Test of Alien Technology RFID Reader ALR9900

To: FCC 47 CFR Part15.247 & IC RSS-210

Test Report Serial No.: ALNT36-A2 Rev A

TEST REPORT

FROM

Test of: Alien Technology RFID Reader ALR9900

To: FCC 47 CFR Part15.247 & IC RSS-210

Test Report Serial No.: ALNT36-A2 Rev A

This report references MiCOM report # ALNT30-A3 Rev A

This report supersedes: NONE

Applicant: Alien Technology
18220 Butterfield Blvd
Morgan Hill
California 95037, USA

–

Product Function: 902 - 928 MHz RFID Reader

Copy No: pdf **Issue Date:** 20th July 2009

This Test Report is Issued Under the Authority of;

MiCOM Labs, Inc.
440 Boulder Court, Suite 200
Pleasanton, CA 94566 USA
Phone: +1 (925) 462-0304
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ACCREDITED
CERTIFICATE #2381.01

MiCOM Labs is an ISO 17025 Accredited Testing Laboratory

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1. ACCREDITATION, LISTINGS & RECOGNITION

1.1. ACCREDITATION

MiCOM Labs, Inc. an accredited laboratory complies with the international standard EN ISO/IEC 17025. The company is accredited by the American Association for Laboratory Accreditation (A2LA) www.a2la.org test laboratory number 2381.01. MiCOM Labs test schedule is available at the following URL; http://www.a2la.org/scopepdf/2381-01.pdf

THE AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

MICOM LABS
Pleasanton, CA

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General Requirements for the Competence of Testing and Calibration Laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 18 June 2005*).

Presented this 26th day of February 2008.

President
For the Accreditation Council
Certificate Number 2381.01
Valid to November 30, 2009

For the tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

1.2. LISTINGS

MiCOM Labs test facilities are listed by the following organizations;

North America

United States of America

Federal Communications Commission (FCC) Listing #: 102167

Canada

Industry Canada (IC) Listing #: 4143A

Japan Registration

VCCI Membership Number: 2959

- Radiated 3 meter site; Registration No. R-2881
- Line Conducted, Registration Nos. C-3181 & T-1470
- Emissions; Registration Nos. C-3180 & T-1469

1.3. RECOGNITION

APEC MRA (Asia-Pacific Economic Community Mutual Recognition Agreement)

Conformity Assessment Body (CAB) – MiCOM Labs

Test data generated by MiCOM Labs is accepted in the following countries under the APEC MRA.

Country	Recognition Body	Phase	CAB Identification No.
Australia	Australian Communications and Media Authority (ACMA)	I	US0159
Hong Kong	Office of the Telecommunication Authority (OFTA)	I	
Korea	Ministry of Information and Communication Radio Research Laboratory (RRL)	I	
Singapore	Infocomm Development Authority (IDA)	I	
Taiwan	National Communications Commission (NCC) Bureau of Standards, Metrology and Inspection (BSMI)	I I	

2. DOCUMENT HISTORY

Document History		
Revision	**Date**	**Comments**
Draft		
Rev A	20th July 2009	Initial release.

3. TEST RESULT CERTIFICATE

Applicant:	Alien Technology 18220 Butterfield Blvd Morgan Hill California 95037, USA	Tested By:	MiCOM Labs, Inc. 440 Boulder Court Suite 200 Pleasanton California, 94566, USA
Product:	902 - 928 MHz RFID Reader	Telephone:	+1 925 462 0304
Model No.:	ALR9900 [with Antennas; CVS-915I; BP6-915; MT-242044; S9028PV; S9028PCL; S9026X; S9025P; ALR-9608-KIT; MT-262013]	Fax:	+1 925 462 0306
S/No's:	FA0700154		
Date(s) Tested:	17th – 18th June 2009	Website:	www.micomlabs.com

STANDARD(S)	TEST RESULTS
FCC 47 CFR Part15.247 & IC RSS-210	EQUIPMENT COMPLIES

MiCOM Labs, Inc. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.

Notes:

1. This document reports conditions under which testing was conducted and the results of testing performed.
2. Details of test methods used have been recorded and kept on file by the laboratory.
3. Test results apply only to the item(s) tested.

Approved & Released for MiCOM Labs, Inc. by:

ACCREDITED
CERTIFICATE #2381.01

Graeme Grieve
Quality Manager MiCOM Labs,

Gordon Hurst
President & CEO MiCOM Labs, Inc.

4. REFERENCES AND MEASUREMENT UNCERTAINTY

4.1. Normative References

Ref.	Publication	Year	Title
i.	FCC 47 CFR Part 15.247	2007	Code of Federal Regulations
ii.	Industry Canada RSS-210	Issue 7 June 2007	Low Power License-Exempt Radiocommunication Devices (All Frequency Bands)
iii.	Industry Canada RSS-Gen	Issue 2 June 2007	General Requirements and Information for the Certification of Radiocommunication Equipment.
iv.	ANSI C63.4	2003	American National Standards for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
v.	CISPR 22/ EN 55022	2005	Limits and Methods of Measurements of Radio Disturbance Characteristics of Information Technology Equipment
vi.	M 3003	Edition 1 Dec. 1997	Expression of Uncertainty and Confidence in Measurements
vii.	LAB34	Edition 1 Aug 2002	The expression of uncertainty in EMC Testing
viii.	ETSI TR 100 028	2001	Parts 1 and 2 Electromagnetic compatibility and Radio Spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics
ix.	A2LA	14th September 2005	Reference to A2LA Accreditation Status – A2LA Advertising Policy

4.2. Test and Uncertainty Procedures

Conducted and radiated emission measurements were conducted in accordance with American National Standards Institute ANSI C63.4, listed in the Normative References section of this report.

Measurement uncertainty figures are calculated in accordance with ETSI TR 100 028 Parts 1 and 2.

Measurement uncertainties stated are based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95 % in accordance with UKAS document M 3003 listed in the Normative References section of this report.

5. TEST SUMMARY

List of Measurements: The following table represents the list of measurements required under

Standard Section(s)	Test Description	Condition	Result	Test Report Section
15.247(b)(2) **A8.4**	Transmit Power	Conducted	Complies	7.1
15.247(d) **15.205** **15.209** **A8.5** **2.2** **2.6** **4.9**	Transmitter - Radiated Emissions above 1 GHz	Radiated	Complies	*7.2.1*
4.10	Receiver - Radiated Emissions above 1 GHz	Radiated	Complies	*7.2.2*
15.247(d) **15.205** **15.209** **A8.5** **2.2** **2.6**	Radiated Emissions below 1 GHz	Radiated	Complies	*7.3*

Note 1: This test report only covers the addition of Antennas for use with the ALR9900. Conducted tests were not performed. Please refer to MiCOM test report ALNT30-A3 Rev A for original test results.

Note 2: Test results reported in this document relate only to the items tested

Note 3: The required tests demonstrated compliance as per client declaration of test configuration, monitoring methodology and associated pass/fail criteria

Note 4: Section 6.8 Equipment Modifications highlights the equipment modifications that were required to bring the product into compliance with the above test matrix.

6. PRODUCT DETAILS AND TEST CONFIGURATIONS

6.1. Test Program Scope

The scope of the compliance program was to test additional antennas for the Alien Technologies RFID Reader, Model ALR9900, in the frequency range 902 MHz - 928 MHz for compliance against FCC 47 CFR Part 15.247 and Industry Canada RSS-210 specifications.

The antennas tested are detailed in section 6.4 Antenna Details.

ALR9900 Product Photo

CVS-915I Antenna - Front

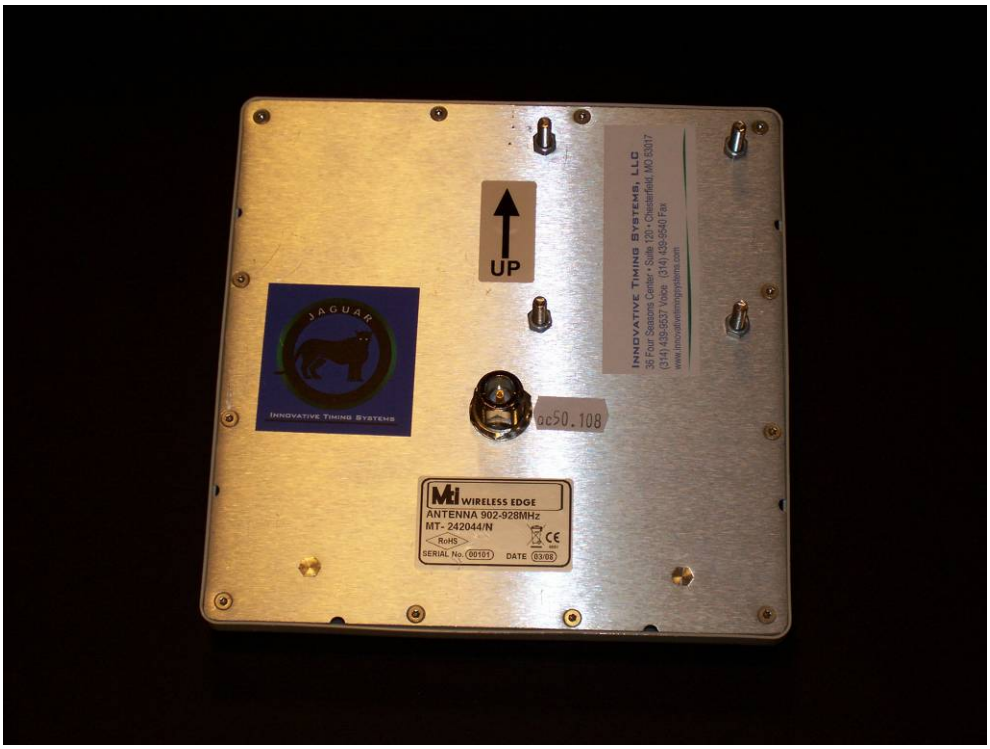
Rear

BP6-915 Antenna - Front

Rear

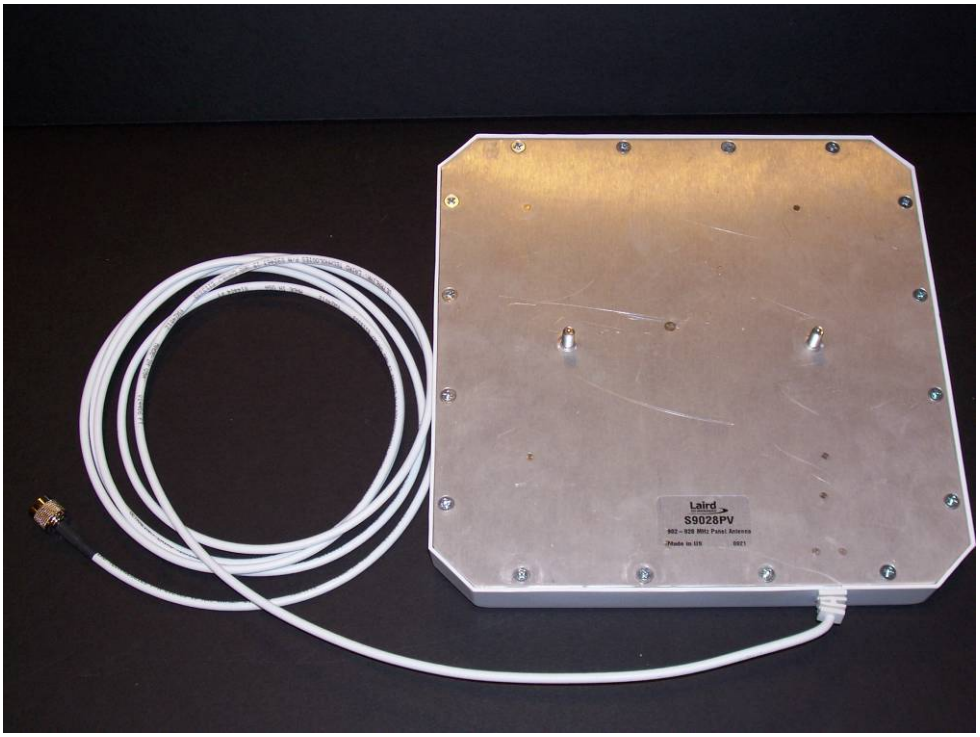
MT-242044 Antenna - Front

Rear



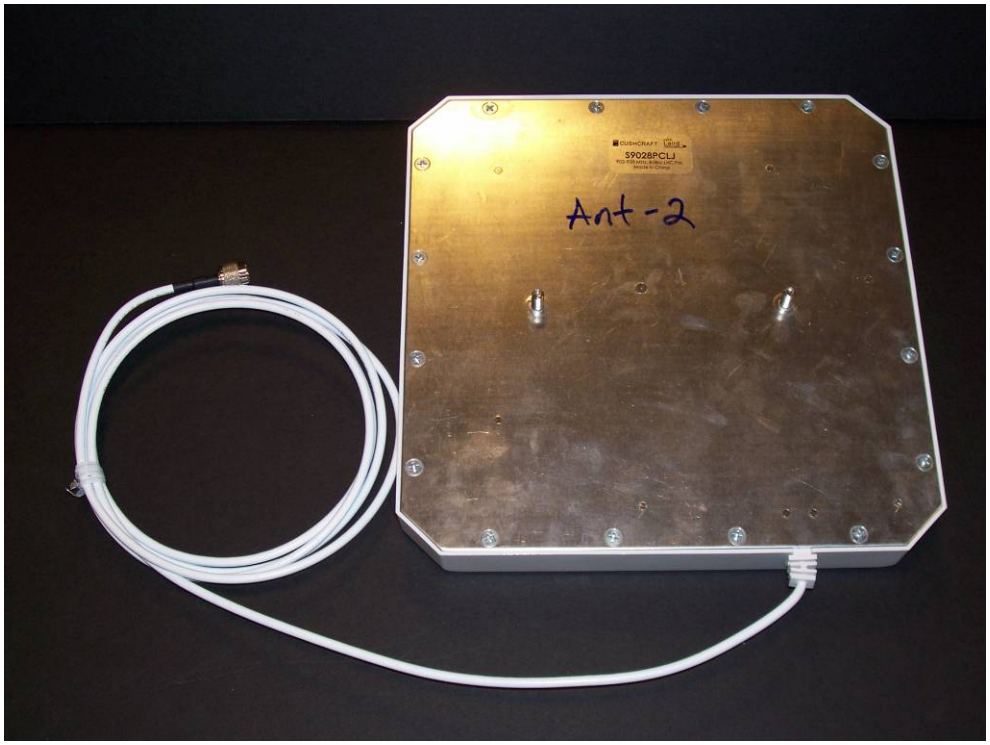
S9028PV Antenna - Front

Rear

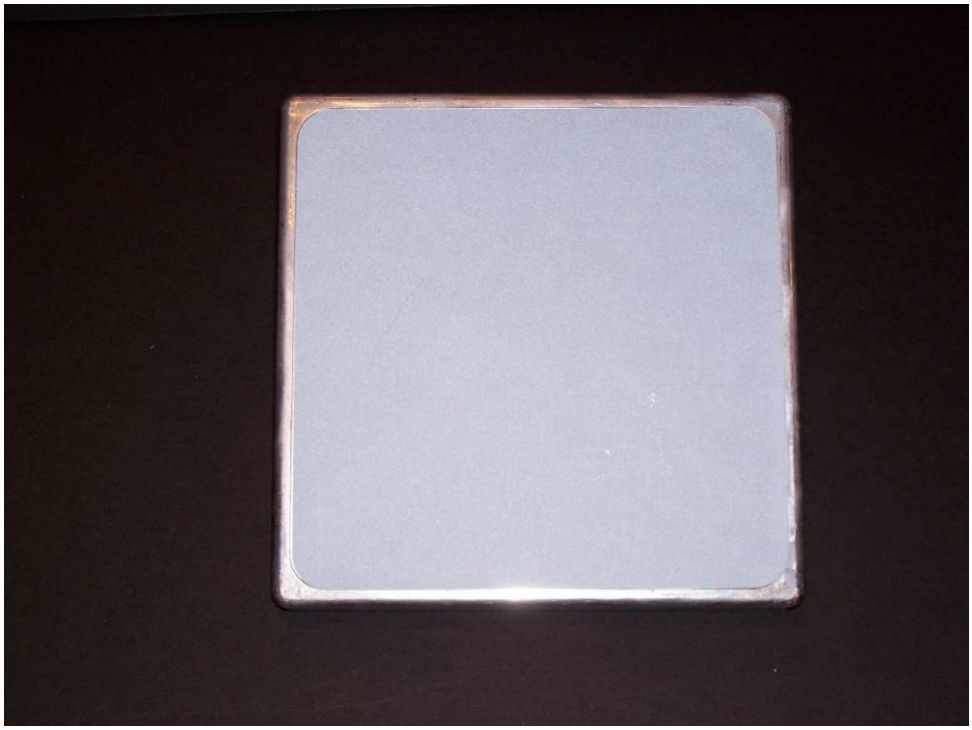


S9028PCL Antenna - Front

Rear

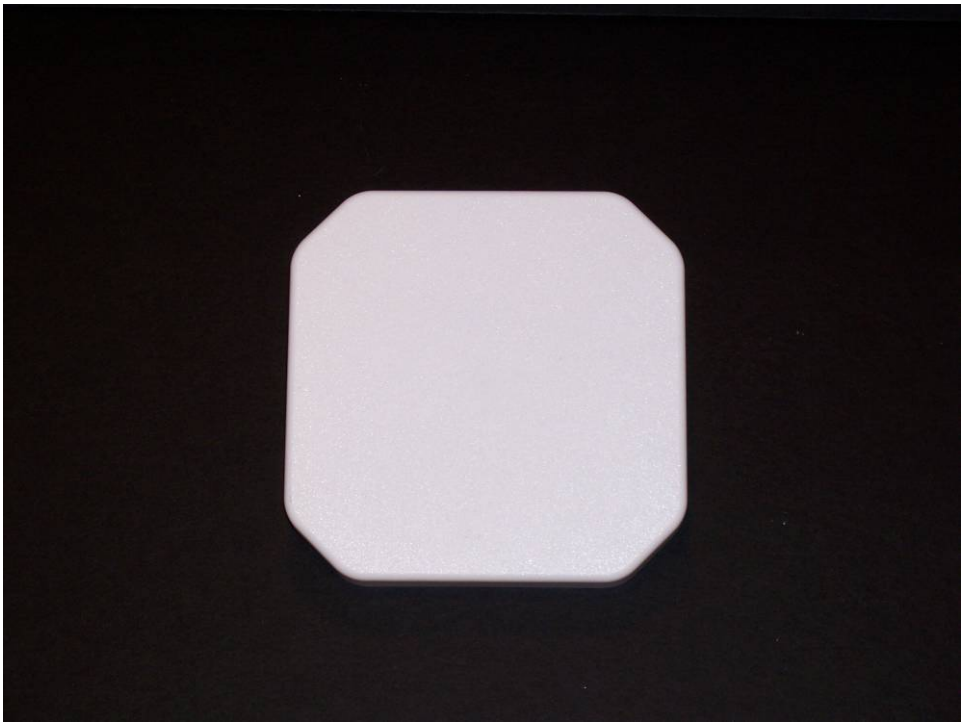


S9026X Antenna - Front



Rear

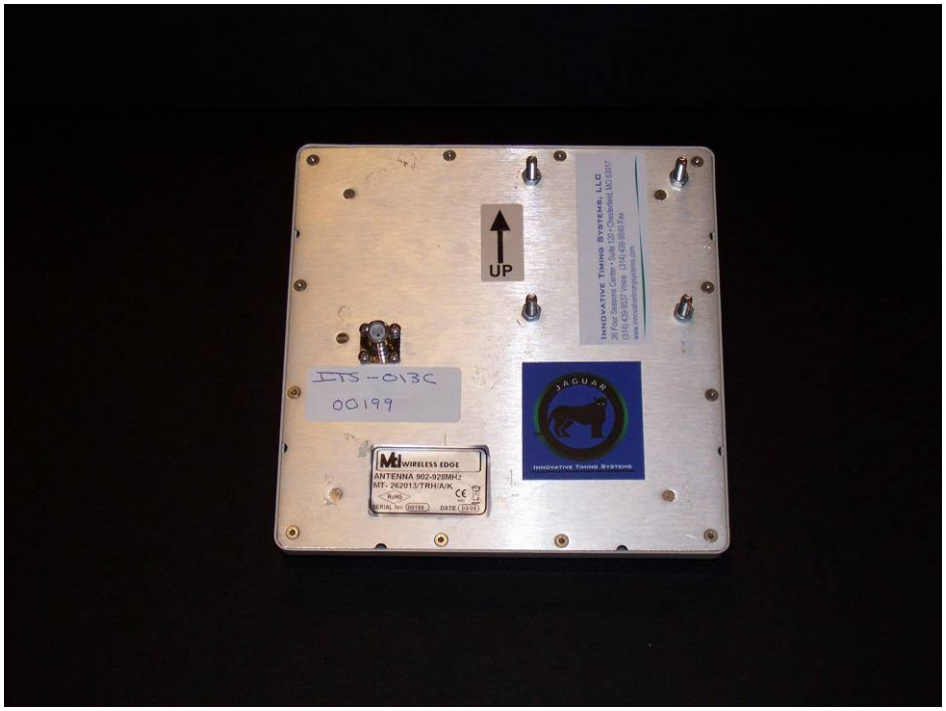
S9025P Antenna - Front



Rear

MT-262013 Antenna - Front

Rear



6.2. EUT Details

Detail	Description
Purpose:	Test of additional antennas for the Alien Technologies RFID Reader, Model ALR9900, in the frequency range 902 MHz - 928 MHz, for compliance against FCC 47 CFR Part 15.247 and Industry Canada RSS-210 specifications.
Applicant:	Alien Technology 18220 Butterfield Blvd Morgan Hill California 95037, USA
Manufacturer:	Same as Applicant
Test Laboratory:	MiCOM Labs, Inc. 440 Boulder Court, Suite 200 Pleasanton, California 94566 USA
Test report reference number:	ALNT36-A2 Rev DRAFT
Date EUT received:	17th June 2009
Dates of test (from - to):	17th – 18th June 2009
No of Units Tested:	1 RFID Reader / 8 additional Antennas
Product Name:	ALR9900 RFID Reader
Manufacturers Trade Name:	Enterprise Reader
Model No.:	ALR9900
Equipment Primary Function:	902 MHz – 928 MHz Radio Frequency Identification (RFID) Reader
Type of Modulation:	PR-ASK
Installation type:	Fixed
ITU Emission Designator:	52K6L1D
Microprocessor(s) Model:	Intel Xscale
Clock/Oscillator(s):	20, 3.6864, 25 MHz, 32.768 kHz
Frequency Stability:	±20ppm
Construction/Location for Use:	Indoor/Outdoor
Software/Firmware Release:	08.06.26.00
Hardware Release:	REV C
Test Software Release:	N/A
Transmit/Receive Operation:	Transceiver, Simplex
AutomaticTransmit Power control:	N/A
Remote Frequency Control:	N/A

EUT Details (Continued)

Detail	Description
Power Supply Model:	XP HUP45-30/#10045-01
Power Supply Serial Number:	05119998
Rated Input Voltage and Current AC:	100-240 V AC 47-63 Hz / Current: 1.35A
Rated Input Voltage and Current DC:	Pin1,2: Common Pin3: +9.75V DC 2.5 A Pin4: -5.75V DC 0.3 A Pin5: +5.75 V DC 3A
Operating Temperature Range ºC:	Max: 50 ºC Min: 0 ºC
Long Term Frequency Stability:	+/- 20 p.p.m.
Equipment Dimensions:	8" x 7" x 1.6"
Weight:	2.21 lbs

6.3. Operational Power Range

FREQ	PWR 316	PWR 295	PWR 285
Low (902.75 MHz)	30.43 dBm	27.91 dBm	26.80 dBm
Mid (915.75 MHz)	30.42 dBm	27.89 dBm	26.72 dBm
High (928.25 MHz)	30.42 dBm	27.75 dBm	26.57 dBm

Notes: Maximum power in EUT firmware is indicated by PWR "316". Power levels were reduced to levels 295 and/or 285 depending on the model and gain of the antenna under test. Please refer to section 6.7 for power levels used for each antenna and test frequency.

6.4. Antenna Details

The following is a description of the EUT antennas.

Model	Antenna Description	Manufacturer	Polarity	Gain (dBi)	Frequency Range (MHz)
CVS-915I	Patch Antenna	Mobile Mark Communications Antenna's	Linear	2.5 dBi	902-928 MHz
BP6-915	Patch Antenna	Mobile Mark Communications Antenna's	Linear	5.5 dBi	902-928 MHz
MT-242044	Reader Antenna	Mti Wireless Edge LTD	Linear	8 dBi	902-928 MHz
S9028PV	Patch Antenna	Laird Technologies	Linear	8 dBi	902-928 MHz
S9028PCL	Panel Antenna	Laird Technologies	Circular	8 dBic / 6 dBi	902-928 MHz
S9026X	RFID Antenna	Laird Technologies	Circular	6 dBiC	902-928 MHz
S9025P	Mini RFID Panel Antenna	Laird Technologies	Circular	5.5 dBic	902-928 MHz
ALR-9608-KIT [identical in construction to S9025P]	Mini RFID Panel Antenna	Alien Technology / Laird Technologies	Circular	5.5 dBic	902-928 MHz
MT-262013	Reader Antenna	Mti Wireless Edge LTD	Circular	7.5 dBic	902-928 MHz

Notes:

ALR-9608-KIT Antenna was not tested. It was declared by the manufacturer to be identical to the Laird Technologies S9025P antenna.

6.5. Cabling and I/O Ports

The following is a description of the cable and input, output ports available on the EUT.

Type of I/O Ports	Description	Screened (y/n)	Length	Qty
RF Port	ANT 0 - Antenna port 0	Y	8 ft or greater	1
RF Port	ANT 1 - Antenna port 1	Y	Open, 8ft or greater	1
RF Port	ANT 2 - Antenna port 2	Y	Open, 8ft or greater	1
RF Port	ANT 3 - Antenna port 3	Y	Open, 8ft or greater	1
Power Port	POWER – DC Power from External Power Adaptor	N	Dc to adapter = 4ft; adapter to AC plug = 6ft	1
Control Port	SERIAL control port - Local Maintenance Terminal	N	Open, 8ft typical	1
Control Port	LAN – 10/100BT Ethernet	N	8ft typical	1
Control Port	I/O Port	N	Open, unknown	1

6.6. Equipment Configurations

The following is a description of EUT and supporting equipment used during the test program.

Type	Equipment Description	Manufacturer	Model No.	Serial No (s).
EUT	RFID Reader	Alien Technolog	ALR9900	FA0700154
Power Supply	100-240Vac/dc PSU 9.75 Vdc, 2.5A +5.75Vdc, 3A -5.75 Vdc, 0.3A	XP Power	XP HUP45-30/#10045-01	05119998
Support	IBM Laptop	IBM	T41	99-BW440

6.7. Test Configurations

Antenna	Gain (dBi)	Frequency	PWR Setting
CVS-915I	2.5 dBi	902.75	316
		915.75	316
		927.25	316
BP6-915	5.5 dBi	902.75	295
		915.75	295
		927.25	295
MT-242044	8 dBi	902.75	295
		915.75	295
		927.25	295
S9028PV	8 dBi	902.75	285
		915.75	285
		927.25	285
S9028PCL	8 dBic / 6 dBi	902.75	295
		915.75	295
		927.25	295
S9026X	6 dBiC	902.75	295
		915.75	295
		927.25	295
S9025P	5.5 dBic	902.75	316
		915.75	316
		927.25	316
ALR-9608-KIT [Not tested – Identical to S9025P]	5.5 dBic	902.75	316
		915.75	316
		927.25	316
MT-262013	7.5 dBic	902.75	316
		915.75	316
		927.25	316

6.8. Equipment Modifications

No modifications were required to bring the equipment into compliance:

6.9. Deviations from the Test Standard

No deviations from the test standard were required in order to complete the test program:

7. TEST RESULTS

This test report only covers the addition of Antennas for use with the ALR9900. Please reference test report Serial number ALNT30-A3 Rev A issued on 22nd January '08 by MiCOM labs for previous test results not included in this test report.

