FCC TEST REPORT

For
47 CFR Part 22E

FCC ID:	**MSQV66S**
Equipment:	V66S Multimedia Mobile Phone (GSM850/PCS Dual Band)
Tx Frequency:	824.2 MHz ~ 848.8 MHz
Report No:	05-0602-E
Test date:	10.17-10.21.2005
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:	V66S

The tests listed in this report have been done to demonstrate compliance with the applicable requirements in FCC rules Part 22 and IC standard RSS-133.

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1. LABORATORYINFORMATION

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:	**09.23.2005**
Date of testing:	**10.17-10.21.2005**
Date of report:	**11.08.2005**

Contents approved:

Eddie Chen **2005/11/08**

3. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC 47 CFR Part 22 & Part 2 / IC RSS-133			
Standard Section	**Test Type and Limit**	**Result**	**REMARK**
2.1047(d)	Modulation Characteristics	PASS	NA
2.1046, 22.913	Maximum Peak Output Power Limit: max.7 watts e.r.p peak power	PASS	Meet the requirement of limit Minimum passing margin is10.7(38.45-27.75) dBm at 836.6MHz
2.1055, 22.355	Frequency Stability AFC Freq. Error vs. Voltage AFC Freq. Error vs. Temperature Limit: max. ±0.1ppm	PASS	Meet the requirement of limit
2.1049, 22.917(b)	Occupied Bandwidth	PASS	Meet the requirement of limit
22.917(b)	Band Edge Measurements	PASS	NA
2.1051, 22.917	Conducted Spurious Emissions	PASS	Meet the requirement of limit Minimum passing margin is –30.71dB at 668.578MHz
2.1053, 22.917	Radiated Spurious Emissions	PASS	Meet the requirement of limit Minimum passing margin is –20.75dB at 3288MHz

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4. EUT INFORMATION

1. The EUT was tested with the following adapter

BRAND:	**ASUSTeK Computer Inc.**
MODEL:	**V66S**
INPUT:	100-240Vac,50-60Hz
UOTPUT:	5.2Vdc, 430mA

2.IMEI Code: 010714000000194

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.

Front view	Back view

EUT Photo

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4.1 EUT description

Product	Dual-band Mobile Phone
Model NO.	V66S
POWER SUPPLY	3.7Vdc from Battery 5.2Vdc from AC Adapter
MODULATION TYPE	GMSK
FREQUENCY RANGE	Tx Frequency： 824.2MHz~848.8MHz(GSM850 band) Rx Frequency： 869.2MHz~893.8MHz (GSM850 band)
Conducted output power (EUT RF output connector) measurement	Channel Power(dBm) 128 32.19 190 32.11 251 32.08
NUMBER OF CHANNEL	299
MAX. RADITED ERP PEAK OUTPUT POWER	27.75dBm(0.6watts)
ANTENNA TYPE	Internal Antenna
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	Earphone plus Microphone
EUT Extreme Vol. Range	3.55Vdc to 4.2Vdc

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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 Dual-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 22

IC RSS-133

EIA/TIA 603

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

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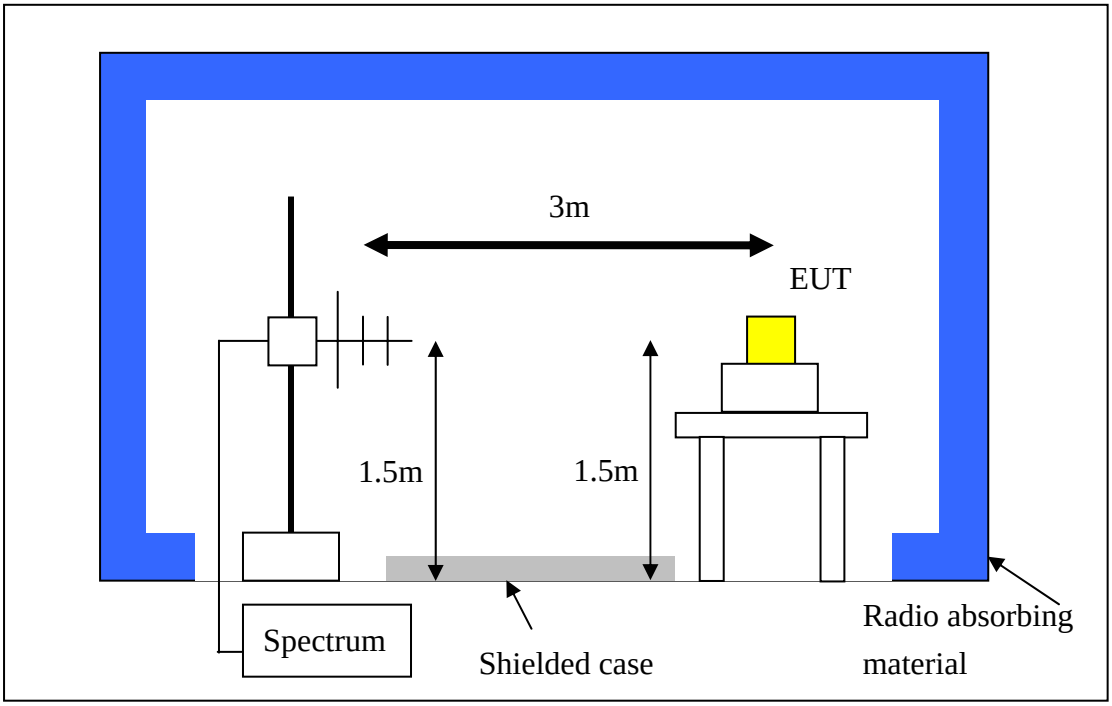
6. RADIATED RF OUTPUT POWER

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.

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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, 128, 190 and 251(low, middle and high operational frequency range.)

b. In the semi-anechoic chamber, E.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.R.P peak power is equal to “SG Power Value + Correction Factor (dB), Correction Factor (dB) =Substitution Antenna Gain (dBd) - Cable Loss(dB) ”. And, Substitution Antenna Gain (dBd) = Gain of the substitutive antenna over dipole (dBi – 2.15dB).

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 ERP shall meet the limits of the specific rule Part.

For 22.913(a) “Mobile / Portable station are limited to 7 watts e.r.p”

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6.5 Results

EUT	Dual-band Mobile Phone	**MODEL**	V66S
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:** Sam Chaung	

ERP RADIATED PEAK OUTPUT POWER

Channel No.	EUT Power Value (dBm)	S.G Power Value (dBm)	Correction Factor (dBm)	Substitution Antenna Gain (dBd)	Cable Loss (dBm)	Peak Output Power	
						dBm	Watt
128	-12.94	24.6	2.95	7.7	2.6	27.55	0.57
190	-12.13	24.7	3.05	7.8	2.6	27.75	**0.60**
251	-12.78	24.7	2.95	7.8	2.7	27.65	0.58

REMARKS:

1. Peak Output Power(dBm)=SG Power Value (dBm) + Correction Factor (dB)
2. Correction Factor(dB) = Substitution Antenna Gain(dBd) - Cable Loss(dB)
3. Substitution Antenna Gain (dBd) = Gain of the substitutive antenna over dipole (dBi – 2.15dB).

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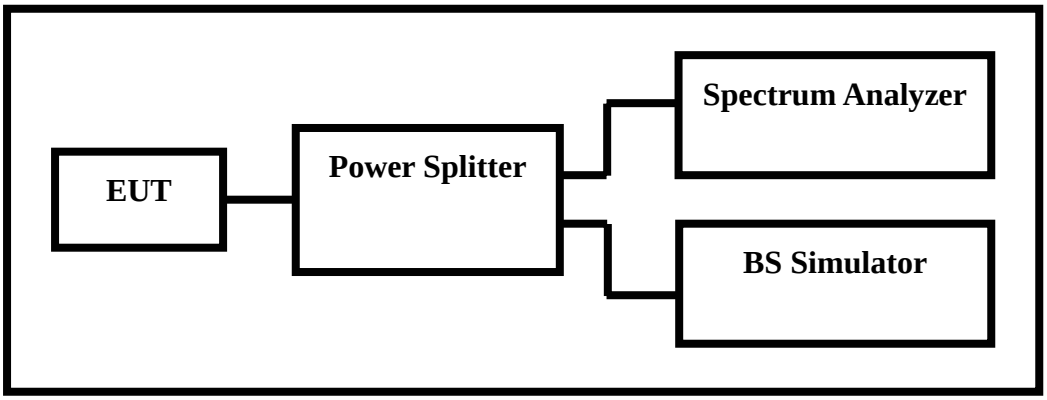
7. CONDUCTED SPURIOUS EMISSION

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.

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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 22.917(a), On any frequency outside a licensee's frequency block within US GSM850 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 22.917(c), When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges (low channel 128 and high channel 251), both upper and lower edges are compliance with FCC 22.917(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.

