



**FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 7**

CERTIFICATION TEST REPORT

FOR

VLF RADIO TRANSMITTER

FCC ID: XV9-SES37120

IC ID: 8714A-SES37120

MODEL NUMBER: 37120 and 37000*

REPORT NUMBER: 10U13278-3, Revision D

ISSUE DATE: JANUARY 6, 2011

**Prepared for
STORE ELECTRONIC SYSTEMS (SES)
39 RUE DE MONTIGNY
ARGENTEUIL
ARGENTEUIL 95100, FRANCE**

**Prepared by
COMPLIANCE CERTIFICATION SERVICES (UL CCS)
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888**

***Model Difference shown in report**

Revision History

| Rev. | Issue Date | Revisions | Revised By |
|------|------------|--|-------------|
| -- | 10/14/10 | Initial Issue | F. Ibrahim |
| A | 12/22/10 | Added model difference to report and FCC/IC ID | A. Zaffar |
| B | 12/28/10 | Revised the formulas in radiated emissions data sheets for below 30 MHz. | F. Ibrahim |
| C | 1/06/11 | Show 10m to 300m extrapolation calculation p.21/44 | T. Cokenias |
| D | 1/06/11 | Edit extrapolation calculations p21 and p22 | T. Cokenias |

TABLE OF CONTENTS

| | |
|---|-----------|
| 1. ATTESTATION OF TEST RESULTS..... | 4 |
| 1. TEST METHODOLOGY | 5 |
| 2. FACILITIES AND ACCREDITATION | 5 |
| 3. CALIBRATION AND UNCERTAINTY | 5 |
| 3.1. MEASURING INSTRUMENT CALIBRATION | 5 |
| 3.2. SAMPLE CALCULATION..... | 5 |
| 3.3. MEASUREMENT UNCERTAINTY | 5 |
| 4. EQUIPMENT UNDER TEST..... | 6 |
| 4.1. DESCRIPTION OF EUT | 6 |
| 4.2. MODEL DIFFERENCES | 6 |
| 4.3. DESCRIPTION OF AVAILABLE ANTENNAS | 6 |
| 4.4. SOFTWARE AND FIRMWARE | 6 |
| 4.5. WORST-CASE CONFIGURATION AND MODE..... | 6 |
| 5. DESCRIPTION OF TEST SETUP | 8 |
| 5.1. SUPPORT EQUIPMENT AND CABLING | 8 |
| 5.2. TEST MODE..... | 8 |
| 5.3. TEST SETUP | 9 |
| 5.3.1. TEST DIAGRAM | 9 |
| 5.3.2. KATO STREET SOUTH TX LOOP ANTENNA..... | 10 |
| 5.3.3. KATO STREET NORTH TX LOOP ANTENNA | 11 |
| 5.3.4. 47173 Benicia Street Loop ANTENNA | 12 |
| 5.4. TEST LOCATIONS..... | 13 |
| 5.4.1. SOUTH KATO LOOP DIAGRAM..... | 13 |
| 5.4.2. NORTH KATO LOOP DIAGRAM..... | 14 |
| 5.4.3. 47173 BENICIA STREET LOOP DIAGRAM..... | 16 |
| 6. TEST AND MEASUREMENT EQUIPMENT..... | 17 |
| 7. APPLICABLE LIMITS AND TEST RESULTS..... | 19 |
| 7.1. 99% OCCUPIED BANDWIDTH..... | 19 |
| 7.2. RADIATED EMISSIONS | 20 |
| 7.3. AC MAINS LINE CONDUCTED EMISSIONS | 29 |
| 8. SETUP PHOTOS | 35 |

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: STORE ELECTRONIC SYSTEMS (SES)
39 RUE DE MONTIGNY ARGENTEUIL
ARGENTEUIL 95100, FRANCE

EUT DESCRIPTION: VLF RADIO TRANSMITTER AND BUFFER MODULATOR

MODEL: 37120 and 37000

SERIAL NUMBER: Transmitter 0012 10/25, Buffer S0009 10/22

DATE TESTED: September 21-28, 2010

| APPLICABLE STANDARDS | |
|---------------------------------|--------------|
| STANDARD | TEST RESULTS |
| FCC PART 15 SUBPART C | Pass |
| INDUSTRY CANADA RSS-210 Issue 7 | Pass |
| INDUSTRY CANADA RSS-GEN Issue 2 | Pass |

Compliance Certification Services (UL CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL CCS By:



FRANK IBRAHIM
EMC SUPERVISOR
UL CCS

Tested By:



TOM COKENIAS
Principal Consultant
UL CCS

1. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 2, and RSS-210 Issue 7.

2. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

3. CALIBRATION AND UNCERTAINTY

3.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

3.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

3.3. MEASUREMENT UNCERTAINTY

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

| PARAMETER | UNCERTAINTY |
|---------------------------------------|-------------|
| Conducted Disturbance, 0.15 to 30 MHz | 3.52 dB |
| Radiated Disturbance, 30 to 1000 MHz | 4.94 dB |

Uncertainty figures are valid to a confidence level of 95%.

4. EQUIPMENT UNDER TEST

4.1. DESCRIPTION OF EUT

The EUT is a VLF transmitter used in stores to program electronic price tags located on shelves. The transmitter can operate in either one of two modes: QPSK, CF = 36 kHz, and FSK (NRZ), CF=38.4 kHz, +/- 1.8 kHz excursion.

4.2. MODEL DIFFERENCES

37120 is the VLF Radio Transmitter which is the EUT;
37000 is support equipment, ITE equipment. Both 37120 and 37000 work together.

4.3. DESCRIPTION OF AVAILABLE ANTENNAS

The transmitter antenna is a simple wire loop antenna, in rectangles strung around the periphery of the area containing the shelves with the price tags. The pattern is a double rectangle, the standard configuration used in actual installations.

The antenna wire is a UL approved type AWM Style 1015 single-conductor multi-strand wire.

The product was tested in situ at 3 different locations with 3 different antenna loop routings:

| | |
|---------------------------------|---------------|
| 47280 Kato Street (South Side): | 13.2m x 16.5m |
| 47280 Kato Street (North Side): | 10.5m x 15m |
| 47173 Benicia Street: | 13.2m x 20m |

For the AC line conducted test, a small loop dummy load was attached to the TX antenna port.

4.4. SOFTWARE AND FIRMWARE

Firmware EmtManu 4.03
Driver Gest 9.03

Firmware Version:

Buffer 37000: v111 0139F800
Transmitter 37120: v111 0139F800

4.5. WORST-CASE CONFIGURATION AND MODE

The EUT consists of a transmitter and loop antenna. The pc controls the transmitter. The EUT, once powered, will start transmitting the VLF signal; there is only one operating mode.

During tests the antenna current was set to the maximum value of 2 A p-p, (0.707 RMS).

5. DESCRIPTION OF TEST SETUP

5.1. SUPPORT EQUIPMENT AND CABLING

SUPPORT EQUIPMENT

| Device Type | Manufacturer | Model Number | Serial Number | FCC ID |
|-------------|--------------|--------------|-------------------------|--------|
| PC | Gateway | DT100 | P80670Z0332393-15891800 | DoC |
| Monitor | Hyundai | X71S | 10A701L04915 | N/A |
| Keyboard | Gateway | KU-0355 | KBUSB0G0179180-04780B00 | DoC |
| Mouse | Acer | M-UVACRI | HC901A0051E | DoC |

CABLES

| Cable | Port | # of Identical Ports | Connector Type | Cable Type | Cable Length | Remarks |
|-------|--------|----------------------|----------------|------------------|--------------|---------|
| RS232 | Serial | 2 | D9 | shielded | 4m | N/A |
| Power | AC | 1 | IEC connector | unshielded | 1.5m | N/A |
| Ant | ANT1&2 | 1 | Screwdown | Single conductor | Varies | N/A |

CLIENT EQUIPMENT

| Description | Mfr | Model Number | Serial | Cal Date | Cal Due |
|-------------------|-----------|--------------|---------|----------|----------|
| Current probe | Tektronix | P6201 | X005097 | 03/02/10 | 03/02/11 |
| Tuning Controller | SES | na | na | NCR | NCR |