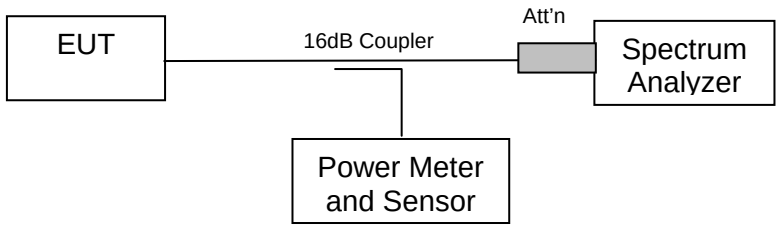
7.1. Output Power

FCC, Part 15 Subpart C §15.247(b)(2)
Industry Canada RSS-210 §A8.4

Test Procedure

The transmitter terminal of EUT was set for CW (continuous wave) operation and connected to the input of the power meter which was calibrated to measure power. The value of measured power including antenna cable loss was reported.

Test Measurement Set up



Measurement set up for Transmitter Output Power

Measurement Results for Output Power

Ambient conditions.
Temperature: 17 – 23 °C Relative humidity: 31- 42% Pressure: 999 – 1012 mbar

TABLE OF RESULTS

Channel	FREQ	PWR 316	PWR 295	PWR 285
0	902.75 MHz	30.43 dBm	27.91 dBm	26.80 dBm
26	915.75 MHz	30.42 dBm	27.89 dBm	26.72 dBm
49	927.25 MHz	30.42 dBm	27.75 dBm	26.57 dBm

Please refer to section 6.7 Test Configurations for the PWR setting applied to each individual antenna.

Specification

Limits

FCC, Part 15 Subpart C §15.247 (b)(2) The maximum output power of the intentional radiator shall not exceed the following:
(2) For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.

Industry Canada RSS-210 §A8.4
For frequency hopping systems operating in the 902 - 928 MHz band, the maximum peak conducted power output power is not to succeed 1.0 W if the hopset uses 50 or more hopping channels and 0.25 W if the hopset uses less than 50 hopping channels.

Laboratory Measurement Uncertainty for Power Measurements

Measurement uncertainty	±1.33 dB

Traceability

Method	Test Equipment Used
Measurements were made per work instruction WI-01 'Measuring RF Output Power'	0158, 0193, 0252, 0313, 0314, 0070, 0116, 0117

7.2. Radiated Emissions (1000 MHz – 18000 MHz)

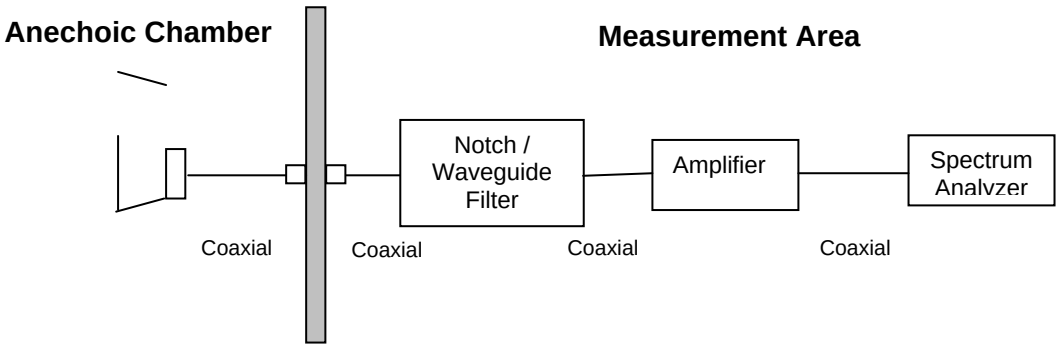
FCC, Part 15 Subpart C §15.247(d)
Industry Canada RSS-210 §A8.5

Test Procedure

Radiated emissions above 1 GHz are measured in the anechoic chamber at a 3-meter distance on every azimuth in both horizontal and vertical polarities. The emissions are recorded and maximized as a function of azimuth by rotation through 360° with a spectrum analyzer in peak hold mode. Depending on the frequency band spanned a notch filter and waveguide filter was used to remove the fundamental frequency. The highest emissions relative to the limit are listed for each frequency spanned.

All measurements on any frequency or frequencies over 1 MHz are based on the use of measurement instrumentation employing an average detector function. All measurements above 1 GHz were performed using a minimum resolution bandwidth of 1 MHz.

Test Measurement Set up



Measurement set up for Radiated Emission Test

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Loss, and subtracting Amplifier Gain from the measured reading. All factors are included in the reported data.

FS = R + AF + CORR – FO

where: FS = Field Strength
R = Measured Spectrum analyzer Input Amplitude
AF = Antenna Factor
CORR = Correction Factor = CL – AG + NFL
CL = Cable Loss
AG = Amplifier Gain
FO = Distance Falloff Factor
NFL = Notch Filter Loss or Waveguide Loss

For example:
Given receiver input reading of 51.5 dBμV; Antenna Factor of 8.5 dB; Cable Loss of 1.3 dB; Falloff Factor of 0 dB, an Amplifier Gain of 26 dB and Notch Filter Loss of 1 dB. The Field Strength of the measured emission is:

FS = 51.5 + 8.5 + 1.3 - 26.0 +1 = 36.3 dBμV/m

Conversion between dBμV/m (or dBμV) and μV/m (or μV) are done as:

Level (dBμV/m) = 20 * Log (level (μV/m))

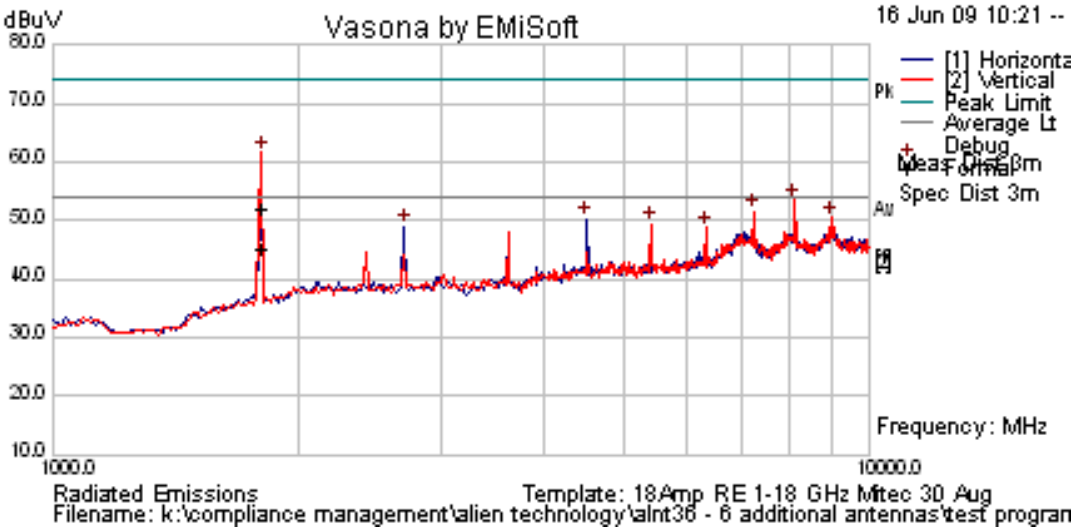
40 dBμV/m = 100 μV/m
48 dBμV/m = 250 μV/m

Radiated Spurious Emissions above 1 GHz

Ambient conditions.
Temperature: 17 – 23 °C Relative humidity: 31- 42% Pressure: 999 – 1012 mbar

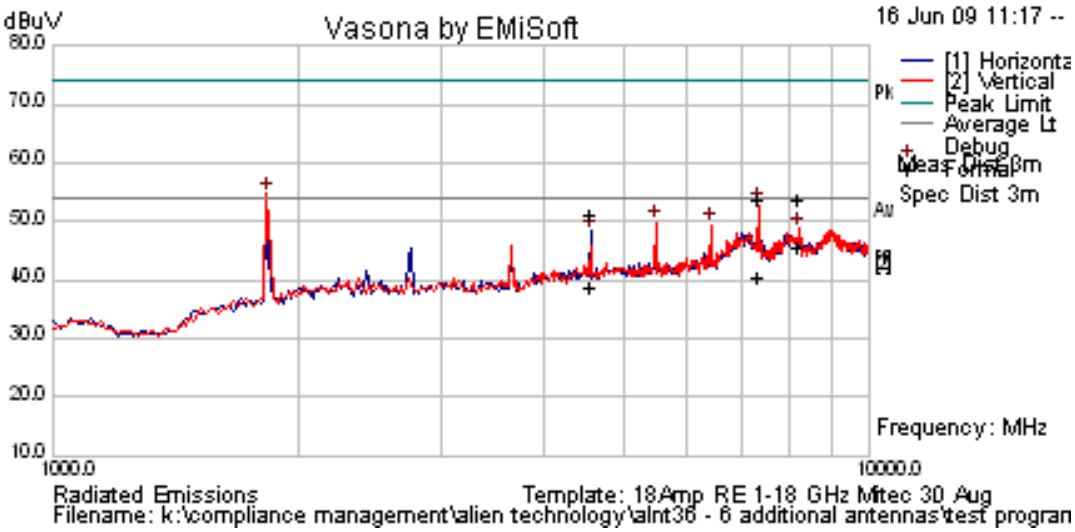
7.2.1. Transmitter Radiated Spurious Emissions (above 1 GHz)

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	CVS-915I; Gain = 2,5 dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



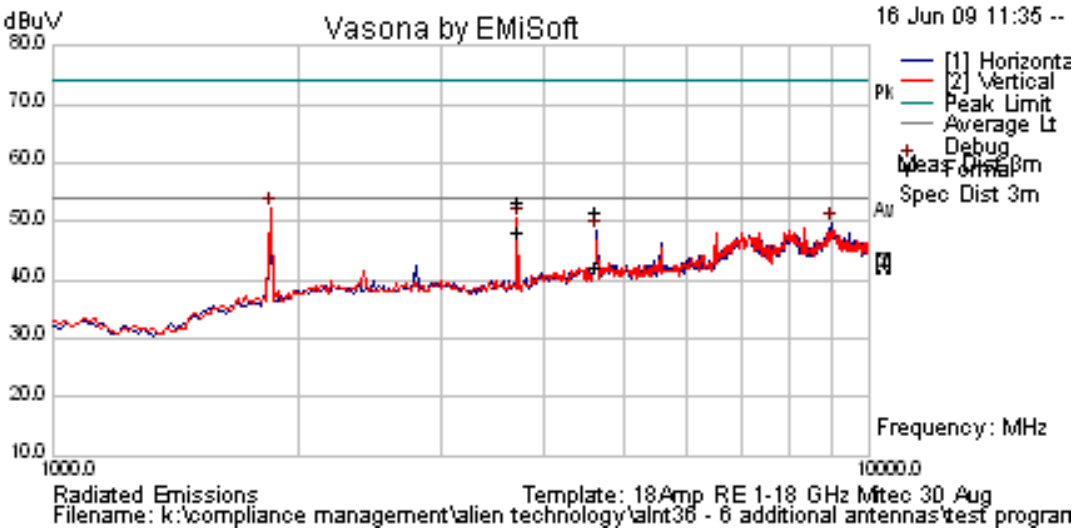
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
1805.49	71.22	2.61	-12.18	61.65	Peak [Scan]	V				> 20 dB	Pass	NRB
2708.294	51.74	3.17	-10.94	43.97	Average Max	H	98	241	54	-10.03	Pass	
2708.294	58.23	3.17	-10.94	50.46	Peak Max	H	98	241	74	-23.54	Pass	
4513.737	51.29	4.18	-8.77	46.71	Average Max	H	98	238	54	-7.29	Pass	
4513.737	58.1	4.18	-8.77	53.52	Peak Max	H	98	238	74	-20.48	Pass	
5416.437	46.61	4.62	-8.43	42.79	Average Max	H	105	251	54	-11.21	Pass	
5416.437	57.04	4.62	-8.43	53.23	Peak Max	H	105	251	74	-20.77	Pass	
8124.749	40.97	5.67	-0.87	45.77	Average Max	V	122	209	54	-8.23	Pass	
8124.749	51.66	5.67	-0.87	56.46	Peak Max	V	122	209	74	-17.54	Pass	
9027.437	33.66	6.21	0.02	39.88	Average Max	H	108	248	54	-14.12	Pass	
9027.437	47.05	6.21	0.02	53.28	Peak Max	H	108	248	74	-20.72	Pass	

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	CVS-915I / Gain = 2.5dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



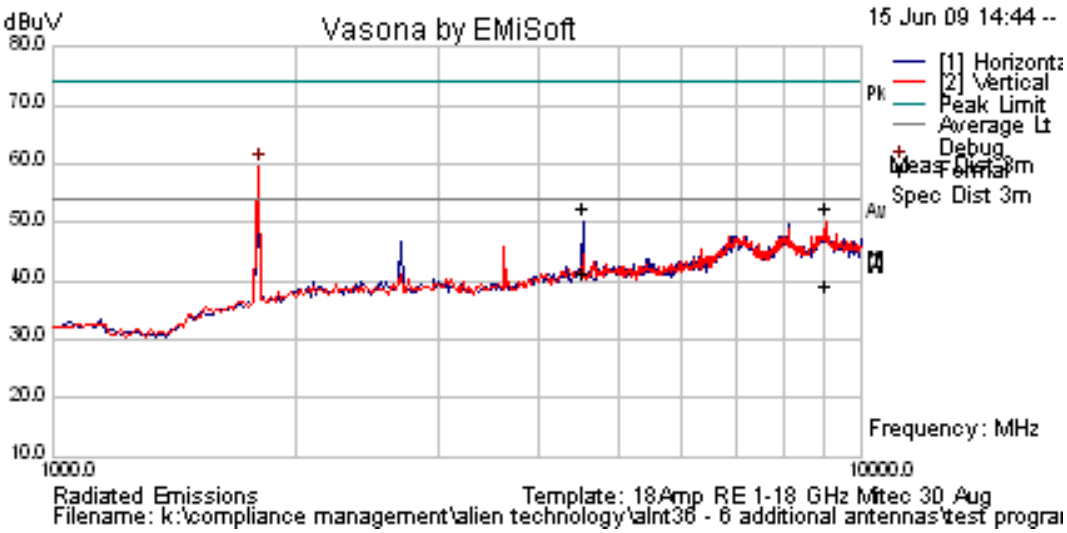
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
1830.511	64.12	2.63	-12	54.75	Peak [Scan]	V				> 20 dB	Pass	NRB
4576.207	43.44	4.24	-8.71	38.97	Average Max	H	124	234	54	-15.03	Pass	
4576.207	55.54	4.24	-8.71	51.07	Peak Max	V	122	0	74	-22.93	Pass	
5491.513	53.59	4.62	-8.32	49.89	Peak [Scan]	V				> 20 dB	Pass	NRB
6406.784	50.39	5.09	-6.14	49.34	Peak [Scan]	V				> 20 dB	Pass	NRB
7321.964	38.02	5.45	-2.89	40.57	Average Max	H	110	190	54	-13.43	Pass	
7321.964	51.41	5.45	-2.89	53.97	Peak Max	H	110	190	74	-20.03	Pass	
8237.197	41.06	5.74	-1.18	45.62	Average Max	V	174	167	54	-8.38	Pass	
8237.197	49.11	5.74	-1.18	53.67	Peak Max	V	174	167	74	-20.33	Pass	

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	CVS-915I / Gain = 2.5dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



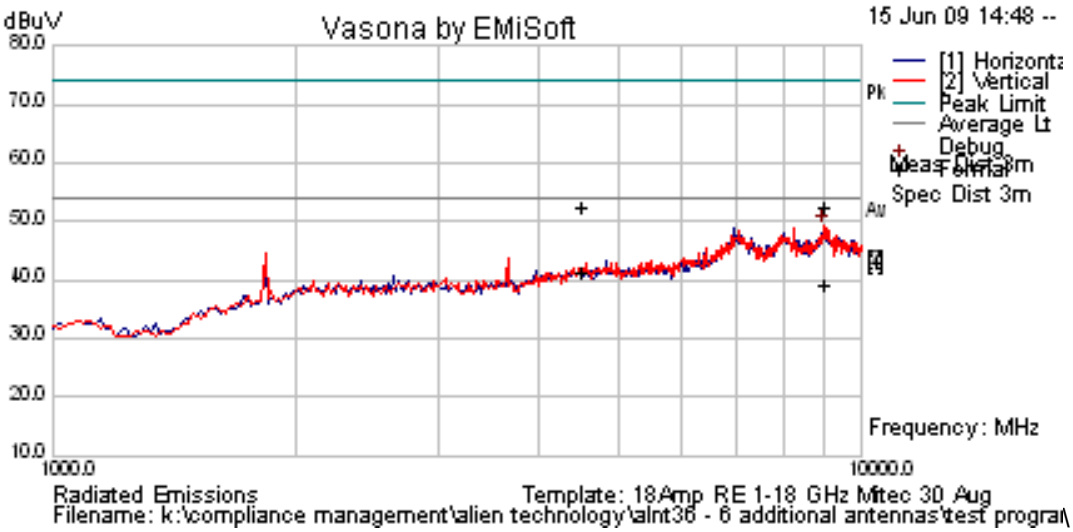
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
1847.695	61.43	2.65	-11.87	52.2	Peak [Scan]	V	100	0	54	-1.8	Pass	NRB
3709.028	55.29	3.73	-10.77	48.25	Average Max	V	135	213	54	-5.75	Pass	
3709.028	60.28	3.73	-10.77	53.24	Peak Max	V	135	213	74	-20.76	Pass	
4636.224	46.45	4.3	-8.69	42.05	Average Max	H	125	231	54	-11.95	Pass	
4636.224	56.04	4.3	-8.69	51.65	Peak Max	H	125	231	74	-22.35	Pass	

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	BP6-915 / Gain = 5.5dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



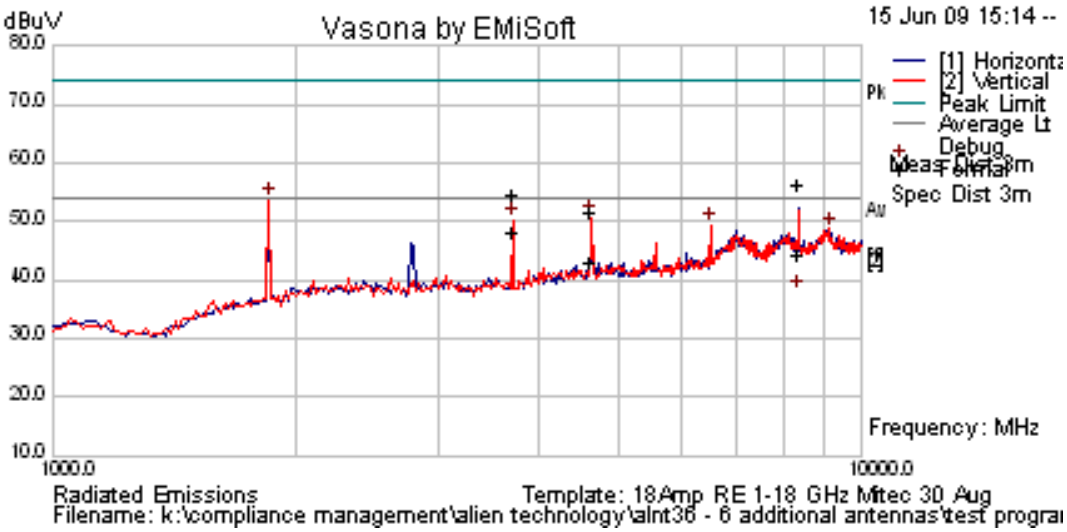
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
1805.475	69.17	2.61	-12.18	59.6	Peak Max	V				> 20 dB	Pass	NRB
4513.707	46.02	4.18	-8.77	41.43	Average Max	H	98	237	54	-12.57	Pass	
4513.707	56.92	4.18	-8.77	52.33	Peak Max	H	98	237	74	-21.67	Pass	
9027.465	33.13	6.21	0.02	39.35	Average Max	H	132	233	54	-14.65	Pass	
9027.465	46.04	6.21	0.02	52.27	Peak Max	H	132	233	74	-21.73	Pass	

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	BP6-915 / Gain = 5.5dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



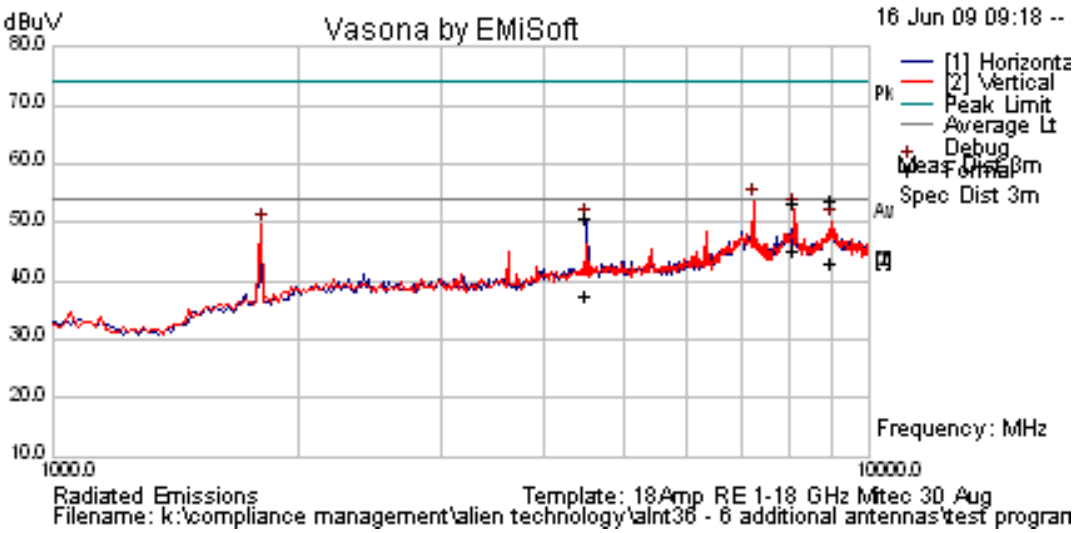
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
8971.944	43.15	6.19	-0.18	49.16	Peak [Scan]	V	100	0	54	-4.84	Pass	
8957.595	32.32	6.18	-0.28	38.22	Average	V	98	-1	54	-15.78	Pass	

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	BP6-915 / Gain = 5.5dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



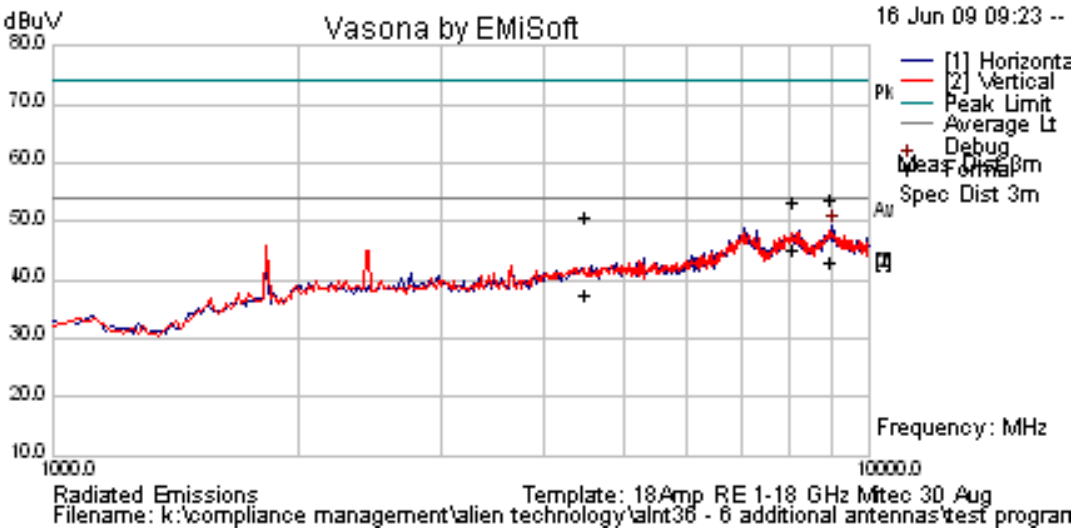
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
1854.494	63.05	2.65	-11.8	53.9	Peak [Scan]	V	100	0	54	-0.1	Pass	NRB
3708.987	55.06	3.73	-10.77	48.01	Average Max	V	134	208	54	-5.99	Pass	
3708.987	61.53	3.73	-10.77	54.49	Peak Max	V	134	208	74	-19.51	Pass	
4636.225	47.43	4.3	-8.69	43.04	Average Max	V	151	126	54	-10.96	Pass	
4636.225	56.16	4.3	-8.69	51.77	Peak Max	H	127	231	74	-22.23	Pass	
6490.706	50.24	5.13	-5.96	49.41	Peak [Scan]	V	100	0	54	-4.59	Pass	NRB
8345.208	39.95	5.81	-1.56	44.2	Average Max	H	115	243	54	-9.8	Pass	
8345.208	52.18	5.81	-1.56	56.43	Peak Max	H	115	243	74	-17.57	Pass	

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	MT-242044; Gain = 8 dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



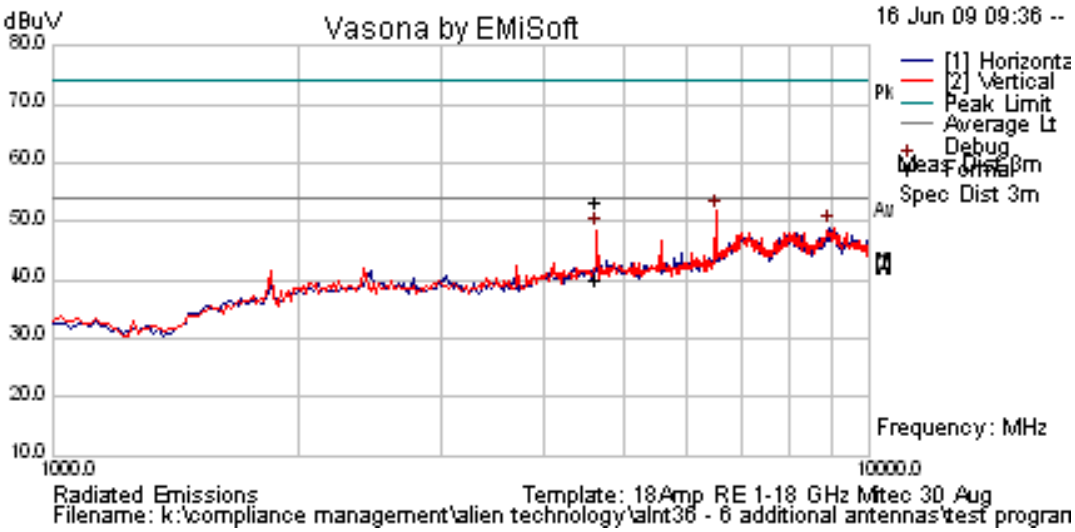
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
1805.531	59.3	2.61	-12.18	49.73	Peak [Scan]	V	100	0	54	-4.27	Pass	NRB
4513.724	42.23	4.18	-8.77	37.65	Average Max	H	112	143	54	-16.35	Pass	
4513.724	55.16	4.18	-8.77	50.58	Peak Max	V	137	227	74	-23.42	Pass	
7221.929	50.72	5.43	-2.4	53.74	Peak [Scan]	V	100	0	54	-0.26	Pass	NRB
8124.684	40.57	5.67	-0.87	45.37	Average Max	H	98	180	54	-8.63	Pass	
8124.684	48.72	5.67	-0.87	53.52	Peak Max	V	154	218	74	-20.48	Pass	
9027.445	36.74	6.21	0.02	42.97	Average Max	V	98	203	54	-11.03	Pass	
9027.445	47.44	6.21	0.02	53.67	Peak Max	V	98	203	74	-20.33	Pass	

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	MT-242044; Gain = 8 dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



