Test Report

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

Report No	EP2631-1
Client	SignalFire Telemetry Alfred Hamilton
Address	43 Broad Street, Unit A-403 Hudson, MA 01749
Phone	(978) 212 - 2868
Items tested	DIN Mount Gateway
FCC ID	W8V-GWDIN
IC ID	8373A-GWDIN
FRN	0018614347
Equipment Type Equipment Code	DSS Part 15, Frequency Hopping Spread Spectrum Transmitter
FCC/IC Rule Parts	47 CFR 15.247, RSS-247 Issue 1
Test Dates	February 29 and March 1 – 2 and 21, 2016
Results	As detailed within this report
Prepared by	Tuyen Truong – Test Engineer
Authorized by	Yunus Fazlioglu – Sr. EMC Engineer
Issue Date	4/18/2016
Conditions of Issue	This Test Report is issued subject to the conditions stated in the '*Conditions of Testing*' section on page 45 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. The product is the DIN Mount Gateway. It is a frequency hopping transmitter that operates in the range 905-925MHz. Product was tested with detachable antennas with 5.8dBi gain (Enclosure Mount Antenna, M/N: EEH-915) and 2.0dBi gain (Nearson Antenna, M/N: 467) respectively.

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

Release Control Record

Issue No.	Reason for change	Date Issued
1	Original Release	April 18, 2016

Test Methodology

Radiated emission and AC line conducted emission testing was performed according to the procedures specified in ANSI C63.10 (2013) and RSS-247 Issue 1. 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 not maximized separately.

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

AC mains conducted emissions was performed with a 50Ω/50µH LISN and using a representative AC/DC power supply

Operating channel frequency = 905 MHz
Operating channel frequency = 915 MHz
Operating channel frequency = 925 MHz

When hopping, the product was configured for the transmission to be either in the range of 905-914.8MHz (Low Band), or 915-924.8MHz (High Band) respectively.

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

Product Tested - Configuration Documentation

EUT Configuration			
Work Order:	P2631		
Company:	SignalFire Telemetry		
Company Address:	43 Broad St, Suite A-403		
	Hudson, MA, 01749		
Client present:	Josh Schadel		
Contact:	Alfred Hamilton		
	MN	**PN**	**SN**
EUT:	GW-DIN	--	Sample 1
EUT Description:	DIN Mount Gateway		
EUT TX Frequency:	905 - 925 MHz		
EUT Max Frequency:	26 MHz (Associated Circuitry)		

EUT Components	**MN**	**SN**
DIN Mount Gateway	GW-DIN	Sample 1
Enclosure Mount Antenna	EEH-915	Sample 1
Nearson Antenna	467	Sample 1

Support Equipment	**MN**	**SN**
Lenovo Laptop	x100e	--
AC/DC power brick	EPS090066	--

Port Label	Port Type	# ports	# populated	cable type	shielded	ferrites	length (m)	in/out	under test	comment
DC Power	Power DC	1	1	Power DC	No	No	2	in	yes	
Serial	RS-485	1	1	other	No	No	2	in	yes	
Serial	RS-232	1	0					in	no	Set up only
Antenna	other	1	1	Coaxial	Yes	No	1	in	yes	Note: the coax cable was present only while testing with the EEH-915 antenna. The 467 antenna was attached directly to the antenna port for testing.

Software Operating Mode Description:

EUT is set to transmit on Low (905 MHz), Mid (915 MHz) and High (925 MHz) respectively.

Performance Criteria:

EMI testing only

Statement of Conformity

The DIN Mount Gateway has been found to conform to the following parts of 47 CFR and RSS 247 as detailed below:

RSS-GEN	RSP-100	RSS 247	Part 15	Comments
6.3			15.15(b)	There are no controls accessible to the user that varies the output power to operate in violation of the regulatory requirements.
	3.1		15.19	The label is shown in the label exhibit.
	3.2		15.21	Information to the user is shown in the instruction manual exhibit.
			15.27	No special accessories are required for compliance.
6.1, 6.5			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.
8.1			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.
8.3			15.203	The antennas for this device are detachable antennas with Reverse Polarity SMA connectors. They are 5.8 dBi and 2.0dBi gains.
8.10			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 or RSS-Gen as applicable
8.8			15.207	The unit complies with the requirements of 15.207
			15.247	The unit complies with the requirements of 15.247
		RSS 247		The unit complies with the requirements of RSS-247
6.6				Occupied Bandwidth measurements were made.

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Modifications Required for Compliance

No Modifications were required for compliance.

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Test Results

Frequency Hopping Requirements

Channel Spacing

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater. [15.247 (a) (1)]

MEASUREMENTS / RESULTS

Channel Spacing

Date: 01-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 21°C **Humidity:** 33% **Pressure:** 998mBar
Frequency Range: 905 to 925 MHz **Measurement Distance:** 1 m
Notes: 20 dB Bandwidth = 59.6080 KHz (worst case) **EUT Max Freq:** 905 to 925 MHz

Frequency Hoping Systems (MHz)		Channel Spacing Reading (KHz)	FCC 15.247 - 20dB Band Width Limit (KHz)	Margin (KHz)	Result (Pass/Fail)
Low Band	*905-915 MHz*	*200.0*	*≥59.6080*	*+140.392*	*Pass*
High Band	*915-925 MHz*	*200.0*	*≥59.6080*	*+140.392*	*Pass*

Table Result: Pass by +26.25 KHz ***Frequency Range:*** 905-925 MHz

Test Site: CEM5 **Attenuation:** Asset#791
Analyzer: Brown

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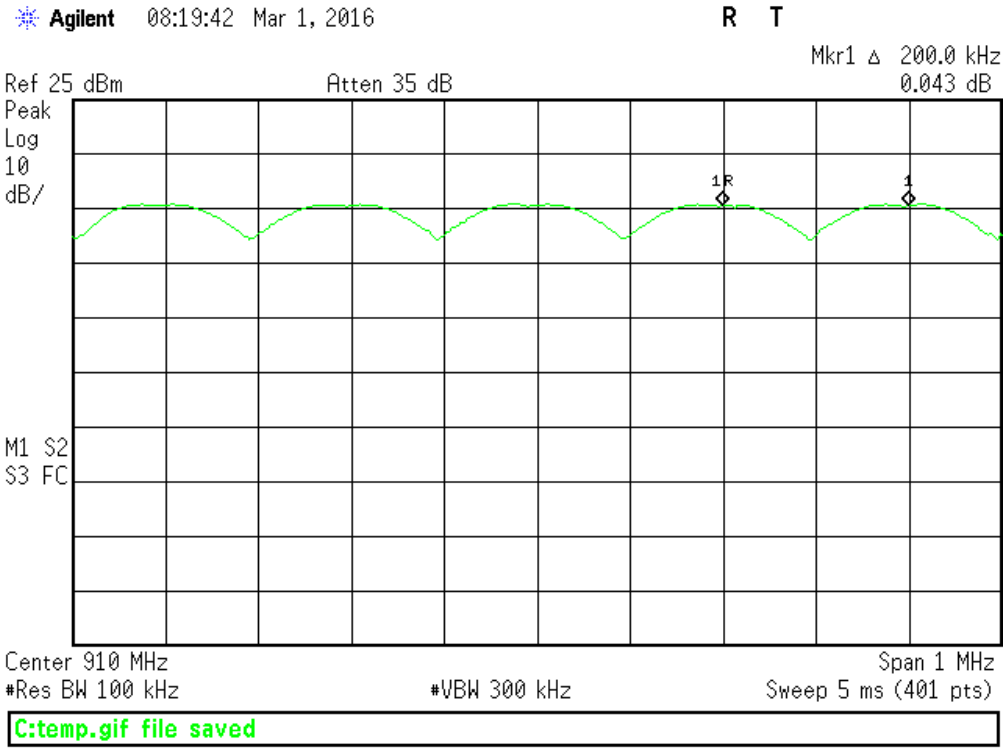
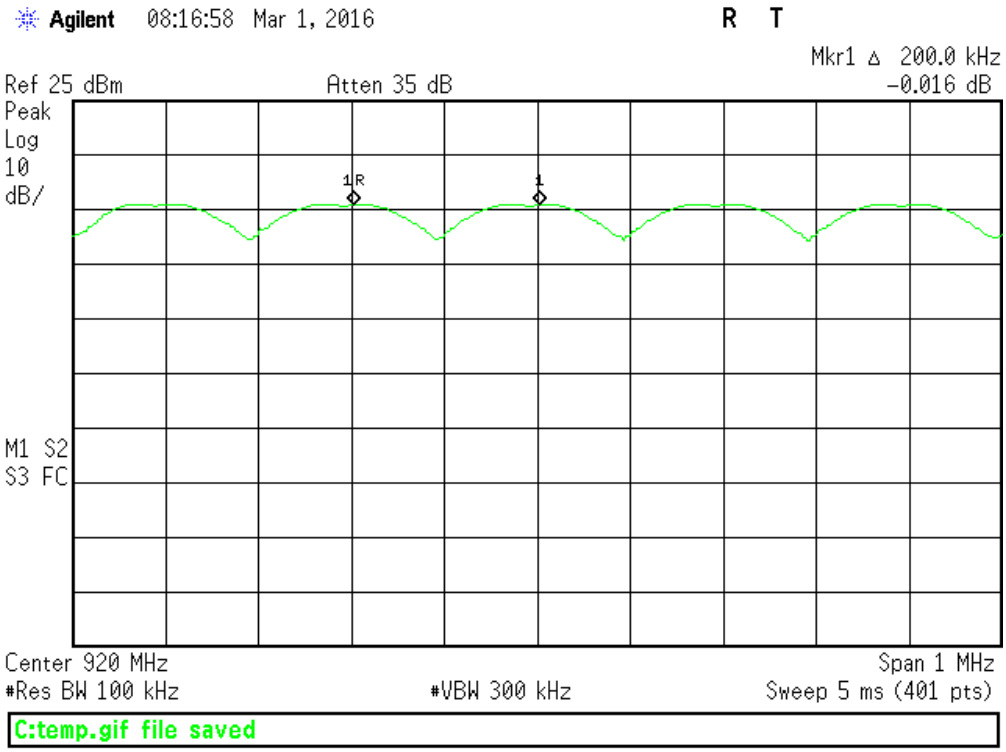
Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Brown	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	1/21/2017	1/21/2016
Conducted Test Sites (Mains / Telco)	**FCC Code**		**VCCI Code**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI 5	719150		A-0015			III	NA	N/A
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/31/2016	7/31/2015
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2078		HTC-1	HDE		2078	II	4/2/2016	4/2/2015

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

PLOTS



Channel Spacing – Running Low Band (905 – 915 MHz)



Channel Spacing – Running High Band (915 – 925 MHz)

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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)]

MEASUREMENTS / RESULTS

Number of Channels

Date: 01-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 21°C **Humidity:** 33% **Pressure:** 998mBar
Frequency Range: 905-925 MHz
Notes: **EUT Tx Freq:** 905 to 925 MHz

Frequency Hoping Systems		Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low Band	905-915 MHz	1	905.0	26	910.0
Low Band	905-915 MHz	2	905.2	27	910.2
Low Band	905-915 MHz	3	905.4	28	910.4
Low Band	905-915 MHz	4	905.6	29	910.6
Low Band	905-915 MHz	5	905.8	30	910.8
Low Band	905-915 MHz	6	906.0	31	911.0
Low Band	905-915 MHz	7	906.2	32	911.2
Low Band	905-915 MHz	8	906.4	33	911.4
Low Band	905-915 MHz	9	906.6	34	911.6
Low Band	905-915 MHz	10	906.8	35	911.8
Low Band	905-915 MHz	11	907.0	36	912.0
Low Band	905-915 MHz	12	907.2	37	912.2
Low Band	905-915 MHz	13	907.4	38	912.4
Low Band	905-915 MHz	14	907.6	39	912.6
Low Band	905-915 MHz	15	907.8	40	912.8
Low Band	905-915 MHz	16	908.0	41	913.0
Low Band	905-915 MHz	17	908.2	42	913.2
Low Band	905-915 MHz	18	908.4	43	913.4
Low Band	905-915 MHz	19	908.6	44	913.6
Low Band	905-915 MHz	20	908.8	45	913.8
Low Band	905-915 MHz	21	909.0	46	914.0
Low Band	905-915 MHz	22	909.2	47	914.2
Low Band	905-915 MHz	23	909.4	48	914.4
Low Band	905-915 MHz	24	909.6	49	914.6
Low Band	905-915 MHz	25	909.8	50	914.8

Test Site: CEM5 **Attenuation:** Asset#791
Analyzer: Brown

Rev. 2/28/2016

Spectrum Analyzers / Receivers /Preselectors	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Brown	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	1/21/2017	1/21/2016
Conducted Test Sites (Mains / Telco)	**FCC Code**		**VCCI Code**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI 5	719150		A-0015			III	NA	N/A
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/31/2016	7/31/2015
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2078		HTC-1	HDE		2078	II	4/2/2016	4/2/2015

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

Number of Channels

Date: 01-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 21°C **Humidity:** 33% **Pressure:** 998mBar
Frequency Range: 905-925 MHz
Notes: **EUT Tx Freq:** 905 to 925 MHz

