Test Report

Curtis-Straus LLC, *a wholly owned subsidiary of BV CPS*

Report No	KE0419-1
Client	ATEK Products, LLC
Address	210 NE 10th Ave. Brainerd, MN 56401
Phone	763.392.5897
Items tested	Tank Scan II Controller
FCC ID	YCLTSC7
IC ID	8942A-TSC7
FRN	0017195009
Equipment Type	Digital Spread Spectrum
Equipment Code	DSS
Emission Designator	
FCC/IC Rule Parts	47 CFR 15.247, RSS 210 issue 7 and RSS GEN issue 2
Test Dates	April 27-30, 2010 and May 20, 2010
Results	As detailed within this report
Prepared by	Matthew Burman– Test Engineer
Authorized by	Mairaj Hussain – EMC Supervisor
Issue Date	May 28, 2010
Conditions of Issue	This Test Report is issued subject to the conditions stated in the '*Conditions of Testing*' section on page 26 of this report.

Contents

Form Final Report REV 7-20-07 (DW)

Summary

This test report supports an application for certification of a transmitter operating pursuant to 47 CFR 15.247 and RSS-210. The product is the Tank Scan II Controller. It is a transmitter that operates in the range 902-928MHz.

We found that the product met the above requirements with modification (*see details in Comments for Statement of Compliance Section).* Brad Cole from ATEK Products, LLC. was present during the testing. The test sample was received in good condition.

Test Methodology

Radiated emission and AC Line conducted testing was performed according to the procedures specified in ANSI C63.4 (2009) and RSS-GEN. Radiated Emissions were maximized by rotating the device around three orthogonal axes as well as varying the test antenna's height and polarity. The device antenna cannot be maximized separately.

Conducted emission at the antenna port was performed, as required by rule section.

Spurious emissions from 30-1000MHz were performed outside of the plastic enclosure, presenting a worst case radiation level.

AC mains line conducted emission were performed using a 50Ω/50µH LISN.

The EUT operating voltage is 120Vac 60Hz.

The following bandwidths were used during radiated spurious and line conducted emissions.

Frequency	RBW	VBW
0.15-30MHz	9kHz	30kHz
30-1000MHz	120kHz	1MHz
1-25GHz	1MHz	3MHz

The low operating channel 0 is centered at 913MHz.
The middle operating channel 29 is centered at 918MHz.
The high operating channel 63 is centered at 926.6MHz.

Release Control Record

Issue No.	Reason for change	Date Issued
1	Original Release	July 12, 2010

Product Tested - Configuration Documentation

EUT Configuration

Work Order: K0419
Company: Atek Products
Company Address: 210 N.E. 10th Ave
Brainerd, MN 56401
Contact: Brad Cole
Person Present: Brad Cole

	MN	PN	SN
EUT:	TS Series Controller	TSC7700	060002
V. Infinity Power Supply:	EPS050100		Sample 1
EUT Description:	Tank Scan II Controller		
EUT Tx Frequency:	902-928MHz		

Support Equipment:	MN	SN
Ethernet Switch	TE100-S8P	0350D1A28994
Teletone telephone line simulator	TLS-3A-01	028796

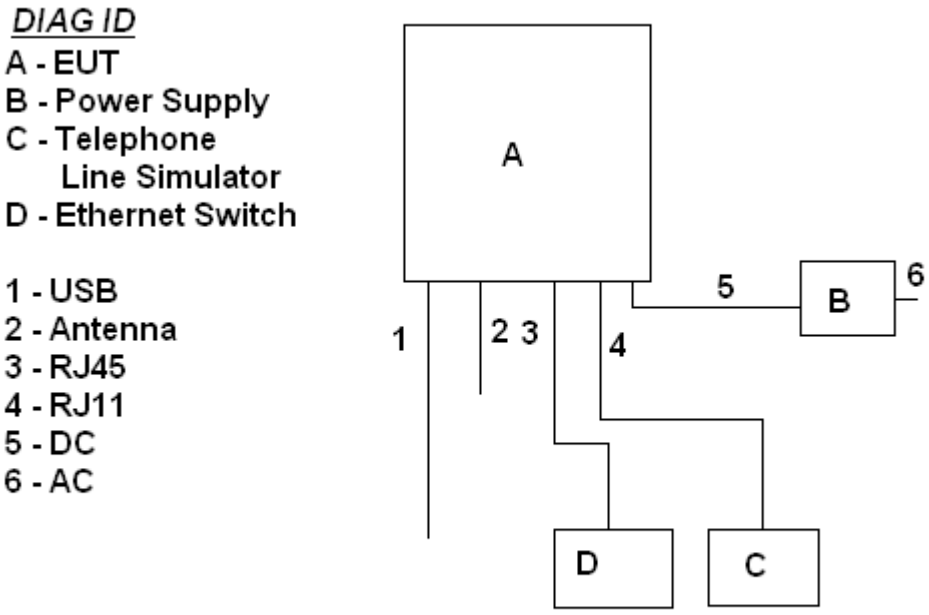
EUT Ports:

Port Label	Port Type	No. of ports	No. Populated	Cable Type	Shielded	Ferrites	Length	Max Length	In/Out NEBS Type	Unpopulated Reason
PWR	DC	1	1	2-wire DC	no	none	1.5m	1.5m	indoor	
ETHERNET	Ethernet	1	1	cat5	no	none	2m	100m	indoor	
LINE	POTS	1	1	RJ11	no	none	2m	100'	indoor	
PHONE	POTS	1	0	---	---	---	---	---	---	redundant
USB	USB	1	1	USB	yes	none	2m	5m	indoor	

Software / Operating Mode Description:

EUT continues to transmit at 902-928MHz, and ethernet, POTS continue to generate traffic and the USB continues to output data.

Test Set-up Diagram



Statement of Conformity

The Tank Scan II Controller has been found to conform to the following parts of 47 CFR and RSS 210 as detailed below:

RSS-GEN	RSS 210	Part 15	Comments
5.3		15.15(b)	There are no controls accessible to the user that varies the output power.
5.2		15.19	The label is shown in the label exhibit.
7.1.5		15.21	Information to the user is shown in the instruction manual exhibit.
		15.27	To meet compliance with spurious emissions for Part 15, the Ethernet oscillator was replaced with a new vendor crystal. This modification is detailed in the digital circuitry report EK0419-3.
		15.31	The EUT was tested in accordance with the measurement standards in this section.
		15.33	Frequency range was investigated according to this section, unless noted in specific rule section under which the equipment operates.
		15.35	The EUT emissions were measured using the measurement detector and bandwidth specified in this section, unless noted in specific rule section under which the equipment operates.
7.1.4		15.203	The antenna for this device is uniquely coupled to the intentional radiator, by use of a left-handed thread.
	2.6	15.205 15.209	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209.
7.2.2		15.207	EUT meets the AC Line conducted emissions requirements of 15.207.
	Annex 8	15.247	The unit complies with the requirements of 15.247
4.6.1			Occupied Bandwidth measurements were made.

Test Results

Bandwidth

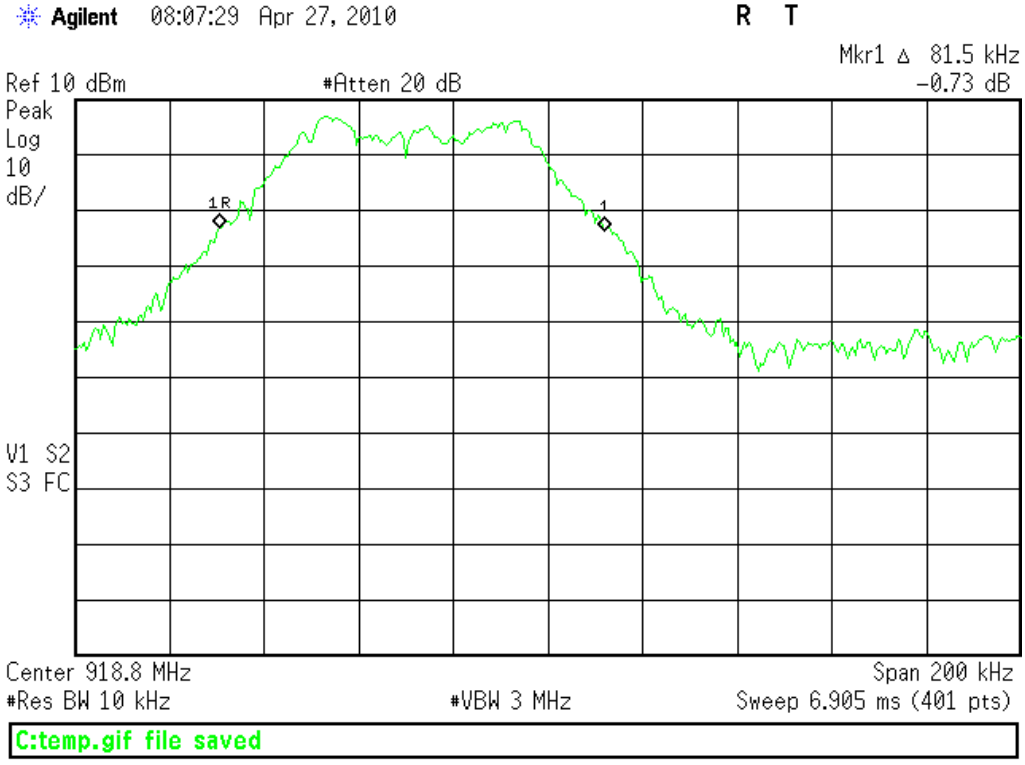
LIMIT

If the 20dB bandwidth of the hopping channel is less than 250kHz, the system shall use at least 50 hoping frequencies... [15.247(a) (1)(i)]

