RF TEST REPORT



Report No.: 17070763-FCC-R2
Supersede Report No.: N/A

Applicant	BLU Products,Inc.			
Product Name	Mobile Pho	Mobile Phone		
Model No.	C5 LTE			
Serial No.	N/A			
Test Standard	FCC Part 1	5.247: 2016, ANS	SI C63.10: 20	013
Test Date	October 16	to November 06,	2017	
Issue Date	November	07, 2017		
Test Result	Pass	Fail		
Equipment compli	ied with the	specification	V	
Equipment did no	t comply with	n the specification		
Loven	Luo	David Hu	ang	
Loren Luo Test Engineer		David Hu Checked		

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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



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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



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1. Report Revision History

Report No.	Report Version	Description	Issue Date
17070763-FCC-R2	NONE	Original	November 07, 2017

2. Customer information

Applicant Name	BLU Products,Inc.
Applicant Add	10814 NW 33rd St#100 Doral,FL33172,USA
Manufacturer	BLU Products,Inc.
Manufacturer Add	10814 NW 33rd St#100 Doral,FL33172,USA

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
I de 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.



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4. Equipment under Test (EUT) Information

Description of EUT: Mobile Phone

Main Model: C5 LTE

Serial Model: N/A

Date EUT received: October 16, 2017

Test Date(s): October 16 to November 06, 2017

Equipment Category: DSS

GSM850: 0.5dBi PCS1900: 0.8dBi

UMTS-FDD Band V: 0.5dBi
UMTS-FDD Band II: 0.8dBi

Antenna Gain: LTE Band 5: 0.8dBi

LTE Band 7: 1.2dBi
Bluetooth/BLE: 0.5dBi

WIFI: 0.5dBi GPS: 0.5dBi

Antenna Type: PIFA antenna

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

LTE Band: QPSK, 16QAM

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

Bluetooth: GFSK, π /4DQPSK, 8DPSK

BLE: GFSK GPS:BPSK FM: FM

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

RF Operating Frequency (ies): 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



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

RX: 1932.4 ~ 1987.6 MHz

LTE Band 5 TX: 826.5 ~ 846.5 MHz; RX : 871.5 ~ 891.5 MHz

LTE Band 7 TX: 2502.5 ~ 2567.5 MHz; RX: 2622.5 ~ 2687.5 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

FM: 87.5 MHz - 108 MHz(RX)

Max. Output Power: 5.438dBm

GSM 850: 124CH PCS1900: 299CH

UMTS-FDD Band V: 102CH

UMTS-FDD Band II: 277CH
Number of Channels: 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-WW-1002

Input: AC100-240V~50/60Hz, 0.2A

Input Power: Output: DC 5.0V,1000mA

Battery:

Model: C775840200L

Spec: 3.8V, 2000mAh, 7.60Wh

Trade Name : BLU

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

FCC ID: YHLBLUC5LTE



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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	
-	-	-	



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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 0.5dBi for Bluetooth/BLE/WIFI/GPS.

A permanently attached PIFA antenna for GSM/PCS/UMTS/ LTE Band II/V/IV/VII, the gain is 0.5dBi for GSM850/ UMTS-FDD Band V, 0.8dBi for PCS1900/UMTS-FDD Band II, the gain is 0.8dBi for LTE Band V, 1.2dBi for LTE Band VII.

The antenna meets up with the ANTENNA REQUIREMENT.

Result: Compliance.



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6.2 Channel Separation

Temperature	25 °C
Relative Humidity	57%
Atmospheric Pressure	1024mbar
Test date :	October 24, 2017
Tested By :	Loren Luo

Requirement(s):

Requirement(s):	1		,			
Spec	Item Requirement Appl		Applicable			
\$ 45.047(-)(4)		Channel Separation < 20dB BW and 20dB BW <				
	۵)	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 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					
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 subparagraphs of this				
		Section. Submit this plot.				



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

Channel Separation measurement result

Type/ Modulation	СН	CH Frequency (MHz)	CH Separation (MHz)	Limit (MHz)	Result
	Low Channel	2402	1.002	0.689	Pass
	Adjacency Channel	2403	1.002	0.009	F d 5 5
CH Separation	Mid Channel	2440	1.002	0.868	Pass
GFSK	Adjacency Channel	2441	1.002	0.000	Pa55
	High Channel	2480	1.002	0.070	Door
	Adjacency Channel	2479	1.002	0.872	Pass
	Low Channel	2402	1.002	0.681	Pass
	Adjacency Channel	2403	1.002	0.061	Pass
CH Separation	Mid Channel	2440	1.002	0.994	Pass
π /4 DQPSK	Adjacency Channel	2441	1.002	0.994	Pass
	High Channel	2480	1.002	0.067	Desc
	Adjacency Channel	2479	1.002	0.867	Pass
	Low Channel	2402	4.000	0.005	Dese
	Adjacency Channel	2403	1.002	0.685	Pass
CH Separation	Mid Channel	2440	4.000	0.000	Desc
8DPSK	Adjacency Channel	2441	1.002	0.866	Pass
	High Channel	2480	4.000	0.007	Dess
	Adjacency Channel	2479	1.002	0.867	Pass



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Test Plots

Channel Separation measurement result





GFSK - Low Channel



GFSK - Middle Channel



GFSK - High Channel



π /4 DPSK - Low Channel



 π /4 DQPSK - Middle Channel

 π /4 DQPSK - High Channel



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8DPSK - Low Channel

8DPSK - Middle Channel



8DPSK - High Channel



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6.3 20dB Bandwidth

Temperature	25 °C
Relative Humidity	57%
Atmospheric Pressure	1024mbar
Test date :	October 24, 2017
Tested By :	Loren Luo

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



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		marker l	level. The marker-delta reading at this point is the 20 dB			
		bandwic	bandwidth 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	tion. Submit this plot(s).			
Remark						
Result		Pass	Fail			
Test Data	Y	es	□ _{N/A}			
Test Plot	V	es (See helow)	□ _{N/A}			

Measurement result

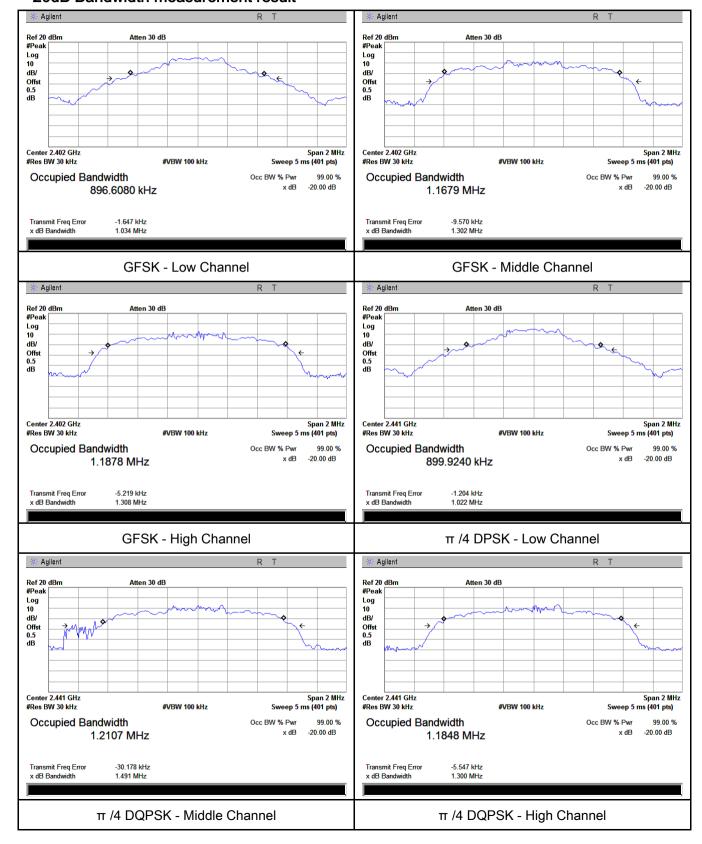
Modulation	2	CH Frequency	20dB Bandwidth	99% Occupied
Modulation	СН	(MHz)	(MHz)	Bandwidth (MHz)
	Low	2402	1.034	0.8966
GFSK	Mid	2441	1.302	1.1679
	High	2480	1.308	1.1878
	Low	2402	1.022	0.8999
π /4 DQPSK	Mid	2441	1.491	1.2107
	High	2480	1.300	1.1848
8-DPSK	Low	2402	1.027	0.8949
	Mid	2441	1.299	1.1704
	High	2480	1.301	1.1861



