

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

For

**Dynamics Hong Kong Limited**

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**FCC ID: C89PIXCELL3310**

<b>Report Type:</b> Original Report	<b>Product Type:</b> mobile phone
<b>Report Number:</b> RDG171208003-00C	
<b>Report Date:</b> 2017-12-27	
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## GENERAL INFORMATION

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

The *Dynamics Hong Kong Limited*'s product, model number: **CR3310** (**FCC ID: C89PIXCELL3310**) (the "EUT") in this report was a **mobile phone**, which was measured approximately: 11.9 cm (L) x 5.25 cm (W) x 1.35 cm (H), rated input voltage: DC3.7V from Battery or DC 5V from adapter.

#### *Adapter Information:*

*Model number:* CR 3310

*INPUT:* AC 100-240V, 50/60Hz

*OUTPUT:* DC 5V, 500mA

*Note: The series product, model ROCK10 are electrically identical, the difference between them is model name, we selected CR3310 for testing, the detail was explained in the attached declaration letter.*

*\*All measurement and test data in this report was gathered from production sample serial number: 171208003 (Assigned by BACL,Dongguan). The EUT was received on 2017-12-08.*

### Objective

This report is prepared on behalf of *Dynamics Hong Kong Limited* 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 15C DSS submissions with FCC ID: C89PIXCELL3310.

FCC Part 15B JBP submissions with FCC ID: C89PIXCELL3310.

### 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).

**Measurement Uncertainty**

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	$\pm 5\%$
RF output power, conducted	$\pm 0.61\text{dB}$
Unwanted Emissions, radiated	30MHz ~ 1GHz: 5.85 dB 1G~26.5GHz: 5.23 dB
Unwanted Emissions, conducted	$\pm 1.5\text{ dB}$
Temperature	$\pm 1^\circ\text{C}$
Humidity	$\pm 5\%$
DC and low frequency voltages	$\pm 0.4\%$
Duty Cycle	1%

**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/IEC 17025 by CNAS(Lab code: L5662). And accredited to ISO/IEC 17025 by A2LA(Test Laboratory Accreditation Certificate Number 4820.01), 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.: 477991. 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.

## 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.

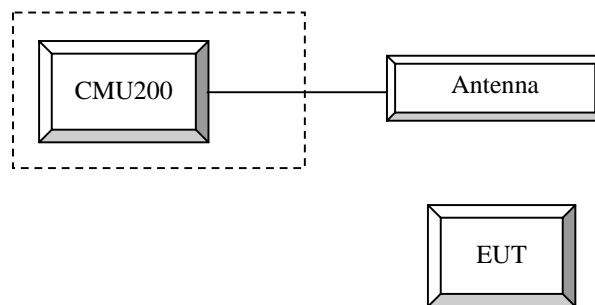
### Equipment Modifications

No modification was made to the EUT.

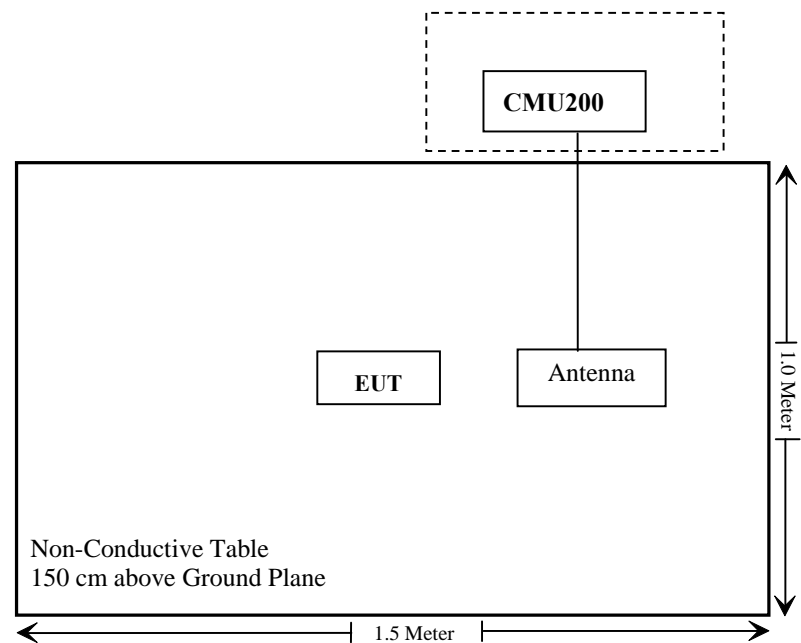
### Support Equipment List and Details

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

### 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)	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: RDG171208003-20.