Frequency Hoping Systems		Channel	Frequency (MHz)	Channel	Frequency (MHz)
High Band	*915-925 MHz*	*51*	*915.0*	*76*	*920.0*
High Band	*915-925 MHz*	*52*	*915.2*	*77*	*920.2*
High Band	*915-925 MHz*	*53*	*915.4*	*78*	*920.4*
High Band	*915-925 MHz*	*54*	*915.6*	*79*	*920.6*
High Band	*915-925 MHz*	*55*	*915.8*	*80*	*920.8*
High Band	*915-925 MHz*	*56*	*916.0*	*81*	*921.0*
High Band	*915-925 MHz*	*57*	*916.2*	*82*	*921.2*
High Band	*915-925 MHz*	*58*	*916.4*	*83*	*921.4*
High Band	*915-925 MHz*	*59*	*916.6*	*84*	*921.6*
High Band	*915-925 MHz*	*60*	*916.8*	*85*	*921.8*
High Band	*915-925 MHz*	*61*	*917.0*	*86*	*922.0*
High Band	*915-925 MHz*	*62*	*917.2*	*87*	*922.2*
High Band	*915-925 MHz*	*63*	*917.4*	*88*	*922.4*
High Band	*915-925 MHz*	*64*	*917.6*	*89*	*922.6*
High Band	*915-925 MHz*	*65*	*917.8*	*90*	*922.8*
High Band	*915-925 MHz*	*66*	*918.0*	*91*	*923.0*
High Band	*915-925 MHz*	*67*	*918.2*	*92*	*923.2*
High Band	*915-925 MHz*	*68*	*918.4*	*93*	*923.4*
High Band	*915-925 MHz*	*69*	*918.6*	*94*	*923.6*
High Band	*915-925 MHz*	*70*	*918.8*	*95*	*923.8*
High Band	*915-925 MHz*	*71*	*919.0*	*96*	*924.0*
High Band	*915-925 MHz*	*72*	*919.2*	*97*	*924.2*
High Band	*915-925 MHz*	*73*	*919.4*	*98*	*924.4*
High Band	*915-925 MHz*	*74*	*919.6*	*99*	*924.6*
High Band	*915-925 MHz*	*75*	*919.8*	*100*	*924.8*

Test Site: CEM5 **Attenuation:** Asset#791
Analyzer: Brown

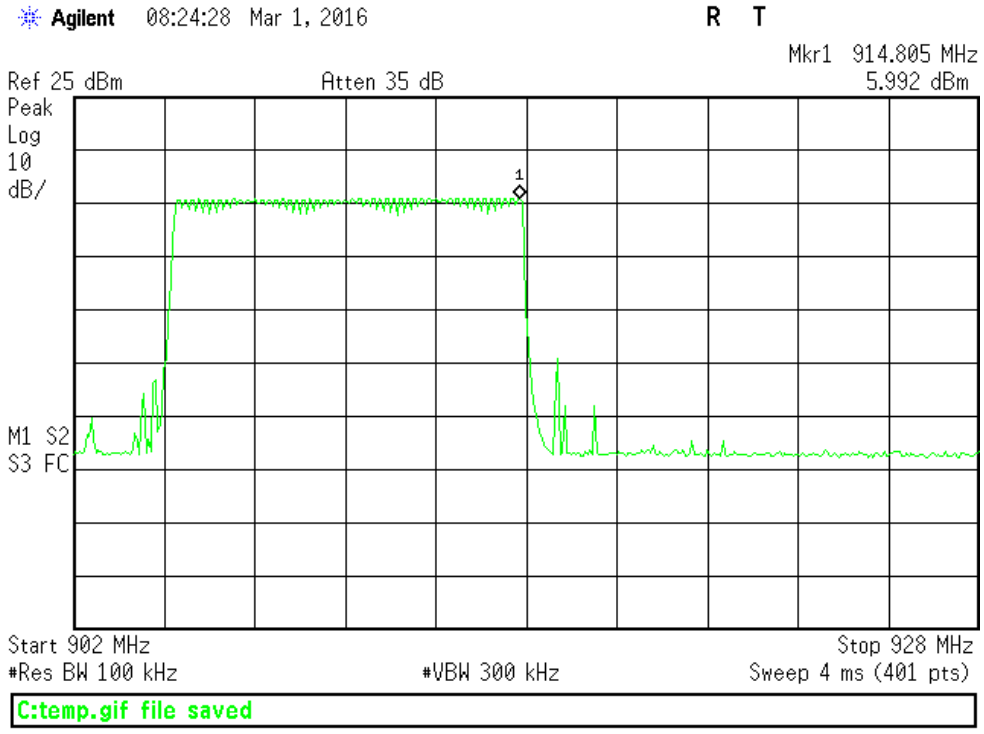
Note: Per client, only 100 channels (905-924.8MHz) are currently using. Channel 101th (925 MHz) shall be used in the future.

Rev. 2/28/2016

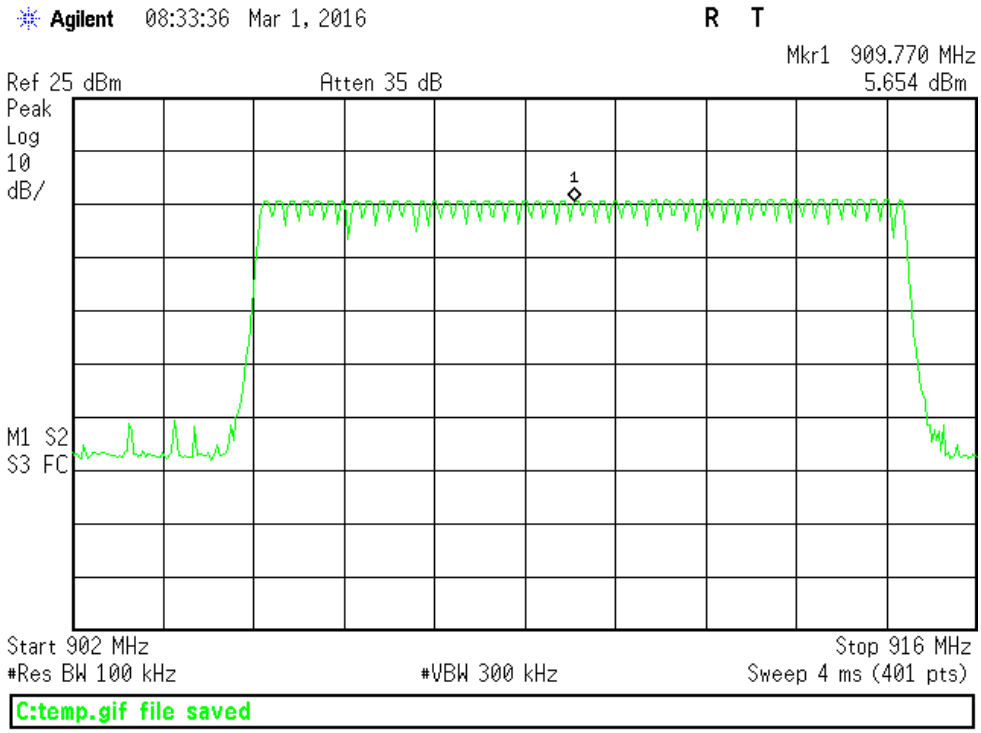
Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Brown	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	1/21/2017	1/21/2016
Conducted Test Sites (Mains / Telco)	**FCC Code**		**VCCI Code**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI 5	719150		A-0015			III	NA	N/A
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/31/2016	7/31/2015
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2078		HTC-1	HDE		2078	II	4/2/2016	4/2/2015

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

PLOTS



Number of Channels - 50 Channels (Running Low Band)



Number of Channels - 50 Channels (Running Low Band – Closed Up View)

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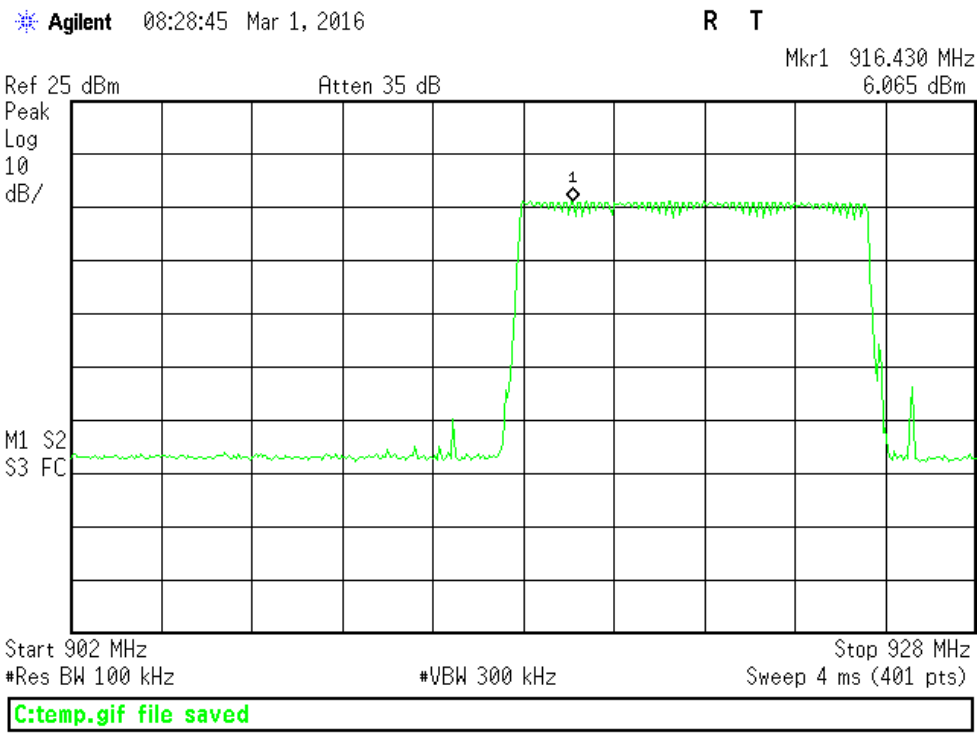
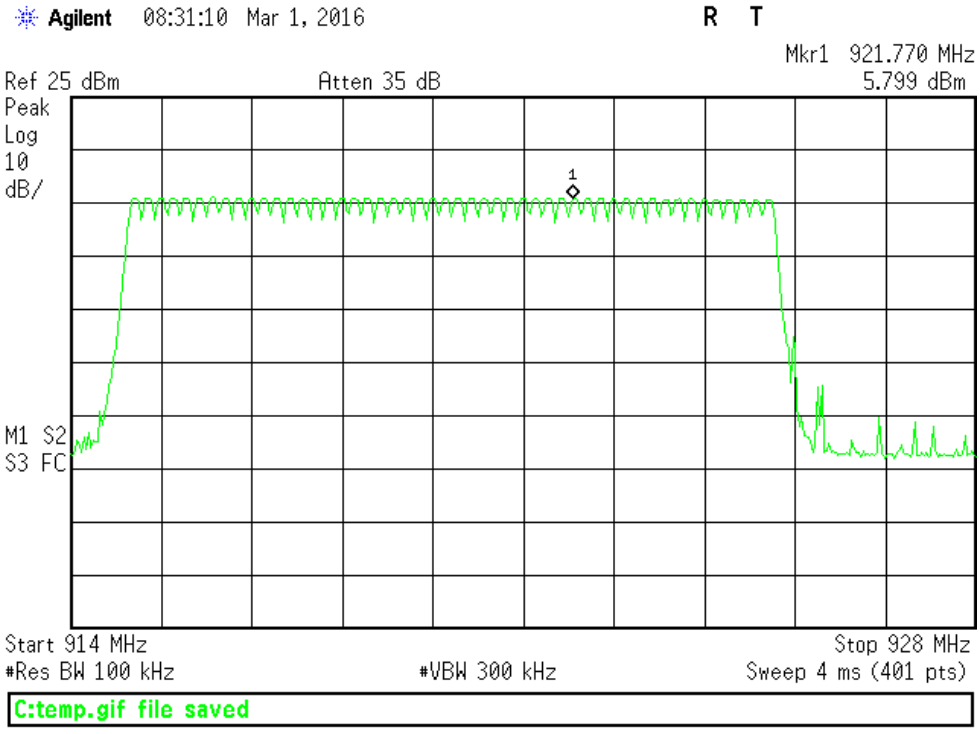


Number of Channels - 50 Channels (Running High Band)



Number of Channels - 50 Channels (Running High Band – Closed Up View)

Occupancy Time

For frequency hopping systems operating in the 902-928MHz band: if the 20dB bandwidth of the hopping channel is less than 250 kHz …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)]

MEASUREMENTS / RESULTS

Occupancy Time

Date: 01-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 21°C **Humidity:** 33% **Pressure:** 998mBar

Frequency Range: 905-925 MHz

Notes: 905.4 MHz (selected frequency)

Frequency (MHz)	Individual Dwell Time (ms)	Total Transmissions Occurred in 20seconds	Total Transmissions Duration in 20 seconds (ms)	Adjusted Total Transmissions Duration in 20 seconds (s)	FCC 15.247 Limit (s)	Margin (s)	Result (Pass/Fail)
905.4	***28.25***	***3***	***84.75***	0.08475	0.4	-0.31525	Pass

Table Result: Pass by -0.31525 s ***Worst Freq:*** 905.4 MHz

Test Site: CEM5 **Attenuation:** Asset#791
Analyzer: Brown

Rev. 2/28/2016

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Brown	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	1/21/2017	1/21/2016
Conducted Test Sites (Mains / Telco)	**FCC Code**		**VCCI Code**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI 5	719150		A-0015			III	NA	N/A
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/31/2016	7/31/2015
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2078		HTC-1	HDE		2078	II	4/2/2016	4/2/2015

