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RADIO TEST REPORT – 444710-10TRFWL

Type of assessment:

Limited Modular approval

Applicant:

Technologies HumanWare Inc.

Product:

BT + WIFI module

Model:

PCBA-0131-A1.0

FCC ID:

XT5-0131

IC Registration number:

8670A-0131

Specifications:

- FCC 47 CFR Part 15 Subpart E, §15.407(h)
- RSS-247, Issue 2, Feb 2017, Section 6.3

Date of issue: October 6, 2021

Yong Huang, EMC/RF Specialist
Tested by

Signature

Andrey Adelberg, Senior EMC/RF Specialist
Reviewed by

Signature

Lab locations

Company name	Nemko Canada Inc.			
Facilities	*Ottawa site:* 303 River Road Ottawa, Ontario Canada K1V 1H2 Tel: +1 613 737 9680 Fax: +1 613 737 9691	***Montréal site:*** **292 Labrosse Avenue** **Pointe-Claire, Québec** **Canada** **H9R 5L8** **Tel: +1 514 694 2684** **Fax: +1 514 694 3528**	*Cambridge site:* 1-130 Saltsman Drive Cambridge, Ontario Canada N3E 0B2 Tel: +1 519 650 4811	*Almonte site:* 1500 Peter Robinson Road West Carleton, Ontario Canada K0A 1L0 Tel: +1 613 256-9117 Fax: +1 613 256-8848
Test site registration	**Organization**	**Recognition numbers and location**		
	FCC/ISED	FCC: CA2040; IC: 2040A-4 (Ottawa/Almonte); FCC: CA2041; IC: 2040G-5 (Montreal); CA0101 (Cambridge)		
Website	www.nemko.com			

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.
This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contained in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

Copyright notification

Table of Contents

Section 1 Report summary

1.1 Test specifications

FCC 47 CFR Part 15, Subpart E, Clause 15.407(h)	Unlicensed National Information Infrastructure Devises. Transmit Power Control (TPC) and Dynamic Frequency Selection (DFS).
RSS-247, Issue 2, Feb 2017, Section 6.3	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices. Technical requirements for licence-exempt local area network devices and digital transmission systems operating in the 5 GHz band. Dynamic frequency selection for devices operating in the bands 5250–5350 MHz, 5470–5600 MHz and 5650–5725 MHz

1.2 Test methods

905462 D02 UNII DFS Compliance Procedures New Rules v02 (April 8, 2016)	Compliance measurement procedures for Unlicensed-National Information Infrastructure devices operating in the 5250–5350 MHz and 5470–5725 MHz bands incorporating Dynamic Frequency Selection
905462 D03 Client Without DFS New Rules v01r02 (August 22, 2016)	U-NII Client devices without RADAR detection capability
905462 D04 Test Mode New Rules v01 (June 2, 2014)	Operational modes suggested for DFS testing
ANSI C63.10 v2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

1.3 Exclusions

Only DFS test were included in this report, all other requirements are excluded.

1.4 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was performed against all relevant requirements of the test standard except as noted in section 1.3 above. Results obtained indicate that the product under test complies In full with the requirements tested. The test results relate only to the items tested.

See "Summary of test results" for full details.

1.5 Test report revision history

Table 1.5-1: *Test report revision history*

Revision #	Date of issue	Details of changes made to test report
TRF	October 6, 2021	Original report issued

Section 2 Engineering considerations

2.1 Modifications incorporated in the EUT for compliance

There were no modifications performed to the EUT during this assessment.

2.2 Technical judgment

As provided by client, the RF module under test is applying for limited single- modular approval, compliance is demonstrated with specific host.

2.3 Deviations from laboratory tests procedures

No deviations were made from laboratory procedures.

Section 3 Test conditions

3.1 Atmospheric conditions

Temperature	15 °C – 35 °C
Relative humidity	20 % – 75 %
Air pressure	86 kPa (860 mbar) – 106 kPa (1060 mbar)

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

3.2 Power supply range

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages ±5 %, for which the equipment was designed.

