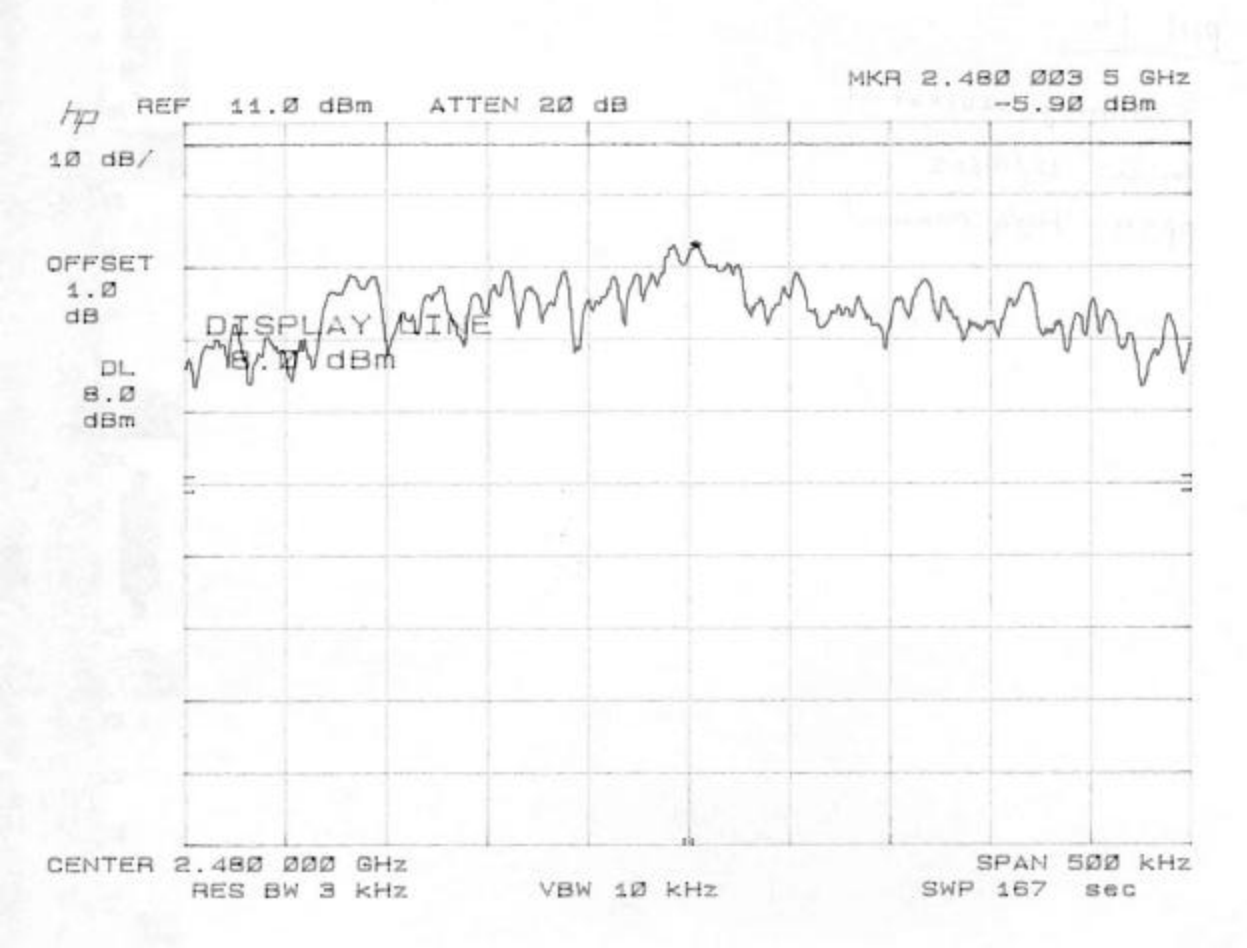
PPSD, High Channel



8.7. MAXIMUM PERMISSIBLE EXPOSURE

CALCULATIONS

Given

$E = \sqrt{(30 * P * G)} / d$

and

$S = E \wedge 2 / 3770$

where

E = Field Strength in Volts / meter
P = Power in Watts
G = Numeric antenna gain
d = distance in meters
S = Power Density in milliwatts / square centimeter

Combining equations and rearranging the terms to express the distance as a function of the remaining variables yields:

$d = \sqrt{((30 * P * G) / (3770 * S))}$

Changing to units of mW and cm, using:

P (mW) = P (W) / 1000 and

d (cm) =100 * d (m)

yields

$d = 100 * \sqrt{((30 * (P / 1000) * G) / (3770 * S))}$

$d = 0.282 * \sqrt{(P * G / S)}$

where

d = distance in cm
P = Power in mW
G = Numeric antenna gain
S = Power Density in mW / cm^2

Substituting the logarithmic form of power and gain using:

P (mW) = 10 ^ (P (dBm) / 10) and

G (numeric) = 10 ^ (G (dBi) / 10)

yields

$$d = 0.282 * 10 ^ ((P + G) / 20) / \sqrt{S}$$ Equation (1)

where

d = MPE safe distance in cm
P = Power in dBm
G = Antenna Gain in dBi
S = Power Density Limit in mW / cm^2

RESULTS

No non-compliance noted:

EUT output power = 4.4 dBm
Antenna Gain = 2 dBi
S = 1.0 mW / cm^2 from 1.1310 Table 1

Substituting these parameters into Equation (1) above:

MPE Safe Distance = 0.589 cm

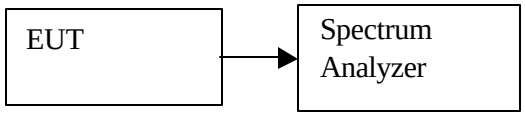
NOTE: For mobile or fixed location transmitters, the minimum separation distance is 20 cm, even if calculations indicate that the MPE distance would be less.

8.8. SPURIOUS EMISSIONS – CONDUCTED MEASUREMENTS

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit.

Also, conducted RF measurements of the transmitter output over the 30 MHz to 25 GHz band were made in order 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 at the lower band edge with the transmitter set to the lowest channel.

Measurements are made at the upper band edge with the transmitter set to the highest channel.

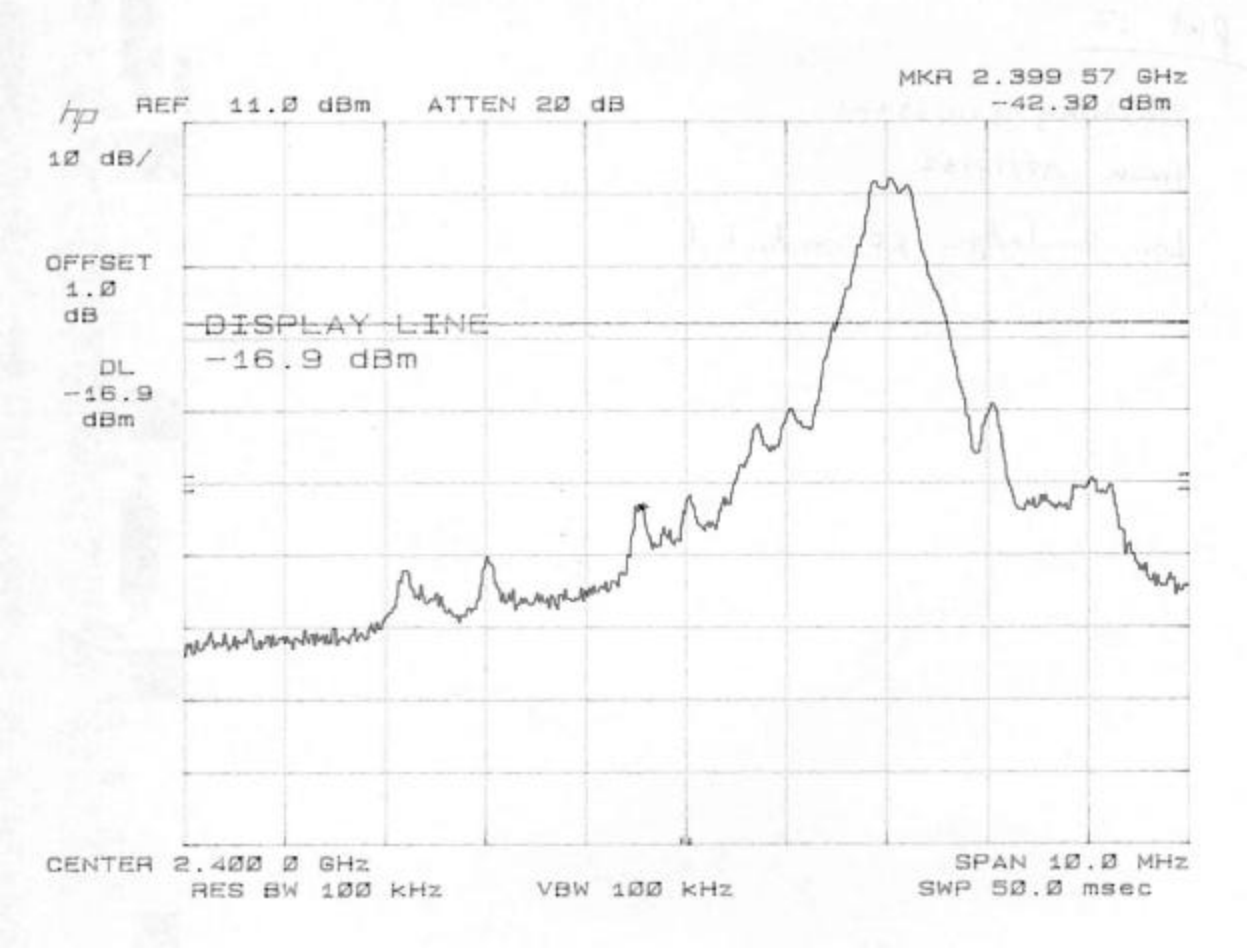
Measurements are made over the 30 MHz to 25 GHz range with the transmitter set to the lowest, middle, and highest channels.

