

Shenzhen Toby Technology Co., Ltd.

Report No.: TB-FCC145093

1 of 33 Page:

FCC Radio Test Report FCC ID: XMF-MID8001

FCC Class II Permissive Change

Report No. TB-FCC145093

Lightcomm Technology Co., Ltd. **Applicant**

Equipment Under Test (EUT)

EUT Name MID

Model No. MID8001-IB

Series Model No. DL801W, DL808W

Brand Name N/A

Receipt Date 2015-08-12

2015-08-12 to 2015-08-17 **Test Date**

Issue Date 2015-08-18

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

Test Method ANSI C63.10:2013

Conclusions PASS

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

The EUT technically complies with the FCC 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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Page: 2 of 33

Contents

COL	NIENIS	2
1.	GENERAL INFORMATION ABOUT EUT	3
	1.1 Client Information	3
	1.2 General Description of EUT (Equipment Under Test)	3
	1.3 Block Diagram Showing the Configuration of System Tested	4
	1.4 Description of Support Units	4
	1.5 Description of Test Mode	5
	1.6 Description of Test Software Setting	5
	1.7 Measurement Uncertainty	6
	1.8 Test Facility	6
2.	TEST SUMMARY	7
3.	TEST EQUIPMENT	8
4.	CONDUCTED EMISSION TEST	9
	4.1 Test Standard and Limit	9
	4.2 Test Setup	
	4.3 Test Procedure	
	4.4 EUT Operating Mode	10
	4.5 Test Data	10
5.	RADIATED EMISSION TEST	15
	5.1 Test Standard and Limit	15
	5.2 Test Setup	16
	5.3 Test Procedure	
	5.4 EUT Operating Condition	17
	5.5 Test Data	18
6.	RESTRICTED BANDS REQUIREMENT	27
	6.1 Test Standard and Limit	27
	6.2 Test Setup	27
	6.3 Test Procedure	27
	6.4 EUT Operating Condition	28
	6.5 Test Data	28
7.	ANTENNA REQUIREMENT	33
	7.1 Standard Requirement	
	7.2 Antenna Connected Construction	33



Page: 3 of 33

1. General Information about EUT

1.1 Client Information

Applicant: Lightcomm Technology Co., Ltd.

Address : RM 1708-10, 17/F, PROSPERITY CENTRE, 25 CHONG YIP

STREET, KWUN TONG, KOWLOON, HONG KONG

Manufacturer : Huizhou Hengdu Electronics Co.,Ltd.

Address : DIP South Area, Huiao Highway, Huizhou, Guangdong, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	i	MID		
Models No.	:	MID8001-IB, DL801W, DL808W		
Model Difference	5	All models are identical in the same PCB layout, interior structure and electrical circuit, The only difference is model name for commercial purpose.		
3	Ti.	Operation Frequency: 2402MHz~2480MHz		
Dunglingt		Number of Channel:	Bluetooth 4.0 (BLE): 40 channels see note(3)	
Product Description		RF Output Power:	5.778 dBm Conducted Power	
		Antenna Gain:	0 dBi FPC Antenna	
WILE.		Modulation Type:	GFSK	
		Bit Rate of Transmitter:	1Mbps(GFSK)	
Power Supply	:	DC power supplied by A DC Voltage supplied from		
Power Rating	:	Input: AC 100~240V 50/ Output: 5V 2A. DC 3.7V from 4500mA L		
Connecting I/O Port(S)	:	Please refer to the User		

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:

Channel	Frequency	Channel	Frequency	Channel	Frequency
	(MHz)		(MHz)		(MHz)

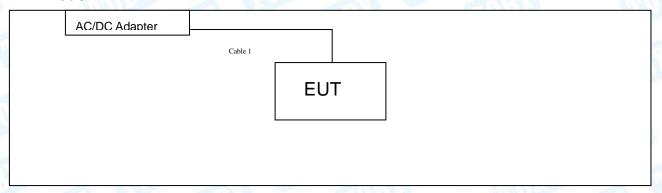


Page: 4 of 33

					April 1
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	3	
13	2428	27	2456		

1.3 Block Diagram Showing the Configuration of System Tested

TX Mode



1.4 Description of Support Units

	Eq	uipment Informatio	on	
Name	Model	S/N	Manufacturer	Used "√"
1	/	1	1	1
		Cable Information		
Number	Shielded Type	Ferrite Core	Length	Note
Cable 1	YES	NO	1.1M	Accessories





Page: 5 of 33

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	AC Charging with TX Mode

For	Radiated Test
Final Test Mode	Description
Mode 2	AC 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.

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	Realtek Bluetooth MPRTK_BT_CHIP_ID_RTL8723B			
Channel	CH 00	CH 20	CH 39	
BLE Mode	DEF	DEF	DEF	



Page: 6 of 33

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 Emission	Level Accuracy:	. 4 CO dD
Radiated Emission	9kHz to 30 MHz	±4.60 dB
Dadiated Emission	Level Accuracy:	. 4 40 dD
Radiated Emission	30MHz to 1000 MHz	±4.40 dB
Dedicted Emission	Level Accuracy:	. 4.20 dD
Radiated Emission	Above 1000MHz	±4.20 dB

1.8 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 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.



