

Shenzhen Toby Technology Co., Ltd.

Report No.: TB-FCC145142

1 of 49 Page:

FCC Radio Test Report FCC ID: 2AFZG-BTM98-8AA

Original Grant

Report No. TB-FCC145142

David Audio Design & Manufacture (Shenzhen) Co., Ltd. **Applicant**

Equipment Under Test (EUT)

EUT Name Bluetooth Module

Model No. BTM98-8AA

Series No. Please see the page of 4

Mistral, TAGA, MP **Brand Name**

Receipt Date 2015-08-17

2015-08-17 to 2015-09-21 **Test Date**

Issue Date 2015-09-22

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

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

Fax: +86 75526509195 Tel: +86 75526509301







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1. General Information about EUT

1.1 Client Information

Applicant: David Audio Design & Manufacture (Shenzhen) Co., Ltd.

Address : 15A Haiyi Block Huijing Haoyuan, Shenzhen High-tech Industrial

Park, Nanshan District, Shenzhen City, China

Manufacturer : David Audio Design & Manufacture (Shenzhen) Co., Ltd.

Address : 15A Haiyi Block Huijing Haoyuan, Shenzhen High-tech Industrial

Park, Nanshan District, Shenzhen City, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	E	Bluetooth Module			
Models No.		BTM98-8AA, MM-1B, MM-2B, MM-3B, MM-4B, MM-5B, MM-6B, MM-7B, MM-8B, DT-307B, DT-308B, DT-310B, DT-312B, DT-313B, DT-315B, DT-316B, DT-318B, HTA-500B, HTA-700B, HTA900B			
Model Difference	i	All these models are identical in the same PCB, layout and electrical circuit, the only difference is model name for commercial.			
TODAY.		Operation Frequency: 2402MHz~2480MHz			
Due due 4		Number of Channel:	Bluetooth 4.0 (BLE): 40 channels see note(3)		
Product Description		RF Output Power:	2.28 dBm Conducted Power		
The state of the s		Antenna Gain:	3 dBi Chip Antenna		
THE PERSON NAMED IN		Modulation Type:	GFSK		
Will a		Bit Rate of Transmitter:	1Mbps(GFSK)		
Power Supply	1:	DC Power by USB Cable.			
Power Rating		DC 5V by USB Cable for Host System.			
Connecting I/O Port(S)	:	Please refer to the User's Manual			

Note:

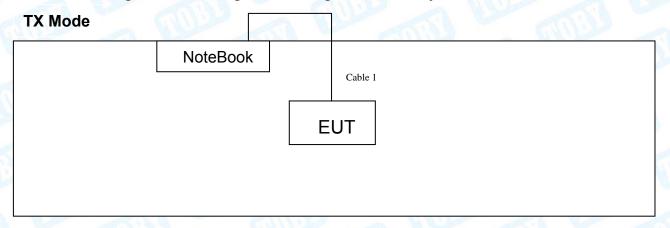
- (1) This Test Report is FCC Part 15.247 for Bluetooth BLE, the test procedure follows the FCC KDB 558074 D01 DTS Meas Guidance v03r03.
- (2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- (3) Antenna information provided by the applicant.
- (4) Channel List:



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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



1.4 Description of Support Units

Equipment Information					
Name Model FCC II			Manufacturer	Used "√"	
Notebook T60P		42W3244 Lenovo		√	
		Cable Information	n		
Number Shielded Type Ferrite Core Length Note					
Cable 1	YES	NO	0.8M	Provided by the applicant	



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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
Dedicted Engineer	Level Accuracy:	14 CO 4D
Radiated Emission	9kHz to 30 MHz	±4.60 dB
Dedicted Emission	Level Accuracy:	14 40 dD
Radiated Emission	30MHz to 1000 MHz	±4.40 dB
Dedicted Emission	Level Accuracy:	14 20 dB
Radiated Emission	Above 1000MHz	±4.20 dB



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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

Standa	rd Section		ludama ant	Remark
FCC	IC	Test Item	Judgment	
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

Conducte	d Emission Te	est			
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Aug. 07, 2015	Aug. 06, 2016
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Aug. 07, 2015	Aug. 06, 2016
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Aug. 07, 2015	Aug. 06, 2016
LISN	Rohde & Schwarz	ENV216	101131	Aug. 07, 2015	Aug. 06, 2016
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Date
	Emission Tes				Cal. Due
Spectrum	Agilent	E4407B	MY45106456	Aug. 29, 2015	Aug. 28, 2016
Analyzer EMI Test Receiver	Rohde & Schwarz	ESCI	100010/007	Aug. 07, 2015	Aug. 06, 2016
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar. 28, 2015	Mar. 27, 2016
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Mar. 28, 2015	Mar. 27, 2016
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 28, 2015	Mar. 27, 2016
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar. 28, 2015	Mar. 27, 2016
Pre-amplifier	Sonoma	310N	185903	Mar. 28, 2015	Mar. 27, 2016
Pre-amplifier	HP	8447B	3008A00849	Mar. 28, 2015	Mar. 27, 2016
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar. 28, 2015	Mar. 27, 2016
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A



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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

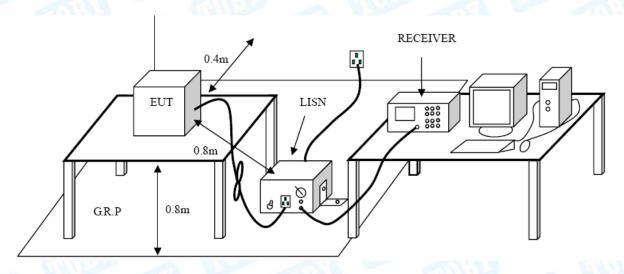
Conducted Emission Test Limit

	Maximum RF Line 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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EUT:		Blueto	oth Module		Model Na	me :	BTMS	8-8AA
Tempe	rature:	25 ℃			Relative H	lumidity:	55%	Alle
Test Vo	ltage:	AC 12	0V/60Hz			(III)	133	
Termin	al:	Line		D.HO.		10		
Test Mo	ode:	USB	Charging wit	th TX BLE N	/lode 2402N	lHz	a V	
Remark	k:	Only v	vorse case i	is reported			181	
90.0 dB	uV							
							QP: AVG:	
*								
40	n My	My My N	X. X		×			
	$[\ \ \ \ \ \]$	v , m	Jan de Jahren (1974)	handralar Andrana		Your Jens		
	/ħ./ \ / '	\wedge	A CONTRACTOR OF THE CONTRACTOR	Maybayman		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	"Hardyna Market	whiteher
	V				V	V V~	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	peak
								AVG
-10								
0.150		0.5		(MHz)	5			30.000
			Reading	Correct	Measure			
No.	Mk.	Freq.	Level	Factor	ment	Limit	O∨er	
		MHz	dBu∀	dB	dBu∨	dBu∨	dB	Detector
1	* 0.	1500	44.38	9.92	54.30	65.99	-11.69	QP
2	0.	1500	26.91	9.92	36.83	55.99	-19.16	AVG
3	0.	2660	32.46	10.02	42.48	61.24	-18.76	QP
4	0.	2660	23.61	10.02	33.63	51.24	-17.61	AVG
5	0.	4900	28.15	10.02	38.17	56.17	-18.00	QP
6	0.	4900	16.16	10.02	26.18	46.17	-19.99	AVG
7	0.	6540	28.80	10.10	38.90	56.00	-17.10	QP
8	0.	6540	19.46	10.10	29.56	46.00	-16.44	AVG
9	1.	0540	25.64	10.06	35.70	56.00	-20.30	QP
10	1.	0540	18.34	10.06	28.40	46.00	-17.60	AVG
11	5.	7860	23.77	10.00	33.77	60.00	-26.23	QP
12	5.	7860	18.03	10.00	28.03	50.00	-21.97	AVG

