UNIFIED COMPLIANCE LABORATORY

427 West 12800 South
Draper, UT 84020

Test Report

Certification

FCC ID	SWX-UTRLR
ISED ID	6545A-UTRLR
Equipment Under Test	UTR-LR
Test Report Serial Number	TR11006_01
Date of Test(s)	15 - 19 and 22 - 23 June; 30 July 2026
Report Issue Date	31 July 2026

Test Specification	Applicant
47 CFR FCC Part 15, Subpart E RSS-247, Issue 4 (July 2025)	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

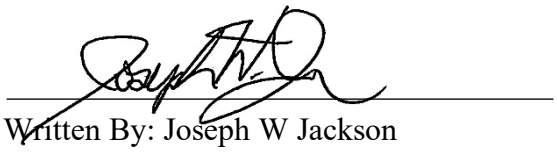
This report has been prepared by Unified Compliance Laboratory (UCL) to document compliance of the device described below with the requirement of Federal Communication Commissions (FCC) Part 15, Subpart E. This report may be reproduced in full. Partial reproduction of this report may only be made with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

Applicant	Ubiquiti Inc.
Manufacturer	Ubiquiti Inc.
Brand Name	UBIQUITI
Model Number	UTR-LR
FCC ID	SWX-UTRLR
ISED ID	6545A-UTRLR

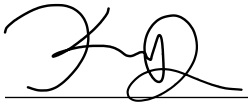
On this 31st day of July 2026, I individually and for Unified Compliance Laboratory certify that the statements made in this engineering report are true, complete and correct to the best of my knowledge and are made in good faith. Unified Compliance laboratory is not responsible for incorrect information provided by the manufacturer.

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: Joseph W Jackson



Reviewed By: Kimberly DeBole

Revision History		
Revision	**Description**	**Date**
01	Original Report Release	31 July 2026
02	Section 5.6 Updated	6 August 2026

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 Officer

1.2 Manufacturer

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

2 Equipment Under Test (EUT)

2.1 Identification of EUT

Brand Name	UBIQUITI
Model Number	UTR-LR
Serial Number	E6D95A
Dimensions (cm)	6.5 x 9.6 x 1.9

2.2 Description of EUT

The UniFi Travel Router Long-Range (UTR-LR) is a compact travel router and VPN functionality for secure connections on the go. The UTR-LR has 2x2 2.4 GHz and 2x2 5GHz dual-band wireless transmitters. The UTR-LR has a Bluetooth transmitter for management control. The UTR is and indoor device and is powered from a USB-C power port.

This device does not support channel puncturing.

For CDD transmission, direction gain is calculated as follows.

Array Gain = 10 log(NANT/NSS) dB
NANT = number of transmit antennas and NSS = number of spatial streams. NSS = 1 considered worst case. 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 + Antenna Gain (dBi). Or 3.01 dB + 10 dBi = 13.01 dBi.

The UTR-LR uses Transmit Power (TP) Control protocol and is included in the power tables of Section 5.4.

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: UTR-LR (Note 1) SN: E6D95A	Wireless Router	See Section 2.4
BN: UBIQUITI MN: E005-1I050100VU SN: N/A	USB Power Adapter	2 Conductor power cord to AC mains/80cm
BN: Dell MN: XPS 13 SN: N/A	Laptop Personal Computer	Unshielded Cat 5e cable/3 meters

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
USB-C Power	1	2 conductor power to AC mains/80cm
USB-C Passthrough	1	USB-C cable/3 meters
Ethernet	2	Unshielded Cat 5e cable/3 meters

2.5 Operating Environment

Power Supply	120 Volts AC Main to USB-C
AC Mains Frequency	60 Hz
Temperature	21.1 - 23.8 °C
Humidity	23.7 - 31.6 %
Barometric Pressure	1012 mBar

2.6 Operating Modes

The UTR-LR was tested using test software in order to enable a constant transmission. The measurements within this report are corrected to reference a 100% duty cycle. All emission modes of 802.11 a/ac were investigated. All measurements are reported with the worst-case mode (802.11ac maximum conducted output power and maximum power spectral density) 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

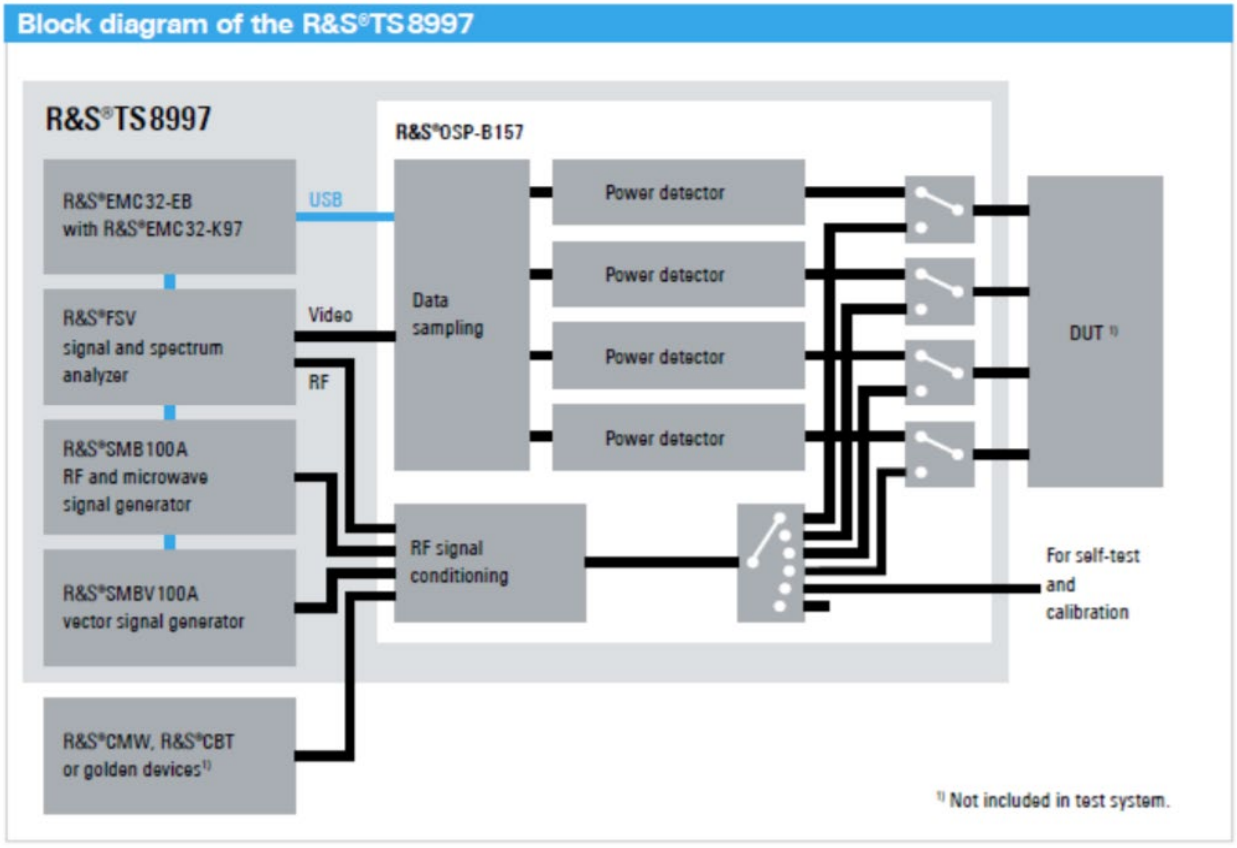


Diagram 1: Test Configuration Block Diagram

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
15.203	N/A	Antenna requirements	Structural Requirement	Compliant
15.207	RSS-Gen	Conducted Disturbance at Mains Port	0.15 to 30	Compliant
15.407(a)	RSS-247 §6.2.2	Bandwidth Requirement	5260 to 5720	Compliant
15.407(a)	RSS-247 §6.2.2, §6.2.3	Peak Output Power	5260 to 5720	Compliant
15.407(b)	RSS-247 §6.2.2, §6.2.3	Antenna Conducted Spurious Emissions	0.009 to 40000	N/A Note[1]
15.209	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 5720	Compliant
15.407(h)	RSS-247 §6.3	DFS Requirements	5260 to 5720	Compliant
The testing was performed according to the procedures in ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024, KDB 558074 and 47 CFR Part 15. Where applicable, KDB 662911 was followed to sum required measurements. Note [1]: Radiated Spurious was performed per 15.209 with the antenna unterminated.				

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 chambers 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 2027. 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 2027.

Unified Compliance Laboratory has been assigned Registration Number 376708 by the FCC, MRA Designation Number US5037 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	11/18/2025	11/18/2026
LISN	AFJ	LS16C/10	UCL-2512	8/12/2025	8/12/2026
ISN	Teseq	ISN T800	UCL-2971	3/4/2026	3/4/2027
AC Power Source	Laplace Instruments	AC1000A	UCL-2857	N/A	N/A
Test Software	AFJ	AFJ FFT3010	UCL-3107	N/A	N/A

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

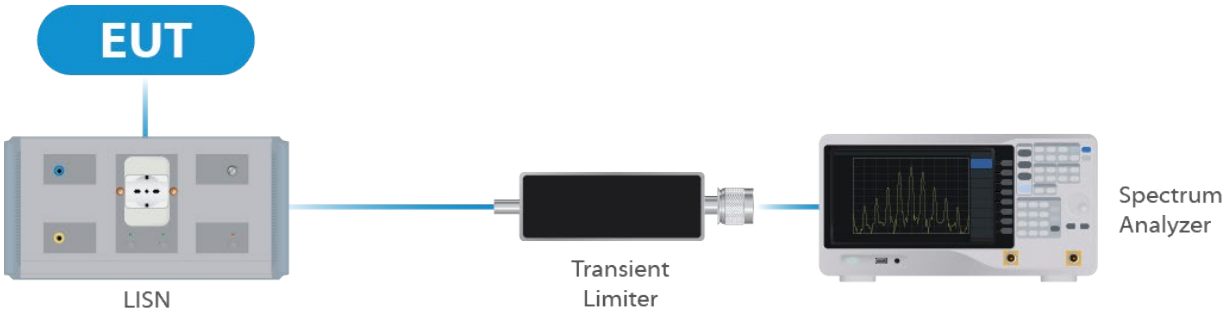


Figure 1: Conducted Emissions Test

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	3/18/2026	3/18/2027
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	4/7/2026	4/7/2027
Switch Extension	R&S	OSP-150W	UCL-2870	4/6/2026	4/6/2027
Test Software	R&S	EMC32	UCL-9442	--	--

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

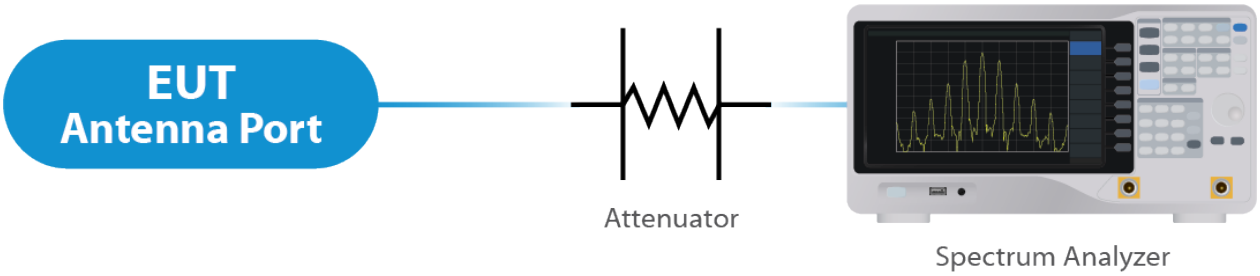


Figure 2: Direct Connect at the Antenna Port Test

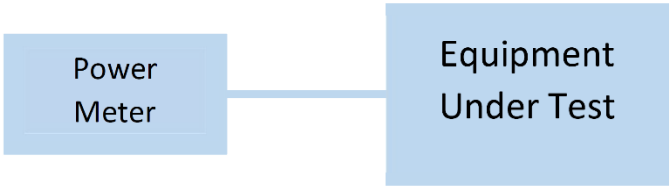


Figure 3: Output Power Measurement

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	12/18/2025	12/18/2026
Pre-Amplifier 9 kHz – 1 GHz	Sonoma Instruments	310N	UCL-2889	7/22/2025	7/22/2026
Tri Log Antenna	Scwarzbeck	VULB 9163	UCL-3062	12/16/2025	12/16/2027
Double Ridge Horn Antenna	Scwarzbeck	BBHA 9120D	UCL-3065	4/2/2025	4/2/2027
Log Periodic	Scwarzbeck	STLP 9129	UCL-3068	2/11/2025	2/4/2027
15 - 40 GHz Horn Antenna	Scwarzbeck	BBHA 9170	UCL-2487	4/7/2025	4/7/2027
1 – 18 GHz Amplifier	Com-Power	PAM 118A	UCL-3833	7/22/2025	7/22/2026
Test Software	Nexio	BatEMC	UCL-5253 & UCL-5249	N/A	N/A