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## **FCC §2.1047 - MODULATION CHARACTERISTIC**

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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**

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**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**

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

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)

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

*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	2017-11-10	2020-11-10
R&S	Spectrum Analyzer	FSU 26	200256	2017-12-8	2018-12-8
ETS LINDGREN	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
HP	Signal Generator	1026	320408	2017-12-14	2018-12-14
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
N/A	Coaxial Cable	C-NJNJ-50	C-0400-01	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-NJNJ-50	C-0075-01	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-NJNJ-50	C-1000-01	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-SJSJ-50	C-0800-01	2017-09-05	2018-09-05
Unknown	Coaxial Cable	C-SJ00-0010	C0010/02	Each Time	/
R&S	Universal Radio Communication Tester	CMU200	109 038	2017-07-18	2018-07-18

**\* 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**

<b>Temperature:</b>	24.7~25.5°C
<b>Relative Humidity:</b>	38~43 %
<b>ATM Pressure:</b>	101.3~102.1 kPa

The testing was performed by Kakaxi Chen and Sunny Cen from 2017-12-12 to 2017-12-14.

**Conducted Output Power****Cellular Band (Part 22H) & PCS Band (Part 24E)**

Band	Channel No.	Conducted Peak Output Power (dBm)				
		GSM	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot
Cellular	128	31.30	31.29	30.30	28.81	27.67
	190	31.40	31.40	30.32	28.81	27.65
	251	31.50	31.50	30.36	28.82	27.68
PCS	512	28.50	28.49	27.50	26.35	25.21
	661	29.00	29.00	28.01	26.82	25.72
	810	29.50	29.50	28.51	27.32	26.10

**ERP & EIRP****Part 22H**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM 850 Middle Channel								
836.600	H	90.20	15.3	0.0	1	14.3	38.5	24.2
836.600	V	103.31	31.5	0.0	1	30.5	38.5	8.0

**Part 24E**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
PCS 1900 Middle Channel								
1880.000	H	87.55	14.9	11.7	2.7	23.9	33.0	9.1
1880.000	V	88.27	15.8	11.7	2.7	24.8	33.0	8.2

**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

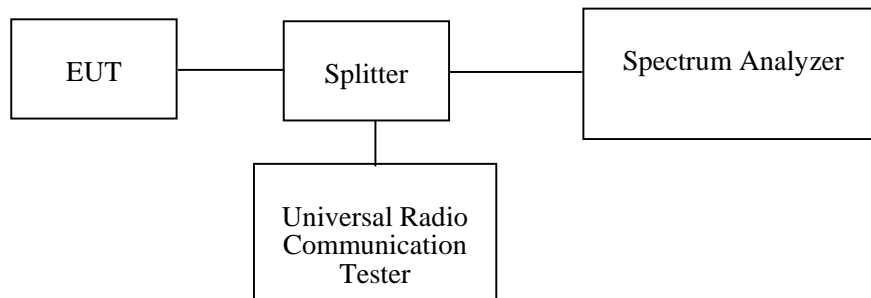
### Applicable Standard

FCC §2.1049, §22.917 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	FSU 26	200256	2017-12-8	2018-12-8
R&S	Universal Radio Communication Tester	CMU200	109 038	2017-07-18	2018-07-18
Unknown	Coaxial Cable	C-SJ00-0010	C0010/02	Each Time	/
Unknown	RF Attenuator	10dB	10dB-1	Each Time	/
Pasternack	RF Coaxial Cable	0.5m	C-5	Each Time	/
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each Time	/

