UNIFIED COMPLIANCE LABORATORY

427 West 12800 South
Draper, UT 84020

Test Report

Certification

FCC ID	SWX-WAVEPRO
ISED ID	6545A-WAVEPRO
Equipment Under Test	Wave-Pro
Test Report Serial Number	TR8076_02
Date of Test	19-21 July, 17 August 2022; 25 April, 3 May 2023
Report Issue Date	5 May 2023

Test Specification	Applicant
47 CFR FCC Part 15, Subpart E	Ubiquiti Inc. 685 Third Avenue New York, NY 10017 U.S.A.

NVLAP TESTING ilac-MRA

NVLAP LAB CODE 600241-0

Certification of Engineering Report

This report has been prepared by Unified Compliance Laboratory (UCL) to document compliance of the device described below with the requirement of Federal Communication Commissions (FCC) Part 15, Subpart E. This report may be reproduced in full. Partial reproduction of this report may only be made with the written consent of the laboratory. The results in this report apply only to the sample tested.

Applicant	Ubiquiti Inc.
Manufacturer	Ubiquiti Inc.
Brand Name	airFiber
Model Number	Wave-Pro
FCC ID	SWX-WAVEPRO
ISED ID	6545A-WAVEPRO

On this 5th day of May 2023, I individually and for Unified Compliance Laboratory certify that the statements made in this engineering report are true, complete and correct to the best of my knowledge and are made in good faith.

Although NVLAP has accredited the Unified Compliance Laboratory testing facilities, this report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the U.S. federal government.

Unified Compliance Laboratory

Written By: Kimberly Rodriguez

Reviewed By: Richard L. Winter

Revision History		
Revision	**Description**	**Date**
01	Original Report Release	5 May 2023
02	Amend Section 5.1	9 May 2023

Table of Contents

1 Client Information

1.1 Applicant

Company	Ubiquiti Inc. 685 Third Avenue New York, NY 10017 U.S.A.
Contact Name	Alex Macon
Title	Compliance

1.2 Manufacturer

Company	Ubiquiti Inc. 685 Third Avenue New York, NY 10017 U.S.A.
Contact Name	Alex Macon
Title	Compliance

2 Equipment Under Test (EUT)

2.1 Identification of EUT

Brand Name	Ubiquiti
Model Number	Wave-Pro
Serial Number	A26196
Dimensions (cm)	42.4 x 42.4 x 16.6

2.2 Description of EUT

The Wave-Pro is a client 60 GHz point-to-point customer premise equipment that features wave technology with a 2.5 Gbps throughput rate. The Wave-Pro is also equipped with a 5 GHz WiFi 6 backup radio to sustain connectivity during a 60 GHz link disruption caused by inclement weather conditions. A Bluetooth LE transceiver is included for device management. The Wave-Pro is an outdoor device and has an Ethernet port which is used for data transfer and to provide power using an Ubiquiti U-POE-at 48-volt PoE power adapter.

Band	Modulation Bandwidth	Frequency (MHz)
UNII-2A	20 MHz	5260, 5265, 5270, 5275, 5280, 5285, 5290, 5295, 5300, 5305, 5310, 5315, 5320
	40 MHz	5270, 5275, 5280, 5285, 5290, 5295, 5300, 5305, 5310
	80 MHz	5290
UNII-2C	20 MHz	5500, 5505, 5510, 5515, 5520, 5525, 5530, 5535, 5540, 5545, 5550, 5555, 5560, 5565, 5570, 5575, 5580, 5585, 5590, 5595, 5600*, 5605*, 5610*, 5615*, 5620*, 5625*, 5630*, 5635*, 5640*, 5645*, 5650, 5655, 5660, 5665, 5670, 5675, 5680, 5685, 5690, 5695, 5700, 5705, 5710, 5715, 5720
	40 MHz	5510, 5515, 5520, 5525, 5530, 5535, 5540, 5545, 5550, 5555, 5560, 5565, 5570, 5575, 5580, 5585, 5590, 5595, 5600*, 5605*, 5610*, 5615*, 5620*, 5625*, 5630*, 5635*, 5640*, 5645*, 5650, 5655, 5660, 5665, 5670, 5675, 5680, 5685, 5690, 5695, 5700, 5705, 5710
	80 MHz	5530, 5535, 5540, 5545, 5550, 5555, 5560, 5565, 5570, 5575, 5580, 5585, 5590, 5595, 5600*, 5605*, 5610*, 5615*, 5620*, 5625*, 5630*, 5635*, 5640*, 5645*, 5650, 5655, 5660, 5665, 5670, 5675, 5680, 5685, 5690
* Frequency not applicable in Canada		

Table 1: UNII-2A and UNII-2C Channel Settings

This report covers the circuitry of the device subject to FCC Part 15, Subpart E. The circuitry of the device subject to FCC Part 15 Subpart B was found to be compliant and is covered under a separate Unified Compliance Laboratory test report.

2.3 EUT and Support Equipment

The EUT and support equipment used during the test are listed below.

Brand Name Model Number Serial Number	Description	Name of Interface Ports / Interface Cables
BN: UBIQUITI MN: Wave-Pro (Note 1) SN: A26196	Wireless Access Point	See Section 2.4
BN: UBIQUITI MN: U-POE-at SN: N/A	PoE Power Adapter	Shielded or Un-shielded cat 5e cable
BN: Dell MN: XPS 13 SN: N/A	Laptop Computer	Shielded or Un-shielded cat 5e cable

Notes: (1) EUT
(2) Interface port connected to EUT (See Section 2.4)

The support equipment listed above was not modified in order to achieve compliance with this standard.

2.4 Interface Ports on EUT

Name of Ports	No. of Ports Fitted to EUT	Cable Description/Length
AC (PoE Injector)	1	3 conductor power cord/80cm
LAN (PoE Injector)	1	Shielded or Un-shielded cat 5e cable/1 meter
Data	1	Shielded or Un-shielded cat 5e cable/1 meter

2.5 Operating Environment

Power Supply	120 Volts ac to 48 Volts PoE
AC Mains Frequency	60 Hz
Temperature	22.5 – 24.4 °C
Humidity	24.1 – 36.1 %
Barometric Pressure	1011 mBar

2.6 Operating Modes

The Wave-Pro was tested using test software in order to enable to constant transmission. The measurements within this report are corrected to reference a 100% duty cycle. All emission modes of 802.11 ax were investigated. All measurements are reported with the worst-case mode (802.11ax) unless otherwise stated.

2.7 EUT Exercise Software

EUT firmware version 1.0 was used to operate the transmitter using a constant transmit mode.

2.8 Block Diagram of Test Configuration

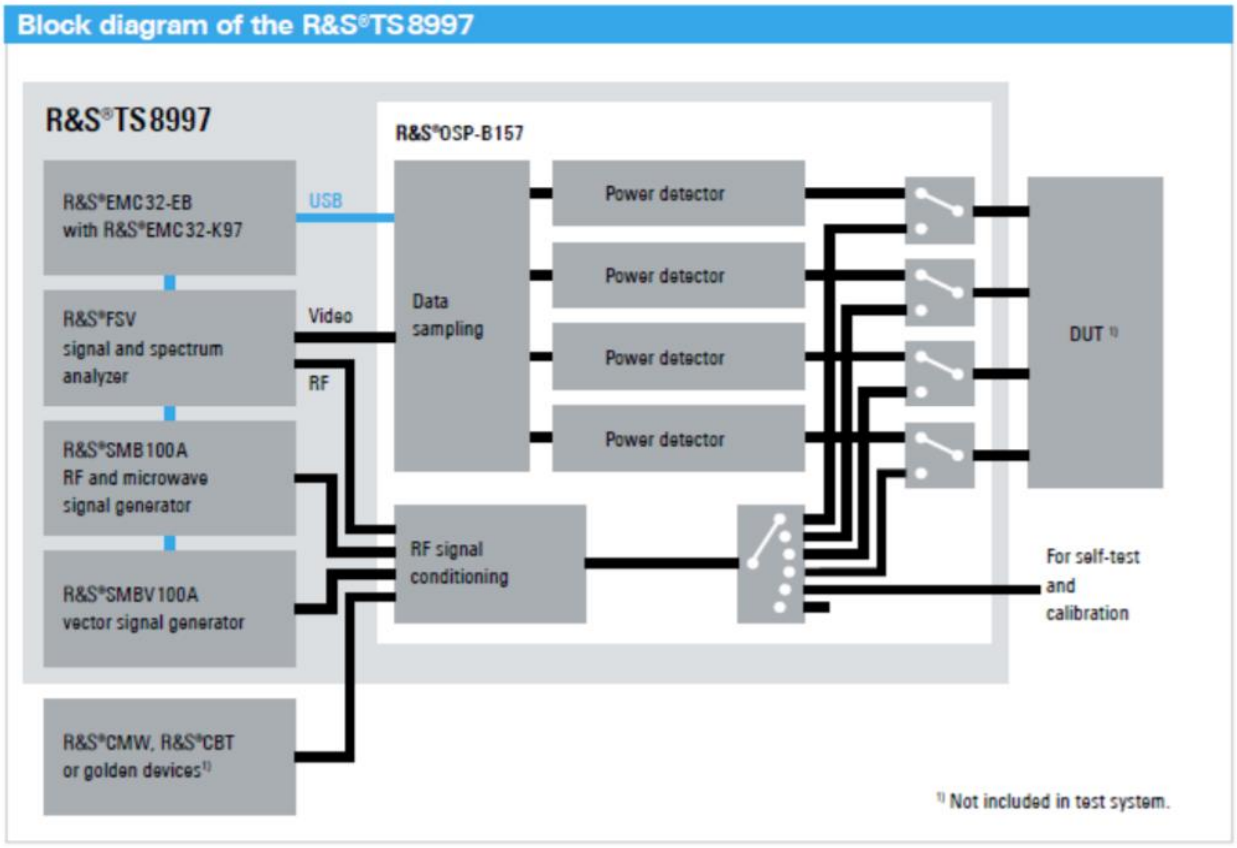


Diagram 1: Test Configuration Block Diagram

2.9 Modification Incorporated/Special Accessories on EUT

There were no modifications made to the EUT during testing to comply with the specification.

2.10 Deviation, Opinions Additional Information or Interpretations from Test Standard

There were no deviations, opinions, additional information or interpretations from the test specification.

3 Test Specification, Method and Procedures

3.1 Test Specification

Title	47 CFR FCC Part 15, Subpart E, Section 15.407 Limits and methods of measurement of radio interference characteristics of Unlicensed National Information Infrastructure Devices
Purpose of Test	The tests were performed to demonstrate initial compliance

3.2 Methods & Procedures

3.2.1 47 CFR FCC Part 15 Section 15.407

See test standard for details.

3.3 FCC Part 15, Subpart E

3.3.1 Summary of Tests

FCC Section	ISED Section	Environmental Phenomena	Frequency Range (MHZ)	Result
15.407(a)	N/A	Antenna requirements	Structural Requirement	Compliant
15.407(b)	RSS-Gen	Conducted Disturbance at Mains Port	0.15 to 30	Compliant
15.407(a)	RSS-247 §6.2.2, §6.2.3	Bandwidth Requirement	5260 to 5570	Compliant
15.407(a)	RSS-247 §6.2.2, §6.2.3	Peak Output Power	5260 to 5570	Compliant
15.407(b)	RSS-247 §6.2.2, §6.2.3	Antenna Conducted Spurious Emissions	0.009 to 40000	Compliant
15.407(b)	RSS-247 §6.2.2, §6.2.3	Radiated Spurious Emissions	0.009 to 40000	Compliant
15.407(a)	RSS-247 §6.2.2, §6.2.3	Peak Power Spectral Density	5260 to 5570	Compliant
15.407(h)	RSS-247 §6.3	DFS Requirements	5260 to 5570	Compliant
The testing was performed according to the procedures in ANSI C63.10-2013, KDB 558074 and 47 CFR Part 15. Where applicable, KDB 662911 was followed to sum required measurements.				

3.4 Results

In the configuration tested, the EUT complied with the requirements of the specification.

3.5 Test Location

Testing was performed at the Unified Compliance Laboratory 3-meter and 10-meter chamber located at 427 West 12800 South, Draper, UT 84020. Unified Compliance Laboratory is accredited by National Voluntary Laboratory Accreditation Program (NVLAP); NVLAP Code 600241-0 which is effective until 30 June 2023. This site has also been registered with Innovations, Science and Economic Development (ISED) department as was accepted under Appendix B, Phase 1 procedures of the APEC Tel MRA for Canadian recognition. ISED No.: 25346, effective until 30 June 2023.

Unified Compliance Laboratory has been assigned Designation Number US5037 by the FCC and Conformity Assessment Number US0223 by ISED.

