



TEST REPORT

Test Report No. : UL-RPT-RP16171218JD04C

Applicant* : Apple Inc.

Model No. / HVIN* : A3534

FCC ID* : BCGA3534 **IC*** : 579C-A3534

Technology : 5 GHz WLAN (802.11 a/n/ac/ax/be)

Test Standard(s) : FCC Part 15.407(h)(2)(iii)(iv)
Innovation, Science and Economic Development Canada
RSS-247 Issue 4 Section 7.3.6(c)(d)(e)

Test Laboratory : UL International (UK) Ltd, Basingstoke, Hampshire, RG24 8AH,
United Kingdom

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3. The sample tested is in compliance with the above standard(s).
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5. All information marked with (*) was provided by the Customer, Applicant or Authorised representative
6. Version 1.0.

Date of Issue: 09 July 2026

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Applicant Information

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Report Revision History

Version Number	Issue Date	Revision Details	Revised By
1.0	09/07/2026	Initial Version	Ben Mercer

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1 Attestation of Test Results

1.1 Description of EUT

The equipment under test (EUT) was a desktop computer.*

1.2 General Information

Specification Reference:	47CFR15.407
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunication): Part 15 Subpart E (Unlicensed National Information Infrastructure Devices) – Section 15.407
Specification Reference:	RSS-247 Issue 4 July 2025
Specification Title:	Digital Transmission Systems, Frequency Hopping Systems and Licence- Exempt Local Area Network Devices in 902-928 MHz, 2400-2483.5 MHz, 5150-5350 MHz, and 5470-5895 MHz bands
Specification Reference:	RSS-Gen Issue 5 February 2021
Specification Title:	General Requirements for Compliance of Radio Apparatus
Site Registration:	FCC: 685609, ISEDC: 20903
FCC Lab. Designation No.:	UK2011
ISEDC CABID:	UK0001
Location of Testing:	Units 3 & 4 Horizon, Wade Road, Kingsland Business Park, Basingstoke, Hampshire, RG24 8AH, United Kingdom
Test Dates:	27 May 2026 to 28 May 2026

1.3 Summary of Test Results

FCC Clause (47CFR)	ISED Clause	Transmitter Measurement	Note	Result
Part 15.407(h)(2)(iii)	RSS-247 7.3.6.3(c)(d)	Channel Closing Transmission Time and Channel Move Time	-	Complied
Part 15.407(h)(2)(iv)	RSS-247 7.3.6.3(e)	Non-occupancy Period	2	Complied

Note(s):

1. The manufacturer confirms that the information regarding the parameters of the radar waveforms is not available to the end user.
2. This test is not required for a client without radar detection according to Tables 1 and 2 of KDB 905462 D02, however it was performed to show compliance with KDB 905462 D02 5.1.2 e) and KDB 905462 D03, section (b)(5) and (b)(6).

1.4 Deviations from the Test Specification

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specification identified above.

2 Summary of Testing

2.1 Facilities and Accreditation

The test site and measurement facilities used to collect data are located at Units 3 & 4 Horizon, Wade Road, Kingsland Business Park, Basingstoke, Hampshire, RG24 8AH, United Kingdom.

UL International (UK) Ltd is accredited by the United Kingdom Accreditation Service (UKAS). UKAS is one of the signatories to the International Laboratory Accreditation Co-operation (ILAC) Arrangement for the mutual recognition of test reports. The tests reported herein have been performed in accordance with its terms of accreditation.

2.2 Methods and Procedures

Reference:	FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02, April 8 2016
Title:	Compliance Measurement Procedures for Unlicensed-National Information Infrastructure Devices Operating in the 5250-5350 MHz and 5470-5725 MHz Bands Incorporating Dynamic Frequency Selection

2.3 Calibration and Uncertainty

Measuring Instrument Calibration

In accordance with UKAS requirements all the measurement equipment is on a calibration schedule. All equipment was within the calibration period on the date of testing.

Measurement Uncertainty & Decision Rule

Overview

No measurement or test can ever be perfect, and the imperfections give rise to error of measurement in the results. Consequently, the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

Decision Rule

Measurement system instrumentation shall be used with an accuracy specification meeting the accuracy specification limits according to IEC/IECEE OD-5014.

As applicable, unless specified otherwise in this quotation, the compliance "Decision Rule" is based on Simple Acceptance. If the measured value is on the limit, the result is defined as a pass. For further information regarding risk assessment refer to ILAC G8:09/2019.

Measurement Uncertainty

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document "approximately" is interpreted as meaning "effectively" or "for most practical purposes".

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
DFS Channel Shutdown Timing	5.25 GHz to 5.725 GHz	95%	±0.45 ms
DFS Non-Occupancy Timing	5.25 GHz to 5.725 GHz	95%	±79.25 ms
DFS Radar Amplitude	5.25 GHz to 5.725 GHz	95%	±1.18 dB

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body is followed.

2.4 Test and Measurement Equipment

Test Equipment Used – DFS Client Without Radar Detection and Client to client

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M2001	Thermohygrometer	Testo	608-H1	45041824	18 Dec 2026	12
M1835	Signal Analyser	Rohde & Schwarz	FSV30	103050	15 Oct 2026	12
G0615	Vector Signal Generator	Rohde & Schwarz	SMBV100A	260473	29 Jan 2029	36
A030	Step Attenuator	Narda	745-69	01544	Calibrated before use	-
A1065	Step Attenuator	Hewlett Packard	8494B	3308A38165	Calibrated before use	-
A248	Step Attenuator	Narda	743-60	01411	Calibrated before use	-
A3046	Step Attenuator	Narda	4743-60	01888	Calibrated before use	-
A2909	Power Splitter	Mini-Circuits	ZN2PD-63-S+	S UU50001612#1	Calibrated before use	-
A241744	Power Splitter	AAMCS	MCS-PWD-2W-2G-18G-10W-Sf	000087	Calibrated before use	-
A242135	Power Splitter	AAMCS	MCS-PWD-2W-2G-18G-10W-Sf	000084	Calibrated before use	-
A212636	Power Splitter	AAMCS	MCS-PWD-2W-2G-18G-10W-Sf	000078	Calibrated before use	-