Page: 7 of 33

2. Test Summary

	FCC Part	t 15 Subpart C(15.247)/ RSS 247	' Issue 1	
Standa	rd Section	Tool How	111111	Downsylv
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 Note(3)
15.247(a)(2)	RSS 247 5.2 (1)	6dB Bandwidth	PASS	N/A Note(3)
15.247(b)	RSS 247 5.4 (4)	Peak Output Power	PASS	N/A Note(3)
15.247(e)	RSS 247 5.2 (2)	Power Spectral Density	PASS	N/A Note(3)
15.247(d)	RSS 247 5.5	Transmitter Radiated Spurious Emission	PASS	N/A

Note (1): "/" for no requirement for this test item.

- (2): N/A is an abbreviation for Not Applicable.
- (3): This report is Class II change report for the original equipment have changed, the transmitter module itself has not changed. More information about the test data please refer to the original test report.



Page: 8 of 33

3. Test Equipment

Conducte	d Emission Te	st			
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
					Cal. Due
Spectrum					
Analyzer	Agilent	E4407B	MY45106456	Sep. 01, 2014	Aug. 31, 2015
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



Page: 9 of 33

4. Conducted Emission Test

4.1 Test Standard and Limit

4.1.1Test Standard FCC Part 15.207

4.1.2 Test Limit

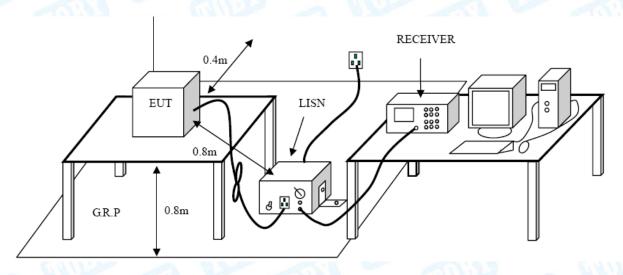
Conducted Emission Test Limit

Francisco (MIII)	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.



Page: 10 of 33

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

Please see the next page.



