The aggregate is the average of the percentage of successful detections of short pulse radar types 1-4

Table 2-Long Pulse Radar Test Waveform

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

Table 3-Frequency Hopping Radar Test Waveform

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

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

Limit of In-Service Monitoring:

Reference to DFS Radar Signal Parameter Values.

Test Procedures:

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

b) In case the EUT is a Master Device, a U-NII device operating as a Client Device will be used and it is assumed that the Client will associate with the EUT (Master). 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) The TCP protocol unicast data stream was generated by the iperf software command line with at least 17% activity ratio over any 100ms period.

d) Timing plots are reported with calculations demonstrating a minimum channel loading of approximately 17% or greater. For example, channel loading can be estimated by setting the spectrum analyzer for zero span and approximate the Time On/ (Time On + Off Time).

e) At time T0 the Radar Waveform generator sends a Burst of pulses for one of the Short Pulse Radar Types 1-4 at DFS Detection Threshold levels 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.

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

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

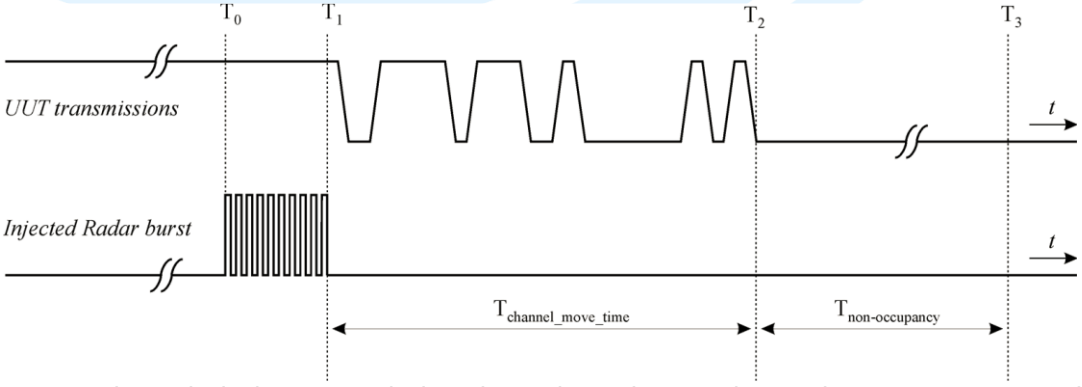
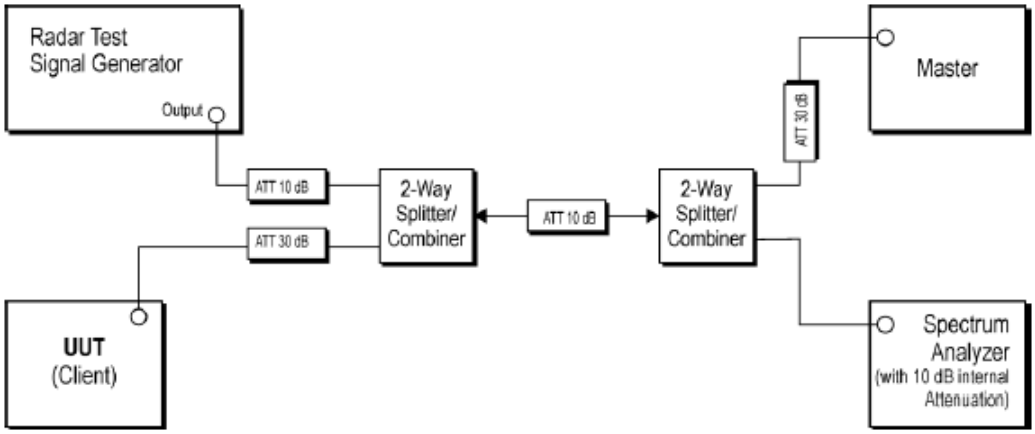


Figure 17: Channel Closing Transmission Time, Channel Move Time and Non-Occupancy Period

