



TEST REPORT

Test Report No. : UL-RPT-RP10655468JD03D V2.0

Manufacturer : Cambium Networks Ltd
Model No. : PMP 450i / PTP 450i
FCC ID : QWP-50450I
Test Standard(s) : FCC Part 15.407(h)(2)

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2. The results in this report apply only to the sample(s) tested.
3. The sample tested is in compliance with the above standard(s).
4. The test results in this report are traceable to the national or international standards.
5. Version 2.0 supersedes all previous versions.

Date of Issue: 25 November 2015

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This laboratory is accredited by UKAS.
The tests reported herein have been
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1. Customer Information












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2. Summary of Testing

2.1. General Information

Specification Reference:	47CFR15.407
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart E (Unlicensed National Information Infrastructure Devices) - Section 15.407
Site Registration:	FCC: 209735
Location of Testing:	UL VS LTD, Unit 3 Horizon, Wade Road, Kingsland Business Park, Basingstoke, Hampshire, RG24 8AH, United Kingdom
Test Dates:	14 September 2015 to 11 November 2015

2.2. Summary of Test Results

FCC Reference (47CFR)	Measurement	Result
Part 15.407(h)(2)	U-NII Detection Bandwidth	
Part 15.407(h)(2)(ii)	Initial Channel Availability Check Time	
Part 15.407(h)(2)(ii)	Radar Burst at the Beginning of the Channel Availability Check Time	
Part 15.407(h)(2)(ii)	Radar Burst at the End of the Channel Availability Check Time	
Part 15.407(h)(2)(iii)	Channel Closing Transmission Time and Channel Move Time	
Part 15.407(h)(2)(iv)	Non-occupancy Period	
Part 15.407(h)(2)	Statistical Performance Check – Short Pulse Radar Types 1-4	
Part 15.407(h)(2)	Statistical Performance Check – Long Pulse Radar Type 5	
Part 15.407(h)(2)	Statistical Performance Check – Frequency Hopping Radar Type 6	
Key to Results		
 = Complied  = Did not comply		

Note(s):

1. The EUT operates in the 5250 to 5350 MHz and 5470 to 5725 MHz bands. It was tested operating on a representative channel in the 5470-5725 MHz band.
2. The manufacturer confirms that information regarding the parameters of the radar waveforms is not available to, or configurable by the end user.
3. Please refer to Test Report UL-RPT-RP10655468JD03A for other FCC Part 15.407 test results in the 5250 to 5350 MHz and 5470 to 5725 MHz bands.

2.3. Methods and Procedures

Reference:	FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v01r02, May 15 2015
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

2.4. Deviations from the Test Specification

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

3. Equipment Under Test (EUT)

3.1. Identification of Equipment Under Test (EUT)

Brand Name:	Cambium Networks Ltd
Model Name or Number:	PMP 450i / PTP 450i
Serial Number:	F50980BB015D (<i>Master</i>)
Hardware Version:	P3
Software Version:	CANOPY 14.0 (Build FCC5) AP-DES
FCC ID:	QWP-50450I

Brand Name:	Cambium Networks Ltd
Model Name or Number:	PMP 450i / PTP 450i
Serial Number:	F50980BB0158 (<i>Client</i>)
Hardware Version:	P3
Software Version:	CANOPY 14.0 (Build FCC5) AP-DES
FCC ID:	QWP-50450I

3.2. Description of EUT

The Equipment Under Test was a fixed radio transceiver operating in the 5250-5350 MHz and 5470-5725 MHz frequency bands. It is a load based system and can operate in Master or Client modes.

Power is provided by a PoE supply.

Radar detection is not supported in Client mode, only channel shutdown was tested when in Client mode.

The EUT is designed to operate in a wireless network where all Client devices communicate only via the Master device. Since the Client devices therefore do not communicate with each in a peer-to-peer link, the EUT (in Client Mode) is deemed not to support bridge or mesh modes, and does not require the additional radar detection tests in a repeater mode, as detailed in KDB 905462 page 4, footnote 2.

The EUT is available in two configurations:

- Connectorised with two external antenna ports.
- Integrated with directional and sectorised flat plate antenna options.

3.3. Modifications Incorporated in the EUT

No modifications were made to the EUT during testing.

