

FCC Part 2, 22H & 24E
EMI MEASUREMENT AND TEST REPORT
For

G.G.Telecom
120 Rue J-Aurele-Roux, Victoriaville, Quebec, G6T 0N5 Canada

FCC ID: EEX-LIVECAMERA

March 20, 2012

This Report Concerns: Original Report		Equipment Type: Live Camera	
Test Engineer:		Eric Li <i>Eric Li</i>	
Report No.:		BST11120047Y-1ER-3	
Receive EUT Date/Test Date:		March 3, 2012/ March 4-16, 2012	
Reviewed By:		Christina <i>Christina</i>	
Prepared By:		 Shenzhen BST Technology Co.,Ltd. 3F, Weames Technology Building, No. 10 Kefa Road, Science Park, Nanshan District, Shenzhen, Guangdong, China Tel: 0755-26747751 ~ 3 Fax: 0755-26747751 ~ 3 ext.826	

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TABLE OF CONTENTS

1.	GENERAL INFORMATION	3
1.1.	Report information.....	3
1.2.	Measurement Uncertainty	3
2.	PRODUCT DESCRIPTION	4
2.1.	EUT Description	4
2.2.	Block Diagram of EUT Configuration.....	4
2.3.	Test Conditions	4
3.	FCC ID LABEL.....	5
4.	TEST RESULTS SUMMARY	6
	Modifications	6
5.	TEST EQUIPMENT USED	7
6.	§2.1046, §22.913 (A), §24.232(B) - RF OUTPUT POWER	8
6.1.	Applicable Standard.....	8
6.2.	Test Procedure	8
6.3.	Test Data	9
7.	§2.1049 - OCCUPIED BANDWIDTH.....	11
7.1.	Applicable Standards	11
7.2.	Test Procedure	11
7.3.	Test Data	11
8.	§2.1051, §22.917(A), §24.238(A) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS	13
8.1.	Applicable Standards	13
8.2.	Test Procedure	13
8.3.	Test Data	13
9.	§2.1053, §22.917(A), §24.238(A) - SPURIOUS RADIATED EMISSIONS.....	18
9.1.	Applicable Standards	18
9.2.	Test Procedure	18
9.3.	Test Data	18
10.	§2.1055, §22.355, §24.235 - FREQUENCY STABILITY	21
10.1.	Applicable Standard.....	21
10.2.	Test Procedure	21
10.3.	Test Data	21

1. GENERAL INFORMATION

1.1. Report information

1.1.1. This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that BST approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that BST in any way guarantees the later performance of the product/equipment.

1.1.2. The sample/s mentioned in this report is/are supplied by Applicant, BST therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through BST, unless the applicant has authorized BST in writing to do so.

Test Facility -

The test site used to collect the radiated data is located on the address of

SinTek Laboratory Co.,Ltd.

(FCC Registered Test Site Number: 963441) on

No.7, Xinshidai Industrial, Guantian Village, Shiyan Town, Baoan District, Shenzhen, Guangdong 518108, China

The Test Site is constructed and calibrated to meet the FCC requirements.

1.2. Measurement Uncertainty

Available upon request.

2. PRODUCT DESCRIPTION

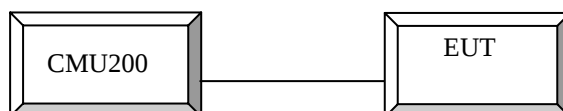
2.1. EUT Description

Description : Live Camera
Applicant : G.G.Telecom
120 Rue J-Aurele-Roux, Victoriaville, Quebec, G6T 0N5
Canada
Manufacture : Milan Enterprise LTD.
8A Qihua Building Charming Villa Yinhu Road Silver Lake
ShenZhen China
Model Number : Live Camera
Power Supply : DC 8.4V (Rechargeable Li-ion Polymer Battery)

Additonal Information

Operating Frequency : GSM 850: 824.2MHz-848.8MHz
GSM 1900: 1850.2MHz-1909.8MHz
Rated Power : GSM 850: 33dBm
GSM 1900: 30dBm
Antenna Gain : 1.2dBi

2.2. Block Diagram of EUT Configuration



2.3. Test Conditions

Temperature: 20~25
Relative Humidity: 45~55%

3. FCC ID LABEL

FCC ID: EEX-LIVECAMERA



This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Label Location on EUT

EUT View/ FCC ID Label Location



4. TEST RESULTS SUMMARY

FCC RULE	DESCRIPTION OF TEST	Result
2.1046 22.913 (a) 24.232(b)	RF Output Power	Compliant
2.1049(h)	Occupied Bandwidth	Compliant
2.1051 22.917 (a) 24.238(a)	Spurious Emissions at Antenna Terminal	Compliant
2.1053 22.917 (a) 24.238(a)	Field Strength of Spurious Radiation	Compliant
2.1055 22.355 24.235	Frequency stability vs. temperature Frequency stability vs. voltage	Compliant

Modifications

No modification was made.

