# EMC TEST REPORT



Report No.: 16070657-FCC-E
Supersede Report No.:N/A

Applicant	SMT TELECOMM HK LIMITED			
Product Name	Mobile Phone			
Model No.	X410			
Serial No.	N/A			
Test Standard	FCC Part	15 Subpart B Class	B:2014, A	NSI C63.4: 2014
Test Date	November 24 to December 04, 2015			
Issue Date	June 07,2016			
Test Result	Pass	Fail		
Equipment complied with the specification				
Equipment did not comply with the specification				
Winnie . Zhang		David Hua	ng	
Winnie Zhang  Test Engineer		David Huan Checked E		

This test report may be reproduced in full only

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
16070657-FCC-E	NONE	Original	June 07,2016

# 2. Customer information

Applicant Name	SMT TELECOMM HK LIMITED
Applicant Add	Unit C 8/F, CHARMHILL CTR 50 HILLWOOD RD TST KL
Manufacturer	SMT TELECOMM HK LIMITED
Manufacturer Add	Unit C 8/F, CHARMHILL CTR 50 HILLWOOD RD TST KL

# 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

Main Model: X410

Serial Model: N/A

Date EUT received: November 23,2015

Test Date(s): November 24 to December 04, 2015

GSM850: -1.2dBi PCS1900: -0.9dBi

UMTS-FDD Band V: -1.1dBi

Antenna Gain: UMTS-FDD Band II: -1.0dBi

Bluetooth/BLE: -0.5dBi

WIFI: -0.5dBi GPS: 0dBi

GSM / GPRS: GMSK

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

Type of Modulation:

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

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

RF Operating Frequency (ies): 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

GPS RX:1575.42 MHz



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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

Battery:

Model:BP X410

Standard Voltage:DC3.7V

Rated Capacity:1200mAh,4.44Wh

Input Power: Charging Linit Voltage: 4.2V

Adapter:

Model:PC X410

Input: AC100-240V; 50/60Hz; 0.15A

Output: DC 5.0V,500mA

Port: Power Port, Earphone Port, USB Port

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

Trade Name: N/A

FCC ID: 2AIMEX410



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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	
§15.107; ANSI C63.4: 2014	AC Power Line Conducted Emissions	Compliance	
§15.109; ANSI C63.4: 2014	Radiated Emissions	Compliance	

#### **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 AC Power Line Conducted Emissions

Temperature	25°C		
Relative Humidity	52%		
Atmospheric Pressure	1028mbar		
Test date :	December 28, 2015		
Tested By:	Winnie Zhang		

#### Requirement(s):

Spec	Item	Requirement	Applicable		
47CFR§15.	a)	<b>V</b>			
107		lower limit applies at th	Limit (		
		(MHz)	QP	Average	
		0.15 ~ 0.5	66 – 56	56 – 46	
		0.5 ~ 5	56	46	
		5 ~ 30	60	50	
Test Setup	Vertical Ground Reference Plane  EUT  80cm  Horizontal Ground Reference Plane				
Procedure	<ol> <li>The EUT and supporting equipment were set up in accordance with the rethe standard on top of a 1.5m x 1m x 0.8m high, non-metallic table.</li> <li>The power supply for the EUT was fed through a 50Ω /50mH EUT LISN, of filtered mains.</li> </ol>				



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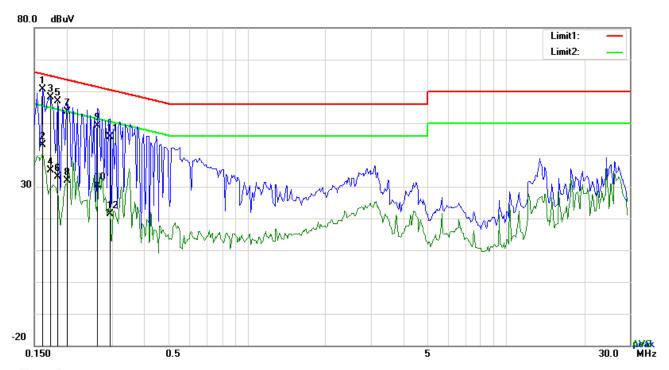
	3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss		
	coaxial cable.		
	4. All other supporting equipment were powered separately from another main supply.		
	5. The EUT was switched on and allowed to warm up to its normal operating condition.		
	6. A scan was made on 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			
	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	□ <sub>N/A</sub>
Test Plot	Yes (See below)	□ <sub>N/A</sub>



