

Schweitzer Engineering Laboratories, Inc.

Wireless Current Sensor

FCC 15.247:2019

902 - 928 MHz Other Wideband (DTS) Transceiver

Report # SCHW0244 Rev. 1



TESTING

NVLAP LAB CODE: 200630-0



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Last Date of Test: August 26, 2019 Schweitzer Engineering Laboratories, Inc. Model: Wireless Current Sensor

Radio Equipment Testing

Standards	
Specification	Method
FCC 15.247:2019	ANSI C63.10:2013, KDB 558074

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	No	N/A	Not required - EUT is not considered to be AC powered.
6.5, 6.6, 11.12.1, 11.13.2	Spurious Radiated Emissions	Yes	Pass	
11.6	Duty Cycle	Yes	N/A	Characterization of radio operation.
7.8.2	Carrier Frequency Separation	No	N/A	Not required for DTS devices.
7.8.3	Number of Hopping Frequencies	No	N/A	Not required for DTS devices.
7.8.4	Dwell Time	No	N/A	Not required for DTS devices.
11.9.1.1	Output Power	Yes	Pass	
11.9.1.1	Equivalent Isotropic Radiated Power	Yes	Pass	
11.11	Band Edge Compliance	Yes	Pass	
7.8.6	Band Edge Compliance - Hopping Mode	No	N/A	Not required for DTS devices.
11.8.2	Occupied Bandwidth	Yes	Pass	
11.11	Spurious Conducted Emissions	Yes	Pass	
11.10.2	Power Spectral Density	Yes	Pass	

Deviations From Test Standards

None

Approved By:

Kyle Holgate, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.

REVISION HISTORY



Revision Number	Description	Date (yyyy-mm-dd)	Page Number
01	The calculation for the protocol limited duty cycle was added to the spurious radiated emissions header block.	2019-10-09	13

ACCREDITATIONS AND AUTHORIZATIONS



United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Element to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB) and as a CAB for the acceptance of test data.

European Union

European Commission – Within Element, we have a EU Notified Body validated for the EMCD and RED Directives.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIT / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

SCOPE

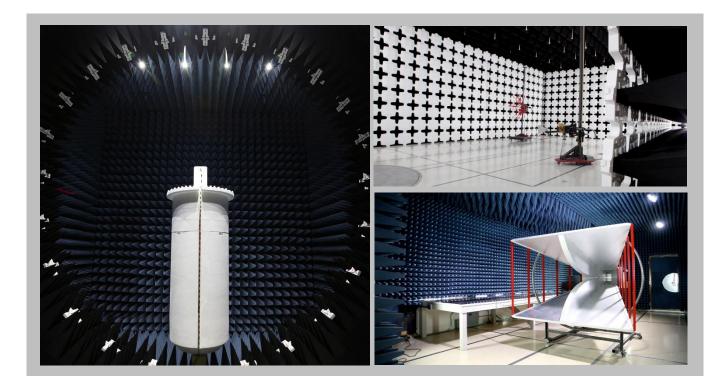
For details on the Scopes of our Accreditations, please visit: https://www.nwemc.com/emc-testing-accreditations

FACILITIES





California Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Minnesota Labs MN01-10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Oregon Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Texas Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Washington Labs NC01-05 19201 120 th Ave NE Bothell, WA 98011 (425)984-6600		
		NVLAP				
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0		
Innovation, Science and Economic Development Canada						
2834B-1, 2834B-3	2834E-1, 2834E-3	2834D-1	2834G-1	2834F-1		
		BSMI				
SL2-IN-E-1154R	SL2-IN-E-1152R	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R		
		VCCI				
A-0029	A-0109	A-0108	A-0201	A-0110		
Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA						
US0158	US0175	US0017	US0191	US0157		



MEASUREMENT UNCERTAINTY



Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

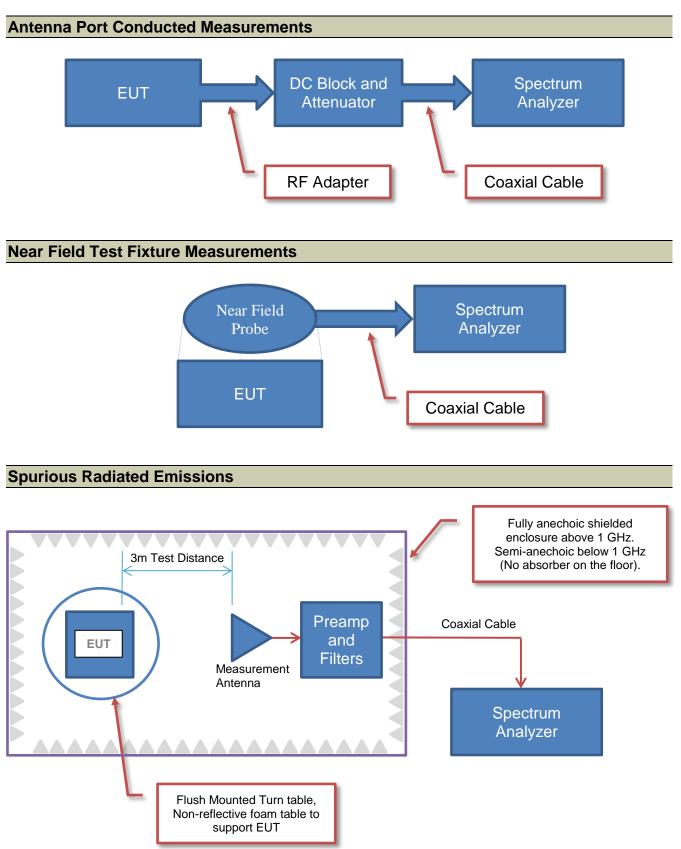
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable test description page. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

Test	+ MU	- MU
Frequency Accuracy	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	1.2 dB	-1.2 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

Test Setup Block Diagrams





PRODUCT DESCRIPTION



Client and Equipment Under Test (EUT) Information

Company Name:	Schweitzer Engineering Laboratories, Inc.
Address:	2350 NE Hopkins Court
City, State, Zip:	Pullman, WA 99163
Test Requested By:	Miralem Cosic
Model:	Wireless Current Sensor
First Date of Test:	August 26, 2019
Last Date of Test:	August 26, 2019
Receipt Date of Samples:	August 26, 2019
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

Wireless Current Sensor with Power Supply

Testing Objective:

Seeking to demonstrate compliance under FCC 15.247:2019 for operation in the 902 - 928 MHz Band.

