# RF TEST REPORT



Report No.: 17070358-FCC-R2
Supersede Report No.: N/A

Applicant	BLU Products, Inc.			
Product Name	Mobile Phone			
Model No.	R2			
Serial No.	N/A			
Test Standard	FCC Part 1	5.247: 2016,	ANSI C63.10: 2	013
Test Date	June 20 to July 04, 2017			
Issue Date	July 05, 2017			
Test Result	Pass Fail			
Equipment compl	Equipment complied with the specification			
Equipment did no	Equipment did not comply with the specification			
Loven	Luo	David	Huang	
Loren Luo Test Engineer			d Huang cked 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

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Test Report	17070358-FCC-R2
Page	2 of 67

### **Laboratories Introduction**

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



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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



Test Report	17070358-FCC-R2
Page	3 of 67

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Test Report	17070358-FCC-R2
Page	4 of 67

## **CONTENTS**

1.	REPORT REVISION HISTORY	5
2.	CUSTOMER INFORMATION	5
3.	TEST SITE INFORMATION	5
4.	EQUIPMENT UNDER TEST (EUT) INFORMATION	6
5.	TEST SUMMARY	8
6.	MEASUREMENTS, EXAMINATION AND DERIVED RESULTS	9
6.1	ANTENNA REQUIREMENT	9
6.2	CHANNEL SEPARATION	10
6.3	20DB BANDWIDTH	14
6.4	PEAK OUTPUT POWER	18
6.5	NUMBER OF HOPPING CHANNEL	22
6.6	TIME OF OCCUPANCY (DWELL TIME)	24
6.7	BAND EDGE & RESTRICTED BAND	28
6.8	AC POWER LINE CONDUCTED EMISSIONS	36
6.9	RADIATED EMISSIONS & RESTRICTED BAND	42
ANN	NEX A. TEST INSTRUMENT	49
ANN	NEX B. EUT AND TEST SETUP PHOTOGRAPHS	50
ANN	NEX C. TEST SETUP AND SUPPORTING EQUIPMENT	62
ANN	NEX D. USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PARTLIST	66
ANI	NEX E. DECLARATION OF SIMILARITY	67



Test Report	17070358-FCC-R2
Page	5 of 67

### 1. Report Revision History

Report No.	Report Version	Description	Issue Date
17070358-FCC-R2	NONE	Original	July 05, 2017

### 2. Customer information

Applicant Name	BLU Products, Inc.
Applicant Add	10814 NW 33rd St # 100 Doral, FL 33172
Manufacturer	BLU Products, Inc.
Manufacturer Add	10814 NW 33rd St # 100 Doral, FL 33172

### 3. Test site information

Lab performing tests	SIEMIC (Shenzhen-China) LABORATORIES		
	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park		
Lab Address	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 of	Radiated Emission Program-To Shenzhen v2.0		
Radiated Emission			
Test Software of	EZ-EMC(ver.lcp-03A1)		
Conducted Emission			



Test Report	17070358-FCC-R2
Page	6 of 67

### 4. Equipment under Test (EUT) Information

Descriptio	n of EUT:	Mobile Phone

Main Model: R2

Serial Model: N/A

Date EUT received: June 19, 2017

Test Date(s): June 20 to July 04, 2017

Equipment Category: DSS

GSM850: -2.6dBi PCS1900: 0.7dBi

UMTS-FDD Band V: -2.6dBi

Antenna Gain: UMTS-FDD Band IV: 0.5dBi

UMTS-FDD Band II: 0.7dBi

WIFI: -2.7dBi

Bluetooth/BLE: -2.7dBi

GPS: -2.9dBi

Antenna Type: PIFA antenna

GSM / GPRS: GMSK EGPRS: GMSK,8PSK UMTS-FDD: QPSK

Type of Modulation: 802.11b/g/n: DSSS, OFDM

Bluetooth: GFSK, π /4DQPSK, 8DPSK

BLE: GFSK GPS:BPSK

GSM850 TX: 824.2 ~ 848.8 MHz; RX: 869.2 ~ 893.8 MHz

PCS1900 TX: 1850.2 ~ 1909.8 MHz; RX: 1930.2 ~ 1989.8 MHz

UMTS-FDD Band V TX: 826.4 ~ 846.6 MHz; RX: 871.4 ~ 891.6 MHz

RF Operating Frequency (ies): UMTS-FDD Band IV TX:1712.4 ~ 1752.6 MHz;

RX: 2112.4 ~ 2152.6 MHz

UMTS-FDD Band II TX:1852.4 ~ 1907.6 MHz;

RX: 1932.4 ~ 1987.6 MHz



Number of Channels:

Test Report	17070358-FCC-R2
Page	7 of 67

WIFI: 802.11b/g/n(20M): 2412-2462 MHz WIFI: 802.11n(40M): 2422-2452 MHz Bluetooth& BLE: 2402-2480 MHz

GPS: 1575.42 MHz

Max. Output Power: 0.657dBm

GSM 850: 124CH PCS1900: 299CH

UMTS-FDD Band V: 102CH UMTS-FDD Band IV: 202CH UMTS-FDD Band II: 277CH

WIFI :802.11b/g/n(20M): 11CH WIFI :802.11n(40M): 7CH

Bluetooth: 79CH

BLE: 40CH GPS:1CH

Port: USB Port, Earphone Port

Adapter:

Model: TPA-46050200UU

Input: AC100-240V~50/60Hz,0.3A

Output: DC 5.0V,1.5A

Input Power: Battery:

Model: C716041300P

Spec: 3.8V,3000mAh,11.4Wh

Voltage: 4.35V

Trade Name :

FCC ID: YHLBLUR2II

GPRS/ EGPRS Multi-slot class 8/10/12



Test Report	17070358-FCC-R2
Page	8 of 67

### 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
§15.247(a)(1)	Channel Separation	Compliance
§15.247(a)(1)	20 dB Bandwidth	Compliance
§15.247(b)(1)	Peak Output Power	Compliance
§15.247(a)(1)(iii)	Number of Hopping Channel	Compliance
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Compliance
§15.247(d)	Band Edge& Restricted Band	Compliance
§15.207(a)	AC Line Conducted Emissions	Compliance
§15.205, §15.209, §15.247(d)	Radiated Emissions& Restricted Band	Compliance

### **Measurement Uncertainty**

Emissions			
Test Item	Description	Uncertainty	
Band Edge& Restricted  Band and Radiated  Emissions& Restricted  Band	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	
-	-	-	



Test Report	17070358-FCC-R2
Page	9 of 67

#### 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.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### Antenna Connector Construction

The EUT has 3 antennas:

A permanently attached PIFA antenna for GSM /PCS/ UMTS-FDD Band V/ IV/ II, the gain is -2.6dBi for GSM/ UMTS-FDD Band V, the gain is 0.7dBi for PCS/ UMTS-FDD Band II, the gain is 0.5dBi for UMTS-FDD Band IV.

A permanently attached PIFA antenna for Bluetooth/WIFI/BLE/GPS, the gain is -2.7dBi for Bluetooth/ WIFI/BLE, the gain is -2.9dBi for GPS.

The antenna meets up with the ANTENNA REQUIREMENT.

Result: Compliance.



Test Report	17070358-FCC-R2
Page	10 of 67

### 6.2 Channel Separation

Temperature	26 °C
Relative Humidity	56%
Atmospheric Pressure	1022mbar
Test date :	June 26, 2017
Tested By :	Loren Luo

#### Requirement(s):

Requirement(s):						
Spec	Item	Item Requirement Appl				
		Channel Separation < 20dB BW and 20dB BW <	<b>~</b>			
\$ 45 247(0)(4)	۵۱	25KHz ; Channel Separation Limit=25KHz				
§ 15.247(a)(1)	(a)	Chanel Separation < 20dB BW and 20dB BW >				
		25kHz; Channel Separation Limit=2/3 20dB BW				
Test Setup		Spectrum Analyzer EUT				
	The t	est follows FCC Public Notice DA 00-705 Measurement	Guidelines.			
	Use the following spectrum analyzer settings:					
	-	- The EUT must have its hopping function enabled				
	- Span = wide enough to capture the peaks of two adjacent					
	channels					
	- Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span					
Test Procedure	- Video (or Average) Bandwidth (VBW) ≥ RBW					
Tool Toolaaro	- Sweep = auto					
	- Detector function = peak					
	- Trace = max hold					
	- Allow the trace to stabilize. Use the marker-delta function to					
	determine the separation between the peaks of the adjacent					
		channels. The limit is specified in one of the subparagra	aphs of this			
		Section. Submit this plot.				



