## Report on the FCC and IC Testing of the Siemens AG

Model: RF695R

## In accordance with FCC 47 CFR Part 15C and ISED Canada RSS-247 and ISED Canada RSS-GEN

Prepared for:

Siemens AG Gleiwitzer Str.555 90475 Nürnberg Germany

FCC ID: NXW-RF69XR IC: 267X-RF69XR

## COMMERCIAL-IN-CONFIDENCE

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Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service document control rules.

#### ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15C and ISED Canada RSS-247 and ISED Canada RSS-GEN. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME		DATE		SIGNATURE
Testing	Michael Ingerl		2023-10-1	10	M. January SIGN-ID 841135
Laboratory Accreditation DAkkS Reg. No. D-PL-11321-11-02		Laboratory recognition Registration No. BNetzA-CAB-16	/21-15	ISED Canada 3050A-2	test site registration
DAkkS Reg. No. D-PL-113	21-11-03				

#### EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15C (2020), ISED Canada RSS-247 (2017) and ISED Canada RSS-GEN (2018).

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## 1 Report Summary

#### 1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Revision	Description of Change	Date of Revision
0	First Revision	2023-03-10
1	Changed FCC and IC ID (Typo), Added Hopping Mode at Chapter 2.1, Added Transmitting simultaneously info as a note at chapter 1.4.1.	2023-10-10

Table	1	

#### 1.2 Introduction

Applicant	Siemens AG			
Manufacturer	Siemens AG			
Model Number(s)	RF695R (Tested) RF690R			
MLFB(s)	RF695R6GT2 811-7DD20-1AA0RF690R6GT2 811-7AD20-1AA0			
FCC ID(s)	NXW-RF69XR			
IC ID(s)	267X-RF69XR			
Serial Number(s)				
Hardware Version(s)				
Software Version(s)				
Number of Samples Tested	1			
Test Specification/Issue/Date	FCC 47 CFR Part 15C (2020), ISED Canada RSS-247 (2017), ISED Canada RSS-GEN (2018).			
Test Plan/Issue/Date				
Order Number	5683255			
Date of Receipt of EUT	2023-02-02			
Start of Test	2023-02-08			
Finish of Test	2023-03-10			
Name of Engineer(s)	Michael Ingerl			
Related Document(s)	ANSI C63.10 (2020)			



#### 1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15C and ISED Canada RSS-247 and ISED Canada RSS-GEN is shown below.

Section	Test Description	Result	Comments/Base Standard
Configura	tion and Mode: UHF Transmitting, with modulated		
2.1	Authorised Band Edges	Pass	ANSI C63.10 (2020)
2.2	Transmitter Output Power	Pass	ANSI C63.10 (2020)
2.3	Field Strength of any Emission	Pass	ANSI C63.10 (2020)
2.4	Restricted Band Edges	Pass	ANSI C63.10 (2020)
2.5	Bandwidth, Carrier Frequency Separation, Number of Hopping Frequencies and Dwell Time	Pass	ANSI C63.10 (2020)
2.6	Frequency Tolerance Under Temperature Variations	Pass	ANSI C63.10 (2020)



#### 1.4 Product Information

#### 1.4.1 Technical Description

Equipment characteristics:				
Type of equipment:	RF6xxR UHF RFID Reader			
Type designation:	RF695R (Tested) RF690R			
Power supply:	AC Nominal: Minimum: Maximum: Nominal frequency:	DC Nominal: 24 V Minimum: 19.2 V Maximum: 28.8 V	Battery Nominal:	
Application <sup>1</sup> :	Radio Frequency Identification	Application		
Kind of equipment	Transceiver			
Equipment class:	Equipment for fixed use			
Frequency range:	902 – 928 MHz			
Channels:	50			
Transmitting simultaneously:	No, only one Antenna port is sending			
Type of Antenna(s)	External Antenna:			
	Siemens SIMATIC RF642A			
Antenna Gain	7 dBi			

<sup>&</sup>lt;sup>1</sup> Classification according to CEPT/ERC Recommendation 70-03



#### 1.5 Deviations from the Standard

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#### 1.6 EUT Modification Record

The table below details modifications made to the EUT during the test programme. The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State Description of Modification still fitted to EUT		Modification Fitted By	Date Modification Fitted
0	As supplied by the customer	Not Applicable	Not Applicable

Table 3

#### 1.7 Test Location

TÜV SÜD Product Service conducted the following tests at our Straubing Test Laboratory.

Test Name	Name of Engineer(s)
Authorised Band Edges	Michael Ingerl
Transmitter Output Power	Michael Ingerl
Field Strength of any Emission	Michael Ingerl
Restricted Band Edges	Michael Ingerl
Bandwidth, Carrier Frequency Separation, Number of Hopping Frequencies and Dwell Time	Michael Ingerl
Frequency Tolerance Under Temperature Variations	Michael Ingerl
Conducted Emissions on Mains Terminals	Michael Ingerl

Table 4

Office Address:

Äußere Frühlingstraße 45 94315 Straubing Germany



### 2 Test Details

#### 2.1 Authorised Band Edges

#### 2.1.1 Specification Reference

FCC 47 CFR Part 15C, 15.247 (a) (1) (i) ISED Canada RSS-247, 5.1 (c) ISED Canada RSS-GEN

#### 2.1.2 Equipment Under Test and Modification State

RF695R, S/N: --- - Modification State 0

#### 2.1.3 Date of Test

2023-03-09

#### 2.1.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.3, 6.5 and 6.6.

#### 2.1.5 Environmental Conditions

Ambient Temperature	22.0 °C
Relative Humidity	37.0 %



#### 2.1.6 Test Results

#### Continuously transmitting

									- 🛞
Spectrum	Spe	ectrum 2	🗶 St	ectrum 3	X				
Ref Level 4 Att	0.00 dBm 50 dB	Offset 10 SWT 1	1.00 dB 👄 R .8.9 μs 👄 V	<b>BW</b> 100 kH <b>BW</b> 300 kH	z z Mode	Auto FFT			
●1Pk Max									
					M	2[1] M1		- 902.0	28.79 dBm 00000 MHz
30 dBm					M		I	902.7	31.67 dBm 50450 MHz
20 dBm						+++			
10 dBm						$\left  \right $			
0 dBm						$\left \right $			
-10 dBm									
-20 dBm									
-30 dBm		~~~~	~~~~~	~~~~~ <sup>M</sup>	2 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	4	home		
-40 dBm									
-50 dBm									
				F	1				
CF 902.0 MH	Ηz			3200	1 pts			Spa	n 5.0 MHz

Date: 9.MAR.2023 19:01:48

,



Spectrum	Sp	ectrum 2	🗶 St	ectrum 3	x				
Ref Level Att	40.00 dBm 50 dB	Offset 10 SWT	).00 dB 🕳 R 18.9 µs 👄 V	<b>BW</b> 100 kH <b>BW</b> 300 kH	z z Mode	Auto FFT			
⊖1Pk Max									
			M1		м	2[1]		928.0	30.05 dBm 07187 MHz
30 dBm			$\wedge$		M	1[1]	I	927.2	31.05 dBm 50000 MHz
20 dBm									
10 dBm									
0 dBm									
-10 dBm									
-20 dBm									
~30 dBm ~~	~~~~~			لحمم	2 			~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
-40 dBm									
-50 dBm									
				F	1				
CF 928.0 M	Hz			3200	1 pts			Spa	n 5.0 MHz

Date: 9.MAR.2023 19:02:34



#### Continuously transmitting in Hopping Mode



Spectrum Spectrum 2 🛛 🛞 Spectrum 3 X Ref Level 40.00 dBm Offset 10.00 dB 🖷 RBW 100 kHz Att 50 dB SWT 56.8 µs 👄 **VBW** 300 kHz Mode Auto FFT ⊖1Pk Max M1[1] 29.34 dBn 902.00000 MH 30 dBm 44444 20 dBm 10 dBm 0 dBm -10 dBm ЩI -20 dBm أسارها 30 086 -40 dBm -50 dBm Span 40.0 MHz CF 902.0 MHz 32001 pts

Date: 9.MAR.2023 18:44:29



Spectrum Spectrum 2 Spectrum 3 X Ref Level 40.00 dBm Offset 10.00 dB 🖷 RBW 100 kHz Att 50 dB SWT 56.8 µs 👄 **VBW** 300 kHz Mode Auto FFT ⊖1Pk Max M1[1] -28.68 dBm 928.00120 MHz dBł -20 dBm -30 dBm -40 dBm -50 dBm F Span 40.0 MHz CF 928.0 MHz 32001 pts

Date: 9.MAR.2023 18:46:33



#### 2.1.7 Test Location and Test Equipment Used

This test was carried out in a non shielded room.

