Test Report

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

Report No	EQ0559-1
Client	Durham Geo Enterprises, Inc.
Address	2175 West Park Court Stone Mountain, GA 30087
Phone	770-465-7557
Items tested	HERMES Radio Module
FCC ID	2AFGQ-HERMES1
IC	20515-HERMES1
HVIN	HERMES1
Equipment Type	Digital Transmission System
Equipment Code	DTS
Emission Designator	769KG1D
FCC/IC Rule Parts	47 CFR 15.247, RSS-247 Issue 1
Test Dates	April 26 to 28, 2016
Results	As detailed within this report
Prepared by	Tuyen A. Truong – Test Engineer
Authorized by	Yunus Faziloglu – Sr. EMC Engineer
Issue Date	6/1/2016
Conditions of Issue	This Test Report is issued subject to the conditions stated in the '*Conditions of Testing*' section on page 37 of this report.

Contents

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

Summary

This test report supports a “Limited Modular Approval” certification application of a transmitter operating pursuant to 47 CFR 15.247 and RSS-247. The product is the “HERMES Radio Module” (Model: HERMES1). It is a digitally modulated transmitter that operates in the 906MHz to 924MHz frequency range. Product was separately set up and tested with 4 different detachable antennas; LINX ¼ Wave Mini Whip Antenna (M/N: ANT-916-CW-RCS) with 3.3dBi gain, TAOGLAS Manhole Lid Antenna (M/N: RG.02.01.3000W) with 2.5dBi gain, LAIRD Omnidirectional Collinear Outdoor Antenna (M/N: FG9023) with 5.15dBi gain and NEARSON ½ Wave Loaded Whip Antenna (M/N: S161AH-915R) with 2.5dBi gain.

We found that the product met the above requirements without modification. The test sample was received in good condition.

Please note that the module was set up in USB configuration (stand-alone) and separately tested with each of the 4 different antennas. Testing was repeated with EUT set up in Serial configuration (inside the host “V-logger”) with only one antenna (LAIRD Omnidirectional Collinear Outdoor Antenna) where the result was found as worst case in the USB configuration.

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

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

All testing was performed according to the following rules/procedures/documents; CFR 47 Part 15.247, RSS-247 Issue 1, RSS-Gen Issue 4, FCC KDB 558074 D01 DTS Measurement Guidance v03r05 and ANSI C63.10-2013.

Radiated emissions were maximized by rotating the device and its antennas around 3 orthogonal planes (X, Y and Z) as well as varying the test antenna's height and polarity.

RF measurements were performed at the antenna port. 3 channels were tested as follows: Low: 906 MHz, Middle: 914MHz, High: 924MHz

When EUT was set up in USB configuration, AC mains conducted emissions was performed with a 50Ω/50µH LISN at 120Vac/60Hz on support PC which provided power to the EUT via USB connection. When EUT was set up in Serial configuration, AC line conducted emissions testing was not applicable since the device is powered by battery.

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

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

Product Tested - Configuration Documentation

EUT Configuration (USB Connection)			
Work Order:	Q0559		
Company:	Durham Geo Enterprises Inc.		
Company Address:	12123 Harbour Reach Drive, Suite 106		
	Mukilteo, WA 98275		
Contact:	Brad Barnicoat		
Person Presence:	Chris Krstanovic		
	MN	**PN**	**SN**
EUT:	HERMES1	--	Sample #2
EUT Description:	HERMES Radio Module		
EUT TX Frequency:	906 to 924 MHz		
EUT Max Frequency:	16 MHz (associated circuitry)		

EUT Components	**MN**	**SN**
Hermes Radio Module	HERMES1	Sample 2
LINX 1/4 Wave Mini Whip Antenna	ANT-916-CW-RCS	Sample 1
Taoglas Manhole Lid Antenna	RG.02.01.3000W	142200085
LAIRD Omnidirectional Collinear Outdoor Antenna	FG9023	02041609
Nearson ½ Wave Loaded Whip, Fixed Rt. Angle Antenna	S161AH-915R	Not Listed

Support Equipment	**MN**	**SN**
Curtis Straus Dell PC	Dimension 4550	00919
Lenovo Mouse	M-UAE119	SNLZ830ASONMS
Dell Keyboard	SK-8115	CN-ODJ331-71616-88IT7H6
Dell LCD Monitor	1704FPVt	CN-OJ6642-71618-53I-ADA4

Port Label	**Port Type**	**# ports**	**# populated**	**cable type**	**shielded**	**ferrites**	**length (m)**	**in/out**	**under test**	**comment**
USB	USB	1	1	USB	Yes	No	1	in	yes	Only use for set up
Antenna (LINX Mini Whip Antenna)	SMA	1	1	Coaxial	Yes	No	0.09	in	yes	Antenna connector is RP SMA
Antenna (Taoglas Manhole Lid Antenna)	SMA	1	1	Coaxial	Yes	No	3	in	yes	Antenna connector is SMA
Antenna (LAIRD Omnidirectional Antenna)	SMA	1	1	Coaxial	Yes	No	1.8	in	yes	Antenna connector is N-Female to RP SMA.
Antenna (Nearson ½ Wave Loaded Whip Antenna)	SMA	1	1	Coaxial	Yes	No	0.2	in	yes	Antenna connector is RP SMA
Serial	RS232	1	0							Serial port is not use in this configuration

Software Operating Mode Description:

EUT is set to transmit on Low (906 MHz), Mid (914 MHz) and High (924 MHz). Please note that HERMES radio module is separately set up via USB connection and tested with each of 4 different antennas listed in the EUT Components section above, only one tested at time during Radiated Emission and AC Mains Conducted Emission (worst case).

EUT Configuration (Serial Connection)			
Work Order:	Q0559		
Company:	Durham Geo Enterprises Inc.		
Company Address:	12123 Harbour Reach Drive, Suite 106		
	Mukilteo, WA, 98275		
Contact:	Brad Barnicoat		
Person Presence:	Chris Krstanovic		
	MN	**PN**	**SN**
EUT:	HERMES1	--	Sample #2
EUT Description:	HERMES Radio Module		
EUT TX Frequency:	906 to 924 MHz		
EUT Max Frequency:	16 MHz (associated circuitry)		

EUT Components	**MN**	**SN**
Hermes Radio Module	HERMES1	Sample 2
LAIRD Omnidirectional Collinear Outdoor Antenna	FG9023	Sample 1

Support Equipment	**MN**	**SN**
Curtis Straus Dell PC	Dimension 4550	00919
Lenovo Mouse	M-UAE119	SNLZ830ASONMS
Dell Keyboard	SK-8115	CN-ODJ331-71616-88IT7H6
Dell LCD Monitor	1704FPVt	CN-OJ6642-71618-53I-ADA4
3.7Vdc Polymer Li-ion Battery	PL-7548168	--
8 Channel V-Logger (Host device)	--	1632092

Port Label	**Port Type**	**# ports**	**# populated**	**cable type**	**shielded**	**ferrites**	**length (m)**	**in/out**	**under test**	**comment**
Antenna	SMA	1	1	Coaxial	Yes	No	1.8	in	yes	Laird FG9023 - n Female Connector to RP SMA
Serial	RS-232	1	1	RS-232	No	No		in	yes	HERMES1 is installed into the V-logger Main board via Serial slot
USB	USB	1	0							USB port is not use in this configuration

Host Port Label	**Port Type**	**# ports**	**# populated**	**cable type**	**shielded**	**ferrites**	**length (m)**	**max length (m)**	**in/out**	**comment**
V-logger Sensor	other	8	8	other	No	No	3		in	5 wire cable
USB	USB	1	1	USB	Yes	No	1	12	in	Only use for set up

Software Operating Mode Description:

EUT is set to transmit on Low (906 MHz), Mid (914 MHz) and High (924 MHz). Please note that HERMES radio module is set up via Serial connection and tested with LAIRD Omnidirectional Antenna listed in the EUT Components section above.

Statement of Conformity

The HERMES1 has been found to conform to the following parts of 47 CFR and 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.
	4		15.21	Information to the user is shown in the instruction manual exhibit.
			15.27	No special accessories are required for compliance.
3, 6.1			15.31	The EUT was tested in accordance with the measurement standards in this section.
6.13			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 module has a RP-SMA connector.
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	In USB configuration, the unit complies with the requirements of 15.207. In Serial configuration, 15.207 is not applicable since the unit is battery powered.
			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.

Test Results

Bandwidth

LIMIT

The minimum 6 dB bandwidth shall be at least 500 kHz. [15.247(a) (2)]

MEASUREMENTS / RESULTS

6dB BANDWIDTH

Date: 26-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power (5Vdc)
Temp: 22°C **Humidity:** 27% **Pressure:** 998mBar
Frequency Range: 906 to 924 MHz
Notes:

Frequency (MHz)	Reading (KHz)	6dB BW Limit (KHz)	6dB BW Margin (KHz)	6dB BW Result (Pass/Fail)
906	654.733	≥500	+154.733	Pass
914	654.332	≥500	+154.332	Pass
924	656.120	≥500	+156.120	Pass

