

Amber Helm Development L.C.

92723 Michigan Hwy-152

Sister Lakes, Michigan 49047 USA

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EMC Test Report

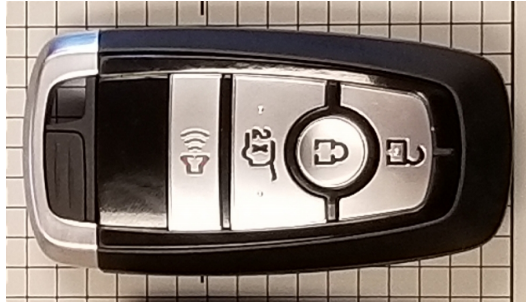
CON03-WR2006TX

Issued: February 26, 2020

regarding

USA: CFR Title 47, Part 15.249 (Emissions)
Canada: IC RSS-210v10/GENv5 (Emissions)

for



A3C054339 Series

Category: RKE Transceiver

Judgments:

15.249 / RSS-210v10 Compliant

Testing Completed: February 22, 2020



Prepared for:

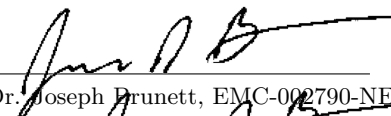
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Date of Issue: February 26, 2020

Revision History

Rev. No.	Date	Details	Revised By
r0	February 26, 2020	Initial Release.	J. Brunett
r1	March 2, 2020	Include band edge data.	J. Brunett

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1 Test Report Scope and Limitations

1.1 Laboratory Authorization

Test Facility description and attenuation characteristics are on file with the FCC Laboratory, Columbia, Maryland (FCC Reg. No: US5348 and US5356) and with ISED Canada, Ottawa, ON (File Ref. No: 3161A and 24249).

1.2 Report Retention

For equipment verified to comply with the regulations herein, the manufacturer is obliged to retain this report with the product records for the life of the product, and no less than ten years. A copy of this Report will remain on file with this laboratory until March 2030.

1.3 Subcontracted Testing

This report does not contain data produced under subcontract.

1.4 Limitation of Results

The test results contained in this report relate only to the item(s) tested. Any electrical or mechanical modification made to the test item subsequent to the test date shall invalidate the data presented in this report. Any electrical or mechanical modification made to the test item subsequent to this test date shall require reevaluation.

1.5 Copyright

This report shall not be reproduced, except in full, without the written approval of Amber Helm Development L.C.

1.6 Endorsements

This report shall not be used to claim product endorsement by any accrediting, regulatory, or governmental agency.

1.7 Test Location

The EUT was fully tested by **Amber Helm Development L.C.**, headquartered at 92723 Michigan Hwy-152, Sister Lakes, Michigan 49047 USA. Table 1 lists all sites employed herein. Specific test sites utilized are also listed in the test results sections of this report where needed.

Table 1: Test Site List.

Description	Location	Quality Num.
OATS (3 meter)	3615 E Grand River Rd., Williamston, Michigan 48895	OATSC

1.8 Traceability and Equipment Used

Pertinent test equipment used for measurements at this facility is listed in Table 2. The quality system employed at Amber Helm Development L.C. has been established to ensure all equipment has a clearly identifiable classification, calibration expiry date, and that all calibrations are traceable to the SI through NIST, other recognized national laboratories, accepted fundamental or natural physical constants, ratio type of calibration, or by comparison to consensus standards.

Table 2: Equipment List.

Description	Manufacturer/Model	SN	Quality Num.	Cal/Ver By / Date Due
Biconical	EMCO / 93110B	9802-3039	BICEMCO01	Keysight / Aug-2020
Log Periodic Antenna	EMCO / 3146	9305-3614	LOGEMCO01	Keysight / Aug-2020
BNC-BNC Coax	WRTL / RG58/U	001	CAB001-BLACK	AHD / Jul-2020
3.5-3.5MM Coax	PhaseFlex / PhaseFlex	001	CAB015-PURP	AHD / Jul-2020
Spectrum Analyzer	R & S / FSV30	101660	RSFSV30001	RS / Apr-2021
Spectrum Analyzer	R & S / FPC1000	101060	RSFPC1K01	RS / Jan-2021
Quad Ridge Horn	Singer / A6100	C35200	HQR1TO18S01	Keysight / Aug-2020

2 Test Specifications and Procedures

2.1 Test Specification and General Procedures

The goal of Continental Automotive is to demonstrate that the Equipment Under Test (EUT) complies with the Rules and/or Directives below. Detailed in this report are the results of testing the Continental Automotive A3C054339 Series for compliance to:

Country/Region	Rules or Directive	Referenced Section(s)
United States	Code of Federal Regulations	CFR Title 47, Part 15.249
Canada	ISED Canada	IC RSS-210v10/GENv5

It has been determined that the equipment under test is subject to the rules and directives above at the date of this testing. In conjunction with these rules and directives, the following specifications and procedures are followed herein to demonstrate compliance (in whole or in part) with these regulations.

