

TEST REPORT

Product: Dual

Model No.: Dual, ED1, ED2, ED3, M1, M2, M3, M4

Trade mark: **MOVIC** 

Report No.: TCT170602E011

Issued Date: Jun. 21, 2017

Issued for:

Shenzhen YLWD Technology co.LTD

RM1002.A.Haisong BLD.RDTairan.FuTian District Shenzhen, China

Issued By:

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TABLE OF CONTENTS

1. Test Certification	3
2. Test Result Summary	4
3. EUT Description.....	5
4. Test Methodology	6
4.1. Decision of Final Test Mode	6
4.2. EUT System Operation	6
5. Setup of Equipment under Test	7
5.1. Description of Support Units	7
5.2. Configuration of System Under Test	8
6. Facilities and Accreditations	9
6.1. Facilities.....	9
6.2. Measurement Uncertainty	9
7. Emission Test	10
7.1. Conducted Emission at Mains Terminals	10
7.2. Radiated Emission.....	14
8. Photographs of Test Configuration	20
9. Photographs of EUT	22

1. Test Certification

Product:	Dual
Model No.:	Dual, ED1, ED2, ED3, M1, M2, M3, M4
Applicant:	Shenzhen YLWD Technology co.LTD
Address:	RM1002.A.Haisong BLD.RDTairan.FuTian District Shenzhen, China
Manufacturer:	Shenzhen YLWD Technology co.LTD
Address:	RM1002.A.Haisong BLD.RDTairan.FuTian District Shenzhen, China
Test Voltage:	DC 5 V (PC Input AC 120 V/ 60 Hz), AC 120 V/ 60 Hz
Date of Test:	Jun. 18, 2017 ~ Jun. 20, 2017
Applicable Standards:	47 CFR FCC Part 15 Subpart B: 2016 ANSI C63.4: 2014

The above equipment has been tested by Shenzhen Tongce Testing Lab and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By:

Jerry

Date:

Jun. 20, 2017

Jerry

Check By:

Joe Zhou

Date:

Jun. 21, 2017

Joe Zhou

Approved By:

Tomsin

Date:

Jun. 21, 2017

Tomsin



2. Test Result Summary

Emission		
Test Method	Item	Result
FCC 47 CFR Part 15 Subpart B	Conducted Emission at Mains Terminals	Pass
	Radiated Emission	Pass

Note:

1. Pass: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.
5. The information of measurement uncertainty is available upon the customer's request.

3. EUT Description

Product Name:	Dual
Model No.:	Dual
Product Parameter:	Adapter Information: Input: AC 100–240 V, 50/ 60 Hz, 0.2 A Output: DC 5 V, 1000 mA
AC Mains:	☐ Shielded ☐ Unshielded, ☐ Detachable ☐ Un-detachable ☒ Not applicable ☐ Length:
USB Line:	☐ Shielded ☒ Unshielded, ☒ Detachable ☐ Un-detachable ☐ Not applicable ☒ Length: 1 m
Control Line:	☐ Shielded ☐ Unshielded, ☐ Detachable ☐ Un-detachable ☒ Not applicable ☐ Length:

Model(s) List

No.	Model Number	Tested With
1	Dual	☒
Other models	ED1, ED2, ED3, M1, M2, M3, M4	☐

Note: Dual is tested model, other models are derivative models. The models are identical in circuit and PCB layout, only different on the model names. So the test data of Dual can represent the remaining models.

4. Test Methodology

4.1. Decision of Final Test Mode

The EUT was tested together with the thereafter additional components, and a configuration, which produced the worst emission levels, was selected and recorded in this report.

The following test mode(s) were assessed:

Test Mode
Mode 1: Charging and Camera Shooting
Mode 2: Charging and SD Playing
Mode 3: Charging and Memory Playing
Mode 4: Data Transmitting

The following test mode was found to produce the highest emission level.

The Worst Test Mode		
Emission	Conducted Emission	Mode 4: Data Transmitting
	Radiated Emission	Mode 4: Data Transmitting

4.2. EUT System Operation

1. Set up EUT with the support equipments.
2. Make sure the EUT work normally during the test.

5. Setup of Equipment under Test

5.1. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

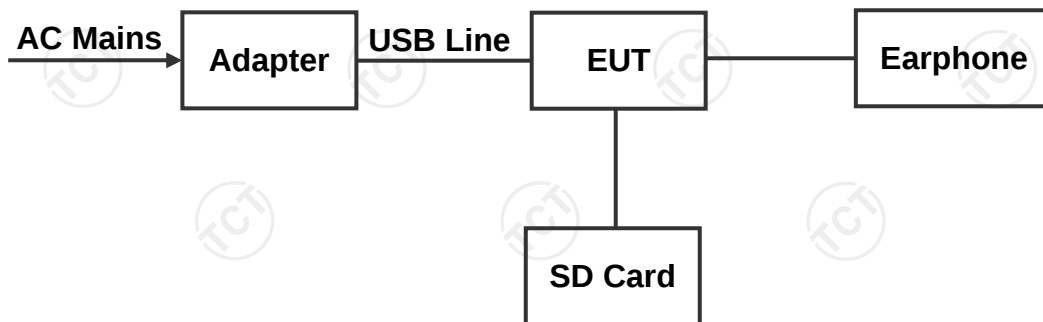
Equipment	Model No.	Serial No.	FCC ID	Trade Name
PC	Inspiron 3668	CN-04T4P2-C1332-26C-0013	/	Dell
Monitor	SE1918HV	CN-0YVJCX-FCC00-75D-AUAB-A00	/	Dell
Mouse	MS116p	CN-009NK2-73826-74M-0QI9	/	Dell
Keyboard	KB216t	CN-0RKR0N-71616-75I-0CYQ-A03	/	Dell
SD Card	SDSDQM-008G-235	80-56-14974-008G	/	SanDisk

Note:

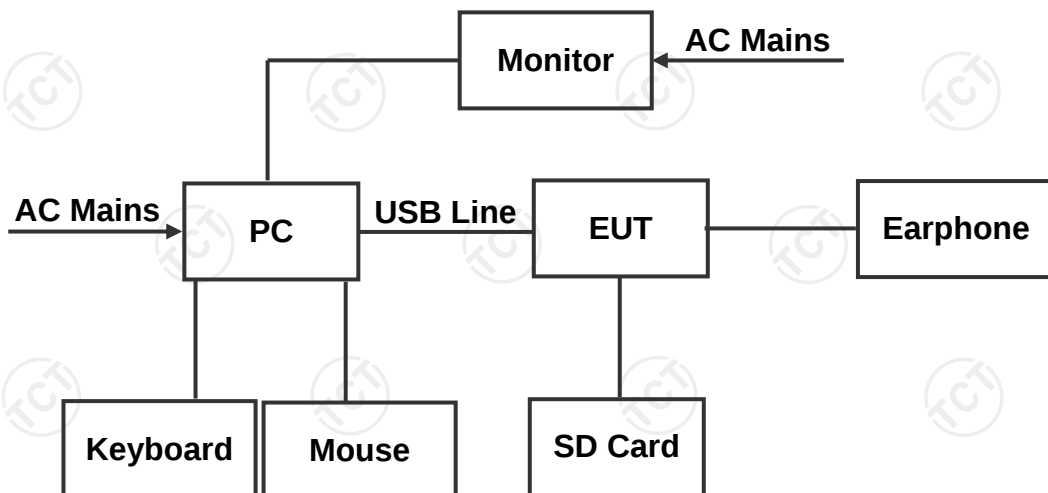
1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

5.2. Configuration of System Under Test

Mode 1/Mode 2/Mode 3



Mode 4



(EUT: Dual)

6. Facilities and Accreditations

6.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

FCC - Registration No.: 572331

Shenzhen Tongce Testing Lab

The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 32. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6.2. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

No.	Item	MU
1.	Temperature	$\pm 0.1^{\circ}\text{C}$
2.	Humidity	$\pm 1.0 \%$
3.	Spurious Emissions, Conducted	$\pm 2.56 \text{ dB}$
4.	All Emissions, Radiated	$\pm 4.50 \text{ dB}$

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of $k=2$.

7. Emission Test

7.1. Conducted Emission at Mains Terminals

7.1.1. Test Specification

Test Requirement:	FCC 47 CFR Part 15 Subpart B
Test Method:	ANSI C63.4: 2014
Frequency Range:	150 kHz to 30 MHz

7.1.2. Limits

Frequency (MHz)	Class A dB(uV)		Class B dB(uV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 – 56 ^a	56 – 46 ^a
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

a. Decreases with the logarithm of the frequency

7.1.3. Test Instruments

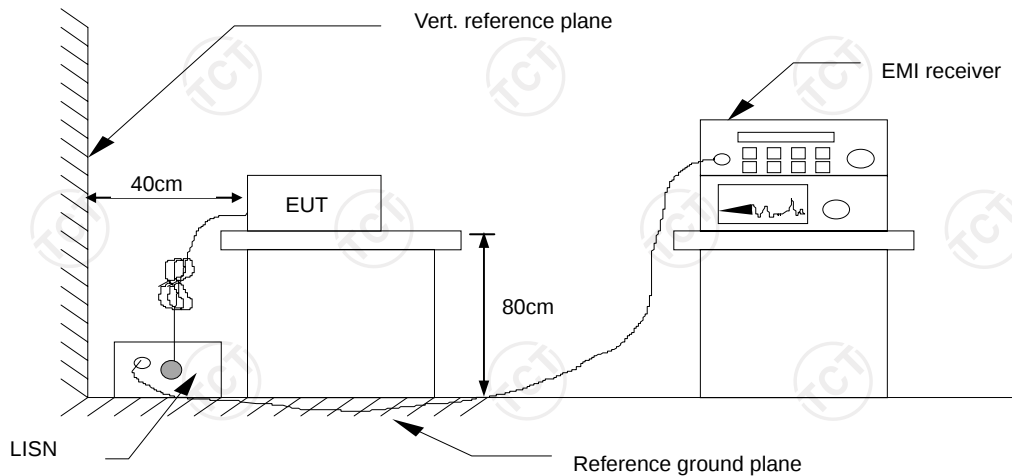
Conducted Emission Shielding Room Test Site (843)				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESCS30	100139	Aug. 11, 2017
LISN	Schwarzbeck	NSLK 8126	8126453	Aug. 16, 2017

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

7.1.4. Test Method

The AMN was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane. This distance was between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the AMN. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN

7.1.5. Block Diagram of Test Setup



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

7.1.6. Test Results

Test Environment:	Temp.: 26 °C	Humid.: 60 %	Press.: 96 kPa
Test Mode:	Mode 1, Mode 2, Mode 3, Mode 4		
Test Voltage:	DC 5 V (PC Input AC 120 V/ 60 Hz), AC 120 V/ 60 Hz		
Test Result:	Pass		

Note:

L1 = Live Line / N = Neutral Line

“---” denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.

Freq. = Emission frequency in MHz

Reading level dB(μV) = Receiver reading

Corr. Factor (dB) = Attenuator factor + Cable loss

Level dB(μV) = Reading level dB(μV) + Corr. Factor (dB)

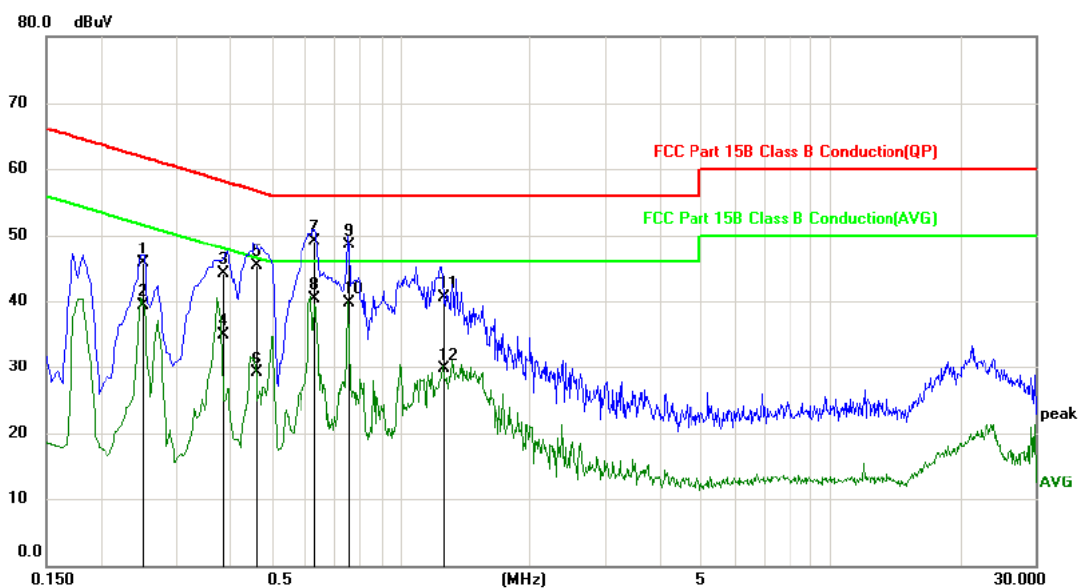
Limit dB(μV) = Limit stated in standard

Margin (dB) = Level dB(μV) – Limits dB(μV)