Test Site: Chamber 2 **Attenuation:** Asset#791
Analyzer: Gold

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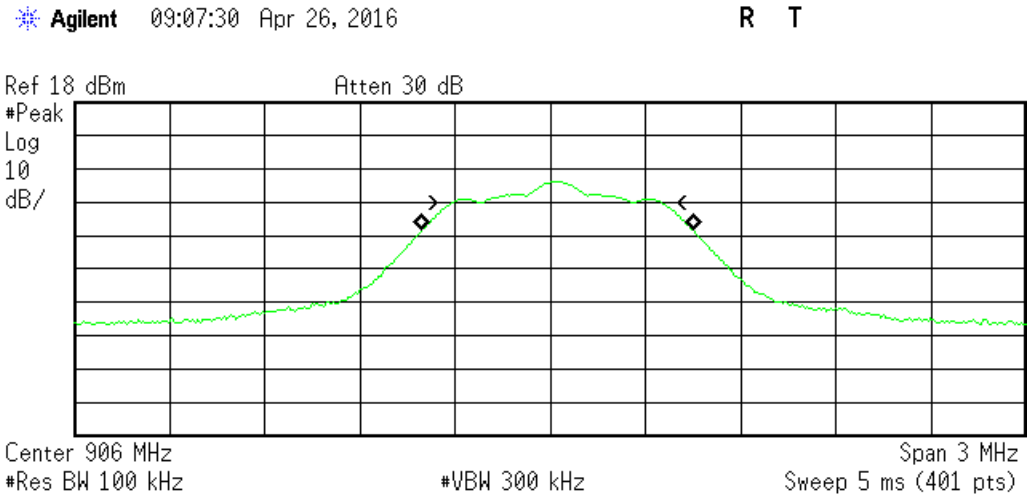
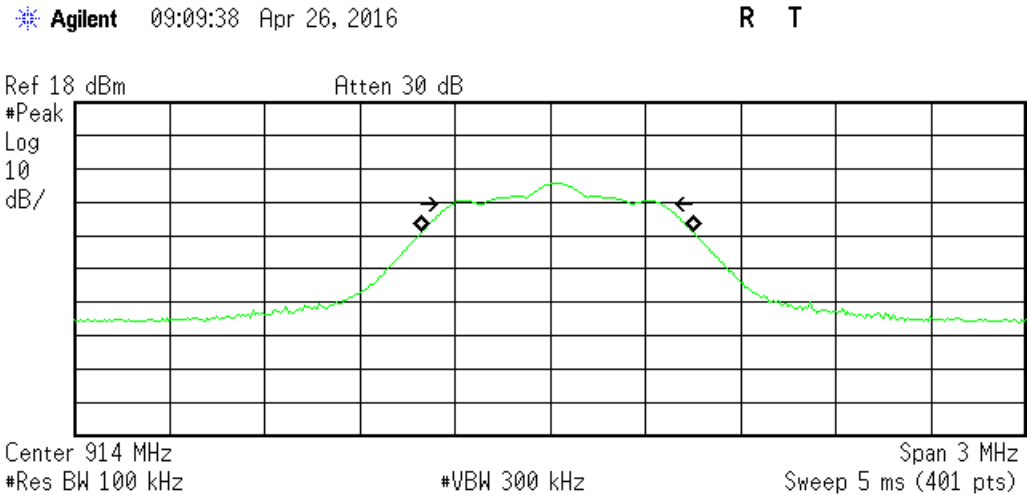
Spectrum Analyzers / Receivers /Preselectors	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration 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**
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**
TH A#2081		HTC-1	HDE		2081	II	4/5/2017	4/5/2016
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.

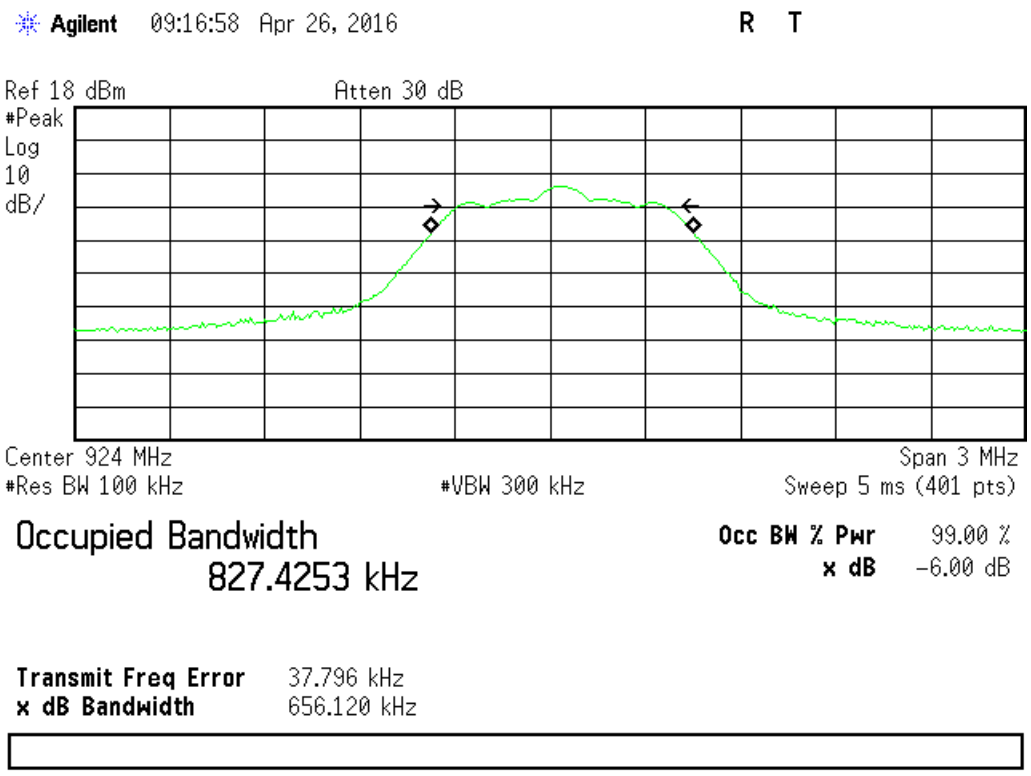
PLOT(s)



906 MHz – 6dB Bandwidth



914 MHz – 6dB Bandwidth



924 MHz – 6dB Bandwidth

Fundamental Emission Output Power

LIMIT

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

Per 558074 D01 DTS Measurement Guidance v03r05 Section 9.1 (Maximum Peak Conducted Output Power)

MEASUREMENTS / RESULTS

Fundamental Emission Output Power

Date: 26-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power (5Vdc)
Temp: 22°C **Humidity:** 27% **Pressure:** 998mBar
Frequency Range: 906 to 924 MHz
Notes:

Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Final Conducted Reading (dBm)	FCC 15.247 Limit (dBm)	Margin (dB)	Result (Pass/Fail)
906	-2.804	19.55	16.746	30.0	-13.25	Pass
914	-3.137	19.55	16.413	30.0	-13.59	Pass
924	-3.558	19.55	15.992	30.0	-14.01	Pass

Table Result: Pass by -13.25 dB ***Worst Freq:*** 906.0 MHz

Test Site: Chamber 2 **Attenuation:** Asset#791
Analyzer: Gold

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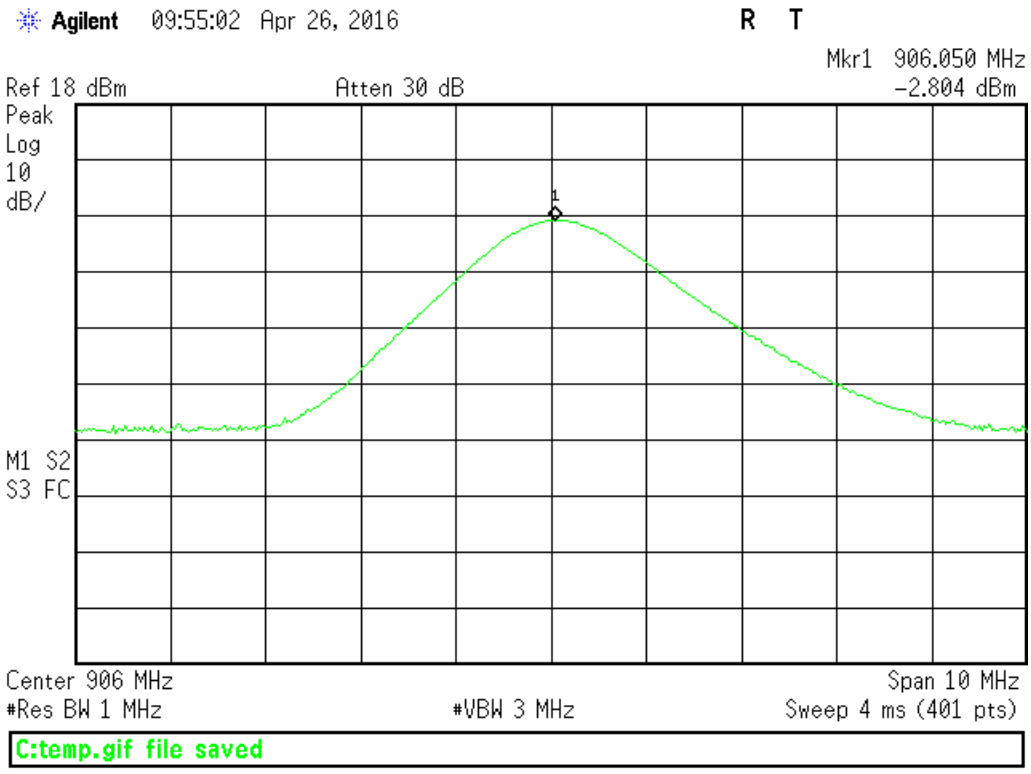
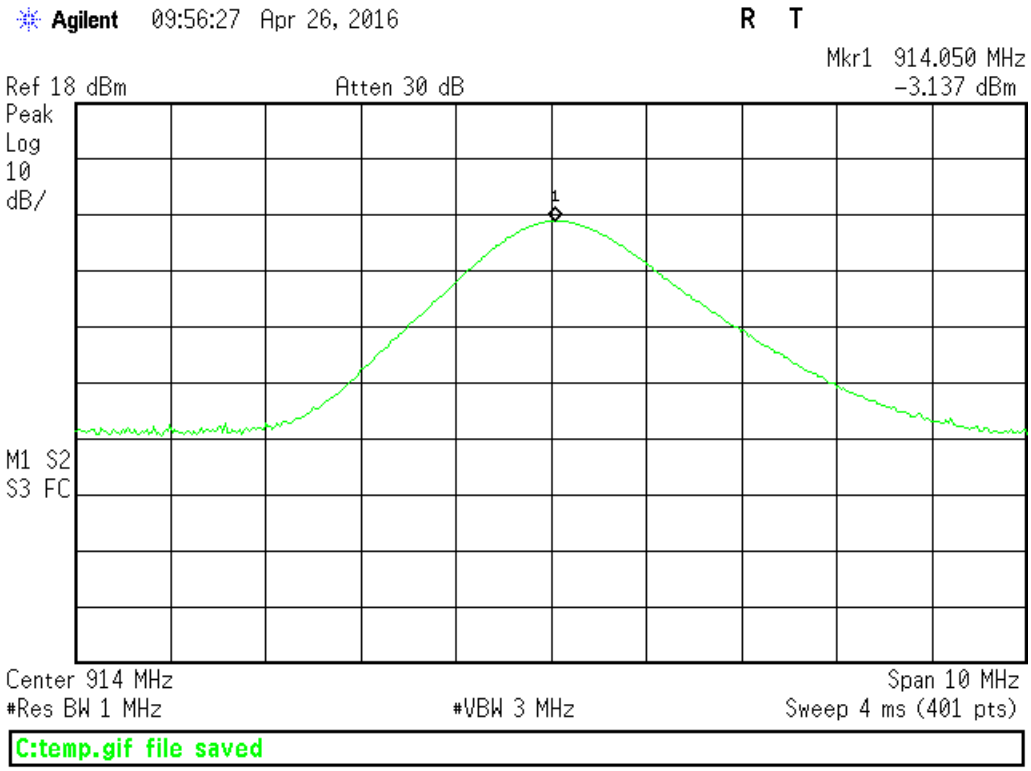
Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**		**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015
Preamps /Coupler 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**
TH A#2081		HTC-1	HDE		2081	II	4/5/2017	4/5/2016
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.

