FCC CFR47 CERTIFICATION

PART 24E

TEST REPORT

FOR

TRI-BAND (900/1800/1900MHz) Voq SMART PHONE

MODEL: Voq A10

FCC ID: N7NVOQA10

REPORT NUMBER: 03U2439-1

ISSUE DATE: JANUARY 09, 2004

SIERRA WIRELESS
13811 WIRELESS WAY
RICHMOND, BC V6V 3A4
CANADA

Prepared by
COMPLIANCE CERTIFICATION SERVICES
561F MONTEREY ROAD, ROUTE 2
MORGAN HILL, CA 95037, USA
TEL: (408) 463-0885
FAX: (408) 463-0888

TABLE OF CONTENT

1. TEST RESULT CERTIFICATION

COMPANY NAME: SIERRA WIRELESS INC., YW
13811 WIRELESS WAY
RICHMOND, BC V6V 3A4
CANADA

EUT DESCRIPTION: TRI-BAND (900/1800/1900MHz) Voq PROFESSIONAL PHONE

MODEL NUMBER: Voq A10

DATE TESTED: JANUARY 06, 2004

TYPE OF EQUIPMENT	INTENTIONAL RADIATOR
EQUIPMENT TYPE	LICENSED TX MODULE IN MOBILE APPLICATION
MEASUREMENT PROCEDURE	ANSI 63.4 / 2001, TIA/EIA 603
PROCEDURE	CERTIFICATION
FCC RULE	CFR 47 PART 24 SUBPART E

Compliance Certification Services, Inc. tested the above equipment for compliance with the requirement set forth in CFR 47, PART 24 Subpart E-Broadband PCS. The equipment in the configuration described in this report, shows the measured emission levels emanating from the equipment do not exceed the specified limit.

Note: This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document.

Tested By:

VIEN TRAN
EMC TECHNICIAN
COMPLIANCE CERTIFICATION SERVICES

Released For CCS By:

THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

2. EUT DESCRIPTION

The EUT is an 800/1800/1900MHz Triband GSM/GPRS smart phone, and only 1900MHz band is operating (transmitting) in North America. It has an output power of 31.4dBm (EIRP), which is designed for the bands transmitting of frequency range1850.2MHz to 1909.9MHz MHz.

3. TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures documented on chapter 13 of ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.

4. TEST FACILITY

The open area test sites and conducted measurement facilities used to collect the radiated data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5. ACCREDITATION AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code: 200065-0 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission (reference no: 31040/SIT (1300B3) and 31040/SIT (1300F2))

6. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

7. TEST SETUP, PROCEDURE AND RESULT

7.1. SECTION 2.1046: RF POWER OUTPUT

INSTRUMENTS LIST

TEST EQUIPMENT LIST				
Name of Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Due Date**
EMI Receiver, 9 kHz ~ 2.9 GHz	**HP**	**8542E**	**3942A00286**	**11/20/2004**
RF Filter Section	**HP**	**85420E**	**3705A00256**	**11/20/2004**
Antenna, Bicon/Log, 25 ~ 2000 MHz	**ARA**	**LPB-2520/A**	**1185**	**3/6/2004**
Line Filter	**Lindgren**	**LMF-3489**	**497**	**CNR**
LISN, 10 kHz ~ 30 MHz	**Solar**	**8012-50-R-24-BNC**	**8379443**	**10/13/2004**
LISN, 10 kHz ~ 30 MHz	**FCC**	**LISN-50/250-25-2**	**2023**	**10/13/2004**
EMI Test Receiver	**R & S**	**ESHS 20**	**827129/006**	**7/17/2004**
Spectrum Analyzer	**HP**	**E4446A**	**US42510266**	**7/23/2004**
Communication Tester	**R & S**	**CMU 200**	**838114/032**	**11/14/2004**
Antenna, Horn 1 ~ 18 GHz	**EMCO**	**3115**	**9001-3245**	**2/4/2004**
Antenna, Horn 1 ~ 18 GHz	**EMCO**	**3115**	**6717**	**2/4/2004**
Signal Generator, 10 MHz ~ 20 GHz	**HP**	**83732B**	**US34490599**	**4/4/2004**
Amplifier 1-26GHz	**MITEQ**	**NSP2600-SP**	**924342**	**4/25/2004**

MEASUREMENT PROCEDURE

1). On a test site, the EUT shall be placed on a turntable, and in the position closest to the normal use as declared by the user.

2). The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the frequency of the transmitter.

3). The output of the test antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.

4). The transmitter shall be placed 0.80 meter above the ground plane, the X, Y, and Z positions shall be tested and the worst case reported. The transmitter shall be switched on with typical modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.

5). The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.

6). The transmitter shall than be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

7). The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.

8). The maximum signal level detected by the measuring receiver shall be noted.

9). The transmitter shall be replaced by a tuned dipole / horn (substitution antenna).

10). The substitution antenna shall be oriented for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.

11). The substitution antenna shall be connected to a calibrated signal generator.

12). If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.

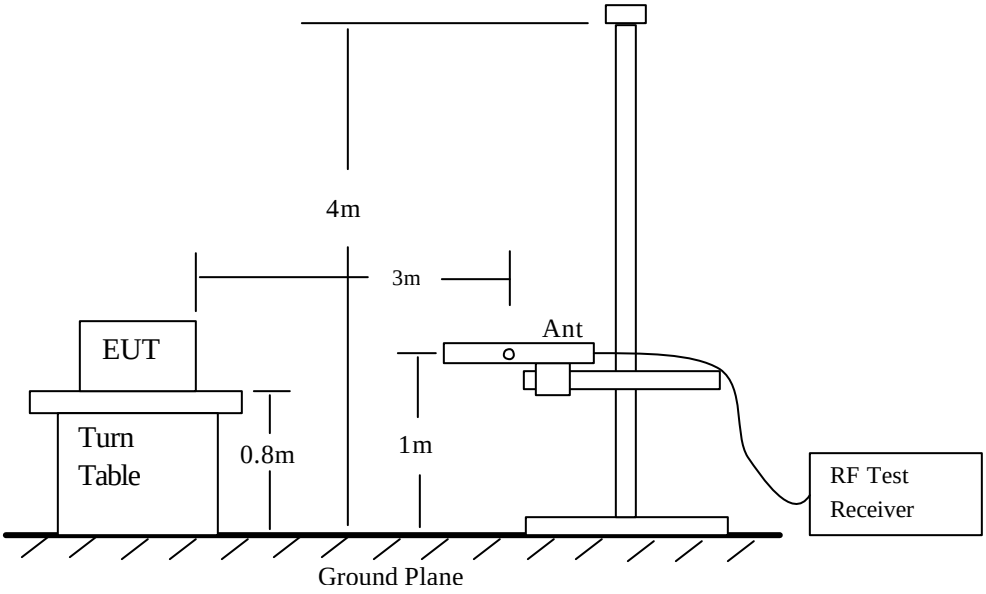
13). The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.

14). The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.

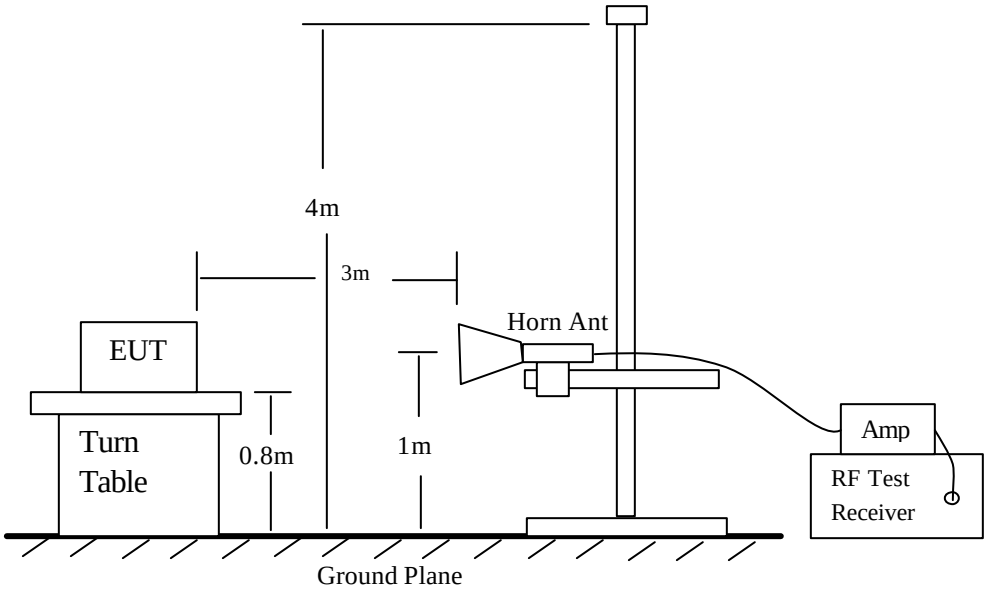
15). The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.

