# RADIO TEST REPORT

## Test Report No. 15356903S-C

| | |
|---|---|
| **Customer** | **Canon Inc.** |
| **Description of EUT** | **Wireless LAN Module** |
| **Model Number of EUT** | **K30400** |
| **FCC ID** | **AZDK30400** |
| **Test Regulation** | **FCC Part 15 Subpart E** |
| **Test Result** | **Complied** |
| **Issue Date** | **November 8, 2024** |
| **Remarks** | **WLAN (5 GHz band) part**<br>**DFS test only (* Client without radar detection)** |

| Representative Test Engineer | Approved By |
|---|---|
| Shiro Kobayashi<br>Engineer | Shinichi Takano<br>Engineer |

CERTIFICATE 1266.03

☐ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan, Inc.

☒ There is no testing item of "Non-accreditation".

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# REVISION HISTORY

**Original Test Report No.: 15356903S-C**

| Revision | Test Report No. | Date | Page Revised Contents |
|---|---|---|---|
| - (Original) | 15356903S-C | November 8, 2024 | - |

## Reference: Abbreviations (Including words undescribed in this report)

| | | | |
|---|---|---|---|
| A2LA | The American Association for Laboratory Accreditation | ICES | Interference-Causing Equipment Standard |
| AC | Alternating Current | IEC | International Electrotechnical Commission |
| AFH | Adaptive Frequency Hopping | IEEE | Institute of Electrical and Electronics Engineers |
| AM | Amplitude Modulation | IF | Intermediate Frequency |
| Amp, AMP | Amplifier | ILAC | International Laboratory Accreditation Conference |
| ANSI | American National Standards Institute | ISED | Innovation, Science and Economic Development Canada |
| Ant, ANT | Antenna | ISO | International Organization for Standardization |
| AP | Access Point | JAB | Japan Accreditation Board |
| ASK | Amplitude Shift Keying | LAN | Local Area Network |
| Atten., ATT | Attenuator | LIMS | Laboratory Information Management System |
| AV | Average | MCS | Modulation and Coding Scheme |
| BPSK | Binary Phase-Shift Keying | MRA | Mutual Recognition Arrangement |
| BR | Bluetooth Basic Rate | N/A | Not Applicable |
| BT | Bluetooth | NIST | National Institute of Standards and Technology |
| BT LE | Bluetooth Low Energy | NS | No signal detect. |
| BW | BandWidth | NSA | Normalized Site Attenuation |
| Cal Int | Calibration Interval | NVLAP | National Voluntary Laboratory Accreditation Program |
| CCK | Complementary Code Keying | OBW | Occupied Band Width |
| Ch., CH | Channel | OFDM | Orthogonal Frequency Division Multiplexing |
| CISPR | Comite International Special des Perturbations Radioelectriques | P/M | Power meter |
| CW | Continuous Wave | PCB | Printed Circuit Board |
| DBPSK | Differential BPSK | PER | Packet Error Rate |
| DC | Direct Current | PHY | Physical Layer |
| D-factor | Distance factor | PK | Peak |
| DFS | Dynamic Frequency Selection | PN | Pseudo random Noise |
| DQPSK | Differential QPSK | PRBS | Pseudo-Random Bit Sequence |
| DSSS | Direct Sequence Spread Spectrum | PSD | Power Spectral Density |
| EDR | Enhanced Data Rate | QAM | Quadrature Amplitude Modulation |
| EIRP, e.i.r.p. | Equivalent Isotropically Radiated Power | QP | Quasi-Peak |
| EMC | ElectroMagnetic Compatibility | QPSK | Quadri-Phase Shift Keying |
| EMI | ElectroMagnetic Interference | RBW | Resolution Band Width |
| EN | European Norm | RDS | Radio Data System |
| ERP, e.r.p. | Effective Radiated Power | RE | Radio Equipment |
| EU | European Union | RF | Radio Frequency |
| EUT | Equipment Under Test | RMS | Root Mean Square |
| Fac. | Factor | RSS | Radio Standards Specifications |
| FCC | Federal Communications Commission | Rx | Receiving |
| FHSS | Frequency Hopping Spread Spectrum | SA, S/A | Spectrum Analyzer |
| FM | Frequency Modulation | SG | Signal Generator |
| Freq. | Frequency | SVSWR | Site-Voltage Standing Wave Ratio |
| FSK | Frequency Shift Keying | TR | Test Receiver |
| GFSK | Gaussian Frequency-Shift Keying | Tx | Transmitting |
| GNSS | Global Navigation Satellite System | VBW | Video BandWidth |
| GPS | Global Positioning System | Vert. | Vertical |
| Hori. | Horizontal | WLAN | Wireless LAN |

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# SECTION 1: Customer Information

| | |
|---|---|
| Company Name | Canon Inc. |
| Address | 451, Tsukagoshi 3-chome, Saiwai-ku, Kawasaki-shi, Kanagawa 212-8530, Japan |
| Telephone Number | +81-3-3758-2111 |
| Contact Person | Shuma Hashimoto |

