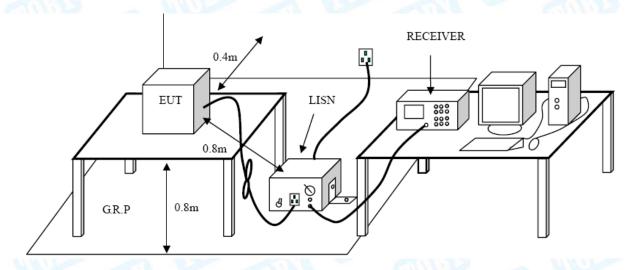
Conducted Emission Test Limit

Eroguenov	Maximum RF Lin	e 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





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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.



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7. 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 Met	ers(at 3m)
(MHz)	Peak (dBuV/m)	Average (dBuV/m)
Above 1000	74	54

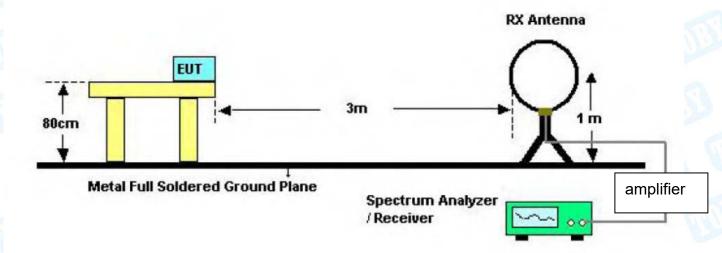
Note:

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

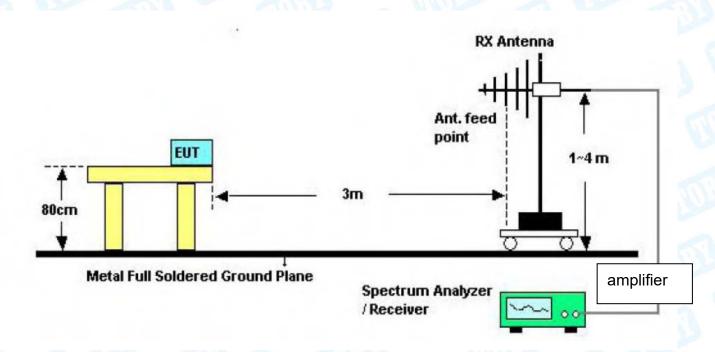


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6.2 Test Setup



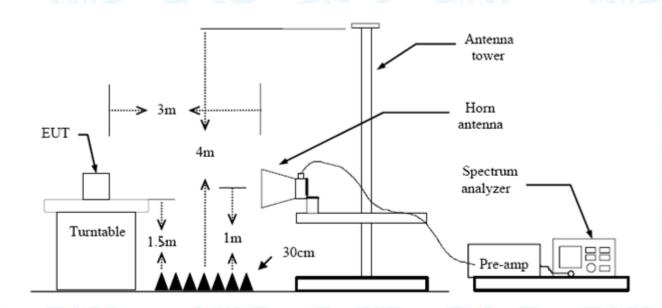
Below 30MHz Test Setup



Below 1000MHz Test Setup



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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.



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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.



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8. Restricted Bands Requirement

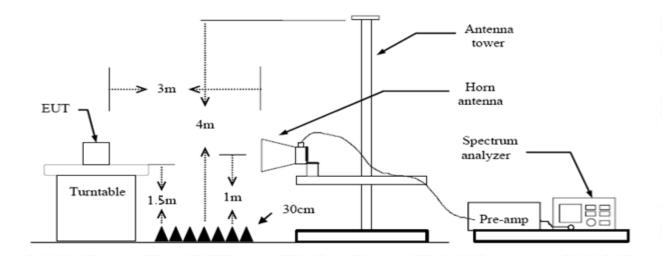
7.1 Test Standard and Limit

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

7.1.2 Test Limit

Restricted Frequency	Distance Me	eters(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.



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(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.



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9. Bandwidth Test

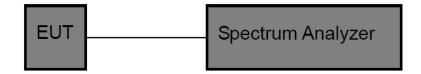
8.1 Test Standard and Limit

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

8.1.2 Test Limit

FCC	Part 15 Subpart C(15.247)/F	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.



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10. Peak Output Power Test

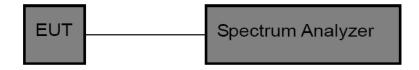
9.1 Test Standard and Limit

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

9.1.2 Test Limit

FCC Par	t 15 Subpart C(15.247)/RS	S-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 v05r02.

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

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.



