### Amber Helm Development L.C.

92723 Michigan Hwy-152 Sister Lakes, Michigan 49047 USA Tel: 888-847-8027

# **EMC Test Report**

SCHTP-WR1812TX Issued: January 2, 2019

regarding

USA: CFR Title 47, Part 15.231 (Emissions) Canada: ISED RSS-210/GENe (Emissions)

for



AG5MWD

Category: TPMS

Judgments: 15.2319(e)/RSS-210v9 Compliant Transmitter Testing Completed: December 22, 2018



Prepared for:

## Schrader Electronics

11 Technology Park, Belfast Road, Antrim Northern Ireland BT41 1QS United Kingdom Phone: +44 28 9448 3067, Fax: +44 28 9446 8440 Contact: James Kyle, jakyle@schrader.co.uk

Data Recorded by:	Ando	- Reviewed by:	Dodon L. Helm
U	r. Joseph Brunett, EMG-002700-NE		Gordon Helm, EMC-002401-NE
Prepared by:	Dr. Joseph Brunett, EMC-002790-NE	Date of Issue:	January 2, 2019

### **Revision History**

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	$\begin{array}{r} 4.1.1 \\ 4.1.2 \\ 4.1.3 \\ 4.2 \\ \text{Intentio} \\ 4.2.1 \\ 4.2.2 \\ 4.2.3 \\ 4.3 \\ \text{Uninten} \end{array}$	Radiated Test Setup and Conducted Emissions Tes Power Supply Variation onal Emissions Fundamental Emission P Fundamental Emission B Fundamental Emission Fintional Emissions	Procedures	9         11         11         11         11         11         11         12         12         13         14         15         16         17         18         18         11         12         12         12         12         12         12         12         12         12         12         12         13         14         15         16         17         18         11         12         13         14         15         16         17         18         11         12         13         14         15         16         17         18         11         12         13         14         15
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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). Amber Helm Development L.C. holds accreditation under NVLAP Lab Code 200129-0.

### 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 February 2029.

### 1.3 Subcontracted Testing

This report does not contain data produced under subcontract.

### 1.4 Test Data

This test report contains data included within the laboratories scope of accreditation.

### 1.5 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.

### 1.6 Copyright

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

### 1.7 Endorsements

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

### 1.8 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 $(3 \text{ meter})$	3615 E Grand River Rd., Williamston, Michigan 48895	OATSC

### 1.9 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	$\mathbf{SN}$	Quality Num.	Last Cal By / Date Due
Biconical	EMCO / 93110B	9802-3039	BICEMCO01	Keysight / Aug-2019
Log Periodic Antenna	EMCO / 3146	9305 - 3614	LOGEMCO01	Keysight / Aug-2019
BNC-BNC Coax	WRTL / $RG58/U$	001	CAB001-BLACK	AHD / Mar-2019
BNC-BNC Coax	WRTL / $RG58/U$	001	CAB002-BLACK	AHD / Mar-2019
3.5-3.5MM Coax	PhaseFlex / PhaseFlex	001	CAB015- PURPLE	AHD / Mar-2019
Spectrum Analyzer	Rohde & Schwarz / FSV30	101660	RSFSV30001	RS / Apr-2019
Quad Ridge Horn	Singer / A6100	C35200	HQR1TO18S01	Keysight / Aug-2019

### 2 Test Specifications and Procedures

### 2.1 Test Specification and General Procedures

The ultimate goal of Schrader Electronics 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 Schrader Electronics AG5MWD 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	"American National Standard of Procedures for Compliance Testing of Unli- censed Wireless Devices"
TP0102RA	"AHD Internal Document TP0102 - Radiated Emissions Test Procedure"
ISED Canada	"The Measurement of Occupied Bandwidth"

### Date: January 2, 2019

### 3 Configuration and Identification of the Equipment Under Test

### 3.1 Description and Declarations

The equipment under test is a wireless tire pressure and temperature sensor. The EUT is approximately  $5 \ge 2 \ge 2 \ge 2$  cm in dimension, and is depicted in Figure 1. It is powered by 3 VDC Lithium cell battery. In use, this device is permanently affixed inside the tire of a motor vehicle. Table 3 outlines provider declared EUT specifications.



Figure 1: Photos of EUT.

Table 3:	EUT	Declarations.
10010 01		10 00101 00101101

General Declarations			
Equipment Type:	TPMS	Country of Origin:	UK
Nominal Supply:	3 VDC	Oper. Temp Range:	Not Declared
Frequency Range:	314.6 - 315.4, 433.92  MHz	Antenna Dimension:	Not Declared
Antenna Type:	PCB Trace	Antenna Gain:	-25  dBi (approx)
Number of Channels:	1	Channel Spacing:	Not Applicable
Alignment Range:	Not Declared	Type of Modulation:	ASK+FSK
United States			
FCC ID Number:	MRXAG5MWD	Classification:	DSC
Canada			
IC Number:	2546A-AG5MWD	Classification:	Remote Control Device, Ve- hicular Device

### 3.1.1 EUT Configuration

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

### 3.1.2 Modes of Operation

This device is capable of three key modes of operation. When the EUT is installed in the vehicle tire and the vehicle drives, it can, in the worst case, periodically transmit where the duration of each transmission is always less than 1 second and the silent period between transmissions is at least 30 times the duration of the transmission, and never less than 10 seconds. In the case of an emergency condition, the EUT will transmit tire pressure and temperature

### EUT FCC ID: MRXAG5MWD IC: 2546A-AG5MWD

Figure 2: EUT Test Configuration Diagram.

information throughout the duration of the condition. Upon manually activated LF interrogation (through the use of special LF tool at a vehicle dealership), the EUT responds with a single transmission containing a set of frames used to configure the device with the vehicle. This EUT can be programmed via a manufacturer supplied LF tool to emulate a wide range of tire pressure sensors at a single tool selected frequency.

### 3.1.3 Variants

There is only a single variant of the EUT, as tested herein.

### 3.1.4 Test Samples

Six samples in total were provided, all capable of normal operation, test activation, and CW mode via LF tools provided. Two of the normal operating samples were provided un-welded for testing and internal photographs.

### 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

The EUT is permanently installed in a transportation vehicle. As such, digital emissions are exempt from US and Canadian digital emissions regulations (per FCC 15.103(a) and IC correspondence on ICES-003). The EUT also employs some modes of operation that alert the vehicle user of sudden changes in tire pressure. Such alert modes fall under FCC 15.231(a)(4), and may operate during the pendency of the alarm condition. A detailed list of all operating modes is included in the Description of Operation exhibit included in this application.

### 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 1.8 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.

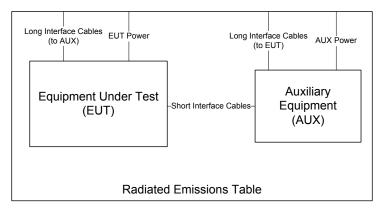


Figure 3: Radiated Emissions Diagram of the EUT.

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  $360^{\circ}$  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  $4 \times 5$  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  $dB\mu V/m$  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

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.

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### 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 HP8546A, BILOG3142.

**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.

		Detector Pk	Span 0	IF Bandwidth 3 MHz		<b>Bandwidth</b> ) MHz	Test Date: Test Engineer: EUT: EUT Mode: Meas. Distance:	Josep Schrade Mo	-Dec-18 oh Brunett or AG5MWD odulated 10 cm
									FCC/IC
		Over	all Trans	mission		Internal I	Frame Characteristics		
		Min.	Max.	Total				Compute	ed Duty Cycle
Frequency	EUT Test Mode*	Repetition Rate (sec)	No. of Frames	Transmission Length (sec)	Max. Frame Length (ms)	Min. Frame Period (ms)	Frame Encoding	(%)	( <b>dB</b> )
1.5	Periodic FSK, see Subfigure (a)	10.2	3	0.220	29.000	89.3	Worst case periodic FSK transmission consists of 3 frames with a 29 ms on time and a 89.3 ms interframe period repeating every 10.2 seconds	32.5	-9.8
	Periodic ASK, see Subfigure (a)	31.2	10	0.960	41.550	99.0	Worst case periodic ASK transmission consists of 10 50% duty ASK frames with a 41.55 ms length and a 99 ms interframe period repeating every 31.2 seconds	21.0	-13.6
314.9 MHz	Manual Activated ASK, See Subfigure (b)	single	16	1.750	28.600	86.2	Worst case single activated ASK transmission consists of 16 frames in 1.75 seconds. Each frame is 28.6 ms long with 50% ASK duty repeating with a minimum 86.2 ms interframe period.	16.6	-15.6
	Manual Activated FSK, See Subfigure (c)	single	6	0.658	9.400	52.6	Worst Case periodic transmission consists of three ASK frames occurring once every 31.2 seconds. Duty cycle of ASK frame is 50%.	17.9	-15.0
	Periodic FSK, see Subfigure (d)	10.2	3	0.2079	29.800	89.1	Worst case periodic FSK transmission consists of 3 frames with a 29.8 ms on time and a 89.1 ms interframe period repeating every 10.2 seconds	33.4	-9.5
433.9 MHz	Periodic ASK, see Subfigure (d)	31.4	10	0.9324	39.957	98.6	Worst case periodic ASK transmission consists of 10 50% duty ASK frames with a 39.95 ms length and a 98.6 ms interframe period repeating every 31.4 seconds	20.3	-13.9
	Manual Activated ASK, See Subfigure (e)	single	16	1.590	28.600	86.0	Worst case single activated ASK transmission consists of 16 frames in 1.75 seconds. Each frame is 28.6 ms long with 50% ASK duty repeating with a minimum 86.2 ms interframe period.	16.6	-15.6
				Not tested	1 – same as 314.	9 MHz above		17.9	-15.0

Table 4: Fundamental Emission Pulsed Operation.

