SGS-CSTC Standards Technical Services Ltd.

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China 518057

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FCC REPORT

Application No. :	SZEM1207004268RF
Applicant:	3M Cogent, Inc
Manufacturer:	Cogent Systems (Shenzhen), Inc.
Factory:	Cogent Systems (Shenzhen), Inc.
Product Name:	Mini-Gate, Normal CPU, Philips card reader, standard + Battery + GPRS version
Model No.(EUT):	ACD100P-CG
FCC ID:	ZYFACD100P-CG
Standards:	47 CFR Part 2(2011) 47 CFR Part 22 subpart H(2011) 47 CFR Part 24 subpart E(2011)
Date of Receipt:	2012-07-31
Date of Test:	2012-09-27 to 2012-11-27
Date of Issue:	2013-01-04
Test Result:	**PASS ***

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

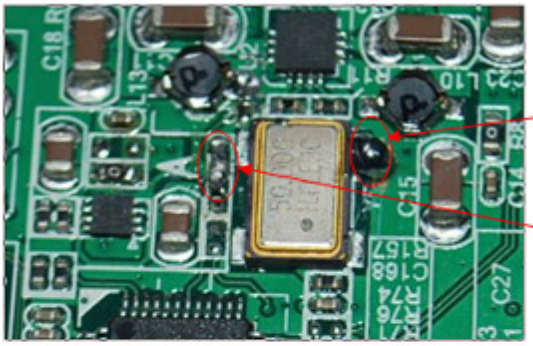
Jack Zhang
EMC Laboratory Manager

2 Test Summary

Test Item	FCC Requirement	Test method	Result
850			
Conducted output power	Part 2.1046(a)/Part 22.913(a)	TIA-603-C-2004 Clause 2.2.1 KDB 971168	PASS
Effective Radiated Power of Transmitter(ERP)	Part 2.1046(a)/Part 22.913(a)	TIA-603-C-2004 Clause 2.2.17	PASS
99% Occupied Bandwidth	Part 2.1049(h) Part 22.917(b)	RSS-Gen clause 4.6.1	PASS
Band Edge at antenna terminals	Part 2.1051 Part 22.917(a)(b）	RSS-132 clause 4.5	PASS
Spurious emissions at antenna terminals	Part 2.1051 Part 2.1057 Part 22.917(a)(b） TIA-603-C-2004	RSS-132 clause 4.5 RSS-Gen clause 4.9	PASS
Field strength of spurious radiation	Part 2.1053/ Part 2.1057/ Part 22.917(a)(b)	TIA-603-C-2004 Clause 2.2.12	PASS
Frequency stability	Part 2.1055 Part 22.355 TIA-603-C-2004	RSS-132 clause 4.3 RSS-Gen clause 4.7	PASS
1900			
Conducted output power	Part 2.1046(a) /Part 24.232(c)	TIA-603-C-2004 Clause 2.2.1 KDB 971168	PASS
Effective Radiated Power of Transmitter(EIRP)	Part 2.1046(a) / Part 24.232(c)	TIA-603-C-2004 Clause 2.2.17	PASS
99% Occupied Bandwidth	Part 2.1049(h) Part 24.238(b)	RSS-Gen clause 4.6.1	PASS
Band Edge at antenna terminals	Part 2.1051 Part 24.238(a)(b)	RSS-133 clause 6.5	PASS
Spurious emissions at antenna terminals	Part 2.1051/ Part 2.1057/ Part 24.238(a)(b) TIA-603-C-2004	RSS-133 clause 6.5 RSS-Gen clause 4.9	PASS
Field strength of spurious radiation	Part 2.1053 /Part 2.1057 / Part 24.238(a)(b)	TIA-603-C-2004 Clause 2.2.12	PASS
Frequency stability	Part 2.1055/Part 24.235	TIA-603-C-2004 Clause 2.2.2	PASS

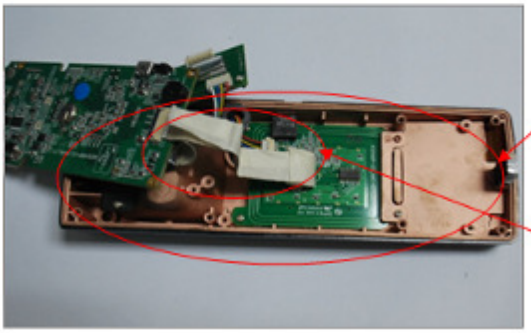
Remark:

The EUT passed the all tests after modification. See picture below:



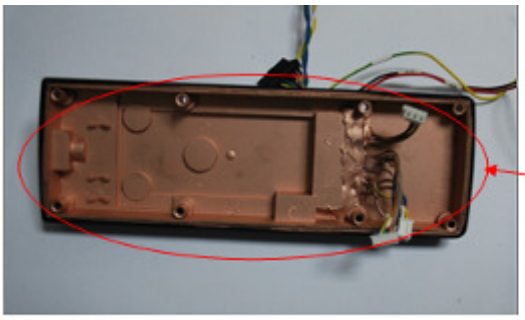
Connect the GND.

Change the resistance to 2PCS chip beads.
Mode:MMZ1005F470C

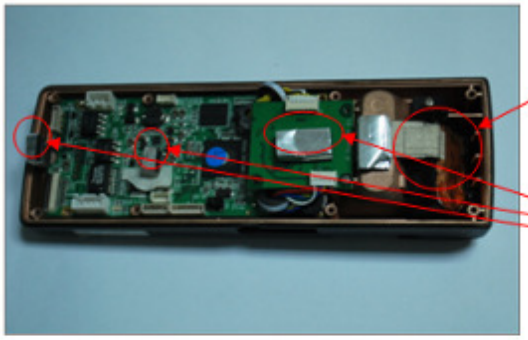


For the plastic casing spray the conductive material on it.

Paste the conductorial cloth on the cable and connect it with the GND.

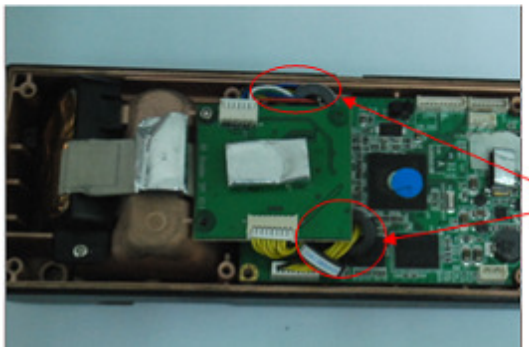


For the plastic casing spray the conductive material on it.

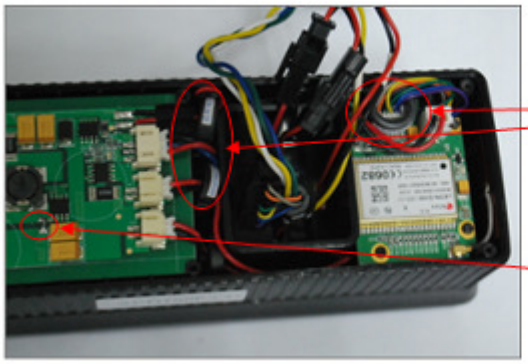


For the crust cover it with copper sheet and connect it with GND.

Add 4PCS sponge and connect with the GND.

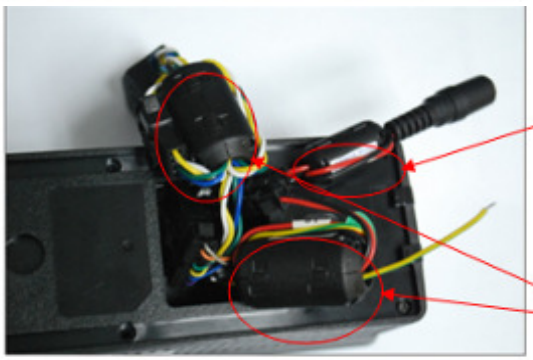


Add 4PCS EMI ferrite on the cable .
P/N:F5K T14*5*9



Add 3PCS EMI ferrite on the cable .
P/N:F5K T14*5*9

Add 1PC 102pF capacitor to GND.



Add 1PC EMI ferrite on the cable .
P/N:RC-70B

Add 2PCS EMI ferrite on the cable .
P/N:RC-90B

3 Contents

4 General Information

4.1 Client Information

Applicant:	3M Cogent, Inc
Address of Applicant:	639 N. Rosemead Blvd. Pasadena, CA 91107, USA
Manufacturer:	Cogent Systems (Shenzhen), Inc.
Address of Manufacturer:	10/F TINWE INDUSTRIAL PARK PHASE 2, 6 LIUFANG RD, 67 AREA, BAOAN DISTRICT, SHENZHEN, GUANGDONG, 518101, CHINA
Factory:	Cogent Systems (Shenzhen), Inc.
Address of Factory:	10/F TINWE INDUSTRIAL PARK PHASE 2, 6 LIUFANG RD, 67 AREA, BAOAN DISTRICT, SHENZHEN, GUANGDONG, 518101, CHINA

4.2 General Description of EUT

Product Name:	Mini-Gate, Normal CPU, Philips card reader, standard + Battery + GPRS version	
Model No.:	ACD100P-CG	
Trade Mark:	3M	
Hardware Version:	V1.0	
Software Version:	V1.0	
IMEI:	351802052211525	
Test Power Grade:	GPRS 850MHz 33dBm GPRS 1900MHz 30dBm	
Frequency Band:	GPRS 850/1900	
Type of Emission:	GPRS(GMSK): 250KGXW	
GPRS Class	Class 10	
Modulation Type:	GPRS Mode with GMSK Modulation	
Sample Type:	Mobile production	
Antenna Type:	Integral	
Antenna Gain:	0dBi	
Power Supply:	AC adapter:	AC/DC Adapter MODEL:PA-1061-0 INPUT: AC 100-240V 50/60Hz 1.5A OUTPUT: DC 12V 5.0A
	Battery:	7.4V recharge battery
Test Voltage (Declared by client):	Normal voltage: 7.4V lowest voltage: 6.5V highest voltage: 8.4V	

4.3 Test Environment and Mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	55% RH
Atmospheric Pressure:	1015 mbar

4.4 Description of Support Units

The EUT has been tested independent unit.

4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch E&E Lab,
No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.
Tel: +86 755 2601 2053 Fax: +86 755 2671 0594
No tests were sub-contracted.

4.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L2929)**
  CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.
- **VCCI**
  The 3m Semi-anechoic chamber, Full-anechoic Chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2197, G-416, T-1153 and C-2383 respectively.
- **FCC – Registration No.: 556682**
  SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.
- **Industry Canada (IC)**
  The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1.

4.7 Deviation from Standards

None.

4.8 Abnormalities from Standard Conditions

The EUT passed the all tests after modification.

4.9 Other Information Requested by the Customer

None.

