



ElitePro S1200 Smart Thermostat

Report #: <24001>

FCC ID: HS9-THX1200WF01

IC: 573R-THX1200WF01

FCC 15.247

RSS-247 Issue 3

RSS-Gen Issue 5:2018+A1:2019+A2:2021

902 – 928 MHz FHSS Transceiver

Issue Date: <2025-06-11>

Prepared by and for:

Resideo LLC.

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Testing

NVLAP Lab Code: 600110

REVISION HISTORY

Revision Number	Prepared By	Reviewed By	Revision Detail	Release Date
00			Original version	
1.0	Jose Badia	Christian Fouth	- Removed the AC Powerline Conducted section - Added FCC Lab Designation Number and ISED CAB Identifier	06/11/2025

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ATTESTATION OF TEST RESULTS

Company Name: Resideo LLC., 2 Corporate Center Dr., Melville, NY 11747, USA
EUT Description: Smart Thermostat
Model: ElitePro S1200
Sample Number: MEL-1175, MEL-1174
Sample receipt date: 04/16/2025
Last Date of test: 05/30/2025

Standards

Specification	Method
CFR 47 Pt 15 Subpart C, Section 15.247:2023	ANSI C63.10: 2013
RSS-247 Issue 3	
RSS-GEN Issue 5:2018+A1:2019+A2:2021	

Guidance

FCC KDB 558074 V05R02:2019

Resideo LLC. tested the above equipment in accordance with the requirements set forth in the listed standards. All indications of Pass/Fail in the report are opinions expressed by Resideo LLC. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

This document is a record of the FCC/ISED Test Report for Resideo LLC. products. It demonstrates the data required to be analyzed to certify a product according to the requirements of the FCC & ISED.

The results in the report reflect only the tested samples, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only.

This document may not be altered or revised in any way unless done so by Resideo LLC. and all revisions are duly noted in the revisions section. Any alterations of this document not carried out by Resideo LLC. will constitute fraud and shall nullify the document.

Resideo LLC. is the legal entity name for Honeywell Home / Resideo. All three names can be used interchangeably within this test report.

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Reviewed & Approved By:

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TEST RESULT SUMMARY

Test Description	Result	FCC Section (s)	RSS Section (s)	ANSI C63.10 Section (s)	Comments
Emissions Bandwidth (20dB)	Pass	15.247(a)	RSS-247 5.2(a)	7.8.7	
Occupied Bandwidth (99%)	Evaluated	15.247(a)	RSS-Gen 6.7	7.8.7	There is no compliance requirement for this test
Maximum Conducted Output Power	Pass	15.247(b)	RSS-247 5.4(d)	7.8.5	
Number of Hopping Frequencies	Pass	15.247(a)(1)	RSS-247 5.1(d)	7.8.3	
Carrier Frequency Separation	Pass	15.247(a)(1)	RSS-247 5.1(b)	7.8.2	
Dwell Time	Pass	15.247(a)(1)	RSS-247 5.1(d)	7.8.4	
Spurious Conducted Emissions	Pass	15.247(d)	RSS-247 5.5	7.8.8	
Band Edge Compliance	Pass	15.247(d)	RSS-247 5.5	7.8.6	

Deviations from test standard

None

ACCREDITATIONS AND AUTHORIZATIONS

USA
FCC - test site and measurement facility used to collect data are located at 2 Corporate Center Dr., Melville, NY 11747, USA. Resideo LLC. is accredited by NVLAP, Laboratory Code 600110-0 . The full scope of accreditation can be viewed at the NVLAP website. Designation Number: US5344
Canada
ISED - test site and measurement facility used to collect data are located at 2 Corporate Center Dr., Melville, NY 11747, USA. Resideo LLC. is accredited by NVLAP, Laboratory Code 600110-0 . The full scope of accreditation can be viewed at the NVLAP website. CAB Identifier: US0242

MEASUREMENT UNCERTAINTY

The measuring equipment utilized to perform the tests documented in this report have been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

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

Parameter	Uncertainty (+/-)
Frequency Accuracy	0.0007
Amplitude Accuracy (dB)	1.2
Conducted Power (dB)	1.2
Temperature (°C)	0.7
Humidity (% RH)	2.5
DC Supply Voltages	0.7
AC Supply Voltages	1

Uncertainty figures are valid to a confidence level of 95%.

Test Setup Block Diagrams

Measurement Bandwidths

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 – 0.15	1.0	0.2	0.2
0.15 – 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

Unless otherwise stated, measurements were made using the bandwidths and detectors specified. No video filter was used

Antenna Port Conducted Measurements



Sample Calculation

Where relevant, the following sample calculation is provided:

Conducted Emissions:

Adjusted Level (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Transducer Factor (dB)

EQUIPMENT UNDER TEST

Test Item Description

The THX1200WF01 is a Redlink, Wi-Fi, BLE (Bluetooth Low Energy), and Radar enabled thermostat operating in the, 900MHz, 2.4GHz, 5Ghz ISM band and 60GHz band for Radar.

This report covers only the Redlink portion of the device.

Test Sample Identification

Sample ID Number	Date Received
MEL-1175 (Antenna port testing)	04/16/2025
MEL-1174 (Conducted AC Line testing)	04/16/2025

Worst-Case Configuration & Mode

Testing was performed with the EUT set to transmit at the low/middle/high channels with the highest output power and $\geq 98\%$ duty cycle as worst-case scenario.

Power setting

The power settings below reflect the maximum power that the EUT is allowed to transmit at during normal operation.

Modulation Types	Position (if multiple channels)	Power Setting (dBm)
Single data rate modulation	Low channel	11
	Mid channel	11
	High channel	11

Test software/firmware installed on EUT: XTR

Antenna description

Antenna	Type	Frequency Range (MHz)	Highest Gain (dBi)
Antenna A	FPC	902-928	1.3
Antenna B	FPC	902-928	0.1

Test & Measurement Equipment

The following test and measurement equipment was utilized for the tests documented in this report:

Equipment List

Instrument Type	ID #	Serial #	Manufacturer	Model	Cal Date	Cal Due Date
RF Lab (Power & Antenna Port Measurements)						
Spectrum Analyzer	11549	MY46187211	Agilent	E4440A	3/5/2024	3/5/2026
Power Sensor	11568	105317	Rohde & Schwarz	NRP-Z81	11/3/2023	11/3/2025
Attenuator	-	1624	Pasternack	PE7087-6	03/25/2025	03/25/2026
Shield Room						
EMI Receiver	11566	102484	Rohde & Schwarz	ESR3	6/2/2023	6/2/2025
LISN	11527	241259	Com-Power	LIN-120A	1/13/2025	1/13/2025
Misc.						
Measurement Software	11543	Version 9.5	UL	UL EMC	N/A	N/A
Environmental Meter	11548	A078188	Extech Instruments	SD700	3/29/2024	3/31/2027

*-Passive devices & Preamps are characterized in-house, not calibrated.

ANTENNA PORT MEASUREMENTS

Duty Cycle

Test Description

There is no compliance requirement to be met by this test, so therefore no pass/fail criteria.

The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum.

The test software provided for operation in a fixed, single channel mode allows the EUT to operate continuously at 100% Duty Cycle.

20dB Emission Bandwidth

Test Description

Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

Test Limit

Reference	Method	Limit
CFR 47 Subpart C 15.247 (a)(1)(i)	ANSI C63.10:2013	≤ 500 kHz
RSS-247 Issue 3	ANSI C63.10:2013	≤ 500 kHz

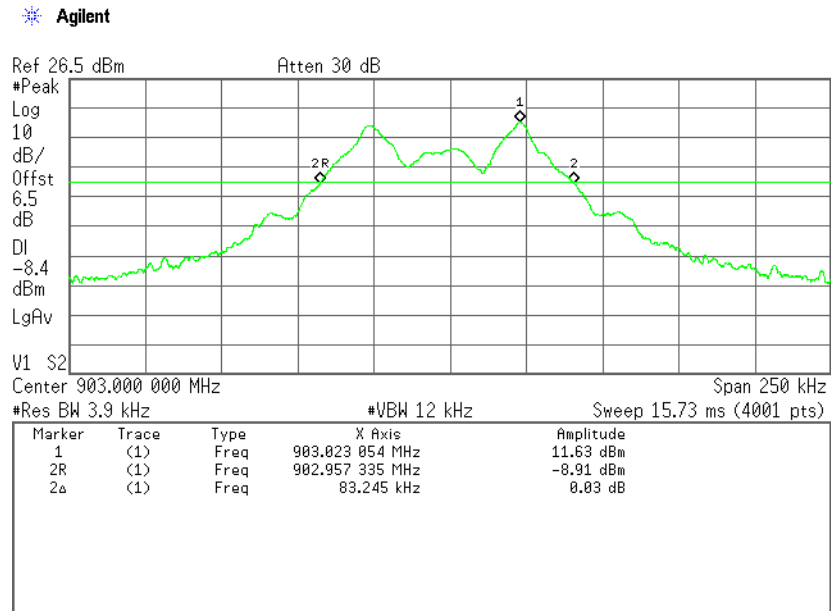
Test Information

Tester	Test Location	Date	Temperature (°C)	Humidity (%RH)	Pressure (mbar)	Results (P/F)
Jose Badia	RF Lab	4/23/2025	22.78	29.7	1019.7	P

