UNIFIED COMPLIANCE LABORATORY

427 West 12800 South
Draper, UT 84020

Test Report

Certification

FCC ID	SWX-AF60XG
ISED ID	6545A-AF60XG
Equipment Under Test	AF60-XG
Test Report Serial Number	TR6980_03
Date of Test	17-19 August; 17-18 September 2021; 19-20 January 2022
Report Issue Date	October 20, 2022

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.

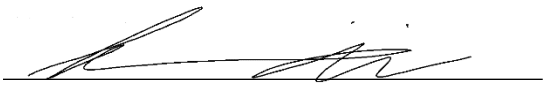
Applicant	Ubiquiti Inc.
Manufacturer	Ubiquiti Inc.
Brand Name	AirFiber
Model Number	AF60-XG
FCC ID	SWX-AF60XG
ISED ID	6545A-AF60XG

On this 20th day of October 2022, 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: Joseph W. Jackson



Reviewed By: Alex Macon

Revision History		
Revision	**Description**	**Date**
01	Original Report Release	17 March 2022
02	Amend Table in Section 2.2	29 September 2022
03	Corrected errors in Table of Section 5.4.1	October 11, 2022

Table of Contents

1 Client Information

1.1 Applicant

Company	Ubiquiti Inc. 685 Third Avenue New York, NY 10017 U.S.A.
Contact Name	Mark Feil
Title	Compliance Manager

1.2 Manufacturer

Company	Ubiquiti Inc. 685 Third Avenue New York, NY 10017 U.S.A.
Contact Name	Mark Feil
Title	Compliance Manager

2 Equipment Under Test (EUT)

2.1 Identification of EUT

Brand Name	airFIBER
Model Number	AF60-XG
Serial Number	FCECDAFFE77E
Dimensions (cm)	77.9 x 66.4 x 38.2

2.2 Description of EUT

The AF60-XG is a 60 GHz point-to-point wireless bridge which provides 2.5+ Gbps throughput connectivity over long distances. The AF60-XG provides an integrated high-gain dish antenna for high speed, long-range point-to-point links. The AF60-XG provides a 5 GHz 2x2 radio with cross polarized elements as a backup radio for operation redundancies. The AF60-XG also includes a Bluetooth management radio for setup and configuration. The AF60-XG is powered from a 48 Volt PoE Power Adapter.

The manufacturer has declared that the information regarding the parameters of the detected radar Waveforms during normal use is not reported by the EUT or made available to the end user.

Band	Modulation Bandwidth	Frequency (MHz)
UNII-2A	20 MHz	5260, 5280, 5300, 5320
	40 MHz	5270, 5310
	80 MHz	5290
UNII-2C	20 MHz	5500, 5520, 5540, 5560, 5580, 5600*, 5620*, 5640*, 5660, 5680, 5700, 5720
	40 MHz	5510, 5550, 5590, 5630*, 5670, 5710
	80 MHz	5530, 5610*, 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: AirFiber MN: AF60-XG (Note 1)	Wireless Access Point	See Section 2.4

SN: FCECDAFFE77E		
BN: Ubiquiti Inc. MN: UPOE-at SN: N/A	PoE Injector Power Supply	Shielded or Un-Shielded Cat 5e cable/1 meter
BN: Dell MN: XPS 13 SN: N/A	Laptop Personal Computer	Shielded or Un-Shielded Cat 5e cable/1 meter

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	1	3 conductor power cord/80cm
PoE	1	Shielded/Un-Shielded Cat 5e cable/1-meter
LAN	1	Shielded/Un-Shielded Cat 5e cable/1-meter

2.5 Operating Environment

Power Supply	120 Vac to 48 Volts PoE Power
AC Mains Frequency	60 Hz
Temperature	22.2-24.5 °C
Humidity	21.9-48.7 %
Barometric Pressure	1028.8 mBar

2.6 Operating Modes

The AF60-XG was tested using test software to enable to constant transmission. The measurements within this report are corrected to reference a 100% duty cycle. All emission modes of 802.11 a/n/ac 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

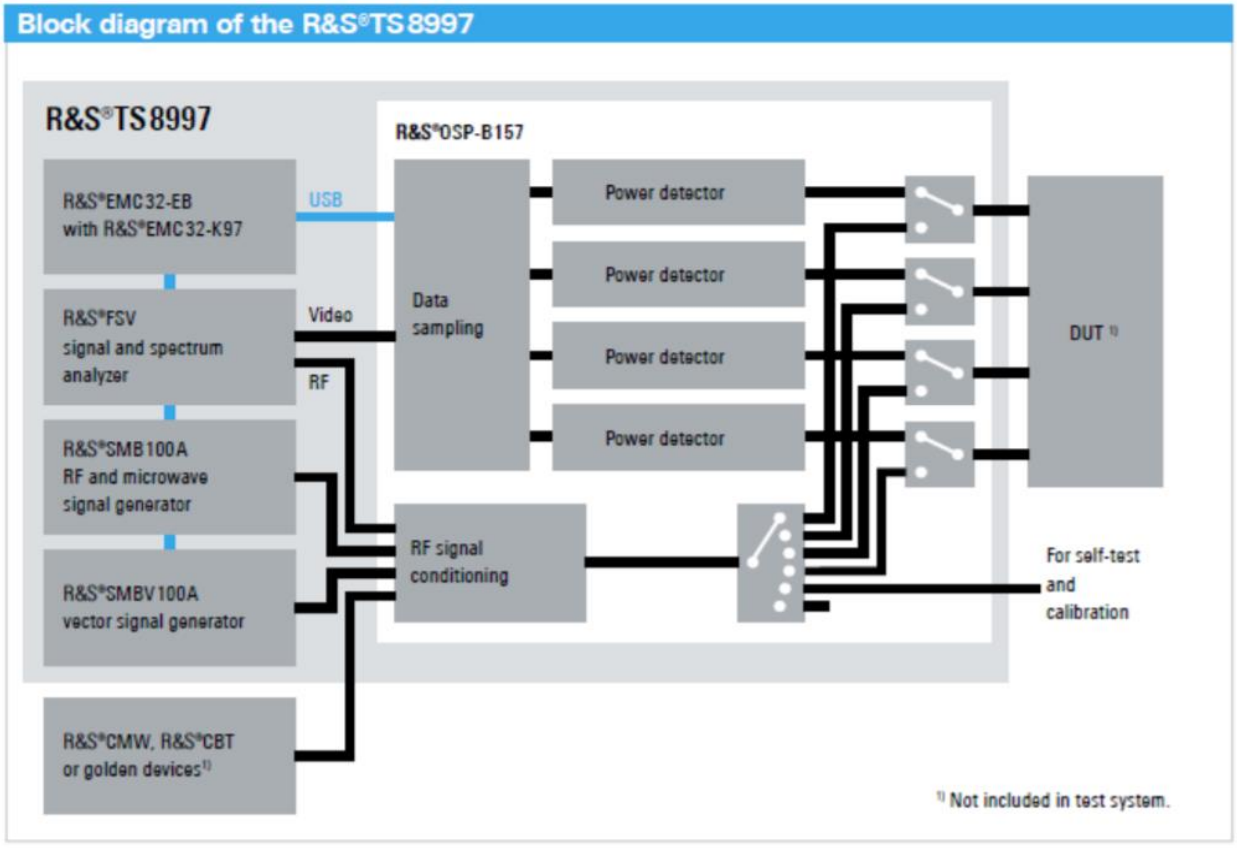


Diagram 1: Test Configuration Block Diagram

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 5575	Compliant
15.407(a)	RSS-247 §6.2.2, §6.2.3	Peak Output Power	5260 to 5575	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 5575	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 2022. 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 2022. Unified Compliance Laboratory has been assigned 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-6754	12/8/2021	12/8/2022
LISN	AFJ	LS16C/10	UCL-6749	12/6/2021	12/6/2023
Cat6 ISN	Teseq	ISN T8-Cat6	UCL-2971	5/18/2020	5/18/2022
ISN	Teseq	ISN T800	UCL-2974	6/4/2021	6/4/2022
LISN	Com-Power	LIN-120C	UCL-2612	1/6/2022	1/6/2023
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

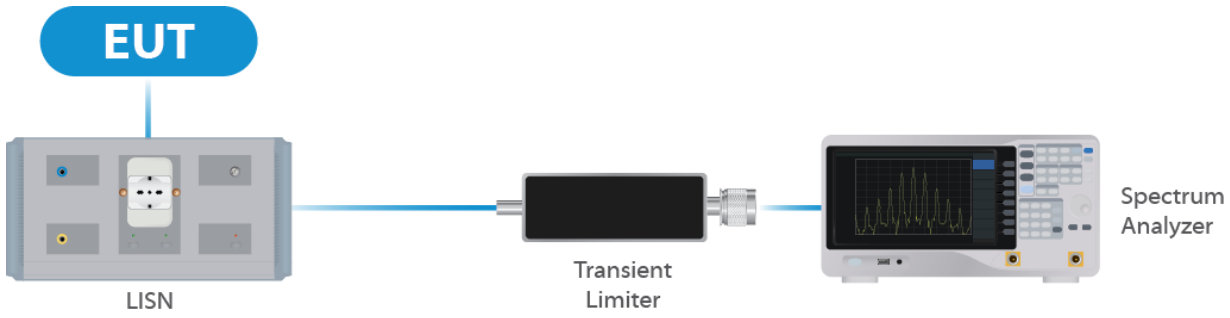


Figure 1: Conducted Emissions Test

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	1/03/2022	1/03/2023
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	1/03/2022	1/03/2023
Switch Extension	R&S	OSP-150W	UCL-2870	1/03/2022	1/03/2023

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

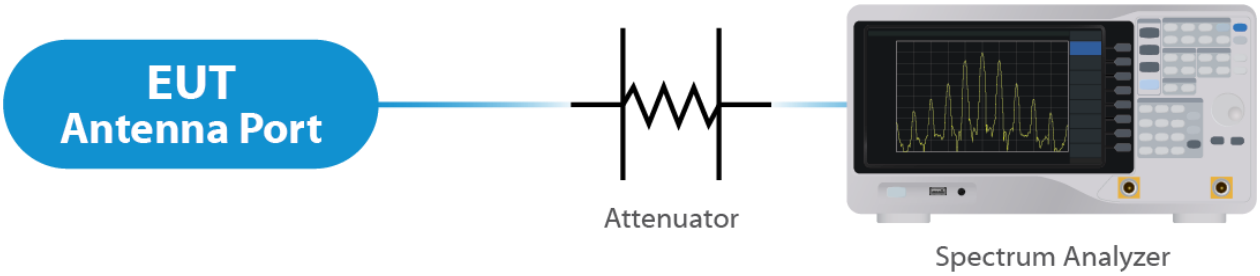


Figure 2: Direct Connect at the Antenna Port Test

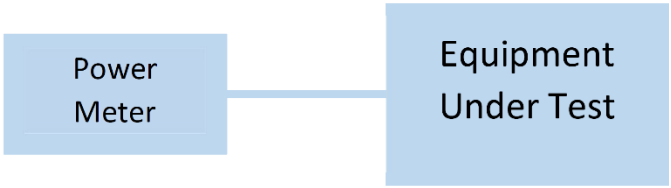


Figure 3: Output Power Measurement

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	6/21/2021	6/21/2022
Pre-Amplifier 9 kHz – 1 GHz	Sonoma Instruments	310N	UCL-2889	10/7/2021	10/7/2022
Broadband Antenna	Scwarzbeck	VULB 9163	UCL-3062	8/28/2020	8/27/2022
Broadband Antenna	Scwarzbeck	VULB 9163	UCL-3071	5/19/2020	5/19/2022
Double Ridge Horn Antenna	Scwarzbeck	BBHA 9120D	UCL-3065	7/8/2021	7/8/2022
Log Periodic	Scwarzbeck	STLP 9129	UCL-3068	11/16/2020	11/16/2022
15 - 40 GHz Horn Antenna	Scwarzbeck	BBHA 9170	UCL-2487	5/21/2020	5/21/2022
1 – 18 GHz Amplifier	Com-Power	PAM 118A	UCL-3833	10/7/2021	10/7/2022
Test Software	UCL	Revision 1	UCL-3108	N/A	N/A