Conducted test setup



Setup for Client with injection at the Master

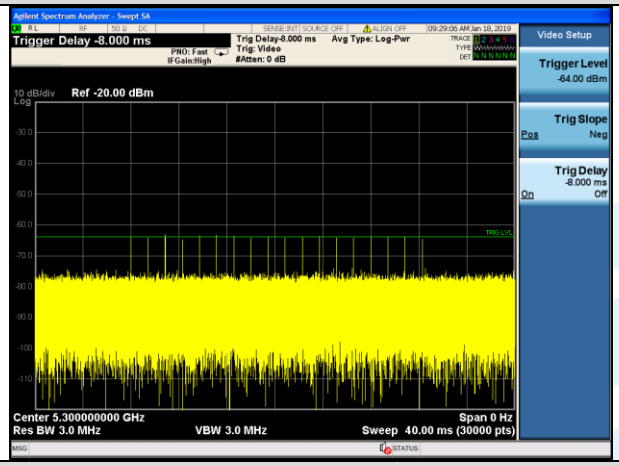
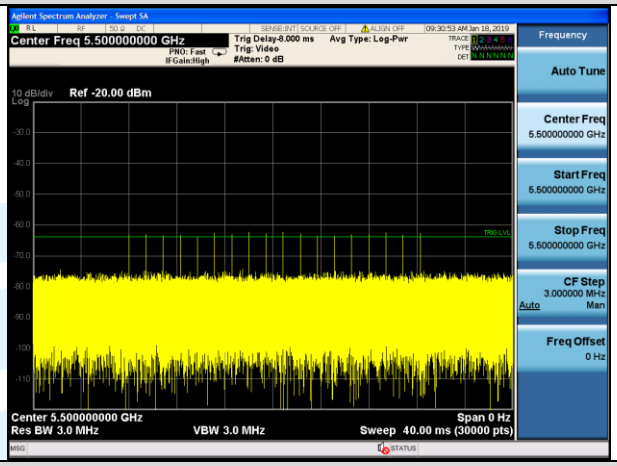
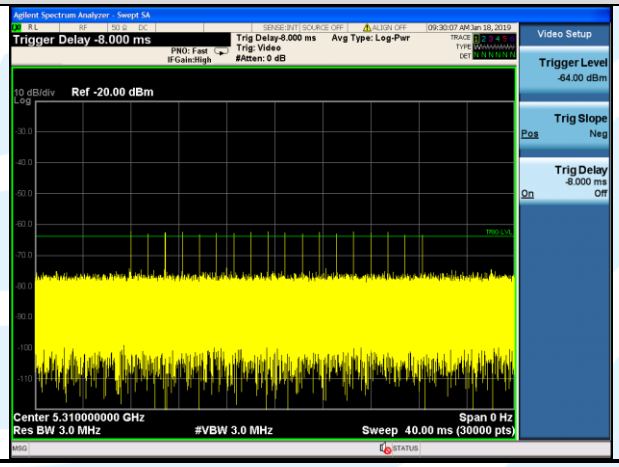
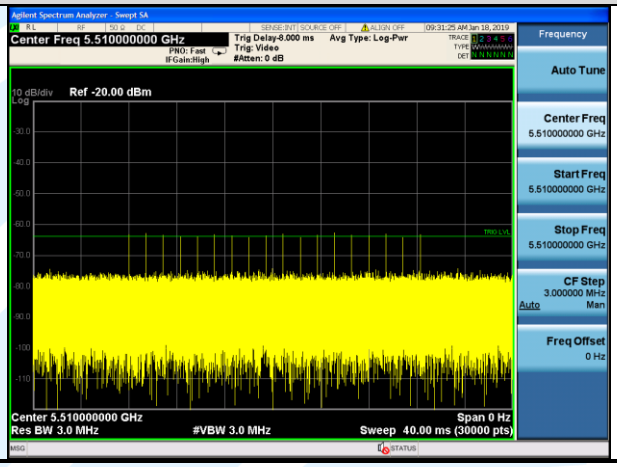
Equipment Used: Refer to section 3 for details.

Test Result: Result of Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period for Client Beacon Tes

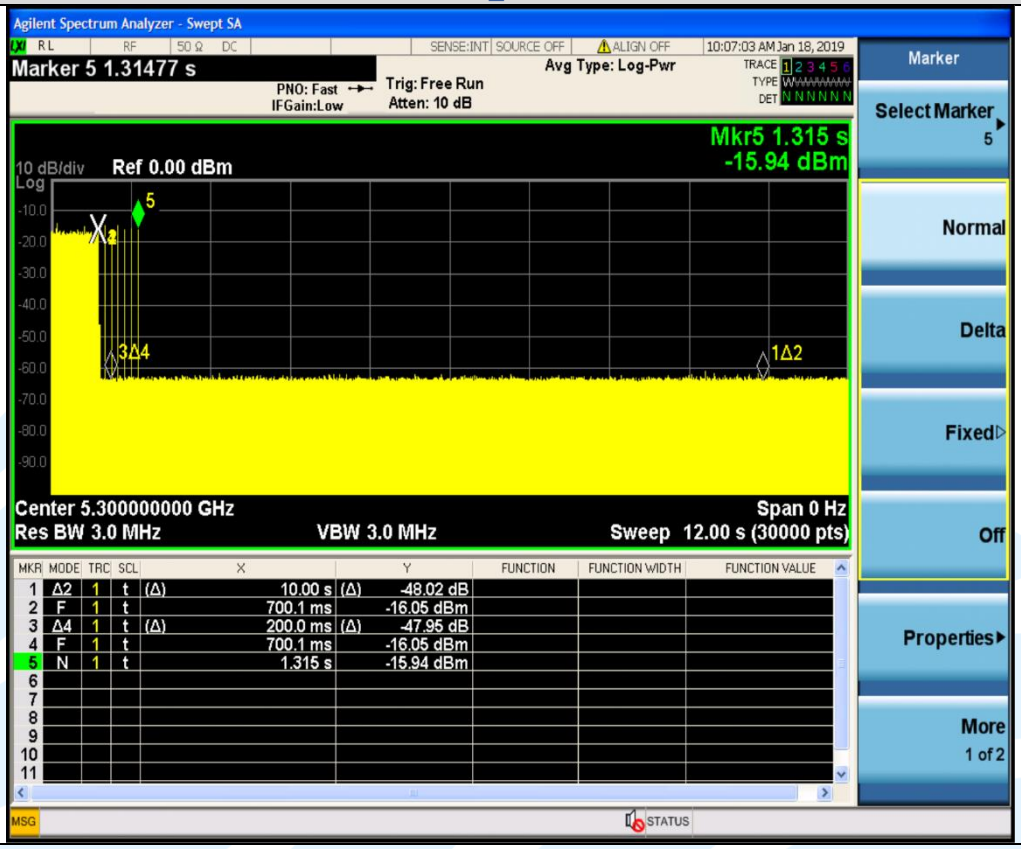
The measurement data as follows:

BW / Channel	Test Item	Test Result	Limit	Pass/Fail
20 MHz / 5300 MHz	Channel Move Time	0.6149 s	< 10s	Pass
	Channel Closing Transmission Time	10 ms	< 200+60ms	Pass
	Non-Occupancy Period	No transmission	30 minutes	Pass
20 MHz / 5500 MHz	Channel Move Time	0.5821 s	< 10s	Pass
	Channel Closing Transmission Time	2.4 ms	< 200+60ms	Pass
	Non-Occupancy Period	No transmission	30 minutes	Pass
40 MHz / 5310 MHz	Channel Move Time	0.6071 s	< 10s	Pass
	Channel Closing Transmission Time	10.8 ms	< 200+60ms	Pass
	Non-Occupancy Period	No transmission	30 minutes	Pass
40 MHz / 5510 MHz	Channel Move Time	0.5965 s	< 10s	Pass
	Channel Closing Transmission Time	5.2 ms	< 200+60ms	Pass
	Non-Occupancy Period	No transmission	30 minutes	Pass

Radar Waveform calibration Plot

Reference DFS test signal	
5300 MHz	5500 MHz
	
5310 MHz	5510 MHz
	

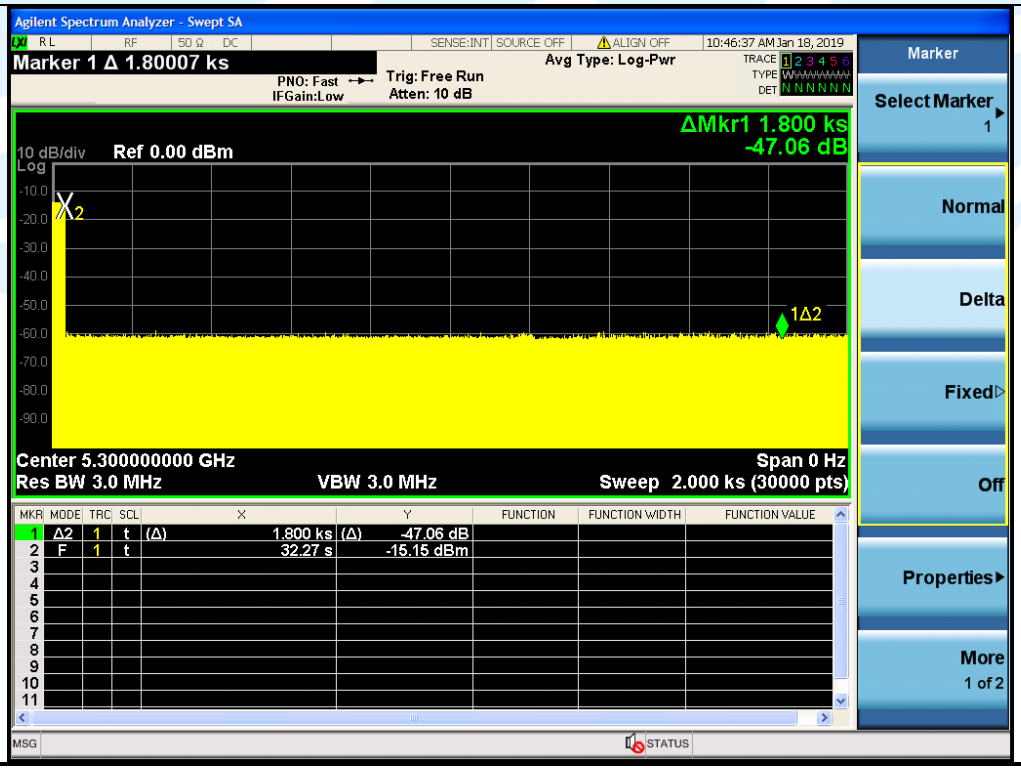
Channel Move Time & Channel Closing Transmission Time
802.11a_5300 MHz



