





FCC PART 22H, PART 24E TEST REPORT

For

JAINA MARKETING & ASSOCIATES

D-170, OKHLA INDUSTRIAL AREA, PHASE-1, NEW DELHI 110020 INDIA

FCC ID: 2AFEWGD18

Report Type: **Product Type:** Original Report Communication Equipment William Li **Test Engineer:** William Li **Report Number:** RSZ150707009-00C **Report Date:** 2015-07-14 Jimmy Xiao xiao Jinmy **Reviewed By:** 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	4
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	
OBJECTIVE	
RELATED SUBMITTAL(S)/GRANT(S)	
TEST METHODOLOGY TEST FACILITY	
SYSTEM TEST CONFIGURATION	
DESCRIPTION OF TEST CONFIGURATION	
EQUIPMENT MODIFICATIONS	6
SUPPORT EQUIPMENT LIST AND DETAILS	
SUMMARY OF TEST RESULTS	
FCC §1.1307 & §2.1093 - RF EXPOSURE	
APPLICABLE STANDARD	
TEST RESULT	8
FCC §2.1047 - MODULATION CHARACTERISTIC	9
FCC § 2.1046, § 22.913 (A) & § 24.232 (C) - RF OUTPUT POWER	10
APPLICABLE STANDARD	
TEST PROCEDURE	
TEST FROCEDURE TEST EQUIPMENT LIST AND DETAILS.	
TEST DATA	
FCC §2.1049, §22.917, §22.905 & §24.238 - BANDWIDTH	13
APPLICABLE STANDARD	
TEST PROCEDURE	
TEST FROCEDORD TEST EQUIPMENT LIST AND DETAILS.	
TEST DATA	
FCC §2.1051, §22.917(A) & §24.238(A) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS	17
APPLICABLE STANDARD	
TEST PROCEDURE	
TEST EQUIPMENT LIST AND DETAILS	17
TEST DATA	17
FCC §2.1053, §22.917 & §24.238 - SPURIOUS RADIATED EMISSIONS	21
APPLICABLE STANDARD	21
TEST PROCEDURE	21
TEST EQUIPMENT LIST AND DETAILS	21
TEST DATA	22
FCC §22.917(A) & §24.238(A) - BAND EDGES	23
APPLICABLE STANDARD	23
Test Procedure	
TEST EQUIPMENT LIST AND DETAILS	
TEST DATA	23
FCC §2.1055, §22.355 & §24.235 - FREQUENCY STABILITY	26
APPLICABLE STANDARD	26

TEST PROCEDURE	26
TEST EQUIPMENT LIST AND DETAILS	27
Test Data	

Report No.: RSZ150707009-00C

FCC Part 22H/24E Page 3 of 28

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The JAINA MARKETING & ASSOCIATES 's product, model number: GD18 (FCC ID: 2AFEWGD18) or the "EUT" in this report was a Communication Equipment, which was measured approximately: 112 mm (L) \times 47 mm (W) \times 13 mm (H), rated with input voltage: DC 3.7V rechargeable Li-ion battery or DC5.0 V from adapter. The highest operating frequency is 26MHz.

Report No.: RSZ150707009-00C

Adapter Information: Model : PA5V05AMUVS

Input: AC100-300V, 50/60Hz, 0.15A

Output: DC 5.0V, 500mA

*All measurement and test data in this report was gathered from production sample serial number: 1505685 (Assigned by Shenzhen BACL). The EUT supplied by the applicant was received on 2015-07-07.

Objective

This test report is prepared on behalf of *JAINA MARKETING & ASSOCIATES* 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 and Part 15B JBP submissions with FCC ID: 2AFEWGD18

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, ANSI C63.4-2009.

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 5.91 dB for 30MHz-1GHz.and 4.92 dB for above 1GHz, 1.95dB for conducted measurement.

FCC Part 22H/24E Page 4 of 28

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.

Report No.: RSZ150707009-00C

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 December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

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.

