# EMC TEST REPORT



Report No.: 18070525-FCC-E
Supersede Report No: N/A

Evans He Test Engineer		David Huang Checked By	
mas. He		David Huang	
Equipment did not comply with the specification			
Equipment complied with the specification			
Test Result	Pass Fail		
Issue Date	May 26, 2018		
Test Date	May 16 to 2	25, 2018	
Test Standard	FCC Part 1	5 Subpart B Class B, ANSI Co	63.4: 2014
Serial No.	N/A		
Model No.	F3		
Product Name	Mobile phone		
Applicant TECNO MOBILE LIMITED			

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

Phone: +86 0755 2601 4629801 Email: China@siemic.com.cn



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# **Laboratories Introduction**

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



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

### Accreditations for Conformity Assessment

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



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# 1. Report Revision History

Report No.	Report Version	Description	Issue Date
18070525-FCC-E	NONE	Original	May 26, 2018

# 2. Customer information

Applicant Name	TECNO MOBILE LIMITED	
Applicant Add	ROOMS 05-15, 13A/F., SOUTH TOWER, WORLD FINANCE CENTRE, HARBOUR	
	CITY, 17 CANTON ROAD, TSIM SHA TSUI, KOWLOON, HONG KONG	
Manufacturer	TECNO MOBILE LIMITED	
Manufacturer Add	ROOMS 05-15, 13A/F., SOUTH TOWER, WORLD FINANCE CENTRE, HARBOUR	
	CITY, 17 CANTON ROAD, TSIM SHA TSUI, KOWLOON, HONG KONG	

# 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.	535293	
IC Test Site No.	4842E-1	
Test Software of	Dedicted Emission Program To Changhan v2.0	
Radiated Emission	Radiated Emission Program-To Shenzhen v2.0	
Test Software of	E7 EMO(	
Conducted Emission	EZ-EMC(ver.lcp-03A1)	



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# 4. Equipment under Test (EUT) Information

Description of EUT:	Mobile phone
Main Model:	F3
Serial Model:	N/A
	GSM850: -4.95dBi
	PCS1900: -3.87dBi
	UMTS-FDD Band V: -4.98dBi
Antenna Gain:	UMTS-FDD Band II: -4.41dBi
	WIFI: -3.5dBi
	Bluetooth/BLE: -3.5dBi
	GPS: -3.1dBi
Antenna Type:	PIFA antenna
	Adapter :
	Model: A8-501000
	Input: AC100-240V~50/60Hz,200mA
	Output: DC 5.0V, 1.0A
Input Power:	Battery:
	Model: BL-24ET
	Spec: 3.8V, 2400mAh/2350mAh(typ/min), 9.12Wh/8.93Wh(typ/min)
	Limited charge voltage: 4.35V
Equipment Category :	JBP
	GSM / GPRS: GMSK
	EGPRS: GMSK

Bluetooth: GFSK,  $\pi$  /4DQPSK, 8DPSK BLE: GFSK

GPS:BPSK

Type of Modulation:

UMTS-FDD: QPSK

802.11b/g/n: DSSS, OFDM



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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: 1575.42 MHz

GSM 850: 124CH PCS1900: 299CH

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

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

WIFI:802.11n(40M): 7CH

Bluetooth: 79CH

BLE: 40CH GPS:1CH

Port: Please refer to the user's manual

Trade Name: TECNO

FCC ID: 2ADYY-F3

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

Date EUT received: May 15, 2018

Test Date(s): May 16 to 25, 2018



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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**

Parameter	Uncertainty	
AC Power Line Conducted Emissions	±3.11dB	
(150kHz~30MHz)		
Radiated Emission(30MHz~1GHz)	±5.12dB	
Radiated Emission(1GHz~6GHz)	±5.34dB	



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# 6. Measurements, Examination And Derived Results

# 6.1 AC Power Line Conducted Emissions

Temperature	25°C		
Relative Humidity	55%		
Atmospheric Pressure	1013mbar		
Test date :	May 17, 2018		
Tested By :	Evans He		

