



FCC TEST REPORT

For 47 CFR Part 24E

FCC ID: MSQV66

Equipment: GSM/GPRS Multimedia Tri-band Mobile Phone
(GSM/DCS/PCS Tri-band)

Tx Frequency: 1850.2 MHz ~ 1909.8 MHz

Report No: 05-0531-E

Test date: 09.05 , 2005

Applicant: ASUSTeK Computer Inc.
(華碩電腦股份有限公司)

Address: No.150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.

Model No: V66I

The tests listed in this report have been done to demonstrate compliance with the applicable requirements in FCC rules Part 24 and IC standard RSS-133.

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CONTENTS

1. <u>LABORATORY INFORMATION</u>	4
2. <u>CUSTOMER INFORMATION</u>	4
3. <u>SUMMARY OF TEST RESULTS</u>	5
4. <u>EUT INFORMATION</u>	6
4.1 <u>EUT description</u>	7
4.2 <u>EUT TEST SETUPS</u>	8
5. <u>APPLICABLE STANDARDS</u>	8
6. <u>RADIATED RF OUTPUT POWER</u>	9
6.1 <u>Test setup</u>	9
6.2 <u>Test method</u>	10
6.3 <u>EUT operation modes</u>	10
6.4 <u>Limit</u>	10
6.5 <u>Results</u>	11
7. <u>CONDUCTED SPURIOUS EMISSION</u>	13
7.1 <u>Test setup</u>	13
7.2 <u>Test method</u>	13
7.3 <u>EUT operation modes</u>	14
7.4 <u>Limit</u>	14
7.5 <u>Results</u>	15
8. <u>RADIATED SPURIOUS EMISSION</u>	27
8.1 <u>Test setup</u>	27
8.2 <u>Test method</u>	27
8.3 <u>EUT operation modes</u>	28
8.4 <u>Limit</u>	28
8.5 <u>Results</u>	29
9. <u>FREQUENCY STABILITY, TEMPERATURE VARIATION</u>	41
9.1 <u>Test setup</u>	41
9.2 <u>Test method</u>	41
9.3 <u>EUT operation modes</u>	41
9.4 <u>Limit</u>	42
9.5 <u>Results</u>	42
10. <u>FREQUENCY STABILITY, VOLTAGE VARIATION</u>	43
10.1 <u>Test setup</u>	43

10.2	Test method	43
10.3	EUT operation modes	43
10.4	Limit	44
10.5	Results	44
11.	99% OCCUPIED BANDWIDTH	45
11.1	Test setup	45
11.2	EUT operation modes	45
11.3	Limit	45
11.4	Results	45
11.5	Screen shots	46
12.	BANDEDGE COMPLIANCE	52
12.1	Test setup	52
12.2	EUT operation modes	52
12.3	Limit	52
12.4	Results	53
13.	TEST EQUIPMENT	55
13.1	EQUIPMENT	55
14.	Measurement Uncertainty	56
14.1	Uncertainty	56



1. LABORATORY INFORMATION

Test laboratory	A Test Lab Techno. Corp. EMC Testing Lab. Tel: 886-(0)2-82122828 Fax : 886-(0)2-82122828
Lab Location:	No. 99, An-Chung Rd, Hsin-Tien City, Taipei Hsien, Taiwan R.O.C.

2. CUSTOMER INFORMATION

Client:	ASUSTeK Computer Inc.
Contact person:	Mf Chen
Receipt of EUT:	08.19.2005
Date of testing:	09.05.2005
Date of report:	09.12.2005

Contents approved:

A handwritten signature in blue ink that reads 'Eddie Chen'. The signature is written in a cursive style and is positioned above a horizontal line.