The information provided from the customer is as follows;
- Customer, Description of EUT, Model Number of EUT, FCC ID on the cover and other relevant pages
- Operating/Test Mode(s) (Mode(s)) on all the relevant pages
- SECTION 1: Customer Information
- SECTION 2: Equipment Under Test (EUT) other than the Receipt Date and Test Date
- SECTION 4: Operation of EUT during testing

# SECTION 2: Equipment Under Test (EUT)

## 2.1 Identification of EUT

| | |
|---|---|
| Description | Wireless LAN Module |
| Model Number | K30400 |
| Serial Number | Refer to SECTION 4.2 |
| Condition | Engineering prototype<br>(Not for Sale: This sample is equivalent to mass-produced items.) |
| Modification | No Modification by the test lab |
| Receipt Date | June 14, 2024 |
| Test Date | July 4, 2024 |

## 2.2 Product Description

**General Specification**

| | |
|---|---|
| Rating | DC 3.3 V |
| Operating temperature | 0 deg. C to +45 deg. C |

## Radio Specification

This report contains data provided by the customer which can impact the validity of results. UL Japan, Inc. is only responsible for the validity of results after the integration of the data provided by the customer. The data provided by the customer is marked “a)” in the table below.

**WLAN (IEEE802.11b/11g/11n-20)**

| | |
|---|---|
| Equipment Type | Transceiver |
| Frequency of Operation | 2412 MHz to 2462 MHz |
| Type of Modulation | DSSS, OFDM |
| Antenna Gain a) | 2.51 dBi |

**WLAN (IEEE802.11a/11n-20/11n-40)**

| | | |
|---|---|---|
| Equipment Type | Transceiver | |
| Frequency of Operation | 20 MHz Band | 5180 MHz to 5240 MHz<br>5260 MHz to 5320 MHz<br>5500 MHz to 5700 MHz<br>5745 MHz to 5825 MHz |
| | 40 MHz Band | 5190 MHz to 5230 MHz<br>5270 MHz to 5310 MHz<br>5510 MHz to 5670 MHz<br>5755 MHz to 5795 MHz |
| Type of Modulation | OFDM | |
| Antenna Gain a) | -0.47 dBi | (WLAN UNII-1 and UNII-2A band) |
| | 0.41 dBi | (WLAN UNII-2C band) |
| | 1.33 dBi | (WLAN UNII-3 band) |

## SECTION 3: Scope of Report

This report only covers DFS requirement, as specified by the following referenced procedures.

## SECTION 4: Test specification, Procedures & Results

### 4.1 Test Specification

| | |
|---|---|
| Test Specification | FCC Part 15 Subpart E<br>The latest version on the first day of the testing period |
| Title | FCC 47 CFR Part 15 Radio Frequency Device Subpart E<br>Unlicensed National Information Infrastructure Devices<br>Section 15.407 General technical requirements |

| | |
|---|---|
| Test Specification | KDB 905462 D02 UNII DFS Compliance Procedure New Rules v02 |
| Title | COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVICES OPERATING IN THE 5250-5350MHz AND 5470-5725MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION |

| | |
|---|---|
| Test Specification | KDB905462 D03 Client Without DFS New Rules v01r02 |
| Title | U-NII CLIENT DEVICES WITHOUT RADAR DETECTION CAPABILITY |

| | |
|---|---|
| Test Specification | KDB905462 D04 Operational Modes for DFS Testing New Rules v01 |
| Title | OPERATIONAL MODES SUGGESTED FOR DFS TESTING |

**FCC Part 15.31 (e)**
The host device provides stable voltage constantly to RF Module regardless of input voltage. Therefore, this EUT complies with the requirement

**FCC Part 15.203 Antenna requirement**
The antenna is not removable from the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

## 4.2 Procedures and Results

**Table 1: Applicability of DFS Requirements**

**< Client mode>**

| Requirement | Operating Mode<br>Client without Radar Detection | Test Procedures & Limits | Deviation | Results |
|---|---|---|---|---|
| U-NII Detection Bandwidth | Not required | KDB905462 D02 UNII DFS Compliance Procedures New Rules v02 | N/A | N/A |
| Initial Channel Availability Check Time | Not required | FCC15.407 (h)<br>KDB905462 D02 UNII DFS Compliance Procedures New Rules v02<br>RSS-247 6.3 | N/A | N/A |
| Radar Burst at the Beginning of the Channel Availability Check Time | Not required | FCC15.407 (h)<br>KDB905462 D02 UNII DFS Compliance Procedures New Rules v02<br>RSS-247 6.3 | N/A | N/A |
| Radar Burst at the End of the Channel Availability Check Time | Not required | FCC15.407 (h)<br>KDB905462 D02 UNII DFS Compliance Procedures New Rules v02<br>RSS-247 6.3 | N/A | N/A |
| In-Service Monitoring for Channel Move Time, Channel Closing Transmission Time | Yes | FCC15.407 (h)<br>KDB905462 D02 UNII DFS Compliance Procedures New Rules v02<br>RSS-247 6.3 | N/A | Complied |
| In-Service Monitoring for Non-Occupancy period | Yes * | FCC15.407 (h)<br>KDB905462 D02 UNII DFS Compliance Procedures New Rules v02<br>RSS-247 6.3 | N/A | Complied |
| Statistical Performance Check | Not required | FCC15.407 (h)<br>KDB905462 D02 UNII DFS Compliance Procedures New Rules v02 | N/A | N/A |
| Note: UL Japan, Inc.'s EMI Work Procedures: Work Instructions-ULID-003591 and Work Instructions-ULID-003593. | | | | |

*Although this test was not required in FCC, KDB 905462 D02, it was performed as additional test.