Emission Level= Read Level+ Correct Factor

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



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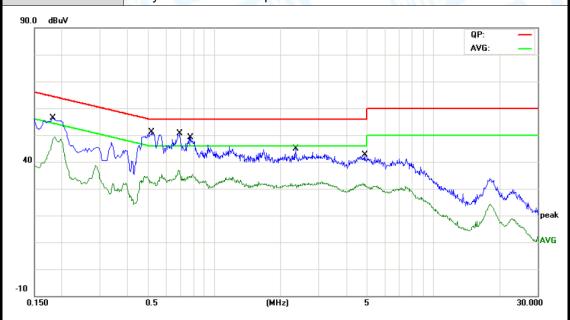
EUT:	Bluet	ooth Module	9	Model Nar	ne :	BIM	98-8AA
Temperature:	25 °C		70	Relative H	umidity:	55%	
Гest Voltage:	AC 1	20V/60Hz		11	67	CEL	
Terminal:	Neuti	ral	ARTE		J. F.		
Test Mode:	USB	Charging wi	th TX BLE	Mode 2402	MHz	- N	N. Carrie
Remark:	Only	worse case	is reported			300	
90.0 dBuV							
						QP: AVG:	
40 M	Much	X X		Land Marine Marine			
1 No. W	u " "W	, of Malayana for parally	MANDEN MANDEN AND	Markey market market by	My Jumy Jumy	۸	
	mon	work who was the way	Wayner and a superior	manual M	_	And the second s	Marulan.
			. Admir.	Λ,	V V-	many of the second	ре
							Alman
10							
0.150	0.5		(MHz)	5			30.000
0.150		Reading	Correct	Measure		Over	30.000
0.150	Freq.	Level	Correct Factor	Measure ment	Limit	Over	
0.150 No. Mk.	Freq.	Level dBuV	Correct Factor	Measure ment	Limit dBu∨	dB	Detector
0.150 No. Mk.	Freq. MHz .2540	dBuV 24.63	Correct Factor dB 10.10	Measure ment dBuV 34.73	Limit dBuV 61.62	dB -26.89	Detector QP
0.150 No. Mk. 1 0. 2 0.	Freq. MHz .2540	24.63 13.63	Correct Factor dB 10.10	Measure ment dBuV 34.73 23.73	Limit dBu√ 61.62 51.62	dB -26.89 -27.89	Detector QP AVG
0.150 No. Mk. 1 0. 2 0. 3 * 0.	Freq. MHz .2540 .2540 .4220	24.63 13.63 30.67	Correct Factor dB 10.10 10.10	Measurement dBuV 34.73 23.73 40.72	61.62 51.62 57.41	dB -26.89 -27.89 -16.69	Detector QP AVG QP
0.150 No. Mk. 1	Freq. MHz 2540 2540 4220	24.63 13.63 30.67 18.42	Correct Factor dB 10.10 10.10 10.05	Measure ment dBuV 34.73 23.73 40.72 28.47	61.62 51.62 57.41 47.41	dB -26.89 -27.89 -16.69 -18.94	Detector QP AVG QP AVG
0.150 No. Mk. 1 0. 2 0. 3 * 0. 4 0. 5 0.	Freq. MHz 2540 2540 4220 4220 6580	Level dBuV 24.63 13.63 30.67 18.42 27.56	Correct Factor dB 10.10 10.10 10.05 10.05 10.02	Measurement dBuV 34.73 23.73 40.72 28.47 37.58	61.62 51.62 57.41 47.41 56.00	dB -26.89 -27.89 -16.69 -18.94 -18.42	Detector QP AVG QP AVG
0.150 No. Mk. 1	Freq. MHz .2540 .2540 .4220 .4220 .6580	24.63 13.63 30.67 18.42 27.56 19.20	Correct Factor dB 10.10 10.10 10.05 10.05 10.02	Measurement dBuV 34.73 23.73 40.72 28.47 37.58 29.22	61.62 51.62 57.41 47.41 56.00 46.00	dB -26.89 -27.89 -16.69 -18.94 -18.42 -16.78	Detector QP AVG QP AVG QP AVG
0.150 No. Mk. 1	Freq. MHz 2540 2540 4220 4220 6580 9780	Level dBuV 24.63 13.63 30.67 18.42 27.56 19.20 25.07	Correct Factor dB 10.10 10.05 10.05 10.02 10.02 10.15	Measurement dBuV 34.73 23.73 40.72 28.47 37.58 29.22 35.22	61.62 51.62 57.41 47.41 56.00 46.00	dB -26.89 -27.89 -16.69 -18.94 -18.42 -16.78 -20.78	Detector QP AVG QP AVG QP AVG
0.150 No. Mk. 1 0.2 0.3 * 0.4 0.5 0.6 0.7 0.8 0.6	Freq. MHz 2540 2540 4220 4220 6580 6580 9780	Level dBuV 24.63 13.63 30.67 18.42 27.56 19.20 25.07 16.97	Correct Factor dB 10.10 10.10 10.05 10.05 10.02 10.02 10.15	Measurement dBuV 34.73 23.73 40.72 28.47 37.58 29.22 35.22 27.12	61.62 51.62 57.41 47.41 56.00 46.00 46.00	dB -26.89 -27.89 -16.69 -18.94 -18.42 -16.78 -20.78 -18.88	QP AVG QP AVG QP AVG
0.150 No. Mk. 1 0.2 0.3 * 0.4 0.5 0.6 0.7 0.8 0.9 3.4	Freq. MHz 2540 2540 4220 4220 6580 6580 9780 1700	Level dBuV 24.63 13.63 30.67 18.42 27.56 19.20 25.07 16.97 24.22	Correct Factor dB 10.10 10.05 10.05 10.02 10.02 10.15 10.06	Measurement dBuV 34.73 23.73 40.72 28.47 37.58 29.22 35.22 27.12 34.28	61.62 51.62 57.41 47.41 56.00 46.00 56.00	dB -26.89 -27.89 -16.69 -18.94 -18.42 -16.78 -20.78 -18.88 -21.72	Detector QP AVG QP AVG QP AVG QP AVG
No. Mk. 1	Freq. MHz 2540 2540 4220 4220 6580 9780 9780 1700	Level dBuV 24.63 13.63 30.67 18.42 27.56 19.20 25.07 16.97 24.22 18.76	Correct Factor dB 10.10 10.10 10.05 10.05 10.02 10.02 10.15 10.06 10.06	Measurement dBuV 34.73 23.73 40.72 28.47 37.58 29.22 35.22 27.12 34.28 28.82	Limit dBuV 61.62 51.62 57.41 47.41 56.00 46.00 56.00 46.00 46.00	dB -26.89 -27.89 -16.69 -18.94 -18.42 -16.78 -20.78 -18.88 -21.72 -17.18	Detector QP AVG QP AVG QP AVG QP AVG AVG
0.150 No. Mk. 1 0.2 0.3 * 0.4 0.5 0.6 0.7 0.8 0.9 3.1 10 3.1 11 4.5	Freq. MHz 2540 2540 4220 4220 6580 6580 9780 1700	Level dBuV 24.63 13.63 30.67 18.42 27.56 19.20 25.07 16.97 24.22	Correct Factor dB 10.10 10.05 10.05 10.02 10.02 10.15 10.06	Measurement dBuV 34.73 23.73 40.72 28.47 37.58 29.22 35.22 27.12 34.28	Limit dBuV 61.62 51.62 57.41 47.41 56.00 46.00 56.00 46.00 56.00 56.00	dB -26.89 -27.89 -16.69 -18.94 -18.42 -16.78 -20.78 -18.88 -21.72	Detector QP AVG QP AVG QP AVG QP AVG