Table 4: List of equipment used for Radiated Emissions

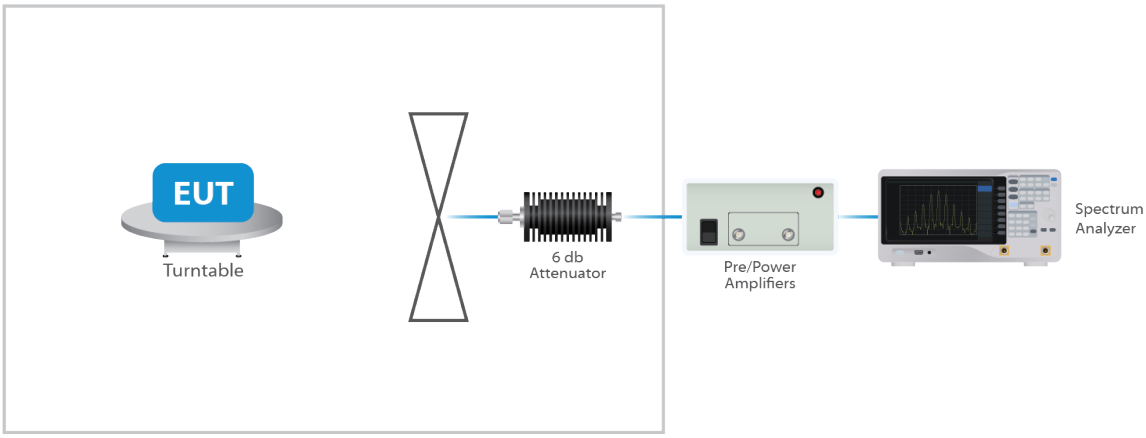


Figure 4: Radiated Emissions Test

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	5/20/2025	8/20/2026

4.4.1 Master Test Set Up

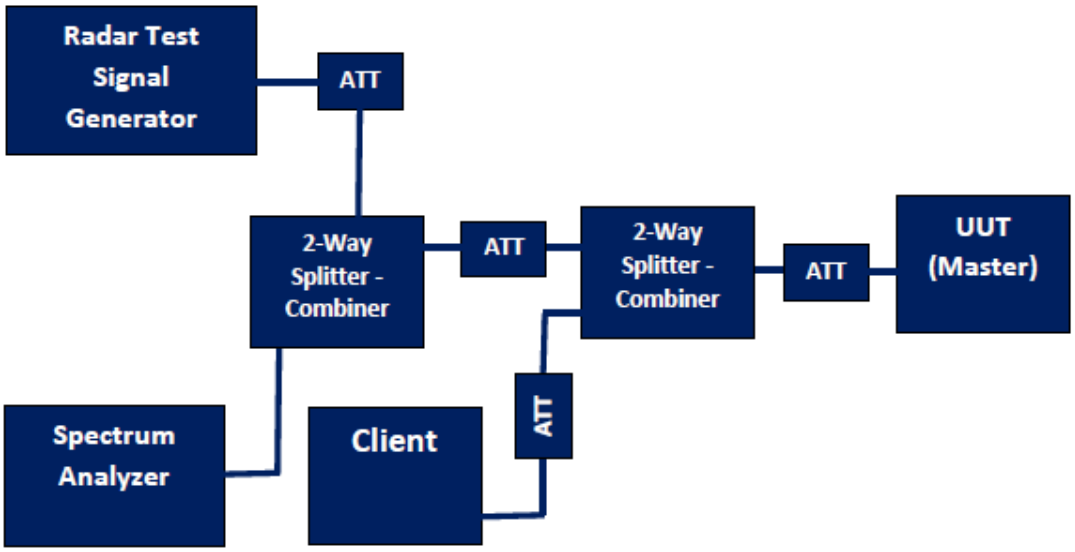


Figure 5: DFS Test Set Up - Master

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 an integral internal antenna. Per the manufacturer, the Maximum gain of the antenna per chain is 10 dBi. The antenna is not user replaceable.

This is an 802.11 device and utilizes CDD as described in KDB 662911 D01.

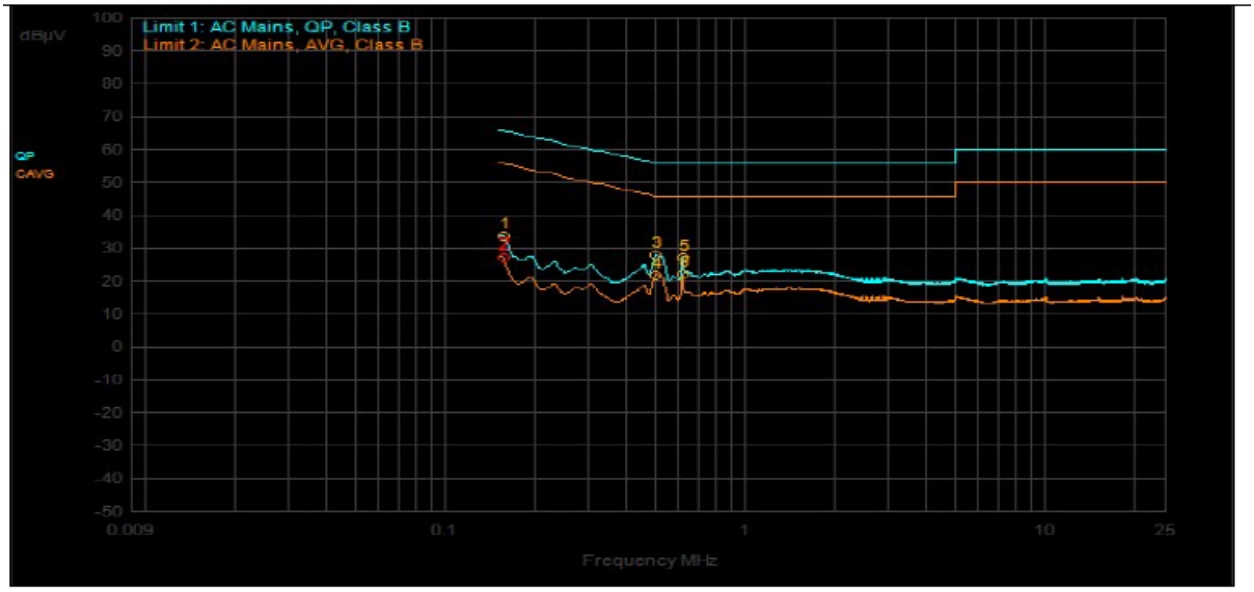
See Section 2.2 for directional gain calculation.

Results

The EUT complied with the specification.

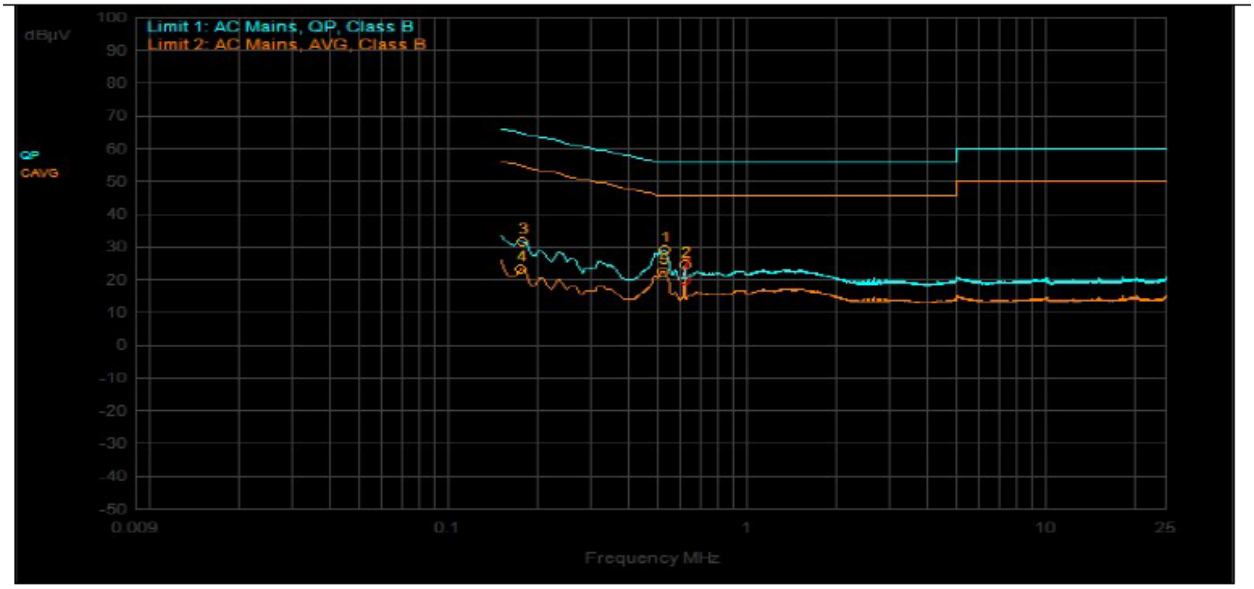
5.2 §15.207 Conducted Emissions at Mains Ports Data

5.2.1 Line



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.	P/F
MU	MHz	dB	dB	dB	Type	dBµV	dBµV	dBµV	dB	dBµV	dB	P/F
3	501,000kHz	9.59	0.00		QPeak	18.30	27.89	56.00	-28.11			
5	615,000kHz	9.61	0.00		QPeak	17.30	26.91	56.00	-29.09			
1	156,000kHz	9.52	0.00		QPeak	24.17	33.69	65.67	-31.99			
2	156,000kHz	9.52	0.00		C_AVG	17.49	27.01			55.67	-28.66	
4	498,000kHz	9.59	0.00		C_AVG	12.22	21.81			46.03	-24.23	
8	615,000kHz	9.61	0.00		C_AVG	12.55	22.16			46.00	-23.84	

5.2.2 Neutral



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.	P/F
MU	MHz	dB	dB	dB	Type	dBµV	dBµV	dBµV	dB	dBµV	dB	P/F
1	525,000kHz	9.52	0.00		QPeak	19.47	28.99	56.00	-27.01			
2	615,000kHz	9.50	0.00		QPeak	15.04	24.54	56.00	-31.46			
3	177,000kHz	9.51	0.00		QPeak	22.06	31.57	64.63	-33.05			
4	174,000kHz	9.51	0.00		C_AVG	13.81	23.32			54.77	-31.45	
5	522,000kHz	9.52	0.00		C_AVG	13.04	22.56			46.00	-23.44	
7	615,000kHz	9.50	0.00		C_AVG	10.33	19.83			46.00	-26.17	

Result

The EUT complied with the specification limit.

5.3 §15.407(a) 26 dB Emissions Bandwidth

All chains were measured under the guidance of KDB 789033 Section II.C. and KDB 662911 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)
OFDM 20	5260	16.8	22.2
OFDM 20	5280	16.8	21.8
OFDM 20	5320	16.8	21.9
VHT 20	5260	18.1	23.1
VHT 20	5280	18.1	23.3
VHT 20	5320	18.1	23.1
VHT 40	5270	36.8	43.8
VHT 40	5310	36.5	52.3
VHT 80	5290	76.5	101.5

5.3.2 UNII-2C

Bandwidth	Frequency (MHz)	99% Bandwidth (MHz)	Emissions 26 dB Bandwidth (MHz)
OFDM 20	5500	17.1	24.9
OFDM 20	5600	17.1	21.9
OFDM 20	5720	17.1	22.8
VHT 20	5500	18.0	24.0
VHT 20	5600	18.0	23.0
VHT 20	5720	18.0	24.2
VHT 40	5510	36.8	47.3
VHT 40	5590	36.5	44.3
VHT 40	5710	36.5	49.5
VHT 80	5530	76.5	102.5
VHT 80	5610	76.5	92.5
VHT 80	5690	76.5	106.0

Result

All chains were tested and the highest bandwidth per chain is reported above. 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 662911 D01. Please see associated annex for details on instrument settings.

See Section 2.2 for directional gain calculation.

The maximum average RF conducted output power measured for this device was 19.87 dBm or 97.05 mW. The limit is 24 dBm or 250 mW (adjusted limit of 20 dBm or 100 mW) when using antennas with 6 dBi or less gain. The antenna has a maximum gain of 10 dBi.

5.4.1 UNII-2A

Nss>1

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Total Summed Output Power* (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
OFDM 20	5260	Mcs0_Nss2	34	18.73	10	28.73	30	-1.27
OFDM 20	5280	Mcs0_Nss2	34	18.79	10	28.79	30	-1.21
OFDM 20	5320	Mcs0_Nss2	34	18.66	10	28.66	30	-1.34
VHT 20	5260	Mcs0_Nss2	35	19.10	10	29.10	30	-0.90
VHT 20	5280	Mcs0_Nss2	36	19.67	10	29.67	30	-0.33
VHT 20	5320	Mcs0_Nss2	36	19.51	10	29.51	30	-0.49
VHT 40	5270	Mcs0_Nss2	36	19.86	10	29.86	30	-0.14
VHT 40	5310	Mcs0_Nss2	36	19.67	10	29.67	30	-0.33
VHT 80	5290	Mcs0_Nss2	36	19.30	10	29.30	30	-0.70

Nss=1

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Total Summed Output Power* (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
OFDM 20	5260	Mcs0_Nss1	20	11.73	10	21.73	30	-8.27
OFDM 20	5280	Mcs0_Nss1	20	11.79	10	21.79	30	-8.21
OFDM 20	5320	Mcs0_Nss1	20	11.66	10	21.66	30	-8.34
VHT 20	5260	Mcs0_Nss1	21	12.10	10	22.10	30	-7.9
VHT 20	5280	Mcs0_Nss1	22	12.67	10	22.67	30	-7.33
VHT 20	5320	Mcs0_Nss1	22	12.51	10	22.51	30	-7.49
VHT 40	5270	Mcs0_Nss1	26	14.86	10	24.86	30	-5.14
VHT 40	5310	Mcs0_Nss1	28	15.67	10	25.67	30	-4.33
VHT 80	5290	Mcs0_Nss1	36	19.30	10	29.30	30	-0.7

5.4.2 UNII-2C

Nss>1

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Total Summed Output Power* (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
OFDM 20	5500	Mcs0_Nss2	35	18.99	10	28.99	30	-1.01
OFDM 20	5600	Mcs0_Nss2	34	18.68	10	28.68	30	-1.32
OFDM 20	5720	Mcs0_Nss2	34	18.88	10	28.88	30	-1.12
VHT 20	5500	Mcs0_Nss2	36	19.34	10	29.34	30	-0.66
VHT 20	5600	Mcs0_Nss2	35	19.06	10	29.06	30	-0.94
VHT 20	5720	Mcs0_Nss2	35	19.28	10	29.28	30	-0.72
VHT 40	5510	Mcs0_Nss2	36	19.63	10	29.63	30	-0.37
VHT 40	5590	Mcs0_Nss2	35	19.47	10	29.47	30	-0.53
VHT 40	5710	Mcs0_Nss2	35	19.54	10	29.54	30	-0.46
VHT 80	5530	Mcs0_Nss2	37	19.38	10	29.38	30	-0.62
VHT 80	5610	Mcs0_Nss2	37	19.74	10	29.74	30	-0.26
VHT 80	5690	Mcs0_Nss2	37	19.87	10	29.87	30	-0.13

Nss=1

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Total Summed Output Power* (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
OFDM 20	5500	Mcs0_Nss1	21	11.99	10	21.99	30	-8.01
OFDM 20	5600	Mcs0_Nss1	20	11.68	10	21.68	30	-8.32
OFDM 20	5720	Mcs0_Nss1	20	11.88	10	21.88	30	-8.12
VHT 20	5500	Mcs0_Nss1	22	12.34	10	22.34	30	-7.66
VHT 20	5600	Mcs0_Nss1	21	12.06	10	22.06	30	-7.94
VHT 20	5720	Mcs0_Nss1	21	12.28	10	22.28	30	-7.72
VHT 40	5510	Mcs0_Nss1	28	15.63	10	25.63	30	-4.37
VHT 40	5590	Mcs0_Nss1	25	14.47	10	24.47	30	-5.53
VHT 40	5710	Mcs0_Nss1	27	15.54	10	25.54	30	-4.46
VHT 80	5530	Mcs0_Nss1	35	18.38	10	28.38	30	-1.62
VHT 80	5610	Mcs0_Nss1	33	17.74	10	27.74	30	-2.26
VHT 80	5690	Mcs0_Nss1	33	17.87	10	27.87	30	-2.13

Result

In the configuration tested, the maximum average RF output power was less than 0.250 watt (adjusted limit of 0.100 watt); therefore, the EUT complied with the requirements of the specification.