4 Test Equipment

4.1 Conducted Emissions at Mains Ports

Type of Equipment	Manufacturer	Model Number	Asset Number	Date of Last Calibration	Due Date of Calibration
EMI Receiver	AFJ	FFT3010	UCL-2500	6/27/2022	6/27/2023
LISN	AFJ	LS16C/10	UCL-6749	12/6/2021	12/6/2023
ISN	Teseq	ISN T800	UCL-2974	6/27/2022	6/272023
LISN	Com-Power	LIN-120C	UCL-2612	1/24/2023	1/24/2024
AC Power Source	Laplace Instruments	AC1000A	UCL-2857	N/A	N/A
Test Software	UCL	Revision 1	UCL-3107	N/A	N/A

Table 2: List of equipment used for Conducted Emissions Testing at Mains Port

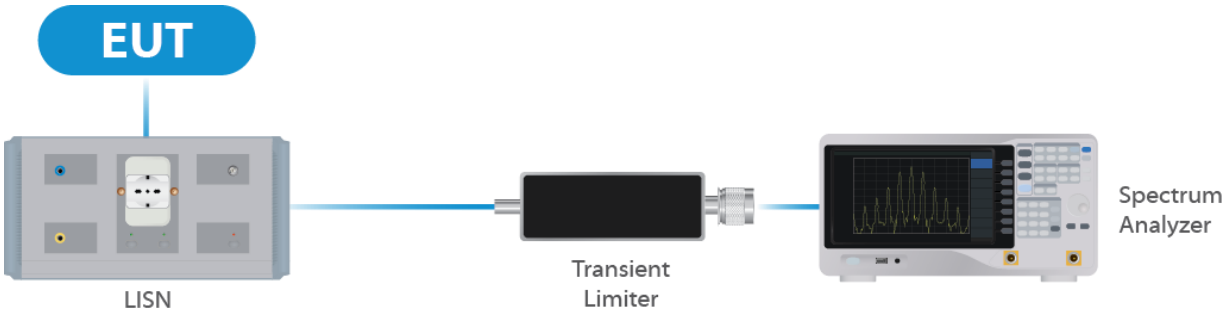


Figure 1: Conducted Emissions Test

4.2 Direct Connect at the Antenna Port Tests

Type of Equipment	Manufacturer	Model Number	Asset Number	Date of Last Calibration	Due Date of Calibration
Spectrum Analyzer	R&S	FSV40	UCL-2861	11/7/2022	11/7/2023
Signal Generator	R&S	SMB100A	UCL-2864	N/A	N/A
Vector Signal Generator	R&S	SMBV100A	UCL-2873	N/A	N/A
Switch Extension	R&S	OSP-B157WX	UCL-2867	2/22/2023	2/22/2024
Switch Extension	R&S	OSP-150W	UCL-2870	2/22/2023	2/22/2024

Table 3: List of equipment used for Direct Connect at the Antenna Port

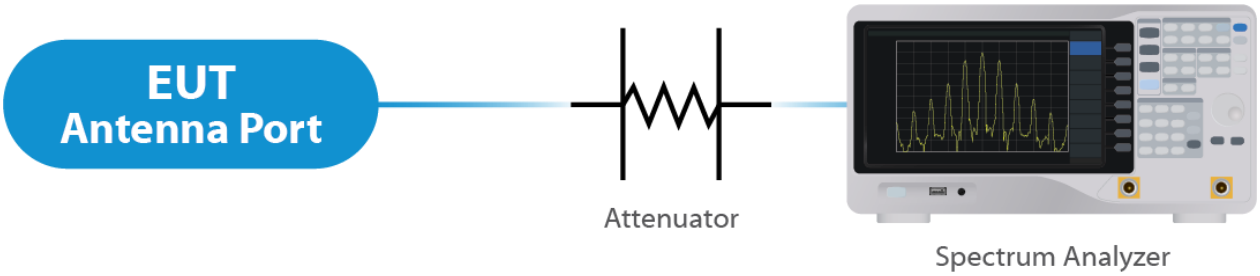


Figure 2: Direct Connect at the Antenna Port Test

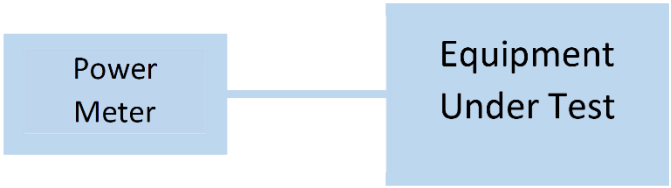


Figure 3: Output Power Measurement

4.3 Radiated Emissions

Type of Equipment	Manufacturer	Model Number	Asset Number	Date of Last Calibration	Due Date of Calibration
EMI Receiver	Keysight	N9038A	UCL-2778	1/27/2023	1/27/2024
Pre-Amplifier 9 kHz – 1 GHz	Sonoma Instruments	310N	UCL-2889	10/7/2021	10/7/2023
Broadband Antenna	Scwarzbeck	VULB 9163	UCL-3062	2/22/2023	2/22/2025
Broadband Antenna	Scwarzbeck	VULB 9163	UCL-3071	1/11/2023	1/11/2025
Double Ridge Horn Antenna	Scwarzbeck	BBHA 9120D	UCL-3065	9/22/2022	9/22/2024
Log Periodic	Scwarzbeck	STLP 9129	UCL-3068	1/27/2023	1/27/2025
15 - 40 GHz Horn Antenna	Scwarzbeck	BBHA 9170	UCL-2487	6/09/2022	6/09/2024
1 – 18 GHz Amplifier	Com-Power	PAM 118A	UCL-3833	12/9/2022	12/9/2023
Test Software	UCL	Revision 1	UCL-3108	N/A	N/A

Table 4: List of equipment used for Radiated Emissions

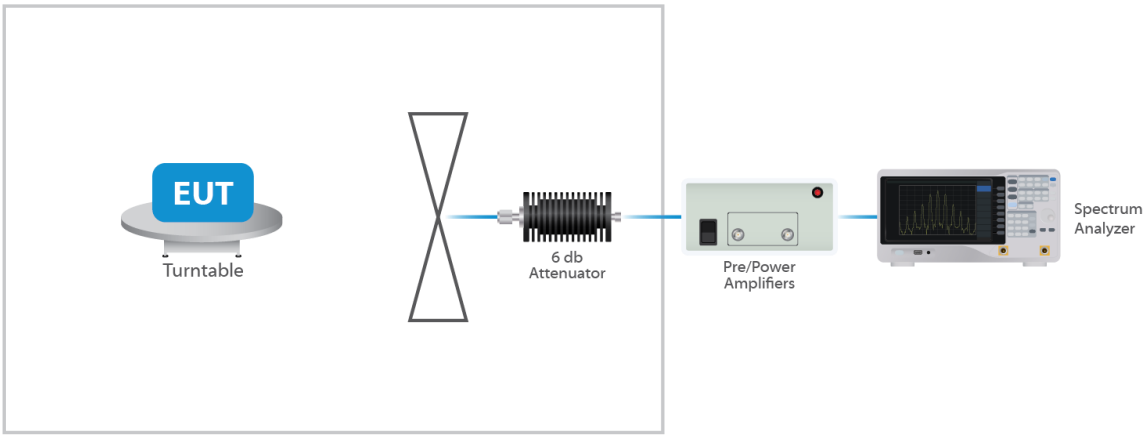


Figure 4: Radiated Emissions Test

4.4 DFS Testing

Type of Equipment	Manufacturer	Model Number	Asset Number	Date of Last Calibration	Due Date of Calibration
Vector Signal Generator	R&S	SMBV100A	UCL-2873	N/A	N/A
Spectrum Analyzer	Keysight	N9010B	UCL-7069	4/25/2022	4/25/2023

4.4.1 Master Test Set Up

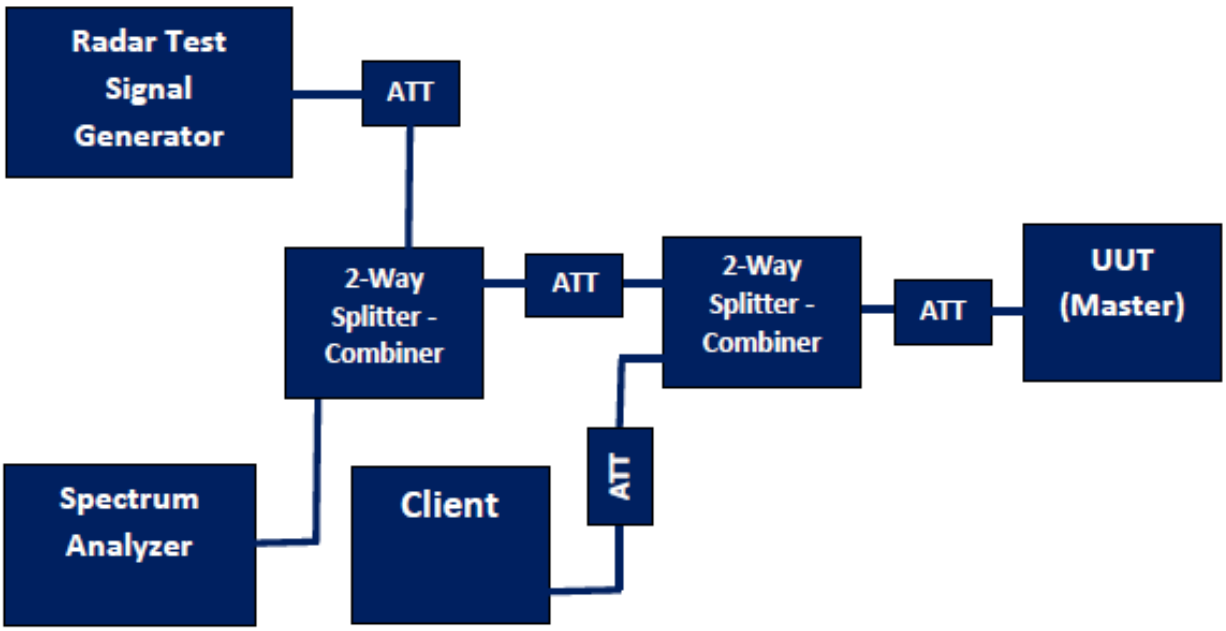


Figure 5: DFS Test Set Up - Master

4.5 Equipment Calibration

All applicable equipment is calibrated using either an independent calibration laboratory or Unified Compliance Laboratory personnel at intervals defined in ANSI C63.4:2014 following outlined calibration procedures. All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and is available for examination upon request.

4.6 Measurement Uncertainty

Test	Uncertainty (± dB)	Confidence (%)
Conducted Emissions	1.44	95
Radiated Emissions (9 kHz to 30 MHz)	2.50	95
Radiated Emissions (30 MHz to 1 GHz)	4.38	95
Radiated Emissions (1 GHz to 18 GHz)	4.37	95
Radiated Emissions (18 GHz to 40 GHz)	3.93	95
Direct Connect Tests	**K Factor**	**Value**
Emissions Bandwidth	2	2.0%
Output Power	2	1.0 dB
Peak Power Spectral Density	2	1.3 dB
Band Edge	2	0.8 dB
Transmitter Spurious Emissions	2	1.8 dB

5 Test Results

5.1 §15.203 Antenna Requirements

The EUT uses integral antenna. The maximum gain of the antenna is 22.0 dBi. This is an 802.11 device and utilizes CDD as described in KDB 662911 D01. The antenna is not user replaceable.

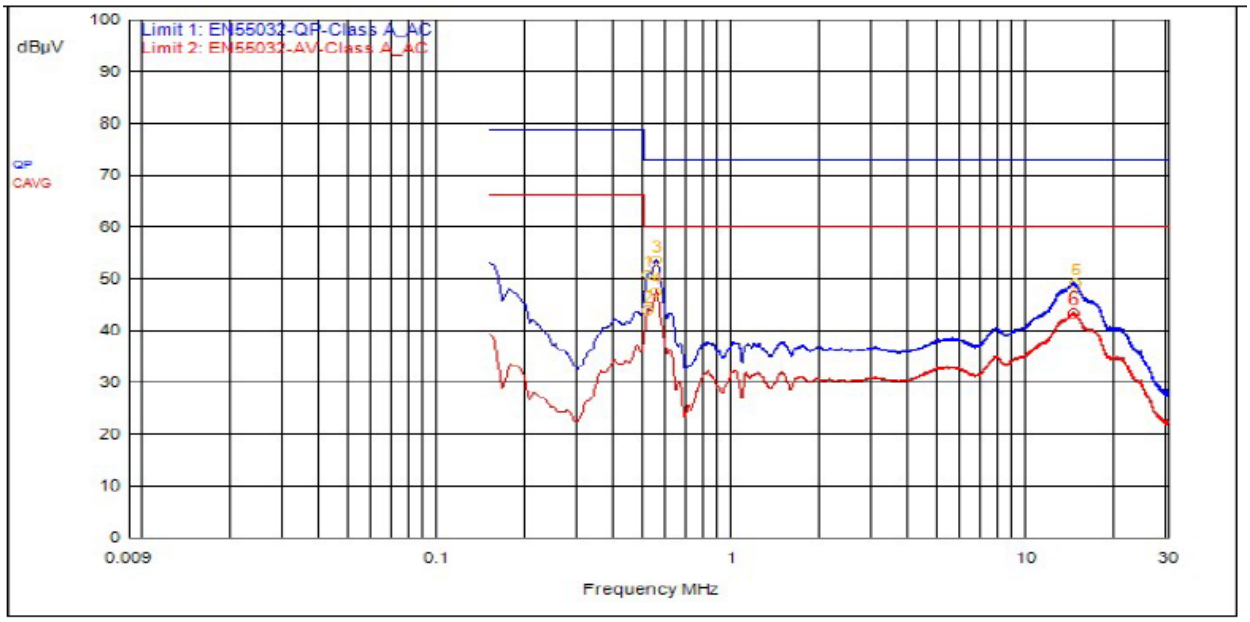
For power measurements on IEEE 802.11 devices, Array Gain = 0 dB for NANT ≤ 4;
For PSD measurements when Nss=1: Array Gain = 10 log(Nant/Nss) dB = 3.01dB

