Test Report

Bureau Veritas Consumer Products Services Inc.

Report No	ES1904-2
Client	SmartSense by Digi Kyle Gilpin
Address	186 Lincoln St, Suite 8 Boston, MA 02111
Phone	(866) 806-2653
Items tested	SCMB100
FCC ID	2ATZ3-SCMB100
IC	25306-SCMB100
FRN	0028136455
Equipment Type	Digital Transmission System
Equipment Code	DTS
Emission Designator	2M05F1D
FCC/IC Rule Parts	CFR Title 47 FCC Part 15.247, ISED Canada RSS-247 Issue 2
Test Dates	9/4/2018 to 9/18/2018
Results	As detailed within this report
Prepared by	Anna Vacheva – EMC Engineer
Authorized by	Arik Zwirner – Sr. EMC Engineer
Issue Date	January 10, 2020
Conditions of Issue	This Test Report is issued subject to the conditions stated in the '*Conditions of Testing*' section on page 35 of this report.

Bureau Veritas Consumer Products Services Inc. is accredited by the American Association for Laboratory Accreditation for the specific scope of accreditation under Certificate Number 1627-01. This report may contain data which is not covered by the A2LA accreditation.

ACCREDITED Cert No. 1627-01

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Form Final Report REV 12-07-15

Summary

This test report supports an application for certification of a transmitter operating pursuant to: CFR Title 47 FCC Part 15.247, ISED Canada RSS-247 Issue 2. This report covers the 2Mbps Bluetooth 5 mode of the device.

The SCMB100 operates in the 2404-2478MHz frequency range and has both an onboard antenna and an external antenna. It is powered by 3V DC battery.
Details of the antennas are as follows,

	Type	Gain (dBi)	Manufacturer	Model
On Board	PCB Trace	3.7	-	-
External	Dipole	2.5	Ethertronics	1001932

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

Test Methodology

All testing was performed according to the following rules/procedures/documents;
CFR Title 47 FCC Part 15.247, RSS-247 Issue 2, RSS-Gen Issue 5, FCC KDB 558074 D01 Measurement Guidance v05 and ANSI C63.10-2013.

Radiated emissions were maximized by rotating the device around 3 orthogonal planes (X, Y and Z) as well as varying the test antenna's height and polarity. Worst case results were:
On board antenna: Upright position
External antenna: EUT on its side and antenna in vertical position
Radiated emissions testing was done in these respective orientations.

RF measurements were performed at the antenna port on 3 channels as follows:

- 2404MHz: Low Channel
- 2440MHz: Mid Channel
- 2478MHz: High Channel

AC line conducted emissions testing was not performed since the unit is battery powered only.

The following bandwidths were used during radiated spurious emissions testing.

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

Product Tested - Configuration Documentation

EUT Configuration			
Work Order:	S1904		
Company:	Smart Sense by Digi		
Company Address:	108 Lincoln Street, Suite BA		
	Boston, MA, 02111		
Contact:	Kyle Gilpin		
	MN	**PN**	**SN**
EUT:	SCMB100		
EUT Description:	Transmitter Module		
EUT Max Frequency:	2478 MHz		
EUT Min Frequency:	2404 MHz		

Port Label	Port Type	# ports	# populated	cable type	shielded	ferrites	length (m)	in/out	under test	comment
USB	USB	1	0					in	yes	Degub / setup only
20 Pin	other	1	0					in	yes	Debug / setup only

Software Operating Mode Description:

Test firmware

Performance Criteria:

No immunity testing

Clock Frequencies	
frequencies (MHz)	2478, 2440, 2404

Statement of Conformity

The device was 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.
3, 6.1, 6.5			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	EUT has internal and external antenna
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	N/A. Battery powered only.
			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.

Modifications Required for Compliance

None

Test Results

Bandwidth

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

MEASUREMENTS / RESULTS

6dB Bandwidth

Date: 9/17/2018 **Company:** Temperature Alert **Work Order:** S1904
Engineer: Zac Johnson **EUT:** SCMB100 **Operating Voltage/Frequency:** 3V DC
Temp: 23°C **Humidity:** 57% **Pressure:** 1013mBar
Frequency Range: 2402-2480 MHz **Measurement Type:** Conducted
Measurement Method: FCC KDB 558074 D01 15.247 Meas Guidance v05
Notes: 2MBPS Data Rate

Frequency (MHz)	Reading (kHz)	6dB Bandwidth Limit (kHz)	Margin (kHz)	Result (Pass/Fail)
2404	1232	≥500	732	Pass
2440	1133	≥500	633	Pass
2478	1139	≥500	639	Pass

Test Site: EMC-5 **Cable:** 2289 Cbl **Attenuator:** 2121 30dB Pad
Analyzer: 118472 SA

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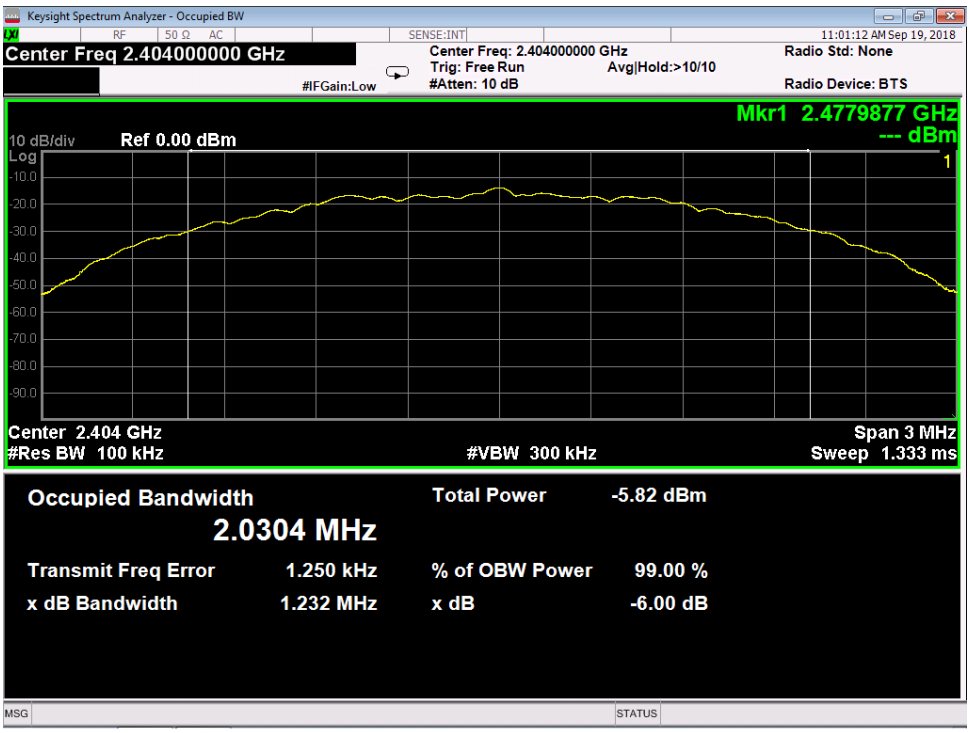
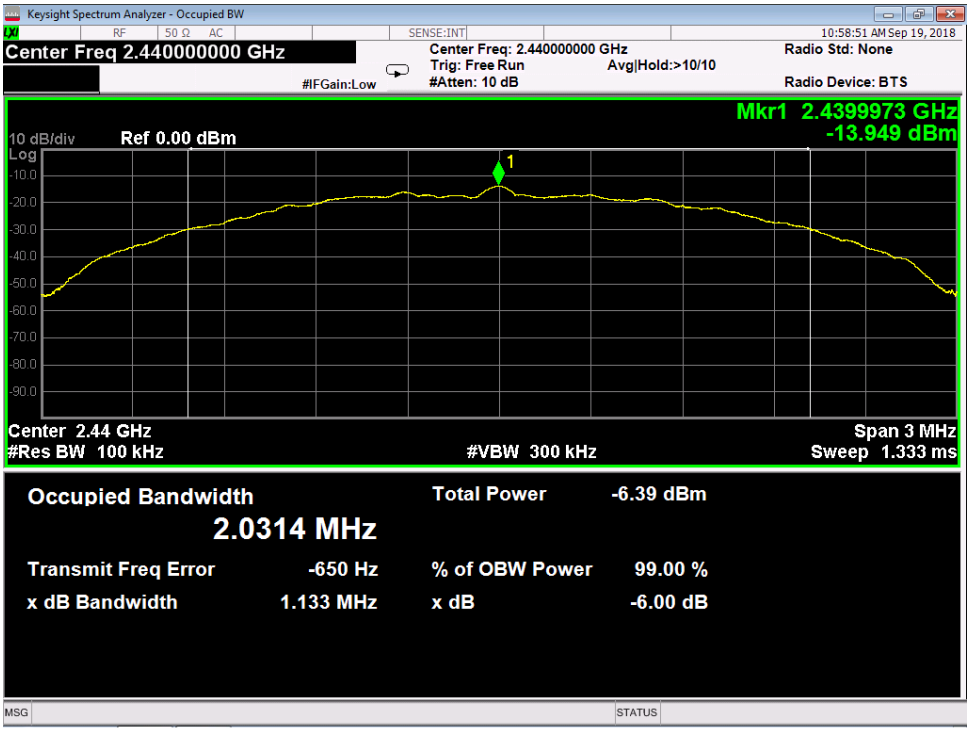
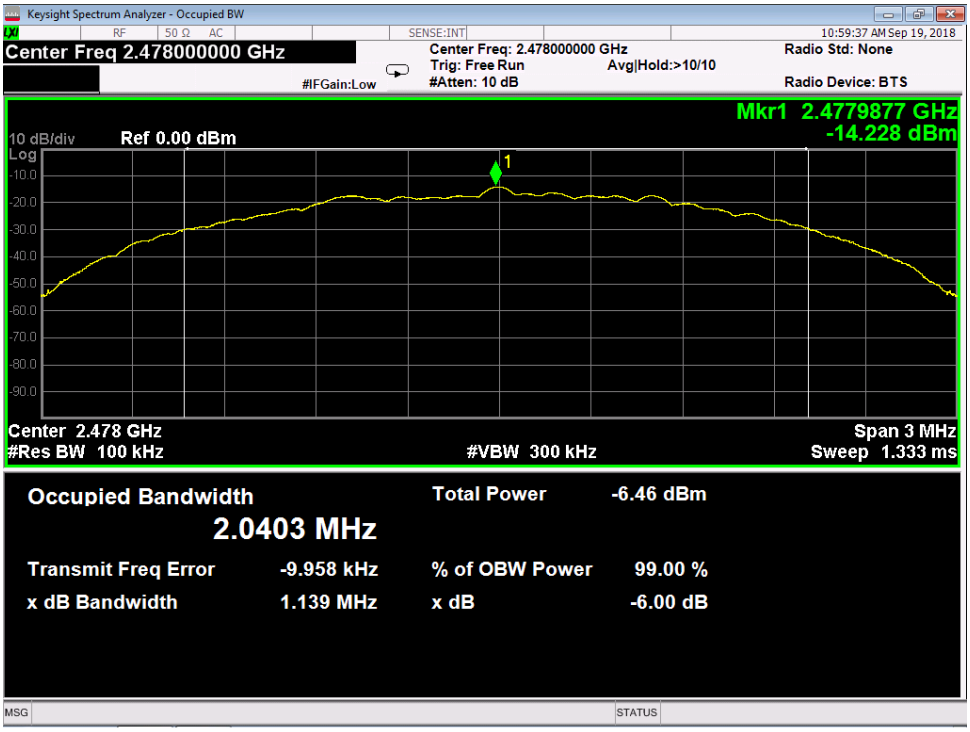
PLOTS