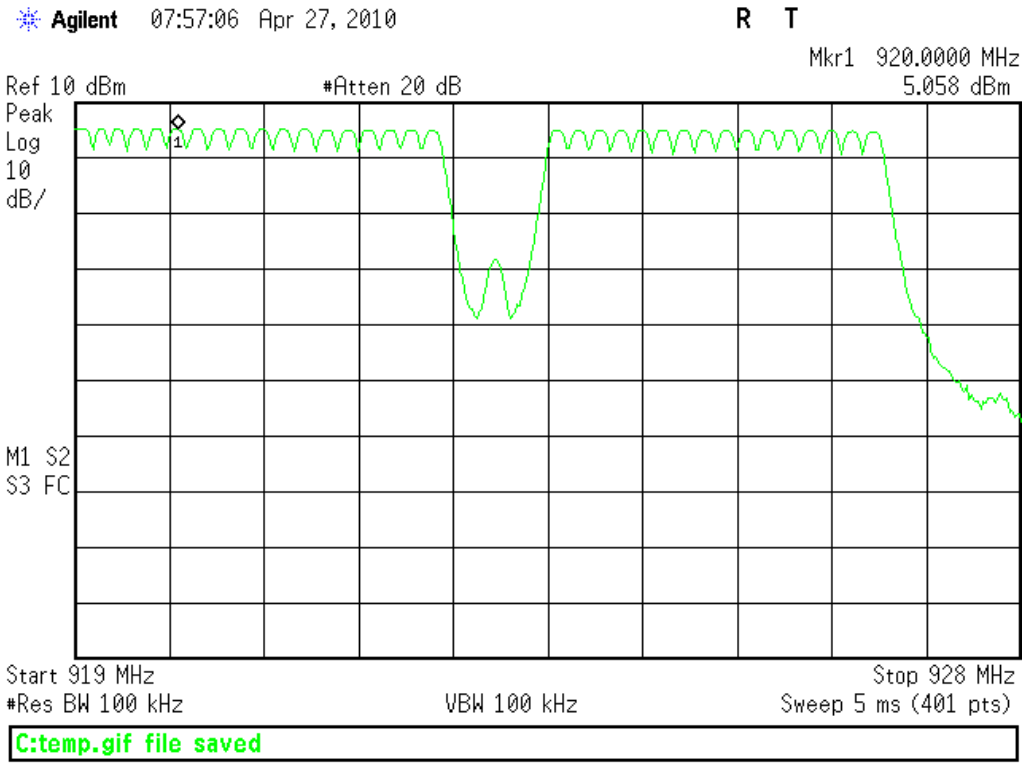
MEASUREMENTS / RESULTS

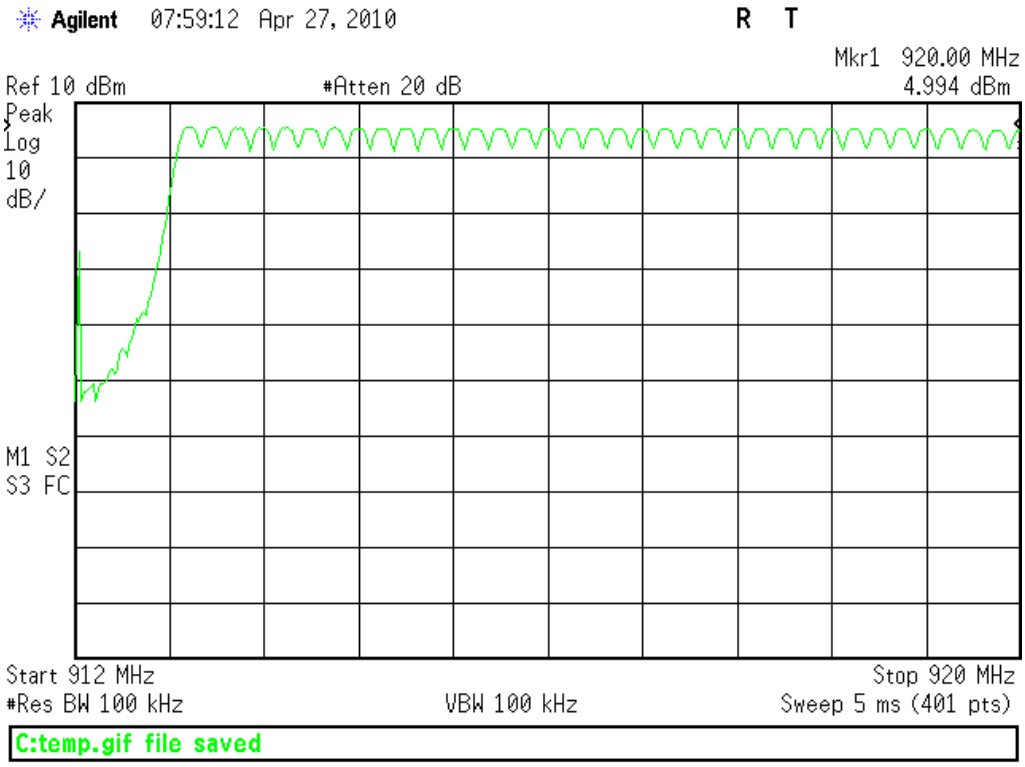
20dB Bandwidth	**K0419** **Atek Products, LLC** **Tank Scan II Controller**
Engineer: MRB	
Site: 3m Indoor OATS	
Spectrum Analyer: Gold	
Cable: EMIR-High-21	
RBW: 10kHz	
VBW: 3MHz	
Channel 0: 81.5kHz	
Channel 29: 82kHz	
Channel 63: 82kHz	

Sample Analyzer Plot



Number of hopping frequencies





The system employs 64 hopping frequencies

Peak Power

LIMIT

Conducted Output Power
1 Watt
[15.247(b) (3)]

MEASUREMENTS / RESULTS

Peak Output Power

Date: 27-Apr-10 **Company:** Atek Products **Work Order:** K0419
Engineer: Matthew Burman **EUT Desc:** Tank Scan II Controller **EUT Operating Voltage/Frequency:** 120Vac 60Hz
Temp: 23.0°C **Humidity:** 31% **Pressure:** 998mBar
Frequency Range: 902-928MHz **Measurement Distance:** Conductive
Notes:

1 Watt = 30dBm

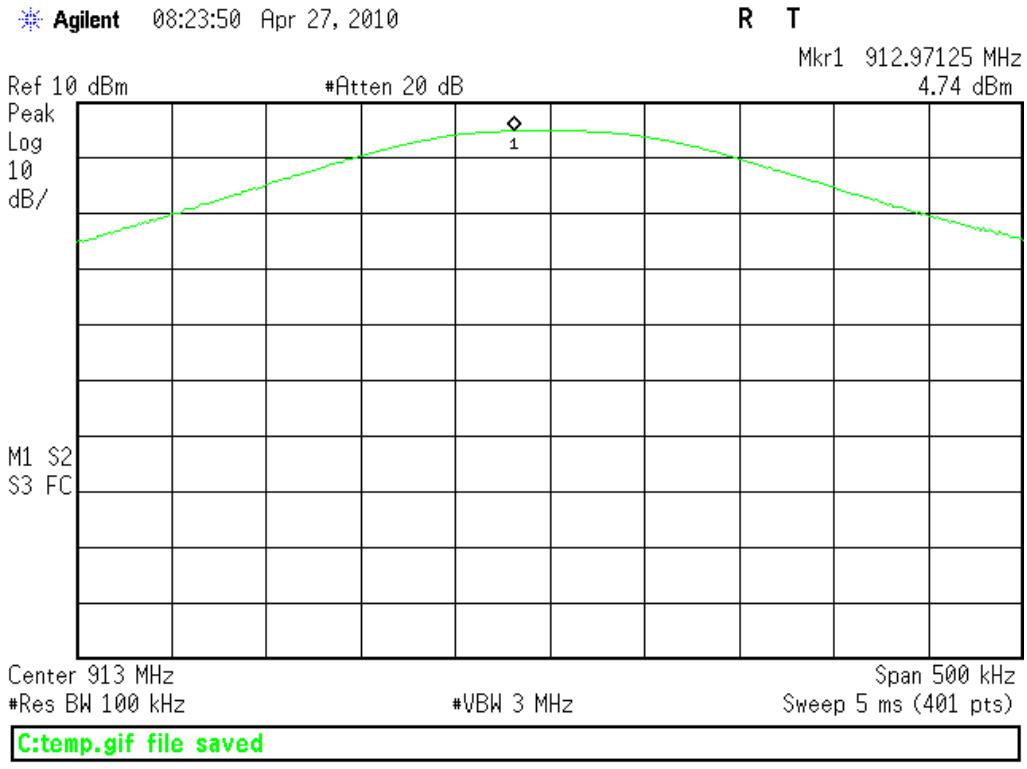
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBm)			Cable Factor (dB)	Adjusted Reading (dBm)	--- Limit (dBµV/m)	--- Margin (dB)	--- Result (Pass/Fail)	FCC 15.247 (b) (2) Limit (dBm)	FCC 15.247 (b) (2) Margin (dB)	FCC 15.247 (b) (2) Result (Pass/Fail)
Channel 0	912.97125	4.740	---	---	1.2	5.9400	---	---	---	30.0	-24.1	Pass
Channel 29	918.8	4.448	---	---	1.2	5.6480	---	---	---	30.0	-24.4	Pass
Channel 63	926.595	4.003	---	---	1.2	5.2030	---	---	---	30.0	-24.8	Pass