5.2. TEST MODE

TEST SETUP

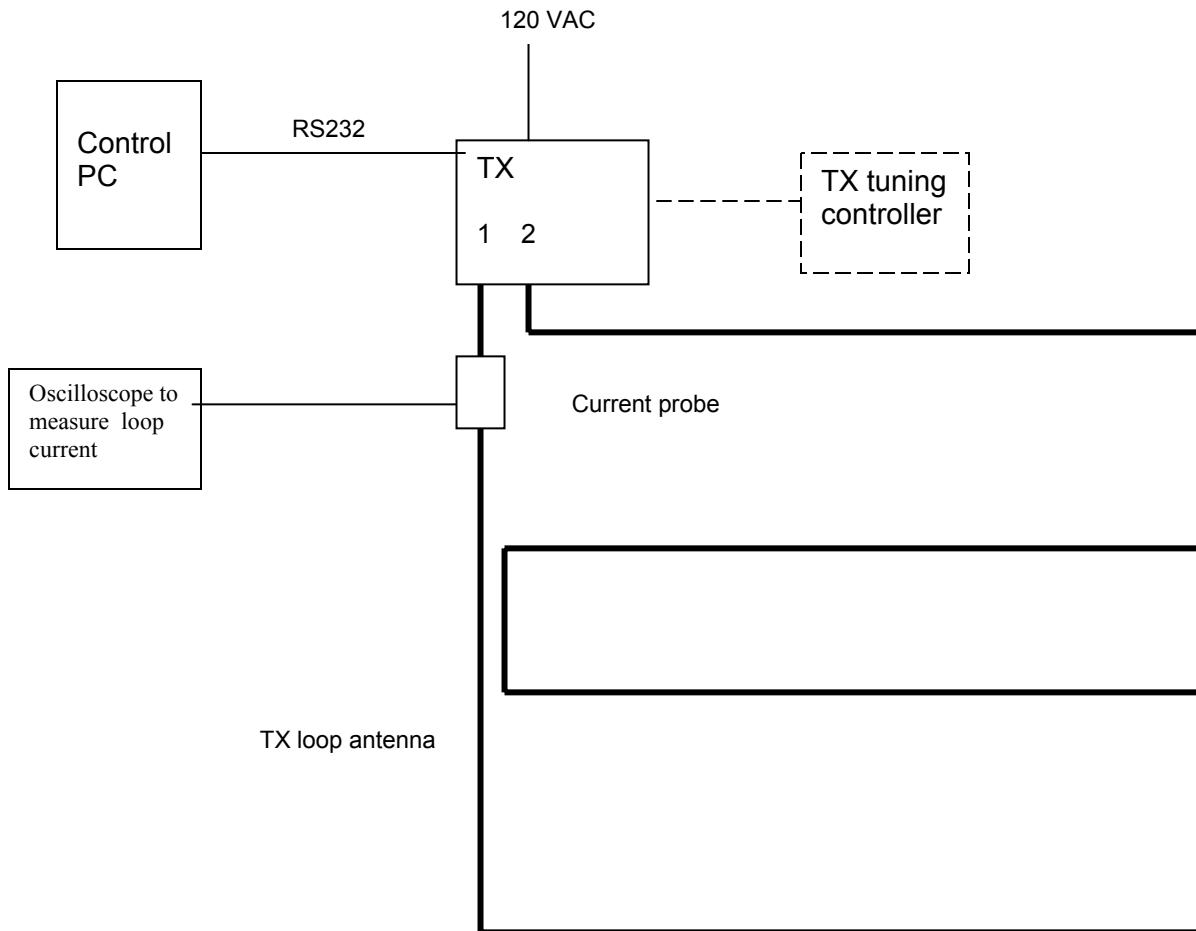
The EUT consists of a transmitter and loop antenna. The TX tuning controller is used to tune the TX match network for each loop antenna.

After the TX has been tuned for the specific loop antenna to which it is connected, the TX tuning controller is disconnected, the TX lid is replaced, and the pc then controls operation of the TX.

For all tests, the TX output was set to produce an antenna loop current of 2 A p-p (0.707A RMS), which per the manufacturer is the maximum level for operation in actual installations.

