



FCC PART 15 SUBPART B
AS/NZS CISPR 22: 2009 + A1: 2010



TEST AND MEASUREMENT REPORT

For

TracStar Systems dba Cobham SATCOM

1551 College Park Business Center Road,
Orlando, FL 32804, USA

FCC ID: 2ADHY-ROJ-5075G
Model: EXPLORER 5075GX

Report Type: Original Report	Product Type: VSAT Terminal
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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1408202	Original Report	2014-10-23
1	R1408202 Rev A	Revised Report	2014-11-24

1 General Information

1.1 Product Description for Equipment under Test (EUT)

This test and measurement report has been compiled on behalf of *TracStar Systems dba Cobham SATCOM*, and their product model: *EXPLORER 5075GX*, FCC ID: 2ADHY-ROJ-5075G, which will henceforth be referred to as the “EUT” (Equipment under Test) in this report. The EUT is Auto-Deploy, portable VSAT terminal for operations on the Inmarsat Global Xpress Ka-band network

1.2 Mechanical Description of EUT

The EUT measures approximately 61cm (L) x 107cm (W) x 101 cm (H) and Wight 27.2 kg.

The data gathered are from a production sample provided by the manufacturer, serial number: R1407111-01 (serial number assigned by BACL).

1.3 Objective

This report is prepared on behalf of *TracStar Systems dba Cobham SATCOM*, in accordance with FCC Part 15B, & AS/NZS CISPR 22:2009 + A1:2010, Information Technology Equipment – Radio Disturbance Characteristics – Limits and Methods of Measurements.

The objective is to determine compliance with FCC Part 15B, & AS/NZS CISPR 22: 2009+A1: 2010, Standard Class B limits for conducted and radiated emission requirements for Information Technology Equipment.

1.4 Related Submittal(s)/Grant(s)

No related submittals.

1.5 Test Methodology

All measurements contained in this report were conducted in accordance with AS/NZS CISPR 22:2009 + A1:2010, CISPR 22, & ANSI C63.4-2009, Standards for Information Technology Equipment — Radio Disturbance Characteristics — Limits and Methods of Measurement.

All tests were performed at Bay Area Compliance Laboratories Corp.

1.6 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR16-4-2:2011, The Treatment of Uncertainty in EMC Measurements, the values ranging from ± 2.0 dB for Conducted Emissions tests and ± 4.0 dB for Radiated Emissions tests are the most accurate estimates pertaining to uncertainty of EMC measurements at BACL Corp.

1.7 Test Facility

Bay area compliance Laboratories Corp. (BACL) is:

1- An independent Commercial Test Laboratory accredited to **ISO 17025: 2005** by **A2LA**, in the fields of: Electromagnetic Compatibility & Telecommunications covering Emissions, Immunity, Radio, RF Exposure, Safety and Telecom. This includes NEBS (Network Equipment Building System), Wireless RF, Telecommunications Terminal Equipment (TTE); Network Equipment; Information Technology Equipment (ITE); Medical Electrical Equipment; Industrial, Commercial, and Medical Test Equipment; Professional Audio and Video Equipment; Electronic (Digital) Products; Industrial and Scientific Instruments; Cabled Distribution Systems and Energy Efficiency Lighting.

2- An ENERGY STAR Recognized Laboratory, for the LM80 Testing, a wide variety of Luminaires and Computers.

3- A NIST Designated Phase-I and Phase-II CAB including: ACMA (Australian Communication and Media Authority), BSMI (Bureau of Standards, Metrology and Inspection of Taiwan), IDA (Infocomm Development Authority of Singapore), IC (Industry Canada), Korea (Ministry of Communications Radio Research Laboratory), NCC (Formerly DGT; Directorate General of Telecommunication of Chinese Taipei) OFTA (Office of the Telecommunications Authority of Hong Kong), Vietnam, VCCI - Voluntary Control Council for Interference of Japan and a designated EU CAB (Conformity Assessment Body) (Notified Body) for the EMC and R&TTE Directives.

4- A Product Certification Body accredited to **ISO Guide 65: 1996** by **A2LA** to certify:

1- Unlicensed, Licensed radio frequency devices and Telephone Terminal Equipment for the FCC. Scope A1, A2, A3, A4, B1, B2, B3, B4 & C.

2. Radio Standards Specifications (RSS) in the Category I Equipment Standards List and All Broadcasting Technical Standards (BETS) in Category I Equipment Standards List for Industry Canada.

3. Radio Communication Equipment for Singapore.

4. Radio Equipment Specifications, GMDSS Marine Radio Equipment Specifications, and Fixed Network Equipment Specifications for Hong Kong.

5. Japan MIC Telecommunication Business Law (A1, A2) and Radio Law (B1, B2 and B3).

6. Audio/Video, Battery Charging Systems, Computers, Displays, Enterprise Servers, Imaging Equipment, Set-Top Boxes, Telephony, Televisions, Ceiling Fans, CFLs (Including GU24s), Decorative Light Strings, Integral LED Lamps, Luminaires, Residential Ventilating Fans.

The test site used by BACL Corp. to collect radiated and conducted emissions measurement data is located at its facility in Sunnyvale, California, USA.

The test site at BACL Corp. has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997, and Article 8 of the VCCI regulations on December 25, 1997. The test site also complies with the test methods and procedures set forth in CISPR 22:2008 §10.4 for measurements below 1 GHz and §10.6 for measurements above 1 GHz as well as ANSI C63.4-2009, ANSI C63.4-2009, TIA/EIA-603 & CISPR 24:2010.

The Federal Communications Commission and Voluntary Control Council for Interference have the reports on file and they are listed under FCC registration number: 90464 and VCCI Registration No.: A-0027. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL Corp. is an American Association for Laboratory Accreditation (A2LA) accredited laboratory (Lab Code 3297-02). The current scope of accreditations can be found at

<http://www.a2la.org/scopepdf/3297-02.pdf?CFID=1132286&CFTOKEN=e42a3240dac3f6ba-6DE17DCB-1851-9E57-477422F667031258&jsessionid=8430d44f1f47cf2996124343c704b367816b>

2 EUT Test Configuration

2.1 Justification

The EUT was configured for testing in accordance with requirements of the ANSI C63.4-2009, AS/NZS CISPR 22:2009 + A1:2010, and CISPR 22 standards.

2.2 EUT Exercise Software

The software used was provided by TracStar and was verified by Bryan Smith to comply with the standard requirements being tested against.

The software used was EMISoft-Vasona 5.0068 for EMI testing.