3.3 Summary of Radar Detection Function requirements and test waveforms

Table 3.3-1: *DFS Response Requirement Values (KDB 905462 D02, Table 4)*

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds[1]
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period[1 and 2]
U-NII Detection Bandwidth	Minimum 100% of the 99% power bandwidth[3]

Notes: [1] The instant that the *Channel Move Time* and the *Channel Closing Transmission Time* begins is as follows:

- For the Short pulse radar Test Signals this instant is the end of the Burst.
- For the Frequency Hopping radar Test Signal, this instant is the end of the last radar Burst generated.
- For the Long Pulse radar Test Signal this instant is the end of the 12 second period defining the radar transmission.

[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 changes (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.

[3] During the *U-NII Detection Bandwidth* detection test, radar type 0 is used and for each frequency step the minimum percentage of detection is 90%. Measurements are performed with no data traffic.

Table 3.3-2: *Short Pulse Radar Test Waveforms (KDB 905462 D02, Table 5)*

Radar type	Pulse width, µs	Pulse Repetition Interval (PRI), µs	Number of pulses	Minimum percentage of successful detection	Minimum number of trials
0	1	1428	18	See note	See note
1	1	**Test A:** 15 unique PRI values randomly selected from the list of 23 PRI values in table below **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	Roundup{(1 ÷ 360) × (19 × 10^6 ÷ $PRI_{\mu s}$)}	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: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.

Table 3.3-3: *Pulse Repetition Intervals Values for Test A (KDB 905462 D02, Table 5a)*

Pulse Repetition Frequency number	Pulse Repetition Frequency, Pulses per second	Pulse Repetition Interval (PRI), µs
1	1930.5	518
2	1818.7	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	1355.0	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	1139.0	878
20	1113.6	898
21	1089.3	918
22	1066.1	938
23	326.2	3066

Table 3.3-4: *Long Pulse Radar Test Waveforms (KDB 905462 D02, Table 6)*

Radar type	Pulse width, µs	Chirp width, MHz	Pulse Repetition Interval (PRI), µs	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

Table 3.3-5: *Frequency Hopping Radar Test Waveforms (KDB 905462 D02, Table 7)*

Radar type	Pulse width, µs	Pulse Repetition Interval (PRI), µs	Pulses per hop	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

Table 3.3-6: *Summary of the requirements*

Description	Radar type	Requirement	Notes
5.2 DFS Detection Threshold	Type 0	−64 dBm	Any BW
7.8.1 U-NII Detection Bandwidth	Type 0–4 (any)	100 % of 99 % BW	10 trials for each BW
7.8.2.1 Initial Channel Availability Check (CAC) Time	Type 0–4 (any)	≥60 s	Any BW
7.8.2.2 Radar Burst at the Beginning of the CAC	Type 0–4 (any)	No Tx	Any BW
7.8.2.3 Radar Burst at the End of the CAC	Type 0–4 (any)	No Tx	Any BW
7.8.3 Channel Move Time	Type 0	≤10 s	Widest BW
7.8.3 Channel Closing Transmission Time	Type 0	≤260 ms	Widest BW
7.8.3 Non-Occupancy Period	Type 0	>30 min	
7.8.4 Statistical Performance Check:	Type 1–6 (all)		Each BW; Each 20 MHz channels + center
7.8.4.1 Short Pulse Radar Test	Type 1–4 (all)	60% detection	30 trials (for each type)
7.8.4.2 Long Pulse Radar Test	Type 5	80% detection	30 trials
7.8.4.3 Frequency hopping Radar Test	Type 6	70% detection	30 trials

Table 3.3-7: *Applicability of DFS requirements prior to use of a channel*

Requirement	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 3.3-8: *Applicability of DFS requirements during normal operation*

Requirement	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

Table 3.3-9: *Applicability of additional DFS requirements for devices with multiple bandwidth modes during normal operation*

Requirement	Master Device 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

Notes 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.

Section 4 Measurement uncertainty

4.1 Uncertainty of measurement

UKAS Lab 34 and TIA-603-B have been used as guidance for measurement uncertainty reasonable estimations with regards to previous experience and validation of data. Nemko Canada, Inc. follows these test methods in order to satisfy ISO/IEC 17025 requirements for estimation of uncertainty of measurement for wireless products.

