

### SMC Corporation EX600-WDYA1 with EX600-WDYE1

FCC 15.247:2020 2400 - 2483.5 MHz FHSS Transceiver

Report: PCTE0001.1, Issue Date: July 31, 2020



TESTING NVLAP LAB CODE: 200676-0



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## **CERTIFICATE OF TEST**



#### Last Date of Test: June 18, 2020 SMC Corporation EUT: EX600-WDYA1 with EX600-WDYE1

### **Radio Equipment Testing**

Standards

Specification	Method
FCC 15.247:2020	ANSI C63.10:2013, KDB 558074

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions (Transmitter)	No	N/A	Not requested for this system level approval.
6.5, 6.6	Spurious Radiated Emissions	Yes	Pass	
7.5	Duty Cycle	No	N/A	Not requested for this system level approval.
7.8.2	Carrier Frequency Separation	No	N/A	Not requested for this system level approval.
7.8.3	Number of Hopping Frequencies	No	N/A	Not requested for this system level approval.
7.8.4	Dwell Time	No	N/A	Not requested for this system level approval.
7.8.5	Output Power	No	N/A	Not requested for this system level approval.
7.8.5	Equivalent Isotropic Radiated Power	No	N/A	Not requested for this system level approval.
7.8.6	Band Edge Compliance	No	N/A	Not requested for this system level approval.
7.8.6	Band Edge Compliance - Hopping Mode	No	N/A	Not requested for this system level approval.
7.8.7	Occupied Bandwidth	No	N/A	Not requested for this system level approval.
7.8.8	Spurious Conducted Emissions	No	N/A	Not requested for this system level approval.
11.10.2	Power Spectral Density	No	N/A	Not required for FHSS devices.

#### **Deviations From Test Standards**

None

**Approved By:** 

Victor Ratinoff, 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
00	None		

# 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 <sup>th</sup> 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)	5.1 dB	-5.1 dB
AC Powerline Conducted Emissions (dB)	2.6 dB	-2.6 dB

# **Test Setup Block Diagrams**





# **PRODUCT DESCRIPTION**



#### **Client and Equipment Under Test (EUT) Information**

Company Name:	SMC Corporation
Address	4-2-2, Kinunodai, Tsukubamirai-shi,
Address:	Ibaraki-ken, 300-2493, Japan
Test Requested By:	PCTEST Engineering Lab, LLC
EUT:	EX600-WDYA1 with EX600-WDYE1, EX600-WDXE1, and EX600-WDXA1
First Date of Test:	June 18, 2020
Last Date of Test:	June 18, 2020
Receipt Date of Samples:	June 18, 2020
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 Remote

#### **Testing Objective:**

Seeking to demonstrate compliance under FCC 15.247:2020 for operation in the 2400 - 2483.5 MHz Band.





#### Configuration PCTE0001-1

EUT						
Description	Manufacturer	Model/Part Number	Serial Number			
Serial Interface Device	SMC	EX600-WDXA1	0E-91-C0-56			
Remote Digital Output	SMC	EX600-WDXE1	0E-51-C0-89			

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Power Cable	Yes	2.5m	No	Serial Interface Device	DC Power Supply
Power Cable	Yes	2.5m	No	Remote Digital Output	DC Power Supply

#### Configuration PCTE0001-2

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EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Serial Interface Device	SMC	EX600-WDYA1	0F-12-00-63
Remote Digital Output	SMC	EX600-WDYE1	0E-52-00-45

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Power Cable	Yes	2.5m	No	Serial Interface Device	DC Power Supply
Power Cable	Yes	2.5m	No	Remote Digital Output	DC Power Supply





### **Equipment Modifications**

Item	Date	Test	Modification	Note	Disposition of EUT
1	2020-06-18	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.



