



TESTING LABORATORY
CERTIFICATE #4820.01



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

For

AVENIR TELECOM

208, Boulevard de Plombieres 13014 Marseille-France

FCC ID:2AM4J-E2

Report Type: Original Report	Product Type: Mobile Phone
Report Number: SZ1210517-17545E-00B	
Report Date: 2021-06-15	
Reviewed By: Ivan Cao Assistant Manager 	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:		Moblie Phone
EUT Model:		E2
Operation modes:		GSM Voice, GPRS Data
Operation Frequency:		GSM 850: 824-849 MHz(TX); 869-894 MHz(RX) PCS 1900: 1850-1910 MHz(TX); 1930-1990 MHz(RX)
Antenna Gain▲:		GSM850: 0.34 dBi(-1.81 dBd) PCS1900: 0.97 dBi
Modulation Type:		GMSK
Adapter Information	Model:	TPA-97050050U01
	Input:	100-240Vac 50/60Hz 0.15A
	Output:	5.0Vdc 500mA
Rated Input Voltage:		DC 3.7V from Battery or DC 5V from Adapter
Serial Number:		SZ1210517-17545E-RF-S1
EUT Received Date:		2021.05.17
EUT Received Status:		Good

Objective

This report is prepared on behalf of **AVENIR TELECOM** in accordance with: Part 2-Subpart J, Part 22-Subpart H, 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.

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 22H, Part 24E.

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	$\pm 5\%$
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%

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.12, Pulong East 1st Road, Tangxia Town, 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 “▲”. 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.

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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 850/1900 MHz, 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

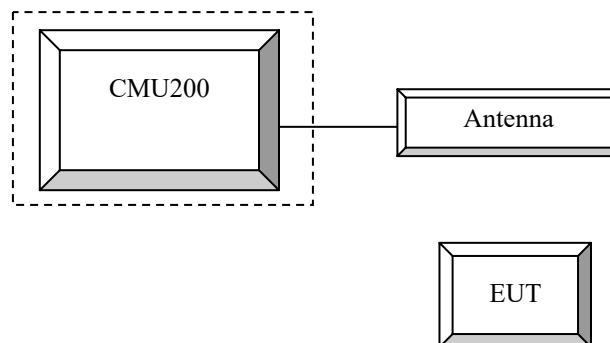
Equipment Modifications

No modification was made to the EUT.

