# RF TEST REPORT



Report No.: 15070962-FCC-R1
Supersede Report No.: N/A

Applicant	Verykool USA Inc			
Product Name	Mobile phone			
Model No.	SL6010			
Serial No.	N/A			
Test Standard	FCC Part 22(H):2014 ;FCC Part 24(E):2014; FCC Part 27:2014;			
rest Standard	ANSI/TIAC603 D: 2010			
Test Date	October 27	October 27 to November 18, 2015		
Issue Date	November	November 18, 2015		
Test Result	Pass Fail			
Equipment complied with the specification				
Equipment did not comply with the specification				
Winnie.Z	hang	David Huang		
Winnie Zhang Test Engineer		David Huang Checked By		

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

#### Issued by:

#### SIEMIC (SHENZHEN-CHINA) LABORATORIES

Zone A, Floor 1, Building 2 Wan Ye Long Technology Park
South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108
Phone: +86 0755 2601 4629801 Email: China@siemic.com.cn



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## **Laboratories Introduction**

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### **Accreditations for Conformity Assessment**

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



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## 1. Report Revision History

Report No.	Report Version	Description	Issue Date
15070962-FCC-R1	NONE	Original	November 18, 2015

## 2. Customer information

Applicant Name	Verykool USA Inc	
Applicant Add	3636 Nobel Drive, Suite 325, San Diego, CA 92122 USA	
Manufacturer	HUIZHOU QIAOXING ELECTRONICS TECHNOLOGY CO.,LTD	
Manufacturer Add	Room 1906 of VIA Building, No.9966 Shennan Avenue, Yuehai Street in Nanshan	
	District, Shenzhen	

## 3. Test site information

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



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## 4. Equipment under Test (EUT) Information

Description of EUT: Mobile phone

Main Model: SL6010

Serial Model: N/A

Date EUT received: October 26, 2015

Test Date(s): October 27 to November 18, 2015

Equipment Category : PCE

GSM850: 1.7 dBi PCS1900: 3.7 dBi

UMTS-FDD Band V: 1.7 dBi UMTS-FDD Band IV: 3.6 dBi UMTS-FDD Band II: 3.7 dBi Bluetooth/BLE: 3.0 dBi

Antenna Gain: WIFI: 2.8 dBi

LTE Band 2: 3.7 dBi LTE Band 4: 3.6 dBi LTE Band 5: 1.7 dBi LTE Band 7: 2.8 dBi LTE Band 17: 1.7 dBi

GPS:1.8 dBi

GSM / GPRS: GMSK EGPRS: GMSK,8PSK

UMTS-FDD: QPSK, 16QAM 802.11b/g/n: DSSS, OFDM

Type of Modulation:

Bluetooth: GFSK, π /4DQPSK, 8DPSK

BLE: GFSK

LTE Band: QPSK, 16QAM

**GPS:BPSK** 

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



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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

WIFI:802.11b/g/n(20M): 2412-2462 MHz WIFI:802.11n(40M): 2422-2452 MHz

Bluetooth& BLE: 2402-2480 MHz

LTE Band 2 TX: 1852.5 ~ 1907.5 MHz; RX : 1932.5 ~ 1987.5 MHz LTE Band 4 TX: 1712.5 ~ 1752.5 MHz; RX : 2112.5 ~ 2152.5 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 LTE Band 17 TX: 706.5 ~ 713.5 MHz; RX : 736.5 ~ 743.5 MHz

GPS RX:1575.42 MHz

GSM850: 33.03 dBm

PCS1900:30.67 dBm

Maximum Conducted

AV Power to Antenna:

UMTS-FDD Band V : 23.12 dBm  $\,$ 

UMTS-FDD Band II: 23.09 dBm

UMTS-FDD Band IV: 22.81 dBm

GSM850: 32.52 dBm / ERP

PCS1900: 32.68 dBm / EIRP

ERP/EIRP: UMTS-FDD Band V: 24.52 dBm / ERP

UMTS-FDD Band II : 25.65 dBm / EIRP UMTS-FDD Band IV: 25.72 dBm/ EIRP

GSM 850: 124CH PCS1900: 299CH

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

Number of Channels: UMTS-FDD Band II: 277C

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

WIFI:802.11n(40M):7CH

Bluetooth: 79CH BLE: 40CH

GPS:1CH

Port: Power Port, Earphone Port, USB Port



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Adapter:

Model:STC-A515A-Z

Input: AC 100-240V; 50/60Hz; 300mA

Output: DC 5.0V,1500mA

Input Power:

Battery:

Model:Q600

Spec:3.7V,2500mAh(9.25Wh) Limited charger voltage:4.2V

Trade Name : verykool

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

FCC ID: WA6SL6010



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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	
§ 1.1307; § 2.1093	RF Exposure (SAR)	Compliance	
§2.1046; § 22.913(a); § 24.232(c);	DE Output Dawer	Compliance	
§ 27.50(c.10); § 27.50(d.4)	RF Output Power	Compliance	
§ 24.232 (d) ; § 27.50(d)	Peak-Average Ratio	Compliance	
§ 2.1047	Modulation Characteristics	N/A	
§ 2.1049; § 22.905; § 22.917;	000/ 9, 20 dD Oppuried Developed	Camplianas	
§ 24.238; § 27.53(a.5)	99% & -26 dB Occupied Bandwidth	Compliance	
§ 2.1051; § 22.917(a);	Courier Cariosians at Antonna Torrainal	Camplianas	
§ 24.238(a); § 27.53(h)	Spurious Emissions at Antenna Terminal	Compliance	
§ 2.1053; § 22.917(a);	Field Strongth of Spurious Dediction	Compliance	
§ 24.238(a); § 27.53(h)	Field Strength of Spurious Radiation	Compliance	
§ 22.917(a); § 24.238(a);	Out of hand emission Rand Edge	Compliance	
§ 27.53(h)	Out of band emission, Band Edge	Compliance	
§ 2.1055; § 22.355; § 24.235;	Frequency stability vs. temperature	Compliance	
§ 27.5(h); § 27.54	Frequency stability vs. voltage	Compliance	

Note: Testing was performed by configuring EUT to maximum output power status, the declared output power class for different

#### **Measurement Uncertainty**

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



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## 6. MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

### 6.1 RF Exposure (SAR)

Test Result: Pass

The EUT is a portable device, thus requires SAR evaluation;

Please refer to RF Exposure Evaluation Report: 15070962-FCC-H.



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## 6.2 RF Output Power

Temperature	25°C
Relative Humidity	54%
Atmospheric Pressure	1012mbar
Test date :	November 12, 2015
Tested By :	Winnie Zhang

#### Requirement(s):

Requirement(s):								
Spec	Item	Requirement Applicable						
§22.913 (a)	a)	RP:38.45dBm						
§24.232 (c)	b)	RP:33dBm						
§27.50 (c)	c)	IRP: 30dBm						
Test Setup		EUT Base Station						
Test Procedure	- - -	The transmitter output port was connected to base state Set EUT at maximum power through base station.  Select lowest, middle, and highest channels for each to different test mode.  For ERP/EIRP:  The transmitter was placed on a wooden turntable, and transmitting into a non-radiating load which was also platerntable.  The measurement antenna was placed at a distance of from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in ord the maximum level of emissions from the EUT. The test performed by placing the EUT on 3-orthogonal axis.  The frequency range up to tenth harmonic of the fundating frequency was investigated.	d it was laced on the f 3 meters ler to identify st was					



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	- Remove the EUT and replace it with substitution antenna. A signal		
	generator was connected to the substitution antenna by a non-		
	radiating cable. The absolute levels of the spurious emissions		
	were measured by the substitution.		
	- Spurious emissions in dB = 10 log (TX power in Watts/0.001) –		
	the absolute level		
	- Spurious attenuation limit in dB = 43 + 10 Log10 (power out in		
	Watts.		
Remark			
Result	Pass		
Test Data Yes	□ <sub>N/A</sub>		
Test Plot Yes	(See below) N/A		