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7.5 RESULTS

EUT	Dual-band Mobile Phone	**MODEL**	V66S
MODE	**Tx Channel 128**	**POWER CONTROL LEVEL**	0
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak
ENVIRONMENTAL CONDITIONS	23 deg. C, 65% RH, 991 hPa	**TESTED BY:** Sam Chaung	

CONDUCTED SPURIOUS EMISSION					
Frequency (MHz)	**Raw (dBm)**	**Correction Factor(dB)**	**Conducted Level(dBm)**	**Limit (dBm)**	**Margin**
660.007	-49.00	3.41	-45.59	-13	-32.59
1645.718	-53.00	5.70	-47.30	-13	-34.30
2472.600	-55.75	6.53	-49.22	-13	-36.22
3296.800	-54.50	7.52	-46.98	-13	-33.98
4121.000	-60.25	8.56	-51.69	-13	-38.69
4945.000	-61.75	9.11	-52.64	-13	-39.64
5769.400	-60.50	7.10	-53.40	-13	-40.40

REMARKS:

1.Peak Output Power(dBm)=Raw Value(dBm) + Correction Factor(dB)

2.Correction Factor(dB) = Power Splitter Loss(dB) + Cable Loss(dB)

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EUT	Dual-band Mobile Phone	**MODEL**	V66S
MODE	**Tx Channel 190**	**POWER CONTROL LEVEL**	0
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak
ENVIRONMENTAL CONDITIONS	23 deg. C, 65% RH, 991 hPa	**TESTED BY:** Sam Chaung	

CONDUCTED SPURIOUS EMISSION					
Frequency (MHz)	**Raw (dBm)**	**Correction Factor(dB)**	**Conducted Level(dBm)**	**Limit (dBm)**	**Margin**
668.578	-47.12	3.41	-43.71	-13	**-30.71**
1671.433	-53.50	5.62	-47.88	-13	-34.88
3346.400	-54.75	7.86	-46.89	-13	-33.89
4183.000	-60.25	8.55	-51.70	-13	-38.70
5019.600	-61.50	9.01	-52.49	-13	-39.49

REMARKS:

1.Peak Output Power(dBm)=Raw Value(dBm) + Correction Factor(dB)

2.Correction Factor(dB) = Power Splitter Loss(dB) + Cable Loss(dB)

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EUT	Tri-band Mobile Phone	**MODEL**	V66S
MODE	**Tx Channel 251**	**POWER CONTROL LEVEL**	0
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak
ENVIRONMENTAL CONDITIONS	23 deg. C, 65% RH, 991 hPa	**TESTED BY:** Sam Chaung	

CONDUCTED SPURIOUS EMISSION					
Frequency (MHz)	**Raw (dBm)**	**Correction Factor(dB)**	**Conducted Level(dBm)**	**Limit (dBm)**	**Margin**
677.150	-48.00	3.41	-44.59	-13	-31.59
1015.720	-52.50	4.12	-48.38	-13	-35.38
1697.600	-57.00	5.45	-51.55	-13	-38.55
2546.400	-55.00	6.68	-48.32	-13	-35.32
3395.200	-53.50	7.75	-45.75	-13	-32.75
4244.000	-59.50	8.13	-51.37	-13	-38.37
5092.800	-60.25	8.63	-51.62	-13	-38.62
5941.600	-59.75	9.24	-50.51	-13	-37.51

REMARKS:

1.Peak Output Power(dBm)=Raw Value(dBm) + Correction Factor(dB)

2.Correction Factor(dB) = Power Splitter Loss(dB) + Cable Loss(dB)

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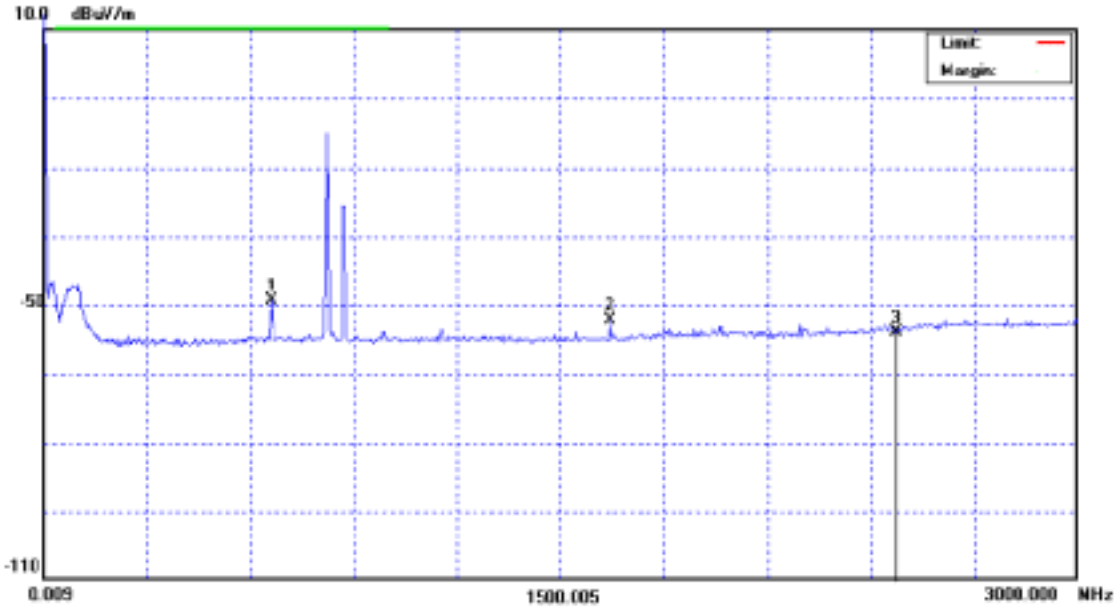
Channel 128

9K~3GHz

RBW 1 MHz
VBW 1 MHz
Ref 10 dBm SWT 15 ms



Mark 1	660.007	MHz	-49.00	dBm
Mark 2	1645.718	MHz	-53.00	dBm
Mark 3	2472.600	MHz	-55.75	dBm

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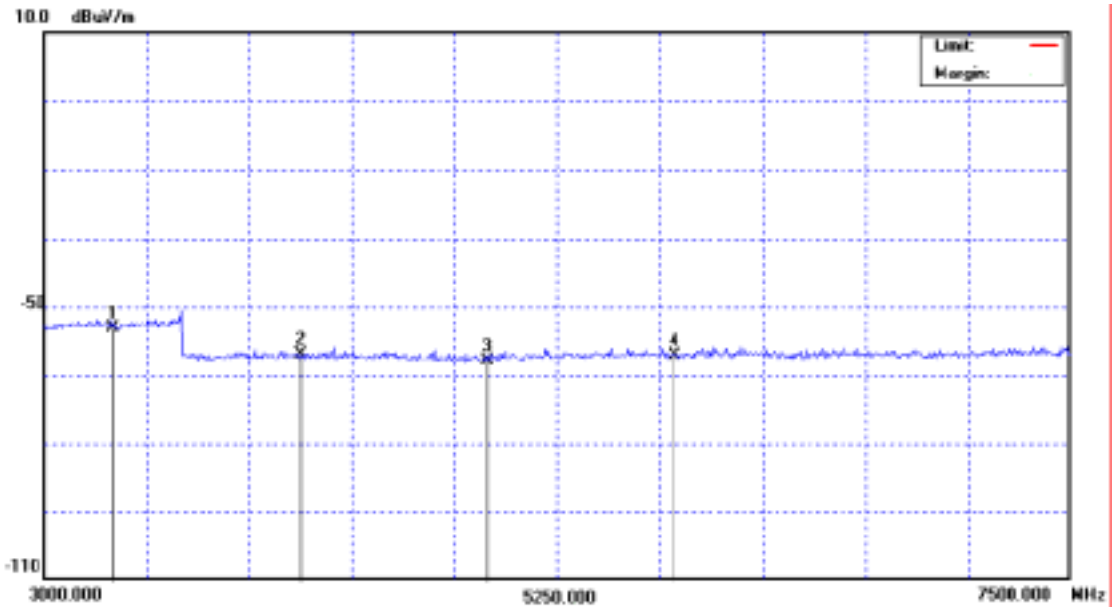
Channel 128

3G~7.5GHz

RBW 1 MHz
VBW 1 MHz
Ref 10 dBm SWT 100 ms



Mark 1	3296.8	MHz	-54.50	dBm
Mark 2	4121.0	MHz	-60.25	dBm
Mark 3	4945.0	MHz	-61.75	dBm
Mark 4	5769.4	MHz	-60.50	dBm