5.3. TEST SETUP

5.3.1. TEST DIAGRAM



5.3.2. KATO STREET SOUTH TX LOOP ANTENNA



5.3.3. KATO STREET NORTH TX LOOP ANTENNA

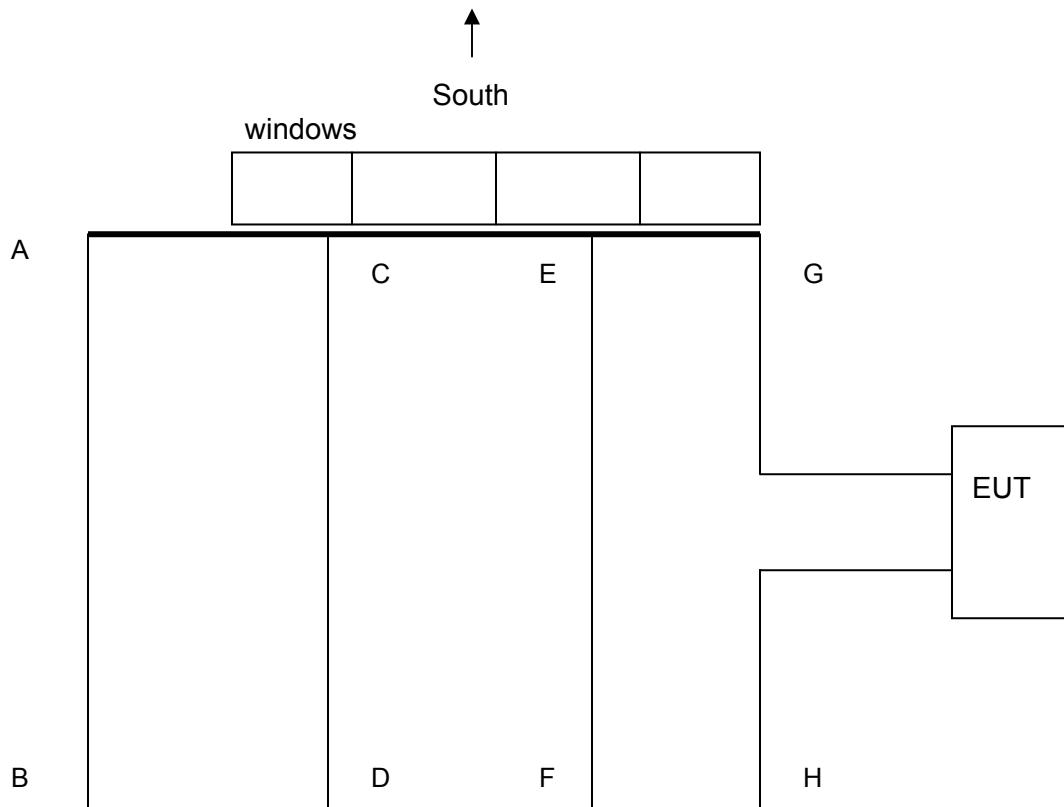


5.3.4. 47173 Benicia Street Loop ANTENNA



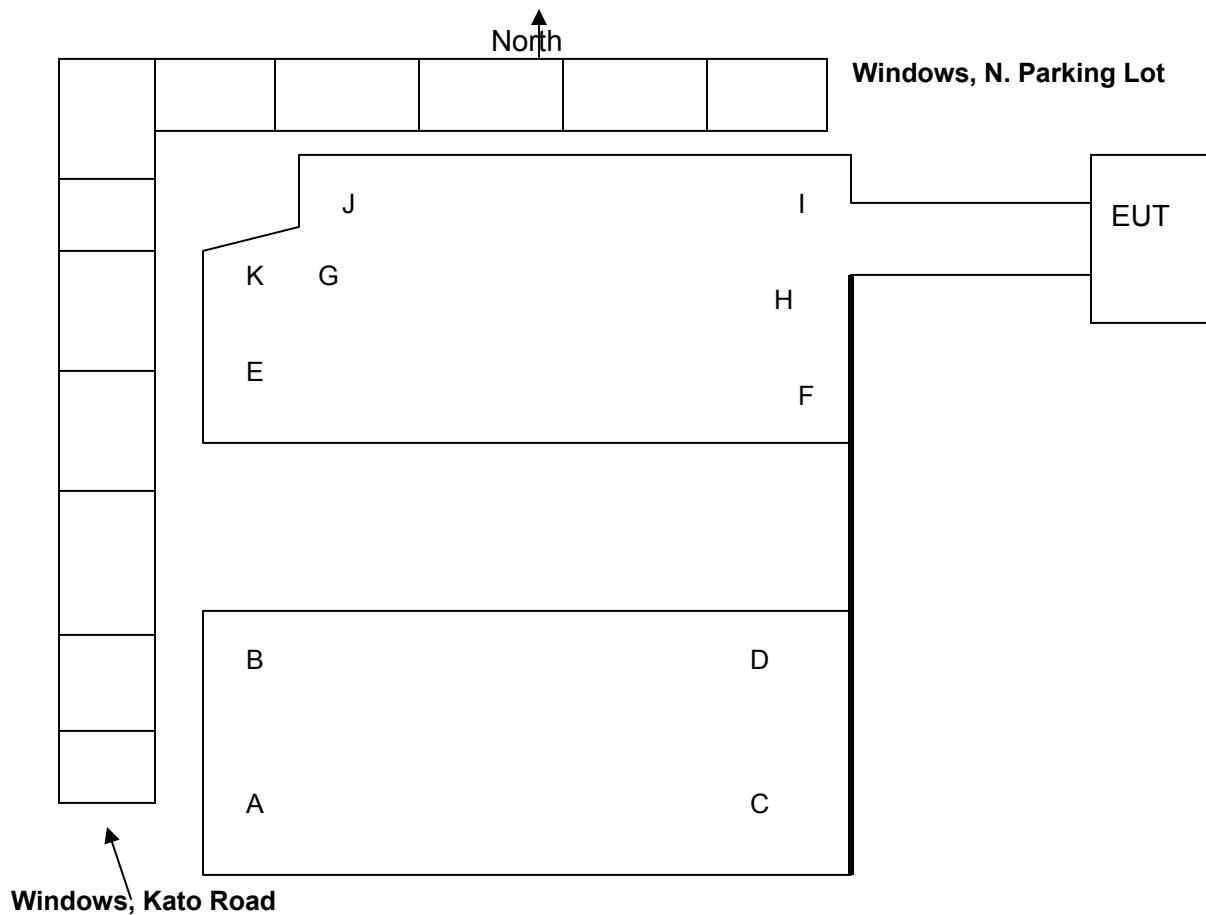
5.4. TEST LOCATIONS

5.4.1. SOUTH KATO LOOP DIAGRAM



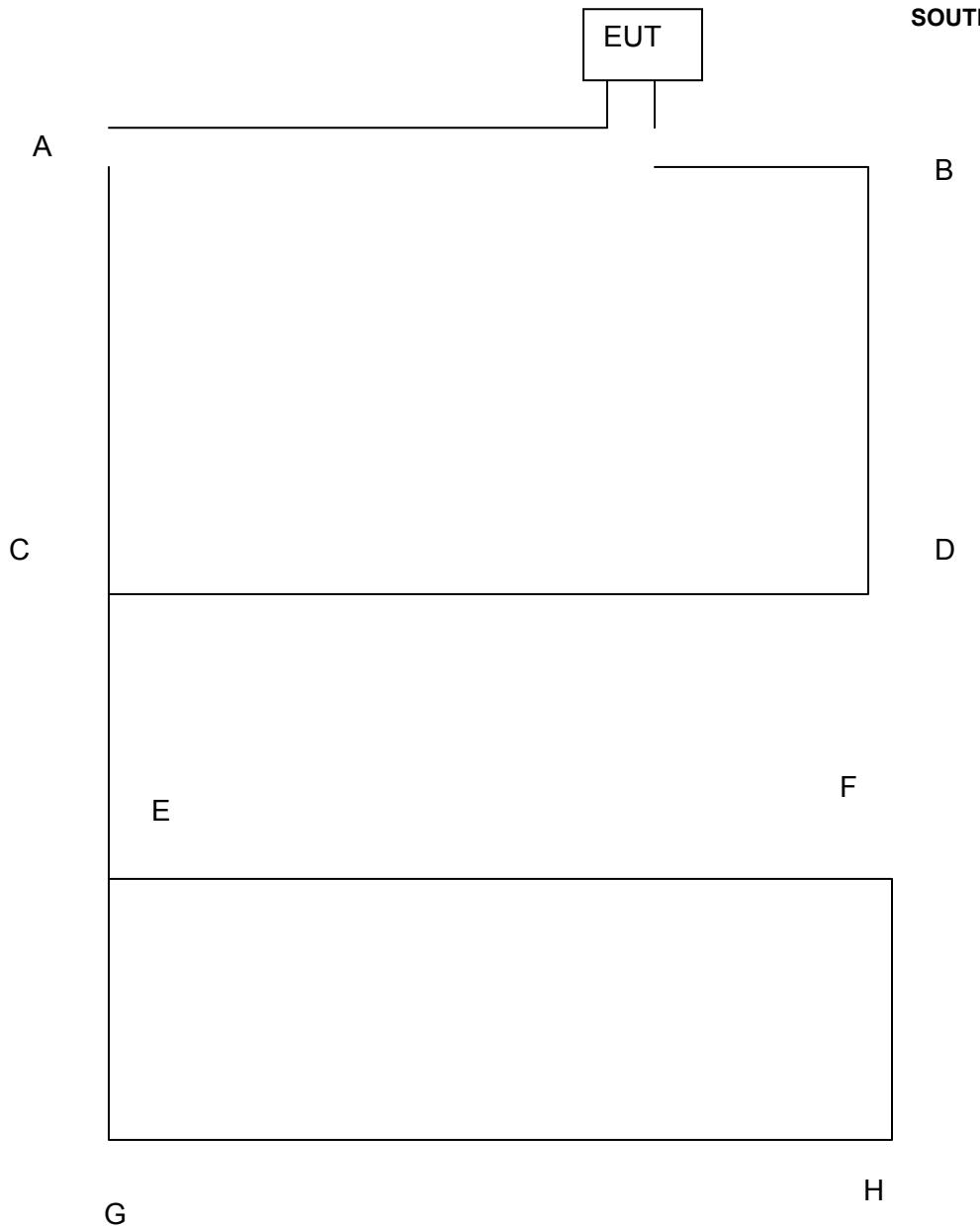
| | |
|---------------------|-----------------|
| A-B, C-D, E-F, G-H: | 16.5m (55 ft.) |
| A-C, B-D: | 4.8m (16ft) |
| C-E, D-F: | 5m (16.67 ft) |
| E-G, F-H: | 3.45m (11.5 ft) |

5.4.2. NORTH KATO LOOP DIAGRAM



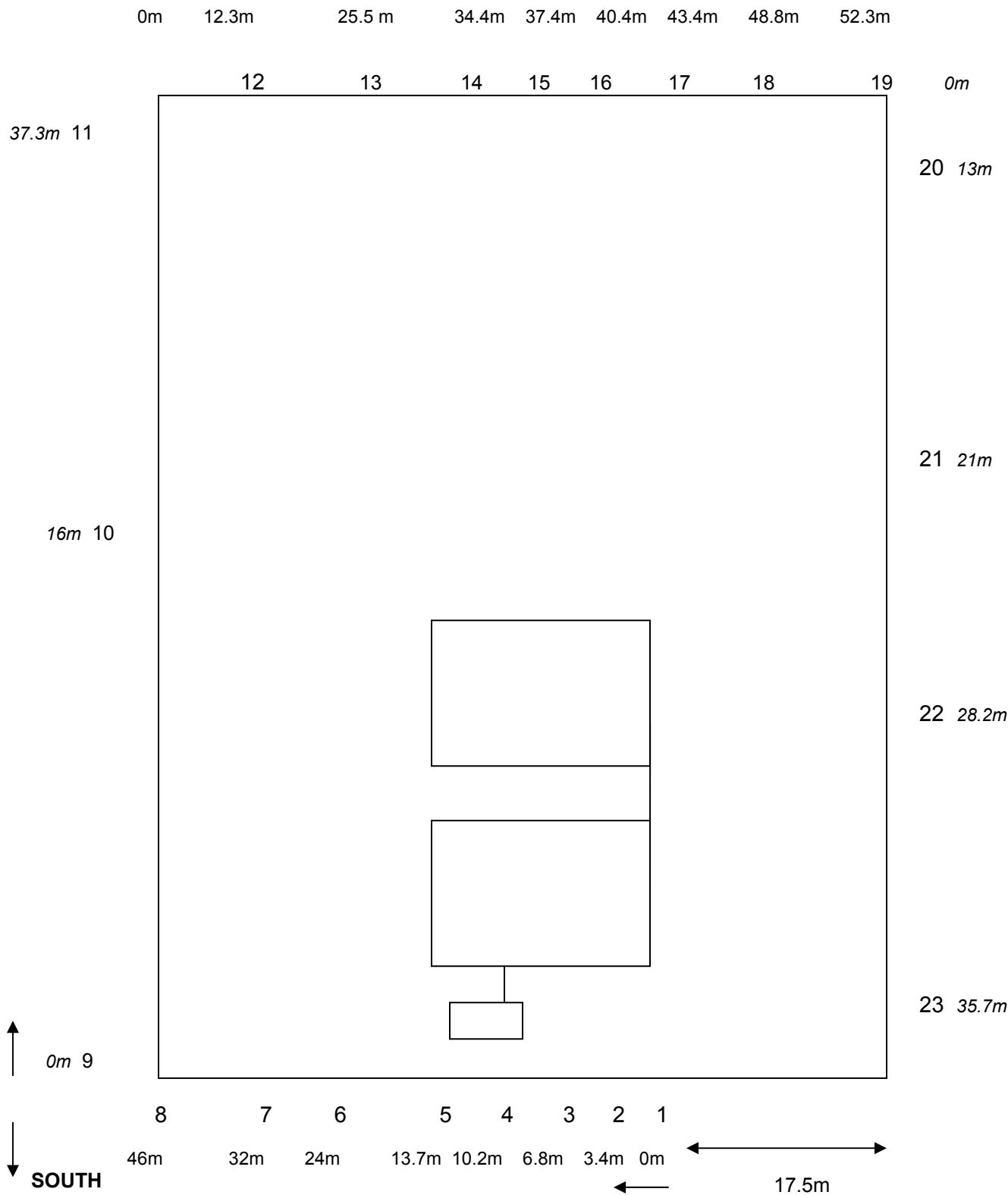


5.4.3. 47173 BENICIA STREET LOOP DIAGRAM



| | |
|---------------------|-----------------|
| A-B, C-D, E-F, G-H: | 13.2m (44 ft) |
| B-D: | 9.2m (30.67 ft) |
| B-H: | 20m (60.67 ft) |
| D-F: | 5.2m (17.33 ft) |
| F-H: | 5.6m (18.67 ft) |