5. TEST EQUIPMENT USED

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052604	2011-09-25	2012-09-25
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2012-03-10	2013-03-10
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2011-05-09	2012-05-09
HP	Preamplifier	8449B	3008A00277	2011-09-29	2012-09-29
HP	Signal Generator	HP8657A	2849U00982	2011-10-16	2012-10-16
HP	Amplifier	HP8447D	2944A09795	2011-11-15	2012-11-15
Giga-tronics	Signal Generator	1026	270801	2011-09-29	2012-09-29
COM POWER	Dipole Antenna	AD-100	041000	2011-09-25	2012-09-25
A.H. System	Horn Antenna	SAS-200/571	135	2011-05-17	2012-05-17
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	1100.0008.02	2011-06-21	2012-06-21
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2011-10-16	2012-10-16
WUHUAN	Temperature & Humidity Chamber	HTP205	20021115	2011-12-28	2012-12-28

6. §2.1046, §22.913 (A), §24.232(B) - RF OUTPUT POWER

6.1. Applicable Standard

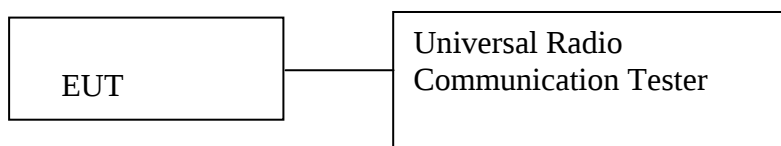
According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232(b), Peak power measurement, Mobile station are limited to 2W.

6.2. Test Procedure

Conducted method:

The RF output of the transmitter was connected to the wireless test set and the spectrum analyzer through sufficient attenuation.



Radiated method:

TIA 603-C section 2.2.17

6.3. Test Data

Pass

Environmental Conditions

Temperature:	25°C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

RF Conducted output power

Test on GSM 850 mode

Channel	Frequency (MHz)	Maximum Antenna gain (dB)	Conducted RF Output Power (dBm)	Calculated Power (dBm)	Limit (dBm)
Low	824.2	1.2	31.5	32.7	38.5
Middle	836.6	1.2	31.3	32.5	38.5
High	848.8	1.2	31.3	32.5	38.5

Test on PCS 1900 mode

Channel	Frequency (MHz)	Maximum Antenna gain (dB)	Conducted RF Output Power (dBm)	Calculated Power (dBm)	Limit (dBm)
Low	1850.2	1.2	29.3	30.5	33
Middle	1880.0	1.2	29.1	30.3	33
High	1909.8	1.2	29.0	30.2	33

Radiated output power:

Below 1GHz was RBW=300kHz, VBW=1MHz

Above 1GHz was RBW=1MHz, VBW=3MHz

Test on GSM 850 mode

Channel	Frequency (MHz)	Antenna Pol.	RF Output Power ERP (dBm)	Limit (dBm)
Low	824.2	H	23.34	38.5
		V	20.18	38.5
Middle	836.6	H	23.19	38.5
		V	20.07	38.5
High	848.8	H	23.21	38.5
		V	20.68	38.5

Test on PCS 1900 mode

Channel	Frequency (MHz)	Antenna Pol.	RF Output Power EIRP (dBm)	Limit (dBm)
Low	1850.2	H	22.16	33
		V	19.42	33
Middle	1880.0	H	22.34	33
		V	19.35	33
High	1909.8	H	21.97	33
		V	19.22	33

7. §2.1049 - OCCUPIED BANDWIDTH

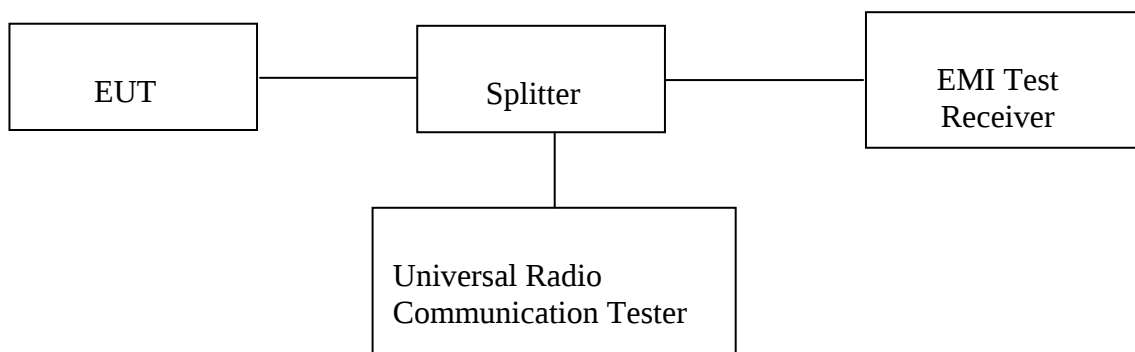
7.1. Applicable Standards

CFR 47 §2.1049

7.2. Test Procedure

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.

The EUT output RF connector was connected with a short a cable to the spectrum analyzer, RBW was set to about 1% of emission BW, VBW $\geq$ 3 times RBW, 99% bandwidth were measured and recorded, the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.



