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# FCC REPORT

Applicant:	Shenzhen Mingchengxin Technology Co., Ltd.		
Address of Applicant:	Room C865, 3/F, Building 1, Detai Technology, No.46,		
	Huarong Road, Dalang, Longhua New District, Shenzhen		
Equipment Under Test (B	EUT)		
Product Name:	SMARTWATCH		
Model No.:	DI03, Z4, M801		
FCC ID:	2AMYB-MCXDI03		
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.249:2017		
Date of sample receipt:	July 3, 2017		
Date of Test:	July 3, 2017 to July 13, 2017		
Date of report issued:	July 13, 2017		
Test Result :	PASS *		

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

Authorized Signature:

Kevin Yu Laboratory Manager

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

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## 2 Version

Version No.	Date	Description
00	July 13, 2017	Original

Prepared by:

Date:

July 13, 2017

Project Engineer

Date:

July 13, 2017

Reviewed by:

Reviewer



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# 4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	Pass
Field strength of the fundamental signal	15.249 (a)	Pass
Spurious emissions	15.249 (a) (d)/15.209	Pass
Band edge	15.249 (d)/15.205	Pass
20dB Occupied Bandwidth	15.215 (c)	Pass

Pass: The EUT complies with the essential requirements in the standard.

Remark: Test according to ANSI C63.4 2014 and ANSI C63.10 2013.

#### 4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes	
Radiated Emission 9kHz ~ 30MHz		$\pm$ 4.34dB	(1)	
Radiated Emission30MHz ~ 1000MHz		± 4.24dB	(1)	
Radiated Emission 1GHz ~ 26.5GHz		± 4.68dB	(1)	
AC Power Line Conducted Emission0.15MHz ~ 30MHz± 3.45dB(1				
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.				



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# 5 General Information

#### 5.1 Client Information

Applicant:	SHENZHEN MINGCHENGXIN TECHNOLOGY CO., LTD.
Address of Applicant:Room C865, 3/F, Building 1, Detai Technology, No.46, Hua Dalang, Longhua New District, Shenzhen	
Manufacturer:	SHENZHEN MINGCHENGXIN TECHNOLOGY CO., LTD.
Address of Manufacturer:	Room C865, 3/F, Building 1, Detai Technology, No.46, Huarong Road, Dalang, Longhua New District, Shenzhen

#### 5.2 General Description of EUT

Product Name:	SMARTWATCH
Model No.:	DI03, Z4, M801
Test Model No.:	DI03
Operation Frequency:	2402MHz~2480MHz
Channel numbers:	79
Channel separation:	1MHz
Modulation type:	GFSK, Pi/4QPSK, 8DPSK
Antenna Type:	Integrated Antenna
Antenna gain:	0dBi (declare by Applicant)
Power supply:	Power by USB Port or
	DC 3.7V 230mAh Lithium battery



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Operation	Operation Frequency each of channel						
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402MHz	21	2422MHz	41	2442MHz	61	2462MHz
2	2403MHz	22	2423MHz	42	2443MHz	62	2463MHz
19	2420MHz	39	2440MHz	59	2460MHz	79	2480MHz
20	2421MHz	40	2441MHz	60	2461MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency		
The lowest channel	2402MHz		
The middle channel	2441MHz		
The Highest channel	2480MHz		



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#### 5.3 Test mode

Transmitting mode	Keep the Bluetooth in continuously transmitting mode
<b>u</b>	

#### Per-test mode.

We have verified the construction and function in typical operation, The EUT was placed on three different polar directions; i.e. X axis, Y axis, Z axis. which was shown in this test report and defined as follows:

Axis	Х	Y	Z		
Field Strength(dBuV/m)	91.77	95.94	92.41		

#### Final Test Mode:

According to ANSI C63.10 standards, the test results are both the "worst case" and "worst setup":

Y axis (see the test setup photo)

#### 5.4 Description of Support Units

Manufacturer	Description	Model	Serial Number	
DELTA	ADAPTER	ADP-60ADT	N/A	

#### 5.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

#### • FCC — Registration No.: 600491

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fuly described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 600491, June 28, 2013.

#### • Industry Canada (IC) — Registration No.: 9079A-2

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, June 26, 2013.