4.10 Equipment List

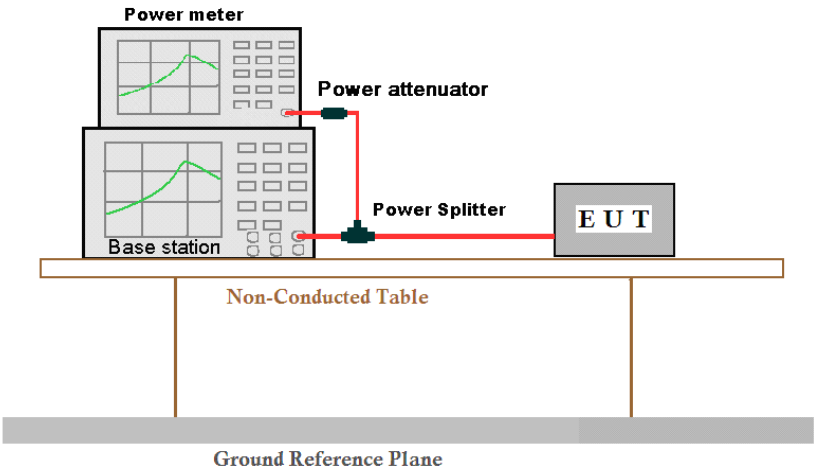
RE in Chamber					
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Due date (yyyy-mm-dd)**
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	2013-06-10
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	2013-05-17
3	EMI Test software	AUDIX	E3	SEL0050	N/A
4	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2013-10-24
5	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2013-10-24
6	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	2013-10-24
7	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	2013-05-17
8	Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEL0168	2013-10-24
9	Coaxial cable	SGS	N/A	SEL0027	2013-05-29
10	Coaxial cable	SGS	N/A	SEL0189	2013-05-29
11	Coaxial cable	SGS	N/A	SEL0121	2013-06-12
12	Coaxial cable	SGS	N/A	SEL0178	2013-05-29
13	Band filter	Amindeon	82346	SEL0094	2013-05-17
14	Barometer	Chang Chun	DYM3	SEL0088	2013-05-24
15	Universal radio communication tester	Rohde & Schwarz	CMU200	SEL0091	2013-10-24
16	Universal radio communication tester	Rohde & Schwarz	CMU200	SEL0194	2013-10-24
17	Signal Generator (10M-27GHz)	Rohde & Schwarz	SMR27	SEL0067	2013-05-17
18	Signal Generator	Rohde & Schwarz	SMY01	SEL0155	22013-10-24
19	Humidity/ Temperature Indicator	Shanhai Qixiang	ZJ1-2B	SEL0103	2013-10-24
20	DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2013-10-24

RF connected test					
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Due date (yyyy-mm-dd)**
1	DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2013-10-24
2	Humidity/ Temperature Indicator	HYGRO	ZJ1-2B	SEL0033	2013-10-24
3	Spectrum Analyzer	Rohde & Schwarz	FSP	SEL0154	2013-10-24
4	Coaxial cable	SGS	N/A	SEL0178	2013-05-29
5	Coaxial cable	SGS	N/A	SEL0179	2013-05-29
6	Barometer	ChangChun	DYM3	SEL0088	2013-05-24
7	Signal Generator	Rohde & Schwarz	SML03	SEL0068	2013-05-16
8	Band filter	amideon	82346	SEL0094	2013-05-16
9	Power Divider(splitter)	Agilent Technologies	11636B	SEL0130	2013-10-24
10	Universal radio communication tester	Rohde & Schwarz	CMU200	SEL0091	2013-10-24
11	Universal radio communication tester	Rohde & Schwarz	CMU200	SEL0194	2013-10-24
12	Attenuator	Beijin feihang taida	TST-2-6dB	SEL0205	2013-05-16
13	POWER METER	Agilent	E4416A	SEL0248	2013-10-24
14	POWER Sensor	Agilent	8481H	SEL0259	2013-10-24

Note: The calibration interval is one year, all the instruments are valid.

5 Test results and Measurement Data

5.1 Conducted Output Power

Test Requirement:	Part 2.1046(a)
Test Method:	TIA-603- C-2004 Clause 2.2.1 KDB 971168
Test Setup:	
Limit:	<table><tr><td>Mode</td><td>GSM 850/WCDMA/HSDPA /HSUPA 850 Band V</td><td>GSM 1900/WCDMA/HSDPA /HSUPA 1900 Band V</td></tr><tr><td>Frequency</td><td>824 – 849MHz</td><td>1850 – 1910MHz</td></tr><tr><td>Limit</td><td>38.45dBm（ERP）</td><td>33.01dBm（EIRP）</td></tr></table>
Measurement Procedure:	The transmitter output was connected to a calibrated coaxial cable, attenuator and power meter, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The power output at the transmitter antenna port was determined by adding the value of the cable insertion loss to the power reading. The tests were performed at three frequencies (low channel, middle channel and high channel) and on the highest power levels, which can be setup on the transmitters.
Instruments Used:	Refer to section 4.10 for details
Test Results:	Pass

Measurement results:

GPRS:

850				
Channel/fc(MHz)	Peak power (dBm)	AV power (dBm)	Limit (dBm)	Result
128/824.2	33.69	33.63	38.45	Pass
190/836.6	33.76	33.70	38.45	Pass
251/848.8	33.36	33.28	38.45	Pass

1900				
Channel/fc(MHz)	Peak power (dBm)	AV power (dBm)	Limit (dBm)	Result
512/1850.2	29.91	29.84	33.01	Pass
661/1880.0	30.20	30.13	33.01	Pass
810/1909.8	30.10	30.06	33.01	Pass

5.2 Effective Radiated Power of Transmitter (ERP/EIRP)

Test Requirement:	Part 2.1046(a)
Test Method:	TIA-603- C-2004 Clause 2.2.17

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	peak	100 kHz	300kHz	Peak
Above 1GHz	Peak	1MHz	3MHz	Peak

Test Setup:

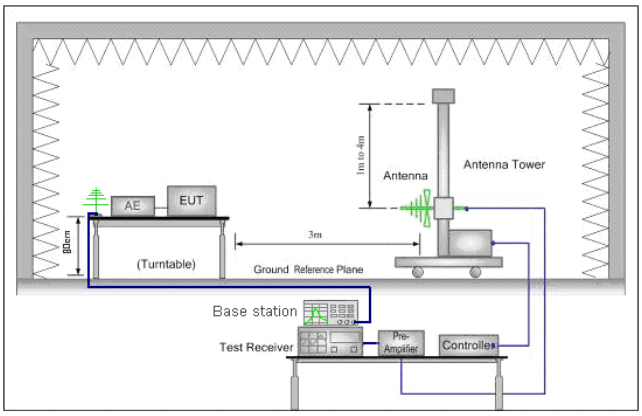


Figure 1. 30MHz to 1GHz

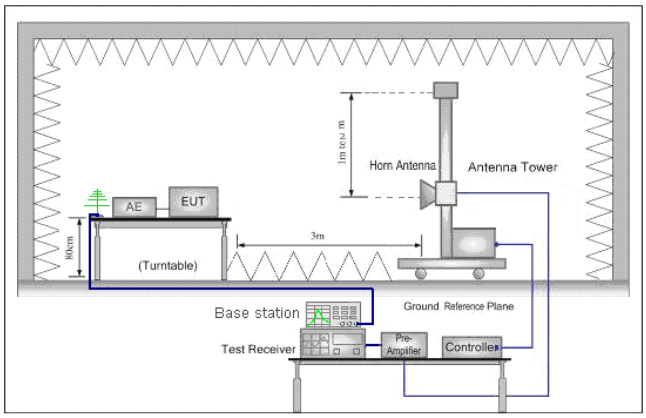


Figure 2. above 1GHz

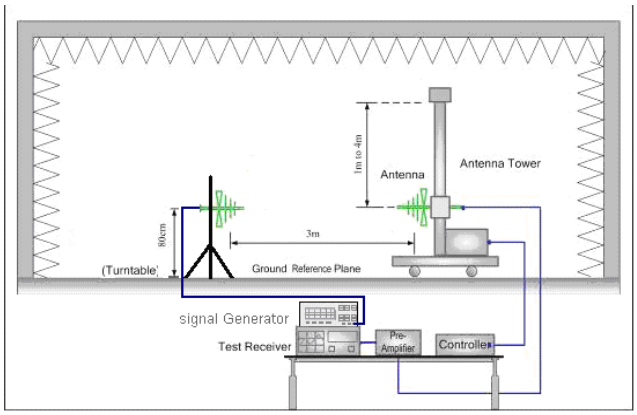


Figure 1. 30MHz to 1GHz

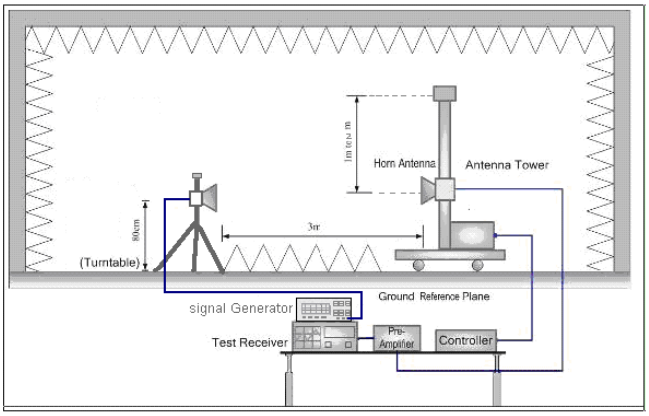


Figure 2. above 1GHz

Limit:

Mode	GSM 850/WCDMA/HSDPA /HSUPA 850 Band V	GSM 1900/WCDMA/HSDPA /HSUPA 1900 Band V
Frequency	824 – 849MHz	1850 – 1910MHz
Limit	38.45dBm（7W）	33.01dBm（2W）

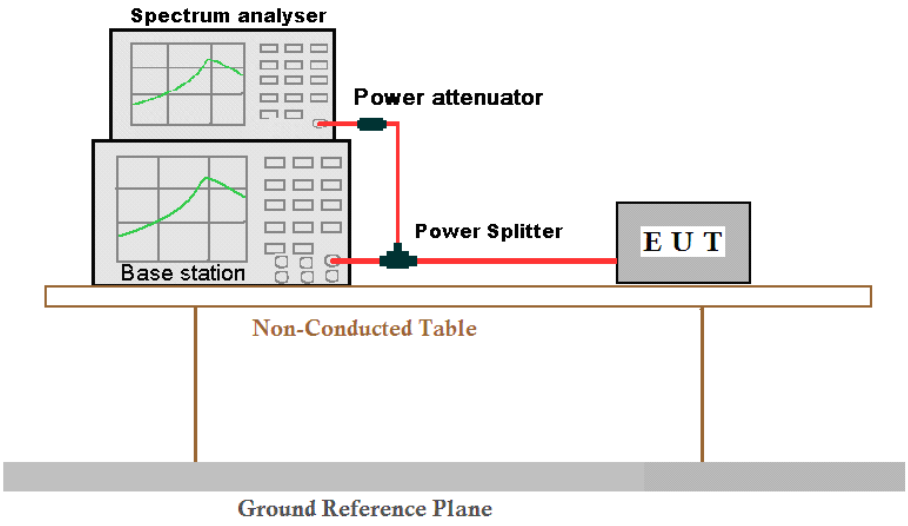
Measurement Procedure:	**Below 1GHz test procedure as below:** 1). The EUT was powered ON and placed on a 0.8m high table in the chamber. The antenna of the transmitter was extended to its maximum length. 2). The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made. 3). Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization. 4). The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter. 5). A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 2) is obtained for this set of conditions. 6). The output power into the substitution antenna was then measured. 7). Steps 5) and 6) were repeated with both antennas polarized. 8). Calculate power in dBm by the following formula: EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi) EIRP=ERP+2.15dB where: Pg is the generator output power into the substitution antenna. **Above 1GHz test procedure as below:** 1). Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber 2). Calculate power in dBm by the following formula: EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi) EIRP=ERP+2.15dB where: Pg is the generator output power into the substitution antenna. 3). Test the EUT in the lowest channel, the middle channel the Highest channel 4). The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, Only the test worst case mode is recorded in the report. 5). Repeat above procedures until all frequencies measured was complete.
Instruments Used:	Refer to section 4.10 for details
Test Results:	Pass

Measurement Data

GPRS 850									
Channel/ fc (MHz)	EUT Pol.	Antenna Pol.	S.G Output (dBm)	Antenna Gain(dBi)	Cable Loss(dB)	EIRP (dBm)	ERP (dBm)	Limit (dBm)	Result
128/824.2	H	H	29.55	5.40	3.31	31.64	29.49	38.45	Pass
		V	30.08	5.40	3.31	32.17	30.02	38.45	Pass
190/836.6	H	H	30.16	4.60	3.35	31.41	29.26	38.45	Pass
		V	30.88	4.60	3.35	32.13	29.98	38.45	Pass
251/848.8	H	H	29.95	4.80	3.41	31.34	29.19	38.45	Pass
		V	30.66	4.80	3.41	32.05	29.90	38.45	Pass