Test Report	17070358-FCC-R2
Page	11 of 67

Rema	rk				
Resu	lt	Pass	Fail		
Test Data	Yes	<b>3</b>	N/A		
Test Plot	Ye	s (See below)	□ <sub>N/A</sub>		

### Channel Separation measurement result

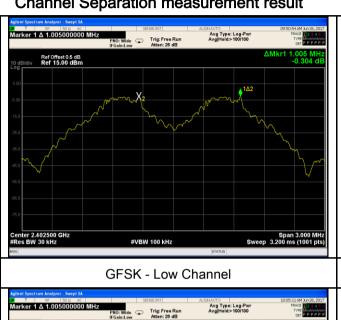
Type/ Modulation	СН	CH Frequency (MHz)	CH Separation (MHz)	Limit (MHz)	Result
	Low Channel	2402	1.005	0.691	Pass
	Adjacency Channel	2403	1.005	0.091	F d 5 5
CH Separation	Mid Channel	2440	1.002	0.683	Pass
GFSK	Adjacency Channel	2441	1.002	0.063	P d 5 5
	High Channel	2480	1.005	0.689	Pass
	Adjacency Channel	2479	1.005	0.069	Pass
	Low Channel	2402	1.002	0.857	Pass
	Adjacency Channel	2403	1.002	0.657	Pass
CH Separation	Mid Channel	2440	1.002	0.857	Dees
π /4 DQPSK	Adjacency Channel	2441	1.002	0.657	Pass
	High Channel	2480	1.005	0.050	Dees
	Adjacency Channel	2479	1.005	0.858	Pass
	Low Channel	2402	4.000	0.057	Desa
	Adjacency Channel	2403	1.002	0.857	Pass
CH Separation	Mid Channel	2440	4.000	0.050	Desa
8DPSK	Adjacency Channel	2441	1.002	0.859	Pass
	High Channel	2480	1.002	0.860	Door
	Adjacency Channel	2479	1.002	0.000	Pass



Test Report	17070358-FCC-R2
Page	12 of 67

#### **Test Plots**

### Channel Separation measurement result







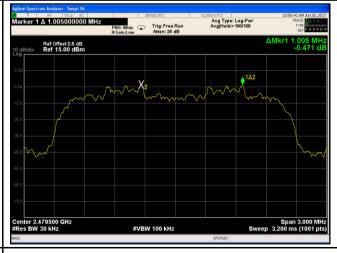




GFSK - High Channel







 $\pi$  /4 DQPSK - Middle Channel

 $\pi$  /4 DQPSK - High Channel



Test Report	17070358-FCC-R2
Page	13 of 67





8DPSK - Low Channel



8DPSK - High Channel

8DPSK - Middle Channel



Test Report	17070358-FCC-R2
Page	14 of 67

### 6.3 20dB Bandwidth

Temperature	26 °C
Relative Humidity	56%
Atmospheric Pressure	1022mbar
Test date :	June 26, 2017
Tested By:	Loren Luo

Requirement(s):						
Spec	Item	Requirement Applicable				
		Frequency hopping systems shall have hopping				
§15.247(a)	a)	channel carrier frequencies separated by a minimum	<b>V</b>			
(1)	a)	of 25 kHz or the 20 dB bandwidth of the hopping				
		channel, whichever is greater.				
Test Setup		Spectrum Analyzer EUT				
	The te	st follows FCC Public Notice DA 00-705 Measurement Gu	ıidelines.			
	Use th	e following spectrum analyzer settings:				
	- Span = approximately 2 to 3 times the 20 dB bandwidth, centered on					
	a hopping channel					
	- RBW ≥ 1% of the 20 dB bandwidth					
	- VBW≥ RBW					
Test	- Sweep = auto					
Procedure	- Detector function = peak					
Flocedule	- Trace = max hold.					
	- The EUT should be transmitting at its maximum data rate. Allow the					
	trace to stabilize. Use the marker-to-peak function to set the marker					
	to the peak of the emission. Use the marker-delta function to					
	measure 20 dB down one side of the emission. Reset the marker-					
		delta function, and move the marker to the other side of the				
		emission, until it is (as close as possible to) even with the	reference			



Test Report	17070358-FCC-R2
Page	15 of 67

_			
		marker le	evel. The marker-delta reading at this point is the 20 dB
		bandwid	th of the emission. If this value varies with different modes of
		operation	n (e.g., data rate, modulation format, etc.), repeat this test for
		each var	iation. The limit is specified in one of the subparagraphs of
		this Sect	ion. Submit this plot(s).
Remark			
Result		Pass	□ Fail
Test Data	Y	´es	N/A
Test Plot	V	es (See helow)	N/A

### Measurement result

Modulation	СН	CH Frequency	20dB Bandwidth	99% Occupied
Modulation		(MHz)	(MHz)	Bandwidth (MHz)
	Low	2402	1.036	0.8970
GFSK	Mid	2441	1.025	0.9020
	High	2480	1.033	0.8938
π /4 DQPSK	Low	2402	1.286	1.1708
	Mid	2441	1.285	1.1652
	High	2480	1.287	1.1661
8-DPSK	Low	2402	1.285	1.1672
	Mid	2441	1.288	1.1670
	High	2480	1.290	1.1695



Test Report	17070358-FCC-R2
Page	16 of 67

#### **Test Plots**

#### 20dB Bandwidth measurement result

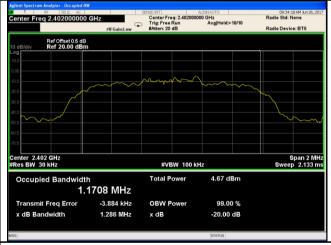




GFSK - Low Channel







GFSK - High Channel

π /4 DPSK - Low Channel



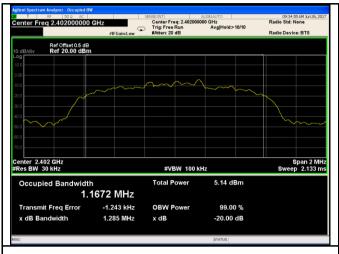


π /4 DQPSK - Middle Channel

π /4 DQPSK - High Channel



Test Report	17070358-FCC-R2
Page	17 of 67





8DPSK - Low Channel



8DPSK - High Channel

8DPSK - Middle Channel



Test Report	17070358-FCC-R2
Page	18 of 67

### 6.4 Peak Output Power

Temperature	26 °C
Relative Humidity	56%
Atmospheric Pressure	1022mbar
Test date :	June 26, 2017
Tested By:	Loren Luo

### Requirement(s):

Spec	Item	Requirement Applicable		
	a)	FHSS in 2400-2483.5MHz with ≥ 75 channels: ≤ 1	<b>V</b>	
		Watt		
	b)	FHSS in 5725-5850MHz: ≤ 1 Watt		
§15.247(b)	c)	For all other FHSS in the 2400-2483.5MHz band:	<b>~</b>	
(3)	<u> </u>	≤ 0.125 Watt.		
(3)	d)	FHSS in 902-928MHz with ≥ 50 channels: ≤ 1 Watt		
	0)	FHSS in 902-928MHz with ≥ 25 & <50 channels:		
	e)	≤ 0.25 Watt		
	f)	DTS in 902 <u>-928MHz, 2400</u> -2483.5MHz: ≤ 1 Watt		
Test Setup	Spectrum Analyzer EUT			
	The test follows FCC Public Notice DA 00-705 Measurement Guidelines.			
	Use the following spectrum analyzer settings:			
	- Span = approximately 5 times the 20 dB bandwidth, centered on a			
	hopping channel			
Test	- RBW > the 20 dB bandwidth of the emission being measured			
Procedure	- VBW≥ RBW			
	- Sweep = auto			
	- Detector function = peak			
	- Trace = max hold			
	- Allow the trace to stabilize.			



