



TESTING LABORATORY  
CERTIFICATE #4820.01



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

For

## MAXWEST INTERNATIONAL LIMITED.

No.1,Longgang Road,Buji, Longgang,Shenzhen,China

**FCC ID: 2AEN3MXD100**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Desktop Phone
<b>Report Number:</b>	<u>RDG180611004-00A</u>
<b>Report Date:</b>	<u>2018-06-25</u>
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## GENERAL INFORMATION

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

<b>EUT Name:</b>		Desktop Phone
<b>EUT Model:</b>		MX-D100
<b>FCC ID:</b>		2AEN3MXD100
<b>Rated Input Voltage:</b>		DC3.7V from Battery or DC5V from adapter
<b>Adapter Information</b>	<b>Model Name:</b>	TBA0050500100VU-U
	<b>Input:</b>	AC 100-240V, 50/60Hz MAX 150mA
	<b>Output:</b>	DC5V, 1000mA
<b>External Dimension:</b>		Length (220 mm)*Width (185 mm)*High (57 mm)
<b>Serial Number:</b>		180611004
<b>EUT Received Date:</b>		2018.06.11

### Objective

This report is prepared on behalf of *MAXWEST INTERNATIONAL 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)

No Related submittal(s)

### 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).

**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 °C
Humidity	±5%
DC and low frequency voltages	±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

The test site has been approved by the FCC 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 test site has been 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.

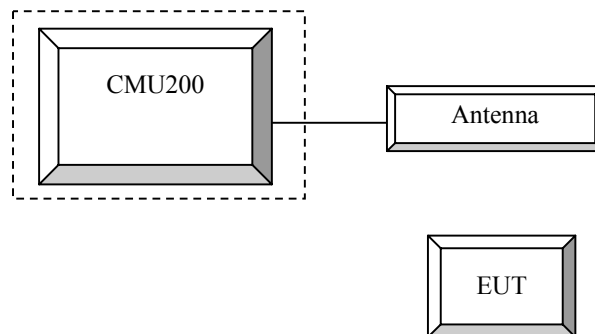
### Equipment Modifications

No modification was made to the EUT.

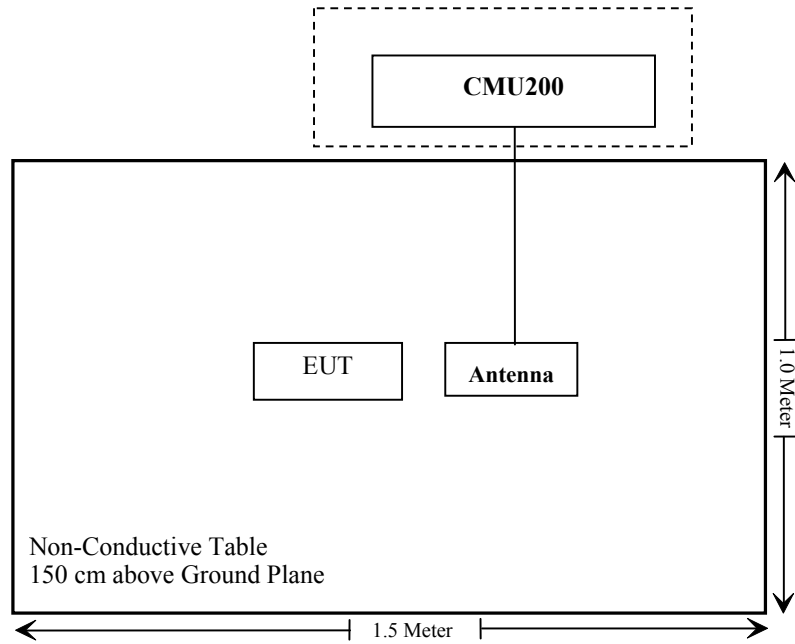
### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Universal Radio Communication Tester	CMU200	109038
N/A	ANTENNA	N/A	N/A

### Configuration of Test Setup



**Block Diagram of Test Setup**



**SUMMARY OF TEST RESULTS**

<b>FCC Rules</b>	<b>Description of Test</b>	<b>Result</b>
§1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	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 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

