

DFS PORTION of FCC 47 CFR PART 15 SUBPART E DFS PORTION of INDUSTRY CANADA RSS-247 ISSUE 1

CERTIFICATION TEST REPORT

FOR

WLAN 2X2 MIMO 802.11a/b/g/n/ac with BLUETOOTH

MODEL NUMBER: P2180

FCC ID: VOB-P2180 IC: 7361A-P2180

REPORT NUMBER: 15U21878-E5V1

ISSUE DATE: OCTOBER 23, 2015

Prepared for NVIDIA 2701 SAN TOMAS EXPRESSWAY SANTA CLARA CA, 95050, UNITED STATES

Prepared by UL VERIFICATION SERVICES INC. 47173 BENICIA STREET FREMONT, CA 94538, U.S.A. TEL: (510) 771-1000 FAX: (510) 661-0888

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	10/23/15	Initial Issue	C. Cheung

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	NVIDIA 2701 SAN TOMAS EXPRESSWAY SANTA CLARA CA, 95050, UNITED STATES		
EUT DESCRIPTION:	WLAN 2X2 MIMO 802.11a/b/g/i	n/ac with BLUETOOTH	
MODEL:	P2180	P2180	
SERIAL NUMBER:	0333715040302, 333715040298		
DATE TESTED:	OCTOBER 5, 2015		
	APPLICABLE STANDARDS		
ST	ANDARD	TEST RESULTS	
DFS Portion of C	FR 47 Part 15 Subpart E	Pass	
INDUSTRY CAI	NADA RSS-247 Issue 1	Pass	

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL Verification Services Inc. By:

Car

CONAN CHEUNG PROJECT LEAD UL Verification Services Inc.

Tested By:

Douglas Conclusion

DOUG ANDERSON EMC ENGINEER UL Verification Services Inc.

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with the DFS portion of FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC 06-96, FCC KDB 789033, KDB 905462 D02 and D03, ANSI C63.10-2013, RSS-247 Issue 1.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL Verification Services, Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <u>http://ts.nist.gov/standards/scopes/2000650.htm</u>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB) 36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	± 3.52 dB
Radiated Disturbance, 30 to 1000 MHz	± 4.94 dB
Radiated Disturbance, 1 to 6 GHz	± 3.86 dB
Radiated Disturbance, 6 to 18 GHz	± 4.23 dB
Radiated Disturbance, 18 to 26 GHz	± 5.30 dB
Radiated Disturbance, 26 to 40 GHz	± 5.23 dB

Uncertainty figures are valid to a confidence level of 95%.

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5. DYNAMIC FREQUENCY SELECTION

5.1. OVERVIEW

5.1.1. LIMITS

INDUSTRY CANADA

IC RSS-247 is closely harmonized with FCC Part 15 DFS rules. The deviations are as follows:

RSS-247 Issue 1

Note: For the band 5600–5650 MHz, no operation is permitted.

Until further notice, devices subject to this annex shall not be capable of transmitting in the band 5600–5650 MHz. This restriction is for the protection of Environment Canada weather radars operating in this band.

FCC

§15.407 (h), FCC KDB 905462 D02 "COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVICES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION" and KDB 905462 D03 "U-NII CLIENT DEVICES WITHOUT RADAR DETECTION CAPABILITY".

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Table 1: Applicability of DFS requirements prior to use of a channel

Requirement	Operational Mode			
	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 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode			
	Master	Client (without DFS)	Client (with DFS)	
DFS Detection Threshold	Yes	Not required	Yes	
Channel Closing Transmission Time	Yes	Yes	Yes	
Channel Move Time	Yes	Yes	Yes	
U-NII Detection Bandwidth	Yes	Not required	Yes	

Additional requirements for	Master Device or Client with	Client				
devices with multiple bandwidth	Radar DFS	(without DFS)				
modes						
U-NII Detection Bandwidth and	All BW modes must be	Not required				
Statistical Performance Check	tested					
Channel Move Time and Channel Test using widest BW mode Test using the						
Closing Transmission Time	available	widest BW mode				
		available for the link				
All other tests	Any single BW mode	Not required				
Note: Frequencies selected for statistical performance check (Section 7.8.4) 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 all 20						
MHz channel blocks and a null freque	ency between the bonded 20 MHz	channel blocks.				