GPRS 1900								
Channel/ fc (MHz)	EUT Pol.	Antenna Pol.	S.G Output (dBm)	Antenna Gain(dBi)	Cable Loss(dB)	EIRP (dBm)	Limit (dBm)	Result
512/1850.2	H	H	24.19	8.40	5.42	27.17	33.01	Pass
		V	24.95	8.40	5.42	27.93	33.01	Pass
661/1880.0	H	H	24.20	8.80	5.56	27.44	33.01	Pass
		V	24.77	8.80	5.56	28.01	33.01	Pass
810/1909.8	H	H	23.47	9.20	5.50	27.17	33.01	Pass
		V	24.81	9.20	5.50	28.51	33.01	Pass

5.3 99%Occupied Bandwidth

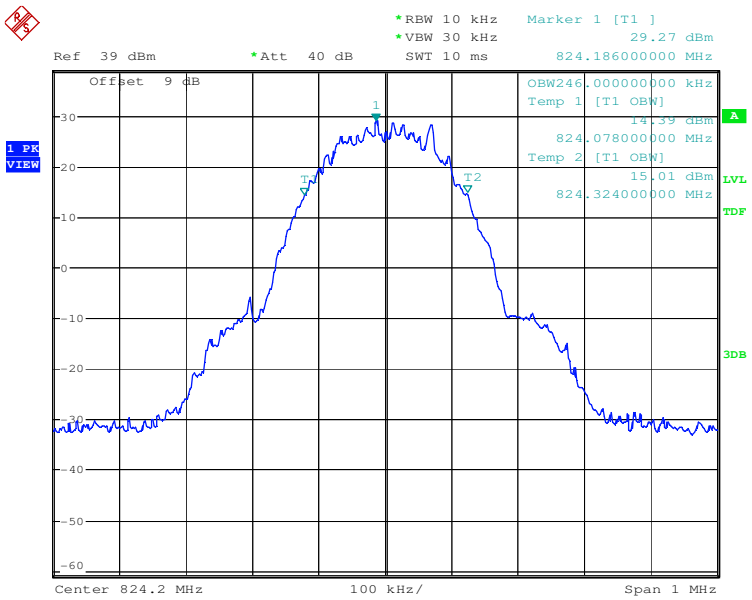
Test Requirement:	Part 2.1049(h) and RSS-Gen 4.6.1
Test Method:	Part 22.917(b)/Part 24.238(b) and RSS-Gen 4.6.1
Test Setup:	
Limit:	N/A
Measurement Procedure:	The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel, middle channel and high channel).the resolution bandwidth of the analyser is set to 100kHz or 1% of the emission bandwidth, the EUT emission bandwidth is measured as the width of the signal between two points, outside of which all emission are attenuated at least 26dB below the transmitter power. The video bandwidth of the spectrum analyzer was set at thrice the resolution bandwidth. Detector Mode was set to peak or peak hold power.
Instruments Used:	Refer to section 4.10 for details
Test Results:	Pass

Measurement Data
GPRS:

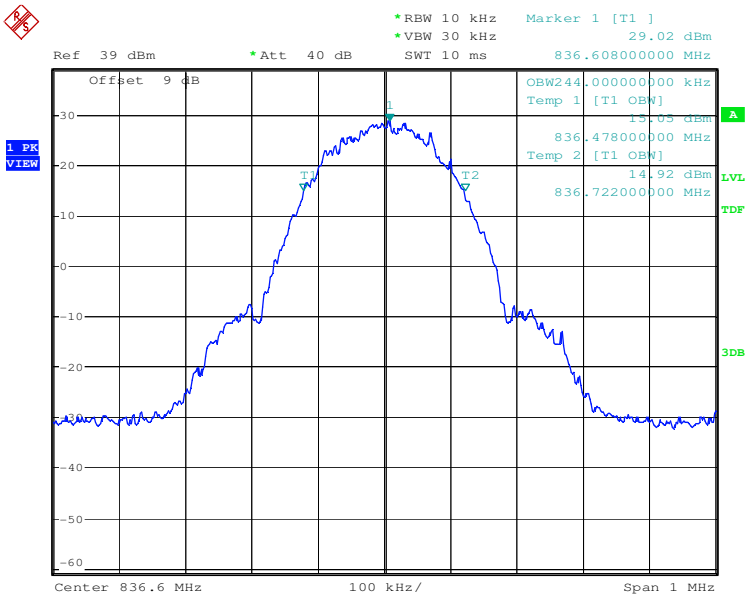
850			
Test channel	Frequency (MHz)	99% Emission Bandwidth	Result
Lowest/128	824.2	246kHz	Pass
Middle/190	836.6	244kHz	Pass
Highest/251	848.8	242kHz	Pass
1900			
Test channel	Frequency (MHz)	99% Emission Bandwidth	Result
Lowest/512	1850.2	248kHz	Pass
Middle/661	1880.0	246kHz	Pass
Highest/810	1909.8	246kHz	Pass

Test plot as follows:

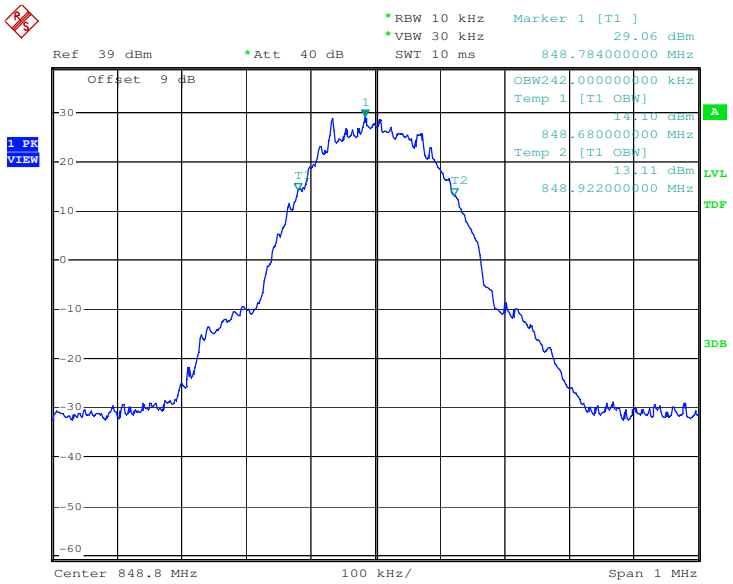
Test mode:	GPRS 850	Test channel:	Lowest/128	Operation Frequency	824.2MHz



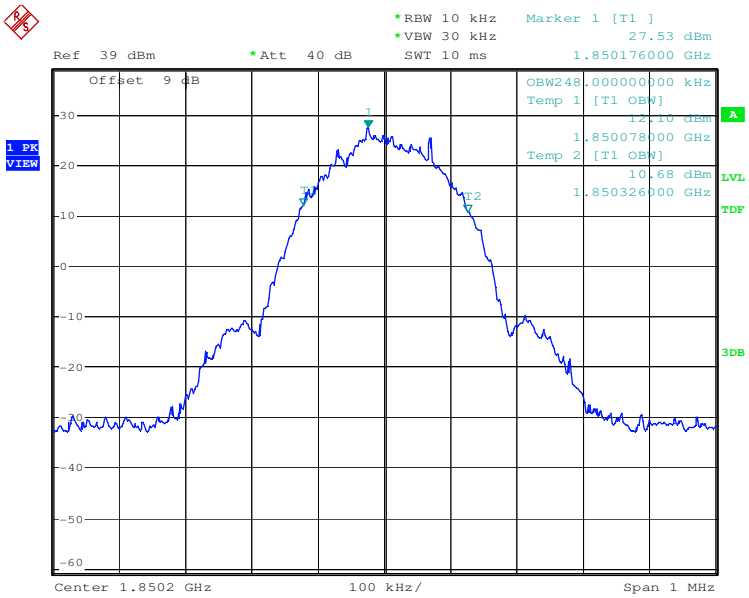
Test mode:	GPRS 850	Test channel:	MIddle/190	Operation Frequency	836.6MHz



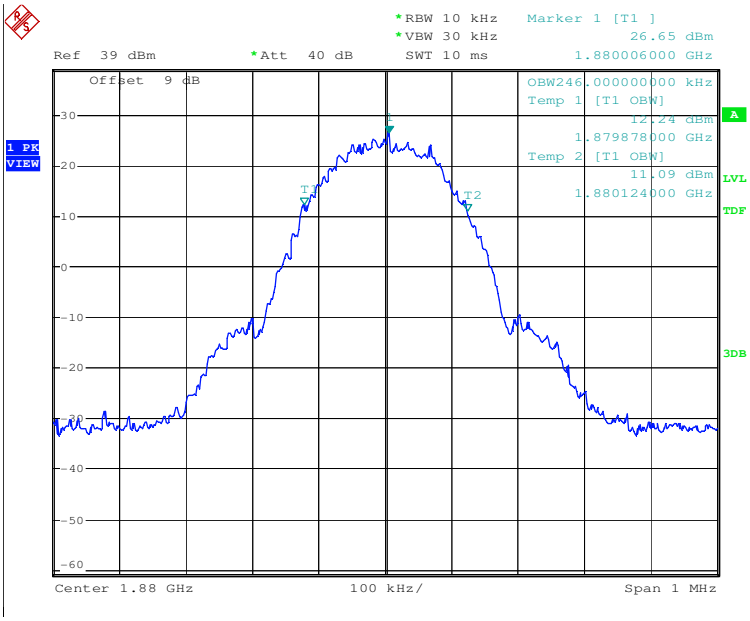
Test mode:	GPRS 850	Test channel:	High/251	Operation Frequency	848.8MHz



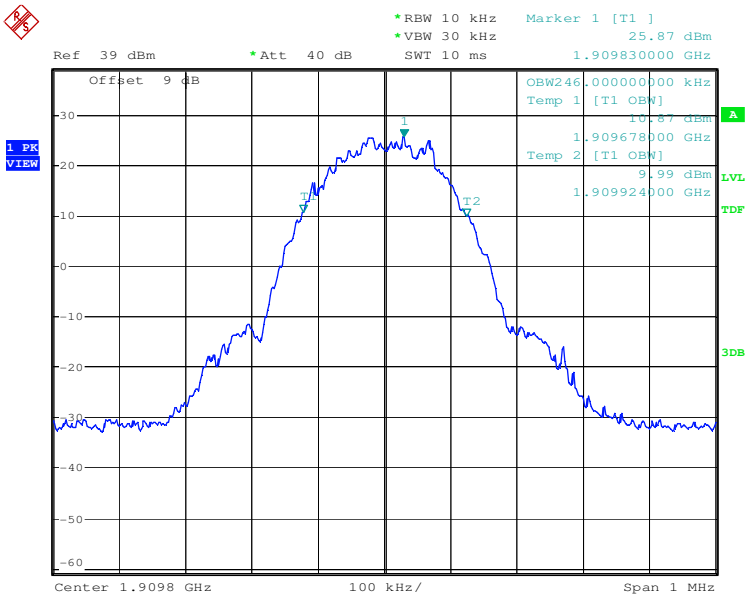
Test mode:	GPRS 1900	Test channel:	Lowest/512	Operation Frequency	1850.2MHz



