RF TEST REPORT



Report No.: 17070963-FCC-R3
Supersede Report No.: N/A

Applicant	BLU Products, Inc.			
Product Name	Mobile Pho	Mobile Phone		
Model No.	R2 PLUS			
Serial No.	N/A			
Test Standard	FCC Part 1	5.247: 2016,	ANSI C63.10: 2	013
Test Date	October 17	to Novembe	r 05, 2017	
Issue Date	November	06, 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			l 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 Re	eport	17070963-FCC-R3
Page		2 of 68

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.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

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	17070963-FCC-R3
Page	3 of 68

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Test Report	17070963-FCC-R3
Page	4 of 68

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	9
6.	MEASUREMENTS, EXAMINATION AND DERIVED RESULTS	10
6.1	ANTENNA REQUIREMENT	10
6.2	CHANNEL SEPARATION	11
6.3	20DB BANDWIDTH	15
6.4	PEAK OUTPUT POWER	19
6.5	NUMBER OF HOPPING CHANNEL	23
6.6	TIME OF OCCUPANCY (DWELL TIME)	25
6.7	BAND EDGE & RESTRICTED BAND	29
6.8	AC POWER LINE CONDUCTED EMISSIONS	37
6.9	RADIATED EMISSIONS & RESTRICTED BAND	43
ANI	NEX A. TEST INSTRUMENT	50
ANI	NEX B. EUT AND TEST SETUP PHOTOGRAPHS	51
ANI	NEX C. TEST SETUP AND SUPPORTING EQUIPMENT	63
ANI	NEX D. USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PARTLIST	67
ANI	NEX E. DECLARATION OF SIMILARITY	68



Test Report	17070963-FCC-R3
Page	5 of 68

1. Report Revision History

Report No.	Report Version	Description	Issue Date
17070963-FCC-R3	NONE	Original	November 06, 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

Test Lab A:

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.	535293	
IC Test Site No.	4842E-1	
Test Software	Radiated Emission Program-To Shenzhen v2.0	

Test Lab B:

Lab performing tests	SIEMIC (Nanjing-China) Laboratories
Lab Address	2-1 Longcang Avenue Yuhua Economic and
Lab Address	Technology Development Park, Nanjing, China
FCC Test Site No.	694825
IC Test Site No.	4842B-1
Test Software	EZ_EMC(ver.lcp-03A1)

Note: We just perform Radiated Spurious Emission above 18GHz in the test Lab. B.



Test Report	17070963-FCC-R3
Page	6 of 68

4. Equipment under Test (EUT) Information

Description of EUT: Mobile Phone

Main Model: R2 PLUS

Serial Model: N/A

Date EUT received: October 16, 2017

Test Date(s): October 17 to November 05, 2017

Equipment Category: DSS

GSM850: -2.8dBi PCS1900: -2.3dBi

UMTS-FDD Band V: -2.5dBi UMTS-FDD Band IV: -2.5dBi UMTS-FDD Band II: -2.5dBi

LTE Band II: -2.8dBi

Antenna Gain: LTE Band IV: -2.4dBi

LTE Band VII: -2.5dBi LTE Band XII: -2.8dBi LTE Band XVII: -3.0dBi Bluetooth/BLE: -2.7dBi

WIFI: -3.0dBi GPS: -2.9dBi

Antenna Type: PIFA Antenna

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

Type of Modulation: LTE Band: QPSK, 16QAM

802.11b/g/n: DSSS, OFDM

Bluetooth: GFSK, π /4DQPSK, 8DPSK

BLE: GFSK GPS:BPSK



Test Report	17070963-FCC-R3	
Page	7 of 68	

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

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

RF Operating Frequency (ies): LTE Band II TX: 1850.7 ~ 1909.3MHz; RX : 1930.7 ~ 1989.3 MHz

LTE Band IV TX: 1710.7 ~ 1754.3 MHz; RX: 2110.7~ 2154.3 MHz

LTE Band VII TX: 2502.5 \sim 2567.5 MHz; RX : 2622.5 \sim 2687.5 MHz

LTE Band XII TX:699.7 ~ 715.3 MHz; RX : 729.7~ 745.3MHz LTE Band XVII TX: 706.5 ~ 713.5 MHz; RX : 736.5 ~ 743.5 MHz

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: 5.357dBm

GSM 850: 124CH

PCS1900: 299CH

UMTS-FDD Band V: 102CH

UMTS-FDD Band IV: 202CH

Number of Channels: 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: US-WT-1500

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

Input Power: Output: DC 5V~1.5A

Battery:

Model: C716041300P

Spec: 3.8V, 3000mAh, 11.4Wh



Test Report	17070963-FCC-R3
Page	8 of 68

GPRS/EGPRS Multi-slot class 8/10/11/12

FCC ID: YHLBLUR2PLUS



Test Report	17070963-FCC-R3	
Page	9 of 68	

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	17070963-FCC-R3
Page	10 of 68

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 2 antennas:

A permanently attached PIFA antenna for Bluetooth/BLE/WIF/GPS, the gain is -2.7dBi for Bluetooth/BLE, the gain is -3.0dBi for WIFI, the gain is -2.9dBi for GPS.

A permanently attached PIFA antenna for GSM/PCS/UMTS/ LTE Band II/IV/VII/XII/XVII, the gain is -2.8dBi for GSM850, -2.3dBi for PCS1900, -2.5dBi for UMTS-FDD Band V/ II/ IV, the gain is -2.8dBi for LTE Band II/XII, -2.4dBi for LTE Band IV, -2.5dBi for LTE Band VII, -3.0dBi for XVII.

The antenna meets up with the ANTENNA REQUIREMENT.

Result: Compliance.



Test Report	17070963-FCC-R3	
Page	11 of 68	

6.2 Channel Separation

Temperature	25 °C		
Relative Humidity	57%		
Atmospheric Pressure	1018mbar		
Test date :	October 19, 2017		
Tested By :	Loren Luo		

Requirement(s):

Requirement(s):			1			
Spec	Item	Requirement				
§ 15.247(a)(1)		Channel Separation < 20dB BW and 20dB BW <	>			
	,	25KHz ; Channel Separation Limit=25KHz				
	(a)	Chanel Separation < 20dB BW and 20dB BW >				
		25kHz; Channel Separation Limit=2/3 20dB BW				
Test Setup	Spectrum Analyzer EUT					
	The to	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					
1001110000010	- 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 subparagraphs of this				
		Section. Submit this plot.				



Test Report	17070963-FCC-R3		
Page	12 of 68		

Rema	rk				
Resu	lt	Pass	Fail		
Test Data	Yes	.	□ _{N/A}		
Test Plot Yes (See below)		□ _{N/A}			

Channel Separation measurement result

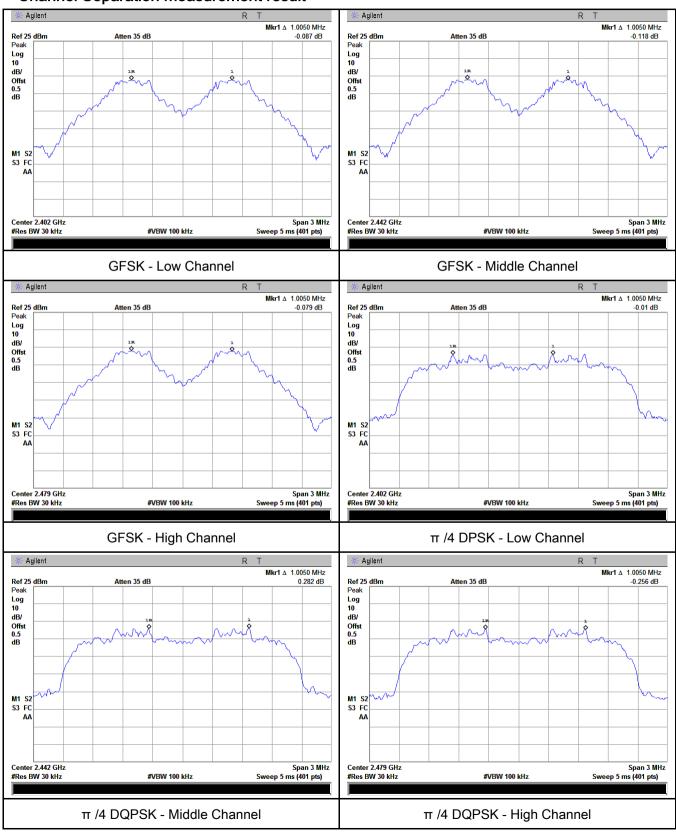
Type/ Modulation	СН	CH Frequency (MHz)	CH Separation (MHz)	Limit (MHz)	Result
	Low Channel	2402	1.005	0.963	Pass
	Adjacency Channel	2403	1.003	0.903	F d 5 5
CH Separation	Mid Channel	2440	1.005	0.685	Pass
GFSK	Adjacency Channel	2441	1.005	0.065	Pa55
	High Channel	2480	1 005	0.691	Door
	Adjacency Channel	2479	1.005	0.091	Pass
	Low Channel	2402	1.005	0.874	Pass
	Adjacency Channel	2403	1.005	0.074	Pass
CH Separation	Mid Channel	2440	1.005	0.872	Pass
π /4 DQPSK	Adjacency Channel	2441	1.005	0.672	Pass
	High Channel	2480	1.005	0.076	Desc
	Adjacency Channel	2479	1.005	0.876	Pass
	Low Channel	2402	4.005	0.070	Dese
	Adjacency Channel	2403	1.005	0.870	Pass
CH Separation	Mid Channel	2440	4.005	0.077	Desc
8DPSK	Adjacency Channel	2441	1.005	0.877	Pass
	High Channel	2480	4.005	0.074	Dess
	Adjacency Channel	2479	1.005	0.871	Pass