CONFIGURATIONS



Configuration SCHW0244-1

EUT							
Description	Description Manufacturer						
Wireless Current Sensor	Schweitzer Engineering Laboratories, Inc.	SEL-WCS	808598516				
Power Supply	Schweitzer Engineering Laboratories, Inc.	SEL-9322	EUT-MV01				

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power Cable	No	1.5m	No	DC Power Supply	Wireless Current Sensor

Configuration SCHW0244- 2

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Wireless Current Sensor	Schweitzer Engineering Laboratories, Inc.	SEL-WCS	808598542
Power Supply	Schweitzer Engineering Laboratories, Inc.	SEL-9322	EUT-MV01

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power Cable	No	1.5m	No	DC Power Supply	Wireless Current Sensor

MODIFICATIONS



Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2019-08-26	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	2019-08-26	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2019-08-26	Equivalent Isotropic Radiated Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	2019-08-26	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	2019-08-26	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
6	2019-08-26	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
7	2019-08-26	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2019.05.10

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Continuous Tx 300kbs set at Highest output power 17 dBm

CHANNELS OF OPERATION

Low Ch. 906 MHz Mid Ch. 915 MHz High Ch. 927 MHz

POWER SETTINGS INVESTIGATED

24VDC

CONFIGURATIONS INVESTIGATED

SCHW0244 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency 30 MHz

Stop Frequency 18 GHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interva
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	24-Nov-2018	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AHV	NCR	0 mo
Cable	None	Standard Gain Horns Cable	EVF	24-Nov-2018	12 mo
Amplifier - Pre-Amplifier	L-3 Narda-MITEQ	AMF-6F-08001200-30-10P	PAO	24-Nov-2018	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AHU	NCR	0 mo
Filter - High Pass	Micro-Tronics	HPM50108	HFV	11-Dec-2018	12 mo
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	24-Mar-2019	12 mo
Cable	N/A	Double Ridge Horn Cables	EVB	24-Nov-2018	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	24-Nov-2018	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	7-Feb-2018	24 mo
Filter - Band Pass/Notch	K&L Microwave	3TNF-500/1000-N/N	HFT	5-Dec-2018	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFD	15-Feb-2019	12 mo
Cable	N/A	Bilog Cables	EVA	24-Nov-2018	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AOL	24-Nov-2018	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AXR	2-Oct-2018	24 mo

TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These "pre-scans" are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector PK = Peak Detector AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of 10*LOG(dc).

SPURIOUS RADIATED EMISSIONS



								EmiR5 2019.08.01	PSA-ESCI 2019.0
Work Ord	ler: SC	HW0244		Date:	26-Aug-2	2019		~	h
Proj	ect:	None	Tem	perature:	22.4 °	С	101	4	
Job S	ite:	EV01	ŀ	lumidity:	45.3%	RH) et	1/10	4
Serial Numb		8598516	Baromet		1024 m		Tested by:	Brandon Hobb	s. Jeff Alcoke
		s Current Ser			-				-,
Configurati									
		zer Engineer	ing Laboratori	es loc					
	es: Miralem		ing Laboratori	es, me.					
	ver: 24VDC	CUSIC							
	Cantinu	T 2001-1				n at 100% duty	. evele		
Operating Mo	de:	JUS IX JUUKI	s set at high	est output po		Tat 100% duty	y cycle		
Deviatio	ns: None								
Comme	nts: method	c for DTS ra		under part 15	5.247 of the	CFR. The cor	surements per KE rrection was made		
est Specificatio	ne				LT.	est Method			
CC 15.247:2019		-				NSI C63.10:20	113		
Run # 12	Test	Distance (m		Antenna H	eight(s)	1 to	4(m)	Results	Pass
Run # 12	Test	Distance (m) 3	Antenna H	eight(s)	1 to	4(m)	Results	Pass
Run # 12	Test	Distance (m) 3	Antenna H	eight(s)	1 to	4(m)	Results	Pass
	Test	Distance (m) 3	Antenna H	eight(s)	1 to	4(m)	Results	Pass
Run # 12 80	Test	Distance (m) 3	Antenna H	eight(s)	1 to	4(m)	Results	Pass
	Test	Distance (m) 3	Antenna H	eight(s)	1 to	4(m)	Results	Pass
80	Test	Distance (m) 3	Antenna H	eight(s)	1 to	4(m)	Results	Pass
	Test	Distance (m) 3	Antenna H	eight(s)	1 to	4(m)	Results	Pass
80	Test	Distance (m) 3	Antenna H	eight(s)	1 to	4(m)	Results	Pass
80	Test	Distance (m) 3	Antenna H	eight(s)	1 to	4(m)	Results	Pass
80		Distance (m) 3	Antenna H	eight(s)	1 to	4(m)	Results	Pass
80	Test	Distance (m) 3	Antenna H	eight(s)	1 to	4(m)	Results	Pass
80		Distance (m) 3	Antenna H	eight(s)	1 to	4(m)	Results	Pass
80	Test	Distance (m) 3	Antenna H	eight(s)	1 to	4(m)	Results	Pass
80		Distance (m) 3	Antenna H	eight(s)		4(m)	Results	Pass
80		Distance (m		Antenna H	eight(s)	1 to	4(m)	Results	Pass
80 70 60 50		Distance (m) 3	Antenna H	eight(s)	1 to	4(m)	Results	Pass
80 70 60 50 50 40		Distance (m		Antenna H			4(m)	Results	Pass
80				Antenna H	eight(s)	1 to	4(m)	Results	Pass
80		Distance (m		Antenna H	eight(s)	1 to	4(m)		Pass
80		Distance (m		Antenna H			4(m)		Pass
80				Antenna H	eight(s)		4(m)		Pass
80		Distance (m		Antenna H			4(m)		Pass
80		Distance (m		Antenna H			4(m)		Pass
80				Antenna H			4(m)		Pass
80				Antenna H			4(m)		Pass
80				Antenna H			4(m)		Pass
80 70 60 50 50 40 30 20 10 0				Antenna H				Results	
80				Antenna H	eight(s)		4(m)		Pass
80				Antenna H				Results	