3 Equipment Under Test (EUT)

3.1 Identification of Equipment Under Test (EUT)

Brand Name*:	Apple
Model Name or Number / HVIN*:	A3534
FCC ID*:	BCGA3534
ISED Canada Certification Number*:	579C-A3534

Test Sample Serial Number*:	Hardware Version*:	Software Version*:	Date of Receipt:
J66561W60R	REV 1.0	26A289	21 April 2026

3.2 Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.3 Additional Information Related to Testing

Technology Tested:	WLAN (IEEE 802.11a,n,ac,ax,be) / U-NII	
Type of Unit:	Transceiver	
Modulation Type:	BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM & 4096QAM	
Transmit / Receive Frequency Range:	5250 MHz to 5350 MHz 5470 MHz to 5725 MHz	
Channel Spacing:	80 MHz	
Transmit Frequency Band:	5470 MHz to 5725 MHz (U-NII-2C)	
Transmit / Receive Channels Tested at 80 MHz Bandwidth setting:	Channel Number	Channel Frequency (MHz)
	106 (Control Channel 100)	5530
Channel Spacing:	160 MHz	
Transmit Frequency Band:	5470 MHz to 5725 MHz (U-NII-2C)	
Transmit Channels Tested:	Channel Number	Channel Frequency (MHz)
	114 (Control Channel 100)	5570

3.4 Description of Available Antennas

The radio utilizes an integrated antenna, with the following maximum gain:

Frequency Band (MHz)	G _{Antenna 1 / Core 0} (dBi)	G _{Antenna 2 / Core 1} (dBi)
5250 to 5350	4.7	4.5
5470 to 5725	4.8	3.9

The EUT complies with FCC Part 15.203 requirements by using a permanently attached antenna with no option for external connection.

3.5 Description of Test Setup

Support Equipment

The following support equipment was used to exercise the EUT during testing:

Customer Supplied*:

Description	Brand Name	Model Name or Number	Serial Number
Client Device	Apple	A2843	C0V9WXX9PD
USB Diagnostic Cable	Apple	Koba	000B94
Test Support Laptop	Apple	MacBook Pro	CYFCQ0MK9X

Laboratory Supplied:

Description	Brand Name	Model Name or Number	Serial Number
Wireless Dual Band Router (DFS Master/Controller)	ASUS	RT-AX88U	JBIUHP000173
Test Laptop	Lenovo	L480	PF1EHZPL

Operating Modes, Configuration and Peripherals

- Operating on the channel selected by the Master/Controller device in U-NII-2C.
- The Master/Controller device controls the channel bandwidth of the EUT. Both the Master/Controller and Client device were set to auto rate with 80 MHz and 160 MHz channel bandwidth to ensure a stable channel loading.
- KDB 905462 D02 v02 *UNII DFS Compliance Procedures* states in Table 2 the EUT should be tested at maximum channel bandwidth.
- For the required channel loading of >17% in KDB 905642 D02 7.7 c), a UDP data transfer of 150 Mbps was performed between a test computer connected to the DFS master router and the EUT. This gave a channel loading (duty cycle) of 22.2% at the modulation scheme and bandwidth above. This was again repeated with a UDP data transfer of 60 Mbps from EUT to client for direct client-to-client testing. This resulted in a channel loading of 28.1% See Appendix 2 *Channel Loading* for further details.
- As a client without radar detection device, being sent UDP test data from the associated DFS Master/Controller access point. The EUT was tested with an auto modulation.
- A second test was performed with the EUT iperfing data to another client device supplied by the customer in client-to-client mode. Both devices were connected to a supervising Master/Controller device.
- The EUT is a Client without Radar Detection capability. It was tested in combination with an FCC approved ASUS DFS enabled router (FCC ID: MSQ-RTAXHP00) being used as the Master/Controller. A Radar Type 0 was injected to the master to test the Clients Channel Move Time and Channel Closing Transmission Time after receiving the channel shutdown command from the Controller.
- The DFS detection threshold of -62 dBm was used throughout, as the maximum transmit power was <200 mW and the power spectral density was < 10 dBm/MHz.

KDB 905462 D02 Table 3: DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection

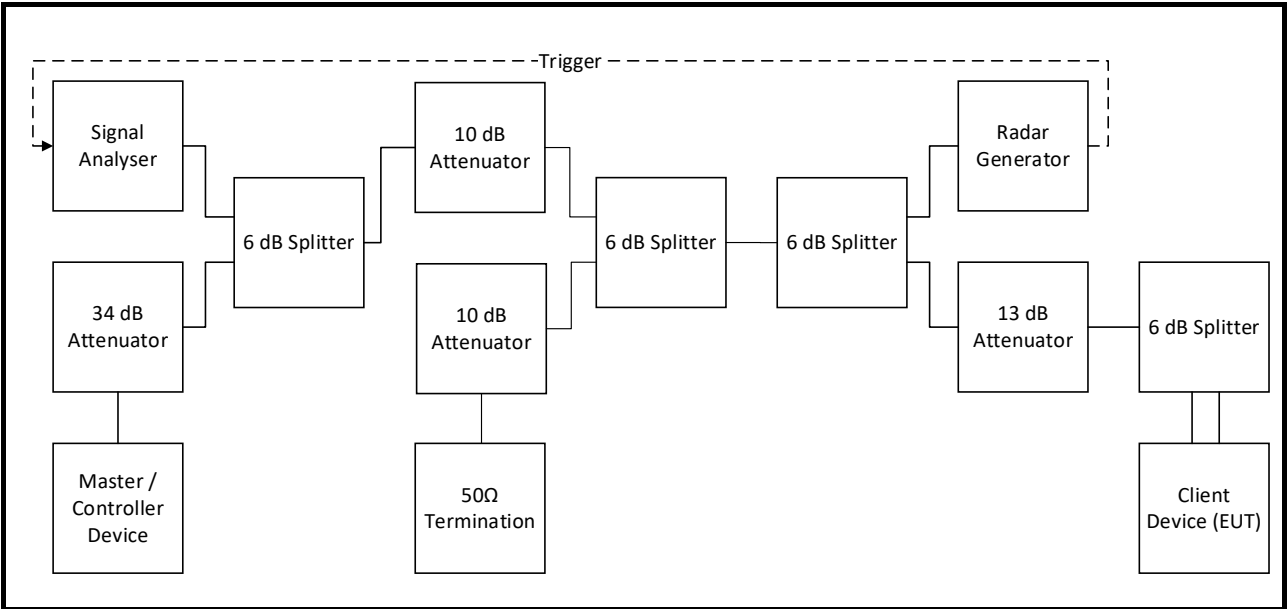
Maximum Transmit Power	Value (see notes)
EIRP ≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna Note 2: Throughout these test procedures an additional 1dB 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.	