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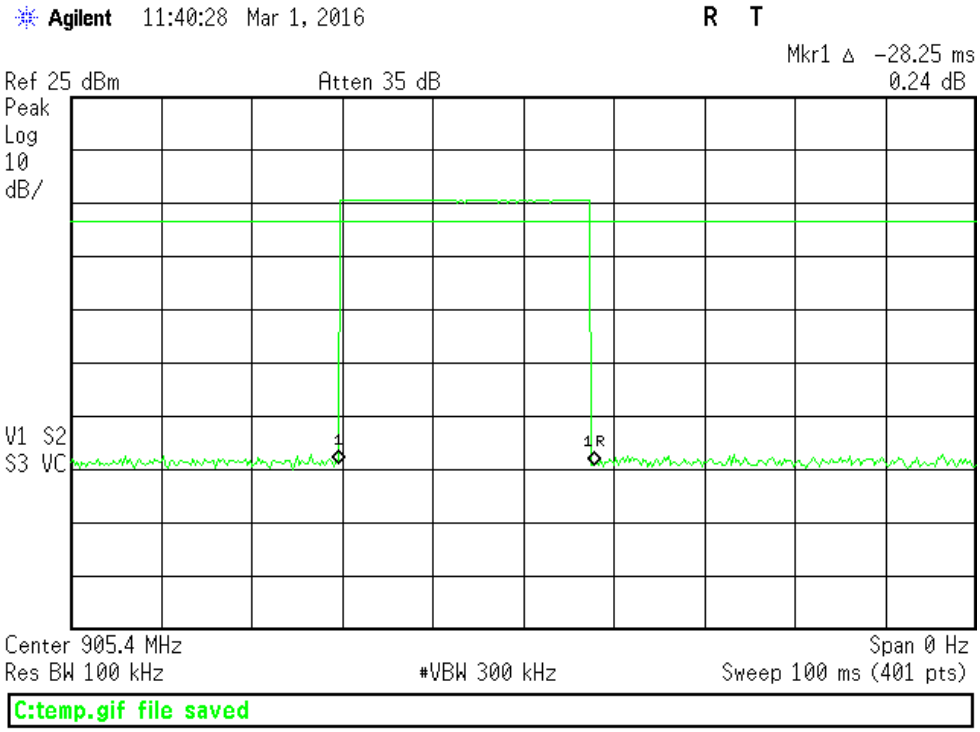
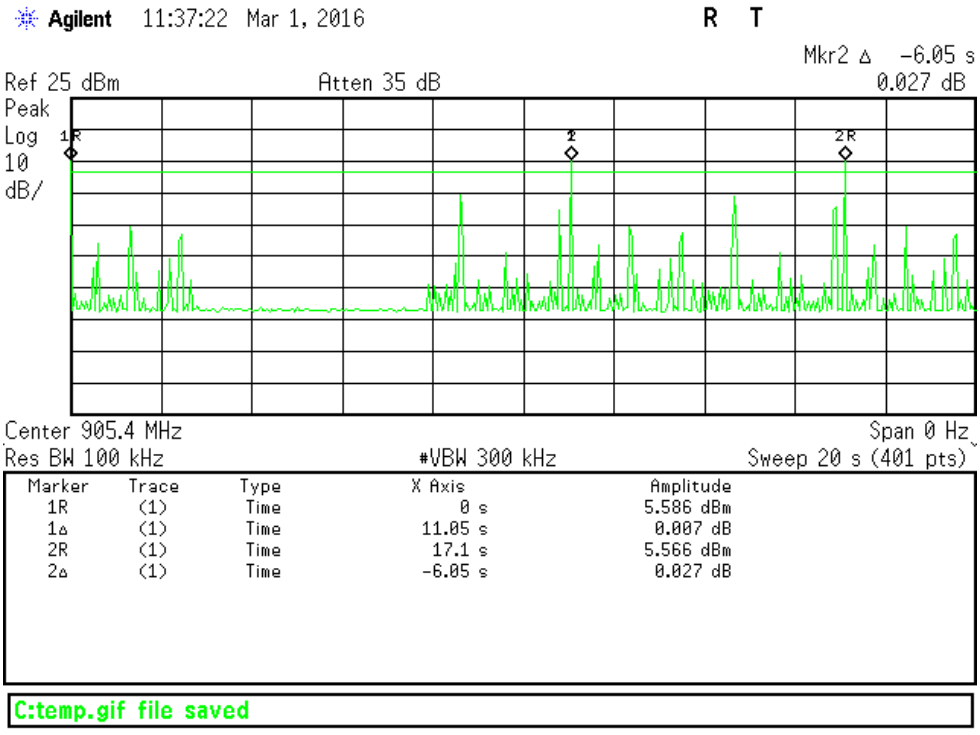
PLOTS



Time Dwelled on a Carrier Frequency (905.4 MHz)



Total Transmissions Times in 20seconds – 3x

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Peak Power

LIMIT

Conducted Output Power
1 Watt
[15.247(b) (2)]

MEASUREMENTS / RESULTS

Peak Power

Date: 01-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 21°C **Humidity:** 33% **Pressure:** 998mBar

Frequency Range: 905-925MHz

Notes:

Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Final Conducted Reading (dBm)	FCC 15.247 Limit (dBm)	Margin (dB)	Result (Pass/Fail)
905	5.04	19.55	24.59	30.0	-5.41	Pass
915	5.22	19.55	24.77	30.0	-5.24	Pass
925	5.30	19.55	24.85	30.0	-5.15	Pass

Table Result: Pass by -5.15 dB ***Worst Freq:*** 925.0 MHz

Test Site: CEM5 **Attenuation:** Asset#791
Analyzer: Brown

Rev. 2/28/2016

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
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Conducted Test Sites (Mains / Telco)	FCC Code	VCCI Code	Cat	Calibration Due	Calibrated on
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Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
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Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
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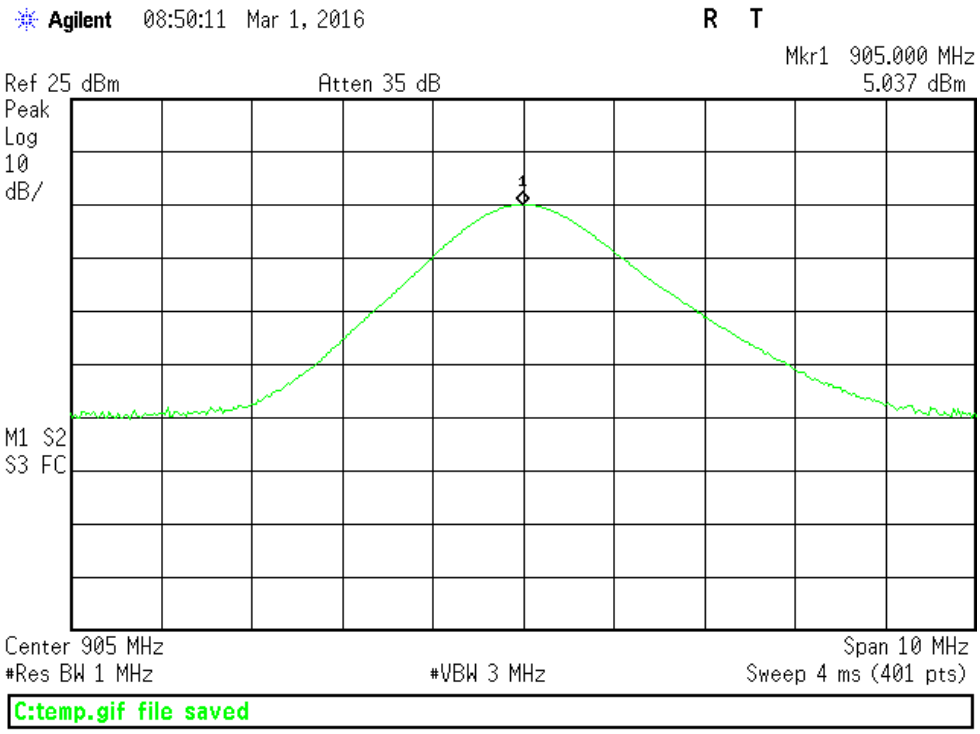
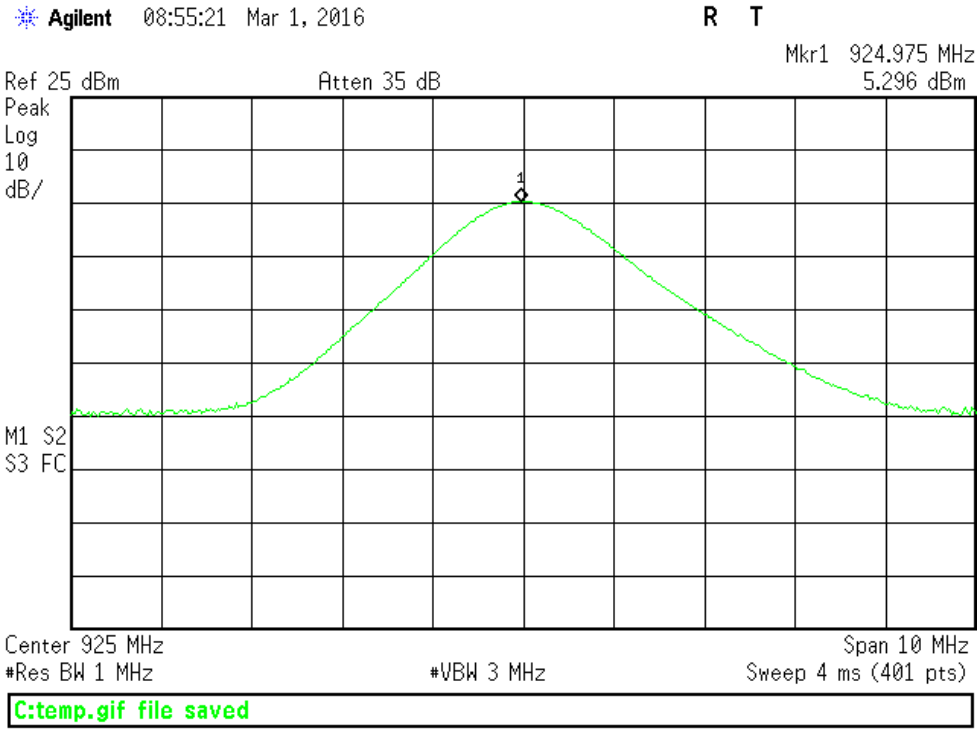


Peak Power – Low Channel



Peak Power – Mid Channel

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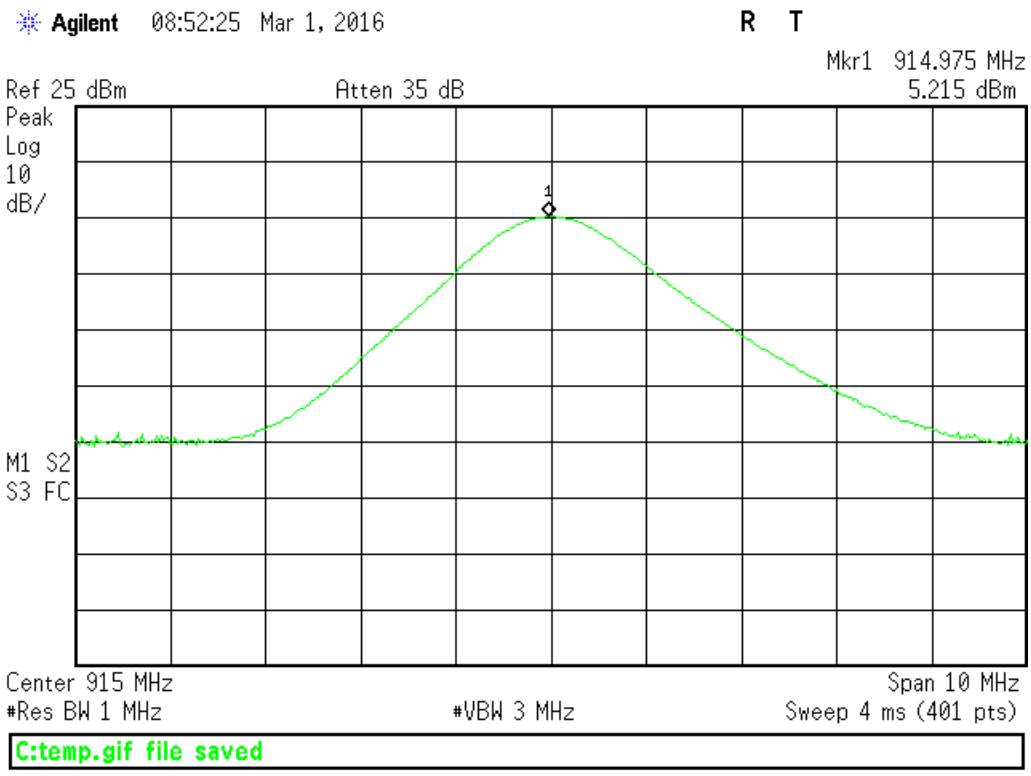

