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Testing of

Electromagnetic Emissions

per

USA:	**CFR Title 47, Part 15.231**	(Emissions)
USA:	**CFR Title 47, Part 2.1091;2.1093**	(Exposure)
Canada:	**ISED RSS-210/GENe**	(Emissions)
Canada:	**ISED RSS-102**	(Exposure)

are herein reported for

Strattec Security Corporation
OHT1130261

Test Report No.: 20170523-RPTWAC010047Ar0
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Applicant/Provider:
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Data Recorded by: Dr. Joseph Brunett, EMC-002790-NE

Reviewed by: Dr. Joseph Brunett, EMC-002790-NE

Prepared by: Dr. Joseph Brunett, EMC-002790-NE

Date of Issue: May 23, 2017

Results of testing completed on (or before) May 15, 2017 are as follows.

Emissions: The transmitter intentional emissions **COMPLY** with the regulatory limit(s) by no less than 4.0 dB. Transmit chain spurious or harmonic emissions **COMPLY** by no less than 22.8 dB. Unintentional spurious emissions from digital circuitry **COMPLY** with radiated emission limit(s) by at least 20 dB.

Revision History

Rev. No.	Date	Details	Revised By
r0	May 23, 2017	Initial Release.	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: 688478) and with ISED Canada, Ottawa, ON (File Ref. No: IC8719A-1 and IC22227-1).

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 May 2027.

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 Willow Run (WR) Test Labs, Inc..

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 **Willow Run (WR) Test Labs, Inc.**, 7117 Fieldcrest Dr., Brighton, Michigan 48116 USA. Table 1 lists all sites employed herein. Specific test sites utilized are also listed in the test results sections of this report.

Table 1: Test Site List.

Description	Location	Quality Num.
OATS (3 meter)	8501 Beck Rd. Bldg 2227, Belleville MI 48111	OATSA

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 Willow Run (WR) Test Labs, Inc. 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.	Last Cal By / Date Due
Spectrum Analyzer	Rohde & Schwarz / FSV30	101660	RSFSV30001	RS / May-2018
Biconical	EMCO / 93110B	9802-3039	BICEMCO01	Lib. Labs / Aug-2017
Log Periodic Antenna	EMCO / 3146	9305-3614	LOGEMCO01	Lib. Labs / Aug-2017
Quad Ridge Horn	ETS Lind. / 3164-04	00066988	HRNQR316401	Lib. Labs / Aug-2017

2 Test Specifications and Procedures

2.1 Test Specification and General Procedures

The ultimate goal of Strattec Security Corporation 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 Strattec Security Corporation OHT1130261 for compliance to:

Country/Region	**Rules or Directive**	**Referenced Section(s)**
United States	Code of Federal Regulations	CFR Title 47, Part 15.231
Canada	ISED Canada	ISED RSS-210/GENe

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 (USA)	"American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices"
CFR 47 2.1091/1093	"447498 D01 General RF Exposure Guidance v06: RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices"
ISED Canada	"The Measurement of Occupied Bandwidth"
ICES-003; Issue 6 (2016)	"Information Technology Equipment (ITE) Limits and methods of measurement"
ISED Canada RSS-102	"Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)"
ISED Canada SPR-002	"Supplementary Procedure for Assessing Compliance with RSS-102 Nerve Stimulation Exposure Limits."

3 Configuration and Identification of the Equipment Under Test

3.1 Description and Declarations

The equipment under test is an automotive Remote Keyless Entry transmitter. The EUT is approximately 8 x 5 x 1 cm (approx) in dimension, and is depicted in Figure 1. It is powered by 3 VDC Lithium cell battery. In use, this device is hand held. Table 3 outlines provider declared EUT specifications.

Figure 1: Photos of EUT.

Table 3: EUT Declarations.

General Declarations			
Equipment Type:	RKE Transmitter	**Country of Origin:**	Not Declared
Nominal Supply:	3 VDC	**Oper. Temp Range:**	Not Declared
Frequency Range:	433.92 MHz	**Antenna Dimension:**	Not Declared
Antenna Type:	Integral	**Antenna Gain:**	Not Declared
Number of Channels:	1	**Channel Spacing:**	Not Applicable
Alignment Range:	Not Declared	**Type of Modulation:**	ASK and FSK
United States			
FCC ID Number:	OHT1130261	**Classification:**	DSC
Canada			
IC Number:	5461A-1130261	**Classification:**	Remote Control Device, Vehicular Device

3.1.1 EUT Configuration

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

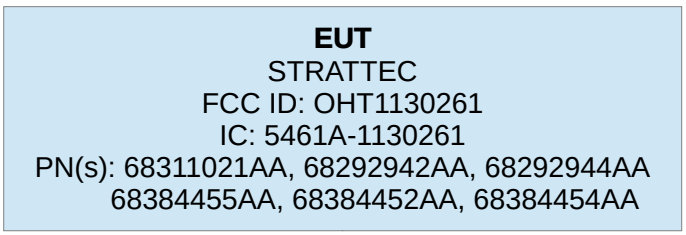


Figure 2: EUT Test Configuration Diagram.

