

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart E (Section 15.407)

Report No.: RFBHKO-WTW-P25070640-4

FCC ID: DD4IMXBP

Product: UC Wall

Brand:



Model No.: IMXBP

Received Date: 2025/8/1

Test Date: 2025/11/4

Issued Date: 2025/11/25

Applicant: Shure Incorporated

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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FCC Registration / 198487 / TW2021

Designation Number:

Approved by:

Jeremy Lin

Date:

2025/11/25

Jeremy Lin / Project Engineer

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Prepared by : Annie Chang / Senior Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFBHKO-WTW-P25070640-4	Original release.	2025/11/25

1 Certificate

Product: UC Wall

Brand:



Test Model: IMXBP

Sample Status: Engineering sample

Applicant: Shure Incorporated

Test Date: 2025/11/4

Standard: 47 CFR FCC Part 15, Subpart E (Section 15.407)

Measurement procedure: KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02
KDB 905462 D03 UNII Clients Without Radar Detection New Rules v01r02

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
Clause	Test Item	Result	Remark
15.407(h)	U-NII Detection Bandwidth	N/A	Not Applicable
15.407(h)	Channel Availability Check Time	N/A	Not Applicable
15.407(h)	Channel Closing Transmission and Channel Move Time	Pass	Applicable
15.407(h)	Non-Occupancy Period	Pass	Applicable
15.407(h)	Statistical Performance Check	N/A	Not Applicable
15.407(h)	Non-Associated Test	Pass	Applicable

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	UC Wall
Brand	
Test Model	IMXBP
DFS Firmware/software version	IntelliMixBarPro-userdebug shure_ren_wall_arm64 2025.10.17 202500100017 test-keys
Operational Mode	Client without radar detection (with TPC function)
Operating Frequency Band	5.25 GHz ~ 5.35 GHz 5.47 GHz ~ 5.725 GHz
Communication Mode	IP based
Channel Puncturing Function	Not Support

Note:

1. IMXBP is the regulatory model number, which includes two product numbers IMXBP-B and IMXBP-W, they are completely same except enclosure color.
2. The EUT uses following accessories.

Item	Brand	Model	Specification
AC Adapter	MASS POWER	E250-1A5400460B3	AC Input: 100-240Vac, 50/60Hz, 3.5A DC Output: 54Vdc, 4.6A, 248.4W Non-shielded AC cable without core, 1m Non-shielded DC cable with 1 core, 1.2m
RJ45 Cable	-	-	Non-shielded without core, 3m
HDMI Cable	-	-	Shielded without core, 2m
Type C Cable	-	-	Shielded without core, 1.8m

3. There are Bluetooth and WLAN (2.4 GHz & 5 GHz) technologies used for the EUT.
4. Bluetooth, WLAN 2.4 GHz & WLAN 5 GHz technologies cannot transmit at same time.
5. The EUT does not support Partial RU technology.
6. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

RF Chain NO.	Frequency range (GHz)	Gain (dBi)	Antenna Type	Connector Type
0	5.15~5.85	4.94	Dipole	ipex(MHF)
1	5.15~5.85	4.85	Dipole	ipex(MHF)

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

2. The EUT incorporates a MIMO function:

5 GHz Band		
Modulation Mode	TX & RX Configuration	
802.11a	2TX	2RX
802.11n (HT20)	2TX	2RX
802.11n (HT40)	2TX	2RX
802.11ac (VHT20)	2TX	2RX
802.11ac (VHT40)	2TX	2RX
802.11ac (VHT80)	2TX	2RX
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	2TX	2RX
802.11ax (HE80)	2TX	2RX

Note:

- The modulation and bandwidth are similar for 802.11n mode for 20 MHz (40 MHz), 802.11ac mode for 20 MHz (40 MHz, 80 MHz) and 802.11ax mode for 20 MHz (40 MHz, 80 MHz). Therefore the investigated worst case is the representative mode in test report.
- The EUT does not use channel puncturing and bandwidth reduction.

3.3 EUT Power Level

Highest Power Level						
Signal Mode	Frequency Band (MHz)	Conducted Power		Gain (dBi)	EIRP	
		(mW)	(dBm)		(mW)	(dBm)
CDD	5250-5350	47.161	16.74	4.94	147.09	21.68
	5470-5725	46.135	16.64	4.94	143.89	21.58

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 Channel Closing Transmission and Channel Move Time

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Horn Antenna EMCO	3115	00027024	2024/11/10	2025/11/9
		00028257	2024/11/10	2025/11/9
MXG Vector Signal Generator Keysight	N5182B	MY53052658	2025/5/26	2026/5/25
RF Coaxial Cable EMCI	EMC104	190802	2025/7/4	2026/7/3
RF Coaxial Cable HUBER+SUHNER	SF-104	Cable-RF-03	2025/7/4	2026/7/3
Signal Analyzer R&S	FSV40	101042	2025/9/19	2026/9/18
		101544	2025/7/1	2026/6/30
Signal Generator Keysight	N5173B	MY53270724	2025/4/16	2026/4/15
Spectrum Analyzer R&S	FSU43	100115	2025/2/12	2026/2/11

Notes:

1. The test was performed in LK - Adaptivity room.
2. Tested Date: 2025/11/4

4.2 Non-Occupancy Period

Refer to section 4.1 to get the tested date and information of the instruments.

4.3 Non-Associated Test

Refer to section 4.1 to get the tested date and information of the instruments.

5 Limits of Test Items

5.1 Working Modes and Required Test Items

The manufacturer shall state whether the UUT is capable of operating as a Master and/or a Client. If the UUT is capable of operating in more than one operating mode then each operating mode shall be tested separately. See tables 1 and 2 for the applicability of DFS requirements for each of the operational modes.

