

Shenzhen Toby Technology Co., Ltd.

Report No.: TB-FCC144563

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FCC Radio Test Report FCC ID: 2AE5S-SH06

Original Grant

Report No. : TB-FCC144563

Applicant: TRASENSE INTERNATIONAL CORPORATION LIMITED

Equipment Under Test (EUT)

EUT Name: TRASENSE Smart Bracelet

Model No. : SH06

Series No. : Please see the page of 4

Brand Name : N/A

Receipt Date : 2015-06-18

Test Date : 2015-06-18 to 2015-07-03

Issue Date : 2015-07-06

Standards : FCC Part 15, Subpart C (15.247:2014)

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 and IC requirements

Test/Witness

Engineer :

Approved&

Authorized

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

TB-RF-074-1.0







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1. General Information about EUT

1.1 Client Information

Applicant : TRASENSE INTERNATIONAL CORPORATION LIMITED

Address : FLAT/RM B07 23/F HOVER INDUSTRIAL BUILDING NO.26-38

KWAI CHEONG ROAD HK

Manufacturer : TRASENSE INTERNATIONAL CORPORATION LIMITED

Address : FLAT/RM B07 23/F HOVER INDUSTRIAL BUILDING NO.26-38

KWAI CHEONG ROAD HK

1.2 General Description of EUT (Equipment Under Test)

EUT Name	1	TRASENSE Smart Brac	elet			
Models No.		SH06, SH01, SH02, SH	SH06, SH01, SH02, SH03 , SH04, SH05, SH07, SH08, SH09, SH10			
Model Difference	1		All these models are identical in the same PCB, layout and electrical circuit, the only difference is model name for commercial.			
		Operation Frequency: 2402MHz~2480MHz				
Dundunt		Number of Channel:	Bluetooth 4.0 (BLE): 40 channels see note(3)			
Product Description		RF Output Power:	-1.17dBm Conducted Power			
		Antenna Gain:	0 dBi PCB Antenna			
		Modulation Type:	GFSK			
ORDER OF		Bit Rate of Transmitter:	1Mbps(GFSK)			
Power Supply	:	DC Voltage supplied from Host System by USB cable DC power by Li-ion Battery				
Power Rating	:	DC 5.0V by USB cable.				
		DC 3.7V 45mAh Li-ion E	Battery.			
Connecting I/O Port(S)		Please refer to the User's Manual				

Note:

- (1) This Test Report is FCC Part 15.247 for Bluetooth BLE, the test procedure follows the FCC KDB 558074 D01 DTS Meas Guidance v03r02.
- (2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- (3) Antenna information provided by the applicant.
- (4) Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	14	2430	28	2458

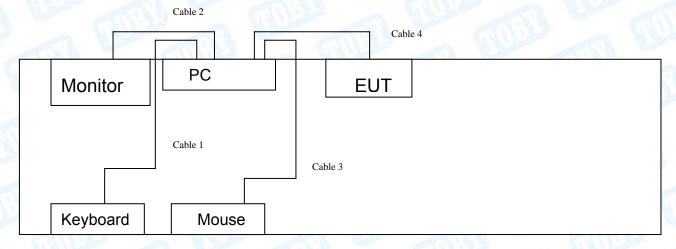


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01	2404	15	2432	29	2460
02	2406	16	2434	30	2462
03	2408	17	2436	31	2464
04	2410	18	2438	32	2466
05	2412	19	2440	33	2468
06	2414	20	2442	34	2470
07	2416	21	2444	35	2472
08	2418	22	2446	36	2474
09	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424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

1.3 Block Diagram Showing the Configuration of System Tested

TX Mode



1.4 Description of Support Units

Equipment Information						
Name	Model	FCC ID/DOC	Manufacturer	Used "√"		
LCD Monitor	E170Sc	DOC	DELL	√		
PC	OPTIPLEX380	DOC	DELL	√		
Keyboard	L100	DOC	DELL	1		
Mouse	M-UARDEL7	DOC	DELL	1		
Cable Information						
Number	Shielded Type	Ferrite Core	Length	Note		
Cable 1	YES	YES	1.5M	LAND.		



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Cable 2	YES	YES	1.5M	A VIII
Cable 3	YES	NO	1.5M	1000
Cable 4	YES	YES	0.8M	in mil

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	USB Charging With TX Mode			

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

Note:

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

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

Bluetooth 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 mobile 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	BlueTest V2.4.8		
Channel	CH 00	CH 20	CH 39
BLE Mode	DEF	DEF	DEF

1.7 Measurement Uncertainty

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

Test Item	Parameters	Expanded Uncertainty (U _{Lab})
	Level Accuracy:	
Conducted Emission	9kHz~150kHz	±3.42 dB
	150kHz to 30MHz	±3.42 dB
Dadiated Emission	Level Accuracy:	14 CO dD
Radiated Emission	9kHz to 30 MHz	±4.60 dB
Radiated Emission	Level Accuracy:	±4.40 dB
Radiated Ellission	30MHz to 1000 MHz	±4.40 db
Radiated Emission	Level Accuracy:	±4.20 dB
Raulateu Elliission	Above 1000MHz	14.20 UD



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1.8 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

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

FCC List No.: (811562)

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

IC Registration No.: (11950A-1)

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

May 22, 2014 certificated by TUV Rheinland(China) Co., Ltd. with TUV certificate No.: UA 50282953 0001 and report No.: 17026822 002. The certificate is valid until the next scheduled audit or up to 18 months, at the discretion of TUV Rhineland.



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2. Test Summary

	FCC Part 15 Subpart C(15.247)/RSS 247 Issue 1					
Standa	rd Section	Tool Hom	ludana ant	Domonic		
FCC	IC	Test Item	Judgment	Remark		
15.203	1	Antenna Requirement	PASS	N/A		
15.207	RSS-GEN 7.2.4	Conducted Emission	PASS	N/A		
15.205	RSS-GEN 7.2.2	Restricted Bands	PASS	N/A		
15.247(a)(2)	RSS 247 5.2 (1)	6dB Bandwidth	PASS	N/A		
15.247(b)	RSS 247 5.4 (4)	Peak Output Power	PASS	N/A		
15.247(e)	RSS 247 5.2 (2)	Power Spectral Density	PASS	N/A		
15.247(d)	RSS 247 5.5	Transmitter Radiated Spurious Emission	PASS	N/A		

Note: "/" for no requirement for this test item.