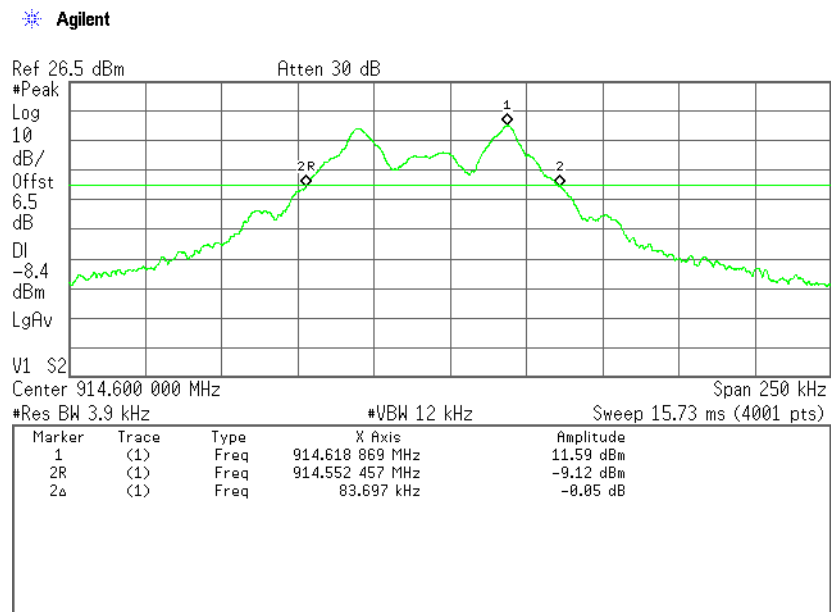
Test Results

Channel	Frequency (MHz)	20dB Bandwidth (kHz)	
		Antenna A	Antenna B
Low	902.99	83.25	84.95
Mid	914.59	83.70	84.95
High	926.39	85.56	84.25

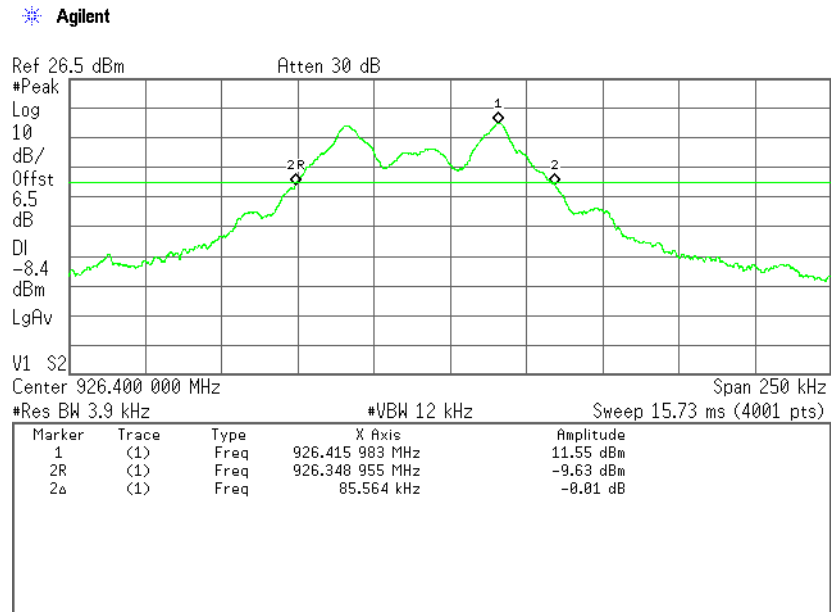
Antenna A



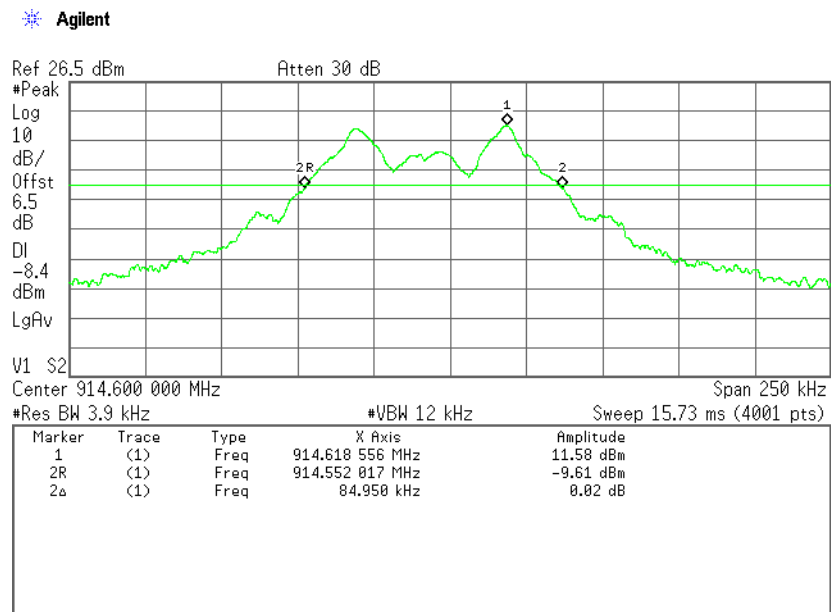
Antenna A: Low Channel - Plot



Antenna A: Mid Channel - Plot

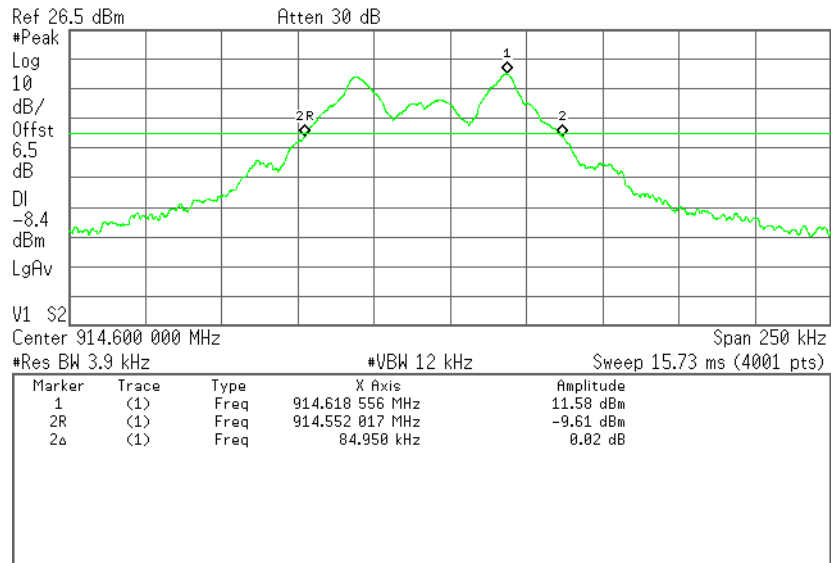


Antenna A: High Channel – Plot

Antenna B

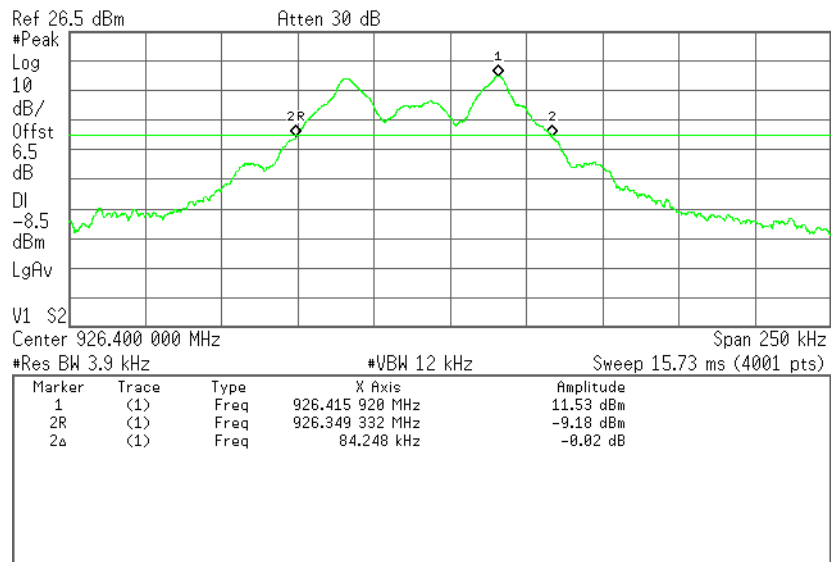
Antenna B: Low Channel - Plot

* Agilent



Antenna B: Mid Channel - Plot

* Agilent



Antenna B: High Channel - Plot

99% Occupied Bandwidth

Test Description

The emission bandwidth (x dB) is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated x dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth.