Low Channel DTS Bandwidth



Middle Channel DTS Bandwidth



High Channel DTS Bandwidth

Peak Power

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

MEASUREMENTS / RESULTS

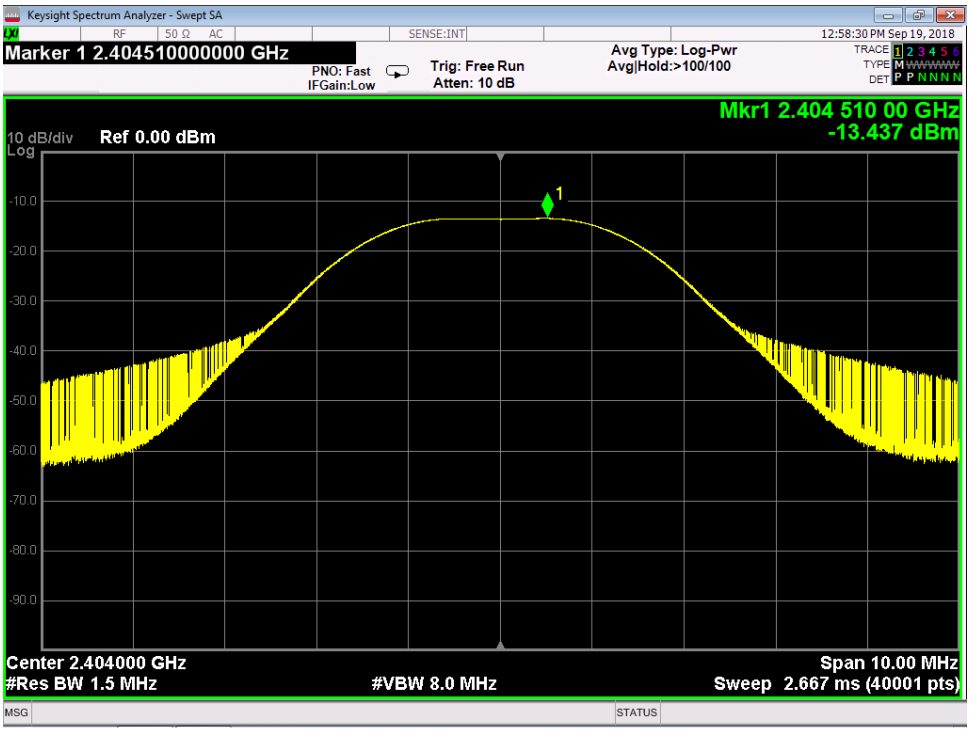
Peak Output Power

Date: 9/17/2018 **Company:** Temperature Alert **Work Order:** S1904
Engineer: Zac Johnson **EUT:** SCMB100 **Operating Voltage/Frequency:** 3V DC
Temp: 23°C **Humidity:** 57% **Pressure:** 1013mBar
Frequency Range: 2402-2480 MHz **Measurement Type:** Conducted
Notes: 2MBPS Data Rate

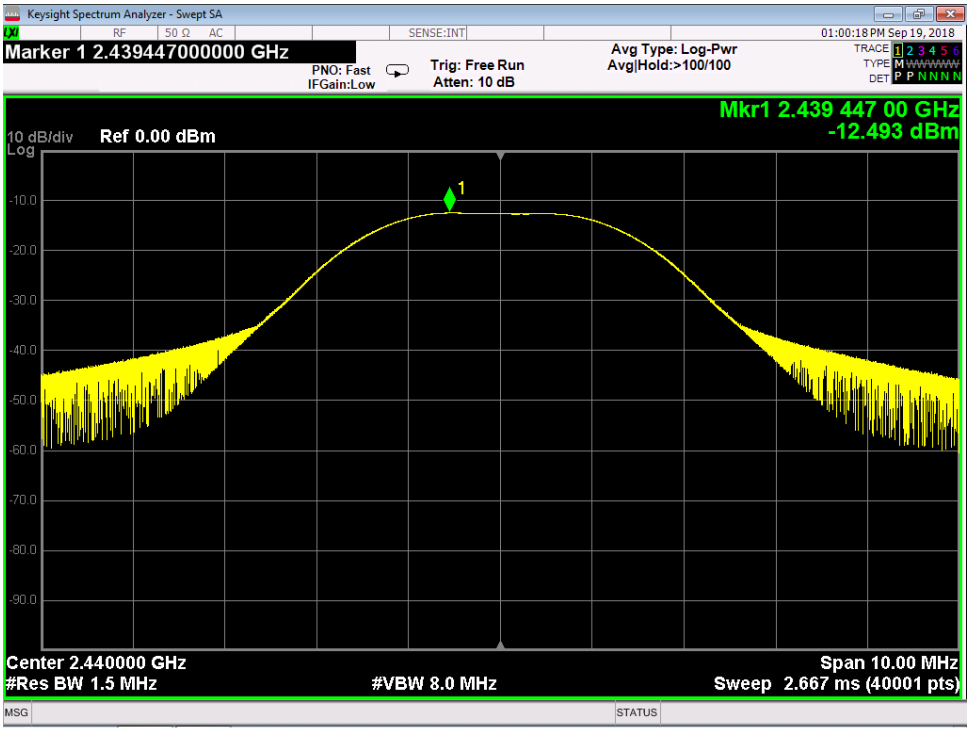
Frequency (MHz)	Peak Reading (dBm)	Cable Loss (dB)	Attenuator Loss (dB)	Peak Output Power (dBm)	Limit (dBm)	Margin (dB)	Result (Pass/Fail)
2404	-13.44	0.57	29.60	16.73	30.0	-13.27	Pass
2440	-12.49	0.57	29.60	17.68	30.0	-12.32	Pass
2478	-13.09	0.57	29.60	17.08	30.0	-12.92	Pass

Test Site: EMC-5 **Cable:** 2289 Cbl **Attenuator:** 2121 30dB Pad
Analyzer: 118472 SA
Peak Output Power (dBm)= Peak Reading (dBm) + Cable Loss (dB) + Attenuator Loss (dB)

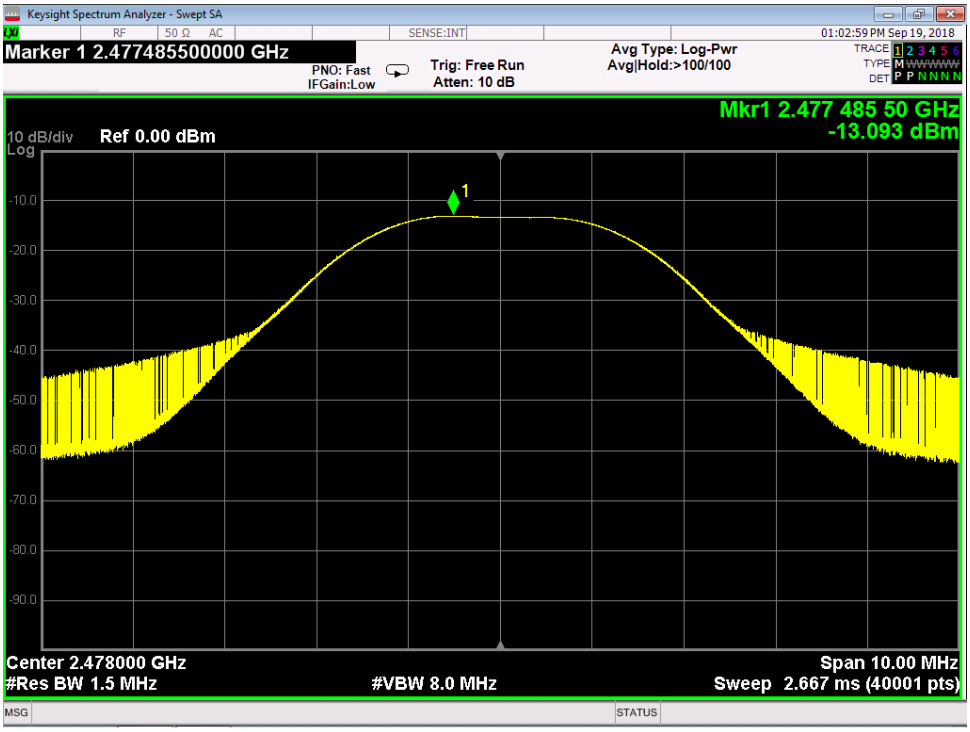
PLOTS



Low Channel Peak Output Power



Middle Channel Peak Output Power



High Channel Peak Output Power

Band Edge Measurements

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

MEASUREMENTS / RESULTS

Radiated Bandedge

Date: 12-Sep-18 **Company:** Temperature Alert **Work Order:** S1904
Engineer: Zac Johnson **EUT Desc:** SCMB100 **EUT Operating Voltage/Frequency:** 3V DC
Temp: 23.6°C **Humidity:** 64% **Pressure:** 1014mBar
Frequency Range: 2390-2483.5MHz **Measurement Distance:** 3 m
Notes: 2MBPS Onboard Antenna
2404-2478MHz EUT Setting

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 15.247 Peak Limit (dBµV/m)	FCC 15.247 Peak Margin (dB)	FCC 15.247 Peak Result (Pass/Fail)	FCC 15.247 Average Limit (dBµV/m)	FCC 15.247 Average Margin (dB)	FCC 15.247 Average Result (Pass/Fail)
V	2390	20.7	11.0	0.0	32.2	4.1	57	47.3	74.0	-17.0	Pass	54.0	-6.7	Pass
V	2483.5	23.7	11.2	0.0	32.4	4.1	60.2	47.7	74.0	-13.8	Pass	54.0	-6.3	Pass

Table Result: Pass by -6.3 dB ***Worst Freq:*** 2483.5 MHz

Test Site: EMI Chamber 1 **Cable 1:** Asset #2456 **Cable 2:** Asset #2480 **Cable 3:** ---
Analyzer: 1170725 SA **Preamp:** None **Antenna:** Blue Horn
CSsoft Radiated Emissions Calculator v 1.017.207
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor
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Onboard Antenna

Radiated Bandedges

Date: 12-Sep-18 **Company:** Temperature Alert **Work Order:** S1904
Engineer: Zac Johnson **EUT Desc:** SCMB100 **EUT Operating Voltage/Frequency:** 3V DC
Temp: 23.6°C **Humidity:** 64% **Pressure:** 1014mBar
Frequency Range: 2390-2483.5MHz **Measurement Distance:** 3 m
Notes: 2MBPS External Antenna
2404-2478MHz EUT setting

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 15.247 Peak Limit (dBµV/m)	FCC 15.247 Peak Margin (dB)	FCC 15.247 Peak Result (Pass/Fail)	FCC 15.247 Average Limit (dBµV/m)	FCC 15.247 Average Margin (dB)	FCC 15.247 Average Result (Pass/Fail)
V	2390	19.9	10.7	0.0	32.2	3.2	55.3	46.1	74.0	-18.7	Pass	54.0	-7.9	Pass
V	2483.5	23.8	11.1	0.0	32.4	3.1	59.3	46.6	74.0	-14.7	Pass	54.0	-7.4	Pass