#### 5.6 Test Location

### All tests were performed at: Global United Technology Services Co., Ltd. Address: 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China

### 5.7 Other Information Requested by the Customer

None.



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# 6 Test Instruments list

Rad	iated Emission:			•		
ltem	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	250	July. 03 2015	July. 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	203	June. 29 2017	June. 28 2018
4	BiConiLog Antenna	SCHWARZBECK MESS- ELEKTRONIK	VULB9163	214	June. 29 2017	June. 28 2018
5	Double -ridged waveguide horn	SCHWARZBECK MESS- ELEKTRONIK	9120D-829	208	June. 29 2017	June. 28 2018
6	Horn Antenna	ETS-LINDGREN	3160	217	June. 29 2017	June. 28 2018
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	213	June. 29 2017	June. 28 2018
9	Coaxial Cable	GTS	N/A	211	June. 29 2017	June. 28 2018
10	Coaxial cable	GTS	N/A	210	June. 29 2017	June. 28 2018
11	Coaxial Cable	GTS	N/A	212	June. 29 2017	June. 28 2018
12	Amplifier(100kHz- 3GHz)	HP	8347A	204	June. 29 2017	June. 28 2018
13	Amplifier(2GHz- 20GHz)	HP	8349B	206	June. 29 2017	June. 28 2018
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	218	June. 29 2017	June. 28 2018
15	Band filter	Amindeon	82346	219	June. 29 2017	June. 28 2018
16	Constant temperature and humidity box	Oregon Scientific	BA-888	248	June. 29 2017	June. 28 2018
17	D.C. Power Supply	Instek	PS-3030	232	June. 29 2017	June. 28 2018
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	588	June. 29 2017	June. 28 2018
19	Splitter	Agilent	11636B	237	June. 29 2017	June. 28 2018



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Distu	rbance voltages:					
ltem	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.0(L)x3.0(W)x3.0(H)	252	Jul. 02 2017	Jul. 01 2018
2	EMI Test Receiver	Rohde & Schwarz	ESCS30	223	Jul. 02 2017	Jul. 01 2018
3	10dB Pulse Limita	Rohde & Schwarz	N/A	224	Jul. 02 2017	Jul. 01 2018
4	Coaxial Switch	ANRITSU CORP	MP59B	225	Jul. 02 2017	Jul. 01 2018
5	LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK8127	226	Jul. 02 2017	Jul. 01 2018
6	Coaxial Cable	GTS	N/A	227	Jul. 02 2017	Jul. 01 2018
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Thermo meter	KTJ	TA328	233	Jul. 02 2017	Jul. 01 2018



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## 7 Test results and Measurement Data

#### 7.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203								
15.203 requirement:	15.203 requirement:								
	be designed to ensure that no antenna other than that furnished by the sed with the device. The use of a permanently attached antenna or of an								

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, 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.

#### E.U.T Antenna:

The antenna is Integrated Antenna, the best case gain of the antenna is 0dBi



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#### **Test Requirement:** FCC Part15 C Section 15.207 Test Method: ANSI C63.10:2013 150KHz to 30MHz **Test Frequency Range:** Class / Severity: Class B RBW=9KHz, VBW=30KHz, Sweep time=auto Receiver setup: Limit: Limit (dBuV) Frequency range (MHz) Quasi-peak Average 0.15-0.5 66 to 56\* 56 to 46\* 0.5-5 56 46 5-30 60 50 Decreases with the logarithm of the frequency. Test setup: Reference Plane LISN LISN 40cm 80cm Filter – AC power AU) E.U.T Equipment EMI Receiver Test table/Insulation plane Remark E.U.T: Equipment Under Test LISN: Line Impedence Stabilization Network Test table height=0.8m The E.U.T and simulators are connected to the main power through a Test procedure: 1 line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement. **Test Instruments:** Refer to section 6.0 for details Test mode: Refer to section 5.3 for details Test results: Pass