#### Requirement(s):

Spec	Item	Requirement Applicat					
47CFR§15.	a)	For Low-power radio-freconnected to the public voltage that is conducted frequency or frequencied not exceed the limits in [mu] H/50 ohms line implower limit applies at the					
107		Frequency ranges	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						
Procedure	<ol> <li>The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table.</li> <li>The power supply for the EUT was fed through a 50Ω /50mH EUT LISN, connected to filtered mains.</li> </ol>						



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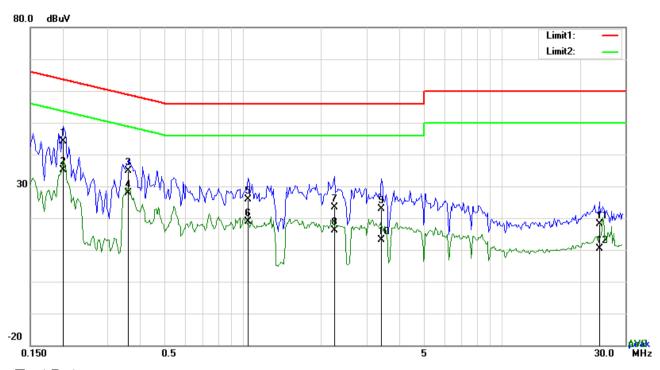
	3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss
	coaxial cable.
	4. All other supporting equipment were powered separately from another main supply.
	5. The EUT was switched on and allowed to warm up to its normal operating condition.
	6. A scan was made on the NEUTRAL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



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Test Mode : USB Mode



#### Test Data

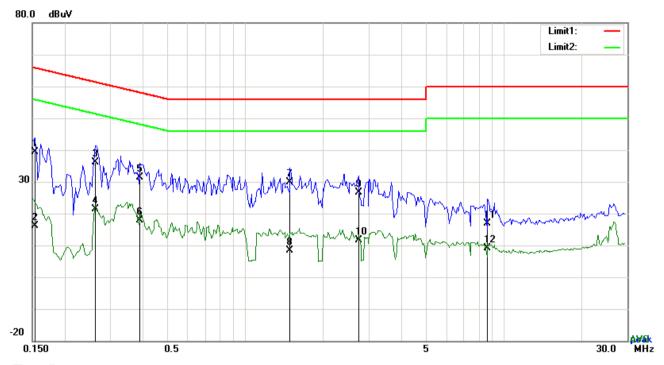
# Phase Line Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	L1	0.2007	34.15	QP	10.03	44.18	63.58	-19.40
2	L1	0.2007	24.99	AVG	10.03	35.02	53.58	-18.56
3	L1	0.3606	24.81	QP	10.03	34.84	58.71	-23.87
4	L1	0.3606	17.84	AVG	10.03	27.87	48.71	-20.84
5	L1	1.0470	15.85	QP	10.03	25.88	56.00	-30.12
6	L1	1.0470	8.77	AVG	10.03	18.80	46.00	-27.20
7	L1	2.2599	13.45	QP	10.05	23.50	56.00	-32.50
8	L1	2.2599	6.05	AVG	10.05	16.10	46.00	-29.90
9	L1	3.4251	12.89	QP	10.06	22.95	56.00	-33.05
10	L1	3.4251	3.16	AVG	10.06	13.22	46.00	-32.78
11	L1	23.8611	7.85	QP	10.37	18.22	60.00	-41.78
12	L1	23.8611	0.10	AVG	10.37	10.47	50.00	-39.53