ANSI C63.4:2014	"Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz"
ANSI C63.10:2013	"American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices"
TP0102RA	"AHD Internal Document TP0102 - Radiated Emissions Test Procedure"
TP0106RC	"AHD Internal Document TP0106 - Emissions Measurement Procedures (above 40 GHz)"
ISED Canada	"The Measurement of Occupied Bandwidth"

3 Configuration and Identification of the Equipment Under Test

3.1 Description and Declarations

The equipment under test is a Remote Keyless Entry transmitter. The EUT is approximately 8 x 4 x 1.5 cm in dimension, and is depicted in Figure 1. It is powered by 3 VDC Lithium cell battery. In use, this device is a transmitter intended for remote control of automobile door locks, trunk, and remote start functionality. Table 3 outlines provider declared EUT specifications.



Figure 1: Photos of EUT.

Table 3: EUT Declarations.

General Declarations	
Equipment Type:	RKE Transceiver
Country of Origin:	USA
Nominal Supply:	3 VDC
Oper. Temp Range:	-40°C to +85°C
Frequency Range:	902.375, 903.425 MHz
Antenna Dimension:	Not Declared
Antenna Type:	PCB Trace
Antenna Gain:	Integral
Number of Channels:	2
Channel Spacing:	N/A
Alignment Range:	Not Declared
Type of Modulation:	FSK
United States	
FCC ID Number:	M3N-A3C054339
Classification:	DXX
Canada	
IC Number:	7812A-A3C054339
Classification:	Remote Control Device, Vehicular Device

3.1.1 EUT Configuration

The EUT is configured for testing as depicted in Figure 2.

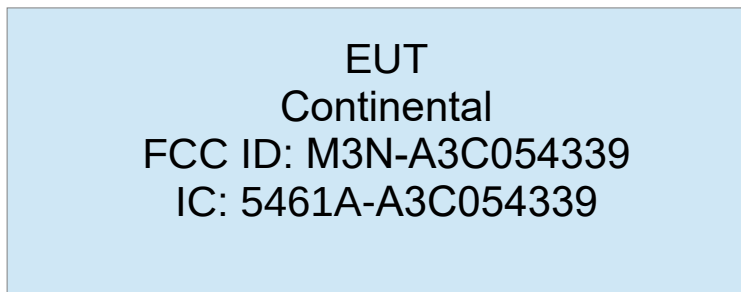


Figure 2: EUT Test Configuration Diagram.

3.1.2 Modes of Operation

This EUT is capable of transmitting on two channels in this frequency band when a button is pressed. The EUT is also capable of transmitting at 314.95 MHz via automatic activation, but those transmissions are addressed in a separate report. The EUT is herein tested with and without its removable key.

3.1.3 Variants

There are eleven (11) minor housing variants of the EUT. All variants employ identical PCBs and circuitry, but the housings vary based on vehicle logo and the number of buttons populated on the housing. The two worst case variants were determined in pretesting, those being the 4-BTN chrome button variant (HVIN: A3C053034) and the 5-BTN chrome button variant (HVIN: A3C055107).

3.1.4 Test Samples

Eight samples of the EUT were provided, including one normal operating samples of each worst case button variant, as well as three samples of each of those same button variants with CW software.

3.1.5 Functional Exerciser

Normal operating EUT functionality was verified by observation of transmitted signal.

3.1.6 Modifications Made

There were no modifications made to the EUT by this laboratory, however pretesting was performed after which the manufacturer selected the final power settings for the device.

3.1.7 Production Intent

The EUT appears to be a production ready sample.

3.1.8 Declared Exemptions and Additional Product Notes

The manufacturer will follow SDoC procedures for confirming compliance of the dual channel 902.375, 903.425 MHz receiver portion of the EUT. Section 2.1077(a) information will be provided.

4 Emissions

4.1 General Test Procedures

4.1.1 Radiated Test Setup and Procedures

Radiated electromagnetic emissions from the EUT are first pre-scanned in our screen room. Spectrum and modulation characteristics of all emissions are recorded. Instrumentation, including spectrum analyzers and other test equipment as detailed in Section 1.7 are employed. After pre-scan, emission measurements are made on the test site of record. If the EUT connects to auxiliary equipment and is table or floor standing, the configurations prescribed in relevant test standards are followed. Alternatively, a layout closest to normal use (as declared by the provider) is employed if the resulting emissions appear to be worst-case in such a configuration. See Figure 3. All intentionally radiating elements that are not fixed-mounted in use are placed on the test table lying flat, on their side, and on their end (3-axes) and the resulting worst case emissions are recorded. If the EUT is fixed-mounted in use, measurements are made with the device oriented in the manner consistent with installation and then emissions are recorded. If the EUT exhibits spurious emissions due to internal receiver circuitry, such emissions are measured with an appropriate carrier signal applied.