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11. Power Spectral Density Test

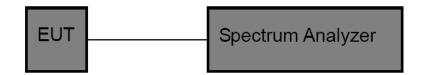
10.1 Test Standard and Limit

10.1.1 Test Standard FCC Part 15.247 (e)

10.1.2 Test Limit

FC	CC Part 15 Subpart C(15.2	47)
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 v05r02.

- (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.



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12. Antenna Requirement

11.1 Standard Requirement

10.1.1 Standard

FCC Part 15.203

10.1.2 Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

11.2 Deviation From Test Standard

No deviation

11.3 Antenna Connected Construction

The gains of the antenna used for transmitting is 0.6 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 Internal Antenna. It complies with the standard requirement.

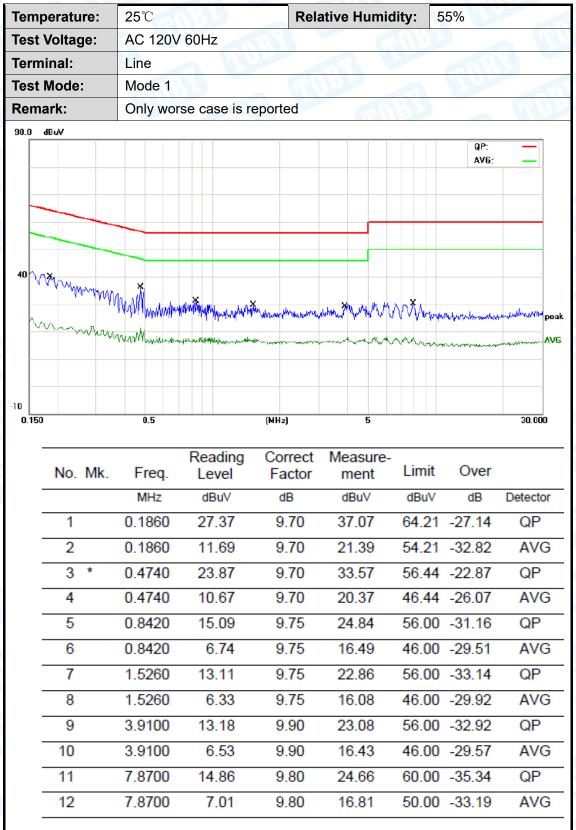
	Antenna Type	
W W	⊠Permanent attached antenna	
W. S.	☐Unique connector antenna	BR.
A MAR	☐Professional installation antenna	





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Attachment A-- Conducted Emission Test Data



- 1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
- 2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)