Table 1: Applicability of DFS Requirements Prior To Use a Channel

Requirement	Operational Mode		
	Master	Client without radar detection	Client with radar detection
Non-Occupancy Period	✓	✓ note	✓
DFS Detection Threshold	✓	Not required	✓
Channel Availability Check Time	✓	Not required	Not required
U-NII Detection Bandwidth	✓	Not required	✓

Note: Per KDB 905462 D03 UNII Clients Without Radar Detection New Rules v01r02 section (b)(5/6), If the client moves with the master, the device is considered compliant if nothing appears in the client non-occupancy period test. For devices that shut down (rather than moving channels), no beacons should appear. An analyzer plot that contains a single 30-minute sweep on the original channel.

Table 2: Applicability of DFS Requirements during Normal Operation.

Requirement	Operational Mode	
	Master or Client with radar detection	Client without radar detection
DFS Detection Threshold	✓	Not required
Channel Closing Transmission Time	✓	✓
Channel Move Time	✓	✓
U-NII Detection Bandwidth	✓	Not required

Additional requirements for devices with multiple bandwidth modes	Master or Client with radar detection	Client without radar detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required

Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.

5.2 Test Limits and Radar Signal Parameters

Detection Threshold Values

Table 3: DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP $\geq$ 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.

Note 3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

Table 4: DFS Response Requirement Values

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.

Parameters of DFS Test Waveforms

Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

Table 5: Short Pulse Radar Test Waveforms

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 ----- 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	$\text{Roundup} \left\lceil \left(\frac{1}{360} \right) \cdot \left(\frac{19 \cdot 10^6}{\text{PRI}_{\mu\text{sec}}} \right) \right\rceil$	60%	30
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 6: Long Pulse Radar Test Waveform

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
Three subsets of trials will be performed with a minimum of ten trials per subset. The subset of trials differ in where the Long Pulse Type 5 Signal is tuned in frequency. a) the Channel center frequency b) tuned frequencies such that 90% of the Long Pulse Type 5 frequency modulation is within the low edge of the UUT Occupied Bandwidth c) tuned frequencies such that 90% of the Long Pulse Type 5 frequency modulation is within the high edge of the UUT Occupied Bandwidth It include 10 trails for every subset, the formula as below, For subset case 1: the center frequency of the signal generator will remain fixed at the center of the UUT Channel. For subset case 2: to retain 90% frequency overlap between the radar signal and the UUT Occupied Bandwidth, the center frequency of the signal generator will vary for each of the ten trials in subset case 2. The center frequency of the signal generator for each trial is calculated by: $FL + (0.4 * \text{Chirp Width [in MHz]})$ For subset case 3: to retain 90% frequency overlap between the radar signal and the UUT Occupied Bandwidth, the center frequency of the signal generator will vary for each of the ten trials in subset case 3. The center frequency of the signal generator for each trial is calculated by: $FH - (0.4 * \text{Chirp Width [in MHz]})$							

Table 7: Frequency Hopping Radar Test Waveform

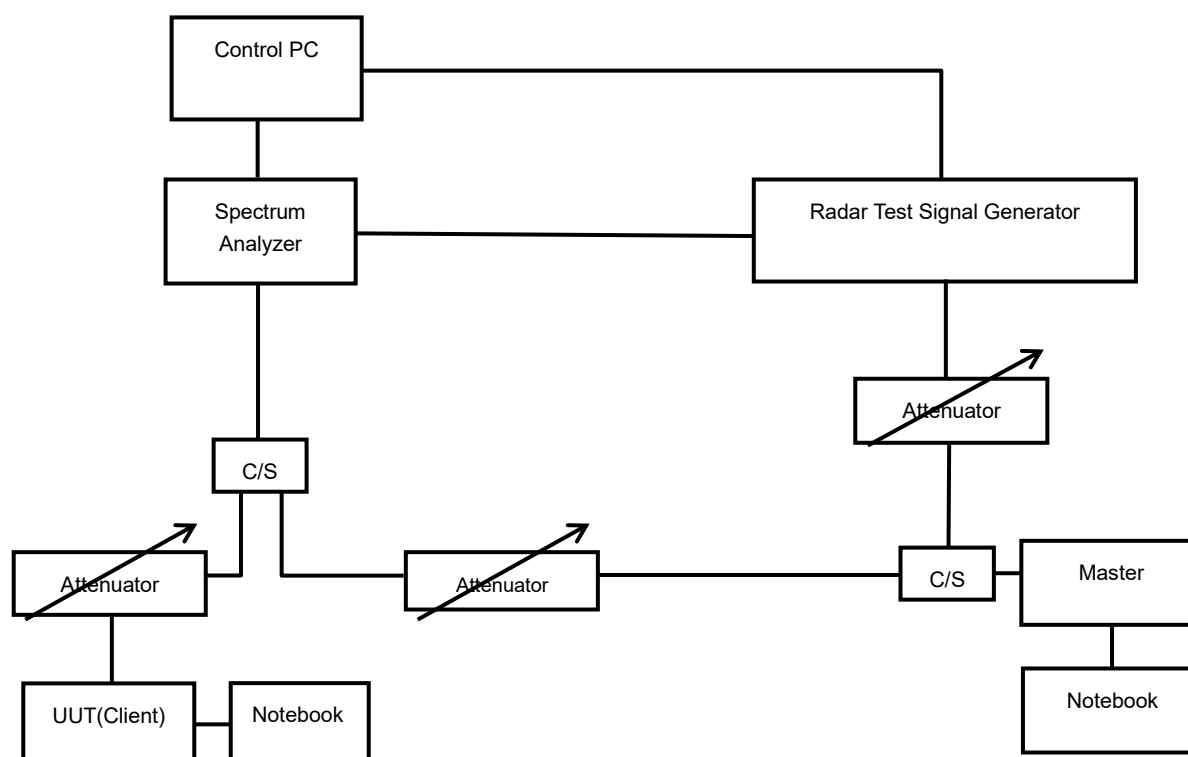
Radar Type	Pulse Width (μsec)	PRI (μsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

