

FCC PART 22H, PART 24E MEASUREMENT AND TEST REPORT

For

Global Distribution FZE

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FCC ID: 2ADPL-I121

Report Type: Product Type: MOBILE PHONE Original Report **Test Engineer:** Dean Liu Report Number: RDG141208003-00C **Report Date:** 2014-12-19 Sola Huas Sula Huang **Reviewed By:** RF Engineer **Test Laboratory:** Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891

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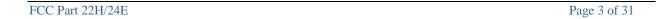
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Global Distribution FZE*'s product, model number: *i121 (FCC ID: 2ADPL-I121)* (or the "EUT") in this report was a *MOBILE PHONE*, which was measured approximately: 11 cm (L) x 4.7 cm (W) x 1.5 cm (H), rated input voltage: DC3.7 V rechargeable Li-ion or DC5V charging from adapter.

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Adapter information: Model: TPA-250505CU

Input: AC100-240V, 50/60Hz, 0.2A

Output: DC 5.0V, 0.5A

* All measurement and test data in this report was gathered from production sample serial number: 141208003 (Assigned by BACL. Dongguan). The EUT was received on 2014-12-09.

Objective

This report is prepared on behalf of *Global Distribution FZE* in accordance with Part 2-Subpart J, Part 22-Subpart H, and Part 24-Subpart E of the Federal Communications Commission's rules.

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

Related Submittal(s)/Grant(s)

FCC Part 15B JBP submissions with FCC ID: 2ADPL-I121. FCC Part15C DSS submissions with FCC ID: 2ADPL-I121.

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part 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-2010, ANSI C63.4-2003.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp.(Dongguan).

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Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

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Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications 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 February 02, 2012. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

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SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to TIA/EIA-603-D-2010.

The test items were performed with the EUT operating at testing mode.

Equipment Modifications

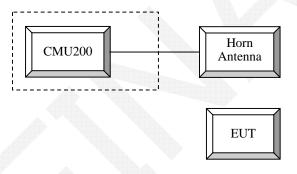
No modification was made to the EUT.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R & S	Universal Radio Communication Tester	CMU200	109038

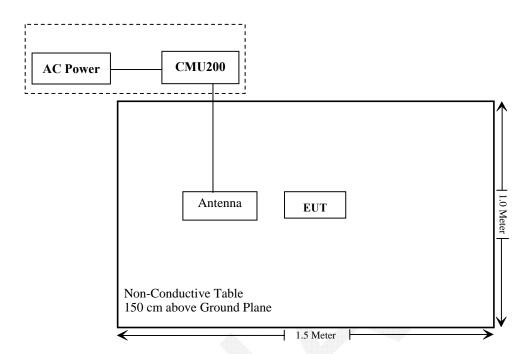
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Configuration of Test Setup



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Block Diagram of Test Setup



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SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310, §2.1093	RF Exposure	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

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FCC §1.1310 & §2.1093- RF EXPOSURE

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Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliant, please refer to the SAR report: RDG141208003-20.

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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.

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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.

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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

GSM

Menu select > GSM Mobile Station > GSM 850/1900 Function:

Press Connection control to choose the different menus

Press RESET > choose all the reset all settings

Connection Press Signal Off to turn off the signal and change settings

Network Support > GSM + only

MS Signal

> 33 dBm for GSM 850 > 30 dBm for GSM 1900

BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel

Frequency Offset > +0 Hz

Mode > BCCH and TCH

BCCH Level > -85 dBm (May need to adjust if link is not stabe)

choose desire test channel [Enter the same channel number for TCH channel (test BCCH Channel >

channel) and BCCH channel] Channel Type > Off 4 dBP0 >

TCH > choose desired test channel

Hopping >

AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input Connection

Press Signal on to turn on the signal and change settings

GPRS

Menu select > GSM Mobile Station > GSM 850/1900 Function:

Press Connection control to choose the different menus

Press RESET > choose all the reset all settings

Press Signal Off to turn off the signal and change settings Connection

Network Support > GSM + GPRS or GSM + EGSM

Main Service > Packet Data

Service selection > Test Mode A – Auto Slot Config. off

MS Signal Press Slot Config Bottom on the right twice to select and change the number of time slots and power setting