- Plots and data were captured using a Rohde and Schwarz FSV30 Spectrum Analyser. The number of data points was increased to maximum and the trace data exported so it could be analysed in far greater detail than available on the built-in display.
- The Channel Move Time was the time taken from the end of the radar waveform to the time the Client ceased transmissions. The Channel Closing Transmission Time was calculated to the nearest sample from any additional pulses occurring >200 ms after the end of the radar.
- The EUT was also tested in a second setup where it was directly exchanging data with another client associated with the same network. Both setups are explained with diagrams in the following section.

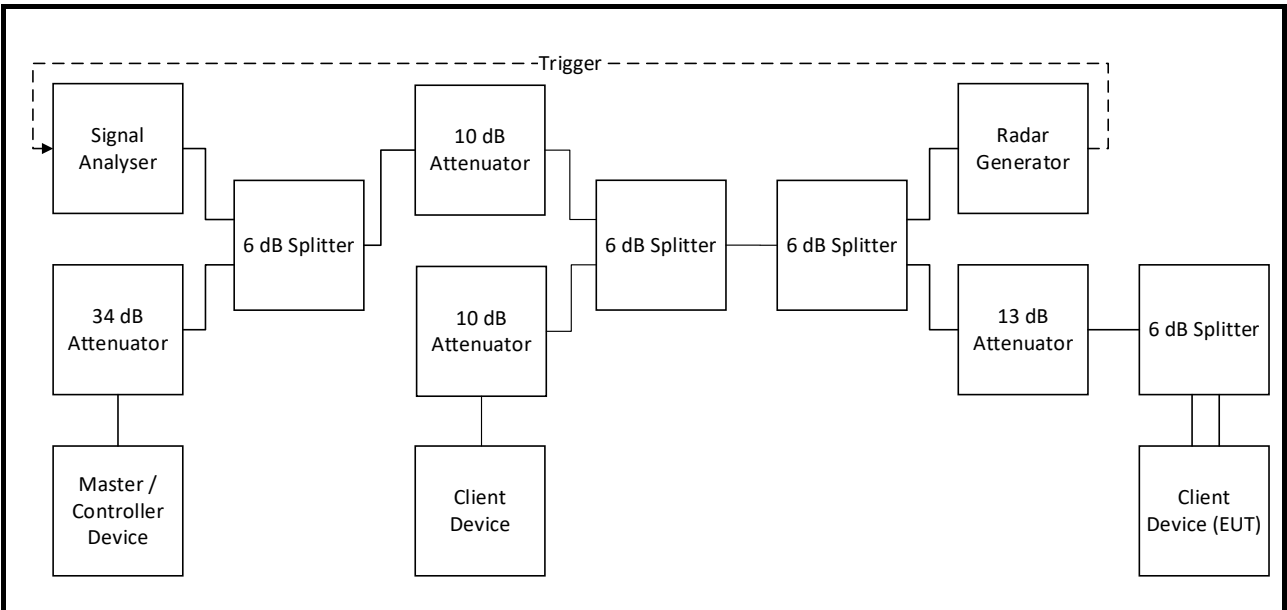
Test Setup Diagrams

Conducted Tests:

Test Setup for DFS Tests: Client without Radar Detection – Setup 1



Test Setup for DFS Tests: Client to client – Setup 2



4 Antenna Port Test Results

4.1 Channel Closing Transmission Time and Channel Move Time

Test Summary:

Test Engineer:	Raghavendra Katti	Test Dates:	27 May 2026 & 28 May 2026
Test Sample Serial Number:	J66561W60R		

FCC Clause:	Part 15.407(h)(2)(iii)
ISED Canada Clause:	RSS-247 7.3.6.3(c)(d)
Test Method Used:	KDB 905462 D02 Section 7.8.3 & KDB 905462 D03 Section (b)(3)

Environmental Conditions:

Temperature (°C):	22 to 23
Relative Humidity (%):	32 to 34

Notes:

1. The channel move time is the time taken from the end of the radar burst to the ceasing of transmission of the EUT.
2. UDP test data was streamed from the EUT to the test support laptop via the Master/Controller device using iPerf bandwidth testing tool. The channel loading was 22.2% with a 150 Mbps data rate. This met the channel loading requirement of >17% in KDB 905462 D02 Section 7.7(c).
3. For the client-to-client test, the UDP test data was streamed from EUT to the second client under the control of the same Master/Controller network to show compliance with KDB 905462 D03, section (b)(3). The channel loading was 28.1% with 60 Mbps data rate. This met the channel loading requirement of >17% in KDB 905462 D02 Section 7.7(c).
4. For the client without radar detection test, the EUT and the Master/Controller device 160 MHz operating channel was centred on 5570 MHz. The spectrum analyser was tuned to zero span at the control channel centre frequency 5500 MHz. The radar was also fired at 5500 MHz. This allowed any control signals to be monitored in addition to the 160 MHz data transfer.
5. For the client-to-client test, the 80 MHz operating channel was centred on 5530 MHz. The spectrum analyser was tuned to zero span at the control channel centre frequency 5500 MHz. The radar was also fired at 5500 MHz. This allowed any control signals to be monitored in addition to the 80 MHz data transfer
6. Tests were performed using a type 0 radar and the radar detection threshold calculated in Section 3.5 of this test report.
7. The type 0 radar was detected, and channel move occurred within the channel move and channel closing time limits.
8. The Total Aggregate Channel Closing Transmission Time shown in the table below was measured from 200 ms after the end of the radar burst and compared to the 60 ms limit.