N/A is an abbreviation for Not Applicable.



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3. Test Equipment

AC Main C	conducted Emis	sion			
Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	ROHDE& SCHWARZ	ESCI	100321	Aug. 08, 2014	Aug. 07, 201
50ΩCoaxial Switch	Anritsu	MP59B	X10321	Aug. 08, 2014	Aug. 07, 201
L.I.S.N	Rohde & Schwarz	ENV216	101131	Aug. 08, 2014	Aug. 07, 201
L.I.S.N	SCHWARZBECK	NNBL 8226-2	8226-2/164	Aug. 08, 2014	Aug. 07, 201
Radiation Description	Spurious Emiss Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	Agilent	E4407B	MY45106456	Sep. 01, 2014	Date Aug. 31, 2019
EMI Test Receiver	Rohde & Schwarz	ESCI	100010/007	Aug. 08, 2014	Aug.07, 2015
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Aug. 08, 2014	Aug.07, 2015
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 06, 2015	Mar.05, 2016
Pre-amplifier	Sonoma	310N	185903	Mar. 06, 2015	Mar.05, 2016
Pre-amplifier	HP	8447B	3008A00849	Mar. 06, 2015	Mar.05, 2016
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar. 06, 2015	Mar.05, 2016
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna C	onducted Emis	sion			
Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Sep. 01, 2014	Aug. 31, 201
EMI Test Receiver	Rohde & Schwarz	ESCI	100010/007	Aug. 08, 2014	Aug. 07, 2015



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4. Conducted Emission Test

4.1 Test Standard and Limit

4.1.1Test Standard FCC Part 15.207

4.1.2 Test Limit

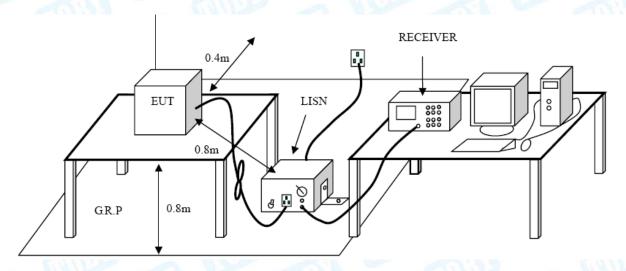
Conducted Emission Test Limit

	Maximum RF Line	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.

4.2 Test Setup



4.3 Test Procedure

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

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



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

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

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

4.4 EUT Operating Mode

Please refer to the description of test mode.

4.5 Test Data

Test data please refer the following pages.





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			de	Mwww.	QP: AVG:	Down pea
Line	Charging wi		de	Mynn	AVG:	
USB			de	Mynn	AVG:	
			de .	Mynn	AVG:	
Only	worse case	is reported	*	Mynn	AVG:	
	Marine Marine		*	Mynn	AVG:	
	Manager Manage		*	Mynny	AVG:	
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	Reading	Correct	Measure-			
Freq.	Level	Factor	ment	Limit	O∨er	
MHz	dBu∀	dB	dBu∨	dBu∀	dB	Detector
0.2140	37.09	10.02	47.11	63.04	-15.93	QP
0.2140	33.82	10.02	43.84	53.04	-9.20	AVG
0.5500	34.83	10.04	44.87	56.00	-11.13	QP
0.5500	27.97	10.04	38.01	46.00	-7.99	AVG
0.8300	30.09	10.09	40.18	56.00	-15.82	QP
0.8300	21.55	10.09	31.64	46.00	-14.36	AVG
1.5339	28.65	10.06	38.71	56.00	-17.29	QP
1.5339	22.23	10.06	32.29	46.00	-13.71	AVG
2.2220	27.16	10.05	37.21	56.00	-18.79	QP
2.2220	22.57	10.05	32.62	46.00	-13.38	AVG
2.8420	26.12	10.03	36.15	56.00	-19.85	QP
2.8420	21.26	10.03	31.29	46.00	-14.71	AVG
	Freq. MHz 0.2140 0.2140 0.5500 0.5500 0.8300 1.5339 1.5339 2.2220 2.8420 2.8420 c:Over limit	Freq. Reading Level MHz dBuV 0.2140 37.09 0.2140 33.82 0.5500 34.83 0.5500 27.97 0.8300 30.09 0.8300 21.55 1.5339 28.65 1.5339 22.23 2.2220 27.16 2.2220 27.16 2.2220 22.57 2.8420 26.12 2.8420 21.26	Freq. Reading Level Correct Factor MHz dBuV dB 0.2140 37.09 10.02 0.2140 33.82 10.02 0.5500 34.83 10.04 0.5500 27.97 10.04 0.8300 30.09 10.09 1.5339 28.65 10.06 1.5339 22.23 10.06 2.2220 27.16 10.05 2.8420 26.12 10.03 2.8420 21.26 10.03	Freq. Reading Level Correct Factor Measurement MHz dBuV dB dBuV 0.2140 37.09 10.02 47.11 0.2140 33.82 10.02 43.84 0.5500 34.83 10.04 44.87 0.5500 27.97 10.04 38.01 0.8300 30.09 10.09 40.18 0.8300 21.55 10.09 31.64 1.5339 28.65 10.06 38.71 1.5339 22.23 10.06 32.29 2.2220 27.16 10.05 37.21 2.2220 22.57 10.05 32.62 2.8420 26.12 10.03 36.15 2.8420 21.26 10.03 31.29	Freq. Reading Level Correct Factor Measurement Measurement Limit MHz dBuV dB dBuV dBuV 0.2140 37.09 10.02 47.11 63.04 0.2140 33.82 10.02 43.84 53.04 0.5500 34.83 10.04 44.87 56.00 0.5500 27.97 10.04 38.01 46.00 0.8300 30.09 10.09 40.18 56.00 0.8300 21.55 10.09 31.64 46.00 1.5339 28.65 10.06 38.71 56.00 2.2220 27.16 10.05 37.21 56.00 2.8420 26.12 10.03 36.15 56.00 2.8420 26.12 10.03 36.15 56.00 2.8420 21.26 10.03 31.29 46.00	Freq. Reading Level Correct Factor Measurement Limit Over MHz dBuV dB dBuV dBuV dB 0.2140 37.09 10.02 47.11 63.04 -15.93 0.2140 33.82 10.02 43.84 53.04 -9.20 0.5500 34.83 10.04 44.87 56.00 -11.13 0.5500 27.97 10.04 38.01 46.00 -7.99 0.8300 30.09 10.09 40.18 56.00 -15.82 0.8300 21.55 10.09 31.64 46.00 -14.36 1.5339 28.65 10.06 38.71 56.00 -17.29 1.5339 22.23 10.06 32.29 46.00 -13.71 2.2220 27.16 10.05 37.21 56.00 -18.79 2.2420 26.12 10.03 36.15 56.00 -19.85 2.8420 21.26 10.03 31.29 46.00





