8. DYNAMIC FREQUENCY SELECTION LIMITS AND RESULTS

8.1. OVERVIEW

8.1.1. LIMITS

§15.407 (h) and FCC 06-96 APPENDIX "COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVCIES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION".

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
Uniform Spreading	Yes	Not required	Not required

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

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

Maximum Transmit Power	**Value (see note)**
≥ 200 milliwatt	-64 dBm
< 200 milliwatt	-62 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna Note 2: Throughout these test procedures an additional 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.	

Table 4: DFS Response requirement values

Parameter	**Value**
Non-occupancy period	30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds
Channel Closing Transmission Time	200 milliseconds + approx. 60 milliseconds over remaining 10 second period
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. 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 approximately 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.	

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Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (Microseconds)	PRI (Microseconds)	Pulses	Minimum Percentage of Successful Detection	Minimum Trials
1	1	1428	18	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

Table 6 – Long Pulse Radar Test Signal

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

Table 7 – Frequency Hopping Radar Test Signal

Radar Waveform	Pulse Width (µsec)	PRI (µsec)	Burst Length (ms)	Pulses per Hop	Hopping Rate (kHz)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	300	9	.333	70%	30

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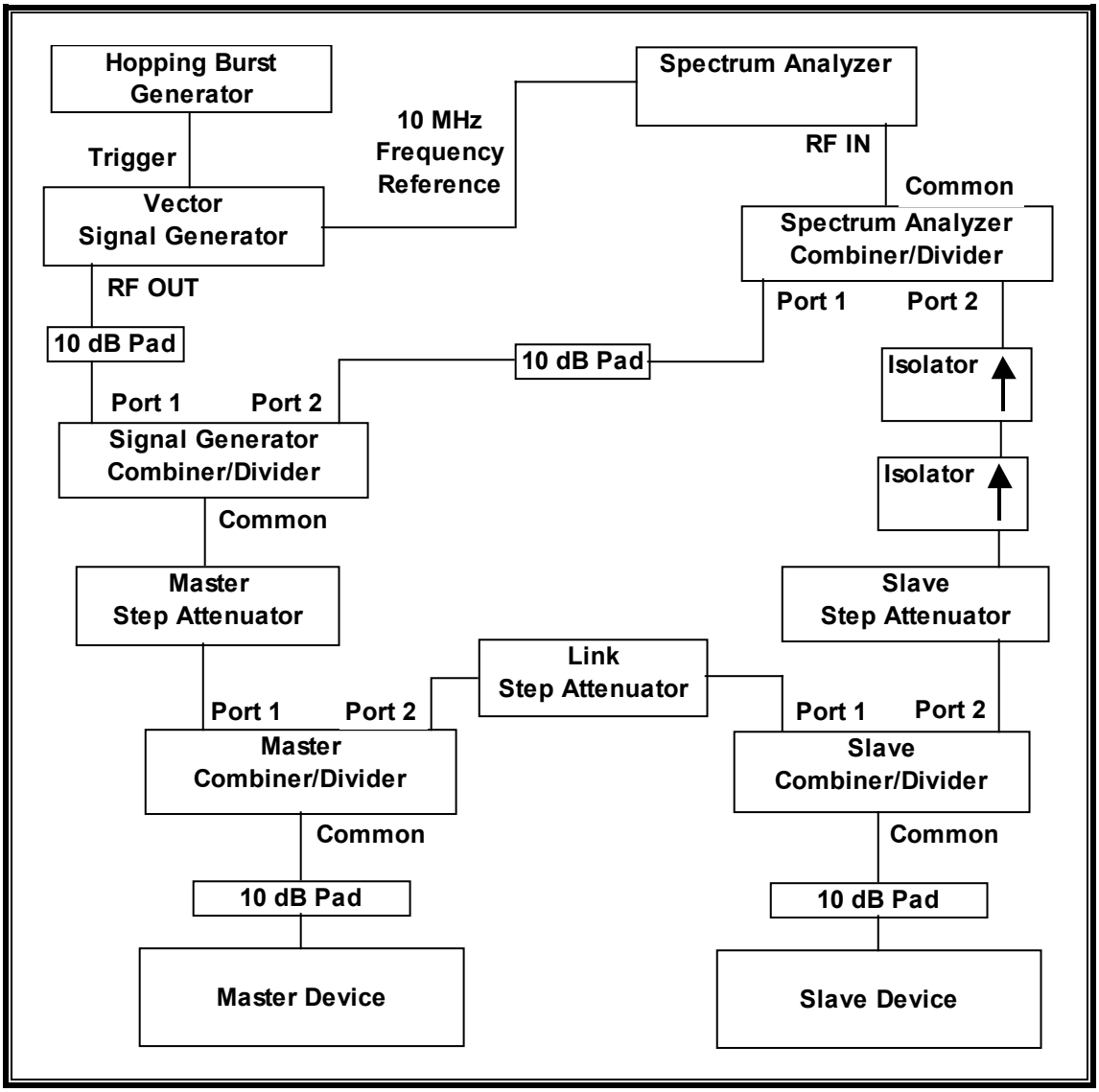
8.1.2. TEST AND MEASUREMENT SYSTEM

CONDUCTED 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 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 Freqeuncy Hopping Radar Waveform Generating Subsystem of FCC 06-96 APPENDIX. 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 set to display 8001 bins on the horizontal axis. The time-domain resolution is 2 msec / bin with a 16 second sweep time, meeting the 10 second short pulse reporting criteria. 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.

Should multiple RF ports be utilized for the Master and/or Slave devices (for example, for diversity or MIMO implementations), additional combiner/dividers are inserted between the Master Combiner/Divider and the pad connected to the Master Device (and/or between the Slave Combiner/Divider and the pad connected to the Slave Device). Additional pads are utilized such that there is one pad at each RF port on each EUT.

SYSTEM CALIBRATION

A 50 ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected in place of the master device and 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.

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Without changing any of the instrument settings, the spectrum analyer is reconnected to the Common port of the Spectrum Analyzer Combiner/Divider. Measure the amplitude and calculate the difference from –64 dBm. Adjust the Reference Level Offset of the spectrum analyzer to this difference.

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.

Set the signal generator to produce a radar waveform, trigger a burst manually and measure the level on the spectrum analyzer. Readjust the amplitude of the signal generator as required so that the peak level of the waveform is at a displayed level equal to the required or desired interference detection threshold. Separate signal generator amplitude settings are determined as required for each radar type.

ADJUSTMENT OF DISPLAYED TRAFFIC LEVEL

Establish a link between the Master and Slave, adjusting the Link Step Attenuator as needed to provide a suitable received level at the Master and Slave devices. Stream the video test file to generate WLAN traffic. Confirm that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold. For Master Device testing confirm that the displayed traffic does not include Slave Device traffic. For Slave Device testing confirm that the displayed traffic does not include Master Device traffic.