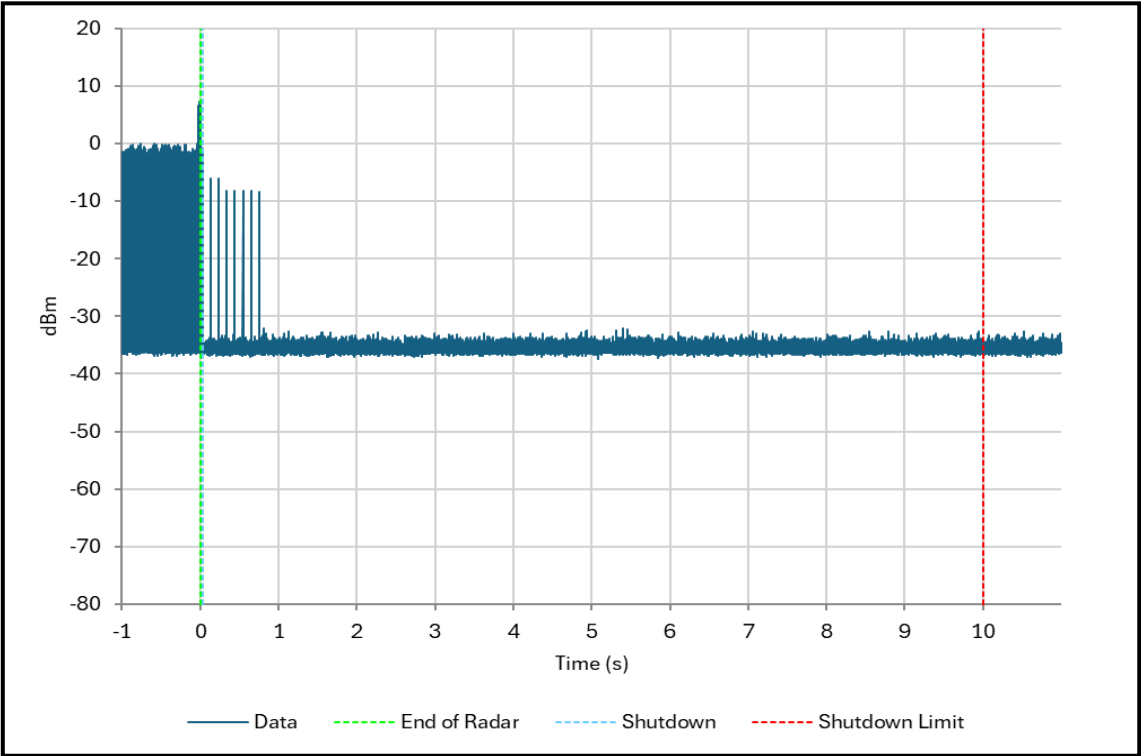
Channel Closing Transmission Time and Channel Move Time (continued)

Results: Setup 1 - Channel Move Time

Channel (MHz)	Move Time (ms)	Limit (ms)	Margin (ms)
5570	34.3	10000.0	9965.7

Results: Setup 1 - Channel Closing Transmission Time

Channel (MHz)	Total Aggregate Tx Time Occurring After time [t ₁ +200 ms] (ms)	Limit (ms)	Margin (ms)
5570	0.0	60.0	60.0



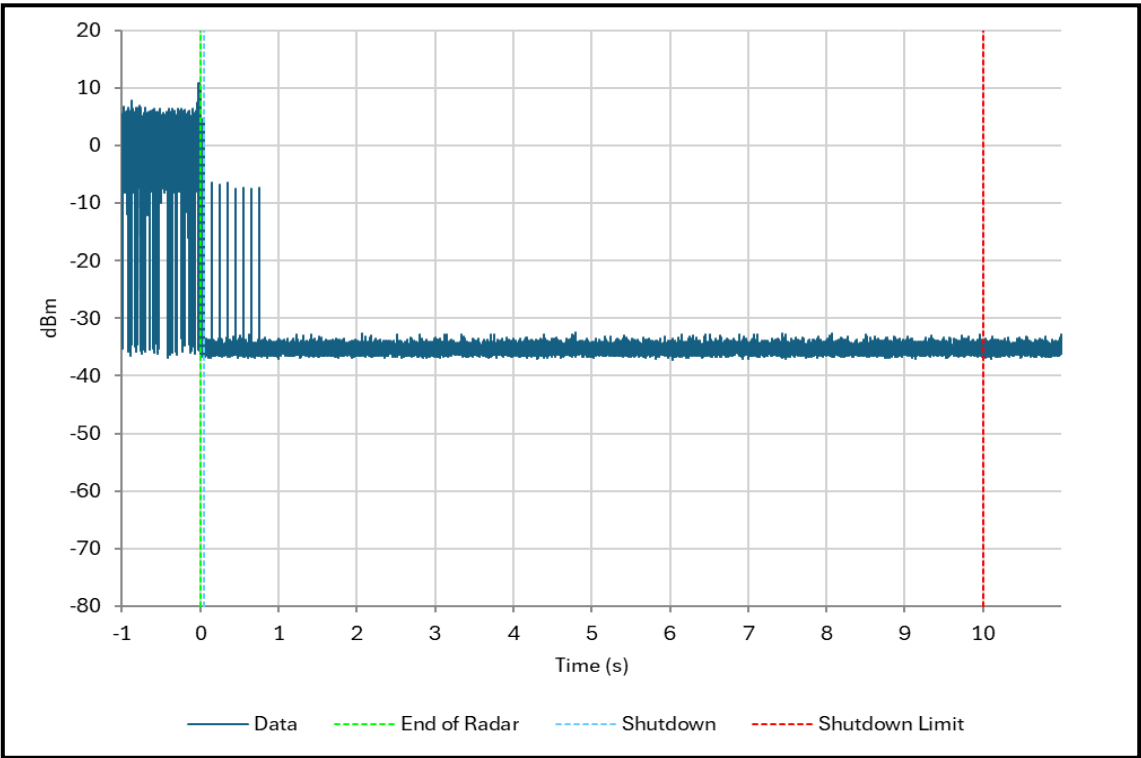
Channel Closing Transmission Time and Channel Move Time (continued)