Page: 11 of 33

UT:	MID		Mo	odel:		MID8001-	IB
emperature:	25 ℃		Re	lative Humi	dity:	55%	Alle
est Voltage:	AC 12	20V/60 Hz		10	G	TI'S	
erminal:	Line	2	AHAR		1 B	100	
est Mode:	AC C	harging with	BLE TX 24	02 MHz	2	~ N	N. O.
Remark:	Only	worse case	is reported			133	
90.0 dBu∀							
						QP: AVG:	
* * ×							
171/1/1	Ă-						
40		MANAMANAMANAMANAMANAMANAMANAMANAMANAMAN	-	A Conduction to the Late Const.			
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AAAAA	. <u> </u>	Milkarieka izzizzi		Mary Colombia	proprietion and grown	and the same of th	pea
							AVI
10							
0 150	0.5		(MH=)	5			30 000
0.150	0.5		(MHz)	5			30.000
		Reading	Correct	Measure-	Limit	Over	30.000
0.150 No. Mk.	Freq.	Reading Level			Limit	Over	30.000
No. Mk.	Freq.	Level dBuV	Correct Factor	Measure- ment	dBu∀	dB	Detector
No. Mk.	Freq. MHz 0.1780	dBuV 43.94	Correct Factor dB 9.98	Measure- ment dBuV 53.92	dBu∀ 64.57	dB -10.65	Detector QP
No. Mk.	Freq. MHz 0.1780 0.1780	dBuV 43.94 29.14	Correct Factor	Measurement dBuV 53.92 39.12	dBuV 64.57 54.57	dB -10.65 -15.45	Detector QP AVG
No. Mk. 1 2 3	Freq. MHz 0.1780 0.1780 0.2180	dBuV 43.94 29.14 42.84	Correct Factor dB 9.98 9.98 10.02	Measure- ment dBuV 53.92 39.12 52.86	64.57 54.57 62.89	dB -10.65 -15.45 -10.03	Detector QP AVG QP
No. Mk. 1 2 3 4	Freq. MHz 0.1780 0.1780 0.2180 0.2180	dBuV 43.94 29.14 42.84 26.48	Correct Factor dB 9.98 9.98 10.02	Measurement dBuV 53.92 39.12 52.86 36.50	dBuV 64.57 54.57 62.89 52.89	dB -10.65 -15.45 -10.03 -16.39	Detector QP AVG QP AVG
No. Mk. 1 2 3 4 5	Freq. MHz 0.1780 0.1780 0.2180 0.2180 0.2540	dBuV 43.94 29.14 42.84 26.48 41.83	Correct Factor dB 9.98 9.98 10.02 10.02	Measure- ment dBuV 53.92 39.12 52.86 36.50 51.85	dBuV 64.57 54.57 62.89 52.89 61.62	dB -10.65 -15.45 -10.03 -16.39 -9.77	Detector QP AVG QP AVG
No. Mk. 1 2 3 4 5	Freq. MHz 0.1780 0.1780 0.2180 0.2180 0.2540 0.2540	43.94 29.14 42.84 26.48 41.83 25.51	Correct Factor dB 9.98 9.98 10.02 10.02 10.02	Measure- ment dBuV 53.92 39.12 52.86 36.50 51.85 35.53	dBuV 64.57 54.57 62.89 52.89 61.62 51.62	dB -10.65 -15.45 -10.03 -16.39 -9.77 -16.09	Detector QP AVG QP AVG QP AVG
No. Mk. 1 2 3 4 5 6 7 *	Freq. MHz 0.1780 0.1780 0.2180 0.2180 0.2540 0.2540 0.3260	Level dBuV 43.94 29.14 42.84 26.48 41.83 25.51 40.04	Correct Factor 9.98 9.98 10.02 10.02 10.02 10.02	Measurement dBuV 53.92 39.12 52.86 36.50 51.85 35.53 50.06	dBuV 64.57 54.57 62.89 52.89 61.62 51.62 59.55	dB -10.65 -15.45 -10.03 -16.39 -9.77 -16.09 -9.49	Detector QP AVG QP AVG QP AVG
No. Mk. 1 2 3 4 5 6 7 *	Freq. MHz 0.1780 0.1780 0.2180 0.2180 0.2540 0.2540 0.3260 0.3260	Level dBuV 43.94 29.14 42.84 26.48 41.83 25.51 40.04 26.49	Correct Factor 9.98 9.98 10.02 10.02 10.02 10.02 10.02 10.02	Measurement dBuV 53.92 39.12 52.86 36.50 51.85 35.53 50.06 36.51	dBuV 64.57 54.57 62.89 52.89 61.62 59.55 49.55	-10.65 -15.45 -10.03 -16.39 -9.77 -16.09 -9.49 -13.04	Detector QP AVG QP AVG QP AVG
No. Mk. 1 2 3 4 5 6 7 * 8	Freq. MHz 0.1780 0.2180 0.2180 0.2540 0.2540 0.3260 0.3260 0.9260	Level dBuV 43.94 29.14 42.84 26.48 41.83 25.51 40.04 26.49 31.66	Correct Factor 9.98 9.98 10.02 10.02 10.02 10.02 10.02 10.02 10.02	Measurement dBuV 53.92 39.12 52.86 36.50 51.85 35.53 50.06 36.51 41.73	dBuV 64.57 54.57 62.89 52.89 61.62 51.62 59.55 49.55	dB -10.65 -15.45 -10.03 -16.39 -9.77 -16.09 -9.49 -13.04 -14.27	Detector QP AVG QP AVG QP AVG QP AVG
No. Mk. 1 2 3 4 5 6 7 * 8 9	Freq. MHz 0.1780 0.2180 0.2180 0.2540 0.2540 0.3260 0.3260 0.9260 0.9260	Level dBuV 43.94 29.14 42.84 26.48 41.83 25.51 40.04 26.49 31.66 17.27	Correct Factor 9.98 9.98 10.02 10.02 10.02 10.02 10.02 10.02 10.07	Measurement dBuV 53.92 39.12 52.86 36.50 51.85 35.53 50.06 36.51 41.73 27.34	dBuV 64.57 54.57 62.89 52.89 61.62 51.62 59.55 49.55 56.00 46.00	dB -10.65 -15.45 -10.03 -16.39 -9.77 -16.09 -9.49 -13.04 -14.27 -18.66	Detector QP AVG QP AVG QP AVG QP AVG
No. Mk. 1 2 3 4 5 6 7 * 8 9 10	Freq. MHz 0.1780 0.2180 0.2180 0.2540 0.2540 0.3260 0.3260 0.9260	Level dBuV 43.94 29.14 42.84 26.48 41.83 25.51 40.04 26.49 31.66	Correct Factor 9.98 9.98 10.02 10.02 10.02 10.02 10.02 10.02 10.02	Measurement dBuV 53.92 39.12 52.86 36.50 51.85 35.53 50.06 36.51 41.73	dBuV 64.57 54.57 62.89 52.89 61.62 59.55 49.55 56.00 46.00	dB -10.65 -15.45 -10.03 -16.39 -9.77 -16.09 -9.49 -13.04 -14.27	Detector QP AVG QP AVG QP AVG