16). The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

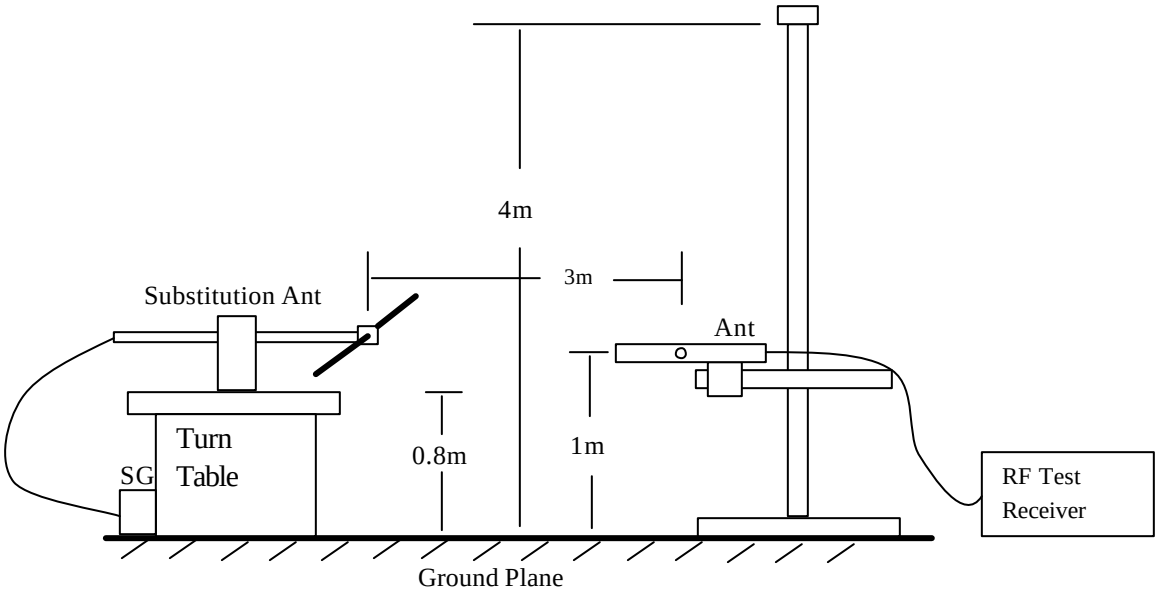
17). The measure of the effective radiated power is the larger of the two levels recorded, at the input to the substitution antenna, corrected for the gain of the substitution antenna if necessary.

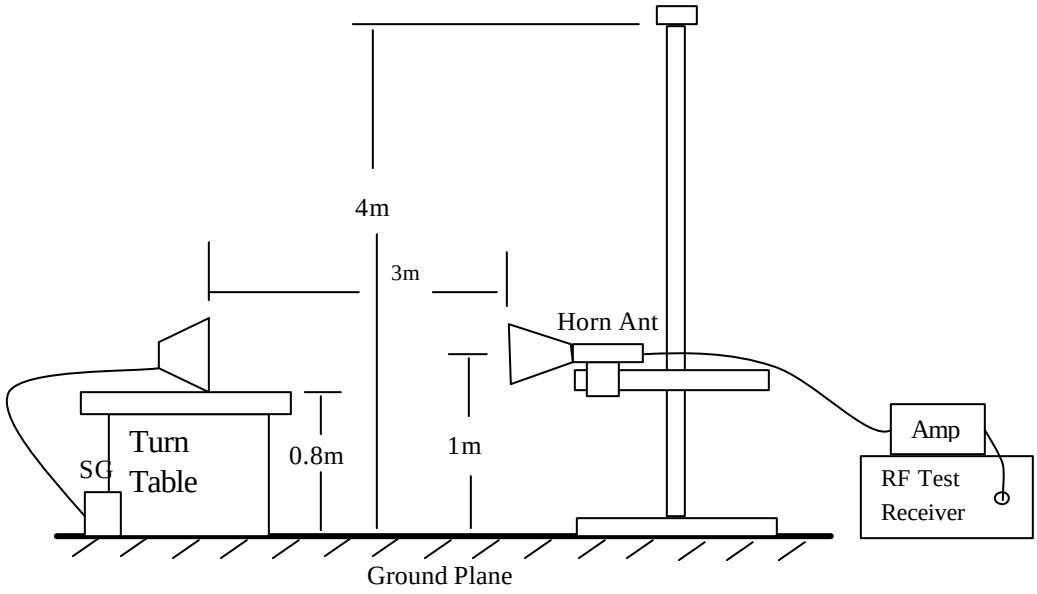


Radiated Emission Measurement 30 to 1000 MHz



Radiated Emission Above 1000 MHz





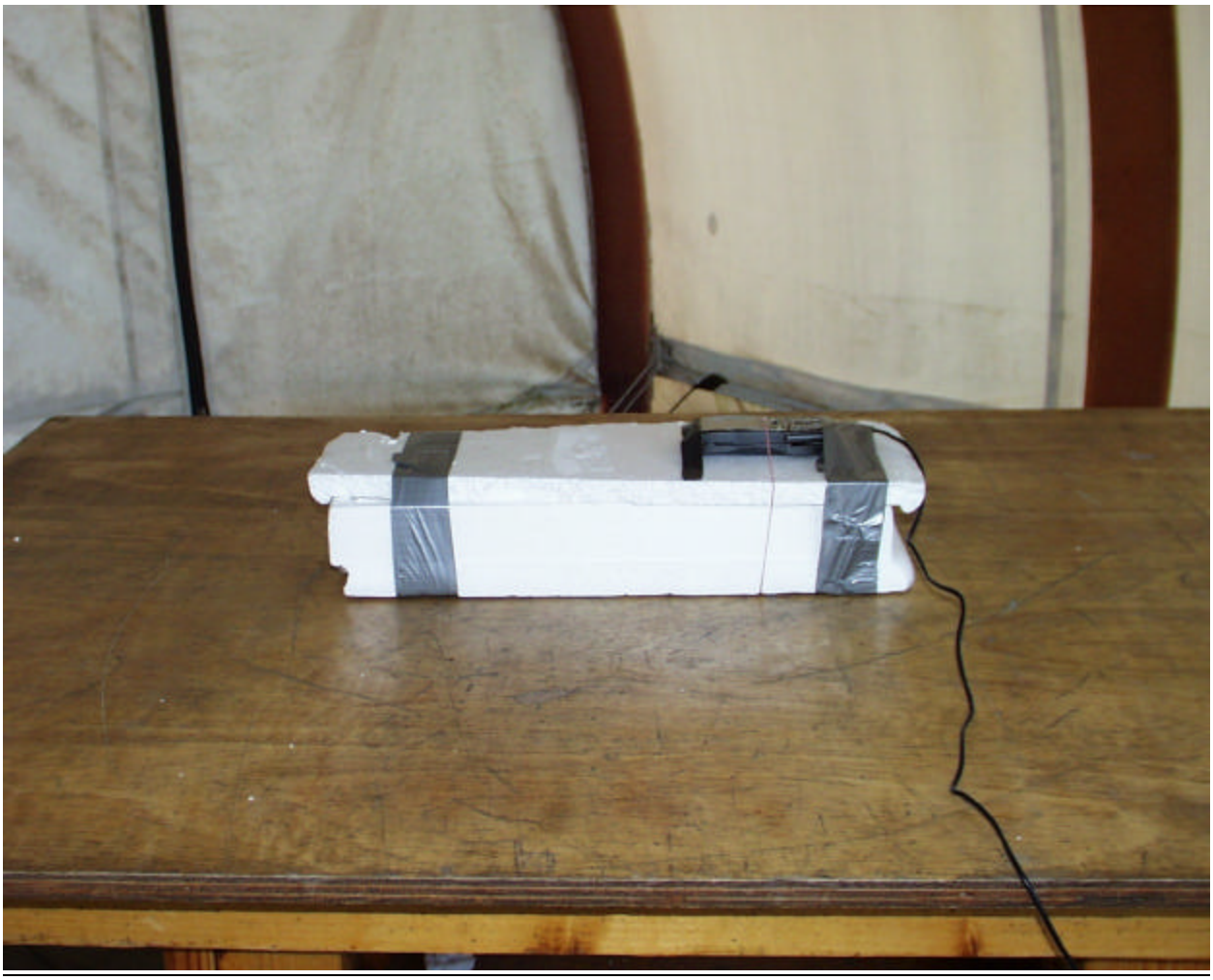
Radiated Emission – Substitution Method Set-up