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4636.100	60.6	4.0	3.8	320.0	0.0	0.0	Vert	PK	0.0	64.6	74.0	-9.4	High Ch.927 Mhz, EUT On Side
4636.317	60.1	4.0	1.0	253.0	0.0	0.0	Vert	PK	0.0	64.1	74.0	-9.9	High Ch.927 MHz, EUT Horz
4636.067	60.0	4.0	1.2	238.0	0.0	0.0	Horz	PK	0.0	64.0	74.0	-10.0	High Ch.927 MHz, EUT Horz
4636.017	59.5	4.0	3.3	245.0	0.0	0.0	Horz	PK	0.0	63.5	74.0	-10.5	High Ch.927 Mhz, EUT On Side
4633.958	58.1	4.0	1.0	268.0	0.0	0.0	Vert	PK	0.0	62.1	74.0	-11.9	High Ch.927 Mhz, EUT Vert
4576.067	58.1	3.9	1.1	237.0	0.0	0.0	Horz	PK	0.0	62.0	74.0	-12.0	Mid Ch.915 MHz, EUT Horz
5437.708	55.5	6.1	3.2	224.0	0.0	0.0	Horz	PK	0.0	61.6	74.0	-12.4	Low Ch.906 MHz, EUT Horz
5434.900	54.5	6.1	2.6	340.0	0.0	0.0	Vert	PK	0.0	60.6	74.0	-13.4	Low Ch.906 MHz, EUT On Side
4636.075	56.1	4.0	1.2	181.0	0.0	0.0	Horz	PK	0.0	60.1	74.0	-13.9	High Ch.927 Mhz, EUT Vert
7413.900	45.6	14.3	1.0	323.0	0.0	0.0	Vert	PK	0.0	59.9	74.0	-14.1	High Ch.927 Mhz, EUT On Side
2780.325	62.7	-3.2	1.0	42.0	0.0	0.0	Vert	PK	0.0	59.5	74.0	-14.5	High Ch.927 Mhz, EUT On Side
7417.580	45.1	14.3	2.6	340.0	0.0	0.0	Horz	PK	0.0	59.4	74.0	-14.6	High Ch.927 MHz, EUT Horz
2745.675	62.8	-3.4	1.0	45.0	0.0	0.0	Vert	PK	0.0	59.4	74.0	-14.6	Mid Ch.915 MHz, EUT On Side
4531.017	55.0	3.9	1.0	239.0	0.0	0.0	Vert	PK	0.0	58.9	74.0	-15.1	Low Ch.906 MHz, EUT On Side
2780.242	62.0	-3.2	1.7	249.0	0.0	0.0	Horz	PK	0.0	58.8	74.0	-15.2	High Ch.927 MHz, EUT Horz
2718.700	62.2	-3.4	1.1	325.0	0.0	0.0	Vert	PK	0.0	58.8	74.0	-15.2	Low Ch.906 MHz, EUT On Side
4531.192	54.9	3.9	3.5	201.0	0.0	0.0	Horz	PK	0.0	58.8	74.0	-15.2	Low Ch.906 MHz, EUT Horz
2745.650	61.6	-3.4	1.5	247.0	0.0	0.0	Horz	PK	0.0	58.2	74.0	-15.8	Mid Ch.915 MHz, EUT Horz
2718.717	61.6	-3.4	1.9	334.0	0.0	0.0	Horz	PK	0.0	58.2	74.0	-15.8	Low Ch.906 MHz, EUT Horz
4576.067	53.5	3.9	1.5	196.0	0.0	0.0	Vert	PK	0.0	57.4	74.0	-16.6	Mid Ch.915 MHz, EUT On Side
3707.108	54.0	2.2	1.1	222.0	0.0	0.0	Horz	PK	0.0	56.2	74.0	-17.8	High Ch.927 MHz, EUT Horz
3707.908	52.2	2.2	1.2	238.0	0.0	0.0	Vert	PK	0.0	54.4	74.0	-19.6	High Ch.927 Mhz, EUT On Side
3660.775	52.3	2.1	3.2	249.0	0.0	0.0	Horz	PK	0.0	54.4	74.0	-19.6	Mid Ch.915 MHz, EUT Horz
3622.850	52.2	1.8	1.1	238.0	0.0	0.0	Vert	PK	0.0	54.0	74.0	-20.0	Low Ch.906 MHz, EUT On Side
3623.142	50.9	1.8	3.2	277.0	0.0	0.0	Horz	PK	0.0	52.7	74.0	-21.3	Low Ch.906 MHz, EUT Horz
3660.800	50.3	2.1	2.6	46.0	0.0	0.0	Vert	PK	0.0	52.4	74.0	-21.6	Mid Ch.915 MHz, EUT On Side
4636.050	56.4	4.0	3.8	320.0	-34.0	0.0	Vert	AV	0.0	26.4	54.0	-27.6	High Ch.927 Mhz, EUT On Side
4636.025	55.8	4.0	1.0	253.0	-34.0	0.0	Vert	AV	0.0	25.8	54.0	-28.2	High Ch.927 MHz, EUT Horz
4636.008	55.6	4.0	1.2	238.0	-34.0	0.0	Horz	AV	0.0	25.6	54.0	-28.4	High Ch.927 MHz, EUT Horz
4636.083	55.3	4.0	3.3	245.0	-34.0	0.0	Horz	AV	0.0	25.3	54.0	-28.7	High Ch.927 Mhz, EUT On Side
4576.067	53.8	3.9	1.1	237.0	-34.0	0.0	Horz	AV	0.0	23.7	54.0	-30.3	Mid Ch.915 MHz, EUT Horz

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4636.067	53.6	4.0	1.0	268.0	-34.0	0.0	Vert	AV	0.0	23.6	54.0	-30.4	High Ch.927 Mhz, EUT Vert
5437.283	50.7	6.1	3.2	224.0	-34.0	0.0	Horz	AV	0.0	22.8	54.0	-31.2	Low Ch.906 MHz, EUT Horz
2780.433	59.2	-3.2	1.0	42.0	-34.0	0.0	Vert	AV	0.0	22.0	54.0	-32.0	High Ch.927 Mhz, EUT On Side
2745.558	59.2	-3.4	1.0	45.0	-34.0	0.0	Vert	AV	0.0	21.8	54.0	-32.2	Mid Ch.915 MHz, EUT On Side
5437.275	49.6	6.1	2.6	340.0	-34.0	0.0	Vert	AV	0.0	21.7	54.0	-32.3	Low Ch.906 MHz, EUT On Side
4636.033	51.5	4.0	1.2	181.0	-34.0	0.0	Horz	AV	0.0	21.5	54.0	-32.5	High Ch.927 Mhz, EUT Vert
2780.433	58.3	-3.2	1.7	249.0	-34.0	0.0	Horz	AV	0.0	21.1	54.0	-32.9	High Ch.927 MHz, EUT Horz
2718.558	58.5	-3.4	1.1	325.0	-34.0	0.0	Vert	AV	0.0	21.1	54.0	-32.9	Low Ch.906 MHz, EUT On Side
2718.558	57.9	-3.4	1.9	334.0	-34.0	0.0	Horz	AV	0.0	20.5	54.0	-33.5	Low Ch.906 MHz, EUT Horz
2745.600	57.8	-3.4	1.5	247.0	-34.0	0.0	Horz	AV	0.0	20.4	54.0	-33.6	Mid Ch.915 MHz, EUT Horz
4531.017	50.3	3.9	1.0	239.0	-34.0	0.0	Vert	AV	0.0	20.2	54.0	-33.8	Low Ch.906 MHz, EUT On Side
4528.950	50.2	3.9	3.5	201.0	-34.0	0.0	Horz	AV	0.0	20.1	54.0	-33.9	Low Ch.906 MHz, EUT Horz
7414.283	38.3	14.3	1.0	323.0	-34.0	0.0	Vert	AV	0.0	18.6	54.0	-35.4	High Ch.927 Mhz, EUT On Side
7417.710	37.8	14.3	2.6	340.0	-34.0	0.0	Horz	AV	0.0	18.1	54.0	-35.9	High Ch.927 MHz, EUT Horz
4576.008	48.2	3.9	1.5	196.0	-34.0	0.0	Vert	AV	0.0	18.1	54.0	-35.9	Mid Ch.915 MHz, EUT On Side
3708.825	49.3	2.2	1.1	222.0	-34.0	0.0	Horz	AV	0.0	17.5	54.0	-36.5	High Ch.927 MHz, EUT Horz
3660.858	47.7	2.1	3.2	249.0	-34.0	0.0	Horz	AV	0.0	15.8	54.0	-38.2	Mid Ch.915 MHz, EUT Horz
3708.833	47.2	2.2	1.2	238.0	-34.0	0.0	Vert	AV	0.0	15.4	54.0	-38.6	High Ch.927 Mhz, EUT On Side
3623.200	47.5	1.8	1.1	238.0	-34.0	0.0	Vert	AV	0.0	15.3	54.0	-38.7	Low Ch.906 MHz, EUT On Side
3660.792	44.9	2.1	2.6	46.0	-34.0	0.0	Vert	AV	0.0	13.0	54.0	-41.0	Mid Ch.915 MHz, EUT On Side
3624.850	45.0	1.8	3.2	277.0	-34.0	0.0	Horz	AV	0.0	12.8	54.0	-41.2	Low Ch.906 MHz, EUT Horz