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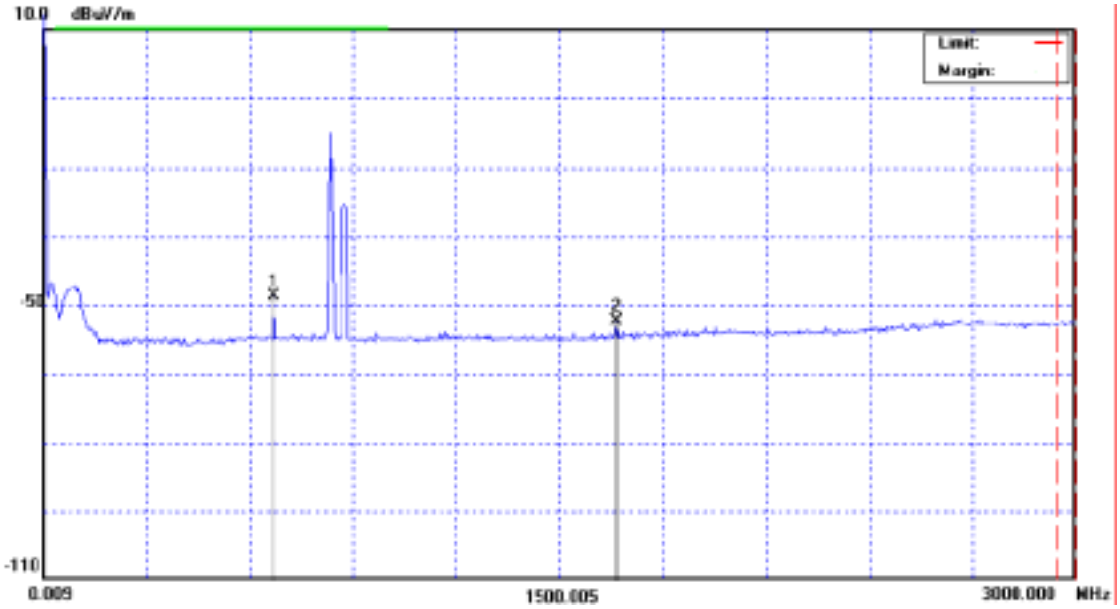
Channel 190

9K~3GHz

RBW 1 MHz
VBW 1 MHz
Ref 10 dBm SWT 15 ms



Mark 1	668.578	MHz	-48.00	dBm
Mark 2	1671.433	MHz	-53.50	dBm

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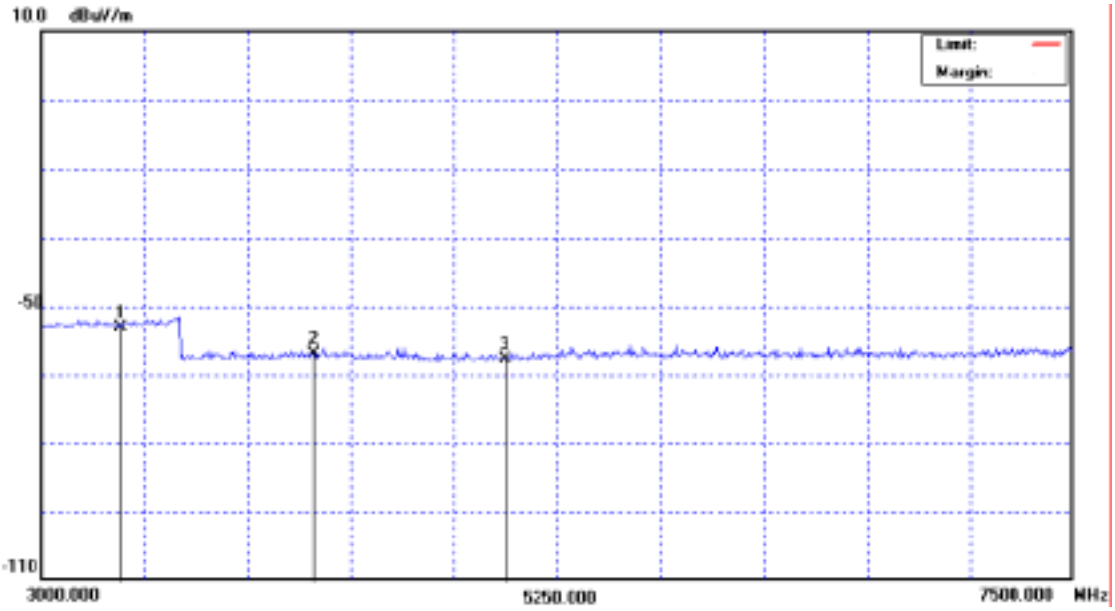
Channel 190

3G~7.5GHz

RBW 1 MHz
VBW 1 MHz
Ref 10 dBm SWT 100 ms



Mark 1	3346.400	MHz	-54.75	dBm
Mark 2	4183.000	MHz	-60.25	dBm
Mark 3	5019.600	MHz	-61.50	dBm

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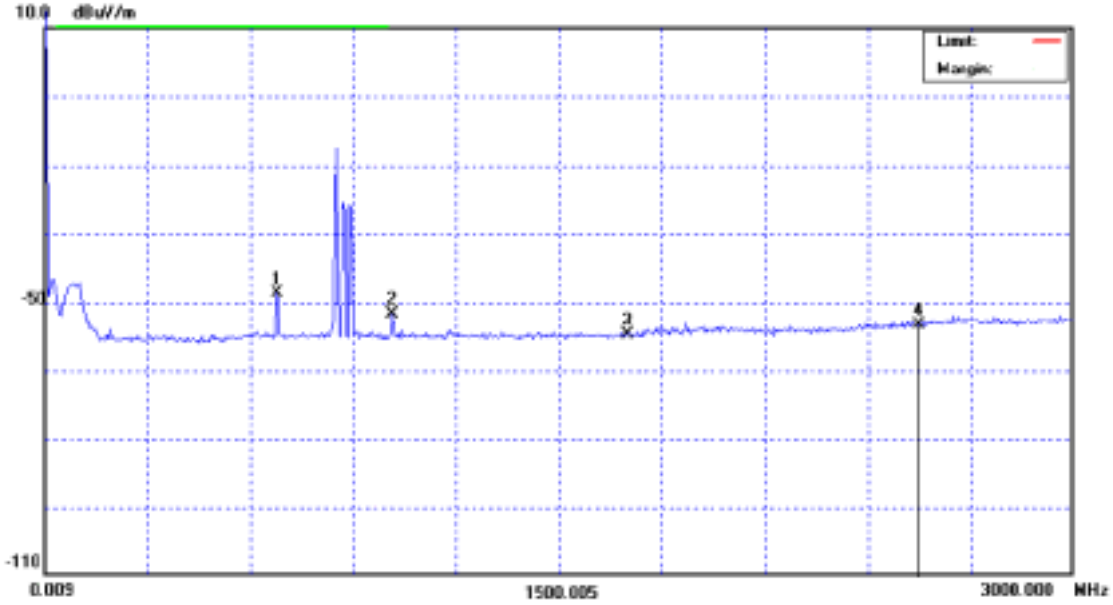
Channel 251

9K~3GHz

RBW 1 MHz
VBW 1 MHz
Ref 10 dBm SWT 15 ms



Mark 1	677.150	MHz	-48.00	dBm
Mark 2	1015.720	MHz	-52.50	dBm
Mark 3	1697.600	MHz	-57.00	dBm
Mark 4	2546.400	MHz	-55.00	dBm
Mark 5	3395.200	MHz	-53.50	dBm

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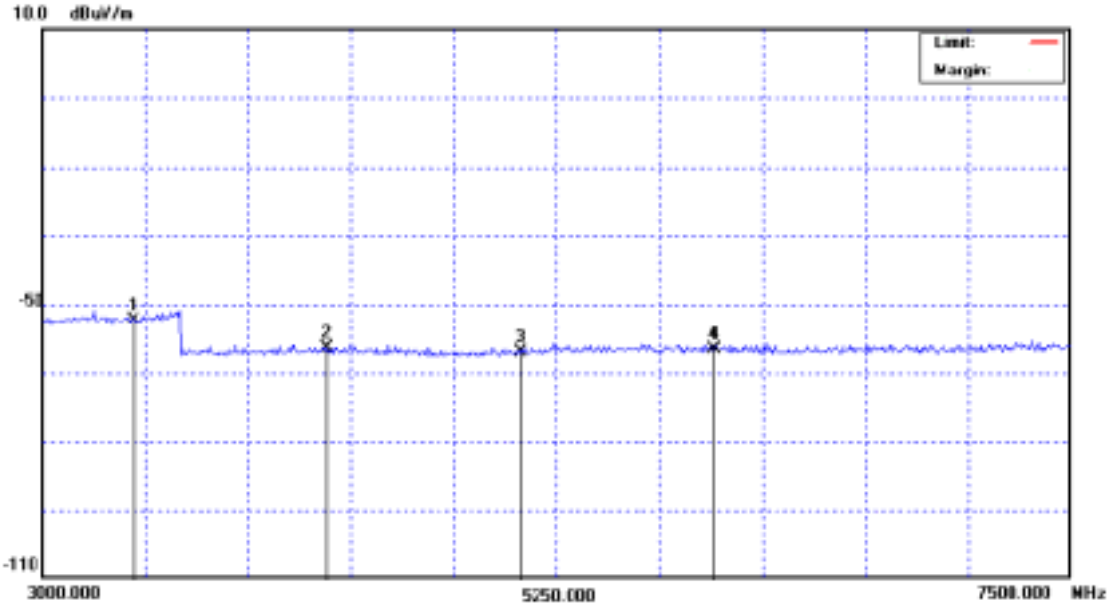
Channel 251

3G~7.5GHz

RBW 1 MHz
VBW 1 MHz
Ref 10 dBm SWT 100 ms



Mark 1	4244.000	MHz	-59.50	dBm
Mark 2	5092.800	MHz	-60.25	dBm
Mark 3	5941.600	MHz	-59.75	dBm

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8 RADIATED SPURIOUS EMISSION

8.1 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.

