

Shenzhen Toby Technology Co., Ltd.

Report No.: TB-FCC153674

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FCC Radio Test Report FCC ID: 2AGGR-MK

Original Grant

Report No. TB-FCC153674

Applicant Shenzhen Rivers Technology Co., Limited

Equipment Under Test (EUT)

EUT Name Keyboard

Model No. MK75+

MK75, MK75F, MK80, MK85, MK85F, MK90, MK90F, MK95, Serial Model No.

MK95F, MK100

Brand Name Bastron

2017-04-25 **Receipt Date**

Test Date 2017-04-26 to 2017-05-04

Issue Date 2017-05-05

FCC Part 15: 2016, Subpart C(15.247) **Standards**

Test Method ANSI C63.10: 2013

Conclusions **PASS**

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

Test/Witness

Engineer

Approved&

Authorized

: IVAN SU : faytai.



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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TOBY

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1. General Information about EUT

1.1 Client Information

Applicant: Shenzhen Rivers Technology Co.,Limited

Address : A#1611, Zhantao Technology Building, Longhua New District,

Shenzhen, China

Manufacturer : Shenzhen Rivers Technology Co., Limited

Address : A#1611, Zhantao Technology Building, Longhua New District,

Shenzhen, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	1	Keyboard			
Models No.		MK75+, MK75, MK75F, MK95F, MK100	MK75+, MK75, MK75F, MK80, MK85, MK85F, MK90, MK90F, MK95, MK95F, MK100		
Model Difference	:	All these models are identical in the same PCB layout and electrical circuit, the only difference is model name for commercial.			
	4	Operation Frequency:	Bluetooth 4.0(BLE): 2402MHz~2480MHz		
		Number of Channel:	Bluetooth 4.0(BLE): 40 channels see note(3)		
Product Description		RF Output Power:	-0.696 dBm Conducted Power(Module 1) -0.727 dBm Conducted Power(Module 2) -0.633 dBm Conducted Power(Module 3)		
Can B.		Antenna Gain:	1.6 dBi PCB Antenna		
		Modulation Type:	GFSK		
		Bit Rate of Transmitter:	1Mbps(GFSK)		
Power Supply : DC Supply by the AA Battery.		attery.			
Power Rating	:	DC 4*1.5V by AA Battery.			
Connecting I/O Port(S)	:	Please refer to the User's Manual			

Note:

This Test Report is FCC Part 15.247 for Bluetooth BLE, the test procedure follows the FCC KDB 558074 D01 DTS Means Guidance v04.

- (1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- (2) Antenna information provided by the applicant.
- (3) 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

TX Mode

EUT	

1.4 Description of Support Units

The EUT has been test as an independent unit.

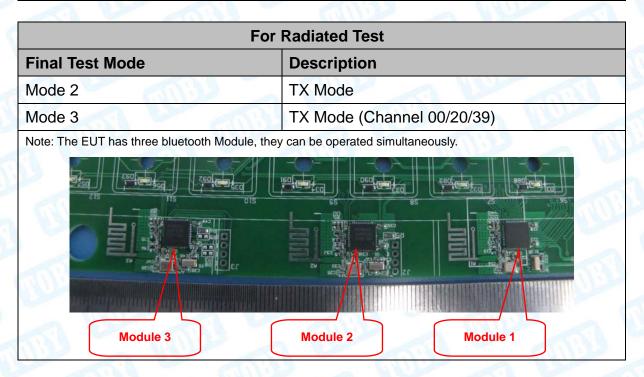


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1.5 Description of Test Mode

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	N/A			



Note:

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

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

BLE Mode: GFSK Modulation Transmitting mode.

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



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1.6 Description of Test Software Setting

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

Test Software Version	Nrfgo studio		
Frequency	2402 MHz	2442MHz	2480 MHz
BLE GFSK	DEF	DEF	DEF

1.7 Measurement Uncertainty

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

Test Item	Parameters	Expanded Uncertainty (U _{Lab})
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	±3.42 dB ±3.42 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	±4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	±4.40 dB
Radiated Emission	Level Accuracy: Above 1000MHz	±4.20 dB



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1.8 Test Facility

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

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

CNAS (L5813)

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



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2. Test Summary

Standard Section		Took Itams	Tradevas and	Damark
FCC	IC	Test Item	Judgment	Remark
15.203		Antenna Requirement	PASS	N/A
15.207(a)	RSS-GEN 7.2.4	Conducted Emission	N/A	(1)
15.205&15.247(d)	RSS-GEN 7.2.2	Band-Edge & Unwanted Emissions into Restricted Frequency	PASS	N/A
15.247(a)(2)	RSS 247 5.2 (1)	6dB Bandwidth	PASS	N/A
15.247(b)(3)	RSS 247 Conducted Max Output 5.4 (4) Power		PASS	N/A
15.247(e)	RSS 247 5.2 (2)	Power Spectral Density	PASS	N/A
15.205, RSS 247 15.209&15.247(d) 5.5		Transmitter Radiated Spurious &Unwanted Emissions into Restricted Frequency	PASS	N/A

Note: (1) The EUT is powered by DC battery, no requirement for this test item.

N/A is an abbreviation for Not Applicable.



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3. Test Equipment

Conducted	d Emission Te	st			
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 22, 2016	Jul. 21, 2017
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 22, 2016	Jul. 21, 2017
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 22, 2016	Jul. 21, 2017
LISN	Rohde & Schwarz	ENV216	101131	Jul. 22, 2016	Jul. 21, 2017
Radiation	Emission Tes	t			
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 22, 2016	Jul. 21, 2017
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 22, 2016	Jul. 21, 2017
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar.25, 2017	Mar. 24, 2018
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Mar.25, 2017	Mar. 24, 2018
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.24, 2017	Mar. 23, 2018
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar.24, 2017	Mar. 23, 2018
Loop Antenna	Laplace instrument	RF300	0701	Mar.24, 2017	Mar. 23, 2018
Pre-amplifier	Sonoma	310N	185903	Mar.25, 2017	Mar. 24, 2018
Pre-amplifier	HP	8449B	3008A00849	Mar. 29, 2017	Mar. 28, 2018
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar. 29, 2017	Mar. 28, 2018
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna C	onducted Em	ission			
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 22, 2016	Jul. 21, 2017
Spectrum Analyzer	Rohde & Schwarz	ESCI	100010/007	Jul. 22, 2016	Jul. 21, 2017
Power Meter	Anritsu	ML2495A	25406005	Jul. 22, 2016	Jul. 21, 2017
Power Sensor	Anritsu	ML2411B	25406005	Jul. 22, 2016	Jul. 21, 2017



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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

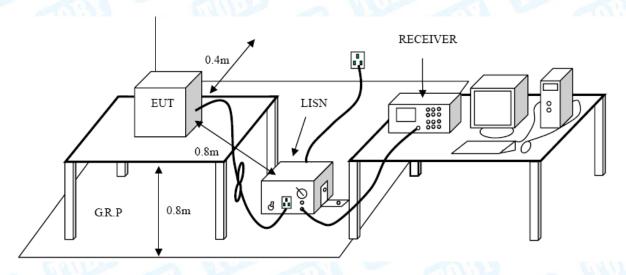
Conducted Emission Test Limit

Eroguanov	Maximum RF Lin	e Voltage (dBμV)
Frequency	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Notes:

- (1) *Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

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 9 kHz, 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 Da5ta

The EUT is powered by DC battery, no requirement for this test item.



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5. Radiated Emission Test

5.1 Test Standard and Limit

5.1.1 Test Standard FCC Part 15.247(d)

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

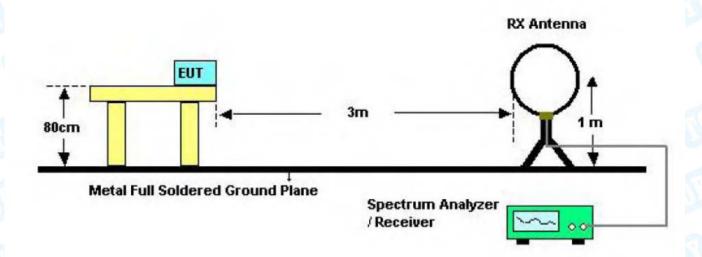
Note:

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

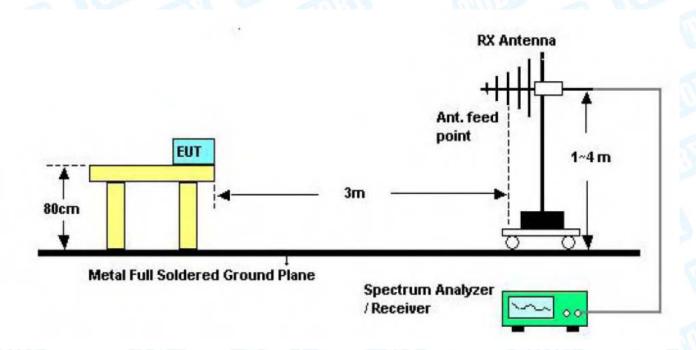


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5.2 Test Setup



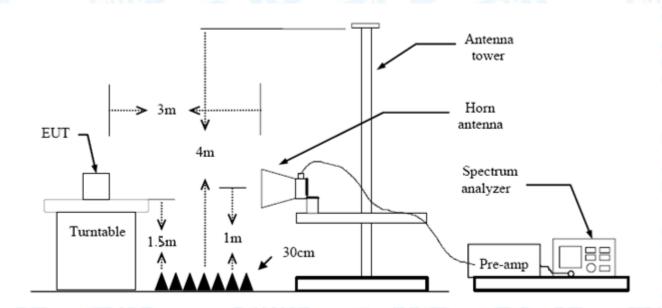
Below 30MHz Test Setup



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.