DUTY CYCLE



XMit 2019.06.11

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum.

The test software provided for operation in a fixed, single channel mode allows the EUT to operate continuously at 100% Duty Cycle.



XMit 2019.06.11

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	7-Jun-19	7-Jun-20
Generator - Signal	Agilent	N5182A	TIF	23-Aug-17	23-Aug-20
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	28-Mar-19	28-Mar-20
Attenuator	S.M. Electronics	SA26B-20	AUY	28-Mar-19	28-Mar-20
Block - DC	Fairview Microwave	SD3379	AMX	29-Mar-19	29-Mar-20

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2013 Section 11.9.1.1 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio.



	/ireless Current Sensor				Work Order:		
Serial Number: 80	08598542				Date:	26-Aug-19	
Customer: S	chweitzer Engineering Laboratories, Inc.				Temperature:	24 °C	
Attendees: M					Humidity:		
Project: N					Barometric Pres.:		
	randon Hobbs, Jeff Alcoke		Powe	: 24VDC	Job Site:	EV06	
TEST SPECIFICATION	NS			Test Method			
FCC 15.247:2019				ANSI C63.10:2013			
COMMENTS The DC block, attenua	ator and cable were all accounted for duri	ng testing.					
		ng testing.					
The DC block, attenua		ng testing.					
The DC block, attenuation DC block, attenuation DC block, attenuation of the block	EST STANDARD	ing testing.	IA.				
The DC block, attenua DEVIATIONS FROM T None	EST STANDARD		TAL,		Out Pwr	Limit	
The DC block, attenua DEVIATIONS FROM T None	EST STANDARD		TAL.		Out Pwr (dBm)	Limit (dBm)	Result
The DC block, attenue DEVIATIONS FROM T None Configuration #	2 Sigr		IA,				Result Pass
The DC block, attenua DEVIATIONS FROM T None	2 Sigr		IA,		(dBm)	(dBm)	



Agllent Spectrum Analyzer -: Element Materials Technology PR0:: Fast				Out Pwr	Limit	
Applent Spectrum Analyzer - Element Materials Technology SENSEINT ALIGN OFF OI.S.1:SOPM AU2 PN0: F.ast PN0: F.ast Trig: Free Run #Avg Hold: 100/100 Track of the technology Ref Offset 20.81 dB Mkr1 905.786 0 I 16.392 c 6 dB:rdiv Ref 20.81 dB 1 1 10.0 1 1 1 1 10.0 1 1 1 1 1 10.0 1 1 1 1 1 1 10.0 1 1 1 1 1 1 1 10.0 1				(dBm)	(dBm)	Result
RL RF S0.9 DC SENSE:INT ALIGN OFF 01:51:50 M Aug2 #Avg Type: Log-Pwr IFGain:Low #Avg Type: Log-Pwr #Avg Hold: 100/100 TYPE IF Ref 20.81 dB Mkr1 905.786 0 16.392 0 Control Ref 20.81 dB 1 16.392 0 16.392 0 10.8 1 1 1 16.392 0 10.9 1 1 1 1 1 10.9 1 1 1 1 1 1 10.9 1				16.392	30	Pass
RL RF S0.9 DC SENSE:INT ALIGN OFF 01:51:50 M Aug2 MAX BY TYPE: Log-Pwr IFGain:Low Trig: Free Run #Arten: 10 dB Mkr1 905.786 0 Tree IFF Cdgd Ref Offset 20.81 dB Mkr1 905.786 0 16.392 0 100 Image: Sense:Intributed in the sense						
PNO: Fast IFGain:Low Trig: Free Run MAtten: 10 dB #Avg Type: Log-Pwr Avg Hold: 100/100 Trice IP Type: Log-Pwr Avg Hold: 100/100 S dB/div Ref Offset 20.81 dB Mkr1 905.786 0 1 16.392 0 10.8 1 1 1 10.8 1 1 1 1 10.8 1 1 1 1 1 10.8 1 1 1 1 1 1 10.8 1		ials Technology				
Ref Offset 20.81 dBm Mkr1 905.786 0 1 16.8 1 16.392 c 16.8 1 1 1 10.8 1 1 1 1 10.8 1 1 1 1 1 10.8 1	KL RF 50Ω DC	SEN	JSE:INT		ul ea Pwr	01:51:50 PM Aug 26, 201
Ref Offset 20.81 dB Mkr1 905.786 0 1 10.8 1 16.392 c 10.8 1 1 11.9 1 1 11.1 1 1 11.1 1 1 11.1 1 1 11.1 1 1 11.1 1 <td></td> <td>PNO: Fast 🔸</td> <td></td> <td>Avg Hold:</td> <td>100/100</td> <td></td>		PNO: Fast 🔸		Avg Hold:	100/100	
ABJAN Ref 20.81 dBm 16.392 d 166 1 1 1 168 1 1 1 108 1 1 1 681 1 1 1 108 1 1 1 681 1 1 1 108 1 1 1 419 1 1 1 419 1 1 1 142 1 1 1 142 1 1 1 142 1 1 1 142 1 1 1 142 1 1 1 142 1 1 1 142 1 1 1 142 1 1 1 1 142 1 1 1 1 142 1 1 1 1 143 1 1 1 1 1 144 1 1 1 <td></td> <td>IFGain:Low</td> <td>#Atten: 10 dB</td> <td></td> <td></td> <td></td>		IFGain:Low	#Atten: 10 dB			
108 1	Bidiv Ref 20.81 dBm				IVIKE	16.392 dBr
15.8 V V 10.8 V V 5.81 V V 6.81 V V 6.91 V V 4.19 V V 9.19 V V -4.19 V V -10.1 V V -11.2 V V -12.2 V V -13.2 V V -14.2 V V -24.2 V V -24.2 V V -24.2 V V -24.2 V V -24.3 V			1			
5.81 6.80 6.81 6.81 6.81 6.81 6.81 6.81 6.8 6.8 7 6.8 7 7 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7	3					
5.81 0.810 4.19 -4						
0.810 Image: Span 2.500 24.19 Image: Span 2.500 14.2 Image: Span 2.500 24.2 #VBW 5.0 MHz Sweep 1.066 ms (1000)						
0.810 Image: Span 2.500 24.19 Image: Span 2.500 14.2 Image: Span 2.500 24.2 #VBW 5.0 MHz Sweep 1.066 ms (1000)						
4.19						
4.19						
9.19						
9.19						
14.2						
-14.2 -19.2 -24.2						
.19.2 .19.2 .24.2						
.19.2 .19.2 .24.2						
-24.2 Center 906.000 MHz Span 2.500 #Res BW 1.5 MHz #VBW 5.0 MHz Sweep 1.066 ms (1000						
Center 906.000 MHz Span 2.500 #Res BW 1.5 MHz #VBW 5.0 MHz Sweep 1.066 ms (1000						
Center 906.000 MHz Span 2.500 #Res BW 1.5 MHz #VBW 5.0 MHz Sweep 1.066 ms (1000						
#Res BW 1.5 MHz #VBW 5.0 MHz Sweep 1.066 ms (1000						
#Res BW 1.5 MHz #VBW 5.0 MHz Sweep 1.066 ms (1000						
#Res BW 1.5 MHz #VBW 5.0 MHz Sweep 1.066 ms (1000						Span 2.500 MH
ASG	nter 906.000 MHz	#VBW	5.0 MHz		Sweep	1.066 ms (1000 pt
				STATUS		
DTS 300 kbs Mid Channel, 915 MHz	es BW 1.5 MHz					Constant of the Cold of Constant of the Cold of the Co
Out Pwr Limit	es BW 1.5 MHz	DTS 300 k	bs Mid Channel			
(dBm) (dBm) Result	es BW 1.5 MHz	DTS 300 k	dos Mid Channel, S	915 MHz	Limit	

