



TESTING LABORATORY
CERTIFICATE #4820.01



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

For

HONG KONG IPRO TECHNOLOGY CO.,LIMITED

12/F 3 LOCKHART ROAD WANCHAI HK

FCC ID:PQ4IPROA16

Report Type: Original Report	Product Type: Mobile Phone
Report Number: RDG200924010-00C	
Report Date: 2020-10-20	
Reviewed By:	Ivan Cao Assistant Manager 
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

TABLE OF CONTENTS

GENERAL INFORMATION.....	4
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
OBJECTIVE	4
RELATED SUBMITTAL(S)/GRANT(S).....	4
TEST METHODOLOGY	4
MEASUREMENT UNCERTAINTY	5
TEST FACILITY	5
DECLARATIONS.....	5
SYSTEM TEST CONFIGURATION.....	6
JUSTIFICATION	6
EQUIPMENT MODIFICATIONS	6
SUPPORT EQUIPMENT LIST AND DETAILS	6
CONFIGURATION OF TEST SETUP	6
BLOCK DIAGRAM OF TEST SETUP	7
SUMMARY OF TEST RESULTS	8
FCC §1.1310 & §2.1093- RF EXPOSURE	9
APPLICABLE STANDARD	9
TEST RESULT	9
FCC §2.1047 - MODULATION CHARACTERISTIC	10
FCC § 2.1046, § 22.913 (A) & § 24.232 (C) - RF OUTPUT POWER.....	11
APPLICABLE STANDARD	11
TEST PROCEDURE	11
TEST EQUIPMENT LIST AND DETAILS.....	12
TEST DATA	12
FCC §2.1049, §22.917, §22.905 & §24.238 - OCCUPIED BANDWIDTH	14
APPLICABLE STANDARD	14
TEST PROCEDURE	14
TEST EQUIPMENT LIST AND DETAILS.....	14
TEST DATA	14
FCC §2.1051, §22.917(A) & §24.238(A) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS	17
APPLICABLE STANDARD	17
TEST PROCEDURE	17
TEST EQUIPMENT LIST AND DETAILS.....	17
TEST DATA	17
FCC §2.1053, §22.917 & §24.238 - SPURIOUS RADIATED EMISSIONS	20
APPLICABLE STANDARD	20
TEST PROCEDURE	20
TEST EQUIPMENT LIST AND DETAILS.....	21
TEST DATA	21
FCC §22.917(A) & §24.238(A)- BAND EDGES.....	24
APPLICABLE STANDARD	24
TEST PROCEDURE	24
TEST EQUIPMENT LIST AND DETAILS.....	24
TEST DATA	24

FCC §2.1055, §22.355 & §24.235 - FREQUENCY STABILITY26
 APPLICABLE STANDARD26
 TEST PROCEDURE26
 TEST EQUIPMENT LIST AND DETAILS.....27
 TEST DATA27

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:		Mobile Phone
EUT Model:		A16
Operation modes:		GSM Voice
Operation Frequency:		GSM 850: 824-849 MHz(TX), 869-894 MHz(RX) PCS 1900: 1850-1910 MHz(TX), 1930-1990 MHz(RX)
Modulation Type:		GMSK
Rated Input Voltage:		DC 3.7V from battery or DC 5.2V from Adapter
Adapter Information	Input:	AC 100V-240V, 50Hz/ 0.15A
	Output:	DC 5.2V +/- 0.25V, 500mA +/- 50mA
Serial Number:		RDG200924010-RF-S1
EUT Received Date:		2020.09.25
EUT Received Status:		Good

Objective

This report is prepared on behalf of **HONG KONG IPRO TECHNOLOGY CO.,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: PQ4IPROA16
FCC Part 15B JBP submissions with FCC ID: PQ4IPROA16

Test Methodology

All tests and measurements indicated in this document were performed in accordance with:

the Code of federal Regulations Title 47, Part 2, Part 22, Part 24

ANSI C63.26-2015, American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Dongguan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Unwanted Emissions, radiated	±3.62 dB
Unwanted Emissions, conducted	±2.47 dB
Temperature	±1 °C
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

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 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.

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol “Δ”. Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

This report cannot be reproduced except in full, without prior written approval of the Company.

This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

This report may contain data that are not covered by the accreditation scope and shall be marked with an asterisk “★”.

SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to ANSI C63.26-2015.

The test items were performed with the EUT operating at testing mode. The device operates on GSM Band 850/1900MHz, test was performed with channels as below table:

Frequency Bands	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
GSM/GPRS 850	0.25	824.2	836.6	848.8
GSM/GPRS 1900	0.25	1850.2	1880	1909.8

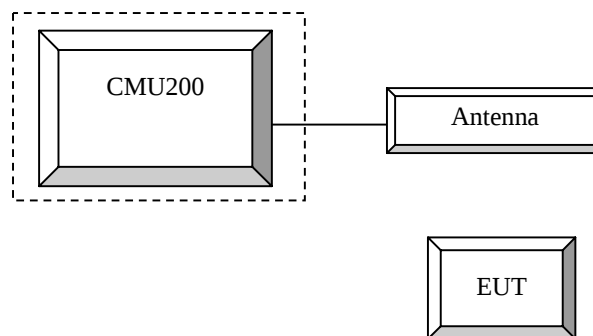
Equipment Modifications

No modification was made to the EUT.