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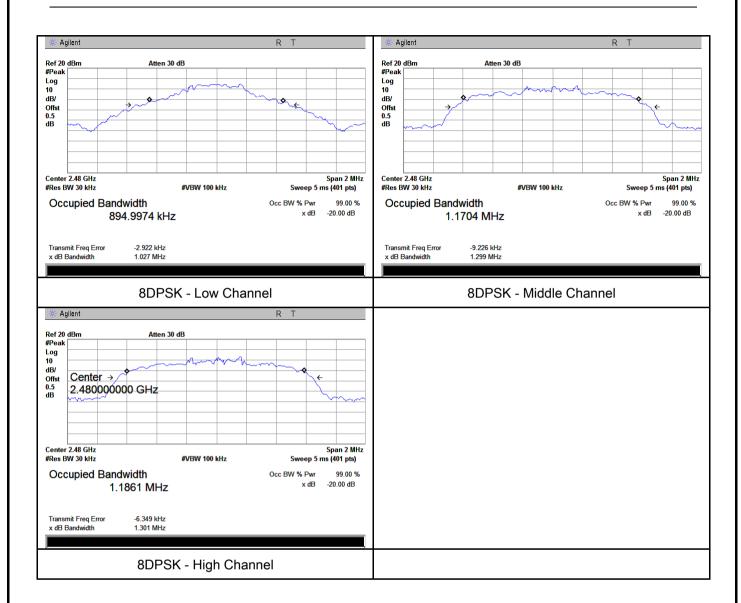
Test Plots

20dB Bandwidth measurement result





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6.4 Peak Output Power

Temperature	25 °C
Relative Humidity	57%
Atmospheric Pressure	1024mbar
Test date :	October 24, 2017
Tested By :	Loren Luo

Requirement(s):

Spec	Item	Requirement Applicable		
	a)	FHSS in 2400-2483.5MHz with ≥ 75 channels: ≤ 1		
		Watt	Y	
	b)	FHSS in 5725-5850MHz: ≤ 1 Watt		
\$45 047/b)	6)	For all other FHSS in the 2400-2483.5MHz band:	1	
§15.247(b)	c)	≤ 0.125 Watt.		
(3)	d)	FHSS in 902-928MHz with ≥ 50 channels: ≤ 1 Watt		
	٥)	FHSS in 902-928MHz with ≥ 25 & <50 channels:	1	
	e)	≤ 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, 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.			
- Allow the trace to Stabilize.				



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	- 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)

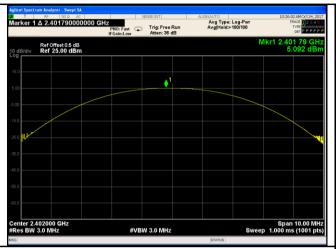
Туре	Modulation	СН	Frequenc y (MHz)	Conducted Power (dBm)	Limit (mW)	Result
		Low	2402	5.092	125	Pass
	GFSK	Mid	2441	5.326	125	Pass
		High	2480	5.438	125	Pass
	π /4 DQPSK	Low	2402	4.133	125	Pass
		Mid	2441	4.406	125	Pass
power		High	2480	4.767	125	Pass
	8-DPSK	Low	2402	4.253	125	Pass
		Mid	2441	4.582	125	Pass
		High	2480	4.798	125	Pass



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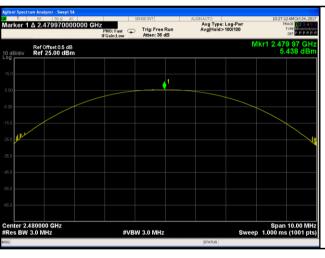
Test Plots

Output Power measurement result

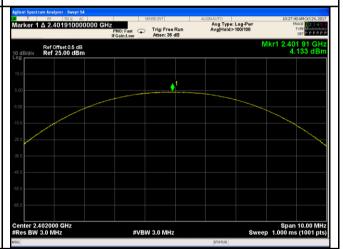




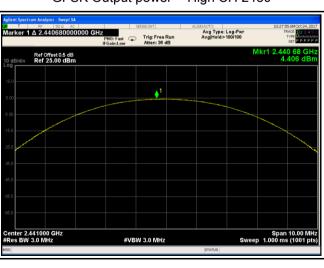
GFSK Output power - Low CH 2402



GFSK Output power - Mid CH 2441



GFSK Output power - High CH 2480



π /4 DQPSK Output power - Low CH 2402

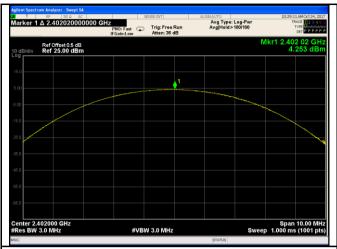


 π /4 DQPSK Output power - Mid CH 2441

 π /4 DQPSK Output power - High CH 2480

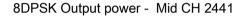


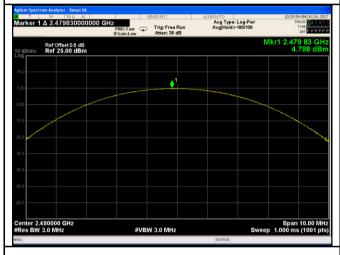
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8DPSK Output power - Low CH 2402





8DPSK Output power - High CH 2480



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6.5 Number of Hopping Channel

Temperature	26 °C
Relative Humidity	57%
Atmospheric Pressure	1025mbar
Test date :	October 25, 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 tes	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					
Tant	- VBW ≥ RBW				
Test 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	s Fail			
Test Data	Yes	N/A			
Test Plot Yes (See below)					



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Number of Hopping Channel measurement result

Туре	Modulation	Frequency Range	Number of Hopping Channel	Limit
Number of	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





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6.6 Time of Occupancy (Dwell Time)

Temperature	25 °C
Relative Humidity	57%
Atmospheric Pressure	1024mbar
Test date :	October 24, 2017
Tested By :	Loren Luo

Requirement(s):