6 Test Arrangements

6.1 Test Setup

Conducted measurement

Client Mode



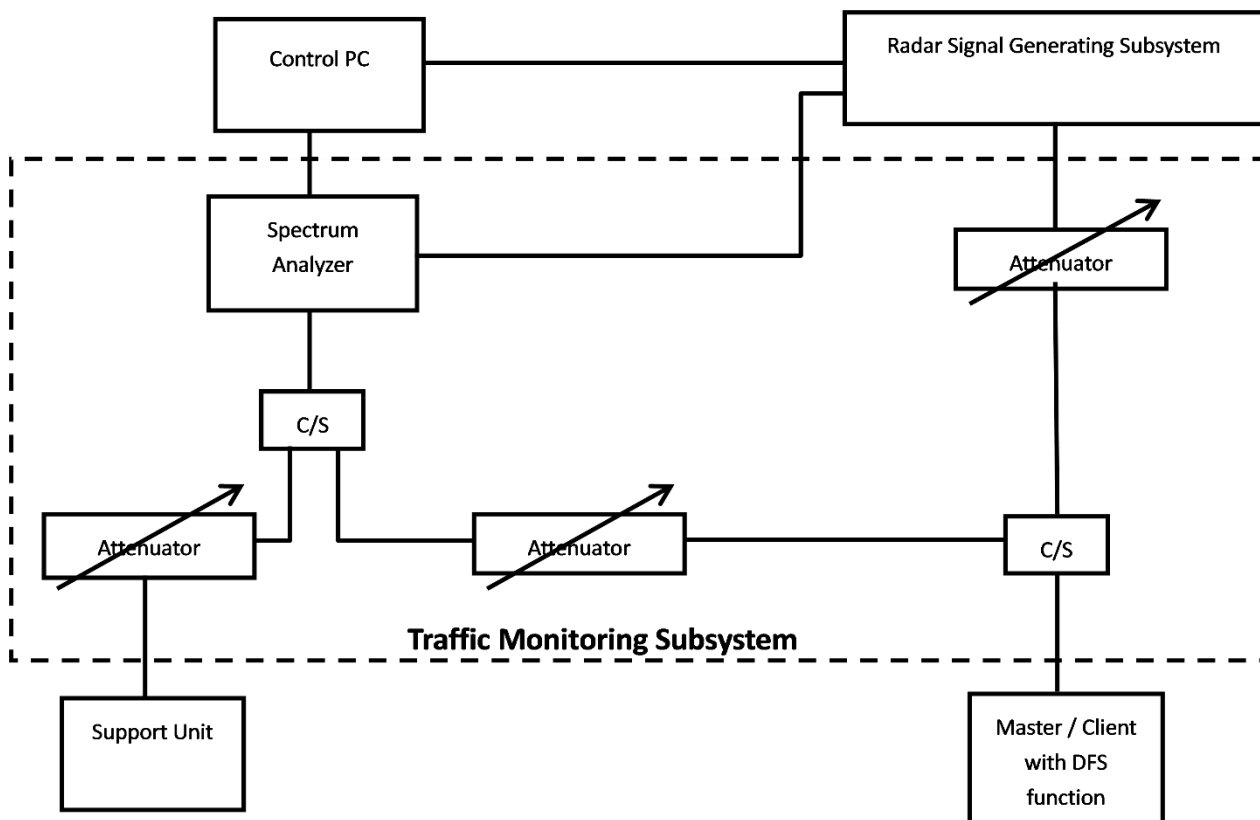
The UUT is a RLAN device operating in Client mode, without Radar Interference Detection function. The radar test signals are injected into the master device.

6.2 Test Procedure

6.2.1 DFS Measurement System

A complete DFS Measurement System consists of two subsystems: (1) the Radar Signal Generating system and (2) the Traffic Monitoring system. The control PC is necessary for generating the Radar waveforms in Table 5, 6 and 7. The traffic monitoring subsystem is specified to the type of unit under test (UUT).