Example Calculation: Worst Case 315 FSK Duty (%) =  $(29.0 \text{ ms} / 89.3 \text{ ms}) \times 100 = 32.5 \%$ 

Example Calculation: Worst Case 433.9 ASK Duty (%) = ( 39.957 ms x 50% / 98.6 ms ) x 100 = 20.3 %

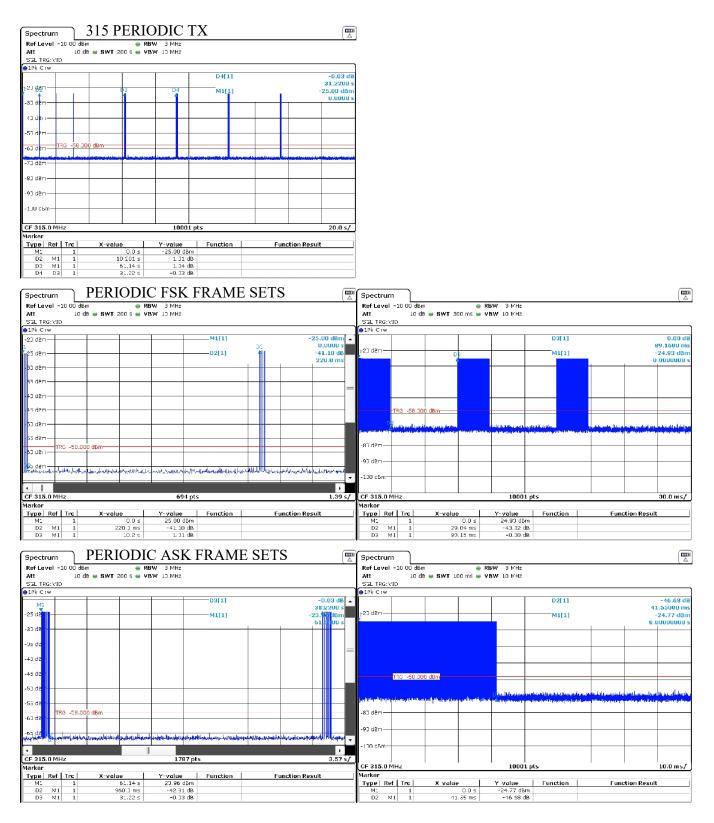


Figure 5(a): Fundamental Emission Pulsed Operation.

SINGLE MANUAL ACTIVATED A	ASK 📼	Spectrum								m
RefLevel -10 00 dBm	ĮΔ.	Ref Level -10	00 dBm	e RBW	3 MHz					(A)
Att 10 dB • SWT 10 s • VBW 10 MHz		Att	10 dB 🖷 SV	VT2 s 🖬 VBW	10 MHz					
S3L		SGL TRG: VID								
1Pk C rw     D3[1]	-42.61 dB	⊜1Pk Crw				D2[1]				-0.07 dB
	5.00000 s					02[1]				100.00 ms
-23 dPn41 M1[1]	-24.58 dBm	-20 dBm				M1[1]	1 h	2		-24.71 dBm
	800.00 ms			n n			והו	<b>n</b> [	ם ו	1.37200 s
-33 020		-53 081								
-+J dĽm		-#J dBm								
50 dB (1		50 dBi (								
-62 d2n		-50 d8m TRO	3 -58.000 dBm-							
										LD.
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-81 dPm		-81 dPm								
		an dhe								
-90 den		-90 dem								
-100 c6m		-100 c6m			_					
CF 315.0 MHz 1001 pts	1.0 s/	CF 315.0 MHz	2		1001	pts				200.0 ms/
Marker		Marker								
Type   Ref   Trc   X-value   Y-value   Function   Function Res	sult	Type Ref 1		value	Y-value	Function		Funct	ion Resul	t
M1 1 000.0 ms 24.50 dBm D2 M1 1 1.75 s -42.21 dB		M1 D2 M1	1	1.172 s 100.0 ms	24.71 dB -0.07 c					
D2         M1         1         1.75 s         -42.21 dB           D3         M1         1         5.0 s         -12.51 dB		D2 M1 D3 M1	1	628.3 ms	-0.07 c					
		¢								
Spectrum		Spectrum								
RefLevel -10 00 dBm 😑 RBW 3 MHz										
		Ref Level -10	0 00 dBm	e Ri	3W 3 MHz					[Δ]
Att 10 dB • SWT 200 ms • VBW 10 MHz		Att		⊜ Ri ¥T 40 ms <del>■</del> V						( Δ )
SGL TRG: VID		Att SGL TRG:VID		-						(A)
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S3L TRG:VID DIPK CTW D4[1]	-0.08 dB 100.000 ms	Att SGL TRG: VID ● 1Pk Crw		-		M1[1]				-24.48 dBm J.0000000 s
S3L TRG:VID           91Pk Crw           -2J den           -2J den           -2J den	100.000 ms -24.78 dBm	Att SGL TRG:VID		-		M1[1]			L.	-24.48 dBm J.000000 s -45.17 dB
SGL TRG:VID 91Pk C rw -2J den V1 -2J de	100.000 ms	Att SGL TRG: VID ● 1Pk Crw		-			חות מות המותחת המות		L.	-24.48 dBm J.0000000 s
S3L TRG:VID           91Pk Crw           -2J den           -2J den           -2J den	100.000 ms -24.78 dBm	Att SGL TRG: VID ● 1Pk Crw		-					L.	-24.48 dBm J.000000 s -45.17 dB
SGL TRG:VID 91Pk C rw -2J den V1 -2J de	100.000 ms -24.78 dBm	Att SGL TRG: VID ● 1Pk Crw		-					L.	-24.48 dBm J.000000 s -45.17 dB
SSL TRG:VID  SSL TRG:VID  S1/K C1w  -2J den -33 den -10 de1 -33	100.000 ms -24.78 dBm	Att SGL TRG: VID ● 1Pk Crw		-					L.	-24.48 dBm J.000000 s -45.17 dB
SSL TRG:VID  S1/K C1w  -2J den	100.000 ms -24.78 dBm	Att SGL TRG: VID ● 1Pk Crw		-					L.	-24.48 dBm J.000000 s -45.17 dB
SSL TRG:VID  SSL TRG:VID  S1/K C1w  -2J den -33 den -10 de1 -33	100.000 ms -24.78 dBm	Att SSL TRG: VID ● TPk C rw > 20 dPn - 10 dPn - 10 dPn - 10 dPn		-					L.	-24.48 dBm J.000000 s -45.17 dB
S3L TRG:VID  S3L TRG:VID  22J dEn  V1  C3J dEn  TG  S5L 100  C3J dEn  TG  S5L 000  C4[1]  C3J dEn  C3J dEn  TG  C5L 000  C4[1]	100.000 ms -24.78 dBm 1.399400 s	Att SSL TRG: VID ● TPk C rw > 20 dPn - 10 dPn - 10 dPn - 10 dPn		-					L.	-24.48 dBm J.000000 s -45.17 dB
S3L TRG:VID           910k C1w           -2J d8m           -43 d8m           -43 d8m	100.000 ms -24.78 dBm 1.399400 s	Att SSL TRG: VID ● TPk C rw > 20 dPn - 10 dPn - 10 dPn - 10 dPn		-					L.	-24.48 dBm J.000000 s -45.17 dB
S3L TRG:VID           D1Pk C rw           -2J dEn           -41 dEn           -30 dEn           -51 dEn           -53 dEn           -63 dEn           -73 dEn           -63 dEn           -73 dEn           -74 dEn           -75 dEn           -75 dEn           -75 dEn           -77 dEn            -77 dEn	100.000 ms -24.78 dBm 1.399400 s	Att SSL TRG: VID ● TPk C rw > 20 dPn - 10 dPn - 10 dPn - 10 dPn		-					L.	-24.48 dBm J.000000 s -45.17 dB
S3L TRG:VID  S3L TRG:VID  22J dEn  V1  C3J dEn  TG  S5L 00 dEm  C3J dEn  TG  S5L 00 dEm  C3J dEn  TG  S5L 00 dEm  C3J dEn  TG  C41  C41  C41  C41  C41  C41  C41  C4	100.000 ms -24.78 dBm 1.399400 s	Att SGL TRG: VID 91Pk Crw 220 dBm - ED dBm		-					L.	-24.48 dBm J.000000 s -45.17 dB
S3L TRG:VID           D1Pk C rw           -2J dEn           -41 dEn           -30 dEn           -51 dEn           -53 dEn           -63 dEn           -73 dEn           -63 dEn           -73 dEn           -74 dEn           -75 dEn           -75 dEn           -75 dEn           -77 dEn            -77 dEn	100.000 ms -24.78 dBm 1.399400 s	Att SSL TRG: VID ● TPk C rw > 20 dPn - 10 dPn - 10 dPn - 10 dPn		-					L.	-24.48 dBm J.000000 s -45.17 dB
S3L TRG:VID       910k Crw       -2J den       -41 den       -30 den       -60 den	100.000 ms -24.78 dBm 1.399400 s	Att SGL TRG: VID 91Pk Crw 220 dBm - ED dBm		-					L.	-24.48 dBm J.000000 s -45.17 dB
S3L TRG:VID       910k Crw       -2J den       -41 den       -30 den       -60 den	100.000 ms -24.78 dBm 1.399400 s	Att Sat TR6: VID 9 TPk Crw 22 dPm - 10 dPm - 10 dPm - 10 dPm - 20 dPm - 10 dPm - 80 dPm - 80 dPm		-					L.	-24.48 dBm J.000000 s -45.17 dB
S3L R6:VID       91/k Crw       -20 d8n       -40 d8n       -60 d8n       -70 d8n       -60 d8n       -70 d8n </td <td>100.000 ms -24.78 dBm 1.399400 s</td> <td>Att Sat TR6: VID 9 TPk Crw 22 dPm - 10 dPm - 10 dPm - 10 dPm - 20 dPm - 10 dPm - 80 dPm - 80 dPm</td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td>L.</td> <td>-24.48 dBm J.000000 s -45.17 dB</td>	100.000 ms -24.78 dBm 1.399400 s	Att Sat TR6: VID 9 TPk Crw 22 dPm - 10 dPm - 10 dPm - 10 dPm - 20 dPm - 10 dPm - 80 dPm - 80 dPm		-					L.	-24.48 dBm J.000000 s -45.17 dB
S3L TRG:VID       910k Crw       -2J den       -41       -30 den       -51 den       -60 den       -70 den       -71 U com	100.000 ms -24.78 dBm 1.399400 s	Att Sal TRC VID 1Pk C tw 220 dbn - 60 dbn - 60 dbn - 60 dbn - 70 dbn - 90 dbn - 90 dbn		-					L.	-24.48 dBm J.000000 s -45.17 dB
S3L TRG:VID       31/k C rw       -2J den       -43 den       -43 den       -53 den       -63 den       -10 den       176 - 58.000 dem       -63 den       -63 den       -10 den       176 - 58.000 dem       -63 den       -64 den       -65 den       -65 den       -65 den       -65 den       -65 den <t< td=""><td>20.0 ms/</td><td>Att Sal TRC VID 1Pk C tw 220 dbn - 60 dbn - 60 dbn - 60 dbn - 70 dbn - 90 dbn - 90 dbn</td><td>10 d8 <b>- SV</b></td><td>-</td><td></td><td></td><td></td><td></td><td>L.</td><td>-24.48 dBm JJUUUUUU 5 -45.17 dB 28.4000 ms</td></t<>	20.0 ms/	Att Sal TRC VID 1Pk C tw 220 dbn - 60 dbn - 60 dbn - 60 dbn - 70 dbn - 90 dbn - 90 dbn	10 d8 <b>- SV</b>	-					L.	-24.48 dBm JJUUUUUU 5 -45.17 dB 28.4000 ms
S3L TRG:VID       910k Crw       -2J den       -41       -30 den       -51 den       -60 den       -70 den       -71 U com	20.0 ms/	Att SSL TRC VID © 1PK C IW 220 dPm - 10	10 dB = SV	-					L.	-24.48 dBm J.000000 s -45.17 dB
S2L TRG:VID           PIPk Crw           -2J den           -41           -33 den           -33 den           -33 den           -34 den           -37 den           -37 den           -37 den           -37 den           -37 den           -38 den           -37 den           -39 den           -30 den           -31 Lobn	20.0 ms/	Att SSL TRC VID SIL TRC VID	10 dB = SV		3W 10 MHz	22[1]			L.	-24.48 dBm J.UUUUUUU 5 -45.17 dB 28.4000 ms
S3L TRG:VID           31/k C rw           -2J dEn           -30 dEn           -30 dEn           -40 dEn           -51 dEn           -60 dEn           -90 dEn           -90 dEn           -10 u cbm	20.0 ms/	Att SSL TRC VID © 1PK C IW 220 dPm - 10	10 dB = SV			22[1]			Larower	-24.48 dBm J.UUUUUUU 5 -45.17 dB 28.4000 ms

