



FCC Test Report

Report No.: AGC01321140113FE02

FCC ID : 2ABGBJVX6699
APPLICATION PURPOSE : Class II Permissive Change
PRODUCT DESIGNATION : Mobile Phone
BRAND NAME : JIVI
MODEL NAME : JV X2550
CLIENT : Complex International Limited
DATE OF ISSUE : Mar. 05, 2014
STANDARD(S) : FCC Part 22H & 24E Rules
REPORT VERSION : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd.



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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Mar. 05, 2014	Valid	Original Report

DESCRIPTION
In this report, only change the GSM antenna. All the test cases were performed on original report which can be referred to Report Number AGC01321140112FE02, model JV X6699. Based on the original test report, only the ERP/EIRP and the worst cases of Radiated Spurious Emission were verified for the differences.

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VERIFICATION OF COMPLIANCE

Applicant	Complex International Limited
Address	Unit 902-904,9th Floor, Tower B, Hung Hom Commercial Centre,37,Ma Tau Wai Road.Hung Hum,Kowloon,HongKong
Manufacturer	Complex International Limited
Address	Unit 902-904,9th Floor, Tower B, Hung Hom Commercial Centre,37,Ma Tau Wai Road.Hung Hum,Kowloon,HongKong
Product Designation	Mobile Phone
Brand name	JIVI
Test Model	JV X2550
Date of Test	Feb. 17, 2014 to Feb. 26, 2014
Deviation	None
Condition of Test Sample	Normal
Report Template	AGCRT-US-2.5G/RF (2013-03-01)

WE HEREBY CERTIFY THAT:

The above equipment was tested by Attestation of Global Compliance(Shenzhen) Co., Ltd. The data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C 63.4:2003 and TIA/EIA 603. The sample tested as described in this report is in compliance with the FCC Rules Part 22H and 24E.

The test results of this report relate only to the tested sample identified in this report.

Tested By :



Bart Xie

Mar. 05, 2014

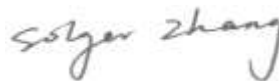
Reviewed By :



Kidd Yang

Mar. 05, 2014

Approved By:



Solger Zhang

Mar. 05, 2014

1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Mobile Phone
Hardware Version:	S40M98Y
Software Version:	N/A
Frequency Bands:	☒ GSM 850 ☒ PCS 1900 (U.S. Bands) ☒ GSM 900 ☒ DCS 1800 (Non-U.S. Bands)
Antenna:	PIFA Antenna
Antenna gain:	-1.3dBi
Battery parameter:	DC3.7V/1500 mAh
Adapter Input:	AC100-240V, 50-60Hz, 130mA
Adapter Output:	DC5.0V, 500mA
Output Power:	30.29 dBm Maximum ERP measured for GSM 850 31.49 dBm Maximum Average Burst Power for GSM 850 27.37 dBm Maximum EIRP measured for GSM 1900 28.45 dBm Maximum Average Burst Power for GSM 1900
Dual SIM Card:	The result for SIM1 is the worst case which was only recorded
GPRS Class:	12
Extreme Vol. Limits:	DC 3.4 V to DC4.2 V (Nominal DC 3.7 V)
Extreme Temp. Tolerance:	-10°C to +50°C
** Note: The High Voltage DC 4.2V and Low Voltage DC 3.4V were declared by manufacturer, The EUT could not operate normally with higher or lower voltage. Other functions have been performed according to verification procedure except for MS function. SIM1 can't transmit with SIM2 simultaneously.	

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2ABGBJVX6699** filing to comply with the FCC Part 22H and 24E requirements.

1.3 TEST METHODOLOGY

The radiated emission testing was performed according to the procedures of ANSI C 63.4: 2003; TIA/EIA 603 and FCC CFR 47 Rules of 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057.

1.4 TEST FACILITY

The test site used to collect the radiated data is located at:

Attestation of Global Compliance (Shenzhen) Co., Ltd.

2/F., Building 2, No.1-No.4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Bao'an District, Shenzhen, Guangdong, China

The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003.