Page: 12 of 33



	MID		M	odel:		MID8001	-IB
Temperature:	25 ℃		R	elative Hum	idity:	55%	ABIN
Test Voltage:	AC 12	20V/60 Hz	- Pari	88	(A)	11:33	
Terminal:	Neutr	al	ARG		1 6		
Test Mode:	AC C	harging with	BLE TX 2	402 MHz		- N	III The
Remark:	Only	worse case	is reported		600	133	
90.0 dBuV							
						QP: AVG:	
XXX							
MMMM	MARAN	N NANANJAN JAN	Marine and a second				
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							AVI
			GHI)				20.000
0.150	0.5		(MHz)	5			30.000
0.150		Reading	Correct	Measure-	Limit	Over	30.000
0.150	Freq.	Level	Correct Factor	Measure- ment	Limit	Over	
0.150 No. Mk.	Freq.	Level dBuV	Correct Factor	Measure- ment	dBuV	dB	Detector
0.150 No. Mk.	Freq. MHz .1819	dBuV 42.43	Correct Factor dB 9.98	Measure- ment dBuV 52.41	dBu∨ 64.39	dB -11.98	Detector QP
0.150 No. Mk. 1 0 2 0	Freq. MHz .1819	dBuV 42.43 26.05	Correct Factor dB 9.98	Measure- ment dBuV 52.41 36.03	dBuV 64.39 54.39	dB -11.98 -18.36	Detector QP AVG
0.150 No. Mk. 1 0 2 0 3 0	Freq. MHz .1819 .1819	dBuV 42.43 26.05 41.02	Correct Factor dB 9.98 9.98 10.02	Measure- ment dBuV 52.41 36.03 51.04	64.39 54.39 62.89	dB -11.98 -18.36 -11.85	Detector QP AVG QP
0.150 No. Mk. 1 0 2 0 3 0 4 0	Freq. MHz .1819 .1819 .2180	dBuV 42.43 26.05 41.02 24.34	Correct Factor dB 9.98 9.98 10.02	Measure- ment dBuV 52.41 36.03 51.04 34.36	dBuV 64.39 54.39 62.89 52.89	dB -11.98 -18.36 -11.85 -18.53	Detector QP AVG QP AVG
0.150 No. Mk. 1 0 2 0 3 0 4 0 5 0	Freq. MHz .1819 .1819 .2180 .2180	dBuV 42.43 26.05 41.02	Correct Factor dB 9.98 9.98 10.02	Measure- ment dBuV 52.41 36.03 51.04 34.36 49.93	64.39 54.39 62.89 52.89 61.62	dB -11.98 -18.36 -11.85 -18.53 -11.69	Detector QP AVG QP
No. Mk. 1 0 2 0 3 0 4 0 5 0 6 0	Freq. MHz .1819 .1819 .2180	dBuV 42.43 26.05 41.02 24.34	Correct Factor dB 9.98 9.98 10.02	Measure- ment dBuV 52.41 36.03 51.04 34.36	64.39 54.39 62.89 52.89 61.62	dB -11.98 -18.36 -11.85 -18.53	Detector QP AVG QP AVG
0.150 No. Mk. 1 0 2 0 3 0 4 0 5 0 6 0	Freq. MHz .1819 .1819 .2180 .2180	dBuV 42.43 26.05 41.02 24.34 39.91	Correct Factor dB 9.98 9.98 10.02 10.02	Measure- ment dBuV 52.41 36.03 51.04 34.36 49.93	dBuV 64.39 54.39 62.89 52.89 61.62 51.62	dB -11.98 -18.36 -11.85 -18.53 -11.69	Detector QP AVG QP AVG
0.150 No. Mk. 1 0 2 0 3 0 4 0 5 0 6 0 7 * 0	Freq. MHz .1819 .1819 .2180 .2180 .2540	dBuV 42.43 26.05 41.02 24.34 39.91 23.65	Correct Factor dB 9.98 9.98 10.02 10.02 10.02	Measurement dBuV 52.41 36.03 51.04 34.36 49.93 33.67	dBuV 64.39 54.39 62.89 52.89 61.62 51.62 59.55	dB -11.98 -18.36 -11.85 -18.53 -11.69 -17.95	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	Freq. MHz .1819 .1819 .2180 .2180 .2540 .3260	dBuV 42.43 26.05 41.02 24.34 39.91 23.65 39.68	Correct Factor dB 9.98 9.98 10.02 10.02 10.02 10.02	Measurement dBuV 52.41 36.03 51.04 34.36 49.93 33.67 49.70	dBuV 64.39 54.39 62.89 52.89 61.62 51.62 59.55 49.55	dB -11.98 -18.36 -11.85 -18.53 -11.69 -17.95 -9.85	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 9 0	Freq. MHz .1819 .1819 .2180 .2180 .2540 .2540 .3260	dBuV 42.43 26.05 41.02 24.34 39.91 23.65 39.68 25.81	Correct Factor dB 9.98 9.98 10.02 10.02 10.02 10.02 10.02	Measurement dBuV 52.41 36.03 51.04 34.36 49.93 33.67 49.70 35.83	dBuV 64.39 54.39 62.89 52.89 61.62 51.62 59.55 49.55 58.06	dB -11.98 -18.36 -11.85 -18.53 -11.69 -17.95 -9.85 -13.72	Detector QP AVG 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 0 10 0	Freq. MHz .1819 .1819 .2180 .2180 .2540 .2540 .3260 .3260 .3899	dBuV 42.43 26.05 41.02 24.34 39.91 23.65 39.68 25.81 35.50	Correct Factor dB 9.98 9.98 10.02 10.02 10.02 10.02 10.02 10.02	Measurement dBuV 52.41 36.03 51.04 34.36 49.93 33.67 49.70 35.83 45.52	64.39 54.39 62.89 52.89 61.62 51.62 59.55 49.55 58.06 48.06	dB -11.98 -18.36 -11.85 -18.53 -11.69 -17.95 -9.85 -13.72 -12.54	Detector QP AVG QP AVG QP AVG QP AVG



13 of 33 Page:



EUT:	MID	N. P.	Mo	del:	I	MID8001-	IB
Temperatu	ure: 25	C	Re	lative Humi	dity:	55%	
Test Volta	ge: AC	240V/60 Hz			GU	4.30	
Terminal:	Line		MAL		1 6		
Test Mode	: AC	Charging wit	h BLE TX 24	02 MHz		1 N	
Remark:	Only	worse case	is reported	-		30	11
90.0 dBuV						QP:	
40				Marine Ma	Mary Marines M	AVG:	peak AVG
0.150	0.5		(MHz)	5			30.000
	- F	Reading	Correct	Measure-	Limit	0.455	
No. Mi	K. Freq.	Level	Factor dB	ment dBuV	dBuV	O∨er dB	Detector
1	0.1740	46.16	9.97	56.13	64.76	-8.63	QP
2	0.1740	32.98	9.97	42.95		-11.81	AVG
3	0.2100	43.34	10.02	53.36	63.20	-9.84	QP
4	0.2100	30.82	10.02	40.84		-12.36	AVG
5	0.2420	40.98	10.02	51.00	62.02	-11.02	QP
6	0.2420	31.59	10.02	41.61	52.02	-10.41	AVG
7	0.3180	41.03	10.02	51.05	59.76	-8.71	QP
8	0.3180	29.81	10.02	39.83	49.76	-9.93	AVG
9	0.7980	38.21	10.10	48.31	56.00	-7.69	QP