Test Report	17070963-FCC-R3
Page	13 of 68

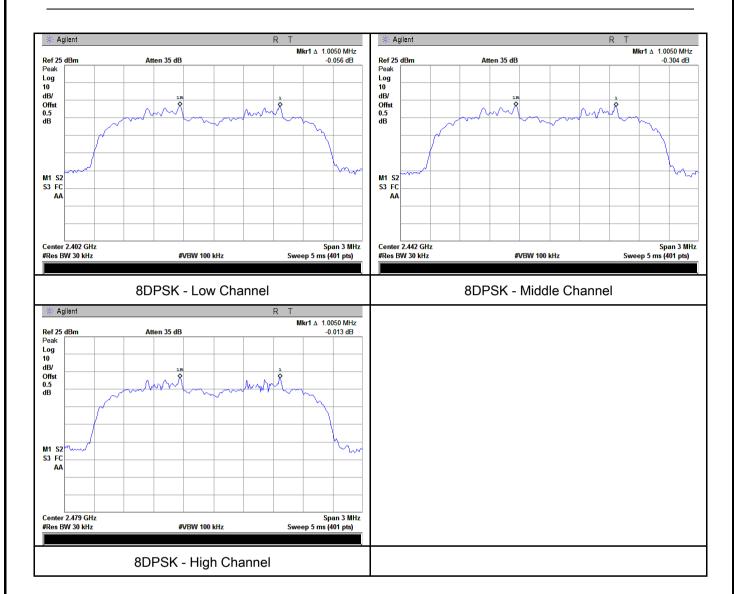
Test Plots

Channel Separation measurement result





Test Report	17070963-FCC-R3
Page	14 of 68





Test Report	17070963-FCC-R3
Page	15 of 68

6.3 20dB Bandwidth

Temperature	25 °C
Relative Humidity	57%
Atmospheric Pressure	1014mbar
Test date :	October 20, 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	V			
(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	uidelines.			
	Use the 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					
Toot	- Sweep = auto					
Test	- Detector function = peak					
Procedure	- 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	ne			
		emission, until it is (as close as possible to) even with the	reference			



Test Report	17070963-FCC-R3
Page	16 of 68

		marker	level. The marker-delta reading at this point is the 20 dB
		bandwid	dth of the emission. If this value varies with different modes of
		operatio	on (e.g., data rate, modulation format, etc.), repeat this test for
		each va	riation. The limit is specified in one of the subparagraphs of
		this Sec	ction. Submit this plot(s).
Remark			
Result		Pass	☐ Fail
Test Data	Y	es	□ _{N/A}
Test Plot	V	es (See below)	N/A

Measurement result

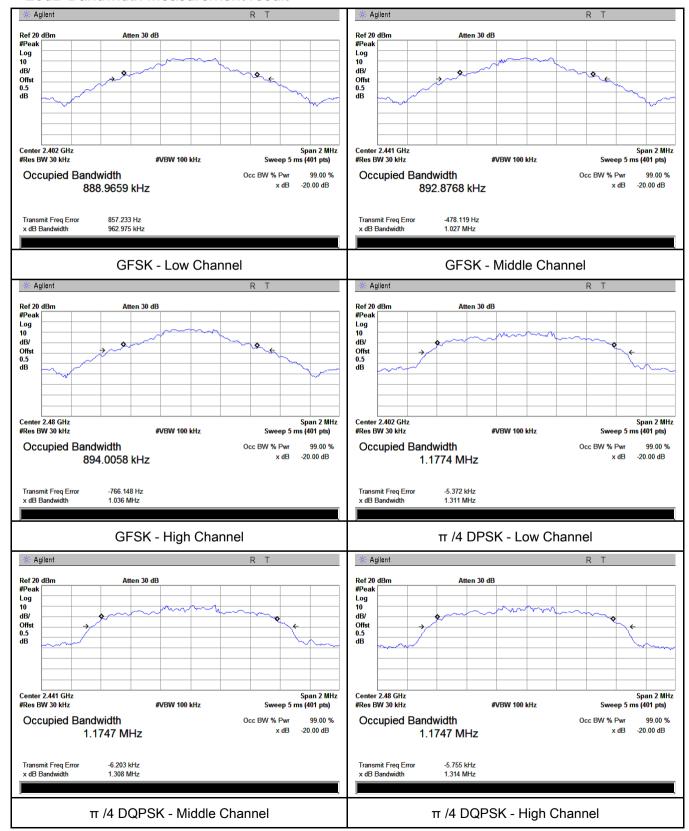
Modulation	СН	CH Frequency	20dB Bandwidth	99% Occupied
Modulation	G	(MHz)	(MHz)	Bandwidth (MHz)
	Low	2402	0.9629	0.8889
GFSK	Mid	2441	1.027	0.8929
	High	2480	1.036	0.8940
π /4 DQPSK	Low	2402	1.311	1.1774
	Mid	2441	1.308	1.1747
	High	2480	1.314	1.1747
	Low	2402	1.305	1.1921
8-DPSK	Mid	2441	1.316	1.1910
	High	2480	1.307	1.1841



Test Report	17070963-FCC-R3
Page	17 of 68

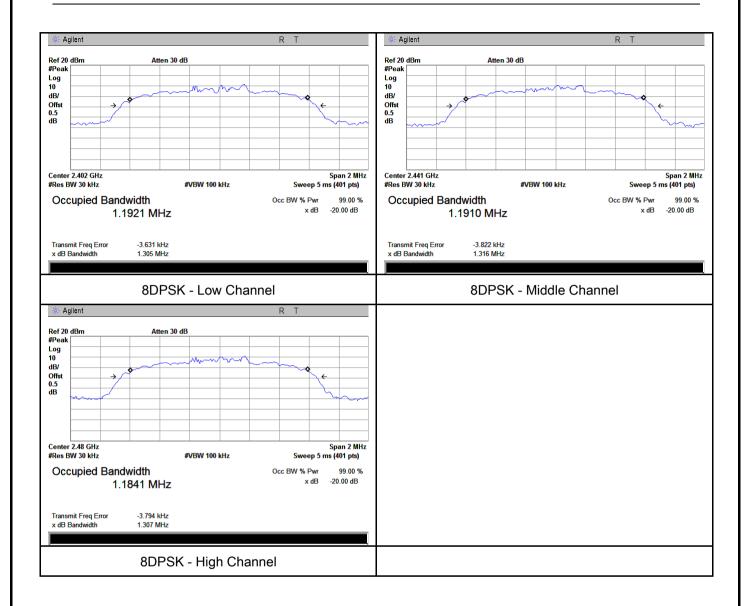
Test Plots

20dB Bandwidth measurement result





Test Report	17070963-FCC-R3
Page	18 of 68





Test Report	17070963-FCC-R3
Page	19 of 68

6.4 Peak Output Power

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

Requirement(s):

Spec	Item	Requirement Applicable		
	a)	FHSS in 2400-2483.5MHz with ≥ 75 channels: ≤ 1 Watt	\	
	b)	FHSS in 5725-5850MHz: ≤ 1 Watt		
§15.247(b)	c)	For all other FHSS in the 2400-2483.5MHz band: ≤ 0.125 Watt.	\	
(3)	d)	FHSS in 902-928MHz with ≥ 50 channels: ≤ 1 Watt		
	e)	FHSS in 902-928MHz with ≥ 25 & <50 channels: ≤ 0.25 Watt		
	f)	DTS in 902-928MHz, 2400-2483.5MHz: ≤ 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, center	ered 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	17070963-FCC-R3	
Page	20 of 68	