FCC register No.: 259865

1.5 MEASUREMENT INSTRUMENTS

NAME OF EQUIPMENT	MANUFACTURER	MODEL	SERIAL NUMBER	Calibration Date	Calibration Due.
SPECTRUM ANALYZER	AGILENT	E4440A	US41421290	July 17, 2013	July 16, 2014
TEST RECEIVER	R&S	ESCI	100694	July 17, 2013	July 16, 2014
COMMUNICATION TESTER	AGILENT	8960	GB46310822	Oct.22, 2012	Oct.21, 2013
SIGNAL GENERATOR	AGILENT	E4438C	MY44260051	Feb.23,2014	Feb. 22,2015
COMMUNICATION TESTER	R&S	CMU200	122500166	Feb.28, 2013	Feb.27, 2014
TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100694	July 17, 2013	July 16, 2014
LISN	R&S	ESH3-Z5	8389791009	July 17, 2013	July 16, 2014
CLIMATE CHAMBER	ALBATROSS	--	--	July 17, 2013	July 16, 2014
Loop Antenna	Daze	ZN30900N	SEL0097	July 17, 2013	July 16, 2014
Biological Antenna	A.H. Systems Inc.	SAS-521-4	26	June 7, 2013	June 6, 2014
Substitution Antenna	EMCO	3142C	---	June 7,2013	June 6, 2014
Substitution Antenna	EM	EM-AH-10180	69	Apr.20, 2013	Apr.19, 2014
Horn Antenna	EM	EM-AH-10180	67	Apr.20, 2013	Apr.19, 2014
Horn Antenna	A.H. Systems Inc.	SAS-574	--	June 7, 2013	June 6, 2014

1.6 SPECIAL ACCESSORIES

The battery and the charger, earphone supplied by the applicant were used as accessories and being tested with EUT intended for FCC grant together.

1.7 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2. SYSTEM TEST CONFIGURATION

2.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT EXERCISE

The Transmitter was operated in the maximum output power mode through Communication Tester. The TX frequency was fixed which was for the purpose of the measurements.

2.3 GENERAL TECHNICAL REQUIREMENTS

Item Number	Item Description		FCC Rules
1	Output Power	Radiated	24.232 (b)
3	Spurious Emission	Radiated Spurious Emission	2.1051 / 22.917 / 24.238

2.4 CONFIGURATION OF EUT SYSTEM

Fig. 2-1 Configuration of EUT System

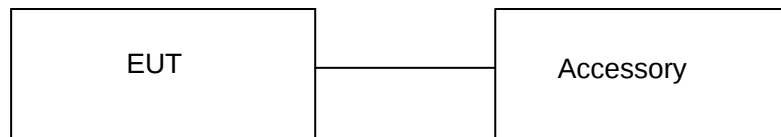


Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Mobile Phone	JV X2550	FCC ID: 2ABGBJVX6699	EUT
2	Adapter	JV X2550	DC5.0V /500mA	Accessory
3	Battery	JV X2550	DC3.7V/ 1500 mAh	Accessory
4	Earphone	JV X2550	N/A	Accessory
5	USB Cable	JV X2550	N/A	Accessory

Note: All the accessories have been used during the test. The following “EUT” in setup diagram means EUT system.

3. SUMMARY OF TEST RESULTS

Item Number	Item Description		FCC Rules	Result
1	Output Power	Radiated Output Power	24.232 (b)	Pass
2	Spurious Emission	Radiated Spurious Emission	2.1051/22.917/ 24.238	Pass

4. DESCRIPTION OF TEST MODES

During the testing, the EUT (Quad-band GSM / GPRS mobile phone) was controlled via Rhode & Schwarz Digital Radio Communication Tester (CMU 200) to ensure max power transmission and proper modulation. Three channels (The top channel, the middle channel and the bottom channel) were chosen for testing on both GSM and PCS frequency band.

Note: GSM and GPRS modes have been tested during the test. The worst condition (GSM) be recorded in the test report if no other modes test data.

5. OUTPUT POWER

5.1 RADIATED OUTPUT POWER

5.1.1 MEASUREMENT METHOD

The measurements procedures specified in TIA-603C-2004 were applied.

- 1 In an anechoic antenna test chamber, a half-wave dipole antenna for the frequency band of interest is placed at the reference centre of the chamber. An RF Signal source for the frequency band of interest is connected to the dipole with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A known (measured) power (P_{in}) is applied to the input of the dipole, and the power received (P_r) at the chamber's probe antenna is recorded.
- 2 The substitution method is used. Substitution values at each frequency are measured before and saved to the test software. A "reference path loss" is established as $AR_{pl} = P_{in} + 2.15 - P_r$. The AR_{pl} is the attenuation of "reference path loss", and including the gain of receive antenna, the cable loss and the air loss. The measurement results are obtained as described below: $Power = P_{Mea} + AR_{pl}$
- 3 The EUT is substituted for the dipole at the reference centre of the chamber and a scan is performed to obtain the radiation pattern.
- 4 From the radiation pattern, the co-ordinates where the maximum antenna gain occurs are identified.
- 5 The EUT is then put into continuously transmitting mode at its maximum power level.
- 6 Power mode measurements are performed with the receiving antenna placed at the coordinates determined in Step 3 to determine the output power as defined in Rule 24.232 (b) and (c). The "reference path loss" from Step1 is added to this result.
- 7 This value is EIRP since the measurement is calibrated using a half-wave dipole antenna of known gain (2.15 dBi) and known input power (P_{in}).
- 8 ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15dBi..$