Eddie Chen

2005/9/13



3. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC 47 CFR Part 24 & Part 2 / IC RSS-133			
Standard Section	Test Type and Limit	Result	REMARK
2.1047(d)	Modulation Characteristics	PASS	NA
2.1046, 24.232	Maximum Peak Output Power Limit: max.2 watts e.i.r.p peak power	PASS	Meet the requirement of limit Minimum passing margin is 4.27 (33-28.73) dBm at 1909.80MHz
2.1055, 24.235	Frequency Stability AFC Freq. Error vs. Voltage AFC Freq. Error vs. Temperature Limit: max. ± 0.1 ppm	PASS	Meet the requirement of limit
2.1049, 24.238(b)	Occupied Bandwidth	PASS	Meet the requirement of limit
24.238(b)	Band Edge Measurements	PASS	NA
2.1051, 24.238	Conducted Spurious Emissions	PASS	Meet the requirement of limit Minimum passing margin is -10.26dB at 1945.333MHz
2.1053, 24.238	Radiated Spurious Emissions	PASS	Meet the requirement of limit Minimum passing margin is -16.57dB at 7406.5MHz



4. EUT INFORMATION

1. The EUT was tested with the following adapter

BRAND:	ASUSTeK Computer Inc.
MODEL:	V66I
INPUT:	100-240Vac,50-60Hz
UOTPUT:	5.2Vdc, 430mA



- 2.IMEI Code: 357775009990074
3. The hardware version: R1.03
4. The software version: V2.0.0.D
5. The above EUT information was declared by manufacturer and for more detailed features description please refers to the manufacturer's specifications or User's Manual.



4.1 EUT description

Product	Tri-band Mobile Phone	
Model NO.	V66I	
POWER SUPPLY	3.7Vdc from Battery 5.2Vdc from AC Adapter	
MODULATION TYPE	GMSK	
FREQUENCY RANGE	Tx Frequency : 1850.2MHz~1909.8MHz(PCS band) Rx Frequency : 1930.2MHz~1989.8MHz (PCS band)	
Conducted output power (EUT RF output connector)	Channel	Power(dBm)
	512	28.8
	661	28.6
	810	28.4
NUMBER OF CHANNEL	299	
MAX. RADITED EIRP PEAK OUTPUT POWER	28.73dBm(0.75watts)	
ANTENNA TYPE	Internal Antenna	
DATA CABLE	NA	
I/O PORTS	NA	
ASSOCIATED DEVICES	Earphone plus Microphone	
EUT Extreme Vol. Range	3.4Vdc to 4.2Vdc	



4.2 EUT TEST SETUPS

For each test the EUT was exercised to find out the worst case of operation modes and device configuration.

5. APPLICABLE STANDARDS

The EUT is a Tri-band Mobile Phone. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2

FCC 47 CFR Part 24

IC RSS-133

EIA/TIA 603

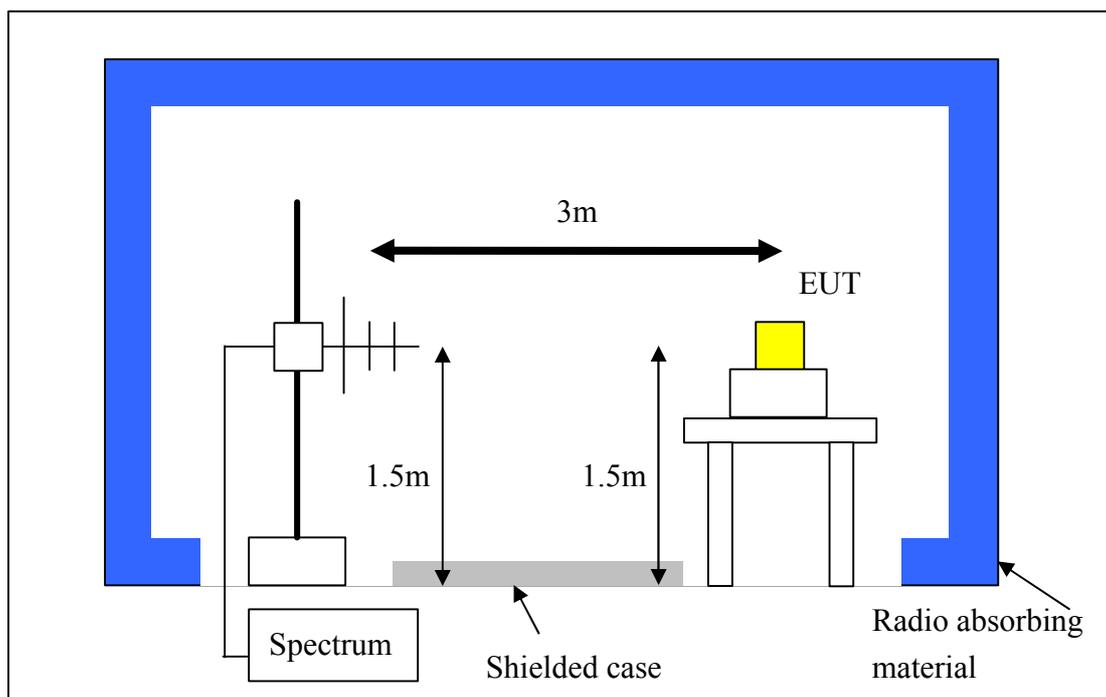
All test items have been performed and recorded as per the above standards.



