RF TEST REPORT

Report No.: 16070501-FCC-R2

Supersede Report No.: N/A

Applicant	Borqs BeiJing Ltd.
Product Name	6 inch Tablet Remote
Model No.	XR6
Serial No.	N/A
Test Standard	FCC Part 15.249: 2015, ANSI C63.10: 2013
Test Date	May 07 to May 22, 2016
Issue Date	May 24, 2016
Test Result	☑ Pass ☐ Fail
Equipment complied with the specification	☑
Equipment did not comply with the specification	☐

Winnie Zhang	David Huang	
Winnie Zhang Test Engineer	David Huang Checked By	

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Test result presented in this test report is applicable to the tested sample only

Issued by:

SIEMIC (SHENZHEN-CHINA) LABORATORIES

Zone A, Floor 1, Building 2 Wan Ye Long Technology Park

South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108

Phone: +86 0755 2601 4629801 Email: China@siemic.com.cn

Laboratories Introduction

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Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC, RF/Wireless, SAR, Telecom
Canada	EMC, RF/Wireless, SAR, Telecom
Taiwan	EMC, RF, Telecom, SAR, Safety
Hong Kong	RF/Wireless, SAR, Telecom
Australia	EMC, RF, Telecom, SAR, Safety
Korea	EMI, EMS, RF, SAR, Telecom, Safety
Japan	EMI, RF/Wireless, SAR, Telecom
Singapore	EMC, RF, SAR, Telecom
Europe	EMC, RF, SAR, Telecom, Safety

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1. Report Revision History

Report No.	Report Version	Description	Issue Date
16070501-FCC-R2	NONE	Original	May 24, 2016

2. Customer information

Applicant Name	Borqs BeiJing Ltd.
Applicant Add	Tower A, Building B23, Universal Business Park, No. 10 Jiuxianqiao Road, Chaoyang District Beijing, 100015 China
Manufacturer	Borqs BeiJing Ltd.
Manufacturer Add	Tower A, Building B23, Universal Business Park, No. 10 Jiuxianqiao Road, Chaoyang District Beijing, 100015 China

3. Test site information

Lab performing tests	SIEMIC (Shenzhen-China) LABORATORIES
Lab Address	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108
FCC Test Site No.	718246
IC Test Site No.	4842E-1
Test Software	Radiated Emission Program-To Shenzhen v2.0

4. Equipment under Test (EUT) Information

Description of EUT:	6 inch Tablet Remote
Main Model:	XR6
Serial Model:	N/A
Date EUT received:	May 06, 2016
Test Date(s):	May 07 to May 22, 2016
Equipment Category：	DXT
Antenna Gain:	Bluetooth: 1.0dBi WIFI (2.4G): 1.0dBi WIFI (5G): 1.0dBi
Type of Modulation:	802.11b/g/n: DSSS, OFDM WIFI(802.11a): OFDM Bluetooth: GFSK, π /4DQPSK, 8DPSK
RF Operating Frequency (ies):	WIFI:802.11b/g/n(20M): 2412-2462 MHz WIFI:802.11n(40M): 2422-2452 MHz WIFI (5G 802.11a/n(HT20):5180-5240 MHz; WIFI (802.11n(HT40):5190-5230 MHz; Bluetooth: 2402-2480 MHz
Number of Channels:	WIFI :802.11b/g/n(20M): 11CH WIFI :802.11n(40M): 7CH WIFI 5.19-5.23G(a):7CH WIFI 5.755-5.795G(a):8CH Bluetooth: 79CH
Port:	Earphone Port, USB Port

Input Power:	Adapter : Model: ASUC72a-050120 Input: AC 100-240V~50/60Hz,0.2A Output: DC 5.0V,1.2A Battery: Spec:3.8V, 10.412Wh Battery Capacity:2470mAh
Trade Name :	VIZIO
FCC ID:	2ABDK-XR6

Note: The difference between the new revision and old revision of XR6 is Antenna, all above were explained in the attached Declaration Letter. And based on the letter the difference, these items " Bandedg , the spurious radiated emissions and unwanted emission restricted frequency band" is re-evaluated.

5. Test Summary

The product was tested in accordance with the following specifications.

All testing has been performed according to below product classification:

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.249(d)	Band Edge & Restricted Band	Compliance
§15.205, §15.209, §15.249(a), §15.249(d)	Radiated Emissions & Restricted Band	Compliance

Measurement Uncertainty

Emissions		
Test Item	**Description**	**Uncertainty**
Band Edge and Radiated Spurious Emissions	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
-	-	-

6. Measurements, Examination And Derived Results

6.1 Antenna Requirement

Applicable Standard

According to § 15.203, 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 user of a standard antenna jack or electrical connector is prohibited.
The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.
c. Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

Antenna Connector Construction

The EUT has 1 antennas:
A permanently attached PIFA antenna for Bluetooth and WIFI, the gain is 1.0dBi.

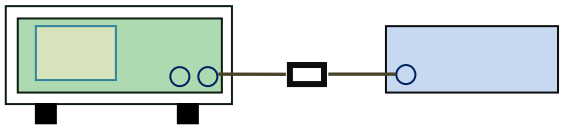
The antenna meets up with the ANTENNA REQUIREMENT.

Result: Compliance.

6.2 Band Edge & Restricted Band

Temperature	22℃
Relative Humidity	59%
Atmospheric Pressure	1017mbar
Test date :	May 17, 2016
Tested By :	Winnie Zhang

Requirement(s):

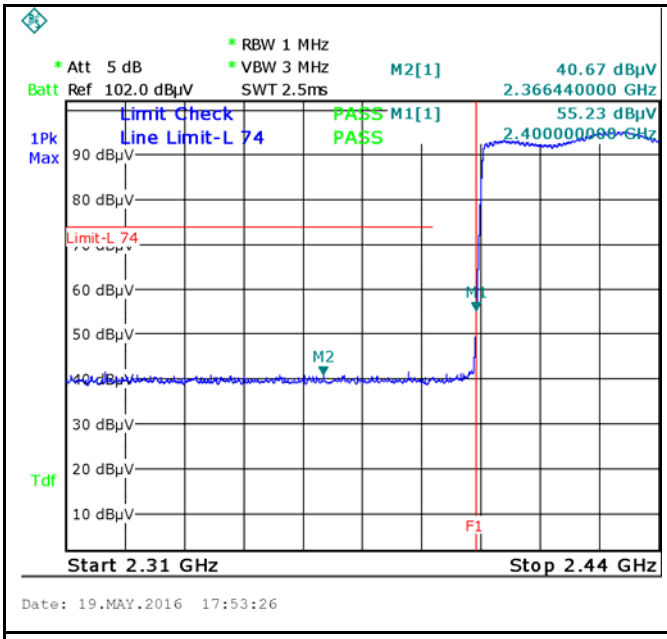
Spec	Item	Requirement	Applicable
§15.249(d)	a)	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.	
Test Setup	 Spectrum Analyzer EUT		
Test Procedure	- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator. - Position the EUT without connection to measurement instrument. Put it on the Rotated table and turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range. - Set both RBW and VBW of spectrum analyzer to 1MHz. - Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency. - Repeat above procedures until all measured frequencies were complete.		
Remark			
Result	☑ Pass ☐ Fail		

Test Data ☐ Yes ☑ N/A

Test Plot ☑ Yes (See below) ☐ N/A

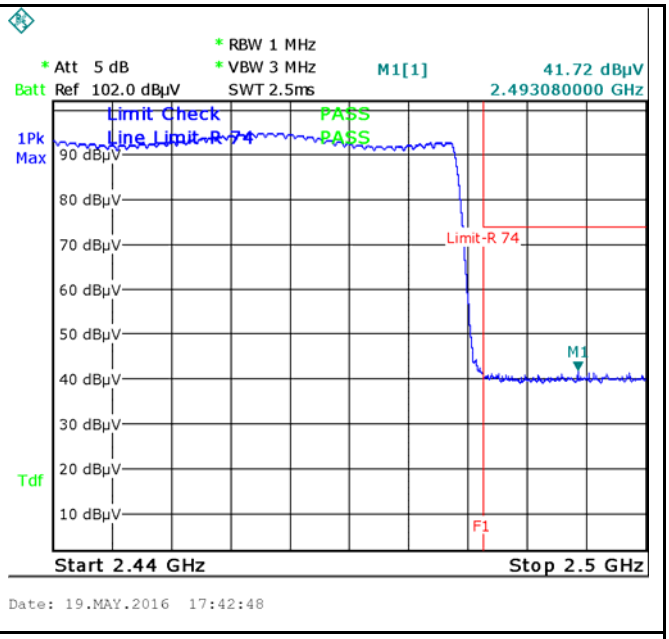
Test Plots

GFSK Mode:



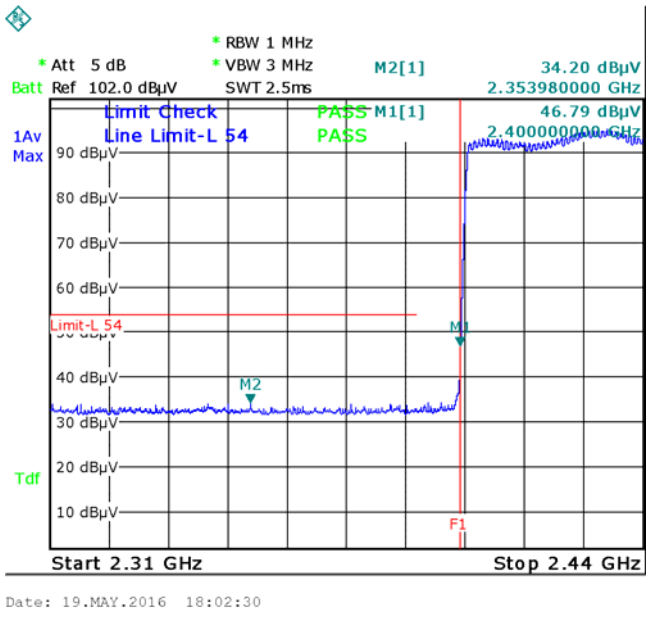
GFSK-Hopping Left Side-PK

Note: F1 is frequency 2400MHz



GFSK-Hopping Right Side-PK

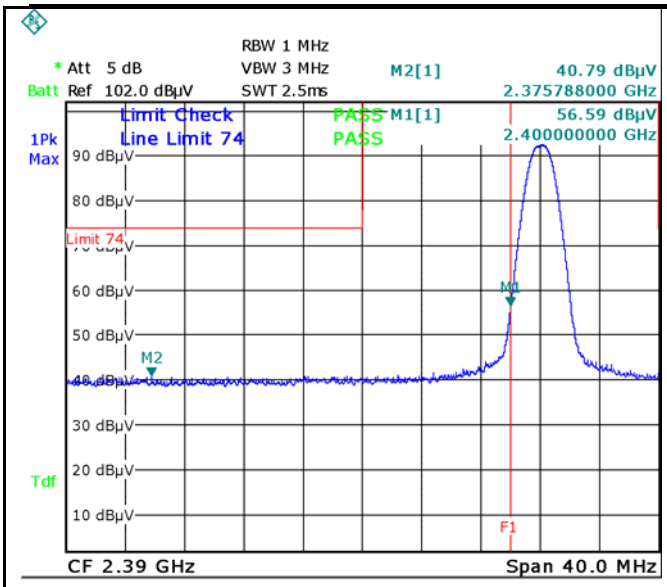
Note: F1 is frequency 2483.5MHz



GFSK-Hopping Left Side-AV

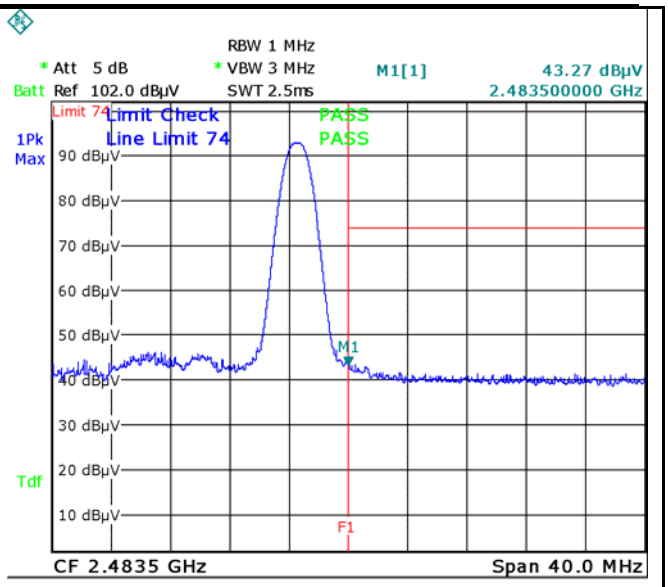
Note: (no need if PK value less than the AV limit)

GFSK-Hopping Right Side-AV



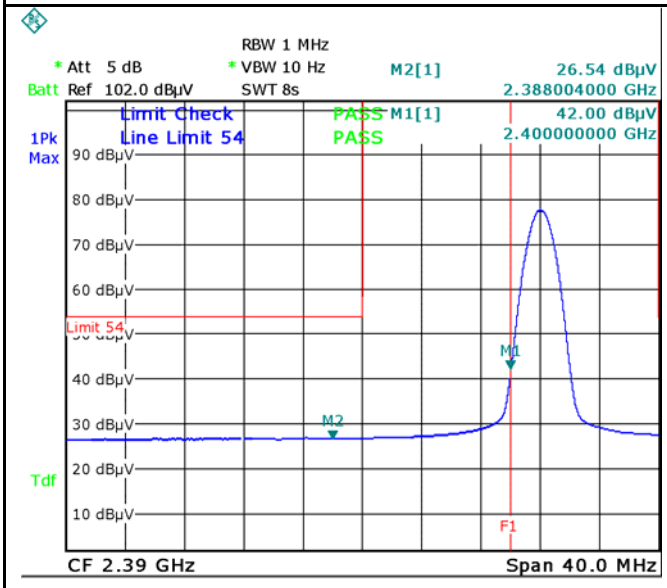
GFSK-Left Side-PK

Note: F1 is frequency 2400MHz



GFSK-Right Side-PK

Note: F1 is frequency 2483.5MHz

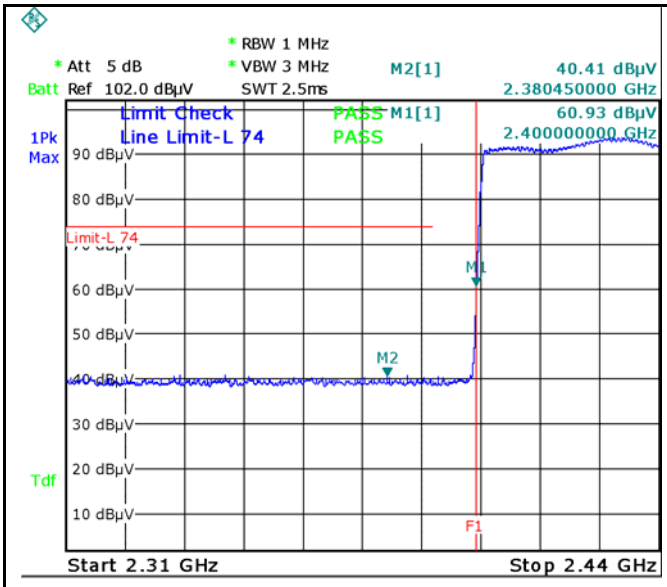


GFSK-Left Side-AV

Note: (no need if PK value less than the AV limit)

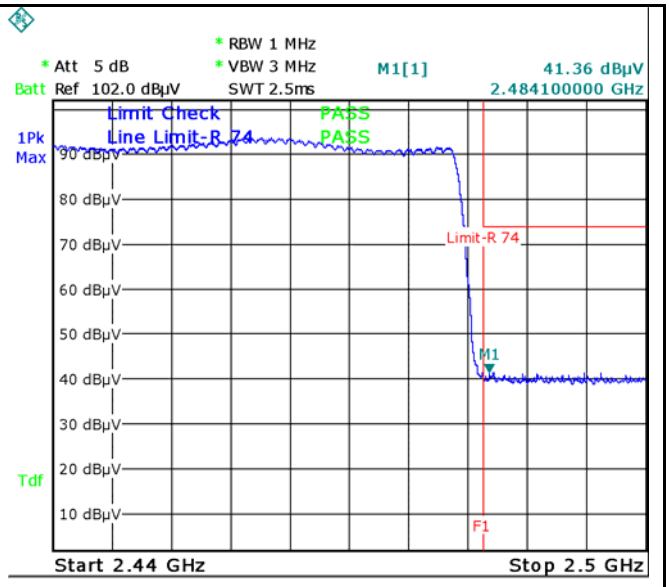
GFSK-Right Side-AV

π /4 DQPSK Mode:



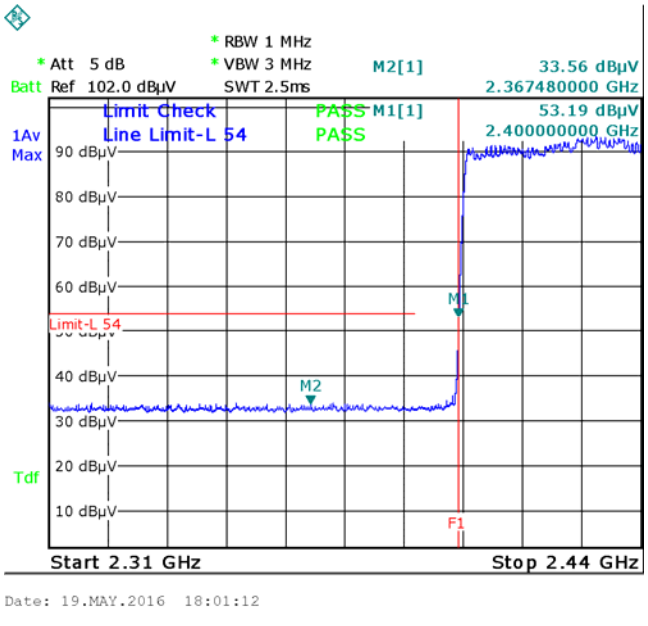
π /4 DQPSK-Hopping Left Side-PK

Note: F1 is frequency 2400MHz



π /4 DQPSK-Hopping Right Side-PK

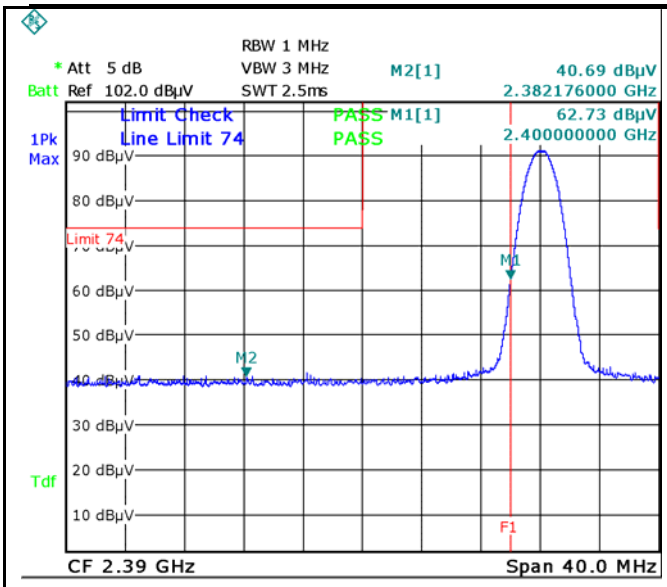
Note: F1 is frequency 2483.5MHz



π /4 DQPSK-Hopping Left-AV

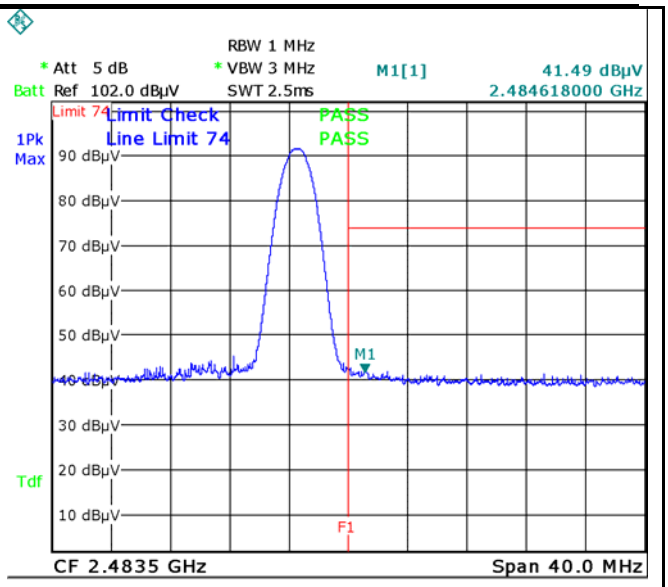
Note: (no need if PK value less than the AV limit)

π /4 DQPSK-Hopping Right-AV



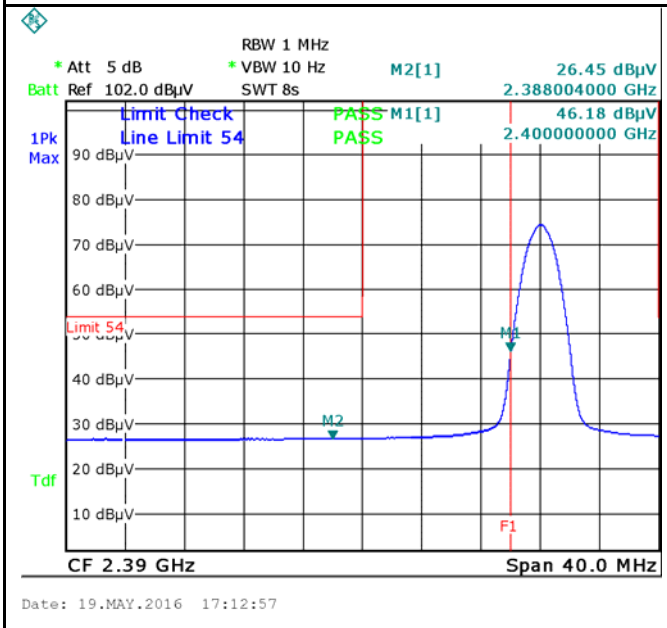
π /4 DQPSK-Left Side-PK

Note: F1 is frequency 2400MHz



π /4 DQPSK-Right Side-PK

Note: F1 is frequency 2483.5MHz

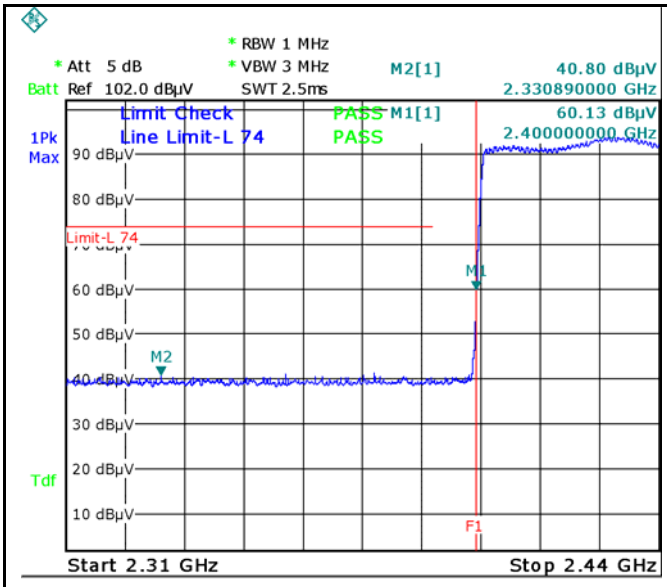


π /4 DQPSK-Left Side-AV

Note: (no need if PK value less than the AV limit)

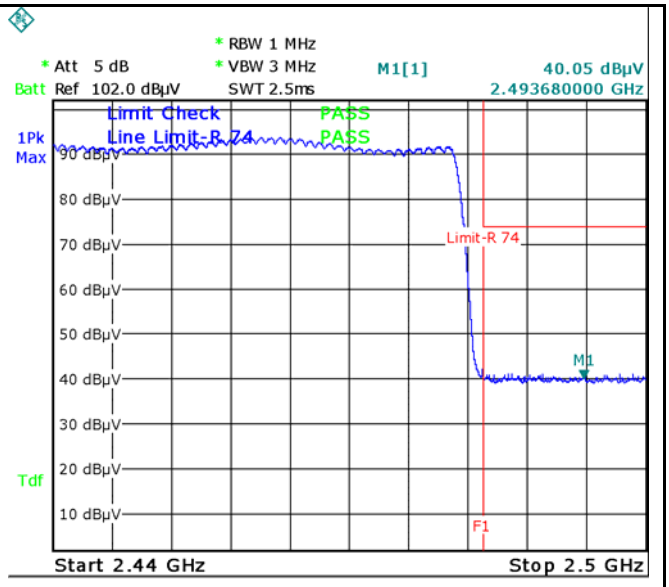
π /4 DQPSK-Right Side-AV

8-DPSK Mode:



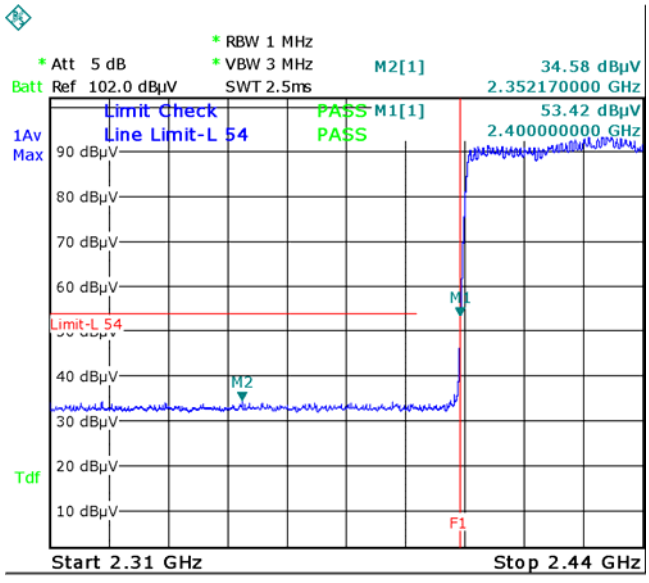
8DPSK-Hopping Left Side-PK

Note: F1 is frequency 2400MHz



8DPSK-Hopping Right Side-PK

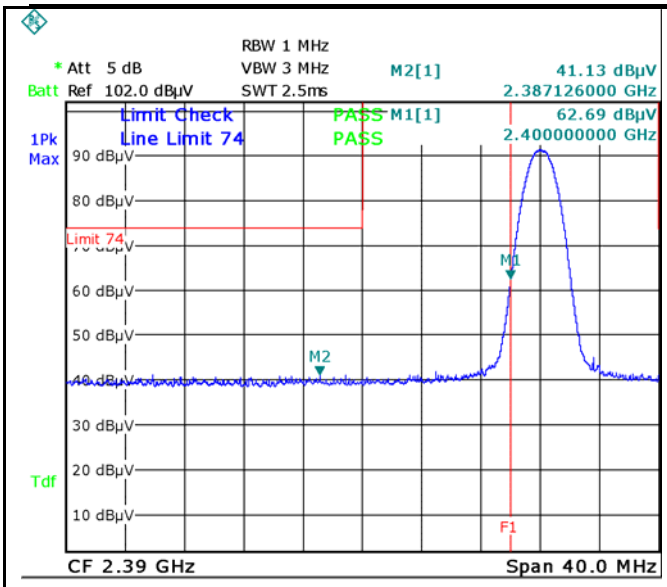
Note: F1 is frequency 2483.5MHz



8DPSK-Hopping Left-AV

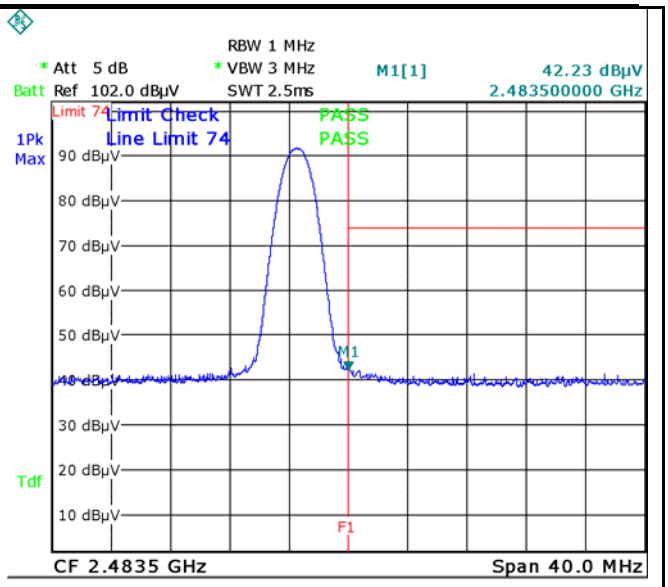
Note: (no need if PK value less than the AV limit)

8DPSK-Hopping Right-AV



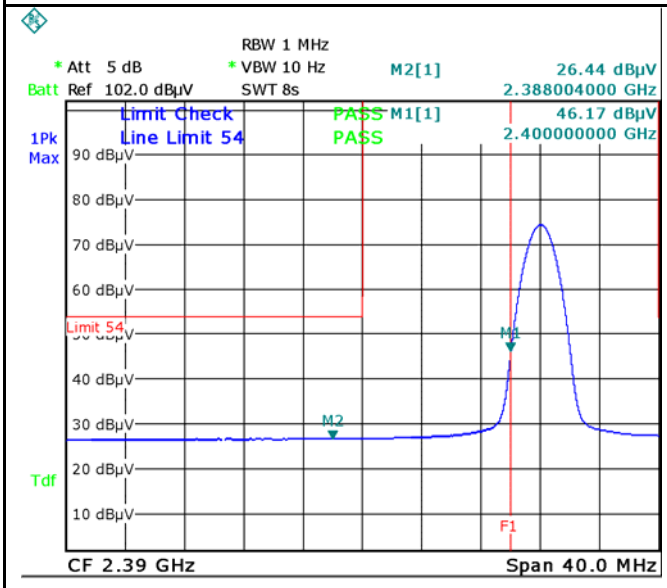
8DPSK-Left Side-PK

Note: F1 is frequency 2400MHz



8DPSK-Right Side-PK

Note: F1 is frequency 2483.5MHz



8DPSK-Left Side-AV

Note: (no need if PK value less than the AV limit)

8DPSK-Right Side-AV

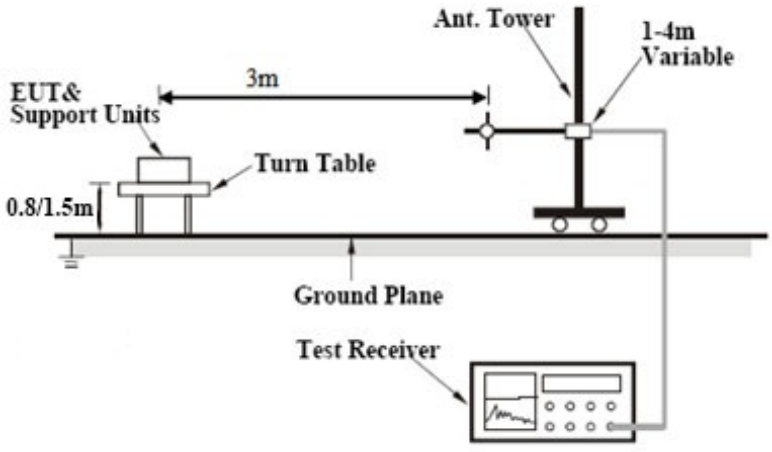
6.3 Radiated Emissions & Restricted Band

Temperature	25℃
Relative Humidity	53%
Atmospheric Pressure	1020mbar
Test date :	May 20, 2016
Tested By :	Winnie Zhang

Requirement(s):

Spec	Item	Requirement	Applicable
§15.209, § 15.205, § 15.249(a) & § 15.249(d)	a)	Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges	☑

Frequency range (MHz)	Field Strength (μV/m)
30 – 88	100
88 – 216	150
216 960	200
Above 960	500

Test Setup	
Procedure	1. The EUT was switched on and allowed to warm up to its normal operating condition. 2. The test was carried out at the selected frequency points obtained from the EUT characterization. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner:

