



# FCC PART 22H, PART 24E

# **TEST REPORT**

For

# HONG KONG IPRO TECHNOLOGY CO., LIMITED

ROOM C1D, 6/F, WING HING INDUSTRIAL BUILDING, 14 HING YIP STREET, KWUN TONG, KOWLOON, HONG KONG

# FCC ID: PQ4IPROVENUSL

Report Type:		Product Type:					
Original Report		GSM Mobile Phone					
Test Engineer:	Mick Yin	Mick. Yin					
Report Number:	RSZ121115001-00C						
Report Date:	2012-12-10						
Reviewed By:	Sula Huang RF Engineer	Sonta Huard					
Test Laboratory:	Bay Area Compli 6/F, the 3rd Phase	20018 320008					

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. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP\*, or any agency of the Federal Government. \* This report may contain data that are not covered by the NVLAP accreditation and shall be marked with an asterisk "★"

Bay Area Compliance Laboratories Corp. (Shenzhen)

# TABLE OF CONTENTS

GENERAL INFORMATION	3
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	
BLOCK DIAGRAM OF TEST SETUP	
SUMMARY OF TEST RESULTS	6
FCC §1.1307 & §2.1093 - RF EXPOSURE	7
APPLICABLE STANDARD	7
TEST RESULT	
FCC §2.1047 - MODULATION CHARACTERISTIC	8
FCC § 2.1046, § 22.913 (A) & § 24.232 (C) - RF OUTPUT POWER	9
Applicable Standard	
TEST PROCEDURE	
TEST EQUIPMENT LIST AND DETAILS	9
TEST DATA	10
FCC §2.1049, §22.917, §22.905 & §24.238 - BANDWIDTH	12
APPLICABLE STANDARD	
TEST PROCEDURE	
TEST EQUIPMENT LIST AND DETAILS TEST DATA	
FCC §2.1051, §22.917(A) & §24.238(A) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS	
Applicable Standard	
Test Procedure Test Equipment List and Details	
TEST EQUIPMENT LIST AND DETAILS TEST DATA	
FCC §2.1053, §22.917 & §24.238 - SPURIOUS RADIATED EMISSIONS	
Applicable Standard Test Procedure	
TEST FROCEDURE	
TEST DATA	
FCC §22.917(A) & §24.238(A) - BAND EDGES	22
Applicable Standard	
Test Procedure	
Test Equipment List and Details	
TEST DATA	
FCC §2.1055, §22.355 & §24.235 - FREQUENCY STABILITY	
APPLICABLE STANDARD	
TEST PROCEDURE	
TEST EQUIPMENT LIST AND DETAILS	
TEST DATA	

FCC Part 22H/24E

Page 2 of 28

#### **GENERAL INFORMATION**

#### **Product Description for Equipment under Test (EUT)**

The *HONG KONG IPRO TECHNOLOGY CO., LIMITED*'s product, model number: *VENUS L (FCC ID: PQ4IPROVENUSL)* or the "EUT" in this report was a *GSM Mobile Phone*, which was measured approximately: 10.5 cm (L) x 5.8 cm (W) x 1.1 cm (H), rated input voltage: DC 3.7 V Li-ion battery.

\* All measurement and test data in this report was gathered from production sample serial number: IPROVENUSL000001 (Assigned by Applicant). The EUT was received on 2012-11-15.

#### Objective

This test report is prepared on behalf of *HONG KONG IPRO TECHNOLOGY CO., LIMITED* 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: PQ4IPROVENUSL.

#### **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.

#### Bay Area Compliance Laboratories Corp. (Shenzhen)

#### **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 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.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at http://ts.nist.gov/Standards/scopes/2007070.htm

# SYSTEM TEST CONFIGURATION

#### **Description of Test Configuration**

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

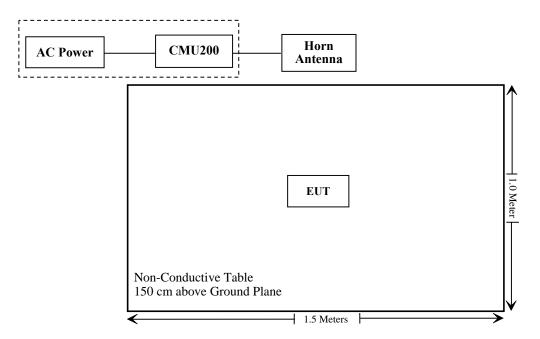
The GSM/PCS item test was performed with the EUT operating at normal mode.

