TEST REPORT

REPORT NUMBER: 25B02W000005-006

ON

Type of Equipment:	Barcode Reader
Type of Designation:	DLMKWF
Brand Name:	DATALOGIC
Manufacturer:	Datalogic S.r.l.
FCC ID:	U4G-DLMKWF
IC	3862E-DLMKWF

ACCORDING TO

FCC Part15E, RSS-247 Issue 3

Chongqing Academy of Information and Communications Technology

Month date, year
Apr.18th, 2025
Signature

Zhou Jin
Director

Note:
The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of Chongqing Academy of Information and Communications Technology.

Revision Version

Report Number	Revision	Date
25B02W000005-006	00	2025-04-18

CONTENTS

1. Test Laboratory 5
1.1. Testing Location 5
1.2. Testing Environment 5
1.3. Project data 5
1.4. Signature 5
2. Client Information 6
2.1. Applicant Information 6
2.2. Manufacturer Information 6
3. Equipment under Test (EUT) and Ancillary Equipment (AE) 7
3.1. About EUT 7
3.2. Internal Identification of EUT used during the test 7
3.3. Outline of Equipment under Test 7
3.4. Internal Identification of AE used during the test 8
3.5. EUT Test RF Configuration 9
4. Reference Documents 10
4.1. Documents supplied by applicant 10
4.2. Reference Documents for testing 10
5. Test Equipments Utilized 11
5.1. RF Test System 11
5.2. Climate Chamber 11
5.3. Anechoic chamber Vibration table 11
5.4. Test software 11
6. Technical Requirements 12
6.1. DFS Technical Requirements and Radar Test Waveforms 12
6.2. Test Set-up 16
7. Summary of Test Results 17
8. Test Results 18

8.1. Radar Waveform Calibration Result 18

8.2. In-Service Monitoring for Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period 20

ANNEX A EUT Photos 23

ANNEX B Deviations from Prescribed Test Methods 24

1. Test Laboratory

1.1. Testing Location

Name:	Chongqing Academy of Information and Communications Technology
Designation Number:	CN1239
IC Registration Number:	29397
Address:	No.19 EastRoad,Xiantao Big-data Valley,Yubei District,Chongqing,People's Republic of China
Postal Code:	401336
Telephone:	0086-23-88069965
Fax:	0086-23-88608777

1.2. Testing Environment

Normal Temperature:	15-35℃
Relative Humidity:	30-75%

1.3. Project data

Testing Start Date:	2025-03-27
Testing End Date:	2025-04-10

1.4. Signature

董俊鑫	**2025-04-18**
Dong Junxin **(Prepared this test report)**	**Date**
	2025-04-18
Wang Lili **(Reviewed this test report)**	**Date**
周进	**2025-04-18**
Zhou Jin **Director of the laboratory** **(Approved this test report)**	**Date**

2. Client Information

2.1. Applicant Information

Company Name:	Datalogic S.r.l.
Address /Post:	Via San Vitalino no.13, Calderara di Reno -40012(BO)-ltaly
City:	Calderara di Reno
Country:	ltaly
Telephone:	+39 051 3147 393
Fax:	N/A
Email:	Ruggero.Cacioppo@datalogic.com
Contact Person:	Ruggero Cacioppo

2.2. Manufacturer Information

Company Name:	Datalogic S.r.l.
Address /Post:	Via San Vitalino no.13, Calderara di Reno -40012(BO)-ltaly
City:	Calderara di Reno
Country:	ltaly
Telephone:	+39 051 3147 393
Fax:	N/A
Email:	Ruggero.Cacioppo@datalogic.com
Contact Person:	Ruggero Cacioppo

3. Equipment under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

EUT Description	Barcode Reader
Model name	DLMKWF
Brand name	DATALOGIC
WLAN Frequency Band	Wi-Fi 5G U-NII-1/ U-NII-2a/U-NII-2c/U-NII-3:802.11a/n/ac
DFS Operating Mode	Slave without radar detection
HVIN	DLMKWF
Extreme Temperature	-20/+50°C
Nominal Test Voltage	3.85V
Extreme Test High Voltage	4.4V
Extreme Test Low Voltage	3.6V

Note1: Photographs of EUT are shown in ANNEX A of this test report.
Note2: High and low voltage values in extreme condition test are given by manufacturer.
Note3: The Extreme Temperature is provided by the manufacturer and has not been verified by the laboratory.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
25B02W000005#S16	867529060024650	V00	0.00.01.20250311	2025-03-27