\* **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**

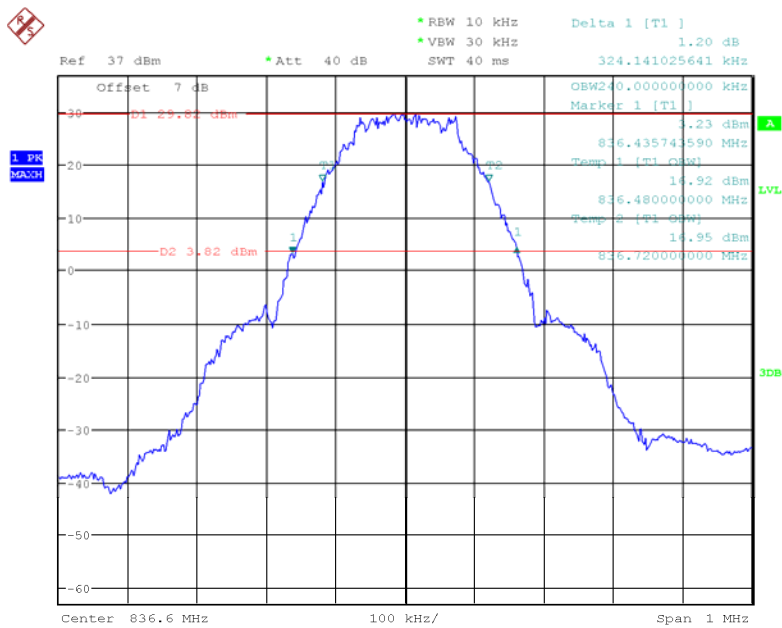
<b>Temperature:</b>	24.7°C
<b>Relative Humidity:</b>	38%
<b>ATM Pressure:</b>	102.1 kPa

*The testing was performed by Nami Quan on 2017-12-12.*

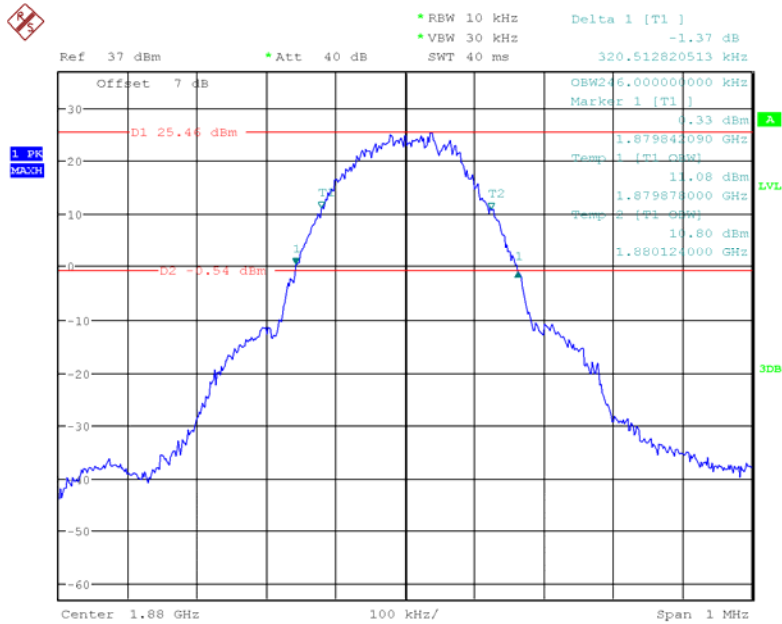
*Test Mode: Transmitting*

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

<b>Band</b>	<b>Test Channel</b>	<b>Mode</b>	<b>99% Occupied Bandwidth (kHz)</b>	<b>26 dB Occupied Bandwidth (kHz)</b>
Cellular	M	GSM	240	324
PCS		PCS	246	321

**GMSK Cellular 850 Band**

Date: 12.DEC.2017 15:58:25

**GMSK PCS1900 Band**

Date: 12.DEC.2017 17:27:10



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

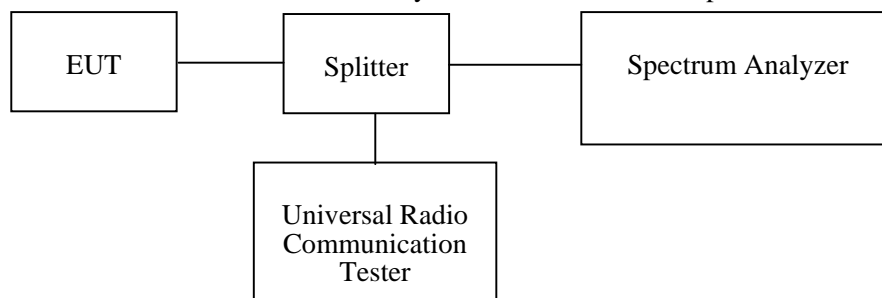
### Applicable Standard

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. 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	Universal Radio Communication Tester	CMU200	109 038	2017-07-18	2018-07-18
Unknown	Coaxial Cable	C-SJ00-0010	C0010/02	Each Time	/
Pasternack	RF Coaxial Cable	0.5m	C-5	Each Time	/
Unknown	RF Attenuator	10dB	10dB-1	Each Time	/
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each Time	/
R&S	Spectrum Analyzer	FSU 26	200256	2017-12-8	2018-12-8