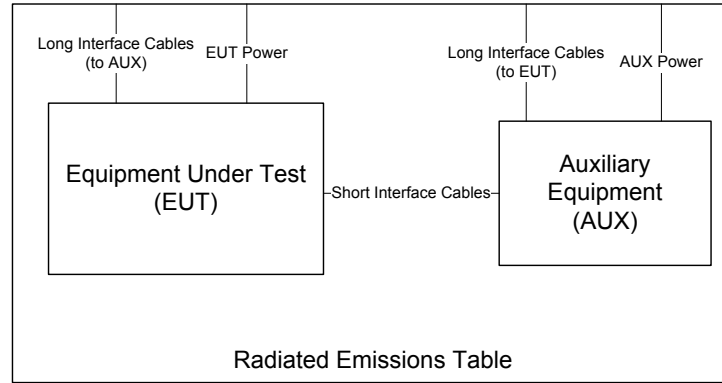


Figure 3: Radiated Emissions Diagram of the EUT.

For devices with intentional emissions below 30 MHz, a shielded loop antenna and/or E-field and H-Field broadband probes are used depending on the regulations. Shielded loops are placed at a 1 meter receive height at the desired measurement distance. For exposure in this band, the broadband probes employed are 10cm diameter single-axis shielded transducers and measurements are repeated and summed over three axes.

Emissions between 30 MHz and 1 GHz are measured using calibrated broadband antennas. For both horizontal and vertical polarizations, the test antenna is raised and lowered from 1 to 4 m in height until a maximum emission level is detected. The EUT is then rotated through 360° in azimuth until the highest emission is detected. The test antenna is then raised and lowered one last time from 1 to 4 m and the worst case value is recorded. Emissions above 1 GHz are characterized using standard gain or broadband ridge-horn antennas on our OATS with a 4×5 m rectangle of ECCOSORB absorber covering the OATS ground screen and a 1.5m table height. Care is taken to ensure that test receiver resolution and video bandwidths meet the regulatory requirements, and that the emission bandwidth of the EUT is not reduced. Photographs of the test setup employed are depicted in Figure 4.

Where regulations allow for direct measurement of field strength, power values (dBm) measured on the test receiver / analyzer are converted to $\text{dB}\mu\text{V}/\text{m}$ at the regulatory distance, using

$$E_{dist} = 107 + P_R + K_A - K_G + K_E - C_F$$

where P_R is the power recorded on spectrum analyzer, in dBm, K_A is the test antenna factor in dB/m, K_G is the combined pre-amplifier gain and cable loss in dB, K_E is duty correction factor (when applicable) in dB, and C_F is a distance conversion (employed only if limits are specified at alternate distance) in dB. This field strength value is then compared with the regulatory limit. If effective isotropic radiated power (EIRP) is computed, it is computed as

$$\text{EIRP}(\text{dBm}) = E_{3m}(\text{dB}\mu\text{V}/\text{m}) - 95.2.$$

When presenting data at each frequency, the highest measured emission under all possible EUT orientations (3-axes) is reported.