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EU.	T:		TRAS	SENS	F Sm	art Brace	elet	Mod	el Na	ame :			SH06	100
	nperatu	re:	25 ℃							Humi	dit	/ !	55%	
	t Voltag		DC 5		40			1.010		. 141111	٠.٠٠)		3370	
	minal:	,o.	Neutr											1
	t Mode	•			aina w	ith TX B	Mod	10						
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	10. IVIIX	 М		dBi		dB		dBu		dBu		dB	Dete	ctor
_	1	0.21		33.		10.12	2	43.4				-19.62		P
_	2	0.21		31.		10.12		41.7		53.0		-11.30		vg
	3	0.55		35.		10.02		45.9				-10.10		P
	4 *	0.55		28.		10.02		38.3		46.0		-7.62		vg
	5	0.99		28.		10.16		38.3				-17.70		P
	6	0.99		21.		10.16		32.0				-13.94		vg
	7	1.57		28.		10.10		38.2				-17.80		P
	8	1.57		23.		10.10		33.3				-12.69		vg
	9	2.19		28.		10.00		39.0				-16.95		P
	9	۷. ۱۵	,,,,,	20.	55	10.00	_	J. C	,_	50.0	-	10.50	-	. •

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

2.1900

4.6140

4.6140

10

11

12

Emission Level= Read Level+ Correct Factor

23.32

26.12

21.84

10.06

10.06

10.06

33.38

36.18

31.90

AVG

AVG

QP

46.00 -12.62

56.00 -19.82

46.00 -14.10



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5. Radiated Emission Test

5.1 Test Standard and Limit

5.1.1 Test Standard FCC Part 15.209

5.1.2 Test Limit

Radiated Emission Limits (9kHz~1000MHz)

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

Radiated Emission Limit (Above 1000MHz)

Frequency	Class A (dBuV	/m)(at 3 M)	Class B (dBuV	//m)(at 3 M)
(MHz)	Peak	Average	Peak	Average
Above 1000	80	60	74	54

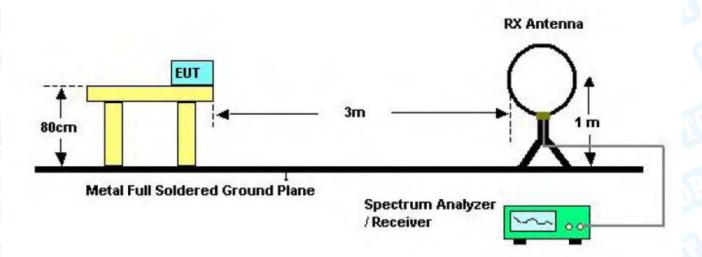
Note:

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

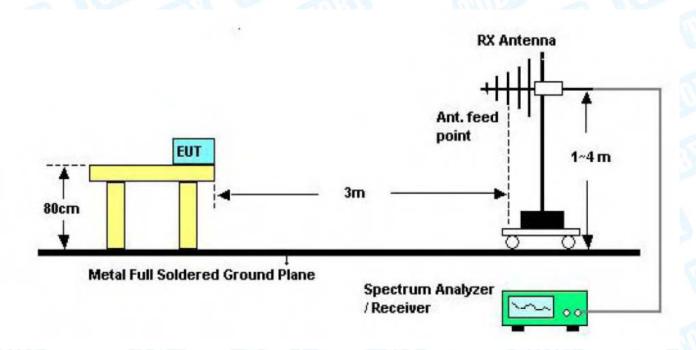


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5.2 Test Setup



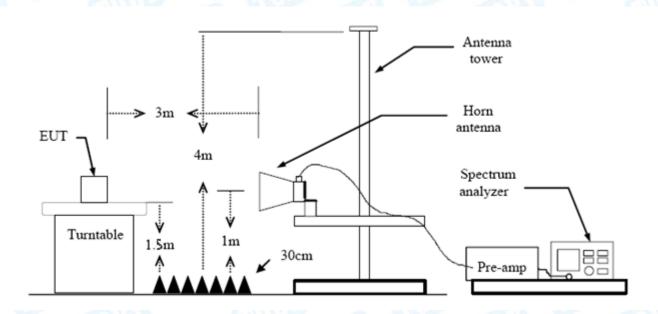
Below 30MHz Test Setup



Below 1000MHz Test Setup



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Above 1GHz Test Setup

5.3 Test Procedure

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



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5.4 EUT Operating Condition

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

5.5 Test Data

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

Test data please refer the following pages.