Conducted Setup Configuration of DFS Measurement System



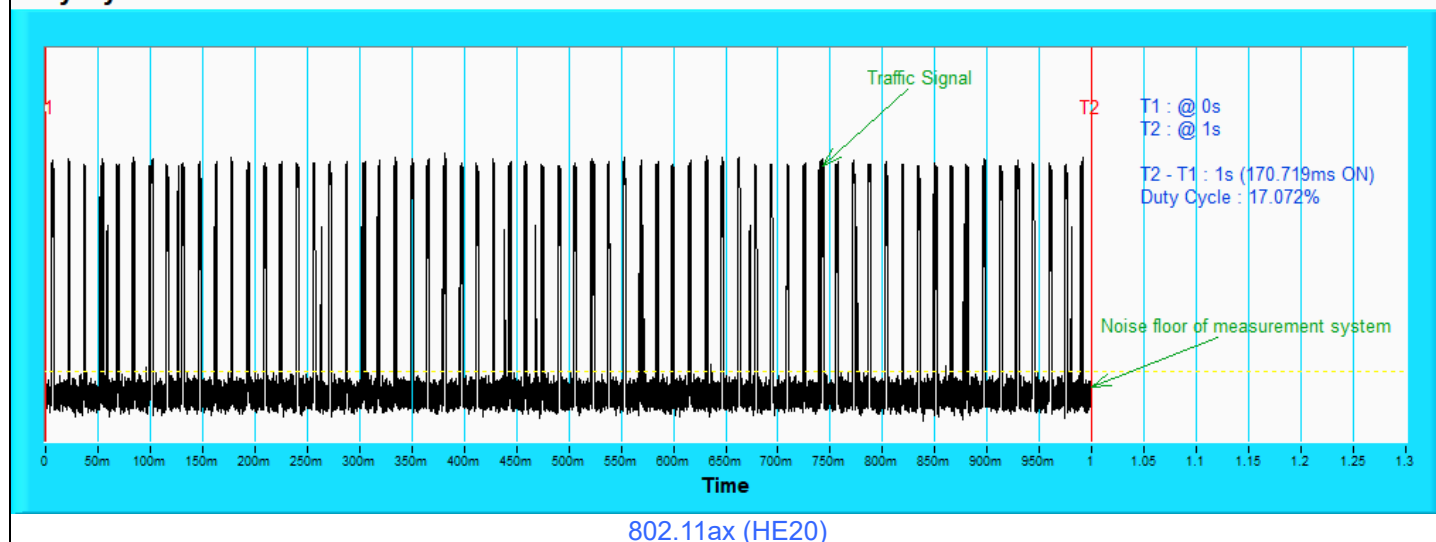
Channel Loading

System testing will be performed with channel-loading using means appropriate to the data types that are used by the unlicensed device. The following requirements apply:

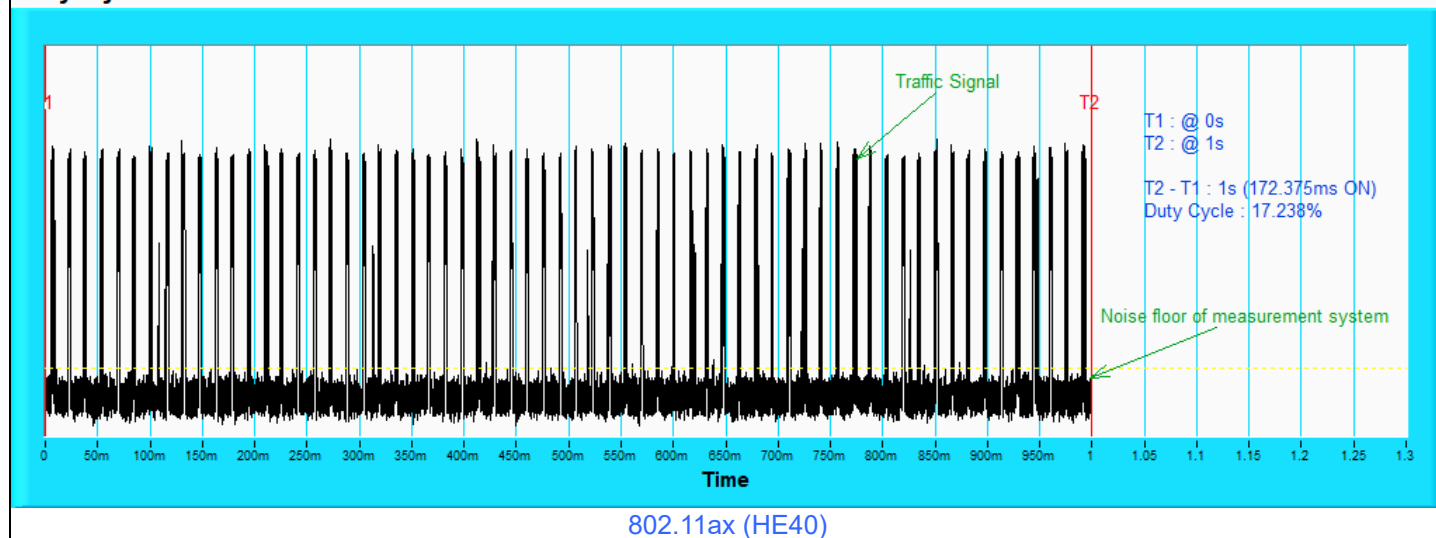
Applicable	Requirements apply
	a) The data file must be of a type that is typical for the device (i.e., MPEG-2, MPEG-4, WAV, MP3, MP4, AVI, etc.) and must generally be transmitting in a streaming mode.
	b) Software to ping the client is permitted to simulate data transfer but must have random ping intervals.
√	c) Timing plots are required with calculations demonstrating a minimum channel loading of approximately 17% or greater.
	d) Unicast or Multicast protocols are preferable but other protocols may be used. The appropriate protocol used must be described in the test procedures.