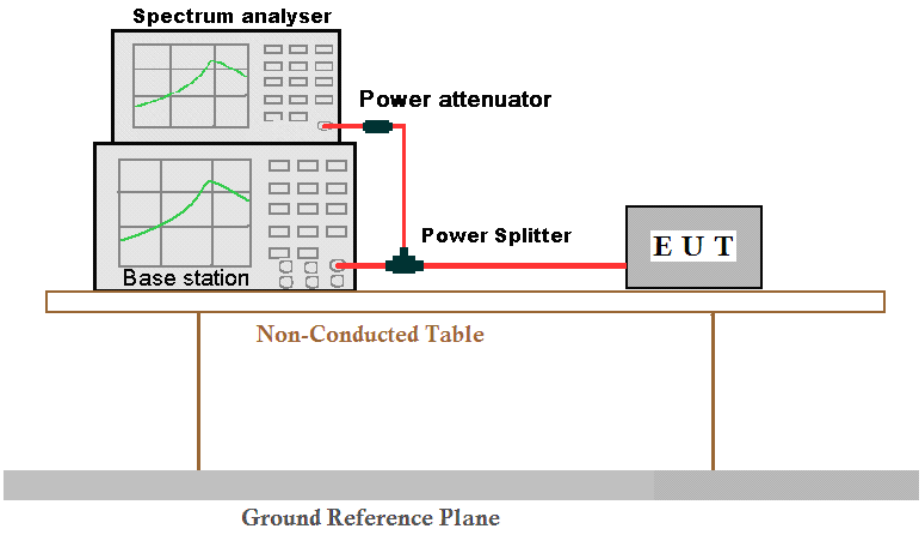
Test mode:	GPRS 1900	Test channel:	Middle/661	Operation Frequency	1880.0MHz



Test mode:	GPRS 1900	Test channel:	High/810	Operation Frequency	1909.8MHz



5.4 Band Edge at antenna terminals

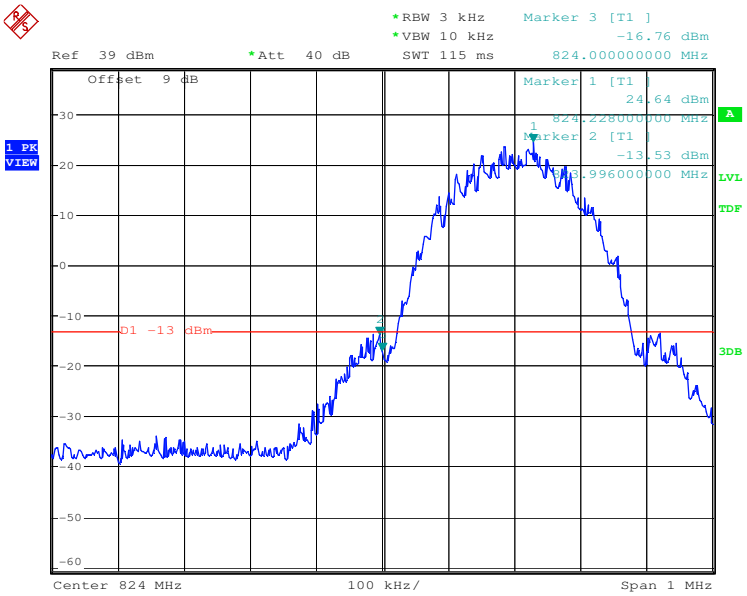
Test Requirement:	Part 2.1051 and RSS-132 Clause 4.5/RSS-133 Clause 6.5
Test Method:	Part 22.917(b)/Part 24.238(b) and RSS-132 Clause 4.5/RSS-133 Clause 6.5
Test Setup:	
Measurement Procedure:	The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel and high channel).in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of 100kHz or 1% of the emission bandwidth of the fundamental emission of the transmitter may be employed. The EUT emission bandwidth is measured as the width of the signal between two points, outside of which all emission are attenuated at least 26dB below the transmitter power. The video bandwidth of the spectrum analyzer was set at thrice the resolution bandwidth. Detector Mode was set to peak or peak hold power.
Limit:	See table below
Instruments Used:	Refer to section 4.10 for details
Test Results:	Pass

Operation Band	Frequency Range (MHz)	Limit
GSM/GPRS/EDGE/ WCDMA 850	Below 824 and above 849	Attenuated at least 43+10log(P)
GSM/GPRS/EDGE/ WCDMA 1900	Below 1850 and above 1910	Attenuated at least 43+10log(P)

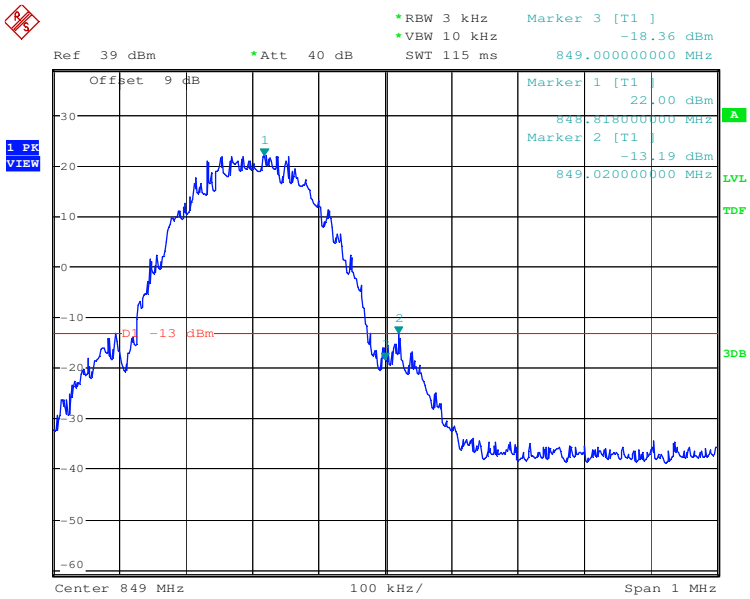
Measurement Data

GPRS:

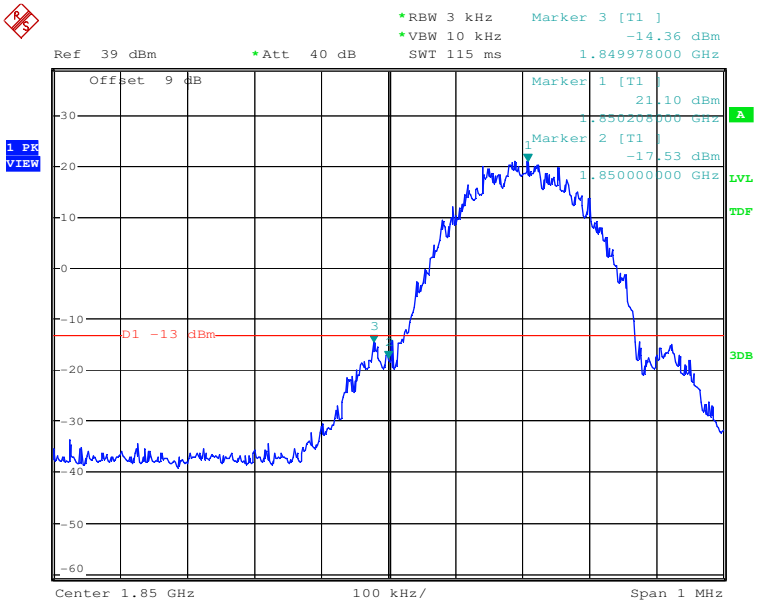
850		
Test channel	Frequency (MHz)	Result
Lowest/128	824.2	Pass



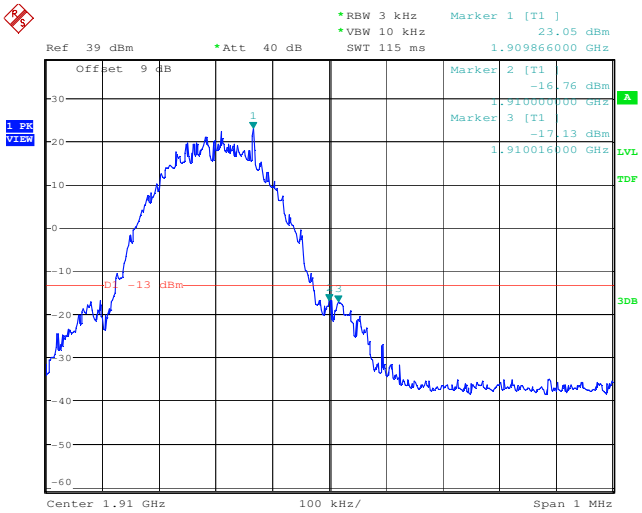
Test channel	Frequency (MHz)	Result
Highest/251	848.8	Pass



1900		
Test channel	Frequency (MHz)	Result
Lowest/512	1850.2	Pass



Test channel	Frequency (MHz)	Result
Highest/810	1909.8	Pass



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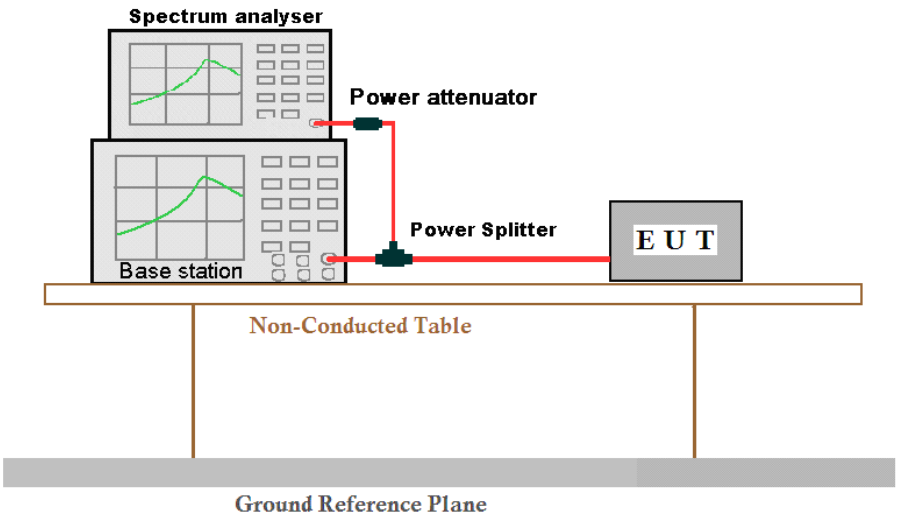
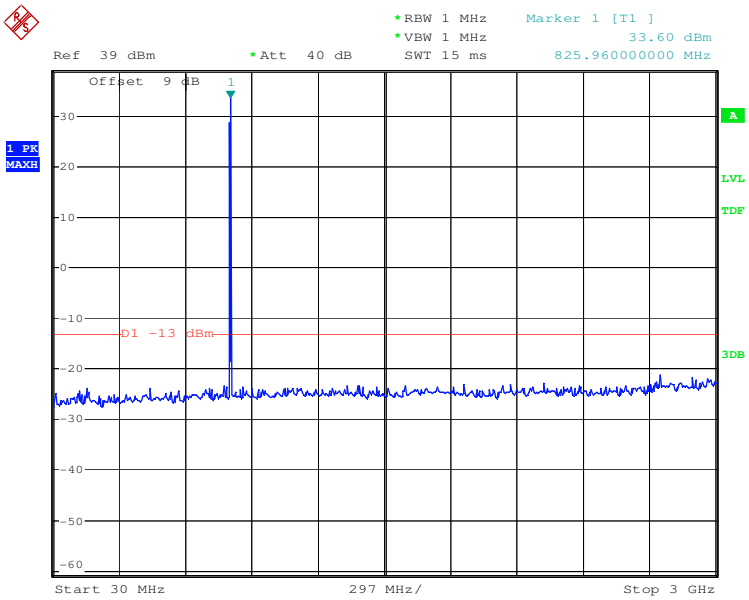
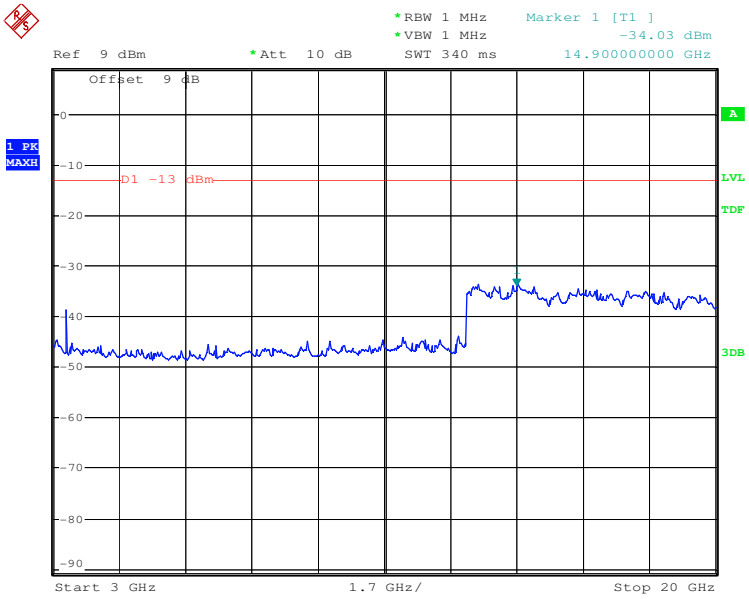
5.5 Spurious emissions at antenna terminals