FCC Part 22H/24E Page 5 of 28

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

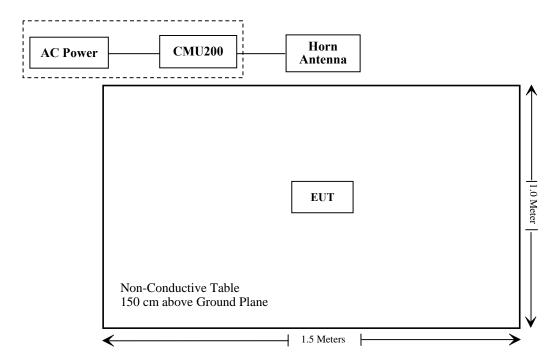
No modification was made to the EUT.

Support Equipment List and Details

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

Report No.: RSZ150707009-00C

Block Diagram of Test Setup



FCC Part 22H/24E Page 6 of 28

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
§ 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

Report No.: RSZ150707009-00C

Note: * Please refer to SAR report released by BACL, report number: RSZ150713004-20.

FCC Part 22H/24E Page 7 of 28

FCC §1.1307 & §2.1093 - RF EXPOSURE

Report No.: RSZ150707009-00C

Applicable Standard

FCC§1.1307 and §2.1093.

Test Result

Compliance, please refer to the SAR report: RSZ150713004-20.

FCC Part 22H/24E Page 8 of 28

FCC §2.1047 - MODULATION CHARACTERISTIC

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

Report No.: RSZ150707009-00C

FCC Part 22H/24E Page 9 of 28

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.

Report No.: RSZ150707009-00C

According to FCC §2.1046 and §24.232 (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.

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		A052304	2014-11-01	2015-11-30
Rohde & Schwarz	Signal Analyzer	FSIQ26	837405/023	2014-08-22	2015-08-22
Sunol Sciences	Broadband Antenna	JB3	A111513	2014-06-18	2017-06-17
НР	Signal Generator	8341B	2624A00116	2015-06-03	2016-06-03
COM POWER	Dipole Antenna	AD-100	041000	NCR	NCR
A.H. System	Horn Antenna	SAS-200/571	135	2013-02-10	2016-02-10
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2014-11-23	2015-11-23

^{*} 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).

FCC Part 22H/24E Page 10 of 28

Test Data

Environmental Conditions

Temperature:	26 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by William Li on 2015-07-13.

Conducted Power

Cellular Band (Part 22H)

Report No.: RSZ150707009-00C

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
	128	824.2	31.57	38.45
GSM	190	836.6	31.24	38.45
	251	848.8	31.41	38.45

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
	512	1850.2	31.81	33
GSM	661	1880.0	31.49	33
	810	1909.8	31.39	33

FCC Part 22H/24E Page 11 of 28

Radiated Power

GSM Mode:

	Receiver Turnt	Turntable Rx An		tenna	S	ubstitut	ed	Absolute	FCC Part	t 22H/24E
Frequency (MHz)	Reading (dBµV)	Angle Degree	Height (m)	Polar (H/V)	S.G. Level (dBm)	Cable loss (dB)	Antenna Gain (dB)	Level (dBm)	Limit (dBm)	Margin (dB)
	ERP for Cellular Band (Part 22H), mid Channel									
836.6	99.84	110	1.4	Н	29.8	0.69	0.0	29.11	38.45	9.34
836.6	98.68	205	1.2	V	28.7	0.69	0.0	28.01	38.45	10.44
	EIRP for PCS Band (Part 24E), mid Channel									
1880	88.22	240	1.3	Н	16.1	1.03	9.40	24.47	33	8.53
1880	85.38	65	1.2	V	13.3	1.03	9.40	21.67	33	11.33

Report No.: RSZ150707009-00C

Note:

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

FCC Part 22H/24E Page 12 of 28

FCC §2.1049, §22.917, §22.905 & §24.238 - BANDWIDTH

Applicable Standard

FCC §2.1049, §22.917, §22.905 and §24.238.

Test Procedure

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

The resolution bandwidth of the spectrum analyzer was set at 5 kHz (Cellular /PCS) & 100 kHz (WCDMA) and the 26 dB & 99% bandwidth was recorded.

Report No.: RSZ150707009-00C



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	837405/023	2014-08-22	2015-08-22
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K0 3-101746-zn	2015-06-13	2016-06-13
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2014-11-23	2015-11-23

^{*} 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:	26 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by William Li on 2015-07-11.