Results

The EUT complied with the specification

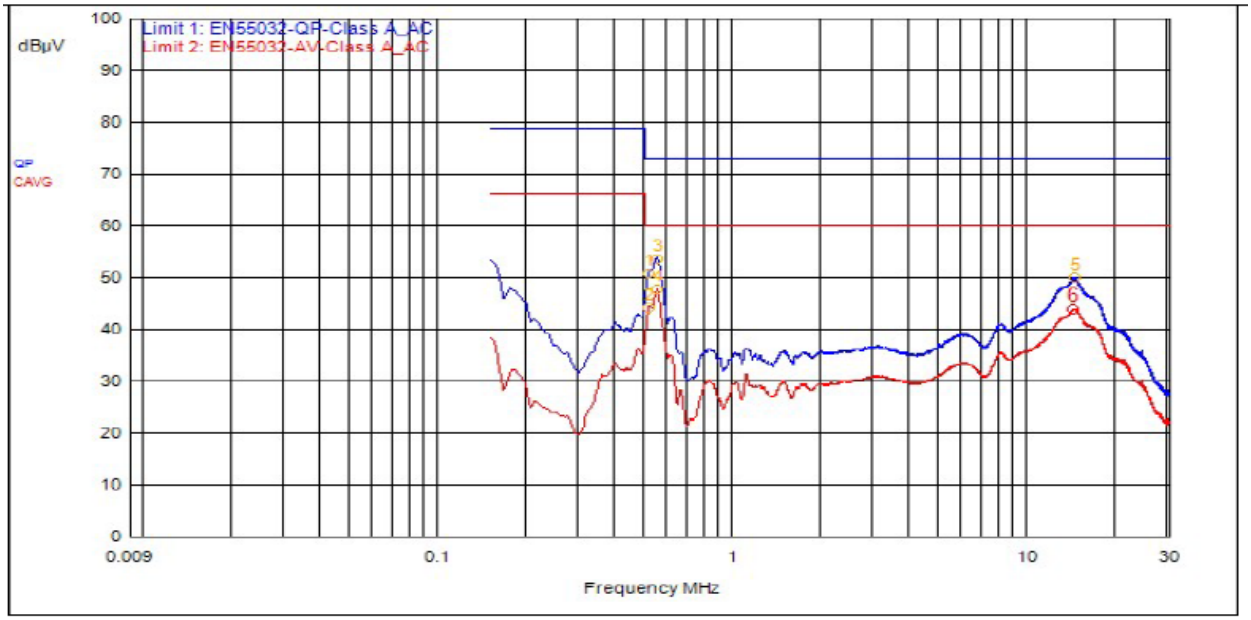
5.2 Conducted Emissions at Mains Ports Data

5.2.1 Line



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.
3	546,000kHz	9.5	0.1		QPeak	43.8	53.5	73.0	-19.5		
1	516,000kHz	9.5	0.1		QPeak	41.2	50.8	73.0	-22.2		
5	14.385MHz	9.7	0.2		QPeak	39.4	49.3	73.0	-23.7		
2	513,000kHz	9.5	0.1		C_AVG	34.4	44.0			60.0	-16.0
4	549,000kHz	9.5	0.1		C_AVG	38.0	47.6			60.0	-12.4
6	14.334MHz	9.7	0.2		C_AVG	33.5	43.4			60.0	-16.6

5.2.2 Neutral



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.
3	549,000kHz	9.5	0.1		QPeak	44.1	53.7	73.0	-19.3		
1	513,000kHz	9.5	0.1		QPeak	41.1	50.8	73.0	-22.2		
5	14.319MHz	9.6	0.2		QPeak	40.0	49.9	73.0	-23.1		
2	513,000kHz	9.5	0.1		C_AVG	34.4	44.1			60.0	-15.9
4	549,000kHz	9.5	0.1		C_AVG	38.0	47.7			60.0	-12.3
6	14.154MHz	9.6	0.2		C_AVG	34.2	44.0			60.0	-16.0

Result

The EUT complied with the specification limit.

5.3 §15.403(i) 26 dB Emissions Bandwidth

All chains were measured under the guidance of KDB 789033 Section II.C. and KDB 66291 D01. Please see associated annex for details on instrument settings.

5.3.1 UNII-2A

Bandwidth	Frequency (MHz)	99% Bandwidth (MHz)	Emissions 26 dB Bandwidth (MHz)
20	5260	19.10	21.20
20	5300	19.10	21.60
20	5335	19.20	21.70
40	5270	37.75	40.20
40	5300	37.75	40.20
40	5325	37.75	39.90
80	5290	77.50	82.50
80	5300	77.50	83.00
80	5305	77.50	83.00

5.3.2 UNII-2C

Bandwidth	Frequency (MHz)	99% Bandwidth (MHz)	Emissions 26 dB Bandwidth (MHz)
20	5485	19.10	21.60
20	5600	19.10	21.70
20	5710	19.10	21.70
40	5495	37.75	40.05
40	5600	37.75	40.20
40	5700	37.75	40.20
80	5515	77.50	82.00
80	5600	77.50	82.50
80	5680	77.50	83.00

Result

The 26 dB bandwidths are reported for information purposes. Please see Annex for all bandwidth measurements.

5.4 §15.407(a)(2) Maximum Average Output Power

All chains were measured and summed under the guidance of KDB 789033 Section II. E.2. and KDB 66291 D01. Please see associated annex for details on instrument settings.
The maximum average RF conducted output power measured for this device was 7.98 dBm or 6.28 mW. The limit is 30 dBm, or 1 Watt when using an antenna with 23 dBi (Fixed point to point) or less gain. The antenna has a gain of 22.0 dBi.

5.4.1 UNII-2A

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power*	Measured PSD
HE 20	5260	Mcs0	13	7.98	-7.41
HE 20	5300	Mcs0	12	7.54	-8.02
HE 20	5335	Mcs0	12	7.63	-7.82
HE 40	5270	Mcs0	13	7.75	-10.60
HE 40	5300	Mcs0	12	7.49	-11.11
HE 40	5325	Mcs0	12	7.47	-10.82
HE 80	5290	Mcs0	12	7.42	-14.07
HE 80	5300	Mcs0	12	7.41	-14.16
HE 80	5305	Mcs0	12	7.45	-14.14

5.4.2 UNII-2C

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power*	Measured PSD
HE 20	5485	Mcs0	13	7.64	-7.47
HE 20	5600	Mcs0	13	7.71	-7.50
HE 20	5710	Mcs0	13	7.92	-7.37
HE 40	5495	Mcs0	13	7.60	-10.55
HE 40	5600	Mcs0	13	7.61	-10.37
HE 40	5700	Mcs0	13	7.72	-10.57
HE 80	5515	Mcs0	13	7.44	-13.64
HE 80	5600	Mcs0	13	7.56	-13.12
HE 80	5680	Mcs0	13	7.64	-13.64

Result

In the configuration tested, the maximum average RF output power was less than 1 watt; therefore, the EUT complied with the requirements of the specification.

5.5 §15.407(b) Spurious Emissions

5.5.1 Conducted Spurious Emissions

The frequency range from the lowest frequency generated or used in the device to the tenth harmonic of the highest fundamental frequency was investigated to measure any antenna-conducted emissions. The graphs show the measurement data from spurious emissions noted across the frequency range when transmitting at the lowest frequency, middle frequency and upper frequency. Shown below are plots with the EUT turned to the upper and lower channels with the antenna gain of 22.0 dBi accounted for. These demonstrate compliance with the provisions of this section at the band edges.

The emissions must be below -27 dBm EIRP.

Result

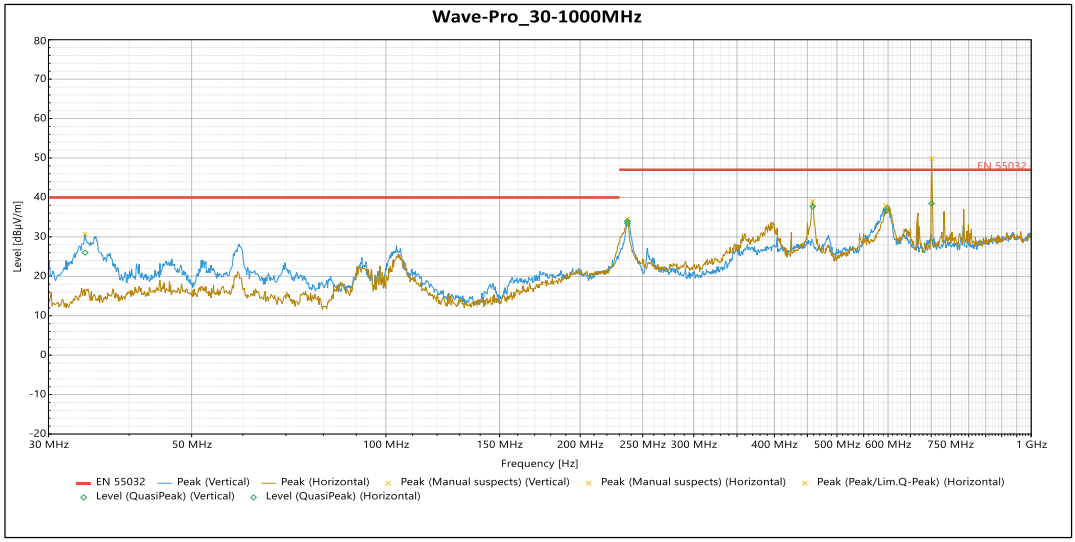
Conducted spurious emissions were below -27 dBm; therefore, the EUT complies with the specification. See Annex for results.

5.5.2 Radiated Spurious Emissions in the Restricted Bands of § 15.205

The frequency range from the lowest frequency generated or used in the device to the tenth harmonic of the highest fundamental emissions was investigated to measure any radiated emissions in the restricted bands. For frequencies above 18.0 GHz. The emissions in the restricted bans must meet the limits specified in § 15.209. Conducted measurement results are included in the Annex. Radiated data with the EUT transmitting into a load is included below. All emissions between the required frequencies were investigated, the following plots represent the worst case. The “fail” is the transmitted signal exceeding the spurious limit.

Correction Factor = Antenna Factor + Cable Loss - Pre-Amplifier Gain, and is added to the Receiver reading.

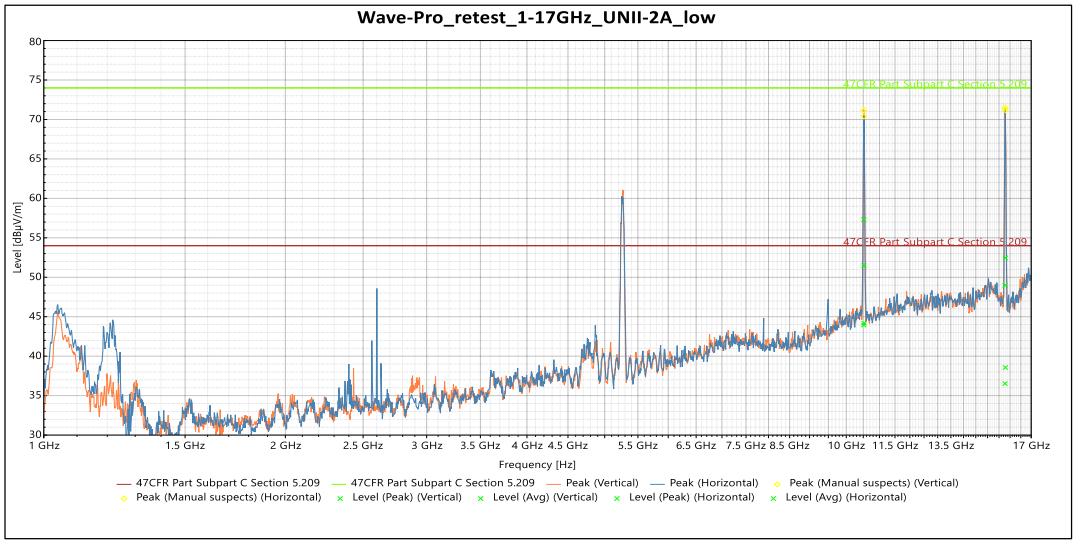
5.5.3 UNII-2A



QuasiPeak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin	Azimuth (°)	Height	Pol.	Correction (dB)
34.199 MHz	26.004	40	-13.996	79	1.063	Vertical	-14.947
236.8 MHz	33.945	47	-13.055	115	1.004	Vertical	-12.533
595.17 MHz	36.5	47	-10.5	137	2.317	Vertical	-4.79
236.75 MHz	33.447	47	-13.553	166	3.863	Horizontal	-12.536
458.53 MHz	37.758	47	-9.242	118	1.849	Horizontal	-7.95
700.94 MHz	38.441	47	-8.559	153	1.218	Horizontal	-3.922

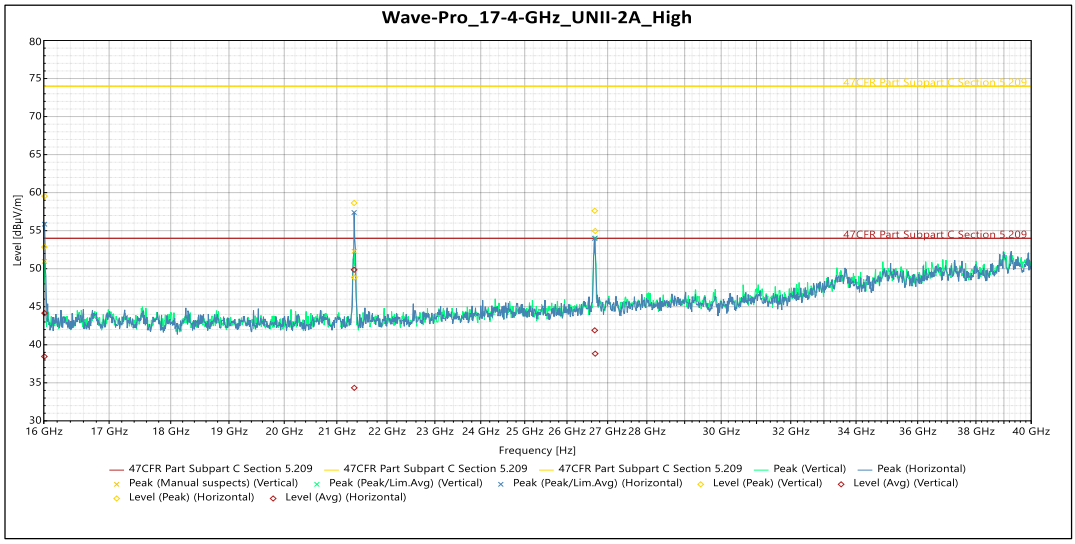
Graph 1: Radiated Emissions within 30MHz - 1GHz



Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.516 GHz	Peak	57.327	74	-16.673	346	2.142	Vertical	2.081
15.77 GHz	Peak	48.982	74	-25.018	196	3.656	Vertical	4.734
10.516 GHz	AVG	43.936	54	-10.064	346	2.142	Vertical	2.081

Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
15.77 GHz	AVG	36.533	54	-17.467	196	3.656	Vertical	4.734
10.52 GHz	Peak	51.464	74	-22.536	276	2.325	Horizontal	2.088
15.787 GHz	Peak	52.452	74	-21.548	215	2.65	Horizontal	4.537
10.52 GHz	AVG	44.182	54	-9.818	276	2.325	Horizontal	2.088
15.787 GHz	AVG	38.556	54	-15.444	215	2.65	Horizontal	4.537

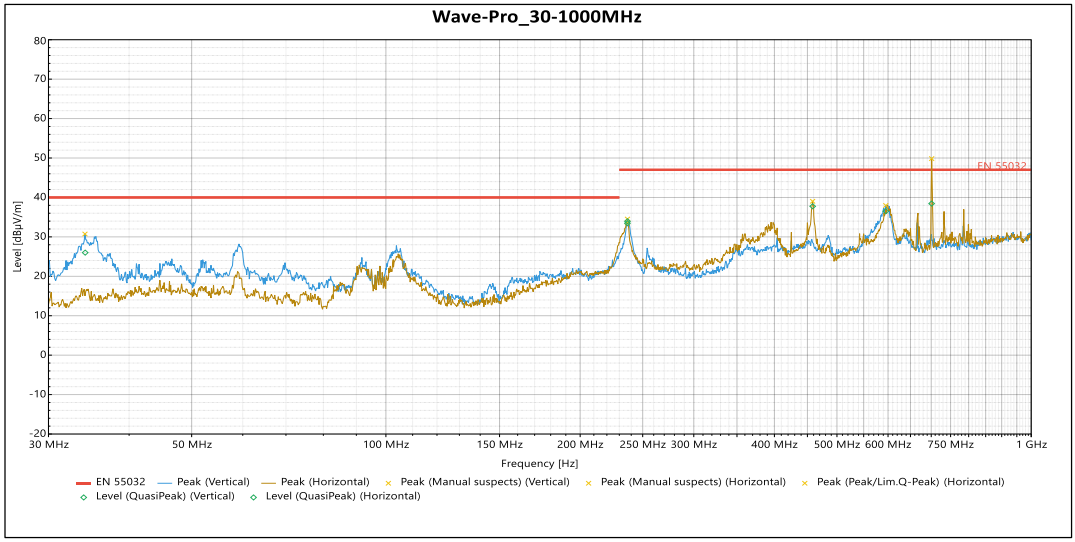
Graph 2: Radiated Emissions within 1 GHz – 16 GHz



Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
16.009 GHz	Peak	52.847	74	-21.153	271	Vertical	-3.555
21.343 GHz	Peak	48.846	74	-25.154	241	Vertical	-5.388
26.69 GHz	Peak	54.959	74	-19.041	274	Vertical	-4.437
16.009 GHz	AVG	38.465	54	-15.535	271	Vertical	-3.555
21.343 GHz	AVG	34.344	54	-19.656	241	Vertical	-5.388
26.69 GHz	AVG	38.833	54	-15.167	274	Vertical	-4.437
16.012 GHz	Peak	59.538	74	-14.462	270	Horizontal	-3.541
21.34 GHz	Peak	58.641	74	-15.359	286	Horizontal	-5.388
26.678 GHz	Peak	57.624	74	-16.376	239	Horizontal	-4.389
16.012 GHz	AVG	44.161	54	-9.839	270	Horizontal	-3.541
21.34 GHz	AVG	49.855	54	-4.145	286	Horizontal	-5.388
26.678 GHz	AVG	41.897	54	-12.103	239	Horizontal	-4.389

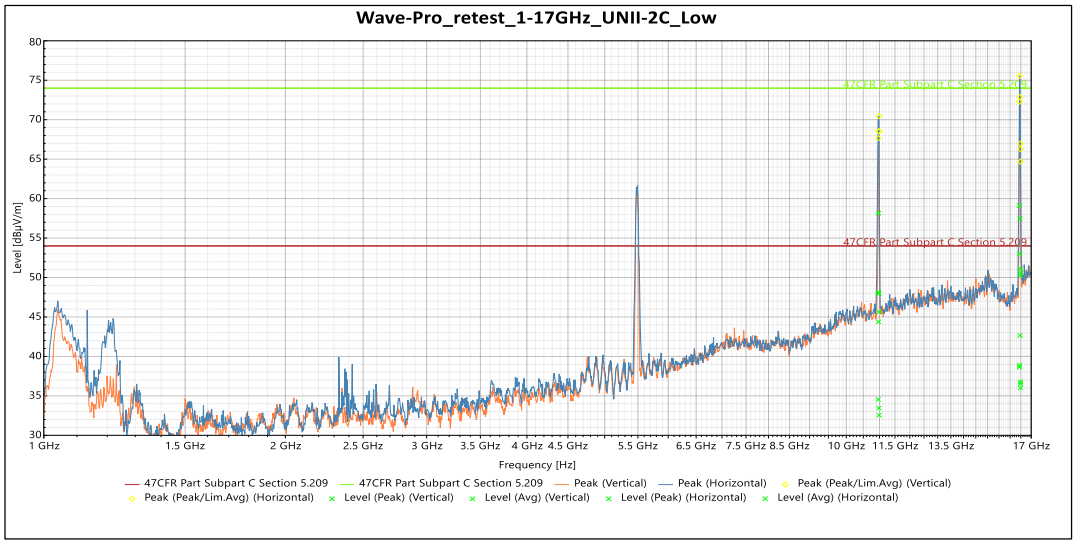
Graph 3: Radiated Emissions within 16 GHz – 40 GHz

5.5.4 UNII-2C



Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin	Azimuth (°)	Height	Pol.	Correction (dB)
34.199 MHz	26.004	40	-13.996	79	1.063	Vertical	-14.947
236.8 MHz	33.945	47	-13.055	115	1.004	Vertical	-12.533
595.17 MHz	36.5	47	-10.5	137	2.317	Vertical	-4.79
236.75 MHz	33.447	47	-13.553	166	3.863	Horizontal	-12.536
458.53 MHz	37.758	47	-9.242	118	1.849	Horizontal	-7.95
700.94 MHz	38.441	47	-8.559	153	1.218	Horizontal	-3.922

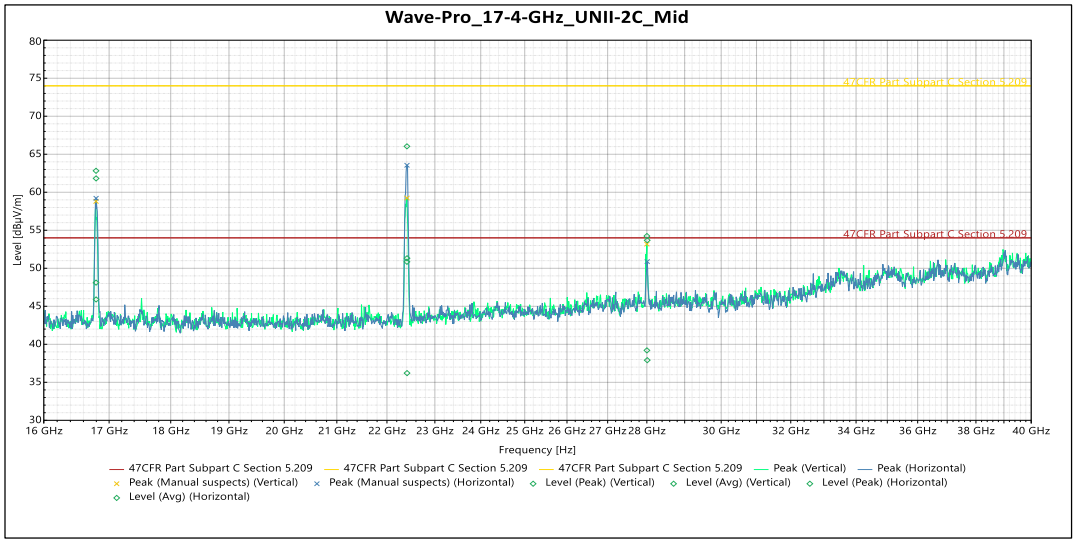
Graph 4: Radiated Emissions within 30MHz - 1GHz



Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.962 GHz	Peak	48.122	74	-25.878	218	1.5	Vertical	2.278
10.972 GHz	Peak	58.158	74	-15.842	339	2.142	Vertical	2.104
16.463 GHz	Peak	57.46	74	-16.54	345	2.142	Vertical	7.593
16.486 GHz	Peak	50.588	74	-23.412	3	1.643	Vertical	6.705
16.487 GHz	Peak	50.245	74	-23.755	39	2.142	Vertical	6.639

Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.962 GHz	AVG	34.554	54	-19.446	218	1.5	Vertical	2.278
10.972 GHz	AVG	44.384	54	-9.616	339	2.142	Vertical	2.104
16.463 GHz	AVG	42.646	54	-11.354	345	2.142	Vertical	7.593
16.486 GHz	AVG	36.549	54	-17.451	3	1.643	Vertical	6.705
16.487 GHz	AVG	36.008	54	-17.992	39	2.142	Vertical	6.639
10.981 GHz	Peak	47.967	74	-26.033	180	3.798	Horizontal	1.938
10.988 GHz	Peak	45.634	74	-28.366	14	3.311	Horizontal	1.774
16.43 GHz	Peak	59.107	74	-14.893	209	1.5	Horizontal	6.497
16.445 GHz	Peak	53.023	74	-20.977	214	2.142	Horizontal	7.102
16.489 GHz	Peak	51.087	74	-22.913	101	4	Horizontal	6.58
10.981 GHz	AVG	33.45	54	-20.55	180	3.798	Horizontal	1.938
10.988 GHz	AVG	32.562	54	-21.438	14	3.311	Horizontal	1.774
16.43 GHz	AVG	38.643	54	-15.357	209	1.5	Horizontal	6.497
16.445 GHz	AVG	38.871	54	-15.129	214	2.142	Horizontal	7.102
16.489 GHz	AVG	36.772	54	-17.228	101	4	Horizontal	6.58

Graph 5: Radiated Emissions within 1 GHz – 16 GHz



Frequency	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
16.795 GHz	Peak	62.817	74	-11.183	257	Vertical	-4.539
22.414 GHz	Peak	51.324	74	-22.676	239	Vertical	-5.411
28.002 GHz	Peak	54.245	74	-19.755	251	Vertical	-4.899
16.795 GHz	AVG	48.105	54	-5.895	257	Vertical	-4.539
22.414 GHz	AVG	36.209	54	-17.791	239	Vertical	-5.411
28.002 GHz	AVG	39.197	54	-14.803	251	Vertical	-4.899
16.796 GHz	Peak	61.825	74	-12.175	257	Horizontal	-4.538
22.412 GHz	Peak	66.037	74	-7.963	251	Horizontal	-5.41
28.01 GHz	Peak	53.684	74	-20.316	264	Horizontal	-4.844
16.796 GHz	AVG	45.9	54	-8.1	257	Horizontal	-4.538
22.412 GHz	AVG	50.849	54	-3.151	251	Horizontal	-5.41
28.01 GHz	AVG	37.913	54	-16.087	264	Horizontal	-4.844

Graph 6: Radiated Emissions within 16 GHz – 40 GHz

5.6 §15.407(a) Maximum Power Spectral Density

All chains were measured and summed under the guidance of KDB 789033 Section II. F. and KDB 66291 D01. Please see associated annex for details on instrument settings.
The maximum average power spectral density conducted from the intentional radiator of the antenna shall not be greater than 11 dBm in any 1 MHz band during any time interval of continuous transmission. With a 22 dBi antenna, the conducted limit for power spectral density is 11 dBm. As per KDB 662911, When the EUT is using spatial-multiplexing in HT to HE modes, there is not additional array gain to accommodate.
Results of this testing are summarized.

5.6.1 UNII-2A

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured PSD
HE 20	5260	Mcs0	13	7.98	-7.41
HE 20	5300	Mcs0	12	7.54	-8.02
HE 20	5335	Mcs0	12	7.63	-7.82
HE 40	5270	Mcs0	13	7.75	-10.60
HE 40	5300	Mcs0	12	7.49	-11.11
HE 40	5325	Mcs0	12	7.47	-10.82
HE 80	5290	Mcs0	12	7.42	-14.07
HE 80	5300	Mcs0	12	7.41	-14.16
HE 80	5305	Mcs0	12	7.45	-14.14

5.6.2 UNII-2C

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power	Measured PSD
HE 20	5485	Mcs0	13	7.64	-7.47
HE 20	5600	Mcs0	13	7.71	-7.50
HE 20	5710	Mcs0	13	7.92	-7.37
HE 40	5495	Mcs0	13	7.60	-10.55
HE 40	5600	Mcs0	13	7.61	-10.37
HE 40	5700	Mcs0	13	7.72	-10.57
HE 80	5515	Mcs0	13	7.44	-13.64
HE 80	5600	Mcs0	13	7.56	-13.12
HE 80	5680	Mcs0	13	7.64	-13.64

Result

The maximum average power spectral density was less than the limit of 8 dBm; therefore, the EUT complies with the specification.