Plots of Channel Loading

Duty Cycle

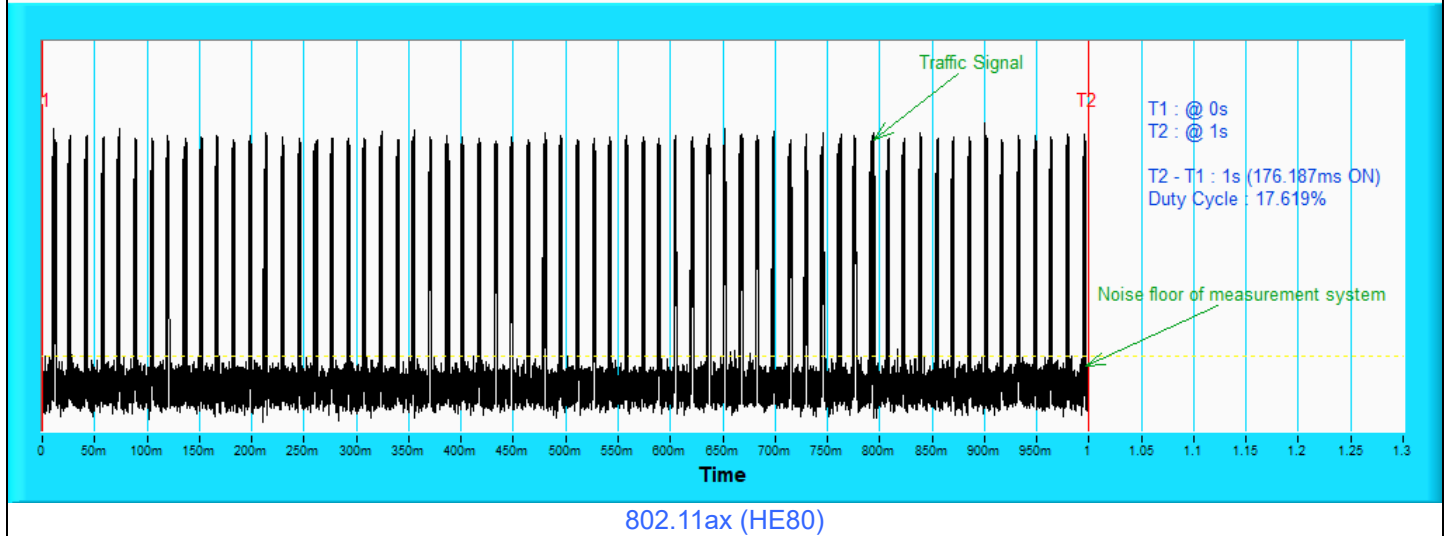


Duty Cycle



Plots of Channel Loading

Duty Cycle



6.2.3 DFS Detection Threshold

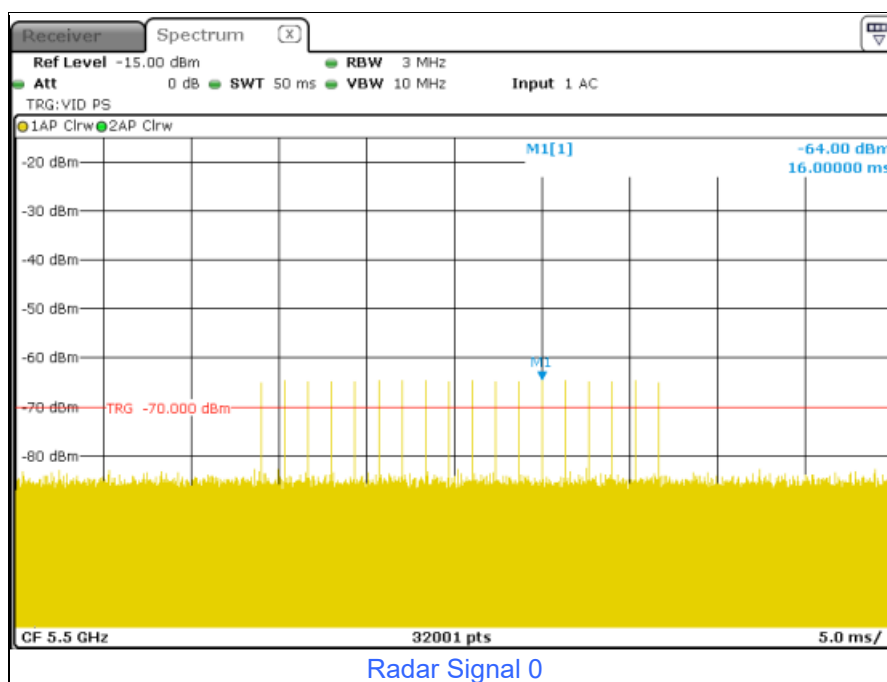
Test Mode: Device Operating in Client without radar detection Mode

Client with injection at the Master. (The radar test waveforms are injected into the Master Device)

The antenna net gain is 2.24 dBi.

DFS Detection Threshold = $-62 \text{ dBm} + 2.24 \text{ dBi} + 1 \text{ dB} = -58.76 \text{ dBm}$

The calibrated conducted detection threshold level is lower than -58.76 dBm .



6.2.4 DFS Companion Device

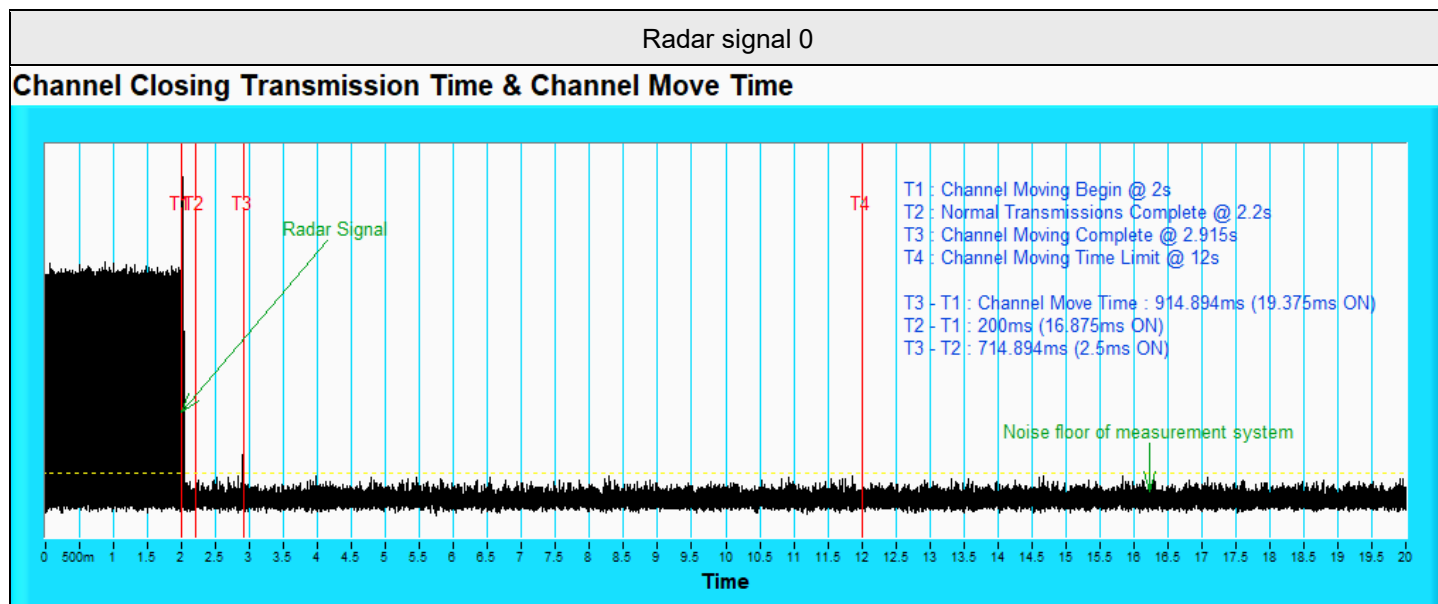
Companion Device Information					
Product	Brand	Model No.	FCC ID	Specification	Software/Firmware Version
802.11ax wireless Router	ASUS	RT-AX88U	MSQ-RTAXHP00	5G Ant gain : 2.24 dB	3.0.0.4.384_7968-g47549fc