Figure 5(b): Fundamental Emission Pulsed Operation.

Spectrum	SINGLE	MANU	AL ACT	IVATE	D FSK	🖫 Spectrum								
Ref Level -10 00 dB		RBW 3 MHz				Ref Level	-10 00 dBm	e RBW	3 MHz					<u>, -</u>
	dB 🗰 SWT 10 s 👄	VBW 10 MHz				Att		WT 1 🗉 🖬 VBW	10 MHz					
SGL						SGL TRG:VI	D							
●1Pk Crw			D3[1]		-25.2	●1Pk Crw			1	D5	C 1 1			-26.79 dB
			03[1]		5.000								e	58.000 ms
-2U dBm			M1[1]		-41.91	Bm				MI	[1]		-	40.55 dBm
-30 dBm					1.070	-3J dBm						1		0.000000 s
						1				03	D4			
-10 dBr ( 10 00 00 00 00 00 00 00 00 00 00 00 00										[	4			
-51 dPm						-shiden								
-a ruerr														
-60 dBm							RG -61.000 dBm-				115			
final march and the	- hunderhalenen weber	Marine Sharmon Martin	LALLAN DB	-	Une marken from the state of the		والطافح بحميت بالجا	مراقع والمحمد المراجع المحمد المحم	ويجز الحططية والعروس لا	en suiter luiter du d	[กษมกใ]ไว้แกม	weather work and the street of	ويدح الحاستها بلتويز برواله	e., des else antra y se se se
-70 dem														
-80 dBm						-81 qRu								
						-90 d2m								
-90 dBm														
-1JU c6m						100 c6m-								
-130 050														
OF OLE O MUS		1001			1.0	CF 315.0 M	liz		1001	. pts			1	.00.0 ms/
CF 315.0 MHz Marker		1001	ots		1.0		1 m 1 N			1		-		
Type Ret Trc	X-value	Y-value	Function	Eupr	ction Result	Type Ref	1 Inc x-	value 0.0 s	<u>Y-value</u> -40.55 dB	Funct	ion	Fun	ction Result	
ML 1	1.07 s	-41.91 dBm	1			D2 M	1	100.0 ms	-25.58 c	jВ				
D2 M1 1	650.00 ms						1	552.0 ms	0.01 c					
D3 M1 1	5.0 s					D0 _ M								
D1 D3 1 Spectrum Ref Level -10 00 d8	-6.04502 s						1	100.3 ms 658.3 ms	-0.04 ( -26.79 (					
Spectrum Ref Level -10 00 dB Att 10	-6.04592 s	-0.02 de				D4 D: D5 M	1							
Spectrum Ref Level -10 00 df Att 10 - SGL TRG:VID	-6.04502 s 3m	-0.02 de	3				1							
Spectrum Ref Level -10 00 df Att 10 - SGL TRG:VID	-6.04502 s 3m	-0.02 de			-39.89	D4 D3 M	1							
Spectrum Ref Level -10 00 df Att 10 - SGL TRG:VID	-6.04502 s 3m	-0.02 de	M1[1]		0.00000	<u>D4</u> D5 М	1							
Spectrum           Ref Level = 10 00 df           Att = 10 00 df           SSL TRG:VID           1Pk Crw           -2J den	-6.04502 s 3m	-0.02 de	3			D4 D: D5 M	1							
Spectrum Ref Level -10 00 dž Att 10 i S3L TRG:VID 01Pk Crw	-6.04502 s 3m	-0.02 de	M1[1] D2[1]		0.00000 -28.9	D4 D: D5 M	1							
Spectrum Ref Level -10 00 df Att 10 - SGL TRG:VID =1Pk Crw -2J dPn	-6.04502 s 3m	-0.02 de	M1[1]		0.00000 -28.9	D4 D: D5 M	1							
Spectrum Ref Level = 10 00 dd Stl Tracvol = 10 10 0 dd Stl Tracvol = 10 10 0 de 10 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-6.04502 s 3m	-0.02 de	M1[1] D2[1]		0.00000 -28.9	D4 D: D5 M	1							
Spectrum           Ref Level - 10 00 db           Att         10 db           SSL TRG: VID           •INk Crw           •20 dbm           -30 dbm           1	-6.04502 s 3m	-0.02 de	M1[1] D2[1]		0.00000 -28.9	D4 D: D5 M	1							
Spectrum           Ref Level - 10 00 dd           Att           93L TRG: VID           10k Crw           -20 d8m           1           10-00 d8m           10-00 d8m           10-00 d8m           10-00 d8m           10-00 d8m           10-00 d8m	-6.04202 c	-0.02 de	M1[1] D2[1]		0.00000 -28.9	D4 D: D5 M	1							
Spectrum Ref Level - 10 00 dd Att S3L TRG:VID IN: Crw -20 ddm30 ddm	-6.04202 c	-0.32 de	M1[1] D2[1]		0.00000 -28.9 9.4001	Bm JU s M Bm Bm Bm Bm Bm Bm Bm Bm Bm Bm	1							
Spectrum           Ref Level - 10 00 dd           Att           10 53L TRG:VID           10k Crw           -20 d8n           1           -50 d8n	-6.04202 c	-0.32 de	M1[1] D2[1]		0.00000 -28.9	Bm JU s M Bm S M Bm S M S M S M S M S M S M S M S M S M S	1							
Spectrum           Ref Lavel - 10 00 dd           Att           93L TRG:VID           1Pk Crw           -20 ddn           -30 ddn           -60 ddn           -70 ddn	-6.04202 c	-0.32 de	M1[1] D2[1]	The first state of the second state of the sec	0.00000 -28.9 9.4001	Bm JU s M Bm S M Bm S M S M S M S M S M S M S M S M S M S	1							
Spectrum Ref Level - 10 00 dd Att S3L TRG:VID IN: Crw -20 ddm30 ddm	-6.04202 c	-0.32 de	M1[1] D2[1]	مرید اور میراند. مورد اور هوارد مارو دور هم در هم	0.00000 -28.9 9.4001	Bm JU s M Bm S M Bm S M S M S M S M S M S M S M S M S M S	1							
Spectrum           Ref Lavel - 10 00 dd           Att           93L TRG:VID           1Pk Crw           -20 ddn           -30 ddn           -60 ddn           -70 ddn	-6.04202 c	-0.32 de	M1[1] D2[1]	tiga in difan di angena sam	0.00000 -28.9 9.4001	Bm JU s M Bm S M Bm S M S M S M S M S M S M S M S M S M S	1							
Spectrum           Rof Level - 10 00 df           Att         10	-6.04202 c	-0.32 de	M1[1] D2[1]	tige de dé si de server	9,400	Bm JU s M Bm S M Bm S M S M S M S M S M S M S M S M S M S	1							
Spectrum           Ref Level - 10 00 dt           Att         10.0           S3L TRG:VID           91Pk Crw           -20 d2n           -30 d2n           1           -60 d2n           -70 d2n           -80 d2n	-6.04202 c	-0.32 de	M1[1] D2[1]		9,400	Bm JU s M Bm S M Bm S M S M S M S M S M S M S M S M S M S	1							
Spectrum           Ref Level -10 00 dit           Att         10           S3L TR3:VID           31Nc Crw           -22 dith           -33 dith           -53 dith           -60 dith           10 dith           -70 dith           -90 dith           -90 dith           -91 dith	-6.04202 c	-0.32 de	M1[1] D2[1]	ter a transmission	0.00000 -28.9 9.4001	Bm 3/0 4 0: 05 M 05 M	1							
Spectrum           Ref Level - 10 00 df           Att         10           932 TRG:VID           91Pk Crw           -20 dEn           -30 dEn           -60 dEn           -70 dEn           -90 dEn           -90 dEn           -110 Com           CF 315.0 MHz	-6.04202 c	-0.32 de	M1[1] D2[1]	tige at all industries and	9,400	Bm 3/0 4 0: 05 M 05 M	1							
Spectrum           Ref Level - 10 00 dd           Att         10           93L TRG:VID           10k Crw           -20 ddn           -30 ddn           -60 ddn           -70 ddn           -90 ddn           -100 ddn           -20 ddn           -20 ddn           -20 ddn           -20 ddn           -30 ddn           -20 ddn           -20 ddn           -20 ddn           -90 ddn           -1.00 cbm           CF 315.0 MHz           Marker	-6.04802 c	-0.32 de	M1[1] D2[1] D3 D3 D3 D3 D3 D3 D3 D3 D3 D3		0.00000 -28.9 9.4001 	Bm 3/0 4 0: 05 M 05 M	1							
Spectrum           Ref Level - 10 00 df           Att         10           531 FRG: VID           -1Pk C rw           -22 dPm           -33 dPm           -53 dPm           -63 dPm           -77 dPm           -83 dPm           -93 dPm           -10 dPm           -22 dPm           -63 dPm           -73 dPm           -63 dPm           -73 dPm           -63 dPm           -73 dPm           -1100 cbm           CF 315.0 MHz           Marker           Type   Ref   Trc	-6.04802 c	-0.32 de RBW 3 MHz VBW 10 MHz VBW 10 MHz 10 MHz 1001	M1[1] D2[1] D2 D2 D2 D2 D2 D2 D2 D2 D2 D2 D2 D2 D2		0.00000 -28.9 9.4001	Bm 3/0 4 0: 05 M 05 M	1							
Spectrum           Ref Level - 10 00 df           Att         10           93L TRG: VID           1Pk C rw           -22 dPn           -33 dPn           -33 dPn           -53 dPn           -63 dPn           -77 dPn           -63 dPn           -93 dPn           -93 dPn           -1100 cbm           CF 315.0 MHz           Marker           Type   Ref           M2         1	-6.04802 c	-0.32 de RBW 3 MHz VBW 10 MHz VBW 10 MHz 10 MHz 10 01 1001	M1[1] D2[1] D2 D2 D2 D2 D2 D2 D2 D2 D2 D2 D2 D2 D2		0.00000 -28.9 9.4001 	Bm 3/0 4 0: 05 M 05 M	1							
Spectrum           Ref Level - 10 00 dd           Att         10           93L TRG:VID           10k Crw           -20 ddn           -30 ddn           -50 ddn           -70 ddn           -90 ddn           -100 cdm           -20 ddn           -20 ddn           -20 ddn           -20 ddn           -30 ddn           -20 ddn           -100 cbm           CF 315.0 MHz           Marker           Type   Ref   Trc             M2	-6.04802 c	-0.32 de RBW 3 MHz VBW 10 MHz VBW 10 MHz 	MI[1] D2[1] D3 D3 D3 D3 D3 D3 D3 D4		0.00000 -28.9 9.4001 	Bm 3/0 4 0: 05 M 05 M	1							

Figure 5(c): Fundamental Emission Pulsed Operation.

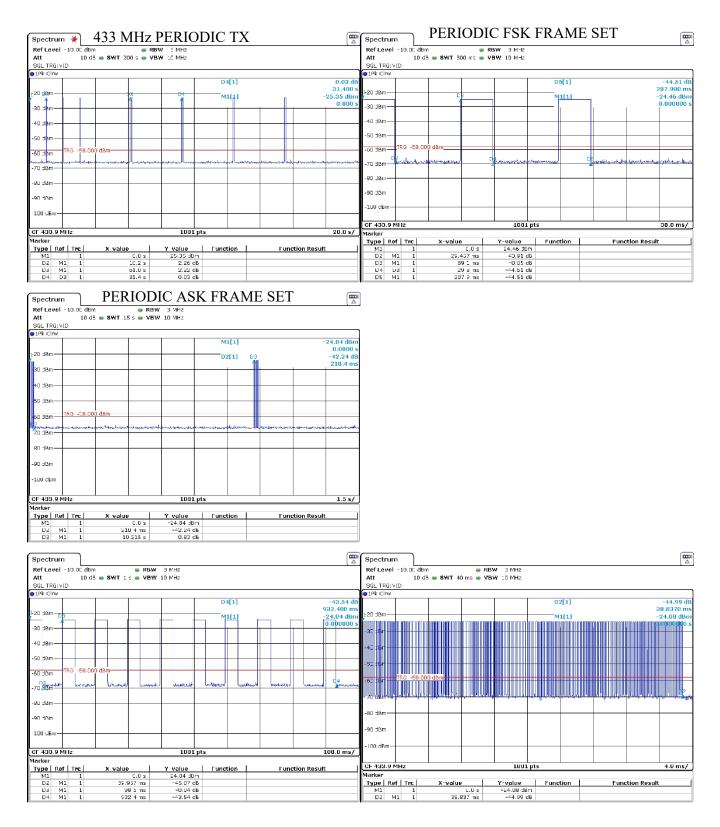


Figure 5(d): Fundamental Emission Pulsed Operation.