5.1.2 PROVISIONS APPLICABLE

This is the test for the maximum radiated power from the EUT. Rule Part 24.232(b) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power" and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage." Rule Part 22.913(a) specifies "Maximum ERP. The effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts."

Radiated Power Limits for GSM 850 MHZ (ERP)		
Mode	Power Step	Nominal Peak Power
GSM	5	≤ 38.45 dBm (7W)
GPRS	3	≤ 38.45 dBm (7W)

Radiated Power Limits for PCS 1900 MHZ (E.I.R.P.)		
Mode	Power Step	Nominal Peak Power
GSM	0	≤ 33 dBm (2W)
GPRS	3	≤ 33 dBm (2W)

5.1.3 MEASUREMENT RESULT

Radiated Power (ERP) for GSM 850 MHZ					
Mode	Frequency	Power Step	Result		Conclusion
			Max. Peak ERP (dBm)	Polarization Of Max. ERP	
GSM	824.2	5	30.18	Vertical	Pass
	836.6	5	30.21	Vertical	Pass
	848.8	5	30.29	Vertical	Pass
GPRS 1 slot	824.2	3	30.17	Vertical	Pass
	836.6	3	30.20	Vertical	Pass
	848.8	3	30.27	Vertical	Pass
GPRS 2 slots	824.2	3	Less than 27 dBm	Vertical	Pass
	836.6	3		Vertical	Pass
	848.8	3		Vertical	Pass
GPRS 3 slots	824.2	2		Vertical	Pass
	836.6	2		Vertical	Pass
	848.8	2		Vertical	Pass
GPRS 4 slots	824.2	2		Vertical	Pass
	836.6	2		Vertical	Pass
	848.8	2		Vertical	Pass

Radiated Power (E.I.R.P) for PCS 1900 MHZ					
Mode	Frequency	Power Step	Result		Conclusion
			Max. Peak E.I.R.P.(dBm)	Polarization Of Max. E.I.R.P.	
GSM	1850.2	0	27.37	Vertical	Pass
	1880.0	0	27.33	Vertical	Pass
	1909.8	0	27.28	Vertical	Pass
GPRS 1slot	1850.2	3	27.34	Vertical	Pass
	1880.0	3	27.29	Vertical	Pass
	1909.8	3	27.26	Vertical	Pass
GPRS 2 slots	1850.2	3	Less than 27 dBm	Vertical	Pass
	1880.0	3		Vertical	Pass
	1909.8	3		Vertical	Pass
GPRS 3 slots	1850.2	2		Vertical	Pass
	1880.0	2		Vertical	Pass
	1909.8	2		Vertical	Pass
GPRS 4 slots	1850.2	2		Vertical	Pass
	1880.0	2		Vertical	Pass
	1909.8	2		Vertical	Pass