Peak Power – High Channel

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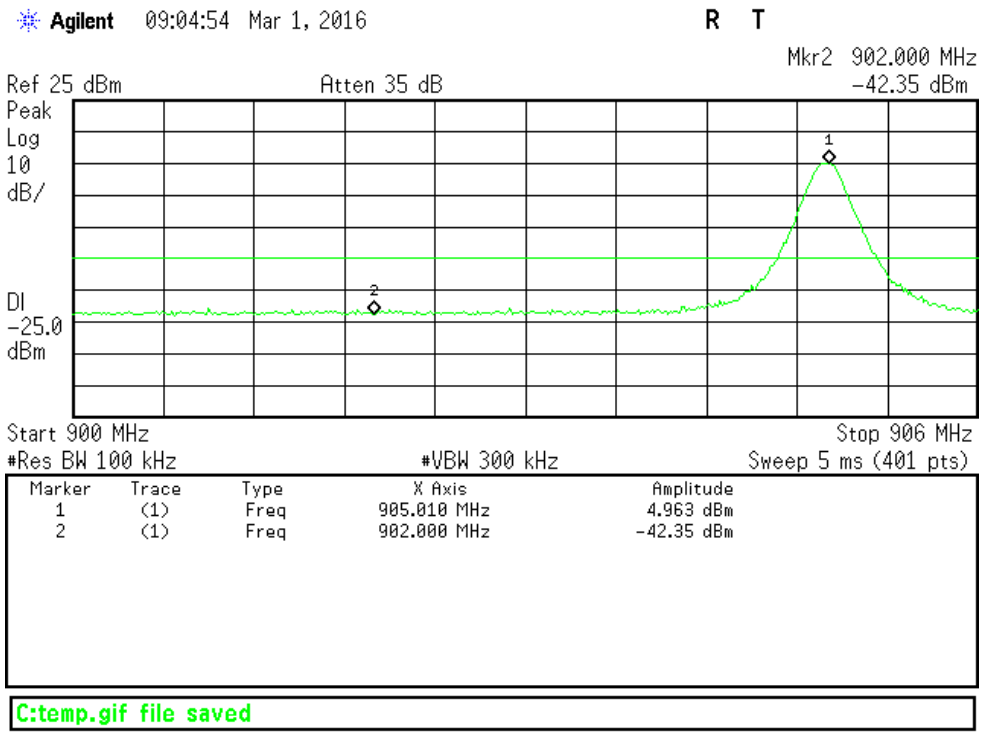
Conducted Spurious Emissions

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 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)]

MEASUREMENTS / RESULTS

PLOTS



Band Edge - Running Low Channel (905 MHz)

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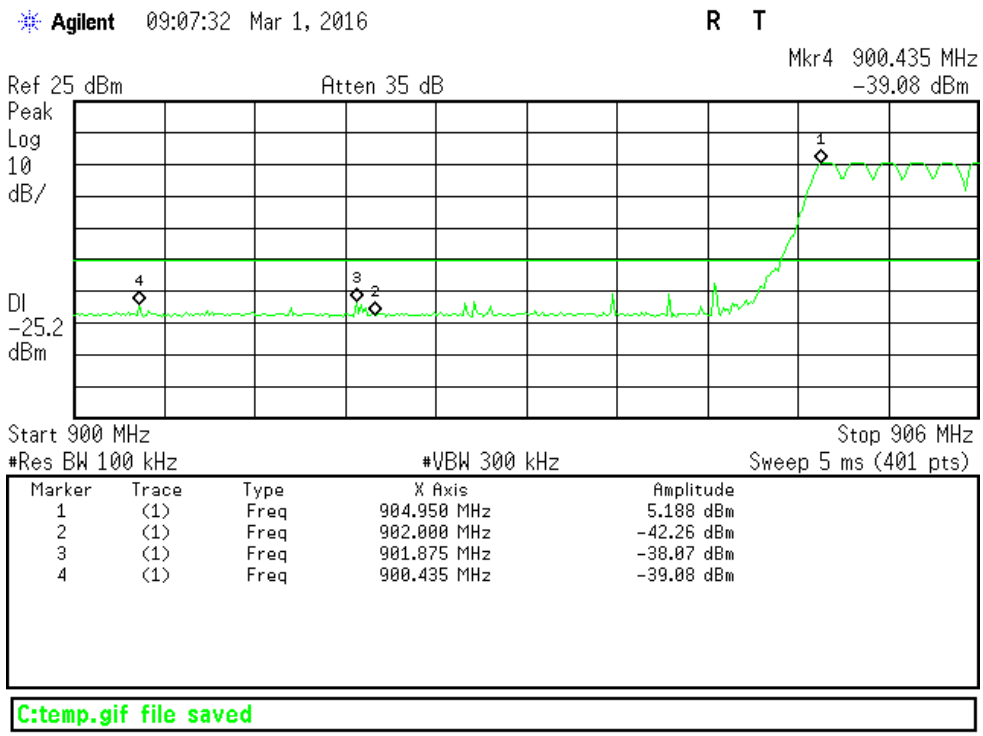
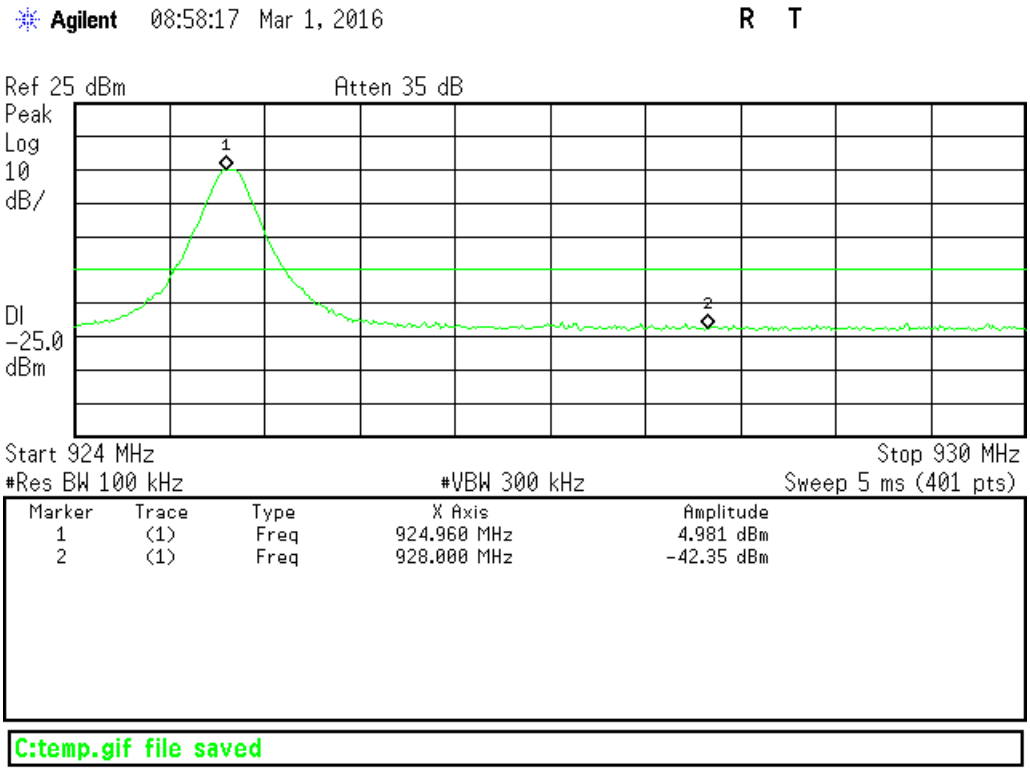
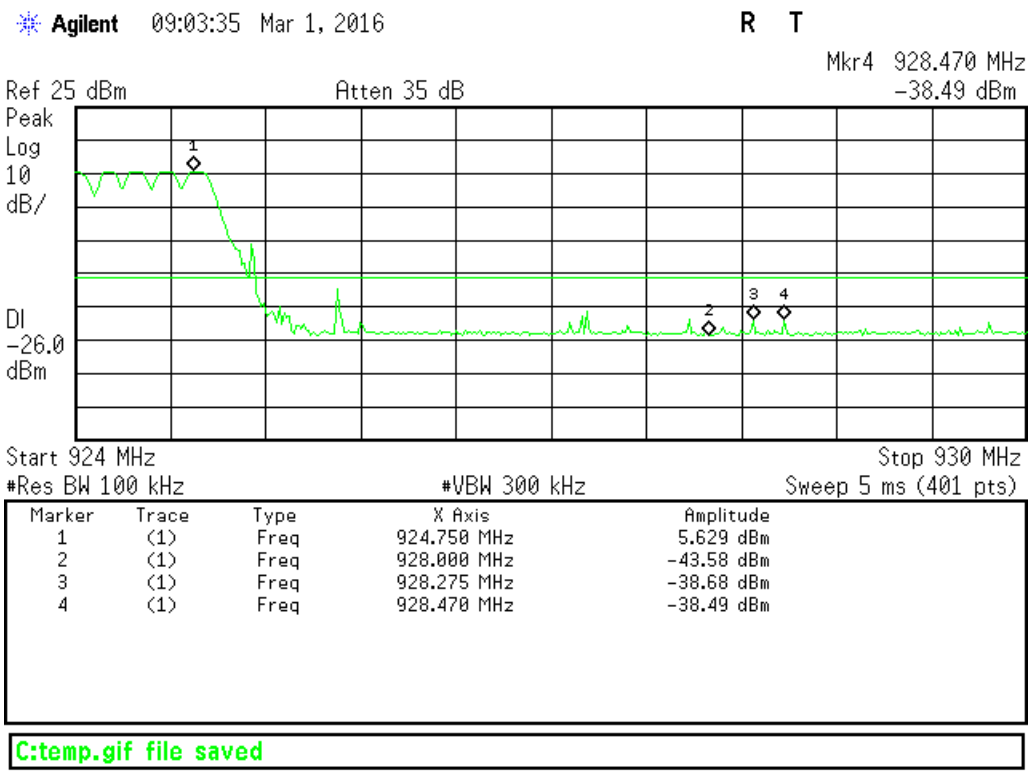


Band Edge – Running Low Band (Hopping Enable)



Band Edge – Running High Channel (925 MHz)



Band Edge – Running High Band (Hopping Enable)

Rev. 2/28/2016

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Brown	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	1/21/2017	1/21/2016
Conducted Test Sites (Mains / Telco)	**FCC Code**		**VCCI Code**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI 5	719150		A-0015			III	NA	N/A
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/31/2016	7/31/2015
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2078		HTC-1	HDE		2078	II	4/2/2016	4/2/2015

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

Conducted Spurious Emission

Maximum In Band in 100 KHz RBW

Date: 01-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 21°C **Humidity:** 33% **Pressure:** 998mBar

Frequency Range: 902-928MHz

Notes: Maximum In Band in 100 KHz RBW

Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Adjusted Reading (dBm)
915	5.013	19.55	24.56

Test Site: CEM5 **Attenuation:** Asset#791
Analyzer: Brown

Conducted Spurious Emission

Date: 01-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 21°C **Humidity:** 33% **Pressure:** 998mBar

Frequency Range: 30-10000 MHz

Notes: TX on low channel
The Limit here is set to -20dB from the max in-band peak PSD level in 100kHz RBW (Attenuation factor included or 19.55dB)

Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Final Conducted Reading (dBm)	FCC 15.247 Limit (dBm)	Margin (dB)	Result (Pass/Fail)
1810.0	-32.69	19.55	-13.14	4.56	-17.70	Pass

Table Result: Pass by -17.70 dB ***Worst Freq:*** 1810.0 MHz

Test Site: CEM5 **Attenuation:** Asset#791
Analyzer: Brown

Conducted Spurious Emission

Date: 01-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 21°C **Humidity:** 33% **Pressure:** 998mBar

Frequency Range: 30-10000 MHz

Notes: TX on mid channel
The Limit here is set to -20dB from the max in-band peak PSD level in 100kHz RBW (Attenuation factor included or 19.55dB)

Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Final Conducted Reading (dBm)	FCC 15.247 Limit (dBm)	Margin (dB)	Result (Pass/Fail)
1830.0	-32.95	19.55	-13.40	4.56	-17.96	Pass

Table Result: Pass by -17.96 dB ***Worst Freq:*** 1830.0 MHz

Test Site: CEM5 **Attenuation:** Asset#791
Analyzer: Brown

Conducted Spurious Emission

Date: 01-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 21°C **Humidity:** 33% **Pressure:** 998mBar

Frequency Range: 30-10000 MHz

Notes: TX on high channel
The Limit here is set to -20dB from the max in-band peak PSD level in 100kHz RBW (Attenuation factor included or 19.55dB)

Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Final Conducted Reading (dBm)	FCC 15.247 Limit (dBm)	FCC 15.247 Margin (dB)	FCC 15.247 Result (Pass/Fail)
1850.0	-32.08	19.55	-12.53	4.56	-17.09	Pass

Table Result: Pass by -17.09 dB ***Worst Freq:*** 1850.0 MHz

Test Site: CEM5 **Attenuation:** Asset#791
Analyzer: Brown

Rev. 2/28/2016

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Brown	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	1/21/2017	1/21/2016

Conducted Test Sites (Mains / Telco)	FCC Code	VCCI Code	Cat	Calibration Due	Calibrated on
CEMI 5	719150	A-0015	III	NA	N/A

Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/31/2016	7/31/2015

Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)	BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2078	HTC-1	HDE		2078	II	4/2/2016	4/2/2015

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

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

Radiated Emissions Table

Date: 29-Feb-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 22.6°C **Humidity:** 26% **Pressure:** 993mBar
Frequency Range: 30 to 1000 MHz **Measurement Distance:** 3 m
Notes: TX on low channel **EUT Max Freq:** 905 to 925 MHz
Tested with Enclosure Mount Antenna (MN: EEH-915)