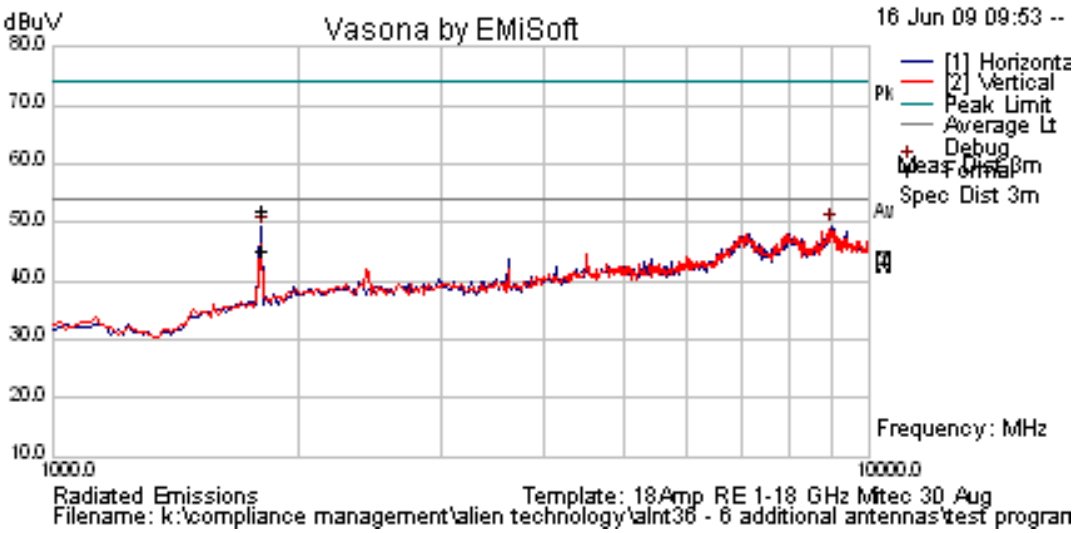
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
No Emissions within 6 dB of limit												

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	MT-242044; Gain = 8 dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



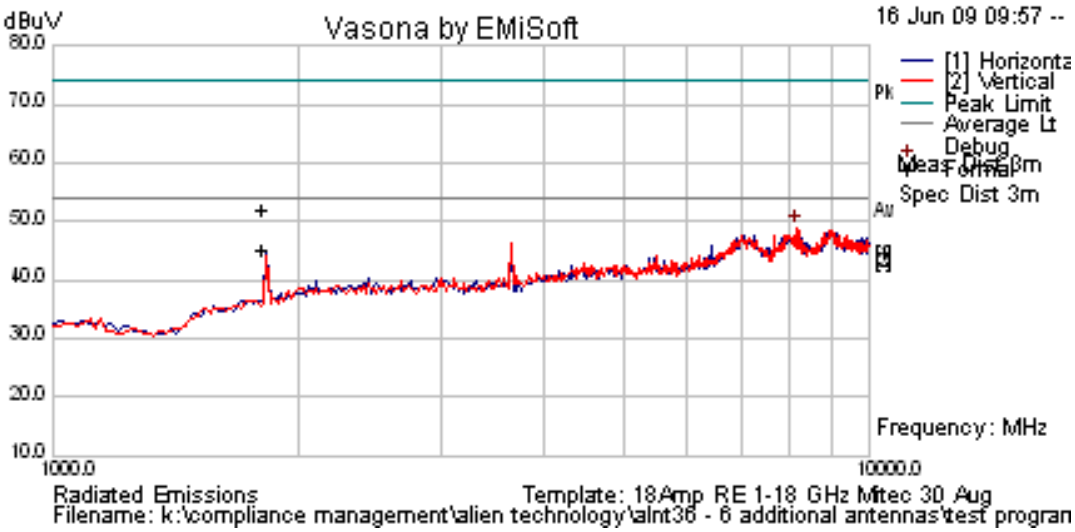
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
4636.265	44.62	4.3	-8.69	40.23	Average Max	V	134	160	54	-13.77	Pass	
4636.265	57.84	4.3	-8.69	53.45	Peak Max	V	134	160	74	-20.55	Pass	
6490.701	52.69	5.13	-5.96	51.86	Peak [Scan]	V	100	0	54	-2.14	Pass	NRB

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	S9028PV; Gain = 8 dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



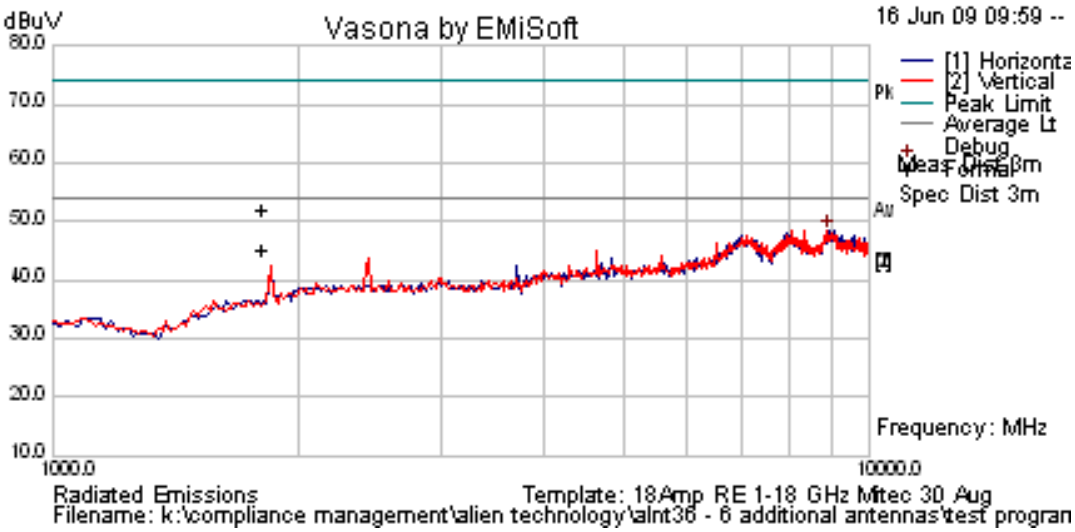
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
1805.504	54.69	2.61	-12.18	45.12	Average Max	H	122	210	54	-8.88	Pass	NRB
1805.504	61.67	2.61	-12.18	52.1	Peak Max	V	139	159	74	-21.9	Pass	NRB

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	S9028PV; Gain = 8 dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



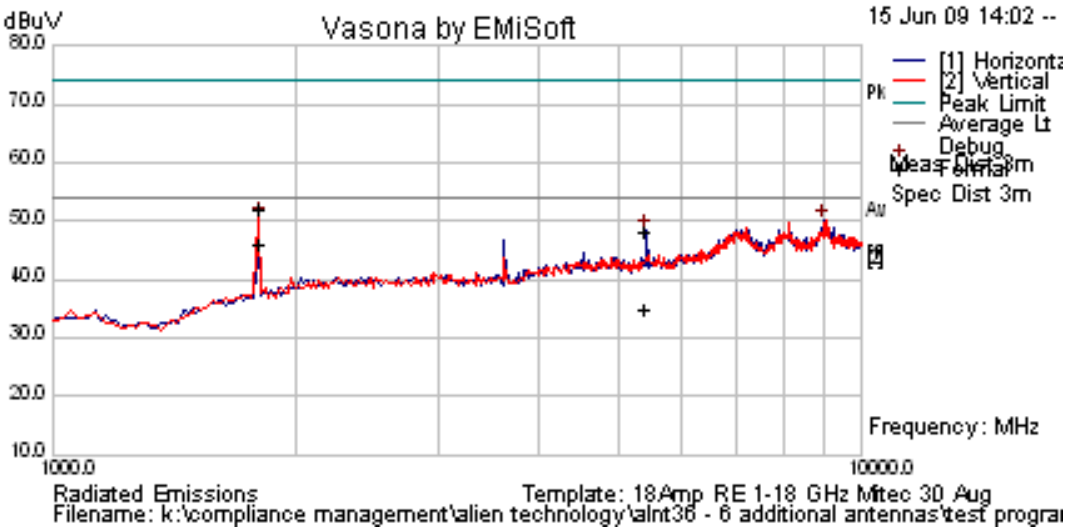
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
No emissions within 6 dB of limit.												

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	S9028PV; Gain = 8 dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



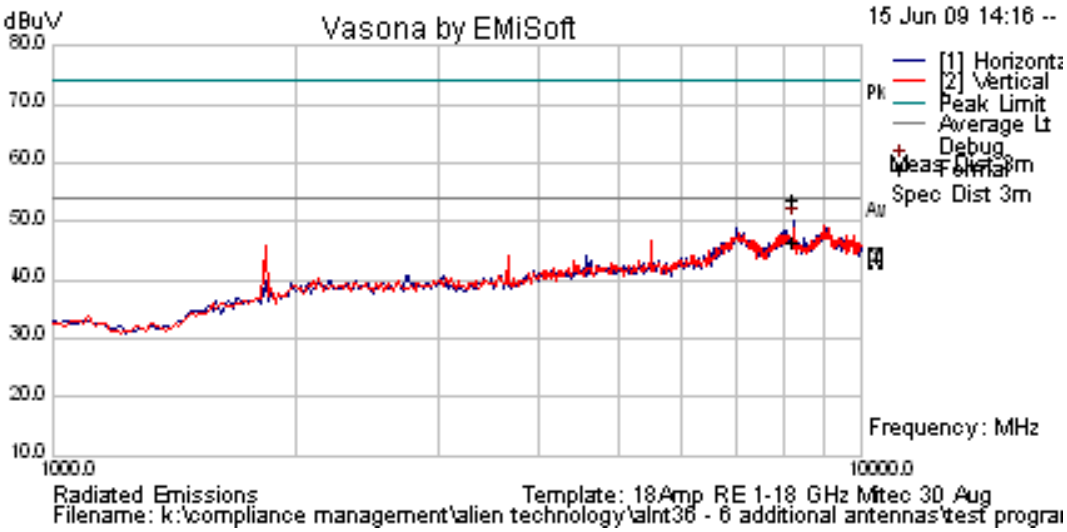
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
No emissions within 6 dB of limit.												

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	S9028PCL / Gain = 8dBiC / 6dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx)
	120V AC



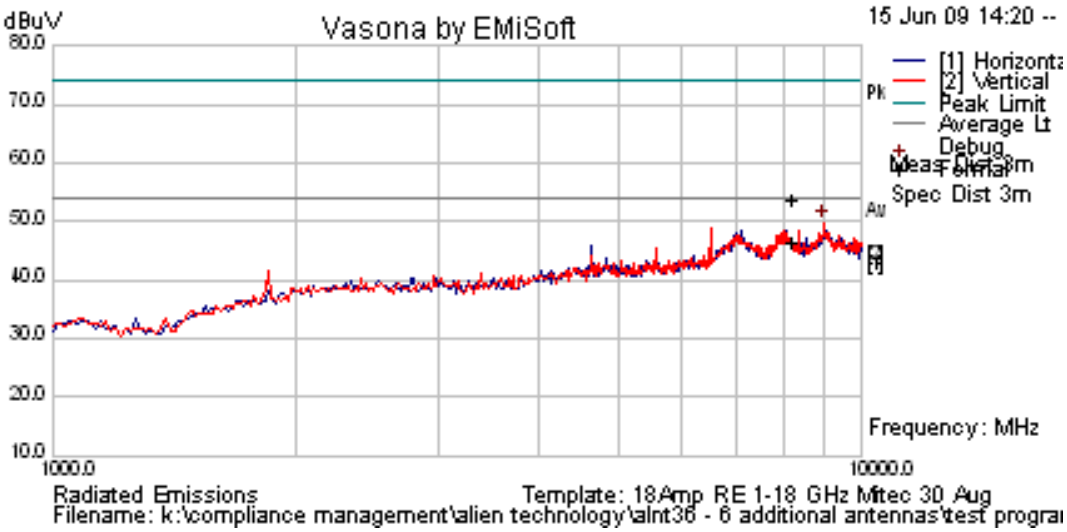
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
1805.485	55.4	2.61	-12.18	45.83	Average Max	V	98	199	54	-8.17	Pass	NRB
1805.485	61.8	2.61	-12.18	52.23	Peak Max	V	98	199	74	-21.77	Pass	NRB
5416.198	38.72	4.62	-8.43	34.91	Average Max	H	102	218	54	-19.09	Pass	
5416.198	51.79	4.62	-8.43	47.98	Peak Max	H	102	218	74	-26.02	Pass	

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	S9028PCL / Gain = 8dBiC / 6dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



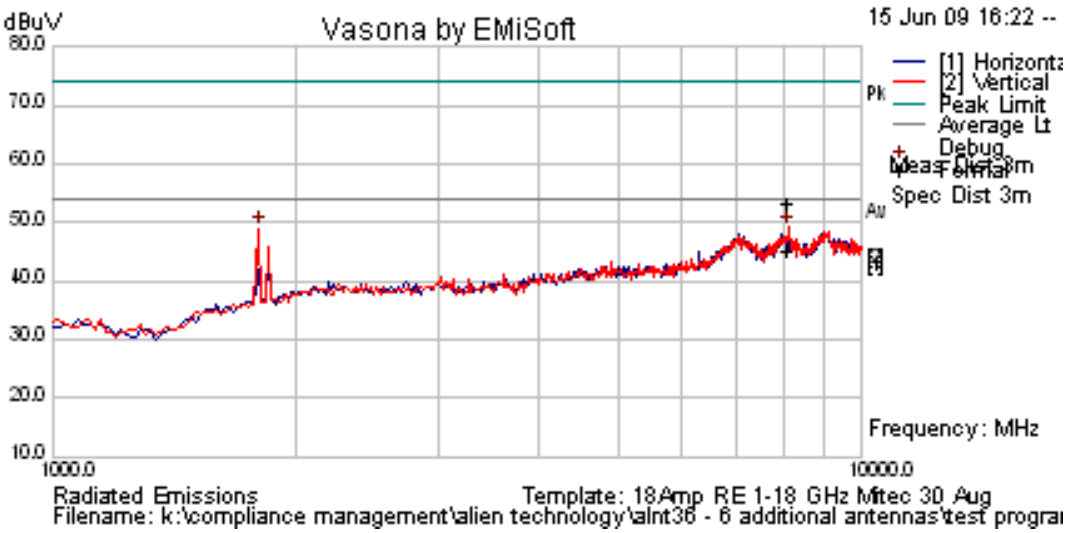
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
8237.282	42.09	5.74	-1.18	46.64	Average Max	V	114	163	54	-7.36	Pass	
8237.282	49.4	5.74	-1.18	53.95	Peak Max	V	114	163	74	-20.05	Pass	

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	S9028PCL / Gain = 8dBiC / 6dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



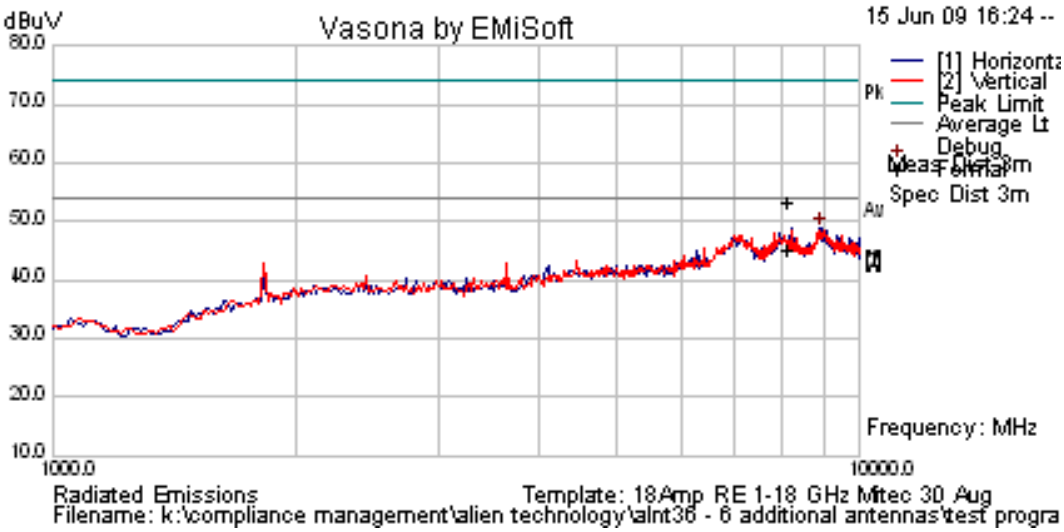
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
8971.944	43.84	6.19	-0.18	49.85	Peak [Scan]	V	100	0	54	-4.15	Pass	NRB

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	S9026X / Gain = 6dBiC
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



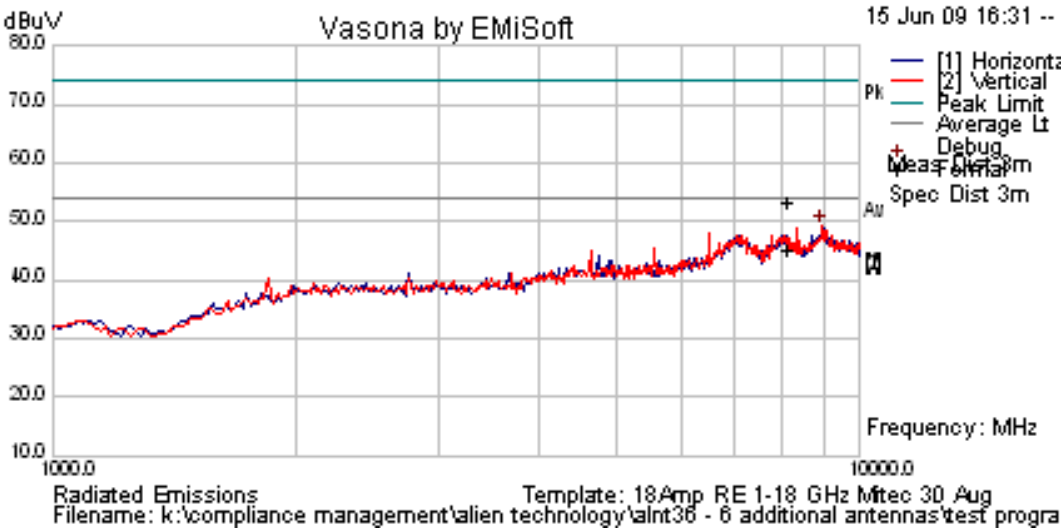
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
1805.517	58.58	2.61	-12.18	49.01	Peak [Scan]	V	100	0	54	-4.99	Pass	NRB
8124.696	48.34	5.67	-0.87	53.14	Peak Max	V	128	173	74	-20.86	Pass	
8124.696	40.19	5.67	-0.87	44.99	Average Max	V	128	173	54	-9.01	Pass	

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	S9026X / Gain = 6dBiC
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



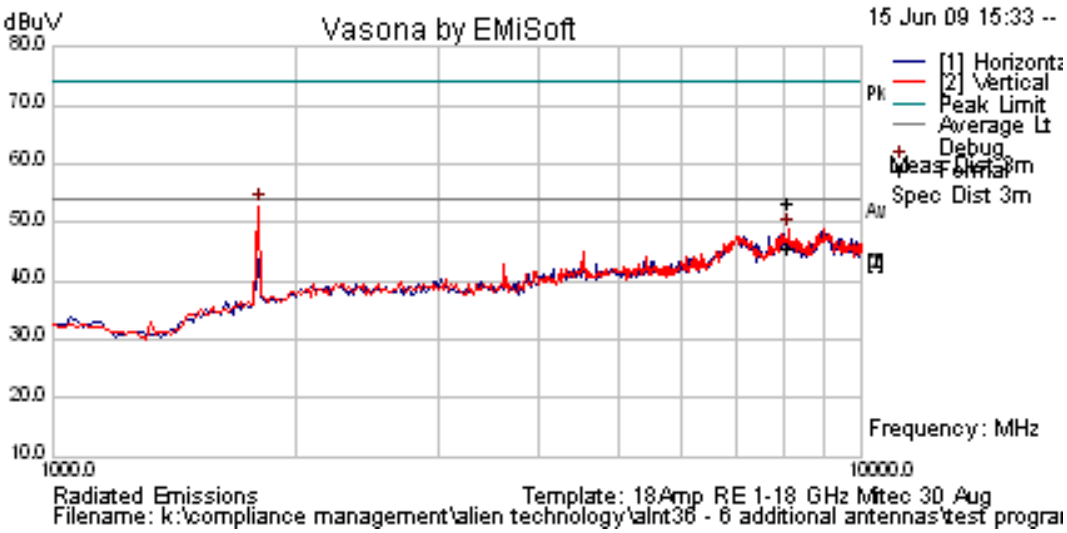
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
8971.944	42.67	6.19	-0.18	48.68	Peak [Scan]	H	100	0	54	-5.32	Pass	NRB

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	S9026X / Gain = 6dBiC
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



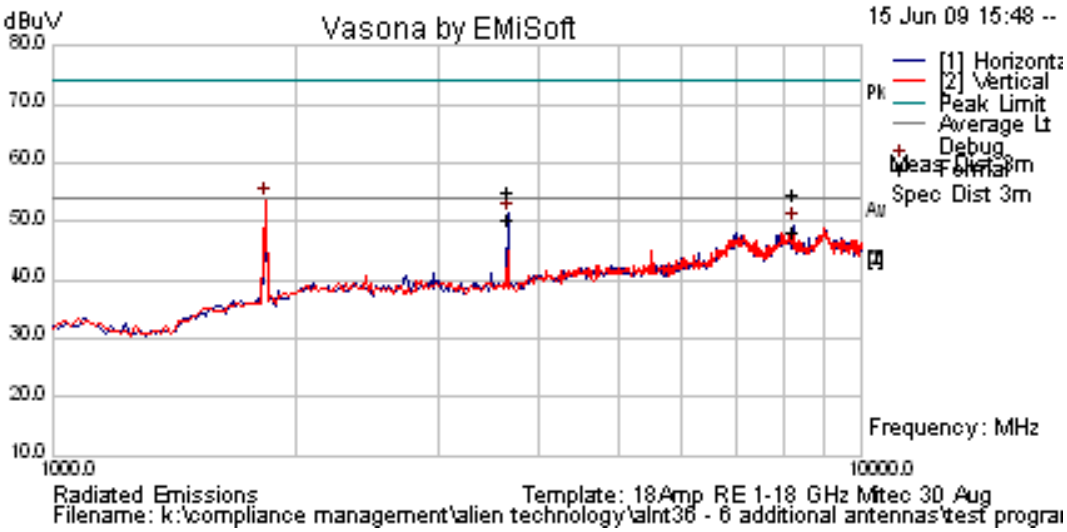
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
8971.944	43.21	6.19	-0.18	49.22	Peak [Scan]	V	100	0	54	-4.78	Pass	NRB

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	S9025P / Gain = 5.5 dBiC
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



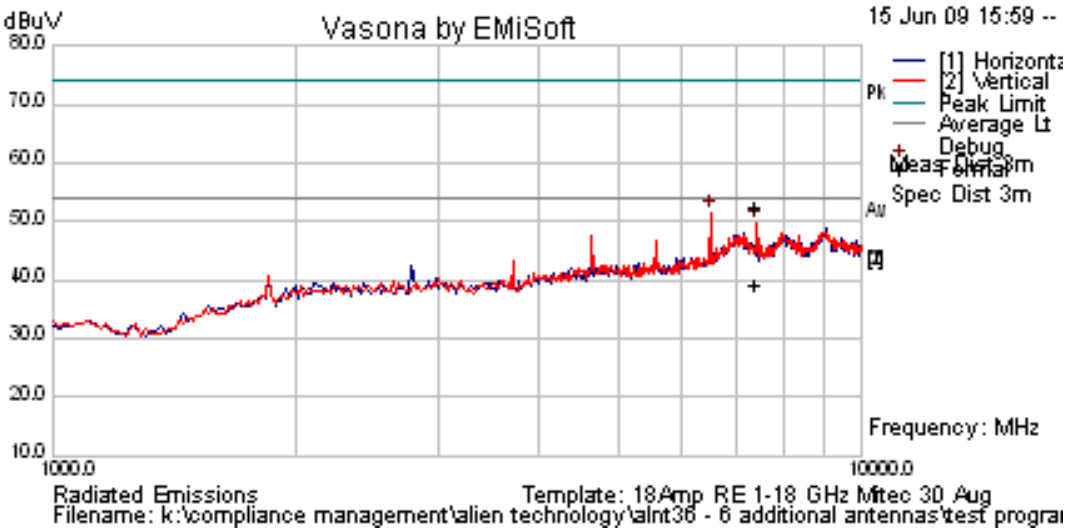
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
1805.485	62.37	2.61	-12.18	52.8	Peak [Scan]	V	100	0	54	-1.2	Pass	NRB
8124.662	40.95	5.67	-0.87	45.75	Average Max	V	104	174	54	-8.25	Pass	
8124.662	48.72	5.67	-0.87	53.52	Peak Max	V	104	174	74	-20.48	Pass	

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	S9025P / Gain = 5.5 dBiC
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



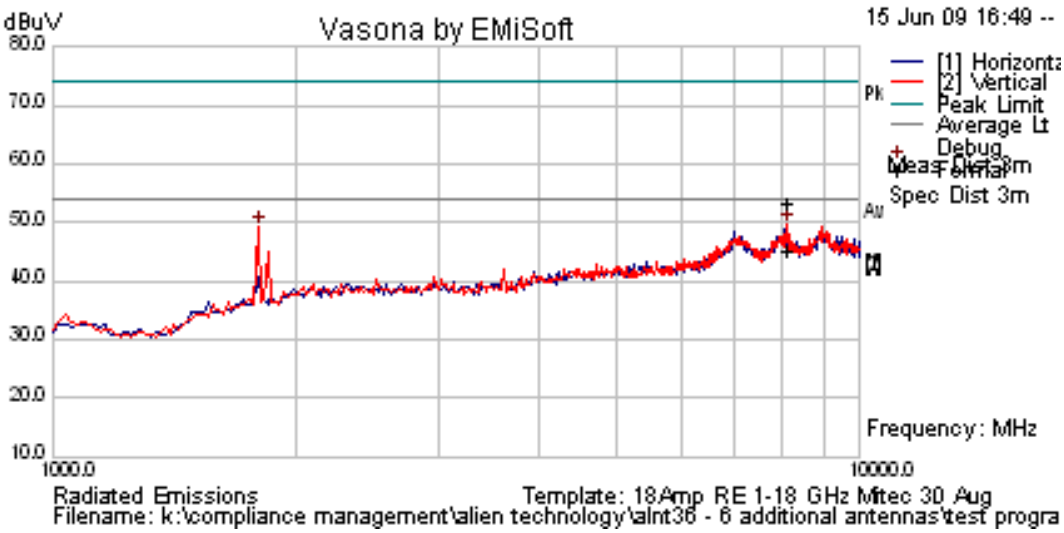
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
1830.518	63.04	2.63	-12	53.67	Peak [Scan]	V	100	0	54	-0.33	Pass	NRB
3660.996	57.45	3.7	-10.9	50.25	Average Max	H	109	244	54	-3.75	Pass	
3660.996	62.36	3.7	-10.9	55.16	Peak Max	H	109	244	74	-18.84	Pass	
8237.243	43.73	5.74	-1.18	48.28	Average Max	V	116	172	54	-5.72	Pass	
8237.243	50.24	5.74	-1.18	54.79	Peak Max	V	116	172	74	-19.21	Pass	

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	S9025P / Gain = 5.5 dBiC
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



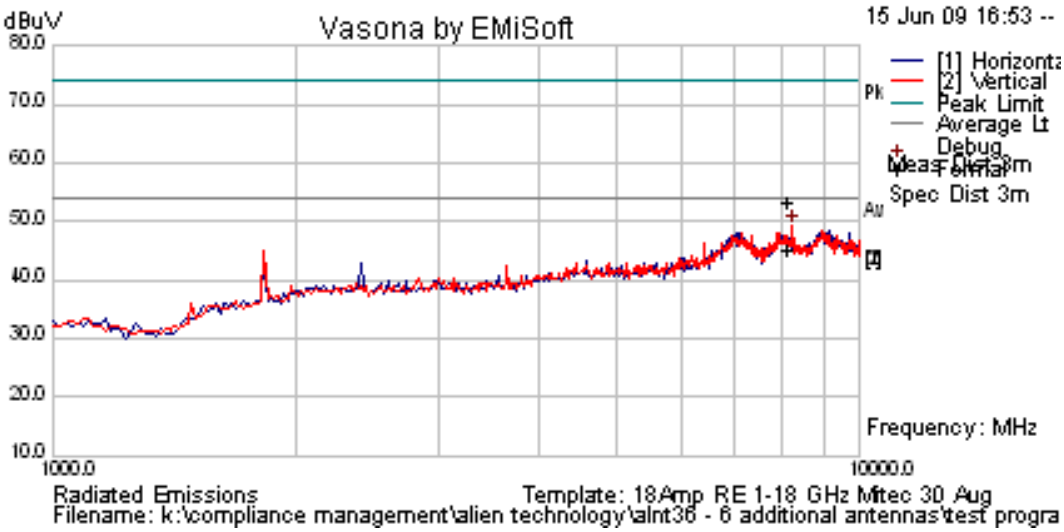
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
6490.701	52.36	5.13	-5.96	51.53	Peak [Scan]	V	100	0	54	-2.47	Pass	NRB
7417.976	37.08	5.46	-3.4	39.14	Average Max	V	115	237	54	-14.86	Pass	
7417.976	50.5	5.46	-3.4	52.56	Peak Max	V	115	237	74	-21.44	Pass	

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	MT-262013 / Gain = 7.5dBiC
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



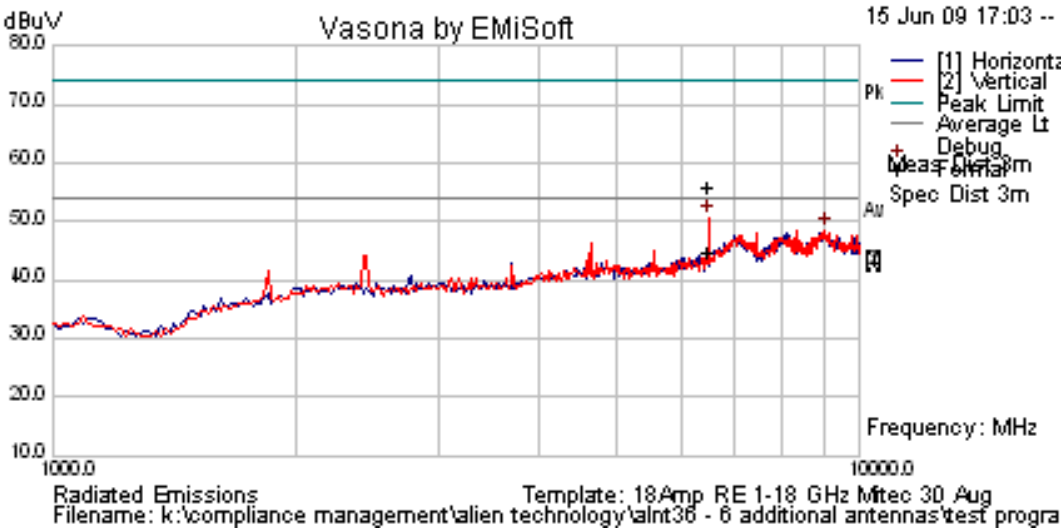
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
1805.512	58.77	2.61	-12.18	49.2	Peak [Scan]	V	100	0	54	-4.8	Pass	NRB
8124.704	48.72	5.67	-0.87	53.52	Peak Max	V	138	191	74	-20.48	Pass	
8124.704	40.45	5.67	-0.87	45.25	Average Max	V	138	191	54	-8.75	Pass	

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	MT-262013 / Gain = 7.5dBiC
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
No emissions with 6 dB of limit.												