Table Result: Pass by -7.4 dB ***Worst Freq:*** 2483.5 MHz

Test Site: EMI Chamber 1 **Cable 1:** Asset #2456 **Cable 2:** Asset #2480 **Cable 3:** ---
Analyzer: 1170725 SA **Preamp:** None **Antenna:** Blue Horn
CSsoft Radiated Emissions Calculator v 1.017.207
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor
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External Antenna

Conducted Bandedge

Date: 9/17/2018 **Company:** Temperature Alert **Work Order:** S1904
Engineer: Zac Johnson **EUT:** SCMB100 **Operating Voltage/Frequency:** 3V DC
Temp: 23°C **Humidity:** 57% **Pressure:** 1013mBar
Frequency Range: 2402-2480 MHz **Measurement Type:** Conducted
Measurement Method: FCC KDB 558074 D01 15.247 Meas Guidance v05
Notes: 2MBPS Data Rate

	Bandedge (dBm)	Fundamental (dBm)	Delta to Peak (dB)	Limit (dB)	Limit (Pass/Fail)
Low Bandedge	-72.286	-13.715	58.571	≥ 20	Pass
High Bandedge	-70.604	-13.343	57.261	≥ 20	Pass

Test Site: EMC-5 **Cable:** 2289 Cbl **Attenuator:** 2121 30dB Pad
Analyzer: 118472 SA
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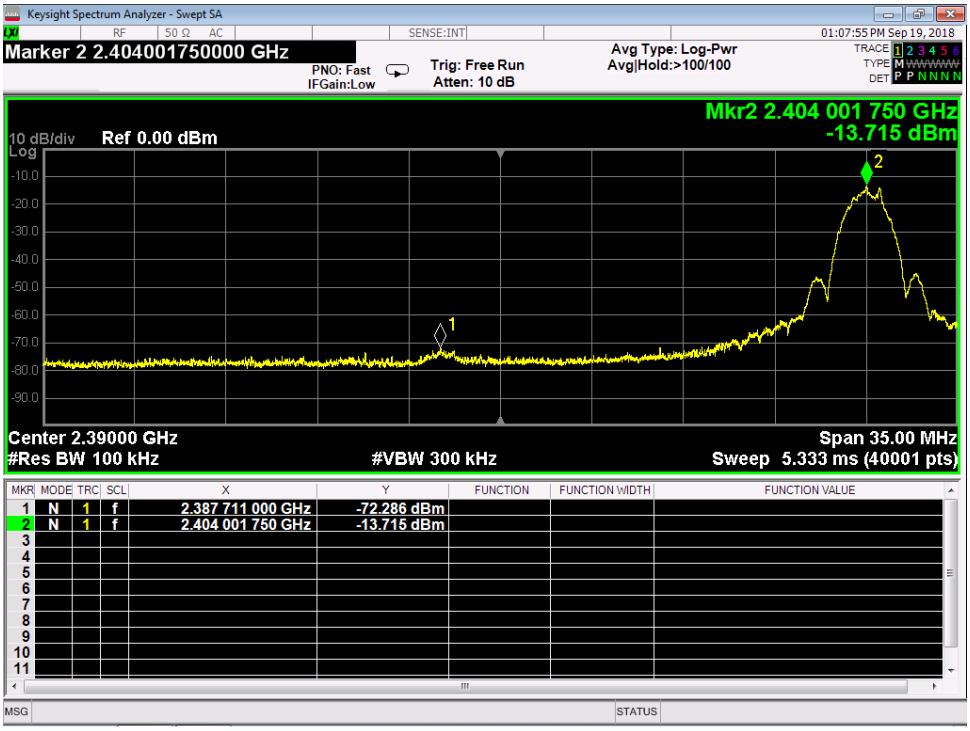
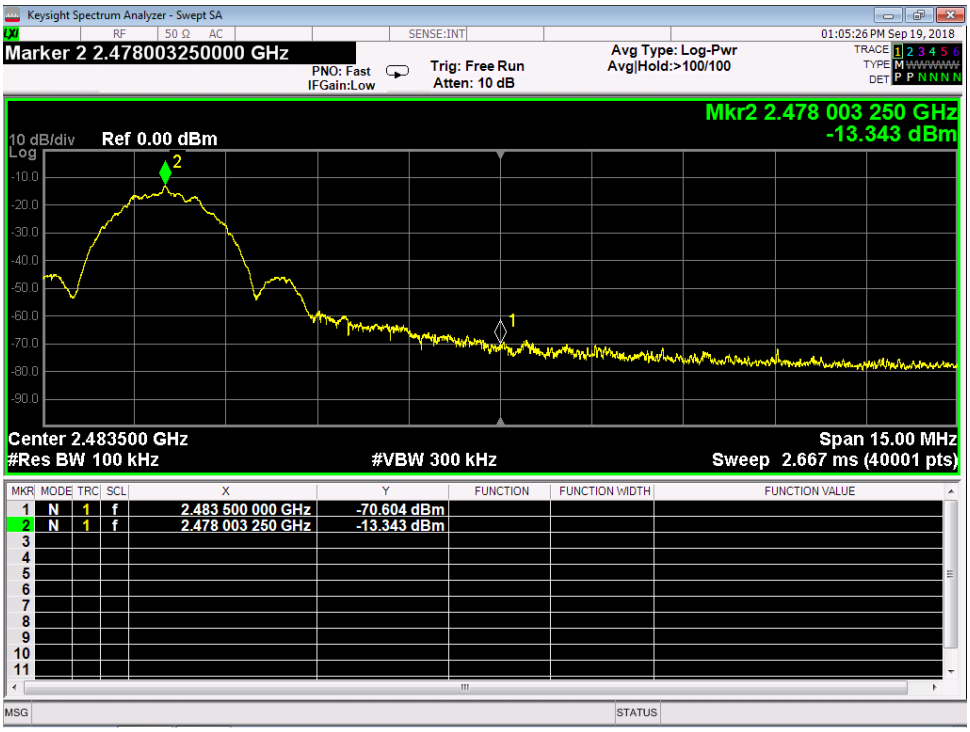
PLOTS



Low Band Edge - Conducted



High Band Edge – Conducted

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)]
High, low, and center channels were tested for both of the antennas.

MEASUREMENTS / RESULTS

Onboard Antenna

Curtis Straus - a Bureau Veritas Company	Work Order - S1904
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 3V DC
30-1000MHz Vertical Data	Test Site - CH-1
Operator: ZJ	Conditions - 23.6°C; 64%RH; 1020mBar
Notes:	0
2MBPS Onboard Low Channel	EUT Maximum Frequency - 2480MHz

Data Taken at 08:51:49 PM, Wednesday, September 12, 2018

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim2 (dB)	Test Results Lim2 (Pass/Fail)	Worst Margin Lim2 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
33.3	39.9	-10.2	29.6	40	-10.4	PASS		40	-10.4	PASS		100	0
35.985	49.7	-12.3	37.4	40	-2.6	PASS	-2.6	40	-2.6	PASS	-2.6	117	176
48.009	53.2	-20.3	32.9	40	-7.1	PASS		40	-7.1	PASS		102	295
168.506	48.1	-16.9	31.2	43.5	-12.3	PASS		43.5	-12.3	PASS		102	340
192.351	47.4	-17.1	30.4	43.5	-13.2	PASS		43.5	-13.2	PASS		125	290
240.001	50.4	-16.8	33.6	46	-12.4	PASS		46	-12.4	PASS		100	101

Curtis Straus - a Bureau Veritas Company	Work Order - S1904
Radiated Emissions Electric Field 3m Distance	EUT Power Input - 3V DC
30-1000MHz Horizontal Data	Test Site - CH-1
Operator: ZJ	Conditions - 23.6°C; 64%RH; 1020mBar
Notes:	0
2MBPS Onboard Low Channel	EUT Maximum Frequency - 2480MHz

Data Taken at 08:51:49 PM, Wednesday, September 12, 2018

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim2 (dB)	Test Results Lim2 (Pass/Fail)	Worst Margin Lim2 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
84.03	38.4	-21.2	17.2	40	-22.8	PASS		40	-22.8	PASS		225	110
168.069	52.7	-16.9	35.9	43.5	-7.7	PASS	-7.7	43.5	-7.7	PASS	-7.7	222	155
819.802	25	-3	22	46	-24	PASS		46	-24	PASS		175	241
819.525	24.9	-3	21.9	46	-24.1	PASS		46	-24.1	PASS		275	295
822.21	25	-3	22	46	-24	PASS		46	-24	PASS		236	290
823.117	25	-3	22.1	46	-24	PASS		46	-24	PASS		131	293

30-1000MHz Low Channel

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
30-1000MHz Vertical Data
Operator: ZJ
Notes:
2MBPS Onboard Mid Channel

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-1
Conditions - 23.6°C; 64%RH; 1020mBar
0
EUT Maximum Frequency - 2480MHz

Data Taken at 08:15:00 PM, Wednesday, September 12, 2018

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim2 (dB)	Test Results Lim2 (Pass/Fail)	Worst Margin Lim2 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
33.266	37.7	-10.2	27.5	40	-12.5	PASS		40	-12.5	PASS		100	155
35.988	49.1	-12.3	36.9	40	-3.1	PASS	-3.1	40	-3.1	PASS	-3.1	125	194
48	53.3	-20.3	33.1	40	-6.9	PASS		40	-6.9	PASS		105	26
60.003	51.1	-21.5	29.6	40	-10.4	PASS		40	-10.4	PASS		107	45
168.192	49.1	-16.9	32.2	43.5	-11.3	PASS		43.5	-11.3	PASS		104	316
192.451	46.7	-17	29.6	43.5	-13.9	PASS		43.5	-13.9	PASS		125	309

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
30-1000MHz Horizontal Data
Operator: ZJ
Notes:
2MBPS Onboard Mid Channel

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-1
Conditions - 23.6°C; 64%RH; 1020mBar
0
EUT Maximum Frequency - 2480MHz

Data Taken at 08:15:00 PM, Wednesday, September 12, 2018

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_109_Class_B (dbµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim2 (dB)	Test Results Lim2 (Pass/Fail)	Worst Margin Lim2 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
120.018	42	-14.9	27.1	43.5	-16.4	PASS		43.5	-16.4	PASS		275	290
168.208	51.7	-16.9	34.8	43.5	-8.7	PASS	-8.7	43.5	-8.7	PASS	-8.7	225	182
192.357	47.9	-17	30.9	43.5	-12.7	PASS		43.5	-12.7	PASS		206	178
204.002	44.6	-16.9	27.6	43.5	-15.9	PASS		43.5	-15.9	PASS		125	340
240.022	52.1	-16.8	35.4	46	-10.6	PASS		46	-10.6	PASS		125	3
576.533	29.4	-7.8	21.6	46	-24.5	PASS		46	-24.5	PASS		165	295

30-1000MHz Mid Channel

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
30-1000MHz Vertical Data
Operator: ZJ
Notes:
2MBPS Onboard High Channel

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar

Data Taken at 10:15:52 AM, Wednesday, September 05, 2018

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim2 (dB)	Test Results Lim2 (Pass/Fail)	Worst Margin Lim2 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
36.003	43.9	-11.2	32.7	40	-7.3	PASS		40	-7.3	PASS		121	0
48.019	56.8	-19.2	37.5	40	-2.5	PASS	-2.5	40	-2.5	PASS	-2.5	100	22