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** NFC Continuous Burst Transmission **CHANNELS INVESTIGATED** Low Channel 0 (2403 MHz) Mid Channel 39 (2442 MHz) High Channel 78 (2481 MHz) WORST CASE CHANNELS INVESTIGATED Low Channel 0 (2403 MHz) **POWER SETTINGS INVESTIGATED** +24VDC **CONFIGURATIONS INVESTIGATED** PCTE0001 FREQUENCY RANGE INVESTIGATED Start Frequency 30 MHz Stop Frequency 26000 MHz

#### 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.	Interval
Filter - High Pass	Micro-Tronics	HPM50111	HHX	2019-07-02	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFT	NCR	0 mo
Attenuator	Fairview Microwave	SA18H-20	TKQ	2019-07-02	12 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2019-07-02	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1402	AOZ	2019-07-02	12 mo
Cable	Northwest EMC	10kHz-1GHz RE Cables	OCH	2019-09-09	12 mo
Antenna - Biconilog	EMCO	3142B	AXK	2019-10-30	24 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOI	2019-12-13	12 mo
Cable	Northwest EMC	18-26GHz RE Cables	OCK	2019-12-13	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AHN	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOF	2020-02-27	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AHT	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOE	2020-02-27	12 mo
Cable	Northwest EMC	8-18GHz RE Cables	000	2020-02-27	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AHR	NCR	0 mo
Amplifier - Pre-Amplifier	Cernex	CBL01084020-xx	PAX	2020-02-28	12 mo
Cable	Northwest EMC	1-8GHz RE Cables	OCJ	2020-02-28	12 mo
Antenna - Double Ridge	EMCO	3115	AHB	2020-04-08	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 within 2 MHz of the allowable band may have been taken using the integration method from ANSI C63.10 clause 11.13.3. This procedure uses the channel power feature of the spectrum analyzer to integrate the power of the emission within a 1 MHz bandwidth.

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  $10*\log(1/dc)$ .



Work Order:    PCTE0001    Date:    2020-06-18    Job Stie:    Configurations      Serial Number:    Sec Configurations    Barometric Pres:    1011.6 mbar    Tested by: Mark Baytan      EUT:    EX800-WDVA1 with EX800-WDVF1    Configurations    Eutrest    Tested by: Mark Baytan      Configuration:    2    Customer:    BMC Corporation    Tested by: Mark Baytan      Attendee:    None    EUT Power:    -24VDC    President Secondary    President Secondary      Operating Mode    NFC Continuous Burst Transmission: Low Channel 0 (2403 MHz)    Deviations:    None      Deviations:    None    Data taken on worst case channel based on preliminary peak scan measurements. Duty cycle correction factor (DCCF)    Configuration: 2      Configuration:    Data taken on worst case channel based on preliminary peak scan measurements. Duty cycle correction factor (DCCF)    Configuration: 2      Configuration:    Data taken on worst case channel based on preliminary peak scan measurements. Duty cycle correction factor (DCCF)    Configuration: 2      Configuration:    Data taken on worst case channel based on preliminary peak scan measurements. Duty cycle correction factor (DCCF)    Configuration: 2      Test Specifications    Test Based on preliminary peak scan duty to the scan duty to the scan duty to the sc								EmiR5 2019.08.15.1	PSA-ESCI 2020.04.03
Project:    None    Temperature:    21.3 °C    With the second part of the second part	Woi	rk Order:	PCTE0001	Date:	2020-0	6-18	11 .	0	
Serial Number: See Configurations Barometric Press: 1011.6 mbar Tested by: Mark Baytan EUT; EX800-WDVA1 with EX800-WDVF1 Configurations 2 Customer: SMC Corporation Attendees: None EUT Power: +24VDC Operating Mode Price Continuous Burst Transmission: Low Channel 0 (2403 MHz) Deviations: None Data taken on worst case channel based on preliminary peak scan measurements. Duty cycle correction factor (DCCF) Comments: calculation: Number of times transmitter hits on channel = 1 time(s) / 100 ms, worst case dwell time = 1.2 ms, DCCF = 20 LOg <sub>0</sub> (1.2 ms/100ms) =38.42 dB. Test Specifications FCC 15.247-2020 ANSI CG3.10.2013 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		Project:	None	Temperature:	21.3	°C	4-K	Or-	1
See Configurations  Tested by: [Mark Baytan    Configurations  Castorer: SMC Corporation    Attendees: None    EUT Power: +24VDC    Operating Mode    None    Data taken on worst case channel based on preliminary peak scan measurements. Duty cycle correction factor (DCCF)    Deviations:    Test Specifications    Test Specifications    Test Distance (m)    Test Method    Ansi Ce3::0::2013		Job Site:	OC10	Humidity:	52.2%	RH	2		
EUT: Ex600-WDY41 with Ex600-WDYE1 Customer: SMC Corporation Attendes: None EUT Powe: +24VDC Deviations: None Deviations: Data taken on worst case channel based on preliminary peak scan measurements. Duty cycle correction factor (DCCF) comments: calculation: Number of times transmitter hits on channel = 1 time(s) / 100 ms, worst case dwell time = 1.2 ms, DCCF = 20 Logvo(1.2ms/100ms) = -38.42 dB. Test Specifications FCC 15.247:2020 Run # 30 Test Distance (m) 3 Antenna Height(s) 1 to 4(m) Results Pass 80 60 60 60 60 60 60 60 60 60 6	Serial	Number:	See Configurations	Barometric Pres.:	1011.6	mbar	Tested by:	Mark Baytan	
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MHZ PK + AV • QP	-20		100		1000		\$		100000
	0 -20 10		100		1000		10000		100000

