FCC PART 22H, PART 24E

TEST REPORT

For

Amgoo Telecom Co., Ltd.

3/F, Block R2-A(North), Gaoxin S. Ave. 4th, Hi-Tech Industrial Park,
Nanshan District, Shenzhen, China

FCC ID: UOSAM450

Report Type:	**Product Type:**
Original Report	Smartphone

Test Engineer:	Shawn Xiao
Report Number:	RSZ160525005-00D
Report Date:	2016-06-08
Reviewed By:	Candy Li RF Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

TABLE OF CONTENTS

GENERAL INFORMATION **3**
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) 3
OBJECTIVE 3
RELATED SUBMITTAL(S)/GRANT(S) 3
TEST METHODOLOGY 3
TEST FACILITY 4
SYSTEM TEST CONFIGURATION **5**
DESCRIPTION OF TEST CONFIGURATION 5
EQUIPMENT MODIFICATIONS 5
SUPPORT EQUIPMENT LIST AND DETAILS 5
BLOCK DIAGRAM OF TEST SETUP 5
SUMMARY OF TEST RESULTS **6**
FCC §1.1307 & §2.1093 - RF EXPOSURE **8**
APPLICABLE STANDARD 8
TEST RESULT 8
FCC §2.1047 - MODULATION CHARACTERISTIC **9**
FCC § 2.1046, § 22.913 (A) & § 24.232 (C) - RF OUTPUT POWER **10**
APPLICABLE STANDARD 10
TEST PROCEDURE 10
TEST EQUIPMENT LIST AND DETAILS 11
TEST DATA 11
FCC §2.1053, §22.917 & §24.238 - SPURIOUS RADIATED EMISSIONS **13**
APPLICABLE STANDARD 13
TEST PROCEDURE 13
TEST EQUIPMENT LIST AND DETAILS 13
TEST DATA 14

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Amgoo Telecom Co., Ltd.*'s product, model number: AM450 *(FCC ID: UOSAM450)* or the "EUT" in this report was a Smartphone , which was measured approximately: 13.3 cm (L) × 6.8 cm (W) × 1.0 cm(H), rated with input voltage: DC 3.7V rechargeable Li-ion battery or DC 5.0V from adapter.

Adapter Information:
Model: CH4
Input: AC 100-240V, 50/60Hz, 0.2A
Output: DC 5V, 700mA

**All measurement and test data in this report was gathered from production sample serial number: 1602342. (Assigned by Shenzhen BACL).The EUT supplied by the applicant was received on 2016-05-25.*

Objective

This test report is prepared on behalf of *Amgoo Telecom Co., Ltd.* in accordance with Part 2-Subpart J, Part 22-Subpart H and Part 24-Subpart E of the Federal Communication Commissions rules.

The objective is to determine the compliance of the EUT with FCC rules for output power, modulation characteristic, occupied bandwidth, and spurious emission at antenna terminal, spurious radiated emission, frequency stability and band edge.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DSS, Part 15.247 DTS and Part 15B JBP submissions with FCC ID: UOSAM450.

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2-Subpart J as well as the following parts:

Part 22 Subpart H - Public Mobile Services
Part 24 Subpart E - Personal Communication Services

Applicable Standards: TIA/EIA 603-D.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement uncertainty with radiated emission is 5.81 dB for 30MHz-1GHz.and 4.88 dB for above 1GHz, 1.95dB for conducted measurement.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp.(Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on October 31, 2013. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The EUT was configured for testing according to TIA/EIA-603-D.

The final qualification test was performed with the EUT operating at normal mode.