6. SPURIOUS EMISSION

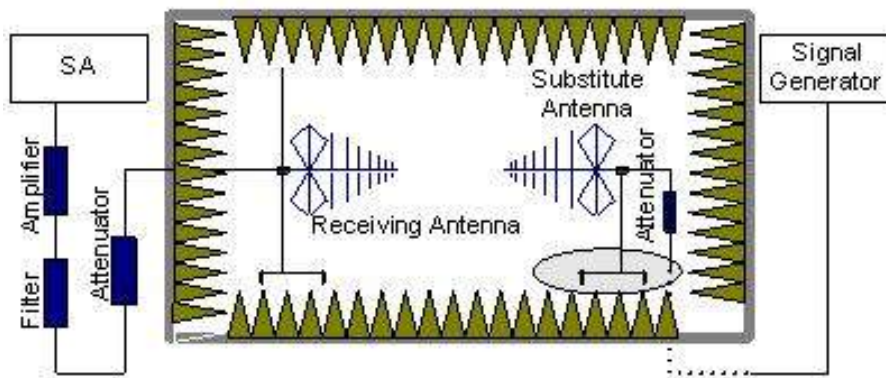
6.1 RADIATED SPURIOUS EMISSION

6.1.1 MEASUREMENT METHOD

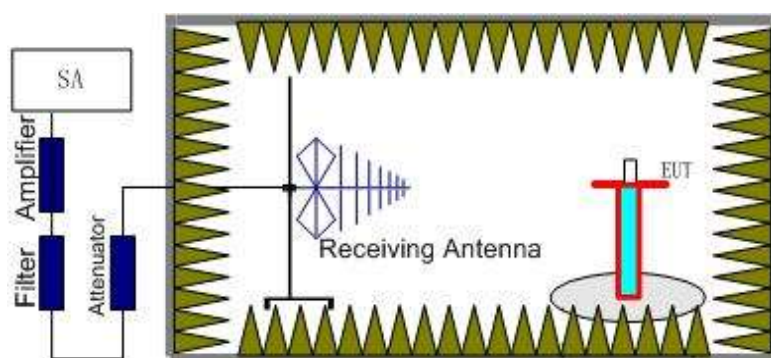
The measurements procedures specified in TIA-603C-2004 were used for testing. The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment. The resolution bandwidth is set 1MHz as outlined in Part 24.238. The measurements were performed on all modes(GSM, GPRS) at 3 typical channels(the Top Channel, the Middle Channel and the Bottom Channel) for both GSM band and PCS band.

The procedure of radiated spurious emissions is as follows:

a) Pre-calibration With pre-calibration method, the Radiated Spurious Emissions(RSE) is calculated as,
$$RSE = R_x (\text{dBuV}) + CL (\text{dB}) + SA (\text{dB}) + \text{Gain} (\text{dBi}) - 107 (\text{dBuV to dBm})$$
The SA is calibrated using following setup.



b) EUT was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the test item for emission measurements. The height of receiving antenna is 0.8m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the test item and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector and 1MHz bandwidth.



Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the PCS band (1850.2 MHz, 1880 MHz and 1909.8 MHz) ,GSM850 band (824.2MHz, 836.6MHz, 848.8MHz) . It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the PCS1900 ,GSM850 into any of the other blocks.

The substitution method is used. Substitution values at each frequency are measured before and saved to the test software. A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss and the air loss. The measurement results are obtained as described below: $Power = P_{Mea} + A_{Rpl}$

6.1.2 PROVISIONS APPLICABLE

(a) On any frequency outside a IMOBOnsee's frequency block (e.g. A, D, B, etc.) within the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least $43 + 10 \log(P)$ dB. The specification that emissions shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

6.1.3 MEASUREMENT RESULT

The Worst Test Results for Channel 128 / 824.2 MHz					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit (dBm)	Polarity
1648.00	-46.08	-5.01	-51.09	-13.00	Horizontal
1752.00	-42.16	-2.18	-44.34	-13.00	Vertical
2472.00	-50.09	3.46	-46.63	-13.00	Horizontal
9086.00	-44.38	2.79	-41.59	-13.00	Horizontal

The Worst Test Results for Channel 190/836.6 MHz					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit (dBm)	Polarity
1673.00	-50.16	-3.22	-53.38	-13.00	Horizontal
1903.00	-52.39	-0.24	-52.63	-13.00	Vertical
9089.00	-48.13	3.98	-44.15	-13.00	Vertical

The Worst Test Results for Channel 251/848.8 MHz					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit (dBm)	Polarity
1698.00	-53.27	-2.26	-55.53	-13.00	Horizontal
1888.50	-50.23	-3.12	-53.35	-13.00	Vertical
2131.00	-46.38	-1.74	-48.12	-13.00	Vertical
9089.00	-48.32	8.46	-39.86	-13.00	Horizontal

The Worst Test Results for Channel 512/1850.2 MHz					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit (dBm)	Polarity
1999.00	-52.17	-1.5	-53.67	-13.00	Horizontal
3700.00	-61.54	8.74	-52.80	-13.00	Horizontal
12950.40	-52.04	11.56	-40.48	-13.00	Vertical
17919.60	-56.23	17.89	-38.34	-13.00	Vertical