**Applicable Standard**

According to subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission’s guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
<b>Frequency Range (MHz)</b>	<b>Electric Field Strength (V/m)</b>	<b>Magnetic Field Strength (A/m)</b>	<b>Power Density (mW/cm<sup>2</sup>)</b>	<b>Averaging Time (minutes)</b>
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; \* = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

**Calculation formula:**

Prediction of power density at the distance of the applicable MPE limit  
 $S = PG/4\pi R^2$  = power density (in appropriate units, e.g. mW/cm<sup>2</sup>);  
 P = power input to the antenna (in appropriate units, e.g., mW);  
 G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;  
 R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

**Calculated Data:**

<b>Frequency Range (MHz)</b>	<b>Antenna Gain</b>		<b>Max. Target Power including Tolerance</b>		<b>Evaluation Distance (cm)</b>	<b>Power Density (W/m<sup>2</sup>)</b>	<b>MPE Limit (W/m<sup>2</sup>)</b>
	<b>(dBi)</b>	<b>(numeric)</b>	<b>(dBm)</b>	<b>(mW)</b>			
824-849	1.3	1.35	31	1258.93	20.00	0.34	0.55
1850-1910	3.1	2.04	29	794.33	20.00	0.32	1.0

Note: the Max. Target Power including Tolerance was declared by manufacturer.

**Result: Compliance,** The device meets MPE requirement for Devices Used by the General Public (Uncontrolled Environment) at distance ≥20 cm.

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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.

## **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

**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2017-12-11	2018-12-11
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
Agilent	Spectrum Analyzer	E4440A	SG43360054	2017-12-08	2018-12-08
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
N/A	Coaxial Cable	C-SJ00-0010	C0010/02	Each time	N/A
R&S	Universal Radio Communication Tester	CMU200	109 038	2017-07-21	2018-07-21

\* **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>	28.6 °C
<b>Relative Humidity:</b>	37 %
<b>ATM Pressure:</b>	101 kPa

\* *The testing was performed by Vern Shen on 2018-06-20.*

**Conducted Output Power**

Band	Channel No.	GSM Conducted Peak Output Power (dBm)
Cellular	128	30.35
	190	30.34
	251	30.36
PCS	512	28.61
	661	28.45
	810	28.33

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)			
<b>GSM 850 Middle Channel</b>								
836.600	H	98.03	23.1	0.0	1	22.1	38.45	16.4
836.600	V	105.90	34.1	0.0	1	33.1	38.45	5.4

**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)			
<b>PCS 1900 Middle Channel</b>								
1880.000	H	70.18	-2.4	11.7	2.7	6.6	33.00	26.4
1880.000	V	90.94	18.5	11.7	2.7	27.5	33.00	5.5

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**

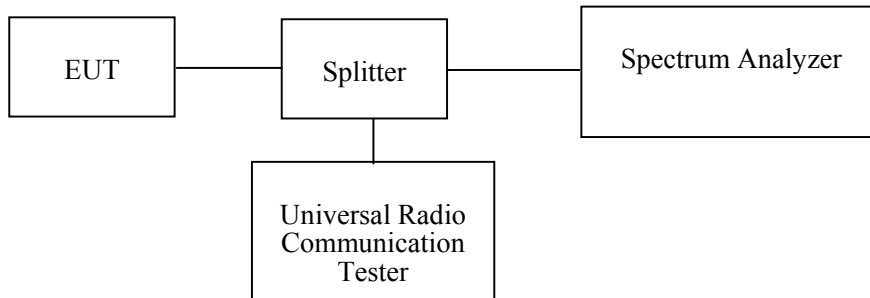
**Applicable Standard**

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
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
narda	Attenuator	6dB	6dB-1	Each time	N/A
R&S	Universal Radio Communication Tester	CMU200	106 891	2017-12-14	2018-12-14

\* **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>	27.1°C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	101.3 kPa