2.3 Equipment Modifications

N/A

2.4 Special Equipment

N/A

2.5 Local Support Equipment

Manufacturer	Description	Model	Serial Number
Toshiba	Laptop	U405-S921	28117987

2.6 External I/O Cabling List and Details

Cable Description	Part Number	Description
TX Cable	105067-19IN	Cable – Transmit 50 OHM UF- 2FT.
RX Cable	1306962	Cable RX 50OHM N STRT N R/A
BUC Ctl Cable	130947	Cable, Pos Head External M&C to BUC

2.7 EUT Internal Configuration Details

Manufacturer	Description	Model	Serial Number
Cobham-Tracstar	Antenna Interface Bd	400069 Rev A	Part of 113706 Rev A
Cobham-Tracstar	CPU Bd	103139 Rev A	Part of 113706 Rev A
Cobham-Tracstar	Motor Drive	102050-9 Rev C	Part of 113706 Rev A
Cobham-Tracstar	Power Supply	400081 Rev B	-
Cobham – Thrane & Thrane	CMIF	TT57-138120 Rev B	6923280011
Amphenol	Ethernet Front Panel	MRJ-5780-01	38-142250-A
Cobham-Thrane & Thrane	WiFi Antenna Module	TBD	0832610020
Cobham-Tracstar	GPS	400065-1 Rev B	070313
Cobham-Tracstar	PIF Bd	400071 Rev A	-
Cobham – NJRC	Ka Band BUC	NJT5830	A00380A43
Cobham – NJRC	Ka Band LNB	NJR2825	A00436A43
Cobham-Tracstar	ACU Board Set	113706 ReV A	302620176A

2.8 Mode of Operation

For the purposes of this testing a test mode of operation was created using the stow command which causes moves of the GX pointing system, both Azimuth and Elevation, in a repetitive sequence. The test mode is invoked by activating a “STOW” stow command from the front panel.

For normal operative mode the “STOW” command will return the pointing head (azimuth and elevation) to a fixed position use in stowing the terminal.

For purposes of test the “DEPLOY” command mode would not be invoked. In normal operation the terminal would point to commanded satellite position, establish lock and stop in the fixed position until re-commanded, shut down or stowed.

2.9 Method of monitoring

For purposes of this test the “STOW” routine may be used to activate continuous movement of the azimuth and elevation arms of the system. In the event of input power failure or protective condition, the power may be automatically restored however the current command would revert to the default power up state. It would be necessary re-invoke the appropriate command (DEPLOY or STOW) as necessary to continue with testing.

3 Summary of Test Results

Standards	Test Description	Result(s)
FCC §15.107 CISPR 22 §5	Conducted Emissions	Compliant
FCC §15.109 CISPR 22 §6	Radiated Emissions	Compliant

4 FCC §15.107& AS/NZS CISPR 22 §5 – Conducted Emissions

4.1 Applicable Standards

As per FCC §15.107,

(a) Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Table 1 – Limits for conducted disturbance at the mains ports of Class B ITE

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

*Decreases with the logarithm of the frequency

As per EN 55022 §5 & CISPR 22 §5: Conducted Limits

The equipment under test (EUT) shall meet the limits in the following table(s), as applicable, including the average limit and the quasi-peak limit when using, respectively, an average detector receiver and quasi-peak detector receiver and measured in accordance with the methods described in Clause 9. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary. If the reading of the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 s at each measurement frequency; the higher reading shall be recorded with the exception of any brief isolated high reading which shall be ignored.

Limits for Conducted Disturbance at the Mains Ports of Class B ITE

Frequency range MHz	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.5 to 5	56	46
5 to 30	60	50
NOTE 1: The lower limit shall apply at the transition frequency.		
NOTE 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.		

4.2 EUT Setup

The conducted emissions tests were performed in the 10-meter chamber, using the setup in accordance with CISPR 22: 2010, measurement procedures. The specifications used were in accordance with CISPR 22 §5 standard, Class B limits.

The spacing between the peripherals was 10 cm.

The external I/O cables were draped along the test table and bundled as required.

The EUT was connected to an AC line power source.

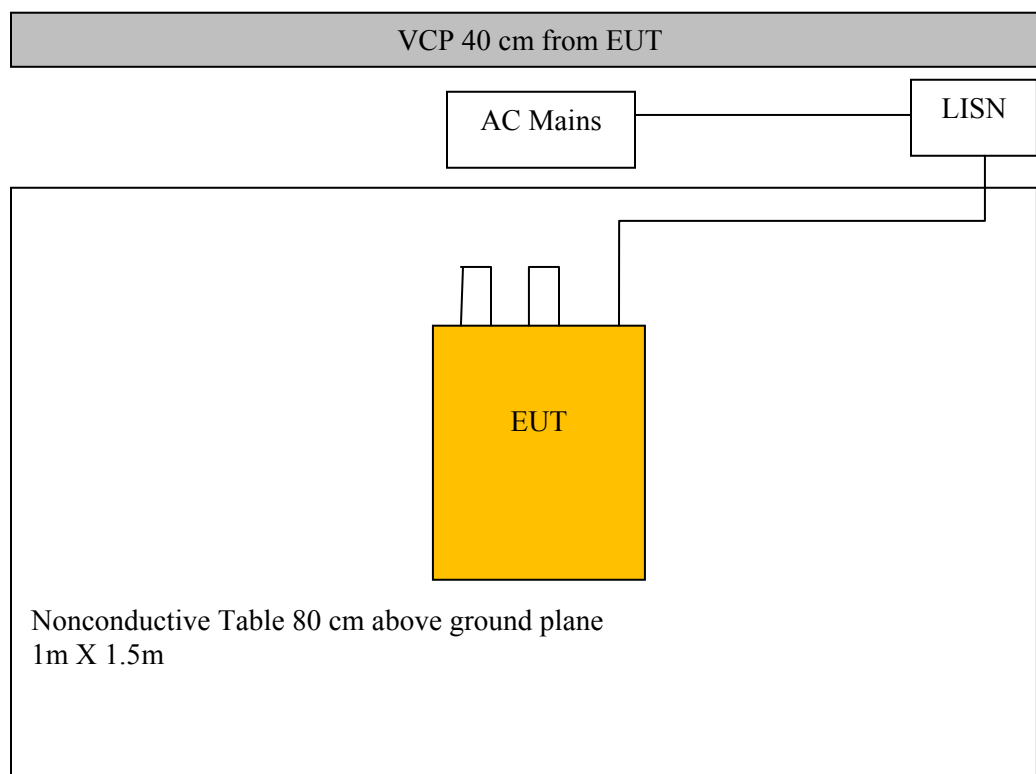
4.3 Test Procedure

During the conducted emissions test, the power cord of the EUT was connected to the LISN-1.

Maximization procedure was performed on the six (6) highest emission readings from the EUT.