RL RF	50 Ω DC		SENSE:INT	ALIGN OFF		01:58:27 PM Aug 26, 20
		PNO: Fast ↔ IFGain:Low	Trig: Free Run #Atten: 10 dB	#Avg Type: Lo Avg Hold: 100	9g-Pwr /100	TRACE 1234 TYPE M WWW DET P P P P
3/div Ref	Offset 20.81 dB 5 20.81 dBm				Mkr	1 914.704 Mi 16.325 dB
			1			
1						
, 						
,						
3						
2						
2						
2						
nter 915.00 es BW 1.5 N		#VE	W 5.0 MHz		Sweep 1	Span 3.000 M .066 ms (1000 p
				STATUS		



		n Channel, 927 MHz Out Pwr	Limit	
		(dBm)	(dBm)	Result
		16.098	30	Pass
Agilent Spectrum Analyzer - Element Materials 20 RL RF ΙSOΩ DC	SENSE:INT PNO: Fast →→ Trig: Fr IFGain:Low #Atten:			02:07:08 PM Aug 26, 20: TRACE 1 2 3 4 9 TYPE MUNUM DET P P P F
Ref Offset 20.81 dB 5 dB/div Ref 20.81 dBm Log			Mkr	1 926.701 MH 16.098 dBi
15.8	1			
10.8				
5.81				
0.810				
-4.19				
-9.19				
-14.2				
-19.2				
-24.2				
Center 927.000 MHz #Res BW 1.5 MHz	#VBW 5.0 MI		Swoon 1	Span 3.000 MH 066 ms (1000 pt



Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5182A	TIF	23-Aug-17	23-Aug-20
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	28-Mar-19	28-Mar-20
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	7-Jun-19	7-Jun-20
Attenuator	S.M. Electronics	SA26B-20	AUY	28-Mar-19	28-Mar-20
Block - DC	Fairview Microwave	SD3379	AMX	29-Mar-19	29-Mar-20

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2013 Section 11.9.1.1 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio.



	/ireless Current Sensor				Work Order:		
Serial Number: 80						26-Aug-19	
	chweitzer Engineering Laboratories, Inc.				Temperature:		
Attendees: M					Humidity:		
Project: N				H	Barometric Pres.:		
	randon Hobbs, Jeff Alcoke	Power: 24VDC			Job Site:	EV06	
EST SPECIFICATION	NS	Test Method					
CC 15.247:2019		ANSI C63.10:2013					
	ator and cable were all accounted for during testing.	• •					
he DC block, attenua		· · · ·					
OMMENTS he DC block, attenua EVIATIONS FROM T ione							
he DC block, attenua EVIATIONS FROM T		JA M					
he DC block, attenua EVIATIONS FROM T one	2	JA //	ut Pwr	Antenna	EIRP	EIRP Limit	
ne DC block, attenua EVIATIONS FROM T one	2		ut Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
e DC block, attenue EVIATIONS FROM T one onfiguration #	2 Signature	(0					Result Pass
he DC block, attenua	2 Signature	(c 1)	(dBm)	Gain (dBi)	(dBm)	(dBm)	

Report No. SCHW0244 Rev. 1 EAR-Controlled Data

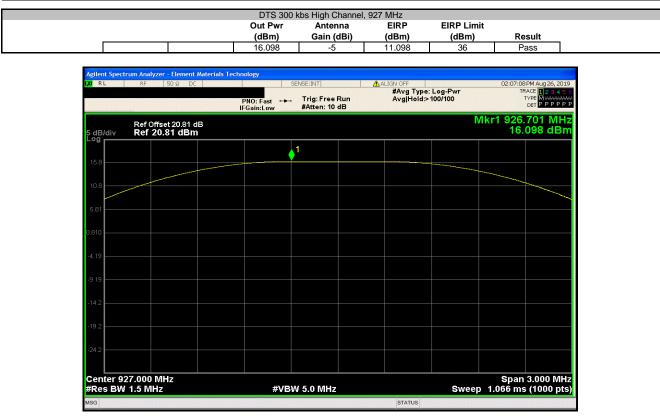




	Out Pwr	Antenna	EIRP	EIRP Limit	
	(dBm)	Gain (dBi)	(dBm)	(dBm)	Result
	16.325	-5	11.325	36	Pass

RF 50Ω DC		SENSE:INT	ALIGN OFF		01:58:27	PM Aug 26, 201
	PNO: Fast ↔ IFGain:Low	Trig: Free Run #Atten: 10 dB	#Avg Type: Avg Hold: 1	00/100	TRACE 12345 TYPE MWWWW DET PPPP	
Ref Offset 20.81 dB B/div Ref 20.81 dBm				Λ	/kr1 914. 16.	704 MF 325 dBi
3		1				
, 						
2						
2						
nter 915.000 MHz					Snan	3.000 M
es BW 1.5 MHz	#VB	W 5.0 MHz		Sweep	Span 1.066 ms	6 (1000 pt
			STATUS			