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9 KHz~30 MHz

From 9 KHz to 30 MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB

below the permissible value has no need to be reported.

30MHz~1GHz

		K	eybo	oard	a						Mod	del:				M	K75	5+	
Temper	ature:	2	5℃								Rela	ative	e Humidity:			55	5%		
Test Vo	ltage:	D	C 6	V				41	أخزالا			1	1			A	1		
Ant. Po	I.	Н	oriz	onta	al	N				50		1			,	W			
Test Mo	de:	В	LE 7	ΓX 2	240)2 N	√lod	e (M	odule	1)		·			3				5
Remark	Κ:	0	nly v	wor	rse	cas	se is	s rep	orted		CA	1							Y
30 dBu	W/m										*	2	3 *	(RF)FC(rgin -(5 dB	*
mulger	MAM	hay land	WW.	لمهالما	العالمير	MI _M	h/kratroto	handal.	المهميل المسب	/* L _{II.} , L _I I	Ar Jiffida),	- 1	W. P.	I (V) NATION	HUP***				
	40		60 7	0 8 R	eo Rea	adir evel	ng	Co	(MHz)		eası men			400	500		700		
-20 30.000	40	50 E	60 7 7	0 8 R	Rea Le	adir	ng	Co Fa	rrect	ı		ıre- t	Li		500	600	700 er	1	000.00
30.000	40 Mk.	Fred	GO 7	0 8 F	Rea Le	adir	ng	Co Fa	rrect	(men	ıre- t	L ii	mit	500	600 Ove	700 er	1 Det	ooo.oo
-20 30.000 No.	40 Mk.	Fred MHz	74	0 8	Rea Le	adir evel	ng 	Co Fa dE	rrect actor 3/m	(men dBuV/	ire- t /m	Lii dE	mit BuV/n	500	500 Ove	700 er	Det p	ooo.oo
-20 30.000 No.	Mk. 23 * 29	Fred MHz 9.98	74 58	0 8	Rea Le dE 53	adir evel BuV B.37	ng 	Co Fa dE -18	orrect actor 3/m 3.18	:	men dBuV 35.1	ire- t /m 9	Linder 4	mit BuV/n	500	000 O∨€	700 er 81	Det p	eak
No.	Mk. 23 * 29 36	Fred MHz 9.98 9.31	74 58	0 8	Rea Le 53 58	adir evel BuV 3.37	ng 	Co Fa dBi -18	actor 3/m 3.18	:	men dBuV/ 35.1 42.0	re- t /m 9	Lii dE 44 44	mit 8uV/n 6.00	500	000 DV€ dB dB -10.	700 er 81 93	Det po	ooo.oo
No. 1 2 3	Mk. 23 * 29 36 41	Fred MHz 9.98 9.31 5.53	74 58 91	0 8	Rea Le 53 58 48	adir evel 3.37 3.74	ng	Coo Fa	3/m 3.18 3.67		men 35.1 42.0 34.9	ym 9 9 00	Lin dE 44 44 44	mit 8uV/n 6.00 6.00	500	Ove dB -10. -3.9	700 er 81 93 10	Det po po po	eecto eak eak



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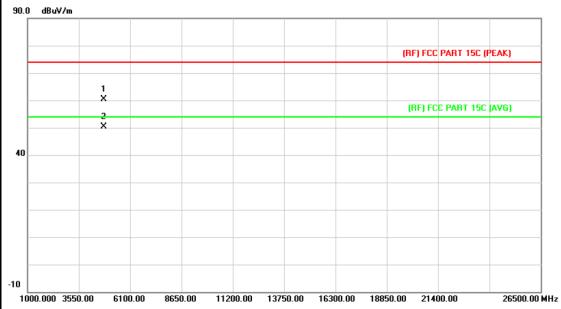
EUT:	Keyboard	M	odel:	MK75+			
Temperature:	25℃	Re	elative Humidity:	55%			
Test Voltage:	DC 6V	N. Committee	(III)	39			
Ant. Pol.	Vertical	A HOLL	10 m				
Test Mode:	BLE TX 2402 Mode	e (Module 1)		HILL			
Remark:	Only worse case is	reported					
80.0 dBuV/m							
30	The state of the s		(RF)FCC 15C :	Margin -6 dB S X X			
-20 30.000 40	50 60 70 80	(MHz)	300 400 500	600 700 1000.000			
	Reading	Correct Mea	sure-				
No. Mk.	Freq. Level		ent Limit	Over			
	MHz dBuV	dB/m dBu	uV/m dBuV/m	dB Detector			
1 8	5.8984 49.75	-22.99 26	.76 40.00	-13.24 peak			
2 * 37	7.2591 48.94	-13.85 35	.09 46.00	-10.91 peak			
3 41	9.1081 46.73	-12.42 34		-11.69 peak			
	8.2458 43.55			-12.02 peak			
	1.7259 41.01			-11.06 peak			
	0.1474 36.92			-12.68 peak			
*:Maximum data	x:Over limit !:over margin	-5.00 53	40.00	-12.00 pear			



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Above 1GHz

EUT:	Keyboard	Model:	MK75+					
Temperature:	25℃	Relative Humidity:	55%					
Test Voltage:	DC 6V	DC 6V						
Ant. Pol.	Horizontal	Horizontal						
Test Mode:	BLE Mode TX 2402 MHz (Modul	le 1)						
Remark:	No report for the emission which more than 10 dB below the							
	prescribed limit.							

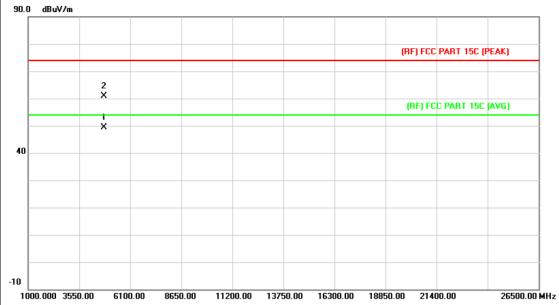


N	o. Mk	. Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4803.643	46.92	13.44	60.36	74.00	-13.64	peak
2	*	4803.643	36.92	13.44	50.36	54.00	-3.64	AVG



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EUT:	Keyboard	Model:	MK75+				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	DC 6V						
Ant. Pol.	Vertical	Vertical					
Test Mode:	BLE Mode TX 2402 MHz (Modu	ule 1)	ALL VIEW				
Remark:	No report for the emission which more than 10 dB below the						
	prescribed limit.						

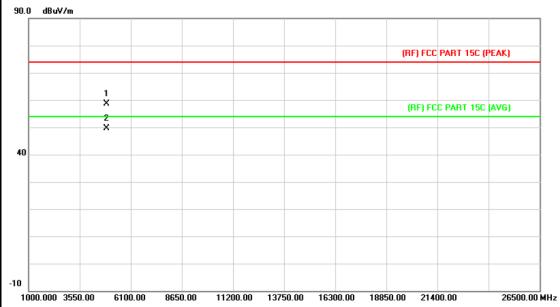


N	lo.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
			MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		*	4803.991	36.05	13.44	49.49	54.00	-4.51	AVG
2			4804.273	47.53	13.44	60.97	74.00	-13.03	peak



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Koyboard	Model	MK75+				
Reyboard	woder:	IVIK/5+				
25℃	Relative Humidity:	55%				
DC 6V		9				
Horizontal						
BLE Mode TX 2442 MHz (Modu	le 1)					
No report for the emission which more than 10 dB below the						
Remark: No report for the emission which more than 10 dB below the prescribed limit.						
	DC 6V Horizontal BLE Mode TX 2442 MHz (Modu No report for the emission which	25°C Relative Humidity: DC 6V Horizontal BLE Mode TX 2442 MHz (Module 1) No report for the emission which more than 10 dB below				

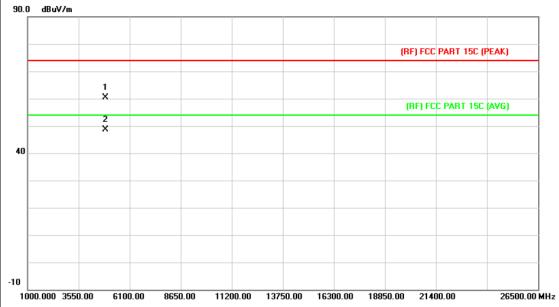


No	. Mk	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4881.022	44.75	13.90	58.65	74.00	-15.35	peak
2	*	4882.249	35.77	13.90	49.67	54.00	-4.33	AVG



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EUT:	Keyboard	Model:	MK75+					
Temperature:	25℃	Relative Humidity:	55%					
Test Voltage:	DC 6V	DC 6V						
Ant. Pol.	Vertical	Vertical						
Test Mode:	BLE Mode TX 2442 MHz (Modu	le 1)	HILL					
Remark:	No report for the emission which more than 10 dB below the prescribed limit.							
00 0 ID VI								

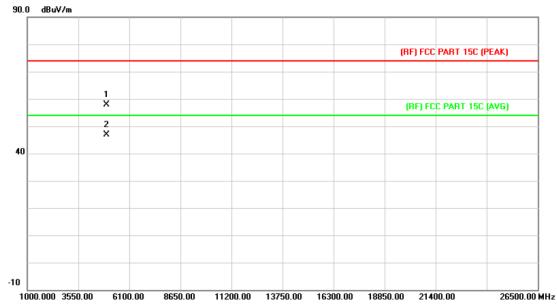


No.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4880.500	46.47	13.89	60.36	74.00	-13.64	peak
2	*	4881.670	34.77	13.90	48.67	54.00	-5.33	AVG



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EUT:	Keyboard	Model:	MK75+				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	DC 6V						
Ant. Pol.	Horizontal						
Test Mode:	BLE Mode TX 2480 MHz (Modu	le 1)	Hilling				
Remark:	No report for the emission which more than 10 dB below the						
	prescribed limit.						

