RF TEST REPORT



Report No.: 17071129-FCC-R4
Supersede Report No.: N/A

Applicant	BLU Produ	cts, Inc.		
Product Name	Mobile Pho	ne		
Model No.	STUDIO V	IEW XL		
Serial No.	N/A			
Test Standard	FCC Part 1	5.247: 2016,	ANSI C63.10: 2	013
Test Date	October 26	to Novembe	r 15, 2017	
Issue Date	November	16, 2017		
Test Result	Pass	☐ Fail		
Equipment compl	ied with the	specification	V	
Equipment did no	t comply wit	h the specific	ation 🗖	
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

Zone A, Floor 1, Building 2 Wan Ye Long Technology Park
South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108
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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
17071129-FCC-R4	NONE	Original	November 16, 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 Addross	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: STUDIO VIEW XL

Serial Model: N/A

Date EUT received: October 25, 2017

Test Date(s): October 26 to November 15, 2017

Equipment Category : DTS

GSM850: -0.5dBi PCS1900: 0.9dBi

UMTS-FDD Band V: -0.5dBi UMTS-FDD Band IV: 0.3dBi

Antenna Gain:

UMTS-FDD Band II: 0.9dBi

WIFI: 1.2dBi

Bluetooth/BLE: 1.1dBi

GPS: 0.8dBi

Antenna Type: PIFA antenna

GSM / GPRS: GMSK

EGPRS: GMSK

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:

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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

802.11b: 13.79 dBm

Max. Output Power: 802.11g: 11.73 dBm

802.11n(20M): 9.70 dBm 802.11n(40M): 8.74 dBm

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: US-WT-1500

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

Input Power: Output: DC 5.0V,1.5A

Battery:

Model: C906043300L

Spec: 3.8V, 3000mAh, 11.4Wh

Trade Name: BLU

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

FCC ID: YHLBLUSTVIEWXL



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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)(2)	DTS (6 dB&20 dB) CHANNEL BANDWIDTH	Compliance
§15.247(b)(3)	Conducted Maximum Output Power	Compliance
§15.247(e)	Power Spectral Density	Compliance
§15.247(d)	Band-Edge & Unwanted Emissions into Restricted Frequency Bands	Compliance
§15.207 (a),	AC Power Line Conducted Emissions	Compliance
§15.205, §15.209,	Radiated Emissions & Unwanted Emissions	Compliance
§15.247(d)	into Restricted Frequency Bands	Compliance

Measurement Uncertainty

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



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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 GSM/PCS/ UMTS-FDD Band V/ IV /II, the gain is -0.5dBi for GSM850/UMTS-FDD Band V, the gain is 0.9dBi for PCS1900/UMTS-FDD Band II, the gain is 0.3dBi for UMTS-FDD Band IV.

A permanently attached PIFA antenna for Bluetooth/BLE/WIFI/GPS, the gain is 1.1dBi for Bluetooth/BLE, the gain is 1.2dBi for WIFI, the gain is 0.8dBi for GPS.

The antenna meets up with the ANTENNA REQUIREMENT.

Result: Compliance.



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6.2 DTS (6 dB&20 dB) Channel Bandwidth

Temperature	25 °C	
Relative Humidity	57%	
Atmospheric Pressure	1015mbar	
Test date :	November 07, 2017	
Tested By :	Loren Luo	

	T .,	<u> </u>	<u> </u>					
Spec	Item	· · · · · · · · · · · · · · · · · · ·						
§ 15.247(a)(2)	a)	a) 6dB BW≥ 500kHz;						
RSS Gen(4.6.1)	b)	99% BW: For FCC reference only; required by IC.						
Test Setup		Spectrum Analyzer EUT						
	55807	4 D01 DTS MEAS Guidance v03r03, 8.1 DTS bandwidth						
	6dB b	andwidth_						
	a) Se	t RBW = 100 kHz.						
	b) Se	b) Set the video bandwidth (VBW) ≥ 3 × RBW.						
	c) Detector = Peak.							
	d) Trace mode = max hold.							
	e) Sweep = auto couple.							
	f) Allow the trace to stabilize.							
	g) Measure the maximum width of the emission that is constrained by the freq							
Test Procedure	uencies associated with the two outermost amplitude points (upper and lower fr							
restriocedure	equencies) that are attenuated by 6 dB relative to the maximum level measure							
	d in the fundamental emission.							
	20dB bandwidth							
	C63.10 Occupied Bandwidth (OBW=20dB bandwidth)							
	1. Set RBW = 1%-5% OBW.							
	2. Set the video bandwidth (VBW) ≥ 3 x RBW.							
	3. Set the span range between 2 times and 5 times of the OBW.							
	4. Sweep time=Auto, Detector=PK, Trace=Max hold.							
	5. Once the reference level is established, the equipment is conditioned with t							
	ypical modulating signals to produce the worst-							



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	case (i.e., the widest) bandwidth. Unless otherwise specified for an unlicensed wireless device, measure the bandwidth at the 20 dB levels with respect to the reference level.
Remark	
Result	Pass

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

Measurement result

Test mode	СН	Freq (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
	Low	2412	9.611	≥ 0.5
802.11b	Mid	2437	9.558	≥ 0.5
	High	2462	10.009	≥ 0.5
	Low	2412	15.699	≥ 0.5
802.11g	Mid	2437	15.602	≥ 0.5
	High	2462	15.717	≥ 0.5
000 44-	Low	2412	15.377	≥ 0.5
802.11n	Mid	2437	16.112	≥ 0.5
(20M)	High	2462	15.626	≥ 0.5
202.44	Low	2422	35.436	≥ 0.5
802.11n	Mid	2437	35.374	≥ 0.5
(40M)	High	2452	35.384	≥ 0.5



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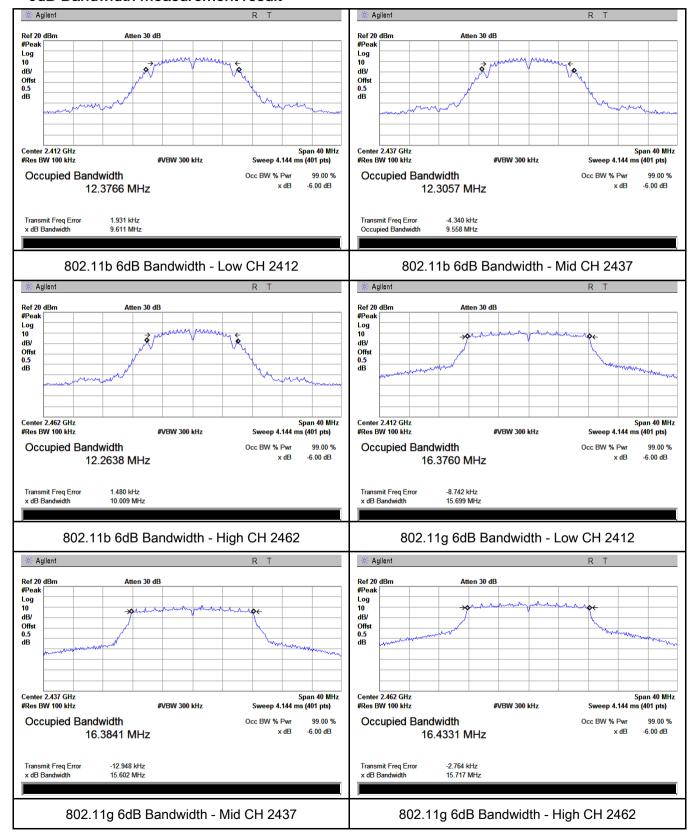
Test mode	СН	Freq (MHz)	20dB Bandwidth (MHz)
	Low	2412	14.330
802.11b	Mid	2437	14.318
	High	2462	14.302
	Low	2412	19.035
802.11g	Mid	2437	18.880
	High	2462	18.996
000 445	Low	2412	19.377
802.11n	Mid	2437	19.392
(20M)	High	2462	19.319
902.445	Low	2422	39.631
802.11n	Mid	2437	39.346
(40M)	High	2452	39.605