BAND EDGE COMPLIANCE



XMit 2019.06.11

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	7-Jun-19	7-Jun-20
Block - DC	Fairview Microwave	SD3379	AMX	29-Mar-19	29-Mar-20
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	28-Mar-19	28-Mar-20
Attenuator	S.M. Electronics	SA26B-20	AUY	28-Mar-19	28-Mar-20
Generator - Signal	Agilent	N5182A	TIF	23-Aug-17	23-Aug-20

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

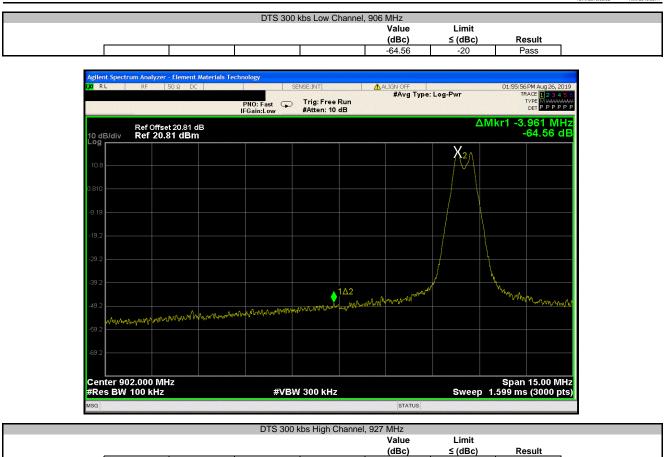
BAND EDGE COMPLIANCE



					TbtTx 2019.08.02	XMit 2019.06.11
EUT:	Wireless Current Sensor			Work Order:	SCHW0244	
Serial Number:	808598542			Date:	26-Aug-19	
Customer:	Schweitzer Engineering Laboratories, Inc.			Temperature:	24 °C	
Attendees:	Miralem Cosic			Humidity:		
Project:				Barometric Pres.:		
	Brandon Hobbs, Jeff Alcoke	Power:	24VDC	Job Site:	EV06	
TEST SPECIFICATI	ONS		Test Method			
FCC 15.247:2019			ANSI C63.10:2013			
COMMENTS						
The DC block, atter	nuator and cable were all accounted for during testing.					
DEVIATIONS FROM	I TEST STANDARD					
None						
Configuration #	2 Signature	A MA				
				Value (dBc)	Limit ≤ (dBc)	Result
DTS 300 kbs Low Ch	nannel, 906 MHz			-64.56	-20	Pass
DTS 300 kbs High C				-48.01	-20	Pass

BAND EDGE COMPLIANCE









XMit 2019.06.11

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	28-Mar-19	28-Mar-20
Generator - Signal	Agilent	N5182A	TIF	23-Aug-17	23-Aug-20
Attenuator	S.M. Electronics	SA26B-20	AUY	28-Mar-19	28-Mar-20
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	7-Jun-19	7-Jun-20
Block - DC	Fairview Microwave	SD3379	AMX	29-Mar-19	29-Mar-20

TEST DESCRIPTION

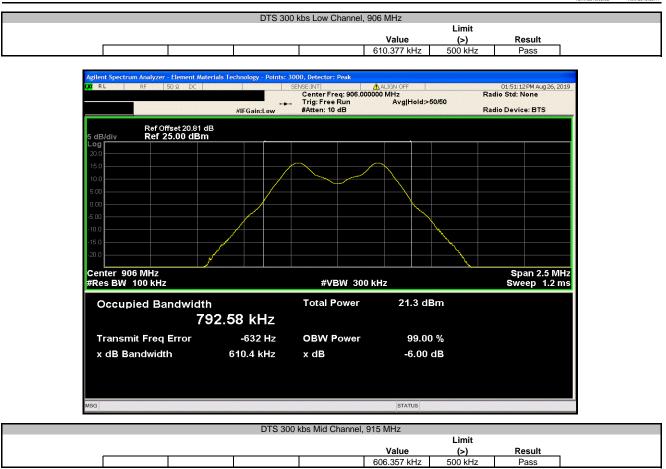
The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was set to the channels and modes listed in the datasheet.

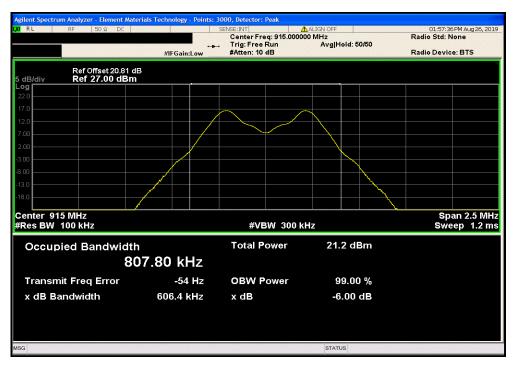
The 6dB occupied bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The 99.0% occupied bandwidth was also measured at the same time which can be needed during Output Power depending on the applicable method.



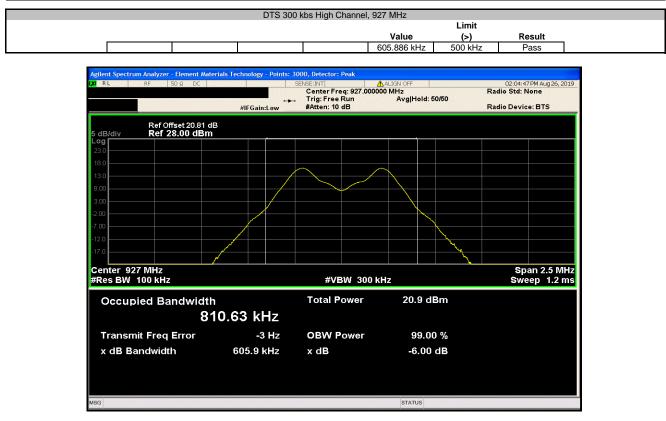
						TbtTx 2019.08.02	XMit 2019.06
	ireless Current Sensor					SCHW0244	
Serial Number: 80	8598542				Date	26-Aug-19	
	hweitzer Engineering Laboratories, Inc.				Temperature	24 °C	
Attendees: Mi						44.9% RH	
Project: No					Barometric Pres.		
	andon Hobbs, Jeff Alcoke		Power	: 24VDC	Job Site	EV06	
FEST SPECIFICATION	IS			Test Method			
FCC 15.247:2019				ANSI C63.10:2013			
COMMENTS The DC block, attenua	tor and cable were all accounted for during testi	ng.					
	-	ng.					
The DC block, attenua	-	ing.					
The DC block, attenua	-	ing.	1A.				
The DC block, attenua DEVIATIONS FROM TI None	EST STANDARD	ng. 	TAL.			Limit	
The DC block, attenua DEVIATIONS FROM TI None	EST STANDARD	ng.	TAF.		Value	Limit (>)	Result
The DC block, attenua DEVIATIONS FROM TI None Configuration #	EST STANDARD 2 Signature	ng.	1A.		 Value 610.377 kHz		Result Pass
The DC block, attenua DEVIATIONS FROM TI None	2 Signature	ng.	1A.			(>)	













XMit 2019.06.11

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	7-Jun-19	7-Jun-20
Generator - Signal	Agilent	N5182A	TIF	23-Aug-17	23-Aug-20
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	28-Mar-19	28-Mar-20
Block - DC	Fairview Microwave	SD3379	AMX	29-Mar-19	29-Mar-20
Attenuator	S.M. Electronics	SA26B-20	AUY	28-Mar-19	28-Mar-20

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.