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EUT:	Bluetooth Module	Model Name :	BTM98-8AA
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 240V/60Hz		1339
Terminal:	Line		
Test Mode:	USB Charging with TX E	BLE Mode 2402MHz	J. Hills

Remark: Only worse case is reported



		Reading	Correct	Measure-			
No. Mk	c. Freq.	Level	Factor	ment	Limit	O∨er	
	MHz	dBu∀	dB	dBu∨	dBu∀	dB	Detector
1	0.1819	37.88	9.98	47.86	64.39	-16.53	QP
2	0.1819	30.22	9.98	40.20	54.39	-14.19	AVG
3	0.5180	36.54	10.03	46.57	56.00	-9.43	QP
4	0.5180	23.01	10.03	33.04	46.00	-12.96	AVG
5 *	0.6940	36.60	10.12	46.72	56.00	-9.28	QP
6	0.6940	25.79	10.12	35.91	46.00	-10.09	AVG
7	0.7780	31.82	10.10	41.92	56.00	-14.08	QP
8	0.7780	24.55	10.10	34.65	46.00	-11.35	AVG
9	2.3460	26.73	10.05	36.78	56.00	-19.22	QP
10	2.3460	20.89	10.05	30.94	46.00	-15.06	AVG
11	4.8700	26.09	9.96	36.05	56.00	-19.95	QP
12	4.8700	20.49	9.96	30.45	46.00	-15.55	AVG

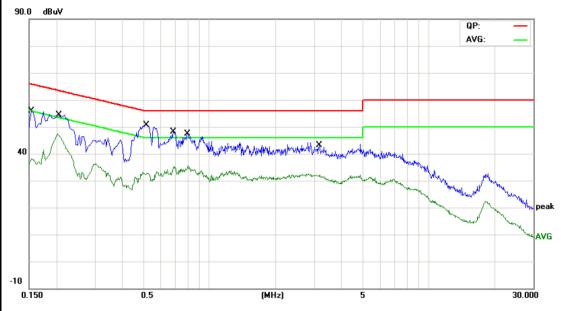
*:Maximum data x:Over limit !:over margin



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EUT:	Bluetooth Module	Model Name :	BTM98-8AA
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 240V/60Hz	100	1
Terminal:	Neutral		
Test Mode:	USB Charging with TX BLE	Mode 2402MHz	J. Hilliam
Remark:	Only worse case is reported		13
90.0 dBuV			
			QP: —



No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	O∨er	
	MHz	dBu∀	dB	dBu∀	dBu∀	dB	Detector
1	0.1548	36.60	10.12	46.72	65.73	-19.01	QP
2	0.1548	25.40	10.12	35.52	55.73	-20.21	AVG
3	0.2060	40.54	10.12	50.66	63.36	-12.70	QP
4 *	0.2060	35.07	10.12	45.19	53.36	-8.17	AVG
5	0.5180	36.94	10.02	46.96	56.00	-9.04	QP
6	0.5180	22.04	10.02	32.06	46.00	-13.94	AVG
7	0.6860	33.35	10.02	43.37	56.00	-12.63	QP
8	0.6860	23.91	10.02	33.93	46.00	-12.07	AVG
9	0.7940	33.35	10.06	43.41	56.00	-12.59	QP
10	0.7940	24.27	10.06	34.33	46.00	-11.67	AVG
11	3.1700	26.94	10.06	37.00	56.00	-19.00	QP
12	3.1700	21.14	10.06	31.20	46.00	-14.80	AVG

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



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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

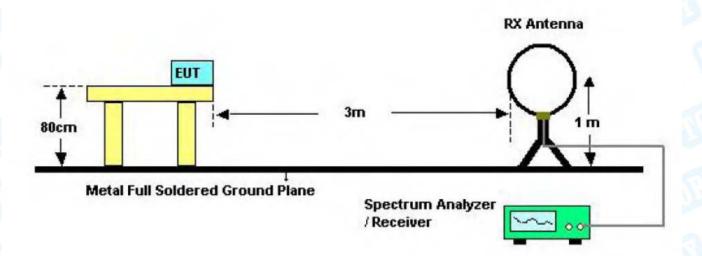
Note:

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

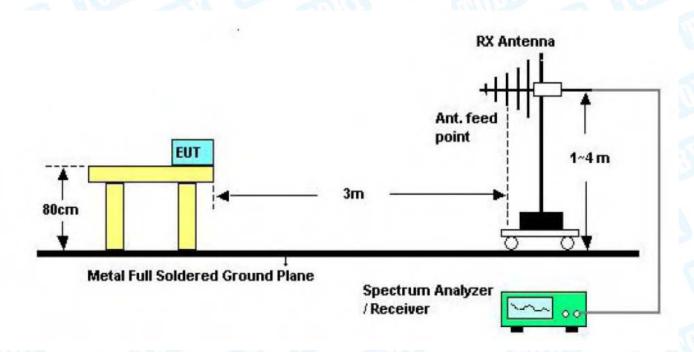


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5.2 Test Setup



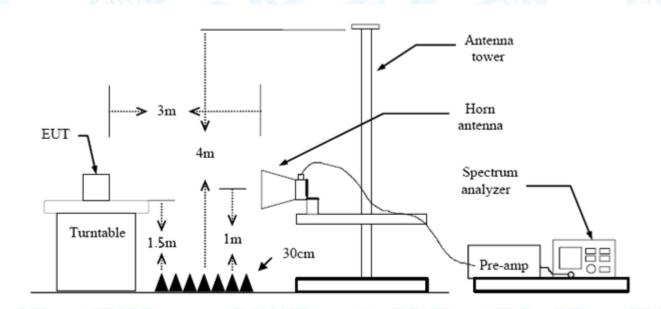
Below 30MHz Test Setup



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=1 kHz with Peak Detector for Average Values.

Test data please refer the following pages.



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EUT:	Bluetooth Mo	Juule	Model:		BTM98	-8AA
Temperature:	25 ℃	MBD -	Relative H	lumidity:	55%	The same
Test Voltage:	DC 5V	100	2.0	Tim	133	
Ant. Pol.	Horizontal			100	A	MI
Test Mode:	BLE TX 2402	2 Mode	COLUMN TO SERVICE	2		Market
Remark:	Only worse of	case is reported				
80.0 dBuV/m						
	×		3 2 4 X	¥ 6	iC 3M Radiation Margin -6	
-20		oke Marinda Ma		* * * * * * * * * * * * * * * * * * *		
an many may from	60 70 80	(MHz)	300	400 50	0 600 700	1000.00
-20	60 70 80 Readi	ing Correct			0 600 700 Over	1000.00
-20 30.000 40 50	Readieq. Leve	ing Correct el Factor	300 Measure-	400 50		1000.00
-20 30.000 40 50 No. Mk. Fre	Readi eq. Leve	ing Correct Factor	Measure- ment	400 50	Over	
-20 30.000 40 50 No. Mk. Fre	Readi eq. Leve z dBu\ 343 59.3	ing Correct Factor dB/m 4 -23.54	Measure- ment dBuV/m	400 50 Limit dBuV/m	Over	Detecto peak
No. Mk. Fre	Readi eq. Leve z dBu\ 343 59.3 143 49.8	Correct Factor dB/m	Measure- ment dBuV/m 35.80	400 50 Limit dBuV/m 40.00	Over	Detecto peak peak
No. Mk. Fre	Readi eq. Leve z dBuv 343 59.3 143 49.8 772 58.0	Correct Factor dB/m -23.54 -19.76	Measure- ment dBuV/m 35.80 30.11	400 50 Limit dBuV/m 40.00 43.50	Over dB -4.20 -13.39	Detecto peak peak peak
No. Mk. Free MH 1 * 72.08 2 214.5 3 243.3	Readi Level 2 dBu 343 59.3 143 49.8 772 58.0 776 49.7	Correct Factor Del GB/m Correct Factor De	300 Measure- ment dBuV/m 35.80 30.11 39.66	400 50 Limit dBuV/m 40.00 43.50 46.00	Over dB -4.20 -13.39 -6.34	Detecto