6. RADIATED RF OUTPUT POWER

6.1 Test setup

The EUT was set on a non-conductive turn table in a semi anechoic chamber. In the corner of the chamber there was a communication antenna, which was connected to the BS simulator located outside the chamber. The radiated power from the EUT was measured with an antenna fixed to a antenna tower. The tower and turn table were remotely controlled to turn the EUT and change the antenna polarization. The measured signal was routed from the measuring antenna to the spectrum analyzer. The BS simulator was used to set the TX channel and power level and modulate the TX signal with different bit patterns.



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.



6.2 Test method

- a. The EUT was set up for the maximum peak power with GPRS link data modulation. The power was measured with Advantest Spectrum Analyzer. All measurements were done at 3 channels, 512, 661 and 810(low, middle and high operational frequency range.)
- b. In the semi-anechoic chamber, E.I.R.P peak power measurement. EUT placed on the 1.5m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization to find the maximum polar radiated power. The “Read Value” is the maximum power value recorded on the spectrum analyzer.
- c. The substitution horn antenna is substituted for EUT at the same position and signal generator export the CW signal to the calibration antenna. The signal generator level has to adjust to have the same emission nature. The radiated power can be calculated via the factor and antenna.
- d. Actually the real E.I.R.P peak power is equal to “SG Power Value + Correction Factor (dB), Correction Factor (dB) =Substitution Antenna Gain (dBi) - Cable Loss(dB) ”

6.3 EUT operation modes

- a. A transmission link is established between the EUT and the test simulator.
- b. The EUT is set to transmit at a maximum output power on the specific channel frequency selected.

6.4 Limit

The radiated EIRP shall meet the limits of the specific rule Part.

For 24.232(b) “Mobile / Portable station are limited to 2 watts e.i.r.p” and

For 24.232(c) “Peak transmit power must be measure over any interval of continuous transmission using instrumentation calibration in terms of rms-equivalent voltage.”



6.5 Results

MODEL:V66

EUT	Tri-band Mobile Phone	MODEL	V66
MODE	Tx	POWER CONTORL LEVEL	0
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	PEAK
NVIRONMENTAL CONDITIONS	23 deg. C, 65 % RH, 999 hPa	TESTED BY: Vic Liu	

EIRP RADIATED PEAK OUTPUT POWER							
Channel No.	EUT Power Value (dBm)	S.G Power Value (dBm)	Correction Factor (dBm)	Substitution Antenna Gain (dBi)	Cable Loss (dBm)	Peak Output Power	
						dBm	Watt
512	13.54	22.89	5.71	9.15	3.44	28.60	0.72
661	13.12	22.76	5.74	9.18	3.44	28.50	0.70
810	13.66	22.94	5.76	9.21	3.45	28.70	0.74

REMARKS:

1. Peak Output Power(dBm)=SG Power Value (dBm) + Correction Factor (dB)
2. Correction Factor(dB) = Substitution Antenna Gain(dBi) - Cable Loss(dB)