RESULTS

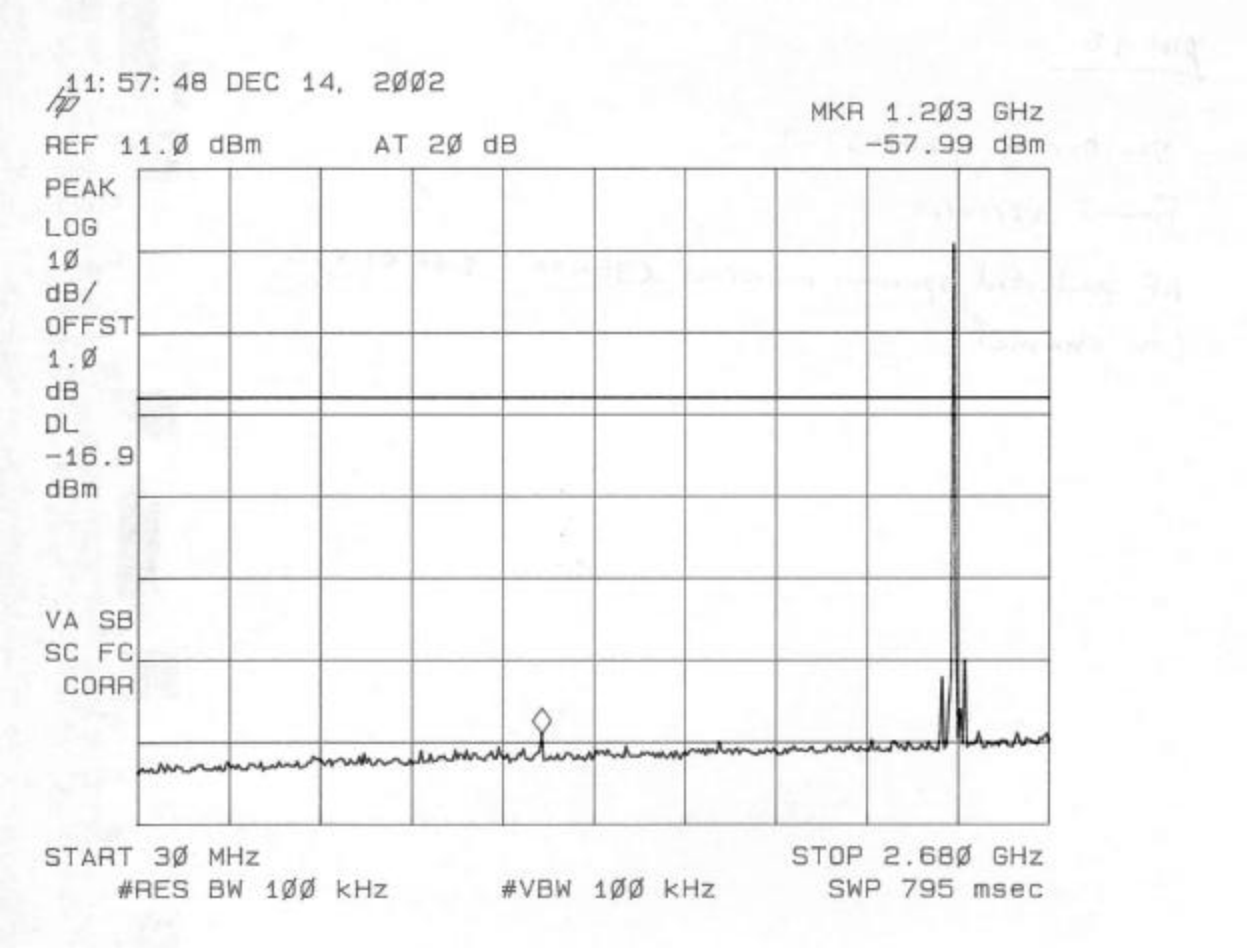
No non-compliance noted:

Refer to plots below.

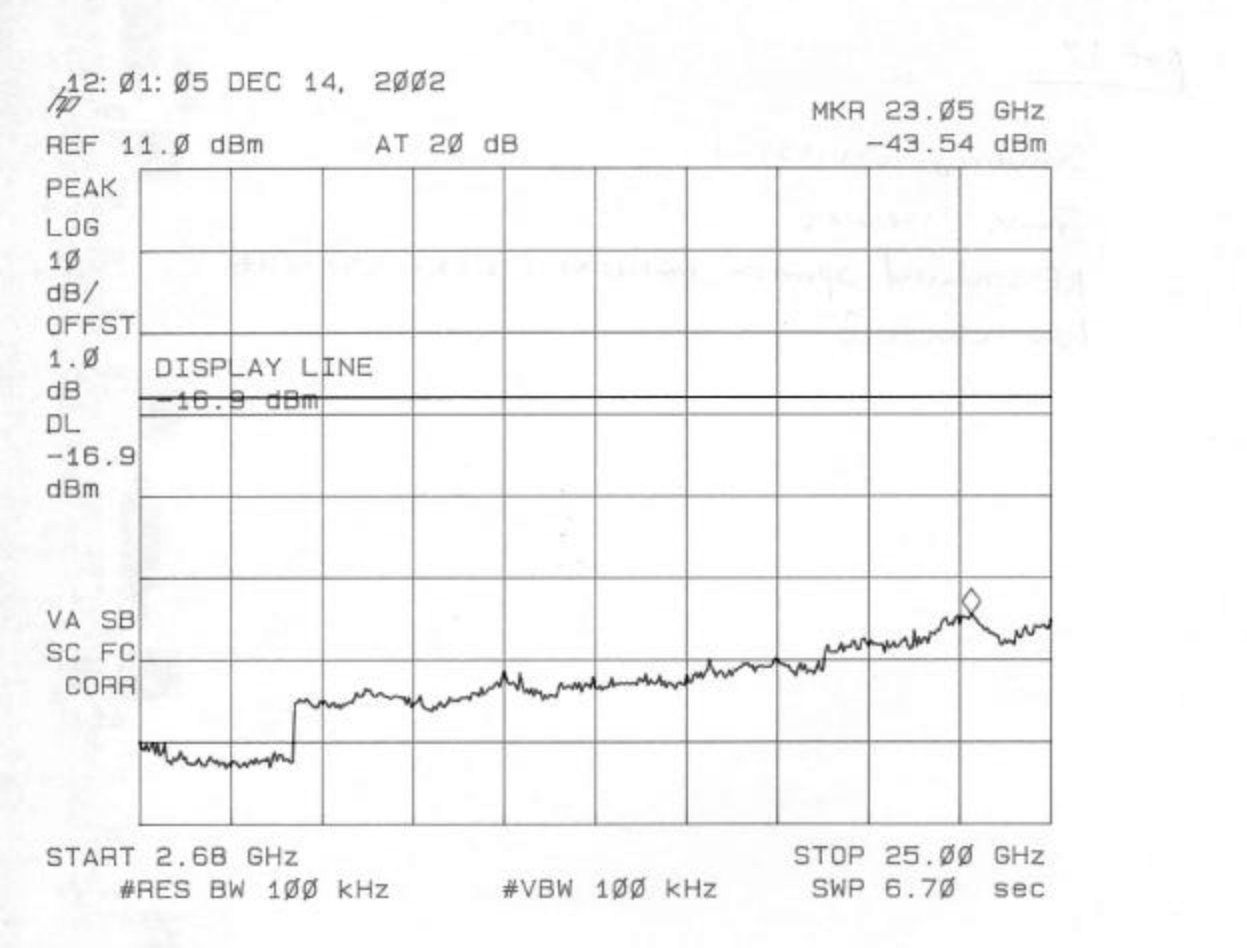
Low Bandedge RF Conducted



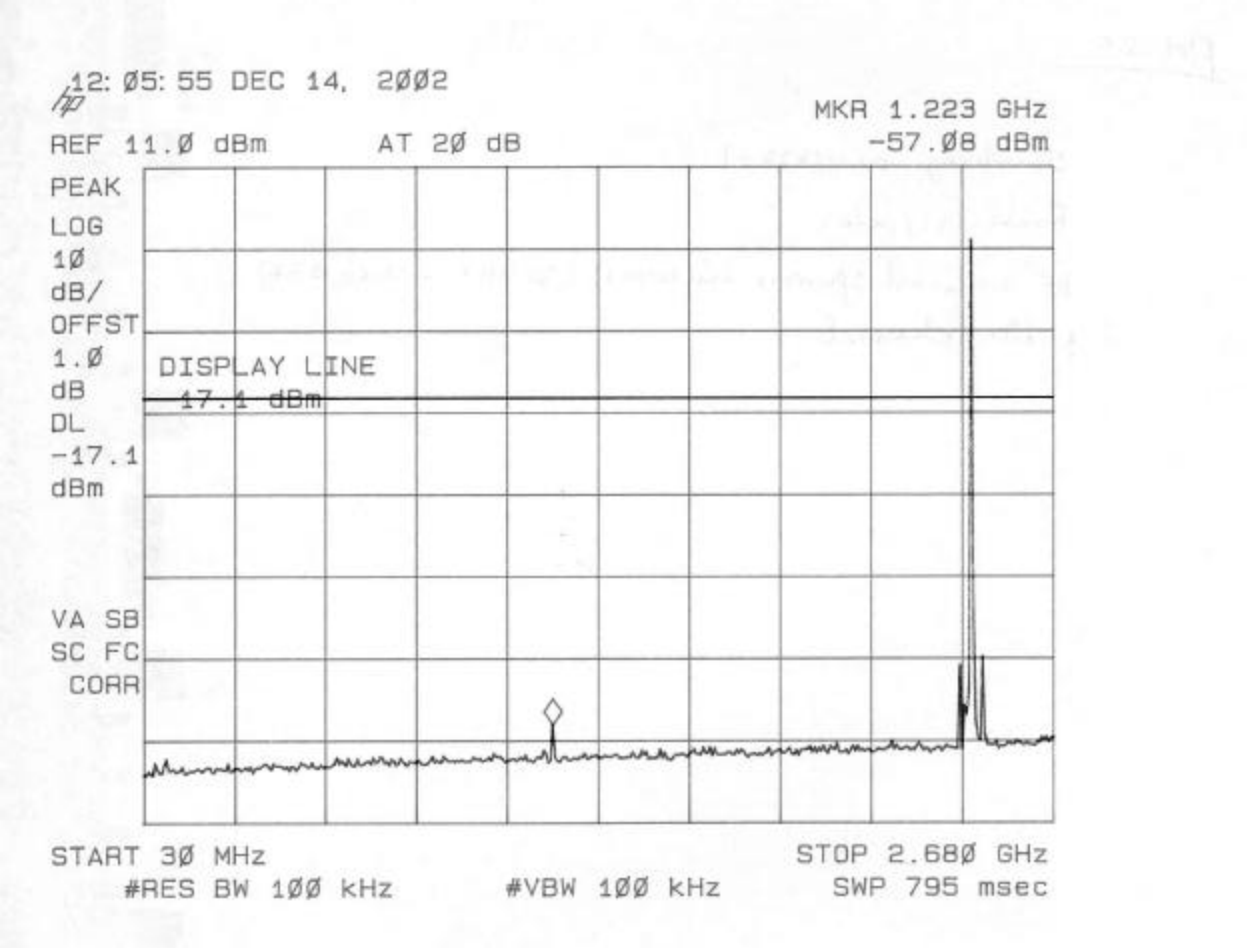
RF Conducted Spurious Emission (30MHz-2.68GHz) Low Channel



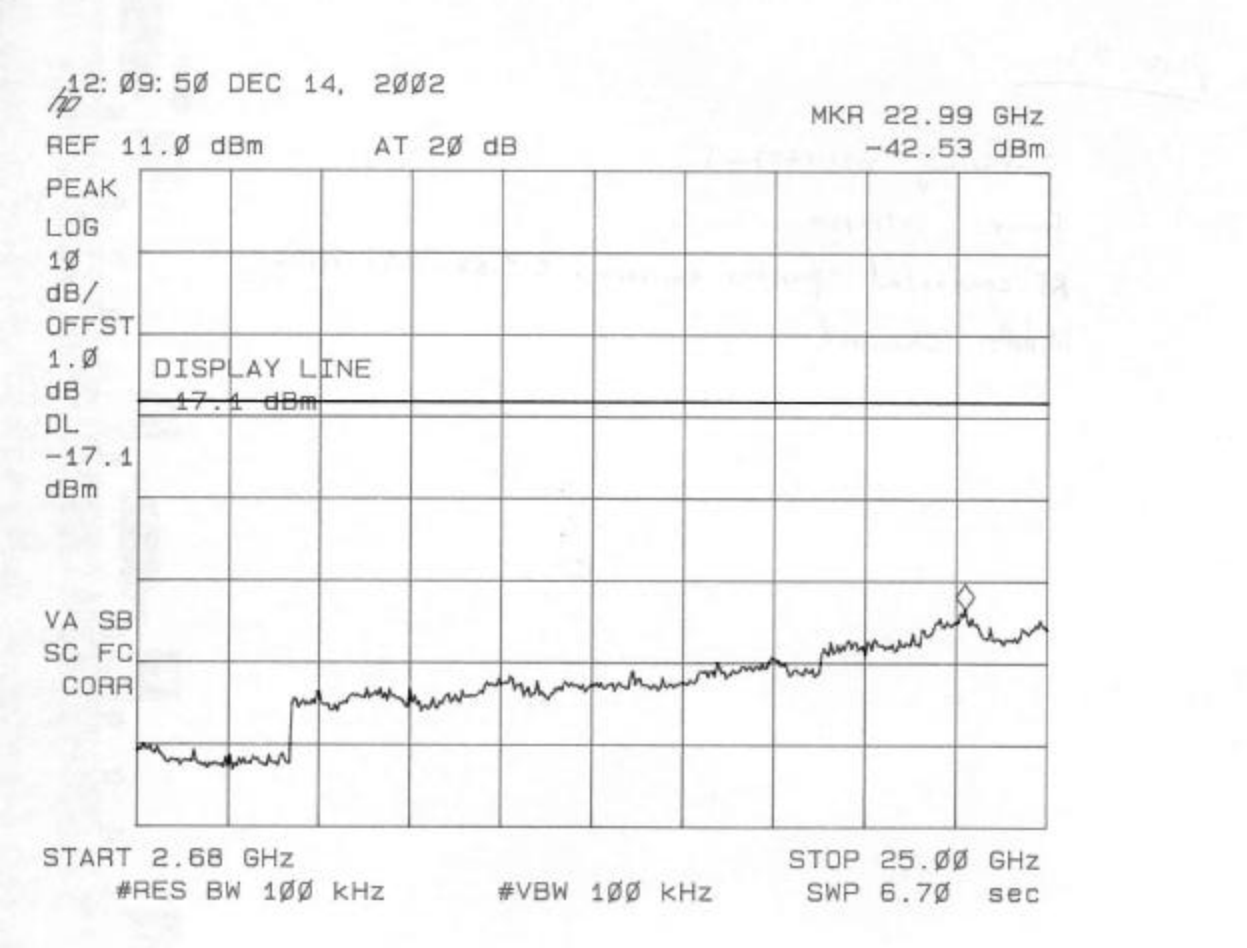
RF Conducted Spurious Emission (2.68-25) GHz Low Channel