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# Test Mode 1 : USB Mode



Test Data

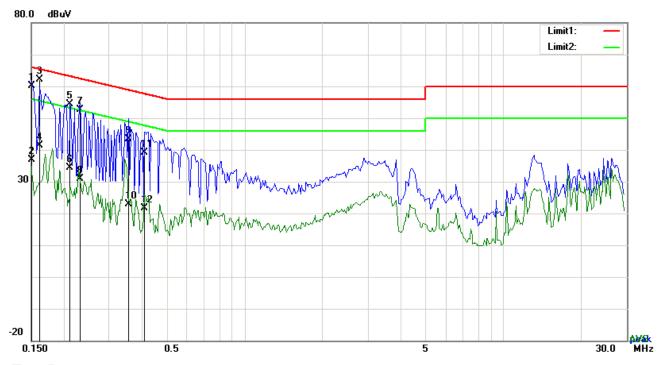
## Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.1617	50.63	QP	10.03	60.66	65.38	-4.72
2	L1	0.1617	33.07	AVG	10.03	43.10	55.38	-12.28
3	L1	0.1734	48.17	QP	10.03	58.20	64.80	-6.60
4	L1	0.1734	25.10	AVG	10.03	35.13	54.80	-19.67
5	L1	0.1851	46.84	QP	10.03	56.87	64.25	-7.38
6	L1	0.1851	23.08	AVG	10.03	33.11	54.25	-21.14
7	L1	0.2007	43.61	QP	10.03	53.64	63.58	-9.94
8	L1	0.2007	21.90	AVG	10.03	31.93	53.58	-21.65
9	L1	0.2631	39.04	QP	10.03	49.07	61.33	-12.26
10	L1	0.2631	20.43	AVG	10.03	30.46	51.33	-20.87
11	L1	0.2943	35.67	QP	10.03	45.70	60.40	-14.70
12	L1	0.2943	11.38	AVG	10.03	21.41	50.40	-28.99



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Test Mode: USB Mode



#### Test Data

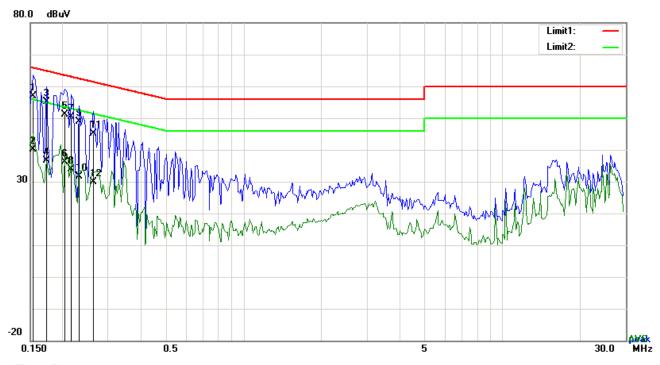
## Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	N	0.1500	49.99	QP	10.02	60.01	66.00	-5.99
2	N	0.1500	26.83	AVG	10.02	36.85	56.00	-19.15
3	N	0.1617	52.07	QP	10.02	62.09	65.38	-3.29
4	N	0.1617	31.43	AVG	10.02	41.45	55.38	-13.93
5	N	0.2124	44.41	QP	10.02	54.43	63.11	-8.68
6	N	0.2124	24.30	AVG	10.02	34.32	53.11	-18.79
7	N	0.2319	42.61	QP	10.02	52.63	62.38	-9.75
8	N	0.2319	20.81	AVG	10.02	30.83	52.38	-21.55
9	N	0.3567	33.26	QP	10.02	43.28	58.80	-15.52
10	N	0.3567	12.95	AVG	10.02	22.97	48.80	-25.83
11	N	0.4113	29.15	QP	10.02	39.17	57.62	-18.45
12	N	0.4113	11.73	AVG	10.02	21.75	47.62	-25.87



