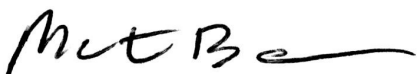
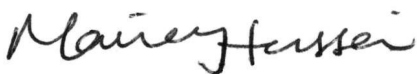




Test Report

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

Report No	EL0853-1
Client	SignalFire Telemetry, Inc
Address	43 Broad Street, Unit A-403 Hudson, MA 01749
Phone	(978) 212-2868
Items tested	SignalFire Telemetry 10mW Radio
FCC ID	W8V-SFTS10
IC ID	8373A-SFTS10
FRN	001814347
Equipment Type	DSS
Equipment Code	Part 15, Frequency Hopping Spread Spectrum Transmitter
FCC/IC Rule Parts	47 CFR 15.247, RSS 210 issue 8 and RSS GEN issue 3, 47 CFR 15 B
Test Dates	June 22, 2011
Results	As detailed within this report
Prepared by	 Matthew Burman – Test Engineer
Authorized by	 Mairaj Hussain – EMC Supervisor
Issue Date	<u>July 6, 2011</u>
Conditions of Issue	This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 27 of this report.

Curtis-Straus LLC is accredited to ISO/IEC 17025 by A2LA for the specific scope of accreditation under Certificate Number 1627-01. This report may contain data which is not covered by the A2LA accreditation. See our scope of accreditation at the end of this test report. Any opinions or interpretations expressed in this report are outside the scope of our A2LA accreditation as A2LA only accredits testing.

Testing Cert. No. 1627-01



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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 SignalFire Telemetry 10mW Radio. It is a frequency hopping transmitter that operates in the range 905-925MHz.

We found that the product met the above requirements without modification. Josh Schadel from Signal Fire Telemetry was present during the testing. The test sample was received in good condition.

Test Methodology

Radiated emission and AC line conducted emission testing was performed according to the procedures specified in ANSI C63.4 (2003), FCC public notice DA00-705 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 was maximized separately.

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

The product will be configured for the transmission to either be in the range of 902-915Mhz, or 915-928MHz.

This report is also for the verification on the digital circuitry.

The product is to be sold with 3 different antenna, radiated measurements were performed on the highest gain antenna supplied due to same type with similar in-band and out-of-band radiation patterns.

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

Frequency	RBW	VBW
0.15-30MHz	9kHz	30kHz
30-1000MHz	120kHz	1MHz
1-10GHz	1MHz	3MHz

Release Control Record

Issue No. Reason for change
1 Original Release

Date Issued

August 3, 2011



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Product Tested - Configuration Documentation

EUT Configuration										
Work Order: L0853 Company: Signal Fire Telemetry Company Address: 43 Broad St, Suite A-403 Hudson, MA 01749 Contact: Josh Schadel Person Present: Josh Schadel										
EUT:		MN	PN	SN						
		SFTS-10	---	3886						
EUT Description: SignalFire Telemetry 10mW Radio EUT Max Frequency: 1Mbit EUT Tx Frequency: 905-925MHz										
Support Equipment:		MN	SN							
IBM Laptop		PPX	11958742							
CUI Power Supply		EPS090066	sample 1							
EUT Ports:										
Port Label	Port Type	No. of ports	No. Populated	Cable Type	Shielded	Ferrites	Length	Max Length	In/Out NEBS Type	Unpopulated Reason
none										
Software / Operating Mode Description:										
EUT is transmitting at 905-925MHz										
Performance Criteria:										
emi only										



Statement of Conformity

The SignalFire Telemetry 10mW Radio 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
5.4		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.
7.1.3 7.1.2		15.21	Information to the user is shown in the instruction manual exhibit.
		15.27	No special accessories are required for compliance.
4.1		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.
7.1.2		15.203	The antenna for this device is hardwired to the PCB; the other antenna will be installed with a unique external antenna. Please refer to modular approval letter.
	2.5	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.
7.2.4		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.



Modifications Required for Compliance

No Modifications were required for compliance.



Test Results

Bandwidth

LIMIT

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

MEASUREMENTS / RESULTS

Bandwidth												
Date: 22-Jun-11			Company: Signal Fire						Work Order: L0853			
Engineer: Matthew Burman			EUT Desc: SignalFire Telemetry 10mW Radio						EUT Operating Voltage/Frequency: 6Vdc			
Temp: 24.1°C			Humidity: 37%			Pressure: 1006mBar						
Frequency Range: 902-928MHz						Measurement Distance: Conductive						
Notes: RBW = 30kHz VBW = 100kHz			RBW > 0.1% of 20dB bandwidth			The maximum allowed 20dB bandwidth of the hopping channel is 500kHz if the 20dB bandwidth of the hopping channel is less than 250kHz, the system shall use at least 50 hopping frequencies						
	Frequency (MHz)	Reading (kHz)								FCC Section 15.247(a)(1)		
										Limit (kHz)	Margin (kHz)	Result (Pass/Fail)
low channel	905.0	100.0	---	---	---	---	---	---	---	250.0	-150.0	Pass
mid channel	915.0	97.5	---	---	---	---	---	---	---	250.0	-152.5	Pass
high channel	925.0	100.0	---	---	---	---	---	---	---	250.0	-150.0	Pass
Test Site: 3m Indoor OATS I Attenuator: ---												
Analyzer: Asset #1491												

Rev: 28-Jun-2011

Spectrum Analyzers / Receivers / Preselectors
Rental SA #5

Range
9kHz-26.5 GHz

MN
E4407B

Mfr
Agilent

SN
MY44220066

Asset
1491

Cat
I

Calibration Due
17-Mar-2012

Meteorological Meters

Temp./Humidity/Atm. Pressure Gauge
1DCC-OATS-3M-I Thermohygrometer

MN
7400 Perception II
35519-044

Mfr
Davis
Control Company

SN
N/A
72457635

Asset
965
1334

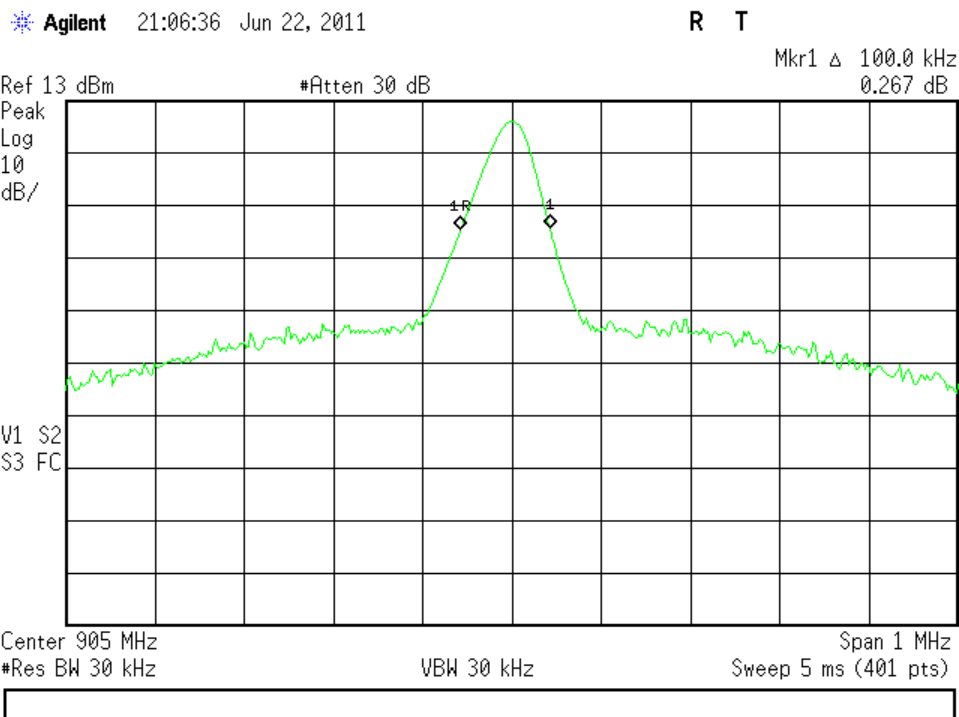
Cat
I
II

Calibration Due
4-Apr-2013
18-Aug-2011

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

PLOT

Low Channel



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Mid Channel

Agilent 21:34:11 Jun 22, 2011

R T

Mkr1 Δ 97.5 kHz
-0.803 dB

Ref 13 dBm

#Atten 30 dB

Peak
Log
10
dB/V1 S2
S3 FC

Center 915 MHz

#Res BW 30 kHz

VBW 30 kHz

Span 1 MHz
Sweep 5 ms (401 pts)