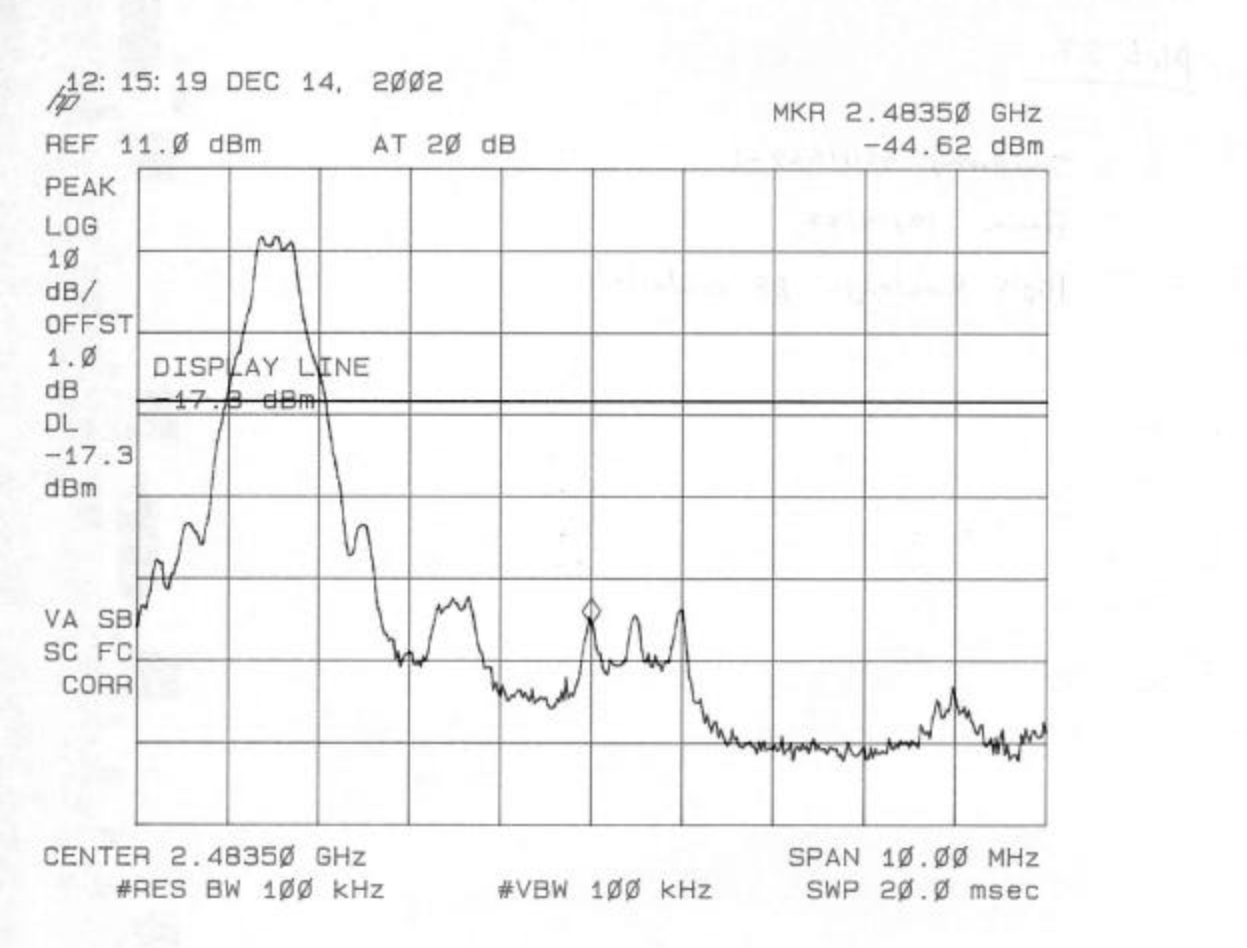
RF Conducted Spurious Emission (30MHz-2.68GHz) Middle Channel



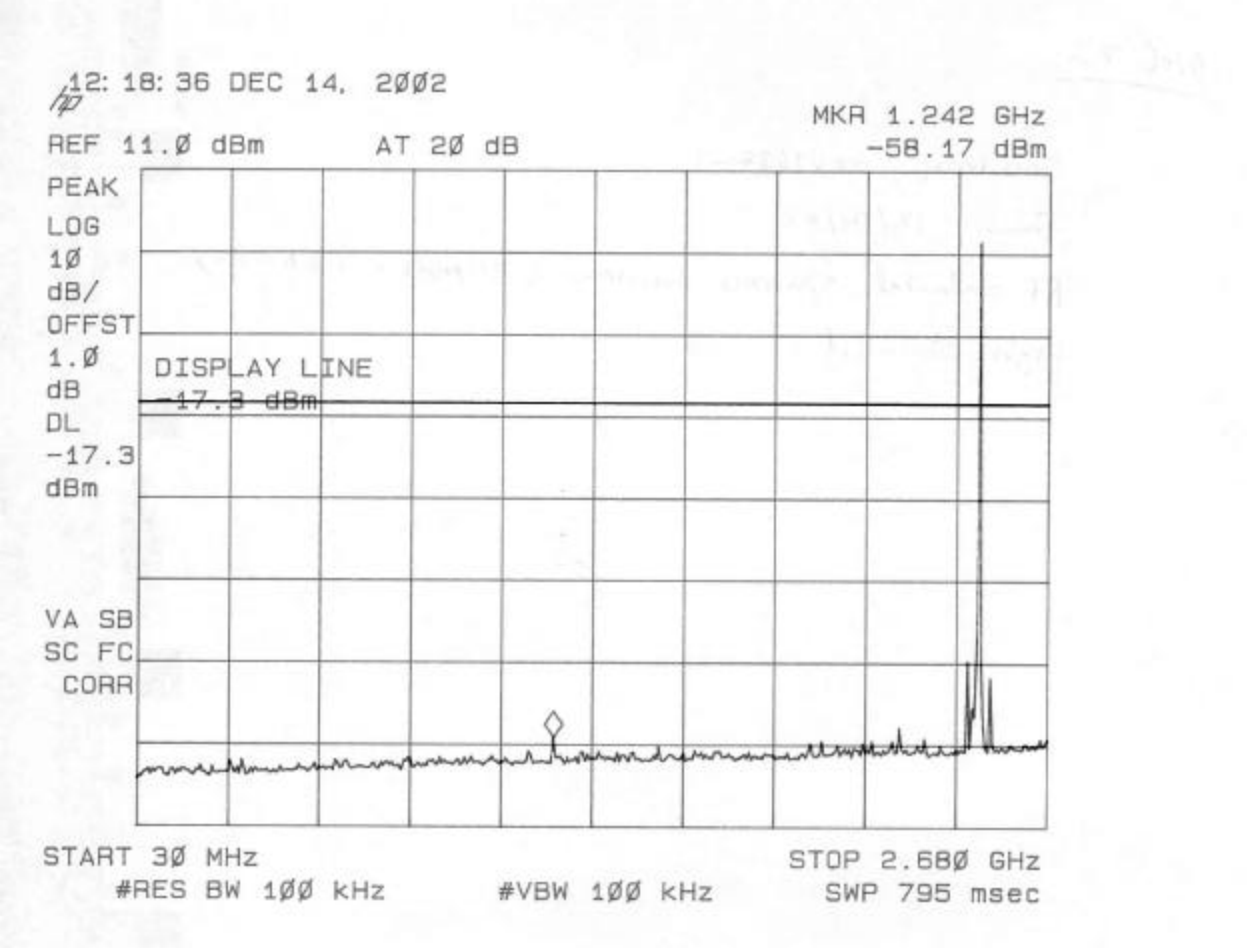
RF Conducted Spurious Emission, (2.68-25)GHz Middle Channel



