



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

For

## **Interglobe Connection Corp**

8228 NW 30th Terrace, Doral, Florida, United States, 33122

FCC ID: 2AC7ISOLEB240N

Report Type:
Original Report

Product Type:
Mobile Phone

Report Number: RDG181211005-00C

**Report Date:** 2019-01-14

Jerry Zhang

**Reviewed By:** EMC Manager

**Test Laboratory:** Bay Area Compliance Laboratories Corp. (Dongguan)

No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China

Jerry Zhang

Tel: +86-769-86858888 Fax: +86-769-86858891 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. (Dongguan). This report must not be used by the customer to claim product certification, approval, or endorsement by A2LA\* or any agency of the Federal Government. \* This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "\*".

## TABLE OF CONTENTS

GENERAL INFORMATION	4
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
Objective	
RELATED SUBMITTAL(S)/GRANT(S)	
TEST METHODOLOGY	
TEST FACILITY	
SYSTEM TEST CONFIGURATION	
JUSTIFICATION	
CONFIGURATION OF TEST SETUP	
BLOCK DIAGRAM OF TEST SETUP	
SUMMARY OF TEST RESULTS	8
FCC §1.1310 & §2.1093- RF EXPOSURE	9
APPLICABLE STANDARD	
TEST RESULT	
FCC §2.1047 - MODULATION CHARACTERISTIC	10
FCC § 2.1046, § 22.913 (A) & § 24.232 (C) - RF OUTPUT POWER	11
APPLICABLE STANDARD	
TEST PROCEDURE	
TEST EQUIPMENT LIST AND DETAILS	
TEST DATA	
FCC §2.1049, §22.917, §22.905 & §24.238 - OCCUPIED BANDWIDTH	
APPLICABLE STANDARD	
TEST PROCEDURE	
TEST EQUIPMENT LIST AND DETAILS	
FCC §2.1051, §22.917(A) & §24.238(A) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS	
APPLICABLE STANDARD	
TEST PROCEDURE	
TEST EQUIPMENT LIST AND DETAILS	
TEST DATA	
FCC §2.1053, §22.917 & §24.238 - SPURIOUS RADIATED EMISSIONS	21
APPLICABLE STANDARD	
TEST PROCEDURE	
TEST EQUIPMENT LIST AND DETAILS	
TEST DATA	
FCC §22.917(A) & §24.238(A)- BAND EDGES	
APPLICABLE STANDARD	
TEST PROCEDURE	
TEST EQUIPMENT LIST AND DETAILS	
FCC §2.1055, §22.355 & §24.235 - FREQUENCY STABILITY	
APPLICABLE STANDARD	28

Test Procedure	28
TEST EQUIPMENT LIST AND DETAILS	29
Test Data	

#### **GENERAL INFORMATION**

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

	<b>EUT Name:</b>	Mobile Phone
EUT Model:		B240
R	ated Input Voltage:	DC3.7V from Battery or DC5V from adapter
	Trame Name:	SOLE
Adapter Information	Input:	100-240V, 50/60Hz
Information	Output:	DC5.0V, 500mA
E	xternal Dimension:	123mm(L)* 53mm(W)*14 mm(H)
Serial Number:		181211005
E	<b>EUT Received Date:</b>	2018.12.11

#### **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: 2AC7ISOLEB240N. FCC Part 15C DSS submissions with FCC ID: 2AC7ISOLEB240N.

#### **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.

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

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%		

#### **Test Facility**

e 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.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 897218, the FCC Designation No.: CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

## **SYSTEM TEST CONFIGURATION**

#### Justification

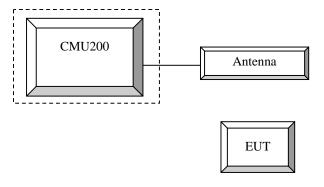
The EUT was configured for testing according to TIA/EIA-603-D 2010.

The test items were performed with the EUT operating at testing mode. The device supports GSM/GPRS 850 and 1900 Bands.

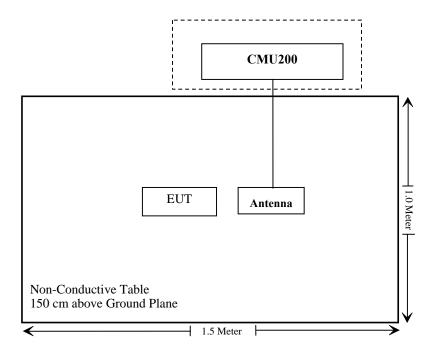
## **Equipment Modifications**

No modification was made to the EUT.