Measurement uncertainty budgets for the tests are detailed below. Measurement uncertainty calculations assume a coverage factor of K = 2 with 95% certainty.

Table 4.1-1: *Measurement uncertainty calculations*

Test name	Measurement uncertainty, ±dB
All antenna port measurements	0.55
Occupied bandwidth	4.45
Conducted spurious emissions	1.13
Radiated spurious emissions	3.78
AC power line conducted emissions	3.55

Section 5 Information provided by the applicant

5.1 Disclaimer

This section contains information provided by the applicant and has been utilized to support the test plan. Inaccurate information provided by the applicant can affect the validity of the results contained within this test report. Nemko accepts no responsibility for the information contained within this section and the impact it may have on the test plan and resulting measurements.

5.2 Applicant/Manufacture

Applicant name	Technologies HumanWare Inc.
Applicant address	1800, Jean-Berchmans-Michaud street Drummondville, (Quebec), Canada J2C 7G7
Manufacture name	Same as applicant
Manufacture address	Same as applicant

5.3 EUT information

Product	BT + WIFI module
Model	PCBA-0131-A1.0
Host Model	DA2
Serial number	None
Part number	PCBA-0131
Power supply requirements	3.0 to 3.6 Vdc, 300 mA , From host AC: 120 V, 50/60 Hz power cord
Product description and theory of operation	The PCBA-0131 RF module integrates a PCB antenna. The module allows the host to connect to Wifi networks via a SDIO interface. It also allows the host to use the Bluetooth protocol via a UART interface.

5.4 Radio technical information

Device DFS type	☐	Master device
	☐	Client with Radar Detection
	☒	Client without Radar Detection
Frequency band(s)	5470–5600 MHz and 5650–5725 MHz (FCC: 5470–5725 MHz) (U-NII-2c)	
Frequency Min (MHz)	20 MHz bandwidth: 5500 40 MHz bandwidth: 5510 80 MHz bandwidth: 5530	
Frequency Max (MHz)	20 MHz bandwidth: 5700 40 MHz bandwidth: 5670 80 MHz bandwidth:5610	
Channel numbers	20 MHz bandwidth: 100 to 140 40 MHz bandwidth: 102 to 134 80 MHz bandwidth:106 to 122	
RF power Max (W), Conducted	20 MHz bandwidth:0.0138 (11.4 dBm) 40 MHz bandwidth: 0.0129(11.1 dBm) 80 MHz bandwidth: 0.0129 (11.1dBm)	
Measured BW (kHz), 99% OBW	20 MHz bandwidth: 17780 40 MHz bandwidth: 36360 80 MHz bandwidth: 75450	
Type of modulation	802.11a/n/ac: OFDM (QPSK, BPSK, 16-QAM, 64-QAM)	
Emission classification	W7D	
Transmitter spurious, dBµV/m @ 3 m	47.49, average @ 5.46GHz	
Antenna information	Molex 211964 2.4GHz/5GHz Ceramic SMT antenna, max peak gain: 2.1 dBi at 2.4 GHz band and 2.2 dBi at 5 GHz band.	
Firmware/Software information	8821cs-txpowerlimits-addition to wifi-bt-continous-2021-06-29	

5.5 EUT setup details

5.5.1 Radio exercise details

Operating conditions	The EUT is soldered on Humanware Digital Talking Book Machine Main PCB, the DA2. The DA2 provides 3.1Vdc power to the EUT. The DA2 also interfaces to the EUT with a digital interface (SDIO and UART). The DA2 runs on Linux and has the appropriate drivers to control the EUT. In order to control the EUT in the appropriate mode, the DA2 is connected to a laptop with a serial to USB communication adapter. The operator uses a terminal interface on the laptop to communicate with the DA2. The DA2 has a special build for this purpose, the "certification-rtwpriv-wifi-bt-continous-2021-06-10"
Transmitter state	Normal operation mode.
Receiver state	Normal operation mode.