> Slot configuration > Uplink/Gamma

> 33 dBm for GPRS 850 > 30 dBm for GPRS 1900

Enter the same channel number for TCH channel (test channel) and BCCH channel BS Signal

Frequency Offset > +0 Hz

Mode > BCCH and TCH

BCCH Level > -85 dBm (May need to adjust if link is not stabe)

BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test

channel) and BCCH channel]

FCC Part 22H/24E Page 11 of 31 Channel Type > Off P0 > 4 dB

Slot Config > Unchanged (if already set under MS signal)

TCH > choose desired test channel

Hopping > Of: Main Timeslot > 3

Network Coding Scheme > CS4 (GPRS)

Bit Stream > 2E9-1 PSR Bit Stream

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AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input

Connection Press Signal on to turn on the signal and change settings

Radiated method:

ANSI/TIA 603-D section 2.2.17

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2014-05-09	2015-05-09
Sunol Sciences	Antenna	JB3	A060611-3	2014-07-28	2017-07-27
HP	Amplifier	8447E	2434A02181	2014-09-01	2015-09-01
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09
ETS LINDGREN	Horn Antenna	3115	000 527 35	2012-09-06	2015-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2014-02-19	2015-02-19
Giga	Signal Generator	1026	320408	2014-05-09	2015-05-09
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
TDK RF	Horn Antenna	HRN-0118	130 084	2012-09-06	2015-09-06

^{*} Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24.4 °C
Relative Humidity:	49 %
ATM Pressure:	101.4 kPa

The testing was performed by Dean Liu on 2014-12-10.

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Conducted Power

Cellular Band (Part 22H) & PCS Band (Part 24E)

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	Channel	Peak Output Power (dBm)					
Band Channel No.		GSM	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot	
	128	33.32	33.26	32.64	30.61	29.69	
Cellular	190	33.18	33.17	31.90	30.00	28.51	
	251	33.42	33.38	32.24	30.34	29.22	
	512	28.64	28.64	28.33	26.37	25.63	
PCS	661	28.26	28.28	27.93	25.74	24.91	
	810	28.19	28.20	27.77	25.53	24.37	

ERP & EIRP

GSM:

			~	1 111 1 115		Woodsorbook	Anthropostas,	
		D	Substituted Method		Absolute			
Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Level (dBm)	Limit (dBm)	Margin (dB)
Cellular band								
824.200	V	104.84	32.9	0.0	1.0	31.9	38.45	6.6
836.600	V	103.68	31.9	0.0	1.0	30.9	38.45	7.6
848.800	V	102.74	31.1	0.0	1.0	30.1	38.45	8.4
				PCS band				
1850.200	V	89.53	17.6	11.4	1.4	27.6	33.0	5.4
1880.000	V	87.84	16.4	11.7	1.4	26.7	33.0	6.3
1909.800	V	87.14	16.1	11.8	1.4	26.5	33.0	6.5

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

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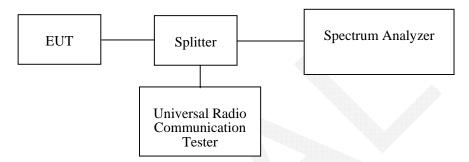
Applicable Standard

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 26 dB & 99% bandwidth was recorded.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09

^{*} Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22.6 °C
Relative Humidity:	37 %
ATM Pressure:	102.2 kPa

The testing was performed by Dean Liu on 2014-12-12.

Test Mode: Transmitting

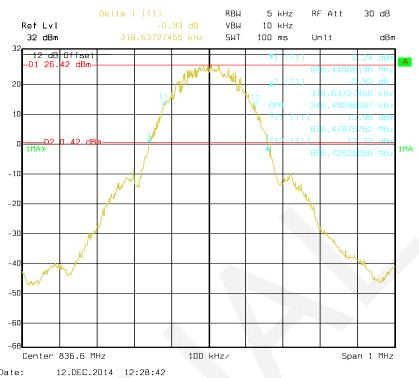
Test Result: Compliant. Please refer to the following table and plots.