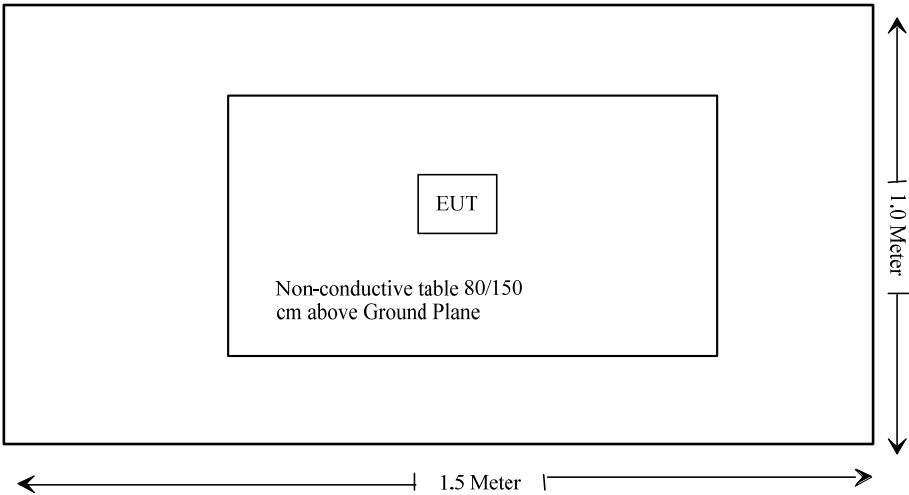
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Universal Radio Communication Tester	CMU200	106 891
Unknown	ANTENNA	Unknown	ANTENNA001

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: RDG200924010-20.

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.

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
ERP/EIRP Test					
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
R&S	EMI Test Receiver	ESR3	102453	2020-09-12	2021-09-12
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2020-05-06	2021-05-06
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2020-09-05	2021-09-05
Agilent	Signal Generator	E8247C	MY43321350	2019-12-10	2020-12-10
TDK RF	Horn Antenna	HRN-0118	130 084	2018-10-12	2021-10-12
R&S	Spectrum Analyzer	FSP 38	100478	2020-07-07	2021-07-07
HUBER+SUHNER	Coaxial Cable	SUCOFLEX 126EA	MY369/26/26E A	2020-09-25	2021-09-25
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Conducted Output Power Test					
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010013	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/03	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201048	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	0E01203239	Each time	N/A
R&S	Universal Radio Communication Tester	CMU200	110 822	2020-09-23	2021-09-22

*** 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**

Test Items	Radiation Below 1GHz	Radiation Above 1GHz	Conducted Output Power
Temperature:	27.1°C	27.1°C	25.2°C
Relative Humidity:	35%	41%	63%
ATM Pressure:	101kPa	100.8kPa	101kPa
Tester:	Jalon Liu, Joker Chen	Joker Chen	Chris Mo
Test Date:	2020-09-28	2020-09-30	2020-10-13

Test Result: Compliance

Conducted Output Power**Cellular Band & PCS Band**

Band	Channel No.	Conducted Peak Output Power (dBm)
		GSM
Cellular	128	31.90
	190	31.70
	251	31.20
PCS	512	28.20
	661	28.40
	810	28.30

ERP & EIRP

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 Low Channel								
824.20	H	92.06	17.04	0.00	0.96	16.08	38.45	22.37
824.20	V	101.13	29.21	0.00	0.96	28.25	38.45	10.20
GSM 850 Middle Channel								
836.60	H	94.05	19.13	0.00	0.97	18.16	38.45	20.29
836.60	V	103.50	31.71	0.00	0.97	30.74	38.45	7.71
GSM 850 High Channel								
848.80	H	95.65	20.82	0.00	0.99	19.83	38.45	18.62
848.80	V	104.91	33.24	0.00	0.99	32.25	38.45	6.20
PCS 1900 Low Channel								
1850.20	H	93.57	17.67	11.05	1.20	27.52	33.00	5.48
1850.20	V	89.21	13.10	11.05	1.20	22.95	33.00	10.05
PCS 1900 Middle Channel								
1880.00	H	94.59	18.75	11.14	1.18	28.71	33.00	4.29
1880.00	V	90.29	14.26	11.14	1.18	24.22	33.00	8.78
PCS 1900 High Channel								
1909.80	H	93.50	17.72	11.23	1.17	27.78	33.00	5.22
1909.80	V	89.18	13.22	11.23	1.17	23.28	33.00	9.72

Note 1: The unit of antenna gain is dBd for frequency below 1GHz and is dBi for frequency above 1GHz.

Note 2: Absolute Level = Substituted Level - Cable loss + Antenna Gain

Margin = Limit - Absolute Level

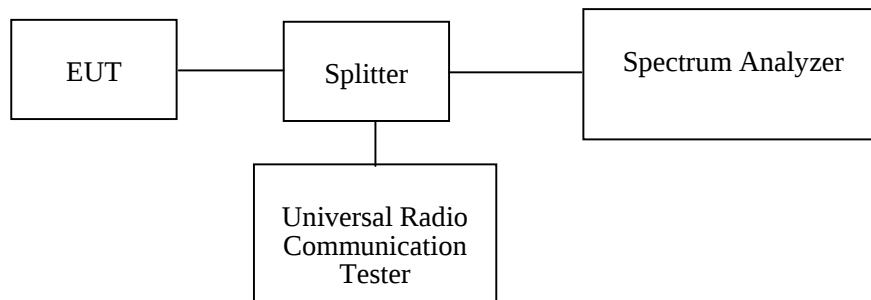
FCC §2.1049, §22.917, §22.905 & §24.238 - OCCUPIED BANDWIDTH**Applicable Standard**

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	FSV40	101474	2020-07-07	2021-07-07
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010013	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/03	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201048	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	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**

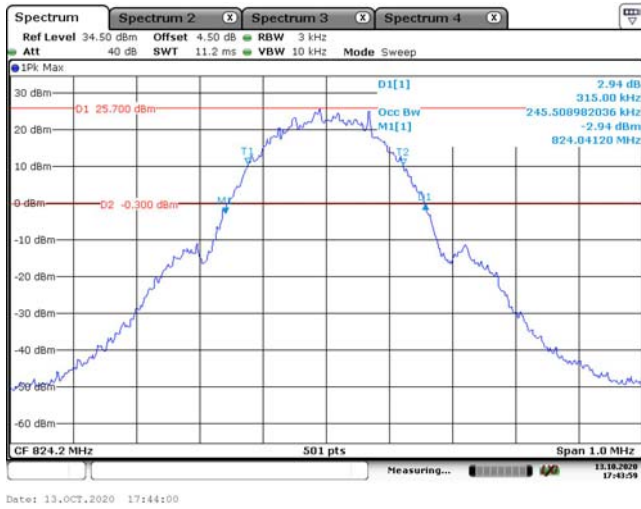
Temperature:	25.2°C
Relative Humidity:	63%
ATM Pressure:	101kPa
Tester:	Chris Mo
Test Date:	2020-10-13