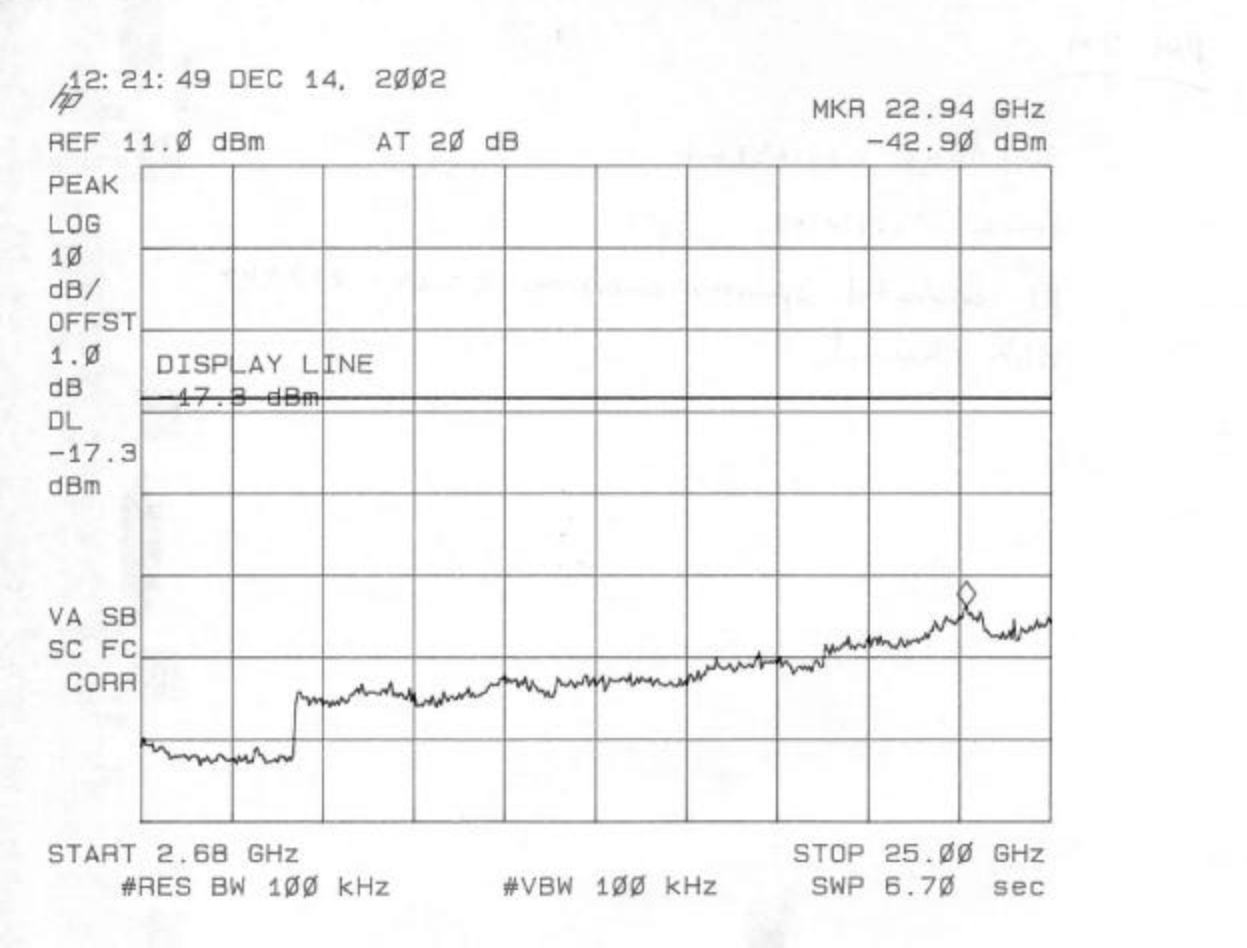
High Bandedge RF Conducted



RF Conducted Spurious Emission (30MHz-2.68GHz) High Channel



RF Conducted Spurious Emission (2.68-25) GHz High Channel



8.9. UNDESIRABLE EMISSIONS – RADIATED MEASUREMENTS

TEST SETUP

For measurements of the EUT as a digital device, the EUT and all other support equipment are placed on a wooden table 80 cm above the ground plane. For measurements of the EUT as a transmitter, the EUT is placed on the wooden table. The antenna to EUT distance is 3 meters for measurements below 1 GHz and 1 meter for measurements above 1 GHz. The EUT is configured in accordance with Section 8 of 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 within restricted bands, 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 25 GHz is investigated.

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.

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 #:	02U1637-1
Report #:	021217C01
Date& Time:	12/17/02 9:55 AM
Test Engr:	Frank Ibrahim

Company:	SensArray
EUT Description:	Bluetooth Test and Calibration Device, Model: ACT8 DISIS # 482-22-0800
Test Configuration :	EUT, Silicon Wafer, Laptop, PS/2 Mouse, Printer
Type of Test:	FCC Class A
Mode of Operation:	TX ON at Mid Channel

( ) A-Site ( ) B-Site (•) C-Site ( ) F-Site [6 Worst Data] [Descending]

Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_A	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
177.00	37.80	15.24	2.29	26.74	28.59	43.50	-14.91	10mV	0.00	1.00	P
65.00	44.00	6.65	1.27	27.15	24.77	39.10	-14.34	10mV	0.00	1.00	P
128.00	37.00	12.14	1.89	26.97	24.07	43.50	-19.43	10mV	0.00	1.00	P
844.00	38.40	21.87	5.50	27.39	38.38	46.40	-8.02	10mV	0.00	1.00	P
473.00	39.20	17.35	3.91	27.44	33.02	46.40	-13.38	10mH	0.00	1.00	P
662.00	38.10	20.46	4.81	27.88	35.49	46.40	-10.91	10mH	0.00	1.00	P

All readings above are noise floor, no RF noise detected from EUT
Total data #: 6
V.2c

SYSTEM NOISE FLOOR FOR HARMONIC AND SPURIOUS MEASUREMENTS

Compliance Certification Services

Worst Case Radiated Emissions System Noise Floor

Each band below corresponds to each horn antenna band
Uses the lowest gain preamplifier; actual preamp used may have higher gain
Uses the longest typical cable configuration; actual cables used may have less loss
Noise floor field strength results are compared to the FCC 15.205 Restricted Band limit

Specification Distance: 3 meters

Freq GHz	SA dBuV	AF dB/m	Distance m	Distance dB	Preamp dB	Cable dB	Field dBuV/m	Limit dBuV/m	Margin dB
1 to 18 GHz band									
RBW = 1 MHz, peak detection									
18	41.9	47.8	1	-9.5	32.6	13.5	61.06	74	-12.94
RBW = 1 MHz, average detection									
18	28.7	47.8	1	-9.5	32.6	13.5	47.86	54	-6.14
18 to 26.5 GHz band									
RBW = 1 MHz, peak detection									
26.5	44.6	33.4	1	-9.5	35.0	19.5	52.96	74	-21.04
RBW = 1 MHz, average detection									
26.5	32.4	33.4	1	-9.5	35.0	19.5	40.76	54	-13.24

TEST RESULTS

No non-compliance noted:

HARMONIC AND SPURIOUS RADIATED EMISSIONS

Date: 12/18/02

Compliance Certification Services, Morgan Hill Open Field Site
FCC Measurement

Test Engr: Frank Ibrahim
Project #: 02U1637-1
Company: SensArray
EUT Descrip.: Bluetooth Test and Calibration Device
EUT M/N: ACT8 DISIS , # 482-22-0800
Test Target: FCC 15.247

Cable: 15.0 feet
Antenna: T72
Amp: T34

Peak Measurements:
1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:
1MHz Resolution Bandwidth
10Hz Video Bandwidth

Low Channel

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
4.804	3.3	47.5	32.0	33.8	5.7	35.7	-9.5	1.0	42.9	27.3	74.0	54.0	-31.1	-26.7	V
7.206	3.3	42.0	30.3	36.9	7.2	34.5	-9.5	1.0	43.1	31.5	74.0	54.0	-30.9	-22.5	V
9.608	3.3	40.0	28.0	38.5	8.5	34.9	-9.5	1.0	43.6	31.6	74.0	54.0	-30.4	-22.4	V, Noise Floor
12.010	3.3	40.0	28.0	39.3	9.5	34.1	-9.5	1.0	46.2	34.2	74.0	54.0	-27.8	-19.8	V, Noise Floor
14.412	3.3	40.0	28.0	41.3	10.7	32.8	-9.5	1.0	50.8	38.8	74.0	54.0	-23.2	-15.2	V, Noise Floor
16.814	3.3	40.0	28.0	40.9	12.2	33.0	-9.5	1.0	51.6	39.6	74.0	54.0	-22.4	-14.4	V, Noise Floor
19.216	3.3	40.0	28.0	31.9	13.5	32.4	-9.5	1.0	44.5	32.5	74.0	54.0	-29.5	-21.5	V, Noise Floor
21.618	3.3	40.0	28.0	32.4	14.7	33.5	-9.5	1.0	45.1	33.1	74.0	54.0	-28.9	-20.9	V, Noise Floor
24.020	3.3	40.0	28.0	33.1	16.4	33.7	-9.5	1.0	47.3	35.3	74.0	54.0	-26.7	-18.7	V, Noise Floor
4.804	3.3	43.7	29.4	33.8	5.7	35.7	-9.5	1.0	39.0	24.7	74.0	54.0	-35.0	-29.3	H
7.206	3.3	40.2	30.0	36.9	7.2	34.5	-9.5	1.0	41.4	31.2	74.0	54.0	-32.6	-22.8	H
9.608	3.3	40.0	28.0	38.5	8.5	34.9	-9.5	1.0	43.6	31.6	74.0	54.0	-30.4	-22.4	H, Noise Floor
12.010	3.3	40.0	28.0	39.3	9.5	34.1	-9.5	1.0	46.2	34.2	74.0	54.0	-27.8	-19.8	H, Noise Floor
14.412	3.3	40.0	28.0	41.3	10.7	32.8	-9.5	1.0	50.8	38.8	74.0	54.0	-23.2	-15.2	H, Noise Floor
16.814	3.3	40.0	28.0	40.9	12.2	33.0	-9.5	1.0	51.6	39.6	74.0	54.0	-22.4	-14.4	H, Noise Floor
19.216	3.3	40.0	28.0	31.9	13.5	32.4	-9.5	1.0	44.5	32.5	74.0	54.0	-29.5	-21.5	H, Noise Floor
21.618	3.3	40.0	28.0	32.4	14.7	33.5	-9.5	1.0	45.1	33.1	74.0	54.0	-28.9	-20.9	H, Noise Floor
24.020	3.3	40.0	28.0	33.1	16.4	33.7	-9.5	1.0	47.3	35.3	74.0	54.0	-26.7	-18.7	H, Noise Floor

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		

Date: 12/18/02

Compliance Certification Services, Morgan Hill Open Field Site
FCC Measurement

Test Engr: Frank Ibrahim
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Peak Measurements:
1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:
1MHz Resolution Bandwidth
10Hz Video Bandwidth

Mid Channel

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
4.804	3.3	46.6	31.2	33.8	5.7	35.7	-9.5	1.0	41.9	26.5	74.0	54.0	-32.1	-27.5	V
7.206	3.3	44.5	31.5	36.9	7.2	34.5	-9.5	1.0	45.6	32.6	74.0	54.0	-28.4	-21.4	V
9.608	3.3	40.0	28.0	38.5	8.5	34.9	-9.5	1.0	43.6	31.6	74.0	54.0	-30.4	-22.4	V, Noise Floor
12.010	3.3	40.0	28.0	39.3	9.5	34.1	-9.5	1.0	46.2	34.2	74.0	54.0	-27.8	-19.8	V, Noise Floor
14.412	3.3	40.0	28.0	41.3	10.7	32.8	-9.5	1.0	50.8	38.8	74.0	54.0	-23.2	-15.2	V, Noise Floor
16.814	3.3	40.0	28.0	40.9	12.2	33.0	-9.5	1.0	51.6	39.6	74.0	54.0	-22.4	-14.4	V, Noise Floor
19.216	3.3	40.0	28.0	31.9	13.5	32.4	-9.5	1.0	44.5	32.5	74.0	54.0	-29.5	-21.5	V, Noise Floor
21.618	3.3	40.0	28.0	32.4	14.7	33.5	-9.5	1.0	45.1	33.1	74.0	54.0	-28.9	-20.9	V, Noise Floor
24.020	3.3	40.0	28.0	33.1	16.4	33.7	-9.5	1.0	47.3	35.3	74.0	54.0	-26.7	-18.7	V, Noise Floor
4.804	3.3	42.3	28.1	33.8	5.7	35.7	-9.5	1.0	37.6	23.5	74.0	54.0	-36.4	-30.5	H
7.206	3.3	40.0	28.0	36.9	7.2	34.5	-9.5	1.0	41.1	29.1	74.0	54.0	-32.9	-24.9	H, Noise Floor
9.608	3.3	40.0	28.0	38.5	8.5	34.9	-9.5	1.0	43.6	31.6	74.0	54.0	-30.4	-22.4	H, Noise Floor
12.010	3.3	40.0	28.0	39.3	9.5	34.1	-9.5	1.0	46.2	34.2	74.0	54.0	-27.8	-19.8	H, Noise Floor
14.412	3.3	40.0	28.0	41.3	10.7	32.8	-9.5	1.0	50.8	38.8	74.0	54.0	-23.2	-15.2	H, Noise Floor
16.814	3.3	40.0	28.0	40.9	12.2	33.0	-9.5	1.0	51.6	39.6	74.0	54.0	-22.4	-14.4	H, Noise Floor
19.216	3.3	40.0	28.0	31.9	13.5	32.4	-9.5	1.0	44.5	32.5	74.0	54.0	-29.5	-21.5	H, Noise Floor
21.618	3.3	40.0	28.0	32.4	14.7	33.5	-9.5	1.0	45.1	33.1	74.0	54.0	-28.9	-20.9	H, Noise Floor
24.020	3.3	40.0	28.0	33.1	16.4	33.7	-9.5	1.0	47.3	35.3	74.0	54.0	-26.7	-18.7	H, Noise Floor

