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# FCC Test Report

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Report No.: AGC06P130101F2B

**FCC ID** : UOSAM217  
**PRODUCT DESIGNATION** : mobile phone  
**BRAND NAME** : AMGOO  
**MODEL NAME** : AM301  
**CLIENT** : Amgoo Telecom Co., Ltd.  
**DATE OF ISSUE** : Mar.05, 2013  
**STANDARD(S)** : FCC Part 15 Rules  
**REPORT VERSION** : V1.0

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

**CAUTION:** This report shall not be reproduced except in full without the written permission of the test laboratory and shall not be quoted out of context.

This is a variant report which is only valid together with the original test report. The product was received on nov. 01, 2012 and completely tested on nov. 08, 2012. we, Attestation of Global Compliance (Shenzhen) Co., Ltd., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ansi / tia / eia-603-c-2004 and shown compliance with the applicable technical standards.

**REVISION HISTORY**

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
AGC06P130101F2B	V1.1	In this report, only change the GSM antenna and button board and Speaker and appearance and GPRS class, Bluetooth is the same. Test results information AM217 in AGC06P121101F2B report. All the test cases were performed on original report which can be referred to Report Number AGC06P121101F2B. Based on the original test report, only the Radiated Spurious Emission were verified for the differences.	Mar.05,2013

## VERIFICATION OF COMPLIANCE

<b>Applicant:</b>	Amgoo Telecom Co., Ltd.
	6/F, Block 3, Tongjian Building, NO.2013, Middle Shennan Rd., Futian District, Shenzhen, China
<b>Manufacturer:</b>	Topology Communication Technology(Shenzhen) CO., LTD.
	KaiXinDa Technology Park, No.49 Zhou Shi Road, Shiyan County, Bao'an District, Shenzhen, China
<b>Product Designation:</b>	mobile phone
<b>Brand Name:</b>	AMGOO
<b>Test Model:</b>	AM301
<b>FCC ID:</b>	UOSAM217
<b>Date of Test:</b>	Feb.27, 2013 to Mar.04, 2013

### WE HEREBY CERTIFY THAT:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.247.

Tested By: \_\_\_\_\_

Bart Xie

Mar.05, 2013

Reviewed By: \_\_\_\_\_

Forrest Lei

Mar.05, 2013

Approved By: \_\_\_\_\_

Solger Zhang

Mar.05, 2013

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## 1. GENERAL INFORMATION

### 1.1 PRODUCT DESCRIPTION

The EUT is a mobile phone designed as a "Communication Device". It is designed by way of utilizing the FHSS technology to achieve the system operation.

A major technical description of EUT is described as following:

Operation Frequency	2.402 GHz to 2.480GHz
Max. Output Power	3.56dBm for GFSK modulation
Bluetooth Version	V2.1 with EDR
Modulation	GFSK, $\pi/4$ -DQPSK, 8-DPSK
Number of channels	79
Antenna Designation	Integrated Antenna
Antenna Gain	0.8dBi
Power Supply	DC3.7V by Built-in Li-ion Battery

### 1.2 TABLE OF CARRIER FREQUENCIES

Frequency Band	Channel Number	Frequency
2400~2483.5MHZ	0	2402MHZ
	1	2403MHZ
	:	:
	38	2440 MHZ
	39	2441 MHZ
	40	2442 MHZ
	:	:
	77	2479 MHZ
	78	2480 MHZ

### 1.3 RECEIVER INPUT BANDWIDTH

The input bandwidth of the receiver is 1.3MHz. In every connection one Bluetooth device is the master and the other one is slave. The master determines the hopping sequence. The slave follows this sequence. Both devices shift between RX and TX time slot according to the clock of the master. Additionally the type of connection (e.g. single or multisport (packet)) is set up at the beginning of the connection. The master adapts its hopping frequency and its TX/RX timing according to the packet type of the connection. Also the slave of the connection will use these settings.

Repeating of a packet has no influence on the hopping sequence. The hopping sequence generated by the master of the connection will be followed in any case. That means, a repeated packet will not be sent on the same frequency, it is sent on the next frequency of the hopping sequence.

#### 1.4 EXAMPLE OF A HOPPING SEQUENCY IN DATA MODE

Example of a 79 hopping sequence in data mode:

40,21,44,23,42,53,46,55,48,33,52,35,50,65,54,67  
56,37,60,39,58,69,62,71,64,25,68,27,66,57,70,59  
72,29,76,31,74,61,78,63,01,41,05,43,03,73,07,75  
09,45,13,47,11,77,15,00,64,49,66,53,68,02,70,06  
01,51,03,55,05,04

#### 1.5 EQUALLY AVERAGE USE OF FREQUENCIES AND BEHAVIOUR

The generation of the hopping sequence in connection mode depends essentially on two input values:

1 LAP/UAP of the master of the connection

2 Internal master clock

The LAP(lower address part) are the 24 LSB's of the 48 BD\_ADDRESS. The BD\_ADDRESS is an unambiguous number of every Bluetooth unit. The UAP(upper address part) are the 24MSB's of the 48BD\_ADDRESS

The internal clock of a Bluetooth unit is derived from a free running clock which is never adjusted and is never turned off. For synchronization with other units only offset are used. It has no relation to the time of the day. Its resolution is at least half the RX/TX slot length of 312.5us. The clock has a cycle of about One day(23h30). In most case it is implemented as 28 bit counter. For the deriving of the hopping sequence the entire.

LAP(24 bits), 4LSB's(4bits)(Input 1) and the 27MSB's of the clock(Input 2) are used. With this input values different mathematical procedures(permutations, additions, XOR-operations)are performed to generate the Sequence. This will be done at the beginning of every new transmission.

Regarding short transmissions the Bluetooth system has the following behavior:

The first connection between the two devices is established, a hopping sequence was generated. For Transmitting the wanted data the complete hopping sequence was not used. The connection ended.

The second connection will be established. A new hopping sequence is generated. Due to the fact the Bluetooth clock has a different value, because the period between the two transmission is longer(and it Cannot be shorter)than the minimum resolution of the clock(312.5us). The hopping sequence will always Differ from the first one.

#### 1.6 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: UOSAM217**, filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

#### 1.7 TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters.

#### 1.8 MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

- Uncertainty of Conducted Emission,  $U_c = \pm 2.75\text{dB}$
- Uncertainty of Radiated Emission,  $U_c = \pm 3.2\text{dB}$

## **1.9 TEST FACILITY**

All measurement facilities used to collect the measurement data are 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

## **1.10 SPECIAL ACCESSORIES**

Refer to section 2.2.

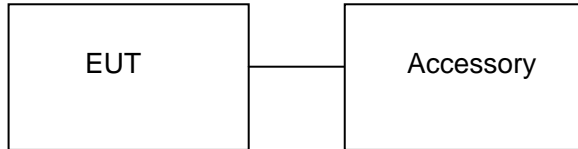
## **1.11 EQUIPMENT MODIFICATIONS**

Not available for this EUT intended for grant.