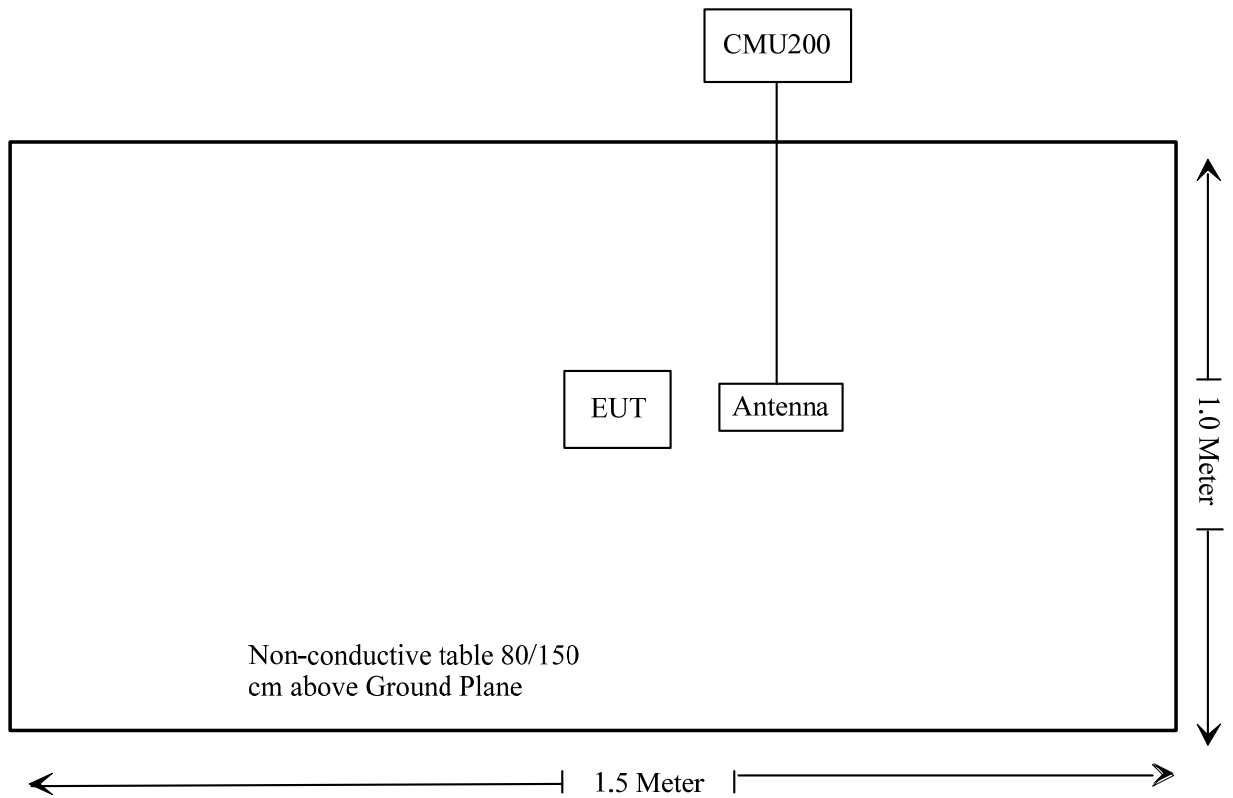
Support Equipment List and Details

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

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

Rules	Description of Test	Result
FCC§1.1310, §2.1093	RF Exposure	Compliance
FCC§2.1046;§ 22.913 (a); § 24.232 (c)	RF Output Power	Compliance
FCC§ 2.1047	Modulation Characteristics	Not Applicable
FCC§ 2.1049; § 22.905 § 22.917; § 24.238	Occupied Bandwidth	Compliance
FCC§ 2.1051, § 22.917 (a); § 24.238 (a)	Spurious Emissions at Antenna Terminal	Compliance
FCC§ 2.1053 § 22.917 (a); § 24.238 (a)	Field Strength of Spurious Radiation	Compliance
FCC§ 22.917 (a); § 24.238 (a)	Out of band emission, Band Edge	Compliance
FCC§ 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: SZ1210517-17545E-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
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010013	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	Each time	N/A
Unknown	Attenuator	UNAT-3+	15529	Each time	N/A
R&S	Universal Radio Communication Tester	CMU200	106 891	2020-09-12	2021-09-12

*** 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:	25.6~25.8 °C
Relative Humidity:	57%
ATM Pressure:	100.0~100.4kPa
Tester:	Joe Qiao
Test Date:	2021-06-05~2021-06-07

Test Result: Compliance

Conducted Output Power:

Band	Channel No.	Conducted Peak Output Power (dBm)				
		GSM	GPRS 1 uplink slot	GPRS 2 uplink slots	GPRS 3 uplink slots	GPRS 4 uplink slots
Cellular	128	31.10	29.60	28.20	26.50	24.80
	190	31.20	29.70	28.30	26.70	24.90
	251	31.30	29.80	28.40	26.80	25.10
PCS	512	26.20	24.30	23.10	21.30	19.50
	661	26.00	23.90	22.50	20.60	18.70
	810	26.10	23.60	22.10	20.10	18.20

ERP/EIRP:

Band	Channel	Conducted Power (dBm)	Antenna Gain (dBi/dBd)	Result (dBm)	Limit (dBm)
Cellular	Low	31.1	-1.81	29.29	38.45
	Middle	31.2	-1.81	29.39	38.45
	High	31.3	-1.81	29.49	38.45
PCS	Low	26.2	0.97	27.17	33.00
	Middle	26	0.97	26.97	33.00
	High	26.1	0.97	27.07	33.00

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) Result = Conducted Power - Cable loss + Antenna Gain
- 3) Antenna gain(dBd)= Antenna gain(dBi)-2.15

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

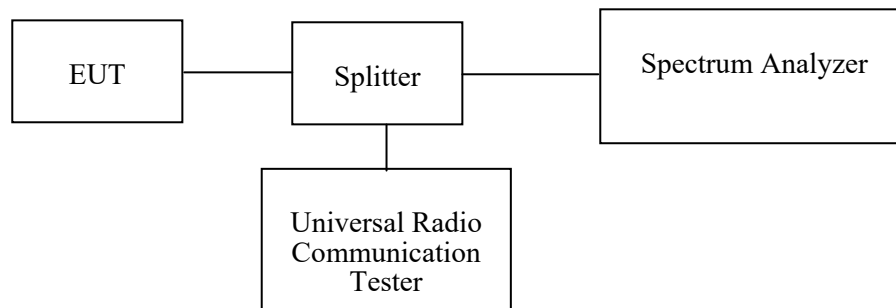
Applicable Standard

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	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	Each time	N/A
Unknown	Attenuator	UNAT-3+	15529	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:	25.6~25.8 °C
Relative Humidity:	57%
ATM Pressure:	100.0~100.4kPa
Tester:	Joe Qiao
Test Date:	2021-06-07