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Outline of Equipment under Test

Technology	Band	UL Freq. (MHz)	DL Freq. (MHz)
DFS	U-NII-2A U-NII-2C	5250MHz-5350MHz 5470MHz-5725MHz	

Test frequency list:

UNII-2A:

BW_20M	Channel	52	56	60	64
	Freq. (MHz)	5260	5280	5300	5320

BW_40M	Channel	54	62
	Freq. (MHz)	5270	5310
BW_80M	Channel	58	
	Freq. (MHz)	5290	

UNII-2C:

BW_20M	Channel	100	104	108	112	116	120	124	128	132	136	140
	Freq. (MHz)	5500	5520	5540	5560	5580	5600	5620	5640	5660	5680	5700
BW_40M	Channel	102		110		118		126		134		/
	Freq. (MHz)	5510		5550		5590		5630		5670		/
BW_80M	Channel	106				122				/		
	Freq. (MHz)	5530				5610						
Note："/" Represents empty												

Maximum Output Power and E.I.R.P.

Frequency Band (MHz)	Max Output Power (dBm)	Antenna Gain (dBi)	Max. e.i.r.p. (dBm)	Max. e.i.r.p. (mW)
5290	15.47	1.97	17.44	55.46
5530	14.62	1.97	16.59	45.60

Note： U-NII devices operating in the 5.25-5.35 GHz band and the 5.47-5.725GHz shall employ a TPC mechanism. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500mW.

3.4. Internal Identification of AE used during the test

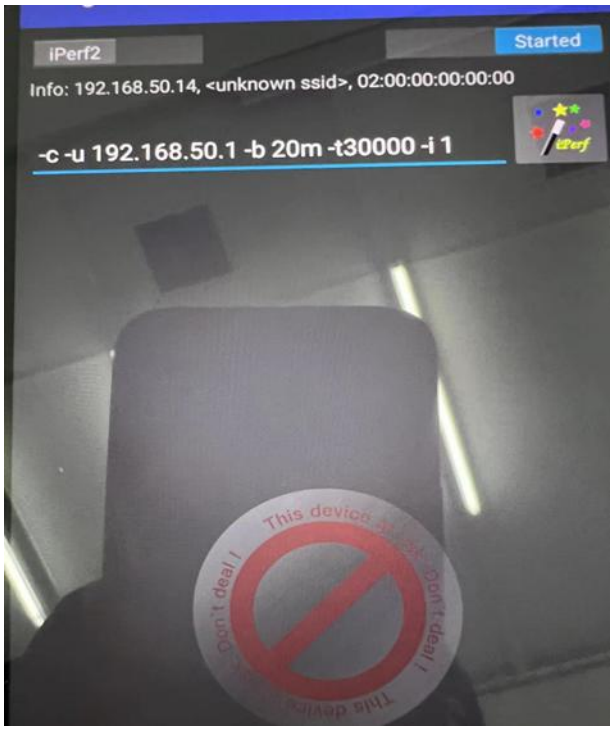
AE ID*	Description	Note
BA01	Battery	Model: MK2-BY-202 3.85V 4850mAh
AE1	RF cable	1.0dB
AE2	Auxiliary equipment	Name: AX6000 8-Stream Wi-Fi 6 Router Model: Archer AX6000 FCC ID: 2AXJ4AX6000V2

*AE ID: is used to identify the test sample in the lab internally.

dB*： is provided customer.

3.5. EUT Test RF Configuration

EUT uses iperf.apk working control emission measurement.



4. Reference Documents

4.1. Documents supplied by applicant

PICS/PIXIT, referring to Annex B for detailed information, is supplied by the client or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 15E	FCC CFR 47, Part 15, Subpart E: Unlicensed National Information Infrastructure Devices	--
RSS-247 Issue 3	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices	2013
KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02[Note1]	Compliance Measurement Procedures For Unlicensed-National Information Infrastructure Devices Operating In The 5250-5350 MHz And 5470-5725 MHz Bands Incorporating Dynamic Frequency Selection	--
Note1: KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02 are not A2AL certification.		