Test Mode: Transmitting

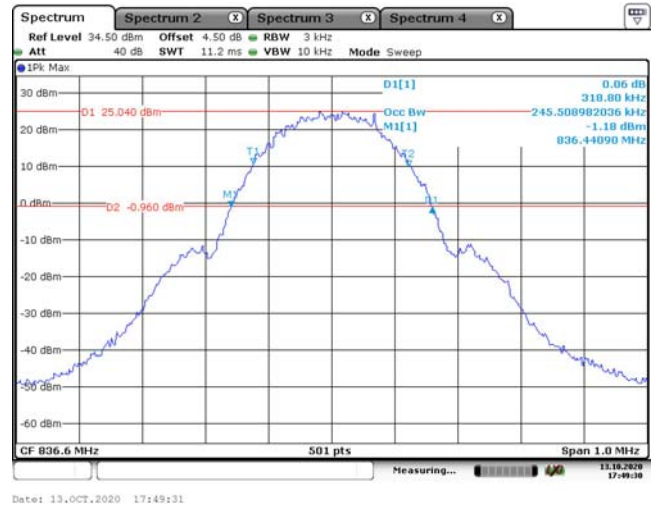
Test Result: Compliance. Please refer to the following table and plots.

Band	Mode	Test Channel	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
Cellular	GSM	Low	0.246	0.315
		Middle	0.246	0.319
		High	0.246	0.318
PCS	GSM	Low	0.246	0.312
		Middle	0.248	0.313
		High	0.244	0.317