8.2 Test method

a) The emissions were searched and maximized by rotate the turn table and raise and lower the antenna and manipulating the EUT. 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.

b) All suspicious frequencies with emission levels were recorded.

c) The EUT was replaced with a substituting antenna.

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) For each frequency recorded, the substituting antenna was fed with the power (from signal generator) giving the same reading as in (b). These power levels were reported. Actually the real E.R.P peak power is equal to “SG Power Value + Correction Factor (dB), Correction Factor (dB) =Substitution Antenna Gain (dBd) - Cable Loss(dB) ”. And, Substitution Antenna Gain (dBd) = Gain of the substitutive antenna over dipole (dBi – 2.15dB).

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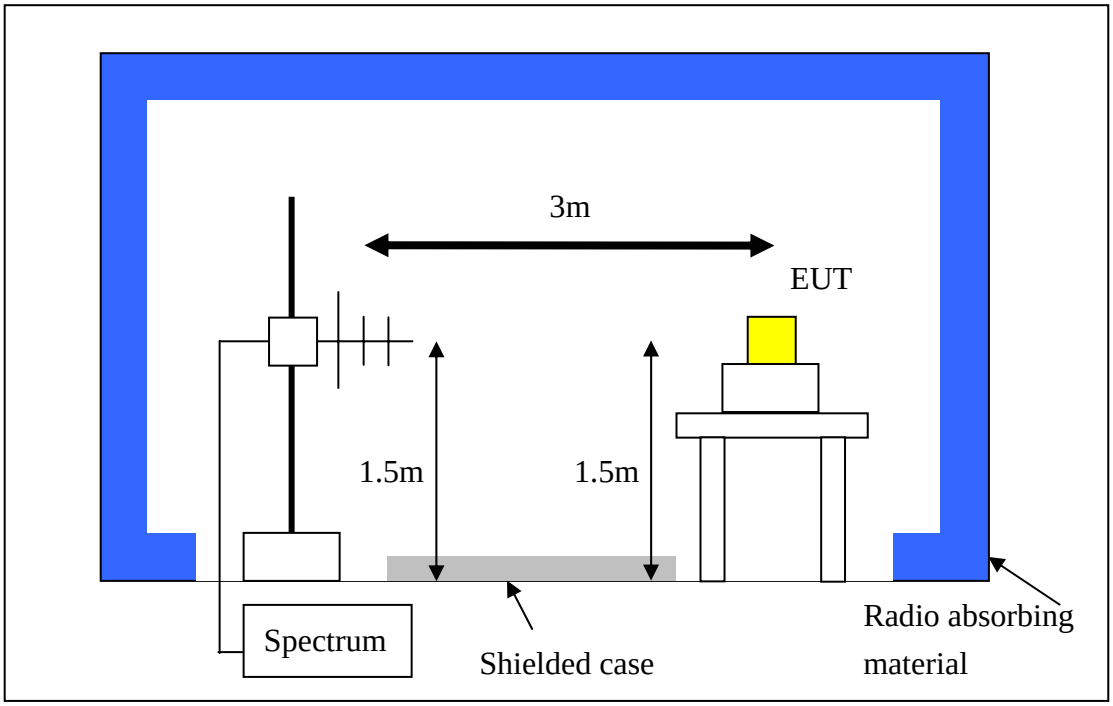
8.3 EUT operation modes

a. The EUT makes a phone call to the GSM simulator.

b. The GSM simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.



8.4 Limit

In the FCC 22.917(a), On any frequency outside a licensee's frequency block within USGSM850 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 22.917(c), When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges (low channel 128 and high channel 251), both upper and lower edges are compliance with FCC 22.917(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.

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8.5 Results

EUT	Dual-band Mobile Phone	**MODEL**	V66S
MODE	Tx Channel 128	**POWER CONTROL LEVEL**	0
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak
ENVIRONMENTAL CONDITIONS	23 deg. C, 65% RH, 991 hPa	**TESTED BY:** Sam Chaung	

Frequency range: 30MHz ~ 7.5GHz

RADIATED SPURIOUS EMISSION : Vertical polarization 3M								
No	Frequency (MHz)	Emission Level(dBm)	Limit (dBm)	S.G Power (dBm)	Correction Factor (dB)	Substitution Ant gain (dBd)	Cable Loss (dB)	Power Value(dBm)
1	36.79	-43.52	-13	-28.3	-33.04	-2.0	31.00	-61.34
2	1644	-13.58	-13	-4.4	-27.51	5.1	32.56	-31.86
3	2463	-17.77	-13	-9.5	-25.35	5.9	31.20	-34.85
4	3289	-3.83	-13	5.8	-29.65	6.8	36.45	-23.85
5	4113.5	-18.96	-13	-10.6	-29.93	7.0	36.90	-40.53
6	4945.5	-20.57	-13	-12.0	-29.95	7.2	37.15	-41.95

RADIATED SPURIOUS EMISSION : Horizontal polarization 3M								
No	Frequency (MHz)	Emission Level(dBm)	Limit (dBm)	S.G Power (dBm)	Correction Factor (dB)	Substitution Ant gain (dBd)	Cable Loss (dB)	Power Value(dBm)
1	31.94	-41.58	-13	-26.7	-33.04	-2.0	31.00	-59.74
2	659.53	-44.05	-13	-28.6	-32.64	-1.3	31.38	-61.24
3	1644	-3.85	-13	5.5	-27.51	5.1	32.56	-22.01
4	2463	-15.87	-13	-7.8	-25.35	5.9	31.20	-33.15
5	3288	-2.98	-13	8.9	-29.65	6.8	36.45	**-20.75**
6	4945.5	-7.89	-13	6.5	-29.93	7.0	36.90	-23.43

REMARKS:

1. Power Value (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna gain (dBd) - Cable Loss (dB)
3. "-" The emission levels were very low against the limit.
4. Substitution Antenna Gain (dBd) =
   Gain of the substitutive antenna over dipole (dBi – 2.15dB)

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EUT	Dual-band Mobile Phone	**MODEL**	V66S
MODE	Tx Channel 190	**POWER CONTROL LEVEL**	0
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak
ENVIRONMENTAL CONDITIONS	23 deg. C, 65% RH, 991 hPa	**TESTED BY:** Sam Chaung	

Frequency range: 30MHz ~ 7.5GHz

RADIATED SPURIOUS EMISSION : Vertical polarization 3M								
No	Frequency (MHz)	Emission Level(dBm)	Limit (dBm)	S.G Power (dBm)	Correction Factor (dB)	Substitution Ant gain (dBd)	Cable Loss (dB)	Power Value(dBm)
1	33.88	-44.87	-13	-30.1	-33.04	-2.04	31.00	-63.14
2	669.23	-42.85	-13	-27.5	-32.65	-1.25	31.40	-60.15
3	1679	-10.57	-13	-1.5	-27.65	5.15	32.80	-29.15
4	2498	-20.23	-13	4.0	-25.25	5.95	31.20	-21.25
5	3338	-5.96	-13	3.6	-29.67	6.85	36.52	-26.07
6	4178.5	-13.86	-13	5.4	-30.02	6.98	37.00	-24.62

RADIATED SPURIOUS EMISSION : Horizontal polarization 3M								
No	Frequency (MHz)	Emission Level(dBm)	Limit (dBm)	S.G Power (dBm)	Correction Factor (dB)	Substitution Ant gain (dBd)	Cable Loss (dB)	Power Value(dBm)
1	36.79	-40.86	-13	-25.1	-33.04	-2.04	31.00	-58.14
2	1679	-4.45	-13	6.0	-27.65	5.15	32.80	-21.65
3	3338	-2.86	-13	7.8	-29.67	6.85	36.52	-21.87
4	4178.5	-13.59	-13	5.6	-30.02	6.98	37.00	-24.42
5	5010.5	-12.85	-13	-5.3	-31.45	7.05	38.50	-36.75

REMARKS:

1. Power Value (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna gain (dBi) - Cable Loss (dB)
3. "-" The emission levels were very low against the limit.
4. Substitution Antenna Gain (dBd) =
   Gain of the substitutive antenna over dipole (dBi – 2.15dB)

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EUT	Dual-band Mobile Phone	**MODEL**	V66S
MODE	Tx Channel 251	**POWER CONTROL LEVEL**	0
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak
ENVIRONMENTAL CONDITIONS	23 deg. C, 65% RH, 991 hPa	**TESTED BY:** Sam Chaung	