3.4. Additional Information Related to Testing

Technology Tested:	Unlicensed National Information Infrastructure Devices (U-NII)	
Type of Unit:	Microwave fixed radio link transceiver	
Modes/Modulation Type:	QPSK, 16QAM, 64QAM & 256QAM	
Channel Spacing:	5, 10 & 20 MHz	
Radar Detection supported on Client?:	No	
Highest possible EIRP:	28.7 dBm (28.5 dBi plate antenna / 0.9 dB RF cable loss / power setting -0.75)	
Lowest possible EIRP:	-4.1 dBm (10 dBi omnidirectional antenna / 0.9 dB RF cable loss / power setting -15)	
Antenna Port Used For Testing:	Port A	
Antenna Connector Impedance:	50 Ohms	
Power-on cycle time:	68.9 seconds	
Power Supply Requirement(s):	Nominal	PoE supply input 120 VAC 60 Hz. PoE output 48 VDC.
Operating Frequency Range:	5250 to 5350 MHz and 5470 to 5725 MHz	
Transmit / Receive Channels Tested at each bandwidth setting:	Bandwidth (MHz)	Channel Frequency (MHz)
	5	5597.5
	10	5595
	20	5590

3.5. Support Equipment

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

Description:	PoE Power supply
Brand Name:	LEADER ELECTRONICS INC.
Model Name or Number:	NU60-R550111-I3
Cambium Part Number:	N000065L001B
Serial Number:	XXXXXXXXXX1318000004

Description:	PoE Power supply
Brand Name:	LEADER ELECTRONICS INC.
Model Name or Number:	NU60-R550111-I3
Cambium Part Number:	N000065L001B
Serial Number:	13000019581409000656

Description:	Laptop PC
Brand Name:	Dell
Model Name or Number:	Latitude D610
Serial Number:	UL Asset No. 00373

Description:	Laptop PC
Brand Name:	Dell
Model Name or Number:	Latitude D610
Serial Number:	UL Asset No. 00782

3.6. Antenna

The table below lists the antennas that the manufacturer intends to use with this product when operating in the 5250-5350 & 5470-5725 MHz bands. The antenna gains were stated by Cambium Networks Ltd:

Type	Stated Gain (dBi)	Manufacturer	Antenna Name	Used for DFS Testing	Note
Dual polarised plate (Integrated)	23.0	MARS	MA-WA56-DP23SCM	-	-
Dual polarised plate (Integrated)	17.0	Cambium	5093HH	-	-
Dual polarised plate (External)	28.5	MARS	MA-WA56-DP28N	-	-
2 ft Parabolic Dual Polarised	28.5	MTI	MT-486013-NVH	-	-
4 ft Parabolic Dual Polarised	34.5	Andrews	PX4F-52-N7A/A	-	-
90° Sectorised (External)	17.0	Laird	ANT, AP Sector	-	-
90° Sectorised (External)	17.0	Proprietary	Part No. A005189	-	-
90° Sectorised (Integrated)	16.0	MARS	MA-WD56-DP16PCMW	-	-
Omnidirectional	13.0	KP	KPPA-5.7-DPOMA	-	-
Omnidirectional	10.0	MARS	MA-WO56-DP10	X	1, 2

X = This antenna was used for testing purposes

Note(s):

1. This antenna is the lowest gain antenna (regardless of antenna type) and was used to set the *DFS Detection Threshold* level during calibration of the test setup.
2. Used in conjunction with two, 0.5 metre length RF cables (Radiall R284C0351033, N type male – N type male) having an individual insertion loss of 0.9 dB across the EUT operating band.

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

The EUT was tested in the following operating modes, unless otherwise stated:

- As a Master or Client device.
- The EUT has radar detection in Master mode only.
- The EUT was set to auto modulation type.
- The radar detection sensitivity is linked to the allowed maximum transmit power of the device in the GUI. This is also limited depending on the operating bandwidth. These conducted powers were set in the GUI for each tested bandwidth:

Channel Bandwidth (MHz)	GUI Combined TX Power Setting
5	10.25
10	13.25
20	16.25

This was designed to simulate the use of the antenna with the minimum specified gain.

- The EUT transmit duty cycle was set depending on the test being performed. See each applicable test for details of the UDP pseudo-random data stream used to give >17 % channel loading as required by KDB 905462 D02 Section 7.7.2.

4.2. Configuration and Peripherals

The EUT was tested in the following configuration(s):

- All measurements were made using a conducted link. The antenna ports gave independent access to 'A' and 'B' antenna connections.
- A laptop PC with a standard web browser was connected to the EUT via Ethernet. This was used to configure the EUT via its normal end-user web configuration utility. DFS detection messages could be seen from within the web interface debug window. The EUT's web configuration console also featured a special engineering test-mode login, where additional set-up parameters, usually unavailable to the end user, could access specific configuration options.
- The same laptop PC was also used to connect via a telnet client to control DFS test modes. DFS detection messages could also be seen by continually repeating the command to report the number of radar detections seen via the telnet session.
- Further details of the conducted test network and set-up can be found in Appendix 2 of this test report.
- Calculation of the radar detection threshold:
 - The customer declared the lowest gain antenna assembly (including cable loss) used with the PMP 450i / PTP 450i to be 9.1 dBi (10.0 dBi – 0.9 dB cable loss). This additional incoming gain in signal would normally be present in a radiated link, but is not present in the conducted test. This minimum gain is therefore added to the radar test level amplitude.
 - The EUT transmitted with an EIRP >200 mW in wider operating bandwidths, else if <200 mW in narrower operating bandwidths the 10 dBm/MHz PSD limit was not met. Therefore the radar detection threshold was calculated for all bandwidths using the -64 dBm limit found in Part 15.407(h)(2) and KDB 905462 D02 Table 3.
 - This -64 dBm detection threshold was then compensated for antenna gain (including 0.9 dB cable loss), and an additional 1 dB added as stated in KDB 905462 D02 Table 3, notes 1 and 2. This gave a radar test level of -64 dBm + 10 dBi - 0.9 dB + 1 dB = -53.9 dBm.