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EUT:	Bluetooth Module	Model:	BTM98-8AA
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5V		1139
Ant. Pol.	Vertical		
Test Mode:	BLE TX 2402 Mode	THE STATE OF THE S	A HILL
Remark:	Only worse case is repo	rted	13 7
80.0 dBuV/m			
		(RF)FCC	15C 3M Radiation
			Margin -6 dB

		1 X				5 X	6		in -6 dE	
1	handay Prof.	,414/14,	_{sup} Aysub	2 X Mahry	A A A A A A A A A A A A A A A A A A A			W	New A	MAN

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	71.8320	58.46	-23.56	34.90	40.00	-5.10	peak
2		99.5281	49.82	-21.86	27.96	43.50	-15.54	peak
3		183.8440	48.91	-20.70	28.21	43.50	-15.29	peak
4		243.3772	47.48	-18.43	29.05	46.00	-16.95	peak
5		379.9141	51.98	-14.14	37.84	46.00	-8.16	peak
6		558.7302	40.60	-10.13	30.47	46.00	-15.53	peak

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



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Temperature:	Bluetooth Mo	odule	Model:		BTM98	BTM98-8AA 55%
iemperature.	25 ℃	MBU -	Relative H	lumidity:	55%	
Test Voltage:	DC 5V		111	(all)	113	
Ant. Pol.	Horizontal	للالا م		I W		
Test Mode:	BLE TX 244	2 Mode	MILLE		1 111	Messa
Remark:	Only worse	case is reported	1	CITI'S		
30 dBuV/m	X X X X X X X X X X X X X X X X X X X	had had had a share of the solicity	2 3 X X	5 4 × 6	C 3M Radiation Margin -6	dB
30.000 40 50		(MHz)	300	400 500	0 600 700	1000.00
30.000 40 50	Read	ling Correct	Measure- ment	400 500 Limit	0 600 700 Over	1000.00
No. Mk.	Read	ling Correct el Factor	Measure-			1000.00
30.000 40 50 No. Mk.	Read Freq. Lev	ling Correct el Factor	Measure- ment	Limit	Over	
No. Mk. F	Read Freq. Lev MHz dBu	ling Correct el Factor V dB/m 36 -23.54	Measure- ment dBuV/m	Limit dBuV/m	Over	Detecto pea k
No. Mk. F	Read Freq. Lev MHz dBu .0843 58.8	ling Correct Factor V dB/m 36 -23.54 29 -18.43	Measure- ment dBuV/m	Limit dBuV/m 40.00	Over dB -4.68	Detecto
No. Mk. F	Read Freq. Lev MHz dBu .0843 58.8 3.3772 49.2	ling Correct Factor V dB/m 36 -23.54 29 -18.43 33 -17.10	Measure- ment dBuV/m 35.32 30.86	Limit dBuV/m 40.00 46.00	Over dB -4.68 -15.14	Detector peak
No. Mk. F	Read Lev MHz dBu .0843 58.8 3.3772 49.2 9.3158 44.6	ling Correct Factor V dB/m 36 -23.54 29 -18.43 33 -17.10 56 -14.61	Measure- ment dBuV/m 35.32 30.86 27.53	Limit dBuV/m 40.00 46.00 46.00	Over dB -4.68 -15.14 -18.47	Detector peak peak peak
No. Mk. F	Read Lev MHz dBu .0843 58.8 3.3772 49.2 9.3158 44.6 0.4768 40.5	ling Correct Factor V dB/m 36 -23.54 29 -18.43 33 -17.10 56 -14.61	Measure- ment dBuV/m 35.32 30.86 27.53 25.95	Limit dBuV/m 40.00 46.00 46.00 46.00	Over dB -4.68 -15.14 -18.47 -20.05	Detection pea



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Tompor	EUT:		tooth Modul	C	Model:		BTM98-8AA	
Temperature: Test Voltage:		25 °	C	30	Relative H	lumidity:	55%	
est Vo	Itage:	DC :	5V	400	18	1170	133	
Ant. Po	I.	Vert	ical	Mile		1 67		121
Test Mo	ode:	BLE	TX 2442 Mo	ode			2 114	1 last
Remark	K :	Only	worse case	is reported		CITI'S		
30 dBu	W/m	1 2 2 3 3		3 X		(RF)FCC 15C	3M Radiation Margin -6 d	B
20	huyanhla		White was borner	~ harden de la		Pylity (Pyrilly) (Indy	Ald Motor 12.2	
20 30.000	40 50		Malwy 100 mm	(MHz)	300	400 500	600 700	1000.000
20	40 50		Reading Level	(MHz) Correct Factor	3000 Measure- ment	400 500 Limit	600 700 Over	1000.000
20 30.000	40 50 Mk.	0 60 70	Reading	Correct	Measure-			1000.000
20 30.000	40 50 Mk.	5 60 70 Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
30.000 No.	40 50 Mk.	Freq.	Reading Level	Correct Factor	Measure- ment dBuV/m	Limit dBuV/m	Over	Detecto
30.000 No. 1	40 50 Mk. 60	Freq. MHz	Reading Level dBuV 49.11	Correct Factor dB/m -24.51	Measure- ment dBuV/m 24.60	Limit dBuV/m 40.00	Over dB -15.40	Detecto peal
No. 1	40 50 Mk. 60 71	Freq. MHz 1.0691	Reading Level dBuV 49.11 48.59	Correct Factor dB/m -24.51 -23.56	Measure- ment dBuV/m 24.60 25.03	Limit dBuV/m 40.00 40.00	Over dB -15.40 -14.97	Detecto peal peal
No. 1	Mk. 60 71 182	Freq. MHz 1.0691 1.5806 2.5592	Reading Level dBuV 49.11 48.59 43.05	Correct Factor dB/m -24.51 -23.56 -20.65	Measure- ment dBuV/m 24.60 25.03 22.40	Limit dBu√/m 40.00 40.00 43.50	Over dB -15.40 -14.97 -21.10	Detecto peal peal peal