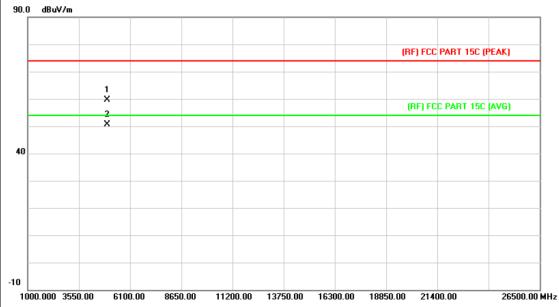


No.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4959.445	43.49	14.36	57.85	74.00	-16.15	peak
2	*	4959.970	32.49	14.36	46.85	54.00	-7.15	AVG



Page: 24 of 75

FUT	16 1	84 . 1 . 1	141/75			
EUT:	Keyboard	Model:	MK75+			
Temperature:	25℃	Relative Humidity:	55%			
Test Voltage:	DC 6V	illin)	9			
Ant. Pol.	Vertical					
Test Mode:	BLE Mode TX 2480 MHz (Modu	le 1)	A REAL PROPERTY.			
Remark:	mark: No report for the emission which more than 10 dB below the					
	prescribed limit.					

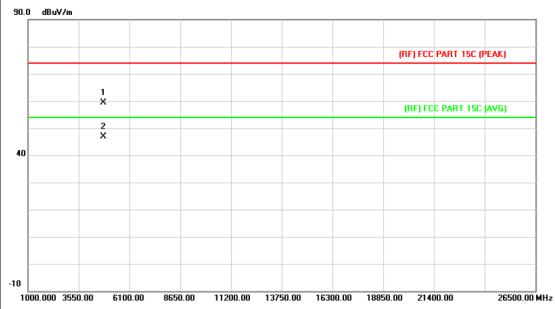


N	o. Mk	. Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4959.457	45.25	14.36	59.61	74.00	-14.39	peak
2	*	4959.970	36.31	14.36	50.67	54.00	-3.33	AVG



Page: 25 of 75

EUT:	Keyboard	Model:	MK75+			
Temperature:	25℃	°C Relative Humidity: 55%				
Test Voltage:	DC 6V	illin)	3			
Ant. Pol.	Horizontal					
Test Mode:	BLE Mode TX 2402 MHz (Modu	le 2)	Hilling			
Remark: No report for the emission which more than 10 dB below the prescribed limit.						

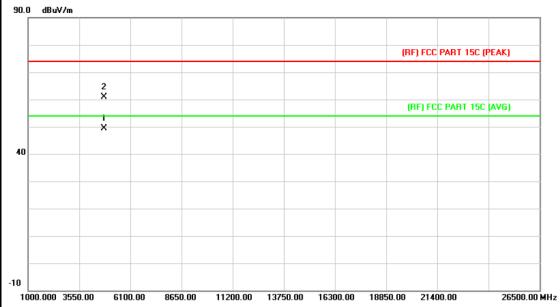


No	. Mk	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4804.267	45.90	13.44	59.34	74.00	-14.66	peak
2	*	4805.257	33.31	13.45	46.76	54.00	-7.24	AVG



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EUT:	Keyboard	Model:	MK75+
Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	DC 6V	CITI'S	
Ant. Pol.	Vertical		
Test Mode:	BLE Mode TX 2402 MHz (Mode	ule 2)	HALL
Remark:	No report for the emission which prescribed limit.	h more than 10 dB belov	v the

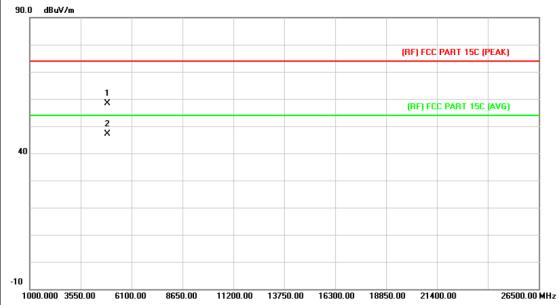


No	. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4803.991	36.05	13.44	49.49	54.00	-4.51	AVG
2		4804.273	47.53	13.44	60.97	74.00	-13.03	peak



Page: 27 of 75

EUT:	Keyboard	Model:	MK75+		
Temperature:	25℃	Relative Humidity:	55%		
Test Voltage:	DC 6V		9		
Ant. Pol.	Horizontal				
Test Mode:	BLE Mode TX 2442 MHz (I	Module 2)	HILL		
Remark:	No report for the emission which more than 10 dB below the				
	prescribed limit.				

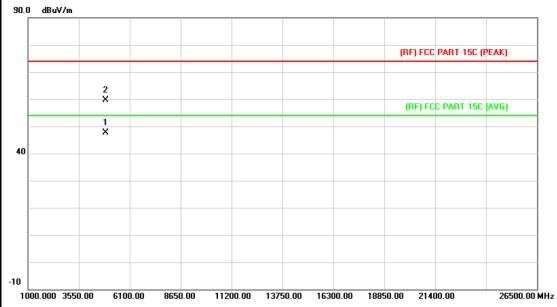


N	o. Mk	. Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4881.216	44.47	13.90	58.37	74.00	-15.63	peak
2	*	4882.357	33.34	13.90	47.24	54.00	-6.76	AVG



Page: 28 of 75

EUT:	Keyboard	Model:	MK75+					
Temperature:	25℃	Relative Humidity:	55%					
Test Voltage:	DC 6V	DC 6V						
Ant. Pol.	Vertical							
Test Mode:	BLE Mode TX 2442 MHz (Modu	le 2)	ALL V					
Remark:	Remark: No report for the emission which more than 10 dB below the prescribed limit.							

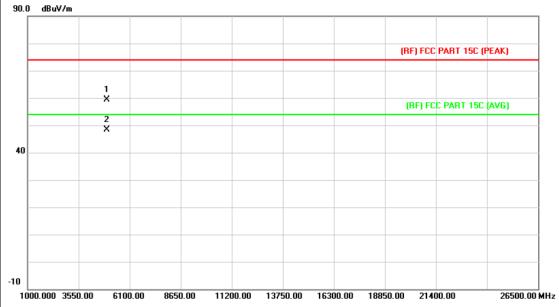


N	lo.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
			MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	,	k	4881.657	33.76	13.90	47.66	54.00	-6.34	AVG
2			4882.671	45.67	13.90	59.57	74.00	-14.43	peak



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Keyboard	Model:	MK75+					
25 (25℃ Relative Humidity: 55%						
DC 6V		2					
Horizontal							
BLE Mode TX 2480 MHz (Modu	le 2)						
No report for the emission which more than 10 dB below the							
prescribed limit.							
	Horizontal BLE Mode TX 2480 MHz (Modu No report for the emission which	25°C Relative Humidity: DC 6V Horizontal BLE Mode TX 2480 MHz (Module 2) No report for the emission which more than 10 dB below					

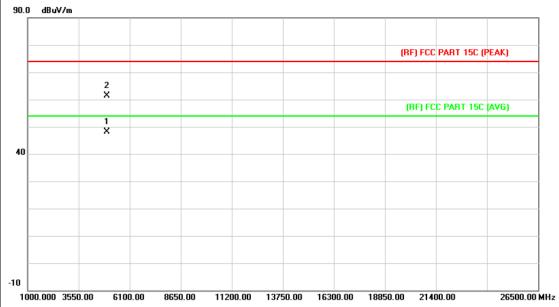


No	. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4959.657	45.00	14.36	59.36	74.00	-14.64	peak
2	*	4960.376	33.90	14.36	48.26	54.00	-5.74	AVG



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EUT:	Keyboard	Model:	MK75+			
Temperature:	25℃	Relative Humidity: 55%				
Test Voltage:	Test Voltage: DC 6V					
Ant. Pol.	Vertical	Vertical				
Test Mode:	BLE Mode TX 2480 MHz (Modu	le 2)	Allen			
Remark:	No report for the emission which more than 10 dB below the					
prescribed limit.						