Instrument	Manufacturer	Туре No	TE No	Calibration Period (months)	Calibration Due
Signal and Spectrum Analysator	Rohde & Schwarz	FSV40	20219	12	2024-02-29



#### 2.2 Transmitter Output Power

#### 2.2.1 Specification Reference

FCC 47 CFR Part 15C, 15.247 (b) (2) ISED Canada RSS-247, 5.4 (a) ISED Canada RSS-GEN

#### 2.2.2 Equipment Under Test and Modification State

RF695R, S/N: --- - Modification State 0

#### 2.2.3 Date of Test

2023-03-09

#### 2.2.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.3, 6.4 and 6.5.

#### 2.2.5 Environmental Conditions

Ambient Temperature22.0 °CRelative Humidity37.0 %

#### 2.2.6 Test Results

Continuously transmitting

Frequency (MHz)	Conducted Output Power (dBm)	Limit (dBm)
902,75	24.38	30
915,25	24.26	30
927,25	24.09	30

Note: The tested Antenna Port is the worst-case Port (Pre-tests made for the worst-case) Measured conducted without Antenna Gain added.



#### 2.2.7 Test Location and Test Equipment Used

This test was carried out in a non shielded room.

Instrument	Manufacturer	Туре No	TE No	Calibration Period (months)	Calibration Due
Signal and Spectrum Analysator	Rohde & Schwarz	FSV40	20219	12	2024-02-29
Switching device	Rohde & Schwarz	OSP120 for TS8997	20248	36	2023-11-30
EMC measurement software	Rohde & Schwarz	EMC32 TS8997 - V10.60.00	44381		
Switching device	Rohde & Schwarz	OSP120 for TS8997	38807	36	2023-11-30



#### 2.3 Field Strength of any Emission

#### 2.3.1 Specification Reference

FCC 47 CFR Part 15C, 15.209 ISED Canada RSS-247, 5.5 ISED Canada RSS-GEN, 6.13

#### 2.3.2 Equipment Under Test and Modification State

RF695R, S/N: --- - Modification State 0

#### 2.3.3 Date of Test

2023-02-08 - 2023-03-09

#### 2.3.4 Test Method

The test was performed according to ANSI C63.10, sections 11.11 and 11.12

Prescans are performed in six positions of the EUT to get the full spectrum of emission caused by the EUT with the measuring antenna raised and lowered from 1 m to 4 m with vertical and horizontal polarisation to find the combination of table position, antenna height and antenna polarisation for the maximum emission levels.

Data reduction is applied to these results to select those levels having less margin than 10 dB or exceeding the limit using subranges and limited number of maximums.

Further maximisation for adjusting the maximum position is following.

Equipment and cables are placed and moved within the range of position likely to find their maximum emissions.



#### 1.1.1.1 Frequency range 9 kHz – 30 MHz

The EUT was placed on a non-conductive table, 0.8 m above the ground.

Radiated emissions in the frequency 9 kHz – 30 MHz is measured within a semi-anechoic room with an active loop antenna with the measurement detector set to peak. In addition in the frequency range 9 kHz to 490 kHz also an average detector was used. The measurement bandwidth of the receiver was set to 300 Hz in the frequency range 9 kHz to 150 kHz and 10 kHz in the frequency range 150 kHz to 30 MHz. Prescans were performed in six positions of the EUT. For final measurements the detector was set to CISPR quasi-peak and in addition to CISPR average in the frequency range 9 kHz to 490 kHz and 9 kHz in the frequency range 150 kHz to 30 MHz. Final tests were performed immediately after a final frequency and zoom (for drifting disturbances) and maximum adjustment.







Alternate test site (semi anechoic room)

The EUT was placed on a non-conductive table, 0.8 m above the ground plane Radiated emissions in the frequency range 30 MHz - 1 GHz is measured within a semi-anechoic room with groundplane complying with the NSA requirements of ANSI C63.4. for alternative test sites. A linear polarised logarithmic periodic antenna combined with a 4:1 broadband dipole ("Trilog broadband antenna") is used.

For prescan tests the test receiver is set to peak-detector with a bandwidth of 120 kHz. With the measurement bandwidth of the test receiver set to 120 kHz CISPR quasi-peak detector is selected for final measurements following immediately after a final frequency zoom (for drifting disturbances) and maximum adjustment.



#### 1.1.1.3

Fully anechoic room

The EUT was placed on a non-conductive table, 1.5 m above the ground plane



Radiated emission tests above 1 GHz are performed in a fully anechoic room with the S<sub>VSWR</sub> requirements of ANSI C63.4. Measurements are performed both in the horizontal and vertical planes of polarisation using a test receiver with the detector function set to peak and average and the resolution bandwidth set to 1 MHz. Testing above 1 GHz is performed with horn antennas with the EUT in boresight of the antenna.

For prescan tests the test receiver is set to peak- and average-detector with a bandwidth of 1 MHz. With the measurement bandwidth of the test receiver set to 1 MHz and peak- and CISPR average-detector is selected for final measurements following immediately after a final frequency zoom (for drifting disturbances) and maximum adjustment.

