Nemko Test Report: **6L0165RUS1rev2**

Applicant: **IDS Ingegneria dei Sistemi SpA**
via Stuperlino 20
Pisa
Italy

Equipment Under Test: **Aladdin SK2**
(E.U.T.)

In Accordance With**:** **FCC Part 15, Subpart F, 15.509**
UltraWideband Operation
Ground Penetrating Radar

Tested By: **Nemko USA Inc.**
802 N. Kealy
Lewisville, Texas 75057-3136

Authorized By:

Kevin Rose Wireless Engineer

Date**:** **July 31, 2006**

Total number of pages:31

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Section 1. Summary Of Test Results

Manufacturer: **IDS Ingegneria dei Sistemi SpA**

Model No.: **Aladdin SK2**

Serial No.: **10**

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15.509. All tests were conducted using measurement procedure ANSI C63.4-2003. Radiated Emissions were made on an open area test site. with a 4 foot by 4foot by 4foot dry sand pit

☒	**New Submission**	☒	**Production Unit**
☐	**Class II Permissive Change**	☐	**Pre-Production Unit**

This test report relates only to the item(s) tested.

The following deviations from, additions to, or exclusions from the test specifications have been made.
See " Summary of Test Data".

NVLAP®
LAB CODE: 100426-0

Summary Of Test Data

NAME OF TEST	PARA. NO.	RESULT
Conducted Emissions	**15.207**	**NA**
Pulse Repetition Frequency	**15.509**	**Complies**
Definition of UWB	**15.203(a)/15.209(a)**	**Complies**
Radiated Emissions	**15.509(d)**	**Complies**
Radiated Emissions	**15.509(e)**	**Complies**
Peak Emission at f_M	**15.509(f)**	**Complies**

The digital circuit portion of the EUT has been tested and verified to comply with FCC Part 15, Subpart B,

Footnotes For N/A's**:** **EUT is a 12Vdc power device**

Test Conditions:

The tests were performed with the EUT transmitting while on a pit filled with dry sand approximately 1 meter by 1 meter by 50 cm deep.

Section 2. General Equipment Specification

Frequency Range:	**Single**	
Operating Frequency(ies) of Sample:	**2151 to 2538 MHz (10 dB BW)**	
Tunable Bands:	**Single**	
10 dB Occupied Bandwidth:	**2.7 GHz**	
User Frequency Adjustment:	**None**	
Integral Antenna	**Yes** ☒	**No** ☐

Description of Device Tested

Ground Penetrating Radar Bipolar Antenna System

System Diagram

Refer to separate exhibit.

Section 3. Pulse Repetition Frequency

NAME OF TEST: Pulse Repetition Frequency	**PARA. NO.: 15.509**
TESTED BY: David Light	**DATE:15 June 2006**

Test Results: **Complies. See attached graph(s).**

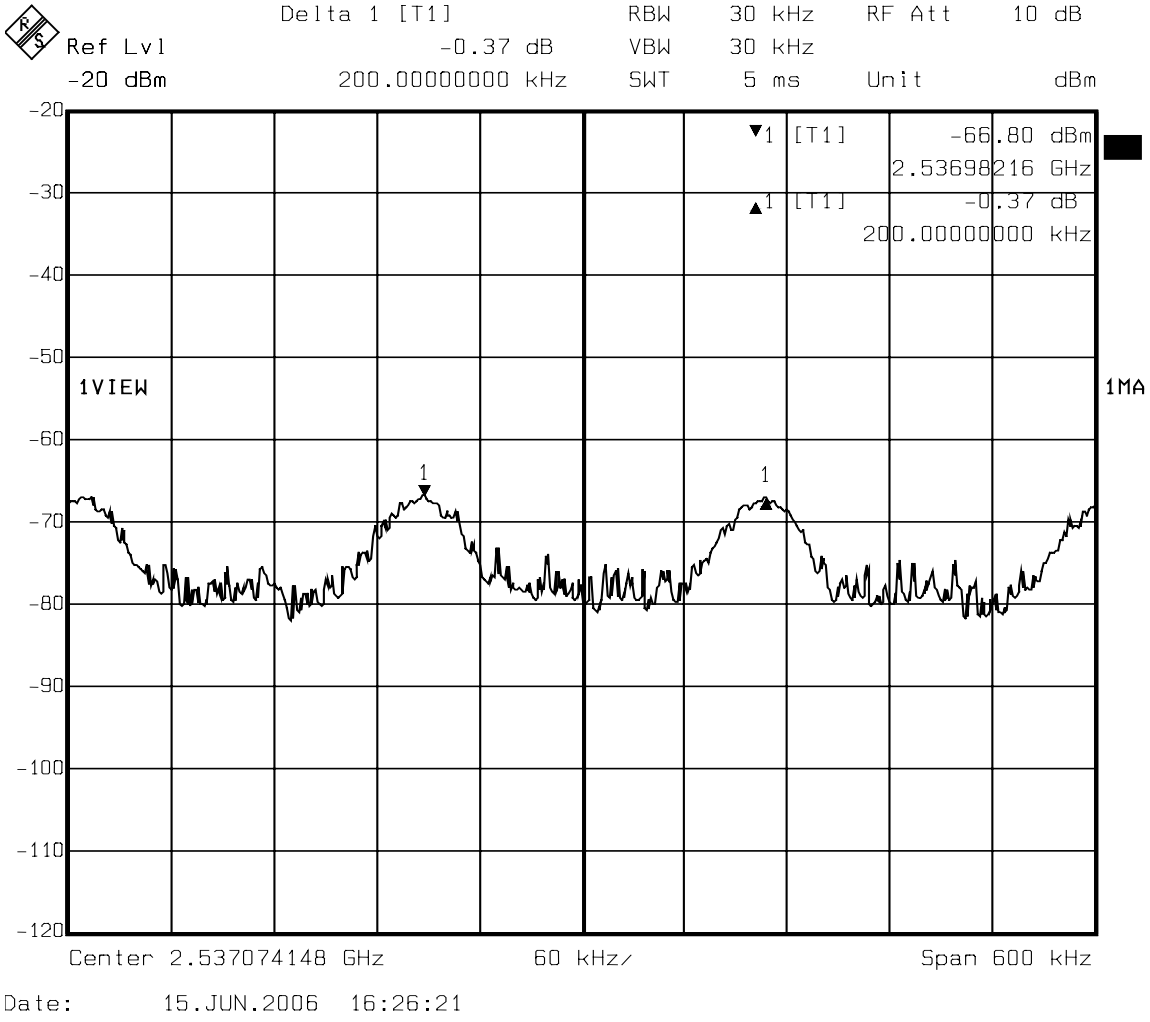
Measurement Data: **See attached graph(s).**

Method of Measurement: **(Procedure ANSI C63.4-2003)**

General:

All measurements are traceable to national standards.