47173 BENICIA STREET TEST LOCATIONS



6. TEST AND MEASUREMENT EQUIPMENT

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

| TEST EQUIPMENT LIST | | | | | |
|------------------------|----------------|------------------|--------|------------|------------|
| Description | Manufacturer | Model | Asset | Cal Date | Cal Due |
| Antenna, Bilog, 2 GHz | Sunol Sciences | JB1 | C01011 | 1/14/2009 | 12/18/2010 |
| Preamplifier, 1300 MHz | Agilent / HP | 8447D | C00885 | 3/31/2009 | 12/19/2010 |
| Spectrum Analyzer | Agilent / HP | E4446A | C01069 | 1/5/2010 | 4/5/2011 |
| Oscilloscope | HP | 54601A | T36 | 2/21/2010 | 2/21/2011 |
| Preamplifier, 26.5 GHz | Agilent / HP | 8449B | C01052 | 8/5/2009 | 12/17/2010 |
| LISN, 30 MHz | FCC | LISN-50/250-25-2 | N02625 | 10/29/2009 | 10/29/2010 |
| LISN, 10 kHz ~ 30 MHz | Solar | 8012-50-R-24-BNC | N02481 | 10/29/2009 | 10/29/2010 |
| EMI Receiver | R & S | ESHS 20 | N02396 | 6/8/2009 | 5/6/2011 |
| Loop Antenna | EMCO | 6502 | C00593 | 9/16/2010 | 1/12/2012 |

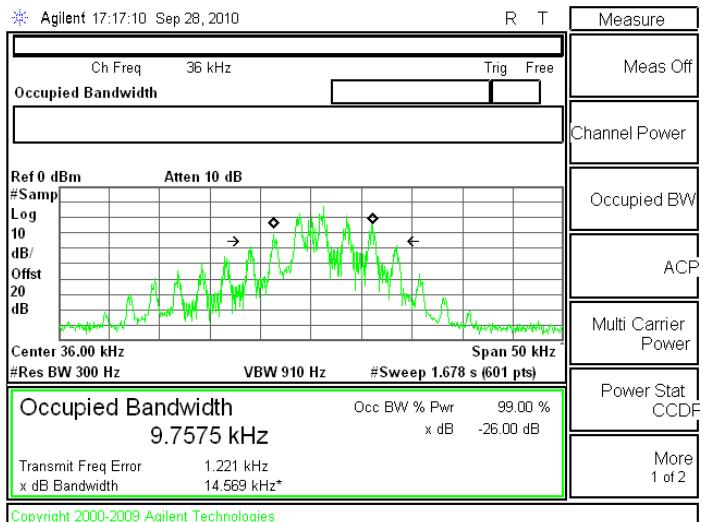
7. APPLICABLE LIMITS AND TEST RESULTS

7.1. 99% OCCUPIED BANDWIDTH

TEST PROCEDURE

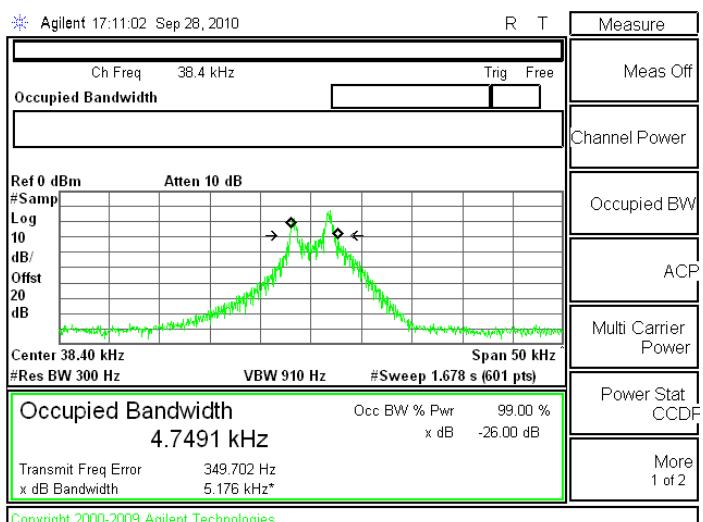
A small pickup loop was placed near the TX loop and was connected to the spectrum analyzer by a 3m length of coax cable. The transmitter was set to transmit continuously. The spectrum analyzer 99% OCC BW internal function was activated.

LIMIT NONE. For reporting purposes only



QPSK modulation

Emission designator: 9K75G1D



FSK modulation

Emission designator: 4K75F1D

7.2. RADIATED EMISSIONS

TEST PROCEDURE

ANSI C63.4

The frequency range was investigated from 9 kHz to 1000 MHz.

Testing was performed at 3 different installations, located in two different buildings. Field strength was measured at 21-23 different radials around each installation.

Preliminary testing was performed at 3 m separation distance from the loop, inside the building, to search for spurious and harmonic emissions between 9 kHz – 30 MHz. For 30-1000 MHz, testing was performed in an anechoic chamber using a dummy load antenna.

LIMIT

§15.209 (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 (m) |
|-----------------|-----------------------------------|--------------------------|
| 0.009–0.490 | 2400/F(kHz) | 300 |
| 0.490–1.705 | 24000/F(kHz) | 30 |
| 1.705–30.0 | 30 | 30 |
| 30–88 | 100 | 3 |
| 88 to 216 | 150 | 3 |
| 216 to 960 | 200 | 3 |
| Above 960 MHz | 500 | 3 |

Note: The lower limit shall apply at the transition frequency.