If a different setting of the Master Step Attenuator is required to meet the above conditions, perform a new System Calibration for the new Master Step Attenuator setting.

TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**Cal Due**
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	US42070220	7/29/2007
Vector Signal Generator 250kHz-20GHz	Agilent / HP	E8267C	US43320336	11/2/2007
High Speed Digital I/O Card	National Instruments	PCI-6534	HA1612845	1/16/2008

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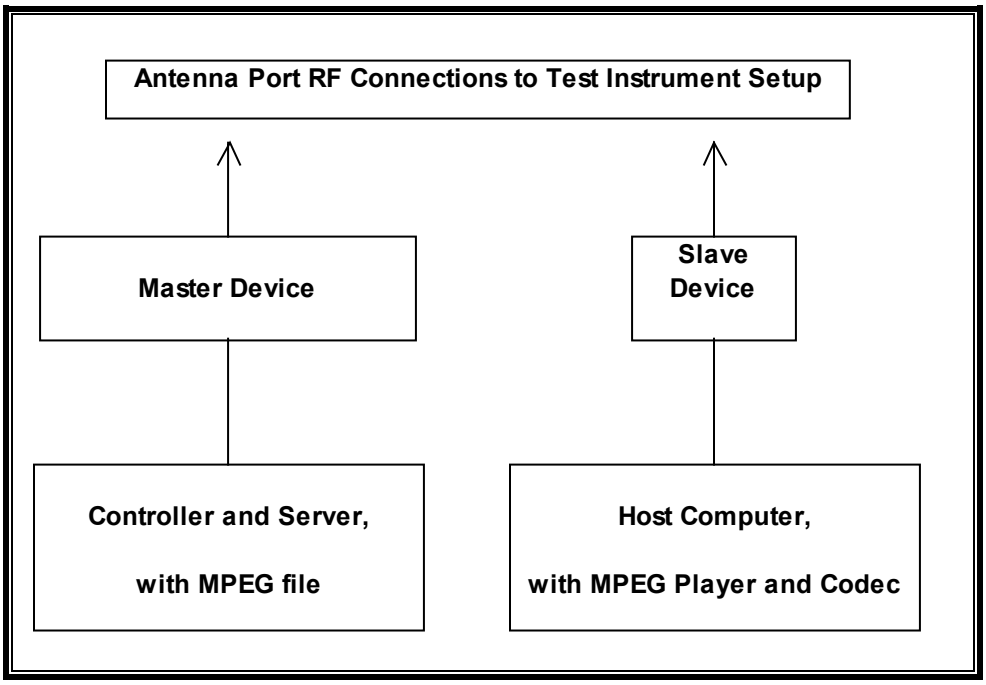
CONDUCTED METHOD EUT TEST SETUP



SUPPORT 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	HP	PPP009L	6108087001	DoC
Laptop	HP	Compaq nx6110	CNU6100R3S	DoC
AC Adapter	SONY	PCGA-AC19V1	0044d0183529	DoC
Laptop	SONY	PCG-R505EL	466535001	DoC

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8.1.3. DESCRIPTION OF EUT

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

The EUT is either a Master Device, or a Slave device without radar detection.

The highest power level within these bands is 28.6 dBm EIRP.

The EUT is configured at the factory with one of three different DFS detection thresholds, as applicable to the antenna assembly gain.

The rated output power of the Master Device is > 23dBm (EIRP). Therefore the required interference threshold level is –64 dBm.

The Master Device is configured with a conducted threshold of –46 dBm for the 18 dBi patch antenna. After correction for antenna gain and procedural adjustments, the required conducted threshold at the antenna port is –64 + 18 + 1 = -45 dBm. The calibrated conducted DFS Detection Threshold level is set to –45 dBm.

The Master Device is configured with a conducted threshold of –42 dBm for the 22 dBi patch antenna. After correction for antenna gain and procedural adjustments, the required conducted threshold at the antenna port is –64 + 22 + 1 = -41 dBm. The calibrated conducted DFS Detection Threshold level is set to –42 dBm. The tested level is lower than the required level hence it provides margin to the limit.

The Master Device is configured with a conducted threshold of –38 dBm for dish antennas with gains ranging from 27 dBi to 33 dBi. After correction for minimum antenna gain and procedural adjustments, the required conducted threshold at the antenna port is –64 + 27 + 1 = -36 dBm. The calibrated conducted DFS Detection Threshold level is set to –38 dBm. The tested level is lower than the required level hence it provides margin to the limit.

Dual-polarization antennas are utilized to meet the transmit diversity operational requirements.

The EUT uses two transmitters connected to two 50-ohm coaxial antenna ports. Both antenna ports are connected to the test system via a power divider to perform conducted tests.

WLAN traffic is generated by streaming the video file TestFile.mp2 “6 ½ Magic Hours” from the Master to the Slave in full motion video mode using the media player with the V2.61 Codec package.

TPC is required since the maximum EIRP is greater than 500 mW (27 dBm).

The EUT utilizes the 802.11a architecture. One nominal channel bandwidths is implemented, 20 MHz.

The DFS firmware installed in the master devices is revision 2p0r1D031201 and the DFS firmware installed in the slave devices is revision 2p0r1D020101.

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IDENTIFICATION OF SAMPLES USED FOR DFS TESTS

The master device sample configured with a conducted threshold of –46 dBm is serial number 6380011.

The master device sample configured with a conducted threshold of –42 dBm is serial number 6380034.

The master device sample configured with a conducted threshold of –38 dBm is serial number 6380012.

The slave device sample is serial number 6380024.

DESCRIPTION OF TPC FUNCTION

The output power of this device is adjustable. The minimum conducted output power is –10 dBm. The maximum antenna gain is 33 dBi, therefore the maximum EIRP at the lowest output power level is +23 dBm EIRP. This iss than the required TPC level of +24 dBm EIRP.

MANUFACTURER'S STATEMENT REGARDING UNIFORM CHANNEL SPREADING

This statement is in a separate document.

