FCC CFR47 PART 15 SUBPART C
CERTIFICATION
TEST REPORT

FOR

WIRELESS HAND PC

MODEL NUMBER: S160

FCC ID: A3LS160P

REPORT NUMBER: 02I1733-1

ISSUE DATE: MARCH 7, 2003

Prepared for

SAMSUNG ELECTRONIC CO., LTD
#416, MAETAN-3DONG, PALDAL-GU
SUWON CITY, KYUNGKI-DO 442-742
KOREA

Prepared by

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

TABLE OF CONTENTS

1. TEST RESULT CERTIFICATION

COMPANY NAME: SAMSUNG ELECTRONIC CO., LTD
#416, MAETAN-3DONG, PALDAL-GU
SUWON CITY, GYEONGGI-DO 442-742, KOREA..

EUT DESCRIPTION: WIRELESS HAND PC

MODEL NAME: S160

DATE TESTED: JANUARY 27, 2003 – MARCH 4, 2003

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART C	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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.

Approved & Released For CCS By:

MIKE HECKROTTE
CHIEF ENGINEER
COMPLIANCE CERTIFICATION SERVICES

Tested By:

CHIN PANG
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. EUT DESCRIPTION

The S160 is a Wireless HAND PC that includes a wireless LAN that operates in the 2.412 to 2.462 GHz range. The maximum peak output power is 16.4 dBm (corresponding to 14.96 dBm average measurement). The antenna is an integral Pifa type antenna with a gain of 0 dBi.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, and 15.407.

4. FACILITIES AND ACCREDITATION

4.1. FACILITIES AND EQUIPMENT

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.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

4.2. TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	1300
Japan	VCCI	CISPR 22 Two OATS and one conducted Site	R-1014, R-619, C-640
Norway	NEMKO	EN50081-1, EN50081-2, EN50082-1, EN50082-2, IEC61000-6-1, IEC61000-6-2, EN50083-2, EN50091-2, EN50130-4, EN55011, EN55013, EN55014-1, EN55104, EN55015, EN61547, EN55022, EN55024, EN61000-3-2, EN61000-3-3, EN60945, EN61326-1	ELA 117
Norway	NEMKO	EN60601-1-2 and IEC 60601-1-2, the Collateral Standards for Electro-Medical Products. MDD, 93/42/EEC, AIMD 90/385/EEC	ELA-171
Taiwan	BSMI	CNS 13438	SL2-IN-E-1012
Canada	Industry Canada	RSS210 Low Power Transmitter and Receiver	IC2324 A,B,C, and F

5. CALIBRATION AND UNCERTAINTY

5.1. MEASURING INSTRUMENT CALIBRATION

The measurement instruments utilized to perform the tests documented in this report have been calibrated in accordance with the manufacturer's recommendations, and are traceable to national standards.

5.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Radiated Emission	
30MHz – 200 MHz	+/- 3.3dB
200MHz – 1000MHz	+4.5/-2.9dB
1000MHz – 2000MHz	+4.6/-2.2dB
Power Line Conducted Emission	
150kHz – 30MHz	+/-2.9

Any results falling within the above values are deemed to be marginal.

5.3. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

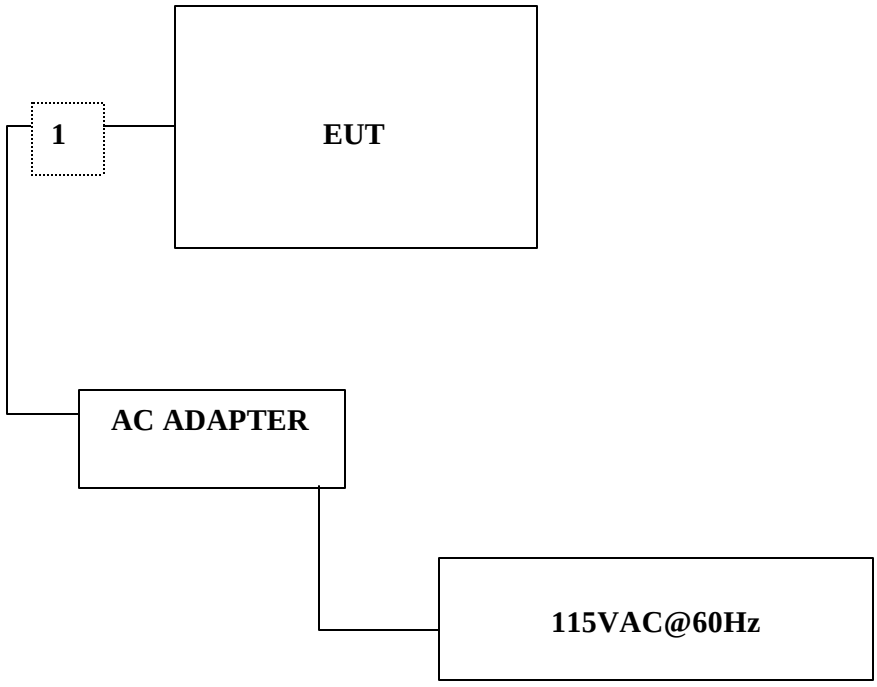
TEST AND MEASUREMENT EQUIPMENT LIST				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due Date
Spectrum Analyzer	HP	8566B	3014A06685	6/1/03
Spectrum Display	HP	85662A	2152A03066	6/1/03
Quasi-Peak Detector	HP	85650A	3145A01654	6/1/03
Preamplifier	HP	8447D	2944A06550	8/22/03
Log Periodic Antenna	EMCO	3146	9107-3163	3/30/03
Biconical Antenna	Eaton	94455-1	1197	3/30/03
Preamplifier (1 - 26.5GHz)	Miteq	NSP10023988	646456	4/26/03
Horn Antenna (1 - 18GHz)	EMCO	3115	6717	2/4/04
Horn Antenna (18 – 26.5GHz)	ARA	MWH 1826/B	1013	11/7/03
High Pass Filter	FSY Microwave	FM-4570-9SS	001	N.C.R.
Power Meter	R & S	NRVD	842093/017	4/18/04
Power Sensor	R & S	NRV-Z51	841275/013	4/18/04
Spectrum Analyzer	Aglient	E4440A	US42221737	9/24/03

6. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Device Type	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Samsung	AD-1005	020600020A	N/A

SETUP DIAGRAM



7. APPLICABLE RULES

§15.247 (a)- BANDWIDTH

(2) For direct sequence systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

§15.247 (b)- POWER OUTPUT

The maximum peak output power of the intentional radiator shall not exceed the following:

(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz , and 5725-5850 MHz bands: 1 watt.

(4) Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

§15.247 (b)- RADIO FREQUENCY EXPOSURE

(5) Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See §1.1307(b)(1) of this chapter.

§15.247 (c)- SPURIOUS EMISSIONS

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in§15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

§15.247 (d)- PEAK POWER SPECTRAL DENSITY

(d) For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

(f) The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

§15.205- RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2] Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.207- CONDUCTED LIMITS

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

§15.209- RADIATED EMISSION LIMITS

(a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

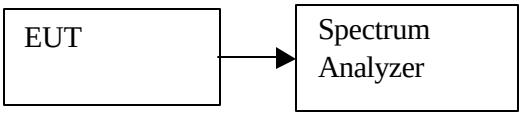
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

(b) In the emission table above, the tighter limit applies at the band edges.