## **Configuration of Test Setup**



## **Block Diagram of Test Setup**



## **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)	Spurious Radiation Emissions	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

## FCC §1.1310 & §2.1093- RF EXPOSURE

## **Applicable Standard**

FCC§1.1310 and §2.1093.

#### **Test Result**

Compliance, please refer to the SAR report: RDG181211005-20.

Page 9 of 30

## 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.

Page 10 of 30

#### 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.

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/EGPRS

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 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) and MCS5 (EGPRS)

Bit Stream > 2E9-1 PSR Bit Stream

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

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100035	2018-08-03	2019-08-03
Sunol Sciences	Antenna	JB3	A060611-3	2017-07-21	2019-07-21
Agilent	Signal Generator	E8247C	MY43321350	2018-12-10	2019-12-10
Agilent	Spectrum Analyzer	E4440A	SG43360054	2018-01-04	2019-01-04
TDK RF	Horn Antenna	HRN-0118	130 084	2016-01-05	2019-01-04
ETS-Lindgren	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
R&S	Universal Radio Communication Tester	CMU200	110 822	2018-12-14	2019-12-14
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-02	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-2200-01	2018-09-05	2019-09-05
MICRO-COAX	Coaxial Cable	UFA147-1-2362- 100100	64639 231029- 001	2018-02-24	2019-02-28
EMCO	EMCO Adjustable Dipole Antenna		9109-753	Not Required	/
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	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).

#### **Test Data**

#### **Environmental Conditions**

Temperature:	19.8 °C		
Relative Humidity:	30 %		
ATM Pressure:	100.9 kPa		

<sup>\*</sup> The testing was performed by Vern Shen & Tyler Pan 2019-01-03.

Test Result: Compliance

#### **Conducted Output Power**

#### Cellular Band & PCS Band

Report No.: RDG181211005-00C

	Channel No.	Conducted Peak Output Power (dBm)						
Band		GSM	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot		
	128	32.10	32.05	30.54	29.30	27.83		
Cellular	190	32.10	32.05	30.51	29.34	27.96		
	251	32.00	31.96	30.46	29.35	27.94		
	512	29.90	30.21	28.52	27.42	25.36		
PCS	661	30.20	30.51	28.55	27.39	25.26		
	810	30.30	30.67	28.60	27.43	25.86		

#### **ERP & EIRP**

#### Part 22H

1 411 2211									
		Receiver Reading (dBµV)	Substituted Method			41 1 4			
Frequency (MHz)	Polar (H/V)		Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)	
	GSM 850 Middle Channel								
836.60	Н	91.39	16.47	0.00	0.97	15.50	38.45	22.95	
836.60	V	98.57	26.78	0.00	0.97	26.50	38.45	11.95	

#### Part 24E

-	I III ( M IL								
		Danie		Su	bstituted Met	thod	Absolute		
	Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Level (dBm)	Limit (dBm)	Margin (dB)
	PCS 1900 Middle Channel								
	1880.00	Н	82.75	7.97	11.14	1.56	17.55	33.00	15.45
	1880.00	V	91.16	16.19	11.14	1.56	26.71	33.00	6.29

#### 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

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

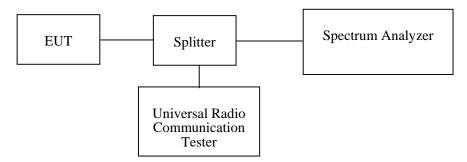
## **Applicable Standard**

FCC §2.1049, §22.917, §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	FSU 26	200256	2018-01-04	2019-01-04
E-Microwave	Two-way Spliter	ODP-1-6-2S	OE0120142	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
yzjingcheng	Coaxial Cable	KTRFBU- 141-50	41005011	Each time	N/A

<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).

#### **Test Data**

#### **Environmental Conditions**

Temperature:	24.7 °C
Relative Humidity:	36%
ATM Pressure:	100.5 kPa

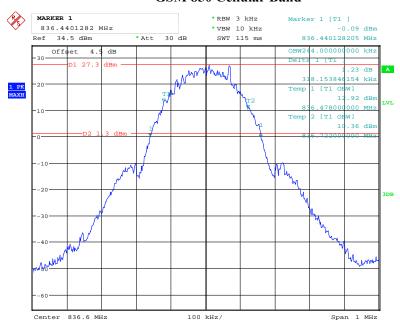
<sup>\*</sup> The testing was performed by Elena Lei on 2019-01-02.