Band	Channel No.	Mode	99% Occupied Bandwidth	26 dB Occupied Bandwidth
			kHz	kHz
Cellular	190	GSM	246.49	318.63
PCS	661	GSM	244.48	317.63

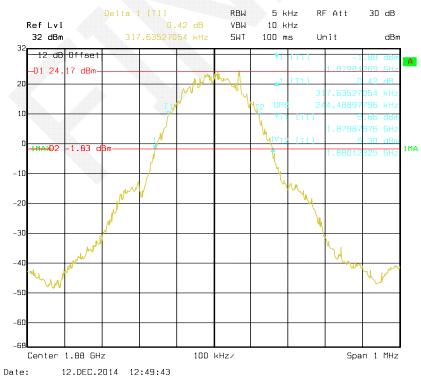
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GMSK Cellular Band

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GMSK PCS Band



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

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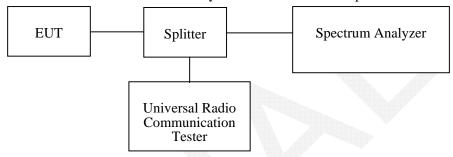
Applicable Standard

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. 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
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09

^{*} Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22.6 °C
Relative Humidity:	37 %
ATM Pressure:	102.2 kPa

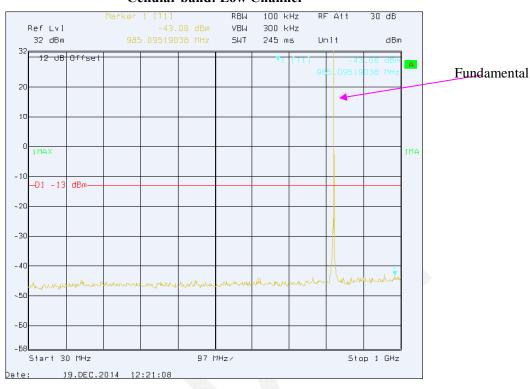
The testing was performed by Dean Liu on 2014-12-19.

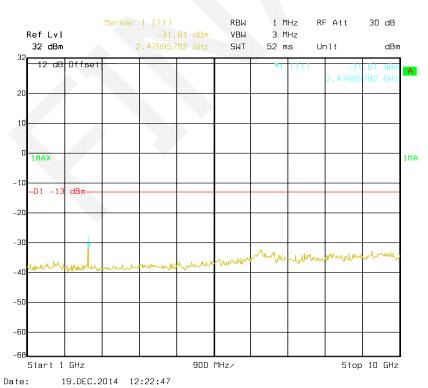
Please refer to the following plots.

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Cellular band: Low Channel

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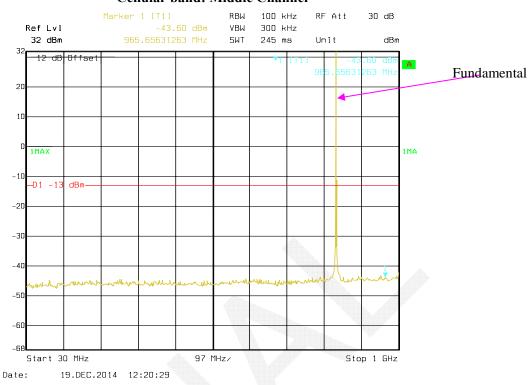


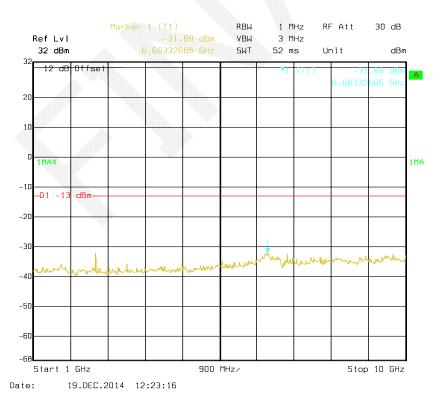


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Cellular band: Middle Channel

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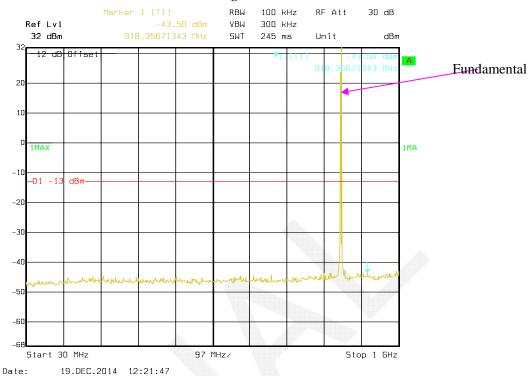