Table 5.5-1: *EUT sub assemblies*

Description	Brand name	Model, Part number, Serial number, Revision level
Digital Talking Book Machine	Humanware	MN: DA2 SN: ALPHA-COND-1 PN: ASSY-1100
BT + WIFI module	Humanware	MN: *PCBA-0131-A1.0*, PN: PCBA-0131 Rev: A1.0

Table 5.5-2: *Support equipment*

Description	Brand name	Model, Part number, Serial number, Revision level
Serial communication board	Humanware	PN: PCBA-0097B Rev: P2
AC power adapter	InnoVision	MN: GW18W-050300UV
Laptop	ASUS	MN: L510M, SN: LCN0CX13E40351A
WIFI Router	LINKSYS	MN: WRT3200ACM, SN: 1981160C901076

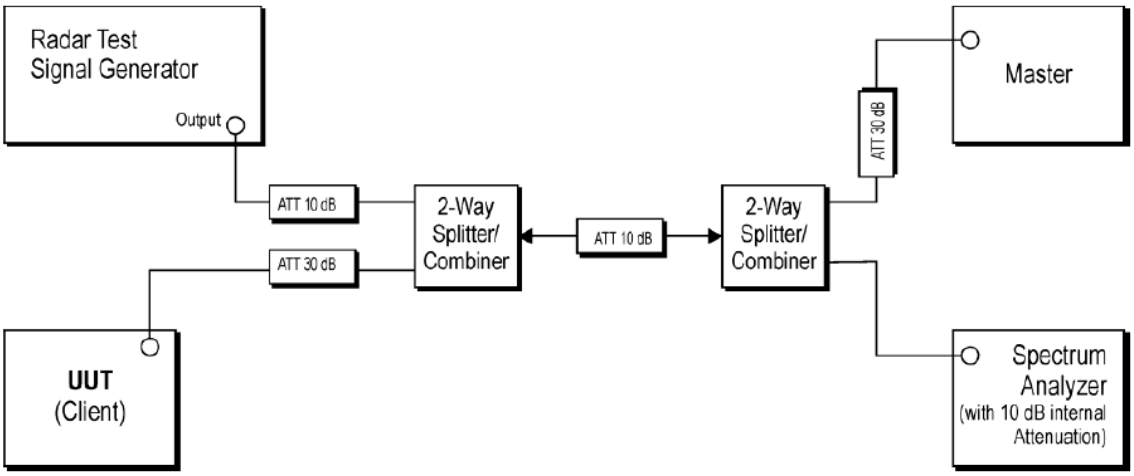

Figure 5.5-1: *testing block diagram*

Section 6 Summary of test results

6.1 Testing location

Test location (s)	Montreal

6.2 Testing period

Test start date	August 19, 2021	Test end date	August 20, 2021

6.3 Sample information

Receipt date	June 10, 2021	Nemko sample ID number(s)	2

6.4 FCC Part §15.407 test results

Table 6.4-1: *FCC requirements results*

Clause	KDB Section	Test description	Verdict
§15.407(h)(B)(iii)	7.8.3	Channel move time	Pass
§15.407(h)(B)(iii)	7.8.3	Channel closing transmission time	Pass
§15.407(h)(B)(iv)	7.8.3	Non-occupancy period	Pass

Notes EUT is client device without radar detection

6.5 ISED RSS-247, Issue 2, test results

Table 6.5-1: *ISED requirements results*

RSS-247 Clause	KDB Section	Test description	Verdict
6.3.2.c	7.8.3	Channel move time	Pass
6.3.2.d	7.8.3	Channel closing transmission time	Pass
6.3.2.e	7.8.3	Non-occupancy period	Pass

Notes EUT is client device without radar detection

Section 7 Test equipment

7.1 Test equipment list

Table 7.1-1: *Equipment list*

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
DFS and Adaptivity system	Aeroflex	PXI 30xx	FA002628	1 year	September 18, 2021
Power Splitter	Mini-Circuits	ZN2PD-63-S+	FA002861	—	VOU
Power Splitter	Mini-Circuits	ZN2PD-63-S+	FA002862	—	VOU
Spectrum analyzer	Rohde & Schwarz	FSV 40	FA002731	1 year	March 23, 2022

Notes: NCR - no calibration required, VOU - verify on use

Section 8 Testing data

8.1 Channel closing transmission and move time

8.1.1 References, definitions and limits

FCC §15.407:

(h)(2) Radar Detection Function of Dynamic Frequency Selection (DFS).

