

REPORT

For

Avari Wireless Corporation

8618 Commerce Court, Burnaby, BC V5A 4N6 Canada 1400 112th Ave SE, Ste 100, Bellevue, WA, USA 98004

Date of Issue: July 15, 2025 Report No.: 20.01.22327-1

Revison No: Rev A Project No.: 22327A

Equipment: Quad-Band Medium Power Remote Unit

Model No.: RU37-4-PS-ABGH-41-C-D0-2C

ISED ID: 32235-RU374PSABGH FCC ID: 2BA6ERU374PSABGH41A

HVIN: RU37-4-PS-ABGH-41-C-D0-2C

RU37-4-PS-ABGH-51-C-D0-2W

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Client: Avari Wireless Inc. Report No.: 20.01.22327-1 Revision No.: Rev. A

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Prepared by: LabTest Certification Inc. Client: Avari Wireless Inc. Date Issued: July 15, 2025 Report No.: 20.01.22327-1 Project No.: 22327A Revision No.: Rev. A

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TEST REPORT

RSS-119 — Land Mobile and Fixed Equipment Operating in the Frequency Range 27.41-960 MHz
RSS-Gen — General Requirements for Compliance of Radio Apparatus
FCC Part 90 - PRIVATE LAND MOBILE RADIO SERVICES

1 00 1 411 3	FCC Part 90 - PRIVATE LAND WIODILE RADIO SERVICES				
Report Reference No	20.01.22327-1				
Report Revision History	Rev. 0 October 3, 2024 Rev. 1 October 24, 2024 Rev. A July 15, 2025				
Compiled by (+ signature)	Zara Vali Jahra Vali				
Approved by (+ signature)	Jack Qin				
Date of issue:	July 15, 2025				
Total number of pages	106				
FCC Site Registration No.:	CA5970				
IC Site Registration No.:	5970A-2				
Testing Laboratory	LabTest Certification Inc.				
Address:	Unit 3128-20800 Westminster HWY, Richmond, BC, V6V 2W3, Canada				
Applicant's name	Avari Wireless Corporation				
Address	8618 Commerce Court, Burnaby, BC V5A 4N6 Canada 1400 112th Ave SE, Ste 100, Bellevue, WA, USA 98004				
Manufacture's Name	Avari Wireless Corporation				
Address:	8618 Commerce Court, Burnaby, BC V5A 4N6 Canada 1400 112th Ave SE, Ste 100, Bellevue, WA, USA 98004				
Test specification:					
Standards	 RSS-119, Issue 12 2015, Amendment (April 1, 2022) RSS-Gen, Issue 5 2018 RSS-131, Issue 4 2022 FCC Part 90 FCC Part 2 				
Test procedure:	→ ANSI C63.26: 2015→ KDB 935210 D05, v01r04				
Test item description:					
Trade Mark:	RU37 [™]				

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Model/Type reference (HVIN):	RU37-4-PS-ABGH-41-C-D0-2C RU37-4-PS-ABGH-51-C-D0-2W	
FVIN	7	
PMN	VL-Series Remote Unit	
Serial Number	10911150E01BE1003	
ISED ID	32235-RU374PSABGH	
FCC ID	2BA6ERU374PSABGH41A	
Possible test case verdicts:		
- test case does not apply to the test object:	N/A	
- test object does meet the requirement:	P (Pass)	
- test object does not meet the requirement:	F (Fail)	
Date of receipt of test item:		
Date of performance of tests:	August 20, 2024	

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Revision History

Revision	Date	Reason For Change	Author
0	October 3, 2024	Initial Data	Zara Vali
1	October 24, 2024	Report update for ISED submission	Zara Vali
А	July 15, 2025	Added the 400-425 MHz band for the new waveform (π /4 DQPSK). There was no change to the hardware and software for the EUT. A new waveform was injected from the external signal generator into the EUT and captured the test results. The new π /4 DQPSK results were added under section 3.4 (Input-Versus-Output Signal Comparison), and 3.2 (occupied bandwidth).	Zara Vali

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Result Summary

The tests indicated in Test Summary were performed on the product constructed as described below.

The test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested complies with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item tested. LabTest does not make any claims of compliance for samples or variants which were not tested.

The Compliance Status is a judgment based on the direct measurements and calculated highest emissions to appropriate standard limits. Measurement uncertainty values, provided on calibration certificates, were not be used in the judgment of the final status of compliance.