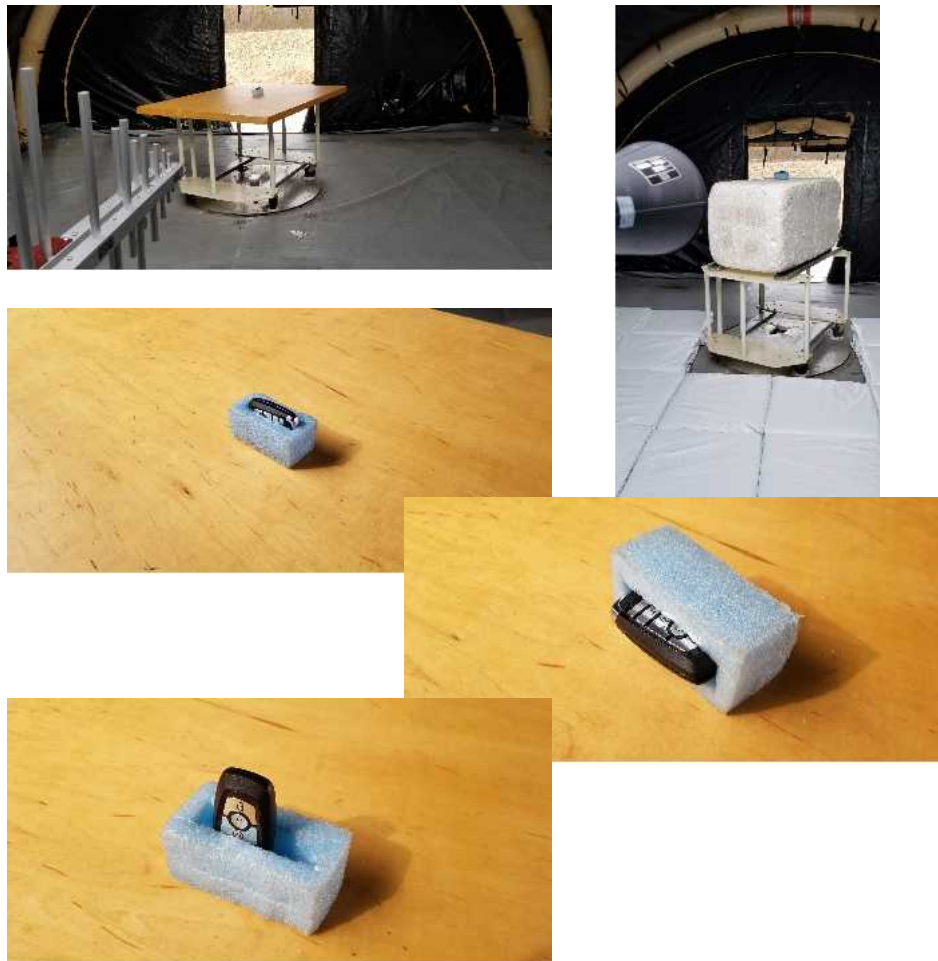


Figure 4: Radiated Emissions Test Setup Photograph(s).

4.1.2 Conducted Emissions Test Setup and Procedures

The EUT is not subject to measurement of power line conducted emissions as it is powered solely by its internal battery.

4.1.3 Power Supply Variation

Tests at extreme supply voltages are made if required by the procedures specified in the test standard, and results of this testing are detailed in this report.

In the case the EUT is designed for operation from a battery power source, the extreme test voltages are evaluated over the range specified in the test standard; no less than $\pm 10\%$ of the nominal battery voltage declared by the manufacturer. For all battery operated equipment, worst case intentional and spurious emissions are re-checked employing a new (fully charged) battery.

4.2 Intentional Emissions

4.2.1 Fundamental Emission Pulsed Operation

Test Setup & Procedure The test equipment and facilities were setup in accordance with the standards and procedures listed in Section 2.1. Environmental conditions were set at the appropriate temperature and thermal balance was checked with a thermocouple based probe. Duty cycle is reported for all relevant modes of operation. The test equipment employed includes RSFPC1K01, LOGEMCO01.

Measurement Results The details and results of testing the EUT are summarized in Table 4. Plots showing the measurements made to obtain these values are provided in Figure 5.

Table 4: Fundamental Emission Pulsed Operation.

Detector	Span	IF Bandwidth	Video Bandwidth	Test Date:	21-Feb-20
Pk	0	1 MHz	3 MHz	Test Engineer:	J. Brunett
				EUT:	Conti A3C054339 SERIES
				EUT Mode:	See below.
				Meas. Distance:	10 cm

FCC/IC										
R0	Test Freq. (MHz)	EUT Test Mode*	Overall Transmission			Internal Frame Characteristics			Computed Duty Cycle	
			Min. Repetition Rate (sec)	Max. No. of Frames	Total Transmission Length (sec)	Max. Frame Length (ms)	Min. Frame Period (ms)	Frame Encoding	(%)	(dB)
R1										
R2	NO DUTY CYCLE APPLIED									
R3										
#	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10



Figure 5: Fundamental Emission Pulsed Operation.

4.2.2 Fundamental Emission Bandwidth

Test Setup & Procedure The test equipment and facilities were setup in accordance with the standards and procedures listed in Section 2.1. Environmental conditions were set at the appropriate temperature and thermal balance was checked with a thermocouple based probe. Emission bandwidth (EBW) of the EUT is measured with the device placed in the test mode(s) with the shortest available frame length and minimum frame spacing. The 20 dB EBW is measured as the max-held peak-detected signal when the IF bandwidth is greater than or equal to 1% of the receiver span. For complex modulations other than ASK and FSK, the 99% emission bandwidth per IC test procedures has a different result, and is also reported. The test equipment employed includes RSFSV30001, LOGEMCO01.

Measurement Results The details and results of testing the EUT are summarized in Table 5. Plots showing the measurements made to obtain these values are provided in Figure 6.

Table 5: Fundamental Emission Bandwidth.