Query UNTERMINATED

High Channel

Agilent 21:18:50 Jun 22, 2011

R T

Mkr1 Δ 100.0 kHz
0.309 dB

Ref 13 dBm

#Atten 30 dB

Peak
Log
10
dB/V1 S2
S3 FC

Center 925 MHz

#Res BW 30 kHz

VBW 30 kHz

Span 1 MHz
Sweep 5 ms (401 pts)

C:\temp.gif file saved



Frequency Hopping Requirements

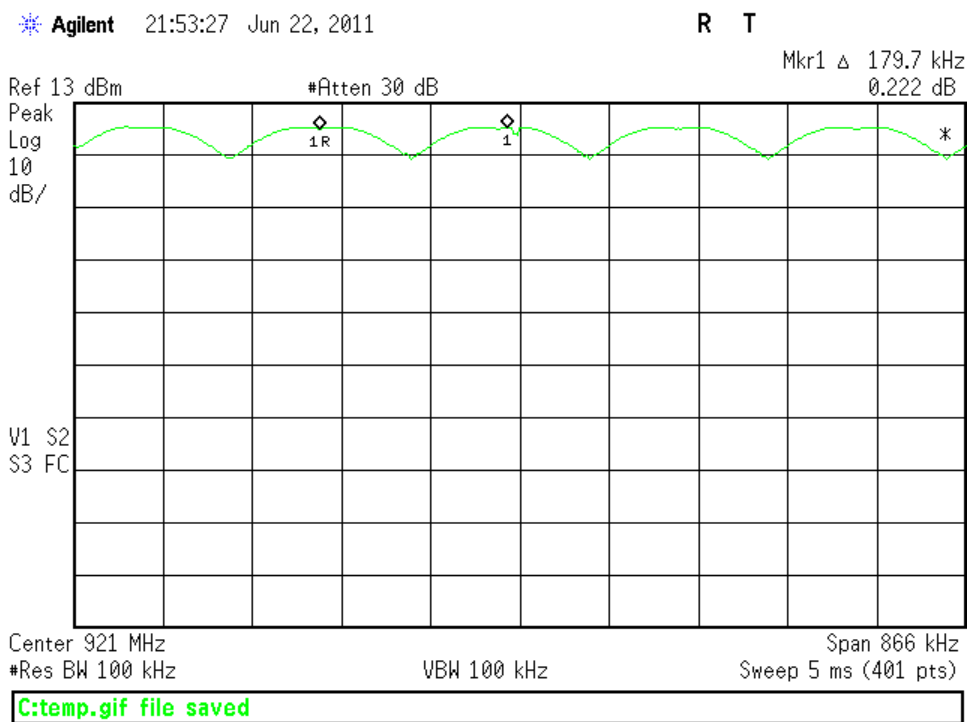
Channel Spacing

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater.

[15.247 (a) (1)]

Plots

Channel spacing between carrier frequencies of 179.7kHz > 20dB bandwidth



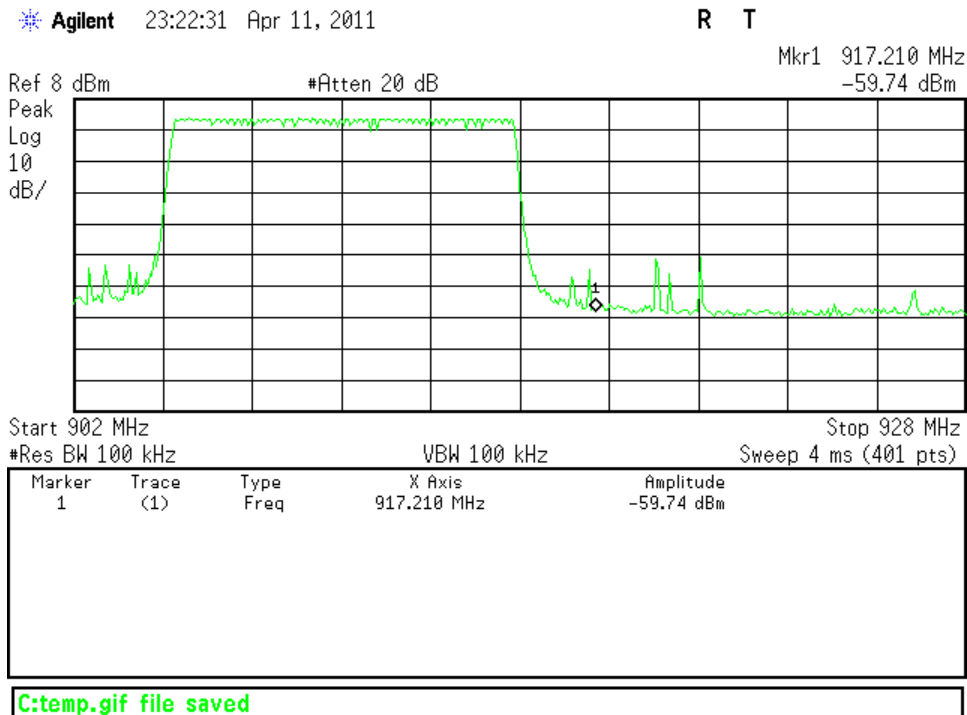
Number of Channels

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) (1) (i)]