Test Item	Test Item Standard		Result
AGC Threshold	RSS-119, Issue 12 2015, Amendment (April 1, 2022) RSS-Gen, Issue 5 2018 FCC Part 2 2.1046(a) FCC Part 90	ANSI C63.26-2015, Section 7.2.3.1 KDB 935210 D05, v01r04, Clause 3.2, 4.2	PASS
Occupied Bandwidth	RSS-119, Issue 12 2015, Amendment (April 1, 2022) RSS-Gen, Issue 5 2018 FCC Part 2 2.1046(a) FCC Part 90	Amendment (April 1, 2022) RSS-Gen, Issue 5 2018 FCC Part 2 2.1046(a) ANSI C63.26-2015, Section 7.2.3.1 KDB 935210 D05, v01r04	
Out of Band Rejection	RSS-119, Issue 12 2015, Amendment (April 1, 2022) RSS-Gen, Issue 5 2018 FCC Part 90	ANSI C63.26-2015, Section 7.2.3.2 KDB 935210 D05, v01r04, Clause 3.3, 4.3	PASS
Input-versus-output Signal Comparison	RSS-119, Issue 12 2015, Amendment (April 1, 2022) RSS-Gen, Issue 5 2018 FCC Part 90	ANSI C63.26-2015, Section 7.2.3.3 KDB 935210 D05, v01r04, Clause 3.4, 4.4	PASS
Input/output Power and Amplifier/Booster Gain	RSS-119, Issue 12 2015, Amendment (April 1, 2022) RSS-Gen, Issue 5 2018 FCC Part 90	ANSI C63.26-2015, Section 7.2.3.4 KDB 935210 D05, v01r04, Clause 3.5, 4.5	PASS
Noise Figure	RSS-119, Issue 12 2015, Amendment (April 1, 2022) RSS-Gen, Issue 5 2018 FCC Part 90	ANSI C63.26-2015, Section 7.2.3.5 KDB 935210 D05, v01r04, Clause 4.6	PASS
Measuring out-of-band/out-of- block (including intermodulation) and spurious emissions	RSS-119, Issue 12 2015, Amendment (April 1, 2022) RSS-Gen, Issue 5 2018 FCC Part 90	ANSI C63.26-2015, Section 7.2.3.6 Section 7.2.3.7 KDB 935210 D05, v01r04, Clause 3.6, 4.7	PASS
Frequency stability	RSS-119, Issue 12 2015, Amendment (April 1, 2022) RSS-Gen, Issue 5 2018 FCC Part 2.1055	ANSI C63.26-2015, Section 7.2.3.8 KDB 935210 D05, v01r04, Clause 3.7, 4.8	N/A

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Spurious emissions radiated measurements above 1 GHz	RSS-119, Issue 12 2015, Amendment (April 1, 2022) RSS-Gen, Issue 5 2018 FCC Part 90 FCC Part 2.1053	ANSI C63.26-2015, Section 7.2.3.9 KDB 935210 D05, v01r04, Clause 3.8, 4.9	PASS
Spurious radiated emissions below 1 GHz	RSS-119, Issue 12 2015, Amendment (April 1, 2022) RSS-Gen, Issue 5 2018 FCC Part 90 FCC Part 2.1053	ANSI C63.26-2015, Section 5.5 KDB 935210 D05, v01r04, Clause 3.8, 4.9	PASS
Conducted Emissions at AC Main	RSS-119, Issue 12 2015, Amendment (April 1, 2022) RSS-Gen, Issue 5 2018 FCC Part 90	ANSI C63.4: 2014	PASS

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1. EUT Information

EUT Description and Variant Models

Description:

The 420-450-700-800MHz RU37 is a Quad-band Remote Unit (RU) that provides up to 5 Watt of output power per band. The unit supports up to 3 bands in a sealed type 4 chassis for Class A operation.

On the downlink path, the RU37 remote unit receives a stream of digitized RF signals from a Master Unit. The RU then converts the digital signal into analog RF signals. The analog RF signal is further amplified in the RF module and then sent through a filter to passive antenna for broadcasting.

On the UL path, the RU37 PS remote unit receives analog RF signals from portable radios over the air through passive antennae. The RF signals are then converted into a digital data stream and delivered over optical fiber to a Master Unit DMU . The RU37 Remote Unit also accommodates a 1 Gbps Ethernet backhaul for transporting IP data from nearby IP devices such as security cameras and Wi-Fi access points.

The intentional transmitter only exists in the downlink path and hence the EMC tests in this report is dedicated to the downlink emission.

In order to build up a complete signal booster system, the DMU was connected as the Auxiliary device. The DMU does NOT radiate over an anntenna port. The radio RF signal source was directly injected and received via coaxial cables.



Variant Models:

The following variant models were not tested as part of this evaluation but have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the models tested. LabTest does not make any claims of compliance for samples or variants which were not tested.

- RU37-4-PS-ABGH-51-C-D0-2W

Quad-Band 5 Watt (Wall-Mount) Remote Unit, RU37 420-450-700-800MHz 64 ch (NEMA4) Same hardware and software as tested model - RU37-4-PS-ABGH-51-C-D0-2C with different mounting kits.

- RU33-4-PS-ABGH-41-C-D0-2C

Quad-Band 2 Watt (Rack-Mount) Remote Unit, RU33 420-450-700-800MHz 64 ch (NEMA4) Same hardware and software as tested model - RU32-4-PS-ABGH-51-C-D0-2C with less composite power and rack-mount kits.