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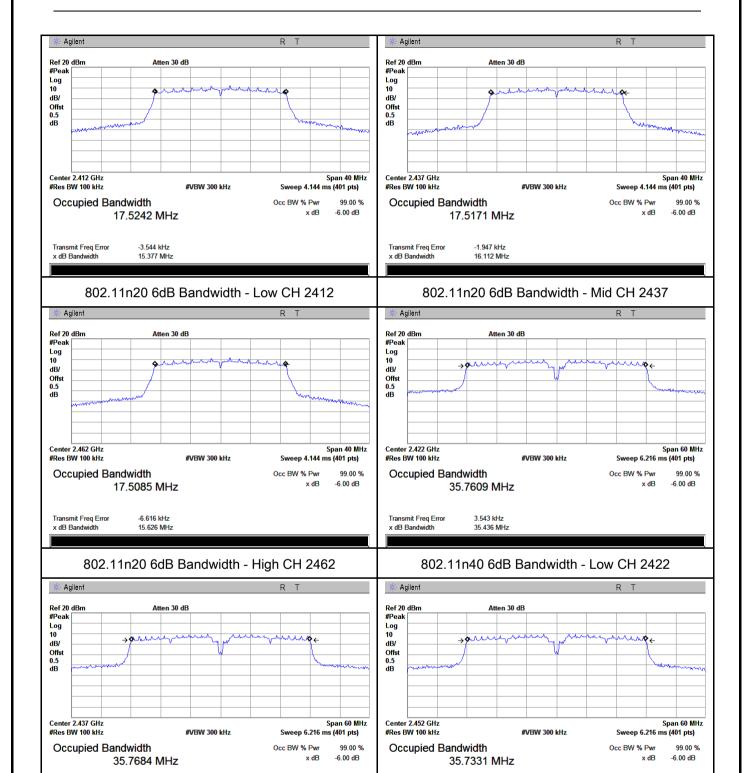
Test Plots

6dB Bandwidth measurement result





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Transmit Freq Error x dB Bandwidth

802.11n40 6dB Bandwidth - Mid CH 2437

10.016 kHz

Transmit Freq Error x dB Bandwidth

802.11n40 6dB Bandwidth - High CH 2452

-14.327 kHz

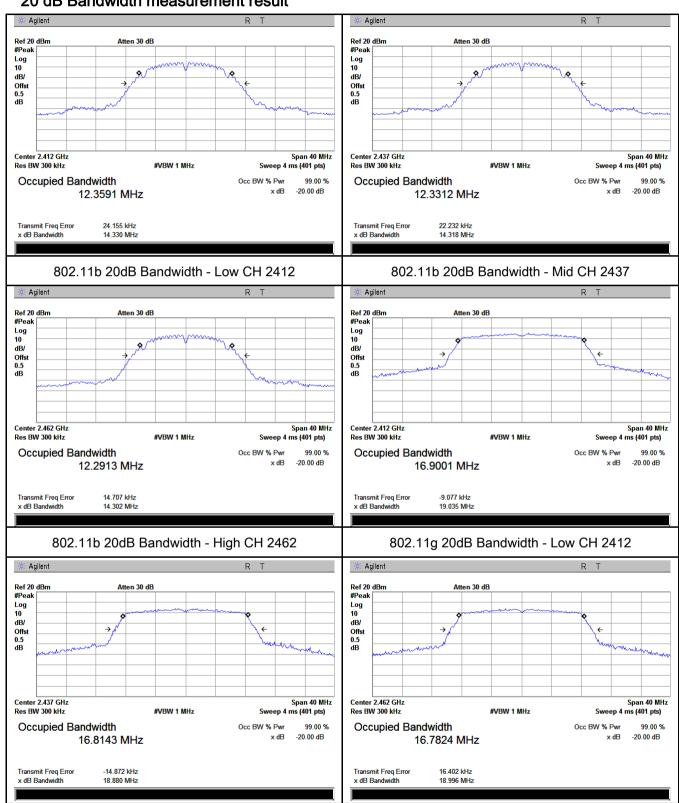


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802.11g 20dB Bandwidth - High CH 2462

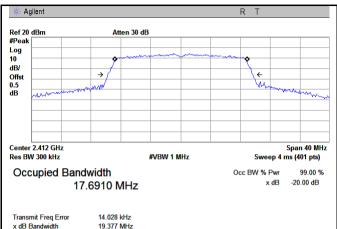
20 dB Bandwidth measurement result

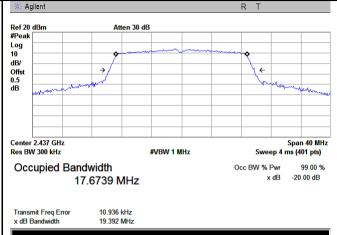
802.11g 20dB Bandwidth - Mid CH 2437



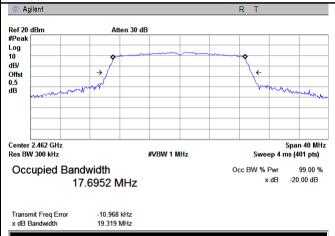


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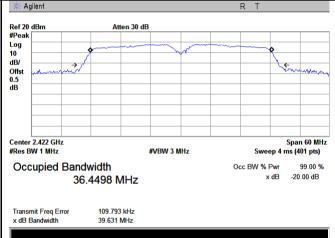




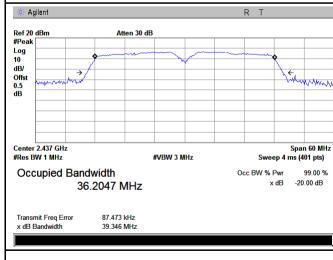
802.11n20 20dB Bandwidth - Low CH 2412



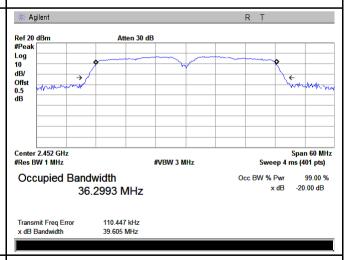
802.11n20 20dB Bandwidth - Mid CH 2437



802.11n20 20dB Bandwidth - High CH 2462



802.11n40 20dB Bandwidth - Low CH 2422



802.11n40 20dB Bandwidth - Mid CH 2437

802.11n40 20dB Bandwidth - High CH 2452



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6.3 Maximum Output Power

Temperature	25 °C
Relative Humidity	57%
Atmospheric Pressure	1015mbar
Test date :	November 07, 2017
Tested By :	Loren Luo

Requirement(s):

Requirement(s):			
Spec	Ite	Requirement	Applicable
Орес	m		
	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	
(3),RSS210		Watt.	
(A8.4)	d)	FHSS in 902-928MHz with ≥ 50 channels: ≤ 1 Watt	
(* 101.1)	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		
	55807	4 D01 DTS MEAS Guidance v03r03, 9.1.2 Integrated band power me	ethod
	Maxim	num output power measurement procedure	
	-	a) Set span to at least 1.5 times the OBW.	
	-	b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz.	
	- c) Set VBW ≥ 3 x RBW.		
Test	-	d) Number of points in sweep ≥ 2 × span / RBW. (This gives bin-to	
Procedure		≤ RBW/2, so that narrowband signals are not lost between frequer	ncy bins.)
	- e) Sweep time = auto.		
	-	f) Detector = RMS (i.e., power averaging), if available. Otherwise, u	se sample
		detector mode.	
	-	g) If transmit duty cycle < 98 %, use a sweep trigger with the level s	
	triggering only on full power pulses. The transmitter shall operate at maximum		



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	power control level for the entire duration of every sweep. If the EUT transmits
	continuously (i.e., with no off intervals) or at duty cycle ≥ 98 %, and if each
	transmission is entirely at the maximum power control level, then the trigger shall
	be set to " free run" .
	- h) Trace average at least 100 traces in power averaging (i.e., RMS) mode.
	- i) Compute power by integrating the spectrum across the OBW of the signal
	using the instrument's band power measurement function, with band limits set
	equal to the OBW band edges. If the instrument does not have a band power
	function, sum the spectrum levels (in power units) at intervals equal to the RBW
	extending across the entire OBW of the spectrum.
Remark	
Result	Pass Fail