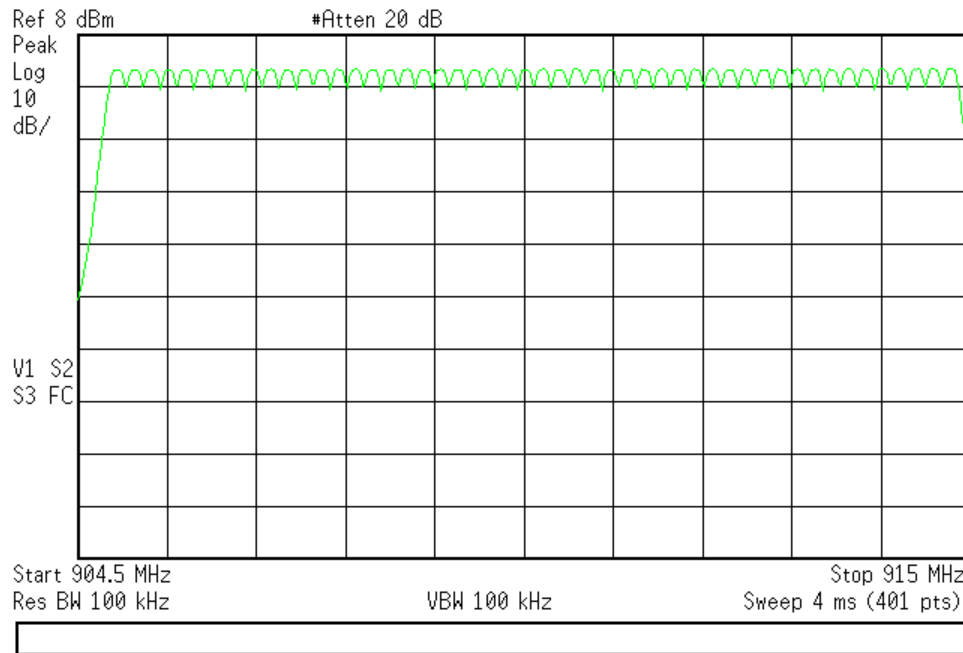
Plots

50 channels – low band



Agilent 23:26:06 Apr 11, 2011

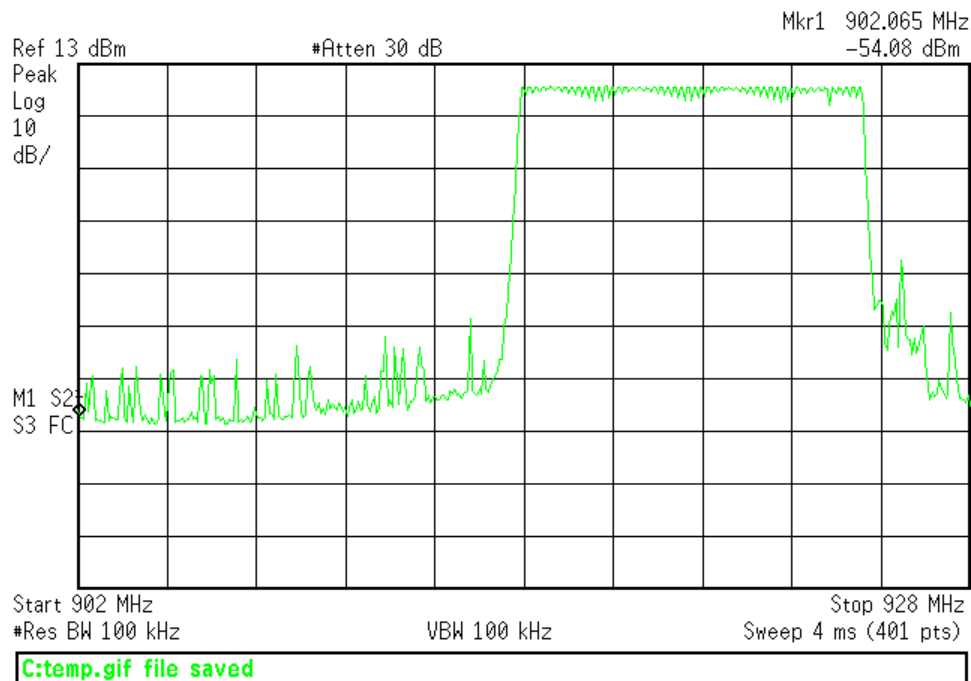
R T



50 channels – high band

Agilent 21:46:54 Jun 22, 2011

R T



Agilent 21:50:01 Jun 22, 2011

R T

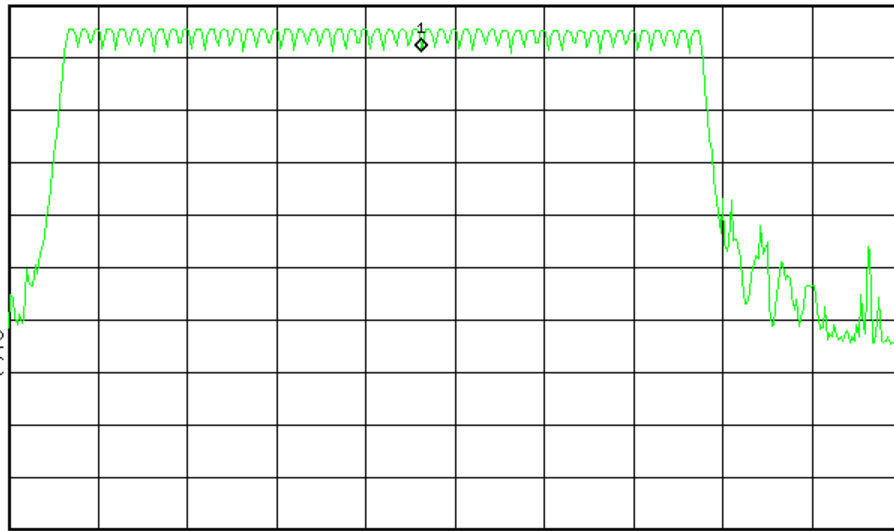
Mkr1 920.475 MHz
4.099 dBm

Ref 13 dBm

*Atten 30 dB

Peak
Log
10
dB/

M1 S2
S3 FC



Start 914 MHz

#Res BW 100 kHz

VBW 100 kHz

Stop 928 MHz
Sweep 4 ms (401 pts)

C:\temp.gif file saved

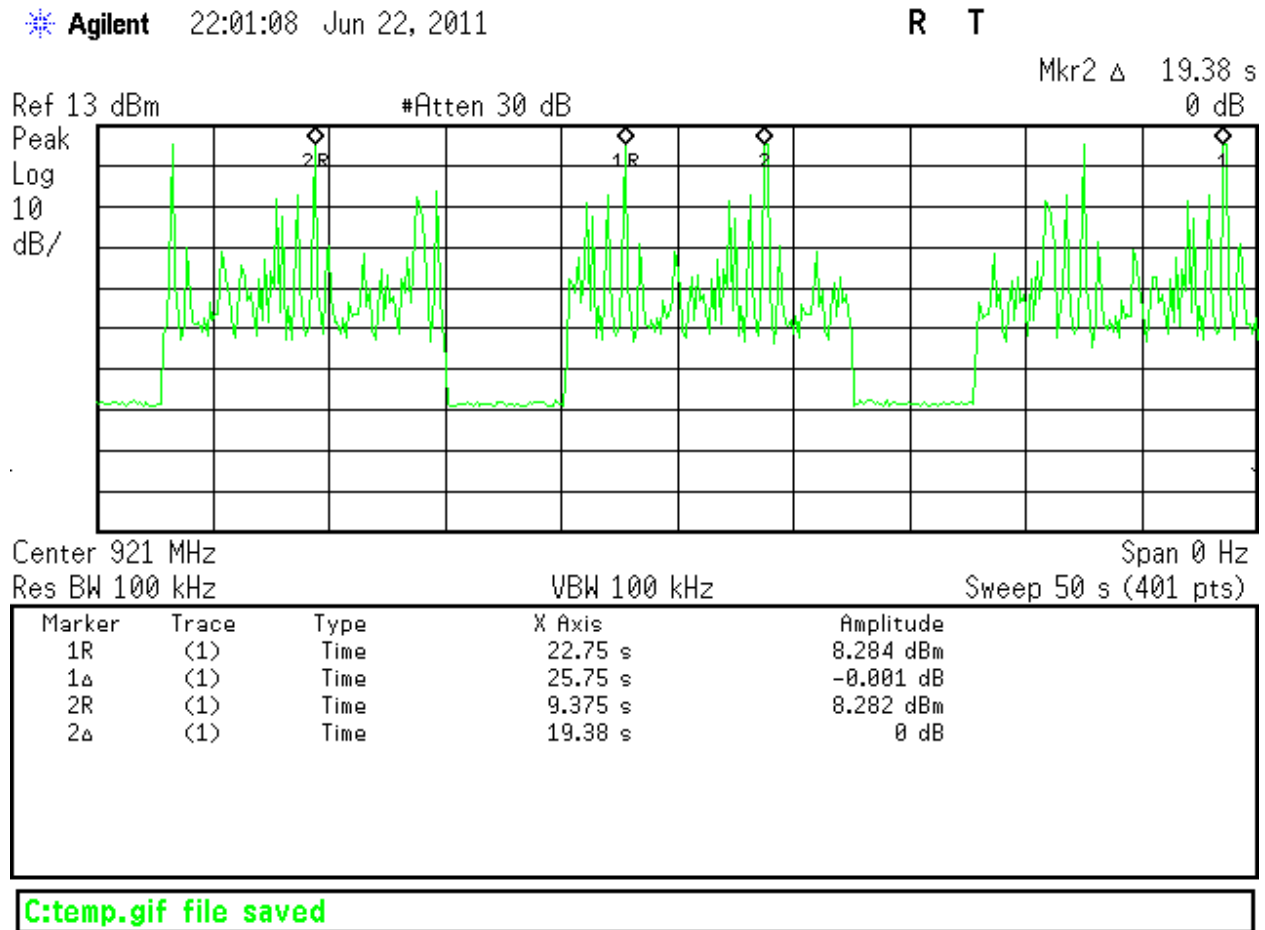


Occupancy Time

For frequency hopping systems operating in the 902-928MHz band:: if the 20dB bandwidth of the hopping channel is less than 250kHz ...the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period;