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RU33-4-PS-ABGH-51-C-D0-2W

Quad-Band 2 Watt (Wall-Mount) Remote Unit, RU33 420-450-700-800MHz 64 ch (NEMA4)

Same hardware and software as tested model - RU37-4-PS-ABGH-51-C-D0-2C with less composite power and wall-mount kits.

Application for:	PS 420-450-700-800MHz Remote Unit, Quad Band Medium Power DAS
Passing Transmit Frequency:	405 – 425 MHz ¹ 450 – 512 MHz 851 MHz – 869 MHz 758 MHz – 775 MHz
Operating Transmit Frequency ISED:	406.1 MHz – 410 MHz ¹ 410 MHz – 420 MHz 420 MHz – 425 MHz 450 MHz – 454 MHz 456 MHz – 462.5375 MHz 462.7375 MHz – 467.5375 MHz 467.7375 MHz – 512 MHz 851 MHz – 869 MHz 758 MHz – 768 MHz 769 MHz – 775 MHz
Passing Receive Frequency	405 – 430 MHz 450 – 512 MHz 806 MHz – 824 MHz 788 MHz – 805 MHz
Operating Receive Frequency ISED	406.1 MHz – 410 MHz 410 MHz – 420 MHz 420 MHz – 430 MHz 450 MHz – 454 MHz 456 MHz – 462.5375 MHz 462.7375 MHz – 467.5375 MHz 467.7375 MHz – 512 MHz 806 MHz – 824 MHz 788 MHz – 798 MHz 799 MHz – 805 MHz
Number of Channels:	Up to 32 channels
Rated RF Output (e.i.r.p.):	
Modulation Type:	P25 Phase I C4FM, CQPSK; P25 Phase II HDQPSK on full band of Band 700, Band 800, Band 415 and Band 450 FM on Band 800 between 851 MHz – 869 MHz only;
Equipment mobility:	Fixed
Operating condition:	-40 to +50 °C
Mass of equipment (g):	< 48,000g

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Dimensions (W X D X H)	433 mm X 313 mm X 855 mm			
Supply Voltage:				
If DC Power:	Internal Power Supply			
	$\underline{\hspace{0.1cm}\sqrt{\hspace{0.1cm}}}$ External Power Supply			
	Battery			
	☐ Nickel Cadmium			
	☐ Alkaline			
	☐ Nickel-Metal Hydride			
	☐ Lithium-Ion			
	☐ Other			

Note 1. The hardware is physically capable of starting at 405 MHz (passing frequencies as per the table), but the unit was tested starting at 406.1 MHz to meet the operating frequencies in FCC requirements. Since the tested unit support channelized operation, in domestic field installations the unit will always be configured to start above 410 MHz to comply with the ISED's restricted frequency band requirements.

Client Equipment Used During Test

Use*	Product Type	Manufacturer	Model	Comments
EUT	RU37, 420-450-700- 800 PS	Avari Wireless Corporation		EUT where the RF (I/O) antenna is attached via duplexers/multiplexer when necessary.
AE1	DMU, 420PS, 450PS, 700PS, 800PS	Avari Wireless Corporation		Auxiliary equipment, which is the front end of system interfaced to Base Station.
AE2	Element Manager (DMC)	Avari Wireless Corporation		Auxiliary equipment provides the configuration and control interface to <i>DMU</i> and <i>RU</i> 37.
AE3	Power Supply	MeanWell		AC to DC Converter, I/P: 120VAC, 60Hz, 5.5A O/P: +48VDC, 480W

Abbreviations:

EUT - Equipment Under Test,

AE - Auxiliary/Associated Equipment, or

SIM - Simulator (Not Subjected to Test)

Software and Firmware

Use*	Description	Version			
EUT	Software installed	7.0.0-1.5912			
AE1	Software installed	7.0.0-1.5930			
AE2	AE2 Software installed 7.0.0-1.1595				
Abbreviations: EUT - Equipment Under Test,					

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AE - Auxiliary/Associated Equipment, or SIM - Simulator (Not Subjected to Test)

Input/Output Ports

Port #	Name	Type*	Cable Max. >3m	Cable Shielded	Comments
1	DC Power Port	DC	No	No	Dual feed 48 VDC Assembly
2	1 * RF Input/Output Ports	I/O	No	No	N-Type Coaxial
3	2 * Optical Fibre I/O Ports	I/O	No	No	LC/UPC Duplex
4	2 * TP	TP	No	No	RJ-45

*Note: AC = AC Power Port DC = DC Power Port N/E = Non-Electrical

I/O = Signal Input or Output Port (Not Involved in Process Control)

TP = Telecommunication Ports

Power Interface

Mode	Voltage	Current	Power	Frequency	Phases	Comments
#	(V)	(A)	(W)	(DC/AC-Hz)	(#)	
1	48	7.1	340	DC	-	DC power port is connected to AC/DC convertor.

EUT Operation Modes

Mode #	Description
1	UL and DL transmission and receiving ON

EUT Configuration Modes

Mode #	Description
1	DMU maximum input threshold set to -10 dBm, uplink attenuation set to 0dB; RU uplink and downlink attenuation set to 0dB.