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8.2. RESULTS FOR MASTER CONFIGURATION AT –46 dBm THRESHOLD

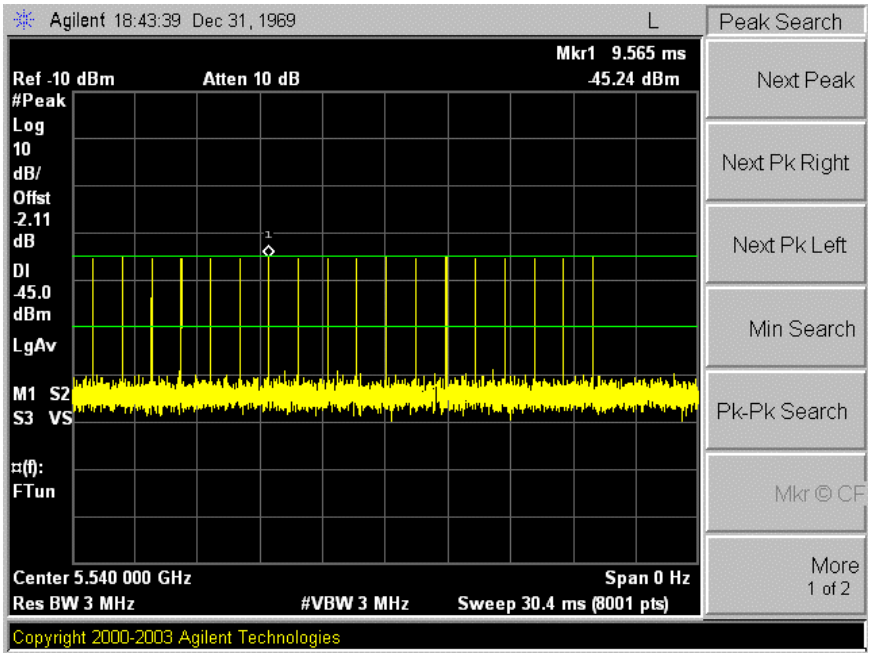
8.2.1. TEST CHANNEL AND METHOD

All tests were performed at a channel center frequency of 5540 MHz. Measurements were performed using conducted test methods.

8.2.2. PLOTS OF RADAR WAVEFORM, AND WLAN TRAFFIC

PLOTS OF RADAR WAVEFORMS

SHORT PULSE RADAR TYPE 1



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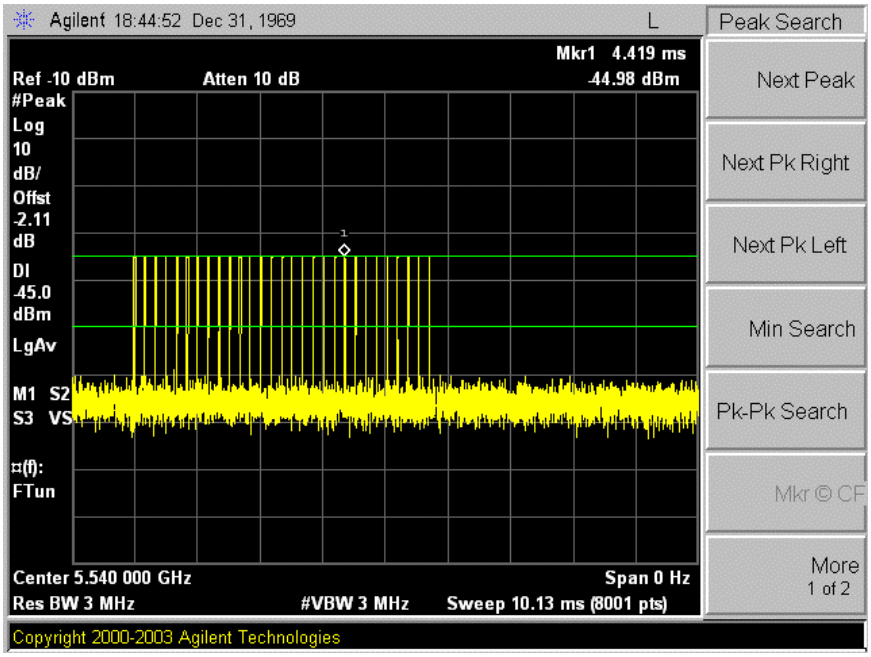
SAMPLE OF RADAR TYPE 2



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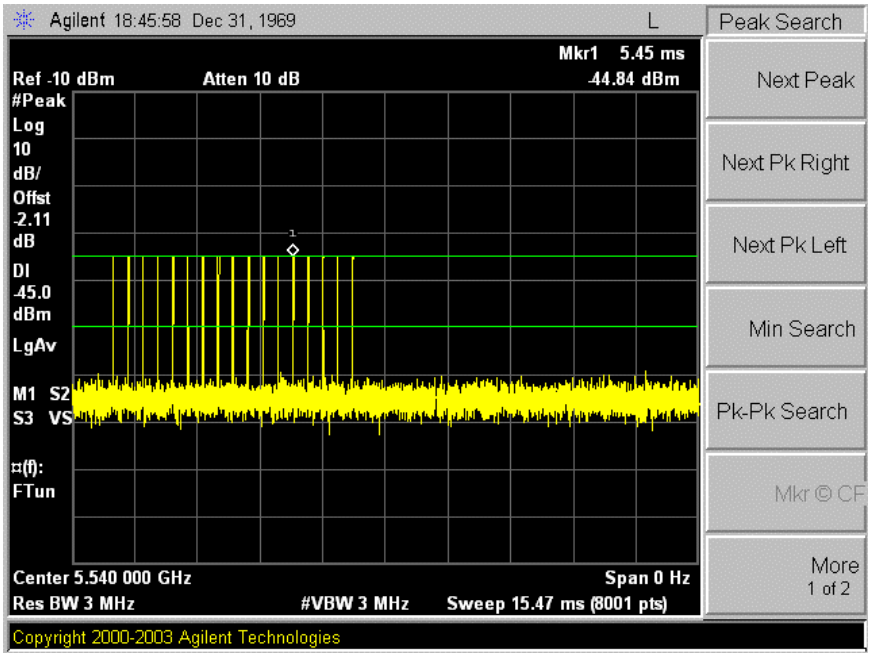
SAMPLE OF RADAR TYPE 3



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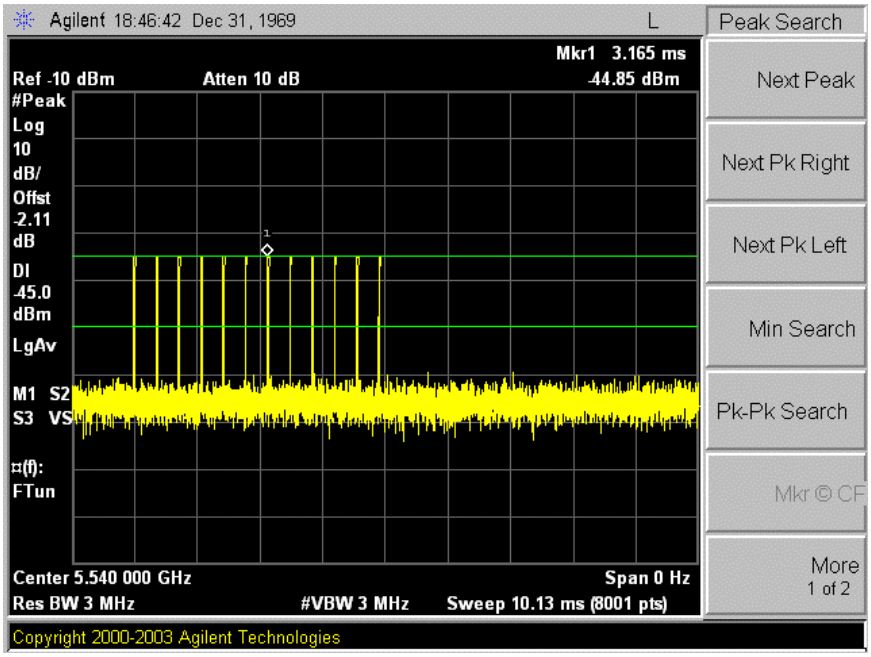
SAMPLE OF RADAR TYPE 4