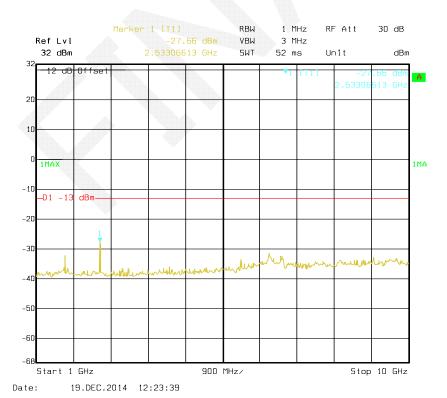


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Cellular band: High Channel

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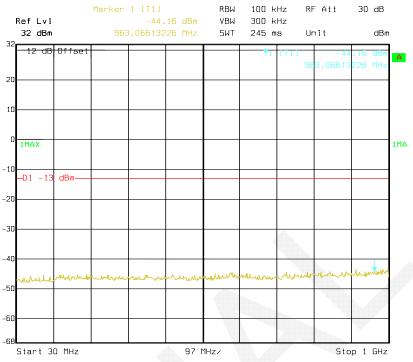




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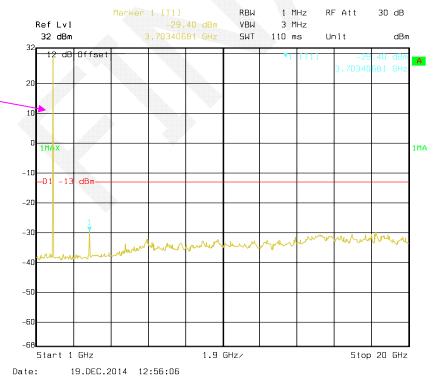
PCS band: Low Channel

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Date: 19.DEC.2014 12:53:02

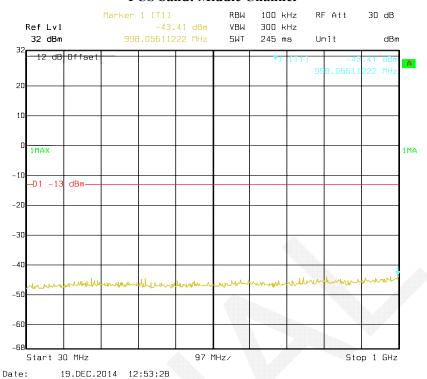




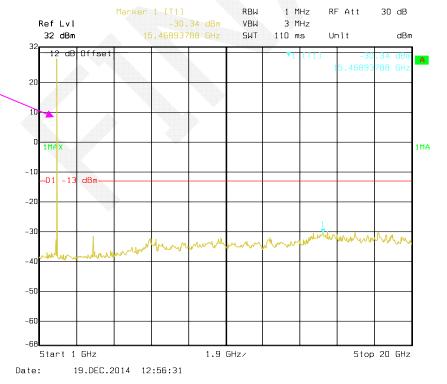
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PCS band: Middle Channel

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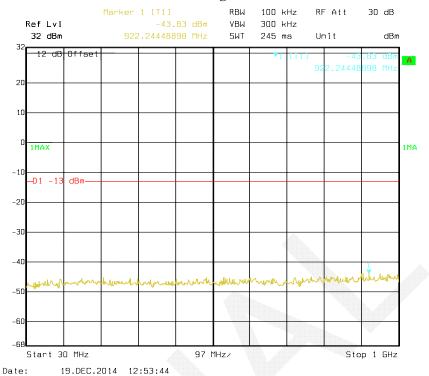
Fundamental



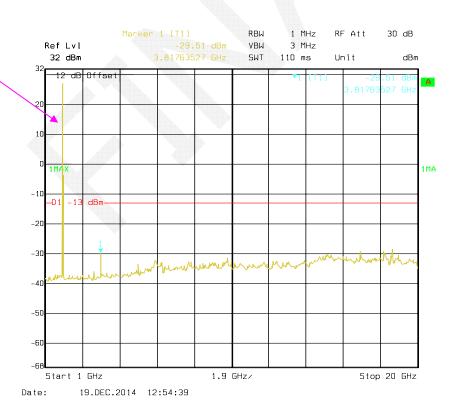
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PCS band: High Channel