Table Result: Pass by -24.1 dB ***Worst Freq:*** 912.97125 MHz

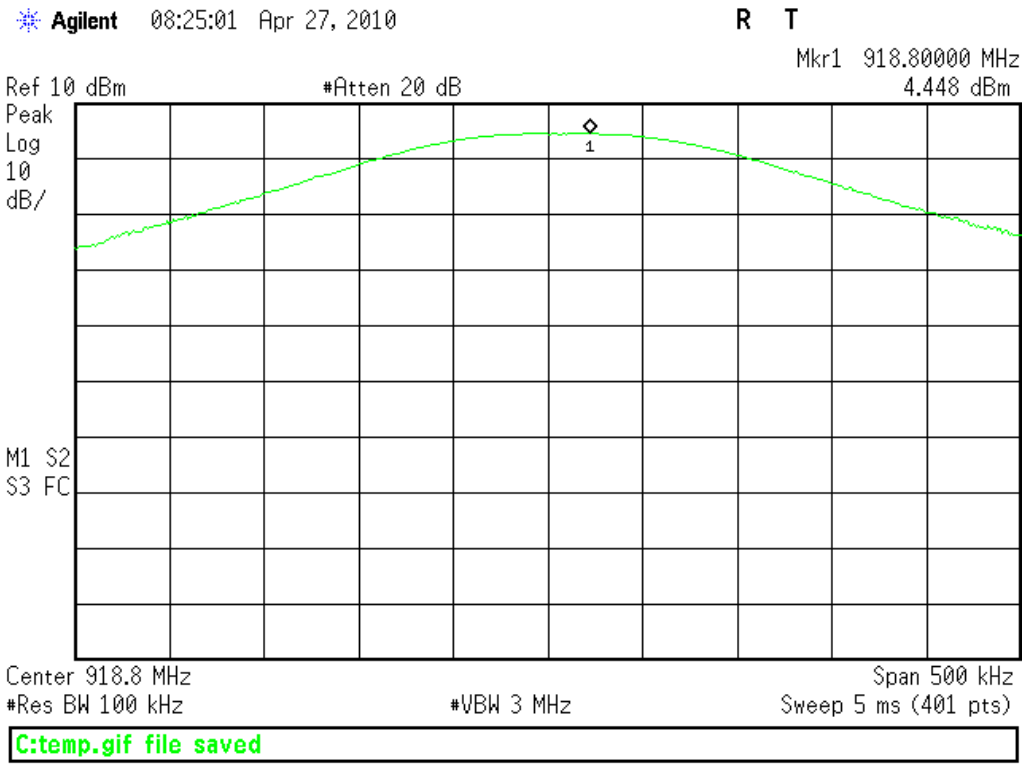
Test Site: EMC-2 **Cable 1:** EMIR-HIGH-13
Analyzer: Gold