4.4 Test Setup Block Diagram

AC Line



4.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude (CA) is calculated by adding the Cable Loss (CL) plus the High Pass Filter/Attenuator value (HA) and subtracting the Amplifier Gain (Ga) to the indicated Amplitude (Ai) reading. The basic equation is as follows:

$$CA = Ai + CL + HA - Ga$$

For example, a corrected amplitude (CA) of 36 dBuV = Indicated Amplitude reading (Ai) of 50.0 dBuV + Cable Loss (CL) 1.0 dB + High Pass Filter/Attenuator (IA) 5 dB - Amplifier Gain (Ga) 20 dB

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin (dB)} = \text{Corrected Amplitude (dBuV)} - \text{Class B Limit (dBuV)}$$

4.6 Test Equipment List and Details

Manufacturer	Description	Model Number	Serial Number	Calibration Date	Calibration Interval
Rohde & Schwarz	Receiver, EMI Test	ESCI 1166.5950K03	100044	2014-07-17	1 year
Solar Electronics	LISN, EMC	9252-50-R-24-N	511205	2014-06-25	1 year
Rohde & Schwarz	Impulse Limiter	ESH3-Z2	101963	2014-07-03	1 year

Statement of Traceability: BACL Corp. attests that all calibrations have been performed according to A2LA requirements, traceable to the NIST.

4.7 Test Environmental Conditions

Temperature	24.12 ° C
Relative Humidity	38.31 %
ATM Pressure	102.15 kPa

The testing was performed by Jerry Wang on 2014-09-29 in 10 m chamber 1.

4.8 Summary of Test Results

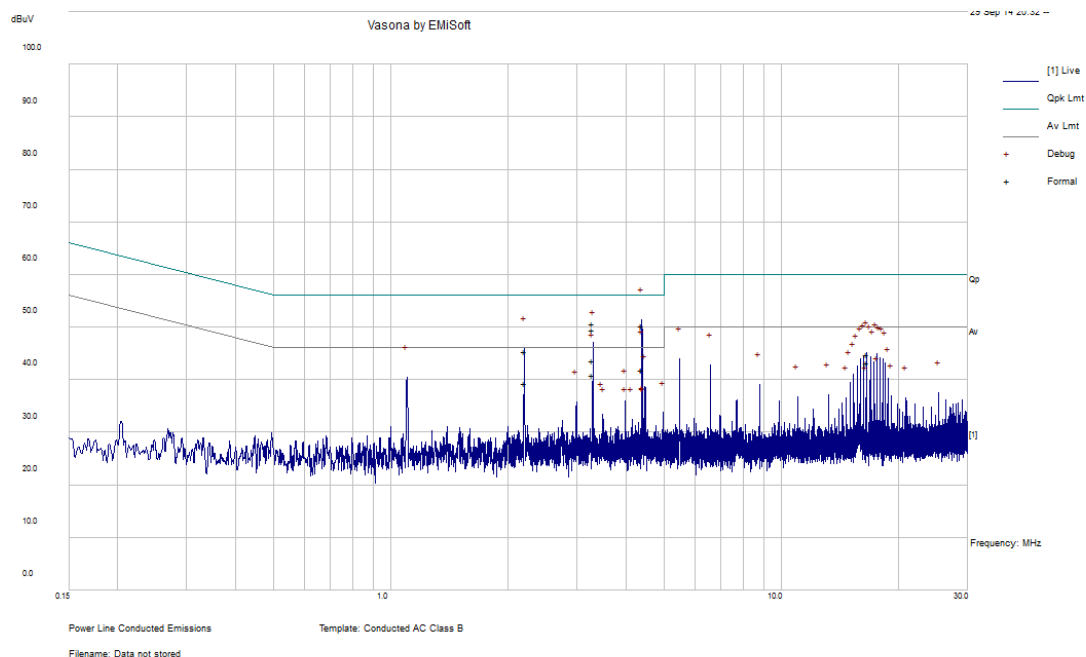
According to the recorded data, the EUT complied with FCC §15.107, and CISPR 22 §5 Standard, Class B limits, and had the worst margin reading of:

Connection: 120 V/60 Hz AC			
Margin (dB)	Frequency (MHz)	Conductor Mode (Line/Neutral)	Range (MHz)
-2.36	3.29458	Neutral	0.15 MHz to 30 MHz

Connection: 230 V/50 Hz AC			
Margin (dB)	Frequency (MHz)	Conductor Mode (Line/Neutral)	Range (MHz)
-2.44	3.294526	Neutral	0.15 MHz to 30 MHz

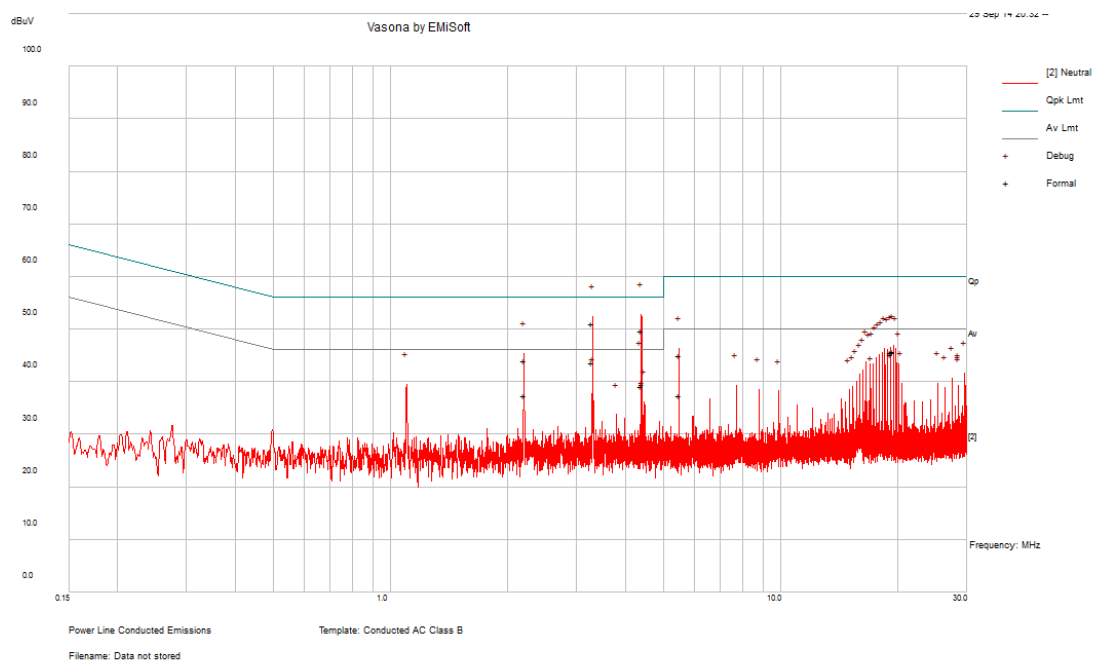
4.9 Conducted Emissions Test Plots and Data