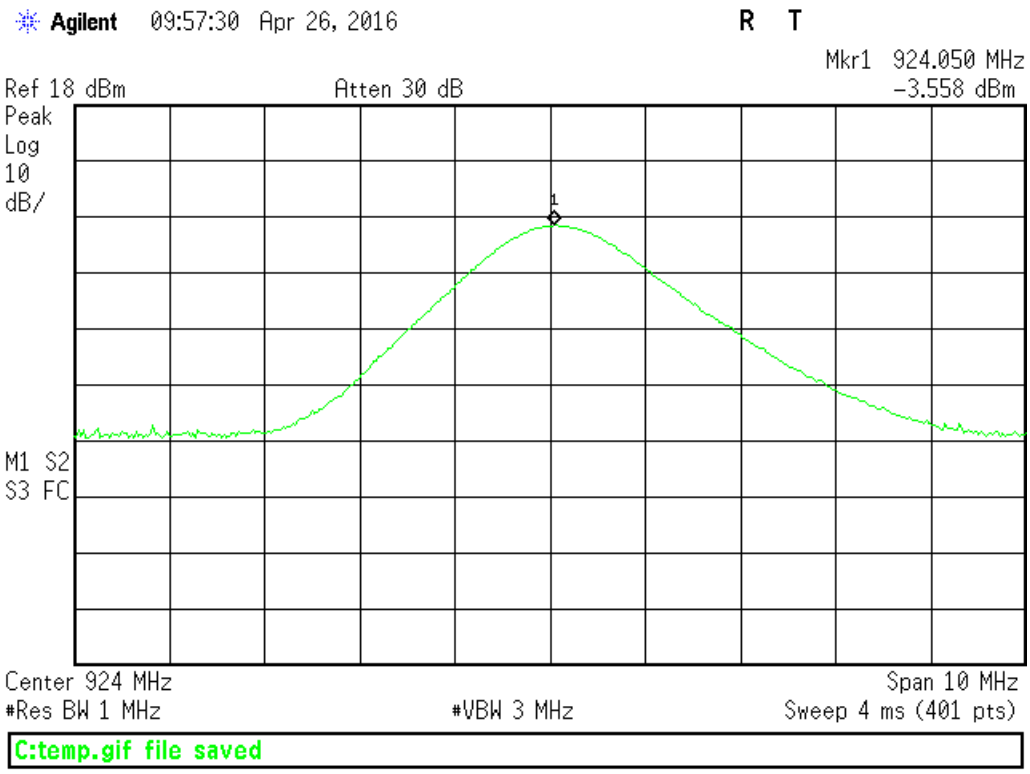
PLOTS



906 MHz – Channel Power



914 MHz – Channel Power



924 MHz – Channel Power

Radiated Spurious Emissions

LIMITS

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

Radiated emissions were maximized by rotating the device around 3 orthogonal planes (X, Y and Z) and worst case emissions observed in Z orientation (configuration #2: HERMES1 with LINX Mini Whip Antenna), in X orientation (configuration #3: HERMES1 with Taoglas Antenna) and in Y orientations (configuration #4: HERMES1 with LAIRD Antenna, configuration #5: HERMES1 with NEARSON Antenna and configuration #6: HERMES1 with LAIRD Antenna and V-logger). All the results below are for the worst case orientations only.

MEASUREMENTS / RESULTS

Radiated Emissions Table

Date: 26-Apr-16 **Company:** Durham Geo Enterprises Inc. **Work Order:** Q0559
Engineer: Chris Bramley **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power
Temp: 23.8°C **Humidity:** 25% **Pressure:** 994mBar

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

Notes: Config #2: ¼ Wave Mini Whip, Fixed Rt. Angle (Linx Technologies Inc. ANT-916-CW-RCS) **EUT Max Freq:** 16 MHz
all three channels were investigated; only worst case recorded. **EUT TX Freq:** 906-924MHz

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)	FCC 15.209 Margin (dB)	FCC 15.209 Result (Pass/Fail)
v	36.0	33.4	25.2	17.1	0.4	25.7				40.0	-14.3	Pass
v	48.0	47.4	25.2	9.2	0.4	31.8				40.0	-8.2	Pass
v	120.0	47.3	25.2	14.2	0.9	37.2				43.5	-6.3	Pass
v	240.0	41.3	25.1	11.9	1.1	29.2				46.0	-16.8	Pass
v	335.4	29.9	25.2	14.1	1.3	20.1				46.0	-25.9	Pass
v	360.0	43.5	25.0	14.9	1.3	34.7				46.0	-11.3	Pass
v	480.0	38.2	25.5	17.8	1.8	32.3				46.0	-13.7	Pass
v	842.0	37.3	25.1	21.8	2.3	36.3				46.0	-9.7	Pass
v	966.0	33.1	24.5	23.0	2.3	33.9				54.0	-20.1	Pass

Table Result: Pass by -6.3 dB ***Worst Freq:*** 120.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507
Analyzer: Gold **Preamp:** Blue-Blk **Antenna:** Red-Black
CSsoft Radiated Emissions Calculator v 1.017.161

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
Blue-Black	0.009-2000MHz	ZFL-1000-LN	CS	N/A	800	II	12/27/2016	12/27/2015

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	4/5/2017	4/5/2016
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 #1507	9kHz - 18GHz	Florida RF	II	2/14/2017	2/14/2016
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: 26-Apr-16 **Company:** Durham Geo Enterprises Inc. **Work Order:** Q0559
Engineer: Chris Bramley **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power
Temp: 23.8°C **Humidity:** 25% **Pressure:** 994mBar
Frequency Range: 1-10GHz **Measurement Distance:** 3 m (1-6GHz), 1m (6-10GHz)
Notes: Config #2: ¼ Wave Mini Whip, Fixed Rt. Angle (Linx Technologies Inc. ANT-916-CW-RCS) **EUT Max Freq:** 16 MHz
RBF Asset 2130 - Rejection Band 900-930MHz (Added 0.4dB Factor) **EUT TX Freq:** 906-924MHz

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)
TX on Low Channel - 906MHz														
v	1812.0	33.12	21.4	18.8	30.6	3.2	48.1	36.4	74.0	-25.9	Pass	54.0	-17.6	Pass
h	1812.0	34.74	23.1	18.8	30.6	3.2	49.7	38.1	74.0	-24.3	Pass	54.0	-15.9	Pass

Table Result: Pass by -15.9 dB ***Worst Freq:*** 1812.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn
CSsoft Radiated Emissions Calculator v 1.017.161
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Radiated Emissions Table

Date: 26-Apr-16 **Company:** Durham Geo Enterprises Inc. **Work Order:** Q0559
Engineer: Chris Bramley **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power
Temp: 23.8°C **Humidity:** 25% **Pressure:** 994mBar
Frequency Range: 1-10GHz **Measurement Distance:** 3 m (1-6GHz), 1m (6-10GHz)
Notes: Config #2: ¼ Wave Mini Whip, Fixed Rt. Angle (Linx Technologies Inc. ANT-916-CW-RCS) **EUT Max Freq:** 16 MHz
RBF Asset 2130 - Rejection Band 900-930MHz (Added 0.4dB Factor) **EUT TX Freq:** 906-924MHz

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)
TX on Mid Channel - 914MHz														
v	1828.0	34.41	22.2	18.8	30.7	3.2	49.5	37.3	74.0	-24.5	Pass	54.0	-16.7	Pass
h	1828.0	35.72	25.7	18.8	30.7	3.2	50.8	40.8	74.0	-23.2	Pass	54.0	-13.2	Pass

Table Result: Pass by -13.2 dB ***Worst Freq:*** 1828.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn
CSsoft Radiated Emissions Calculator v 1.017.161
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

Radiated Emissions Table

Date: 26-Apr-16 **Company:** Durham Geo Enterprises Inc. **Work Order:** Q0559
Engineer: Chris Bramley **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power
Temp: 23.8°C **Humidity:** 25% **Pressure:** 994mBar
Frequency Range: 1-10GHz **Measurement Distance:** 3 m (1-6GHz), 1m (6-10GHz)
Notes: Config #2: ¼ Wave Mini Whip, Fixed Rt. Angle (Linx Technologies Inc. ANT-916-CW-RCS) **EUT Max Freq:** 16 MHz
RBF Asset 2130 - Rejection Band 900-930MHz (Added 0.4dB Factor) **EUT TX Freq:** 906-924MHz

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)
TX on High Channel - 924MHz														
v	1848.0	34.56	21.8	18.8	30.8	3.2	49.8	37.0	74.0	-24.2	Pass	54.0	-17.0	Pass
h	1848.0	34.39	23.6	18.8	30.8	3.2	49.6	38.8	74.0	-24.4	Pass	54.0	-15.2	Pass

Table Result: Pass by -15.2 dB ***Worst Freq:*** 1848.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn
CSsoft Radiated Emissions Calculator v 1.017.161
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**
1517 HF Preamp	1-20GHz	CS	CS	N/A	1517	II	8/6/2016	8/6/2015
2130 BRF	0.009-18000MHz	BRM18770	Micro-Tronics	1	2130	II	1/6/2017	1/6/2016
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	2/8/2017	2/8/2015
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
TH A#2081		HTC-1	HDE		2081	II	4/5/2017	4/5/2016
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 #1507	9kHz - 18GHz		Florida RF			II	2/14/2017	2/14/2016
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: 27-Apr-16 **Company:** Durham Geo Enterprises Inc. **Work Order:** Q0559
Engineer: Chris Bramley **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power
Temp: 23.8°C **Humidity:** 25% **Pressure:** 993mBar
Frequency Range: 30-1000MHz **Measurement Distance:** 3 m
Notes: Config#3: Manhole Lid Antenna (by Taoglas Limited RG.02.01.3000W) **EUT Max Freq:** 16MHz
EUT Tx on Channel 1 (906MHz) - worst case **EUT TX Freq:** 906-924MHz