Temperature:	25℃			Relative H	umidity	: 55%	
Test Voltage:	AC 1	20V 60Hz		CHIL.		1 6	
Terminal:	Neuti	ral			MILLE		~ N
Test Mode:	Mode	e 1				5	30
Remark:	Only	worse case	is reported	The same	1	1135	
90.0 dBuV							
						QP:	
-							
40 X W W W W W W W W W W W W W W W W W W	¥						
. Alubord	YVYNNAMM HUMAN	advadasediki daga	. Aliana	A Market	m.ĂΛ Χ Λν		J. b deedlakelee De
mmm	nn na n	Markhad a la a cala	AND I HEADING AND TOWN	arakilikarakariar miler akil ak	. A A A A A A A	4,000 grantestant	De de de la composition della
	" V PURVINDININA	Aprilia de la maria de la m	of white first have represented in a standard with	for the second second second second	~~~~		A'
16							
0.150	0.5		(MHz)	5			30.000
0.150	0.5	Reading					30.000
	o.s Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	30.000
0.150			Correct	Measure-	Limit	Over	30.000 Detector
0.150	Freq.	Level	Correct Factor	Measure- ment		dB	
0.150 No. Mk.	Freq.	Level dBuV	Correct Factor	Measure- ment dBuV	dBuV	dB	Detector
No. Mk.	Freq. MHz 0.1700	dBuV 28.55	Correct Factor dB 9.80	Measure- ment dBuV 38.35	dBuV 64.96 54.96	dB -26.61	Detector QP
No. Mk.	Freq. MHz 0.1700 0.1700	dBuV 28.55 13.24	Correct Factor dB 9.80 9.80	Measure- ment dBuV 38.35 23.04	dBuV 64.96 54.96 56.44	dB -26.61 -31.92	Detector QP AVG
No. Mk. 1 2 3 *	Freq. MHz 0.1700 0.1700 0.4740	Level dBuV 28.55 13.24 25.05	Correct Factor dB 9.80 9.80 9.80	Measure- ment dBuV 38.35 23.04 34.85	dBuV 64.96 54.96 56.44 46.44	dB -26.61 -31.92 -21.59	Detector QP AVG QP
No. Mk. 1 2 3 * 4	Freq. MHz 0.1700 0.1700 0.4740 0.4740	Level dBuV 28.55 13.24 25.05 11.36	Correct Factor dB 9.80 9.80 9.80 9.80	Measure- ment dBuV 38.35 23.04 34.85 21.16	dBuV 64.96 54.96 56.44 46.44 56.00	dB -26.61 -31.92 -21.59 -25.28	Detector QP AVG QP AVG
No. Mk. 1 2 3 * 4 5	Freq. MHz 0.1700 0.1700 0.4740 0.4740 0.9140	Level dBuV 28.55 13.24 25.05 11.36 16.21	Correct Factor dB 9.80 9.80 9.80 9.80 9.80	Measure- ment dBuV 38.35 23.04 34.85 21.16 26.01	dBuV 64.96 54.96 56.44 46.44 56.00 46.00	dB -26.61 -31.92 -21.59 -25.28 -29.99	Detector QP AVG QP AVG QP
No. Mk. 1 2 3 * 4 5 6	Freq. MHz 0.1700 0.1700 0.4740 0.4740 0.9140 0.9140	Level dBuV 28.55 13.24 25.05 11.36 16.21 7.17	Correct Factor dB 9.80 9.80 9.80 9.80 9.80 9.80	Measure- ment dBuV 38.35 23.04 34.85 21.16 26.01 16.97	dBuV 64.96 54.96 56.44 46.44 56.00 46.00	dB -26.61 -31.92 -21.59 -25.28 -29.99 -29.03	Detector QP AVG QP AVG QP AVG
No. Mk. 1 2 3 * 4 5 6 7	Freq. MHz 0.1700 0.1700 0.4740 0.4740 0.9140 0.9140 1.6300	Level dBuV 28.55 13.24 25.05 11.36 16.21 7.17 11.11	Correct Factor dB 9.80 9.80 9.80 9.80 9.80 9.80	Measure- ment dBuV 38.35 23.04 34.85 21.16 26.01 16.97 20.91	dBuV 64.96 54.96 56.44 46.44 56.00 46.00 46.00	dB -26.61 -31.92 -21.59 -25.28 -29.99 -29.03 -35.09	Detector QP AVG QP AVG QP AVG QP
No. Mk. 1 2 3 * 4 5 6 7 8	Freq. MHz 0.1700 0.1700 0.4740 0.4740 0.9140 0.9140 1.6300 1.6300	Level dBuV 28.55 13.24 25.05 11.36 16.21 7.17 11.11 5.66	Correct Factor dB 9.80 9.80 9.80 9.80 9.80 9.80 9.80	Measure- ment dBuV 38.35 23.04 34.85 21.16 26.01 16.97 20.91 15.46	dBuV 64.96 54.96 56.44 46.44 56.00 46.00 46.00 60.00	dB -26.61 -31.92 -21.59 -25.28 -29.99 -29.03 -35.09 -30.54	Detector QP AVG QP AVG QP AVG AVG
No. Mk. 1 2 3 * 4 5 6 7 8	Freq. MHz 0.1700 0.1700 0.4740 0.4740 0.9140 1.6300 1.6300 6.6300	Level dBuV 28.55 13.24 25.05 11.36 16.21 7.17 11.11 5.66 14.50	Correct Factor dB 9.80 9.80 9.80 9.80 9.80 9.80 9.80 9.80	Measure- ment dBuV 38.35 23.04 34.85 21.16 26.01 16.97 20.91 15.46 24.38	dBuV 64.96 54.96 56.44 46.44 56.00 46.00 46.00 60.00 50.00	dB -26.61 -31.92 -21.59 -25.28 -29.99 -29.03 -35.09 -30.54 -35.62	Detector QP AVG QP AVG QP AVG QP AVG QP AVG

- Remark:
 1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
 2. Margin (dB) = QuasiPeak/Average (dBuV)-Limit (dBuV)



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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