Q.P. =Quasi-Peak

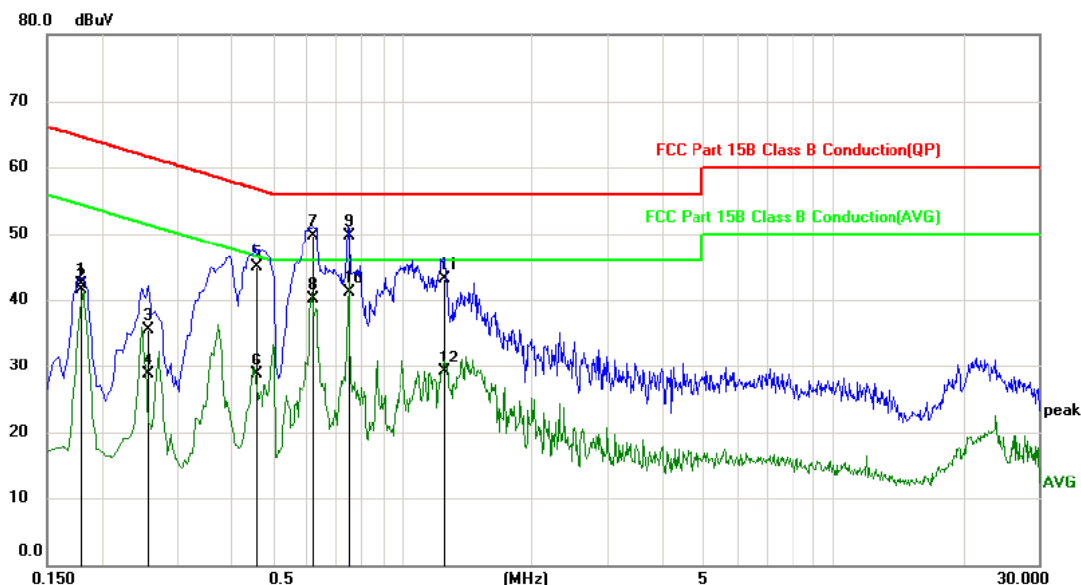
AVG=Average

Please refer to following diagram for individual



Site: Phase: **L1** Temperature: 26
 Limit: FCC Part 15B Class B Conduction(QP) Power: Humidity: 60 %
 Mode: Data Transmitting
 Note: DC 5V(PC Input AC 120V/60Hz)

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2521	34.20	11.44	45.64	61.69	-16.05	QP	
2		0.2521	27.82	11.44	39.26	51.69	-12.43	AVG	
3		0.3871	32.80	11.37	44.17	58.13	-13.96	QP	
4		0.3871	23.51	11.37	34.88	48.13	-13.25	AVG	
5		0.4621	34.04	11.33	45.37	56.65	-11.28	QP	
6		0.4621	17.75	11.33	29.08	46.65	-17.57	AVG	
7		0.6278	37.80	11.26	49.06	56.00	-6.94	QP	
8	*	0.6278	29.01	11.26	40.27	46.00	-5.73	AVG	
9		0.7578	37.37	11.23	48.60	56.00	-7.40	QP	
10		0.7578	28.48	11.23	39.71	46.00	-6.29	AVG	
11		1.2569	29.17	11.33	40.50	56.00	-15.50	QP	
12		1.2569	18.35	11.33	29.68	46.00	-16.32	AVG	



Site: Phase: **N** Temperature: 26
 Limit: FCC Part 15B Class B Conduction(QP) Power: Humidity: 60 %
 Mode: Data Transmitting
 Note: DC 5V(PC Input AC 120V/60Hz)

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1794	30.74	11.48	42.22	64.51	-22.29	QP	
2		0.1794	29.93	11.48	41.41	54.51	-13.10	AVG	
3		0.2573	24.16	11.44	35.60	61.52	-25.92	QP	
4		0.2573	17.31	11.44	28.75	51.52	-22.77	AVG	
5		0.4587	33.51	11.33	44.84	56.72	-11.88	QP	
6		0.4587	17.43	11.33	28.76	46.72	-17.96	AVG	
7		0.6215	38.38	11.26	49.64	56.00	-6.36	QP	
8		0.6215	28.90	11.26	40.16	46.00	-5.84	AVG	
9		0.7483	38.53	11.23	49.76	56.00	-6.24	QP	
10	*	0.7483	29.79	11.23	41.02	46.00	-4.98	AVG	
11		1.2460	31.85	11.33	43.18	56.00	-12.82	QP	
12		1.2460	17.79	11.33	29.12	46.00	-16.88	AVG	

7.2. Radiated Emission

7.2.1. Test Specification

Test Requirement:	FCC 47 CFR Part 15 Subpart B
Test Method:	ANSI C63.4: 2014
Frequency Range:	30 MHz to 6000 MHz
Measurement Distance:	3 m
Antenna Polarization:	Horizontal & Vertical

7.2.2. Limits

Frequency (MHz)	Class A (at 3m)	Class B (at 3m)
	dBuV/m	dBuV/m
30 ~ 88	49.0	40.0
88 ~ 216	53.5	43.5
216 ~ 960	56.4	46.0
960 ~ 1000	59.5	54.0

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level $\text{dB}(\mu\text{V}/\text{m}) = 20 \log \text{Emission level } (\mu\text{V}/\text{m})$.