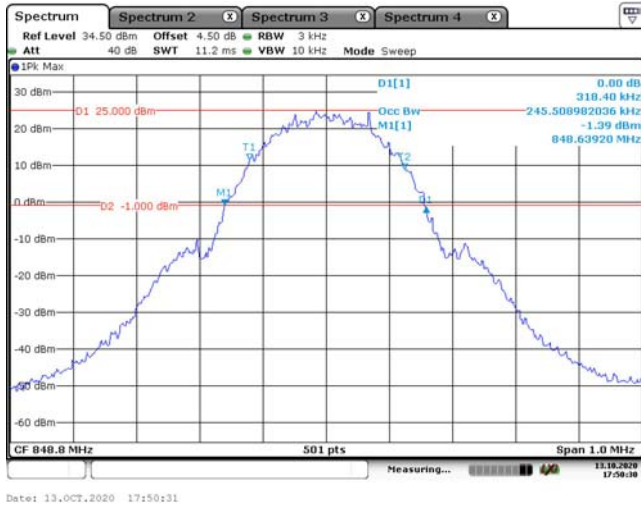
Cellular 850 Band, GSM, Low Channel



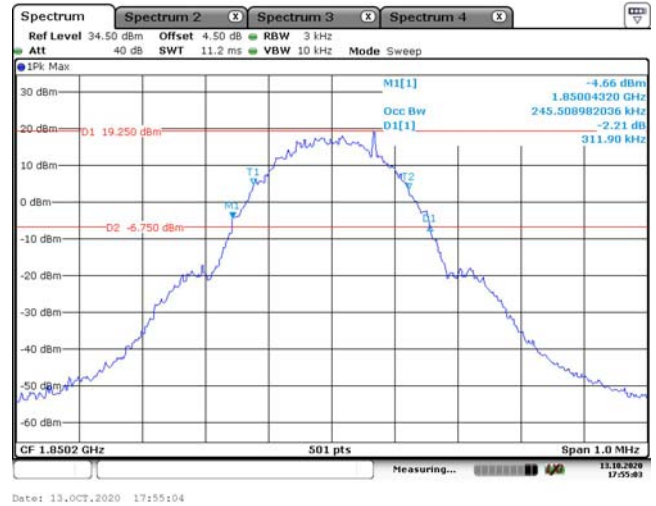
Cellular 850 Band, GSM, Middle Channel



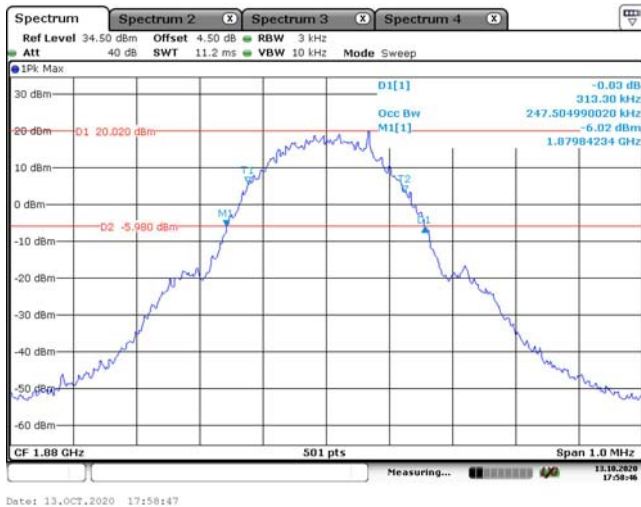
Cellular 850 Band, GSM, High Channel



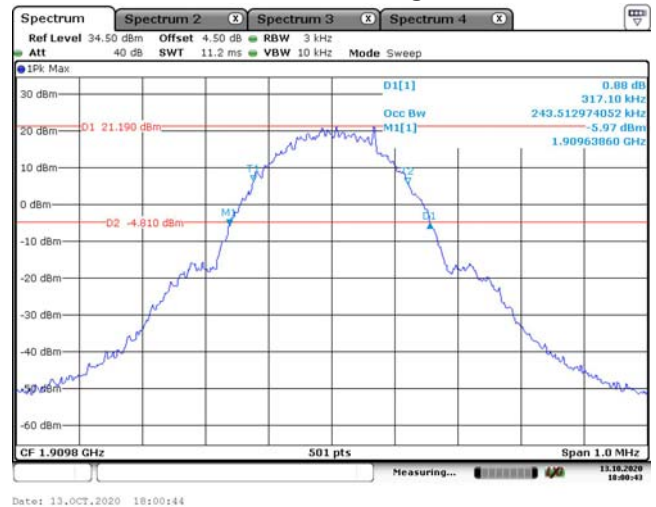
PCS 1900 Band, GSM, Low Channel



PCS 1900 Band, GSM, Middle Channel



PCS 1900 Band, GSM, High Channel



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

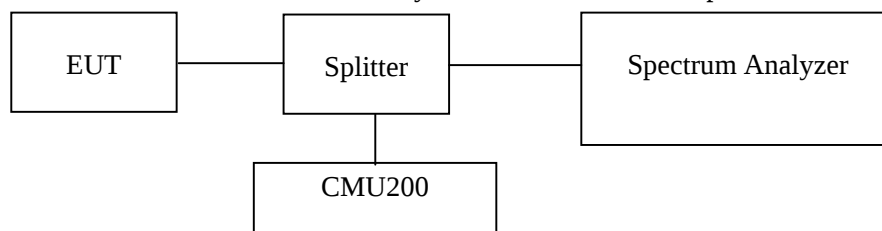
Applicable Standard

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 10th harmonic.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2020-07-07	2021-07-07
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010013	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/03	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201048	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	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

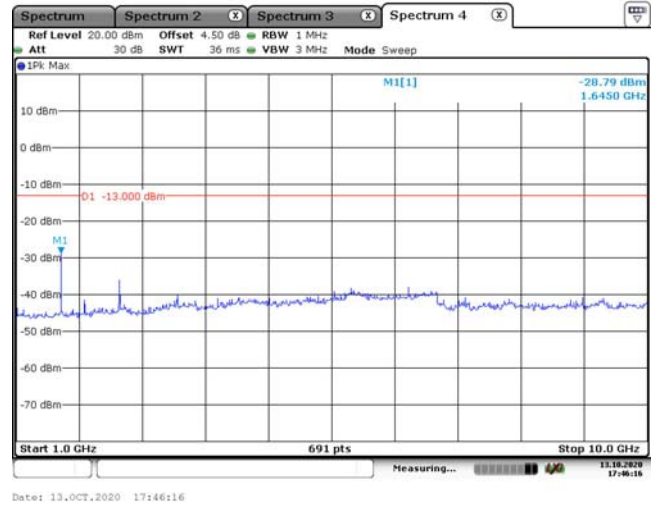
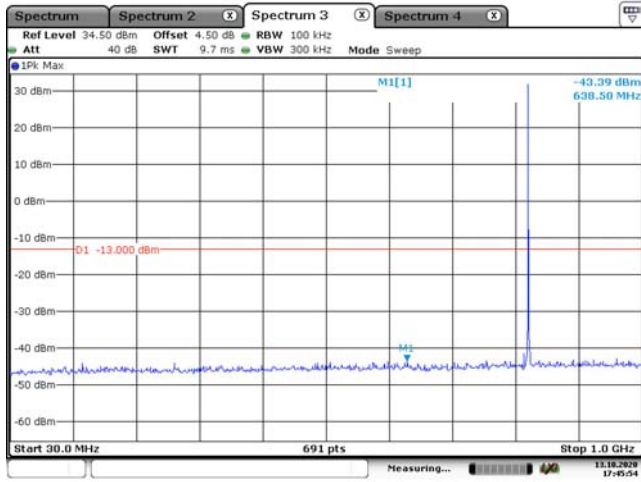
Environmental Conditions

Temperature:	25.2°C
Relative Humidity:	63%
ATM Pressure:	101kPa
Tester:	Chris Mo
Test Date:	2020-10-13

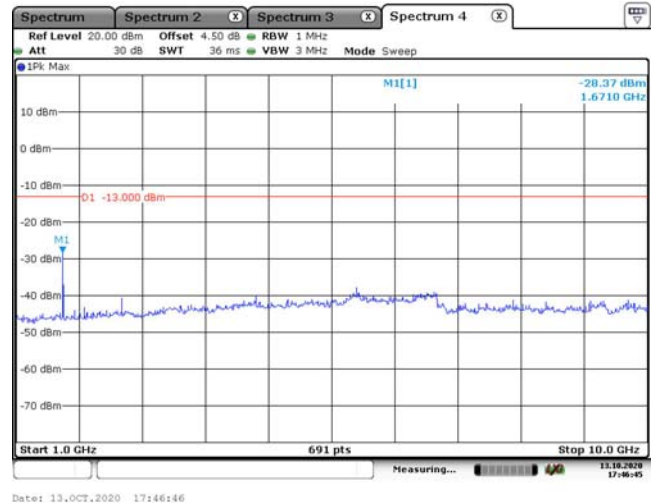
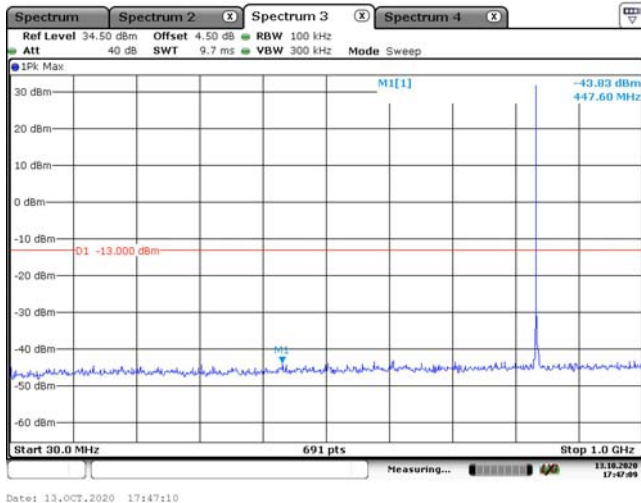
Test mode: Transmitting