3.1.2 Modes of Operation

There are two modes of operation. When manually activated by button press the EUT transmits a finite set of ASK frames. When manually activated by LF interrogation (i.e. when user lifts a door handle or presses a button on the vehicle which in turn causes a module in the vehicle to transmit encoded LF to the EUT) the EUT transmits a single FSK frame in response.

3.1.3 Variants

There are six variants of the EUT all employing the same PCB with different numbers of SMT switches populated on the PCB. For each set of button populations (zero, three, or four buttons) there are two Part Numbers associated with the product depending on their use as production or service parts.

3.1.4 Test Samples

Six samples in total were provided; one normal operating sample of each variant and one CW modified sample of each variant.

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.

3.1.7 Production Intent

The EUT appears to be a production ready sample.

3.1.8 Declared Exemptions and Additional Product Notes

None.

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 shielded anechoic chamber or GTEM test cell. 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.

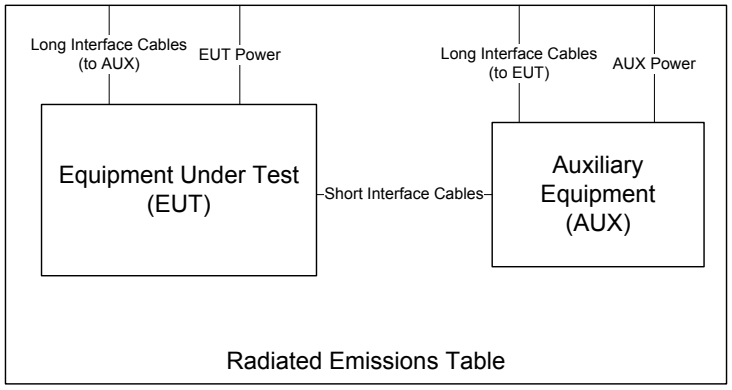


Figure 3: Radiated Emissions Diagram of the EUT.

If the EUT exhibits spurious emissions due to internal receiver circuitry, such emissions are measured with an appropriate carrier signal applied. For devices with intentional emissions below 30 MHz, a shielded loop antenna is used. It is placed at a 1 meter receive height. Emissions between 30 MHz and 1 GHz are measured using tuned dipoles and/or 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^o 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 horn or broadband ridge-horn antennas on our OATS with a 4×5 m rectangle of H-4 absorber placed over the ground screen covering the OATS ground screen. 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 dBμV/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