Detector	IF Bandwidth	Video Bandwidth	Test Date:	21-Feb-20
Pk	10 kHz	30 kHz	Test Engineer:	J. Brunett
			EUT:	Conti A3C054339 SERIES
			EUT Mode:	FSK Modulated
			Meas. Distance:	10 cm

FCC/IC							
R0	Mode	Center Frequency (MHz)	20 dB EBW (MHz)	EBW Limit (MHz)	99% OBW (MHz)		
R1	FSK	902.375	0.060		0.085		
R2	FSK	903.425	0.061		0.090		
R3							
#	C1	C2	C3	C4	C5	C7	C8

(ROW) (COLUMN) NOTE:

R0 C8

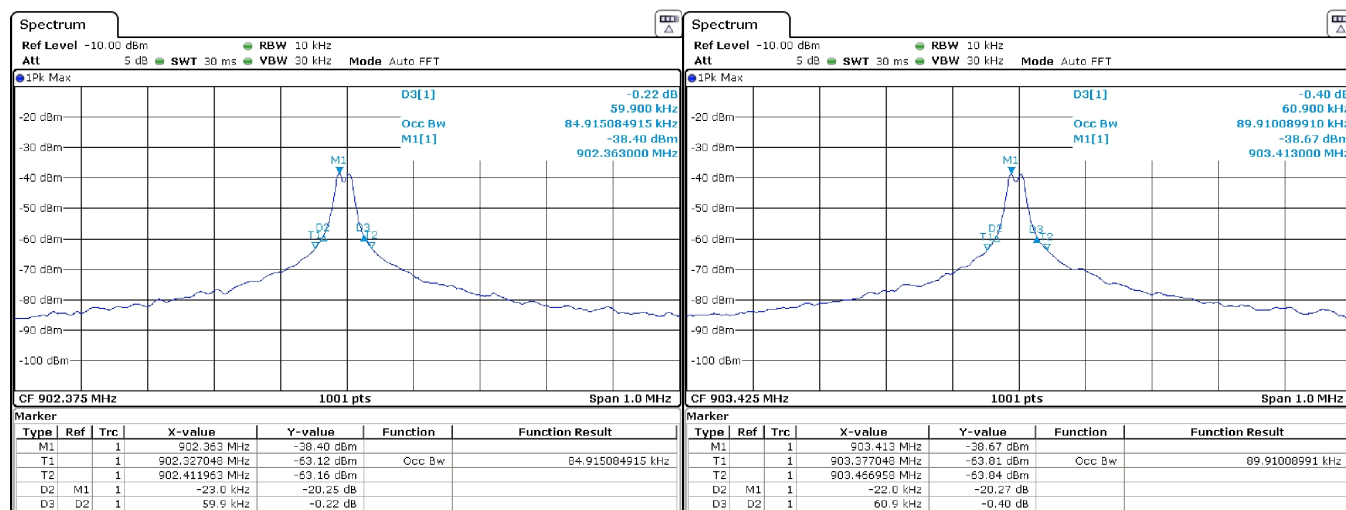


Figure 6: Fundamental Emission Bandwidth.

4.2.3 Fundamental Emission Field Strength

Test Setup & Procedure The test equipment and facilities were setup in accordance with the standards and procedures listed in Section 2.1. Environmental conditions were set at the appropriate temperature and thermal balance was checked with a thermocouple based probe. Fundamental emissions are measured at the regulatory distance on our OATS. The test equipment employed includes RSFSV30001, LOGEMCO01.

Measurement Results The details and results of testing the EUT are summarized in Table 6.

Table 6: Fundamental Emission Field Strength.