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

0.7980

1.1539

1.1539

9 10

11

12

Emission Level= Read Level+ Correct Factor

29.57

37.21

25.65

10.10

10.06

10.06

39.67

47.27

35.71

AVG

AVG

QP

46.00

56.00

-6.33

-8.73

46.00 -10.29



Emission Level= Read Level+ Correct Factor

Report No.: TB-FCC145093

Page: 14 of 33

EUT:	MID		Model:		MID8001-	IB
Temperature:	25 ℃		Relative Humi	idity:	Albert	
Test Voltage:	AC 240V	60 Hz	501	67	4.50	
Terminal:	Neutral	- 44	U.	1 6		
Test Mode:	AC Charg	ging with BLE T	X 2402 MHz		0 N	N. Jane
Remark:	Only wors	se case is repo	rted		33	
90.0 dBuV						
					QP: AVG:	
* * * · ·						-
TTTTAA	- -	× ×				
40			Warmer and the same			
1717/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/	אג''' גוואו וויוואין	Ma Jama Jana Jana Jana Jana Jana Jana Jan	h A n .	was of the way of the same	March March	
<u> </u>		HANDER WAS A A	A proportion was an and a second		- HANDER	Mounday
A A A A A A	HHILLIAKIA			, and Mark	and the second	pe
					Maria and	AV
-10						
0.150	0.5	(MHz	2) 5			30.000
No. Mk.		ading Corre		Limit	Over	
NO. WIK.	<u> </u>	BuV dB	tor ment dBuV	dBuV	dB	Detector
1 0		7.65 10.1		64.76	-6.99	QP
		7.65 10.1 2.42 10.1			-12.22	AVG
		4.10 10.1		63.36	-9.14	QP
		0.22 10.1			-13.02	AVG
		2.25 10.1			-9.66	QP
		1.60 10.1			-10.31	AVG
		1.77 10.0		59.86	-8.01	QP
8 * 0).3140 3	3.79 10.0	8 43.87	49.86	-5.99	AVG
9 0	.8380 3	6.32 10.0	8 46.40	56.00	-9.60	QP
10 0	.8380 2	4.96 10.0	8 35.04	46.00	-10.96	AVG
11 1	.1539 3	4.82 10.1	4 44.96	56.00	-11.04	QP
		2.02 10.1	4 32.16		-13.84	AVG

TB-RF-074-1.0



Page: 15 of 33

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	

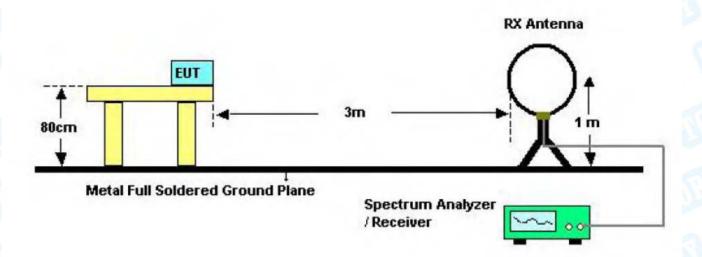
Note:

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

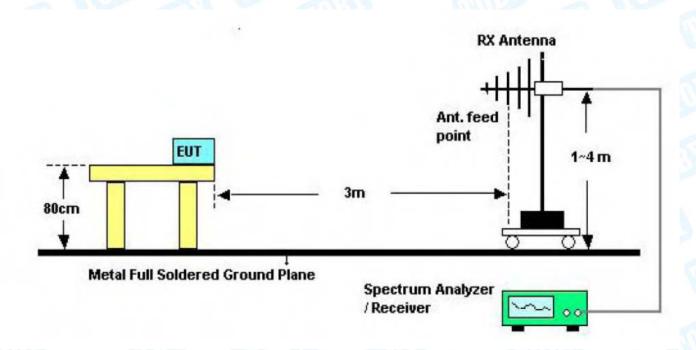


Page: 16 of 33

5.2 Test Setup



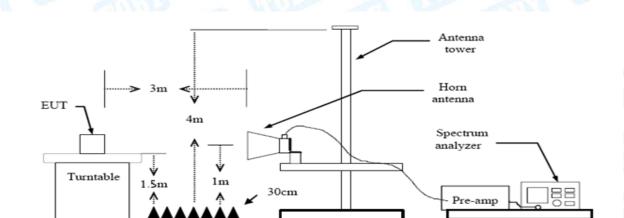
Below 30MHz Test Setup



Below 1000MHz Test Setup



Page: 17 of 33



Above 1GHz Test Setup

5.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz. The EUT was placed on a rotating 0.8m high above the 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.