Radiated Emissions

X –Orientation

Y –Orientation

Z–Orientation



MEASUREMENT RESULT:

Output Power (EIRP) at worst X, Z-Positions for GSM and GPRS 1900MHZ:

Test Engr: VIEN TRAN
Project #: 03U2439
Company: SIERRA WIRELESS
EUT Descrip.: 900/1800/1900MHz DCS, GSM, PCS SMART PHONE
EUT M/N: Voq A10
Test Target: FUNDAMENTAL & SUBSTITUTION_GSM & GPRS 1900MHz
Mode Oper: TX AT LOW/MID/HIGH CHANNELS_EUT AT XZ POSITION

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifer 1-26GHz	Spectrum Analyzer	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T87 Miteq 924342	Agilent E4446A Analyzer		EIRP

Hi Frequency Cables: ☐ (2 ft) ☐ (2 – 3 ft) ☑ (4 – 6 ft) ☐ (12 ft)

Peak Measurements:
Fundamental: RBW>99% or 26dB Emissions BW, VBW=RBW
Bandedge: RBW=>1% Emissions BW, VBW=> 3*RBW
Spurious: RBW=1MHz, VBW=1MHz

f GHz	SA reading (dBuV)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
GSM									
_EUT AT X POSITION (VERTICAL)_HORN ANTENNA AT VERTICAL POSITION									
1.850	97.0	23.5	0.4	7.8	5.7	30.9	33.0	-2.1	V
1.874	97.0	23.7	0.4	7.9	5.7	31.1	33.0	-1.9	V
1.910	95.5	22.8	0.4	7.9	5.8	30.3	33.0	-2.7	V
_EUT AT Z POSITION (HORIZONTAL)_HORN ANTENNA AT HORIZONTAL POSITION_LOW/MID/HI CH									
1.850	100.9	23.4	0.4	7.8	5.7	30.8	33.0	-2.2	H
1.874	100.4	22.9	0.4	7.9	5.7	30.3	33.0	-2.7	H
1.910	99.3	21.8	0.4	7.9	5.8	29.3	33.0	-3.7	H
GPRS									
_EUT AT X POSITION (VERTICAL)_HORN ANTENNA AT VERTICAL POSITION									
1.850	97.3	23.8	0.4	7.8	5.7	31.2	33.0	-1.8	V
1.874	97.3	24.0	0.4	7.9	5.7	31.4	33.0	-1.6	V
1.910	95.7	23.0	0.4	7.9	5.8	30.5	33.0	-2.5	V
_EUT AT Z POSITION (HORIZONTAL)_HORN ANTENNA AT HORIZONTAL POSITION_LOW/MID/HI CH									
1.850	101.0	23.5	0.4	7.8	5.7	30.9	33.0	-2.1	H
1.874	100.5	23.0	0.4	7.9	5.7	30.4	33.0	-2.6	H
1.910	99.3	21.8	0.4	7.9	5.8	29.3	33.0	-3.7	H

VBW=RBW=3MHz

7.5. SECTION 2.1053: FIELD STRENGTH OF SPURIOUS RADIATION

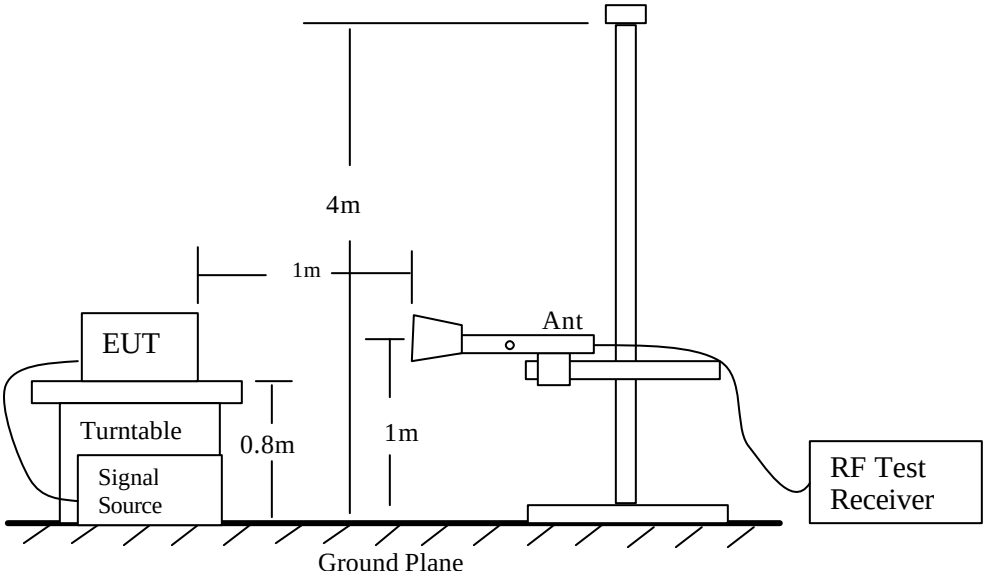
INSTRUMENTS LIST

Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	11/20/2004
RF Filter Section	HP	85420E	3705A00256	11/20/2004
Antenna, Bicon/Log, 25 ~ 2000 MHz	ARA	LPB-2520/A	1185	3/6/2004
Line Filter	Lindgren	LMF-3489	497	CNR
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	10/13/2004
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	10/13/2004
EMI Test Receiver	R & S	ESHS 20	827129/006	7/17/2004
Spectrum Analyzer	HP	E4446A	US42510266	7/23/2004
Communication Tester	R & S	CMU 200	838114/032	11/14/2004
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	9001-3245	2/4/2004
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	2/4/2004
Signal Generator, 10 MHz ~ 20 GHz	HP	83732B	US34490599	4/4/2004
Amplifier 1-26GHz	MITEQ	NSP2600-SP	924342	4/25/2004

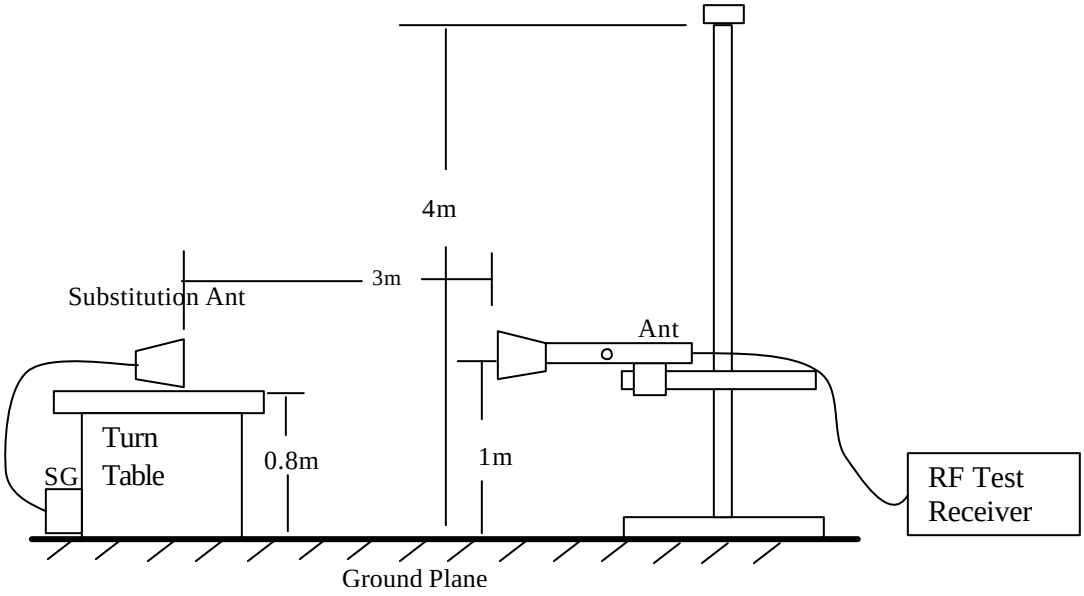
Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak ☐ Average	☒ 1 MHz ☐ 1 MHz	☒ 1 MHz ☐ 10 Hz