Test Mode: Transmitting

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

Band	Test Channel	Mode	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
Cellular	М	GSM	0.244	0.318
PCS	M	PCS	0.244	0.315

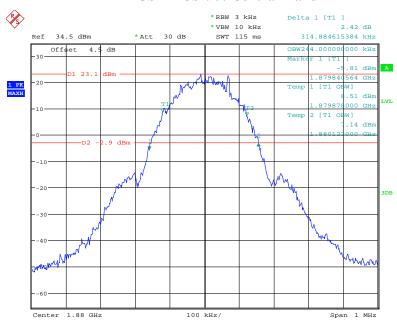
#### **GSM 850 Cellular Band**



Date: 2.JAN.2019 16:38:20

#### Report No.: RDG181211005-00C

#### **GSM PCS1900 Cellular Band**



Date: 2.JAN.2019 16:41:01

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

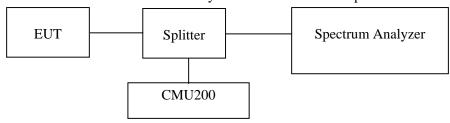
## **Applicable Standard**

FCC §2.1051, §22.917(a), §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	FSU 26	200256	2018-01-04	2019-01-04
E-Microwave	Two-way Spliter	ODP-1-6-2S	OE0120142	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
yzjingcheng	Coaxial Cable	KTRFBU- 141-50	41005011	Each time	N/A

<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).

#### **Test Data**

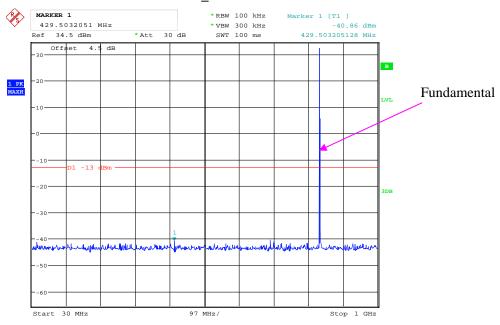
#### **Environmental Conditions**

Temperature:	24.7 °C
Relative Humidity:	36%
ATM Pressure:	100.5 kPa

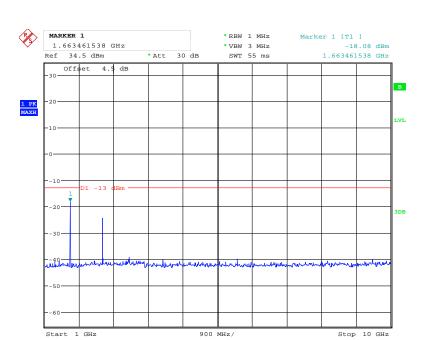
<sup>\*</sup> The testing was performed by Elena Lei on 2019-01-02.