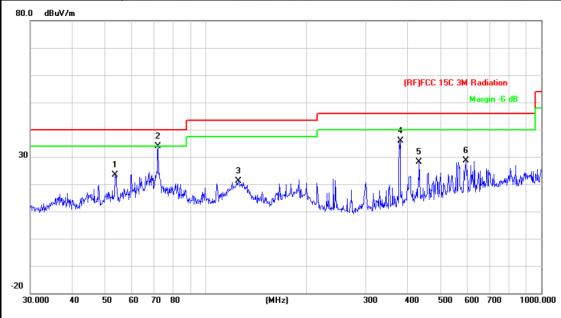
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emperature:	Bluetooth Modu	ıle	Model:		BTM98	-8AA
•	25 ℃	(A)	Relative H	lumidity:	55%	
est Voltage:	DC 5V	1	11	Tim	13.9	
nt. Pol.	Horizontal	Alle		1 62		
est Mode:	BLE TX 2480 M	lode	WHO I		A W	Market
Remark:	Only worse cas	e is reported		CITI'S		
30 dBuV/m		and the same of th	3 * 2 × × × × × × × × × × × × × × × × × ×	5 6 X Y	C 3M Radiation Margin -6	dB
20 30.000 40 50	60 70 80	(MHz)	300	400 50	0 600 700	1000.0
30.000 40 50	Reading		Measure- ment	400 500 Limit	0 600 700 Over	1000.0
30.000 40 50	Reading eq. Level					1000.0
30.000 40 50 No. Mk. Fre	Reading eq. Level	Correct Factor	Measure- ment	Limit	Over	
No. Mk. Fre	Reading eq. Level dBu√ 320 60.94	Correct Factor	Measure- ment	Limit dBuV/m	Over	Detecto
No. Mk. Fro	Reading Level dBuV 320 60.94 346.55	Correct Factor dB/m -23.56	Measure- ment dBuV/m	Limit dBuV/m 40.00	Over dB -2.62 -18.41	Detecto peal peal
No. Mk. From Mh 1 * 71.83 2 232.5 3 243.3	Reading Level Hz dBuV 320 60.94 3318 46.55 3772 49.62	Correct Factor dB/m -23.56 -18.96 -18.43	Measure- ment dBuV/m 37.38 27.59 31.19	Limit dBuV/m 40.00 46.00 46.00	Over dB -2.62 -18.41 -14.81	Detector peal peal peal
No. Mk. From Mh 1 * 71.83 2 232.5 3 243.3 4 299.3	Reading Level dBu 320 60.94 3318 46.55 3772 49.62 3158 51.75	Correct Factor dB/m -23.56 -18.96 -18.43 -17.10	Measure- ment dBuV/m 37.38 27.59 31.19 34.65	Limit dBuV/m 40.00 46.00 46.00 46.00	Over dB -2.62 -18.41 -14.81 -11.35	Detector peal peal peal peal
No. Mk. From Mh 1 * 71.83 2 232.5 3 243.3	Reading Level dBu dBu 320 60.94 3318 46.55 3772 49.62 3158 51.75 3141 43.65	Correct Factor dB/m -23.56 -18.96 -18.43	Measure- ment dBuV/m 37.38 27.59 31.19	Limit dBuV/m 40.00 46.00 46.00	Over dB -2.62 -18.41 -14.81	Detecto peal peal



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EUT:	Bluetooth Module	Model:	BTM98-8AA					
Temperature:	25 ℃	Relative Humidity:	55%					
Test Voltage:	DC 5V	DC 5V						
Ant. Pol.	Vertical							
Test Mode:	BLE TX 2480 Mode		A HILL					
Remark:	Only worse case is reported							
80.0 dBuV/m								



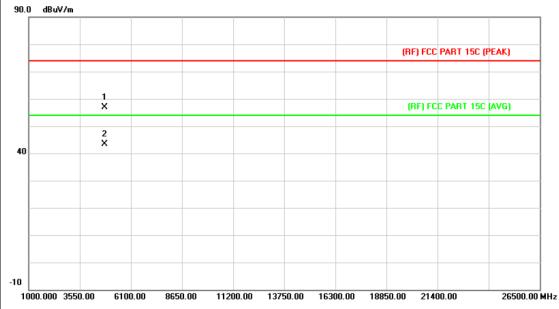
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	O∨er	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		53.6932	47.87	-24.44	23.43	40.00	-16.57	peak
2	*	72.0843	57.42	-23.54	33.88	40.00	-6.12	peak
3		125.0066	43.43	-22.34	21.09	43.50	-22.41	peak
4		379.9141	50.09	-14.14	35.95	46.00	-10.05	peak
5		432.5457	40.84	-12.78	28.06	46.00	-17.94	peak
6		597.2234	38.28	-9.54	28.74	46.00	-17.26	peak

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



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EUT:	Bluetooth Module Model:		BTM98-8AA					
Temperature:	25 ℃	Relative Humidity:	55%					
Test Voltage:	DC 5V							
Ant. Pol.	Horizontal	Horizontal						
Test Mode:	BLE Mode TX 2402 MHz		HILL					
Remark:	No report for the emission w	No report for the emission which more than 10 dB below the						
	prescribed limit.							

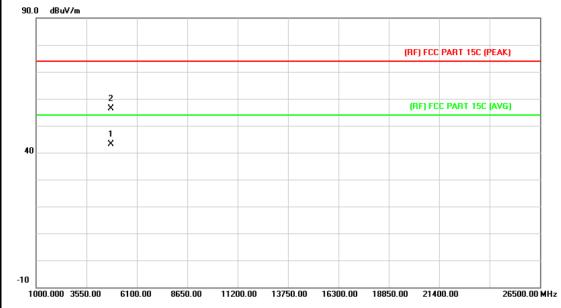


No	. Mk	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4803.627	43.34	13.44	56.78	74.00	-17.22	peak
2	*	4804.196	29.83	13.44	43.27	54.00	-10.73	AVG



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Bluetooth Module	etooth Module Model: BTM						
25 ℃	Relative Humidity:	55%					
DC 5V							
Vertical							
BLE Mode TX 2402 MHz		HALL					
No report for the emission which more than 10 dB below the							
prescribed limit.							
	25 ℃ DC 5V Vertical BLE Mode TX 2402 MHz No report for the emission which	25 °C Relative Humidity: DC 5V Vertical BLE Mode TX 2402 MHz No report for the emission which more than 10 dB below					

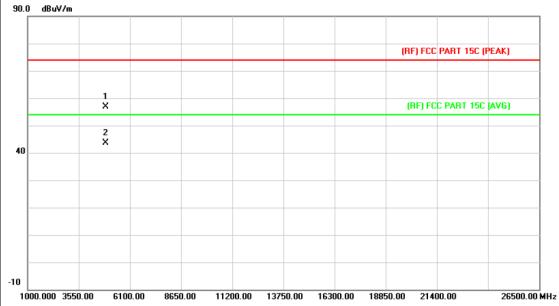


N	o. Mk	. Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4803.805	29.78	13.44	43.22	54.00	-10.78	AVG
2		4804.166	42.97	13.44	56.41	74.00	-17.59	peak



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EUT:	Bluetooth Module Model: B'		BTM98-8AA					
Temperature:	25 ℃	Relative Humidity:	55%					
Test Voltage:	DC 5V							
Ant. Pol.	Horizontal	Horizontal						
Test Mode:	BLE Mode TX 2442 MHz		HILL					
Remark:	No report for the emission which more than 10 dB below the							
	prescribed limit.							
i								

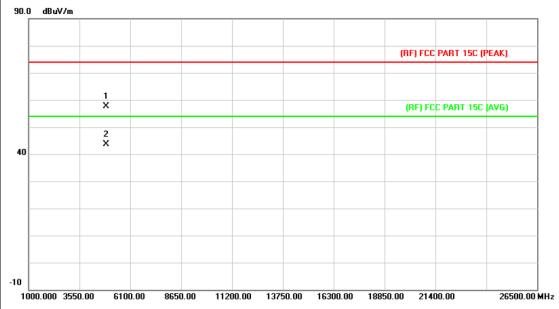


No	o. Mk	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4883.549	43.01	13.92	56.93	74.00	-17.07	peak
2	*	4884.383	29.72	13.92	43.64	54.00	-10.36	AVG



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EUT:	Bluetooth Module	Model:	BTM98-8AA				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	DC 5V		33				
Ant. Pol.	Vertical	Vertical					
Test Mode:	BLE Mode TX 2442 MHz	BLE Mode TX 2442 MHz					
Remark:	No report for the emission w prescribed limit.	No report for the emission which more than 10 dB below the prescribed limit.					