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

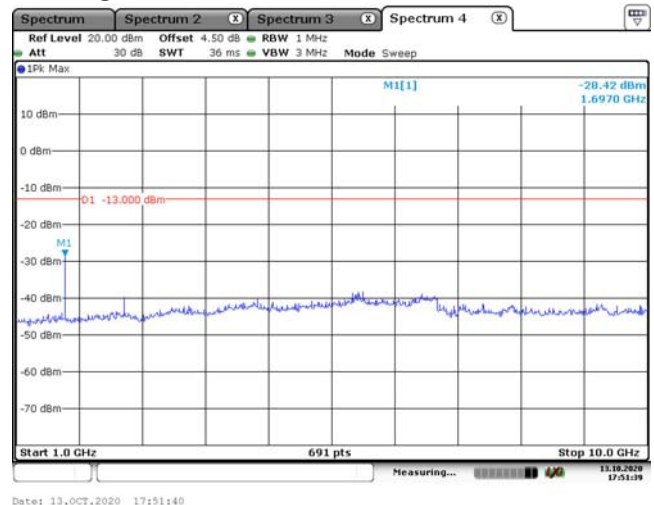
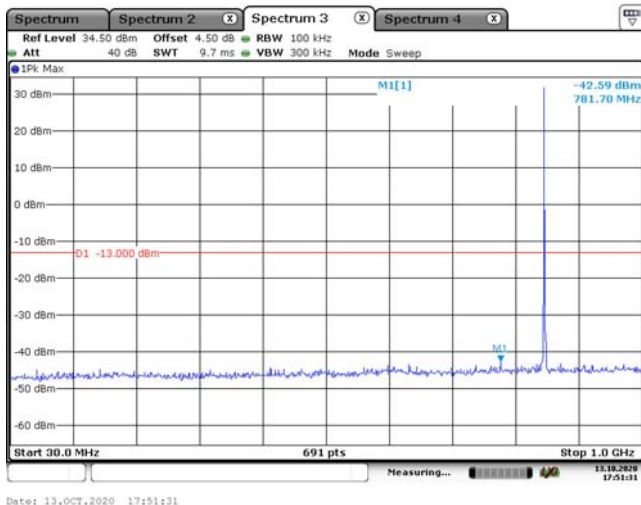
Cellular 850 Band, GSM, Low Channel



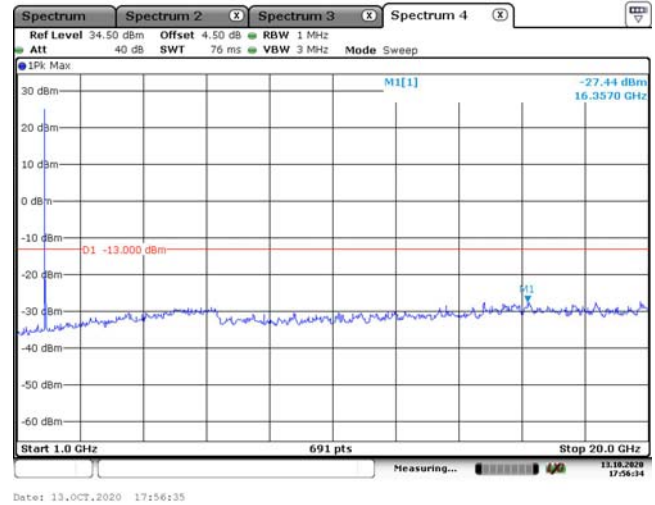
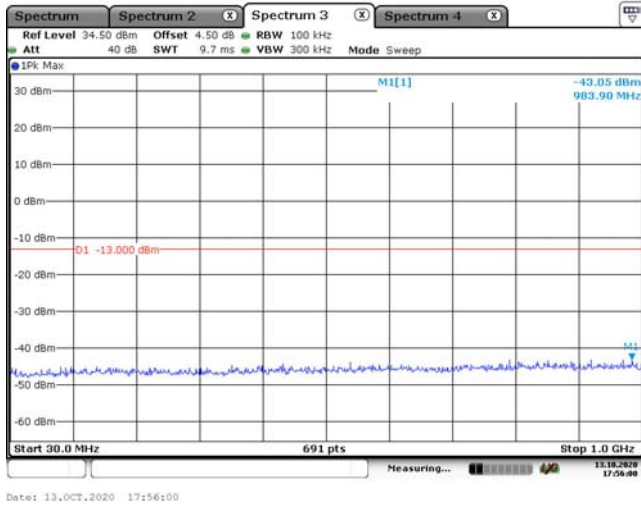
Cellular 850 Band, GSM, Middle Channel