Test Requirement:	Part 2.1051/Part 2.1057 and RSS-132 Clause 4.5/RSS-133 Clause 6.5
Test Method:	TIA-603- C-2004 Clause 2.2.13 and RSS-Gen Clause 4.9
Test Setup:	
Measurement Procedure:	The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyzer, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel and high channel).the equipment operates below 10GHz: to the tenth harmonic of the highest fundamental frequency or to 40GHz.whichever is lower, the resolution bandwidth of the spectrum analyzer was set at 100kHz for spurious emissions below 1 GHz, and 1 MHz for spurious emissions above 1GHz.the video bandwidth of the spectrum analyzer was set at thrice the resolution bandwidth. Detector Mode was set to mean or average power.
Instruments Used:	Refer to section 4.10 for details
Limit:	Attenuated at least 43+10log(P)
Test Results:	Pass

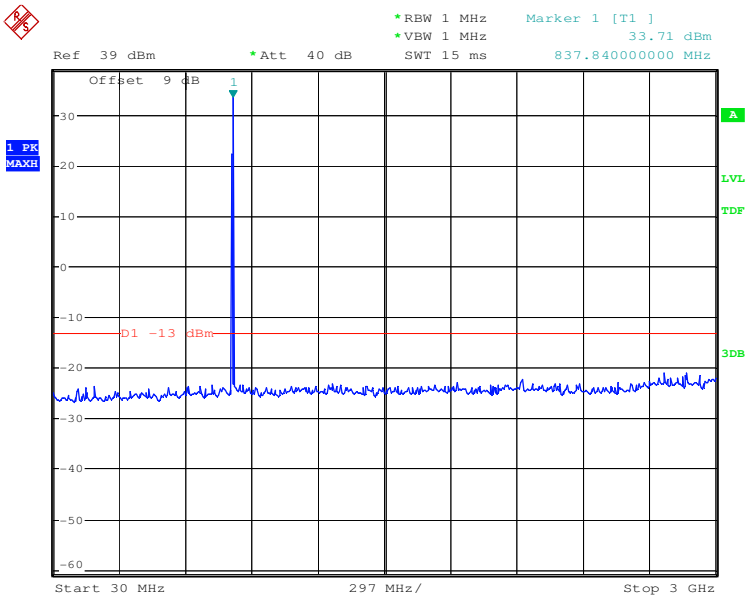
Test plot as follows:

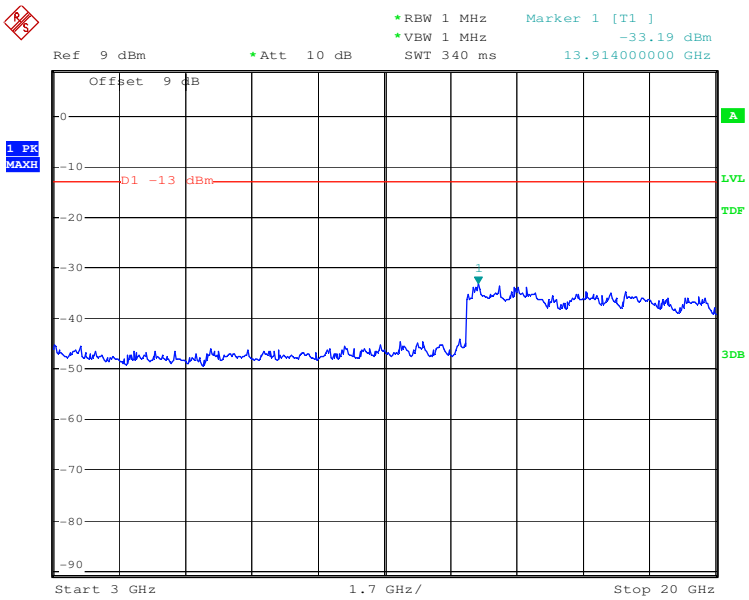
Test mode:	GPRS 850	Test channel:	Lowest/128	Operation Frequency	824.2MHz



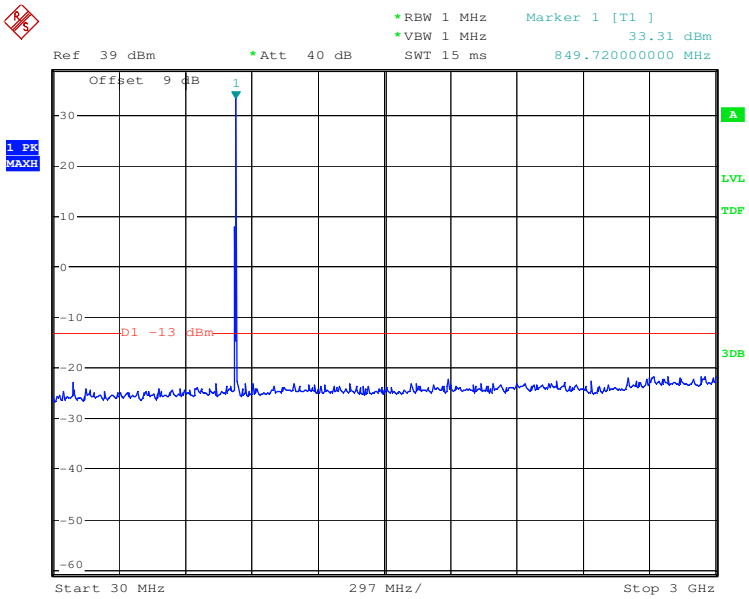


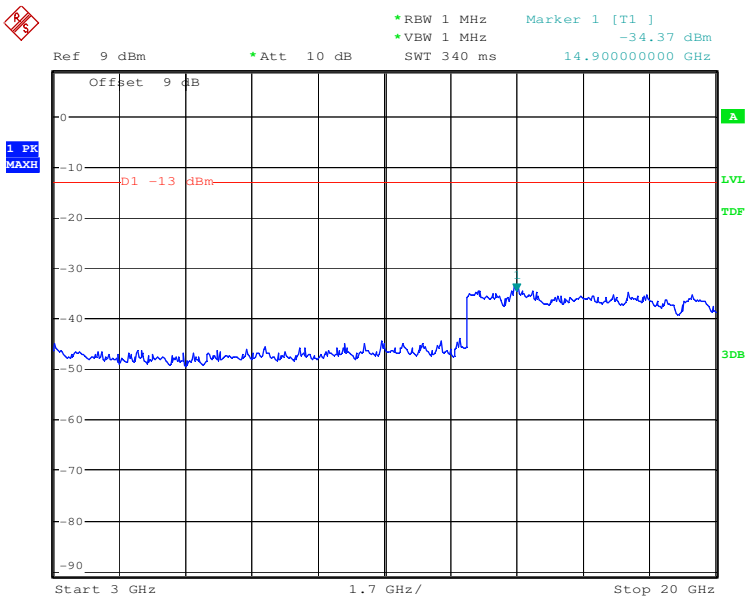
Test mode:	GPRS 850	Test channel:	Middle/190	Operation Frequency	836.6MHz



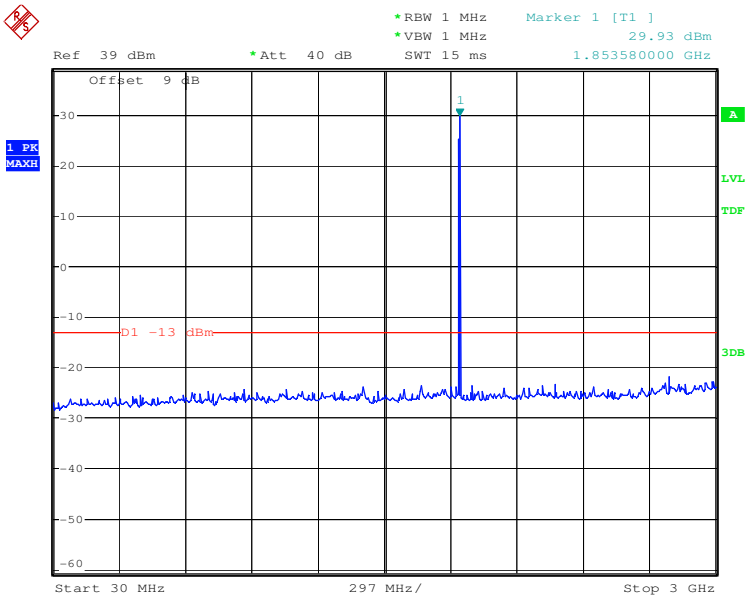


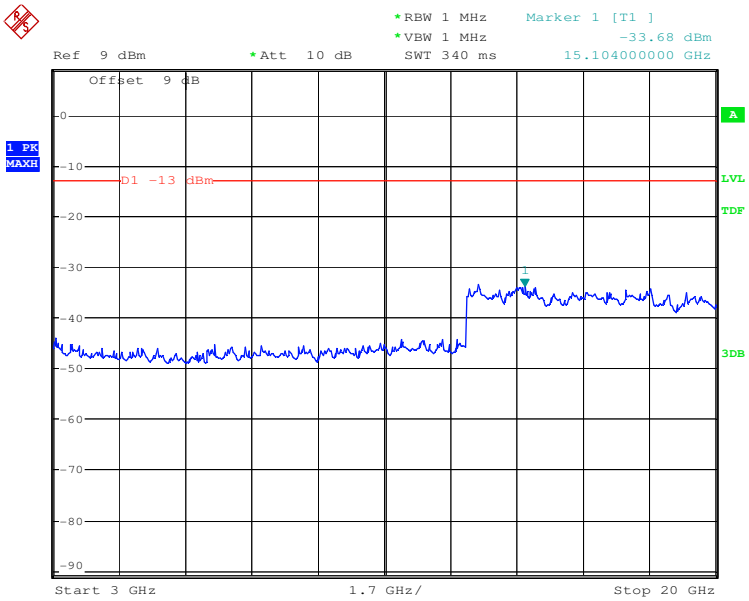
Test mode:	GPRS 850	Test channel:	High/251	Operation Frequency	848.8MHz