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

Output Power measurement result

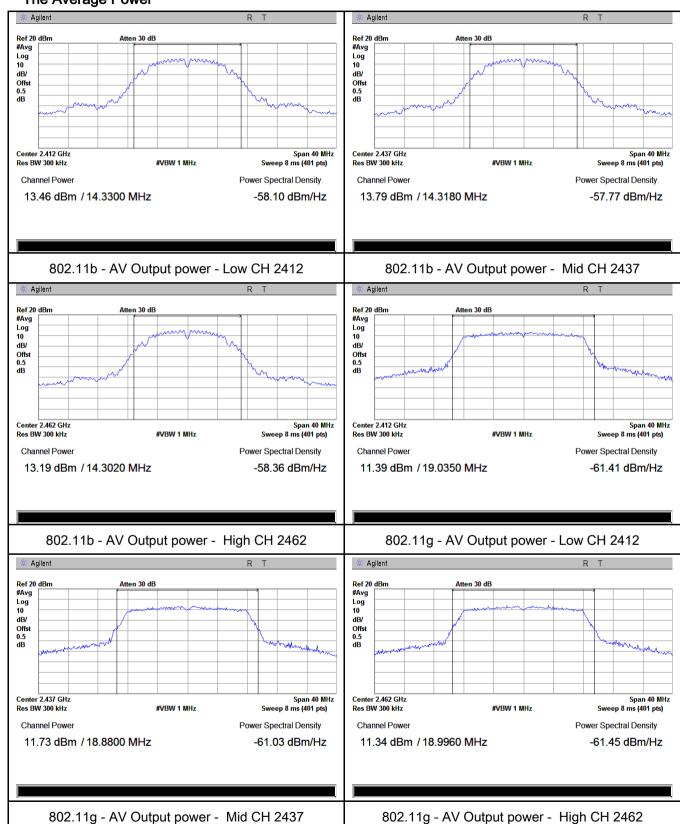
Tyrno	Test mode	CH	Frequency	Conducted	Limit	Result
Type	rest mode	СП	(MHz)	Power (dBm)	(dBm)	Result
		Low	2412	13.46	30	Pass
	802.11b	Mid	2437	13.79	30	Pass
		High	2462	13.19	30	Pass
		Low	2412	11.39	30	Pass
		Mid	2437	11.73	30	Pass
Output		High	2462	11.34	30	Pass
power		Low	2412	9.70	30	Pass
		Mid	2437	9.55	30	Pass
		High	2462	9.06	30	Pass
		Low	2422	8.40	30	Pass
		Mid	2437	8.74	30	Pass
		High	2452	8.29	30	Pass



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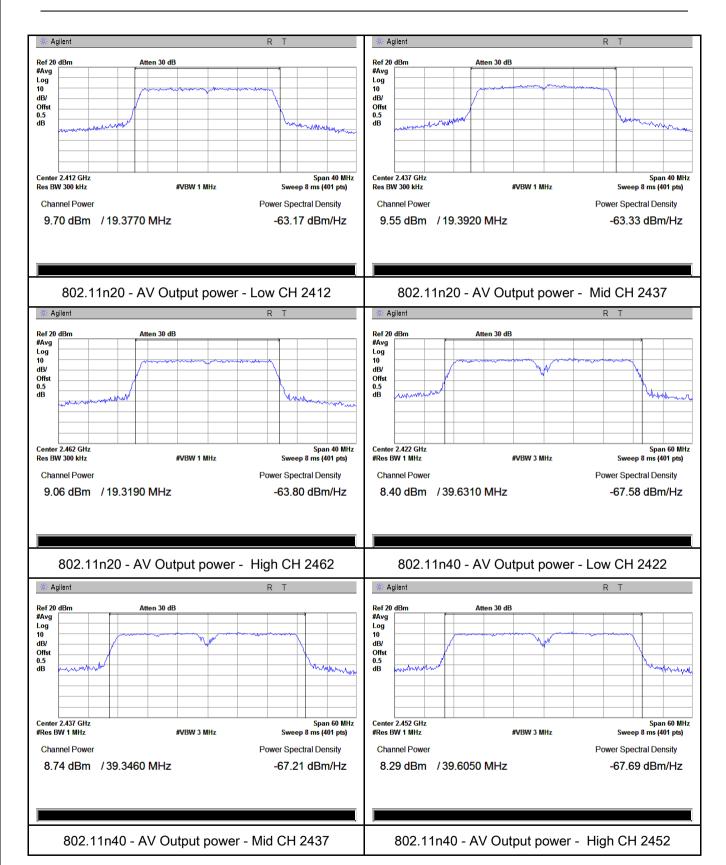
Test Plots

The Average Power





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6.4 Power Spectral Density

Temperature	25 °C
Relative Humidity	55%
Atmospheric Pressure	1012mbar
Test date :	November 10, 2017
Tested By :	Loren Luo

Spec	Item	Requirement	Applicable
§15.247(e)	a) The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.		
Test Setup		Spectrum Analyzer EUT	
Test Procedure	power s	A D01 DTS MEAS Guidance v03r03, 10.2 power spectral density measurement procedure a) Set analyzer center frequency to DTS channel center frequency b) Set the span to 1.5 times the DTS bandwidth. c) Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz. d) Set the VBW ≥ 3 × RBW. e) Detector = peak. f) Sweep time = auto couple. g) Trace mode = max hold. h) Allow trace to fully stabilize. i) Use the peak marker function to determine the maximum and level within the RBW. j) If measured value exceeds limit, reduce RBW (no less than repeat.	nency.
Remark			
Result	Pas	ss Fail	



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

Power Spectral Density measurement result

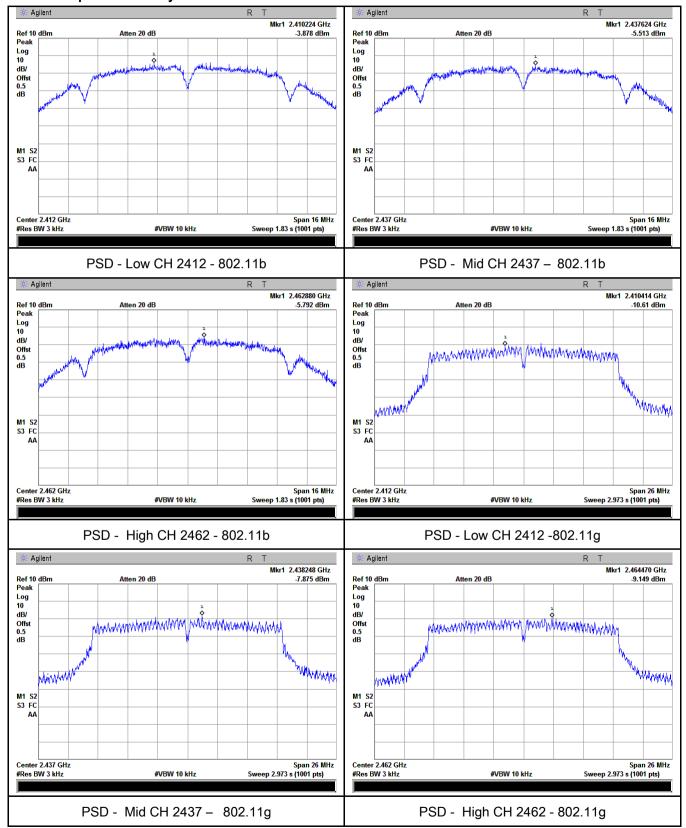
Туре	Test mode	СН	Freq	PSD	Limit	Result
			(MHz)	(dBm)	(dBm)	
		Low	2412	-3.878	8	Pass
	802.11b	Mid	2437	-5.513	8	Pass
		High	2462	-5.792	8	Pass
	802.11g	Low	2412	-10.61	8	Pass
		Mid	2437	-7.875	8	Pass
PSD		High	2462	-9.149	8	Pass
P3D	000 115	Low	2412	-10.59	8	Pass
	802.11n	Mid	2437	-8.103	8	Pass
	(20M) 802.11n (40M)	High	2462	-9.298	8	Pass
		Low	2422	-10.81	8	Pass
		Mid	2437	-11.16	8	Pass
		High	2452	-10.68	8	Pass