120V, 60 Hz – Line



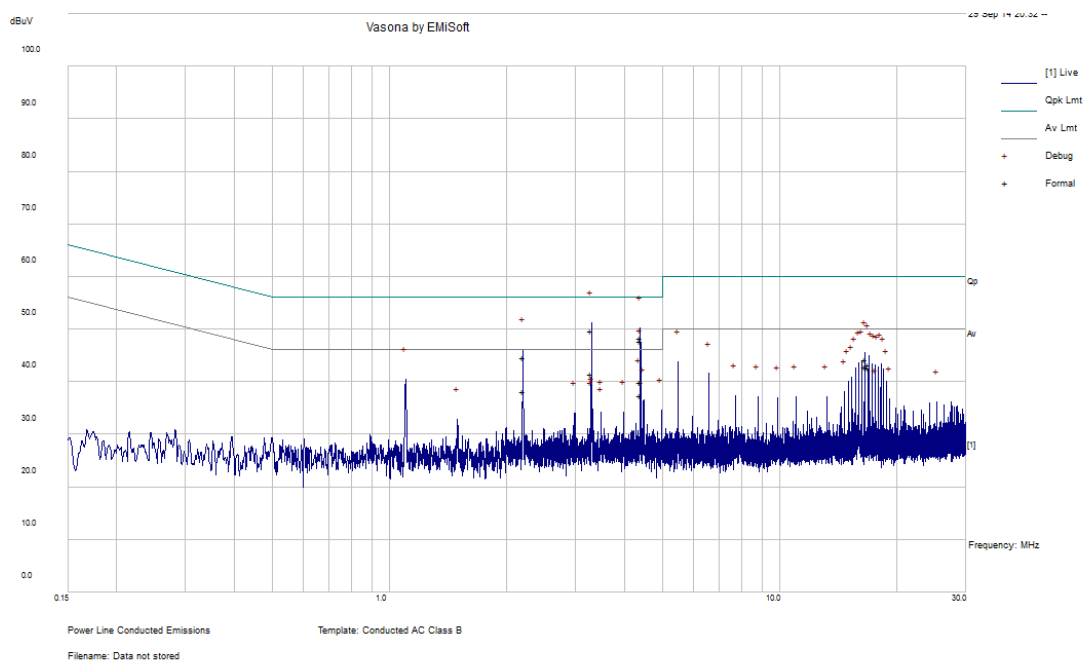
Frequency (MHz)	Corrected Amplitude (dBuV)	Conductor (Line/Neutral)	Limit (dBuV)	Margin (dB)	Detector (PK/QP/Ave)
3.294497	50.75	Line	56	-5.25	QP
4.394543	50.32	Line	56	-5.68	QP
4.394435	50.27	Line	56	-5.73	QP
3.291841	49.56	Line	56	-6.44	QP
2.197337	45.35	Line	56	-10.65	QP
16.564389	44.81	Line	60	-15.19	QP

Frequency (MHz)	Corrected Amplitude (dBuV)	Conductor (Line/Neutral)	Limit (dBuV)	Margin (dB)	Detector (PK/QP/Ave)
3.294497	43.6	Line	46	-2.40	Ave.
4.394543	41.96	Line	46	-4.04	Ave.
4.394435	41.95	Line	46	-4.05	Ave.
3.291841	40.88	Line	46	-5.12	Ave.
2.197337	39.34	Line	46	-6.66	Ave.
16.564389	43.29	Line	50	-6.71	Ave.

120 V, 60 Hz – Neutral

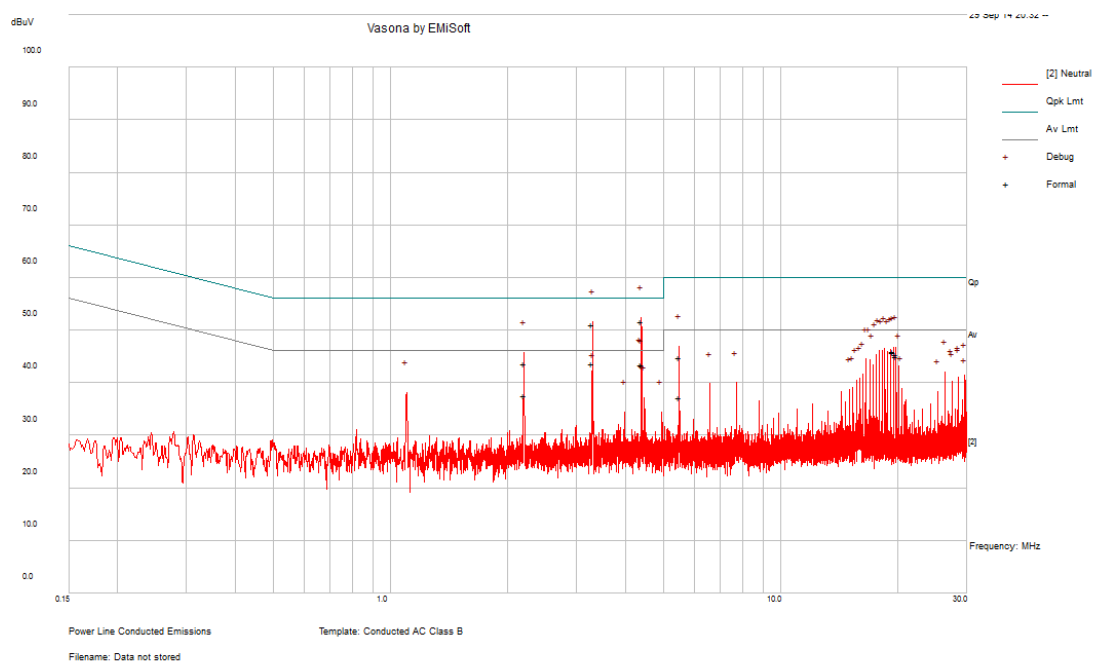
Frequency (MHz)	Corrected Amplitude (dBuV)	Conductor (Line/Neutral)	Limit (dBuV)	Margin (dB)	Detector (PK/QP/Ave)
3.29458	51.13	Neutral	56	-4.87	QP
4.390094	49.68	Neutral	56	-6.32	QP
2.198198	43.96	Neutral	56	-12.04	QP
19.43525	45.67	Neutral	60	-14.33	QP
19.116611	45.25	Neutral	60	-14.75	QP
5.492558	45.08	Neutral	60	-14.92	QP

Frequency (MHz)	Corrected Amplitude (dBuV)	Conductor (Line/Neutral)	Limit (dBuV)	Margin (dB)	Detector (PK/QP/Ave)
3.29458	43.64	Neutral	46	-2.36	Ave.
19.43525	45.81	Neutral	50	-4.19	Ave.
19.116611	45.51	Neutral	50	-4.49	Ave.
4.390094	39.17	Neutral	46	-6.83	Ave.
2.198198	37.36	Neutral	46	-8.64	Ave.
5.492558	37.44	Neutral	50	-12.56	Ave.