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Table 3: Interference Threshold values, Master or Client incorporating In-ServiceMonitoring

Maximum Transmit Power	Value					
	(see notes)					
E.I.R.P. ≥ 200 mill watt	-64 dBm					
E.I.R.P. < 200 mill watt and	-62 dBm					
power spectral density < 10 dBm/MHz						
E.I.R.P. < 200 mill watt that do not meet power spectral	-64 dBm					
density requirement						
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 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. Note 3: E.I.R.P. is based on the highest antenna gain. For MIMO devices refer to KDB					

publication 662911 D01.

Table 4: DFS Response requirement values
--

Parameter	Value
Non-occupancy period	30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds (See Note 1)
Channel Closing Transmission Time	200 milliseconds + approx. 60 milliseconds over remaining 10 second period. (See Notes 1 and 2)
U-NII Detection Bandwidth	Minimum 100% of the U- NII 99% transmission power bandwidth. (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.

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 signals will not count quiet periods in between transmissions.

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 5 – Short Pulse Radar Test Waveforms

Radar	Pulse	PRI	Pulses	Minimum	Minimum			
Туре	Width	(usec)		Percentage	Trials			
	(usec)			of Successful				
				Detection				
0	1	1428	18	See Note 1	See Note			
					1			
1	1	Test A: 15 unique		60%	30			
		PRI values randomly						
		selected from the list	Roundup:					
		of 23 PRI values in	{(1/360) x (19 x 10 ⁶ PRI _{usec})}					
		table 5a						
		Test B: 15 unique						
		PRI values randomly						
		selected within the						
		range of 518-3066						
		usec. With a						
		minimum increment						
		of 1 usec, 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 (Radar T	ypes 1-4)	80%	120			
Note 1:	Note 1: Short Pulse Radar Type 0 should be used for the <i>Detection Bandwidth</i> test, <i>Channel</i>							
Move T	Move Time, and Channel Closing Time tests.							

Table 6 – Long Pulse Radar Test Signal

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

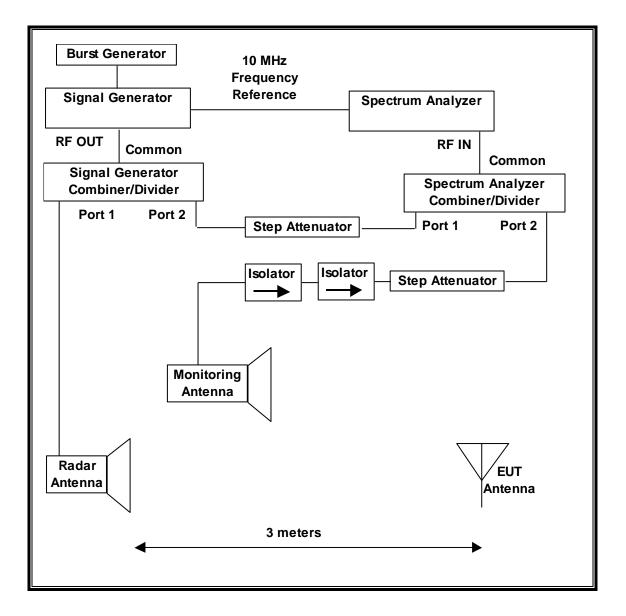
Table 7 – Frequency Hopping Radar Test Signal

		· / · · · · ·		J			
Radar	Pulse	PRI	Pulses	Hopping	Hopping	Minimum	Minimum
Waveform	Width	(µsec)	per	Rate	Sequence	Percentage of	Trials
Туре	(µsec)		Нор	(kHz)	Length	Successful	
					(msec)	Detection	
6	1	333	9	0.333	300	70%	30

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5.1.2. TEST AND MEASUREMENT SYSTEM

RADIATED METHOD SYSTEM BLOCK DIAGRAM



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SYSTEM OVERVIEW

The short pulse and long pulse signal generating system utilizes the NTIA software. The Vector Signal Generator has been validated by the NTIA. The hopping signal generating system utilizes the CCS simulated hopping method and system, which has been validated by the DoD, FCC and NTIA. 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, and the long pulse type 5 parameters are randomized at run-time.