							---			FCC 15.209		
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	37.12	46.3	25.4	16.0	0.4	37.3	---	---	---	40.0	-2.7	Pass
v	38.49	46.3	25.4	15.0	0.4	36.3	---	---	---	40.0	-3.7	Pass
h	72.19	54.0	25.4	8.4	0.5	37.5	---	---	---	40.0	-2.5	Pass
v	74.26	46.0	25.4	8.5	0.5	29.6	---	---	---	40.0	-10.4	Pass
v	92.17	55.8	25.5	8.3	0.6	39.2	---	---	---	43.5	-4.3	Pass
h	92.8	49.6	25.5	8.5	0.6	33.2	---	---	---	43.5	-10.3	Pass
v	112.0	34.0	25.4	13.2	0.6	22.4	---	---	---	43.5	-21.1	Pass
h	112.0	41.9	25.4	13.2	0.6	30.3	---	---	---	43.5	-13.2	Pass
v	351.0	25.8	25.7	14.3	1.0	15.4	---	---	---	46.0	-30.6	Pass
v	812.85	40.3	25.5	21.7	1.7	38.2	---	---	---	46.0	-7.8	Pass
h	977.3	34.5	25.2	23.2	1.8	34.3	---	---	---	54.0	-19.7	Pass
v	997.1	41.0	25.0	23.6	1.9	41.5	---	---	---	54.0	-12.5	Pass

Table Result: Pass by -2.5 dB ***Worst Freq:*** 72.19 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053 **Cable 3:** ---
Analyzer: Gold **Preamp:** Red-White **Antenna:** Red-White **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.157

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Rev. 2/28/2016

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-White	0.009-2000MHz	ZFL-1000-LN	CS	N/A	1258	II	12/27/2016	12/27/2015
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	8/12/2017	8/12/2015
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2052	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2053	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015

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ACCREDITED Testing Cert. No. 1627-01

Radiated Emissions Table

Date: 29-Feb-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 22.6°C **Humidity:** 26% **Pressure:** 993mBar
Frequency Range: 1 to 6 GHz **Measurement Distance:** 3 m
Notes: TX on Low channel **EUT Max Freq:** 905 to 925 MHz
Tested with Enclosure Mount Antenna (MN: EEH-915)

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
v	2715.0	59.38	57.5	40.4	29.1	4.8	52.9	51.0	74.0	-21.1	Pass	54.0	-3.0	Pass
h	2715.0	57.44	55.5	40.4	29.1	4.8	50.9	49.0	74.0	-23.1	Pass	54.0	-5.0	Pass
h	3620.0	49.7	42.2	40.9	31.6	5.4	45.8	38.3	74.0	-28.2	Pass	54.0	-15.7	Pass
h	4525.0	45.9	45.6	40.6	32.3	6.0	43.6	43.3	74.0	-30.4	Pass	54.0	-10.7	Pass
h	5430.0	47.8	42.3	40.1	34.5	6.7	48.9	43.4	74.0	-25.1	Pass	54.0	-10.6	Pass
v	5430.0	47.89	41.5	40.1	34.5	6.7	49.0	42.6	74.0	-25.0	Pass	54.0	-11.4	Pass

Table Result: Pass by -3.0 dB ***Worst Freq:*** 2715.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053 **Cable 3:** Asset #1785
Analyzer: Gold **Preamp:** Asset #2111 **Antenna:** Black Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.157

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Radiated Emissions Table

Date: 29-Feb-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 22.6°C **Humidity:** 26% **Pressure:** 993mBar
Frequency Range: 6 to 10 GHz **Measurement Distance:** 1 m
Notes: TX on Low channel **EUT Max Freq:** 905 to 925 MHz
Tested with Enclosure Mount Antenna (MN: EEH-915)

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
v	7240.0	49.87	44.3	40.0	37.7	7.7	55.3	49.7	83.5	-28.2	Pass	63.5	-13.8	Pass
h	7240.0	53.24	48.8	40.0	37.7	7.7	58.6	54.2	83.5	-24.9	Pass	63.5	-9.3	Pass

Table Result: Pass by -9.3 dB ***Worst Freq:*** 7240.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053 **Cable 3:** Asset #1785
Analyzer: Gold **Preamp:** Asset #2111 **Antenna:** Black Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.157

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Rev. 2/28/2016

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016

Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz		I	4/29/2017	4/29/2015

Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
A#2111 HF Preamp	0.5-18GHz	PAM-118A	COM-POWER	551063	2111	II	11/20/2016	11/20/2015
High Pass Filter	0.03-9 GHz	VHP-16	Mini-Circuits	NA	1288	II	1/7/2017	1/7/2016

Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Black Horn	1-18GHz	3115	EMCO	9703-5148	56	I	8/21/2016	8/21/2014

Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015

Cables	Range	Mfr	Cat	Calibration Due	Calibrated on
Asset #1785	9kHz - 18GHz	Florida RF	II	1/5/2017	1/5/2016
Asset #2052	9kHz - 18GHz	Florida RF	II	3/8/2016	3/8/2015
Asset #2053	9kHz - 18GHz	Florida RF	II	3/8/2016	3/8/2015

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Testing Cert. No. 1627-01

Radiated Emissions Table

Date: 29-Feb-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 22.6°C **Humidity:** 26% **Pressure:** 993mBar
Frequency Range: 30 to 1000 MHz **Measurement Distance:** 3 m
Notes: TX on mid channel **EUT Max Freq:** 905 to 925 MHz
Tested with Enclosure Mount Antenna (MN: EEH-915)

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)	FCC 15.209 Limit (dBµV/m)	FCC 15.209 Margin (dB)	FCC 15.209 Result (Pass/Fail)
v	38.5	45.1	25.4	15.0	0.4	35.1	---	---	---	40.0	-4.9	Pass
h	52.57	48.4	25.4	7.4	0.4	30.8	---	---	---	40.0	-9.2	Pass
v	71.5	47.0	25.4	8.4	0.5	30.5	---	---	---	40.0	-9.5	Pass
h	72.22	48.3	25.4	8.4	0.5	31.8	---	---	---	40.0	-8.2	Pass
v	74.9	43.9	25.4	8.5	0.5	27.5	---	---	---	40.0	-12.5	Pass
v	92.15	56.6	25.5	8.3	0.6	40.0	---	---	---	43.5	-3.5	Pass
h	92.15	36.6	25.5	8.3	0.6	20.0	---	---	---	43.5	-23.5	Pass
v	112.1	35.7	25.4	13.2	0.6	24.1	---	---	---	43.5	-19.4	Pass
h	112.1	35.6	25.4	13.2	0.6	24.0	---	---	---	43.5	-19.5	Pass
v	823.5	40.3	25.5	21.7	1.7	38.2	---	---	---	46.0	-7.8	Pass
h	842.8	32.2	25.5	21.7	1.8	30.2	---	---	---	46.0	-15.8	Pass
v	932.0	38.8	25.5	22.4	1.6	37.3	---	---	---	46.0	-8.7	Pass
v	992.7	30.6	25.0	23.5	1.9	31.0	---	---	---	54.0	-23.0	Pass

Table Result: Pass by -3.5 dB ***Worst Freq:*** 92.15 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053 **Cable 3:** ---
Analyzer: Gold **Preamp:** Red-White **Antenna:** Red-White **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.157

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Rev. 2/28/2016

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-White	0.009-2000MHz	ZFL-1000-LN	CS	N/A	1258	II	12/27/2016	12/27/2015
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	8/12/2017	8/12/2015
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2052	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2053	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015

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

Radiated Emissions Table

Date: 29-Feb-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 22.6°C **Humidity:** 26% **Pressure:** 993mBar
Frequency Range: 1 to 6 GHz **Measurement Distance:** 3 m
Notes: TX on Mid channel **EUT Max Freq:** 905 to 925 MHz
Tested with Enclosure Mount Antenna (MN: EEH-915)

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak Limit (dBµV/m)	Peak Margin (dB)	Peak Result (Pass/Fail)	FCC 15.209 High Frequency - Average Limit (dBµV/m)	Average Margin (dB)	Average Result (Pass/Fail)
v	2745.0	59.24	57.3	40.4	29.1	4.7	52.6	50.7	74.0	-21.4	Pass	54.0	-3.3	Pass
h	2745.0	55.01	51.9	40.4	29.1	4.7	48.4	45.3	74.0	-25.6	Pass	54.0	-8.7	Pass
v	3660.0	53.73	49.2	40.8	31.8	5.3	50.0	45.5	74.0	-24.0	Pass	54.0	-8.5	Pass
v	4575.0	50.98	47.7	40.7	32.5	6.2	49.0	45.7	74.0	-25.0	Pass	54.0	-8.3	Pass
h	4575.0	52.05	47.9	40.7	32.5	6.2	50.1	45.9	74.0	-23.9	Pass	54.0	-8.1	Pass
v	5489.0	50.36	46.1	40.0	34.5	6.9	51.8	47.5	74.0	-22.2	Pass	54.0	-6.5	Pass
h	5489.8	50.88	46.8	40.0	34.5	6.9	52.3	48.2	74.0	-21.7	Pass	54.0	-5.8	Pass

Table Result: Pass by -3.3 dB ***Worst Freq:*** 2745.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053 **Cable 3:** Asset #1785
Analyzer: Gold **Preamp:** Asset #2111 **Antenna:** Black Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.157

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

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Radiated Emissions Table

Date: 29-Feb-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 22.6°C **Humidity:** 26% **Pressure:** 993mBar
Frequency Range: 6 to 10 GHz **Measurement Distance:** 1 m
Notes: TX on Mid channel **EUT Max Freq:** 905 to 925 MHz
Tested with Enclosure Mount Antenna (MN: EEH-915)

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
v	7320.0	52.02	47.4	40.1	37.9	7.9	57.7	53.1	83.5	-25.8	Pass	63.5	-10.4	Pass
h	7320.0	53.64	49.7	40.1	37.9	7.9	59.3	55.4	83.5	-24.2	Pass	63.5	-8.1	Pass

Table Result: Pass by -8.1 dB ***Worst Freq:*** 7320.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053 **Cable 3:** Asset #1785
Analyzer: Gold **Preamp:** Asset #2111 **Antenna:** Black Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.157

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz		I	4/29/2017	4/29/2015
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
A#2111 HF Preamp	0.5-18GHz	PAM-118A	COM-POWER	551063	2111	II	11/20/2016	11/20/2015
High Pass Filter	0.03-9 GHz	VHP-16	Mini-Circuits	NA	1288	II	1/7/2017	1/7/2016
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Black Horn	1-18GHz	3115	EMCO	9703-5148	56	I	8/21/2016	8/21/2014
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #1785	9kHz - 18GHz		Florida RF			II	1/5/2017	1/5/2016
Asset #2052	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2053	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015

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

Radiated Emissions Table

Date: 29-Feb-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 22.6°C **Humidity:** 26% **Pressure:** 993mBar
Frequency Range: 30 to 1000 MHz **Measurement Distance:** 3 m
Notes: TX on high channel **EUT Max Freq:** 905 to 925 MHz
Tested with Enclosure Mount Antenna (MN: EEH-915)

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	---			FCC 15.209		
							Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
v	37.22	46.0	25.4	15.9	0.4	36.9	---	---	---	40.0	-3.1	Pass
v	38.53	45.8	25.4	15.0	0.4	35.8	---	---	---	40.0	-4.2	Pass
v	71.5	46.5	25.4	8.4	0.5	30.0	---	---	---	40.0	-10.0	Pass
h	72.2	54.2	25.4	8.4	0.5	37.7	---	---	---	40.0	-2.3	Pass
v	91.45	56.5	25.5	8.2	0.6	39.8	---	---	---	43.5	-3.7	Pass
h	92.12	44.5	25.5	8.3	0.6	27.9	---	---	---	43.5	-15.6	Pass
v	112.2	33.0	25.4	13.2	0.6	21.4	---	---	---	43.5	-22.1	Pass
h	113.8	36.5	25.4	13.5	0.6	25.2	---	---	---	43.5	-18.3	Pass
v	832.9	41.8	25.5	21.7	1.8	39.8	---	---	---	46.0	-6.2	Pass
v	962.1	33.6	25.4	22.9	1.7	32.8	---	---	---	54.0	-21.2	Pass
h	997.2	35.7	25.0	23.6	1.9	36.2	---	---	---	54.0	-17.8	Pass

Table Result: Pass by -2.3 dB ***Worst Freq:*** 72.2 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053 **Cable 3:** ---
Analyzer: Gold **Preamp:** Red-White **Antenna:** Red-White **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.157

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-White	0.009-2000MHz	ZFL-1000-LN	CS	N/A	1258	II	12/27/2016	12/27/2015
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	8/12/2017	8/12/2015
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2052	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2053	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015

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

Radiated Emissions Table

Date: 29-Feb-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 22.6°C **Humidity:** 26% **Pressure:** 993mBar
Frequency Range: 1 to 6 GHz **Measurement Distance:** 3 m
Notes: TX on High channel **EUT Max Freq:** 905 to 925 MHz
Tested with Enclosure Mount Antenna (MN: EEH-915)