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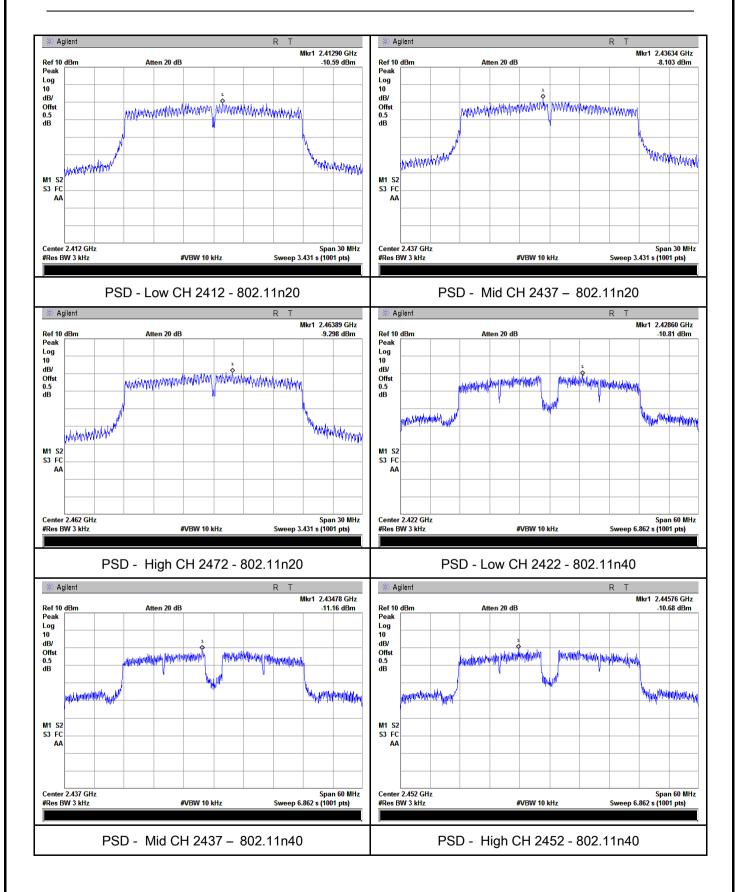
Test Plots

Power Spectral Density measurement result





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6.5 Band-Edge & Unwanted Emissions into Restricted Frequency Bands

Temperature	25 °C	
Relative Humidity	53%	
Atmospheric Pressure	1005mbar	
Test date :	November 01, 2017	
Tested By :	Loren Luo	

Requirement(s):

Spec	Item	Item Requirement		
§15.247(d)	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	Peak conducted power limits. Ant. Tower Support Units Ground Plane Test Receiver			
Test Procedure	Radiated Method Only 1. Check the calibration of the measuring instrument using either calibrator or a known signal from an external generator. 2. Position the EUT without connection to measurement instrume the Rotated table and turn on the EUT and make it operate in tra mode. Then set it to Low Channel and High Channel within its operand make sure the instrument is operated in its linear range.		ent. Put it on	



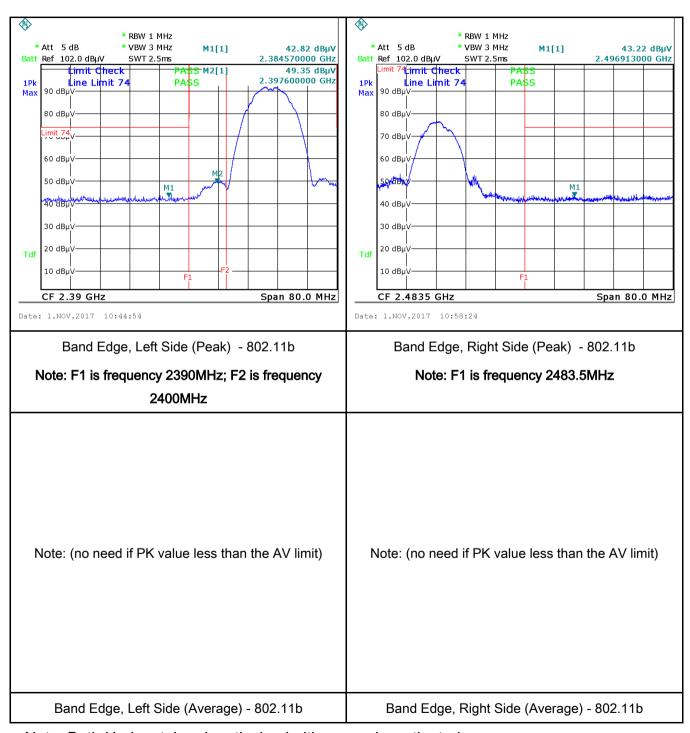
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	- 3. First, set both RBW and VBW of spectrum analyzer to 100 kHz with a
	convenient frequency span including 100kHz bandwidth from band edge,
	check the emission of EUT, if pass then set Spectrum Analyzer as below:
	a. The resolution bandwidth and 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
	·
T (D)	
Test Data	Yes N/A
Test Plot	Yes (See below)



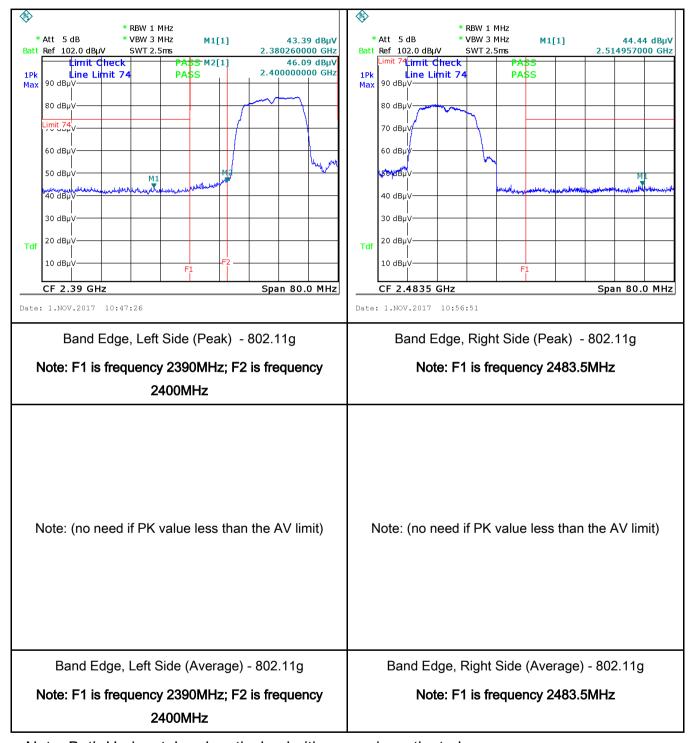
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Test Plots Band Edge measurement result