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)	FCC 15.209 Margin (dB)	FCC 15.209 Result (Pass/Fail)
v	36.0	31.0	25.2	17.1	0.4	23.3				40.0	-16.7	Pass
v	48.0	44.7	25.2	9.2	0.4	29.1				40.0	-10.9	Pass
v	60.0	44.2	25.3	7.6	0.5	27.0				40.0	-13.0	Pass
v	72.0	39.2	25.3	8.9	0.6	23.4				40.0	-16.6	Pass
v	120.0	45.4	25.2	14.2	0.9	35.3				43.5	-8.2	Pass
v	240.0	37.1	25.1	11.9	1.1	25.0				46.0	-21.0	Pass
h	276.0	31.0	25.2	13.3	1.2	20.3				46.0	-25.7	Pass

Table Result: Pass by -8.2 dB ***Worst Freq:*** 120.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507
Analyzer: Gold **Preamp:** Blue-Blk **Antenna:** Red-Black
CSsoft Radiated Emissions Calculator v 1.017.161

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**
Blue-Black	0.009-2000MHz	ZFL-1000-LN	CS	N/A	800	II	12/27/2016	12/27/2015
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	4/5/2017	4/5/2016
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 #1507	9kHz - 18GHz		Florida RF			II	2/14/2017	2/14/2016
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: 27-Apr-16 **Company:** Durham Geo Enterprises Inc. **Work Order:** Q0559
Engineer: Chris Bramley **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power
Temp: 23.8°C **Humidity:** 25% **Pressure:** 993mBar
Frequency Range: 1-10GHz **Measurement Distance:** 3 m (1-6GHz), 1m (6-10GHz)
Notes: Config#3: Manhole Lid Antenna (by Taoglas Limited RG.02.01.3000W) **EUT Max Freq:** 16MHz
RBF Asset 2130 - Rejection Band 900-930MHz (Added 0.4dB Factor) **EUT TX Freq:** 906-924MHz

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)
TX on Low Channel - 906MHz														
v	1812.0	34.41	23.7	18.8	30.6	3.2	49.4	38.7	74.0	-24.6	Pass	54.0	-15.3	Pass
h	1812.0	33.75	23.2	18.8	30.6	3.2	48.8	38.2	74.0	-25.2	Pass	54.0	-15.8	Pass
v	2718.0	35.39	24.1	20.2	32.9	3.6	51.7	40.4	74.0	-22.3	Pass	54.0	-13.6	Pass
h	2718.0	36.21	27.0	20.2	32.9	3.6	52.5	43.3	74.0	-21.5	Pass	54.0	-10.7	Pass
v	3624.0	34.75	25.1	19.1	33.3	4.4	53.4	43.7	74.0	-20.6	Pass	54.0	-10.3	Pass
h	3624.0	35.59	27.2	19.1	33.3	4.4	54.2	45.8	74.0	-19.8	Pass	54.0	-8.2	Pass

Table Result: Pass by -7.2 dB ***Worst Freq:*** 2742.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn
CSsoft Radiated Emissions Calculator v 1.017.161

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

Radiated Emissions Table

Date: 27-Apr-16 **Company:** Durham Geo Enterprises Inc. **Work Order:** Q0559
Engineer: Chris Bramley **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power
Temp: 23.8°C **Humidity:** 25% **Pressure:** 993mBar
Frequency Range: 1-10GHz **Measurement Distance:** 3 m (1-6GHz), 1m (6-10GHz)
Notes: Config#3: Manhole Lid Antenna (by Taoglas Limited RG.02.01.3000W) **EUT Max Freq:** 16MHz
RBF Asset 2130 - Rejection Band 900-930MHz (Added 0.4dB Factor) **EUT TX Freq:** 906-924MHz

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)
TX on Mid Channel - 914MHz														
v	1828.0	36.45	29.1	18.8	30.7	3.2	51.6	44.2	74.0	-22.4	Pass	54.0	-9.8	Pass
h	1828.0	35.53	27.0	18.8	30.7	3.2	50.6	42.1	74.0	-23.4	Pass	54.0	-11.9	Pass
v	2742.0	36.58	28.0	20.2	33.0	3.7	53.1	44.5	74.0	-20.9	Pass	54.0	-9.5	Pass
h	2742.0	37.37	30.3	20.2	33.0	3.7	53.9	46.8	74.0	-20.1	Pass	54.0	-7.2	Pass
v	3656.0	34.82	24.5	19.1	33.3	4.3	53.3	43.0	74.0	-20.7	Pass	54.0	-11.0	Pass
h	3656.0	36.05	26.3	19.1	33.3	4.3	54.6	44.8	74.0	-19.4	Pass	54.0	-9.2	Pass

Table Result: Pass by -7.2 dB ***Worst Freq:*** 2742.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn
CSsoft Radiated Emissions Calculator v 1.017.161

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

Radiated Emissions Table

Date: 27-Apr-16 **Company:** Durham Geo Enterprises Inc. **Work Order:** Q0559
Engineer: Chris Bramley **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power
Temp: 23.8°C **Humidity:** 25% **Pressure:** 993mBar
Frequency Range: 1-10GHz **Measurement Distance:** 3 m (1-6GHz), 1m (6-10GHz)
Notes: Config#3: Manhole Lid Antenna (by Taoglas Limited RG.02.01.3000W) **EUT Max Freq:** 16MHz
RBF Asset 2130 - Rejection Band 900-930MHz (Added 0.4dB Factor) **EUT TX Freq:** 906-924MHz

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)
TX on High Channel - 924MHz														
v	1848.0	35.0	25.3	18.8	30.8	3.2	50.2	40.5	74.0	-23.8	Pass	54.0	-13.5	Pass
h	1848.0	34.86	24.7	18.8	30.8	3.2	50.1	39.9	74.0	-23.9	Pass	54.0	-14.1	Pass
v	2772.0	34.36	22.8	20.1	33.0	3.7	51.0	39.4	74.0	-23.0	Pass	54.0	-14.6	Pass
h	2772.0	35.07	23.6	20.1	33.0	3.7	51.7	40.2	74.0	-22.3	Pass	54.0	-13.8	Pass
v	3696.0	35.32	25.1	19.1	33.4	4.2	53.8	43.6	74.0	-20.2	Pass	54.0	-10.4	Pass
h	3696.0	35.69	27.2	19.1	33.4	4.2	54.2	45.7	74.0	-19.8	Pass	54.0	-8.3	Pass

Table Result: Pass by -7.2 dB ***Worst Freq:*** 2742.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn
CSsoft Radiated Emissions Calculator v 1.017.161

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
1517 HF Preamp	1-20GHz	CS	CS	N/A	1517	II	8/6/2016	8/6/2015
2130 BRF	0.009-18000MHz	BRM18770	Micro-Tronics	1	2130	II	1/6/2017	1/6/2016

Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	2/8/2017	2/8/2015

Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
TH A#2081		HTC-1	HDE		2081	II	4/5/2017	4/5/2016
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 #1507	9kHz - 18GHz	Florida RF	II	2/14/2017	2/14/2016
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: 27-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power
Temp: 22.4°C **Humidity:** 24% **Pressure:** 994mBar
Frequency Range: 30 to 1000 MHz **Measurement Distance:** 3 m
Notes: Hermes1 with LAIRD Antenna - configuration #4 **EUT Max Freq:** 16 MHz
all three channels were investigated; only worst case recorded. **EUT TX Freq:** 906 to 924 MHz

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	35.95	34.3	25.2	17.1	0.4	26.6	---	---	---	40.0	-13.4	Pass
v	48.0	49.5	25.2	9.2	0.4	33.9	---	---	---	40.0	-6.1	Pass
h	48.0	43.0	25.2	9.2	0.4	27.4	---	---	---	40.0	-12.6	Pass
v	72.0	40.3	25.3	8.9	0.6	24.5	---	---	---	40.0	-15.5	Pass
v	120.0	49.4	25.2	14.2	0.9	39.3	---	---	---	43.5	-4.2	Pass
h	120.0	48.8	25.2	14.2	0.9	38.7	---	---	---	43.5	-4.8	Pass
h	192.0	39.0	24.9	11.6	1.1	26.8	---	---	---	43.5	-16.7	Pass
h	205.0	39.6	25.0	11.4	0.9	26.9	---	---	---	43.5	-16.6	Pass
h	240.0	39.1	25.1	11.9	1.1	27.0	---	---	---	46.0	-19.0	Pass
h	360.0	36.0	25.0	14.9	1.3	27.2	---	---	---	46.0	-18.8	Pass
h	420.0	35.9	25.5	16.5	1.7	28.6	---	---	---	46.0	-17.4	Pass

Table Result: Pass by -4.2 dB ***Worst Freq:*** 120.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507 **Cable 3:** ---
Analyzer: Gold **Preamp:** Blue-Blk **Antenna:** Red-Black **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.161

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
Blue-Black	0.009-2000MHz	ZFL-1000-LN	CS	N/A	800	II	12/27/2016	12/27/2015
2130 BRF	0.009-18000MHz	BRM18770	Micro-Tronics	1	2130	II	1/6/2017	1/6/2016

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	4/5/2017	4/5/2016
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 #1507	9kHz - 18GHz	Florida RF	II	2/14/2017	2/14/2016
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: 27-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power
Temp: 22.4°C **Humidity:** 24% **Pressure:** 994mBar
Frequency Range: 1 to 10 GHz **Measurement Distance:** 3 m (1 to 6 GHz), 1m (6 to 10 GHz)
Notes: Hermes1 with LAIRD Antenna - configuration #4 **EUT Max Freq:** 16 MHz
TX on Low Channel -1.08dB attenuation loss was added to readings (HPF - 1288) **EUT TX Freq:** 906 to 924 MHz

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	1812.0	34.36	25.2	18.8	30.6	3.2	49.4	40.2	74.0	-24.6	Pass	54.0	-13.9	Pass
h	1812.0	35.58	24.7	18.8	30.6	3.2	50.6	39.7	74.0	-23.4	Pass	54.0	-14.4	Pass

Table Result: Pass by -13.9 dB ***Worst Freq:*** 1812.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507 **Cable 3:** ---
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.161