## 2. SYSTEM TEST CONFIGURATION

### 2.1 CONFIGURATION OF TESTED SYSTEM Configure



*Note: No software used to control the EUT for staying in continuous transmitting mode for testing.*

### 2.2 EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Note
1	GSM Mobile Phone	AM301	FCC ID: UOSAM217	EUT
2	Adapter	CH4	DC 5.0V / 600mA	Accessory
3	Battery	AM-5C	DC 3.7V/ 700mAh	Accessory
4	Earphone	AM301	N/A	Accessory
5	USB Cable	AM301	N/A	Accessory

### 3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.209	Radiated Emission	Compliant
§15.247	Band Edges	Compliant

### 4. DESCRIPTION OF TEST MODES

The following operating modes were applied for the related test items. For Conducted Emission and Radiated Emission, 3 axis were chosen for testing for each applicable modes.

No.	TEST MODES
1	Low Channel(TX)
2	Middle Channel(TX)
3	High Channel(TX)
4	Normal Hopping

\*\*\***Note:** All the test modes can be supply by Built-in Li-ion battery, and the battery is full filled, only the result of the worst case was recorded in the report.

## **8. RADIATED EMISSION**

### **8.1 MEASUREMENT PROCEDURE**

1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

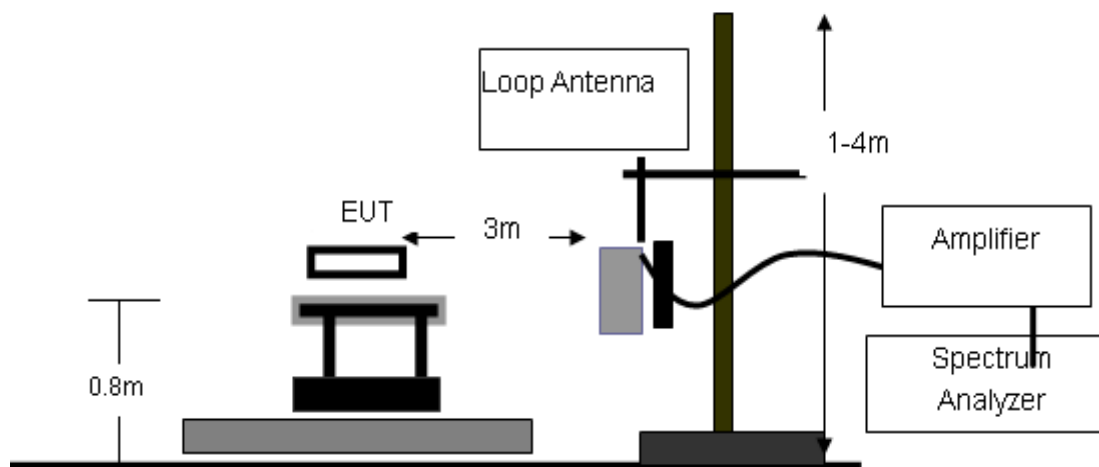
The following table is the setting of spectrum analyzer and receiver.'

Spectrum Parameter	Setting
Start Frequency	1GHz
Stop Frequency	26.5GHz
RB/VB(Emission in restricted band)	1MHz/1MHz for Peak, 1MHz/10Hz for Average
RB/VB(Emission in non-restricted band)	1MHz/1MHz for Peak

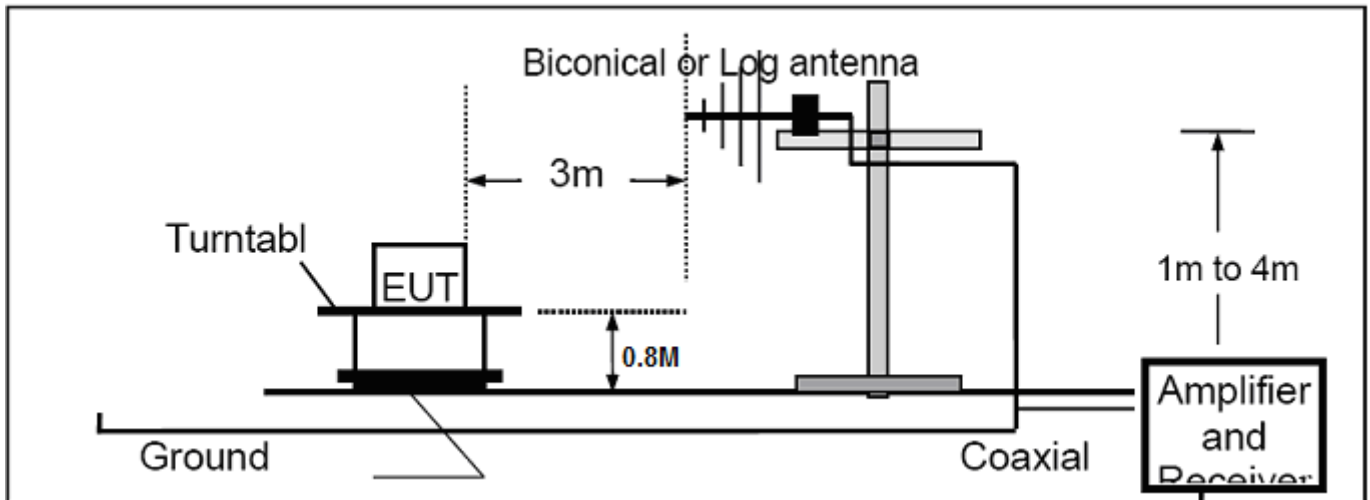
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

## 8.2 TEST SETUP

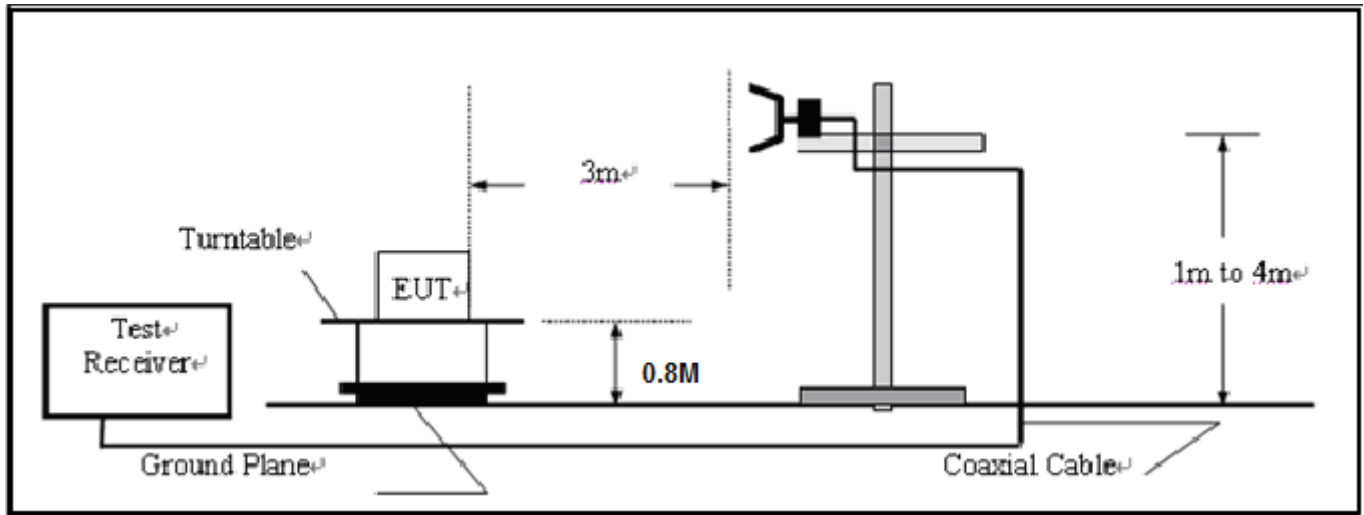
### RADIATED EMISSION TEST SETUP BELOW 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



