SGS-CSTC Standards Technical Services Ltd.

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FEDERAL COMMUNICATIONS COMMISSION
Registration number: 282399

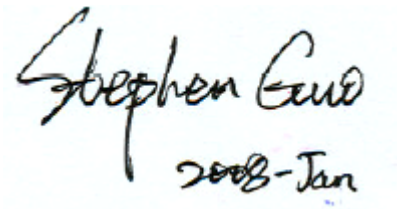
TEST REPORT

Application No. :	GLEMR080100054TX
Applicant:	Guangzhou Gaoke Communications Technology Co., Ltd
FCC ID:	VYRS1801EC
Fundamental Carrier Frequency :	1850MHz ~ 1910MHz
Equipment Under Test (EUT):	
Name:	CDMA 1900MHz FIXED WIRELESS TERMINAL
Model:	S1810EC
Standards:	FCC part 2:2007 &FCC part 24:2007& FCC part 15:2007
Date of Receipt:	7 January 2008
Date of Test:	7 to 23 January 2008
Date of Issue:	25 January 2008

Test Result :	**PASS ***

* In the configuration tested, the EUT detailed in this report complied with the standards specified above. Please refer to section 2 of this report for further details.

Authorized Signature:



Stephen Guo
Manager

FCC ID: VYRS1801EC

2 Test Summary

Test	Test Requirement	Standard Paragraph	Result
RF Power Output	FCC PART 2:2007	Section 2.1046	PASS
Occupied Bandwidth	FCC PART 2 :2007	Section 2.1049	PASS
Effective Isotropic Radiated Power	FCC PART 24:2007	Section 24.232	PASS
Spurious Emissions at antenna terminals	FCC PART 2 :2007	Section 2.1051	PASS
Out of Band Emissions	FCC PART 24:2007	Section 24.238	PASS
Radiated Spurious Emissions	FCC PART 24:2007	Section 24.238	PASS
Conducted Emissions	FCC PART 15 :2007	Section 15.207	PASS
Frequency Stability	FCC PART 2 :2007 FCC PART 24:2007	Section 2.1055 Section 24.235	PASS

3 Contents

4 General Information

4.1 Client Information

Applicant:	Guangzhou Gaoke Communications Technology Co., Ltd.
Address of Applicant:	Building Gaoke, No.398 Mid Zhongshan Avenue, Guangzhou, P.R.China

4.2 General Description of E.U.T.

Product Name:	CDMA 1900MHz Fixed Wireless Terminal
Model:	S1801EC
Frequency:	Tx:1850MHz ~ 1910MHz Rx:1930MHz ~ 1990MHz
Type of Modulation	CDMA
Duplex Mode:	FDD
Duplex spacing:	80MHz
Antenna :	External 50ohm, Max 3dBi
Power supply:	Batteries supplied: 7.2 DC(Ni-MH 1200mAh rechargeable battery) or AC/DC adapter
Adapter information	Model no.:GM-120100; Input :AC 100V~240V, 50-60Hz ; Output: DC 12,1A; Adapter DC output cable: 1.5m x 2 wires unscreened cable.

4.3 Description of Support Units

The EUT has been tested independently.

4.4 Standards Applicable for Testing

The customer requested FCC tests for the EUT.

The standard used was FCC PART 2:2007 & PART 24:2007& Part 15:2007.

4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory, No.198 Kezhu Road, Science Town Economic& Technology Development District Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

4.6 Other Information Requested by the Customer

None.

4.7 Test Facility

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

- **NVLAP – Lab Code: 200611-0**

  SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is recognized under the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

- **FCC – Registration No.: 282399**

  SGS-CSTC Standards Technical Services Co., Ltd., 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 282399, May 31, 2002. With the above and NVLAP's accreditation, SGS-CSTC is an authorized test laboratory for the DoC process.

5 Equipments Used during Test

	RE in Chamber/OATS					
No:	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
EMC0525	Compact Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	N/A	06-03-2007	06-03-2008
EMC0522	EMI Test Receiver	Rohde & Schwarz	ESIB26	100249	05-12-2007	05-12-2008
N/A	EMI Test Software	Audix	E3	N/A	N/A	N/A
EMC0514	Coaxial cable	SGS	N/A	N/A	04-12-2007	04-12-2008
EMC0524	Bi-log Type Antenna	Schaffner -Chase	CBL6112B	2966	12-08-2007	12-08-2008
EMC0519	Bilog Type Antenna	Schaffner -Chase	CBL6143	5070	12-08-2007	12-08-2008
EMC0517	Horn Antenna	Rohde & Schwarz	HF906	100095	12-08-2007	12-08-2008
EMC0040	Spectrum Analyzer	Rohde & Schwarz	FSP30	100324	05-12-2007	05-12-2008
EMC0520	0.1-1300 MHz Pre-Amplifier	HP	8447D OPT 010	2944A06252	28-03-2007	28-03-2008
EMC0521	1-26.5 GHz Pre-Amplifier	Agilent	8449B	3008A01649	28-03-2007	28-03-2008
EMC0523	Active Loop Antenna	EMCO	6502	00042963	09-08-2006	09-08-2008
EMC0530	10m Semi- Anechoic Chamber	ETS	N/A	N/A	10-08-2007	10-08-2008

	Conducted Emission					
No:	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
EMC0306	Shielding Room	Zhong Yu	8 x 3 x 3.8 m^3	N/A	N/A	N/A
EMC0102	LISN	Schaffner Chase	MNZ050D/1	1421	14-12-2007	14-12-2008
EMC0118	Two-line v-netwok	Rohde & Schwarz	ENV216	100359	16-08--2007	16-08--2008
EMC0506	EMI Test Receiver	Rohde & Schwarz	ESCS30	100085	14-12-2007	14-12-2008
EMC0107	Coaxial Cable	SGS	2m	N/A	24-11-2007	26-11-2008
EMC0106	Voltage Probe	SGS	N/A	N/A	N/A	N/A

	General used equipment					
No:	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
EMC0050-EMC0053	Temperature, & Humidity	ZHENGZHOU BO YANG	WSB	N/A	05-12-2007	05-12-2008
EMC0006	DMM	Fluke	73	70681569	27-09-2007	27-09-2008
EMC0007	DMM	Fluke	73	70671122	27-09-2007	27-09-2008

6 Test Results

6.1 E.U.T. test conditions

Power supply:	AC adapter and Battery.
Type of antenna:	external
Operating Environment:	
Temperature:	20.0 -25.0 °C
Humidity:	38-48 % RH
Atmospheric Pressure:	992 -1006 mbar

Test frequency is the lowest channel: 25 channel(1851.25MHz) , middle channel: 600 channel(1880MHz) and highest channel: 1175 channel(1908.75MHz)

6.2 RF Power Output

Test Requirement: FCC Part 2.1046

Test Method: FCC Part 2.1046

Test Date: January 21 2008

Test Status: Test lowest, middle, highest channel.

Test Procedure:

1. Establish call communication between EUT and Tester;
2. Adjust the Test transmitter signal to make the EUT RF power output at Maximum;
3. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
4. Observe the power output at least 10s, consider the cable loss between the EUT and Tester, record the maximum RF power output value.

Test result:

Test Channel	Carrier Frequency (MHz)	RF Power Output (dBm)	Max Antenna Gain (dBi)	EIRP Limit (dBm)
25	1851.25	4.2	3dBi	33
600	1880.0	5.1		
1175	1908.75	5.9		

Remark:

The external antenna max gain is 3 dBi, calculate the EIRP base the formula (1) and compare it with the limit. And Radiated test result is in the other section.