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

Radiated Emissions Table

Date: 27-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power
Temp: 22.4°C **Humidity:** 24% **Pressure:** 994mBar
Frequency Range: 1 to 10 GHz **Measurement Distance:** 3 m (1 to 6 GHz), 1m (6 to 10 GHz)
Notes: Hermes1 with LAIRD Antenna - configuration #4 **EUT Max Freq:** 16 MHz
TX on Mid Channel - 1.08dB attenuation loss was added to readings (HPF - 1288) **EUT TX Freq:** 906 to 924 MHz

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	1828.0	35.48	25.1	18.8	30.7	3.2	50.6	40.2	74.0	-23.4	Pass	54.0	-13.8	Pass
h	1828.0	36.84	24.8	18.8	30.7	3.2	51.9	39.9	74.0	-22.1	Pass	54.0	-14.1	Pass

Table Result: Pass by -13.8 dB ***Worst Freq:*** 1828.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507 **Cable 3:** ---
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.161

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

Radiated Emissions Table

Date: 27-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power
Temp: 22.4°C **Humidity:** 24% **Pressure:** 994mBar
Frequency Range: 1 to 10 GHz **Measurement Distance:** 3 m (1 to 6 GHz), 1m (6 to 10 GHz)
Notes: Hermes1 with LAIRD Antenna - configuration #4 **EUT Max Freq:** 16 MHz
TX on High Channel - 1.08dB attenuation loss was added to readings (HPF - 1288) **EUT TX Freq:** 906 to 924 MHz

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	1848.0	35.48	25.1	18.8	30.8	3.2	50.7	40.3	74.0	-23.3	Pass	54.0	-13.7	Pass
h	1848.0	33.49	24.9	18.8	30.8	3.2	48.7	40.1	74.0	-25.3	Pass	54.0	-13.9	Pass

Table Result: Pass by -13.7 dB ***Worst Freq:*** 1848.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507 **Cable 3:** ---
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.161

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
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
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	2/8/2017	2/8/2015

Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
TH A#2081		HTC-1	HDE		2081	II	4/5/2017	4/5/2016
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 #1507	9kHz - 18GHz	Florida RF	II	2/14/2017	2/14/2016
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: 26-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power
Temp: 22°C **Humidity:** 25% **Pressure:** 998mBar

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

Notes: Hermes1 with Nearson Antenna - configuration #5
all three channels were investigated; only worst case recorded.
EUT Max Freq: 16 MHz
EUT TX Frequency: 906 to 924 MHz

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	120.0	38.0	25.2	14.2	0.9	27.9	---	---	---	43.5	-15.6	Pass
v	168.0	32.4	25.0	11.9	0.9	20.2	---	---	---	43.5	-23.3	Pass
v	240.0	40.4	25.1	11.9	1.1	28.3	---	---	---	46.0	-17.7	Pass
v	276.4	31.5	25.2	13.3	1.2	20.8	---	---	---	46.0	-25.2	Pass
h	614.0	29.0	24.8	19.0	2.0	25.2	---	---	---	46.0	-20.8	Pass
v	978.0	23.2	24.4	23.0	2.3	24.1	---	---	---	54.0	-29.9	Pass

Table Result: Pass by -15.6 dB ***Worst Freq:*** 120.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507 **Cable 3:** ---
Analyzer: Gold **Preamp:** Blue-Blk **Antenna:** Red-Black **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.161

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
Blue-Black	0.009-2000MHz	ZFL-1000-LN	CS	N/A	800	II	12/27/2016	12/27/2015
2130 BRF	0.009-18000MHz	BRM18770	Micro-Tronics	1	2130	II	1/6/2017	1/6/2016

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	4/5/2017	4/5/2016
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 #1507	9kHz - 18GHz	Florida RF	II	2/14/2017	2/14/2016
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: 26-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power
Temp: 22°C **Humidity:** 25% **Pressure:** 998mBar

Frequency Range: 1 to 10 GHz **Measurement Distance:** 3 m (1 to 6 GHz), 1m (6 to 10 GHz)

Notes: Hermes1 with Nearson Antenna - configuration #5
TX on low channel - 1.08dB attenuation loss was added to readings (HPF - 1288)
EUT Max Freq: 16 MHz
EUT TX Freq: 906 to 924 MHz

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	1812.0	36.11	25.9	18.8	30.6	3.2	51.1	40.9	74.0	-22.9	Pass	54.0	-13.2	Pass

Table Result: Pass by -13.2 dB ***Worst Freq:*** 1812.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507 **Cable 3:** ---
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.161

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

Radiated Emissions Table

Date: 26-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power
Temp: 22°C **Humidity:** 25% **Pressure:** 998mBar
Frequency Range: 1 to 10 GHz **Measurement Distance:** 3 m (1 to 6 GHz), 1m (6 to 10 GHz)
Notes: Hermes1 with Nearson Antenna - configuration #5 **EUT Max Freq:** 16 MHz
TX on mid channel - 1.08dB attenuation loss was added to readings (HPF - 1288) **EUT TX Freq:** 906 to 924 MHz

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	1828.0	34.64	27.2	18.8	30.7	3.2	49.7	42.3	74.0	-24.3	Pass	54.0	-11.7	Pass

Table Result: Pass by -11.7 dB ***Worst Freq:*** 1828.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507 **Cable 3:** ---
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.161

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

Radiated Emissions Table

Date: 26-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power
Temp: 22°C **Humidity:** 25% **Pressure:** 998mBar
Frequency Range: 1 to 10 GHz **Measurement Distance:** 3 m (1 to 6 GHz), 1m (6 to 10 GHz)
Notes: Hermes1 with Nearson Antenna - configuration #5 **EUT Max Freq:** 16 MHz
TX on high channel - 1.08dB attenuation loss was added to readings (HPF - 1288) **EUT TX Freq:** 906 to 924 MHz

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	1848.0	35.2	26.6	18.8	30.8	3.2	50.4	41.8	74.0	-23.6	Pass	54.0	-12.3	Pass

Table Result: Pass by -12.3 dB ***Worst Freq:*** 1848.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507 **Cable 3:** ---
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.161

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
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
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	2/8/2017	2/8/2015

Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
TH A#2081	HTC-1	HDE		2081	II	4/5/2017	4/5/2016
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 #1507	9kHz - 18GHz	Florida RF	II	2/14/2017	2/14/2016
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: 28-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** 3.7Vdc (battery power)
Temp: 22°C **Humidity:** 24% **Pressure:** 1000.4mBar
Frequency Range: 30 to 1000 MHz **Measurement Distance:** 3 m
Notes: Configuration #6: Serial Configuration (HERMES1 with V-logger and LAIRD antenna) all three channels were investigated; only worst case recorded. **EUT Max Freq:** 16 MHz **EUT TX Freq:** 906 to 924 MHz

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)
vbb	38.45	40.6	25.2	15.2	0.4	31.0	---	---	---	40.0	-9.0	Pass
v	60.0	52.4	25.3	7.6	0.5	35.2	---	---	---	40.0	-4.8	Pass
h	95.5	41.4	25.2	9.1	0.7	26.0	---	---	---	43.5	-17.5	Pass
v	96.1	49.1	25.2	9.2	0.7	33.8	---	---	---	43.5	-9.7	Pass
v	120.0	49.0	25.2	14.2	0.9	38.9	---	---	---	43.5	-4.6	Pass
h	120.0	45.8	25.2	14.2	0.9	35.7	---	---	---	43.5	-7.8	Pass
v	240.0	45.1	25.1	11.9	1.1	33.0	---	---	---	46.0	-13.0	Pass
h	240.0	45.0	25.1	11.9	1.1	32.9	---	---	---	46.0	-13.1	Pass
h	258.0	40.3	25.3	11.8	1.1	27.9	---	---	---	46.0	-18.1	Pass
v	310.8	33.8	25.3	13.7	1.3	23.5	---	---	---	46.0	-22.5	Pass
h	311.3	39.9	25.3	13.7	1.3	29.6	---	---	---	46.0	-16.4	Pass

Table Result: Pass by -4.6 dB ***Worst Freq:*** 120.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507 **Cable 3:** ---
Analyzer: Gold **Preamp:** Blue-Blk **Antenna:** Red-Black **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.161

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
Blue-Black	0.009-2000MHz	ZFL-1000-LN	CS	N/A	800	II	12/27/2016	12/27/2015
2130 BRF	0.009-18000MHz	BRM18770	Micro-Tronics	1	2130	II	1/6/2017	1/6/2016

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	4/5/2017	4/5/2016
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 #1507	9kHz - 18GHz	Florida RF	II	2/14/2017	2/14/2016
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: 28-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** 3.7Vdc (battery power)
Temp: 22°C **Humidity:** 24% **Pressure:** 1000.4mBar
Frequency Range: 1 to 10 GHz **Measurement Distance:** 3 m (1 to 6 GHz), 1m (6 to 10 GHz)
Notes: Config#6: Serial Configuration (HERMES1 with V-logger and LAIRD antenna) TX on Low Channel / 0.4dB attenuation loss was added to readings (BRF - 2130) **EUT Max Freq:** 16 MHz **EUT TX Freq:** 906 to 924 MHz

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	1812.0	36.62	28.0	18.8	30.6	3.2	51.6	43.0	74.0	-22.4	Pass	54.0	-11.0	Pass
h	1812.0	38.46	28.9	18.8	30.6	3.2	53.5	43.9	74.0	-20.5	Pass	54.0	-10.1	Pass

Table Result: Pass by -10.1 dB ***Worst Freq:*** 1812.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507 **Cable 3:** ---
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.161

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

Radiated Emissions Table

Date: 28-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** 3.7Vdc (battery power)
Temp: 22°C **Humidity:** 24% **Pressure:** 1000.4mBar
Frequency Range: 1 to 10 GHz **Measurement Distance:** 3 m (1 to 6 GHz), 1m (6 to 10 GHz)
Notes: Config#6: Serial Configuration (HERMES1 with V-logger and LAIRD antenna) **EUT Max Freq:** 16 MHz
TX on mid channel / 0.4dB attenuation loss was added to readings (BRF - 2130) **EUT TX Freq:** 906 to 924 MHz

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	1828.0	38.5	29.6	18.8	30.7	3.2	53.6	44.7	74.0	-20.4	Pass	54.0	-9.3	Pass
h	1828.0	40.68	32.2	18.8	30.7	3.2	55.8	47.3	74.0	-18.2	Pass	54.0	-6.7	Pass

Table Result: Pass by -6.7 dB ***Worst Freq:*** 1828.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507 **Cable 3:** ---
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.161

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

Radiated Emissions Table

Date: 28-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** 3.7Vdc (battery power)
Temp: 22°C **Humidity:** 24% **Pressure:** 1000.4mBar
Frequency Range: 1 to 10 GHz **Measurement Distance:** 3 m (1 to 6 GHz), 1m (6 to 10 GHz)
Notes: Config#6: Serial Configuration (HERMES1 with V-logger and LAIRD antenna) **EUT Max Freq:** 16 MHz
TX on high channel / 0.4dB attenuation loss was added to readings (BRF - 2130) **EUT TX Freq:** 906 to 924 MHz

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	1848.0	36.14	27.7	18.8	30.8	3.2	51.3	42.9	74.0	-22.7	Pass	54.0	-11.2	Pass
h	1848.0	39.35	30.9	18.8	30.8	3.2	54.6	46.1	74.0	-19.5	Pass	54.0	-7.9	Pass

Table Result: Pass by -7.9 dB ***Worst Freq:*** 1848.0 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2052 **Cable 2:** Asset #1507 **Cable 3:** ---
Analyzer: Gold **Preamp:** Asset #1517 **Antenna:** Blue Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.161

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**
2130 BRF	0.009-18000MHz	BRM18770	Micro-Tronics	1	2130	II	1/6/2017	1/6/2016
1517 HF Preamp	1-20GHz	CS	CS	N/A	1517	II	8/6/2016	8/6/2015
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	2/8/2017	2/8/2015
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
TH A#2081		HTC-1	HDE		2081	II	4/5/2017	4/5/2016
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 #1507	9kHz - 18GHz		Florida RF			II	2/14/2017	2/14/2016
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.