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
Top Peaks Horizontal 30-1000MHz
Operator: ZJ
Notes:
2MBPS Onboard High Channel

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar

Data Taken at 10:15:52 AM, Wednesday, September 05, 2018

Frequency (MHz)	Peak Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Lim1: FCC_pt15_109_Class_B (dBµV/m)	Lim1 Margin (dB)	Lim1 Test Results (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: FCC_pt15_109_Class_B (dBµV/m)	Lim2 Margin (dB)	Lim2 Test Results (Pass/Fail)	Worst Margin Lim2 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
104.448	47.2	-16.2	31	43.5	-12.5	PASS		43.5	-12.5	PASS		250	270
120.016	44.8	-14.3	30.6	43.5	-13	PASS		43.5	-13	PASS		250	135
168.055	48.9	-15.7	33.2	43.5	-10.3	PASS	-10.3	43.5	-10.3	PASS	-10.3	250	315
192.936	46.3	-15.4	30.9	43.5	-12.6	PASS		43.5	-12.6	PASS		200	315
204.042	47	-15.7	31.3	43.5	-12.2	PASS		43.5	-12.2	PASS		150	135
240.029	49.4	-15.4	33.9	46	-12.1	PASS		46	-12.1	PASS		150	135

30-1000MHz High Channel

Rev. 8/30/2018

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
2093 MXE EMI Receiver	20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	11/16/2018	11/16/2017
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz	1686	I	12/21/2018	12/21/2016
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
2311 PA	1-1000MHz	PAM-103	COM-POWER	441174	2311	II	10/29/2018	10/29/2017
2116 BRF	0.009-18000MHz	BRM50702	Micro-Tronics	G226	2116	II	11/8/2018	11/8/2017
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	8/21/2019	8/21/2017
Meteorological Meters/Chambers		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	5/15/2020	5/15/2018
TH A#2080		HTC-1	HDE		2080	II	3/22/2019	3/22/2018
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2051	9kHz - 18GHz		Florida RF			II	3/7/2019	3/7/2018
Asset #2054	9kHz - 18GHz		Florida RF			II	10/31/2018	10/31/2017
Asset #2467	9KHz-18GHz		MegaPhase			II	10/29/2018	10/29/2017

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

Test Equipment Used

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Vertical Data
Operator: ZJ
Notes:
2404MHz 2MBPS

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 11:59:39 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2180.7	42.4	32.5	1.9	44.4	74	-29.6	PASS		34.5	54	-19.5	PASS		102	187
3250.8	42.7	32.8	2.1	44.8	74	-29.2	PASS		34.9	54	-19.1	PASS		190	25
5748.8	39.9	31.1	6.1	46	74	-28	PASS	-28	37.2	54	-16.8	PASS	-16.8	125	30

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Horizontal Data
Operator: ZJ
Notes:
2404MHz 2MBPS

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar
0
EUT Maximum Frequency - 2480MHz

Data Taken at 11:59:39 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Average Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
5544.8	41	31.2	5.5	46.5	74	-27.5	PASS	-27.5	36.6	54	-17.4	PASS	-17.4	102	248

1-6GHz Low Channel

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Vertical Data
Operator: ZJ
Notes:
2440MHz 2MBPS

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 10:26:52 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2131.8	42.9	32.6	1.5	44.4	74	-29.6	PASS		34.1	54	-19.9	PASS		275	225
2907	42	32.5	2.6	44.5	74	-29.4	PASS		35.1	54	-18.9	PASS		206	53
5802.1	40.1	30.9	6.3	46.3	74	-27.6	PASS	-27.6	37.2	54	-16.8	PASS	-16.8	110	96

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Horizontal Data
Operator: ZJ
Notes:
2440MHz 2MBPS

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 10:26:52 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Average Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
1317.9	41	32.5	-3.4	37.6	74	-36.4	PASS		29.1	54	-24.9	PASS		188	81
2170	40.7	32.5	1.9	42.5	74	-31.4	PASS		34.4	54	-19.6	PASS		275	5
3058.8	41.2	32.7	2.2	43.4	74	-30.6	PASS		34.9	54	-19	PASS		125	340
5742.7	39.6	31	6.1	45.7	74	-28.3	PASS	-28.3	37.1	54	-16.9	PASS	-16.9	175	241

1-6GHz Mid Channel

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Vertical Data
Operator: ZJ
Notes:
2478MHz 2MBPS

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 09:43:59 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2169.5	42.8	32.5	1.8	44.6	74	-29.3	PASS		34.3	54	-19.6	PASS		175	212
3155.5	42.9	33	2.3	45.2	74	-28.8	PASS	-28.8	35.3	54	-18.7	PASS		300	138
5709.2	39.2	31	5.9	45.1	74	-28.8	PASS		36.9	54	-17	PASS	-17	275	263

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Horizontal Data
Operator: ZJ
Notes:
2478MHz 2MBPS

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 09:43:59 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Average Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2169.2	41.7	32.5	1.8	43.5	74	-30.4	PASS		34.4	54	-19.6	PASS		100	195
3165.5	40.7	32.8	2.4	43.1	74	-30.8	PASS		35.2	54	-18.7	PASS		118	292
5713.7	39	31	5.9	45	74	-29	PASS	-29	37	54	-17	PASS	-17	286	164

1-6GHz High Channel

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 1m Distance
6-18GHz Vertical Data
Operator: ZJ
Notes:
2404MHz 2MBPS

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 07:00:26 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_Clas sB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_Cl assB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
7212	43	32.8	8	51	83.5	-32.5	PASS		40.8	63.5	-22.7	PASS		100	0
17962.5	39	30.6	21	60	83.5	-23.5	PASS	-23.5	51.6	63.5	-11.9	PASS	-11.9	200	284

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 1m Distance
6-18GHz Horizontal Data
Operator: ZJ
Notes:
2404MHz 2MBPS

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 07:00:26 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_Cla ssB_Peak (dBµV/m)	Peak Margin (dB)	Peak Test Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_Cl assB_AVG (dBµV/m)	Avg Margin (dB)	Avg Test Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
7212	54.3	46.2	8.1	52	83.5	-31.5	PASS	-21.2	54.2	63.5	-9.3	PASS	-9.3	146	0
17957.8	40.2	30.7	20.9	61.2	83.5	-22.3	PASS		51.6	63.5	-11.9	PASS		175	50

6-18GHz Low Channel

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 1m Distance
6-18GHz Vertical Data
Operator: ZJ
Notes:
2440MHz 2MBPS

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 08:03:10 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_Cla ssB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
17977	40.1	30.6	21.2	61.3	83.5	-22.2	PASS	-22.2	51.8	63.5	-11.7	PASS	-11.7	109	109

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 1m Distance
6-18GHz Horizontal Data
Operator: ZJ
Notes:
2440MHz 2MBPS

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 08:03:10 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Test Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Test Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
7319.1	47.3	38.5	8	55.4	83.5	-28.1	PASS		46.5	63.5	-17	PASS		151	4
17973.1	39.4	30.6	21.2	60.6	83.5	-22.9	PASS	-22.9	51.8	63.5	-11.7	PASS	-11.7	175	30

6-18GHz Mid Channel

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 1m Distance
6-18GHz Vertical Data
Operator: ZJ
Notes:
2478MHz 2MBPS

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 08:37:09 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
17983	39.2	30.4	21.3	60.5	83.5	-23	PASS	-23	51.7	63.5	-11.8	PASS	-11.8	196	212

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 1m Distance
6-18GHz Horizontal Data
Operator: ZJ
Notes:
2478MHz 2MBPS

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 08:37:09 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Test Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Test Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
7434	42.9	41.2	8	50.9	83.5	-32.6	PASS		49.3	63.5	-14.2	PASS		137	4
17950.5	40.5	30.8	20.8	61.4	83.5	-22.1	PASS	-22.1	51.6	63.5	-11.9	PASS	-11.9	182	118

6-18GHz High Channel

Rev. 8/30/2018

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
2093 MXE EMI Receiver	20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	11/16/2018	11/16/2017
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz	1686	I	12/21/2018	12/21/2016
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
2111 HF Preamp	0.5-18GHz	PAM-118A	COM-POWER	551063	2111	II	11/19/2018	11/19/2017
2116 BRF	0.009-18000MHz	BRM50702	Micro-Tronics	G226	2116	II	11/8/2018	11/8/2017
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	2/14/2019	2/14/2017
Meteorological Meters/Chambers		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	5/15/2020	5/15/2018
TH A#2080		HTC-1	HDE		2080	II	3/22/2019	3/22/2018
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2051	9kHz - 18GHz		Florida RF			II	3/7/2019	3/7/2018
Asset #2054	9kHz - 18GHz		Florida RF			II	10/31/2018	10/31/2017
Asset #2467	9KHz-18GHz		MegaPhase			II	10/29/2018	10/29/2017

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

Test Equipment Used

Radiated Emissions Table

Date: 11-Sep-18 **Company:** Temperature Alert **Work Order:** S1904
Engineer: Zac Johnson **EUT Desc:** SCMB100 **EUT Operating Voltage/Frequency:** 3V DC
Temp: 22.9°C **Humidity:** 49% **Pressure:** 1014mBar
Frequency Range: 18-26.5GHz **Measurement Distance:** 0.1 m
Notes: **EUT Max Freq:** 2480MHz

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 Class B High Frequency - Peak Limit (dBµV/m)	FCC Class B High Frequency - Peak Margin (dB)	FCC Class B High Frequency - Peak Result (Pass/Fail)	FCC Class B High Frequency - Average Limit (dBµV/m)	FCC Class B High Frequency - Average Margin (dB)	FCC Class B High Frequency - Average Result (Pass/Fail)
2404MHz				---	---	---	---	---	---	---	---	---	---	---
H / V	19242.5	66.0	66.0	40.8	40.3	7.1	72.6	72.6	103.5	-30.9	Pass	83.5	-10.9	Pass
				---	---	---	---	---	---	---	---	---	---	---
2440MHz				---	---	---	---	---	---	---	---	---	---	---
H / V	19522.5	60.4	60.4	40.7	40.3	7.3	67.3	67.3	103.5	-36.2	Pass	83.5	-16.2	Pass
				---	---	---	---	---	---	---	---	---	---	---
2478MHz				---	---	---	---	---	---	---	---	---	---	---
H / V	19837.5	63.3	63.3	40.9	40.3	7.3	70.0	70.0	103.5	-33.5	Pass	83.5	-13.5	Pass
				---	---	---	---	---	---	---	---	---	---	---

Table Result: Pass by -10.9 dB ***Worst Freq:*** 19242.5 MHz

Test Site: EMI Chamber 2 **Cable 1:** Asset #2324 **Cable 2:** --- **Cable 3:** ---
Analyzer: Gold **Preamp:** 18-26.5GHz **Antenna:** 18-26.5GHz Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.207 Copyright Curtis-Straus LLC 2000
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

18-26.5GHz 3 Channels

Rev. 8/30/2018

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	3/19/2019	3/19/2018
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
HF (Yellow)	18-26.5GHz	AFS4-18002650-60-8P-4	CS	467559	1266	II	10/16/2018	10/16/2017
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
HF (White) Horn	18-26.5GHz	801-WLM	Waveline	758	758	III	Verify before Use	date of test
Meteorological Meters/Chambers		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	5/15/2020	5/15/2018
TH A#2080		HTC-1	HDE		2080	II	3/22/2019	3/22/2018
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2324	1-26.5GHz	TM26-S1S1-120	MEGAPHASE	17139101 001	2324	II	8/9/2019	8/9/2018