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

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

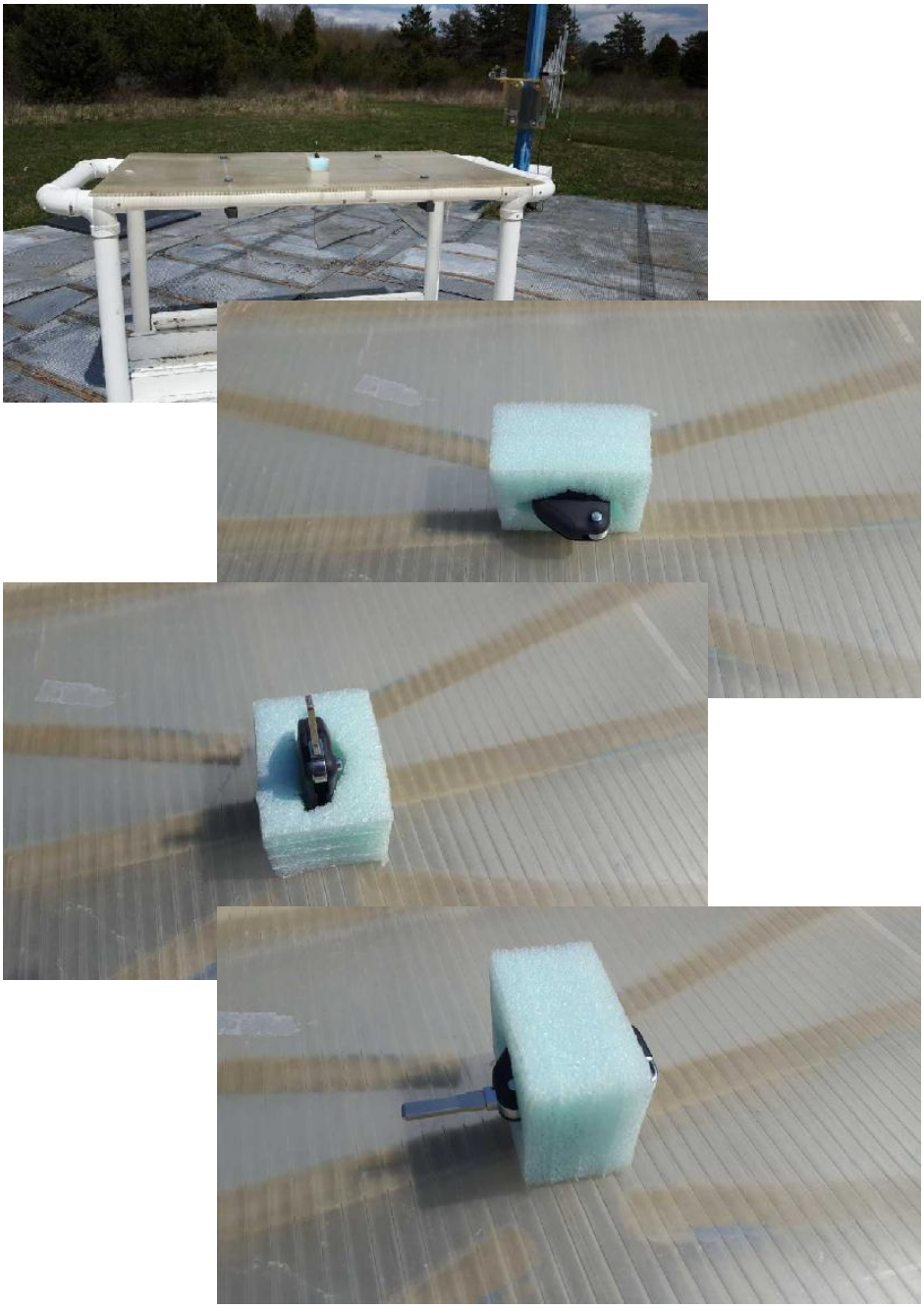


Figure 4: Radiated Emissions Test Setup Photograph(s).

4.1.2 Conducted Emissions Test Setup and Procedures

Battery Power Conducted Spurious 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 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 ±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.

4.1.4 Thermal Variation

Tests at extreme temperatures were not performed for this device.

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 RSFSV30001, 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
Pk	0	1 MHz	3 MHz

Test Date:	23-Apr-17
Test Engineer:	Joseph Brunett
EUT:	Strattec JLR
EUT Mode:	Modulated
Meas. Distance:	10 cm

FCC/IC

R0		Overall Transmission			Internal Frame Characteristics			Computed Duty Cycle	
	EUT Test Mode*	Min. Repetition Rate (sec)	Max. No. of Frames	Total Transmission Length (sec)	Max. Frame Length (ms)	Min. Frame Period (ms)	Frame Encoding	(%)	(dB)
R1	Manual Button Press (subfigure (a))	Single	5	0.56	56.4	124.8	When manually actuated single button press the EUT transmits five ASK frames. The worst case ASK frame is 56.4 ms in duration and consists of one 4.2ms wake pulse followed by 46.5 ms of 50% duty Manchester encoding.	27.5	-11.2
R2	Manual LF Activated (subfigure (b))	Single	1	0.0119	11.9	-	When activated by an LF encoded transmission (from user manual action), a single FSK frame of 11.9 ms in duration is transmitted.	11.88	-18.5
#	C1	C2	C3	C4	C5	C6	C7	C8	C9

Example Calculation: Worst Case Duty (%) =(4.2 ms + 46.5ms x 50% duty) / 100 ms = 27.5 % on-time.
Equipment Used: LOGEMCO1, RSFSV30001