When the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth, as calculated or measured.

Test Criteria

Reference	Limit
RSS-GEN, Section 6.6	N/A

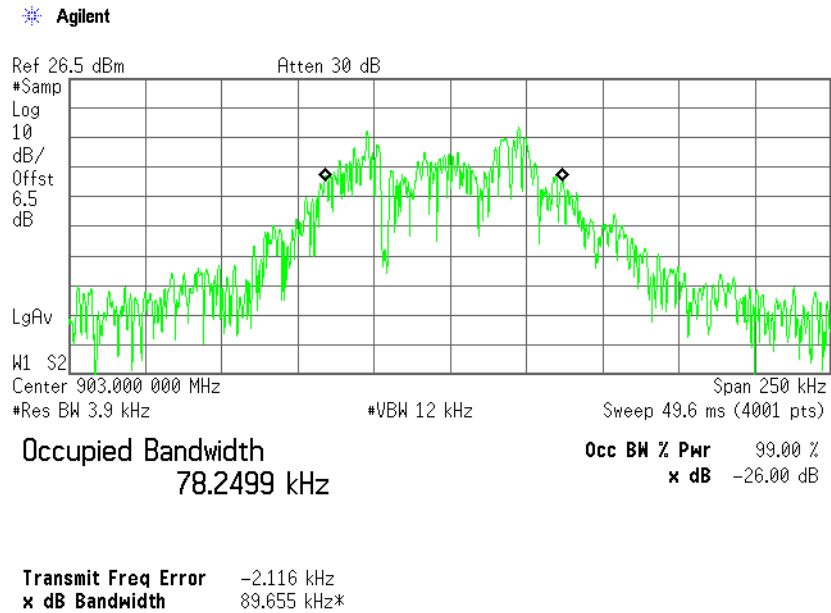
Test Information

Tester	Test Location	Date	Temperature (°C)	Humidity (%RH)	Pressure (mbar)	Results (P/F)
Jose Badia	RF Lab	4/23/2025	22.78	29.7	1019.7	P

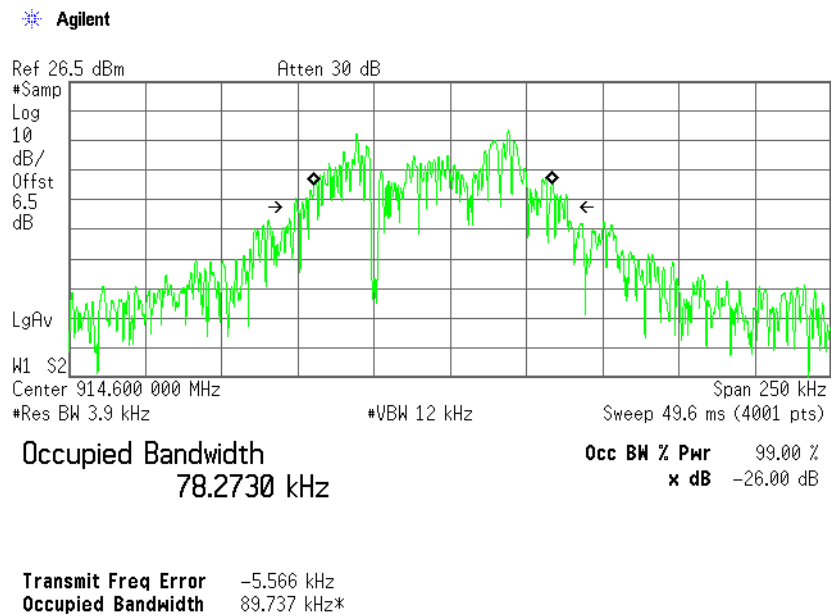
Test Results

Channel	Frequency (MHz)	99% Bandwidth (in kHz)	
		Antenna A	Antenna B
Low	903	78.25	78.16
Mid	914.6	78.27	78.26
High	926.4	78.32	78.64