### 8.3 TEST EQUIPMENT LIST

Description	Manufacturer	Model	SERIAL NUMBER	Cal. Date	Cal. Due
Spectrum Analyzer	Agilent	E4440A	N/A	07/18/2012	07/17/2013
Horn Antenna	EM	EM-AH-10180	N/A	04/21/2012	04/21/2013
Horn Antenna	A.H. Systems Inc.	SAS-574	--	06/08/2012	06/07/ 2013
EMI Test Receiver	Rohde & Schwarz	ESCI	N/A	07/18/2012	07/17/2013
Amplifier	EM	EM30180	N/A	07/18/2012	07/17/2013
Biological Antenna	A.H. Systems Inc.	SAS-521-4	N/A	06/08/2012	06/07/ 2013
Loop Antenna	Daze	ZN30900N	SEL0097	07/18/2012	07/17/2013
Isolation Transformer	LETEAC	LTBK	--	07/18/2012	07/17/2013

## 8.4 TEST RESULT

The worst case is Normal Hopping Mode.

### RADIATED EMISSION BELOW 30MHZ

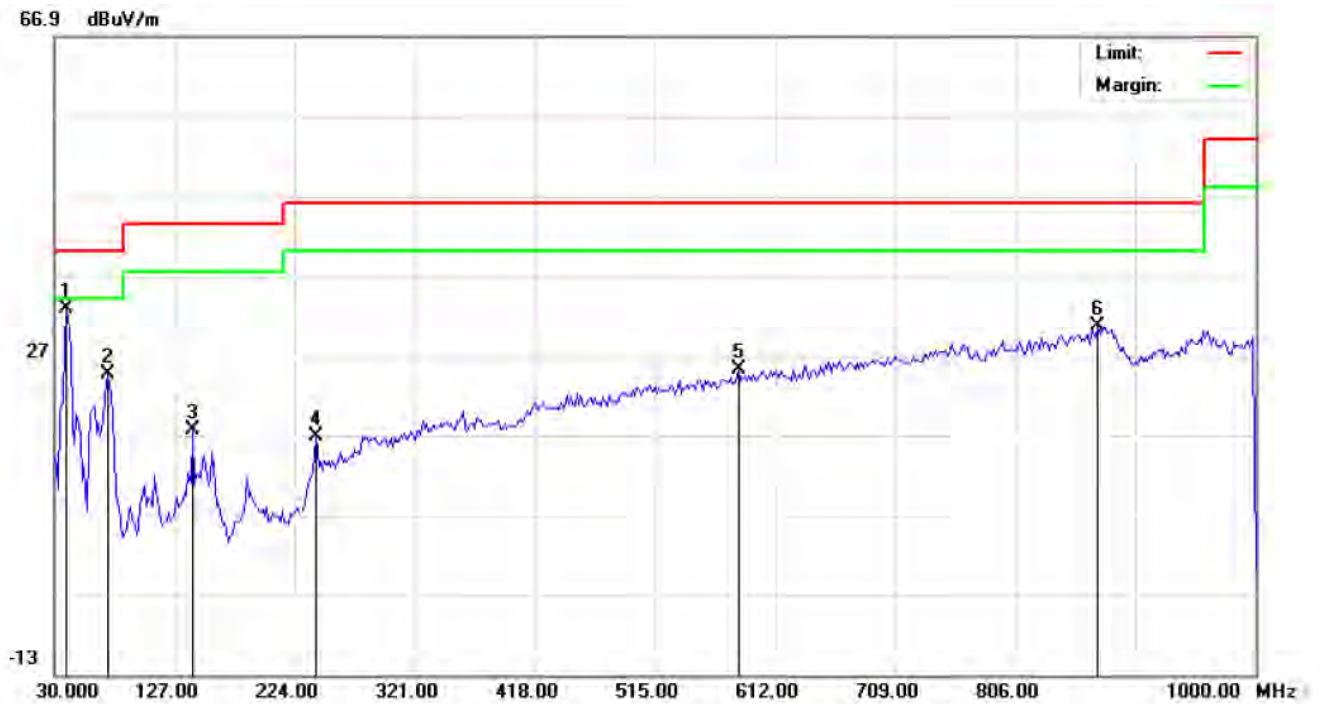
No emission found between lowest internal used/generated frequencies to 30MHz.

### RADIATED EMISSION BELOW 1GHZ



Site: site #1	Polarization: <span style="color: blue;">Horizontal</span>	Temperature: 26
Limit: FCC Class B 3M Radiation	Power: AC 120V/60Hz	Humidity: 60 %
EUT: GSM Mobile Phone	Distance:	
M/N: AM301		
Mode: Normal Hopping		
Note:		

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		39.7000	8.99	8.04	17.03	40.00	-22.97	peak			
2		60.7167	16.70	4.06	20.76	40.00	-19.24	peak			
3		89.8167	-1.40	17.11	15.71	43.50	-27.79	peak			
4		581.2833	0.60	24.68	25.28	46.00	-20.72	peak			
5		762.3500	1.75	27.62	29.37	46.00	-16.63	peak			
6	*	841.5667	0.48	31.17	31.65	46.00	-14.35	peak			



Site: site #1

Polarization: **Vertical**

Temperature: 26

Limit: FCC Class B 3M Radiation

Power: AC 120V/60Hz

Humidity: 60 %

EUT: GSM Mobile Phone

Distance:

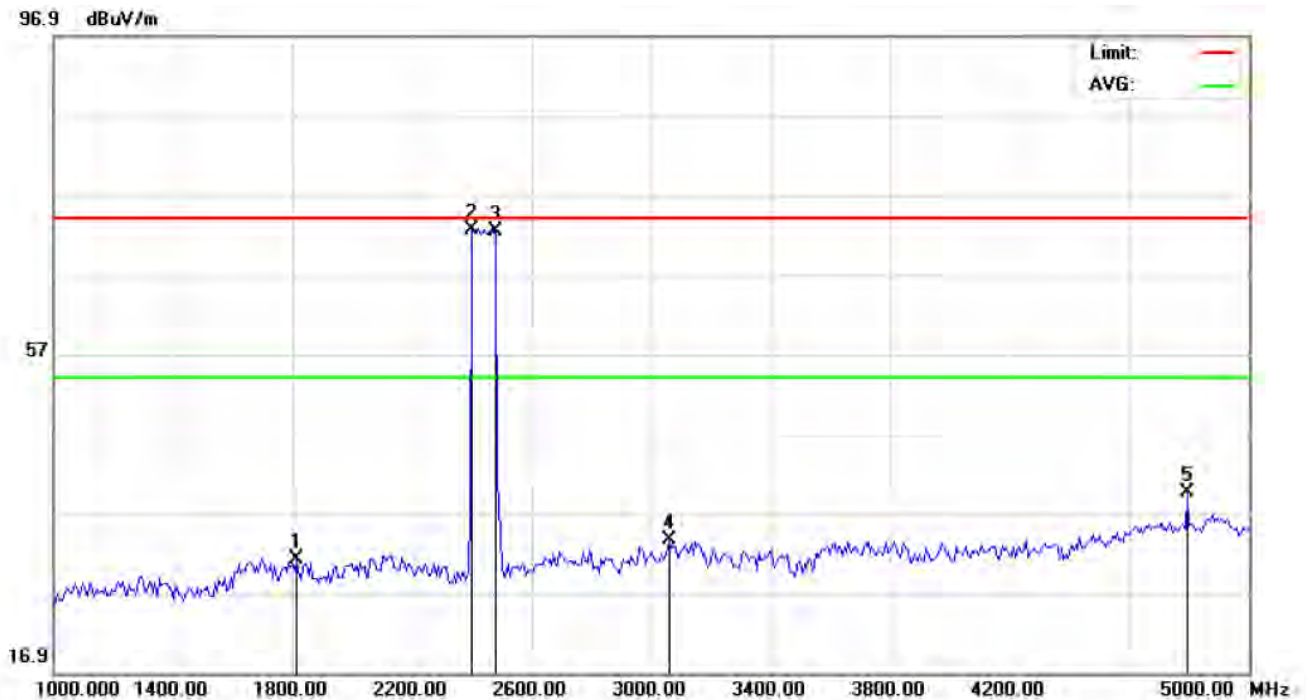
M/N: AM301

Mode: Normal Hopping

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	39.7000	24.95	7.76	32.71	40.00	-7.29	peak			
2		73.6500	19.24	5.35	24.59	40.00	-15.41	peak			
3		141.5500	5.68	11.99	17.67	43.50	-25.83	peak			
4		241.7833	2.66	14.23	16.89	46.00	-29.11	peak			
5		582.9000	0.49	24.70	25.19	46.00	-20.81	peak			
6		872.2833	0.76	29.93	30.69	46.00	-15.31	peak			

### RADIATED EMISSION ABOVE 1GHZ



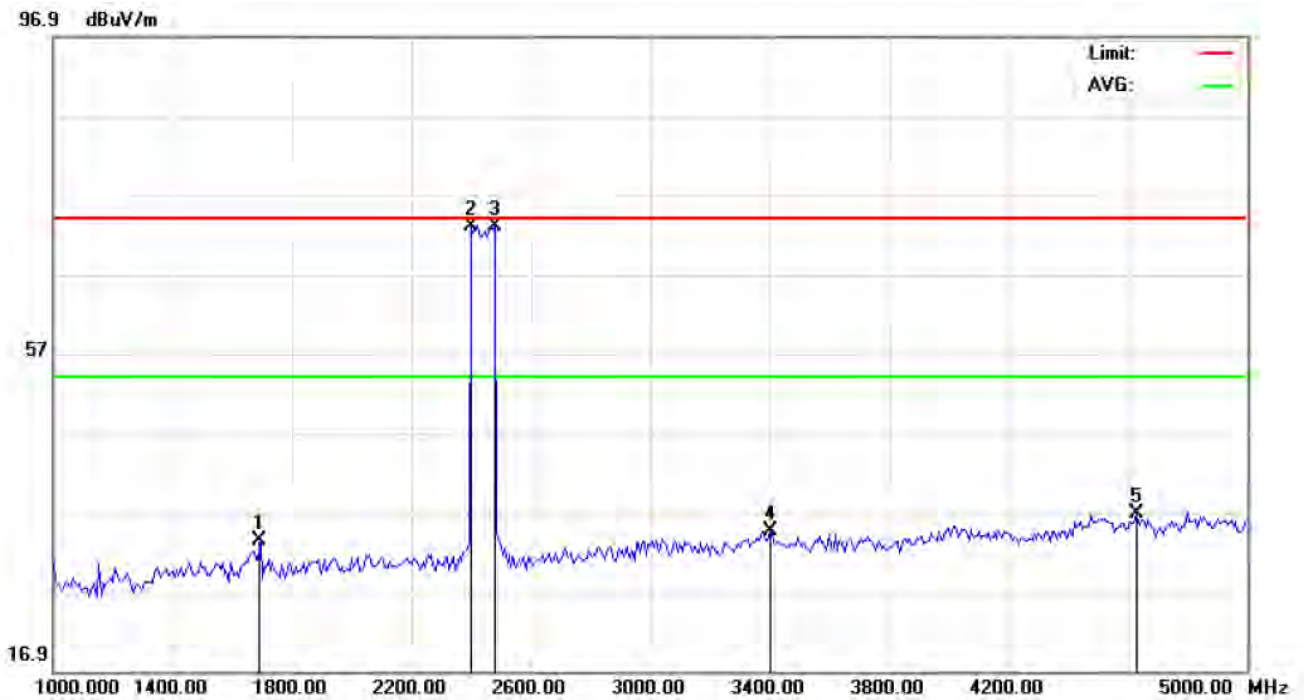
Site: site #1  
Limit: FCC Class B 3M Radiation above 1GHZ(PK)  
EUT: mobile phone  
M/N: AM301  
Mode: Normal Hopping  
Note:

Polarization: *Horizontal*  
Power:  
Distance: 3m

Temperature: 26  
Humidity: 60 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		1813.333	41.41	-10.18	31.23	74.00	-42.77	peak			
2	*	2400.000	81.05	-8.40	72.65	74.00	-1.35	peak			
3		2480.000	80.39	-8.08	72.31	74.00	-1.69	peak			
4		3060.000	42.19	-8.61	33.58	74.00	-40.42	peak			
5		4793.333	43.39	-3.72	39.67	74.00	-34.33	peak			





Site: site #1 Polarization: *Vertical* Temperature: 26  
 Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %  
 EUT: mobile phone Distance: 3m  
 M/N: AM301  
 Mode: Normal Hopping  
 Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		1693.333	43.79	-10.30	33.49	74.00	-40.51	peak			
2		2400.000	81.31	-8.40	72.91	74.00	-1.09	peak			
3	*	2480.000	81.15	-8.08	73.07	74.00	-0.93	peak			
4		3400.000	42.47	-7.83	34.64	74.00	-39.36	peak			
5		4626.667	40.97	-4.14	36.83	74.00	-37.17	peak			

**Note:** 5~25GHz at least have 20dB margin. No recording in the test report.  
 Factor=Antenna Factor+ Cable loss-Amplifier gain, Over=Measurement-Limit.