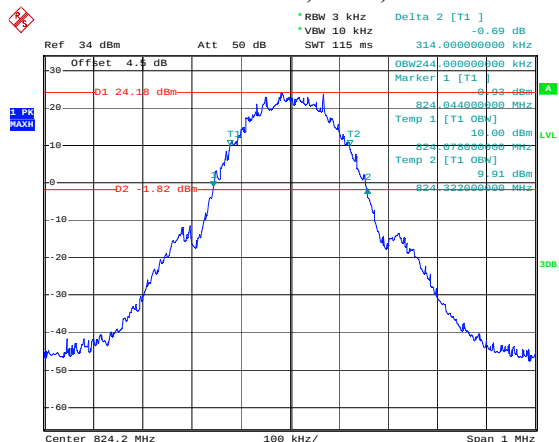
Test Mode: Transmitting

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

GSM mode:

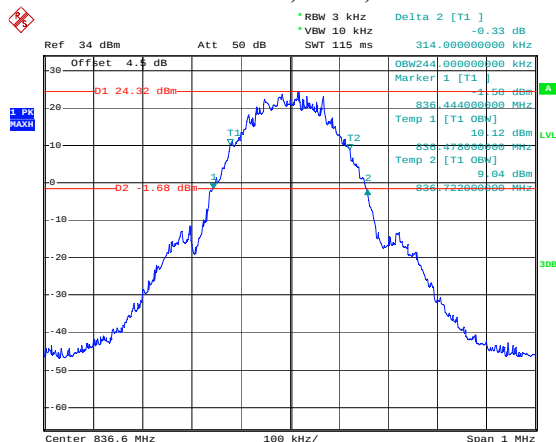
Band	Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
		Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
Cellular	GSM	0.244	0.244	0.246	0.314	0.314	0.314
PCS	GSM	0.242	0.246	0.244	0.308	0.320	0.308