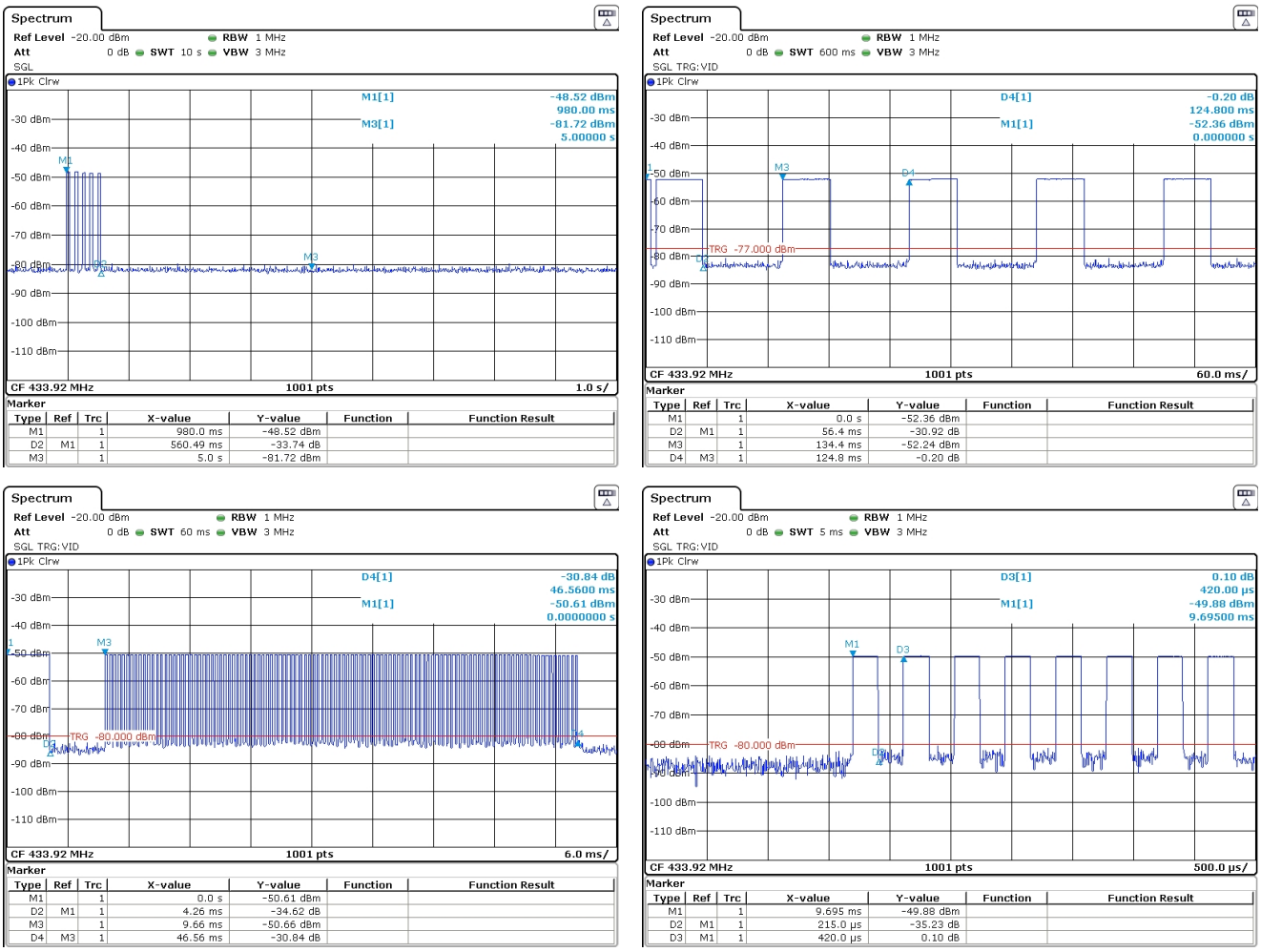


Figure 5(a): Fundamental Emission Pulsed Operation.