#### 2.3.5 Environmental Conditions

Ambient Temperature20.0 °CRelative Humidity33.0 %



#### 2.3.6 Test Results

#### **Conducted Measurement:**

Channel: 902.75 MHz

									- 😵
Spectrun	n Sp	ectrum 2	X	Spectrum 3	×				
Ref Level	-6.00 dBm	Offset 1	0.00 dB	RBW 100 k	Hz				( - )
Att	0 dB	SWT	5 ms	VBW 300 k	Hz Mode	Auto FFT			
• 1PK Max	theck			PARS	M	1[1]			72 75 dBm
-10 dBm	CC 15.209	conducted		PASS		1[1]		5	73.660 kHz
FCC 15.209	conducted								
-20 dBm									
-30 dBm									
1									
-40 dBm									
-50 dBm									
-60 dBm									
🚧 dBm—									
Winner					mander	manthanthan	munuman	and Manuala	harris and
-80 dBm	Myrand Whater	for the little and the for	<b>///////////////</b> /////////////////////	and a strate of the second strates in order					
-90 dBm									
-100 dBm—									F1
Start 9.0 k	H7			3200	1 nts			Ston	30.0 MHz
									~
									6
Spectrun	n Sp	ectrum 2	X	Spectrum 3	3 X				
Spectrun Ref Level	n Sp -6.00 dBm	ectrum 2 Offset 1	<b>X</b> 0.00 dB	Spectrum 3	2 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	uto Swoor			
Spectrun Ref Level Att 1Pk Max	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 • SWT	<b>X</b> 0.00 dB 39.9 ms	Spectrum 3 • RBW 1 MH • VBW 3 MH	Z Z Mode A	uto Sweep	)		
Spectrun Ref Level Att 1Pk Max	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	<b>X</b> 0.00 dB 39.9 ms	Spectrum 3 RBW 1 MH VBW 3 MH	Z Z Mode A	uto Sweep 3(1)	)		57.70 dBm
Spectrun Ref Level Att • 1Pk Max -10 dBm +1	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	8 0.00 dB 39.9 ms	Spectrum 3 RBW 1 MH VBW 3 MH	z Z Mode A	uto Sweep 3[1]	)	- 2.7	57.70 dBm 08263 GHz
Spectrun Ref Level Att 1Pk Max -10 dBm	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	8 0.00 dB 39.9 ms	Spectrum 3 RBW 1 MH VBW 3 MH	Z Mode A	uto Sweep 3[1] 1[1]	)	- 2.7 90	57.70 dBm 08263 GHz 9.39 dBm 2.820 MHz
Spectrum Ref Level Att • 1Pk Max -10 dBm	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	(X) 0.00 dB 39.9 ms	Spectrum 2 • RBW 1 MH • VBW 3 MH	Z Z Mode A M	uto Sweep 3[1] 1[1]	, 	- 2.7 90	57.70 dBm 08263 GHz 9.39 dBm 12.820 MHz
Spectrun Ref Level Att P1Pk Max -10 dBm -20 dBm -30 dBm	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	0.00 dB 39.9 ms	Spectrum 2 RBW 1 MH VBW 3 MH	Z Mode A	uto Sweep 3[1] 1[1]		- 2.7 90	57.70 dBm 08263 GHz 9.39 dBm 12.820 MHz
Spectrun Ref Level Att 10 dBm -20 dBm -30 dBm -40 dBm	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	8 0.00 dB 39.9 ms	Spectrum 2 RBW 1 MH VBW 3 MH	Z Mode A Mode A	uto Sweep 3[1] 1[1]		- 2.7 90	57.70 dBm 08263 GHz 9.39 dBm 12.820 MHz
Spectrun Ref Level Att 10 dBm -20 dBm -30 dBm -40 dBm	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	8) 0.00 dB 39.9 ms	Spectrum 2 RBW 1 MH VBW 3 MH	Z Mode A Mode A	uto Sweep 3[1] 1[1]		- 2.7 90	57.70 dBm 08263 GHz 9.39 dBm 12.820 MHz
Spectrun Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -50 dBm	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	8) 0.00 dB 39.9 ms	Spectrum 2 • RBW 1 MH • VBW 3 MH	Z Mode A	uto Sweep 3[1] 1[1]		- 2.7 90	57.70 dBm 08263 GHz 9.39 dBm 12.820 MHz
Spectrun Ref Level Att 10 dBm -10 dBm -20 dBm -30 dBm -50 dBm FCC 15 209	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	8) 0.00 dB 39.9 ms	Spectrum 2 • RBW 1 MH • VBW 3 MH	2 2 Mode A M:	uto Sweep 3[1] 1[1]		- 2.7 90	57.70 dBm 08263 GHz 9.39 dBm 12.820 MHz
Spectrun Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -50 dBm	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	8) 0.00 dB 39.9 ms	Spectrum 2 • RBW 1 MH • VBW 3 MH	2 2 Mode A M: M	uto Sweep 3[1] 1[1]		90	57.70 dBm 08263 GHz 9.39 dBm 12.820 MHz
Spectrum Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm FCC 15.209 Country	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	8 0.00 dB 39.9 ms	Spectrum 2 • RBW 1 MH • VBW 3 MH	X Z Mode A M M	uto Sweep 9[1] 1[1]		- 2.7 90	57.70 dBm 08263 GHz 9.39 dBm 2.820 MHz
Spectrum Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm FCC 15.209 Control 15.209 Control 15.209	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	8 0.00 dB 39.9 ms	Spectrum 2 • RBW 1 MH • VBW 3 MH	X Z Mode A M M	uto Sweep 9[1] 1[1]		- 2.7 90	57.70 dBm 08263 GHz 9.39 dBm 2.820 MHz
Spectrum Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -30 dBm -50 dBm FCC 15.209 -80 dBm	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	8 0.00 dB 39.9 ms	Spectrum 2 • RBW 1 MH • VBW 3 MH	X Z Z Mode A M M	uto Sweep 3(1) 1(1)		- 2.7 90	57.70 dBm 08263 GHz 9.39 dBm 2.820 MHz
Spectrum Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm FCC 15.209 -80 dBm -90 dBm	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	8 0.00 dB 39.9 ms	Spectrum 3 • RBW 1 MH • VBW 3 MH	X Z Z Mode A M	uto Sweep 3[1] 1[1]		- 2.7 90	57.70 dBm 08263 GHz 9.39 dBm 2.820 MHz
Spectrun Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -50 dBm -50 dBm -50 dBm -80 dBm -90 dBm	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	8 0.00 dB 39.9 ms	Spectrum 3	X Z Z Mode A M	uto Sweep 3[1] 1[1]		- 2.7 90	57.70 dBm 08263 GHz 9.39 dBm 12.820 MHz
Spectrun Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -50 dBm -50 dBm -50 dBm -80 dBm -90 dBm -100 dBm	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	8 0.00 dB 39.9 ms	Spectrum 2 • RBW 1 MH • VBW 3 MH	X Z Z Mode A M M	uto Sweep 3[1] 1[1]		- 2.7 90	57.70 dBm 08263 GHz 9.39 dBm 12.820 MHz
Spectrun Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -50 dBm -50 dBm -90 dBm -100 dBm -100 dBm	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	8 0.00 dB 39.9 ms	Spectrum 3 • RBW 1 MH • VBW 3 MH	X Z Z Mode A M M	uto Sweep 3[1] 1[1]		- 2.7 90	57.70 dBm 08263 GHz 9.39 dBm 12.820 MHz
Spectrun Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -50 dBm -50 dBm -50 dBm -50 dBm -90 dBm -100 dBm -100 dBm	n Sp -6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	8 0.00 dB 39.9 ms	Spectrum 3 RBW 1 MH VBW 3 MH	X Z Z Mode A M	uto Sweep 3[1] 1[1]		- 2.7 90	57.70 dBm 08263 GHz 9.39 dBm 12.820 MHz
Spectrun Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -50 dBm -50 dBm -90 dBm -100 dBm -100 dBm -100 dBm -100 dBm -100 dBm -100 dBm	n Sp -6.00 dBm 0 dB 	ectrum 2 Offset 1 SWT	COULD ADDRESS OF THE COUL	Spectrum 3 RBW 1 MH VBW 3 MH	X Z Z Mode A M	uto Sweep 3[1] 1[1]	)	- 2.7 90 	57.70 dBm 08263 GHz 9.39 dBm 12.820 MHz
Spectrun           Ref Level           Att           1Pk Max           -10 dBm           -20 dBm           -30 dBm           -40 dBm           -50 dBm           -50 dBm           -50 dBm           -50 dBm           -100 dBm	n Sp -6.00 dBm 0 dB 	ectrum 2 Offset 1 SWT M3 M3 M3 M3 M3 M3 M3 M3 M3 M3		Spectrum 2 • RBW 1 MH • VBW 3 MH	X Z Z Mode A M	uto Sweep 3[1] 1[1]	)	2.7 90	57.70 dBm 08263 GHz 9.39 dBm 2.820 MHz