The hopping type 6 pulse parameters are fixed while the hopping sequence is based on the August 2005 NTIA Hopping Frequency List. The initial starting point randomized at run-time and each subsequent starting point is incremented by 475. Each frequency in the 100-length segment is compared to the boundaries of the EUT Detection Bandwidth and the software creates a hopping burst pattern in accordance with Section 7.4.1.3 Method #2 Simulated Frequency Hopping Radar Waveform Generating Subsystem of KDB 905462 D02. The frequency of the signal generator is incremented in 1 MHz steps from F_L to F_H for each successive trial. This incremental sequence is repeated as required to generate a minimum of 30 total trials and to maintain a uniform frequency distribution over the entire Detection Bandwidth.

The signal monitoring equipment consists of a spectrum analyzer. 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 and max hold.

SYSTEM CALIBRATION

A 50-ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to a horn antenna via a coaxial cable, with the reference level offset set to (horn antenna gain – coaxial cable loss). The signal generator is set to CW mode. The amplitude of the signal generator is adjusted to yield a level of –64 dBm as measured on the spectrum analyzer.

Without changing any of the instrument settings, the spectrum analyzer is reconnected to the Common port of the Spectrum Analyzer Combiner/Divider. The Reference Level Offset of the spectrum analyzer is adjusted so that the displayed amplitude of the signal is –64 dBm.

The spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device. The interference detection threshold may be varied from the calibrated value of –64 dBm and the spectrum analyzer will still indicate the level as received by the Master Device.

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ADJUSTMENT OF DISPLAYED TRAFFIC LEVEL

A link is established between the Master and Slave and the distance between the units is adjusted as needed to provide a suitable received level at the Master and Slave devices. The video test file is streamed to generate WLAN traffic. The monitoring antenna is adjusted so that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold.

TEST AND MEASUREMENT EQUIPMENT

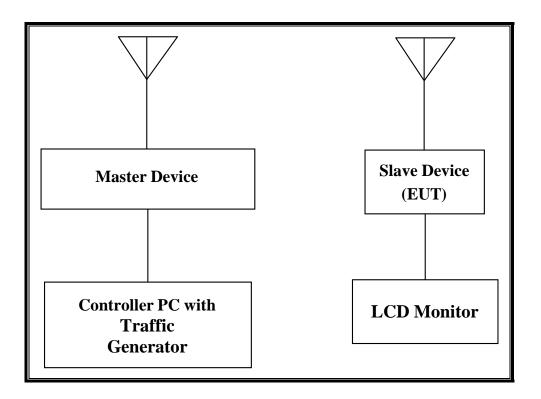
The following test and measurement equipment was utilized for the DFS tests documented in this report:

	PERIPHERAL SUPPORT EQUIPMENT LIST										
Description	Manufacturer	Model	Serial Number	FCC ID							
AC Adapter (EUT)	Wean Well	GST90A19-P1M	E850E31770	DoC							
802.11ac Dual Band Wireless Access Point (Master)	Cisco	AIR-CAP3702E-A- K9	FTX181570A6	LDK102087							
P.O.E. Injector (Master)	Phihong	POE30U-560(G)	PHI170102N2	DoC							
Notebook PC (Controller/Server)	Lenovo	Туре 4236-В92	PB-HEX04 12/05	DoC							
AC Adapter (Controller/Server PC)	Lenovo	42T4418	11S42T4418Z1ZGW G08R90M	DoC							
LCD Monitor	Polaroid	TLX-01511C	2006	DoC							