5.7 DFS Requirement

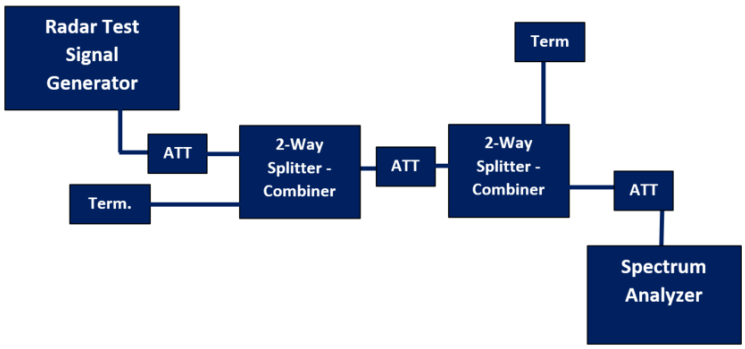
This product is a master with radar detection. The outcome of the required DFS tests is located in this section. DFS testing was performed following the test procedures as outlined in KDB 905462.

The product passes all required DFS tests for a master with radar detection.

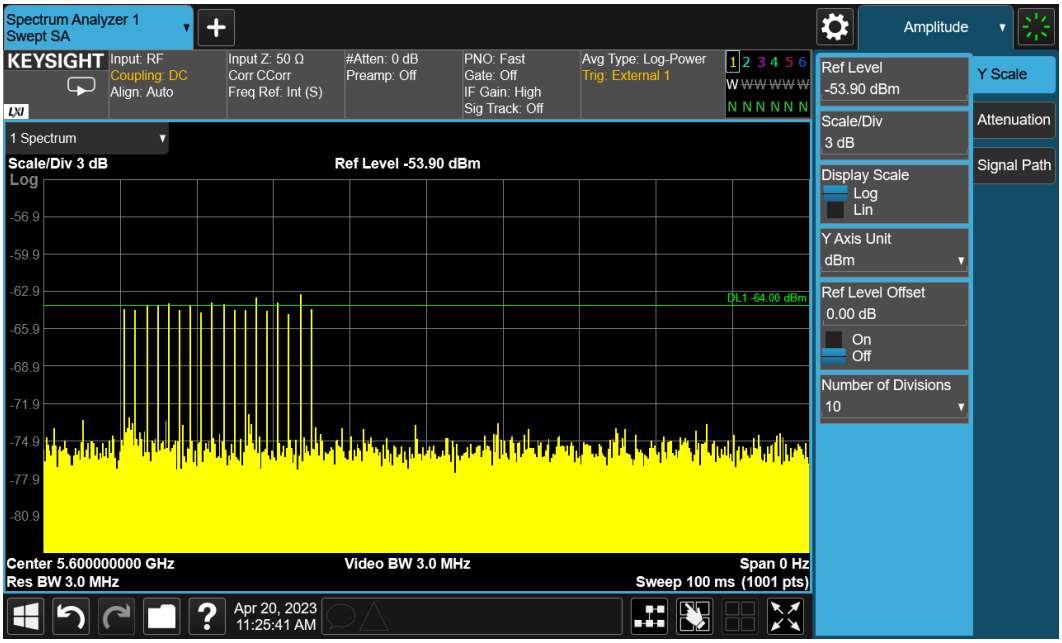
Information	Status
Possible Antenna/s	22 dBi integral
Antenna used for test	22 dBi integral
Operating mode	Master
Port used for testing	FJ1 and FJ2
EIRP range	> 200 milliwatts
Impedance of port	50 ohms
Channel loading technique	Data transfer was enacted to achieve a minimum channel loading of approximately 17%
Time of power-on cycle	45s
Detection threshold level	-64dBm

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
Non-Occupancy Period	Yes	Not Required	Yes
DFS Detection Threshold	Yes	Not Required	Yes
Channel Availability Check Time	Yes	Not Required	Not Required
U-NII Detection Bandwidth	Yes	Not Required	Yes

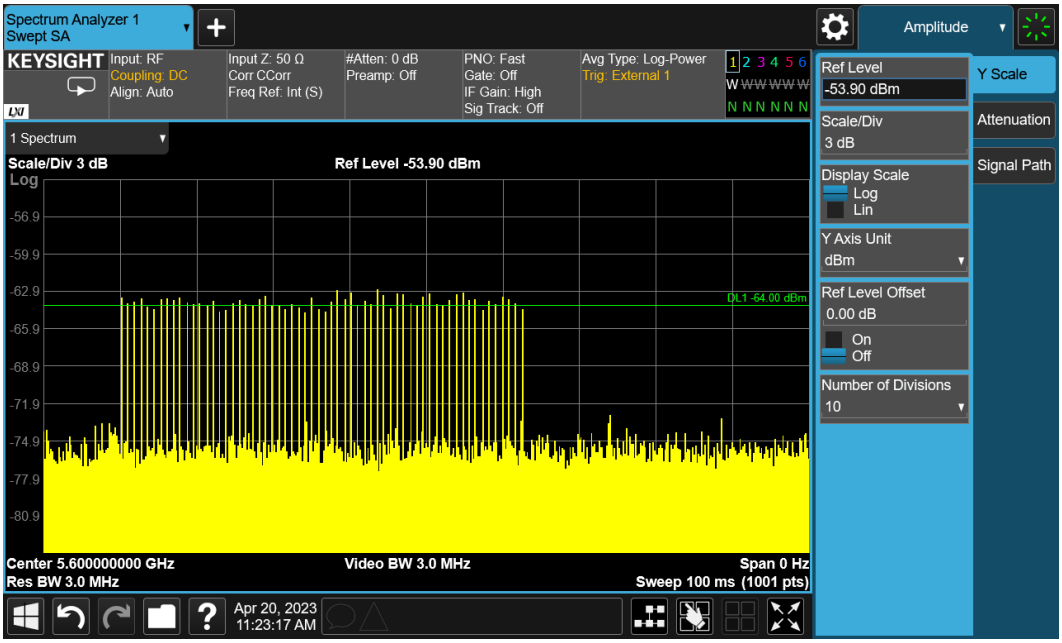
Requirement	Operational Mode	
	Master or Client With Radar Detection	Client Without Radar Detection
DFS Detection Threshold	Yes	Not Required
Channel Closing Transmission Time	Yes	Yes
Channel Move Time	Yes	Yes
U-NII Detection Bandwidth	Yes	Not Required



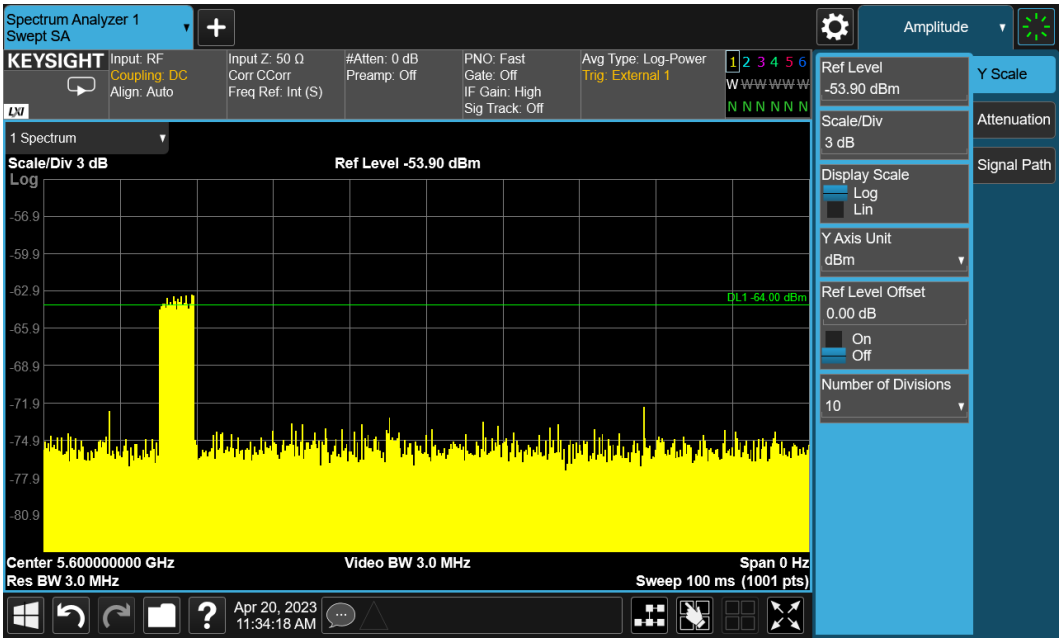
Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP ≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. **Note 2:** Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response. **Note3:** EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.	