[15.247 (a) (1) (i)]

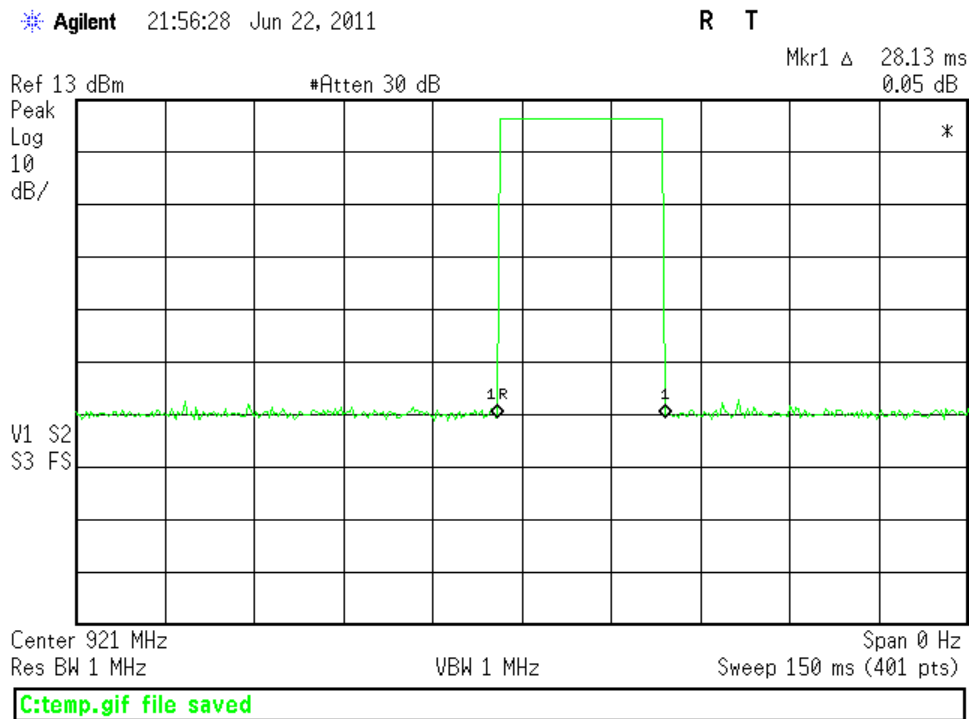
Plots



The frequency is only transmitted once during a transmission burst

During 50 seconds, the transmission occurs 6 times





Time dwelled on a carrier frequency is 28.13 milliseconds.

Therefore 6×0.028 seconds = 0.169 seconds < 0.4 seconds

So within any 20 second window, either before or after the transmission, it shall be less than 0.4 seconds.

Peak Power**LIMIT**

Conducted Output Power

1 Watt

[15.247(b) (2)]

MEASUREMENTS / RESULTS

Peak Output Power												
Date: 22-Jun-11			Company: Signal Fire						Work Order: L0853			
Engineer: Matthew Burman			EUT Desc: SignalFire Telemetry 10mW Radio						EUT Operating Voltage/Frequency: 6Vdc			
Temp: 24.1°C			Humidity: 37%			Pressure: 1006mBar						
Frequency Range: 902-928MHz								Measurement Distance: Conductive				
Notes: RBW = 1Mhz VBW = 3MHz												
	Frequency (Mhz)	Reading (dBm)	Attenuator Factor (dB)	Adjusted Reading (dB)						FCC Section 15.247(b(2))		
										Limit (dBm)	Margin	Result (Pass/Fail)
low channel	905.0	9.603	0.000	9.603	---	---	---	---	---	30.0	-20.397	Pass
mid channel	915.0	9.428	0.000	9.428	---	---	---	---	---	30.0	-20.572	Pass
high channel	925.0	9.228	0.000	9.228	---	---	---	---	---	30.0	-20.772	Pass
Test Site: 3m Indoor OATS I Attenuator: ---												
Analyzer: Asset #1491												

Rev: 28-Jun-2011

Spectrum Analyzers / Receivers / Preselectors
Rental SA #5Range
9kHz-26.5 GHzMN
E4407BMfr
AgilentSN
MY44220066Asset
1491Cat
ICalibration Due
17-Mar-2012Meteorological Meters
Temp./Humidity/Atm. Pressure Gauge
1DCC-OATS-3M-I ThermohygrometerMN
7400 Perception II
35519-044Mfr
Davis
Control CompanySN
N/A
72457635Asset
965
1334Cat
I
IICalibration Due
4-Apr-2013
18-Aug-2011

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

PLOTS**Low Channel**

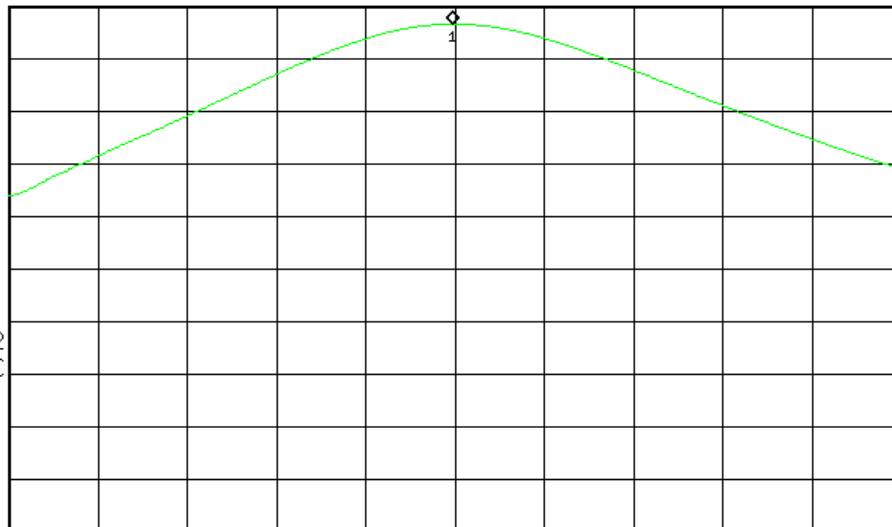
Agilent 21:10:16 Jun 22, 2011

R T

Mkr1 904.9825 MHz
9.603 dBm

Ref 13 dBm

#Atten 30 dB

Peak
Log
10
dB/M1 S2
S3 FC

Center 905 MHz

#Res BW 1 MHz

VBW 1 MHz

Span 5 MHz
Sweep 5 ms (401 pts)