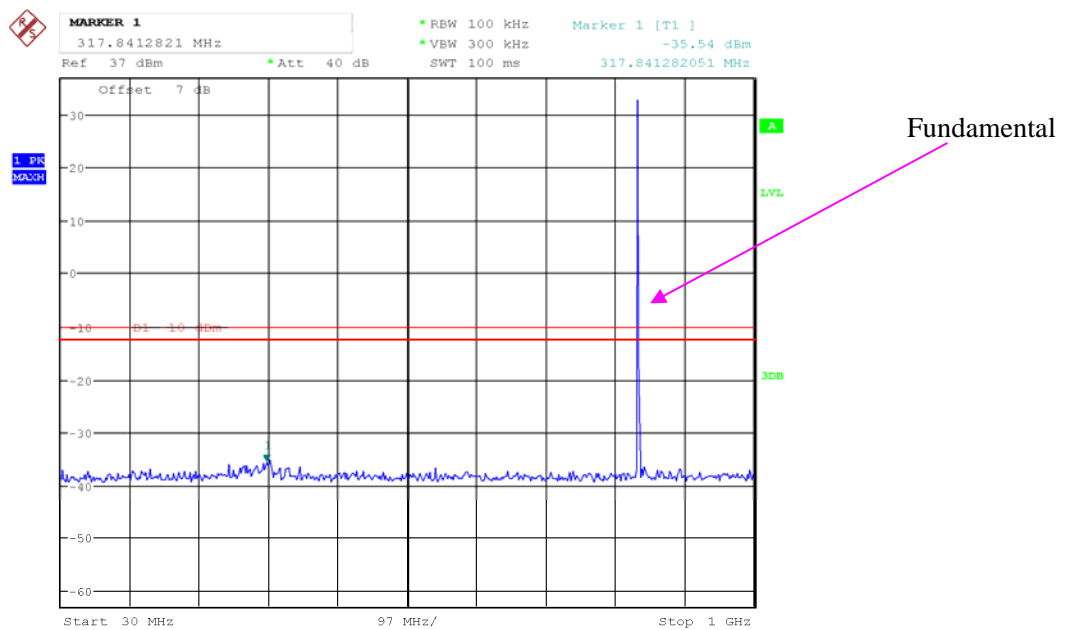
\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Data****Environmental Conditions**

Temperature:	24.7°C
Relative Humidity:	38%
ATM Pressure:	102.1 kPa

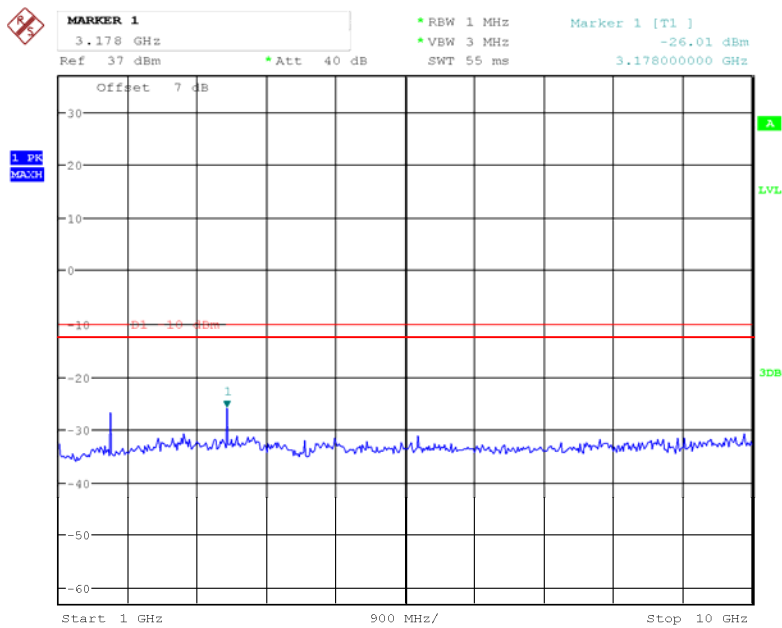
The testing was performed by Nami Quan on 2017-12-12.

Test result: Compliant. All emissions are under the limit -13dBm. Please refer to the following plots.