Spec	Item	Requirement	Applicable	
§15.247(a) (1)(iii)	a)	Dwell Time < 0.4s	V	
Test Setup		Spectrum Analyzer EUT		
	The te	The test follows FCC Public Notice DA 00-705 Measurement Guidelines.		
	Use the	Use the following spectrum analyzer		
	-	Span = zero span, centered on a hopping channel		
	-	RBW = 1 MHz		
Test	-	VBW ≥ RBW		
Procedure	- Sweep = as necessary to capture the entire dwell time per hopping			
		channel		
	-	Detector function = peak		
	-	Trace = max hold		
	- use the marker-delta function to determine the dwell time			
Remark				
Result	Pas	s Fail		

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



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Dwell Time measurement result

Туре	Modulation	СН	Pulse Width (ms)	Dwell Time (ms)	Limit (ms)	Result
		Low	2.900	309.333	400	Pass
	GFSK	Mid	2.910	310.400	400	Pass
		High	2.900	309.333	400	Pass
Dwell Time	π /4 DQPSK	Low	2.910	310.400	400	Pass
		Mid	2.910	310.400	400	Pass
		High	2.910	310.400	400	Pass
		Low	2.910	310.400	400	Pass
	8-DPSK Mid 2.900	2.900	309.333	400	Pass	
		High	2.910	310.400	400	Pass

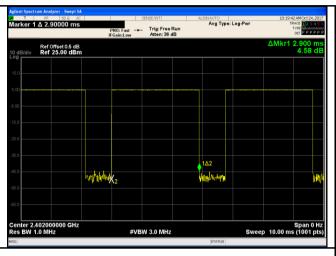
Note: Dwell time=Pulse Time (ms) × (1600 \div 6 \div 79) ×31.6

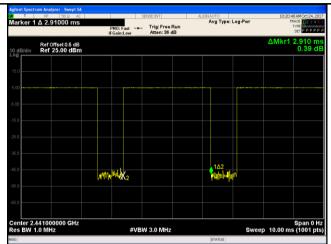


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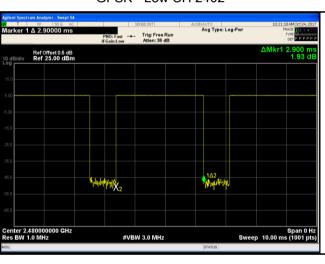
Test Plots

Dwell Time measurement result

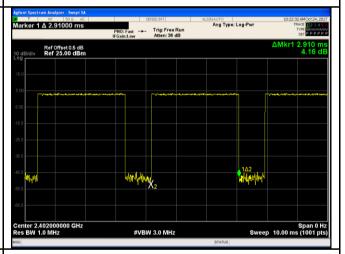




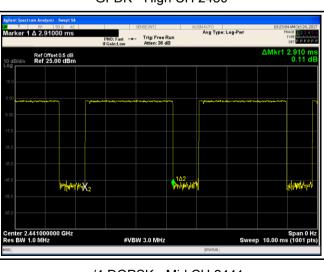
GFSK - Low CH 2402



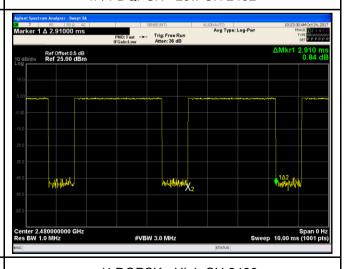
GFSK - Mid CH 2441



GFDK - High CH 2480



 π /4 DQPSK - Low CH 2402

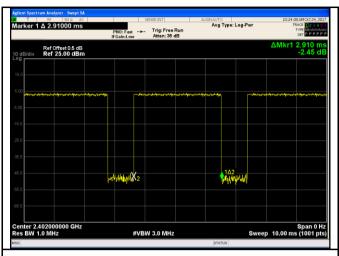


 π /4 DQPSK - Mid CH 2441

 π /4 DQPSK - High CH 2480 $\,$

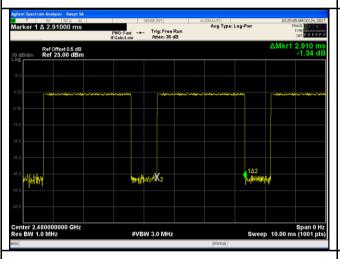


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8DPSK - Low CH 2402



8DPSK - High CH 2480

8DPSK - Mid CH 2441



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6.7 Band Edge & Restricted Band

Temperature	26 °C
Relative Humidity	56%
Atmospheric Pressure	1022mbar
Test date :	October 26, 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 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,		



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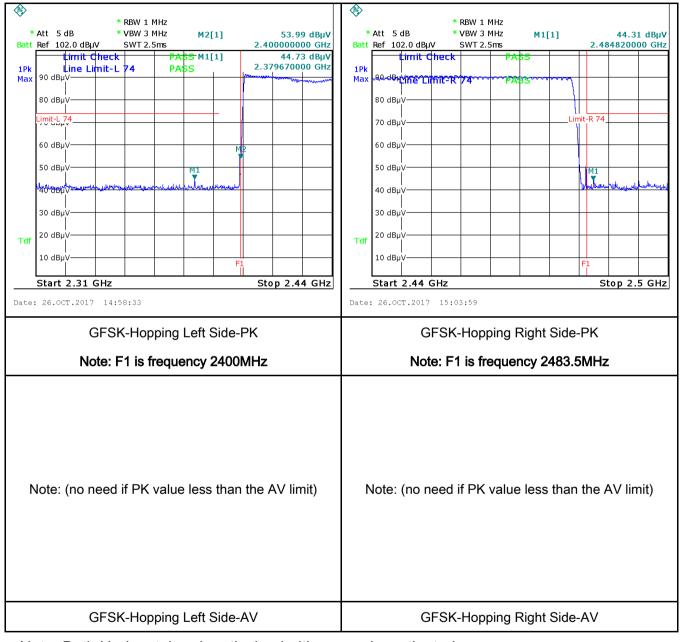
	and make sure the instrument is operated in its linear range.
	- 3. First, set both RBW and VBW of spectrum analyzer to 100 kHz with a
	convenient frequency span including 100kHz bandwidth from band edge, check
	the emission of EUT, if pass then set Spectrum Analyzer as below:
	a. The resolution bandwidth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



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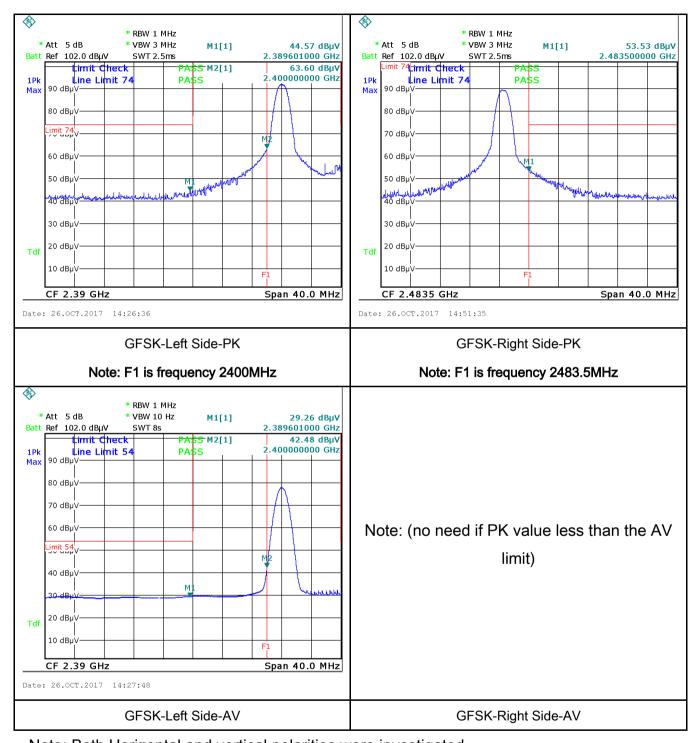
Test Plots