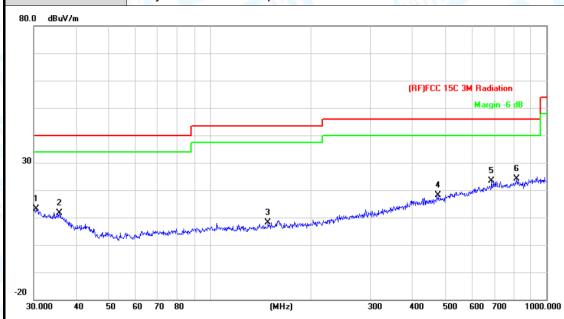


Report No.: TB-FCC144563
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THU.			
EUT:	TRASENSE Smart Bracelet	Model:	SH06
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5V		333
Ant. Pol.	Horizontal		

Test Mode: BLE TX 2402 Mode

Remark: Only worse case is reported



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		30.5306	27.48	-14.28	13.20	40.00	-26.80	peak
2		35.7490	29.08	-17.53	11.55	40.00	-28.45	peak
3		148.9625	29.44	-21.26	8.18	43.50	-35.32	peak
4		477.1694	29.79	-11.61	18.18	46.00	-27.82	peak
5		687.1507	30.57	-7.22	23.35	46.00	-22.65	peak
6	*	815.9678	30.52	-6.37	24.15	46.00	-21.85	peak

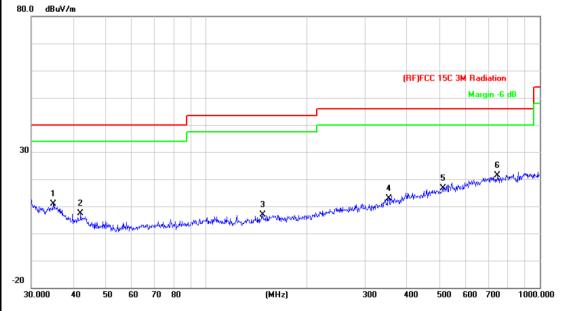
^{*:}Maximum data x:Over limit !:over margin



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t Model:	SH06							
Relative Humidity: 55%								
and a second						DC 5V		
Ant. Pol. Vertical								
BLE TX 2402 Mode								
d	3							
(RF)FCC 15C :	3M Radiation							
	(RF)FCC 15C :							



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	O∨er	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		34.8823	27.91	-16.98	10.93	40.00	-29.07	peak
2		42.1542	28.34	-21.07	7.27	40.00	-32.73	peak
3		147.9214	28.24	-21.34	6.90	43.50	-36.60	peak
4		352.9433	27.54	-14.59	12.95	46.00	-33.05	peak
5		513.6331	27.45	-10.85	16.60	46.00	-29.40	peak
6	*	747.4825	28.48	-7.08	21.40	46.00	-24.60	peak

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



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EUT:	TRASENSE Smart Bracelet Model: SH06						
Temperature:	25 °C Relative Humidity: 55%						
Test Voltage:	DC 5V						
Ant. Pol.	Horizontal	Horizontal					
Test Mode:	BLE Mode TX 2402 MHz	BLE Mode TX 2402 MHz					
Remark:	No report for the emission which more than 10 dB below the						
	prescribed limit.						

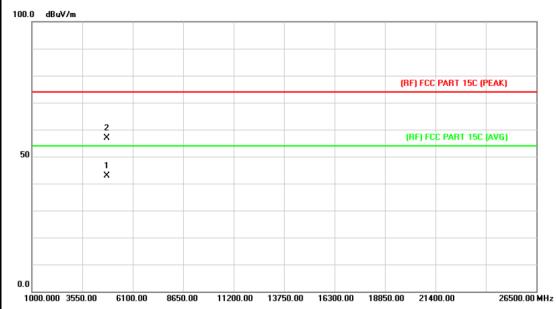


No	. Mk	. Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4803.652	29.29	13.44	42.73	54.00	-11.27	AVG
2		4804.414	43.89	13.44	57.33	74.00	-16.67	peak



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TRASENSE Smart Bracelet	NSE Smart Bracelet Model: Sh				
25 ℃	Relative Humidity: 55%				
DC 5V					
Vertical	Vertical				
BLE Mode TX 2402 MHz		HILL			
No report for the emission which more than 10 dB below the					
	25 °C DC 5V Vertical BLE Mode TX 2402 MHz	25 °C Relative Humidity: DC 5V Vertical BLE Mode TX 2402 MHz No report for the emission which more than 10 dB below			

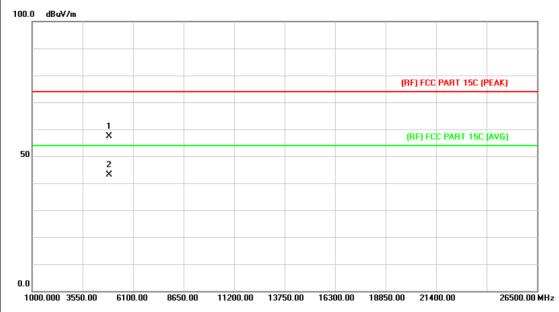


No	. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4803.931	29.37	13.44	42.81	54.00	-11.19	AVG
2		4804.711	43.54	13.44	56.98	74.00	-17.02	peak



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EUT:	TRASENSE Smart Bracelet	Model:	SH06		
Temperature:	25 ℃	25 ℃ Relative Humidity: 55%			
Test Voltage:	DC 5V	and the same	33		
Ant. Pol.	Horizontal				
Test Mode:	BLE Mode TX 2442 MHz		HILL		
Remark:	No report for the emission which more than 10 dB below the				
	prescribed limit.				



N	10. M	lk.	Freq.	Reading Level		Measure- ment	Limit	Over	
			MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4	4883.334	43.58	13.92	57.50	74.00	-16.50	peak
2	*	4	4883.970	29.28	13.92	43.20	54.00	-10.80	AVG



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EUT:	TRASENSE Smart Bracelet	Model:	SH06			
Temperature:	25 ℃	Relative Humidity: 55%				
Test Voltage:	DC 5V	DC 5V				
Ant. Pol.	Vertical	Vertical				
Test Mode:	BLE Mode TX 2442 MHz		ABIL			
Remark:	No report for the emission which more than 10 dB below the					
	prescribed limit.					



ı	No.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
			MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		*	4883.316	29.36	13.91	43.27	54.00	-10.73	AVG
2			4884.414	43.88	13.92	57.80	74.00	-16.20	peak



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EUT:	TRASENSE Smart Bracelet	Model:	SH06			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	DC 5V	DC 5V				
Ant. Pol.	Horizontal					
Test Mode:	BLE Mode TX 2480 MHz		HILL			
Remark:	No report for the emission which more than 10 dB below the prescribed limit.					