Conducted Spurious Emissions

LIMITS

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth that contains the highest level of desired power based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB …
[15.247(d)]

MEASUREMENTS / RESULTS

Conducted Band Edges

Spurious Conducted Emissions - Maximum In Band (Peak PSD in 100 KHz RBW)

Date: 26-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power (5Vdc)
Temp: 22°C **Humidity:** 27% **Pressure:** 998mBar
Frequency Range: 902 to 928 MHz
Notes:

Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Adjusted Reading (dBm)
906	-5.430	19.55	14.1

Test Site: Chamber 2 **Attenuation:** Asset#791
Analyzer: Gold

Band Edge

Date: 26-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power (5Vdc)
Temp: 22°C **Humidity:** 27% **Pressure:** 998mBar
Frequency Range: 902 to 928 MHz
Notes:
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)
902.0	-48.91	19.55	-29.36	-5.90	-23.46	Pass
928.0	-49.27	19.55	-29.72	-5.90	-23.82	Pass

Table Result: Pass by -23.46 dB ***Worst Freq:*** 902.0 MHz

Test Site: Chamber 2 **Attenuation:** Asset#791
Analyzer: Gold

Rev. 4/24/2016

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

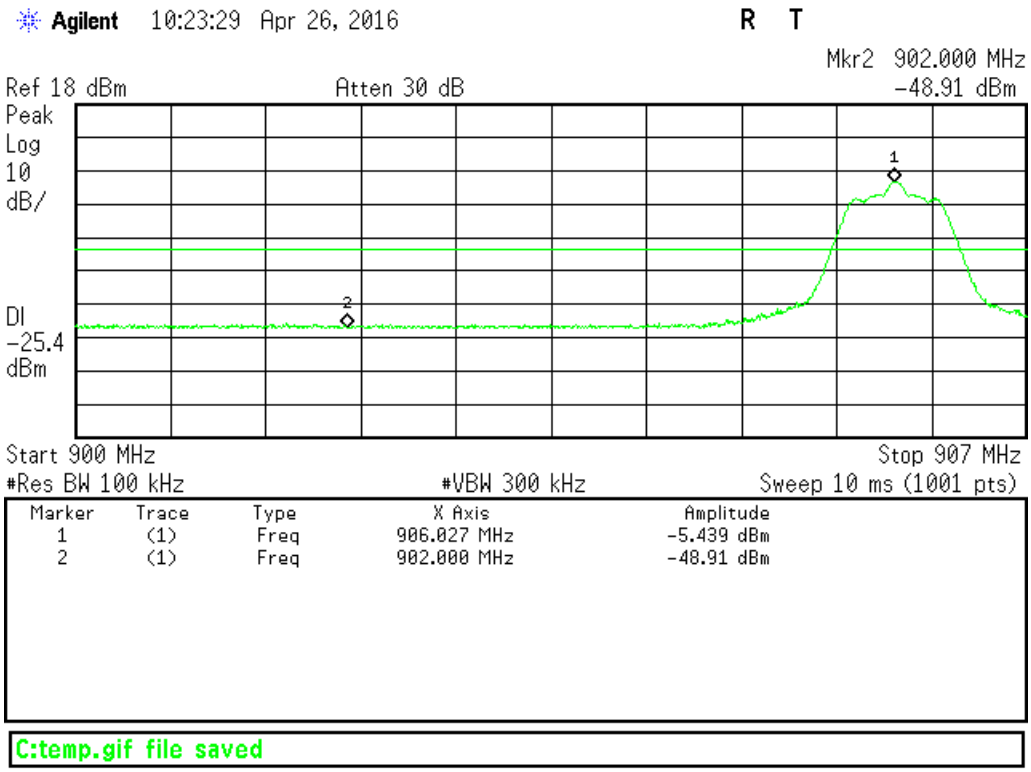
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015

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

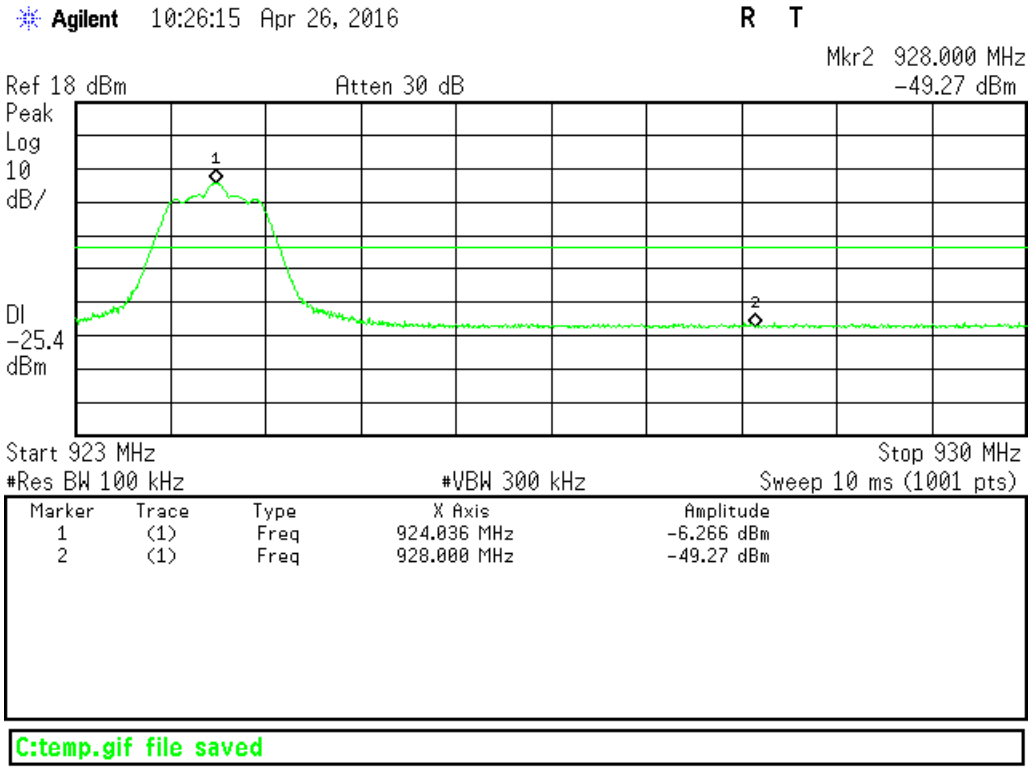
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
TH A#2081		HTC-1	HDE		2081	II	4/5/2017	4/5/2016
Barometric A#2160		5396-0321	Monarch Instrument	4000060	2160	I	3/7/2017	3/7/2016

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

Plot(s)



Lower Channel – Band Edge



Upper Channel – Band Edge

Conducted Spurious Emission

9 kHz -10 GHz frequency range was investigated for all 3 channels (low, middle and high) at the EUT antenna port. Except for the fundamental, all emissions were at instrument noise floor. Highest noise floor level was less than -20dBm for the entire frequency range, which is more than 20dB below the fundamental.

Conducted Spurious Emission

Date: 26-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power (5Vdc)
Temp: 22°C **Humidity:** 27% **Pressure:** 998mBar

Frequency Range: 9KHz to 10GHz

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)
30.0	-48.51	19.55	-28.96	-5.90	-23.06	Pass
1812.0	-49.36	19.55	-29.81	-5.90	-23.91	Pass
2718.0	-49.13	19.55	-29.58	-5.90	-23.68	Pass

Table Result: Pass by -23.06 dB ***Worst Freq:*** 30.0 MHz

Test Site: Chamber 2 **Attenuation:** Asset#791
Analyzer: Gold

Conducted Spurious Emission

Date: 26-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power (5Vdc)
Temp: 22°C **Humidity:** 27% **Pressure:** 998mBar

Frequency Range: 9KHz to 10GHz

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)
30.0	-49.29	19.55	-29.74	-5.90	-23.84	Pass
1828.0	-48.34	19.55	-28.79	-5.90	-22.89	Pass
2742.0	-50.22	19.55	-30.67	-5.90	-24.77	Pass

Table Result: Pass by -23.84 dB ***Worst Freq:*** 30.0 MHz

Test Site: Chamber 2 **Attenuation:** Asset#791
Analyzer: Gold

Conducted Spurious Emission

Date: 26-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power (5Vdc)
Temp: 22°C **Humidity:** 27% **Pressure:** 998mBar

Frequency Range: 9KHz to 10GHz

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)	Margin (dB)	Result (Pass/Fail)
30.0	-49.87	19.55	-30.32	-5.90	-24.42	Pass
1848.0	-49.11	19.55	-29.56	-5.90	-23.66	Pass
2772.0	-49.31	19.55	-29.76	-5.90	-23.86	Pass

Table Result: Pass by -23.66 dB ***Worst Freq:*** 1848.0 MHz

Test Site: Chamber 2 **Attenuation:** Asset#791
Analyzer: Gold

Rev. 4/24/2016

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
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
TH A#2081		HTC-1	HDE		2081	II	4/5/2017	4/5/2016
Barometric A#2160		5396-0321	Monarch Instrument	4000060	2160	I	3/7/2017	3/7/2016