Formula (1): EIRP = P * G; P = Power(dBm) , G= Gain (dBi)

Test Result does meet the FCC requirement.

6.3 Occupied Bandwidth

Test Requirement: FCC Part 2.1049

Test Method: FCC Part 2.1049

Test Date: January 21 2008

Test Status: Test lowest, middle, highest channel.

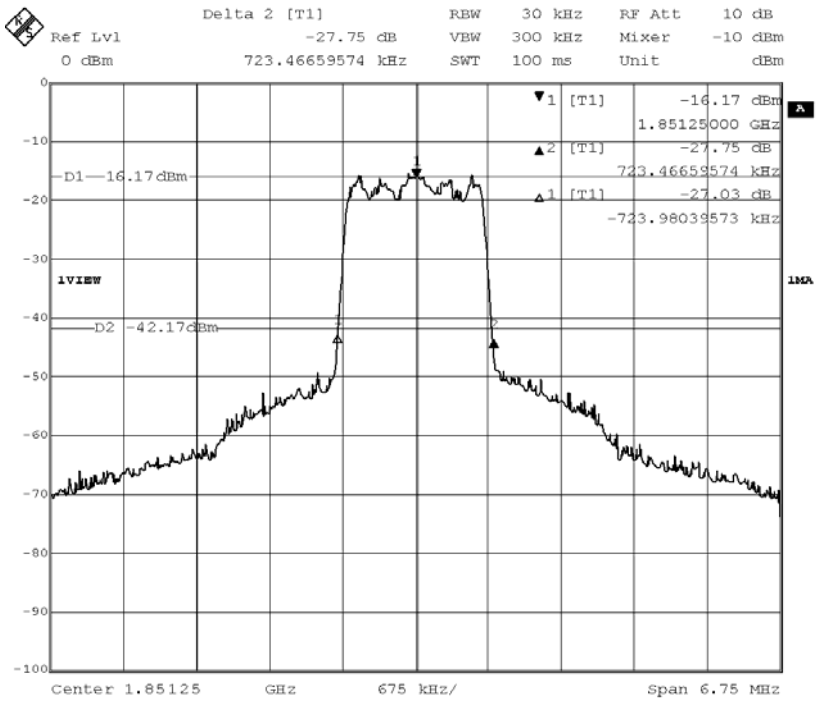
Test Procedure:

1. Establish call communication between EUT and Tester;
2. Adjust the Test transmitter signal to make the EUT RF power output at Maximum
3. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
4. Measure the 99% Channel Power Occupied Bandwidth without considering the cable loss.

Test result:

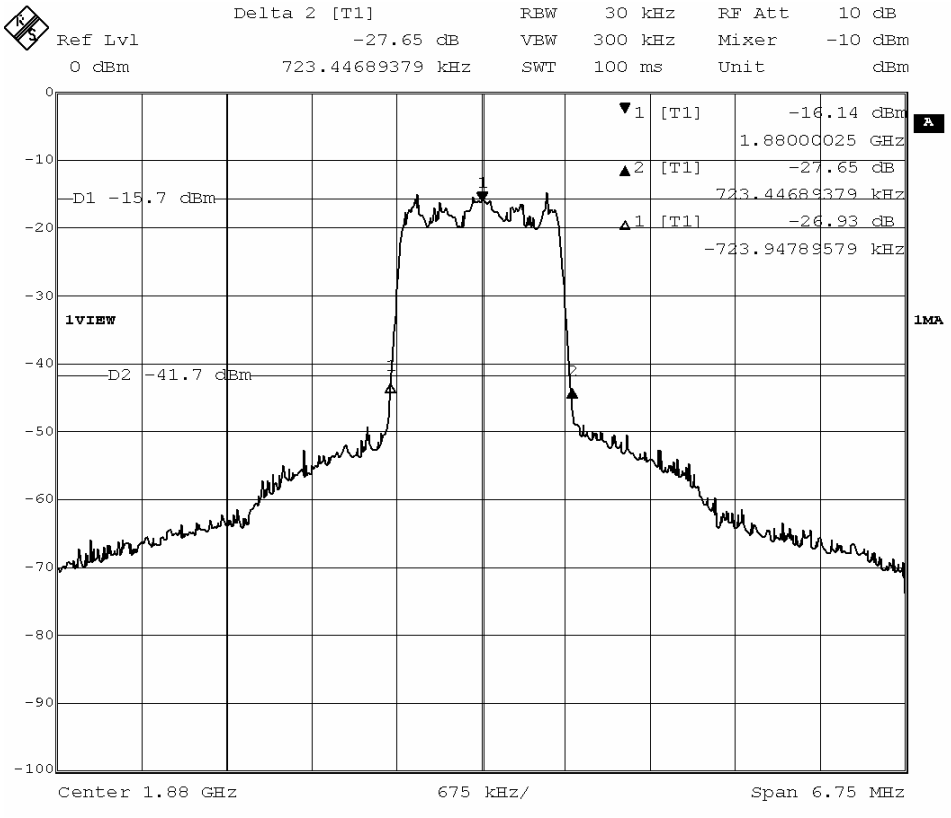
Test Channel	Carrier Frequency(MHz)	99% Channel Power Occupied Bandwidth (MHz)
25	1851.25	1.447
600	1880.0	1.447
1175	1908.75	1.443