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2. Description of Test Setup

Test Equipment Verified for function

Model #	Description	Checked Function	Results	
KT-N9038A Spectrum Analyzer		Frequency and Amplitude	Connected 50MHz and -20 dBm Ref_signal and checked OK	
JB1	Antenna, 30 to 2000MHz	' Checked structure i		
SAS-571	Antenna, 1 to 18GHz	Checked structure	Normal – no damage	
KT-N5172B	Signal Generator	Frequency, Amplitude and Modulation	Within MFR Specs	
KT-N9020B- 526	MXA Signal Analyzer	Frquency and Amplitude	Within MFR Specs	

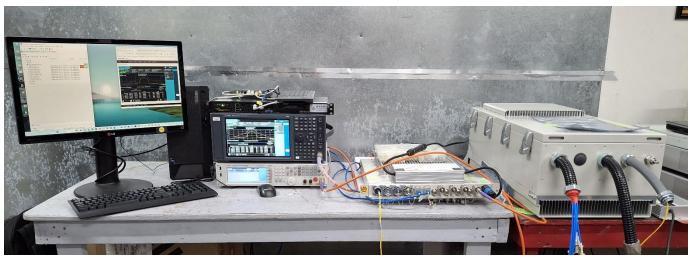
Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests:

Parameter	Uncertainty
Radio Frequency	±1 ppm
Total RF Power: Conducted	±1 dB
RF Power Density: Conducted	±2.75 dB
Spurious Emissions: Conducted	±3 dB
Temperature	±1 °C
Humidity	±5 %
DC and Low Frequency Voltages	±3 %
Radiated Emission, 30 to 18,000MHz	± 4.95 dB

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Test Station Photo



Test Station Cables and Loads

Model #	Manufacture	Description	
3 x TM8-N1S1-60	MegaPhase	N male to SMA male coaxial cable in 60 inches	
1 x 49-30-34 Aeroflex		30dB 25W attenuator	

Test Station Insertion Loss

	Band 800
DL Transmitter	31.7
UL Receiver	0.7

	Band 700
DL Transmitter	31.7
UL Receiver	0.7

	Band 465
DL Transmitter	31.3
UL Receiver	0.5

	Band 415
DL Transmitter	31.3
UL Receiver	0.5

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3. Test Result

3.1 AGC Threshold

Governing Doc	RSS-119, Issue Amendment (Ap RSS-Gen, Issue	oril 1, 2022)	Room Temperature (°C)		21	
Test Procedure	ANSI C63.26-26 Section 7.2.3.1 KDB 935210 D0 Clause 3.2, 4.2		Relative Humidity (%)		45	
Test Location	Bench top, Rich	mond Lab	Barometric Pressure	(hPa)	1012	
Test Engineer	Zara Vali		Date		August 20, 2024	
EUT Voltage	⊠ +48VD	С	□ 120VAC @ 60H	łz		
Test Equipment Used	Manufacturer	Model	Serial Number	Calibration date	Calibration due	
Signal Generator	Keysight	N5172B-506	MY53050270	Dec 12, 2023	Dec 12, 2026	
Spectrum Analyzer	Keysight	N9020B-526	MY62153079	Aug 1, 2023	Aug 1, 2025	
Frequency Range:	Frequency Range: □ 405 MHz – 425 MHz □ 450 MHz – 512 MHz □ 851 MHz – 869 MHz □ 758 MHz – 775 MHz					
Detector:	⊠ Peak					
Type of Facility:						
Distance:	⊠ Direct					
Arrangement of EUT: ⊠ Table-top only □ Floor-standing only □ Rack Mounted						
Output power is: less than or equal 36.99 dBm in 800 band less than or equal 37.09 dBm in 700 band less than or equal 36.98 dBm in 450 band less than or equal 37.05 dBm in 415 band						
Compliant ⊠ Non-Compliant □			Not Applic	able 🗆		

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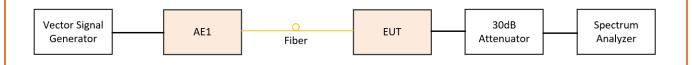
Test setup

Description of test set-up:

Output power is measured by connecting a spectrum analyzer to RF output connector of EUT via 30dB Attenuator. With a nominal input power and the amplifier properly adjusted the RF output is measured.

The EUT was set to Operation Mode #1 with configuration Mode #1.

The maximum output power is measured when the Automatic Level Control (ALC) starting to compress the power and hold to a constant level.