Spectrum	SINGLE N	/IANU/	AL ACT	TIVATE	ED AS	SK 💬	Spectrum	ר												
Ref Level -10 00 dBr		V 3 MHz				<u> </u>	Ref Level -10	00 dBm		e R	RBW 31	MHz								
	B 🖶 SWT 10 s 🖶 VBV	N 10 MHz					Att	10 dB (	SWT 1	L.6 S 🕳 V	/BW 101	MHz								
SGL							SGL TRG: VID													
●1Pk Cirw							●1Pk Crw													
			D3[1]			-41.85 dB 5.00000 s								M1[1]					-24.86 c	
-20 dBm			M1[1]			25.16 dBm	-20 dBm			_		ML		D2[1]					-0.06	
						1.12024 s		m h	і <b>г</b> і	pro-	m	5	D2				- m		100.00	
-30 dBu		+ +					-\$0 d2m					_				_				
-4u ditim							-+D dBri													
50 dBr i																				
35 acr 1							\$0 den													
-60 dBm							TRG	-50.000	dBm											
an a	Wals Brownerster	unpersonal and	and an internet Des	and a second	umana	at a summer	-6J dBm													
-70 dPm	all a st to Townson straw		No. Alara and Township		CANOL HARD SHOWE		hadren land	l hand	have be	where where	enough he	يها الهرس	and have	I have	l literance	المل الم	unal u	unel leh	in homest	سا ا
							- \1 95W													
-81 dPm	+ + +	+ +					-80 dBm													
0.0 - 10																				
-90 dPm							-90 dBm												_	
-100 c6m																				
							-100 c6m													
CF 433.9 MHz		1001				1.0 s/														
CF 433.9 MHZ Marker		1001 p	ts			1.0 \$7	CF 133.9 MHz	1		I	1	1001	nis.		1				160.0 m	
Marker Type Ref Trc	X-value	Y-value	Function	Euror	tion Result		Marker					100.	. pts						100.01	
MI 1	1.12C24 s	25.16 dBm		Func	alon Kesult	·	Type   Ref   T	ne l	X valu	e	Yv	alue	1 r	unction	1		Funct	ion Res	ilt	
D2 M1 1	1.59C12 s	-42.24 dB					ML.	1	742	2.64 ms	-24	4.86 dE	m							
D3 M1 1	5.0 s	-11.35 dB					D2 M1	1	10	00.0 ms		-0.06	1B							
								T				0.50								
							·					0.50								
Spectrum							Spectrum													
Ref Level -10 00 dBr		NBW 3 MHz					Spectrum Ref Level -10	00 dBm			RBW 3	MHz								
RefLevel -10 00 dBr Att 10 d	m 👄 🗑 B 🖶 SWT 200 ms 🖷 V						Spectrum Ref Level -10 Att	00 dBm	• SWT 3			MHz								
Ref Level -10 00 dBr Att 10 d SGL TRG: VID							Spectrum Ref Level -10 Att SSL TRG:VID	00 dBm				MHz								
RefLevel -10 00 dBr Att 10 d			D4E13				Spectrum Ref Level -10 Att	00 dBm				MHz	'	MIN						
RefLevel -10 00 dBr Att 10 d SGL TRG: VID PIPK Crw			D4[1]			-0.10 dB	Spectrum Ref Level -10 Att SGL TRG:VID IPk Crw	00 dBm				MHz		M1[1]					-24.83 c	1Bm
Ref Level -10 00 dBr Att 10 d SGL TRG: VID			D4[1] M1[1]				Spectrum Ref Level -10 Att SSL TRG:VID	00 dBm				MHz		M1[1]						lBm UU s
Ref Level -10 00 dBr Att 10 d SGL TRG: VID 01Pk Crw 12J d2n		ABW 10 MHz			-	-0.10 dB	Spectrum Ref Level -10 Att SGL TRG:VID IPk Crw	00 dBm				MHz				ות הר מ		וות ה היה	-24.83 c	lBm UU s 3 dB
RefLevel -10 00 dBr Att 10 d SGL TRG: VID PIPK Crw		ABW 10 MHz			-	-0.10 dB 100.000 ms 24.93 dBm	Spectrum Ref Level -10 Att SGL TRG:VID IPk Crw	00 dBm				MHz							-24.83 c 0.00000 -44.68	lBm UU s 3 dB
Ref Level -10 00 dBr Att 10 d SGL TRG: VID 01Pk Crw 12J d2n		ABW 10 MHz			-	-0.10 dB 100.000 ms 24.93 dBm	Spectrum Ref Level -10 Att SGL TRG:VID IPk Crw	00 dBm				MHz							-24.83 c 0.00000 -44.68	lBm UU s 3 dB
Ref Level -10 00 dBr           Att         10 db           S3L TRG: VID           910k Crw           12J dEn           -30 dEn		ABW 10 MHz			-	-0.10 dB 100.000 ms 24.93 dBm	Spectrum Ref Level -10 Att SGL TRG:VID IPk Crw	00 dBm				MHz							-24.83 c 0.00000 -44.68	lBm UU s 3 dB
Ref Level -10 00 dBr           Att         10 dl           SGL TRG: VID           © IPK Crw           320 dPn		ABW 10 MHz			-	-0.10 dB 100.000 ms 24.93 dBm	Spectrum Ref Level -10 Att SGL TRG:VID IPk Crw	00 dBm				MHz							-24.83 c 0.00000 -44.68	lBm UU s 3 dB
Ref Level - 10 00 dBr           Att         10 d           SSL TRG: VID           ●1Pk Crw           •20 dBr           •30 dBr           •10 ub           •10 ub	B SWT 200 ms V	ABW 10 MHz			-	-0.10 dB 100.000 ms 24.93 dBm	Spectrum Ref Level -10 Att SGL TRG:VID IPk Crw	00 dBm				MHz							-24.83 c 0.00000 -44.68	lBm UU s 3 dB
Ref Level - 10 00 dBr           Att         10 d           SSL TRG: VID           ●10k Crw           22 dBr           -33 dBr           -51 dPr		ABW 10 MHz			-	-0.10 dB 100.000 ms 24.93 dBm	Spectrum Ref Level -10 Att SGL TRG:VID IPk Crw	00 dBm				MHz							-24.83 c 0.00000 -44.68	lBm UU s 3 dB
Ref Level - 10 00 dBr           Att         10 d           SSL TRG: VID           ●10k Crw           •10 dBr           •30 dBr           -30 dBr           -51 dBr           •17 dBr           •0 dBr           •0 dBr	B SWT 200 ms V	ABW 10 MHz	M1[1]			-0,10 dB LUU.UUU ms 24.93 dBm /42.4UU ms	Spectrum Ref Level -10 Att SGL TRG:VID IPk Crw	00 dBm				MHz							-24.83 c 0.00000 -44.68	lBm UU s 3 dB
Ref Level - 10 00 dBr           Att         10 d           SSL TRG: VID           ●1Pk C rw           23 dBh           10 dB           -51 dBh           -51 dBh           -60 dBh           -60 dBh	B SWT 200 ms V	ABW 10 MHz	M1[1]	Active relationships		-0,10 dB LUU.UUU ms 24.93 dBm /42.4UU ms	Spectrum Ref Level -10 Att SGL TRG:VID IPk Crw	00 dBm				MHz							-24.83 c 0.00000 -44.68	lBm UU s 3 dB
Ref Level - 10 00 dBr           Att         10 d           SSL TRG: VID           ●10k Crw           •10 dBr           •30 dBr           -30 dBr           -51 dBr           •17 dBr           •0 dBr           •0 dBr	B SWT 200 ms V	ABW 10 MHz	M1[1]			-0,10 dB LUU.UUU ms 24.93 dBm /42.4UU ms	Spectrum Ref Level -10 Att SGL TRG:VID IPk Crw	00 dBm				MHz							-24.83 c 0.00000 -44.68	lBm UU s 3 dB