#### Channel: 915.25 MHz





#### Channel: 927.25 MHz

Spectrum	Sn	ectrum 2	(X)	Spectrum 3	x				( ministration of the second s
Ref Level	-6.00 dBm	Offset 1	0.00 dB	RBW 100 kH	-IZ				
Att	0 dB	SWT	5 ms	🔵 <b>VBW</b> 300 kH	lz Mode	Auto FFT			
1Pk Max	h la			n tha					70.00.10
-10 dBm	песк С 15.209 (	conducted		PASS	M	1[1]		5	73.60 dBm 73.660 kHz
FCC 15.209 c	onducted								
-20 dBm									
<b>}</b>									
-30 dBm									
1									
40 dBm									
-50 dBm									
-60 dBm									
N70 dBm									
MT abiii									
on allowing	and all and	-	montent	mannon	annahanna	A. Warthow Charles	havennen	unhunn	mound
-00 Ubin									
0.0 - 10									
-90 aBm									
-100 dBm-									F1
Start 9.0 ki	Hz			32001	Lpts			Stop	30.0 MHz
									<b>A</b>
Spectrum	Sp	ectrum 2	X	Spectrum 3	×				
Spectrum Ref Level	-6.00 dBm	ectrum 2 Offset 1	<b>X</b> 0.00 dB	Spectrum 3 RBW 1 MHz	8				
Spectrum Ref Level Att	-6.00 dBm 0 dB	ectrum 2 Offset 1 • SWT	<b>X</b> 0.00 dB 39.9 ms	Spectrum 3 RBW 1 MHz VBW 3 MHz	X Mode A	uto Sweep			
Spectrum Ref Level Att 1Pk Max	-6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	8 0.00 dB 39.9 ms	Spectrum 3 RBW 1 MHz VBW 3 MHz	X Mode A	uto Sweep 2[1]			42.33 dBm
Spectrum Ref Level Att 1Pk Max -10 dBm Ma	-6.00 dBm 0 dB	ectrum 2 Offset 1 • SWT	8 0.00 dB 39.9 ms	Spectrum 3 RBW 1 MHz VBW 3 MHz	8 Mode A	uto Sweep 2[1]			42.33 dBm 54920 GHz
Spectrum Ref Level Att 1Pk Max -10 dBm-44 -20 dBm	-6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	8 0.00 dB 39.9 ms	Spectrum 3 RBW 1 MHz VBW 3 MHz	8 Mode A M	uto Sweep 2[1] 1[1]			42.33 dBm 54920 GHz 10.19 dBm 7.420 MHz
Spectrum Ref Level Att •1Pk Max -10 dBm 441 -20 dBm	-6.00 dBm 0 dB	ectrum 2 Offset 1 SWT	<b>X</b> 0.00 dB 39.9 ms	Spectrum 3 RBW 1 MHz VBW 3 MHz	Mode A	uto Sweep 2[1] 1[1]		- 1.8 92	42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz
Spectrum Ref Level Att • 1Pk Max -10 dBm -20 dBm -30 dBm	-6.00 dBm 0 dB	ectrum 2 Offset 1 • SWT	X) 0.00 dB 39.9 ms	Spectrum 3 RBW 1 MHz VBW 3 MHz	Mode         A          M        M	uto Sweep 2[1] 1[1]		- 1.8 92	42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz
Spectrum Ref Level Att •10 dBm-41 -20 dBm -30 dBm	-6.00 dBm 0 dB	ectrum 2 Offset 1 • SWT	8) 0.00 dB 39.9 ms	Spectrum 3 RBW 1 MHz VBW 3 MHz	Mode         A          M        M	uto Sweep 2[1] 1[1]		- 1.8 92	42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz
Spectrum Ref Level Att •1Pk Max -10 dBm -20 dBm -30 dBm -40 dBm	-6.00 dBm 0 dB	ectrum 2 Offset 1 • SWT	8) 0.00 dB 39.9 ms	Spectrum 3 RBW 1 MHz VBW 3 MHz	Mode         A          M        M	uto Sweep 2[1] 1[1]			42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz
Spectrum Ref Level Att • 1Pk Max -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm	-6.00 dBm 0 dB	ectrum 2 Offset 1 • SWT	8) 0.00 dB 39.9 ms	Spectrum 3 RBW 1 MHz VBW 3 MHz	Mode         A          M        M	uto Sweep 2[1] 1[1]			42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz
Spectrum Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm	-6.00 dBm 0 dB	ectrum 2 Offset 1 • SWT	0.00 dB 39.9 ms	Spectrum 3 RBW 1 MHz VBW 3 MHz	Mode         A          M        M	uto Sweep 2[1] 1[1]			42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz
Spectrum Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm FCC 15.209 c	-6.00 dBm 0 dB	ectrum 2 Offset 1 • SWT	0.00 dB 39.9 ms	Spectrum 3 RBW 1 MHz VBW 3 MHz	Mode A     M:	uto Sweep 2[1] 1[1]			42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz
Spectrum Ref Level Att • 1Pk Max -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm FCC 15.209 c	-6.00 dBm 0 dB	ectrum 2 Offset 1 • SWT	©.00 dB 39.9 ms	Spectrum 3  RBW 1 MHz VBW 3 MHz	Mode         A          M        M	uto Sweep 2[1] 1[1]		- 1.8 92	42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz
Spectrum Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -50 dBm -50 dBm	-6.00 dBm 0 dB	ectrum 2 Offset 1 • SWT	(0.00 dB     (39.9 ms	Spectrum 3  RBW 1 MHz VBW 3 MHz	Mode         A          M        M	uto Sweep 2[1] 1[1]		- 1.8 92	42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz
Spectrum Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -30 dBm -50 dBm -50 dBm -50 dBm -50 dBm -80 dBm	-6.00 dBm 0 dB M2	ectrum 2 Offset 1 • SWT	©.00 dB 39.9 ms	Spectrum 3  RBW 1 MHz VBW 3 MHz	Mode         A          M        M	uto Sweep 2[1] 1[1]		- 1.8 92	42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz
Spectrum Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -30 dBm -50 dBm -50 dBm -50 dBm -60 dBm -80 dBm	-6.00 dBm 0 dB M2	ectrum 2 Offset 1 • SWT	©.00 dB 39.9 ms	Spectrum 3  RBW 1 MHz VBW 3 MHz	X           Mode          M          M          M          M	uto Sweep 2[1] 1[1]		- 1.8 92	42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz
Spectrum Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -30 dBm -50 dBm -50 dBm -50 dBm -80 dBm -90 dBm	-6.00 dBm 0 dB M2	ectrum 2 Offset 1 • SWT	©.00 dB 39.9 ms	Spectrum 3  RBW 1 MHz VBW 3 MHz	X           Mode          M          M          M          M	uto Sweep 2[1] 1[1]		- 1.8 92	42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz
Spectrum Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -30 dBm -50 dBm -50 dBm -50 dBm -90 dBm -90 dBm	-6.00 dBm 0 dB M2	ectrum 2 Offset 1 SWT	8 0.00 dB 39.9 ms	Spectrum 3  RBW 1 MHz VBW 3 MHz	Mode         A          M        M          M        M	uto Sweep 2[1] 1[1]		- 1.8 92	42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz
Spectrum Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -30 dBm -50 dBm -50 dBm -50 dBm -90 dBm -100 dBm	-6.00 dBm 0 dB M2	ectrum 2 Offset 1 SWT	8 0.00 dB 39.9 ms	Spectrum 3  RBW 1 MHz VBW 3 MHz	Mode         A          M        M          M        M	uto Sweep 2[1] 1[1]		- 1.8 92	42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz
Spectrum Ref Level Att 1Pk Max -10 dBm -20 dBm -30 dBm -30 dBm -50 dBm -50 dBm -50 dBm -00 dBm -100 dBm -100 dBm	-6.00 dBm 0 dB 0 dB	ectrum 2 Offset 1 SWT	8 0.00 dB 39.9 ms	Spectrum 3  RBW 1 MHz VBW 3 MHz	Mode A Mi Mi	uto Sweep 2[1] 1[1]		- 1.8 92	42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz
Spectrum Ref Level Att 10 dBm -10 dBm -20 dBm -30 dBm -30 dBm -50 dBm -50 dBm -50 dBm -50 dBm -100 dBm -100 dBm -100 dBm	-6.00 dBm 0 dB 0 dB	ectrum 2 Offset 1 SWT	(x)     (	Spectrum 3 • RBW 1 MHz • VBW 3 MHz 	Mode A Mode A Mi	uto Sweep 2[1] 1[1]			42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz
Spectrum Ref Level Att 10 dBm -10 dBm -20 dBm -30 dBm -30 dBm -50 dBm -50 dBm -50 dBm -50 dBm -100 dBm	-6.00 dBm 0 dB 0 dB 0 dB 0 dB 0 dB 0 dB 0 dB 0 dB	ectrum 2 Offset 1 SWT		Spectrum 3 • RBW 1 MHz • VBW 3 MHz • UPW 3 MHz • UPW 3 MHz • UPW 1 MHZ •	X           Mode           Mile           Mile <td>uto Sweep 2[1] 1[1]</td> <td>Fund</td> <td>- 1.8 92 </td> <td>42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz 10.0 GHz</td>	uto Sweep 2[1] 1[1]	Fund	- 1.8 92 	42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz 10.0 GHz
Spectrum           Ref Level           Att           • 1Pk Max           -10 dBm           -20 dBm           -30 dBm           -30 dBm           -50 dBm           -50 dBm           -80 dBm           -90 dBm           -100 dBm           Start 30.0 ff           Marker           Type           M1           M2	-6.00 dBm 0 dB 0 dB 0 dB 0 dB 0 dB 0 dB 0 dB 0 dB	ectrum 2 Offset 1 SWT	(x)     (	Spectrum 3 • RBW 1 MHz • VBW 3 MHz • USW 4 MHZ • U	X           Mode           M           M           M           M           M           M           M           M           M           M           M           M           M           M           M           M           M	uto Sweep 2[1] 1[1]	Func	- 1.8 92 	42.33 dBm 54920 GHz 10.19 dBm 7.430 MHz 10.0 GHz