**Table 2 DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection**

| Maximum Transmit Power | Value (See Notes 1,2, and 3) |
|---|---|
| ≥ 200 milliwatt | -64 dBm |
| < 200 milliwatt and<br>power spectral density < 10 dBm/MHz | -62 dBm |
| < 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.<br>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.<br>Note 3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01. | |

**Table 3 DFS Response Requirement Values**

| Parameter | Value |
|---|---|
| Non-occupancy period | Minimum 30 minutes |
| Channel Availability Check Time | 60 seconds |
| Channel Move Time | 10 seconds<br>See Note 1 |
| Channel Closing Transmission Time | 200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period.<br>See Notes 1 and 2 |
| U-NII Detection Bandwidth | Minimum 100 % of the U-NII 99 % transmission power bandwidth<br>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.<br>**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 signal will not count quiet periods in between transmissions.<br>**Note 3:** During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic. | |

**Table 4 Short Pulse Radar Test Waveform**

| Radar Type | Pulse Width (μs) | PRI (μs) | Number of Pulses | Minimum Percentage of Successful Detection | Minimum Number of Traials |
|---|---|---|---|---|---|
| 0 | 1 | 1428 | 18 | See Note 1 | See Note 1 |
| 1 | 1 | Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a | Roundup{(1/360)*(19*$10^6$/PRI$_{us}$)} | 60 % | 30 |
| | | Test B: 15 unique PRI values randomly selected within the range of 518-3066 μs, with a minimum increment of 1 μs, excluding PRI values selected in Test A | | | |
| 2 | 1-5 | 150-230 | 23-29 | 60 % | 30 |
| 3 | 6-10 | 200-500 | 16-18 | 60 % | 30 |
| 4 | 11-20 | 200-500 | 12-16 | 60 % | 30 |
| Aggregate (Rader 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 5 Long Pulse Radar Test Waveform**

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

**Table 6 Frequency Hopping Radar Test Waveform**

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

### 4.3 Addition to Standard

No addition, exclusion nor deviation has been made from the standard.

## 4.4 Uncertainty

Measurement uncertainty is not taken into account when stating conformity with a specified requirement.
Note: When margins obtained from test results are less than the measurement uncertainty, the test results may exceed the limit.

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor *k*=2.

Time Measurement uncertainty for this test was: (±) 0.012 %

## 4.5 Test Location

UL Japan, Inc. Shonan EMC Lab.
1-22-3, Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 Japan
Telephone: +81-463-50-6400
A2LA Certificate Number: 1266.03
(FCC test firm registration number: 626366, ISED lab company number: 2973D / CAB identifier: JP0001)

| Test room | Width x Depth x Height (m) | Size of reference ground plane (m) / horizontal conducting plane | Maximum measurement distance |
|---|---|---|---|
| No.1 Semi-anechoic chamber (SAC1) | 20.6 x 11.3 x 7.65 | 20.6 x 11.3 | 10 m |
| No.2 Semi-anechoic chamber (SAC2) | 20.6 x 11.3 x 7.65 | 20.6 x 11.3 | 10 m |
| No.3 Semi-anechoic chamber (SAC3) | 12.7 x 7.7 x 5.35 | 12.7 x 7.7 | 5 m |
| No.4 Semi-anechoic chamber (SAC4) | 8.1 x 5.1 x 3.55 | 8.1 x 5.1 | - |
| Wireless anechoic chamber 1 (WAC1) | 9.5 x 6.0 x 5.4 | 9.5 x 6.0 | 3 m |
| Wireless anechoic chamber 2 (WAC2) | 9.5 x 6.0 x 5.4 | 9.5 x 6.0 | 3 m |
| No.1 Shielded room | 6.8 x 4.1 x 2.7 | 6.8 x 4.1 | - |
| No.2 Shielded room | 6.8 x 4.1 x 2.7 | 6.8 x 4.1 | - |
| No.3 Shielded room | 6.3 x 4.7 x 2.7 | 6.3 x 4.7 | - |
| No.4 Shielded room | 4.4 x 4.7 x 2.7 | 4.4 x 4.7 | - |
| No.5 Shielded room | 7.8 x 6.4 x 2.7 | 7.8 x 6.4 | - |
| No.6 Shielded room | 7.8 x 6.4 x 2.7 | 7.8 x 6.4 | - |
| No.8 Shielded room | 3.45 x 5.5 x 2.4 | 3.45 x 5.5 | - |
| No.1 Measurement room | 2.55 x 4.1 x 2.5 | - | - |
| No.2 Measurement room | 4.5 x 3.5 x 2.5 | - | - |
| Wireless shielded room 1 | 3.0 x 4.5 x 2.7 | 3.0 x 4.5 | - |
| Wireless shielded room 2 | 3.0 x 4.5 x 2.7 | 3.0 x 4.5 | - |

## 4.6 Test Data, Test Instruments, and Test Set Up

Refer to APPENDIX.