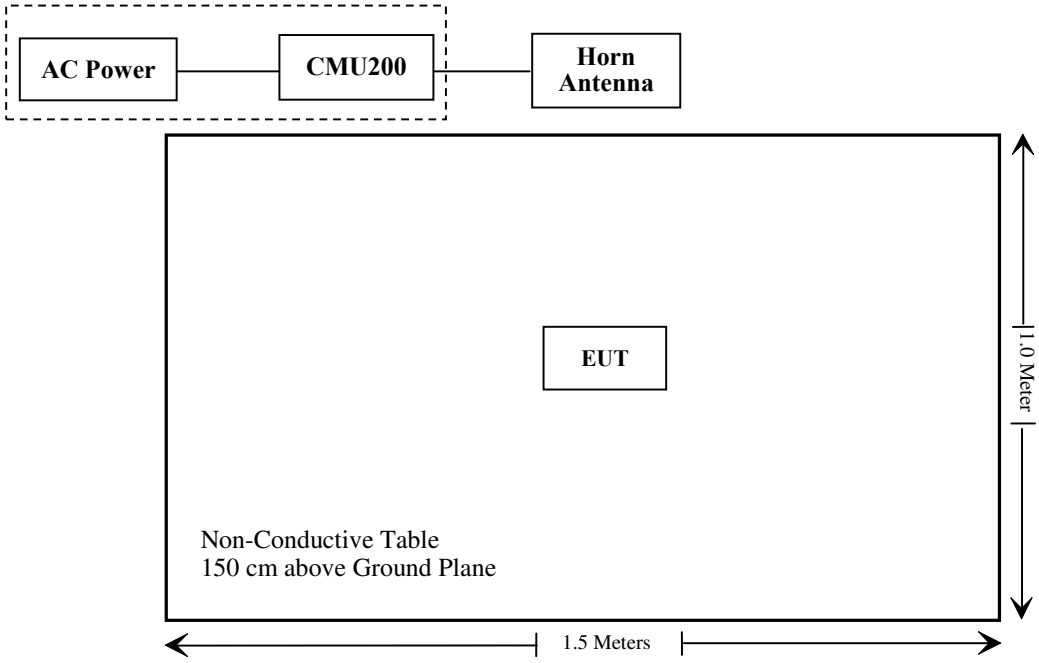
Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

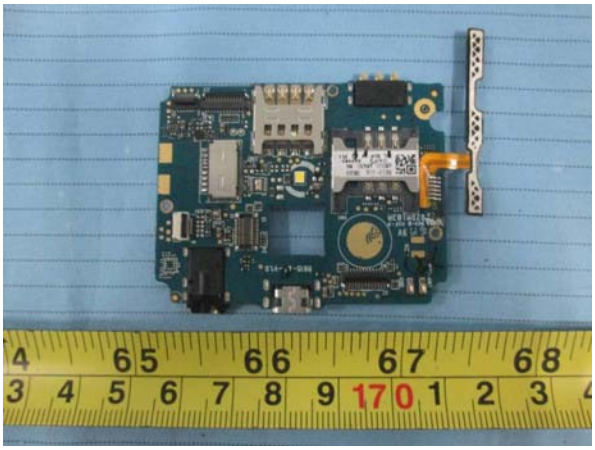
FCC Rules	Description of Test	Result
§1.1307, §2.1093	RF Exposure (SAR)	Compliance*
§2.1046; § 22.913 (a); § 24.232 (c)	RF Output Power	Compliance Note*
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905 § 22.917; § 24.238	Bandwidth	Compliance**
§ 2.1051, § 22.917 (a); § 24.238 (a)	Spurious Emissions at Antenna Terminal	Compliance**
§ 2.1053 § 22.917 (a); § 24.238 (a)	Field Strength of Spurious Radiation	Compliance
§ 22.917 (a); § 24.238 (a)	Out of band emission, Band Edge	Compliance**
§ 2.1055 § 22.355; § 24.235	Frequency stability vs. temperature Frequency stability vs. voltage	Compliance**

Compliance*: Please refer to the SAR report RSZ160525005-20
Compliance**: Please refer to the SAR report RSZ160525004-00D
Note: The EUT (Model: AM450, FCC ID: UOSAM450) has the same main board and chip as the EUT (Model: AM402, FCC ID: UOSAM402), test lab has checked the conducted output powers and found they are consistent with the certified product. The ERP and EIRP have been verified by test lab. And "Field Strength of Spurious Radiation" was also performed; all the other test data are referred to the certified product with report No.: RSZ160525004 -00D, which was tested by Bay Area Compliance Laboratories Corp. (Shenzhen).

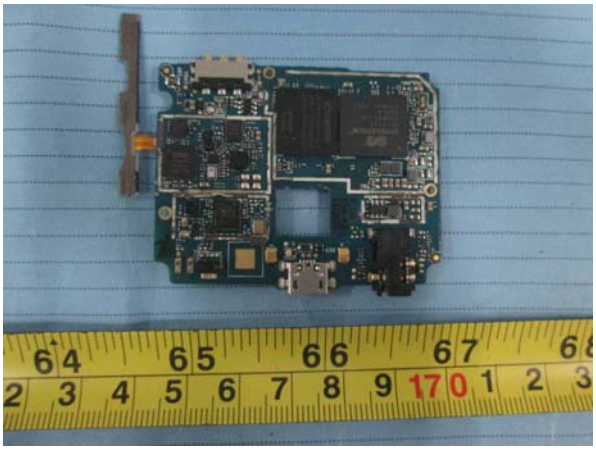
The main board and chip details please refer to the images below.