7.3. Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

Test on GSM 850 mode

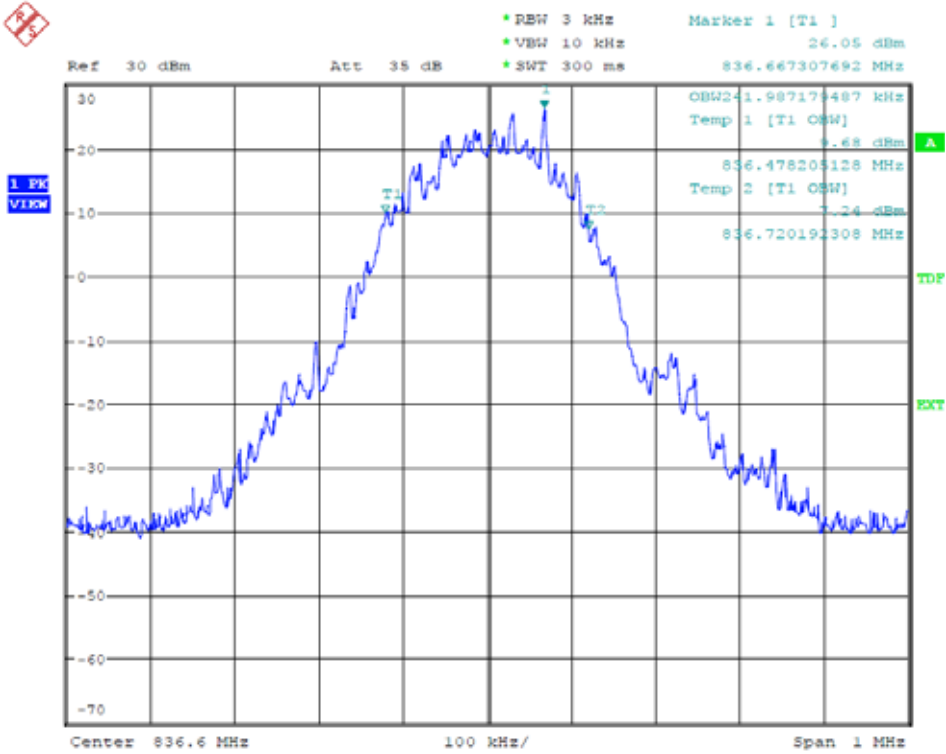
Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	836.6	241.987

Test on PCS 1900 mode

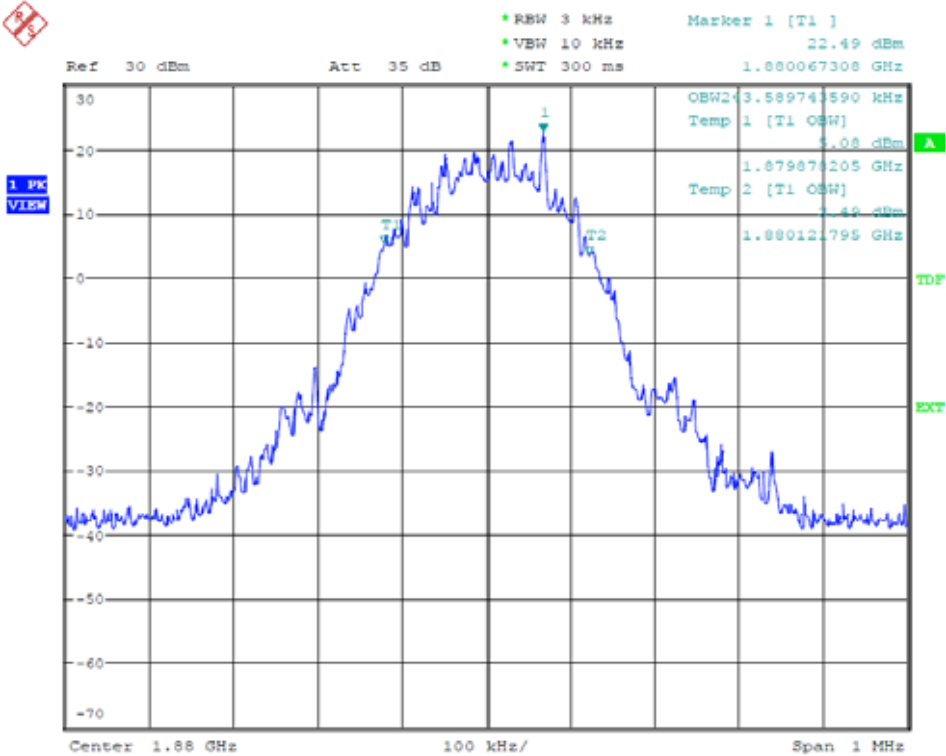
Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	1880.0	243.590

99% Bandwidth

GSM 850 Channel Mid



PCS 1900 Channel Mid



8. §2.1051, §22.917(A), §24.238(A) - SPURIOUS EMISSIONS AT ANTENNA

TERMINALS

8.1. Applicable Standards

CFR 47 §2.1051, §22.917(a) and §24.238(a)

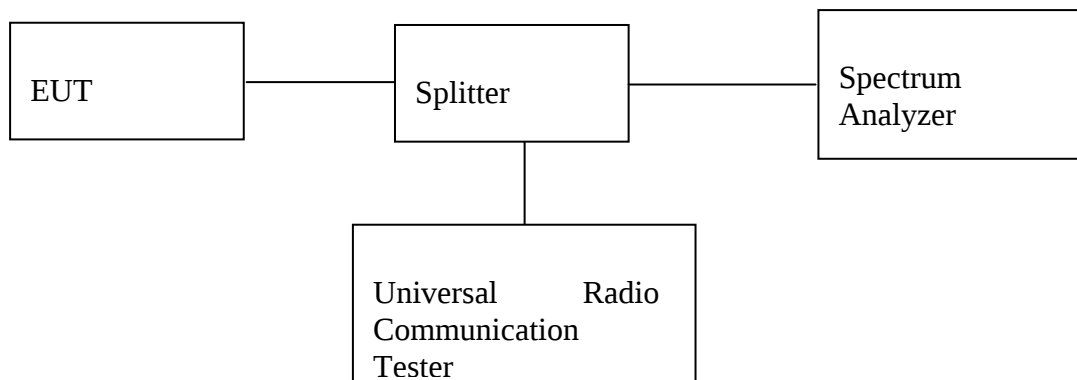
FCC part 22.917(a), 24.238(a) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specification in the instruction manual and/or alignment procedure, shall not be less than $43+10\log(\text{Mean power in watts})$ dBc below the mean power output outside a license's frequency block(-13dBm).