PLOTS

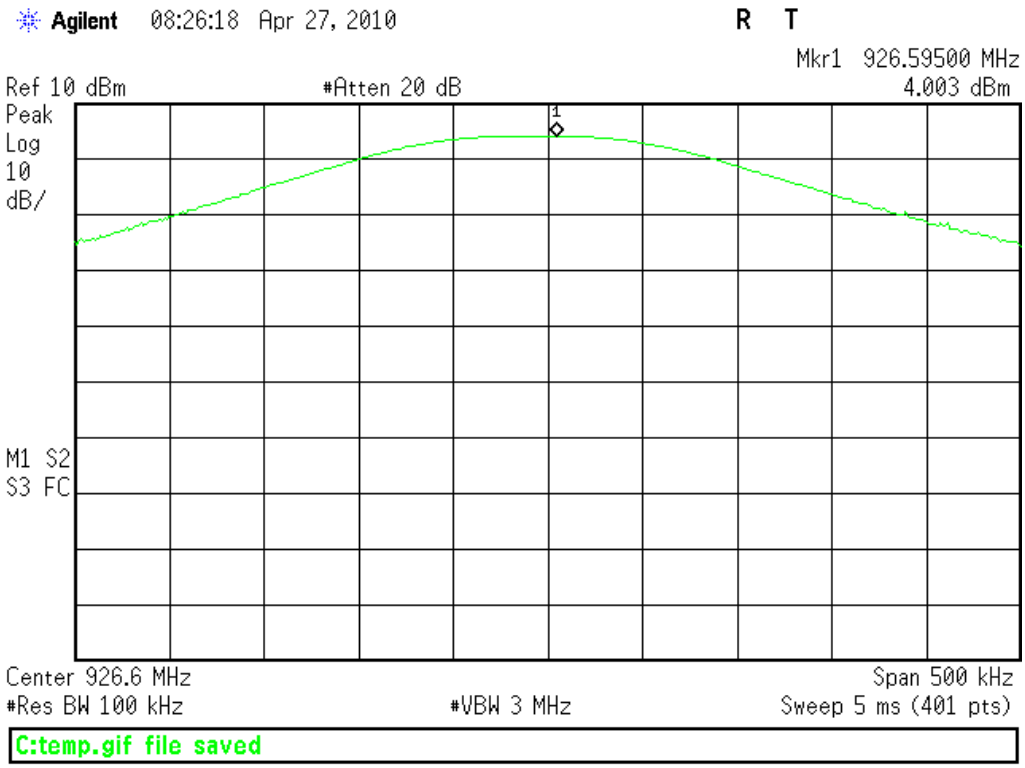
Channel 0



Channel 29



Channel 63

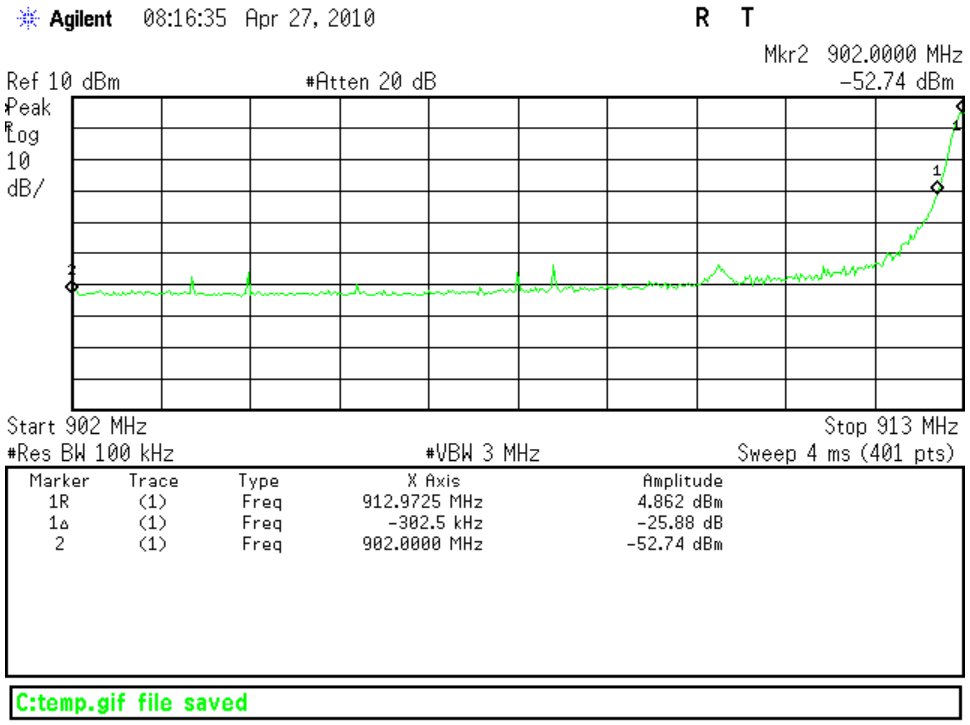


Band Edge Measurements

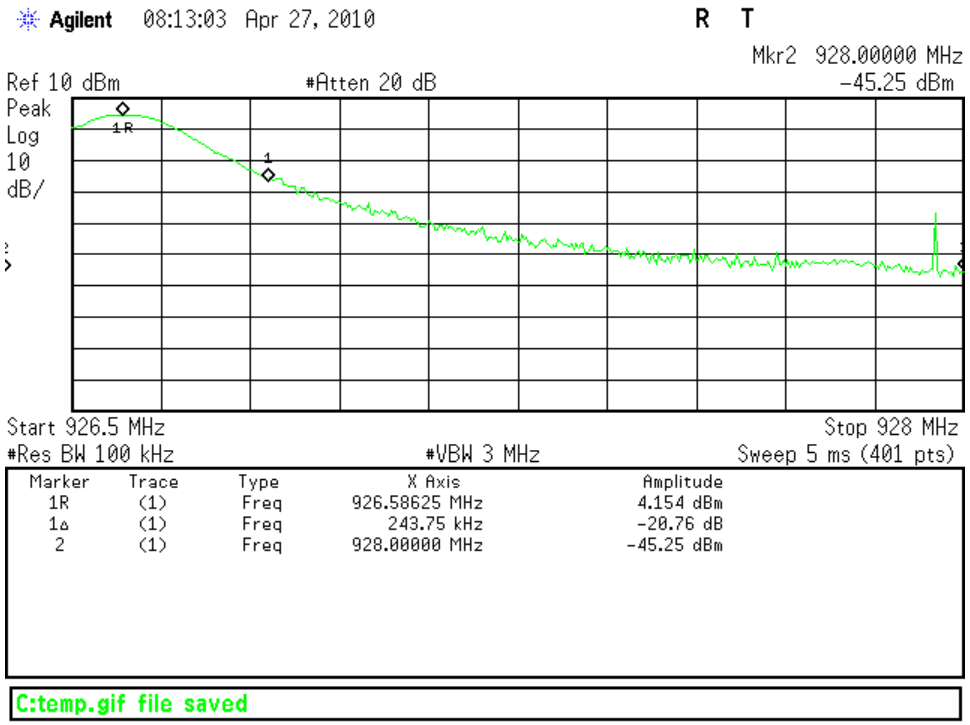
LIMITS

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).
[15.247(d)]

902MHz Band Edge

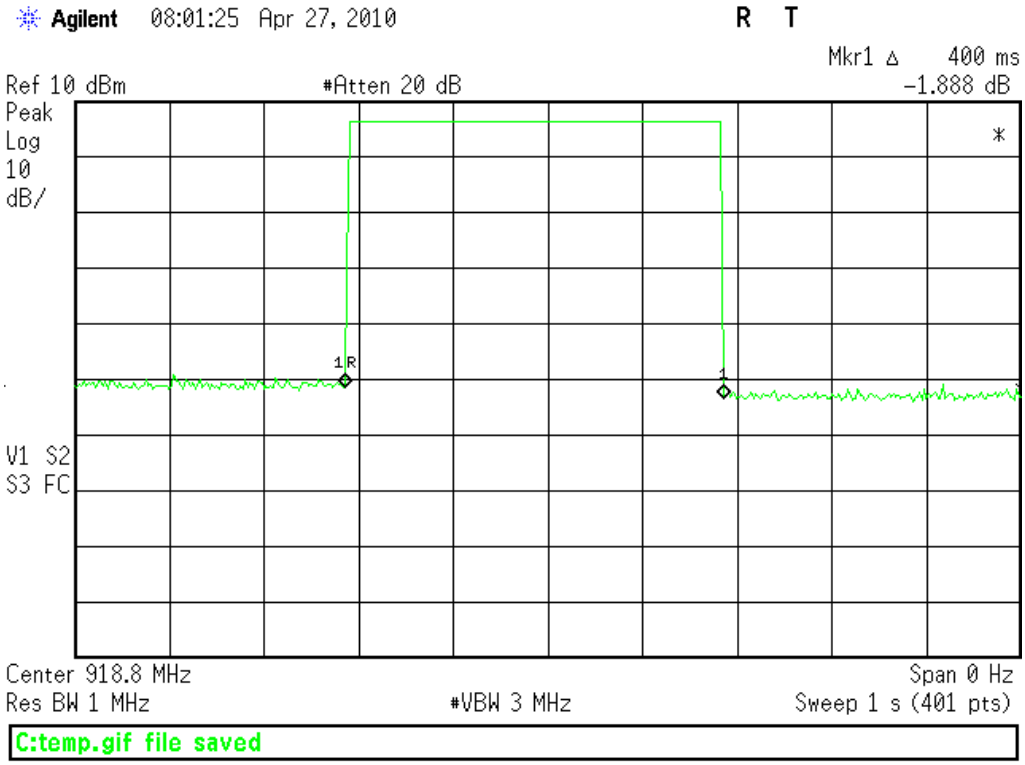


928MHz Band Edge

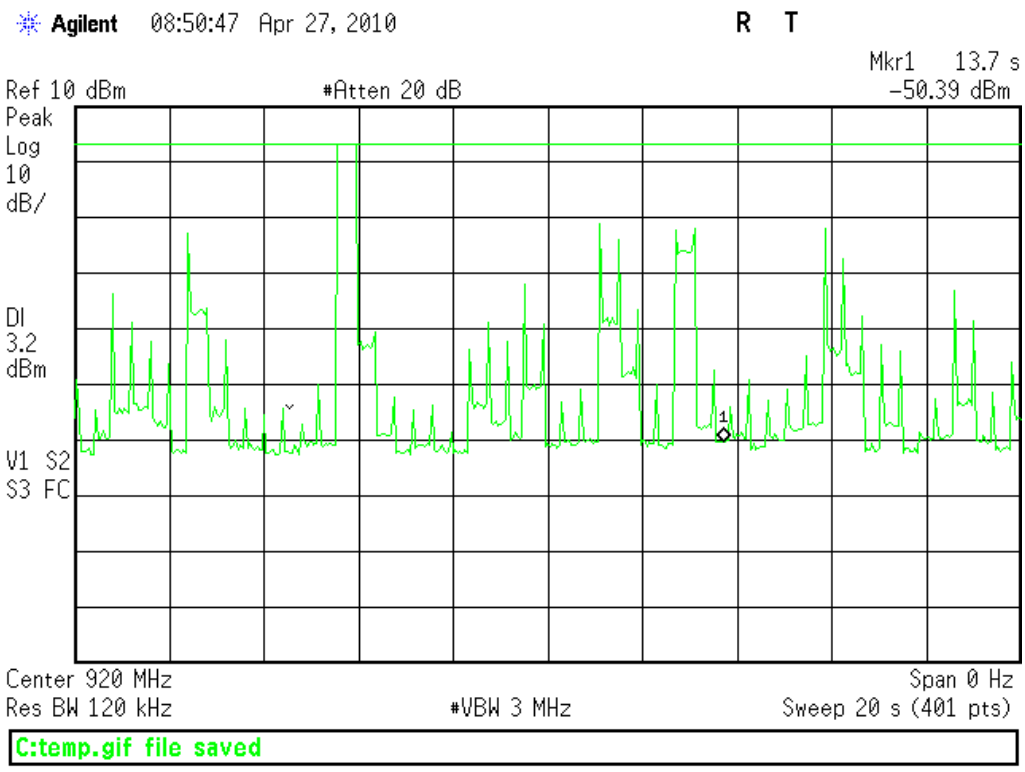


Frequency Hopping Timing Requirements

The average time of occupancy on any channel shall not be than greater than 0.4 seconds within a 20 second period.
15.247 (a)(i)



Single transmission

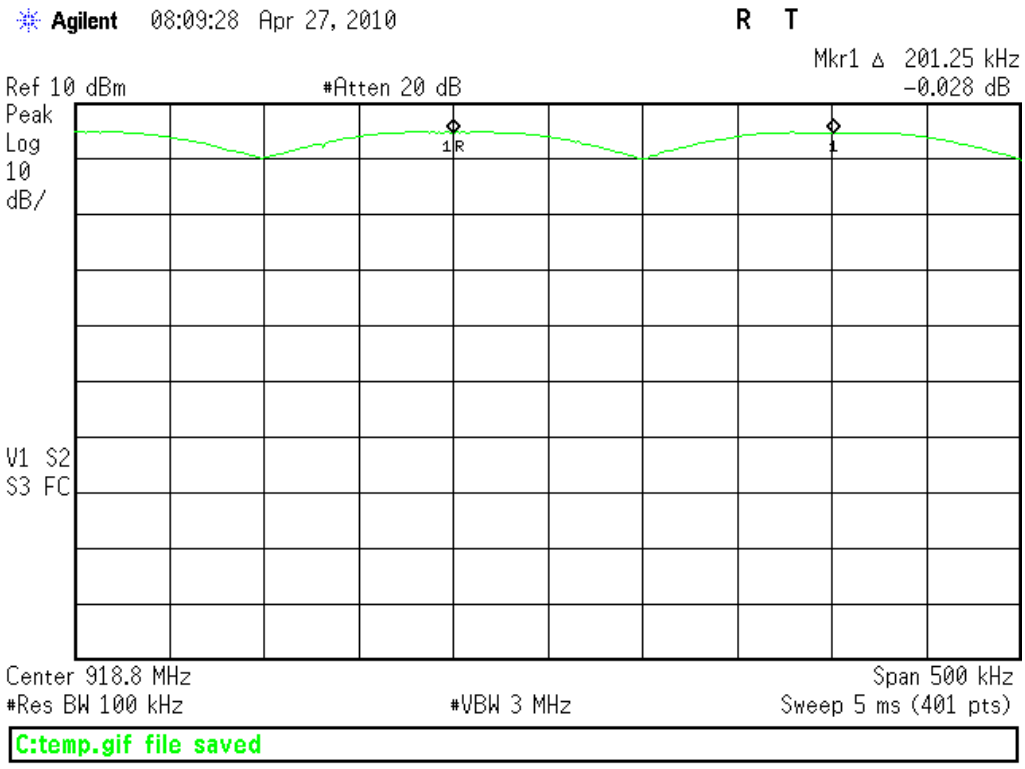


20 second period

Within the 20 second period, only one transmission of 0.4 seconds occurs.