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Test Mode : USB Mode



Test Data

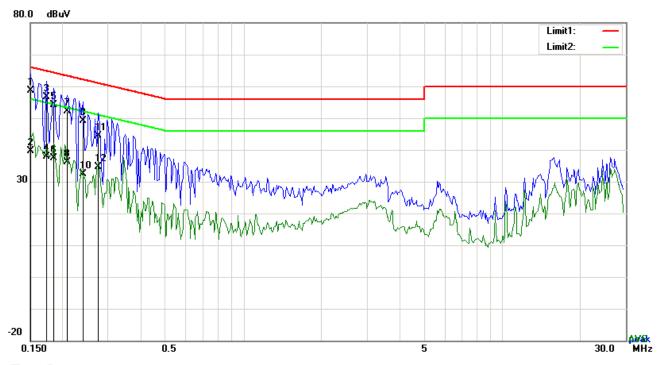
#### Phase Line Plot at 240Vac, 60Hz

	·							
No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	L1	0.1539	46.95	QP	10.03	56.98	65.79	-8.81
2	L1	0.1539	29.99	AVG	10.03	40.02	55.79	-15.77
3	L1	0.1734	45.05	QP	10.03	55.08	64.80	-9.72
4	L1	0.1734	26.64	AVG	10.03	36.67	54.80	-18.13
5	L1	0.2046	41.22	QP	10.03	51.25	63.42	-12.17
6	L1	0.2046	26.02	AVG	10.03	36.05	53.42	-17.37
7	L1	0.2163	40.37	QP	10.03	50.40	62.96	-12.56
8	L1	0.2163	23.92	AVG	10.03	33.95	52.96	-19.01
9	L1	0.2319	38.77	QP	10.03	48.80	62.38	-13.58
10	L1	0.2319	21.56	AVG	10.03	31.59	52.38	-20.79
11	L1	0.2631	35.02	QP	10.03	45.05	61.33	-16.28
12	L1	0.2631	19.77	AVG	10.03	29.80	51.33	-21.53



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Test Mode : USB Mode



#### Test Data

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

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	N	0.1500	48.65	QP	10.02	58.67	66.00	-7.33
2	N	0.1500	29.56	AVG	10.02	39.58	56.00	-16.42
3	N	0.1734	46.58	QP	10.02	56.60	64.80	-8.20
4	N	0.1734	27.77	AVG	10.02	37.79	54.80	-17.01
5	N	0.1851	44.23	QP	10.02	54.25	64.25	-10.00
6	N	0.1851	27.42	AVG	10.02	37.44	54.25	-16.81
7	N	0.2085	42.23	QP	10.02	52.25	63.26	-11.01
8	N	0.2085	26.21	AVG	10.02	36.23	53.26	-17.03
9	N	0.2397	39.20	QP	10.02	49.22	62.11	-12.89
10	N	0.2397	22.45	AVG	10.02	32.47	52.11	-19.64
11	N	0.2748	34.41	QP	10.02	44.43	60.97	-16.54
12	N	0.2748	24.53	AVG	10.02	34.55	50.97	-16.42



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# 6.2 Radiated Emissions

Temperature	22°C
Relative Humidity	54%
Atmospheric Pressure	1021mbar
Test date :	December 21, 2015
Tested By :	Winnie Zhang

#### Requirement(s):

Spec	Item	Requirement		Applicable			
47CFR§15.	a)	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	<b>&gt;</b>				
109(d)		Frequency range (MHz)	Field Strength (μV/m)				
		30 - 88	100				
		88 – 216	150				
		216 960	200				
		Above 960	500				
Test Setup		Ant. Tower  Support Units  Turn Table  Ground Plane  Test Receiver					
Procedure	1. 2.						



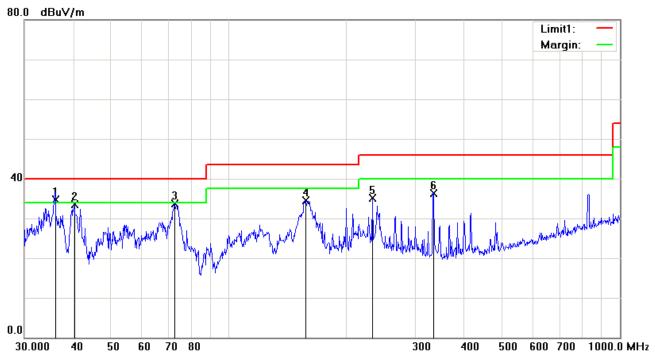
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			over a full rotation of the EUT) was chosen.
		b.	The EUT was then rotated to the direction that gave the maximum
			emission.
		C.	Finally, the antenna height was adjusted to the height that gave the maximum
			emission.
	3.	The res	solution bandwidth and video bandwidth of test receiver/spectrum analyzer is
		120 kH	z for Quasiy Peak detection at frequency below 1GHz.
	4.	The reso	olution bandwidth of test receiver/spectrum analyzer is 1MHz and video
		bandwi	dth is 3MHz with Peak detection for Peak measurement at frequency above
		1GHz.	
		The re	solution bandwidth of test receiver/spectrum analyzer is 1MHz and the video
		bandw	ridth with Peak detection for Average Measurement as below at frequency
		above	1GHz.
		■ 1 kH	Iz (Duty cycle < 98%) □ 10 Hz (Duty cycle > 98%)
	5.	Steps 2	and 3 were repeated for the next frequency point, until all selected frequency
		points v	vere measured.
Remark			
Result	<b>☑</b> Pa	ISS	■ Fail
Test Data	Yes		□ <sub>N/A</sub>
E	7		
Test Plot ☐	Yes (S	ee belo	w) N/A