C:temp.gif file saved



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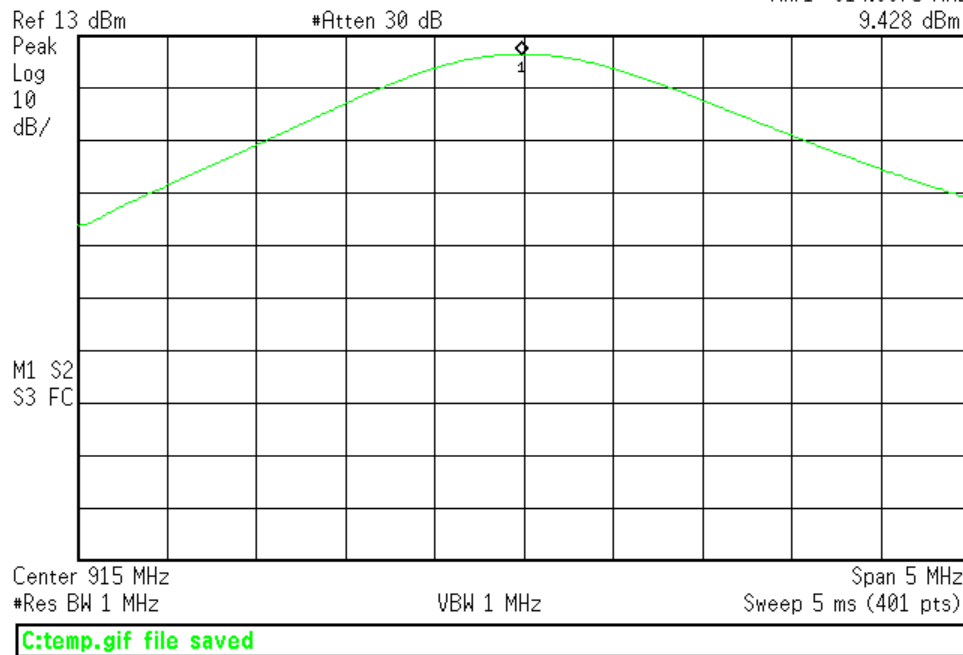
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Mid Channel

Agilent 21:27:18 Jun 22, 2011

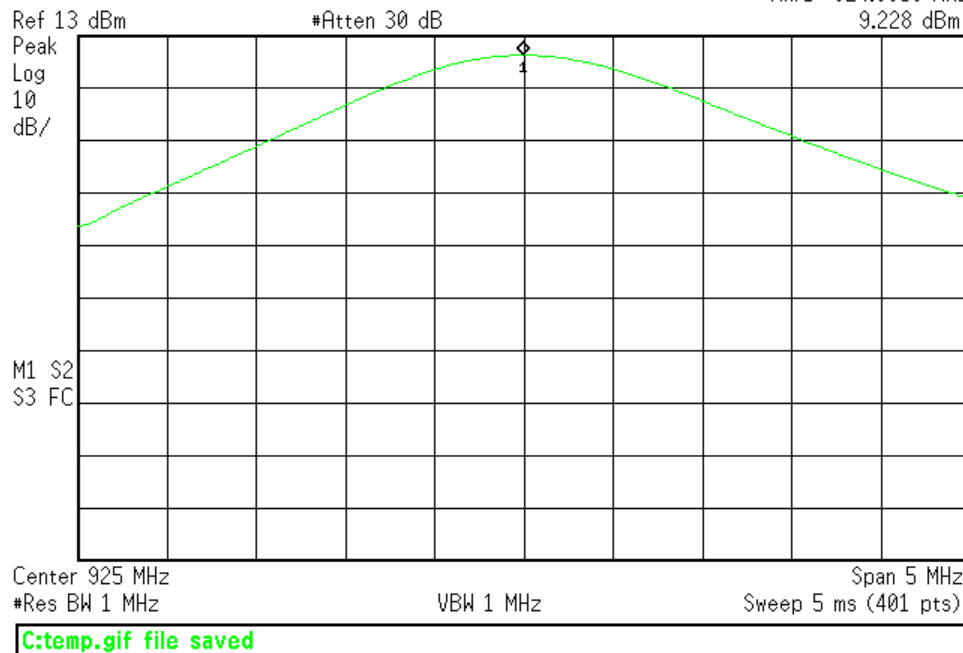
R T

Mkr1 914.9875 MHz
9.428 dBm

High Channel

Agilent 21:22:26 Jun 22, 2011

R T

Mkr1 924.9950 MHz
9.228 dBm

Band Edge Measurements

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 within the band that contains the highest level of the desired power, based on either a RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

[15.247(d)]

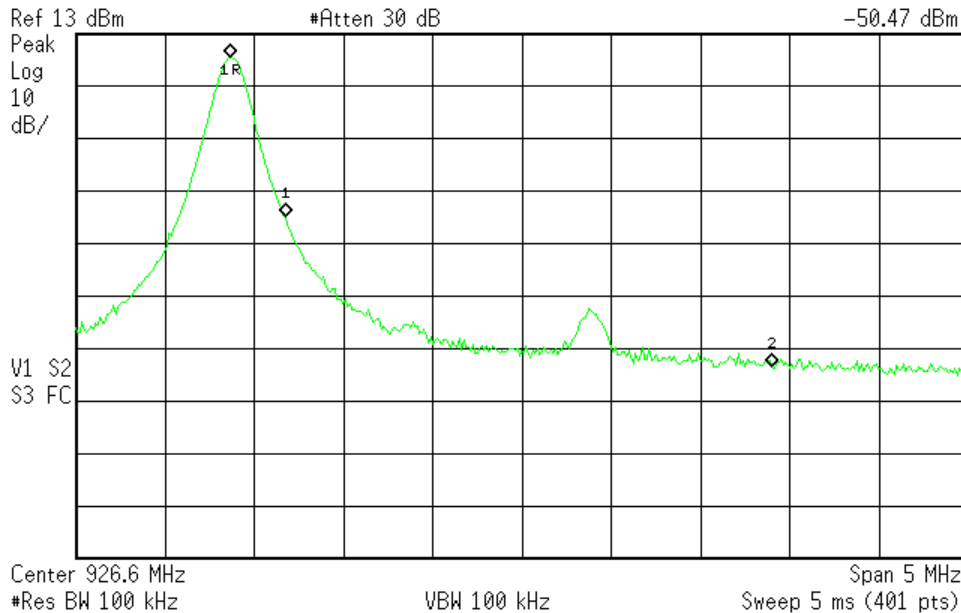
PLOTS

928MHz Edge

Agilent 21:24:31 Jun 22, 2011

R T

Mkr2 928.0000 MHz
-50.47 dBm



C:\temp.gif file saved



902MHz Band Edge

Agilent 21:14:28 Jun 22, 2011

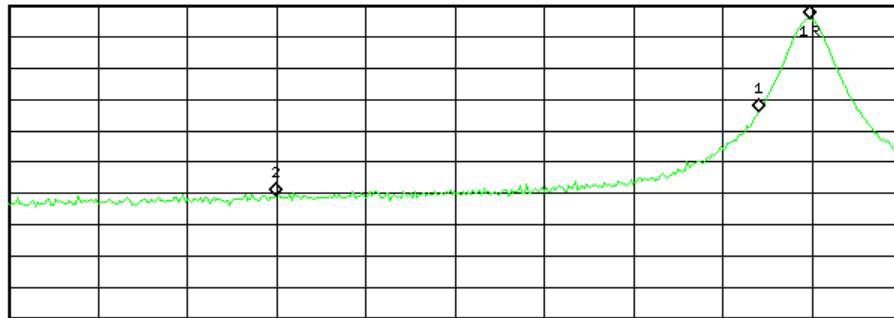
R T

Mkr2 902.0000 MHz
-47.97 dBm

Ref 13 dBm

#Atten 30 dB

Peak
Log
10
dB/



Center 903 MHz

Span 5 MHz

#Res BW 100 kHz

VBW 100 kHz

Sweep 5 ms (401 pts)

Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Freq	904.9875 MHz	8.764 dBm
1Δ	(1)	Freq	-287.5 kHz	-29.83 dB
2	(1)	Freq	902.0000 MHz	-47.97 dBm

C:\temp.gif file saved



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)]

Radiated emission measurements were also taken for the digital circuitry for compliance to FCC part 15 class A or class B products. These emissions were not present during the transmission function being active only.