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		

Date: 12/18/02

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Peak Measurements:
1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:
1MHz Resolution Bandwidth
10Hz Video Bandwidth

High Channel

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
4.804	3.3	47.2	28.0	33.8	5.7	35.7	-9.5	1.0	42.5	23.4	74.0	54.0	-31.5	-30.6	V
7.206	3.3	40.0	28.0	36.9	7.2	34.5	-9.5	1.0	41.1	29.1	74.0	54.0	-32.9	-24.9	V, Noise Floor
9.608	3.3	43.8	31.1	38.5	8.5	34.9	-9.5	1.0	47.4	34.6	74.0	54.0	-26.6	-19.4	V
12.010	3.3	40.0	28.0	39.3	9.5	34.1	-9.5	1.0	46.2	34.2	74.0	54.0	-27.8	-19.8	V, Noise Floor
14.412	3.3	40.0	28.0	41.3	10.7	32.8	-9.5	1.0	50.8	38.8	74.0	54.0	-23.2	-15.2	V, Noise Floor
16.814	3.3	40.0	28.0	40.9	12.2	33.0	-9.5	1.0	51.6	39.6	74.0	54.0	-22.4	-14.4	V, Noise Floor
19.216	3.3	40.0	28.0	31.9	13.5	32.4	-9.5	1.0	44.5	32.5	74.0	54.0	-29.5	-21.5	V, Noise Floor
21.618	3.3	40.0	28.0	32.4	14.7	33.5	-9.5	1.0	45.1	33.1	74.0	54.0	-28.9	-20.9	V, Noise Floor
24.020	3.3	40.0	28.0	33.1	16.4	33.7	-9.5	1.0	47.3	35.3	74.0	54.0	-26.7	-18.7	V, Noise Floor
4.804	3.3	40.0	28.0	33.8	5.7	35.7	-9.5	1.0	35.3	23.3	74.0	54.0	-38.7	-30.7	H
7.206	3.3	40.0	28.0	36.9	7.2	34.5	-9.5	1.0	41.1	29.1	74.0	54.0	-32.9	-24.9	H, Noise Floor
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14.412	3.3	40.0	28.0	41.3	10.7	32.8	-9.5	1.0	50.8	38.8	74.0	54.0	-23.2	-15.2	H, Noise Floor
16.814	3.3	40.0	28.0	40.9	12.2	33.0	-9.5	1.0	51.6	39.6	74.0	54.0	-22.4	-14.4	H, Noise Floor
19.216	3.3	40.0	28.0	31.9	13.5	32.4	-9.5	1.0	44.5	32.5	74.0	54.0	-29.5	-21.5	H, Noise Floor
21.618	3.3	40.0	28.0	32.4	14.7	33.5	-9.5	1.0	45.1	33.1	74.0	54.0	-28.9	-20.9	H, Noise Floor
24.020	3.3	40.0	28.0	33.1	16.4	33.7	-9.5	1.0	47.3	35.3	74.0	54.0	-26.7	-18.7	H, Noise Floor

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		

FCC Measurement

Test Engr: Frank Ibrahim
Project #: 02U1637-1
Company: SensArray
EUT Descrip.: Bluetooth Test and Calibration Device
EUT M/N: ACT8 DISIS , # 482-22-0800
Test Target: FCC 15.247

Cable: 12.0 feet
Antenna: T72
Amp: T34

Peak Measurements:
1 MHz Resolution Bandwidth
1MHz Video Bandwidth

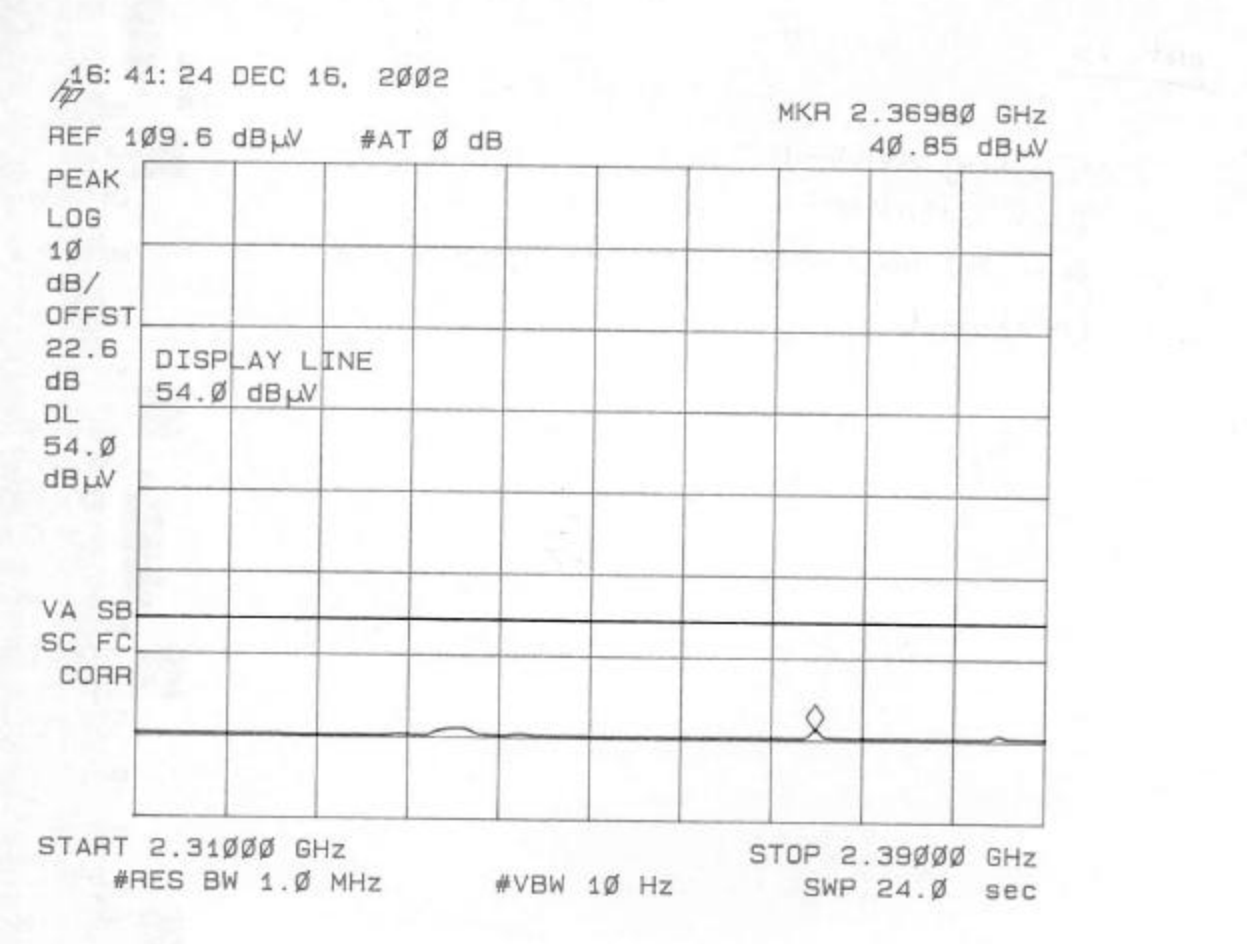
Average Measurements:
1MHz Resolution Bandwidth
10Hz Video Bandwidth

Spurious Emissions

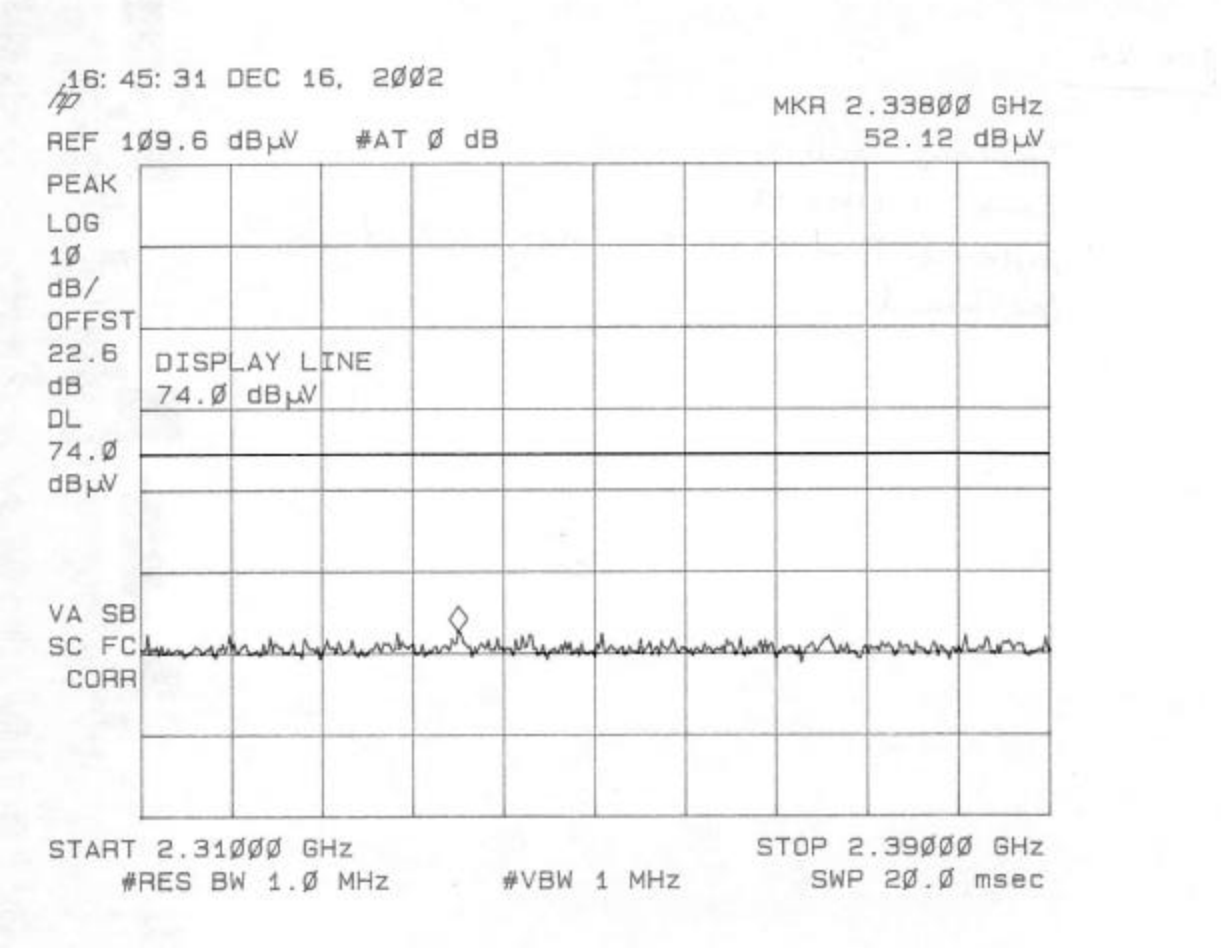
f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
1.199	3.3	40.8	25.2	24.7	2.1	0.0	-9.5	0.0	58.1	42.5	74.0	54.0	-15.9	-11.5	V
1.259	3.3	43.2	32.9	25.0	2.2	0.0	-9.5	0.0	60.8	50.6	74.0	54.0	-13.2	-3.4	V
1.286	3.3	42.9	30.7	25.0	2.2	0.0	-9.5	0.0	60.5	48.4	74.0	54.0	-13.5	-5.6	V
1.199	3.3	40.7	25.7	24.7	2.1	0.0	-9.5	0.0	58.1	43.0	74.0	54.0	-15.9	-11.0	H