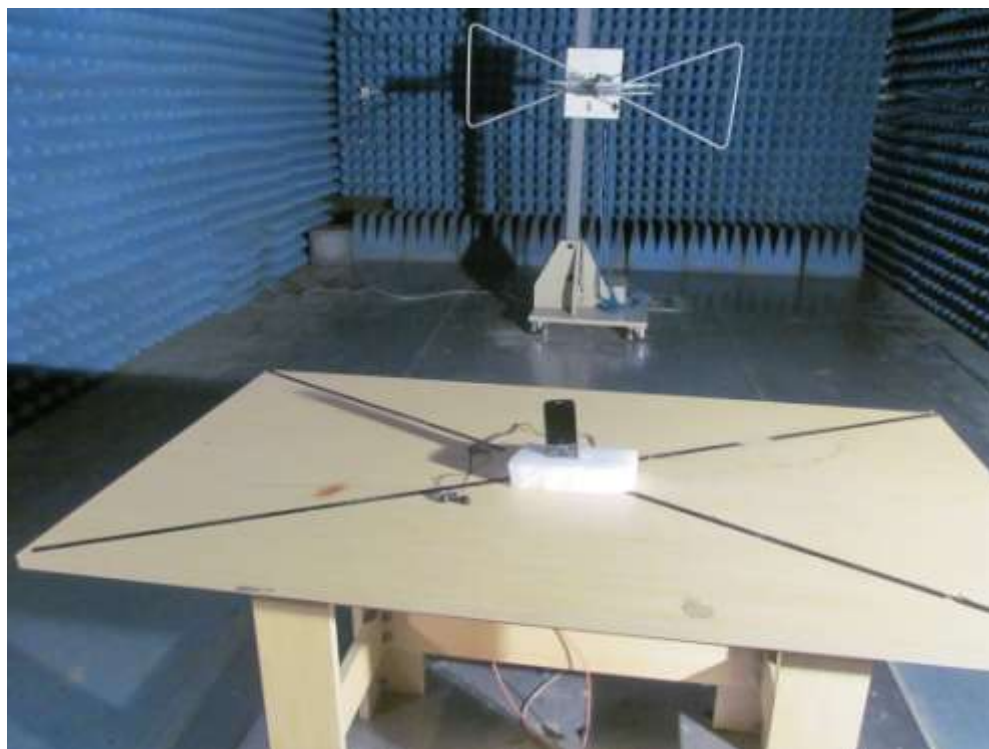
The Worst Test Results for Channel 661/1880.0 MHz					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit (dBm)	Polarity
2000.50	-51.35	2.7	-48.65	-13.00	Vertical
9399.00	-52.86	11.6	-41.26	-13.00	Vertical
13160.40	-56.35	14.89	-41.46	-13.00	Horizontal
15039.60	-55.42	13.87	-41.55	-13.00	Vertical
17941.20	-59.16	19.76	-39.40	-13.00	Horizontal
The Worst Test Results for Channel 810/1909.8 MHz					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit (dBm)	Polarity
2000.00	-54.27	2.32	-51.95	-13.00	Vertical
9548.50	-53.16	11.3	-41.86	-13.00	Horizontal
13367.40	-54.24	12.4	-41.84	-13.00	Horizontal
15277.80	-53.37	15.03	-38.34	-13.00	Vertical
17931.60	-53.49	19	-34.49	-13.00	Horizontal

Note: Below 30MHZ no Spurious found and The GSM modes is the worst condition.