* Gated EIRP shown in the Annex is the conducted measurement.

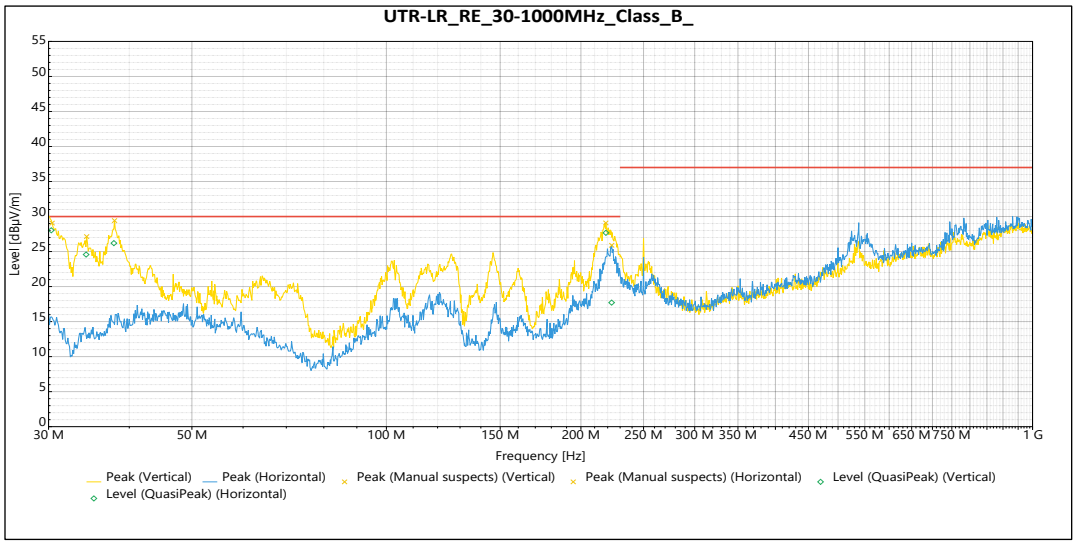
5.5 §15.407(b) Spurious Emissions

5.5.1 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 (dBi) + Cable Loss (dB) - Pre-Amplifier Gain (dB), and is added to the Receiver reading.

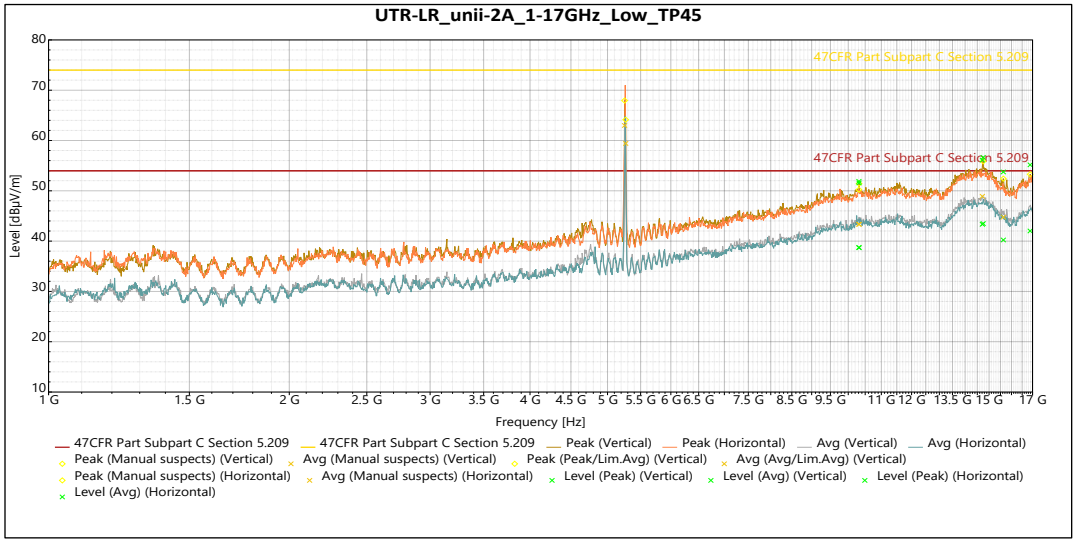
5.5.2 UNII-2A



QuasiPeak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin	Azimuth (°)	Height	Pol.	Correction (dB)
30.29 MHz	28.04	30.0	-1.96	115	1.05	Vertical	-17.22
34.30 MHz	24.57	30.0	-5.43	185	1.48	Vertical	-16.13
37.87 MHz	26.20	30.00	-3.80	218	1.02	Vertical	-14.13
218.64 MHz	27.67	30.0	-2.33	167	1.13	Vertical	-14.10
223.14 MHz	17.71	30.0	-12.29	290	2.97	Horizontal	-13.78

Table 5: Radiated Emissions 30 – 1000 MHz



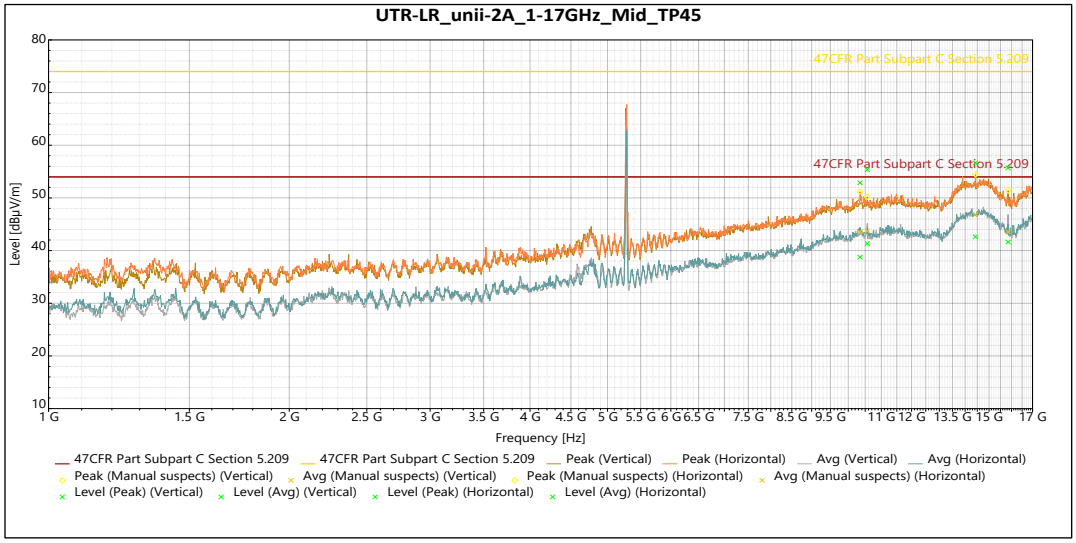
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
14.71 GHz	56.12	74.0	-17.88	320	3.798	Vertical	11.89
14.75 GHz	56.65	74.0	-17.35	59	3.802	Vertical	11.92
15.63 GHz	53.75	74.0	-20.25	47	3.307	Vertical	9.12
16.88 GHZ	55.16	74.0	-18.84	286	3.802	Vertical	11.93
10.31 GHz	51.88	74.0	-22.12	67	3.798	Horizontal	6.73

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
14.71 GHz	43.34	54.0	-10.66	320	3.798	Vertical	11.89
14.75 GHz	43.49	54.0	-10.51	59	3.802	Vertical	11.92
15.63 GHz	40.23	54.0	-13.77	47	3.307	Vertical	9.12
16.88 GHZ	42.02	54.0	-11.98	286	3.802	Vertical	11.93
10.31 GHz	38.76	54.0	-15.24	67	3.798	Horizontal	6.73

Table 6: Radiated Emissions 1 – 17 GHz at the Lowest Frequency



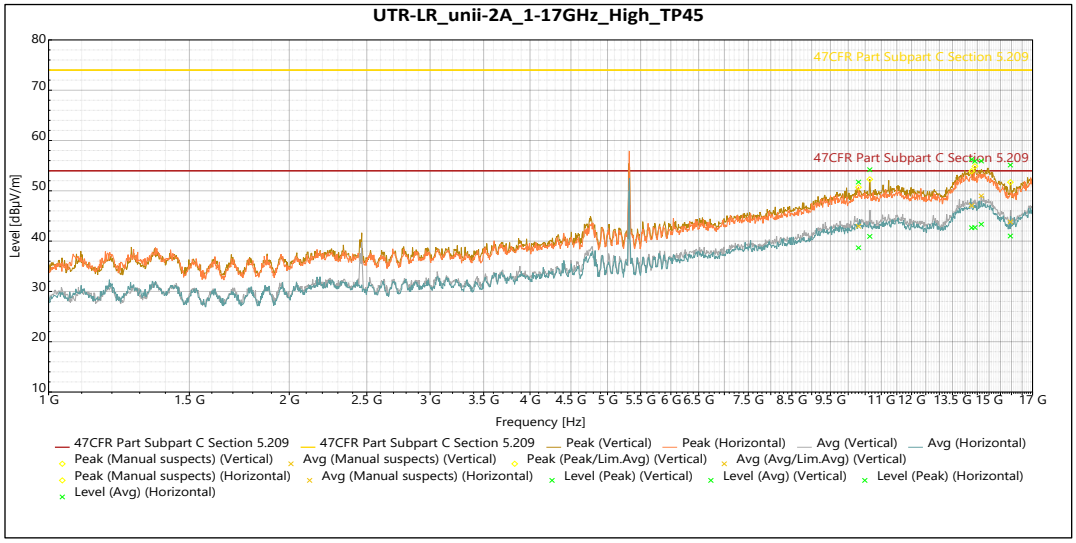
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.56 GHz	55.37	74.0	-18.63	276	3.154	Vertical	7.06
15.85 GHz	55.71	74.0	-18.29	286	2.815	Vertical	7.95
10.34 GHz	52.88	74.0	-21.12	208	3.307	Horizontal	6.70
14.42 GHz	56.65	74.0	-17.35	48	3.802	Horizontal	11.14

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.56 GHz	41.33	54.0	-12.67	276	3.154	Vertical	7.06
15.85 GHz	41.93	54.0	-12.37	286	2.815	Vertical	7.95
10.34 GHz	38.75	54.0	-15.25	208	3.307	Horizontal	6.70
14.42 GHz	42.63	54.0	-11.37	48	3.802	Horizontal	11.14

Table 7: Radiated Emissions 1 – 17 GHz at the Middle Frequency



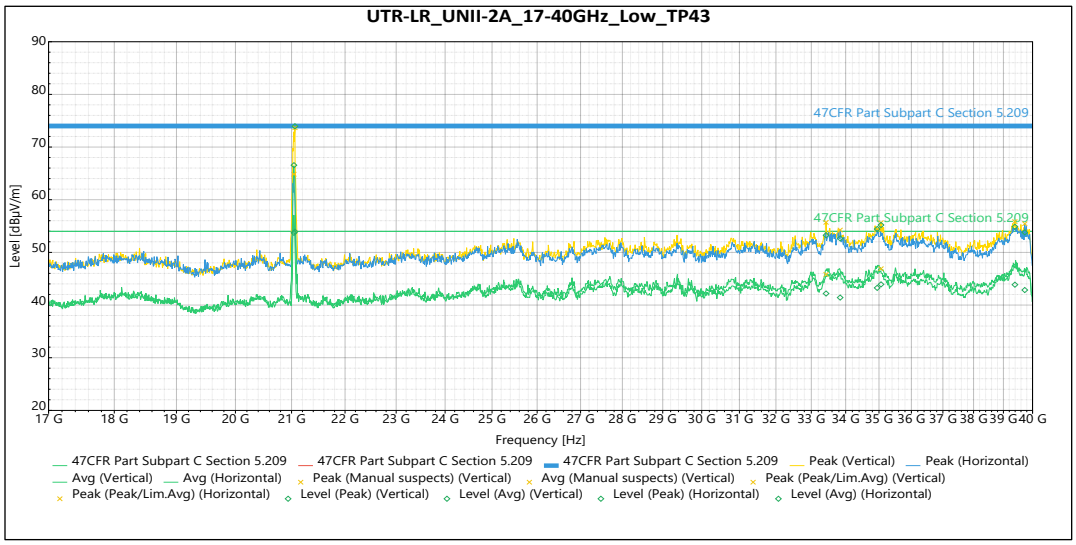
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.64 GHz	54.19	74.0	-19.81	267	1.638	Vertical	7.27
14.40 GHz	55.87	74.0	-18.13	290	4	Vertical	11.19
14.67 GHz	55.93	74.0	-17.07	215	3.311	Vertical	12.07
15.95 GHz	55.12	74.0	-18.88	267	3.307	Vertical	8.20
10.30 GHz	51.75	74.0	-22.25	248	3.802	Horizontal	6.68
14.27 GHz	56.34	74.0	-17.76	318	3.311	Horizontal	11.15

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
10.64 GHz	40.94	54.0	-13.06	267	1.638	Vertical	7.27
14.40 GHz	42.71	54.0	-11.29	290	4	Vertical	11.19
14.67 GHz	43.35	54.0	-10.65	215	3.311	Vertical	12.07
15.95 GHz	41.02	54.0	-12.98	267	3.307	Vertical	8.20
10.30 GHz	38.67	54.0	-15.33	248	3.802	Horizontal	6.68
14.27 GHz	42.56	54.0	-11.34	318	3.311	Horizontal	11.15