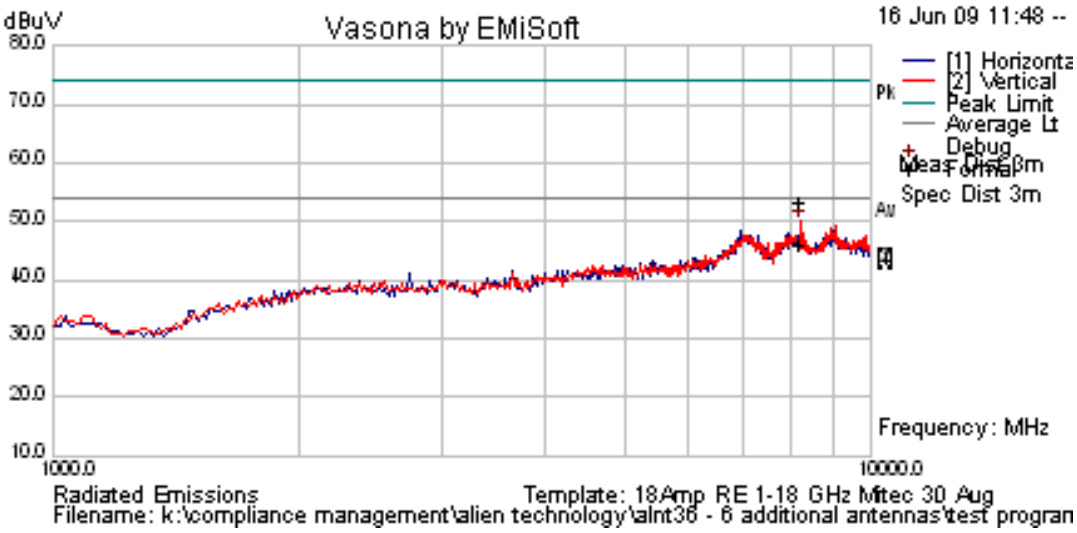
Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	MT-262013 / Gain = 7.5dBiC
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
6490.751	45.55	5.13	-5.96	44.71	Average Max	V	135	203	54	-9.29	Pass	
6490.751	56.66	5.13	-5.96	55.83	Peak Max	V	135	203	74	-18.17	Pass	

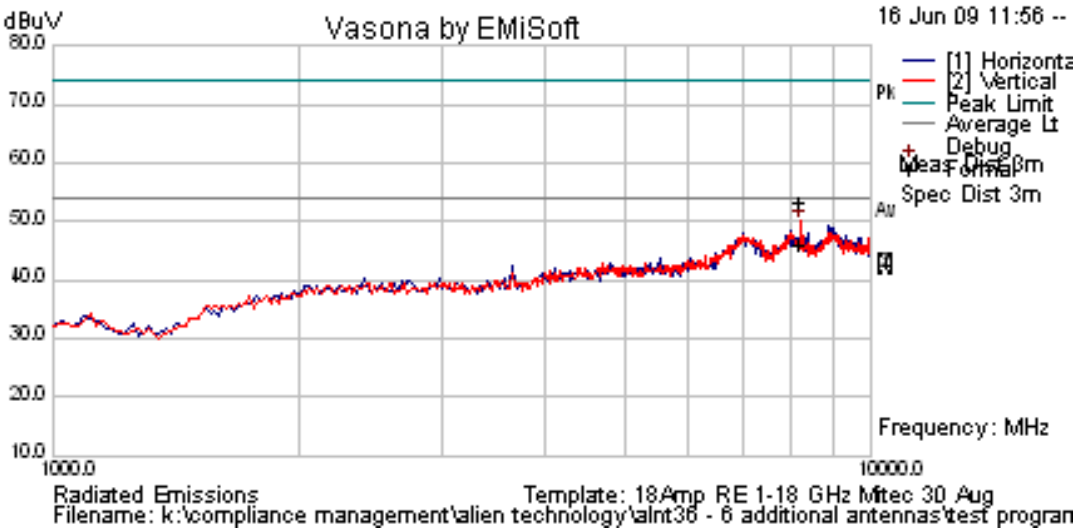
7.2.2. Receiver Radiated Spurious Emissions (above 1 GHz)

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	CVS-915I / Gain = 2.5dBi
Power setting	Receive / Standby
Test Conditions	ALR-9900 (Rx) 120V AC



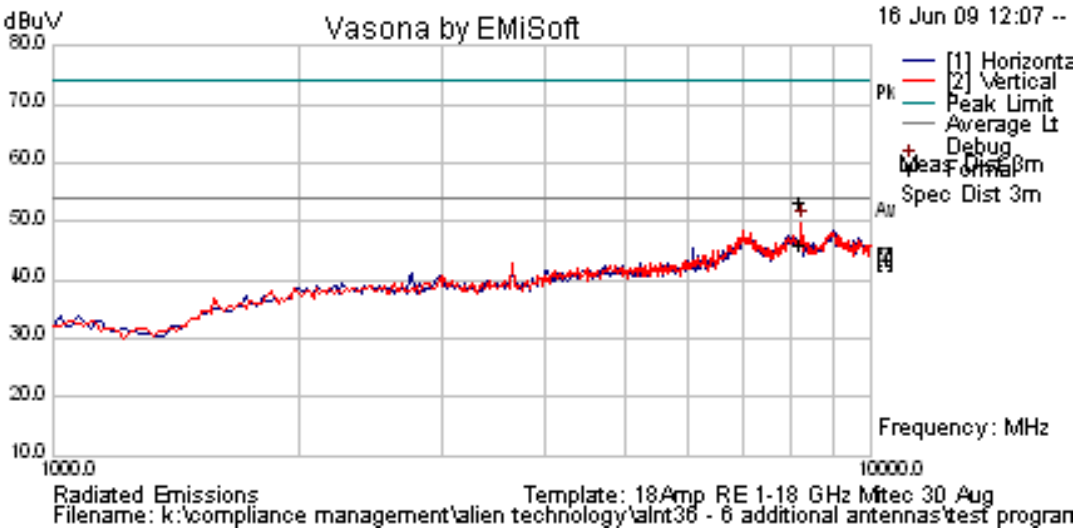
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
8237.208	41.49	5.74	-1.18	46.04	Average Max	V	119	214	54	-7.96	Pass	

Date	6/16/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	S9028PV
Power setting	Receive / Standby
Test Conditions	ALR-9900 (Rx) 120V AC



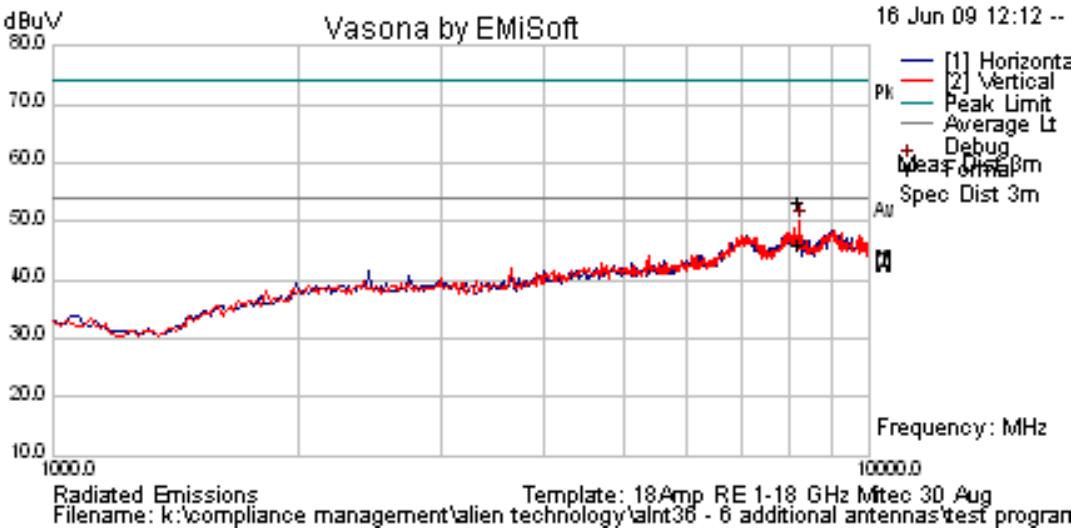
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
8237.208	41.49	5.74	-1.18	46.04	Average Max	V	119	214	54	-7.96	Pass	

Date	6/16/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	MT242044
Power setting	Receive / Standby
Test Conditions	ALR-9900 (Rx) 120V AC



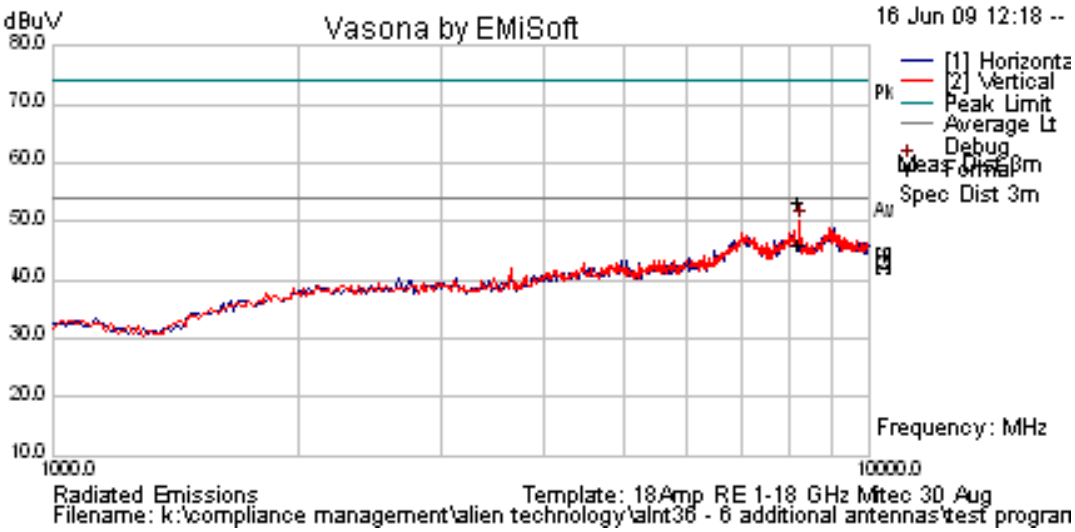
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
8237.208	41.49	5.74	-1.18	46.04	Average Max	V	119	214	54	-7.96	Pass	

Date	6/16/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	MT262013
Power setting	Receive / Standby
Test Conditions	ALR-9900 (Rx) 120V AC



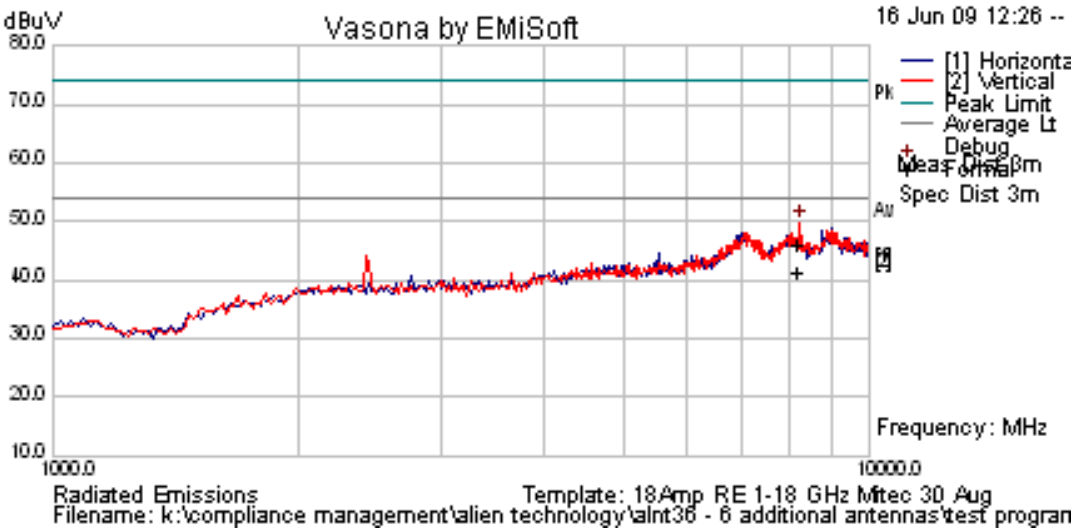
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
8237.208	41.49	5.74	-1.18	46.04	Average Max	V	119	214	54	-7.96	Pass	

Date	6/16/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	S9026X
Power setting	Receive / Standby
Test Conditions	ALR-9900 (Rx) 120V AC



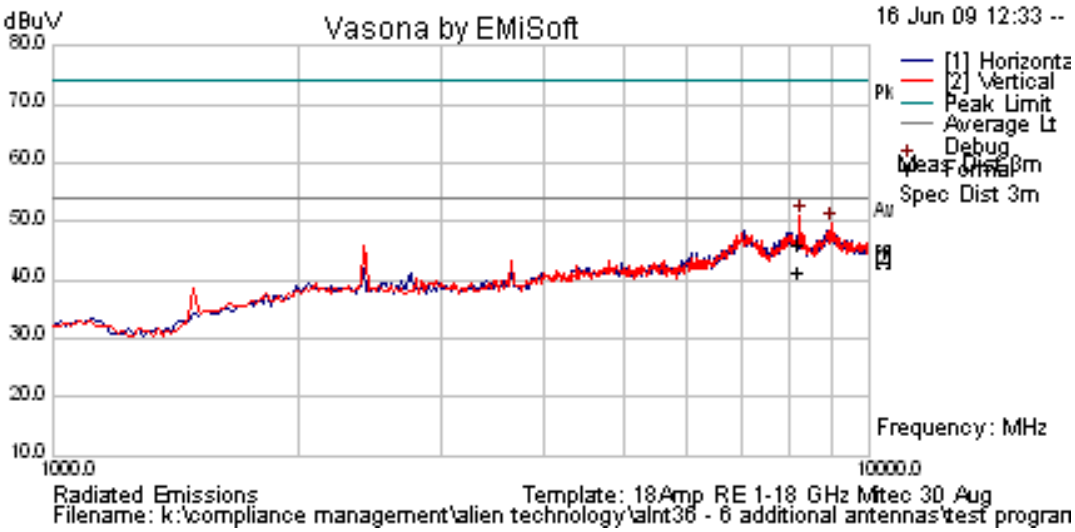
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
8237.208	41.49	5.74	-1.18	46.04	Average Max	V	119	214	54	-7.96	Pass	

Date	6/16/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	BP6-915
Power setting	Receive / Standby
Test Conditions	ALR-9900 (Rx) 120V AC



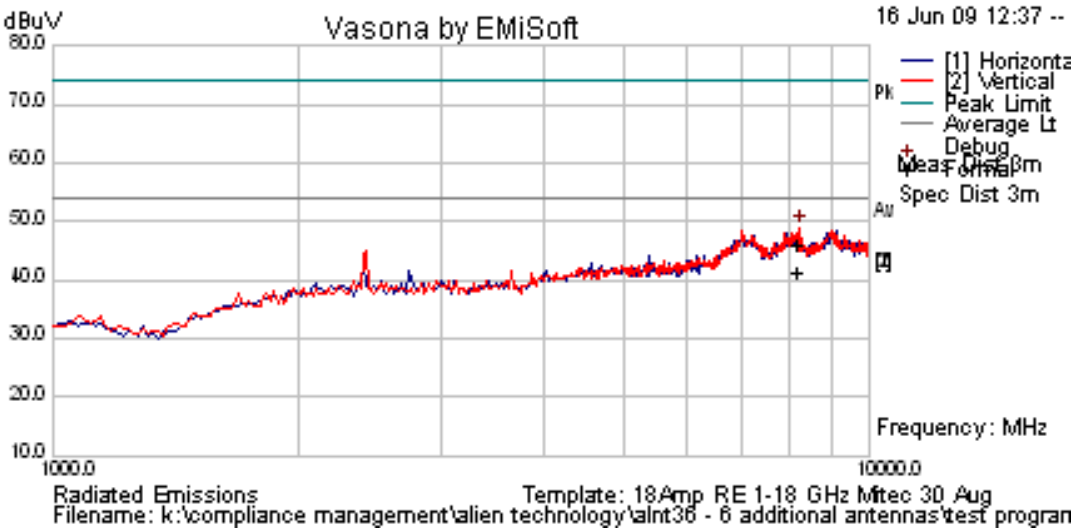
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
8237.208	41.49	5.74	-1.18	46.04	Average Max	V	119	214	54	-7.96	Pass	

Date	6/16/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	S9025P
Power setting	Receive / Standby
Test Conditions	ALR-9900 (Rx) 120V AC



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
8237.208	41.49	5.74	-1.18	46.04	Average Max	V	119	214	54	-7.96	Pass	

Date	6/16/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	S9028PCL
Power setting	Receive / Standby
Test Conditions	ALR-9900 (Rx) 120V AC



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
8237.208	41.49	5.74	-1.18	46.04	Average Max	V	119	214	54	-7.96	Pass	

FCC, Part 15 Subpart C §15.247(d)

Industry Canada RSS-210 §A8.5

Specification

FCC Part 15 Subpart C §15.247(d)

Industry Canada §A8.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted power limits.

Laboratory Measurement Uncertainty for Radiated Emissions

Measurement uncertainty	+5.6/ -4.5 dB

Traceability

Method	Test Equipment Used
Measurements were made per work instruction WI-03 'Measurement of Radiated Emissions'	0088, 0158, 0134, 0304, 0311, 0315, 0310, 0312

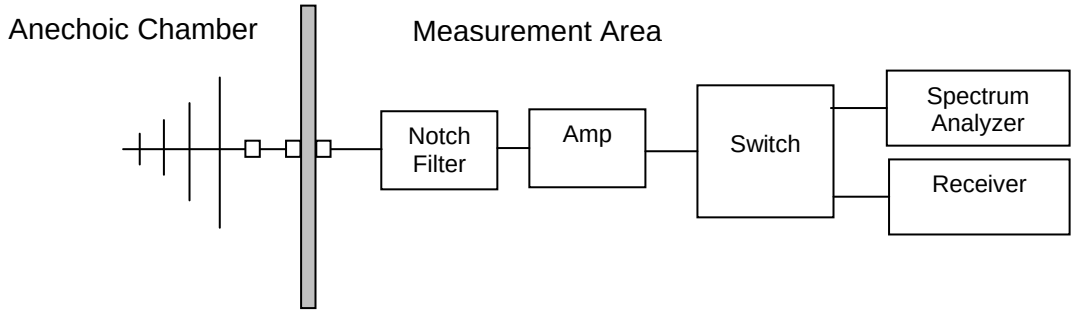
7.3. Radiated Spurious Emissions (30MHz - 1000 MHz)

FCC, Part 15 Subpart C §15.247(d), §15.205, 15.209
Industry Canada RSS-210 §A8.5, 2.2, 2.6.

Test Procedure
Preliminary radiated emissions were measured in the anechoic chamber at a 3-meter distance on every azimuth in both horizontal and vertical polarity. The emissions are recorded with a CISPR compliant spectrum analyzer in peak hold mode. Emissions closest to the limits are measured in the quasi-peak mode with the tuned receiver using a bandwidth of 120 kHz. Only the highest emissions relative to the limit are listed. A photograph of the test set-up in the anechoic chamber in Section 6 Test Set-Up Photographs.

A notch filter with >70 dB of rejection was used to remove the fundamental frequency.

Test Measurement Set up



Field Strength Calculation
The field strength is calculated by adding the Antenna Factor and Cable Loss, and subtracting Amplifier Gain from the measured reading. In this test facility, the Antenna Factor, Cable Loss, and Amplifier Gains are loaded into the Rohde & Schwarz Receiver and the corrected field strength can be read directly on the receiver.

$$FS = R + AF + CORR$$

where:

FS = Field Strength
R = Measured Receiver Input Amplitude
AF = Antenna Factor
CORR = Correction Factor = CL – AG + NFL
CL = Cable Loss
AG = Amplifier Gain

For example:
Given a Receiver input reading of 51.5dBμV; Antenna Factor of 8.5dB; Cable Loss of 1.3dB; Falloff Factor of 0dB, an Amplifier Gain of 26dB and Notch Filter Loss of 1dB. The Field Strength of the measured emission is:

FS = 51.5 + 8.5 + 1.3 - 26.0 +1 = 36.3dBμV/m

Conversion between dBμV/m (or dBμV) and μV/m (or μV) are done as:

Level (dBμV/m) = 20 * Log (level (μV/m))

40 dBμV/m = 100μV/m
48 dBμV/m = 250μV/m

Measurement Results for Radiated Emissions (30 MHz – 1 GHz)

Ambient conditions.
Temperature: 17 – 23 °C Relative humidity: 31- 42% Pressure: 999 – 1012 mbar

Digital Emissions:

The EUT is a Class A digital device. Digital emissions were evaluated to the Class A limits identified in CFR 47 Part 15 Section 15.109.

Transmitter Spurious Emissions:

The EUT was tested below 1 GHz for the spurious emissions using the highest gain antenna of each type. Fundamental Peak and Restricted Band emissions adjacent to the transmission frequency were performed for each antenna.

7.3.1. Digital Radiated Spurious Emissions (30 MHz – 1000 MHz)

Class A Device: The EUT is a Class A digital device. Digital emissions were evaluated to the Class A limits identified in CFR 47 Part 15 Section 15.109.

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	S9028PCL / Gain = 8dBiC
Power setting	31.6 dB (Gain set to max available)
Test Conditions	ALR-9900 (Tx) 120V AC

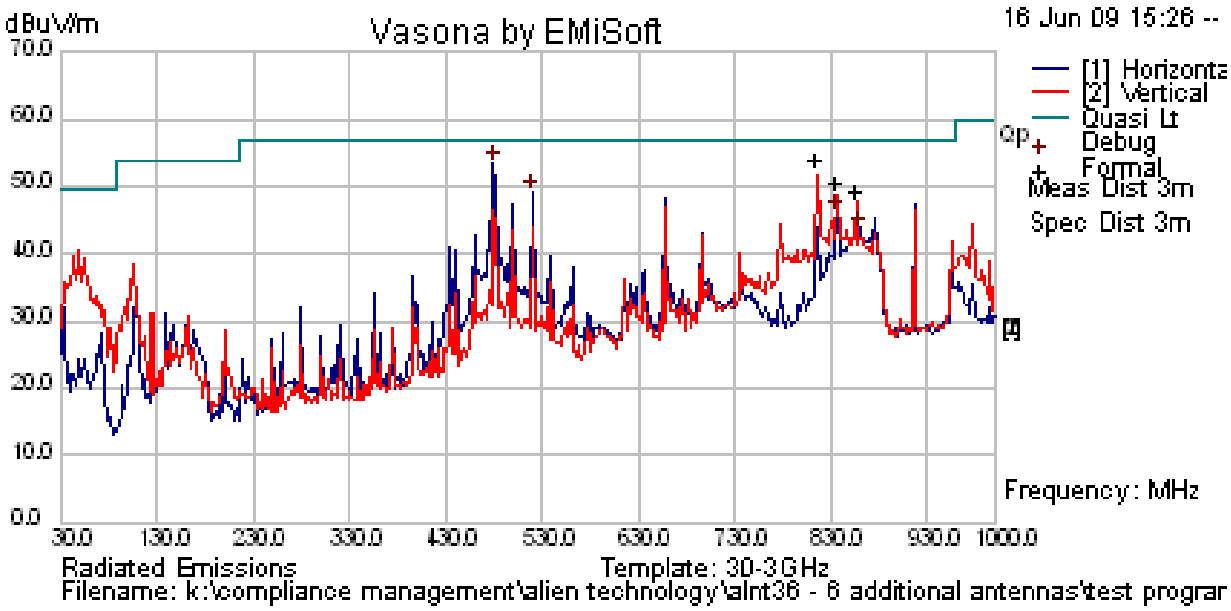


TABLE OF RESULTS – DIGITAL EMISSIONS

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
38.888	52.95	3.55	-13.7	42.79	Quasi Max	V	132	74	49.5	-6.71	Pass
279.99	55.78	5.11	-17.15	43.74	Quasi Max	H	101	355	57	-13.26	Pass
479.984	59.34	5.92	-12.53	52.73	Quasi Max	H	200	277	57	-4.27	Pass
499.979	56.59	6	-12.62	49.97	Quasi Max	H	172	276	57	-7.03	Pass
519.982	58.81	6.1	-12.4	52.51	Quasi Max	H	150	309	57	-4.49	Pass
667.238	52.57	6.58	-10.23	48.92	Quasi Max	V	160	190	57	-8.08	Pass

Specification

Limits

§15.205 (a) Except as shown in paragraph (d) of 15.205 (a), only spurious emissions are permitted in any of the frequency bands listed.

§15.205 (a) Except as shown in paragraphs (d) and (e) of this section, 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.

§15.209 (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.