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5.1.3. SETUP OF EUT

RADIATED METHOD EUT TEST SETUP



SUPPORT EQUIPMENT

The following support equipment was utilized for the DFS tests documented in this report:

PERIPHERAL SUPPORT EQUIPMENT LIST										
Description	Manufacturer	Model	Serial Number	FCC ID						
AC Adapter (EUT)	Mean Well	GST90A19-P1M	E850E31770	DoC						
802.11ac Dual Band Wireless Access Point (Master)	Cisco	AIR-CAP3702E-A-K9	FTX181570A6	LDK102087						
P.O.E. Injector (Master)	Phihong	POE30U-560(G)	PHI170102N2	DoC						
Notebook PC (Controller/Server)	Lenovo	Туре 4236-В92	PB-HEX04 12/05	DoC						
AC Adapter (Controller/Server PC)	Lenovo	42T4418	11S42T4418Z1ZG WG08R90M	DoC						
LCD Monitor	Polaroid	TLX-01511C	02006	DoC						

5.1.4. DESCRIPTION OF EUT

For FCC the EUT operates over the 5250-5350 MHz and 5470-5725 MHz ranges.

For IC the EUT operates over the 5250-5350 MHz and 5470-5725 MHz ranges, excluding the 5600-5650 MHz range.

The EUT is a Slave Device without Radar Detection.

The highest power level within these bands is 24.86 dBm EIRP in the 5250-5350 MHz band and 23.49 dBm EIRP in the 5470-5725 MHz band.

The only antenna assembly utilized with the EUT has a minimum gain of 4.84 dBi in the 5 GHz bands.

Two identical antennas are utilized to meet the diversity and MIMO operational requirements.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is -64 dBm. After correction for procedural adjustments, the required radiated threshold at the antenna port is -64 + 1 = -63 dBm.

The calibrated radiated DFS Detection Threshold level is set to –64 dBm. The tested level is lower than the required level hence it provides a margin to the limit.

The EUT uses two transmitter/receiver chains, each connected to an antenna to perform radiated tests.

WLAN traffic that meets or exceeds the minimum required loading was generated by transferring a data stream from the controller PC to the EUT using iPerf version 2.0.5 software package.

TPC is not required since the maximum EIRP is less than 500 mW (27 dBm), however TPC is implemented.

The EUT utilizes the 802.11ac architecture. Three nominal channel bandwidths are implemented: 20 MHz, 40 MHz and 80 MHz.

The software installed in the EUT is Android revision5.1.1.

The software installed in the access point is revision AP3G2-K9W7-M Version 15.2(4)JB4.

UNIFORM CHANNEL SPREADING

This is requirement not applicable to Slave Devices.

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OVERVIEW OF MASTER DEVICE WITH RESPECT TO §15.407 (h) REQUIREMENTS

The Master Device is a Cisco Access Point, FCC ID: LDK102087. The minimum antenna gain for the Master Device is 6 dBi.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is -64 dBm. After correction for procedural adjustments, the required radiated threshold at the antenna port is -64 + 1 = -63 dBm.

The calibrated radiated DFS Detection Threshold level is set to –64 dBm. The tested level is lower than the required level hence it provides a margin to the limit.

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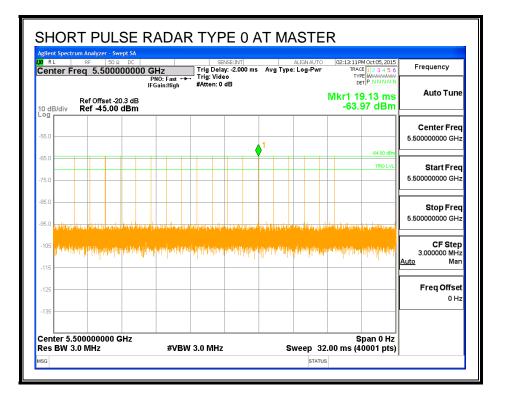
5.2. RESULTS FOR 20 MHz BANDWIDTH

5.2.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5500 MHz.