8. TEST SETUP, PROCEDURE AND RESULT

8.1. 6 dB BANDWIDTH

TEST SETUP



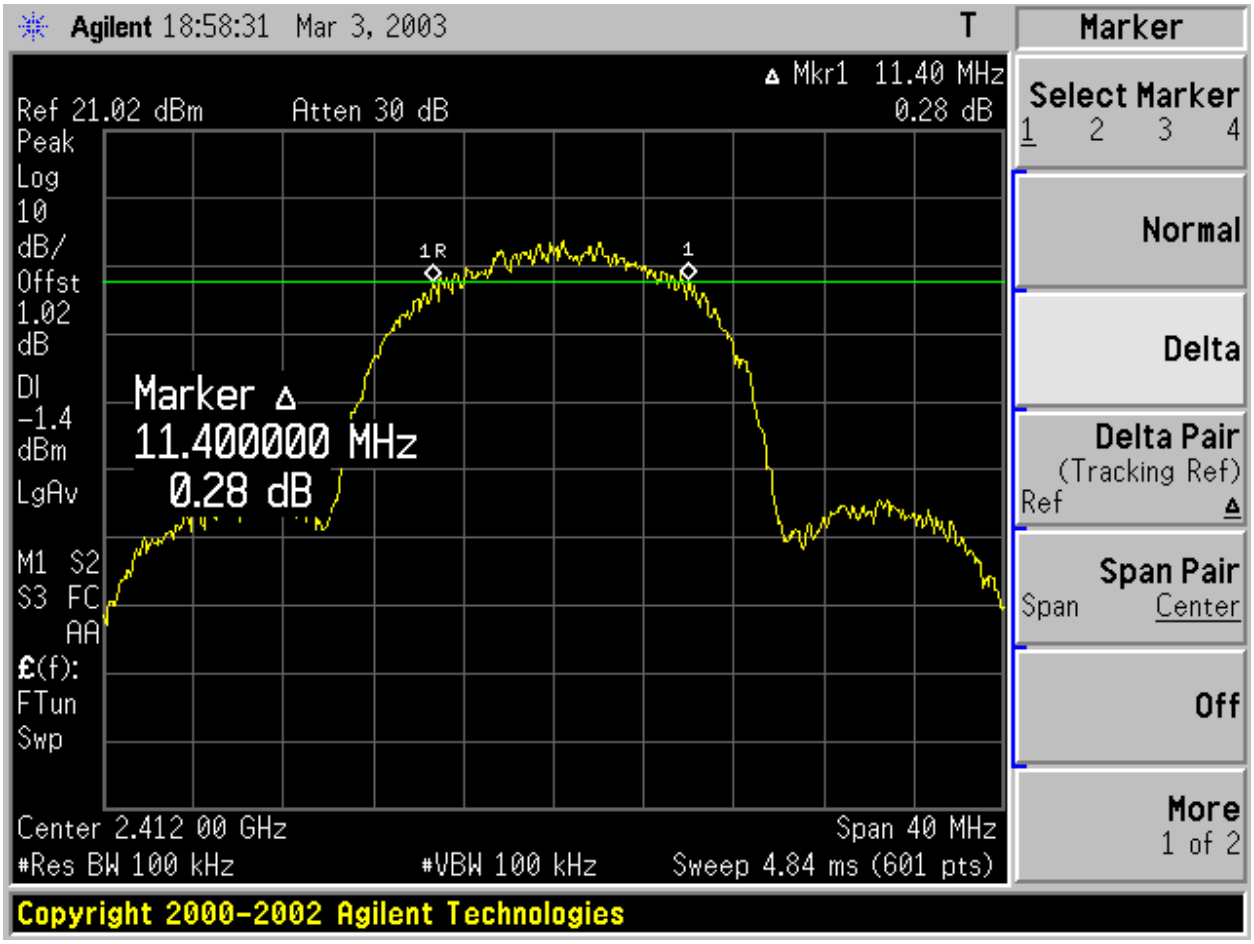
TEST PROCEDURE

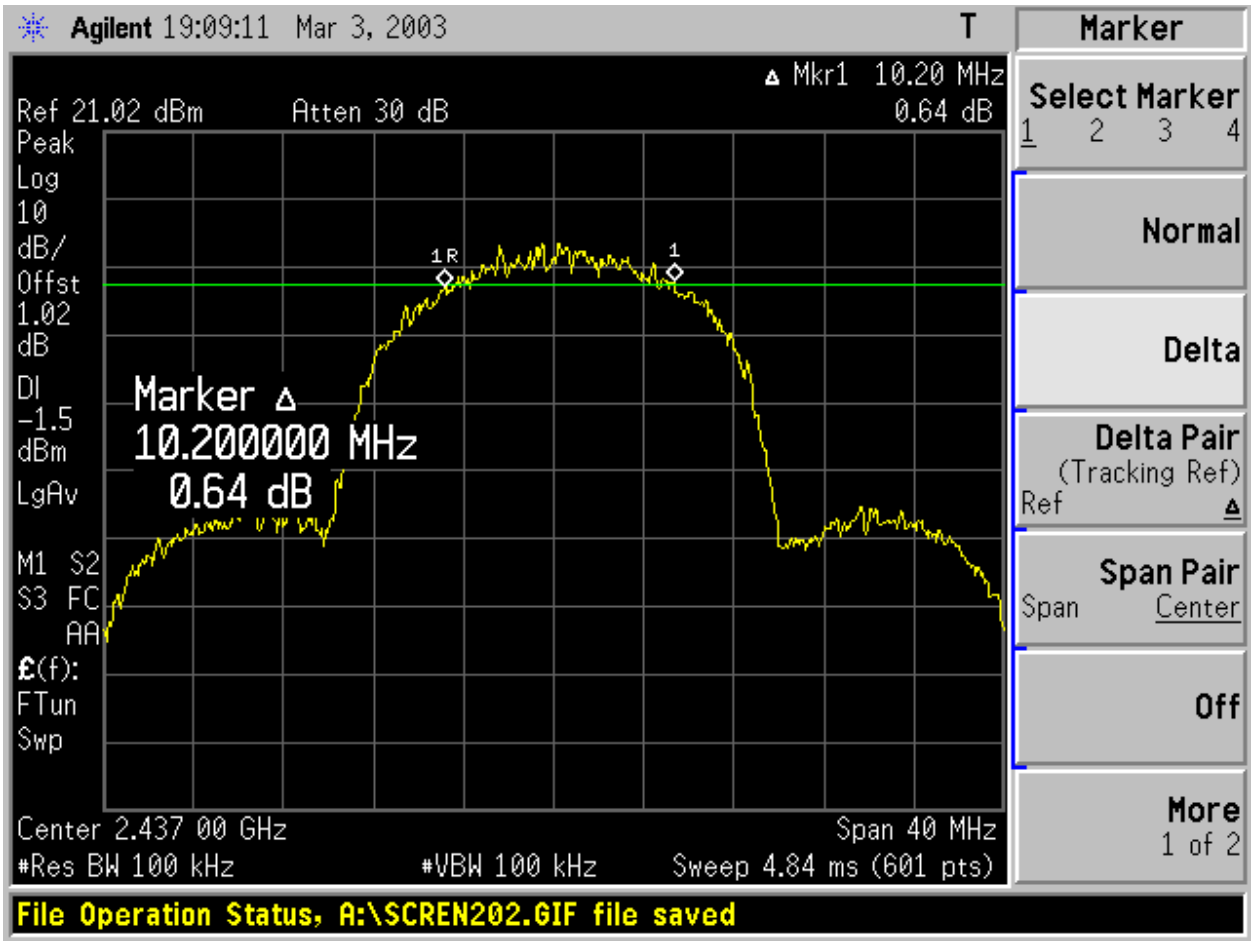
The transmitter output is connected to the spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 100 kHz. The sweep time is coupled.

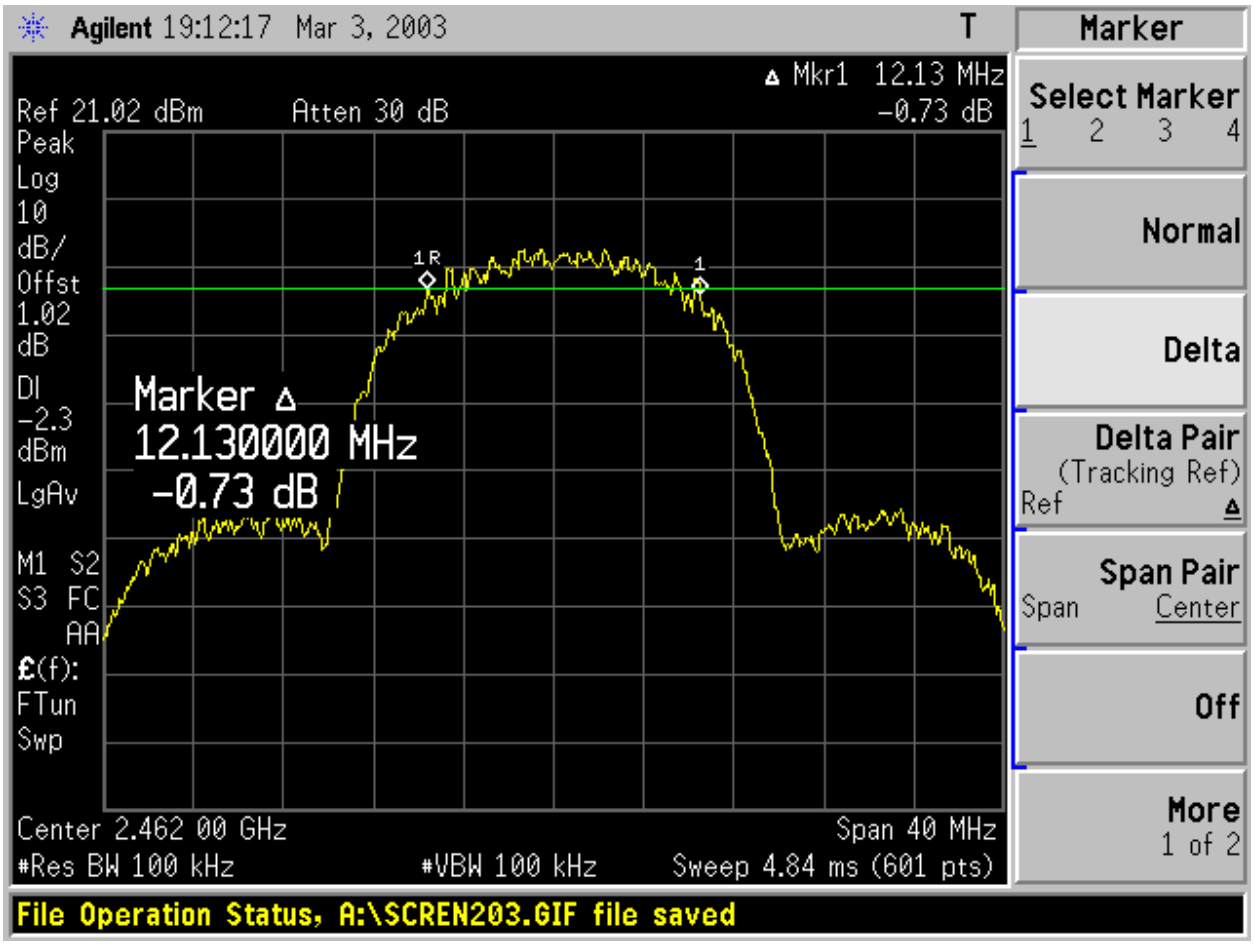
RESULTS

No non-compliance noted:

Channel	Frequency (MHz)	B (kHz)	Limit (kHz)	Margin (kHz)
Low	2412	11400	500	10900
Middle	2437	10200	500	9700
High	2462	12130	500	11630

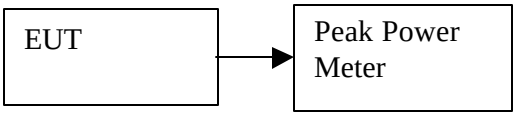






8.2. PEAK POWER

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to the power meter. The power meter is set to read peak power.

LIMIT

The maximum antenna gain = 0 dBi, therefore the limit is 30 dBm.

RESULTS

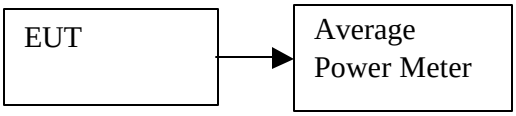
No non-compliance noted:

The cable loss of 1.02 dB was entered into the power meter as an offset to allow for direct reading of power at the antenna port.

Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	16.40	30	-13.60
Middle	2437	15.98	30	-14.02
High	2462	16.00	30	-14.00

8.3. AVERAGE POWER

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to the power meter. The power meter is set to read average power.

LIMIT

None, reporting only.

RESULTS

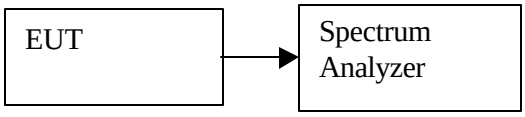
No non-compliance noted:

The cable loss of 1.02 dB was entered into the power meter as an offset to allow for direct reading of power at the antenna port.

Channel	Frequency (MHz)	Average Power (dBm)
Low	2412	14.96
Middle	2437	14.54
High	2462	14.56