Cellular 850 Band, GSM, Low Channel



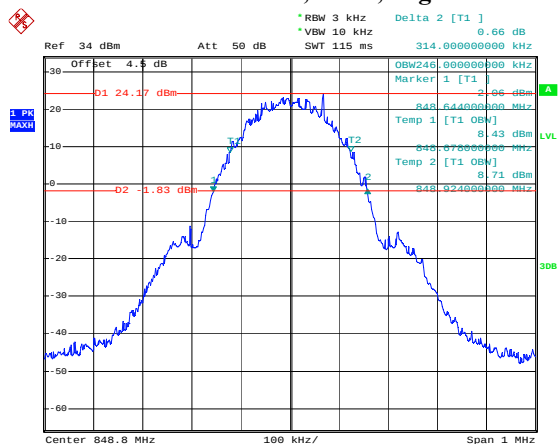
Date: 7. JUN. 2021 12:25:08

Cellular 850 Band, GSM, Middle Channel



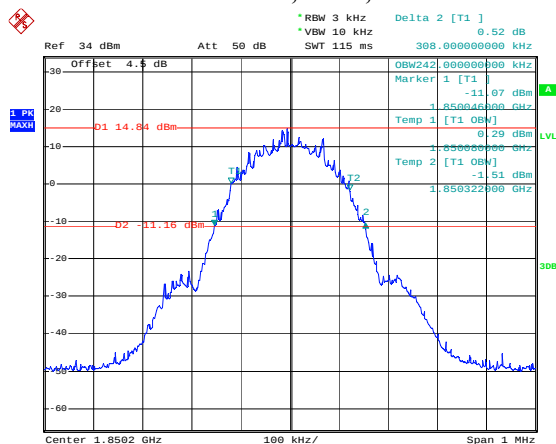
Date: 7. JUN. 2021 12:27:16

Cellular 850 Band, GSM, High Channel



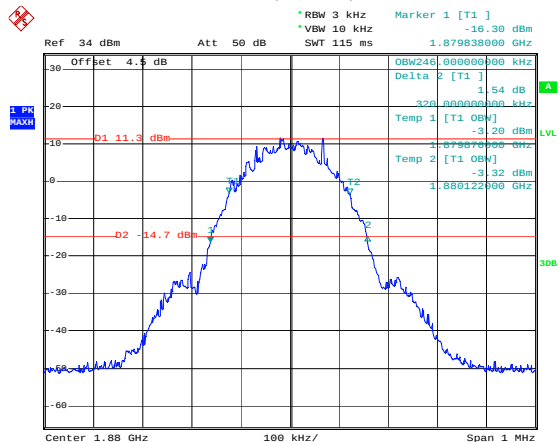
Date: 7. JUN. 2021 12:30:05

PCS 1900 Band, GSM, Low Channel



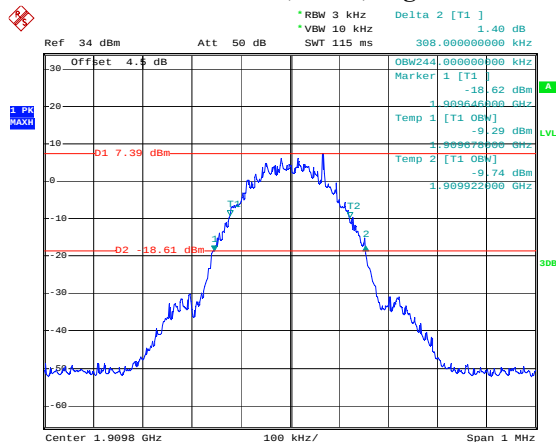
Date: 7. JUN. 2021 12:13:34

PCS 1900 Band, GSM, Middle Channel



Date: 7. JUN. 2021 12:16:21

PCS 1900 Band, GSM, High Channel



Date: 7. JUN. 2021 12:20:09

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

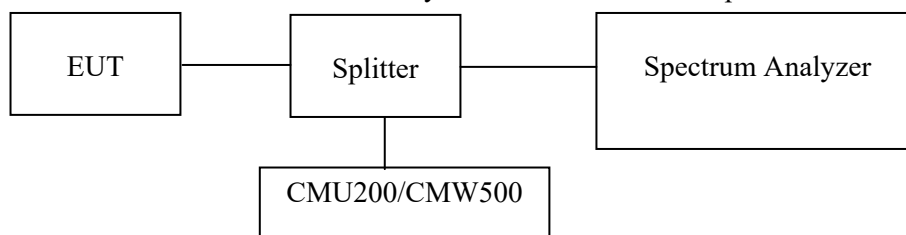
Applicable Standard

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	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	Each time	N/A
Unknown	Attenuator	UNAT-3+	15529	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).

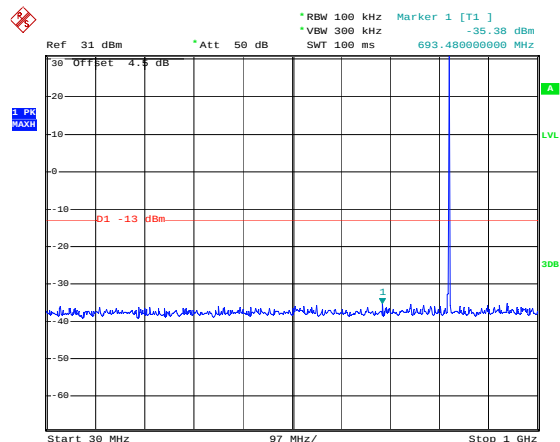
Test Data

Environmental Conditions

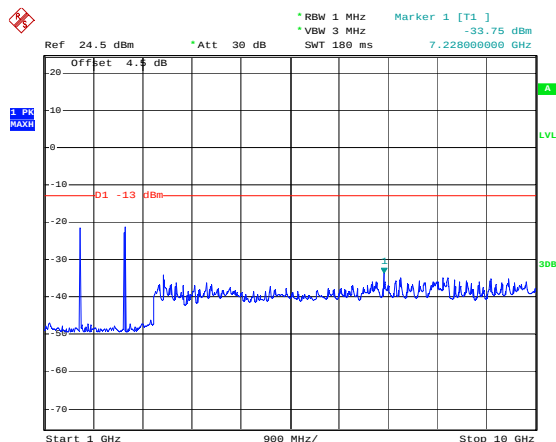
Temperature:	25.6~25.8 °C
Relative Humidity:	57%
ATM Pressure:	100.0~100.4kPa
Tester:	Joe Qiao
Test Date:	2021-06-05