Теі	mpera	ature	:	25°	С		H.H.I		Relative H	lumidity:	55%	
Te:	st Vol	tage	:	DC	3.7	V			10.5	1	MA	
Αn	t. Pol			Hoi	rizo	ntal				(BE)		MIL
Tes	st Mo	de:		Мо	de 2	2	47.5		A W		177	
Re	mark:			On	ly w	orse	e case	is reported		S GAI	معطول	
80.	0 dBuV	7/m										
										(RF)FC0	C 15C 3M Rac	diation
												gin -6 dB
						1			* 3		5 X	8 X
						丁			×	X ,		
30								1X	Why Mr.		h. hall	Muluhan
	Mw.							$\longrightarrow \mathbb{A}$	The control	Maryland	Maryana	
	mym	www	m. 1	٨		Ann	mandage	many				
				July (p. v	V							
				+	+							
20	000	40	FO		70	80		(MHz)		200 400	E00 C00	700 1000 00
3	0.000	40	50	60	70					300 400	500 600	700 1000.00
	NI.	MI					ading	Correct	Measure-	Limit	Over	
	INO.	Mk.		req			.evel	Factor	ment			
				MHz			dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
	1		168	3.41	38	4	7.21	-20.52	26.69	43.50	-16.81	peak
	2	İ	216	3.782	28	6	0.30	-19.04	41.26	46.00	-4.74	QP
	3		263	3.819	90	5	4.28	-16.96	37.32	46.00	-8.68	peak
	4		312	2.179	94	5	3.62	-15.88	37.74	46.00	-8.26	peak
	-						2.41	-10.99	41.42	46.00	-4.58	
		T	492	211				-10.55	41.44	40.00	-4.50	peak
	5	! *	482	2.21 1.86			8.19	-6.62	41.57	46.00	-4.43	peak

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





Temperature:	25℃	1	R	elative Humio	dity:	55%	
Test Voltage:	DC 3.7	V		dilli		I King	
Ant. Pol.	Vertica		MAL S	- 6	1110		111
Test Mode:	Mode 2	2				THE STATE OF	
Remark:	Only w	orse case is	s reported.	Mir.		Aller	X
80.0 dBuV/m							
30			My		(RF)FCC	15C 3M Radiation Margin 6 o	IB G
Vui V	Mymm	annamm	mound	100			
20 30.000 40 50	3,00	an amount	(MHz)	300	400 !	500 600 700	1000.00
30.000 40 50	0 60 70	Reading	Correct	Measure-			1000.00
30.000 40 50	60 70 Freq.	Level		Measure- ment	Limit	Over	
30.000 40 50 No. Mk.	Freq.	Level	Correct Factor	Measure- ment dBuV/m	Limit dBuV/m	Over dB	1000.000
30.000 40 50 No. Mk.	60 70 Freq.	Level	Correct Factor	Measure- ment	Limit	Over dB	Detecto
No. Mk.	Freq.	Level	Correct Factor	Measure- ment dBuV/m	Limit dBuV/m	Over dB -11.41	Detecto peak
No. Mk. 1 31 2 210	Freq. MHz	dBuV 42.84	Correct Factor dB/m -14.25	Measure- ment dBuV/m 28.59	Limit dBuV/m 40.00	Over dB -11.41 -6.85	Detecto peak peak
No. Mk. 1 31 2 210 3 45	Freq. MHz .7313	dBuV 42.84 58.19	Correct Factor dB/m -14.25 -19.04	Measure- ment dBuV/m 28.59 39.15	Limit dBuV/m 40.00 46.00	Over dB -11.41 -6.85 -7.39	
No. Mk. 1 31 2 216 3 458 4 * 506	Freq. MHz .7313 6.7828 5.9057	dBuV 42.84 58.19 50.38	Correct Factor dB/m -14.25 -19.04 -11.77	Measure- ment dBuV/m 28.59 39.15 38.61	Limit dBuV/m 40.00 46.00	Over dB -11.41 -6.85 -7.39 -4.80	Detecto peak peak peak

Remark:

*:Maximum data

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

x:Over limit !:over margin





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Above 1GHz

Temperature:	25℃	Relative Humidity:	55%		
Test Voltage:	DC 3.7V				
Ant. Pol.	Horizontal				
Test Mode:	BLE(1Mbps) Mode TX 2402	MHz	WILLIAM STATE		
Remark:	No report for the emission which more than 10 dB below the				
	prescribed limit.	Milling	- W		

No	. Mk.	Freq.		Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4804.000	41.58	13.01	54.59	74.00	-19.41	peak
2	*	4804.000	34.30	13.01	47.31	54.00	-6.69	AVG

- 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 (dB μ V/m)-Limit PK/AVG(dB μ V/m)

Temperature:	25℃	Relative Humidity:	55%
Temperature.	200	Relative Hailingty.	3370
Test Voltage:	DC 3.7V	The state of the s	
Ant. Pol.	Vertical		7 100
Test Mode:	BLE(1Mbps) Mode	e TX 2402 MHz	33
Remark:	No report for the e	emission which more than 10 de	B below the
	prescribed limit.		LAID:

No	. Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4804.000	40.30	13.01	53.31	74.00	-20.69	peak
2	*	4804.000	30.21	13.01	43.22	54.00	-10.78	AVG

- 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:	25℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V	AMILE TO SERVICE	The same of the sa
Ant. Pol.	Horizontal		
Test Mode:	BLE(1Mbps) Mode TX 2442	MHz	
Remark:	No report for the emission was prescribed limit.	hich more than 20 dB	below the

No	. Mk	Freq.		Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4884.000	41.10	13.60	54.70	74.00	-19.30	peak
2	*	4884.000	29.61	13.60	43.21	54.00	-10.79	AVG

- 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:	25℃ Rel	ative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Vertical	1132	TILL
Test Mode:	BLE(1Mbps) Mode TX 2442 MHz		
Remark:	No report for the emission which	more than 20 dB	below the
	prescribed limit.		

No	. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4884.000	41.45	13.60	55.05	74.00	-18.95	peak
2	*	4884.000	30.54	13.60	44.14	54.00	-9.86	AVG

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





Temperature:	25℃	Relative Humidity:	55%			
Test Voltage:	DC 3.7V	ALITY OF THE PARTY	West of the			
Ant. Pol.	Horizontal	Horizontal				
Test Mode:	BLE(1Mbps) Mode TX 2480	MHz				
Remark:	No report for the emission which more than 20 dB below the					
	prescribed limit.		The Court			

No	. Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4960.000	39.39	14.15	53.54	74.00	-20.46	peak
2	*	4960.000	26.16	14.15	40.31	54.00	-13.69	AVG

- 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 (dB μ V/m)-Limit PK/AVG(dB μ V/m)

25℃	Relative Humidity:	55%			
DC 3.7V					
Vertical	Vertical				
BLE(1Mbps) Mode TX	2480 MHz				
No report for the emission which more than 20 dB below the					
prescribed limit.		Chine			
	DC 3.7V Vertical BLE(1Mbps) Mode TX No report for the emiss	DC 3.7V Vertical BLE(1Mbps) Mode TX 2480 MHz No report for the emission which more than 20 dB			

No	. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4960.000	39.69	14.15	53.84	74.00	-20.16	peak
2	*	4960.000	29.98	14.15	44.13	54.00	-9.87	AVG

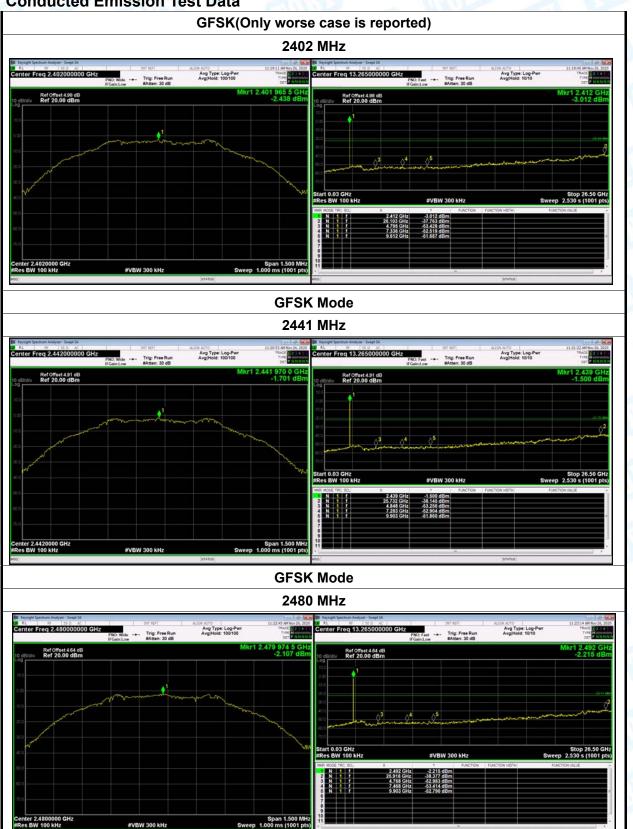
- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = Peak/AVG (dB μ V/m)-Limit PK/AVG(dB μ V/m)



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Conducted Emission Test Data