5. Test Equipments Utilized

5.1. RF Test System

No.	Equipment	Model	SN	HW Version	SW Version	Manufacture	Cal. Interval	Cal.Due Date
1	Spectrum analyzer	FSQ 26	201137	--	--	R&S	1 Year	2025-06-28
2	Signal Generator	N5182A	MY50140290	--	--	Agilent	1 Year	2025-06-28
3	T-SWT01 RF switch unit	--	--	--	--	Beijing Zhiwang Xince Technology Co., Ltd	--	--

5.2. Climate Chamber

No.	Name	Type	SN	Manufacture	Cal. Interval	Cal.Due Date
--	--	--	--	--	--	--

5.3. Anechoic chamber Vibration table

No.	Name	Type	SN	Manufacture	Cal. Interval	Cal.Due Date
--	--	--	--	--	--	--

5.4. Test software

No.	Name	version	SN	Manufacture
4	WIFI/BT CE/FCC/ICautomated testing software	V1.0.0.0	--	Beijing Zhiwang Xince Technology Co., Ltd

6. Technical Requirements

6.1. DFS Technical Requirements and Radar Test Waveforms

6.1.1 DFS Overview

Table 6-1 Applicability of DFS Requirements Prior to Use of a Channel

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

Table 6-2 Applicability of DFS requirements during normal operation

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

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar Detection	Client Without Radar Detection
U-NII Detection Bandwidth	All BW modes must be tested	Not required
Statistical Performance Check	All BW modes must be tested	Not required
Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
Channel Move 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 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.		

6.1.2 DFS Detection Thresholds

Table 6-3 DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

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 6-4 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.

6.1.3 Radar Test Waveforms

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	Roundup	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.*

Pulse Repetition Intervals Values for Test A

Pulse Repetition Frequency Number	Pulse Repetition Frequency (Pulses Per Second)	Pulse Repetition Interval (Microseconds)
1	1930.5	518
2	1858.7	538
3	1792.1	558
4	1730.1	578
5	1672.2	598
6	1618.1	618
7	1567.4	638
8	1519.8	658
9	1474.9	678
10	1432.7	698
11	1392.8	718
12	1355	738
13	1319.3	758
14	1285.3	778
15	1253.1	798

16	1222.5	818
17	1193.3	838
18	1165.6	858
19	1139	878
20	1113.6	898
21	1089.3	918
22	1066.1	938
23	326.2	3066

The aggregate is the average of the percentage of successful detections of Short Pulse Radar Types 1-4. For example, the following table indicates how to compute the aggregate of percentage of successful detections.

Radar Type	Number of Trials	Number of Successful Detections	Minimum Percentage of Successful Detection
1	35	29	82.9%
2	30	18	60%
3	30	27	90%
4	50	44	88%
Aggregate (82.9% + 60% + 90% + 88%)/4 = 80.2%			

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

The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the Long Pulse Radar Type waveforms. If more than 30 waveforms are used for the Long Pulse Radar Type waveforms, then each additional waveform must also be unique and not repeated from the previous waveforms.

Frequency Hopping Radar Test Waveform

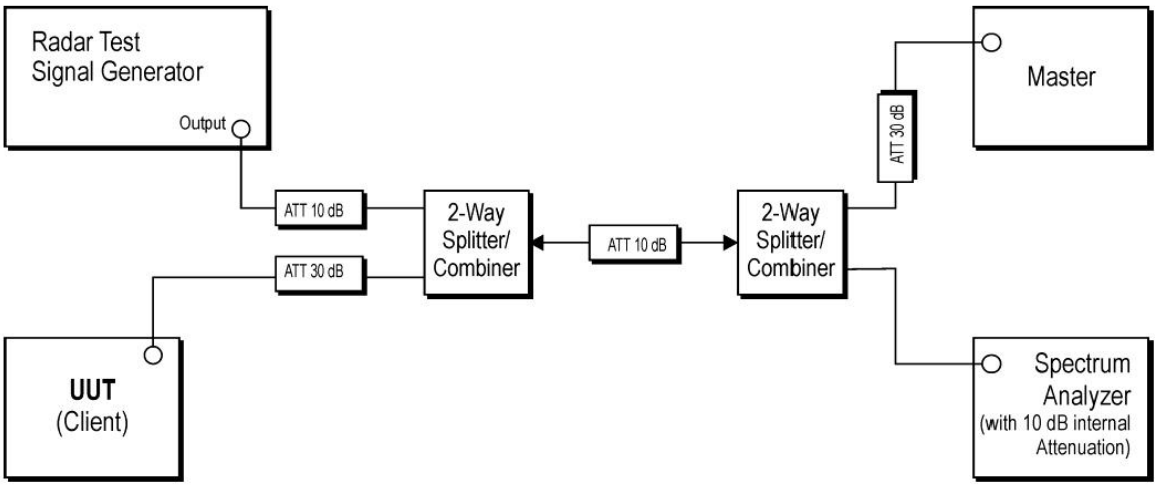
Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

For the Frequency Hopping Radar Type, the same Burst parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected from the hopping sequence defined by the following algorithm: The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250 – 5724 MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474

frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of a random frequency, the frequencies remaining within the group are always treated as equally likely.