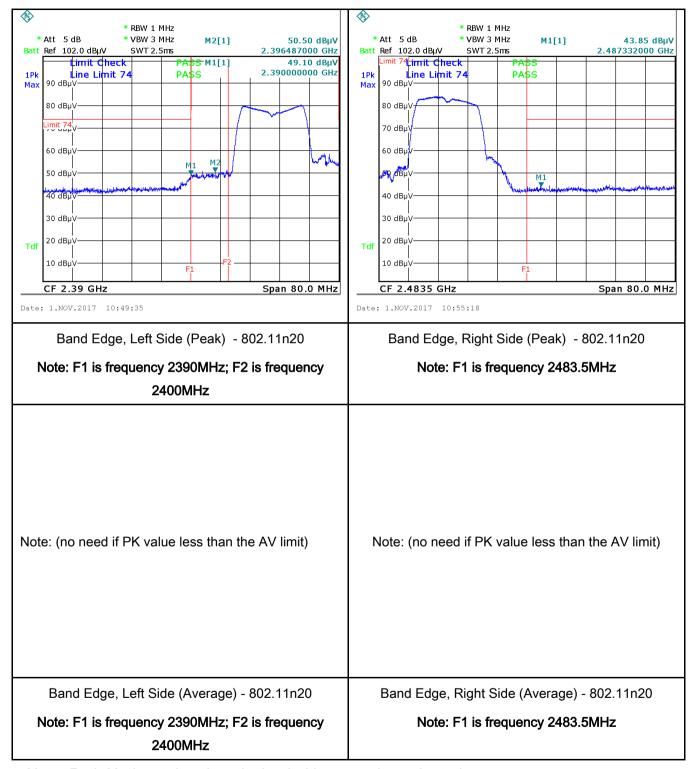


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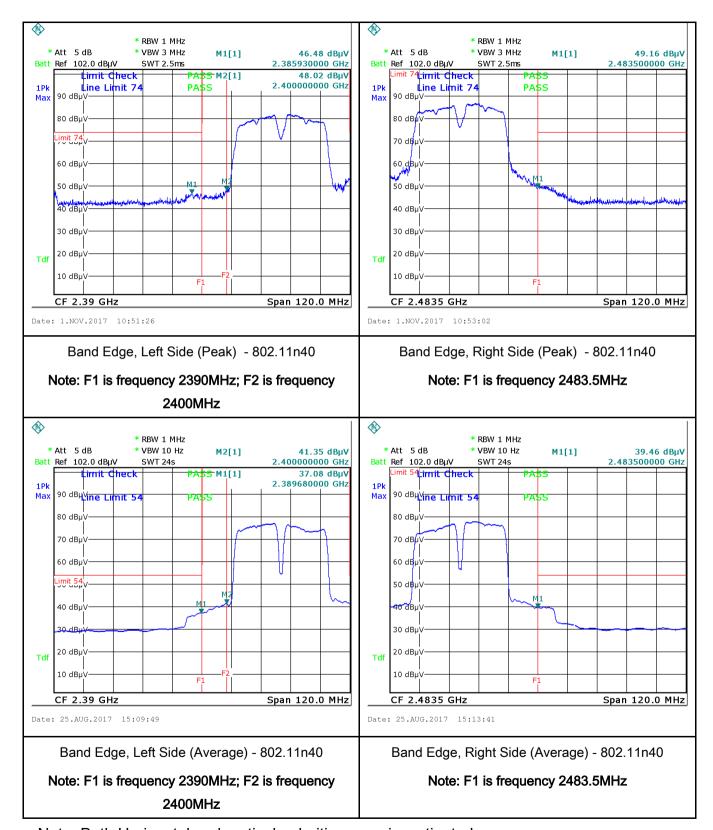


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6.6 AC Power Line Conducted Emissions

Temperature	22 °C
Relative Humidity	53%
Atmospheric Pressure	1008mbar
Test date :	November 02, 2017
Tested By :	Loren Luo

Requirement(s):

Spec	Item	em Requirement		Applicable	
47CFR§15. 207, RSS210 (A8.1)	a)	For Low-power radio-fr connected to the public voltage that is conducte frequency or frequencie not exceed the limits in [mu] H/50 ohms line im lower limit applies at th Frequency ranges (MHz)	e utility (AC) power line and back onto the AC poses, within the band 150 the following table, as apedance stabilization to boundary between the	, the radio frequency ower line on any kHz to 30 MHz, shall measured using a 50 network (LISN). The	▼
		0.15 ~ 0.5	66 – 56	56 – 46	
		0.5 ~ 5	56	46	
		5 ~ 30	60	50	
Test Setup	Vertical Ground Reference Plane 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				
The EUT and supporting equipment were set up in accordance with the requi			quirements of		
	the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table.				4 555 61
Procedure	2. The power supply for the EUT was fed through a 50W/50mH EUT LISN, or			onnected to	
	filtered mains.				
3. The RF OUT of the EUT LISN was connected to the EMI test receiver		ne EMI test receiver via	a low-loss		

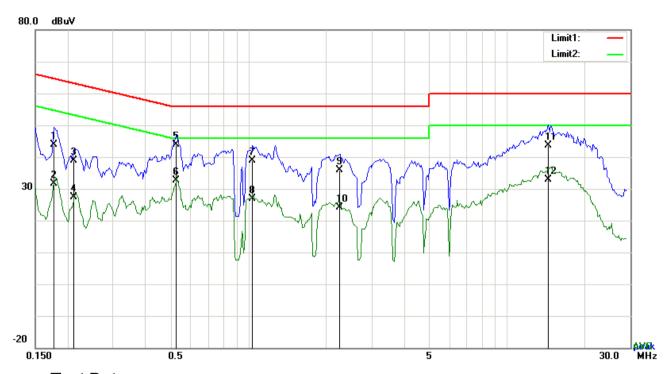


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	coaxial cable.
	4. All other supporting equipment were powered separately from another main supply.
	5. The EUT was switched on and allowed to warm up to its normal operating condition.
	6. A scan was made on the NEUTRAL line (for AC mains) or Earth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



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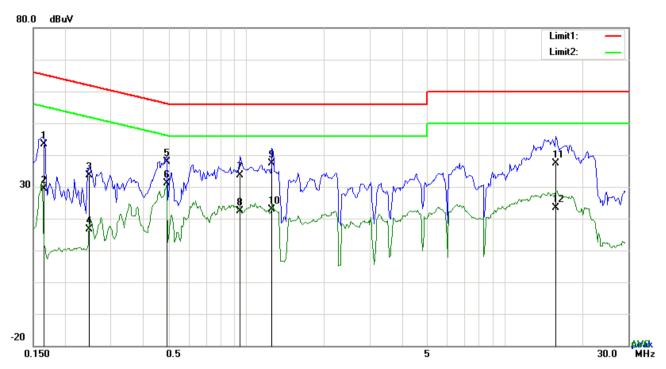
Test Data

Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)
1	L1	0.1773	33.90	QP	10.03	43.93	64.61	-20.68
2	L1	0.1773	21.69	AVG	10.03	31.72	54.61	-22.89
3	L1	0.2124	28.78	QP	10.03	38.81	63.11	-24.30
4	L1	0.2124	17.32	AVG	10.03	27.35	53.11	-25.76
5	L1	0.5283	33.93	QP	10.03	43.96	56.00	-12.04
6	L1	0.5283	22.56	AVG	10.03	32.59	46.00	-13.41
7	L1	1.0392	28.91	QP	10.03	38.94	56.00	-17.06
8	L1	1.0392	16.96	AVG	10.03	26.99	46.00	-19.01
9	L1	2.2599	25.77	QP	10.05	35.82	56.00	-20.18
10	L1	2.2599	14.05	AVG	10.05	24.10	46.00	-21.90
11	L1	14.4543	33.53	QP	10.22	43.75	60.00	-16.25
12	L1	14.4543	22.59	AVG	10.22	32.81	50.00	-17.19



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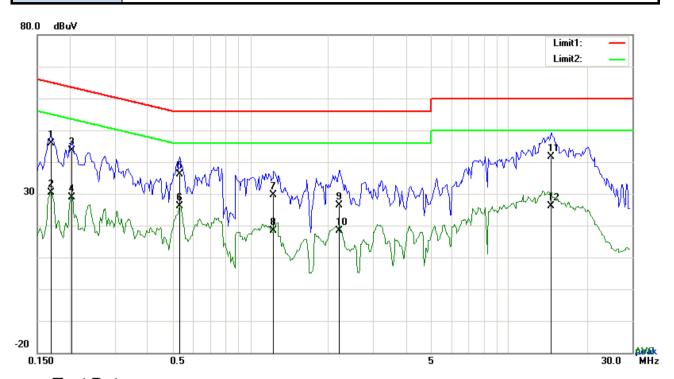
Test Data

Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)
1	N	0.1656	33.29	QP	10.02	43.31	65.18	-21.87
2	N	0.1656	19.28	AVG	10.02	29.30	55.18	-25.88
3	N	0.2475	23.51	QP	10.02	33.53	61.84	-28.31
4	N	0.2475	6.65	AVG	10.02	16.67	51.84	-35.17
5	N	0.4932	27.74	QP	10.02	37.76	56.11	-18.35
6	N	0.4932	21.08	AVG	10.02	31.10	46.11	-15.01
7	N	0.9456	23.70	QP	10.03	33.73	56.00	-22.27
8	N	0.9456	12.47	AVG	10.03	22.50	46.00	-23.50
9	N	1.2615	27.23	QP	10.03	37.26	56.00	-18.74
10	N	1.2615	12.90	AVG	10.03	22.93	46.00	-23.07
11	N	15.7569	27.05	QP	10.21	37.26	60.00	-22.74
12	N	15.7569	13.22	AVG	10.21	23.43	50.00	-26.57