Table 4: List of equipment used for Radiated Emissions

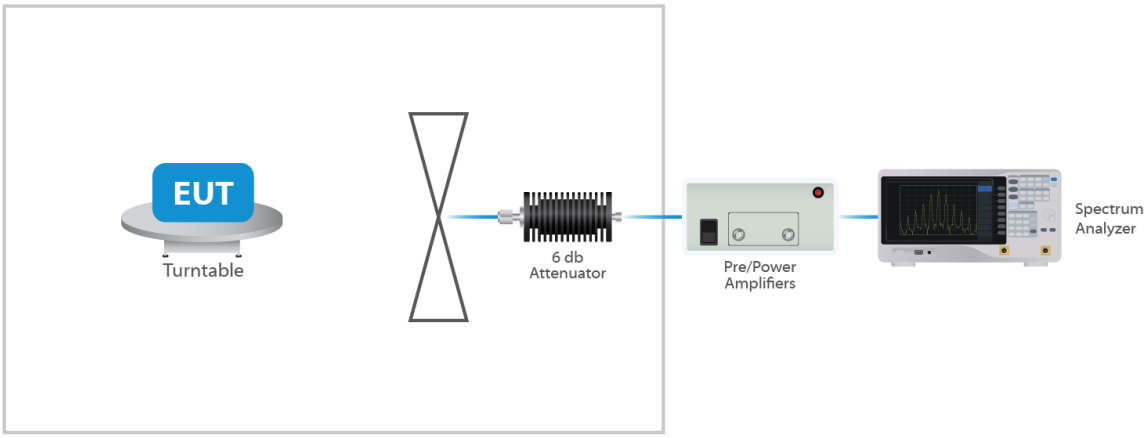


Figure 4: Radiated Emissions Test

4.4 DFS Testing

4.4.1 Master Test Set Up

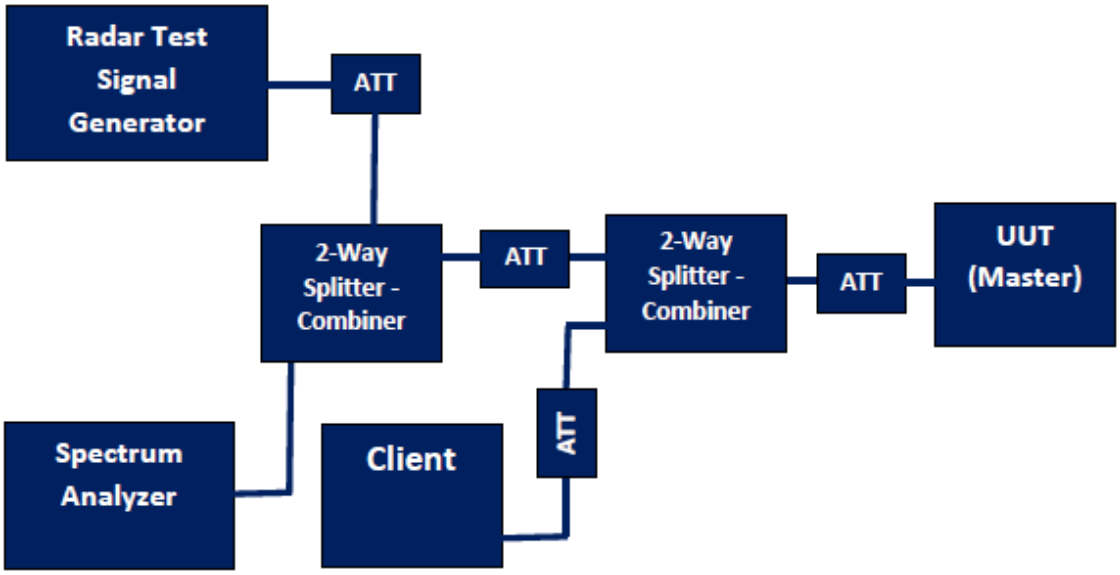


Figure 5: DFS Test Set Up – Master

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

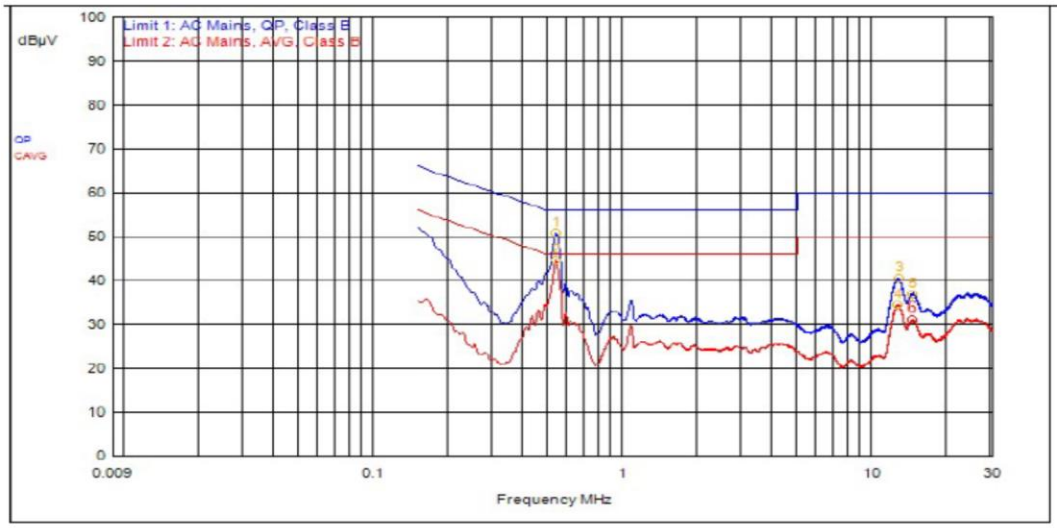
The EUT uses a dish antenna structure. The maximum gain of the antenna 26 dBi. This is an 802.11 device and utilizes CDD as described in KDB 662911 D01. The antenna is not user replaceable. The EUT has a 2x2 transmitter and the chains are cross polarized.

Results

The EUT complied with the specification

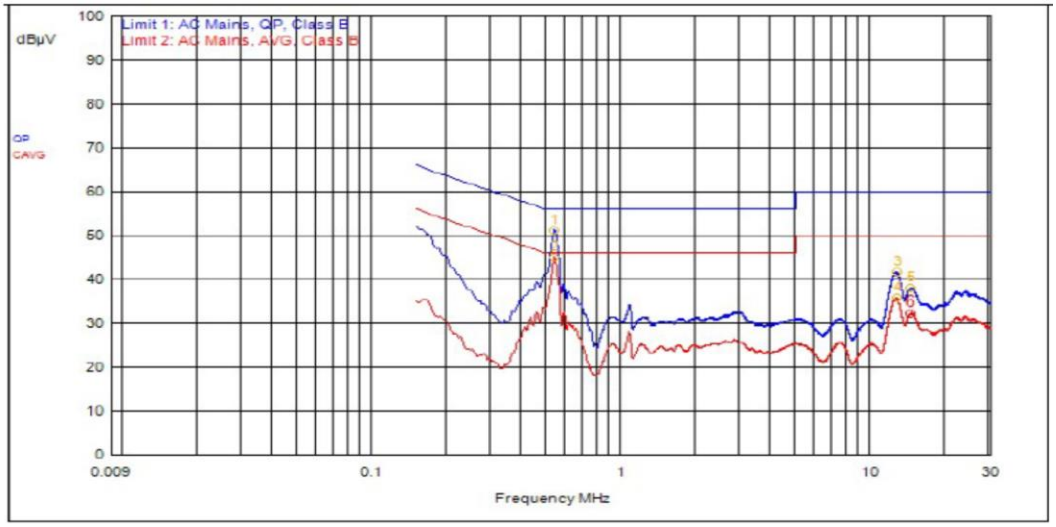
5.2 Conducted Emissions at Mains Ports Data

5.2.1 Line



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.
1	534,000kHz	12.4	0.0		QPeak	38.4	50.8	56.0	-5.2		
3	12.558MHz	12.4	0.2		QPeak	27.9	40.5	60.0	-19.5		
5	14.262MHz	12.5	0.2		QPeak	24.2	36.9	60.0	-23.1		
2	534,000kHz	12.4	0.0		C_AVG	32.2	44.6			46.0	-1.4
4	12.501MHz	12.4	0.2		C_AVG	21.8	34.4			50.0	-15.6
6	14.265MHz	12.5	0.2		C_AVG	18.4	31.0			50.0	-19.0

5.2.2 Neutral



ID	Frequency	Probe	Cable	Atten.	Detector	Meter Read	Meas Level	Limit 1	Limit 1 Dist.	Limit 2	Limit 2 Dist.
1	534,000kHz	12.4	0.0		QPeak	38.8	51.2	56.0	-4.8		
3	12.558MHz	12.4	0.2		QPeak	29.0	41.6	60.0	-18.4		
5	14.334MHz	12.5	0.2		QPeak	25.4	38.1	60.0	-21.9		
2	537,000kHz	12.4	0.0		C_AVG	32.7	45.1			46.0	-0.9
4	12.576MHz	12.4	0.2		C_AVG	23.2	35.8			50.0	-14.2
6	14.337MHz	12.5	0.2		C_AVG	19.6	32.2			50.0	-17.8

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)
OFDM 20	5260	16.50	20.80
OFDM 20	5280	16.60	20.80
OFDM 20	5320	16.50	21.10
HT 20	5260	17.70	21.70
HT 20	5280	17.70	21.40
HT 20	5320	17.80	21.80
HT 40	5270	37.00	42.00
HT 40	5310	37.00	42.00
VHT 20	5260	17.70	21.80
VHT 20	5280	17.80	22.30
VHT 20	5320	17.70	21.80
VHT 40	5270	37.00	42.60
VHT 40	5310	37.25	43.50
VHT 80	5290	76.50	84.00

5.3.2 UNII-2C

Bandwidth	Frequency (MHz)	99% Bandwidth (MHz)	Emissions 26 dB Bandwidth (MHz)
OFDM 20	5500	16.60	20.90
OFDM 20	5600	16.60	20.90
OFDM 20	5720	16.60	21.10
HT 20	5500	17.80	21.60
HT 20	5600	17.80	22.10
HT 20	5720	17.70	21.60
HT 40	5510	36.50	43.95
HT 40	5590	36.50	42.75
HT 40	5710	36.75	42.15
VHT 20	5500	17.80	22.60
VHT 20	5600	17.80	21.70
VHT 20	5720	17.80	21.30
VHT 40	5510	36.75	43.35
VHT 40	5590	36.75	43.35
VHT 40	5710	36.25	42.50
VHT 80	5530	76.50	85.50
VHT 80	5610	76.50	87.00
VHT 80	5690	76.00	87.50

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 3.97 dBm or 2.49 mW. The limit is 24 dBm when using antennas with 6 dBi gain. The antenna has a maximum gain of 26 dBi, therefore the limit is 4 dBm.