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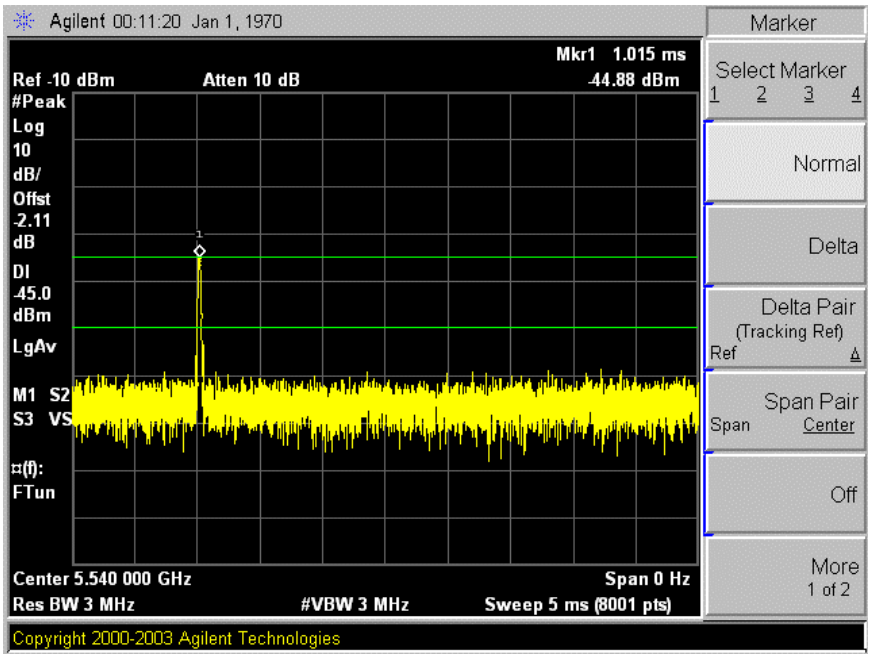
SAMPLE OF SINGLE BURST OF RADAR TYPE 5



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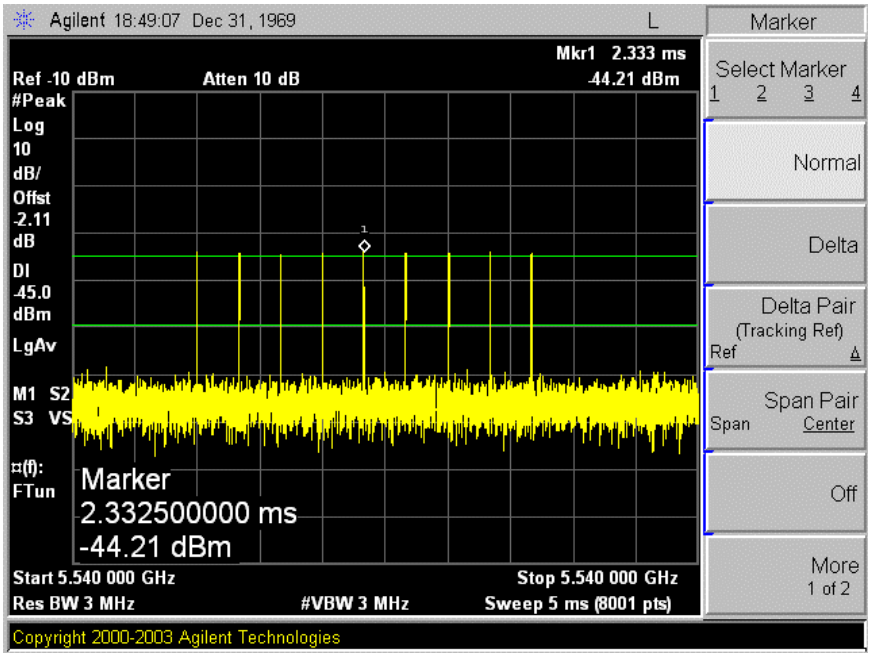
SINGLE BURST OF RADAR TYPE 6



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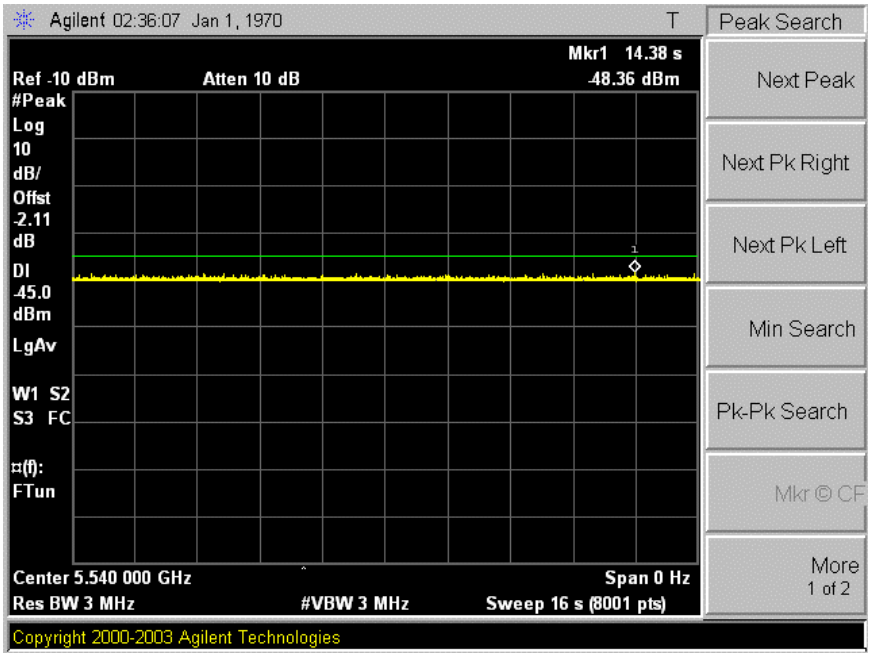
PLOT OF WLAN TRAFFIC FROM MASTER

WLAN TRAFIC



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8.2.3. CHANNEL AVAILABILITY CHECK TIME

TEST PROCEDURE TO DETERMINE INITIAL POWER-UP CYCLE TIME

A link was established on channel, then the EUT was rebooted. The time from the cessation of traffic to the re-initialization of traffic was measured as the time required for the EUT to complete the total power-up cycle. The time to complete the initial power-up period is 60 seconds less than this total power-up time.