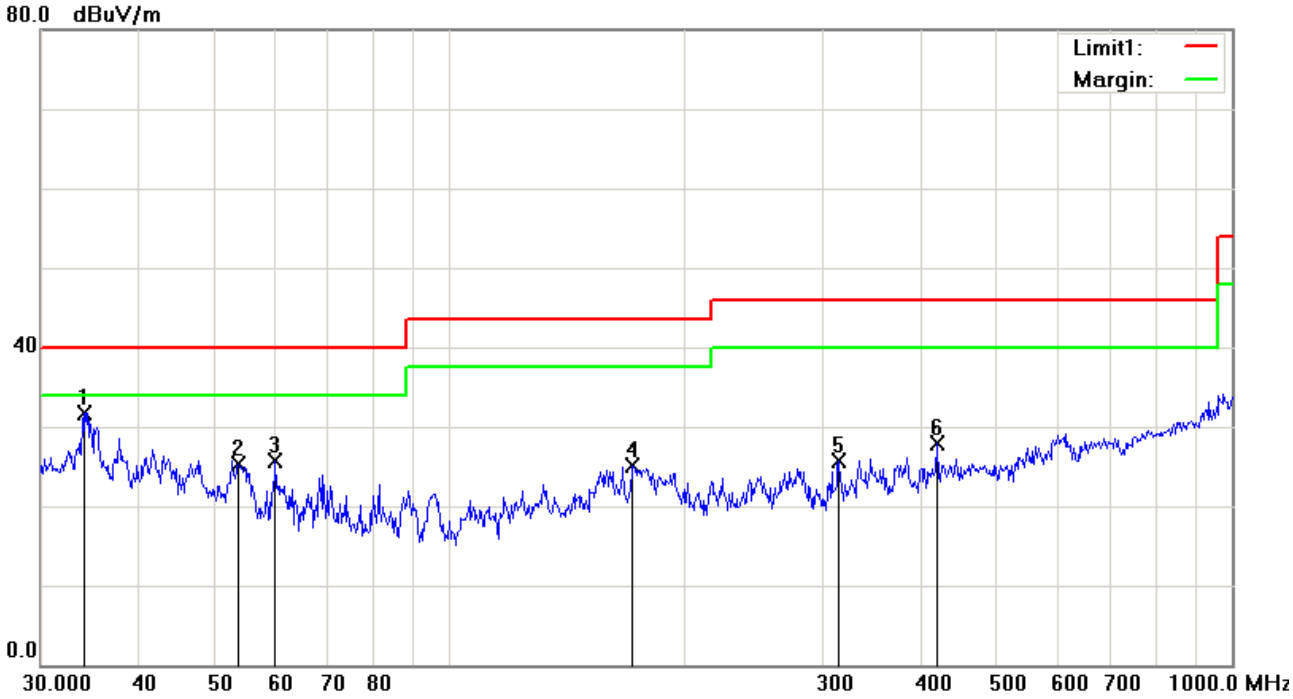
	a. Vertical or horizontal polarization (whichever gave the higher emission level over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasiy Peak detection at frequency below 1GHz. 4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz with Peak detection for Peak measurement at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz with Peak detection for Average Measurement as below at frequency above 1GHz. 5. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.
Remark	
Result	☑ Pass ☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☑ N/A

Test Mode:	Bluetooth Mode

Below 1GHz

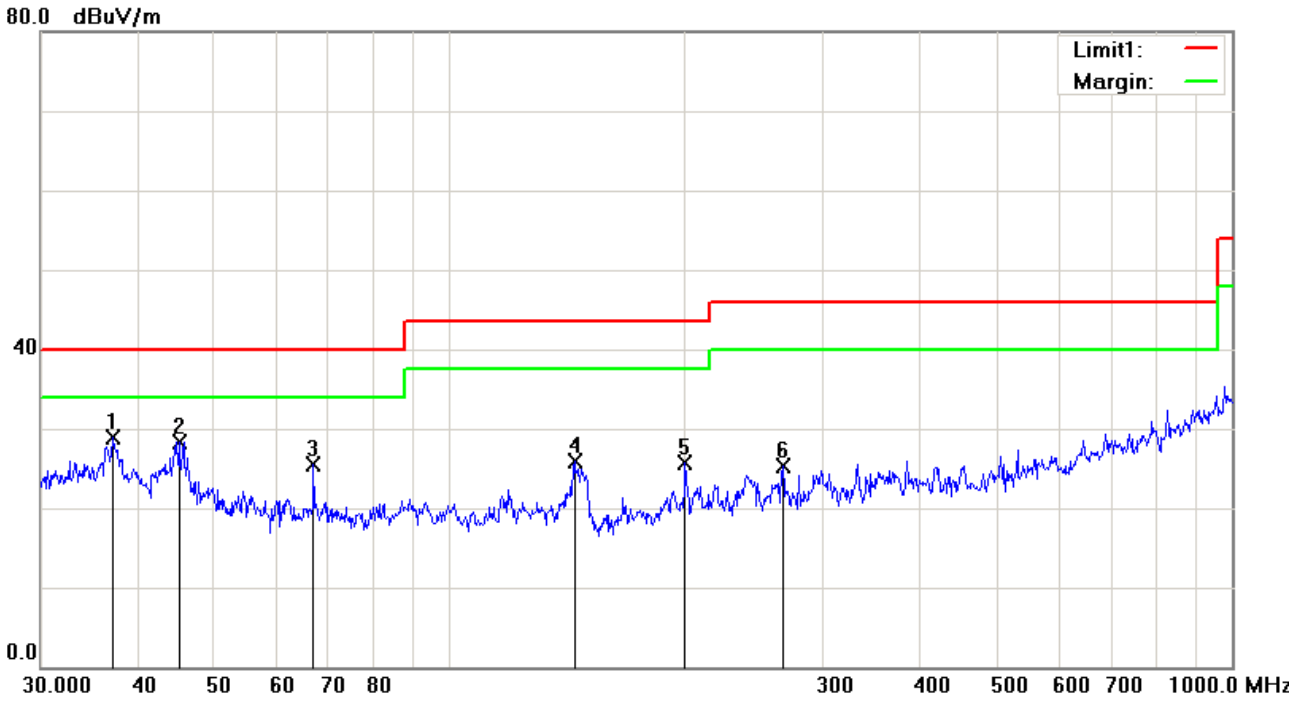


Test Data

Horizontal Polarity Plot @3m

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Height	Degree
		(MHz)	(dBuV/m)		(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)
1	H	34.0365	35.02	peak	-3.24	31.78	40.00	-8.22	100	149
2	H	53.6932	38.84	peak	-13.61	25.23	40.00	-14.77	100	220
3	H	59.8588	40.05	peak	-14.34	25.71	40.00	-14.29	100	173
4	H	171.3926	34.26	peak	-9.21	25.05	43.50	-18.45	100	208
5	H	314.3765	32.23	peak	-6.49	25.74	46.00	-20.26	100	114
6	H	419.1081	31.77	peak	-3.83	27.94	46.00	-18.06	100	53

Below 1GHz



Test Data

Vertical Polarity Plot @3m

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	Height	Degree
		(MHz)	(dBuV/m)		(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)
1	V	37.0249	34.36	peak	-5.42	28.94	40.00	-11.06	100	149
2	V	45.0583	39.30	peak	-10.97	28.33	40.00	-11.67	100	182
3	V	66.9669	39.25	peak	-13.82	25.43	40.00	-14.57	100	34
4	V	144.3348	34.37	peak	-8.48	25.89	43.50	-17.61	100	251
5	V	199.9856	34.37	peak	-8.74	25.63	43.50	-17.87	100	186
6	V	266.6089	33.68	peak	-8.43	25.25	46.00	-20.75	100	55

Test Mode:	Transmitting Mode

Above 1GHz

Mode: GFSK (Worst Case)

Low Channel (2402 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4804	38.66	AV	V	33.83	6.86	31.72	47.63	54	-6.37
4804	38.51	AV	H	33.83	6.86	31.72	47.48	54	-6.52
4804	47.95	PK	V	33.83	6.86	31.72	56.92	74	-17.08
4804	47.38	PK	H	33.83	6.86	31.72	56.35	74	-17.65
2237	47.53	AV	V	28.65	3.12	33.99	45.31	54	-8.69
2237	47.29	AV	H	28.65	3.12	33.99	45.07	54	-8.93
2237	56.91	PK	V	28.65	3.12	33.99	54.69	74	-19.31
2237	56.65	PK	H	28.65	3.12	33.99	54.43	74	-19.57