	- 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	res N/A

Peak Output Power measurement result

Test Plot Yes (See below) N/A

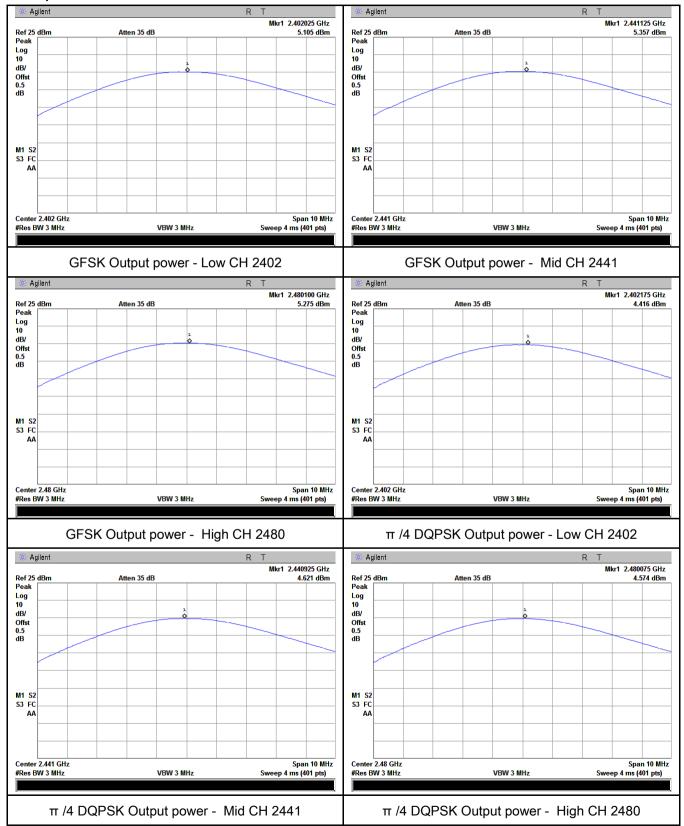
Туре	Modulation	СН	Frequenc y (MHz)	Conducted Power (dBm)	Limit (mW)	Result
		Low	2402	5.105	1000	Pass
	GFSK	Mid	2441	5.357	125	Pass
Output power		High	2480	5.275	125	Pass
	π /4 DQPSK 8-DPSK	Low	2402	4.416	125	Pass
		Mid	2441	4.621	125	Pass
		High	2480	4.574	125	Pass
		Low	2402	4.582	125	Pass
		Mid	2441	4.781	125	Pass
		High	2480	4.681	125	Pass



Test Report	17070963-FCC-R3	
Page	21 of 68	

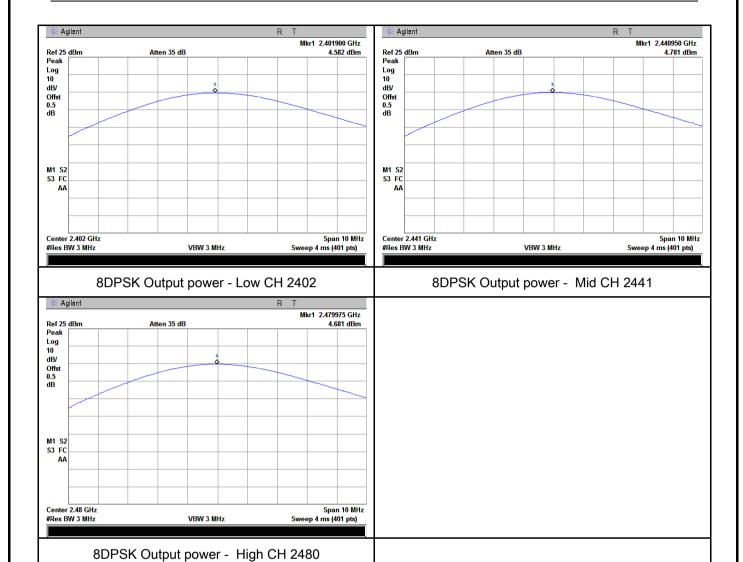
Test Plots

Output Power measurement result





Test Report	17070963-FCC-R3
Page	22 of 68





Test Report	17070963-FCC-R3	
Page	23 of 68	

6.5 Number of Hopping Channel

Temperature	26 °C
Relative Humidity	57%
Atmospheric Pressure	1018mbar
Test date :	October 21, 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			
	-	RBW ≥ 1% of the span		
Test	- VBW ≥ RBW			
Procedure	- Sweep = auto			
Procedure	- Detector function = peak			
	- Trace = max hold			
	- 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	below) N/A		



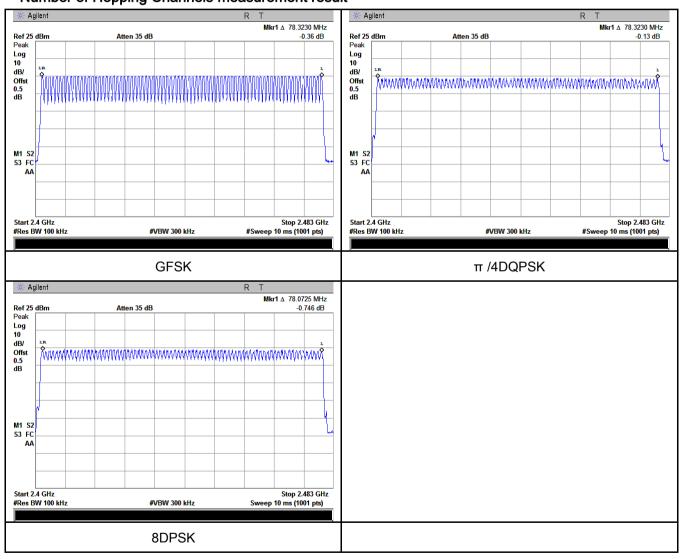
Test Report	17070963-FCC-R3	
Page	24 of 68	

Number of Hopping Channel measurement result

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

Test Plots

Number of Hopping Channels measurement result





Test Report	17070963-FCC-R3
Page	25 of 68

6.6 Time of Occupancy (Dwell Time)

Temperature	26 °C
Relative Humidity	57%
Atmospheric Pressure	1018mbar
Test date :	October 21, 2017
Tested By :	Loren Luo

Requirement(s):

Spec	Item	Requirement	Applicable
§15.247(a) (1)(iii)	a)	Dwell Time < 0.4s	▼
Test Setup		Spectrum Analyzer EUT	
Test Procedure	Use the	et follows FCC Public Notice DA 00-705 Measurement Get 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 channel Detector function = peak Trace = max hold use the marker-delta function to determine the dwell time	er hopping
Remark			
Result	Pas	s Fail	

Test Data	Yes	□ _{N/A}
Test Plot	Yes (See below)	□ _{N/A}



Test Report	17070963-FCC-R3
Page	26 of 68

Dwell Time measurement result

Туре	Modulation	СН	Pulse Width (ms)	Dwell Time (ms)	Limit (ms)	Result
		Low	2.91	310.400	400	Pass
	GFSK	Mid	2.91	310.400	400	Pass
		High	2.91	310.400	400	Pass
		Low	2.90	309.333	400	Pass
Dwell Time	π /4 DQPSK	Mid	2.92	311.467	400	Pass
		High	2.91	310.400	400	Pass
		Low	2.90	309.333	400	Pass
	8-DPSK	Mid	2.92	311.467	400	Pass
		High	2.92	311.467	400	Pass

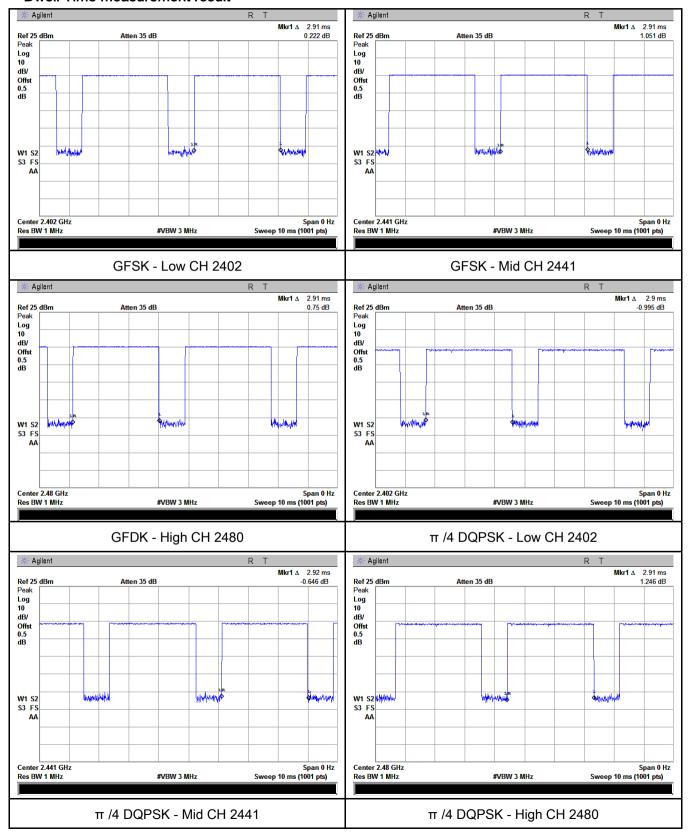
Note: Dwell time=Pulse Time (ms) × (1600 \div 6 \div 79) ×31.6