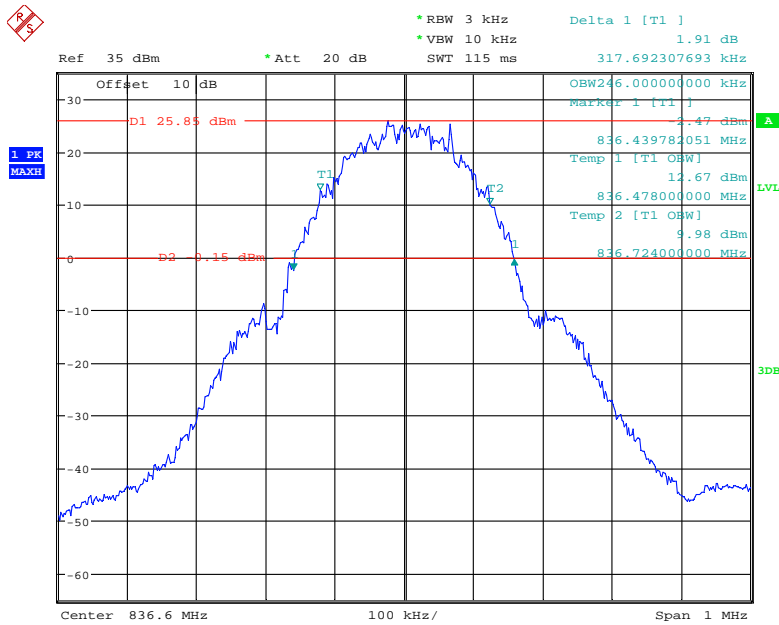
\* The testing was performed by Harry Yang on 2018-06-13.

Test Mode: Transmitting

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

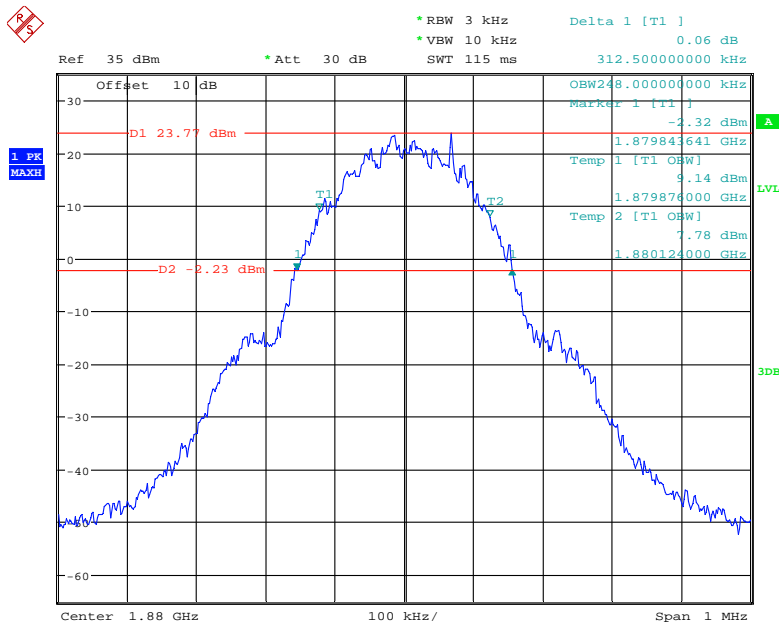
Band	Test Channel	Mode	99% Occupied Bandwidth (kHz)	26 dB Occupied Bandwidth (kHz)
Cellular	M	GSM	246.0	317.7
PCS		PCS	248.0	312.5

### GSM 850 Cellular Band



Date: 13.JUN.2018 13:48:44

### GSM PCS1900 Cellular Band



Date: 13.JUN.2018 13:58:20



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

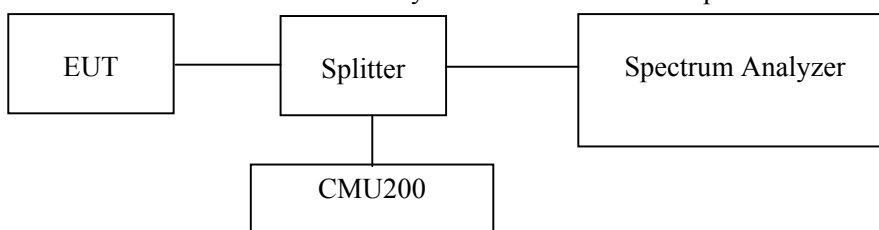
### Applicable Standard

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
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
narda	Attenuator	6dB	6dB-1	Each time	N/A
R&S	Universal Radio Communication Tester	CMU200	106 891	2017-12-14	2018-12-14