**GSM850\_Middle Channel**

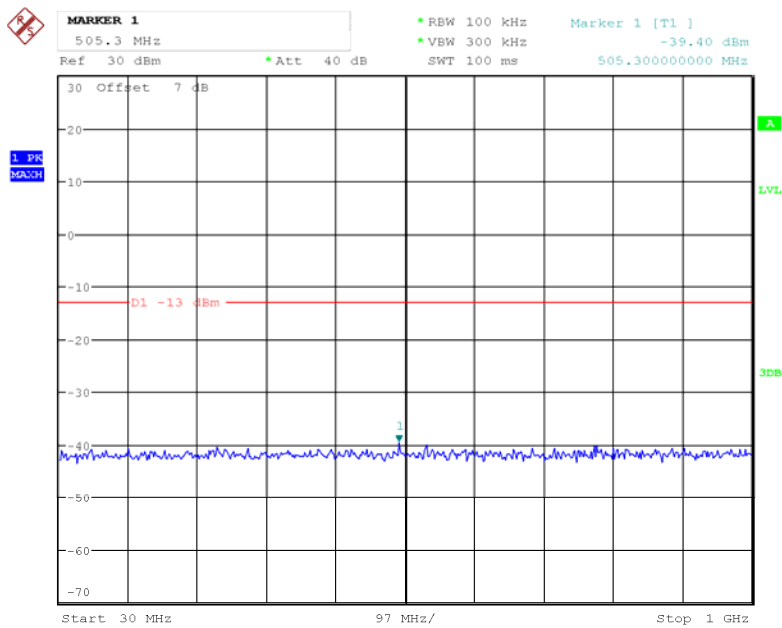
Date: 12.DEC.2017 15:55:26

### GSM850\_Middle Channel



Date: 12.DEC.2017 15:56:17

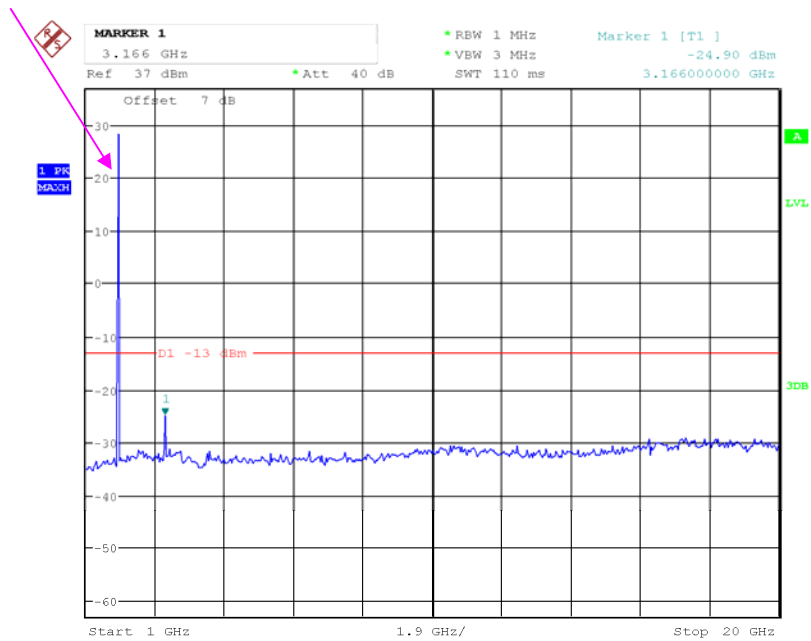
### PCS 1900\_Middle Channel



Date: 12.DEC.2017 17:31:06

Fundamental

### PCS 1900\_ Middle Channel



Date: 12.DEC.2017 17:32:16

## 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 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 =  $10 \lg(\text{TXpwr in Watts}/0.001)$  – the absolute level

Spurious attenuation limit in dB =  $43 + 10 \log_{10}(\text{power out in Watts})$

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2017-09-01	2018-09-01
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
HP	Amplifier	8447D	2727A05902	2017-09-05	2018-09-05
R&S	Spectrum Analyzer	FSU 26	200256	2017-12-8	2018-12-8
ETS LINDGREN	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-05
MITEQ	Amplifier	AFS42-00101800-25-S-42	2001271	2017-09-05	2018-09-05
Quinstar	Amplifier	QLW-18405536-JO	171122001	2017-06-27	2018-06-27
HP	Signal Generator	1026	320408	2017-12-14	2018-12-14
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 Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2017-06-16	2020-06-15
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2016-11-18	2019-11-18
N/A	Coaxial Cable	C-NJNJ-50	C-0400-01	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-NJNJ-50	C-0075-01	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-NJNJ-50	C-1000-01	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-SJSJ-50	C-0800-01	2017-09-05	2018-09-05

\* **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**

<b>Temperature:</b>	25.5 °C
<b>Relative Humidity:</b>	43 %
<b>ATM Pressure:</b>	101.3 kPa

The testing was performed by Kakaxi Chen and Sunny Cen on 2017-12-14.