Frequency range: 30MHz ~ 7.5GHz

RADIATED SPURIOUS EMISSION : Vertical polarization 3M								
No	Frequency (MHz)	Emission Level(dBm)	Limit (dBm)	S.G Power (dBm)	Correction Factor (dB)	Substitution Ant gain (dBd)	Cable Loss (dB)	Power Value(dBm)
1	33.88	-40.65	-13	-25.5	-33.04	-2.04	31.00	-58.54
2	94.99	-41.32	-13	-26.0	-33.04	-2.04	31.00	-59.04
3	1679	-13.86	-13	-4.1	-27.65	5.15	32.80	-31.75
4	2540.5	-20.96	-13	-12.8	-25.30	6.05	31.35	-38.10
5	3385.5	-7.86	-13	1.8	-29.87	6.84	36.71	-28.07
6	4243.5	-16.41	-13	-8.1	-30.03	7.05	37.08	-38.13

RADIATED SPURIOUS EMISSION : Horizontal polarization 3M								
No	Frequency (MHz)	Emission Level(dBm)	Limit (dBm)	S.G Power (dBm)	Correction Factor (dB)	Substitution Ant gain (dBd)	Cable Loss (dB)	Power Value(dBm)
1	36.79	-43.61	-13	-28.5	-33.04	-2.04	31.00	-61.54
2	523.73	-44.28	-13	-36.5	-32.85	-1.45	31.40	-69.35
3	1679	-2.99	-13	6.8	-27.65	5.15	32.80	-20.85
4	2498	-12.96	-13	-4.3	-25.30	6.05	31.35	-29.60
5	3385.5	-3.11	-13	6.8	-29.87	6.84	36.71	-23.07
6	4243.5	-15.75	-13	-8.8	-30.03	7.05	37.08	-38.83

REMARKS:

1. Power Value (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna gain (dBi) - Cable Loss (dB)
3. "-" The emission levels were very low against the limit.
4. Substitution Antenna Gain (dBd) =
   Gain of the substitutive antenna over dipole (dBi – 2.15dB)

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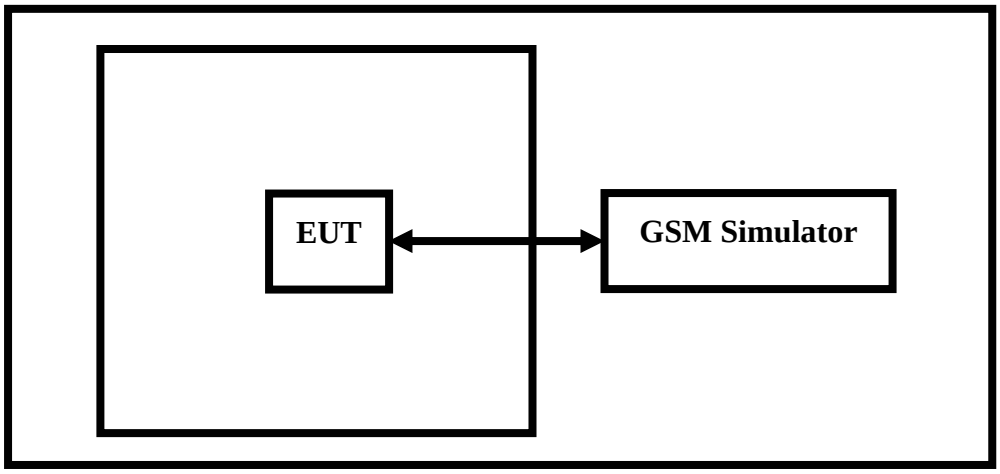
9. FREQUENCY STABILITY, TEMPERATURE VARIATION

9.1 EUT operation modes

EUT	Dual-band Mobile Phone	**MODEL**	V66S
MODE	TX channel 190	**POWER CONTROL LEVEL**	0
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	500 Bursts
ENVIRONMENTAL CONDITIONS	25 deg. C, 50 % RH, 999 hPa	**TESTED BY:** Sam Chaung	

9.2 Test setup

The BS simulator was used to set the TX channel with GPRS and power level and modulate the TX signal with different bit patterns.



9.3 Test method

a) The climate chamber temperature was set to the minimum value and the temperature was allowed to stabilize. A soak time (after chamber reaches appropriate temperature) is 60 minutes.

b) The EUT was placed in the chamber

c) The EUT was set in idle mode for 45 minutes.

d) The EUT was set to transmit.

e) The transmit frequency error was measured immediately

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9.4 Limit

According to the FCC part 2.4235 shall be tested the frequency stability. The rule is defined that" The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The frequency error rate is according to the JTC standard that the frequency error rate shall be accurate to within 0.1 ppm of the received frequency from the base station. The extreme temperature rule is comply with the 2.1055(a)(1) –30℃~50℃.

9.5 Results

Frequency deviation, temperature variation		
Temperature [ºC]	**Deviation [Hz]**	**Deviation [ppm]**
-30	-25	-0.029
-20	-26	-0.031
-10	-31	-0.036
0	-21	-0.025
10	-20	-0.024
20	-22	-0.026
30	-20	-0.024
40	-19	-0.022
50	-17	-0.020

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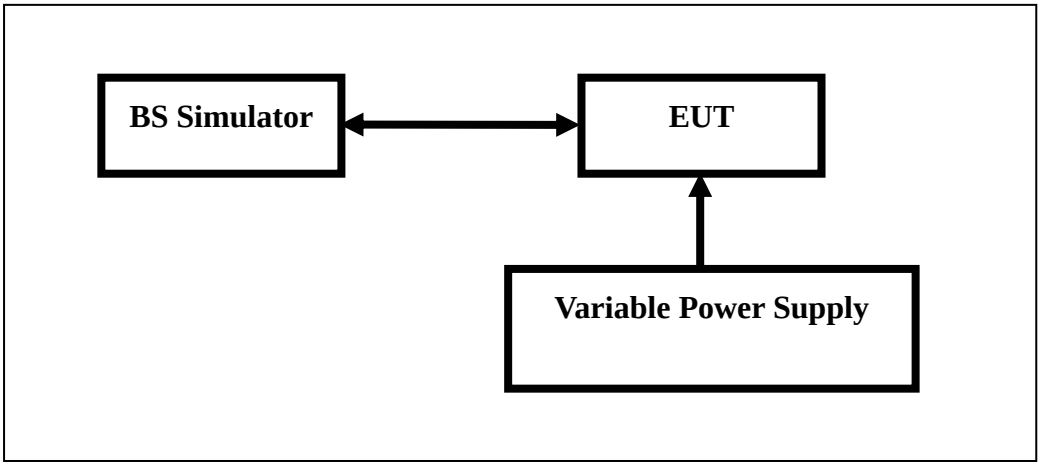
10. FREQUENCY STABILITY, VOLTAGE VARIATION

10.1 EUT operation modes

EUT	Dual-band Mobile Phone	**MODEL**	V66S
MODE	TX channel 190	**POWER CONTROL LEVEL**	0
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	500 Bursts
ENVIRONMENTAL CONDITIONS	25 deg. C, 50 % RH, 999 hPa	**TESTED BY**:	Sam Chaung

10.2 Test setup

The BS simulator was used to set the TX channel with GPRS and power level and modulate the TX signal with different bit patterns.



10.3 Test method

The EUT battery was replaced with an adjustable power supply. The frequency stability was measured at nominal voltage and at the battery cut-off point.

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10.4 Limit

According to the FCC part 2.4235 shall be tested the frequency stability. The rule is defined that" The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The frequency error rate is according to the JTC standard that the frequency error rate shall be accurate to within 0.1 ppm of the received frequency from the base station. The test extreme voltage is according to the 2.1055(d)(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

10.5 Results

Frequency deviation, voltage variation			
Level	**Voltage [V]**	**Deviation [Hz]**	**Deviation [ppm]**
Battery full point	4.2	31	0.036
Nominal	3.8	30	0.035
Battery cut-off point	3.55	25	0.029

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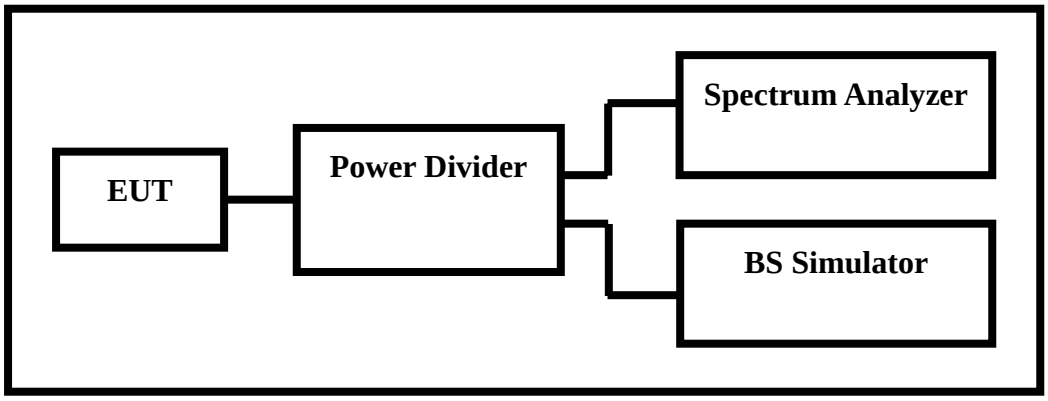
11. 99% OCCUPIED BANDWIDTH

11.1 Test setup

The BS simulator was used to set the TX channel with GPRS and power level and modulate the TX signal with different bit patterns.