#### **Radiated Measurement:**

Frequency range	Test distance
9 kHz to 4 GHz	3 m
4 GHz to 10 GHz	1 m

#### Table 7

The tested orientation is the worst-case position (Pre-scans made for the worst-case orientation)

#### Channel: 902.75 MHz





Final Results 1:

Frequency	QuasiPeak	Limit	Margin	Meas. Time	Bandwidth	Height	Pol	Azimuth	Corr.
MHz	dBµV/m	dBµV/m	dB	ms	kHz	ст		deg	dB/m
22.173000	27.52	69.54	42.02	1000.0	9.000	100.0	Н	118.0	19.0





#### Final Results 1:

Frequency	QuasiPeak	Limit	Margin	Meas.	Bandwidth	Height	Pol	Azimuth	Corr.
			-	Time		-			
MHz	dBµV/m	dBµV/m	dB	ms	kHz	ст		deg	dB/m
39.180000	33.04	40.00	6.96	1000.0	120.000	106.0	V	169.0	20.1
39.240000	33.93	40.00	6.07	1000.0	120.000	100.0	V	200.0	20.1
40.920000	30.44	40.00	9.56	1000.0	120.000	105.0	V	-82.0	19.0
750.000000	45.18	46.02	0.84	1000.0	120.000	100.0	H	73.0	28.6
885.480000	39.28	46.02	6.74	1000.0	120.000	110.0	V	20.0	30.3
898.290000	39.73	46.02	6.29	1000.0	120.000	190.0	V	20.0	30.5
902.760000	111.87	#1	#1	1000.0	120.000	201.0	V	-9.0	30.6
914.970000	40.94	46.02	5.08	1000.0	120.000	110.0	V	-14.0	30.8
922.140000	42.19	46.02	3.83	1000.0	120.000	110.0	V	5.0	30.8

#1: Intentional Radiation







PreviewResult 2H-AVG PreviewResult 2V AVG FCCPart 15CElectric Field Strength 3m PK Final\_Result PK+ PreviewResult 1H-PK+ PreviewResult 1√-PK+ FCCPart 15CElectric Field Strength 3m AV Final\_Result CAV

Frequency	MaxPeak	CAverage	Limit	Margin	Meas.	Bandwidth	Height	Pol	Azimuth	Corr.
				-	Time		-			
MHz	dBµV/m	dBµV/m	dBµV/m	dB	ms	kHz	ст		deg	dB/m
3908.500000	53.46		73.98	20.52	1000.0	1000.000	300.0	V	-145.0	46.0
3908.500000		40.57	53.98	13.41	1000.0	1000.000	300.0	V	-145.0	46.0





Frequency	MaxPeak	CAverage	Limit	Margin	Meas.	Bandwidth	Height	Pol	Azimuth	Corr.
				-	Time					
MHz	dBµV/m	dBµV/m	dBµV/m	dB	ms	kHz	ст		deg	dB/m
7978.250000		58.22	63.50	5.28	1000.0	1000.000	100.0	Н	175.0	48.5
7978.250000	71.14		83.50	12.36	1000.0	1000.000	100.0	Н	175.0	48.5



#### Channel: 927.25 MHz



PreviewResult 2H-AVG PreviewResult 1H-PK+ FCCPart 15CElect ric Field Strength 3m QP+AV(9k-30M) Final\_Result QPK Final\_Result CAV

Frequency	QuasiPeak	Limit	Margin	Meas.	Bandwidth	Height	Pol	Azimuth	Corr.
				Time					
MHz	dBµV/m	dBµV/m	dB	ms	kHz	ст		deg	dB
22.107750	27.79	69.54	41.75	1000.0	9.000	100.0	Η	3.0	19.0





#### Final Results 1:

Frequency	QuasiPeak	Limit	Margin	Meas.	Bandwidth	Height	Pol	Azimuth	Corr.
				Time					
MHz	dBµV/m	dBµV/m	dB	ms	kHz	ст		deg	dB
38.850000	28.42	40.00	11.58	1000.0	120.000	105.0	V	176.0	20.3
750.000000	43.33	46.02	2.69	1000.0	120.000	105.0	Н	5.0	28.6
921.780000	39.98	46.02	6.04	1000.0	120.000	199.0	V	-5.0	30.8
927.240000	112.39	#1	#1	1000.0	120.000	198.0	V	-10.0	30.8
955.440000	35.10	46.02	10.92	1000.0	120.000	100.0	V	-10.0	30.9

#1: Intentional Radiation







Preview Result 1H-PK+ Preview Result 1√-PK+ FCCPart 15CElectric Field Strength 3m AV Final\_Result CAV

Frequency	MaxPeak	CAverage	Limit	Margin	Meas.	Bandwidth	Height	Pol	Azimuth	Corr.
					Time		-			
MHz	dBµV/m	dBµV/m	dBµV/m	dB	ms	kHz	ст		deg	dB
3984.500000		40.31	53.98	13.67	1000.0	1000.000	200.0	Н	-90.0	39.8
3984.500000	55.17		73.98	18.81	1000.0	1000.000	200.0	Н	-90.0	39.8





Frequency	MaxPeak	CAverage	Limit	Margin	Meas.	Bandwidth	Height	Pol	Azimuth	Corr.
					Time					
MHz	dBµV/m	dBµV/m	dBµV/m	dB	ms	kHz	ст		deg	dB
7920.750000		58.03	63.50	5.47	1000.0	1000.000	100.0	V	175.0	48.5
7920.750000	71.36		83.50	12.14	1000.0	1000.000	100.0	V	175.0	48.5



#### FCC 47 CFR Part 15, Limit Clause 15.209

Frequency (MHz)	Field Strength (µV/m)	Measurement Distance (m)		
0.009 to 0.490	2400/F (kHz)	300		
0.490 to 1.705	24000/F (kHz)	30		
1705 to 30	30	30		
30 to 88	100**	3		
88 to 216	150**	3		
216 to 960	200**	3		
Above 960	500	3		

#### Table 8 - FCC Limit

NOTE: The level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission.