			TbtTx 2019.08.02	XMit 2019.0
EUT: Wireless Current Sensor		Work Order:	SCHW0244	
Serial Number: 808598542			26-Aug-19	
Customer: Schweitzer Engineering Laboratories, Inc.		Temperature:	24.1 °C	
Attendees: Miralem Cosic		Humidity:		
Project: None		Barometric Pres.:	1020 mbar	
Tested by: Brandon Hobbs, Jeff Alcoke Power: 24VDC		Job Site:	EV06	
TEST SPECIFICATIONS Test Method				
FCC 15.247:2019 ANSI C63.10:2013				
COMMENTS				
DEVIATIONS FROM TEST STANDARD None Configuration # 2 Signature				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
DTS 300 kbs Low Channel, 906 MHz Fundamental	905.79	N/A	N/A	N/A
ITS 300 kbs Low Channel, 906 MHz 30 MHz 30 MHz - 12.5 GHz	1811.21	-53.17	-20	Pass
ITS 300 kbs Low Channel, 906 MHz 12.5 GHz - 25 GHz	24177.45	-67.96	-20	Pass
ITS 300 kbs Mid Channel, 915 MHz Fundamental	914.79	N/A	N/A	
		50.00	-20	N/A
	1829.48	-53.38	-20	N/A Pass
DTS 300 kbs Mid Channel, 915 MHz 30 MHz - 12.5 GHz	1829.48 24287.33	-53.38 -68.81	-20	
DTS 300 kbs Mid Channel, 915 MHz 30 MHz - 12.5 GHz DTS 300 kbs Mid Channel, 915 MHz 12.5 GHz - 25 GHz				Pass
DTS 300 kbs Mid Channel, 915 MHz 30 MHz - 12.5 GHz DTS 300 kbs Mid Channel, 915 MHz 12.5 GHz - 25 GHz	24287.33	-68.81	-20	Pass Pass

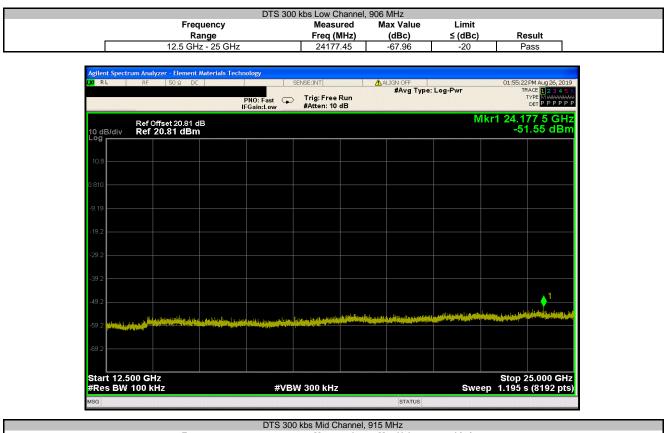


	Frequency	D13 300) kbs Low Channel, Measured	Max Value	Limit	
	Range		Freq (MHz)	(dBc)	≤ (dBc)	Result
	Fundamental		905.79	N/A	N/A	N/A
	rundumontar		000.10		10/7	10// (
Agilent Spectrum Analyzer						
LXIRL RF S	50 Ω DC		SENSE:INT	ALIGN OFF #Avg Type:	Log-Pwr	01:53:24 PM Aug 26, 201
		PNO: Wide 😱 IFGain:Low	Trig: Free Run #Atten: 10 dB			TRACE 12345 TYPE MUMUM DET PPPP
RefOffset	20.81 dB				Mkr1	905.791 05 MH 16.41 dBr
10 dB/div Ref 20.8		•1				10.41 UBI
10.8						
10.0						
0.810						
-9.19						
-19.2						
-29.2						
-39.2						
-49.2						
-59.2						
-69.2						
Center 906.0000 M	Hz	<i>#</i>) (B)	W 200 KU-		0	Span 1.000 MH
#Res BW 100 kHz		#VB	W 300 kHz	STATUS	Sweep	1.092 ms (8192 pt

DIS 30	0 kbs Low Channel,	, 906 MHz		
Frequency Measured Max Value Limit				
Range	Freq (MHz)	(dBc)	≤ (dBc)	Result
30 MHz - 12.5 GHz	1811.21	-53.17	-20	Pass

RL	RF 50 Ω D	ic	SENSE:INT		ALIGN OFF		01:54:2	4 PM Aug 26, 201
		PNO: Fast IFGain:Lov	🕞 Trig: F	ree Run : 10 dB	#Avg Type	:: Log-Pwr		RACE 12345 TYPE MUMUUM DET PPPP
dB/div	Ref Offset 20.81 Ref 20.81 dBr	dB M						811 2 GH 6.76 dBr
).8								
.2								
.2								
2	• ¹							
.2								
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	and the product of the second					and the second secon		
.2								
art 30 IV es BW	IHz 100 kHz		#VBW 300 k	Hz		Sw	Stop /eep 1.192	12.500 GH s (8192 pt
1	and the second second second		and the supervised of	an a	STATUS	SIRVER		

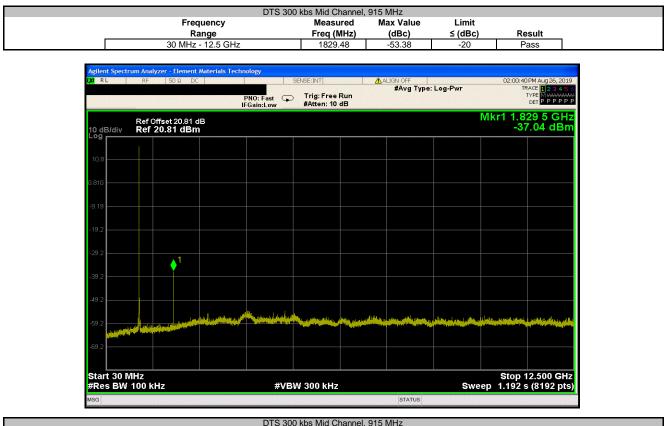




	DTS 300 kbs Mid Channel	l, 915 MHz		
Frequency Measured Max Value Limit				
Range	Freq (MHz)	(dBc)	≤ (dBc)	Result
Fundamental	914.79	N/A	N/A	N/A