MEASUREMENTS / RESULTS

Radiated Emissions Table												
Date: 22-Jun-11			Company: Signal Fire Telemetry				Work Order: L0853					
Engineer: Arik Zwirner			EUT Desc: SFTS-10				EUT Operating Voltage/Frequency: 120Vac/60Hz					
Temp: 25 °C			Humidity: 33%				Pressure: 1008mBar					
Frequency Range: 30-1000MHz							Measurement Distance: 3 m					
Notes: trasmit mode of operation												
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)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
V	31.9	34.1	22.8	19.8	0.4	31.5	---	---	---	40.0	-8.5	Pass
V	52.0	43.0	22.9	7.3	0.4	27.8	---	---	---	40.0	-12.2	Pass
V	55.8	43.2	22.8	7.1	0.5	28.0	---	---	---	40.0	-12.0	Pass
V	96.2	40.5	22.8	9.0	0.5	27.2	---	---	---	43.5	-16.3	Pass
V	126.0	42.6	22.8	14.1	0.6	34.5	---	---	---	43.5	-9.0	Pass
H	750.0	37.9	22.1	20.6	1.6	38.0	---	---	---	46.0	-8.0	Pass
Table Result: Pass by -8.0 dB							Worst Freq: 750.0 MHz					
Test Site: EMI Chamber 1			Cable 1: Asset #1505				Cable 2: Asset #1522			Cable 3: ---		
Analyzer: Asset #1328			Preamp: Blue				Antenna: Red-Black			Preselector: ---		

Spurious Emissions															
Date: 22-Jun-11			Company: Signal Fire Telemetry					Work Order: L0853							
Engineer: Matthew Burman			EUT Desc: Signal Fire Telemetry 10mW Radio					EUT Operating Voltage/Frequency: 6Vdc							
Temp: 24.1°C			Humidity: 37%					Pressure: 1006mBar							
Frequency Range: 1-10GHz								Measurement Distance: 3 m							
Notes: high gain antenna DCCF = 11.02dB															
Antenna Polarization (H/V)	Frequency (MHz)	Peak Reading (dBμV)	Average Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Filter Factor (dB)	Cable Factor (dB)	Adjusted Peak Reading (dBμV/m)	Adjusted Avg Reading (dBμV/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average		
										Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
h	2715.0	39.7	28.7	22.0	28.9	0.3	3.5	49.8	38.8	74.0	-24.2	Pass	54.0	-15.2	Pass
h	3620.0	35.76	24.7	21.2	31.6	0.4	3.9	49.7	38.6	74.0	-24.3	Pass	54.0	-15.4	Pass
Table Result:				Pass		by -15.2		dB		Worst Freq:				2715.0 MHz	
Test Site: 1DCC-OATS-3M-I			Cable 1: EMIR-HIGH-22			High Pass Filter: Asset #1310			Cable 3: ...						
Analyzer: Rental SA#5			Preamp: Asset #1517			Antenna: Orange Horn			Preselector: ...						



Receiver Spurious Emissions

Radiated Emissions Table												
Date: 22-Jun-11			Company: Signal Fire Telemetry				Work Order: L0853					
Engineer: Arik Zwimer			EUT Desc: SFTS-10				EUT Operating Voltage/Frequency: 120Vac/60Hz					
Temp: 25°C			Humidity: 33%				Pressure: 1008mBar					
Frequency Range: 30-1000MHz							Measurement Distance: 3 m					
Notes: receive mode of operation												
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
V	31.9	33.9	22.8	19.8	0.4	31.3	---	---	---	40.0	-8.7	Pass
V	52.0	42.1	22.9	7.3	0.4	26.9	---	---	---	40.0	-13.1	Pass
V	55.8	41.6	22.8	7.1	0.5	26.4	---	---	---	40.0	-13.6	Pass
V	96.2	37.8	22.8	9.0	0.5	24.5	---	---	---	43.5	-19.0	Pass
V	126.0	37.9	22.8	14.1	0.6	29.8	---	---	---	43.5	-13.7	Pass
H	750.0	39.1	22.1	20.6	1.6	39.2	---	---	---	46.0	-6.8	Pass
Table Result:			Pass		by -6.8 dB		Worst Freq:			750.0 MHz		
Test Site: EMI Chamber 1			Cable 1: Asset #1505			Cable 2: Asset #1522			Cable 3: ---			
Analyzer: Asset #1328			Preamp: Blue			Antenna: Red-Black			Preselector: ---			

Spurious Emissions																			
Date: 22-Jun-11			Company: Signal Fire Telemetry						Work Order: L0853										
Engineer: Matthew Burman			EUT Desc: Signal Fire Telemetry 10mW Radio						EUT Operating Voltage/Frequency: 6Vdc										
Temp: 24.1°C			Humidity: 37%						Pressure: 1006mBar										
Frequency Range: 1-10GHz								Measurement Distance: 3 m											
Notes: high gain antenna DCCF = 11.02dB																			
Receive mode																			
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBμV)	Average Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Filter Factor (dB)	Cable Factor (dB)	Adjusted Peak Reading (dBμV/m)	Adjusted Avg Reading (dBμV/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average						
										Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)				
no emissions found										---	---	---	---	---	---	---			
Table Result:				Pass		by		---		dB		Worst Freq:				---		MHz	
Test Site: 1DCC-OATS-3M-I				Cable 1: EMIR-HIGH-22				High Pass Filter: Asset #1310				Cable 3: ---							
Analyzer: Rental SA#5				Preamp: Asset #1517				Antenna: Orange Horn				Preselector: ---							

Rev: 28-Jun-2011

Spectrum Analyzers / Receivers / Preselectors		Range	MN	Mfr	SN	Asset	Cat	Calibration Due
SA EMI Chamber (1328)		9kHz-13.2 GHz	E4405B	Agilent	MY44210241	1328	I	4-Mar-2012
Rental SA #5		9kHz-26.5 GHz	E4407B	Agilent	MY44220066	1491	I	17-Mar-2012
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
EMI Chamber 1		719150	2762A-6	R-3032, G-106			I	12-Mar-2013
Preamps / Couplers Attenuators / Filters		Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Blue		0.009-2000MHz	ZFL-1000-LN	CS	N/A	759	II	1-Jun-2012
1517 HF Preamp		1-20GHz	CS	CS	N/A	1517	II	29-Mar-2012
High Pass Filter		0.03-6.5 GHz	11SH10-1000/T3000-0/0	K&L	1	1310	II	22-Dec-2011
Antennas		Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Red-Black Bilog		30-2000MHz	JB1	Sunol	A091604-2	1106	I	3-Dec-2012
Orange Horn		1-18GHz	3115	EMCO	0004-6123	390	I	19-Jul-2011
Meteorological Meters			MN	Mfr	SN	Asset	Cat	Calibration Due
Temp./Humidity/Atm. Pressure Gauge			7400 Perception II	Davis	N/A	965	I	4-Apr-2013
1DCC-OATS-3M-I Thermohygrometer			35519-044	Control Company	72457635	1334	II	18-Aug-2011
CHAMBER1 Thermohygrometer			35519-044	Control Company	72457642	1345	II	18-Aug-2011
Cables		Range		Mfr			Cat	Calibration Due
Asset #1505		9kHz - 18GHz		Florida RF			II	18-Aug-2011
Asset #1522		9kHz - 26.5GHz		Florida RF			II	17-Sep-2011
REMI-High-22		9kHz - 15GHz		C-S			II	18-Jan-2012