Results – Output Power ISED Requirement

Frequency Range (MHz)	Frequency (MHz)	Input Power Trip ALC (dBm)	Output Power (dBm)	Output Power (Watt)
	406.1	-11.0	37.00	5.01
415 PS 405 - 425	415.55	-11.0	36.99	5.00
403 - 423	425	-10.6	37.05	5.07

Frequency Range (MHz)	Frequency (MHz)	Input Power Trip ALC (dBm)	Output Power (dBm)	Output Power (Watt)	
450 PS 450 - 512	450	-12.0	36.95	4.95	
	465	-12.6	36.97	4.98	
	480	-13.2	36.98	4.99	

Frequency Range (MHz)	Frequency (MHz)	Input Power Trip ALC (dBm)	Output Power (dBm)	Output Power (Watt)
700PS 758 - 775	758	-11.8	37.00	5.01
	766.5	-12.2	37.06	5.08
	775	-12.0	37.09	5.12

Frequency Range (MHz)	Frequency (MHz)	Input Power Trip ALC (dBm)	Output Power (dBm)	Output Power (Watt)	
800PS 851 - 869	851	-9.4	36.95	4.95	
	860	-10.8	36.99	5.00	
	869	-9.4	36.93	4.93	

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3.2 Occupied Bandwidth

5.2 Occupied Balluwi	ис							
Governing Doc	RSS-119, Issue 12 2015, Amendment (April 1, 2022) RSS-Gen, Issue 5 2018			Room Temperature (°C)		21		
Test Procedure	ANSI C63.26: 2015			Relative Humidity (%)		45		
Test Location	Bench top, Richmond Lab			Barometric Pressure (hPa)		1012		
Test Engineer	Zara Vali	Zara Vali			Date		August 20, 2024	
EUT Voltage	⊠ +48VD0			120VAC @ 60Hz				
Test Equipment Used	Manufacturer	Model	Ser	al Number	Calibration da	ate	Calibration due	
Signal Generator	Keysight	N5172B- 506	MY53050270		Dec 12, 2023		Dec 12, 2026	
Spectrum Analyzer	Keysight	N9020B- 526	MY62153079		Aug 1, 2023		Aug 1, 2025	
Frequency Range:	 ≥ 405 MHz – 425 MHz 450 MHz – 512 MHz 851 MHz – 869 MHz 758 MHz – 775 MHz 							
Detector:	⊠ Peak							
Type of Facility:	⊠ Test bench							
Distance:	⊠ Direct							
Arrangement of EUT:	☑ Table-top only □ Floor-standing only □ Rack Mounted							
Output signal has an 99% occupied channel bandwidth less than the designated channel bandwidth on any location on the operating band. - C4FM < 7.698 kHz - CQPSK < 4.83 kHz - HDQPSK < 9.685 kHz - π/4 DQPSK < 20.939 kHz								
Compliant ⊠	Non-Compliant □ Not Applicable □							

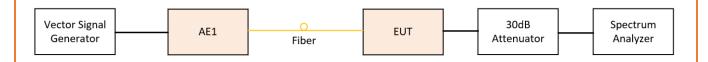
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Test setup

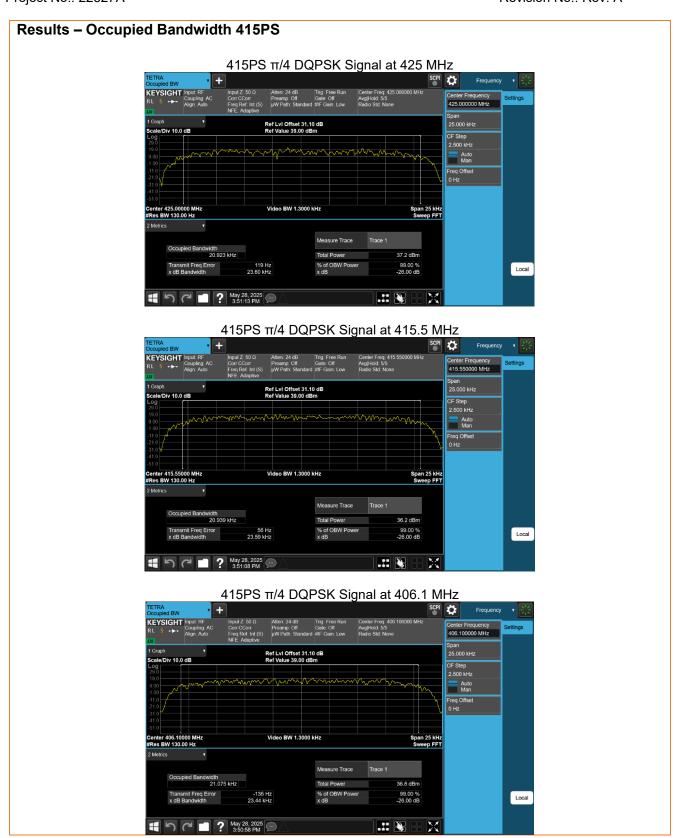
Occupied Bandwidth is measured by connecting a Spectrum Analyzer to the RF output connector via 30dB attenuator. The required measurement resolution bandwidth (RBW) is 1% of the emission bandwidth. 99% energy rule was applied to measure the occupied channel bandwidth. The emission bandwidth is measured as the width of the signal between two frequency points on the channel edge, outside of which the transmission power is attenuated at least 26dB below the transmitter output power

The EUT was set to Operation Mode #1 with configuration Mode #1.