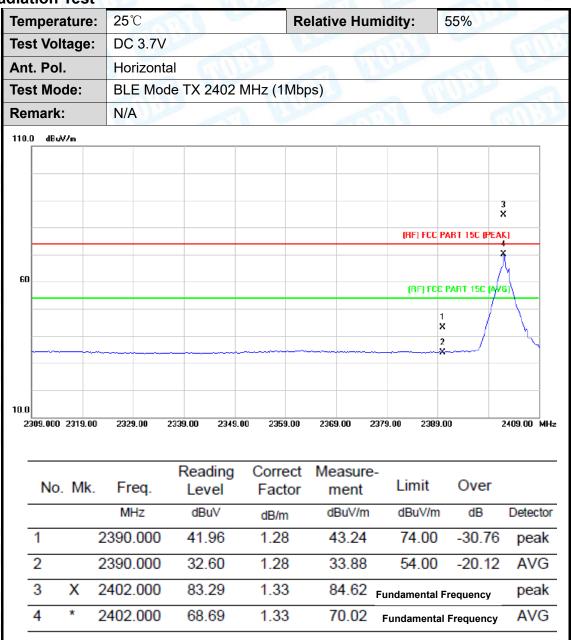




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Attachment C-- Restricted Bands Requirement and Band **Edge Test Data**

(1) Radiation Test



- 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 (dB μ V/m)-Limit PK/AVG(dB μ V/m)





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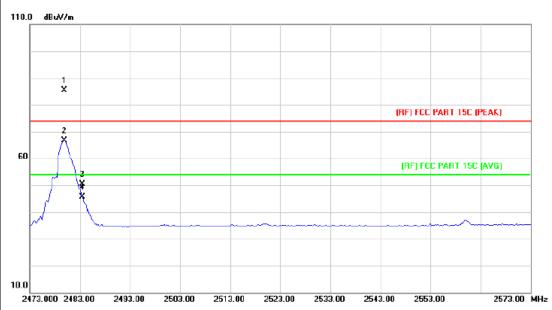
Гет	peratur	e:	25℃		I H	F	Relativ	e Hu	midity:	55%	195	
Гest	Voltage	e:	DC 3.7V									
Ant.	Pol.		Vertic	al		Dist.			CITIES .	7		
Гest	Mode:		BLE N	BLE Mode TX 2402 MHz(1Mbps)								
Rem	nark:		N/A	133		- 5	11115			Alle		
100.0	dBuV/m											
											3 X	
									(RF) FC	C PART 15C (F		
									(05) 5	CC PART 15C	4 X	
50									(HF) FI	LC PART 15C	AVE	
										1 X	/ \	
										2 X	7	
0.0												
230	9.000 2319	.00	2329.00	2339.00	2349.00	2359.0	0 2369	9.00	2379.00 238	39.00	2409.00 M	
				Readi	ing C	orrect	Meas	sure	-			
ı	No. Mk	. 1	Freq.	Leve		Factor	me	ent	Limit	Over		
			MHz	dBu\	/	dB/m	dBu	V/m	dBuV/m	dB	Detector	
1		239	90.000	41.9	3	1.28	43.	.21	74.00	-30.79	peak	
2		239	90.000	32.5	8	1.28	33.	.86	54.00	-20.14	AVG	
3	*	240	02.000	81.7	9	1.33	83	.12	Fundamental	Frequency	peak	
4	Χ	240	02.000	57.9	8	1.33	59	.31	 Fundamenta	Frequency	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)





7	emperature:	25℃	Relative Humidity:	55%			
1	est Voltage:	DC 3.7V					
A	Ant. Pol.	Horizontal					
٦	est Mode:	BLE Mode TX 2480 MHz (1Mbps)					
F	Remark:	N/A					



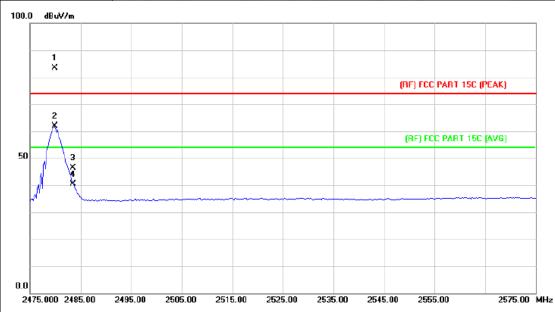
No	. Mk	c. Freq.	Reading Level	Correct Factor	Measure ment	- Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Х	2479.800	83.49	1.85	85.34	Fundamental F	requency	peak
2	*	2479.800	64.83	1.85	66.68	Fundamental F	requency	AVG
3		2483.500	48.44	1.88	50.32	74.00	-23.68	peak
4		2483.500	43.71	1.88	45.59	54.00	-8.41	AVG

- 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:	25℃	Relative Humidity:	55%			
	Test Voltage:	DC 3.7V					
١	Ant. Pol. Vertical						
	Test Mode:	BLE Mode TX 2480 MHz (1Mbps)					
P	Remark:	N/A	THUE				