RESULTS

0.15 TO 30 MHz (WORST-CASE CONFIGURATION)

FSK Modulation

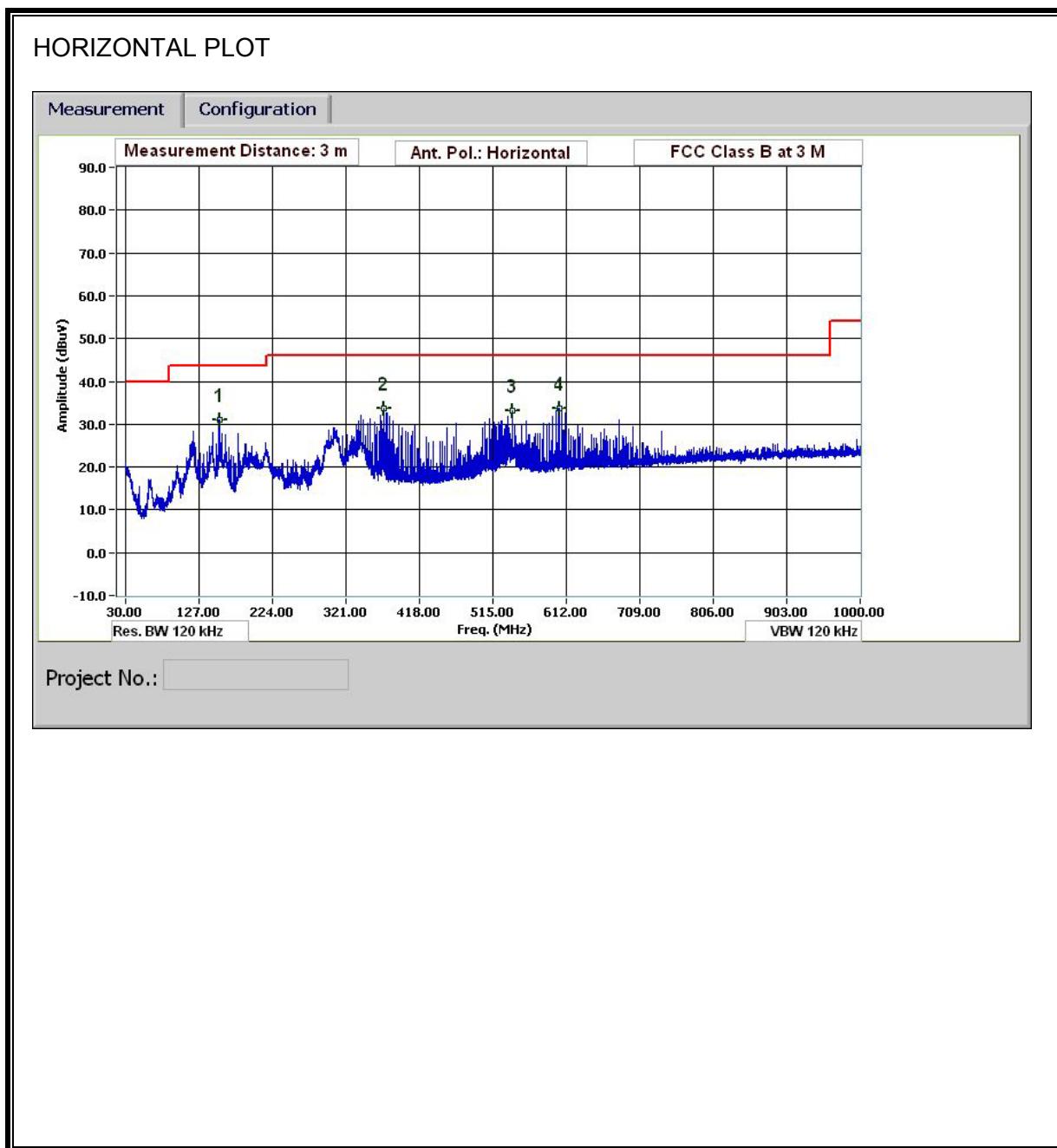
| FCC Part 15.209 | | | | | | | | | | | | | |
|--|----------------------|-------------|----------------|---------|-------------|----------------|---------|-------------|----------|-------------------|----------|-------|-------------------|
| FSK Modulation: Loop Antenna Measurement At Open Field below 30 MHz | | | | | | | | | | | | | |
| Company: | SES | | | | | | | | | | | | |
| Project #: | 10U13278 | | | | | | | | | | | | |
| Model #: | 37120 | | | | | | | | | | | | |
| Tester: | T. Cokenias | | | | | | | | | | | | |
| Date: | 21-23 September 2010 | | | | | | | | | | | | |
| Frequency | Reading | Measurement | Field Strength | Reading | Measurement | Field Strength | Antenna | Distance | Limit | Field Strength | Limit | Delta | Notes |
| (MHz) | A | Distance A | A | B | Distance B | B | Factor | Factor | Distance | at Limit Distance | | | (Pk/QP/AV, etc.) |
| (dBuV) | (dBuV) | (m) | (dBuV/m) | (dBuV) | (m) | (dBuV/m) | (dB/m) | (dB/decade) | (m) | (dBuV/m) | (dBuV/m) | (dB) | |
| Loop Antenna Maximized over all 3 planes: XY, YZ, and ZX: | | | | | | | | | | | | | |
| 0.0366 | 75.17 | 10 | 87.67 | | | | 12.50 | 40.00 | 300 | 28.59 | 36.33 | -7.7 | KatoSouth Loc11 |
| 0.042 | 73.83 | 10 | 85.93 | | | | 12.10 | 40.00 | 300 | 26.85 | 35.14 | -8.3 | |
| 0.0366 | 77.2 | 10 | 89.70 | | | | 12.50 | 40.00 | 300 | 30.62 | 36.33 | -5.7 | KatoNorth Loc4 |
| 0.042 | 76 | 10 | 88.10 | | | | 12.10 | 40.00 | 300 | 29.02 | 35.14 | -6.1 | |
| 0.0366 | 57.33 | 10 | 69.83 | | | | 12.50 | 40.00 | 300 | 10.75 | 36.05 | -25.3 | 47173Benicia Loc4 |
| 0.042 | 61 | 10 | 72.10 | | | | 12.10 | 40.00 | 300 | 13.02 | 36.05 | -23.0 | |
| No other emissions detected | | | | | | | | | | | | | |
| Notes: In accordance with 15.31 (f) (2): For each frequency at which a measurement is made at only one distance, the square of an inverse linear distance extrapolation factor (40 dB/decade) is applied. | | | | | | | | | | | | | |
| Extrapolation factor from 10m to 300m: '40log(10/300) = -59.08 dB' | | | | | | | | | | | | | |

QPSK Modulation

| FCC Part 15.209 QPSK Modulation: Loop Antenna Measurement At Open Field below 30 MHz | | | | | | | | | | | | | |
|--|---------|-------------|----------------|---------|-------------|----------------|---------|-------------|----------------------------|----------------|----------|-------|-------------------|
| Frequency | Reading | Measurement | Field Strength | Reading | Measurement | Field Strength | Antenna | Distance | Limit | Field Strength | Limit | Delta | Notes |
| (MHz) | A | Distance A | A | B | Distance B | B | Factor | Factor | Distance at Limit Distance | (dBuV/m) | (dBuV/m) | (dB) | (Pk/QP/AV, etc.) |
| (dBuV) | (m) | (dBuV/m) | (dBuV) | (m) | (dBuV/m) | (dBuV) | (dB/m) | (dB/decade) | (m) | (dBuV/m) | (dBuV/m) | (dB) | |
| Loop Antenna Maximized over all 3 planes: XY, YZ, and ZX: | | | | | | | | | | | | | |
| 0.036 | 74.17 | 10 | 86.67 | | | | 12.50 | 40.00 | 300 | 27.59 | 36.48 | -8.9 | KatoSouth Loc11 |
| 0.036 | 73.7 | 10 | 86.20 | | | | 12.50 | 40.00 | 300 | 27.12 | 36.48 | -9.4 | KatoNorth Loc3 |
| 0.036 | 61 | 10 | 78.30 | | | | 12.50 | 40.00 | 300 | 19.22 | 36.05 | -16.8 | 47173Benicia Loc4 |
| No other emissions detected | | | | | | | | | | | | | |
| Notes: In accordance with 15.31 (f) (2): For each frequency at which a measurement is made at only one distance, the square of an inverse linear distance extrapolation factor (40 dB/decade) is applied. Extrapolation factor from 10m to 300m: '40log(10/300) = -59.08 dB' | | | | | | | | | | | | | |

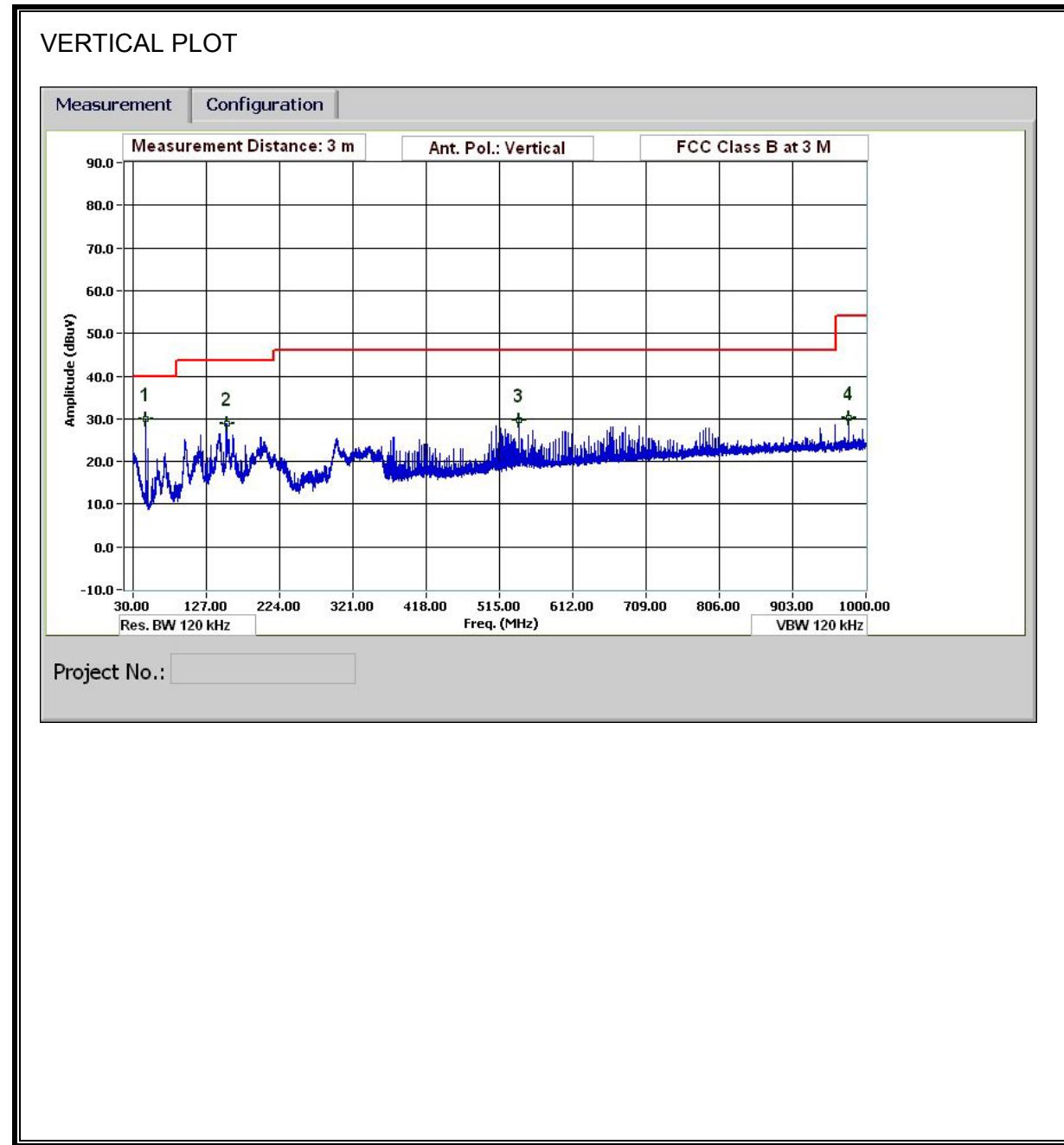
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