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

## **GSM850\_Middle Channel**

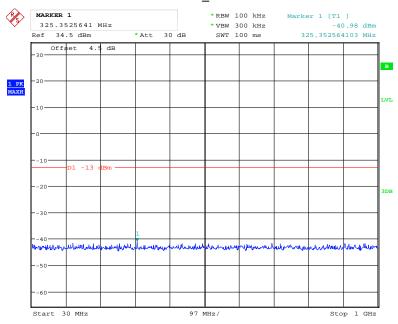


Date: 2.JAN.2019 16:34:16

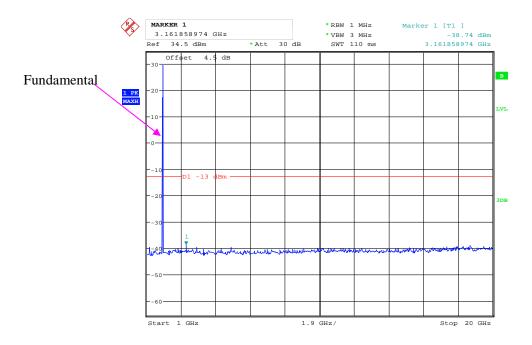


Date: 2.JAN.2019 16:35:10

#### PCS 1900\_ Middle Channel



Date: 2.JAN.2019 16:42:31



Date: 2.JAN.2019 16:41:51

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

#### **Applicable Standard**

FCC § 2.1053, §22.917, § 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**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2018-12-10	2019-12-10
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2018-05-06	2019-05-06
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2018-09-05	2019-09-05
HP	Amplifier	8447D	2727A05902	2018-09-05	2019-09-05
Sinoscite	Band-stop filter	BSF824-862MS- 1438-001	1438001	2018-06-16	2019-06-16
Agilent	Signal Generator	E8247C	MY43321350	2018-12-10	2019-12-10
R&S	Spectrum Analyzer	FSP 38	100478	2018-12-10	2019-12-10
TDK RF	Horn Antenna	HRN-0118	130 084	2016-01-05	2019-01-04
ETS-Lindgren	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
MICRO-COAX	Coaxial Cable	UFA147-1-2362- 100100	64639 231029- 001	2018-02-24	2019-02-28
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2018-09-05	2019-09-05
Sinoscite	Band-stop filter	BSF1850-1910MS- 0935V2	0935V2	2018-06-16	2019-06-16

<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).

#### **Test Data**

#### **Environmental Conditions**

Temperature:	19.8 °C	
Relative Humidity:	30 %	
ATM Pressure:	100.9 kPa	

<sup>\*</sup> The testing was performed by Vern Shen & Tyler Pan on 2019-01-03.

Test Result: Compliance.

EUT Operation Mode: Transmitting

#### Cellular Band (PART 22H)

Report No.: RDG181211005-00C

#### 30 MHz-10 GHz:

		D	Su	bstituted Met	hod	A11 4.	aluta	
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)
GSM850, Frequency:836.600 MHz								
1673.200	Н	58.21	-46.17	10.5	1.27	-36.9	-13.0	23.9
1673.200	V	60.74	-43.57	10.5	1.27	-34.3	-13.0	21.3
2509.800	Н	53.93	-48.84	12.2	1.25	-37.9	-13.0	24.9
2509.800	V	56.48	-47.68	12.2	1.25	-36.7	-13.0	23.7
3346.400	Н	50.10	-51.09	12.3	1.58	-40.4	-13.0	27.4
3346.400	V	43.15	-56.97	12.3	1.58	-46.3	-13.0	33.3
264.000	Н	48.22	-60.85	0.0	0.51	-61.4	-13.0	48.4
264.000	V	50.56	-61.35	0.0	0.51	-61.9	-13.0	48.9

#### PCS Band (PART 24E)

#### 30 MHz-20 GHz:

		D	Su	bstituted Met	hod	Albara lasta		
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)
GSM1900, Frequency:1880.000 MHz								
3760.000	Н	64.45	-35.76	12.3	1.53	-25.0	-13.0	12.0
3760.000	V	68.31	-31.6	12.3	1.53	-20.9	-13.0	7.9
5640.000	Н	57.57	-37.73	13.0	1.28	-26.0	-13.0	13.0
5640.000	V	62.34	-33.27	13.0	1.28	-21.6	-13.0	8.6
7520.000	Н	50.15	-41.37	12.8	1.33	-29.9	-13.0	16.9
7520.000	V	48.06	-44.15	12.8	1.33	-32.7	-13.0	19.7
379.200	Н	49.63	-55.98	0.0	0.59	-56.6	-13.0	43.6
379.200	V	51.26	-57.29	0.0	0.59	-57.9	-13.0	44.9

#### 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

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

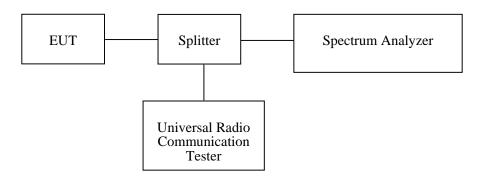
#### **Applicable Standard**

FCC § 2.1053, §22.917, § 24.238.

#### **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	FSU 26	200256	2018-01-04	2019-01-04
E-Microwave	Two-way Spliter	ODP-1-6-2S	OE0120142	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
yzjingcheng	Coaxial Cable	KTRFBU- 141-50	41005011	Each time	N/A

<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).