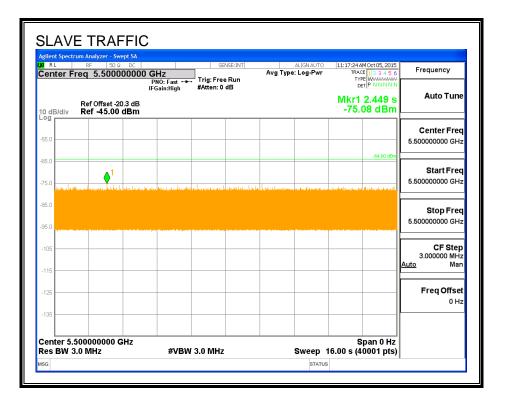
5.2.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM



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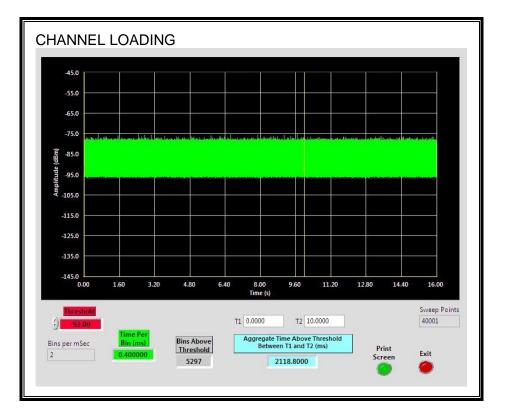
TRAFFIC



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CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 21.18%

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5.2.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

5.2.4. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time = (Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

Channel Move Time	Limit
(sec)	(sec)
0.088	10

Aggregate Channel Closing Transmission Time	Limit
(msec)	(msec)
0.0	60

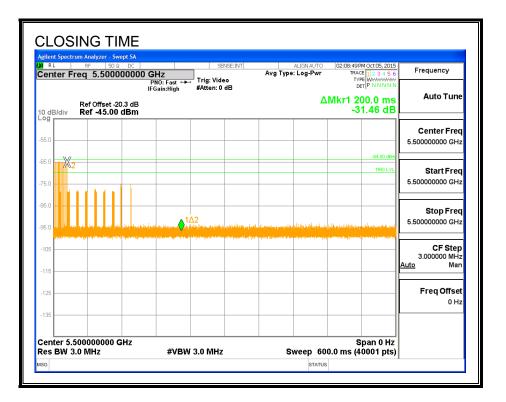
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MOVE TIME

RL R	nalyzer - Swept SA F 50 Ω DC 5.500000000		SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	02:04:35 PM Oct 05, 2015 TRACE 1 2 3 4 5 6 TYPE WWWWWWW	Frequency
Re	f Offset -20.3 dB	PNO:Fast ↔ IFGain:High	#Atten: 0 dB	Δ	Mkr1 88.40 ms	Auto Tune
odB/div Re	ef -45.00 dBm				-12.68 dB	
5.0 5.0	142				-64.00 dBm	Center Fred 5.500000000 GHz
5.0 5.0						Start Fred 5.50000000 GH;
115 125 135						Stop Fred 5.50000000 GH;
enter 5.500 es BW 3.0 N	000000 GHz /Hz	#VB\	V 3.0 MHz	Sweep 1	Span 0 Hz 6.00 s (40001 pts)	CF Step 3.000000 MH
	(Δ)	88.40 ms (Δ	-12.68 dB	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Mar
2 F 1 t 3 4 5 6		1.601 s	-65.75 dBm			Freq Offse 0 Ha
7 8 9 0						