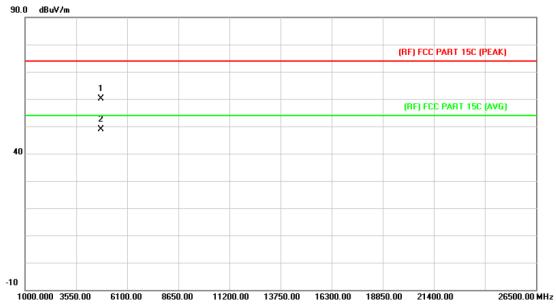


	No.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
			MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		*	4958.720	33.73	14.35	48.08	54.00	-5.92	AVG
2			4960.356	46.90	14.36	61.26	74.00	-12.74	peak



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		MK75+					
25℃	Relative Humidity: 55%						
Test Voltage: DC 6V							
Horizontal							
BLE Mode TX 2402 MHz (Module	e 3)	Allen					
No report for the emission which more than 10 dB below the							
prescribed limit.							
E	DC 6V Horizontal BLE Mode TX 2402 MHz (Module) No report for the emission which	OC 6V Horizontal BLE Mode TX 2402 MHz (Module 3) No report for the emission which more than 10 dB below					

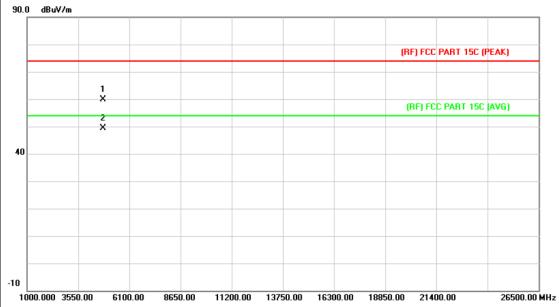


No	. Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4801.357	46.80	13.43	60.23	74.00	-13.77	peak
2	*	4802.361	35.33	13.43	48.76	54.00	-5.24	AVG



Page: 32 of 75

EUT:	Keyboard	Model:	MK75+				
Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:	DC 6V	CITI'S					
Ant. Pol.	Vertical	Vertical					
Test Mode:	BLE Mode TX 2402 MHz (Mode	ule 3)	HALL				
Remark:	No report for the emission which prescribed limit.	h more than 10 dB belov	v the				

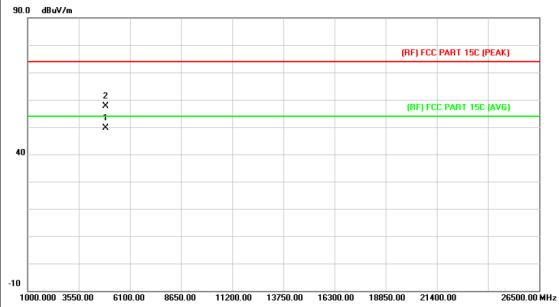


No	. Mk	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4803.275	46.53	13.44	59.97	74.00	-14.03	peak
2	*	4804.371	36.05	13.44	49.49	54.00	-4.51	AVG



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EUT:	Keyboard	Model:	MK75+				
Temperature:	25℃ Relative Humidity: 55						
Test Voltage:	DC 6V		9				
Ant. Pol.	Horizontal	Horizontal					
Test Mode:	BLE Mode TX 2442 MHz (Mod	lule 3)	Hilliam				
Remark:	No report for the emission which more than 10 dB below the						
	prescribed limit.						

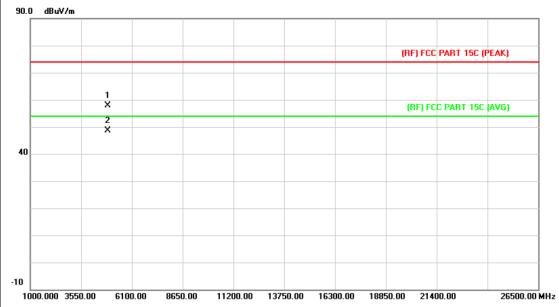


N	o. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4883.205	35.72	13.91	49.63	54.00	-4.37	AVG
2		4883.679	43.71	13.92	57.63	74.00	-16.37	peak



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EUT:	Keyboard	Model:	MK75+				
Temperature:	25 ℃	Relative Humidity: 55%					
Test Voltage:	: DC 6V						
Ant. Pol.	Vertical	Vertical					
Test Mode:	BLE Mode TX 2442 MHz (Modu	le 3)	Hilling				
Remark:	No report for the emission which more than 10 dB below the						
prescribed limit.							

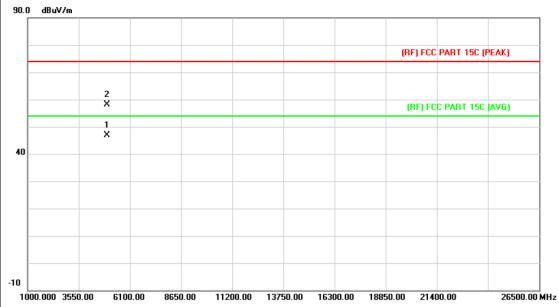


No	o. Mk	. Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4882.279	44.08	13.90	57.98	74.00	-16.02	peak
2	*	4883.720	34.73	13.92	48.65	54.00	-5.35	AVG



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EUT:	Keyboard	Model:	MK75+				
Temperature:	25℃	Relative Humidity: 55%					
Test Voltage:	DC 6V	DC 6V					
Ant. Pol.	Horizontal	Horizontal					
Test Mode:	BLE Mode TX 2480 MHz (Mo	odule 3)	ALC:				
Remark: No report for the emission which more than 10 dB below the prescribed limit.							

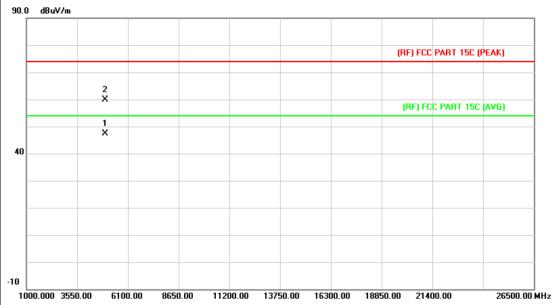


N	lo. M	lk. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4959.355	32.62	14.36	46.98	54.00	-7.02	AVG
2		4960.275	43.89	14.36	58.25	74.00	-15.75	peak



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EUT:	Keyboard	Model:	MK75+			
Temperature:	25℃	Relative Humidity:	55%			
Test Voltage:	DC 6V					
Ant. Pol.	Ant. Pol. Vertical					
Test Mode: BLE Mode TX 2480 MHz (Module 3)			HILL			
Remark:	No report for the emission which more than 10 dB below the prescribed limit.					



No	o. MI	k. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4958.279	32.93	14.35	47.28	54.00	-6.72	AVG
2		4959.357	45.40	14.36	59.76	74.00	-14.24	peak



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6. Restricted Bands Requirement

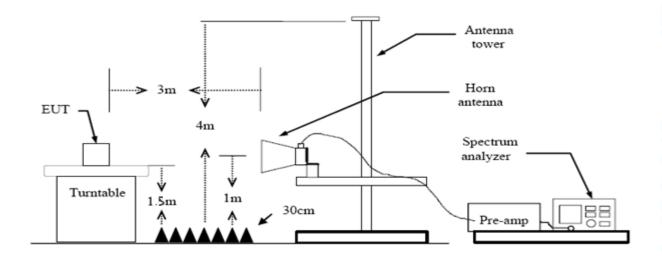
6.1 Test Standard and Limit

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

6.1.2 Test Limit

Restricted Frequency	Distance Meters(at 3m)				
Band (MHz)	Peak (dBuV/m)	Average (dBuV/m)			
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



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mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

6.4 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.

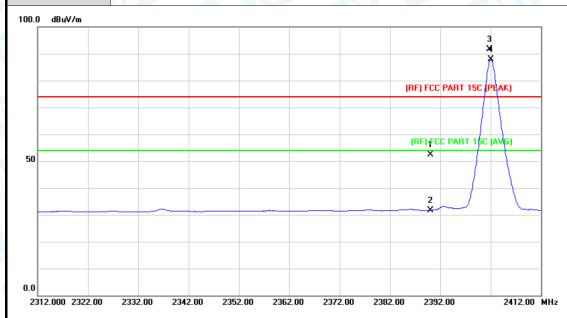
Test data please refer the following pages.



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(1) Radiation Test

EUT:	Keyboard	Model:	MK75+			
Temperature:	25℃ Relative Humidity: 55%					
Test Voltage:	DC 6V					
Ant. Pol.	Horizontal	Horizontal				
Test Mode:	BLE Mode TX 2402 MHz(Module 1)					
Remark:	N/A	A VIII				



No	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	51.57	0.77	52.34	74.00	-21.66	peak
2		2390.000	30.96	0.77	31.73	54.00	-22.27	AVG
3	Χ	2401.800	90.87	0.82	91.69	- Fundamental	Frequency	peak
4	*	2402.000	86.95	0.82	87.77	– Fundamental	Frequency	AVG



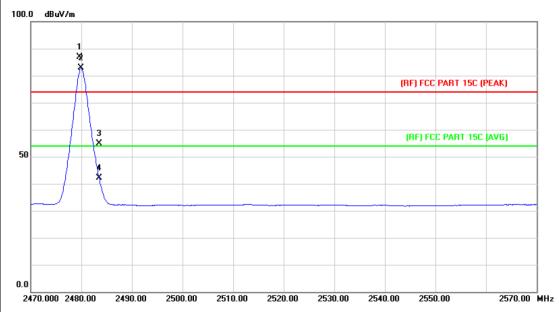
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UT:			Keybo	pard			Mod	el:		Mk	(75+	
emp	eratu	re:	25℃	-	CEST	7	Rela	tive	Humidity	: 55	%	
est '	Voltag	e:	DC 6\	/					(A)			
nt. l	Pol.		Vertica	al	S W	مزر		~	A W		600	
est l	Mode:		BLE N	/lode TX	2402 MHz	(Modul	e 1)	W		5 W		
ema	ark:		N/A	Alle		112	600					
00.0	dBuV/m											
										4		
										* *		
									(RF) FCC P	ART 15C (PE	AK)	
												7
									(BE) ECC	PART 15C (A)	ke)	-
50									1 X		,	
									2			
												1
\vdash												1
0.0 2312	2.000 232	2 00	2332.00	2342.00	2352.00 23	62.00	2372.00	23	82.00 2392.0	ın	2412.00	_ M
2012			2002.00	2012.00	2002.00	02.00	2012.00		2002.0		2772.00	
				Readir	ng Corre	ect M	/leasu	re-				
No	. Mk.	. F	req.	Leve	•		ment		Limit	Over		
		ľ	MHz	dBuV	dB/m		dBuV/ı	m	dBuV/m	dB	Dete	ecto
1		239	0.000	49.59	9 0.77	7	50.3	6	74.00	-23.64	l pe	al
2		239	0.000	30.75	5 0.77	7	31.5	2	54.00	-22.48	3 A\	/G
3	*	240	2.000	83.97	7 0.82	2	84.79	9	Fundamental	Frequency	A۱	/G
4	X	240	2.300	87.82	2 0.82	2	88.64	4	Fundamental	Frequency	pe	al