(B) The requirement for channel move time applies in both the master and slave operational modes.

(iii) Channel Move Time. 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, Clause 6.3:

Dynamic frequency selection for devices operating in the bands 5250–5350 MHz, 5470–5600 MHz and 5650–5725 MHz

6.3.2 Operational requirements

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

d. 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-second period of the channel move time.

KDB 905462 D02, Clause 7.8.3:

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

8.1.2 Test summary

Verdict	Pass		
Tested by	Yong Huang	Test date	August 19, 2021

8.1.3 Observations, settings and special notes

The steps below define the procedure to determine the parameters when a radar Burst with a level equal to the DFS Detection Threshold + 1 dB 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 UUT 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 UUT 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 UUT (Client device) to Associate with the Master Device. In case the UUT 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 UUT (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. Vertical polarization is used for testing.

c) 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.

d) 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 variations/errors.

e) Observe the transmissions of the UUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). Measure and record the Channel Move Time and Channel Closing Transmission Time if radar detection occurs.

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

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

The test was performed on the widest channel BW, which is 80 MHz with the use of Radar type 0.

As per stated by client on site, at this mode the companion device is on a 80 MHz channel while EUT only operates on a 20 MHz bandwidth within the companion device's channel.

8.1.4 Test data

Table 8.1-1: *Channel closing transmission time results*

Measured closing transmission time, ms	Limit, ms	Margin, ms
2.271	260.00	257.729

Table 8.1-2: *Channel move time results*

Measured move time, s	Limit, s	Margin, s
0.57	10.00	9.43

Table 8.1-3: *Channel closing transmission and move time measurement results*

Region	Start, s	End, s	Measured, ms	Limit, ms
0	0	0.2	0.758	200
1	0.2	10	1.513	60
2	10	12	0	0

Table 8.1-4: *Pulses detected*

Start Time (ms)	Stop Time (ms)	Duration (ms)
1.457	1.496	0.039
1.52	1.564	0.044
53.948	54.231	0.283
82.779	82.815	0.036
82.837	82.886	0.049
156.349	156.648	0.299
164.067	164.114	0.048
164.139	164.183	0.044
245.332	245.341	0.009
245.353	245.38	0.027
245.404	245.448	0.044
258.749	259.049	0.3
326.629	326.666	0.037
326.688	326.737	0.049
361.15	361.45	0.299
407.928	407.963	0.034
407.989	408.036	0.047
463.551	463.851	0.3
489.214	489.244	0.03
489.26	489.261	0.001
489.286	489.33	0.044
565.952	566.251	0.299