§15.209 (a) and **RSS-Gen §2.2** Limit Matrix

Frequency(MHz)	Field Strength (µV/m)	Field Strength (dBµV/m)	Measurement Distance (meters)
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Laboratory Measurement Uncertainty for Radiated Emissions

Measurement uncertainty	+5.6/ -4.5 dB

Traceability

Method	Test Equipment Used
Measurements were made per work instruction WI-03 'Measurement of Radiated Emissions'	0088, 0158, 0134, 0304, 0311, 0315, 0310, 0312, 0341

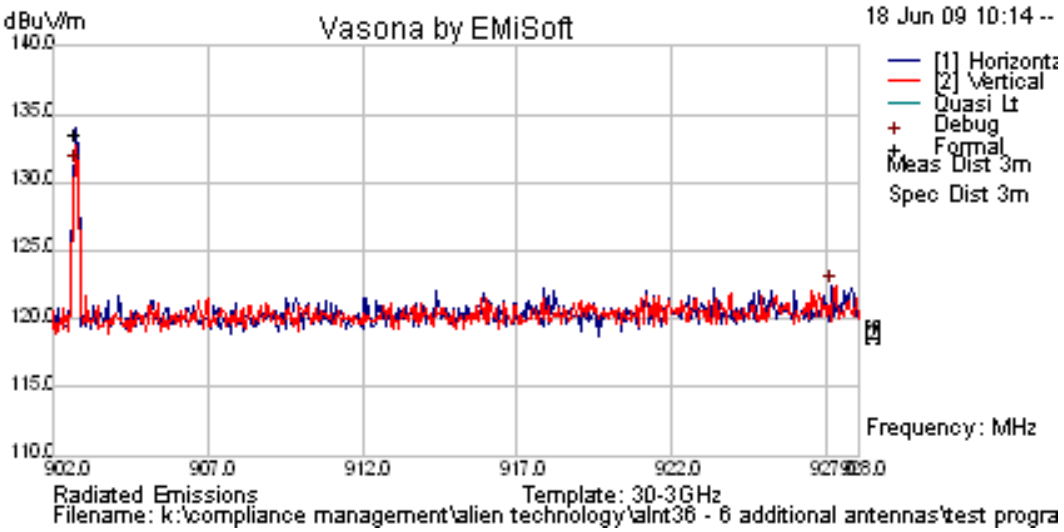
7.3.2. Transmitter Radiated Spurious Emissions (30 MHz – 1000 MHz)

The EUT was tested below 1 GHz for the spurious emissions using the highest gain antenna of each type. Fundamental Peak and Restricted Band emissions adjacent to the transmission frequency were performed for each antenna.

Please note: This is a Class A digital device, refer to 7.3.1 for digital emissions present during transmitter testing.

Circularly Polarized Antenna

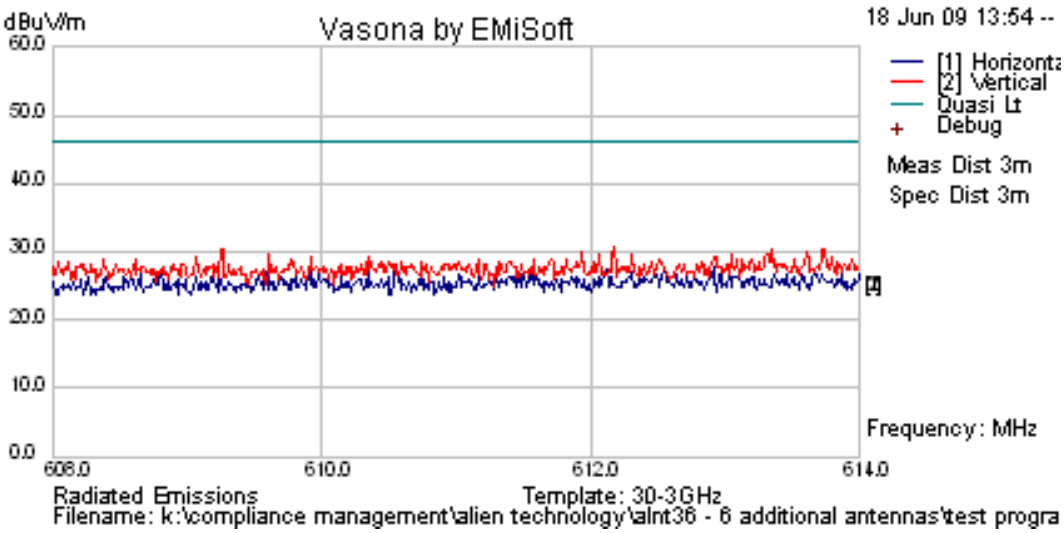
Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	S9028PCL / Gain = 8dBiC / 6dBi
Power setting	rflvl = 295 in test utility
Test Conditions	Peak Emissions



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
902.7401	71.04	37.32	22.71	131.1	Peak	H						

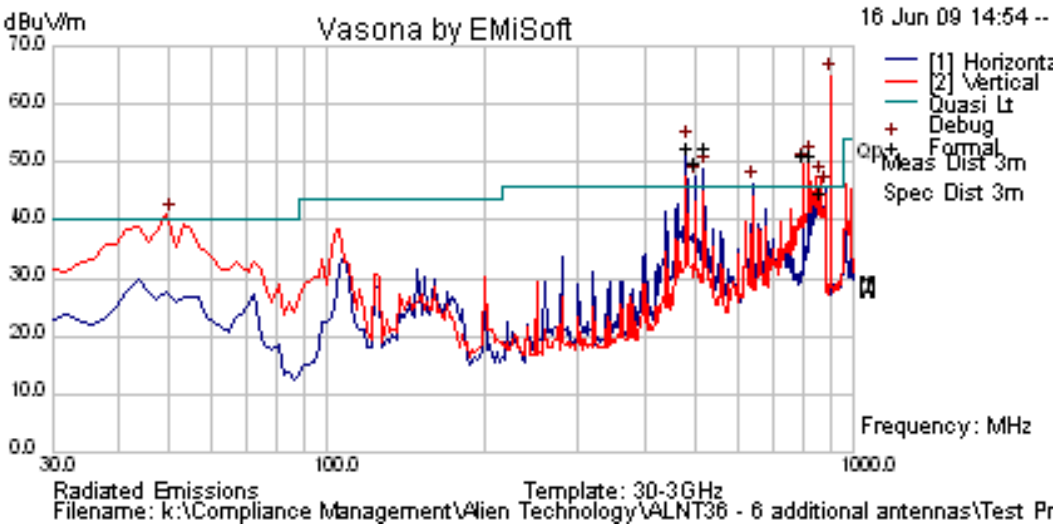
Non-Restricted Band (NRB) Limits: 131.1 dBuV/m – 20 dB = 111.1 dBuV/m

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	S9028PCL / Gain = 8dBiC / 6dBi
Power setting	rflvl = 295 in test utility
Test Conditions	Band Edge 608 MHz – 614 MHz Restricted Band



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Emissions within 6 dB of limit												

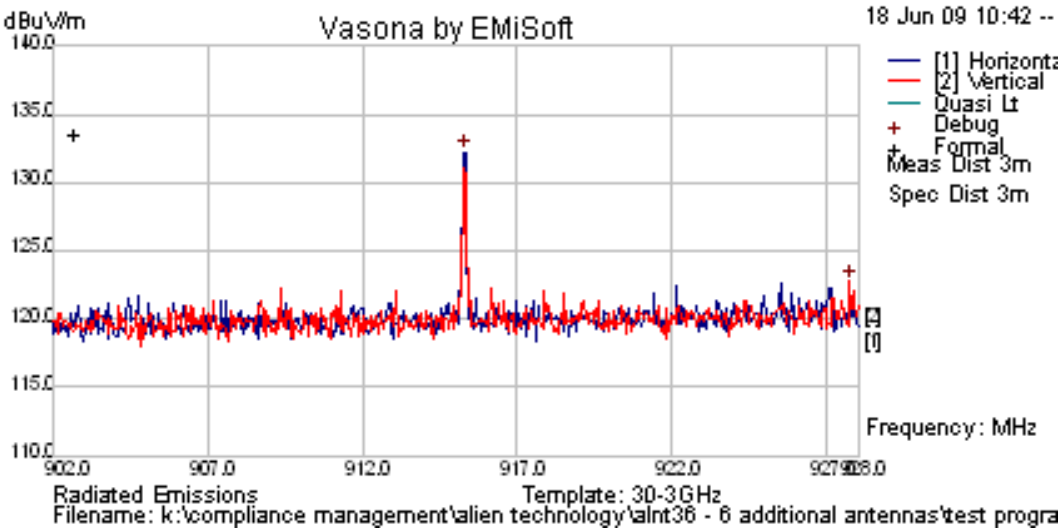
Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	S9028PCL / Gain = 8dBiC / 6dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
802.74	52.53	7.18	-8.31	51.39	Quasi Max	V	130	185	111.1	> 20 dB	Pass	NRB-Radio
822.738	52.13	7.18	-7.98	51.33	Quasi Max	V	111	194	111.1	> 20 dB	Pass	NRB-Radio
862.738	45.4	7.21	-7.69	44.91	Quasi Max	H	142	183	111.1	> 20 dB	Pass	NRB-Radio

Non-Restricted Band (NRB) Limits: 131.1 dBuV/m – 20 dB = 111.1 dBuV/m

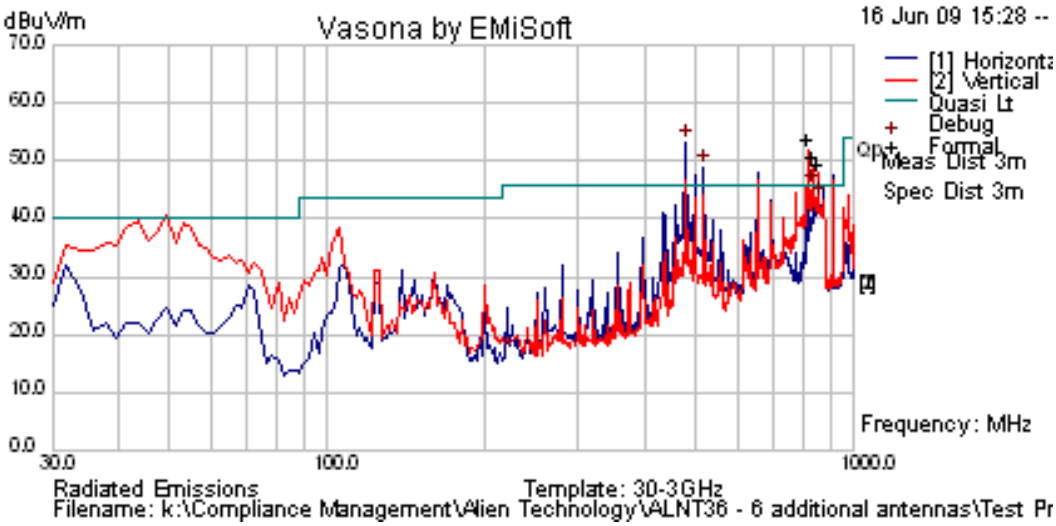
Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	S9028PCL / Gain = 8dBiC / 6dBi
Power setting	rflvl = 295 in test utility
Test Conditions	Peak Emissions



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
915.3387	71.92	37.38	22.9	132.2	Peak [Scan]	H						

Non-Restricted Band (NRB) Limits: 132.2 dBuV/m – 20 dB = 112.2 dBuV/m

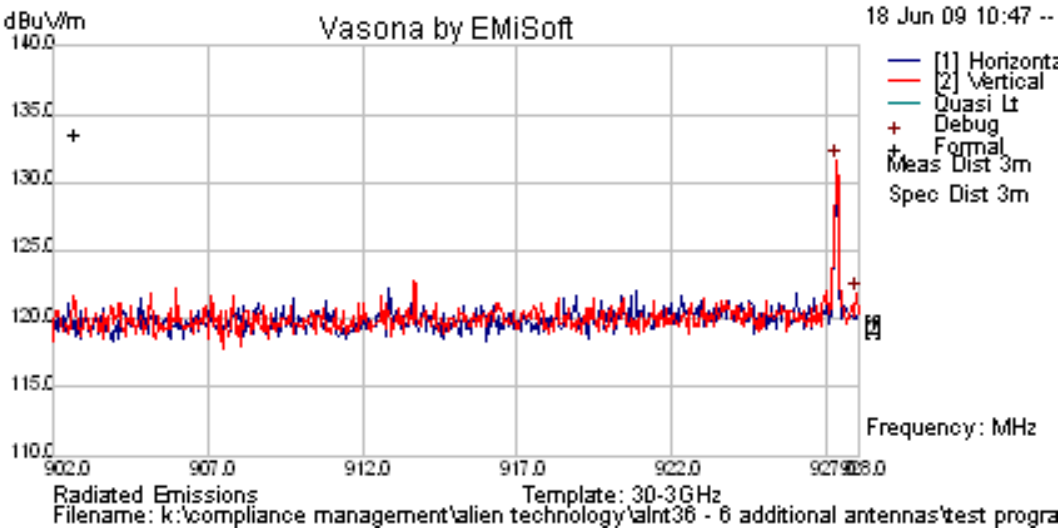
Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	S9028PCL / Gain = 8dBiC / 6dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
815.242	54.83	7.18	-8.13	53.87	Quasi Max	V	111	206	112.2	> 20 dB	Pass	NRB
835.239	51.51	7.17	-7.9	50.78	Quasi Max	V	115	198	112.2	> 20 dB	Pass	NRB
855.233	50.01	7.19	-7.85	49.35	Quasi Max	V	112	204	112.2	> 20 dB	Pass	NRB

Non-Restricted Band (NRB) Limits: 132.2 dBuV/m – 20 dB = 112.2 dBuV/m

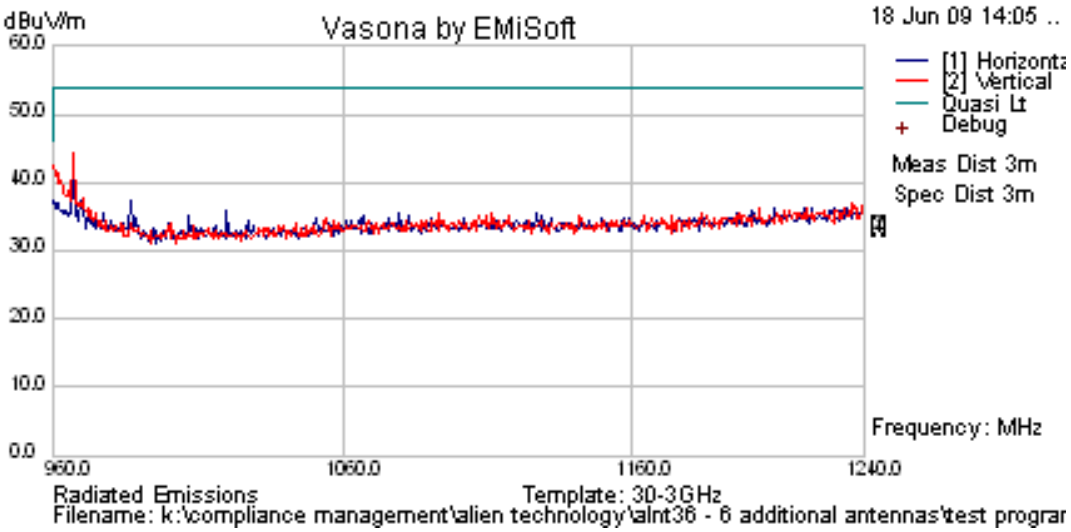
Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	S9028PCL / Gain = 8dBiC / 6dBi
Power setting	rflvl = 295 in test utility
Test Conditions	Peak Emissions



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
927.3226	71.08	37.43	23.1	131.6	Peak [Scan]	V						

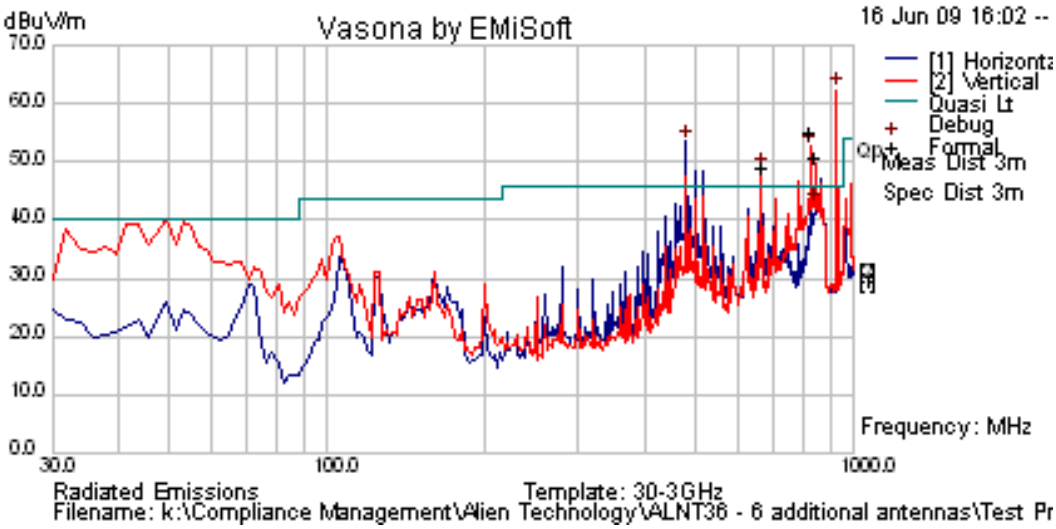
Non-Restricted Band (NRB) Limits: 131.6 dBuV/m – 20 dB = 111.6 dBuV/m

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	S9028PCL / Gain = 8dBiC / 6dBi
Power setting	rflvl = 295 in test utility
Test Conditions	Band Edge 960 MHz – 1240 MHz Restricted Band



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Emissions within 6 dB of limit												

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	S9028PCL / Gain = 8dBiC / 6dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC

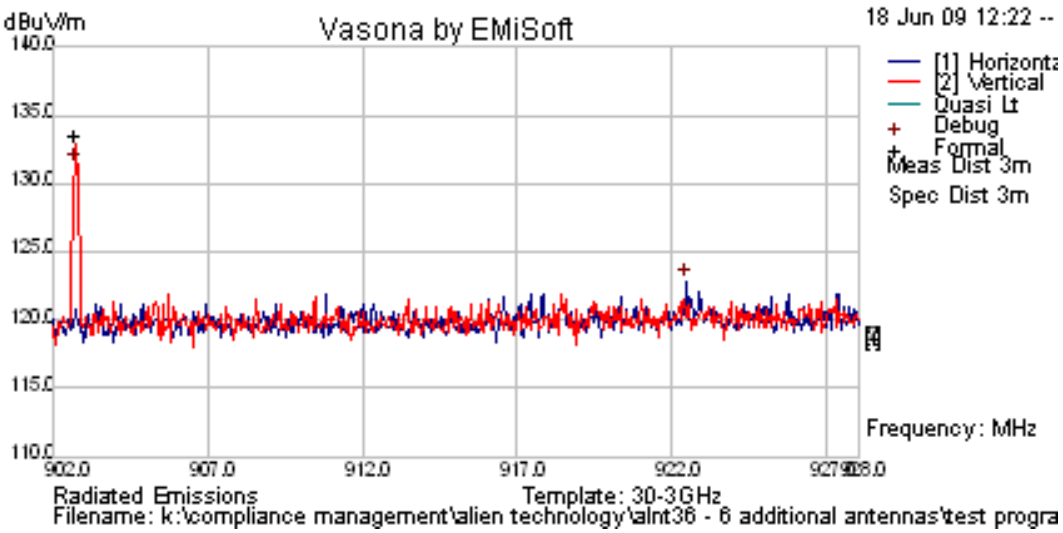


Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
667.238	52.57	6.58	-10.23	48.92	Quasi Max	V	160	190	111.6	>20 dB	Pass	NRB-Digital
827.238	55.77	7.17	-7.92	55.03	Quasi Max	V	111	199	111.6	>20 dB	Pass	NRB-Radio
847.239	51.69	7.17	-7.87	50.99	Quasi Max	V	109	201	111.6	>20 dB	Pass	NRB-Radio

Non-Restricted Band (NRB) Limits: 131.6 dBuV/m – 20 dB = 111.6 dBuV/m

Linearly Polarized Single Patch Antenna

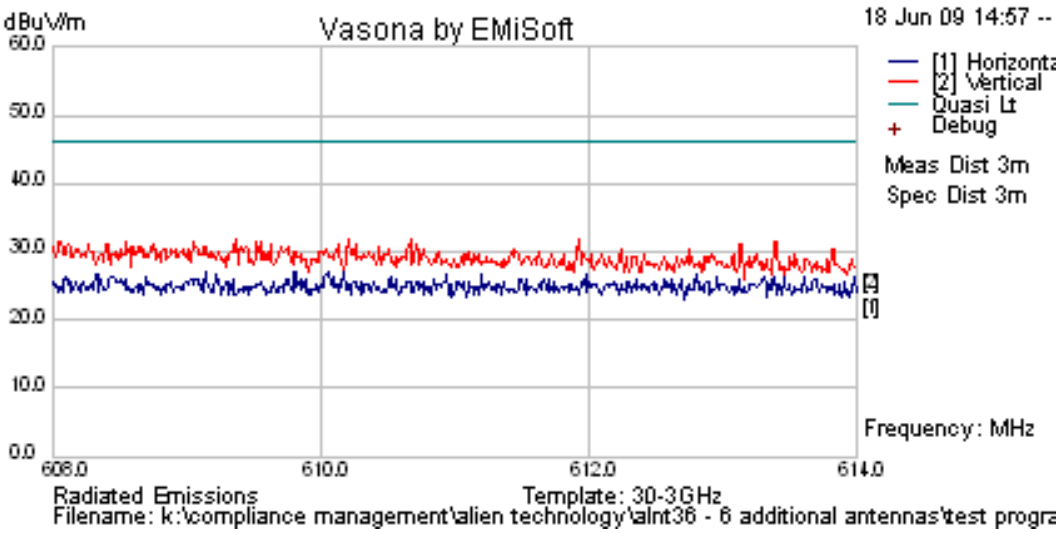
Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	S9028PV
Power setting	rflvl = 285 in test utility
Test Conditions	Peak Emissions



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
902.7443	71.34	37.32	22.71	131.4	Peak	V						

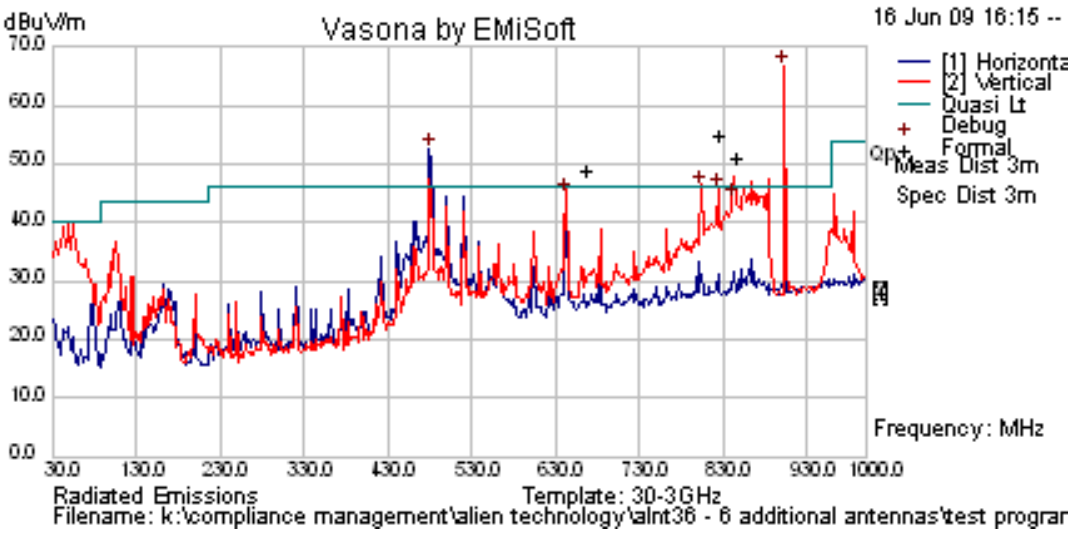
Non-Restricted Band (NRB) Limits: 131.4 dBuV/m – 20 dB = 111.4 dBuV/m

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	S9028PV
Power setting	rflvl = 285 in test utility
Test Conditions	Band Edge 608 MHz – 614 MHz Restricted Band



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Emissions within 6 dB of limit												

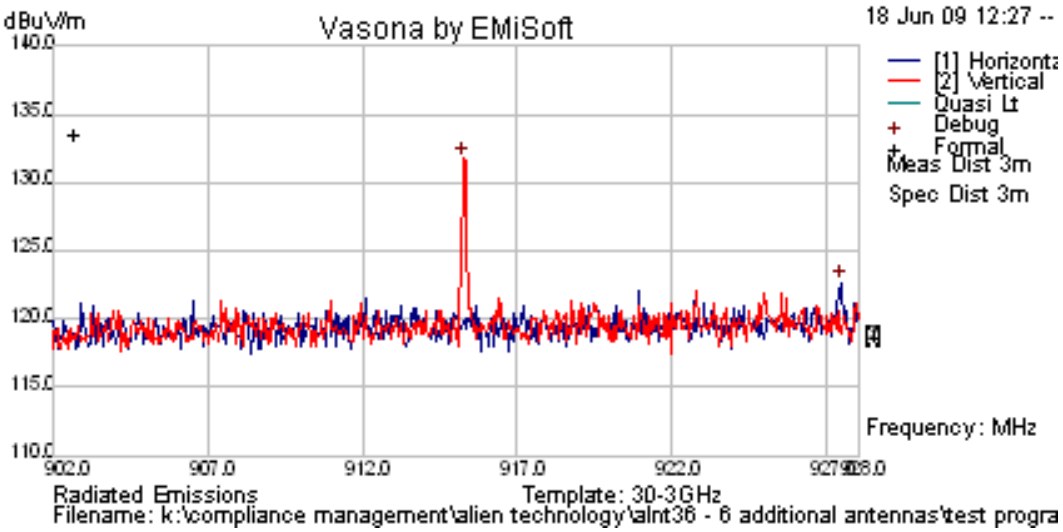
Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	S9028PV
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
802.753	47.13	7.18	-8.31	46	Peak [Scan]	H	98	360	111.4	> 20 dB	Pass	NRB-Radio
822.729	46.21	7.18	-7.98	45.41	Peak [Scan]	H	98	360	111.4	> 20 dB	Pass	NRB-Radio
842.744	44.41	7.17	-7.89	43.69	Peak [Scan]	H	98	360	111.4	> 20 dB	Pass	NRB-Radio

Non-Restricted Band (NRB) Limits: 131.4 dBuV/m – 20 dB = 111.4 dBuV/m

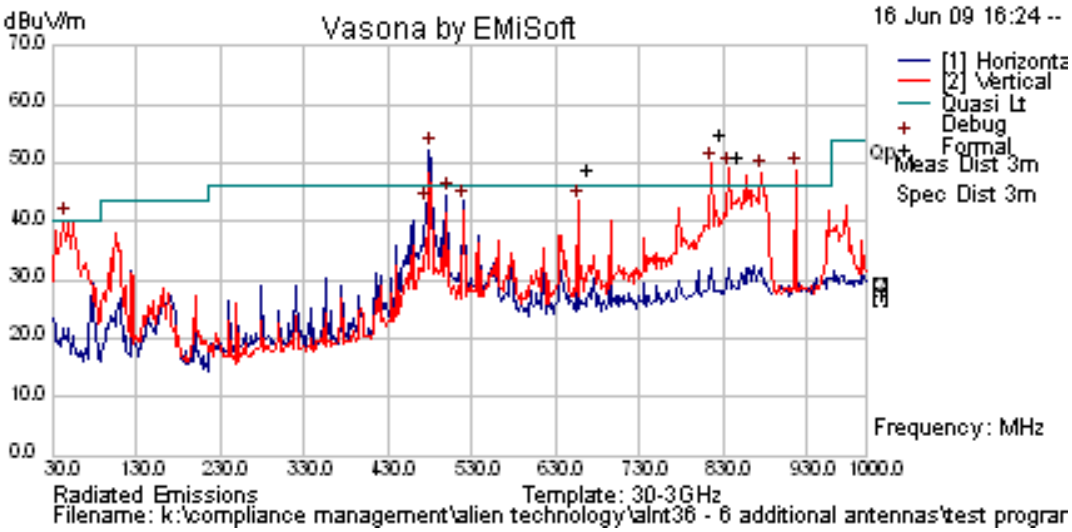
Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	S9028PV
Power setting	rflvl = 285 in test utility
Test Conditions	Peak Emissions