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
2246.883	54.1	-12.8	1.1	4.0	0.0	20.0	Vert	PK	0.0	61.3	74.0	-12.7	Low Ch 0, EUT Horz
2247.025	53.5	-12.8	1.2	320.0	0.0	20.0	Vert	PK	0.0	60.7	74.0	-13.3	Low Ch 0, EUT Vert
2247.167	53.4	-12.8	1.2	183.0	0.0	20.0	Vert	PK	0.0	60.6	74.0	-13.4	Low Ch 0, EUT on Side
2246.675	53.0	-12.8	2.0	268.0	0.0	20.0	Horz	PK	0.0	60.2	74.0	-13.8	Low Ch 0, EUT Horz
2247.058	52.7	-12.8	1.2	12.0	0.0	20.0	Horz	PK	0.0	59.9	74.0	-14.1	Low Ch 0, EUT on Side
2245.900	52.5	-12.8	2.8	169.0	0.0	20.0	Horz	PK	0.0	59.7	74.0	-14.3	Low Ch 0, EUT Vert
4806.450	55.6	-4.4	1.1	334.0	0.0	0.0	Vert	PK	0.0	51.2	74.0	-22.8	Low Ch 0, EUT on Side
4805.858	53.6	-4.4	1.0	192.0	0.0	0.0	Horz	PK	0.0	49.2	74.0	-24.8	Low Ch 0, EUT Horz
12017.100	45.7	-4.1	1.5	160.0	0.0	0.0	Vert	PK	0.0	41.6	74.0	-32.4	Low Ch 0, EUT on Side
12015.070	45.4	-4.1	1.5	184.0	0.0	0.0	Horz	PK	0.0	41.3	74.0	-32.7	Low Ch 0, EUT Horz
2247.058	45.6	-12.8	1.2	183.0	-38.4	20.0	Vert	AV	0.0	14.4	54.0	-39.6	Low Ch 0, EUT on Side
2246.992	45.5	-12.8	1.1	4.0	-38.4	20.0	Vert	AV	0.0	14.3	54.0	-39.7	Low Ch 0, EUT Horz
2247.033	44.6	-12.8	1.2	320.0	-38.4	20.0	Vert	AV	0.0	13.4	54.0	-40.6	Low Ch 0, EUT Vert
2246.933	44.2	-12.8	2.0	268.0	-38.4	20.0	Horz	AV	0.0	13.0	54.0	-41.0	Low Ch 0, EUT Horz
2246.900	44.1	-12.8	1.2	12.0	-38.4	20.0	Horz	AV	0.0	12.9	54.0	-41.1	Low Ch 0, EUT on Side
2247.033	43.8	-12.8	2.8	169.0	-38.4	20.0	Horz	AV	0.0	12.6	54.0	-41.4	Low Ch 0, EUT Vert
4805.983	49.7	-4.4	1.1	334.0	-38.4	0.0	Vert	AV	0.0	6.9	54.0	-47.1	Low Ch 0, EUT on Side
4805.958	47.8	-4.4	1.0	192.0	-38.4	0.0	Horz	AV	0.0	5.0	54.0	-49.0	Low Ch 0, 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
12014.730	38.5	-4.1	1.5	184.0	-38.4	0.0	Horz	AV	0.0	-4.0	54.0	-58.0	Low Ch 0, EUT Horz
12015.960	36.6	-4.1	1.5	160.0	-38.4	0.0	Vert	AV	0.0	-5.9	54.0	-59.9	Low Ch 0, EUT on Side