ISED Canada RSS-247, Limit Clause 4.4

Under no circumstance shall the level of any unwanted emissions exceed the level of the fundamental emissions.

#### ISED Canada RSS-Gen, Limit Clause 8.9

Frequency (MHz)	Field Strength (µV/m)	Measurement Distance (m)	
0.009 to 0.490	2400/F (kHz)	300	
0.490 to 1.705	24000/F (kHz)	30	
1705 to 30	30	30	

#### Table 9 - IC Limit, Below 30 MHz

Frequency (MHz)	Field Strength (µV/m at 3 metres)
30 to 88	100
88 to 216	150
216 to 960	200
Above 960	500

Table 10 - IC Limit, Above 30 MHz



#### 2.3.7 Test Location and Test Equipment Used

This test was carried out in Semi anechoic room - cabin no. 11 and a non shielded room.

Instrument	Manufacturer	Туре No	TE No	Calibration Period (months)	Calibration Due
EMI test receiver	Rohde & Schwarz	ESW44	39897	12	2023-04-30
Loop antenna	Schwarzbeck	FMZB 1519 B	44334	36	2024-01-31
ULTRALOG Antenna	Rohde & Schwarz	HL562E	38401	36	2026-01-31
Horn antenna	Rohde & Schwarz	HF907	40089	24	2024-10-31
Semi anechoic room	Rohde & Schwarz	No. 11			
EMC measurement software	Rohde & Schwarz	EMC32 Emission K11 – V11.50	42986		
Signal and Spectrum Analysator	Rohde & Schwarz	FSV40	20219	12	2024-02-29



#### 2.4 Restricted Band Edges

#### 2.4.1 Specification Reference

FCC 47 CFR Part 15C, 15.205 ISED Canada RSS-247 ISED Canada RSS-GEN, 8.10

#### 2.4.2 Equipment Under Test and Modification State

RF695R, S/N: --- - Modification State 0

#### 2.4.3 Date of Test

2023-02-08 - 2023-03-09

#### 2.4.4 Test Method

This test was performed in accordance with ANSI C63.10, clause 11.13.1.

#### 2.4.5 Test Results

No emission above FCC 47 CFR §15.209 found outside of operational frequency band 902 MHz to 928 MHz. See chapter '2.3 Field Strength of any Emission' and '2.1 Authorised Band Edges'.



#### 2.5 Bandwidth, Carrier Frequency Separation, Number of Hopping Frequencies and Dwell Time

#### 2.5.1 Specification Reference

FCC 47 CFR Part 15C, 15.247 (a) (1) (i) ISED Canada RSS-247, 5.1 (c) ISED Canada RSS-GEN, 6.7

#### 2.5.2 Equipment Under Test and Modification State

RF695R, S/N: --- - Modification State 0

#### 2.5.3 Date of Test

2023-03-09

#### 2.5.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.9.1.

#### 2.5.5 Environmental Conditions

Ambient Temperature	22.0 °C
Relative Humidity	37.0 %

#### 2.5.6 Test Results

Continuously transmitting

Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)	Limit (kHz)
902.75	78.8	81.7	250
915.25	77.0	79.3	250
927.25	70.7	79.8	250

#### Table 12

#### Continuously transmitting in Hopping Mode

Channels	Carrier Frequency Seperation (kHz)	Length (ms)	Shipments occurring within 20s	Dwell Time (ms)	Limit (ms)
50	499.0	191.7	2	383.4	400



#### 20dB Bandwidth

Spectr	um	Sp	ectrum 2	X	Spec	trum 3	×					
Ref Lev	<b>/el</b> 40	.00 dBm	Offset	10.00 dB	😑 RB\	V 1 kHz						
Att		50 dB	SWT	1.9 ms	😑 VB	N/3 kHz	Mode	Auto FFT				
😑 1Pk Vie	ew											
						м	1	D2[1]				-20.69 dB
							ŕ.					39.380 kHz
30 dBm-						1		M1[1]				31.53 dBm
						- /	ξ į	AI			902.7	50000 MHz
20 dBm-					$\sim$	~ 5	7 -	172				
			D3 ~~	$h \sim N$		$\mathcal{M}$	w.	~	m.	~ D2		
10 dBm-			fry the							- <del>/ (</del>		
			17							<u> </u>		
p.dBm	_		1									m
r' )		. ~	4								ma a	
-10 dBm	YYY '	$\sim$									- <del></del>	$\mathcal{V}$
-20 dBm	_											
-30 dBm	_											
-40 dBm												
io abiii												
-50 dBm												
-30 ubiii												
CF 902.	75 MI	Ηz				1001	pts				Span	150.0 kHz
Marker												
Type	Ref	Trc	X-valu	e	Y-	value	Fu	nction		Fund	tion Result	:
M1		1	902.	75 MHz		31.53 dB	m					
D2	M1	1	39	.38 kHz		-20.69 0	iB					
D3	M1	1	-39	.41 kHz		-20.10 c	iB					

Date: 9.MAR.2023 17:53:21

					<b>\$</b>
Spectrum	Spectrum 2 🛞	Spectrum 3 🛛 🔇			
Ref Level 40.00 Att 5	dBm Offset 10.00 dB 0 dB 😑 SWT 1.9 ms	S ● RBW 1 kHz S ● VBW 3 kHz Mo	de Auto FFT		
●1Pk View					
30 dBm		M1	D2[1]		-20.23 dB -38.660 kHz 21.50 dBm
			(ALL 1		915.250150 MHz
20 dBm	D2mmN	Mary V	www	nno3	
10 UBIII-				Ph.	m
-10 dBm	~~			- Mr.	www.
-20 dBm					
-30 dBm					
-40 dBm					
-50 dBm					
CF 915.25 MHz		1001 pts			Span 150.0 kHz
Marker					
Type Ref Tro	X-value	Y-value	Function	Functio	n Result
D2 M1	1 915.25015 MHz 1 -38.66 kHz	-20.23 dB			
D3 M1 :	1 38.36 kHz	-20.18 dB			

Date: 9.MAR.2023 17:55:03



~

									~ <b>%</b>
Spectrum	Spe	ectrum 2	×s	pectrum 3	×				
Ref Level 4 Att	0.00 dBm 50 dB	Offset 1 SWT	.0.00 dB 👄 1.9 ms 👄	RBW 1 kHz VBW 3 kHz	Mode A	uto FFT			
●1Pk View									
				Μ	1 D	3[1]			-20.16 dB 35.360 kHz
30 dBm					M	1[1]		927.2	31.07 dBm 50000 MHz
20 dBm		Da	$\sim$	m	hm	m			
10 dBm		N					Mr.		
ologen M	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	(					- · ~	m.m	AN C
-10 dBm	- V~							- V~	V
-20 dBm									
-30 dBm									
-40 dBm									
-50 dBm									
CF 927.25 N	1Hz		1	1001	pts		1	Span	150.0 kHz
Marker									
Type   Ref	Trc	X-value		Y-value	Func	tion 📋	Fund	tion Result	
M1	1	927.2	25 MHz	31.07 dB	m				
D2 M1	1	-35.	36 kHz	-20.39 d	IB				
D3 M1	1	35.	36 kHz	-20.16 d	IB				