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EUT:	Keyboard	Model:	MK75+			
Temperature:	25℃	Relative Humidity:	55%			
Test Voltage:	DC 6V					
Ant. Pol.	Horizontal					
Test Mode:	BLE Mode TX 2480 MHz(Module 1)					
Remark:	N/A					

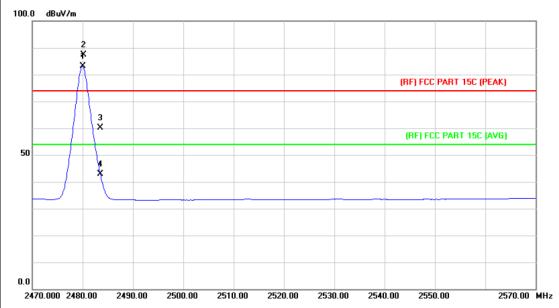


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2479.700	85.66	1.15	86.81	Fundamental	Frequency	peak
2	*	2479.900	81.64	1.15	82.79	Fundamental	Frequency	AVG
3		2483.500	53.78	1.17	54.95	74.00	-19.05	peak
4		2483.500	41.06	1.17	42.23	54.00	-11.77	AVG



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EUT:	Keyboard	Model:	MK75+			
Temperature:	25℃	: 55%				
Test Voltage:	DC 6V	DC 6V				
Ant. Pol.	Vertical					
Test Mode:	BLE Mode TX 2480 MHz(Module 1)					
Remark:	N/A	ALL IN				

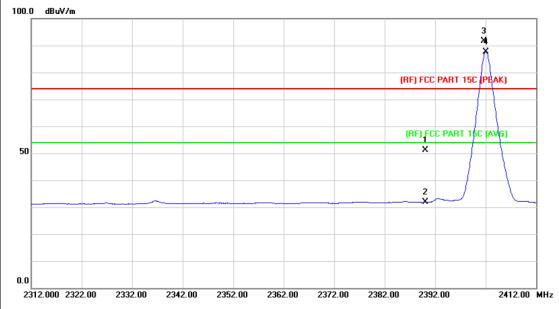


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2480.000	82.07	1.15	83.22	Fundamental	Frequency	AVG
2	X	2480.200	86.28	1.15	87.43	Fundamental	Frequency	peak
3		2483.500	58.92	1.17	60.09	74.00	-13.91	peak
4		2483.500	41.71	1.17	42.88	54.00	-11.12	AVG



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EUT:	Keyboard	Model:	MK75+						
Temperature:	25℃	Relative Humidity:	55%						
Test Voltage:	DC 6V	DC 6V							
Ant. Pol.	Horizontal								
Test Mode:	BLE Mode TX 2402 MHz(Module	2)	Aller						
Remark:	Remark: N/A								
100.0 dBuV/m									

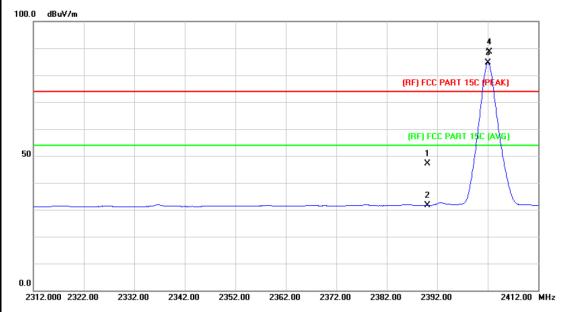


No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	50.41	0.77	51.18	74.00	-22.82	peak
2		2390.000	31.04	0.77	31.81	54.00	-22.19	AVG
3	Χ	2401.700	90.81	0.82	91.63	Fundamenta	I Frequency	peak
4	*	2402.000	86.93	0.82	87.75	- Fundamenta	l Frequency	AVG



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EUT:	Keyboard	Model:	MK75+			
Temperature:	25℃	55%				
Test Voltage:	DC 6V					
Ant. Pol.	Vertical					
Test Mode:	BLE Mode TX 2402 MHz(Module 2)					
Remark:	N/A					

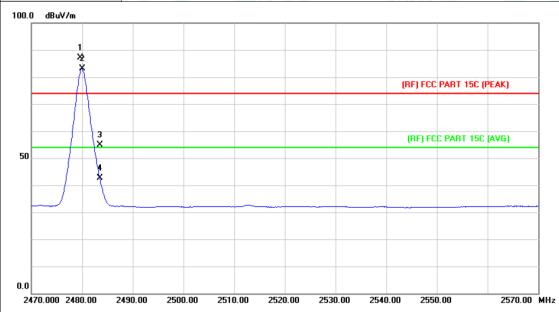


No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	46.45	0.77	47.22	74.00	-26.78	peak
2		2390.000	30.80	0.77	31.57	54.00	-22.43	AVG
3	*	2402.000	83.87	0.82	84.69	Fundamental	Frequency	AVG
4	Χ	2402.300	87.82	0.82	88.64	Fundamental	Frequency	peak



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EUT:	Keyboard	Model:	MK75+				
Temperature:	25℃	S°C Relative Humidity: 55%					
Test Voltage:	DC 6V						
Ant. Pol.	Horizontal						
Test Mode:	BLE Mode TX 2480 MHz(Module 2)						
Remark:	N/A						

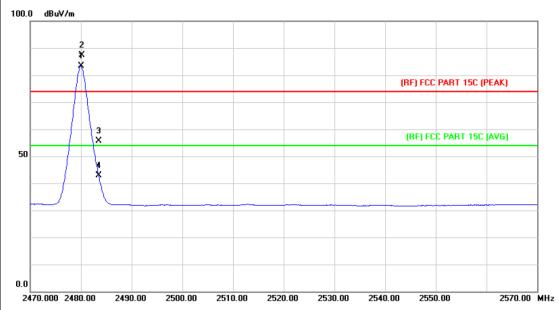


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Χ	2479.700	85.87	1.15	87.02	Fundamental	Frequency	peak
2	*	2480.000	81.91	1.15	83.06	- Fundamental	Frequency	AVG
3		2483.500	53.60	1.17	54.77	74.00	-19.23	peak
4		2483.500	41.34	1.17	42.51	54.00	-11.49	AVG



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EUT:	Keyboard	Model:	MK75+				
Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:	DC 6V	DC 6V					
Ant. Pol.	Vertical						
Test Mode:	BLE Mode TX 2480 MHz(Module	BLE Mode TX 2480 MHz(Module 2)					
Remark:	N/A						



1	Vo.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
			MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		*	2480.000	82.21	1.15	83.36	Fundamental I	requency	AVG
2		X	2480.200	86.15	1.15	87.30	Fundamental I	requency	peak
3			2483.500	54.42	1.17	55.59	74.00	-18.41	peak
4			2483.500	41.62	1.17	42.79	54.00	-11.21	AVG



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EUT:	Keyboa	rd		Model:		MK7	'5 +
Temperature:	25℃	can'	33	Relative	Humidity:	55%	N. P.
Test Voltage:	DC 6V	1 600	1000		Turn	13.9	
Ant. Pol.	Horizon	ital	MAG		100		MI
Test Mode:	BLE Mo	ode TX 2402	MHz(Modu	e 3)		1 19	l list
Remark:	N/A	A STATE OF				3	
100.0 dBuV/m							
						4	
						×	
					(RF) FCC PAR	RT 15C (PEAK)	
50					(RF) FCC PA	ART 15C (AVG)	1
50							
					2		\vdash
		-			×		
0.0							
2312.000 2322.00	2332.00	2342.00 235	2.00 2362.00	2372.00 238	2.00 2392.00	24	112.00 MHz
		Reading	Correct	Measure-			
No. Mk.	Freq.	Level	Factor	ment	Limit	Over	
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detecto
1 23	390.000	50.65	0.77	51.42	74.00	-22.58	peak
2 23	390.000	30.82	0.77	31.59	54.00	-22.41	AVG

Emission Level= Read Level+ Correct Factor

2402.000

2402.300

86.34

90.26

0.82

0.82

87.16

91.08

3

4

Χ

AVG

peak

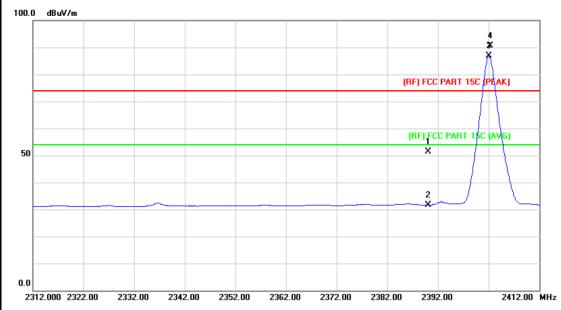
Fundamental Frequency

Fundamental Frequency



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EUT:	Keyboard	Model:	MK75+					
Temperature:	25℃	Relative Humidity:	55%					
Test Voltage:	DC 6V		13					
Ant. Pol.	Vertical	Vertical						
Test Mode:	BLE Mode TX 2402 MHz(Module	e 3)	HILL					
Remark:	N/A							
100.0 40.4/-								



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	50.61	0.77	51.38	74.00	-22.62	peak
2		2390.000	30.90	0.77	31.67	54.00	-22.33	AVG
3	*	2402.000	85.99	0.82	86.81	- Fundamental	Frequency	AVG
4	X	2402.300	89.92	0.82	90.74	Fundamental	Frequency	peak