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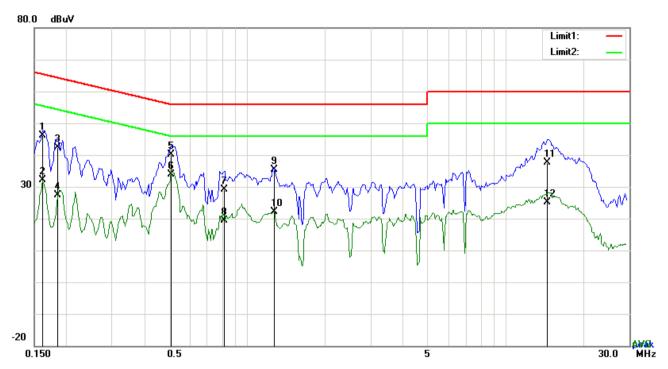
Test Data

Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)
1	L1	0.1695	35.82	QP	10.03	45.85	64.98	-19.13
2	L1	0.1695	20.34	AVG	10.03	30.37	54.98	-24.61
3	L1	0.2046	33.53	QP	10.03	43.56	63.42	-19.86
4	L1	0.2046	18.93	AVG	10.03	28.96	53.42	-24.46
5	L1	0.5322	26.13	QP	10.03	36.16	56.00	-19.84
6	L1	0.5322	16.07	AVG	10.03	26.10	46.00	-19.90
7	L1	1.2342	19.52	QP	10.03	29.55	56.00	-26.45
8	L1	1.2342	8.37	AVG	10.03	18.40	46.00	-27.60
9	L1	2.2131	16.36	QP	10.05	26.41	56.00	-29.59
10	L1	2.2131	8.23	AVG	10.05	18.28	46.00	-27.72
11	L1	14.5908	31.35	QP	10.22	41.57	60.00	-18.43
12	L1	14.5908	15.87	AVG	10.22	26.09	50.00	-23.91



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Test Data

Phase Neutral Plot at 240Vac, 60Hz

No.	P/L	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)
1	N	0.1617	36.19	QP	10.02	46.21	65.38	-19.17
2	Ν	0.1617	22.12	AVG	10.02	32.14	55.38	-23.24
3	N	0.1851	32.30	QP	10.02	42.32	64.25	-21.93
4	N	0.1851	17.38	AVG	10.02	27.40	54.25	-26.85
5	Ν	0.5088	30.17	QP	10.02	40.19	56.00	-15.81
6	Ν	0.5088	23.85	AVG	10.02	33.87	46.00	-12.13
7	Ν	0.8169	19.08	QP	10.03	29.11	56.00	-26.89
8	N	0.8169	9.32	AVG	10.03	19.35	46.00	-26.65
9	N	1.2693	25.41	QP	10.03	35.44	56.00	-20.56
10	N	1.2693	11.98	AVG	10.03	22.01	46.00	-23.99
11	N	14.5128	27.32	QP	10.19	37.51	60.00	-22.49
12	N	14.5128	14.86	AVG	10.19	25.05	50.00	-24.95



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6.7 Radiated Spurious Emissions & Restricted Band

Temperature	22 °C
Relative Humidity	53%
Atmospheric Pressure	1008mbar
Test date :	November 02, 2017
Tested By:	Loren Luo

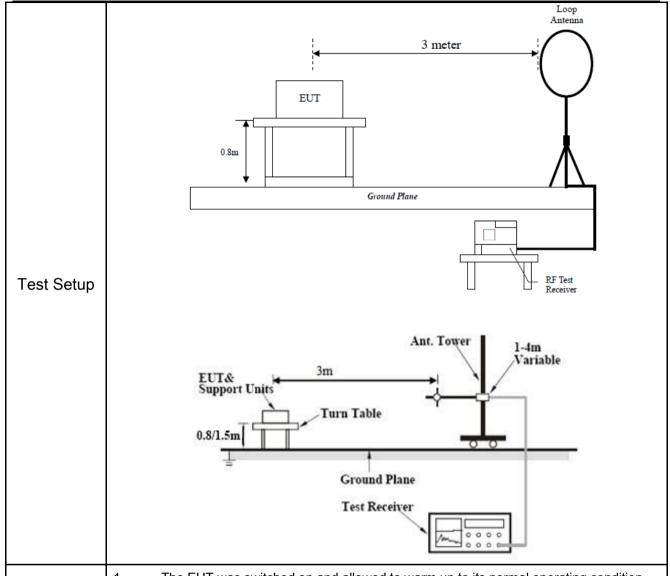
Requirement(s):

Spec	Item	Requirement	Applicable	
		Except higher limit as specified else emissions from the low-power radio exceed the field strength levels spet the level of any unwanted emission the fundamental emission. The tight edges		
	-)	Frequency range (MHz)	Field Strength (μV/m)	
	(a)	0.009~0.490	2400/F(KHz)	>
		0.490~1.705	24000/F(KHz)	
		1.705~30.0	30	
		30 - 88	100	
47CFR§15.	b)	88 – 216	150	
247(d),		216 960	200	
RSS210		Above 960	500	
(A8.5)		For non-restricted band, In any 100 frequency band in which the spread modulated intentional radiator is oppower that is produced by the inter 20 dB or 30dB below that in the 10 band that contains the highest level determined by the measurement mused. Attenuation below the general	d spectrum or digitally perating, the radio frequency ational radiator shall be at least 0 kHz bandwidth within the 1 of the desired power, sethod on output power to be	>
	c)	is not required 20 dB down 30 or restricted band, emission must a emission limits specified in 15.209	dB down	>



Procedure

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- 1. The EUT was switched on and allowed to warm up to its normal operating condition.
- 2. The test was carried out at the selected frequency points obtained from the EUT characterization. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner:
 - a. Vertical or horizontal polarization (whichever gave the higher emission level over a full rotation of the EUT) was chosen.
 - b. The EUT was then rotated to the direction that gave the maximum emission.
 - c. Finally, the antenna height was adjusted to the height that gave the maximum emission.
- 3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasiy Peak detection at frequency below 1GHz.
- 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.



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	The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video
	bandwidth is 10Hz with Peak detection for Average Measurement as below at
	frequency above 1GHz.
	5. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency
	points were measured.
Domonik	Different RF configuration has been evaluated but not much difference was found. The data
Remark	presented here is the worst case data with EUT under 802.11n – HT20-2437MHz mode.
Result	Pass Fail

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



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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);

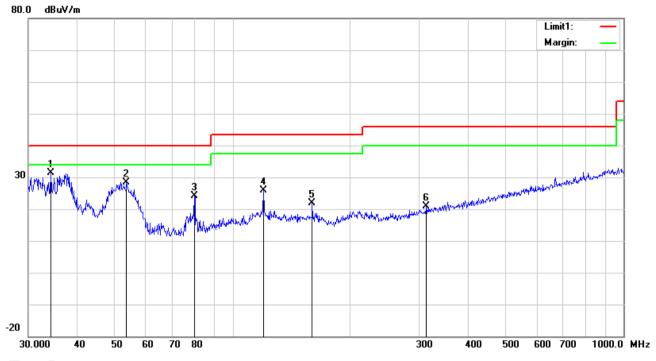
Limit line = specific limits(dBuv) + distance extrapolation factor.



