

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

For

# **Interglobe Connection Corp**

8228 NW 30th Terrace, Doral, Florida, United States

FCC ID: 2AC7ISOLEF450N

Report Type: Product Name:
Original Report Mobile Phone

**Report Number:** RDG170901004 -00C

**Report Date:** 2017-10-09

Jerry Zhang

**Reviewed By:** EMC Manager

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**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.(Dongguan).

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#### **GENERAL INFORMATION**

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

The *Interglobe Connection Corp*'s product, model number: F450 ( $FCC\ ID: 2AC7ISOLEF450N$ ) (the "EUT") in this report was a *Mobile Phone*, which was measured approximately:  $10.6\ cm\ (L)\ x\ 5.1\ cm\ (W)\ x\ 1.7\ cm\ (H)$ , rated input voltage: DC3.7V from Li-on Battery or DC 5.0V from adapter.

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Adapter Information: INPUT:AC100-240~50/60Hz OUTPUT:DC5.0V,500mA

\*All measurement and test data in this report was gathered from production sample serial number: 170901004 (Assigned by BACL, Dongguan). The EUT was received on 2017-09-04.

#### **Objective**

This report is prepared on behalf of *Interglobe Connection Corp* 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: 2AC7ISOLEF450N. FCC Part 15C DSS submissions with FCC ID: 2AC7ISOLEF450N.

#### **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, Part 22 Subpart H, Part 24 Subpart E.

Applicable Standards: TIA/EIA 603-D-2010.

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

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#### **Measurement Uncertainty**

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Unwanted Emissions, radiated	30MHz ~ 1GHz:5.85 dB 1G~26.5GHz: 5.23 dB
Unwanted Emissions, conducted	±1.5 dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%

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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 Industry Area, Tangxia, Dongguan, Guangdong, China

Bay Area Compliance Laboratories Corp. (Dongguan) has been accredited to ISO 17025 by CNAS(Lab code: L5662). And accredited to ISO 17025 by NVLAP(Test Laboratory Accreditation Certificate Number 500069-0), the FCC Designation No. CN5002 under the KDB 974614 D01.

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.

Bay Area Compliance Laboratories Corp. (Dongguan) was registered with ISED Canada under ISED Canada Registration Number 3062D.

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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**

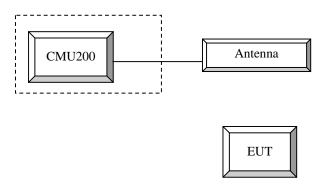
No modification was made to the EUT.

## **Support Equipment List and Details**

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

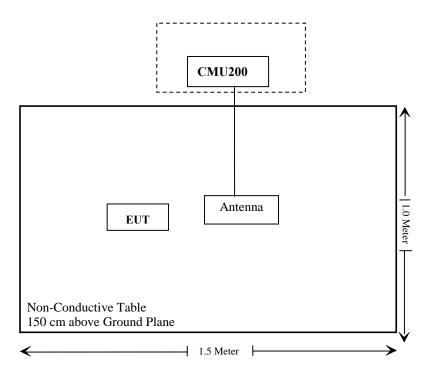
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#### **Configuration of Test Setup**



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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: RDG170901004 -20.

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# 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.

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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..

According to §24.232 (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**

#### GSM/GPRS

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

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 + 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

> 27 dBm for EGPRS 850

> 26 dBm for EGPRS 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 stable)

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

channel) and BCCH channel]

Channel Type > Off

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P0 > 4 dB

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

TCH > choose desired test channel

Hopping > Off Main Timeslot > 3

Network Coding Scheme > CS4 (GPRS)

Bit Stream > 2E9-1 PSR Bit Stream

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

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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	2017-09-01	2018-09-01
Sunol Sciences	Antenna	JB3	A060611-1	2014-11-06	2017-11-05
R&S	Spectrum Analyzer	E4440A	SG43360054	2016-12-08	2017-12-08
ETS LINDGREN	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
HP	Signal Generator	1026	320408	2016-12-08	2017-12-08
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
TDK RF	Horn Antenna	HRN-0118	130 084	2016-01-05	2019-01-04
Unknown	Coaxial Cable	Chamber A-1	4m	2017-09-05	2018-09-05
Unknown	Coaxial Cable	Chamber B-1	0.75m	2017-09-05	2018-09-05
Unknown	Coaxial Cable	Chamber A-2	10m	2017-09-05	2018-09-05
Unknown	Coaxial Cable	Chamber B-2	8m	2017-09-05	2018-09-05
Unknown	Coaxial Cable	0.1m	C-1	Each Time	/
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2017-05-06	2018-05-06
R&S	Universal Radio Communication Tester	CMU200	109 038	2017-07-18	2018-07-18

<sup>\*</sup> **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:	28.9 °C
Relative Humidity:	60 %
ATM Pressure:	100.4 kPa

The testing was performed by Steven Zuo on 2017-09-25.