Middle Channel (2441 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4882	38.75	AV	V	33.86	6.82	31.82	47.61	54	-6.39
4882	38.63	AV	H	33.86	6.82	31.82	47.49	54	-6.51
4882	48.01	PK	V	33.86	6.82	31.82	56.87	74	-17.13
4882	47.67	PK	H	33.86	6.82	31.82	56.53	74	-17.47
2248	48.56	AV	V	28.68	3.13	33.93	46.44	54	-7.56
2248	48.35	AV	H	28.68	3.13	33.93	46.23	54	-7.77
2248	58.34	PK	V	28.68	3.13	33.93	56.22	74	-17.78
2248	58.82	PK	H	28.68	3.13	33.93	56.7	74	-17.30

High Channel (2480 MHz)

Frequency (MHz)	S.A. Reading (dBμV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4960	38.59	AV	V	33.9	6.76	31.92	47.33	54	-6.67
4960	38.46	AV	H	33.9	6.76	31.92	47.2	54	-6.8
4960	48.12	PK	V	33.9	6.76	31.92	56.86	74	-17.14
4960	47.95	PK	H	33.9	6.76	31.92	56.69	74	-17.31
2260	48.72	AV	V	28.7	3.15	33.95	46.62	54	-7.38
2260	48.48	AV	H	28.7	3.15	33.95	46.38	54	-7.62
2260	59.76	PK	V	28.7	3.15	33.95	57.66	74	-16.34
2260	59.48	PK	H	28.7	3.15	33.95	57.38	74	-16.62

Note:

*1, The testing has been conformed to 10*2480MHz=24,800MHz*
2, All other emissions more than 30 dB below the limit
3, X-Axis, Y-Axis and –Axis were investigated. The results above show only the worst case.
4.All modes were investigated. The results above show only the worst case.

Annex A. TEST INSTRUMENT

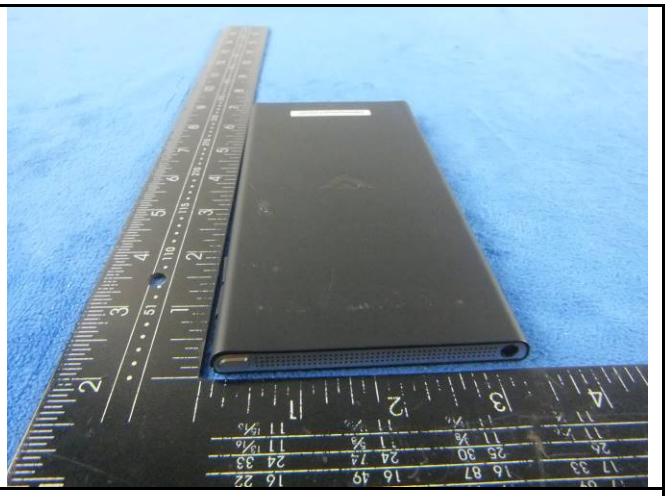
Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted					
EMI test receiver	ESCS30	8471241027	09/17/2015	09/16/2016	☐
Line Impedance	LI-125A	191106	09/25/2015	09/24/2016	☐
Line Impedance	LI-125A	191107	09/25/2015	09/24/2016	☐
LISN	ISN T800	34373	09/25/2015	09/24/2016	☐
Double Ridge Horn Antenna (1 ~18GHz)	AH-118	71283	09/24/2015	09/23/2016	☐
Transient Limiter	LIT-153	531118	09/01/2015	08/31/2016	☐
RF conducted test					
Agilent ESA-E SERIES	E4407B	MY45108319	09/17/2015	09/16/2016	☐
Power Splitter	1#	1#	09/01/2015	08/31/2016	☐
DC Power Supply	E3640A	MY40004013	09/17/2015	09/16/2016	☐
Radiated Emissions					
EMI test receiver	ESL6	100262	09/17/2015	09/16/2016	☑
Positioning Controller	UC3000	MF780208282	11/19/2015	11/18/2016	☑
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	09/01/2015	08/31/2016	☑
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/24/2016	03/23/2017	☑
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/21/2015	09/20/2016	☑
Double Ridge Horn Antenna (1 ~18GHz)	AH-118	71283	09/24/2015	09/23/2016	☑
Universal Radio Communication Tester	CMU200	121393	09/25/2015	09/24/2016	☑

Annex B. EUT And Test Setup Photographs

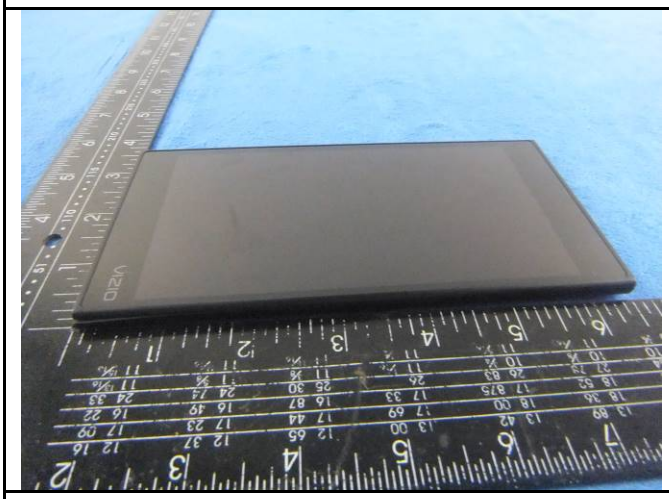
Annex B.i. Photograph: EUT External Photo

	
Whole Package View	Adapter - Front View
	
EUT - Front View	EUT - Rear View

EUT - Top View



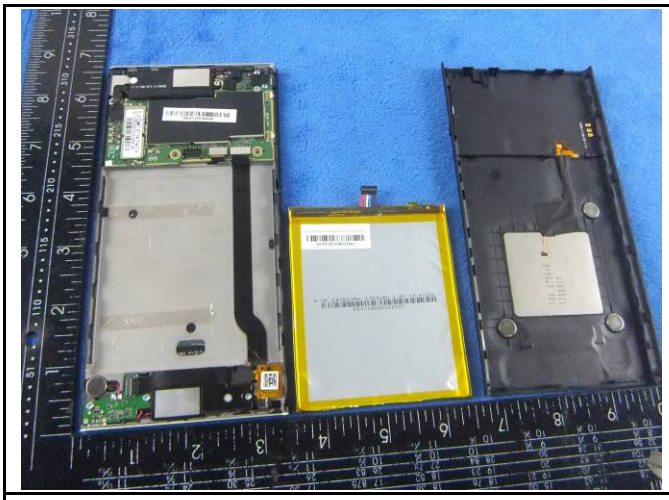
EUT - Bottom View



EUT - Left View

EUT - Right View

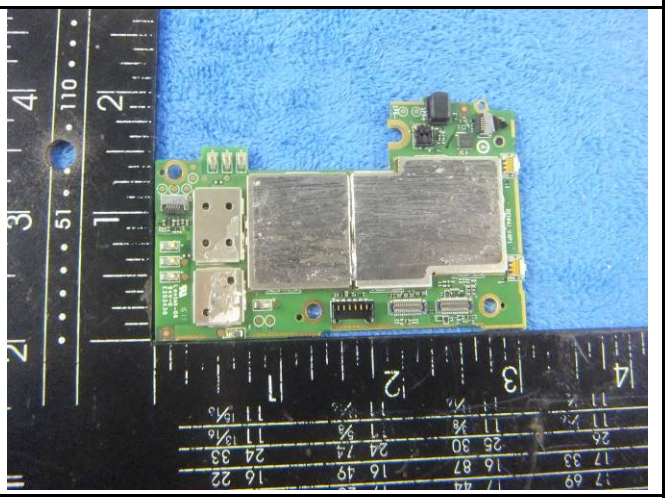
Annex B.ii. Photograph: EUT Internal Photo