EUT Operation Mode: Transmitting .

**Cellular Band (PART 22H)****30 MHz-10 GHz:**

50 MHz To GHz:

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM850, Frequency:836.600 MHz								
1673.200	H	63.46	-50.8	10.6	0.7	-40.9	-13.0	27.9
1673.200	V	66.24	-48.6	10.6	0.7	-38.7	-13.0	25.7
2509.800	H	64.68	-48.3	13.1	1.2	-36.4	-13.0	23.4
2509.800	V	61.34	-51.7	13.1	1.2	-39.8	-13.0	26.8
3346.400	H	54.29	-56.4	13.8	1.6	-44.2	-13.0	31.2
3346.400	V	55.43	-55.3	13.8	1.6	-43.1	-13.0	30.1
1560.000	H	48.36	-66.6	9.9	0.9	-57.6	-13.0	44.6
1499.000	V	49.23	-66.1	9.5	1.3	-57.9	-13.0	44.9
437.000	H	42.50	-62.1	0.0	0.6	-62.7	-13.0	49.7
437.000	V	48.20	-59.6	0.0	0.6	-60.2	-13.0	47.2

**PCS Band (PART 24E)****30 MHz-20 GHz:**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM1900, Frequency:1880.000 MHz								
3760.000	H	57.35	-51.5	13.8	1.6	-39.3	-13.0	26.3
3760.000	V	61.54	-47.1	13.8	1.6	-34.9	-13.0	21.9
5640.000	H	54.26	-51.8	14.0	1.3	-39.1	-13.0	26.1
5640.000	V	49.57	-56.3	14.0	1.3	-43.6	-13.0	30.6
6292.000	H	46.38	-58.2	13.5	1.6	-46.3	-13.0	33.3
4204.000	V	49.37	-59.6	14.0	1.6	-47.2	-13.0	34.2
612.000	H	43.50	-58.5	0.0	0.8	-59.3	-13.0	46.3
612.000	V	48.60	-56.6	0.0	0.8	-57.4	-13.0	44.4

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

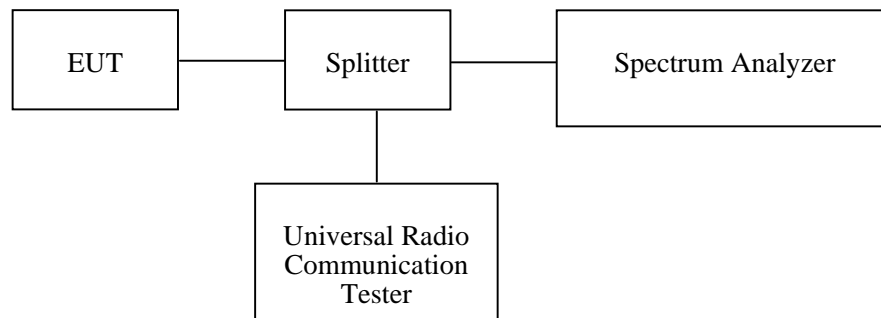
According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

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.



### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Universal Radio Communication Tester	CMU200	109 038	2017-07-18	2018-07-18
Unknown	RF Attenuator	10dB	10dB-1	Each Time	/
Unknown	Coaxial Cable	C-SJ00-0010	C0010/02	Each Time	/
Pasternack	RF Coaxial Cable	0.5m	C-5	Each Time	/
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each Time	/
R&S	Spectrum Analyzer	FSU 26	200256	2017-12-8	2018-12-8