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#### Below 1GHz



#### Test Data

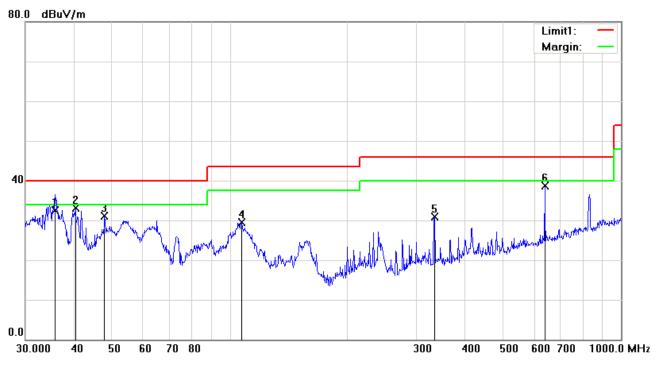
## Horizontal Polarity Plot @3m

No.	P/L	Frequency	Readin g	Detector	Corrected	Result	Limit	Margin	Height	Degree
		(MHz)	(dBuV/ m)		(dB/m)	(dBuV/m )	(dBuV/m)	(dB)	(cm)	( )
1	Н	36.0007	39.45	QP	-4.67	34.78	40.00	-5.22	100	297
2	Н	40.2757	41.27	peak	-7.77	33.50	40.00	-6.50	100	331
3	Н	72.8466	47.45	peak	-13.68	33.77	40.00	-6.23	100	133
4	Н	157.5589	42.83	peak	-8.31	34.52	43.50	-8.98	100	137
5	Н	232.5318	44.22	peak	-9.04	35.18	46.00	-10.82	100	99
6	Н	333.6867	42.23	peak	-5.93	36.30	46.00	-9.70	100	125



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#### Below 1GHz



#### Test Data

## Vertical Polarity Plot @3m

No.	P/L	Frequency	Readin g	Detector	Corrected	Result	Limit	Margin	Height	Degree
		(MHz)	(dBuV/ m)		(dB/m)	(dBuV/m )	(dBuV/m)	(dB)	(cm)	( )
1	V	35.7491	37.00	QP	-4.49	32.51	40.00	-7.49	100	349
2	>	40.2757	40.90	peak	-7.77	33.13	40.00	-6.87	100	218
3	٧	47.8260	43.27	peak	-12.20	31.07	40.00	-8.93	100	278
4	٧	107.1337	39.05	peak	-9.52	29.53	43.50	-13.97	100	221
5	٧	333.6867	36.93	peak	-5.93	31.00	46.00	-15.00	100	45
6	>	638.3686	38.01	peak	0.62	38.63	46.00	-7.37	100	207



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#### Above 1GHz

Frequency (MHz)	Amplitude (dΒμV/m)	Azimuth	Height (cm)	Polarity (H/V)	Factors (dB)	Limit (dBµV/m)	Margin (dB)	Detector (PK/AV)
1553.42	51.25	56	182	V	-23.02	74	-22.75	PK
2055.36	57.33	123	206	V	-22.03	74	-16.67	PK
1657.52	53.24	96	234	V	-24.01	74	-20.76	PK
2145.56	51.25	78	126	Н	-21.25	74	-22.75	PK
2839.601	52.33	68	189	Н	-21.73	74	-21.67	PK
1825.33	53.65	66	177	Н	-20.56	74	-20.35	PK

Note1: The highest frequency of the EUT is 2480 MHz, so the testing has been conformed to 5\*2480 MHz=12,400 MHz.

Note 2: The frequency that above 3GHz is mainly from the environment noise.

Note3: The AV measurement performed, more than 20dB below limit so AV test data was not presented.