MODEL:V66I

EUT	Tri-band Mobile Phone	MODEL	V66I
MODE	Tx	POWER CONTORL LEVEL	0
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	PEAK
NVIRONMENTAL CONDITIONS	23 deg. C, 65 % RH, 999 hPa	TESTED BY: Vic Liu	

EIRP RADIATED PEAK OUTPUT POWER							
Channel No.	EUT Power Value (dBm)	S.G Power Value (dBm)	Correction Factor (dBm)	Substitution Antenna Gain (dBi)	Cable Loss (dBm)	Peak Output Power	
						dBm	Watt
512	13.18	22.53	5.71	9.15	3.44	28.24	0.67
661	12.92	22.56	5.74	9.18	3.44	28.30	0.68
810	13.63	22.91	5.76	9.21	3.45	28.73	0.75

REMARKS:

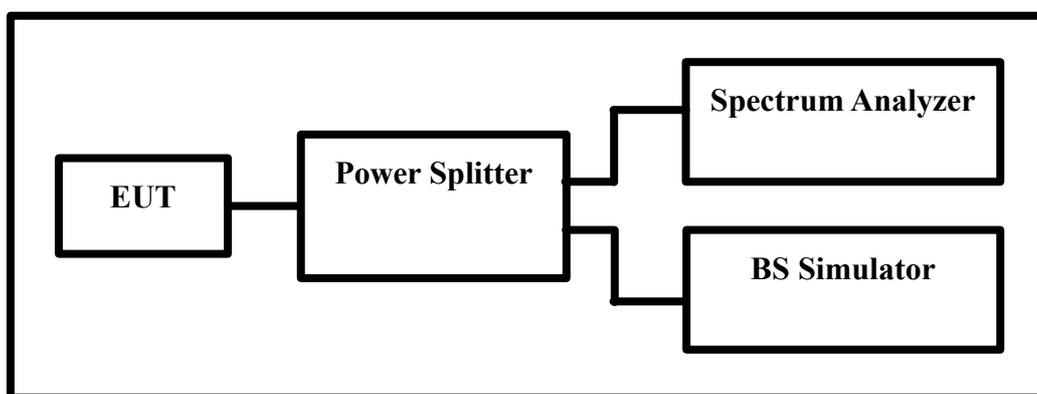
1. Peak Output Power(dBm)=SG Power Value (dBm) + Correction Factor (dB)
2. Correction Factor(dB) = Substitution Antenna Gain(dBi) - Cable Loss(dB)



7. CONDUCTED SPURIOUS EMISSION

7.1 Test setup

A set of LP/HP/BS filters was used to prevent overloading the spectrum analyzer. The BS simulator was used to set the TX channel with GPRS and power level and modulate the TX signal with different bit patterns. The test was done using an automated test system, where the measurement devices were controlled by a computer.



7.2 Test method

- a) The emissions were searched and maximized measuring antenna and manipulating the EUT.
- b) All suspicious frequencies with emission levels were recorded.



7.3 EUT operation modes

- a. A transmission link is established between the EUT and the test simulator.
- b. The EUT is set to transmit at a maximum output power on the specific channel frequency selected.

7.4 Limit

In the FCC 24.238(a), On any frequency outside a licensee's frequency block within USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log (P)$ dB. In the FCC 24.238(c), When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges (low channel 512 and high channel 810), both upper and lower edges are compliance with FCC 24.238(b), Adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.



7.5 RESULTS

EUT	Tri-band Mobile Phone	MODEL	V66
MODE	Tx Channel 512	POWER CONTROL LEVEL	0
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak
ENVIRONMENTAL CONDITIONS	23 deg. C, 65% RH, 991 hPa	TESTED BY: Vic Liu	

CONDUCTED SPURIOUS EMISSION					
Frequency (MHz)	Raw (dBm)	Correction Factor(dB)	Conducted Level(dBm)	Limit (dBm)	Margin
1667.147	-60.75	5.74	-55.01	-13	-42.01
1752.861	-51.75	5.67	-46.08	-13	-33.08
2035.717	-60.75	5.72	-55.03	-13	-42.03
3700.714	-62.75	13.27	-49.48	-13	-36.48
5545.714	-66.00	7.16	-58.84	-13	-45.84
7397.143	-64.00	7.15	-56.85	-13	-43.85
9246.429	-61.00	7.48	-53.52	-13	-40.52
11110.714	-50.75	8.11	-42.64	-13	-29.64
12953.571	-60.50	8.82	-51.68	-13	-38.68