5.4.1 UNII-2A

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power*	Measured EIRP	Measured PSD
OFDM 20	5260	Mcs0	24	3.72	29.72	-10.97
OFDM 20	5280	Mcs0	23	3.85	29.85	-11.1
OFDM 20	5320	Mcs0	21	3.87	29.87	-11.02
HT 20	5260	Mcs0	24	3.66	29.66	-11.28
HT 20	5280	Mcs0	23	3.74	29.74	-11.46
HT 20	5320	Mcs0	21	3.8	29.8	-11.31
HT 40	5270	Mcs0	24	3.61	29.61	-14.52
HT 40	5310	Mcs0	22	3.67	29.67	-14.6
HT 20	5260	Mcs0	24	3.64	29.64	-11.45
VHT 20	5280	Mcs0	23	3.79	29.79	-11.31
VHT 20	5320	Mcs0	21	3.79	29.79	-11.29
VHT 40	5270	Mcs0	24	3.64	29.64	-14.61
VHT 40	5310	Mcs0	22	3.69	29.69	-14.71
VHT 8-	5290	Msc0	24	3.94	29.94	-17.63

5.4.2 UNII-2C

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power*	Measured EIRP	Measured PSD
OFDM 20	5500	Mcs0	19	3.52	29.52	-11.06
OFDM 20	5600	Mcs0	21	3.96	29.96	-10.54
OFDM 20	5720	Mcs0	23	3.7	29.7	-10.76
HT 20	5500	Mcs0	19	3.49	29.49	-11.31
HT 20	5600	Mcs0	21	3.91	29.91	-10.61
HT 20	5720	Mcs0	23	3.64	29.64	-11.45
HT 40	5510	Mcs0	20	3.62	29.62	-14.43
HT 40	5590	Mcs0	21	3.63	29.63	-13.93
HT 40	5710	Mcs0	24	3.8	29.8	-14.46
VHT 20	5500	Mcs0	20	3.97	29.97	-10.63
VHT 20	5600	Mcs0	21	3.9	29.9	-10.28
VHT 20	5720	Mcs0	23	3.59	29.59	-11.33
VHT 40	5510	Mcs0	20	3.59	29.59	-14.3
VHT 40	5590	Mcs0	21	3.58	29.58	-13.9
VHT 40	5710	Mcs0	24	3.83	29.83	-14.16
VHT 80	5530	Mcs0	21	3.79	29.79	-17.84

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.

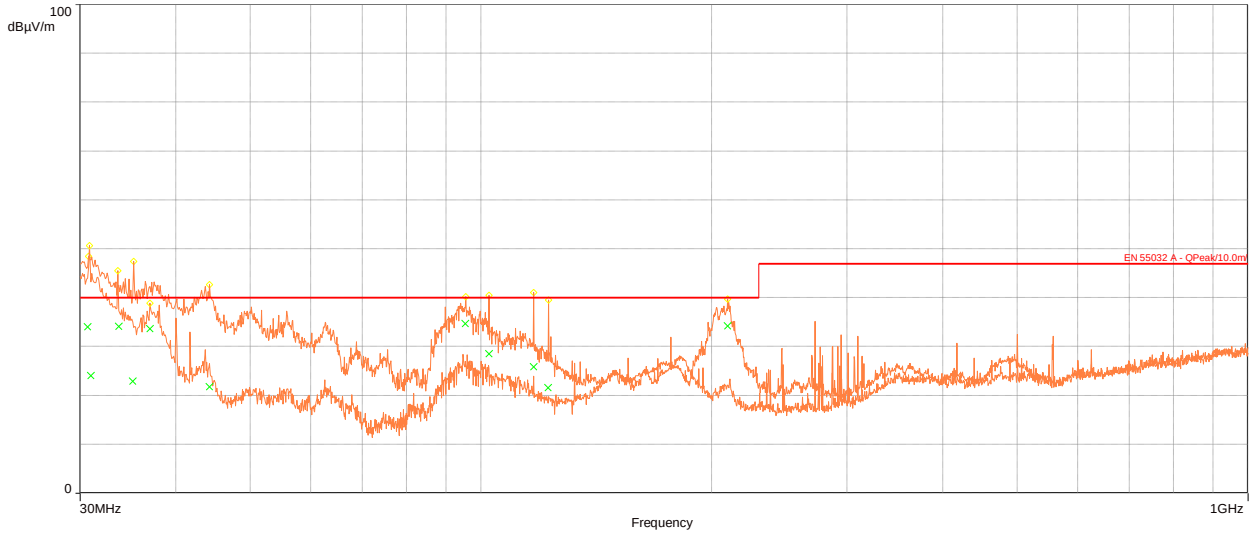
5.5 §15.407(b) Spurious Emissions

5.5.1 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.

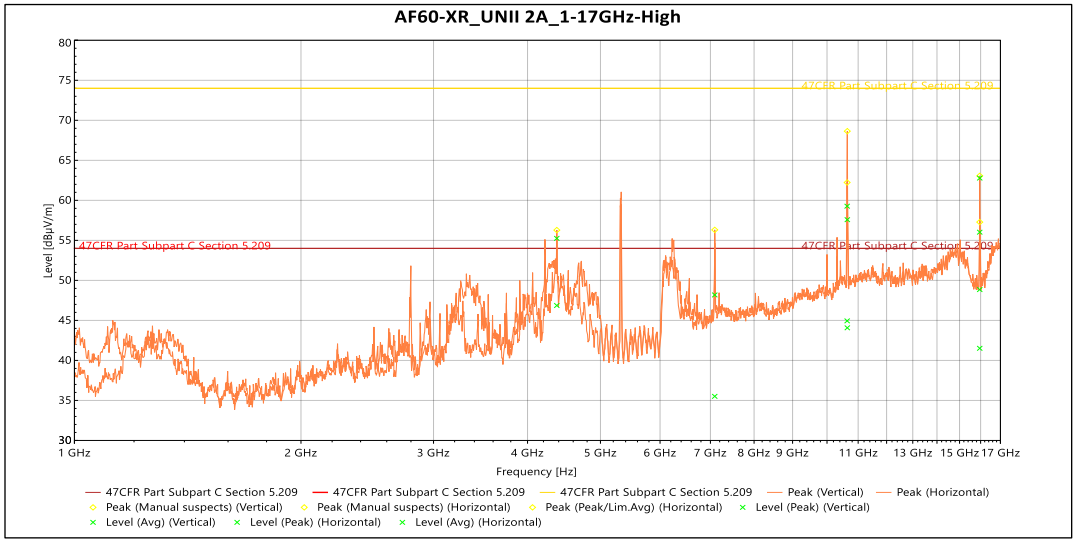
Correction Factor = Antenna Factor + Cable Loss - Pre-Amplifier Gain, and is added to the Receiver reading.

5.5.2 UNII-2A



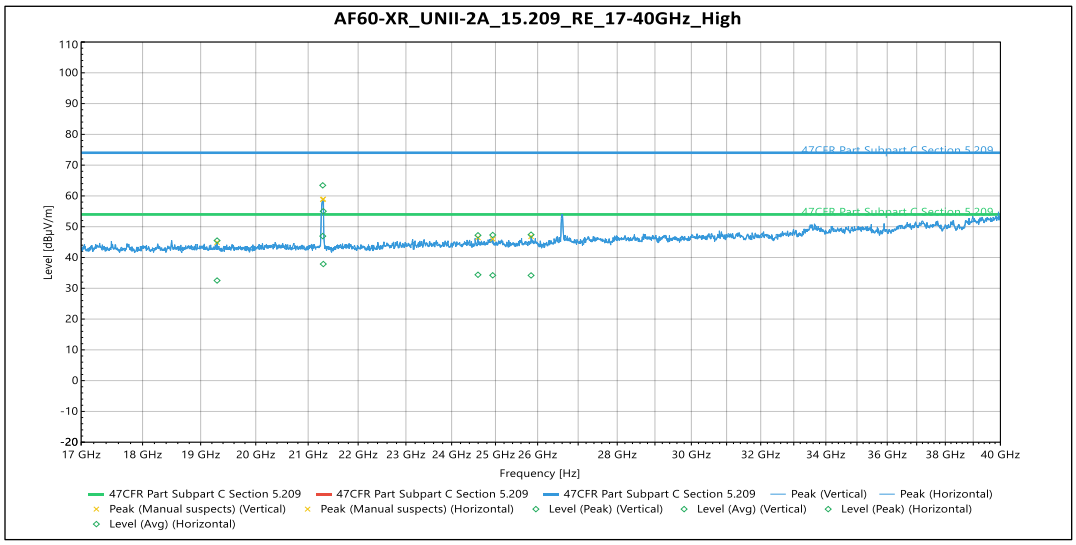
Frequency (MHz)	SR	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height	Pol.	Correction (dB)
30.682	1	34.08	40.00	-5.92	281.00	1.00	Vertical	-11.88
35.17	1	22.89	40.00	-17.11	154.00	1.14	Vertical	-11.60
44.253	1	21.78	40.00	-18.22	264.00	1.33	Vertical	-11.28
95.4	1	34.73	40.00	-5.27	174.00	1.86	Vertical	-13.88
102.46	1	28.53	40.00	-11.47	160.00	1.37	Vertical	-13.34
117.14	1	25.83	40.00	-14.17	269.00	1.15	Vertical	-15.47
122.25	1	21.54	40.00	-18.46	167.00	1.14	Vertical	-16.15
209.6	1	34.22	40.00	-5.78	221.00	1.14	Vertical	-14.79
30.938	2	24.05	40.00	-15.95	74.00	3.13	Horizontal	-11.81
33.65	2	34.17	40.00	-5.83	310.00	2.42	Horizontal	-11.81
36.999	2	33.62	40.00	-6.38	292.00	2.41	Horizontal	-11.74

Graph 1: Radiated Emissions in 30 MHz – 1 GHz



Frequency	Peak/Avg	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
7.0931 GHz	Peak	48.183	74	-25.817	87	1.647	Vertical	-2.251
10.641 GHz	Peak	57.578	74	-16.422	93	1.643	Vertical	5.071
15.957 GHz	Peak	56.023	74	-17.977	89	2.146	Vertical	4.859
7.0931 GHz	Avg	35.51	54	-18.49	87	1.647	Vertical	-2.251
10.641 GHz	Avg	44.071	54	-9.929	93	1.643	Vertical	5.071
15.957 GHz	Avg	41.515	54	-12.485	89	2.146	Vertical	4.859
4.3748 GHz	Peak	55.245	74	-18.755	92	1.5	Horizontal	-9.856
10.636 GHz	Peak	59.269	74	-14.731	98	1.643	Horizontal	5.106
15.957 GHz	Peak	62.78	74	-11.22	84	1.647	Horizontal	4.859
4.3748 GHz	Avg	46.865	54	-7.135	92	1.5	Horizontal	-9.856
10.636 GHz	Avg	44.939	54	-9.061	98	1.643	Horizontal	5.106
15.957 GHz	Avg	48.851	54	-5.149	84	1.647	Horizontal	4.859

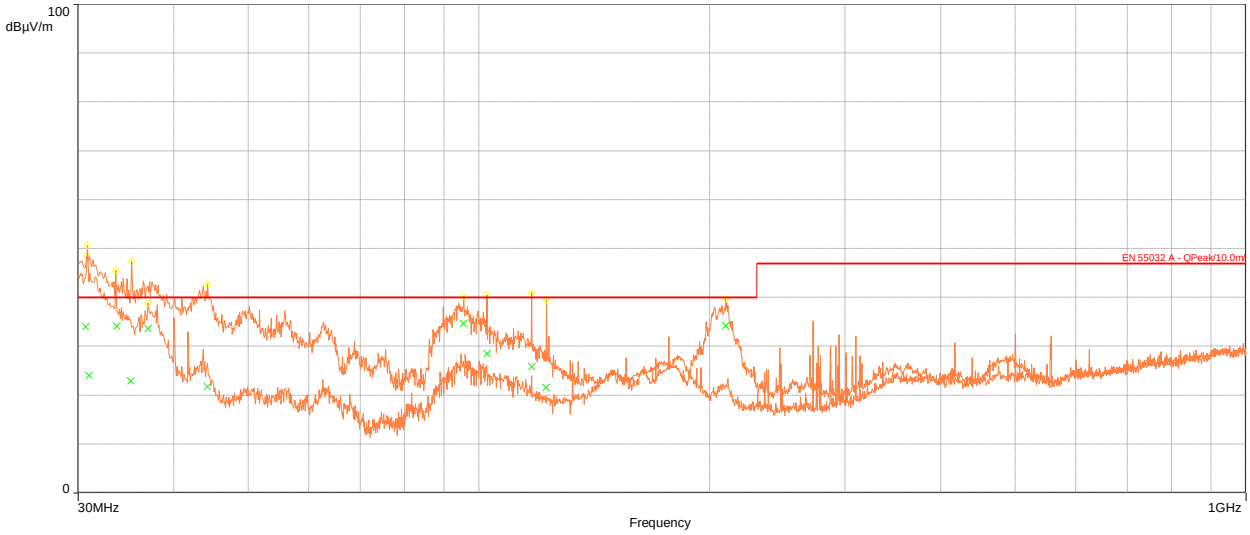
Graph 2: Radiated Emissions in 1-17GHz on High Frequency (worst-case)