Table 8: Radiated Emissions 1 – 17 GHz at the Highest Frequency



Peak

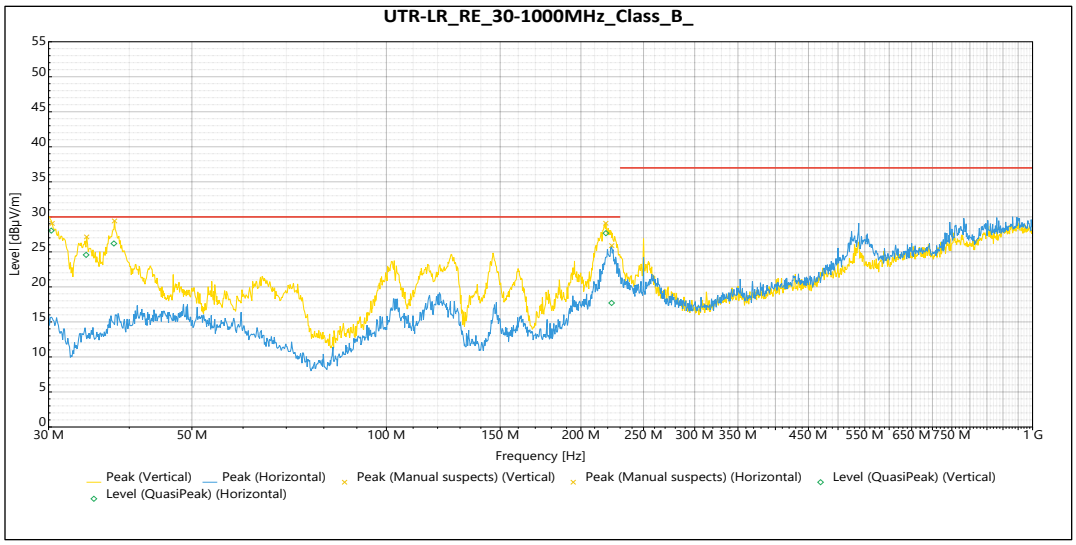
Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
21.06 GHz	73.96	74.0	-0.04	28	Vertical	-0.31
33.43 GHz	53.27	74.0	-20.73	5	Vertical	3.63
35.06 GHz	55.21	74.0	-18.79	152	Vertical	5.43
39.39 GHz	54.87	74.0	-19.13	60	Vertical	3.91
21.04 GHz	66.56	74.0	-7.44	168	Horizontal	-0.54
33.84 GHz	52.66	74.0	-21.34	219	Horizontal	4.17
34.95 GHz	54.44	74.0	-19.56	309	Horizontal	5.65
39.73 GHz	53.81	74.0	-20.19	302	Horizontal	3.32

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
21.06 GHz	53.94	54.0	-0.06	28	Vertical	-0.31
33.43 GHz	42.19	54.0	11.81	5	Vertical	3.63
35.06 GHz	43.93	54.0	-10.07	152	Vertical	5.43
39.39 GHz	43.87	54.0	-10.13	60	Vertical	3.91
21.04 GHz	53.71	54.0	-0.29	168	Horizontal	-0.54
33.84 GHz	41.43	54.0	-12.57	219	Horizontal	4.17
34.95 GHz	43.26	54.0	-10.74	309	Horizontal	5.65
39.73 GHz	42.86	54.0	-11.14	302	Horizontal	3.32

Table 9: Radiated Emissions 17 – 26 GHz at the Lowest Frequency (worse case)

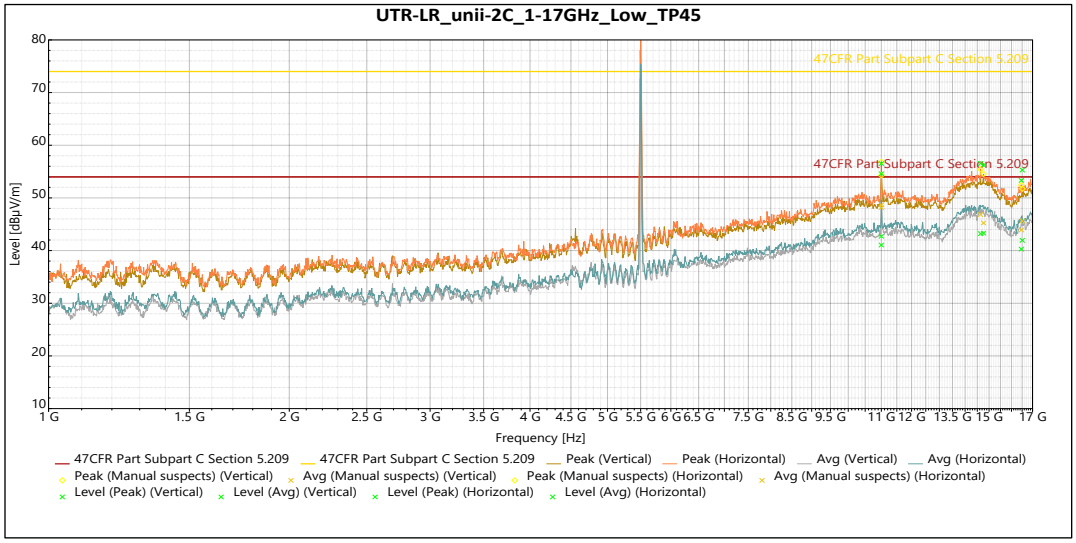
5.5.3 UNII-2C



QuasiPeak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin	Azimuth (°)	Height	Pol.	Correction (dB)
30.29 MHz	28.04	30.0	-1.96	115	1.05	Vertical	-17.22
34.30 MHz	24.57	30.0	-5.43	185	1.48	Vertical	-16.13
37.87 MHz	26.20	30.00	-3.80	218	1.02	Vertical	-14.13
218.64 MHz	27.67	30.0	-2.33	167	1.13	Vertical	-14.10
223.14 MHz	17.71	30.0	-12.29	290	2.97	Horizontal	-13.78

Table 10: Radiated Emissions 30 – 1000 MHz



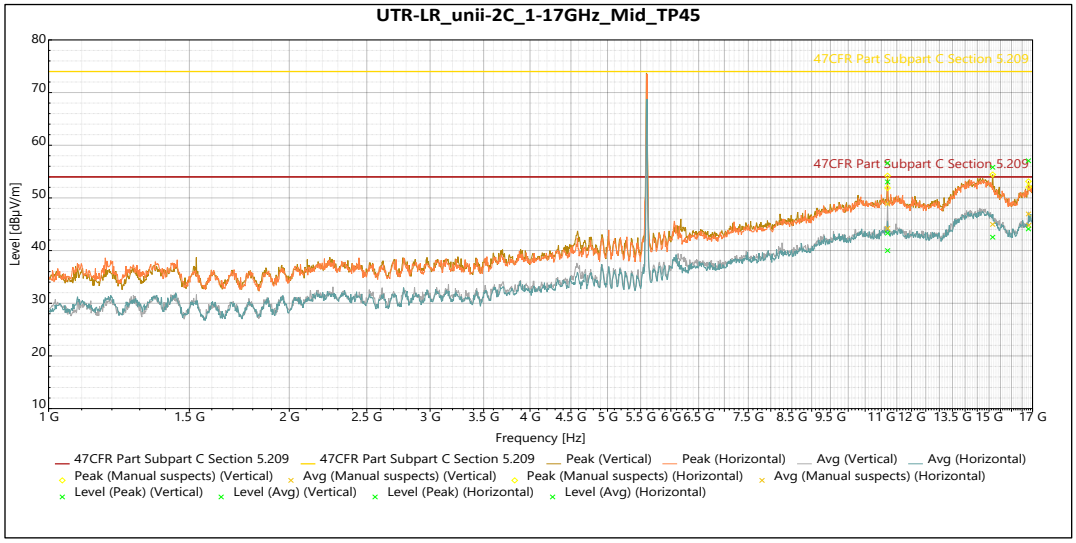
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
11.00 GHz	54.59	74.0	-19.41	52	3.307	Vertical	7.34
14.76 GHz	56.23	74.0	-17.77	190	3.798	Vertical	11.95
16.51 GHz	55.29	74.0	-18.71	277	2.82	Vertical	10.43
11.00 GHz	56.53	74.0	-17.47	282	3.311	Horizontal	7.34
14.64 GHz	56.55	74.0	-17.45	15	3.798	Horizontal	11.86
16.46 GHz	53.33	74.0	-20.67	60	2.816	Horizontal	10.34

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
11.00 GHz	41.05	54.0	-12.95	52	3.307	Vertical	7.34
14.76 GHz	43.31	54.0	-10.69	190	3.798	Vertical	11.95
16.51 GHz	41.94	54.0	-12.06	277	2.82	Vertical	10.43
11.00 GHz	42.72	54.0	-11.28	282	3.311	Horizontal	7.34
14.64 GHz	43.22	54.0	-10.78	15	3.798	Horizontal	11.86
16.46 GHz	40.29	54.0	-13.71	60	2.816	Horizontal	10.34

Table 11: Radiated Emissions 1 – 17 GHz at the Lowest Frequency



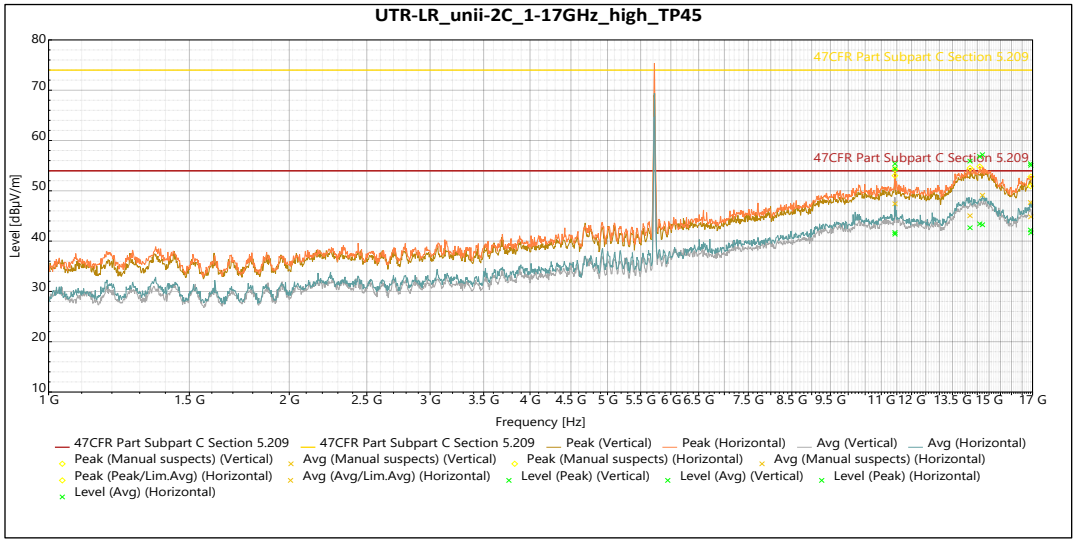
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
11.20 GHz	56.62	74.0	-17.38	276	1.638	Vertical	7.22
15.16 GHz	55.82	74.0	-18.18	348	3.652	Vertical	11.02
16.80 GHz	57.06	74.0	-16.94	126	3.307	Vertical	11.41
11.20 GHz	53.05	74.0	-20.95	304	3.802	Horizontal	7.22

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
11.20 GHz	43.30	54.0	-10.70	276	1.638	Vertical	7.22
15.16 GHz	42.54	54.0	-11.46	348	3.652	Vertical	11.02
16.80 GHz	44.11	54.0	-9.89	126	3.307	Vertical	11.41
11.20 GHz	40.00	54.0	-14.00	304	3.802	Horizontal	7.22

Table 12: Radiated Emissions 1 – 17 GHz at the Middle Frequency



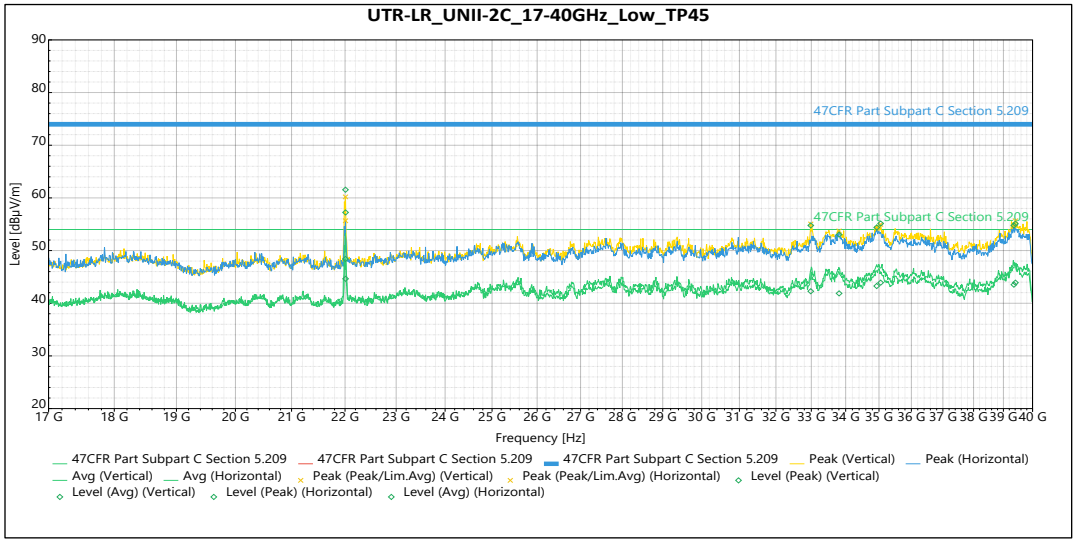
Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
11.44 GHz	54.38	74.0	-19.62	89	3.307	Vertical	7.73
14.20 GHz	55.91	74.0	-18.09	86	3.798	Vertical	11.17
16.92 GHz	55.07	74.0	-18.93	208	3.384	Vertical	12.35
11.44 GHz	55.38	74.0	-18.62	334	1.643	Horizontal	7.71
14.60 GHz	56.82	74.0	-17.18	211	4	Horizontal	11.86
14.72 GHz	57.18	74.0	-16.82	63	3.307	Horizontal	11.88
16.90 GHz	55.40	74.0	-18.60	129	3.311	Horizontal	12.16

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
11.44 GHz	41.38	54.0	-12.62	89	3.307	Vertical	7.73
14.20 GHz	42.67	54.0	-11.33	86	3.798	Vertical	11.17
16.92 GHz	41.65	54.0	-12.35	208	3.384	Vertical	12.35
11.44 GHz	41.71	54.0	-12.29	334	1.643	Horizontal	7.71
14.60 GHz	43.43	54.0	-10.57	211	4	Horizontal	11.86
14.72 GHz	43.25	54.0	-10.75	63	3.307	Horizontal	11.88
16.90 GHz	42.22	54.0	-11.78	129	3.311	Horizontal	12.16

Table 13: Radiated Emissions 1 – 17 GHz at the Highest Frequency



Peak

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
22.01 GHz	61.55	74.0	-12.15	248	Vertical	-0.15
32.98 GHz	54.78	74.0	-19.22	132	Vertical	2.35
35.05 GHz	55.14	74.0	-16.86	224	Vertical	5.49
39.41 GHz	55.09	74.0	-18.91	51	Vertical	3.94
22.01 GHz	57.24	74.0	-16.76	282	Horizontal	-0.15
33.81 GHz	53.04	74.0	-20.96	230	Horizontal	4.55
34.93 GHz	54.38	74.0	-19.62	237	Horizontal	5.62
39.36 GHz	54.77	74.0	-19.23	111	Horizontal	3.92

Avg

Frequency	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
22.01 GHz	48.41	54.0	-5.59	248	Vertical	-0.15
32.98 GHz	42.28	54.0	-11.72	132	Vertical	2.35
35.05 GHz	43.90	54.0	-10.10	224	Vertical	5.49
39.41 GHz	43.91	54.0	-10.09	51	Vertical	3.94
22.01 GHz	44.64	54.0	-9.36	282	Horizontal	-0.15
33.81 GHz	41.87	54.0	-12.13	230	Horizontal	4.55
34.93 GHz	43.27	54.0	-10.73	237	Horizontal	5.62
39.36 GHz	43.52	54.0	-10.48	111	Horizontal	3.92

Table 14: Radiated Emissions 17 – 26 GHz at the Lowest Frequency (worse case)

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 662911 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. Results of this testing are summarized. With a 6 dBi antenna, the conducted limit for power spectral density is 11 dBm.