GFSK Mode:





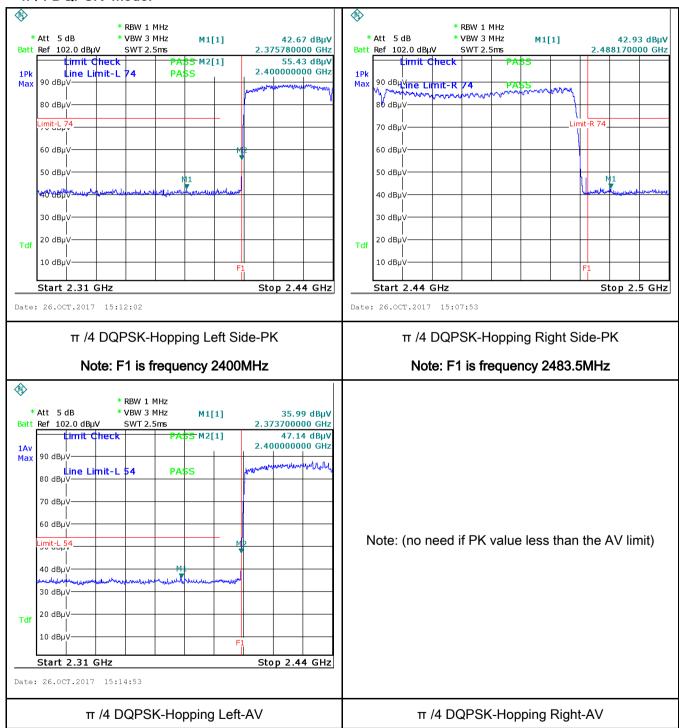
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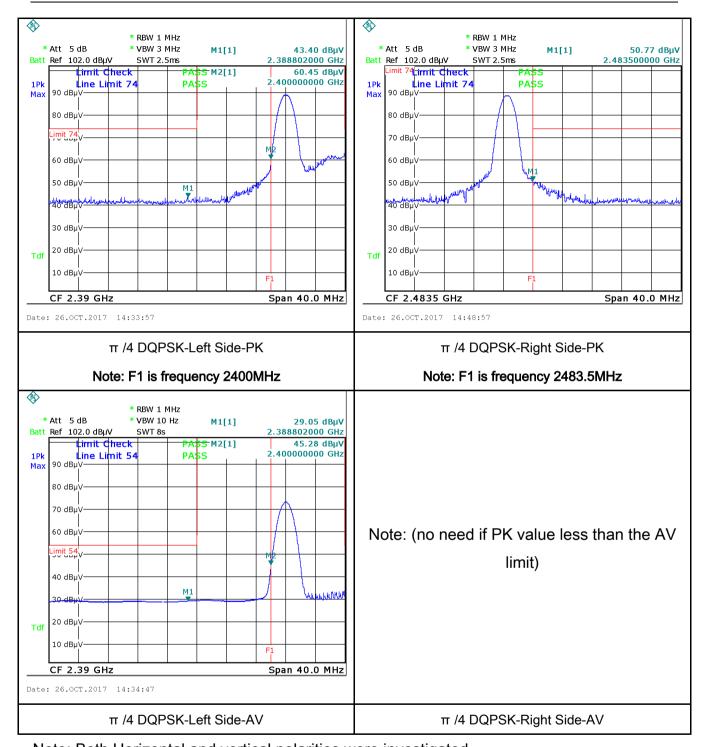
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π /4 DQPSK Mode:





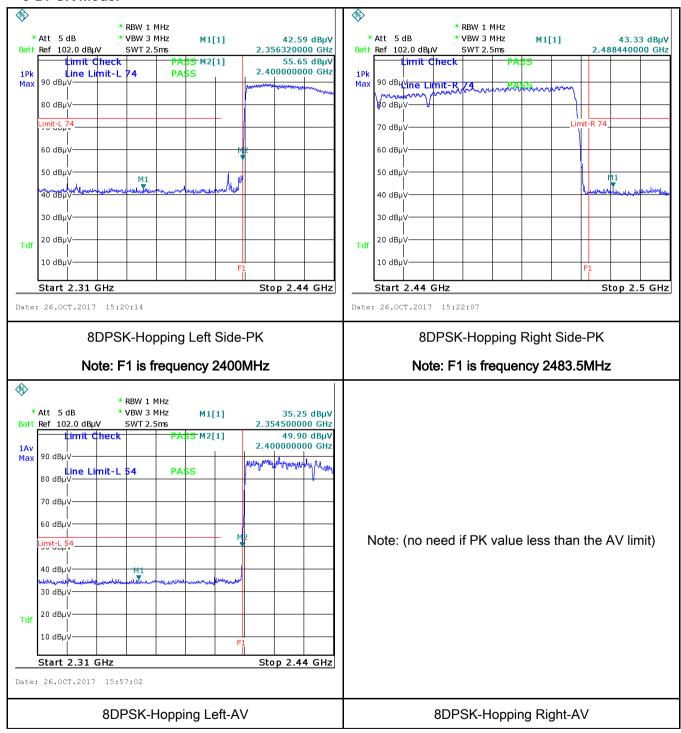
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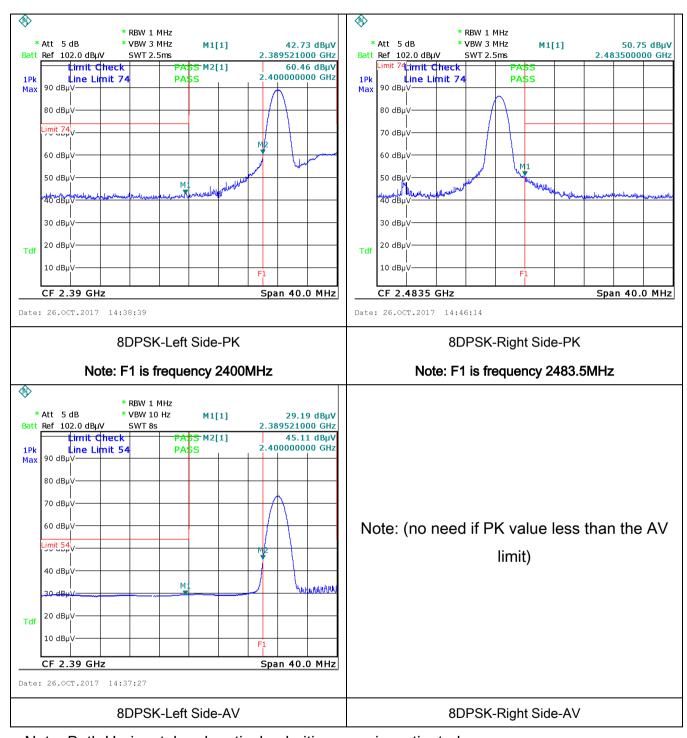
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8-DPSK Mode:





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6.8 AC Power Line Conducted Emissions

Temperature	26 °C
Relative Humidity	57%
Atmospheric Pressure	1025mbar
Test date :	October 25, 2017
Tested By :	Loren Luo