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Test Mode:
------------



#### Test Data

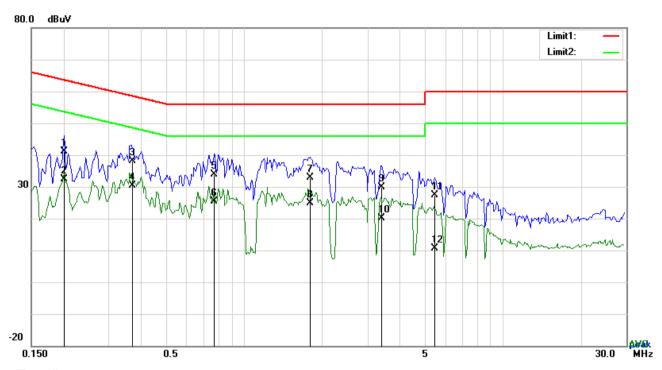
# Phase Neutral Plot at 120Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB}	(dBuV)	(dBuV)	(dB)
1	N	0.1539	29.36	QP	10.02	39.38	65.79	-26.41
2	N	0.1539	6.17	AVG	10.02	16.19	55.79	-39.60
3	Ν	0.2631	26.00	QP	10.02	36.02	61.33	-25.31
4	N	0.2631	11.38	AVG	10.02	21.40	51.33	-29.93
5	N	0.3918	21.33	QP	10.02	31.35	58.03	-26.68
6	Ν	0.3918	7.74	AVG	10.02	17.76	48.03	-30.27
7	Ν	1.4916	19.93	QP	10.03	29.96	56.00	-26.04
8	Ν	1.4916	-1.77	AVG	10.03	8.26	46.00	-37.74
9	Ν	2.7357	16.47	QP	10.05	26.52	56.00	-29.48
10	N	2.7357	1.57	AVG	10.05	11.62	46.00	-34.38
11	N	8.6667	6.76	QP	10.12	16.88	60.00	-43.12
12	N	8.6667	-1.05	AVG	10.12	9.07	50.00	-40.93



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Test Mode : USB Mode



#### Test Data

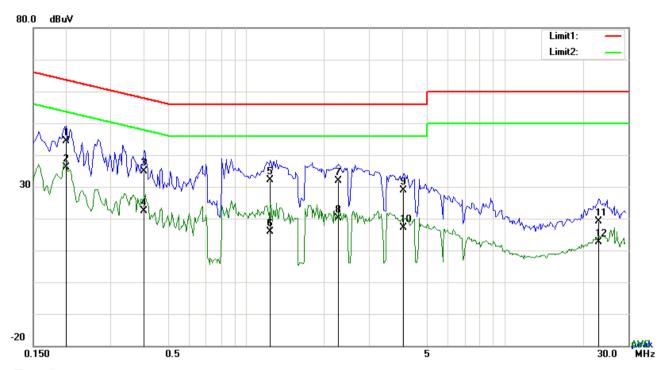
# Phase Line Plot at 240Vac, 60Hz

No.	P/L	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
		(MHz)	(dBuV)		(dB)	(dBuV)	(dBuV)	(dB)
1	L1	0.2007	31.06	QP	10.03	41.09	63.58	-22.49
2	L1	0.2007	22.28	AVG	10.03	32.31	53.58	-21.27
3	L1	0.3692	28.00	QP	10.03	38.03	58.52	-20.49
4	L1	0.3692	20.47	AVG	10.03	30.50	48.52	-18.02
5	L1	0.7662	23.86	QP	10.03	33.89	56.00	-22.11
6	L1	0.7662	15.25	AVG	10.03	25.28	46.00	-20.72
7	L1	1.7958	22.88	QP	10.04	32.92	56.00	-23.08
8	L1	1.7958	14.84	AVG	10.04	24.88	46.00	-21.12
9	L1	3.4095	19.81	QP	10.06	29.87	56.00	-26.13
10	L1	3.4095	10.09	AVG	10.06	20.15	46.00	-25.85
11	L1	5.4609	17.30	QP	10.09	27.39	60.00	-32.61
12	L1	5.4609	0.58	AVG	10.09	10.67	50.00	-39.33