# SECTION 5: Operation of EUT during testing

## 5.1 Operating Mode(s)

The EUT, which is a Client Device without Radar detection capability, operates over the W53 and W56 Band.

The channel-loading of approximately 17 % or greater was used for testing, and its test data was transferred from the Master Device to the Client Device for all test configurations.

WLAN traffic is generated random data by iperf program from the Master to the Client.

The EUT utilizes the 802.11a/n architecture, with a 20 MHz and 40 MHz channel bandwidth.

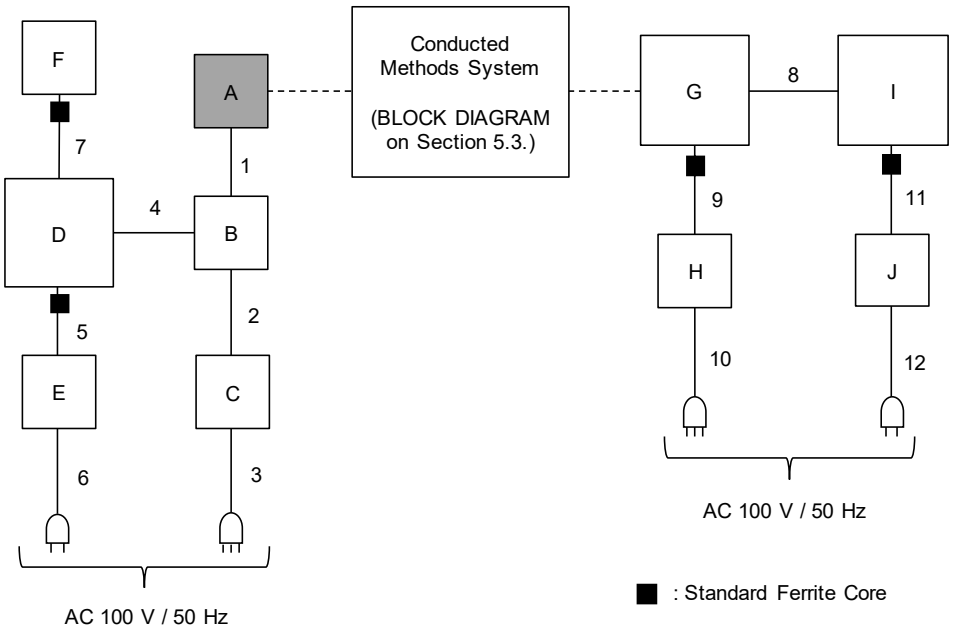
The FCC ID for the Master Device used with EUT for DFS testing is LDK102087.

The rated output power of the Master unit is >200 mW (23 dBm). Therefore the required interference threshold level is -64 dBm. After correction for antenna gain and procedural adjustments, the required conducted threshold at the antenna port is -64 + 1 + 0 = -63.0 dBm (threshold level + additional 1 dB + antenna gain).

It is impossible for users to change DFS control, because the DFS function is written on the firmware and users cannot access it.

The EUT was set by the software as follows:
Software name & version: iperf.exe, version 2.0.9
linux OS: Ubuntu 16.04.7 LTS
FW Verion: 16.80.21.128

## 5.2 Configuration and peripherals




**Description of EUT and Support Equipment**

| No. | Item | Model Number | Serial Number | Manufacturer | Remarks |
|---|---|---|---|---|---|
| A | Wireless LAN Module | K30400 | E024 | Canon | EUT |
| B | WLAN JOINT PCB | - | - | Canon | - |
| C | Power Supply(DC) | PW16-5ADP | 19100034 | GW Instek | - |
| D | Laptop Computer | Thinkpad X61s 7666-77J | LV-B8PVT 08/05 | LENOVO | - |
| E | AC Adapter | 42T4422 | 11S42T4422Z1ZF3D9BV4XN | Lenovo | - |
| F | USB DVD-ROM DRIVE | LDV-P8U2LBK | 1225762 | Logitec | - |
| G | Wireless LAN access point | AIR-CAP3702E-A-K9 | FTX18227609 | Cisco Systems, Inc. | FCC ID: LDK102087 |
| H | AC Adapter | AA25480L | ALD0522GAFE | Cisco Systems, Inc. | - |
| I | Laptop Computer | ThinkPad E470 | PF-0UU34A | LENOVO | - |
| J | AC Adapter | ADLX45DLC2A | 8SSA10E75792L1CZ75Z0W0R | LENOVO | - |