Model AM450:

Main board top view



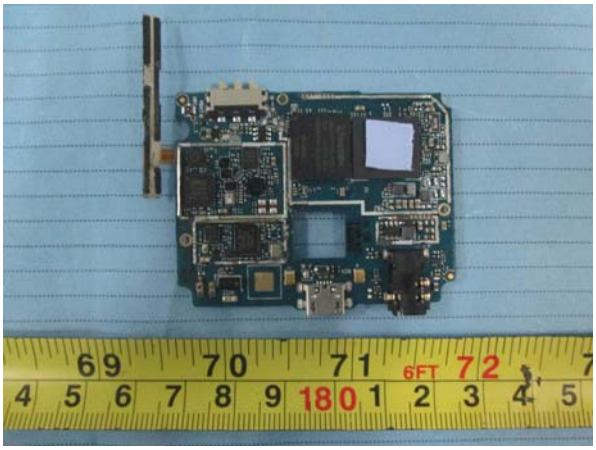
Main board Bottom Shielding Off view



Model AM402:

Main board top view

Main board Bottom Shielding Off view



FCC §1.1307 & §2.1093 - RF EXPOSURE

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliance, please refer to the SAR report: RSZ160525005-20.

FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

FCC § 2.1046, § 22.913 (a) & § 24.232 (c) - RF OUTPUT POWER

Applicable Standard

According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (c) (d):

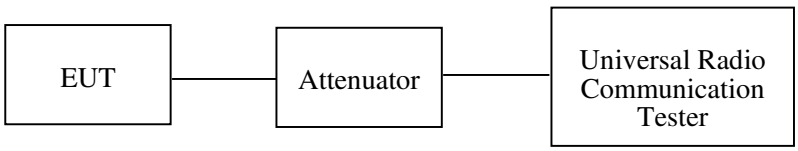
(c) Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

(d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

Test Procedure

Conducted method:

The RF output of the transmitter was connected to the wireless test set and the spectrum analyzer through sufficient attenuation.



Radiated method:

TIA 603-D section 2.2.17

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052604	2014-12-29	2017-12-28
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2015-12-15	2016-12-14
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-07	2017-12-06
HP	Synthesized Sweeper	HP 8341B	2624A00116	2015-07-02	2016-07-01
COM POWER	Dipole Antenna	AD-100	041000	2015-08-18	2016-08-18
A.H. System	Horn Antenna	SAS-200/571	135	2015-08-18	2018-08-17
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2015-11-23	2016-11-23
Ducommun technologies	RF Cable	UFA210A-1-4724-30050U	MFR64369 223410-001	2015-06-15	2016-06-15
Ducommun technologies	RF Cable	104PEA	218124002	2015-06-15	2016-06-15
Ducommun technologies	RF Cable	RG-214	1	2015-06-15	2016-06-15
Ducommun technologies	RF Cable	RG-214	2	2015-06-15	2016-06-15
Ducommun technologies	RF Cable	RG-214	3	2015-06-15	2016-06-15
WEINSCHEL	3dB Attenuator	5321	AU0709	2015-06-18	2016-06-18

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24℃
Relative Humidity:	54 %
ATM Pressure:	101.0 kPa

The testing was performed by Shawn Xiao on 2016-06-01.

Radiated Power

ERP & EIRP

GSM Mode:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H/24E	
			Height (m)	Polar (H/V)	S.G. Level (dBm)	Cable loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
ERP for Cellular Band (Part 22H), Middle Channel										
836.6	99.27	42	1.8	H	31.3	0.67	0	30.63	38.45	7.82
836.6	97.15	209	2.1	V	29.2	0.67	0	28.53	38.45	9.92
EIRP for PCS Band (Part 24E), Middle Channel										
1880.00	90.11	348	1.3	H	21.4	1.40	7.30	27.30	33	5.70
1880.00	88.12	291	1.5	V	18.9	1.40	7.30	24.80	33	8.20

WCDMA Mode:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	S.G. Level (dBm)	Cable loss (dB)	Antenna Gain (dB)			
ERP for WCDMA Band V (Part 22H), Middle Channel										
836.6	90.64	329	1.8	H	22.6	0.67	0	21.93	38.45	16.52
836.6	89.33	126	1.6	V	21.3	0.67	0	20.63	38.45	17.82
EIRP for WCDMA Band II (Part 24E), Middle Channel										
1880.00	84.13	194	1.0	H	15.5	1.40	7.30	21.40	33	11.60
1880.00	82.11	115	1.5	V	12.9	1.40	7.30	18.80	33	14.20

Note:
All above data were tested with no amplifier.
Absolute Level = SG Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

FCC §2.1053, §22.917 & §24.238 - SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC § 2.1053, §22.917 and § 24.238.