FCC Part 22H/24E Page 13 of 28

EUT operation mode: Transmitting

Test Result: Compliance. Please refer to the following tables and plots.

Cellular Band (Part 22H)

Report No.: RSZ150707009-00C

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	836.6	244.57	314.00

PCS Band (Part 24E)

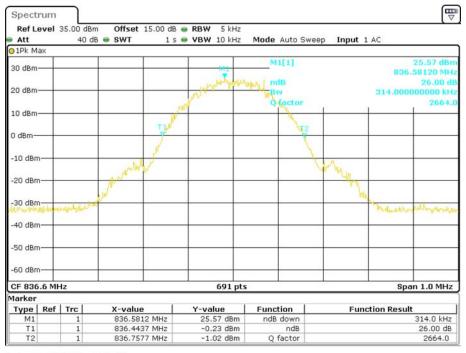
Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM (GMSK)	1880.0	244.57	316.90

FCC Part 22H/24E Page 14 of 28

Cellular Band (Part 22H)

26 dB Emissions Bandwidth for GSM (GMSK) Mode

Report No.: RSZ150707009-00C



Date: 11.JUL.2015 16:39:46

99% Occupied Bandwidth for GSM (GMSK) Mode



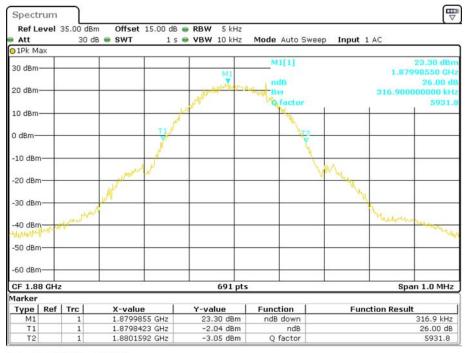
Date: 11.JUL.2015 16:40:47

FCC Part 22H/24E Page 15 of 28

PCS Band (Part 24E)

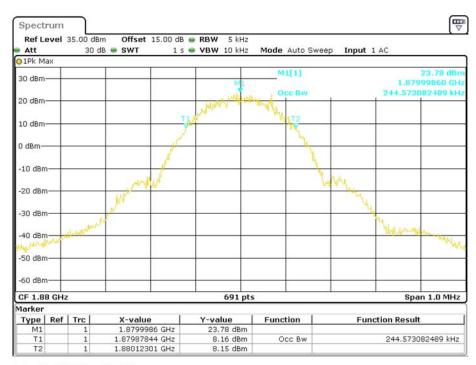
26 dB Emissions Bandwidth for GSM (GMSK) Mode

Report No.: RSZ150707009-00C



Date: 11.JUL.2015 16:55:55

99% Occupied Bandwidth for GSM (GMSK) Mode



Date: 11.JUL.2015 16:56:31

FCC Part 22H/24E Page 16 of 28

FCC §2.1051, §22.917(a) & §24.238(a) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Report No.: RSZ150707009-00C

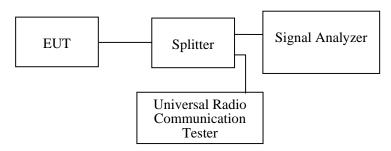
Applicable Standard

FCC §2.1051, §22.917(a) and §24.238(a).

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1051.

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	837405/023	2014-08-22	2015-08-22
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2014-11-23	2015-11-23

^{*} 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:	25 ℃	
Relative Humidity:	52 %	
ATM Pressure:	101.0 kPa	

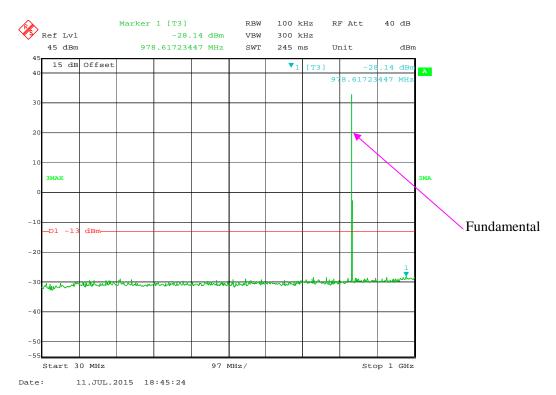
The testing was performed by William Li on 2015-07-11.