Antenna A

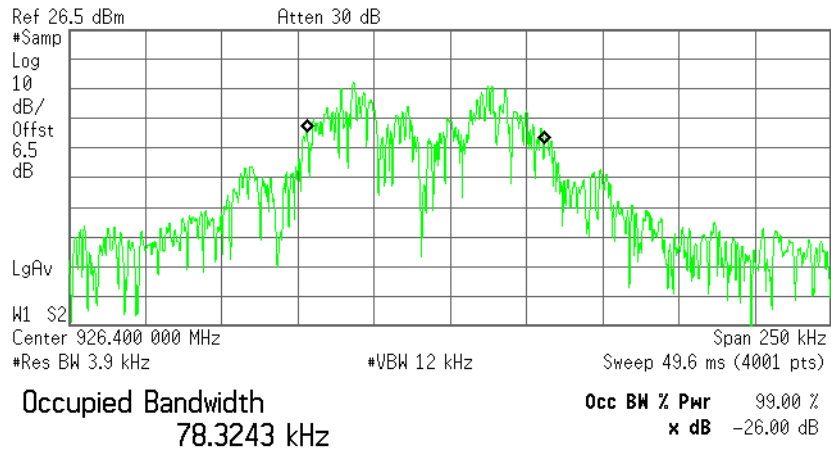


Antenna A: Low Channel - Plot



Antenna A: Mid Channel - Plot

* Agilent

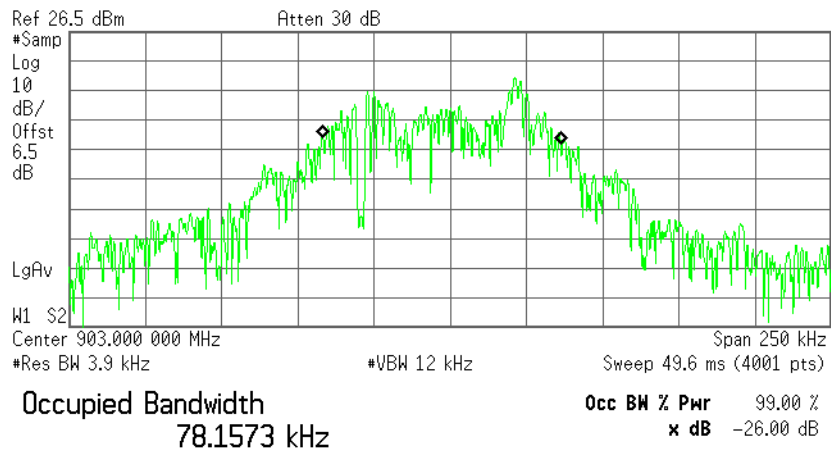


Transmit Freq Error -7.995 kHz
x dB Bandwidth 84.464 kHz*

Antenna A: High Channel – Plot

Antenna B

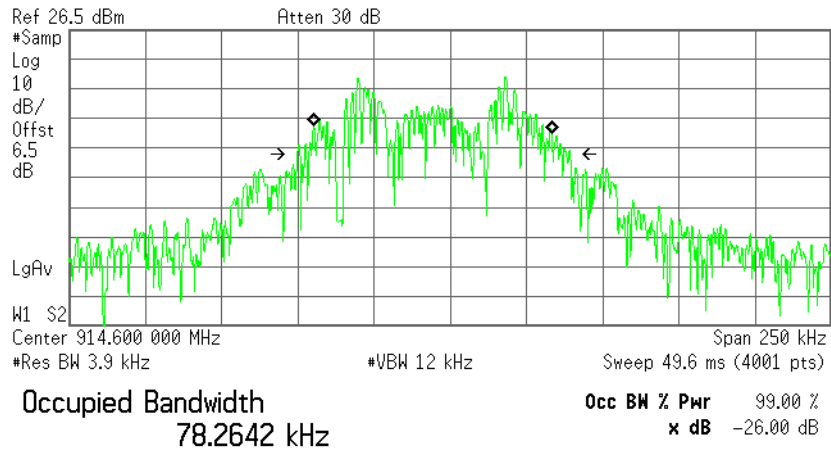
* Agilent



Transmit Freq Error -2.736 kHz
x dB Bandwidth 89.717 kHz*

Antenna B: Low Channel - Plot

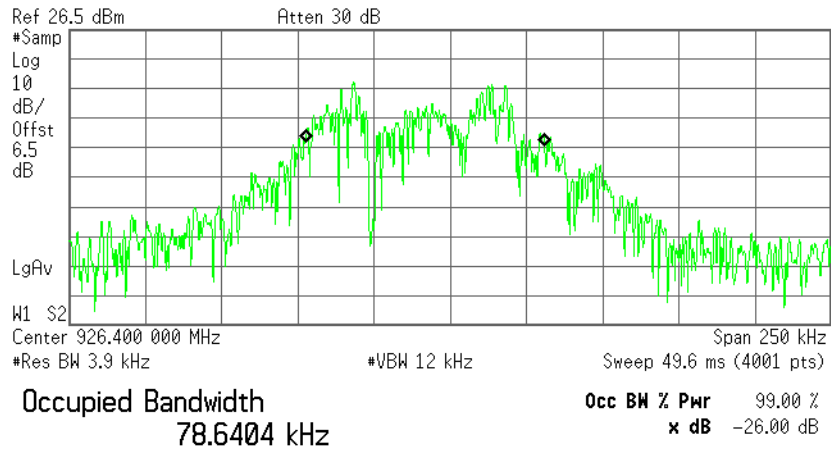
* Agilent



Transmit Freq Error -5.673 kHz
Occupied Bandwidth 89.829 kHz*

Antenna B: Mid Channel - Plot

* Agilent



Transmit Freq Error -8.281 kHz
x dB Bandwidth 89.839 kHz*

Antenna B: High Channel - Plot

Maximum Conducted Output Power

Test Description

For systems using digital modulation in the 902-928MHz, 2400-2483,5MHz and 5725-5850MHz bands, the conducted output power limit (specified below) is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Maximum peak conducted output power was the method employed to determine fundamental emission output power.

Method PKPM1 per C63.10 and KDB 558074 was utilized for this test program.

For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.

Test Criteria

Reference	Method	Limit
CFR 47 Subpart C 15.247 (b)(2) RSS-247 Section 5.4 (a)	ANSI C63.10:2013	1W (30dBm)

Test Information

Tester	Test Location	Date	Temperature (°C)	Humidity (%RH)	Pressure (mbar)	Results (P/F)
Jose Badia	RF Lab	05/30/2025	22.78	29.7	1019.7	P

Test Results

Channel	Frequency (MHz)	Tx Channel Power (dBm)	
		Antenna A	Antenna B
Low	903	10.55	10.5
Mid	914.6	10.5	10.45
High	926.4	10.51	10.45

Output Power Plots:

Note: PKPM1 method uses a power meter for measurement and therefore no plots are produced.

Number of Hopping Frequencies

Test Description

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

Test Criteria

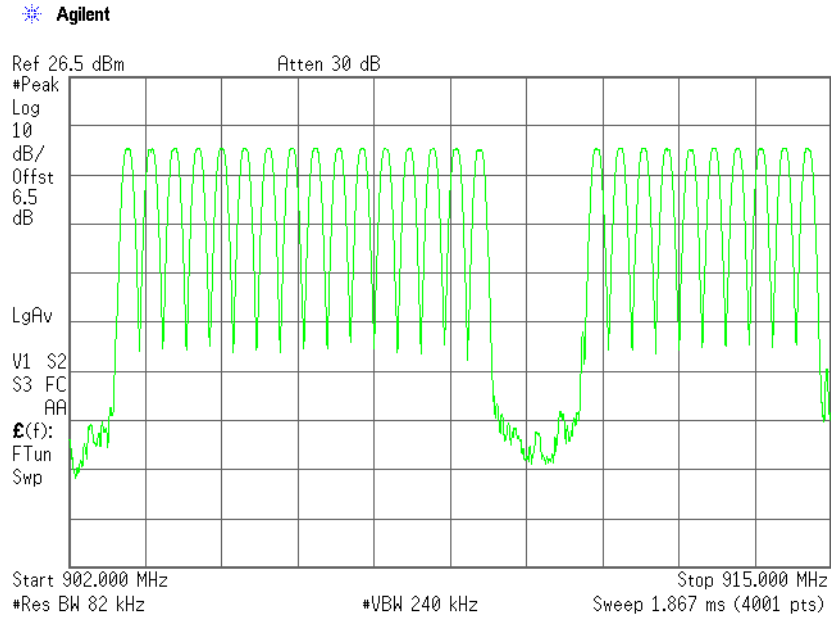
Reference	Method	Limit
CFR 47 Subpart C 15.247 (a)(1)(i) RSS-247 Section 5.1 (c)	ANSI C63.10	≥50 Hopping Frequencies

Test Information

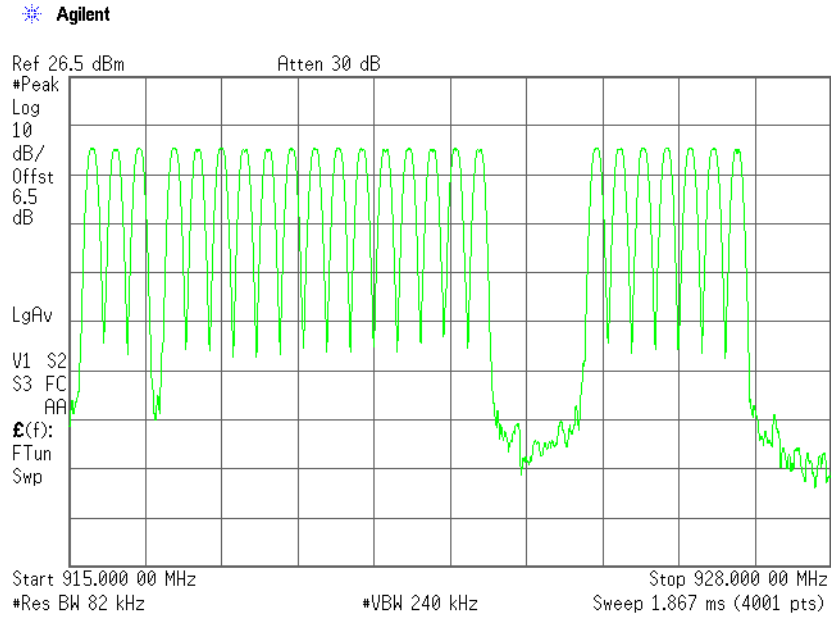
Tester	Test Location	Date	Temperature (°C)	Humidity (%RH)	Pressure (mbar)	Results (P/F)
Jose Badia	RF Lab	4/24/2025	22.22	28.3	1010.4	P

Test Results

Frequency Operating Band (MHz)	Highest DTS BW (kHz)	Number of Hopping Frequencies	Results (P/F)
902 – 928	85.56	50	P