TEST PROCEDURE FOR TIMING OF RADAR BURST

With a link established on channel, the EUT was rebooted. A radar signal was triggered within 0 to 6 seconds after the initial power-up period, and transmissions on the channel were monitored on the spectrum analyzer.

The Non-Occupancy list was cleared. With a link established on channel, the EUT was rebooted. A radar signal was triggered within 54 to 60 seconds after the initial power-up period, and transmissions on the channel were monitored on the spectrum analyzer.

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CHANNEL AVAILABILITY CHECK TIME RESULTS

No non-compliance noted:

Time required for EUT to complete the initial power-up cycle (sec)
97.14

If a radar signal is detected during the channel availability check then the PC controlling the EUT displays a message stating that radar was detected.

Timing of Radar Burst	Display on Control Computer	Spectrum Analyzer Display
No Radar Triggered	EUT marks Channel as active	Transmissions begin on channel after completion of the initial power-up cycle and the 60 second CAC
Within 0 to 6 second window	EUT does not display any radar parameter values	No transmissions on channel
Within 54 to 60 second window	EUT does not display any radar parameter values	No transmissions on channel

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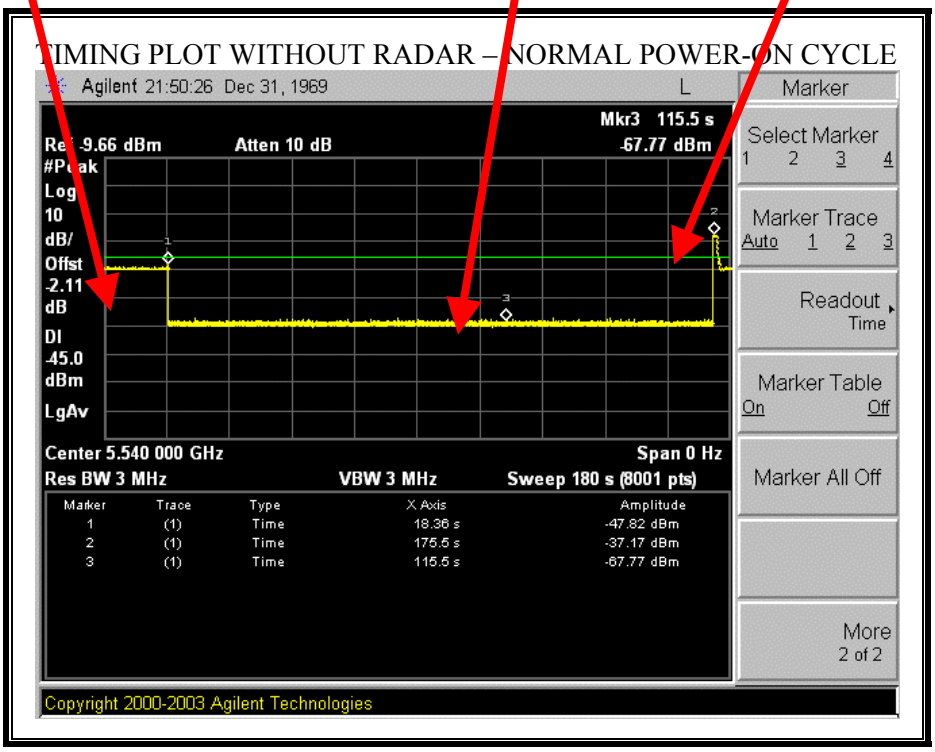
TIMING PLOT WITHOUT RADAR DURING CAC

AP is rebooted
Traffic ceases
Start of Initial Power-up cycle

End of Initial Power-up cycle
Start of CAC

End of CAC
Traffic is Initiated



The initial power-up cycle requires (175.5 – 18.36 – 60) = 97.14 seconds.

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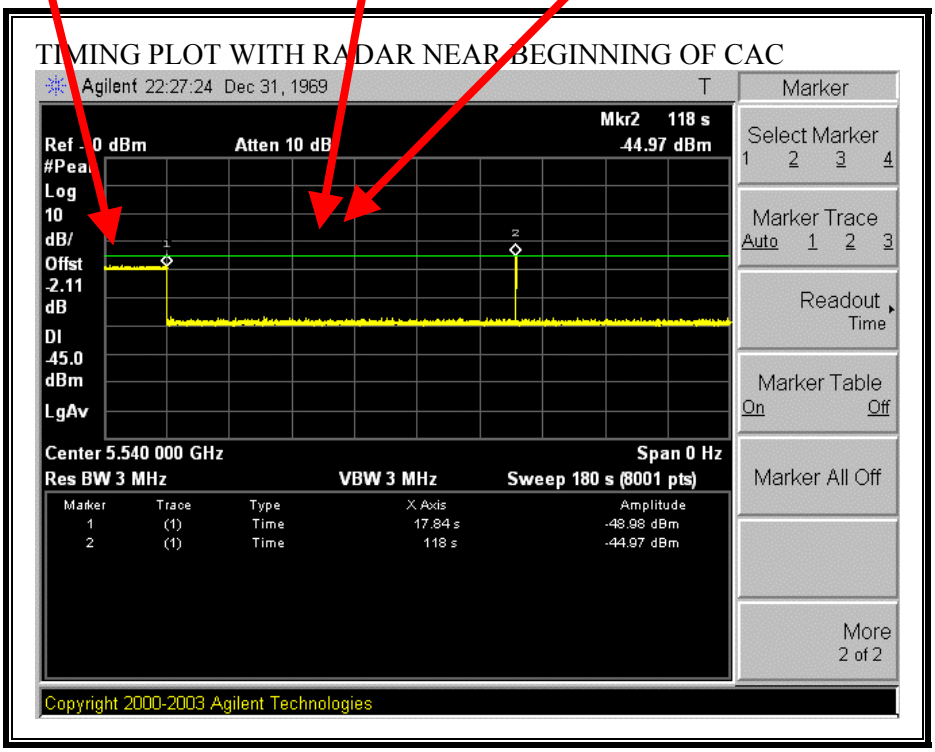
TIMING PLOT WITH RADAR NEAR BEGINNING OF CAC

AP is rebooted
Traffic ceases
Start of Initial Power-up cycle

End of Initial Power-up cycle
Start of CAC

Radar Signal Applied



The radar signal is applied (118 – 18.36) = 99.64 seconds after reboot, which is (99.64 – 97.14) = 2.5 seconds after the start of the CAC period.

No EUT transmissions were observed after the radar signal.