\* **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**

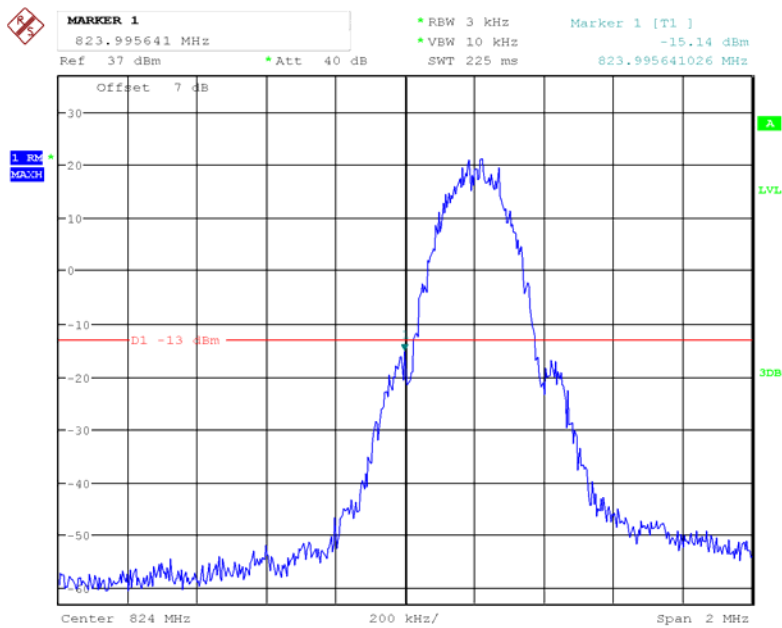
<b>Temperature:</b>	24.7°C
<b>Relative Humidity:</b>	38 %
<b>ATM Pressure:</b>	102.1 kPa

*The testing was performed by Nami Quan on 2017-12-12.*

*Test Mode: Transmitting*

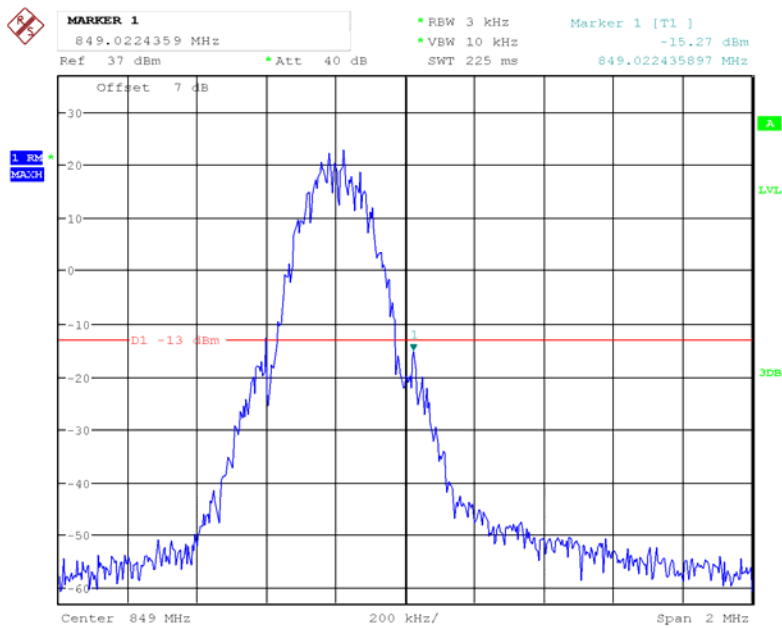
*Test Result: Compliant. Please refer to the following plots.*