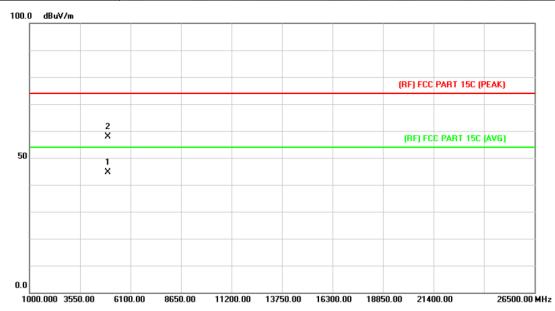


N	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4959.805	45.38	14.36	59.74	74.00	-14.26	peak
2	*	4959.871	32.14	14.36	46.50	54.00	-7.50	AVG



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EUT:	TRASENSE Smart Bracelet	Model:	SH06		
Temperature:	25 ℃	Relative Humidity:	55%		
Test Voltage:	DC 5V				
Ant. Pol.	Vertical				
Test Mode:	BLE Mode TX 2480 MHz		HELL		
Remark:	No report for the emission which more than 10 dB below the				
	prescribed limit.	- War			



N	o. Mk	. Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4960.009	30.34	14.36	44.70	54.00	-9.30	AVG
2		4960.060	43.53	14.36	57.89	74.00	-16.11	peak



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6. Restricted Bands Requirement

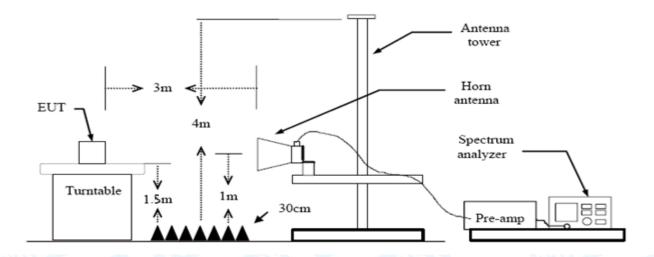
6.1 Test Standard and Limit

6.1.1 Test Standard FCC Part 15.209 FCC Part 15.205

6.1.2 Test Limit

Restricted Frequency	Class B (dB	uV/m)(at 3 M)
Band (MHz)	Peak	Average
2310 ~2390	74	54
2483.5 ~2500	74	54

6.2 Test Setup



6.3 Test Procedure

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



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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 KHz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

6.4 EUT Operating Condition

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

6.5 Test Data

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

Test data please refer the following pages.





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(1) Radiation Test

EUT:	TRASENSE Smart Bracelet	Model:	SH06
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Ant. Pol.	Horizontal		MALL
Test Mode:	BLE Mode TX 2402 MHz		
Remark:	N/A	A HAVE	



No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	41.38	0.77	42.15	74.00	-31.85	peak
2		2390.000	29.94	0.77	30.71	54.00	-23.29	AVG
3	Χ	2401.700	90.08	0.82	90.90	Fundamental	Frequency	peak
4	*	2402.000	89.33	0.82	90.15	Fundamental	Frequency	AVG

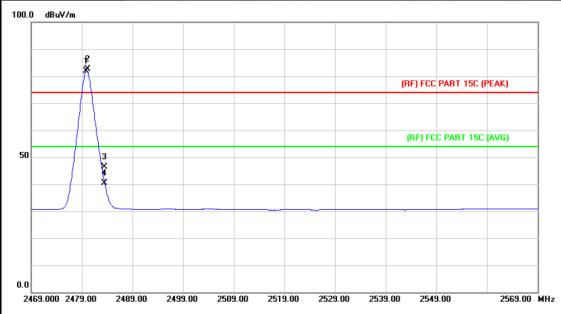


EUT:			TRA	SENSE Sr	mart Bracelet	Model:		SH06	
Temp	peratu	re:	25 °C	C		Relative	Humidity:	55%	
Test	Voltag	e:	DC 3	3.7V		10. 10	Gill	139	
Ant.	Pol.		Verti	cal	A THUS				Mary.
Test	Mode:		BLE	Mode TX	2402 MHz	WILL STATE		3 W	Mes
Rem	ark:		N/A	Bir		1		131	_ (
100.0	dBuV/m								
								31 ×	
							(RF) FCC P.	ART 15C (PEAK	g
-								$\rightarrow \nearrow$	
							(RF) FCC	PART/15C AVE	 n
50									
							1 X		
				_			2 X		
							•		
0.0 231	14.000 23	24.00 2	2334.00	2344.00	2354.00 2364.00	2374.00 2	2384.00 2394.0	00 2	2414.00 MH
				Reading	Correct	Measure			
N	o. Mk	. Fr	eq.	Level	Factor	ment	Limit	Over	
		MH	Hz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.	.000	40.73	0.77	41.50	74.00	-32.50	peak
2		2390	.000	29.48	0.77	30.25	54.00	-23.75	AVG
_				00.04	0.82	83.06	Fundamental	Eroguonev	peak
3	Χ	2401.	.700	82.24	0.02	00.00	runuamentai	rrequency	



Report No.: TB-FCC144563
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EUT:	TRASENSE Smart Bracelet	Model:	SH06
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V	The same	13
Ant. Pol.	Horizontal		
Test Mode:	BLE Mode TX 2480 MHz	MILES OF	HILL
Remark:	N/A	(1)	

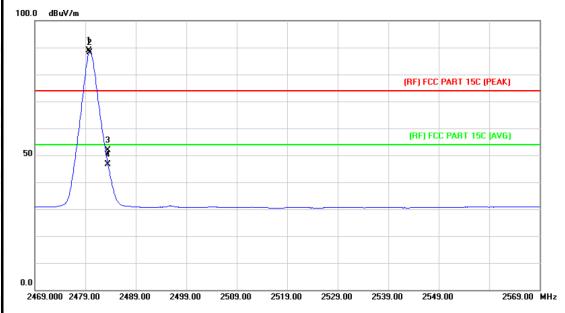


No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	O∨er	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2479.900	80.76	1.15	81.91	Fundamental	Frequency	AVG
2	Х	2480.200	81.52	1.15	82.67	Fundamental	Frequency	peak
3		2483.500	45.19	1.17	46.36	74.00	-27.64	peak
4		2483.500	39.32	1.17	40.49	54.00	-13.51	AVG

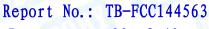


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_
M.