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

Power Spectral Density

LIMIT

…the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission. [15.247(e)]

Per 558074 D01 DTS Measurement Guidance v03r05 Section 10.2 (Peak PSD)

MEASUREMENTS / RESULTS

Power Spectral Density

Date: 26-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power (5Vdc)
Temp: 22°C **Humidity:** 27% **Pressure:** 998mBar
Frequency Range: 906 to 924 MHz
Notes:

Frequency (MHz)	Reading (dBm)	Attenuation (dB)	Final Conducted Reading (dBm)	FCC 15.247 Limit (dBm)	Margin (dB)	Result (Pass/Fail)
906	-13.10	19.55	6.45	8.0	-1.55	Pass
914	-13.41	19.55	6.14	8.0	-1.86	Pass
924	-13.88	19.55	5.67	8.0	-2.33	Pass

Table Result: Pass by -1.55 dB ***Worst Freq:*** 906.0 MHz

Test Site: Chamber 2 **Attenuation:** Asset#791
Analyzer: Gold

Rev. 4/24/2016

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	00Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	1/13/2017	1/13/2016

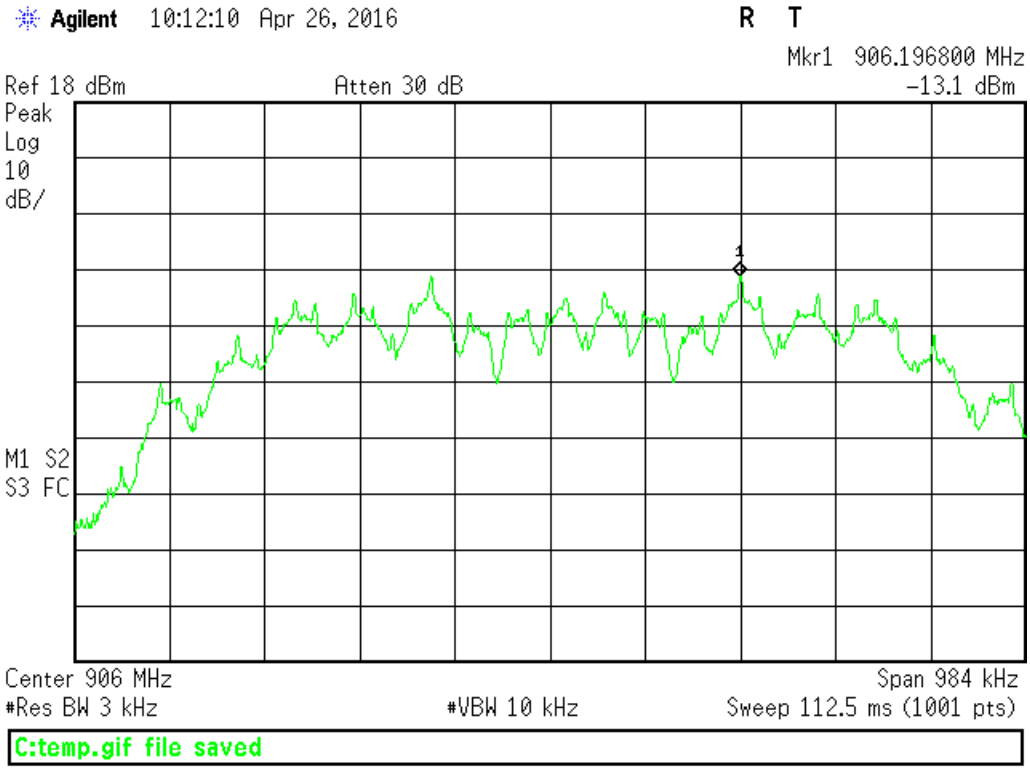
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range	Cat	Calibration Due	Calibrated on
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz	II	3/22/2017	3/22/2015

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

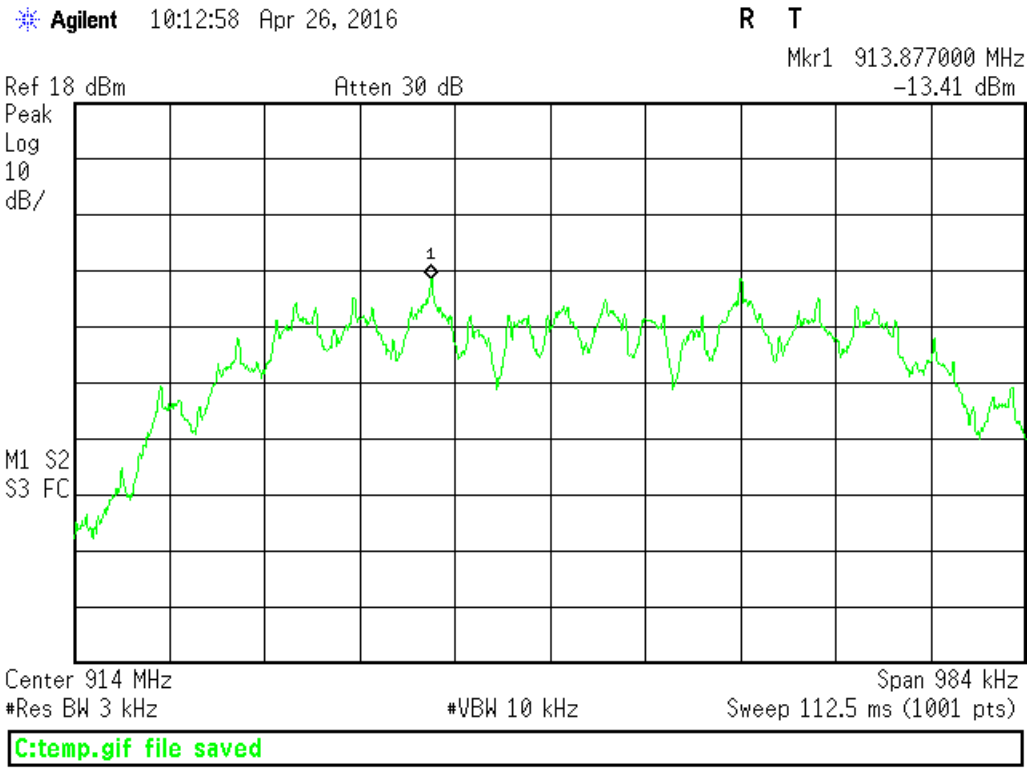
Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
TH A#2081	HTC-1	HDE		2081	II	4/5/2017	4/5/2016
Barometric A#2160	5396-0321	Monarch Instrument	4000060	2160	I	3/7/2017	3/7/2016

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

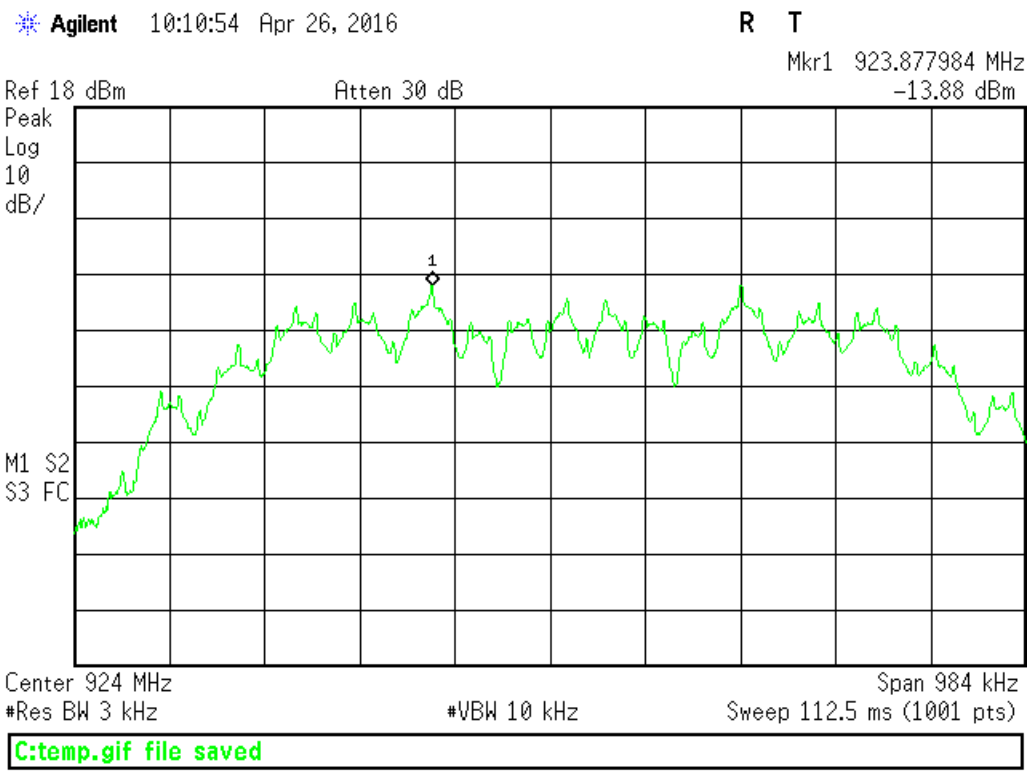
PLOTS



906 MHz – PSD



914 MHz – PSD


Agilent 10:10:54 Apr 26, 2016
R T
Mkr1 923.877984 MHz
-13.88 dBm
Ref 18 dBm
Atten 30 dB
Peak
Log
10
dB/
1
M1 S2
S3 FC
Center 924 MHz
#Res BW 3 kHz
#VBW 10 kHz
Span 984 kHz
Sweep 112.5 ms (1001 pts)
C:temp.gif file saved

924 MHz – PSD

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

Please note that AC Conducted Emissions was performed on EUT with LAIRD Antenna (M/N: FG9023) where the result was found to be worst case during Radiated Emissions.