### GSM 850, Left Band Edge



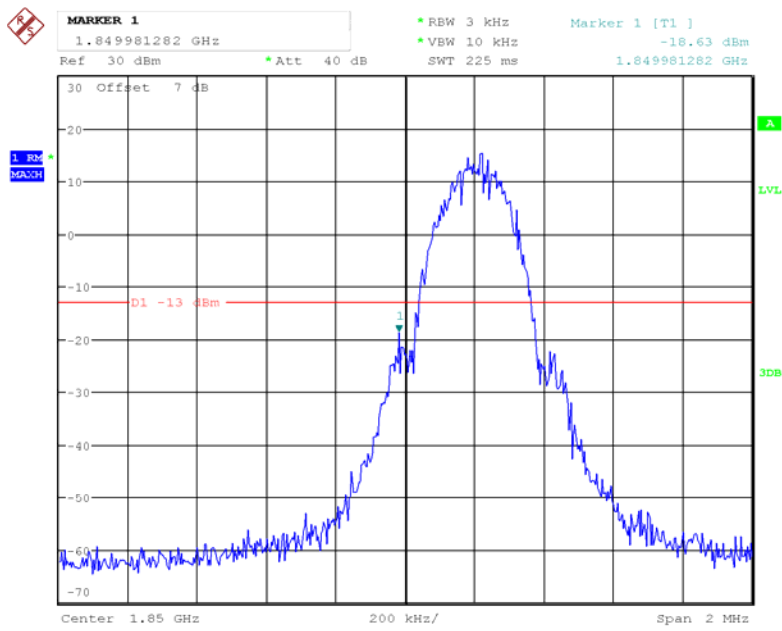
Date: 12.DEC.2017 15:59:20

### GSM 850, Right Band Edge



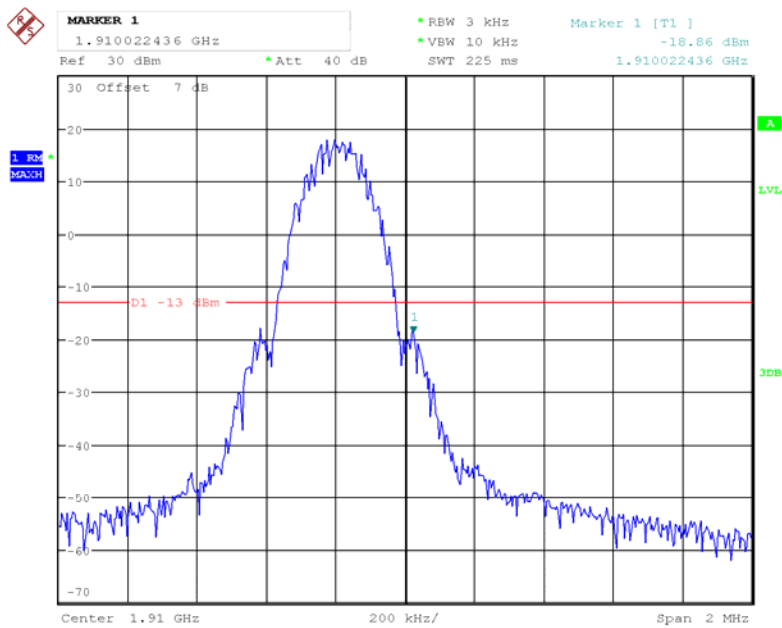
Date: 12.DEC.2017 15:59:46

### PCS 1900, Left Band Edge



Date: 12.DEC.2017 17:29:14

### PCS 1900, Right Band Edge



Date: 12.DEC.2017 17:30:05

## 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 Mobile 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

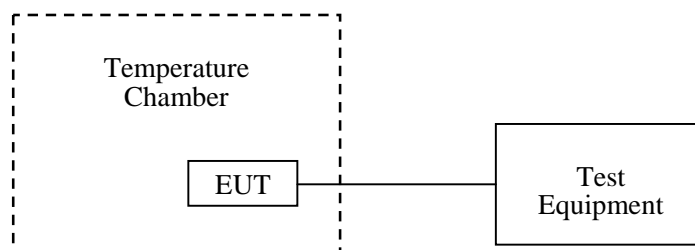
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

### 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
Dongzhixu	High Temperature Test Chamber	DP1000	201105083-4	2017-09-10	2018-09-09
R&S	Universal Radio Communication Tester	CMU200	109 038	2017-07-18	2018-07-18
UNI-T	Multimeter	UT39A	M130199938	2017-04-02	2018-04-02
Unknown	RF Attenuator	10dB	10dB-1	Each Time	/
Unknown	Coaxial Cable	C-SJ00-0010	C0010/02	Each Time	/
Pro instrument	DC Power Supply	pps3300	N/A	N/A	N/A

\* **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**

<b>Temperature:</b>	24.7°C
<b>Relative Humidity:</b>	38 %
<b>ATM Pressure:</b>	102.1 kPa

The testing was performed by Nami Quan on 2017-12-12.

**Cellular Band (Part 22H)**

GSM850, Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V <sub>DC</sub>	Hz	ppm	ppm
-30	3.7	18	0.022	2.5
-20		13	0.016	
-10		16	0.019	
0		15	0.018	
10		12	0.014	
20		16	0.019	
30		19	0.023	
40		16	0.019	
50		14	0.017	
25	3.5	15	0.018	2.5
25	4.2	13	0.016	

**PCS Band (Part 24E)**

PCS1900, Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Results
°C	V <sub>DC</sub>	Hz	ppm	
-30	3.7	7	0.004	Pass
-20		11	0.006	
-10		8	0.004	
0		12	0.006	
10		7	0.004	
20		10	0.005	
30		8	0.004	
40		7	0.004	
50		12	0.006	
25	3.5	8	0.004	
25	4.2	12	0.006	

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