Number of Channels – Plot 1 – Channels 1 - 26



Number of Channels - Plot 2 – Channels 26 - 50

Carrier Frequency Separation

Test Description

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Test Criteria

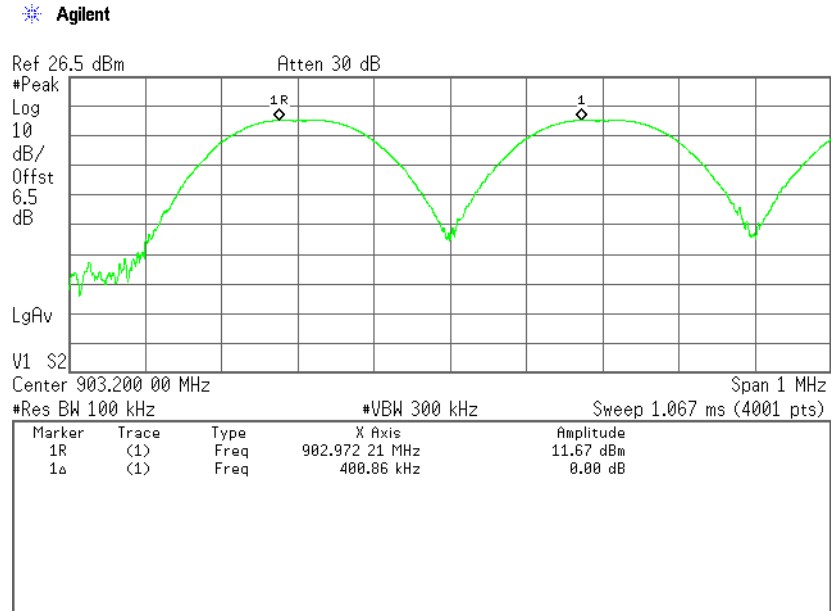
Reference	Method	Limit
CFR 47 Subpart C 15.247 (a)(1) RSS-247 Section 5.1 (b)	ANSI C63.10:2023	≥25kHz or the 20dB Bandwidth, whichever is greater

Test Information

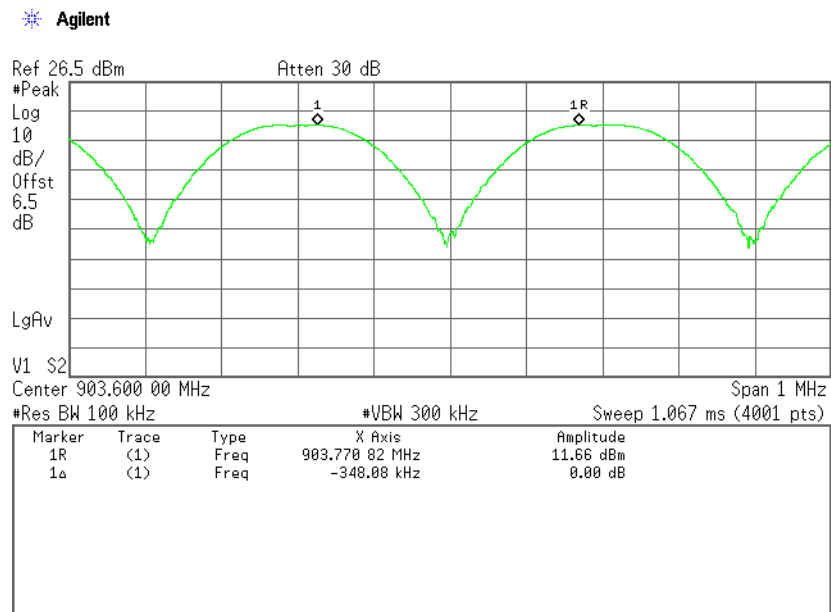
Tester	Test Location	Date	Temperature (°C)	Humidity (%RH)	Pressure (mbar)	Results (P/F)
Jose Badia	RF Lab	5/02/2025	21.11	26.7	1002.3	P

Test Results

Frequency Operating Band (MHz)	Highest DTS BW (kHz)	Channel Separation Frequency (kHz)	Results (P/F)
902 – 928	85.56	> 300kHz	P



Channels 0-1



Channels 1-2

Dwell Time

Test Description

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

Test Criteria

Reference	Limit
CFR 47 Subpart C 15.247 (a)(1) RSS-247 Section 5.1 (c/d)	≤ 0.4 seconds

Test Information

Tester	Test Location	Date	Temperature (°C)	Humidity (%RH)	Pressure (mbar)	Results (P/F)
Jose Badia	RF Lab	4/24/2025	22.22	28.3	1010.4	P

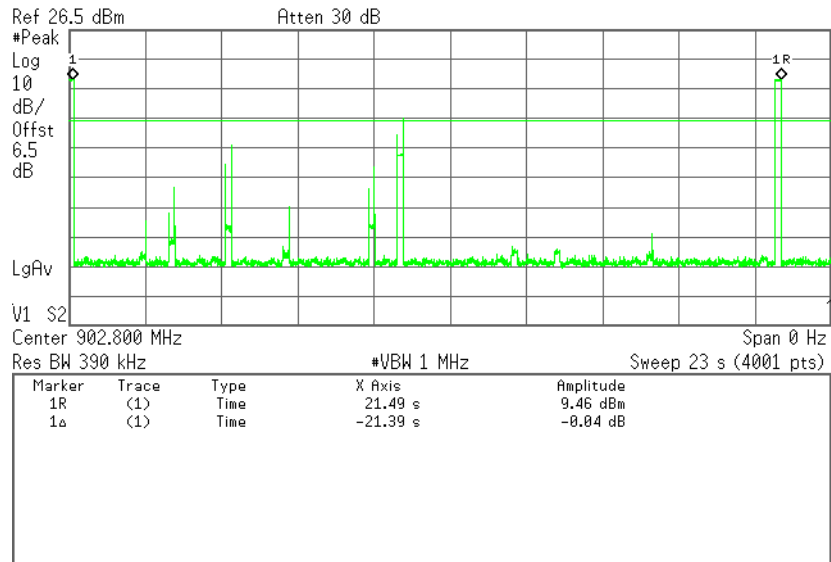
Test Results

Observation Period (sec)	Number of observed hops	Regulatory Period (sec)	Number of hops in Regulatory period	Measured Dwell time (msec)	Occupancy Period (msec)	Limit (msec)
20	2	20	2	179.8	359.6	400

Number of hops in the regulatory observation period = (number of observed hops / analyzers sweep time) * (regulatory observation period)

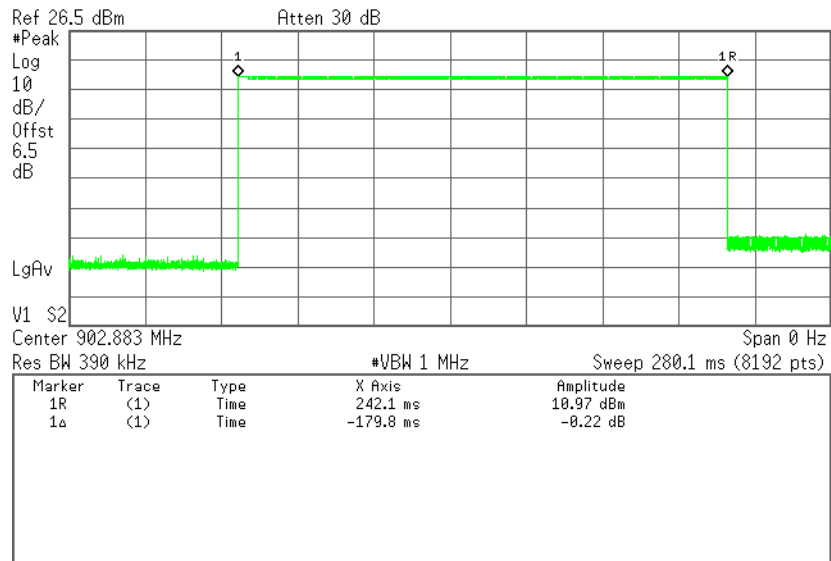
Occupancy Period = (Number of Observed Hops) * (measured dwell time)

* Agilent



Number of Transmissions

* Agilent



Dwell Time per Channel

Spurious Conducted Emissions

Test Description

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on RF conducted measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

Testing was performed with hopping disabled per ANSI C63.10 Section 7.8.7.1.

Test Criteria

Reference	Limit
CFR 47 Subpart C 15.247 (d) RSS-247, Section 5.5	20dBc Below the Fundamental

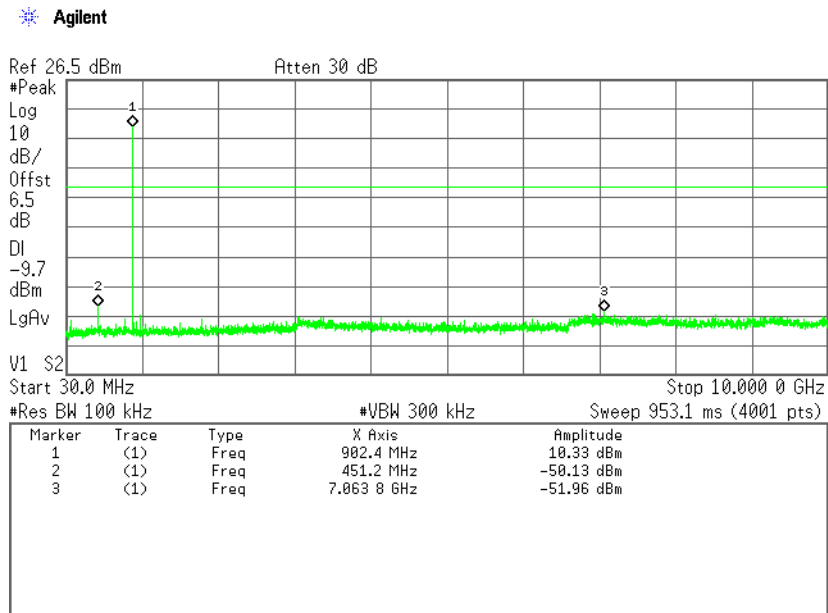
Note: 20dBc is in reference to the highest measured in-band level across all channels measured using the same instrument settings, per ANSI C63.10 Section 7.8.7.1.