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
915.2866	71.44	37.38	22.9	131.7	Peak [Scan]	V						

Non-Restricted Band (NRB) Limits: 131.7 dBuV/m – 20 dB = 111.7 dBuV/m

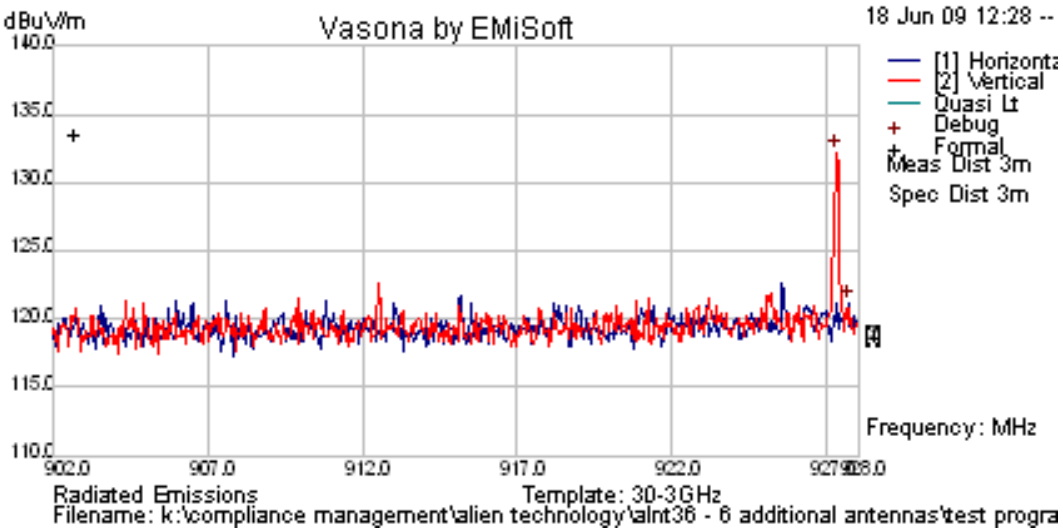
Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	S9028PV
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
815.241	53.65	7.18	-8.13	52.69	Quasi Max	V	120	189	111.7	> 20 dB	Pass	NRB-Radio
836.7134	49.66	7.17	-7.88	48.95	Quasi Max	V	115	198	111.7	> 20 dB	Pass	NRB-Radio
875.239	48.93	7.24	-7.72	48.45	Quasi Max	V	112	204	111.7	> 20 dB	Pass	NRB-Radio

Non-Restricted Band (NRB) Limits: 131.7 dBuV/m – 20 dB = 111.7 dBuV/m

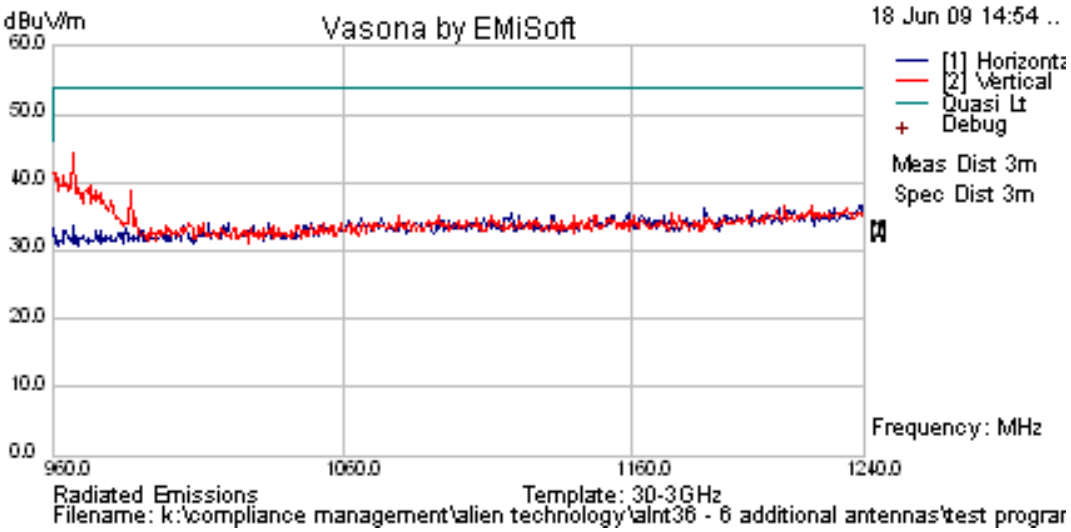
Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	S9028PV
Power setting	rflvl = 285 in test utility
Test Conditions	Peak Emissions



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
927.3226	71.71	37.43	23.1	132.2	Peak [Scan]	V						

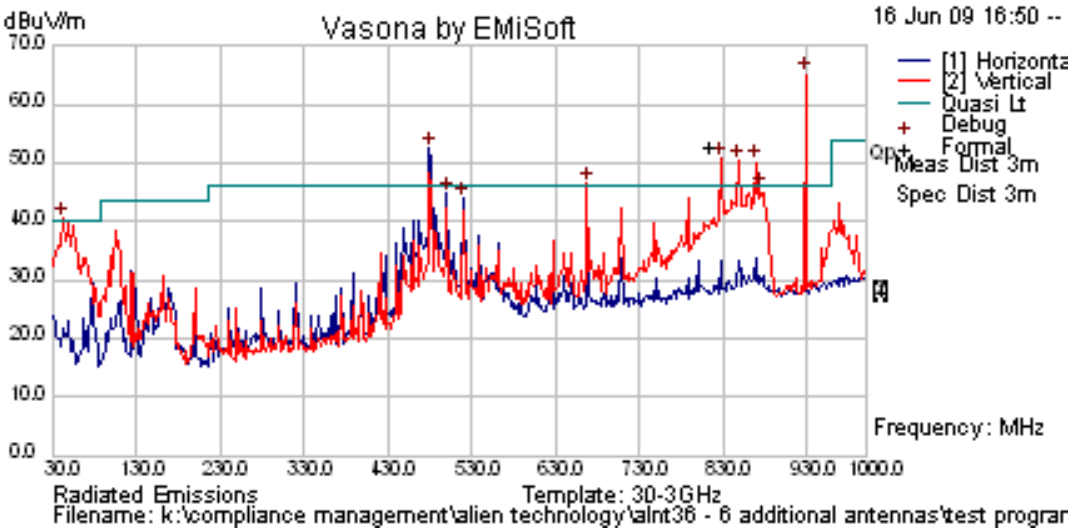
Non-Restricted Band (NRB) Limits: 132.2 dBuV/m – 20 dB = 112.2 dBuV/m

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	S9028PV
Power setting	rflvl = 285 in test utility
Test Conditions	Band Edge 960 MHz – 1240 MHz Restricted Band



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Emissions within 6 dB of limit												

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	S9028PV
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC

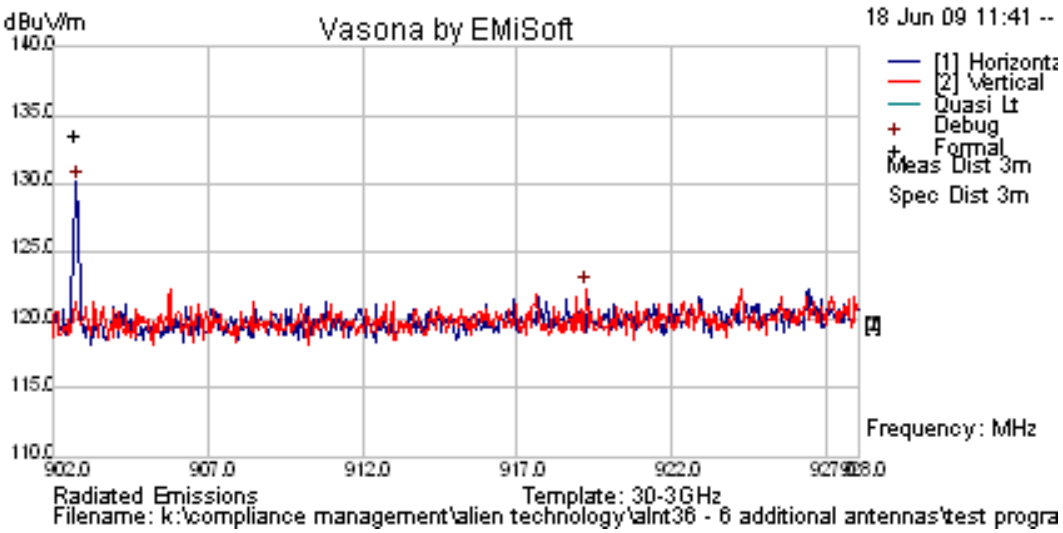


Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
827.245	51.56	7.17	-7.92	50.82	Peak [Scan]	V	100	0	112.2	> 20 dB	Pass	NRB-Radio
847.25	50.91	7.17	-7.87	50.21	Peak [Scan]	V	100	0	112.2	> 20 dB	Pass	NRB-Radio
867.245	50.49	7.22	-7.68	50.03	Peak [Scan]	V	100	0	112.2	> 20 dB	Pass	NRB-Radio

Non-Restricted Band (NRB) Limits: 132.2 dBuV/m – 20 dB = 112.2 dBuV/m

Compact Profile/Close Proximity Patch Antenna

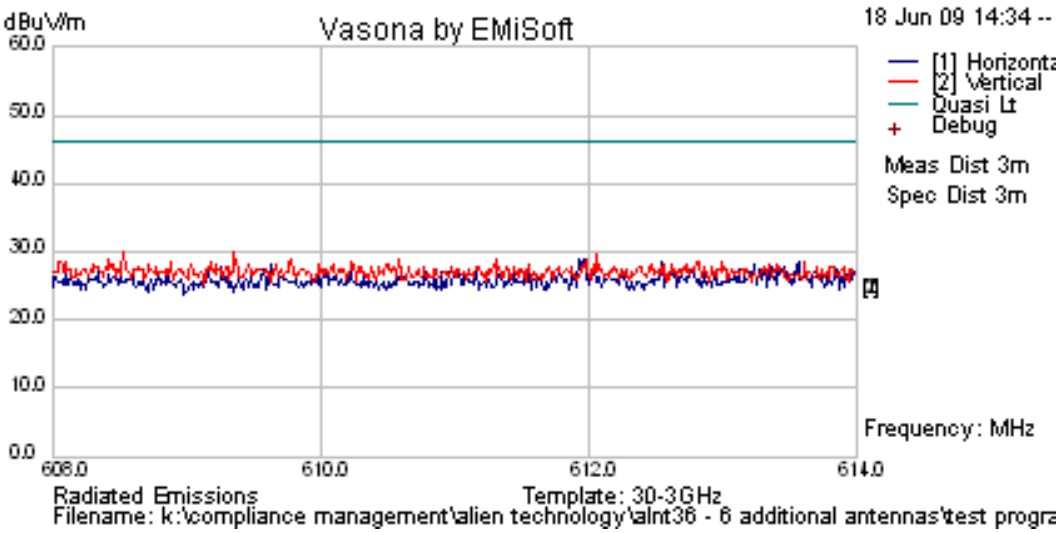
Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	CVS-915I
Power setting	rflvl = 316 in test utility
Test Conditions	Peak Emissions



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
902.7816	70.06	37.32	22.71	130.1	Peak [Scan]	H						

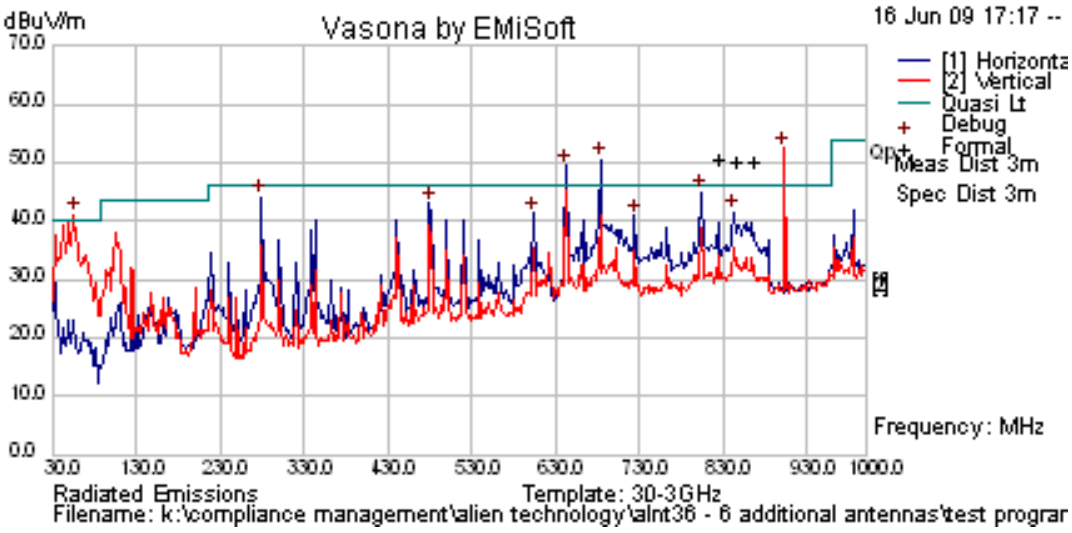
Non-Restricted Band (NRB) Limits: 130.1 dBuV/m – 20 dB = 110.1 dBuV/m

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	CVS-915I
Power setting	rflvl = 316 in test utility
Test Conditions	Band Edge 608 MHz – 614 MHz Restricted Band



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Emissions within 6 dB of limit												

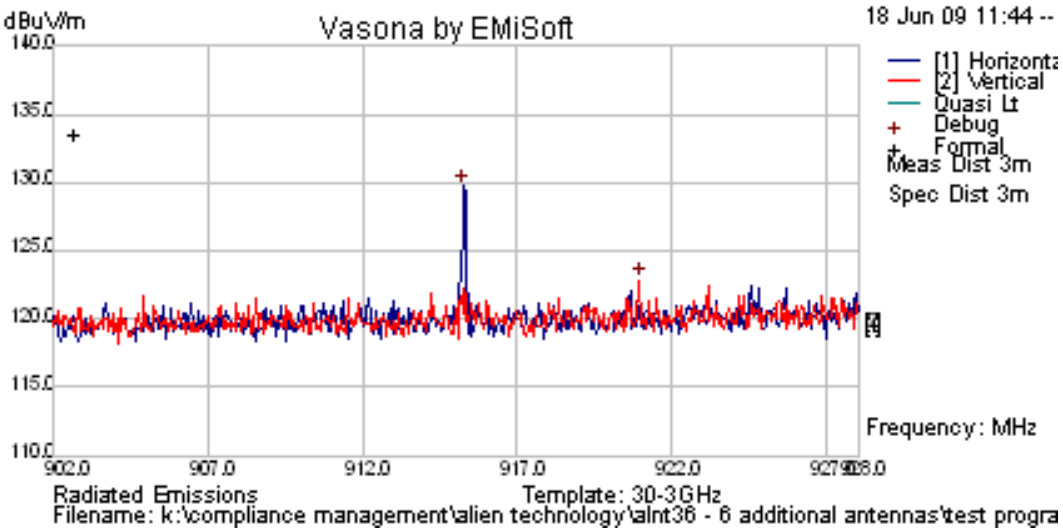
Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	CVS-915I
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx)
	120V AC



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
642.742	53.12	6.51	-10.17	49.46	Peak [Scan]	H	300	0	110.1	> 20 dB	Pass	NRB-Radio
682.731	53.97	6.63	-10.11	50.49	Peak [Scan]	H	100	0	110.1	> 20 dB	Pass	NRB-Radio
802.732	46.06	7.18	-8.31	44.92	Peak [Scan]	H	100	0	110.1	> 20 dB	Pass	NRB-Radio

Non-Restricted Band (NRB) Limits: 130.1 dBuV/m – 20 dB = 110.1 dBuV/m

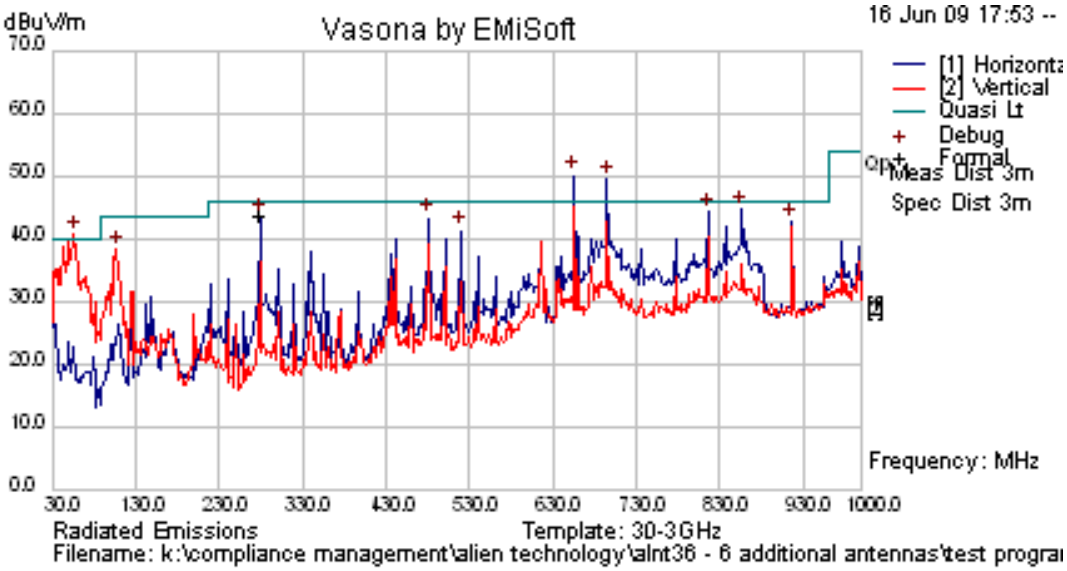
Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	CVS-915I
Power setting	rflvl = 316 in test utility
Test Conditions	Peak Emissions



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
915.2866	69.48	37.38	22.9	129.8	Peak [Scan]	H						

Non-Restricted Band (NRB) Limits: 129.8 dBuV/m – 20 dB = 109.6 dBuV/m

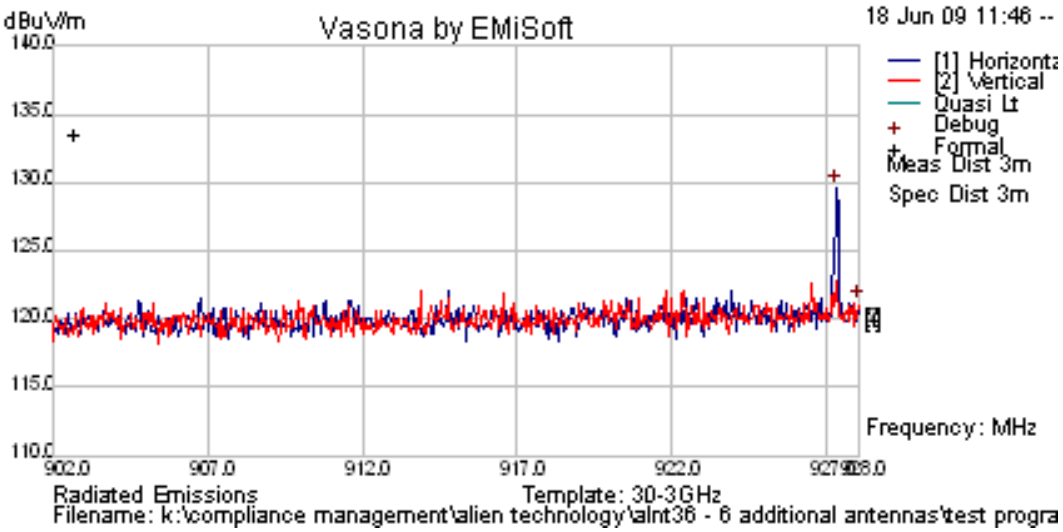
Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	CVS-915I; Gain = 2.5 dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
655.24	53.69	6.55	-10.19	50.05	Peak [Scan]	H	300	0	109.6	> 20 dB	Pass	NRB-Radio
695.249	52.6	6.67	-9.86	49.41	Peak [Scan]	H	100	0	109.6	> 20 dB	Pass	NRB-Radio
815.245	45.38	7.18	-8.13	44.42	Peak [Scan]	H	100	0	109.6	> 20 dB	Pass	NRB-Radio
855.239	45.27	7.19	-7.85	44.6	Peak [Scan]	H	100	0	109.6	> 20 dB	Pass	NRB-Radio

Non-Restricted Band (NRB) Limits: 129.8 dBuV/m – 20 dB = 109.6 dBuV/m

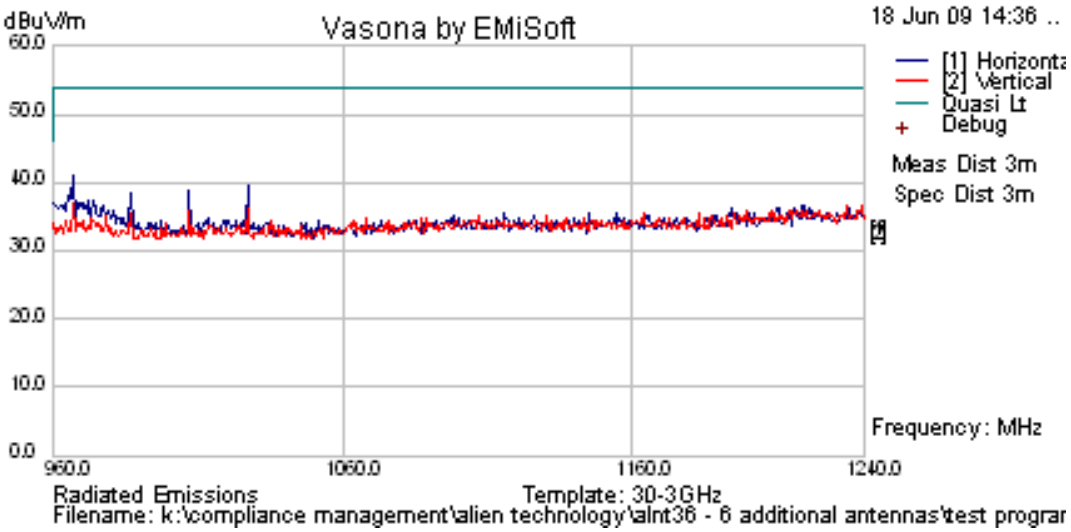
Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	CVS-915I
Power setting	rflvl = 316 in test utility
Test Conditions	Peak Emissions



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
927.3226	69.09	37.43	23.1	129.6	Peak [Scan]	H						

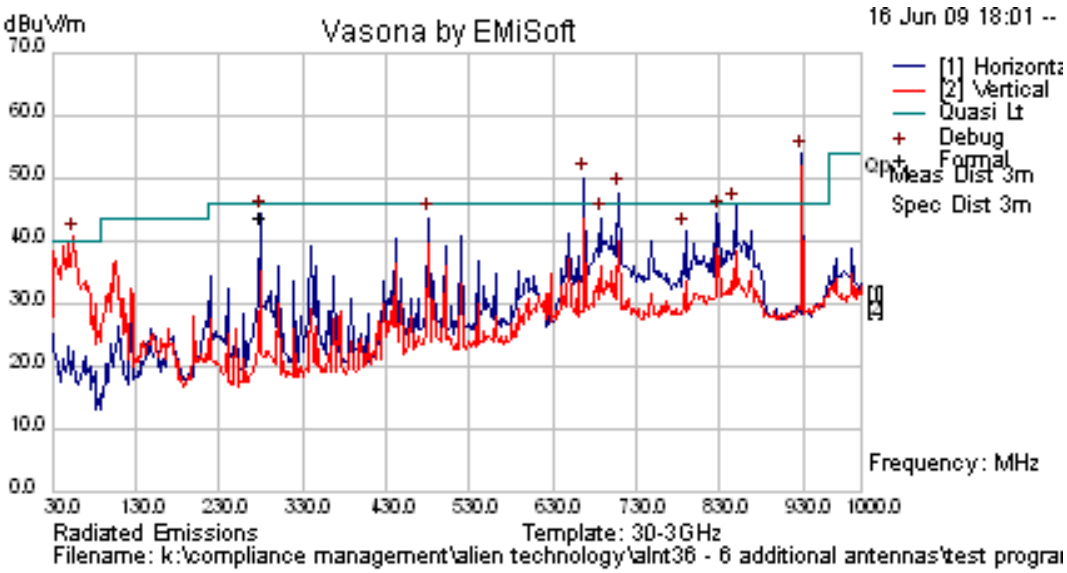
Non-Restricted Band (NRB) Limits: 129.6 dBuV/m – 20 dB = 109.6 dBuV/m

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	CVS-915I
Power setting	rflvl = 316 in test utility
Test Conditions	Band Edge 960 MHz – 1240 MHz Restricted Band



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Emissions within 6 dB of limit												

Date	6/15/2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	CVS-915I; Gain = 2.5 dBi
Power setting	31.6 dBm
Test Conditions	ALR-9900 (Tx) 120V AC



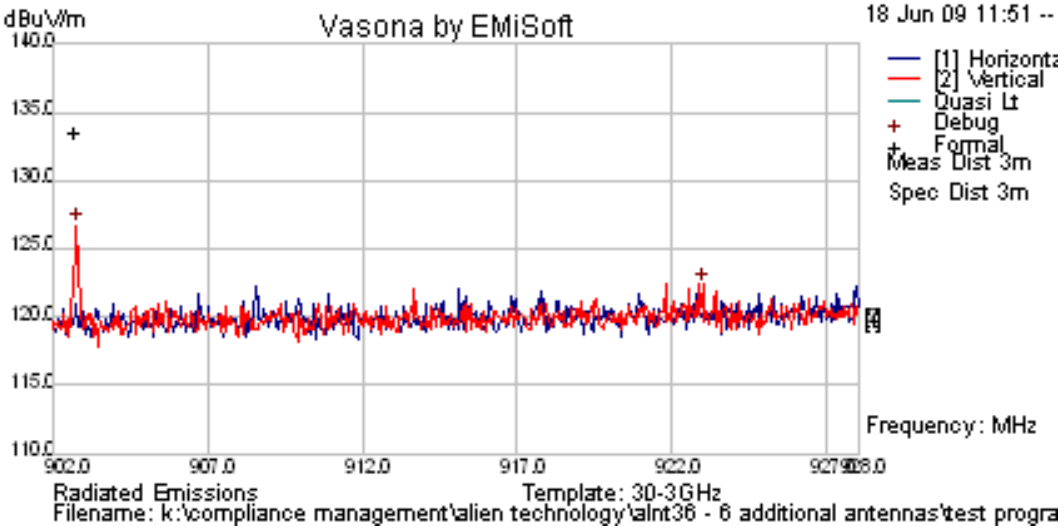
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV	Margin dB	Pass /Fail	Comments
667.228	53.69	6.58	-10.23	50.04	Peak [Scan]	H	100	0	109.6	> 20 dB	Pass	NRB-Radio
687.246	47.09	6.64	-10.02	43.71	Peak [Scan]	H	100	0	109.6	> 20 dB	Pass	NRB-Radio
707.241	50.63	6.71	-9.67	47.67	Peak [Scan]	H	100	0	109.6	> 20 dB	Pass	NRB-Radio
787.25	43.02	7.1	-8.63	41.49	Peak [Scan]	H	100	0	109.6	> 20 dB	Pass	NRB-Radio
827.244	44.9	7.17	-7.92	44.16	Peak [Scan]	H	100	0	109.6	> 20 dB	Pass	NRB-Radio

Non-Restricted Band (NRB) Limits: 129.6 dBuV/m – 20 dB = 109.6 dBuV/m

7.3.3. Transmitter Radiated Peak and Band Edge Emissions

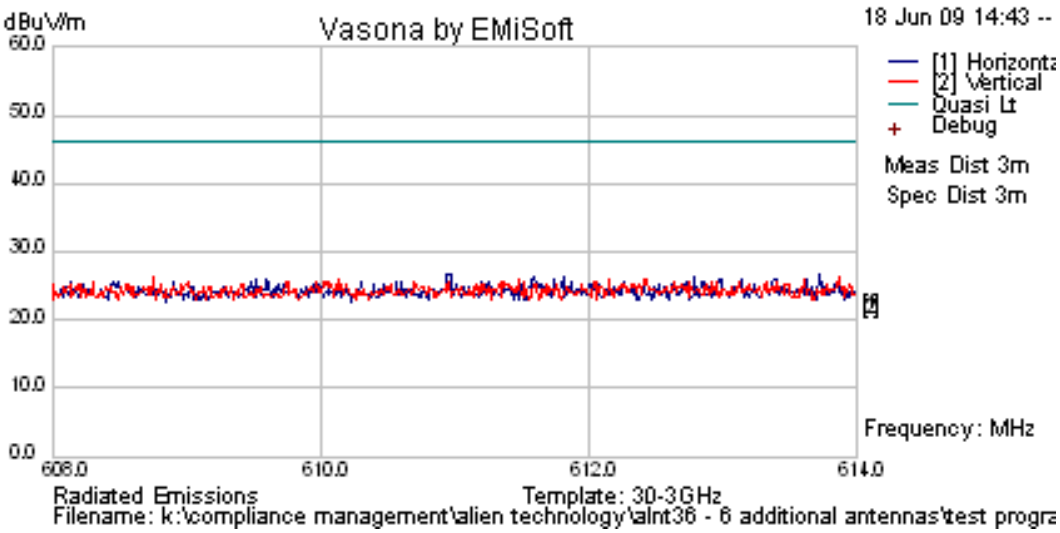
Peak and Adjacent Restricted Band measurements were performed on the remainder of the antennas.