		EUT Modes:		a1	5BTN CHROME, CW, Key In																										
				a2	5BTN CHROME, CW, Key Out																										
Test Date(s):		02/10/20		a3	4BTN CHROME, CW, Key In																										
Test Engineer:		J. Brunett		a4	4BTN CHROME, CW, Key Out																										
R0	Frequency		Temp. (C) Hum.	Table Angle	Site			CF	EUT			Test Antenna				Cable Kg	Receiver				Field Strength @ DR				EIRP		Details				
	Start	Stop			MR	DR	N/F		Mode	Volt.	Dim	Pol.	Ant.	Dim.	Ka		Rx Power	Bandwidth	Meas.	Pk		Calc.	Qpk		Calc.						
	MHz	MHz			%	deg	m		see table	(V)	cm	H/V	m	cm	dB/m		dB	dBm		MHz	dBuV/m		Limit USA	CAN				Limit USA	CAN	dBm	dB
R1	SETUP				OATSC					A3C054339 SERIES	EMCOLOG						CAB001	RSFSV30001				NOTES: H-POL - FLAT, V-POL END Worst Case Orient									
R2	902.375	902.375	5 / 48	0.0	3.0	3.0		0.0	a1	3.0	8.0	H	1.0	100.0	22.6	-0.2			0.12	0.30	91.9	114.0	114.0	91.9	94.0	94.0	-3.3		2.1		
R3	902.375	902.375	5 / 48	90.0	3.0	3.0		0.0	a1	3.0	8.0	V	1.5	100.0	22.6	-0.2			0.12	0.30	92.1	114.0	114.0	92.1	94.0	94.0	-3.1		1.9		
R4	903.425	903.425	5 / 48	0.0	3.0	3.0		0.0	a1	3.0	8.0	H	1.0	100.0	22.6	-0.2			0.12	0.30	91.5	114.0	114.0	91.5	94.0	94.0	-3.7		2.5		
R5	903.425	903.425	5 / 48	90.0	3.0	3.0		0.0	a1	3.0	8.0	V	1.5	100.0	22.6	-0.2			0.12	0.30	92.4	114.0	114.0	92.4	94.0	94.0	-2.8		1.6		
R6	SETUP				OATSC					A3C054339 SERIES	EMCOLOG						CAB001	RSFSV30001				NOTES: H-POL - FLAT, V-POL END Worst Case Orient									
R7	902.375	902.375	5 / 48	0.0	3.0	3.0		0.0	a2	3.0	8.0	H	1.0	100.0	22.6	-0.2			0.12	0.30	85.2	114.0	114.0	85.2	94.0	94.0	-10.0		8.8		
R8	902.375	902.375	5 / 48	90.0	3.0	3.0		0.0	a2	3.0	8.0	V	1.5	100.0	22.6	-0.2			0.12	0.30	85.4	114.0	114.0	85.4	94.0	94.0	-9.8		8.6		
R9	903.425	903.425	5 / 48	0.0	3.0	3.0		0.0	a2	3.0	8.0	H	1.0	100.0	22.6	-0.2			0.12	0.30	84.8	114.0	114.0	84.8	94.0	94.0	-10.4		9.2		
R10	903.425	903.425	5 / 48	90.0	3.0	3.0		0.0	a2	3.0	8.0	V	1.5	100.0	22.6	-0.2			0.12	0.30	85.7	114.0	114.0	85.7	94.0	94.0	-9.5		8.3		
R11	SETUP				OATSC					A3C054339 SERIES	EMCOLOG						CAB001	RSFSV30001				NOTES: H-POL - FLAT, V-POL END Worst Case Orient									
R12	902.375	902.375	5 / 48	0.0	3.0	3.0		0.0	a3	3.0	8.0	H	1.0	100.0	22.6	-0.2			0.12	0.30	91.3	114.0	114.0	91.3	94.0	94.0	-3.9		2.7		
R13	902.375	902.375	5 / 48	90.0	3.0	3.0		0.0	a3	3.0	8.0	V	1.5	100.0	22.6	-0.2			0.12	0.30	91.8	114.0	114.0	91.8	94.0	94.0	-3.4		2.2		
R14	903.425	903.425	5 / 48	0.0	3.0	3.0		0.0	a3	3.0	8.0	H	1.0	100.0	22.6	-0.2			0.12	0.30	90.1	114.0	114.0	90.1	94.0	94.0	-5.1		3.9		
R12	903.425	903.425	5 / 48	90.0	3.0	3.0		0.0	a3	3.0	8.0	V	1.5	100.0	22.6	-0.2			0.12	0.30	90.6	114.0	114.0	90.6	94.0	94.0	-4.6		3.4		
R13	SETUP				OATSC					A3C054339 SERIES	EMCOLOG						CAB001	RSFSV30001				NOTES: H-POL - FLAT, V-POL END Worst Case Orient									
R14	902.375	902.375	5 / 48	0.0	3.0	3.0		0.0	a4	3.0	8.0	H	1.0	100.0	22.6	-0.2			0.12	0.30	86.5	114.0	114.0	86.5	94.0	94.0	-8.7		7.5		
R15	902.375	902.375	5 / 48	90.0	3.0	3.0		0.0	a4	3.0	8.0	V	1.5	100.0	22.6	-0.2			0.12	0.30	87.0	114.0	114.0	87.0	94.0	94.0	-8.2		7.0		
R16	903.425	903.425	5 / 48	0.0	3.0	3.0		0.0	a4	3.0	8.0	H	1.0	100.0	22.6	-0.2			0.12	0.30	85.3	114.0	114.0	85.3	94.0	94.0	-9.9		8.7		
R17	903.425	903.425	5 / 48	90.0	3.0	3.0		0.0	a4	3.0	8.0	V	1.5	100.0	22.6	-0.2			0.12	0.30	85.8	114.0	114.0	85.8	94.0	94.0	-9.4		8.2		
R18																															
R19																															
#	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29		
(ROW)		(COLUMN)		NOTE:																											
R0		C5		MR is Measurement Range, which is reduced from DR to achieve necessary SNR.																											
R0		C6		DR is the regulatory Desired Range measurement distance.																											
R0		C7		N/F is Near-Field / Far-Field distance computed for max of EUT Antenna Dimension (C10) computed above 1 GHz.																											
R0		C8		CF is computed using a 20 dB/decade Decay Rate.																											
R0		C18/19		When E-field or EIRP is reported directly from Spectrum Analyzer, Antenna Factors and Cable losses are included directly in SA settings and Pr is not reported.																											

4.3 Unintentional Emissions

4.3.1 Transmit Chain Spurious Emissions

Test Setup & Procedure The test equipment and facilities were setup in accordance with the standards and procedures listed in Section 2.1. Environmental conditions were set at the appropriate temperature and thermal balance was checked with a thermocouple based probe. Spurious radiated emissions measurements are performed to 10 times the highest fundamental operating frequency. The test equipment employed includes RSFSV30001, LOGEMCO01, HQR1TO18S01.