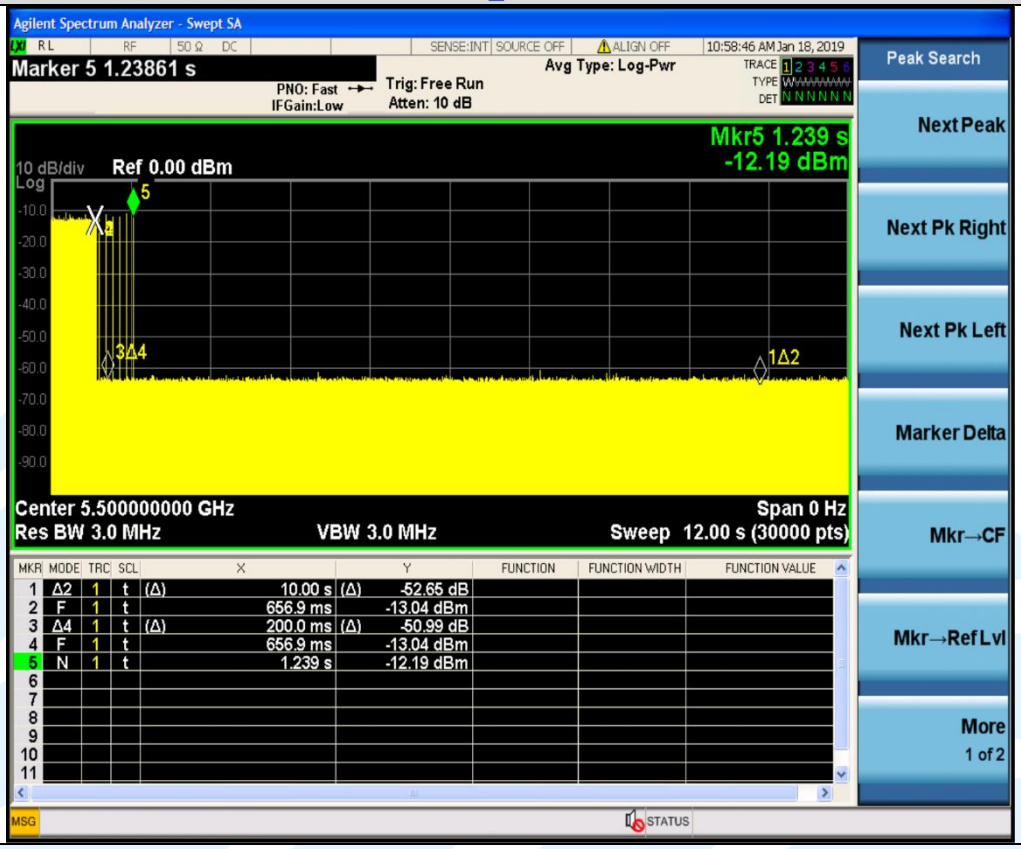
Note:

1) Mark1 Time: 700.1 ms, Mark2 Time: 10700.1 ms, Ontime Points: 25
2) Dwell = S/B = 12000ms/30000 = 0.4 ms, C = N x Dwell = 25x 0.4 = 10ms
3) CMT = 1.315 s – 0.7001 s = 0.6149s

Non-Occupancy Period_802.11a_5300 MHz



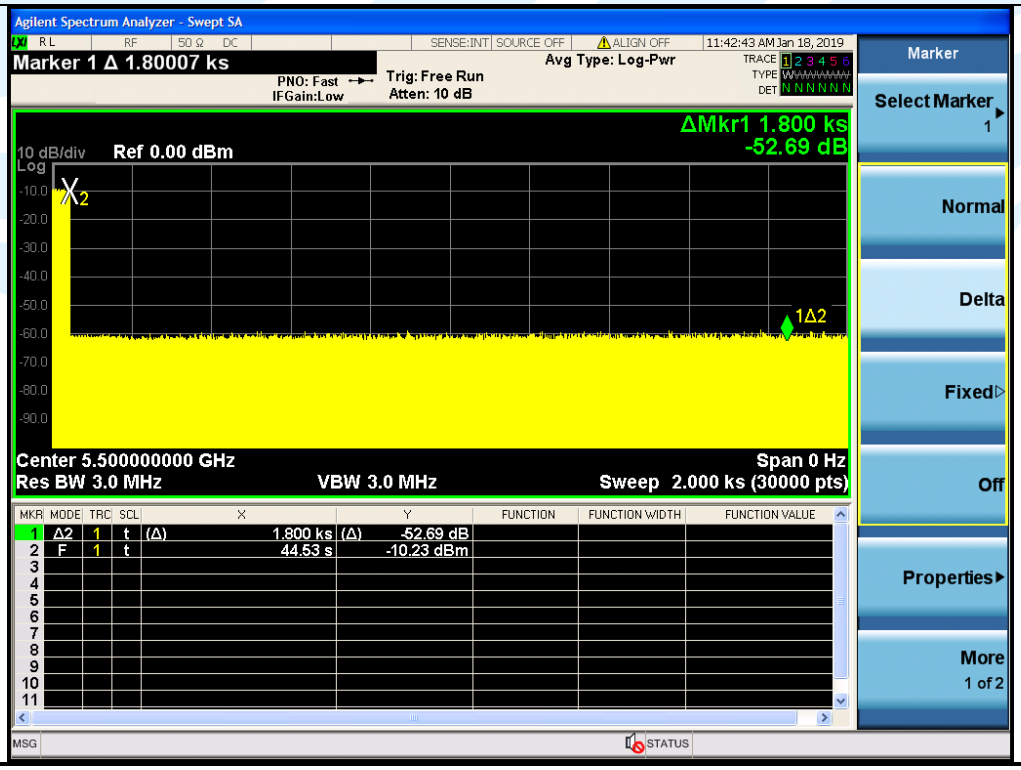
Channel Move Time & Channel Closing Transmission Time
802.11a_5500 MHz