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	FCC 15.209 High Frequency - Average Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
v	2775.0	59.2	57.8	40.3	29.1	4.5	52.5	51.1	74.0	-21.5	Pass	54.0	-2.9	Pass
h	2775.0	53.25	49.5	40.3	29.1	4.5	46.6	42.8	74.0	-27.4	Pass	54.0	-11.2	Pass
h	3700.0	54.55	52.5	40.8	32.1	5.2	51.1	49.0	74.0	-22.9	Pass	54.0	-5.0	Pass
v	4625.0	49.62	45.0	40.7	32.6	6.2	47.7	43.1	74.0	-26.3	Pass	54.0	-10.9	Pass
h	4625.0	51.69	46.2	40.7	32.6	6.2	49.8	44.3	74.0	-24.2	Pass	54.0	-9.7	Pass
v	5550.0	49.53	45.9	39.9	34.4	6.8	50.8	47.2	74.0	-23.2	Pass	54.0	-6.8	Pass
h	5550.0	50.1	46.2	39.9	34.4	6.8	51.4	47.5	74.0	-22.6	Pass	54.0	-6.5	Pass

Table Result: Pass by -2.9 dB ***Worst Freq:*** 2775.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053 **Cable 3:** Asset #1785
Analyzer: Gold **Preamp:** Asset #2111 **Antenna:** Black Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.157

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Radiated Emissions Table

Date: 29-Feb-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 22.6°C **Humidity:** 26% **Pressure:** 993mBar
Frequency Range: 6 to 10 GHz **Measurement Distance:** 1 m
Notes: TX on high channel **EUT Max Freq:** 905 to 925 MHz
Tested with Enclosure Mount Antenna (MN: EEH-915)

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	FCC 15.209 High Frequency - Average Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
v	7400.0	49.39	44.3	40.0	37.9	7.7	55.0	49.9	83.5	-28.5	Pass	63.5	-13.6	Pass
h	7400.0	55.79	53.4	40.0	37.9	7.7	61.4	59.0	83.5	-22.1	Pass	63.5	-4.5	Pass

Table Result: Pass by -4.5 dB ***Worst Freq:*** 7400.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053 **Cable 3:** Asset #1785
Analyzer: Gold **Preamp:** Asset #2111 **Antenna:** Black Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.157

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	)0Hz-26.5 GH	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz		I	4/29/2017	4/29/2015
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
A#2111 HF Preamp	0.5-18GHz	PAM-118A	COM-POWER	551063	2111	II	11/20/2016	11/20/2015
High Pass Filter	0.03-9 GHz	VHP-16	Mini-Circuits	NA	1288	II	1/7/2017	1/7/2016
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Black Horn	1-18GHz	3115	EMCO	9703-5148	56	I	8/21/2016	8/21/2014
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	)regon Scientifi	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #1785	)kHz - 18GHz		Florida RF			II	1/5/2017	1/5/2016
Asset #2052	)kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2053	)kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015

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

Radiated Emissions Table

Date: 02-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631

Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc

Temp: 24°C **Humidity:** 28% **Pressure:** 1011mBar

Frequency Range: 30 to 1000 MHz **Measurement Distance:** 3 m

Notes: RX mode **EUT Max Freq:** 905 to 925 MHz
Tested with Enclosure Mount Antenna (MN: EEH-915)

							---			FCC 15.209		
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	37.5	40.6	25.4	15.8	0.4	31.4	---	---	---	40.0	-8.6	Pass
v	37.78	41.1	25.4	15.6	0.4	31.7	---	---	---	40.0	-8.3	Pass
v	73.5	45.0	25.4	8.5	0.5	28.6	---	---	---	40.0	-11.4	Pass
h	73.5	47.7	25.4	8.5	0.5	31.3	---	---	---	40.0	-8.7	Pass
v	108.0	23.6	25.4	12.5	0.5	11.2	---	---	---	43.5	-32.3	Pass
v	115.0	28.9	25.4	13.7	0.6	17.8	---	---	---	43.5	-25.7	Pass
v	608.0	25.7	25.7	18.6	1.5	20.1	---	---	---	46.0	-25.9	Pass
v	960.0	25.4	25.4	22.9	1.7	24.6	---	---	---	46.0	-21.4	Pass

Table Result: Pass by -8.6 dB ***Worst Freq:*** 37.5 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053 **Cable 3:** ---

Analyzer: Asset #1327 **Preamp:** Red-White **Antenna:** Red-White **Preselector:** ---

CSsoft Radiated Emissions Calculator v 1.017.157

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA EMI Chamber (1327)	9kHz-13.2 GHz	E4405B	Agilent	MY45103416	1327	I	7/10/2016	7/10/2015
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-White	0.009-2000MHz	ZFL-1000-LN	CS	N/A	1258	II	12/27/2016	12/27/2015
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	8/12/2017	8/12/2015
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2052	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2053	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015

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

Radiated Emissions Table

Date: 29-Feb-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 22.6°C **Humidity:** 26% **Pressure:** 993mBar
Frequency Range: 1 to10 GHz **Measurement Distance:** 3 m (1-6GHz) & 1m (6 -10GHz)
Notes: RX mode **EUT Max Freq:** 905 to 925 MHz
Tested with Enclosure Mount Antenna (MN: EEH-915)

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	FCC 15.209 High Frequency - Average Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
No emissions found within 10dB of the limit in this range														

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

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2053 **Cable 3:** Asset #1785
Analyzer: Gold **Preamp:** Asset #2111 **Antenna:** Black Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.157

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	)0Hz-26.5 GH	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016

Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range	Cat	Calibration Due	Calibrated on
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz	I	4/29/2017	4/29/2015

Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
A#2111 HF Preamp	0.5-18GHz	PAM-118A	COM-POWER	551063	2111	II	11/20/2016	11/20/2015
High Pass Filter	0.03-9 GHz	VHP-16	Mini-Circuits	NA	1288	II	1/7/2017	1/7/2016

Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Black Horn	1-18GHz	3115	EMCO	9703-5148	56	I	8/21/2016	8/21/2014

Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Weather Clock (Pressure Only)		BA928	)regon Scientifi	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015

Cables	Range	Mfr	Cat	Calibration Due	Calibrated on
Asset #1785	)kHz - 18GHz	Florida RF	II	1/5/2017	1/5/2016
Asset #2052	)kHz - 18GHz	Florida RF	II	3/8/2016	3/8/2015
Asset #2053	)kHz - 18GHz	Florida RF	II	3/8/2016	3/8/2015

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

Radiated Emissions Table

Date: 21-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 20.5°C **Humidity:** 27% **Pressure:** 993mBar
Frequency Range: 30 to 1000 MHz **Measurement Distance:** 3 m
Notes: TX on low channel **EUT Max Freq:** 905 to 925 MHz
Tested with Nearson Antenna (MN: 467)

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)	FCC 15.209 Limit (dBµV/m)	FCC 15.209 Margin (dB)	FCC 15.209 Result (Pass/Fail)
v	37.7	34.1	22.3	15.8	0.5	28.1	---	---	---	40.0	-11.9	Pass
v	74.85	43.9	22.4	9.1	0.6	31.2	---	---	---	40.0	-8.8	Pass
h	74.85	37.2	22.4	9.1	0.6	24.5	---	---	---	40.0	-15.5	Pass
v	108.0	42.9	22.5	12.3	0.8	33.5	---	---	---	43.5	-10.0	Pass
v	133.8	37.6	22.6	13.9	1.0	29.9	---	---	---	43.5	-13.6	Pass
v	207.3	39.6	22.5	11.0	1.0	29.1	---	---	---	43.5	-14.4	Pass
v	961.2	26.1	22.1	23.0	2.1	29.1	---	---	---	54.0	-24.9	Pass

Table Result: Pass by -8.8 dB ***Worst Freq:*** 74.85 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #1785 **Cable 2:** Asset #2052 **Cable 3:** ---
Analyzer: --- **Preamp:** Blue **Antenna:** Red-Black **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.158

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA EMI Chamber (1327)	9kHz-13.2 GHz	E4405B	Agilent	MY45103416	1327	I	7/10/2016	7/10/2015
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Blue	0.009-2000MHz	ZFL-1000-LN	CS	N/A	759	II	5/17/2016	5/17/2015
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-Black Bilog	30-2000MHz	JB1	Sunol	A091604-2	1106	I	2/9/2017	2/9/2015
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015
Barometric A#2160		5396-0321	Monarch Instruments	4000060	2160	I	3/7/2017	3/7/2016

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

Radiated Emissions Table

Date: 21-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631

Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc

Temp: 20.5°C **Humidity:** 27% **Pressure:** 993mBar

Frequency Range: 1 to 6 GHz **Measurement Distance:** 3 m

Notes: Tx on low channel **EUT Max Freq:** 905 to 925 MHz
Tested with Nearson Antenna (MN: 467)

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
v	2715.0	40.54	37.7	20.2	29.1	3.8	53.2	50.4	74.0	-20.8	Pass	54.0	-3.6	Pass
h	2715.0	37.2	32.8	20.2	29.1	3.8	49.9	45.5	74.0	-24.1	Pass	54.0	-8.5	Pass
v	3620.0	38.6	34.9	19.1	31.6	4.1	55.2	51.5	74.0	-18.8	Pass	54.0	-2.5	Pass
h	3620.0	37.97	34.2	19.1	31.6	4.1	54.6	50.8	74.0	-19.4	Pass	54.0	-3.2	Pass
v	4525.0	34.978	27.2	17.9	32.3	4.8	54.2	46.4	74.0	-19.8	Pass	54.0	-7.6	Pass
h	4525.0	34.53	28.1	17.9	32.3	4.8	53.7	47.3	74.0	-20.3	Pass	54.0	-6.7	Pass
v	5429.0	37.59	29.3	17.6	34.5	5.2	59.7	51.4	74.0	-14.3	Pass	54.0	-2.6	Pass
h	5429.0	34.46	27.2	17.6	34.5	5.2	56.6	49.3	74.0	-17.4	Pass	54.0	-4.7	Pass

Table Result: Pass by -2.5 dB ***Worst Freq:*** 3620.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #1785 **Cable 2:** Asset #2052 **Cable 3:** ---

Analyzer: --- **Preamp:** Asset #1517 **Antenna:** Black Horn **Preselector:** ---

CSsoft Radiated Emissions Calculator v 1.017.158

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA EMI Chamber (1327)	9kHz-13.2 GHz	E4405B	Agilent	MY45103416	1327	I	7/10/2016	7/10/2015
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz		I	4/29/2017	4/29/2015
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
1517 HF Preamp	1-20GHz	CS	CS	N/A	1517	II	8/6/2016	8/6/2015
High Pass Filter	0.03-9 GHz	VHP-16	Mini-Circuits	NA	1288	II	1/7/2017	1/7/2016
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Black Horn	1-18GHz	3115	EMCO	9703-5148	56	I	8/21/2016	8/21/2014
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015
Barometric A#2160		5396-0321	Monarch Instruments	4000060	2160	I	3/7/2017	3/7/2016
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #1785	9kHz - 18GHz		Florida RF			II	1/5/2017	1/5/2016
Asset #2052	9kHz - 18GHz		Florida RF			II	3/2/2017	3/2/2016

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

Radiated Emissions Table

Date: 02-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 24°C **Humidity:** 28% **Pressure:** 1011mBar
Frequency Range: 6 to 10 GHz **Measurement Distance:** 1 m
Notes: TX on low channel **EUT Max Freq:** 905 to 925 MHz
Tested with Nearson Antenna (MN: 467)

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
v	7240.0	49.68	43.7	40.0	37.7	7.7	55.1	49.1	83.5	-28.4	Pass	63.5	-14.4	Pass
h	7240.0	50.37	45.2	40.0	37.7	7.7	55.8	50.6	83.5	-27.7	Pass	63.5	-12.9	Pass
v	8145.0	48.38	43.5	38.6	37.7	7.6	55.1	50.2	83.5	-28.4	Pass	63.5	-13.3	Pass
h	8145.0	45.55	39.3	38.6	37.7	7.6	52.3	46.0	83.5	-31.2	Pass	63.5	-17.5	Pass
v	9050.0	51.14	45.9	39.2	38.4	8.1	58.4	53.2	83.5	-25.1	Pass	63.5	-10.3	Pass

Table Result: Pass by -10.3 dB ***Worst Freq:*** 9050.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2054 **Cable 3:** Asset #1785
Analyzer: Asset #1327 **Preamp:** Asset #2111 **Antenna:** Black Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.157

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Rev. 3/1/2016

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA EMI Chamber (1327)	9kHz-13.2 GHz	E4405B	Agilent	MY45103416	1327	I	7/10/2016	7/10/2015
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz		I	4/29/2017	4/29/2015
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
A#2111 HF Preamp	0.5-18GHz	PAM-118A	COM-POWER	551063	2111	II	11/20/2016	11/20/2015
High Pass Filter	0.03-9 GHz	VHP-16	Mini-Circuits	NA	1288	II	1/7/2017	1/7/2016
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Black Horn	1-18GHz	3115	EMCO	9703-5148	56	I	8/21/2016	8/21/2014
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #1785	9kHz - 18GHz		Florida RF			II	1/5/2017	1/5/2016
Asset #2052	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2054	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015

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

Radiated Emissions Table

Date: 21-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 20.5°C **Humidity:** 27% **Pressure:** 993mBar
Frequency Range: 30 to 1000 MHz **Measurement Distance:** 3 m
Notes: TX on mid channel **EUT Max Freq:** 905 to 925 MHz
Tested with Nearson Antenna (MN: 467)