6.2. Test Set-up

Setup for Client with injection at the Master



Pic 6-1: Example Conducted Setup where UUT is a Client and Radar Test Waveforms are injected into the Master

7. Summary of Test Results

A brief summary of the tests carried out is shown as following.

FCC Rules	IC Rules	Name of Test	Result
15.407(h) (2)	RSS-247 6.3	Non-Occupancy Period	Pass
15.407(h) (2)	RSS-247 6.3	Channel Closing Transmission Time	Pass
15.407(h) (2)	RSS-247 6.3	Channel Move Time	Pass
NOTE 1：The mobile computer, manufactured by Datalogic S.r.l. is a new product for testing.			

8. Test Results

Specifications:	FCC 47 Part 15.407(h)(2), RSS-247 6.3
DUT Serial Number:	25B02W000005#S16
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Measurement Uncertainty:

Item	Uncertainty
Channel Closing Transmission Time	0.04s
Channel Move Time	0.04s
Non-Occupancy Period	12.1s

8.1. Radar Waveform Calibration Result

Method of Measurement

A spectrum analyzer is used to establish the test signal level for each radar type. During this process, there are no transmissions by either the Master Device or Client Device. The spectrum analyzer is switched to the zero span (time domain) mode at the frequency of the Radar Waveform generator. The peak detector function of the spectrum analyzer is utilized. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) are set to at least 3 MHz.

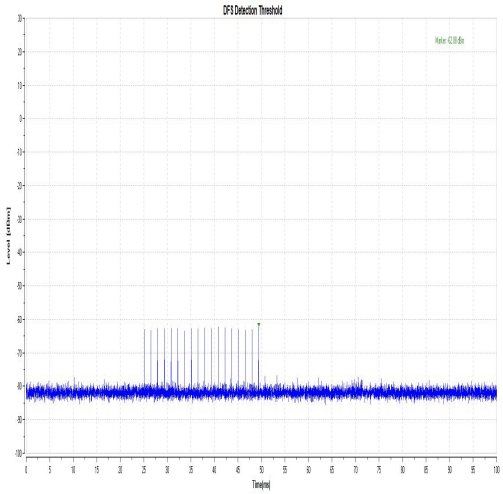
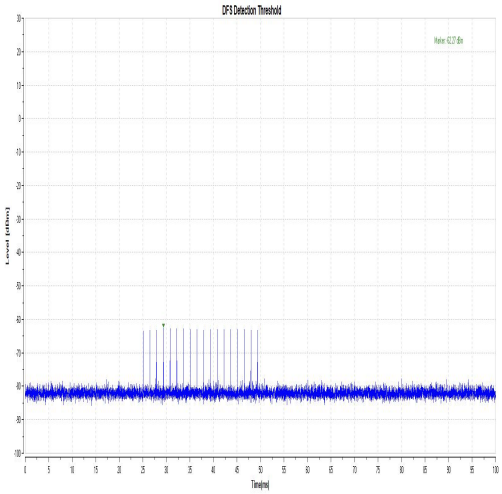
The signal generator amplitude and/or step attenuators are set so that the power level measured at the spectrum analyzer is equal to the DFS Detection Threshold that is required for the tests. The signal generator and attenuator settings are recorded for use during the test.

DFS Threshold Level	
DFS Threshold level: -62dBm	☑ at the antenna connector
	☐ in front of the antenna
Note: Because Maximum Transmit Power is less than 200 milliwatt in this report, the Interference Radar Detection Threshold Level is -60.03dBm. That had been taken into account the output power range and antenna gain.	