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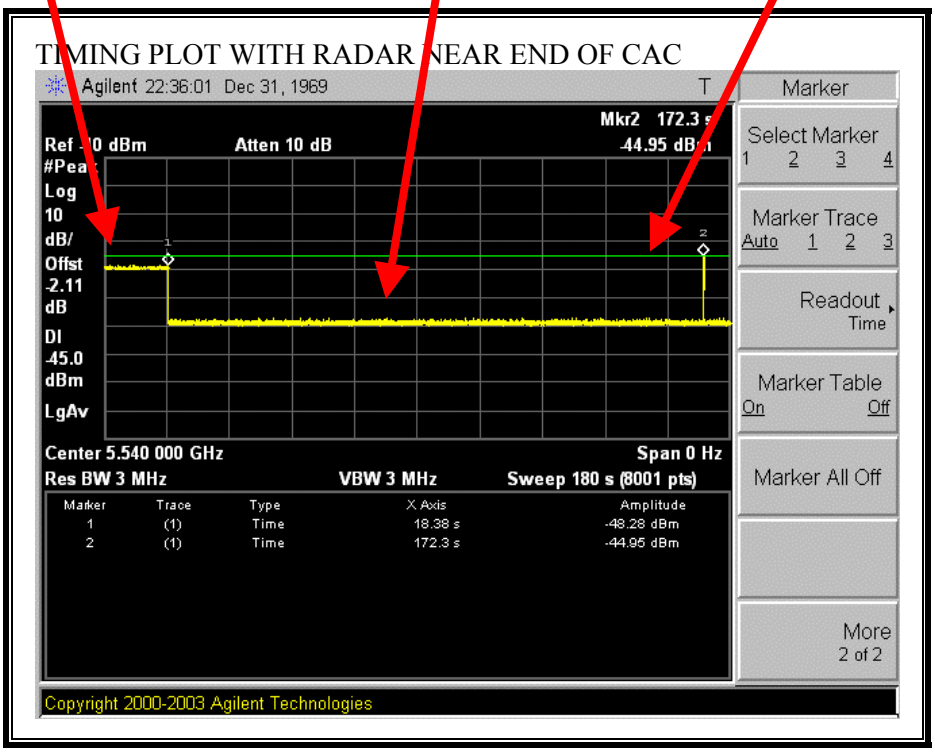
TIMING PLOT WITH RADAR NEAR END OF CAC

AP is rebooted
Traffic ceases
Start of Initial Power-up cycle

End of Initial Power-up cycle
Start of CAC

Radar Signal Applied



The radar signal is applied (172.3 – 18.38) = 153.92 seconds after reboot, which is (153.92 – 97.14) = 56.78 seconds after the start of the CAC period.

No EUT transmissions were observed after the radar signal.

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8.2.4. CHANNEL MOVE TIME AND CHANNEL CLOSING TRANSMISSION TIME

GENERAL REPORTING NOTES

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

SHORT PULSE RADAR REPORTING NOTES

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).

LONG PULSE RADAR REPORTING NOTES

The delta marker is set to 10 seconds after the end of the radar pulse.

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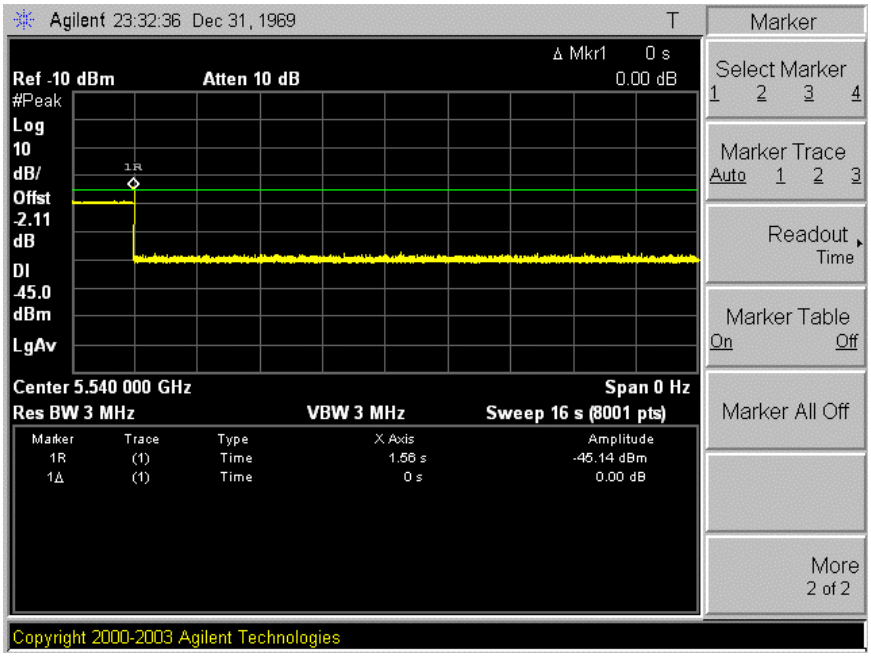
CHANNEL MOVE TIME RESULTS

No non-compliance noted:

Channel Move Time (s)	Limit (s)
0.000	10

MOVE TIME PLOT FOR SHORT PULSE RADAR



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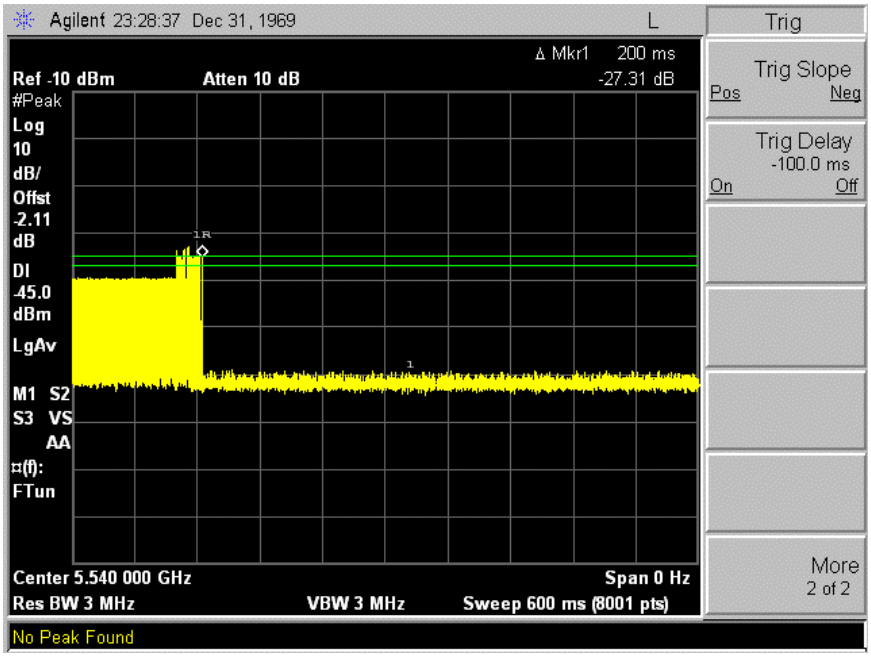
CHANNEL CLOSING TIME RESULTS