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# Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use			
AC Line Conducted Emissions								
EMI test receiver	ESCS30	8471241027	09/17/2015	09/16/2016	•			
Line Impedance Stabilization Network	LI-125A	191106	09/25/2015	09/24/2016	<b>&gt;</b>			
Line Impedance Stabilization Network	LI-125A	191107	09/25/2015	09/24/2016	<u>&lt;</u>			
LISN	ISN T800	34373	09/25/2015	09/24/2016	<			
Transient Limiter	LIT-153	531118	09/01/2015	08/31/2016	<			
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	<b>&gt;</b>			
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/25/2015	03/24/2016	<b>\</b>			
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/21/2015	09/20/2016	<b>\</b>			
Double Ridge Horn Antenna	AH-118	71259	09/24/2015	09/23/2016	<b>\(\z\)</b>			



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**EUT - Rear View** 

# Annex B. EUT And Test Setup Photographs

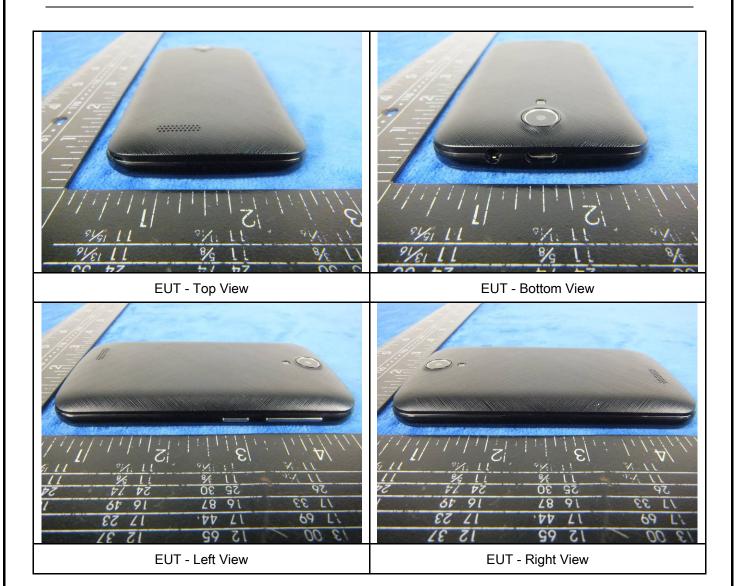
#### Annex B.i. Photograph: EUT External Photo

**EUT - Front View** 





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





Cover Off - Top View 1

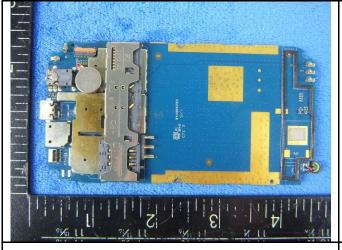
Cover Off - Top View 2



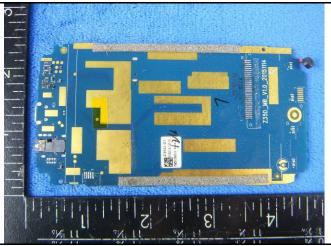


Battery - Front View

Battery - Rear View



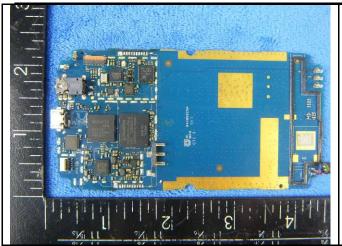




Mainbard with Shielding - Rear View

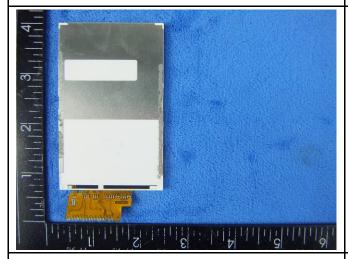


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Mainboard without shielding - Front View

LCD - Front View





LCD - Rear View

GSM/PCS/UMTS-FDD - Antenna View



WIFI/BT/BLE/GPS - Antenna View



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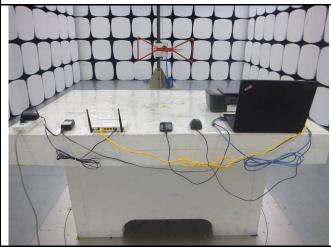
## Annex B.iii. Photograph: Test Setup Photo