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EU	Γ:		Keyb	oard		a \	MAR	Mod	del:	M	K75+
Ten	nperatu	re:	25 ℃	6				Rel	ative Humid	lity: 55	5%
Tes	t Voltag	e:	DC 6	V			110		III	133	
Ant	. Pol.		Horiz	ontal		113					
Tes	t Mode:		BLE	Mode T	X 248	80 MHz	(Modul	e 3)		J W	1 leader
Ren	nark:		N/A	MA							
100.0) dBuV/m										
50		3 X								ART 15C (PEA	
0.0											
24	70.000 248	0.00 24	490.00	2500.00	2510.	.00 2520	0.00 2!	530.00	2540.00 2550.0	0	2570.00 MHz
N	lo. Mk.	Fre	∍q.	Readii Leve		Correct Factor		easure ment	- Limit	Over	
		MH	łz	dBu∀	,	dB/m	C	BuV/m	dBuV/m	dB	Detector
1	X	2479.	800	85.02	2	1.15	(36.17	Fundamental	Frequency	peak
2	*	2480.	000	81.28	3	1.15	(32.43	Fundamental	Frequency	AVG
3		2483.	500	54.0	7	1.17		55.24	74.00	-18.76	peak

Emission Level= Read Level+ Correct Factor

40.79

1.17

41.96

54.00

2483.500

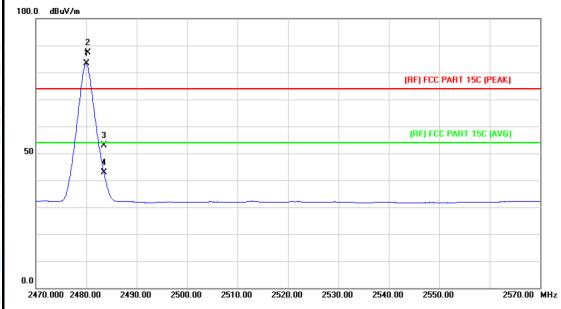
AVG

-12.04



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EUT:	Keyboard	Model:	MK75+
Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	DC 6V	and the	33
Ant. Pol.	Vertical		
Test Mode:	BLE Mode TX 2480 MHz(Modu	e 3)	HALL
Remark:	N/A		

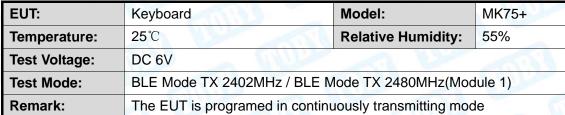


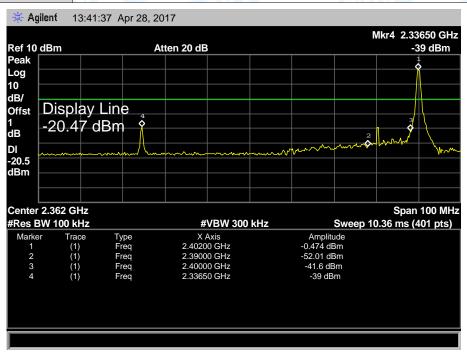
N	lo.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
			MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		*	2480.000	82.21	1.15	83.36	Fundamental Frequency		AVG
2		X	2480.300	86.13	1.15	87.28	Fundamental	Frequency	peak
3			2483.500	51.71	1.17	52.88	74.00	-21.12	peak
4			2483.500	41.67	1.17	42.84	54.00	-11.16	AVG

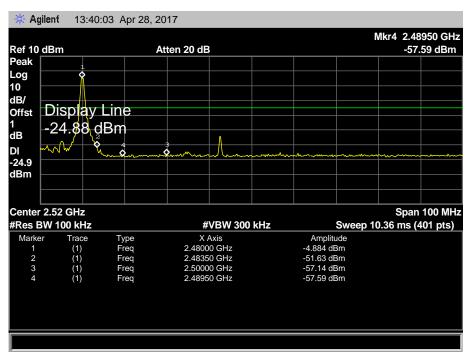


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(2) Conducted Test



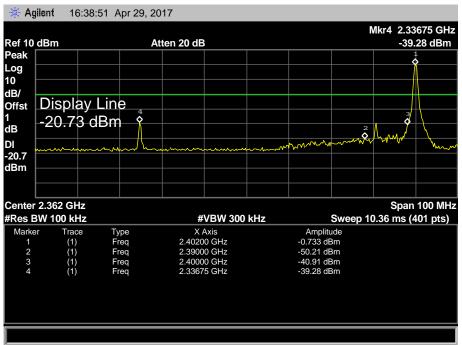


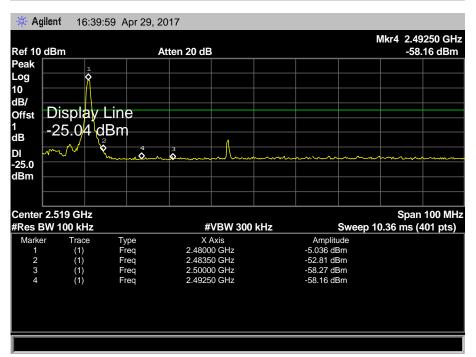




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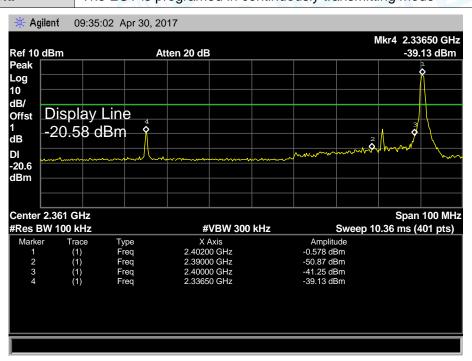


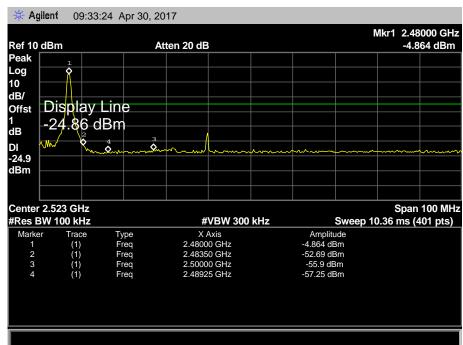




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EUT: Keyboard Model: MK75+ 25℃ Temperature: **Relative Humidity:** 55% DC 6V **Test Voltage: Test Mode:** BLE Mode TX 2402MHz / BLE Mode TX 2480MHz(Module 3) Remark: The EUT is programed in continuously transmitting mode







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7. Bandwidth Test

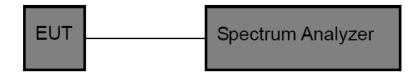
7.1 Test Standard and Limit

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(M							
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.

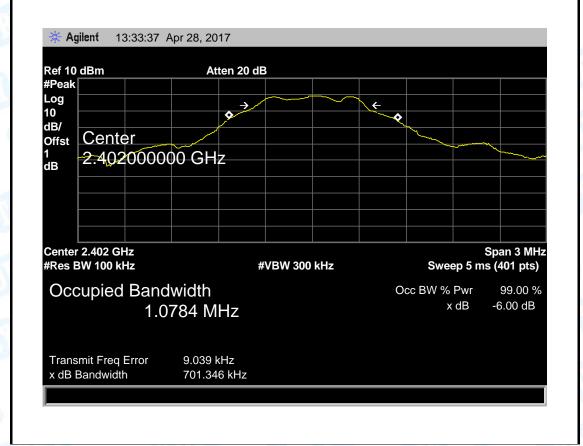


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7.5 Test Data

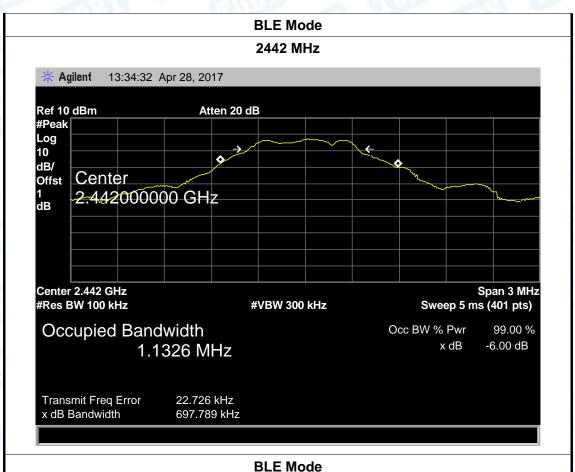
EUT:	Keyb	oard	Model:	MK75+
Temperature:	25℃		Relative Humidity:	55%
Test Voltage:	DC 6	V		A Branch
Test Mode:	BLE	TX Mode(Module 1)		
Channel freque	ncy	6dB Bandwidth	99% Bandwidth	Limit
(MHz)		(kHz)	(kHz)	(kHz)
2402		701.346	1078.40	
2442		697.789	1132.60	>=500
2480		704.024	1132.60	
		RI F Mode	ı	1

BLE Mode





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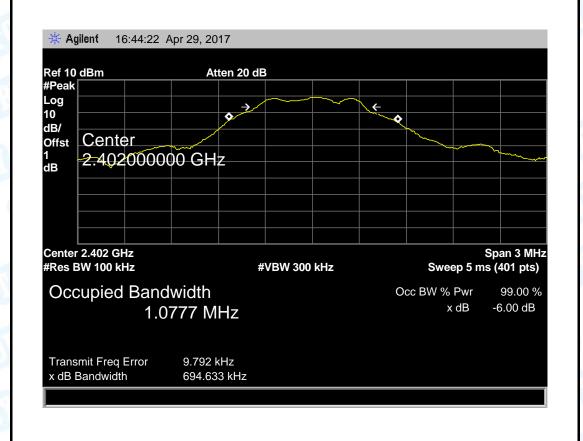