\* **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

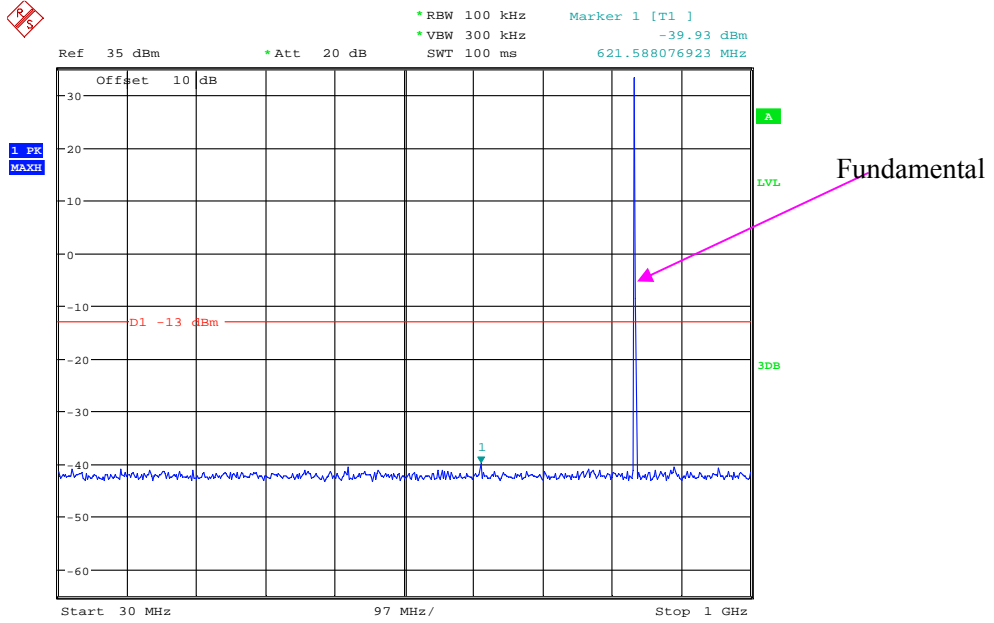
#### Environmental Conditions

<b>Temperature:</b>	27.1°C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	101.3 kPa

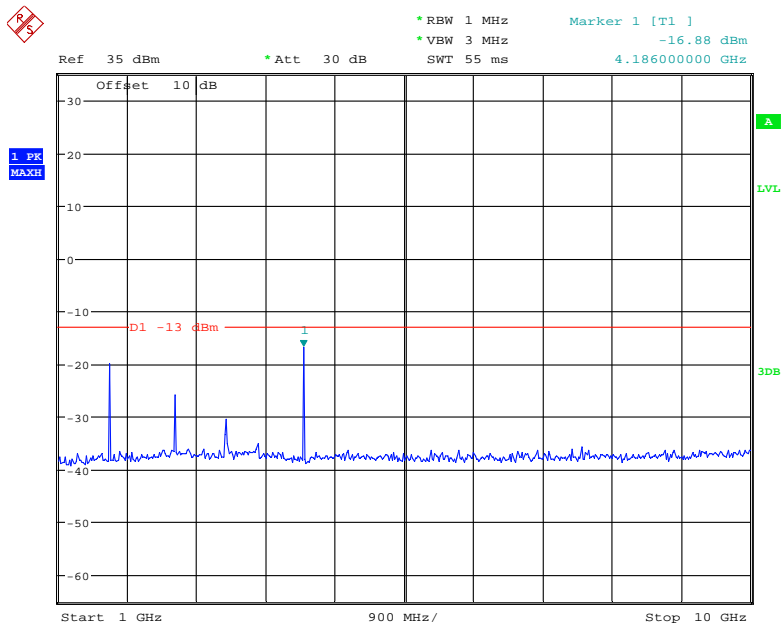
\* The testing was performed by Harry Yang on 2018-06-13.

Please refer to the following plots.