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

Test Equipment Used

External Antenna

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
30-1000MHz Vertical Data
Operator: ZJ
Notes:
2402MHz 2MBPS External Antenna

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 21.7°C; 60%RH; 1020mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 11:52:00 AM, Tuesday, September 11, 2018

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim2 (dB)	Test Results Lim2 (Pass/Fail)	Worst Margin Lim2 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
36.013	48.9	-11.2	37.7	40	-2.3	PASS	-2.3	40	-2.3	PASS	-2.3	110	93
47.974	53.8	-19.2	34.6	40	-5.4	PASS		40	-5.4	PASS		116	25
60.004	51.7	-20.7	31	40	-9	PASS		40	-9	PASS		106	0
75.394	29.4	-20.1	9.3	40	-30.7	PASS		40	-30.7	PASS		157	25
93.289	28.9	-19.1	9.8	43.5	-33.7	PASS		43.5	-33.7	PASS		125	110
240.024	50.3	-15.4	34.9	46	-11.1	PASS		46	-11.1	PASS		101	212

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
30-1000MHz Horizontal Data
Operator: ZJ
Notes:
2402MHz 2MBPS External Antenna

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 21.7°C; 60%RH; 1020mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 11:52:00 AM, Tuesday, September 11, 2018

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_109_Class_B (dbµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim2 (dB)	Test Results Lim2 (Pass/Fail)	Worst Margin Lim2 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
34.323	28.8	-9.9	18.9	40	-21.1	PASS	-21.1	40	-21.1	PASS	-21.1	175	111
45.09	28.2	-17.7	10.5	40	-29.5	PASS		40	-29.5	PASS		105	120
57.758	28.4	-20.8	7.6	40	-32.4	PASS		40	-32.4	PASS		188	215
71.985	33.8	-20	13.7	40	-26.3	PASS		40	-26.3	PASS		215	273
75.858	28.3	-20.1	8.2	40	-31.8	PASS		40	-31.8	PASS		265	270
79.683	28.6	-20.3	8.2	40	-31.8	PASS		40	-31.8	PASS		260	298

30-1000MHz Low Channel

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
30-1000MHz Vertical Data
Operator: ZJ
Notes:
2440MHz 2MBPS External Antenna

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 21.7°C; 60%RH; 1020mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 01:36:40 PM, Tuesday, September 11, 2018

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim2 (dB)	Test Results Lim2 (Pass/Fail)	Worst Margin Lim2 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
35.999	49	-11.2	37.9	40	-2.1	PASS	-2.1	40	-2.1	PASS	-2.1	112	53
38.459	33.2	-13	20.1	40	-19.9	PASS		40	-19.9	PASS		125	29
48.026	55.2	-19.2	35.9	40	-4.1	PASS		40	-4.1	PASS		100	25
60.008	51.7	-20.7	30.9	40	-9.1	PASS		40	-9.1	PASS		109	12
143.974	41.9	-14.6	27.3	43.5	-16.2	PASS		43.5	-16.2	PASS		125	274
240.039	49.8	-15.4	34.4	46	-11.7	PASS		46	-11.7	PASS		100	211

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
30-1000MHz Horizontal Data
Operator: ZJ
Notes:
2440MHz 2MBPS External Antenna

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 21.7°C; 60%RH; 1020mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 01:36:40 PM, Tuesday, September 11, 2018

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_109_Class_B (dbµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim2 (dB)	Test Results Lim2 (Pass/Fail)	Worst Margin Lim2 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
120.043	40.7	-14.3	26.5	43.5	-17	PASS		43.5	-17	PASS		257	280
192.316	43.4	-15.5	27.9	43.5	-15.6	PASS		43.5	-15.6	PASS		131	326
204.015	46.4	-15.7	30.7	43.5	-12.8	PASS		43.5	-12.8	PASS		161	139
240.03	54.2	-15.4	38.8	46	-7.2	PASS	-7.2	46	-7.2	PASS	-7.2	115	128
836.848	26.4	-3	23.5	46	-22.6	PASS		46	-22.6	PASS		262	0
960.093	43	-1.5	41.5	54	-12.5	PASS		54	-12.5	PASS		100	0

30-1000MHz Mid Channel

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
30-1000MHz Vertical Data
Operator: ZJ
Notes:
2480MHz 2MBPS External Antenna

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 21.7°C; 60%RH; 1020mBar
0
EUT Maximum Frequency - 2480MHz

Data Taken at 02:22:29 PM, Tuesday, September 11, 2018

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim2 (dB)	Test Results Lim2 (Pass/Fail)	Worst Margin Lim2 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
36.006	49.5	-11.2	38.3	40	-1.7	PASS	-1.7	40	-1.7	PASS	-1.7	100	200
36.412	35	-11.5	23.5	40	-16.5	PASS		40	-16.5	PASS		174	12
47.962	52.7	-19.2	33.5	40	-6.5	PASS		40	-6.5	PASS		100	48
60.018	49.8	-20.7	29.1	40	-10.9	PASS		40	-10.9	PASS		111	205
144.018	44.1	-14.6	29.5	43.5	-14	PASS		43.5	-14	PASS		125	259
240.015	50.4	-15.4	34.9	46	-11.1	PASS		46	-11.1	PASS		100	220

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
30-1000MHz Horizontal Data
Operator: ZJ
Notes:
2480MHz 2MBPS External Antenna

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 21.7°C; 60%RH; 1020mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 02:22:29 PM, Tuesday, September 11, 2018

Frequency (MHz)	Raw QP Reading (dBµV)	Correction Factor (dB/m)	Adjusted QP Amplitude (dBµV/m)	Lim1: FCC_pt15_109_Class_B (dbµV/m)	Margin to Lim1 (dB)	Test Results Lim1 (Pass/Fail)	Worst Margin Lim1 (dB)	Lim2: FCC_pt15_109_Class_B (dBµV/m)	Margin to Lim2 (dB)	Test Results Lim2 (Pass/Fail)	Worst Margin Lim2 (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
30.808	28	-7	21.1	40	-18.9	PASS		40	-18.9	PASS		175	50
192.452	45.4	-15.5	29.9	43.5	-13.6	PASS		43.5	-13.6	PASS		146	299
204.008	46.6	-15.7	31	43.5	-12.6	PASS		43.5	-12.6	PASS		136	160
240.031	54.3	-15.4	38.9	46	-7.1	PASS	-7.1	46	-7.1	PASS	-7.1	125	137
480.781	32.1	-8.4	23.7	46	-22.3	PASS		46	-22.3	PASS		175	107
960.09	42.8	-1.5	41.3	54	-12.7	PASS		54	-12.7	PASS		100	0

30-1000MHz High Channel

Rev. 8/30/2018

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
2093 MXE EMI Receiver	20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	11/16/2018	11/16/2017
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	30-1000MHz	1686	I	12/21/2018	12/21/2016
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
2311 PA	1-1000MHz	PAM-103	COM-POWER	441174	2311	II	10/29/2018	10/29/2017
2116 BRF	0.009-18000MHz	BRM50702	Micro-Tronics	G226	2116	II	11/8/2018	11/8/2017
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Red-White Bilog	30-2000MHz	JB1	Sunol	A091604-1	1105	I	8/21/2019	8/21/2017
Meteorological Meters/Chambers		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	5/15/2020	5/15/2018
TH A#2080		HTC-1	HDE		2080	II	3/22/2019	3/22/2018
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2051	9kHz - 18GHz		Florida RF			II	3/7/2019	3/7/2018
Asset #2054	9kHz - 18GHz		Florida RF			II	10/31/2018	10/31/2017
Asset #2467	9KHz-18GHz		MegaPhase			II	10/29/2018	10/29/2017

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

Test Equipment Used

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Vertical Data
Operator: ZJ
Notes:
2404MHz 2MBPS External Antenna

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 02:58:53 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2147.7	42.4	32.5	1.6	44	74	-29.9	PASS		34.2	54	-19.8	PASS		175	88
3245.4	42	32.8	2.2	44.3	74	-29.7	PASS		35	54	-19	PASS		125	58
5171.3	40.3	31	4.5	44.7	74	-29.3	PASS		35.5	54	-18.5	PASS		293	97
5266.8	42.9	31.1	5	47.9	74	-26.1	PASS	-26.1	36	54	-17.9	PASS	-17.9	214	86

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Horizontal Data
Operator: ZJ
Notes:
2404MHz 2MBPS External Antenna

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 02:58:53 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Average Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2157.7	41.7	32.6	1.7	43.5	74	-30.5	PASS		34.3	54	-19.7	PASS		104	135
3135.7	40.7	32.9	2.3	43	74	-31	PASS		35.3	54	-18.7	PASS		275	162
5187	39.6	30.9	4.6	44.2	74	-29.8	PASS		35.5	54	-18.5	PASS		275	290
5204.4	39.8	31	4.7	44.6	74	-29.4	PASS	-29.4	35.7	54	-18.3	PASS	-18.3	175	0

1-6GHz Low Channel

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Vertical Data
Operator: ZJ
Notes:
2440MHz 2MBPS External Antenna

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 02:23:34 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2174.3	41.3	32.5	1.9	43.2	74	-30.8	PASS		34.4	54	-19.6	PASS		203	24
3388.8	41	32.5	2	43	74	-30.9	PASS		34.5	54	-19.4	PASS		275	90
5176	42.6	31	4.5	47.1	74	-26.9	PASS	-26.9	35.5	54	-18.4	PASS		104	124
5255.8	38.9	31	4.9	43.8	74	-30.2	PASS		36	54	-18	PASS		205	337
5287.7	41.1	31	5.2	46.3	74	-27.7	PASS		36.2	54	-17.8	PASS	-17.8	125	242

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Horizontal Data
Operator: ZJ
Notes:
2440MHz 2MBPS External Antenna

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 02:23:34 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Average Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
1341.4	41.5	32.5	-3.5	38	74	-36	PASS		28.9	54	-25	PASS		212	46
2160.1	41.3	32.6	1.8	43.1	74	-30.9	PASS		34.3	54	-19.6	PASS		230	73
2904.4	42	32.5	2.7	44.7	74	-29.3	PASS		35.2	54	-18.8	PASS		186	257
5732.7	39	31.1	6.1	45.1	74	-28.9	PASS	-28.9	37.2	54	-16.8	PASS	-16.8	275	240

1-6GHz Mid Channel

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Vertical Data
Operator: ZJ
Notes:
2478MHz 2MBPS External Antenna

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 01:45:39 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2181	40.6	32.5	2	42.6	74	-31.4	PASS		34.5	54	-19.5	PASS		225	124
2872.8	42	32.5	2.7	44.7	74	-29.3	PASS		35.2	54	-18.8	PASS		217	63
5270	39.7	31	5	44.7	74	-29.3	PASS		36	54	-18	PASS		190	16
5751.4	39.1	31	6.2	45.3	74	-28.6	PASS	-28.6	37.2	54	-16.7	PASS	-16.7	182	24

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 3m Distance
1-6GHz Horizontal Data
Operator: ZJ
Notes:
2478MHz 2MBPS External Antenna