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



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

Spurious Emissions											
Date: 22-Jun-11			Company: Signal Fire					Work Order: L0853			
Engineer: Matthew Burman			EUT Desc: SignalFire Telemetry 10mW Radio					EUT Operating Voltage/Frequency: 6Vdc			
Temp: 24.1°C			Humidity: 37%			Pressure: 1006mBar					
Frequency Range: 30-10000MHz								Measurement Distance: Conductive			
Notes: RBW = 100kHz VBW = 300kHz											
	Frequency (MHz)	Reading (dBm)					---		Limit (dBm)	Margin (dB)	Result (Pass/Fail)
fundamental	915.0	8.545	---	---	---	---	---	---	---	---	---
spurious	1833.0	-41.38	---	---	---	---	---	---	-11.5	-29.925	Pass
Test Site: 3m Indoor OATS I Attenuator: ---											
Analyzer: Asset #1491											

Rev: 28-Jun-2011

Spectrum Analyzers / Receivers /Preselectors
Rental SA #5

Range
9kHz-26.5 GHz

MN
E4407B

Mfr
Agilent

SN
MY44220066

Asset
1491

Cat
I

Calibration Due
17-Mar-2012

Meteorological Meters
Temp./Humidity/Atm. Pressure Gauge
1DCC-OATS-3M-I Thermohygrometer

MN
7400 Perception II
35519-044

Mfr
Davis
Control Company

SN
N/A
72457635

Asset
965
1334

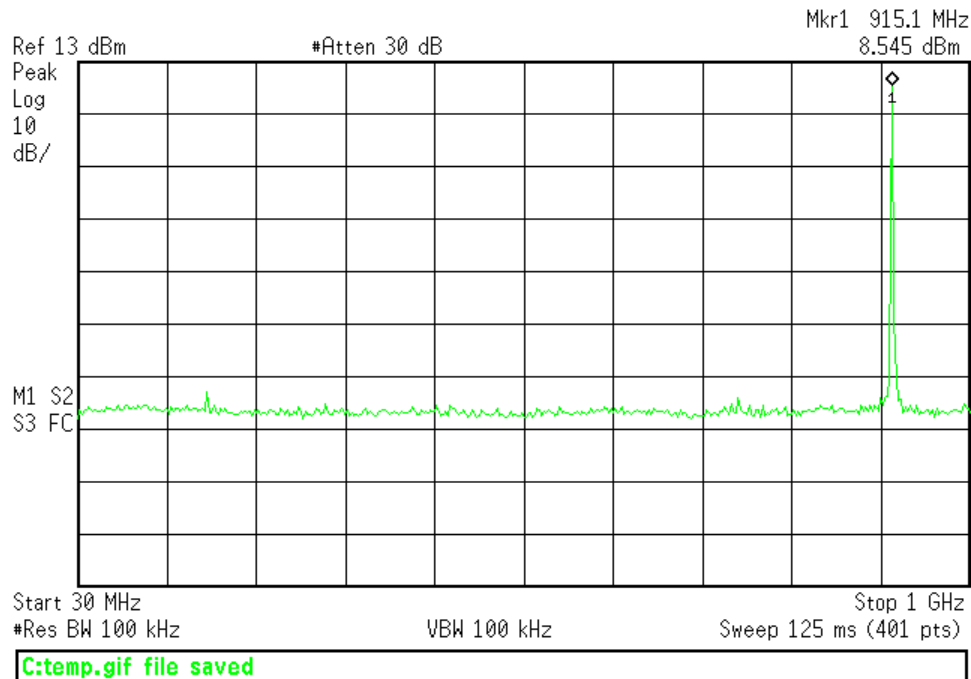
Cat
I
II

Calibration Due
4-Apr-2013
18-Aug-2011

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

Agilent 21:37:27 Jun 22, 2011

R T

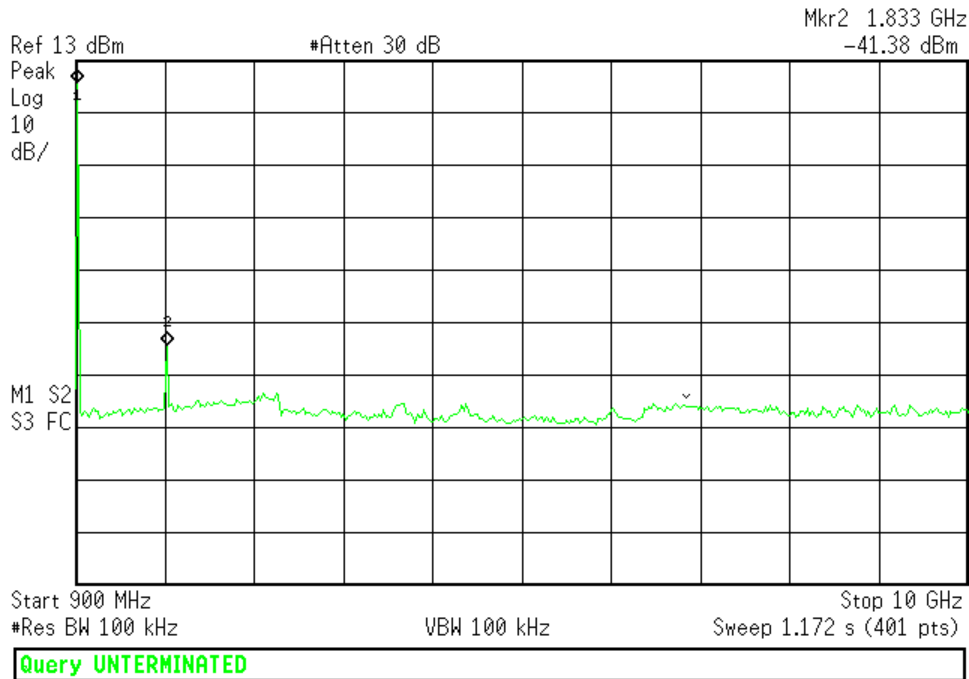


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Agilent 21:39:37 Jun 22, 2011