Results: Setup 2 - Channel Move Time

Channel (MHz)	Move Time (ms)	Limit (ms)	Margin (ms)
5530	44.8	10000.0	9955.2

Results: Setup 2 - Channel Closing Transmission Time

Channel (MHz)	Total Aggregate Tx Time Occurring After time [t ₁ +200 ms] (ms)	Limit (ms)	Margin (ms)
5530	0.0	60.0	60.0



Channel Closing Transmission Time and Channel Move Time (continued)**Limits:****Part 15.407(h)(2)(iii)**

After a radar's presence is detected, all transmissions shall cease on the operating channel within 10 seconds. Transmissions during this period shall consist of normal traffic for a maximum of 200 ms after detection of the radar signal. In addition, intermittent management and control signals can be sent during the remaining time to facilitate vacating the operating channel.

RSS-247 7.3.6.3(c)(d)

Channel move time: after a radar signal is detected, the device shall cease all transmissions on the operating channel within 10 s.

Channel closing transmission time: is comprised of 200 ms 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 ms) over the remaining 10 s period of the channel move time.

The aggregate duration of all transmissions shall not count quiet periods between transmissions.

KDB 905462 D02 Table 4: DFS Response Requirement Values

Parameter	Value
<i>Channel Move Time</i>	10 seconds See Note 1.
<i>Channel Closing Transmission Time</i>	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
Note 1: <i>Channel Move Time</i> and the <i>Channel Closing Transmission Time</i> should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.	
Note 2: The <i>Channel Closing Transmission Time</i> is comprised of 200 milliseconds starting at the beginning of the <i>Channel Move Time</i> plus any additional intermittent control signals required to facilitate a <i>Channel</i> 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.	

4.2 Non-occupancy Period

Test Summary:

Test Engineer:	Raghavendra Katti	Test Dates:	27 May 2026 & 28 May 2026
Test Sample Serial Number:	J66561W60R		

FCC Clause:	Part 15.407(h)(2)(iv)
ISED Canada Clause:	RSS-247 7.3.6.3(e)
Test Method Used:	KDB 905462 D02 Section 7.8.3 & KDB 905462 D03 Section (b)(3)

Environmental Conditions:

Temperature (°C):	22 to 23
Relative Humidity (%):	32 to 34

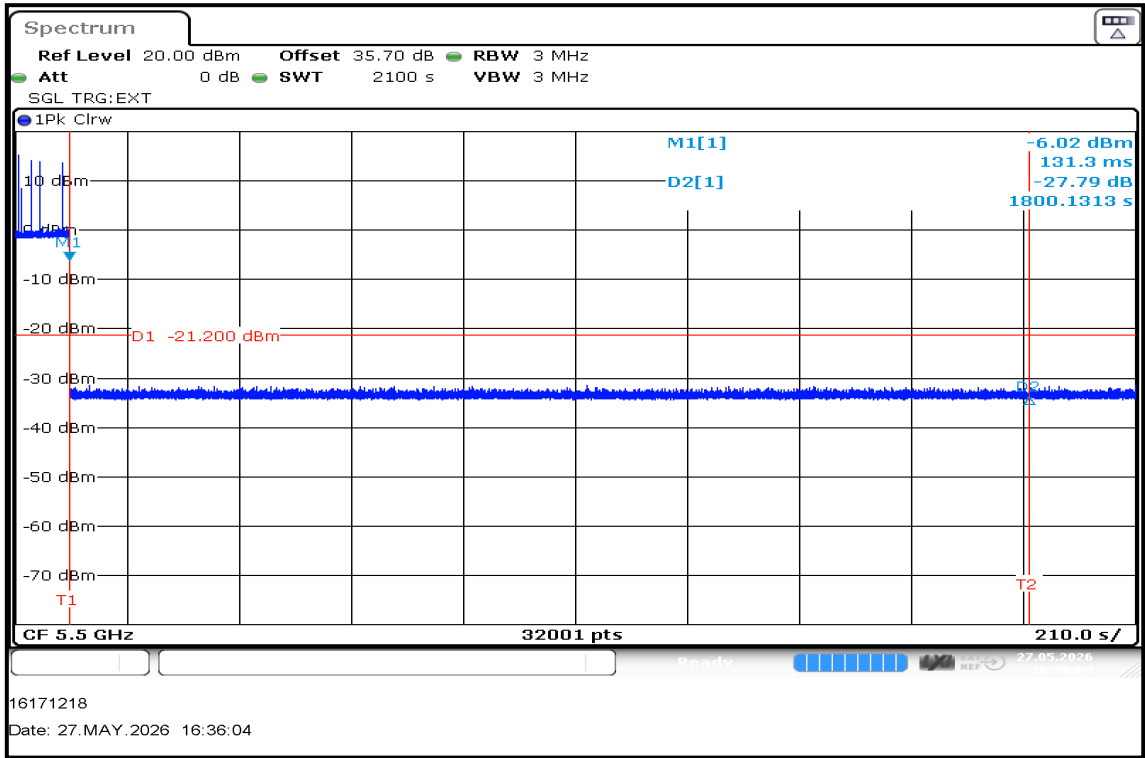
Notes:

1. This test is not required for a client without radar detection according to Tables 1 and 2 of KDB 905462 D02, however it was performed to show compliance with KDB 905462 D02 5.1.2 e) and KDB 905462 D03, section (b)(5) and (b)(6). Therefore, no specified bandwidth requirement is given and so was performed using an 160MHz for Client without radar detection device and an 80 MHz channel bandwidth for client to client device as per KDB 905462 D03, section (b)(3); as used for *Channel Closing Transmission Time and Channel Move Time*.
2. Radar burst type 0 was detected and the channel was vacated for >1800 seconds. Since the client has no radar detection and is therefore not performing an 'intelligent' blacklisting of the channel, the device was shown not to transmit for greater than 30 minutes after its own shutdown time, not the shutdown of the DFS controller or the second client in the peer-to-peer set-up.
3. For the client without radar detection test, the EUT and the Master/Controller device 160 MHz operating channel was centred on 5570 MHz. The spectrum analyser was tuned to zero span at the control channel centre frequency 5500 MHz. The radar was also fired at 5500 MHz. This allowed any control signals to be monitored in addition to the 160 MHz data transfer.
4. For the client-to-client test, the 80 MHz operating channel was centred on 5530 MHz. The spectrum analyser was tuned to zero span at the control channel centre frequency 5500 MHz. The radar was also fired at 5500 MHz. This allowed any control signals to be monitored in addition to the 80 MHz data transfer
5. The noise floor remained below the -21.2 dBm/MHz (74 dBμV/m at 3m) unintentional radiator limit for the 30 minute (1800 seconds) non-occupancy period. Therefore, the EUT is deemed to comply.