REMARKS:

1. Peak Output Power(dBm)=Raw Value(dBm) + Correction Factor(dB)
2. Correction Factor(dB) = Power Splitter Loss(dB) + Cable Loss(dB)



EUT	Tri-band Mobile Phone	MODEL	V66
MODE	Tx Channel 661	POWER CONTROL LEVEL	0
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak
ENVIRONMENTAL CONDITIONS	23 deg. C, 65% RH, 991 hPa	TESTED BY: Vic Liu	

CONDUCTED SPURIOUS EMISSION					
Frequency (MHz)	Raw (dBm)	Correction Factor(dB)	Conducted Level(dBm)	Limit (dBm)	Margin
1692.861	-53.5	5.70	-47.8	-13	-34.8
1812.861	-44.0	5.57	-38.43	-13	-25.43
2070.003	-53.5	5.73	-47.77	-13	-34.77
3758.571	-61.0	9.26	-51.74	-13	-38.74
5635.714	-54.75	6.92	-47.83	-13	-34.83
7514.286	-59.5	7.01	-52.49	-13	-39.49
9400.000	-61.0	7.51	-53.49	-13	-40.49
11274.286	-50.25	8.00	-42.25	-13	-29.25
13148.571	-57.5	8.91	-48.59	-13	-35.59

REMARKS:

1. Peak Output Power(dBm)=Raw Value(dBm) + Correction Factor(dB)
2. Correction Factor(dB) = Power Splitter Loss(dB) + Cable Loss(dB)



EUT	Tri-band Mobile Phone	MODEL	V66
MODE	Tx Channel 810	POWER CONTROL LEVEL	0
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak
ENVIRONMENTAL CONDITIONS	23 deg. C, 65% RH, 991 hPa	TESTED BY: Vic Liu	

CONDUCTED SPURIOUS EMISSION					
Frequency (MHz)	Raw (dBm)	Correction Factor(dB)	Conducted Level(dBm)	Limit (dBm)	Margin
1675.718	-60.25	5.88	-54.37	-13	-41.37
1718.575	-55.25	5.79	-49.46	-13	-36.46
1869.354	-42.74	5.61	-37.13	-13	-24.13
1945.333	-28.95	5.69	-23.26	-13	-10.26
2100.003	-53.00	6.06	-46.94	-13	-33.94
2287.495	-62.31	6.49	-55.82	-13	-42.82
3816.429	-51.75	9.46	-42.29	-13	-29.29
5725.714	-55.25	6.61	-48.64	-13	-35.64
7571.429	-62.5	7.11	-55.39	-13	-42.39
9548.571	-56.25	7.61	-48.64	-13	-35.64
11480.000	-62.00	8.05	-53.95	-13	-40.95
13377.143	-62.00	9.00	-53.00	-13	-40.00

REMARKS:

1. Peak Output Power(dBm)=Raw Value(dBm) + Correction Factor(dB)
2. Correction Factor(dB) = Power Splitter Loss(dB) + Cable Loss(dB)