#### **Conducted Output Power**

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

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	Channal	(	Conducted P	eak Output P	Power (dBm)	)
Band	Channel No.	GSM	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot
	128	31.51	31.41	29.77	28.15	25.74
Cellular	190	31.32	31.27	29.79	28.07	25.79
	251	31.24	31.30	29.88	28.09	25.93
	512	28.97	28.81	26.46	25.65	23.59
PCS	661	28.86	28.76	26.42	25.29	23.41
	810	28.79	28.71	26.36	25.39	23.53

#### **ERP & EIRP**

#### Part 22H

		D:	Substituted Method			Abaaluta			
Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)	
	GSM 850 Middle Channel								
836.600	Н	88.53	20.6	0.0	0.5	20.1	38.5	18.4	
836.600	V	93.39	28.5	0.0	0.5	28.0	38.5	10.5	

#### Part 24E

		ъ .	Substituted Method			A11.4.			
Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)	
	PCS 1900 Middle Channel								
1880.000	Н	90.79	18.2	11.7	2.7	27.2	33.0	5.8	
1880.000	V	85.57	13.1	11.7	2.7	22.1	33.0	10.9	

#### 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 = Substituted Level Cable loss + Antenna Gain
- 3) Margin = Limit-Absolute Level

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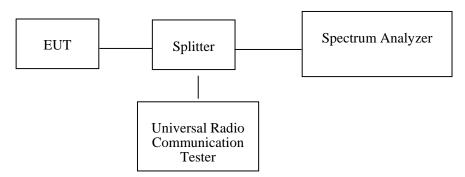
#### **Applicable Standard**

FCC §2.1049, §22.917 and §22.905, §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	831259/019	2017-7-18	2018-7-18
R&S	Universal Radio Communication Tester	CMU200	109 038	2017-07-18	2018-07-18
Unknown	Coaxial Cable	0.1m	C-1	Each Time	/
E-Microwave	DC Blocking	EMDCB- 00036	0E01201047	Each Time	/
Pasternack	RF Coaxial Cable	0.5m	C-5	Each Time	/
E-Microwave	Two-way Spliter	ODP-1-6-2S	OE0120142	Each Time	/
Unknown	RF Attenuator	6dB	6dB-2	Each Time	/

<sup>\*</sup> 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:	29.3°C
Relative Humidity:	63 %
ATM Pressure:	100.4 kPa

The testing was performed by Swim Lv on 2017-09-28.

Test Mode: Transmitting

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

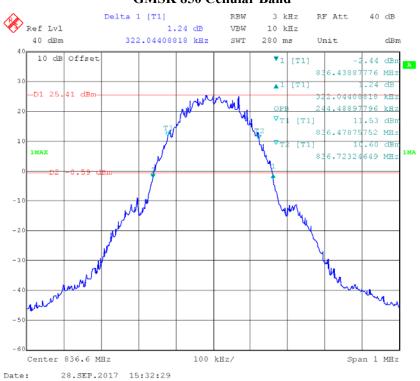
Band	Test Channel	Mode	99% Occupied Bandwidth (kHz)	26 dB Occupied Bandwidth (kHz)
Cellular	М	GSM	244	322
PCS	M	PCS	244	312

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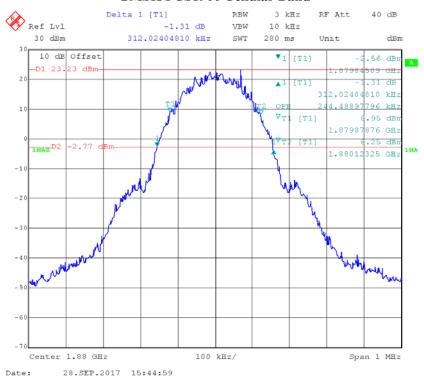
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#### **GMSK 850 Cellular Band**

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#### **GMSK PCS1900 Cellular Band**



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

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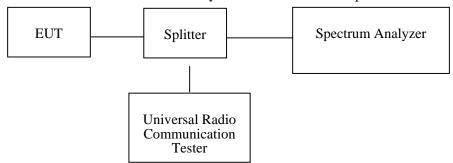
#### **Applicable Standard**

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 10<sup>th</sup> harmonic.