**List of Cables Used**

| No. | Name | Length (m) | Shield | | Remarks |
|---|---|---|---|---|---|
| | | | Cable | Connector | |
| 1 | Flat | 0.1 | Unshielded | Unshielded | - |
| 2 | DC | 0.3 + 2.0 | Unshielded | Unshielded | - |
| 3 | AC | 2.0 | Unshielded | Unshielded | - |
| 4 | USB | 1.0 | Shielded | Shielded | - |
| 5 | DC | 1.8 | Unshielded | Unshielded | - |
| 6 | AC | 0.9 | Unshielded | Unshielded | - |
| 7 | USB | 0.4 | Shielded | Shielded | - |
| 8 | LAN | 1.5 | Unshielded | Unshielded | - |
| 9 | DC | 1.8 | Unshielded | Unshielded | - |
| 10 | AC | 2.0 | Unshielded | Unshielded | - |
| 11 | DC | 1.6 | Unshielded | Unshielded | - |
| 12 | AC | 0.9 | Unshielded | Unshielded | - |

## 5.3 Test and Measurement System

### SYSTEM OVERVIEW

The measurement system is based on a conducted test method.

The software selects waveform parameters from within the bounds of the signal type on a random basis using uniform distribution. The short pulse types 1, 2, 3, and 4, the long pulse type 5, and the frequency hopping type 6 parameters are randomized at run-time.

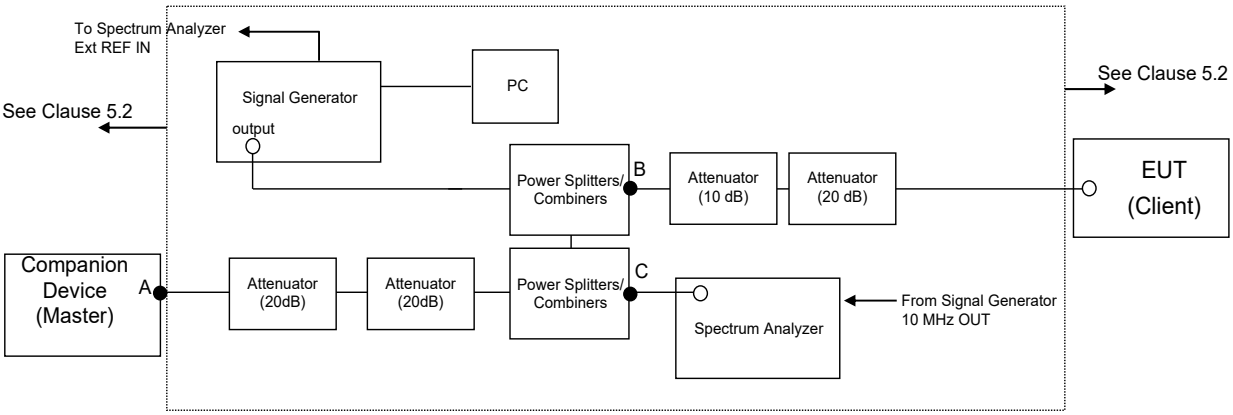
The signal monitoring equipment consists of a spectrum analyzer with the capacity to display 10001 bins on the horizontal axis. A time-domain resolution of 1.6 ms/bin is achievable with a 16 second sweep time, meeting the 10 seconds short pulse reporting criteria. The aggregate ON time is calculated by multiplying the number of bins above a threshold during a particular observation period by the dwell time per bin, with the analyzer set to peak detection.

### FREQUENCY HOPPING RADAR WAVEFORM GENERATING SUBSYSTEM

The first 100 frequencies are selected out of the hopping sequence of the randomized 475 hop frequencies.
Only a *Burst* that has the frequency falling within the receiver bandwidth of the tested U-NII device is selected among those frequencies. (Frequency-domain simulation). The radar waveform generated at the start time of the selected *Burst* (Time-domain simulation) is download to the Signal Generator.
If all of the randomly selected 100 frequencies do not fall within the receiver bandwidth of the U-NII device, the radar waveform is not used for the test.

### CONDUCTED METHODS SYSTEM BLOCK DIAGRM

**<Client mode>**




### MEASUREMENT SYSTEM FREQUENCY REFERENCE

Lock the signal generator and the spectrum analyzer to the same reference sources as follows: Connect the 10 MHz OUT on the signal generator to the EXT REF IN on the spectrum analyzer and set the spectrum analyzer Ext to On.

## SYSTEM CALIBRATION

**Step 1**: Set the system as shown in Figure 3 of KDB905462 D02, 7.2.2.

**Step 2**: Adjust each attenuator to fulfill the following three conditions:
- WLAN can be communicated, and
- Rader detection threshold level is bigger than Client Device traffic level on the spectrum analyzer, and
- Master Device traffic level is not displayed on the spectrum analyzer.

**Step 3**: Terminate 50 ohm at B and C points, and connect the spectrum analyzer to the point A. (See the figure on before page of Clause 5.3)
At the point A, adjust the signal generator and spectrum analyzer to the center frequency of the channel to be measured.
Download the applicable radar waveforms to the signal generator. Select the radar waveform, trigger a burst manually and measure the amplitude on the spectrum analyzer. Readjust the amplitude of the signal generator as required so that the peak level of the waveform is at a displayed level equal to the required or desired interference detection threshold.
Separate signal generator amplitude settings are determined as required for each radar type.