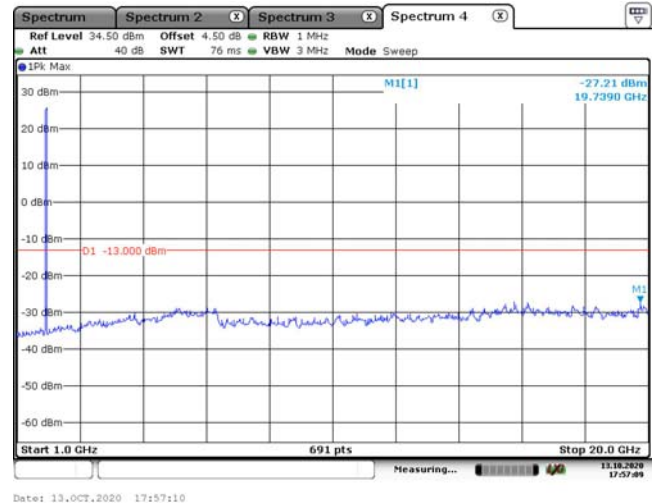
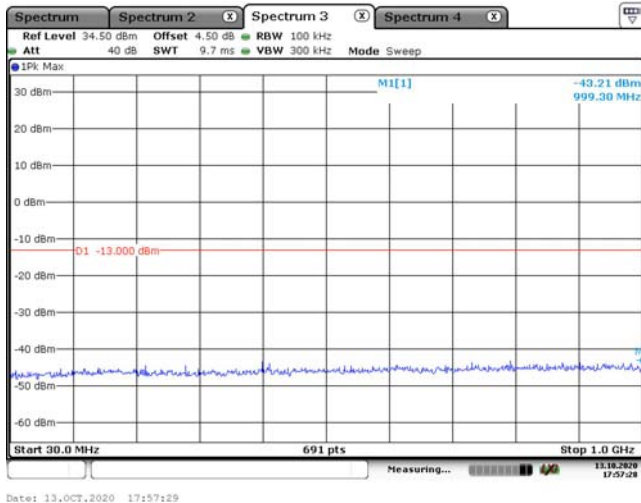
Cellular 850 Band, GSM, High Channel



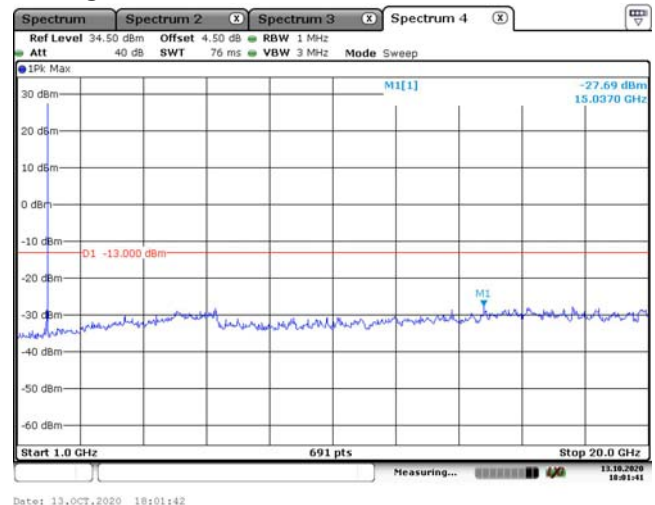
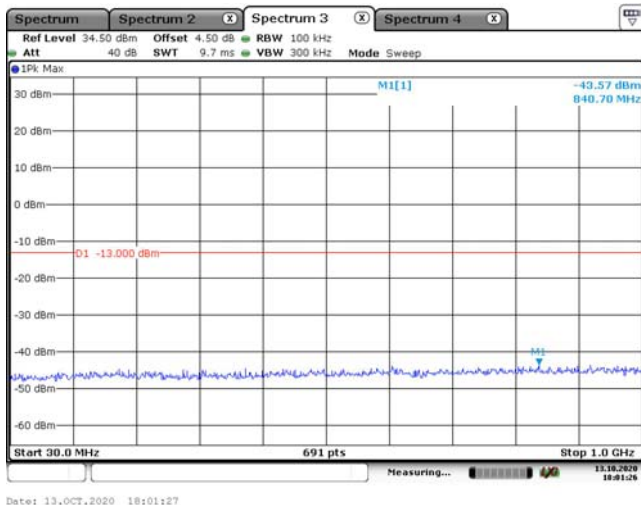
PCS 1900 Band, GSM, Low Channel



PCS 1900 Band, GSM, Middle Channel



PCS 1900 Band, GSM, High Channel



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 = $10 \lg (\text{TXpwr in Watts}/0.001)$ – 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	ESR3	102453	2020-09-12	2021-09-12
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2020-05-06	2021-05-06
HP	Amplifier	8447D	2727A05902	2020-09-05	2021-09-05
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2020-09-05	2021-09-05
Agilent	Signal Generator	E8247C	MY43321350	2019-12-10	2020-12-10
TDK RF	Horn Antenna	HRN-0118	130 084	2018-10-12	2021-10-12
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
R&S	Spectrum Analyzer	FSP 38	100478	2020-07-07	2021-07-07
HUBER+SUHNER	Coaxial Cable	SUCOFLEX 126EA	MY369/26/26EA	2020-09-25	2021-09-25
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2020-09-05	2021-09-05
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2020-06-27	2021-06-27
Sinoscite	Band-stop filter	BSF1850-1910MS-0935V2	0935V2	2020-06-16	2021-06-16
Sinoscite	Band-stop filter	BSF824-862MS-1438-001	1438001	2020-06-16	2021-06-16
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2017-12-06	2020-12-05
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2017-12-06	2020-12-05

* **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**

Test Items:	Radiation Below 1GHz	Radiation Above 1GHz
Temperature:	27.1°C	27.1°C
Relative Humidity:	35%	41%
ATM Pressure:	101kPa	100.8kPa
Tester:	Jalon Liu, Joker Chen	Joker Chen
Test Date:	2020-09-28	2020-09-30