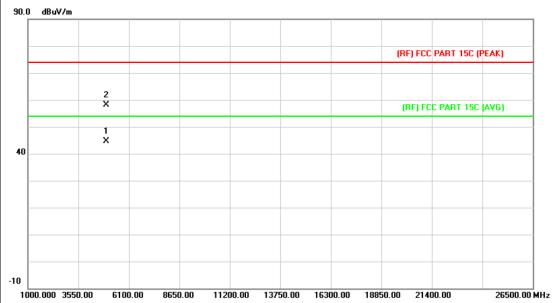


No	. Mk	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4883.706	43.74	13.92	57.66	74.00	-16.34	peak
2	*	4884.267	29.79	13.92	43.71	54.00	-10.29	AVG



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EUT:	Bluetooth Module	Model:	BTM98-8AA				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	DC 5V						
Ant. Pol.	Horizontal	Horizontal					
Test Mode:	BLE Mode TX 2480 MHz	BLE Mode TX 2480 MHz					
Remark:	No report for the emission w	No report for the emission which more than 10 dB below the					
	prescribed limit.						

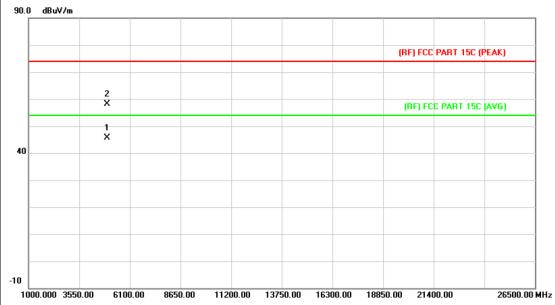


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4960.280	30.24	14.36	44.60	54.00	-9.40	AVG
2		4960.487	43.78	14.36	58.14	74.00	-15.86	peak



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EUT:	Bluetooth Module	Model:	BTM98-8AA				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	DC 5V	an:	33				
Ant. Pol.	Vertical	Vertical					
Test Mode:	BLE Mode TX 2480 MHz	BLE Mode TX 2480 MHz					
Remark:	ch more than 10 dB bel	ow the					
	prescribed limit.	130					



N	o. Mk	Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4959.934	31.18	14.36	45.54	54.00	-8.46	AVG
2		4960.126	43.86	14.36	58.22	74.00	-15.78	peak



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6. Restricted Bands Requirement

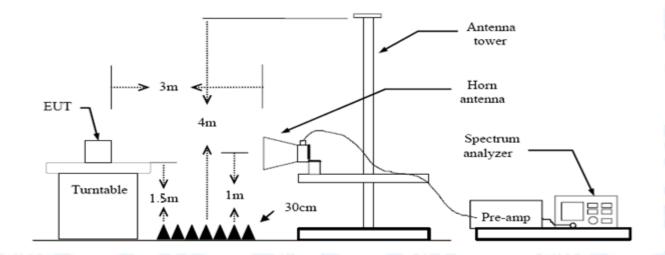
6.1 Test Standard and Limit

6.1.1 Test Standard FCC Part 15.209 FCC Part 15.205

6.1.2 Test Limit

Restricted Frequency	Class B (dB	BuV/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=1kHz with Peak Detector for Average Values.

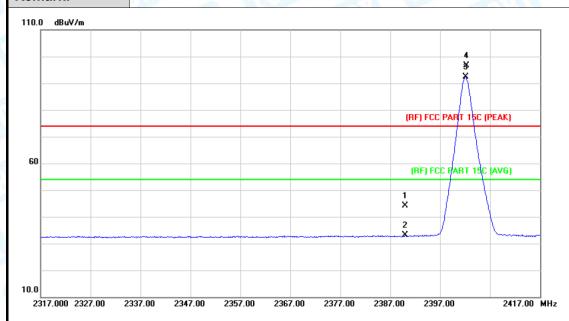
Test data please refer the following pages.



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(1) Radiation Test

EUT:	Bluetooth Module	Model:	BTM98-8AA
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5V		
Ant. Pol.	Horizontal	CLUD'S	MADE
Test Mode:	BLE Mode TX 2402 MHz		5 0
Remark:	N/A	130	



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	43.27	0.77	44.04	74.00	-29.96	peak
2		2390.000	32.24	0.77	33.01	54.00	-20.99	AVG
3	*	2402.100	91.45	0.82	92.27	Fundamental Frequency		AVG
4	Х	2402.300	95.93	0.82	96.75	Fundamental Frequency		peak



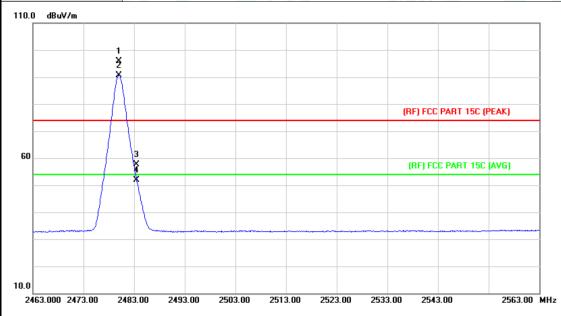
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EUT	:		Blue	tooth Modul	th Module Model: B		ВТМ9	8-8AA		
Tem	peratu	re:	25 °C	0		Relative	Humidity:	55%	%	
Test	t Voltag	e:	DC 5	δV	400					
Ant.	Pol.		Verti	cal	Alto:		1			
Test	Mode:		BLE	Mode TX 2	402 MHz	THE	The state of the s		1 leave	
Ren	nark:		N/A	1300						
110.0) dBuV/m									
							(RF) FCC PA	4 3 X PT 15C (PEAK		
60								ART 19C (AVG]	
		-					1 X			
10.0 23	817.000 23	27.00 2	337.00	2347.00 23	57.00 2367.00	2377.00 2	2387.00 2397.00) 2	417.00 MHz	
N	lo. Mk	. Fre	eq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MH	Ηz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detecto	
1		2390.	000	44.10	0.77	44.87	74.00	-29.13	peak	
2		2390.	000	31.85	0.77	32.62	54.00	-21.38	AVG	
3	*	2402.	100	92.34	0.82	93.16	Fundamental F	requency	AVG	
4	Х	2402.		97.28	0.82	98.10			peak	



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EUT:	Bluetooth Module	Model:	BTM98-8AA
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5V		39
Ant. Pol.	Horizontal		
Test Mode:	BLE Mode TX 2480 MHz	WILL ST	Alton
Remark:	N/A		
110.0 dBuV/m			



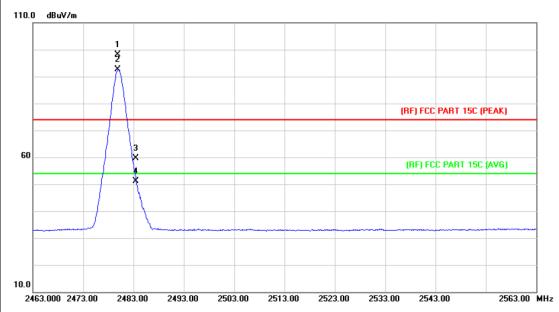
No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	O∨er	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Χ	2480.000	94.80	1.15	95.95	Fundamental I	Frequency	peak
2	*	2480.000	89.54	1.15	90.69	Fundamental I	Frequency	AVG
3		2483.500	56.37	1.17	57.54	74.00	-16.46	peak
4		2483.500	50.69	1.17	51.86	54.00	-2.14	AVG