#### 7.2 Conducted Emissions



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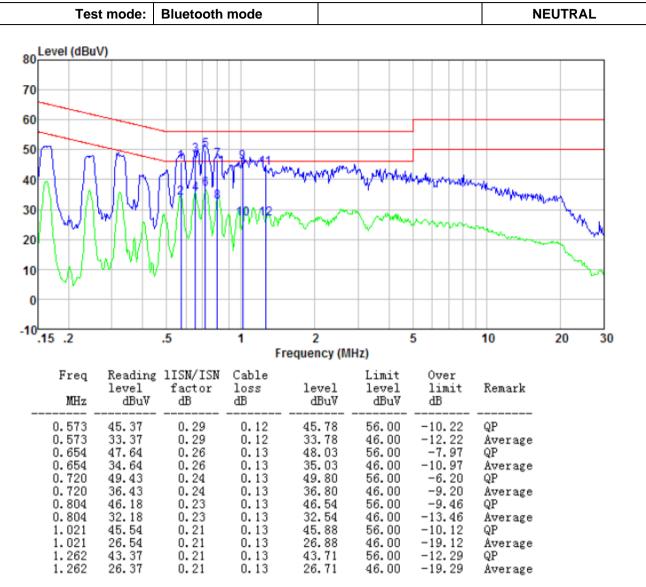
#### Measurement data:

Test mode	Bluetoot	th mode					LINE	
80 Level (dBuV)								
70								
60								
50	3 80 9	. 11						
40 0 0 0	ry (Wax)	10	"What what	advanter	handwork	Λ <b>μ</b>		
30	RAAN I	mon	y more	m	m	and the second	man h	
20	MIII	V					~~~~~	
10 W V	/						~~	
0								
-10 <sup>1</sup> .15 .2	.5	1	2 quency (MH	5	;	10	20 3	0
Error Brodier	TCN/TCN		quency (mr	-	<b>A</b>			
level	1ISN/ISN factor	Cable loss	level	Limit level	Over limit	Remark		
MHz dBuV	dB	_dB 		dBu∛	dB			
0.320 42.91	0.44	0.10	43.45	59.71	-16.26	QP		
0.320 33.91 0.564 44.73	0.44 0.33	0.10 0.12	34.45 45.18	49.71 56.00	-15.26 -10.82	Average QP		
0.564 33.73 0.665 46.22	0.33 0.29	0.12 0.13	34.18 46.64	46.00 56.00	-11.82 -9.36	Average QP		
0.665 35.22	0.29	0.13	35.64	46.00	-10.36	Average		
0.708 50.02 0.708 36.02	0.28 0.28	0.13 0.13	50.43 36.43	56.00 46.00	-5.57 -9.57	QP Average		
0.796 44.93 0.796 35.93	0.27 0.27	0.13 0.13	45.33 36.33	56.00 46.00	-10.67 -9.67	QP Average		
1.141 44.06	0.24	0.13	44.43	56.00	-11.57	QP		
1.141 33.06	0.24	0.13	33.43	46.00	-12.57	Average		

Remarks:level = Reading level + Antenna factor + Cable loss



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Remarks:level = Reading level + Antenna factor + Cable loss

Notes:

- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss
- 4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.



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### 7.3 Radiated Emission Method

Test Requirement:	FCC Part15 C S	Section 15.20	9								
Test Method:	ANSI C63.10:20	013									
Test Frequency Range:	30MHz to 25GH	lz									
Test site:	Measurement D	istance: 3m									
Receiver setup:	Frequency	Detector	RBW	VBW	Remark						
	30MHz- 1GHz	Quasi-peal	k 120KHz	300KHz	Quasi-peak Value						
		Peak	1MHz	3MHz	Peak Value						
	Above 1GHz	Peak	1MHz	10Hz	Average Value						
Limit:	Freque	ency	Limit (dBuV	/m @3m)	Remark						
(Field strength of the fundamental signal)	2400MHz-24	2400MHz-2483.5MHz 94.00 114.00									
Limit:	Freque	ency	Limit (dBuV	/m @3m)	Remark						
(Spurious Emissions)	30MHz-8		40.0		Quasi-peak Value						
	88MHz-2		43.5		Quasi-peak Value						
	216MHz-960MHz		46.00 54.00		Quasi-peak Value						
	960MHz-	·1GHz		Quasi-peak Value Average Value							
	Above 1	Above 1GHz 54.00 74.00									
Limit: (band edge)	harmonics, sha fundamental or	II be attenuat to the genera	ed by at least al radiated em	50 dB below	bands, except for w the level of the in Section 15.209,						
Test setup:	fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation. Below 1GHz										