Note: This device was functioned as a Master device during the DFS test.

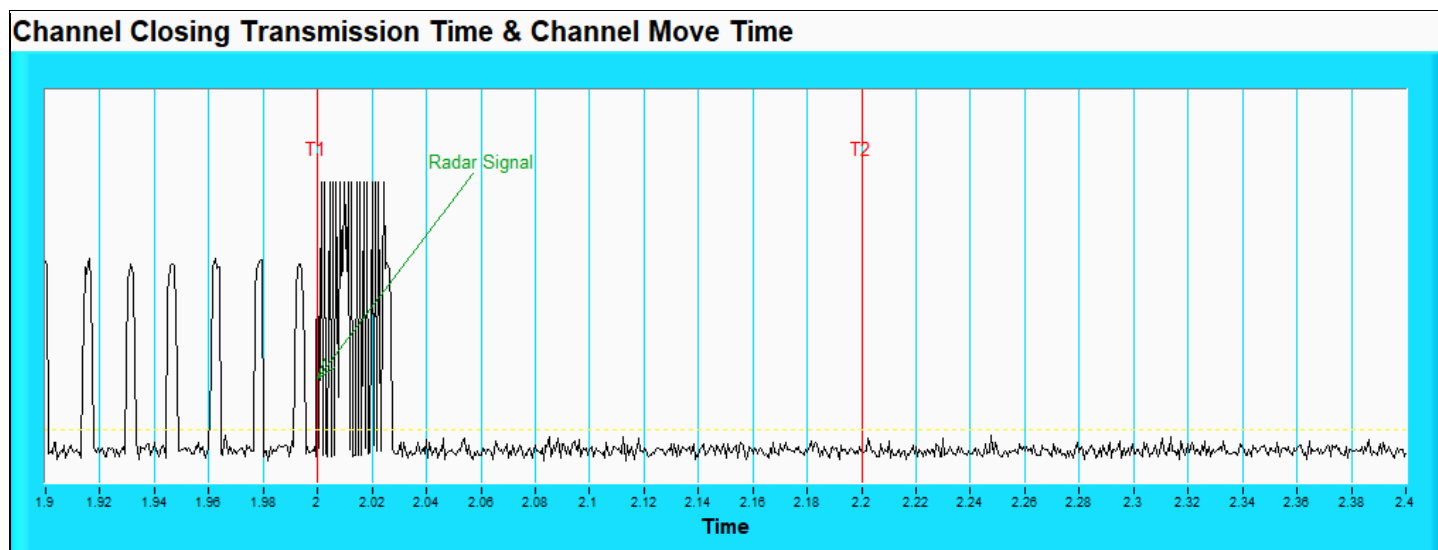
7 Test Results of Test Item

7.1 Channel Closing Transmission and Channel Move Time

Environmental Conditions:	25°C, 76% RH	Tested By:	Waydi Tuan
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Note: T1 denotes the start of Channel Move Time upon the end of the last Radar burst. T2 denotes the data transmission time of 200 ms from T1. T3 denotes the end of Channel Move Time. T4 denotes the 10 second from T1 to observe the aggregate duration of transmissions.



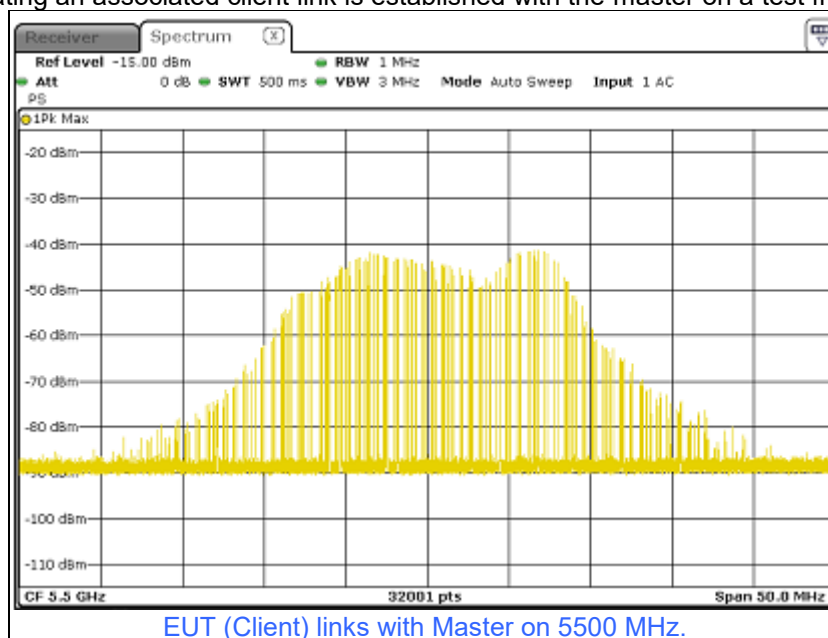
Note: Zoom in of the first 500 ms after radar signal applied.