RL RF 50Ω DC	SENSE:INT	ALIGN OFF	01:59:39 PM Aug 26, 2019
	PNO: Wide 🕞 Trig: Free Run IFGain:Low #Atten: 10 dB	#Avg Type: Log-Pwr	TRACE 12345 TYPE MUMUU DET PPPP
Ref Offset 20.81 dB dB/div Ref 20.81 dBm		Mkr	1 914.790 93 MH 16.34 dBr
3			
10			
19			
.2			
3.2			
.2			
.2			
.2			
enter 915.0000 MHz			Span 1.000 MH
Res BW 100 kHz	#VBW 300 kHz	Sweep	Span 1.000 MH 1.092 ms (8192 pt





DTS 300 kbs Mid Channel, 915 MHz						
	Frequency Measured Max Value Limit					
	Range	Freq (MHz)	(dBc)	≤ (dBc)	Result	_
	12.5 GHz - 25 GHz	24287.33	-68.81	-20	Pass	

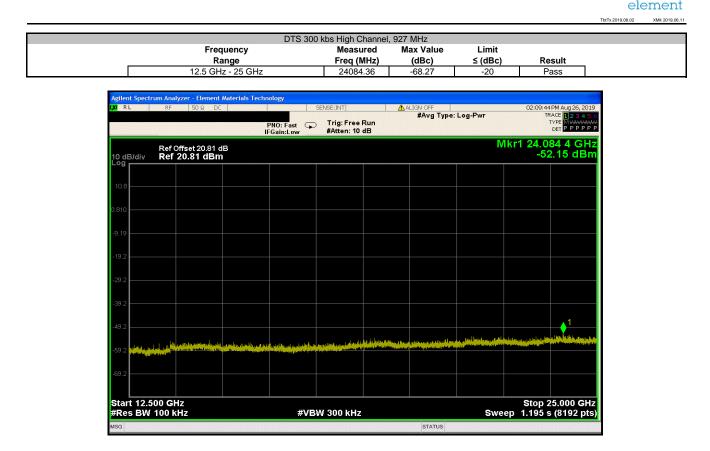
RL	RF	50 Ω DC			SENSE:INT	ALIGN OFF		02:02	:10 PM Aug 26, 201
				PNO: Fast 🕞 FGain:Low	Trig: Free #Atten: 10		/pe: Log-Pwr		TRACE 12345 TYPE MWWWW DET PPPP
0 dB/d og r	Ref Of liv Ref 2	fset 20.81 o 2 0.81 dBm	iB ì					Mkr1 24.	287 3 GH 52.47 dBr
0.8									
310									
.19									
9.2									
9.2									
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9.2	de la compañía				والقارب المتكرين والمراجع والمراجع	يلي مارد ويا ورو المراجع			the particular states of
9.2	and the particular second								
5.2									
	12.500 GH 3W 100 kH			#VE	3W 300 kHz		S	Stop weep 1.19	25.000 GH



	DT	S 300 kbs High Channel	, 927 MHz		
	Frequency	Measured	Max Value	Limit	
	Range	Freq (MHz)	(dBc)	≤ (dBc)	Result
	Fundamental	926.79	N/A	N/A	N/A
DØ RL	Analyzer - Element Materials Technology RF 50 Q DC PNO: Wid PNO: Wid IFGain:Lor of Offset 20.81 dB	SENSE:INT e Trig: Free Run #Atten: 10 dB	ALIGN OFF #Avg Type:		02:07:45PM Aug 26, 2019 TRACE 1 2 3 4 5 6 TYPE MUMUUL DET P P P P P P 26.790 93 MFZ
10 dB/div R	ef 20.81 dBm				16.12 dBm
10.8					
0.810 -9.19					
-19.2					
-39.2					
-49.2					
-69.2					
Center 927.0 #Res BW 10		#VBW 300 kHz		Sweep 1.	Span 1.000 MHz 092 ms (8192 pts)
MSG			STATUS		
	DT	S 300 kbs High Channel	027 MH-		
	Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
	30 MHz - 12.5 GHz	1853.84	-54.48	-20	Pass

Frequency	Measured	Max Value	Limit	– 1/
Range	Freq (MHz)	(dBc)	≤ (dBc)	Result
30 MHz - 12.5 GHz	1853.84	-54.48	-20	Pass

RL	RF	50 Ω DC			SENSE: IN	TV	<u>∧</u> A	LIGN OFF			45 PM Aug 26, 20:
			I	PNO: Fast ⊂ FGain:Low		g: Free Run ten: 10 dB		#Avg Type:	Log-Pwr		TRACE 1 2 3 4 5 TYPE MUMMA DET PPPPF
dB/div	Ref Offs Ref 20	et 20.81 d .81 dBm	IB I							Mkr1 1.4 -3	853 8 GH 88.36 dBi
).8											
10											
19											
.2											
.2											
.2		♦ ¹									
.2											
.2			الميهانة الإبهانان	No.	and a second second	and the second secon		ويتغفظه والعا	والمتحالي المعالي والمعالي	الفارة إيار إيازة ها	New Antonia Station
.2	and the second state of	and a second									
art 30 N	IHz									Stop	12.500 GF
	100 kHz			#V	BW 300	0 kHz			Swe	eep 1.192	s (8192 pt





Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	7-Jun-19	7-Jun-20
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	28-Mar-19	28-Mar-20
Generator - Signal	Agilent	N5182A	TIF	23-Aug-17	23-Aug-20
Block - DC	Fairview Microwave	SD3379	AMX	29-Mar-19	29-Mar-20
Attenuator	S.M. Electronics	SA26B-20	AUY	28-Mar-19	28-Mar-20

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The maximum power spectral density measurements was measured using the channels and modes as called out on the following data sheets.

Per the procedure outlined in ANSI C63.10 the peak power spectral density was measured in a 3 kHz RBW.



EUT: W	ireless Current Sensor		Work Order:		
Serial Number: 80	08598542			26-Aug-19	
Customer: Sc	chweitzer Engineering Laboratories, Inc.		Temperature:	24.1 °C	
Attendees: Mi			Humidity:		
Project: No			Barometric Pres.:		
	randon Hobbs, Jeff Alcoke	Power: 24VDC	Job Site:	EV06	
TEST SPECIFICATION	IS	Test Method			
FCC 15.247:2019		ANSI C63.10:2013			
COMMENTS	ator and cable were all accounted for during testing				
The DC block, attenua	ator and cable were all accounted for during testing.				
		· · · · · · · · · · · · · · · · · · ·			
The DC block, attenua		Ter Ma			
The DC block, attenua DEVIATIONS FROM TI None	EST STANDARD	TA M	Value dBm/3kHz	Limit < dBm/3kHz	Results
The DC block, attenua DEVIATIONS FROM TI None Configuration #	2 Signature	Tel 1			Results Pass
The DC block, attenua DEVIATIONS FROM TI None	2 Signature	TA M	dBm/3kHz	< dBm/3kHz	

Report No. SCHW0244 Rev. 1 EAR-Controlled Data