11.2 EUT operation modes

a. The EUT makes a phone call to the GSM with GPRS simulator.

b. The GSM with GPRS simulator station system controlled a EUT to export maximum and minimum output power under transmission mode and specific channel frequency.

11.3 Limit

According to FCC 22.917(b) specified that emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

11.4 Results

Frequency (MHz)	Max. Output Power -26 dBc Bandwidth (kHz)	Min. Output Power -26 dBc Bandwidth (kHz)
1850.2	315	316
1880.2	315	320
1909.8	315	314

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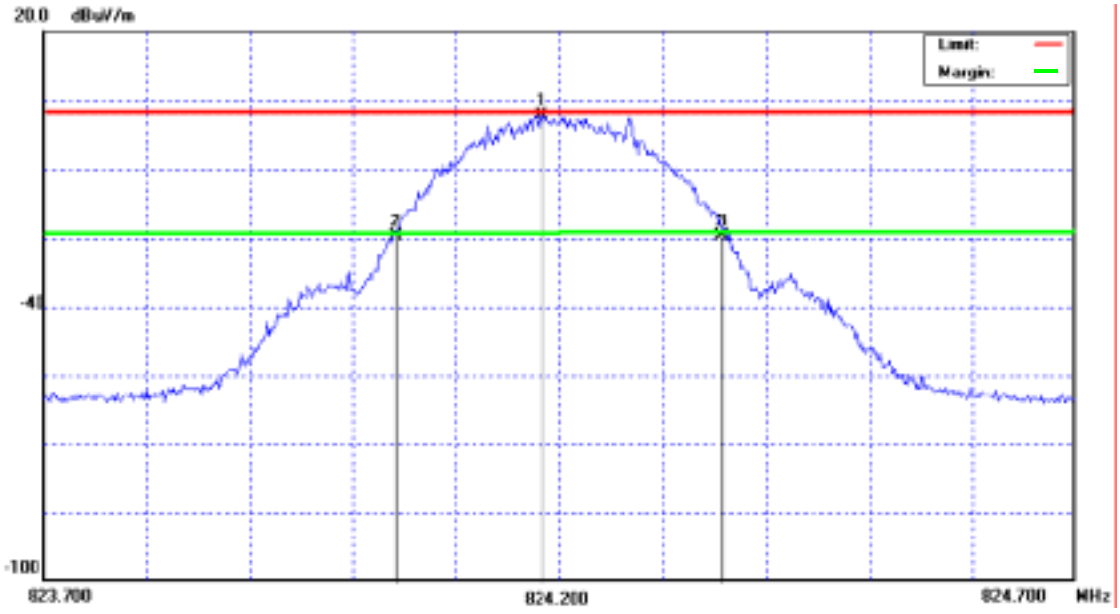
11.5 Screen shots

Channel 128 Max. Power

-26 dBc Bandwidth

	RBW 3 KHz	Delta 26dB
	VBW 10 KHz	-24.5 dBm
Ref 20 dBm	SWT 115 ms	317 KHz



Mark 1	824.1829	MHz	1.5	dBm
Mark 2	824.0410	MHz	-24.5	dBm
Mark 3	824.3580	MHz	-24.5	dBm

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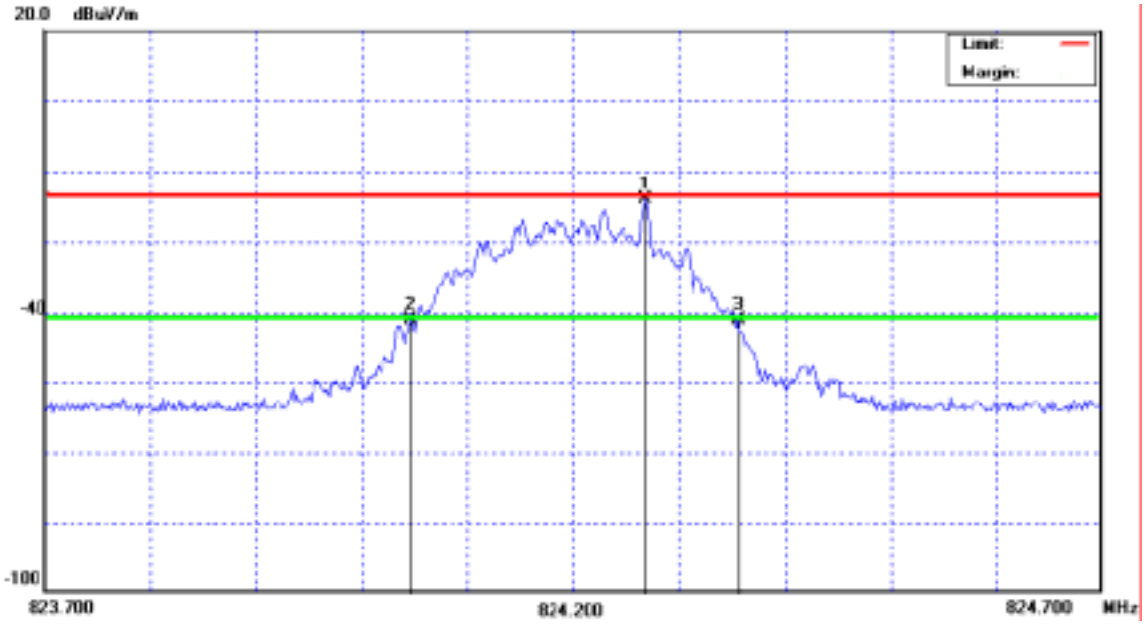
Channel 128 Min. Power

-26 dBc Bandwidth

RBW 3 KHz
VBW 10 KHz
SWT 115 ms
Delta 26dB
-41.75 dBm
312 KHz

Ref 20 dBm



Mark 1	824.268	MHz	-15.75	dBm
Mark 2	824.045	MHz	-41.75	dBm
Mark 3	824.357	MHz	-41.75	dBm

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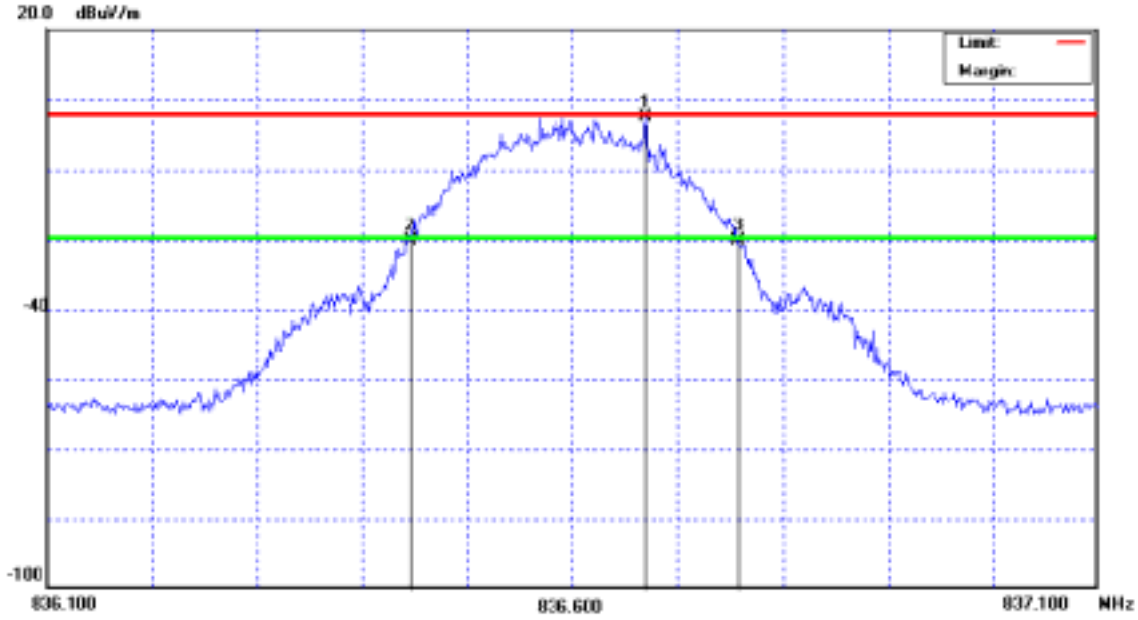
Channel 190 Max. Power