7.2.3. Test Instruments

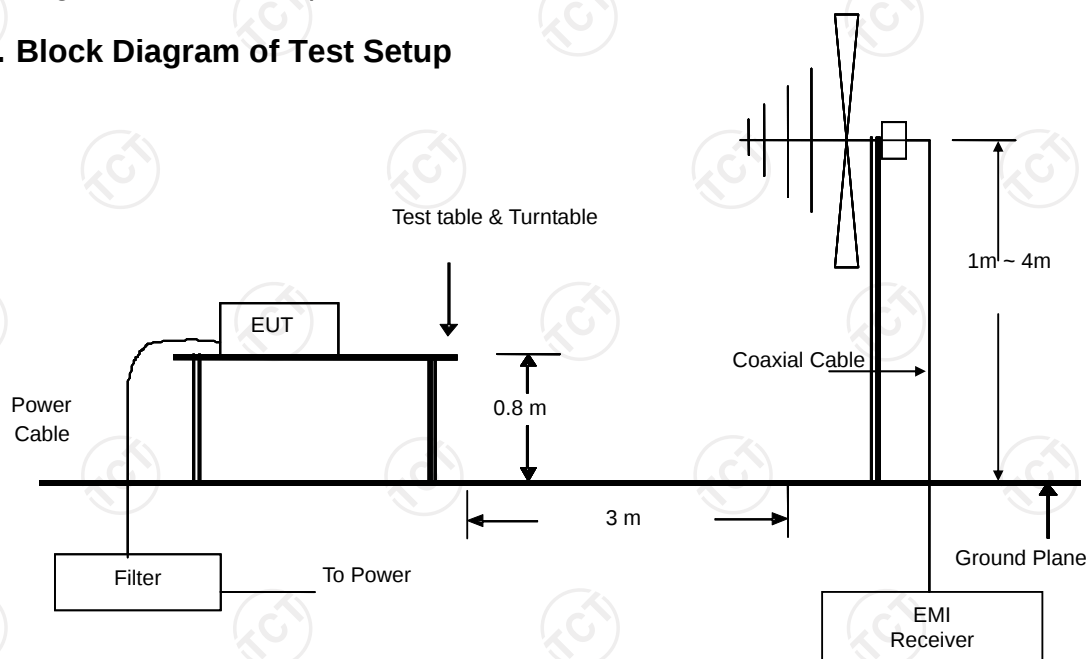
Radiated Emission Test Site (966)				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESVD	100008	Aug. 11, 2017
Spectrum Analyzer	R&S	FSEM	848597-001	Aug. 11, 2017
Amplifier	HP	8447D	2727A05017	Aug. 11, 2017
Amplifier	EM	EM30265	07032613	Aug. 11, 2017
Broadband Antenna	Schwarzbeck	VULB9163	340	Aug. 13, 2017
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Aug. 13, 2017

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

7.2.4. Test Method

Measurements were made in a 3-meter semi-anechoic chamber or Open Area Test Site that complies to CISPR 16. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3 meter. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities. Final measurements (quasi-peak) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4 m. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable. Block Diagram of Test Setup.

7.2.5. Block Diagram of Test Setup



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration

7.2.6. Test Results

Test Environment:	Temp.: 25 °C	Humid.: 55 %	Press.: 96 kPa
Test Mode:	Mode 1, Mode 2, Mode 3, Mode 4		
Test Voltage:	DC 5 V (PC Input AC 120 V/ 60 Hz), AC 120 V/ 60 Hz		
Test Result:	Pass		

Note:

Freq. = Emission frequency in MHz

Reading level dB(μV) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss

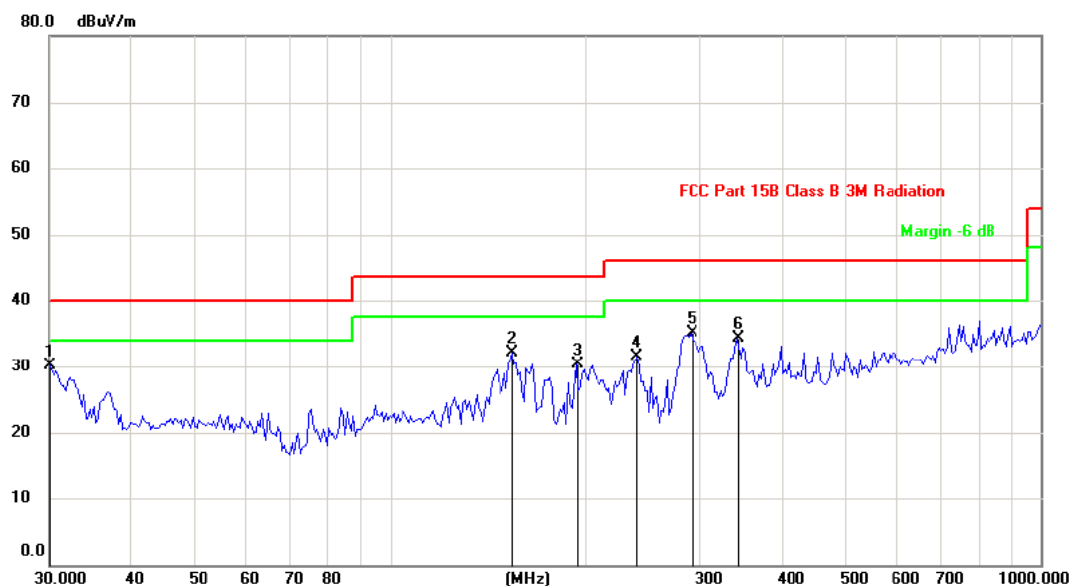
Measurement dB(μV/m) = Reading level dB(μV) + Corr. Factor (dB)

Limit dB(μV/m) = Limit stated in standard

Margin (dB) = Measurement dB(μV/m) – Limits dB(μV/m)