### GSM850\_Middle Channel

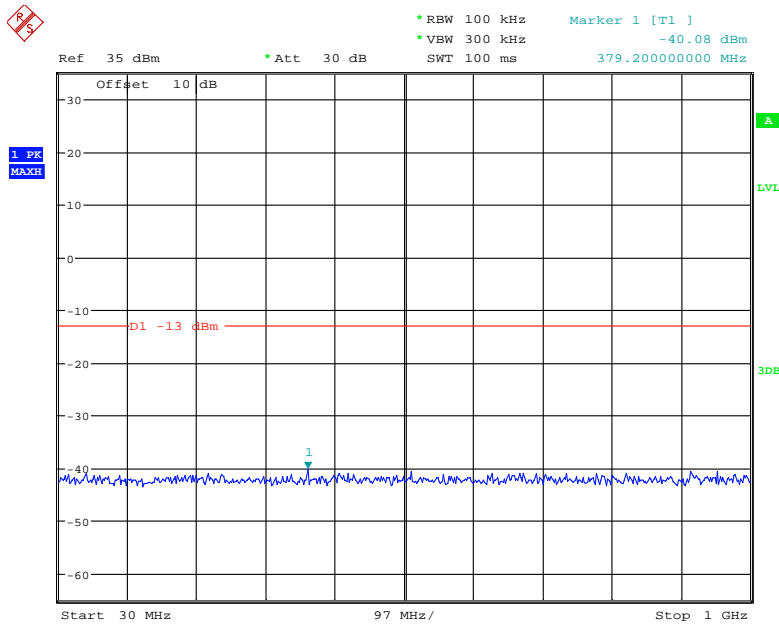


Date: 13.JUN.2018 13:50:32



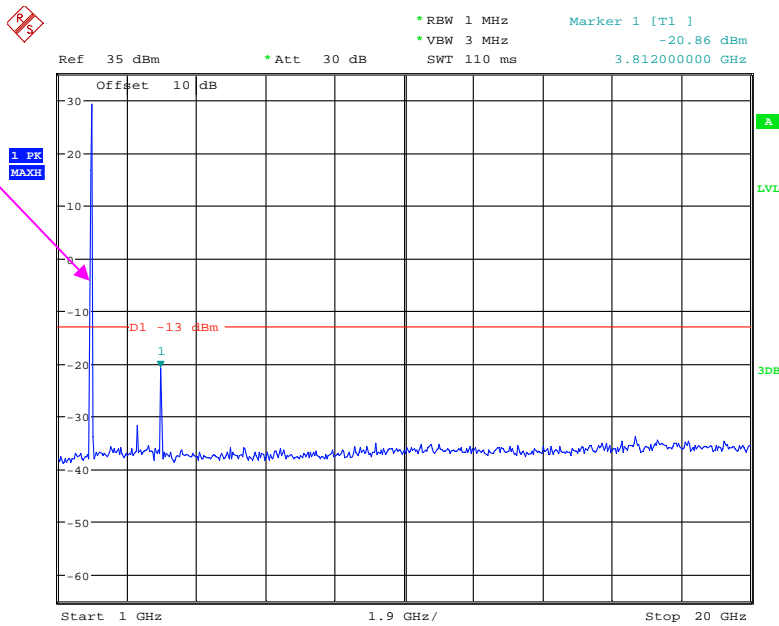
Date: 13.JUN.2018 13:53:58

### PCS 1900\_ Middle Channel



Date: 13.JUN.2018 14:02:05

Fundamental



Date: 13.JUN.2018 14:03:09

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

**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
R&S	EMI Test Receiver	ESCI	100224	2017-12-11	2018-12-11
HP	Amplifier	8447D	2727A05902	2017-09-05	2018-09-05
Agilent	Spectrum Analyzer	E4440A	SG43360054	2017-12-08	2018-12-08
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
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2016-11-18	2019-11-18
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2016-11-18	2019-11-18
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2017-06-27	2018-06-27
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2017-09-05	2018-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2017-09-05	2018-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2017-09-05	2018-09-05
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2017-09-05	2018-09-05
Unknown	Coaxial Cable	C-2.4J2.4J-50	C-0700-02	2017-06-27	2018-06-27
HP	Signal Generator	1026	320408	2017-12-08	2018-12-08
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

\* **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>	28.6 °C
<b>Relative Humidity:</b>	37 %
<b>ATM Pressure:</b>	101 kPa

\* The testing was performed by Vern Shen & Tyler Pan on 2018-06-20.