Channel 25：

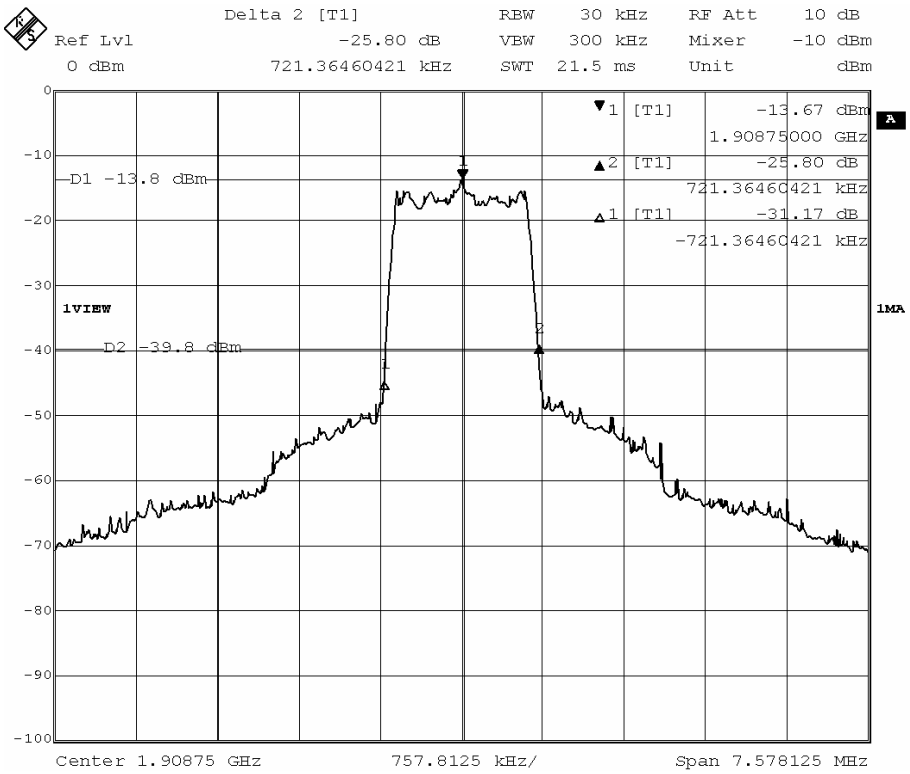


FCC ID: VYRS1801EC

Channel 600：



Channel 1175：



6.4 Spurious Emissions at antenna terminals

Test Requirement: FCC Part 2.1051

Test Method: FCC Part 2.1051

Test Date: January 21 2008

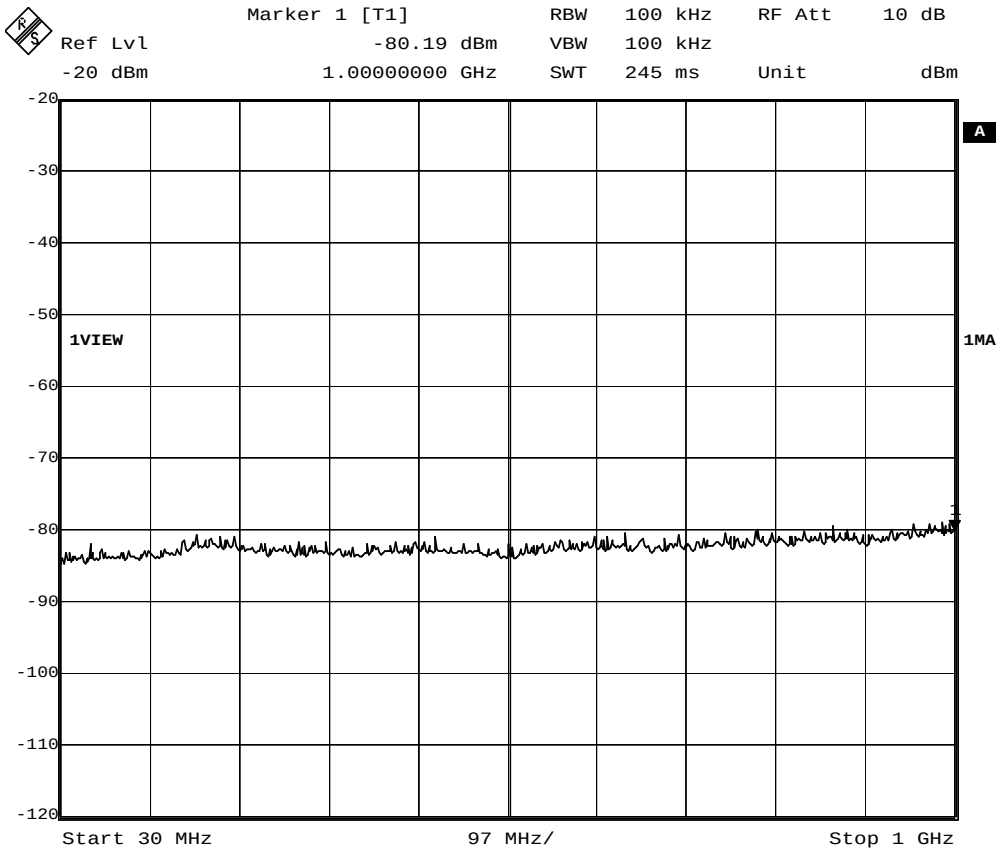
Test Status: Test lowest, middle, highest channel.

Test Procedure:

1. Establish call communication between EUT and Tester;
2. Adjust the Test transmitter signal to make the EUT RF power output at Maximum;
3. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
4. Scan from 30MHz to 20GHz(higher than the 10th harmonic of the carrier) in the spectrum analyzer, Peak detector used;
5. record the spurious emission frequencies and level;

Test result:

Channel 25



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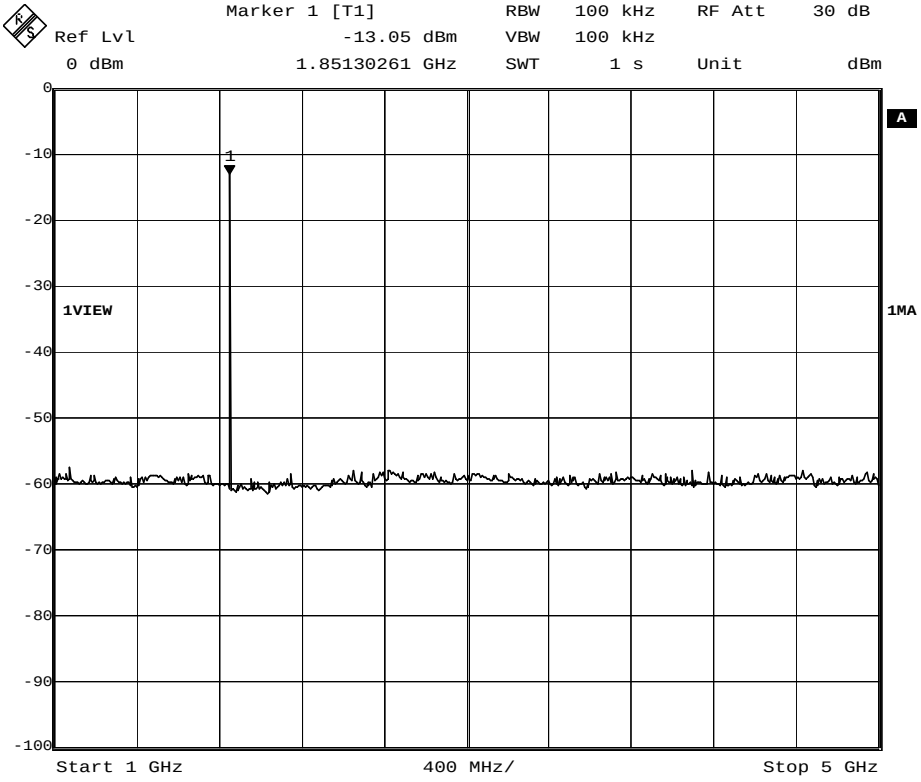
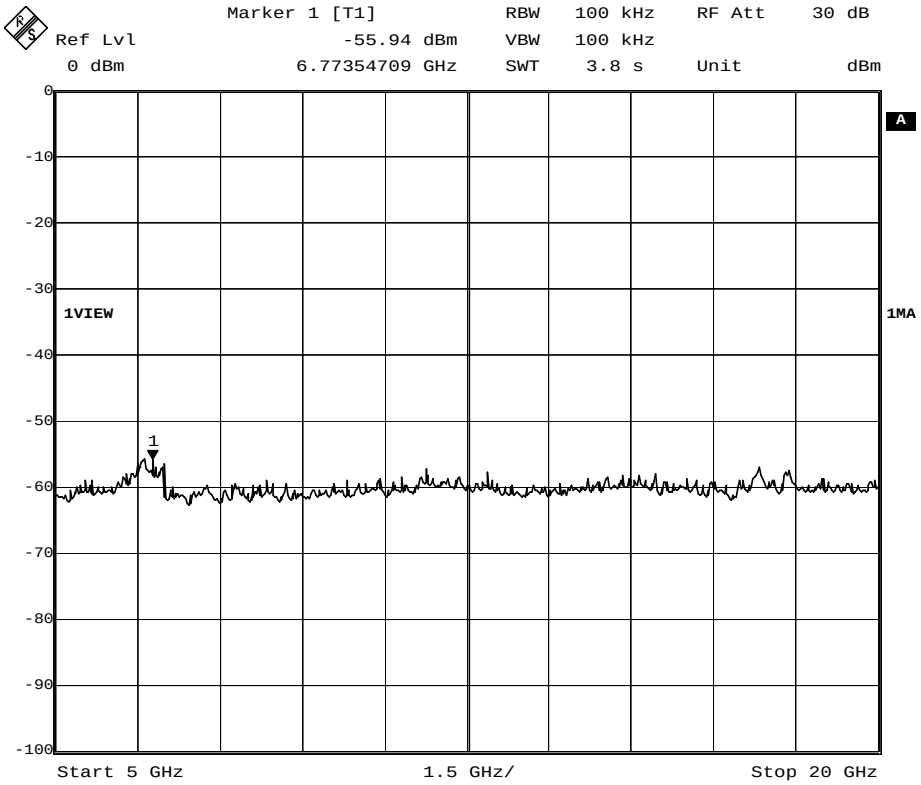
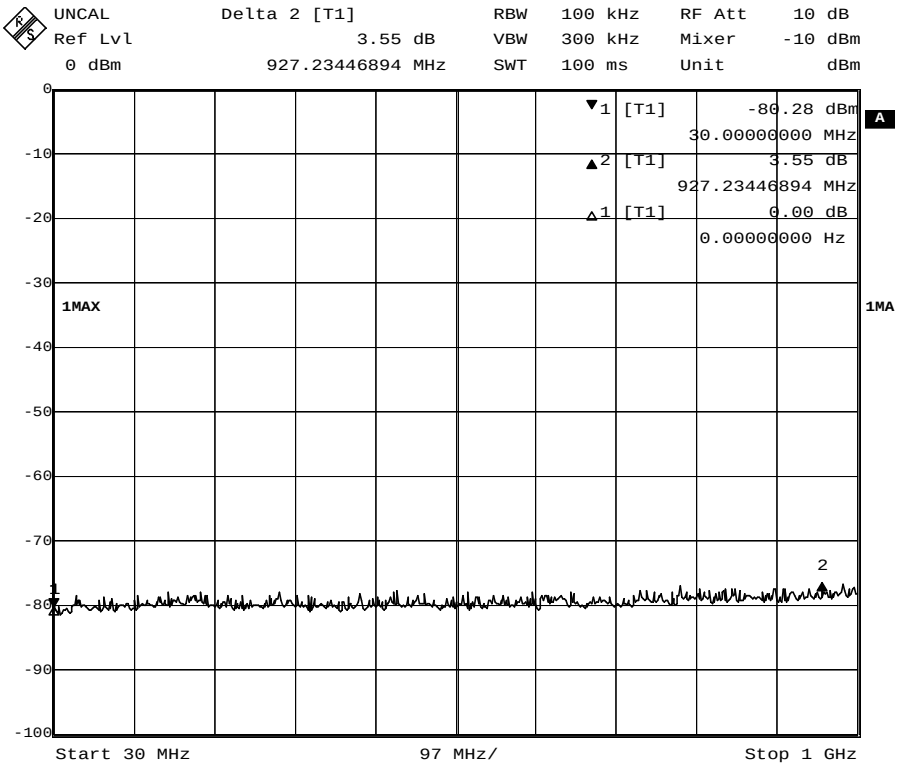
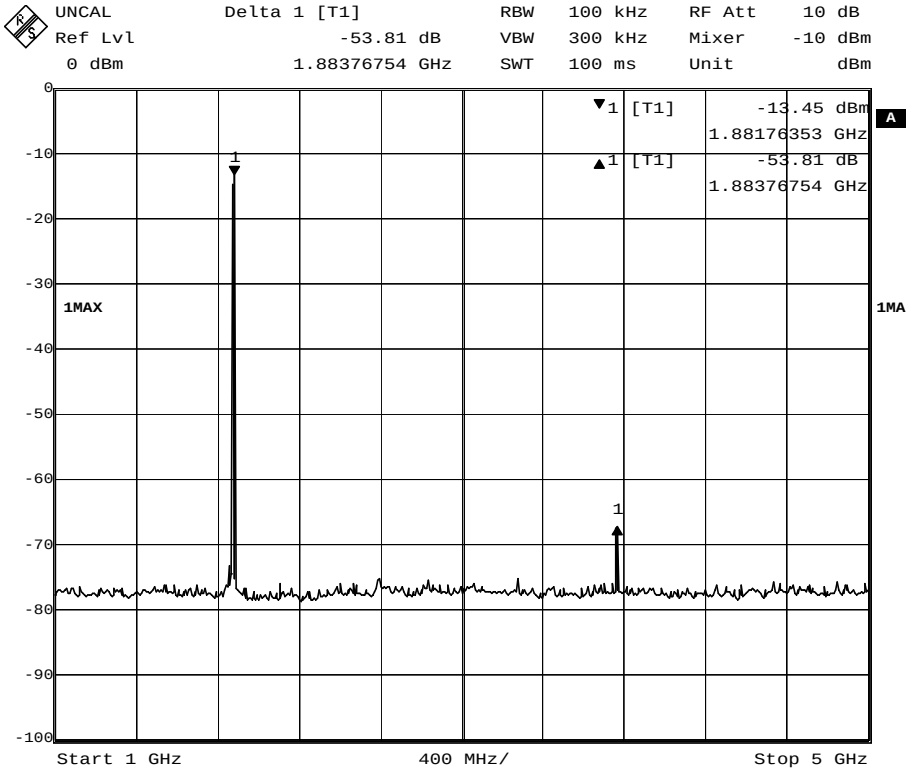




FCC ID: VYRS1801EC

Channel 600:





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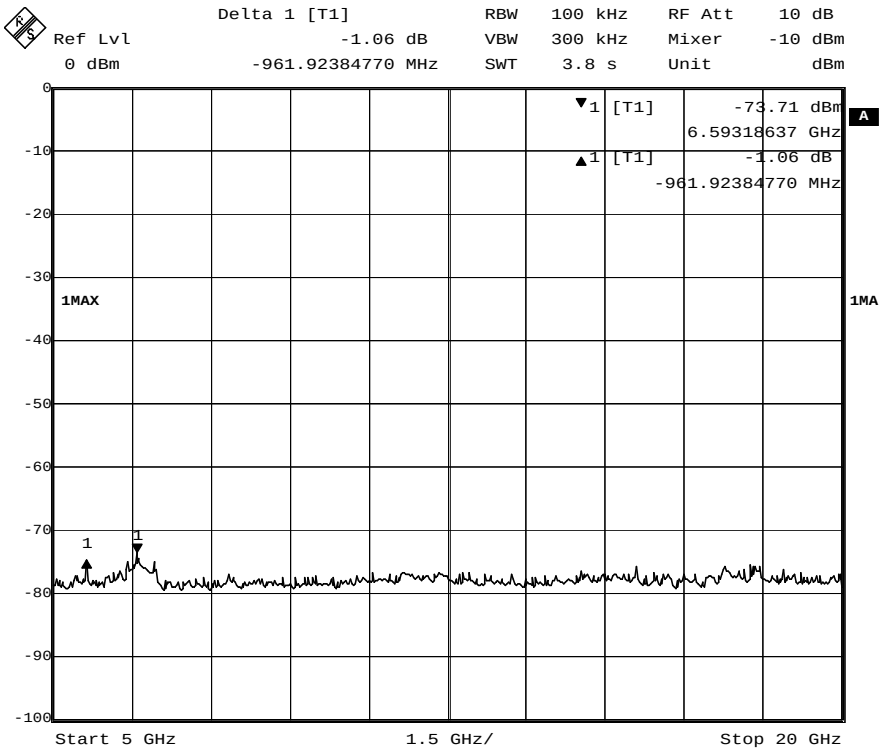
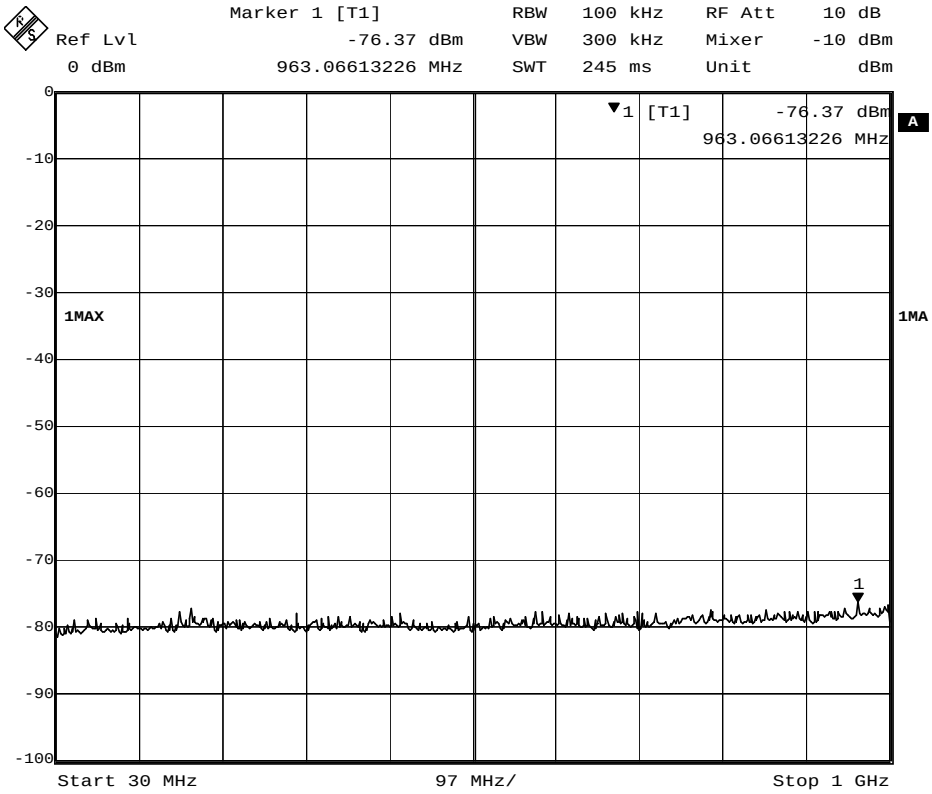
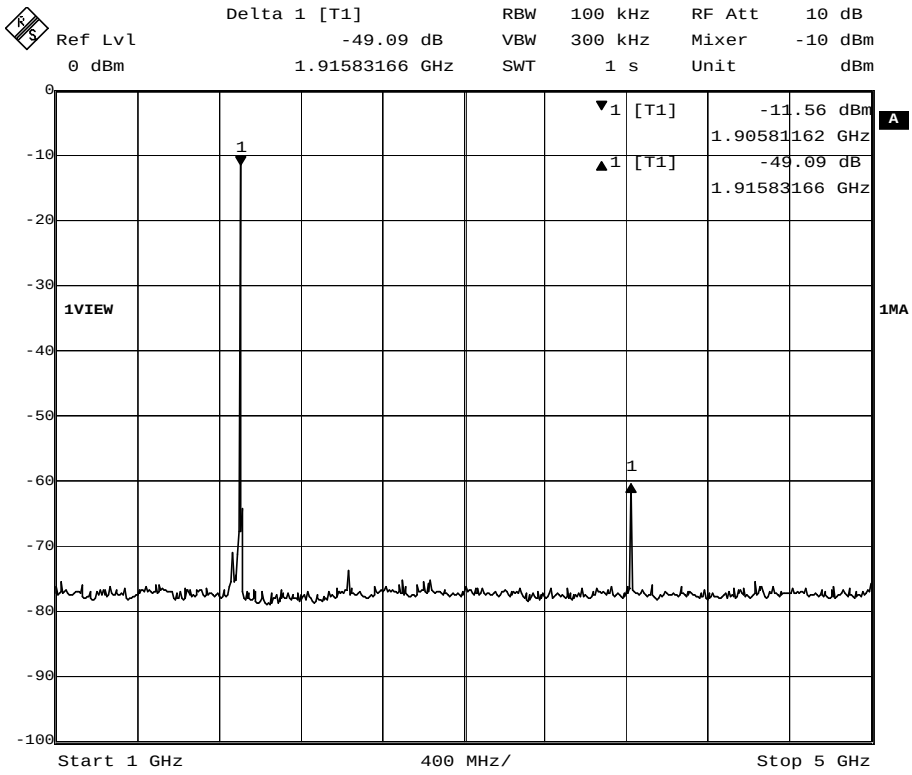
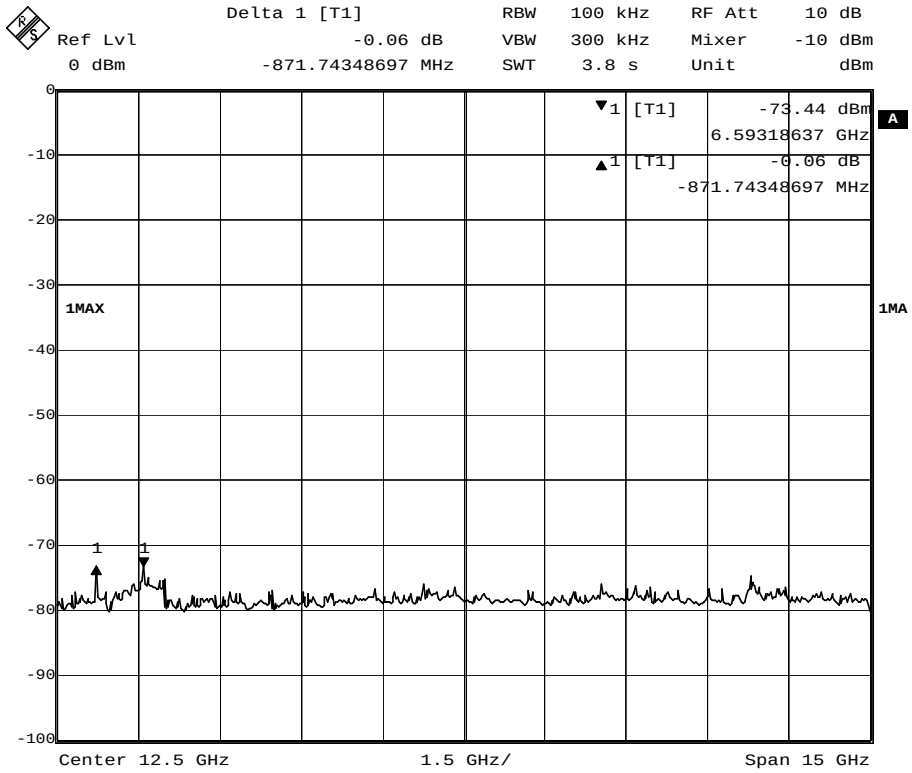


Channel 1175:



FCC ID: VYRS1801EC





FCC ID: VYRS1801EC

6.5 Effective Isotropic Radiated Power

Test Requirement: FCC Part 24.232
Test Method: TIA-603-C:2004
Test Date: 21 January 2008
Test Status: Test lowest, middle, highest channel.