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		

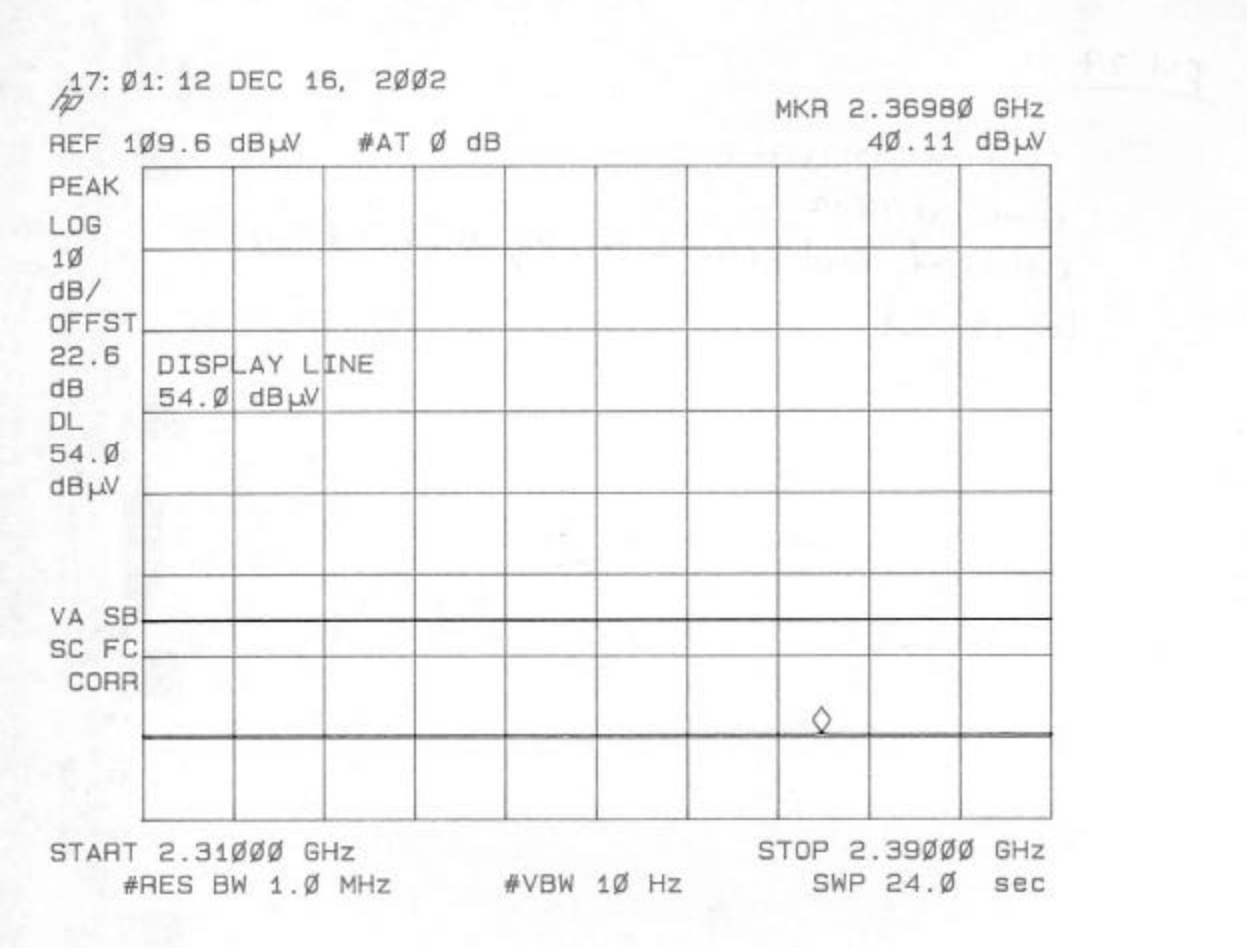
Restricted Band (2310-2390) MHz, Vertical Average Low Channel



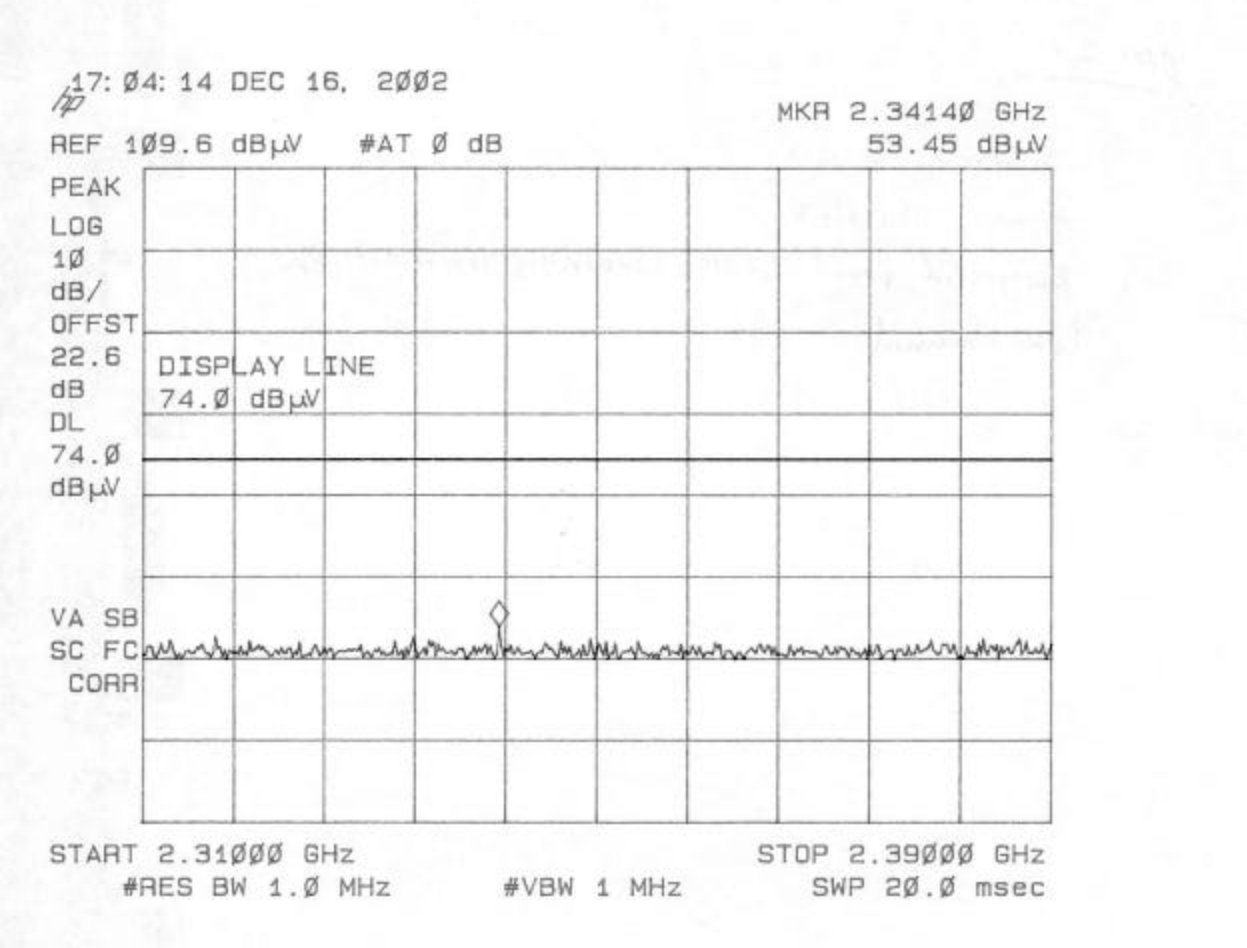
Restricted Band (2310-2390)MHz, Vertical Peak Low Channel



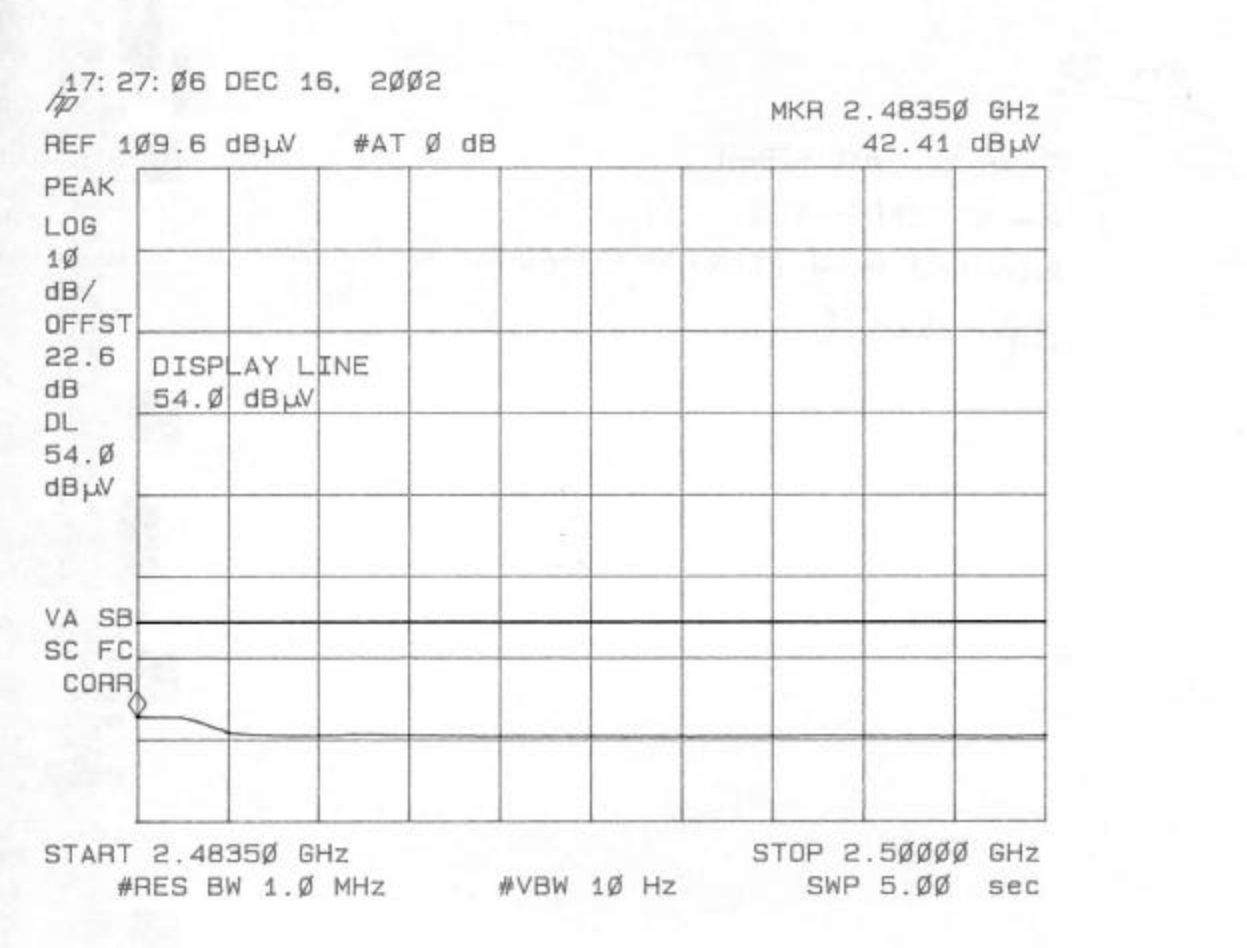
Restricted Band (2310-2390)MHz, Horizontal, Average Low Channel