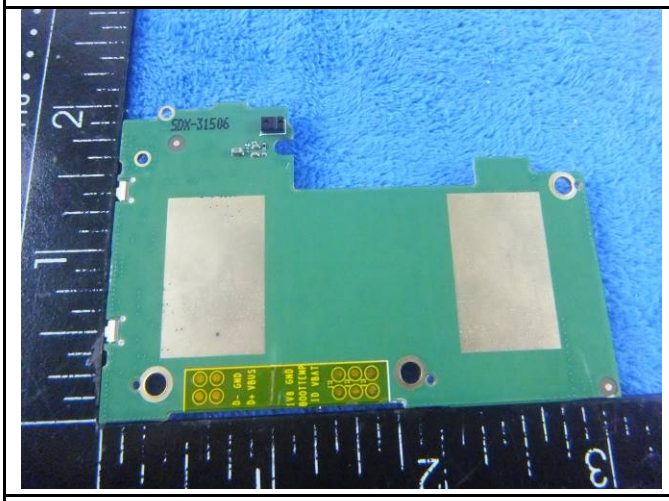
Cover Off - Top View 1

Battery - Front View

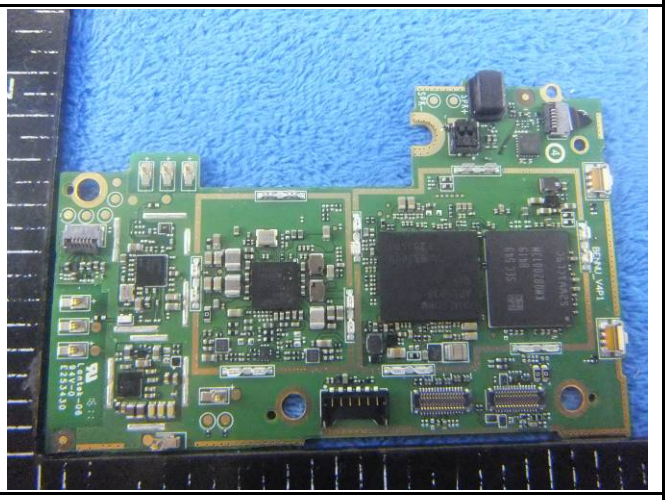
Battery - Rear View



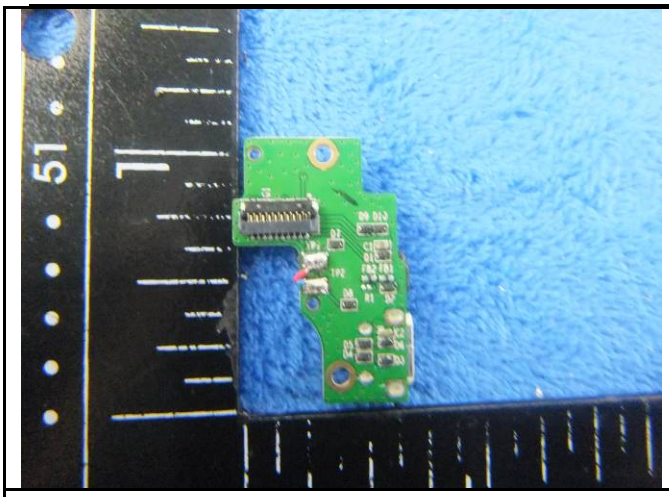
Mainboard with Shielding - Front View



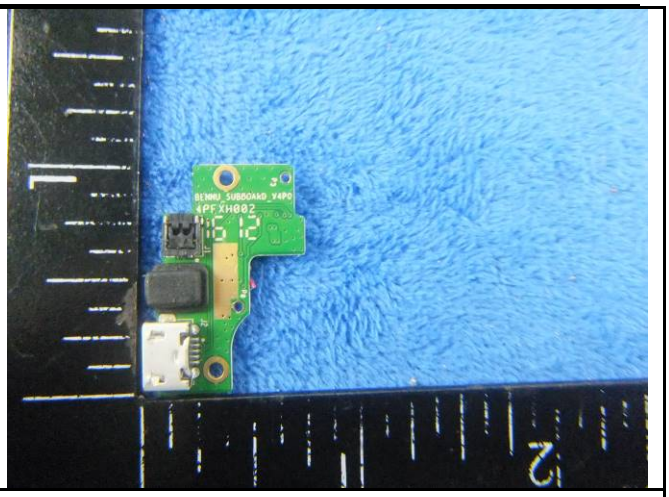
Mainboard - Rear View



Mainbard without Shielding - Front View



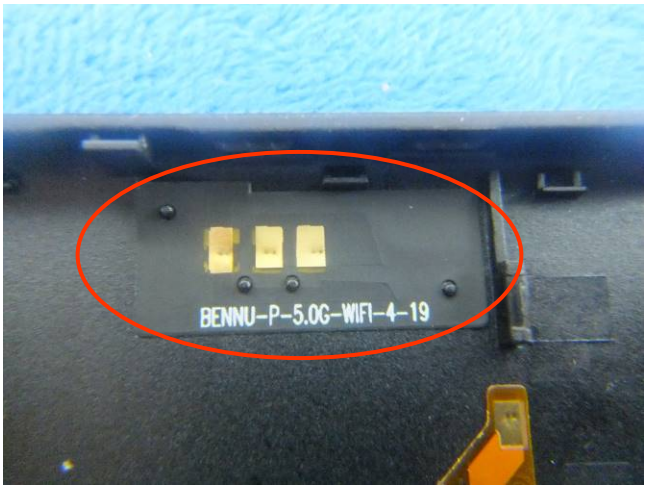
Sub Mainbard - Front View



Sub Mainbard – Rear View

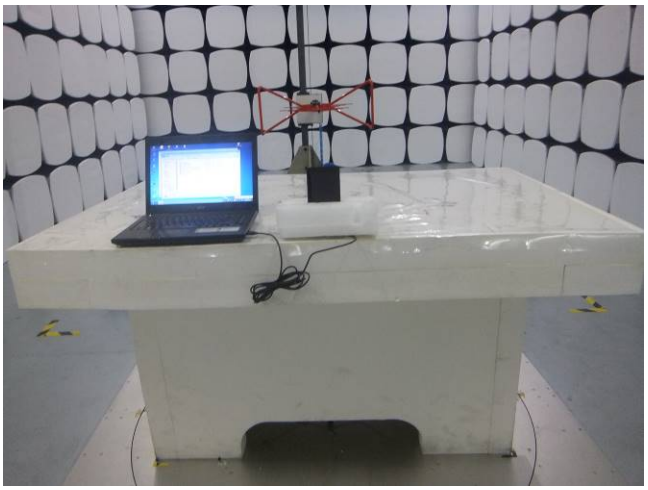
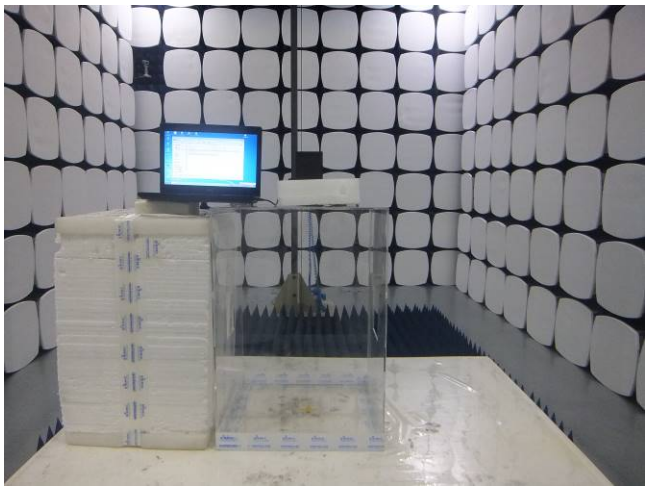
LCD – Front View