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	EUT Turn Table Turn Table Turn Table Antenna Tower Horn Antenna Spectrum Analyzer Amplifier
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
	<ol><li>The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li></ol>
	3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
	4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
	<ol><li>The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li></ol>
	6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

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#### Measurement data:

#### 7.3.1 Field Strength of The Fundamental Signal

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2402.00	96.97	27.58	5.39	34.01	95.93	114.00	-18.07	Vertical
2402.00	94.51	27.58	5.39	34.01	93.47	114.00	-20.53	Horizontal
2441.00	96.99	27.48	5.43	33.96	95.94	114.00	-18.06	Vertical
2441.00	94.75	27.48	5.43	33.96	93.70	114.00	-20.30	Horizontal
2480.00	96.25	27.52	5.47	33.92	95.32	114.00	-18.68	Vertical
2480.00	94.09	27.52	5.47	33.92	93.16	114.00	-20.84	Horizontal
Average valu	le:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2402.00	86.74	27.58	5.39	34.01	85.70	94.00	-8.30	Vertical
2402.00	84.67	27.58	5.39	34.01	83.63	94.00	-10.37	Horizontal
2441.00	87.05	27.48	5.43	33.96	86.00	94.00	-8.00	Vertical
2441.00	84.62	27.48	5.43	33.96	83.57	94.00	-10.43	Horizontal
2480.00	86.72	27.52	5.47	33.92	85.79	94.00	-8.21	Vertical
2480.00	84.09	27.52	5.47	33.92	83.16	94.00	-10.84	Horizontal



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#### 7.3.2 Spurious emissions

■ Below 1	GHz							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
94.76	30.88	11.35	1.15	29.84	13.54	43.5	-29.96	Vertical
105.272	30.72	11.8	1.24	29.78	13.98	43.5	-29.52	Vertical
210.048	30.55	10.59	1.9	29.47	13.57	43.5	-29.93	Vertical
216.024	31.43	10.78	1.93	29.52	14.62	46	-31.38	Vertical
253.837	30.33	11.95	2.14	29.84	14.58	46	-31.42	Vertical
262.896	33.67	12.24	2.19	29.91	18.19	46	-27.81	Vertical
96.775	25.43	11.35	1.17	29.82	8.13	43.5	-35.37	Horizontal
181.283	28.38	8.8	1.75	29.48	9.45	43.5	-34.05	Horizontal
222.17	24.79	10.98	1.97	29.57	8.17	46	-37.83	Horizontal
272.278	28.96	12.63	2.24	29.98	13.85	46	-32.15	Horizontal
311.087	30.24	13.74	2.42	30.13	16.27	46	-29.73	Horizontal
566.622	24.67	18.72	3.59	29.43	17.55	46	-28.45	Horizontal



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#### Above 1GHz

Test channel	:			Lowe	st channel			
Peak value:				L				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4804.00	39.43	31.78	8.60	32.09	47.72	74.00	-26.28	Vertical
7206.00	33.24	36.15	11.65	32.00	49.04	74.00	-24.96	Vertical
9608.00	32.73	37.95	14.14	31.62	53.20	74.00	-20.80	Vertical
12010.00	*					74.00		Vertical
14412.00	*					74.00		Vertical
4804.00	44.15	31.78	8.60	32.09	52.44	74.00	-21.56	Horizontal
7206.00	35.19	36.15	11.65	32.00	50.99	74.00	-23.01	Horizontal
9608.00	32.35	37.95	14.14	31.62	52.82	74.00	-21.18	Horizontal
12010.00	*					74.00		Horizontal
14412.00	*					74.00		Horizontal
Average val	ue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4804.00	27.85	31.78	8.60	32.09	36.14	54.00	-17.86	Vertical
7206.00	21.69	36.15	11.65	32.00	37.49	54.00	-16.51	Vertical
9608.00	20.63	37.95	14.14	31.62	41.10	54.00	-12.90	Vertical
12010.00	*					54.00		Vertical
14412.00	*					54.00		Vertical
4804.00	32.31	31.78	8.60	32.09	40.60	54.00	-13.40	Horizontal
7206.00	24.00	36.15	11.65	32.00	39.80	54.00	-14.20	Horizontal
9608.00	20.54	37.95	14.14	31.62	41.01	54.00	-12.99	Horizontal
12010.00	*					54.00		Horizontal
14412.00	*					54.00		Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor

2. The emission levels of other frequencies are very lower than the limit and not show in test report.

3. *"\*", means this data is the too weak instrument of signal is unable to test.* 



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Test channel	:			Middl	le channel			
Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4882.00	37.69	31.85	8.67	32.12	46.09	74.00	-27.91	Vertical
7323.00	32.09	36.37	11.72	31.89	48.29	74.00	-25.71	Vertical
9764.00	31.70	38.35	14.25	31.62	52.68	74.00	-21.32	Vertical
12205.00	*					74.00		Vertical
14646.00	*					74.00		Vertical
4882.00	42.06	31.85	8.67	32.12	50.46	74.00	-23.54	Horizontal
7323.00	33.88	36.37	11.72	31.89	50.08	74.00	-23.92	Horizontal
9764.00	31.16	38.35	14.25	31.62	52.14	74.00	-21.86	Horizontal
12205.00	*					74.00		Horizontal
14646.00	*					74.00		Horizontal
Average val	ue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4882.00	26.45	31.85	8.67	32.12	34.85	54.00	-19.15	Vertical
7323.00	20.74	36.37	11.72	31.89	36.94	54.00	-17.06	Vertical
9764.00	19.79	38.35	14.25	31.62	40.77	54.00	-13.23	Vertical
12205.00	*					54.00		Vertical
14646.00	*					54.00		Vertical
4882.00	30.72	31.85	8.67	32.12	39.12	54.00	-14.88	Horizontal
7323.00	22.94	36.37	11.72	31.89	39.14	54.00	-14.86	Horizontal
9764.00	19.55	38.35	14.25	31.62	40.53	54.00	-13.47	Horizontal
12205.00	*					54.00		Horizontal
14646.00	*					54.00		Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor

2. The emission levels of other frequencies are very lower than the limit and not show in test report.

3. "\*", means this data is the too weak instrument of signal is unable to test.



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Test channel	:			Highe	est channel			
Peak value:				·				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4960.00	36.71	31.93	8.73	32.16	45.21	74.00	-28.79	Vertical
7440.00	31.43	36.59	11.79	31.78	48.03	74.00	-25.97	Vertical
9920.00	31.12	38.81	14.38	31.88	52.43	74.00	-21.57	Vertical
12400.00	*					74.00		Vertical
14880.00	*					74.00		Vertical
4960.00	40.87	31.93	8.73	32.16	49.37	74.00	-24.63	Horizontal
7440.00	33.14	36.59	11.79	31.78	49.74	74.00	-24.26	Horizontal
9920.00	30.48	38.81	14.38	31.88	51.79	74.00	-22.21	Horizontal
12400.00	*					74.00		Horizontal
14880.00	*					74.00		Horizontal
Average val	ue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4960.00	25.70	31.93	8.73	32.16	34.20	54.00	-19.80	Vertical
7440.00	20.23	36.59	11.79	31.78	36.83	54.00	-17.17	Vertical
9920.00	19.34	38.81	14.38	31.88	40.65	54.00	-13.35	Vertical
12400.00	*					54.00		Vertical
14880.00	*					54.00		Vertical
4960.00	29.87	31.93	8.73	32.16	38.37	54.00	-15.63	Horizontal
7440.00	22.37	36.59	11.79	31.78	38.97	54.00	-15.03	Horizontal
9920.00	19.03	38.81	14.38	31.88	40.34	54.00	-13.66	Horizontal
12400.00	*					54.00		Horizontal
14880.00	*					54.00		Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor

2. The emission levels of other frequencies are very lower than the limit and not show in test report.

3. "\*", means this data is the too weak instrument of signal is unable to test.



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#### 7.3.3 Bandedge emissions

All of the restriction bands were tested, and only the data of worst case was exhibited.