5.4 EUT Operating Condition

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



Page: 18 of 33

5.5 Test Data

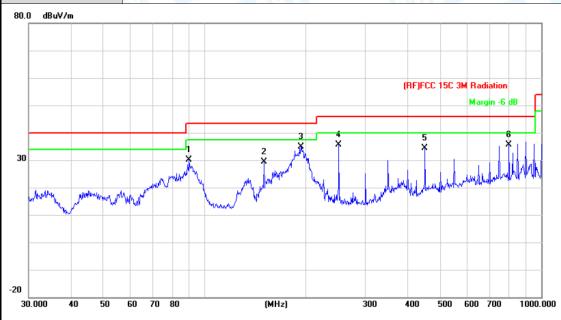
Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10Hz with Peak Detector for Average Values.

Test data please refer the following pages.



19 of 33 Page:

THU:			
EUT:	MID	Model:	MID8001-IB
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal	U C	
Test Mode:	BLE TX 2402 Mode		MALL



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	O∨er	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		89.9047	52.77	-22.69	30.08	43.50	-13.42	peak
2		150.0107	50.56	-21.17	29.39	43.50	-14.11	peak
3	*	193.0945	55.75	-20.75	35.00	43.50	-8.50	peak
4		250.3009	53.79	-18.11	35.68	46.00	-10.32	peak
5		451.1349	46.70	-12.41	34.29	46.00	-11.71	peak
6		801.7862	42.21	-6.49	35.72	46.00	-10.28	peak

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



Report No.: TB-FCC145093 20 of 33

	KY.
J.	$\mathbf{n}_{\mathbf{T}}$
	J.

EUT:	MID	M	odel:	MI	D8001-IB				
Temperature:	25 ℃	Re	elative Humidity	/: 559	%	The same			
Test Voltage:	AC 120V/60 Hz			(III)	130				
Ant. Pol.	Vertical	A Prince		62					
Test Mode:	BLE TX 2402 M	ode	THE PERSON NAMED IN		THE RESERVE				
Remark:	Only worse case	e is reported		Tim.	1:33				
80.0 dBuV/m									
30	The state of the s	rapped and the second as	5 X	RF)FCC 15C	3M Radiation Margin -6				
-20									
30.000 40 50 No. Mk. F	Reading req. Level	Correct Factor	Measure-	100 500 mit	600 700 Over	1000.000			
	∕lHz dBuV	dB/m	dBuV/m dl	3uV/m	dB	Detector			
1 44.	9004 54.31	-22.23	32.08 4	0.00	-7.92	peak			
2 48.	6719 56.87	-23.84	33.03 4	0.00	-6.97	peak			
3 * 73.	3593 58.55	-23.50	35.05 4	0.00	-4.95	peak			
4 91.	1744 58.86	-22.59	36.27 4	3.50	-7.23	peak			
5 250	.3009 51.93	-18.11	33.82 4	6.00	-12.18	peak			

32.86

46.00

-13.14

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

451.1349

6

Emission Level= Read Level+ Correct Factor

45.27

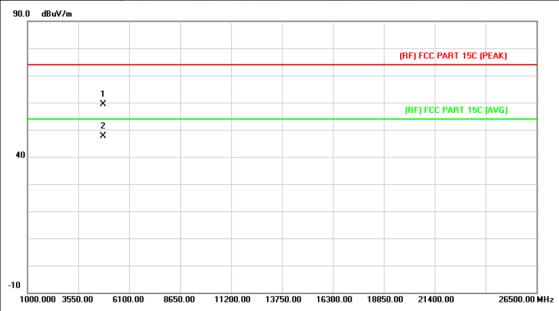
-12.41

peak



Page: 21 of 33

EUT:	MID	Model:	MID8001-IB				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	AC 120V/60 Hz						
Ant. Pol.	Horizontal	Horizontal					
Test Mode:	BLE Mode TX 2402 MI	-lz	J. Hilliam				
Remark:	mark: No report for the emission which more than 10 dB below the prescribed limit.						

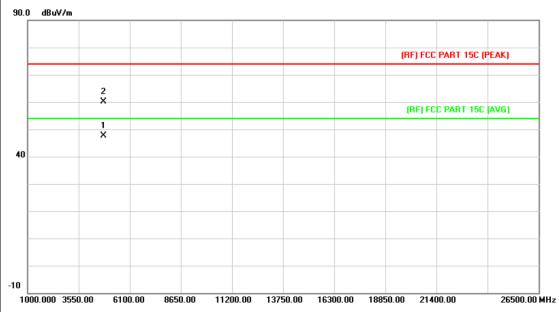


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4803.985	46.01	13.44	59.45	74.00	-14.55	peak
2	*	4804.075	34.10	13.44	47.54	54.00	-6.46	AVG



Page: 22 of 33

EUT:	MID	Model:	MID8001-IB			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	AC 120V/60 Hz	01 - 6				
Ant. Pol.	Vertical	Vertical				
Test Mode:	BLE Mode TX 2402 MHz					
Remark:	No report for the emission which more than 10 dB below the					
	prescribed limit.					