Test Procedure:

1. Establish call communication between EUT and Tester;
2. Adjust the Test transmitter signal to make the EUT RF power output at Maximum;
3. test the EUT ERP with the external antenna connected and put in vertical polarity;

The technique used to find the output power of the transmitter was the antenna substitution method. Substitution method was performed to determine the actual ERP emission levels of the EUT.

The following test procedure as below:

a) The EUT was powered ON and placed on a table in the chamber. The antenna of the transmitter was extended to its maximum length.

b) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering the receive antenna and by rotating the turntable. After the fundamental emission was maximized, a field strength measurement was made.

c) Steps 1 and 2 were performed with the EUT and the receive antenna in both vertical and horizontal polarization.

d) 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.

e) 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.

f) The output power into the substitution antenna was then measured.

g) Steps e) and f) were repeated with both antennas vertical polarized.

4. Report the Max EIRP value (EIRP=ERP+2.15).

Test result:

Test Channel	Carrier Frequency(MHz)	EIRP(dBm)	Limit
25	1851.25	3.6	2W or 33dBm
600	1880.0	3.5	
1175	1908.75	3.6	

Test Result does meet the FCC requirement.

6.6 Out of band emissions

6.6.1 Band edges emissions

Test Requirement: FCC Part 24.238
Test Method: TIA-603-C:2004
Test Date: 21 January 2008
Test Status: Test lowest, middle, highest channel.
Test Procedure:

1. Establish call communication between EUT and Tester;
2. Adjust the Test transmitter signal to make the EUT RF power output at Maximum;
3. test the EUT ERP with the external antenna connected and put in vertical polarity;

The technique used to find the output power of the transmitter was the antenna substitution method. Substitution method was performed to determine the actual ERP emission levels of the EUT.

The following test procedure as below:

a) The EUT was powered ON and placed on a table in the chamber. The antenna of the transmitter was extended to its maximum length.

b) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering the receive antenna and by rotating the turntable. After the fundamental emission was maximized, a field strength measurement was made.

c) Steps 1 and 2 were performed with the EUT and the receive antenna in both vertical and horizontal polarization.

d) 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.

e) 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.

f) The output power into the substitution antenna was then measured.

g) Steps e) and f) were repeated with both antennas vertical polarized.

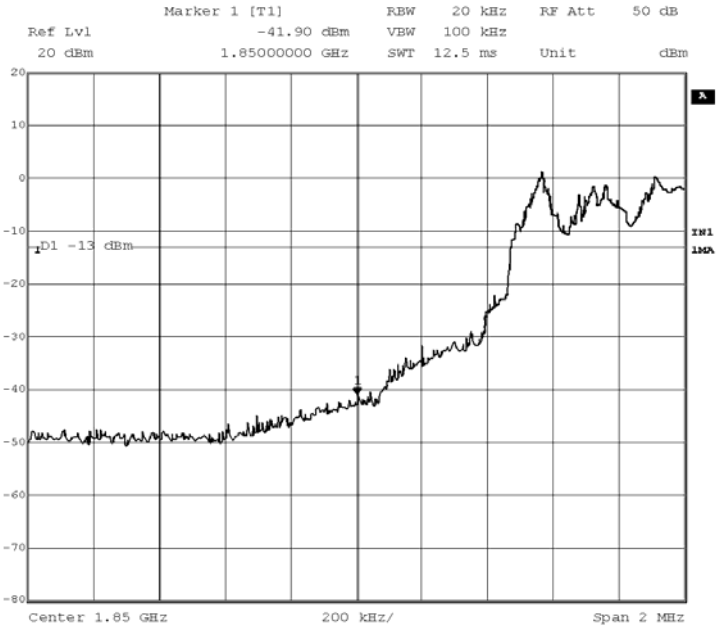
4. Scan the lower edge and upper edge to find the worst emissions to compare with the requirement.

FCC ID: VYRS1801EC

Test result:

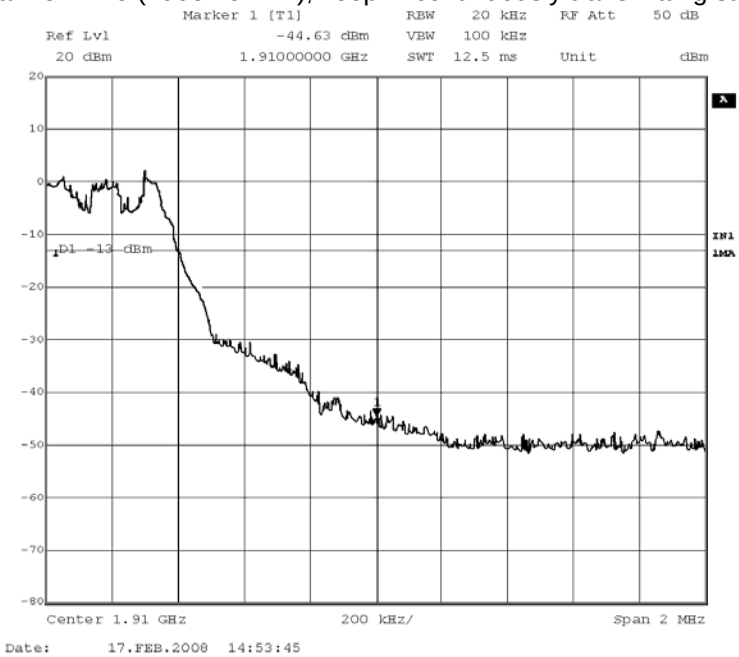
Lower edge:

1. Test in Channel 25 (1851.25MHz), keep in continuously transmitting status.



Upper edge:

2. Test in Channel 1175 (1908.75MHz), keep in continuously transmitting status.



Test Result does meet the FCC requirement.

6.6.2 Radiated Spurious Emissions

Test Requirement:	FCC Part 24.238
Test Method:	TIA-603-C:2004
Test Date:	21 January 2008
Test Status:	Test lowest channel, middle, highest channel.

Test procedure:

1. Establish call communication between EUT and Tester;
2. Adjust the Test transmitter signal to make the EUT RF power output at Maximum;
3. Add the notch-filter before the receiver antenna;
4. test the EUT ERP with the external antenna connected and put in vertical polarity;

The technique used to find the output power of the transmitter was the antenna substitution method. Substitution method was performed to determine the actual ERP emission levels of the EUT.

The following test procedure as below:

a) The EUT was powered ON and placed on a table in the chamber. The antenna of the transmitter was extended to its maximum length.

b) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering the receive antenna and by rotating the turntable. After the fundamental emission was maximized, a field strength measurement was made.

c) Steps 1 and 2 were performed with the EUT and the receive antenna in both vertical and horizontal polarization.

d) 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.

e) 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.

f) The output power into the substitution antenna was then measured.

g) Steps e) and f) were repeated with both antennas vertical polarized.