Test Report	17070358-FCC-R2
Page	19 of 67

	- Use the marker-to-peak function to set the marker to the peak of the
	emission. The indicated level is the peak output power (see the note
	above regarding external attenuation and cable loss). The limit is
	specified in one of the subparagraphs of this Section. Submit this
	plot. A peak responding power meter may be used instead of a
	spectrum analyzer.
Remark	
Result	Pass Fail
Test Data	Yes N/A

### Peak Output Power measurement result

Test Plot 

Yes (See below) 

N/A

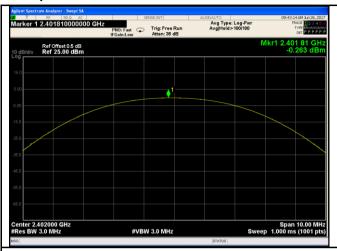
Туре	Modulation	СН	Frequenc y (MHz)	Conducted Power (dBm)	Limit (mW)	Result
		Low	2402	-0.263	125	Pass
	GFSK	Mid	2441	0.588	125	Pass
		High	2480	0.657	125	Pass
Outtout		Low	2402	-0.844	125	Pass
Output	π /4 DQPSK	Mid	2441	0.326	125	Pass
power		High	2480	0.504	125	Pass
	8-DPSK	Low	2402	-0.369	125	Pass
		Mid	2441	0.482	125	Pass
		High	2480	0.491	125	Pass



Test Report	17070358-FCC-R2
Page	20 of 67

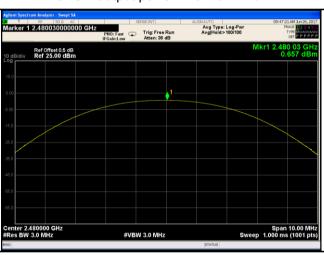
#### **Test Plots**

#### Output Power measurement result





GFSK Output power - Low CH 2402



GFSK Output power - Mid CH 2441



GFSK Output power - High CH 2480



π /4 DQPSK Output power - Low CH 2402

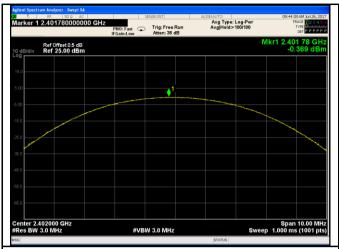


 $\pi$  /4 DQPSK Output power - Mid CH 2441

 $\pi$  /4 DQPSK Output power - High CH 2480



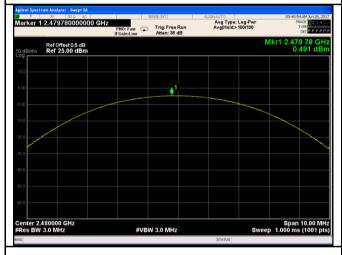
Test Report	17070358-FCC-R2
Page	21 of 67





8DPSK Output power - Low CH 2402

8DPSK Output power - Mid CH 2441



8DPSK Output power - High CH 2480



Test Report	17070358-FCC-R2
Page	22 of 67

### 6.5 Number of Hopping Channel

Temperature	26 °C
Relative Humidity	56%
Atmospheric Pressure	1022mbar
Test date :	June 26, 2017
Tested By :	Loren Luo

Requirement(s):					
Spec	Item	Requirement	Applicable		
§15.247(a) (1)(iii)	a)	FHSS in 2400-2483.5MHz ≥ 15 channels	V		
Test Setup		Spectrum Analyzer EUT			
	The te	st follows FCC Public Notice DA 00-705 Measurement Gu	idelines.		
	Use the	e following spectrum analyzer settings:			
	The El	JT must have its hopping function enabled.			
	-	- Span = the frequency band of operation			
	<ul> <li>RBW ≥ 1% of the span</li> <li>VBW ≥ RBW</li> <li>Sweep = auto</li> <li>Detector function = peak</li> <li>Trace = max hold</li> </ul>				
_ ,					
Test					
Procedure					
	- Allow trace to fully stabilize.				
	- It may prove necessary to break the span up to sections, in order to				
	clearly show all of the hopping frequencies. The limit is specified in				
	one of the subparagraphs of this Section. Submit this plot(s).				
Remark					
Result	Pas	Fail			
Test Data	Yes	N/A			
Test Plot	Yes (See	e below) N/A			



Test Report	17070358-FCC-R2
Page	23 of 67

### Number of Hopping Channel measurement result

Туре	Modulation	Frequency Range	Number of Hopping Channel	Limit
Number	GFSK	2400-2483.5	79	15
Number of	π /4 DQPSK	2400-2483.5	79	15
Hopping Channel	8-DPSK	2400-2483.5	79	15

#### **Test Plots**

### Number of Hopping Channels measurement result





Test Report	17070358-FCC-R2
Page	24 of 67

## 6.6 Time of Occupancy (Dwell Time)

Temperature	26 °C
Relative Humidity	56%
Atmospheric Pressure	1022mbar
Test date :	June 26, 2017
Tested By :	Loren Luo

### Requirement(s):

Spec	Item	Requirement	Applicable
§15.247(a) (1)(iii)	a)	Dwell Time < 0.4s	<b>&gt;</b>
Test Setup		Spectrum Analyzer EUT	
Test Procedure	Use th	The test follows FCC Public Notice DA 00-705 Measurement Guidelines.  Use the following spectrum analyzer  - Span = zero span, centered on a hopping channel  - RBW = 1 MHz  - VBW ≥ RBW  - Sweep = as necessary to capture the entire dwell time per hopping channel	
Remark			
Result	Pas	s Fail	

Test Data	Yes	□ <sub>N/A</sub>
Test Plot	Yes (See below)	□ <sub>N/A</sub>



Test Report	17070358-FCC-R2
Page	25 of 67

### Dwell Time measurement result

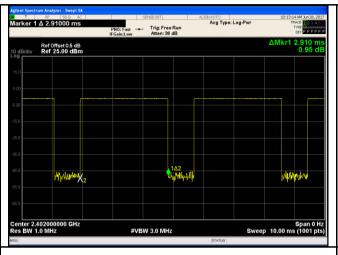
Tymo	Modulation	СН	Pulse Width	Dwell Time	Limit	Result
Туре	Modulation		(ms)	(ms)	(ms)	Result
		Low	2.910	310.400	400	Pass
	GFSK	Mid	2.930	312.533	400	Pass
		High	2.890	308.267	400	Pass
	π /4 DQPSK Mid 2.910 310.400 40	400	Pass			
Dwell Time		Mid	2.910	310.400	400	Pass
		High	2.930	312.533	400	Pass
			2.930	312.533	400	Pass
	8-DPSK	Mid	2.920	311.467	400	Pass
		High	2.920	311.467	400	Pass
Note: Dwell time=Pulse Time (ms) × (1600 ÷ 6 ÷ 79) ×31.6						



Test Report	17070358-FCC-R2
Page	26 of 67

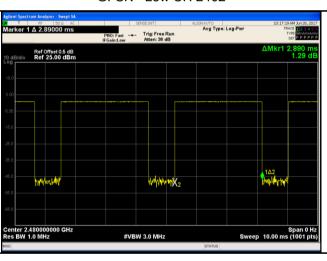
#### **Test Plots**

#### **Dwell Time measurement result**

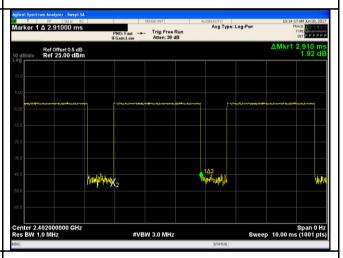




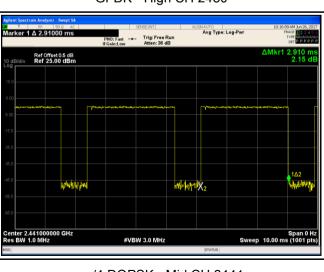
GFSK - Low CH 2402



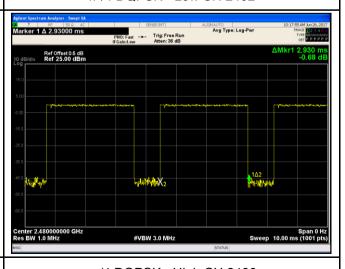
GFSK - Mid CH 2441



GFDK - High CH 2480



 $\pi$  /4 DQPSK - Low CH 2402

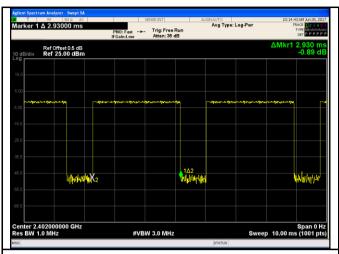


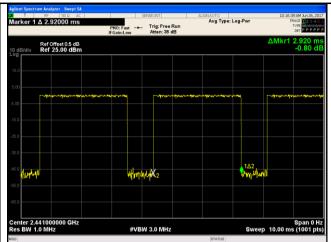
 $\pi$  /4 DQPSK - Mid CH 2441

 $\pi$  /4 DQPSK - High CH 2480  $\,$ 

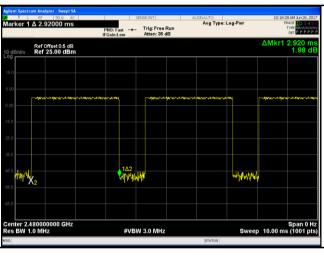


Test Report	17070358-FCC-R2
Page	27 of 67





8DPSK - Low CH 2402



8DPSK - High CH 2480

8DPSK - Mid CH 2441



Test Report	17070358-FCC-R2
Page	28 of 67

## 6.7 Band Edge & Restricted Band

Temperature	25 °C
Relative Humidity	57%
Atmospheric Pressure	1014mbar
Test date :	June 20, 2017
Tested By:	Loren Luo