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Test Mode: Transmitting Mode

30MHz -1GHz



Test Data

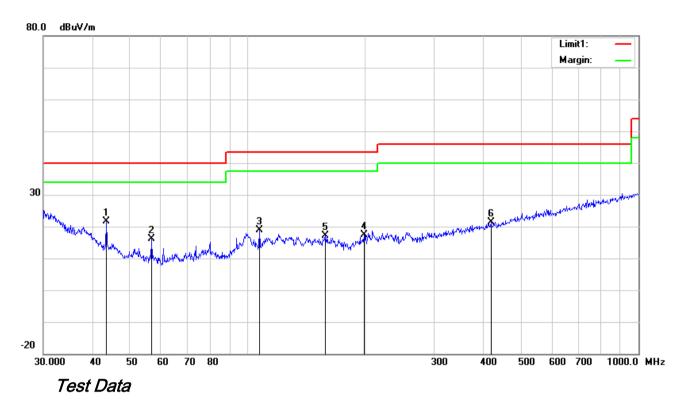
Vertical Polarity Plot @3m

No.	P/L	Frequency	Reading	Detect	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degr
				or								ee
		(MHz)	(dBuV/m)		(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	()
1	V	34.2760	34.71	peak	18.11	22.25	0.74	31.31	40.00	-8.69	100	152
2	٧	53.5052	42.05	peak	8.01	22.39	0.79	28.46	40.00	-11.54	100	18
3	>	79.8003	37.82	peak	7.60	22.42	1.05	24.05	40.00	-15.95	100	324
4	>	119.8556	33.31	peak	13.87	22.36	1.16	25.98	43.50	-17.52	100	146
5	V	159.7844	30.17	peak	12.60	22.27	1.39	21.89	43.50	-21.61	100	276
6	V	313.2760	27.32	peak	13.88	22.25	1.86	20.81	46.00	-25.19	100	9



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30MHz -1GHz



Horizontal Polarity Plot @3m

N	P/	Frequency	Reading	Detect	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degr
0.	L	(MHz)	(dBuV/m	or	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(º)
1	Н	43.5057	31.51	peak	11.59	22.29	0.76	21.57	40.00	-18.43	100	207
2	Н	56.7917	30.01	peak	7.65	22.40	0.77	16.03	40.00	-23.97	100	356
3	Н	107.1337	28.41	peak	11.65	22.33	1.16	18.89	43.50	-24.61	100	304
4	Н	198.5880	26.20	peak	12.02	22.37	1.54	17.39	43.50	-26.11	100	355
5	Н	158.1123	25.48	peak	12.60	22.28	1.38	17.18	43.50	-26.32	100	9
6	Н	419.1081	25.30	peak	16.08	21.97	2.06	21.47	46.00	-24.53	100	112



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Above 1GHz

st Mode:

Low Channel (2412 MHz) (b mode worst case)

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)
4824	55.71	AV	V	33.39	7.22	48.46	47.86	54	-6.14
4824	53.22	AV	Ι	33.39	7.22	48.46	45.37	54	-8.63
4824	68.73	PK	٧	33.39	7.22	48.46	60.88	74	-13.12
4824	63.99	PK	Н	33.39	7.22	48.46	56.14	74	-17.86
12904	18.24	AV	٧	45.12	11.57	32.11	42.82	54	-11.18
12904	20.7	AV	Н	45.12	11.57	32.11	45.28	54	-8.72
12904	40.01	PK	V	45.12	11.57	32.11	64.59	74	-9.41
12904	40.81	PK	Н	45.12	11.57	32.11	65.39	74	-8.61

Middle Channel (2437 MHz) (b $\underline{\hspace{0.1cm}}$ mode worst case)

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)
4874	53.52	AV	V	33.62	7.53	48.36	46.31	54	-7.69
4874	54.81	AV	Н	33.62	7.53	48.36	47.6	54	-6.4
4874	68.44	PK	V	33.62	7.53	48.36	61.23	74	-12.77
4874	63.14	PK	Η	33.62	7.53	48.36	55.93	74	-18.07
8093	18.14	AV	V	45.17	11.63	32.18	42.76	54	-11.24
8093	19.18	AV	Η	45.17	11.63	32.18	43.8	54	-10.2
8093	41.15	PK	V	45.17	11.63	32.18	65.77	74	-8.23
8093	42.21	PK	Н	45.17	11.63	32.18	66.83	74	-7.17



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High Channel (2462 MHz) (b mode worst case)

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)
4924	53.97	AV	٧	33.74	7.78	48.34	47.15	54	-6.85
4924	53.55	AV	Ι	33.74	7.78	48.34	46.73	54	-7.27
4924	67.38	PK	٧	33.74	7.78	48.34	60.56	74	-13.44
4924	64.69	PK	Н	33.74	7.78	48.34	57.87	74	-16.13
17871	18.33	AV	٧	45.19	11.61	32.24	42.89	54	-11.11
17904	19.51	AV	Н	45.19	11.61	32.24	44.07	54	-9.93
17904	38.98	PK	V	45.19	11.61	32.24	63.54	74	-10.46
17904	40.58	PK	Н	45.19	11.61	32.24	65.14	74	-8.86

Note:

- 1, The testing has been conformed to 10*2462MHz=24,620MHz
- 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 Data	Cal Due	In use
Instrument	Model	Seriai #	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	V
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	1
(0.1-1300MHz)	8447E	2727A02430	08/30/2017	08/29/2018	>
Horn Antenna	BBHA9170	3145226D1	09/27/2017	09/26/2018	>
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	<u>\</u>
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/19/2017	09/18/2018	<u>\</u>
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



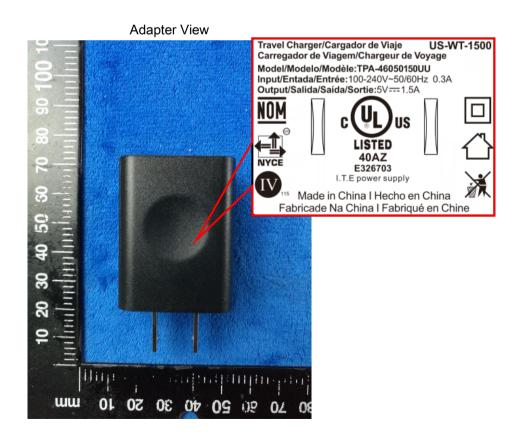
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Annex B. EUT and Test Setup Photographs

Annex B.i. Photograph: EUT External Photo









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EUT - Front View



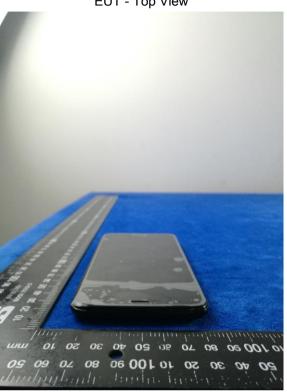
EUT - Rear View



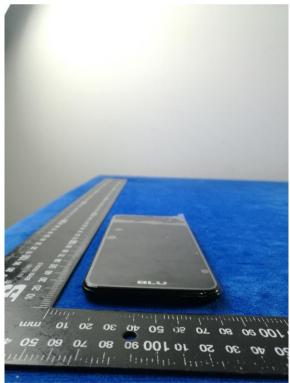


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EUT - Top View



EUT - Bottom View





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EUT - Left View



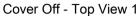
EUT - Right View





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Annex B.ii. Photograph: EUT Internal Photo





Cover Off - Top View 2





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Battery - Front View



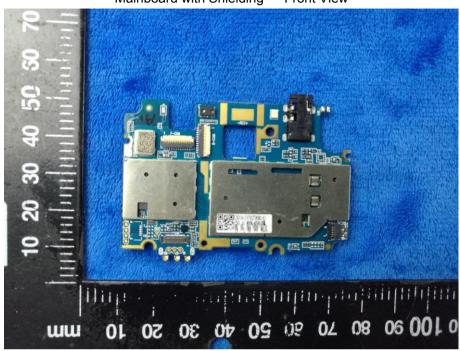
Battery - Rear View



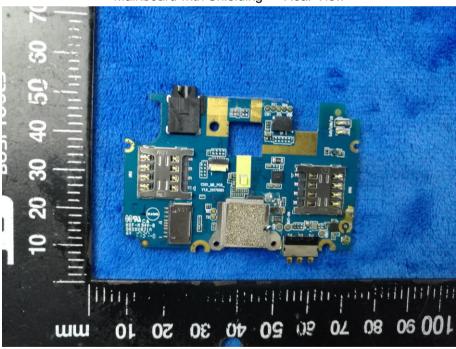


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Mainboard with Shielding - Front View