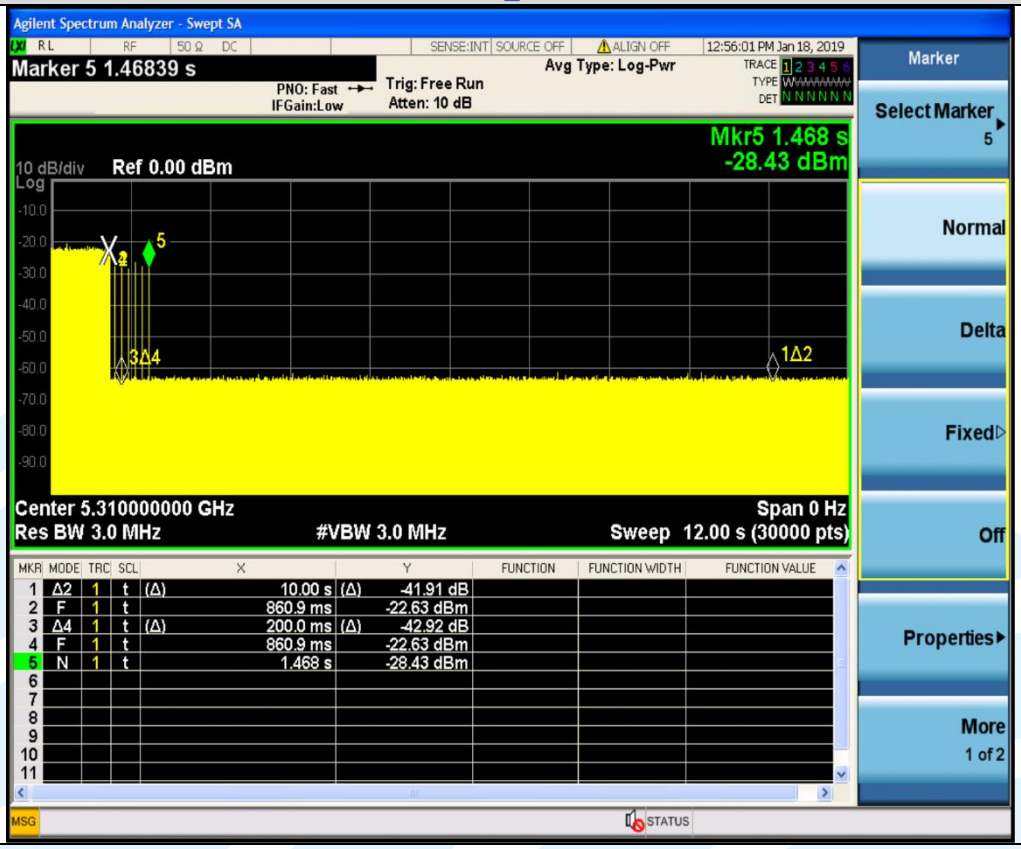
Note:

4) Mark1 Time: 656.9 ms, Mark2 Time: 10656.9 ms,Ontime Points: 6
5) Dwell = S/B = 12000ms/30000 = 0.4 ms, C = N x Dwell = 6 x 0.4 = 2.4ms
6) CMT = 1.239 s – 0.6569 s = 0.5821s

Non-Occupancy Period_802.11a_5500 MHz



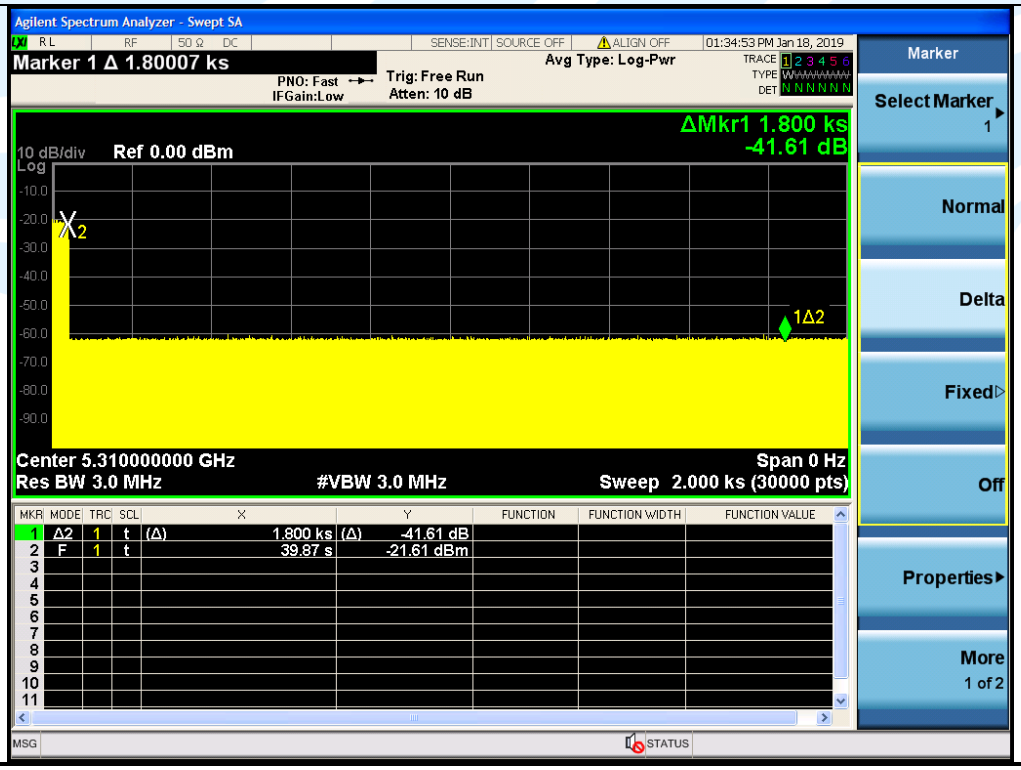
Channel Move Time & Channel Closing Transmission Time
802.11n40_5310 MHz