*EUT Operation Mode: Transmitting***Cellular Band (PART 22H)****30 MHz-10 GHz:**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB $\mu$ V)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM850, Frequency:836.600 MHz								
210.420	H	45.59	-63.2	0.0	0.5	-63.7	-13.0	50.7
140.580	V	56.12	-56.6	0.0	0.4	-57.0	-13.0	44.0
1673.200	H	66.76	-47.5	10.6	0.7	-37.6	-13.0	24.6
1673.200	V	67.89	-46.9	10.6	0.7	-37.0	-13.0	24.0
2509.800	H	45.17	-67.8	13.1	1.2	-55.9	-13.0	42.9
2509.800	V	46.20	-66.8	13.1	1.2	-54.9	-13.0	41.9
3346.400	H	56.03	-54.6	13.8	1.6	-42.4	-13.0	29.4
3346.400	V	56.84	-53.9	13.8	1.6	-41.7	-13.0	28.7
4183.000	H	67.37	-41.6	13.9	1.6	-29.3	-13.0	16.3
4183.000	V	73.29	-35.7	13.9	1.6	-23.4	-13.0	10.4

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

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB $\mu$ V)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM1900, Frequency:1880.000 MHz								
701.240	H	47.62	-53.8	0.0	0.9	-54.7	-13.0	41.7
140.580	V	55.98	-56.7	0.0	0.4	-57.1	-13.0	44.1
3760.000	H	63.97	-44.8	13.8	1.6	-32.6	-13.0	19.6
3760.000	V	74.65	-34	13.8	1.6	-21.8	-13.0	8.8
5640.000	H	58.71	-47.3	14.0	1.3	-34.6	-13.0	21.6
5640.000	V	58.71	-47.2	14.0	1.3	-34.5	-13.0	21.5
7520.000	H	45.80	-54.5	13.2	1.3	-42.6	-13.0	29.6
7520.000	V	48.37	-52.4	13.2	1.3	-40.5	-13.0	27.5

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**

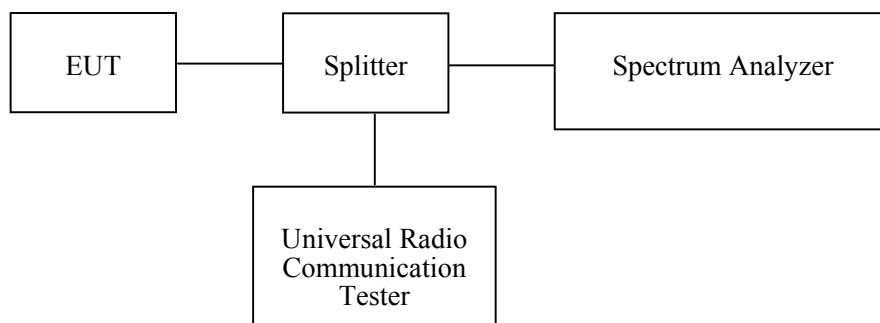
**Applicable Standard**

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
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
narda	Attenuator	6dB	6dB-1	Each time	N/A
R&S	Universal Radio Communication Tester	CMU200	106 891	2017-12-14	2018-12-14

\* **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**

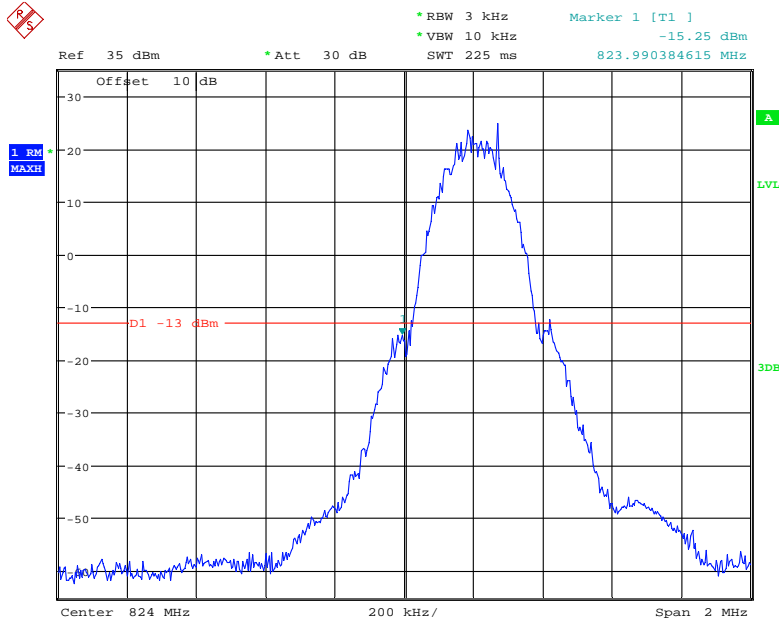
<b>Temperature:</b>	27.1°C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	101.3kPa