The GPRS item test was performed with the EUT operating at testing mode.

#### **Equipment Modifications**

No modification was made to the EUT.

#### **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
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905 § 22.917; § 24.238	Occupied 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

Note: \* Please refer to SAR report released by BACL, report number: RSZ121115001-20.

# FCC §1.1307 & §2.1093 - RF EXPOSURE

## Applicable Standard

FCC§1.1307 and §2.1093.

#### **Test Result**

Compliance, please refer to the SAR report: RSZ121115001-20.

# 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**

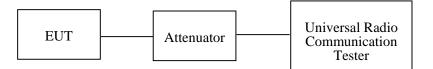
According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (C), 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	2011-12-01	2014-11-30
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2012-11-24	2013-11-23
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2014-11-27
HP	Synthesized Sweeper	8341B	2624A00116	2012-05-17	2013-05-16
COM POWER	Dipole Antenna	AD-100	041000	2012-06-06	2013-06-05
A.H. System	Horn Antenna	SAS-200/571	135	2012-02-11	2015-02-10
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	109038	2012-04-11	2013-04-10

\* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Institute of Metrology (NIM).

# Test Data

#### **Environmental Conditions**

Temperature:	25 °C
<b>Relative Humidity:</b>	55 %
ATM Pressure:	100.0 kPa

The testing was performed by Mick Yin on 2012-12-06.

#### **Conducted Power**

#### Cellular Band (Part 22H)

Mode	Channel	Frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)	
	128	824.2	32.14	38.45	
GSM	190	836.6	32.17	38.45	
	251	848.8	32.13	38.45	

Mode	Channel	Frequency	Pea	Limit			
Moue		(MHz)	Slot 1	Slot 2	Slot 3	Slot 4	(dBm)
	128	824.2	32.08	31.69	/	/	38.45
GPRS	190	836.6	32.12	31.62	/	/	38.45
	251	848.8	32.11	31.67	/	/	38.45

#### PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)
	512	1850.2	29.11	33
GSM	661	1880.0	29.39	33
	810	1909.8	29.52	33

Mode	Channel	Channel Frequency			Peak Output Power (dBm)				
WIGUE		(MHz)	Slot 1	Slot 2	Slot 3	Slot 4	(dBm)		
	512	1850.2	29.07	28.95	/	/	33		
GPRS	661	1880.0	29.27	28.85	/	/	33		
	810	1909.8	29.35	28.46	/	/	33		

Bay Area Compliance Laboratories Corp. (Shenzhen)

Report No.: RSZ121115001-00C

#### **Radiated Power**

#### ERP & EIRP

Frequency	Receiver	Turntable	Rx An	tenna	Substituted		Absolute	Part 22H	
(MHz)	Reading (dBµV/m)	Angle Degree	Height (m)	Polar (H/V)	S.G. Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)	Level (dBm)	Limit (dBm)
	Middle Channel								
836.6	100.52	150	1.8	Н	30.4	0.68	0	29.72	38.45
836.6	101.33	223	1.8	V	32.1	0.68	0	31.42	38.45

# ERP for Cellular Band (Part 22H)

# EIRP for PCS Band (Part 24E)

Frequency	Receiver	Turntable	Rx An	Rx Antenna		Substitut	ed	d Absolute		
(MHz)	Reading (dBµV/m)	Angle Degree	Height (m)	Polar (H/V)	S.G. Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)	Level (dBm)	Limit (dBm)	
				High Ch	annel					
1909.8	86.46	83	1.5	Н	18.4	1.03	9.4	26.77	33	
1909.8	87.92	15	1.8	V	20.0	1.03	9.4	28.37	33	

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

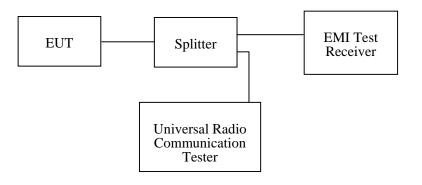
#### **Applicable Standard**

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) and the 26 dB & 99% bandwidth was recorded.



#### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2012-11-24	2013-11-23
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	109038	2012-04-11	2013-04-10

\* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Institute of Metrology (NIM).

#### **Test Data**

#### **Environmental Conditions**

Temperature:	25 °C
<b>Relative Humidity:</b>	55 %
ATM Pressure:	100.0 kPa

The testing was performed by Mick Yin on 2012-12-06.

# Test Mode: Transmitting

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

#### **GMSK Modulation:**

#### Cellular Band (Part 22H)

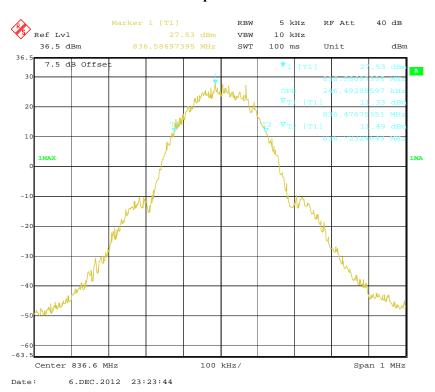
Channel	Frequency	99% Occupied Bandwidth	26 dB Bandwidth
	(MHz)	(kHz)	(kHz)
190	836.6	246.5	322.6

#### PCS Band (Part 24E)

Channel	Frequency	99% Occupied Bandwidth	26 dB Bandwidth
	(MHz)	(kHz)	(kHz)
661	1880.0	246.5	314.6

#### Report No.: RSZ121115001-00C

#### Cellular Band (Part 22H)



#### 99% Occupied Bandwidth

#### 26 dB Bandwidth



FCC Part 22H/24E

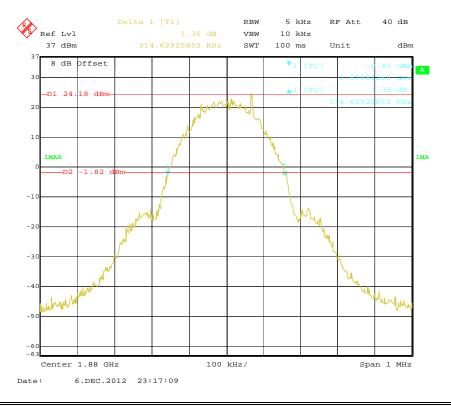
Page 14 of 28

#### PCS Band (Part 24E)

Marker 1 [T1] RBW 5 kHz RF Att 40 dB Ref Lvl 24.30 dBm VBW 10 kHz 37 dBm SWT 100 ms Unit dBm 8 dB Offset A 20 10 1MAX ма -10 N -20 -30 ٦ -40 unju now -50 -6 -63 100 kHz/ Center 1.88 GHz Span 1 MHz 6.DEC.2012 23:17:28 Date:

#### 99% Occupied Bandwidth

#### 26 dB Bandwidth



FCC Part 22H/24E

Page 15 of 28

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

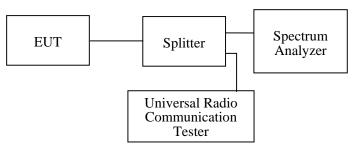
#### **Applicable Standard**

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 10<sup>th</sup> harmonic.



#### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2012-11-24	2013-11-23
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	109038	2012-04-11	2013-04-10

\* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Institute of Metrology (NIM).

#### **Test Data**

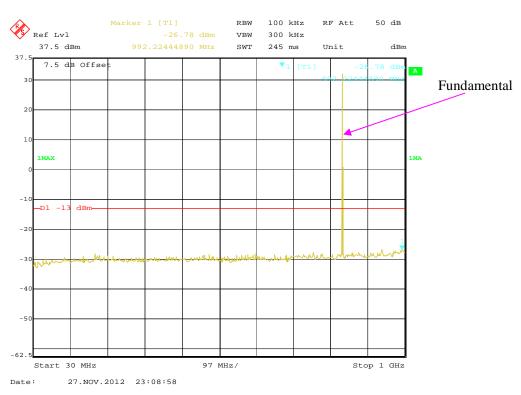
#### **Environmental Conditions**

Temperature:	25 °C
<b>Relative Humidity:</b>	55 %
ATM Pressure:	100.0 kPa

The testing was performed by Mick Yin on 2012-11-27.