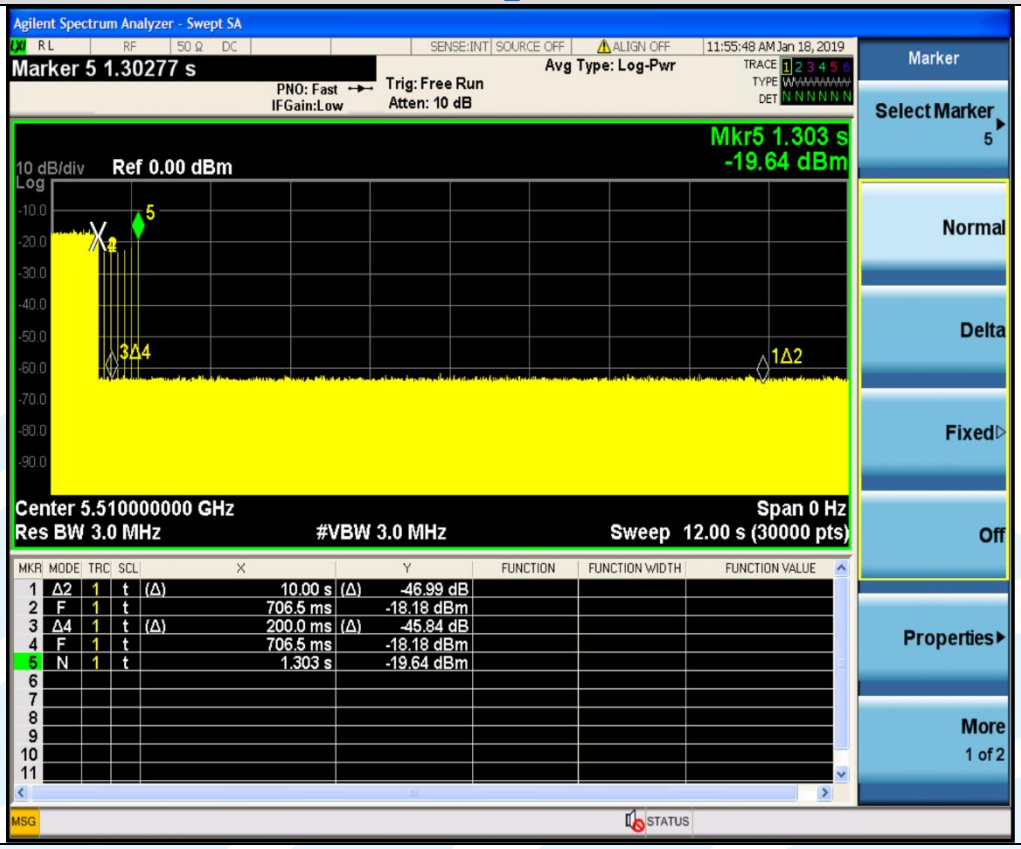
Note:

7) Mark1 Time: 860.9 ms, Mark2 Time: 10860.9 ms,Ontime Points: 27
8) Dwell = S/B = 12000ms/30000 = 0.4 ms, C = N x Dwell = 27 x 0.4 = 10.8ms
9) CMT = 1.468 s – 0.8609 s = 0.6071s