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	---			FCC 15.209		
							Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
v	37.76	34.4	22.3	15.8	0.5	28.4	---	---	---	40.0	-11.6	Pass
v	74.85	43.6	22.4	9.1	0.6	30.9	---	---	---	40.0	-9.1	Pass
h	74.85	40.7	22.4	9.1	0.6	28.0	---	---	---	40.0	-12.0	Pass
v	108.0	41.6	22.5	12.3	0.8	32.2	---	---	---	43.5	-11.3	Pass
h	110.0	38.6	22.5	12.7	0.8	29.6	---	---	---	43.5	-13.9	Pass
v	209.5	37.9	22.5	10.6	1.0	27.0	---	---	---	43.5	-16.5	Pass
h	221.0	35.7	22.5	10.8	1.0	25.0	---	---	---	46.0	-21.0	Pass
v	466.5	28.6	22.5	17.3	1.5	24.9	---	---	---	46.0	-21.1	Pass
h	466.5	30.3	22.5	17.3	1.5	26.6	---	---	---	46.0	-19.4	Pass
v	983.0	25.6	22.2	23.1	2.2	28.7	---	---	---	54.0	-25.3	Pass

Table Result: Pass by -9.1 dB ***Worst Freq:*** 74.85 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #1785 **Cable 2:** Asset #2052 **Cable 3:** ---
Analyzer: --- **Preamp:** Blue **Antenna:** Red-Black **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.158

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA EMI Chamber (1327)	9kHz-13.2 GHz	E4405B	Agilent	MY45103416	1327	I	7/10/2016	7/10/2015
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Blue	0.009-2000MHz	ZFL-1000-LN	CS	N/A	759	II	5/17/2016	5/17/2015
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-Black Bilog	30-2000MHz	JB1	Sunol	A091604-2	1106	I	2/9/2017	2/9/2015
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015
Barometric A#2160		5396-0321	Monarch Instruments	4000060	2160	I	3/7/2017	3/7/2016

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

Radiated Emissions Table

Date: 21-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631

Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc

Temp: 20.5°C **Humidity:** 27% **Pressure:** 993mBar

Frequency Range: 1 to 6 GHz **Measurement Distance:** 3 m

Notes: Tx on mid channel **EUT Max Freq:** 905 to 925 MHz
Tested with Nearson Antenna (MN: 467)

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
v	2745.0	40.57	33.4	20.2	29.1	3.7	53.2	46.0	74.0	-20.8	Pass	54.0	-8.0	Pass
v	3660.0	40.58	35.1	19.1	31.8	3.9	57.2	51.7	74.0	-16.8	Pass	54.0	-2.3	Pass
h	3660.0	37.91	33.6	19.1	31.8	3.9	54.5	50.2	74.0	-19.5	Pass	54.0	-3.8	Pass
v	4575.0	34.3	25.0	17.9	32.5	4.9	53.8	44.5	74.0	-20.2	Pass	54.0	-9.5	Pass
h	4575.0	35.36	28.3	17.9	32.5	4.9	54.9	47.8	74.0	-19.1	Pass	54.0	-6.2	Pass
v	5490.0	35.75	29.2	17.6	34.5	5.4	58.1	51.5	74.0	-15.9	Pass	54.0	-2.5	Pass
h	5490.0	37.06	28.5	17.6	34.5	5.4	59.4	50.8	74.0	-14.6	Pass	54.0	-3.2	Pass

Table Result: Pass by -2.3 dB ***Worst Freq:*** 3660.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #1785 **Cable 2:** Asset #2052 **Cable 3:** ---

Analyzer: --- **Preamp:** Asset #1517 **Antenna:** Black Horn **Preselector:** ---

CSsoft Radiated Emissions Calculator v 1.017.158

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Rev. 3/8/2016

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA EMI Chamber (1327)	9kHz-13.2 GHz	E4405B	Agilent	MY45103416	1327	I	7/10/2016	7/10/2015
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz		I	4/29/2017	4/29/2015
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
1517 HF Preamp	1-20GHz	CS	CS	N/A	1517	II	8/6/2016	8/6/2015
High Pass Filter	0.03-9 GHz	VHP-16	Mini-Circuits	NA	1288	II	1/7/2017	1/7/2016
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Black Horn	1-18GHz	3115	EMCO	9703-5148	56	I	8/21/2016	8/21/2014
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015
Barometric A#2160		5396-0321	Monarch Instruments	4000060	2160	I	3/7/2017	3/7/2016
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #1785	9kHz - 18GHz		Florida RF			II	1/5/2017	1/5/2016
Asset #2052	9kHz - 18GHz		Florida RF			II	3/2/2017	3/2/2016

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

Radiated Emissions Table

Date: 02-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 24°C **Humidity:** 28% **Pressure:** 1011mBar
Frequency Range: 6 to 10 GHz **Measurement Distance:** 1 m
Notes: TX on mid channel **EUT Max Freq:** 905 to 925 MHz
Tested with Nearson Antenna (MN: 467)

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	FCC 15.209 High Frequency - Average Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
v	7320.0	47.79	41.5	40.1	37.9	7.9	53.5	47.2	83.5	-30.0	Pass	63.5	-16.3	Pass
h	7320.0	50.95	46.7	40.1	37.9	7.9	56.7	52.4	83.5	-26.8	Pass	63.5	-11.1	Pass
v	8235.0	49.76	45.0	38.5	37.8	7.6	56.7	51.9	83.5	-26.8	Pass	63.5	-11.6	Pass
h	8235.0	47.67	40.5	38.5	37.8	7.6	54.6	47.4	83.5	-28.9	Pass	63.5	-16.1	Pass
v	9150.0	48.42	42.9	39.2	38.3	8.3	55.8	50.3	83.5	-27.7	Pass	63.5	-13.2	Pass
h	9150.0	46.15	39.1	39.2	38.3	8.3	53.6	46.5	83.5	-29.9	Pass	63.5	-17.0	Pass

Table Result: Pass by -11.1 dB ***Worst Freq:*** 7320.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2054 **Cable 3:** Asset #1785
Analyzer: Asset #1327 **Preamp:** Asset #2111 **Antenna:** Black Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.157

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA EMI Chamber (1327)	9kHz-13.2 GHz	E4405B	Agilent	MY45103416	1327	I	7/10/2016	7/10/2015
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz		I	4/29/2017	4/29/2015
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
A#2111 HF Preamp	0.5-18GHz	PAM-118A	COM-POWER	551063	2111	II	11/20/2016	11/20/2015
High Pass Filter	0.03-9 GHz	VHP-16	Mini-Circuits	NA	1288	II	1/7/2017	1/7/2016
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Black Horn	1-18GHz	3115	EMCO	9703-5148	56	I	8/21/2016	8/21/2014
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #1785	9kHz - 18GHz		Florida RF			II	1/5/2017	1/5/2016
Asset #2052	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2054	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015

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

Radiated Emissions Table

Date: 21-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 20.5°C **Humidity:** 27% **Pressure:** 993mBar
Frequency Range: 30 to 1000 MHz **Measurement Distance:** 3 m
Notes: TX on high channel **EUT Max Freq:** 905 to 925 MHz
Tested with Nearson Antenna (MN: 467)

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)	FCC 15.209 Limit (dBµV/m)	FCC 15.209 Margin (dB)	FCC 15.209 Result (Pass/Fail)
v	37.76	34.1	22.3	15.8	0.5	28.1	---	---	---	40.0	-11.9	Pass
v	44.6	46.4	22.4	10.9	0.5	35.4	---	---	---	40.0	-4.6	Pass
v	74.85	43.5	22.4	9.1	0.6	30.8	---	---	---	40.0	-9.2	Pass
h	74.85	36.6	22.4	9.1	0.6	23.9	---	---	---	40.0	-16.1	Pass
v	110.0	42.3	22.5	12.7	0.8	33.3	---	---	---	43.5	-10.2	Pass
h	110.0	35.3	22.5	12.7	0.8	26.3	---	---	---	43.5	-17.2	Pass
v	207.0	37.2	22.5	11.0	1.0	26.7	---	---	---	43.5	-16.8	Pass
h	221.6	35.5	22.5	10.9	1.0	24.9	---	---	---	46.0	-21.1	Pass
v	466.5	27.7	22.5	17.3	1.5	24.0	---	---	---	46.0	-22.0	Pass
v	980.6	25.0	22.2	23.0	2.2	28.0	---	---	---	54.0	-26.0	Pass

Table Result: Pass by -4.6 dB ***Worst Freq:*** 44.6 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #1785 **Cable 2:** Asset #2052 **Cable 3:** ---
Analyzer: --- **Preamp:** Blue **Antenna:** Red-Black **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.158

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA EMI Chamber (1327)	9kHz-13.2 GHz	E4405B	Agilent	MY45103416	1327	I	7/10/2016	7/10/2015
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Blue	0.009-2000MHz	ZFL-1000-LN	CS	N/A	759	II	5/17/2016	5/17/2015
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-Black Bilog	30-2000MHz	JB1	Sunol	A091604-2	1106	I	2/9/2017	2/9/2015
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015
Barometric A#2160		5396-0321	Monarch Instruments	4000060	2160	I	3/7/2017	3/7/2016

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

Radiated Emissions Table

Date: 02-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 24°C **Humidity:** 28% **Pressure:** 1011mBar
Frequency Range: 1 to 6 GHz **Measurement Distance:** 3 m
Notes: TX on high channel **EUT Max Freq:** 905 to 925 MHz
Tested with Nearson Antenna (MN: 467)

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
v	2775.0	57.83	55.6	40.3	29.1	4.6	51.2	49.0	74.0	-22.8	Pass	54.0	-5.0	Pass
h	2775.0	56.0	53.1	40.3	29.1	4.6	49.4	46.5	74.0	-24.6	Pass	54.0	-7.5	Pass
v	3700.0	56.75	54.5	40.8	32.1	5.1	53.2	50.9	74.0	-20.8	Pass	54.0	-3.1	Pass
h	3700.0	55.09	52.3	40.8	32.1	5.1	51.5	48.7	74.0	-22.5	Pass	54.0	-5.3	Pass
v	4625.0	51.67	46.5	40.7	32.6	6.1	49.7	44.5	74.0	-24.3	Pass	54.0	-9.5	Pass
h	4625.0	53.49	49.7	40.7	32.6	6.1	51.5	47.7	74.0	-22.5	Pass	54.0	-6.3	Pass
v	5550.0	53.6	50.9	39.9	34.4	6.6	54.7	52.0	74.0	-19.3	Pass	54.0	-2.0	Pass
h	5550.0	53.2	50.8	39.9	34.4	6.6	54.3	51.9	74.0	-19.7	Pass	54.0	-2.1	Pass

Table Result: Pass by -2.0 dB ***Worst Freq:*** 5550.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2054 **Cable 3:** Asset #1785
Analyzer: Asset #1327 **Preamp:** Asset #2111 **Antenna:** Black Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.157

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Radiated Emissions Table

Date: 02-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 24°C **Humidity:** 28% **Pressure:** 1011mBar
Frequency Range: 6 to 10 GHz **Measurement Distance:** 1 m
Notes: TX on high channel **EUT Max Freq:** 905 to 925 MHz
Tested with Nearson Antenna (MN: 467)

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
h	7400.0	54.59	51.5	40.0	37.9	7.7	60.2	57.1	83.5	-23.3	Pass	63.5	-6.4	Pass
v	8325.0	49.31	44.2	38.7	37.9	8.5	57.0	51.9	83.5	-26.5	Pass	63.5	-11.6	Pass
h	8325.0	46.53	40.3	38.7	37.9	8.5	54.2	48.0	83.5	-29.3	Pass	63.5	-15.5	Pass
v	9250.0	47.43	33.9	39.3	38.3	8.6	55.0	41.5	83.5	-28.5	Pass	63.5	-22.0	Pass

Table Result: Pass by -6.4 dB ***Worst Freq:*** 7400.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #2054 **Cable 3:** Asset #1785
Analyzer: Asset #1327 **Preamp:** Asset #2111 **Antenna:** Black Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.157

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

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Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA EMI Chamber (1327)	9kHz-13.2 GHz	E4405B	Agilent	MY45103416	1327	I	7/10/2016	7/10/2015
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz		I	4/29/2017	4/29/2015
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
A#2111 HF Preamp	0.5-18GHz	PAM-118A	COM-POWER	551063	2111	II	11/20/2016	11/20/2015
High Pass Filter	0.03-9 GHz	VHP-16	Mini-Circuits	NA	1288	II	1/7/2017	1/7/2016
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Black Horn	1-18GHz	3115	EMCO	9703-5148	56	I	8/21/2016	8/21/2014
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #1785	9kHz - 18GHz		Florida RF			II	1/5/2017	1/5/2016
Asset #2052	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015
Asset #2054	9kHz - 18GHz		Florida RF			II	3/8/2016	3/8/2015

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

Radiated Emissions Table

Date: 21-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631

Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc

Temp: 20.5°C **Humidity:** 27% **Pressure:** 993mBar

Frequency Range: 30 to 1000 MHz **Measurement Distance:** 3 m

Notes: EUT is set to RX mode **EUT Max Freq:** 905 to 925 MHz
Tested with Nearson Antenna (MN: 467)