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

GSM 850, Low Channel

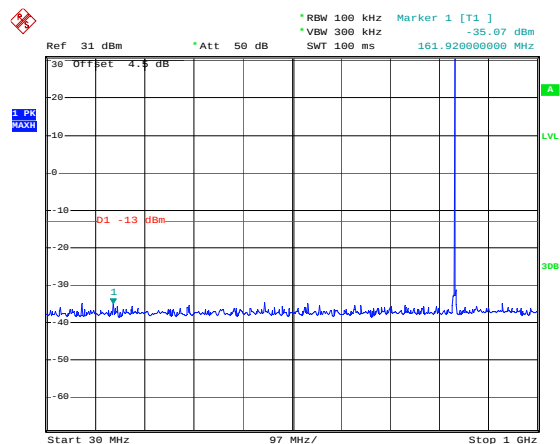


Date: 5.JUN.2021 17:00:18

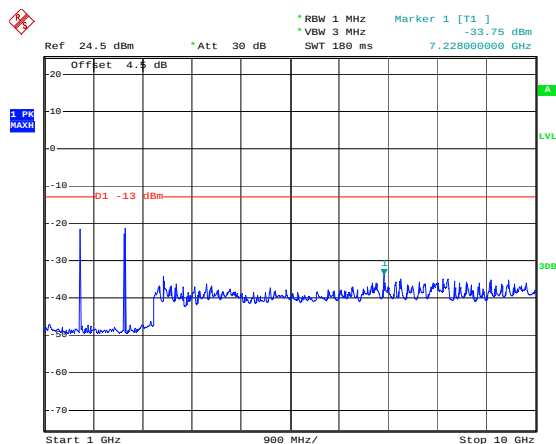


Date: 5.JUN.2021 16:54:42

GSM 850, Middle Channel

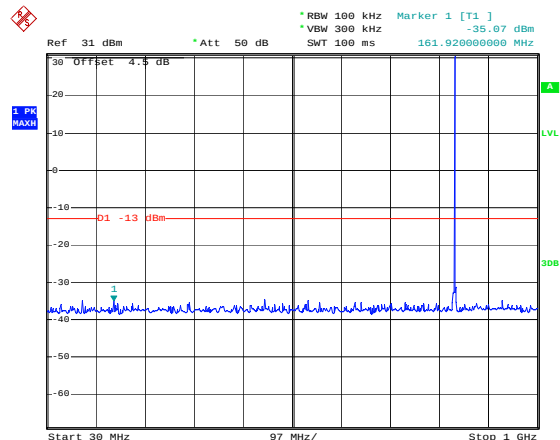


Date: 5.JUN.2021 17:02:15

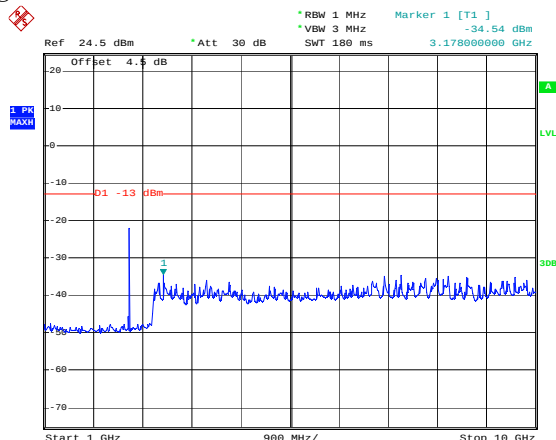


Date: 5.JUN.2021 16:54:42

GSM 850, High Channel



Date: 5.JUN.2021 17:02:15



Date: 5.JUN.2021 16:55:34

The screenshot shows a Spectrum Analyzer interface. At the top, a red box contains the text "1 PR MAX". The main display area is a grid with a vertical axis labeled from -60 to -30 and a horizontal axis labeled from Start 30 MHz to Stop 1 GHz. A red horizontal line is drawn across the grid at the -13 dB level, labeled "D1 -13 dBm". A blue signal trace is visible, showing a noisy baseline with a small peak at 97 MHz, which is marked with a green vertical line and a green "1". The top status bar displays various parameters: Ref 34 dBm, Att 40 dB, RBW 100 kHz, VBW 300 kHz, SWT 100 ms, Marker 1 [T1], and 538.280000000 MHz. The bottom status bar displays Start 30 MHz, 97 MHz/, and Stop 1 GHz.

1 PR
MAX

Ref 24.5 dBm *Att 30 dB

*RBW 1 MHz Marker 1 [T1] -16.87 dBm
*VBW 3 MHz
SWT 380 ms 18.06200000 GHz

Offset 4.5 dB

D1 -13 dBm

Start 1 GHz 1.9 GHz/ Stop 20 GHz

Date: 5.JUN.2021 16:49:21

Ref 34 dBm *Att 40 dB SWT 100 ms 858.38000000 MHz
 Offset 4.5 dB
 -30 dBm
 -20 dBm
 -10 dBm
 0 dBm
 -10 dBm
 -20 dBm
 -30 dBm
 -40 dBm
 -50 dBm
 -60 dBm
 Start 30 MHz 97 MHz/ Stop 1 GHz
 PR MAX1
 A
 LVL
 30B
 1
 D1 -13 dBm