Frequency Hopping Channel Separation

For frequency hopping systems operating in the 902-928MHz band: if the 20dB bandwidth of the hopping channel is less than 250kHz, the system shall use at least 50 hopping frequencies…
15.247 (a)(i)



The 20dB bandwidth measured is 81.5kHz

Radiated Spurious Emissions

LIMITS

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).
[15.247(d)]

MEASUREMENTS / RESULTS

Spurious Emissions

Date: 20-May-10 **Company:** Atek **Work Order:** K0419
Engineer: Matthew Burman **EUT Desc:** Tank Scan II Controller **EUT Operating Voltage/Frequency:** 120Vac 60Hz
Temp: 21.1°C **Humidity:** 33% **Pressure:** 1011mBar
Frequency Range: 30-1000MHz **Measurement Distance:** 3 m
Notes: Radio Related Emissions

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	FCC Class B Limit (dBµV/m)	FCC Class B Margin (dB)	FCC Class B Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
no emissions found												

Table Result:

Test Site: 1DCC-OATS-3M-I **Cable 1:** EMIR-16 **Cable 2:** --- **Cable 3:** ---
Analyzer: Rental SA#1 **Preamp:** Red-White **Antenna:** Green **Preselector:** ---

Spurious Emissions

Date: 20-May-10 **Company:** Atek **Work Order:** K0419
Engineer: Matthew Burman **EUT Desc:** Tank Scan II Controller **EUT Operating Voltage/Frequency:** 120Vac 60Hz
Temp: 21.1°C **Humidity:** 33% **Pressure:** 1011mBar
Frequency Range: 30-1000MHz **Measurement Distance:** 3 m
Notes: Radio Related Emissions
Receive Mode

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	FCC Class B Limit (dBµV/m)	FCC Class B Margin (dB)	FCC Class B Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
no emissions found												

Table Result:

Test Site: 1DCC-OATS-3M-I **Cable 1:** EMIR-16 **Cable 2:** --- **Cable 3:** ---
Analyzer: Rental SA#1 **Preamp:** Red-White **Antenna:** Green **Preselector:** ---

Spurious Emissions

Date: 30-Apr-10 **Company:** Atek Products **Work Order:** K0419
Engineer: Matthew Burman **EUT Desc:** Tank Scan II Controller **EUT Operating Voltage/Frequency:** 120Vac 60Hz
Temp: 19.7°C **Humidity:** 22% **Pressure:** 998mBar
Frequency Range: 1-5GHz **Measurement Distance:** 3 m
Notes: New Mode **No Duty Cycle Correction Factor**
15.247 - spurious emissions - restricted bands

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Filter Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC Class B High Frequency - Peak Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	FCC Class B High Frequency - Average Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
v	2749.5	37.0	37.0	22.8	28.9	1.6	0.4	45.1	45.1	74.0	-29.0	Pass	54.0	-9.0	Pass
v	3666.0	39.3	39.3	21.9	31.9	1.8	0.5	51.6	51.6	74.0	-22.4	Pass	54.0	-2.4	Pass
v	4582.5	34.0	34.0	21.0	32.4	2.2	0.4	48.0	48.0	74.0	-26.0	Pass	54.0	-6.0	Pass

Table Result: Pass by -2.4 dB ***Worst Freq:*** 3666.0 MHz

Test Site: 1DCC-OATS-3M-I **Cable 1:** EMIR-HIGH-21 **High Pass Filter:** Asset #1310 **Cable 3:** ---
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Orange Horn **Preselector:** ---

Spurious Emissions

Date: 30-Apr-10 **Company:** Atek Products **Work Order:** K0419
Engineer: Matthew Burman **EUT Desc:** Tank Scan II Controller **EUT Operating Voltage/Frequency:** 120Vac 60Hz
Temp: 19.7°C **Humidity:** 22% **Pressure:** 998mBar
Frequency Range: 5-10GHz **Measurement Distance:** 1 m
Notes: New Mode **No Duty Cycle Correction Factor**
15.247 - spurious emissions - restricted bands

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Filter Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC Class B High Frequency - Peak Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	FCC Class B High Frequency - Average Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
v	7332.0	40.9	40.9	20.7	37.3	2.9	0.6	61.0	61.0	83.5	-22.5	Pass	63.5	-2.5	Pass
v	8248.5	31.0	31.0	20.7	37.6	3.1	7.4	58.4	58.4	83.5	-25.1	Pass	63.5	-5.1	Pass
v	9165.0	32.0	32.0	20.5	38.1	3.3	6.1	59.0	59.0	83.5	-24.6	Pass	63.5	-4.6	Pass

Table Result: Pass by -2.5 dB ***Worst Freq:*** 7332.0 MHz

Test Site: 1DCC-OATS-3M-I **Cable 1:** EMIR-HIGH-21 **High Pass Filter:** Asset #1310 **Cable 3:** ---
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Orange Horn **Preselector:** ---

Spurious Emissions

Date: 30-Apr-10 **Company:** Atek Products **Work Order:** K0419
Engineer: Matthew Burman **EUT Desc:** Tank Scan II Controller **EUT Operating Voltage/Frequency:** 120Vac 60Hz
Temp: 19.7°C **Humidity:** 22% **Pressure:** 998mBar
Frequency Range: 1-10GHz **Measurement Distance:** 1 m
Notes: receive mode **No Duty Cycle Correction Factor**

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Filter Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC Class B High Frequency - Peak: Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	FCC Class B High Frequency - Average: Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
no emissions found		---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table Result: --- by --- dB ***Worst Freq:*** --- MHz

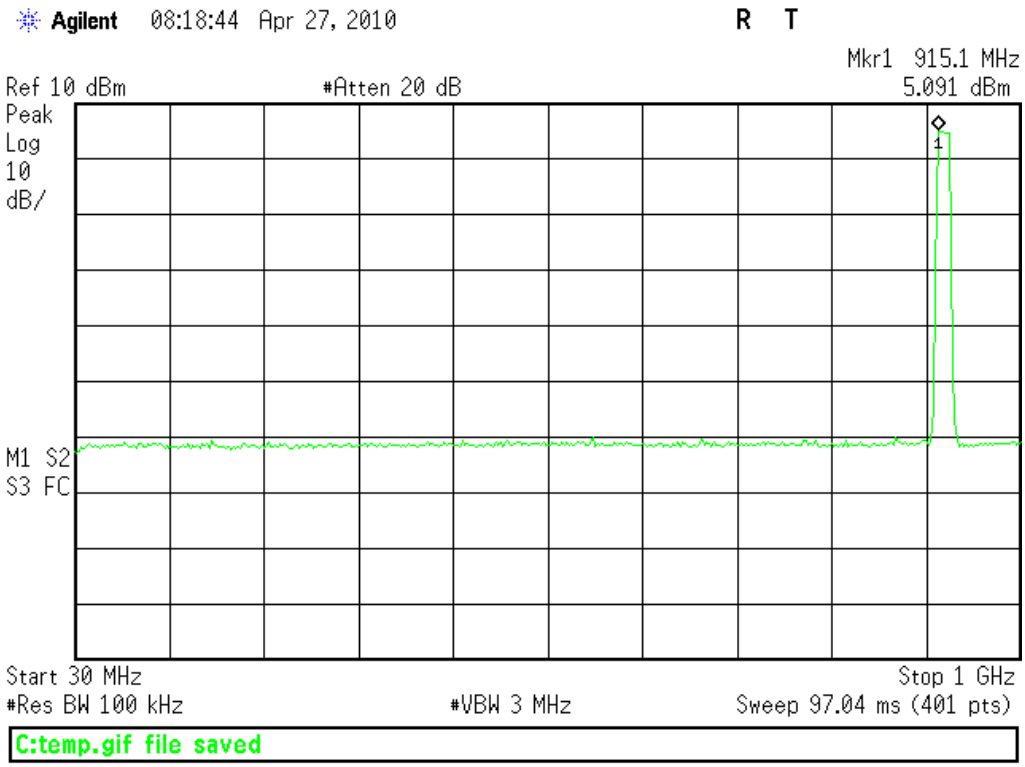
Test Site: 1DCC-OATS-3M-I **Cable 1:** EMIR-HIGH-21 **High Pass Filter:** Asset #1310 **Cable 3:** ---
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Orange Horn **Preselector:** ---