### Requirement(s):

Spec	Item	Requirement	Applicable
§15.247(a) (1)(iii)	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.		V
Test Setup	Ant. Tower  Support Units  Turn Table  Ground Plane  Test Receiver		
Test Procedure	The test follows FCC Public Notice DA 00-705 Measurement Guidelines.  Radiated Method Only  - 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.  - 2. 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,		



Test Report	17070358-FCC-R2
Page	29 of 67

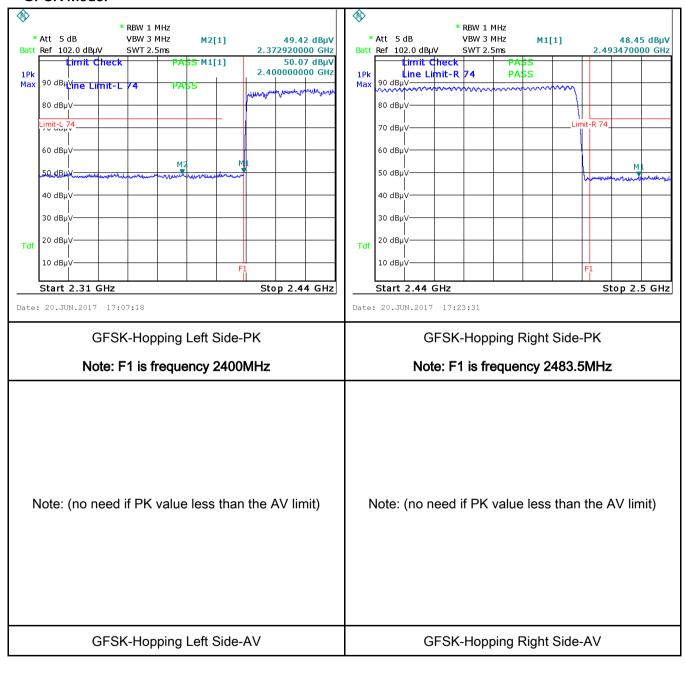
	and make sure the instrument is operated in its linear range.
	- 3. First, set both RBW and VBW of spectrum analyzer to 100 kHz with a
	convenient frequency span including 100kHz bandwidth from band edge, check
	the emission of EUT, if pass then set Spectrum Analyzer as below:
	a. The resolution bandwidth and video bandwidth of test receiver/spectrum
	analyzer is 120 kHz for Quasiy Peak detection at frequency below 1GHz.
	b. 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.
	c. 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.
	- 4. 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.
	- 5. Repeat above procedures until all measured frequencies were complete.
Remark	
Nemark	
Result	Pass Fail
Test Data	Yes N/A
Test Plot	Yes (See below)
. 550 1 100	100 (000 20.011)



Test Report	17070358-FCC-R2
Page	30 of 67

#### **Test Plots**

#### **GFSK Mode:**





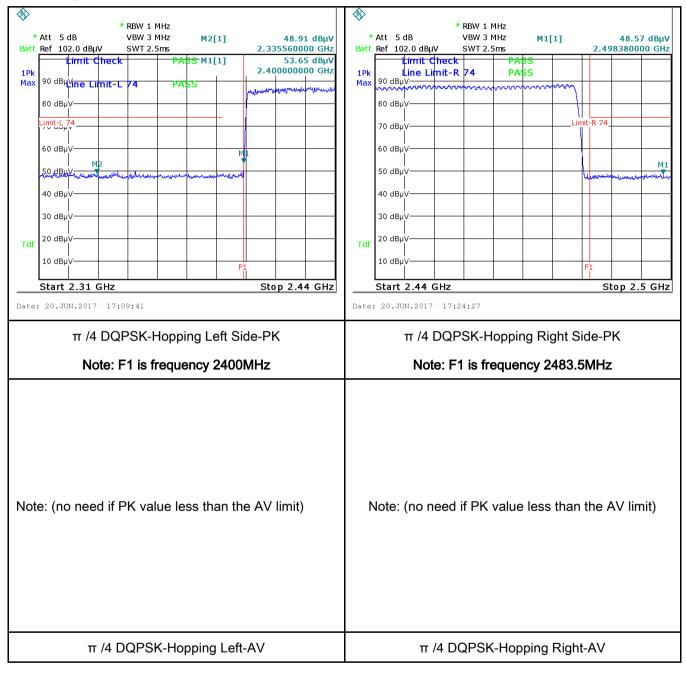
Test Report	17070358-FCC-R2
Page	31 of 67





Test Report	17070358-FCC-R2
Page	32 of 67

#### π /4 DQPSK Mode:





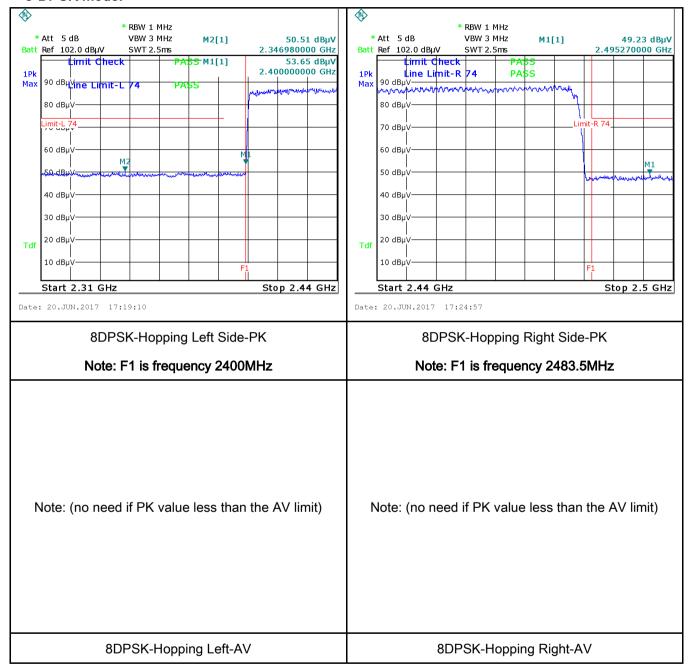
Test Report	17070358-FCC-R2	
Page	33 of 67	





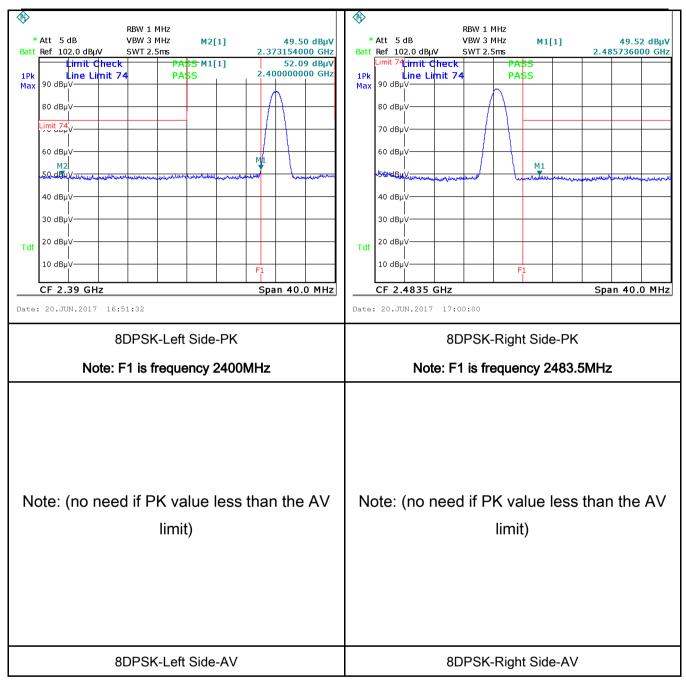
Test Report	17070358-FCC-R2
Page	34 of 67

#### 8-DPSK Mode:





Test Report	17070358-FCC-R2
Page	35 of 67





Test Report	17070358-FCC-R2
Page	36 of 67

### 6.8 AC Power Line Conducted Emissions

Temperature	25 °C
Relative Humidity	55%
Atmospheric Pressure	1017mbar
Test date :	June 23, 2017
Tested By :	Loren Luo

### Requirement(s):

Spec	Item	Requirement			Applicable
47CFR§15. 207, RSS210	a)	For Low-power radio-frequency devices that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 [mu]H/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequencies ranges.			<b>&gt;</b>
(A8.1)		Frequency ranges	Limit (	. ,	
		(MHz) 0.15 ~ 0.5	66 – 56	Average 56 – 46	
		0.5 ~ 5	56	46	
		5 ~ 30	60	50	
Test Setup    Vertical Ground Reference Plane					
Procedure	<ol> <li>The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table.</li> <li>The power supply for the EUT was fed through a 50W/50mH EUT LISN, connected to filtered mains.</li> <li>The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss</li> </ol>				