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### **Conducted Power**

### **GSM Mode:**

Burst Average Power (dBm);								
Band	GSM850				PCS1900			
Channel	128	190	251	Tune up Power tolerant	512	661	810	Tune up Power tolerant
Frequency (MHz)	824.2	836.6	848.8	1	1850.2	1880	1909.8	1
GSM Voice (1 uplink),GMSK	33.03	32.99	32.04	33±1	30.67	30.31	30.26	30±1
GPRS Multi-Slot Class 8 (1 uplink),GMSK	33.01	32.99	32.93	33±1	30.46	30.29	30.23	30±1
GPRS Multi-Slot Class 10 (2 uplink) GMSK	32.19	32.09	31.97	32±1	29.46	29.38	29.35	29±1
GPRS Multi-Slot Class 12 (4 uplink) GMSK	29.35	29.15	28.96	29±1	26.51	26.40	26.36	26±1
EGPRS Multi-Slot Class 8 (1 uplink) GMSK MCS1	32.96	32.94	32.93	32±1	30.56	30.49	30.40	30±1
EGPRS Multi-Slot Class 10 (2 uplink) GMSK MCS1	32.20	32.13	32.04	32±1	29.47	29.40	29.27	29±1
EGPRS Multi-Slot Class 12 (4 uplink) GMSK MCS1	29.27	29.05	28.8	29±1	26.29	26.22	26.25	26±1
EGPRS Multi-Slot Class 8 (1 uplink) 8PSK MCS5	27.31	27.18	26.89	27±1	25.89	26.25	26.43	26±1
EGPRS Multi-Slot Class 10 (2 uplink) 8PSK MCS5	26.35	26.14	25.82	26±1	25.11	25.34	25.56	25±1
EGPRS Multi-Slot Class 12 (4 uplink) 8PSK MCS5	26.31	26.10	25.8	26±1	25.09	25.33	25.54	25±1



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#### Remark:

GPRS, CS1 coding scheme.

EGPRS, MCS1 coding scheme.

EGPRS, MCS5 coding scheme.

Multi-Slot Class 8 , Support Max 4 downlink, 1 uplink , 5 working link

Multi-Slot Class 10 , Support Max 4 downlink, 2 uplink , 5 working link

Multi-Slot Class 12, Support Max 4 downlink, 4 uplink, 5 working link

Note: Since GSM mode has higher power, so the test items below were not performed to GPRS and EGPRS mode.



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## **UMTS Mode:**

## UMTS-FDD Band V

Band/ Time Slot	Ohamal	F	Average power	Tune up
configuration	Channel	Frequency	(dBm)	Power tolerant
DMO	4132	826.4	22.99	23±1
RMC	4175	835	23.12	23±1
12.2kbps	4233	846.6	22.80	23±1
HSDPA	4132	826.4	20.89	21.3±1
Subtest1	4175	835	20.91	21.3±1
Sublest i	4233	846.6	20.34	21.3±1
LICDDA	4132	826.4	20.85	21.3±1
HSDPA Subtest2	4175	835	20.88	21.3±1
Sublesiz	4233	846.6	20.36	21.3±1
HSDPA	4132	826.4	20.79	21.3±1
Subtest3	4175	835	20.84	21.3±1
Sublesis	4233	846.6	20.35	21.3±1
HSDPA	4132	826.4	20.81	21.3±1
Subtest4	4175	835	20.87	21.3±1
Sublesi4	4233	846.6	20.37	21.3±1
HSUPA	4132	826.4	20.74	21.3±1
Subtest1	4175	835	20.83	21.3±1
Sublest i	4233	846.6	20.33	21.3±1
HSUPA	4132	826.4	20.82	21.3±1
Subtest2	4175	835	20.93	21.3±1
Sublesiz	4233	846.6	20.41	21.3±1
LICLIDA	4132	826.4	20.84	21.3±1
HSUPA Subtest3	4175	835	20.94	21.3±1
Sublesis	4233	846.6	20.44	21.3±1
HCLIDA	4132	826.4	20.76	21.3±1
HSUPA Subtest4	4175	835	20.85	21.3±1
Sublesi4	4233	846.6	20.31	21.3±1
LICUIDA	4132	826.4	20.86	21.3±1
HSUPA Subtest5	4175	835	20.96	21.3±1
Sublesio	4233	846.6	20.45	21.3±1



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## **UMTS-FDD Band II**

Band/ Time Slot configuration	Channel	Frequency	Average power (dBm)	Tune up Power tolerant
DMC	9262	1852.4	22.74	23±1
RMC	9400	1880	23.09	23±1
12.2kbps	9538	1907.6	22.70	23±1
HODDA	9262	1852.4	21.68	22±1
HSDPA Subtest1	9400	1880	22.06	22±1
Sublest I	9538	1907.6	21.86	22±1
HODDA	9262	1852.4	21.77	22±1
HSDPA	9400	1880	21.93	22±1
Subtest2	9538	1907.6	21.76	22±1
HODDA	9262	1852.4	21.75	22±1
HSDPA	9400	1880	21.98	22±1
Subtest3	9538	1907.6	21.75	22±1
HODDA	9262	1852.4	21.74	22±1
HSDPA Subtest4	9400	1880	21.93	22±1
Sublest4	9538	1907.6	21.74	22±1
HOUDA	9262	1852.4	21.73	22±1
HSUPA	9400	1880	21.99	22±1
Subtest1	9538	1907.6	21.76	22±1
HOUDA	9262	1852.4	21.77	22±1
HSUPA Subtest2	9400	1880	22.03	22±1
Sublesiz	9538	1907.6	21.75	22±1
LICLIDA	9262	1852.4	21.76	22±1
HSUPA	9400	1880	22.04	22±1
Subtest3	9538	1907.6	21.74	22±1
LICUIDA	9262	1852.4	21.73	22±1
HSUPA Subtost4	9400	1880	21.96	22±1
Subtest4	9538	1907.6	21.71	22±1
HOUBA	9262	1852.4	21.71	22±1
HSUPA Subtest5	9400	1880	21.99	22±1
วนมเฮอเฮ	9538	1907.6	21.73	22±1



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## **UMTS-FDD Band IV**

Band/ Time Slot configuration	Channel	Frequency	Average power (dBm)	Tune up Power tolerant	
DMC	1313	1712.6	22.81	22±1	
RMC	1413	1732.6	22.58	22±1	
12.2kbps	1512	1752.4	22.79	22±1	
LIODDA	1313	1712.6	21.56	22±1	
HSDPA	1413	1732.6	21.63	22±1	
Subtest1	1512	1752.4	21.35	22±1	
LIODDA	1313	1712.6	21.62	22±1	
HSDPA Subtest2	1413	1732.6	21.53	22±1	
Subtest2	1512	1752.4	21.43	22±1	
LIODDA	1313	1712.6	21.56	22±1	
HSDPA	1413	1732.6	21.42	22±1	
Subtest3	1512	1752.4	21.28	22±1	
LIODEA	1313	1712.6	21.52	22±1	
HSDPA	1413	1732.6	21.56	22±1	
Subtest4	1512	1752.4	21.59	22±1	
HOUDA	1313	1712.6	21.46	22±1	
HSUPA	1413	1732.6	21.56	22±1	
Subtest1	1512	1752.4	21.51	22±1	
HOUDA	1313	1712.6	21.43	22±1	
HSUPA Subtest2	1413	1732.6	21.57	22±1	
Sublesiz	1512	1752.4	21.56	22±1	
HOUDA	1313	1712.6	21.51	22±1	
HSUPA	1413	1732.6	21.43	22±1	
Subtest3	1512	1752.4	21.44	22±1	
LICUIDA	1313	1712.6	21.58	22±1	
HSUPA Subtost4	1413	1732.6	21.46	22±1	
Subtest4	1512	1752.4	21.51	22±1	
LICUDA	1313	1712.6	21.59	22±1	
HSUPA Subtest5	1413	1732.6	21.62	22±1	
Sublesto	1512	1752.4	21.43	22±1	



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### **ERP & EIRP**

### ERP for Cellular Band (Part 22H)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
824.2	26.19	V	6.8	0.53	32.46	38.45
824.2	15.34	Н	6.8	0.53	21.61	38.45
836.6	26.21	V	6.8	0.53	32.48	38.45
836.6	25.43	Н	6.8	0.53	31.70	38.45
848.8	26.15	V	6.9	0.53	32.52	38.45
848.8	25.39	Н	6.9	0.53	31.76	38.45