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CHANNEL CLOSING TIME

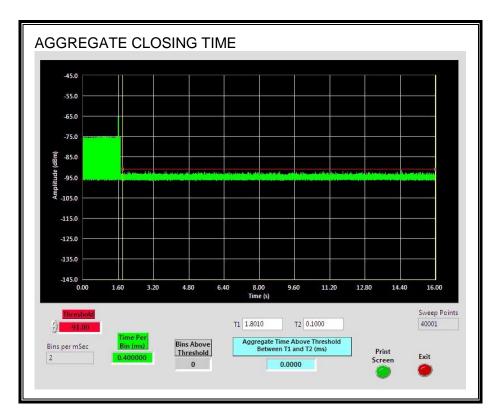


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AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



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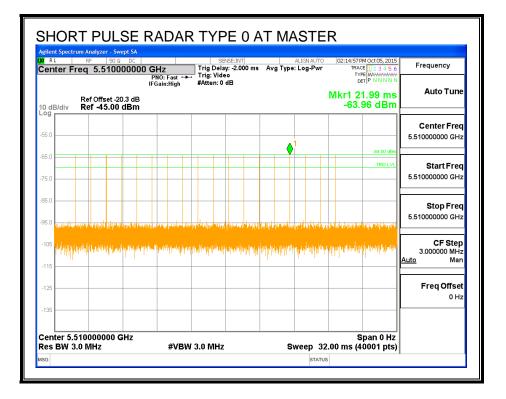
5.3. **RESULTS FOR 40 MHz BANDWIDTH**

5.3.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5510 MHz.

5.3.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM



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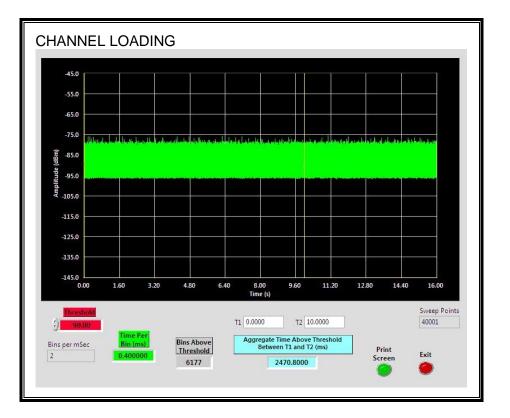
TRAFFIC

RL RF Renter Freq 5.		Hz N0: Fast ↔] Trig: Free		Avg Typ	ALIGNAUTO e: Log-Pwr	02:24:57 PM Oct 05, 20 TRACE 1 2 3 4 5 TYPE WWWW	6 Frequency
dB/div Ref -4		Gain:High	#Atten: 0	dB			™nnn Mkr1 1.150 -75.27 dBr	s Auto Tune
5.0								Center Freq 5.510000000 GHz
5.0 5.0	والمحتمد والمحافظة والمحتا	a alali da da ala ala ala	اهداره إربراء والر	level on the followed by the	matu az da sta alta az	uin fai s mhi	-64.00 dt	Start Freq 5.510000000 GHz
5.0								
5.0	- 101 - 101 - 10 (- 100 - 100				a adaptation of 2 days (1.1 are			Stop Fred 5.510000000 GHz
05								5.510000000 GH: CF Step 3.000000 MH;
								5.510000000 GHz CF Step 3.000000 MHz

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CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 24.7%

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5.3.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

5.3.4. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time = (Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

Channel Move Time	Limit
(sec)	(sec)
0.960	10

Aggregate Channel Closing Transmission Time	Limit
(msec)	(msec)
0.0	60

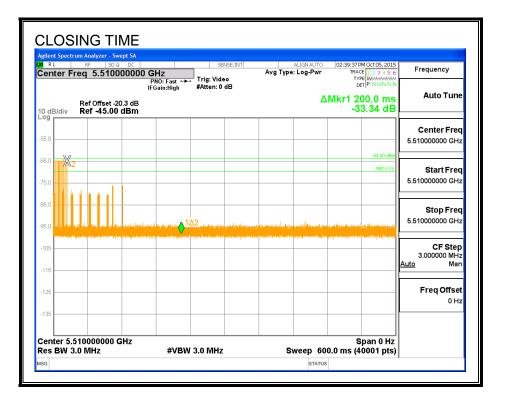
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MOVE TIME