These tests were conducted using measurement procedures of ANSI C63.4-2003.


Delta 1 [T1]
RBW 30 kHz
RF Att 10 dB
Ref Lvl
-0.37 dB
VBW 30 kHz
-20 dBm
200.00000000 kHz
SWT 5 ms
Unit dBm
▼1 [T1] -66.80 dBm
2.53698216 GHz
▲1 [T1] -0.37 dB
200.00000000 kHz
1VIEW
1MA
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
Center 2.537074148 GHz
60 kHz/
Span 600 kHz
Date: 15.JUN.2006 16:26:21

Section 4. Radiated Emissions

NAME OF TEST: Radiated Emissions	**PARA. NO.: 15.509(d)&(e)**
TESTED BY: David Light	**DATE: 16 June 2006**

Minimum Standard: Para no. 15.509

Limits below 960 MHz (15.209 and 15.509):

Frequency (MHz)	Field Strength Limits (microvolts/m)	Measuring RBW	Distance (Meters)
0.009-0.490	2400/F(kHz)	1 kHz	300
0.490-1.705	24000/F(kHz)	10 kHz	30
1.705-30.0	30	10 kHz	30
30-88	100	100 kHz	3
88-216	150	100 kHz	3
216-960	200	100 kHz	3

Limits above 960 MHz (15.509)

Frequency (MHz)	E.I.R.P. (dBm)	Measuring RBW	Distance (Meters)
960-1610	-65.3	1 MHz	3
1610-1990	-53.3	1 MHz	3
1990-3100	-51.3	1 MHz	3
3100-10600	-41.3	1 MHz	3
Above 10600	-51.3	1 MHz	3
1164-1240	-75.3	1 kHz	3
159-1610	-75.3	1 kHz	3

E.I.R.P limits converted to field strength during measurements per 15.521(g)

Maximizing Emission Levels:
The emissions were scanned from 30 MHz to 15000 MHz.
For measurements below 960 MHz the emissions were made using a PEAK detector RBW=VBW=100 kHz
For Frequency above 960 MHz and outside the below frequency bands, the emissions were measured using RMS detector, RBW=1MHz, VBW=3MHz
For frequencies fall inside 1164-1240 and 1559-1610 MHz, the emissions were measured using EMI RMS Detector, RBW = 1 KHz, VBW = 1 MHz
Note: The above tests were performed with the EUT in contact with the ground as its intended use. The EUT was tested in 8 positions (every 45°)

Test Results: Complies

Measurement Data: **See attached table(s).**

Test Data – Radiated Emissions

Note: All measurements were made at a distance of 1.5 meters.

Radiated Emissions

Page 1 of 1

Job No.:	6L0165	Date:	7/16/2006
Specification:	15.509	Temperature(°C):	28
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	Ground Penetrating radar		
Configuration:	Tx over sandpit		
Sample Number:	2		
Location:	AC 3	RBW:	1 MHz
Detector Type:	Peak	VBW:	1 MHz

Test Equipment Used

Antenna:	993	Directional Coupler:	#N/A
Pre-Amp:	1016	Cable #1:	1484
Filter:	#N/A	Cable #2:	1485
Receiver:	1036	Cable #3:	#N/A
Attenuator #1	#N/A	Cable #4:	#N/A
Attenuator #2:	#N/A	Mixer:	#N/A

Measurement Uncertainty: +/- 3.6 dB

Frequency (GHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-Amp Gain (dB)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Delta (dB)	Angle / Polarity
								0º / Vertical
1.000	41.3	22.7	1.0	29.5	35.5	35.9	-0.4	
1.050	39.6	22.7	1.0	29.5	33.8	35.9	-2.1	
1.107	40.5	22.7	1.0	29.5	34.7	35.9	-1.2	
1.404	40.5	24.3	1.2	32.2	33.8	35.9	-2.1	
1.750	38.3	26.5	1.3	32.0	34.1	47.9	-13.8	
3.200	33.3	29.7	1.9	32.5	32.4	59.9	-27.5	
10.500	33.4	37.7	3.7	37.8	37.0	59.9	-22.9	
								GPS
1.164	25.6	22.7	1.0	29.5	19.8	25.9	-6.1	
1.200	24.9	22.7	1.0	29.5	19.1	25.9	-6.8	
1.240	28.3	22.7	1.0	29.5	22.5	25.9	-3.4	
1.559	22.3	24.3	1.2	32.2	15.6	25.9	-10.3	
1.585	22.5	24.3	1.2	32.2	15.8	25.9	-10.1	
1.610	26.9	24.3	1.2	32.2	20.2	25.9	-5.7	

Test Data – Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-Amp Gain (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Delta (dB)	Detector / Polarity
								45º / Vertical
1.000	39.6	22.7	1.0	29.5	33.8	35.9	-2.1	
1.050	40.4	22.7	1.0	29.5	34.6	35.9	-1.3	
1.107	41.3	22.7	1.0	29.5	35.5	35.9	-0.4	
1.404	39.9	24.3	1.2	32.2	33.2	35.9	-2.7	
1.750	41.1	26.5	1.3	32.0	36.9	47.9	-11.0	
3.200	34.4	29.7	1.9	32.5	33.5	59.9	-26.4	
10.500	33.2	37.7	3.7	37.8	36.8	59.9	-23.1	
								GPS
1.164	26.4	22.7	1.0	29.5	20.6	25.9	-5.3	
1.200	26.1	22.7	1.0	29.5	20.3	25.9	-5.6	
1.240	26.1	22.7	1.0	29.5	20.3	25.9	-5.6	
1.559	19.4	24.3	1.2	32.2	12.7	25.9	-13.2	
1.585	22.1	24.3	1.2	32.2	15.4	25.9	-10.5	
1.610	21.5	24.3	1.2	32.2	14.8	25.9	-11.1	