230V, 50 Hz – Line

Frequency (MHz)	Corrected Amplitude (dBuV)	Conductor (Line/Neutral)	Limit (dBuV)	Margin (dB)	Detector (PK/QP/Ave)
3.29282	49.75	Line	56	-6.25	QP
4.393103	48.4	Line	56	-7.60	QP
4.39037	47.74	Line	56	-8.26	QP
2.198295	44.62	Line	56	-11.38	QP
16.563258	44.27	Line	60	-15.73	QP
16.882977	43.26	Line	60	-16.74	QP

Frequency (MHz)	Corrected Amplitude (dBuV)	Conductor (Line/Neutral)	Limit (dBuV)	Margin (dB)	Detector (PK/QP/Ave)
3.29282	41.5	Line	46	-4.50	Ave.
4.393103	39.93	Line	46	-6.07	Ave.
16.563258	42.93	Line	50	-7.07	Ave.
16.882977	42.68	Line	50	-7.32	Ave.
2.198295	38.22	Line	46	-7.78	Ave.
4.39037	37.33	Line	46	-8.67	Ave.

230V, 50 Hz – Neutral

Frequency (MHz)	Corrected Amplitude (dBuV)	Conductor (Line/Neutral)	Limit (dBuV)	Margin (dB)	Detector (PK/QP/Ave)
4.395245	51.7	Neutral	56	-4.30	QP
3.294526	51.07	Neutral	56	-4.93	QP
2.196689	43.73	Neutral	56	-12.27	QP
19.433258	45.7	Neutral	60	-14.30	QP
19.752863	45.11	Neutral	60	-14.89	QP
5.491994	44.86	Neutral	60	-15.14	QP

Frequency (MHz)	Corrected Amplitude (dBuV)	Conductor (Line/Neutral)	Limit (dBuV)	Margin (dB)	Detector (PK/QP/Ave)
3.294526	43.56	Neutral	46	-2.44	Ave.
4.395245	43.39	Neutral	46	-2.61	Ave.
19.433258	45.91	Neutral	50	-4.09	Ave.
19.752863	45.31	Neutral	50	-4.69	Ave.
2.196689	37.64	Neutral	46	-8.36	Ave.
5.491994	37.19	Neutral	50	-12.81	Ave.

5 FCC §15.109 & AS/NZS CISPR 22 §6 – Radiated Emissions

5.1 Applicable Standards

As per FCC §15.109: Radiated Emission Limits

(a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of Emission (MHz)	Field Strength (microvolts/meter)
30 to 88	100
88 to 216	150
216 to 960	200
Above 960	500

(g) As an alternative to the radiated emission limits shown in paragraphs (a) and (b) of this section, digital devices may be shown to comply with the standards contained in Third Edition of the International Special Committee on Radio Interference (CISPR), Pub. 22: “Information Technology Equipment – Radio Disturbance Characteristics – Limits and Methods of Measurement.”

NOTE 1: The CISPR 22 §6 Standard, Class B limits are applied to the test data hereinafter.

As per EN 55022 §6 and CISPR §6: Radiated Emission Limits

The EUT shall meet the limits of the table below when measured at the measuring distance R in accordance with the methods described in Clause 10. If the reading on the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 s at each measurement frequency; the highest reading shall be recorded, with the exception of any brief isolated high reading, which should be ignored.

Limits for radiated disturbance of class B ITE at a measuring distance of 10 m

Frequency range (MHz)	Quasi-peak limits (dB μ V/m)
30 to 230	30
230 to 1000	37

NOTE 1: The lower limit shall apply at the transition frequency.
NOTE 2: Additional provisions may be required for cases where interference occurs.

As per EN 55022 §6 and CISPR §6: Limits above 1 GHz

The EUT shall meet the limits of the table below when measured in accordance with the method described in Clause 10 and the conditional testing procedure described below.

Limits for radiated disturbance of Class B ITE at a measurement distance of 3 m

Frequency Range (GHz)	Average Limit dB(μV/m)	Peak Limit dB(μV/m)
1 to 3	50	70
3 to 6	54	74
<i>NOTE 1: The lower limit shall apply at the transition frequency.</i>		
<i>NOTE 2: Additional provisions may be required for cases where interference occurs.</i>		

5.2 EUT Setup

The radiated emissions tests were performed in the 10-meter test chamber, using the setup in accordance with CISPR 22 measurement procedures. The specifications used were in accordance with CISPR 22 §6 standard, Class B limits for measurements up to 1 GHz and FCC Part 15 Rules, Class B limits for frequencies above 1 GHz.

The spacing between the peripherals was 10 cm.

The external I/O cables were draped along the test table and bundled as required.

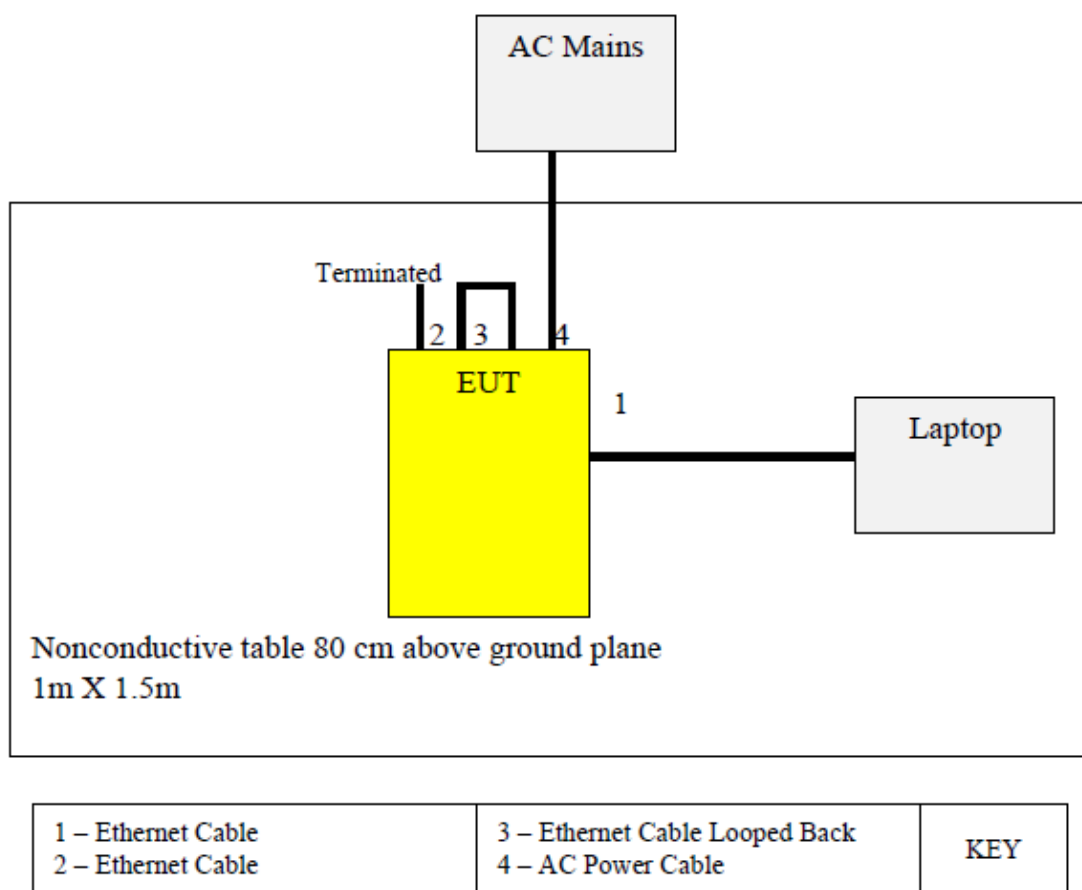
The EUT was connected to an AC line power source.