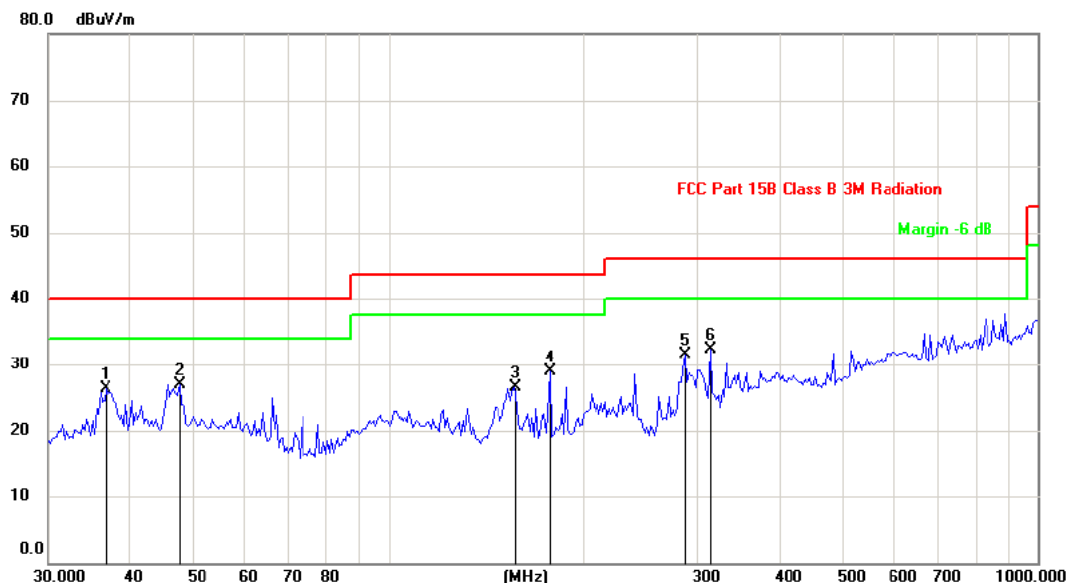
Q.P. =Quasi-Peak

Please refer to following diagram for individual



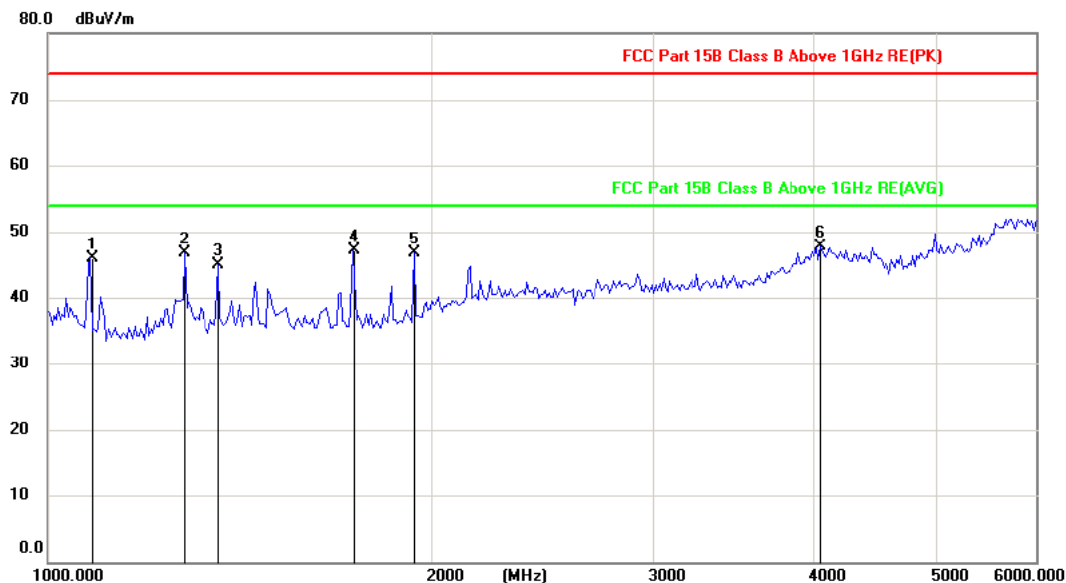
Site: Polarization: **Horizontal** Temperature: 25
 Limit: FCC Part 15B Class B 3M Radiation Power: Humidity: 55 %
 Mode: Data Transmitting
 Note: DC 5V(PC Input AC 120V/60Hz)

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
1	*	30.0000	38.06	-8.02	30.04	40.00	-9.96	peak		
2		154.2428	42.36	-10.23	32.13	43.50	-11.37	peak		
3		193.1366	39.50	-9.25	30.25	43.50	-13.25	peak		
4		240.1442	40.50	-9.07	31.43	46.00	-14.57	peak		
5		290.3170	40.99	-5.97	35.02	46.00	-10.98	peak		
6		341.2442	37.95	-3.68	34.27	46.00	-11.73	peak		



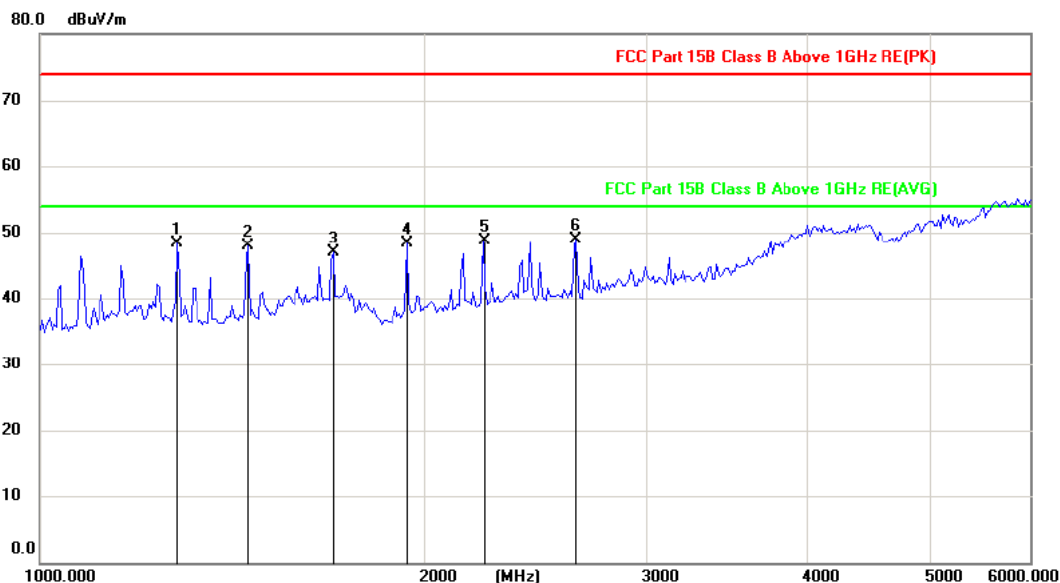
Site: Polarization: **Vertical** Temperature: 25
 Limit: FCC Part 15B Class B 3M Radiation Power: Humidity: 55 %
 Mode: Data Transmitting
 Note: DC 5V(PC Input AC 120V/60Hz)