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

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP ≥ 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
<p>Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.</p> <p>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.</p> <p>Note 3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.</p>	

5. Measurements, Examinations and Derived Results

5.1. General Comments

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to *Section 6 Measurement Uncertainty* for details.

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.

5.2. Test Results

5.2.1. U-NII Detection Bandwidth

Test Summary:

Test Engineer:	Philip Harrison	Test Dates:	15 September 2015, 16 September 2015, 12 October 2015 & 13 October 2015
Test Sample Serial Numbers:	F50980BB015D (<i>Master</i>)		

FCC Reference:	Part 15.407(h)(2)
Test Method Used:	KDB 905462 D02 Section 7.8.1 and Notes below

Environmental Conditions:

Temperature (°C):	24 to 25
Relative Humidity (%):	45 to 47

Notes:

1. In accordance with KDB 905462 D02 Table 2, the U-NII Detection Bandwidth test was performed on all supported channel bandwidths.
2. The 99% bandwidth was measured in accordance with FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, Section II D.
3. Tests were performed using a type 0 radar (as stated in KDB 905462 D02 Table 4, Note 3) and the radar detection threshold used was as calculated in Section 4.2 of this test report.
4. KDB 905462 D02 Section 7.8.1 requests testing detection bandwidth at 1 MHz steps near the channel edges until the entire 99% bandwidth is covered. However, due to small channel bandwidths or 99% bandwidths of the EUT, smaller steps were used at the channel edge extremities on all supported channel bandwidths.

U-NII Detection Bandwidth (continued)**Results: 5 MHz Master**

Channel Bandwidth (MHz)	99% Bandwidth (MHz)	U-NII Detection Bandwidth $F_H - F_L$ (MHz)	Result
5	4.529	≥ 5.0	Complied

Measurement Offsets from centre frequency (MHz)	Detection attempts successful from 10 attempts at each frequency	Detection Rate (%)
-2.5 (F_L)	10	100
-2.0	10	100
-1	10	100
0 (5597.5 MHz)	10	100
+1	10	100
+2	10	100
+2.5 (F_H)	10	100

The EUT exceeded the requirement of $\geq 90\%$ detection probability over 100% of the measured 99% bandwidth.

U-NII Detection Bandwidth (continued)**Results: 10 MHz Master**

Channel Bandwidth (MHz)	99% Bandwidth (MHz)	U-NII Detection Bandwidth $F_H - F_L$ (MHz)	Result
10	9.018	≥ 9.2	Complied

Measurement Offsets from centre frequency (MHz)	Detection attempts successful from 10 attempts at each frequency	Detection Rate (%)
-4.6 (F_L)	10	100
-4	10	100
-3	10	100
-2	10	100
-1	10	100
0 (5595 MHz)	10	100
+1	10	100
+2	10	100
+3	10	100
+4	10	100
+4.6 (F_H)	10	100

The EUT exceeded the requirement of $\geq 90\%$ detection probability over 100% of the measured 99% bandwidth.

U-NII Detection Bandwidth (continued)**Results: 20 MHz Master**

Channel Bandwidth (MHz)	99% Bandwidth (MHz)	U-NII Detection Bandwidth $F_H - F_L$ (MHz)	Result
20	18.116	≥ 18.25	Complied

Measurement Offsets from centre frequency (MHz)	Detection attempts successful from 10 attempts at each frequency	Detection Rate (%)
-9.125 (F_L)	10	100
-9	10	100
-8	10	100
-7	10	100
-6	10	100
-5	10	100
0 (5590 MHz)	10	100
+5	10	100
+6	10	100
+7	10	100
+8	10	100
+9	10	100
+9.125 (F_H)	10	100

The EUT exceeded the requirement of $\geq 90\%$ detection probability over 100% of the measured 99% bandwidth.

U-NII Detection Bandwidth (continued)**Limits:****Part 15.407(h)(2)**

The device must sense for radar signals at 100 percent of its emission bandwidth.