Non-occupancy Period (continued)

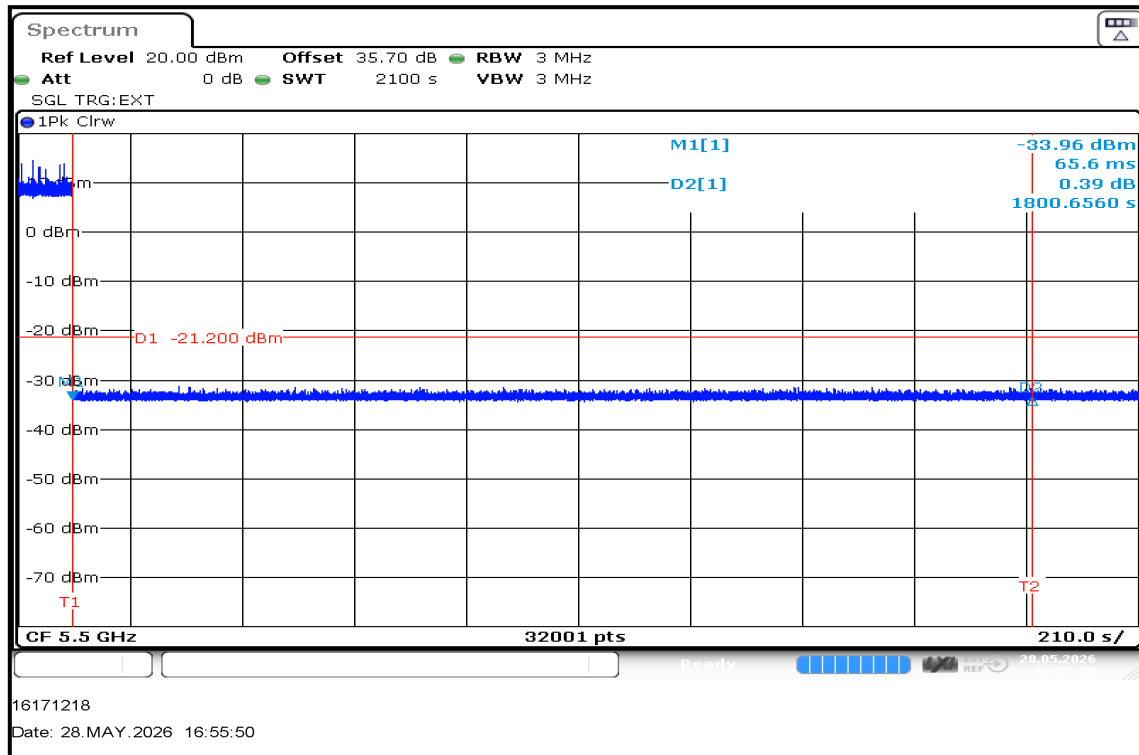
Results: Setup 1

Channel (MHz)	Non-Occupancy (min)	Limit (min)	Margin (min)
5570	>33.0	30.0	3.3



Non-occupancy Period (continued)**Results: Setup 2**

Channel (MHz)	Non-Occupancy (min)	Limit (min)	Margin (min)
5530	>33.0	30.0	3.3

**Limits:****Part 15.407(h)(2)(iv)**

A channel that has been flagged as containing a radar system, either by a channel availability check or in-service monitoring, is subject to a non-occupancy period of at least 30 minutes. The non-occupancy period starts at the time when the radar system is detected.

RSS-247 7.3.6.3(e)

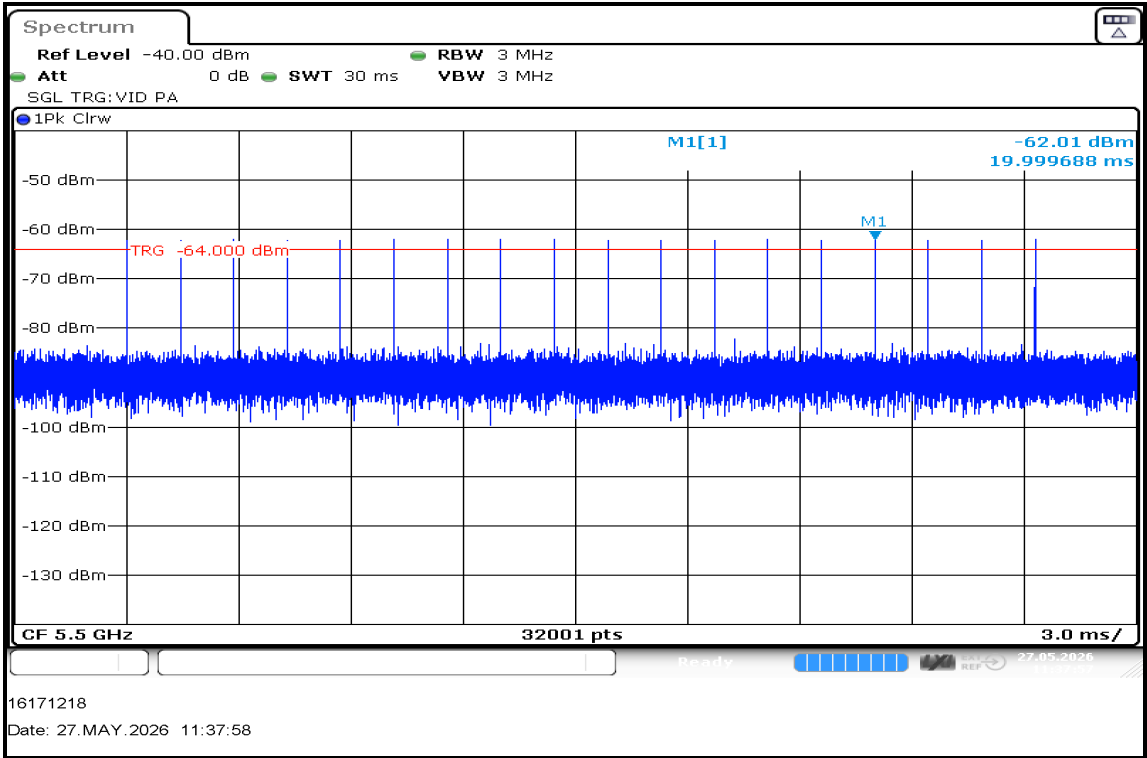
A channel that has been flagged as containing a radar signal, either by a channel availability check or in-service monitoring, is subject to a 30-minute non-occupancy period where the channel cannot be used by the LE-LAN device. The non-occupancy period starts from the time that the radar signal is detected.