Test Mode: Transmitting

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

Cellular Band (PART 22H)**30 MHz-10 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)			
Cellular 850 Band, GSM, Low Channel								
1648.40	H	48.71	-56.33	10.45	1.28	-47.16	-13.00	34.16
1648.40	V	43.70	-61.27	10.45	1.28	-52.10	-13.00	39.10
2472.60	H	47.98	-55.73	12.16	1.23	-44.80	-13.00	31.80
2472.60	V	45.57	-59.48	12.16	1.23	-48.55	-13.00	35.55
3296.80	H	46.33	-55.93	12.28	1.57	-45.22	-13.00	32.22
3296.80	V	46.84	-54.49	12.28	1.57	-43.78	-13.00	30.78
700.30	H	44.53	-56.89	0.00	0.94	-57.83	-13.00	44.83
700.30	V	42.73	-61.17	0.00	0.94	-62.11	-13.00	49.11
Cellular 850 Band, GSM, Middle Channel								
1673.20	H	49.50	-55.52	10.52	1.27	-46.27	-13.00	33.27
1673.20	V	47.05	-57.90	10.52	1.27	-48.65	-13.00	35.65
2509.80	H	42.24	-61.39	12.20	1.25	-50.44	-13.00	37.44
2509.80	V	43.55	-61.47	12.20	1.25	-50.52	-13.00	37.52
3346.40	H	41.25	-60.93	12.26	1.58	-50.25	-13.00	37.25
3346.40	V	39.82	-61.28	12.26	1.58	-50.60	-13.00	37.60
126.20	H	45.63	-58.57	0.00	0.32	-58.89	-13.00	45.89
300.20	V	42.21	-67.77	0.00	0.52	-68.29	-13.00	55.29
Cellular 850 Band, GSM, High Channel								
1697.60	H	44.70	-60.30	10.59	1.26	-50.97	-13.00	37.97
1697.60	V	43.29	-61.64	10.59	1.26	-52.31	-13.00	39.31
2546.40	H	45.55	-58.02	12.22	1.26	-47.06	-13.00	34.06
2546.40	V	46.87	-57.98	12.22	1.26	-47.02	-13.00	34.02
3395.20	H	38.08	-64.01	12.24	1.59	-53.36	-13.00	40.36
3395.20	V	39.73	-61.15	12.24	1.59	-50.50	-13.00	37.50
176.70	H	46.17	-63.16	0.00	0.44	-63.60	-13.00	50.60
520.60	V	41.62	-65.25	0.00	0.72	-65.97	-13.00	52.97

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)			
PCS 1900 Band, GSM, Low Channel								
3700.40	H	42.15	-59.14	12.24	1.55	-48.45	-13.00	35.45
3700.40	V	45.01	-55.70	12.24	1.55	-45.01	-13.00	32.01
5550.60	H	41.77	-54.76	12.87	1.26	-43.15	-13.00	30.15
5550.60	V	43.18	-53.74	12.87	1.26	-42.13	-13.00	29.13
846.30	H	36.30	-61.65	0.00	0.99	-62.64	-13.00	49.64
741.00	V	36.11	-67.18	0.00	0.94	-68.12	-13.00	55.12
PCS 1900 Band, GSM, Middle Channel								
3760.00	H	46.02	-55.08	12.25	1.53	-44.36	-13.00	31.36
3760.00	V	46.78	-54.03	12.25	1.53	-43.31	-13.00	30.31
5640.00	H	40.78	-55.51	13.00	1.28	-43.79	-13.00	30.79
5640.00	V	45.76	-50.83	13.00	1.28	-39.11	-13.00	26.11
846.30	H	37.19	-60.76	0.00	0.99	-61.75	-13.00	48.75
415.30	V	41.13	-66.90	0.00	0.63	-67.53	-13.00	54.53
PCS 1900 Band, GSM, High Channel								
3819.60	H	47.51	-53.41	12.26	1.51	-42.66	-13.00	29.66
3819.60	V	48.45	-52.45	12.26	1.51	-41.70	-13.00	28.70
5729.40	H	42.40	-53.65	13.12	1.31	-41.84	-13.00	28.84
5729.40	V	46.56	-49.71	13.12	1.31	-37.90	-13.00	24.90
851.90	H	37.10	-60.77	0.00	0.99	-61.76	-13.00	48.76
729.80	V	37.02	-66.44	0.00	0.94	-67.38	-13.00	54.38

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

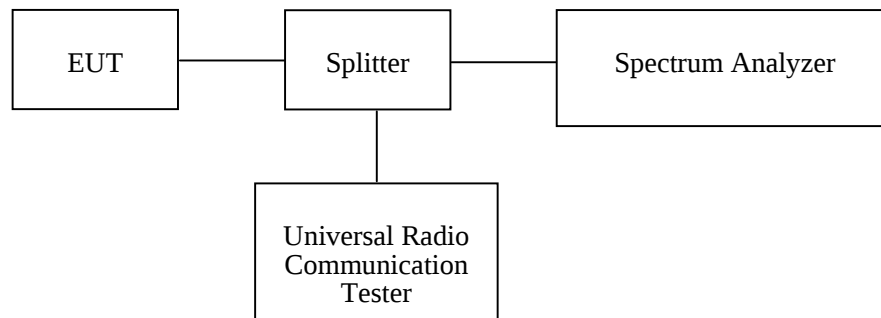
FCC §22.917(a) & §24.238(a)- BAND EDGES**Applicable Standard**

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	FSV40	101474	2020-07-07	2021-07-07
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010013	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/03	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201048	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	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).

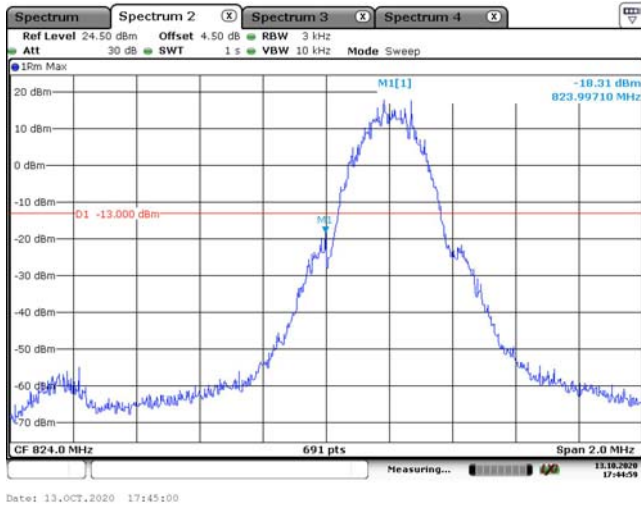
Test Data**Environmental Conditions**

Temperature:	25.2°C
Relative Humidity:	63%
ATM Pressure:	101kPa
Tester:	Chris Mo
Test Date:	2020-10-13