Frequency (GHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-Amp Gain (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Delta (dB)	Detector / Polarity
								90º / Vertical
1.000	37.7	22.7	1.0	29.5	31.9	35.9	-4.0	
1.277	37.3	22.7	1.0	29.5	31.5	35.9	-4.4	
1.500	38.3	24.3	1.2	32.2	31.6	35.9	-4.3	
1.687	43.4	24.3	1.2	32.2	36.7	47.9	-11.2	
1.750	39	26.5	1.3	32.0	34.8	47.9	-13.1	
3.200	37.8	29.7	1.9	32.5	36.9	59.9	-23.0	
10.500	33.3	37.7	3.7	37.8	36.9	59.9	-23.0	
								GPS
1.164	17.7	22.7	1.0	29.5	11.9	25.9	-14.0	
1.200	20.4	22.7	1.0	29.5	14.6	25.9	-11.3	
1.240	21.6	22.7	1.0	29.5	15.8	25.9	-10.1	
1.559	17.9	24.3	1.2	32.2	11.2	25.9	-14.7	
1.585	19.4	24.3	1.2	32.2	12.7	25.9	-13.2	
1.610	21.3	24.3	1.2	32.2	14.6	25.9	-11.3	

Test Data – Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-Amp Gain (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Delta (dB)	Detector / Polarity
								135º / Vertical
1.000	35.5	22.7	1.0	29.5	29.7	35.9	-6.2	
1.277	39.9	22.7	1.0	29.5	34.1	35.9	-1.8	
1.600	38.6	24.3	1.2	32.2	31.9	35.9	-4.0	
1.920	40.5	28.5	1.4	32.7	37.7	47.9	-10.2	
2.999	45.8	29.7	1.9	32.7	44.7	47.9	-3.2	
3.200	34.3	29.7	1.9	32.5	33.4	59.9	-26.5	
10.500	33.2	37.7	3.7	37.8	36.8	59.9	-23.1	
								GPS
1.164	19.3	22.7	1.0	29.5	13.5	25.9	-12.4	
1.200	20.4	22.7	1.0	29.5	14.6	25.9	-11.3	
1.240	22.1	22.7	1.0	29.5	16.3	25.9	-9.6	
1.559	20.7	24.3	1.2	32.2	14.0	25.9	-11.9	
1.585	23.2	24.3	1.2	32.2	16.5	25.9	-9.4	
1.610	22.1	24.3	1.2	32.2	15.4	25.9	-10.5	

Frequency (GHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-Amp Gain (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Delta (dB)	Detector / Polarity
								180º / Vertical
1.000	36.2	22.7	1.0	29.5	30.4	35.9	-5.5	
1.500	36.3	22.7	1.0	29.5	30.5	35.9	-5.4	
1.761	42.0	24.3	1.2	32.2	35.3	47.9	-12.6	
3.200	33.6	29.7	1.9	32.5	32.7	59.9	-27.2	
10.500	32.8	37.7	3.7	37.8	36.4	59.9	-23.5	
								GPS
1.164	13.7	22.7	1.0	29.5	7.9	25.9	-18.0	
1.200	14.8	22.7	1.0	29.5	9.0	25.9	-16.9	
1.240	15.2	22.7	1.0	29.5	9.4	25.9	-16.5	
1.559	20.3	24.3	1.2	32.2	13.6	25.9	-12.3	
1.585	21	24.3	1.2	32.2	14.3	25.9	-11.6	
1.610	18.3	24.3	1.2	32.2	11.6	25.9	-14.3	

Test Data – Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-Amp Gain (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Delta (dB)	Detector / Polarity
								225º / Vertical
1.000	37.1	22.7	1.0	29.5	31.3	35.9	-4.6	
1.500	39.1	22.7	1.0	29.5	33.3	35.9	-2.6	
1.761	40.4	24.3	1.2	32.2	33.7	47.9	-14.2	
3.200	33.6	29.7	1.9	32.5	32.7	59.9	-27.2	
10.500	34.6	37.7	3.7	37.8	38.2	59.9	-21.7	
								GPS
1.164	17.4	22.7	1.0	29.5	11.6	25.9	-14.3	
1.200	17.5	22.7	1.0	29.5	11.7	25.9	-14.2	
1.240	16.6	22.7	1.0	29.5	10.8	25.9	-15.1	
1.559	19.7	24.3	1.2	32.2	13.0	25.9	-12.9	
1.585	18.7	24.3	1.2	32.2	12.0	25.9	-13.9	
1.610	19.1	24.3	1.2	32.2	12.4	25.9	-13.5	

Frequency (GHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-Amp Gain (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Delta (dB)	Detector / Polarity
								270º / Vertical
1.000	41.2	22.7	1.0	29.5	35.4	35.9	-0.5	
1.500	38.7	22.7	1.0	29.5	32.9	35.9	-3.0	
1.761	43.9	24.3	1.2	32.2	37.2	47.9	-10.7	
2.850	35.0	29.7	1.9	32.5	34.1	47.9	-13.8	
3.200	35.5	29.7	1.9	32.5	34.6	59.9	-25.3	
10.500	34.2	37.7	3.7	37.8	37.8	59.9	-22.1	
								GPS
1.164	26.4	22.7	1.0	29.5	20.6	25.9	-5.3	
1.200	24.1	22.7	1.0	29.5	18.3	25.9	-7.6	
1.240	24.5	22.7	1.0	29.5	18.7	25.9	-7.2	
1.559	23.5	24.3	1.2	32.2	16.8	25.9	-9.1	
1.585	23.3	24.3	1.2	32.2	16.6	25.9	-9.3	
1.610	23.3	24.3	1.2	32.2	16.6	25.9	-9.3	

Test Data – Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-Amp Gain (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Delta (dB)	Detector / Polarity
								315º / Vertical
1.000	41.3	22.7	1.0	29.5	35.5	35.9	-0.4	
1.500	37.1	22.7	1.0	29.5	31.3	35.9	-4.6	
1.761	41.7	24.3	1.2	32.2	35.0	47.9	-12.9	
2.850	39.1	29.7	1.9	32.5	38.2	47.9	-9.7	
3.200	34.0	29.7	1.9	32.5	33.1	59.9	-26.8	
10.500	34.4	37.7	3.7	37.8	38.0	59.9	-21.9	
								GPS
1.164	26.8	22.7	1.0	29.5	21.0	25.9	-4.9	
1.200	22.8	22.7	1.0	29.5	17.0	25.9	-8.9	
1.240	18.3	22.7	1.0	29.5	12.5	25.9	-13.4	
1.559	16.4	24.3	1.2	32.2	9.7	25.9	-16.2	
1.585	17	24.3	1.2	32.2	10.3	25.9	-15.6	
1.610	19.0	24.3	1.2	32.2	12.3	25.9	-13.6	