7.2 Non-Occupancy Period

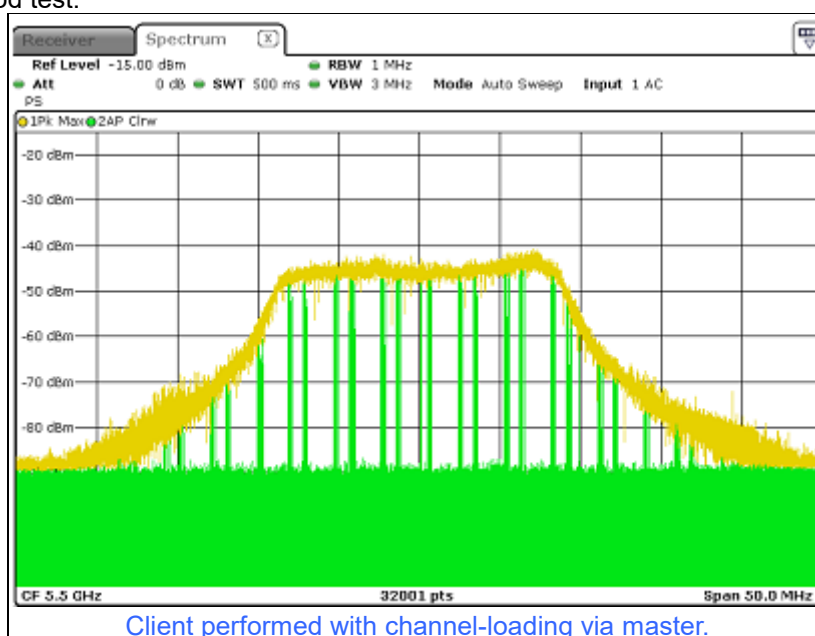
Environmental Conditions:	25°C, 76% RH	Tested By:	Waydi Tuan
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For Associated Test

1) Test results demonstrating an associated client link is established with the master on a test frequency.



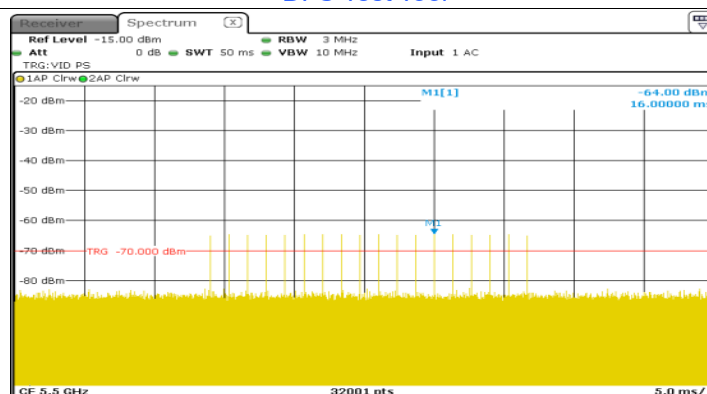
2) The client and DFS-certified master device are associated, and system testing will be performed with channel-loading for a non-occupancy period test.



3). The device transmits one type of radar as specified in the DFS Order.

	Trial Id	Radar Type	Pulse Width (us)	PRI (us)	Number of Pulses	Waveform Length (us)
Download	0	Type 0	1.0	1428.0	18	25704.0
Download	1	Type 0	1.0	1428.0	18	25704.0
Download	2	Type 0	1.0	1428.0	18	25704.0
Download	3	Type 0	1.0	1428.0	18	25704.0
Download	4	Type 0	1.0	1428.0	18	25704.0
Download	5	Type 0	1.0	1428.0	18	25704.0
Download	6	Type 0	1.0	1428.0	18	25704.0
Download	7	Type 0	1.0	1428.0	18	25704.0
Download	8	Type 0	1.0	1428.0	18	25704.0
Download	9	Type 0	1.0	1428.0	18	25704.0
Download	10	Type 0	1.0	1428.0	18	25704.0
Download	11	Type 0	1.0	1428.0	18	25704.0
Download	12	Type 0	1.0	1428.0	18	25704.0
Download	13	Type 0	1.0	1428.0	18	25704.0
Download	14	Type 0	1.0	1428.0	18	25704.0
Download	15	Type 0	1.0	1428.0	18	25704.0
Download	16	Type 0	1.0	1428.0	18	25704.0