Non-Occupancy Period_802.11n40_ 5310 MHz



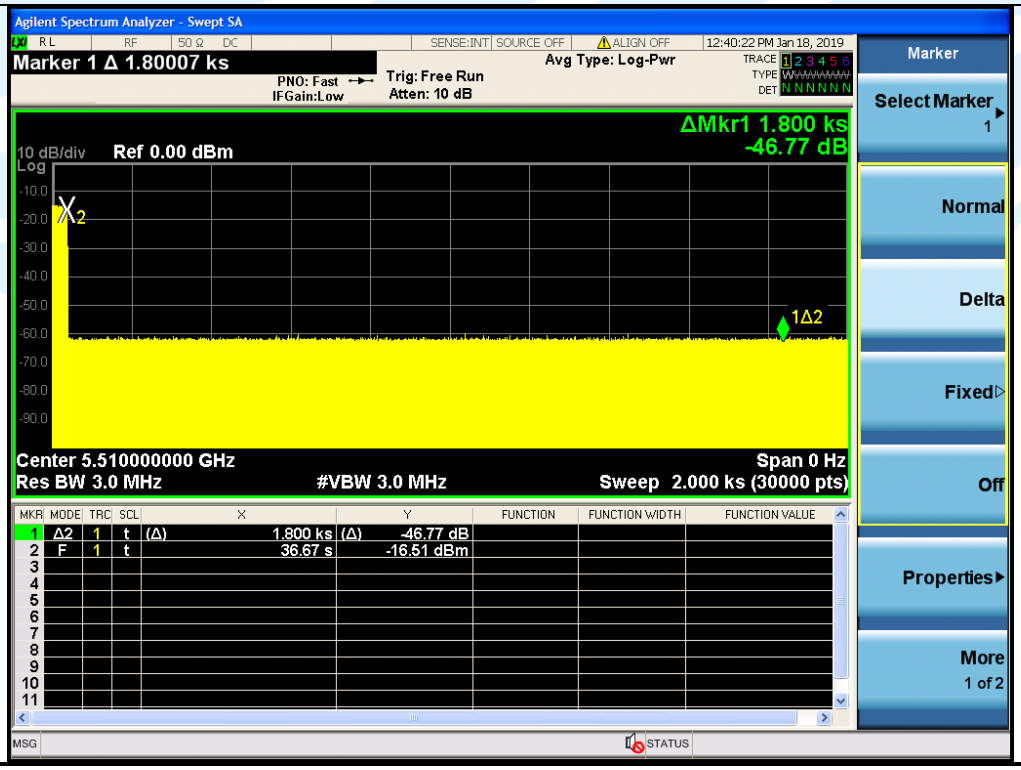
Channel Move Time & Channel Closing Transmission Time
802.11n40_5510 MHz



Note:

10) Mark1 Time: 706.5 ms, Mark2 Time: 10706.5 ms,Ontime Points: 13
11) Dwell = S/B = 12000ms/30000 = 0.4 ms, C = N x Dwell = 13 x 0.4 = 5.2ms
12) CMT = 1.303 s – 0.7065 s = 0.5965s

Non-Occupancy Period_802.11n40_5510 MHz



5.9 AC POWER LINE CONDUCTED EMISSION

Test Requirement: FCC 47 CFR Part 15 Subpart C Section 15.207

Test Method: ANSI C63.10-2013 Section 6.2

Limits:

Frequency range (MHz)	Limits (dB(μV))	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

Remark:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

Test Setup: Refer to section 4.4.2 for details.

Test Procedures:

Test frequency range :150KHz-30MHz

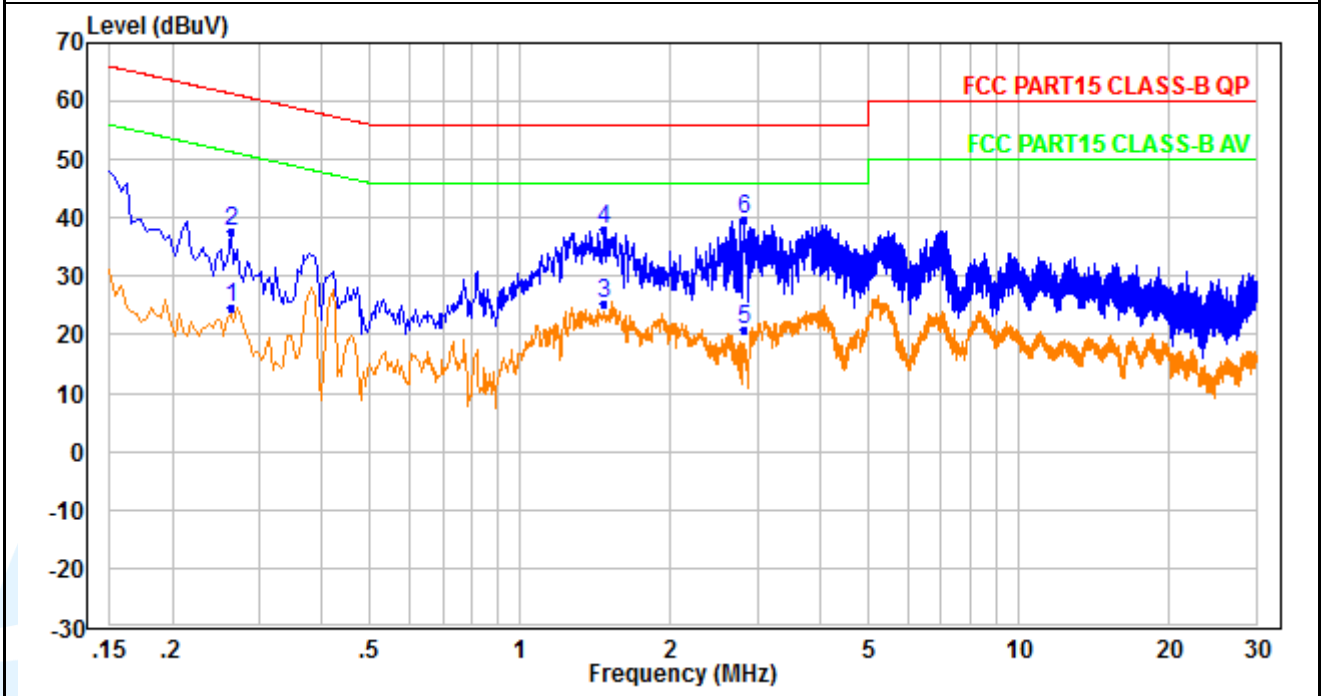
1) The mains terminal disturbance voltage test was conducted in a shielded room.
2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Equipment Used: Refer to section 3 for details.