1 PR
AVL

Ref 24.5 dBm *Att 30 dB SWT 380 ms 14.83200000 GHz

Offset 4.5 dB

D1 -13 dBm

Marker 1 [T1] -10.10 dBm

Start 1 GHz 1.9 GHz/ Stop 20 GHz

Date: 5 JUN 2021 16:50:33

Ref 34 dBm *Att 40 dB

*RBW 100 kHz Marker 1 [T1] -34.10 dBm
 *VBW 300 kHz
 SWT 100 ms 998.820000000 MHz

Off Set 4.5 dB

1 PR MAX

D1 -13 dBm

Start 39 MHz 97 MHz/ Stop 1 GHz

Ref 24.5 dBm *Att 30 dB *BW 1 MHz Marker 1 [T1] -17.66 dBm
 *VM 3 MHz SWT 380 ms 19.96200000 GHz

Offset 4.5 dB

D1 -13 dBm

Start 1 GHz 1.9 GHz/ Stop 20 GHz

Date: 5.JUN.2021 16:51:22

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	A060611-2	2020-08-25	2023-08-25
R&S	EMI Test Receiver	ESCI	100224	2020-09-12	2021-09-12
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2020-09-24	2021-09-24
Sonoma	Amplifier	310N	185914	2020-10-13	2021-10-13
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	2021-04-25	2022-04-24
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Agilent	Spectrum Analyzer	E4440A	SG43360054	2020-07-07	2021-07-07
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2020-09-05	2021-09-05
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	2020-09-05	2021-09-05
TDK RF	Horn Antenna	HRN-0118	130 084	2018-10-12	2021-10-12
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2020-09-05	2021-09-05
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2020-12-05	2023-12-04
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2020-12-05	2023-12-04

*** 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**

Test Items	Radiation Below 1GHz	Radiation Above 1GHz
Temperature:	28.4°C	29.5°C
Relative Humidity:	542%	43 %
ATM Pressure:	100 kPa	100 kPa
Tester:	Burt Hu	Jeremy Liang
Test Date:	2021-06-01	2021-05-31

Test Result: Compliance.

EUT Operation Mode: Transmitting

30 MHz-10 GHz:

30 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:824.2MHz								
1648.40	H	56.87	-47.31	10.44	0.71	-37.58	-13.00	24.58
1648.40	V	61.89	-42.89	10.44	0.71	-33.16	-13.00	20.16
2472.60	H	48.69	-54.09	12.88	1.25	-42.46	-13.00	29.46
2472.60	V	48.97	-53.86	12.88	1.25	-42.23	-13.00	29.23
3296.80	H	44.59	-55.19	13.60	1.59	-43.18	-13.00	30.18
3296.80	V	44.78	-55.01	13.60	1.59	-43.00	-13.00	30.00
967.20	H	39.57	-53.65	0.00	0.51	-54.16	-13.00	41.16
838.70	V	54.15	-40.08	0.00	0.50	-40.58	-13.00	27.58
GSM850 Frequency:836.6MHz								
1673.20	H	58.47	-45.47	10.61	0.73	-35.59	-13.00	22.59
1673.20	V	63.57	-40.97	10.61	0.73	-31.09	-13.00	18.09
2509.80	H	48.95	-53.96	13.11	1.25	-42.10	-13.00	29.10
2509.80	V	49.59	-53.35	13.11	1.25	-41.49	-13.00	28.49
3346.40	H	41.95	-57.73	13.83	1.61	-45.51	-13.00	32.51
3346.40	V	42.35	-57.37	13.83	1.61	-45.15	-13.00	32.15
967.00	H	41.29	-51.94	0.00	0.51	-52.45	-13.00	39.45
838.80	V	54.75	-39.48	0.00	0.50	-39.98	-13.00	26.98
GSM850 Frequency:848.8MHz								
1697.60	H	53.61	-50.09	10.78	0.75	-40.06	-13.00	27.06
1697.60	V	62.35	-41.95	10.78	0.75	-31.92	-13.00	18.92
2546.40	H	48.17	-54.78	13.15	1.27	-42.90	-13.00	29.90
2546.40	V	49.59	-53.50	13.15	1.27	-41.62	-13.00	28.62
3395.20	H	45.48	-54.04	14.08	1.64	-41.60	-13.00	28.60
3395.20	V	45.28	-54.34	14.08	1.64	-41.90	-13.00	28.90
966.80	H	36.44	-56.80	0.00	0.51	-57.31	-13.00	44.31
839.70	V	52.13	-42.07	0.00	0.50	-42.57	-13.00	29.57