Test result: Compliance, please refer to the following plots.

FCC Part 22H/24E Page 17 of 28

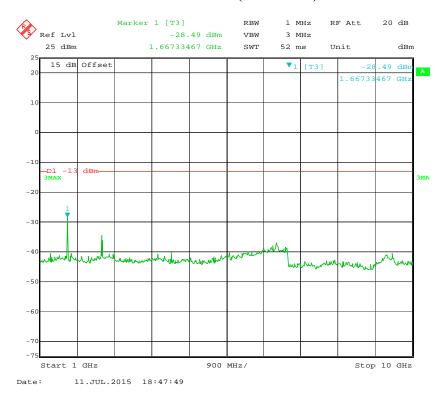
Cellular Band (Part 22H)

30 MHz - 1 GHz



Report No.: RSZ150707009-00C

1 GHz – 10 GHz (GSM Mode)

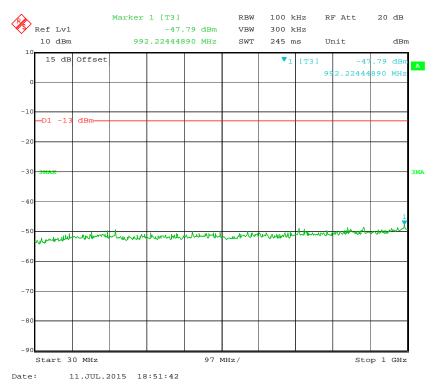


FCC Part 22H/24E Page 18 of 28

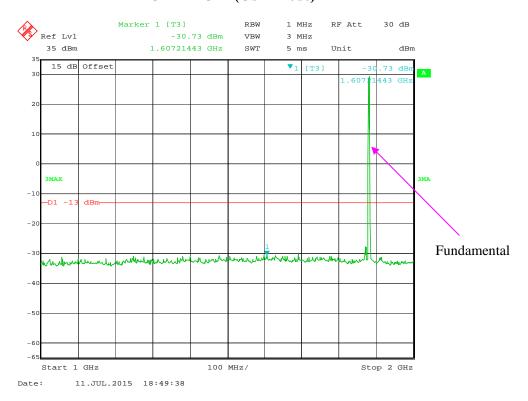
PCS Band (Part 24E)

30 MHz – 1 GHz (GSM Mode)

Report No.: RSZ150707009-00C

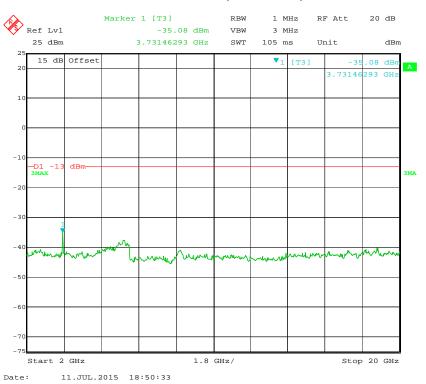


1 GHz – 2 GHz (GSM Mode)



FCC Part 22H/24E Page 19 of 28

2 GHz - 20 GHz (GSM Mode)



FCC Part 22H/24E Page 20 of 28

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

Report No.: RSZ150707009-00C

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 $dB = 43 + 10 \text{ Log}_{10}$ (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	A052304	2014-11-01	2015-11-30
Sunol Sciences	Broadband Antenna	ЈВ3	A111513	2014-06-18	2017-06-17
Rohde & Schwarz	Signal Analyzer	FSIQ26	837405/023	2014-08-22	2015-08-22
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2015-04-23	2016-04-23
HP	Amplifier	8447E	1937A01046	2015-05-06	2016-05-06
HP	Signal Generator	8341B	2624A00116	2015-06-03	2016-06-03
COM POWER	Dipole Antenna	AD-100	041000	NCR	NCR
A.H. System	Horn Antenna	SAS-200/571	135	2013-02-11	2016-02-10
Electro-Mechanics	Horn Antenna	3116	9510-2270	2013-10-14	2016-10-13
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2014-11-23	2015-11-23

^{*} 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).