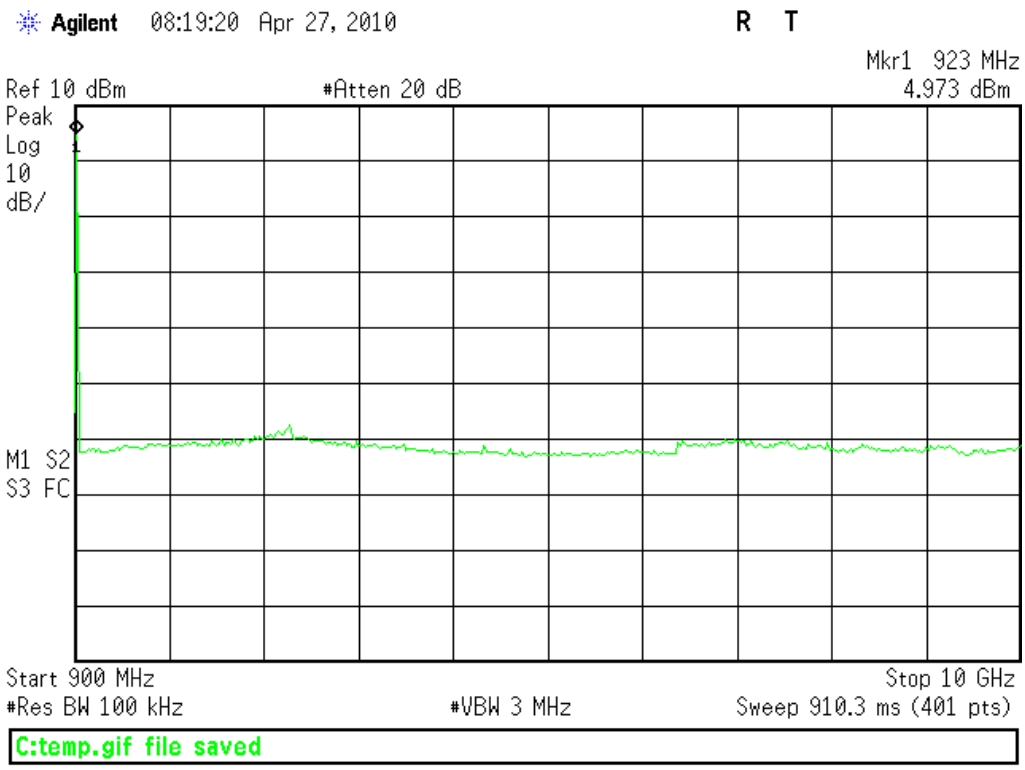
Conducted Spurious Emissions

LIMITS

In any 100kHz 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 20dB below that in the 100kHz bandwidth that contains the highest level of desired power…
[15.247(d)]

MEASUREMENTS / RESULTS




Agilent 08:19:20 Apr 27, 2010
R T
Mkr1 923 MHz
4.973 dBm
Ref 10 dBm
#Atten 20 dB
Peak
Log
10
dB/
M1 S2
S3 FC
Start 900 MHz
#Res BW 100 kHz
#VBW 3 MHz
Stop 10 GHz
Sweep 910.3 ms (401 pts)
C:temp.gif file saved

AC Line Conducted Emissions

LIMITS

Frequency of emission (MHz)	Quasi-peak limit (dBµV)	Average limit (dBµV)
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

[47 CFR 15.207(a)]

MEASUREMENTS / RESULTS

AC Mains Conducted Emissions

Date: 20-May-10 **Company:** Atek **Work Order:** K0419
Engineer: Matthew Burman **EUT Desc:** Tank Scan II Controller **Test Site:** CEMI1
Temp: 21.1°C **Humidity:** 33% **Pressure:** 1011mBar
Notes:
Measurement Device: Red LISN **EUT Operating Voltage/Frequency:** 120Vac 60Hz
Range: 0.15-30MHz **Spectrum Analyzer:** Red

	Q.P. Readings		Ave. Readings		Impedance Factor	FCC/CISPR B		FCC/CISPR B		Overall
Frequency (MHz)	QP1 (dBµV)	QP2 (dBµV)	AV1 (dBµV)	AV2 (dBµV)	(dB)	qp Limit (dBµV)	qp Margin dB	AVE Limit (dBµV)	AVE Margin dB	Result (Pass/Fail)
0.19	19.4	19.2	17.9	17.1	20.3	63.9	-24.2	53.9	-15.7	Pass
0.26	30.9	24.8	24.5	14.2	20.3	61.4	-10.2	51.4	-6.6	Pass
0.65	28.7	20.6	22.0	8.3	20.2	56.0	-7.2	46.0	-3.8	Pass
0.78	26.1	20.4	21.7	8.7	20.2	56.0	-9.7	46.0	-4.1	Pass
1.03	28.2	20.3	19.3	6.8	20.2	56.0	-7.6	46.0	-6.5	Pass
1.17	29.9	22.3	22.4	8.7	20.2	56.0	-5.9	46.0	-3.4	Pass

Table Result: Pass by -3.40 dB ***Worst Freq:*** 1.17 MHz

Voltage Variations

REQUIREMENT

Measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery powered equipment, the equipment tests shall be performed using a new battery.
[15.31(e)]

MEASUREMENTS / RESULTS

Voltage Variations

Date: 27-Apr-10 **Company:** Atek Products **Work Order:** K0419
Engineer: Matthew Burman **EUT Desc:** Tank Scan II Controller **EUT Operating Voltage/Frequency:** 120Vac 60Hz
Temp: 23.0°C **Humidity:** 31% **Pressure:** 998mBar
Frequency Range: 902-928MHz **Measurement Distance:** Conductive
Notes:

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBm)			Cable Factor (dB)	Adjusted Reading (dBm)	--- Limit (dBµV/m)	--- Margin (dB)	--- Result (Pass/Fail)	FCC 15.31 (e) Limit (dBm)	FCC 15.31 (e) Margin (dB)	FCC 15.31 (e) Result (Pass/Fail)
Channel 0	912.97125	4.740	---	---	1.2	5.9400	---	---	---	---	---	---
85%	912.97125	4.740	---	---	1.2	5.9400	---	---	---	---	---	---
115%	912.97125	4.740	---	---	1.2	5.9400	---	---	---	---	---	---

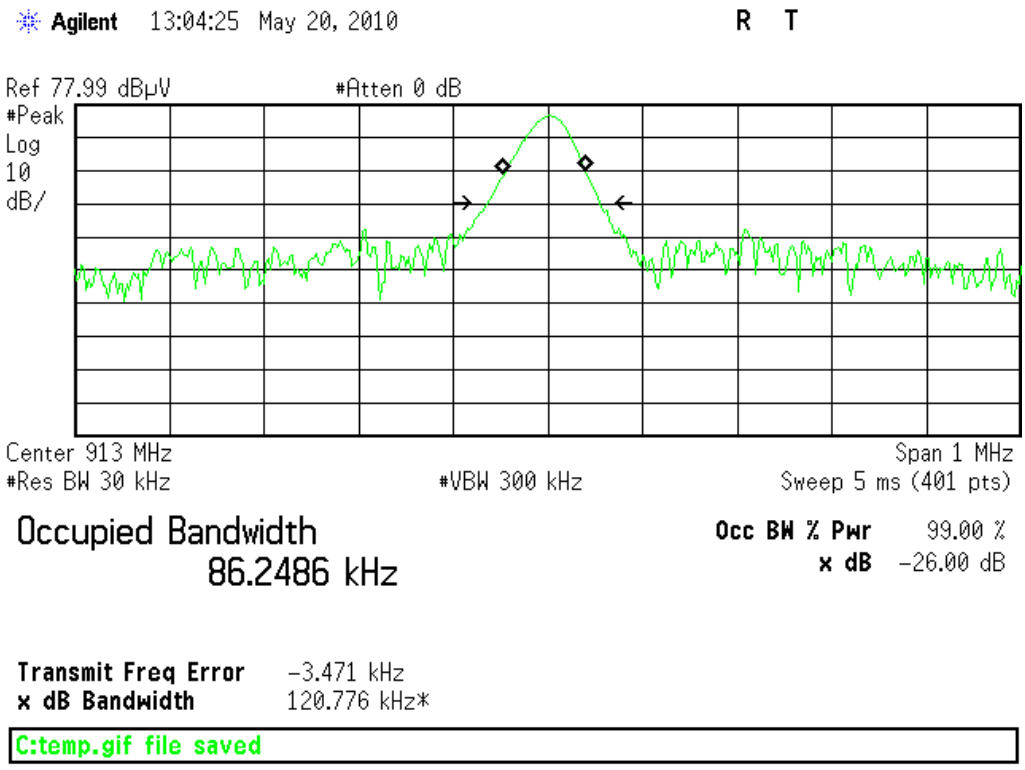
Test Site: EMC-2 **Cable 1:** EMIR-HIGH-13
Analyzer: Gold