5.3 Test Procedure

Maximization procedure was performed on the six (6) highest emissions readings to ensure the EUT is compliant with all installation combinations.

All data was recorded in the peak detection mode. Quasi-peak readings were performed only when an emission was found to be marginal (within -4 dB of specification limits).

5.4 Test Setup Block Diagram



5.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude (CA) is calculated by adding the Antenna Factor (AF), the Cable Loss (CL), the Attenuator Factor (Atten) and subtracting the Amplifier Gain (Ga) to the indicated Amplitude (Ai) reading. The basic equation is as follows:

$$CA = Ai + AF + CL + Atten - Ga$$

For example, the Corrected Amplitude (CA) of 40.3 dBuV/m = indicated Amplitude reading (Ai) 32.5 dBuV + Antenna Factor (AF) 23.5dB + Cable Loss (CL) 3.7 dB + Attenuator (Atten) 10 dB - Amplifier Gain (Ga) 29.4 dB

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin (dB)} = \text{Corrected Amplitude (dBuV/m)} - \text{Class B Limit (dBuV/m)}$$

5.6 Test Equipment List and Details

Manufacturer	Description	Model Number	Serial Number	Calibration Date	Calibration Interval
Sunol Sciences	Antenna, Biconi-Log	JB1	A020106-1	2014-06-25	1 year
Agilent	Amplifier, Pre	8447D	2944A10187	2014-03-20	1 year
Rohde & Schwarz	Receiver, EMI Test	ESCI 1166.5950K03	100044	2014-07-17	1 year
Sunol Sciences	Controller, System	SC104V	113005-1	Cal. Not required	N/A
HP	Amplifier, Pre	8449B	3147A00400	2014-03-10	1 year
A. H. Systems	Antenna, Horn	SAS-200/571	261	2014-01-30	1 year
Agilent	Analyzer, Spectrum	E4446A	US44300386	2013-10-22	1 year
Wisewave	Antenna, Horn	ARH-4223-02	10555-01	2012-08-09	3 years
Wisewave	Antenna, Horn	ARH-2823-02	10555-01	2012-08-09	3 years
Wisewave	Amplifier, Low Noise	ALN-33144030-01	11424-01	2013-03-30	2 years

Statement of Traceability: BACL Corp. attests that all calibrations have been performed according to A2LA requirements, traceable to the NIST.

5.7 Test Environmental Conditions

30-1000 MHz:

Temperature	24.12 °C
Relative Humidity	38.31 %
ATM Pressure	102.15 kPa

The testing was performed by Jerry Wang on 2014-09-29 in 10 m chamber 1.

1-40GHz:

Temperature	25 ° C
Relative Humidity	41 %
ATM Pressure	101.42 kPa

The testing was performed by Bryan Smith on 2014-09-16 in 10 m chamber 1.

5.8 Summary of Test Results

According to the data in the following table, the EUT complied with FCC 15.109, ICES-003 §6.2 and CISPR 22 Standard, Class B limits, and had the worst margin reading of:

CISPR 22 & FCC 15B, 30 MHz to 1 GHz:

Frequency Range: 30 to 1000 MHz			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Range (MHz)
-1.45	136.0675	Vertical	30 to 1000 MHz

FCC 15B, 1-18 GHz

Frequency Range: 1 to 18 GHz			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Range (MHz)
-4.50	17279.41	Horizontal	1000 to 18000 MHz

FCC 15B, 18-26.5 GHz

Frequency Range: 18 to 26.5 GHz			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Range (GHz)
-8.22	24912.65	Horizontal	18 to 26.5 GHz

FCC 15B, 26.5-40 GHz

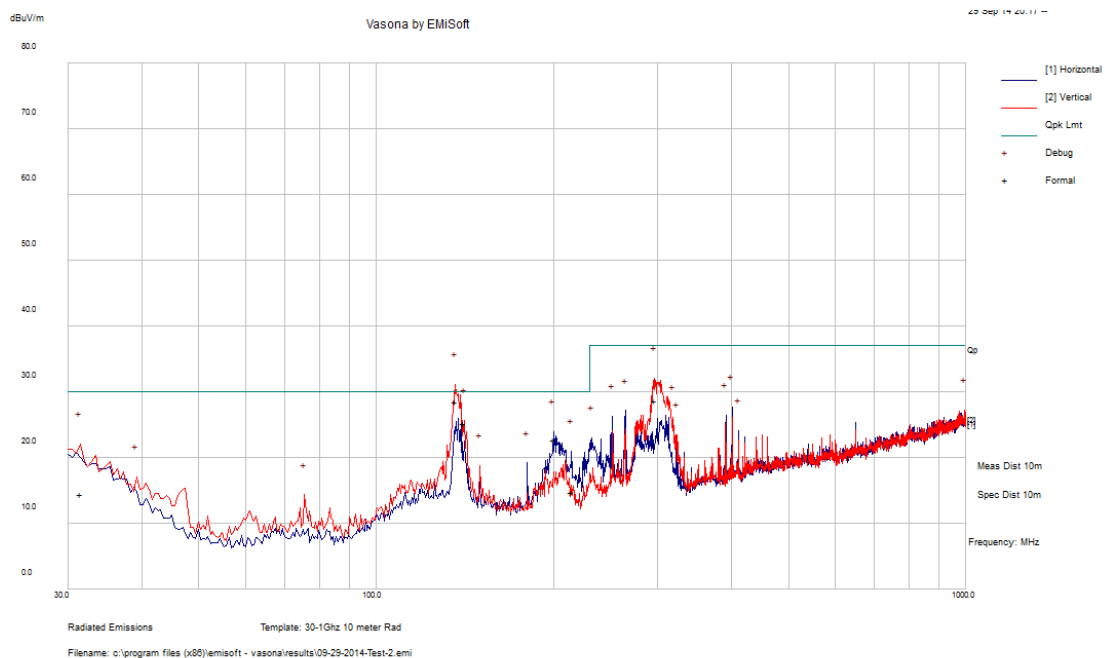
Frequency Range: 26.5 to 40 GHz			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Range (GHz)
-5.24	39399.21	Horizontal	26.5 to 40 GHz