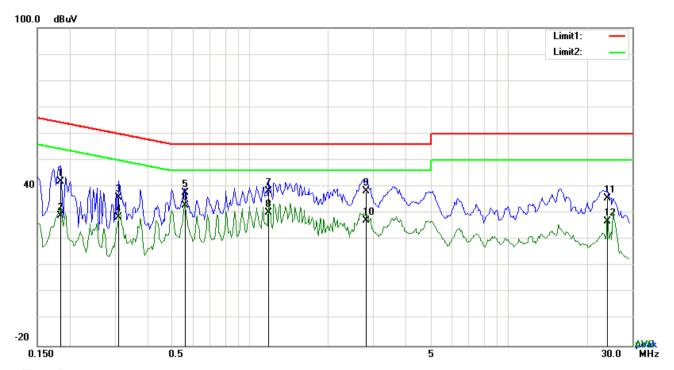
Test Report	17070358-FCC-R2
Page	37 of 67

	coaxial cable.
	4. All other supporting equipment were powered separately from another main supply.
	5. The EUT was switched on and allowed to warm up to its normal operating condition.
	6. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power)
	over the required frequency range using an EMI test receiver.
	7. High peaks, relative to the limit line, The EMI test receiver was then tuned to the
	selected frequencies and the necessary measurements made with a receiver bandwidth
	setting of 10 kHz.
	8. Step 7 was then repeated for the LIVE line (for AC mains) or DC line (for DC power).
Remark	
Result	Pass Fail
Test Data	Yes N/A
Test Plot	Yes (See below)



Test Report	17070358-FCC-R2
Page	38 of 67

Test Mode:	Bluetooth Mode
i est ivioue.	Didelooti iviode



### Test Data

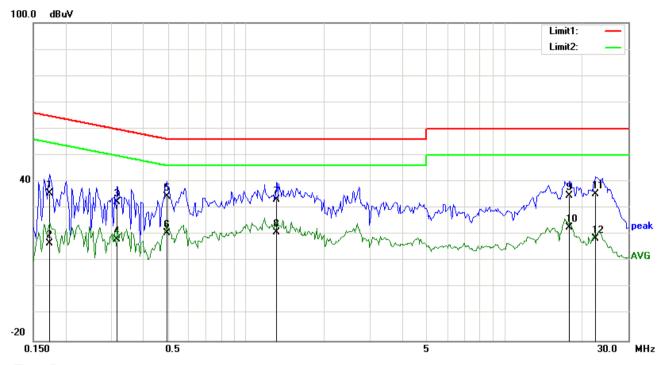
## Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.1851	31.87	QP	10.03	41.90	64.25	-22.35
2	L1	0.1851	18.94	AVG	10.03	28.97	54.25	-25.28
3	L1	0.3099	25.93	QP	10.03	35.96	59.97	-24.01
4	L1	0.3099	18.45	AVG	10.03	28.48	49.97	-21.49
5	L1	0.5595	27.60	QP	10.03	37.63	56.00	-18.37
6	L1	0.5595	23.05	AVG	10.03	33.08	46.00	-12.92
7	L1	1.1757	28.27	QP	10.03	38.30	56.00	-17.70
8	L1	1.1757	20.10	AVG	10.03	30.13	46.00	-15.87
9	L1	2.8176	28.26	QP	10.05	38.31	56.00	-17.69
10	L1	2.8176	17.21	AVG	10.05	27.26	46.00	-18.74
11	L1	24.0288	25.23	QP	10.38	35.61	60.00	-24.39
12	L1	24.0288	16.52	AVG	10.38	26.90	50.00	-23.10



Test Report	17070358-FCC-R2
Page	39 of 67

Test Mode:	Bluetooth Mode



### Test Data

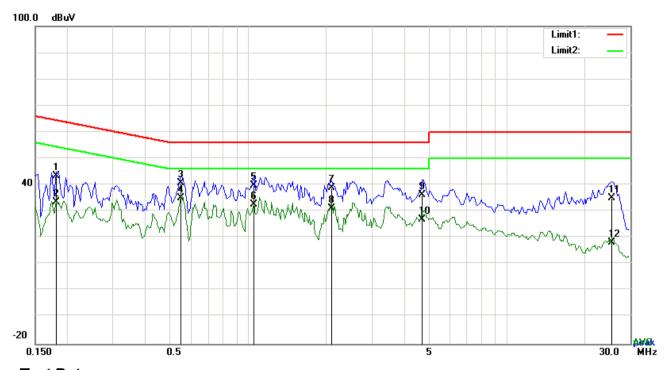
### Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	N	0.1734	25.72	QP	10.02	35.74	64.80	-29.06
2	N	0.1734	6.61	AVG	10.02	16.63	54.80	-38.17
3	N	0.3177	22.36	QP	10.02	32.38	59.77	-27.39
4	N	0.3177	8.31	AVG	10.02	18.33	49.77	-31.44
5	N	0.4932	24.41	QP	10.02	34.43	56.11	-21.68
6	N	0.4932	10.65	AVG	10.02	20.67	46.11	-25.44
7	N	1.3161	23.37	QP	10.03	33.40	56.00	-22.60
8	N	1.3161	10.85	AVG	10.03	20.88	46.00	-25.12
9	N	17.8083	24.67	QP	10.23	34.90	60.00	-25.10
10	N	17.8083	12.51	AVG	10.23	22.74	50.00	-27.26
11	N	22.4649	24.94	QP	10.30	35.24	60.00	-24.76
12	N	22.4649	8.23	AVG	10.30	18.53	50.00	-31.47



Test Report	17070358-FCC-R2
Page	40 of 67

Test Mode: Bluetooth Mode



### Test Data

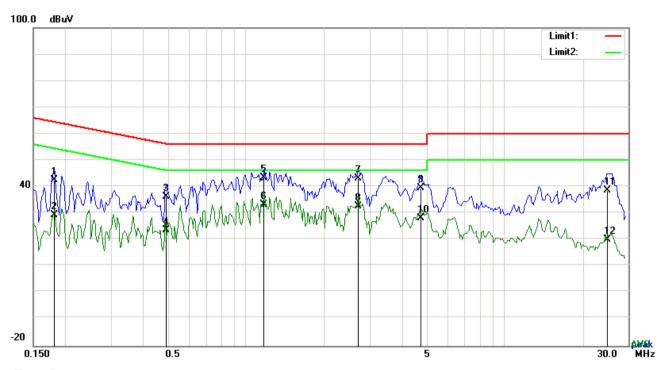
## Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.1812	33.28	QP	10.03	43.31	64.43	-21.12
2	L1	0.1812	23.63	AVG	10.03	33.66	54.43	-20.77
3	L1	0.5478	30.80	QP	10.03	40.83	56.00	-15.17
4	L1	0.5478	25.16	AVG	10.03	35.19	46.00	-10.81
5	L1	1.0509	29.95	QP	10.03	39.98	56.00	-16.02
6	L1	1.0509	22.63	AVG	10.03	32.66	46.00	-13.34
7	L1	2.1000	28.81	QP	10.04	38.85	56.00	-17.15
8	L1	2.1000	21.08	AVG	10.04	31.12	46.00	-14.88
9	L1	4.7160	26.28	QP	10.08	36.36	56.00	-19.64
10	L1	4.7160	16.73	AVG	10.08	26.81	46.00	-19.19
11	L1	25.4640	24.74	QP	10.40	35.14	60.00	-24.86
12	L1	25.4640	7.70	AVG	10.40	18.10	50.00	-31.90



Test Report	17070358-FCC-R2
Page	41 of 67

Test Mode: Bluetooth Mode



### Test Data

### Phase Neutral Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	N	0.1812	32.43	QP	10.02	42.45	64.43	-21.98
2	N	0.1812	19.37	AVG	10.02	29.39	54.43	-25.04
3	N	0.4893	26.20	QP	10.02	36.22	56.18	-19.96
4	N	0.4893	13.77	AVG	10.02	23.79	46.18	-22.39
5	N	1.1718	33.47	QP	10.03	43.50	56.00	-12.50
6	N	1.1718	23.21	AVG	10.03	33.24	46.00	-12.76
7	N	2.7201	33.03	QP	10.05	43.08	56.00	-12.92
8	N	2.7201	22.70	AVG	10.05	32.75	46.00	-13.25
9	N	4.7277	29.54	QP	10.07	39.61	56.00	-16.39
10	N	4.7277	17.97	AVG	10.07	28.04	46.00	-17.96
11	N	25.0272	28.30	QP	10.34	38.64	60.00	-21.36
12	N	25.0272	9.84	AVG	10.34	20.18	50.00	-29.82