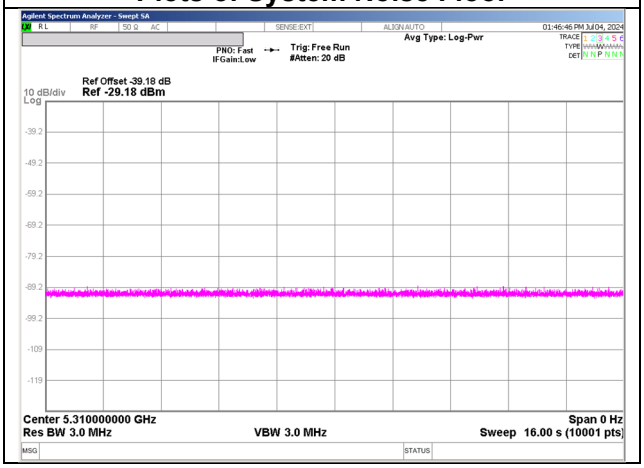
**Step 4**: Without changing any of the instrument settings, restore the system setting to Step 2 and adjust the Reference Level Offset of the spectrum analyzer to the level at Step 3.

By taking the above steps 1 to 4, the spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device.

See Clause 5.4 for Plots of Noise, Rader Waveforms, and WLAN signals.

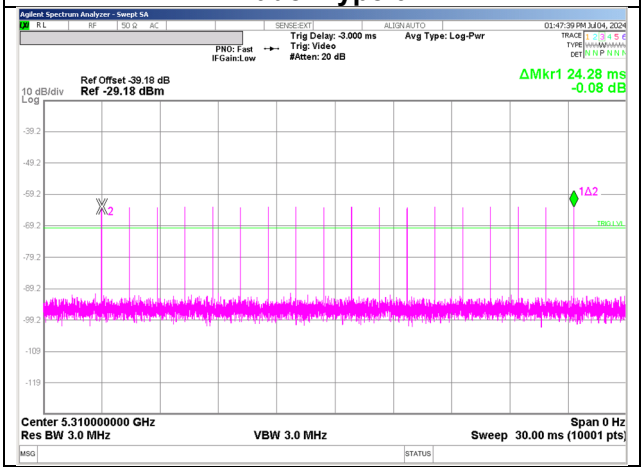
## 5.4 Plots of Noise, Rader Waveforms, and WLAN signals

### Plots of System Noise Floor



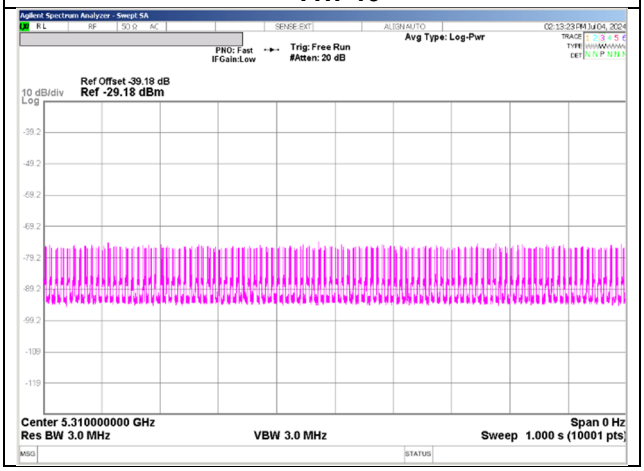

### Plots of Radar Waveforms

### Rader Type 0




### Plots of WLAN Traffic

### 11n-40



# SECTION 6: Channel Move Time, Channel Closing Transmission Time

## 6.1 Operating environment

| | |
|---|---|
| Test place | Shonan EMC Lab. No.6 Shielded Room |
| Date | July 4, 2024 |
| Temperature/ Humidity | 25 deg. C / 44 % RH |
| Engineer | Shiro Kobayashi |
| Mode | 11n-40 |

## 6.2 Test Procedure

Transmit the data from the Master Device to the Client Device on the test Channel for the entire period of the test.
The Radar Waveform generator sends a Burst of pulses for one of the Radar Types 0 at levels defined 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 variations/errors.
Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds.