-26 dBc Bandwidth

	RBW 3 KHz	Delta 26dB
	VBW 10 KHz	-25 dBm
Ref 20 dBm	SWT 115 ms	313 KHz



Mark 1	836.670	MHz	1	dBm
Mark 2	836.445	MHz	-25	dBm
Mark 3	836.758	MHz	-25	dBm

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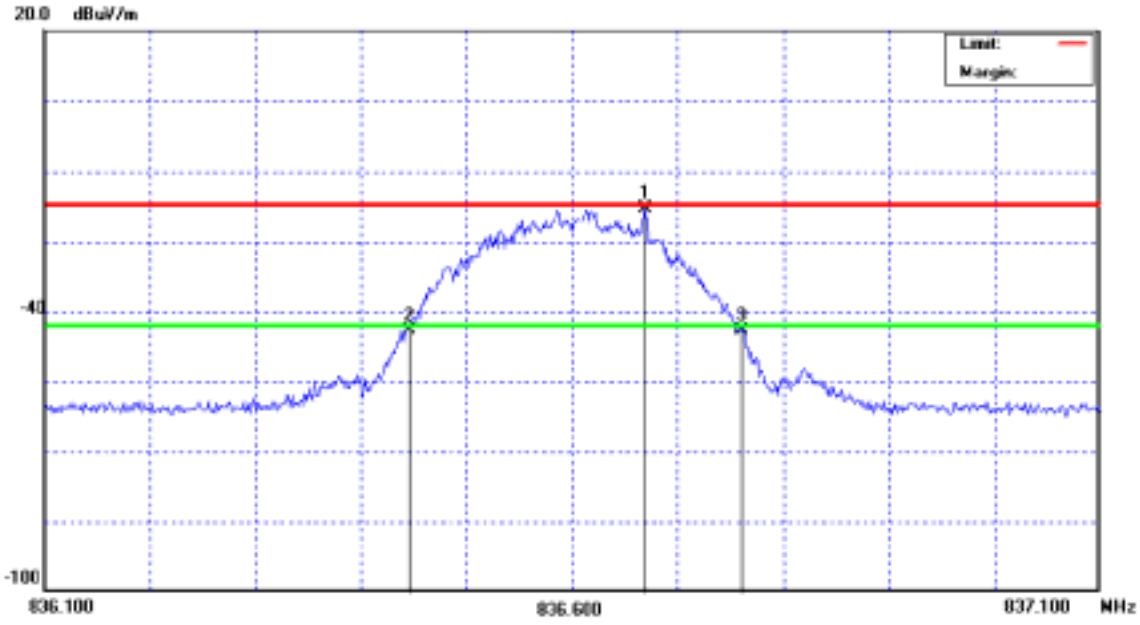
Channel 190 Min. Power
-26 dBc Bandwidth

RBW 3 KHz
VBW 10 KHz
SWT 115 ms

Delta 26dB
-44 dBm
315 KHz

Ref 20 dBm



Mark 1	836.670	MHz	-18	dBm
Mark 2	836.445	MHz	-44	dBm
Mark 3	836.760	MHz	-44	dBm

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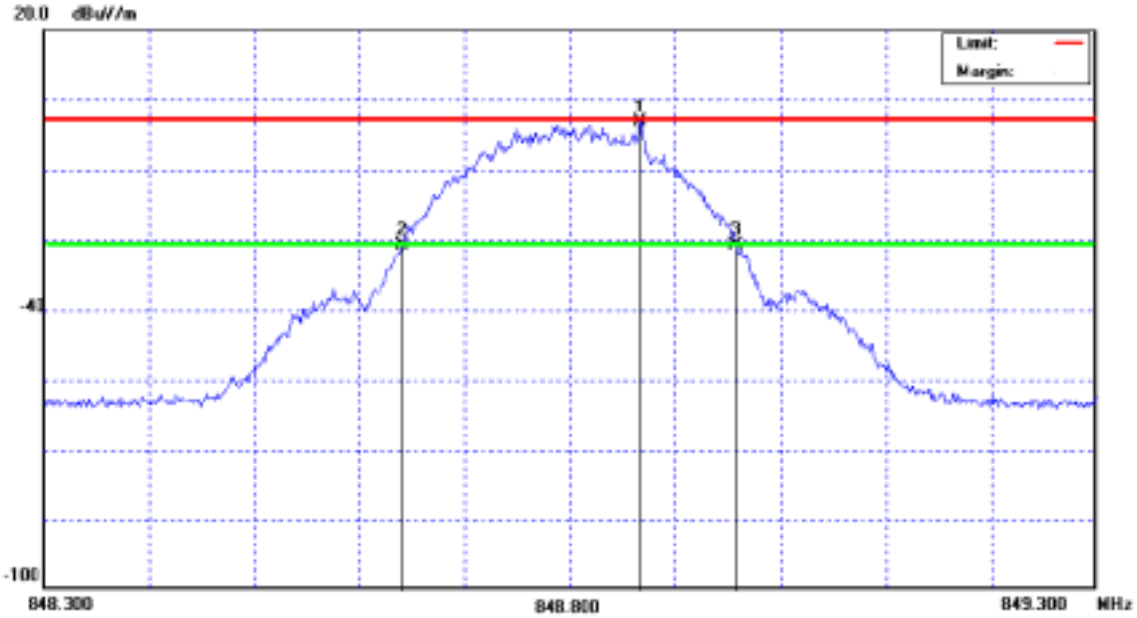
Channel 251 Max. Power

-26 dBc Bandwidth

	RBW 3 KHz	Delta 26dB
	VBW 10 KHz	-26 dBm
Ref 20 dBm	SWT 115 ms	318 KHz



Mark 1	848.867	MHz	0	dBm
Mark 2	848.640	MHz	-26	dBm
Mark 3	848.958	MHz	-26	dBm

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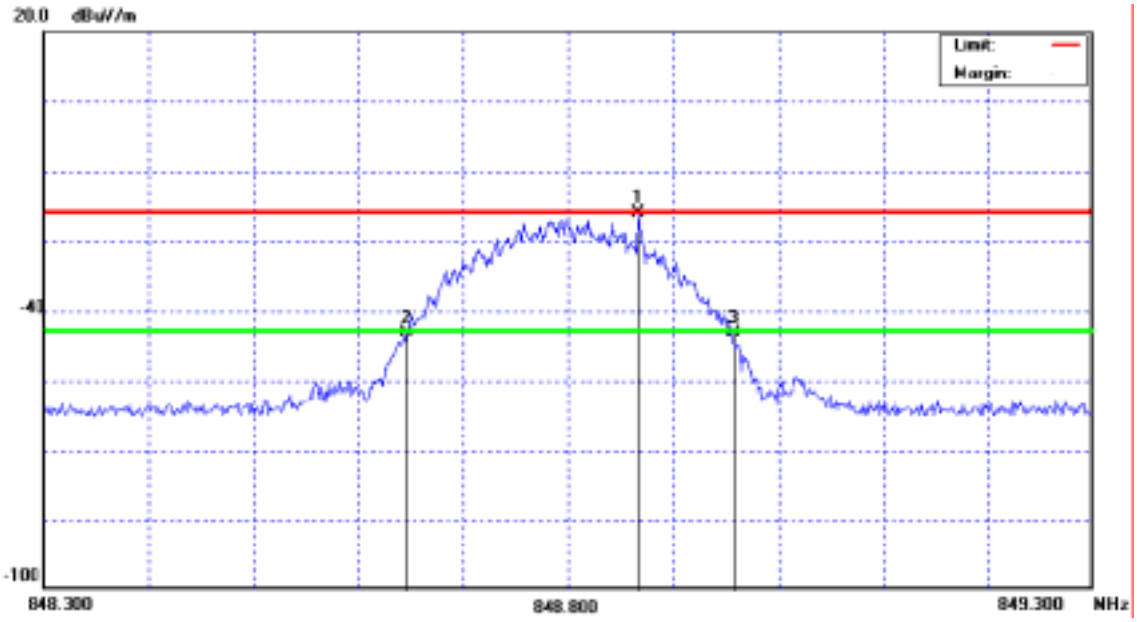
Channel 251 Min. Power

-26 dBc Bandwidth

RBW 3 KHz
VBW 10 KHz
SWT 115 ms

Delta 26dB
-44.75 dBm
313 KHz

Ref 0 dBm



Mark 1	848.8671	MHz	-18.75	dBm
Mark 2	848.6450	MHz	-44.75	dBm
Mark 3	848.9580	MHz	-44.75	dBm

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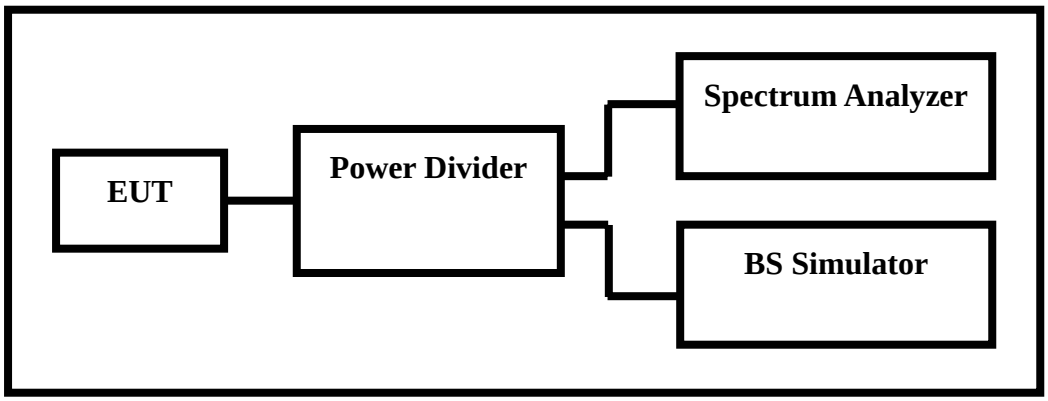
12. BANDEDGE COMPLIANCE

12.1 Test setup

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 band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

12.2 EUT operation modes

a. The EUT makes a phone call to the GSM with GPRS simulator.

b. The GSM with GPRS simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

12.3 Limit

The GSM850 frequency bands refer to the FCC 22.905 rule. According to FCC 22.917(b) specified that emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. In the 1 MHz bands immediately outside and 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. Then we measure that the bandwidth is about 300kHz and the resolution bandwidth is 3kHz.