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

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	831259/019	2017-7-18	2018-7-18
R&S	Universal Radio Communication Tester	unication CMU200 109 038 2		2017-07-18	2018-07-18
Unknown	Coaxial Cable	0.1m	C-1	Each Time	/
E-Microwave	DC Blocking	EMDCB- 00036	0E01201047	Each Time	/
Pasternack	RF Coaxial Cable	0.5m	C-5	Each Time	/
E-Microwave	Two-way Spliter	ODP-1-6-2S	OE0120142	Each Time	/
Unknown	RF Attenuator	6dB	6dB-2	Each Time	/

<sup>\*</sup> 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:	29.3°C		
Relative Humidity:	63 %		
ATM Pressure:	100.4 kPa		

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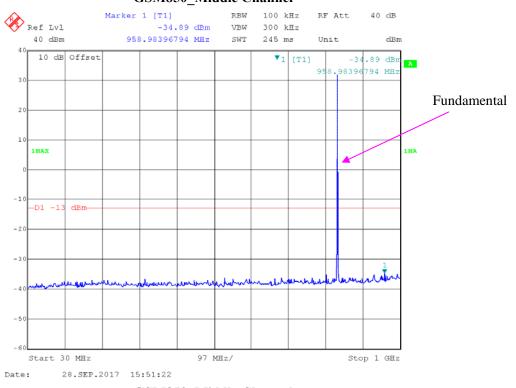
The testing was performed by Swim Lv on 2017-09-28.

Please refer to the following plots.

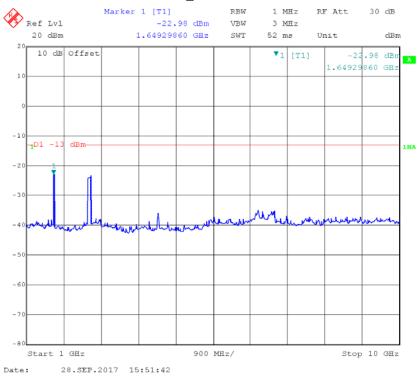
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# GSM850\_Middle Channel

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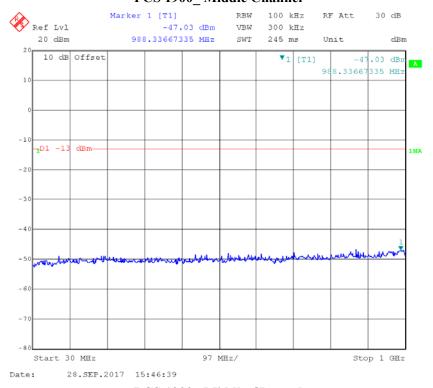
#### **GSM850\_Middle Channel**



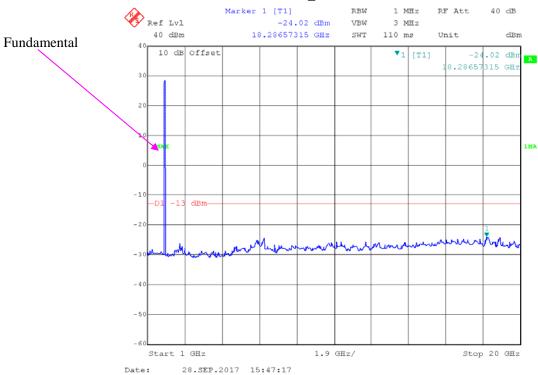
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# PCS 1900\_ Middle Channel

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#### PCS 1900\_ Middle Channel



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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)

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# **Test Equipment List and Details**

Manufacturer	Description	Model	Serial	Calibration	Calibration
	-		Number	Date	<b>Due Date</b>
R&S	EMI Test Receiver	ESCI	100224	2017-09-01	2018-09-01
Sunol Sciences	Antenna	JB3	A060611-1	2014-11-06	2017-11-05
HP	Amplifier	8447D	2727A05902	2017-09-05	2018-09-05
R&S	Spectrum Analyzer	E4440A	SG43360054	2016-12-08	2017-12-08
ETS LINDGREN	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
MITEQ	Amplifier	AFS42- 00101800-25- S-42	2001271	2017-09-05	2018-09-05
Quinstar	Amplifier	QLW- 18405536-JO	15964001001	2017-06-27	2018-06-27
HP	Signal Generator	1026	320408	2016-12-08	2017-12-08
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
TDK RF	Horn Antenna	HRN-0118	130 084	2016-01-05	2019-01-04
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-02 1304	2017-06-16	2020-06-15
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-01 1304	2016-11-18	2019-11-18
Unknown	Coaxial Cable	Chamber A-1	4m	2017-09-05	2018-09-05
Unknown	Coaxial Cable	Chamber B-1	0.75m	2017-09-05	2018-09-05
Unknown	Coaxial Cable	Chamber A-2	10m	2017-09-05	2018-09-05
Unknown	Coaxial Cable	Chamber B-2	8m	2017-09-05	2018-09-05

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#### **Test Data**

#### **Environmental Conditions**

Temperature:	28.4°C
Relative Humidity:	48 %
ATM Pressure:	100.4 kPa

<sup>\*</sup> The testing was performed by Tony Zeng on 2017-09-25.