Frequency (GHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-Amp Gain (dB)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Delta (dB)	Angle / Polarity
								0º / Horizontal
1.330	39.7	22.7	1.0	32.2	31.2	35.9	-4.7	
1.771	38.3	28.5	1.4	32.2	36.0	47.9	-11.9	
2.337	42.6	29.0	1.6	32.8	40.4	49.9	-9.5	
3.200	33.0	29.7	1.9	32.5	32.1	59.9	-27.8	
10.000	32.2	37.7	3.7	37.8	35.8	59.9	-24.1	
								GPS
1.164	19.4	22.7	1.0	29.5	13.6	25.9	-12.3	
1.200	14.4	22.7	1.0	29.5	8.6	25.9	-17.3	
1.240	17.5	22.7	1.0	29.5	11.7	25.9	-14.2	
1.559	21.0	24.3	1.2	29.5	17.0	25.9	-8.9	
1.585	20.4	24.3	1.2	29.5	16.4	25.9	-9.5	
1.610	18.7	24.3	1.2	29.5	14.7	25.9	-11.2	

Test Data – Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-Amp Gain (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Delta (dB)	Detector / Polarity
								90º / Horizontal
1.330	38.8	22.7	1.0	32.2	30.3	35.9	-5.6	
1.771	42.3	28.5	1.4	32.2	40.0	47.9	-7.9	
2.337	42.0	29.0	1.6	32.8	39.8	49.9	-10.1	
3.200	33.0	29.7	1.9	32.5	32.1	59.9	-27.8	
10.000	32.2	37.7	3.7	37.8	35.8	59.9	-24.1	
								GPS
1.164	21.2	22.7	1.0	29.5	15.4	25.9	-10.5	
1.200	21.5	22.7	1.0	29.5	15.7	25.9	-10.2	
1.240	21.5	22.7	1.0	29.5	15.7	25.9	-10.2	
1.559	17.8	24.3	1.2	29.5	13.8	25.9	-12.1	
1.585	14.1	24.3	1.2	29.5	10.1	25.9	-15.8	
1.610	13.7	24.3	1.2	29.5	9.7	25.9	-16.2	

Frequency (GHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-Amp Gain (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Delta (dB)	Detector / Polarity
								180º / Horizontal
1.330	40.9	22.7	1.0	32.2	32.4	35.9	-3.5	
1.771	43.0	28.5	1.4	32.2	40.7	47.9	-7.2	
2.337	41.3	29.0	1.6	32.8	39.1	49.9	-10.8	
3.200	33.1	29.7	1.9	32.5	32.2	59.9	-27.7	
10.000	32.2	37.7	3.7	37.8	35.8	59.9	-24.1	
								GPS
1.164	19.0	22.7	1.0	29.5	13.2	25.9	-12.7	
1.200	12.0	22.7	1.0	29.5	6.2	25.9	-19.7	
1.240	18.0	22.7	1.0	29.5	12.2	25.9	-13.7	
1.559	21.0	24.3	1.2	29.5	17.0	25.9	-8.9	
1.585	22.0	24.3	1.2	29.5	18.0	25.9	-7.9	
1.610	22.3	24.3	1.2	29.5	18.3	25.9	-7.6	

Test Data – Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-Amp Gain (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Delta (dB)	Detector / Polarity
								270º / Horizontal
1.330	38.6	22.7	1.0	32.2	30.1	35.9	-5.8	
1.771	37.3	28.5	1.4	32.2	35.0	47.9	-12.9	
2.337	37.3	29.0	1.6	32.8	35.1	49.9	-14.8	
3.200	32.7	29.7	1.9	32.5	31.8	59.9	-28.1	
10.000	31.5	37.7	3.7	37.8	35.1	59.9	-24.8	
								GPS
1.164	21.3	22.7	1.0	29.5	15.5	25.9	-10.4	
1.200	22.6	22.7	1.0	29.5	16.8	25.9	-9.1	
1.240	22.1	22.7	1.0	29.5	16.3	25.9	-9.6	
1.559	17.0	24.3	1.2	29.5	13.0	25.9	-12.9	
1.585	13.7	24.3	1.2	29.5	9.7	25.9	-16.2	
1.610	13.7	24.3	1.2	29.5	9.7	25.9	-16.2	

Test Data – Radiated Emissions

Radiated Emissions Data

Complete	X	Job # :	6L0165	Test # :	REHE-01
Preliminary		Page	1	of	6

Client Name :	IDS
EUT Name :	Aladdin
EUT Model # :	SK2
EUT Serial # :	10
EUT Config. :	Tx on sandpit

Specification :	CFR47 Part 15, Subpart B, Class B			Reference :	
Rod. Ant. #:		Temp. (deg. C) :	22	Date :	07/16/06
Bicon Ant.#:	1195	Humidity (%) :	40	Time :	2:00
Log Ant.#:	1034	EUT Voltage :	12	Staff :	D. Light
Bilog Ant.#:		EUT Frequency :	dc	Photo ID:	na
Dipole Ant.#:		Phase:	O	Peak Bandwidth:	100 KHz
Cable#:	1522	Location:	D OATS	Video Bandwidth	100 KHz
Preamp#:	791	Distance:	3		
Limiter#:	na				
Atten #:	na				
Detector#:	1036				

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	QP readings Comment
120	V	0	45	11.4	3.8	24.7	35.5	43.5	-8.0	Pass	0 Degrees
128	V	0	41	11.5	4.2	24.6	32.1	43.5	-11.4	Pass	
160	V	0	43.4	13.1	4.7	24.6	36.6	43.5	-6.9	Pass	
200	V	0	42	14.8	5.5	24.5	37.8	43.5	-5.7	Pass	
225	V	0	43.5	15.6	5.9	24.5	40.5	46.0	-5.5	Pass	
280	V	0	33.8	17.9	6.4	24.4	33.7	46.0	-12.3	Pass	
120	V	0	46.8	11.4	3.8	24.7	37.3	43.5	-6.2	Pass	45 Degrees
128	V	0	40.7	11.5	4.2	24.6	31.8	43.5	-11.7	Pass	
160	V	0	43.6	13.1	4.7	24.6	36.8	43.5	-6.7	Pass	
200	V	0	42.6	14.8	5.5	24.5	38.4	43.5	-5.1	Pass	
225	V	0	25.4	15.6	5.9	24.5	22.4	46.0	-23.6	Pass	
280	V	0	34.2	17.9	6.4	24.4	34.1	46.0	-11.9	Pass	
120	V	0	47.1	11.4	3.8	24.7	37.6	43.5	-5.9	Pass	90 Degrees
128	V	0	41.4	11.5	4.2	24.6	32.5	43.5	-11.0	Pass	
160	V	0	43.5	13.1	4.7	24.6	36.7	43.5	-6.8	Pass	
200	V	0	42.7	14.8	5.5	24.5	38.5	43.5	-5.0	Pass	
225	V	0	25.1	15.6	5.9	24.5	22.1	46.0	-23.9	Pass	
280	V	0	34.7	17.9	6.4	24.4	34.6	46.0	-11.4	Pass	