CISPR 22, above 1 GHz:

Frequency Range: 1 to 6 GHz			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Range (MHz)
-17.60	1000	Horizontal	1000 to 6000 MHz

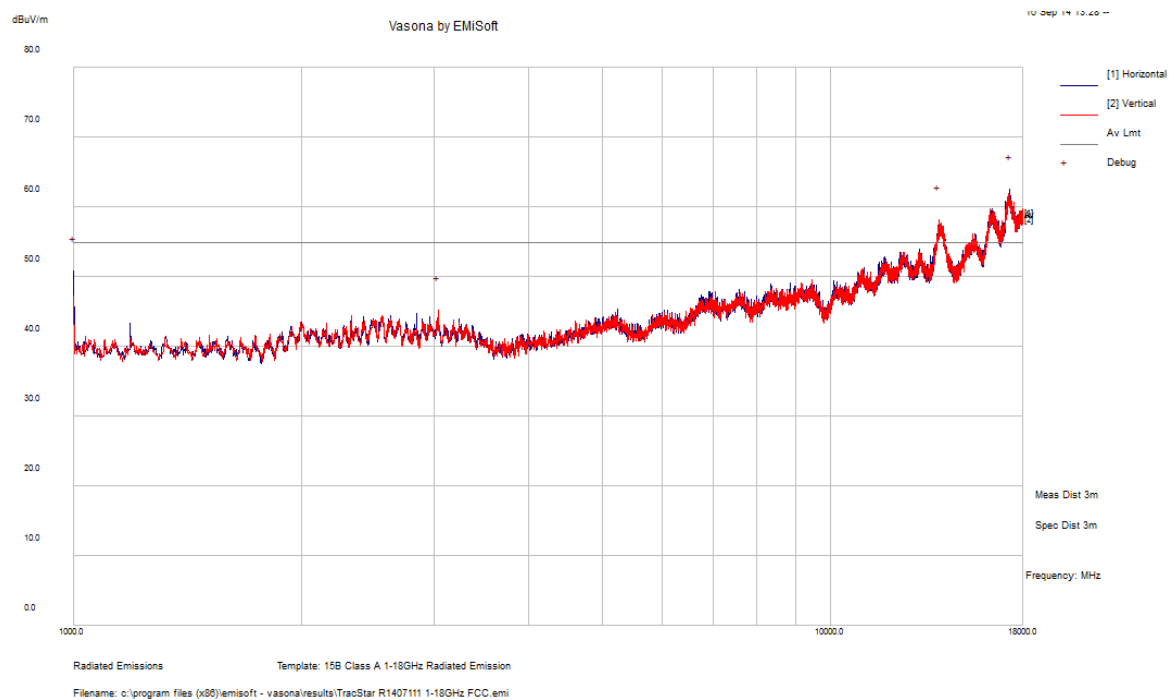
5.9 Radiated Emissions Test Plot and Data

1) 30 MHz to 1 GHz measured at 10m Distance



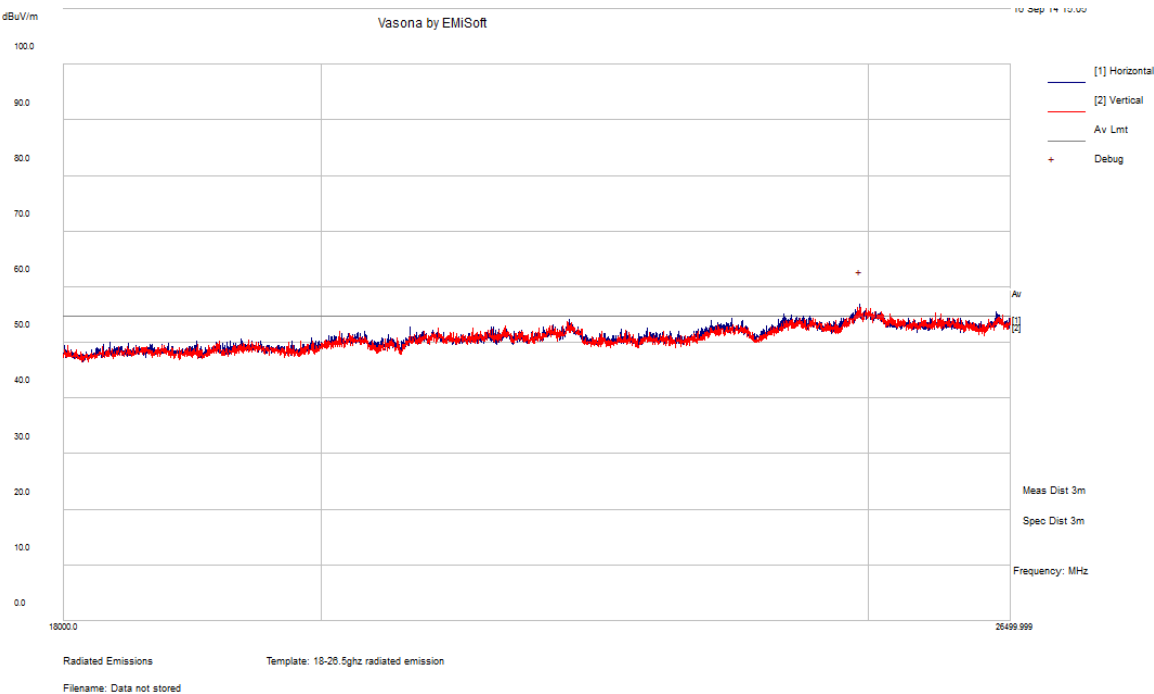
Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP/Ave.)
136.0675	28.55	100	V	361	30	-1.45	QP
140.9455	25.26	148	V	14	30	-4.74	QP
199.9878	22.72	397	H	298	30	-7.28	QP
296.9525	28.63	204	V	231	37	-8.37	QP
214.0758	14.67	365	H	302	30	-15.33	QP
31.4945	14.37	369	V	147	30	-15.63	QP