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Comment
1		36.7811	33.66	-7.36	26.30	40.00	-13.70	peak		
2	*	47.7028	33.75	-6.82	26.93	40.00	-13.07	peak		
3		156.4259	36.76	-10.19	26.57	43.50	-16.93	peak		
4		177.5179	38.58	-9.65	28.93	43.50	-14.57	peak		
5		286.2653	37.73	-6.29	31.44	46.00	-14.56	peak		
6		313.6482	36.97	-4.71	32.26	46.00	-13.74	peak		



Site: Polarization: **Horizontal** Temperature: 25
 Limit: FCC Part 15B Class B Above 1GHz RE(PK) Power: Humidity: 55 %
 Mode: Data Transmitting
 Note: DC 5V(PC Input AC 120V/60Hz)

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		1078.321	58.32	-12.48	45.84	74.00	-28.16	peak		
2		1281.150	58.77	-12.00	46.77	74.00	-27.23	peak		
3		1361.790	56.75	-11.81	44.94	74.00	-29.06	peak		
4		1738.405	59.22	-12.13	47.09	74.00	-26.91	peak		
5		1943.090	57.01	-10.36	46.65	74.00	-27.35	peak		
6	*	4056.713	45.21	2.43	47.64	74.00	-26.36	peak		



Site: Polarization: **Vertical** Temperature: 25
 Limit: FCC Part 15B Class B Above 1GHz RE(PK) Power: Humidity: 55 %
 Mode: Data Transmitting
 Note: DC 5V(PC Input AC 120V/60Hz)

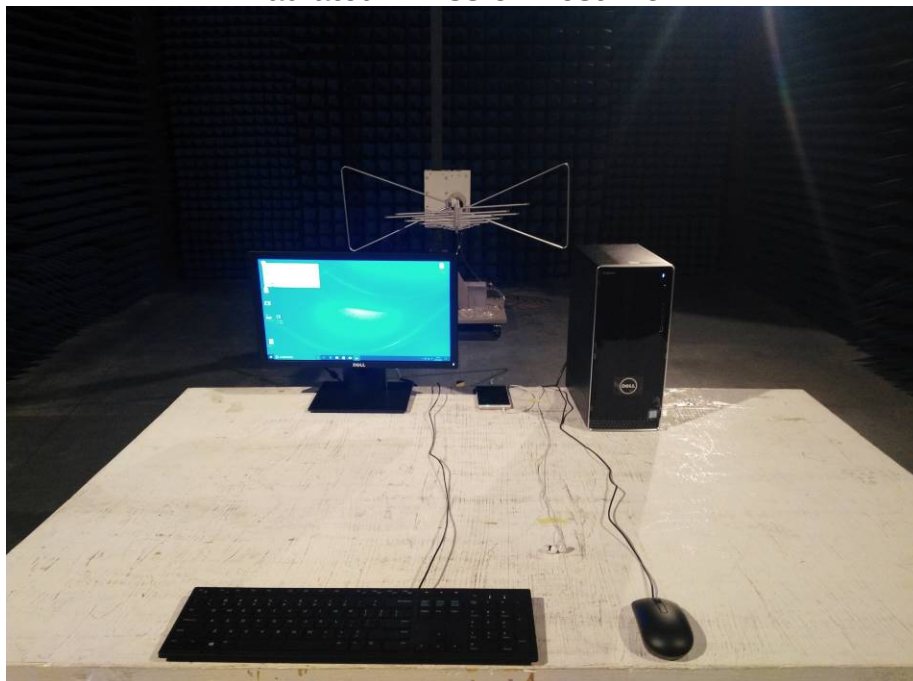
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		1281.150	60.22	-12.00	48.22	74.00	-25.78	peak		
2		1457.938	59.55	-11.73	47.82	74.00	-26.18	peak		
3		1701.352	58.91	-12.08	46.83	74.00	-27.17	peak		
4		1943.090	58.60	-10.36	48.24	74.00	-25.76	peak		
5		2227.158	57.09	-8.36	48.73	74.00	-25.27	peak		
6	*	2636.597	55.50	-6.63	48.87	74.00	-25.13	peak		