CLOSE-UP PLOT OF CLOSING TIME



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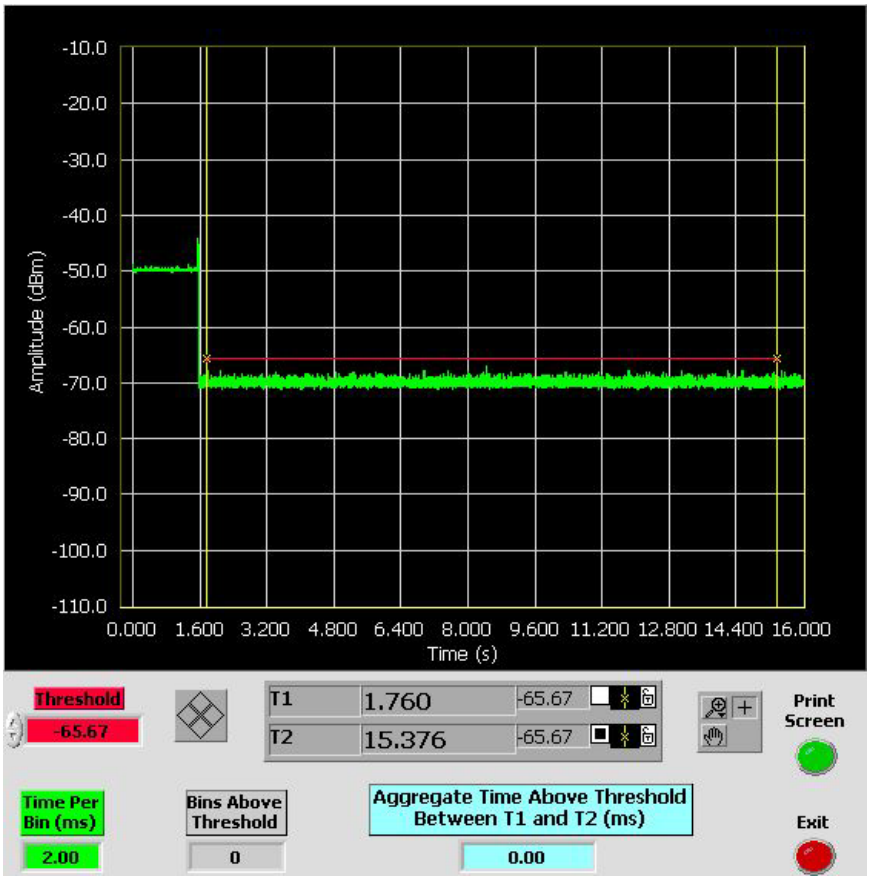
FCC AGGREGATE CHANNEL CLOSING TRANSMISSION TIME RESULTS

No non-compliance noted:

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
0.00	60	60.00

No transmissions are observed during the aggregate monitoring period.

AGGREGATE CLOSING TIME PLOT



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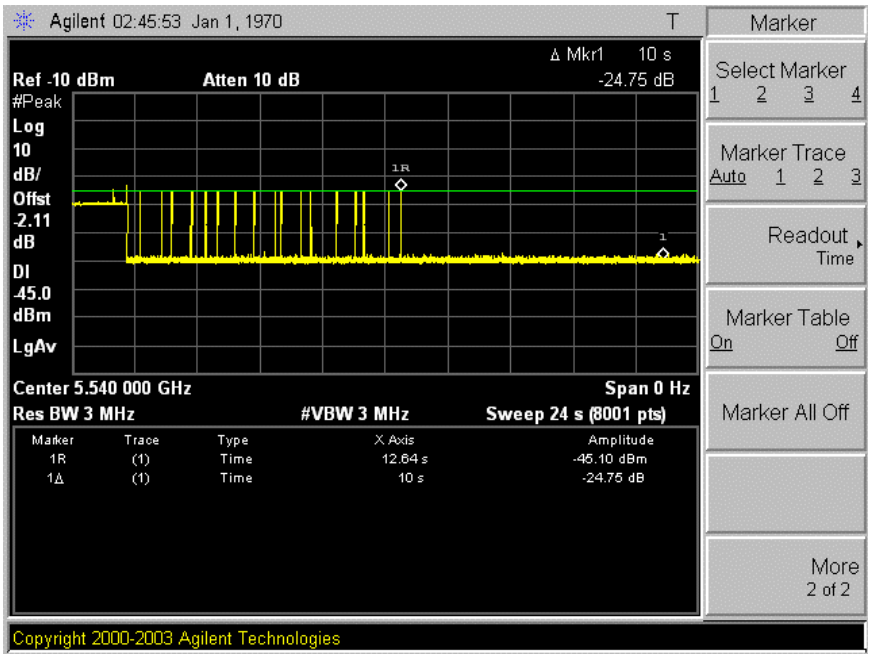
LONG PULSE CHANNEL MOVE TIME RESULTS

No non-compliance noted:

The traffic ceases prior to 10 seconds after the end of the radar waveform.

MOVE TIME PLOT FOR LONG PULSE RADAR



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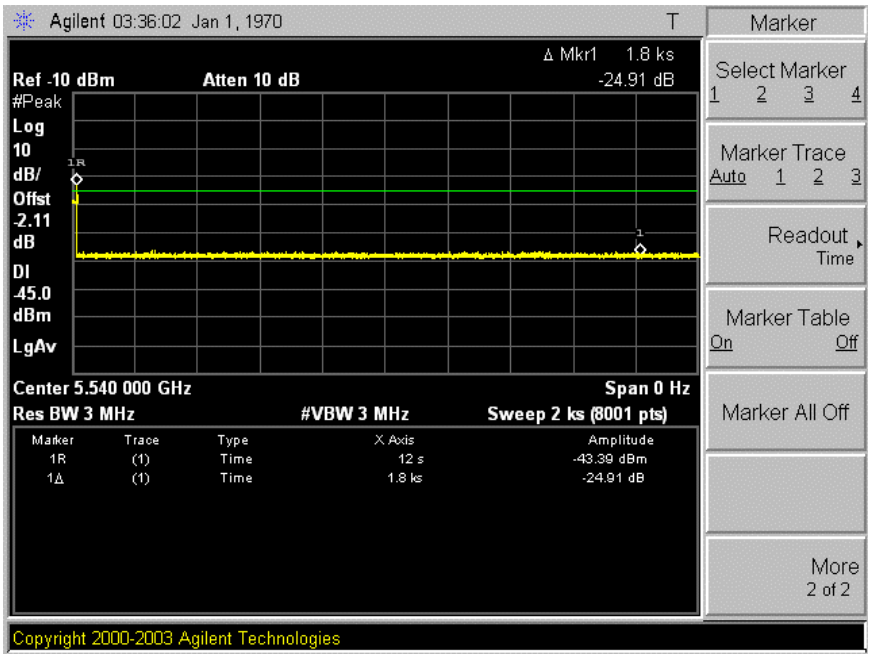
8.2.5. NON-OCCUPANCY PERIOD

RESULTS

No non-compliance noted: No EUT transmissions were observed on the test channel during the 30 minute observation time.