Date: 9.MAR.2023 17:59:04



99% Bandwidth

Date: 9.MAR.2023 18:03:02

									~ <b>?</b> \$
Spectrum	Spe	ctrum 2	× s	pectrum 3	×				
Ref Level 4 Att	0.00 dBm 45 dB (	Offset 1 SWT	.0.00 dB 👄 5.7 ms 👄	RBW 1 kHz VBW 3 kHz	Mode A	uto FFT			
⊖1Pk Max									
				M	1 1	1[1]		915.2	31.85 dBm 50150 MHz
30 dBm					<u> </u>	CC BW		81.6683	31668 kHz
00 40									
20 dBm			$\sim$	m	Sm	M. M.	m		
10 dBm		Fred					W		0.0
O dam		(					1		- ANC
in hy	m							m	$\sqrt{2}$
-10 dBm									
-20 dBm									
-30 dBm									
-40 dBm									
-50 dBm									
CF 915.25 M	1Hz			1001	pts			Span	150.0 kHz

Spectrum Spectrum 2 🛞 Spectrum 3 X 
 Ref Level
 40.00
 dBm
 Offset
 10.00
 dB
 RBW
 1 kHz

 Att
 45 dB
 SWT
 5.7 ms
 VBW
 3 kHz
 5.7 ms 😑 VBW 3 kHz Mode Auto FFT ⊖1Pk Max 31.80 dBm 915.250150 MHz M1[1] 79.270729271 kHz Occ Bw 30 dBm 20 dBm N n N M 10 dBm R/ 5 o digin -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm CF 915.25 MHz 1001 pts Span 150.0 kHz

Date: 9.MAR.2023 18:02:30





Date: 9.MAR.2023 18:01:30

#### Channels (Hopping Mode)



Date: 9.MAR.2023 18:13:27

Carrier Frequency separation (Hopping Mode)





Date: 9.MAR.2023 18:08:37

#### Length (Hopping Mode)

Spectrum	Spe	ectrum 2	× s	pectrum 3	×					
Ref Level 40	0.00 dBm	Offset	10.00 dB 👄	RBW 100 k	Hz					
Att	50 dB	⊜ SWT	300 ms 👄	<b>VBW</b> 300 k	Hz					
M1					D	2[1]	D	2	191	0.59 dB 70000 ms
30 dBm				TH TH			n, ni		25	30.90 dBm i.96875 ms
20 dBm							+			
10 dBm							+			
0 dBm							+			
-10 dBm							+			
-20 dBm							-			
ls30,rlβm <sub>pr</sub>								in Harril	an breithean an d	a third a second se
-40 dBm							_	Hundener Afr	a an a fairt fi fan de fairt an fin	and and a second se
-50 dBm							+			
CF 915.25 M	Hz			3200	1 pts					30.0 ms/

Date: 9.MAR.2023 18:17:49

Period (Hopping Mode)





Date: 9.MAR.2023 18:28:43

#### 2.5.7 Test Location and Test Equipment Used

This test was carried out in a non shielded room.

Instrument	Manufacturer	Туре No	TE No	Calibration Period (months)	Calibration Due
Signal and Spectrum Analysator	Rohde & Schwarz	FSV40	20219	12	2024-02-29



#### 2.6 Frequency Tolerance Under Temperature Variations

#### 2.6.1 Specification Reference

FCC 47 CFR Part 15C ISED Canada RSS-247 ISED Canada RSS-GEN, 6.11

#### 2.6.2 Equipment Under Test and Modification State

RF695R, S/N: --- - Modification State 0

#### 2.6.3 Date of Test

2023-03-07

#### 2.6.4 Environmental Conditions

Ambient Temperature20,0 °CRelative Humidity39,0 %

#### 2.6.5 Test Results

#### Continuously transmitting

Temperature	Voltage	Frequency (MHz)	Frequency Deviation (%)	Frequency (MHz)	Frequency Deviation (%)
-30.0 °C	24 V DC	902.75	0.0049	927.25	0.0050
-20.0 °C	24 V DC	902.75	0.0050	927.25	0.0053
-10.0 °C	24 V DC	902.75	0.0051	927.25	0.0051
0.0 °C	24 V DC	902.75	0.0056	927.25	0.0052
+10.0 °C	24 V DC	902.75	0.0053	927.25	0.0053
+20.0 °C	24 V DC	902.75	0.0049	927.25	0.0050
+30.0 °C	24 V DC	902.75	0.0051	927.25	0.0051
+40.0 °C	24 V DC	902.75	0.0049	927.25	0.0059
+50.0 °C	24 V DC	902.75	0.0051	927.25	0.0057

#### Table 14 - Frequency Tolerance Under Temperature Variation

Temperature	Voltage	Frequency (MHz)	Frequency Deviation (%)	Frequency (MHz)	Frequency Deviation (%)
+20.0 °C	19.2 V DC	902.75	0.0050	927.25	0.0052
+20.0 °C	24 V DC	902.75	0.0047	927.25	0.0049
+20.0 °C	28.8 V DC	902.75	0.0056	927.25	0.0058

Table 15 - Frequency	Tolerance Unde	r Voltage Variation
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#### 2.6.6 Test Location and Test Equipment Used

This test was carried out in a non shielded room.

Instrument	Manufacturer	Туре No	TE No	Calibration Period (months)	Calibration Due
Signal and Spectrum Analysator	Rohde & Schwarz	FSV40	20219	12	2024-02-29
Temperature test chamber	Feutron	KPK200-2	19868	18	2024-08-31



#### 2.7 Conducted Emissions on Mains Terminals

#### 2.7.1 Specification Reference

FCC 47 CFR Part 15 C, Clause 15.207 ISED RSS-Gen, Clause 8.8

#### 2.7.2 Equipment Under Test and Modification State

RF695R, S/N: --- - Modification State 0

#### 2.7.3 Date of Test

2023-03-10

#### 2.7.4 Environmental Conditions

Ambient Temperature	21 °C
Relative Humidity	39 %

#### 2.7.5 Test Method

The test was performed according to ANSI C63.10, section 6.2.



The EUT was placed on a non-conductive table 0.8 m above a reference ground plane and 0.4 m away from a vertical coupling plane.

All power was connected to the EUT through an Line Impedance Stabilization Network (LISN). Conducted disturbance voltage measurements on mains lines were made at the output of the LISN. The LISN was placed 0.8 m from the boundary of the EUT and bounded to the reference ground plane. To simplify testing with quasi-peak and linear average (cispr-average) detector the following procedure is used:

First the whole spectrum of emission caused by the equipment under test (EUT) is recorded with the detectors set to peak and average using CISPR bandwidth of 10 kHz. After that all emission levels having less margin than 10 dB to or exceeding the average limit are retested with the detectors set to quasi-peak and average. If the average limit is kept with quasi-peak levels measurement with average detector is optional. In cases of emission levels between quasi-peak and average limit an additional measurement with average detector has to be performed.

According to ANSI C63.10, section 6.2.5, testing of intentional radiators with frequencies below 30 MHz shall be performed using a suitable dummy load connected to the antenna output terminals. Otherwise the tests shall be performed with the integral or a representative antenna and, if adjustable, fully extended. Testing with



a dummy load may be necessary to distinguish (unintentional) conducted emissions on the supply lines form (intentional) emissions radiated by the antenna and coupling directly to supply lines and/or LISN. The usage of a dummy load has to be stated in the appropriate test record(s) and notes should be added to clarify the test setup.