Requirement(s):

Spec	Item	Requirement			Applicable
47CFR§15. 207, RSS210 (A8.1)	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. Frequency ranges Limit (dBµV)		Аррисавіе	
		(MHz) 0.15 ~ 0.5	QP 66 – 56	Average 56 - 46	
		0.5 ~ 5	56	46	
		5 ~ 30	60	50	
Test Setup Test Setup Horizontal Ground Reference Plane Note: 1.Support units were connected to second LISN. 2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm					
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 Plot
✓ Yes (See below)
N/A

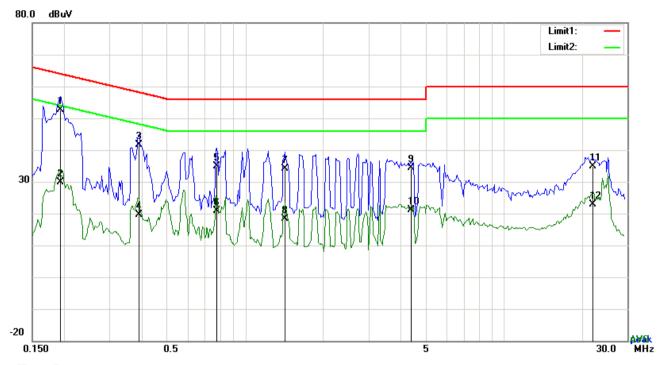
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	coaxial cable.
	4. All other supporting equipment were powered separately from another main supply.
	5. The EUT was switched on and allowed to warm up to its normal operating condition.
	6. A scan was made on the NEUTRAL line (for AC mains) or Earth 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



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Test Mode:	Bluetooth Mode



Test Data

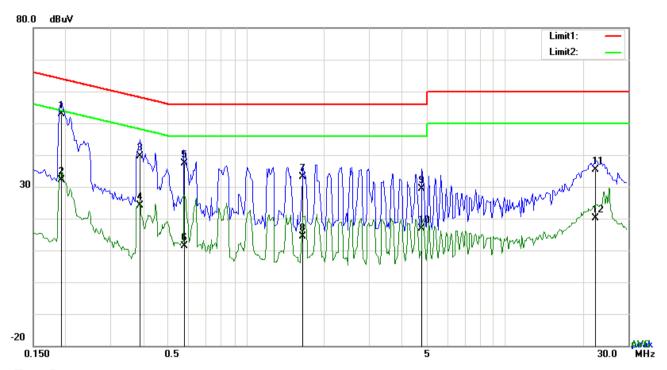
Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.1929	42.64	QP	10.03	52.67	63.91	-11.24
2	L1	0.1929	19.83	AVG	10.03	29.86	53.91	-24.05
3	L1	0.3879	31.70	QP	10.03	41.73	58.11	-16.38
4	L1	0.3879	9.49	AVG	10.03	19.52	48.11	-28.59
5	L1	0.7779	24.85	QP	10.03	34.88	56.00	-21.12
6	L1	0.7779	10.97	AVG	10.03	21.00	46.00	-25.00
7	L1	1.4253	23.98	QP	10.04	34.02	56.00	-21.98
8	L1	1.4253	8.31	AVG	10.04	18.35	46.00	-27.65
9	L1	4.3728	24.26	QP	10.07	34.33	56.00	-21.67
10	L1	4.3728	11.07	AVG	10.07	21.14	46.00	-24.86
11	L1	22.0632	24.57	QP	10.34	34.91	60.00	-25.09
12	L1	22.0632	12.53	AVG	10.34	22.87	50.00	-27.13



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Test Mode: Bluetooth Mode



Test Data

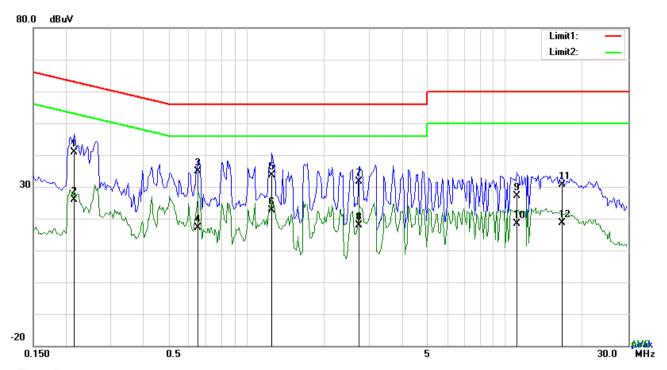
Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	N	0.1929	42.90	QP	10.02	52.92	63.91	-10.99
2	N	0.1929	22.23	AVG	10.02	32.25	53.91	-21.66
3	N	0.3879	29.66	QP	10.02	39.68	58.11	-18.43
4	N	0.3879	14.18	AVG	10.02	24.20	48.11	-23.91
5	N	0.5762	27.36	QP	10.02	37.38	56.00	-18.62
6	N	0.5762	1.34	AVG	10.02	11.36	46.00	-34.64
7	N	1.6554	23.20	QP	10.04	33.24	56.00	-22.76
8	N	1.6554	4.34	AVG	10.04	14.38	46.00	-31.62
9	N	4.7745	19.41	QP	10.07	29.48	56.00	-26.52
10	N	4.7745	6.75	AVG	10.07	16.82	46.00	-29.18
11	N	22.3947	25.17	QP	10.30	35.47	60.00	-24.53
12	N	22.3947	9.95	AVG	10.30	20.25	50.00	-29.75



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Test Mode: Bluetooth Mode



Test Data

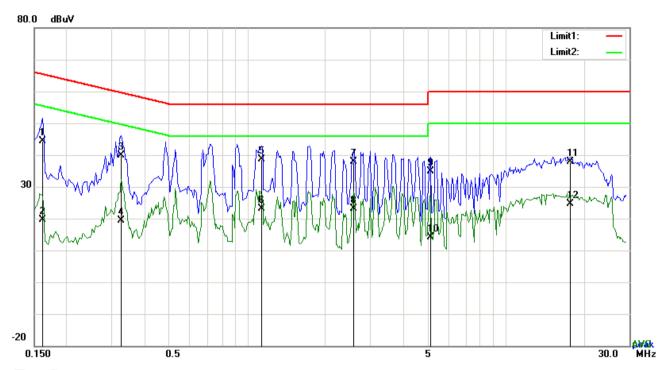
Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.2163	30.86	QP	10.03	40.89	62.96	-22.07
2	L1	0.2163	15.73	AVG	10.03	25.76	52.96	-27.20
3	L1	0.6531	24.90	QP	10.03	34.93	56.00	-21.07
4	L1	0.6531	7.05	AVG	10.03	17.08	46.00	-28.92
5	L1	1.2576	23.67	QP	10.03	33.70	56.00	-22.30
6	L1	1.2576	12.71	AVG	10.03	22.74	46.00	-23.26
7	L1	2.7318	21.69	QP	10.05	31.74	56.00	-24.26
8	L1	2.7318	7.79	AVG	10.05	17.84	46.00	-28.16
9	L1	11.1120	16.95	QP	10.17	27.12	60.00	-32.88
10	L1	11.1120	8.19	AVG	10.17	18.36	50.00	-31.64
11	L1	16.7046	20.50	QP	10.25	30.75	60.00	-29.25
12	L1	16.7046	8.44	AVG	10.25	18.69	50.00	-31.31