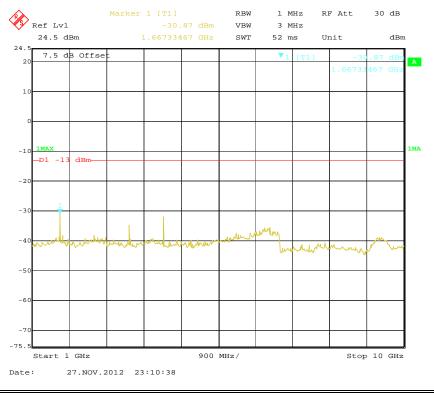
Please refer to the following plots.

#### Cellular Band (Part 22H)



#### 30 MHz - 1 GHz - Middle Channel

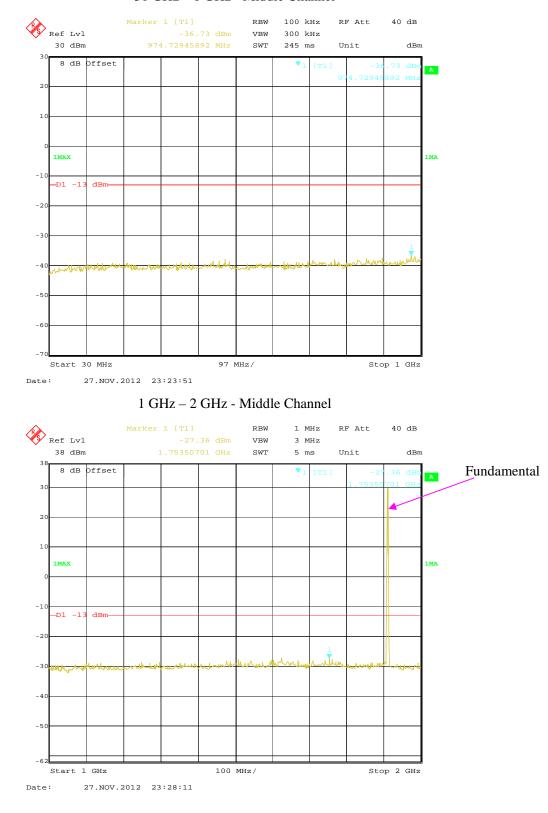
#### 1 GHz - 10 GHz - Middle Channel



FCC Part 22H/24E

Page 17 of 28

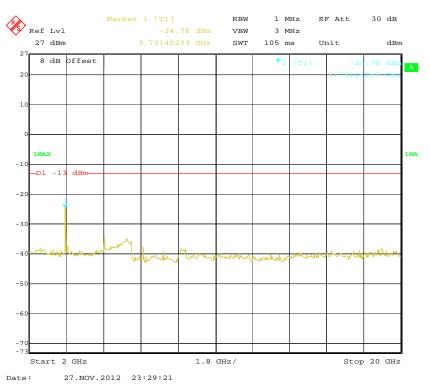
#### PCS Band (Part 24E)



30 GHz - 1 GHz - Middle Channel

FCC Part 22H/24E

Page 18 of 28



#### 2 GHz - 20 GHz - Middle Channel

FCC Part 22H/24E

Page 19 of 28

# 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  $dB = 43 + 10 \text{ Log}_{10}$  (power out in Watts)

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-01	2014-11-30
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2014-11-27
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2012-11-24	2013-11-23
SUPER ULTRA	Amplifier	ZVA-213+	N/A	2012-11-24	2013-11-23
HP	Amplifier	8447E	1937A01046	2012-11-24	2013-11-23
HP	Synthesized Sweeper	8341B	2624A00116	2012-05-17	2013-05-16
COM POWER	Dipole Antenna	AD-100	041000	2012-06-06	2013-06-05
A.H. System	Horn Antenna	SAS-200/571	135	2012-02-11	2015-02-10
Electro-Mechanics	Horn Antenna	3116	9510-2270	2010-10-14	2013-10-13
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	109038	2012-04-11	2013-04-10

## **Test Equipment List and Details**

\* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Institute of Metrology (NIM).

#### **Test Data**

#### **Environmental Conditions**

Temperature:	25 °C
<b>Relative Humidity:</b>	55 %
ATM Pressure:	100.0 kPa

The testing was performed by Mick Yin on 2012-12-06.