KDB 905462 D02 Table 4: DFS Response Requirement Values

Parameter	Value
<i>U-NII Detection Bandwidth</i>	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.
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.	

5.2.2. Initial Channel Availability Check Time**Test Summary:**

Test Engineer:	Philip Harrison	Test Date:	14 September 2015
Test Sample Serial Numbers:	F50980BB015D (<i>Master</i>) F50980BB0158 (<i>Client</i>)		

FCC Reference:	Part 15.407(h)(2)(ii)
Test Method Used:	KDB 905462 D02 Section 7.8.2.1 and Notes below

Environmental Conditions:

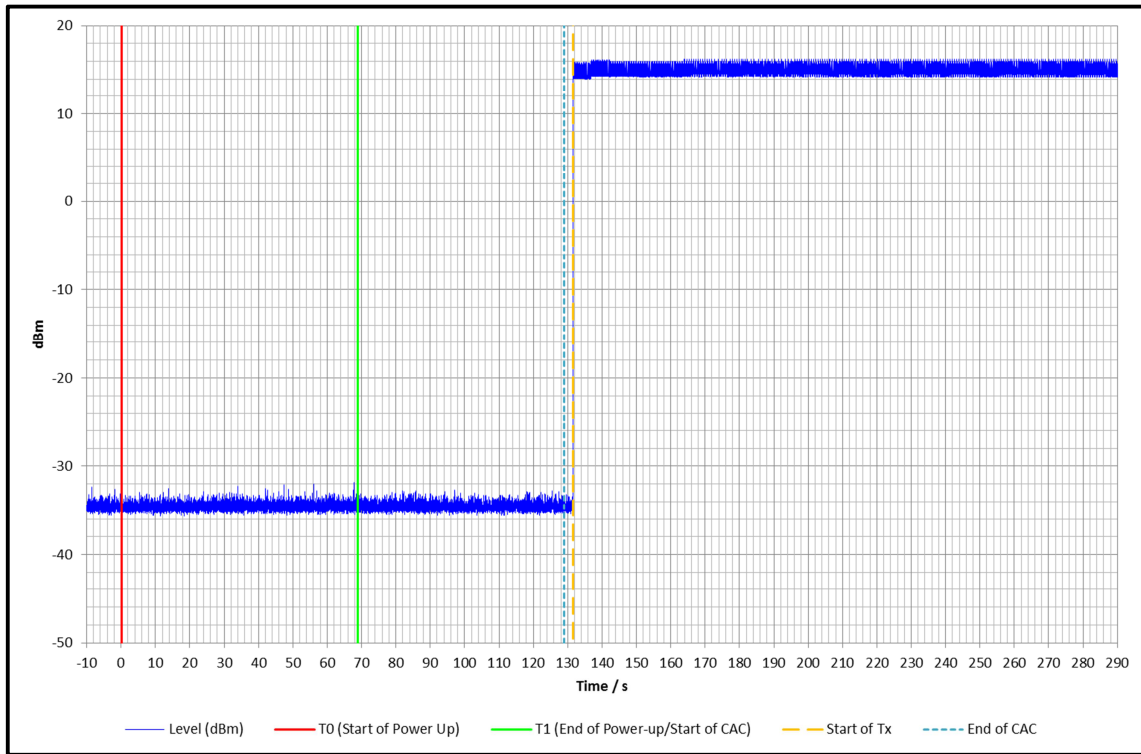
Temperature (°C):	25
Relative Humidity (%):	42

Notes:

1. In accordance with KDB 905462 D02 Table 2, the Initial Channel Availability Check test can be performed on any single bandwidth. It was therefore tested only on a 20 MHz channel bandwidth.
2. The EUT master device was powered on at T0 (red vertical line) on the plot below. This gave improved accuracy over starting the sweep at the same time as power up as requested by KDB 905462 D02. 32,000 sweep points were used on the spectrum analyser. The measurement was performed with the spectrum analyser in zero span and the 32,000 data points exported as an ASCII file. The ASCII file was then imported and analysed in Microsoft Excel.
3. A second PTP 450i, set as a Client device, was connected and powered up throughout the test.
4. No beacon or data transmission was seen from the Master during channel availability check time. The Master did not transmit for >60 seconds, only transmitting after 131.4 seconds. The EUT therefore complies, as shown by the results plot on the following page.
5. All emissions remained below the -27 dBm/MHz spurious limit. This was measured worst-case with a peak detector and 3 MHz RBW in accordance with KDB 905462 D02 Section 7.8.2.1(a).
6. The customer declared the CAC time to be 60 seconds. There is also a short 2.5 second gap between the end of CAC and transmission with In-Service Monitoring. Therefore the CAC starts and ends 2 seconds earlier than otherwise expected and the power up time until CAC start was calculated to be 131.4 (transmit time) – 60 (CAC length) – 2.5 (time between CAC and ISM) = 68.9 seconds.