\* The testing was performed by Harry Yang on 2018-06-13.

Test Mode: Transmitting

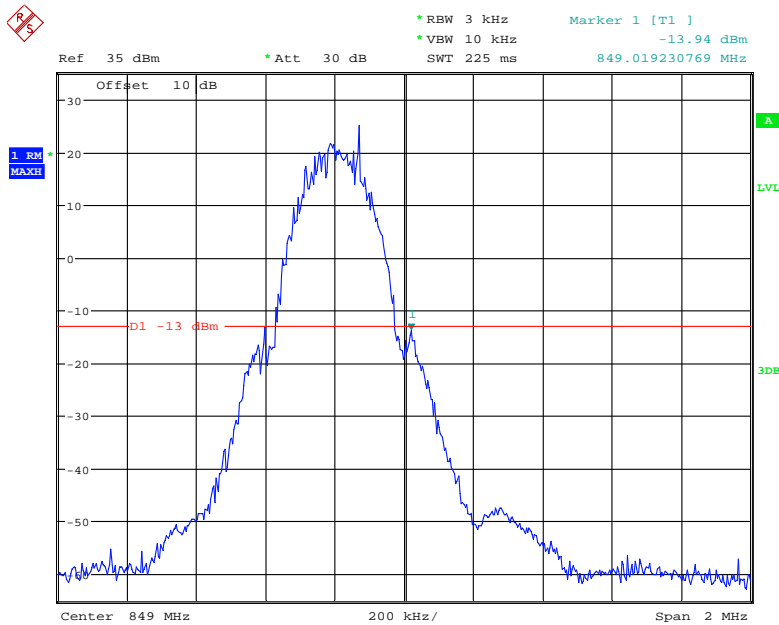
Test Result: Compliant. Please refer to the following plots.