vvor	k Order:	PCTE	:0001		Date:	2020-06-1	18	1	1	0				
	Project:	No	ne	Temp	perature:	21.3 °C	-	10	TK	6	1-			
J	lob Site:	OC	:10	Ĥ	lumidity:	52.2% R	Н		2					
Serial N	Number:	See Confi	igurations	Barometr	ic Pres.:	1011.6 mb	bar	Tested by: Mark Baytan						
	EUT:	EX600-WD	YA1 with E	X600-WDYE	1									
Config	uration:	2												
Cu	stomer:	SMC Corpo	oration											
Att	endees:	None												
FUT	Power	+24VDC												
Operatin	g Mode:	NFC Contin	nuous Burs	t Transmissi	on: Low Cha	annel 0 (2403	8 MHz)							
Dev	viations:	None												
Cor	nments:	Data taken calculation Log <sub>10</sub> (1.2m	on worst ca : Number of ns/100ms) =	ase channel f times trans - 38.42 d	based on pr mitter hits or B.	reliminary pea n channel = 1	ak scan me I time(s) / 1	easureme 100 ms, v	ents. Duty vorst case	v cycle correctic e dwell time = 1	on factor I.2 ms, D	(DC( )CCF		
Spacifi	cations					Tos	t Mothod							
15 247	2020	1				103		2013						
Run #	33	Test Dis	tance (m)	3	Antenna H	eight(s)	11	to 4(m)		Results	Pa	ISS		
Run #	33	Test Dis	stance (m)	3	Antenna H	eight(s)	1	to 4(m)		Results	Pa	ISS		
Run #	33	Test Dis	stance (m)	3	Antenna H	eight(s)	1	to 4(m)		Results	Pa	ISS		
<b>Run #</b>	33	Test Dis	stance (m)	3	Antenna H	eight(s)	1	to 4(m)		Results	Pa	ISS		
<b>Run #</b>	33	Test Dis	stance (m)	3	Antenna H	eight(s)	1	to 4(m)		Results	Pa	ISS		
<b>Run #</b>	33	Test Dis	stance (m)	3	Antenna H	eight(s)	11	to 4(m)		Results	Pa	ISS		
Run #	33	Test Dis	stance (m)	3	Antenna H	eight(s)		to 4(m)		Results	Pa	ISS		
Run #	33	Test Dis	stance (m)	3	Antenna H	eight(s)		to 4(m)		Results	Pa			
Run #	33	Test Dis	stance (m)	3	Antenna H	eight(s)		to 4(m)		Results	Pa			
Run #    80    70    60	33	Test Dis	stance (m)	3	Antenna H	eight(s)		to 4(m)		Results	Pa			
Run #        80        70        60	33	Test Dis	stance (m)	3	Antenna H	eight(s)		to 4(m)		Results	Pa			
Run #        80        70        60        50	33	Test Dis	stance (m)	3	Antenna H	eight(s)		to 4(m)		Results	Pa			
Run #        80        70        60        50	33	Test Dis	stance (m)	3	Antenna H	eight(s)		to 4(m)		Results	Pa			
Run #        80        70        60        50	33	Test Dis	stance (m)	3	Antenna H	eight(s)		to 4(m)		Results	Pa			
Run #        80        70        60        50        40	33	Test Dis	stance (m)	3	Antenna H	eight(s)		to 4(m)		Results	Pa			
Run #        80        70        60        50        40	33	Test Dis	stance (m)	3	Antenna H	eight(s)		to 4(m)		Results	Pa			
Run #    80    70    60    50    40	33	Test Dis	stance (m)	3	Antenna H	eight(s)		to 4(m)		Results	Pa			
Run #    80    70    60    50    40    30	33	Test Dis	stance (m)	3	Antenna H	eight(s)		to 4(m)		Results	Pa			
Run #    80    70    60    50    40    30	33	Test Dis	stance (m)	3	Antenna H	eight(s)		to 4(m)		Results	Pa			
Run #        80        70        60        50        40        30	33	Test Dis	stance (m)	3	Antenna H	eight(s)		to 4(m)		Results	Pa			
Run #    80    70    60    50    40    30    20	33	Test Dis	stance (m)	3	Antenna H			to 4(m)		Results	Pa			
Run #    80    70    60    50    40    30    20	33	Test Dis		3	Antenna H	eight(s)		to 4(m)		Results	Pa			
Run #    80    70    60    50    40    30    20	33	Test Dis		3	Antenna H			to 4(m)		Results	Pa			
Run #    80    70    60    50    40    30    20    10	33	Test Dis		3	Antenna H			to 4(m)		Results	Pa			
Run #    80    70    60    50    40    30    20    10	33	Test Dis		3	Antenna H			to 4(m)		Results	Pa			
Run #    80    70    60    50    40    30    20    10	33	Test Dis		3	Antenna H			to 4(m)		Results	Pa			
Run #    80    70    60    50    40    30    20    10    0	33	Test Dis		3	Antenna H			to 4(m)		Results	Pa			