Occupied Bandwidth

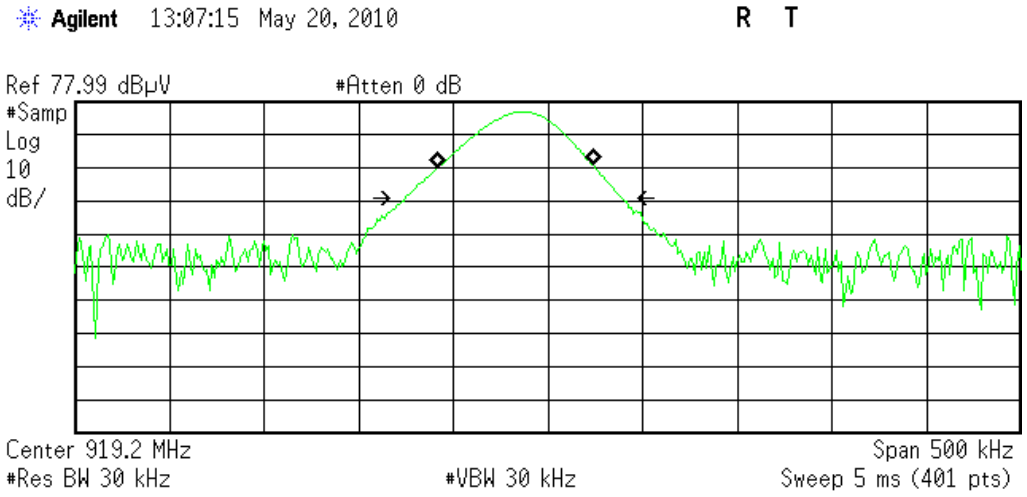
REQUIREMENT

When an occupied bandwidth is no specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured. [RSS-GEN 4.6.1]

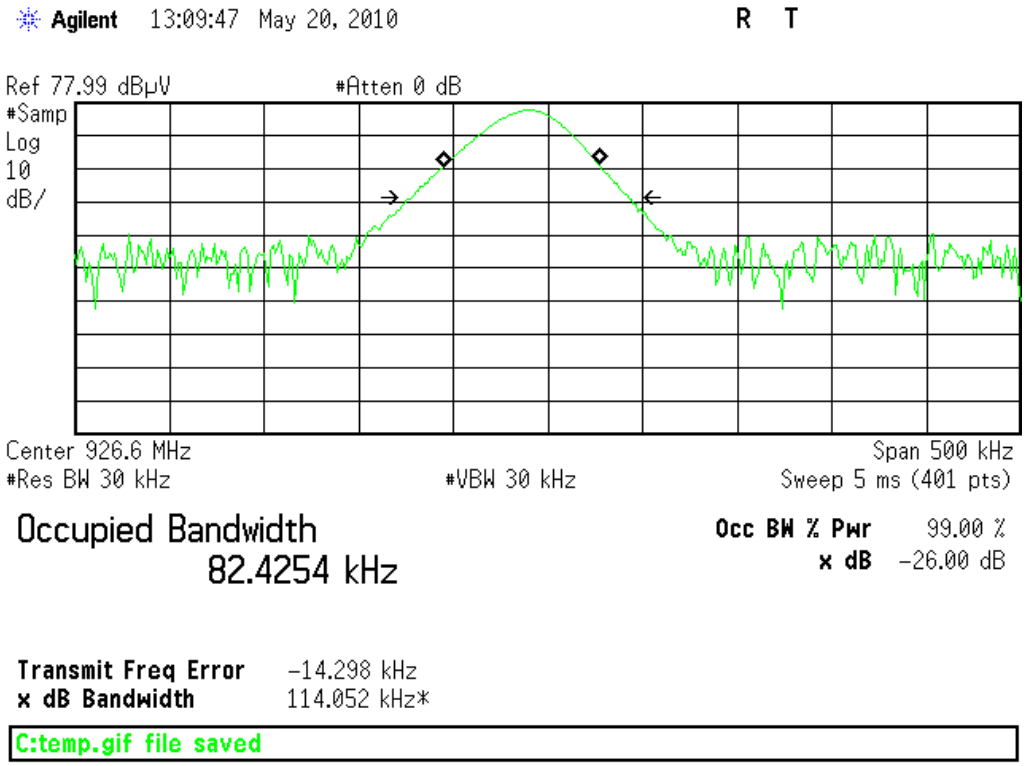
Channel 0



Channel 29



Channel 63



Measurement Uncertainty

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement	Expanded Uncertainty k=2	Maximum allowable uncertainty
Radiated Emissions (30-1000MHz) NIST CISPR	 5.6dB 4.6dB	 N/A 5.2dB (Ucispr)
Radiated Emissions (1-26.5GHz)	4.6dB	N/A
Radiated Emissions (above 26.5GHz)	4.9dB	N/A
Magnetic Radiated Emissions	5.6dB	N/A
Conducted Emissions NIST CISPR	 3.9dB 3.6dB	 N/A 3.6dB (Ucispr)
Telco Conducted Emissions (Current)	2.9dB	N/A
Telco Conducted Emissions (Voltage)	4.4dB	N/A
Electrostatic Discharge	11.5%	N/A
Radiated RF Immunity (Uniform Field)	1.6dB	N/A
Electrical Fast Transients	23.1%	N/A
Surge	23.1%	N/A
Conducted RF Immunity	3dB	N/A
Magnetic Immunity	12.8%	N/A
Dips and Interrupts	2.3V	N/A
Harmonics	3.5%	N/A
Flicker	3.5%	N/A
Radio frequency (@ 2.4GHz)	3.23×10^{-8}	1×10^{-7}
RF power, conducted	0.40dB	0.75dB
Maximum frequency deviation: • Within 300Hz and 6kHz of audio frequency / Within 6kHz and 25kHz of audio frequency	 3.4% 0.3dB	 5% 3dB
Adjacent channel power	1.9dB	3dB
Conducted spurious emission of transmitter, valid up to 12.75GHz	2.39dB	3dB
Conducted emission of receivers	1.3dB	3dB
Radiated emission of transmitter, valid up to 26.5GHz	3.9dB	6dB
Radiated emission of transmitter, valid up to 80GHz	3.3dB	6dB
Radiated emission of receiver, valid up to 26.5GHz	3.9dB	6dB
Radiated emission of receiver, valid up to 80GHz	3.3dB	6dB
Humidity	2.37%	5%
Temperature	0.7°C	1.0°C
Time	4.1%	10%
RF Power Density, Conducted	0.4dB	3dB
DC and low frequency voltages	1.3%	3%
Voltage (AC, <10kHz)	1.3%	2%
Voltage (DC)	0.62%	1%
The above reflects a 95% confidence level		

Test Equipment Used

Rev: 24-May-2010

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	9-Apr-2011
Red	9kHz-1.8GHz	8591E	Agilent	3441A03559	24	I	10-Mar-2011
Rental SA #1 (Brown)	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	25-Mar-2011

LISNs/Measurement Probes	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Red LISN	9kHz-50MHz	8012-50-R-24-BNC	Solar	956348	753	I	19-Jun-2010

Radiated Emissions Sites	FCC Code	IC Code	VCCI Code			Cat	Calibration Due
1DCC-OATS-3M-I	719150	2762A-8	R-3109			II	7-Jul-2011

Conducted Test Sites (Mains / Telco)	FCC Code		VCCI Code			Cat	Calibration Due
CEMI 1	719150		C-3360, T-1575			III	NA

Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Red-White	0.009-2000MHz	ZFL-1000-LN	CS	N/A	1258	II	1-Mar-2011
1517 HF Preamp	1-18GHz	CS	CS	N/A	1517	II	29-May-2010

Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Green Bilog	30-2000MHz	CBL6112B	Chase	2742	620	I	17-Dec-2010
Orange Horn	1-18GHz	3115	EMCO	0004-6123	390	I	19-Jun-2011

RMS Voltmeters/Current Clamp		MN	Mnfr	SN	Asset	Cat	Calibration Due
True-RMS Multimeter		177	Fluke	83390025	974	I	2-Apr-2012

Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due
Temp./Humidity/Atm. Pressure Gauge		7400 Perception II	Davis	N/A	965	I	6-Apr-2011
1DCC-OATS-3M-I Thermohygrometer		35519-044	Control Company	72457635	1334	II	18-Aug-2011
CEMI1 Thermohygrometer		35519-044	Control Company	72457738	1335	II	18-Aug-2011

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

Product Documentation

The following documentation has been provided by the client for inclusion in this report.