Test Information

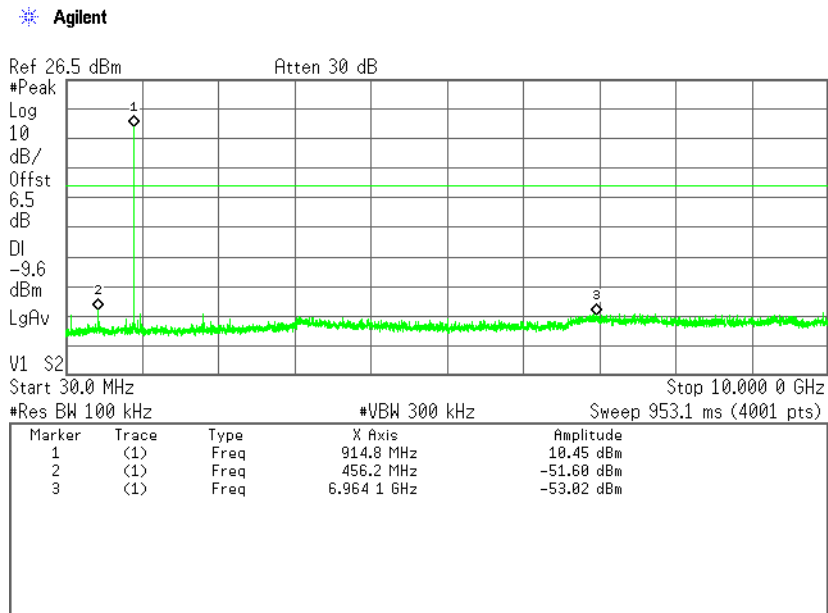
<u>Tester</u>	<u>Test Location</u>	<u>Date</u>	<u>Temperature</u> <u>(°C)</u>	<u>Humidity</u> <u>(%RH)</u>	<u>Pressure</u> <u>(mbar)</u>	<u>Results (P/F)</u>
Jose Badia	RF Lab	4/30/2025	22.78	29.7	1019.7	P