5. Report the Max value.
6. Scan from 30MHz to 20GHz, read the observed unwanted emissions and report the emission level limit less than 6dB.

FCC ID: VYRS1801EC
Measurement record:

CH 25:

Tx in operation mode				
Maximum Frequency	**Spurious Emission polarization and Level**		**Limit**	**Over Limit**
MHz	**polarization**	**dBm**	**dBm**	**dB**
3697.39	Vertical	-55.9	-13.0	-42.9
5689.48	V	-58.6	-13.0	-45.6
3697.39	Horizontal	-57.7	-13.0	-44.7
Remark: • –70dBm was the minimum level which could be detected by measuring facility when below 1GHz, -60dBm at over 1GHz. • No other emission can be observed and be reported from 30MHz to 20GHz.				

CH 600:

Tx in operation mode				
Maximum Frequency	**Spurious Emission polarization and Level**		**Limit**	**Over Limit**
MHz	**polarization**	**dBm**	**dBm**	**dB**
3761.52	Vertical	-55.2	-13.0	-42.2
3761.52	Horizontal	-60.0	-13.0	-47.0
Remark: • –70dBm was the minimum level which could be detected by measuring facility when below 1GHz, -60dBm at over 1GHz. • No other emission can be observed and be reported from 30MHz to 20GHz.				

CH 1175:

Tx in operation mode				
Maximum Frequency	**Spurious Emission polarization and Level**		**Limit**	**Over Limit**
MHz	**polarization**	**dBm**	**dBm**	**dB**
3817.64	Vertical	-47.8	-13.0	-34.8
3817.64	Horizontal	-56.3	-13.0	-43.3
Remark: • –70dBm was the minimum level which could be detected by measuring facility when below 1GHz, -60dBm at over 1GHz. • No other emission can be observed and be reported from 30MHz to 20GHz.				

Test Result does meet the FCC requirement.

FCC ID: VYRS1801EC

6.7 Frequency Stability

Test Requirement: FCC Part 2.1055& Part 24.235

Test Method: Part 2.1055& TIA-603-C:2004

Test Date: 16 January 2008

Test Status: Test lowest channel, middle, highest channel.

Test procedure:

1. Establish call communication between EUT and Tester;
2. Make the EUT RF power output at Maximum;
3. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
4. - 30° C to + 50° C;
5. 6.1V DC to 8.3V DC; ,

Temperature(° C)	Test Results (Hz)		
	Channel 25: 1851.25MHz	**Channel 600: 1880MHz**	**Channel 1175: 1908.75MHz**
-30	200	-180	-230
-20	220	-150	-240
-10	250	-160	-220
0	290	-150	-250
+10	300	-120	-260
+20	330	-100	-290
+30	340	-100	-300
+40	350	-80	-320
+50	370	-50	-330
Limit	1851.25MHz±2.5ppm 1851.25MHz ±4628.125Hz	1880MHz±2.5ppm 1880MHz ± 4700Hz	1908.75MHz±2.5ppm 1908.75MHz±4771.875Hz
Voltage(V)	**Test Results(Hz)**		
	Channel 25: 1851.25MHz	**Channel 600: 1880MHz**	**Channel 1175: 1908.75MHz**
6.1	-300	100	220
7.2	-140	180	250
8.3	-250	230	350
Limit	1851.25MHz±2.5ppm 1851.25MHz±4628.125Hz	1880MHz±2.5ppm 1880MHz ± 4700Hz	1908.75MHz±2.5ppm 1908.75MHz±4771.875Hz

6.8 Conducted Emissions Mains Terminals, 150 kHz to 30MHz

Test Requirement: Part 15.207

Test Method: ANSI C63.4.

Test Date: 28 January 2008

Frequency Range: 150KHz to 30MHz

Detector: Peak for pre-scan (9kHz Resolution Bandwidth)

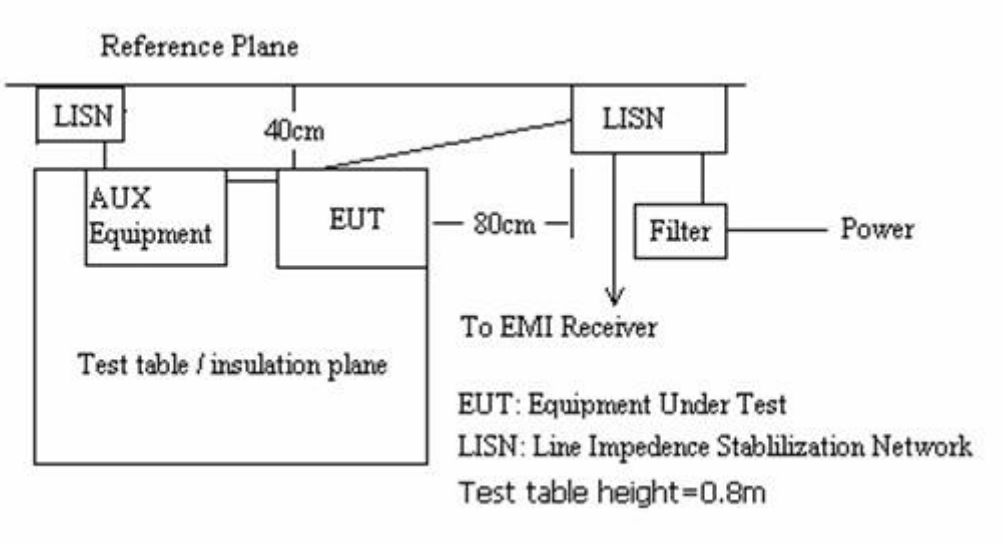
Quasi-Peak if maximised peak within 6dB of Quasi-Peak limit

EUT Operation:

An initial pre-scan was performed on the live and neutral lines with peak detector.