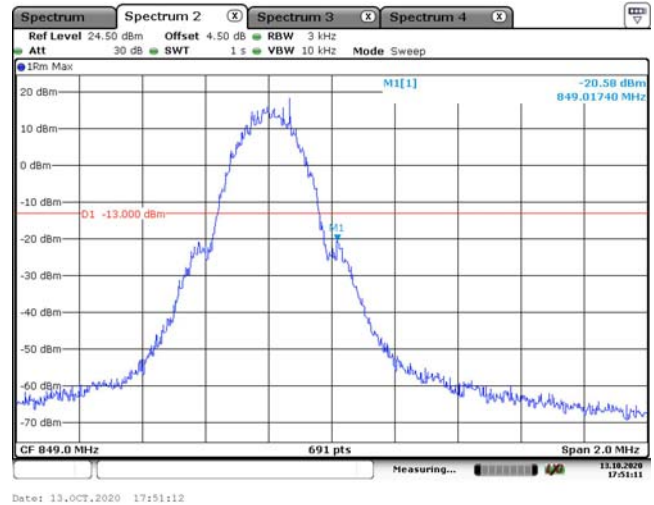
Test Mode: Transmitting

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

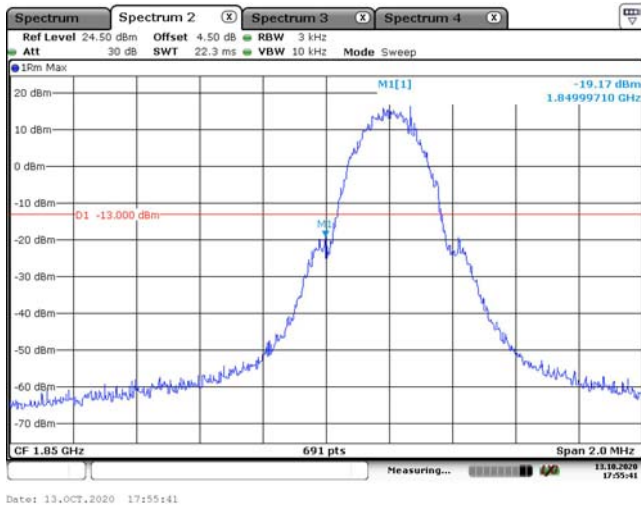
Cellular 850 Band, GSM, Left Band Edge



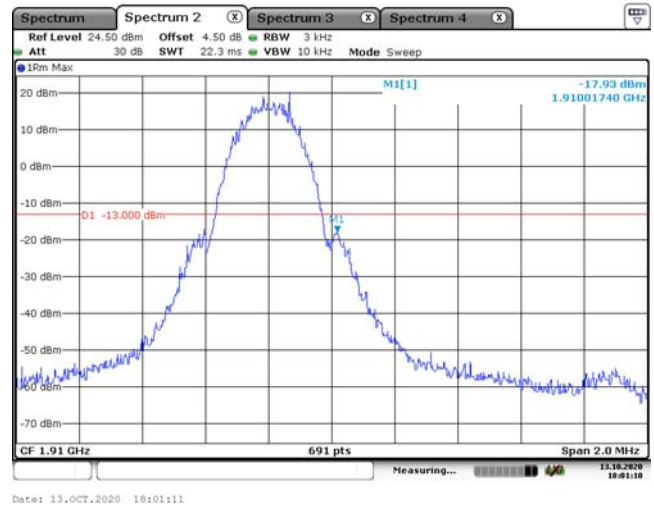
Cellular 850 Band, GSM, Right Band Edge



PCS 1900 Band, GSM, Left Band Edge



PCS 1900 Band, GSM, Right Band Edge



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

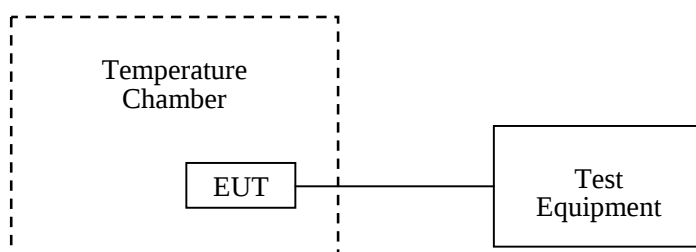
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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 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
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010013	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/03	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201048	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	N/A
R&S	Universal Radio Communication Tester	CMU200	110 822	2020-09-23	2021-09-22
ESPEC	Constant temperature and humidity Tester	ESX-4CA	018 463	2020-03-10	2021-03-09
UNI-T	Multimeter	UT39A	M130199938	2020-07-24	2021-07-24
Pro instrument	DC Power Supply	pps3300	3300012	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**

Temperature:	25.2°C
Relative Humidity:	63%
ATM Pressure:	101kPa
Tester:	Chris Mo
Test Date:	2020-10-13

Test Mode: Transmitting

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

Cellular Band

GMSK, Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.7	-30	-0.03586	2.5
-20		-27	-0.03227	
-10		-29	-0.03466	
0		-21	-0.02510	
10		-25	-0.02988	
20		-26	-0.03108	
30		-30	-0.03586	
40		-25	-0.02988	
50		-18	-0.02152	
20	3.5	-17	-0.02032	
20	4.2	-23	-0.02749	

PCS Band

GMSK, Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Results
°C	V _{DC}	Hz	ppm	
-30	3.7	18	0.00957	Pass
-20		15	0.00798	
-10		12	0.00638	
0		16	0.00851	
10		17	0.00904	
20		19	0.01011	
30		11	0.00585	
40		8	0.00426	
50		6	0.00319	
20	3.5	7	0.00372	
20	4.2	16	0.00851	

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