Test Report	17070358-FCC-R2
Page	42 of 67

# 6.9 Radiated Emissions & Restricted Band

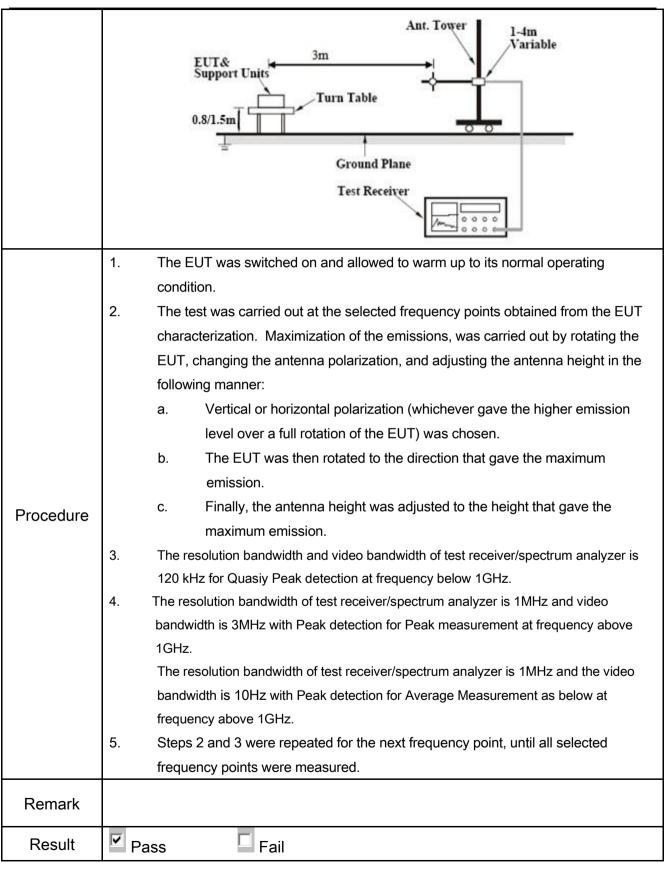
Temperature	25 °C
Relative Humidity	55%
Atmospheric Pressure	1017mbar
Test date :	June 23, 2017
Tested By:	Loren Luo

### Requirement(s):

Spec	Item	Requirement Applicable							
47CFR§15.		Except higher limit as specified else emissions from the low-power radio exceed the field strength levels specified the level of any unwanted emissions the fundamental emission. The tight edges							
205,	2)	Frequency range (MHz)	Field Strength (µV/m)						
§15.209,	a)	0.009~0.490	2400/F(KHz)	<b>~</b>					
§15.247(d)		0.490~1.705	24000/F(KHz)						
310.247 (d)		1.705~30.0	30						
		30 – 88	100						
		88 – 216	150						
		216 960	200						
		Above 960	500						
Test Setup		EUT G	3 meter  RF Tes Receive						



Test Report	17070358-FCC-R2
Page	43 of 67



**Test Data** 







Test Report	17070358-FCC-R2
Page	44 of 67

**Test Plot** 

 $\square_{\mathsf{N}/\mathsf{A}}$ 

#### **Test Result:**

Test Mode: Bluetooth Mode

Frequency range: 9KHz - 30MHz

Freq.	Detection	Detection Factor Reading Result		Result	Limit@3m	Margin
(MHz)	value	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)
						>20
						>20

#### Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =40 log (specific distance/test distance)(dB);

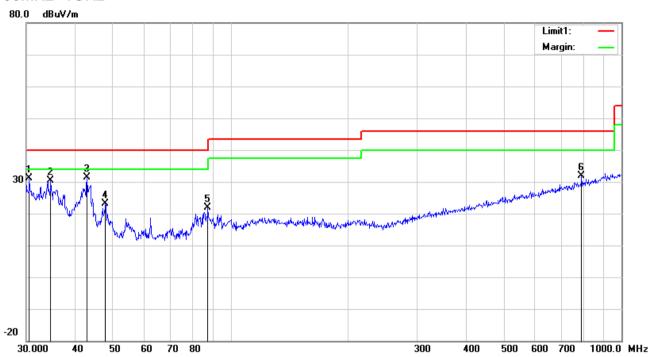
Limit line = specific limits(dBuv) + distance extrapolation factor.



Test Report	17070358-FCC-R2
Page	45 of 67

Test Mode: Bluetooth Mode

### 30MHz -1GHz



#### Test Data

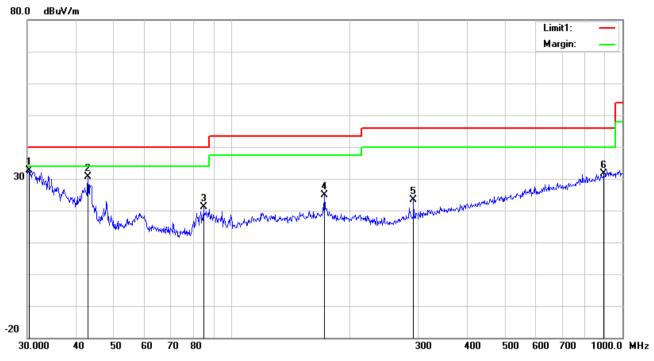
### Horizontal Polarity Plot @3m

No.	P/L	Frequency	Reading	Detect	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degr
	.,_			or								ee
		(MHz)	(dBuV/m)		(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	()
1	Н	30.5306	31.91	peak	20.99	22.28	0.63	31.25	40.00	-8.75	100	40
2	Н	34.6385	33.93	peak	17.83	22.25	0.75	30.26	40.00	-9.74	200	347
3	Н	42.8998	40.84	peak	11.99	22.29	0.77	31.31	40.00	-8.69	100	217
4	Н	47.8260	35.36	peak	9.36	22.34	0.78	23.16	40.00	-16.84	100	252
5	Н	87.4177	35.40	peak	7.90	22.35	1.01	21.96	40.00	-18.04	100	146
6	Н	790.6188	28.87	peak	21.29	21.17	2.94	31.93	46.00	-14.07	100	351



Test Report	17070358-FCC-R2
Page	46 of 67

### 30MHz -1GHz



#### Test Data

## Vertical Polarity Plot @3m

No.	P/L	Frequency	Reading	Detect	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degr
	172			or								ее
		(MHz)	(dBuV/m)		(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	()
1	V	30.3173	33.14	peak	21.16	22.28	0.63	32.65	40.00	-7.35	200	265
2	V	42.8998	40.20	peak	11.99	22.29	0.77	30.67	40.00	-9.33	100	174
3	V	84.7019	34.75	peak	7.79	22.37	1.07	21.24	40.00	-18.76	100	291
4	V	172.5988	34.23	peak	11.59	22.26	1.36	24.92	43.50	-18.58	100	331
5	V	292.0583	30.59	peak	13.25	22.29	1.78	23.33	46.00	-22.67	100	254
6	V	893.8567	26.96	peak	22.43	20.90	3.05	31.54	46.00	-14.46	100	39



Test Report	17070358-FCC-R2
Page	47 of 67

### Above 1GHz

nsmitting Mode
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#### Low Channel: GFSK Mode (Worst Case) (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	39.18	AV	V	33.67	6.86	32.66	47.05	54	-6.95
4804	38.89	AV	Н	33.67	6.86	32.66	47.7	54	-6.3
4804	48.57	PK	V	33.67	6.86	32.66	56.44	74	-17.56
4804	45.25	PK	Н	33.67	6.86	32.66	53.12	74	-20.88
17804	24.69	AV	V	45.03	11.21	32.38	48.55	54	-5.45
17804	23.57	AV	Н	45.03	11.21	32.38	48.6	54	-5.4
17804	40.89	PK	V	45.03	11.21	32.38	64.75	74	-9.25
17804	39.42	PK	Н	45.03	11.21	32.38	65.45	74	-8.55

### Middle Channel: GFSK Mode (Worst Case) (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	39.65	AV	V	33.71	6.95	32.74	47.57	54	-6.43
4882	38.52	AV	Н	33.71	6.95	32.74	46.44	54	-7.56
4882	49.51	PK	V	33.71	6.95	32.74	57.43	74	-16.57
4882	46.55	PK	Н	33.71	6.95	32.74	54.47	74	-19.53
17809	25.23	AV	V	45.15	11.18	32.41	49.15	54	-4.85
17809	23.13	AV	Н	45.15	11.18	32.41	47.05	54	-6.95
17809	40.97	PK	V	45.15	11.18	32.41	64.89	74	-9.11
17809	38.76	PK	Н	45.15	11.18	32.41	65.64	74	-8.36



Test Report	17070358-FCC-R2
Page	48 of 67

### High Channel: GFSK Mode (Worst Case) (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	39.84	AV	V	33.9	6.76	32.74	44.89	54	-9.11
4960	37.72	AV	Н	33.9	6.76	32.74	45.64	54	-8.36
4960	47.33	PK	V	33.9	6.76	32.74	55.25	74	-18.75
4960	47.01	PK	Н	33.9	6.76	32.74	54.93	74	-19.07
17819	23.1	AV	V	45.22	11.35	32.38	47.29	54	-6.71
17819	22.15	AV	Н	45.22	11.35	32.38	48.42	54	-5.58
17819	42.12	PK	V	45.22	11.35	32.38	66.31	74	-7.69
17819	41.13	PK	Н	45.22	11.35	32.38	65.32	74	-8.68

#### 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 Z-Axis were investigated. The results above show only the worst case.