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Test Mode:	Bluetooth Mode
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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	0.1617	34.29	QP	10.02	44.31	65.38	-21.07
2	N	0.1617	9.51	AVG	10.02	19.53	55.38	-35.85
3	N	0.3255	29.94	QP	10.02	39.96	59.57	-19.61
4	N	0.3255	9.25	AVG	10.02	19.27	49.57	-30.30
5	N	1.1406	28.61	QP	10.03	38.64	56.00	-17.36
6	N	1.1406	13.15	AVG	10.03	23.18	46.00	-22.82
7	N	2.5797	27.73	QP	10.05	37.78	56.00	-18.22
8	N	2.5797	13.14	AVG	10.05	23.19	46.00	-22.81
9	N	5.1138	24.70	QP	10.07	34.77	60.00	-25.23
10	N	5.1138	4.02	AVG	10.07	14.09	50.00	-35.91
11	N	17.7264	27.56	QP	10.23	37.79	60.00	-22.21
12	N	17.7264	14.38	AVG	10.23	24.61	50.00	-25.39



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6.9 Radiated Emissions & Restricted Band

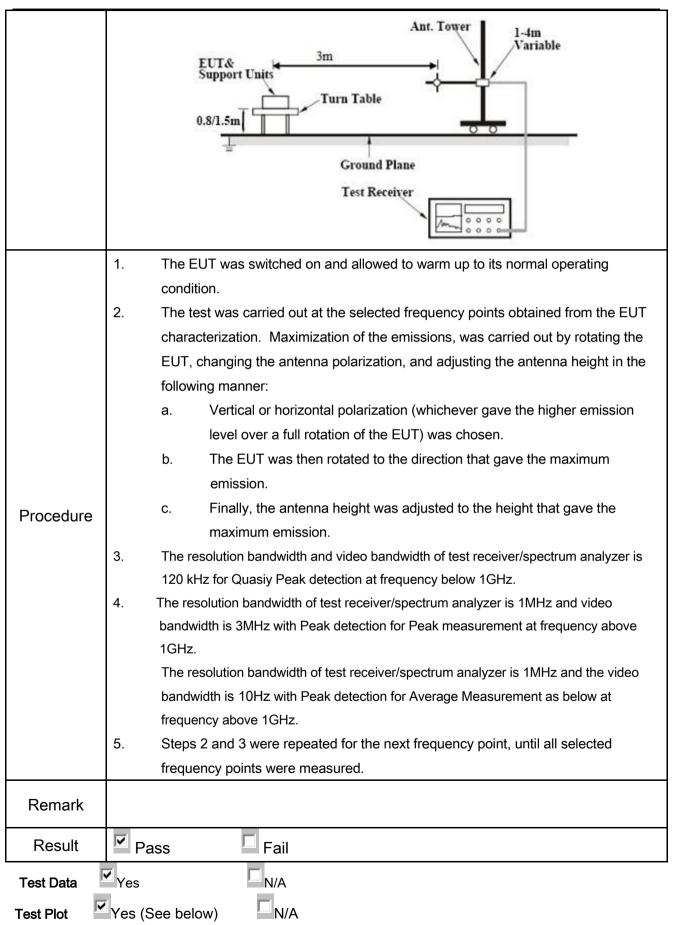
Temperature	26 °C
Relative Humidity	57%
Atmospheric Pressure	1025mbar
Test date :	October 25, 2017
Tested By :	Loren Luo

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 spet the level of any unwanted emissions the fundamental emission. The tight edges	r-frequency devices shall not cified in the following table and s shall not exceed the level of	
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)	
		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 Receiv	Anna Cana



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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);

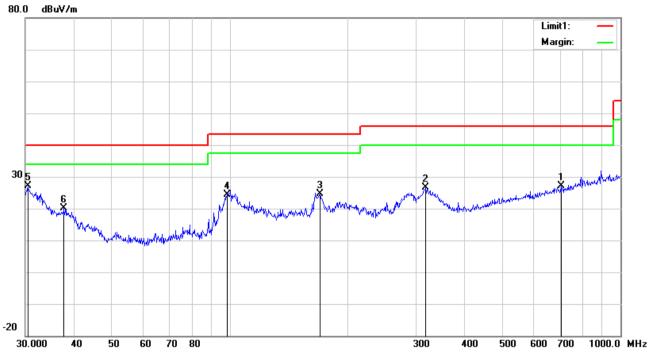
Limit line = specific limits(dBuv) + distance extrapolation factor.



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Test Mode: Bluetooth Mode

30MHz -1GHz



Test Data

Horizontal Polarity Plot @3m

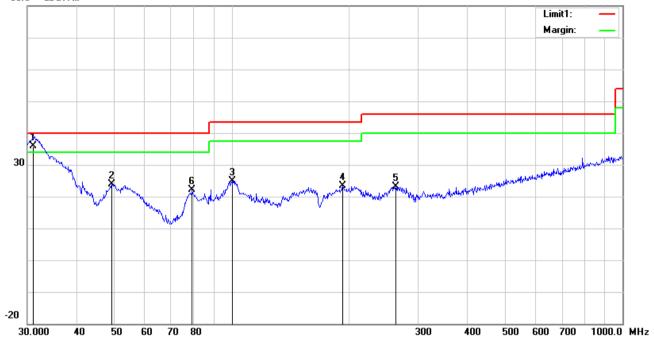
No.	P/L	Frequency	Reading	Detect	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degr
				or								ее
		(MHz)	(dBuV/m)		(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	()
1	Н	704.2261	25.69	peak	20.25	21.35	2.57	27.16	46.00	-18.84	100	253
2	Н	317.7011	32.92	peak	13.97	22.24	1.88	26.53	46.00	-19.47	100	323
3	Н	170.1948	33.65	peak	11.78	22.26	1.36	24.53	43.50	-18.97	100	168
4	Ι	98.4866	35.52	peak	10.04	22.32	1.08	24.32	43.50	-19.18	100	232
5	Н	30.4238	27.67	peak	21.07	22.28	0.63	27.09	40.00	-12.91	100	138
6	Н	37.6798	26.06	peak	15.59	22.27	0.78	20.16	40.00	-19.84	100	197



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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
		(MHz)	(dBuV/m)	or	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	()
1	٧	31.0706	36.97	QP	20.58	22.27	0.65	35.93	40.00	-4.07	100	332
2	V	49.3594	36.84	peak	8.68	22.37	0.79	23.94	40.00	-16.06	100	34
3	V	100.2286	35.55	peak	10.44	22.32	1.12	24.79	43.50	-18.71	100	56
4	٧	192.4186	32.50	peak	11.68	22.33	1.54	23.39	43.50	-20.11	100	333
5	V	262.8955	31.65	peak	11.97	22.29	1.72	23.05	46.00	-22.95	100	358
6	V	79.2426	35.77	peak	7.62	22.42	1.04	22.01	40.00	-17.99	100	250



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Above 1GHz

Test Mode: Transmitting Mode

Low Channel: 8-DPSK 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	39.72	AV	V	33.39	7.22	48.46	31.87	54	-22.13
4804	39.43	AV	Н	33.39	7.22	48.46	31.58	54	-22.42
4804	49.32	PK	V	33.39	7.22	48.46	41.47	74	-32.53
4804	45.36	PK	Н	33.39	7.22	48.46	37.51	74	-36.49
7614	24.82	AV	V	37.61	7.61	48.21	21.83	54	-32.17
7614	25.44	AV	Н	37.61	7.61	48.21	22.45	54	-31.55
7614	40.12	PK	V	37.61	7.61	48.21	37.13	74	-36.87
7614	42.79	PK	Н	37.61	7.61	48.21	39.8	74	-34.2