KDB 905462 D02 Table 4: DFS Response Requirement Values

Parameter	Value
Non-occupancy period	Minimum 30 minutes

Appendix 1. Radar Calibration and Verification Data

Radar Type 0

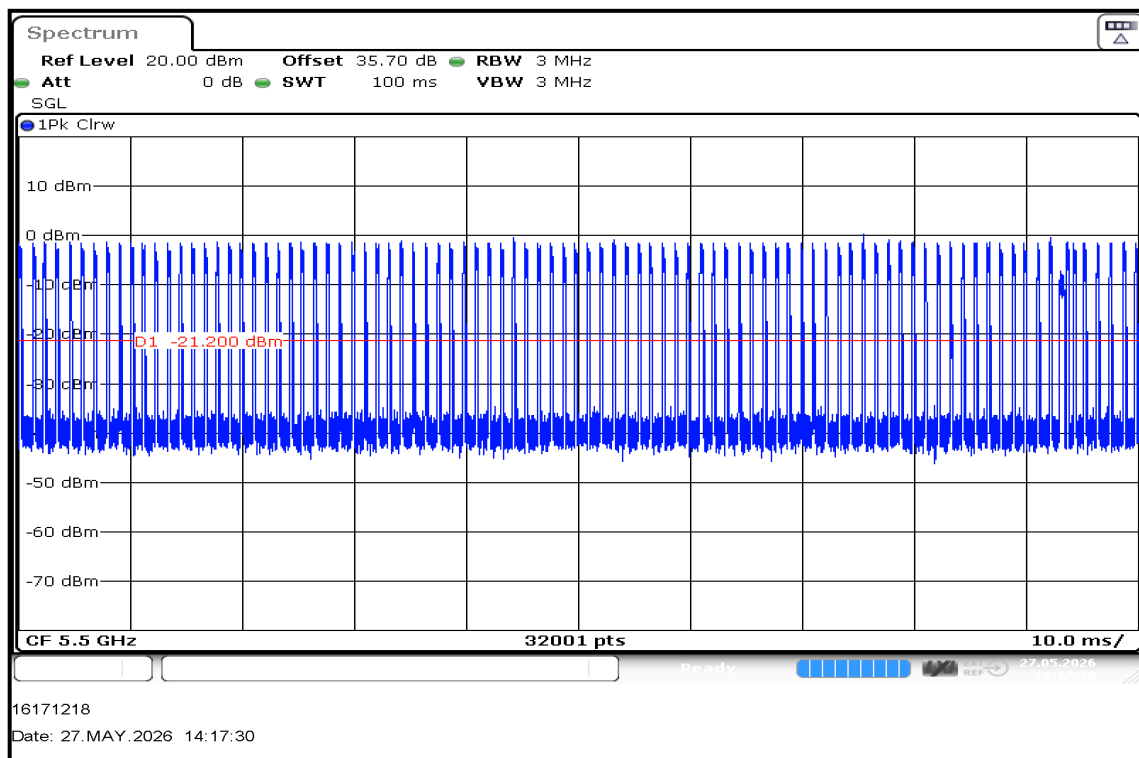


Radar Type 0 – full 18 pulse waveform – Setup 1 and Setup 2

Appendix 2. Channel Loading

UDP data was transmitted from the EUT to the companion device. 100 ms of transmissions showing both the EUT and companion device were then captured on a spectrum analyser in the time domain. The spectrum analyser was set to 30,001 sweep points giving a sample size accuracy of 3.333 μ sec. The data points were then exported as an ASCII file and each sample determined to be either transmissions from the EUT or companion device (channel loading) or idle. The duty cycle was then calculated from this ratio.

Included below are spectrum analyser plots from which the raw data was extracted to calculate the channel loading.