Ref Level - 10 00 dBr           Att         10 d           SSL TRG: VID           ●10k Crw           •10 dBr           •30 dBr           •51 dPr           •50 dBr           •60 dBr           •70 dBr           •80 dBr	B SWT 200 ms V	ABW 10 MHz	M1[1]			-0.10 dB LUU.UUU ms 24.93 dBm /42.4UU ms	Spectrum Ref Level -10 Att SGL TRG:VID IPk Crw	00 dBm				MHz							-24.83 c 0.00000 -44.68	lBm UU s 3 dB
Ref Level - 10 00 dBr           Att         10 d           S3L TRG: VID           91Pk Crw           -33 dBh           -33 dBh           -53 dBh           -60 dBh           -73 dBh	B SWT 200 ms V	ABW 10 MHz	M1[1]			-0.10 dB LUU.UUU ms 24.93 dBm /42.4UU ms	Spectrum           Ref Level - 10 Att           SSL TRG:VID           91Pk C1w           •10k C1w           •20 dPn           •30 dEn           •30 dEn           •50 dEn           •00 den	00 dBm				MHz							-24.83 c 0.00000 -44.68	lBm UU s 3 dB
Ref Level - 10 00 dBr           Att         10 d           S3L TR3: VID           91Pk C rw           12 Jd Br           -51 dPr           -60 dBr           -80 dBr           -90 dBr	B SWT 200 ms V	ABW 10 MHz	M1[1]			-0.10 dB LUU.UUU ms 24.93 dBm /42.4UU ms	Spectrum           Ref Level - 10 Att           SSL TRG:VID           91Pk C1w           •10k C1w           •20 dPn           •30 dEn           •30 dEn           •50 dEn           •00 den	00 dBm				MHz							-24.83 c 0.00000 -44.68	lBm UU s 3 dB
Ref Level - 10 00 dBr           Att         10 d           SSL TRG: VID           ●10k Crw           •10 dBr           •30 dBr           •51 dPr           •50 dBr           •60 dBr           •70 dBr           •80 dBr	B SWT 200 ms V	ABW 10 MHz	M1[1]	wice and the acceptory		-0.10 dB LUU.UUU ms 24.93 dBm /42.4UU ms	Spectrum Ref Level -10 Att SSL TRG:VID ●1Pk CTW +20 dPn +20	00 dBm				MHz							-24.83 c 0.00000 -44.68	lBm UU s 3 dB
Ref Level - 10 00 der           Att         10 der           SL TRG: VID           SILT RG: VID	B SWT 200 ms V		M1(1)	vice and name sign	- 7 7 Leocharaeolustop	-0.10 dB 100.000 ms 24.93 dBm 442.400 ms	Spectrum Ref Level -10 Att SSL TRG:VID ●1Pk CTW +20 dPn +20	00 dBm				MHz							-24.83 c 0.00000 -44.68	lBm UU s 3 dB
Ref Level - 10 00 dBr           Att         10 d           SSL TR3: VID           910k Crw           920 dBn           -33 dB           -33 dB           -51 dB           -51 dB           -63 dB           -63 dB           -77 dB           -93 dB           -93 dB           -1.00 cbm           CF 433.9 MHz	B SWT 200 ms V	ABW 10 MHz	M1(1)	veljo- joniški sko-pijeto	- 7 7 Leocharaeolustop	-0.10 dB LUU.UUU ms 24.93 dBm /42.4UU ms	Spectrum Rof Lavel -10 Att Stat TRE:VID @1Pk C rw -23 dPn -2 dPn -2 dPn -2 dPn -3 dPn -93 dPn	00 dBm				MHz							-24.83 c 0.00000 -44.68	lBm UU s 3 dB
Ref Lavel - 10 00 der           Att         10 der           Stall TRG: VID           S1L TRG: VID           S1D TRG: VID           S2D TRG: VID		1001 pt	M1[1]		/ /	-0.10 dB 100.000 ms 42.400 ms 42.400 ms 42.400 ms 400.000 ms/	Spectrum           Ref Level - 10 Att           SSL TRG:VID           910k Crw           22 dBm           -32 dBm           -32 dBm           -52 dBm           -83 dBm           -93 dBm           -10 c5m	00 dBm											-24.83 c	iBm UU s 3 dB I ms
Ref Level - 10 00 dBr           Att         10 d           S3L TR3: VID           91Pk Crw           22 J dBn           -33 dBn           -51 dBn           -50 dBn           -90 dBn           -1JU cbm           CF 433.9 MHz           Marker           Type Ref Trc	B SWT 200 ms V	/BW 10 MHz	M1[1]		- 7 7 Leocharaeolustop	-0.10 dB 100.000 ms 42.400 ms 42.400 ms 42.400 ms 400.000 ms/	Spectrum Ref Lavel -10 Att SL T65:VID @1Pk Crw -23 dPn -23 dPn -23 dPn -25 d	00 dBm				MHz							-24.83 c 0.00000 -44.68	iBm UU s 3 dB I ms
Ref Level - 10 00 der Att         10 00 der SIL TRG: VID           SIL TRG: VID         10 de           SIL TRG: VID         10 de           -30 de	B SWT 200 ms V	24.93 GBM	M1[1]		/ /	-0.10 dB 100.000 ms 42.400 ms 42.400 ms 42.400 ms 400.000 ms/	Spectrum           Ref Lavel -10 Att           SL TR3:VID           I'Ik CTW           20 dEn           -20 dEn           -20 dEn           -80 dEn           -90 dEn           -10 cSm           CF 133.9 MHz           Marker	-50 200	8 <b>SWT</b> 3	30 ms		MHz MHz 0000700							-24.83 c	iBm UU s 3 dB I ms
Ref Level - 10 00 dBr           Att         10 d           S3L TR3: VID           91Pk Crw           22 J dBn           -33 dBn           -51 dBn           -50 dBn           -90 dBn           -1JU cbm           CF 433.9 MHz           Marker           Type Ref Trc	B SWT 200 ms V	/BW 10 MHz	M1[1]		/ /	-0.10 dB 100.000 ms 42.400 ms 42.400 ms 42.400 ms 400.000 ms/	Spectrum Ref Lavel -10 Att SL T65:VID @1Pk Crw -23 dPn -23 dPn -23 dPn -25 d	-50 200		30 ms	YBW 10							ion Rest	-24.83 c	iBm UU s 3 dB I ms
Ref Level - 10 00 dBr           Att         10 d           S3L TR3: VID           91Pk C tw           *20 dBn           *33 dBn           *33 dBn           *50 dBn           *50 dBn           *90 dBn           *11 Ut Cbm           CF 433.9 MHz           Marker           Type Ret         Trc           M1 1         11	B SWT 200 ms V B B SWT 200 ms V D dBm D dBm D dBm Value X-value X-value 742.4 ms 20.5 ms	24.93 dbm 4.32 dbm 4.32 dbm 4.32 dbm 4.32 dbm 4.32 dbm 4.32 dbm 4.32 dbm	M1[1]		/ /	-0.10 dB 100.000 ms 42.400 ms 42.400 ms 42.400 ms 400.000 ms/	Spectrum           Ref Lavel -10           Att           SL 165:VID           ●10k C rw           +20 d8n           +30 d8n           +90 d8n           -90 d8n           -10 n5m           GE 133.9 MHz           Marker           Type Ref	00 dBm 10 dB -50 500 00	SWT 2	e	VBW 10	MHz MHz 1001 1001					Γunct	ion Res	-24.83 c	iBm UU s 3 dB I ms