8.4. PEAK POWER SPECTRAL DENSITY

TEST SETUP



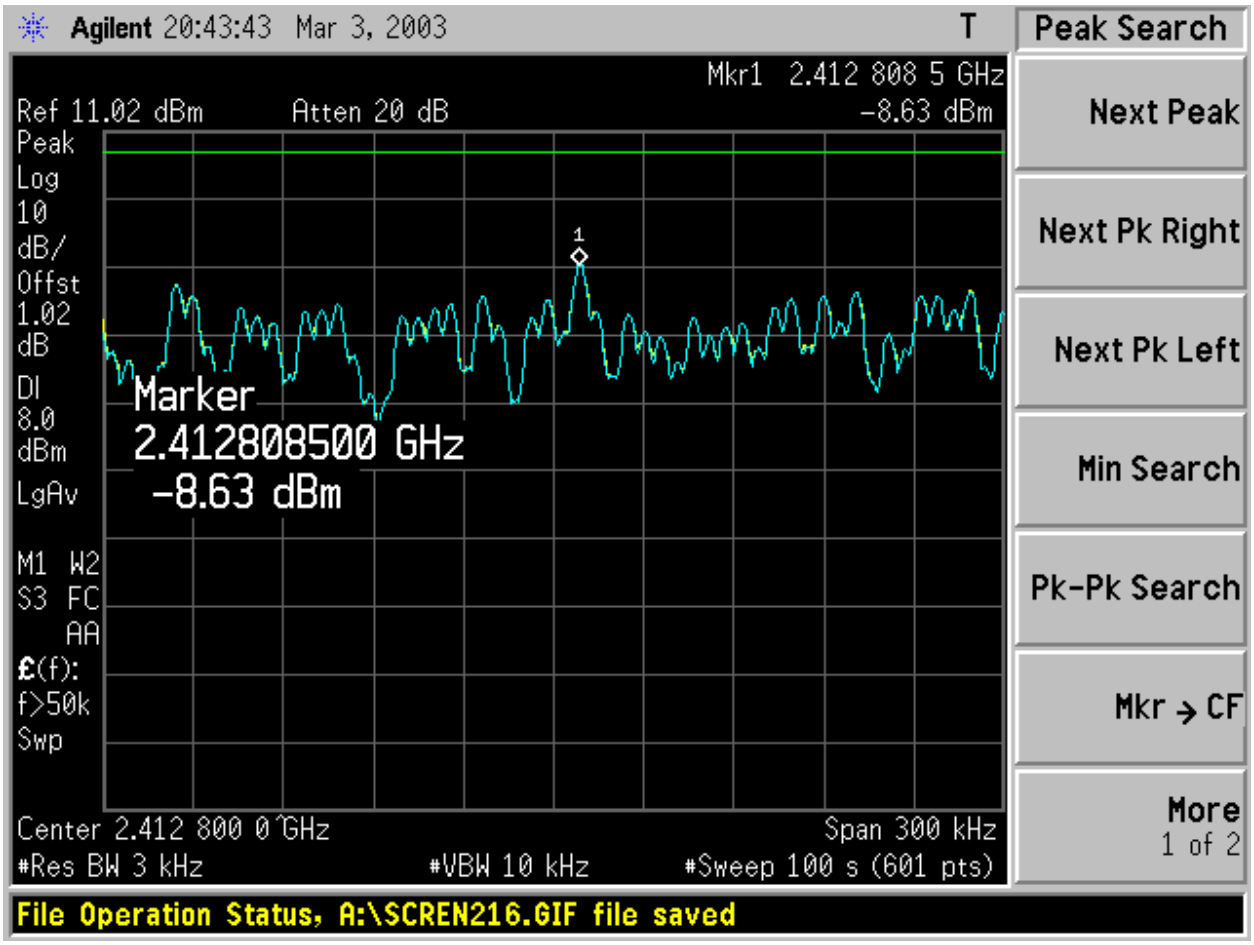
TEST PROCEDURE

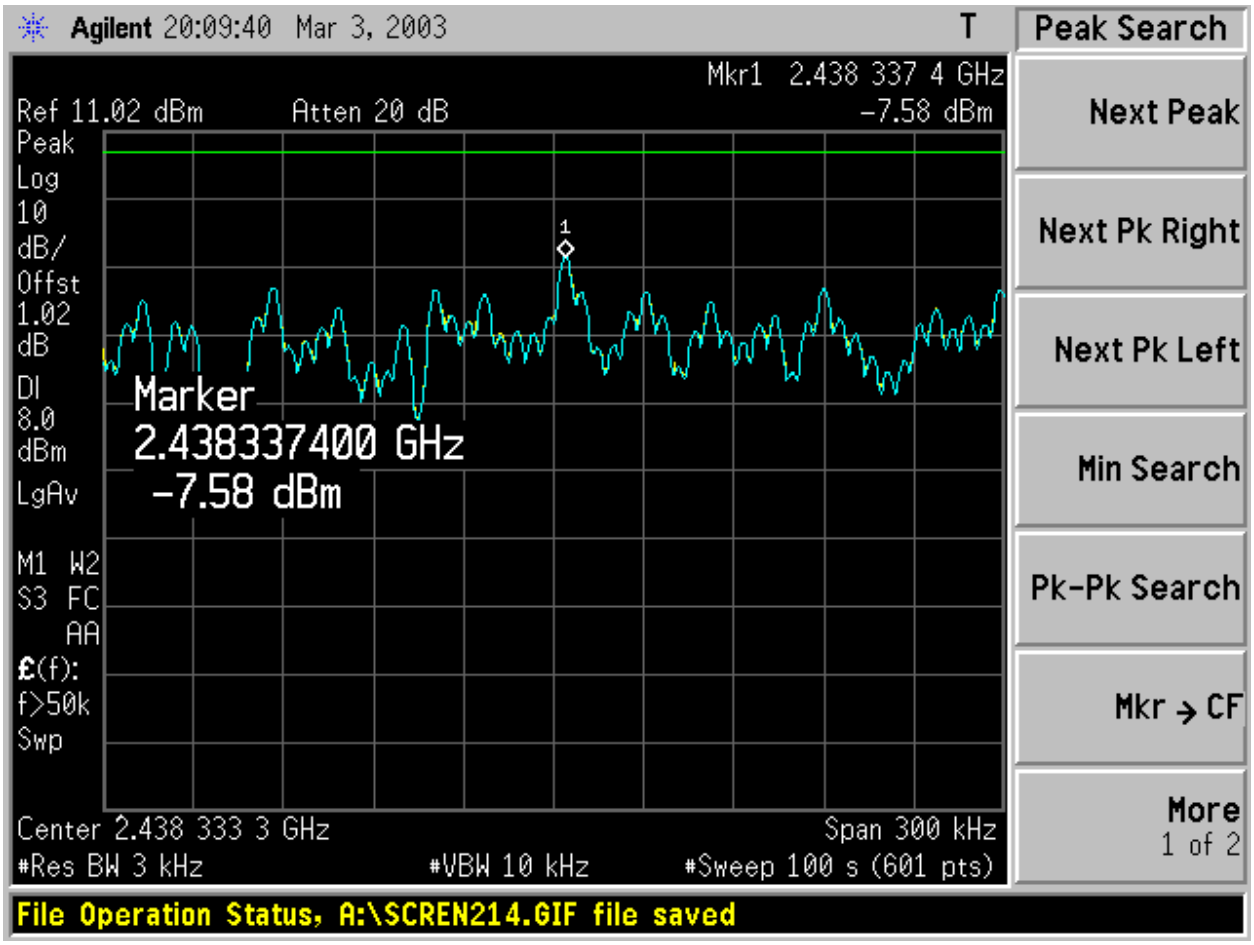
The transmitter output is connected to the spectrum analyzer, the maximum level in a 3 kHz bandwidth is measured with the spectrum analyzer using RBW = 3 kHz and VBW >= 3KHz, sweep time = span / 3 kHz, and video averaging is turned off. The PPSD is the highest level found across the emission in any 3 kHz band.

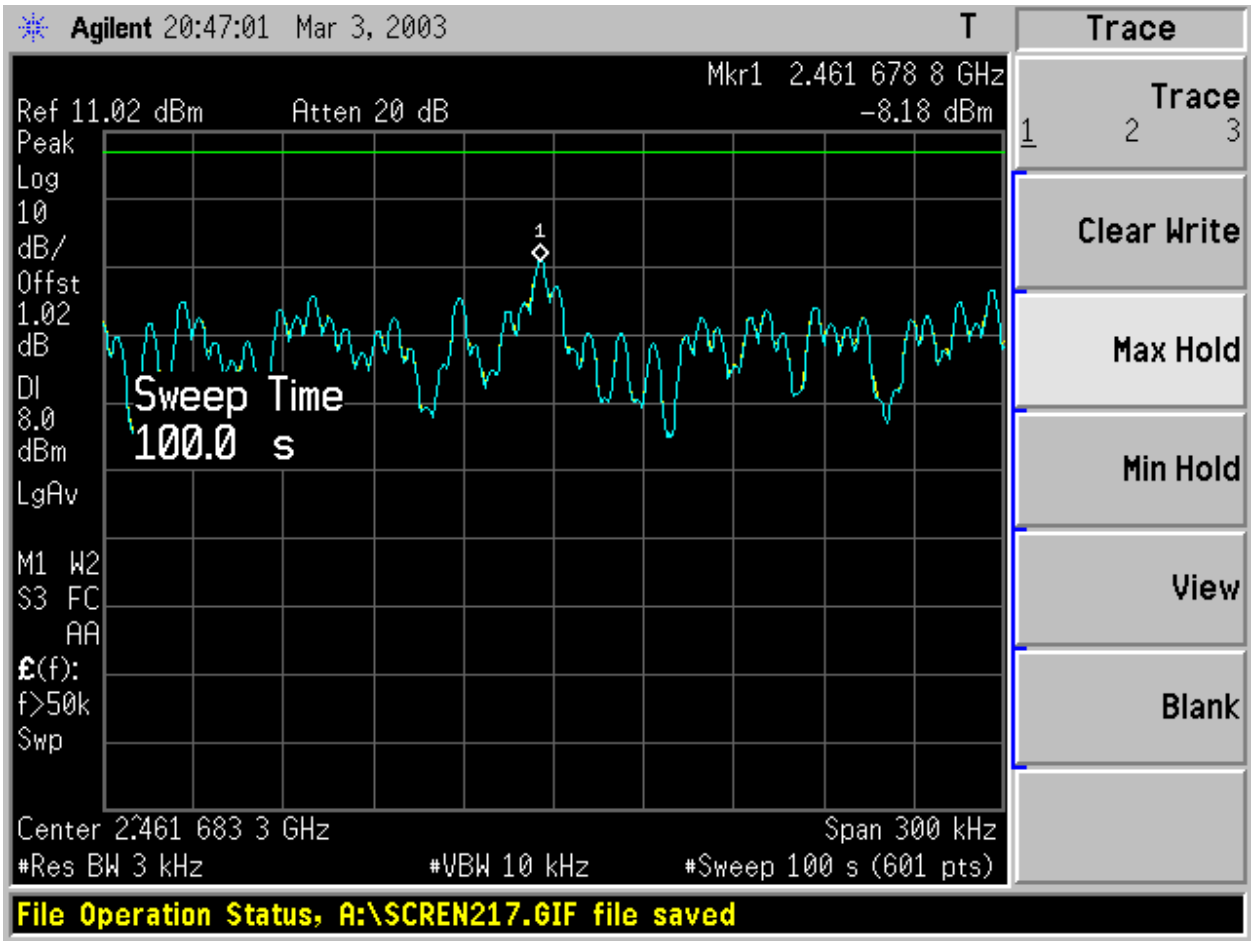
RESULTS

No non-compliance noted:

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-8.63	8	-16.63
Middle	2437	-7.58	8	-15.58
High	2462	-8.18	8	-16.18



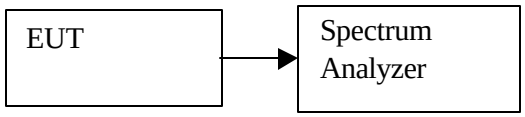




8.5. SPURIOUS EMISSIONS

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

TEST SETUP



TEST PROCEDURE

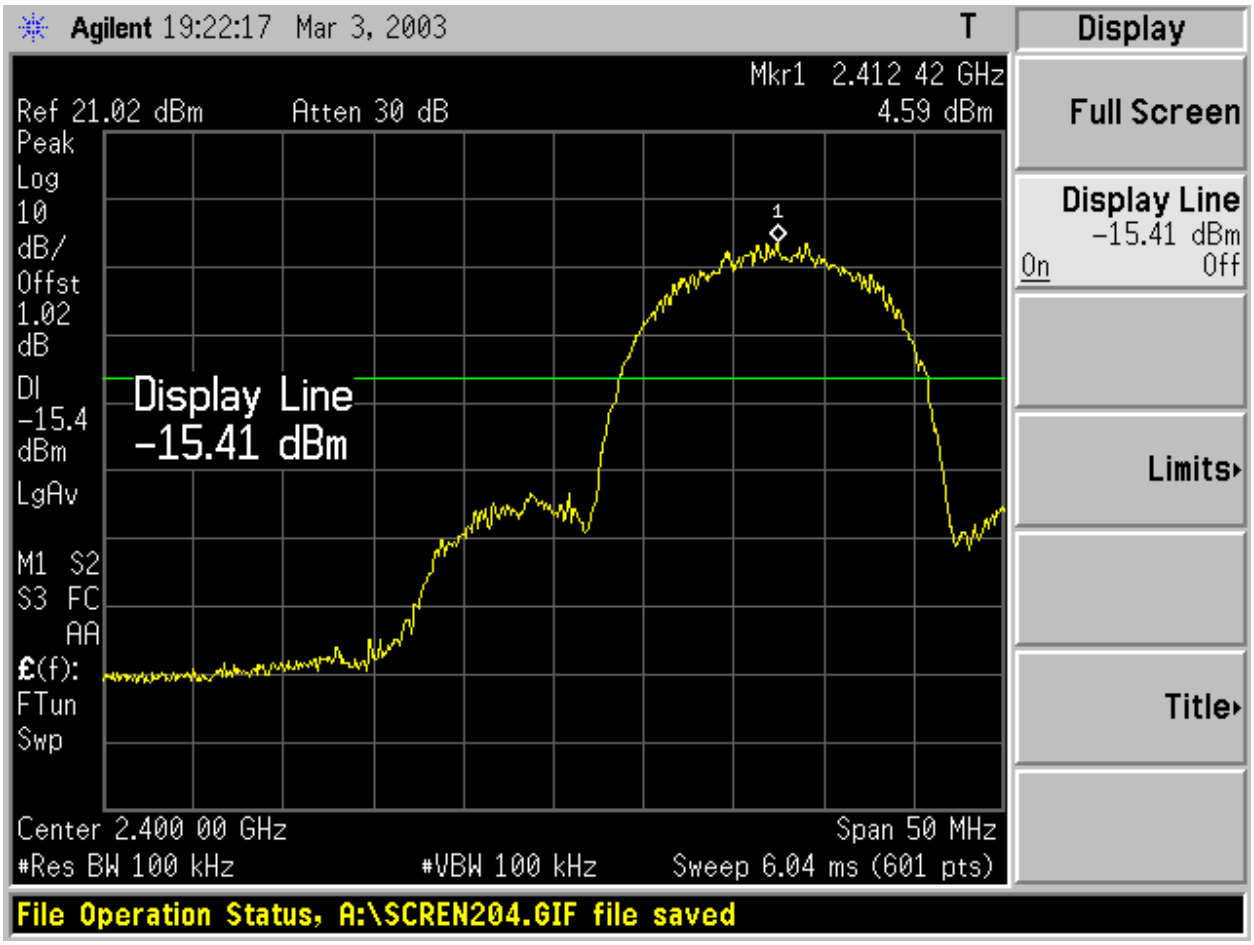
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 100 kHz.