Initial Channel Availability Check Time (continued)

Results: 20 MHz Master



Limits:

Part 15.407(h)(2)(ii)

A U-NII device shall check if there is a radar system already operating on the channel before it can initiate a transmission on a channel and when it has to move to a new channel. The U-NII device may start using the channel if no radar signal with a power level greater than the interference threshold values listed in paragraph (h)(2) of this part, is detected within 60 seconds.

KDB 905462 D02 Table 4: DFS Response Requirement Values

Parameter	Value
<i>Channel Availability Check Time</i>	60 seconds

5.2.3. Radar Burst at the Beginning of the Channel Availability Check Time**Test Summary:**

Test Engineer:	Philip Harrison	Test Date:	14 September 2015
Test Sample Serial Numbers:	F50980BB015D (<i>Master</i>) F50980BB0158 (<i>Client</i>)		

FCC Reference:	Part 15.407(h)(2)(ii)
Test Method Used:	KDB 905462 D02 Section 7.8.2.2

Environmental Conditions:

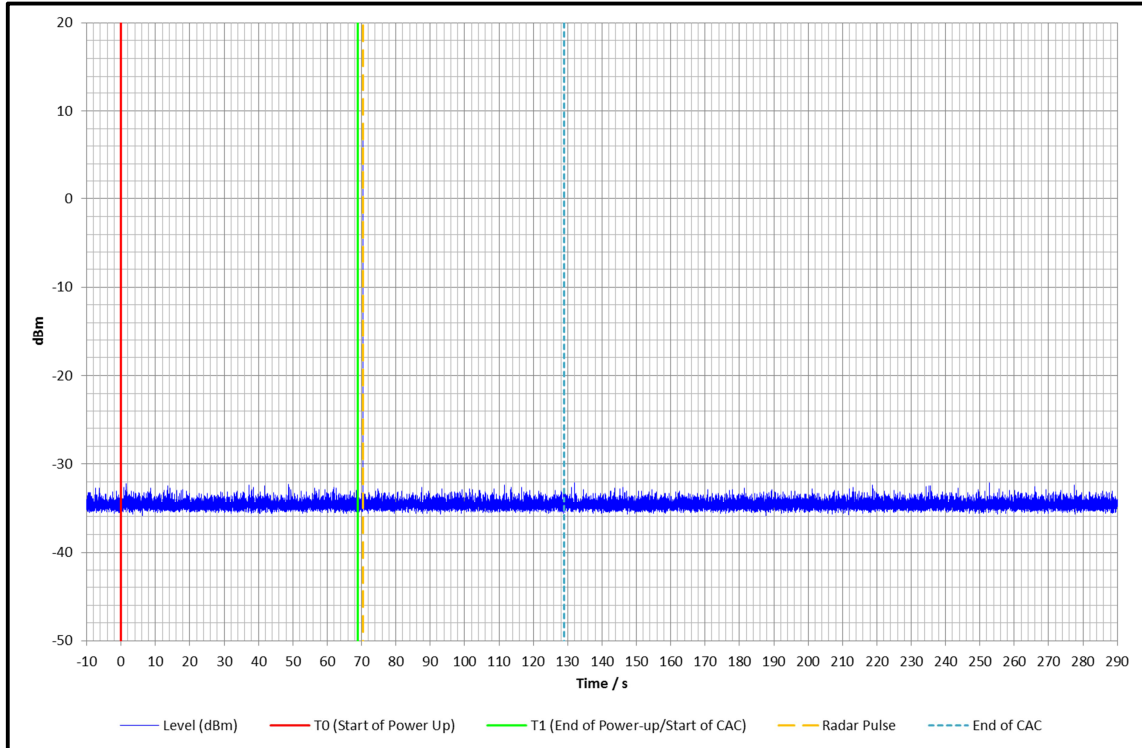
Temperature (°C):	23 to 24
Relative Humidity (%):	45 to 47

Notes:

1. In accordance with KDB 905462 D02 Table 2, the Initial Channel Availability Check test was performed on any single bandwidth. It was therefore tested only on a 20 MHz channel bandwidth.
2. The radar was fired 70.4 seconds after power on, and therefore 1.5 seconds into the allowed 6 second radar window at the beginning of CAC (power up time shown to be 68.9 seconds during Initial Channel Availability Check test). The radar pulse appears under the vertical dotted yellow line on the result plot shown on the following page.
3. Observation of Ch_r continued for >2.5 minutes after the radar burst was generated.
4. Tests were performed using a type 0 radar and the radar detection threshold used was as calculated in Section 4.2 of this test report.
5. The radar burst type 0, shown occurring just after the T1 line on the plot on the following page, was detected and no beacon or data transmission seen from the EUT after the end of CAC. Therefore the CAC starts at the time declared and, in conjunction with the *Radar Burst at the End of the Channel Availability Check Time* test, shows the CAC duration is greater or equal to the 60 second minimum..
6. No transmissions occurred.
7. All emissions remained below the -27 dBm spurious limit. This was measured worst-case with a peak detector and 3 MHz RBW to give equivalent results to the Initial Channel Availability Check test method defined in KDB 905462 D02 Section 7.8.2.1(a). Measured results were recorded and the EUT complies.