Test Report	17070963-FCC-R3
Page	27 of 68

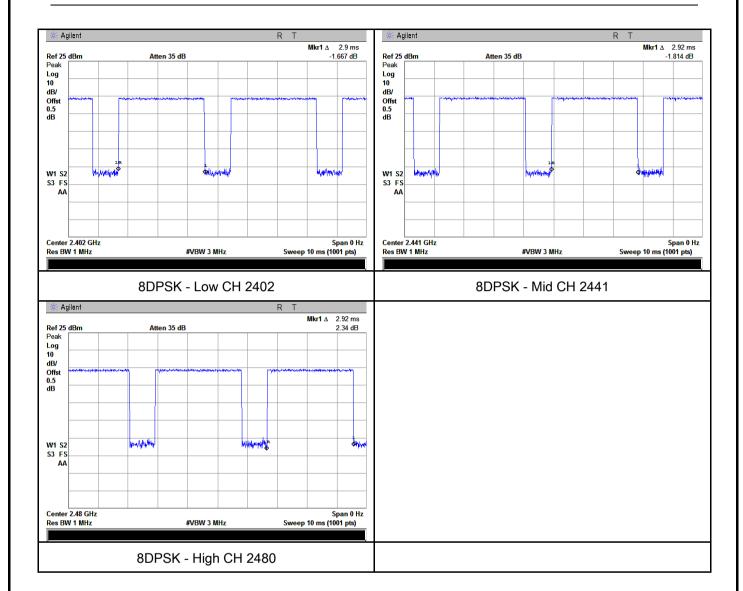
Test Plots

Dwell Time measurement result





Test Report	17070963-FCC-R3
Page	28 of 68





Test Report	17070963-FCC-R3
Page	29 of 68

6.7 Band Edge & Restricted Band

Temperature	26 °C
Relative Humidity	55%
Atmospheric Pressure	1017mbar
Test date :	October 18, 2017
Tested By :	Loren Luo

Requirement(s):

Spec	Item	Requirement	Applicable
§15.247(a) (1)(iii)	a)	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.	\
Test Setup	Ant. Tower Support Units 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	17070963-FCC-R3
Page	30 of 68

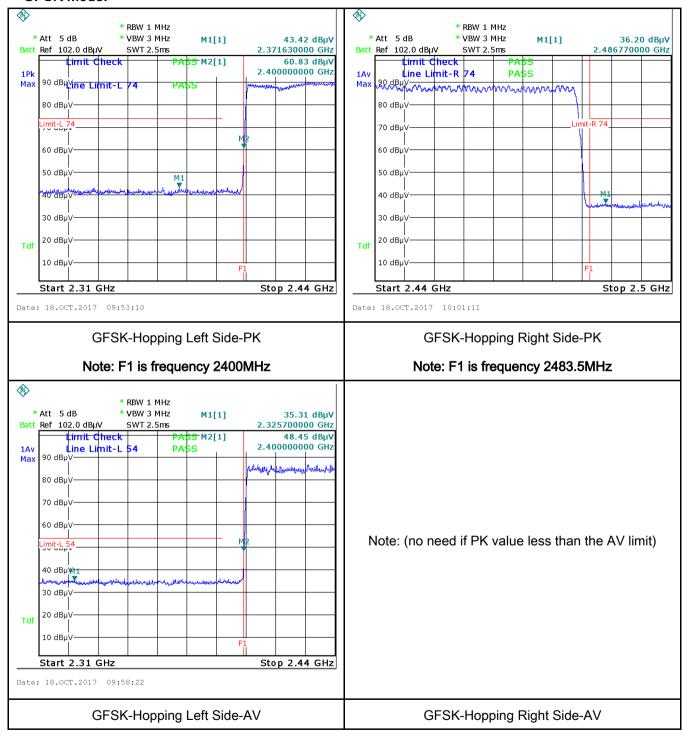
	and make sure the instrument is operated in its linear range.
	- 3. First, set both RBW and VBW of spectrum analyzer to 100 kHz with a
	convenient frequency span including 100kHz bandwidth from band edge, check
	the emission of EUT, if pass then set Spectrum Analyzer as below:
	a. The resolution bandwidth 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	
Result	Pass Fail
Test Data	Yes N/A
Test Plot	Yes (See below)
	· /



Test Report	17070963-FCC-R3
Page	31 of 68

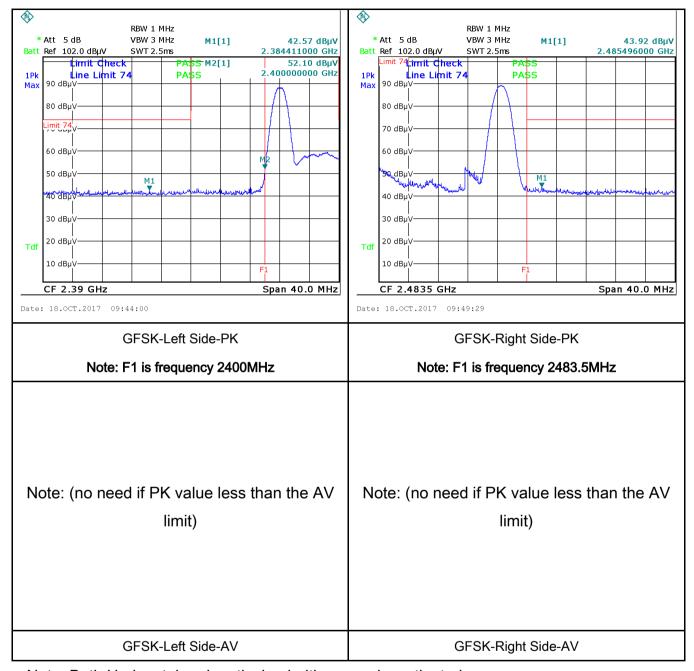
Test Plots

GFSK Mode:





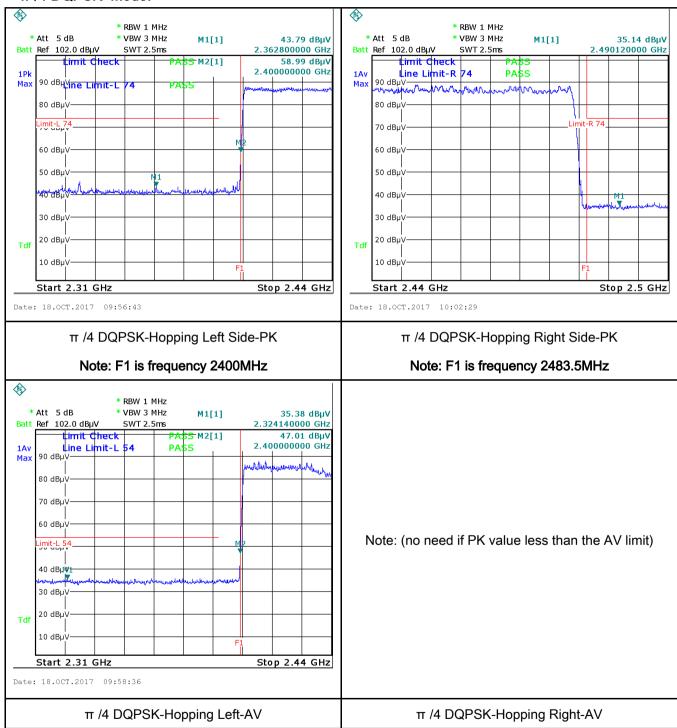
Test Report	17070963-FCC-R3
Page	32 of 68





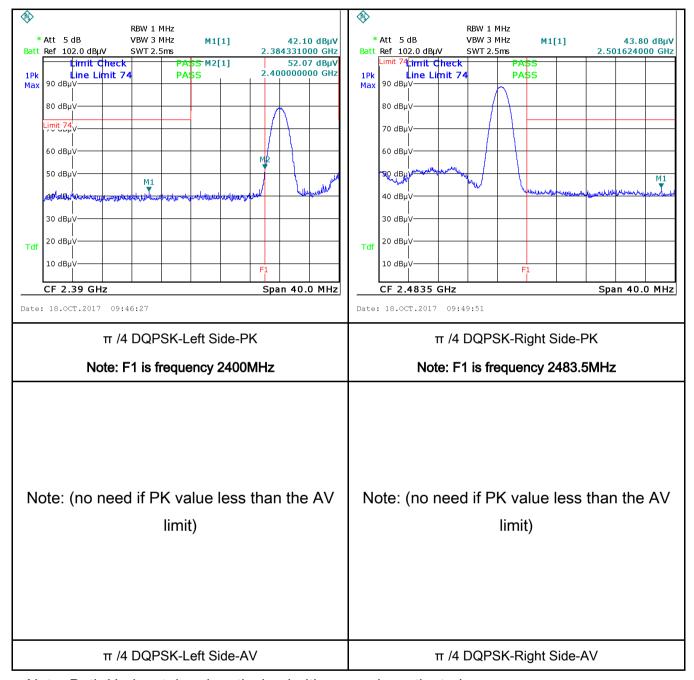
Test Report	17070963-FCC-R3
Page	33 of 68