Frequency	Peak/Avg	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
19.293 GHz	Peak	1	45.5	74	-28.5	57	Vertical	-6.044
21.298 GHz	Peak	1	55.029	74	-18.971	95	Vertical	-5.795
24.936 GHz	Peak	1	47.313	74	-26.687	22	Vertical	-5.072
19.293 GHz	Avg	1	32.523	54	-21.477	57	Vertical	-6.044
21.298 GHz	Avg	1	37.885	54	-16.115	95	Vertical	-5.795
24.936 GHz	Avg	1	34.223	54	-19.777	22	Vertical	-5.072
21.287 GHz	Peak	2	63.443	74	-10.557	80	Horizontal	-5.769
24.596 GHz	Peak	2	47.209	74	-26.791	105	Horizontal	-5.111
25.842 GHz	Peak	2	47.409	74	-26.591	271	Horizontal	-5.419
21.287 GHz	Avg	2	46.948	54	-7.052	80	Horizontal	-5.769
24.596 GHz	Avg	2	34.391	54	-19.609	105	Horizontal	-5.111
25.842 GHz	Avg	2	34.175	54	-19.825	271	Horizontal	-5.419

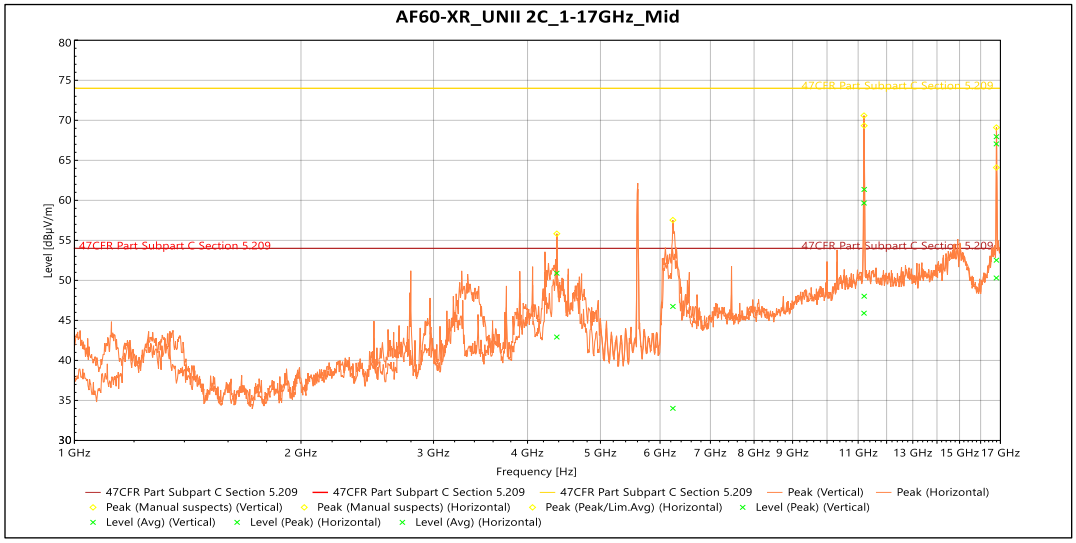
Graph 3: Radiated Emissions in 17-40GHz on High Frequency (worst-case)

5.5.3 UNII-2C



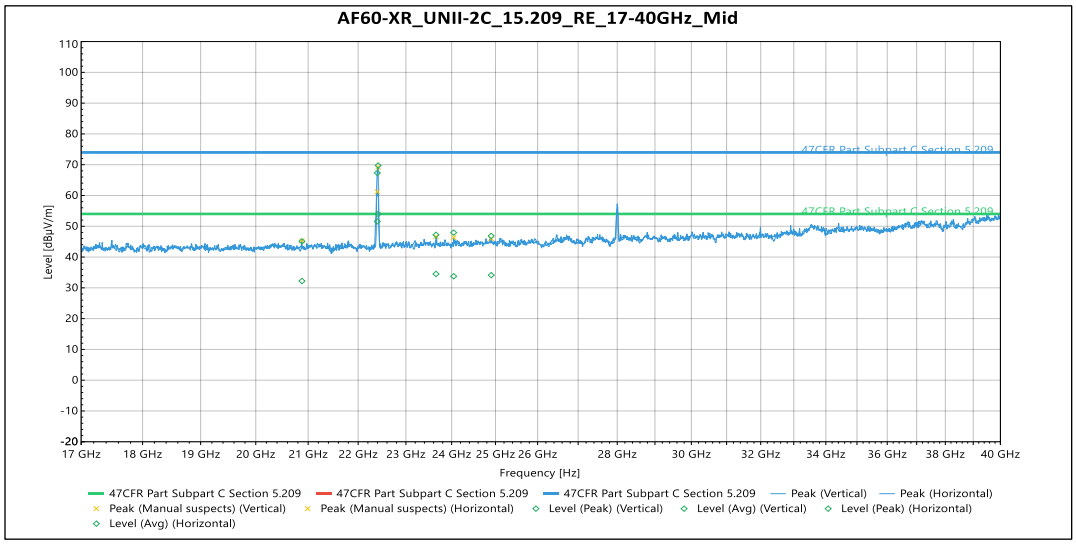
Frequency (MHz)	SR	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height	Pol.	Correction (dB)
30.682	1	34.08	40.00	-5.92	281.00	1.00	Vertical	-11.88
35.17	1	22.89	40.00	-17.11	154.00	1.14	Vertical	-11.60
44.253	1	21.78	40.00	-18.22	264.00	1.33	Vertical	-11.28
95.4	1	34.73	40.00	-5.27	174.00	1.86	Vertical	-13.88
102.46	1	28.53	40.00	-11.47	160.00	1.37	Vertical	-13.34
117.14	1	25.83	40.00	-14.17	269.00	1.15	Vertical	-15.47
122.25	1	21.54	40.00	-18.46	167.00	1.14	Vertical	-16.15
209.6	1	34.22	40.00	-5.78	221.00	1.14	Vertical	-14.79
30.938	2	24.05	40.00	-15.95	74.00	3.13	Horizontal	-11.81
33.65	2	34.17	40.00	-5.83	310.00	2.42	Horizontal	-11.81
36.999	2	33.62	40.00	-6.38	292.00	2.41	Horizontal	-11.74

Graph 4: Radiated Emissions in 30 MHz – 1 GHz



Frequency	Peak/Avg	Peak/Avg	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	Correction (dB)
4.3749 GHz	Peak	1	50.89	74	-23.11	80	3.793	Vertical	-9.856
11.205 GHz	Peak	1	61.357	74	-12.643	104	1.83	Vertical	4.56
16.79 GHz	Peak	1	67.052	74	-6.948	89	1.643	Vertical	11.598
4.3749 GHz	Avg	1	42.918	54	-11.082	80	3.793	Vertical	-9.856
11.205 GHz	Avg	1	48.02	54	-5.98	104	1.83	Vertical	4.56
16.79 GHz	Avg	1	50.304	54	-3.696	89	1.643	Vertical	11.598
6.2408 GHz	Peak	2	46.739	74	-27.261	120	3.793	Horizontal	-6.806
11.199 GHz	Peak	2	59.657	74	-14.343	105	1.825	Horizontal	4.644
16.793 GHz	Peak	2	67.946	74	-6.054	87	1.643	Horizontal	11.604
6.2408 GHz	Avg	2	34.013	54	-19.987	120	3.793	Horizontal	-6.806
11.199 GHz	Avg	2	45.897	54	-8.103	105	1.825	Horizontal	4.644
16.793 GHz	Avg	2	52.52	54	-1.48	87	1.643	Horizontal	11.604

Graph 5: Radiated Emissions in 1-17GHz on Mid Frequency (Worst-case)



Frequency	Peak/Avg	SR #	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	Correction (dB)
22.396 GHz	Peak	1	67.322	74	-6.678	84	Vertical	-5.773
23.653 GHz	Peak	1	47.217	74	-26.783	1	Vertical	-4.357
24.046 GHz	Peak	1	47.941	74	-26.059	44	Vertical	-5.174
22.396 GHz	Avg	1	51.583	54	-2.417	84	Vertical	-5.773
23.653 GHz	Avg	1	34.511	54	-19.489	1	Vertical	-4.357
24.046 GHz	Avg	1	33.755	54	-20.245	44	Vertical	-5.174
20.879 GHz	Peak	2	45.1	74	-28.9	285	Horizontal	-5.806
22.413 GHz	Peak	2	69.736	74	-4.264	84	Horizontal	-5.721
24.901 GHz	Peak	2	46.86	74	-27.14	150	Horizontal	-5.413
20.879 GHz	Avg	2	32.213	54	-21.787	285	Horizontal	-5.806
22.413 GHz	Avg	2	53.978	54	-0.022	84	Horizontal	-5.721
24.901 GHz	Avg	2	34.112	54	-19.888	150	Horizontal	-5.413

Graph 6: Radaited Emissions in 17-40GHz on Mid Frequency (worst-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 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. Results of this testing are summarized. With a 26 dBi antenna, the conducted limit for power spectral density is -9 dBm. As per KDB 662911, When the EUT is using spatial-multiplexing in HT to HE modes, there is no 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 EIRP	Measured PSD
OFDM 20	5260	Mcs0	24	3.72	29.72	-10.97
OFDM 20	5280	Mcs0	23	3.85	29.85	-11.1
OFDM 20	5320	Mcs0	21	3.87	29.87	-11.02
HT 20	5260	Mcs0	24	3.66	29.66	-11.28
HT 20	5280	Mcs0	23	3.74	29.74	-11.46
HT 20	5320	Mcs0	21	3.8	29.8	-11.31
HT 40	5270	Mcs0	24	3.61	29.61	-14.52
HT 40	5310	Mcs0	22	3.67	29.67	-14.6
HT 40	5260	Mcs0	24	3.64	29.64	-11.45
VHT 20	5280	Mcs0	23	3.79	29.79	-11.31
VHT 20	5320	Mcs0	21	3.79	29.79	-11.29
VHT 20	5270	Mcs0	24	3.64	29.64	-14.61
VHT 80	5310	Mcs0	22	3.69	29.69	-14.71

5.6.2 UNII-2C

Modulation (BW)	Frequency (MHz)	Data Rate	TP Setting	Conducted Output Power*	Measured EIRP	Measured PSD
OFDM 20	5500	Mcs0	19	3.52	29.52	-11.06
OFDM 20	5600	Mcs0	21	3.96	29.96	-10.54
OFDM 20	5720	Mcs0	23	3.7	29.7	-10.76
HT 20	5500	Mcs0	19	3.49	29.49	-11.31
HT 20	5600	Mcs0	21	3.91	29.91	-10.61
HT 20	5720	Mcs0	23	3.64	29.64	-11.45
HT 40	5510	Mcs0	20	3.62	29.62	-14.43
HT 40	5590	Mcs0	21	3.63	29.63	-13.93
HT 40	5710	Mcs0	24	3.8	29.8	-14.46
VHT 20	5500	Mcs0	20	3.97	29.97	-10.63
VHT 20	5600	Mcs0	21	3.9	29.9	-10.28
VHT 20	5720	Mcs0	23	3.59	29.59	-11.33
VHT 40	5510	Mcs0	20	3.59	29.59	-14.3
VHT 40	5590	Mcs0	21	3.58	29.58	-13.9
VHT 40	5710	Mcs0	24	3.83	29.83	-14.16
VHT 80	5530	Mcs0	21	3.79	29.79	-17.84

5.6.3 Result

The maximum average power spectral density was less than the limit of -9 dBm; therefore, the EUT complies with the specification.