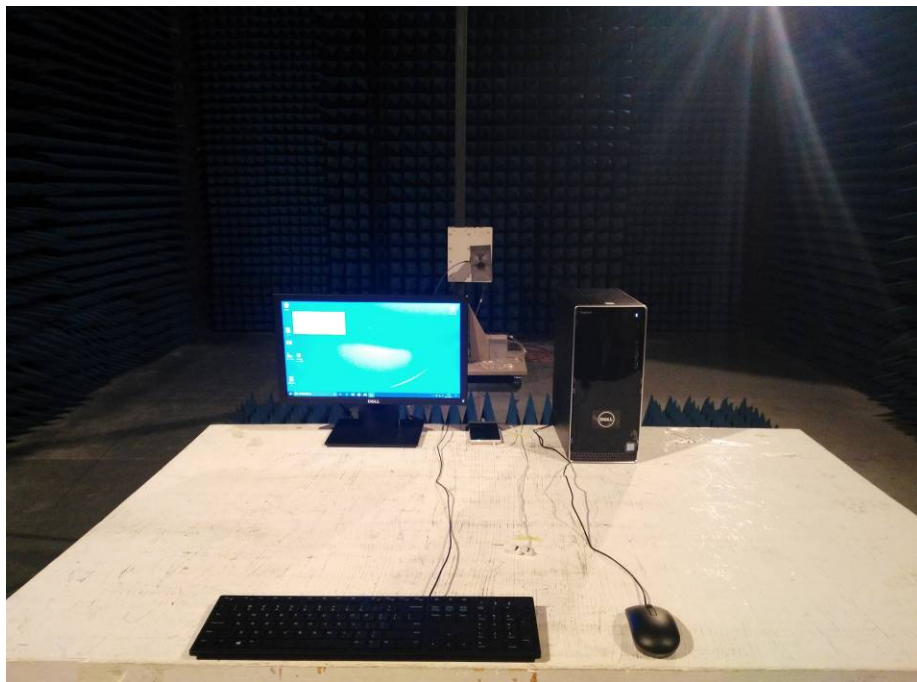
8. Photographs of Test Configuration

Conducted Emission Test View



Radiated Emission Test View





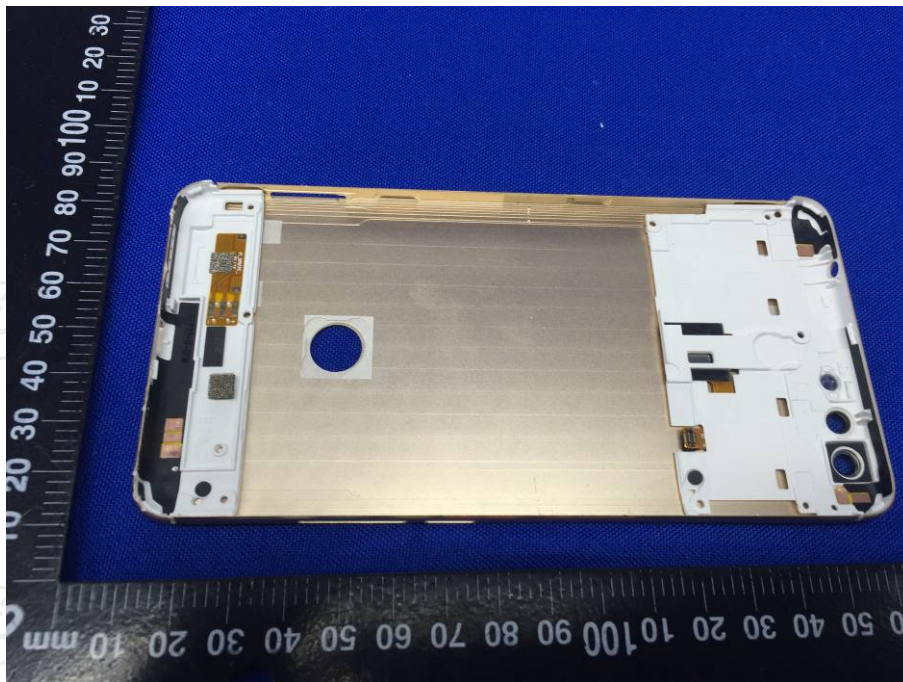
9. Photographs of EUT

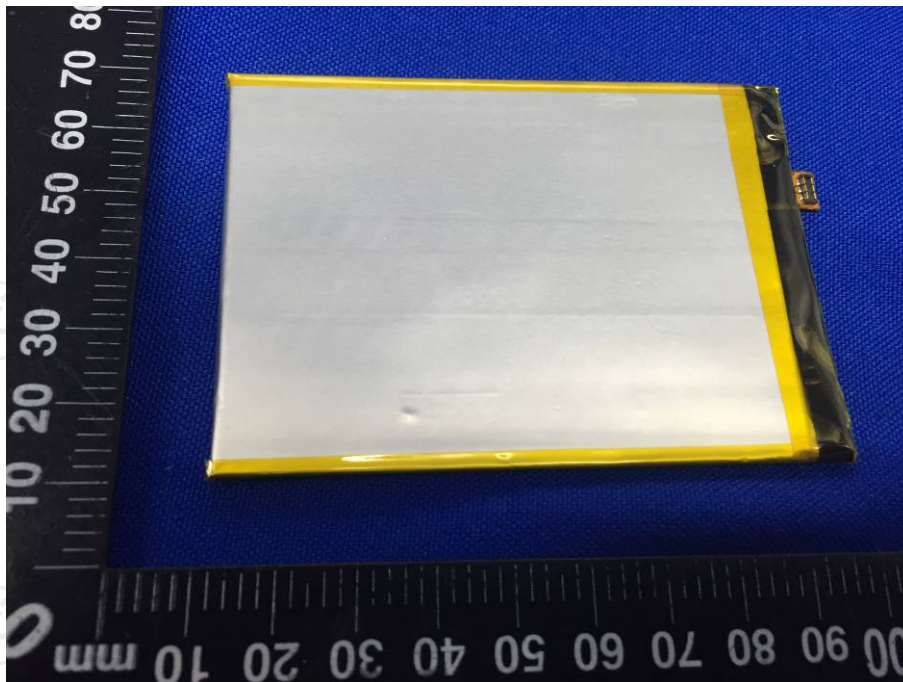