Test Results

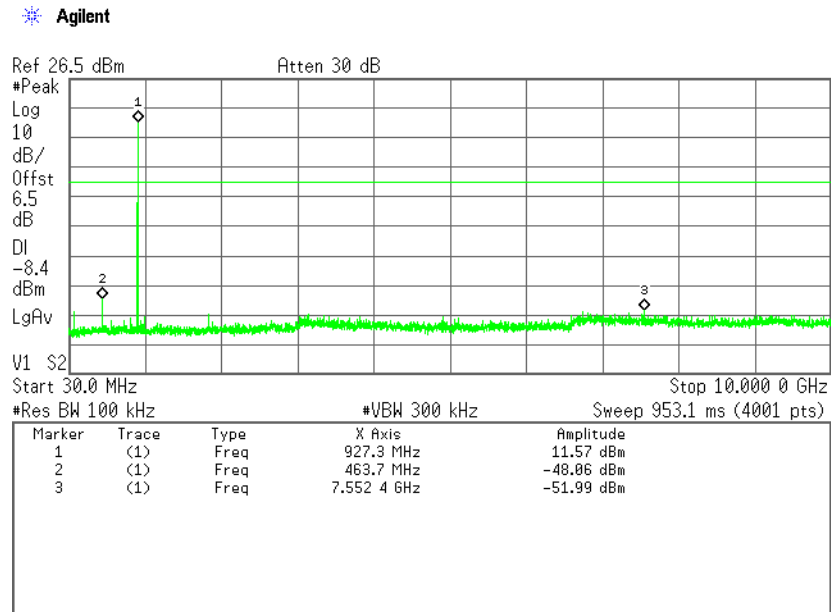
Antenna A



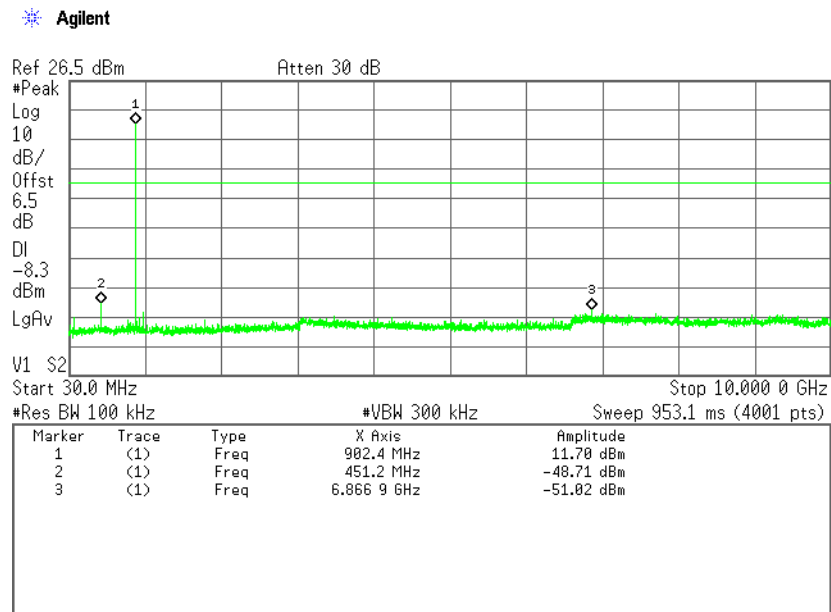
Antenna A: Low Channel - Plot



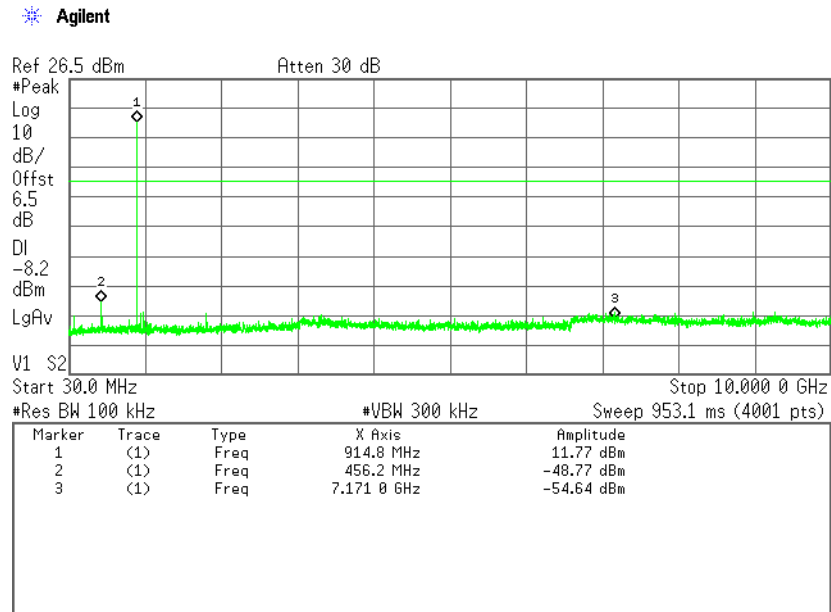
Antenna A: Mid Channel - Plot



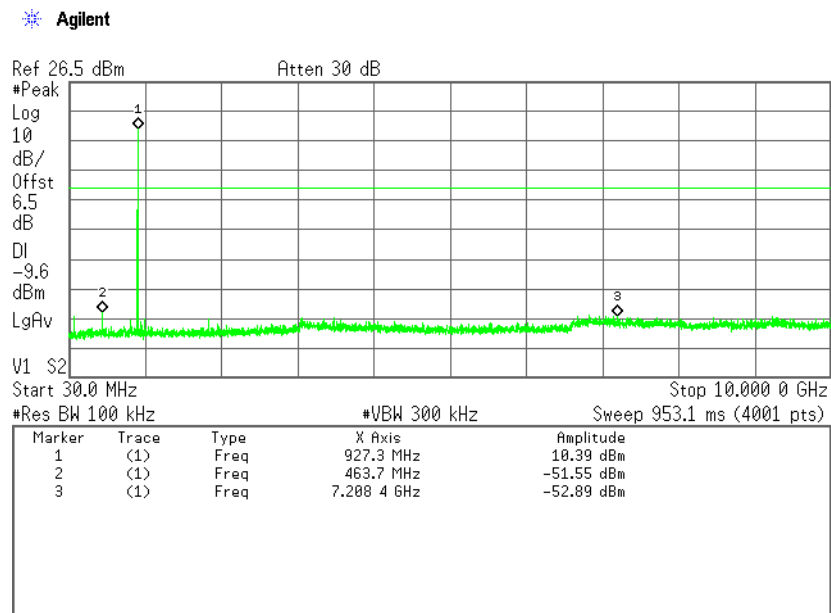
Antenna A: High Channel – Plot

Antenna B

Antenna B: Low Channel - Plot



Antenna B: Mid Channel - Plot



Antenna B: High Channel - Plot

Conducted Band Edge

Test Description

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on RF conducted measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

The Spurious RF conducted emissions at the edges of the authorized band were measured with the EUT set to non-hopping mode and its normal pseudo-random hopping sequence.

Test Criteria

Reference	Limit
CFR 47 Subpart C 15.247 (d) RSS-247, Section 5.5	20dBc Below the Fundamental

Note: 20dBc is in reference to the previously measured PSD measurements as referenced in ANSI C63.10 Section 11.11.2

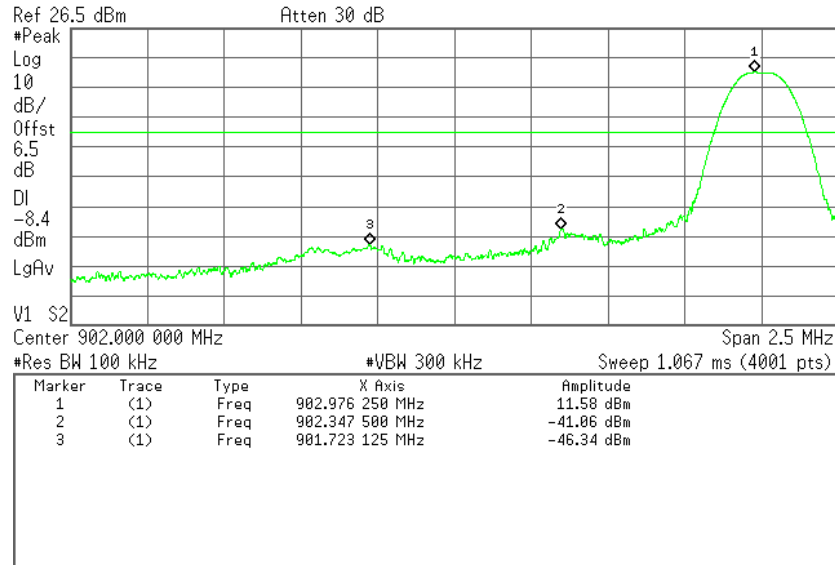
Test Information

<u>Tester</u>	<u>Test Location</u>	<u>Date</u>	<u>Temperature</u> <u>(°C)</u>	<u>Humidity</u> <u>(%RH)</u>	<u>Pressure</u> <u>(mbar)</u>	<u>Results (P/F)</u>
Jose Badia	RF Lab	4/24/2025	22.78	29.7	1019.7	P