Test Report	17070358-FCC-R2
Page	49 of 67

# Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted					
EMI test receiver	ESCS30	8471241027	09/16/2016	09/15/2017	~
Line Impedance	LI-125A	191106	09/24/2016	09/23/2017	~
Line Impedance	LI-125A	191107	09/24/2016	09/23/2017	~
ISN	ISN T800	34373	09/24/2016	09/23/2017	
Double Ridge Horn Antenna (1 ~18GHz)	AH-118	71283	09/23/2016	09/22/2017	<b>V</b>
Transient Limiter	LIT-153	531118	08/31/2016	08/30/2017	✓
RF conducted test					
Agilent ESA-E SERIES	E4407B	MY45108319	09/16/2016	09/15/2017	<b>~</b>
Power Splitter	1#	1#	08/31/2016	08/30/2017	<b>~</b>
DC Power Supply	E3640A	MY40004013	09/16/2016	09/15/2017	~
Radiated Emissions					
EMI test receiver	ESL6	100262	09/16/2016	09/15/2017	~
Positioning Controller	UC3000	MF780208282	11/18/2016	11/17/2017	~
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	08/31/2016	08/30/2017	✓
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/23/2017	03/22/2018	~
Active Antenna (9kHz-30MHz)	AL-130	121031	10/13/2016	10/12/2017	<b>~</b>
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/20/2016	09/19/2017	~
Double Ridge Horn Antenna (1 ~18GHz)	AH-118	71283	09/23/2016	09/22/2017	~
Universal Radio Communication Tester	CMU200	121393	09/24/2016	09/23/2017	V



Test Report	17070358-FCC-R2
Page	50 of 67

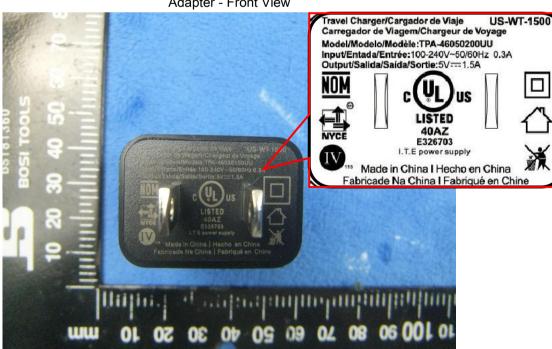
## Annex B. EUT And Test Setup Photographs

## Annex B.i. Photograph: EUT External Photo





Adapter - Front View





Test Report	17070358-FCC-R2
Page	51 of 67

**EUT - Front View** 



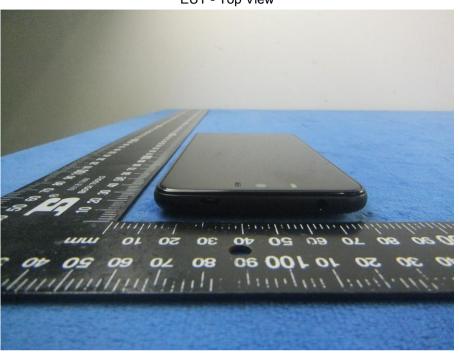
**EUT - Rear View** 





Test Report	17070358-FCC-R2
Page	52 of 67

EUT - Top View



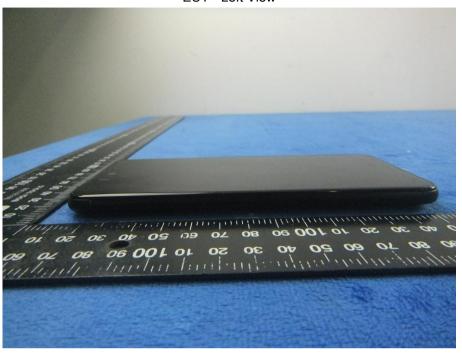
EUT - Bottom View



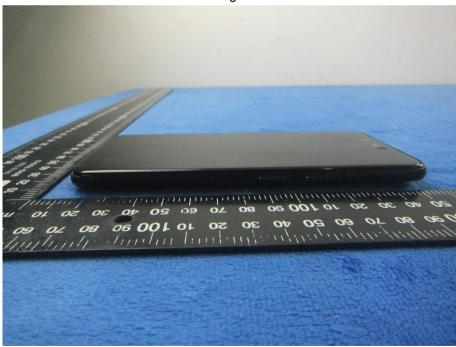


Test Report	17070358-FCC-R2
Page	53 of 67

EUT - Left View



EUT - Right View





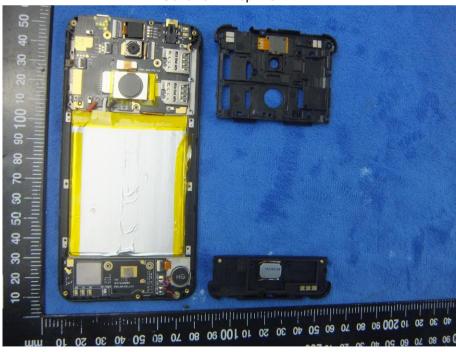
Test Report	17070358-FCC-R2
Page	54 of 67