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Test Data – Radiated Emissions

Radiated Emissions Data

Complete X
Preliminary

Job # :
Test # : REHE-01
Page 2 of 6

Client Name : IDS
EUT Name : Aladdin
EUT Model # : SK2
EUT Serial # : 10
EUT Config. : Tx on sandpit

Specification : CFR47 Part 15, Subpart B, Class B
Reference :

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Det. Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
120	V	0	46.8	11.4	3.8	24.7	37.3	43.5	-6.2	Pass	135 Degrees
128	V	0	40.2	11.5	4.2	24.6	31.3	43.5	-12.2	Pass	
160	V	0	43.7	13.1	4.7	24.6	36.9	43.5	-6.6	Pass	
200	V	0	42.1	14.8	5.5	24.5	37.9	43.5	-5.6	Pass	
225	V	0	28.2	15.6	5.9	24.5	25.2	46.0	-20.8	Pass	
280	V	0	34.6	17.9	6.4	24.4	34.5	46.0	-11.5	Pass	
120	V	0	47.6	11.4	3.8	24.7	38.1	43.5	-5.4	Pass	180 Degrees
128	V	0	42	11.5	4.2	24.6	33.1	43.5	-10.4	Pass	
160	V	0	43.5	13.1	4.7	24.6	36.7	43.5	-6.8	Pass	
200	V	0	43.2	14.8	5.5	24.5	39.0	43.5	-4.5	Pass	
225	V	0	26	15.6	5.9	24.5	23.0	46.0	-23.0	Pass	
280	V	0	34.4	17.9	6.4	24.4	34.3	46.0	-11.7	Pass	
120	V	0	42.6	11.4	3.8	24.7	33.1	43.5	-10.4	Pass	225 Degrees
128	V	0	40.1	11.5	4.2	24.6	31.2	43.5	-12.3	Pass	
160	V	0	42	13.1	4.7	24.6	35.2	43.5	-8.3	Pass	
200	V	0	41.8	14.8	5.5	24.5	37.6	43.5	-5.9	Pass	
225	V	0	30	15.6	5.9	24.5	27.0	46.0	-19.0	Pass	
280	V	0	33	17.9	6.4	24.4	32.9	46.0	-13.1	Pass	
120	V	0	46.5	11.4	3.8	24.7	37.0	43.5	-6.5	Pass	270 Degrees
128	V	0	40.7	11.5	4.2	24.6	31.8	43.5	-11.7	Pass	
160	V	0	41	13.1	4.7	24.6	34.2	43.5	-9.3	Pass	
200	V	0	41.7	14.8	5.5	24.5	37.5	43.5	-6.0	Pass	
225	V	0	29.4	15.6	5.9	24.5	26.4	46.0	-19.6	Pass	
280	V	0	33	17.9	6.4	24.4	32.9	46.0	-13.1	Pass	
120	V	0	46.4	11.4	3.8	24.7	36.9	43.5	-6.6	Pass	315 Degrees
128	V	0	40	11.5	4.2	24.6	31.1	43.5	-12.4	Pass	
160	V	0	40.6	13.1	4.7	24.6	33.8	43.5	-9.7	Pass	
200	V	0	41.9	14.8	5.5	24.5	37.7	43.5	-5.8	Pass	
225	V	0	41.9	15.6	5.9	24.5	38.9	46.0	-7.1	Pass	
280	V	0	32.2	17.9	6.4	24.4	32.1	46.0	-13.9	Pass	

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Test Data – Radiated Emissions

Radiated Emissions Data

Complete X
Preliminary

Job # :
Test # : REHE-01
Page 3 of 6

Client Name : IDS
EUT Name : Aladdin
EUT Model # : SK2
EUT Serial # : 10
EUT Config. : Tx on sandpit

Specification : CFR47 Part 15, Subpart B, Class B
Reference :

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Det. Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
120	H	0	32.6	11.4	3.8	24.7	23.1	43.5	-20.4	Pass	0 Degrees
160	H	0	33.6	13.1	4.7	24.6	26.8	43.5	-16.7	Pass	
280	H	0	27.3	17.9	6.4	24.4	27.2	46.0	-18.8	Pass	
120	H	0	35.1	11.4	3.8	24.7	25.6	43.5	-17.9	Pass	45 Degrees
160	H	0	35.4	13.1	4.7	24.6	28.6	43.5	-14.9	Pass	
280	H	0	28	17.9	6.4	24.4	27.9	46.0	-18.1	Pass	
120	H	0	33.3	11.4	3.8	24.7	23.8	43.5	-19.7	Pass	90 Degrees
160	H	0	32.3	13.1	4.7	24.6	25.5	43.5	-18.0	Pass	
280	H	0	30	17.9	6.4	24.4	29.9	46.0	-16.1	Pass	
120	H	0	33.3	11.4	3.8	24.7	23.8	43.5	-19.7	Pass	135 Degrees
160	H	0	33.8	13.1	4.7	24.6	27.0	43.5	-16.5	Pass	
280	H	0	25.5	17.9	6.4	24.4	25.4	46.0	-20.6	Pass	
120	H	0	32.2	11.4	3.8	24.7	22.7	43.5	-20.8	Pass	180 Degrees
160	H	0	32.8	13.1	4.7	24.6	26.0	43.5	-17.5	Pass	
280	H	0	26.9	17.9	6.4	24.4	26.8	46.0	-19.2	Pass	
120	H	0	31.8	11.4	3.8	24.7	22.3	43.5	-21.2	Pass	225 Degrees
160	H	0	32.3	13.1	4.7	24.6	25.5	43.5	-18.0	Pass	
280	H	0	27	17.9	6.4	24.4	26.9	46.0	-19.1	Pass	
120	H	0	31.5	11.4	3.8	24.7	22.0	43.5	-21.5	Pass	270 Degrees
160	H	0	32.2	13.1	4.7	24.6	25.4	43.5	-18.1	Pass	
280	H	0	27.2	17.9	6.4	24.4	27.1	46.0	-18.9	Pass	
120	H	0	32.7	11.4	3.8	24.7	23.2	43.5	-20.3	Pass	315 Degrees
160	H	0	32.7	13.1	4.7	24.6	25.9	43.5	-17.6	Pass	
280	H	0	27.1	17.9	6.4	24.4	27.0	46.0	-19.0	Pass	