## EIRP for PCS Band (Part 24E)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1850.2	26.65	V	7.88	0.85	32.68	33
1850.2	25.81	Н	7.88	0.85	31.84	33
1880	26.59	V	7.88	0.85	32.62	33
1880	25.73	Н	7.88	0.85	31.76	33
1909.8	26.55	V	7.86	0.85	32.56	33
1909.8	25.69	Н	7.86	0.85	31.70	33



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### ERP for UMTS-FDD Band V (Part 22H)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
826.4	18.15	V	6.8	0.53	24.42	38.45
826.4	17.39	Н	6.8	0.53	23.66	38.45
835	18.21	V	6.8	0.53	24.48	38.45
835	17.43	Н	6.8	0.53	23.70	38.45
846.6	18.15	V	6.9	0.53	24.52	38.45
846.6	17.36	Н	6.9	0.53	23.73	38.45

### EIRP for UMTS-FDD Band II (Part 24E)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1852.4	18.59	V	7.88	0.85	25.62	33
1852.4	17.81	Н	7.88	0.85	24.84	33
1880	18.62	V	7.88	0.85	25.65	33
1880	17.86	Н	7.88	0.85	24.89	33
1907.6	18.63	V	7.86	0.85	25.64	33
1907.6	17.84	Н	7.86	0.85	24.85	33

### EIRP for UMTS-FDD Band IV (Part 27H)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1712.4	18.73	V	7.76	0.82	25.67	30
1712.4	17.59	Н	7.76	0.82	24.53	30
1740	18.78	V	7.76	0.82	25.72	30
1740	17.62	Н	7.76	0.82	24.56	30
1752.6	18.75	V	7.74	0.82	25.67	30
1752.6	17.56	Н	7.74	0.82	24.48	30

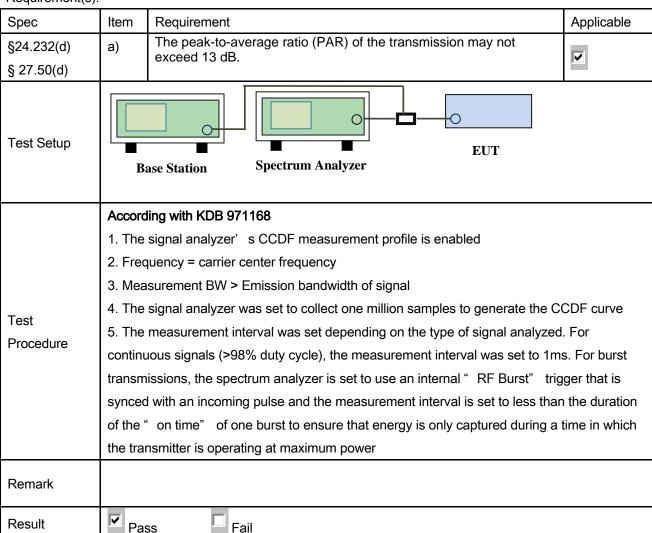


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### 6.3 Peak-Average Ratio

Temperature	25°C
Relative Humidity	54%
Atmospheric Pressure	1012mbar
Test date :	November 12, 2015
Tested By:	Winnie Zhang

#### Requirement(s):



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



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### GSM 1900 PK-AV POWER(PART 24E)

Frequency	Conducted power(dBm)		Peak-Average
(MHz)	Peak	Average	Ratio(PAR)
1850.2	31.62	30.56	1.06
1880	31.58	30.31	1.27
1909.8	31.52	30.26	1.26

### UMTS-FDD BandII PK-AV POWER(PART 24E)

Frequency	Conducted power(dBm)		Peak-Average
(MHz)	Peak	Average	Ratio(PAR)
1852.4	25.35	22.74	2.61
1880	25.96	23.09	2.87
1907.6	25.48	22.7	2.78

### UMTS-FDD BandIV PK-AV POWER (PART 27)

Frequency	Conducted power(dBm)		Peak-Average
(MHz)	Peak	Average	Ratio(PAR)
1712.6	25.72	22.99	2.73
1732.6	26.69	23.12	3.57
1752.4	25.97	22.8	3.17



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### 6.4 Modulation Characteristic

According to FCC § 2.1047(d), Part 22H, 24E& Part 27 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.



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## 6.5 Occupied Bandwidth

Temperature	25°C
Relative Humidity	54%
Atmospheric Pressure	1012mbar
Test date :	November 12, 2015
Tested By :	Winnie Zhang

### Requirement(s):

Spec	Item	Requirement	Applicable
§2.1049, §22.917,	a)	99% Occupied Bandwidth(kHz)	<b>V</b>
§22.905 §24.238 §27.53(a)	b)	26 dB Bandwidth(kHz)	<b>V</b>
Test Setup	Base Station Spectrum Analyzer EUT		
Test Procedure	<ul> <li>The EUT was connected to Spectrum Analyzer and Base Station via power divider.</li> <li>The 99% and 26 dB occupied bandwidth (BW) of the middle channel for the highest RF powers.</li> </ul>		
Remark			
Result	Pa	ss Fail	_

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



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### Cellular Band (Part 22H) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
128	824.2	244.0938	316.421
190	836.6	246.7255	315.755
251	848.8	247.0177	319.128

### PCS Band (Part 24E) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
512	1850.2	244.3752	316.143
661	1880.0	247.0476	318.248
810	1909.8	245.9101	315.508

### UMTS-FDD Band V (Part 22H)

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
4132	826.4	4.1988	4.912
4175	835.0	4.2106	4.838
4233	846.6	4.2232	4.884

### UMTS-FDD Band II (Part 24E)

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
9262	1852.4	4.2354	4.879
9400	1880.0	4.2318	4.909
9538	1907.6	4.2293	4.915

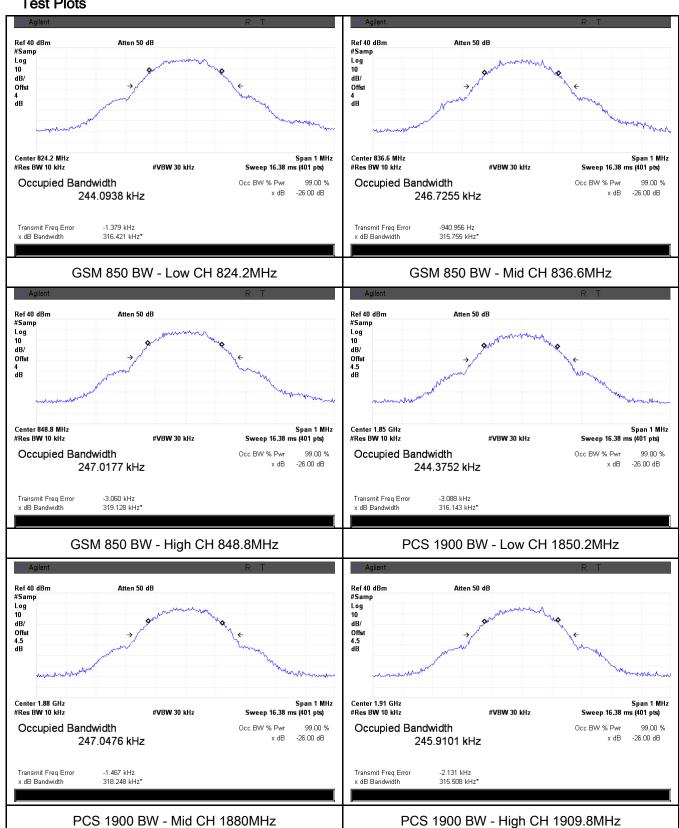
### UMTS-FDD Band IV (Part 27)

Channel	Frequency	99% Occupied	26 dB Bandwidth
	(MHz)	Bandwidth (MHz)	(MHz)
9262	1852.4	4.2142	4.921
9400	1880.0	4.2523	4.973
9538	1907.6	4.2069	4.853