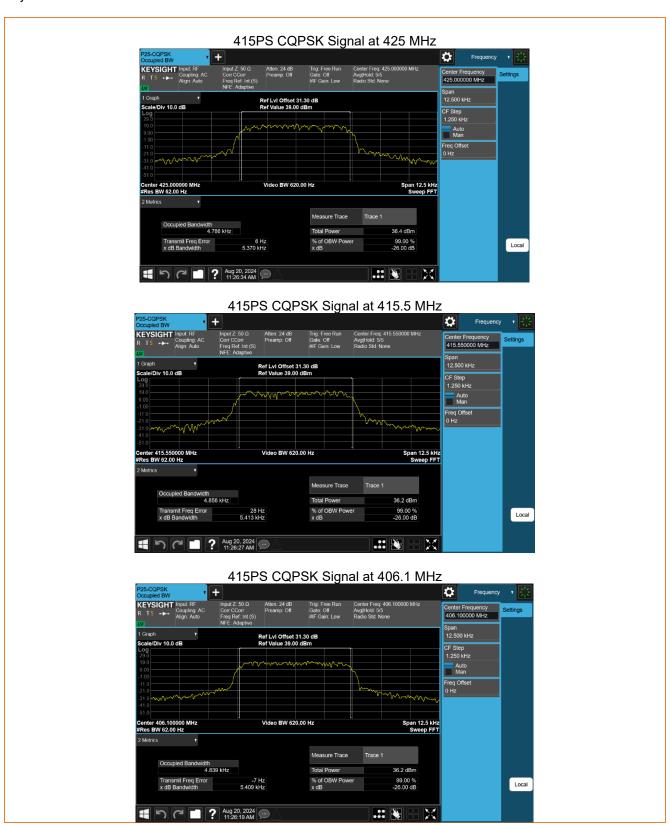
The occupied bandwidth of UL output is measured under one input conditions: Nominal: with input 0.5dB below AGC threshold



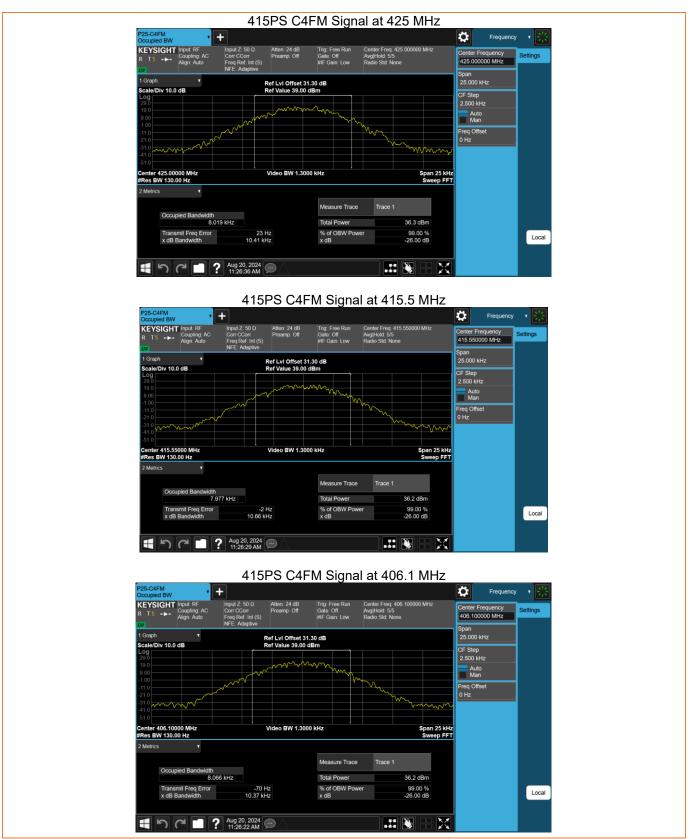
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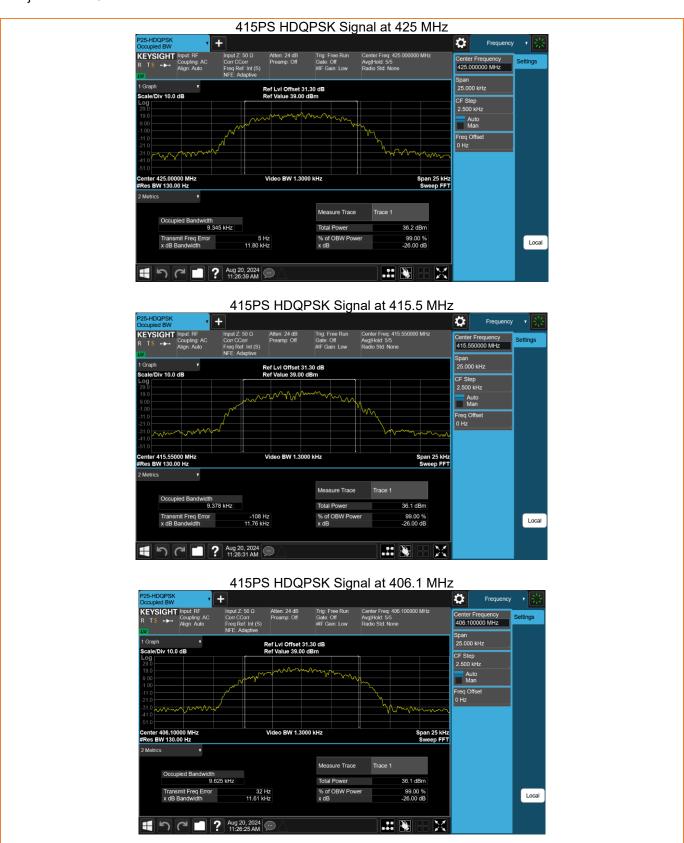
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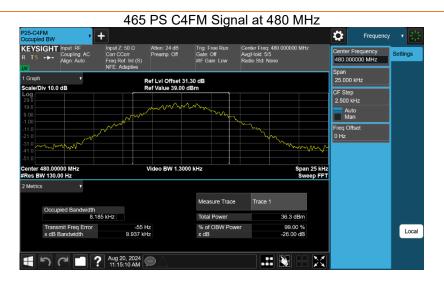
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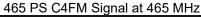