Measurement Results The details and results of testing the EUT are summarized in Table 7.

Table 7: Transmit Chain Spurious Emissions.

EUT Modes: a1 5BTN CHROME, CW, Key In (WORST CASE HARM EMM) a5 Normal Operating (FSK Button Press)																													
Test Date(s): 02/11/20 Test Engineer: J. Brunett																													
R0	Frequency		Temp. (C) Hum. %	Table Angle deg	Site			CF	EUT			Test Antenna				Cable Kg dB	Receiver				Field Strength @ DR				EIRP		Details Pass Fail dB		
	Start	Stop			MR	DR	N/F		Mode	Volt.	Dim	Pol.	Ant. Height	Dim.	Ka		Rx Power	Bandwidth	Pk		QPk (<1GHz), Avg		Calc.	Limit	Calc.	Limit			
	MHz	MHz							see table	(V)	cm	H/V	m	cm	dB/m		Pk	Avg	RBW	VBW	Meas.	Limit USA CAN	Calc. dBuV/m	Limit USA CAN	Calc. dBm	Limit dBm			
	MHz	MHz																											
R1	SETUP				OATSC				A3C054339 SERIES			EMCOLOG				CAB001	RSFSV30001				NOTES: H-POL - FLAT, V-POL END Worst Case Orient								
R2	902.0	902.0	5 / 48	0.0	3.0	3.0		0.0	a5	3.0	8.0	H	1.0	100.0	22.6	-0.2			0.12	0.30				43.4	46.0	46.0		2.6	
R3	902.0	902.0	5 / 48	90.0	3.0	3.0		0.0	a5	3.0	8.0	V	1.5	100.0	22.6	-0.2			0.12	0.30				43.6	46.0	46.0		2.4	
R4	928.0	928.0	5 / 48	0.0	3.0	3.0		0.0	a5	3.0	8.0	H	1.0	100.0	22.9	-0.2			0.12	0.30				27.3	46.0	46.0		18.7	
R5	928.0	928.0	5 / 48	90.0	3.0	3.0		0.0	a5	3.0	8.0	V	1.5	100.0	22.9	-0.2			0.12	0.30				27.5	46.0	46.0		18.5	
R6																													
R7	SETUP				OATSC				A3C054339 SERIES			HRNSINGQR				CAB015	RSFSV30001				NOTES: max all orientations of EUT, CH1								
R8	1804.8	1804.8	6 / 55	all	3.0	3.0	0.3	0.0	a1	3.0	4.0	H/V	all	15.0	27.2	-3.5			1.00	3.00	34.2	74.0	74.0	34.2	54.0	54.0	-61.0		19.8
R9	2707.1	2707.1	6 / 55	all	3.0	3.0	0.4	0.0	a1	3.0	8.0	H/V	all	15.0	31.3	-4.6			1.00	3.00	48.0	74.0	74.0	48.0	54.0	54.0	-47.2		6.0
R10	3609.5	3609.5	6 / 55	all	3.0	3.0	0.5	0.0	a1	3.0	8.0	H/V	all	15.0	31.9	-5.6			1.00	3.00	35.5	74.0	74.0	35.5	54.0	54.0	-59.7		18.5
R11	4511.9	4511.9	6 / 55	all	3.0	3.0	0.7	0.0	a1	3.0	8.0	H/V	all	15.0	32.0	-6.5			1.00	3.00	43.9	74.0	74.0	43.9	54.0	54.0	-51.3		10.1
R12	5414.3	5414.3	6 / 55	all	3.0	3.0	0.8	0.0	a1	3.0	8.0	H/V	all	15.0	32.5	-7.4			1.00	3.00	38.8	74.0	74.0	38.8	54.0	54.0	-56.4		15.2
R13	6316.6	6316.6	6 / 55	all	3.0	3.0	0.9	0.0	a1	3.0	8.0	H/V	all	15.0	32.7	-8.2			1.00	3.00	41.0	74.0	74.0	41.0	54.0	54.0	-54.2		13.0
R14	7219.0	7219.0	6 / 55	all	3.0	3.0	1.1	0.0	a1	3.0	8.0	H/V	all	15.0	33.3	-9.0			1.00	3.00	41.7	74.0	74.0	41.7	54.0	54.0	-53.5		12.3
R15	8121.4	8121.4	6 / 55	all	3.0	3.0	1.2	0.0	a1	3.0	8.0	H/V	all	15.0	34.1	-9.8			1.00	3.00	40.9	74.0	74.0	40.9	54.0	54.0	-54.3		13.1
R16	9023.8	9023.8	6 / 55	all	3.0	3.0	1.4	0.0	a1	4.0	8.0	H/V	all	15.0	34.8	-10.4			1.00	3.00	37.9	74.0	74.0	37.9	54.0	54.0	-57.3		16.1
R17																													
R18	SETUP				OATSC				A3C054339 SERIES			HRNSINGQR				CAB015	RSFSV30001				NOTES: max all orientations of EUT, CH2								
R19	1806.9	1806.9	6 / 55	all	3.0	3.0	0.3	0.0	a1	3.0	4.0	H/V	all	15.0	27.2	-3.5			1.00	3.00	35.2	74.0	74.0	35.2	54.0	54.0	-60.0		18.8
R20	2710.3	2710.3	6 / 55	all	3.0	3.0	0.4	0.0	a1	3.0	8.0	H/V	all	15.0	31.4	-4.6			1.00	3.00	46.0	74.0	74.0	46.0	54.0	54.0	-49.2		8.0
R21	3613.7	3613.7	6 / 55	all	3.0	3.0	0.5	0.0	a1	3.0	8.0	H/V	all	15.0	31.9	-5.6			1.00	3.00	35.5	74.0	74.0	35.5	54.0	54.0	-59.7		18.5
R22	4517.1	4517.1	6 / 55	all	3.0	3.0	0.7	0.0	a1	3.0	8.0	H/V	all	15.0	32.0	-6.5			1.00	3.00	45.6	74.0	74.0	45.6	54.0	54.0	-49.6		8.4
R23	5420.6	5420.6	6 / 55	all	3.0	3.0	0.8	0.0	a1	3.0	8.0	H/V	all	15.0	32.5	-7.4			1.00	3.00	39.2	74.0	74.0	39.2	54.0	54.0	-56.0		14.8
R24	6324.0	6324.0	6 / 55	all	3.0	3.0	0.9	0.0	a1	3.0	8.0	H/V	all	15.0	32.7	-8.2			1.00	3.00	40.3	74.0	74.0	40.3	54.0	54.0	-54.9		13.7
R25	7227.4	7227.4	6 / 55	all	3.0	3.0	1.1	0.0	a1	3.0	8.0	H/V	all	15.0	33.3	-9.0			1.00	3.00	41.0	74.0	74.0	41.0	54.0	54.0	-54.2		13.0
R26	8130.8	8130.8	6 / 55	all	3.0	3.0	1.2	0.0	a1	3.0	8.0	H/V	all	15.0	34.1	-9.8			1.00	3.00	41.1	74.0	74.0	41.1	54.0	54.0	-54.1		12.9
R27	9034.3	9034.3	6 / 55	all	3.0	3.0	1.4	0.0	a1	4.0	8.0	H/V	all	15.0	34.8	-10.5			1.00	3.00	39.2	74.0	74.0	39.2	54.0	54.0	-56.0		14.8
R28																													
#	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29