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 22.9°C; 49%RH; 1014mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 01:45:39 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Average Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
2183.1	42.8	32.5	2	44.8	74	-29.2	PASS		34.5	54	-19.5	PASS		275	164
2933.8	41.4	32.6	2.7	44	74	-29.9	PASS		35.2	54	-18.7	PASS		300	45
5824.8	40.1	31	6.3	46.4	74	-27.6	PASS	-27.6	37.2	54	-16.8	PASS	-16.8	275	97

1-6GHz High Channel

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 1m Distance
6-18GHz Vertical Data
Operator: ZJ
Notes:
2404MHz 2MBPS External Antenna

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 20.9°C; 39%RH; 1020mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 10:59:03 AM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_Cla ssB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
7212	43	33.9	8	51	83.5	-32.5	PASS		41.9	63.5	-21.6	PASS		100	0
10681.9	39.5	29.9	13.1	52.6	83.5	-30.9	PASS		42.9	63.5	-20.6	PASS		100	19
16511.5	40.8	31.3	18.2	59	83.5	-24.5	PASS		49.5	63.5	-14	PASS		100	35
17957.2	39.9	30.6	20.9	60.9	83.5	-22.6	PASS	-22.6	51.6	63.5	-11.9	PASS	-11.9	200	305

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 1m Distance
6-18GHz Horizontal Data
Operator: ZJ
Notes:
2404MHz 2MBPS External Antenna

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 20.9°C; 39%RH; 1020mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 10:59:03 AM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_Clas sB_Peak (dBµV/m)	Peak Margin (dB)	Peak Test Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Test Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
10586.1	39.8	29.6	12.6	52.4	83.5	-31.1	PASS		42.2	63.5	-21.3	PASS		174	39
17933.2	40.1	30.7	20.6	60.7	83.5	-22.8	PASS	-22.8	51.2	63.5	-12.3	PASS	-12.3	127	6

6-18GHz Low Channel

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 1m Distance
6-18GHz Vertical Data
Operator: ZJ
Notes:
2440MHz 2MBPS External Antenna

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 20.9°C; 39%RH; 1020mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 11:41:22 AM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_C lassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
17083.5	42.2	32.1	19.1	61.3	83.5	-22.2	PASS	-22.2	51.2	63.5	-12.3	PASS	-12.3	200	290

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 1m Distance
6-18GHz Horizontal Data
Operator: ZJ
Notes:
2440MHz 2MBPS External Antenna

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 20.9°C; 39%RH; 1020mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 11:41:22 AM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Test Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Test Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
16010.3	39.3	30.4	17.3	56.7	83.5	-26.8	PASS		47.8	63.5	-15.7	PASS		137	101
17876.6	39.7	30.2	20.2	59.9	83.5	-23.6	PASS	-23.6	50.4	63.5	-13.1	PASS	-13.1	115	280

6-18GHz Mid Channel

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 1m Distance
6-18GHz Vertical Data
Operator: ZJ
Notes:
2478MHz 2MBPS External Antenna

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 20.9°C; 39%RH; 1020mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 01:08:13 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
17078.1	40.9	32.1	19.1	60	83.5	-23.5	PASS		51.2	63.5	-12.3	PASS		112	141
17993.3	40.6	30.2	21.4	62	83.5	-21.5	PASS	-21.5	51.6	63.5	-11.9	PASS	-11.9	184	213

Curtis Straus - a Bureau Veritas Company
Radiated Emissions Electric Field 1m Distance
6-18GHz Horizontal Data
Operator: ZJ
Notes:
2478MHz 2MBPS External Antenna

Work Order - S1904
EUT Power Input - 3V DC
Test Site - CH-2
Conditions - 20.9°C; 39%RH; 1020mBar
EUT Maximum Frequency - 2480MHz

Data Taken at 01:08:13 PM, Monday, September 10, 2018

Frequency (MHz)	Raw Peak Reading (dBµV)	Raw Avg Reading (dBµV)	Correction Factor (dB/m)	Adjusted Peak Amplitude (dBµV/m)	Pk Lim: FCC_pt15_109_ClassB_Peak (dBµV/m)	Peak Margin (dB)	Peak Test Results (Pass/Fail)	Worst Peak Margin (dB)	Adjusted Avg Amplitude (dBµV/m)	Av Lim: FCC_pt15_109_ClassB_AVG (dBµV/m)	Avg Margin (dB)	Avg Test Results (Pass/Fail)	Worst Avg Margin (dB)	Antenna Height (cm)	EUT Azimuth (degrees)
6675.3	40.9	30.3	7.7	48.6	83.5	-34.9	PASS		38	63.5	-25.5	PASS		125	96
17972.8	40.8	30.6	21.1	62	83.5	-21.5	PASS	-21.5	51.8	63.5	-11.7	PASS	-11.7	104	239

6-18GHz High Channel

Rev. 8/30/2018

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
2093 MXE EMI Receiver	20Hz-26.5GHz	N9038A	Agilent	MY51210181	2093	I	11/16/2018	11/16/2017
Radiated Emissions Sites	**FCC Code**	**IC Code**	**VCCI Code**	**Range**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
EMI Chamber 2	719150	2762A-7	A-0015	1-18GHz	1686	I	12/21/2018	12/21/2016
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
2111 HF Preamp	0.5-18GHz	PAM-118A	COM-POWER	551063	2111	II	11/19/2018	11/19/2017
2116 BRF	0.009-18000MHz	BRM50702	Micro-Tronics	G226	2116	II	11/8/2018	11/8/2017
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Blue Horn	1-18Ghz	3117	ETS	157647	1861	I	2/14/2019	2/14/2017
Meteorological Meters/Chambers		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	5/15/2020	5/15/2018
THA#2080		HTC-1	HDE		2080	II	3/22/2019	3/22/2018
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2051	9kHz - 18GHz		Florida RF			II	3/7/2019	3/7/2018
Asset #2054	9kHz - 18GHz		Florida RF			II	10/31/2018	10/31/2017
Asset #2467	9KHz-18GHz		MegaPhase			II	10/29/2018	10/29/2017

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

Test Equipment Used

Radiated Emissions Table

Date: 11-Sep-18 **Company:** Temperature Alert **Work Order:** S1904
Engineer: Zac Johnson **EUT Desc:** SCMB100 **EUT Operating Voltage/Frequency:** 3V DC
Temp: 22.9°C **Humidity:** 49% **Pressure:** 1014mBar
Frequency Range: 18-26.5GHz **Measurement Distance:** 0.1 m
Notes: **EUT Max Freq:** 2480MHz

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 Class B High Frequency - Peak Limit (dBµV/m)	FCC Class B High Frequency - Peak Margin (dB)	FCC Class B High Frequency - Peak Result (Pass/Fail)	FCC Class B High Frequency - Average Limit (dBµV/m)	FCC Class B High Frequency - Average Margin (dB)	FCC Class B High Frequency - Average Result (Pass/Fail)
2404MHz				---	---	---	---	---	---	---	---	---	---	---
H / V	19242.5	51.0	51.0	40.8	40.3	7.1	76.4	76.4	103.5	-27.1	Pass	83.5	-7.1	Pass
				---	---	---	---	---	---	---	---	---	---	---
2440MHz				---	---	---	---	---	---	---	---	---	---	---
H / V	19522.5	49.5	49.5	40.7	40.3	7.3	74.6	74.6	103.5	-28.9	Pass	83.5	-8.9	Pass
				---	---	---	---	---	---	---	---	---	---	---
2478MHz				---	---	---	---	---	---	---	---	---	---	---
H / V	19837.5	52.2	52.2	40.9	40.3	7.3	76.5	76.5	103.5	-27.0	Pass	83.5	-7.0	Pass
				---	---	---	---	---	---	---	---	---	---	---

Table Result: Pass by -7.0 dB ***Worst Freq:*** 19838.1 MHz

Test Site: EMI Chamber 1 **Cable 1:** Asset #2324 **Cable 2:** --- **Cable 3:** ---
Analyzer: Gold **Preamp:** 18-26.5GHz **Antenna:** 18-26.5GHz Horn **Preselector:** ---
CSsoft Radiated Emissions Calculator v 1.017.207
Copyright Curtis-Straus LLC 2000
Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor

18-26.5GHz 3 Channels

Rev. 8/30/2018

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Gold	100Hz-26.5 GHz	E4407B	Agilent	MY45113816	1284	I	3/19/2019	3/19/2018
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
HF (Yellow)	18-26.5GHz	AFS4-18002650-60-8P-4	CS	467559	1266	II	10/16/2018	10/16/2017
Antennas	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
HF (White) Horn	18-26.5GHz	801-WLM	Waveline	758	758	III	Verify before Use	date of test
Meteorological Meters/Chambers		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	5/15/2020	5/15/2018
TH A#2080		HTC-1	HDE		2080	II	3/22/2019	3/22/2018
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2324	1-26.5GHz	TM26-S1S1-120	MEGAPHASE	17139101 001	2324	II	8/9/2019	8/9/2018