Tx FSK



SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

Tx FSK



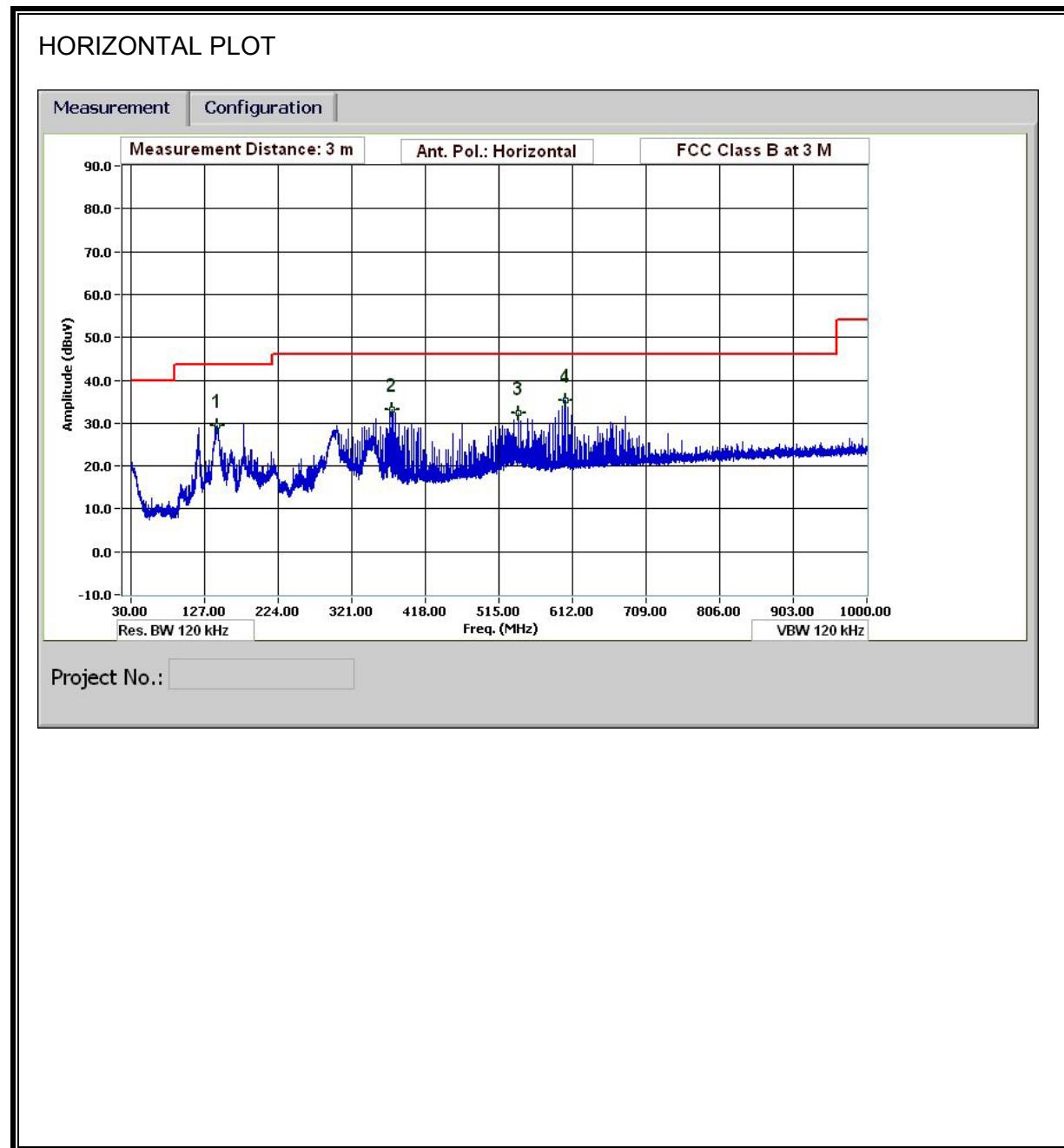
EMISSIONS DATA

Tx FSK

| 30-1000MHz Frequency Measurement Compliance Certification Services, Fremont 5m Chamber | | | | | | | | | | | | | | | | | | |
|---|-----------------------|--------|-------------|------------------------------|------|--------|-----|--------|--------|--------|------------------|--------|-----------|-------------|-------|--|--|--|
| Test Engr: | Thanh Nguyen | | | | | | | | | | | | | | | | | |
| Date: | 09/22/10 | | | | | | | | | | | | | | | | | |
| Project #: | 10U13278 | | | | | | | | | | | | | | | | | |
| Company: | SES | | | | | | | | | | | | | | | | | |
| Test Target: | FCC Class B | | | | | | | | | | | | | | | | | |
| Mode Oper: | FSK Modulation | | | | | | | | | | | | | | | | | |
| f | Measurement Frequency | Amp | Preamp Gain | | | | | | | Margin | Margin vs. Limit | | | | | | | |
| Dist | Distance to Antenna | D | Corr | Distance Correct to 3 meters | | | | | | | | | | | | | | |
| Read | Analyzer Reading | Filter | | Filter Insert Loss | | | | | | | | | | | | | | |
| AF | Antenna Factor | Corr. | | Calculated Field Strength | | | | | | | | | | | | | | |
| CL | Cable Loss | Limit | | Field Strength Limit | | | | | | | | | | | | | | |
| f | Dist | Read | AF | CL | Amp | D Corr | Pad | Corr. | Limit | Margin | Ant. Pol. | Det. | Ant. High | Table Angle | Notes | | | |
| MHz | (m) | dBuV | dB/m | dB | dB | dB | dB | dBuV/m | dBuV/m | dB | V/H | P/A/QP | cm | Degree | | | | |
| FSK | | | | | | | | | | | | | | | | | | |
| 46.681 | 3.0 | 47.7 | 10.0 | 0.6 | 28.4 | 0.0 | 0.0 | 29.9 | 40.0 | -10.1 | V | P | 100.0 | 0 - 360 | | | | |
| 153.605 | 3.0 | 43.8 | 12.3 | 1.1 | 28.3 | 0.0 | 0.0 | 29.0 | 43.5 | -14.5 | V | P | 100.0 | 0 - 360 | | | | |
| 540.741 | 3.0 | 38.0 | 17.4 | 2.1 | 27.7 | 0.0 | 0.0 | 29.8 | 46.0 | -16.2 | V | P | 100.0 | 0 - 360 | | | | |
| 976.959 | 3.0 | 32.8 | 22.3 | 2.9 | 27.9 | 0.0 | 0.0 | 30.2 | 54.0 | -23.8 | V | P | 100.0 | 0 - 360 | | | | |
| 153.605 | 3.0 | 46.0 | 12.3 | 1.1 | 28.3 | 0.0 | 0.0 | 31.1 | 43.5 | -12.4 | H | P | 100.0 | 0 - 360 | | | | |
| 370.694 | 3.0 | 45.6 | 14.5 | 1.7 | 28.1 | 0.0 | 0.0 | 33.7 | 46.0 | -12.3 | H | P | 100.0 | 0 - 360 | | | | |
| 540.741 | 3.0 | 41.5 | 17.4 | 2.1 | 27.7 | 0.0 | 0.0 | 33.3 | 46.0 | -12.7 | H | P | 100.0 | 0 - 360 | | | | |
| 602.184 | 3.0 | 40.4 | 18.4 | 2.2 | 27.5 | 0.0 | 0.0 | 33.6 | 46.0 | -12.4 | H | P | 100.0 | 0 - 360 | | | | |
| Rev. 1.27.09 | | | | | | | | | | | | | | | | | | |
| Note: No other emissions were detected above the system noise floor. | | | | | | | | | | | | | | | | | | |