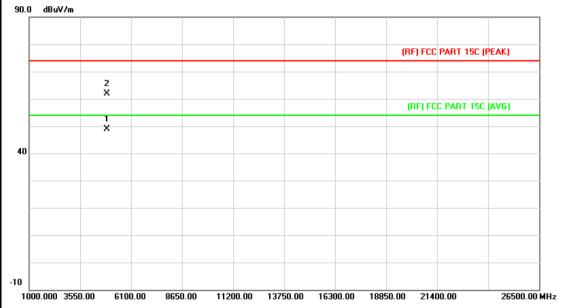


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	O∨er	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4803.954	34.14	13.44	47.58	54.00	-6.42	AVG
2		4803.974	46.68	13.44	60.12	74.00	-13.88	peak



Page: 23 of 33

EUT.	MID	Madali	MID0004 ID			
EUT:	MID	Model:	MID8001-IB			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	AC 120V/60 Hz					
Ant. Pol.	Horizontal	Horizontal				
Test Mode:	BLE Mode TX 2442 MHz					
Remark:	No report for the emission which more than 10 dB below the					
	prescribed limit.	J 13				

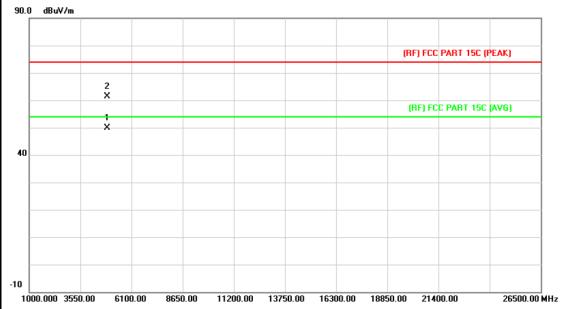


N	o. Mk.	Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4883.964	35.05	13.92	48.97	54.00	-5.03	AVG
2		4883.987	47.92	13.92	61.84	74.00	-12.16	peak



Page: 24 of 33

EUT:	MID	Model:	MID8001-IB			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	AC 120V/60 Hz	01 - 6				
Ant. Pol.	Vertical	Vertical				
Test Mode:	BLE Mode TX 2442 MHz					
Remark:	No report for the emission which more than 10 dB below the					
	prescribed limit.					

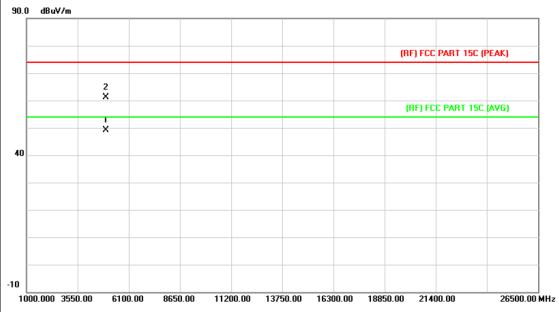


No	. Mk	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4883.967	35.95	13.92	49.87	54.00	-4.13	AVG
2		4884.084	47.53	13.92	61.45	74.00	-12.55	peak



Page: 25 of 33

EUT:	MID	Model:	MID8001-IB			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	AC 120V/60 Hz					
Ant. Pol.	Horizontal	Horizontal				
Test Mode:	BLE Mode TX 2480 MHz					
Remark:	No report for the emission which more than 10 dB below the					
	prescribed limit.	لا مرس				
1						



No	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4960.035	34.68	14.36	49.04	54.00	-4.96	AVG
2		4960.045	46.86	14.36	61.22	74.00	-12.78	peak



Page: 26 of 33

EUT:	MID	Model:	MID8001-IB				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	AC 120V/60 Hz	AC 120V/60 Hz					
Ant. Pol.	Vertical	Vertical					
Test Mode:	BLE Mode TX 2480 MHz						
Remark:	No report for the emission which more than 10 dB below the						
	prescribed limit.						



Ν	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4959.966	45.75	14.36	60.11	74.00	-13.89	peak
2	*	4959.987	34.77	14.36	49.13	54.00	-4.87	AVG



Page: 27 of 33

6. Restricted Bands Requirement

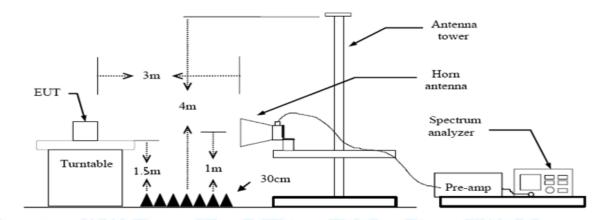
6.1 Test Standard and Limit

6.1.1 Test Standard FCC Part 15.209 FCC Part 15.205

6.1.2 Test Limit

Restricted Frequency	Class B (dBuV/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. The EUT was placed on a rotating 0.8m high above the 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



Page: 28 of 33

Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.

- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

6.4 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=10Hz with Peak Detector for Average Values.

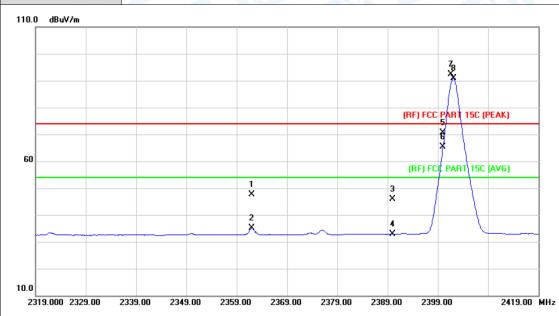
Test data please refer the following pages.