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
2388.837	57.1	-11.7	1.5	317.0	0.0	20.0	Horz	PK	0.0	65.4	74.0	-8.6	Low Ch 0, EUT on Side
2388.583	57.0	-11.7	2.2	350.0	0.0	20.0	Vert	PK	0.0	65.3	74.0	-8.7	Low Ch 0, EUT Vert
2389.583	57.0	-11.7	1.5	14.0	0.0	20.0	Vert	PK	0.0	65.3	74.0	-8.7	Low Ch 0, EUT on Side
2389.950	53.8	-11.7	1.5	78.0	0.0	20.0	Vert	PK	0.0	62.1	74.0	-11.9	Low Ch 0, EUT Horz
2389.903	52.8	-11.7	1.5	259.0	0.0	20.0	Horz	PK	0.0	61.1	74.0	-12.9	Low Ch 0, EUT Vert
2388.307	52.3	-11.7	1.6	239.0	0.0	20.0	Horz	PK	0.0	60.6	74.0	-13.4	Low Ch 0, EUT Horz
2389.523	44.3	-11.7	1.5	78.0	-38.4	20.0	Vert	AV	0.0	14.2	54.0	-39.8	Low Ch 0, EUT Horz
2389.830	44.3	-11.7	2.2	350.0	-38.4	20.0	Vert	AV	0.0	14.2	54.0	-39.8	Low Ch 0, EUT Vert
2388.880	44.2	-11.7	1.5	14.0	-38.4	20.0	Vert	AV	0.0	14.1	54.0	-39.9	Low Ch 0, EUT on Side
2389.000	44.1	-11.7	1.6	239.0	-38.4	20.0	Horz	AV	0.0	14.0	54.0	-40.0	Low Ch 0, EUT Horz
2388.853	43.6	-11.7	1.5	259.0	-38.4	20.0	Horz	AV	0.0	13.5	54.0	-40.5	Low Ch 0, EUT Vert
2389.937	43.4	-11.7	1.5	317.0	-38.4	20.0	Horz	AV	0.0	13.3	54.0	-40.7	Low Ch 0, EUT on Side