Radar Burst at the Beginning of the Channel Availability Check Time (continued)

Results: 20 MHz Master



Plot showing the radar at the beginning of CAC

Limits:

Part 15.407(h)(2)(ii)

A U-NII device shall check if there is a radar system already operating on the channel before it can initiate a transmission on a channel and when it has to move to a new channel. The U-NII device may start using the channel if no radar signal with a power level greater than the interference threshold values listed in paragraph (h)(2) of this part, is detected within 60 seconds.

KDB 905462 D02 Table 4: DFS Response Requirement Values

Parameter	Value
<i>Channel Availability Check Time</i>	60 seconds

5.2.4. Radar Burst at the End of the Channel Availability Check Time**Test Summary:**

Test Engineer:	Philip Harrison	Test Date:	14 September 2015
Test Sample Serial Numbers:	F50980BB015D (<i>Master</i>) F50980BB0158 (<i>Client</i>)		

FCC Reference:	Part 15.407(h)(2)(ii)
Test Method Used:	KDB 905462 D02 Section 7.8.2.3

Environmental Conditions:

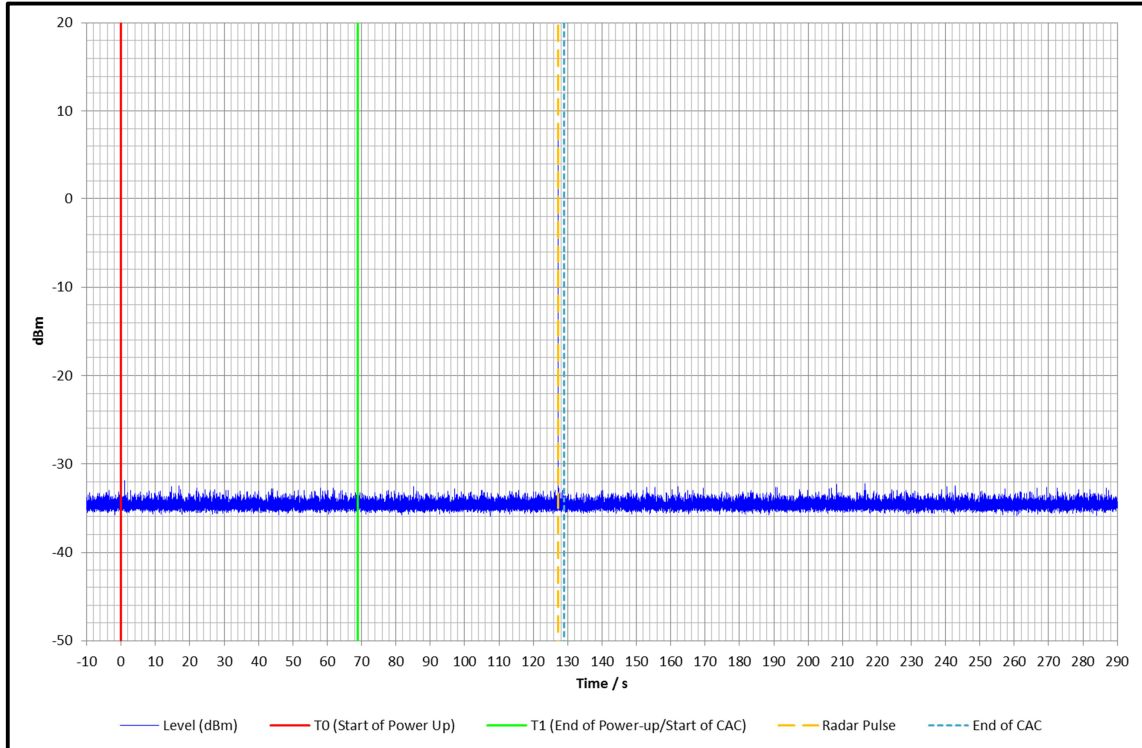
Temperature (°C):	25
Relative Humidity (%):	42

Notes:

1. In accordance with KDB 905462 D02 Table 2, the Initial Channel Availability Check test was performed on any single bandwidth. It was therefore tested only on a 20 MHz channel bandwidth.
2. The radar was fired 127.3 seconds after power on, and therefore 1.6 seconds before the end of the allowed 6 second radar window at the end of CAC (power up time shown to be 68.9 seconds during Initial Channel Availability Check test). The radar pulse appears under the vertical dotted yellow line on the result plot shown on the following page.
3. Observation of Ch_r continued for >2.5 minutes after the radar burst was generated.
4. Tests were performed using a type 0 radar and the radar detection threshold was as calculated in Section 4.2 of this test report.
5. The radar burst type 0, shown occurring just before the End of CAC line on the plot on the following page, was detected and no beacon or data transmission seen from the EUT after the end of CAC. Therefore the CAC ends at the point declared and, in conjunction with the *Radar Burst at the Beginning of the Channel Availability Check Time* test, shows the CAC duration is greater than the 60 second minimum.
6. All emissions remained below the -27 dBm/MHz spurious limit. This was measured worst-case with a peak detector and 3 MHz RBW to give equivalent results to the *Initial Channel Availability Check* test method defined in KDB 905462 D02 Section 7.8.2.1(a). Measured results were recorded and the EUT complies.

Radar Burst at the End of the Channel Availability Check Time (continued)

Results: 20 MHz Master



Plot showing the radar fired at the end of CAC

Limits:

Part 15.407(h)(2)(ii)

A U-NII device shall check if there is a radar system already operating on the channel before it can initiate a transmission on a channel and when it has to move to a new channel. The U-NII device may start using the channel if no radar signal with a power level greater than the interference threshold values listed in paragraph (h)(2) of this part, is detected within 60 seconds.

KDB 905462 D02 Table 4: DFS Response Requirement Values

Parameter	Value
<i>Channel Availability Check Time</i>	60 seconds

5.2.5. Channel Closing Transmission Time and Channel Move Time**Test Summary:**

Test Engineer:	Philip Harrison	Test Date:	15 September 2015
Test Sample Serial Numbers:	F50980BB015D (<i>Master</i>) F50980BB0158 (<i>Client</i>)		

FCC Reference:	Part 15.407(h)(2)(iii)
Test Method Used:	KDB 905462 D02 Section 7.8.3

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	48

Notes:

1. In accordance with KDB 905462 D02 Table 2, the Initial Channel Availability Check test was performed on the widest channel bandwidth. It was therefore tested only on a 20 MHz channel bandwidth.
2. UDP test data was streamed from the Master to the Client device using iPerf3 bandwidth testing tool. The channel loading was 61.7% with a 22 Mbit/s data rate. This therefore met the channel loading requirement of >17% in KDB 905462 D02 Section 7.7(c).
3. Tests were performed using a type 0 radar and the radar detection threshold calculated in Section 4.2 of this test report.
4. The total channel closing time limit was 200 ms + 60 ms = 260 ms (from KDB 905462 D02 Table 4).
5. Radar burst type 0 was detected and channel move occurred within the channel move and channel closing time limits, for both master and client modes. Therefore the EUT complied.

Channel Closing Transmission Time and Channel Move Time (continued)**Results: 20 MHz Master - Channel Move Time**

Channel (MHz)	BW (MHz)	Trial	Radar Type	PW (us)	PRF 1 (pps)	PPB	Move Time (ms)	Limit (ms)	Margin (ms)	Detected
5590	20	1	0	1	700	18	0	10000	10000	Yes

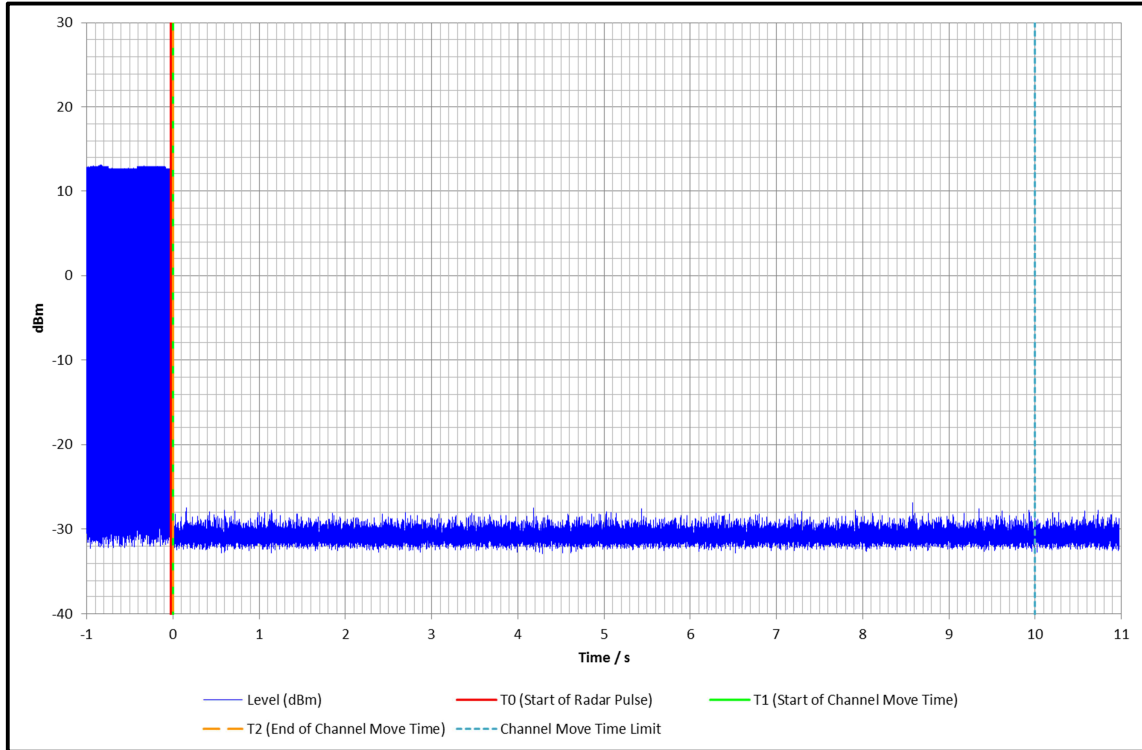
Results: 20 MHz Master - Channel Closing Transmission Time