π /4 DQPSK Mode:





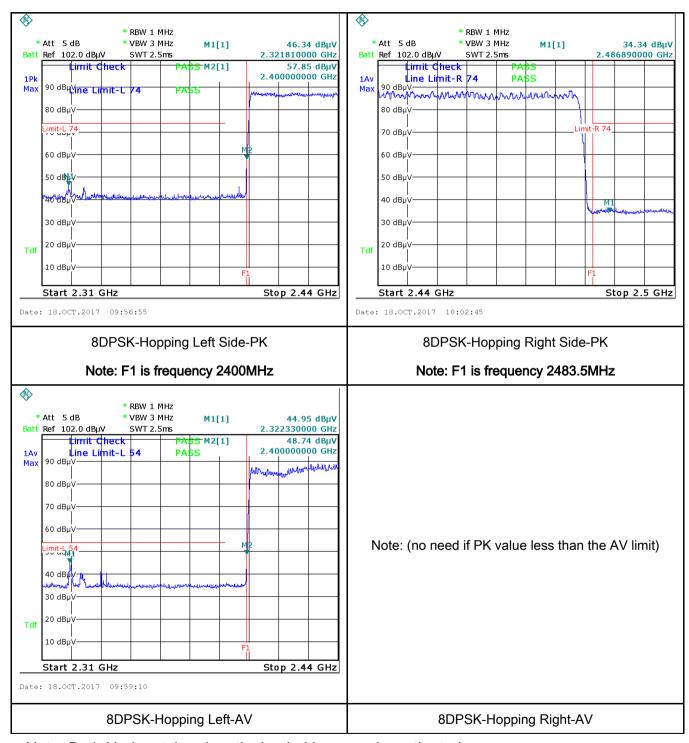
Test Report	17070963-FCC-R3
Page	34 of 68





Test Report	17070963-FCC-R3
Page	35 of 68

8-DPSK Mode:





Test Report	17070963-FCC-R3
Page	36 of 68





Test Report	17070963-FCC-R3
Page	37 of 68

6.8 AC Power Line Conducted Emissions

Temperature	26 °C		
Relative Humidity	55%		
Atmospheric Pressure	1017mbar		
Test date :	October 18, 2017		
Tested By :	Loren Luo		

Requirement(s):

Spec	Item	Requirement Applic				
47CFR§15. 207, RSS210 (A8.1)	a)	For Low-power radio-freconnected to the public voltage that is conducted frequency or frequencies not exceed the limits in [mu]H/50 ohms line implower limit applies at the Frequency ranges	Y			
		(MHz)	QP	Average		
		0.15 ~ 0.5 0.5 ~ 5	66 – 56 56	56 – 46 46		
		5 ~ 30	60	50		
Test Setup						
Procedure	 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. The power supply for the EUT was fed through a 50W/50mH EUT LISN, connected to filtered mains. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss 					

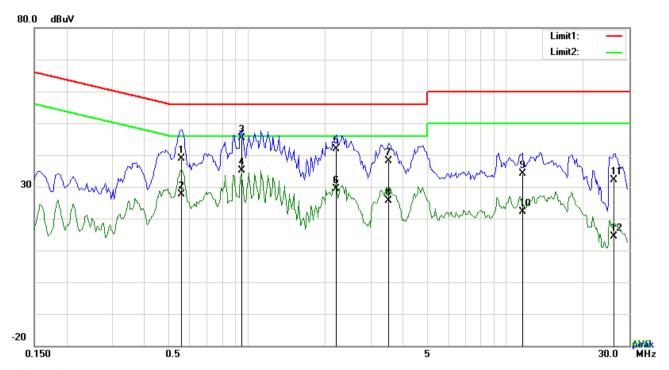


Test Report	17070963-FCC-R3
Page	38 of 68

	coaxial cable.				
	4. All other supporting equipment were powered separately from another main supply.				
	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	17070963-FCC-R3
Page	39 of 68



Test Data

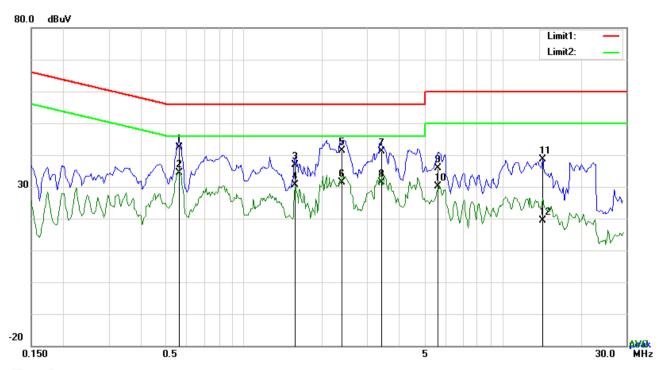
Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.5556	28.83	QP	10.03	38.86	56.00	-17.14
2	L1	0.5556	17.71	AVG	10.03	27.74	46.00	-18.26
3	L1	0.9495	35.38	QP	10.03	45.41	56.00	-10.59
4	L1	0.9495	24.99	AVG	10.03	35.02	46.00	-10.98
5	L1	2.2092	31.84	QP	10.05	41.89	56.00	-14.11
6	L1	2.2092	19.30	AVG	10.05	29.35	46.00	-16.65
7	L1	3.5226	27.97	QP	10.06	38.03	56.00	-17.97
8	L1	3.5226	15.64	AVG	10.06	25.70	46.00	-20.30
9	L1	11.5644	23.99	QP	10.17	34.16	60.00	-25.84
10	L1	11.5644	12.04	AVG	10.17	22.21	50.00	-27.79
11	L1	26.2635	21.75	QP	10.42	32.17	60.00	-27.83
12	L1	26.2635	3.90	AVG	10.42	14.32	50.00	-35.68



Test Report	17070963-FCC-R3
Page	40 of 68

Test Mode: Bluetooth Mode



Test Data

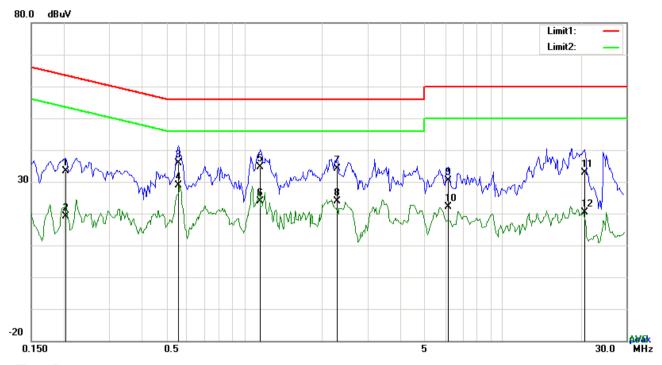
Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	N	0.5595	32.47	QP	10.02	42.49	56.00	-13.51
2	N	0.5595	24.43	AVG	10.02	34.45	46.00	-11.55
3	N	1.5735	26.92	QP	10.04	36.96	56.00	-19.04
4	N	1.5735	20.48	AVG	10.04	30.52	46.00	-15.48
5	N	2.3925	31.22	QP	10.04	41.26	56.00	-14.74
6	N	2.3925	21.35	AVG	10.04	31.39	46.00	-14.61
7	N	3.4056	31.02	QP	10.05	41.07	56.00	-14.93
8	N	3.4056	21.25	AVG	10.05	31.30	46.00	-14.70
9	N	5.6130	25.80	QP	10.08	35.88	60.00	-24.12
10	N	5.6130	19.94	AVG	10.08	30.02	50.00	-19.98
11	N	14.2398	28.35	QP	10.19	38.54	60.00	-21.46
12	N	14.2398	9.17	AVG	10.19	19.36	50.00	-30.64