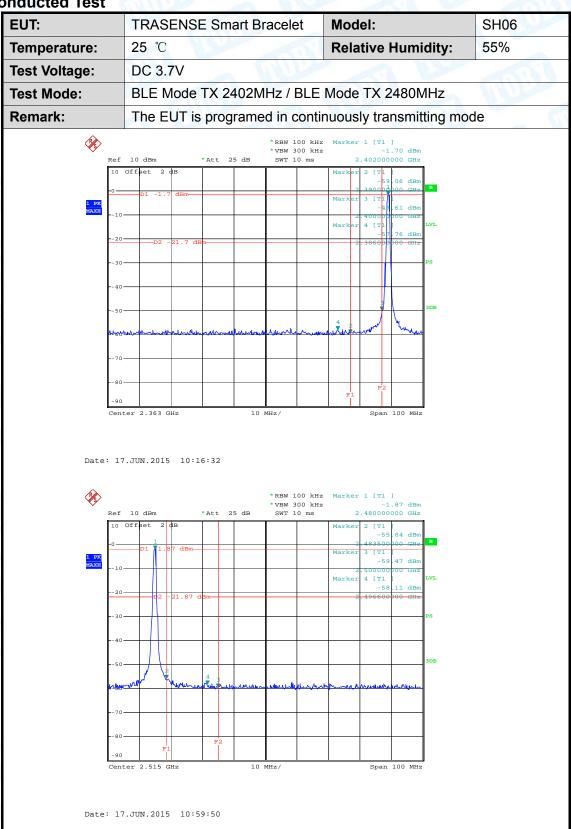
No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Χ	2479.700	87.82	1.15	88.97	Fundamental	Frequency	peak
2	*	2479.900	87.04	1.15	88.19	Fundamental	Frequency	AVG
3		2483.500	50.83	1.17	52.00	74.00	-22.00	peak
4		2483.500	45.41	1.17	46.58	54.00	-7.42	AVG





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(2) Conducted Test





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7. Bandwidth Test

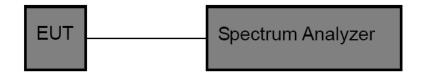
7.1 Test Standard and Limit

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

7.1.2 Test Limit

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

7.2 Test Setup



7.3 Test Procedure

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

7.4 EUT Operating Condition

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



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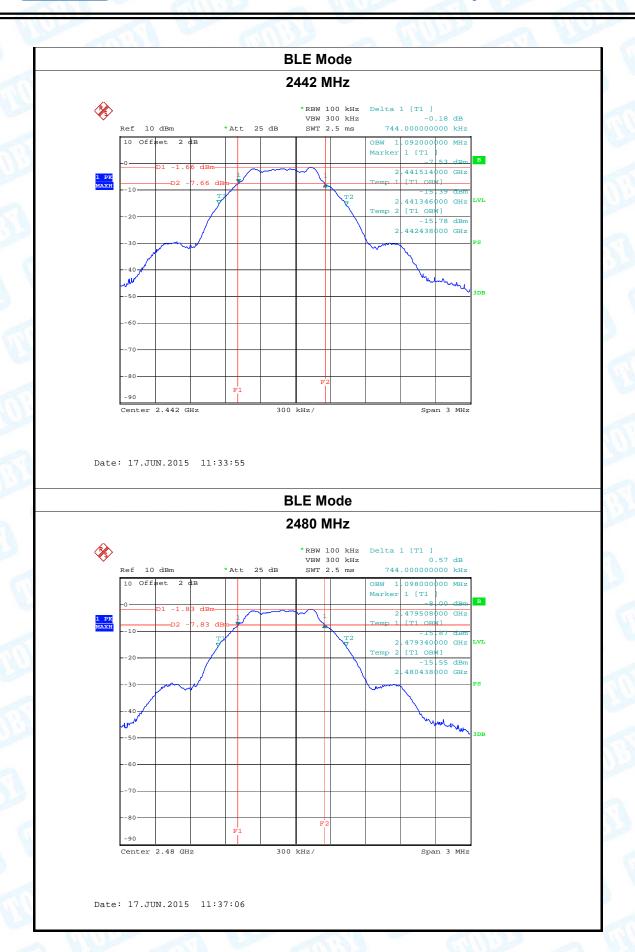