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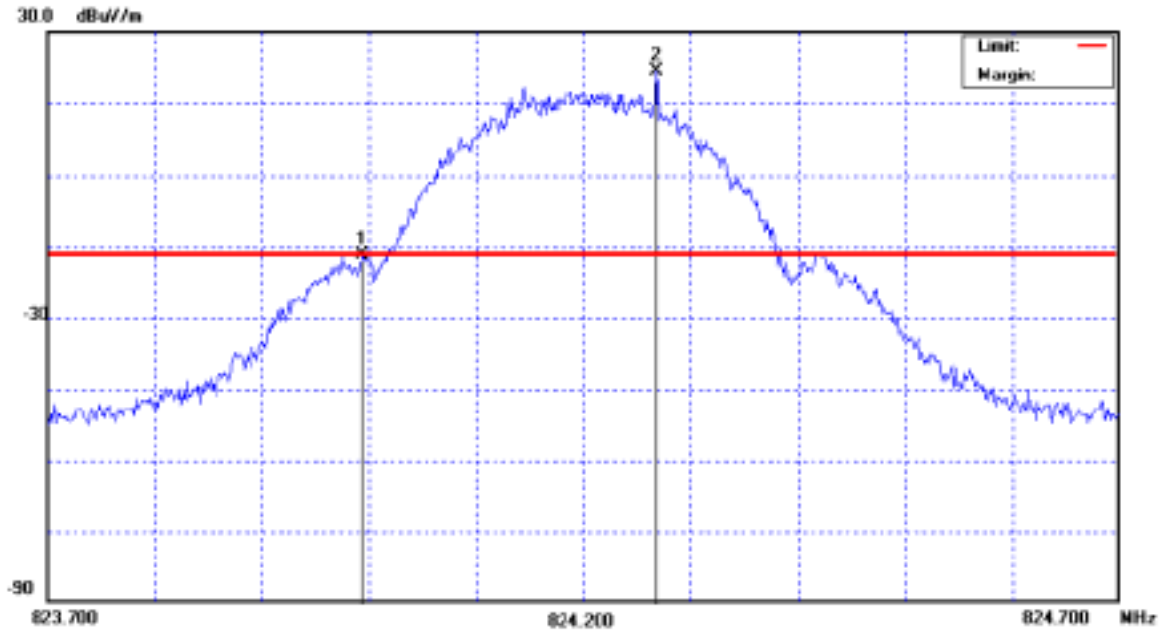
12.4 Results

Lower Band Edge

	RBW 3 KHz	Mark 1
	VBW 10 KHz	-18.75 dBm
Ref 30 dBm	SWT 225 ms	823.9943 GHz



Frequency	Read data	loss	Power	Limit	Margin	
823.9943M	-18.75	-3.9	-14.85	-13	-1.85	PASS

* Loss= splitter loss and cable loss in the transmitted path track on test frequency

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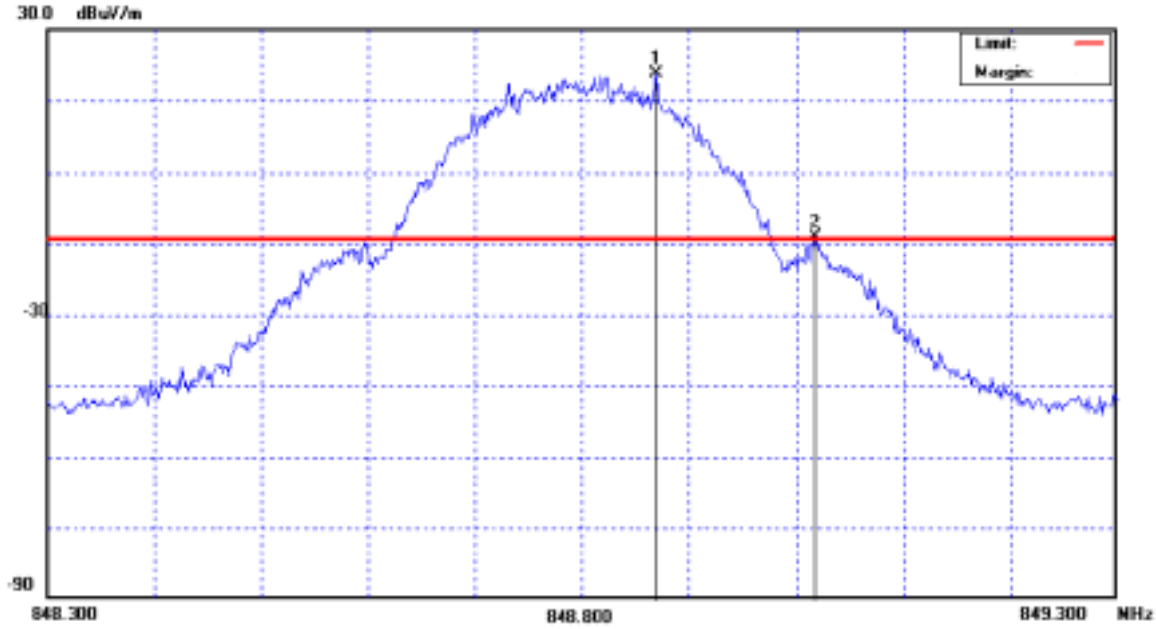
Higher Band Edge

RBW 3 KHz
VBW 10 KHz
SWT 225 ms
Mark 1
-17.91 dBm
849.0186 GHz

Ref 20 dBm



Frequency	Read data	loss	Power	Limit	Margin	PASS
849.0186M	-17.91	-3.65	-14.26	-13	-1.26	

* Loss= splitter loss and cable loss in the transmitted path track on test frequency

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14. TEST EQUIPMENT

14.1 EQUIPMENT

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
Advantest	Spectrum Analyzer	R3271A	120100971	Apr.08,2005	Apr.08,2007
Agilent	Wireless Communication	8960(E5515C)	GB41450409	Jan.31,2005	Jan.31,2007
Agilent	Single Generator	E8257D	MY44320425	Jan.15,2005	Jan.15,2007
Agilent	Power Meter	E4418B	GB42420591	May 10, 2005	May 10, 2006
Agilent	Power Sensor	8481H	MY41091025	May 11, 2005	May 11, 2006
KI	DC power supply	DPS	1303AF	NCR	NCR
AML	Pre-Amplifier	0120L3410	107	NCR	NCR
GIANT FORCE	Thermal Chamber	GTH-225-70-1P	NCR	Nov 11, 2004	Nov 11, 2006
Agilent	Dual Directional Coupler	778D	50334	NCR	NCR
Agilent	Power splitter	87302C	3239A00760	NCR	NCR
Agilent	attenuator	8491A	NCR	NCR	NCR
Microwave Circuits	High pass filter	H1G513G3	NCR	NCR	NCR
Microwave Circuits	High pass filter	H04G18G2	NCR	NCR	NCR
KεL	Tunable notch filter	3TNF-800/1000-0.2-N/N	NCR	NCR	NCR
KεL	Tunable notch filter	5TNF-1700/2000-0.1-N/N	NCR	NCR	NCR
ETS	Bilog Antenna	3142B	00022056	May 07, 2003	May 07, 2006
R&S	Horn Antenna	HF 960	NCR	Jun 15, 2003	Jun 15, 2006
ETS	LISN	3810	00026823	Aug 07, 2003	Aug 07, 2006

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13. Measurement Uncertainty

13.1 Uncertainty

Uncertainty of measurement

Measurement	Frequency	Uncertainty
Conducted emissions	9K ~ 30MHz	2.6dB
Radiated emission	30M ~ 500MHz	3.5dB
	500M ~ 1GHz	3.9dB
	1G ~ 10GHz	3.5dB
	10G ~ 20GHz	3.9dB

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