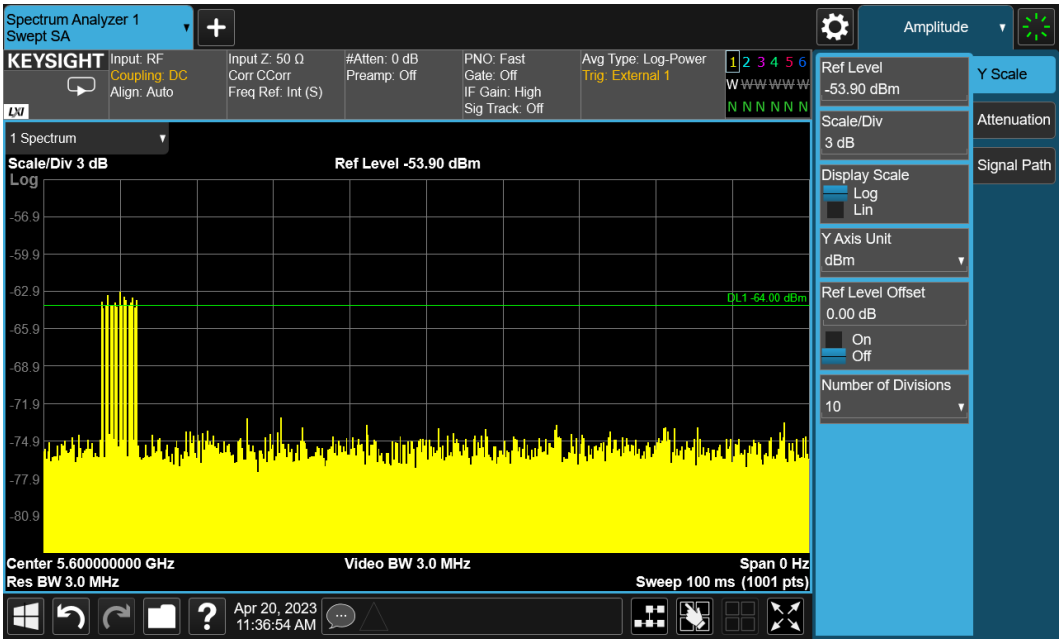
Plot 1: Radar Level 0



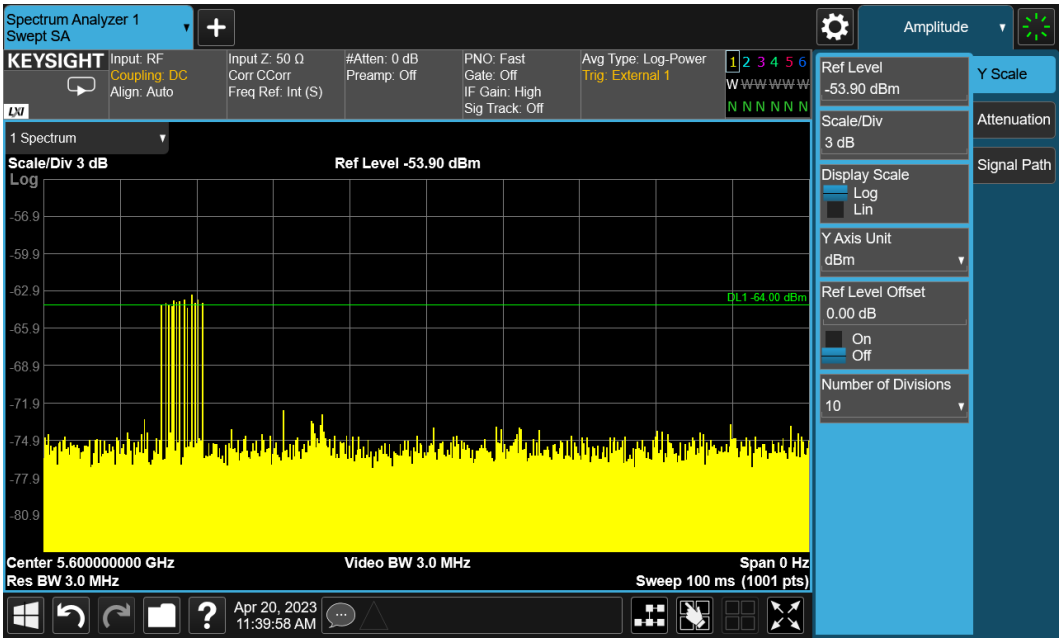
Plot 2: Radar Level 1



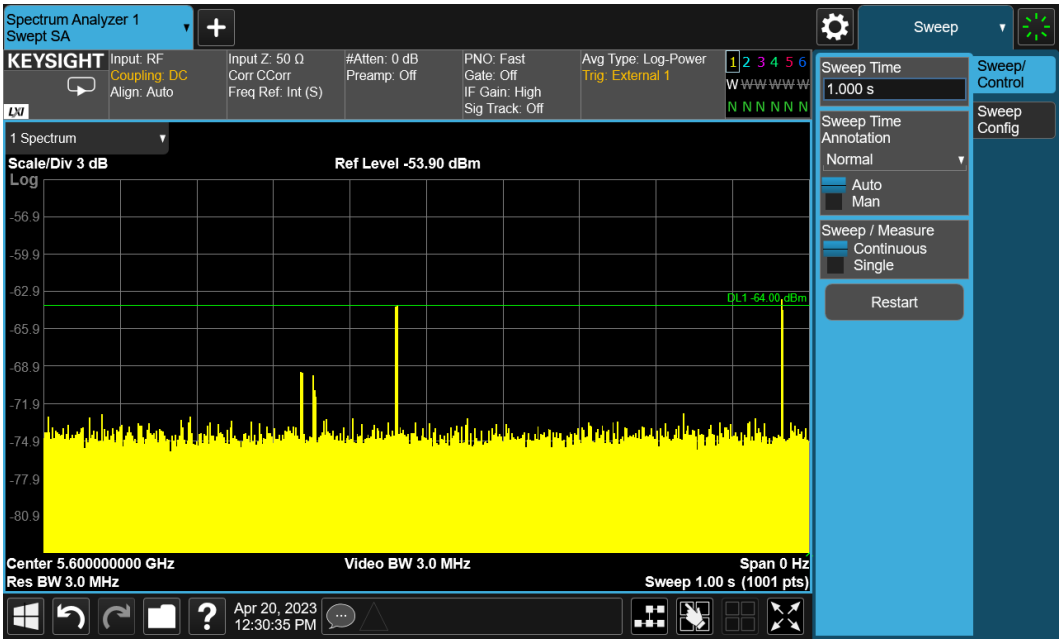
Plot 3: Radar Level 2



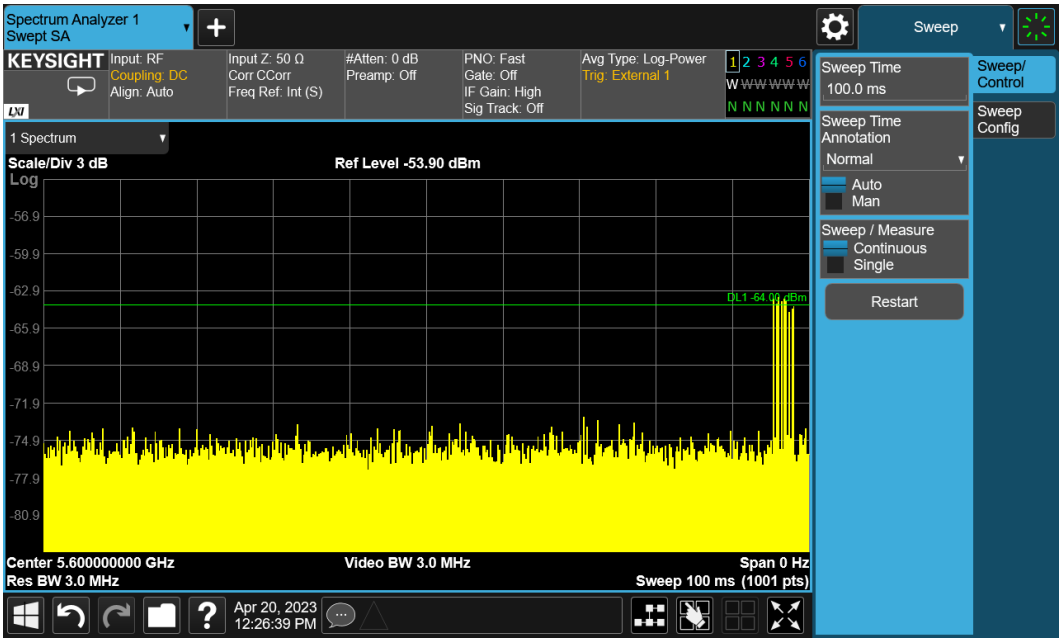
Plot 4: Radar Level 3



Plot 5: Radar Level 4



Plot 6: Radar Level 5



Plot 7: Radar Level 6

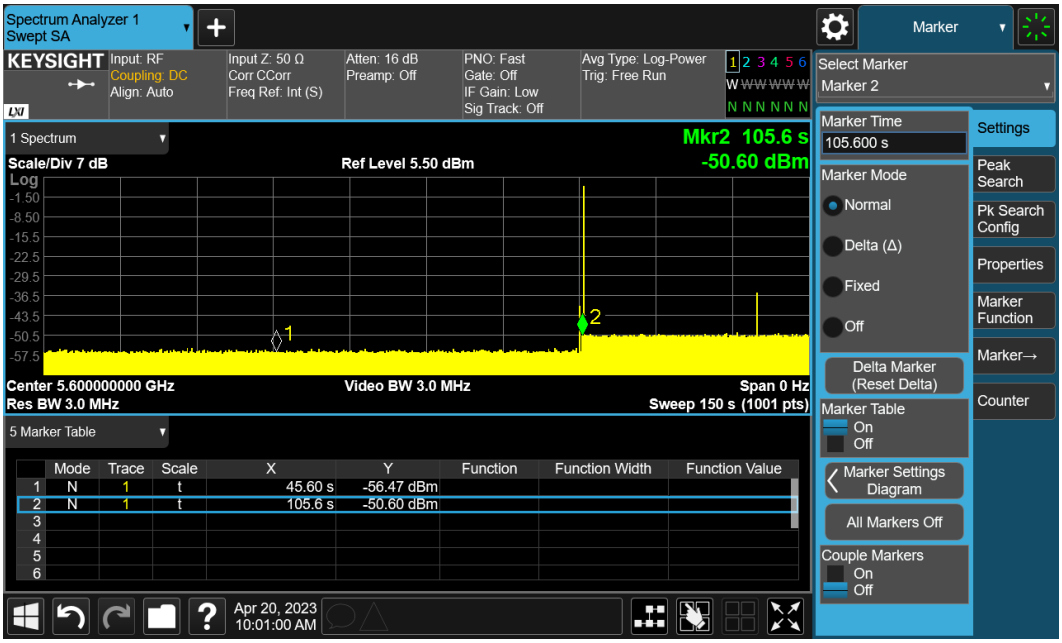
5.7.1 Channel Availability Check (CAC)

The EUT shall perform a CAC to ensure that there is no radar operating on the channel. After the power-up sequence, at-east 1 minute shall be monitored on the intended operating frequency. For initial CAC, the EUT does not emit beacon, control, or data signals on the test channel until the power-up sequence has been completed and the UNII device checks for radar waveforms for one minute on the test channel. This test does not use any radar waveforms. The markers in the associated plots indicate initial beacons.

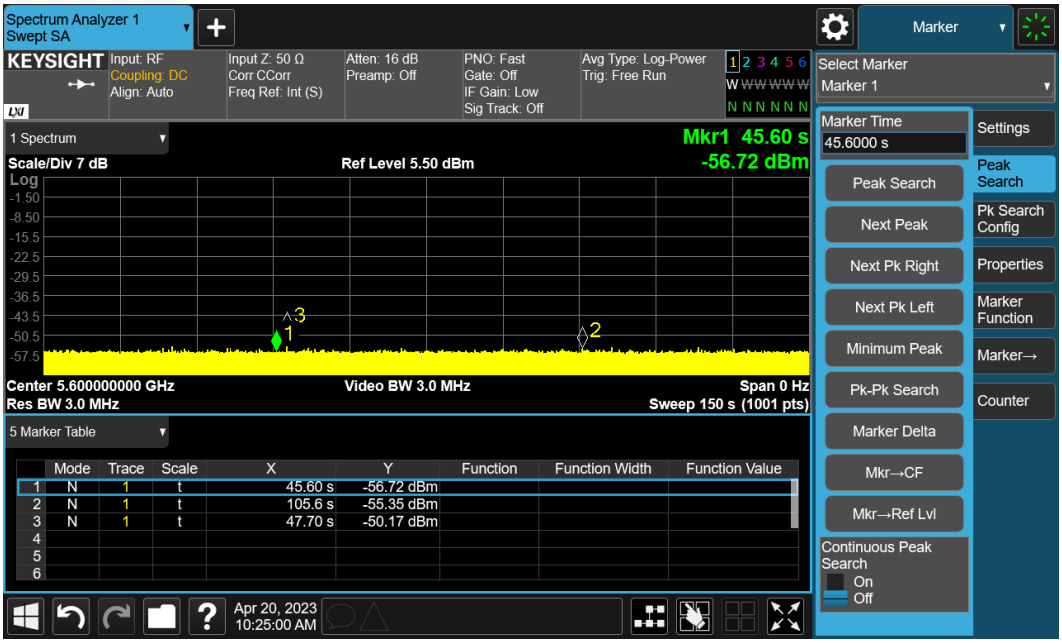
For radar burst at the beginning of the CAC. To verify successful radar detection on the selected channel during a period equal to the beginning of the CAC time, visual indication on the EUT of successful detection of the radar burst will be recorded and reported. Observation of the radar burst is show on the associated plot to be within the beginning of the CAC time. Emissions will continue to be monitored for the remaining 300 seconds.

For radar burst at the end of the CAC. To verify successful radar detection on the selected channel during a period equal to the end of the CAC time, visual indication on the EUT of successful detection of the radar burst will be recorded and reported. Observation of the radar burst is show on the associated plot to be within the end of the CAC time. Emissions will continue to be monitored for the remaining 300 seconds.

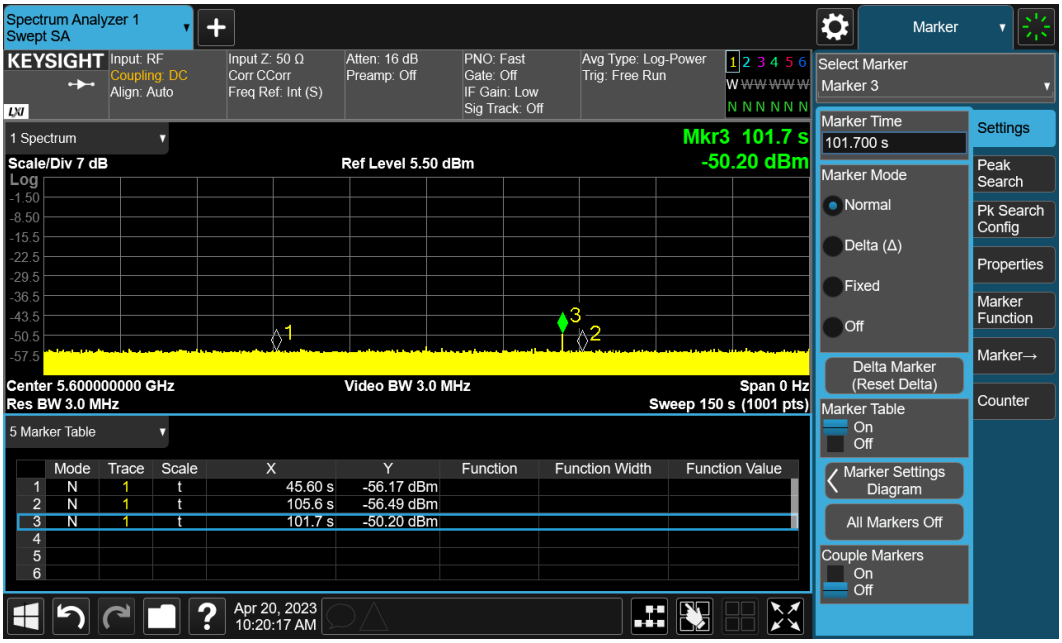
A spectrum analyzer is used as a monitor to verify that the EUT has vacated the channel within the channel closing transmission time and channel move time, and does not transmit on a channel during the non-occupancy period after the detection and channel move.