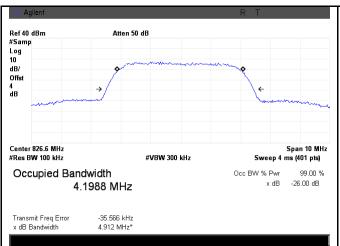
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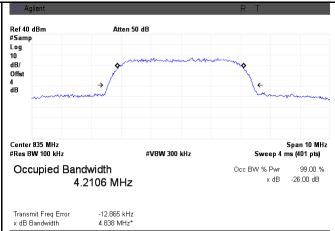
#### **Test Plots**



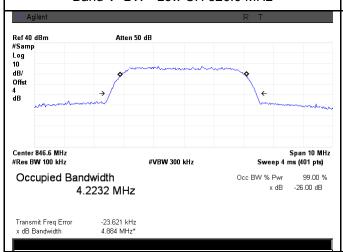


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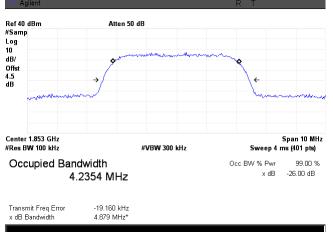




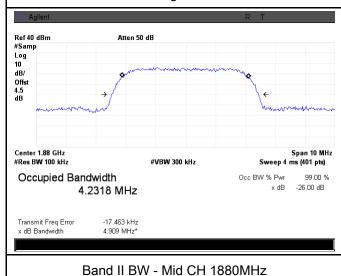
#### Band V BW - Low CH 826.6 MHz



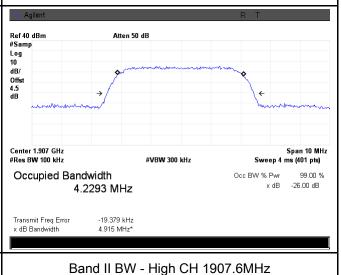
Band V BW - Mid CH 835.0 MHz



#### Band V BW - High CH 846.4 MHz

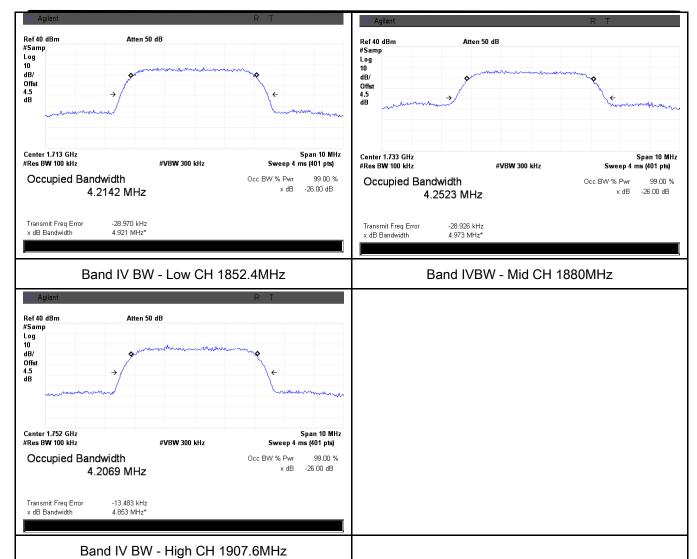


#### Band II BW - Low CH 1852.4MHz





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## 6.6 Spurious Emissions at Antenna Terminals

Temperature	25°C
Relative Humidity	54%
Atmospheric Pressure	1012mbar
Test date :	November 12, 2015
Tested By:	Winnie Zhang

#### Requirement(s):

Requirement(s).			
Spec	Item	Requirement	Applicable
§2.1051,		The power of any emission outside of the authorized	
§22.917(a)&	۵)	operating frequency ranges must be lower than the	V
§24.238(a)	(a)	transmitter power (P) by a factor of at least 43 + 10 log	
§ 27.53(h)		(P) dB	
Test Setup		Base Station Spectrum Analyzer	
Test Procedure	<ul> <li>The EUT was connected to Spectrum Analyzer and Base Station via power divider.</li> <li>The Band Edges of low and high channels for the highest RF powers were measured.</li> <li>Setting RBW as roughly BW/100.</li> </ul>		
Remark			
Result	<b>☑</b> Pa	iss Fail	

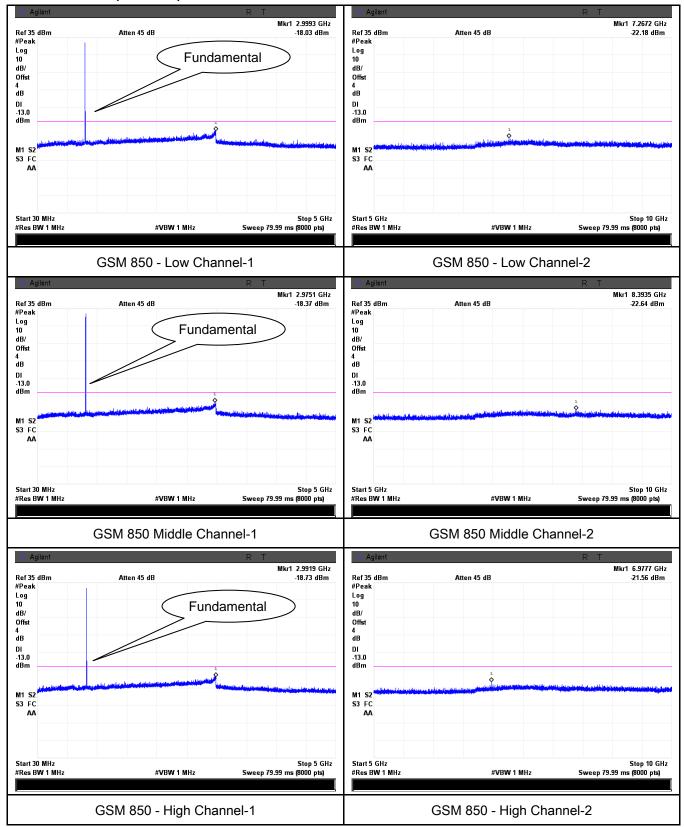
Test Data	Yes	□ <sub>N/A</sub>
Test Plot	Yes (See below)	□ <sub>N/A</sub>