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Fundamental



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

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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 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

		Violation.	The state of the s		
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2014-05-09	2015-05-09
Sunol Sciences	Antenna	JB3	A060611-3	2014-07-28	2017-07-27
HP	Amplifier	8447E	2434A02181	2014-09-01	2015-09-01
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09
ETS LINDGREN	Horn Antenna	3115	000 527 35	2012-09-06	2015-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2014-02-19	2015-02-19
Giga	Signal Generator	1026	320408	2014-05-09	2015-05-09
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
TDK RF	Horn Antenna	HRN-0118	130 084	2012-09-06	2015-09-06

^{*} Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

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Test Data

Environmental Conditions

Temperature:	24.4 °C
Relative Humidity:	49 %
ATM Pressure:	101.4 kPa

The testing was performed by Dean Liu on 2014-12.10

EUT Operation Mode: Transmitting (worst-case)

GSMK 850 (Cellular Band)

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Frequency	Polar	S.A Reading	S.G. Level	Antenna Gain	Cable Loss	Absolute Level	Limit	Margin
MHz	H/V	dΒμV	dBm	dBd/dBi	dB	dBm	dBm	dB
				Middle Cha	nnel			
1673.200	Н	69.31	-31.8	10.6	1.5	-22.7	-13.0	9.7
1673.200	V	76.78	-24.6	10.6	1.5	-15.5	-13.0	2.5
2509.800	Н	66.19	-31.8	13.1	2.8	-21.5	-13.0	8.5
2509.800	V	67.72	-29.4	13.1	2.8	-19.1	-13.0	6.1
3346.400	Н	52.14	-45.3	13.8	1.7	-33.2	-13.0	20.2
3346.400	V	52.40	-44.7	13.8	1.7	-32.6	-13.0	19.6

GSMK 1900 (PCS Band)

Frequency	Polar	S.A Reading	S.G. Level	Antenna Gain	Cable Loss	Absolute Level	Limit	Margin
MHz	H/V	dΒμV	dBm	dBd/dBi	dB	dBm	dBm	dB
High Channel								
3819.600	Н	65.17	-28.6	13.6	3.3	-18.3	-13.0	5.3
3819.600	V	57.33	-34.8	13.6	3.3	-24.5	-13.0	11.5
5729.400	Н	56.32	-35.6	13.9	2.4	-24.1	-13.0	11.1
5729.400	V	52.40	-39.3	13.9	2.4	-27.8	-13.0	14.8
7639.200	Н	47.48	-40	13.3	3.2	-29.9	-13.0	16.9
7639.200	V	45.73	-41.8	13.3	3.2	-31.7	-13.0	18.7

Note

- 1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
- 2) Absolute Level = SG Level Cable loss + Antenna Gain
- 3) Margin = Limit-Absolute Level
- 4) For below 1GHz, all spurious emissions are 20 dB below the limit or are on the system noise floor level.

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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.

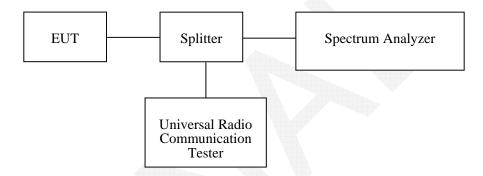
Report No.: RDG141208003-00C

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
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09

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

Test Data

Environmental Conditions

Temperature:	22.6 °C
Relative Humidity:	37 %
ATM Pressure:	102.2 kPa

The testing was performed by Dean Liu on 2014-12-19

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Test Mode: Transmitting

Test Result: Compliant. Please refer to the following table and plots.