8.2. Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emission is any up to 10th harmonic.

For the out of band: set RBW, VBW=1MHz, stat=30MHz, stop= 10th harmonic. Limit=-13dBm.

Band Edge requirements: In 1Mhz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 % of bandwidth of fundamental emission of the transmitter any be employed to measure the out of band emission. Limit=-13dBm.



8.3. Test Data

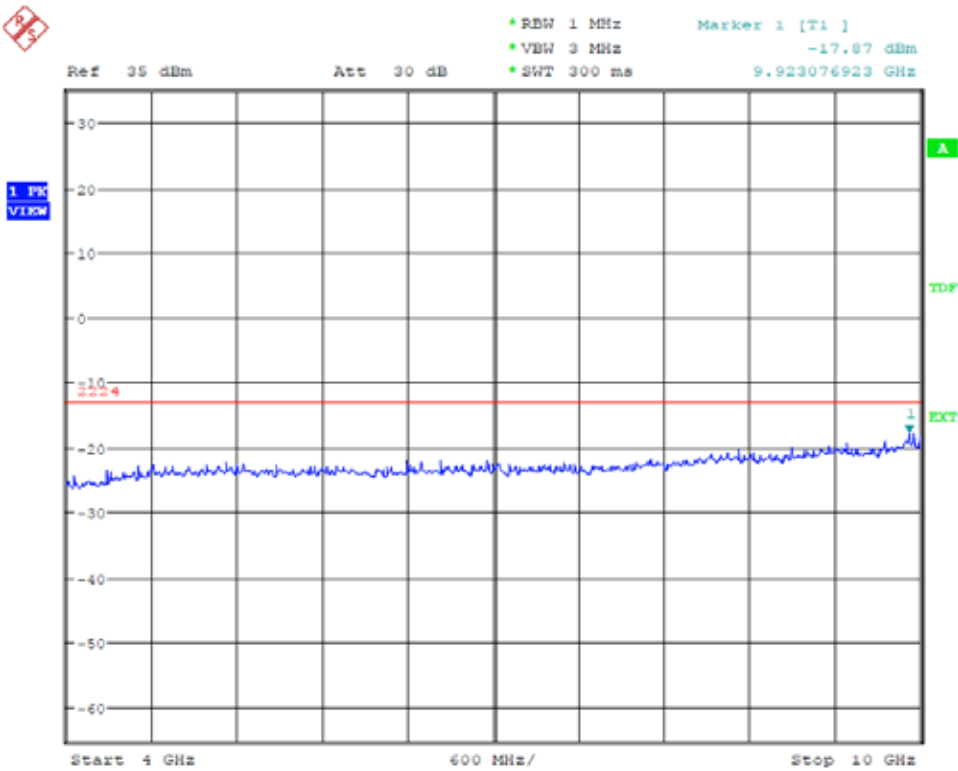
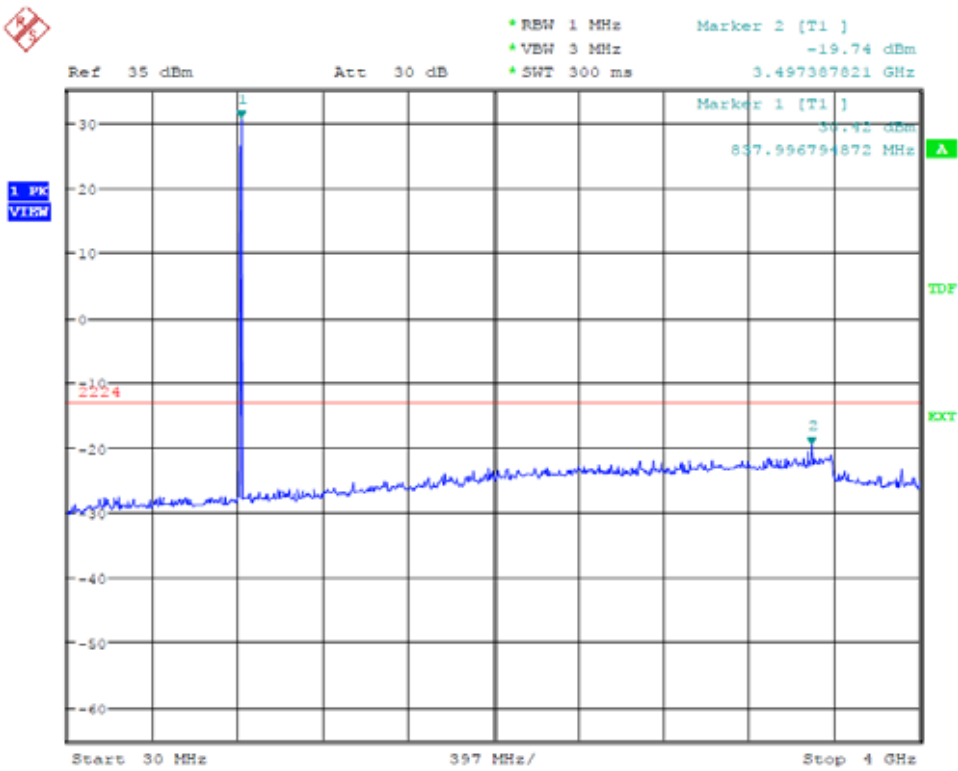
Pass.