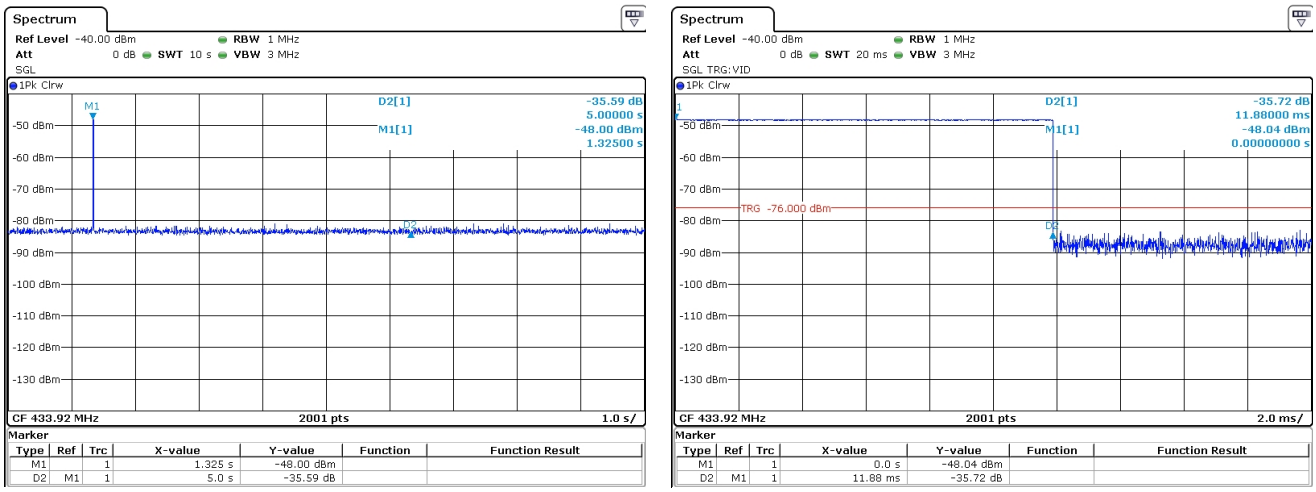


Figure 5(b): Fundamental Emission Pulsed Operation.

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.

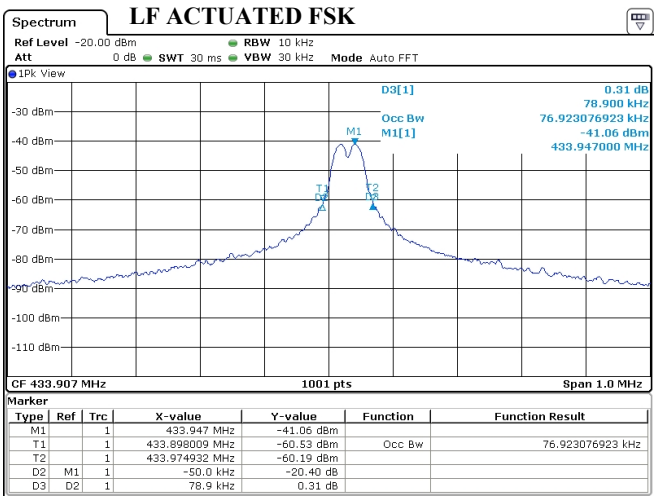
Measurement Results The details and results of testing the EUT are summarized in Table 5. Plots showing the measurements made to obtain these values are provided in Figure 6.

Table 5: Fundamental Emission Bandwidth.

Detector	IF Bandwidth	Video Bandwidth
Pk	10 kHz	30 kHz

Test Date:	23-Apr-17
Test Engineer:	Joseph Brunett
EUT:	Strattec JLR
EUT Mode:	Modulated
Meas. Distance:	10 cm

							FCC/IC
R0	Modulation	Center Frequency (MHz)	20 dB EBW (MHz)	EBW Limit (MHz)	99% OBW (MHz)		
R1	ASK	433.937	0.0569	1.085	0.147		
R2	FSK	433.920	0.0789	1.085	0.077		
#	C1	C2	C3	C4	C5	C6	C7



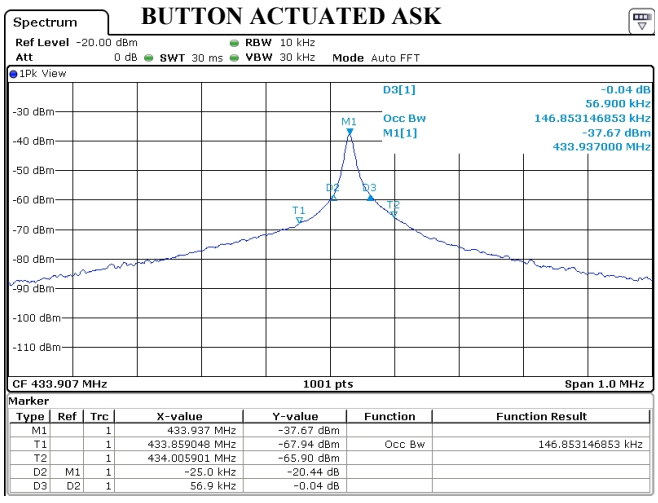


Figure 6: Fundamental Emission Bandwidth.