RL	n Analyzer - Swept RF 50 Ω E rq 5.510000	ic 🛛	SENSE:INT	ALD Avg Type: Lo		:54 PM Oct 05, 2015 TRACE 1 2 3 4 5 6 TYPE WWWWWW	Frequency
	Ref Offset -20.3	IFGain:High	#Atten: 0 dB			96.00 ms	Auto Tune
0 dB/div og	Ref -45.00 dE	im				-11.40 0.5	Contor From
5.0	102					-64.00 dBm	Center Fred 5.510000000 GHz
5.0 5.0							Start Freq 5.51000000 GHz
115 125 135							Stop Fred 5.510000000 GHz
enter 5.51 es BW 3.0	0000000 GH2 MHz		W 3.0 MHz	Sv	veep 16.00 s	Span 0 Hz (40001 pts)	CF Step 3.000000 MHz
KR MODE TRC 1 Δ2 1 2 F 1	sc∟ t (∆) t	× 96.00 ms (<i>i</i> 1.637 s	∆) -11.46 dB -64.93 dBm	FUNCTION FUNCTI	ON WIDTH FUN		<u>uto</u> Man
3 4 5 6		1.007 3	-04.30 (15)				Freq Offset 0 Hz
7 8 9 10							

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CHANNEL CLOSING TIME

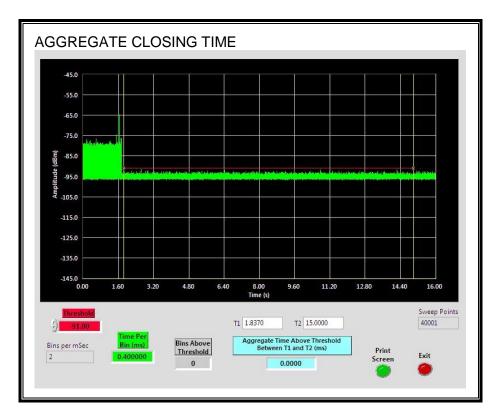


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AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.



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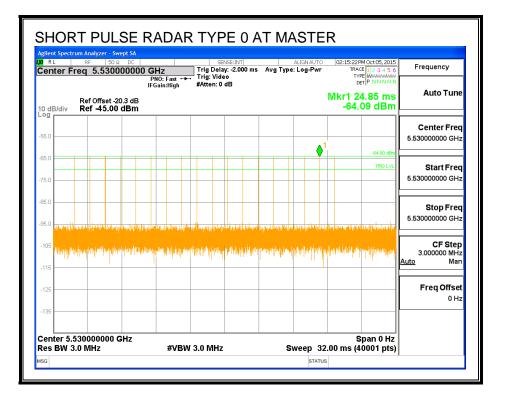
5.4. **RESULTS FOR 80 MHz BANDWIDTH**

5.4.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5530 MHz.

5.4.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM



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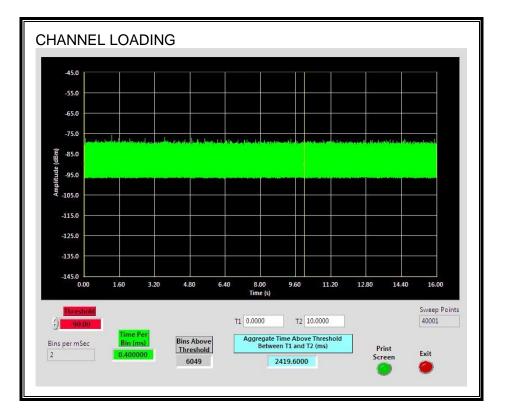
TRAFFIC