## 9. BAND EDGES EMISSION

### 9.1 MEASUREMENT PROCEDURE

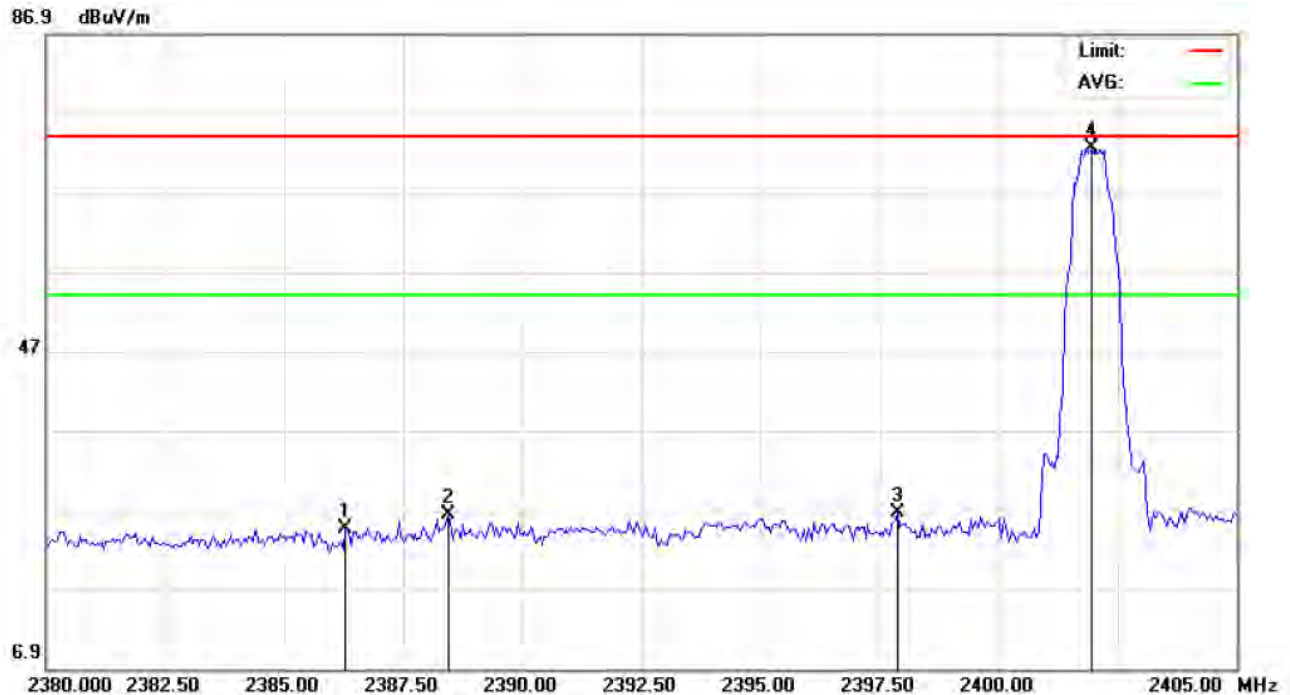
1. Set the EUT Work on the top, the bottom operation frequency individually.
2. Set SPA Start or Stop Frequency = Operation Frequency, RBW $\geq$ 1%span, VBW $\geq$ RBW
3. The band edges was measured and recorded.

### 9.2 TEST SET-UP

The same as described in section 8.2

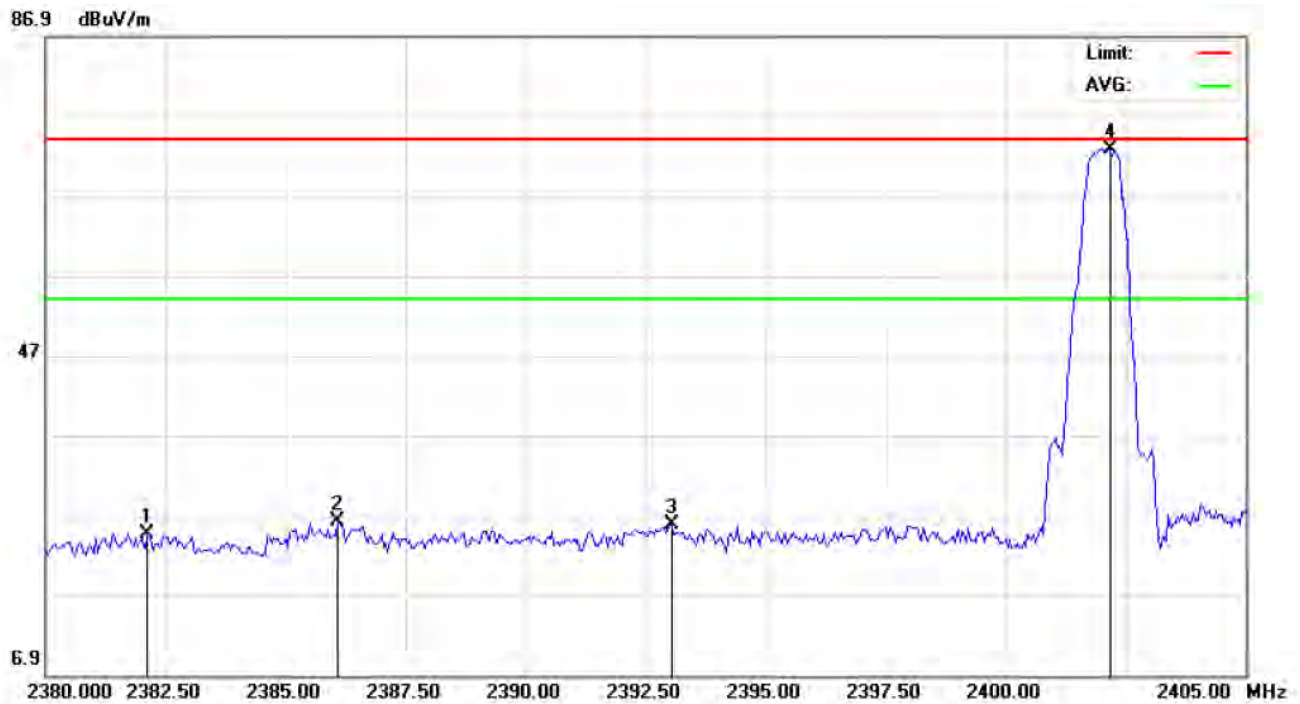
### 9.3 TEST RESULT

TEST PLOT OF BAND EDGE FOR LOW CHANNEL



Site: site #1	Polarization: <b>Horizontal</b>	Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK)	Power:	Humidity: 60 %
EUT: mobile phone	Distance: 3m	
M/N: AM301		
Mode: Low Channel-TX		
Note:		