Test mode: Transmitting (worst case)

#### **30 MHz ~ 10 GHz:**

#### **Cellular Band (Part 22H)**

	Receiver	Turntable	Rx Ant	tenna		Substitute	ed	Absolute		
Frequency (MHz)	Reading (dBµV/m)	Angle Degree	Height (m)	Polar (H/V)	SG Level (dBm)	Cable loss (dB)	Antenna Gain (dB)	Level (dBm)	Limit (dBm)	Margin (dB)
	÷			Mid	dle Chann	el				
1673.2	65.14	115	1.6	V	-35.3	0.97	9.40	-26.87	-13	13.87
1673.2	61.38	85	1.8	Н	-41.7	0.97	9.40	-33.27	-13	20.27
3346.4	46.36	35	1.5	V	-47.2	2.08	10.80	-38.48	-13	25.48
3346.4	46.7	227	1.8	Н	-47.7	2.08	10.80	-38.98	-13	25.98
2509.8	42.1	93	1.6	V	-54.3	1.46	10.70	-45.06	-13	32.06
2509.8	42.57	13	1.7	Н	-58.2	1.46	10.70	-48.96	-13	35.96

#### 30 MHz ~ 20 GHz:

#### PCS Band (Part 24E)

	Receiver	Turntable	Rx Ant	tenna	1	Substitute	ed	Absolute		
Frequency (MHz)	Reading (dBµV/m)	Angle Degree	Height (m)	Polar (H/V)	SG Level (dBm)	Cable loss (dB)	Antenna Gain (dB)	Level (dBm)	Limit (dBm)	Margin (dB)
				Hig	gh Channe	1				
5729.4	65.62	58	1.8	V	-24.4	3.94	11.70	-16.64	-13	3.64
7639.2	54.33	224	1.6	V	-35.3	3.07	12.00	-26.37	-13	13.37
7639.2	53.99	267	1.7	Н	-35.8	3.07	12.00	-26.87	-13	13.87
5729.4	57.94	55	1.6	Н	-34.8	3.94	11.70	-27.04	-13	14.04
3819.6	57.59	32	1.8	Н	-38.5	2.96	10.40	-31.06	-13	18.06
3819.6	54.32	135	1.5	V	-40.4	2.96	10.40	-32.96	-13	19.96

#### Note:

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

2) Margin = Limit - Absolute Level
3) For below 1GHz, all spurious emissions are 20 dB below the limit or are on the system noise floor level.

#### Bay Area Compliance Laboratories Corp. (Shenzhen)

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

#### **Applicable Standard**

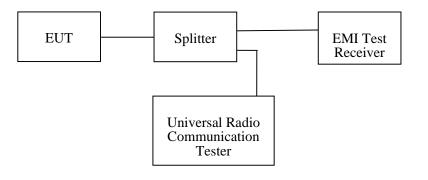
According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P) dB$ .

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, RBW set to 5 kHz.



#### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2012-11-24	2013-11-23
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	109038	2012-04-11	2013-04-10

\* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Institute of Metrology (NIM).

#### **Test Data**

#### **Environmental Conditions**

Temperature:	25 °C
<b>Relative Humidity:</b>	56 %
ATM Pressure:	100.0kPa

The testing was performed by Mick Yin on 2012-11-27.

## Test Mode: Transmitting

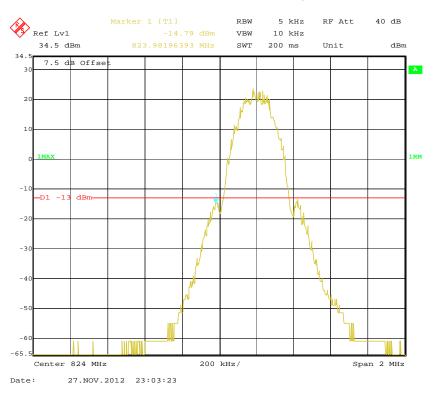
Test Result: Compliance. Please refer to the following tables and plots.