TEST SETUP



Radiated Emission Measurement



Radiated Emission – Substitution Method set-up

TEST PROCEDURE

1). On a test site, the EUT shall be placed on a turntable, and in the position closest to the normal use as declared by the user.
2). The test antenna shall be oriented initially for vertical polarization located 1m from the EUT to correspond to the frequency of the transmitter.
3). The output of the test antenna shall be connected to the measuring receiver and either a peak or average detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
4). The transmitter shall be switched on, if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
5). The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
6). The transmitter shall than be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
7). The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
8). The maximum signal level detected by the measuring receiver shall be noted.
9). The transmitter shall be replaced by a substitution antenna.
10). The substitution antenna shall be oriented for vertical polarization.
11). The substitution antenna shall be connected to a calibrated signal generator.
12). If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
13). The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
14). The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
15). The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
16). The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.
17). The measure of the effective radiated power is the larger of the two levels recorded, at the input to the substitution antenna, corrected for the gain of the substitution antenna if necessary.

MEASUREMENT RESULT

No non-compliance noted, as shown below

Radiated Emission, EUT TX at worst position:

GSM 1900MHz - Harmonics & Spurious Emissions: Low, Mid, & High Channels:

1/9/2004		**High Frequency Measurement**						
Compliance Certification Services,Mogan Hill Open Field Site								
Test Engineer:		VIEN TRAN						
Project#:		03U2439						
Company:		SIERRA WIRELESS						
EUT Description:		900/1800/1900MHz						
		DCS, GSM, PCS SMART PHONE						
EUT M/N:		VoqA10						
Test Target:		HARMONIC SPUR_SUBSTITUTION						
		GSM 1900MHz						
Mode Operate:		TX _ SWORST CASE						
		LOW / MID / HI CHANNELS						
Test Equipment:								
EMCO Horn 1-18GHz		Pre-amplifier 1-26GHz				Spectrum Analyzer		
EMCO T73 S/N 6717		T87,NSP 2600-SP				8593EM		
EMCO T73 S/N 3245								
Signal Generator								
R&S SMP04								

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
GSM 1900MHz _ Low Channel								
3700.40	67.80	H	-45.97	2.16	9.46	-34.35	-13.00	-21.35
5550.60	63.00	H	-51.17	2.83	11.29	-37.05	-13.00	-24.05
7400.80	61.00	H	-50.86	3.20	11.47	-36.19	-13.00	-23.19
9251.00	56.20	H	-52.24	3.67	11.35	-37.22	-13.00	-24.22
GSM 1900MHz _ Mid Channel								
4943.96	67.30	H	-46.95	2.71	10.93	-33.31	-13.00	-20.31
7413.08	62.60	H	-49.24	3.20	11.47	-34.57	-13.00	-21.57
9887.92	60.80	H	-46.18	3.91	12.40	-29.87	-13.00	-16.87
12359.15	55.40	H	-53.33	3.76	12.49	-37.08	-13.00	-24.08
GSM 1900MHz _ High Channel								
4943.96	66.90	H	-47.35	2.71	10.93	-33.71	-13.00	-20.71
7413.08	62.20	H	-49.64	3.20	11.47	-34.97	-13.00	-21.97
9887.92	60.60	H	-46.38	3.91	12.40	-30.07	-13.00	-17.07
12359.15	55.40	H	-53.33	3.76	12.49	-37.08	-13.00	-24.08

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
GSM 1900MHz _ Low Channel								
3700.40	65.60	V	-48.02	2.16	9.46	-36.41	-13.00	-23.41
5550.60	57.20	V	-57.21	2.83	11.29	-43.09	-13.00	-30.09
7400.80	60.10	V	-52.59	3.20	11.47	-37.92	-13.00	-24.92
9251.00	53.30	V	-56.64	3.67	11.35	-41.62	-13.00	-28.62
GSM 1900MHz _ Mid Channel								
3748.00	66.10	V	-47.45	2.18	9.49	-35.79	-13.00	-22.79
7415.95	58.00	V	-54.67	3.20	11.47	-40.00	-13.00	-27.00
9887.90	61.30	V	-46.95	3.91	12.40	-30.65	-13.00	-17.65
12359.95	54.00	V	-54.83	3.76	12.49	-38.58	-13.00	-25.58
GSM 1900MHz _ Mid Channel								
3819.80	64.70	V	-48.73	2.22	9.54	-36.98	-13.00	-23.98
5729.70	56.60	V	-57.84	2.86	11.37	-43.61	-13.00	-30.61
7939.60	59.80	V	-52.02	3.45	11.32	-37.26	-13.00	-24.26
9549.50	53.70	V	-55.46	3.78	11.83	-39.85	-13.00	-26.85

GPRS 1900MHz - Harmonics & Spurious Emissions: Low, Mid, & High Channels:

1/9/2004		**High Frequency Measurement**						
Compliance Certification Services,Mogan Hill Open Field Site								
Test Engineer:		VIEN TRAN						
Project#:		03U2439						
Company:		SIERRA WIRELESS						
EUT Description:		900/1800/1900MHz						
		DCS, GSM, PCS SMART PHONE						
EUT M/N:		VoqA10						
Test Target:		HARMONIC SPUR_SUBSTITUTION						
		GPRS 1900MHz						
Mode Operate:		TX _ SWORST CASE						
		LOW / MID / HI CHANNELS						
Test Equipment:								
EMCO Horn 1-18GHz		Pre-amplifier 1-26GHz				Spectrum Analyzer		
EMCO T73 S/N 6717		T87,NSP 2600-SP				8593EM		
EMCO T73 S/N 3245								
Signal Generator								
R&S SMP04								

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
GPRS 1900MHz _ Low Channel								
3700.40	68.80	H	-44.97	2.16	9.46	-33.35	-13.00	-20.35
5550.60	64.00	H	-50.17	2.83	11.29	-36.05	-13.00	-23.05
7400.80	62.00	H	-49.86	3.20	11.47	-35.19	-13.00	-22.19
9251.00	57.20	H	-51.24	3.67	11.35	-36.22	-13.00	-23.22
GPRS 1900MHz _ Mid Channel								
4943.96	67.80	H	-46.45	2.71	10.93	-32.81	-13.00	-19.81
7413.08	63.10	H	-48.74	3.20	11.47	-34.07	-13.00	-21.07
9887.92	61.30	H	-45.68	3.91	12.40	-29.37	-13.00	-16.37
12359.15	55.90	H	-52.83	3.76	12.49	-36.58	-13.00	-23.58
GPRS 1900MHz _ High Channel								
4943.96	67.40	H	-46.85	2.71	10.93	-33.21	-13.00	-20.21
7413.08	62.70	H	-49.14	3.20	11.47	-34.47	-13.00	-21.47
9887.92	61.10	H	-45.88	3.91	12.40	-29.57	-13.00	-16.57
12359.15	55.90	H	-52.83	3.76	12.49	-36.58	-13.00	-23.58

Frequency (MHz)	Reading level (dBuV)	Antenna Polarization	S.G. (dBm)	Cable loss (dB)	Ant.Gain (dBi)	Emission level (dBm)	Limit (dBm)	Margin (dB)
GPRS 1900MHz _ Low Channel								
3700.40	66.50	V	-47.12	2.16	9.46	-35.51	-13.00	-22.51
5550.60	58.10	V	-56.31	2.83	11.29	-42.19	-13.00	-29.19
7400.80	61.00	V	-51.69	3.20	11.47	-37.02	-13.00	-24.02
9251.00	54.20	V	-55.74	3.67	11.35	-40.72	-13.00	-27.72
GPRS 1900MHz _ Mid Channel								
3748.00	67.00	V	-46.55	2.18	9.49	-34.89	-13.00	-21.89
7415.95	58.90	V	-53.77	3.20	11.47	-39.10	-13.00	-26.10
9887.90	62.20	V	-46.05	3.91	12.40	-29.75	-13.00	-16.75
12359.95	54.90	V	-53.93	3.76	12.49	-37.68	-13.00	-24.68
GPRS 1900MHz _ Mid Channel								
3819.80	65.60	V	-47.83	2.22	9.54	-36.08	-13.00	-23.08
5729.70	57.50	V	-56.94	2.86	11.37	-42.71	-13.00	-29.71
7939.60	60.70	V	-51.12	3.45	11.32	-36.36	-13.00	-23.36
9549.50	54.60	V	-54.56	3.78	11.83	-38.95	-13.00	-25.95