#### 2.7.6 Test Results

#### Sample calculation:

Final Value  $(dB\mu V) =$ 

Reading Value (dBµV) + (Cable attenuation (dB) + LISN Transducer (dB))

#### Continuously transmitting

#### Line: L1 and N



Frequency	QuasiPeak	CAverage	Limit	Margin	Meas. Time	Bandwidth	Line	Corr.
MHz	dBµV	dBµV	dBµV	dB	ms	kHz		dB
0.343500	42.77		59.12	16.34	1000.0	9.000	L1	10.0
0.483000		45.52	46.29	0.77	1000.0	9.000	N	10.0
0.483000	48.66		56.29	7.63	1000.0	9.000	N	10.0
19.477500	37.42		60.00	22.58	1000.0	9.000	N	10.3



#### 2.7.7 Test Location and Test Equipment Used

This test was carried out in a shielded room- cabin no. 9

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
EMI test receiver	Rohde & Schwarz GmbH & Co. KG	ESU8	19904	12	2024-02-29
V-network	Rohde & Schwarz GmbH & Co. KG	ENV216	39908	12	2023-03-31
EMC measurement software	Rohde & Schwarz GmbH & Co. KG	EMC32 Immunity K9 – V10.60.20	44380		
Shielded room	Albatross Projects GmbH	Cabin no. 9	21083		



## 3 Measurement Uncertainty

The measurement uncertainty in the laboratory is less than or equal to the maximum measurement uncertainty according to CISPR16-4-2:  $2011 + A1 + A2 + Cor1 (U_{CISPR})$ . This normative regulation means that the measured value is also the value to be assessed in relation to the limit value.

For a 95% confidence level, the measurement uncertainties for defined systems are:

Radio Testing			
Test Name	kp	Expanded Uncertainty	Note
Occupied Bandwidth	2.0	±1.14 %	2
RF-Frequency error	1.96	±1 · 10-7	7
RF-Power, conducted carrier	2	±0.079 dB	2
RF-Power uncertainty for given BER	1.96	+0.94 dB / -1.05	7
RF power, conducted, spurious emissions	1.96	+1.4 dB / -1.6 dB	7
RF power, radiated			
25 MHz – 4 GHz	1.96	+3.6 dB / -5.2 dB	8
1 GHz – 18 GHz	1.96	+3.8 dB / -5.6 dB	8
18 GHz – 26.5 GHz	1.96	+3.4 dB / -4.5 dB	8
40 GHz – 170 GHz	1.96	+4.2 dB / -7.1 dB	8
Spectral Power Density, conducted	2.0	±0.53 dB	2
Maximum frequency deviation			
300 Hz – 6 kHz	2	±2,89 %	2
6 kHz – 25 kHz	2	±0.2 dB	2
Maximum frequency deviation for FM	2	±2,89 %	2
Adjacent channel power 25 MHz – 1 GHz	2	±2.31 %	2
Temperature	2	±0.39 K	4
(Relative) Humidity	2	±2.28 %	2
DC- and low frequency AC voltage			
DC voltage	2	±0.01 %	2
AC voltage up to 1 kHz	2	±1.2 %	2
Time	2	±0.6 %	2



Radio Interference Emission Testing				
Test Name	kp	Expanded Uncertainty	Note	
Conducted Voltage Emission				
9 kHz to 150 kHz (50Ω/50μH AMN)	2	± 3.8 dB	1	
150 kHz to 30 MHz (50Ω/50μH AMN)	2	± 3.4 dB	1	
100 kHz to 200 MHz (50Ω/5μH AMN)	2	± 3.6 dB	1	
Discontinuous Conducted Emission				
9 kHz to 150 kHz (50Ω/50μH AMN)	2	± 3.8 dB	1	
150 kHz to 30 MHz (50Ω/50μH AMN)	2	± 3.4 dB	1	
Conducted Current Emission				
9 kHz to 200 MHz	2	± 3.5 dB	1	
Magnetic Field strength				
9 kHz to 30 MHz (with loop antenna)	2	± 3.9 dB	1	
9 kHz to 30 MHz (large-loop antenna 2 m)	2	± 3.5 dB	1	
Radiated Emission				
Test distance 1 m (ALSE)				
9 kHz to 150 kHz	2	± 4.6 dB	1	
150 kHz to 30 MHz	2	± 4.1 dB	1	
30 MHz to 200 MHz	2	± 5.2 dB	1	
200 MHz to 2 GHz	2	± 4.4 dB	1	
2 GHz to 3 GHz	2	± 4.6 dB	1	
Test distance 3 m				
30 MHz to 300 MHz	2	± 4.9 dB	1	
300 MHz to 1 GHz	2	± 5.0 dB	1	
1 GHz to 6 GHz	2	± 4.6 dB	1	
Test distance 10 m				
30 MHz to 300 MHz	2	± 4.9 dB	1	
300 MHz to 1 GHz	2	± 4.9 dB	1	
Radio Interference Power				
30 MHz to 300 MHz	2	± 3.5 dB	1	
Harmonic Current Emissions			4	
Voltage Changes, Voltage Fluctuations and Flicker			4	



Immunity Testing				
Test Name	kp	Expanded Uncertainty	Note	
Electrostatic Discharges			4	
Radiated RF-Field				
Pre-calibrated field level	2	+32.2 / -24.3 %	5	
Dynamic feedback field level	2.05	+21.2 / -17.5 %	3	
Electrical Fast Transients (EFT) / Bursts			4	
Surges			4	
Conducted Disturbances, induced by RF-Fields				
via CDN	2	+15.1 / -13.1 %	6	
via EM clamp	2	+42.6 / -29.9 %	6	
via current clamp	2	+43.9 / -30.5 %	6	
Power Frequency Magnetic Field	2	+20.7 / -17.1 %	2	
Pulse Magnetic Field			4	
Voltage Dips, Short Interruptions and Voltage Variations			4	
Oscillatory Waves			4	
Conducted Low Frequency Disturbances				
Voltage setting	2	± 0.9 %	2	
Frequency setting	2	± 0.1 %	2	
Electrical Transient Transmission in Road Vehicles			4	

#### Note 1:

#### Table 20

The expanded uncertainty reported according to CISPR 16-4-2:2003-11 is based on a standard uncertainty multiplied by a coverage factor of kp = 2, providing a level of confidence of p = 95.45%Note 2:

# The expanded uncertainty reported according to UKAS Lab 34 (Edition 1, 2002-08) is based on a standard uncertainty multiplied by a coverage factor of kp = 2, providing a level of confidence of p = 95.45% Note 3:

The expanded uncertainty reported according to UKAS Lab 34 (Edition 1, 2002-08) is based on a standard uncertainty multiplied by a coverage factor of kp = 2.05, providing a level of confidence of p = 95.45% Note 4:

It has been demonstrated that the used test equipment meets the specified requirements in the standard with at least a 95% confidence.

Note 5:

The expanded uncertainty reported according to IEC 61000-4-3 is based on a standard uncertainty multiplied by a coverage factor of kp = 2, providing a level of confidence of p = 95.45%

Note 6:

The expanded uncertainty reported according to IEC 61000-4-6 is based on a standard uncertainty multiplied by a coverage factor of kp = 2, providing a level of confidence of p = 95.45%Note 7:

The expanded uncertainty reported according ETSI TR 100 028 V1.4.1 (all parts) to is based on a standard uncertainty multiplied by a coverage factor of kp = 1.96, providing a level of confidence of p = 95.45% Note 8:

The expanded uncertainty reported according to ETSI TR 102 273 V1.2.1 (all parts) is based on a standard uncertainty multiplied by a coverage factor of kp = 1.96, providing a level of confidence of p = 95.45%