No	o. Mk	c. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2479.800	81.49	1.85	83.34	Fundamental	Frequency	peak
2	X	2479.800	59.95	1.85	61.80	Fundamental	Frequency	AVG
3		2483.500	44.43	1.88	46.31	74.00	-27.69	peak
4		2483.500	38.61	1.88	40.49	54.00	-13.51	AVG

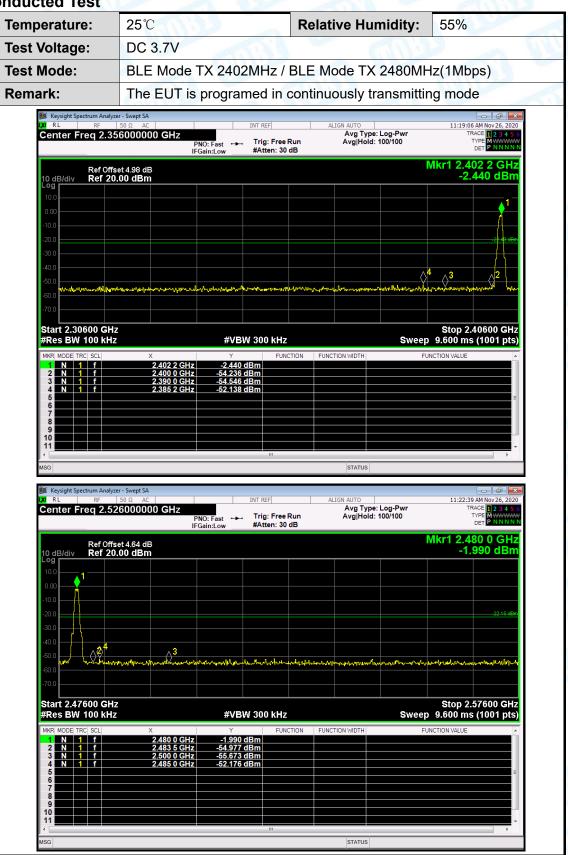
- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
 3. Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)





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(2) Conducted Test







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Attachment D-- Bandwidth Test Data

Temperature: 25°C			Relative Humidity:	55%	
Test Voltage:	DC 3	.7V		2 011	
Test Mode:	BLE	TX Mode(1 Mbps)			
Channel frequency		6dB Bandwidth	99% Bandwidth	Limit	
(MHz)		(kHz)	(kHz)	(kHz)	
2402		671.800	1025.60		
2442		2442 668.900		>=500	
2480		667.700	1021.30		
1				•	

BLE Mode

2402 MHz



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BLE Mode 2442 MHz Center Freq 2.442000000 GHz Radio Device: BTS #IFGain:Low Center 2.442 GHz #Res BW 100 kHz Span 3 MHz Sweep 1.333 ms #VBW 300 kHz **Total Power** 4.79 dBm **Occupied Bandwidth** 1.0218 MHz -13.361 kHz **Transmit Freq Error** % of OBW Power 99.00 % x dB Bandwidth 668.9 kHz x dB -6.00 dB **BLE Mode** 2480 MHz

Keysight Spectrum Analyzer - Occupied BW Center Freq: 2.480000000 GHz Trig: Free Run Avg|Hold: 100/100 #Atten: 30 dB 11:21:52 AM Nov 26, 2020 Radio Std: None Center Freq 2.480000000 GHz Radio Device: BTS Ref Offset 4.64 dB Ref 24.64 dBm Span 3 MHz Sweep 1.333 ms Center 2.48 GHz #Res BW 100 kHz #VBW 300 kHz Occupied Bandwidth **Total Power** 4.39 dBm 1.0213 MHz Transmit Freq Error -20.154 kHz % of OBW Power 99.00 % -6.00 dB x dB Bandwidth 667.7 kHz x dB STATUS

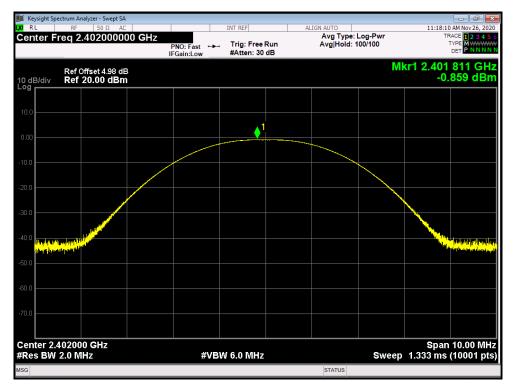




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Attachment E-- Peak Output Power Test Data