The Calibration is listed below:

TestMode	Frequency[dbm]	Radar Type	Result	Limit[dbm]	Verdict
11AC80SISO	5290	Type0	-62.08	-60.03	PASS
11AC80SISO	5530	Type0	-62.27	-60.03	PASS

Test Graphs

11AC80SISO-5290-Type0-PASS	11AC80SISO-5530-Type0-PASS
	

8.2. In-Service Monitoring for Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period

Method of Measurement

These tests define how the following DFS parameters are verified during In-Service Monitoring;

- Channel Closing Transmission Time
- Channel Move Time
- Non-Occupancy Period

The steps below define the procedure to determine the above mentioned parameters when a radar Burst with a level equal to the DFS Detection Threshold + 1dB is generated on the Operating Channel of the U-NII device (In- Service Monitoring).

a) One frequency will be chosen from the Operating Channels of the EUT within the 5250-5350 MHz or 5470-5725 MHz bands. For 802.11 devices, the test frequency must contain control signals. This can be verified by disabling channel loading and monitoring the spectrum analyzer. If no control signals are detected, another frequency must be selected within the emission bandwidth where control signals are detected.

b) In case the EUT is a U-NII device operating as a Client Device (with or without DFS), a U-NII device operating as a Master Device will be used to allow the EUT (Client device) to Associate wit the Master Device. In case the EUT is a Master Device, a U-NII device operating as a Client Device will be used and it is assumed that the Client will Associate with the EUT (Master). In both cases for conducted tests, the Radar Waveform generator will be connected to the Master Device. For radiated tests, the emissions of the Radar Waveform generator will be directed towards the Master Device. If the Master Device has antenna gain, the main beam of the antenna will be directed toward the radar emitter.

c) Vertical polarization is used for testing.

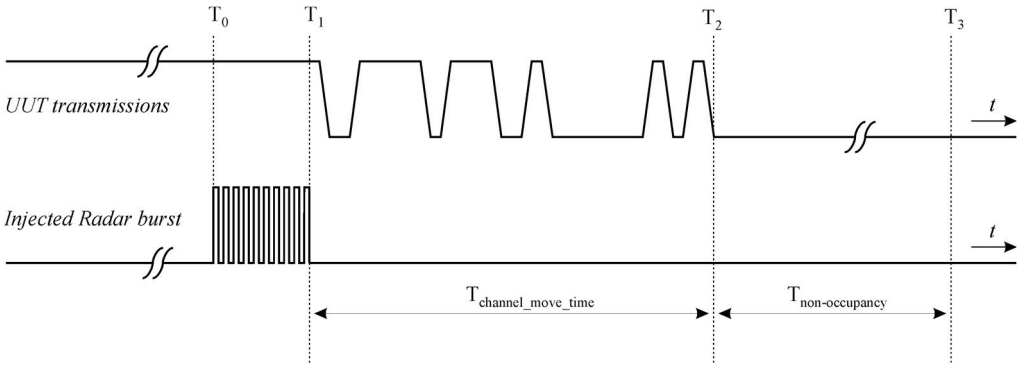
d) Stream the channel loading test file from the Master Device to the Client Device on the test Channel for the entire period of the test.

e) At time T0 the Radar Waveform generator sends a Burst of pulses for one of the Radar Type 0 in Table 5 at levels defined in Table 3, on the Operating Channel. An additional 1 dB is added to the radar test signal to ensure it is at or above the DFS Detection Threshold, accounting for equipment variation /errors.

f) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds. Measure and record the transmissions from the EUT during the observation time (Channel Move Time). Measure and r cord the Channel Move Time and Channel Closing Transmission Time if radar detection occurs. Figure 17 illustrates Channel Closing Transmission Time.

g) When operating as a Master Device, monitor the EUT for more than 30 minutes following instant T2 to verify that the EUT does not resume any transmissions on this Channel. Perform this test once and record the measurement result.

h) In case the EUT is a U-NII device operating as a Client Device with In-Service Monitoring, perform steps a) to f).



Pic 7-1: Channel Closing Transmission Time, Channel Move Time and Non-Occupancy Period

Limits:

Channel Move Time	≤10s
Channel Closing Transmission Time	≤200ms + 60ms (over remaining 10s period)
Non-Occupancy Period	≥30min

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 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: The Channel Closing Transmission Time is calculated by the computer.