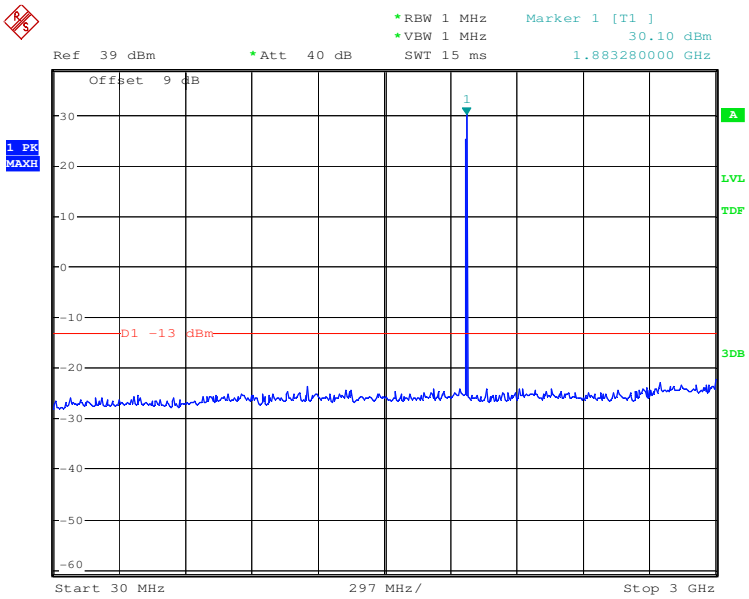


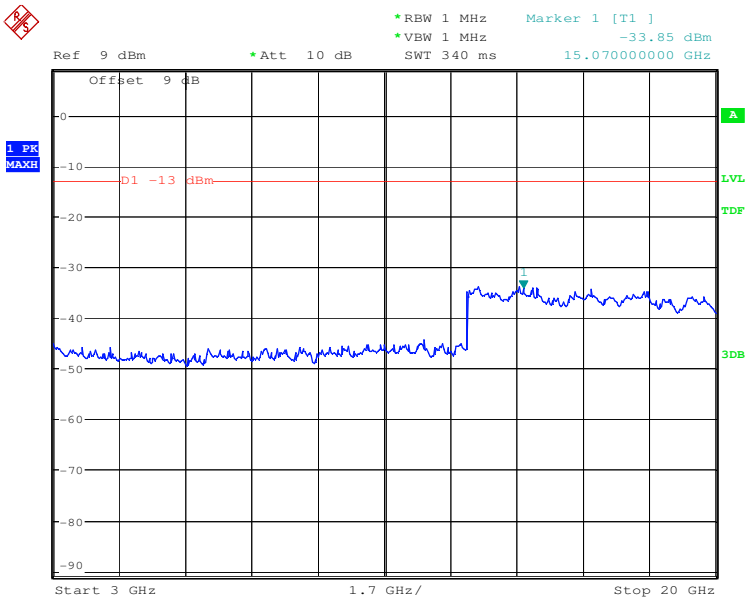
Test mode:	GPRS 1900	Test channel:	Lowest/512	Operation Frequency	1850.2MHz



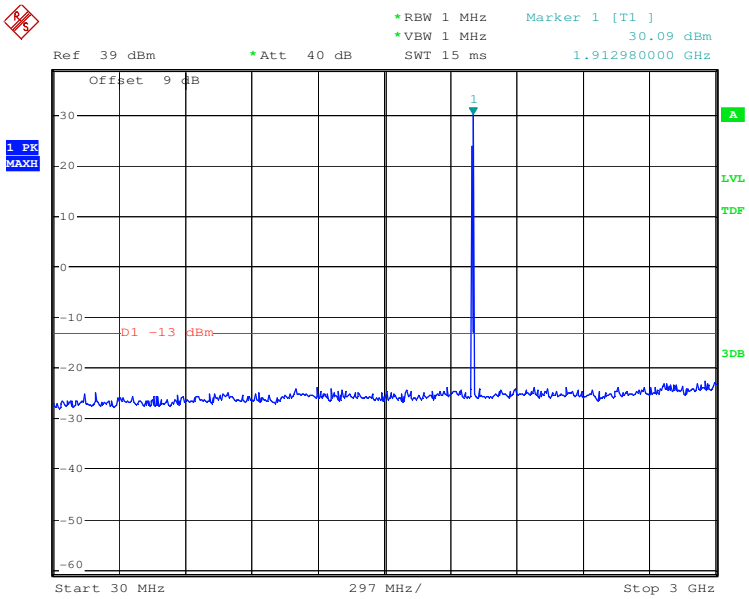


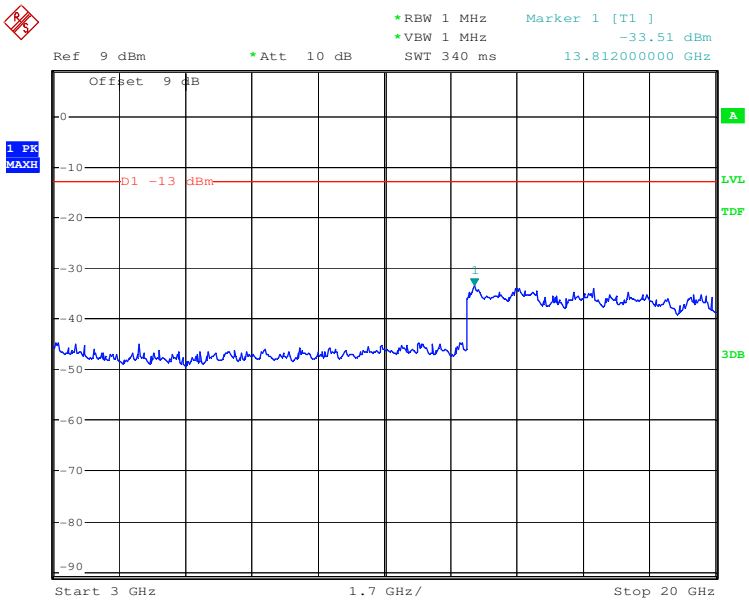
Test mode:	GPRS 1900	Test channel:	Middle/661	Operation Frequency	1880.0MHz





Test mode:	GPRS 1900	Test channel:	High/810	Operation Frequency	1909.8MHz





5.6 Field strength of spurious radiation

Test Requirement:	Part 2.1053 and Part 2.1057
Test Method:	TIA-603- C-2004 Clause 2.2.12
Receiver Setup:	

Frequency	Detector	RBW	VBW	Remark
0.009MHz-30MHz	Peak	10kHz	30kHz	Peak
30MHz-1GHz	Peak	100kHz	300kHz	Peak
Above 1GHz	Peak	1MHz	3MHz	Peak

Test Setup:

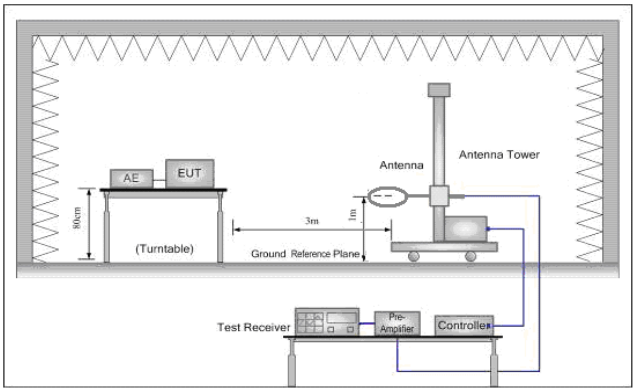


Figure 1. Below 30MHz

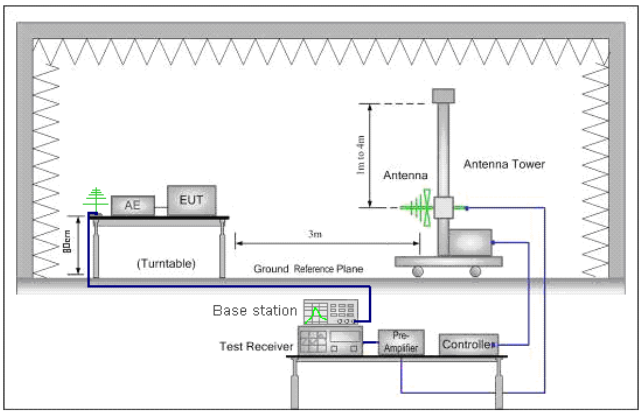


Figure 2. 30MHz to 1GHz

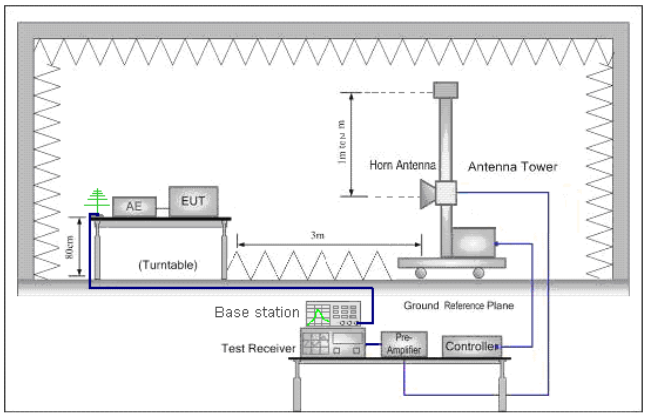


Figure 3. above 1GHz

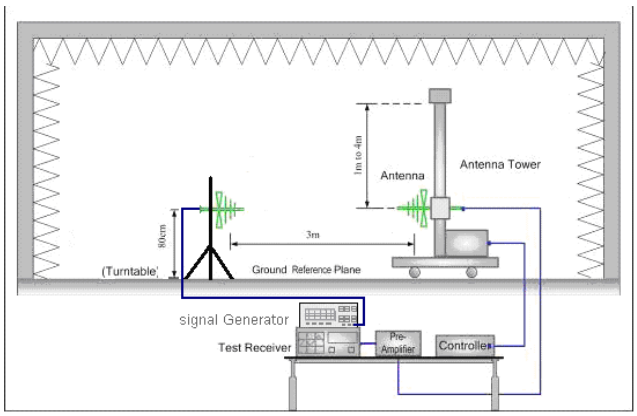


Figure 2. 30MHz to 1GHz

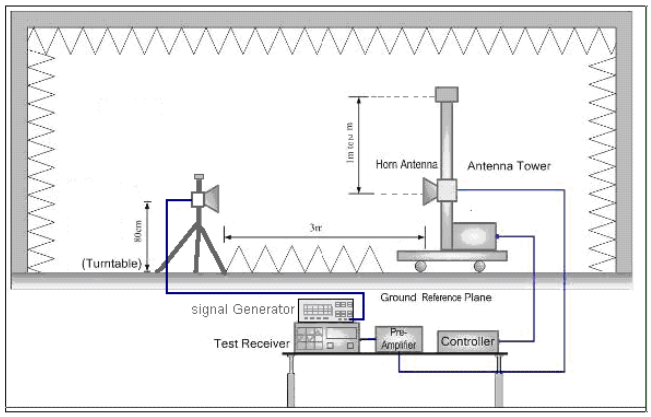


Figure 3. above 1GHz

Measurement Procedure:	**Below 1GHz test procedure as below:** 1). The EUT was powered ON and placed on a 1.70m high table in the chamber. The antenna of the transmitter was extended to its maximum length. 2). The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made. 3). Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization. 4). The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter. 5). A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 2) is obtained for this set of conditions. 6). The output power into the substitution antenna was then measured. 7). Steps 5) and 6) were repeated with both antennas polarized. 8) Calculate power in dBm by the following formula: EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi) EIRP=ERP+2.15dB where: Pg is the generator output power into the substitution antenna. **Above 1GHz test procedure as below:** 1) Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber 2) Calculate power in dBm by the following formula: EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi) EIRP=ERP+2.15dB where: Pg is the generator output power into the substitution antenna. 3.Test the EUT in the lowest channel, the middle channel the Highest channel

	4. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, Only the test worst case mode is recorded in the report. 5. Repeat above procedures until all frequencies measured was complete.
Instruments Used:	Refer to section 4.10 for details
Limit:	Attenuated at least 43+10log(P)
Test Results:	Pass