5.7 DFS Requirement

This product is a master with radar detection. DFS testing followed the test procedures as outlined in KDB 905462. The product passes all required DFS tests for a master with radar detection.

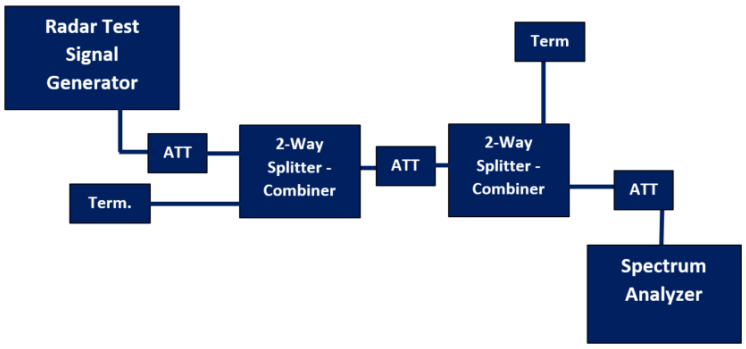
Information	Status
Possible Antenna/s	2 dBi integral, 26 dBi dish
Antenna used for test	2 dBi integral
Operating mode	Master
Port used for testing	J7/CH1
EIRP range	< 200 milliwatt
Impedance of port	50 ohms
Channel loading technique	Data transfer was enacted to achieve a minimum channel loading of approximately 17%
Antenna measurement technique	See note 1
Time of power-on cycle	46.5 secs
Detection threshold level	-62 dBm

*Note 1: The AF60-XG was designed in Ansys HFSS, industry-leading full-wave 3D electromagnetic simulation software. The hardware was measured against calibrated standard gain horn antennas in two internal Ubiquiti antenna chambers. The first antenna test chamber is a spherical near-field chamber manufactured by The Howland Company. This chamber measures the complex spherical near-field radiated power and computes the near-field to far-field transformation to accurately measure the directivity and realized gain of the antenna under test. The second chamber is a Compact Antenna Test Range (CATR). The compact range radiates a spherical wavefront from a fixed source into a parabolic reflector which collimates the signal into a plane wave to uniformly illuminate the antenna under test. This method is commonly used to accurately measure large antenna structures' directivity and realized gain.

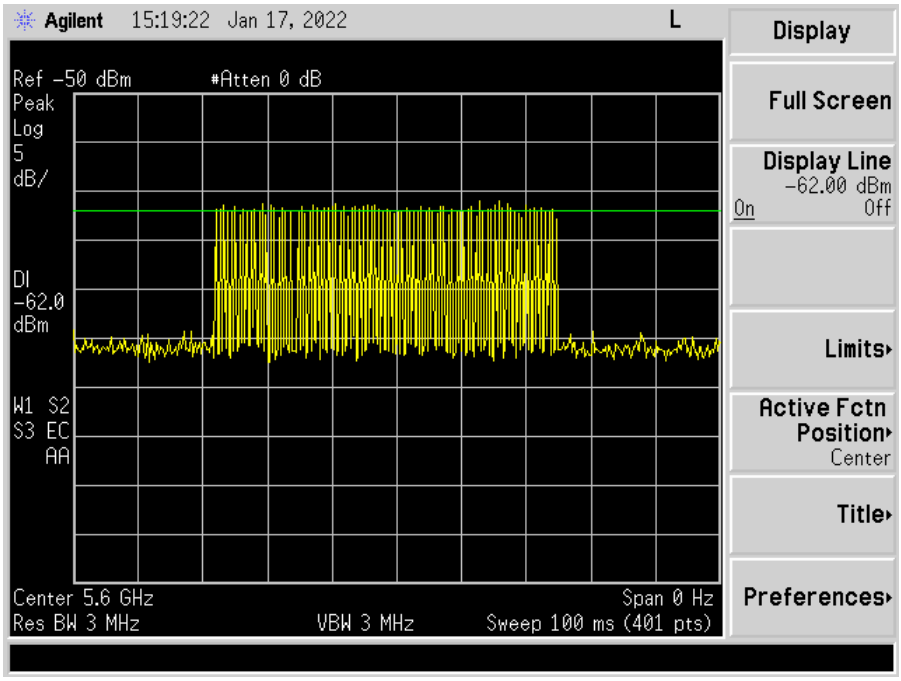
Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
Non-Occupancy Period	Yes	Not Required	Yes
DFS Detection Threshold	Yes	Not Required	Yes
Channel Availability Check Time	Yes	Not Required	Not Required
U-NII Detection Bandwidth	Yes	Not Required	Yes

Requirement	Operational Mode	
	Master Device 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

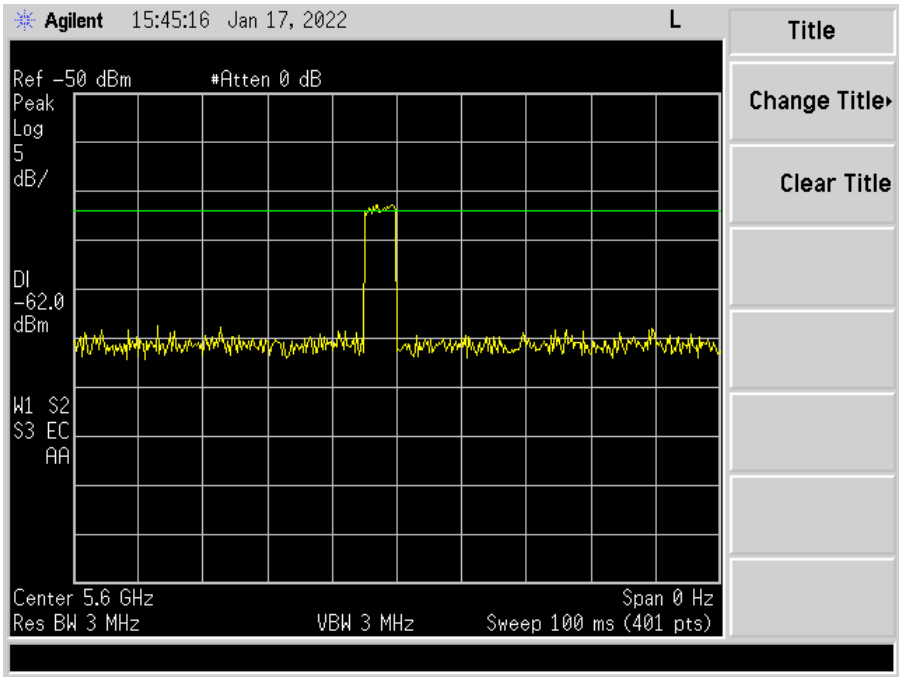
5.7.1 DFS Threshold Level



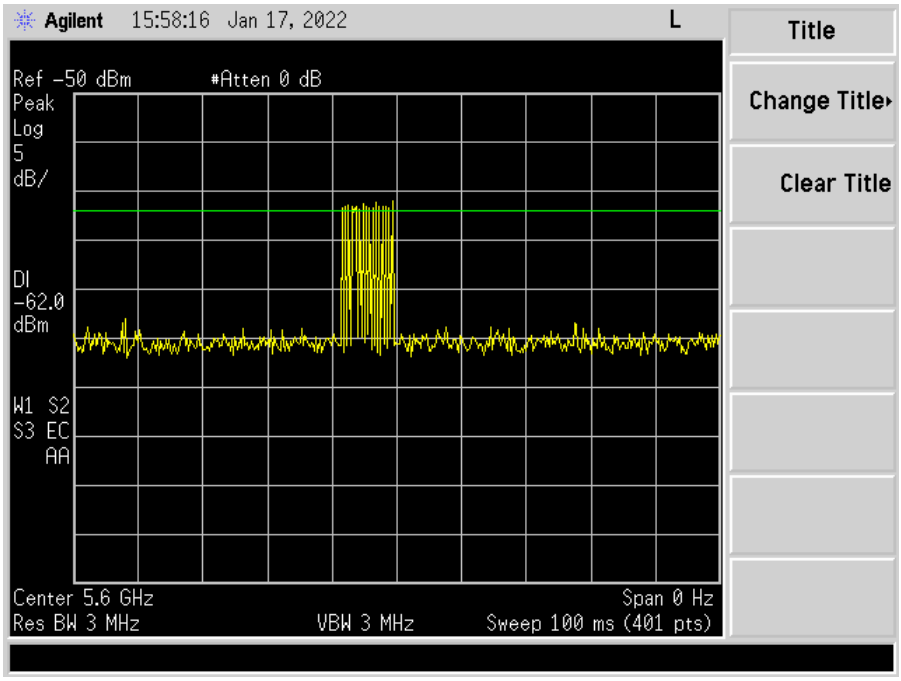
Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP ≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm
Note 1: This is the level at the input of the receiver assuming a 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.	