Test data, continued

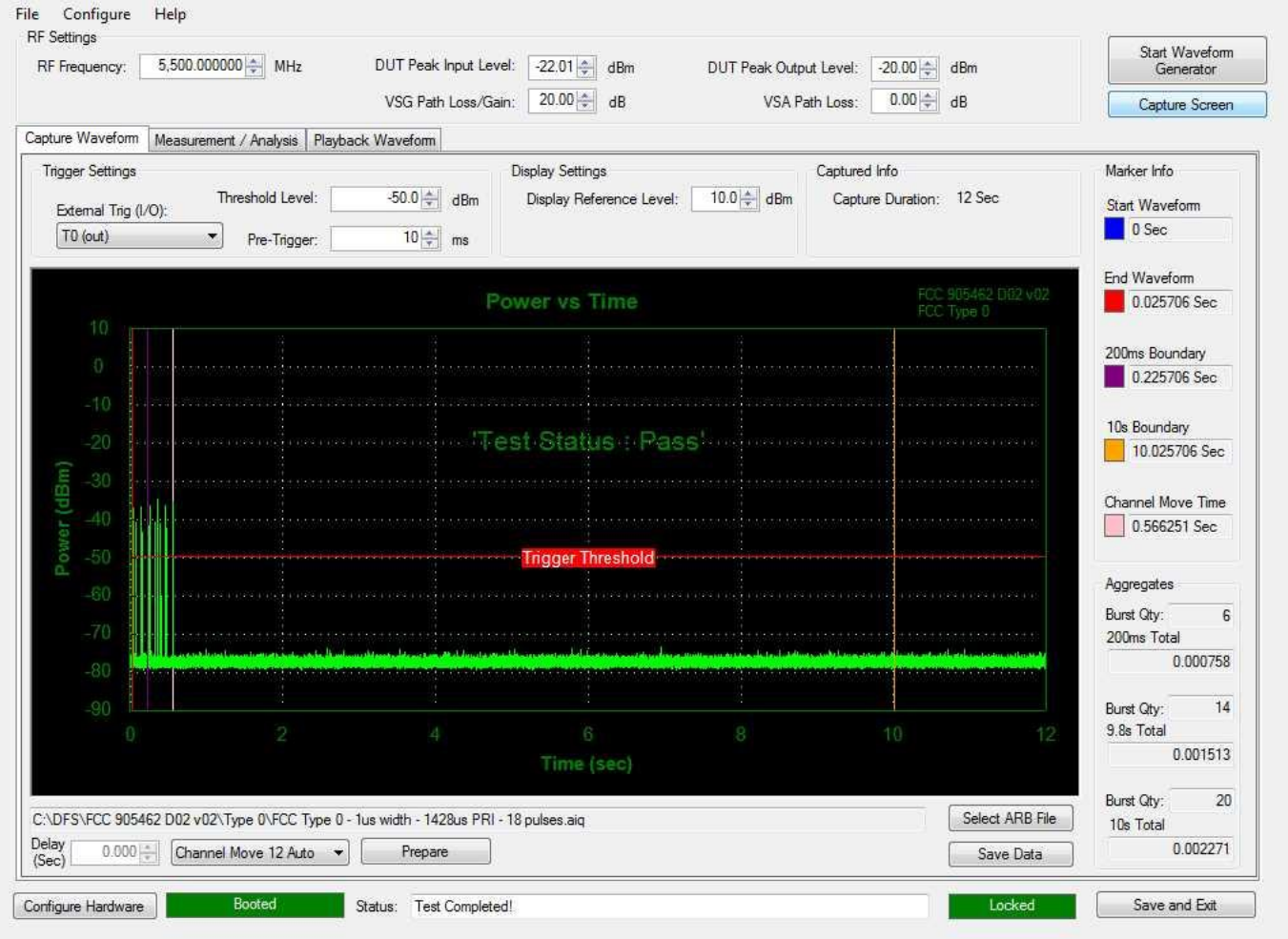

Figure 8.1-1: *Channel closing transmission and move time*

8.2 Non-occupancy period

8.2.1 References, definitions and limits

FCC §15.407:

(h)(2) Radar Detection Function of Dynamic Frequency Selection (DFS).

(B) The requirement for channel move time applies in both the master and slave operational modes.

(iv) Non-occupancy Period. 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, Clause 6.3:

Dynamic frequency selection for devices operating in the bands 5250–5350 MHz, 5470–5600 MHz and 5650–5725 MHz

6.3.2 Operational requirements

e. Non-occupancy period: 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, Clause 7.8.3:

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

8.2.1 Test summary

Verdict	Pass		
Tested by	Yong Huang	Test date	August 19, 2021

8.2.2 Observations, settings and special notes

The steps below define the procedure to determine the parameters when a radar Burst with a level equal to the DFS Detection Threshold + 1 dB 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 UUT 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 UUT 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 UUT (Client device) to Associate with the Master Device. In case the UUT 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 UUT (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. Vertical polarization is used for testing.

c) 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.

d) 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 variations/errors.

e) Observe the transmissions of the UUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). Measure and record the Channel Move Time and Channel Closing Transmission Time if radar detection occurs.