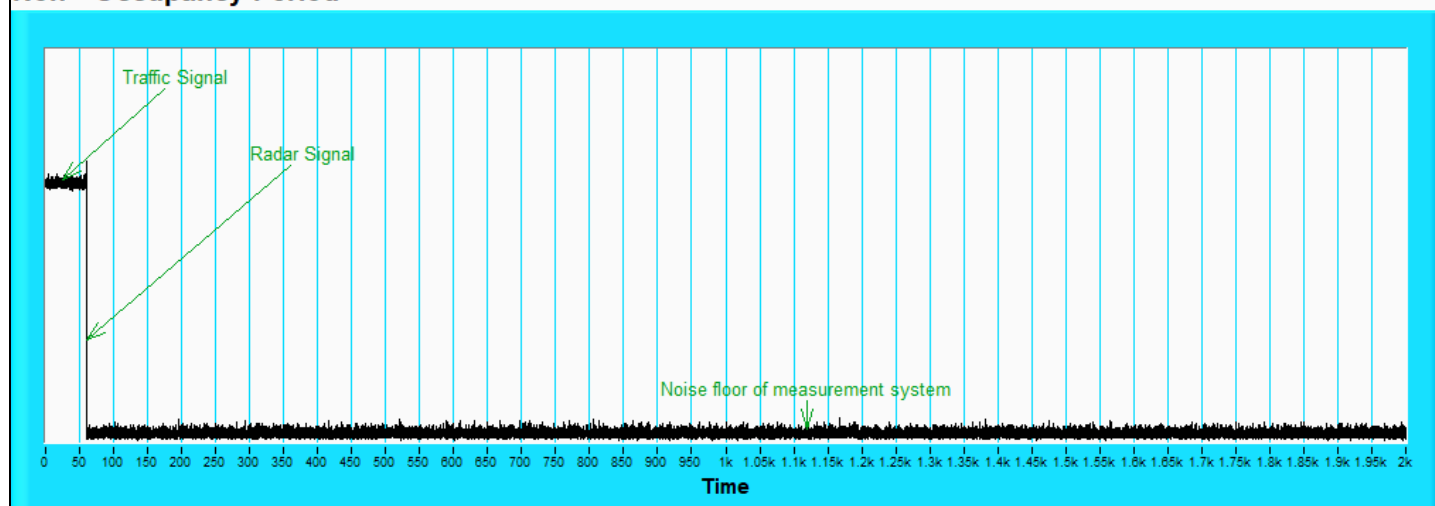
DFS Test Tool



Radar 0 is used to test during DFS test

- 4) The test frequency has been monitored to ensure no transmission of any type has occurred for 30 minutes;
Note: If the client moves with the master, the device is considered compliant if nothing appears in the client non-occupancy period test. For devices that shut down (rather than moving channels), no beacons should appear;
5) An analyzer plot that contains a single 30-minute sweep on the original test frequency.

Non - Occupancy Period



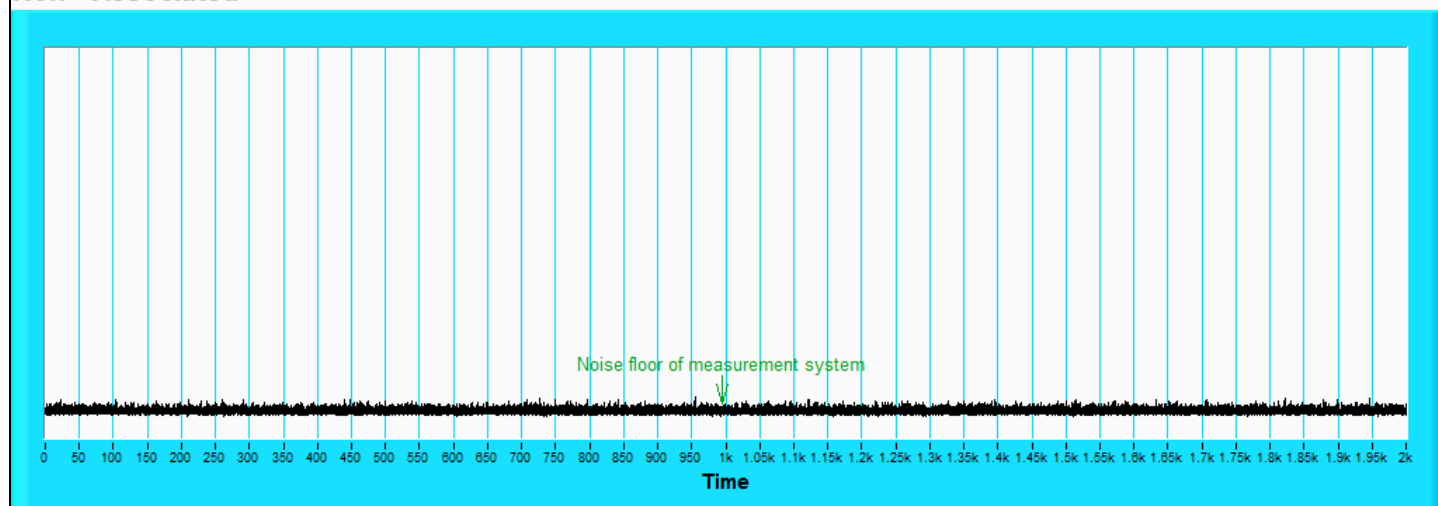
7.3 Non-Associated Test

Environmental Conditions:	25°C, 76% RH	Tested By:	Waydi Tuan
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Master was off.

During the 30 minutes observation time, The EUT did not make any transmissions in the DFS band after EUT power-up.

Non - Associated



8 Declaration of Conformity by the Manufacturer

8.1 Transmit Power Control (TPC)

U-NII devices operating in DFS Bands (5.25 to 5.35 GHz and 5.47 to 5.725 GHz) shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

The maximum EIRP of this device is 147.09 mW, and it has TPC functionality.

The UUT can adjust a transmitter's output power based on the signal level present at the receiver. TPC is auto controlled by software.

8.2 Statement of Manufacturer

Manufacturer statement confirming that information regarding the parameters of the detected Radar Waveforms is not available to the end user. And the device doesn't have ad-hoc mode on DFS frequency band.

9 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

10 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

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