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Test Data – Radiated Emissions

Radiated Emissions Data

Complete X
Preliminary

Job # :
Test # : REHE-01
Page 4 of 6

Client Name : IDS
EUT Name : Aladdin
EUT Model # : SK2
EUT Serial # : 10
EUT Config. : Tx on sandpit

Specification : CFR47 Part 15, Subpart B, Class B
Reference :

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Det. Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
360	V	0	33.4	15.1	7.4	24.4	31.5	46.0	-14.5	Pass	0 Degrees
400	V	0	23	16.6	8.0	24.4	23.2	46.0	-22.8	Pass	
440	V	0	24.8	17.4	8.0	24.4	25.8	46.0	-20.2	Pass	
520	V	0	26.7	16.6	8.9	24.5	27.7	46.0	-18.3	Pass	
720	V	0	28.5	17.7	10.7	24.5	32.4	46.0	-13.6	Pass	
360	V	0	32.1	15.1	7.4	24.4	30.2	46.0	-15.8	Pass	45 degrees
400	V	0	21	16.6	8.0	24.4	21.2	46.0	-24.8	Pass	
440	V	0	26.7	17.4	8.0	24.4	27.7	46.0	-18.3	Pass	
520	V	0	26.9	16.6	8.9	24.5	27.9	46.0	-18.1	Pass	
720	V	0	27.8	17.7	10.7	24.5	31.7	46.0	-14.3	Pass	
360	V	0	33.6	15.1	7.4	24.4	31.7	46.0	-14.3	Pass	90
400	V	0	25	16.6	8.0	24.4	25.2	46.0	-20.8	Pass	
440	V	0	28.2	17.4	8.0	24.4	29.2	46.0	-16.8	Pass	
520	V	0	28.3	16.6	8.9	24.5	29.3	46.0	-16.7	Pass	
720	V	0	28	17.7	10.7	24.5	31.9	46.0	-14.1	Pass	
360	V	0	34.4	15.1	7.4	24.4	32.5	46.0	-13.5	Pass	135
400	V	0	25.9	16.6	8.0	24.4	26.1	46.0	-19.9	Pass	
440	V	0	28.2	17.4	8.0	24.4	29.2	46.0	-16.8	Pass	
520	V	0	26.9	16.6	8.9	24.5	27.9	46.0	-18.1	Pass	
720	V	0	26.5	17.7	10.7	24.5	30.4	46.0	-15.6	Pass	
360	V	0	34.6	15.1	7.4	24.4	32.7	46.0	-13.3	Pass	180
400	V	0	25.8	16.6	8.0	24.4	26.0	46.0	-20.0	Pass	
440	V	0	28.1	17.4	8.0	24.4	29.1	46.0	-16.9	Pass	
520	V	0	28.1	16.6	8.9	24.5	29.1	46.0	-16.9	Pass	
720	V	0	24.4	17.7	10.7	24.5	28.3	46.0	-17.7	Pass	
360	V	0	35.4	15.1	7.4	24.4	33.5	46.0	-12.5	Pass	225
400	V	0	26.5	16.6	8.0	24.4	26.7	46.0	-19.3	Pass	
440	V	0	29.7	17.4	8.0	24.4	30.7	46.0	-15.3	Pass	
520	V	0	29.7	16.6	8.9	24.5	30.7	46.0	-15.3	Pass	
720	V	0	26	17.7	10.7	24.5	29.9	46.0	-16.1	Pass	

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Test Data – Radiated Emissions

Radiated Emissions Data

Complete X
Preliminary

Job # :
Test # : REHE-01
Page 5 of 6

Client Name : IDS
EUT Name : Aladdin
EUT Model # : SK2
EUT Serial # : 10
EUT Config. : Tx on sandpit

Specification : CFR47 Part 15, Subpart B, Class B
Reference :

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Det. Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
360	V	0	36.6	15.1	7.4	24.4	34.7	46.0	-11.3	Pass	270
400	V	0	20.8	16.6	8.0	24.4	21.0	46.0	-25.0	Pass	
440	V	0	26.7	17.4	8.0	24.4	27.7	46.0	-18.3	Pass	
520	V	0	27.9	16.6	8.9	24.5	28.9	46.0	-17.1	Pass	
720	V	0	26.2	17.7	10.7	24.5	30.1	46.0	-15.9	Pass	
360	V	0	35	15.1	7.4	24.4	33.1	46.0	-12.9	Pass	315
400	V	0	24.7	16.6	8.0	24.4	24.9	46.0	-21.1	Pass	
440	V	0	27.7	17.4	8.0	24.4	28.7	46.0	-17.3	Pass	
520	V	0	28.5	16.6	8.9	24.5	29.5	46.0	-16.5	Pass	
720	V	0	26	17.7	10.7	24.5	29.9	46.0	-16.1	Pass	
360	H	0	30.2	15.1	7.4	24.4	28.3	46.0	-17.7	Pass	0
400	H	0	30.3	16.6	8.0	24.4	30.5	46.0	-15.5	Pass	
440	H	0	25	17.4	8.0	24.4	26.0	46.0	-20.0	Pass	
520	H	0	31.9	16.6	8.9	24.5	32.9	46.0	-13.1	Pass	
720	H	0	30	17.7	10.7	24.5	33.9	46.0	-12.1	Pass	
360	H	0	28.9	15.1	7.4	24.4	27.0	46.0	-19.0	Pass	45
400	H	0	30	16.6	8.0	24.4	30.2	46.0	-15.8	Pass	
440	H	0	25.1	17.4	8.0	24.4	26.1	46.0	-19.9	Pass	
520	H	0	31.3	16.6	8.9	24.5	32.3	46.0	-13.7	Pass	
720	H	0	30.7	17.7	10.7	24.5	34.6	46.0	-11.4	Pass	
360	H	0	28	15.1	7.4	24.4	26.1	46.0	-19.9	Pass	90
400	H	0	30	16.6	8.0	24.4	30.2	46.0	-15.8	Pass	
440	H	0	25	17.4	8.0	24.4	26.0	46.0	-20.0	Pass	
520	H	0	33.3	16.6	8.9	24.5	34.3	46.0	-11.7	Pass	
720	H	0	29.2	17.7	10.7	24.5	33.1	46.0	-12.9	Pass	
360	H	0	31	15.1	7.4	24.4	29.1	46.0	-16.9	Pass	135
400	H	0	28	16.6	8.0	24.4	28.2	46.0	-17.8	Pass	
440	H	0	25.4	17.4	8.0	24.4	26.4	46.0	-19.6	Pass	
520	H	0	32.3	16.6	8.9	24.5	33.3	46.0	-12.7	Pass	
720	H	0	27.8	17.7	10.7	24.5	31.7	46.0	-14.3	Pass	