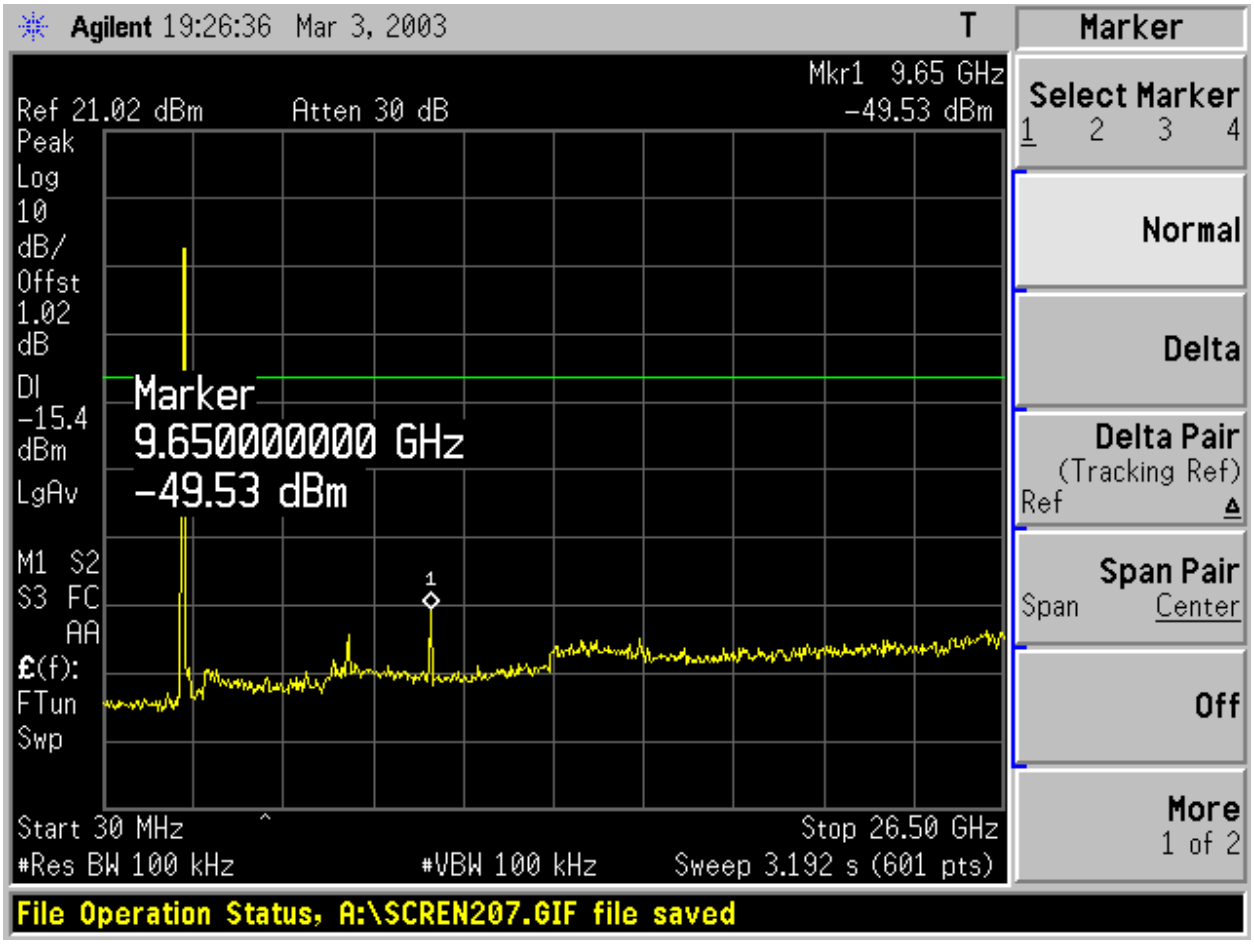
Measurements are made over the 30 MHz to 26.5 GHz range with the transmitter set to the lowest, middle, and highest channels.

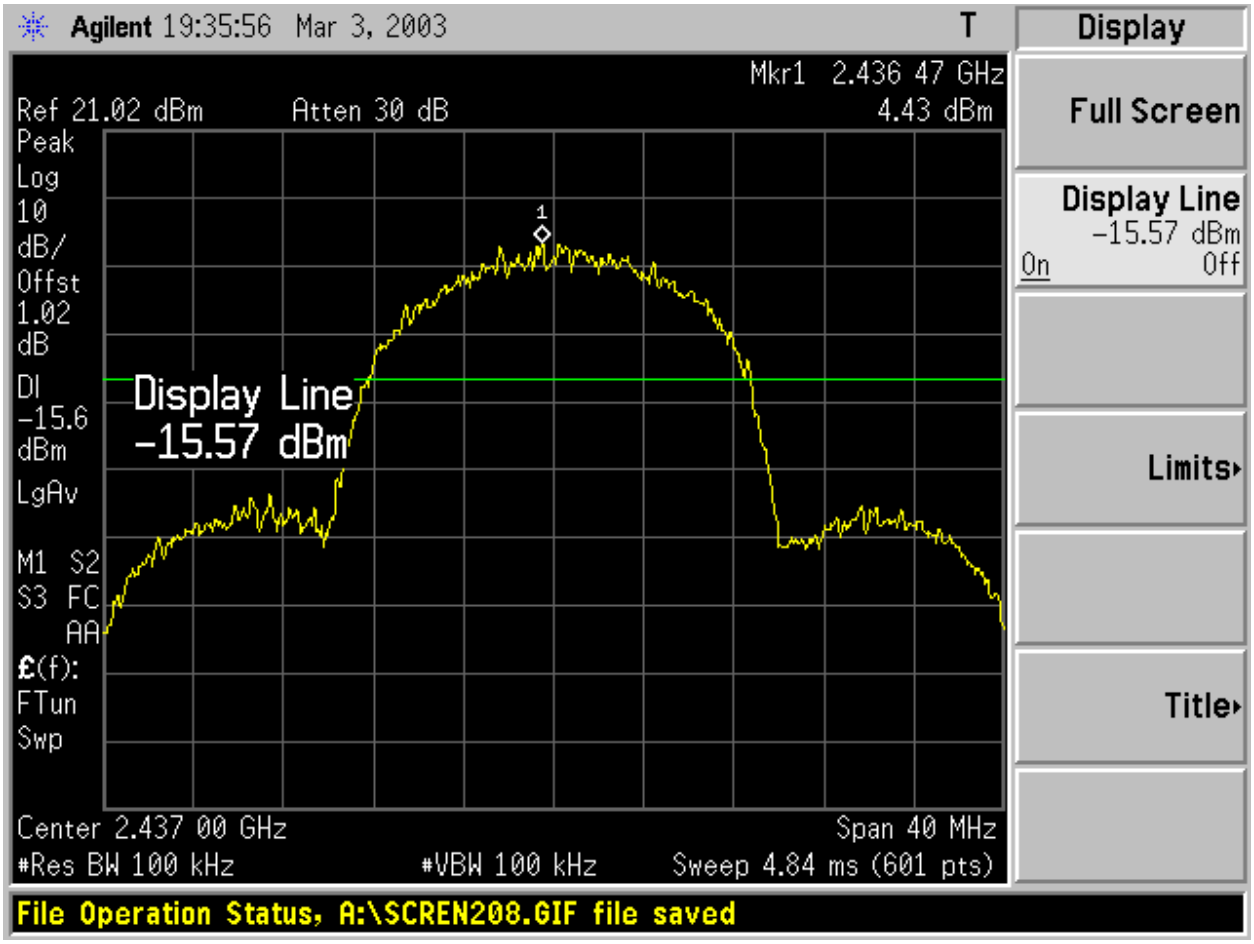
RESULTS

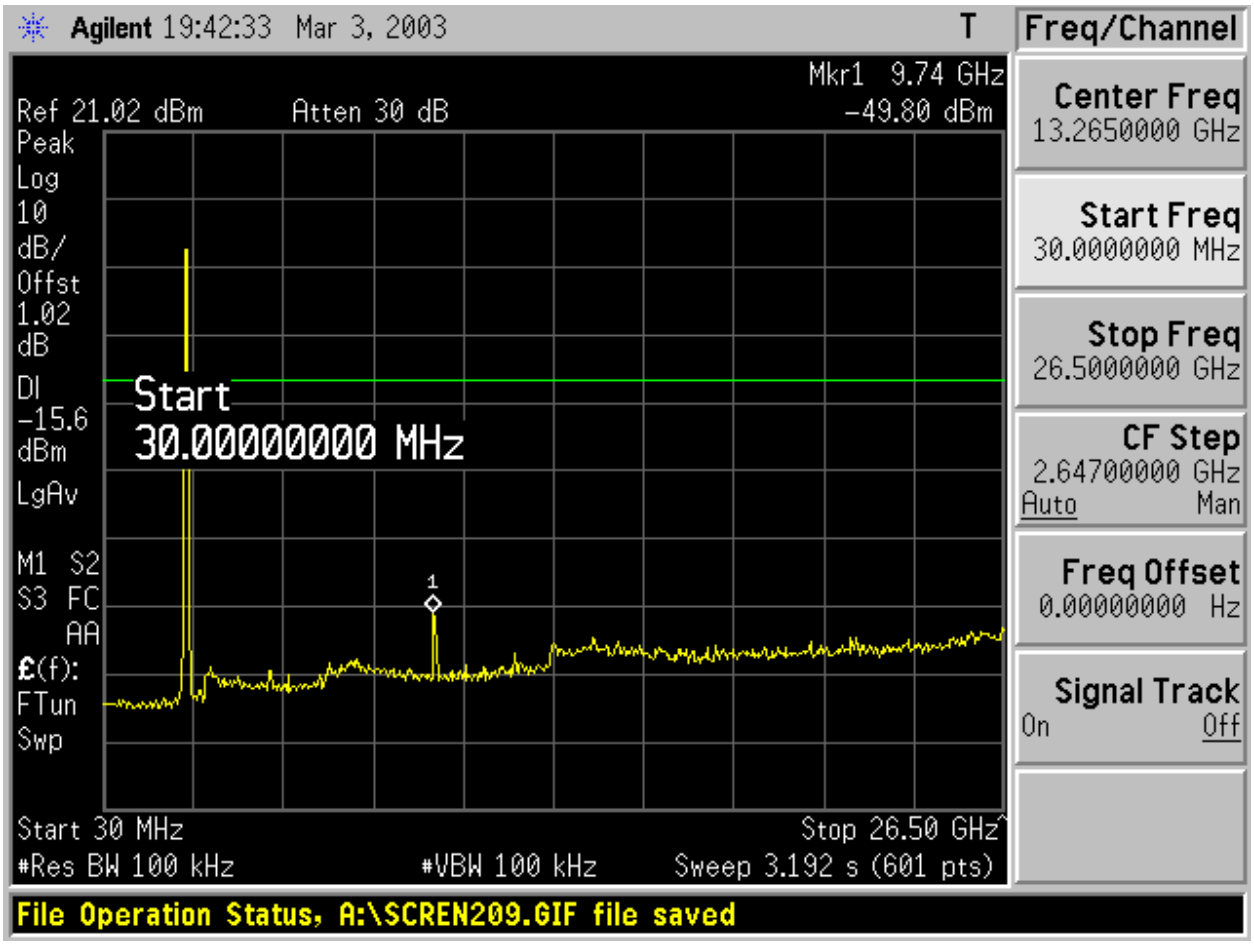
No non-compliance noted:

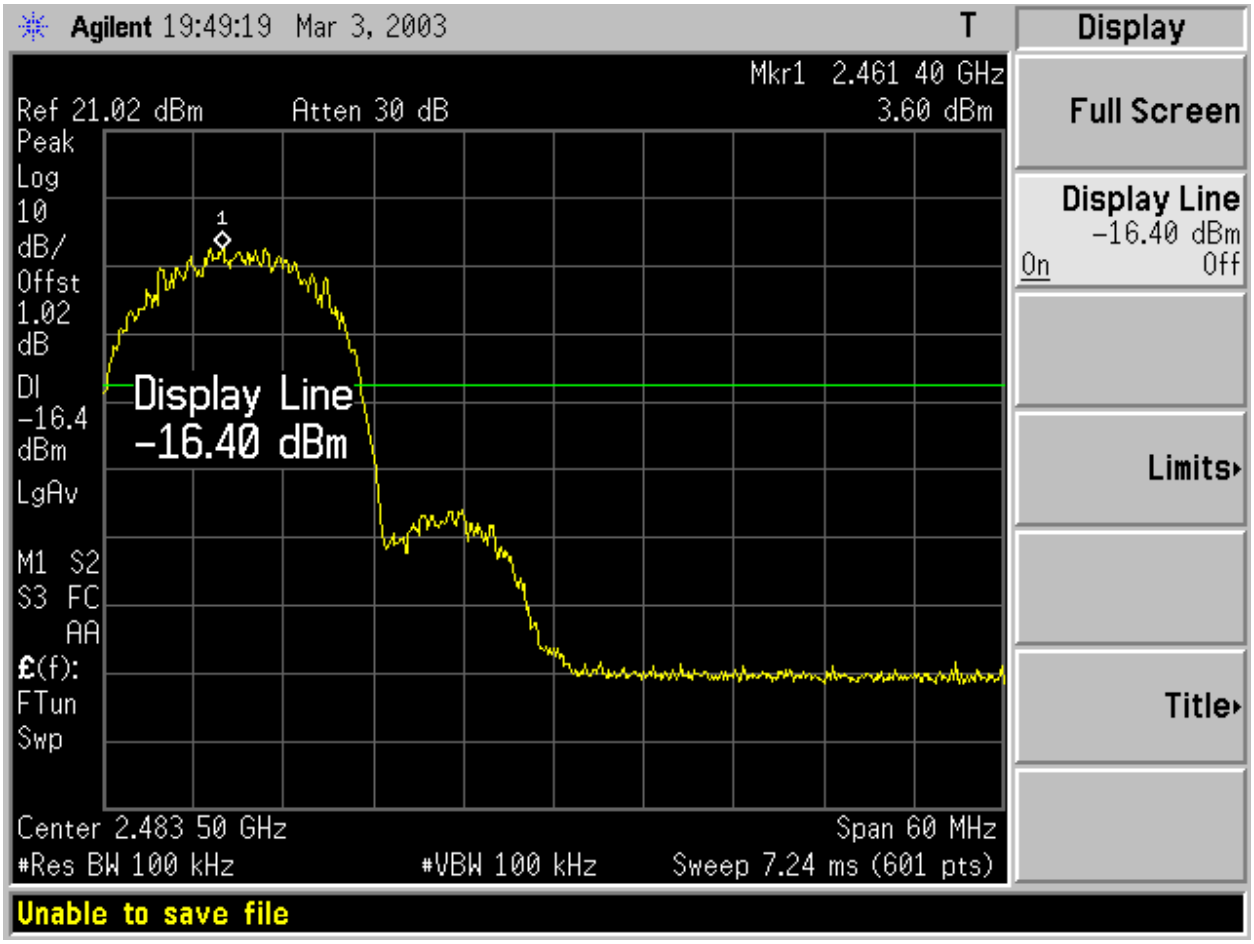
CONDUCTED SPURIOUS EMISSIONS

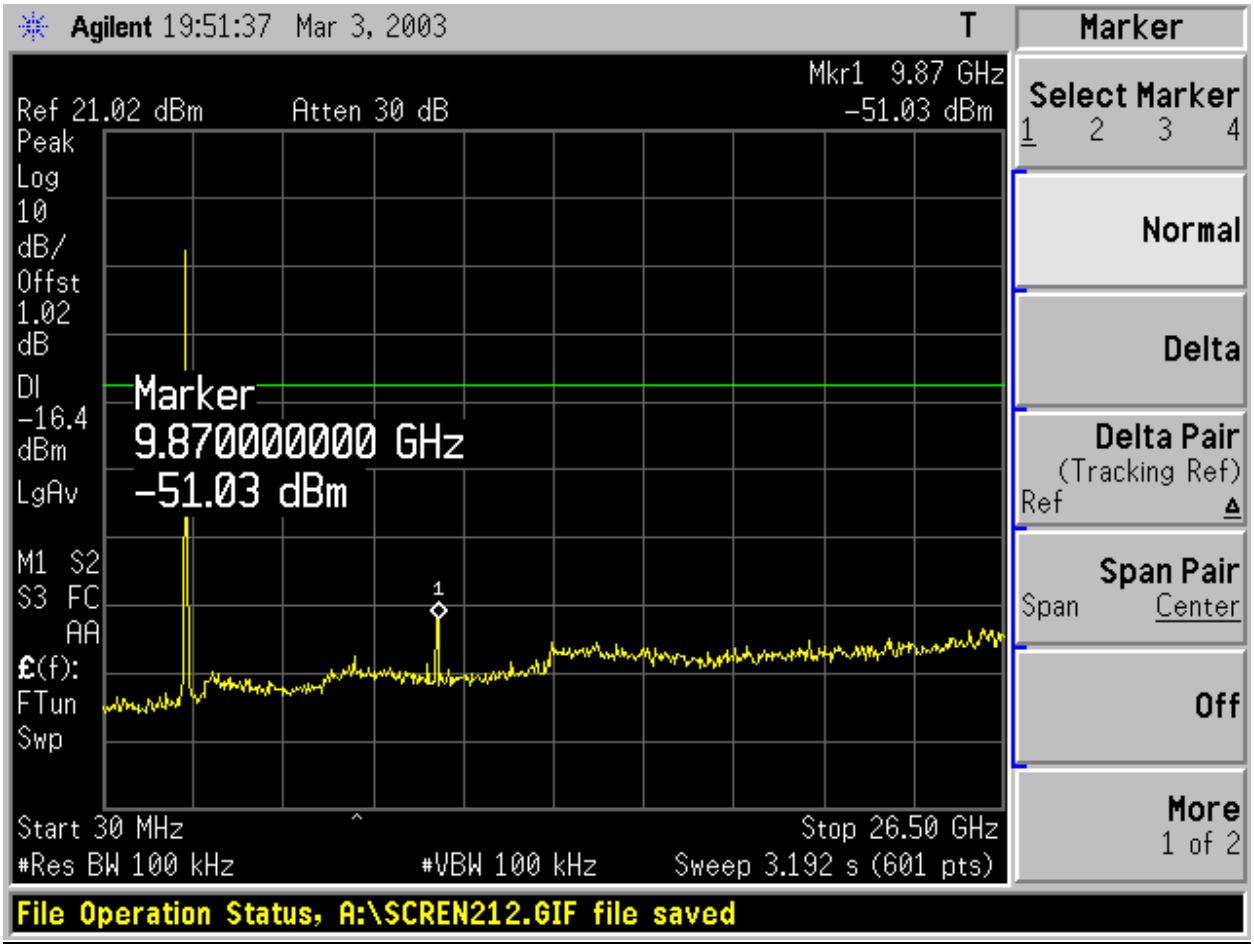












8.6. RADIATED EMISSIONS

TEST SETUP

The EUT is placed on the wooden table. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4/1992.

The EUT is set to transmit in a continuous mode.

TEST PROCEDURE

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz, the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

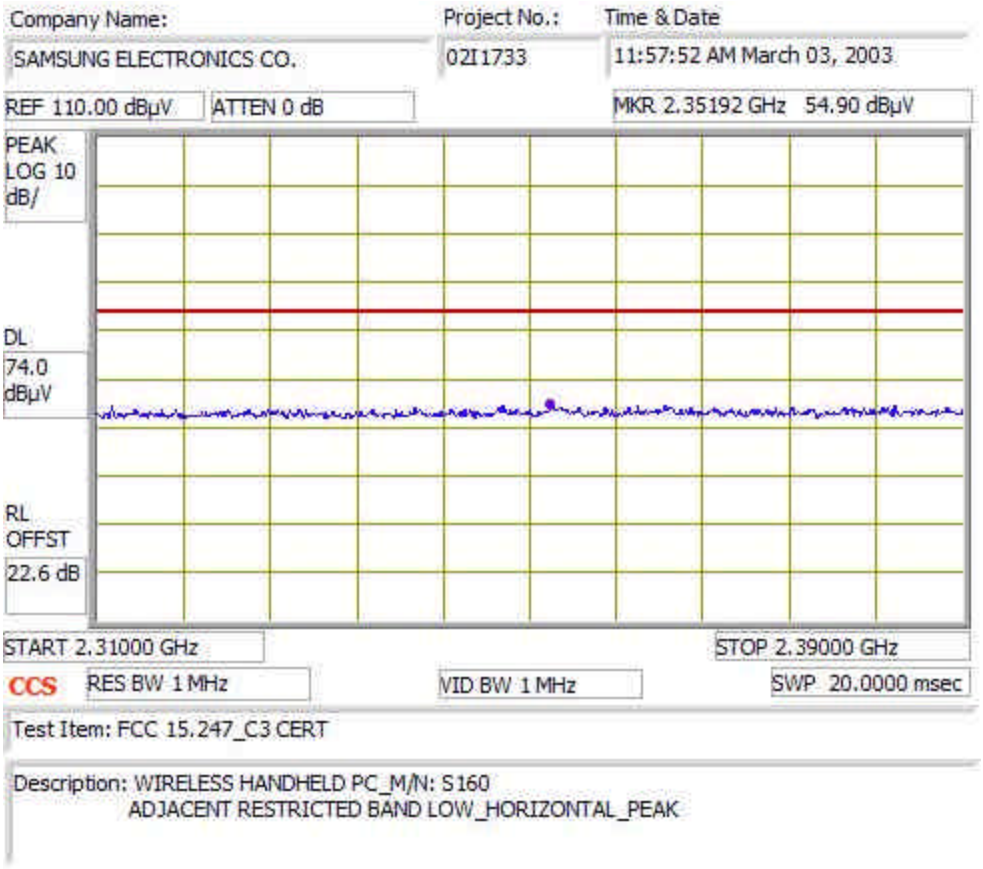
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The frequency span is set small enough to easily differentiate between broadcast stations, intermittent ambient signals and EUT emissions. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the suspected signal. Measurements were made with the antenna polarized in both the vertical and the horizontal positions.

TEST RESULTS

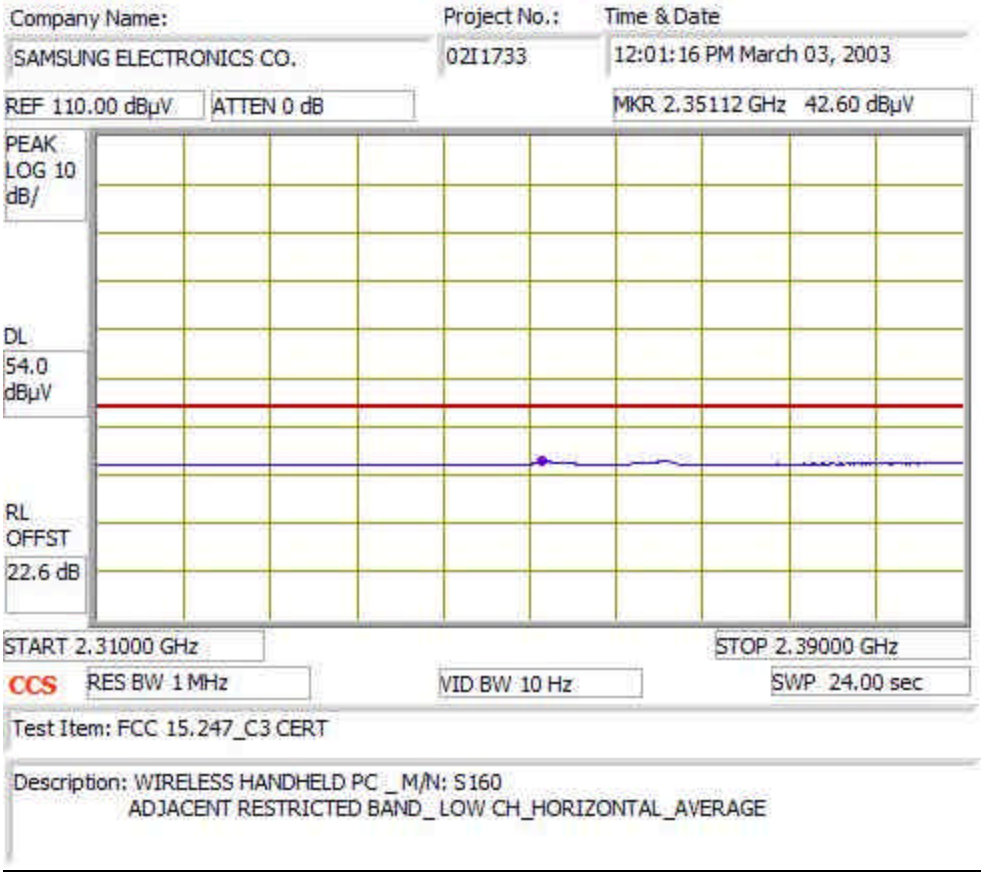
Preliminary tests were performed with the EUT aligned in three orthogonal (X., Y, and Z) orientations. Final test data presented in this report is with the worst-case orientation.