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

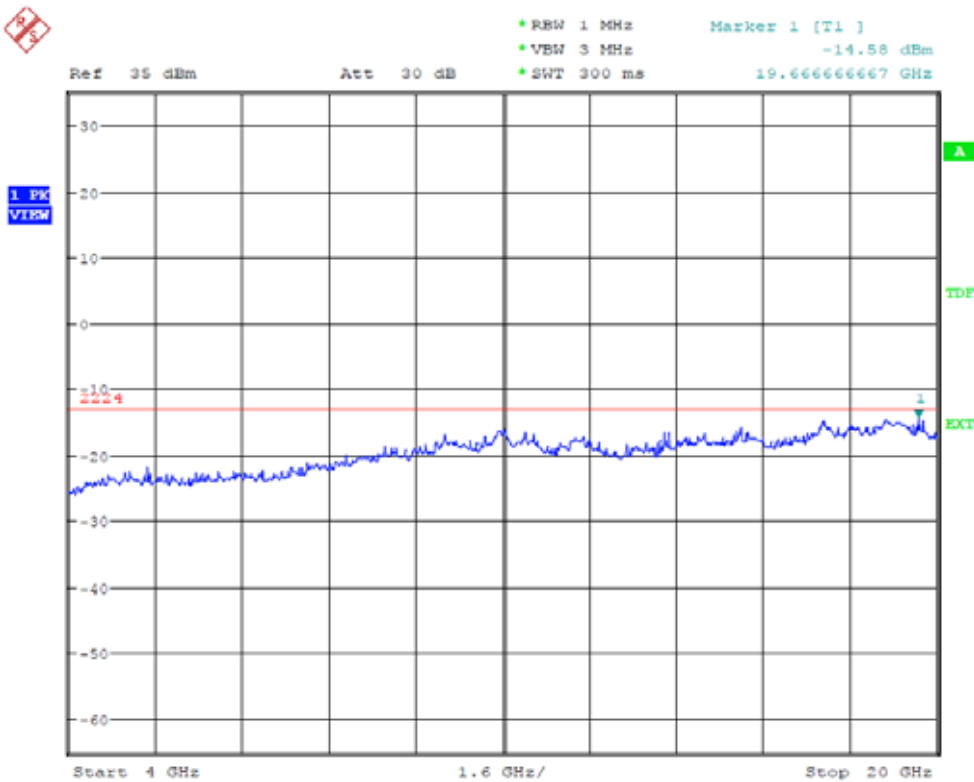
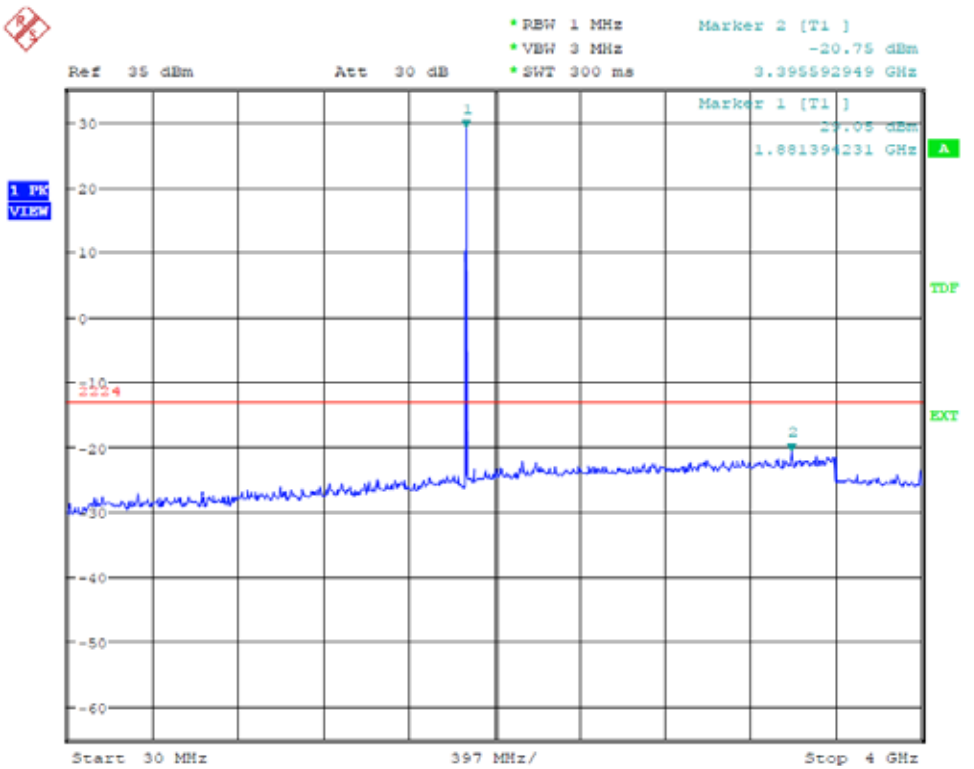
Out of band Emission