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 CW
a2
Test Date: 04/24/17 a3
Test Engineer: Joseph Brunett a4

	Frequency		Site					EUT			Test Antenna			Cable	Receiver				Field Strength @ DR						EIRP		Details
	Start	Stop	Temp.	MR	DR	N/F	CF				Pol.	Dim.	Ka	Kg	Rx Power		Bandwidth		Pk			Avg					
R0								Mode see table	Volt.	Dim					Pk	Avg	RBW	VBW	Meas.	Limit USA	Limit CAN	Meas.	Limit USA	Limit CAN	Calc.	Limit	Pass Fail
	MHz	MHz	(C)	m			dB		(V)	cm	H/V	cm	dB/m	dB	dBuV/m		MHz		dBuV/m						dBm		dB
R1	SETUP		OATSB					4-BTN, KEY-IN			LOGEMCO101				RSFSV30001				NOTES: max all orientations of EUT								
R2	433.9	433.9	18	3.0	3.0		0.0	a1	3.1	8.0	H	100.0	16.3	23.7	-14.3		0.12	0.30	85.3	100.8	100.8	74.1	80.8	80.8	-9.9		6.7
R3	433.9	433.9	18	3.0	3.0		0.0	a1	3.1	8.0	V	100.0	16.3	23.7	-11.6		0.12	0.30	88.0	100.8	100.8	76.8	80.8	80.8	-7.2		**4.0**
R4																											
R5	433.9	433.9	18	3.0	3.0		0.0	a1	2.5	8.0	V	100.0	16.3	23.7	-13.2		0.12	0.30	86.4	100.8	100.8	75.2	80.8	80.8	-8.8		5.6
R6	433.9	433.9	18	3.0	3.0		0.0	a1	2.7	8.0	V	100.0	16.3	23.7	-12.9		0.12	0.30	86.7	100.8	100.8	75.5	80.8	80.8	-8.5		5.3
R7	433.9	433.9	18	3.0	3.0		0.0	a1	3.0	8.0	V	100.0	16.3	23.7	-11.6		0.12	0.30	88.0	100.8	100.8	76.8	80.8	80.8	-7.2		4.0
R8	433.9	433.9	18	3.0	3.0		0.0	a1	3.3	8.0	V	100.0	16.3	23.7	-11.4		0.12	0.30	88.2	100.8	100.8	77.0	80.8	80.8	-7.0		3.8
R9																											
R10	SETUP		OATSB					4-BTN, KEY-OUT			LOGEMCO101				RSFSV30001				NOTES: max all orientations of EUT								
R11	433.9	433.9	18	3.0	3.0		0.0	a1	3.1	8.0	V	100.0	16.3	23.7	-12.0		0.12	0.30	87.6	100.8	100.8	76.4	80.8	80.8	-7.6		4.4
R12	SETUP		OATSB					0-BTN, KEY-IN			LOGEMCO101				RSFSV30001				NOTES: max all orientations of EUT								
R13	433.9	433.9	18	3.0	3.0		0.0	a1	3.1	8.0	V	100.0	16.3	23.7	-11.9		0.12	0.30	87.7	100.8	100.8	76.5	80.8	80.8	-7.5		4.3
R14	SETUP		OATSB					0-BTN, KEY-OUT			LOGEMCO101				RSFSV30001				NOTES: max all orientations of EUT								
R15	433.9	433.9	18	3.0	3.0		0.0	a1	3.1	8.0	V	100.0	16.3	23.7	-12.0		0.12	0.30	87.6	100.8	100.8	76.4	80.8	80.8	-7.6		4.4
#	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

(ROW)	(COLUMN)	NOTE:
R0	C4	MR is Measurement Range, which is reduced from DR to achieve necessary SNR.
R0	C5	DR is the regulatory Desired Range measurement distance.
R0	C6	N/F is Near-Field / Far-Field distance computed for max of EUT Antenna Dimension (C10) and Test Antenna dimension (C12), where applicable.
R0	C7	CF is computed using a 20 dB/decade Decay Rate.
R0	C15	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.

4.2.4 Exposure and Potential Health Hazard

To demonstrate compliance with with regulations that place limitations on human electromagnetic field exposure for both the general public and for workers, we compute EIRP from measured emission data. These levels are compared with limits placed by the directives and recommendations detailed in Section 2.1. Table 7 details the results of these computations.