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#### Test Plots

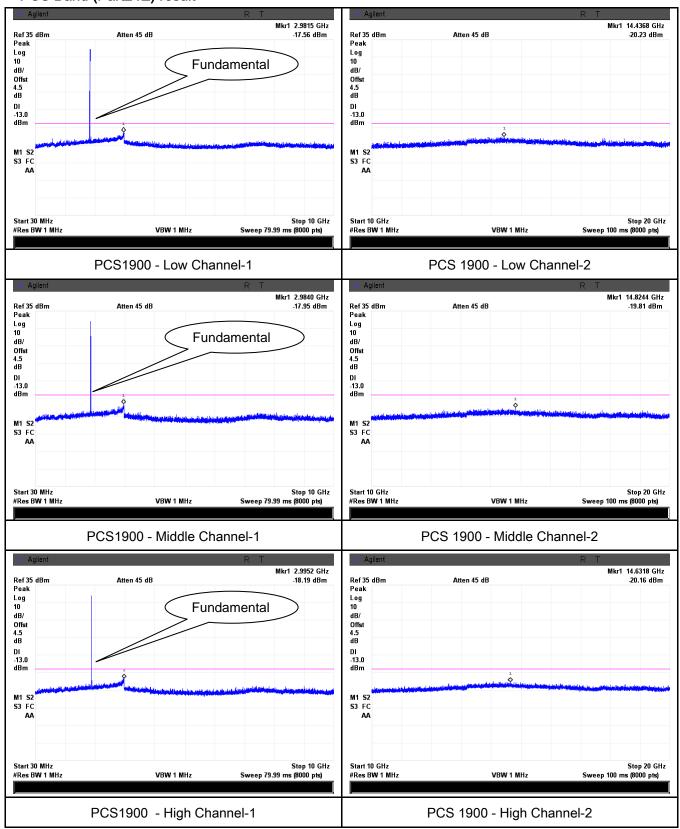
#### Cellular Band (Part 22H) result





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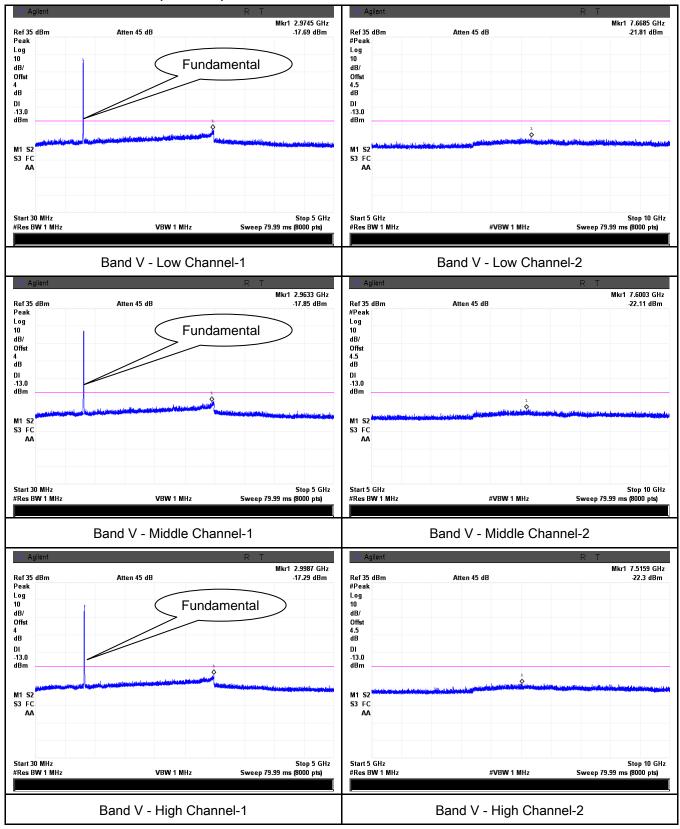
#### PCS Band (Part24E) result





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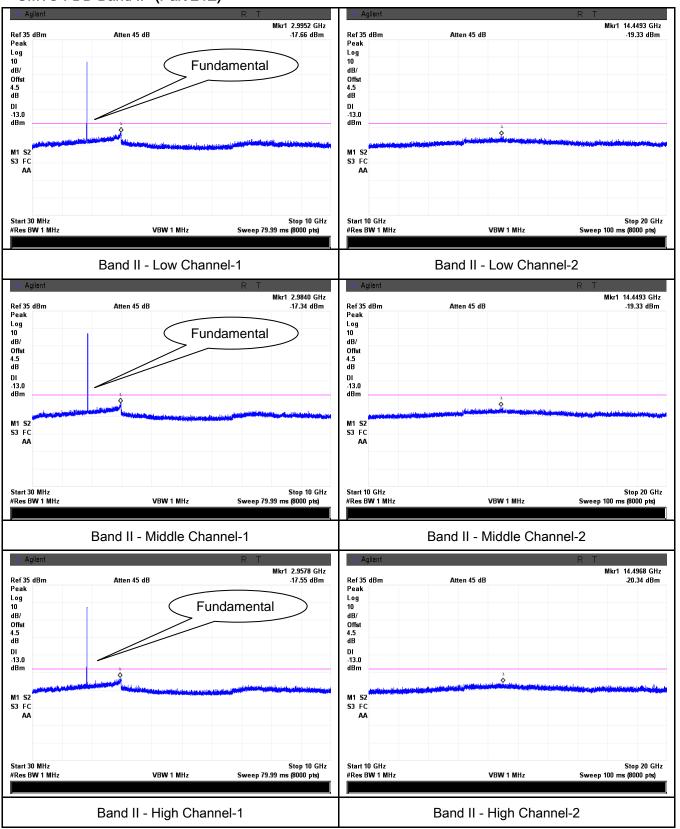
#### UMTS-FDD Band V (Part 22H)





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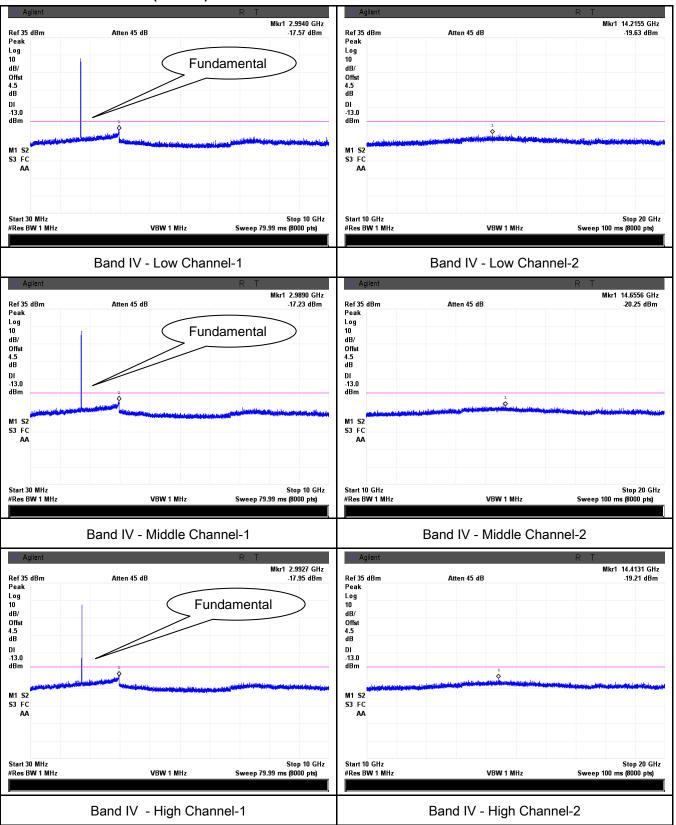
#### UMTS-FDD Band II (Part 24E)





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#### UMTS-FDD Band IV (Part 27)





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## 6.7 Spurious Radiated Emissions

Temperature	25°C
Relative Humidity	54%
Atmospheric Pressure	1012mbar
Test date :	November 12, 2015
Tested By :	Winnie Zhang

Requirement(s):			
Spec	Item	Requirement	Applicable
§2.1053, §22.917 & §24.238 § 27.53(h)	a)	The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.	₹
Test setup	Ant. Tower  Support Units  Turn Table  Test Receiver		
Test Procedure	<ol> <li>The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.</li> <li>The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.</li> <li>Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.         Sample Calculation:         EUT Field Strength = Raw Amplitude (dBµV/m) - Amplifier Gain (dB) + Antenna Factor (dB) + Cable Loss (dB) + Filter Attenuation (dB, if used)     </li> </ol>		



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Remark				
Result	Pass	Fail		

Test Data Yes N/A

Test Plot Yes (See below)

### Cellular Band (Part 22H) result

#### Low channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1648.4	-42.83	V	7.95	0.78	-35.66	-13	-22.66
1648.4	-43.37	Н	7.95	0.78	-36.2	-13	-23.2
153.8	-44.61	V	1.3	0.19	-43.5	-13	-30.5
568.5	-50.34	Н	6.6	0.35	-44.09	-13	-31.09

#### Middle channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1673.2	-42.79	V	7.95	0.78	-35.62	-13	-22.62
1673.2	-43.33	Н	7.95	0.78	-36.16	-13	-23.16
153.8	-44.57	V	1.3	0.19	-43.46	-13	-30.46
568.5	-50.21	Н	6.6	0.35	-43.96	-13	-30.96

### High channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1697.6	-42.74	٧	7.95	0.78	-35.57	-13	-22.57
1697.6	-43.29	Н	7.95	0.78	-36.12	-13	-23.12
153.8	-44.51	٧	1.3	0.19	-43.4	-13	-30.4
568.5	-50.16	Н	6.6	0.35	-43.91	-13	-30.91



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## PCS Band (Part24E) result

### Low channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3700.4	-47.55	V	10.25	2.73	-40.03	-13	-27.03
3700.4	-48.61	Н	10.25	2.73	-41.09	-13	-28.09
153.8	-46.37	V	1.3	0.19	-45.26	-13	-32.26
568.5	-51.94	Н	6.6	0.35	-45.69	-13	-32.69

### Middle channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3760	-47.63	V	10.25	2.73	-40.11	-13	-27.11
3760	-48.59	Н	10.25	2.73	-41.07	-13	-28.07
153.8	-46.32	V	1.3	0.19	-45.21	-13	-32.21
568.5	-51.88	Н	6.6	0.35	-45.63	-13	-32.63