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the receiving antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = 10 lg (TXpwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log_{10} (power out in Watts)

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052604	2014-12-29	2017-12-28
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-07	2017-12-06
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2015-12-15	2016-12-14
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2016-04-23	2017-04-23
HP	Amplifier	HP8447E	1937A01046	2016-05-06	2017-05-06
HP	Signal Generator	HP 8341B	2624A00116	2015-07-02	2016-07-01
COM POWER	Dipole Antenna	AD-100	041000	2015-08-18	2016-08-18
A.H. System	Horn Antenna	SAS-200/571	135	2015-08-18	2018-08-17
the electro-Mechanics Co.	Horn Antenna	3116	9510-2270	2013-10-14	2016-10-13
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2015-11-23	2016-11-23
Ducommun technologies	RF Cable	UFA210A-1-4724-30050U	MFR64369 223410-001	2015-06-15	2016-06-15
Ducommun technologies	RF Cable	104PEA	218124002	2015-06-15	2016-06-15
Ducommun technologies	RF Cable	RG-214	1	2015-06-15	2016-06-15
Ducommun technologies	RF Cable	RG-214	2	2015-06-15	2016-06-15

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 ℃
Relative Humidity:	54 %
ATM Pressure:	101.0 kPa

The testing was performed by Shawn Xiao on 2016-05-31

EUT operation mode: Transmitting

Pre-scan with Low, Middle and High channel, the worst case as below:

30 MHz ~ 10 GHz:

Cellular Band (Part 22H)

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
GSM Mode										
460.90	34.15	267	1.6	H	-62.8	0.47	0	-63.27	-13	50.27
460.90	33.05	27	1.2	V	-63.9	0.47	0	-64.37	-13	51.37
1673.20	61.28	349	1.0	H	-46.1	1.60	6.90	-40.80	-13	27.80
1673.20	65.75	125	2.2	V	-42.1	1.60	6.90	-36.80	-13	23.80
2509.80	61.03	87	2.2	H	-43.6	1.70	8.60	-36.70	-13	23.70
2509.80	54.96	164	2.3	V	-49.9	1.70	8.60	-43.00	-13	30.00
WCDMA Mode										
460.90	34.79	279	2.0	H	-62.2	0.47	0	-62.67	-13	49.67
460.90	33.59	245	1.6	V	-63.4	0.47	0	-63.87	-13	50.87
1673.20	64.62	338	1.8	H	-42.8	1.60	6.90	-37.50	-13	24.50
1673.20	64.35	21	1.5	V	-43.5	1.60	6.90	-38.20	-13	25.20
2509.80	69.51	154	2.1	H	-35.1	1.70	8.60	-28.20	-13	15.20
2509.80	65.21	117	1.7	V	-39.7	1.70	8.60	-32.80	-13	19.80

30 MHz ~ 20 GHz:

PCS Band (Part 24E)

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
GSM Mode										
460.90	33.59	298	1.0	H	-63.4	0.47	0	-63.87	-13	50.87
460.90	34.07	351	1.3	V	-62.9	0.47	0	-63.37	-13	50.37
3760.00	52.97	248	1.1	H	-46.5	1.90	9.90	-38.50	-13	25.50
3760.00	53.81	75	1.4	V	-45.3	1.90	9.90	-37.30	-13	24.30
5640.00	53.74	8	1.3	H	-42.7	2.10	10.30	-34.50	-13	21.50
5640.00	52.87	75	2.3	V	-43.0	2.10	10.30	-34.80	-13	21.80
7520.00	60.54	179	1.4	H	-28.4	2.60	10.70	-20.30	-13	7.30
7520.00	64.54	55	2.4	V	-25.5	2.60	10.70	-17.40	-13	4.40
WCDMA Mode										
460.90	33.31	230	1.7	H	-63.7	0.47	0	-64.17	-13	51.17
460.90	33.79	5	2.1	V	-63.2	0.47	0	-63.67	-13	50.67
3760.00	50.61	213	2.4	H	-48.9	1.90	9.90	-40.90	-13	27.90
3760.00	52.83	145	2.5	V	-46.2	1.90	9.90	-38.20	-13	25.20

Note:
1) Absolute Level = SG Level - Cable loss + Antenna Gain
2) Margin = Limit- Absolute Level

******* END OF REPORT *******