Table 7: Electromagnetic Field Exposure.

USA REF: 2.1091/1093, 447498 D01 General RF Exposure Guidance v06
IC REF: RSS-102 Issue 5
Min. Sep. Distance: <5mm

Test Date: 24-Apr-17
Test Engineer: Joseph Brunett
EUT: Strattec JLR
EUT Mode: CW
Meas. Distance: 3 meters

Freq. MHz	E3(Pk)* dBµV/m	Duty Factor dB	E3(Avg)** dBuV/m	EIRP(Avg)** dBm	EIRP(Avg)** mW
433.92	88.2	.0	88.2	-7.0	.2012285

Canada			USA		
Calculated SAR Threshold (Avg) mW	1-g SAR Body Power Threshold Exclusion Limit (Avg) mW	10-g SAR Extremity Power Threshold Exclusion Limit (Avg) mW	Calculated SAR Threshold (Avg)	1-g SAR Body Power Threshold Exclusion Limit (Avg)	10-g SAR Extremity Power Threshold Exclusion Limit (Avg)
.201	54.037	135.092	**.027**	3.0	7.5

*As Measured / Computed from highest fundamental emission, see fundamental emission section of this report.
**Only RMS level is required, RMS/6min << Pk, Peak emission employed to demonstrate compliance.

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, HRNQR316401.

Measurement Results The details and results of testing the EUT are summarized in Table 8.

Table 8: Transmit Chain Spurious Emissions.