Emission Level= Read Level+ Correct Factor



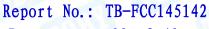
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EUT:	Bluetooth Module	Model:	BTM98-8AA
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	DC 5V		79
Ant. Pol.	Vertical		
Test Mode:	BLE Mode TX 2480 MHz	WILL S	Alton
Remark:	N/A		



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	O∨er	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Χ	2479.900	97.06	1.15	98.21	Fundamental I	Frequency	peak
2	*	2479.900	91.60	1.15	92.75	Fundamental I	Frequency	AVG
3		2483.500	58.52	1.17	59.69	74.00	-14.31	peak
4		2483.500	49.98	1.17	51.15	54.00	-2.85	AVG

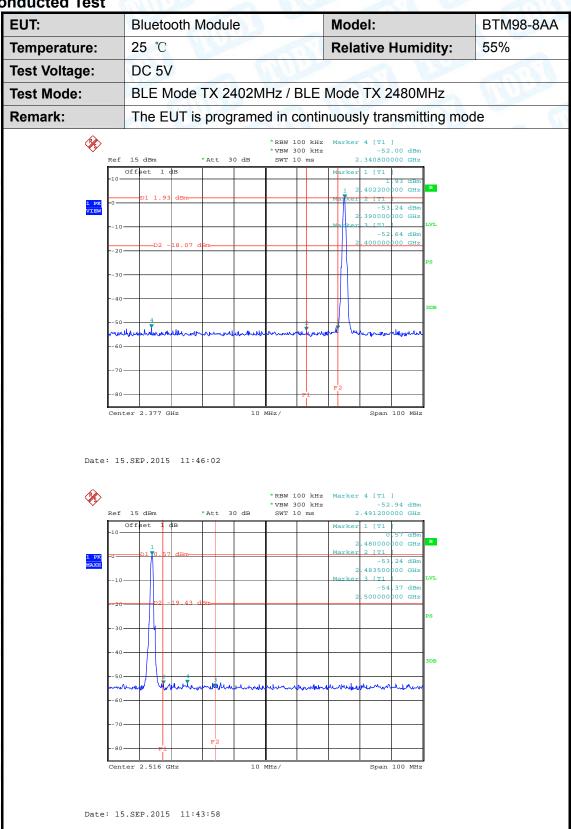
Emission Level= Read Level+ Correct Factor





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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 P	FCC Part 15 Subpart C(15.247)/RSS-247								
Test Item	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.



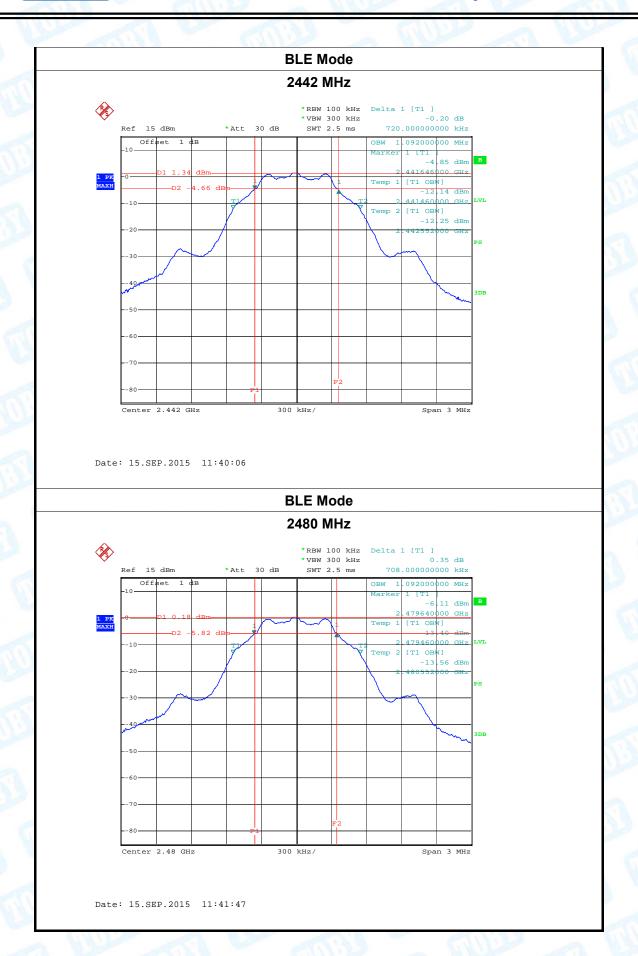
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7.5 Test Data

UT:		Bluetooth Module				1		Model:			Е	TM98-8	ΑA
emperatur	e:	25	°C		9		ı	Relativ	e Hu	midity	: 5	5%	
est Voltage		DC :	5V		13			MINE			A	3	
Test Mode: BLI			TX Mode			N				13	3		
Channel frequency		су	6	dB E	Bandw	/idth		99%	Band	width		Lim	it
(MHz)				(kHz)				(kHz))		(kH	z)
240	2			7	20.00			1	086.0	0			
244	2			7	20.00			1	092.0	0		>=5(00
2480	0			7	08.00			1	092.0	0			
					E	BLE M	ode						
						2402 N	1H2						
1 PK	-10	D1 1.54						OBW 3	- 1 [T] -4		В		
1 PK MAXH	-10	D1 1.54		TI			1		-401466	.48 dBm 000 GHz W] .61 dBm 000 GHz W] .65 dBm			
1 PK MAXH	-10	D1 1.54	dBm-				1	Marker Temp	-401646 -11 OB -11 OB -11 OB -11 OB -11 OB	.48 dBm 000 GHz W] .61 dBm 000 GHz W] .65 dBm	LVL		
1 PK MAXH	-10	D1 1.54	dBm-					Marker Temp	-401646 -11 OB -11 OB -11 OB -11 OB -11 OB	.48 dBm 000 GHz W] .61 dBm 000 GHz W] .65 dBm	LVL		
1 PK MAXH	-10 20 30	D1 1.54	dBm-					Marker Temp	-401646 -11 OB -11 OB -11 OB -11 OB -11 OB	48 dBm 300 GHz W1 61 dBm 000 GHz W1 65 dBm 000 GHz	LVL PS		
1 PK MAXH	10 20 30 50	D1 1.54	dBm-					Marker Temp	-401646 -11 OB -11 OB -11 OB -11 OB -11 OB	48 dBm 300 GHz W1 61 dBm 000 GHz W1 65 dBm 000 GHz	LVL PS		
1 PK MAXH	10 20 30 50	D1 1.54	dBm-				F2	Marker Temp	-401646 -11 OB -11 OB -11 OB -11 OB -11 OB	48 dBm 300 GHz W1 61 dBm 000 GHz W1 65 dBm 000 GHz	LVL PS		



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8. Peak Output Power Test

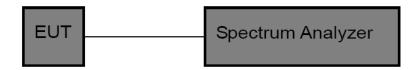
8.1 Test Standard and Limit

8.1.1 Test Standard FCC Part 15.247 (b)

8.1.2 Test Limit

FCC Part 15 Subpart C(15.247)/RSS-247								
Test Item	Limit	Frequency Range(MHz)						
Peak Output Power	1 Watt or 30 dBm	2400~2483.5						

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 v03r03.

- (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.