Test Results

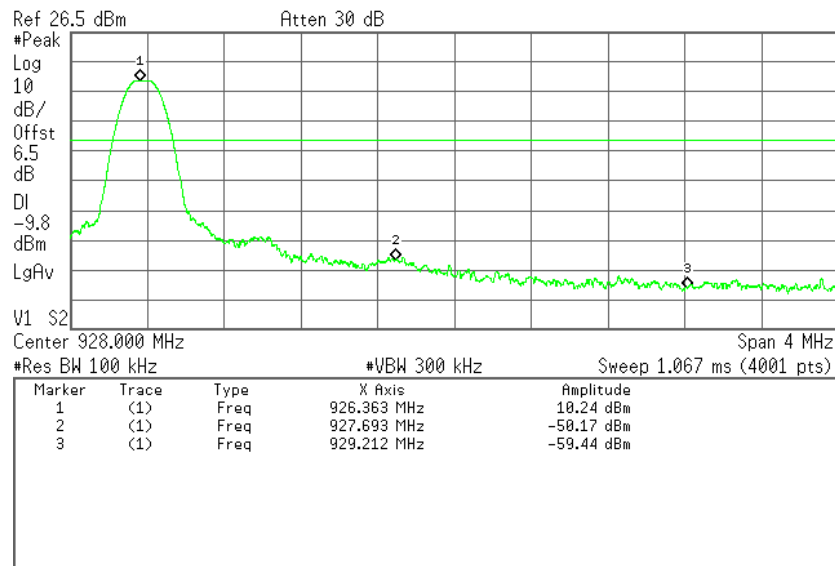
Non-Hopping

✱ Agilent



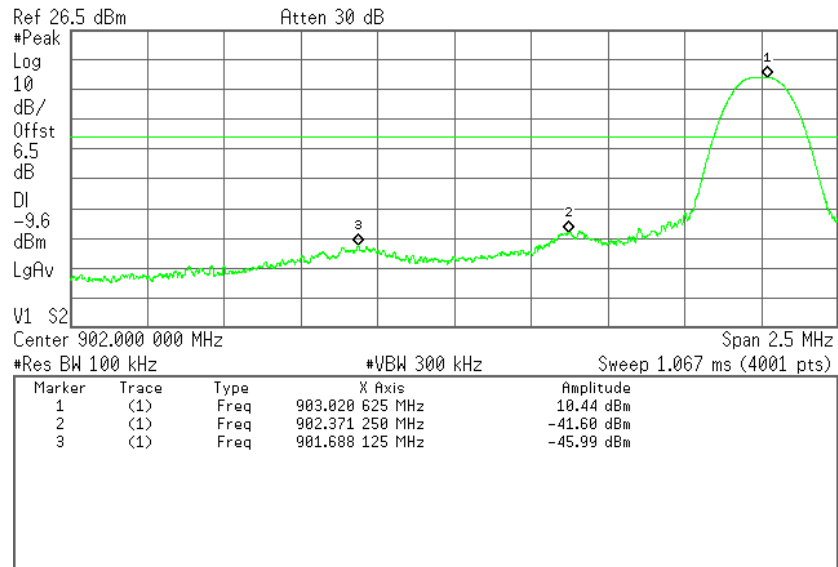
Antenna A: Low Channel – Non-hopping

✱ Agilent



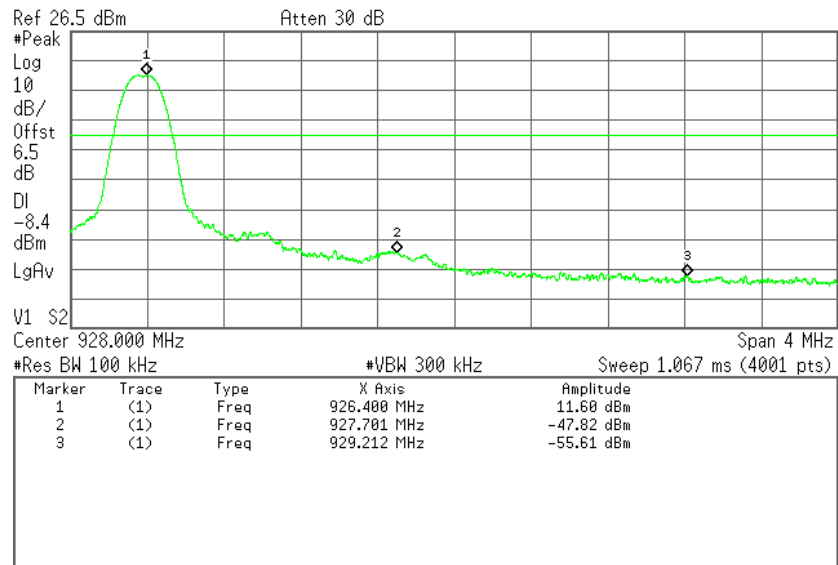
Antenna A: High Channel – Non-hopping

Agilent



Antenna B: Low Channel – Non-hopping

Agilent

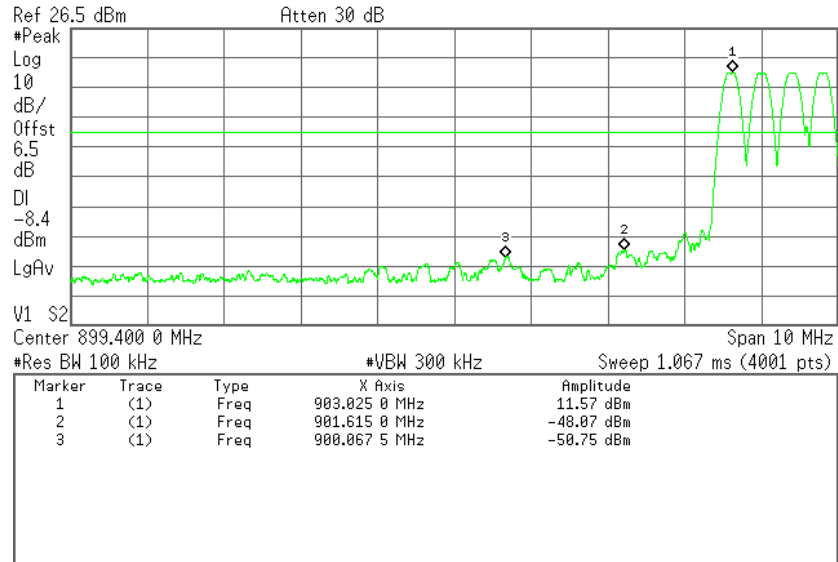


Antenna B: High Channel – Non-hopping

Report #: <24001>

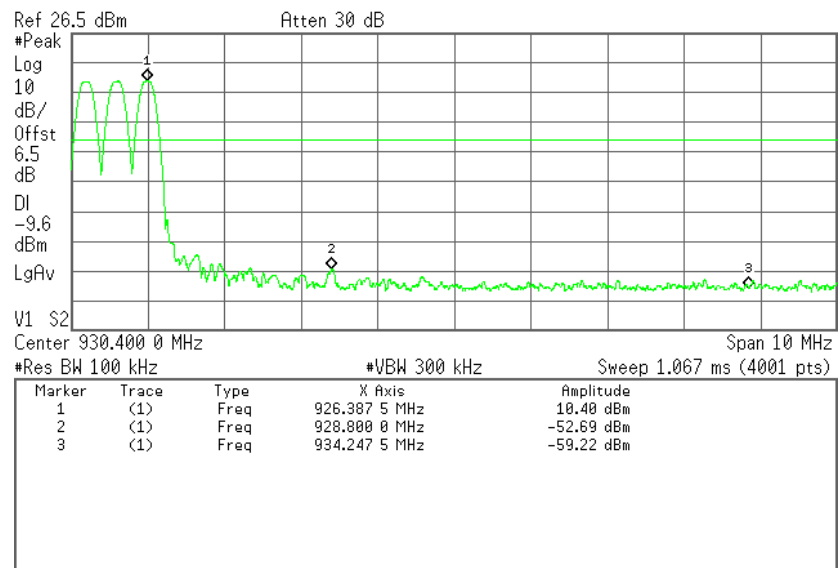
Hopping

Agilent



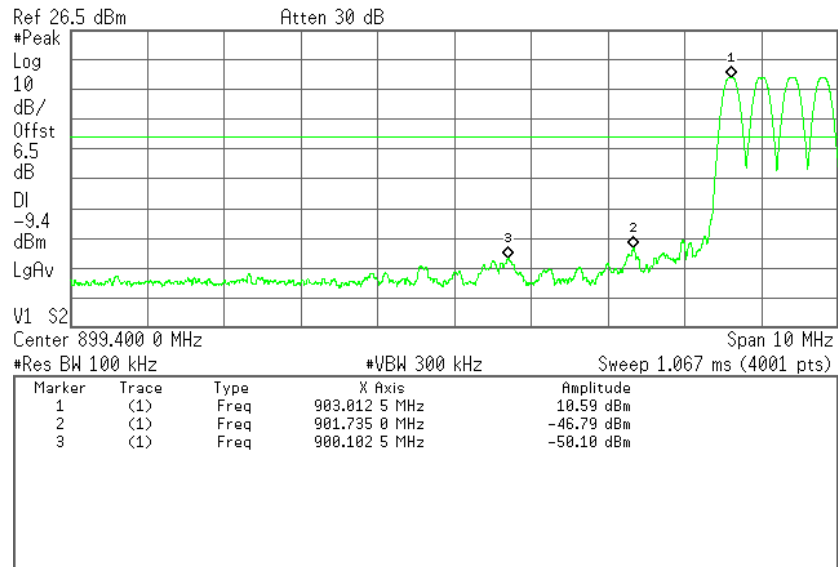
Antenna A: Low Channel – Hopping

Agilent



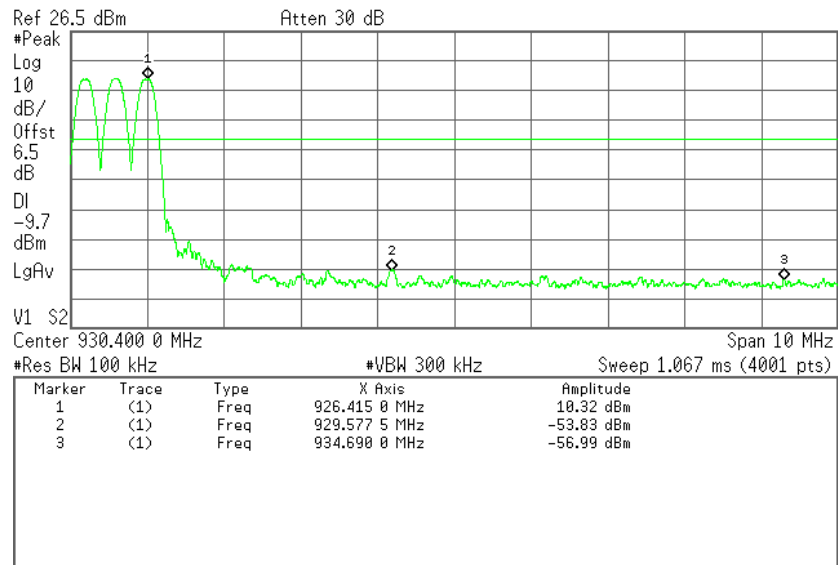
Antenna A: High Channel – Hopping

* Agilent



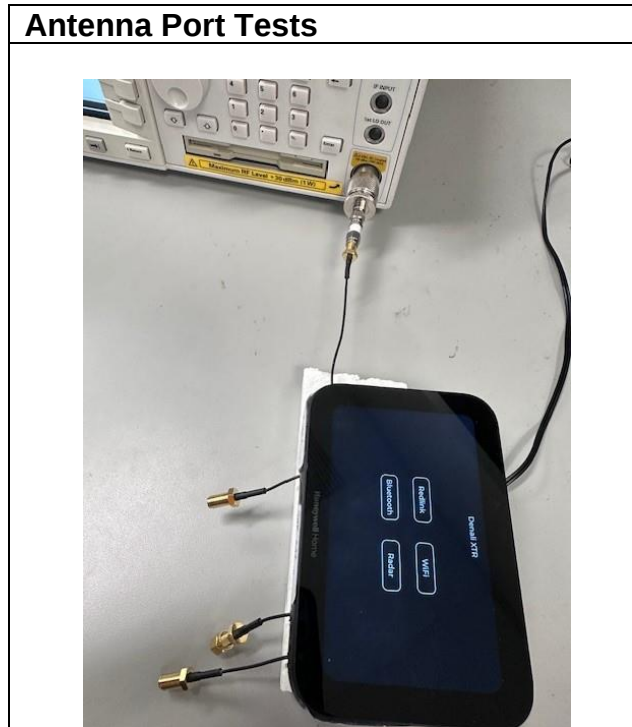
Antenna B: Low Channel – Hopping

* Agilent



Antenna B: High Channel – Hopping

Setup Photos



Note: Above photo is representative of both all tested antenna ports. Only the Redlink antenna ports were tested for purposes of this report.

END OF REPORT