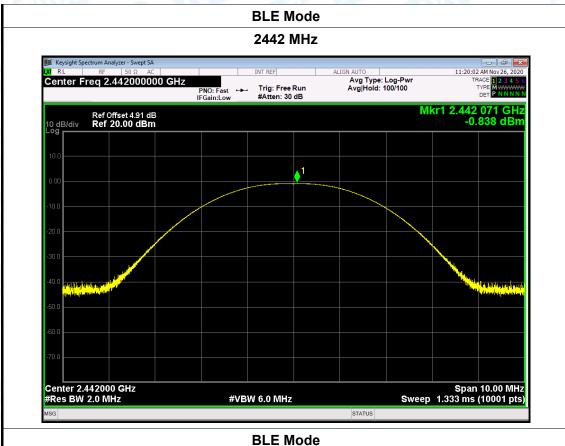
Temperature: 25°C		25℃ Relative H		55%	
Test Voltage: DC 3.7V				1 2	
Test Mode:	BLE TX M	ode (1Mbps)	S. S. S.		
Channel frequen	cy (MHz)	Test Result (dBm)		Limit (dBm)	
2402		-0.859			
2442		-0.838		30	
2480		-1.340			
		BLE Mode			
		2402 MHz			







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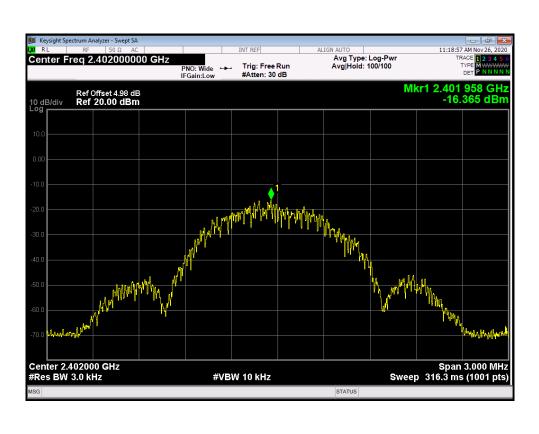






Attachment F-- Power Spectral Density Test Data

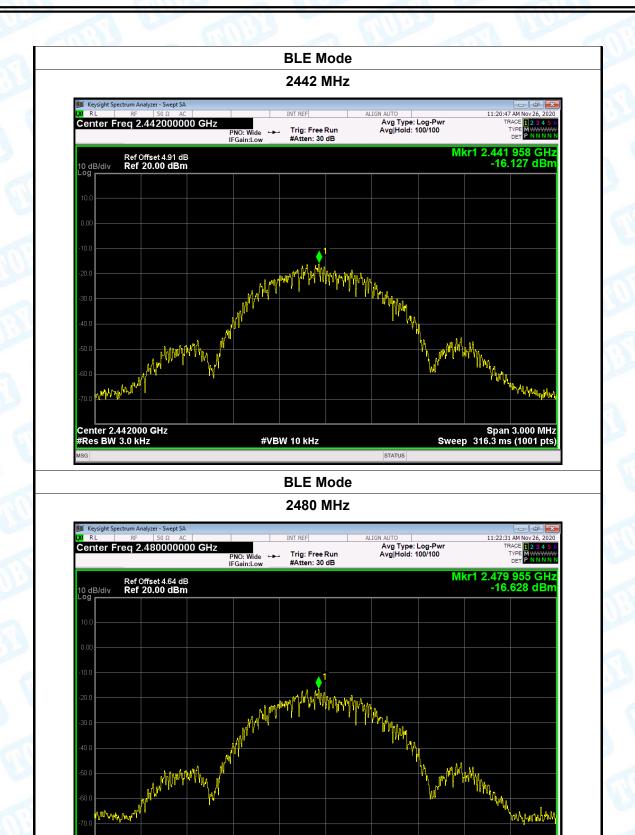
Temperature: 25°C		Relative Humidity:		55%		
DC 3.7V		-	40197			
BLE TX M	_E TX Mode(1Mbps)					
iency	Power Density		Limit		Result	
	(dBm/3kHz)		(dBm/3kHz)		Result	
2402		65	8		PASS	
2442		27				
2480		28				
-	BLE M	ode				
	2402 N	ИНz				
	DC 3.7V BLE TX M	DC 3.7V BLE TX Mode(1Mbps) Iency	DC 3.7V BLE TX Mode(1Mbps) Hency Power Density	DC 3.7V BLE TX Mode(1Mbps) Iency	DC 3.7V BLE TX Mode(1Mbps) lency	







Center 2.480000 GHz #Res BW 3.0 kHz Page: 42 of 42



#VBW 10 kHz

Span 3.000 MHz Sweep 316.3 ms (1001 pts)

STATUS