AC Conducted Emissions Data Table (support PC)

Date: 28-Apr-16 **Company:** Durham Geo Enterprises Inc. **Work Order:** Q0559
Engineer: Chris Bramley **EUT Desc:** Hermes1
Temp: 21.8 ºC **Humidity:** 31% **Pressure:** 1000 mBar
Notes: Laird #FG9023 Antenna, Tx on Channel 1 (906MHz) / tested Support PC which provided power to the EUT via USB configuration at 120Vac/60Hz.
Frequency Range: 0.15-30MHz **EUT Input Voltage/Frequency:** 5Vdc (USB Power)

	Quasi-Peak Readings		Average Readings		LISN Factors		Cable	ATTN	FCC 15.207			FCC 15.207		
Frequency (MHz)	QP1 (dBµV)	QP2 (dBµV)	AVG1 (dBµV)	AVG2 (dBµV)	L1 (dB)	L2 (dB)	Factor (dB)	Factor (dB)	QP Limit (dBµV)	Margin (dB)	Result (Pass/Fail)	AVG Limit (dBµV)	Margin (dB)	Result (Pass/Fail)
0.194	21.5	23.9	18.7	21.1	-0.1	-0.1	-0.1	-20.8	63.9	-19.1	Pass	53.9	-11.9	Pass
0.700	20.5	19.8	17.9	17.1	0.0	0.0	-0.1	-20.8	56.0	-14.6	Pass	46.0	-7.2	Pass
2.690	23.0	24.0	19.5	19.9	0.0	0.0	-0.1	-20.8	56.0	-11.0	Pass	46.0	-5.2	Pass
13.400	25.7	24.5	24.5	21.6	-0.1	-0.1	-0.2	-20.9	60.0	-13.1	Pass	50.0	-4.4	Pass
13.500	27.0	24.3	24.9	21.5	-0.1	-0.1	-0.2	-20.9	60.0	-11.9	Pass	50.0	-4.0	Pass
13.600	26.1	25.2	24.7	21.5	-0.1	-0.1	-0.2	-20.9	60.0	-12.7	Pass	50.0	-4.2	Pass

Result: Pass ***Worst Margin:*** -4.0 dB ***Frequency:*** 13.500 MHz

Measurement Device: LISN ASSET 1726(Line 1) LISN ASSET 1727(Line 2) **Cable:** CEMI-01 **Spectrum Analyzer:** SA EMI Chamber (1327)
Attenuator: 20dB Attenuator-07 **Site:** CEMI 6

C-S CEMI Calculator Version 3.0.14 *Equipment Factor Sheet rev: 4/16/2016*
Adjusted Reading = Raw Reading + LISN Insertion Loss + Cable Loss + Attenuation
Rev. 4/24/2016

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
LISNs/Measurement Probes	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
LISN Asset 1726	150kHz-30MHz	LI-150A	Com-Power	201092	1726	I	2/4/2017	2/4/2016
LISN Asset 1727	150kHz-30MHz	LI-150A	Com-Power	201093	1727	I	2/4/2017	2/4/2016
Conducted Test Sites (Mains / Telco)	**FCC Code**		**VCCI Code**			**Cat**	**Calibration Due**	**Calibrated on**
CEMI 6	719150		A-0015			III	NA	N/A
Meteorological Meters		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
TH A#2082		HTC-1	HDE		2082	II	4/5/2017	4/5/2016
Barometric A#2160		5396-0321	Monarch Instruments	4000060	2160	I	3/7/2017	3/7/2016
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-07	9kHz-2GHz	BW-N20W+	MCL	N/A		II	4/10/2017	4/10/2016

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

Occupied Bandwidth

REQUIREMENT

When an occupied bandwidth is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured. [RSS-GEN 6.6]

MEASUREMENTS / RESULTS

99% OCCUPIED BANDWIDTH

Date: 26-Apr-16 **Company:** Durham Geo Enterprises **Work Order:** Q0559
Engineer: Tuyen Truong **EUT Desc:** HERMES1 **EUT Operating Voltage/Frequency:** USB Power (5Vdc)
Temp: 22°C **Humidity:** 27% **Pressure:** 998mBar
Frequency Range: 906 to 924 MHz
Notes:

Frequency (MHz)	Occupied Bandwidth Reading (KHz)
906	**768.7237**
914	**767.3712**
924	**767.1168**

Test Site: Chamber 2 **Attenuation:** Asset#791
Analyzer: Gold

Rev. 4/24/2016

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

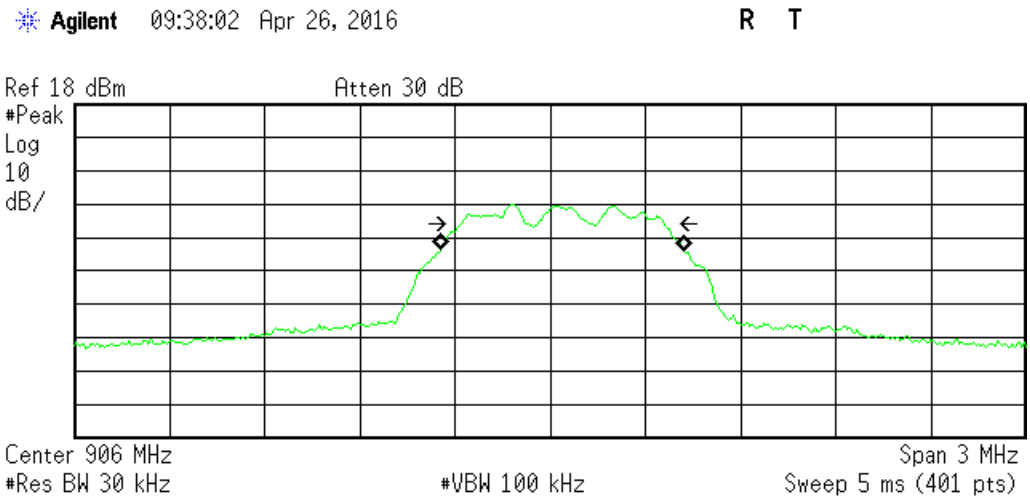
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code	Range		Cat	Calibration Due	Calibrated on
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz		II	3/22/2017	3/22/2015

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

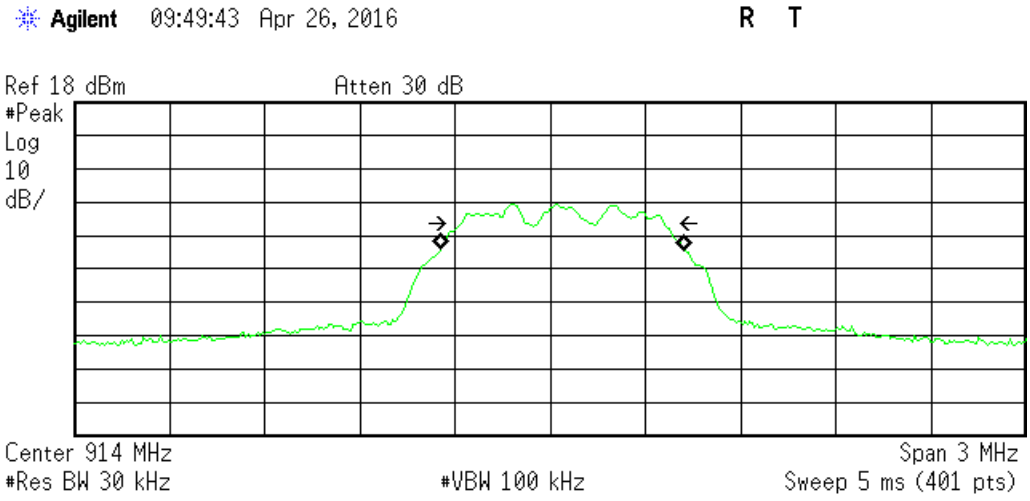
Meteorological Meters	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
TH A#2081	HTC-1	HDE		2081	II	4/5/2017	4/5/2016
Barometric A#2160	5396-0321	Monarch Instruments	4000060	2160	I	3/7/2017	3/7/2016

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

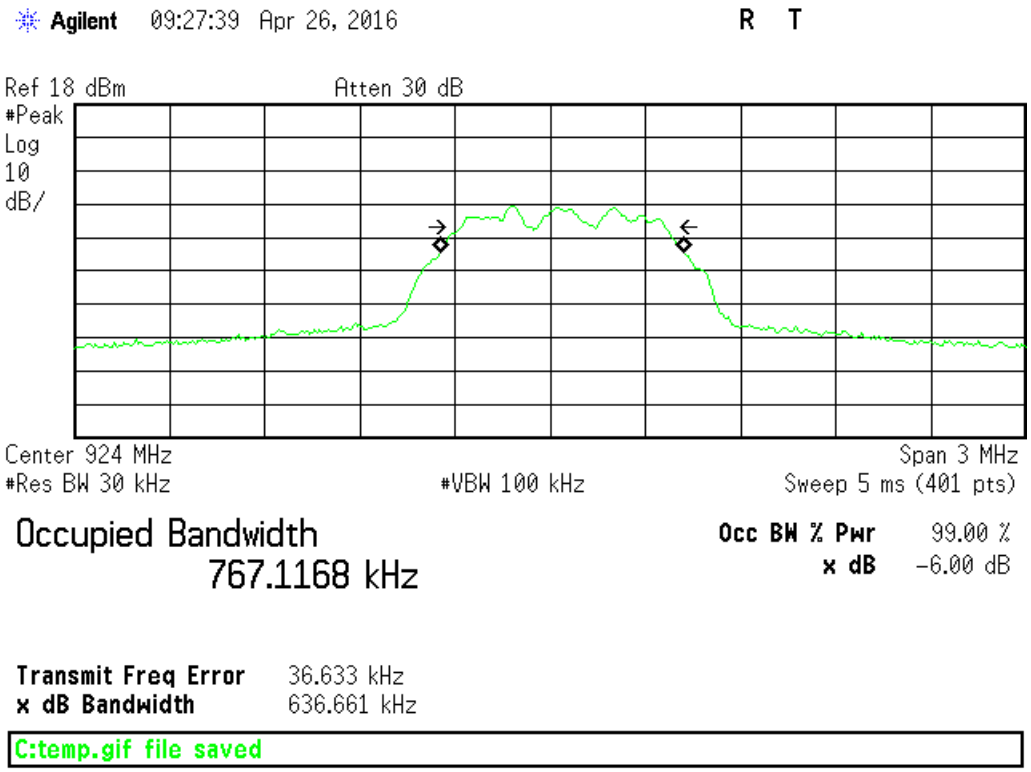
Plot(s)



906 MHz – Occupied Bandwidth



914 MHz – Occupied Bandwidth



924 MHz – Occupied Bandwidth

Measurement Uncertainty

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

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

Conditions Of Testing

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

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

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

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

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

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

The complete list of the Approved Subcontractors Curtis-Straus may use to delegate the performance of work can be provided upon request.
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