No non-compliance noted:

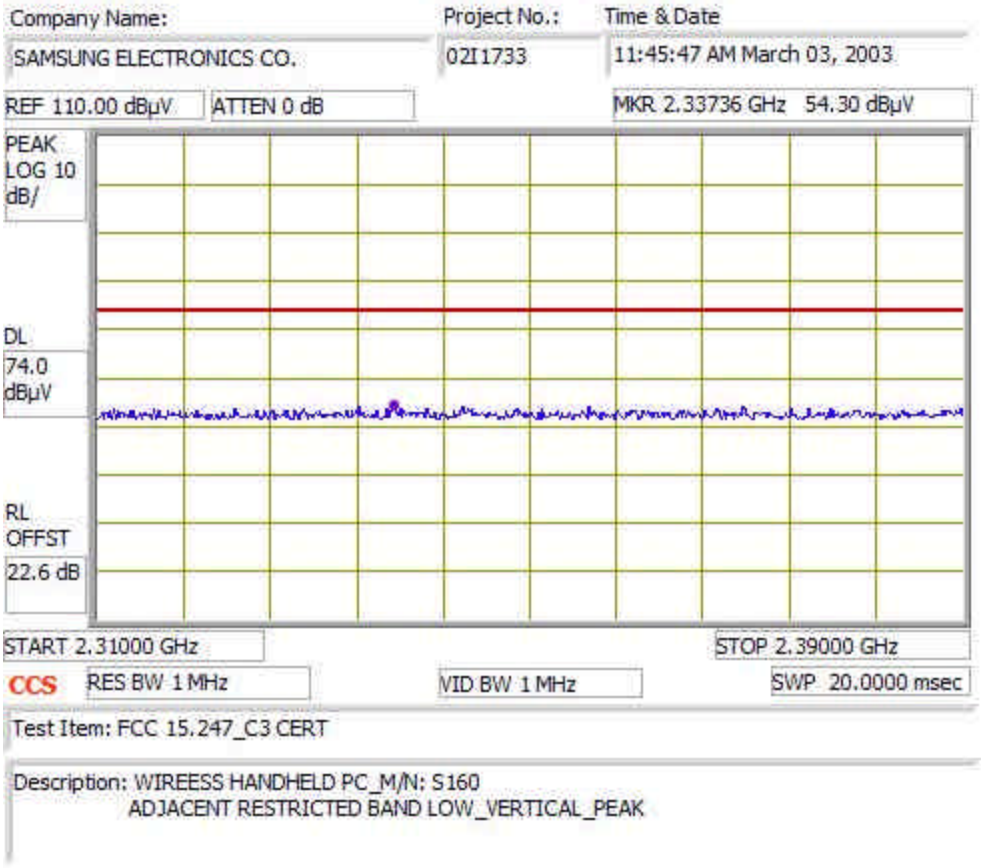
RESTRICTED BAND RADIATED EMISSIONS (LOW CHANNEL, HORIZONTAL , PEAK)



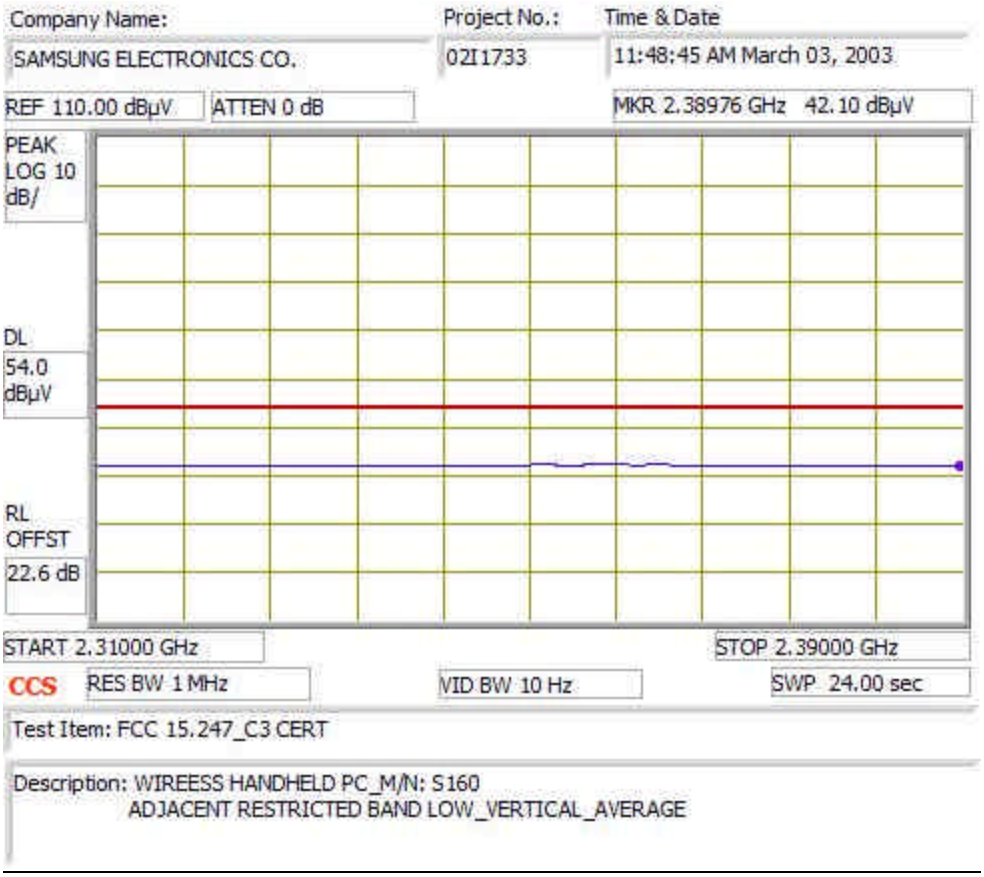
RESTRICTED BAND RADIATED EMISSIONS (LOW CHANNEL, HORIZONTAL , AVERAGE)



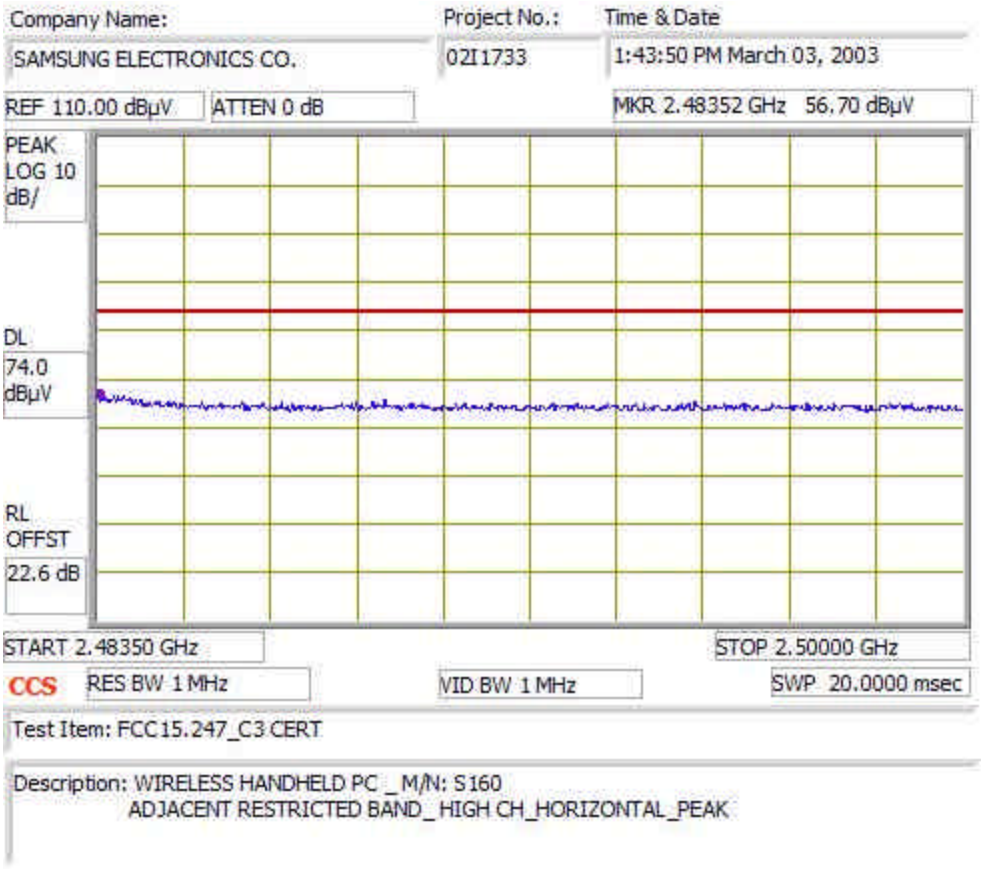
RESTRICTED BAND RADIATED EMISSIONS (LOW CHANNEL, VERTICAL, PEAK)



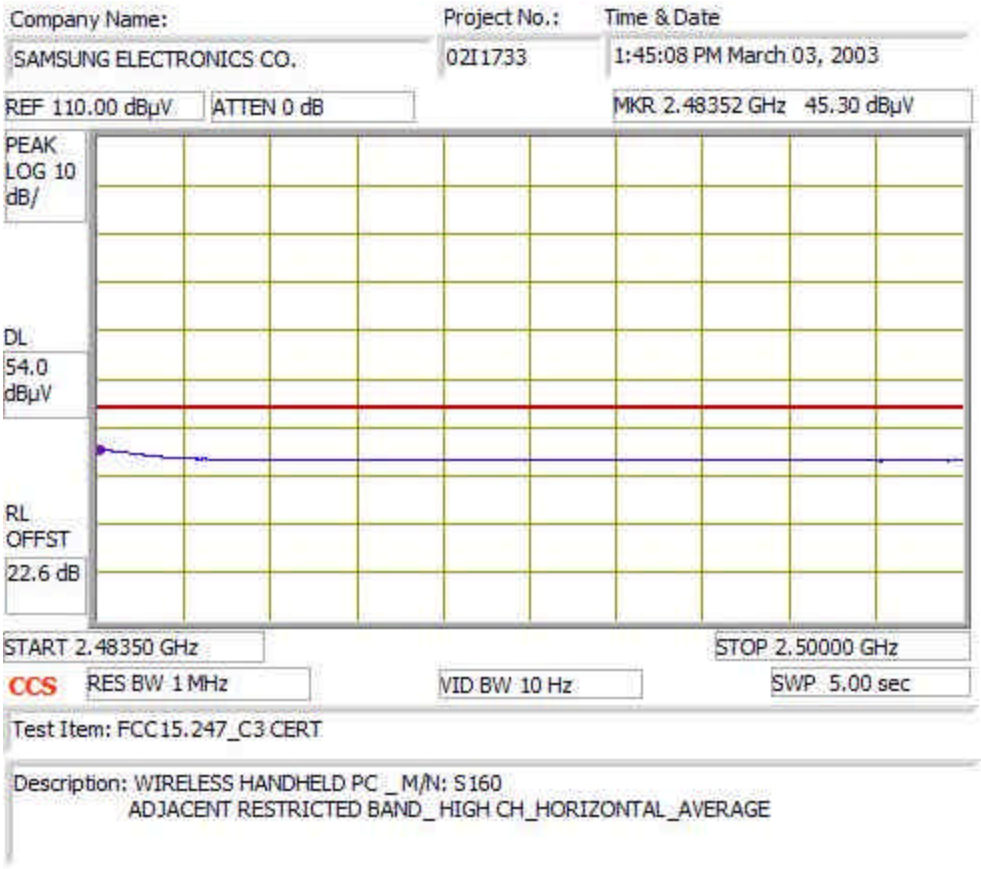
RESTRICTED BAND RADIATED EMISSIONS (LOW CHANNEL, VERTICAL, AVERAGE)