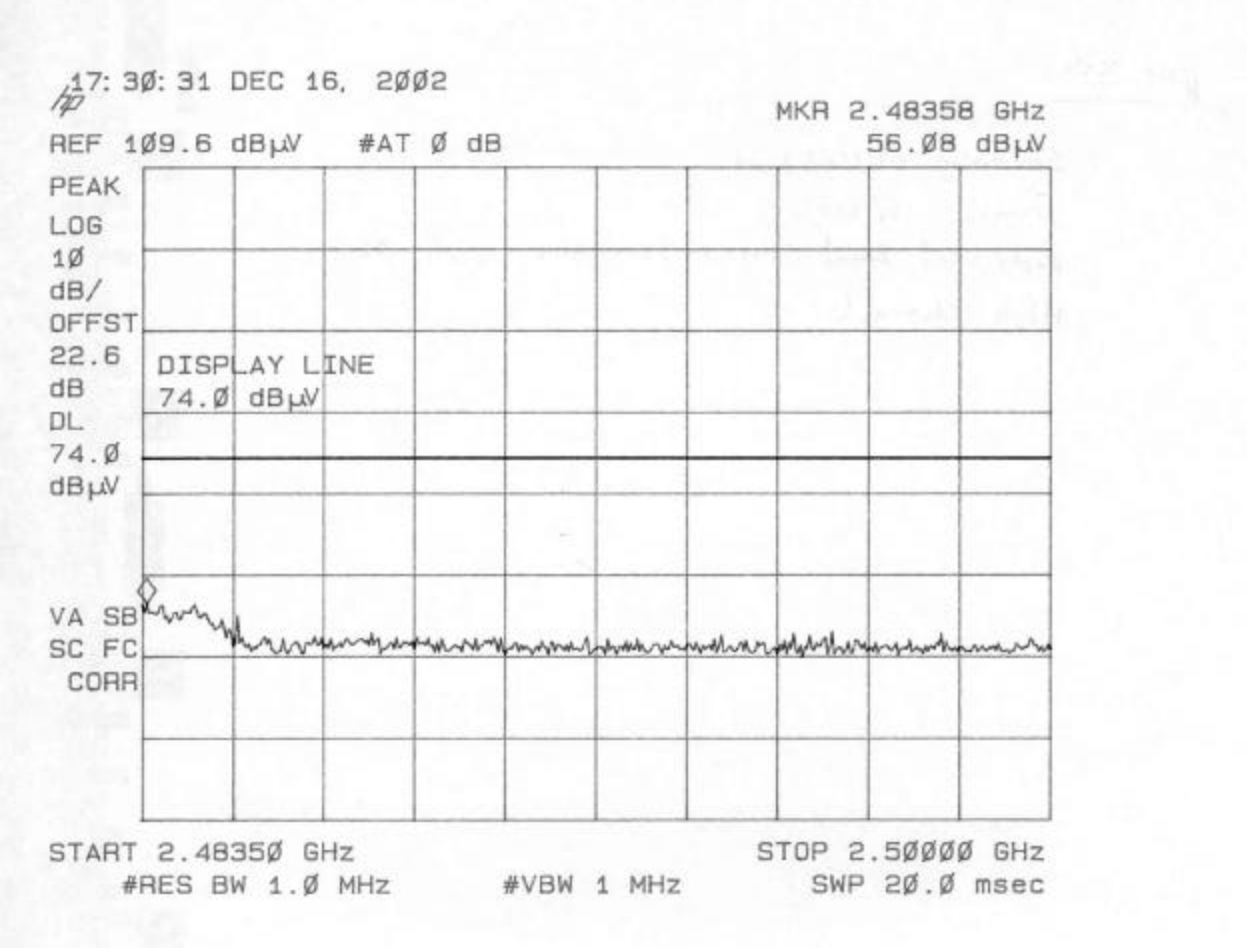
Restricted Band (2310-2390)MHz, Horizontal Peak Low Channel



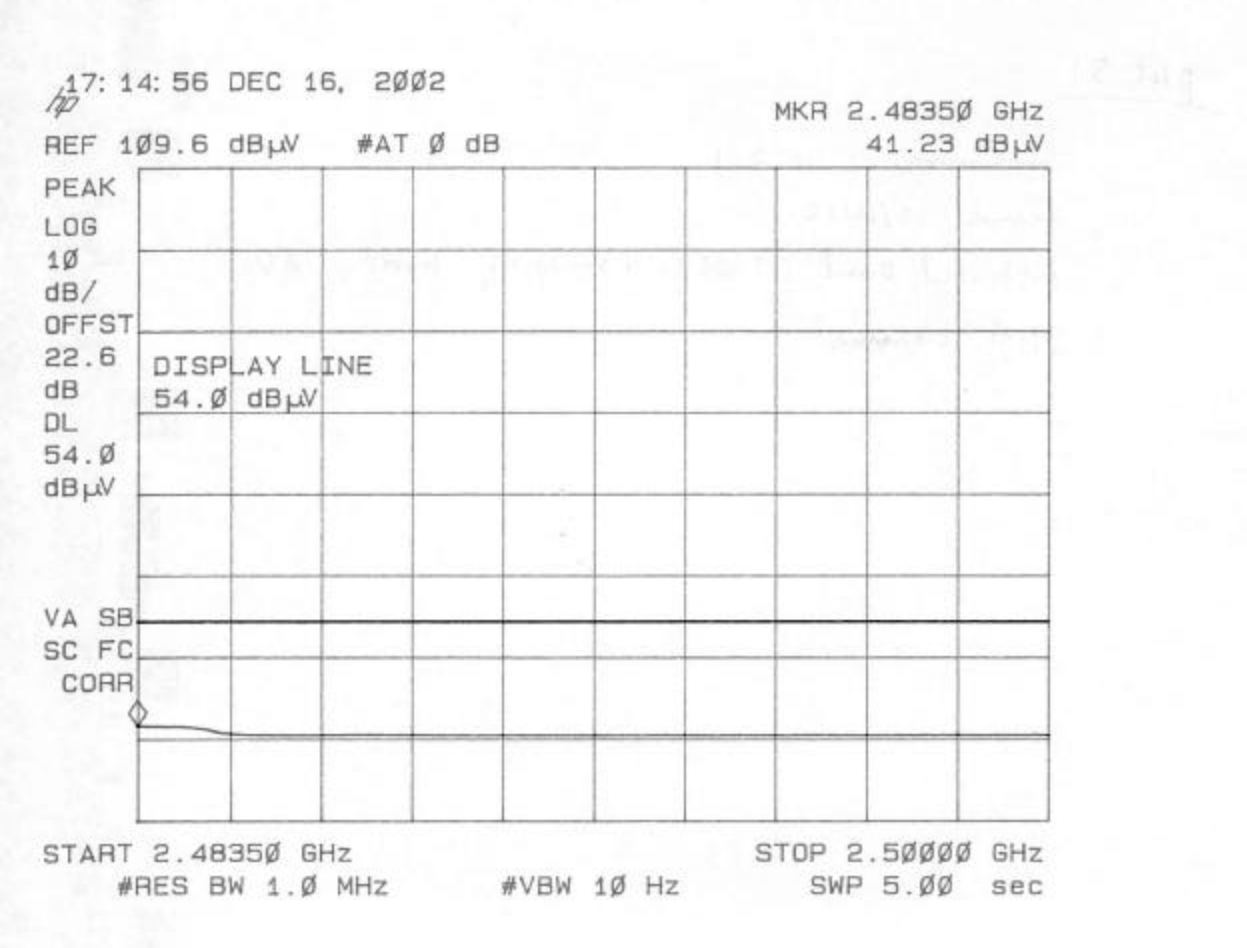
Restricted Band (2483.5-2500) MHz, Vertical Average High Channel



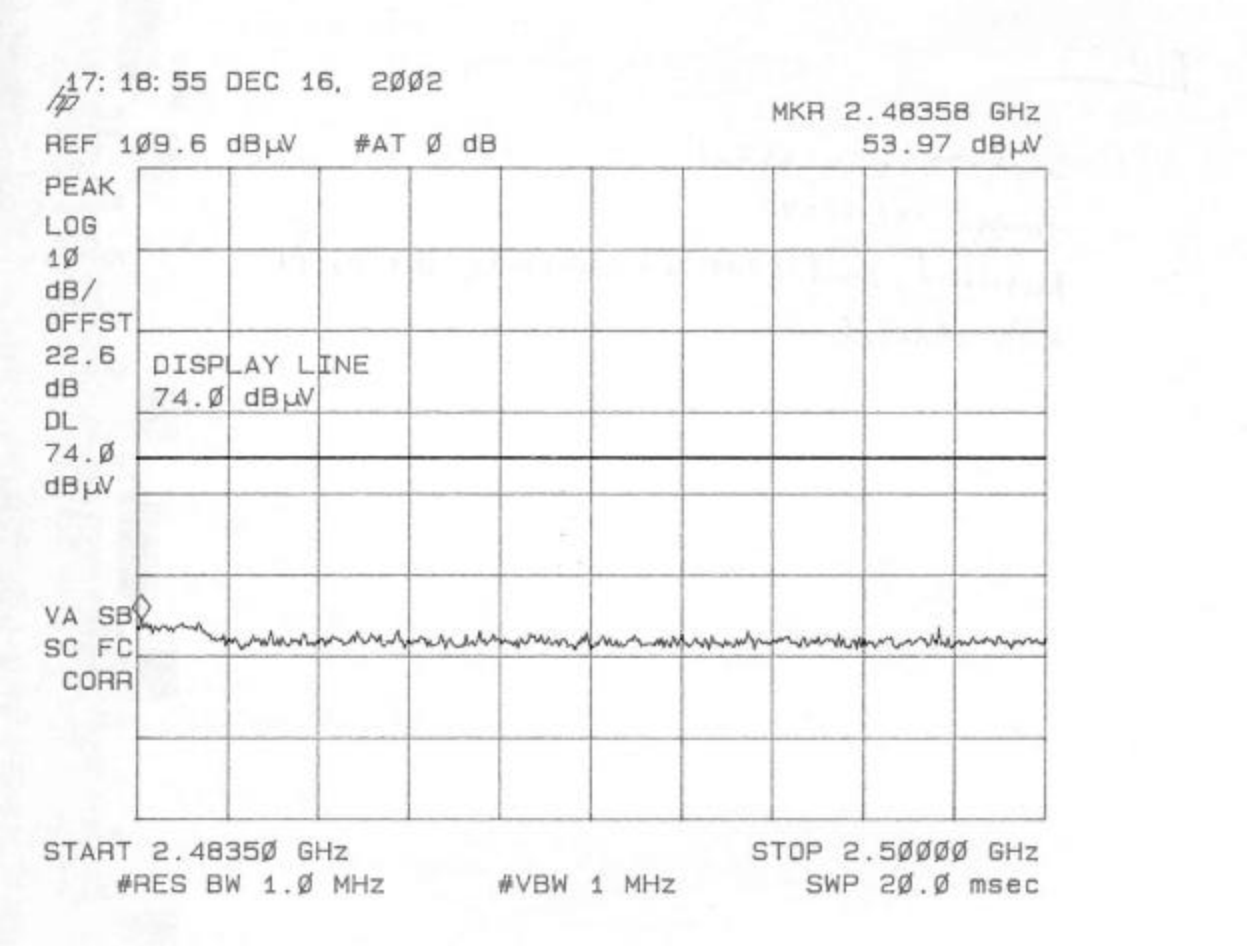
Restricted Band (2483.5-2500) MHz, Vertical Peak High Channel



Restricted Band (2483.5-2500) MHz, Horizontal Average High Channel



Restricted Band (2483.5-2500) MHz, Horizontal Peak High Channel



8.10. POWER LINE CONDUCTED EMISSIONS

The EUT was setup and located so that the distance between the boundary of the EUT and the closest surface to the LISN was 0.8m or more.