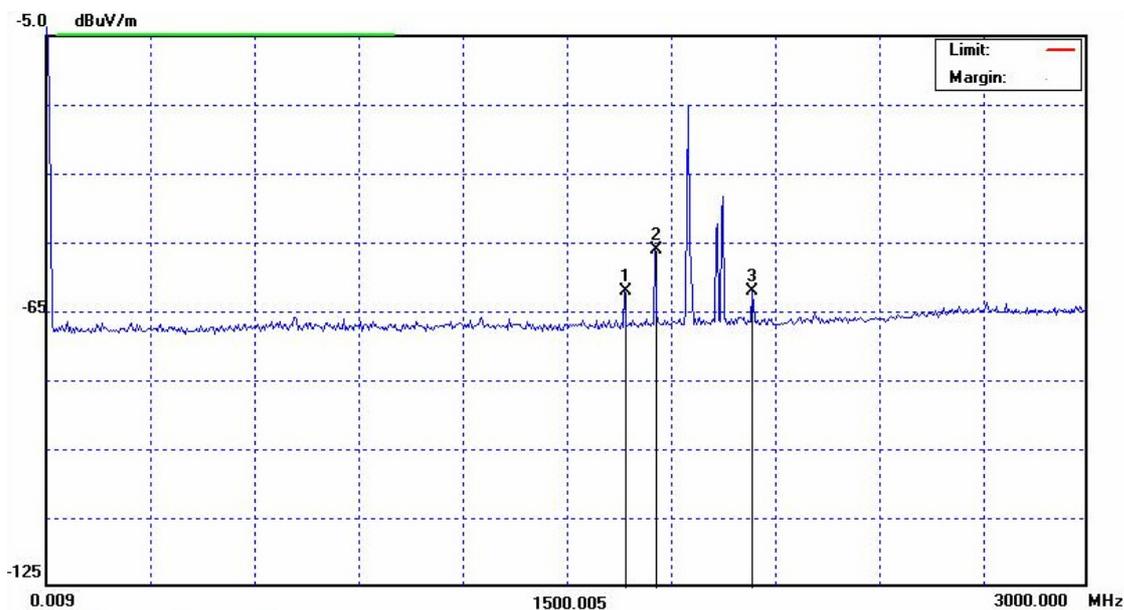
Channel 512
9K~3GHz

RBW 1 MHz

VBW 1 MHz

SWT 15 ms

Ref -5 dBm



Mark 1	1667.147 MHz	-60.75 dBm
Mark 2	1752.861 MHz	-51.75 dBm
Mark 3	2035.717 MHz	-60.75 dBm



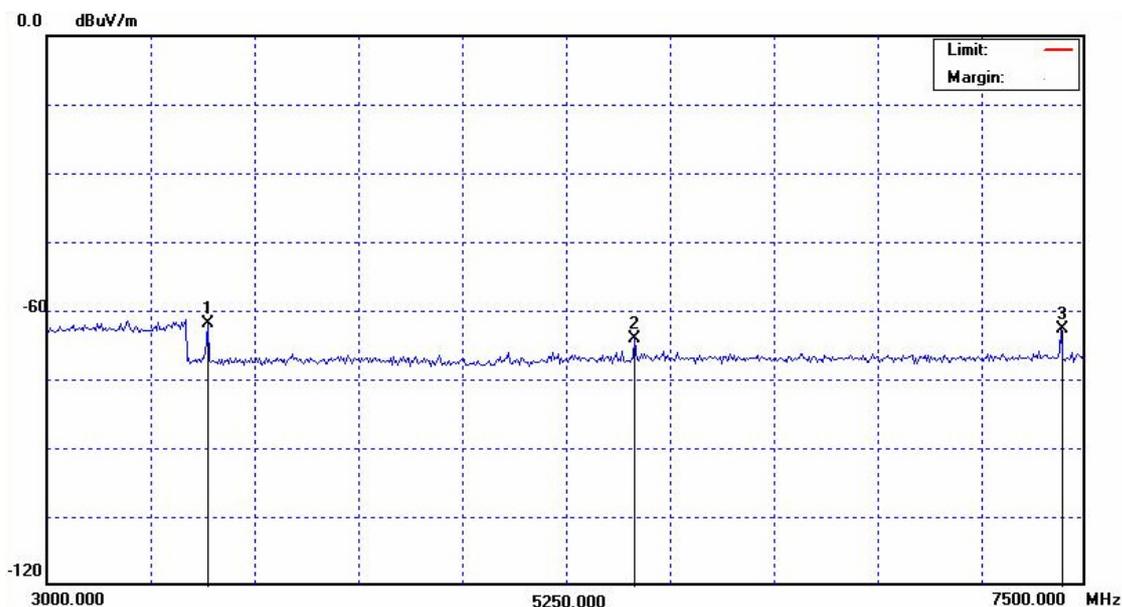
Channel 512
3G~7.5GHz

RBW 1 MHz

VBW 1 MHz

Ref 0 dBm

SWT 100 ms



Mark 1	3700.714	MHz	-62.75	dBm
Mark 2	5545.714	MHz	-66.00	dBm
Mark 3	7397.143	MHz	-64.00	dBm