7.5 Test Data

UT:	TRA	SENSE S	mart Br	racelet	Mode	:		SH06
emperature:	25 °C	C	2 1	MARK	Relati	ve Hum	idity:	55%
est Voltage:	DC 3	3.7V	65					A PROPERTY OF
est Mode:	BLE	TX Mode		1777		6	UNI	3
Channel freque	ency		andwi	dth	99%	Bandw	idth	Limit
(MHz)			kHz)			(kHz)		(kHz)
2402		1	50.00			1086.00		
2442		7	44.00			1092.00		>=500
2480		7	44.00			1098.00		
	·		В	LE Mod	е			
			۷.	402 MH	2			
				*RBW 100 VBW 300	kHz Delta		7 dB	
	10 dBm	* Att	25 dB	SWT 2.5	ms 75	50.0000000	0 kHz	
10 O	ffset 2 d	IB I			ORW	1 0860000	O MUZ	
	ffset 2 d				OBW Marke	1.08600000 er 1 [T1]		
-0	D1 -1.6	7 dBm 1				er 1 [T1] -7 9 2.40150800	7 dBm B	
	D1 -1.6			~	Marke	2 1 [T1] -7 9 2 40150800 1 [T1 ORW]	7 dBm B	
1 PK	D1 -1.6	7 dBm-		~	Marke	2 .40150800 1 [T1 OBW] -15 .1 2 .40135200	7 dBm 0 GHz 4 dBm 0 GHz LVL	
-0	D1 -1.6	7 dBm-		1	Temp	2.40150800 1 [T1 OBW] -15.1 2.40135200 2 [T1 OBW]	7 dBm 0 GHz 4 dBm 0 GHz LVL	
1 PK MAXH10	D1 -1.6	7 dBm-		1	Temp	2 . 40150800 1 [T1 OBW] -15.1 2 . 40135200 2 [T1 OBW] -15.4	7 dBm 0 GHz 4 dBm 0 GHz LVL 1 dBm 0 GHz	
-0	D1 -1.6	7 dBm-		1	Temp	2 . 40150800 1 [T1 OBW] -15.1 2 . 40135200 2 [T1 OBW] -15.4	7 dBm 0 GHz 4 dBm 0 GHz LVL 1 dBm 0 GHz	
-10	D1 -1.6	7 dBm-		1	Temp	2 . 40150800 1 [T1 OBW] -15.1 2 . 40135200 2 [T1 OBW] -15.4	7 dBm 0 GHz 4 dBm 0 GHz LVL 1 dBm 0 GHz	
-0	D1 -1.6	7 dBm-		1	Temp	2 . 40150800 1 [T1 OBW] -15.1 2 . 40135200 2 [T1 OBW] -15.4	7 dBm B 0 GHz 4 dBm 0 GHz LVL 1 dBm 0 GHz PS	
	D1 -1.6	7 dBm-		1	Temp	2 . 40150800 1 [T1 OBW] -15.1 2 . 40135200 2 [T1 OBW] -15.4	7 dBm B 0 GHz 4 dBm 0 GHz LVL 1 dBm 0 GHz PS	
-0	—D1 -1.6	7 dBm-			Temp	2 . 40150800 1 [T1 OBW] -15.1 2 . 40135200 2 [T1 OBW] -15.4	7 dBm B 0 GHz 4 dBm 0 GHz LVL 1 dBm 0 GHz PS	
-0	—D1 -1.6	7 dBm-			Temp	2 . 40150800 1 [T1 OBW] -15.1 2 . 40135200 2 [T1 OBW] -15.4	7 dBm B 0 GHz 4 dBm 0 GHz LVL 1 dBm 0 GHz PS	
-0	D1 -1.6	7 dBm-		F2	Temp	2 . 40150800 1 [T1 OBW] -15.1 2 . 40135200 2 [T1 OBW] -15.4	7 dBm B 0 GHz 4 dBm 0 GHz LVL 1 dBm 0 GHz PS	



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8. Peak Output Power Test

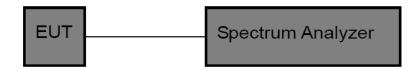
8.1 Test Standard and Limit

8.1.1 Test Standard FCC Part 15.247 (b)

8.1.2 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

8.2 Test Setup



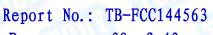
8.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement is according to section 9.1.1 of KDB 558074 D01 DTS Meas Guidance v03r02.

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

8.4 EUT Operating Condition

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





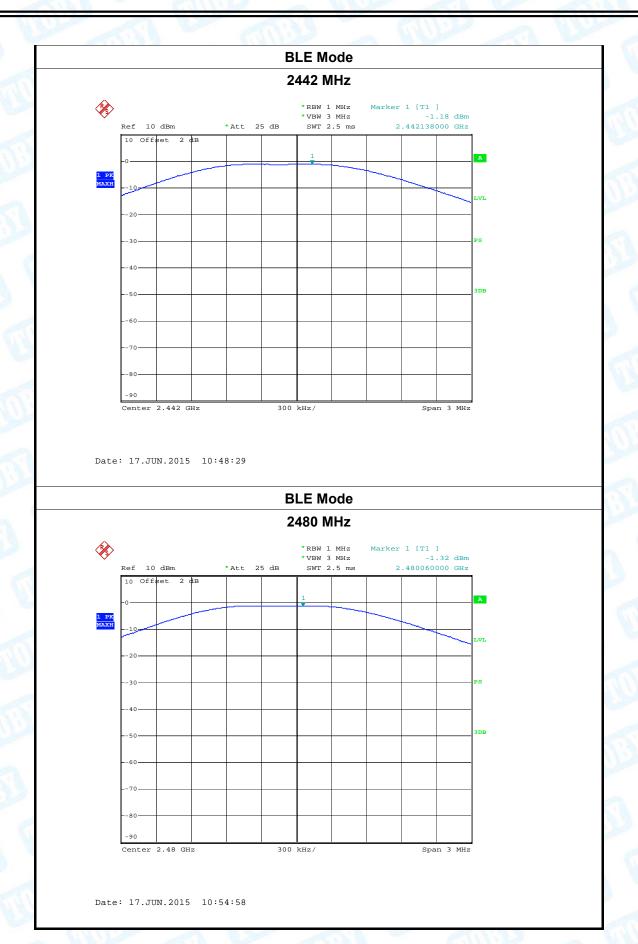
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8.5 Test Data