## Cellular Band (Part 22H)

Frequency (MHz)	Emission (dBm)	Limit (dBm)
823.982	-14.79	-13
849.022	-14.70	-13

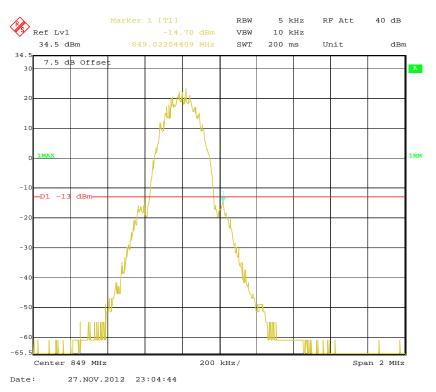
#### PCS Band (Part 24E)

Frequency (MHz)	Emission (dBm)	Limit (dBm)
1849.998	-15.04	-13
1910.018	-16.81	-13



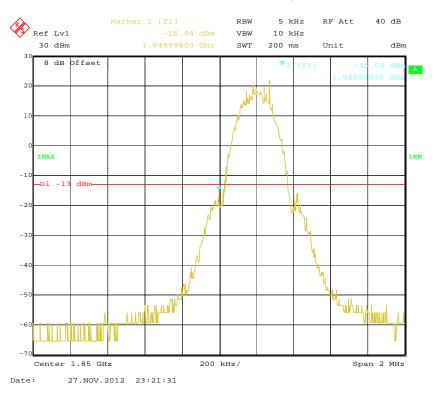
#### Cellular Band, Left Band Edge

#### Cellular Band, Right Band Edge



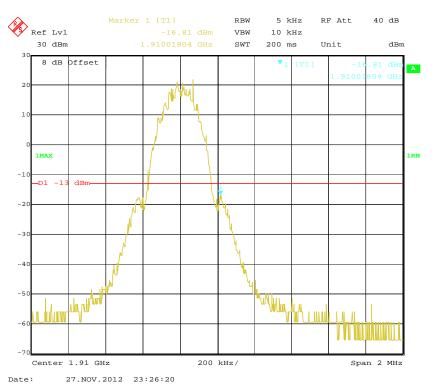
FCC Part 22H/24E

Page 24 of 28



#### PCS Band, Left Band Edge

#### PCS Band, Right Band Edge



FCC Part 22H/24E

## 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 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

Frequency Tolerance for Transmitters in the Public Mobile Services

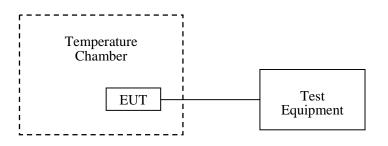
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

#### **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: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the battery end point. The output frequency was recorded for each battery voltage.



FCC Part 22H/24E

#### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2012-11-02	2013-11-01
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	109038	2012-04-11	2013-04-10

\* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Institute of Metrology (NIM).

#### **Test Data**

#### **Environmental Conditions**

Temperature:	20 °C	
<b>Relative Humidity:</b>	55 %	
ATM Pressure:	100.0kPa	

The testing was performed by Mick Yin on 2012-11-27.

Test Mode: Transmitting

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

#### Cellular Band (Part 22H)

Middle Channel, f <sub>o</sub> = 836.6 MHz				
Temperature (℃)	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30		7	0.008367	2.5
-20		7	0.008367	2.5
-10		8	0.009563	2.5
0		9	0.010758	2.5
10	3.7	8	0.009563	2.5
20		10	0.011953	2.5
30		11	0.013148	2.5
40		9	0.010758	2.5
50		10	0.011953	2.5
25	V <sub>max.</sub> = 4.2	8	0.009563	2.5
25	V <sub>min.</sub> = 3.5	12	0.014344	2.5

Middle Channel, f <sub>o</sub> = 1880.0 MHz				
Temperature (℃)	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30		14	0.007447	Pass
-20		15	0.007979	Pass
-10		15	0.007979	Pass
0		16	0.008511	Pass
10	3.7	15	0.007979	Pass
20		17	0.009043	Pass
30		17	0.009043	Pass
40		15	0.007979	Pass
50		18	0.009574	Pass
25	V <sub>max.</sub> = 4.2	13	0.006915	Pass
25	V <sub>min.</sub> = 3.5	14	0.007447	Pass

#### PCS Band (Part 24E)

# \*\*\*\*\* END OF REPORT \*\*\*\*\*