## 6.3 Test data

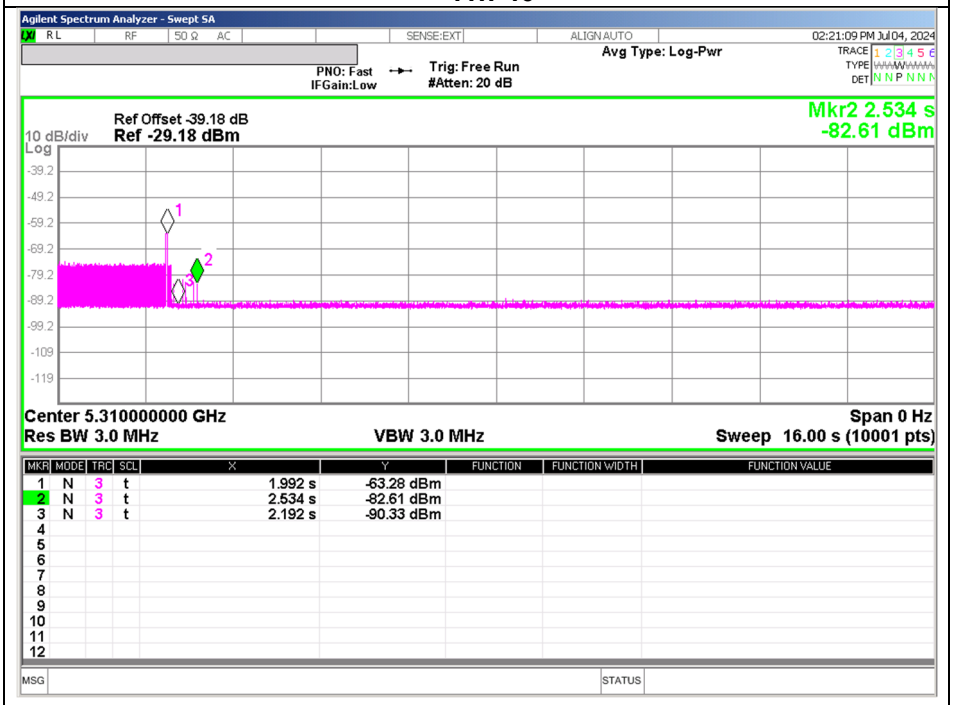
**11n-40**

| Test Item | Unit | Measurement Time | Limit | Results |
|---|---|---|---|---|
| Channel Move Time *1) | [s] | 0.542 | 10.000 | Pass |
| Channel Closing Transmission Time *2) | [ms] | 8 | 60 | Pass |

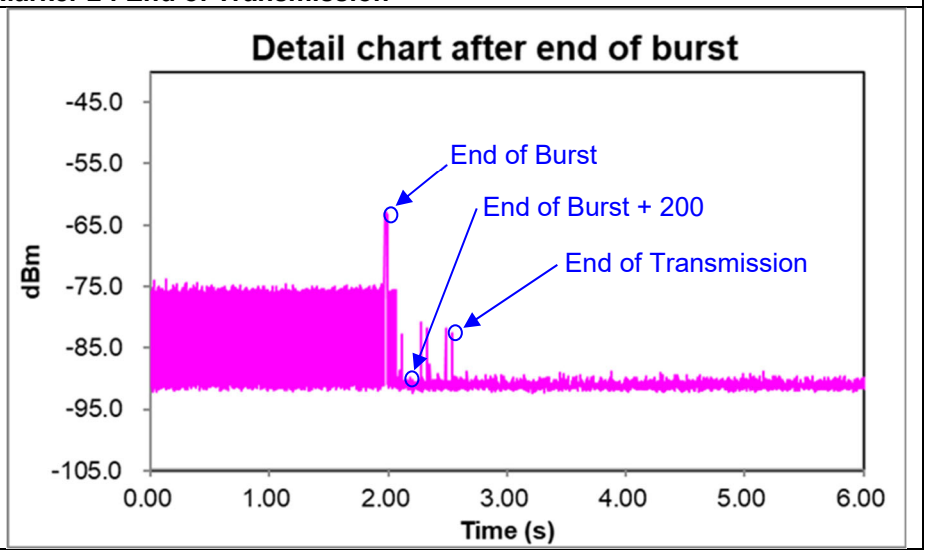
*1) Channel Move Time is calculated as follows:
(Channel Move Time) = (End of Transmission) - (End of Burst) = 2.534 - 1.992
*2) Channel Closing Transmission Time is calculated from (End of Burst + 200 ms) to (End of Burst + 10 s )
(Channel Closing Transmission Time) = (Number of analyzer bins showing transmission) × (dwell time per bin)
= 5 × 1.6 [ms]

**Radar Type 0**

**11n-40**




**Marker 1 : End of Burst**
**Marker 2 : End of Transmission**




## 6.4 Test result

Test result: Pass

# SECTION 7: Non-Occupancy Period

## 7.1 Operating environment

| | |
|---|---|
| Test place | Shonan EMC Lab. No.6 Shielded Room |
| Date | July 4, 2024 |
| Temperature/ Humidity | 25 deg. C / 44 % RH |
| Engineer | Shiro Kobayashi |
| Mode | 11n-40 |