		IRA	SEN	SE Sr	nart B	racele	et	Mode	el:			SH06
mperature) :	25 '	°C					Rela	tive H	umidi	ty:	55%
st Voltage	:	DC :	3.7V	MIN.				11/11				THE STATE OF THE S
st Mode:		BLE	TX	Mode		100	N	1	- 6		30	
hannel fre	quen	су (М	IHz)		Test l	Resul	t (dB	m)			Limit	(dBm)
2	402					-1.1	7					
2	442					-1.18	8				;	30
2	480					-1.32	2					
					В	LE M	ode					
						402 N						
6						*RBW 1		Marke	r 1 [T1			
% >						*VBW 3			-1	1.17 dBm		
	Ref 10	dBm		*Att 2	5 dB		2.5 ms		2.402150	0000 GHz		
	Ref 10		dВ	*Att 2	25 dB	SWT 2	2.5 ms		2.402150	0000 GHz		
-			dВ	*Att 2	5 dB		2.5 ms		2.402150	0000 GHz	A	
1 PK MAXH	10 Off		В	*Att 2	25 dB	SWT 2	2.5 ms		2.402150	0000 GHz		
-	10 Off		dB	*Att 2	25 dB	SWT 2	2.5 ms		2.402150	0000 GHz		
-	10 Off:		В	*Att 2	5 dB	SWT 2	2.5 ms		2.402150	0000 GHz	A	
-	10 Off		₫B	*Att 2	5 dB	SWT 2	2.5 ms		2.402150	0000 GHz	A	
-	10 Off:		dB	*Att 2	5 dB	SWT 2	2.5 ms		2.402150	0000 GHz	LVL	
-	10 Off.		В	*Att 2	25 dB	SWT 2	2.5 ms		2.402150	0000 GHz	LVL	
-	10 Off.		B	*Att 2	25 dB	SWT 2	2.5 ms		2.402150	0000 GHz	LVL	
-	10 Off.		đв	*Att 2	5 dB	SWT 2	2.5 ms		2.40215(0000 GHz	LVL	
-	10 Off.		đВ	*Att 2	5 dB	SWT 2	2.5 ms		2.402150	0000 GHz	LVL	
-	10 Off		đВ	*Att 2	25 dB	SWT 2	2.5 ms		2.402150	0000 GHz	LVL	
-	10 Off		đВ	*Att 2	5 dB	SWT 2	2.5 ms		2.402150	0000 GHz	LVL	



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9. Power Spectral Density Test

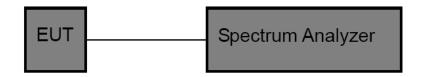
9.1 Test Standard and Limit

9.1.1 Test Standard FCC Part 15.247 (e)

9.1.2 Test Limit

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

9.2 Test Setup



9.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v03r02.

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

9.4 EUT Operating Condition

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



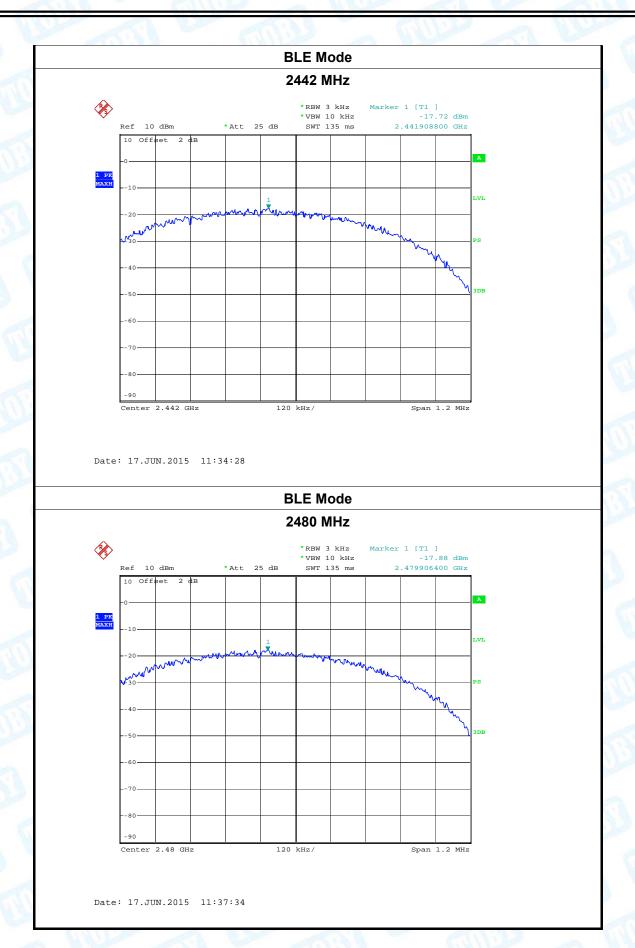
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8.5 Test Data

UT:		TRAS	SENSE	Smart E	Bracelet	Mode	el:		SH06
emperature:		25 ℃	1 8			Relat	ive Hu	nidity:	55%
est Voltage:		DC 3.	.7V	-	A STATE		120	Var	emi!
est Mode:		BLE	ГХ Мос	de		1111	1		1 1000
Channel F	requ	iency		Po	wer Den	sity			Limit
(MI	Hz)			(3	kHz/dB	m)			(dBm)
24	02				-17.60				
24	42				-17.72				8
24					-17.88				
					BLE Mod	40			
					2402 MH				
\(\sigma_{\sigma}\)									
^							ker 1 [T1		
√/s /					* VBW 10	kHz	-17	.60 dBm	
Re				t 25 dB	SWT 135		2.401913	600 GHz	
_		dBm et 2 dB		t 25 dB					
_				t 25 dB				600 GHz	ı
1 PK								A	
1 PK MAXH	0 Offs	et 2 dB		t 25 dB	SWT 135	ms			
1 PK MAXH	0 Offs	et 2 dB			SWT 135	ms	2.401913	LVI	
1 PK MAXH	0 Offs				SWT 135	ms .	2.401913	A	
1 PX MAXH	0 Offs	et 2 dB			SWT 135	ms .	2.401913	LVI	
1 PX MAXH	10 Offs	et 2 dB			SWT 135	ms .	2.401913	LVI	
1 PX MAXH	10 Offs 20	et 2 dB			SWT 135	ms .	2.401913	LVI	
1 PX MAXH	10 Offs 20	et 2 dB			SWT 135	ms .	2.401913	LVI	
1 PX MAXH	10 Offs 20	et 2 dB			SWT 135	ms .	2.401913	LVI	
1 PX MAXH	10 Offs 10	et 2 dB			SWT 135	ms .	2.401913	LVI	
1 PK MAXH	10 Offs 10 20 40 50 60 70	et 2 dB			SWT 135	ms .	2.401913	LVI	



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10. Antenna Requirement

10.1 Standard Requirement

10.1.1 Standard FCC Part 15.203

10.1.2 Requirement

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

10.2 Antenna Connected Construction

The directional gains of the antenna used for transmitting is 0 dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

10.3 Result

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

Antenna Type	
✓ Permanent attached antenna	TI
□ Unique connector antenna	
☐ Professional installation antenna	D.