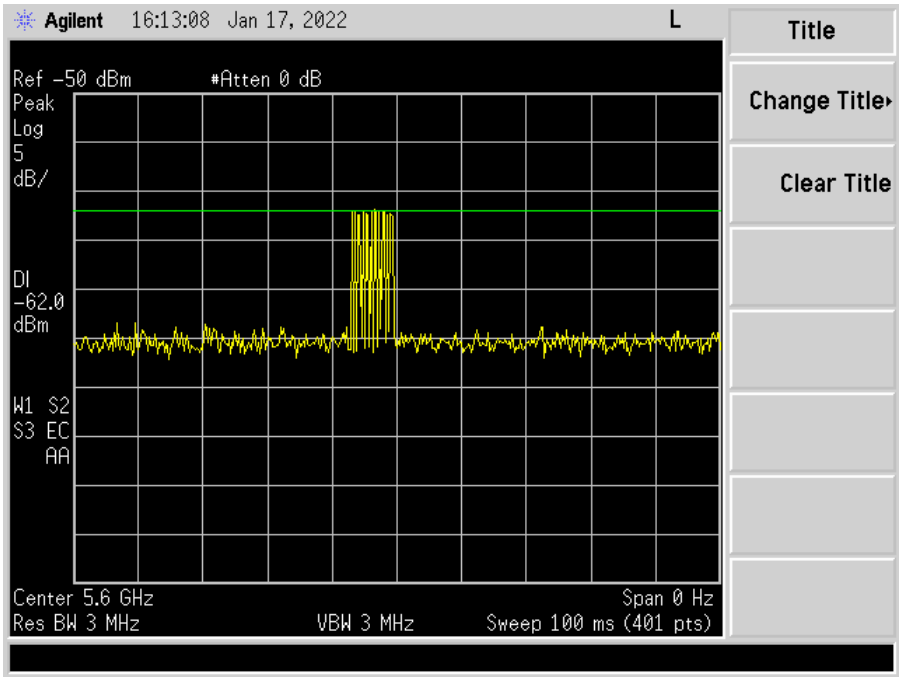
Plot 1: Radar Level 1



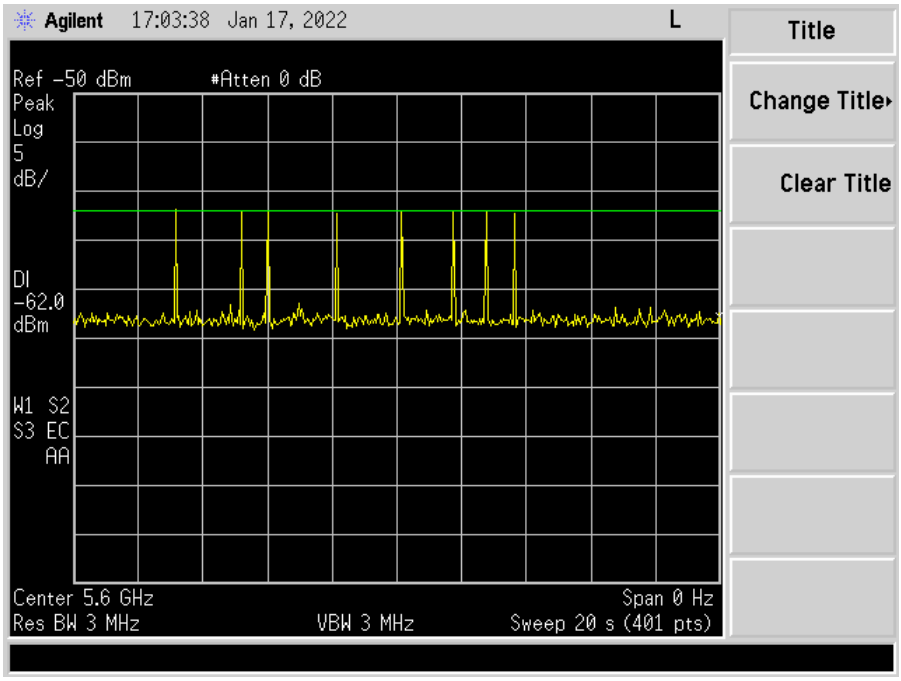
Plot 2: Radar Level 2



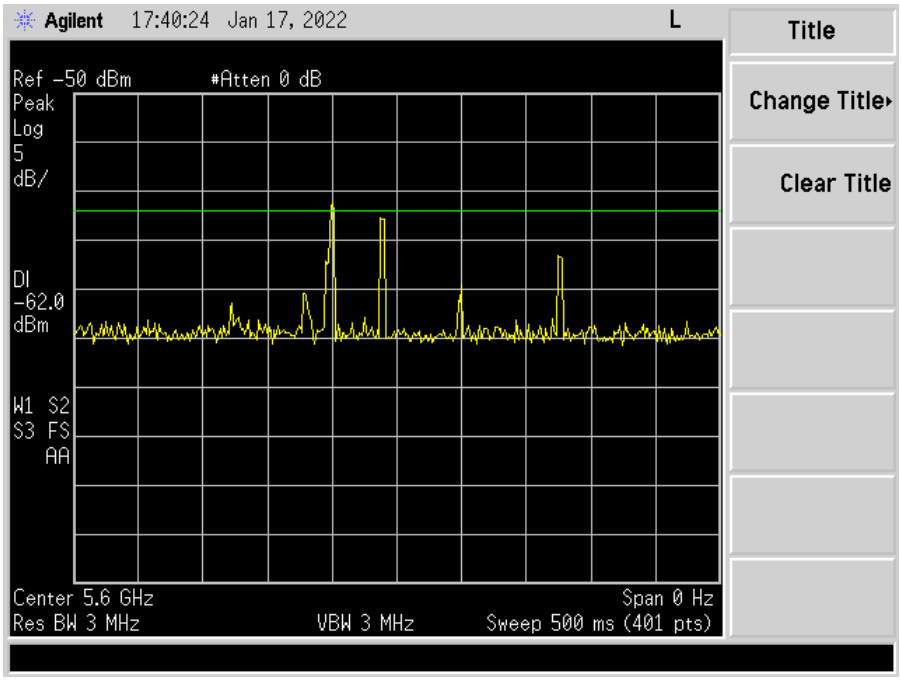
Plot 3: Radar Level 3



Plot 4: Radar Level 4



Plot 5: Radar Level 5



Plot 6: Radar Level 6

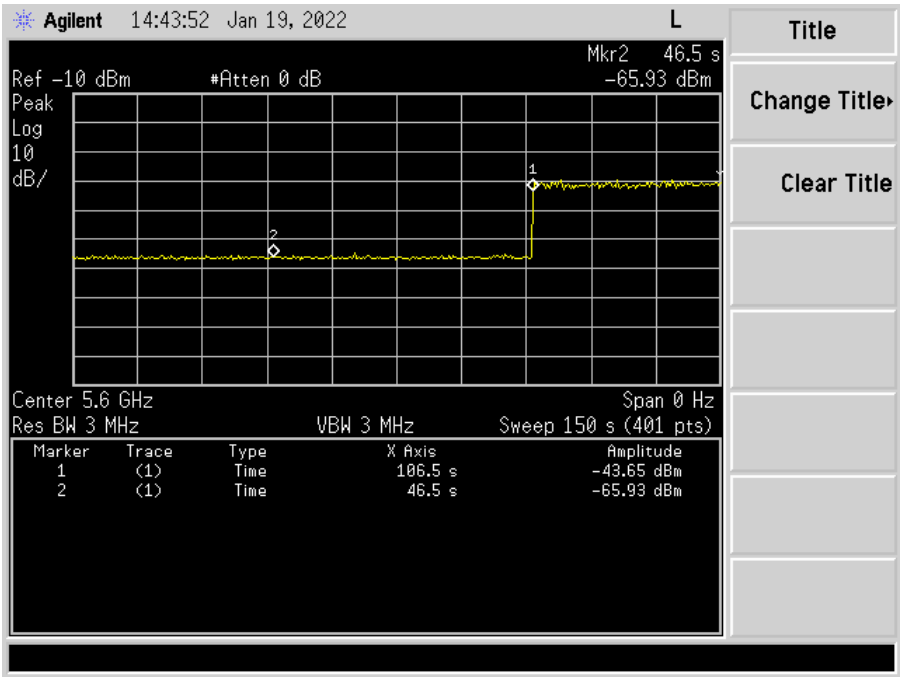
5.7.2 Channel Availability Check (CAC)

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 within the annex indicate initial beacons.

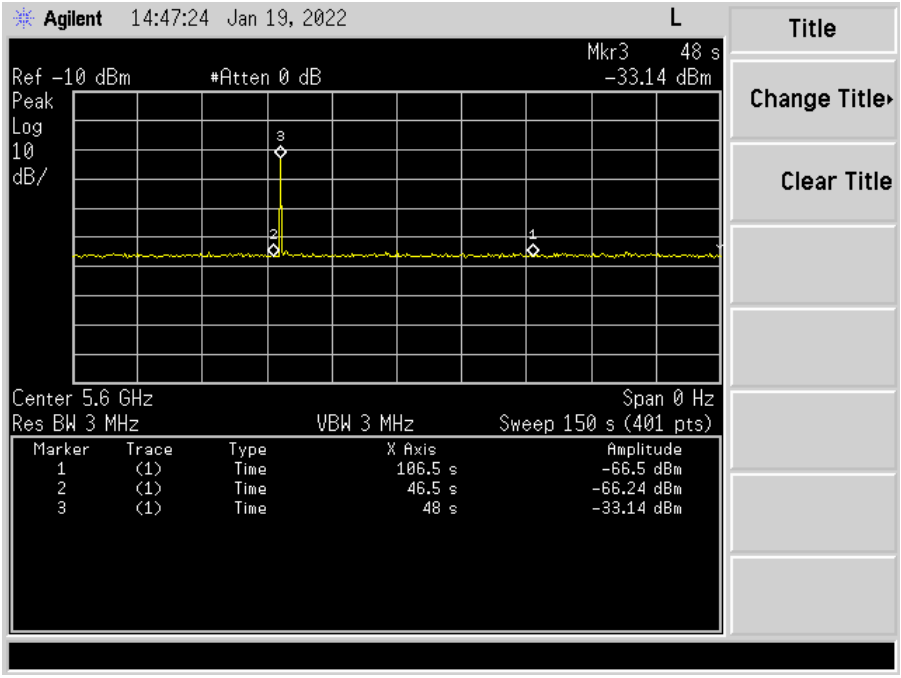
For radar burst at the beginning of the CAC. To verify successful radar detection on the selected channel during a period equal to the beginning of the CAC time, visual indication on the EUT of successful detection of the radar burst will be recorded and reported. Observation of the radar burst is show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

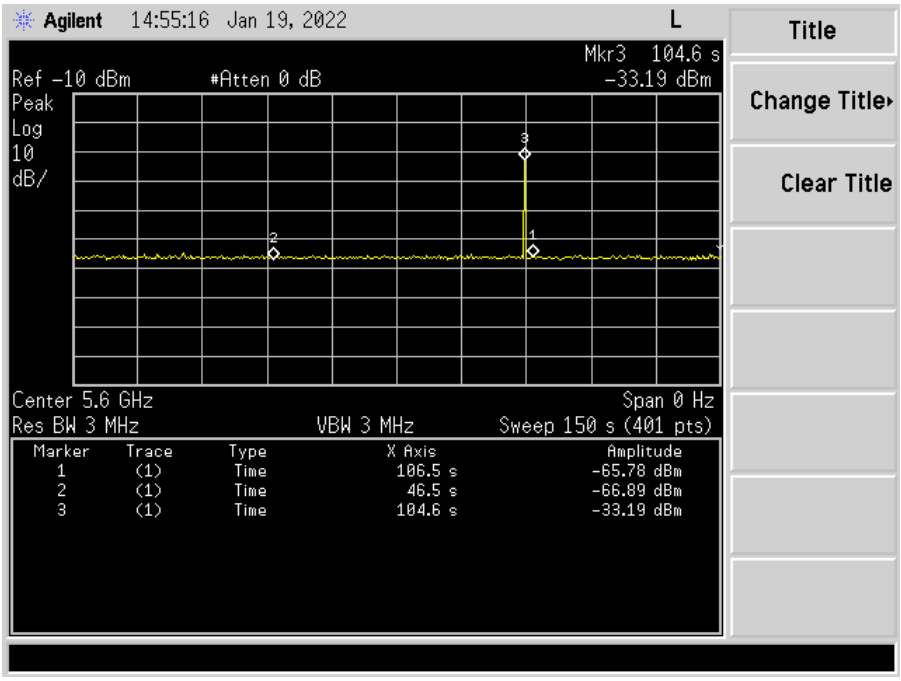
A spectrum analyzer is used as a monitor to verify that the EUT has vacated the channel within the channel closing transmission time and channel move time, and does not transmit on a channel during the non-occupancy period after the detection and channel move.



Plot 7: Turn-On



Plot 8: Beginning


Agilent 14:55:16 Jan 19, 2022
L
Mkr3 104.6 s
Ref -10 dBm
#Atten 0 dB
-33.19 dBm
Peak
Log
10
dB/
Center 5.6 GHz
Span 0 Hz
Res BW 3 MHz
VBW 3 MHz
Sweep 150 s (401 pts)
Marker Trace Type X Axis Amplitude
1 (1) Time 106.5 s -65.78 dBm
2 (1) Time 46.5 s -66.89 dBm
3 (1) Time 104.6 s -33.19 dBm
Title
Change Title
Clear Title

Plot 9: End

5.7.3 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

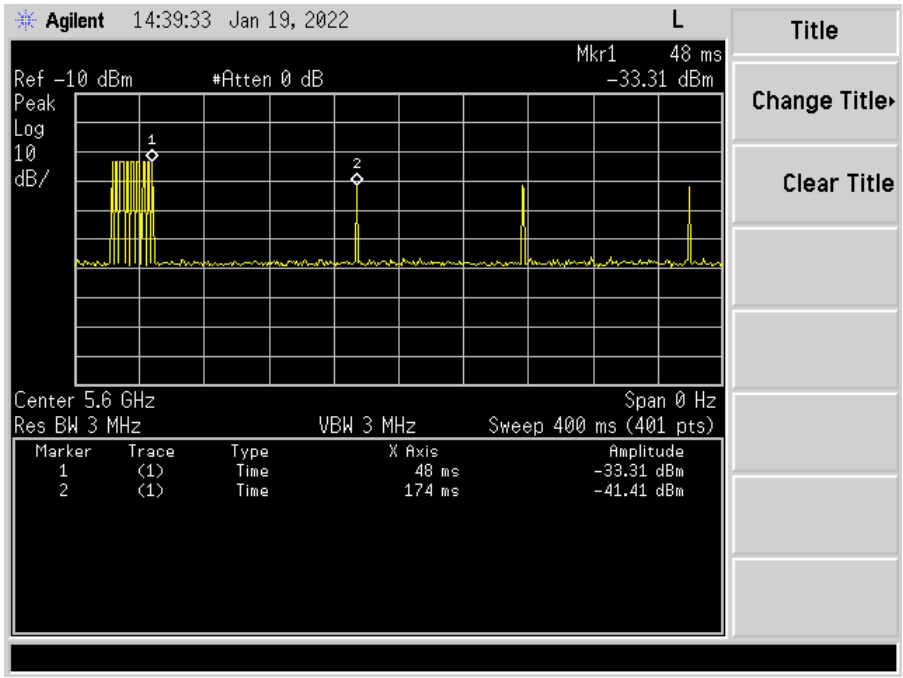
Verified during in-service monitoring: channel closing transmission time and channel move time. The transmissions were observed at the end of the radar burst on the operating channel for a duration of greater than 10 seconds. The transmissions were measured and recorded during the observation time. This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