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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	0.2007	34.28	QP	10.02	44.30	63.58	-19.28
2	N	0.2007	26.04	AVG	10.02	36.06	53.58	-17.52
3	N	0.4035	24.83	QP	10.02	34.85	57.78	-22.93
4	N	0.4035	12.27	AVG	10.02	22.29	47.78	-25.49
5	N	1.2381	22.11	QP	10.03	32.14	56.00	-23.86
6	N	1.2381	5.84	AVG	10.03	15.87	46.00	-30.13
7	N	2.2794	21.77	QP	10.04	31.81	56.00	-24.19
8	N	2.2794	10.09	AVG	10.04	20.13	46.00	-25.87
9	N	4.0647	18.72	QP	10.06	28.78	56.00	-27.22
10	N	4.0647	7.11	AVG	10.06	17.17	46.00	-28.83
11	N	23.1240	8.86	QP	10.31	19.17	60.00	-40.83
12	N	23.1240	2.27	AVG	10.31	12.58	50.00	-37.42



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# 6.2 Radiated Emissions

Temperature	25°C	
Relative Humidity	55%	
Atmospheric Pressure	1013mbar	
Test date :	May 17, 2018	
Tested By:	Evans He	

#### Requirement(s):

Spec	Item	m Requirement Applicable			
47CFR§15. 109(d)	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  Frequency range (MHz)	<b>&gt;</b>		
		30 - 88	100		
		88 – 216	150		
		216 - 960	200		
		Above 960	500		
Test Setup	Ant. Tower  Support Units  Turn Table  Ground Plane  Test Receiver				
1. The EUT was switched on and allowed to warm up to its normal open.  2. The test was carried out at the selected frequency points obtained from characterization. Maximization of the emissions, was carried out by a changing the antenna polarization, and adjusting the antenna height manner:  a. Vertical or horizontal polarization (whichever gave the higher				the EUT ating the EUT, the following	



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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 res	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	esolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video
	bandv	vidth with Peak detection for Average Measurement as below at frequency
	above	1GHz.
	■ 1 kH	Hz (Duty cycle < 98%) □ 10 Hz (Duty cycle > 98%)
	5. Steps 2	2 and 3 were repeated for the next frequency point, until all selected frequency
	points	were measured.
Remark		
Result	Pass	□ Fail
Test Data	Yes	N/A
Test Plot	Yes (See belo	w) N/A



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Test Mode : USB Mode

#### Below 1GHz



#### Test Data

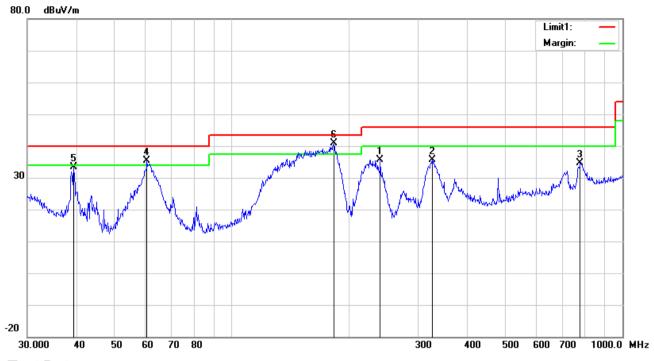
#### Horizontal Polarity Plot @3m

No.	P/L	Frequency	Reading	Detector	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degree
		(MHz)	(dBuV/m)		(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/ m)	(dB)	(cm)	()
1	I	222.9502	50.20	QP	11.78	22.34	1.61	41.25	46.00	-4.75	100	213
2	Н	152.1297	45.22	peak	12.60	22.33	1.35	36.84	43.50	-6.66	100	360
3	Н	183.2005	47.53	QP	11.18	22.27	1.42	37.86	43.50	-5.64	100	263
4	Н	480.5276	39.73	peak	17.31	21.85	2.31	37.50	46.00	-8.50	100	79
5	Н	61.5618	40.18	peak	7.38	22.41	0.79	25.94	40.00	-14.06	100	278
6	Н	323.3204	49.94	QP	14.09	22.22	1.91	43.72	46.00	-2.28	100	184