7.6. RADIATED EMISSION - DIGITAL TEST

TEST EQUIPMENT LIST

Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	11/20/2004
RF Filter Section	HP	85420E	3705A00256	11/20/2004
Antenna, Bicon/Log, 25 ~ 2000 MHz	ARA	LPB-2520/A	1185	3/6/2004
Line Filter	Lindgren	LMF-3489	497	CNR
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	10/13/2004
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	10/13/2004
EMI Test Receiver	R & S	ESHS 20	827129/006	7/17/2004
Spectrum Analyzer	HP	E4446A	US42510266	7/23/2004
Communication Tester	R & S	CMU 200	838114/032	11/14/2004
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	9001-3245	2/4/2004
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	2/4/2004
Signal Generator, 10 MHz ~ 20 GHz	HP	83732B	US34490599	4/4/2004
Amplifier 1-26GHz	MITEQ	NSP2600-SP	924342	4/25/2004

TEST PERIPHRALS

Device Type	Manufacturer	Model Number	Serial Number	FCC ID
Laptop	HP	10194130	CAT000069915	
MODEM	ACEEX	1414	9013538	IFAXDM1414
USB MOUSE	LOGITECH	M-UA34	LTC70500299	DZL211087
PRINTER	HP	2225C	2930S52614	DSI6XU2225
MICROPHO NE SET	UNKNOWN	UNKNOWN	UNKNOWN	UNKNOWN

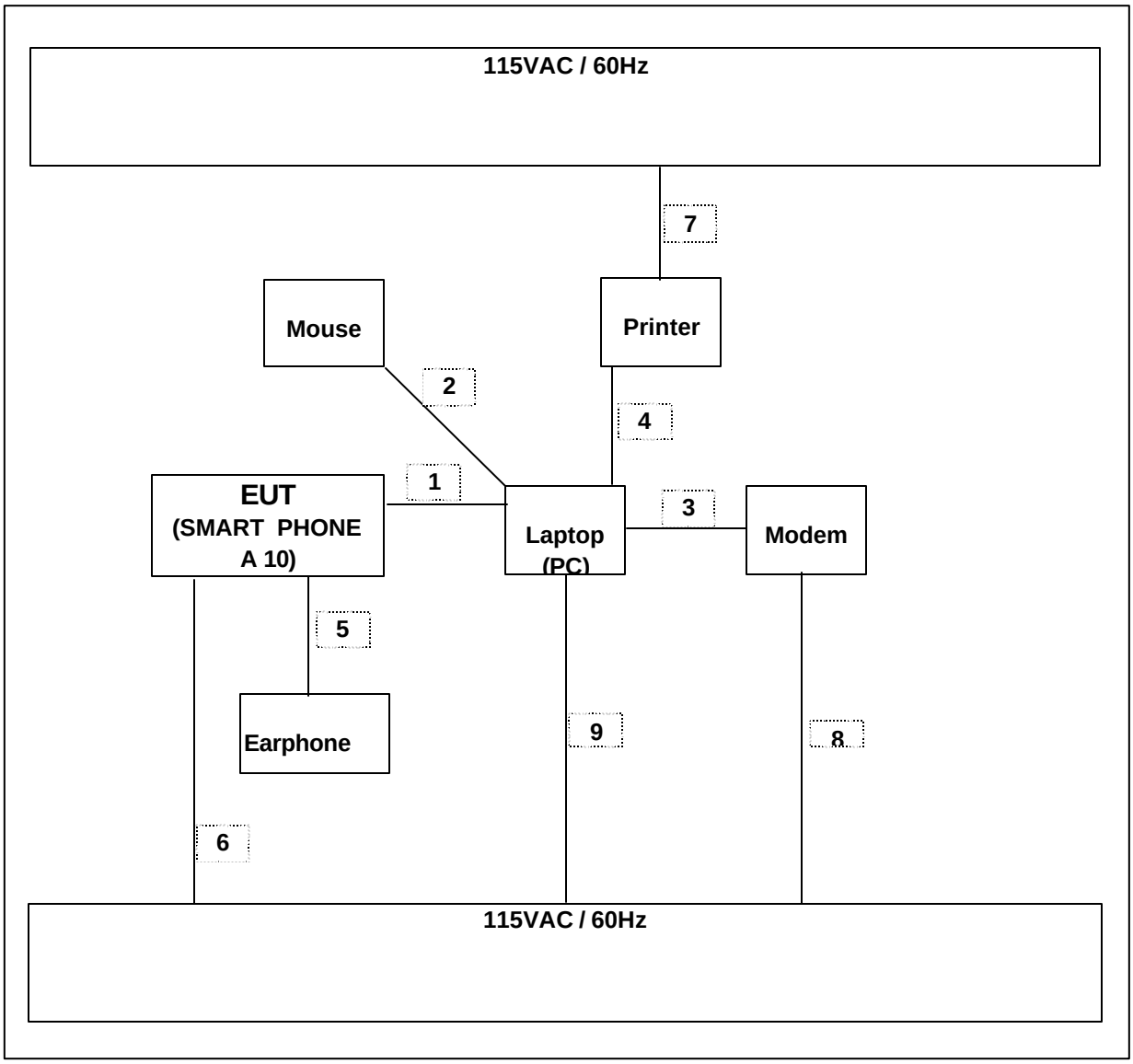
TEST I/O CABLES

Cable No	I/O Port	# of I/O Port	Connector Type	Type of Cable	Cable Length	Data Traffic	Bundled	Remark
1	EUT I/O Port	1	USB	Un-shielded	1 m	Yes	No	EUT: SMART PHONE
2	Mouse	1	USB	Un-shielded	1.5	Yes	No	
3	Serial	1	DB9	Shielded	2 m	Yes	Yes	Fax Modem
4	Parallel	1	DB25	Shielded	2 m	Yes	Yes	Printer
5	EUT I/O Port	1	Din	Un-shielded	0.5 m	Yes	No	Microphone set
6	AC	1	US115V	Un-shielded	2 m	No	Yes	Bundled LC test only
7	AC	1	US115V	Un-shielded	2 m	No	No	
8	AC	1	US115V	Un-shielded	2 m	No	No	
9	AC	1	US115V	Un-shielded	2 m	No	No	

Detector Setting of Spectrum Analyzer

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	☒ Peak ☒ Quasi Peak	☒ 100 KHz ☒ 1 MHz	☒ 100 KHz ☒ 1 MHz