Page: 29 of 33

(1) Radiation Test

EUT:	MID	Model:	MID8001-IB			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	AC 120V/60 Hz					
Ant. Pol.	Horizontal					
Test Mode:	BLE Mode TX 2402 MHz					
Remark:	N/A	A VIII				



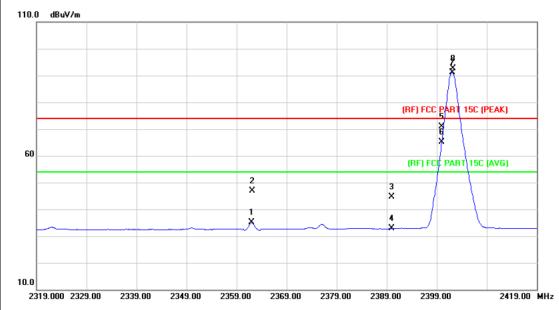
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2362.000	46.99	0.65	47.64	74.00	-26.36	peak
2		2362.000	34.41	0.65	35.06	54.00	-18.94	AVG
3		2390.000	45.07	0.77	45.84	74.00	-28.16	peak
4		2390.000	32.12	0.77	32.89	54.00	-21.11	AVG
5		2400.000	69.73	0.81	70.54	Fundamental	Frequency	peak
6	Χ	2400.000	64.61	0.81	65.42	Fundamental	Frequency	AVG
7	Χ	2401.600	91.63	0.82	92.45	74.00	18.45	peak
8	*	2402.100	90.01	0.82	90.83	54.00	36.83	AVG





Page: 30 of 33

EUT:	MID	Model:	MID8001-IB
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		33
Ant. Pol.	Vertical		
Test Mode:	BLE Mode TX 2480 MHz		HILL
Remark:	N/A	(M)	

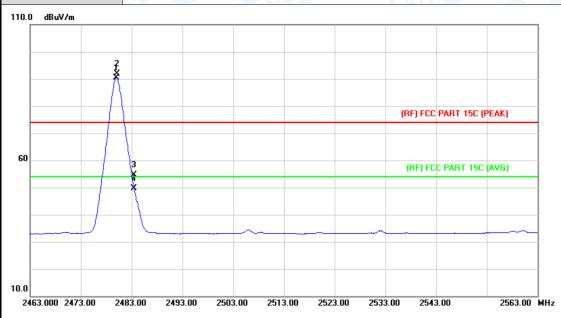


No.	Mk.	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2362.000	34.36	0.65	35.01	54.00	-18.99	AVG
2		2362.100	46.22	0.65	46.87	74.00	-27.13	peak
3		2390.000	43.97	0.77	44.74	74.00	-29.26	peak
4		2390.000	32.03	0.77	32.80	54.00	-21.20	AVG
5		2400.000	70.03	0.81	70.84	Fundamental	l Frequency	peak
6	Χ	2400.000	64.41	0.81	65.22	Fundamental I	Frequency	AVG
7	*	2402.100	90.41	0.82	91.23	54.00	37.23	AVG
8	Χ	2402.300	91.81	0.82	92.63	74.00	18.63	peak



Page: 31 of 33

EUT:	MID	Model:	MID8001-IB				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	AC 120V/60 Hz	01 - 6					
Ant. Pol.	Horizontal						
Test Mode:	BLE Mode TX 2480 MHz	BLE Mode TX 2480 MHz					
Remark:	N/A		1:33				
1100 10 11							



No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	O∨er	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2480.000	89.19	1.15	90.34	Fundamental	Frequency	AVG
2	Х	2480.200	90.77	1.15	91.92	Fundamental	Frequency	peak
3		2483.500	53.47	1.17	54.64	74.00	-19.36	peak
4		2483.500	48.49	1.17	49.66	54.00	-4.34	AVG



Page: 32 of 33



EUT:			MID			3	Model:			MID8001-IB			10
Гетр	eratu	re:	25 °C	С		3	Relativ	e Hum	idity:	55%	55%		
Test V	/oltag	je:	AC 1	120V/60	Hz		0.80		6	MI.	33		A.
Ant. P	ol.		Verti	cal		III.							
Test N	/lode:		BLE	Mode T	X 248	0 MHz	_ 5	11/10	1		16		
Rema	rk:		N/A	RR					6.00	1777			I
110.0	dBuV/m												7
60		7,3	3 ** *								T 15C (PE.		
	000 247	3.00 2	483.00	2493.00	2503.0	00 2513.	.00 2523	3.00 2	533.00	2543.00		2563.00	МН
No	. Mk	. Fr	eq.	Read Leve	_	Correc Facto		isure- ent	Limit	: (Over		
No	. Mk	. Fre	•		el		r m		Limit dBuV		Over dB	Dete	ctor
No 1	. Mk		- Hz	Leve	el ¯ ∨	Facto	r m e	ent	dBuV	/m			
		MH	dz .600	dBu ^v	el	Factor dB/m	r me dBi 93	ent uV/m	dBuV Fundan	/m nental Fi	dB	y pea	ak
1	Х	MH 2479 .	600 .000	dBu ¹ 92.4	el v v 2 73	dB/m 1.15	r me dBi 93	ent u∀/m 3.57	dBuV Fundan	/m nental Fi	dB requenc	y pea	ak 'G



Page: 33 of 33

7. Antenna Requirement

7.1 Standard Requirement

7.1.1 Standard FCC Part 15.203

7.1.2 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.

7.2 Antenna Connected Construction

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

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

	Antenna Type
D The	▼ Permanent attached antenna
0033	□ Unique connector antenna
	Professional installation antenna