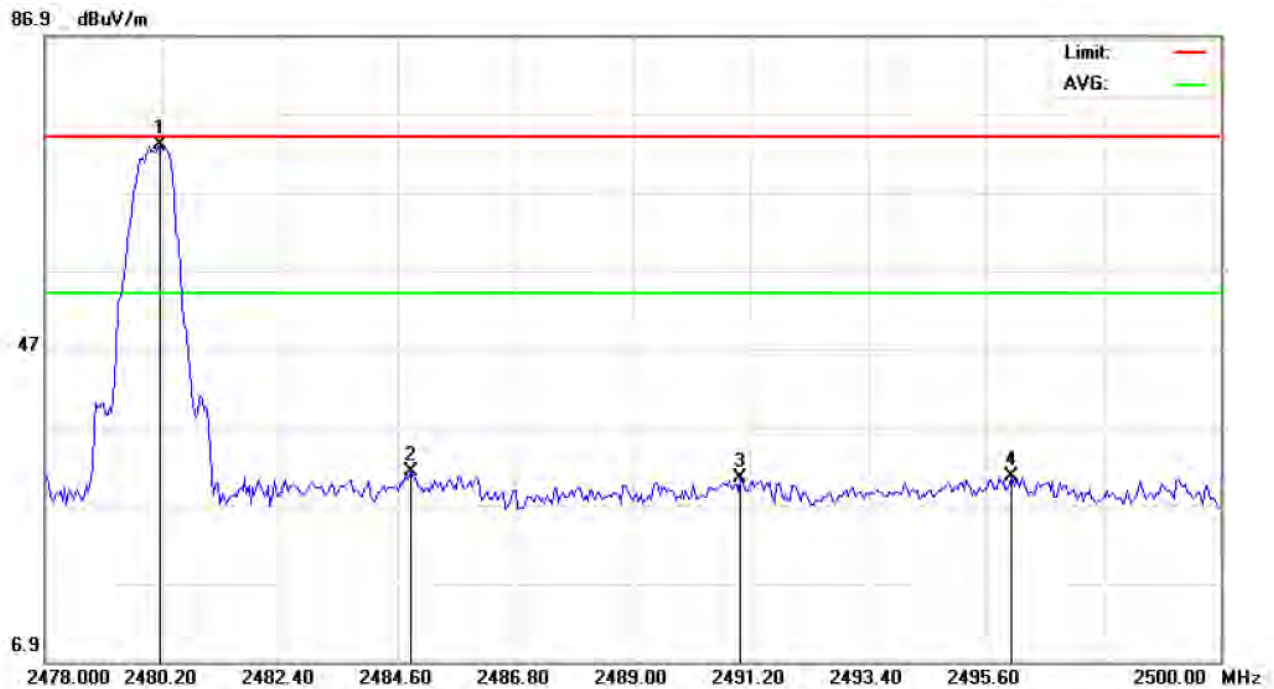
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2386.292	33.13	-8.45	24.68	74.00	-49.32	peak			
2		2388.458	34.78	-8.45	26.33	74.00	-47.67	peak			
3		2397.875	35.07	-8.41	26.66	74.00	-47.34	peak			
4	*	2401.958	80.95	-8.39	72.56	74.00	-1.44	peak			



Site: site #1 Polarization: **Vertical** Temperature: 26  
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %  
EUT: mobile phone Distance: 3m  
M/N: AM301  
Mode: Low Channel-TX  
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2382.125	33.08	-8.47	24.61	74.00	-49.39	peak			
2		2386.083	34.70	-8.46	26.24	74.00	-47.76	peak			
3		2393.042	34.15	-8.43	25.72	74.00	-48.28	peak			
4	*	2402.167	81.29	-8.39	72.90	74.00	-1.10	peak			

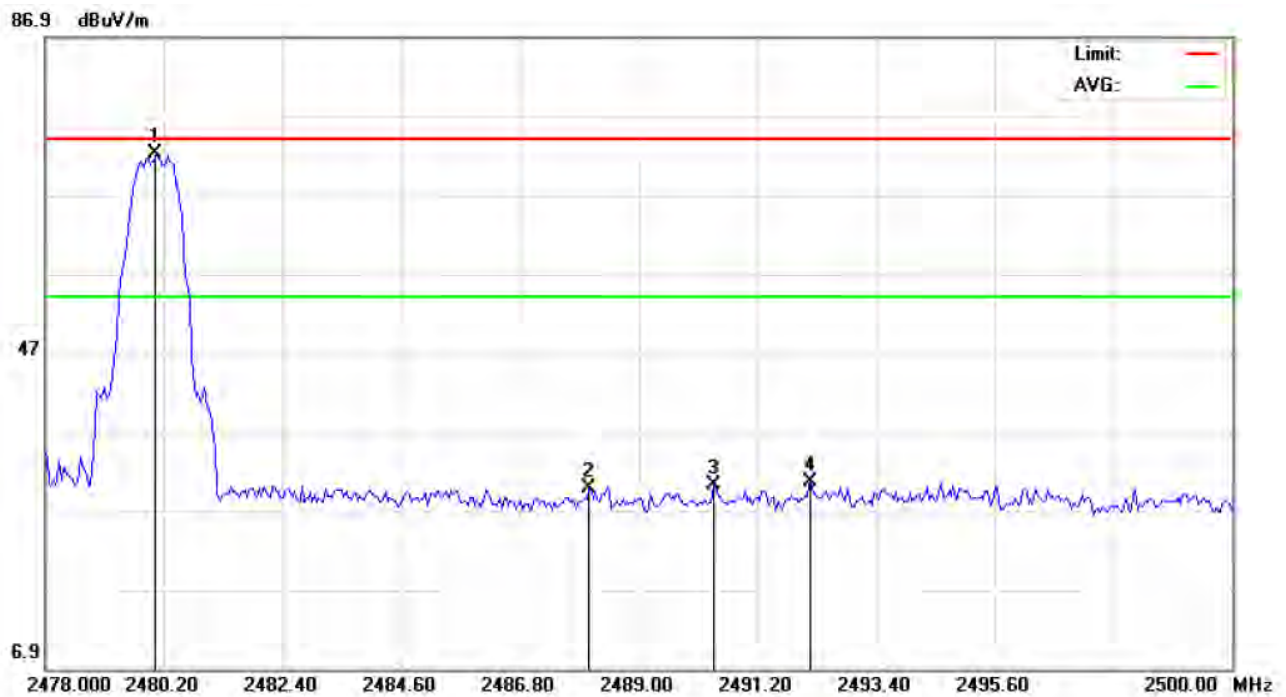
### TEST PLOT OF BAND EDGE FOR HIGH CHANNEL



Site: site #1 Polarization: **Horizontal** Temperature: 26  
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %  
EUT: mobile phone Distance: 3m  
M/N: AM301  
Mode: High Channel-TX  
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.163	81.04	-8.08	72.96	74.00	-1.04	peak			
2		2484.857	39.31	-8.06	31.25	74.00	-42.75	peak			
3		2491.017	38.43	-8.04	30.39	74.00	-43.61	peak			
4		2496.077	38.66	-8.02	30.64	74.00	-43.36	peak			





Site: site #1 Polarization: **Vertical** Temperature: 26  
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %  
EUT: mobile phone Distance: 3m  
M/N: AM301  
Mode: High Channel-TX  
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.053	80.27	-8.08	72.19	74.00	-1.81	peak			
2		2488.083	37.76	-8.05	29.71	74.00	-44.29	peak			
3		2490.393	38.22	-8.04	30.18	74.00	-43.82	peak			
4		2492.190	38.56	-8.03	30.53	74.00	-43.47	peak			