Test Result: Pass

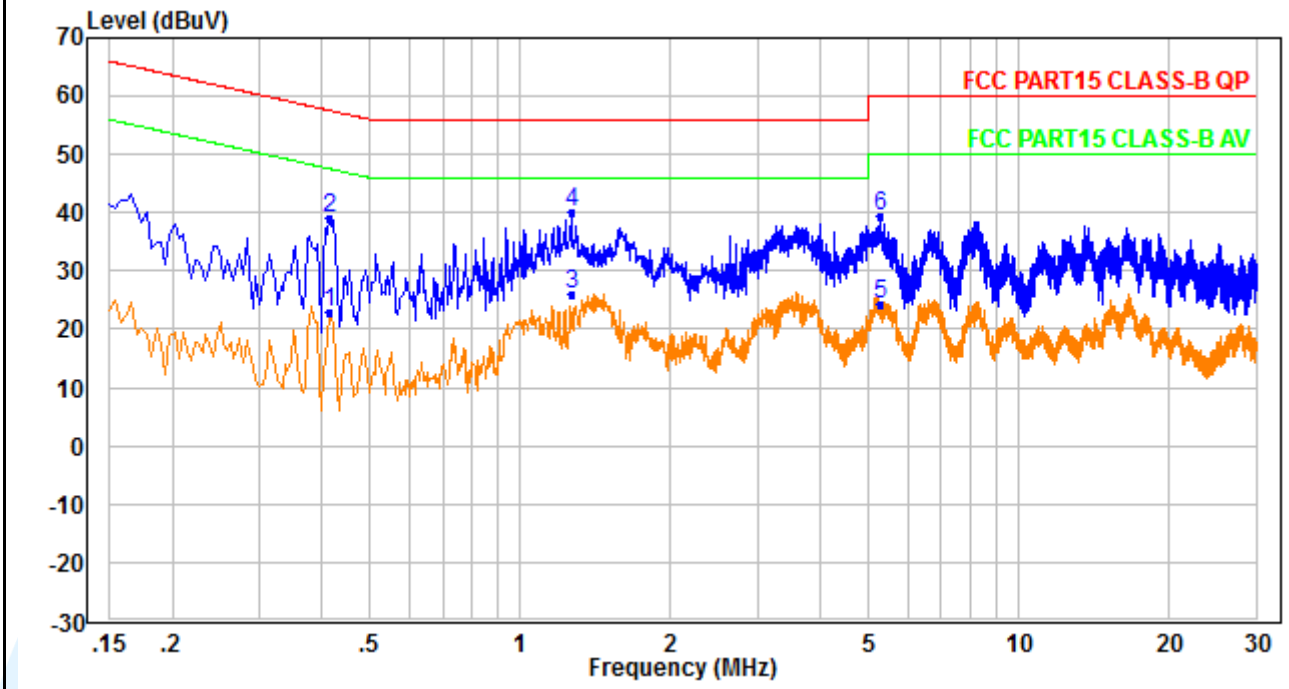
The measurement data as follows:
Quasi Peak and Average:
Mode: WIFI Link

Live Line



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.262	14.27	10.40	24.67	51.37	-26.70	Average
2	0.262	27.27	10.40	37.67	61.37	-23.70	QP
3	1.478	14.71	10.48	25.19	46.00	-20.81	Average
4	1.478	27.71	10.48	38.19	56.00	-17.81	QP
5	2.806	10.30	10.53	20.83	46.00	-25.17	Average
6	2.806	29.30	10.53	39.83	56.00	-16.17	QP

Neutral Line



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.414	12.97	9.96	22.93	47.57	-24.64	Average
2	0.414	28.97	9.96	38.93	57.57	-18.64	QP
3	1.266	16.00	10.00	26.00	46.00	-20.00	Average
4	1.266	30.00	10.00	40.00	56.00	-16.00	QP
5	5.282	14.25	10.18	24.43	50.00	-25.57	Average
6	5.282	29.25	10.18	39.43	60.00	-20.57	QP

Remark:
1. An initial pre-scan was performed on the Phase and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

APPENDIX 1 PHOTOS OF TEST SETUP

See test photos attached in Appendix 1 for the actual connections between Product and support equipment.

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photos.

*** End of Report ***