Channel (MHz)	BW (MHz)	Trial	Radar Type	PW (us)	PRF 1 (pps)	PPB	Total Aggregate Tx Time (ms)	Limit (ms)	Margin (ms)	Tx Time >200 ms after end of radar (ms)	Limit (ms)	Margin (ms)
5590	20	1	0	1	700	18	0	260	260	0	60	60

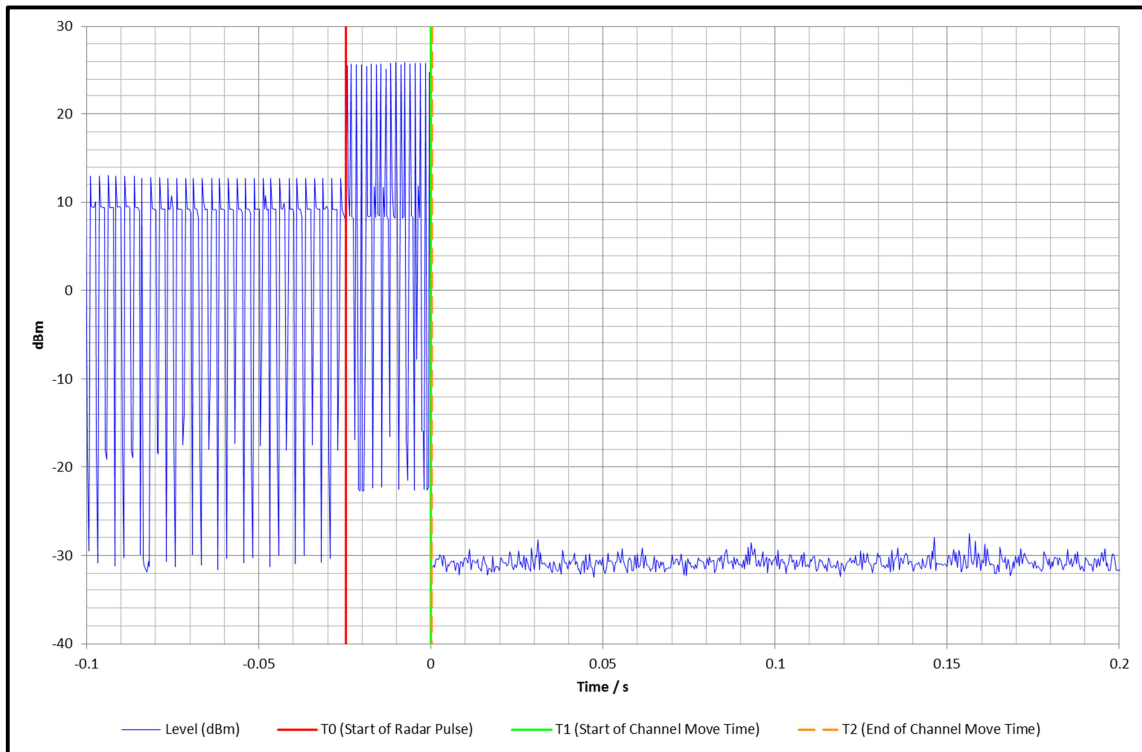
NOTE: A channel move or closing transmission time of zero occurs when the EUT shuts down before the end of the radar burst.

Channel Closing Transmission Time and Channel Move Time (continued)

Results: 20 MHz Master



Plot showing the full 10 second shutdown limit



Zoomed plot showing the first 200 ms after the end of the type 0 radar burst