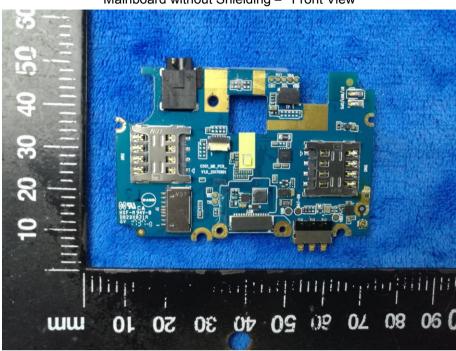
Mainboard with Shielding - Rear View



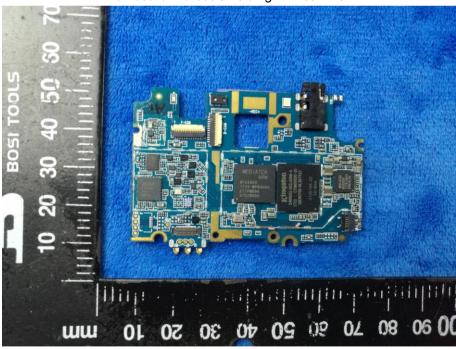


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Mainboard without Shielding - Front View



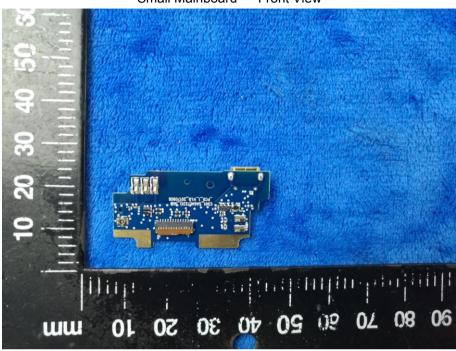
Mainboard without Shielding - Rear View



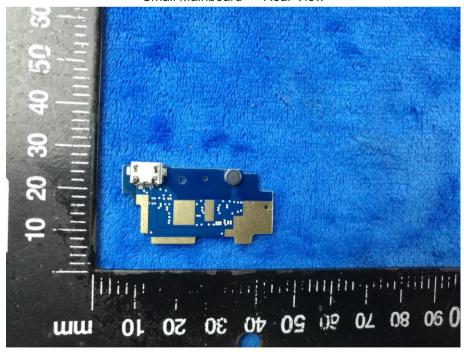


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Small Mainboard - Front View



Small Mainboard - Rear View



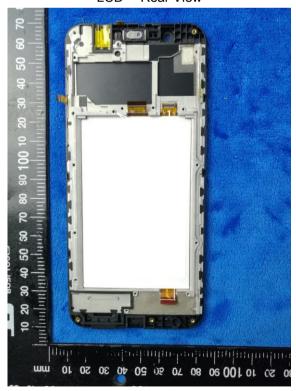


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LCD - Front View



LCD - Rear View





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GSM/PCS/UMTS-FDD - Antenna View



WIFI/BT/BLE/GPS - Antenna View





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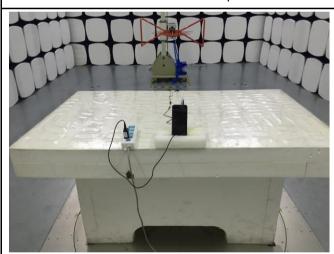
Annex B.iii. Photograph: Test Setup Photo



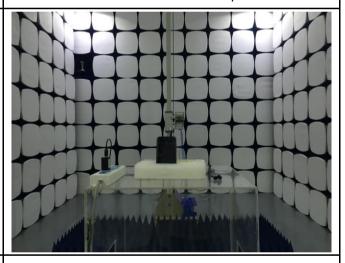
Conducted Emissions Test Setup Front View



Conducted Emissions Test Setup Side View



Radiated Spurious Emissions Test Setup Below 1GHz



Radiated Spurious Emissions Test Setup Above 1GHz

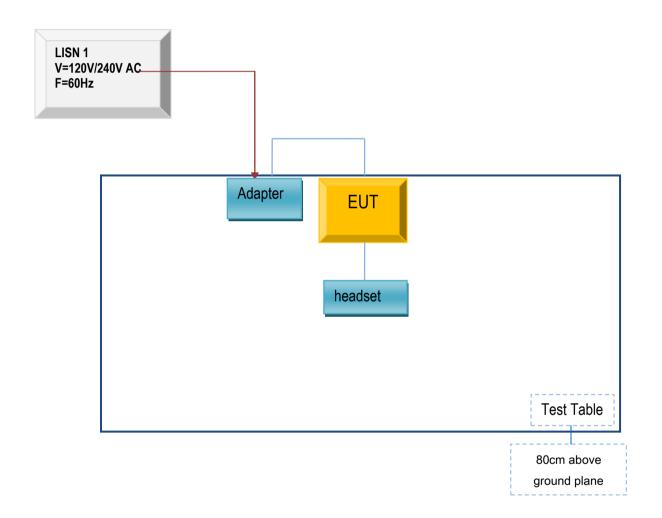


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Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

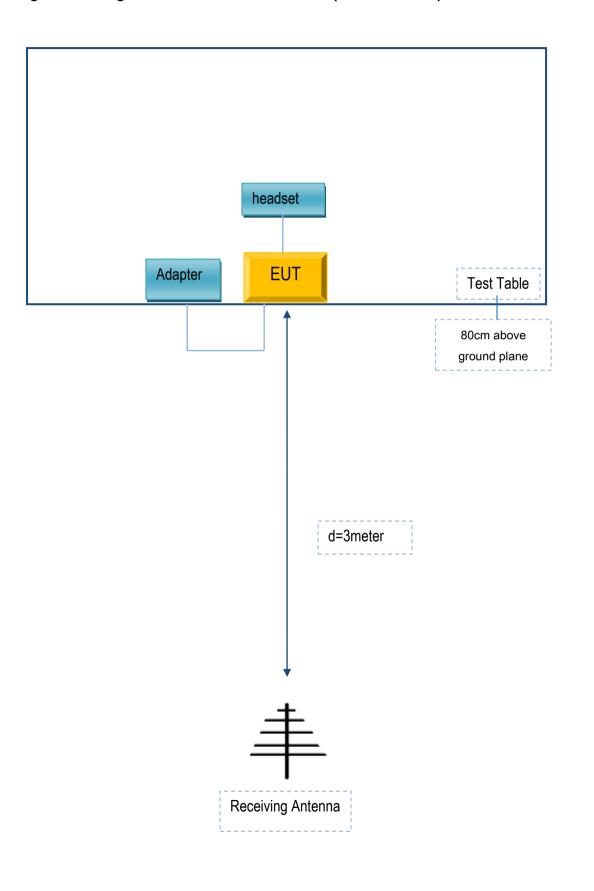
Block Configuration Diagram for AC Line Conducted Emissions





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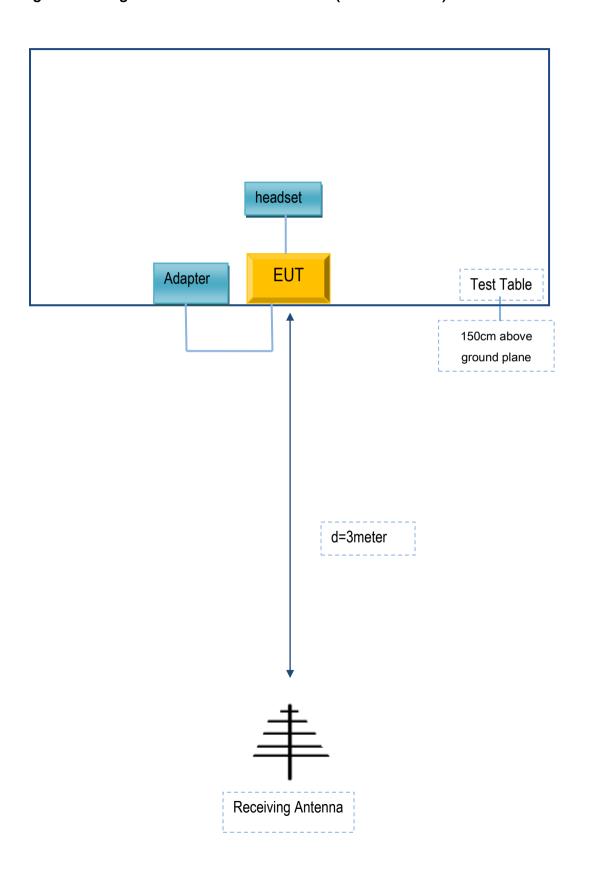
Block Configuration Diagram for Radiated Emissions (Below 1GHz).





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

Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
Power 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