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:1850.2MHz								
3700.40	H	72.29	-25.70	14.00	1.83	-13.53	-13.00	0.53
3700.40	V	70.07	-27.90	14.00	1.83	-15.73	-13.00	2.73
5550.60	H	49.25	-44.72	13.95	1.27	-32.04	-13.00	19.04
5550.60	V	47.92	-45.90	13.95	1.27	-33.22	-13.00	20.22
126.15	H	40.20	-69.54	0.00	0.22	-69.76	-13.00	56.76
230.50	V	39.60	-67.79	0.00	0.23	-68.02	-13.00	55.02
GSM1900 Frequency:1880MHz								
3760.00	H	70.64	-27.00	13.76	1.63	-14.87	-13.00	1.87
3760.00	V	68.76	-28.74	13.76	1.63	-16.61	-13.00	3.61
5640.00	H	47.87	-45.72	14.02	1.31	-33.01	-13.00	20.01
5640.00	V	45.11	-48.37	14.02	1.31	-35.66	-13.00	22.66
245.15	H	40.21	-69.16	0.00	0.26	-69.42	-13.00	56.42
220.70	V	39.47	-67.63	0.00	0.22	-67.85	-13.00	54.85
GSM1900Frequency:1909.8MHz								
3819.60	H	66.87	-30.38	13.56	1.50	-18.32	-13.00	5.32
3819.60	V	64.41	-32.66	13.56	1.50	-20.60	-13.00	7.60
5729.40	H	44.61	-49.10	13.96	1.31	-36.45	-13.00	23.45
5729.40	V	42.79	-50.89	13.96	1.31	-38.24	-13.00	25.24
261.02	H	41.23	-67.91	0.00	0.28	-68.19	-13.00	55.19
233.70	V	39.40	-68.08	0.00	0.24	-68.32	-13.00	55.32

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 §22.917(a) & §24.238(a) - BAND EDGES

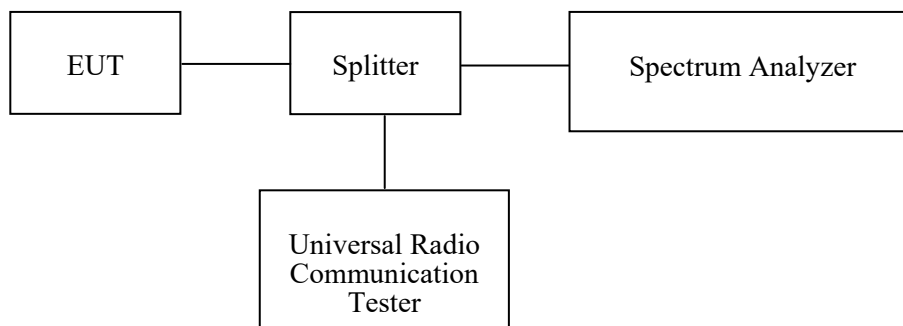
Applicable Standard

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	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	Each time	N/A
Unknown	Attenuator	UNAT-3+	15529	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

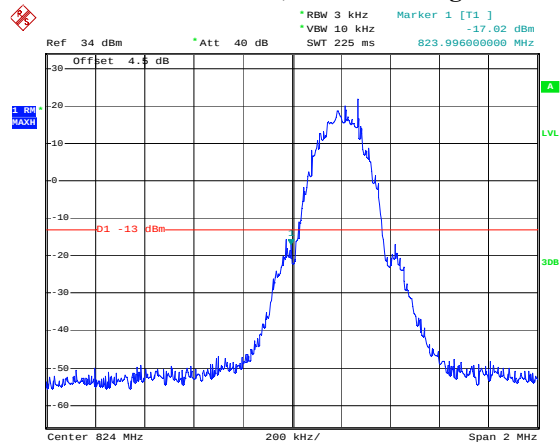
Environmental Conditions

Temperature:	25.6~25.8 °C
Relative Humidity:	57%
ATM Pressure:	100.0~100.4kPa
Tester:	Joe Qiao
Test Date:	2021-06-05

Test Mode: Transmitting

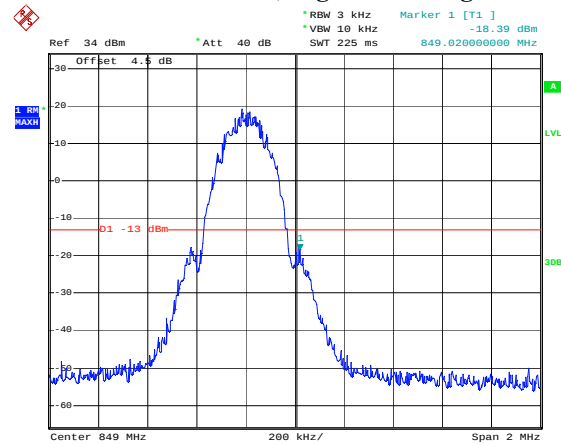
Test Result: Compliance. Please refer to the following plots.