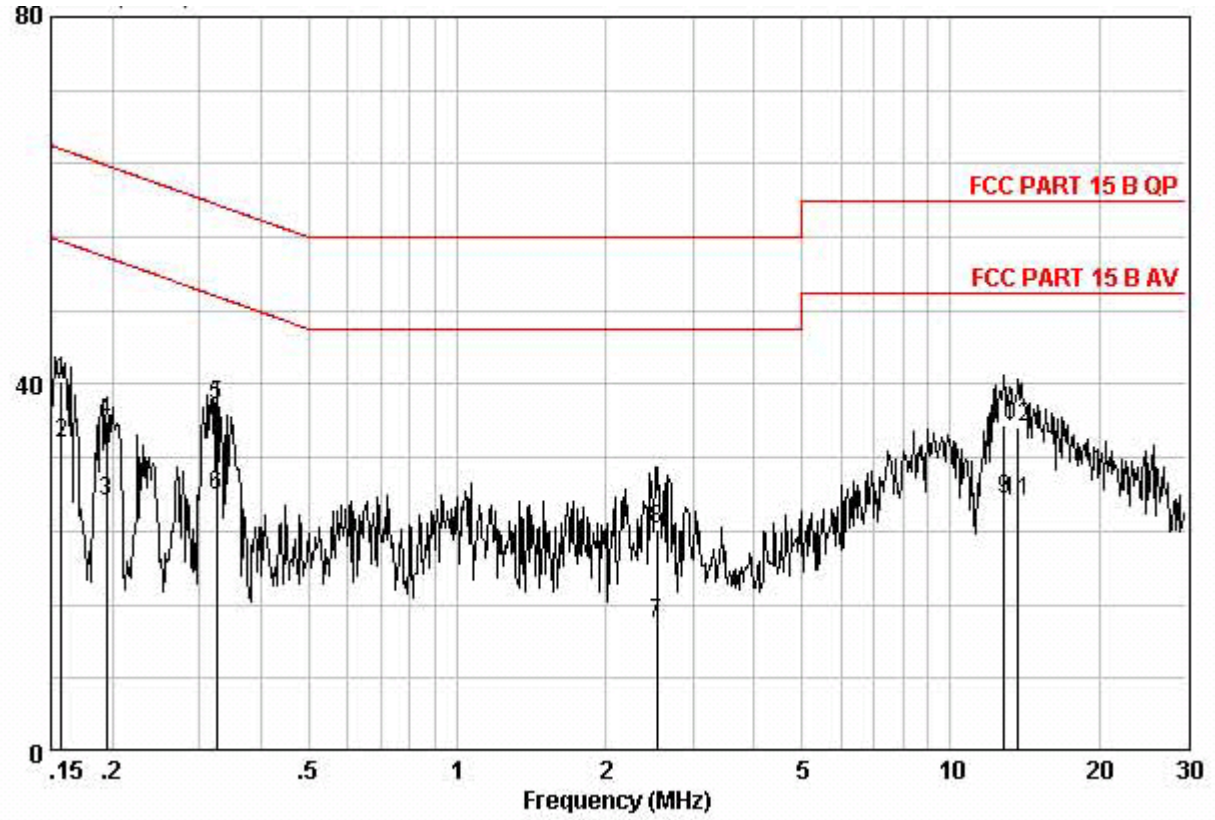
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Plan View of Test Setup



FCC ID: VYRS1801EC

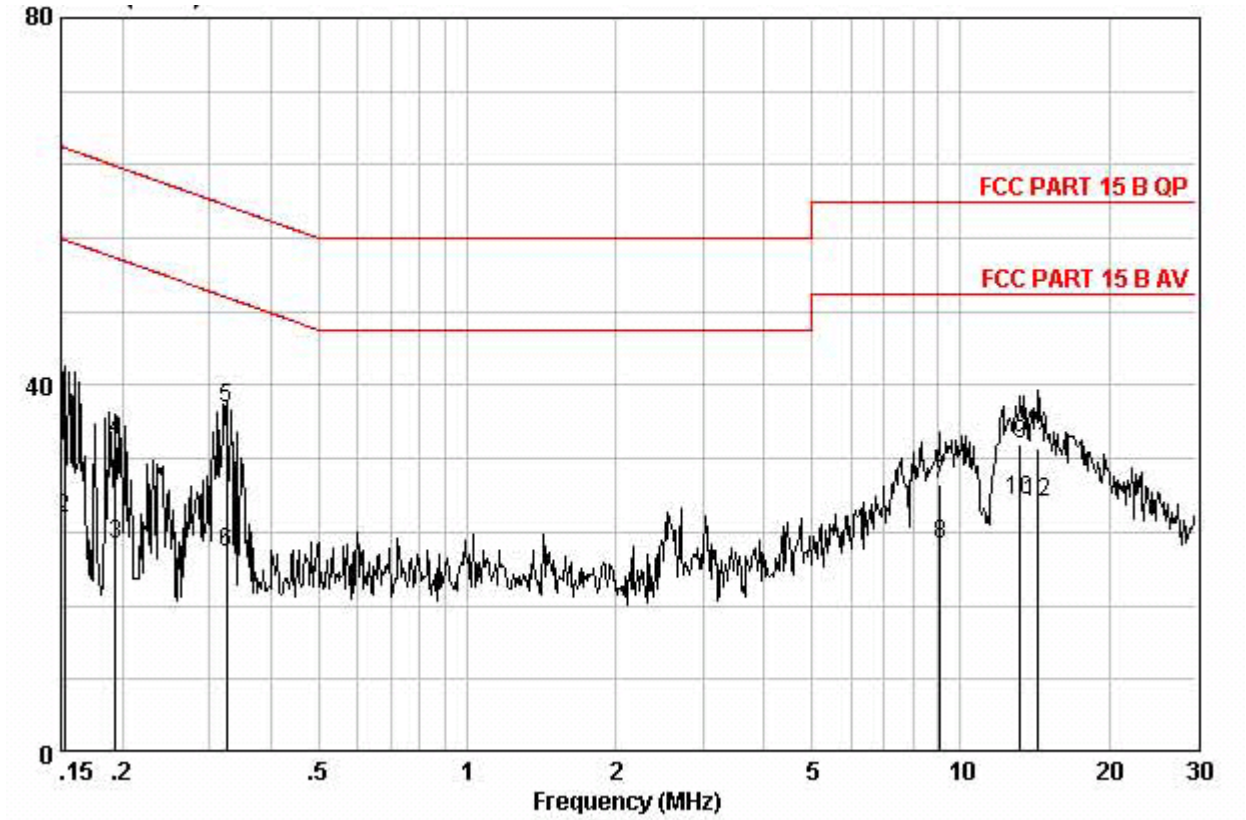
Live line



	Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.157	30.35	0.00	9.95	40.30	65.60	-25.31	QP
2	0.157	23.61	0.00	9.95	33.56	55.60	-22.05	AVERAGE
3	0.194	17.27	0.00	9.91	27.18	53.84	-26.66	AVERAGE
4	0.194	25.95	0.00	9.91	35.86	63.84	-27.98	QP
5	0.325	27.82	0.00	9.91	37.73	59.57	-21.85	QP
6 @	0.325	18.02	0.00	9.91	27.93	49.57	-21.65	AVERAGE
7	2.540	4.26	0.04	9.73	14.03	46.00	-31.97	AVERAGE
8	2.540	14.40	0.04	9.73	24.17	56.00	-31.83	QP
9	12.852	17.39	0.15	9.83	27.37	50.00	-22.63	AVERAGE
10	12.852	25.48	0.15	9.83	35.46	60.00	-24.54	QP
11	13.695	17.26	0.16	9.85	27.27	50.00	-22.73	AVERAGE
12	13.695	25.36	0.16	9.85	35.37	60.00	-24.63	QP

FCC ID: VYRS1801EC

Neutral Line



	Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.152	28.95	0.00	9.82	38.77	65.87	-27.10	QP
2	0.152	15.74	0.00	9.82	25.56	55.87	-30.31	AVERAGE
3	0.193	12.71	0.00	9.96	22.67	53.89	-31.22	AVERAGE
4	0.193	24.15	0.00	9.96	34.11	63.89	-29.78	QP
5	0.325	27.60	0.00	9.91	37.51	59.57	-22.06	QP
6	0.325	11.85	0.00	9.91	21.76	49.57	-27.81	AVERAGE
7	9.107	19.39	0.10	9.75	29.24	60.00	-30.76	QP
8	9.107	12.86	0.10	9.75	22.71	50.00	-27.29	AVERAGE
9	13.197	23.54	0.15	9.84	33.53	60.00	-26.47	QP
10	13.197	17.48	0.15	9.84	27.47	50.00	-22.53	AVERAGE
11	14.364	23.18	0.16	9.87	33.21	60.00	-26.79	QP
12	14.364	17.19	0.16	9.87	27.22	50.00	-22.78	AVERAGE