### Annex B.ii. Photograph: EUT Internal Photo

Cover Off - Top View 1



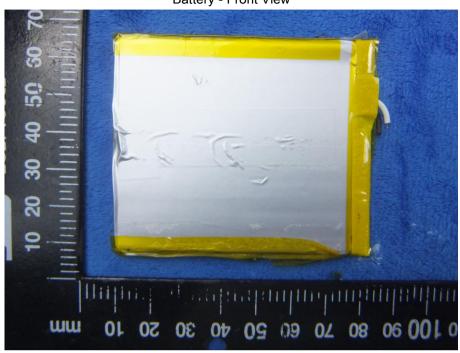
Cover Off - Top View 2





Test Report	17070358-FCC-R2	
Page	55 of 67	

Battery - Front View



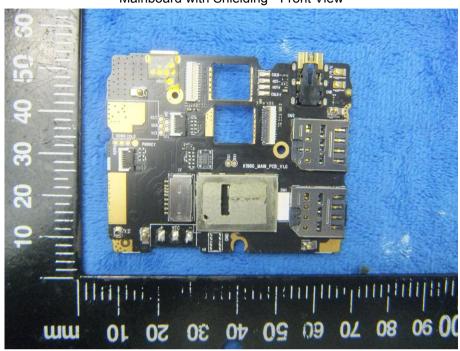
Battery - Rear View



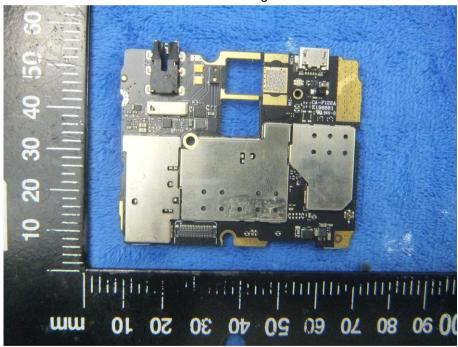


Test Report	17070358-FCC-R2	
Page	56 of 67	

Mainboard with Shielding - Front View



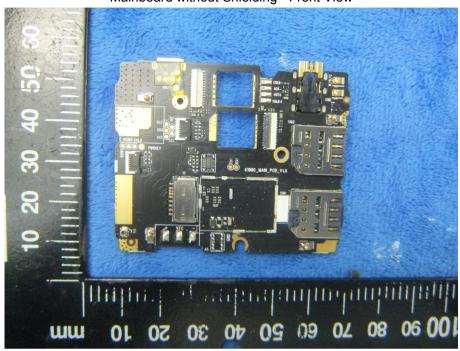
Mainboard with Shielding - Rear View



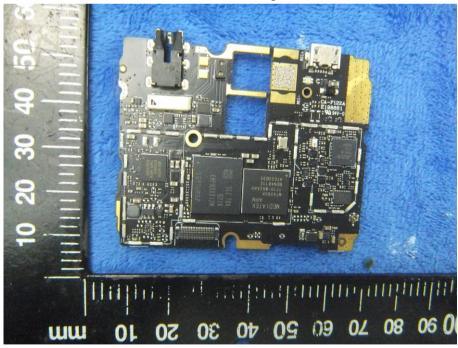


Test Report	17070358-FCC-R2	
Page	57 of 67	

Mainboard without Shielding - Front View



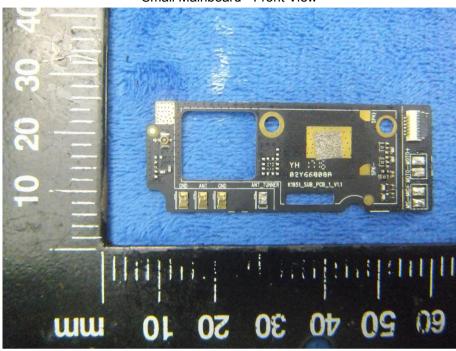
Mainboard without Shielding - Rear View



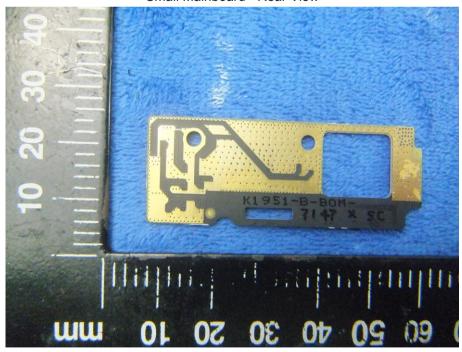


Test Report	17070358-FCC-R2	
Page	58 of 67	

#### Small Mainboard - Front View



Small Mainboard - Rear View





Test Report	17070358-FCC-R2	
Page	59 of 67	

LCD - Front View



LCD - Rear View





Test Report	17070358-FCC-R2	
Page	60 of 67	

#### GSM/PCS/UMTS - Antenna View



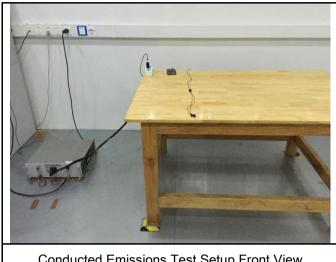
BT/WIFI - Antenna View





Test Report	17070358-FCC-R2	
Page	61 of 67	

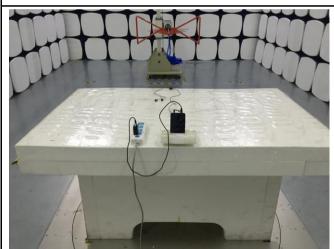
### Annex B.iii. Photograph: Test Setup Photo



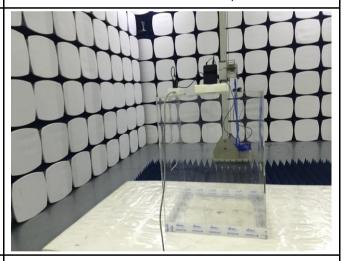
Conducted Emissions Test Setup Front View



Conducted Emissions Test Setup Side View



Radiated Spurious Emissions Test Setup Below 1GHz



Radiated Spurious Emissions Test Setup Above 1GHz

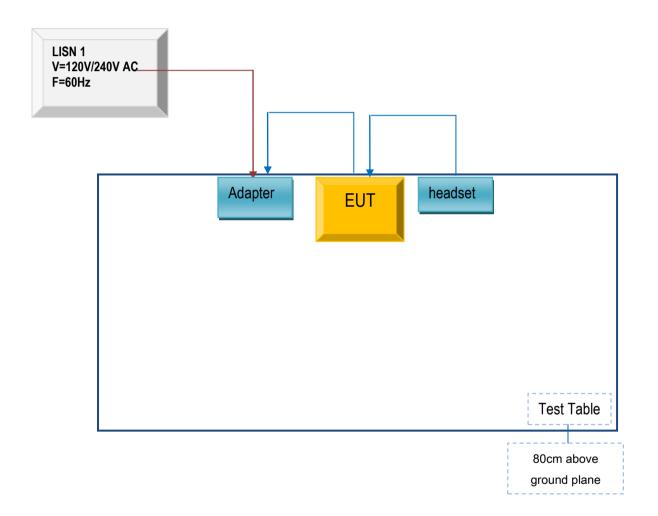


Test Report	17070358-FCC-R2	
Page	62 of 67	

## Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

### Annex C.ii. TEST SET UP BLOCK

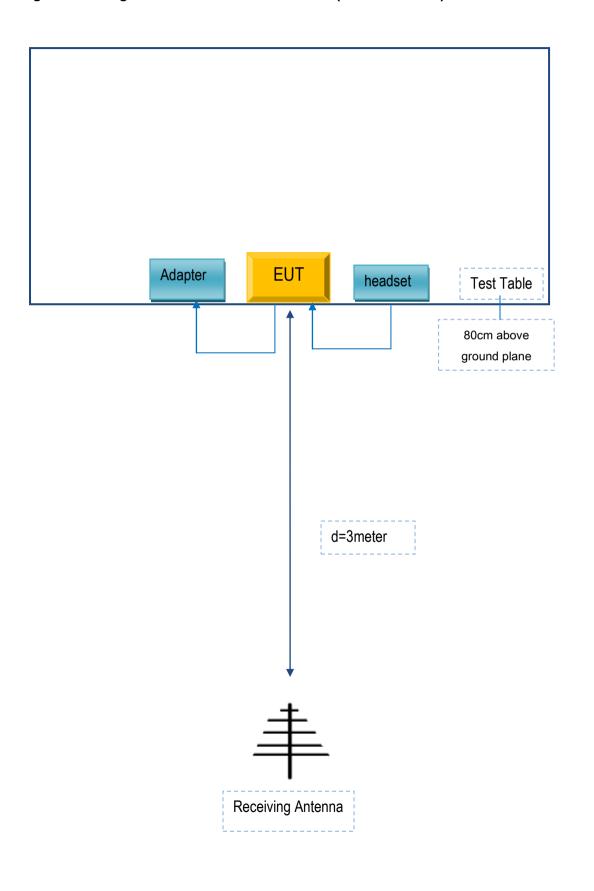
Block Configuration Diagram for AC Line Conducted Emissions





Test Report	17070358-FCC-R2	
Page	63 of 67	

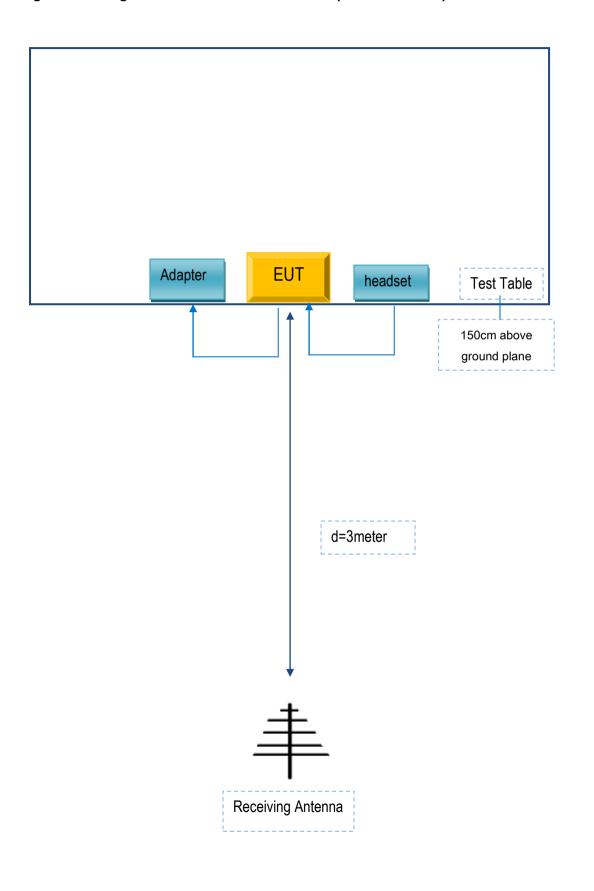
## Block Configuration Diagram for Radiated Emissions (Below 1GHz).





Test Report	17070358-FCC-R2
Page	64 of 67

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





Test R	eport	17070358-FCC-R2
Page		65 of 67

## Annex C. il. 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
BLU Products , Inc	Adapter	TPA-46B050100UU	N/A
SAMSUNG	headset	HS130	N/A

### Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
USB Cable	Un-shielding	No	0.8m	N/A



Test Report	17070358-FCC-R2
Page	66 of 67

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

Please see the attachment



Test Report	17070358-FCC-R2
Page	67 of 67

# Annex E. DECLARATION OF SIMILARITY

N/A