Figure 5(e): 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 HP8546A, BILOG3142.

**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.
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					Test Date:	18-Dec-18
	Detector	IF Bandwidth	Video Bandwidth		Test Engineer:	Joseph Brunett
	Pk	10 kHz	30 kHz		EUT:	Schrader AG5MWD
					<b>EUT Mode:</b>	Modulated
					Meas. Distance:	10 cm
						FCC/IC
		Center Frequency	20 dB EBW	EBW Limit	99% OBW	
#	Modulation	(MHz)	(MHz)	(MHz)	(MHz)	
1	ASK	314.90	0.120	0.7873	0.502	
2	FSK	314.95	0.139	0.787375	0.198	
3	ASK	433.9	0.122	1.08475	0.516	
4	FSK	433.9	0.143	1.08475	0.207	

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Spectrum	314.9 MH	Iz - A	SK			Spectrum	31 ך	4.9 MH	z - FS	K			
RefLevel - 10 00 dBr All 5 d		₩ 10 kHz				RefLevel -10 00 dBm							
ALL 5 U D1Pk Max	18 🖷 SWT 30 ms 🖷 VB1	W SU KH2	MODE AUTO FFT			ALL I I I I I I I I I I I I I I I I I I I	5 UB 🔲 🕏	SWAT 30 ms 🖷 🕅	SW EU KH2	MODE ALTC FFT			
-			D0[1]		-0.01 dC 119.900 kHz					D0[1]		13	-0.50 dB 8.900 kHz
-20 UBi i		Μ	1 Occ Bw M1[1]	582	.497502497 kHz -26.33 dBm	-20 dBr i			M	1 Occ Bw /M1[1]		197.80219	7802 kHz 5.97 dBm
-31 dPm			(		314.948100 MHz	-31 dPm							8100 MHz
-40 dBm		D2	1 03			-40 dBm			т1 🕬				
-50 dBm	T.1	<u>Ā</u> j		T2		-50 dBm				- <del>X</del>			
-pu dino -/ A_A	h X han	9		A. J. A.	A A.A.A	-oj dyn		AA	μ	1	r. mm		
-70 dem					- www	-70 dPm	m	~~~				how	m
80 dBi i						80 dBri							
-91 dPm						-91 dPm							
-130 c6m						-100 c6m							
CF 314.9401 MHz		1001	nts		Span 1.0 MHz	СГ 314.9401 М	112		1001	nts		Snan	1.0 MHz
Marker		1001			oparraio	Marker						opun	
Type Ref Trc	X-value	Y-value	Function	Function F	Result	Type Ref T	inc X	-value	Y-value	Function	Fur	iction Result	
ML 1 TL 1	314.9481 MHz 314.696352 MHz	-26.33 dBi -57.87 dBi		512	.497502497 kHz	M1 T1		314.9481 MHz	-25.97 dB -49.47 dB			197.80219	7802 kHz
T2 1	015.190049 MHz	55.71 dBi	m	022		T2	1 019	5.005962 MHz	40.09 dB	m		151100215	TOOL NIL
D2 M1 1	-58.9 kHz	-20.04 d	ie.			D2 M1	1	-29.C kHz	-20.25 (	iB			
								100 C Mun	0.52.4	In			
D3 D2 1	119.0 kHz	-0.01 d				D3 D2	1	138.0 kHz	-0.53 (	1B.			
D3 D2 1		-0.01 d	IB.		Ē	D3 D2	1	138.5 kHz					Ē
	433.9 MH	-0.01 d	IB.			D3 D2	ı 43 _	3.9 MH					
Spectrum Ref Level -10 00 dBi All 5 d	433.9 MH	-0.01 d [Z - A] W 10 kHz	ßK		(m	D3 D2 Spectrum Ref Level -10 All	1 43	3.9 MH	z - FS	K			
D3 D2 1 Spectrum Ref Level -10 00 dB/	119.6 kHz 433.9 MH	-0.01 d [Z - A] W 10 kHz	IB SK Mode Auto FFT		•	D3 D2 Spectrum Ref Level -10	1 43	3.9 MH	z - FS	Mode Auto FFT			
D3 D2 1 Spectrum Ref Level -10 00 dB/ All 5 d @1Pk Mex	119.6 kHz 433.9 MH	-0.01 d [Z - A] W 10 kHz	B SK Mode Auto FFT		0.56 d0 121.900 kHz	D3 D2 Spectrum Ref Level -10 All • 1Pk Max	1 43	3.9 MH	z - FS	Mode Auto FFT			0.05 dB 2.900 kHz
03 02 1 Spectrum Ref Level -10 00 dB/ AtL 5 d 01Pk Mex -20 dB/ 1	119.6 kHz 433.9 MH	-0.01 d [Z - A] W 10 kHz	B SK Mode Auto FFT DO[1]	516	0.56 d0 121.900 kHz .483516483 kHz	D3 D2 Spectrum Ref Level -10 All • 1Pk Max -23 dPi i	1 43	3.9 MH	z - FS	Mode Auto FFT		206.79320	-0.05 dB 2.900 kHz 16793 kHz
D3 D2 1 Spectrum Ref Level -10 00 dBA All 5 d @1Pk Mex	119.6 kHz 433.9 MH	-0.01 d [Z - A] W 10 kHz	B SK Mode Auto FFT		0.56 d0 121.900 kHz	D3 D2 Spectrum Ref Level -10 All • 1Pk Max	1 43	3.9 MH	z - FS	Mode Auto FFT		206.79320	0.05 dB 2.900 kHz
03 02 1 Spectrum Ref Level -10 00 dB/ AtL 5 d 01Pk Mex -20 dB/ 1	119.6 kHz 433.9 MH	-0.01 d Iz - A w 10 kHz w 20 kHz	B B Mode ALLC FFT D3[1] AL ODC BW M1[1] U		0.56 d0 121.900 kHz .483516483 kHz -25.10 dBm	D3 D2 Spectrum Ref Level -10 All • 1Pk Max -23 dPi i	1 43	3.9 MH		Mode Auto FFT		206.79320	-0.05 dB 2.900 kHz 16793 kHz 25.38 dBm
D3         D2         1           Spectrum         Ref Level -10 00 dBi         30           Att         S d         91Pk Mex           -20 dBi	119.6 kHz 433.9 MH	-0.01 d [Z - A] W 10 kHz	B SK Mode Auto FFT DO[1]		0.56 d0 121.900 kHz .483516483 kHz -25.10 dBm	D3 D2 Spectrum Ref Level -10 All 1Pk Mex -20 dBi i -31 dPm	1 43	3.9 MH	z - FS	Mode Auto FFT		206.79320	-0.05 dB 2.900 kHz 16793 kHz 25.38 dBm
D3         D2         1           Spectrum         Ref Level - 10 00 dBi         30           Att         5 d         5 d           #1Pk Mex         -23 dBi	119.6 kHz 433.9 MH	-0.01 d Iz - A w 10 kHz w 20 kHz	B B Mode ALLC FFT D3[1] AL ODC BW M1[1] U		0.56 dC 121.900 kHz .483516483 kHz -25.10 dBm	D3         D2           Spectrum         Ref Level -10 All           ●1Pk Mex         -23 UP: 1           -31 dPn         -43 dPn	1 43	3.9 MH		Mode Auto FFT		206.79320 -2 433.95	-0.05 dB 2.900 kHz 16793 kHz 5.38 dBm 7000 MHz
03         02         1           Spectrum		-0.01 d Iz - A w 10 kHz w 20 kHz	B B Mode ALLC FFT D3[1] AL ODC BW M1[1] U		0.56 d0 121.900 kHz -483516483 kHz -25.10 dBm -25.10 dBm 433.9 i 6000 MHz	D3         D2           Spectrum         Ref Level -10           All         91Pk Mex           • 1Pk Mex         -20 UB II           • 31 dPn         -31 dPn           • 50 dBn         -50 dBn	1 43	3.9 MH		Mode Auto FFT		206.79320	-0.05 dB 2.900 kHz 16793 kHz 5.38 dBm 7000 MHz
D3 02 1      Spectrum      Ref Level -10 00 dB      Att 5 0      PPk Max  -23 dB  -31 dPn  -53 dBn  -53 dBn  -73 dBn  -75 d		-0.01 d	B B Mode ALLC FFT D3[1] AL ODC BW M1[1] U		0.56 d0 121.900 kHz -483516483 kHz -25.10 dBm -25.10 dBm 433.9 i 6000 MHz	D3         D2           Spectrum         Ref Level -10           All         P1Pk Max           -20 UR I	1 43	3.9 MH		Mode Auto FFT		206.79320 -2 433.95	-0.05 dB 2.900 kHz 16793 kHz 5.38 dBm 7000 MHz