### GSM 850, Left Band Edge



Date: 13.JUN.2018 13:55:39

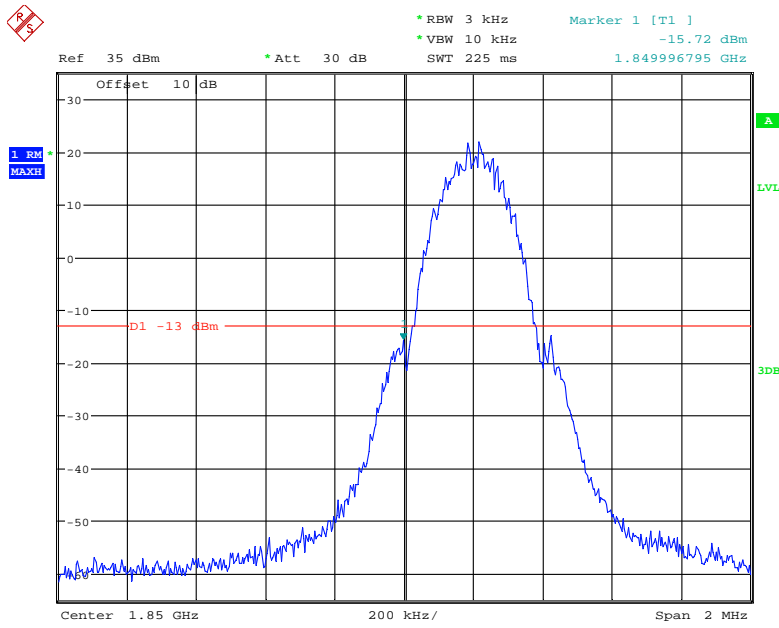
### GSM 850, Right Band Edge



Date: 13.JUN.2018 13:56:22

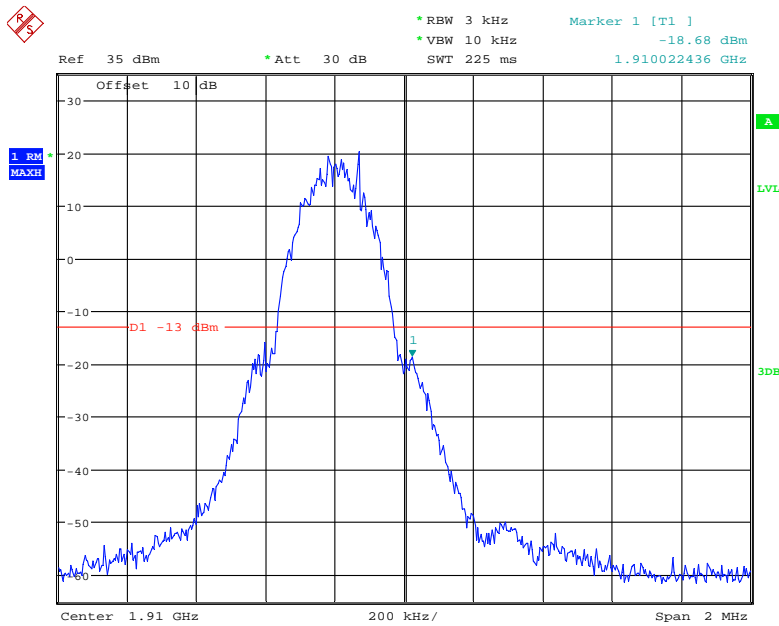


### GSM 1900, Left Band Edge



Date: 13.JUN.2018 14:00:36

### GSM 1900, Right Band Edge



Date: 13.JUN.2018 14:01:30

## 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

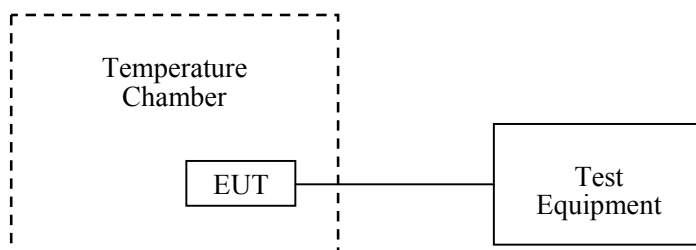
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

### 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	2017-08-28	2018-08-28
R&S	Universal Radio Communication Tester	CMU200	109 038	2017-07-21	2018-07-21
UNI-T	Multimeter	UT39A	M130199938	2018-05-09	2019-05-09
Unknown	Coaxial Cable	0.1m	C-1	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>	25.9 °C
<b>Relative Humidity:</b>	51 %
<b>ATM Pressure:</b>	100.8kPa

\* The testing was performed by Harry Yang on 2018-03-29.

**Cellular Band (Part 22H)**

GMSK, 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	-10	-0.012	2.5
-20		-12	-0.014	
-10		-9	-0.011	
0		-8	-0.010	
10		-9	-0.011	
20		-8	-0.010	
30		-7	-0.008	
40		-14	-0.017	
50		-17	-0.020	
25		3.5	-16	
25	4.2	-16	-0.019	

**PCS Band (Part 24E)**

<b>GMSK, Middle Channel, <math>f_c = 1880.0</math> MHz</b>				
<b>Temperature</b>	<b>Voltage</b>	<b>Frequency Error</b>	<b>Frequency Error</b>	<b>Results</b>
<b>°C</b>	<b>V<sub>DC</sub></b>	<b>Hz</b>	<b>ppm</b>	
-30	3.7	-22	-0.012	Pass
-20		-20	-0.011	
-10		-19	-0.010	
0		-34	-0.018	
10		-32	-0.017	
20		-30	-0.016	
30		-32	-0.017	
40		-35	-0.019	
50		-34	-0.018	
25		3.5	-31	
25	4.2	-30	-0.016	

Note: The fundamental emissions stay within the authorized bands of operation based on the frequency deviation measured is small, the extreme voltage was declared by applicant.

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