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3819.6	-47.65	V	10.36	2.73	-40.02	-13	-27.02
3819.6	-48.57	Н	10.36	2.73	-40.94	-13	-27.94
153.8	-46.38	V	1.3	0.19	-45.27	-13	-32.27
568.5	-51.92	Н	6.6	0.35	-45.67	-13	-32.67



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## UMTS-FDD Band V (Part 22H)

## Low channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1652.8	-44.26	V	7.95	0.78	-37.09	-13	-24.09
1652.8	-45.11	Н	7.95	0.78	-37.94	-13	-24.94
153.8	-45.51	V	1.3	0.19	-44.4	-13	-31.4
568.5	-51.24	Н	6.6	0.35	-44.99	-13	-31.99

### Middle channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1670	-44.32	٧	7.95	0.78	-37.15	-13	-24.15
1670	-45.17	Н	7.95	0.78	-38	-13	-25
153.8	-45.43	V	1.3	0.19	-44.32	-13	-31.32
568.5	-51.29	Н	6.6	0.35	-45.04	-13	-32.04

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1693.2	-44.29	V	7.95	0.78	-37.12	-13	-24.12
1693.2	-45.21	Н	7.95	0.78	-38.04	-13	-25.04
153.8	-45.48	V	1.3	0.19	-44.37	-13	-31.37
568.5	-51.33	Н	6.6	0.35	-45.08	-13	-32.08



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## UMTS-FDD Band II (Part 24E)

### Low channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3704.8	-49.17	V	10.25	2.73	-41.65	-13	-28.65
3704.8	-50.53	Н	10.25	2.73	-43.01	-13	-30.01
153.8	-46.39	V	1.3	0.19	-45.28	-13	-32.28
568.5	-52.81	Н	6.6	0.35	-46.56	-13	-33.56

### Middle channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3760	-49.23	٧	10.25	2.73	-41.71	-13	-28.71
3760	-50.59	Н	10.25	2.73	-43.07	-13	-30.07
153.8	-46.41	V	1.3	0.19	-45.30	-13	-32.30
568.5	-52.76	Н	6.6	0.35	-46.51	-13	-33.51

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3815.2	-49.28	V	10.36	2.73	-41.65	-13	-28.65
3815.2	-50.52	Н	10.36	2.73	-42.89	-13	-29.89
153.8	-46.43	V	1.3	0.19	-45.32	-13	-32.32
568.5	-52.77	Н	6.6	0.35	-46.52	-13	-33.52



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## UMTS-FDD Band IV (Part 27)

### Low channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3424.8	-46.25	V	10.07	2.52	-38.7	-13	-25.7
3424.8	-47.11	Н	10.07	2.52	-39.56	-13	-26.56
154.3	-47.31	V	1.3	0.19	-46.2	-13	-33.2
567.5	-52.75	Н	6.6	0.35	-46.5	-13	-33.5

### Middle channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3480	-46.22	V	10.09	2.52	-38.65	-13	-25.65
3480	-47.15	Н	10.09	2.52	-39.58	-13	-26.58
154.7	-47.36	V	1.3	0.19	-46.25	-13	-33.25
567.3	-52.81	Н	6.6	0.35	-46.56	-13	-33.56

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3505.2	-46.17	٧	10.09	2.52	-38.60	-13	-25.60
3505.2	-47.13	Н	10.09	2.52	-39.56	-13	-26.56
154.5	-47.24	V	1.3	0.19	-46.13	-13	-33.13
567.1	-52.79	Н	6.6	0.35	-46.54	-13	-33.54



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# 6.8 Band Edge

Temperature	25°C
Relative Humidity	54%
Atmospheric Pressure	1012mbar
Test date :	November 12, 2015
Tested By :	Winnie Zhang

### Requirement(s):

Spec	Item	Requirement	Applicable	
§22.917(a) §24.238(a) § 27.53(h)	a)	The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.	>	
Test setup		Base Station Spectrum Analyzer		
Procedure	-	<ul> <li>The EUT was connected to Spectrum Analyzer and Base Station via power divider.</li> <li>The Band Edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly BW/100.</li> </ul>		
Remark				
Result	<b>☑</b> Pa	ss Fail		

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



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## Cellular Band (Part 22H) result

Frequency (MHz)	Emission (dBm)	Limit (dBm)
823.9950	-13.31	-13
849.0175	-15.31	-13

## PCS Band (Part24E) result

Frequency (MHz)	Emission (dBm)	Limit (dBm)
1849.9950	-15.74	-13
1910.0175	-15.54	-13

### UMTS-FDD Band V (Part 22H)

Frequency (MHz)	Emission (dBm)	Limit (dBm)
823.9000	-21.69	-13
849.2000	-20.91	-13

## UMTS-FDD Band IV (Part 27)

Frequency (MHz)	Emission (dBm)	Limit (dBm)
1849.8500	-27.34	-13
1910.0500	-28.39	-13

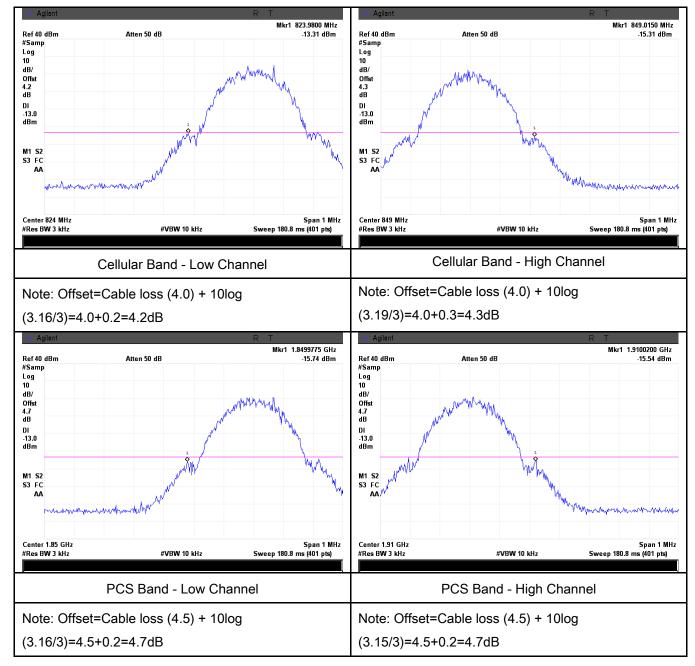
## UMTS-FDD Band II (Part 24E)

Frequency (MHz)	requency (MHz) Emission (dBm) Limit (dBm)	
1849.8500	-25.32	-13
1910.0500	-24.02	-13



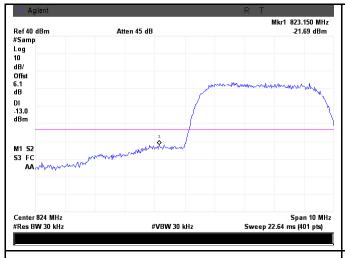
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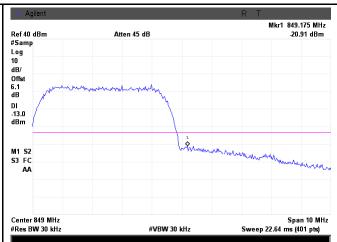
#### **Test Plots**





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UMTS-FDD Band V - Low Channel