Below 1GHz

GPRS 850 128 channel/824.2 MHz(lower channel)									
Frequency (MHz)	Antenna Pol.	S.G Output (dBm)	Antenna Gain(dBi)	Cable Loss(dB)	EIRP (dBm)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	Result
47.460	H	-59.72	-4.60	0.74	-65.06	-67.21	-13.00	-54.21	Pass
104.690	H	-66.62	2.70	1.21	-65.13	-67.28	-13.00	-54.28	Pass
201.690	H	-60.61	8.20	1.40	-53.81	-55.96	-13.00	-42.96	Pass
388.900	H	-55.58	6.00	2.17	-51.75	-53.90	-13.00	-40.90	Pass
458.740	H	-59.35	7.40	2.44	-54.39	-56.54	-13.00	-43.54	Pass
709.000	H	-56.93	4.20	2.93	-55.66	-57.81	-13.00	-44.81	Pass
48.430	V	-58.89	-4.60	0.77	-64.26	-66.41	-13.00	-53.41	Pass
87.230	V	-60.52	3.00	1.10	-58.62	-60.77	-13.00	-47.77	Pass
122.150	V	-65.22	5.20	1.26	-61.28	-63.43	-13.00	-50.43	Pass
175.500	V	-55.53	6.70	1.36	-50.19	-52.34	-13.00	-39.34	Pass
388.900	V	-59.14	6.00	2.16	-55.30	-57.45	-13.00	-44.45	Pass
708.030	V	-52.80	4.20	2.93	-51.53	-53.68	-13.00	-40.68	Pass

GPRS 850 190 channel/836.6MHz (middle channel)									
Frequency (MHz)	Antenna Pol.	S.G Output (dBm)	Antenna Gain(dBi)	Cable Loss(dB)	EIRP (dBm)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	Result
47.460	H	-60.25	-4.60	0.74	-65.59	-67.74	-13.00	-54.74	Pass
105.660	H	-63.39	2.70	1.21	-61.90	-64.05	-13.00	-51.05	Pass
175.500	H	-59.65	6.70	1.36	-54.31	-56.46	-13.00	-43.46	Pass
211.390	H	-61.69	8.60	1.46	-54.55	-56.70	-13.00	-43.70	Pass
388.900	H	-55.17	6.00	2.17	-51.34	-53.49	-13.00	-40.49	Pass
568.350	H	-58.03	3.80	2.67	-56.90	-59.05	-13.00	-46.05	Pass
48.430	V	-61.01	-4.60	0.77	-66.38	-68.53	-13.00	-55.53	Pass
102.750	V	-60.51	2.30	1.21	-59.42	-61.57	-13.00	-48.57	Pass
174.530	V	-58.60	6.70	1.36	-53.26	-55.41	-13.00	-42.41	Pass
215.270	V	-60.20	8.50	1.49	-53.19	-55.34	-13.00	-42.34	Pass
378.230	V	-57.56	6.90	2.14	-52.80	-54.95	-13.00	-41.95	Pass
602.300	V	-58.50	8.10	1.70	-52.10	-54.25	-13.00	-41.25	Pass

GPRS 850 251 channel/848.8MHz(highest channel)									
Frequency (MHz)	Antenna Pol.	S.G Output (dBm)	Antenna Gain(dBi)	Cable Loss(dB)	EIRP (dBm)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	Result
47.460	H	-60.84	-4.60	0.74	-66.18	-68.33	-13.00	-55.33	Pass
175.500	H	-57.38	6.70	1.36	-52.04	-54.19	-13.00	-41.19	Pass
191.990	H	-59.32	8.00	1.39	-52.71	-54.86	-13.00	-41.86	Pass
213.330	H	-60.97	8.50	1.47	-53.94	-56.09	-13.00	-43.09	Pass
370.470	H	-57.55	7.70	2.13	-51.98	-54.13	-13.00	-41.13	Pass
459.710	H	-58.76	7.40	2.49	-53.85	-56.00	-13.00	-43.00	Pass
47.460	V	-59.25	-4.60	0.74	-64.59	-66.74	-13.00	-53.74	Pass
102.750	V	-58.46	2.30	1.21	-57.37	-59.52	-13.00	-46.52	Pass
140.580	V	-62.59	5.50	1.30	-58.39	-60.54	-13.00	-47.54	Pass
184.230	V	-55.20	7.60	1.37	-48.97	-51.12	-13.00	-38.12	Pass
214.300	V	-58.70	8.50	1.49	-51.69	-53.84	-13.00	-40.84	Pass
388.900	V	-56.69	6.00	2.17	-52.86	-55.01	-13.00	-42.01	Pass

GPRS 1900 512 channel/1850.2MHz(lower channel)								
Frequency (MHz)	Antenna Pol.	S.G Output (dBm)	Antenna Gain(dBi)	Cable Loss(dB)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Result
48.430	H	-61.35	-4.60	0.77	-66.72	-13.00	-55.87	Pass
102.750	H	-61.58	2.30	1.21	-60.49	-13.00	-49.64	Pass
140.580	H	-67.40	5.50	1.31	-63.21	-13.00	-52.36	Pass
180.350	H	-63.74	7.40	1.37	-57.71	-13.00	-46.86	Pass
322.940	H	-60.91	6.20	1.98	-56.69	-13.00	-45.84	Pass
459.710	H	-59.04	7.40	2.45	-54.09	-13.00	-43.24	Pass
47.460	V	-61.06	-4.60	0.74	-66.40	-13.00	-55.55	Pass
102.750	V	-61.26	2.30	1.21	-60.17	-13.00	-49.32	Pass
187.140	V	-64.00	7.60	1.38	-57.78	-13.00	-46.93	Pass
238.550	V	-65.35	7.00	1.62	-59.97	-13.00	-49.12	Pass
373.380	V	-57.85	7.70	2.13	-52.28	-13.00	-41.43	Pass
602.300	V	-57.77	8.10	2.70	-52.37	-13.00	-41.52	Pass

GPRS 1900 661 channel/1880.0MHz(middle channel)								
Frequency (MHz)	Antenna Pol.	S.G Output (dBm)	Antenna Gain(dBi)	Cable Loss(dB)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Result
47.460	H	-59.19	-4.60	0.74	-64.53	-13.00	-53.68	Pass
102.750	H	-60.10	2.30	1.20	-59.00	-13.00	-48.15	Pass
140.580	H	-64.36	5.50	1.30	-60.16	-13.00	-49.31	Pass
175.500	H	-59.00	6.70	1.36	-53.66	-13.00	-42.81	Pass
211.390	H	-62.48	8.60	1.46	-55.34	-13.00	-44.49	Pass
373.380	H	-58.70	7.70	2.13	-53.13	-13.00	-42.28	Pass
87.230	V	-64.04	3.00	1.10	-62.14	-13.00	-51.29	Pass
140.580	V	-63.16	5.50	1.30	-58.96	-13.00	-48.11	Pass
175.500	V	-57.90	6.70	1.36	-52.56	-13.00	-41.71	Pass
180.350	V	-58.10	7.40	1.37	-52.07	-13.00	-41.22	Pass
388.900	V	-57.39	6.00	2.17	-53.56	-13.00	-42.71	Pass
602.300	V	-58.12	8.10	2.70	-52.72	-13.00	-41.87	Pass

GPRS 1900 810 channel/1909.8MHz(highest channel)								
Frequency (MHz)	Antenna Pol.	S.G Output (dBm)	Antenna Gain(dBi)	Cable Loss(dB)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Result
40.670	H	-56.88	-9.30	0.74	-66.92	-13.00	-56.07	Pass
102.750	H	-61.66	2.30	1.21	-60.57	-13.00	-49.72	Pass
175.500	H	-59.12	6.70	1.36	-53.78	-13.00	-42.93	Pass
388.900	H	-55.49	6.00	2.17	-51.66	-13.00	-40.81	Pass
459.710	H	-59.27	7.40	2.45	-54.32	-13.00	-43.47	Pass
909.790	H	-58.17	8.10	3.61	-53.68	-13.00	-42.83	Pass
51.340	V	-60.09	-3.50	0.80	-64.39	-13.00	-53.54	Pass
102.750	V	-61.69	2.30	1.21	-60.60	-13.00	-49.75	Pass
185.200	V	-59.57	7.60	1.38	-53.35	-13.00	-42.50	Pass
215.270	V	-61.97	8.50	1.49	-54.96	-13.00	-44.11	Pass
388.900	V	-58.11	6.00	2.17	-54.28	-13.00	-43.43	Pass
602.300	V	-57.69	8.10	2.70	-52.29	-13.00	-41.44	Pass

Above 1GHz

GPRS 850 128 channel/824.2 MHz(lower channel)									
Frequency (MHz)	Antenna Pol.	S.G Output (dBm)	Antenna Gain(dBi)	Cable Loss(dB)	EIRP (dBm)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	Result
1640.590	H	-42.90	8.40	5.13	-39.63	-41.78	-13.00	-26.63	Pass
3147.748	H	-48.62	7.10	7.36	-48.88	-51.03	-13.00	-35.88	Pass
3971.916	H	-45.74	6.60	7.89	-47.03	-49.18	-13.00	-34.03	Pass
5236.004	H	-39.45	5.50	11.74	-45.69	-47.84	-13.00	-32.69	Pass
6966.265	H	-40.57	9.70	13.69	-44.56	-46.71	-13.00	-31.56	Pass
9332.543	H	-42.51	14.00	13.64	-42.15	-44.30	-13.00	-29.15	Pass
1640.590	V	-45.32	8.40	5.13	-42.05	-44.20	-13.00	-29.05	Pass
3126.079	V	-49.74	7.10	7.36	-50.00	-52.15	-13.00	-37.00	Pass
4395.416	V	-46.91	6.60	8.96	-49.27	-51.42	-13.00	-36.27	Pass
5847.901	V	-44.84	10.20	13.00	-47.64	-49.79	-13.00	-34.64	Pass
6966.265	V	-42.98	9.70	13.69	-46.97	-49.12	-13.00	-33.97	Pass
7550.922	V	-44.80	10.80	12.81	-46.81	-48.96	-13.00	-33.81	Pass

GPRS 850 190 channel/836.6MHz (middle channel)									
Frequency (MHz)	Antenna Pol.	S.G Output (dBm)	Antenna Gain(dBi)	Cable Loss(dB)	EIRP (dBm)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	Result
1671.091	H	-46.79	8.40	5.05	-43.44	-45.59	-13.00	-30.44	Pass
3396.253	H	-47.34	7.80	7.22	-46.76	-48.91	-13.00	-33.76	Pass
4159.106	H	-44.26	6.60	8.59	-46.25	-48.40	-13.00	-33.25	Pass
5188.000	H	-37.76	5.50	11.71	-43.97	-46.12	-13.00	-30.97	Pass
6966.265	H	-38.84	9.70	13.74	-42.88	-45.03	-13.00	-29.88	Pass
9354.057	H	-42.33	14.00	13.92	-42.25	-44.40	-13.00	-29.25	Pass
1671.091	V	-40.59	8.40	5.05	-37.24	-39.39	-13.00	-24.24	Pass
3589.219	V	-46.04	7.80	8.44	-46.68	-48.83	-13.00	-33.68	Pass
4466.836	V	-43.98	6.60	8.86	-46.24	-48.39	-13.00	-33.24	Pass
5584.702	V	-38.54	6.60	12.72	-44.66	-46.81	-13.00	-31.66	Pass
7430.191	V	-41.66	10.80	12.68	-43.54	-45.69	-13.00	-30.54	Pass
8933.055	V	-43.17	13.80	13.30	-42.67	-44.82	-13.00	-29.67	Pass