2480 MHz * Agilent 13:35:33 Apr 28, 2017 Ref 10 dBm Atten 20 dB #Peak Log 10 dB/ Center Offst 2.480000000 GHz 1 dB Center 2.48 GHz Span 3 MHz #Res BW 100 kHz Sweep 5 ms (401 pts) **#VBW 300 kHz** Occupied Bandwidth Occ BW % Pwr 99.00 % -6.00 dB x dB 1.1326 MHz Transmit Freq Error 18.192 kHz x dB Bandwidth 704.024 kHz



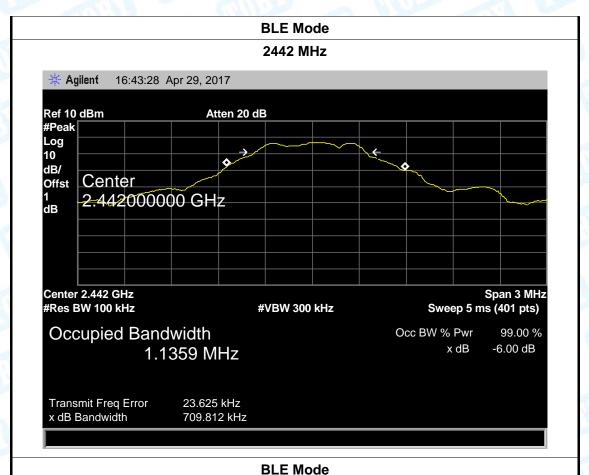
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EUT:	Keyb	oard	Model:	MK75+
Temperature:	25℃		Relative Humidity:	55%
Test Voltage:	DC 6	V	THE PARTY OF THE P	
Test Mode:	BLE	TX Mode(Module 2)	0.00	0
Channel frequency		6dB Bandwidth	99% Bandwidth	Limit
(MHz) 2402 2442 2480		(kHz)	(kHz)	(kHz)
		694.633	1077.70	
		709.812	1135.90	>=500
		699.910	1134.60	
BLE Mode				





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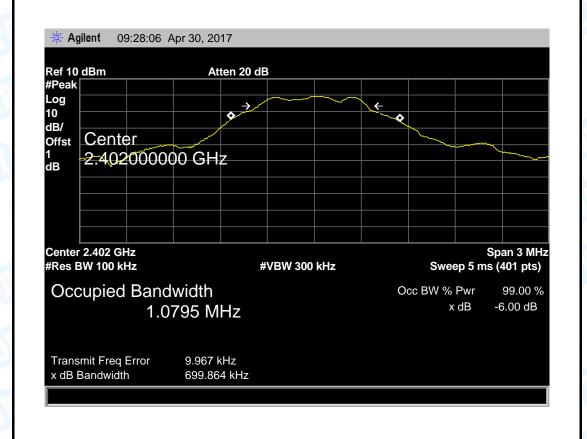
2480 MHz * Agilent 16:41:06 Apr 29, 2017 Ref 10 dBm Atten 20 dB #Peak Log 10 dB/ Center Offst 2.480000000 GHz 1 dB Center 2.48 GHz Span 3 MHz #Res BW 100 kHz **#VBW 300 kHz** Sweep 5 ms (401 pts) Occupied Bandwidth Occ BW % Pwr 99.00 % -6.00 dB x dB 1.1346 MHz Transmit Freq Error 19.269 kHz x dB Bandwidth 699.910 kHz



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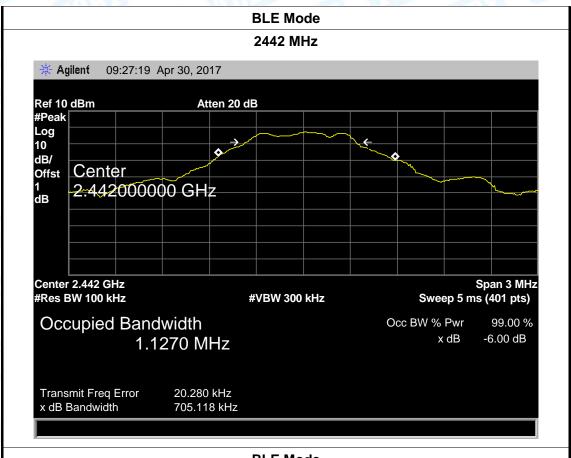
EUT:	Keyb	oard	Model:	MK75+
Temperature:	25℃		Relative Humidity:	55%
Test Voltage:	e: DC 6V		THU:	J. William
Test Mode: BLE TX Mode(Module 3)		dum -		
Channel frequency		6dB Bandwidth	99% Bandwidth	Limit
(MHz)		(kHz)	(kHz)	(kHz)
2402		699.864	1079.50	
2442		705.118	1127.00	>=500
2480		706.884	1105.70	

BLE Mode





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BLE Mode 2480 MHz * Agilent 09:26:30 Apr 30, 2017 Atten 20 dB Ref 10 dBm #Peak Log 10 dB/ RBW Offst 1 dB 100.0000000 kHz Center 2.48 GHz Span 3 MHz #Res BW 100 kHz **#VBW 300 kHz** Sweep 5 ms (401 pts) Occupied Bandwidth Occ BW % Pwr 99.00 % -6.00 dB x dB 1.1057 MHz Transmit Freq Error 17.724 kHz x dB Bandwidth 706.884 kHz



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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)(3)

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 v04.

- (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

EUT:	Keyboard		Model:		MK75+
Temperature:	25℃	Relative Humidity:		55%	
Test Voltage:	DC 6V		MAR		A Branch
Test Mode:	BLE TX M	lode(Module 1)			
Channel frequency (MHz)		Test Result (dBm)		Limit (dBm)
2402		-0.696			
2442		-2.975		30)
2480		-5.002			
		BLE Mode	,		
		2402 MHz			



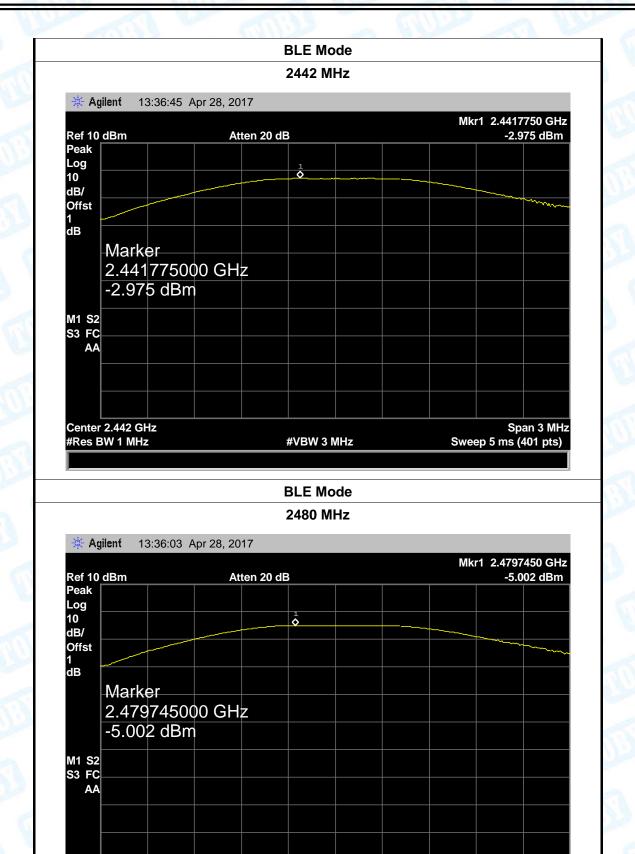


Center 2.48 GHz

#Res BW 1 MHz

Report No.: TB-FCC153674

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#VBW 3 MHz

Span 3 MHz

Sweep 5 ms (401 pts)

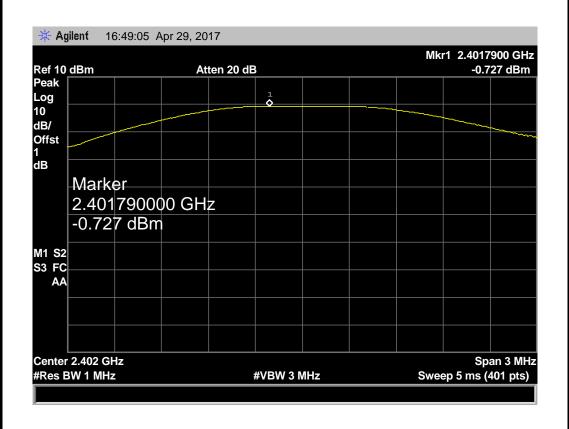


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EUT:	Keyboard		Model:	MK75+
Temperature:	25℃		Relative Humidity:	55%
Test Voltage:	DC 6V		CHU!	V VI
Test Mode: BLE TX Mode(Module 2)			CIII)	
Channel frequency (MHz)		Test Result (dBm) Limit	(dBm)
2402		-0.727		

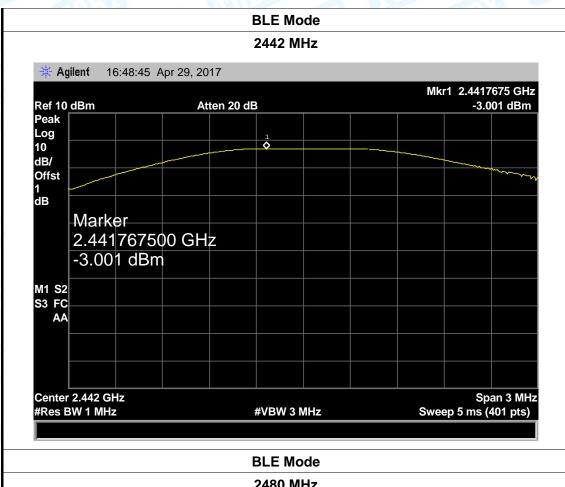
Channel frequency (MHz)	Test Result (dBm)	Limit (dBm)
2402	-0.727	
2442	-3.001	30
2480	-5.028	