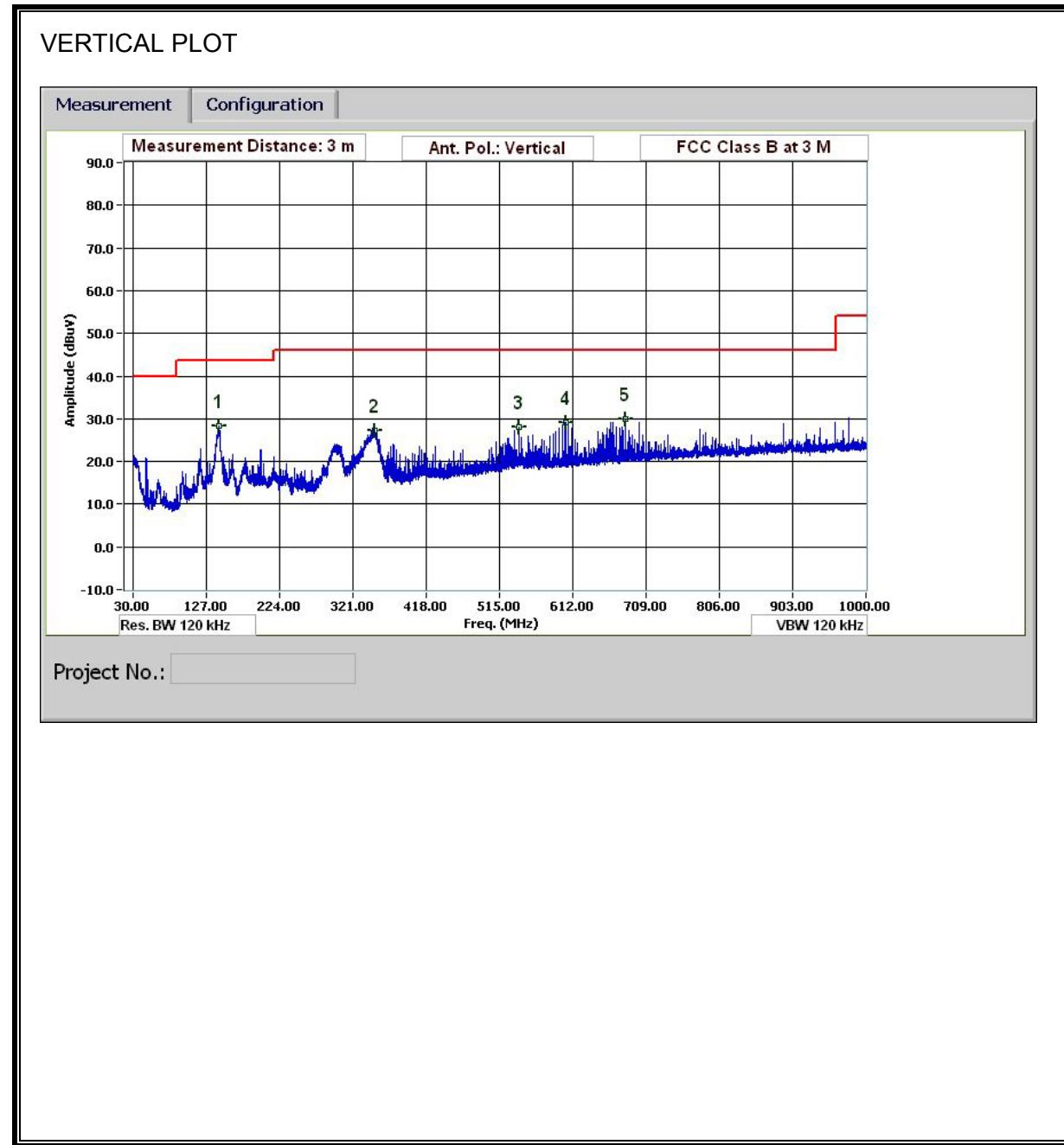
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

Tx QPSK



SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

Tx QPSK



EMISSIONS DATA

Tx QPSK

7.3 AC MAINS LINE CONDUCTED EMISSIONS

TEST PROCEDURE

ANSI C63.4

LIMIT

§15.207 (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 μ H/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 frequencies ranges.

| Frequency of emission (MHz) | Conducted Limit (dB μ V) | |
|--------------------------------|------------------------------|-----------|
| | Quasi-peak | Average |
| 0.15 to 0.50 | 66 to 56* | 56 to 46* |
| 0.50 to 5 | 56 | 46 |
| 5 to 30 | 60 | 50 |

* Decreases with the logarithm of the frequency.

RESULTS

6 WORST EMISSIONS

Tx FSK

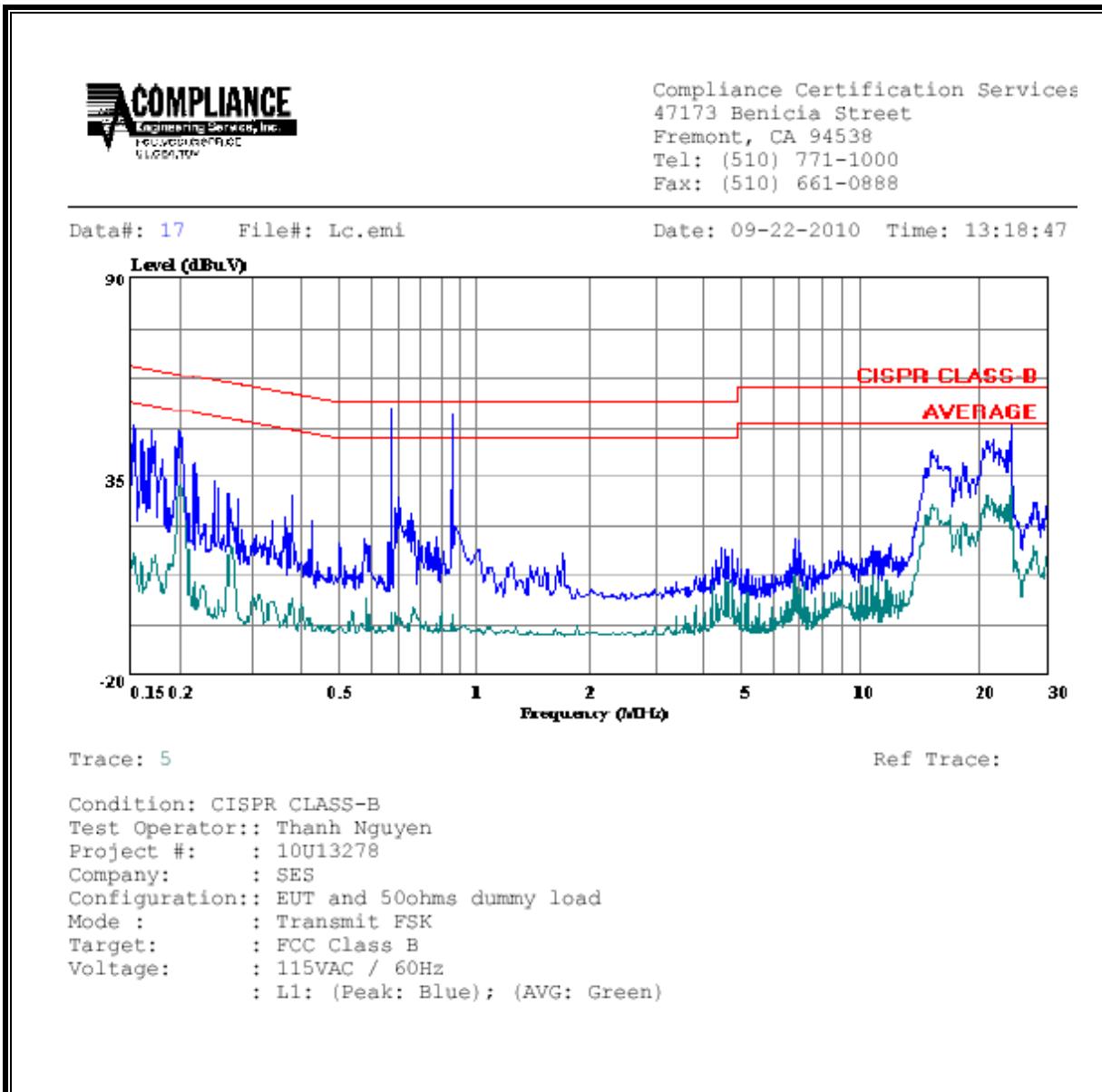
| CONDUCTED EMISSIONS DATA (115VAC 60Hz) | | | | | | | | | |
|--|-----------|-----------|-----------|---------------|-------|-------|--------|---------|--------|
| Freq. (MHz) | Reading | | | Closs (dB) | Limit | EN_A | Margin | | Remark |
| | PK (dBuV) | QP (dBuV) | AV (dBuV) | | | QP | AV | QP (dB) | |
| 0.67 | 54.42 | -- | -- | 0.00 | 73.00 | 60.00 | -18.58 | -5.58 | L1 |
| 0.95 | 52.30 | -- | -- | 0.00 | 73.00 | 60.00 | -20.70 | -7.70 | L1 |
| 24.01 | 49.34 | -- | -- | 0.00 | 73.00 | 60.00 | -23.66 | -10.66 | L1 |
| 0.39 | 54.08 | -- | -- | 0.00 | 79.00 | 66.00 | -24.92 | -11.92 | L2 |
| 0.83 | 55.74 | -- | -- | 0.00 | 73.00 | 60.00 | -17.26 | -4.26 | L2 |
| 24.01 | 48.93 | -- | -- | 0.00 | 73.00 | 60.00 | -24.07 | -11.07 | L2 |
| 6 Worst Data | | | | | | | | | |
| | | | | | | | | | |