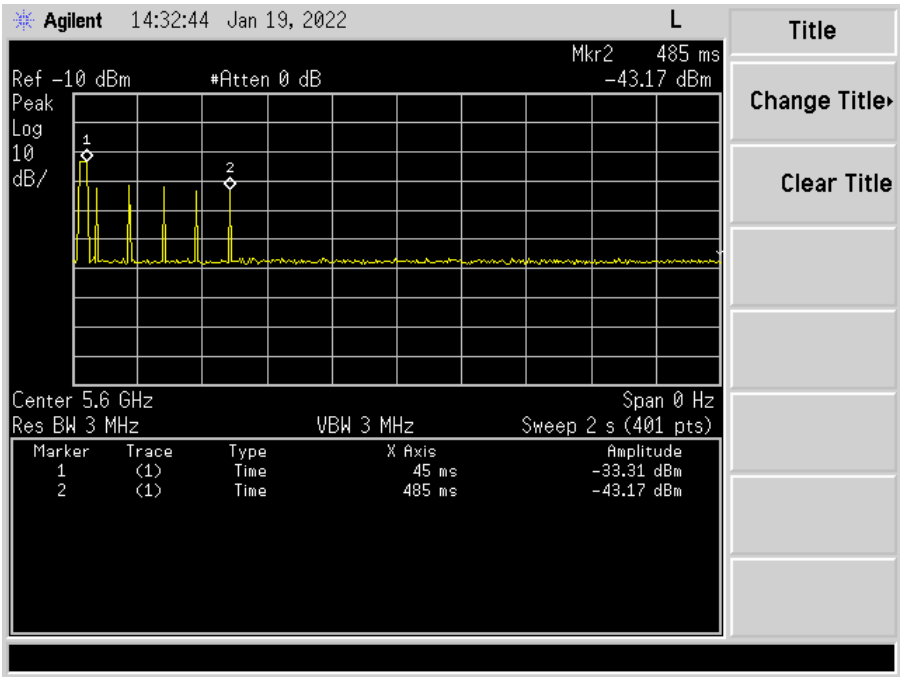
During the 30 minutes observation time, the EUT did not make any transmissions on a channel after a radar signal was detected.

Please see plots within the annex.

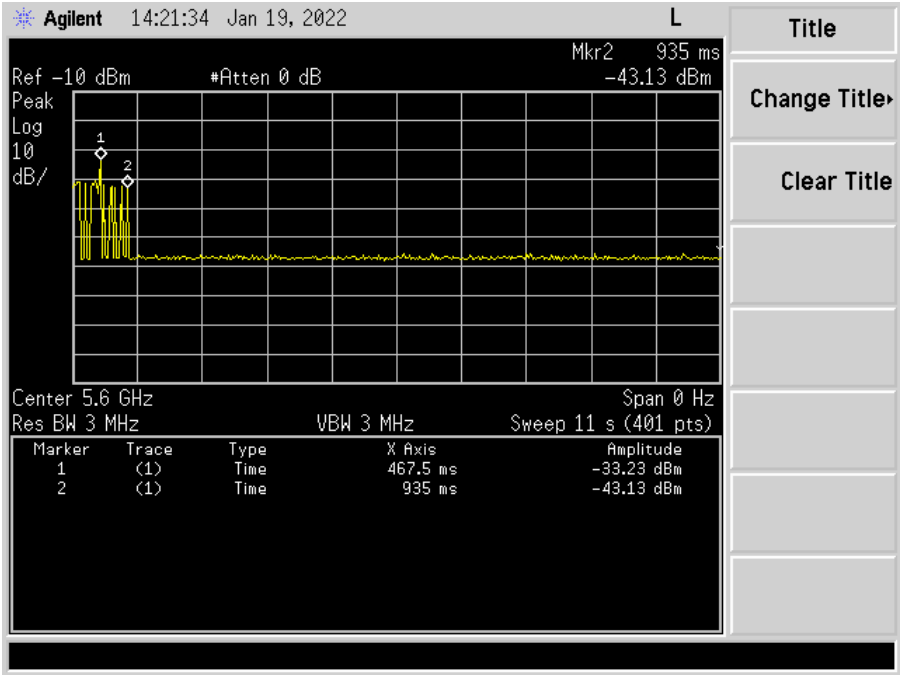
A spectrum analyzer is used as a monitor to verify that the EUT has vacated the channel within the channel closing transmission time and channel move time, and does not transmit on a channel during the non-occupancy period after the detection and channel move.



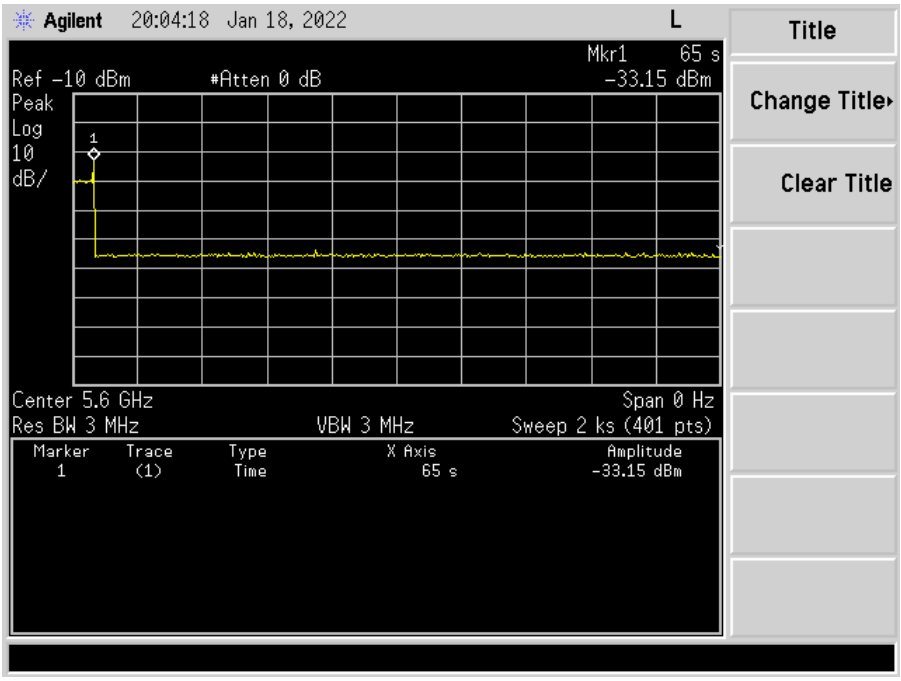
Plot 10: 400 ms



Plot 11: Close 2 seconds



Plot 12: Move



Plot 13: Non-Occupancy

5.7.4 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	1	1	1	1	1	1	1	1	1	1	100
5576											
5577											
5578											
5579											
5580	1	1	1	1	1	1	1	1	1	1	100
5581											
5582											
5583											
5584											
5585	1	1	1	1	1	1	1	1	1	1	100
5586											
5587											
5588											
5589											
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 = 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
5571											
5572											
5573											
5574											
5575	1	1	1	1	1	1	1	1	1	1	100
5576											
5577											
5578											
5579											
5580	1	1	1	1	1	1	1	1	1	1	100
5581											
5582											
5583											
5584											
5585	1	1	1	1	1	1	1	1	1	1	100
5586											
5587											
5588											
5589											
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											
5610	1	1	1	1	1	1	1	1	1	1	100
5611											
5612											
5613											
5614											
5615	1	1	1	1	1	1	1	1	1	1	100
5616											
5617											
5618											
5619											
5620	1	1	1	1	1	1	1	1	1	1	100
5621											
5622											
5623											
5624											
5625	1	1	1	1	1	1	1	1	1	1	100
5626											
5627											
5628											
5629											
5630	1	1	1	1	1	1	1	1	1	1	100
5631											
5632											
5633											
5634											
5635	1	1	1	1	1	1	1	1	1	1	100
5636											
5637											
5638											
5639											
5640	1	1	1	1	1	1	1	1	1	1	100
5641											

5642											
5643											
5644											
5645	1	1	1	1	1	1	1	1	1	1	100
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											

5.7.5 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 within the annex.

20 MHz

RADAR TYPE 1				Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	**Number of Pulses per Burst**	**Pulse Width (µsec)**	**PRI (µs)**	**Detection (yes/no)**
1	83	1	638	y
2	59	1	898	y
3	102	1	518	y
4	70	1	758	y
5	67	1	798	y
6	61	1	878	y
7	95	1	558	y
8	18	1	3066	n
9	65	1	818	y
10	89	1	598	y
11	81	1	658	y
12	57	1	938	y
13	68	1	778	n
14	74	1	718	y
15	72	1	738	y
16	79	1	674	y
17	92	1	575	y
18	75	1	712	y
19	26	1	2104	y
20	26	1	2055	y
21	20	1	2747	y
22	19	1	2899	y
23	85	1	620	y
24	32	1	1699	n
25	26	1	2053	y
26	60	1	882	n
27	44	1	1198	y
28	51	1	1052	y
29	46	1	1156	y
30	44	1	1201	y
Detection Probability 26/30				87 %

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	2.6	178	y
2	27	2.3	226	y
3	26	1.5	223	y
4	25	1.6	176	y
5	26	4.7	190	y
6	29	3.1	184	y
7	28	4.9	171	y
8	24	3.5	189	y
9	28	1.5	196	y
10	29	4.3	192	y
11	26	3.6	181	y
12	24	1.6	210	y
13	28	4.2	156	y
14	29	1.5	197	y
15	26	3.7	226	y
16	27	2	218	y
17	24	1.6	153	y
18	26	1.6	226	y
19	29	2.9	174	y
20	26	3	192	y
21	26	2.1	203	y
22	23	2.8	172	y
23	24	3.4	223	y
24	24	4.2	169	y
25	26	1.8	190	y
26	28	3.4	209	y
27	28	3.7	157	y
28	28	3.4	195	y
29	25	3	185	y
30	25	1.6	223	y
Detection Probability 30/30				100 %

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	6.4	490	y
2	17	6.4	296	y
3	17	7.6	499	y
4	18	6.1	466	y
5	17	8.6	206	y
6	17	9.1	299	y
7	16	7.8	440	y
8	18	7.8	276	y
9	17	8.5	420	y
10	17	9.8	440	y
11	16	9.6	316	y
12	18	8.9	419	y
13	18	8.5	206	y
14	17	9.1	286	y
15	17	7.4	404	y
16	18	7.9	389	y
17	16	7.5	426	y
18	18	8.8	397	y
19	16	7.6	352	y
20	16	6.1	263	y
21	18	7.4	475	y
22	18	6	493	y
23	17	7.9	306	y
24	16	7.2	315	y
25	17	7.4	339	y
26	17	7.5	225	y
27	17	8.1	381	y
28	18	8.4	264	y
29	18	7.8	396	y
30	17	8.8	229	y
Detection Probability 30/30				100 %