## 7.2 Test Procedure

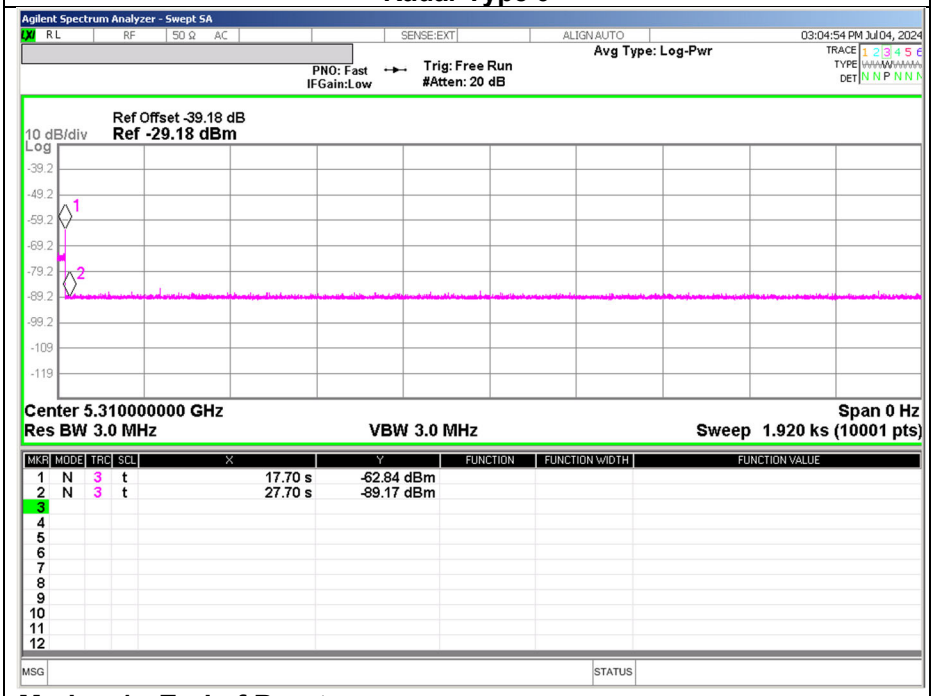
The following two tests are performed:

1). Transmit the data from the Master Device to the Client Device on the test Channel for the entire period of the test.
The Radar Waveform generator sends a Burst of pulses for one of the Radar Types 0 (Client Device) at levels defined 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 variations/errors.
Observe the transmissions of the EUT after the Channel Move Time on the Operating Channel for duration greater than 30 minutes.

## 7.3 Test data

**Non-Occupancy Period**

**Radar Type 0**




**Marker 1 : End of Burst**
**Marker 2 : End of Burst + 10 s**

## 7.4 Test result

Test result: Pass

# APPENDIX 1: Test Instruments

## Test Equipment

| Test Item | LIMS ID | Description | Manufacturer | Model | Serial | Last Calibration Date | Cal Int |
|---|---|---|---|---|---|---|---|
| DFS | 145132 | Attenuator | Weinschel Corp. | 54A-10 | W5692 | 2023/10/13 | 12 |
| DFS | 145155 | Attenuator | Weinschel Corp. | 54A-20 | 31484 | 2024/04/04 | 12 |
| DFS | 145693 | Wireless LAN access point | Cisco Systems, Inc. | AIR-CAP3702E-A-K9 | FTX18227609 | - | - |
| DFS | 146223 | Spectrum Analyzer | Keysight Technologies Inc | N9010A-526 | MY48031482 | 2023/10/07 | 12 |
| DFS | 146252 | Power Splitters/Combiners | Mini-Circuits | ZFSC-2-10G+ | - | 2023/11/22 | 12 |
| DFS | 146253 | Power Splitters/Combiners | Mini-Circuits | ZFSC-2-10G+ | - | 2023/11/22 | 12 |
| DFS | 146293 | Thermo-Hygrometer | A&D Company | AD-5681 | 4062518 | 2023/08/03 | 12 |
| DFS | 158037 | Signal Generator | Rohde & Schwarz | SMBV100A | 262877 | 2023/08/08 | 12 |
| DFS | 242070 | Attenuator | Weinschel Corp. | 54A-20 | 120415 | 2023/11/02 | 12 |
| DFS | 242072 | Attenuator | Weinschel Corp. | 54A-20 | 120518 | 2023/11/02 | 12 |
| DFS | 245174 | Coaxial Cable | Hayashi-Repic co., Ltd. | KMS020B-GL140sE-KMS020B-2.0m | 49334-01-01 | 2024/02/14 | 12 |
| DFS | 246244 | Coaxial Cable | Hayashi-Repic co., Ltd. | SMS13-13A26-SMS13-1.0m | 49883-01-01 | 2024/03/15 | 12 |
| DFS | 246245 | Coaxial Cable | Hayashi-Repic co., Ltd. | SMS13-13A26-SMS13-1.0m | 49883-01-02 | 2024/03/15 | 12 |
| DFS | 246246 | Coaxial Cable | Hayashi-Repic co., Ltd. | SMS13-13A26-SMS13-1.0m | 49883-01-03 | 2024/03/15 | 12 |

***Hyphens for Last Calibration Date and Cal Int (month) are instruments that Calibration is not required (e.g. software), or instruments checked in advance before use.**

**The expiration date of the calibration is the end of the expired month.**
**As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.**

**All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.**

**Test item:**

**DFS: Dynamic Frequency Selection**