Test Report	17070963-FCC-R3
Page	41 of 68

Test Mode: Bluetooth Mode



Test Data

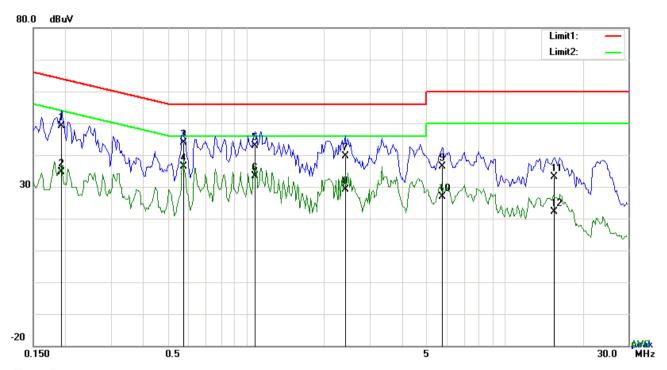
Phase Line Plot at 240Vac, 60Hz

	That Ellio Florat 2 To Vac, Cort								
No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin	
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)	
1	L1	0.2046	23.35	QP	10.03	33.38	63.42	-30.04	
2	L1	0.2046	9.22	AVG	10.03	19.25	53.42	-34.17	
3	L1	0.5556	25.90	QP	10.03	35.93	56.00	-20.07	
4	L1	0.5556	18.77	AVG	10.03	28.80	46.00	-17.20	
5	L1	1.1562	24.69	QP	10.03	34.72	56.00	-21.28	
6	L1	1.1562	13.73	AVG	10.03	23.76	46.00	-22.24	
7	L1	2.2911	23.96	QP	10.05	34.01	56.00	-21.99	
8	L1	2.2911	13.93	AVG	10.05	23.98	46.00	-22.02	
9	L1	6.1395	20.24	QP	10.10	30.34	60.00	-29.66	
10	L1	6.1395	12.15	AVG	10.10	22.25	50.00	-27.75	
11	L1	20.7450	22.60	QP	10.31	32.91	60.00	-27.09	
12	L1	20.7450	10.09	AVG	10.31	20.40	50.00	-29.60	



Test Report	17070963-FCC-R3
Page	42 of 68

Test Mode:	Bluetooth Mode
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Test Data

Phase Neutral Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Detector Corrected		Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	N	0.1929	39.22	QP	10.02	49.24	63.91	-14.67
2	N	0.1929	24.70	AVG	10.02	34.72	53.91	-19.19
3	N	0.5712	33.94	QP	10.02	43.96	56.00	-12.04
4	N	0.5712	26.26	AVG	10.02	36.28	46.00	-9.72
5	N	1.0821	32.93	QP	10.03	42.96	56.00	-13.04
6	N	1.0821	23.35	AVG	10.03	33.38	46.00	-12.62
7	N	2.4120	29.48	QP	10.04	39.52	56.00	-16.48
8	N	2.4120	19.17	AVG	10.04	29.21	46.00	-16.79
9	N	5.7378	26.37	QP	10.08	36.45	60.00	-23.55
10	N	5.7378	16.82	AVG	10.08	26.90	50.00	-23.10
11	N	15.5073	22.80	QP	10.21	33.01	60.00	-26.99
12	N	15.5073	11.97	AVG	10.21	22.18	50.00	-27.82



Test Report	17070963-FCC-R3
Page	43 of 68

6.9 Radiated Emissions & Restricted Band

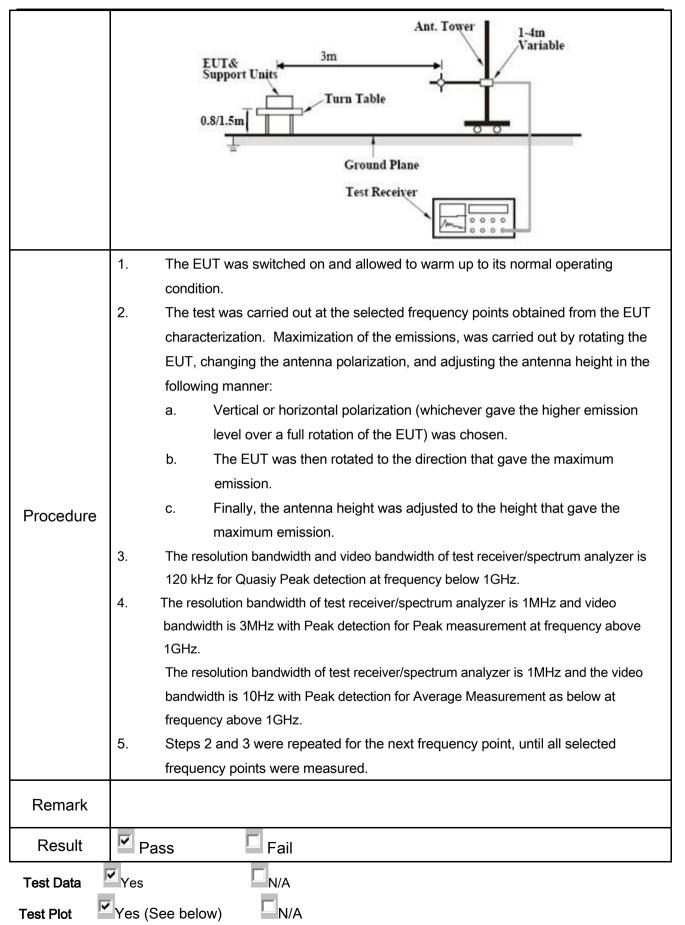
Temperature	25 °C
Relative Humidity	57%
Atmospheric Pressure	1018mbar
Test date :	October 19, 2017
Tested By :	Loren Luo

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 specthe level of any unwanted emissions the fundamental emission. The tight edges					
205, §15.209,	a)	Frequency range (MHz) 0.009~0.490	Field Strength (µV/m) 2400/F(KHz)	V			
§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 0.8m	3 meter RF Tes Receive	\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\			



Test Report	17070963-FCC-R3
Page	44 of 68





Test Report	17070963-FCC-R3
Page	45 of 68

Test Result:

Test Mode: Transmitting Mode

Frequency range: 9KHz - 30MHz

Freq.	Detection	Factor	Reading	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);

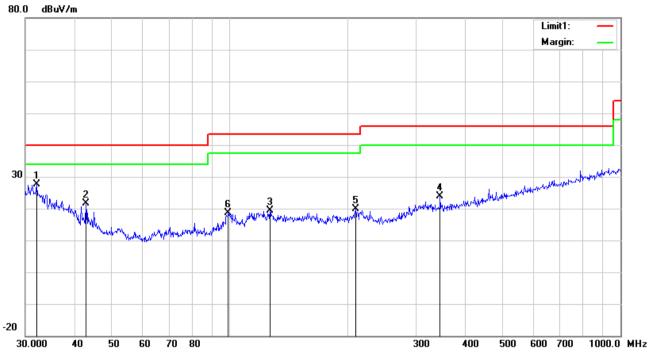
Limit line = specific limits(dBuv) + distance extrapolation factor.



Te	est Report	17070963-FCC-R3
Pa	age	46 of 68

Test Mode: Bluetooth Mode

30MHz -1GHz



Test Data

Horizontal Polarity Plot @3m

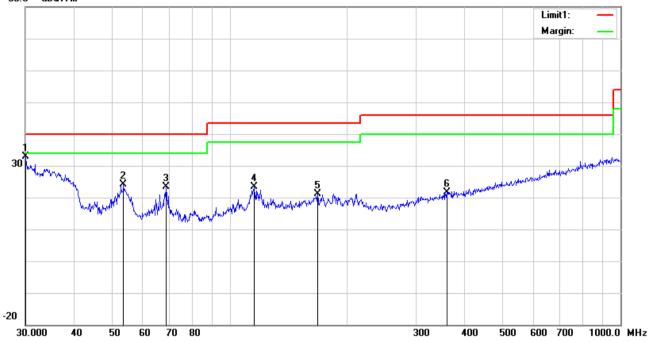
	Honzontar Folding Flot World											
No.	P/L	Frequency	Reading	Detect or	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degr ee
		(MHz)	(dBuV/m)		(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	()
1	Н	32.0668	29.33	peak	19.81	22.27	0.68	27.55	40.00	-12.45	100	312
2	Н	42.8998	31.15	peak	11.99	22.29	0.77	21.62	40.00	-18.38	200	355
3	П	126.7723	27.10	peak	13.46	22.38	1.19	19.37	43.50	-24.13	100	38
4	Н	345.5952	29.34	peak	14.56	22.16	2.02	23.76	46.00	-22.24	100	18
5	Н	210.0482	28.65	peak	11.96	22.36	1.57	19.82	43.50	-23.68	100	96
6	П	99.1797	29.74	peak	10.20	22.32	1.10	18.72	43.50	-24.78	100	11



Test Report	17070963-FCC-R3
Page	47 of 68

30MHz -1GHz





Test Data

Vertical Polarity Plot @3m

No.	P/L	Frequency	Reading	Detect or	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degr ee
		(MHz)	(dBuV/m)	01	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	()
1	٧	30.0000	33.23	peak	21.40	22.28	0.62	32.97	40.00	-7.03	100	148
2	V	53.5052	37.65	peak	8.01	22.39	0.79	24.06	40.00	-15.94	100	254
3	V	68.8721	37.07	peak	7.74	22.38	0.96	23.39	40.00	-16.61	100	163
4	٧	115.7256	31.42	peak	13.15	22.35	1.16	23.38	43.50	-20.12	100	22
5	V	167.8243	30.08	peak	11.97	22.26	1.37	21.16	43.50	-22.34	100	178
6	V	359.1860	26.87	peak	14.84	22.12	2.03	21.62	46.00	-24.38	100	237