See Section 2.2 for directional gain calculation.

Results of this testing are summarized.

5.6.1 UNII-2A

Nss>1

Modulation (BW)	Freq. (MHz)	Data Rate	TP Setting	Total Sum PSD EIRP (dBm)	Antenna Gain (dBi)	Limit (dBm)	Margin (dBm)
OFDM 20	5260	Mcs0_Nss2	34	6.62	10	7	-0.38
OFDM 20	5280	Mcs0_Nss2	34	6.57	10	7	-0.43
OFDM 20	5320	Mcs0_Nss2	34	6.42	10	7	-0.58
VHT 20	5260	Mcs0_Nss2	35	6.45	10	7	-0.55
VHT 20	5280	Mcs0_Nss2	36	6.93	10	7	-0.07
VHT 20	5320	Mcs0_Nss2	36	6.83	10	7	-0.17
VHT 40	5270	Mcs0_Nss2	36	4.09	10	7	-2.91
VHT 40	5310	Mcs0_Nss2	36	3.96	10	7	-3.04
VHT 80	5290	Mcs0_Nss2	36	-0.27	10	7	-7.27

Nss=1

Modulation (BW)	Freq. (MHz)	Data Rate	TP Setting	Total Sum PSD EIRP (dBm)	Antenna Gain (dBi)	Limit (dBm)	Margin (dBm)
OFDM 20	5260	Mcs0_Nss1	20	-0.38	13.01	-0.01	-0.37
OFDM 20	5280	Mcs0_Nss1	20	-0.43	13.01	-0.01	-0.42
OFDM 20	5320	Mcs0_Nss1	20	-0.58	13.01	-0.01	-0.57
VHT 20	5260	Mcs0_Nss1	21	-0.55	13.01	-0.01	-0.54
VHT 20	5280	Mcs0_Nss1	22	-0.07	13.01	-0.01	-0.06
VHT 20	5320	Mcs0_Nss1	22	-0.17	13.01	-0.01	-0.16
VHT 40	5270	Mcs0_Nss1	26	-0.91	13.01	-0.01	-0.90
VHT 40	5310	Mcs0_Nss1	28	-0.04	13.01	-0.01	-0.03
VHT 80	5290	Mcs0_Nss1	36	-0.27	13.01	-0.01	-0.26

5.6.2 UNII-2C

Nss>1

Modulation (BW)	Freq. (MHz)	Data Rate	TP Setting	Total Sum PSD EIRP (dBm)	Antenna Gain (dBi)	Limit (dBm)	Margin (dBm)
OFDM 20	5500	Mcs0_Nss2	35	6.80	10	7	-0.2
OFDM 20	5600	Mcs0_Nss2	34	6.57	10	7	-0.43
OFDM 20	5720	Mcs0_Nss2	34	6.69	10	7	-0.31
VHT 20	5500	Mcs0_Nss2	36	6.80	10	7	-0.2
VHT 20	5600	Mcs0_Nss2	35	6.53	10	7	-0.47
VHT 20	5720	Mcs0_Nss2	35	6.74	10	7	-0.26
VHT 40	5510	Mcs0_Nss2	36	3.92	10	7	-3.08
VHT 40	5590	Mcs0_Nss2	35	4.18	10	7	-2.82
VHT 40	5710	Mcs0_Nss2	35	3.73	10	7	-3.27
VHT 80	5530	Mcs0_Nss2	37	0.25	10	7	-6.75
VHT 80	5610	Mcs0_Nss2	37	1.43	10	7	-5.57
VHT 80	5690	Mcs0_Nss2	37	1.32	10	7	-5.68

Nss=1

Modulation (BW)	Freq. (MHz)	Data Rate	TP Setting	Total Sum PSD EIRP (dBm)	Antenna Gain (dBi)	Limit (dBm)	Margin (dBm)
OFDM 20	5500	Mcs0_Nss1	21	-0.20	13.01	-0.01	-0.19
OFDM 20	5600	Mcs0_Nss1	20	-0.43	13.01	-0.01	-0.42
OFDM 20	5720	Mcs0_Nss1	20	-0.31	13.01	-0.01	-0.3
VHT 20	5500	Mcs0_Nss1	22	-0.20	13.01	-0.01	-0.19
VHT 20	5600	Mcs0_Nss1	21	-0.47	13.01	-0.01	-0.46
VHT 20	5720	Mcs0_Nss1	21	-0.26	13.01	-0.01	-0.25
VHT 40	5510	Mcs0_Nss1	28	-0.08	13.01	-0.01	-0.07
VHT 40	5590	Mcs0_Nss1	25	-0.82	13.01	-0.01	-0.81
VHT 40	5710	Mcs0_Nss1	27	-0.27	13.01	-0.01	-0.26
VHT 80	5530	Mcs0_Nss1	35	-0.75	13.01	-0.01	-0.74
VHT 80	5610	Mcs0_Nss1	33	-0.57	13.01	-0.01	-0.56
VHT 80	5690	Mcs0_Nss1	33	-0.68	13.01	-0.01	-0.67

Result

The maximum average power spectral density was less than the limit of 11 dBm (adjusted limit of 7 dBm and -0.01 for Nss=1); 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	Integral Internal 10 dBi
Antenna used for test	Integral Internal 10 dBi
Operating mode	Master
If Client	N/A
Port used for testing	FJ21 and FJ22
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%
Antenna measurement technique	See note 1
Time of power-on cycle	144 Seconds
Detection threshold level	-54 dBm

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 Client Without 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

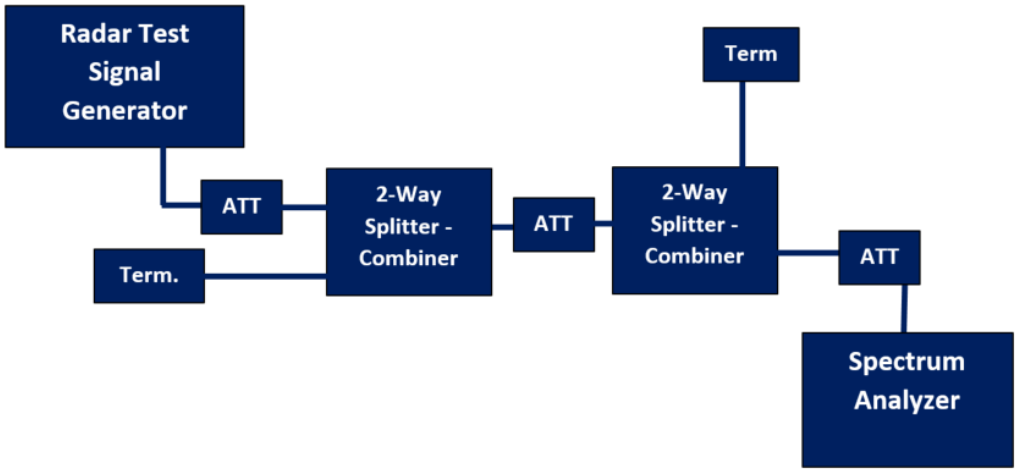


Figure 6: DFS injection at Master conducted setup

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.
Note 1: *Channel Move Time* and the *Channel Closing Transmission Time* should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. **Note 2:** The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate a *Channel* move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions. **Note 3:** During the *U-NII Detection Bandwidth* detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.	

Table 15: DFS Timing requirements

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.	

Table 16: DFS Detection Threshold

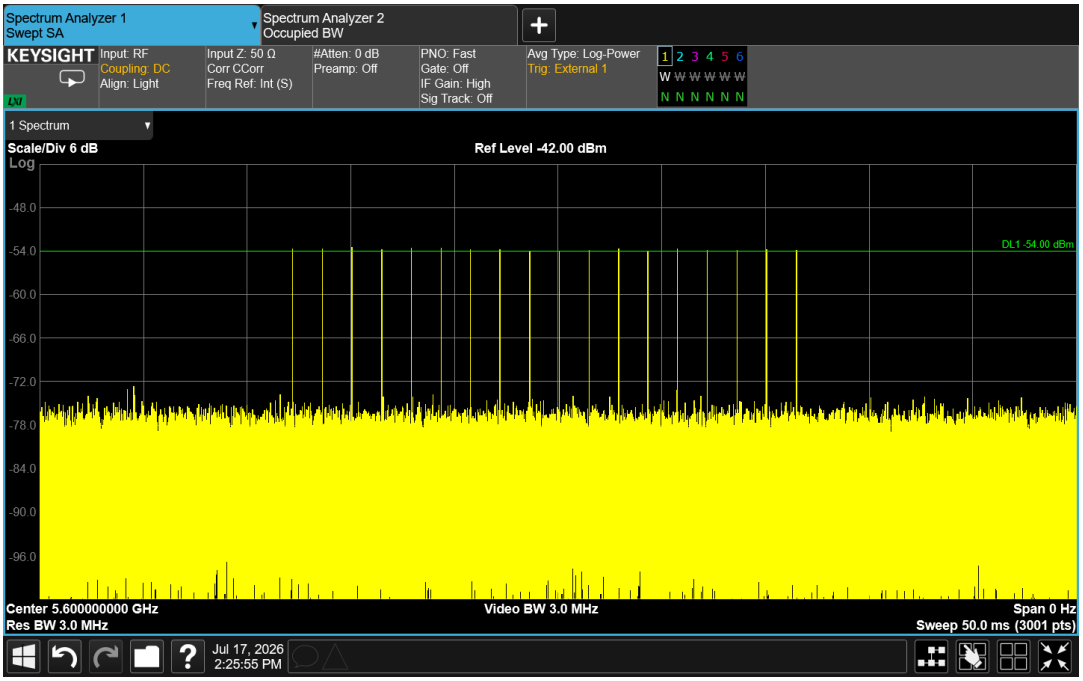
Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a	Roundup $\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot10^6}{PRI_{\mu sec}}\right)\right\}$	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 µsec, with a minimum increment of 1 µsec, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120
Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.					

Table 17: Short Pulse Radar Types

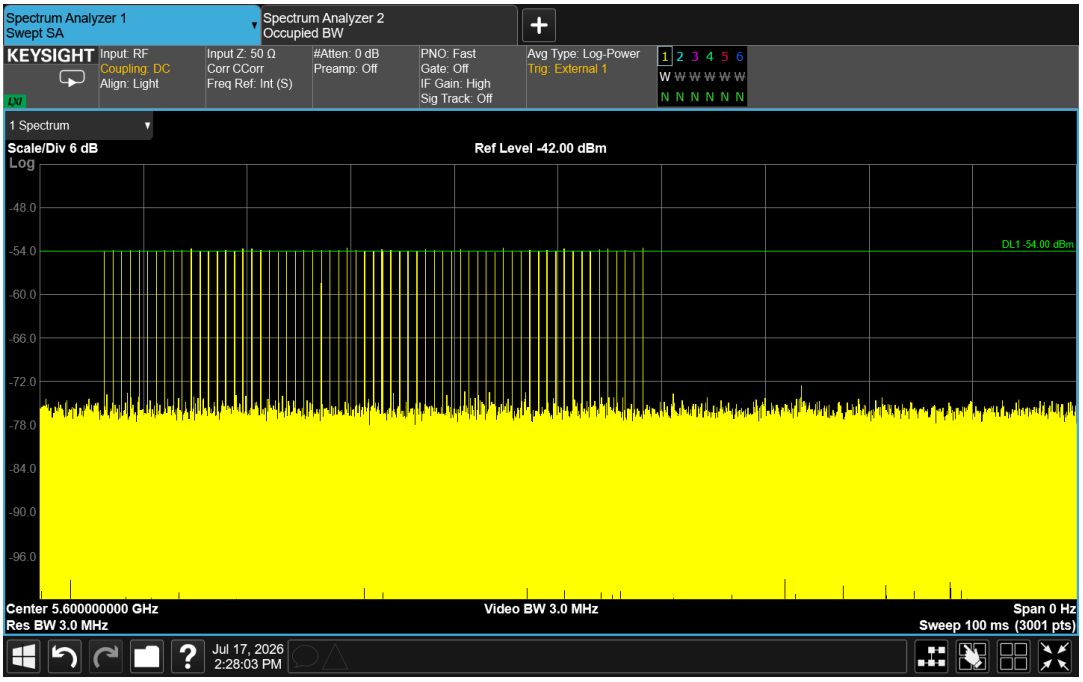
Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per *Burst*	Number of *Bursts*	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