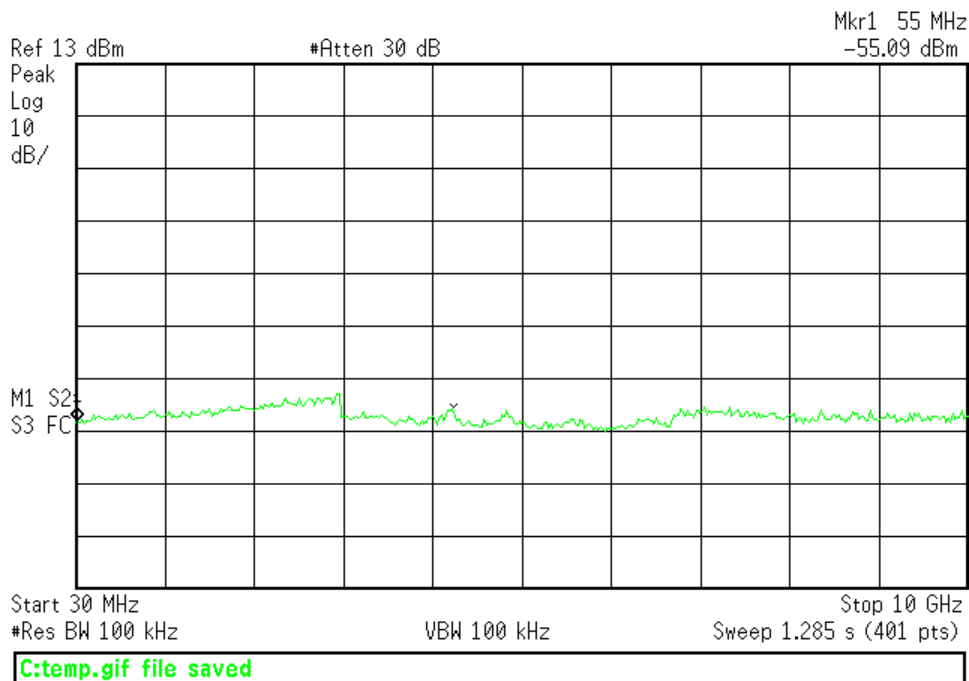
R T



Receive Mode

Agilent 21:42:57 Jun 22, 2011

R T



Occupied Bandwidth

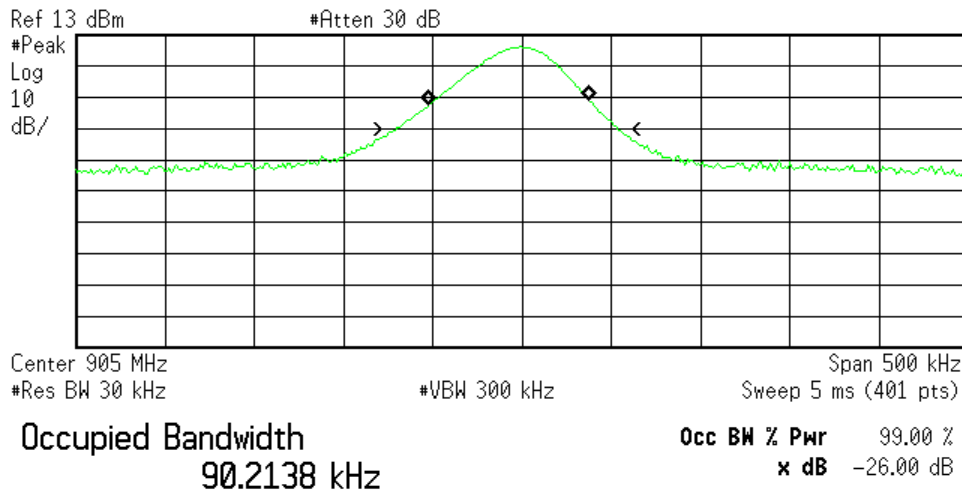
REQUIREMENT

When an occupied bandwidth is not 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]

Low Channel

Agilent 21:12:27 Jun 22, 2011

R T



Transmit Freq Error -7.079 kHz
x dB Bandwidth 123.998 kHz

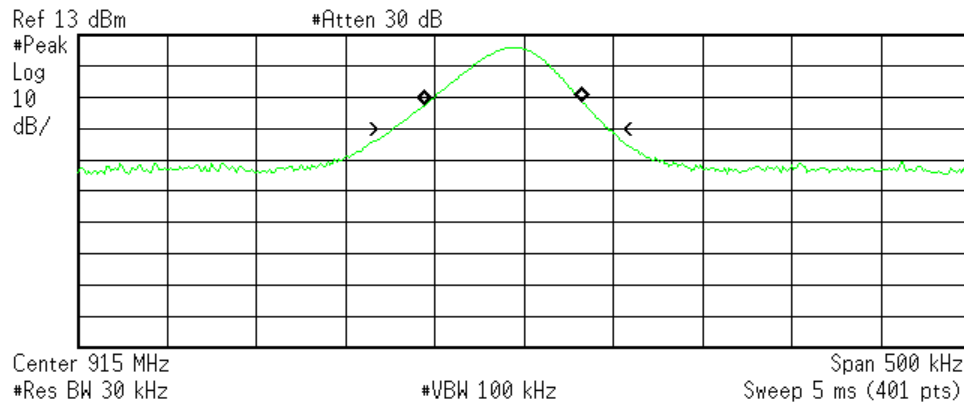
C:\temp.gif file saved



Mid Channel

Agilent 21:35:42 Jun 22, 2011

R T



Occupied Bandwidth
88.0156 kHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

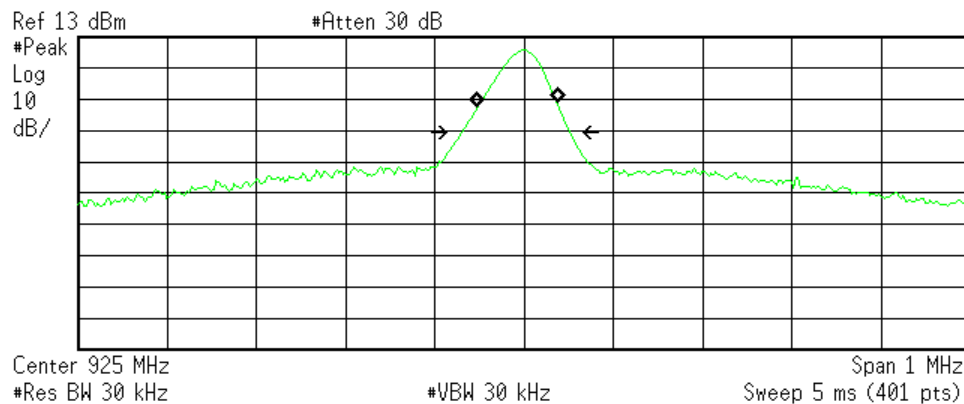
Transmit Freq Error -11.671 kHz
x dB Bandwidth 120.757 kHz

C:\temp.gif file saved

High Channel

Agilent 21:20:55 Jun 22, 2011

R T



Occupied Bandwidth
88.5672 kHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -7.726 kHz
x dB Bandwidth 120.732 kHz

Query UNTERMINATED



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: 22-Jun-11			Company: Signal Fire Telemetry				Work Order: L0853			
Engineer: Matthew Burman			EUT Desc: Signal Fire Telemetry 10mW Radio				Test Site: CEMI5			
Temp: 24.1 °C			Humidity: 41%				Pressure: 1006mBar			
Notes:										
Measurement Device: Green LISN						EUT Operating Voltage/Frequency: 120Vac 60Hz / 6Vdc				
Range: 0.15-30MHz						Spectrum Analyzer: Black				
Frequency (MHz)	Q.P. Readings		Ave. Readings		Impedance Factor (dB)	FCC/CISPR B		FCC/CISPR B		Overall Result (Pass/Fail)
	QP1 (dBμV)	QP2 (dBμV)	AV1 (dBμV)	AV2 (dBμV)		qp Limit (dBμV)	qp Margin dB	AVE Limit (dBμV)	AVE Margin dB	
0.17	30.2	29.6	20.3	20.3	20.3	65.2	-14.7	55.2	-14.6	Pass
0.23	37.1	37.2	27.6	27.7	20.2	62.3	-4.9	52.3	-4.4	Pass
0.27	30.1	29.9	20.1	20.0	20.2	61.3	-11.0	51.3	-11.0	Pass
0.37	21.0	20.3	12.7	12.3	20.1	58.6	-17.5	48.6	-15.8	Pass
0.67	14.0	14.7	8.1	5.2	20.1	56.0	-21.2	46.0	-17.8	Pass
4.59	23.0	22.3	2.3	0.8	20.1	56.0	-12.9	46.0	-23.6	Pass
Table Result:		Pass	by		-4.40 dB	Worst Freq:		0.23 MHz		

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Spectrum Analyzers / Receivers / Preselectors

Black

Range
9kHz-12.8GHzMN
8596EMfr
AgilentSN
3710A00944Asset
337Cat
ICalibration Due
12-Oct-2011**LISNs/Measurement Probes**

Green LISN

Range
9kHz-50MHzMN
8012-50-R-24-BNCMfr
SolarSN
411658Asset
987Cat
ICalibration Due
26-Apr-2012**Conducted Test Sites (Mains / Telco)**

CEMI 5

FCC Code
719150VCCI Code
C-3364, T-1579Cat
IIICalibration Due
NA**Meteorological Meters**Temp./Humidity/Atm. Pressure Gauge
CEMI5 ThermohygrometerMN
7400 Perception II
35519-044Mfr
Davis
Control CompanySN
N/A
72457633Asset
965
1341Cat
I
IICalibration Due
4-Apr-2013
18-Aug-2011**Cables**

CEMI-05

Range
9kHz - 2GHzMfr
C-SCat
IICalibration Due
4-Apr-2012

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Product Documentation

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



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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 where 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



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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.

Rev.160009121(2)_#684340 v13CS