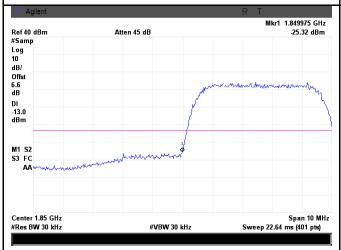
UMTS-FDD Band V - High Channel

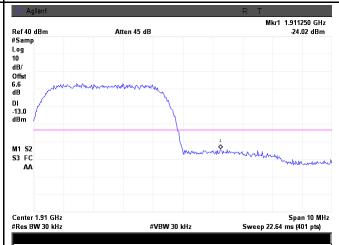
Note: Offset=Cable loss (4.0) + 10log

Note: Offset=Cable loss (4.0) + 10log

(49.12/30)=4.0+2.1=6.1 dB

(48.84/30)=4.0+2.1=6.1 dB





UMTS-FDD Band II - Low Channel

UMTS-FDD Band II - High Channel

Note: Offset=Cable loss (4.5) + 10log

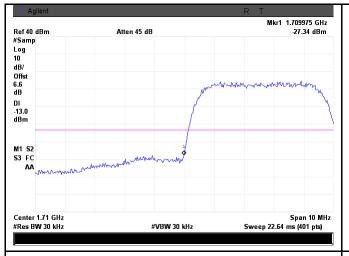
Note: Offset=Cable loss (4.5) + 10log

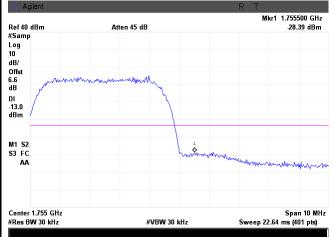
(48.79/30)=4.5+2.1=6.6 dB

(49.15/30)=4.5+2.1=6.6 dB



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UMTS-FDD Band IV - High Channel

UMTS-FDD Band IV - Low Channel

Note: Offset=Cable loss (4.5) + 10log

Note: Offset=Cable loss (4.5) + 10log

(48.53/30)=4.5+2.1=6.6 dB

(49.21/30)=4.5+2.1=6.6 dB



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# 6.9 Frequency Stability

Temperature	25°C
Relative Humidity	54%
Atmospheric Pressure	1012mbar
Test date :	November 12, 2015
Tested By :	Winnie Zhang

#### Requirement(s):

Spec	Item	Requirement				Applicable
		According to §22.3 the Public Mobile S tolerances given in Frequency Toleran Services	Services mus Table below	t be maintained w	ithin the	
§2.1055,		Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile ≤ 3 watts (ppm)	
§22.355 &		25 to 50	20.0	20.0	50.0	
§24.235	a)	50 to 450	5.0	5.0	50.0	V
§ 27.5(h);		45 to 512	2.5	5.0	.0	
§ 27.54		821 to 896	1.5	2.5	2.5	
		928 to 29.	5.0	N/A	N/A	
		929 to 960.	1.5	N/A	N/A	
		2110 to 2220	10.0	N/A	N/A	
		According to §24.2	35, the frequ	ency stability sha	ll be sufficient to	
		ensure that the fun	damental en	nissions stay withi	n the authorized	
		frequency block.				
Test setup		Base Station EUT				
				Thermal Cham	lber	



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	A communication link was established between EUT and base station. The	
	frequency error was monitored and measured by base station under variation	
Procedure	of ambient temperature and variation of primary supply voltage.	
	Limit: The frequency stability of the transmitter shall be maintained within	
	±0.00025% (±2.5ppm) of the center frequency.	
Remark		
Result	Pass Fail	

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



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## Cellular Band (Part 22H) result

	Middle Channel, f₀ = 836.6 MHz				
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	
-10		-17	0.0203	2.5	
0		-15	0.0179	2.5	
10	3.7	-16	0.0191	2.5	
20		-10	0.0120	2.5	
30		-16	0.0191	2.5	
40		-18	0.0215	2.5	
50		-19	0.0227	2.5	
55		-22	0.0263	2.5	
25	4.2	-21	0.0251	2.5	
25	3.5	-20	0.0239	2.5	

## PCS Band (Part 24E) result

	1 00 Band (Fart 242) Tesuit				
	Middle Channel, f <sub>o</sub> = 1880 MHz				
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	
-10		-25	0.0133	2.5	
0		-21	0.0112	2.5	
10	3.7	-15	0.0080	2.5	
20		-11	0.0059	2.5	
30		-15	0.0080	2.5	
40		-19	0.0101	2.5	
50		-18	0.0096	2.5	
55		-22	0.0117	2.5	
25	4.2	-22	0.0117	2.5	
25	3.5	-25	0.0133	2.5	



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## UMTS-FDD Band V (Part 22H)

Middle Channel, f₀ = 835 MHz				
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10		15	0.0120	2.5
0		13	0.0072	2.5
10	3.7	8	0.0060	2.5
20		5	0.0036	2.5
30		6	0.0108	2.5
40		11	0.0096	2.5
50		13	0.0084	2.5
55		15	0.0072	2.5
25	4.2	11	0.0132	2.5
25	3.5	13	0.0120	2.5

### UMTS-FDD Band II (Part 24E)

	Middle Channel, f <sub>o</sub> = 1880 MHz				
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	
-10		10	0.0016	2.5	
0		8	0.0021	2.5	
10	3.7	6	0.0011	2.5	
20		4	0.0016	2.5	
30		5	0.0027	2.5	
40		7	0.0021	2.5	
50		9	0.0032	2.5	
55		11	0.0032	2.5	
25	4.2	9	0.0037	2.5	
25	3.5	8	0.0043	2.5	



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## UMTS-FDD Band IV (Part 27)

	Middle Channel, f₀ = 1880 MHz				
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	
-10		10	0.0053	2.5	
0		8	0.0043	2.5	
10	3.7	7	0.0037	2.5	
20		5	0.0027	2.5	
30		6	0.0032	2.5	
40		4	0.0021	2.5	
50		9	0.0048	2.5	
55		11	0.0059	2.5	
25	4.2	12	0.0064	2.5	
25	3.5	12	0.0064	2.5	



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# Annex A. TEST INSTRUMENT

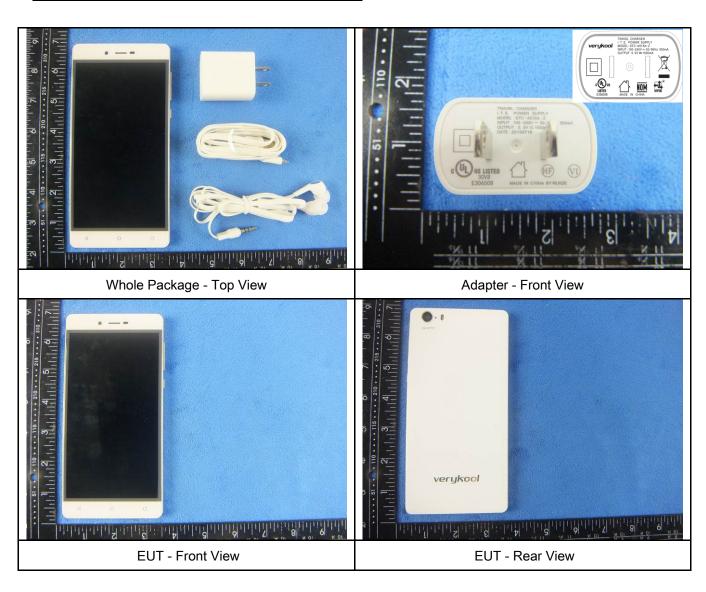
Instrument	Model	Serial#	Cal Date	Cal Due	In use
RF Conducted Test					
Agilent ESA-E SERIES SPECTRUM ANALYZER	E4407B	MY45108319	09/16/2015	09/15/2016	<b>\</b>
Power Splitter	1#	1#	09/01/2015	08/31/2016	~
Universal Radio Communication Tester	CMU200	121393	09/25/2015	09/24/2016	<b>&gt;</b>
Temperature/Humidity Chamber	UHL-270	001	10/09/2015	10/08/2016	<u>&lt;</u>
DC Power Supply	E3640A	MY40004013	09/17/2015	09/16/2016	•
Radiated Emissions					
EMI test receiver	ESL6	100262	09/17/2015	09/16/2016	•
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	09/01/2015	08/31/2016	<u>&lt;</u>
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/25/2015	03/24/2016	<b>Y</b>
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/21/2015	09/20/2016	<b>\</b>
Bilog Antenna (30MHz~2GHz)	JB1	A112017	09/21/2015	09/20/2016	<u>&lt;</u>
Double Ridge Horn Antenna (1 ~18GHz)	AH-118	71259	09/24/2015	09/23/2016	<b>(</b>
Double Ridge Horn Antenna (1 ~18GHz)	AH-118	71283	09/24/2015	09/23/2016	<b>(</b>
SYNTHESIZED SIGNAL GENERATOR	8665B	3744A01293	09/17/2015	09/16/2016	<b>&gt;</b>
Tunable Notch Filter	3NF- 800/1000-S	AA4	09/01/2015	08/31/2016	<b>\</b>
Tunable Notch Filter	3NF- 1000/2000-S	AM 4	09/01/2015	08/31/2016	<b>&gt;</b>