TEST SETUP



TEST PROCEDURE

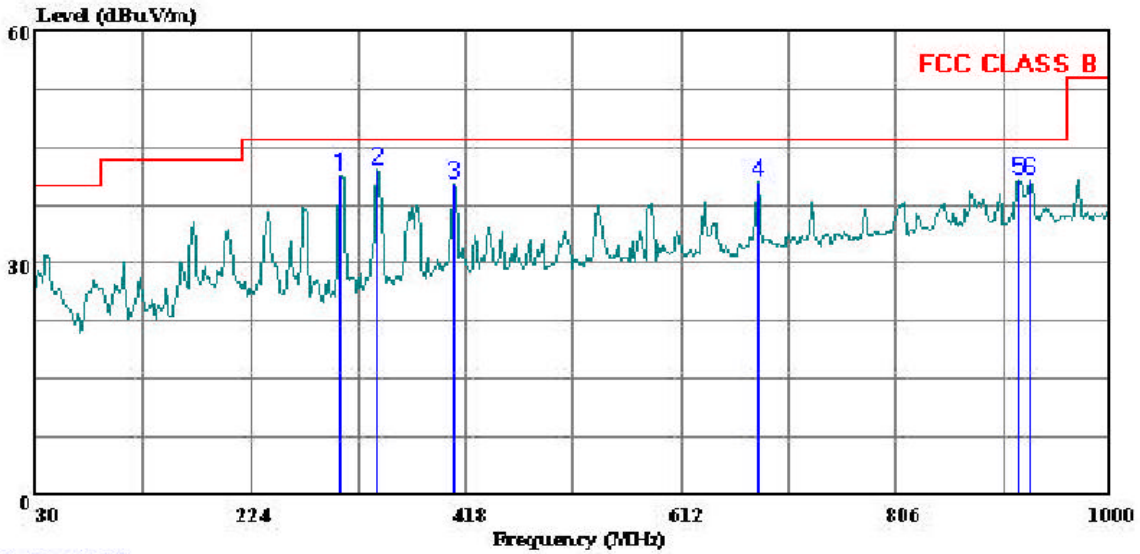
1. The EUT was placed on the turn table 0.8 meter above ground inside 3 meter Anechoic Chamber.
2. Set the resolution bandwidth to 120KHz in the test receiver and select Peak function to scan the frequency below 1 GHz.
3. Shift the interference-receiving antenna located in antenna tower upwards and downwards between 1 and 4 meters above ground and find out the local peak emission on frequency domain.
4. Locate the interference-receiving antenna at the position where the local peak reach the maximum emission.
5. Rotate the turn table and stop at the angle where the measurement device has maximum reading
6. Shift the interference-receiving antenna again to detect the maximum emission of the local peak
7. If the reading of the local peak under Peak function is lower than limit by 6dB, then Quasi Peak detection is not needed and this reading should be recorded. And if it is higher than Peak limit, then the test is fail. Others, switch the receiver to Quasi Peak function, set the resolution bandwidth to 100kHz and repeat the procedures (3)~(6). If the reading is lower than limit, this reading should be recorded, otherwise, the test is fail.

MEASUREMENT RESULT

No non-compliance noted, as shown below.

COMPLIANCE Engineering Services, Inc.
561F Monterey Road
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 8 File#: a11.EMI Date: 01-08-2004 Time: 12:02:46



(Audix ATC)

Trace: 4 Ref Trace:

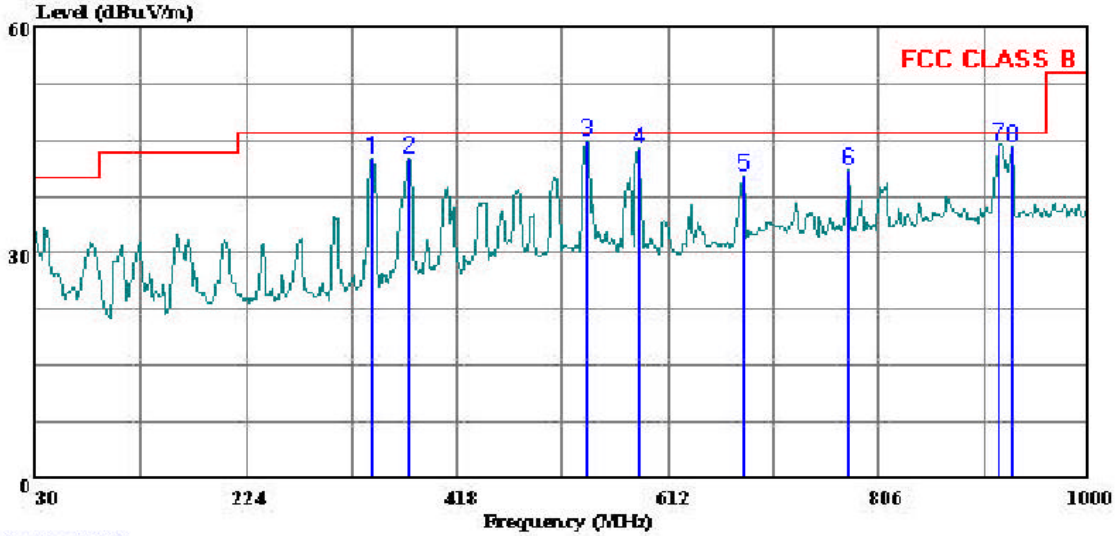
Condition: FCC CLASS B CHAMBER 030306 1185 HORIZONTAL
Test Eng: : Ben Du
Project #: : 03U2439
Company: : SIERRA WIRELESS
EUT: : SMART PHONE
Model No: : A 10
Configuration: : EUT/Laptop
Target of Test: : FCC CLASS B
Mode of Operation: TransferData With Laptop

Page: 1

	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	305.480	Peak	27.33	13.96	41.29	46.00	-4.71
2	337.490	Peak	27.33	14.87	42.20	46.00	-3.80
3	407.330	Peak	23.66	16.65	40.31	46.00	-5.69
4	681.840	Peak	19.39	21.16	40.55	46.00	-5.45
5	916.580	Peak	16.76	23.91	40.67	46.00	-5.33
6	926.280	Peak	16.74	24.02	40.76	46.00	-5.24

COMPLIANCE Engineering Services, Inc.
561F Monterey Road
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 7 File#: a11.EMI Date: 01-08-2004 Time: 12:00:49



(Audix ATC)

Trace: 3 Ref Trace:

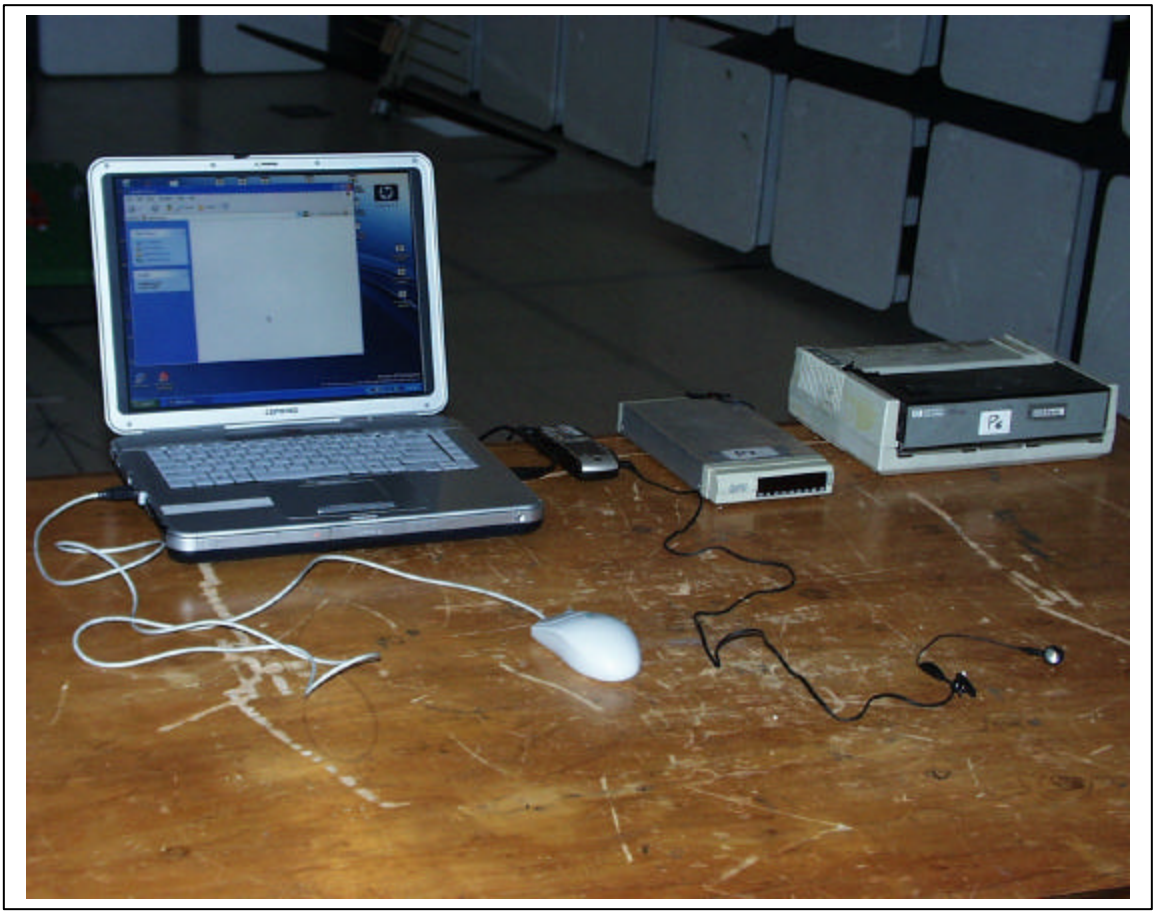
Condition: FCC CLASS B CHAMBER 030306 1185 VERTICAL
Test Eng: : Ben Du
Project #: : 03U2439
Company: : SIERRA WIRELESS
EUT: : SMART PHONE
Model No: : A10
Configuration: : EUT/Laptop
Target of Test: : FCC CLASS B
Mode of Operation: Transfer Data with Laptop