## APPENDIX I PHOTOGRAPHS OF THE 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

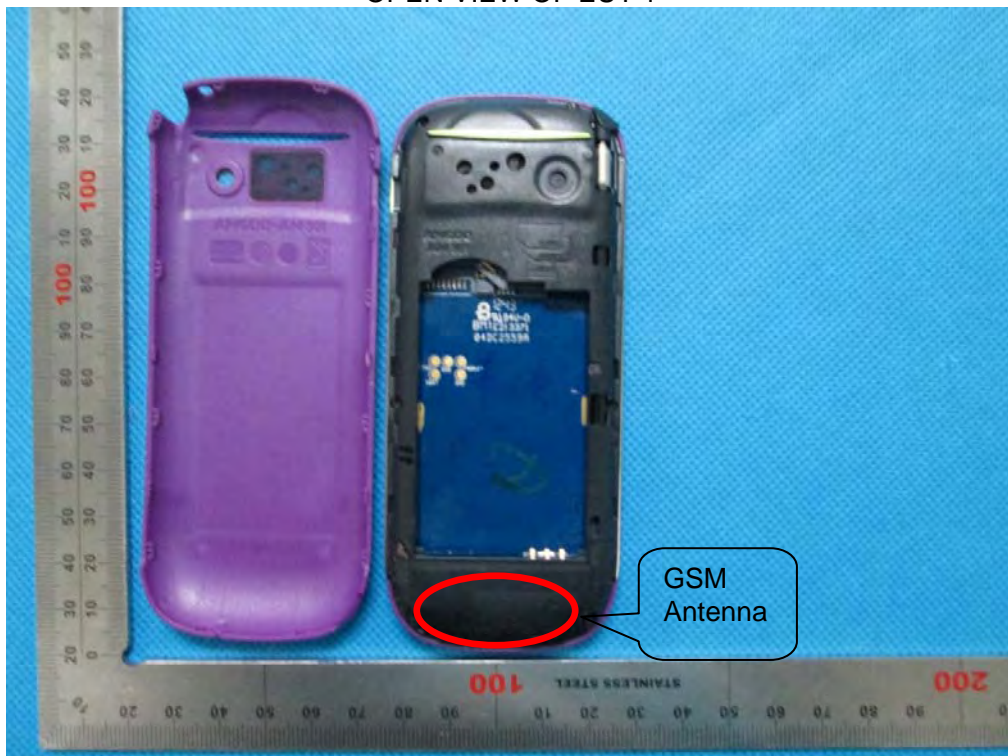




RIGHT VIEW OF EUT



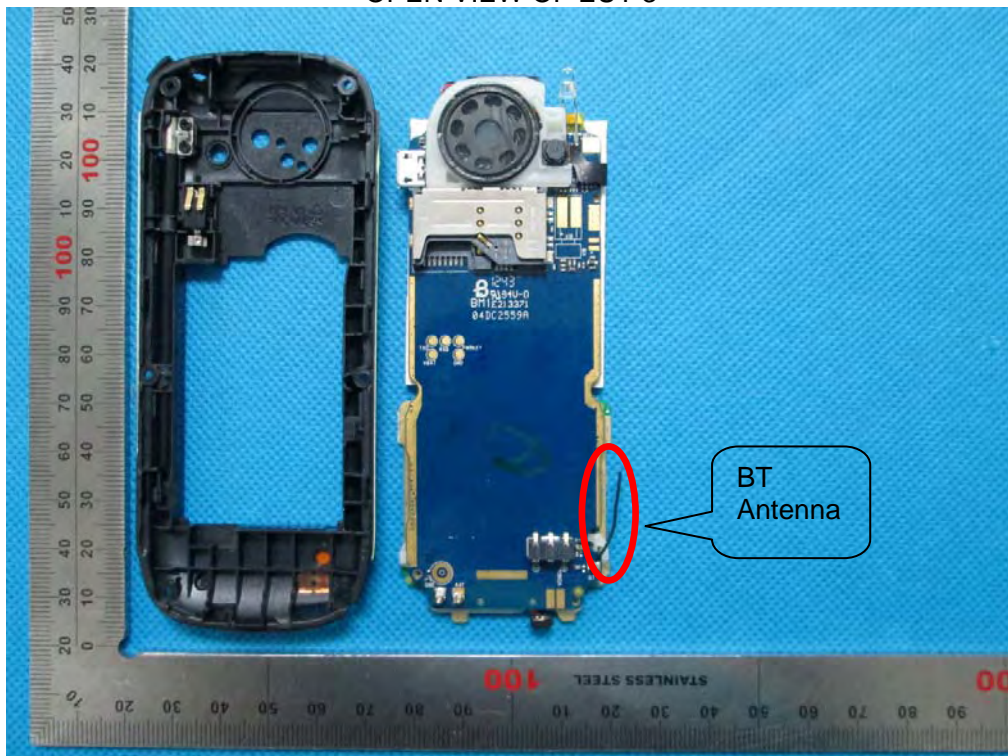
OPEN VIEW OF EUT-1



OPEN VIEW OF EUT-2

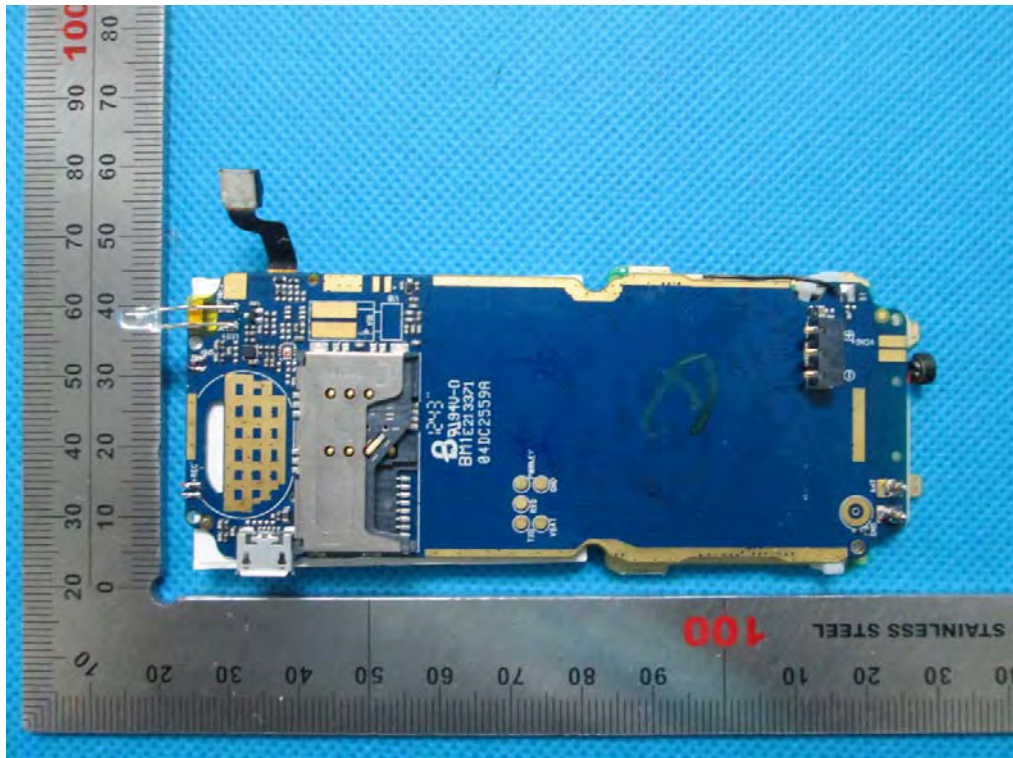


OPEN VIEW OF EUT-3