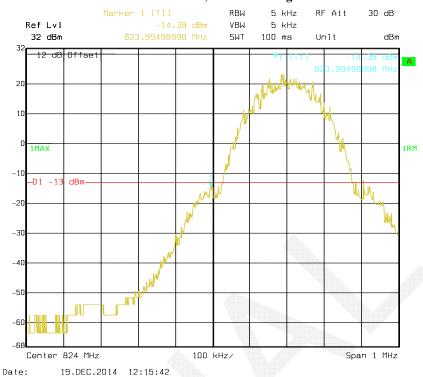
Band	Mode	Channel	Reading	Limit
Danu	Mode	No.	dBm	dBm
Cellular	GSM	Left	-14.38	-13
Centulai	OSM	Right	-14.59	-13
DCC	CCM	Left	-15.50	-13
PCS	GSM	Right	-17.00	-13

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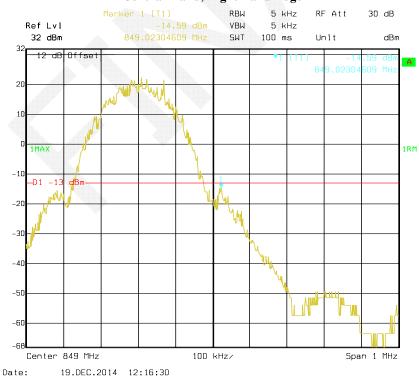
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Cellular Band, Left Band Edge

Report No.: RDG141208003-00C



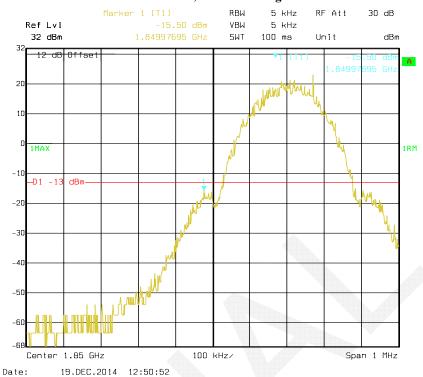
Cellular Band, Right Band Edge



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PCS band, Left Band Edge

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PCS band, Right Band Edge



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

Applicable Standard

FCC § 2.1055 (a), § 2.1055 (d), §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 Tolerance for Transmitters in the Public M	obile Services

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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

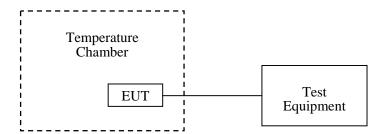
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set from 85% 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.



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Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Dongzhixu	High Temperature Test Chamber	DP1000	201105083-3	2014-08-01	2015-08-01
R&S	Universal Radio Communication Tester	CMU200	109 038	2014-05-09	2015-05-09

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Test Data

Environmental Conditions

Temperature:	27.5 °C
Relative Humidity:	52 %
ATM Pressure:	101 kPa

The testing was performed by Dean Liu on 2014-12-12.

Cellular Band (Part 22H)

GMSK, Middle Channel, f _c = 836.6 MHz					
Temperature	Voltage	Frequency Error	Frequency Error	Limit	
c	V_{DC}	Hz	ppm	ppm	
-30	3.7	-9	-0.011	2.5	
-20	3.7	-8	-0.010	2.5	
-10	3.7	-9	-0.011	2.5	
0	3.7	-7	-0.008	2.5	
10	3.7	-7	-0.008	2.5	
20	3.7	-10	-0.012	2.5	
30	3.7	-11	-0.013	2.5	
40	3.7	-9	-0.011	2.5	
50	3.7	-8	-0.010	2.5	
25	3.6	-5	-0.006	2.5	
25	4.2	-11	-0.013	2.5	

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^{*} Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

PCS Band (Part 24E)

GMSK, Middle Channel, f _c = 1880.0 MHz					
Temperature	Voltage	Frequency Error	Frequency Error	Result	
℃	V_{DC}	Hz	ppm		
-30	3.7	-29	-0.015	Pass	
-20	3.7	-25	-0.013	Pass	
-10	3.7	-32	-0.017	Pass	
0	3.7	-32	-0.017	Pass	
10	3.7	-29	-0.015	Pass	
20	3.7	-41	-0.022	Pass	
30	3.7	-40	-0.021	Pass	
40	3.7	-33	-0.018	Pass	
50	3.7	-25	-0.013	Pass	
25	3.6	-21	-0.011	Pass	
25	4.2	-41	-0.022	Pass	

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**** END OF REPORT ****

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