Page: 1

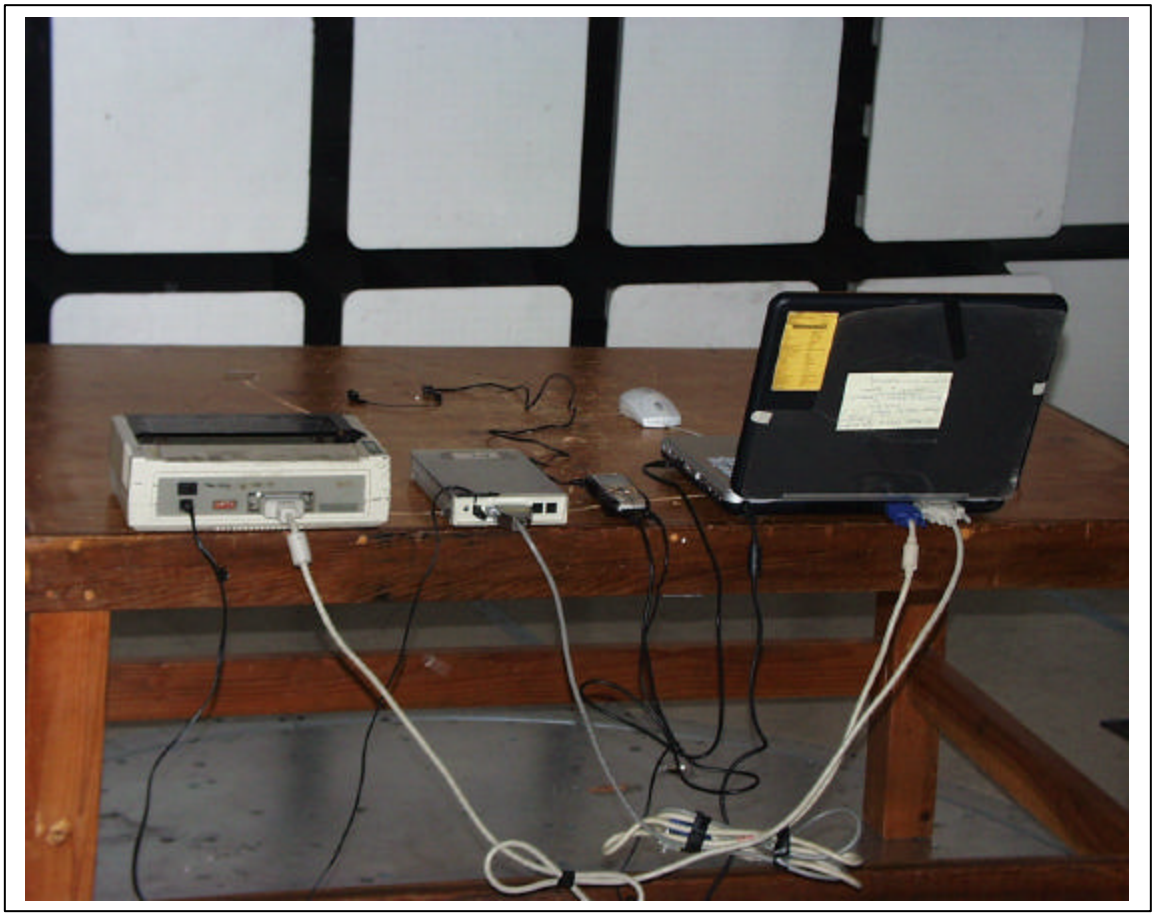
	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	339.430	Peak	27.74	14.93	42.67	46.00	-3.33
2	373.380	Peak	26.70	15.84	42.54	46.00	-3.46
3	536.340	Peak	25.48	19.42	44.90	46.00	-1.10
4	584.840	Peak	23.93	20.06	43.99	46.00	-2.01
5	681.840	Peak	19.22	21.16	40.38	46.00	-5.62
6	778.840	Peak	18.45	22.51	40.96	46.00	-5.04
7	916.580	Peak	20.41	23.91	44.32	46.00	-1.68
8	929.190	Peak	20.22	24.03	44.25	46.00	-1.75

Radiated Emission photos

Front view



Back view

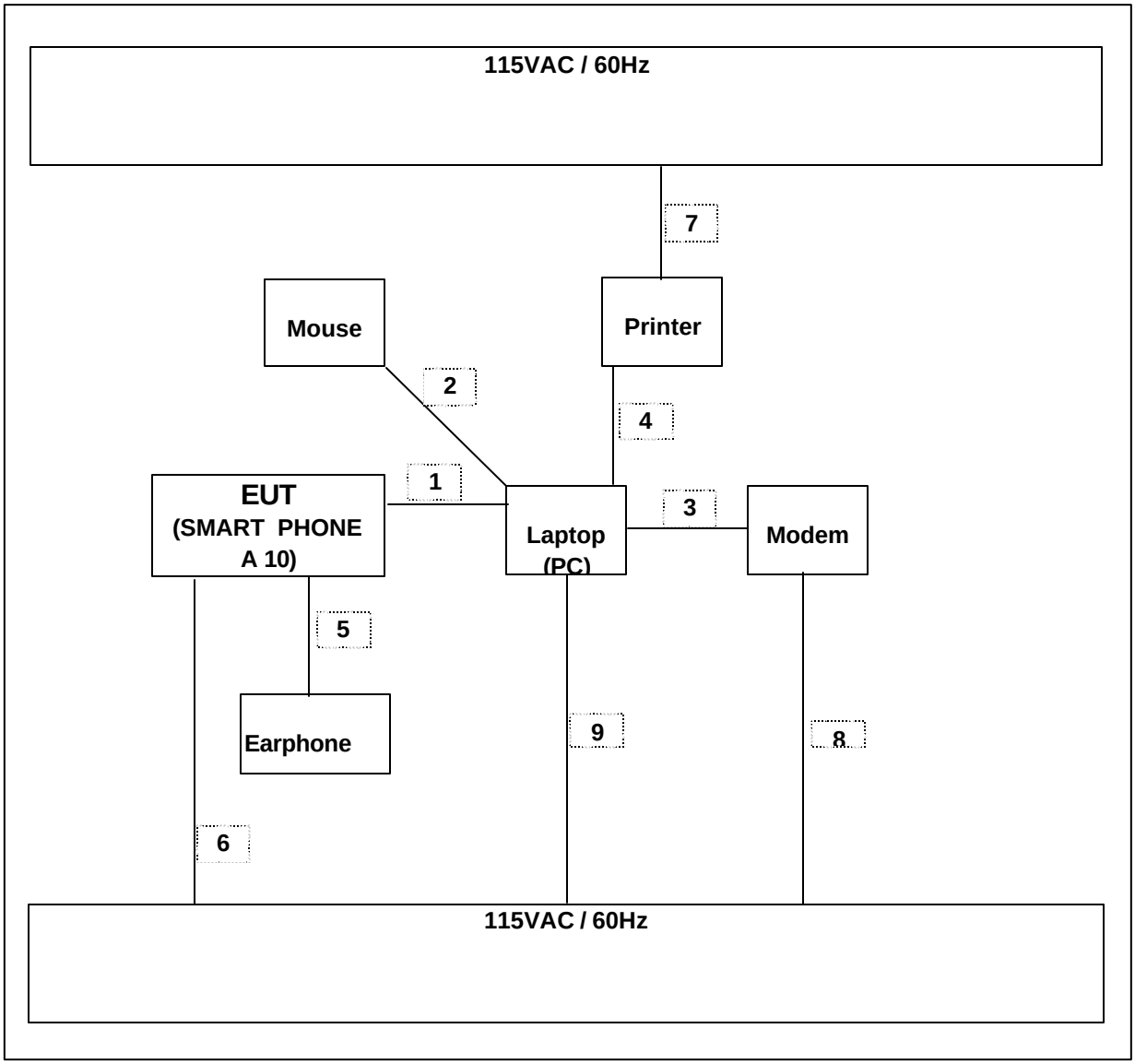


7.7. POWERLINE CONDUCTED EMISSION

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
150 KHz to 30 MHz	☒ Peak ☐ CISPR Quasi Peak	☒ 9 KHz	☒ 9 KHz