FCC Part 22H/24E Page 21 of 28

Test Data

Environmental Conditions

Temperature:	26 ℃	
Relative Humidity:	52 %	
ATM Pressure:	101.0 kPa	

The testing was performed by William Li on 2015-07-13.

EUT operation mode: Transmitting (worst case)

GSM Mode

Report No.: RSZ150707009-00C

P	Receiver	Turntable	Rx An	tenna	,	Substitut	ed	Absolute		C Part I/24E
Frequency (MHz)	Reading (dBµV)	Angle Degree	Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)	Level (dBm)	Limit (dBm)	Margin (dB)
			G	SM 850,	middle cl	annel				
480.03	35.84	143	1.2	Н	-61.2	0.47	0	-61.67	-13	48.67
480.03	34.69	15	1.1	V	-62.3	0.47	0	-62.77	-13	49.77
1673.20	44.59	0	1.1	Н	-51.6	1.60	6.90	-46.30	-13	33.30
1673.20	43.57	353	1.1	V	-54.7	1.60	6.90	-49.40	-13	36.40
2509.80	40.89	49	1.5	Н	-53.6	1.70	8.60	-46.70	-13	33.70
2509.80	40.32	350	1.6	V	-54.3	1.70	8.60	-47.40	-13	34.40
3346.40	37.09	167	1.3	Н	-52.0	1.90	9.80	-44.10	-13	31.10
3346.40	36.94	47	1.6	V	-53.7	1.90	9.80	-45.80	-13	32.80
5856.20	40.38	29	1.9	Н	-47.4	2.40	10.40	-39.40	-13	26.40
5856.20	36.54	19	1.2	V	-52.0	2.40	10.40	-44.00	-13	31.00
			P	CS 1900,	middle cl	nannel				
480.03	36.24	87	2.5	Н	-60.8	0.47	0	-61.27	-13	48.27
480.03	35.81	356	2.2	V	-61.2	0.47	0	-61.67	-13	48.67
3760.00	46.26	192	2.0	Н	-43.6	1.90	9.90	-35.60	-13	22.60
3760.00	47.17	122	1.1	V	-43.0	1.90	9.90	-35.00	-13	22.00
5640.00	51.25	23	2.5	Н	-30.7	2.10	10.30	-22.50	-13	9.50
5640.00	42.99	105	2.1	V	-39.9	2.10	10.30	-31.70	-13	18.70

Note:

1) Absolute Level = SG Level - Cable loss + Antenna Gain

2) Margin = Limit- Absolute Level

FCC Part 22H/24E Page 22 of 28

FCC §22.917(a) & §24.238(a) - BAND EDGES

Applicable Standard

According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

Report No.: RSZ150707009-00C

According to \$24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P) dB$.

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03 -101746-zn	2015-06-13	2016-06-13
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2014-11-23	2015-11-23

^{*} 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:	25 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by William Li on 2015-07-11.

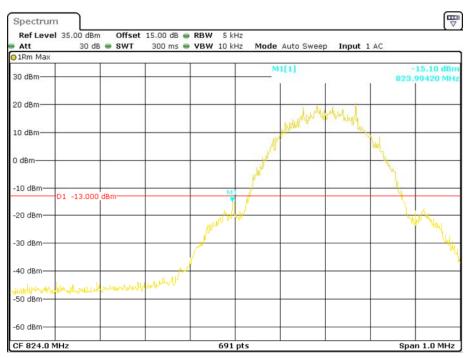
EUT operation mode: Transmitting

Test Result: Compliance. Please refer to the following plots.