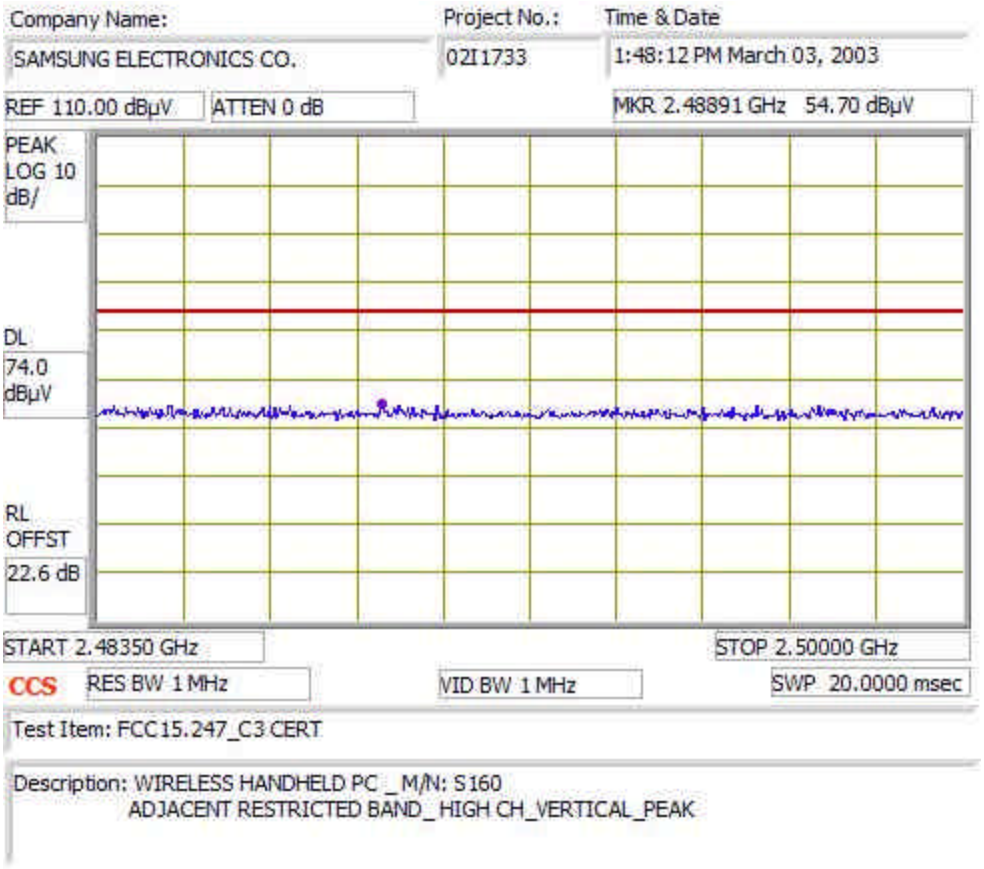
RESTRICTED BAND RADIATED EMISSIONS (HIGH CHANNEL, HORIZONTAL PEAK)



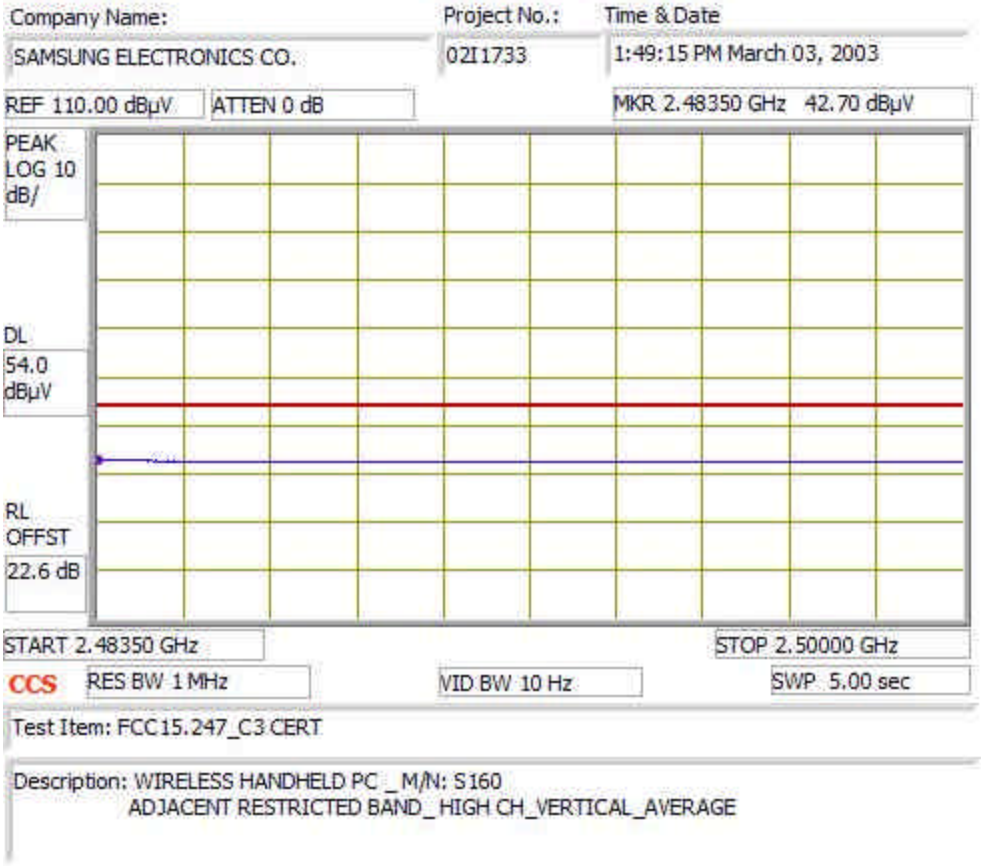
RESTRICTED BAND RADIATED EMISSIONS (HIGH CHANNEL, HORIZONTAL AVERAGE)



RESTRICTED BAND RADIATED EMISSIONS (HIGH CHANNEL, VERTICAL, PEAK)



RESTRICTED BAND RADIATED EMISSIONS (HIGH CHANNEL, VERTICAL, AVERAGE)



HARMONIC AND SPURIOUS RADIATED EMISSIONS

03/13/03 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: VIEN TRAN
Project #: 02I1733
Company: SAMSUNG ELECTRONICS CO.
EUT Descrip.: WIRELESS HANDHELD PC
EUT M/N: S160
Test Target: FCC15.247
Mode Oper: Tx ON AT LOW CHANNEL (2.412GHz) AT WORST CASE ORIENTATION

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifer 1-26GHz	Spectrum Analyzer	Horn > 18GHz
T60; S/N: 2238 @3m	HP 8449B	8566B Analyzer	T87; ARA 18-26GHz; S/N:1049

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

Peak Measurements:
1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:
1 MHz Resolution Bandwidth
10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
4.824	9.8	45.2	29.9	33.1	3.4	-34.6	0.0	1.0	48.1	32.8	74.0	54.0	-25.9	-21.2	H, 2nd Harmonic
4.875	9.8	44.4	32.5	33.1	3.4	-34.6	0.0	1.0	47.4	35.5	74.0	54.0	-26.6	-18.5	H, Spur
4.824	9.8	40.8	29.1	33.1	3.4	-34.6	0.0	1.0	43.7	32.0	74.0	54.0	-30.3	-22.0	V, 2nd Harmonic
4.875	9.8	48.6	37.0	33.1	3.4	-34.6	0.0	1.0	51.6	40.0	74.0	54.0	-22.4	-14.0	V, SPUR

NO OTHER SPURIOUS OR HARMONICS FOUND ABOVE 2nd HARMONIC

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

03/03/03 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: VIEN TRAN
Project #: 02I1733
Company: SAMSUNG ELECTRONICS CO.
EUT Descrip.: WIRELESS HANDHELD PC
EUT M/N: S160
Test Target: FCC15.247
Mode Oper: Tx ON AT MID CHANNEL (2.437GHz) AT WORST CASE ORIENTATION

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifer 1-26GHz	Spectrum Analyzer	Horn > 18GHz
T60; S/N: 2238 @3m	HP 8449B	8566B Analyzer	

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

Peak Measurements:
1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:
1 MHz Resolution Bandwidth
10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
4.875	9.8	43.5	30.1	33.1	3.4	-34.6	0.0	1.0	46.5	33.1	74.0	54.0	-27.5	-20.9	H, 2nd Harmonic
4.875	9.8	45.5	34.7	33.1	3.4	-34.6	0.0	1.0	48.5	37.7	74.0	54.0	-25.5	-16.3	V, 2nd Harmonic

NO OTHER SPURIOUS OR HARMONICS FOUND ABOVE 2nd HARMONIC

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

03/13/03 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: VIEN TRAN
Project #: 02I1733
Company: SAMSUNG ELECTRONICS CO.
EUT Descrip.: WIRELESS HANDHELD PC
EUT M/N: S160
Test Target: FCC15.247
Mode Oper: Tx ON AT HIGH CHANNEL (2.462GHz) AT WORST CASE ORIENTATION

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifer 1-26GHz	Spectrum Analyzer	Horn > 18GHz
T60; S/N: 2238 @3m	HP 8449B	8566B Analyzer	T87; ARA 18-26GHz; S/N:1049

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

Peak Measurements: 1 MHz Resolution Bandwidth, 1MHz Video Bandwidth
Average Measurements: 1 MHz Resolution Bandwidth, 10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
4.924	9.8	43.2	33.6	33.2	3.5	-34.5	0.0	1.0	46.3	36.7	74.0	54.0	-27.7	-17.3	H, 2nd Harmonic
								1.0							
4.924	9.8	45.5	34.7	33.2	3.5	-34.5	0.0	1.0	48.6	37.8	74.0	54.0	-25.4	-16.2	V, 2nd Harmonic

NO OTHER SPURIOUS OR HARMONICS FOUND ABOVE 2nd HARMONIC

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

DIGITAL DEVICE RADIATED EMISSIONS

COMPLIANCE Certification Services

FCC, VCCI, CISPR, CE, AUSTEL, NZ
UL, CSA, TUV, BSMI, DHHS, NVLAP

561F MONTEREY ROAD, SAN JOSE, CA 95037-9001
PHONE: (408) 463-0885 FAX: (408) 463-0888

Project #:	02I1733-1
Report #:	030127C1
Date& Time:	01/27/03 2:06 PM
Test Engr:	Thanh Nguyen

Company:	SAMSUNG ELECTRONICS CO., LTD
EUT Description:	Wireless Hand PC
Test Configuration :	EUT Only
Type of Test:	FCC Class B
Mode of Operation:	Transmitting

<< Main Sheet

Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
147.25	47.30	16.05	2.03	26.88	38.50	43.50	-5.00	3mV	180.00	1.50	P
561.59	45.30	18.51	4.36	27.70	40.47	46.00	-5.53	3mV	180.00	1.00	P
758.63	41.50	21.29	5.17	27.64	40.33	46.00	-5.67	3mV	180.00	1.00	P
665.63	42.20	20.56	4.82	27.88	39.70	46.00	-6.30	3mV	180.00	1.50	P
39.08	47.00	12.84	0.98	27.20	33.62	40.00	-6.38	3mV	180.00	1.00	P
39.42	46.50	12.83	0.99	27.20	33.12	40.00	-6.88	3mV	180.00	1.00	P
6 Worst Data											

8.7. POWERLINE CONDUCTED EMISSIONS

TEST SETUP

The EUT is placed on a wooden table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane on the floor.