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)	FCC 15.209 Limit (dBµV/m)	FCC 15.209 Margin (dB)	FCC 15.209 Result (Pass/Fail)
v	37.75	30.0	22.3	15.8	0.5	24.0	---	---	---	40.0	-16.0	Pass
v	74.84	40.5	22.4	9.1	0.6	27.8	---	---	---	40.0	-12.2	Pass
v	110.0	37.5	22.5	12.7	0.8	28.5	---	---	---	43.5	-15.0	Pass
v	125.0	43.0	22.4	14.4	0.9	35.9	---	---	---	43.5	-7.6	Pass
v	209.5	35.4	22.5	10.6	1.0	24.5	---	---	---	43.5	-19.0	Pass
v, nf	905.0	23.6	21.8	22.6	2.0	26.4	---	---	---	46.0	-19.6	Pass
v, nf	915.0	24.9	21.9	22.7	2.0	27.7	---	---	---	46.0	-18.3	Pass
v, nf	925.0	24.4	22.0	22.7	2.1	27.2	---	---	---	46.0	-18.8	Pass
v, nf	968.0	25.9	22.2	23.0	2.1	28.8	---	---	---	54.0	-25.2	Pass

Table Result: Pass by -7.6 dB ***Worst Freq:*** 125.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #1785 **Cable 2:** Asset #2052 **Cable 3:** ---
Analyzer: --- **Preamp:** Blue **Antenna:** Red-Black **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.158

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Rev. 3/8/2016

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA EMI Chamber (1327)	9kHz-13.2 GHz	E4405B	Agilent	MY45103416	1327	I	7/10/2016	7/10/2015
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Blue	0.009-2000MHz	ZFL-1000-LN	CS	N/A	759	II	5/17/2016	5/17/2015
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-Black Bilog	30-2000MHz	JB1	Sunol	A091604-2	1106	I	2/9/2017	2/9/2015
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015
Barometric A#2160		5396-0321	Monarch Instruments	4000060	2160	I	3/7/2017	3/7/2016

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Radiated Emissions Table

Date: 21-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 20.5°C **Humidity:** 27% **Pressure:** 993mBar
Frequency Range: 1 to 10 GHz **Measurement Distance:** 3 m (1-6GHz) & 1m (6 -10GHz)
Notes: EUT is set to RX mode **EUT Max Freq:** 905 to 925 MHz
Tested with Nearson Antenna (MN: 467)

Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dBµV)	Average Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBµV/m)	Adjusted Avg Reading (dBµV/m)	FCC 15.209 High Frequency - Peak			FCC 15.209 High Frequency - Average		
									Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
No emissions found within 10dB of the limit in this range														

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

Test Site: EMI Chamber 2 **Cable 1:** Asset #1785 **Cable 2:** Asset #2052 **Cable 3:** ---
Analyzer: --- **Preamp:** Asset #1517 **Antenna:** Black Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.158

Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Rev. 3/8/2016

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
SA EMI Chamber (1327)	9kHz-13.2 GHz	E4405B	Agilent	MY45103416	1327	I	7/10/2016	7/10/2015

Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz		I	4/29/2017	4/29/2015

Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
1517 HF Preamp	1-20GHz	CS	CS	N/A	1517	II	8/6/2016	8/6/2015
High Pass Filter	0.03-9 GHz	VHP-16	Mini-Circuits	NA	1288	II	1/7/2017	1/7/2016

Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Black Horn	1-18GHz	3115	EMCO	9703-5148	56	I	8/21/2016	8/21/2014

Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
TH A#2081		HTC-1	HDE		2081	II	4/2/2016	4/2/2015
Barometric A#2160		5396-0321	Monarch Instruments	4000060	2160	I	3/7/2017	3/7/2016

Cables	Range	Mfr			Cat	Calibration Due	Calibrated on
Asset #1785	9kHz - 18GHz	Florida RF			II	1/5/2017	1/5/2016
Asset #2052	9kHz - 18GHz	Florida RF			II	3/2/2017	3/2/2016

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20dB Bandwidth and Occupied Bandwidth

REQUIREMENT

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

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 6.6]

MEASUREMENTS / RESULTS

20dB BANDWIDTH and 99% OCCUPIED BANDWIDTH

Date: 01-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway **EUT Operating Voltage/Frequency:** 9Vdc
Temp: 21°C **Humidity:** 33% **Pressure:** 998mBar
Frequency Range: 902.7-927.3 MHz
Notes:

Frequency (MHz)	20 dB Bandwidth Reading (KHz)	Occupied Bandwidth Reading (KHz)
905	59.6080	68.1735
915	59.1580	64.7994
925	59.2270	66.9736

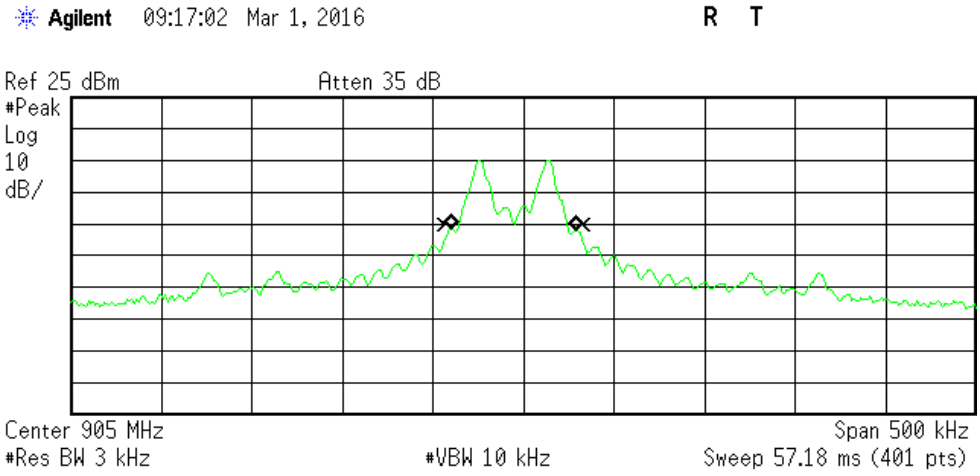
Test Site: CEM5 **Attenuation:** Asset#791
Analyzer: Brown

Rev. 2/28/2016

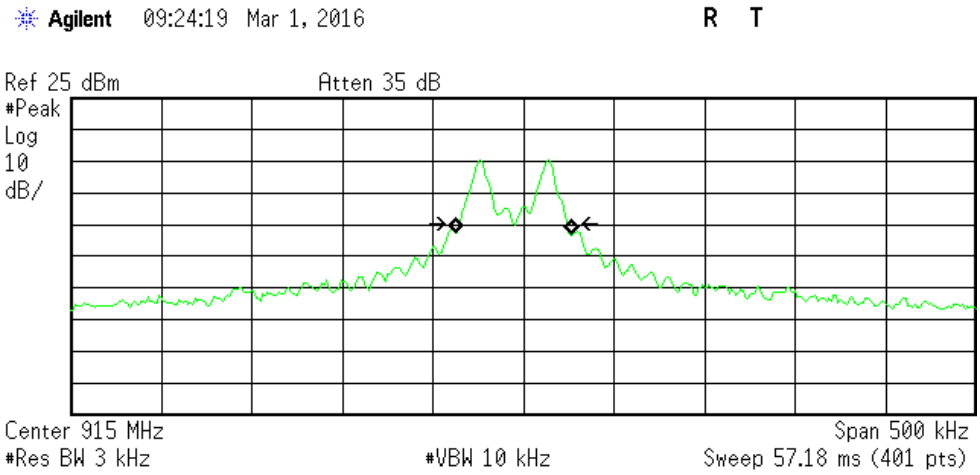
Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Brown	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	1/21/2017	1/21/2016
Conducted Test Sites (Mains / Telco)	**FCC Code**		**VCCI Code**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI 5	719150		A-0015			III	NA	N/A
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
HF 20dB 50W Attenuator	0.009-18 GHz	PE 7019-20	Pasternack	1	791	II	7/31/2016	7/31/2015
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2078		HTC-1	HDE		2078	II	4/2/2016	4/2/2015

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

PLOTS



Occupied Bandwidth – Low Channel



Occupied Bandwidth – Mid Channel

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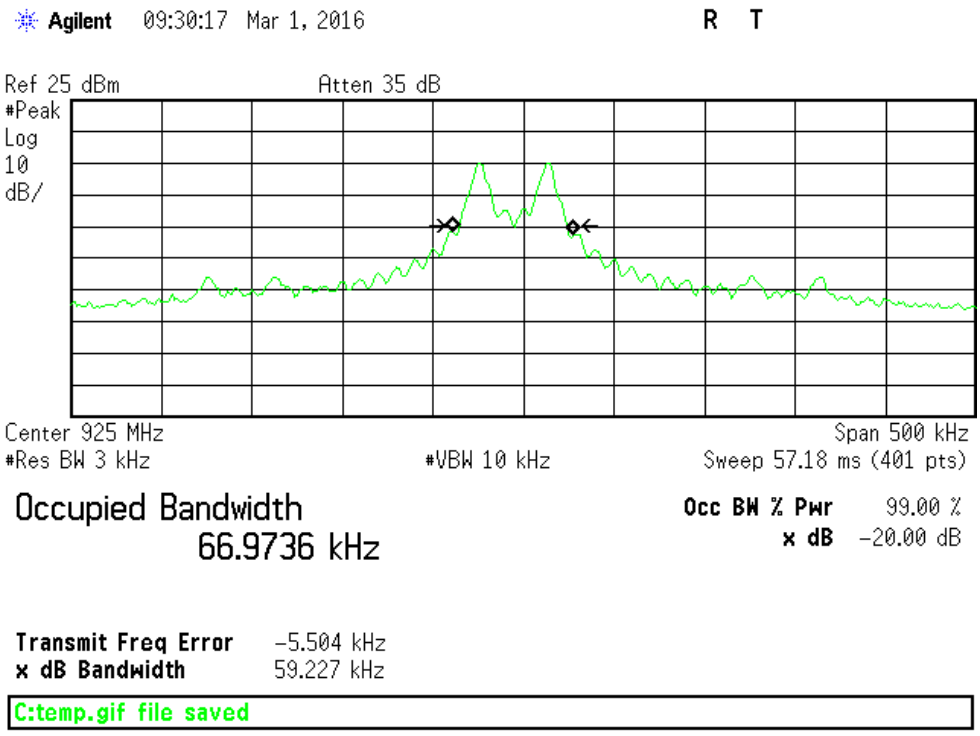

Occupied Bandwidth – High Channel

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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 Side of a DC Supply Conducted Emissions

Date: 01-Mar-16 **Company:** Signal Fire Telemetry **Work Order:** P2631
Engineer: Tuyen Truong **EUT Desc:** DIN Mount Gateway
Temp: 22.2 ºC **Humidity:** 36% **Pressure:** 998 mBar
Notes: EUT is tested with Enslosure Mount Antenna (M/N: EEH-915)
Frequency Range: 0.15 to 30 MHz **EUT Input Voltage/Frequency:** 9Vdc

	Quasi-Peak Readings		Average Readings		LISN Factors				FCC 15.207			FCC 15.207		
Frequency (MHz)	QP1 (dBµV)	QP2 (dBµV)	AVG1 (dBµV)	AVG2 (dBµV)	L1 (dB)	L2 (dB)	Cable Factor (dB)	ATTN Factor (dB)	QP Limit (dBµV)	Margin (dB)	Result (Pass/Fail)	AVG Limit (dBµV)	Margin (dB)	Result (Pass/Fail)
0.18	29.9	29.0	11.3	16.3	-0.4	-0.4	-0.1	-19.0	64.3	-14.9	Pass	54.3	-18.5	Pass
1.09	27.7	28.1	15.8	16.5	-0.5	-0.5	-0.1	-19.0	56.0	-8.3	Pass	46.0	-9.9	Pass
11.42	21.4	9.3	11.1	1.8	-0.2	-0.2	-0.2	-19.0	60.0	-19.3	Pass	50.0	-19.6	Pass
13.06	20.2	11.8	12.4	1.1	-0.2	-0.2	-0.2	-19.0	60.0	-20.5	Pass	50.0	-18.3	Pass
15.82	18.5	16.7	12.3	6.5	-0.2	-0.2	-0.2	-19.0	60.0	-22.2	Pass	50.0	-18.3	Pass
18.58	17.5	20.0	7.7	9.7	-0.2	-0.2	-0.3	-19.0	60.0	-20.6	Pass	50.0	-20.9	Pass
23.99	27.0	16.2	21.4	8.4	-0.2	-0.2	-0.3	-19.0	60.0	-13.5	Pass	50.0	-9.1	Pass

Result: Pass ***Worst Margin:*** -8.3 dB ***Frequency:*** 1.090 MHz

Measurement Device: LISN Asset 2092 **Cable:** CEMI-01 **Spectrum Analyzer:** Gold
Attenuator: 20dB Attenuator-06 **Site:** CEMI 5

C-S CEMI Calculator Version 3.0.14 *Equipment Factor Sheet rev: 2/18/2016*
Adjusted Reading = Raw Reading + LISN Insertion Loss + Cable Loss + Attenuation

Rev. 2/28/2016

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016
LISNs/Measurement Probes	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
LISN Asset 2092	9KHz-30MHz	NNLK 8121	Schwarzbeck	NNLK 8121-662	2092	I	6/30/2016	6/30/2015
Conducted Test Sites (Mains / Telco)	**FCC Code**		**VCCI Code**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI 5	719150		A-0015			III	NA	N/A
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	3/19/2016	3/19/2014
TH A#2078		HTC-1	HDE		2078	II	4/2/2016	4/2/2015
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI-01	9kHz - 2GHz		C-S			II	9/11/2016	9/11/2015
Attenuators	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
20dB Attenuator-06	9kHz-2GHz	PE7000-20	Pasternack	N/A		II	7/29/2016	7/29/2015

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

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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.

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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		

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 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

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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.

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