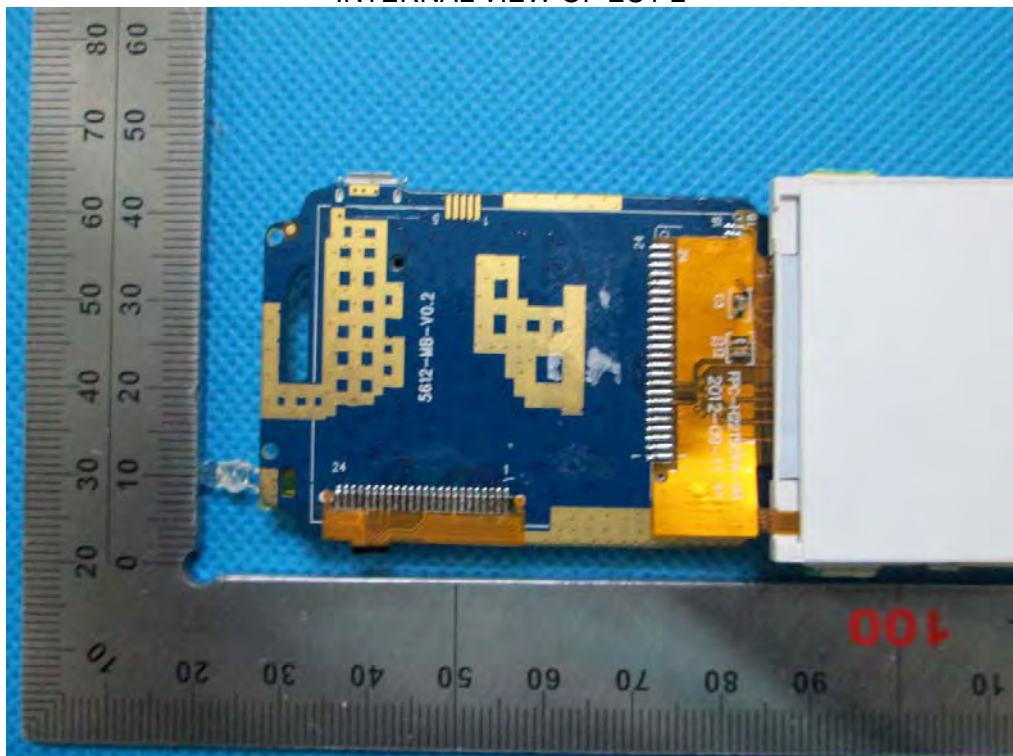




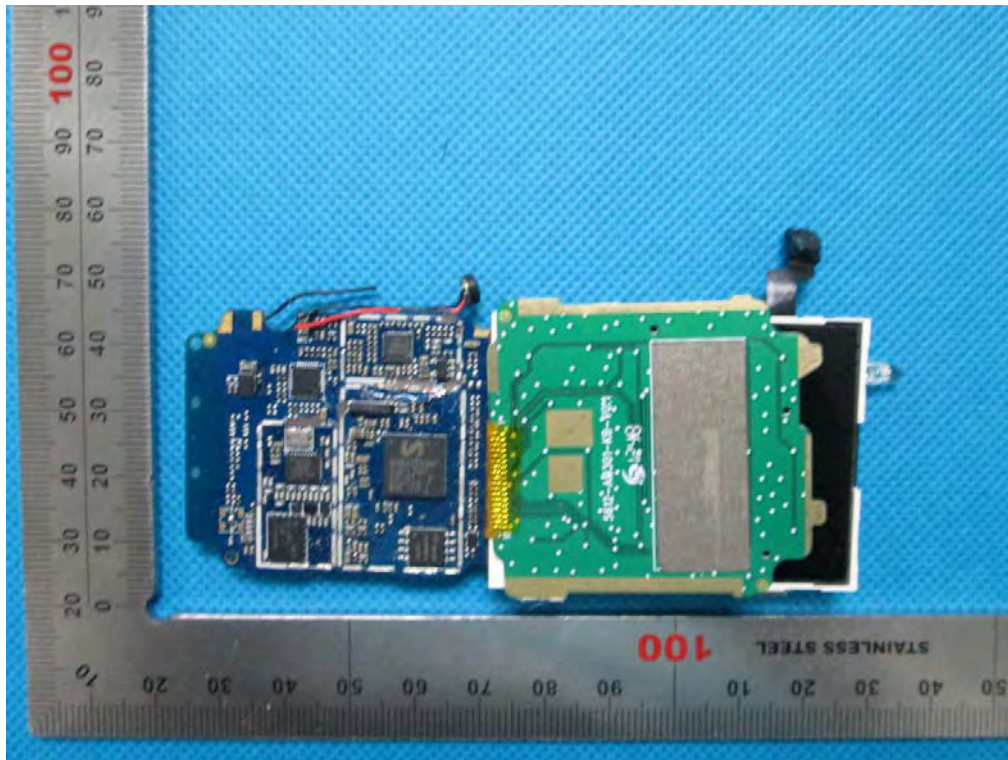
INTERNAL VIEW OF EUT-1



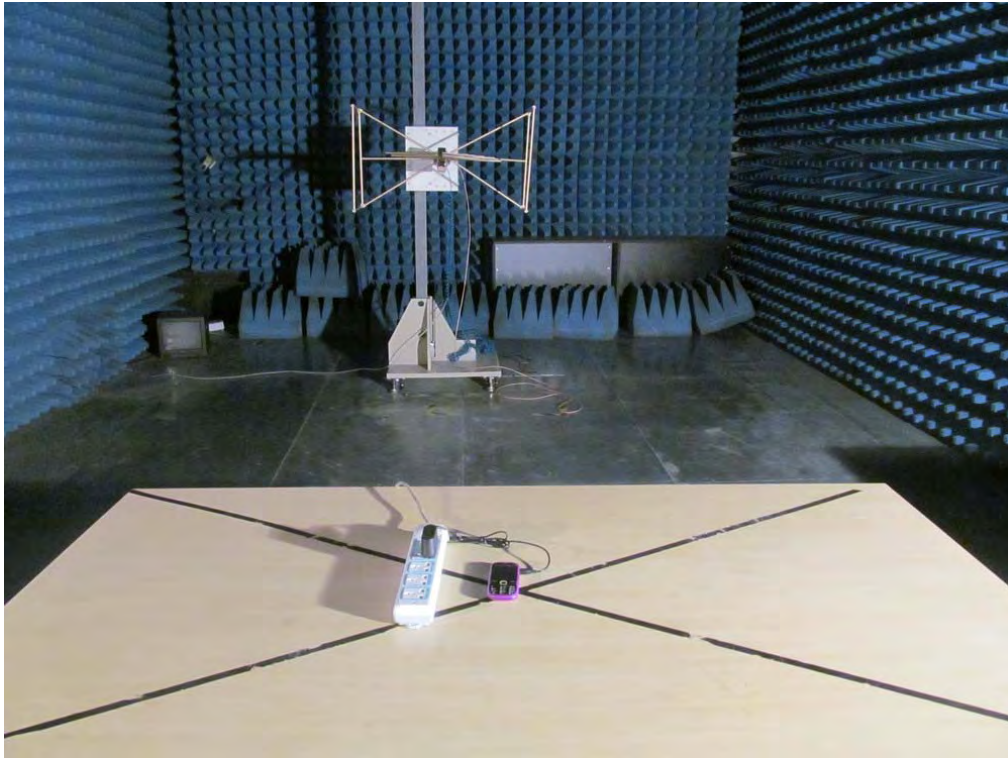
INTERNAL VIEW OF EUT-2



INTERNAL VIEW OF EUT-2



**APPENDIX II**  
**PHOTOGRAPHS OF THE TEST SETUP**  
FCC RADIATED EMISSION TEST SETUP



----END OF REPORT----