enter F		50 Ω DC 300000000	GHz PN0: Fast ↔→→	Trig: Free		Avg 1	ALIGNAUTO ype: Log-Pwr	02:42:14 PM Oct 05, 201 TRACE 1 2 3 4 5 TYPE WWWWWWW DET P NNNN	Frequency
0 dB/div	Ref Offse Ref -45.	t -20.3 dB	FGain:High	#Atten: 0	dB			Mkr1 1.256 s -75.75 dBm	Auto Tune
°g									Center Freq 5.530000000 GHz
5.0	All all at days	Salara ya salah basi kita	dun linding departments to the	الم معاولة من الم	Lebes satisficanted a	li alucha.	reli stati latinante no il	-64.00 dBn	Start Fred 5.530000000 GHz
5.0									Stop Fred 5.530000000 GHz
105									CF Step 3.000000 MHz <u>Auto</u> Mar
25									Freq Offse
	.53000000 3.0 MHz	0 GHz		3.0 MHz				Span 0 Hz 6.00 s (40001 pts	

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CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 24.19%

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5.4.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

5.4.4. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time = (Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

Channel Move Time	Limit
(sec)	(sec)
0.0508	10

Aggregate Channel Closing Transmission Time	Limit
(msec)	(msec)
0.0	60

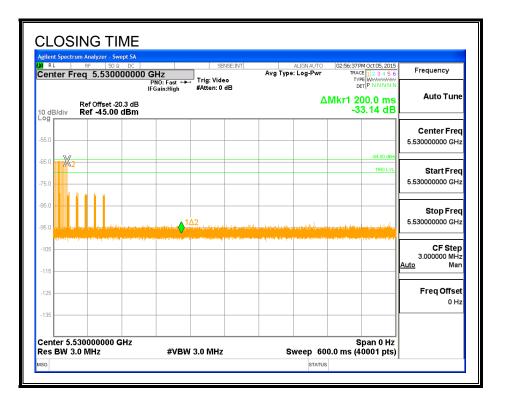
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MOVE TIME

	5.5300000	00 GHz PNO: Fast ↔	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	02:49:13PM Oct 05, 2015 TRACE 1 2 3 4 5 6 TYPE WWWWWW DET P NNNNN	Frequency		
IFGain:High #Atten: 0 dB DETIP NNNN Ref Offset -20.3 dB ΔMkr1 50.80 ms 0 dB/div 10 dB/div Ref -45.00 dBm −16.24 dB								
	, 1∆2				-64.00 dBm	Center Free 5.53000000 GH		
5.0 5.0 05						Start Free 5.530000000 GH;		
15 25 36						Stop Free 5.53000000 GH		
enter 5.530 es BW 3.0 I	000000 GHz VHz	#VB\	V 3.0 MHz	Sweep 1	Span 0 Hz 6.00 s (40001 pts)	CF Step 3.000000 MH		
2 F 1 t	(Δ)	50.80 ms (∆ 1.581 s		UNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Mar		
3 4 5 6 7						Freq Offse 0 Hi		
, 8 9 0								

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CHANNEL CLOSING TIME



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AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

Only intermittent transmissions are observed during the aggregate monitoring period.



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5.4.1. 10-MINUTE BEACON MONITORING PERIOD

RESULTS

No EUT transmissions were observed on the test channel during the 10-minute observation time.

rlent Spectrum Analyz RL RF Rter Freq 5.	50 Ω DC 530000000 GH	D: East 🛶 Trig: I	SENSE:INT	ALIG Avg Type: Lo	g-Pwr	04:04:47 PM Oct 05 TRACE 1 2 3 TYPE WWW	456 Frequency
		in:High #Atter	n:0 dB			ΔMkr1 600. -13.09	0 s Auto Tune
55.0							Center Free 5.530000000 GH
5.0						-54.	5.530000000 GH
5.0 An wells while		stal and so and a star for star for	le de la constant de		La reg Herris	1 <u>Δ</u> 2	5.530000000 GH
15							CF Step 3.000000 MH <u>Auto</u> Ma
25							Freq Offse
enter 5.530000 es BW 3.0 MHz		#VBW 3.0 M	Hz	Sw	/eep 7	Span (20.0 s (40001	

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