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	13.6	416	y
2	12	19.8	494	y
3	12	11.7	354	y
4	16	12	410	y
5	13	15.9	379	y
6	15	13.3	339	y
7	13	17.7	283	y
8	14	16.8	413	y
9	15	18.2	318	y
10	12	16.3	234	y
11	15	16.9	207	y
12	13	12.6	207	y
13	16	17.4	446	y
14	14	16.2	499	y
15	12	19.1	319	y
16	13	18	337	y
17	14	13.3	432	y
18	12	14.7	439	y
19	14	14.1	463	y
20	14	13	351	y
21	13	19.9	377	y
22	16	14.7	352	y
23	16	15	428	y
24	15	15.7	296	y
25	14	11.3	383	y
26	16	11.5	393	y
27	14	15.5	409	y
28	16	11.1	300	y
29	13	17.3	358	y
30	14	17.1	298	y
Detection Probability 30/30				100 %

TYPE 5	Rohde & Schwarz K350 Pulse Sequencer DFS			
Trial #	**Detection (yes/no)**	**Chirp Width (MHz)**	**Subset**	**Fc**
1	y	10	1	5500
2	y	14	1	5500
3	y	7	1	5500
4	y	19	1	5500
5	y	7	1	5500
6	y	12	1	5500
7	n	15	1	5500
8	y	13	1	5500
9	y	12	1	5500
10	y	13	1	5500
11	y	17	2	5497.8
12	y	11	2	5495.4
13	n	10	2	5495
14	y	10	2	5495
15	y	15	2	5497
16	y	16	2	5497.4
17	y	19	2	5498.6
18	y	13	2	5496.2
19	y	18	2	5498.2
20	y	12	2	5495.8
21	y	12	3	5504.2
22	y	17	3	5502.2
23	y	12	3	5504.2
24	y	18	3	5501.8
25	n	19	3	5501.4
26	y	18	3	5501.8
27	y	6	3	5506.6
28	n	17	3	5502.2
29	y	14	3	5503.4
30	y	11	3	5504.6
Detection Probability 26/30	87 %			

TYPE 6 S	Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	**Detection (yes/no)**
1	y
2	n
3	y
4	y
5	y
6	n
7	n
8	y
9	n
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	n
23	n
24	y
25	n
26	y
27	y
28	y
29	y
30	n
Detection Probability 22/30	73 %

40 MHz

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	556	y
2	25	1	2166	y
3	18	1	3023	y
4	23	1	2326	y
5	67	1	790	y
6	31	1	1709	n
7	39	1	1364	y
8	38	1	1420	y
9	53	1	1006	y
10	32	1	1688	y
11	60	1	891	y
12	18	1	3005	y
13	83	1	640	y
14	80	1	663	y
15	51	1	1050	y
16	21	1	2571	y
17	43	1	1254	y
18	35	1	1549	n
19	42	1	1265	y
20	38	1	1392	y
21	25	1	2159	y
22	18	1	2934	y
23	23	1	2298	y
24	29	1	1875	y
25	59	1	902	y
26	43	1	1253	y
27	25	1	2110	y
28	33	1	1621	n
29	73	1	729	y
30	25	1	2142	y
Detection Probability 27/30				90 %

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	1.6	229	y
2	26	4	222	y
3	27	2.4	204	y
4	28	1.2	189	y
5	29	4.7	167	y
6	25	1.8	218	y
7	27	3.6	175	y
8	25	3.8	185	n
9	24	4	185	y
10	26	4.8	196	y
11	28	2.9	198	y
12	27	3.4	156	y
13	28	3.9	194	y
14	27	3.2	173	y
15	26	3.6	209	y
16	23	4.5	211	y
17	23	3.4	195	y
18	25	3.5	172	y
19	28	2.1	229	y
20	27	1.4	202	y
21	25	1.5	154	y
22	24	3.6	190	n
23	28	4	156	y
24	26	1.6	150	n
25	28	2.1	163	y
26	26	2.6	215	y
27	28	4.1	211	y
28	23	1.4	226	y
29	26	2.7	170	y
30	28	1.8	217	y
Detection Probability 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	18	6.2	426	y
2	17	6.2	259	y
3	16	7.8	398	y
4	17	9.7	331	y
5	18	8.6	450	n
6	18	8.5	215	y
7	17	9.4	381	y
8	16	9.7	323	y
9	16	7.1	453	y
10	17	9.7	413	y
11	17	6.3	381	y
12	17	7.3	231	n
13	16	9.7	274	y
14	18	7.7	492	y
15	16	9.4	384	y
16	17	6.4	377	y
17	17	8.2	270	y
18	16	9.7	207	y
19	18	9.5	345	y
20	17	7.1	371	y
21	17	8.9	372	y
22	16	6	495	n
23	18	7.3	238	y
24	18	9.5	218	y
25	18	6.4	220	y
26	18	6.8	317	y
27	17	8.8	365	y
28	18	6.1	262	y
29	17	7.3	361	y
30	16	7.5	498	y
Detection Probability 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	16.6	375	y
2	13	19.8	460	y
3	14	11	243	y
4	15	18.5	343	y
5	15	15	252	y
6	14	13.8	269	y
7	13	13.3	404	n
8	13	12.7	467	n
9	13	13.4	405	y
10	15	14.8	443	y
11	12	12.1	202	y
12	15	19	301	y
13	14	15.1	256	y
14	15	12.6	360	y
15	13	14	279	n
16	12	18.3	236	y
17	15	16.2	332	y
18	13	11.2	422	y
19	12	18.2	346	y
20	16	18.6	419	y
21	16	15.8	347	y
22	14	12.7	388	y
23	15	19.5	438	y
24	13	16.3	200	n
25	14	16.3	490	y
26	15	15.6	322	n
27	13	13.2	223	y
28	12	16.3	326	y
29	12	15.8	344	y
30	14	18.1	252	n
Detection Probability 24/30				80 %

TYPE 5	Rohde & Schwarz K350 Pulse Sequencer DFS			
Trial #	**Detection (yes/no)**	**Chirp Width (MHz)**	**Subset**	**Fc**
1	y	10	1	5500
2	y	11	1	5500
3	y	9	1	5500
4	y	19	1	5500
5	y	13	1	5500
6	y	15	1	5500
7	y	5	1	5500
8	n	7	1	5500
9	y	16	1	5500
10	y	12	1	5500
11	y	14	2	5496.6
12	y	7	2	5493.8
13	y	7	2	5493.8
14	y	17	2	5497.8
15	y	16	2	5497.4
16	y	17	2	5497.8
17	y	10	2	5495
18	y	7	2	5493.8
19	y	11	2	5495.4
20	y	17	2	5497.8
21	n	14	3	5503.4
22	y	15	3	5503
23	y	15	3	5503
24	y	14	3	5503.4
25	y	9	3	5505.4
26	y	9	3	5505.4
27	y	10	3	5505
28	y	10	3	5505
29	y	6	3	5506.6
30	y	10	3	5505
Detection Probability 28/30	93 %			

TYPE 6 S	Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	**Detection (yes/no)**
1	y
2	n
3	y
4	y
5	y
6	y
7	y
8	n
9	y
10	y
11	y
12	y
13	y
14	y
15	n
16	y
17	y
18	y
19	n
20	y
21	y
22	n
23	y
24	y
25	y
26	n
27	y
28	n
29	y
30	y
Detection Probability 23/30	77 %

80 MHz

RADAR TYPE 1				Rohde & Schwarz K350 Pulse Sequencer DFS
Trial #	**Number of Pulses per Burst**	**Pulse Width (µsec)**	**PRI (µs)**	**Detection (yes/no)**
1	39	1	1355	y
2	44	1	1206	y
3	60	1	885	y
4	66	1	805	y
5	37	1	1454	y
6	58	1	922	y
7	49	1	1084	y
8	45	1	1186	y
9	25	1	2190	n
10	23	1	2382	y
11	45	1	1176	y
12	21	1	2531	y
13	67	1	787	y
14	19	1	2889	y
15	40	1	1326	y
16	51	1	1043	y
17	22	1	2493	y
18	32	1	1686	y
19	64	1	835	n
20	38	1	1423	y
21	52	1	1018	y
22	23	1	2340	y
23	33	1	1632	y
24	64	1	833	y
25	20	1	2674	n
26	42	1	1271	y
27	29	1	1876	y
28	35	1	1540	n
29	29	1	1840	y
30	58	1	909	y
Detection Probability 26/30				87 %

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	3.5	164	y
2	27	3.2	203	y
3	24	3.3	183	y
4	27	4.3	202	y
5	25	3.4	153	y
6	24	1.9	198	y
7	25	3.9	170	y
8	25	4.8	165	y
9	28	1.7	188	y
10	29	4.6	226	y
11	25	1.3	222	y
12	24	2	157	y
13	26	4.5	156	y
14	25	1	169	n
15	28	4.8	226	y
16	24	2.7	201	y
17	26	3	228	y
18	27	2.7	201	y
19	28	4.9	185	y
20	25	3.5	194	y
21	29	1.5	183	y
22	24	4.3	174	y
23	28	4.9	208	y
24	23	4	214	y
25	26	4.7	219	y
26	25	2.8	175	y
27	28	2.9	217	y
28	29	2	216	y
29	24	1.3	216	n
30	25	4.7	193	y
Detection Probability 28/30				93 %

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	9.7	224	y
2	18	8.4	232	y
3	16	9.7	464	y
4	17	9.7	287	y
5	18	8.9	461	y
6	18	8.7	307	y
7	17	6.9	283	y
8	17	8.9	346	y
9	16	6.5	457	y
10	17	7	486	y
11	17	9	283	n
12	17	7.9	299	y
13	17	9.1	284	y
14	17	7.4	324	y
15	17	7.5	228	y
16	18	9.8	205	n
17	16	6.6	275	n
18	17	9	430	y
19	16	9.7	376	y
20	17	8.1	247	y
21	16	8.8	434	n
22	16	7	281	y
23	16	9	416	n
24	17	6.1	279	y
25	16	6	453	y
26	18	7.6	376	y
27	18	7	219	y
28	18	7.2	415	y
29	17	9.2	359	y
30	17	9.5	248	y
Detection Probability 25/30				83 %

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	17	344	y
2	12	19.3	338	y
3	13	11.4	393	y
4	14	14.3	440	y
5	14	16.1	461	y
6	13	13.1	347	y
7	13	12.1	227	y
8	16	11.3	422	y
9	14	18.9	362	y
10	14	15.7	260	y
11	14	11.4	379	y
12	16	14.2	380	y
13	16	17.9	455	y
14	15	13.9	427	y
15	14	18.2	437	y
16	13	15.7	357	y
17	13	16.7	274	y
18	14	13.9	218	y
19	14	14.5	497	n
20	14	13.6	261	y
21	13	12	337	y
22	16	13.1	290	y
23	13	11	424	y
24	15	14.5	334	y
25	16	12.2	476	y
26	14	11.6	282	y
27	13	18.7	477	y
28	13	13	343	n
29	14	16.8	293	y
30	13	16.1	431	y
Detection Probability 28/30				93 %

TYPE 5	Rohde & Schwarz K350 Pulse Sequencer DFS			
Trial #	**Detection (yes/no)**	**Chirp Width (MHz)**	**Subset**	**Fc**
1	y	5	1	5500
2	y	10	1	5500
3	y	5	1	5500
4	y	18	1	5500
5	y	8	1	5500
6	y	10	1	5500
7	y	7	1	5500
8	y	7	1	5500
9	y	5	1	5500
10	y	16	1	5500
11	y	15	2	5497
12	y	15	2	5497
13	y	12	2	5495.8
14	y	6	2	5493.4
15	y	10	2	5495
16	n	19	2	5498.6
17	y	15	2	5497
18	y	5	2	5493
19	y	5	2	5493
20	y	16	2	5497.4
21	y	12	3	5504.2
22	y	18	3	5501.8
23	y	6	3	5506.6
24	y	15	3	5503
25	y	9	3	5505.4
26	n	17	3	5502.2
27	y	17	3	5502.2
28	y	14	3	5503.4
29	y	5	3	5507
30	y	9	3	5505.4
Detection Probability 28/30	93 %			

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	y
11	y
12	y
13	y
14	y
15	y
16	y
17	y
18	y
19	y
20	n
21	y
22	y
23	n
24	y
25	y
26	y
27	y
28	y
29	y
30	y
Detection Probability 28/30	93 %

-- End of Test Report --