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#### Below 1GHz



#### Test Data

# Vertical Polarity Plot @3m

No.	P/L	Frequency	Reading	Detector	Ant_F	PA_G	Cab_L	Result	Limit	Margin	Height	Degree
		(MHz)	(dBuV/m)		(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/ m)	(dB)	(cm)	()
1	>	239.9873	44.85	peak	11.54	22.31	1.67	35.75	46.00	-10.25	100	290
2	٧	325.5958	41.78	peak	14.14	22.22	1.92	35.62	46.00	-10.38	200	360
3	V	779.6068	31.83	peak	21.16	21.19	2.92	34.72	46.00	-11.28	100	239
4	V	60.7044	49.64	QP	7.34	22.41	0.77	35.34	40.00	-4.66	100	176
5	٧	39.4372	40.53	peak	14.31	22.28	0.79	33.35	40.00	-6.65	100	93
6	V	182.5592	50.60	QP	11.14	22.27	1.41	40.88	43.50	-2.62	100	61



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#### Above 1GHz

Frequency	Read_level	A! 4lb	Height	Polarity	Factors	Level	Limit	Margin	Detector
(MHz)	(dBµV/m)	Azimuth	(cm)	(H/V)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(PK/AV)
1136.5	67.67	10	100	٧	-19.42	48.25	74	-25.75	PK
1658.28	67.57	192	100	V	-18.22	49.35	74	-24.65	PK
2120.87	62.9	352	100	V	-14.19	48.71	74	-25.29	PK
1381.84	67.8	159	100	Н	-19.37	48.43	74	-25.57	PK
1419.99	67.9	129	100	Н	-19.04	48.86	74	-25.14	PK
1870.82	64.15	171	100	Н	-15.39	48.76	74	-25.24	PK

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

Note2: 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

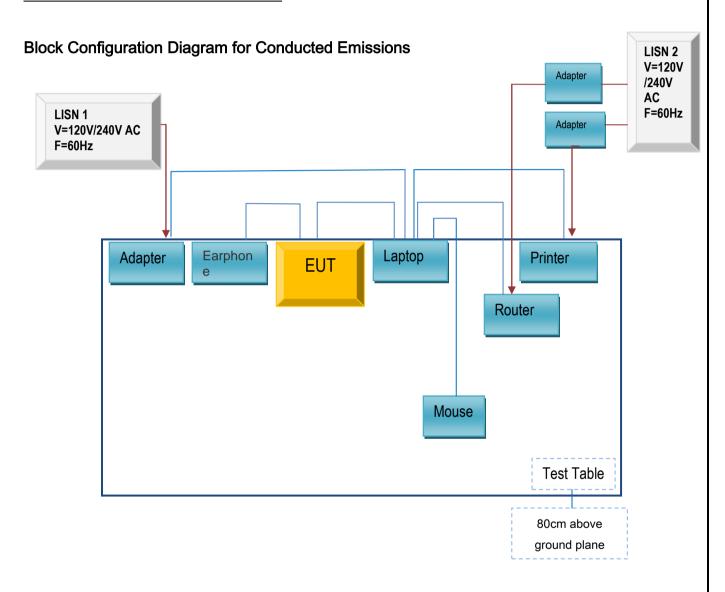
Instrument	Model	Serial#	Cal Date	Cal Due	In use				
AC Line Conducted Emis	AC Line Conducted Emissions								
EMI test receiver	ESCS30	8471241027	09/15/2017	09/14/2018	~				
Line Impedance	LI-125A	191106	09/23/2017	09/22/2018	₹				
Stabilization Network			00/20/2011	00/==/,=0:0	-				
Line Impedance	LI-125A	191107	09/23/2017	09/22/2018	<b>V</b>				
Stabilization Network	LI-125A	191101	03/23/2011	03/22/2010					
ISN	ISN T800	34373	09/23/2017	09/22/2018					
Transient Limiter	LIT-153	531118	08/30/2017	08/29/2018	~				
Radiated Emissions									
EMI test receiver	E SL6	100262	09/15/2017	09/14/2018	<				
OPT 010 AMPLIFIER	8447E	2727A02430	08/30/2017	08/29/2018	<u>&lt;</u>				
(0.1-1300MHz)	0441⊏	2121A02430	00/30/2017	00/29/2010	•				
Microwave Preamplifier	8449B	2000 4 02 402	03/22/2018	03/21/2019	₹				
(1 ~ 26.5GHz)	8449B	3008A02402	03/22/2018	03/21/2019	•				
Bilog Antenna	JB6	A110712	09/19/2017	09/18/2018	<u>&lt;</u>				
(30MHz~6GHz)	JDO	ATTUTIZ	09/19/2017	09/10/2018	•				
Double Ridge Horn	AH-118	71259	09/22/2017	09/21/2018	₹				
Antenna	A11-110	7 1239	03/22/2017	03/21/2010					