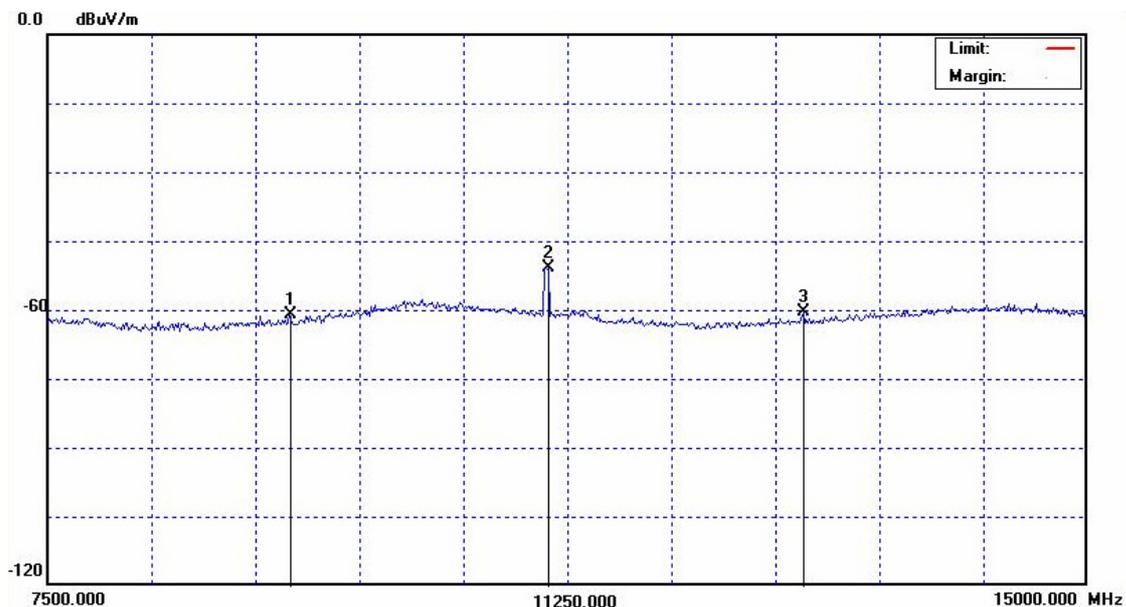
Channel 512
7.5G~15GHz

RBW 1 MHz

VBW 1 MHz

Ref 0 dBm

SWT 250 ms



Mark 1	9246.429	MHz	-61.00	dBm
Mark 2	11110.714	MHz	-50.75	dBm
Mark 3	12953.571	MHz	-60.50	dBm