										EmiR5 2019.08.15.1	F	PSA-ESCI 2020.04.03.0	)
W	ork Order:	PCT	E0001		Date:	2020	-06-18		1/				
	Project:	N	one	Ter	nperature:	21.	3 °C	-0	7-K	6	1-		
	Job Site:	0	C10		Humidity:	52.2	% RH						
Seria	al Number:	See Con	figurations	Barome	etric Pres.:	1011.	6 mbar		Tested by:	Mark Bayt	an		-
	EUT:	EX600-W	DZA1 with E	X600-WD	XE1								-
Con	figuration:	1											-
	Customer:	SMC Corp	oration										-
	Attendees:	None											-
E	UT Power:	+24VDC											-
		NFC Cont	inuous Burs	t Transmis	sion <sup>.</sup> Low (	Channel 0 (	2403 MHz)						-
Opera	ting Mode:				2010		00						
		None											-
C	Deviations:												
С	Comments:	Data taker Number o Log <sub>10</sub> (1.2r	n on worst c f times trans ms/100ms) :	ase emissi smitter hits = -38.42 dB	on and EU on channel 3.	Γ orientatio = 1 time(s	n from Con ) / 100 ms, <sup>,</sup>	fig 2. Duty worst case	cycle correc dwell time =	tion factor = 1.2 ms, D	(DCCF) ca CCF = 20	lculation:	-
Test Spec	cifications						Test Meth	od					-
FCC 15.24	47:2020						ANSI C63	10:2013	-				-
Pup #	1 25	Toot Di	stance (m)	2	Antonno	Hoight(c)		1 to 1(m)		Populto		200	-
Kun #	- 35	Test Di	stance (m)	3	Antenna	a neight(s)		1 to 4(m)		Results	P	ass	-
Г													
80													
00													
											_		
70													
60 +													
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50 +													
40 +													
30 +													
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							•						
10							•						
10 +													
10	1		100			1000			10000			100000	
10	,		100			1000			10000			100000	
						MHz				PK	♦ AV	OP	
											•		
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
2388.837	54.1	-11.7	1.5	213.0	0.0	20.0	Horz	PK	0.0	62.4	74.0	-11.6	Low Ch 0, EUT Ho
2388.063	52.5	-11.7	1.5	4.0	0.0	20.0	Vert	PK	0.0	60.8	74.0	-13.2	Low Ch 0, EUT Ho
2389.917	45.7	-11.7	1.5	4.0	-38.4	20.0	Vert	AV	0.0	15.6	54.0	-38.4	Low Ch 0, EUT Ho
2389.847	43.3	-11.7	1.5	213.0	-38.4	20.0	Horz	AV	0.0	13.2	54.0	-40.8	Low Ch 0, EUT Ho



										EmiR5 2019.08.15.1		PSA-ESCI 2020.04.03.0	0
N	Vork Order:	PCTE	0001		Date:	2020-	-06-18	1	1		2		
	Project:	No	ne	Ter	nperature:	21.	3 °C	- 0	1-K	0	4-		
	Job Site:	00	:10		Humidity:	52.2	% RH						
Seri	al Number:	See Cont	Igurations	Barome		1011.	6 mbar		lested by:	Mark Bayt	an		-
Cor	EUT:	1 EX600-VVL	DZA'I WITH E	X600-WD/	VE I								-
00	Customer:	SMC Corp	oration										-
	Attendees:	None	oration										-
E	EUT Power:	+24VDC											_
Opera	ating Mode:	NFC Conti	nuous Burs	t Transmis	sion: Low C	Channel 0 (2	2403 MHz)						_
	Deviations:	None											_
(	Comments:	Data taken Number of Log <sub>10</sub> (1.2m	on worst c times trans ns/100ms) =	ase emissi mitter hits = -38.42 dB	on and EU on channel 5.	T orientation	n from Conf / 100 ms, v	ig 2. Duty o worst case	cycle correc dwell time =	tion factor = 1.2 ms, D	(DCCF) ca CCF = 20	lculation:	-
Test Spe	cifications						Test Meth	od					-
FCC 15.2	247:2020						ANSI C63.	10:2013					_
Run #	<b>#</b> 36	Test Dis	stance (m)	3	Antenna	a Height(s)		1 to 4(m)		Results	P	ass	-
				-									-
80 -													
											_		
70 -													
60 -													
50 -													
40 -													
30 -													
20 -													
							*						
10 -													
0 +	n		100	1		1000			10000			100000	
10	J		100						10000			100000	
						MHZ				PK	◆ AV	o QP	
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
2247.097	53.7	-12.8	1.5	157.0	0.0	20.0	Horz	PK	0.0	60.9	74.0	-13.1	Low Ch 0, EUT Horz
2246.957	52.8	-12.8	1.5	294.0	0.0	20.0	Vert	PK	0.0	60.0	74.0	-14.0	Low Ch 0, EUT on Side
2246.940 2246.930	46.0 45.0	-12.8 -12.8	1.5	294.0 157.0	-38.4 -38.4	20.0	veπ Horz	AV	0.0	14.8	54.0 54.0	-39.2 -40.2	Low Ch 0, EUT Horz