EUT test configuration was according to Section 7 of ANSI C63.4/1992.

Conducted disturbance was measured between the phase lead and the ground, and between the neutral lead and the ground. The frequency 0.150 - 30 MHz was investigated.

The EMI receiver was set to PEAK detector setting, and swept continuously over the frequency range to be investigated. The resolution bandwidth was set to 10kHz minimum. The EMI receiver input cable was connected to LINE 1 RF measurement connection on the LISN. A 50ohm terminator was connected to the unused RF port on the LISN. For each mode of EUT operation, emissions readings were maximized by manipulating cable and wire positions. The configuration for each EUT power cord, which produced emissions closest to the limit, was recorded. The same procedure was repeated for LINE 2 of each EUT power cord.

Refer to the following pages for data sheets and plots.

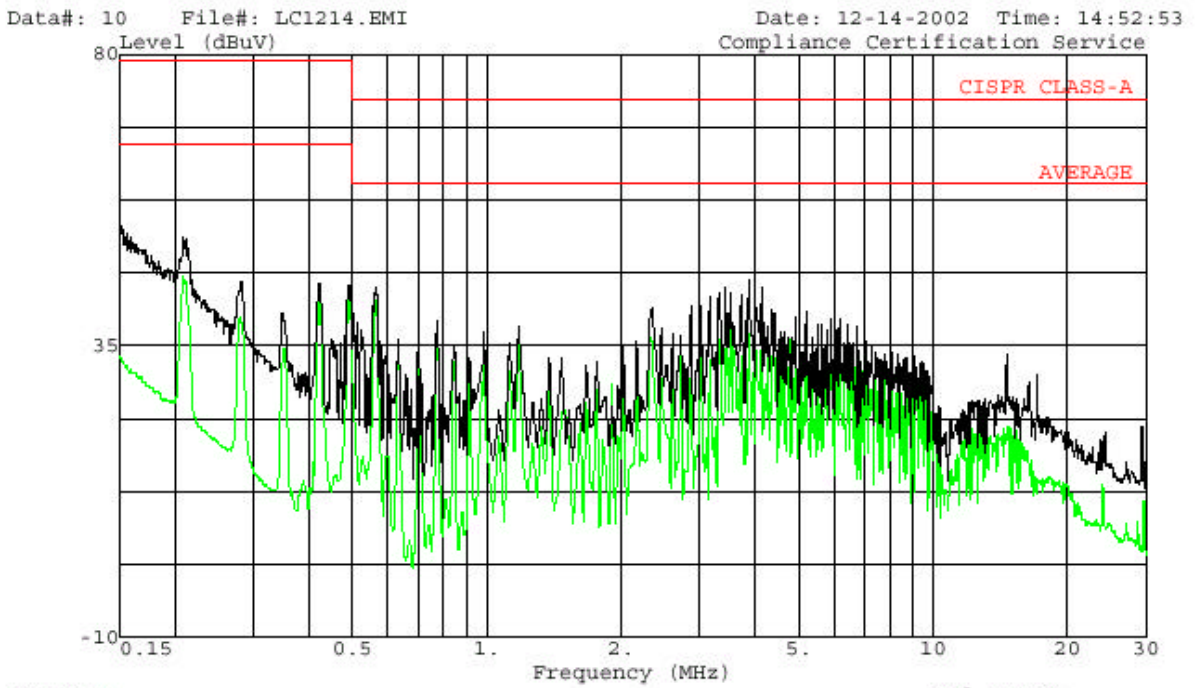
CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN_A	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.21	51.68	45.72	--	0.00	79.00	66.00	-27.32	-20.28	L1
0.49	44.42	42.08	--	0.00	79.00	66.00	-34.58	-23.92	L1
0.56	44.12	42.18	--	0.00	73.00	60.00	-28.88	-17.82	L1
0.21	51.20	45.02	--	0.00	79.00	66.00	-27.80	-20.98	L2
0.49	42.72	39.44	--	0.00	79.00	66.00	-36.28	-26.56	L2
0.56	38.90	36.96	--	0.00	73.00	60.00	-34.10	-23.04	L2
6 Worst Data									

Laptop AC/DC Adapter

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN_A	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.16	47.94	--	--	0.00	79.00	66.00	-31.06	-18.06	L1
0.20	39.48	--	--	0.00	79.00	66.00	-39.52	-26.52	L1
28.75	43.34	--	--	0.00	73.00	60.00	-29.66	-16.66	L1
0.16	45.70	--	--	0.00	79.00	66.00	-33.30	-20.30	L2
0.20	38.32	--	--	0.00	79.00	66.00	-40.68	-27.68	L2
28.45	43.70	--	--	0.00	73.00	60.00	-29.30	-16.30	L2
6 Worst Data									

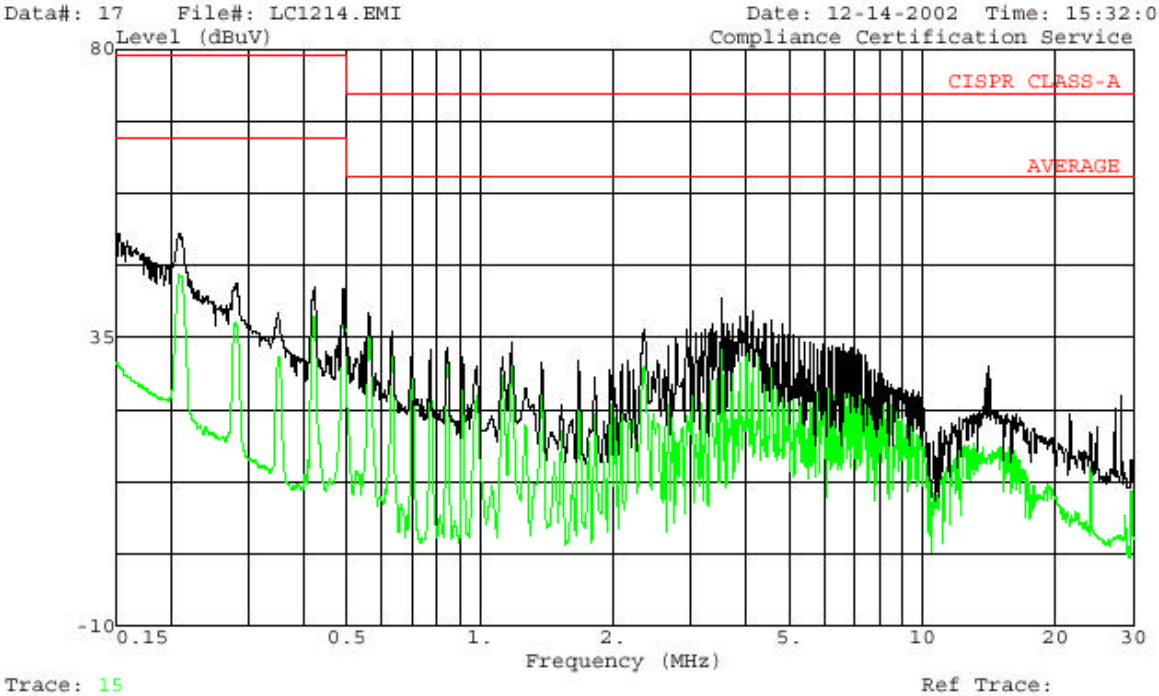
EUT Charging Statior

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



Trace: 8 Ref Trace:
Project # : 02U1637-1
Test Engineer : Frank Ibrahim
Company : SensArray
EUT : Bluetooth Test and Calibration Device
Model Name : ACT8 DISIS , Model # 482-22-0800
Test Config. : EUT,Silicon Wafer,Laptop, Mouse, Printer
Test of Target: FCC 15.207
Mode of Op. : TX ON at Mid Channel
: 115VAC, 60Hz
: L1: PK(BLACK), QP(GREEN)

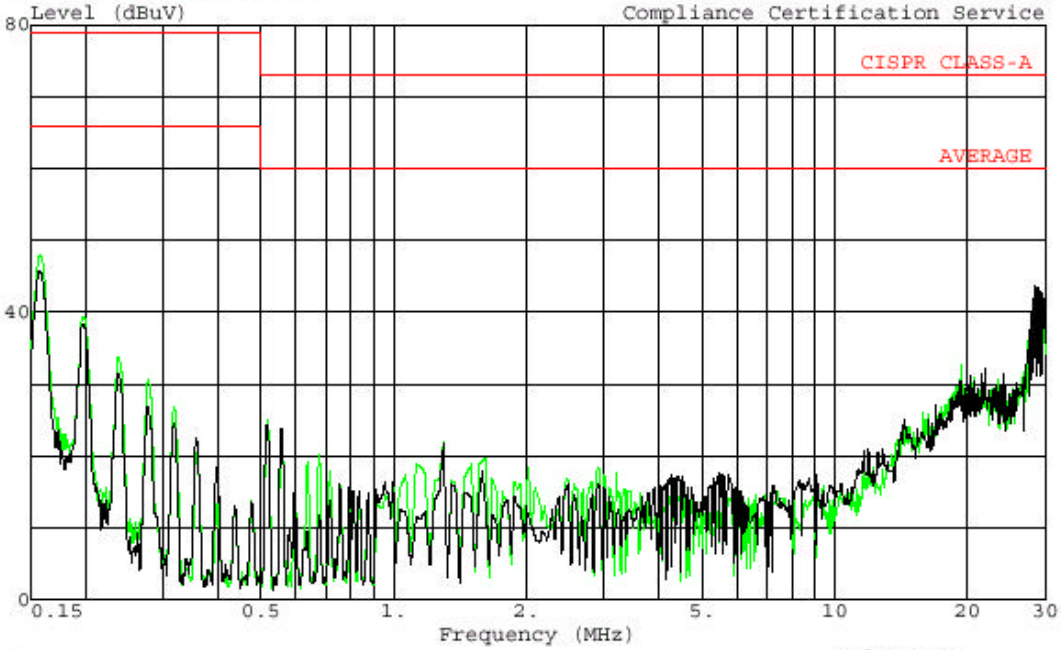
COMPLIANCE Engineering Services, Inc.
561F Monterey Road,
San Jose, CA 95037 USA
Tel: (408) 463-0885
Fax: (408) 463-0888



Trace: 15 Ref Trace:
Project # : 02U1637-1
Test Engineer : Frank Ibrahim
Company : SensArray
EUT : Bluetooth Test and Calibration Device
Model Name : ACT8 DISIS , Model # 482-22-0800
Test Config. : EUT,Silicon Wafer,Laptop, Mouse, Printer
Test of Target: FCC 15.207
Mode of Op. : TX ON at Mid Channel
: 115VAC, 60Hz
: L2: PK(BLACK), QP(GREEN)

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

Data#: 7 File#: LC1217.EMI Date: 12-17-2002 Time: 14:16:01



Trace: 3 Ref Trace:

Project # : 02U1637-1
Test Engineer : Frank Ibrahim
Company : SensArray
EUT : Bluetooth Test and Calibration Device
Model Name : ACT8 DISIS, model: 482-22-0800
Test Config. : EUT, Charger
Test of Target: EN55022, Class A
Mode of Op. : EUT being charged
: 115VAc, 60Hz
: PK: L1(BLACK), L2(GREEN)

8.11. SETUP PHOTOS

ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP

RADIATED RF MEASUREMENT SETUP BELOW 1GHZ

RADIATED RF MEASUREMENT SETUP ABOBE 1GHZ

POWER LINE CONDUCTED EMISSIONS SETUP

END OF REPORT