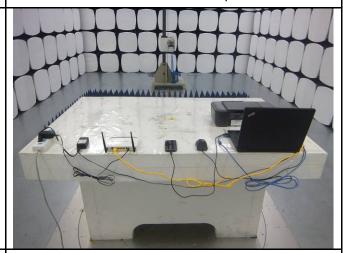
Conducted Emissions Test Setup – Front View



Conducted Emissions Test Setup - Side View



Radiated Spurious Emissions Test Setup Below 1GHz



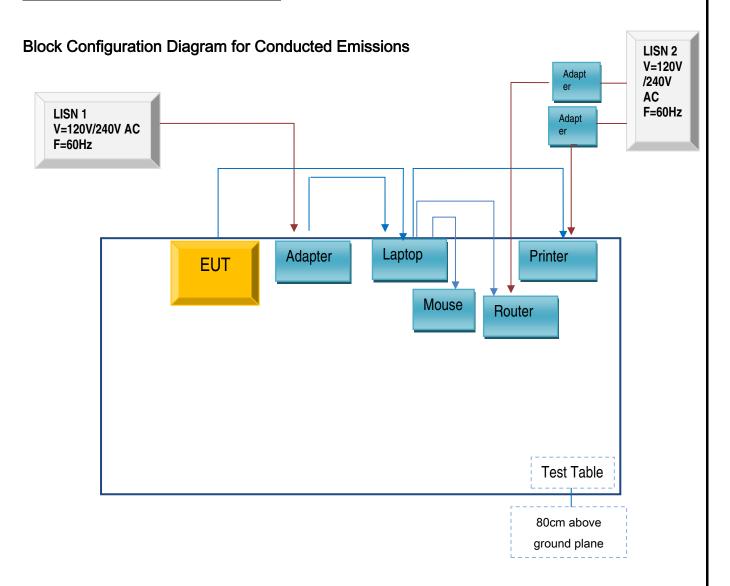
Radiated Spurious Emissions Test Setup Above 1GHz



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# Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

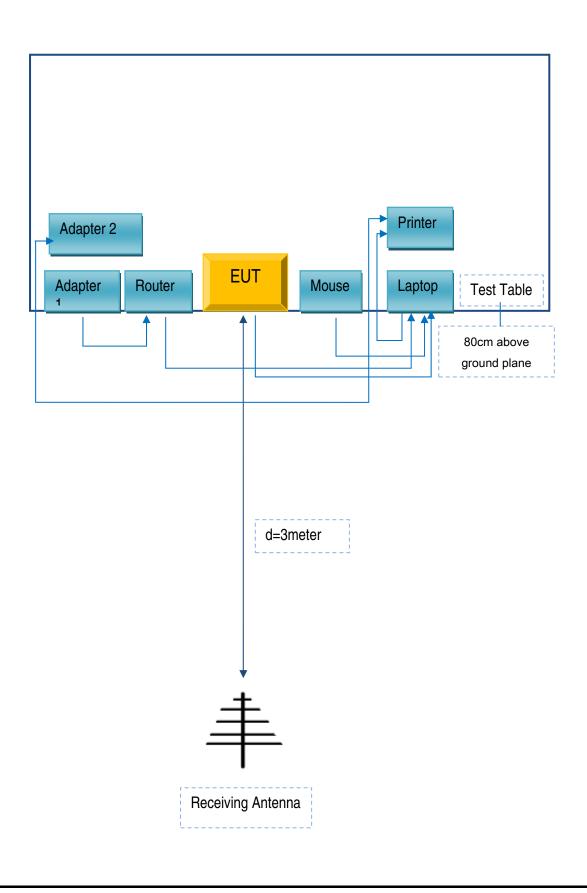
#### Annex C.ii. TEST SET UP BLOCK





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## **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.

#### Supporting Euquipment:

Manufacturer	Equipment Description	Model	Serial No
Lenovo	Lenovo Laptop	E40& 0579A52	LR-1EHRX
GOLDWEB	Router	R102	1202032094
HP	Printer	VCVRA-1003	CN36M19JWX
DELL	Mouse	E100	912NMTUT41481
SMT TELECOMM HK LIMITED	Adapter	PC X410	CN15010451

## Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
USB Cable	Un-shielding	No	2m	JX120051274
RJ45 Cable	Un-shielding	No	2m	KX156327541
Router Power cable	Un-shielding	No	2m	13274630Z
Printer Power cable	Un-shielding	No	2m	127581031
USB Cable	Un-shielding	No	0.8m	JX1502542



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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