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

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

The test was performed on the widest channel BW, which is 80 MHz with the use of Radar type 0.

As per stated by client on site, at this mode the companion device is on a 80 MHz channel while EUT only operates on a 20 MHz bandwidth within the companion device's channel.

8.2.3 Test data

Table 8.2-1: *Non-occupancy period results*

Measured Non-occupancy period, min	Minimum limit, min	Margin, min
33	30	3

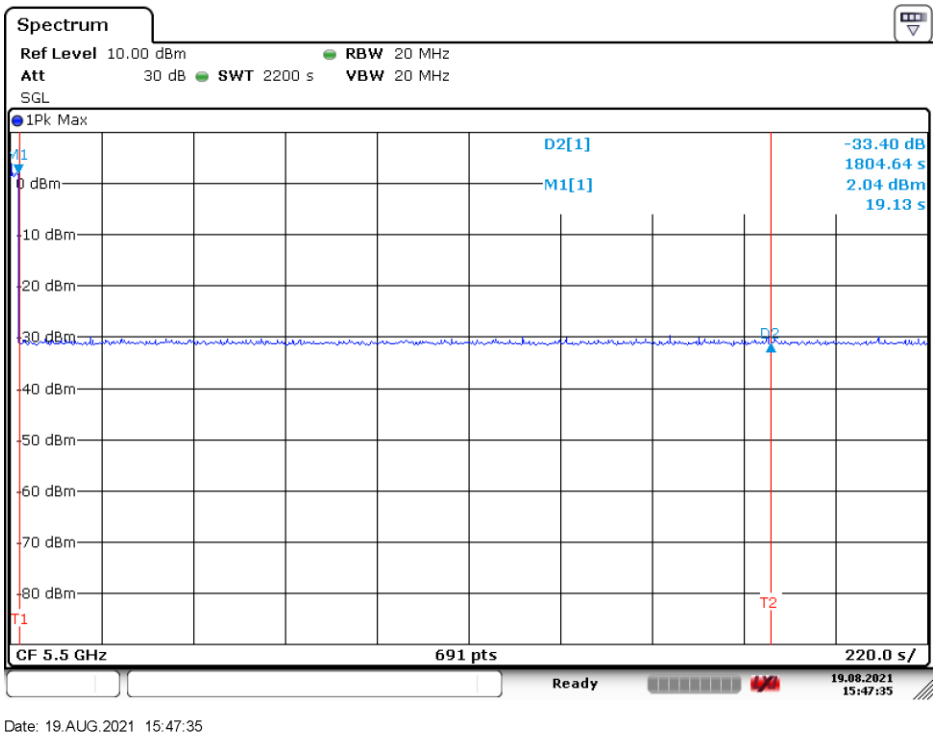

Figure 8.2-1: *Non-occupancy period*

Section 9 EUT photos

9.1 External photos

Figure 9.1-1: *Front view photo*

Figure 9.1-2: *Rear view photo*

Figure 9.1-3: *Side view photo*

Figure 9.1-4: *Side view photo*

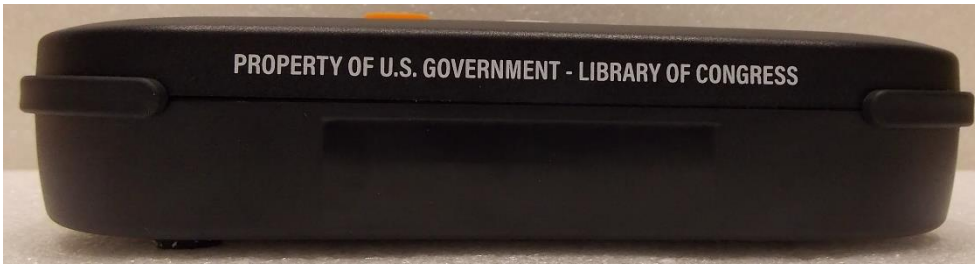

Figure 9.1-5: *Top view photo*

Figure 9.1-6: *Bottom view photo*

End of the test report