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<sup>\*</sup> 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).

EUT Operation Mode: Transmitting

#### Cellular Band (PART 22H)

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#### 30 MHz-10 GHz:

		D	Su	bstituted Met	hod	Alexalesta		
Frequency (MHz)	' ' Reading	Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)	
			GSM850, Fre	equency:836.6	00 MHz			
1673.200	Н	52.51	-61.7	10.6	0.7	-51.8	-13.0	38.8
1673.200	V	62.15	-52.7	10.6	0.7	-42.8	-13.0	29.8
2509.800	Н	53.79	-59.2	13.1	1.2	-47.3	-13.0	34.3
2509.800	V	65.39	-47.7	13.1	1.2	-35.8	-13.0	22.8
3346.400	Н	60.63	-50	13.8	1.6	-37.8	-13.0	24.8
3346.400	V	63.89	-46.8	13.8	1.6	-34.6	-13.0	21.6
3525.000	Н	45.36	-64.8	13.9	1.6	-52.5	-13.0	39.5
3525.000	V	45.58	-64.5	13.9	1.6	-52.2	-13.0	39.2
239.520	Н	38.41	-40.6	0.0	0.3	-40.9	-13.0	27.9
231.760	V	39.77	-35.8	0.0	0.2	-36.0	-13.0	23.0

#### PCS Band (PART 24E)

#### 30 MHz-20 GHz:

		D	Su	bstituted Met	hod	Absolute	Limit (dBm)	Margin (dB)
Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Level (dBm)		
	GSM1900, Frequency:1880.000 MHz							
3760.000	Н	51.52	-57.3	13.8	1.6	-45.1	-13.0	32.1
3760.000	V	52.57	-56.1	13.8	1.6	-43.9	-13.0	30.9
5640.000	Н	54.59	-51.4	14.0	1.3	-38.7	-13.0	25.7
5640.000	V	57.62	-48.3	14.0	1.3	-35.6	-13.0	22.6
4629.000	Н	45.61	-62.9	14.3	1.8	-50.4	-13.0	37.4
4629.000	V	45.38	-63.2	14.3	1.8	-50.7	-13.0	37.7
404.420	Н	39.88	-36.4	0.0	0.4	-36.8	-13.0	23.8
421.880	V	39.56	-33.7	0.0	0.4	-34.1	-13.0	21.1

#### 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 = Substituted Level Cable loss + Antenna Gain
- 3) Margin = Limit-Absolute 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.

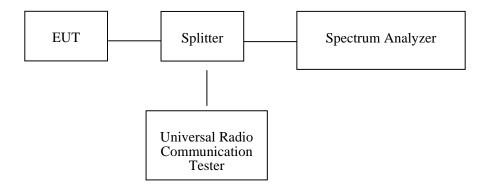
Report No.: RDG170901004 -00C

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.



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

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	831259/019	2017-7-18	2018-7-18
R&S	Universal Radio Communication Tester	CMU200	109 038	2017-07-18	2018-07-18
Unknown	Coaxial Cable	0.1m	C-1	Each Time	/
E-Microwave	DC Blocking	EMDCB- 00036	0E01201047	Each Time	/
Pasternack	RF Coaxial Cable	0.5m	C-5	Each Time	/
E-Microwave	Two-way Spliter	ODP-1-6-2S	OE0120142	Each Time	/
Unknown	RF Attenuator	6dB	6dB-2	Each Time	/

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#### **Test Data**

#### **Environmental Conditions**

Temperature:	29.3°C		
Relative Humidity:	63 %		
ATM Pressure:	100.4 kPa		

The testing was performed by Swim Lv on 2017-09-28.