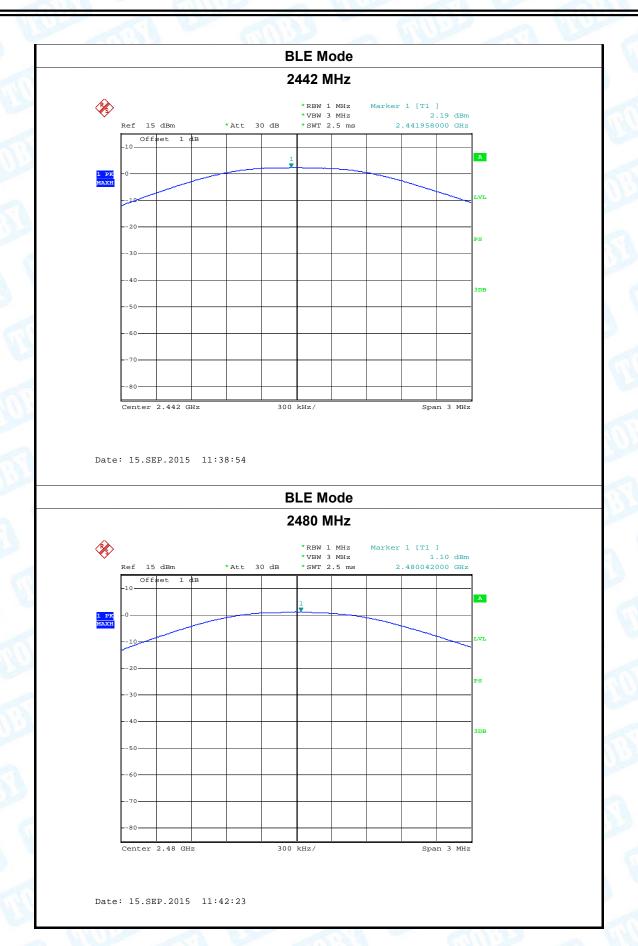
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8.5 Test Data

UT:		Bluetooth Module				Model:				BTM98-8AA			
emperatur	e:	25 °	C		n 1	1111		Relative Humidity:			y:	55%	
Test Voltage: DC 5V			Win.	9			1111						
Test Mode: BLE TX N		/lode	ode			(CINE S						
Channel frequency (MHz)				Test	Resu	lt (dE	Bm) Limit (dBm)						
2	402					2.2	8						
2	2442					2.19	9					30	
2	2480					1.10	0						
				1	В	LE M	ode						
					2	402 N	ИHz						
							1 MHz	Marke	er 1 [T1				
							3 MHz 2.5 ms			2.28 dBm 3000 GHz			
•		dBm		*Att 3	30 dB	SWI							
·		dBm set 1 d	lB	*Att 3	30 dB	SWI					_		
	Off		iВ	*Att 3	30 dB	1					A		
1 PK MAXH	Off		ВВ	*Att 3	30 dB	1							
	Off		iB	*Att	30 dB	1					A		
	Off		В	*Att	30 dB	1					LVL		
	Off -10		ii B	*Att	30 dB	1							
	-10 Off -0		B	*Att	0 dB	1					LVL		
	Off -10 — — — — — — — — — — — — — — — — — — —		В	*Att	0 dB	341					LVL		
	-10 Off -0		В	*Att	0 dB	11					LVL PS		
	Off -10 — — — — — — — — — — — — — — — — — — —		iB	*Att :	0 dB	3					LVL PS		
	-10 Off		B	*Att	0 dB	1					LVL PS		
	-10 Off		iB	*Att :	0 dB	3					LVL PS		
	-20 -30 -40 -50 -60 -70 -80			*Att		kHz/					LVL PS		



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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

FCC Part 15 Subpart C(15.247)								
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 v03r03.

- (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.



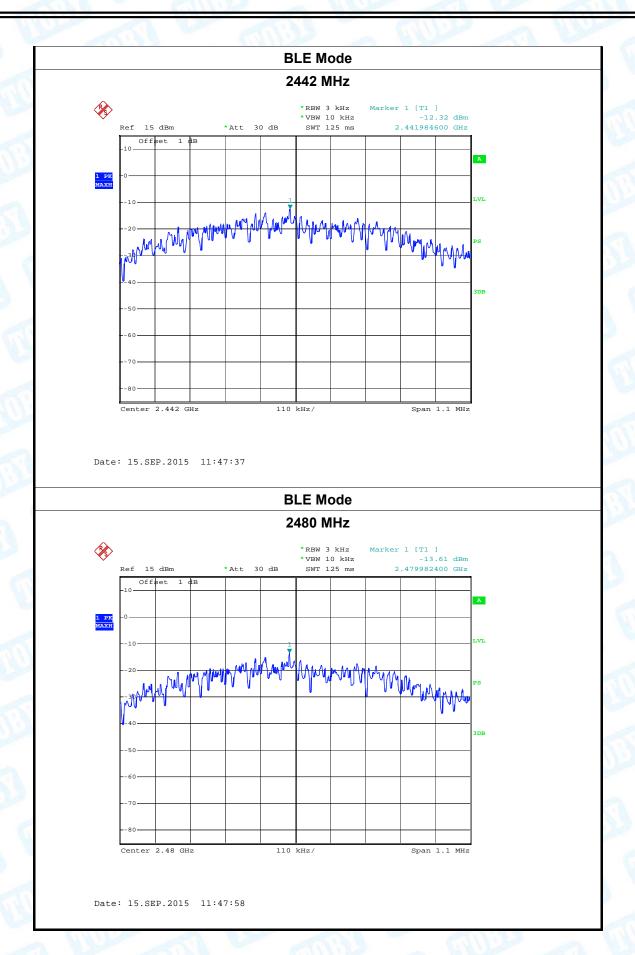
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8.5 Test Data

EUT:	Bluetooth	Module		Model:			BTM98-8AA
Temperature:	25 ℃	The same of	THE STATE OF THE S	Relativ	e Humidit	y:	55%
Test Voltage:	DC 5V	-	1300		S 1/2		emil.
Test Mode:	BLE TX N	/lode		(1)			1000
Channel Free	Pov	wer Dens	sity		Limit		
(MHz)	(3	(3 kHz/dBm)				IBm)	
2402			-12.05				
2442			-12.32				8
2480			-13.61				
		Е	BLE Mod	е	I		
		2	2402 MH	Z			
	15 dBm ffset 1 dB	*Att 30 dB	*VBW 10 k SWT 125		-12.05 dB		
₽			*RBW 3 kH	z Marker	1 [T1]		
		*Att 30 dB					
-10	LISEC I GB					A	
1 PK							
1 PK MAXH			1			LVL	
10	I washin	www.hwww.au	1 MAGA MA			LVL	
10	M M M Mary	May My ma	Mypory	Myllhryllv	Mulmann na	LVL	
10	M W W		Mymym	M/M/M	Www.andpann		
10	Mary Mary	y My Mal	Toppy of	ryllo-Alv	Munday of the Mark		
10— 20—	M VVVIV		Mywyry	My Juny	W washing	₽S	
10 — 20 — 40 —			Mynayry	r ullurulu	Www.	₽S	
10— 20— 40— 50—	AND MANUTANA		Duryman	ulalla de	Monday of the same	₽S	
10— 20— 40— 50—	M VVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVV		The part of	AMM MAN	Wy grap page	₽S	
10			T Wywyy cyf	challa _r Alv	We grap proper	PS 3DB	
10	r 2.402 GHz		hHz/		Span 1.1 Mi	PS 3DB	
10			hHz/	challa _r Alv	Span 1.1 ME	PS 3DB	
10—20—		110	httz/	All Indian	Span 1.1 MH	PS 3DB	



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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 3 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 Chip Antenna. It complies with the standard requirement.

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