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# Annex B. TEST SETUP AND SUPPORTING EQUIPMENT

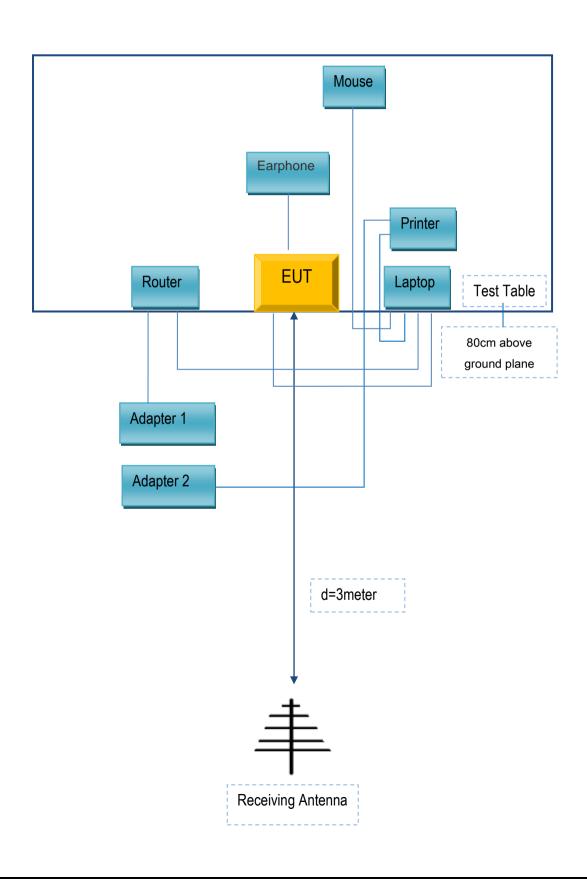
#### Annex B.ii. TEST SET UP BLOCK





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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 Equipment:

Manufacturer	Equipment Description	Model	Serial No
Lenovo	Laptop	E40	LR-1EHRX
GOLDWEB	Router	R102	1202032094
Lenovo	AC Adapter	42T4416	21D9JU
HP	Printer	VCVRA-1003	CN36M19JWX
DELL	Mouse	E100	912NMTUT41481
BULL	Socket	GN-403	GN201203
SAMSUNG	headset	HS330	N/A

#### Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
USB Cable	Un-shielding	No	2m	JX120051274
USB Cable	Un-shielding	No	2m	CBA3000AH0C1
RJ45 Cable	Un-shielding	No	2m	KX156327541
Router Power cable	Un-shielding	No	2m	13274630Z
Printer Power cable	Un-shielding	No	2m	127581031
Power Cable	Un-shielding	No	0.8m	GT211032



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# Annex C. User Manual / Block Diagram / Schematics / Partlist/ DECLARATION OF SIMILARITY

Please see the attachment