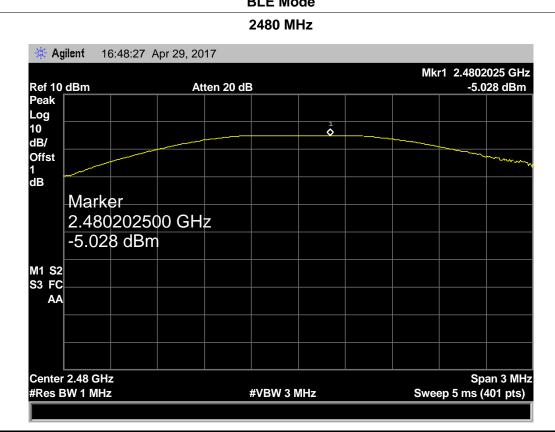
BLE Mode





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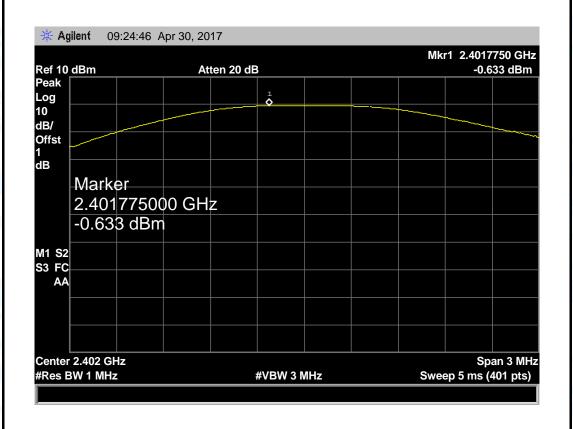


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EUT:	Keyboard	Model:	MK75+
Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	DC 6V	THU:	A COLOR
Test Mode:	BLE TX Mode(Module 3)	CALL DE	

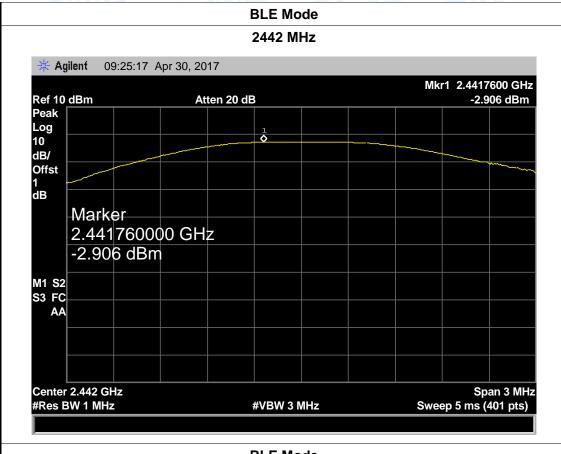
Channel frequency (MHz)	Test Result (dBm)	Limit (dBm)
2402	-0.633	
2442	-2.906	30
2480	-4.949	

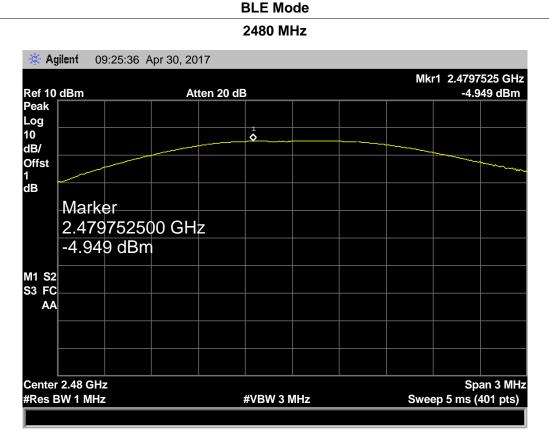
BLE Mode





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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 v04.

- (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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9.5 Test Data

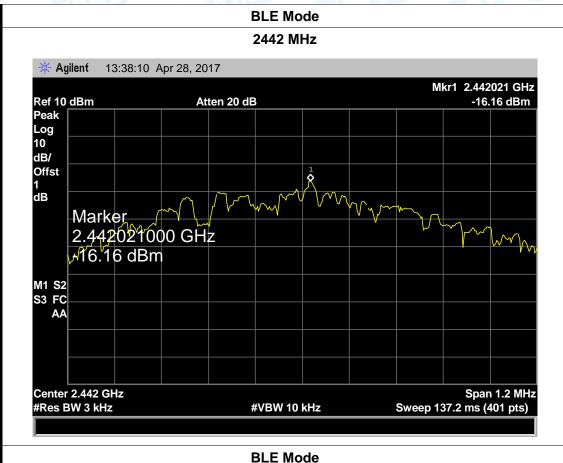
EUT:	Keyboard		Model:	MK75+
Temperature: 25°C		COURT OF THE PARTY	Relative Humidity:	
Test Voltage:	DC 6V			
Test Mode:	BLE TX N	Mode(Module 1)	Will be	Contract of the second
Channel Frequency		Power Density	Limit	Result
(MHz)	(MHz)		(dBm)	Result
2402		-14.33		
2442		-16.16	8	PASS
2480		-18.88		
		DI E Mada	<u>.</u>	

BLE Mode





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2480 MHz * Agilent 13:38:38 Apr 28, 2017 Mkr1 2.480021 GHz -18.88 dBm Ref 10 dBm Atten 20 dB Peak Log 10 dB/ Offst 1 dB mmy Marker 2.480021000 GHz -118.88 dBm M1 S2 S3 FC AΑ Center 2.48 GHz Span 1.2 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 137.2 ms (401 pts)



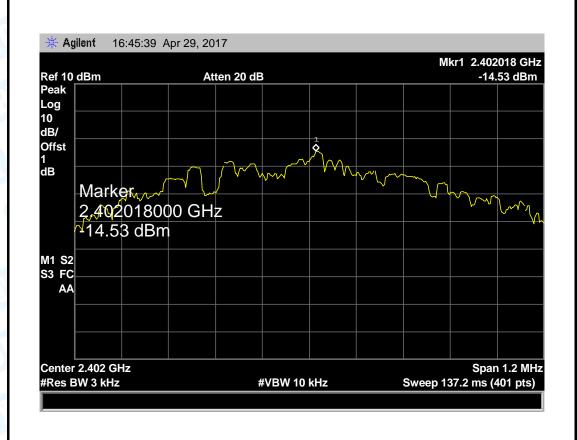
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EUT:	Keyboard	Model:	MK75+
Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	DC 6V	THU:	J. Warner
Tost Modo:	BLE TY Mode(Module 2)		

Test Mode: BLE TX Mode(Module 2)

Channel Frequency	Power Density	Limit	Result
(MHz)	(dBm)	(dBm)	
2402	-14.53		
2442	-16.04	8	PASS
2480	-19.28		

BLE Mode





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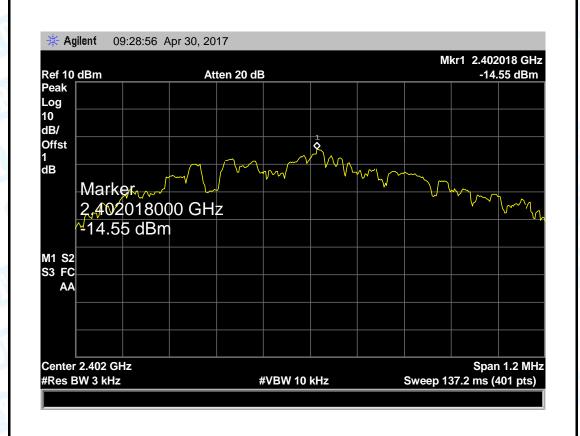


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EUT:	Keyboard	Model:	MK75+
Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	DC 6V	Chine Contract	J. William
Test Mode: BLE TX Mode(Module 3)			2

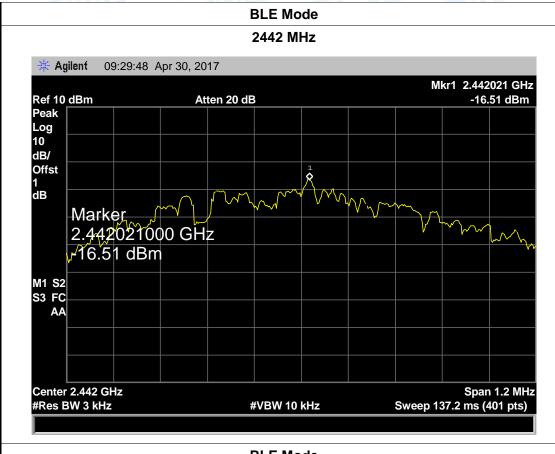
Channel Frequency	Power Density	Limit	Result
(MHz)	(dBm)	(dBm)	11000
2402	-14.55		
2442	-16.51	8	PASS
2480	-18.79		

BLE Mode





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BLE Mode 2480 MHz * Agilent 09:31:29 Apr 30, 2017 Mkr1 2.480021 GHz -18.79 dBm Ref 10 dBm Atten 20 dB Peak Log 10 dB/ Offst <u>^</u> 1 dB My Marker 2.480021000 GHz -18.79 dBm M1 S2 S3 FC AΑ Center 2.48 GHz Span 1.2 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 137.2 ms (401 pts)



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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 1.6dBi, 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	Will service	
□ Unique connector antenna		
□ Professional installation antenna	TO:	

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