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

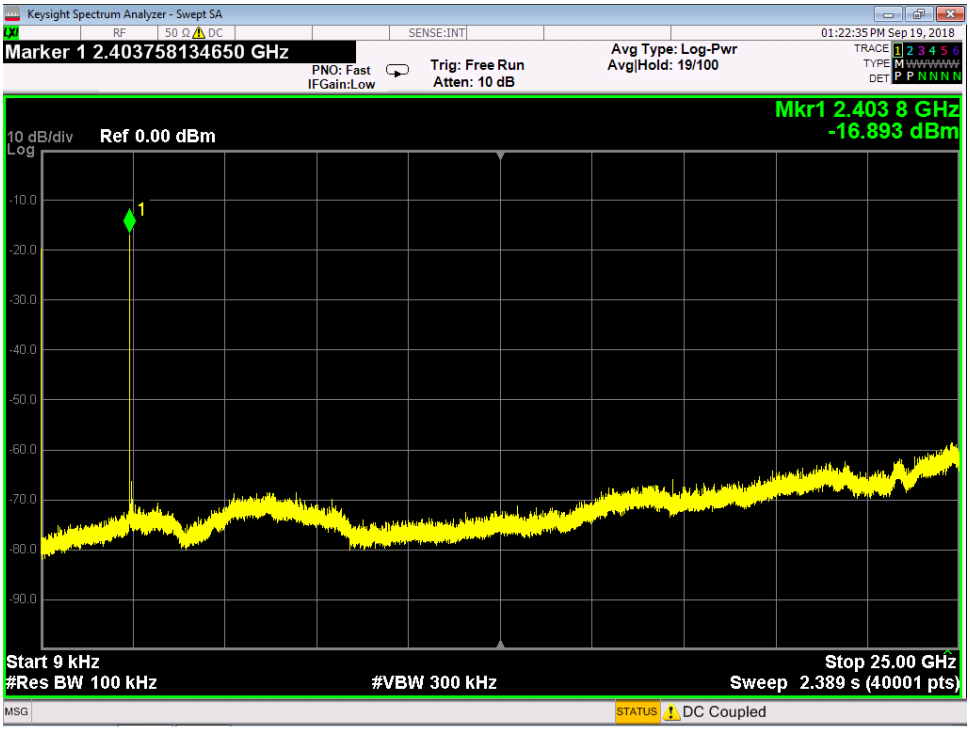
Test Equipment Used

Conducted Spurious Emissions

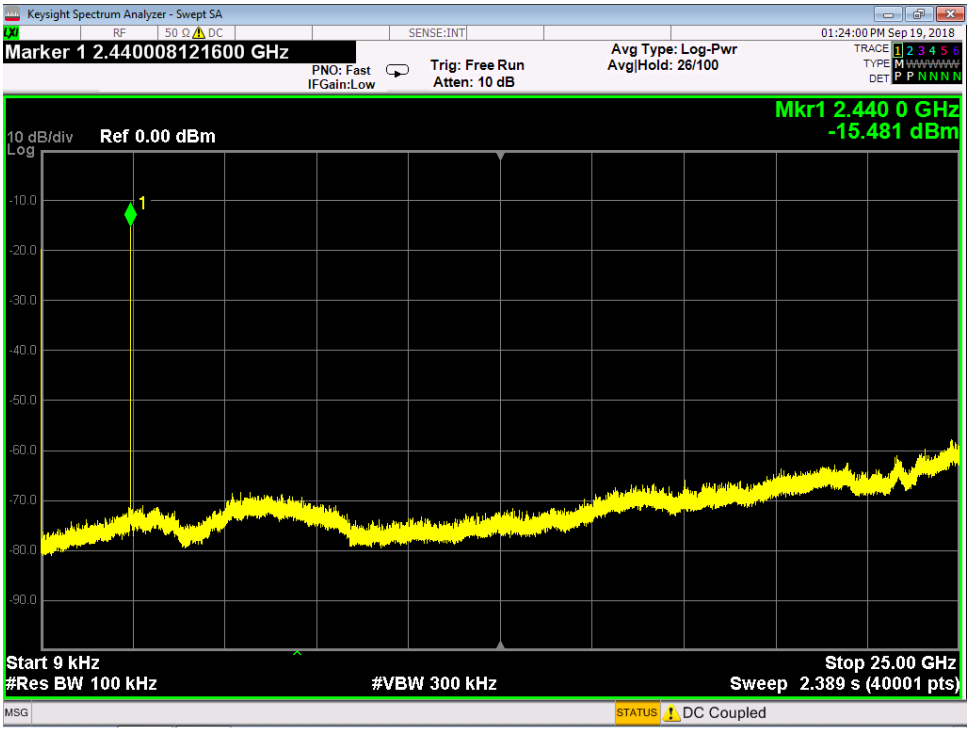
Limits: In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth that contains the highest level of desired power.
[15.247(d)]

MEASUREMENTS / RESULTS

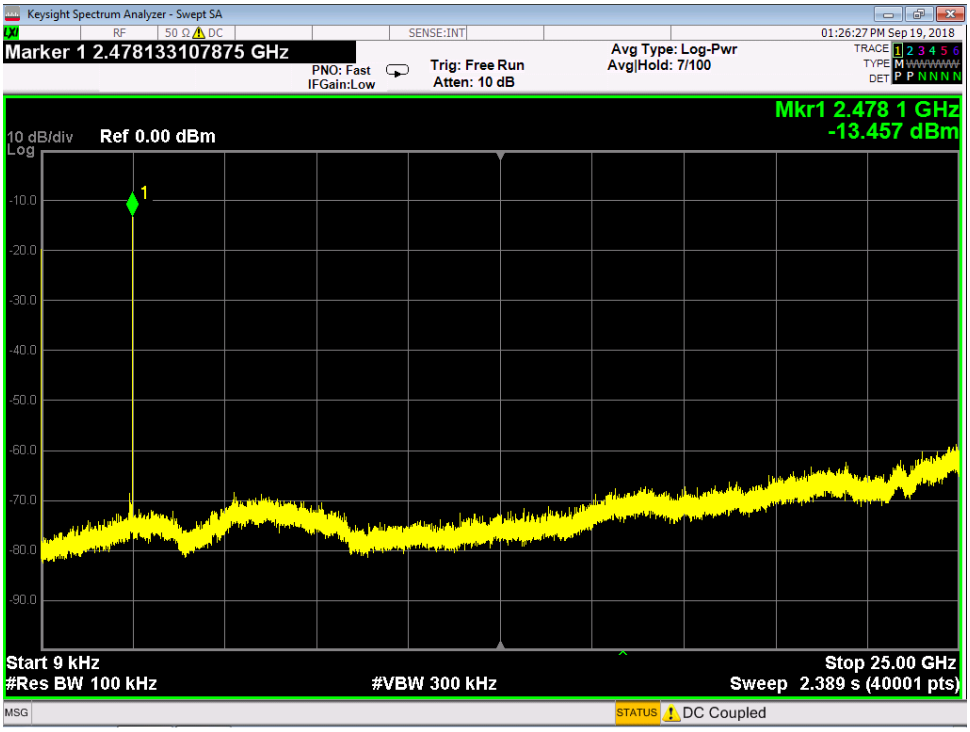
9kHz to 25GHz frequency range was investigated for 3 channels (low, middle and high) and no emissions within 20dB of their corresponding fundamentals were observed.



9kHz-25GHz Conducted Spurious (Low channel)



9kHz-25GHz Conducted Spurious (Mid channel)



9kHz-25GHz Conducted Spurious (High channel)

Power Spectral Density

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

MEASUREMENTS / RESULTS

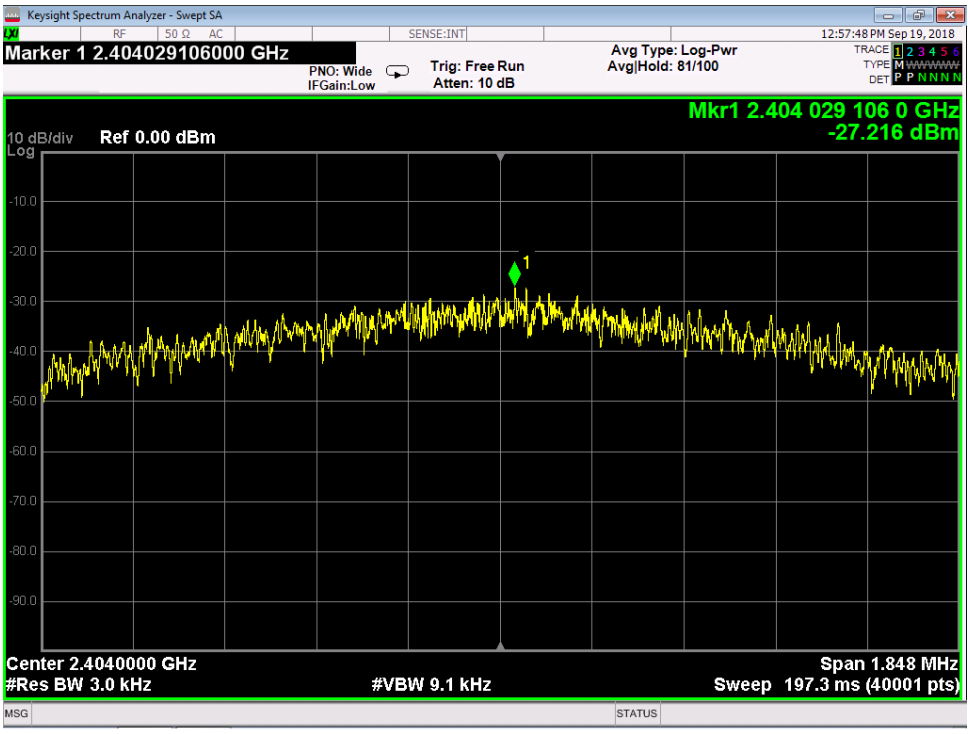
Peak Power Spectral Density

Date: 9/17/2018 **Company:** Temperature Alert **Work Order:** S1904
Engineer: Zac Johnson **EUT:** SCMB100 **Operating Voltage/Frequency:** 3V DC
Temp: 23°C **Humidity:** 57% **Pressure:** 1013mBar
Frequency Range: 2402-2480 MHz **Measurement Type:** Conducted
Notes: 2MBPS Data Rate

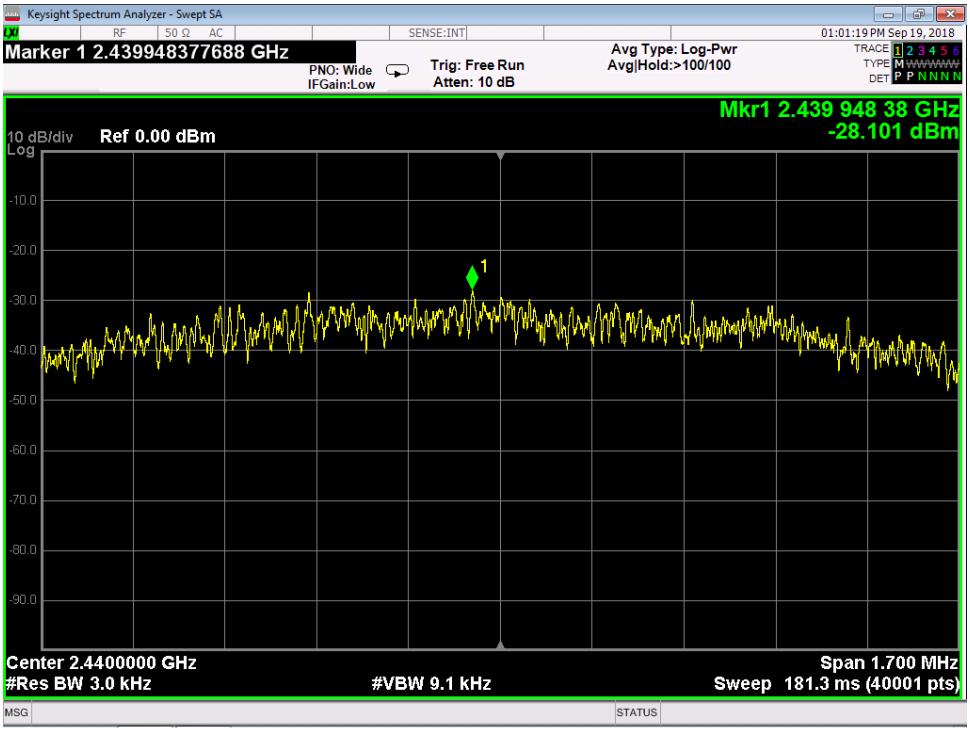
Frequency (MHz)	Peak Reading (dBm)	Cable Loss (dB)	Attenuator Loss (dB)	Peak PSD (dBm)	Limit (dBm)	Margin (dB)	Result
2404	-27.22	0.57	29.6	2.95	8.0	-5.05	Pass
2440	-28.10	0.57	29.6	2.07	8.0	-5.93	Pass
2478	-29.51	0.57	29.6	0.66	8.0	-7.34	Pass

Test Site: EMC-5 **Cable:** 2289 Cbl **Attenuator:** 2121 30dB Pad
Analyzer: 118472 SA
PSD(dBm) = Reading (dBm) + Cable Loss (dB) + Attenuator Loss (dBm)