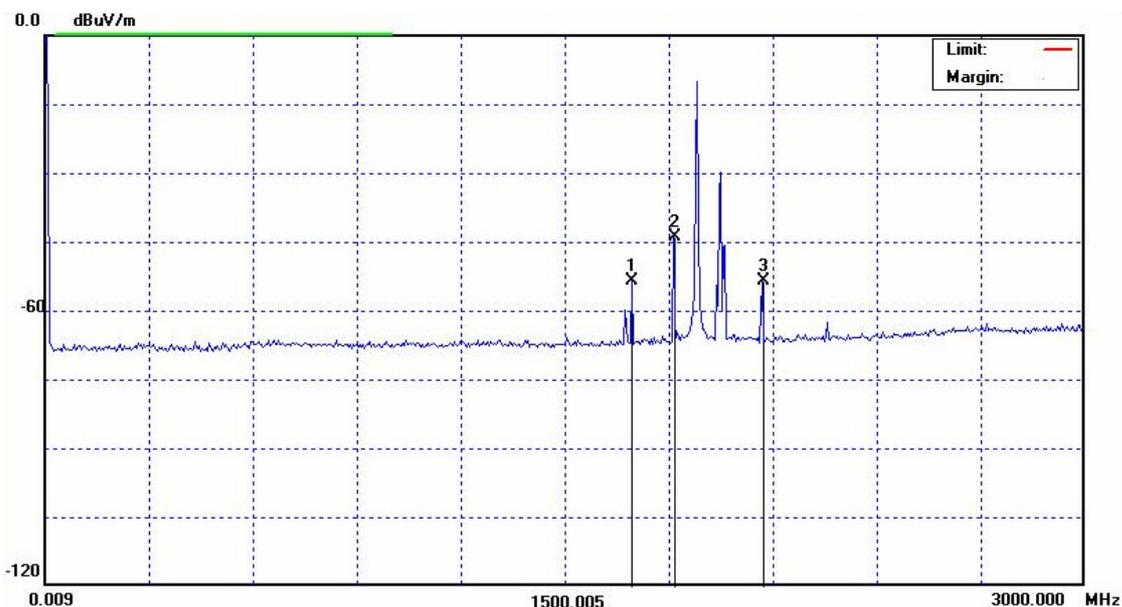
Channel 661
9K~3GHz

RBW 1 MHz

VBW 1 MHz

Ref -5 dBm

SWT 15 ms



Mark 1	1692.861	MHz	-53.5	dBm
Mark 2	1812.861	MHz	-44.0	dBm
Mark 3	2070.003	MHz	-53.5	dBm



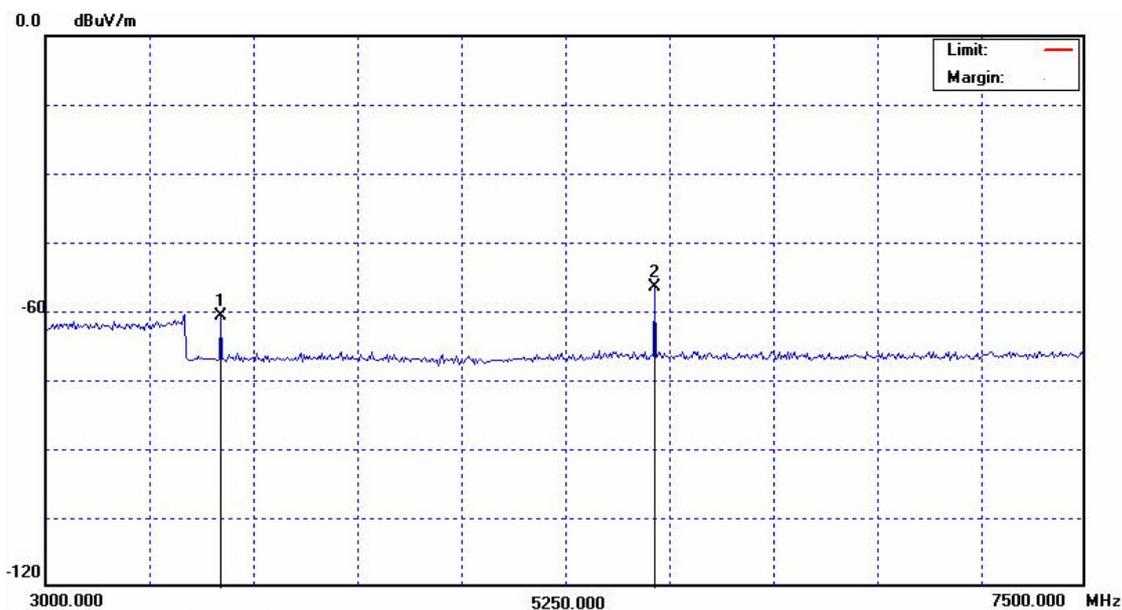
Channel 661
3G~7.5GHz

RBW 1 MHz

VBW 1 MHz

Ref 0 dBm

SWT 100 ms



Mark 1	3758.571	MHz	-61	dBm
Mark 2	5635.714	MHz	-54.75	dBm