Plot 8: DUT Power On



Plot 9: CAC Beginning

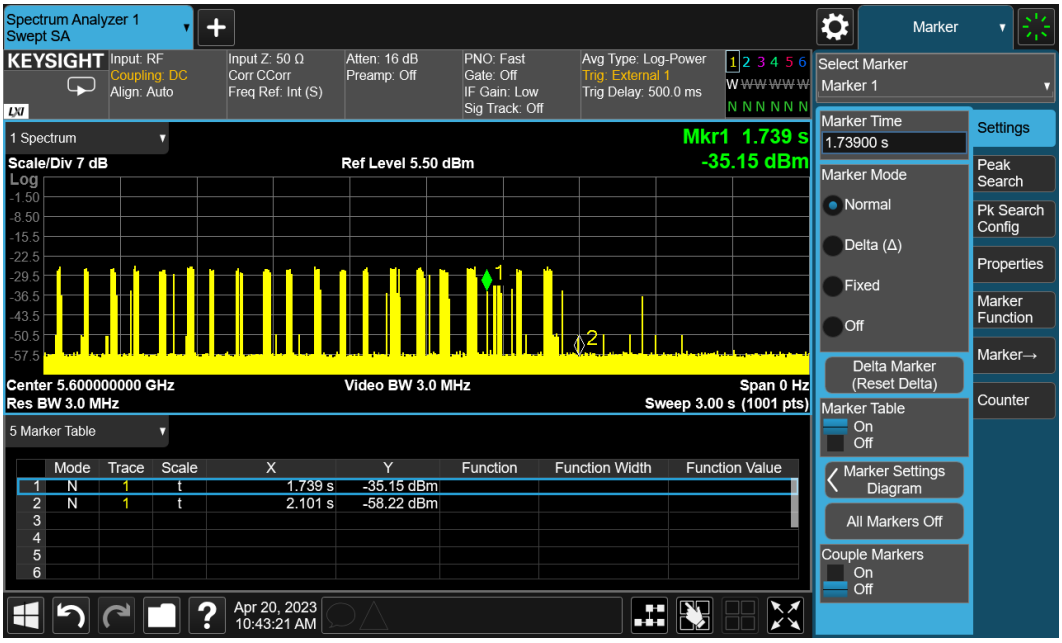


Plot 10: CAC End

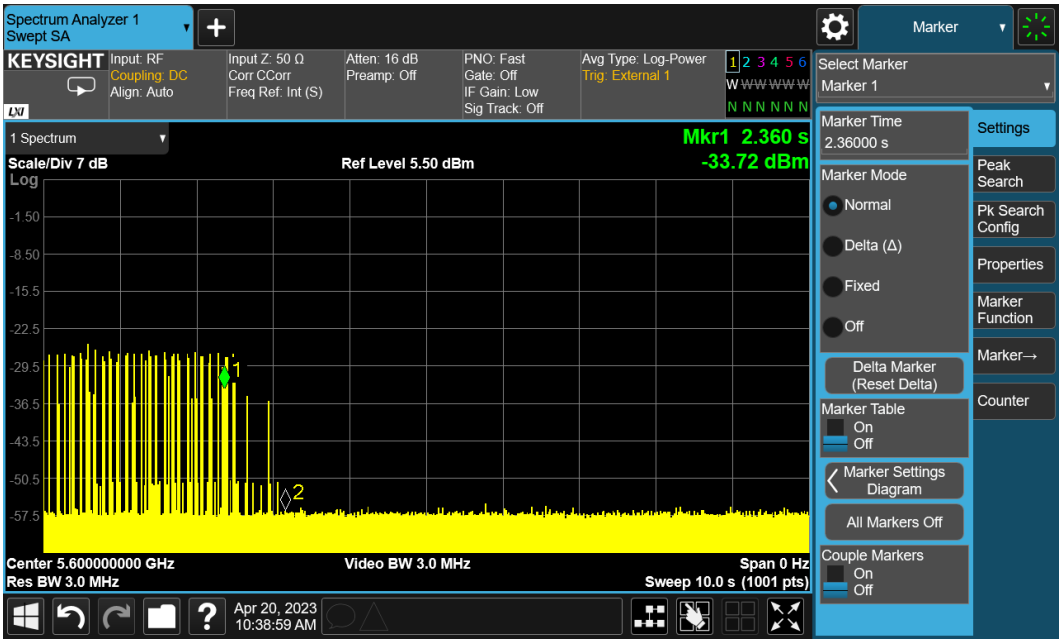
5.7.2 In-service Monitoring

Channel Move Time	10 seconds
Channel Closing Transmission Time	200 ms + aggregate of 60 ms over remaining 10 second period
Non-occupancy period	Minimum 30 minutes

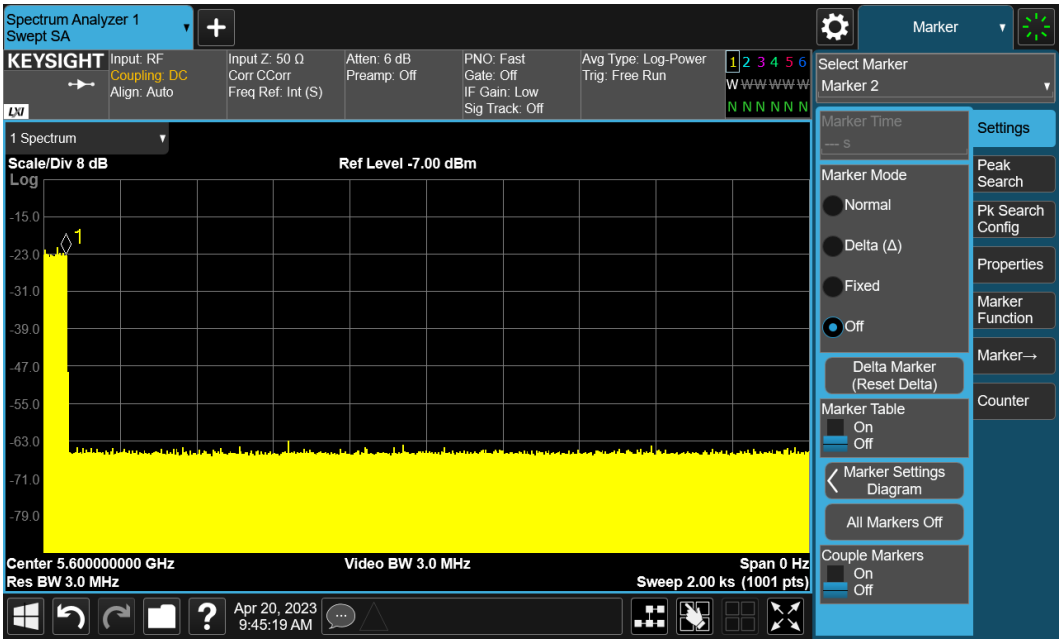
Verified during in-service monitoring: channel closing transmission time and channel move time. The transmissions were observed at the end of the radar burst on the operating channel for a duration of greater than 10 seconds. The transmissions were measured and recorded during the observation time. This was compared to the channel move time and channel closing time limits.
One 12 second plot is reported for the short pulse radar type 0. A 60 ms plot is also provided to verify closing time for the aggregate transmission time starting from 200 ms after the end of the radar signal to the completion of the channel move.
During the 30 minutes observation time, the EUT did not make any transmissions on a channel after a radar signal was detected.
Please see plots below.
A spectrum analyzer is used as a monitor to verify that the EUT has vacated the channel within the channel closing transmission time and channel move time, and does not transmit on a channel during the non-occupancy period after the detection and channel move.



Plot 11: Channel Close (2 s)



Plot 12: Channel Move



Plot 13: Non-Occupancy

5.7.3 DFS Detection Bandwidth

20 MHz

EUT Frequency = 5600 MHz ; Bandwidth = 20 MHz											
Radar Frequency MHz	DFS Detection Trials (1 = Detection, 0 = No Detection)										Detection Rate %
	Trials										
	1	2	3	4	5	6	7	8	9	10	
F_Low 5590	1	1	1	1	1	1	1	1	1	1	100
5591											
5592											
5593											
5594											
5595	1	1	1	1	1	1	1	1	1	1	100
5596											
5597											
5598											
5599											
5600	1	1	1	1	1	1	1	1	1	1	100
5601											
5602											
5603											
5604											
5605	1	1	1	1	1	1	1	1	1	1	100
5606											
5607											
5608											
5609											
F_High 5610	1	1	1	1	1	1	1	1	1	1	100
Total Detection Percentage											100
Detection Bandwidth = FH-FL = 5590 MHz - 5610 MHz = 20 MHz											
99% Bandwidth = 19.8 MHz											

40 MHz

EUT Frequency = 5590 MHz ; Bandwidth = 40 MHz											
Radar Frequency MHz	DFS Detection Trials (1 = Detection, 0 = No Detection)										Detection Rate %
	Trials										
	1	2	3	4	5	6	7	8	9	10	
F_Low 5570	1	1	1	1	1	1	1	1	1	1	100
5571											
5572											
5573											
5574											
5575											
5576											
5577											
5578											
5579											
5580	1	1	1	1	1	1	1	1	1	1	100
5581											
5582											
5583											
5584											
5585											
5586											
5587											
5588											
5589											
5590	1	1	1	1	1	1	1	1	1	1	100
5591											
5592											
5593											
5594											
5595											
5596											
5597											
5598											
5599											
5600	1	1	1	1	1	1	1	1	1	1	100
5601											
5602											
5603											
5604											
5605											
5606											
5607											
5608											
5609											
F_High 5610	1	1	1	1	1	1	1	1	1	1	100
Total Detection Percentage											100
Detection Bandwidth = FH-FL = 5570 MHz - 5610 MHz = 40 MHz											
99% Bandwidth = 39.6 MHz											

80 MHz

EUT Frequency = 5610 MHz ; Bandwidth = 80 MHz											
Radar Frequency MHz	DFS Detection Trials (1 = Detection, 0 = No Detection) Trials										Detection Rate %
	1	2	3	4	5	6	7	8	9	10	
F_Low 5570	1	1	1	1	1	1	1	1	1	1	100
5571											
5572											
5573											
5574											
5575											
5576											
5577											
5578											
5579											
5580	1	1	1	1	1	1	1	1	1	1	100
5581											
5582											
5583											
5584											
5585											
5586											
5587											
5588											
5589	1	1	1	1	1	1	1	1	1	1	100
5590											
5591											
5592											
5593											
5594											
5595											
5596											
5597											
5598											
5599											
5600	1	1	1	1	1	1	1	1	1	1	100
5601											
5602											
5603											
5604											
5605											
5606											
5607											
5608											
5609											
5610	1	1	1	1	1	1	1	1	1	1	100
5611											
5612											
5613											
5614											
5615											
5616											
5617											
5618											
5619											
5620	1	1	1	1	1	1	1	1	1	1	100
5621											
5622											
5623											
5624											
5625											
5626											
5627											
5628											
5629											
5630	1	1	1	1	1	1	1	1	1	1	100
5631											
5632											
5633											
5634											
5635											
5636											
5637											
5638											
5639											
5640	1	1	1	1	1	1	1	1	1	1	100
5641											
5642											
5643											
5644											
5645											
5646											
5647											
5648											
5649											
F_High 5650	1	1	1	1	1	1	1	1	1	1	100
Total Detection Percentage											100
Detection Bandwidth = FH-FL = 5570 MHz - 5650 MHz = 80 MHz											
99% Bandwidth = 79.2 MHz											

5.7.4 Detection Probability

For statistical performance check. Demonstrating a minimum channel loading of approximately 17% or greater of the test. Observe the transmissions of the EUT at the end of the burst on the operating channel for duration greater than 10 seconds for short pulse radar type 1-4 and 6 to ensure detection occurs. Then observe the transmissions of the EUT at the end of the burst on the operating channel for duration greater than 22 seconds for long pulse radar type 5 to ensure detection occurs. The device can utilize a test mode to demonstrate when detection occurs to prevent the need to reset the device between trial runs.
Please see data below.

Radar Type	Min successful detection (%)	Minimum Trials
1	60	30
2	60	30
3	60	30
4	60	30
Types 1 - 4	80	120
5	80	30
6	70	30

20 MHz

Summary

Type	Detections	Trials	Detection Probability
Type 1	25	30	83%
Type 2	27	30	90%
Type 3	21	30	70%
Type 4	24	30	80%
Type 5	29	30	97%
Type 6	25	30	83%
Aggregate 1-4	97	120	81%

RADAR TYPE 1 — Rohde & Schwarz K350 Pulse Sequencer DFS

Trial #	Number of Pulses per Burst	Pulse Width (µsec)	PRI (µs)	Detection (yes/no)
1	21	1	2527	y
2	47	1	1142	y
3	32	1	1661	y
4	19	1	2804	y
5	35	1	1506	y
6	34	1	1551	n
7	58	1	917	y
8	25	1	2144	n
9	29	1	1850	y
10	54	1	993	y
11	18	1	3017	y
12	20	1	2736	y
13	21	1	2519	n
14	23	1	2303	y
15	27	1	2017	y
16	20	1	2655	y
17	19	1	2813	y
18	34	1	1581	y
19	23	1	2346	y
20	19	1	2792	y
21	29	1	1863	y
22	21	1	2535	y
23	18	1	3022	y
24	91	1	585	y
25	27	1	2000	y
26	22	1	2467	y
27	45	1	1173	y
28	78	1	683	n
29	21	1	2521	n
30	54	1	979	y
				25/30: 83.3%

RADAR TYPE 2 — Rohde & Schwarz K350 Pulse Sequencer DFS

Trial #	Number of Pulses per Burst	Pulse Width (µsec)	PRI (µs)	Detection (yes/no)
1	28	2.7	217	y
2	26	4.7	215	y
3	27	3.8	182	y
4	28	4.1	216	y
5	26	2.1	163	y
6	24	1.4	193	y
7	26	2	167	y
8	27	2.6	173	y
9	23	4	197	y
10	25	1.1	154	y
11	24	1.4	197	y
12	28	3.6	212	y
13	26	2.8	173	y
14	29	3.4	174	y
15	27	3.9	162	y
16	26	3.9	209	y
17	29	3.5	196	y
18	25	1.8	157	n
19	27	1.1	219	n
20	29	2.7	157	y
21	27	4.4	163	n
22	23	4.6	152	y
23	24	2.1	201	y
24	28	1.1	158	y
25	26	1.4	210	y
26	25	2	225	y
27	25	1.9	183	y
28	28	2.7	206	y
29	27	3.9	189	y
30	28	2.2	173	y
				27/30: 90%

RADAR TYPE 3				Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	Number of Pulses per Burst	Pulse Width (µsec)	PRI (µs)	Detection (yes/no)
1	16	9.3	232	y
2	17	8.8	260	y
3	16	6.7	362	y
4	18	9	290	y
5	16	9.2	361	n
6	17	6.2	454	n
7	17	7.6	303	y
8	17	6.7	221	y
9	17	6.8	361	y
10	17	7.8	373	y
11	16	8.8	244	n
12	17	8.3	316	y
13	18	9.9	282	n
14	16	7	332	y
15	16	6.8	437	y
16	17	8.8	326	y
17	18	7.2	212	y
18	18	6.8	392	n
19	17	9	464	n
20	17	6.2	433	y
21	17	6.5	381	y
22	16	8.5	446	n
23	17	8.5	282	y
24	17	7.1	374	y
25	17	8.9	358	y
26	17	8.6	465	y
27	17	9.2	369	n
28	17	6.1	434	y
29	18	9.5	302	y
30	17	6.1	377	n
				21/30: 70%

RADAR TYPE 4				Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	Number of Pulses per Burst	Pulse Width (µsec)	PRI (µs)	Detection (yes/no)
1	14	12.7	317	n
2	13	12	390	y
3	12	15.8	275	y
4	14	16.4	246	n
5	13	19.6	366	y
6	13	11.7	333	y
7	12	15.8	352	n
8	14	14.2	436	y
9	13	11.2	356	y
10	13	12.9	422	y
11	15	19.3	213	y
12	14	16.5	211	y
13	16	13.5	498	y
14	13	12.7	265	y
15	15	14.7	403	y
16	15	16.3	465	n
17	16	13.9	473	y
18	14	19.4	288	y
19	15	13	275	y
20	14	12.6	494	y
21	14	17.5	320	y
22	13	16.8	255	y
23	16	11.9	464	y
24	14	13.7	281	y
25	14	19.7	209	y
26	13	13.5	387	n
27	12	12.4	437	y
28	13	19.3	245	n
29	12	11.7	387	y
30	16	11.5	254	y
				24/30: 80%