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Test Data – Radiated Emissions

Radiated Emissions Data

Complete X
Preliminary

Job # : 6L0165R Test # : REHE-01
Page 6 of 6

Client Name : IDS
EUT Name : Aladdin
EUT Model # : SK2
EUT Serial # : 10
EUT Config. : Tx on sandpit

Specification : CFR47 Part 15, Subpart B, Class B Reference :

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Det. Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
360	V	0	26.3	15.1	7.4	24.4	24.4	46.0	-21.6	Pass	180
400	V	0	28	16.6	8.0	24.4	28.2	46.0	-17.8	Pass	
440	V	0	25.3	17.4	8.0	24.4	26.3	46.0	-19.7	Pass	
520	V	0	31.1	16.6	8.9	24.5	32.1	46.0	-13.9	Pass	
720	V	0	30	17.7	10.7	24.5	33.9	46.0	-12.1	Pass	
360	V	0	24	15.1	7.4	24.4	22.1	46.0	-23.9	Pass	225
400	V	0	27	16.6	8.0	24.4	27.2	46.0	-18.8	Pass	
440	V	0	25	17.4	8.0	24.4	26.0	46.0	-20.0	Pass	
520	V	0	33.3	16.6	8.9	24.5	34.3	46.0	-11.7	Pass	
720	V	0	30	17.7	10.7	24.5	33.9	46.0	-12.1	Pass	
360	H	0	24	15.1	7.4	24.4	22.1	46.0	-23.9	Pass	270
400	H	0	30	16.6	8.0	24.4	30.2	46.0	-15.8	Pass	
440	H	0	26	17.4	8.0	24.4	27.0	46.0	-19.0	Pass	
520	H	0	32.6	16.6	8.9	24.5	33.6	46.0	-12.4	Pass	
720	H	0	30	17.7	10.7	24.5	33.9	46.0	-12.1	Pass	
360	H	0	26	15.1	7.4	24.4	24.1	46.0	-21.9	Pass	315
400	H	0	28	16.6	8.0	24.4	28.2	46.0	-17.8	Pass	
440	H	0	25.3	17.4	8.0	24.4	26.3	46.0	-19.7	Pass	
520	H	0	34	16.6	8.9	24.5	35.0	46.0	-11.0	Pass	
720	H	0	29	17.7	10.7	24.5	32.9	46.0	-13.1	Pass	

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Radiated Photographs

Section 5. Highest Radiated Emission (f_M)

NAME OF TEST: Highest Radiated Emission (f_M)	**PARA. NO.: 15.509(f)**
TESTED BY: David Light	**DATE:16 June 2006**

Test Results: **Complies**

Measurement Data**:** **See attached table.**

For UWB devices where the frequency at which the highest radiated emission occurs, f_M, is above 960 MHz, there is a limit on the peak level of the emissions contained within a 50 MHz bandwidth centered on f_M. That limit is 0 dBm EIRP. It is acceptable to employ a different resolution bandwidth, and a correspondingly different peak emission limit, following the procedures described in 15.521.

Calculation:

20 log (1(RBW)/50) = -34 dBm EIRP

Test Data - f_M

Field Strength of Spurious Emissions

Page 1 of 1 — Complete X

Job No.: 6L0165 — Date: 6/16/2006 — Preliminary

Specification: 15.509(f) — Temperature(°C): 22

Tested By: David Light — Relative Humidity(%) 40

E.U.T.: GPR

Configuration: Tx

Sample No: 2

Location: AC 3 — RBW: 1 MHz — Measurement

Detector Type: Peak — VBW: 1 MHz — Distance: 3 m

Test Equipment Used

Antenna: 993 — Directional Coupler:

Pre-Amp: 1016 — Cable #1: 1484

Filter: — Cable #2: 1485

Receiver: 1036 — Cable #3:

Attenuator #1 — Cable #4:

Attenuator #2: — Mixer:

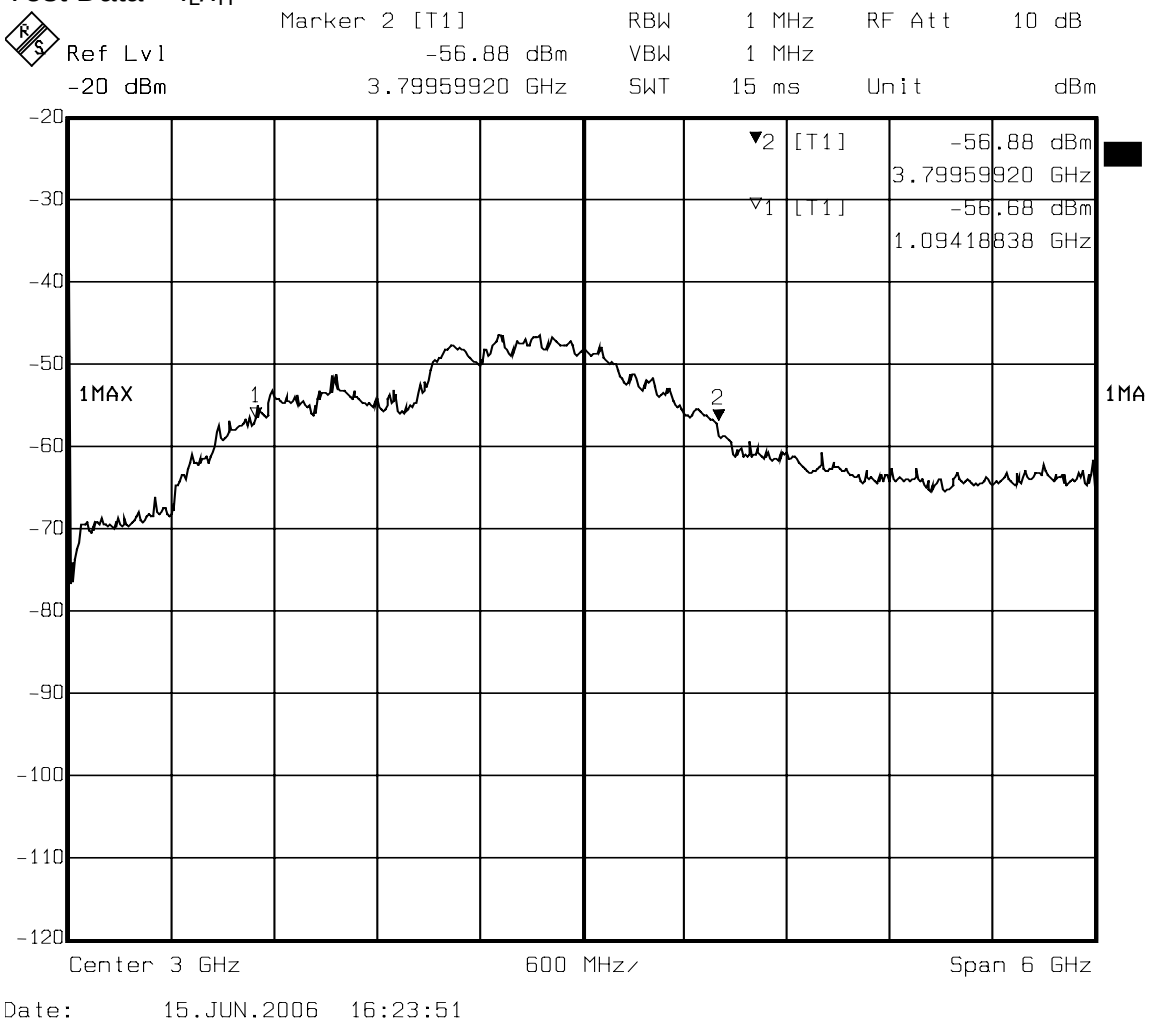
Additional equipment used:

Measurement Uncertainty: +/-1.7 dB

Frequency (MHz)	Meter Reading (dBm)	Correction Factor (dB)		Pre-Amp Gain (dB)	Substitution Antenna Gain (dBi)	Limit	EIRP (dBm)	EIRP (mW)	Polarity	Comments
										200 kHz Repetition
2151	-49.4	36.8		33	5.6	-34.0	-40.0	0.0001	H	
2538	-46.3	36.9		33	7.1	-34.0	-35.3	0.0003	V	

Notes:

Test Data – f_L/f_H



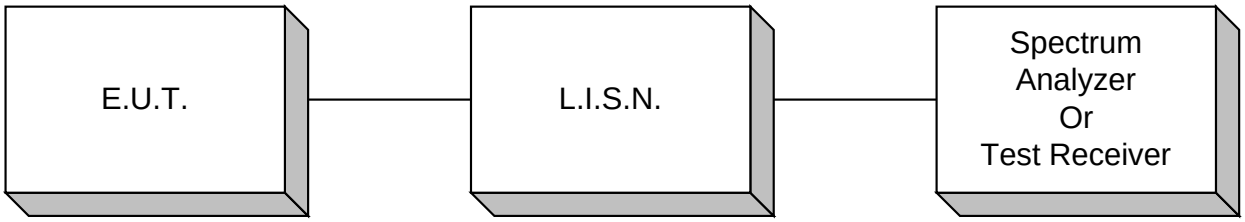
Section6. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
1484	Cable	Storm PR90-010-072	N/A	08/26/05	08/26/06
1485	Cable	Storm PR90-010-216	N/A	08/26/05	08/26/06
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ FSEK30	830844/006	05/26/06	05/26/08
1082	CABLE	Astrolab 32027-2-29094-72TC	N/A	CBU	N/A
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	04/20/06	04/20/07
993	Horn antenna	A.H. Systems SAS-200/571	XXX	08/01/05	08/02/07
1195	ANTENNA,BICONICAL	A.H. SYSTEMS SAS-200/542	235	02/10/06	02/10/07
1034	ANTENNA,LP	A.H. SYSTEMS SAS-200/510	121	03/13/06	03/13/07
1522	Cable Assy, LAB 5 - D OATS	Nemko USA, Inc. Site D OATS	N/A	05/09/06	05/09/07
791	PREAMP, 25dB	Nemko USA, Inc. LNA25	398	04/20/06	04/20/07

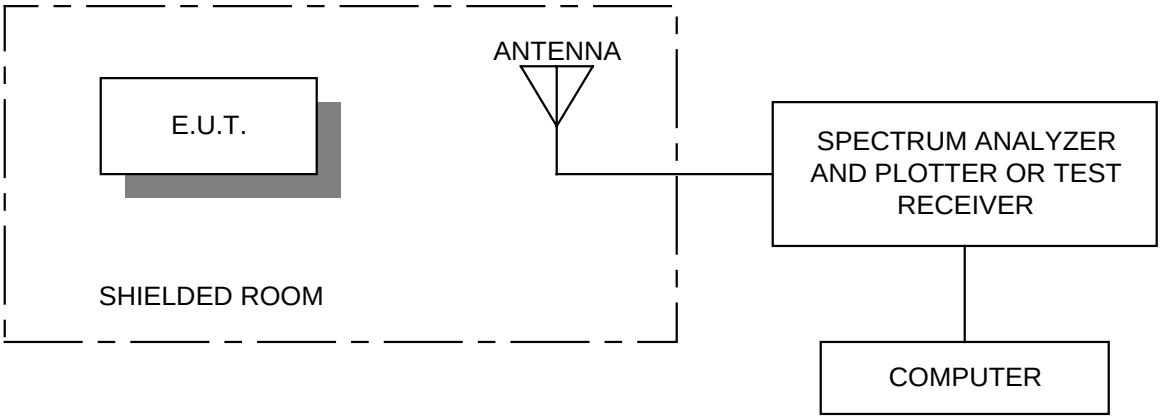
ANNEX A

TEST DIAGRAMS

Conducted Emissions



Radiated Prescan


ANTENNA
E.U.T.
SPECTRUM ANALYZER
AND PLOTTER OR TEST
RECEIVER
SHIELDED ROOM
COMPUTER

Test Site For Radiated Emissions