APPENDIX I

PHOTOGRAPHS OF TEST SETUP

RADIATED SPURIOUS EMISSION





APPENDIX II

PHOTOGRAPHS OF EUT

TOTAL VIEW OF EUT



TOP VIEW OF EUT



BOTTOM VIEW OF EUT



FRONT VIEW OF EUT



BACK VIEW OF EUT



LEFT VIEW OF EUT



RIGHT VIEW OF EUT



GSM
Antenna

OPEN VIEW OF EUT-1



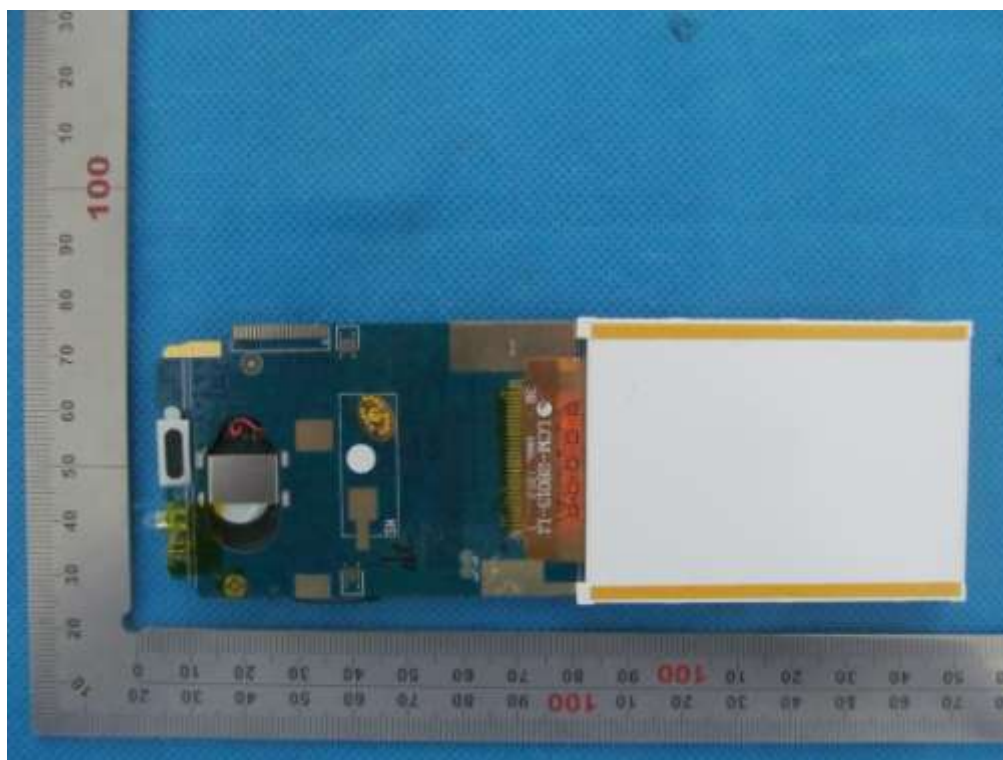
OPEN VIEW OF EUT-2



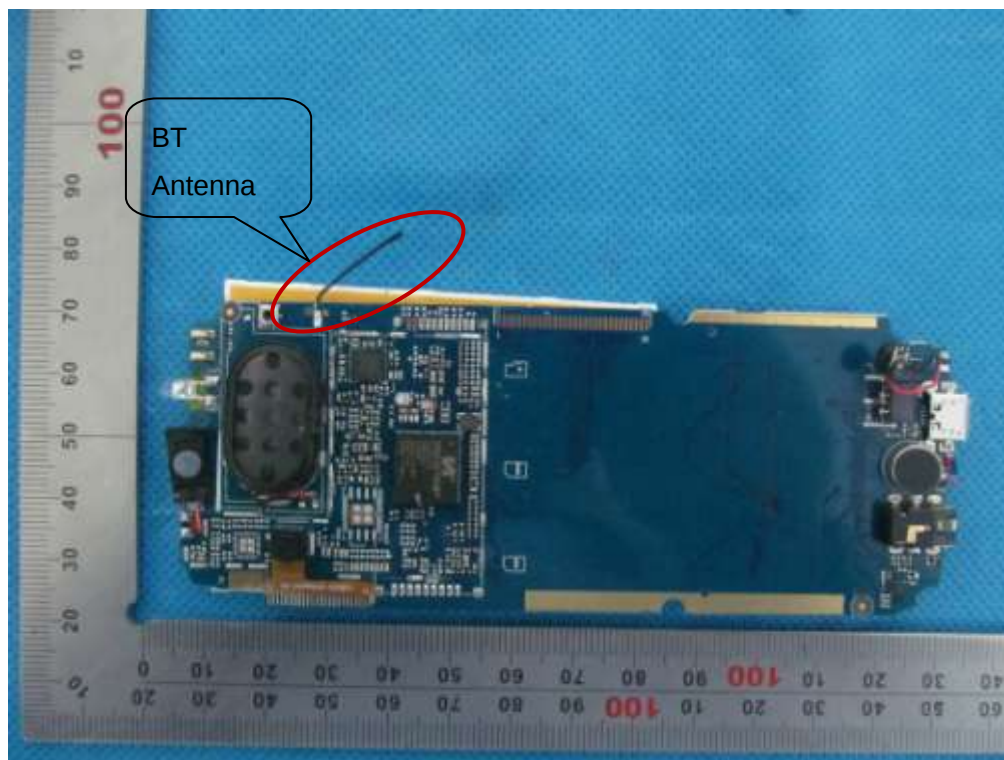
OPEN VIEW OF EUT-3



INTERNAL VIEW OF EUT-1



INTERNAL VIEW OF EUT-2



-----END OF REPORT-----