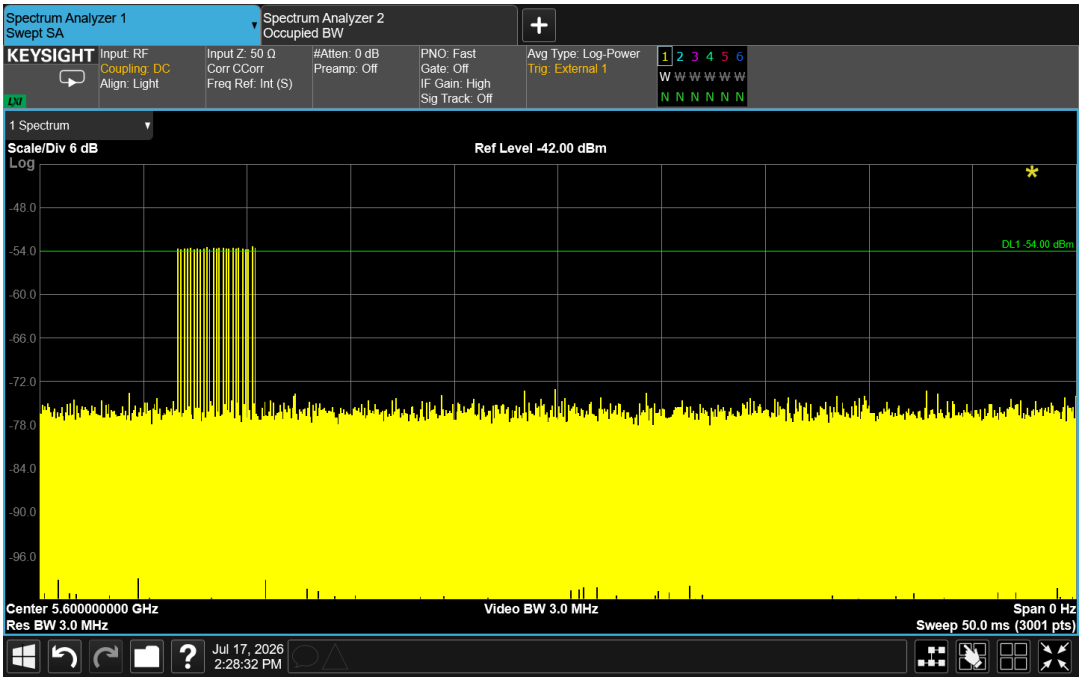
Table 18: Long Pulse Radar Types for In-service Monitoring



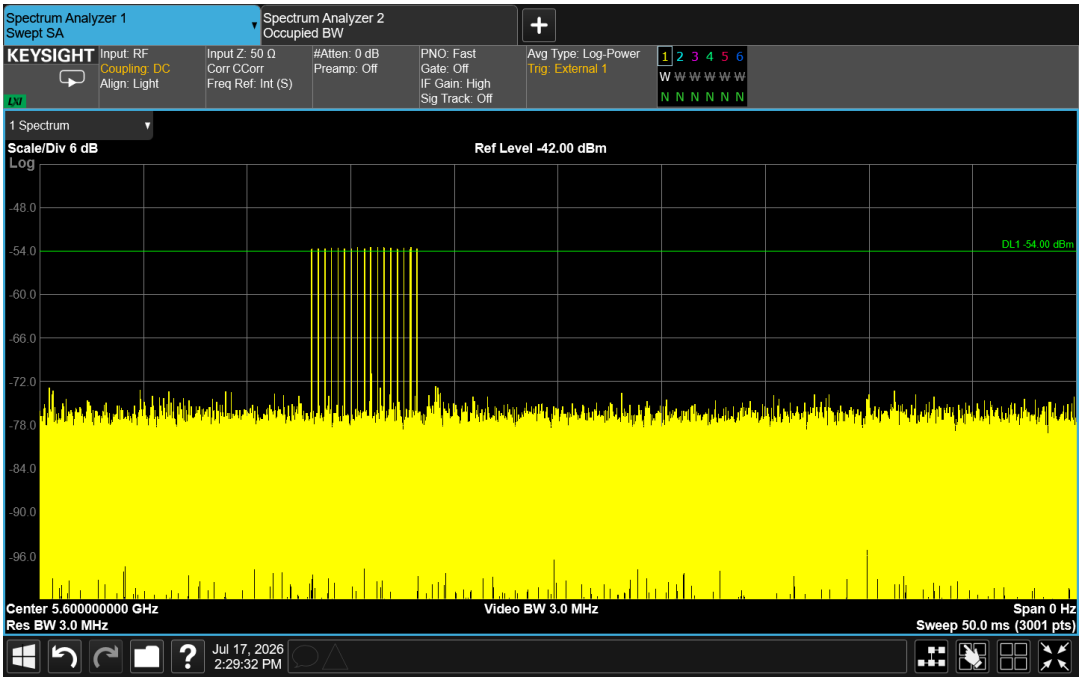
Plot 1: Radar Level 0



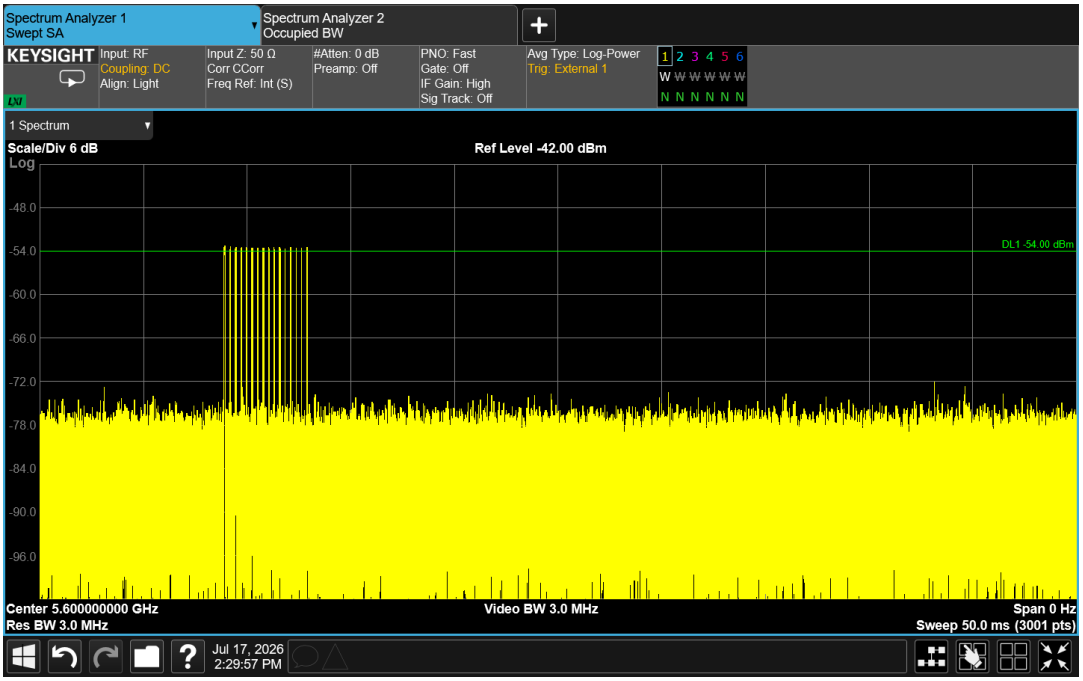
Plot 2: Radar Level 1



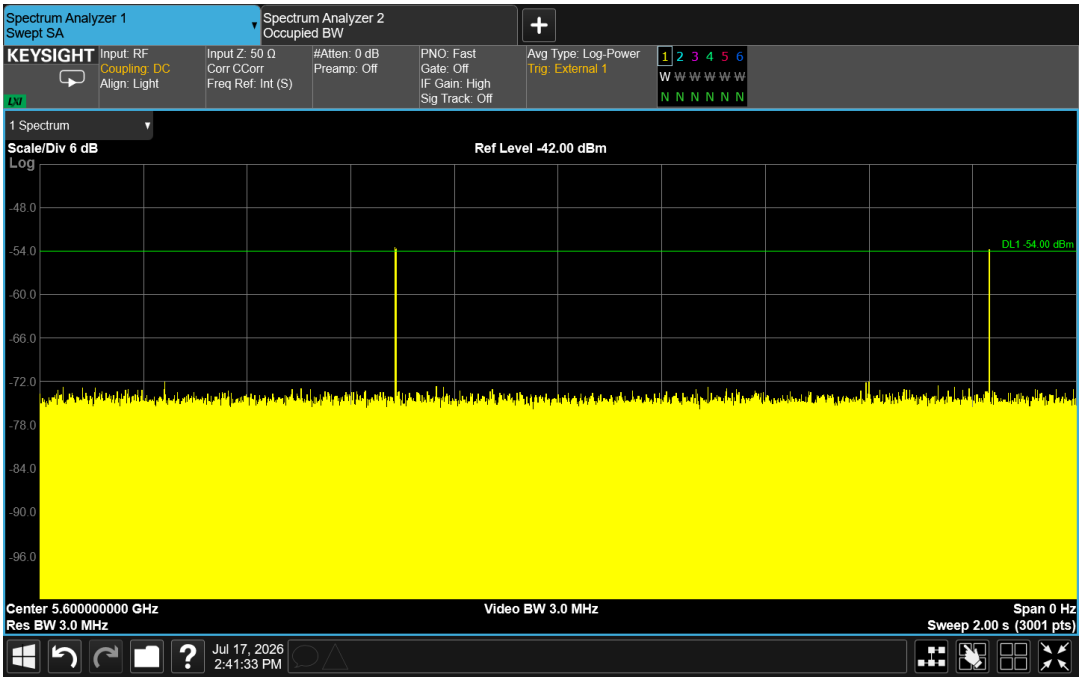
Plot 3: Radar Level 2



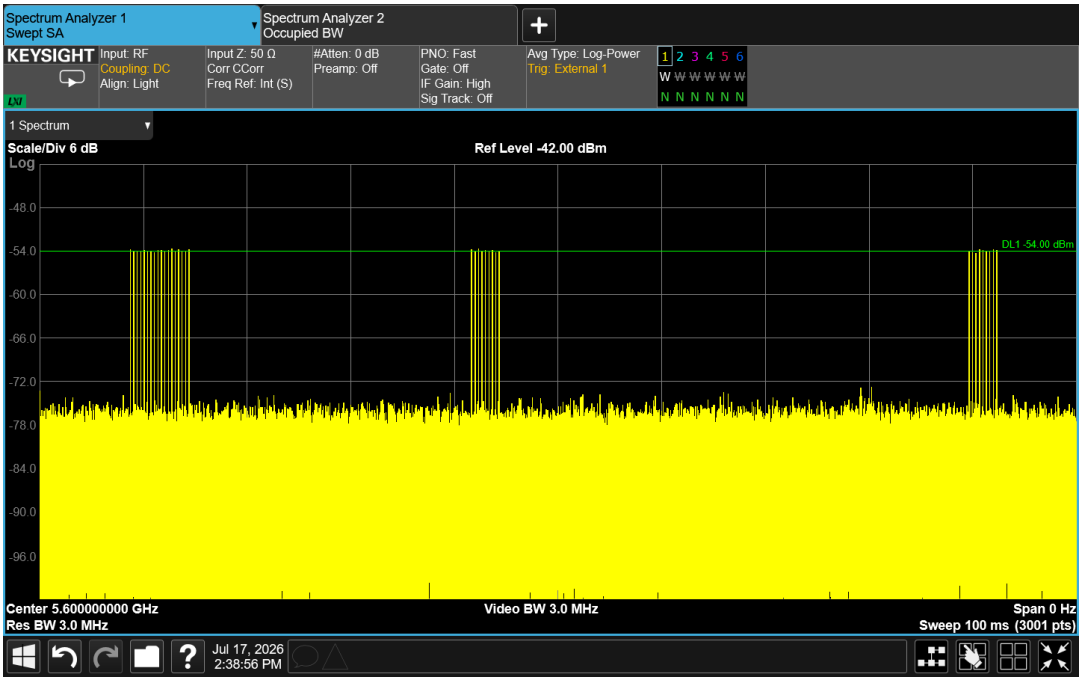
Plot 4: Radar Level 3



Plot 5: Radar Level 4



Plot 6: Radar Level 5



Plot 7: Radar Level 6

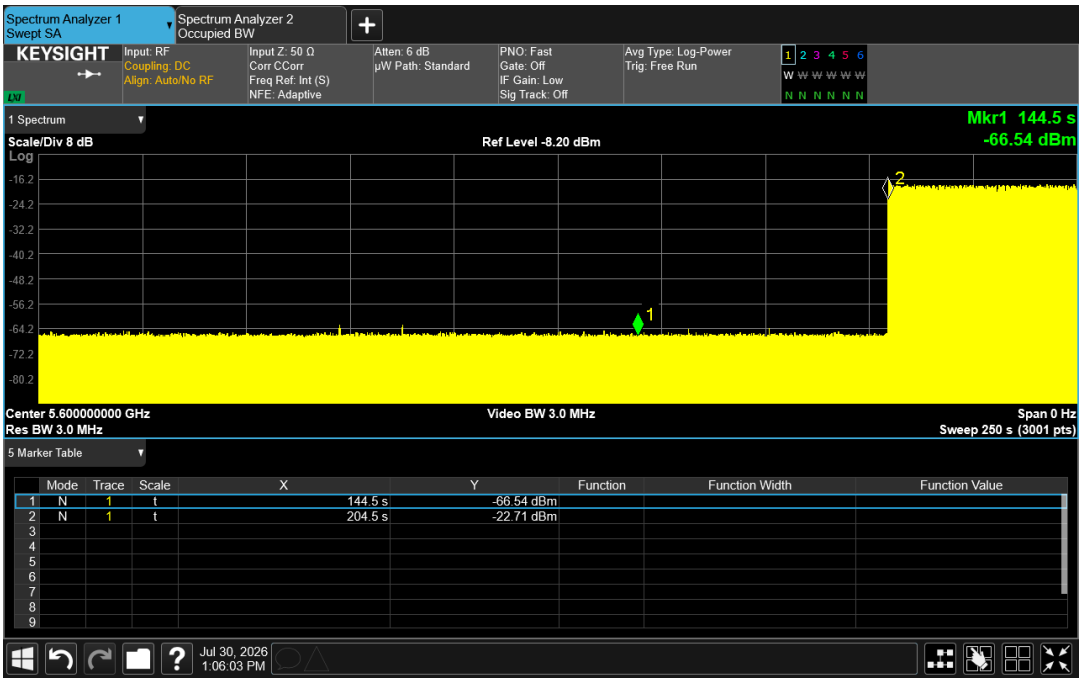
5.7.1 Channel Availability Check (CAC)

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.