GSM 850, Left Band Edge



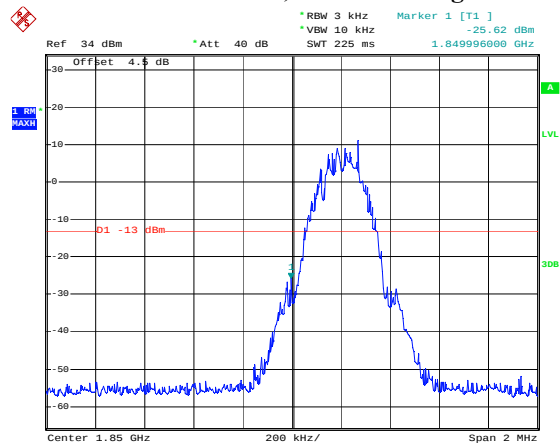
Date: 5.JUN.2021 16:33:23

GSM 850, Right Band Edge



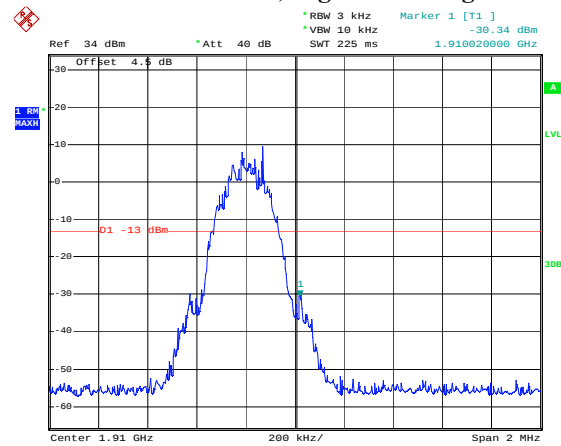
Date: 5.JUN.2021 16:32:28

PCS 1900, Left Band Edge



Date: 5.JUN.2021 16:34:43

PCS 1900, Right Band Edge



Date: 5.JUN.2021 16:35:28

FCC §2.1055, §22.355 & §24.235 - FREQUENCY STABILITY

Applicable Standard

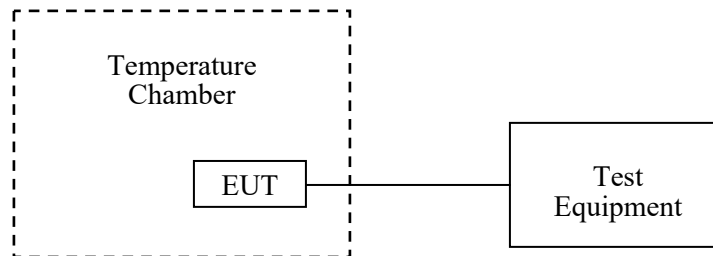
FCC § 2.1055 (a), § 2.1055 (d), §22.355, §24.235

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
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	Each time	N/A
Unknown	Attenuator	UNAT-3+	15529	Each time	N/A
R&S	Universal Radio Communication Tester	CMU200	106 891	2020-09-12	2021-09-12
ESPEC	Constant temperature and humidity Tester	ESX-4CA	018 463	2021-03-10	2022-03-09
UNI-T	Multimeter	UT39A	M130199938	2020-07-01	2021-07-01
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:	25.6~25.8 °C
Relative Humidity:	57%
ATM Pressure:	100.0~100.4kPa
Tester:	Joe Qiao
Test Date:	2021-06-05~2021-06-07

Test Result: Compliance.

GMSK, Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.7	5	0.00598	2.5
-20		-7	-0.00837	
-10		-8	-0.00956	
0		-3	-0.00359	
10		0	0.00000	
20		2	0.00239	
30		5	0.00598	
40		9	0.01076	
50		8	0.00956	
20	3.5	2	0.00239	
20	4.2	-3	-0.00359	

GMSK, Middle Channel, $f_c = 1880$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V _{DC}	Hz	ppm	
-30	3.7	6	0.00319	Pass
-20		0	0.00000	
-10		-7	-0.00372	
0		-6	-0.00319	
10		0	0.00000	
20		-5	-0.00266	
30		7	0.00372	
40		-2	-0.00106	
50		-9	-0.00479	
20	3.5	0	0.00000	
20	4.2	-6	-0.00319	

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 *****