03         02         1           Spectrum		-0.01 d	B B Mode ALLC FFT D3[1] AL ODC BW M1[1] U		0.56 d0 121.900 kHz -483516483 kHz -25.10 dBm -25.10 dBm 433.9 i 6000 MHz	D3         D2           Spectrum         Ref Level -10           All         91Pk Mex           • 1Pk Mex         -20 UB II           • 31 dPn         -31 dPn           • 50 dBn         -50 dBn	1 43	3.9 MH		Mode Auto FFT		206.79320 -2 433.95	-0.05 dB 2.900 kHz 16793 kHz 5.38 dBm 7000 MHz
D3 02 1      Spectrum      Ref Level -10 00 dB      Pk Mex  -23 JB  -31 dP  -43 dB  -55 dB  -75		-0.01 d	B B Mode ALLC FFT D3[1] AL ODC BW M1[1] U		0.56 d0 121.900 kHz -483516483 kHz -25.10 dBm -25.10 dBm 433.9 i 6000 MHz	D3         D2           Spectrum         Ref Level -10           All         P1Pk Max           -20 UR I	1 43	3.9 MH		Mode Auto FFT		206.79320 -2 433.95	-0.05 dB 2.900 kHz 16793 kHz 5.38 dBm 7000 MHz
D3 02 1      Spectrum     Ref Level -10 00 dB     All     5 u      PPk Max -23 uB		-0.01 d	B B Mode ALLC FFT D3[1] AL ODC BW M1[1] U		0.56 d0 121.900 kHz -483516483 kHz -25.10 dBm -25.10 dBm 433.9 i 6000 MHz	D3         D2           Spectrum         Ref Lavel - 10           Ref Lavel - 10         All           ● IPk Mex         -23 d2n           -33 d2n         -33 d2n           -53 d2n         -73 d2n           83 J2i i         -83 J2i i	1 43	3.9 MH		Mode Auto FFT		206.79320 -2 433.95	-0.05 dB 2.900 kHz 16793 kHz 5.38 dBm 7000 MHz
D3         D2         1           Spectrum         Ref Level - 10 00 dBi         5 u           MI         5 u         5 u           19k Max         5 u         5 u           -23 UBi I		-0.01 d	B B B B B B B B B B B B B B B B B B B		0.56 d0 121.900 kHz -483516483 kHz -25.10 dBm -25.10 dBm +33.9 i 6000 MHz	D3         D2           Spectrum         Ref Lavel - 10           Ref Lavel - 10         All           -20 JB:	1 43 00 dBm 5 dB • 1	3.9 MH		Mode Auto FFT		206.79320 -2 433.95	-0.05 dB 2.900 kHz 16793 kHz 5.38 dBm 7000 MHz
03         02         1           Spectrum         Ref Level - 10 00 dB.         3           Main         5 ui         5           -23 uBi i		-0.31 d IZ - A W 10 HHz W 20 HHz	BI DO[1]	. A. TE A. A	0.55 d0 121.900 kHz -25.10 dBm +23.10 dBm +43.9 I 6000 MHz 	D3         D2           Spectrum         Ref Lavel - 10           All         -20           #1Pk Max         -20           -20         20           -31         dPn           -43         dPn           -53         dPn           -75         dPn           -75         dPn           -91         dPn           -130         c6m           CF         433.907 Mill           Marker	1 43 00 dbm 5 uB • s	3.9 MH	z - FS	Made Auto FPT		206.79370 -2 433.95	0.05 dB 2.900 KHz 16793 KHz 5.38 dBm 7000 MHz
03         02         1           Spectrum         Ref Level - 10 00 dBi         50           Marker         50         61 Pk Max           -20 dBi	110.0 KH2 433.9 MH m R84 B SWT 30 m5 VB1 T1 T1 T1 T1 T1 T1 T1 T1 T1 T	-0.01 d IZ - A W 10 kHz W 20 kHz	B. DO[1]		0.55 d0 121.900 kHz -25.10 dBm +23.10 dBm +43.9 I 6000 MHz 	D3         D2           Spectrum         Ref Level -10           All         -20           -20         B1Pk Max           -20         B2           -31         APn           -43         A2n           -53         APn           -53         APn           -73         APn           -90         APn           -100         c6m           CT         433.907 Mil           Marker         Type Jeef T	1 43 00 dBm 5 uB • s 5 uB • s 10 11 12 12 12	3.9 MH	z - FS	Mode Auto FFT DO[1] DO[1] DO[1] DO[2] DO[2	Fur	206.79320 -2 433.95	0.05 dB 2.900 KHz 16793 KHz 5.38 dBm 7000 MHz
03         02         1           Spectrum	110.6 KH2 433.9 MH m RB4 B SWT 30 ms VBV T1 T1 T1 T1 T1 T1 T1 T1 T1 T1	-0.31 d IZ - A W 10 kHz W 20 kHz 1001 Y-velue -25.16 db	BI DO[1]	Function F	0.55 d0 121.900 kHz -25.10 dBm +23.10 dBm +43.9 I 6000 MHz 	D3         D2           Spectrum         Ref Level -10           All         -23 dB1	1 43 00 dBm 5 uB • s 5 uB • s 1 1 433 1 433	3.9 MH	z - FS W 10 kHz W 20 kHz A A A A A A A A A A A A A	Mode Auto FFT DO[1] DO[1] DO[1] DO[2] DO[2	Fur	206.79370 -2 433.95	0.05 dB 2.900 kHz 16793 kHz 15.38 dBm 7000 MHz
03         02         1           Spectrum           Ref Level - 10         00         dB           Max         5         0           •1Pk Max         5         0           •23         dB         -           -43         dB         -           -53         dB         -           -53         dB         -           -53         dB         -           -73         dB         -           93         dB         -           -100         c6         -           Marker         -         -           Marker         -         1	110.0 KH2	-0.31 d IZ - A W 10 HH2 W 20 HH2 028 029 1001 -25.10 db	BI DO[1]	Function F	0.55 d0 121.900 kHz -25.10 dBm +25.10 dBm +43.916000 MHz 	D3         D2           Spectrum         Ref Level - 10           All         -23 d81           -23 d81         -           -31 d87         -           -43 d87         -           -53 d87         -           -83 d81         -           -91 d87         -           -100 c6m         -           Cf 430.907 MI         Marker           Type   ed   T         Marker	1 43 00 dBm 5 uB • s 5 uB • s 1 1 433 1 433	3.9 MH	z - FS W 10 kHz W 20 kHz A A A A A A A A A A A A A	Made Aute FFT DO[1] DO[1	Fur	206.79320 433.95 433.95 5pon spon	0.05 dB 2.900 kHz 16793 kHz 15.38 dBm 7000 MHz

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 HP8546A, BILOG3142.