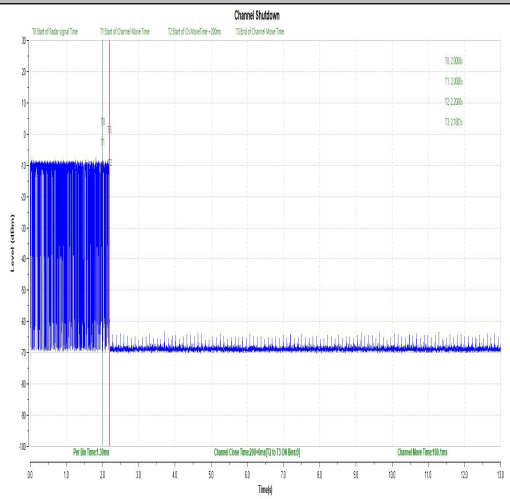
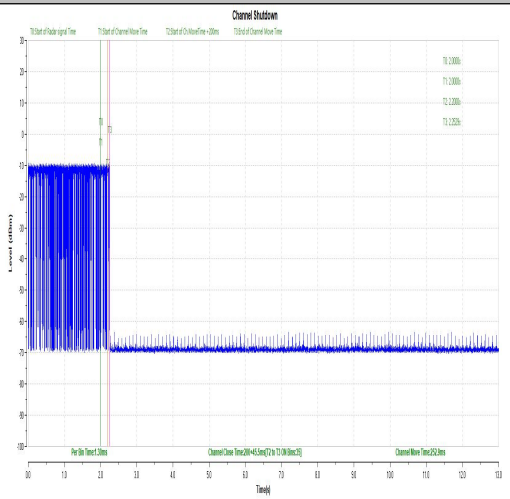
Note 4: A port with a minimum antenna gain was selected for testing. For details, refer to the document" DFS Set-up Photo".

Test result of Channel Move Time and Channel Closing Transmission Time

TestMode	Frequency[MHz]	CCTT[ms]	Limit[ms]	CMT[ms]	Limit[ms]	Verdict
11AC80SISO	5290	200+0	200+60	180.1	10000	PASS
11AC80SISO	5530	200+45.5	200+60	252.9	10000	PASS

Note:
CCTT = 200ms + Per Bin Time * Number of T2 to T3 ON Bins;
CMT=T3-T1.
*CCTT: Channel Closing Transmission Time,
*CMT: Channel Move Time,
*T0: Start of Radar signal Time,
*T1: Start of channel Move Time,
*T2: Start of channel Move Time + 200ms,
*T3: End of Channel Move Time.

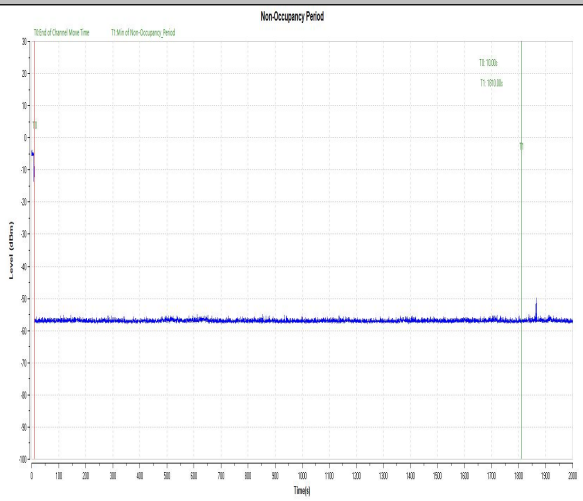
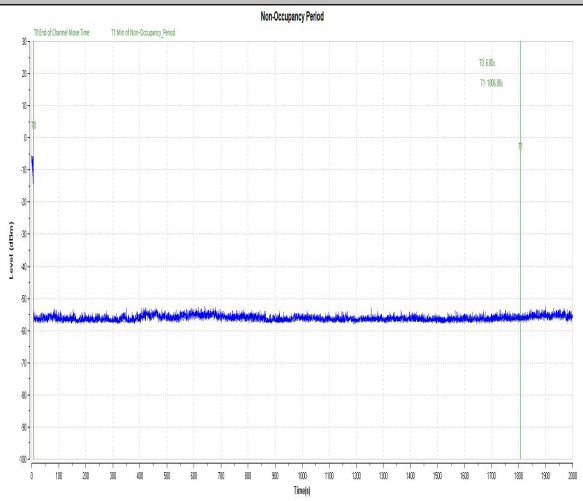
Test Graphs

11AC80SISO-5290-Type0-PASS	11AC80SISO-5530-Type0-PASS
	

Test result of Non-Occupancy Period

TestMode	Frequency[MHz]	Result	Limit[s]	Verdict
11AC80SISO	5290	see test graph	≥1800	PASS
11AC80SISO	5530	see test graph	≥1800	PASS

Test Graphs

11AC80SISO-5290-Type0-PASS	11AC80SISO-5530-Type0-PASS
	

ANNEX A EUT Photos

See the document ”25B02W000005-External Photos”.
See the document ”25B02W000005-Internal Photos”.

ANNEX B Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

*****END OF REPORT*****