GPRS 850 251 channel/848.8MHz(highest channel)									
Frequency (MHz)	Antenna Pol.	S.G Output (dBm)	Antenna Gain(dBi)	Cable Loss(dB)	EIRP (dBm)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	Result
1698.244	H	-44.57	8.40	5.05	-41.22	-43.37	-13.00	-28.22	Pass
3013.006	H	-49.33	7.10	6.68	-48.91	-51.06	-13.00	-35.91	Pass
3890.451	H	-45.88	6.60	7.89	-47.17	-49.32	-13.00	-34.17	Pass
5035.006	H	-42.20	5.50	9.80	-46.50	-48.65	-13.00	-33.50	Pass
6516.284	H	-38.58	9.20	13.73	-43.11	-45.26	-13.00	-30.11	Pass
7481.695	H	-41.14	10.80	12.77	-43.11	-45.26	-13.00	-30.11	Pass
1185.769	V	-54.48	5.50	4.33	-53.31	-55.46	-13.00	-40.31	Pass
1698.244	V	-42.58	8.40	5.05	-39.23	-41.38	-13.00	-26.23	Pass
3715.352	V	-47.47	7.80	7.40	-47.07	-49.22	-13.00	-34.07	Pass
5093.309	V	-40.08	5.50	10.83	-45.41	-47.56	-13.00	-32.41	Pass
6397.348	V	-38.40	9.20	14.41	-43.61	-45.76	-13.00	-30.61	Pass
8749.838	V	-43.14	13.30	13.10	-42.94	-45.09	-13.00	-29.94	Pass

GPRS 1900 512 channel/1850.2MHz(lower channel)								
Frequency (MHz)	Antenna Pol.	S.G Output (dBm)	Antenna Gain(dBi)	Cable Loss(dB)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Result
2790.113	H	-51.08	6.80	6.42	-50.70	-13.00	-37.70	Pass
3757.637	H	-47.91	7.80	7.51	-47.62	-13.00	-34.62	Pass
5031.499	H	-41.78	5.50	9.80	-46.08	-13.00	-33.08	Pass
7454.429	H	-41.79	10.80	12.77	-43.76	-13.00	-30.76	Pass
9475.497	H	-42.88	14.00	13.66	-42.54	-13.00	-29.54	Pass
11533.480	H	-31.92	11.00	16.45	-37.37	-13.00	-24.37	Pass
3025.306	V	-49.87	7.10	6.68	-49.45	-13.00	-36.45	Pass
3714.443	V	-47.42	7.80	7.40	-47.02	-13.00	-34.02	Pass
5031.499	V	-42.21	5.50	9.80	-46.51	-13.00	-33.51	Pass
6698.373	V	-40.53	9.20	13.32	-44.65	-13.00	-31.65	Pass
8248.005	V	-43.80	12.60	12.33	-43.53	-13.00	-30.53	Pass
10068.450	V	-39.55	13.30	14.36	-40.61	-13.00	-27.61	Pass

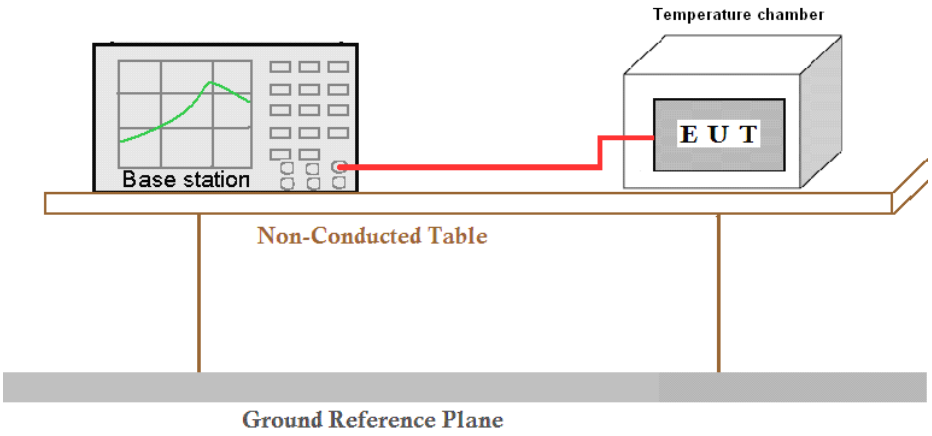
GPRS 1900 661 channel/1880.0MHz(middle channel)								
Frequency (MHz)	Antenna Pol.	S.G Output (dBm)	Antenna Gain(dBi)	Cable Loss(dB)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Result
1877.800	H	-56.87	9.20	5.50	-53.11	-13.00	-39.97	Pass
3598.203	H	-48.01	7.80	8.44	-48.59	-13.00	-35.45	Pass
5209.075	H	-39.61	5.50	11.71	-45.76	-13.00	-32.62	Pass
6698.373	H	-40.29	9.20	13.32	-44.35	-13.00	-31.21	Pass
8943.274	H	-42.98	13.80	13.30	-42.42	-13.00	-29.28	Pass
11975.100	H	-32.55	13.30	16.45	-35.64	-13.00	-22.50	Pass
1877.800	V	-55.91	9.20	5.50	-52.15	-13.00	-39.01	Pass
3096.075	V	-49.39	7.10	7.55	-49.78	-13.00	-36.64	Pass
4039.212	V	-45.94	6.60	8.11	-47.39	-13.00	-34.25	Pass
5519.072	V	-39.89	6.60	12.36	-45.59	-13.00	-32.45	Pass
7015.420	V	-40.75	9.70	13.74	-44.73	-13.00	-31.59	Pass
10885.670	V	-38.38	12.60	14.36	-40.08	-13.00	-26.94	Pass

GPRS 1900 810 channel/1909.8MHz(highest channel)								
Frequency (MHz)	Antenna Pol.	S.G Output (dBm)	Antenna Gain(dBi)	Cable Loss(dB)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Result
1883.236	H	-57.58	9.20	5.50	-53.88	-13.00	-40.88	Pass
3159.355	H	-49.62	7.10	7.03	-49.55	-13.00	-36.55	Pass
4469.214	H	-43.99	5.50	8.86	-47.35	-13.00	-34.35	Pass
6340.436	H	-38.55	9.20	14.44	-43.79	-13.00	-30.79	Pass
8368.069	H	-44.88	13.30	13.06	-44.64	-13.00	-31.64	Pass
10545.010	H	-37.24	12.60	15.16	-39.80	-13.00	-26.80	Pass
1390.276	V	-58.03	8.40	4.45	-54.08	-13.00	-41.08	Pass
3123.039	V	-48.88	7.10	7.55	-49.33	-13.00	-36.33	Pass
4133.699	V	-46.07	6.60	8.09	-47.56	-13.00	-34.56	Pass
5780.300	V	-37.58	6.60	12.97	-43.95	-13.00	-30.95	Pass
7454.429	V	-41.32	10.80	12.77	-43.29	-13.00	-30.29	Pass
9502.925	V	-41.57	14.00	13.66	-41.23	-13.00	-28.23	Pass

NOTE:

1) The disturbance above 10GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
2) EIRP=S.G. output(dBm)+Antenna Gain(dBi)-Cable Loss(dB)
   EIRP=ERP+2.15dB

5.7 Frequency stability

Test Requirement:	Part 2.1055 and RSS-132 Clause 4.3/RSS-133 Clause 6.3
Test Method:	TIA-603- C-2004 Clause 2.2.2 and RSS-Gen Clause 4.7
Test Setup:	
Measurement Procedure:	The transmitter output was connected to a calibrated coaxial cable and a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel and high channel).The EUT was place in the temperature chamber, the DC leads and RF output cable exited the chamber though an opening made for that purpose. After Operate the equipment in standby conditions for 15 minutes before proceeding. The temperature was varied from -30℃ to +50℃ at intervals of not more than 10℃ The frequency stability was read from the base station at 25℃ the input voltage was varied +/-15%, the frequency stability and input voltage was record.
Instruments Used:	Refer to section 4.10 for details
Limit:	Operation Band: Frequency stability Limit(ppm) GSM/GPRS/EDGE/WCDMA 850: ±2.5ppm GSM/GPRS/EDGE/WCDMA 1900: ---
Test Results:	Pass

GPRS:

Reference Frequency: Low channel 824.2MHz@ 25 degree

Limit: +/- 2.5ppm = 2060.5Hz

Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
7.4	-20	824.199952	48	2060.5
7.4	-10	824.199946	54	2060.5
7.4	10	824.199939	61	2060.5
7.4	20	824.199962	32	2060.5
7.4	30	824.199967	33	2060.5
7.4	40	824.199938	62	2060.5
7.4	50	824.199927	73	2060.5

Reference Frequency: Mid channel 836.6MHz@ 25 degree

Limit: +/- 2.5ppm = 2091.5Hz

Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
7.4	-20	836.599971	29	2091.5
7.4	-10	836.599955	45	2091.5
7.4	10	836.599943	57	2091.5
7.4	20	836.599937	63	2091.5
7.4	30	836.599963	37	2091.5
7.4	40	836.599947	53	2091.5
7.4	50	836.599974	26	2091.5

Reference Frequency: High channel 848.8MHz@ 25 degree

Limit: +/- 2.5ppm = 2122Hz

Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
7.4	-20	848.799946	54	2122
7.4	-10	848.799935	65	2122
7.4	10	848.799982	18	2122
7.4	20	848.799927	73	2122
7.4	30	848.799933	67	2122
7.4	40	848.799947	53	2122
7.4	50	848.799950	50	2122

Reference Frequency: Low channel 1850.2MHz@ 25 degree

Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
7.4	-20	1850.199962	38	N/A
7.4	-10	1850.199935	65	N/A
7.4	10	1850.199941	59	N/A
7.4	20	1850.199961	39	N/A
7.4	30	1850.199953	47	N/A
7.4	40	1850.199959	41	N/A
7.4	50	1850.199964	36	N/A

Reference Frequency: Mid channel 1880MHz@ 25 degree

Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
7.4	-20	1879.999947	53	N/A
7.4	-10	1879.999969	31	N/A
7.4	10	1879.999958	42	N/A
7.4	20	1879.999915	75	N/A
7.4	30	1879.999935	65	N/A
7.4	40	1879.999941	59	N/A
7.4	50	1879.999969	31	N/A

Reference Frequency: High channel 1909.8MHz@ 25 degree

Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
7.4	-20	1909.799953	47	N/A
7.4	-10	1909.799969	31	N/A
7.4	10	1909.799958	42	N/A
7.4	20	1909.799985	15	N/A
7.4	30	1909.799921	79	N/A
7.4	40	1909.799967	33	N/A
7.4	50	1909.799931	69	N/A

Reference Frequency: Low channel 824.2MHz				
Limit: +/- 2.5ppm = 2060.5Hz				
Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
8.4	25	824.200069	31	2060.5
7.4	25	824.200033	67	2060.5
6.5 (Endpoint)	25	824.200051	49	2060.5

Reference Frequency: Mid channel 836.6MHz				
Limit: +/- 2.5ppm = 2091.5Hz				
Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
8.4	25	836.600036	64	2091.5
7.4	25	836.600051	49	2091.5
6.5 (Endpoint)	25	836.600083	17	2091.5

Reference Frequency: High channel 848.8MHz				
Limit: +/- 2.5ppm = 2122Hz				
Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
8.4	25	848.800029	71	2122
7.4	25	848.800063	37	2122
6.5 (Endpoint)	25	848.800076	24	2122

Reference Frequency: Low channel 1850.2MHz				
Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
8.4	25	1850.200058	42	N/A
7.4	25	1850.200066	34	N/A
6.5 (Endpoint)	25	1850.200027	73	N/A

Reference Frequency: Mid channel 1880MHz				
Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
8.4	25	1880.000044	56	N/A
7.4	25	1880.000033	67	N/A
6.5 (Endpoint)	25	1880.000071	29	N/A

Reference Frequency: High channel 1909.8MHz				
Power Supply	Environment	Frequency	Delta	Limit
Vdc	Temperature(degree)	(MHz)	(Hz)	(Hz)
8.4	25	1909.800066	34	N/A
7.4	25	1909.800048	52	N/A
6.5 (Endpoint)	25	1909.800037	63	N/A