FCC Part 22H/24E Page 23 of 28

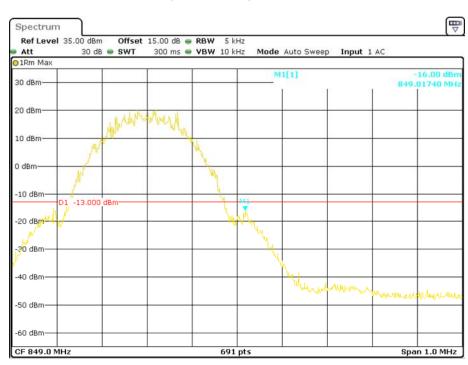
Cellular Band, Left Band Edge for GSM (GMSK) Mode

Report No.: RSZ150707009-00C



Date: 15.JUL.2015 16:55:16

Cellular Band, Right Band Edge for GSM (GMSK) Mode

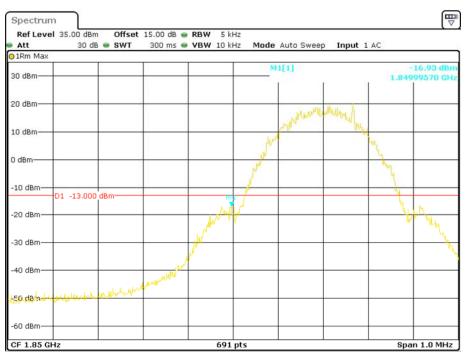


Date: 15.JUL.2015 16:56:40

FCC Part 22H/24E Page 24 of 28

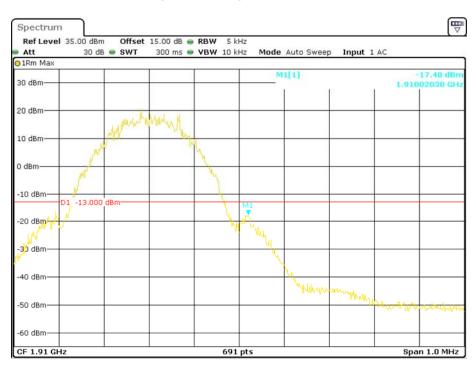
PCS Band, Left Band Edge for GSM (GMSK) Mode

Report No.: RSZ150707009-00C



Date: 15.JUL.2015 17:03:43

PCS Band, Right Band Edge for GSM (GMSK) Mode



Date: 15.JUL.2015 17:05:10

FCC Part 22H/24E Page 25 of 28

FCC §2.1055, §22.355 & §24.235 - FREQUENCY STABILITY

Applicable Standard

FCC § 2.1055, §22.355, §24.235

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Toleran	ce for '	Transmitters	in the	Public	Mobile Services
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Report No.: RSZ150707009-00C

Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

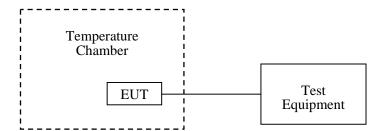
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: For hand carried, battery powered equipment; reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



FCC Part 22H/24E Page 26 of 28

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2014-11-01	2015-11-01
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2014-11-23	2015-11-23

Report No.: RSZ150707009-00C

Test Data

Environmental Conditions

Temperature:	26 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by William Li on 2015-07-11.

EUT operation mode: Transmitting

Test Result: Compliance. Please refer to the following tables.

Cellular Band (Part 22H)

GSM Mode

Middle Channel, f _o =836.6MHz					
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	
-30		24	0.02869	2.5	
-20		22	0.02630	2.5	
-10		18	0.02152	2.5	
0		-19	-0.02271	2.5	
10	3.7	-20	-0.02391	2.5	
20		-16	-0.01913	2.5	
30		22	0.02630	2.5	
40		18	0.02152	2.5	
50		15	0.01793	2.5	
25	V min.= 3.5	18	0.02152	2.5	
25	V max.= 4.2	-23	-0.02749	2.5	

FCC Part 22H/24E Page 27 of 28

^{*} 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).

PCS Band (Part 24E)

Report No.: RSZ150707009-00C

GSM Mode

Middle Channel, f _o =1880.0 MHz					
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result	
-30	3.7	-46	-0.02447	pass	
-20		-39	-0.02074	pass	
-10		40	0.02128	pass	
0		32	0.01702	pass	
10		28	0.01489	pass	
20		26	0.01383	pass	
30		22	0.01170	pass	
40		24	0.01277	pass	
50		-26	-0.01383	pass	
25	V min.= 3.5	28	0.01489	pass	
25	V max.= 4.2	-44	-0.02340	pass	

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

FCC Part 22H/24E Page 28 of 28