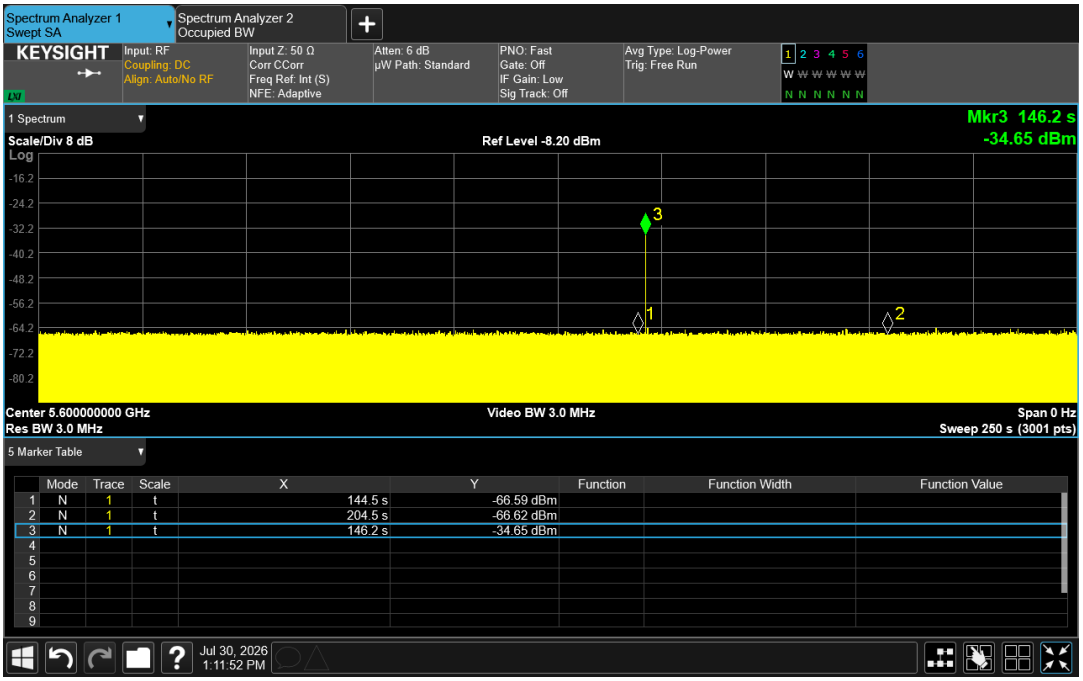
For radar burst at the beginning of the CAC. To verify successful radar detection on the selected channel during a period equal to the beginning of the CAC time, visual indication on the EUT of successful detection of the radar burst will be recorded and reported. Observation of the radar burst is show 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.

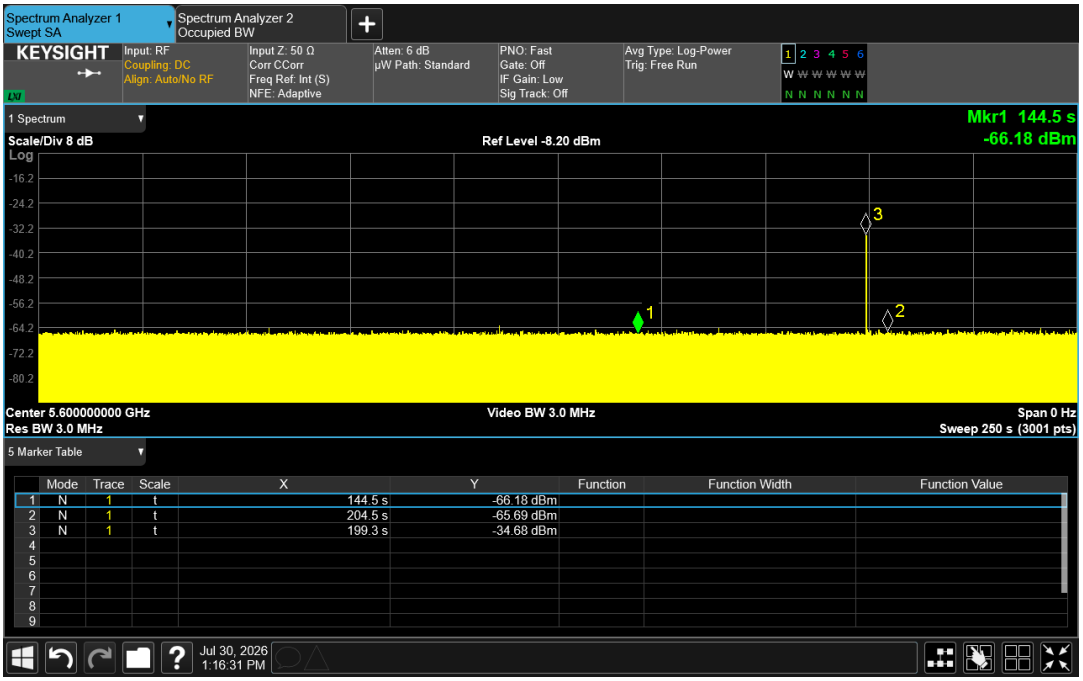
A spectrum analyzer is used as a monitor to verify that the EUT has vacated the channel within the channel closing transmission time and channel move time, and does not transmit on a channel during the non-occupancy period after the detection and channel move.



Plot 8: DUT Turn On



Plot 9: Beginning



Plot 10: 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

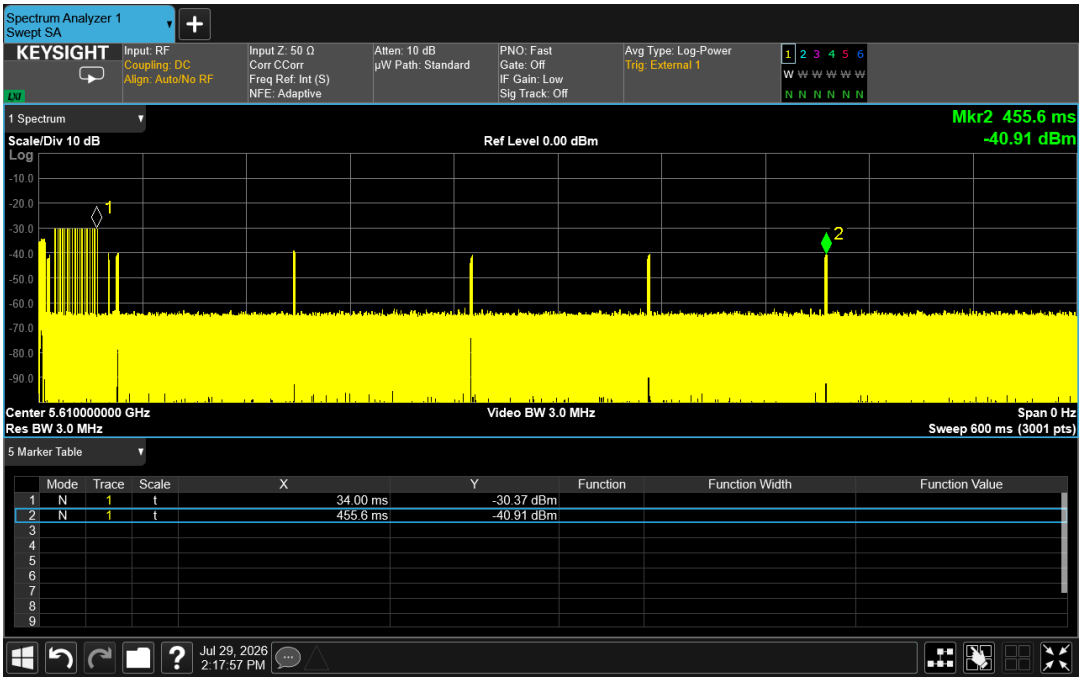
Verified during in-service monitoring: channel closing transmission time and channel move time. The transmissions were observed at the end of the radar burst on the operating channel for a duration of greater than 10 seconds. The transmissions were measured and recorded during the observation time. This 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.

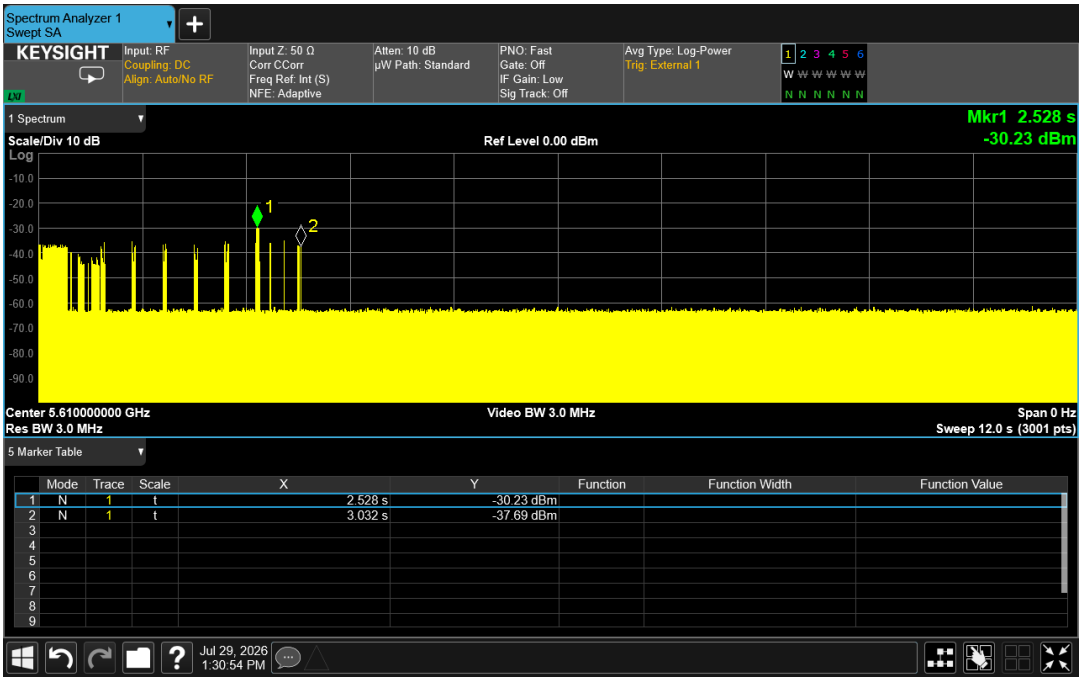
During the 30 minutes observation time, the EUT did not make any transmissions on a channel after a radar signal was detected.

Please see plots below.

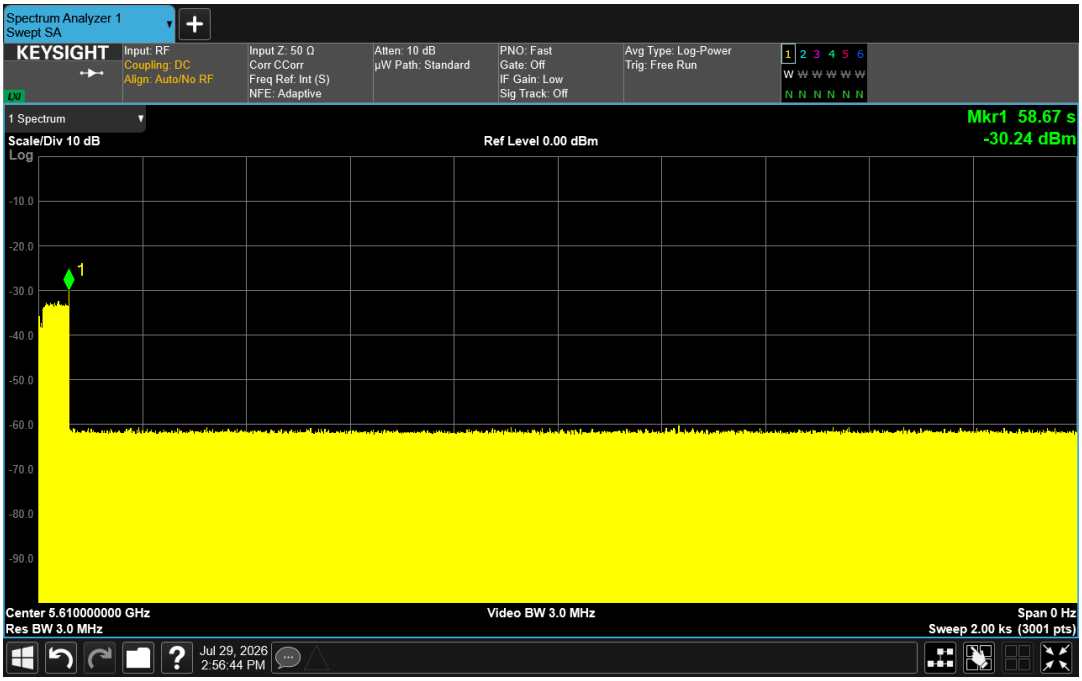
A spectrum analyzer is used as a monitor to verify that the EUT has vacated the channel within the channel closing transmission time and channel move time, and does not transmit on a channel during the non-occupancy period after the detection and channel move.