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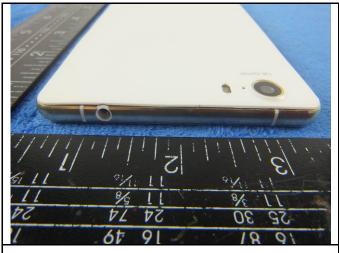
## Annex B. EUT And Test Setup Photographs

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





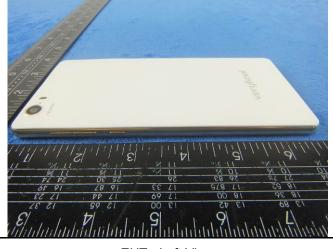
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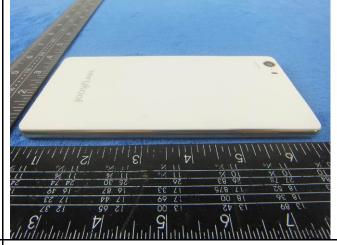


EUT - Top View

EUT - Bottom View



EUT - Left View

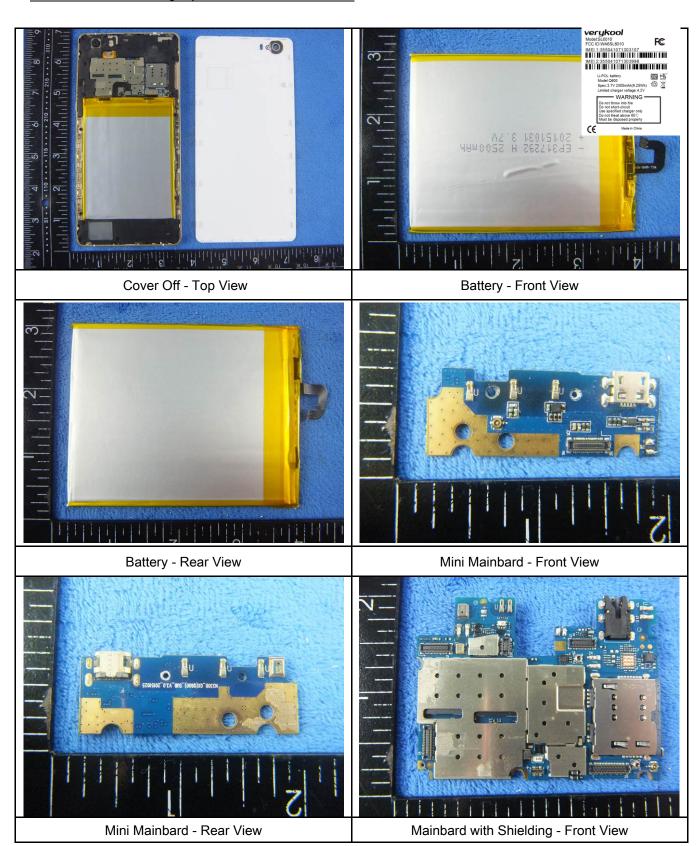


EUT - Right View



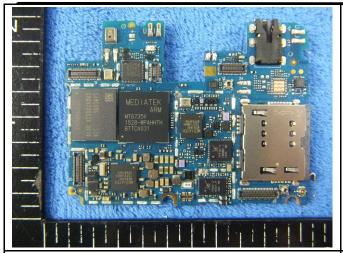
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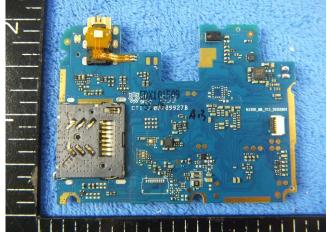
## Annex B.ii. Photograph: EUT Internal Photo





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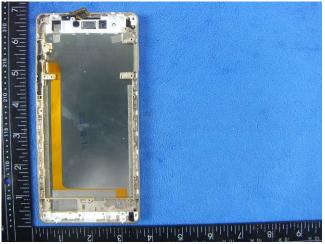




Mainbard without Shielding - Front View

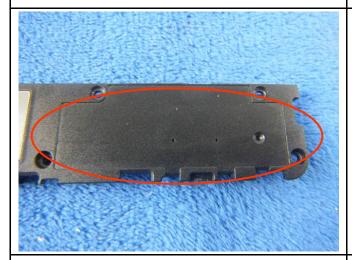
Mainbard - Rear View



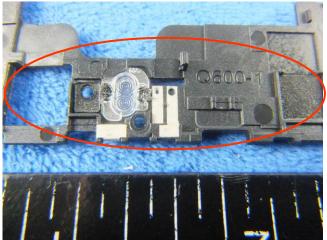


LCD - Front View

LCD - Rear View



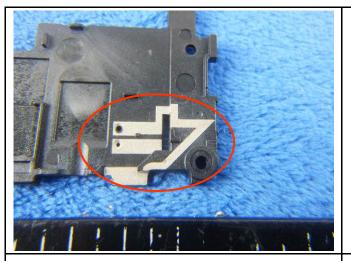




WIFI/BT/BLE - Antenna View



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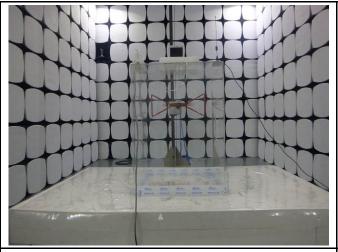


GPS - Antenna View

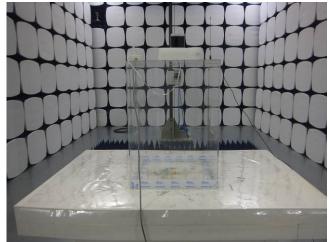


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## Annex B.iii. Photograph: Test Setup Photo



Radiated Spurious Emissions Test Setup Below 1GHz



Radiated Spurious Emissions Test Setup Above 1GHz

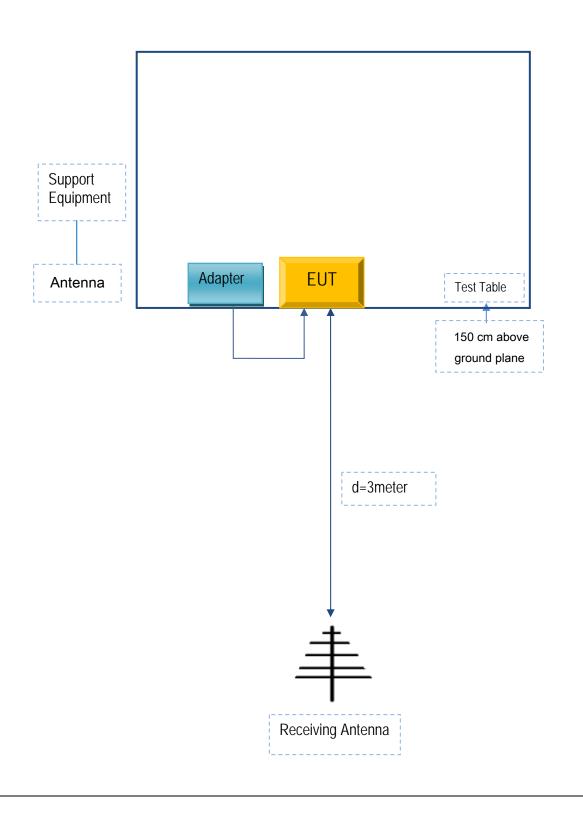


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# Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

## Annex C.ii. TEST SET UP BLOCK

**Block Configuration Diagram for Radiated Emissions** 





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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.

Manufacturer	Equipment Description	Model	Calibration Date	Calibration Due Date
N/A	N/A	N/A	N/A	N/A



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## Annex C.ii. EUT OPERATING CONKITIONS

N/A



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

Please see attachment



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# Annex E. DECLARATION OF SIMILARITY

N/A