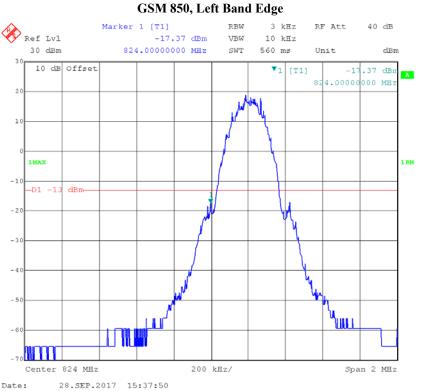
Test Mode: Transmitting

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

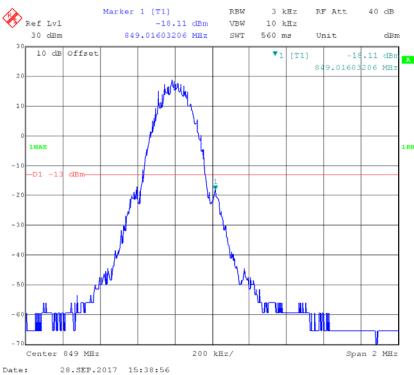
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<sup>\*</sup> **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

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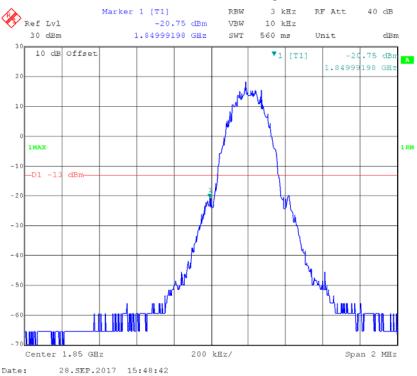
#### **GSM 850, Right Band Edge**



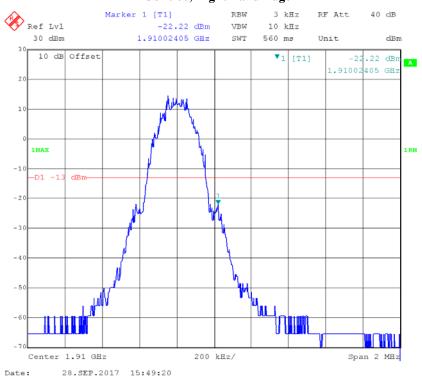
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#### PCS 1900, Left Band Edge



#### PCS 1900, 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	or Transmitt	ers in the	Public N	Mobile Services
I I C q a C I I C ,	I OTOTALICO I	or reministra	CID III CIIC	I GOILE I	TOOLIG DOL TICOD

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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

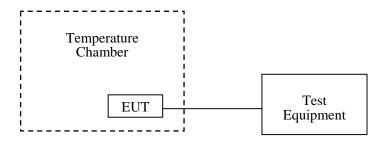
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

#### **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	201105083-4	2017-09-10	2018-09-10
R&S	Universal Radio Communication Tester	CMU200	109 038	2017-07-18	2018-07-18
Pro instrument	DC Power Supply	pps3300	N/A	N/A	N/A
UNI-T	Multimeter	UT39A	M130199938	2017-04-02	2018-04-02
Unknown	Coaxial Cable	0.1m	C-1	Each Time	/
Unknown	RF Attenuator	6dB	6dB-2	Each Time	/

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#### **Test Data**

#### **Environmental Conditions**

Temperature:	29.3 °C
Relative Humidity:	63 %
ATM Pressure:	100.4 kPa

The testing was performed by Swim Lv on 2017-09-28

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<sup>\*</sup> **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).

# Cellular Band (Part 22H)

GMSK, Middle Channel, f <sub>c</sub> = 836.6 MHz						
Temperature	Voltage	Frequency Error	Frequency Error	Limit		
${\mathbb C}$	$V_{DC}$	Hz	ppm	ppm		
-30		-9	-0.011			
-20		-2	-0.002			
-10		-14	-0.017			
0		1	0.001			
10	3.7	-18	-0.022			
20		-5	-0.006	2.5		
30		1	0.001			
40		-1	-0.001			
50		-2	-0.002			
25	3.5	-13	-0.016			
25	4.2	-8	-0.010			

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## PCS Band (Part 24E)

GMSK, Middle Channel, f <sub>c</sub> = 1880.0 MHz						
Temperature	Voltage	Frequency Error	Frequency Error	Result		
°C	V <sub>DC</sub>	Hz	ppm			
-30		-12	-0.006			
-20	3.7	-7	-0.004			
-10		-8	-0.004			
0		-20	-0.011			
10		-11	-0.006			
20		-18	-0.010	Compliance		
30		-14	-0.007			
40		-7	-0.004			
50		-19	-0.010			
25	3.5	-16	-0.009			
25	4.2	-10	-0.005			

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

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