TEST SETUP



TEST PROCEDURE

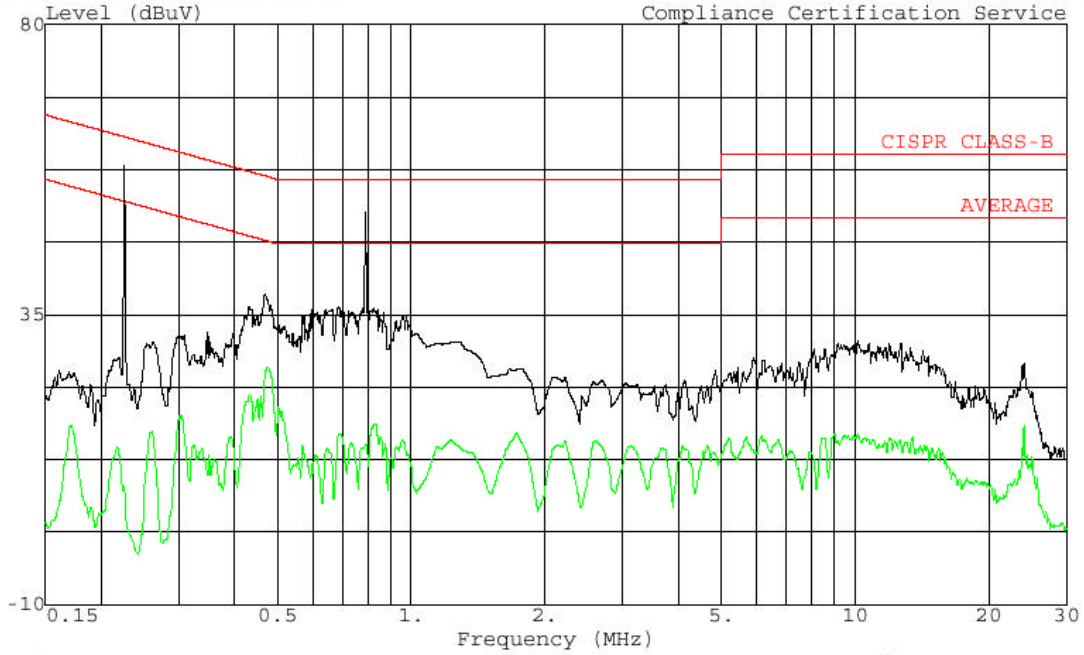
1. The EUT was placed on a wooden table 40 cm from a vertical ground plane and approximately 80 cm above the horizontal ground plane on the floor. The EUT was set to transmit in a continuous mode.

2. Line conducted data was recorded for both NEUTRAL and HOT lines.

MEASUREMENT RESULT
LINE 1

COMPLIANCE Engineering Services, Inc.
561F Monterey Road,
San Jose, CA 95037 USA
Tel: (408) 463-0885
Fax: (408) 463-0888

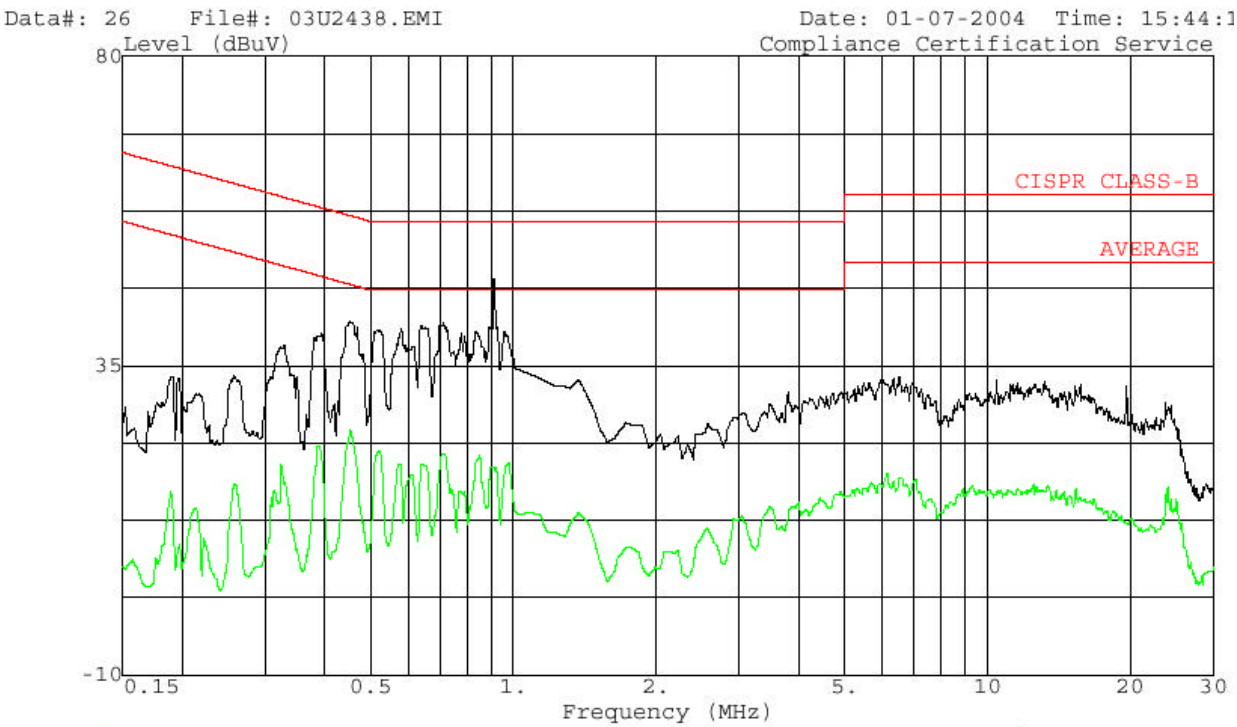
Data#: 33 File#: 03U2438.EMI Date: 01-07-2004 Time: 16:01:11
Level (dBuV) Compliance Certification Service



Trace: 31 Ref Trace:
Project # : 03U2439
Test Operator : Ben Du
Company : SIERRA WIRELESS
EUT : GSM/GPRS Smart Phone
Model : Voq A10
Configuration : EUT, Laptop
Mode of Operation: Trans Data between EUT and Laptop
Target of Test : FCC Class B
Voltage : 115Vac/60Hz
: L1:Peak (BLACK), Avrage (GREEN)

LINE 2

COMPLIANCE Engineering Service, Inc.
561F Monterey Road,
San Jose, CA 95037
Tel: (408) 463-0885
Fax: (408) 463-0888



Trace: 24 Ref Trace:
Project # : 03U2439
Test Operator : Ben Du
Company : SIERRA WIRELESS
EUT : GSM/GPRS Smart Phone
Model : Voq A10
Configuration : EUT, Laptop
Mode of Operation: Trans Data between EUT and Laptop
Target of Test : FCC Class B
Voltage : 115Vac/60Hz
: L2:Peak (BLACK), Avrage (GREEN)

LINE CONDUCTION DATA

CONDUCTED EMISSIONS DATA (115VAC 60Hz)

Freq.	Reading			Closs	Limit	EN_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.44	52.30	--	4.59	0.00	56.00	46.00	-3.70	-41.41	L1
0.76	50.98	--	3.95	0.00	56.00	46.00	-5.02	-42.05	L1
4.14	32.48	--	17.72	0.00	56.00	46.00	-23.52	-28.28	L1
0.45	41.40	--	25.70	0.00	57.37	47.37	-15.97	-21.67	L2
0.91	47.66	--	21.86	0.00	56.00	46.00	-8.34	-24.14	L2
19.64	32.02	--	17.45	0.00	60.00	50.00	-27.98	-32.55	L2
6 Worst Data									

LINE CONDUCTION - FRONT

LINE CONDUCTION - BACK

8. APENDIX

8.1. EXTERNAL & INTERNAL PHOTOS

8.2. SCHEMATICS

8.3. BLOCK DIAGRAM

8.4. USER MANUAL

END OF REPORT