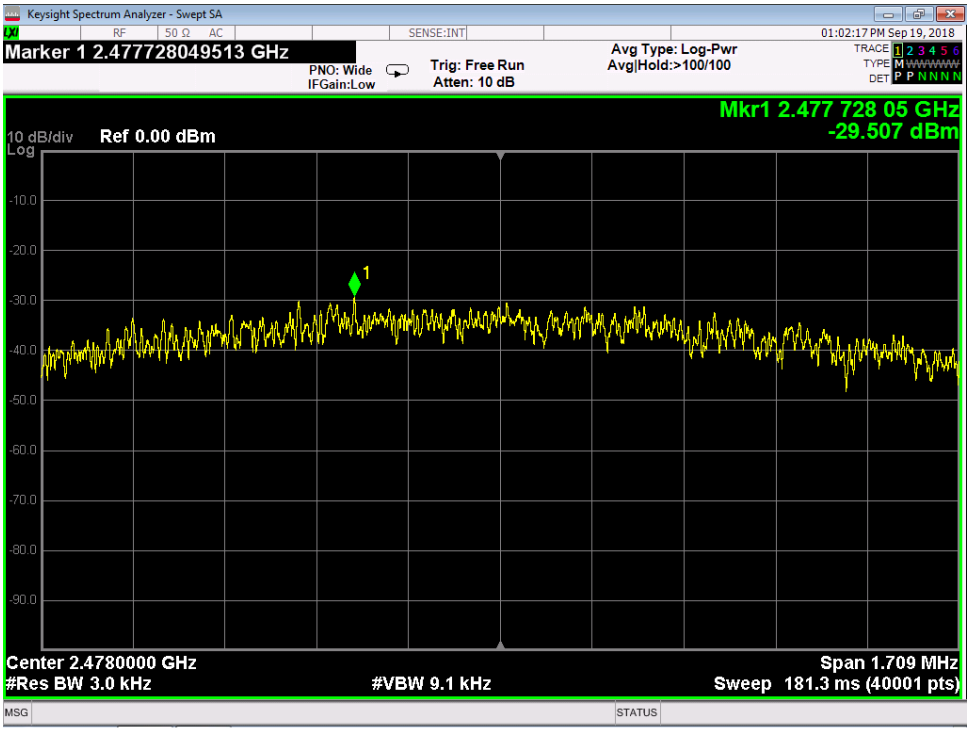
PLOTS



Low Channel PSD



Middle Channel PSD



High Channel PSD

Occupied Bandwidth

Requirement: When an occupied bandwidth is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is its 99% emission bandwidth, as calculated or measured.
[RSS-GEN 6.7]

MEASUREMENTS / RESULTS

99% Occupied Bandwidth

Date: 9/17/2018	**Company:** Temperature Alert		**Work Order:** S1904
Engineer: Zac Johnson	**EUT:** SCMB100		**Operating Voltage/Frequency:** 3V DC
Temp: 23°C	**Humidity:** 57%	**Pressure:** 1013mBar	
Frequency Range: 2402-2480 MHz		**Measurement Type:** Conducted	
Notes: 2MBPS Data Rate			

Frequency (MHz)	99% OBW (MHz)
2404	2.0293
2440	2.0538
2478	2.0392

Test Site: EMC-5	**Cable:** 2289 Cbl	**Attenuator:** 2121 30dB Pad
Analyzer: 118472 SA		

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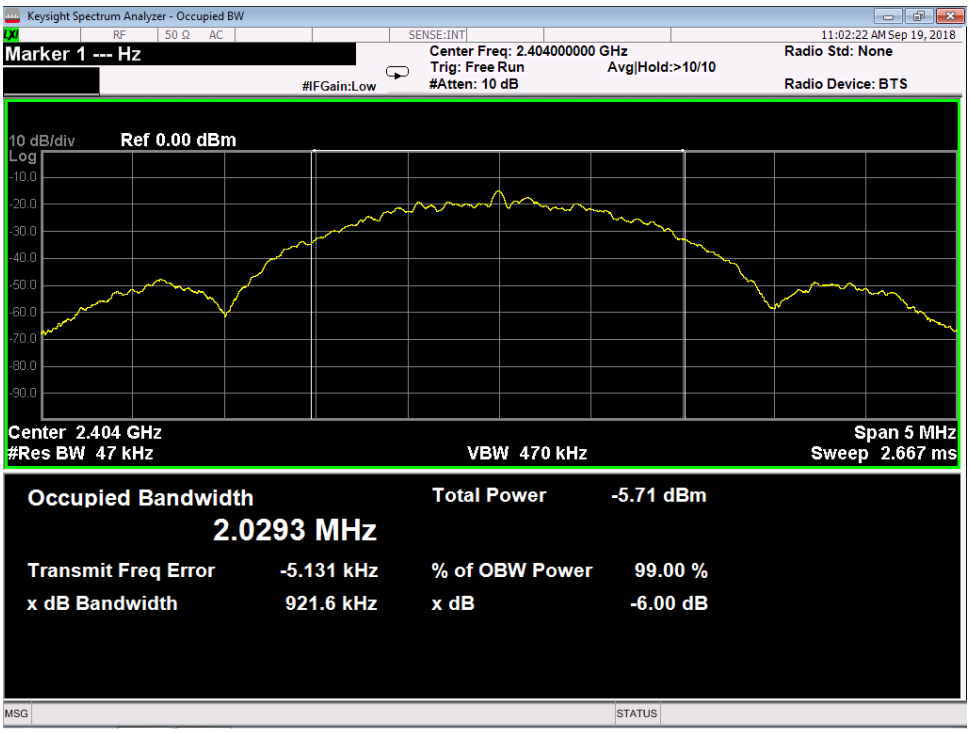
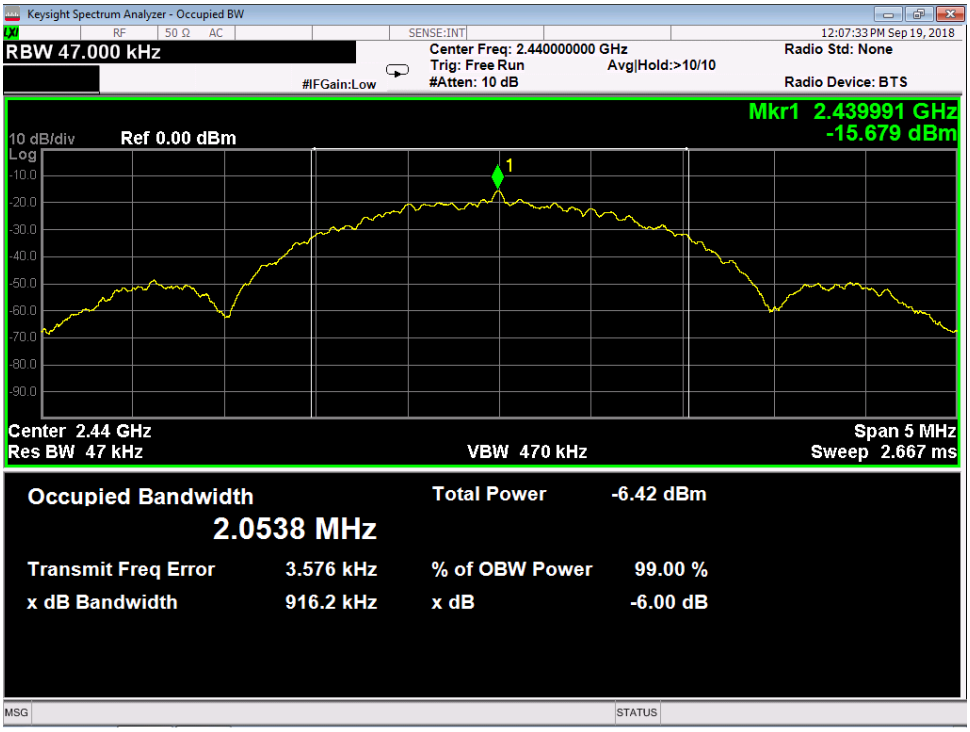
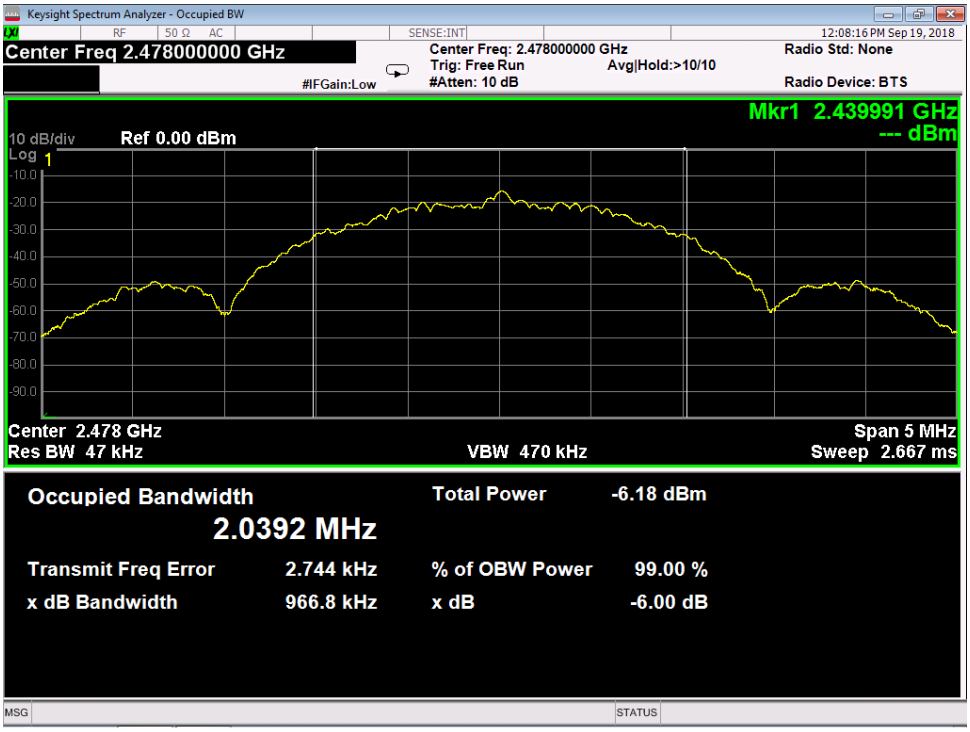
PLOTS



99% Occupied Bandwidth Low Channel



99% Occupied Bandwidth Middle Channel



99% Occupied Bandwidth High Channel

Test equipment below used for all conducted antenna port measurement tests within this report

Rev. 9/12/2018

Spectrum Analyzers / Receivers /Preselectors	Range	MN	Mfr	SN	Asset	Cat	Calibration Due	Calibrated on
Rental EXA Signal Analyzer(1118472)	9KHz-26.5GHz	N9010A-526;K	AT	MY51170010	1118472	I	8/10/2019	8/10/2018
Preamps /Couplers Attenuators / Filters	**Range**	**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
API - 30dB 20W Attenuator	9KHz-40GHz	89-30-11	API Weinschel	703	2121	I	3/23/2019	3/23/2018
Meteorological Meters/Chambers		**MN**	**Mfr**	**SN**	**Asset**	**Cat**	**Calibration Due**	**Calibrated on**
Weather Clock (Pressure Only)		BA928	Oregon Scientific	C3166-1	831	I	5/15/2020	5/15/2018
TH A#2077		HTC-1	HDE		2077	II	3/22/2019	3/22/2018
Cables	**Range**		**Mfr**			**Cat**	**Calibration Due**	**Calibrated on**
Asset #2289	9KHz-26.5GHz	FLC-1.5FT-SMSM+	Mini-Circuits	16021039		II	1/29/2019	1/29/2018

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

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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