LCD – Rear View



WIFI/BT - Antenna View

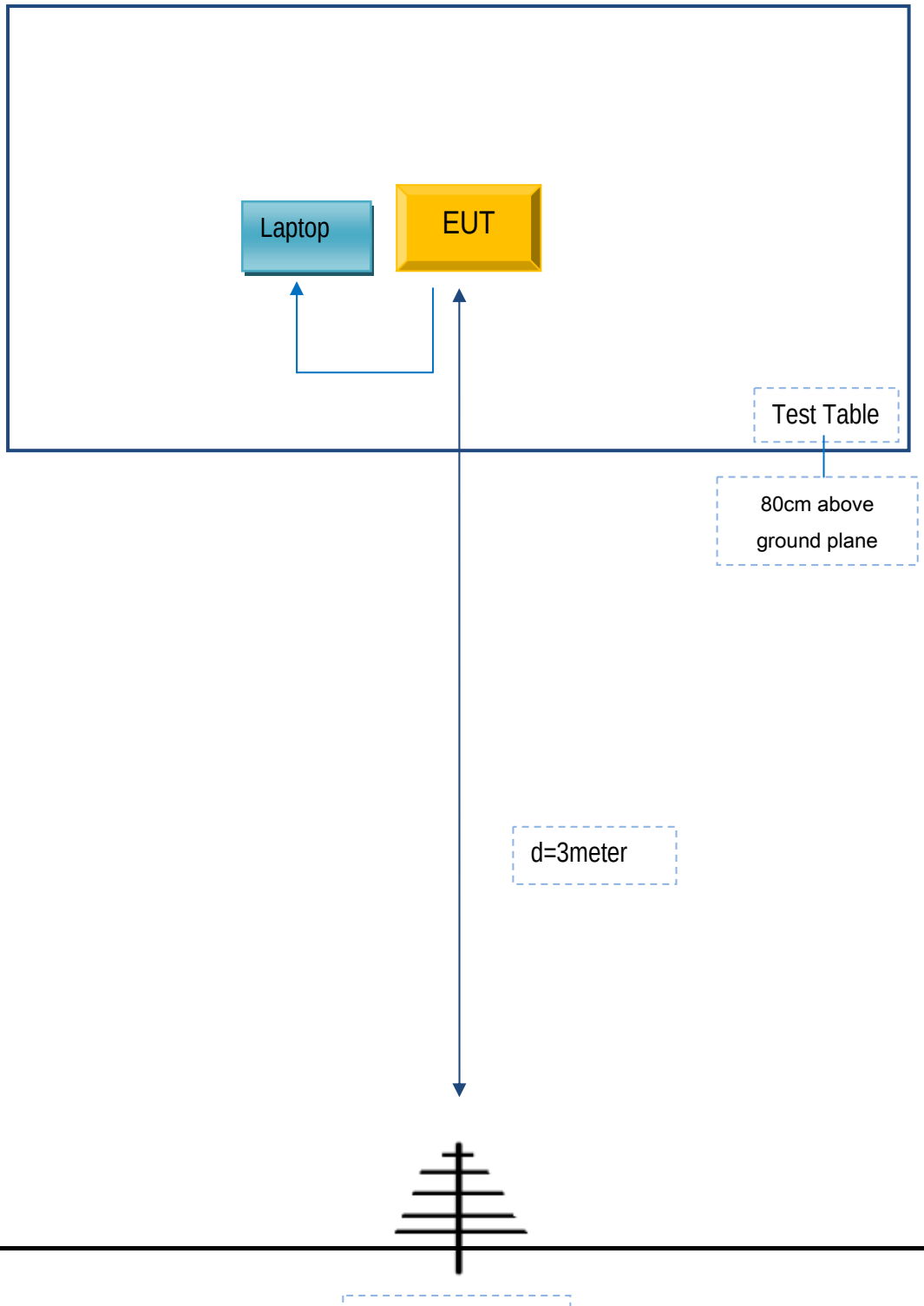
Annex B.iii. Photograph: Test Setup Photo

	
Radiated Spurious Emissions Test Setup Below 1GHz	Radiated Spurious Emissions Test Setup Above 1GHz

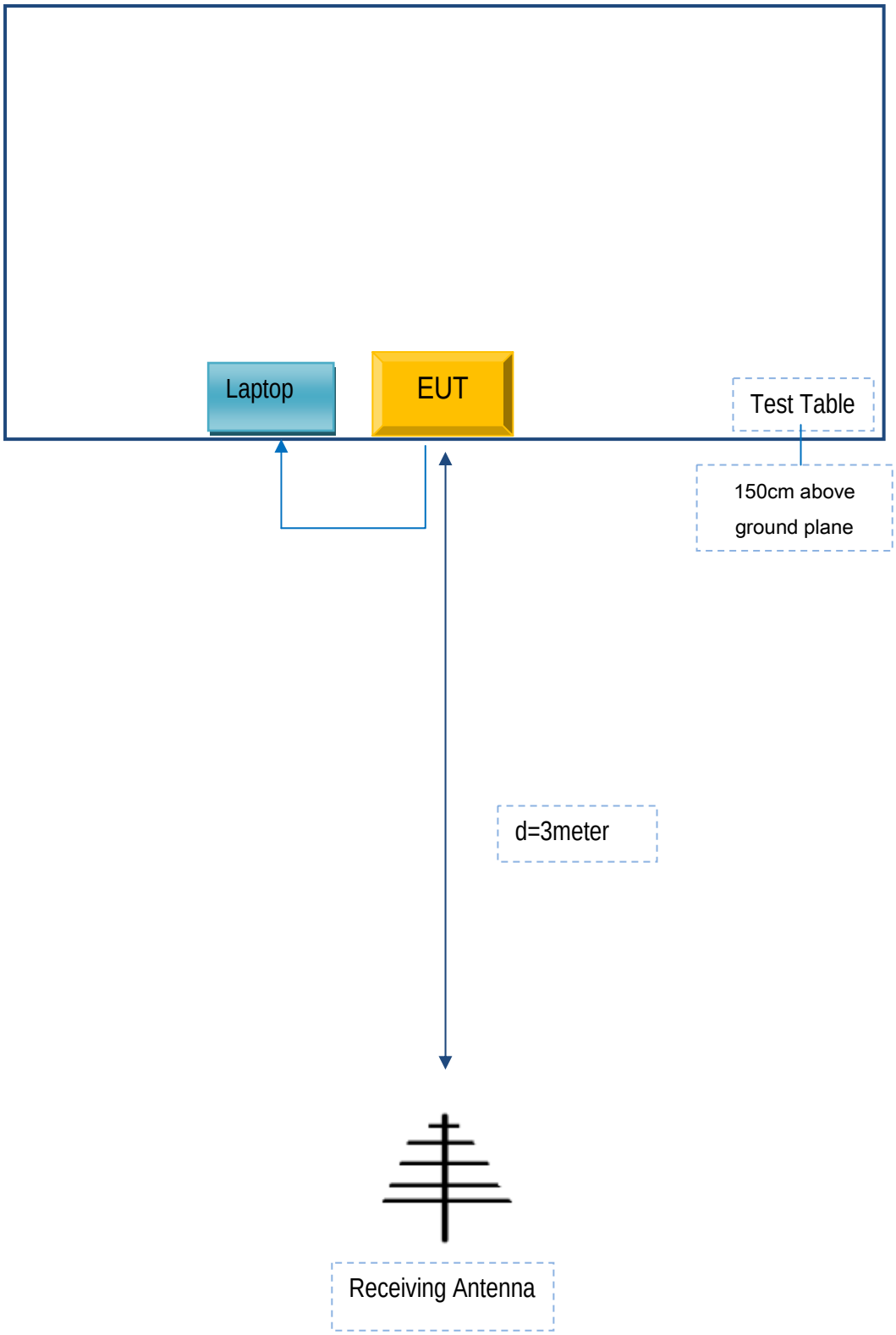
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

Block Configuration Diagram for Radiated Emissions (Below 1GHz) .



Block Configuration Diagram for Radiated Emissions （Above 1GHz）.



Annex C. iI. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

Supporting Equipment:

Manufacturer	Equipment Description	Model	Serial No
Lenovo	Lenovo Laptop	E40	LR-1EHRX
Borqs BeiJing Ltd.	Adapter	ASUC41a-050120	A15302

Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
USB Cable	Un-shielding	No	0.8m	F703

Annex D. User Manual / Block Diagram / Schematics / Partlist

N/A

Annex E. DECLARATION OF SIMILARITY

Borqs BeiJing Ltd.

FCC Class II Permissive Change Request Letter

Date: 2016-05-26

To FCC:

RE: FCC Permissive II Change Request for Company: Borqs BeiJing Ltd. **FCC ID:** 2ABDK-XR6

We are submitting an application for a class II permissive change to the FCC approval of the Company name: Borqs BeiJing Ltd., product description: 6" Tablet Remote (FCC: 2ABDK-XR6, Original Grant Date: 2015-03-13). The transmitter module itself has not changed. Here are the changes:

Change the antenna

Sincerely,

Signature

Liang XueBin

name / title : xuebin Liang / QA directo
information / address: Tower A, Building B23, Universal
Business Park, No. 10 Jiuxianqiao Road, Chaoyang District Beijing, 100015 China