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	BP6-915
Power setting	rflvl = 295 in test utility
Test Conditions	Peak Emissions



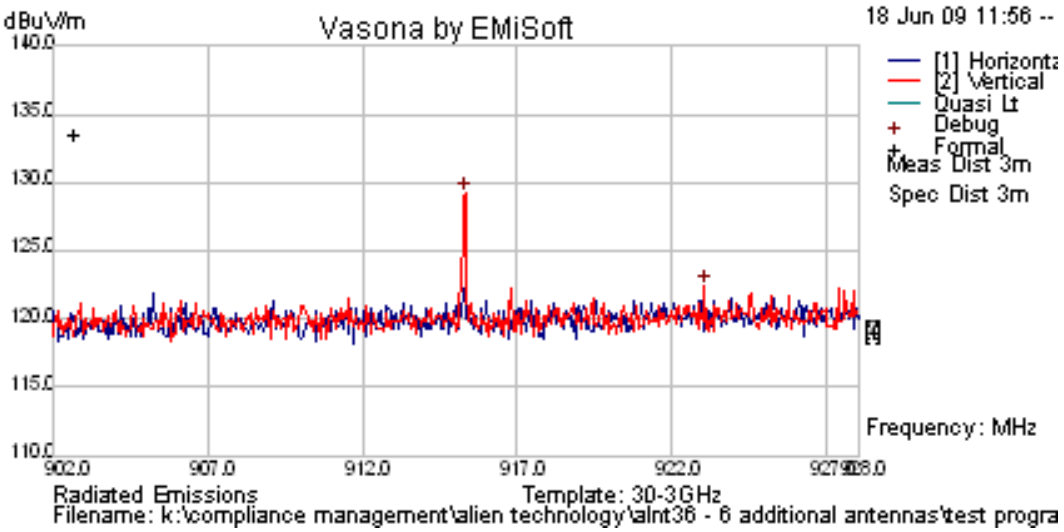
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
902.7295	67.21	37.3	22.71	127.2	Peak [Scan]	V						

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	BP6-915
Power setting	rflvl = 295 in test utility
Test Conditions	Band Edge 608 MHz – 614 MHz Restricted Band



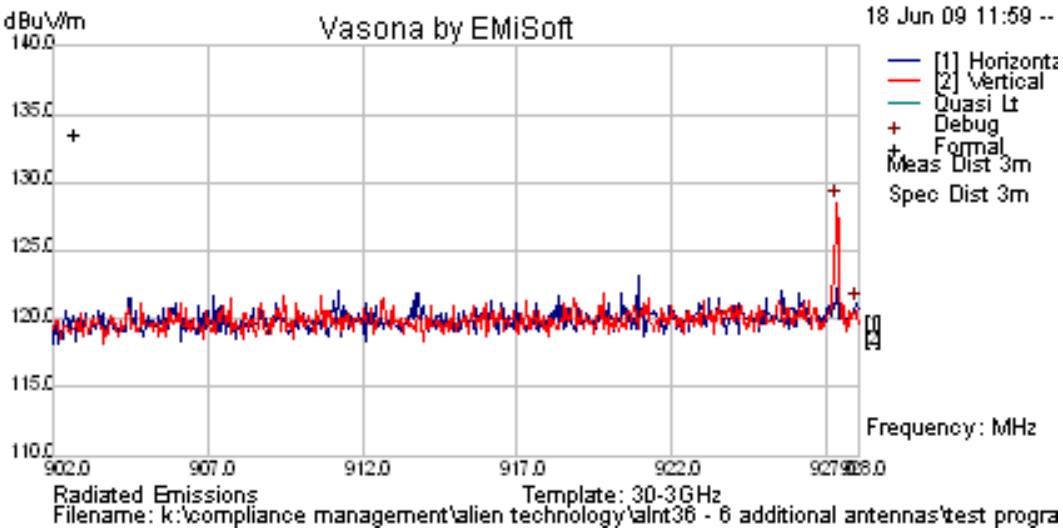
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Emissions within 6 dB of limit												

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	BP6-915
Power setting	rflvl = 295 in test utility
Test Conditions	Peak Emissions



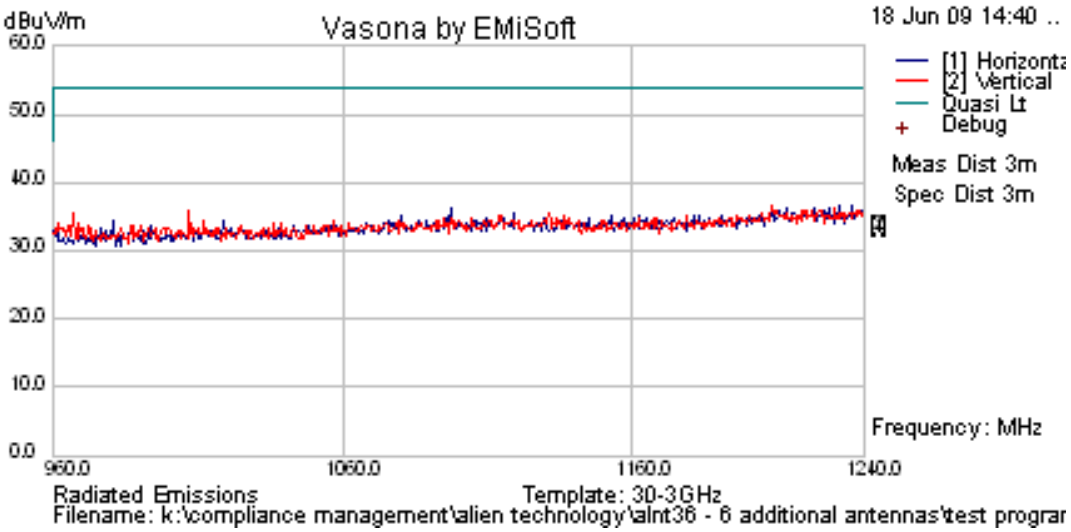
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
915.3387	68.88	37.4	22.9	129.2	Peak [Scan]	V						

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	BP6-915
Power setting	rflvl = 295 in test utility
Test Conditions	Peak Emissions



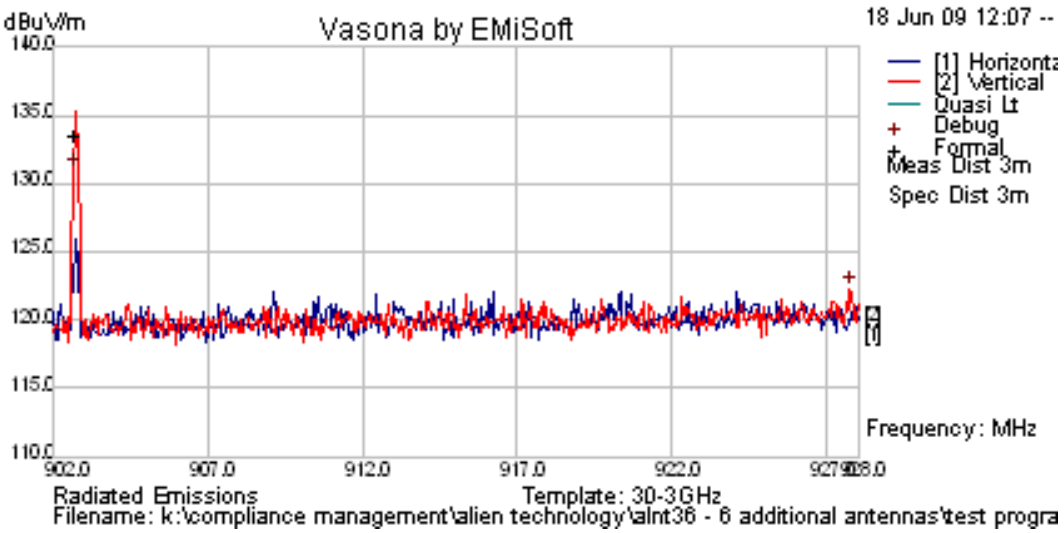
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
927.3226	67.97	37.4	23.1	128.5	Peak [Scan]	V						

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	BP6-915
Power setting	rflvl = 295 in test utility
Test Conditions	Band Edge 960 MHz – 1240 MHz Restricted Band



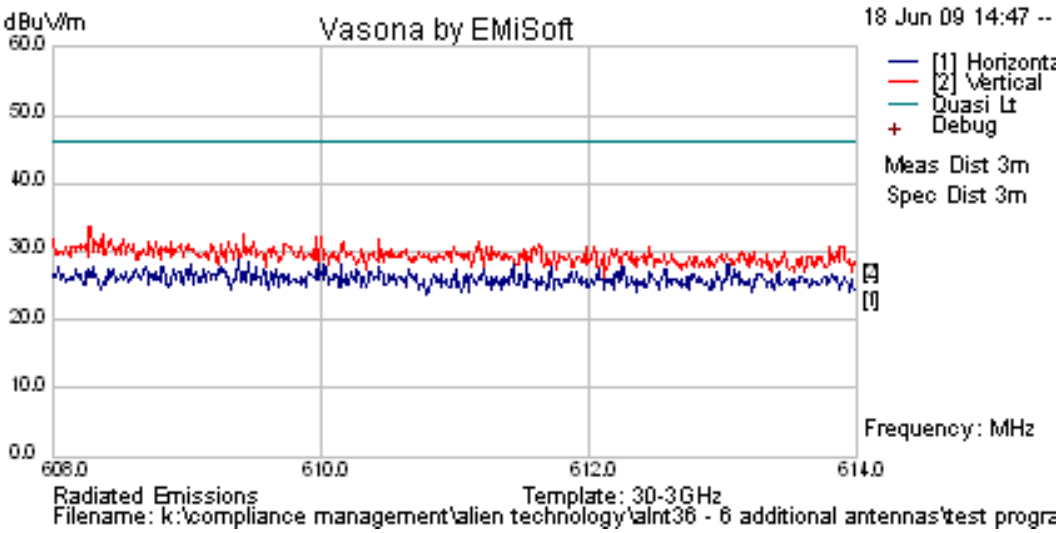
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Emissions within 6 dB of limit												

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	MT-242044
Power setting	rflvl = 295 in test utility
Test Conditions	Peak Emissions



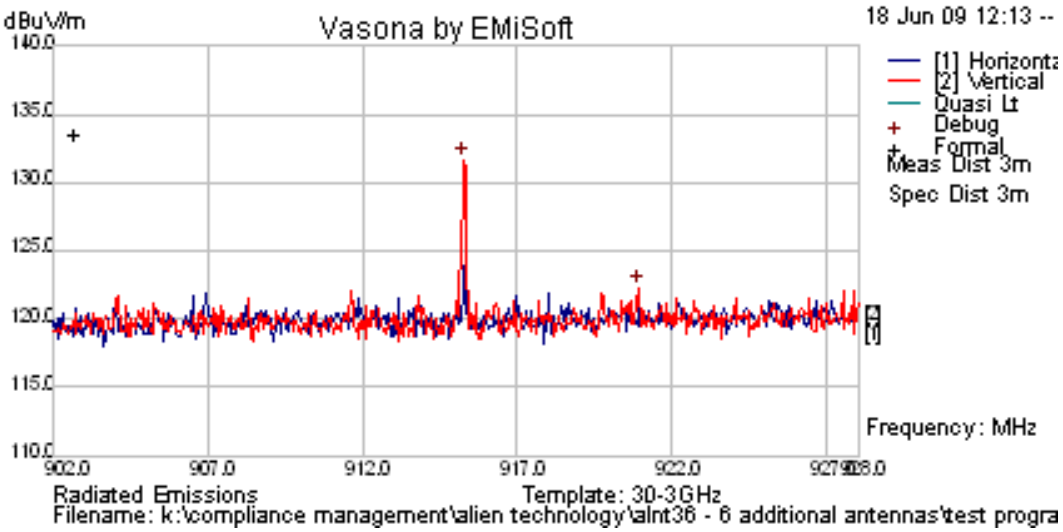
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
902.7433	70.89	37.32	22.71	130.9	Peak	V						

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	MT-242044
Power setting	rflvl = 295 in test utility
Test Conditions	Band Edge 608 MHz – 614 MHz Restricted Band



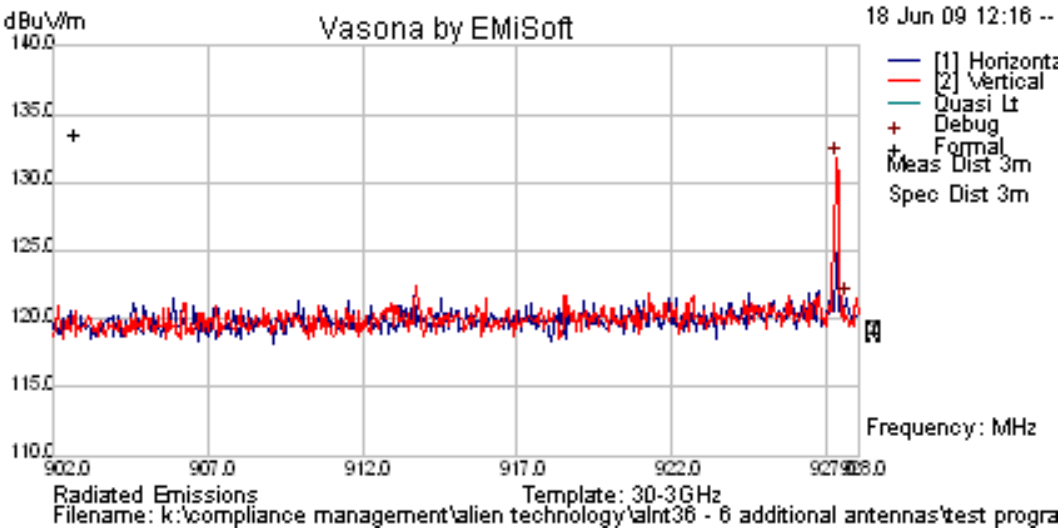
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Emissions within 6 dB of limit												

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	MT-242044
Power setting	rflvl = 295 in test utility
Test Conditions	Peak Emissions



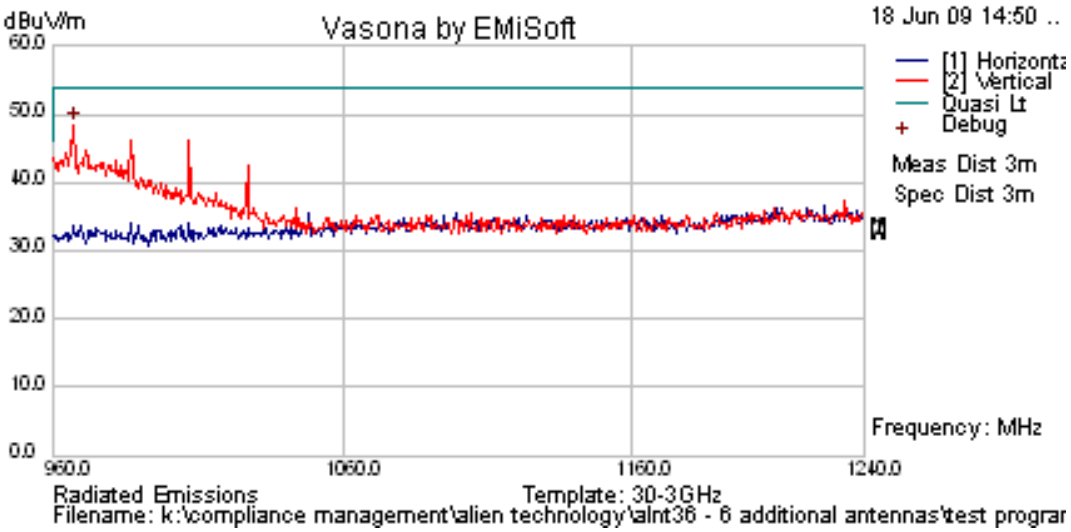
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
915.2866	71.39	37.38	22.9	131.7	Peak [Scan]	V						

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	MT-242044
Power setting	rflvl = 295 in test utility
Test Conditions	Peak Emissions



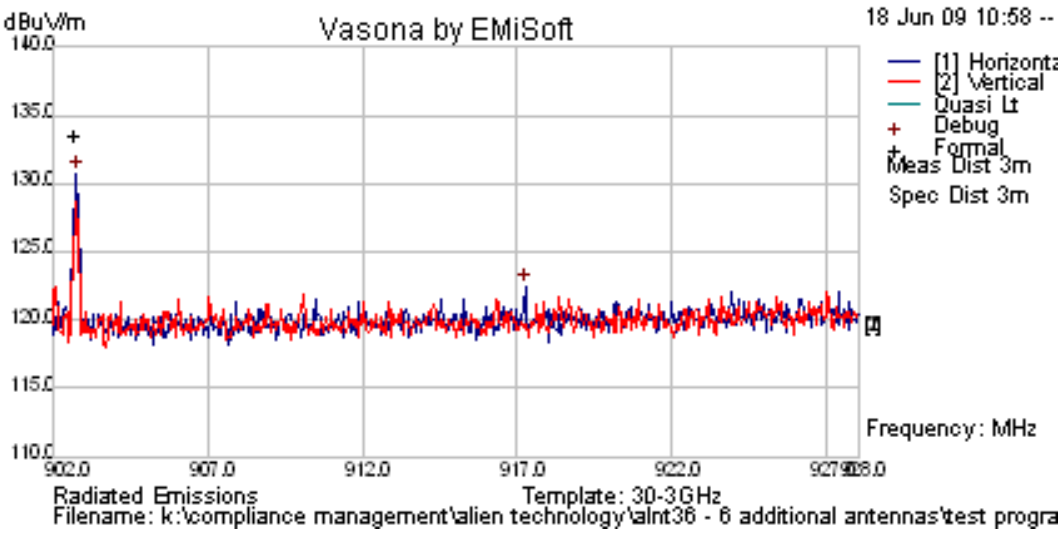
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
927.3226	71.19	37.43	23.1	131.7	Peak [Scan]	V						

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	MT-242044
Power setting	rflvl = 295 in test utility
Test Conditions	Band Edge 960 MHz – 1240 MHz Restricted Band



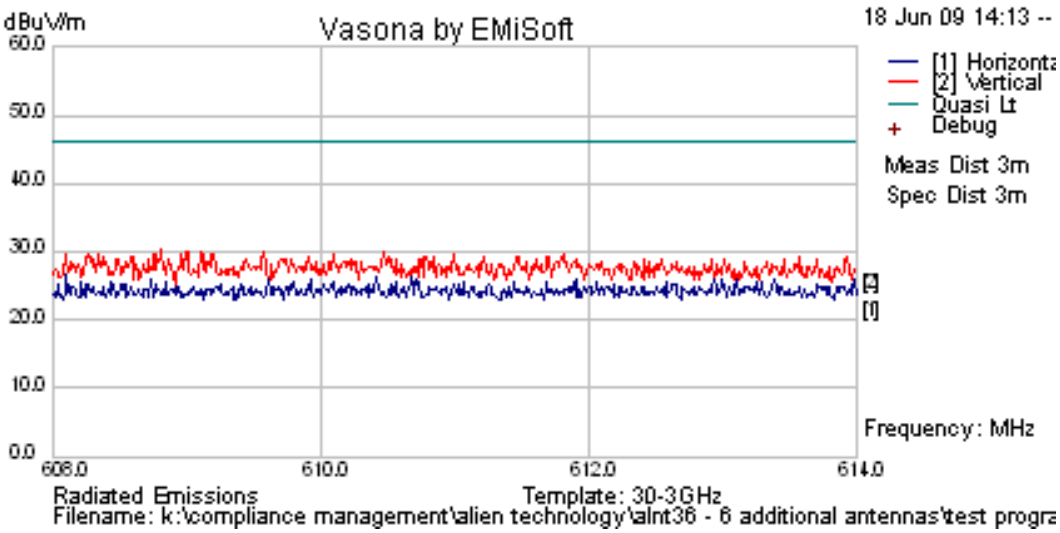
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
967.2946	47.5	7.59	-6.61	48.48	Peak [Scan]	V	100	0	54	-5.52	Pass	

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	S9026X
Power setting	rflvl = 295 in test utility
Test Conditions	Peak Emissions



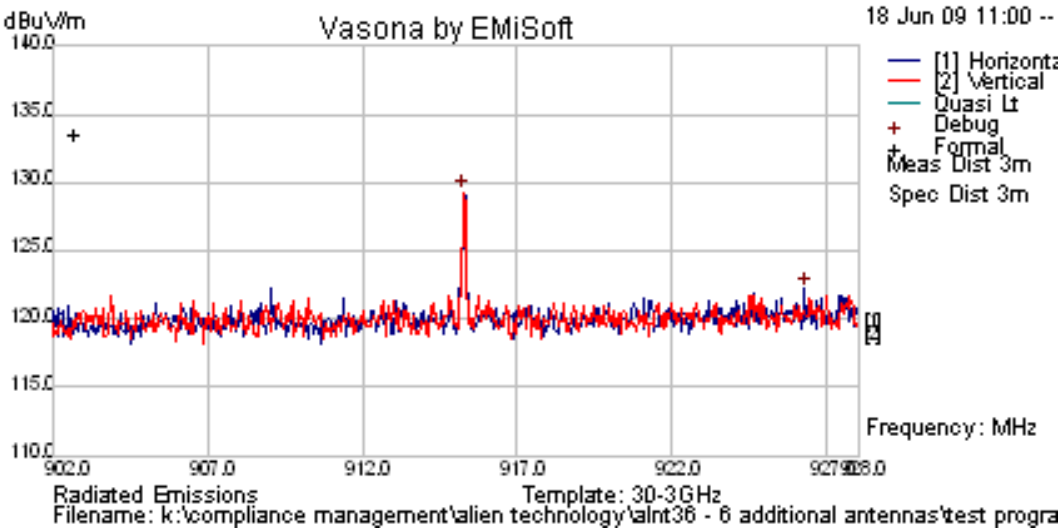
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
902.7816	70.75	37.3	22.71	130.8	Peak [Scan]	H						

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	S9026X
Power setting	rflvl = 295 in test utility
Test Conditions	Band Edge 608 MHz – 614 MHz Restricted Band



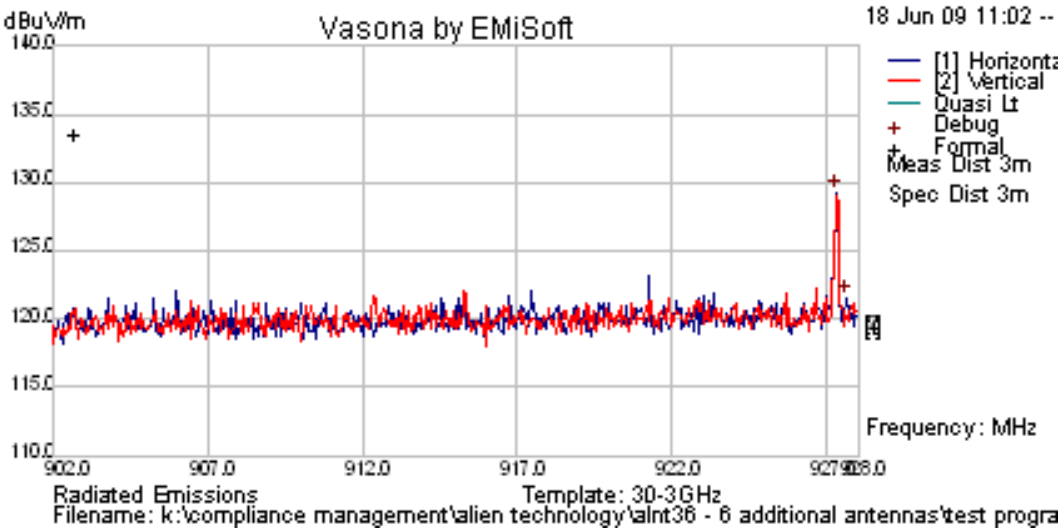
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Emissions within 6 dB of limit												

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	S9026X
Power setting	rflvl = 295 in test utility
Test Conditions	Peak Emissions



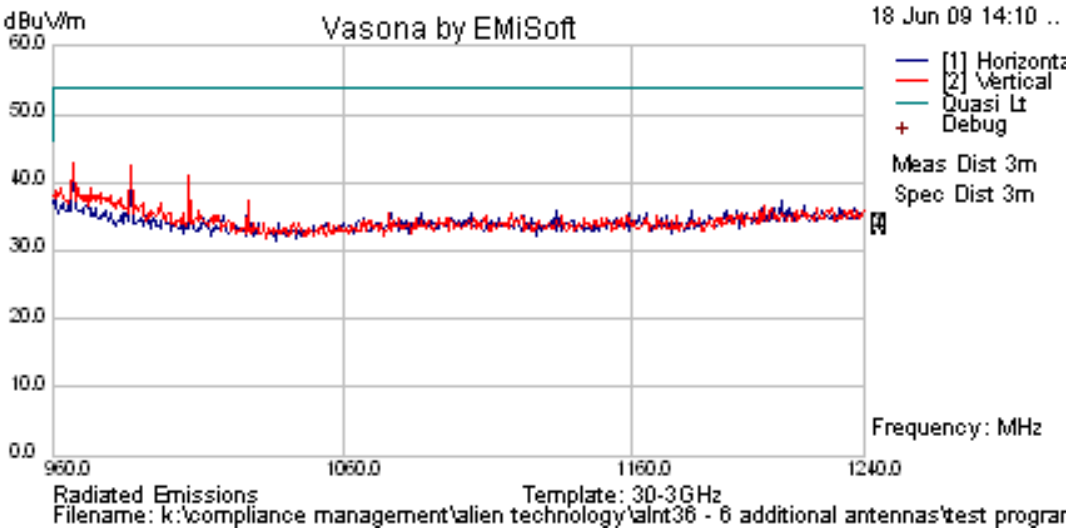
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
915.2866	69.01	37.4	22.9	129.3	Peak [Scan]	H						

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	S9026X
Power setting	rflvl = 295 in test utility
Test Conditions	Peak Emissions



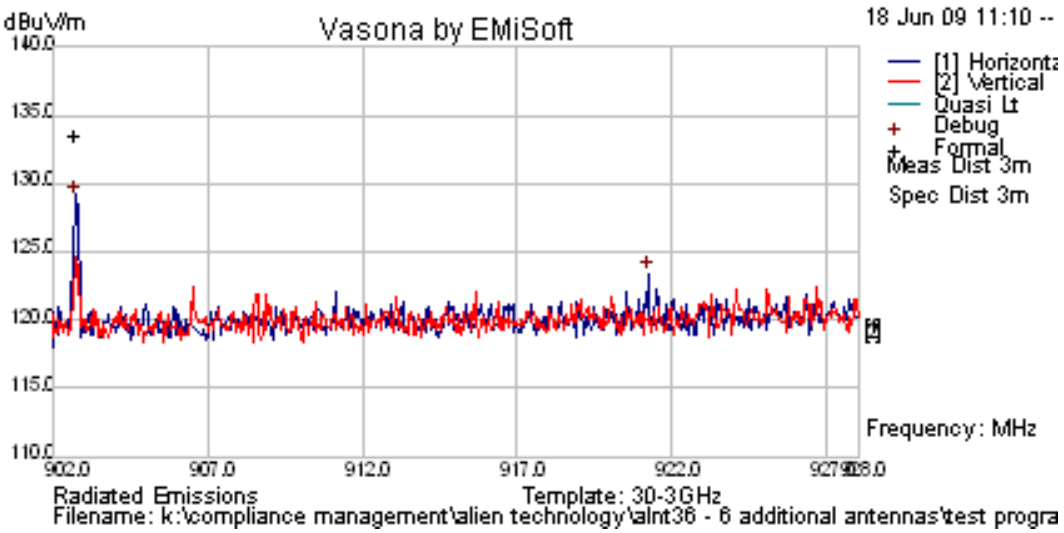
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
927.3226	68.74	37.4	23.1	129.3	Peak [Scan]	H						