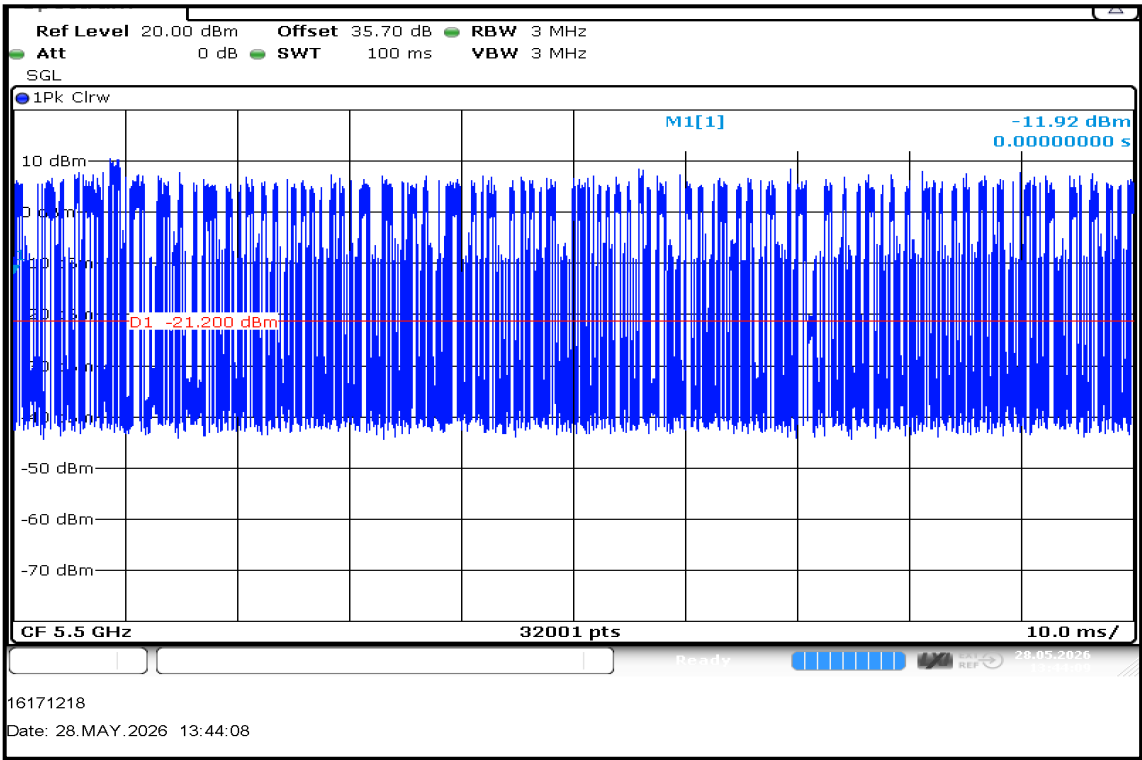


22.2% Channel Loading at 160 MHz Bandwidth

The number of samples greater than -10.0 dBm was compared to the total number of samples to calculate the duty cycle. The EUT and test router were found to be transmitting above this threshold for 17 % of the total, hence meeting the requirement of greater than 17 % channel loading.

Appendix 2. Channel Loading (continued)

This channel loading was then repeated for the client-to-client testing.

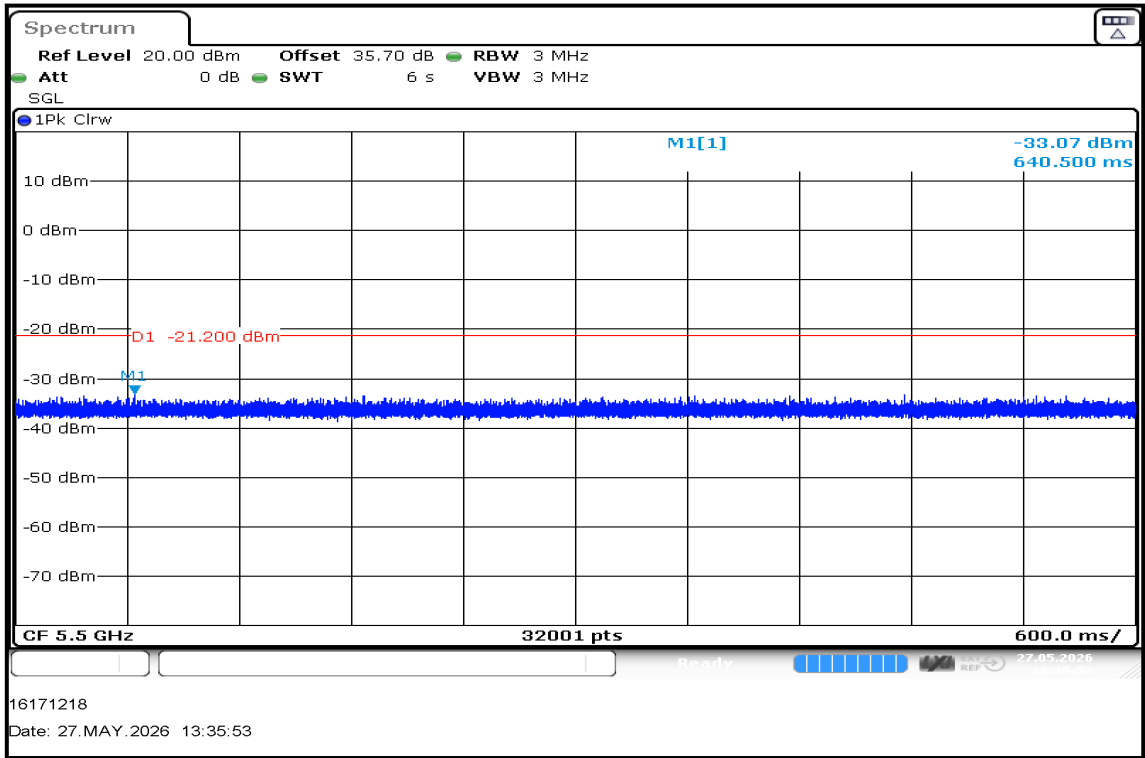


28.1% Channel Loading at 80 MHz Bandwidth

The number of samples greater than 0 dBm was compared to the total number of samples to calculate the duty cycle. The EUT and test router were found to be transmitting above this threshold for 17 % of the total, hence meeting the requirement of greater than 17 % channel loading.

Appendix 3. Noise Floor Plots

Noise floor plots are presented below as required by 905462 D02 8.3 d) 3).



Test System Noise Floor – Setup 1 and Setup 2

Appendix 4. Channel/Frequency plan

Wi-Fi Supported Channels				
Country	Channels			
	20 MHz	40 MHz	80 MHz	160 MHz
United States Canada	1 - 13 36 - 48 52 - 64 100 - 144 149 - 165	38 - 46 54 - 62 102 - 142 151 - 159	42 - 58 106 -138 155	50-114

Note(s):

1. Channels 118 – 128: Only used if DFS Controller allows
2. Channels 36 – 64: Set to Indoor use only for Canada
3. The following channels are set to Active/Passive in FCC domain:

2.4 GHz Band

Channels 1 – 11: Active

Channels 12 – 13: Passive

5 GHz Band

Channels 36 – 48: Active

Channels 52 – 144: Passive DFS

Channels 149 – 165: Active

--- END OF REPORT ---