TYPE 5		Rohde & Schwarz K350 Pulse Sequencer DFS		
Trial #	Detection (yes/no)	Chirp Width (MHz)	Subset	Fc
1	y	16	1	5600
2	y	5	1	5600
3	y	11	1	5600
4	y	10	1	5600
5	y	8	1	5600
6	y	16	1	5600
7	y	18	1	5600
8	y	17	1	5600
9	y	5	1	5600
10	y	13	1	5600
11	y	17	2	5596.8
12	y	9	2	5593.6
13	n	6	2	5592.4
14	y	9	2	5593.6
15	y	17	2	5596.8
16	y	17	2	5596.8
17	y	18	2	5597.2
18	y	15	2	5596
19	y	11	2	5594.4
20	y	11	2	5594.4
21	y	14	3	5604.4
22	y	5	3	5608
23	y	17	3	5603.2
24	y	7	3	5607.2
25	y	11	3	5605.6
26	y	19	3	5602.4
27	y	13	3	5604.8
28	y	11	3	5605.6
29	y	17	3	5603.2
30	y	18	3	5602.8
	29/30: 96.7%			

TYPE 6 S	Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	Detection (yes/no)
1	y
2	y
3	y
4	y
5	y
6	n
7	y
8	y
9	y
10	y
11	y
12	y
13	y
14	y
15	y
16	y
17	y
18	y
19	y
20	y
21	n
22	y
23	n
24	n
25	n
26	y
27	y
28	y
29	y
30	y
	25/30: 83.3%

40 MHz

Summary

Type	Detections	Trials	Detection Probability
Type 1	26	30	87%
Type 2	28	30	93%
Type 3	20	30	67%
Type 4	23	30	77%
Type 5	29	30	97%
Type 6	28	30	93%
Aggregate 1-4	97	120	81%

RADAR TYPE 1 — Rohde & Schwarz K350 Pulse Sequencer DFS

Trial #	Number of Pulses per Burst	Pulse Width (µsec)	PRI (µs)	Detection (yes/no)
1	24	1	2208	y
2	30	1	1780	y
3	38	1	1413	y
4	19	1	2843	y
5	19	1	2813	y
6	27	1	1964	n
7	19	1	2857	y
8	30	1	1795	y
9	63	1	846	y
10	69	1	772	y
11	22	1	2407	y
12	20	1	2674	y
13	75	1	706	y
14	79	1	670	y
15	63	1	848	y
16	19	1	2883	y
17	30	1	1786	n
18	25	1	2153	y
19	23	1	2353	y
20	22	1	2490	n
21	75	1	709	y
22	30	1	1803	y
23	24	1	2232	y
24	39	1	1363	y
25	33	1	1645	y
26	25	1	2122	y
27	43	1	1226	y
28	22	1	2426	y
29	26	1	2070	n
30	97	1	544	y
				26/30: 86.7%

RADAR TYPE 2 — Rohde & Schwarz K350 Pulse Sequencer DFS

Trial #	Number of Pulses per Burst	Pulse Width (µsec)	PRI (µs)	Detection (yes/no)
1	26	3.4	168	y
2	25	1.1	203	y
3	24	4.1	165	n
4	26	1.9	172	y
5	26	2	219	y
6	23	2.9	192	y
7	24	4.6	157	y
8	28	3.3	162	y
9	25	4.5	227	y
10	29	3.8	179	y
11	29	4.2	153	y
12	28	2.6	164	y
13	29	1.2	216	y
14	24	2.2	167	y
15	27	4.1	206	y
16	28	2.4	192	y
17	25	3.4	176	y
18	29	2.8	176	y
19	26	2	227	y
20	25	2.2	182	y
21	24	4.2	221	y
22	25	1.3	177	y
23	28	3.5	150	y
24	28	3.7	221	y
25	28	1.1	167	n
26	26	4.8	203	y
27	23	4.7	181	y
28	25	4.7	221	y
29	25	2.9	162	y
30	26	1.6	199	y
				28/30: 93.3%

RADAR TYPE 3				Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	Number of Pulses per Burst	Pulse Width (µsec)	PRI (µs)	Detection (yes/no)
1	17	6.7	288	y
2	17	7.4	355	y
3	17	8.1	348	y
4	17	9.1	318	y
5	17	6.7	422	n
6	18	9.3	247	y
7	17	8.7	221	y
8	17	6.2	358	y
9	18	7.4	437	y
10	17	6.1	467	y
11	18	6.4	206	y
12	17	6.5	217	n
13	17	9.1	484	n
14	17	7.8	280	n
15	16	7.9	455	y
16	17	7.5	441	n
17	17	9.7	348	y
18	17	8.2	348	y
19	17	6.4	376	y
20	16	8.8	381	n
21	16	9.1	256	y
22	17	9.3	347	n
23	17	7.8	261	y
24	16	8.4	450	n
25	17	6.6	224	y
26	17	7	333	n
27	16	7.4	387	y
28	17	8.3	299	n
29	18	6.8	357	y
30	16	7.5	409	y
				20/30: 66.7%

RADAR TYPE 4				Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	Number of Pulses per Burst	Pulse Width (µsec)	PRI (µs)	Detection (yes/no)
1	14	12.7	317	y
2	13	12	390	y
3	12	15.8	275	n
4	14	16.4	246	y
5	13	19.6	366	y
6	13	11.7	333	y
7	12	15.8	352	y
8	14	14.2	436	n
9	13	11.2	356	n
10	13	12.9	422	n
11	15	19.3	213	y
12	14	16.5	211	y
13	16	13.5	498	y
14	13	12.7	265	y
15	15	14.7	403	y
16	15	16.3	465	y
17	16	13.9	473	y
18	14	19.4	288	n
19	15	13	275	y
20	14	12.6	494	n
21	14	17.5	320	y
22	13	16.8	255	y
23	16	11.9	464	n
24	14	13.7	281	y
25	14	19.7	209	y
26	13	13.5	387	y
27	12	12.4	437	y
28	13	19.3	245	y
29	12	11.7	387	y
30	16	11.5	254	y
				23/30: 76.7%

TYPE 5		Rohde & Schwarz K350 Pulse Sequencer DFS		
Trial #	Detection (yes/no)	Chirp Width (MHz)	Subset	Fc
1	y	14	1	5500
2	y	11	1	5500
3	y	18	1	5500
4	y	12	1	5500
5	y	18	1	5500
6	y	15	1	5500
7	y	19	1	5500
8	y	6	1	5500
9	n	8	1	5500
10	y	17	1	5500
11	y	14	2	5496.6
12	y	6	2	5493.4
13	y	10	2	5495
14	y	5	2	5493
15	y	15	2	5497
16	y	12	2	5495.8
17	y	8	2	5494.2
18	y	6	2	5493.4
19	y	18	2	5498.2
20	y	13	2	5496.2
21	y	13	3	5503.8
22	y	11	3	5504.6
23	y	10	3	5505
24	y	17	3	5502.2
25	y	9	3	5505.4
26	y	16	3	5502.6
27	y	16	3	5502.6
28	y	19	3	5501.4
29	y	15	3	5503
30	y	11	3	5504.6
	29/30: 96.7%			

TYPE 6 S	Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	Detection (yes/no)
1	y
2	y
3	y
4	y
5	y
6	y
7	n
8	y
9	y
10	y
11	y
12	y
13	y
14	y
15	y
16	y
17	y
18	y
19	y
20	y
21	y
22	y
23	y
24	y
25	y
26	y
27	y
28	y
29	y
30	n
	28/30: 93.3%

80 MHz

Summary

Type	Detections	Trials	Detection Probability
Type 1	24	30	80%
Type 2	27	30	90%
Type 3	25	30	83%
Type 4	21	30	70%
Type 5	27	30	90%
Type 6	27	30	90%
Aggregate 1-4	97	120	81%

RADAR TYPE 1 — Rohde & Schwarz K350 Pulse Sequencer DFS

Trial #	Number of Pulses per Burst	Pulse Width (µsec)	PRI (µs)	Detection (yes/no)
1	67	1	798	y
2	86	1	618	y
3	62	1	858	y
4	68	1	778	y
5	74	1	718	n
6	65	1	818	y
7	83	1	638	y
8	57	1	938	y
9	95	1	558	y
10	72	1	738	y
11	59	1	898	y
12	92	1	578	y
13	81	1	658	y
14	63	1	838	y
15	58	1	918	n
16	27	1	1963	y
17	33	1	1600	n
18	19	1	2788	y
19	19	1	2910	n
20	39	1	1372	n
21	42	1	1272	y
22	47	1	1140	y
23	20	1	2667	y
24	62	1	854	y
25	34	1	1574	y
26	20	1	2724	n
27	37	1	1456	y
28	20	1	2762	y
29	26	1	2080	y
30	97	1	548	y
				24/30: 80%

RADAR TYPE 2 — Rohde & Schwarz K350 Pulse Sequencer DFS

Trial #	Number of Pulses per Burst	Pulse Width (µsec)	PRI (µs)	Detection (yes/no)
1	27	1.5	217	y
2	28	4.7	150	y
3	24	2.7	152	y
4	24	1.9	217	y
5	24	3.8	177	y
6	26	1.2	202	y
7	28	3.8	215	y
8	25	4.7	155	y
9	28	2.2	219	y
10	23	4.2	216	y
11	28	4.8	180	y
12	28	1.5	169	n
13	25	3.6	188	y
14	28	1.9	198	y
15	26	3.3	176	y
16	24	4.9	159	y
17	26	2.6	207	n
18	25	1.2	204	y
19	25	1.5	215	y
20	27	1.4	179	y
21	23	1.6	172	y
22	26	1	163	n
23	25	4.2	163	y
24	26	3.3	172	y
25	29	3.4	166	y
26	28	2.1	200	y
27	25	2.9	192	y
28	27	1.4	165	y
29	28	1.4	156	y
30	28	1.1	188	y
				27/30: 90%

RADAR TYPE 3				Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	Number of Pulses per Burst	Pulse Width (µsec)	PRI (µs)	Detection (yes/no)
1	17	6.9	484	y
2	17	7.6	487	n
3	17	8	429	y
4	16	8.6	344	y
5	16	9.6	276	n
6	16	9.7	233	y
7	16	6	385	y
8	17	7.7	337	y
9	17	9.3	416	y
10	18	8.8	228	y
11	16	9.3	274	n
12	17	8.2	401	n
13	18	7.3	293	y
14	17	9.4	234	y
15	17	6.8	271	y
16	17	9.3	365	y
17	16	7.4	298	y
18	18	9.1	352	n
19	17	8.1	278	y
20	17	7.4	248	y
21	16	6.4	229	y
22	17	9.8	325	y
23	16	9.8	452	y
24	18	8.7	410	y
25	18	8.3	321	y
26	16	6.5	326	y
27	17	8	433	y
28	16	8.5	244	y
29	16	6.7	237	y
30	18	8.6	284	y
				25/30: 83.3%

RADAR TYPE 4				Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	Number of Pulses per Burst	Pulse Width (µsec)	PRI (µs)	Detection (yes/no)
1	14	11.7	222	y
2	15	11	238	y
3	15	15	214	y
4	13	18.8	316	y
5	15	12.1	467	y
6	14	19.3	201	y
7	15	17.4	383	n
8	16	15.2	339	y
9	13	17.9	340	n
10	14	15.3	371	n
11	12	16.5	484	y
12	15	14.1	301	n
13	14	18.8	368	n
14	14	14.5	373	n
15	15	16.9	240	y
16	13	15.2	279	y
17	14	19.1	261	y
18	13	14.1	368	y
19	13	12.8	404	y
20	13	16.3	417	n
21	15	11.1	451	y
22	12	12.8	481	y
23	15	19.6	470	y
24	15	13.1	283	y
25	15	19.4	366	y
26	13	17.5	480	y
27	13	16.1	419	n
28	15	17.7	371	y
29	13	19.8	351	n
30	13	18.6	301	y
				21/30: 70%

TYPE 5				Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	Detection (yes/no)	Chirp Width (MHz)	Subset	Fc
1	y	18	1	5500
2	y	14	1	5500
3	y	13	1	5500
4	y	14	1	5500
5	y	5	1	5500
6	y	14	1	5500
7	y	10	1	5500
8	y	5	1	5500
9	y	18	1	5500
10	y	14	1	5500
11	y	11	2	5495.4
12	y	9	2	5494.6
13	y	6	2	5493.4
14	n	5	2	5493
15	y	9	2	5494.6
16	n	17	2	5497.8
17	y	15	2	5497
18	y	6	2	5493.4
19	y	8	2	5494.2
20	y	18	2	5498.2
21	y	17	3	5502.2
22	y	19	3	5501.4
23	n	11	3	5504.6
24	y	9	3	5505.4
25	y	5	3	5507
26	y	5	3	5507
27	y	5	3	5507
28	y	16	3	5502.6
29	y	14	3	5503.4
30	y	16	3	5502.6
	27/30: 90%			

TYPE 6 S	Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	Detection (yes/no)
1	y
2	y
3	y
4	n
5	y
6	y
7	y
8	y
9	y
10	y
11	y
12	y
13	y
14	n
15	y
16	y
17	y
18	y
19	y
20	y
21	y
22	y
23	y
24	n
25	y
26	y
27	y
28	y
29	y
30	y
	27/30: 90%

-- End of Test Report --