GSM 850 Channel Mid

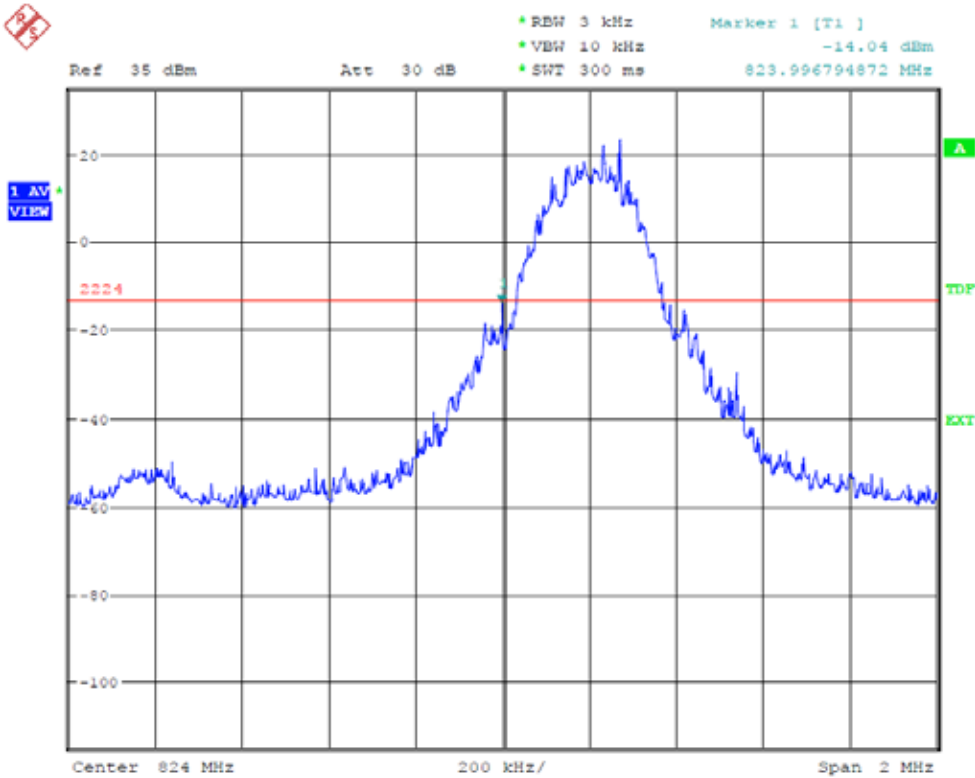


Out of band Emission

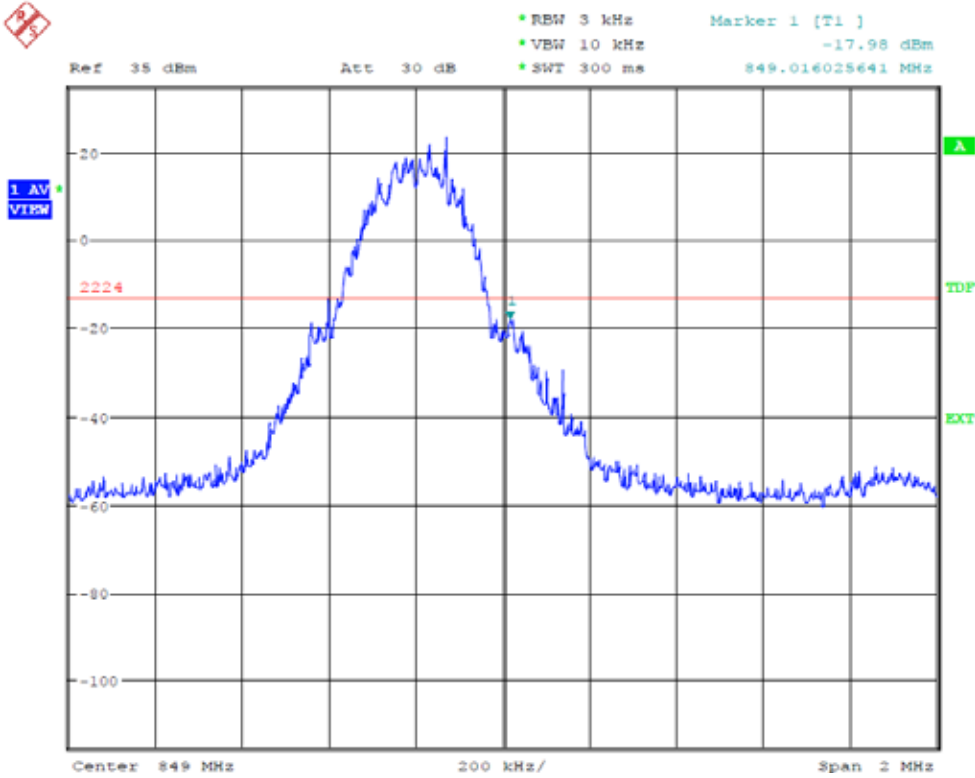
PCS 1900 Channel Mid



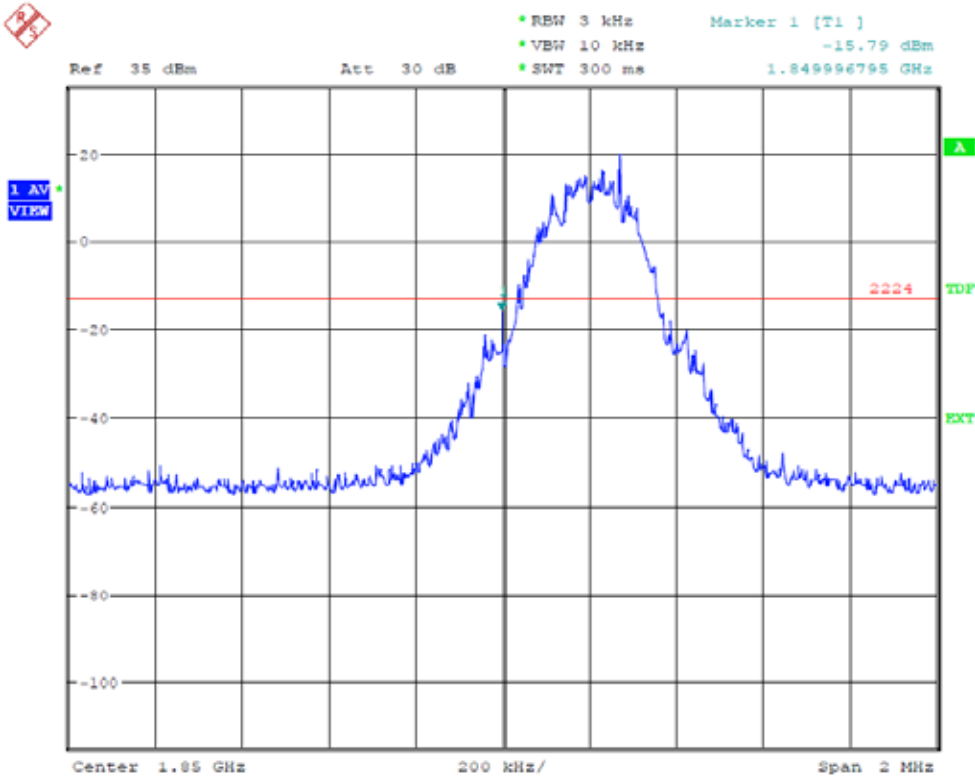
Band Edge emission GSM 850 Channel Low



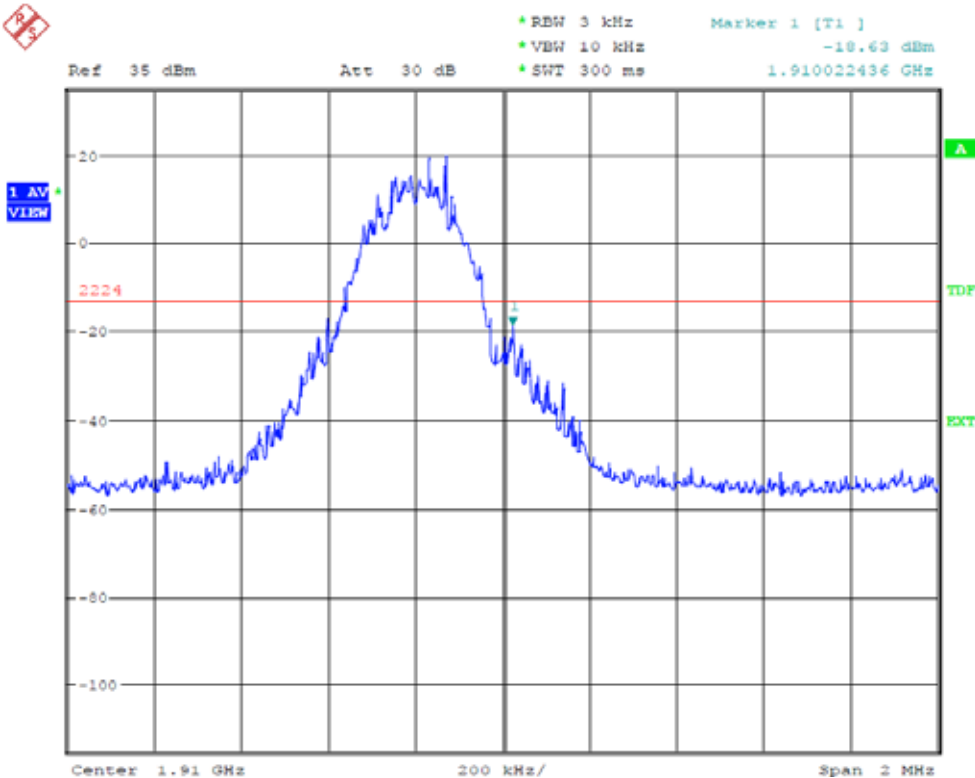
Band Edge emission GSM 850 Channel high



Band Edge emission PCS 1900 Channel Low



Band Edge emission PCS 1900 Channel high



9. §2.1053, §22.917(A), §24.238(A) - SPURIOUS RADIATED EMISSIONS

9.1. Applicable Standards

CFR 47 §2.1053, §22.917(a) and §24.238(a)

FCC part 22.917(a), 24.238(a) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specification in the instruction manual and/or alignment procedure, shall not be less than $43+10\log(\text{Mean power in watts})$ dBc below the mean power output outside a license's frequency block(-13dBm).