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	S9026X
Power setting	rflvl = 295 in test utility
Test Conditions	Band Edge 960 MHz – 1240 MHz Restricted Band



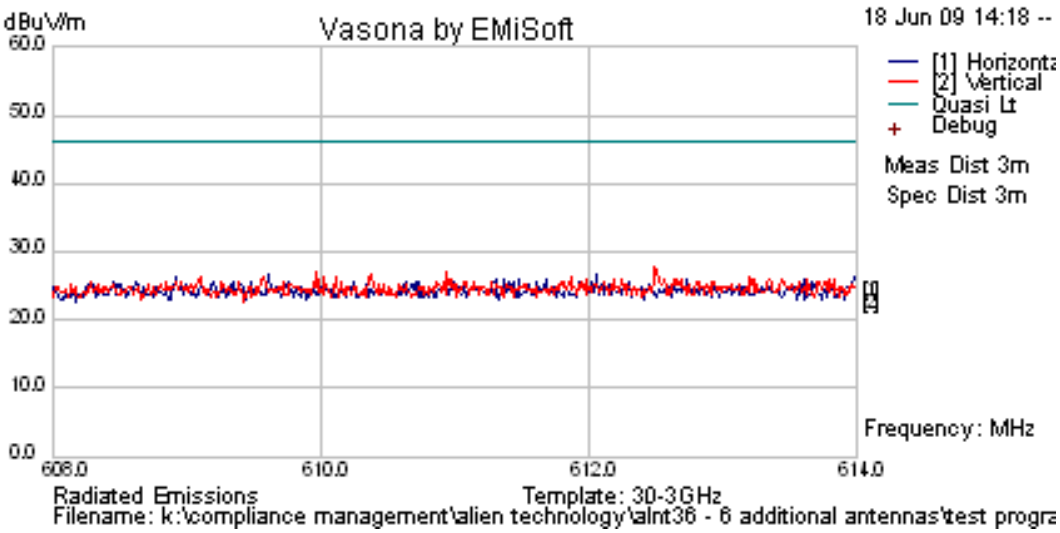
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Emissions within 6 dB of limit												

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	S9025P
Power setting	rflvl = 316 in test utility
Test Conditions	Peak Emissions



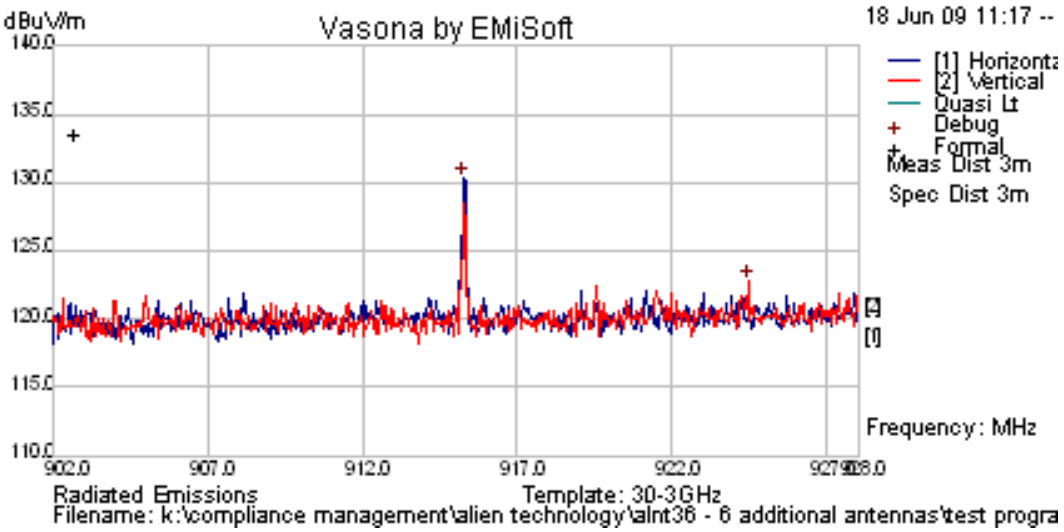
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
902.7356	68.92	37.32	22.71	129	Peak	H						

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	S9025P
Power setting	rflvl = 316 in test utility
Test Conditions	Band Edge 608 MHz – 614 MHz Restricted Band



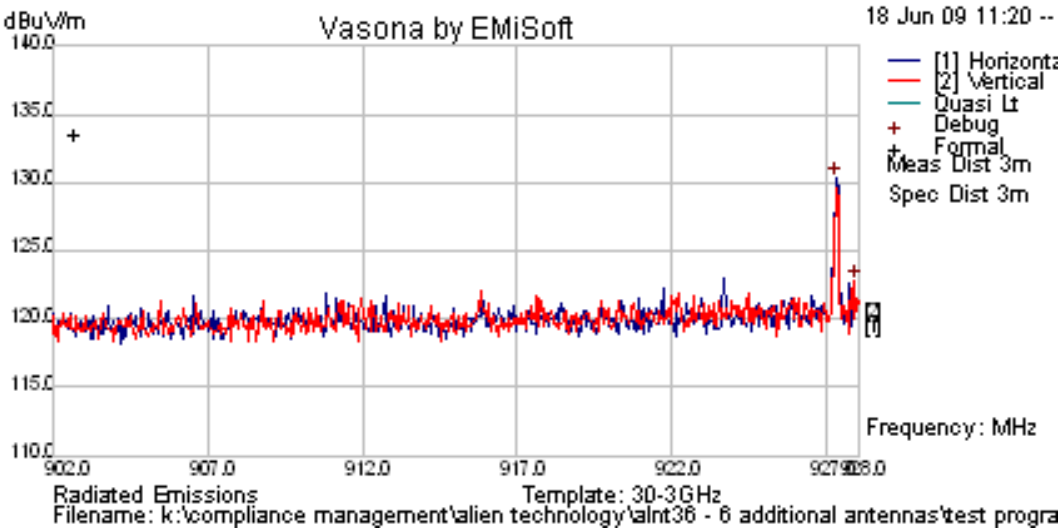
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Emissions within 6 dB of limit												

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	S9025P
Power setting	rflvl = 316 in test utility
Test Conditions	Peak Emissions



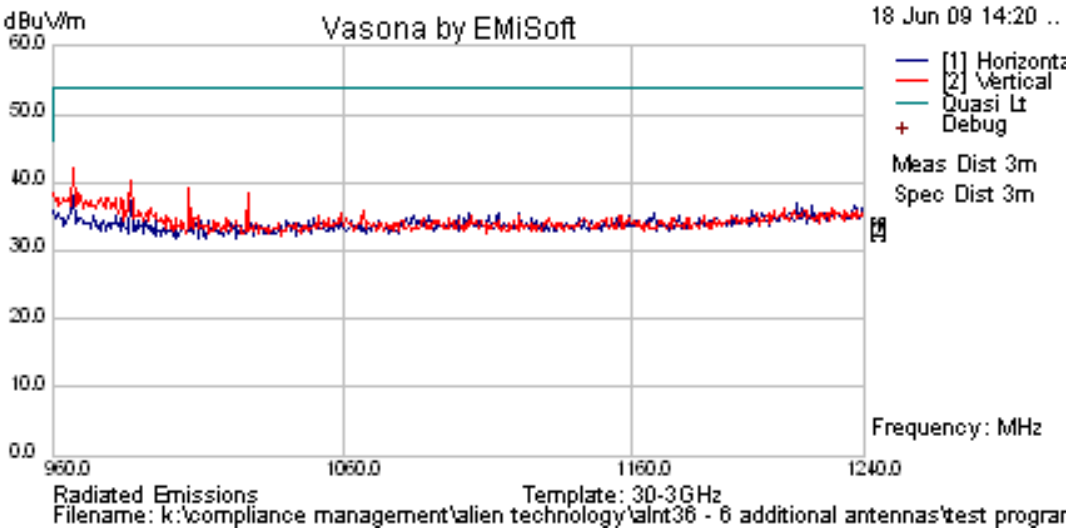
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
915.2866	70.05	37.38	22.9	130.3	Peak [Scan]	H						

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	S9025P
Power setting	rflvl = 316 in test utility
Test Conditions	Peak Emissions



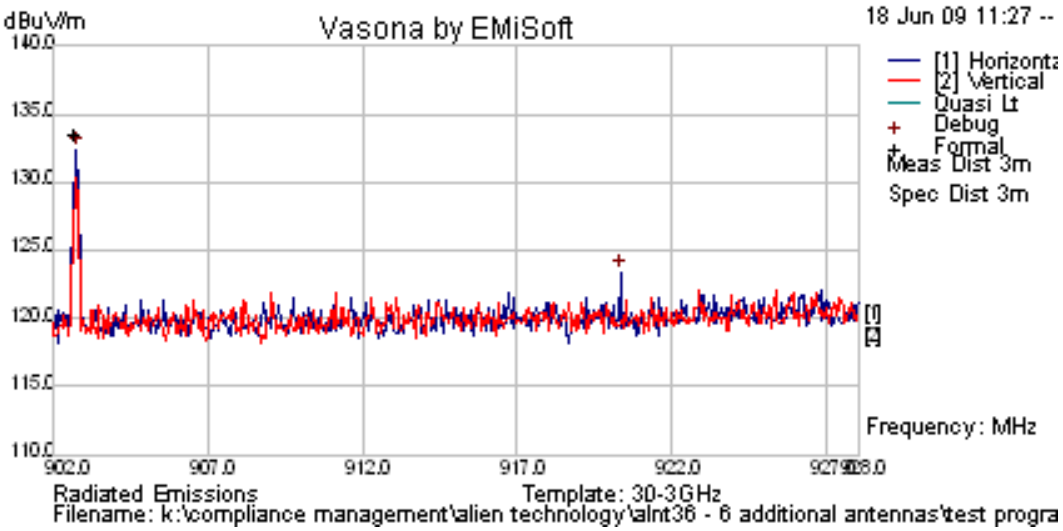
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
927.3226	69.71	37.43	23.1	130.2	Peak [Scan]	H						

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	S9025P
Power setting	rflvl = 316 in test utility
Test Conditions	Band Edge 960 MHz – 1240 MHz Restricted Band



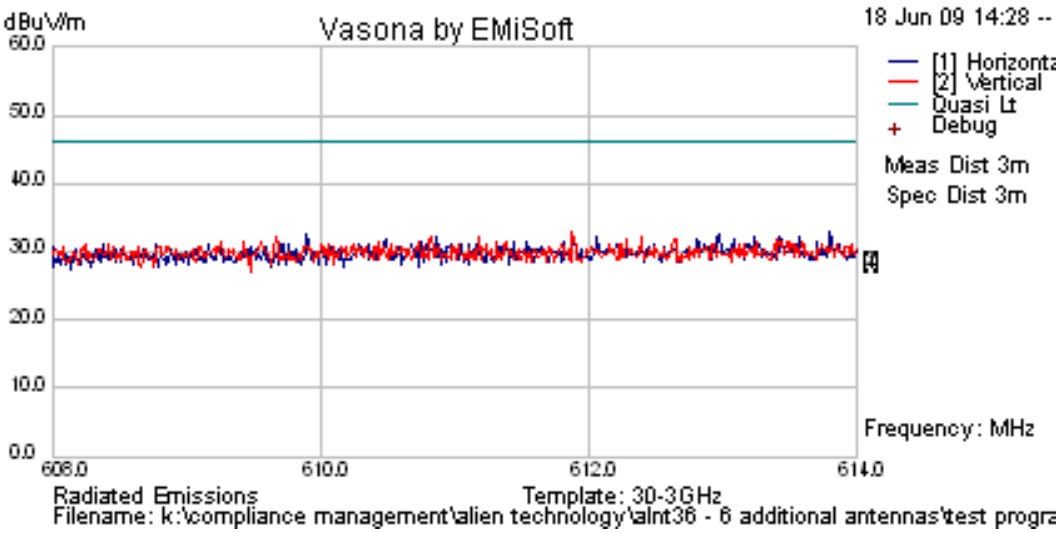
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Emissions within 6 dB of limit												

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	MT-262013
Power setting	rflvl = 316 in test utility
Test Conditions	Peak Emissions



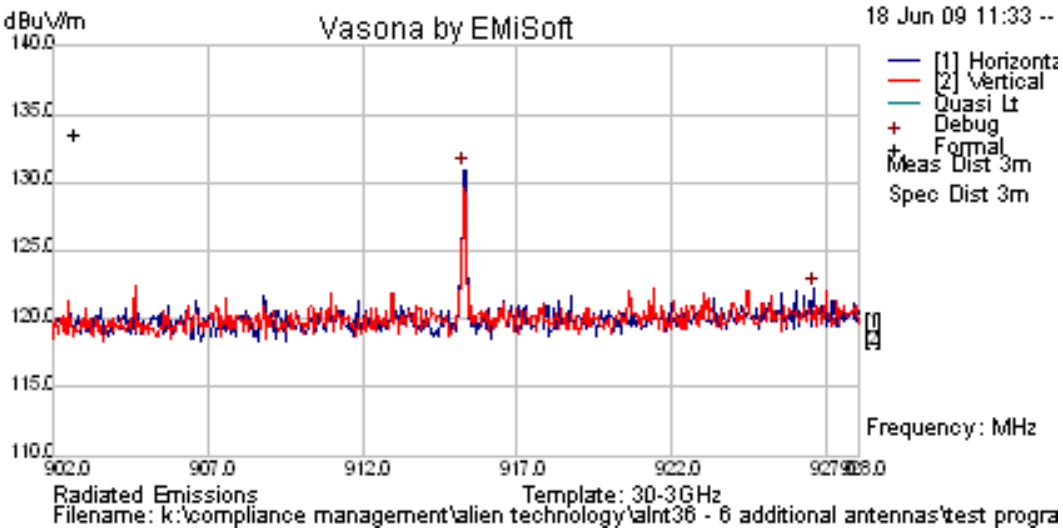
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
902.741	70.38	37.32	22.71	130.4	Peak	H						

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	902.75
Antenna Model	MT-262013
Power setting	rflvl = 316 in test utility
Test Conditions	Band Edge 608 MHz – 614 MHz Restricted Band



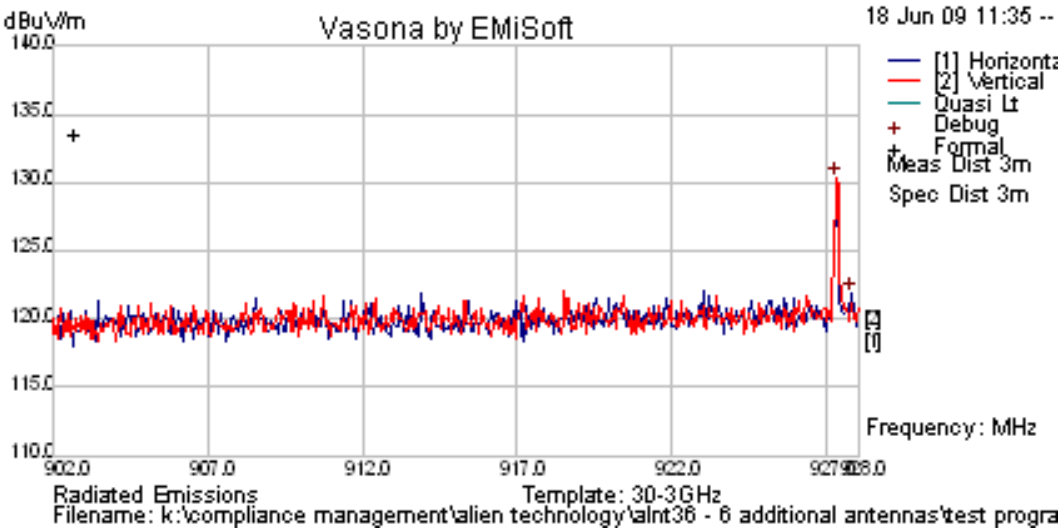
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Emissions within 6 dB of limit												

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	915.75
Antenna Model	MT-262013
Power setting	rflvl = 316 in test utility
Test Conditions	Peak Emissions



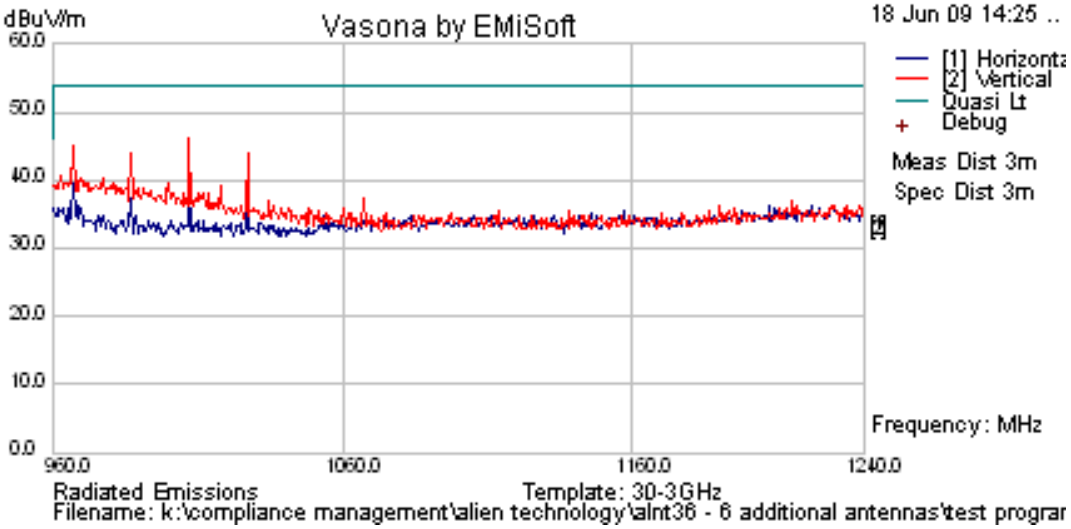
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
915.2866	70.66	37.38	22.9	130.9	Peak [Scan]	H						

Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	928.15
Antenna Model	MT-262013
Power setting	rflvl = 316 in test utility
Test Conditions	Peak Emissions



Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
927.3226	69.72	37.43	23.1	130.3	Peak [Scan]	V						

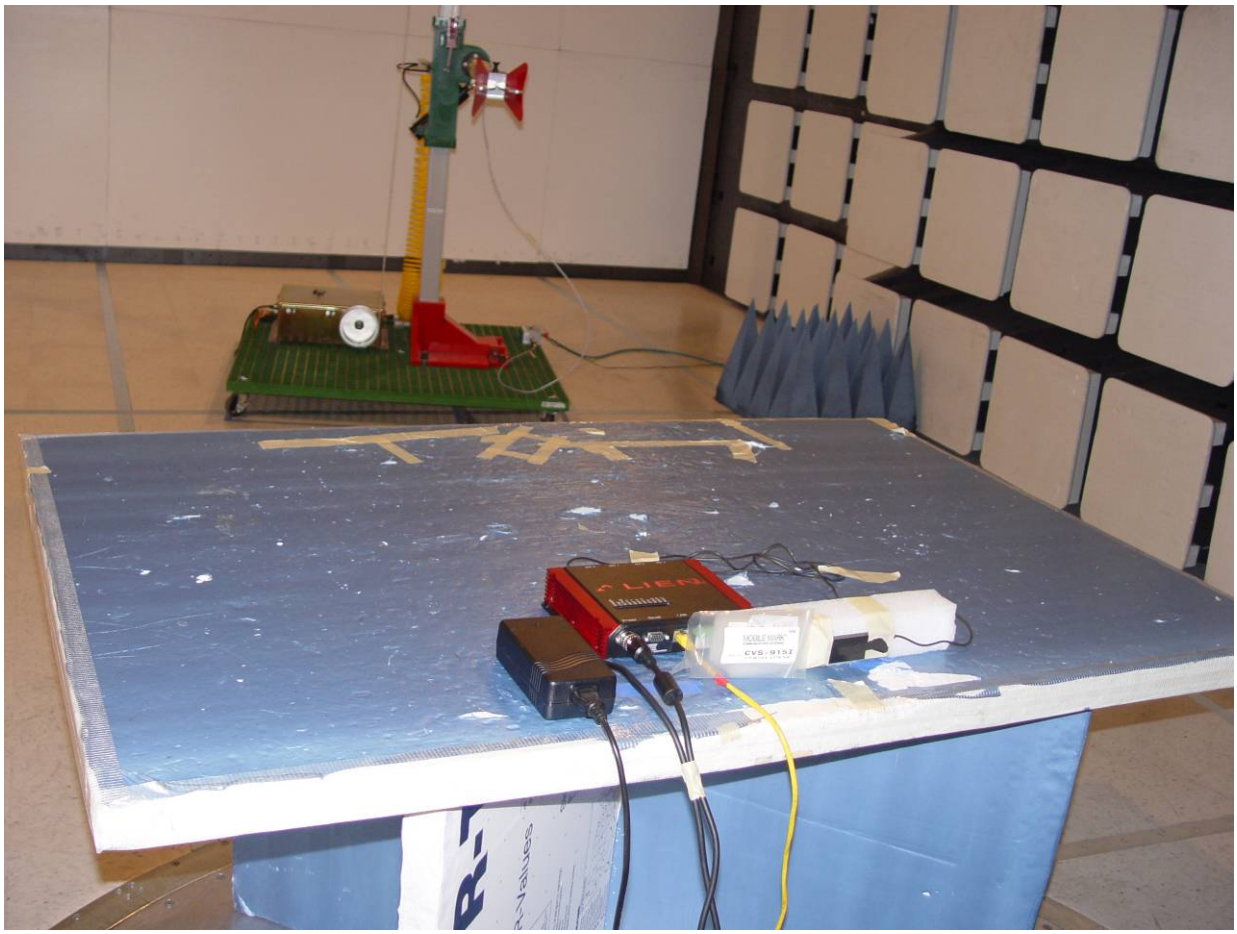
Date	18th June, 2009
Engineer	CSB
Test Case	ALNT36
Frequency	927.25
Antenna Model	MT-262013
Power setting	rflvl = 316 in test utility
Test Conditions	Band Edge 960 MHz – 1240 MHz Restricted Band



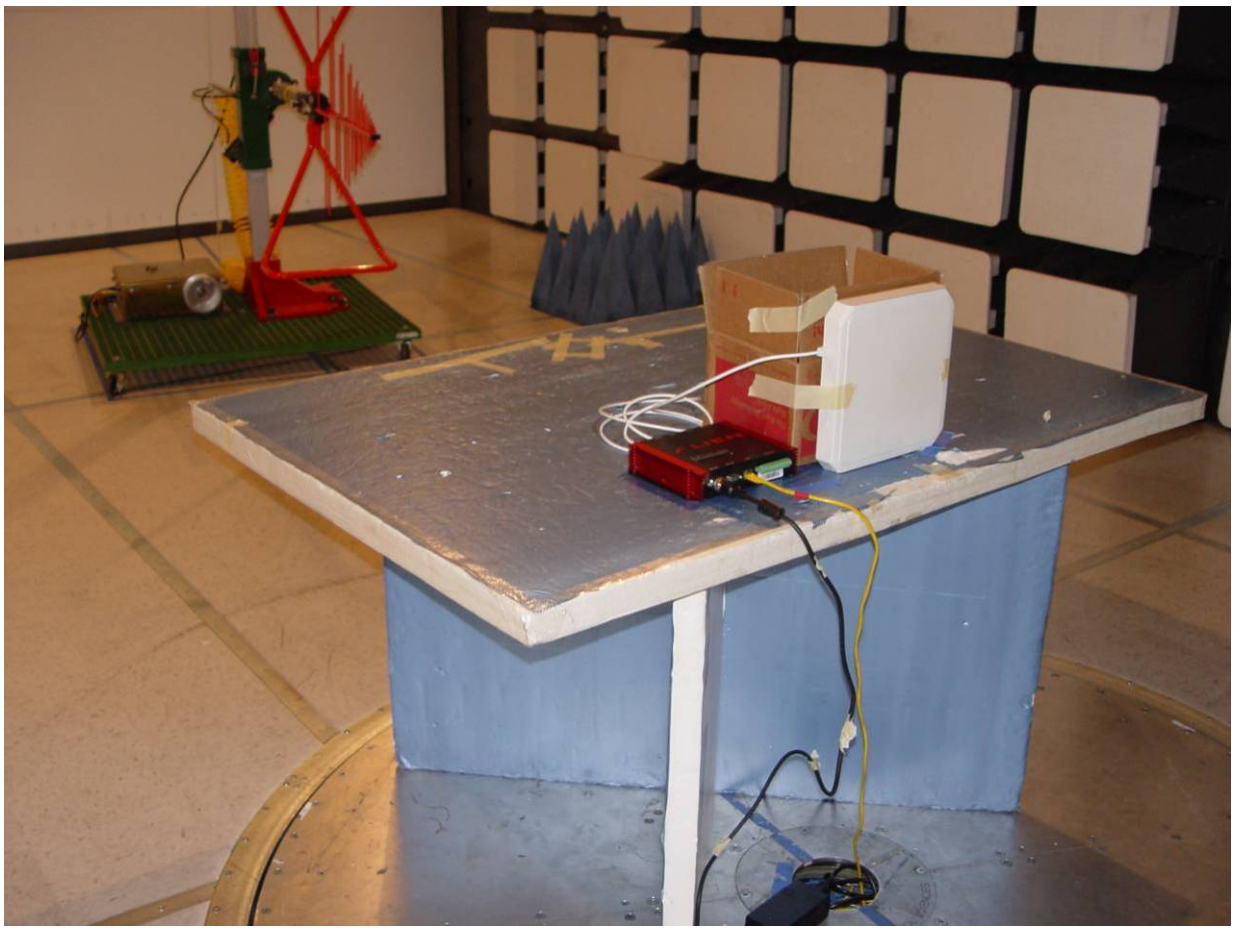
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Emissions within 6 dB of limit												

8. PHOTOGRAPHS

8.1. Radiated Emissions >1 GHz



8.2. Radiated Emissions <1 GHz



9. TEST EQUIPMENT DETAILS

Asset #	Instrument	Manufacturer	Part #	Serial #
0104	1-18GHz Horn Antenna	The Electro-Mechanics Company	3115	9205-3882
0134	Amplifier	Com Power	PA 122	181910
0158	Barometer /Thermometer	Control Co.	4196	E2846
0193	EMI Receiver	Rhode & Schwartz	ESI 7	838496/007
0287	EMI Receiver	Rhode & Schwartz	ESIB 40	100201
0252	SMA Cable	Megaphase	Sucoflex 104	None
0310	2m SMA Cable	Micro-Coax	UFA210A-0-0787-3G03G0	209089-001
0312	3m SMA Cable	Micro-Coax	UFA210A-1-1181-3G0300	209092-001
0313	Coupler	Hewlett Packard	86205A	3140A01285
0314	30dB N-Type Attenuator	ARRA	N9444-30	1623
0070	Power Meter	Hewlett Packard	437B	3125U11552
0116	Power Sensor	Hewlett Packard	8485A	3318A19694
0117	Power Sensor	Hewlett Packard	8487D	3318A00371
0184	Pulse Limiter	Rhode & Schwartz	ESH3Z2	357.8810.52
0190	LISN	Rhode & Schwartz	ESH3Z5	836679/006
0293	BNC Cable	Megaphase	1689 1GVT4	15F50B001
0307	BNC Cable	Megaphase	1689 1GVT4	15F50B002
0341	902-928 MHz Notch Filter	EWT	EWT-14-0199	H1

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