Middle Channel: 8-DPSK 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	38.49	AV	V	33.62	7.53	48.36	31.28	54	-22.72
4882	39.56	AV	Н	33.62	7.53	48.36	32.35	54	-21.65
4882	49.18	PK	V	33.62	7.53	48.36	41.97	74	-32.03
4882	45.79	PK	Н	33.62	7.53	48.36	38.58	74	-35.42
9025	24.59	AV	V	37.88	9.16	48.55	23.08	54	-30.92
9025	25.88	AV	Н	37.88	9.16	48.55	24.37	54	-29.63
9025	40.04	PK	V	37.88	9.16	48.55	38.53	74	-35.47
9025	41.95	PK	Н	37.88	9.16	48.55	40.44	74	-33.56



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High Channel: π /4 DQPSK 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	40.1	AV	V	33.89	7.86	48.31	33.54	54	-20.46
4960	39.37	AV	Н	33.89	7.86	48.31	32.81	54	-21.19
4960	47.89	PK	V	33.89	7.86	48.31	41.33	74	-32.67
4960	46.36	PK	Н	33.89	7.86	48.31	39.8	74	-34.2
17779	23.64	AV	V	43.21	19.44	44.4	41.89	54	-12.11
17779	23.97	AV	Н	43.21	19.44	44.4	42.22	54	-11.78
17779	39.42	PK	V	43.21	19.44	44.4	57.67	74	-16.33
17779	41.78	PK	Н	43.21	19.44	44.4	60.03	74	-13.97

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.
- 4, The radiated spurious test above 18GHz is subcontracted to SIEMIC (Nanjing-China) Laboratories. and found 30dB below the limit at least.



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Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
instrument	Model	Seriai #	Cai Date	Cai Due	III use
AC Line Conducted					I
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	11/17/2017	11/16/2018	>
OPT 010 AMPLIFIER	0.1.1==		00/00/00/7	00/00/00/0	
(0.1-1300MHz)	8447E	2727A02430	08/30/2017	08/29/2018	V
Horn Antenna	BBHA9170	3145226D1	09/27/2017	09/26/2018	V
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/23/2017	03/22/2018	✓
Active Antenna (9kHz-30MHz)	AL-130	121031	10/12/2017	10/11/2018	✓
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	V



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Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo





Adapter - Lable View

| Bold Like US US-WW-1002 | Input/Entrada/Entrée:100-240V-50/60Hz 0.2A | Output/Salida/Sortie: 5V=1000mA | Output/Salida/Salida/Sortie: 5V=1000mA | Output/Salida/Salida/Sortie: 5V=1000mA | Output/Salida/Sal



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EUT - Front View



EUT - Rear View



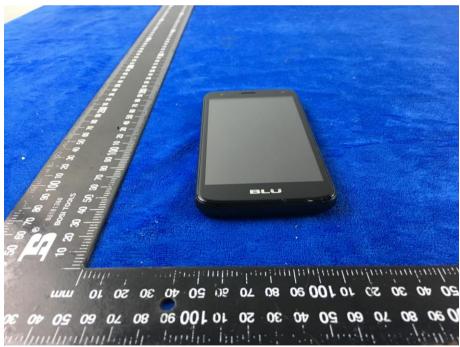


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EUT - Top View



EUT - Bottom View





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EUT - Left View



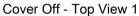
EUT - Right View





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Annex B.ii. Photograph: EUT Internal Photo





Cover Off - Top View 2



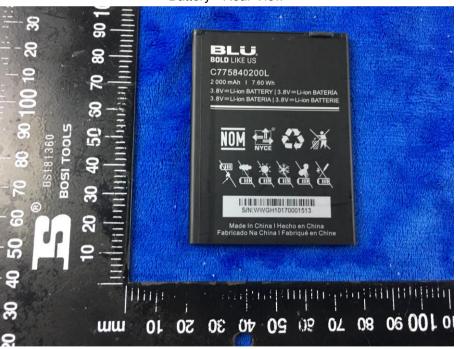


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Battery - Front View



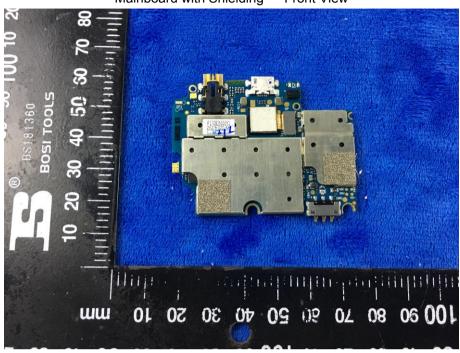
Battery - Rear View



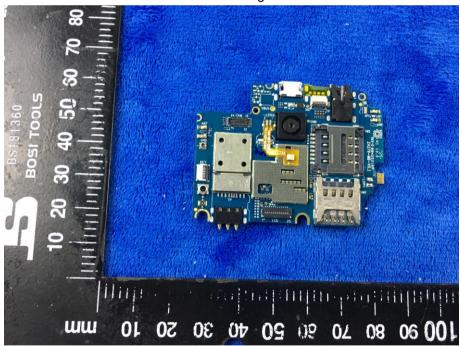


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Mainboard with Shielding - Front View



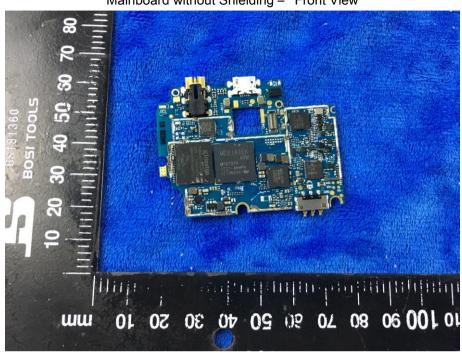
Mainboard with Shielding - Rear View



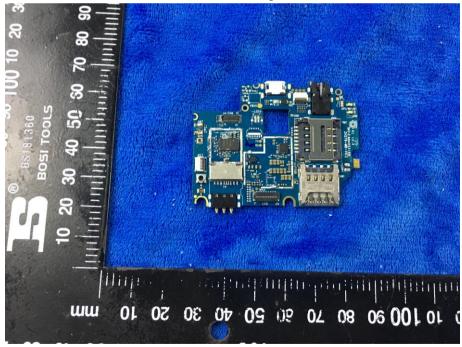


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Mainboard without Shielding - Front View



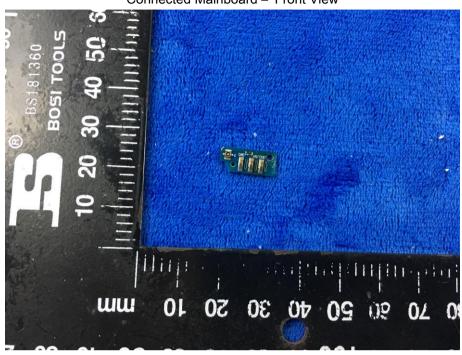
Mainboard without Shielding - Rear View



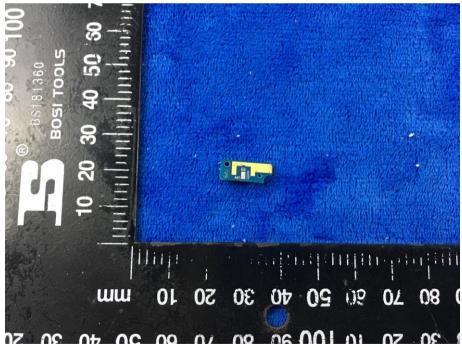


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Connected Mainboard - Front View