9.2. 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 = $43 + 10 \text{ Log}_{10} (\text{power out in Watts})$

9.3. Test Data

Pass

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

GSM 850 mode**Operation mode: TX CH Low 824.2MHz mode**

Frequency (MHz)	Antenna Pol.	Spurious Emissions ERP (dBm)	Limit (dBm)
1648.40	H	-39.82	-13.0
2472.60	H	-49.33	-13.0
3296.80	H	-50.34	-13.0
4121.00	H	-34.72	-13.0
1648.40	V	-43.38	-13.0
2472.60	V	-49.23	-13.0
3296.80	V	-32.67	-13.0
4121.00	V	-33.19	-13.0

Operation mode: TX CH Mid 836.6MHz mode

Frequency (MHz)	Antenna Pol.	Spurious Emissions ERP (dBm)	Limit (dBm)
1673.20	H	-38.84	-13.0
2509.80	H	-48.87	-13.0
3346.40	H	-32.35	-13.0
4183.00	H	-36.64	-13.0
1673.20	V	-42.15	-13.0
2509.80	V	-48.03	-13.0
3346.40	V	-33.37	-13.0
4183.00	V	-34.26	-13.0

Operation mode: TX CH High 848.8MHz mode

Frequency (MHz)	Antenna Pol.	Spurious Emissions ERP (dBm)	Limit (dBm)
1697.60	H	-42.56	-13.0
2546.40	H	-49.33	-13.0
3395.20	H	-34.41	-13.0
4244.00	H	-36.28	-13.0
1697.60	V	-44.78	-13.0
2546.40	V	-47.39	-13.0
3395.20	V	-32.45	-13.0
4244.00	V	-35.97	-13.0

PCS 1900 mode**Operation mode: TX CH Low 1850.2MHz mode**

Frequency (MHz)	Antenna Pol.	Spurious Emissions EIRP (dBm)	Limit (dBm)
1800.00	H	-49.86	-13.0
3700.40	H	-45.31	-13.0
5550.60	H	-46.59	-13.0
7400.80	H	-51.64	-13.0
9251.00	H	-53.95	-13.0
1800.00	V	-48.36	-13.0
3700.40	V	-40.67	-13.0
5550.60	V	-44.28	-13.0
7400.80	V	-50.41	-13.0
9251.00	V	-52.07	-13.0

Operation mode: TX CH Mid 1880.0MHz mode

Frequency (MHz)	Antenna Pol.	Spurious Emissions EIRP (dBm)	Limit (dBm)
1800.00	H	-49.36	-13.0
3760.00	H	-43.68	-13.0
5640.00	H	-45.69	-13.0
7520.00	H	-51.35	-13.0
9400.00	H	-52.17	-13.0
1800.00	V	-47.87	-13.0
3760.00	V	-37.45	-13.0
5640.00	V	-45.93	-13.0
7520.00	V	-50.61	-13.0
9400.00	V	-52.54	-13.0

Operation mode: TX CH High 1909.8MHz mode

Frequency (MHz)	Antenna Pol.	Spurious Emissions EIRP (dBm)	Limit (dBm)
1800.00	H	-48.51	-13.0
3819.60	H	-45.12	-13.0
5729.80	H	-42.87	-13.0
7639.20	H	-48.68	-13.0
9549.00	H	-52.14	-13.0
1800.00	V	-46.34	-13.0
3819.60	V	-36.95	-13.0
5729.80	V	-45.17	-13.0
7639.20	V	-50.64	-13.0
9549.00	V	-50.97	-13.0

10. §2.1055, §22.355, §24.235 - FREQUENCY STABILITY

10.1.Applicable Standard

CFR47 §2.1055, §22.355, §24.235

Frequency Tolerance: +/-2.5ppm for 850MHz band
+/-2.5ppm for 1900MHz band

10.2.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 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.

10.3.Test Data

Pass

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	100.0kPa

Frequency Stability vs. Temperature

Reference Frequency: GSM 850 Mid channel 836.6MHz@ 25 degree			
Limit: +/- 2.5ppm = 2091Hz			
Environment Temperature	Frequency	Delta (Hz)	Limit (Hz)
(degree)	(MHz)		
-30	836.600047	47	2091
-20	836.600032	32	2091
-10	836.600028	28	2091
0	836.600025	25	2091
10	836.600018	18	2091
20	836.600013	13	2091
30	836.600021	21	2091
40	836.600036	36	2091
50	836.600042	42	2091

Reference Frequency: PCS 1900 Mid channel 1880MHz@ 25 degree			
Limit: +/- 2.5ppm = 4700Hz			
Environment Temperature	Frequency	Delta (Hz)	Limit (Hz)
(degree)	(MHz)		
-30	1880.000075	75	4700
-20	1880.000063	63	4700
-10	1880.000068	68	4700
0	1880.000042	42	4700
10	1880.000026	26	4700
20	1880.000026	26	4700
30	1880.000038	38	4700
40	1880.000055	55	4700
50	1880.000061	61	4700

Frequency Stability vs. Voltage

Reference Frequency: GSM 850 Mid channel 836.6MHz@ 25 degree			
Limit: +/- 2.5ppm = 2091Hz			
Power Supply	Frequency	Delta (Hz)	Limit (Hz)
Vdc	(MHz)		
9.6	836.600038	38	2091
8.4	836.600012	12	2091
7.1	836.600019	19	2091

Reference Frequency: PCS 1900 Mid channel 1880MHz@ 25 degree			
Limit: +/- 2.5ppm = 4700Hz			
Power Supply	Frequency	Delta (Hz)	Limit (Hz)
Vdc	(MHz)		
9.6	1880.000056	56	2091
8.4	1880.000024	24	2091
7.1	1880.000031	31	2091