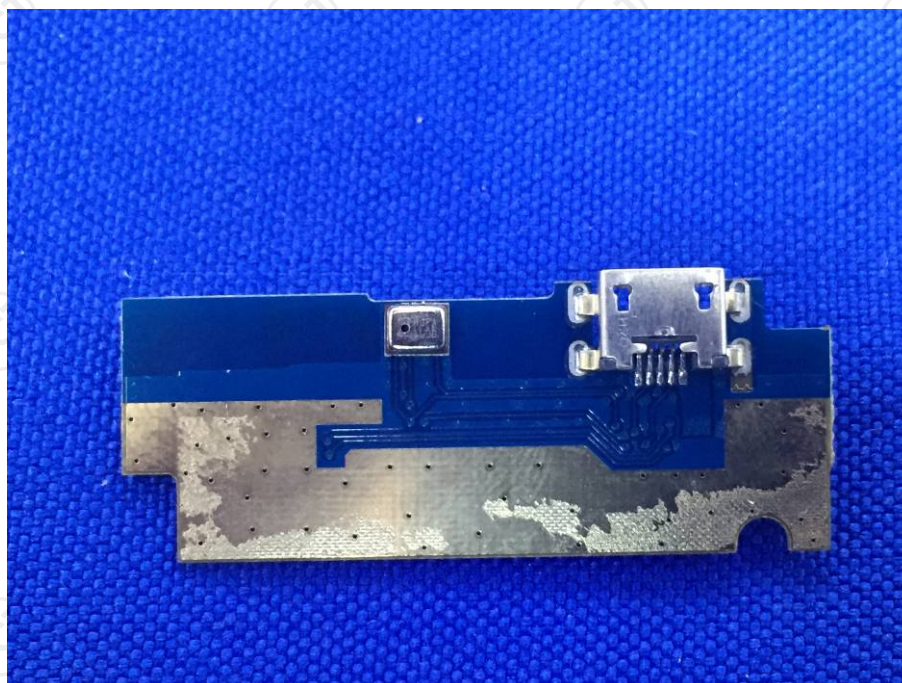
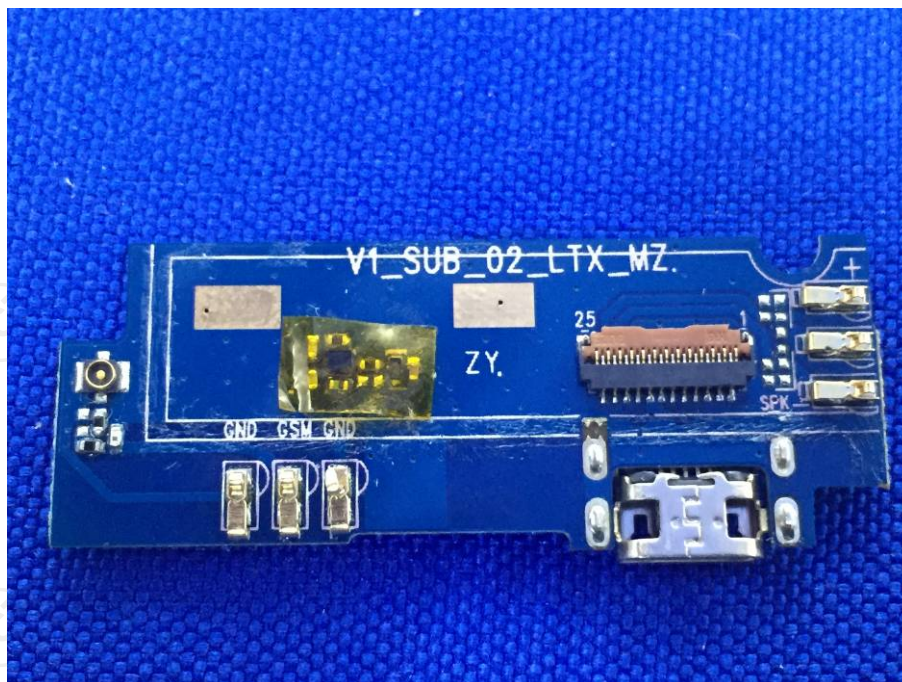


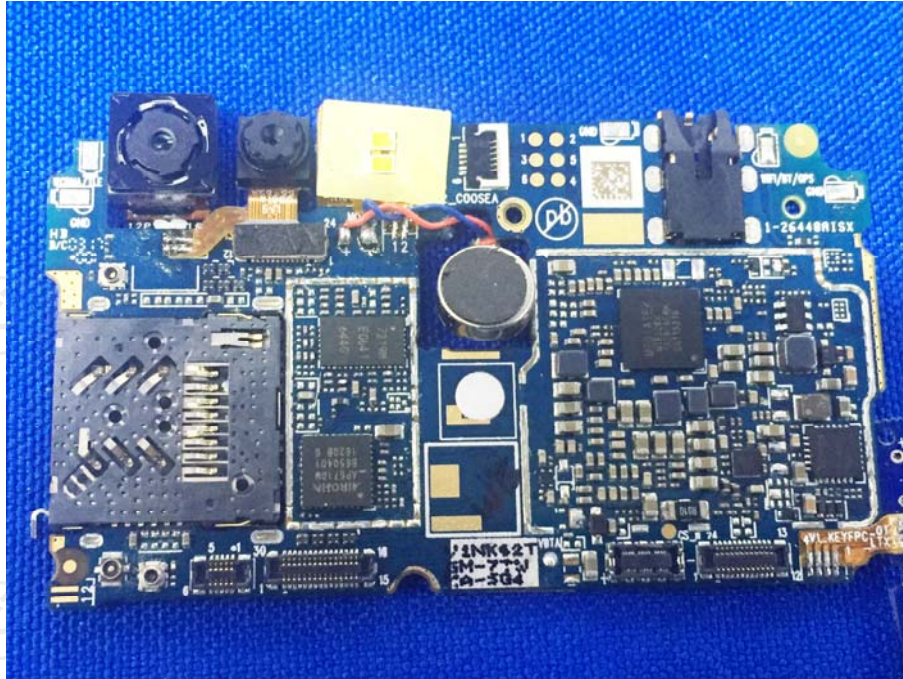


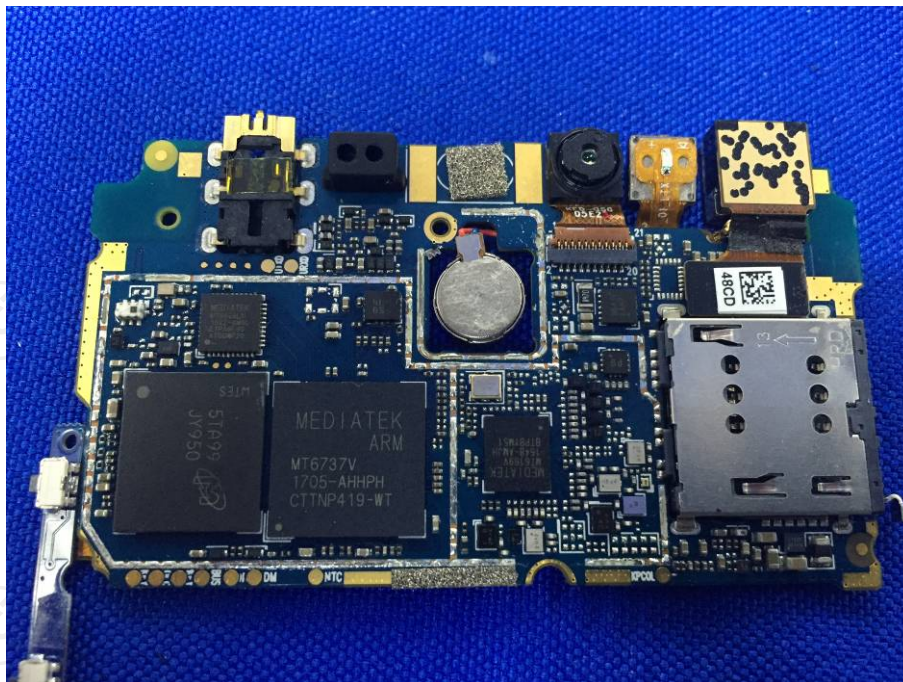












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