EUT Modes: a1 CW
a2
Test Date: 04/24/17 a3
Test Engineer: Joseph Brunett a4

	Frequency		Site					EUT			Test Antenna			Cable	Receiver				Field Strength @ DR						EIRP		Details
	Start	Stop	Temp.	MR	DR	N/F	CF								Rx Power		Bandwidth		Pk			Avg					
R0								Mode see	Volt.	Dim	Pol.	Dim.	Ka	Kg	Pk	Avg	RBW	VBW	Meas.	Limit USA	Limit CAN	Meas.	Limit USA	Limit CAN	Calc.	Limit	Pass Fail
	MHz	MHz	(C)	m			dB	table	(V)	cm	H/V	cm	dB/m	dB	dBuV/m		MHz		dBuV/m						dBm		dB
R1	SETUP		OATSB					4-BTN, KEY-IN			LOGEMCO101				RSFSV30001				NOTES: max all orientations of EUT								
R2	867.8	867.8	18	3.0	3.0		0.0	a1	3.0	4.0	H	100.0	22.2	21.8	-67.7		0.12	0.30	39.7	80.8	80.8	28.5	60.8	60.8	-55.5		32.4
R3	867.8	867.8	18	3.0	3.0		0.0	a1	3.0	4.0	V	100.0	22.2	21.8	-72.4		0.12	0.30	35.0	80.8	80.8	23.8	60.8	60.8	-60.2		37.1
R4	SETUP		OATSB					4-BTN, KEY-IN			HRNQR316401				RSFSV30001				NOTES: max all orientations of EUT								
R5	1301.8	1301.8	18	3.0	3.0	0.4	0.0	a1	3.0	4.0	H/V	22.0	25.4	-0.2			1.00	3.00	30.9	80.8	80.8	19.7	60.8	60.8	-64.3		41.1
R6	1735.7	1735.7	18	3.0	3.0	0.6	0.0	a1	3.0	4.0	H/V	22.0	28.7	-0.2			1.00	3.00	33.3	80.8	80.8	22.1	60.8	60.8	-61.9		38.7
R7	2169.6	2169.6	18	3.0	3.0	0.7	0.0	a1	3.0	4.0	H/V	22.0	30.7	-0.3			1.00	3.00	35.0	80.8	80.8	23.8	60.8	60.8	-60.2		37.0
R8	2603.5	2603.5	18	3.0	3.0	0.8	0.0	a1	3.0	4.0	H/V	22.0	33.8	-0.3			1.00	3.00	39.7	80.8	80.8	28.5	60.8	60.8	-55.5		32.3
R9	3037.4	3037.4	18	3.0	3.0	1.0	0.0	a1	3.0	4.0	H/V	22.0	36.5	-0.3			1.00	3.00	43.3	80.8	80.8	32.1	60.8	60.8	-51.9		28.7
R10	3471.4	3471.4	18	3.0	3.0	1.1	0.0	a1	3.0	4.0	H/V	22.0	36.0	-0.4			1.00	3.00	42.5	80.8	80.8	31.3	60.8	60.8	-52.7		29.5
R11	3905.3	3905.3	18	3.0	3.0	1.3	0.0	a1	3.0	4.0	H/V	22.0	33.9	-0.4			1.00	3.00	41.6	80.8	74.0	30.4	60.8	54.0	-53.6		23.6
R12	4339.2	4339.2	18	4.0	4.0	1.5	0.0	a1	3.0	5.0	H/V	23.0	33.1	-0.4			1.00	4.00	42.4	80.8	74.0	31.2	60.8	54.0	-52.8		22.8
R13																											
R14	SETUP		OATSB					0-BTN, KEY-IN			LOGEMCO101				RSFSV30001				NOTES: max all orientations of EUT								
R15	867.8	867.8	18	3.0	3.0		0.0	a1	3.0	4.0	H	100.0	22.2	21.8	-69.2		0.12	0.30	38.2	80.8	80.8	27.0	60.8	60.8	-57.0		33.9
R16	867.8	867.8	18	3.0	3.0		0.0	a1	3.0	4.0	V	100.0	22.2	21.8	-71.0		0.12	0.30	36.4	80.8	80.8	25.2	60.8	60.8	-58.8		35.7
R17	SETUP		OATSB					0-BTN, KEY-IN			HRNQR316401				RSFSV30001				NOTES: max all orientations of EUT								
R18	1301.8	1301.8	18	3.0	3.0	0.4	0.0	a1	3.0	4.0	H/V	22.0	25.4	-0.2			1.00	3.00	38.3	80.8	80.8	27.1	60.8	60.8	-56.9		33.7
R19	1735.7	1735.7	18	3.0	3.0	0.6	0.0	a1	3.0	4.0	H/V	22.0	28.7	-0.2			1.00	3.00	39.3	80.8	80.8	28.1	60.8	60.8	-55.9		32.7
R20	2169.6	2169.6	18	3.0	3.0	0.7	0.0	a1	3.0	4.0	H/V	22.0	30.7	-0.3			1.00	3.00	35.0	80.8	80.8	23.8	60.8	60.8	-60.2		37.0
R21	2603.5	2603.5	18	3.0	3.0	0.8	0.0	a1	3.0	4.0	H/V	22.0	33.8	-0.3			1.00	3.00	39.3	80.8	80.8	28.1	60.8	60.8	-55.9		32.7
R22	3037.4	3037.4	18	3.0	3.0	1.0	0.0	a1	3.0	4.0	H/V	22.0	36.5	-0.3			1.00	3.00	43.8	80.8	80.8	32.6	60.8	60.8	-51.4		28.2
R23	3471.4	3471.4	18	3.0	3.0	1.1	0.0	a1	3.0	4.0	H/V	22.0	36.0	-0.4			1.00	3.00	43.5	80.8	80.8	32.3	60.8	60.8	-51.7		28.5
R24	3905.3	3905.3	18	3.0	3.0	1.3	0.0	a1	3.0	4.0	H/V	22.0	33.9	-0.4			1.00	3.00	42.3	80.8	74.0	31.1	60.8	54.0	-52.9		22.9
R25	4339.2	4339.2	18	4.0	4.0	1.5	0.0	a1	3.0	5.0	H/V	23.0	33.1	-0.4			1.00	4.00	42.3	80.8	74.0	31.1	60.8	54.0	-52.9		22.9
R26																											
#	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

(ROW)	(COLUMN)	NOTE:
R0	C4	MR is Measurement Range, which is reduced from DR to achieve necessary SNR.
R0	C5	DR is the regulatory Desired Range measurement distance.
R0	C6	N/F is Near-Field / Far-Field distance computed for max of EUT Antenna Dimension (C10) and Test Antenna dimension (C12), where applicable.
R0	C7	CF is computed using a 20 dB/decade Decay Rate.
R0	C15	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

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 9: 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	$\pm 1.8\,\text{dB}$
Radiated Emm. Amplitude $(30 - 200\,\text{MHz})$	$\pm 2.7\,\text{dB}$
Radiated Emm. Amplitude $(200 - 1000\,\text{MHz})$	$\pm 2.5\,\text{dB}$
Radiated Emm. Amplitude $(f > 1000\,\text{MHz})$	$\pm 3.7\,\text{dB}$
DC and Low Frequency Voltages	$\pm 2\%$
Temperature	$\pm 0.5°\text{C}$
Humidity	$\pm 5\%$

[†]Ref: CISPR 16-4-2:2011+A1:2014