Page 24 of 30

#### **Test Data**

#### **Environmental Conditions**

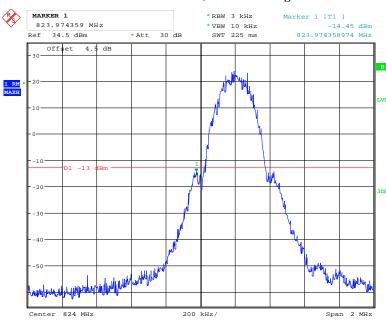
Temperature:	24.7 °C
Relative Humidity:	36%
ATM Pressure:	100.5 kPa

<sup>\*</sup> The testing was performed by Elena Lei on 2019-01-02.

Test Mode: Transmitting

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

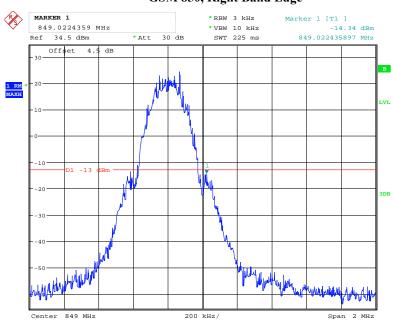
#### **GSM 850, Left Band Edge**



Date: 2.JAN.2019 16:28:44

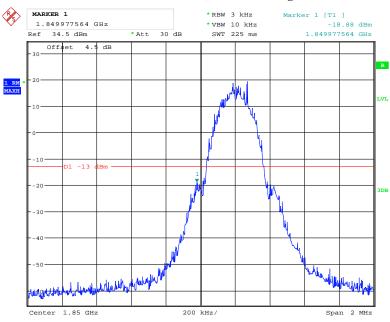
## GSM 850, Right Band Edge

Report No.: RDG181211005-00C



Date: 2.JAN.2019 16:29:19

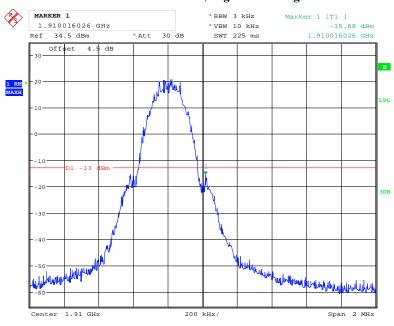
#### GSM 1900, Left Band Edge



Date: 2.JAN.2019 16:44:42

#### Report No.: RDG181211005-00C

## GSM 1900, Right Band Edge



Date: 2.JAN.2019 16:45:58

#### 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

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

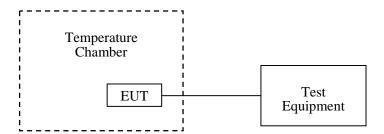
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

#### **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.



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

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Universal Radio Communication Tester	CMU200	106 891	2018-12-14	2019-12-14
ESPEC	Constant temperature and humidity Tester	ESX-4CA	018 463	2018-03-26	2019-03-26
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
UNI-T	Multimeter	UT39A	M130199938	2018-07-24	2019-07-24
Pro instrument	DC Power Supply	pps3300	3300012	N/A	N/A

<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).

#### **Test Data**

#### **Environmental Conditions**

Temperature:	24.7 °C		
Relative Humidity:	36%		
ATM Pressure:	100.5 kPa		

<sup>\*</sup> The testing was performed by Elena Lei on 2019-01-02.

Test Result: Compliance.

#### **Cellular Band**

GMSK, Middle Channel, f <sub>c</sub> = 836.6 MHz					
Temperature	Voltage	Frequency Error	Frequency Error	Limit	
°C	$V_{DC}$	Hz	ppm	ppm	
-30		8	0.00956		
-20		8	0.00956		
-10		3	0.00359		
0		2	0.00239		
10	3.7	-2	-0.00239		
20		12	0.01434	2.5	
30		7	0.00837		
40		12	0.01434		
50		7	0.00837		
20	3.5	-3	-0.00359		
20	4.2	-7	-0.00837		

#### **PCS Band**

GMSK, Middle Channel, f <sub>c</sub> = 1880.0 MHz					
Temperature	Voltage Frequency Error		Frequency Error Resul		
°C	V <sub>DC</sub>	Hz	ppm		
-30		8	0.00426		
-20		13	0.00691		
-10		15	0.00798		
0		20	0.01064		
10	3.7	23	0.01223		
20		23	0.01223	Pass	
30		20	0.01064		
40		26	0.01383		
50		30	0.01596		
20	3.5	15	0.00798		
20	4.2	7	0.00372		

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