The EUT is set to transmit in a continuous mode.

TEST PROCEDURE

The resolution bandwidth is set to 10 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Line conducted data is recorded for both NEUTRAL and HOT lines.

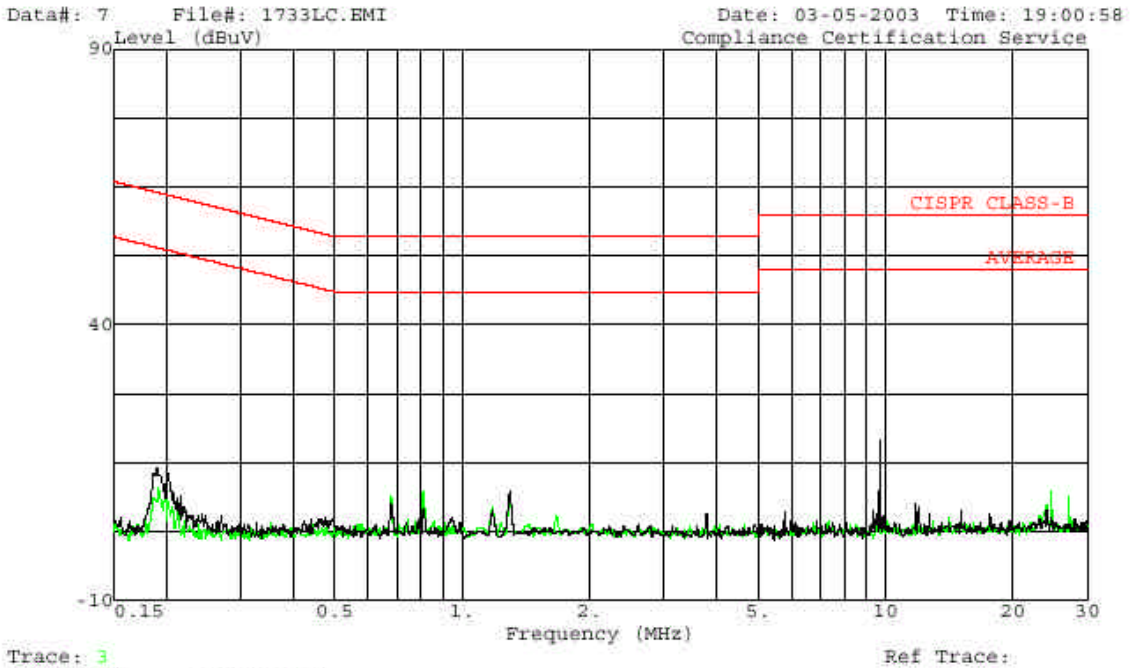
RESULTS

No non-compliance noted:

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
0.19	10.46	--	--	0.00	64.83	54.83	-54.37	-44.37	L1
0.81	10.10	--	--	0.00	56.00	46.00	-45.90	-35.90	L1
24.66	10.76	--	--	0.00	60.00	50.00	-49.24	-39.24	L1
0.19	14.72	--	--	0.00	64.83	54.83	-50.11	-40.11	L2
1.30	10.88	--	--	0.00	56.00	46.00	-45.12	-35.12	L2
9.71	19.26	--	--	0.00	60.00	50.00	-40.74	-30.74	L2
6 Worst Data									

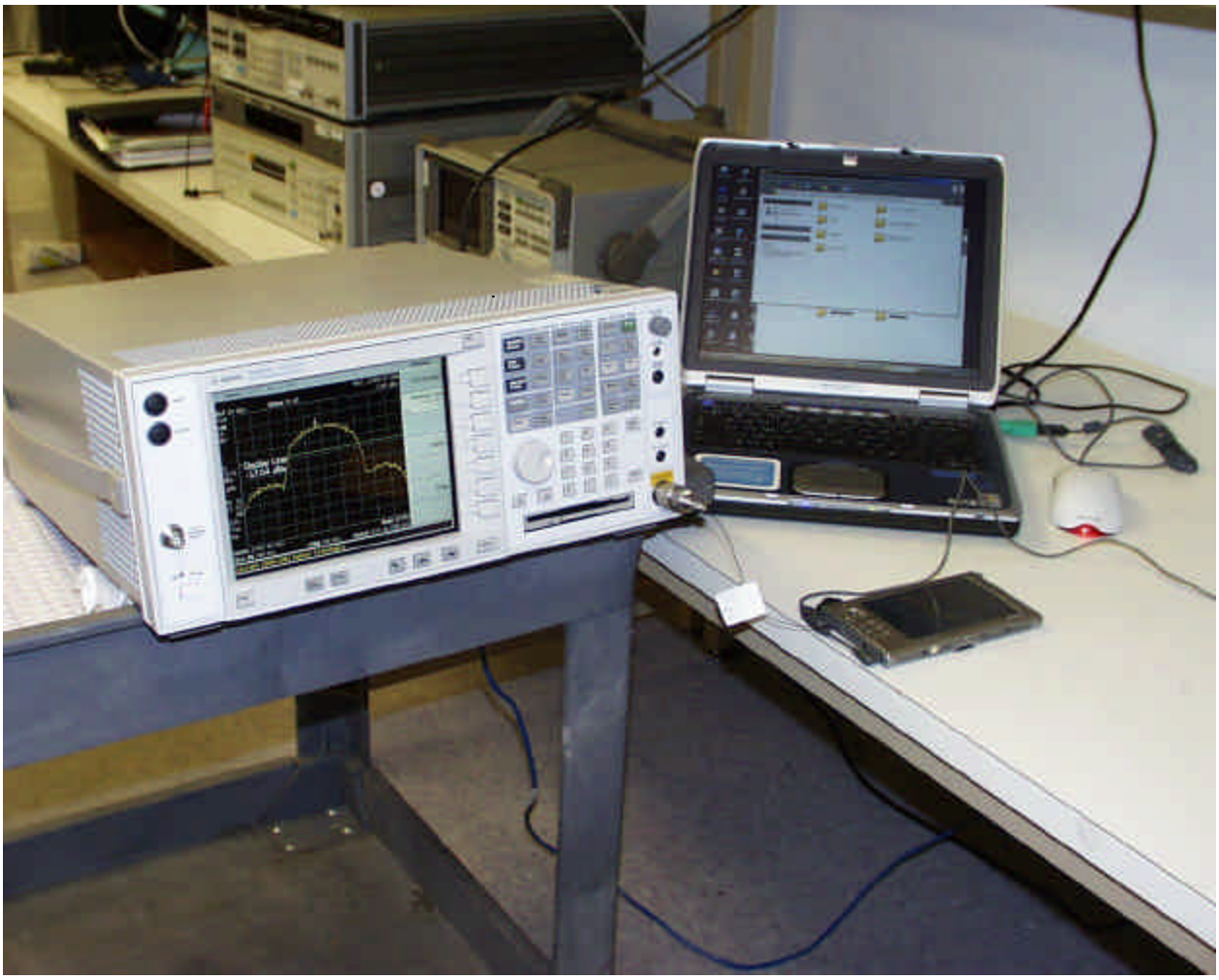
561F Monterey Road,
San Jose, CA 95037 USA
Tel: (408) 463-0885
Fax: (408) 463-0888



Trace: 3 Ref Trace:
Project # : 02i1733-1
Test Engineer : Chin Pang
Company : Samsung Electronic Co., LTD
EUT : Wireless Hand PC
: Model : S160
Test Config. : EUT/Support Equipment
Test of Target: EN55022 class B
Mode of Oper. : Tx
: L1: Peak (Black), L2: Peak (Green)

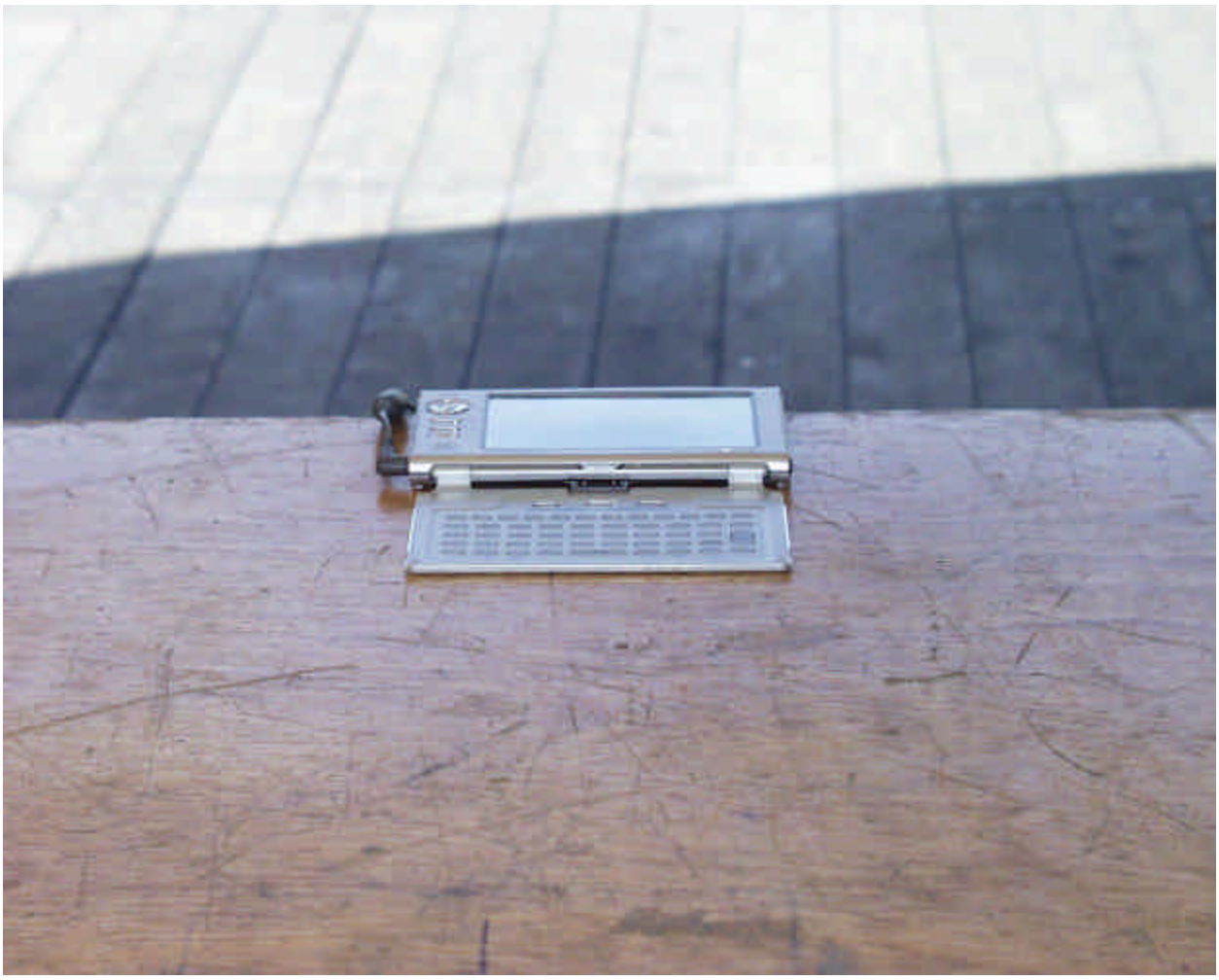
8.8. SETUP PHOTOS

ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP



RADIATED RF MEASUREMENT SETUP (AT WORST-CASE ORIENTATION)

DIGITAL DEVICE RADIATED EMISSIONS SETUP (AT WORST-CASE ORIENTATION)



POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP

END OF REPORT