Test Report	17070963-FCC-R3
Page	48 of 68

Above 1GHz

st Mode: Transmitting Mode	Test 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	39.38	AV	V	33.39	7.22	48.46	31.53	54	-22.47
4804	39.14	AV	Н	33.39	7.22	48.46	31.29	54	-22.71
4804	47.89	PK	V	33.39	7.22	48.46	40.04	74	-33.96
4804	46.01	PK	Н	33.39	7.22	48.46	38.16	74	-35.84
7716	23.49	AV	V	37.74	8.88	49.15	20.96	54	-33.04
7716	25.25	AV	Н	37.74	8.88	49.15	22.72	54	-31.28
7716	40.81	PK	V	37.74	8.88	49.15	38.28	74	-35.72
7716	42.03	PK	Н	37.74	8.88	49.15	39.5	74	-34.5

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	38.88	AV	V	33.62	7.53	48.36	31.67	54	-22.33
4882	40.28	AV	Н	33.62	7.53	48.36	33.07	54	-20.93
4882	48.54	PK	V	33.62	7.53	48.36	41.33	74	-32.67
4882	45.25	PK	Н	33.62	7.53	48.36	38.04	74	-35.96
11764	24.08	AV	V	40.85	12.54	47.47	30	54	-24
11764	24.57	AV	Н	40.85	12.54	47.47	30.49	54	-23.51
11764	40.35	PK	V	40.85	12.54	47.47	46.27	74	-27.73
11764	42.69	PK	Н	40.85	12.54	47.47	48.61	74	-25.39



Test Report	17070963-FCC-R3
Page	49 of 68

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	38.7	AV	V	33.89	7.86	48.31	32.14	54	-21.86
4960	40.6	AV	Н	33.89	7.86	48.31	34.04	54	-19.96
4960	47.67	PK	V	33.89	7.86	48.31	41.11	74	-32.89
4960	46.74	PK	Н	33.89	7.86	48.31	40.18	74	-33.82
17916	25.2	AV	V	43.28	19.12	44.38	43.22	54	-10.78
17916	24.96	AV	Н	43.28	19.12	44.38	42.98	54	-11.02
17916	39.7	PK	V	43.28	19.12	44.38	57.72	74	-16.28
17916	43.03	PK	Н	43.28	19.12	44.38	61.05	74	-12.95

Note:

- 1, The testing has been conformed to 10*2480MHz=24,800MHz
- 2, All other emissions more than 30 dB below the limit
- $\it 3, X-Axis, Y-Axis \ and \ Z-Axis \ were \ investigated.$ The results above show only the worst case.
- 4, The radiated spurious test above 18GHz is subcontracted to SIEMIC (Nanjing-China) Laboratories. and found 30dB below the limit at least.



Test Report	17070963-FCC-R3
Page	50 of 68

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted					
EMI test receiver	ESCS30	8471241027	09/15/2017	09/14/2018	>
Line Impedance	LI-125A	191106	09/23/2017	09/22/2018	>
Line Impedance	LI-125A	191107	09/23/2017	09/22/2018	>
ISN	ISN T800	34373	09/23/2017	09/22/2018	
Transient Limiter	LIT-153	531118	08/30/2017	08/29/2018	
RF conducted test					
Agilent ESA-E SERIES	E4407B	MY45108319	09/15/2017	09/14/2018	>
Power Splitter	1#	1#	08/30/2017	08/29/2018	>
DC Power Supply	E3640A	MY40004013	09/15/2017	09/14/2018	>
Radiated Emissions					
EMI test receiver	ESL6	100262	09/15/2017	09/14/2018	>
Positioning Controller	UC3000	MF780208282	11/18/2016	11/17/2017	>
OPT 010 AMPLIFIER	04475	0707400400	00/00/00/47	00/00/00/0	_
(0.1-1300MHz)	8447E	2727A02430	08/30/2017	08/29/2018	>
Microwave Preamplifier	0440D	2000402402	02/22/2047	02/22/2040	<u>\</u>
(1 ~ 26.5GHz)	8449B	3008A02402	03/23/2017	03/22/2018	V
Horn Antenna	BBHA9170	3145226D1	09/27/2017	09/26/2018	₹
Active Antenna	AL-130	121031	10/12/2017	10/11/2018	•
(9kHz-30MHz)	AL-130	121031	10/12/2017	10/11/2016	•
Bilog Antenna					_
(30MHz~6GHz)	JB6	A110712	09/19/2017	09/18/2018	>
Double Ridge Horn					
Antenna (1 ~18GHz)	AH-118	71283	09/22/2017	09/21/2018	>
Universal Radio					
Communication Tester	CMU200	121393	09/23/2017	09/22/2018	>



Test Report	17070963-FCC-R3
Page	51 of 68

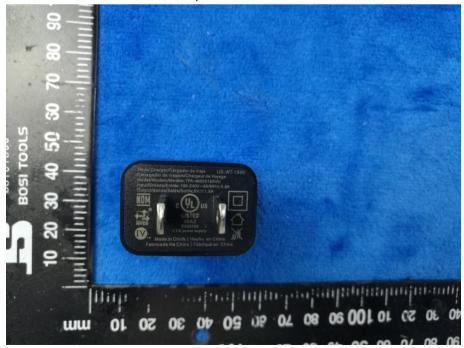
Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo





Adapter - Lable View





Test Report	17070963-FCC-R3
Page	52 of 68

EUT - Front View



EUT - Rear View



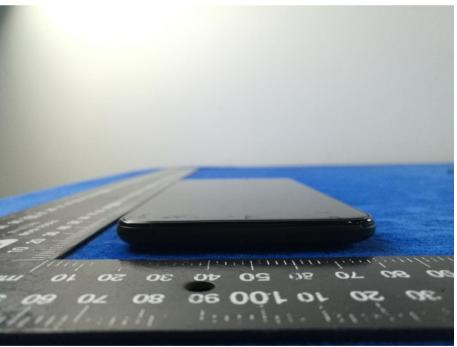


Test Report	17070963-FCC-R3
Page	53 of 68

EUT - Top View



EUT - Bottom View



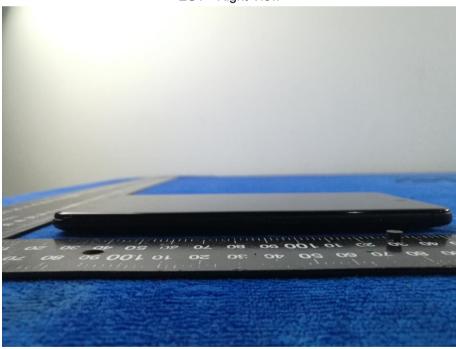


Test Report	17070963-FCC-R3
Page	54 of 68

EUT - Left View



EUT - Right View





Test Report	17070963-FCC-R3
Page	55 of 68

Annex B.ii. Photograph: EUT Internal Photo

Cover Off - Top View 1



Cover Off - Top View 2



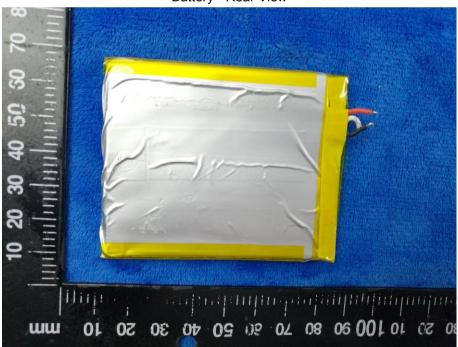


Test Report	17070963-FCC-R3
Page	56 of 68

Battery - Front View



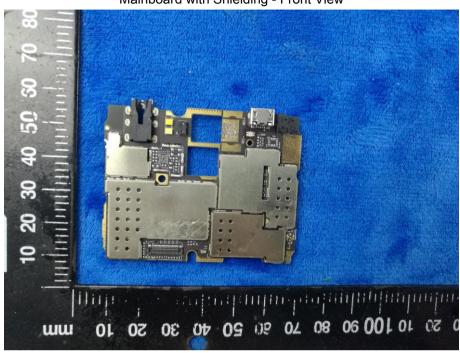
Battery - Rear View



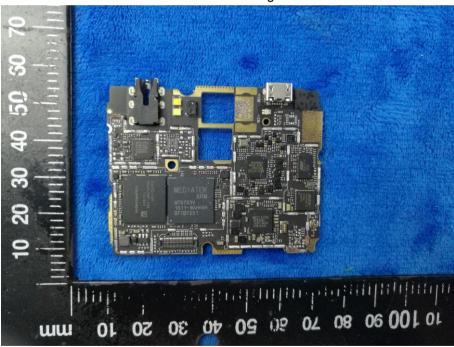


Test Report	17070963-FCC-R3
Page	57 of 68

Mainboard with Shielding - Front View



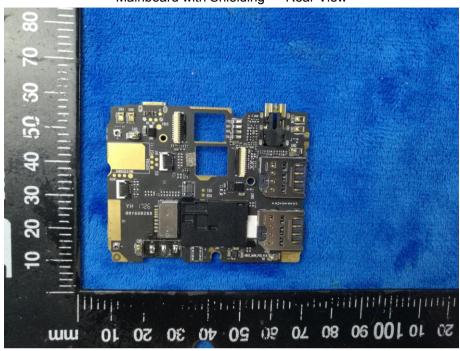
Mainboard without Shielding - Front View