Connected Mainboard - Rear View





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LCD - Front View



LCD - Rear View





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GSM/PCS/UMTS-FDD/LTE - Antenna View



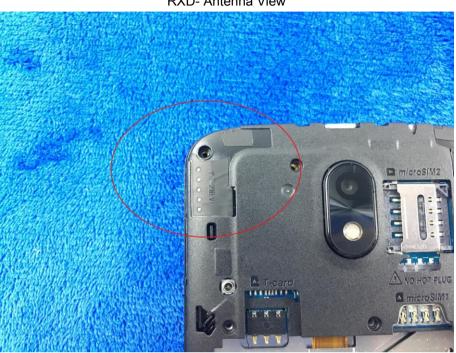
WIFI/BT/BLE/GPS - Antenna View





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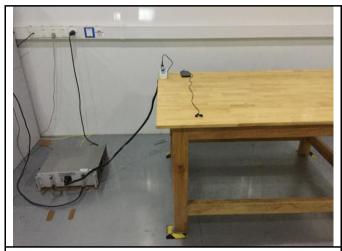
RXD- Antenna View





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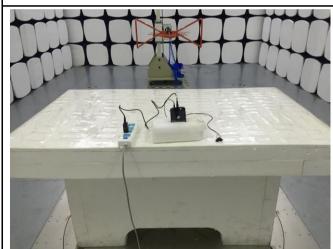
Annex B.iii. Photograph: Test Setup Photo



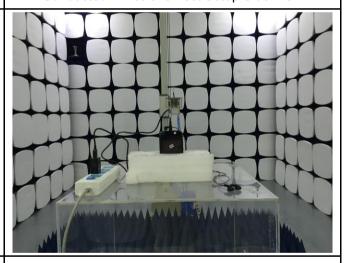
Conducted Emissions Test Setup Front View



Conducted Emissions Test Setup Side View



Radiated Spurious Emissions Test Setup Below 1GHz



Radiated Spurious Emissions Test Setup Above 1GHz

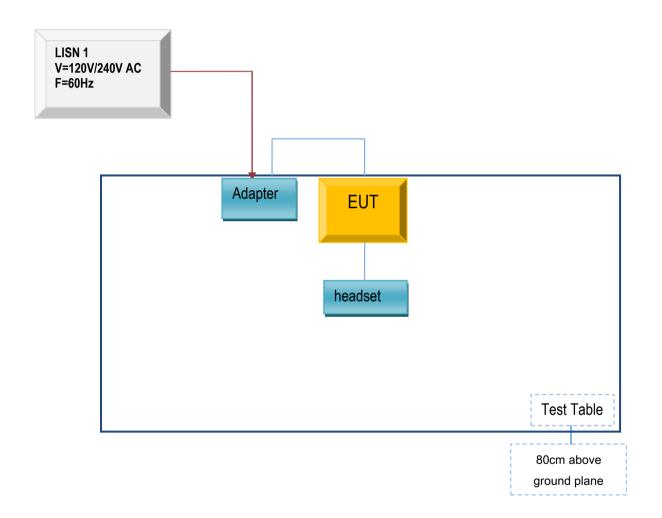


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Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

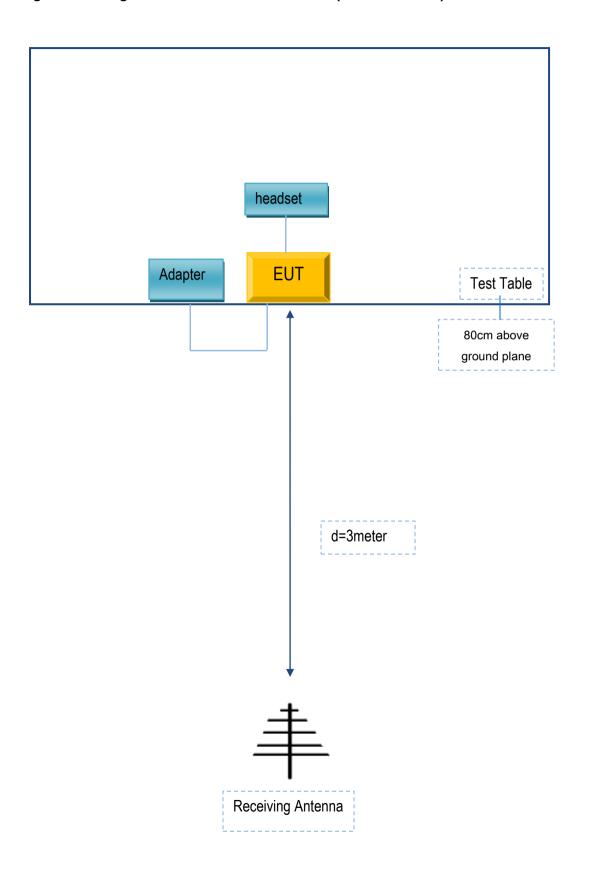
Block Configuration Diagram for AC Line Conducted Emissions





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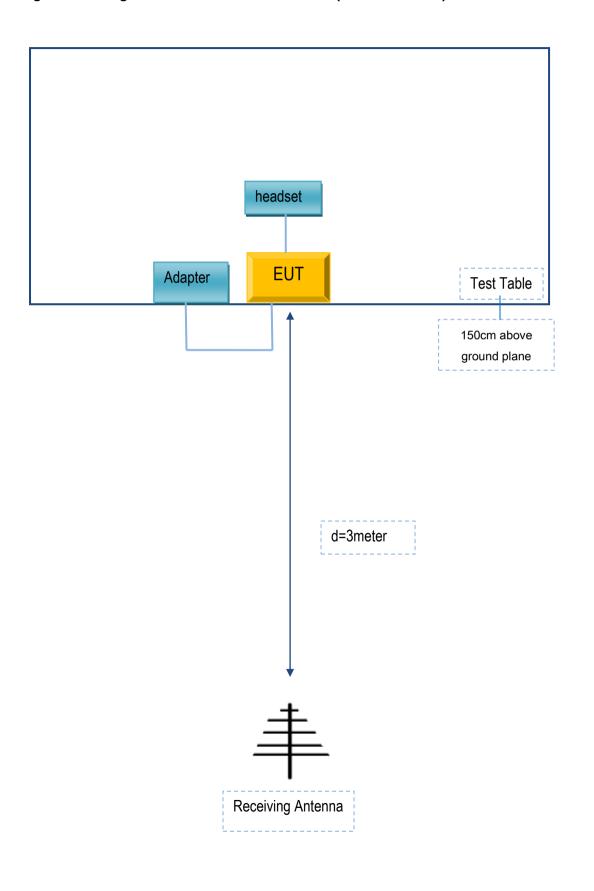
Block Configuration Diagram for Radiated Emissions (Below 1GHz).





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





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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-WW-1002	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



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

Please see the attachment



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Annex E. DECLARATION OF SIMILARITY

N/A