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Results - Occupied Bandwidth 465 PS 465 PS CQPSK Signal at 480 MHz Ö KEYSIGHT Input: F Span 12.500 kHz CF Step 1.250 kHz Auto Man Freq Offset 0 Hz Span 12.5 kHz Sweep FFT Video BW 620.00 Hz Measure Trace 36.3 dBm 99.00 % -26.00 dB Local ? Aug 20, 2024 465 PS CQPSK Signal at 465 MHz ₽ KEYSIGHT 12.500 kHz CF Step 1.250 kHz Auto Man 36,3 dBm Local Aug 20, 2024 11:15:01 AM 465 PS CQPSK Signal at 450 MHz **O** Span 12.500 kHz CF Step 1.250 kHz Auto Man Span 12.5 kl 36.2 dBm Local Aug 20, 2024 11:14:53 AM

Date Issued: July 15, 2025 Project No.: 22327A Client: Avari Wireless Inc. Report No.: 20.01.22327-1 Revision No.: Rev. A



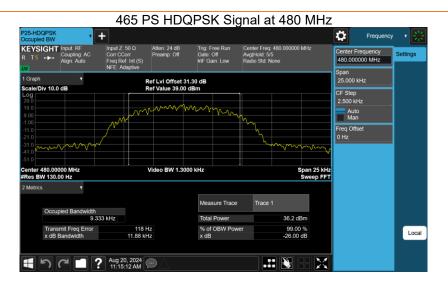


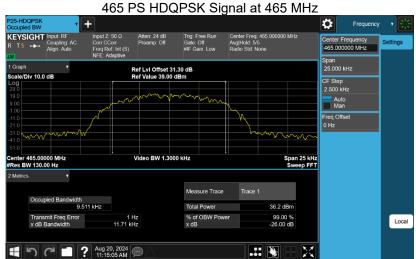


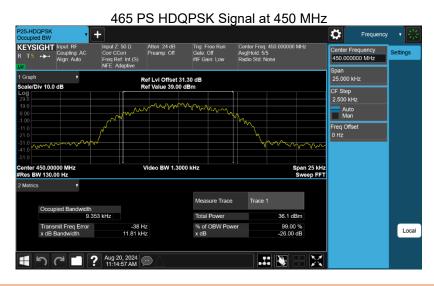
465 PS C4FM Signal at 450 MHz



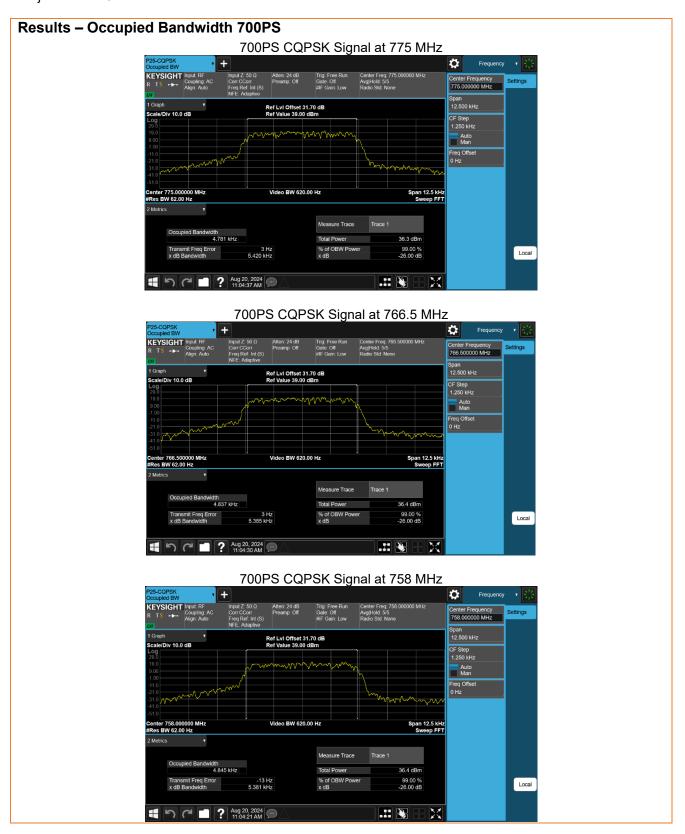
Date Issued: July 15, 2025 Project No.: 22327A