(ROW) (COLUMN)

NOTE:

R0 C5 MR is Measurement Range, which is reduced from DR to achieve necessary SNR.

R0 C6 DR is the regulatory Desired Range measurement distance.

R0 C7 N/F is Near-Field / Far-Field distance computed for max of EUT Antenna Dimension (C10) computed above 1 GHz.

R0 C8 CF is computed using a 20 dB/decade Decay Rate.

R0 C18/19 When E-field or EIRP is reported directly from Spectrum Analyzer, Antenna Factors and Cable losses are included directly in SA settings and Pr is not reported.

4.3.2 Radiated Digital Spurious

The results for the measurement of digital spurious emissions are not reported herein as all digital emissions were greater than 20 dB below the regulatory limit. Radiation from digital components was measured to 4 GHz, or to five times the maximum digital component operating frequency, whichever is greater.

5 Measurement Uncertainty and Accreditation Documents

The maximum values of measurement uncertainty for the laboratory test equipment and facilities associated with each test are given in the table below. This uncertainty is computed for a 95.45% confidence level based on a coverage factor of $k = 2$.

Table 8: Measurement Uncertainty.

Measured Parameter	Measurement Uncertainty [†]
Radio Frequency	$\pm(f_{Mkr}/10^7 + RBW/10 + (SPN/(PTS - 1))/2 + 1 \text{ Hz})$
Conducted Emm. Amplitude	$\pm 1.9 \text{ dB}$
Radiated Emm. Amplitude (30 – 200 MHz)	$\pm 4.0 \text{ dB}$
Radiated Emm. Amplitude (200 – 1000 MHz)	$\pm 5.2 \text{ dB}$
Radiated Emm. Amplitude ($f > 1000 \text{ MHz}$)	$\pm 3.7 \text{ dB}$

[†]Ref: CISPR 16-4-2:2011+A1:2014

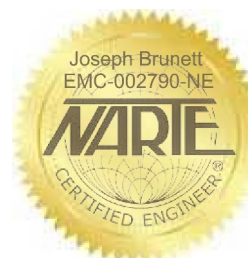


Figure 7: Accreditation Documents