Test channe	l:			L	Lowest channel						
Peak value:											
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
2390.00	42.17	27.59	5.38	30.18	44.96	74.00	-29.04	Horizontal			
2400.00	47.85	27.58	5.39	30.18	50.64	74.00	-23.36	Horizontal			
2390.00	42.65	27.59	5.38	30.18	45.44	74.00	-28.56	Vertical			
2400.00	46.81	27.58	5.39	30.18	49.60	74.00	-24.40	Vertical			

#### Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	32.88	27.59	5.38	30.18	35.67	54.00	-18.33	Horizontal
2400.00	35.07	27.58	5.39	30.18	37.86	54.00	-16.14	Horizontal
2390.00	32.77	27.59	5.38	30.18	35.56	54.00	-18.44	Vertical
2400.00	35.65	27.58	5.39	30.18	38.44	54.00	-15.56	Vertical

#### Test channel:

#### Highest channel

Peak value:								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	44.19	27.53	5.47	29.93	47.26	74.00	-26.74	Horizontal
2500.00	43.49	27.55	5.49	29.93	46.60	74.00	-27.40	Horizontal
2483.50	44.91	27.53	5.47	29.93	47.98	74.00	-26.02	Vertical
2500.00	44.43	27.55	5.49	29.93	47.54	74.00	-26.46	Vertical

#### Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	35.70	27.53	5.47	29.93	38.77	54.00	-15.23	Horizontal
2500.00	33.80	27.55	5.49	29.93	36.91	54.00	-17.09	Horizontal
2483.50	36.85	27.53	5.47	29.93	39.92	54.00	-14.08	Vertical
2500.00	33.66	27.55	5.49	29.93	36.77	54.00	-17.23	Vertical

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor



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### 7.4 20dB Occupy Bandwidth

Test Requirement:	FCC Part15 C Section 15.249/15.215
Test Method:	ANSI C63.10:2013
Limit:	Operation Frequency range 2400MHz~2483.5MHz
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

#### **Measurement Data**

Test channel	20dB bandwidth(MHz)	Result
Lowest	0.875	Pass
Middle	0.869	Pass
Highest	0.866	Pass



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#### Test plot as follows:

Ch Freq 2.402 GHz Trig Free Occupied Bandwidth	Avg Number 10 0n <u>Off</u> Avg Mode Exp Repeat
Ref 10 dBm Atten 20 dB  Peak  Jog  0	Max Hold On Off
	Occ BW % Pwr 99.00 %
Center 2.402 900 GHz Span 3 MHz	<b>OBW Spar</b> 3.00000000 MH2
•Res BW 30 kHz         •VBW 100 kHz         Sweep 3.2 ms (601 pts)           Occupied Bandwidth         •cc BH % Pwr         99.00 %           834,5608 kHz         × dB         -20.00 dB	<b>x dE</b> -20.00 dE
Transmit Freq Error -8.185 kHz x dB Bandwidth 874.782 kHz Copyright 2000-2012 Agilent Technologies	Optimize RefLeve

Lowest channel



Middle channel



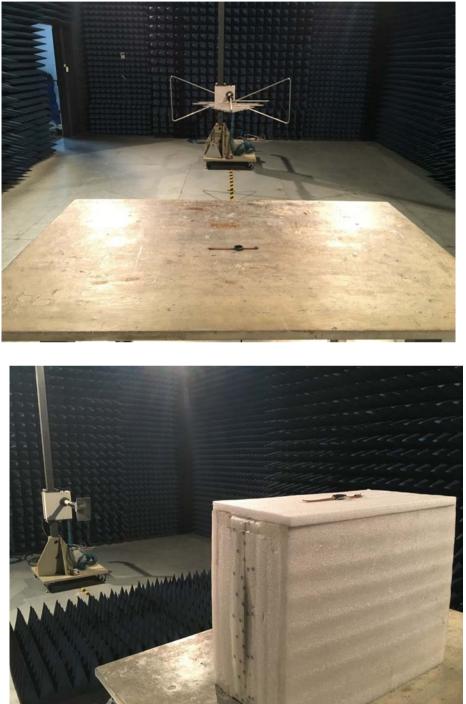
Highest channel



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# 8 Test Setup Photo

**Radiated Emission** 





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#### Conducted Emission





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# 9 EUT Constructional Details

Reference to the test report No. EBO1707061-E258

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