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

Table 6: Fundamental Emission Field Strength.

	<b>Frequency</b> 25 MHz f	y <b>Range</b> 1 000 MHz		<b>Det</b> Pk/QPk	<b>IF Bandwi</b> 120 kHz			Video Band 300 kH:			Test Date: Test Engineer:	Test Date:22-Dec-18est Engineer:J. Brunett	
	f > 1 000	) MHz		Pk	1 MHz			3 MHz			EUT:	Sc	hrader AG5MWD
	f > 1 000	) MHz		Avg	1 MHz			10 kHz			EUT Mode:		CW
											Meas. Distance:		3 meters
													FCC/IC
	Freq.	Ant.	Ant.	Table Azim.	Ant Height	Ka	Kg	E3(Pk)**	E3(Avg)*	FCC/IC E3(Pk)	FCC/IC E3(Avg)	Pass	
#	MHz	Used	Pol.	deg	m	dB/m	dB	dBµV/m	dBµV/m	Lim. $dB\mu V/m$	Lim. $dB\mu V/m$	dB	Comments
1	314.9	LOGEMCO01	Н	.0	1.0	14.1	-1.2	70.4	60.6	87.7	67.7	7.1	end
2	314.9	LOGEMCO01	V	.0	1.4	14.1	-1.2	67.9	58.1	87.7	67.7	9.6	side
3	433.9	LOGEMCO01	Н	80.0	1.0	16.3	-1.5	73.8	64.3	92.9	72.9	8.6	end
4	433.9	LOGEMCO01	V	.0	1.4	16.3	-1.5	73.3	63.8	92.9	72.9	9.1	side

\*Avg data computed from Peak Measured Data and EUT Duty Cycle. EUT in CW mode.

\*\* Worst case emissions from both variants of housing.

### 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 HP8546A, BILOG3142, RH3115.

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

	Free	quency Range		Det		IF Ban	dwidth	Video Ba	ndwidth		1	Test Date:	22-Dec-18
	25 MHz	f 1 000 MHz		Pk/QPk		120	kHz	300	kHz		Test	Engineer:	J. Brunett
	f >	1 000 MHz		Pk		1 N	1Hz	3 M	Hz			EUT:	Schrader AG5MWD
	f >	1 000 MHz		Avg		1 N	1Hz	10k	Hz		EU	JT Mode:	CW
											Meas.	Distance:	3 meters
	Transmitter Unintentional Spurious Emissions								FCC/IC				
	Freq.	Ant.	Ant.	Table Azim.	Ant Height	Ka	Kg	E3(Pk)**	E3(Avg)	FCC/IC E3lim (Pk)	FCC/IC E3lim (Avg)	Pass	
#	MHz	Used	Pol.	deg	m	dB/m	dB	dBµV/m	dBµV/m	dBµV/m	dBµV/m	dB	Comments
1	630.0	LOGEMCO01	Н	.0	1.00	19.5	-2.1	42.3	32.5	74.0	54.0	21.5	flat
2	630.0	LOGEMCO01	V	.0	1.30	19.5	-5.7	40.2	30.4	74.0	54.0	23.6	flat
3	945.0	LOGEMCO01	Н	.0	1.10	23.2	-3.0	38.2	28.4	74.0	54.0	25.6	max all
4	945.0	LOGEMCO01	V	.0	1.50	23.2	-7.2	40.0	30.2	74.0	54.0	23.8	flat
5	1260.0	HQR1TO18S01	H/V	max all	1.50	32.8	-3.5	41.7	31.9	74.0	54.0	22.1	max all
6	1575.0	HQR1TO18S01	H/V	max all	1.50	30.9	-4.0	41.4	31.6	74.0	54.0	22.4	max all
7	1890.0	HQR1TO18S01	H/V	max all	1.50	30.0	-4.4	49.8	40.0	74.0	54.0	14.0	max all
8	2205.0	HQR1TO18S01	H/V	max all	1.50	29.8	-4.8	45.7	35.9	74.0	54.0	18.1	max all
9	2520.0	HQR1TO18S01	H/V	max all	1.50	30.0	-5.2	54.4	44.6	74.0	54.0	9.4	max all
10	2835.0	HQR1TO18S01	H/V	max all	1.50	30.4	-5.5	51.5	41.7	74.0	54.0	12.3	max all
11	3150.0	HQR1TO18S01	H/V	max all	1.50	30.8	-5.8	52.5	42.7	74.0	54.0	11.3	max all
12													
13	867.8	LOGEMCO01	Н	80.0	1.00	22.2	-2.8	44.5	35.0	74.0	54.0	19.0	end
14	867.8	LOGEMCO01	V	.0	1.40	22.2	-6.9	42.5	33.0	74.0	54.0	21.0	flat
15	1301.8	HQR1TO18S01	H/V	max all	1.50	32.4	-3.5	42.3	32.8	74.0	54.0	21.2	max all
16	1735.7	HQR1TO18S01	H/V	max all	1.50	30.4	-4.2	44.0	34.5	74.0	54.0	19.5	max all
17	2169.6	HQR1TO18S01	H/V	max all	1.50	29.8	-4.8	42.2	32.7	74.0	54.0	21.3	max all
18	2603.5	HQR1TO18S01	H/V	max all	1.50	30.1	-5.3	55.8	46.3	74.0	54.0	7.7	max all
19	3037.4	HQR1TO18S01	H/V	max all	1.50	30.7	-5.7	48.1	38.6	74.0	54.0	15.4	max all
20	3471.4	HQR1TO18S01	H/V	max all	1.50	31.3	-6.1	46.2	36.7	74.0	54.0	17.3	max all
21	3905.3	HQR1TO18S01	H/V	max all	1.50	31.8	-6.4	42.9	33.4	74.0	54.0	20.6	max all, noise
22	4339.2	HQR1TO18S01	H/V	max all	1.50	32.1	-6.7	43.6	34.1	74.0	54.0	19.9	max all, noise
23													

### Table 7: Transmit Chain Spurious Emissions.

\*Avg data computed from Peak Measured Data and EUT Duty Cycle. EUT in CW mode.

\*\* Worst case emissions from both variants of housing.

### 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.

${\bf Measurement} ~ {\bf Uncertainty}^{\dagger}$
$\pm (f_{Mkr}/10^7 + RBW/10 + (SPN/(PTS - 1))/2 + 1 \text{ Hz})$
$\pm 1.9\mathrm{dB}$
$\pm 4.0\mathrm{dB}$
$\pm 5.2\mathrm{dB}$
$\pm 3.7\mathrm{dB}$

<sup>†</sup>Ref: CISPR 16-4-2:2011+A1:2014

United States Department of Commerce National Institute of Standards and Technology	FEDERAL COMMUNICATIONS COMMISSION Laboratory Division 7435 Oaktand Millis Read Columbia, MD 21046 July 06, 2018
Certificate of Accreditation to ISO/IEC 17025:2005	National Voluntary Laboratory Accreditation Program 100 Brenan Diro Gaithersburg, MD 20899-2140
NVLAP LAB CODE: 200129-0 AHD (Amber Helm Development, L.C.) Sister Lakes, MI	Attention:     Timothy Rasinski       Re:     Accreditation of AHD (Amber Helm Development, L.C.)       Designation     Designation of AS9064
is eccretited by the National Voluntary Laboratory Accreditation Program for specific services, Island on the Scope 3 Accreditation, for. <b>Electromagnetic Compatibility &amp; Telecommunications</b> This islowatory is accredited in accrediance with her recognized internations' Standard 150/REC 17025.2005. This accreditation domination technical completence for defined access and the operation of a biotrary guilty management system (refer to joint ISC-LAC-LAF Communicate adult January 2009). 20:8-07-02 (corrupt 2019-06-10 Planets Takes	Dear Sir or Madam: We have been notified by National Voluntary Laboratory Accreditation Program that AHD (Amber Helm Development, L.C.) has been accredited as a testing laboratory. At this time AHD (Amber Helm Development, L.C.) is breeby recognized to perform compliance testing on equipment subject to Declaration Of Conformity (DOC) and Certification of the Commission's Rules. This recognition will expire upon expiration of the accreditation or notification of withdrawal of recognition Ary queations about this recognition should be submitted as an inquiry to the FCC Knowledge Database at www.icc.gov/adb. Sincerely,
	George Tannahill Electronics Engineer



Figure 7: Accreditation Documents