Tx QPSK

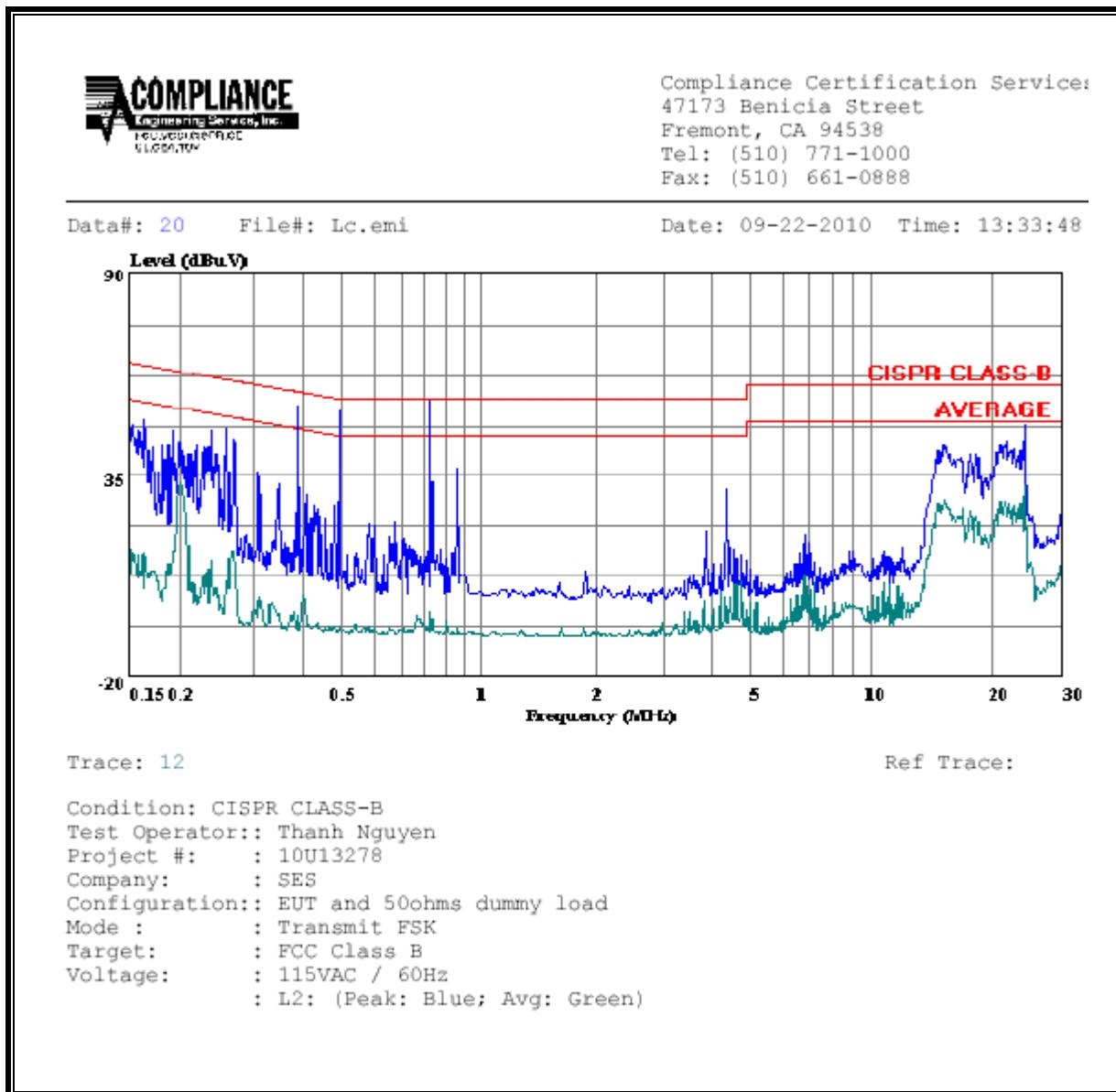
| CONDUCTED EMISSIONS DATA (115VAC 60Hz) | | | | | | | | | |
|--|-----------|-----------|-----------|---------------|-------|-------|--------|---------|--------|
| Freq. (MHz) | Reading | | | Closs (dB) | Limit | EN_B | Margin | | Remark |
| | PK (dBuV) | QP (dBuV) | AV (dBuV) | | | QP | AV | QP (dB) | |
| 0.15 | 61.99 | -- | 23.52 | 0.00 | 66.00 | 56.00 | -4.01 | -32.48 | L1 |
| 0.50 | 47.31 | -- | 3.21 | 0.00 | 56.00 | 46.00 | -8.69 | -42.79 | L1 |
| 24.01 | 50.38 | -- | 41.35 | 0.00 | 60.00 | 50.00 | -9.62 | -8.65 | L1 |
| 0.19 | 51.88 | -- | 33.02 | 0.00 | 64.26 | 54.26 | -12.38 | -21.24 | L2 |
| 0.26 | 47.74 | -- | 17.67 | 0.00 | 61.43 | 51.43 | -13.69 | -33.76 | L2 |
| 24.01 | 49.23 | -- | 40.23 | 0.00 | 60.00 | 50.00 | -10.77 | -9.77 | L2 |
| 6 Worst Data | | | | | | | | | |
| | | | | | | | | | |

FSK Modulation

LINE 1 RESULTS

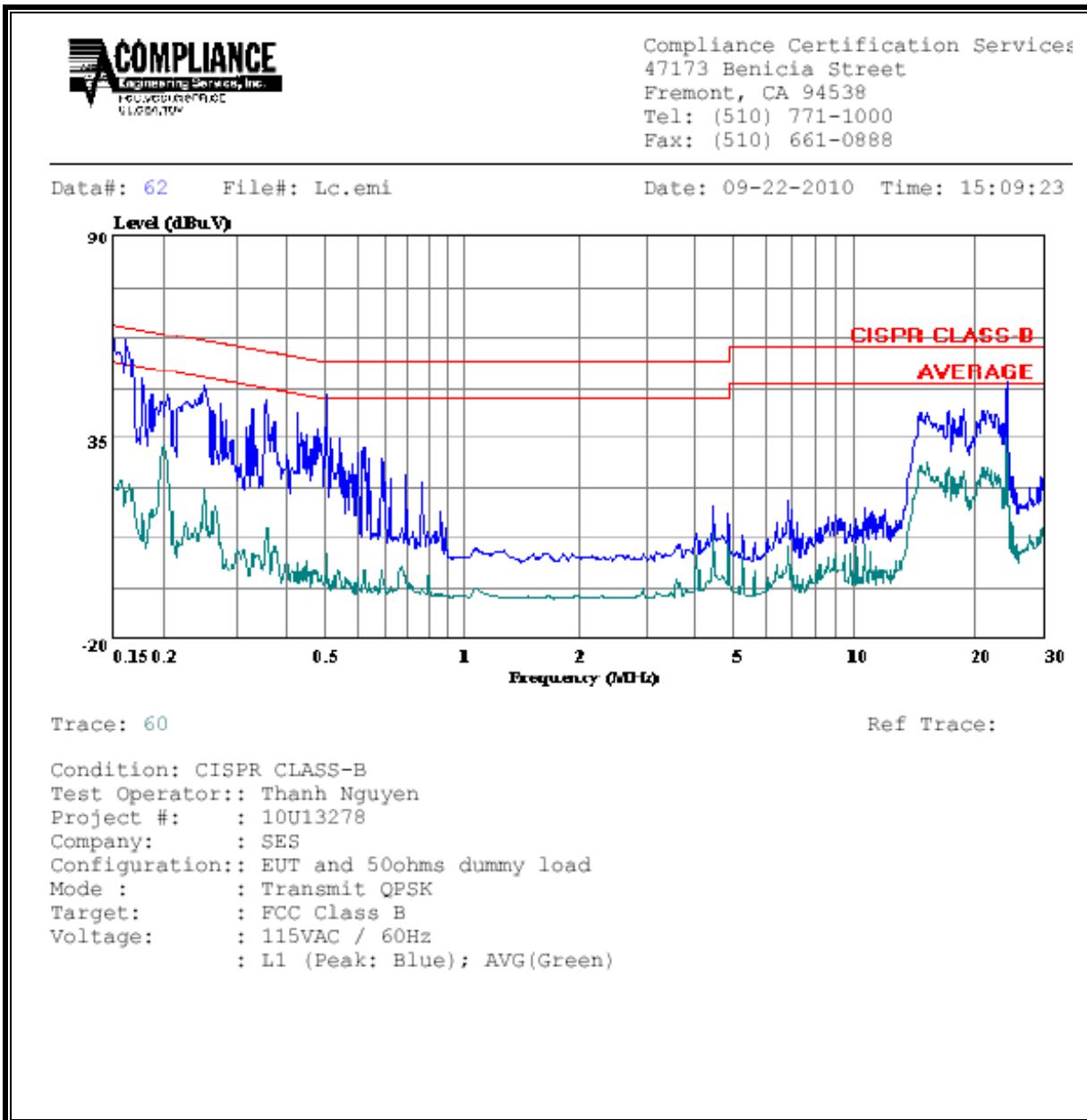


LINE 2 RESULTS



QPSK Modulation

LINE 1 RESULTS



LINE 2 RESULTS