2) FCC Part 15B, 1 to 18 GHz measured at 3m Distance



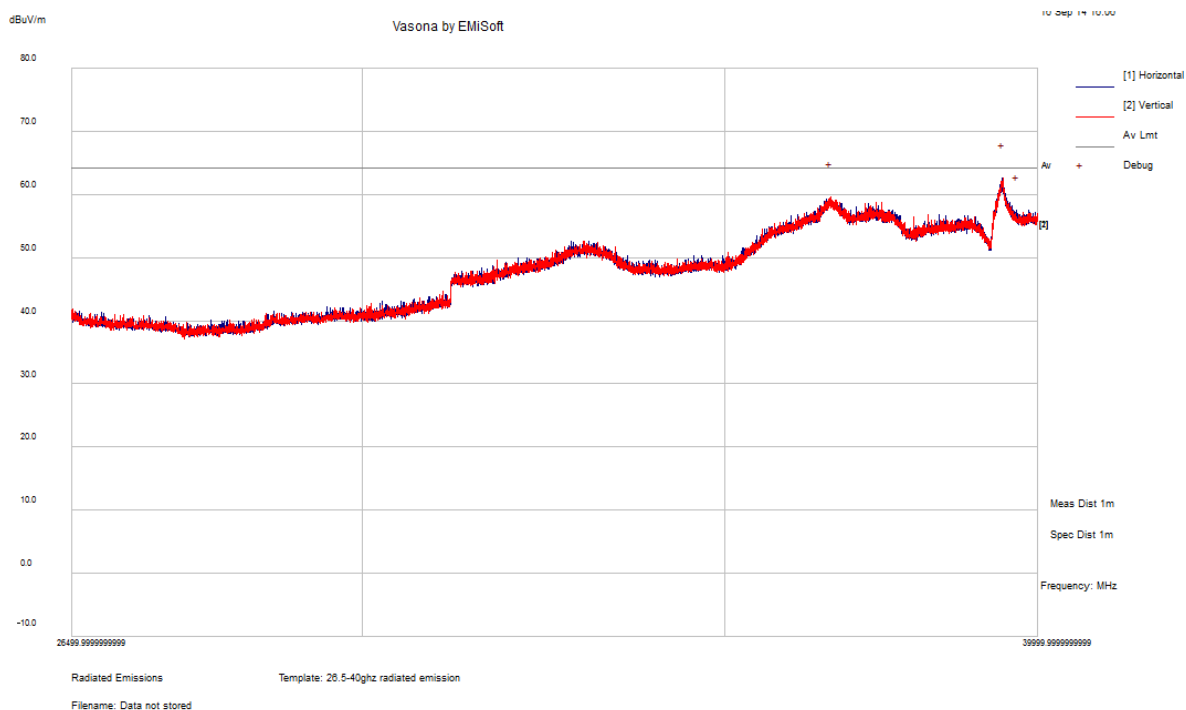
Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP/Ave.)
17280.16	62.51	100	H	0	74	-11.49	PK
13920	58.15	200	V	0	74	-15.85	PK
1000	50.86	100	H	0	74	-23.14	PK
3032.031	45.23	200	V	0	74	-28.77	PK
17279.41	49.5	112	H	25	54	-4.50	Ave.
13921.54	46.04	125	V	169	54	-7.97	Ave.
1000	34.79	100	H	87	54	-19.21	Ave.
3032.644	31.39	203	V	231	54	-22.61	Ave.

3) FCC Part 15B, 18 to 26.5 GHz measured at 3m Distance



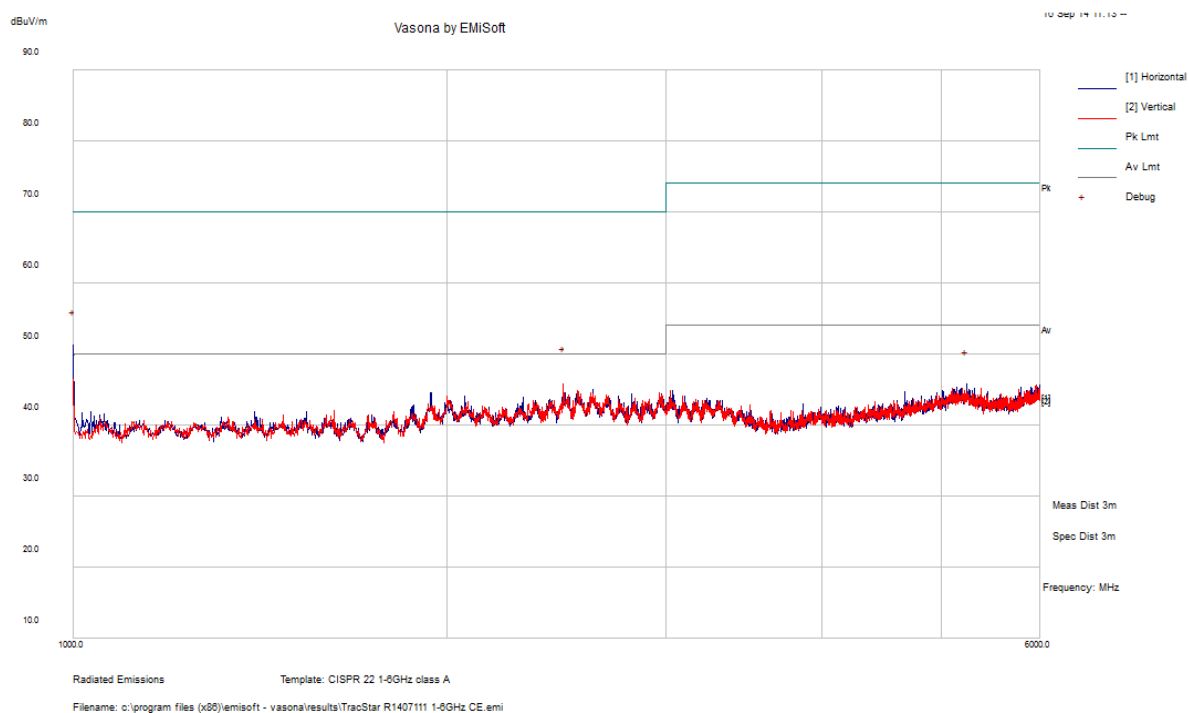
Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)	Detector (PK/QP/Ave.)
24914.22	56.83	200	H	0	74	-17.17	PK
24912.65	45.78	191	H	289	54	-8.22	Ave.

4) FCC Part 15B, 26.5 to 40 GHz measured at 1m Distance



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP/Ave.)
39400.94	72.63	100	H	0	84	-11.37	PK
36618.67	69.71	200	V	0	84	-14.29	PK
39641.41	67.55	200	H	0	84	-16.45	PK
39399.21	58.76	114	H	230	64	-5.24	Ave.
36620.41	56.3	158	V	291	64	-7.70	Ave.
39640.27	54.04	106	H	233	64	-9.96	Ave.

5) CISPR 22, above 1 GHz measured at 3m Distance



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Detector (PK/QP/Ave.)
2481.56	42.83	124	V	318	70	-27.17	PK
5234.31	43.21	174	H	58	74	-30.79	PK
1000	36.17	100	H	144	70	-33.83	PK
1000	32.4	100	H	144	50	-17.60	Ave.
2481.56	31.74	124	V	318	50	-18.26	Ave.
5234.31	32.17	174	H	58	54	-21.83	Ave.