Plot 11: Channel Close



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
5595	1	1	1	1	1	1	1	1	1	1	100
5600	1	1	1	1	1	1	1	1	1	1	100
5605	1	1	1	1	1	1	1	1	1	1	100
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
5580	1	1	1	0	1	1	1	1	1	1	90
5590	1	1	1	1	1	1	1	1	1	1	100
5600	1	1	1	1	1	1	1	1	1	1	100
F_High 5610	0	1	1	1	1	1	1	1	1	1	90
Total Detection Percentage											96
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)**										**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
5590	1	1	1	1	1	1	1	1	1	1	100
5610	1	1	1	1	1	1	1	1	1	1	100
5630	0	1	1	1	1	1	1	1	1	1	90
F_High 5650	1	1	1	1	1	1	1	1	1	1	100
Total Detection Percentage											98
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	26	30	87%
Type 2	24	30	80%
Type 3	25	30	83%
Type 4	22	30	73%
Type 5	30	30	100%
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	95	1	558	y
2	89	1	598	y
3	70	1	758	y
4	86	1	618	y
5	68	1	778	n
6	89	1	598	y
7	74	1	718	y
8	57	1	938	y
9	58	1	918	y
10	83	1	638	y
11	58	1	918	y
12	57	1	938	y
13	58	1	918	y
14	86	1	618	y
15	92	1	578	y
16	72	1	738	y
17	98	1	538	y
18	72	1	738	y
19	61	1	878	n
20	61	1	878	y
21	72	1	738	n
22	70	1	758	y
23	59	1	898	y
24	86	1	618	y
25	59	1	898	y
26	59	1	898	y
27	58	1	918	y
28	62	1	858	y
29	57	1	938	n
30	62	1	858	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	24	2.6	215	y
2	23	1.3	220	y
3	24	4.4	179	y
4	26	2.3	196	y
5	26	1.2	207	y
6	26	2.5	177	y
7	23	1	180	y
8	28	3.6	220	y
9	29	2.9	180	y
10	26	2.2	182	n
11	27	3.5	178	y
12	27	1.1	202	y
13	29	1.5	228	n
14	28	4.5	213	y
15	29	4.4	167	n
16	24	3.7	161	y
17	24	1.5	206	y
18	24	3.6	197	n
19	25	3.3	208	y
20	25	3.3	210	y
21	26	3.7	191	y
22	26	2.2	168	y
23	27	1.8	185	y
24	25	4.2	153	y
25	26	4.8	201	y
26	24	4.9	165	y
27	27	2.8	212	n
28	26	2.3	175	y
29	24	2.5	183	n
30	25	2.8	196	y
				24/30: 80%

RADAR TYPE 3				Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	**Number of Pulses per Burst**	**Pulse Width (µsec)**	**PRI (µs)**	**Detection (yes/no)**
1	18	8.2	455	y
2	18	8.5	490	y
3	18	8.3	408	y
4	17	8.2	448	y
5	18	9.9	422	y
6	18	6.5	367	y
7	17	6.1	216	y
8	17	9.4	453	n
9	17	8.4	449	y
10	17	10	282	y
11	18	9.4	302	y
12	17	7.5	241	y
13	17	7.7	372	y
14	18	7.9	392	y
15	17	8.9	246	y
16	17	6.3	357	y
17	17	9.8	385	n
18	16	9.6	384	y
19	18	9	264	y
20	18	7.1	481	y
21	17	6.3	429	y
22	16	6	280	y
23	17	9.3	343	y
24	16	9.5	384	n
25	16	8.1	298	y
26	18	8.6	241	y
27	17	6	462	n
28	17	7.4	406	y
29	18	9.3	474	y
30	18	7.6	310	n
				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	16	15.7	293	y
2	13	18.4	303	y
3	14	13.8	376	y
4	14	16.6	493	n
5	12	14.2	223	y
6	15	11.4	325	y
7	14	14.1	368	y
8	13	18.9	416	y
9	13	11.2	328	y
10	13	15.9	241	n
11	16	15.8	471	y
12	15	14.8	422	n
13	14	12.1	340	y
14	12	12	494	y
15	12	17.1	429	y
16	15	13.5	283	n
17	14	17.6	408	y
18	12	12.5	386	y
19	13	14	337	y
20	13	18	219	n
21	15	16.2	315	y
22	16	11.5	308	y
23	12	19.4	230	y
24	15	19.9	413	y
25	13	11.2	370	y
26	15	14.9	303	n
27	14	11	221	n
28	13	19.3	492	y
29	14	18	202	y
30	12	14	226	n
				22/30: 73.3%

TYPE 5	Rohde & Schw arz K350 Pulse Sequencer DFS			
Trial #	**Detection (yes/no)**	**Chirp Width (MHz)**	**Subset**	**Fc**
1	y	10	1	5600
2	y	6	1	5600
3	y	8	1	5600
4	y	5	1	5600
5	y	6	1	5600
6	y	9	1	5600
7	y	9	1	5600
8	y	9	1	5600
9	y	10	1	5600
10	y	10	1	5600
11	y	5	2	5592
12	y	8	2	5593.2
13	y	9	2	5593.6
14	y	6	2	5592.4
15	y	9	2	5593.6
16	y	7	2	5592.8
17	y	5	2	5592
18	y	5	2	5592
19	y	9	2	5593.6
20	y	6	2	5592.4
21	y	7	3	5607.2
22	y	6	3	5607.6
23	y	6	3	5607.6
24	y	7	3	5607.2
25	y	9	3	5606.4
26	y	9	3	5606.4
27	y	7	3	5607.2
28	y	6	3	5607.6
29	y	10	3	5606
30	y	6	3	5607.6
	30/30: 100%			

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	y
8	y
9	y
10	n
11	y
12	y
13	n
14	y
15	y
16	n
17	y
18	y
19	n
20	y
21	y
22	y
23	y
24	y
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	26	30	87%
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	89	1	598	y
2	67	1	798	y
3	86	1	618	y
4	102	1	518	y
5	62	1	858	n
6	81	1	658	y
7	81	1	658	y
8	57	1	938	y
9	78	1	678	y
10	78	1	678	y
11	78	1	678	y
12	89	1	598	n
13	62	1	858	y
14	57	1	938	y
15	74	1	718	y
16	83	1	638	y
17	74	1	718	y
18	68	1	778	y
19	65	1	818	y
20	92	1	578	n
21	89	1	598	y
22	81	1	658	y
23	61	1	878	n
24	18	1	3066	y
25	57	1	938	y
26	92	1	578	y
27	98	1	538	y
28	63	1	838	y
29	70	1	758	y
30	81	1	658	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	25	3.7	211	y
2	25	4.6	176	y
3	27	4.5	178	y
4	27	1.5	219	y
5	27	1.6	220	y
6	24	5	211	y
7	25	4.6	213	n
8	28	3.8	187	y
9	28	2.7	202	y
10	24	1.4	205	y
11	29	3.2	228	y
12	26	4.8	218	y
13	24	4.2	216	y
14	24	2.7	196	y
15	25	3.9	219	y
16	25	4.6	230	n
17	28	3.8	221	y
18	28	3.2	211	y
19	29	4	170	n
20	25	4.2	172	y
21	24	1.5	187	y
22	28	3.1	191	y
23	26	4.6	214	y
24	24	3.4	220	y
25	23	4.9	153	y
26	27	2.8	202	y
27	23	3.8	215	y
28	24	4	208	y
29	23	2.6	197	n
30	29	4.9	182	y
				26/30: 86.7%

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	7	409	y
2	17	6	345	y
3	17	6.5	449	y
4	16	8.2	423	n
5	16	8.7	310	y
6	18	9.2	338	n
7	17	8.2	427	y
8	16	8.4	337	y
9	17	8.1	323	y
10	18	7.6	452	n
11	18	8.6	459	y
12	17	7.2	361	n
13	17	7.1	313	y
14	16	8.9	364	y
15	17	8.1	438	y
16	17	9.6	395	n
17	17	6.6	203	y
18	16	9.2	357	y
19	18	9.6	404	n
20	17	6.4	200	n
21	16	9.2	367	y
22	18	10	383	y
23	18	6.6	449	y
24	18	7	498	y
25	17	8	453	y
26	17	8.4	231	y
27	16	6	314	n
28	17	9.7	295	n
29	17	8.9	300	y
30	17	8.8	485	y
				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	11.3	366	y
2	13	18.7	481	y
3	14	12.2	481	y
4	14	17.3	444	n
5	15	17.1	487	y
6	15	18.1	299	y
7	15	16.8	478	y
8	14	15.2	287	y
9	15	11.1	444	y
10	15	12.2	210	n
11	12	16.2	411	y
12	13	11.6	439	y
13	14	17.1	422	y
14	15	18.9	428	n
15	14	11.8	391	n
16	16	14	271	y
17	14	15.5	395	y
18	16	19.2	498	y
19	13	11.5	314	y
20	16	12.4	398	y
21	14	19	494	y
22	14	12.9	484	y
23	14	13.1	469	y
24	13	17.4	491	y
25	13	12	410	y
26	13	15.6	304	y
27	14	14.4	322	n
28	13	12.3	377	n
29	16	18.6	331	y
30	16	19.3	478	y
				24/30: 80%

TYPE 5	Rohde & Schwarz K350 Pulse Sequencer DFS			
Trial #	**Detection (yes/no)**	**Chirp Width (MHz)**	**Subset**	**Fc**
1	y	9	1	5590
2	y	8	1	5590
3	y	5	1	5590
4	y	10	1	5590
5	y	6	1	5590
6	n	6	1	5590
7	y	8	1	5590
8	y	9	1	5590
9	y	10	1	5590
10	y	6	1	5590
11	y	6	2	5572.4
12	y	7	2	5572.8
13	y	7	2	5572.8
14	y	5	2	5572
15	y	10	2	5574
16	y	7	2	5572.8
17	y	6	2	5572.4
18	y	6	2	5572.4
19	y	5	2	5572
20	y	9	2	5573.6
21	y	5	3	5608
22	y	7	3	5607.2
23	y	6	3	5607.6
24	y	5	3	5608
25	y	7	3	5607.2
26	y	9	3	5606.4
27	y	7	3	5607.2
28	y	8	3	5606.8
29	y	8	3	5606.8
30	y	5	3	5608
	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	y
8	n
9	y
10	n
11	y
12	y
13	y
14	y
15	y
16	y
17	n
18	y
19	y
20	n
21	y
22	y
23	y
24	y
25	y
26	y
27	n
28	y
29	y
30	y
	25/30: 83.3%

80 MHz

Summary			
Type	**Detections**	**Trials**	**Detection Probability**
Type 1	29	30	97%
Type 2	27	30	90%
Type 3	27	30	90%
Type 4	27	30	90%
Type 5	30	30	100%
Type 6	21	30	70%
Aggregate 1-4	110	120	92%

RADAR TYPE 1				Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	**Number of Pulses per Burst**	**Pulse Width (µsec)**	**PRI (µs)**	**Detection (yes/no)**
1	58	1	918	y
2	92	1	578	y
3	83	1	638	y
4	95	1	558	y
5	86	1	618	y
6	86	1	618	y
7	83	1	638	y
8	102	1	518	n
9	86	1	618	y
10	76	1	698	y
11	78	1	678	y
12	68	1	778	y
13	76	1	698	y
14	57	1	938	y
15	76	1	698	y
16	81	1	658	y
17	98	1	538	y
18	74	1	718	y
19	68	1	778	y
20	86	1	618	y
21	76	1	698	y
22	68	1	778	y
23	65	1	818	y
24	78	1	678	y
25	74	1	718	y
26	74	1	718	y
27	57	1	938	y
28	63	1	838	y
29	57	1	938	y
30	78	1	678	y
				29/30: 96.7%

RADAR TYPE 2				Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	**Number of Pulses per Burst**	**Pulse Width (µsec)**	**PRI (µs)**	**Detection (yes/no)**
1	24	4.8	208	y
2	27	2.5	186	y
3	29	3.6	219	y
4	29	3.3	151	y
5	26	2.5	203	y
6	24	4.5	150	y
7	25	3.5	190	y
8	25	3.6	160	y
9	28	2.3	176	y
10	24	3.6	155	y
11	29	4.4	155	n
12	23	1	166	n
13	27	4.2	171	y
14	24	1	166	y
15	29	1.9	213	y
16	28	4	185	y
17	23	4.5	182	y
18	28	4.2	167	y
19	24	1.8	200	y
20	28	1.9	228	y
21	23	2.5	187	y
22	29	4.5	178	y
23	25	3.6	154	y
24	27	2.4	219	n
25	28	4.5	151	y
26	28	1.6	201	y
27	23	2.9	227	y
28	25	3.5	224	y
29	28	3.5	150	y
30	26	1.1	206	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	6.8	361	n
2	17	6.8	292	n
3	16	7.6	266	y
4	18	8.3	419	y
5	16	10	276	y
6	16	7.6	201	y
7	18	7.9	441	y
8	18	9.6	355	y
9	17	8.6	350	y
10	17	8.3	226	y
11	17	6.1	280	n
12	18	8.6	443	y
13	18	8.7	361	y
14	17	6.4	352	y
15	18	9.7	357	y
16	17	8	276	y
17	17	8.7	349	y
18	17	8.8	393	y
19	17	8.1	279	y
20	17	9.1	423	y
21	17	9.7	435	y
22	16	8	458	y
23	17	9.5	333	y
24	17	9	361	y
25	18	8.4	297	y
26	18	8.2	283	y
27	16	9.3	483	y
28	17	7.5	416	y
29	17	7.4	211	y
30	17	9.7	263	y
				27/30: 90%

RADAR TYPE 4				Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	**Number of Pulses per Burst**	**Pulse Width (µsec)**	**PRI (µs)**	**Detection (yes/no)**
1	15	19.8	489	y
2	12	11.9	357	y
3	15	19.9	439	y
4	16	16	295	y
5	13	18.9	271	y
6	16	14.6	432	n
7	14	12.2	339	y
8	14	17.1	417	y
9	16	16.5	485	y
10	15	12.1	227	y
11	15	15.7	395	y
12	13	17	358	y
13	15	11.8	407	y
14	14	11.8	269	y
15	14	15.5	277	y
16	14	15.1	310	y
17	14	19.3	210	y
18	15	19.5	260	y
19	15	14.7	326	y
20	12	13.1	395	y
21	15	15.6	274	y
22	14	17	377	y
23	12	14.3	296	y
24	12	18.4	293	y
25	15	17.6	447	n
26	15	11.8	236	n
27	16	15.7	251	y
28	14	14	310	y
29	15	16.1	268	y
30	14	19.7	389	y
				27/30: 90%

TYPE 5	Rohde & Schwarz K350 Pulse Sequencer DFS			
Trial #	**Detection (yes/no)**	**Chirp Width (MHz)**	**Subset**	**Fc**
1	y	9	1	5610
2	y	5	1	5610
3	y	7	1	5610
4	y	5	1	5610
5	y	5	1	5610
6	y	9	1	5610
7	y	6	1	5610
8	y	6	1	5610
9	y	10	1	5610
10	y	7	1	5610
11	y	9	2	5573.6
12	y	5	2	5572
13	y	9	2	5573.6
14	y	5	2	5572
15	y	6	2	5572.4
16	y	8	2	5573.2
17	y	6	2	5572.4
18	y	10	2	5574
19	y	8	2	5573.2
20	y	7	2	5572.8
21	y	6	3	5647.6
22	y	5	3	5648
23	y	6	3	5647.6
24	y	9	3	5646.4
25	y	7	3	5647.2
26	y	7	3	5647.2
27	y	9	3	5646.4
28	y	6	3	5647.6
29	y	5	3	5648
30	y	7	3	5647.2
	30/30: 100%			

TYPE 6 S	Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	**Detection (yes/no)**
1	y
2	y
3	y
4	y
5	n
6	n
7	y
8	y
9	n
10	n
11	y
12	y
13	n
14	y
15	y
16	y
17	y
18	y
19	n
20	n
21	y
22	y
23	y
24	y
25	y
26	y
27	y
28	y
29	n
30	n
	21/30: 70%

-- End of Test Report --