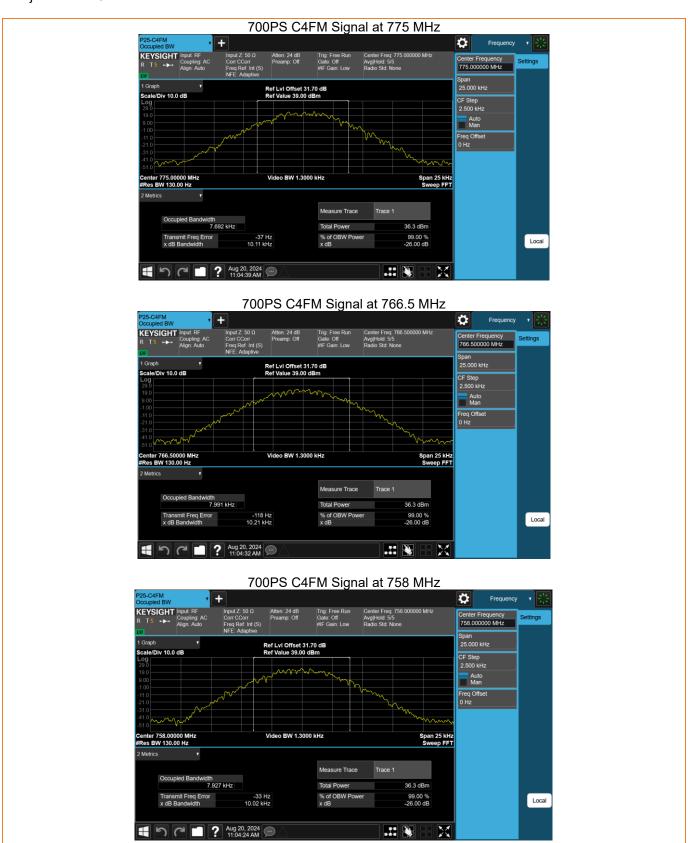




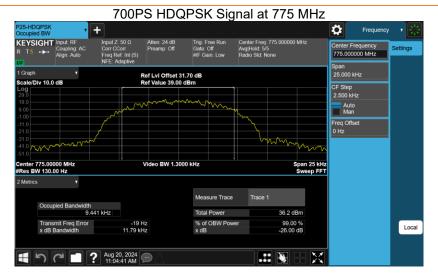
Date Issued: July 15, 2025 Project No.: 22327A

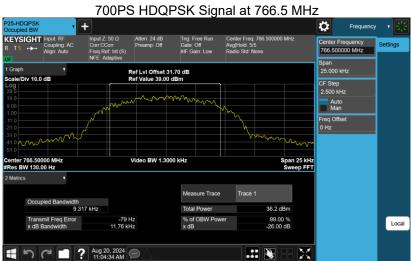


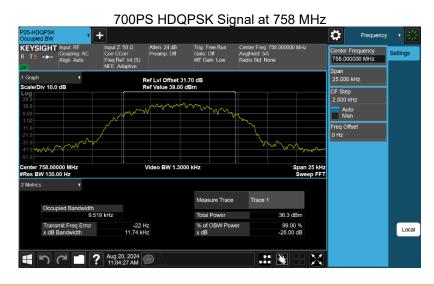
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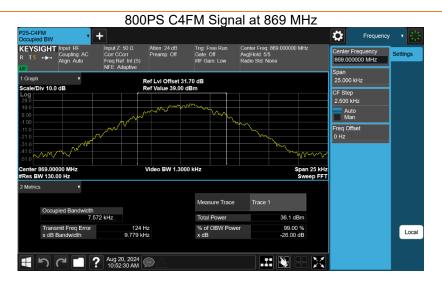


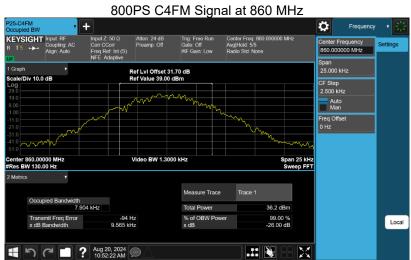


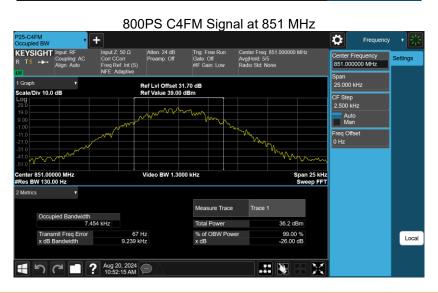
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