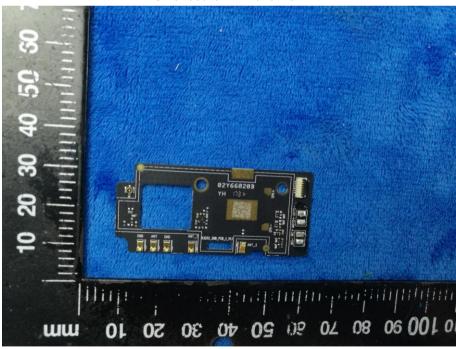


Test Report	17070963-FCC-R3
Page	58 of 68

Mainboard with Shielding - Rear View



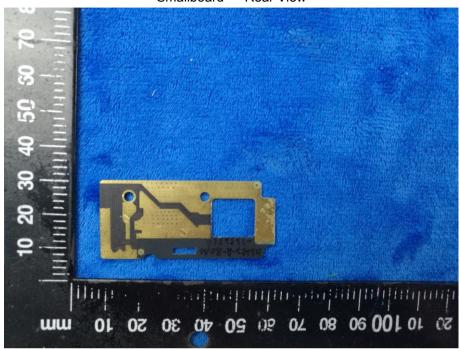
Smallboard - Front View





Test Report	17070963-FCC-R3
Page	59 of 68

Smallboard - Rear View



LCD - Front View





Test Report	17070963-FCC-R3
Page	60 of 68

LCD - Rear View



GSM/PCS/UMTS-FDD/LTE Antenna View





Test Report	17070963-FCC-R3
Page	61 of 68

WIFI/BT/BLE/GPS - Antenna View



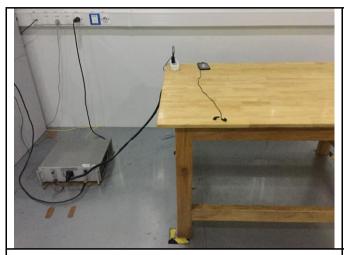
RXD- Antenna View





Test Report	17070963-FCC-R3
Page	62 of 68

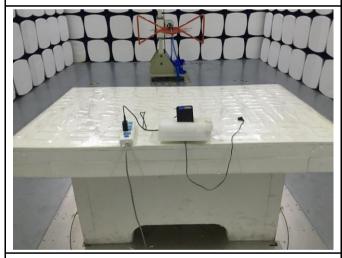
Annex B.iii. Photograph: Test Setup Photo



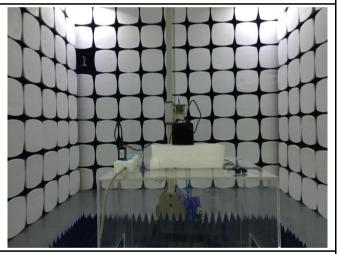
Conducted Emissions Test Setup Front View



Conducted Emissions Test Setup Side View



Radiated Spurious Emissions Test Setup Below 1GHz



Radiated Spurious Emissions Test Setup Above 1GHz

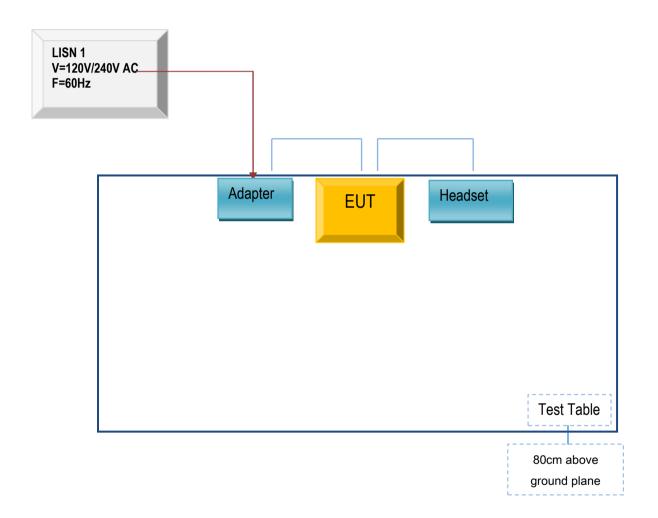


Test Report	17070963-FCC-R3
Page	63 of 68

Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

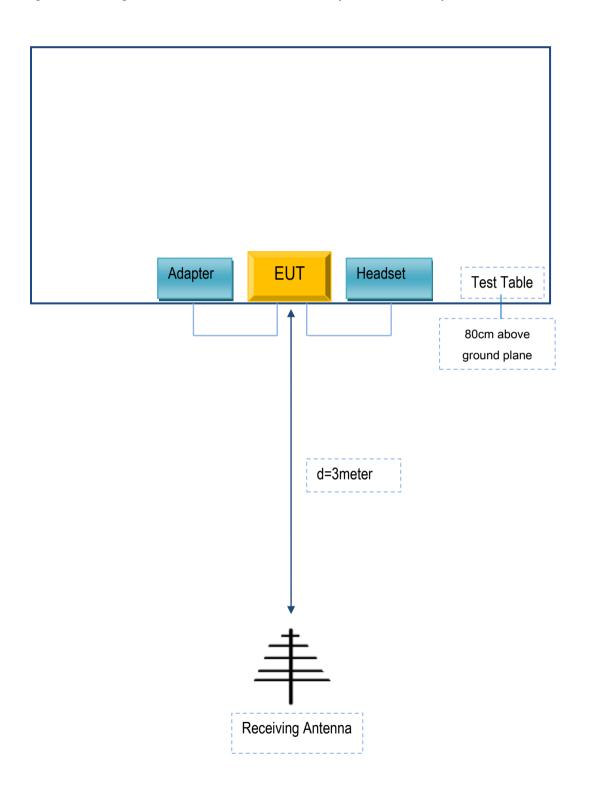
Block Configuration Diagram for AC Line Conducted Emissions





Test Report	17070963-FCC-R3
Page	64 of 68

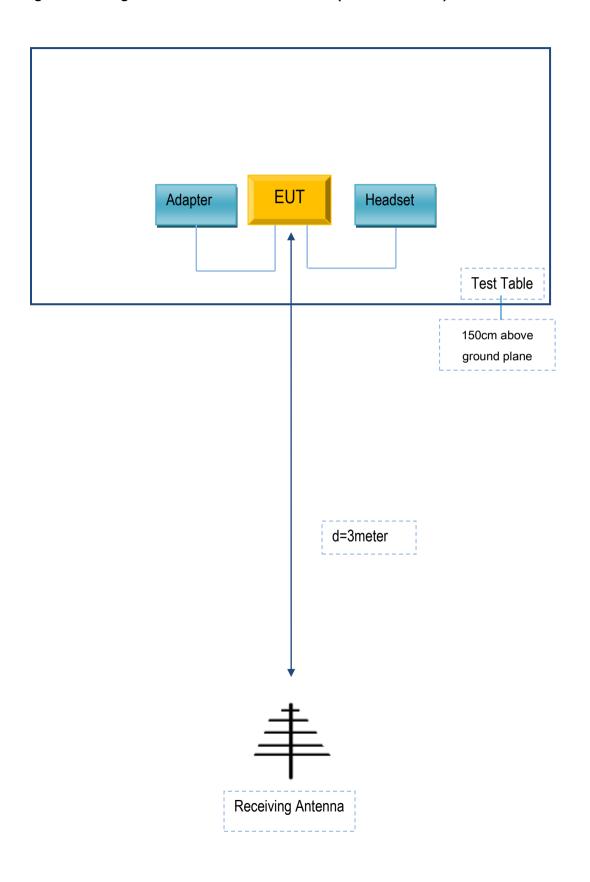
Block Configuration Diagram for Radiated Emissions (Below 1GHz).





Test Report	17070963-FCC-R3
Page	65 of 68

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





Test Report	17070963-FCC-R3
Page	66 of 68

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	US-WT-1500	N/A
SAMSUNG	headset	HS330	N/A

Supporting Cable:

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



Test Report	17070963-FCC-R3
Page	67 of 68

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

Please see the attachment



Test Report	17070963-FCC-R3
Page	68 of 68

Annex E. DECLARATION OF SIMILARITY

N/A