Conditions Of Testing

[Bureau Veritas Consumer Products Services, Inc., a Massachusetts corporation], and/or its affiliates (collectively, the "Company") will conduct, at the request of the Submitter ("**Client**"), the tests specified on the submitted Test Request Form or equivalent in accordance with, and subject to, the following terms and conditions (collectively, "**Conditions**"):

1. All orders for tests are subject to acceptance by the Company, and no order will constitute a binding commitment of the Company unless and until such order is accepted by it, as evidenced by the issuance of a written report ("**Test Report**") by the Company. The Test Report is issued solely by the Company, is intended for the exclusive use of Client and shall not be published, used for advertising purposes, copied or replicated for distribution to any other person or entity or otherwise publicly disclosed without the prior written consent of the Company. By submitting a request for services to the Company, Client consents to the disclosure to accreditation bodies of those records of Client relevant to the accreditation body's assessment of the Company's competence and compliance with relevant accreditation criteria. The Company shall not be liable for any loss or damage whatsoever resulting from the failure of the Company to provide its services within any time period for completion estimated by the Company. If Client anticipates using the Test Report in any legal proceeding, arbitration, dispute resolution forum or other proceeding, it shall so notify the Company prior to submitting the Test Report in such proceeding. The Company has no obligation to provide a fact or expert witness at such proceeding unless the Company agrees in advance to do so for a separate and additional fee.
2. The Test Report will set forth the findings of the Company solely with respect to the test samples identified therein. Unless specifically and expressly indicated in the Test Report, the results set forth in such Test Report are not intended to be indicative or representative of the quality or characteristics of the lot from which a test sample is taken, and Client shall not rely upon the Test Report as being so indicative or representative of the lot or of the tested product in general. The Test Report will reflect the findings of the Company at the time of testing only, and the Company shall have no obligation to update the Test Report after its issuance. The Test Report will set forth the results of the tests performed by the Company based upon the written information provided to the Company. The Test Report will be based solely on the samples and written information submitted to the Company by Client, and the Company shall not be obligated to conduct any independent investigation or inquiry with respect thereto.
3. The Company may, in its sole discretion, destroy samples which have been furnished to the Company for testing and which have not been destroyed in the course of testing. The Company may delegate the performance of all or a portion of the services contemplated hereunder to an affiliate, agent or subcontractor of the Company, and Client consents to such delegation.
4. These Conditions and the Test Report represent the entire understanding of the parties hereto with respect to the subject matter hereof and of the Test Report, and no modification, variance or extrapolation with respect thereto shall be permitted without the prior written consent of the Company.
5. The names, service marks, trademarks and copyrights of the Company and its affiliates, including the names "**BUREAU VERITAS**," "**BUREAU VERITAS CONSUMER PRODUCTS SERVICES**," "**BVCPS**", "**MTL**", "**ACTS**", "**MTL-ACTS**" and **CURTIS-STRAUS** (collectively, the "**Marks**") are and shall remain the sole property of the Company or its affiliates and shall not be used by Client except solely to the extent that Client obtains the prior written approval of the Company and then only in the manner prescribed by the Company. Client shall not contest the validity of the Marks or take any action that might impair the value or goodwill associated with the Marks or the image or reputation of the Company or its affiliates.
6. Payment in full shall be due 30 days after the date of invoice. Interest shall be due on overdue amounts from the due date until paid at an interest rate of 1.5% per month or, if less, the maximum rate permitted by law. The Company reserves the right, at any time and from time to time, to revoke any credit extended to Client. Client shall reimburse the Company for any costs it incurs in collecting past due amounts, including court costs and fees and expenses of attorneys and collection agencies. The Test Report may not be used or relied upon by Client if and for so long as Client fails to pay when due any invoice issued by the Company or any affiliate of it to Client or any affiliate or subsidiary of Client together with interest and penalties, if any, accrued thereon.
7. The Company disclaims any and all responsibility or liability arising out of or in connection with e-mail transmissions of such information.
8. Client understands and agrees that the Company is neither an insurer nor a guarantor, that the Company does not take the place of Client or any designer, manufacturer, agent, buyer, distributor or transportation or shipping company, and that the Company disclaims all liability in such capacities. Client further understands that if it seeks assurance against loss or damage, it should obtain appropriate insurance.
9. Client agrees that the Company, by providing the services, does not take the place of Client nor any third party, nor does the Company release them from any of their obligations, nor does the Company otherwise assume, abridge, abrogate or undertake to discharge any duty of any third party to Client or any duty of Client or any third party to any other third party, and Client will not release any third party from its obligations and duties with respect to the tested goods.
10. Client shall, on a timely basis, (a) provide adequate instructions to the Company in order to enable the Company to perform properly its services, (b) provide, or cause Client's suppliers and contractors to provide, the Company with all documents necessary to enable the Company to perform its services, (c) furnish the Company with all relevant information regarding Client's intended use and purposes of the tested goods, (d) advise the Company of essential dates and deadlines relevant to the tested goods and (e) fully exercise all rights and remedies available to Client against third parties in respect of the tested goods.
11. The Company shall undertake due care and ordinary skill in the performance of its services to Client, and the Company shall accept responsibility only were such skill has not been exercised and, even in such event, only to the extent of the limitation of liability set forth herein.
12. If Client desires to assert a claim arising from or relating to (i) the performance, purported performance or non-performance of any services by the Company or (ii) the sale, resale, manufacture, distribution or use of any tested goods, it must submit that claim to the Company in a writing that sets forth with particularity the basis for such claim within 60 days from discovery of the potential claim and not more than six months after the date of issuance of the Test Report to Client. Client waives any and all such claims including, without limitation, claims that the Test Report is inaccurate, incomplete or misleading or that additional or different testing is required, unless and then only to the extent that Client submits a written claim to the Company within both such time periods.

13. CLIENT SHALL, EXCEPT TO THE EXTENT OF COMPANY'S LIABILITY TO CLIENT HEREUNDER (WHICH IN NO EVENT SHALL EXCEED THE LIMITATION OF LIABILITY HEREIN), HOLD HARMLESS AND INDEMNIFY THE COMPANY, ITS AFFILIATES AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES, AGENTS AND SUBCONTRACTORS AGAINST ALL ACTUAL OR ALLEGED THIRD PARTY CLAIMS FOR LOSS, DAMAGE OR EXPENSE OF WHATSOEVER NATURE AND HOWSOEVER ARISING FROM OR RELATING TO (i) THE PERFORMANCE, PURPORTED PERFORMANCE OR NON-PERFORMANCE OF ANY SERVICES BY THE COMPANY OR (ii) THE SALE, RESALE, MANUFACTURE, DISTRIBUTION OR USE OF ANY TESTED GOODS.

14. EXCEPT AS MAY OTHERWISE BE EXPRESSLY AGREED TO IN WRITING BY THE COMPANY AND NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN OR IN ANY TEST REPORT, NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, IS MADE.

15. (A) IN NO EVENT WHATSOEVER SHALL THE COMPANY BE LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL, EXEMPLARY OR PUNITIVE DAMAGES IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE TEST REPORT OR THE SERVICES PROVIDED BY THE COMPANY HEREUNDER, INCLUDING WITHOUT LIMITATION LOSS OF OR DAMAGE TO PROPERTY; LOSS OF INCOME, PROFIT OR USE; OR ANY CLAIMS OR DEMANDS MADE AGAINST CLIENT OR ANY OTHER PERSON BY ANY THIRD PARTY IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE SERVICES PROVIDED BY THE COMPANY HEREUNDER.

(B)NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN, AND IN RECOGNITION OF THE RELATIVE RISKS AND BENEFITS TO CLIENT AND THE COMPANY ASSOCIATED WITH THE TESTING SERVICES CONTEMPLATED HEREBY, THE RISKS HAVE BEEN ALLOCATED SUCH THAT UNDER NO CIRCUMSTANCES WHATSOEVER SHALL THE LIABILITY OF THE COMPANY TO CLIENT OR ANY THIRD PARTY IN RESPECT OF ANY CLAIM FOR LOSS, DAMAGE OR EXPENSE, OF WHATSOEVER NATURE OR MAGNITUDE, AND HOWSOEVER ARISING, EXCEED AN AMOUNT EQUAL TO FIVE (5) TIMES THE AMOUNT OF THE FEES PAID TO THE COMPANY FOR THE SPECIFIC SERVICES WHICH GAVE RISE TO SUCH CLAIM OR U.S.$10,000, WHICHEVER IS THE LESSER AMOUNT.

16. The Company shall not be liable for any loss or damage resulting from any delay or failure in performance of its obligations hereunder resulting directly or indirectly from any event of force majeure or any event outside the control of the Company. If any such event occurs, the Company may immediately cancel or suspend its performance hereunder without incurring any liability whatsoever to Client.

17. Company's services, including these Conditions, shall be governed by, and construed in accordance with, the local laws of the country where the Company performs the tests or, in the case of tests performed in the United States of America, the laws of Massachusetts without regard to conflicts of laws principles. If any aspect(s) of these Conditions is found to be illegal or unenforceable, the validity, legality and enforceability of all remaining aspects of these Conditions shall not in any way be affected or impaired thereby. Any proceeding related to the subject matter hereof shall be brought, if at all, in the courts of the country where the Company performs the tests or, in the case of tests performed in the United States of America, in the courts of Massachusetts. Client waives the right to interpose any counterclaim or setoffs of any nature in any litigation arising hereunder.

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