NON-OCCUPANCY PERIOD PLOT



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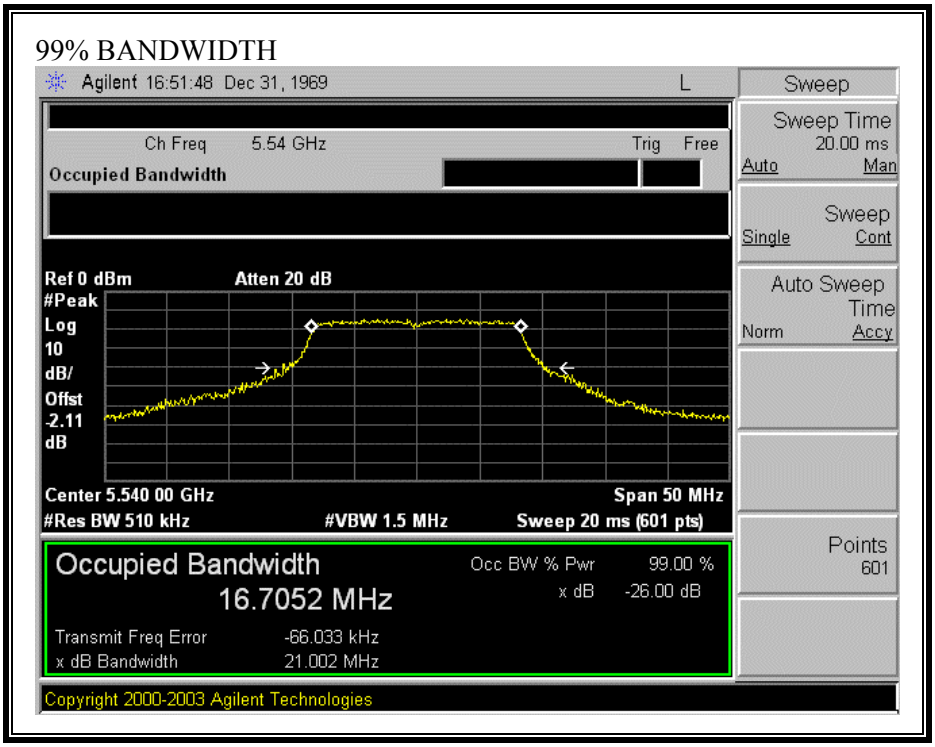
8.2.6. DETECTION BANDWIDTH

REFERENCE PLOT OF 99% POWER BANDWIDTH



RESULTS

No non-compliance noted:

FL (MHz)	FH (MHz)	Detection Bandwidth (MHz)	99% Power Bandwidth (MHz)	Ratio of Detection BW to 99% Power BW (%)	Minimum Limit (%)
5531	5548	17	16.705	101.8	80

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DETECTION BANDWIDTH PROBABILITY

DETECTION BANDWIDTH PROBABILITY RESULTS

Detection Bandwidth Test Results:			Waveform: TYPE 1	
Frequency (MHz)	Number of Trials	Number Detected	Detection (%)	Mark
5530	5	0	0.00	
5531	10	10	100.00	FL
5532	10	10	100.00	
5533	10	10	100.00	
5534	10	10	100.00	
5535	10	10	100.00	
5536	10	10	100.00	
5537	10	10	100.00	
5538	10	10	100.00	
5539	10	10	100.00	
5540	10	10	100.00	
5541	10	10	100.00	
5542	10	10	100.00	
5543	10	10	100.00	
5544	10	10	100.00	
5545	10	10	100.00	
5546	10	10	100.00	
5547	10	10	100.00	
5548	10	10	100.00	FH
5549	10	5	50.00	

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8.2.7. IN-SERVICE MONITORING

RESULTS

No non-compliance noted:

Radar Test Summary:				
Signal Type	**Number of Trials**	**Detection (%)**	**Limit (%)**	**Pass/Fail**
FCC TYPE 1	30	100.00	60.00	Pass
FCC TYPE 2	30	100.00	60.00	Pass
FCC TYPE 3	30	100.00	60.00	Pass
FCC TYPE 4	30	100.00	60.00	Pass
Aggregate		100.00	80.00	Pass
FCC TYPE 5	30	100.00	80.00	Pass
FCC TYPE 6	30	100.00	70.00	Pass

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TYPE 1 DETECTION PROBABILITY

Data Sheet for Short Pulse Radar Type 1	
Trial No.	**Successful Detection (Yes/No)**
1	Yes
2	Yes
3	Yes
4	Yes
5	Yes
6	Yes
7	Yes
8	Yes
9	Yes
10	Yes
11	Yes
12	Yes
13	Yes
14	Yes
15	Yes
16	Yes
17	Yes
18	Yes
19	Yes
20	Yes
21	Yes
22	Yes
23	Yes
24	Yes
25	Yes
26	Yes
27	Yes
28	Yes
29	Yes
30	Yes

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TYPE 2 DETECTION PROBABILITY

Data Sheet for Short Pulse Radar Type 2				
Waveform No.	# Pulses per burst	Pulse Width (us)	Pulse repetition Interval (us)	Successful Detection (Yes/No)
2001	29	4.80	169	Yes
2002	28	2.40	208	Yes
2003	25	3.90	227	Yes
2004	26	1.30	219	Yes
2005	29	4.30	213	Yes
2006	28	3.20	212	Yes
2007	25	4.20	169	Yes
2008	29	1.00	178	Yes
2009	25	1.70	187	Yes
2010	23	3.80	173	Yes
2011	25	2.60	226	Yes
2012	26	2.40	212	Yes
2013	26	1.20	179	Yes
2014	23	2.40	200	Yes
2015	26	4.90	159	Yes
2016	23	3.20	172	Yes
2017	29	1.10	209	Yes
2018	26	1.50	182	Yes
2019	27	3.10	218	Yes
2020	28	1.60	201	Yes
2021	25	4.00	172	Yes
2022	25	1.60	151	Yes
2023	25	2.40	160	Yes
2024	27	2.20	210	Yes
2025	26	1.50	150	Yes
2026	27	1.50	168	Yes
2027	28	1.90	191	Yes
2028	25	4.60	230	Yes
2029	28	4.60	184	Yes
2030	24	2.10	213	Yes

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TYPE 3 DETECTION PROBABILITY

Data Sheet for Short Pulse Radar Type 3				
Waveform No.	# Pulses per burst	Pulse Width (us)	Pulse repetition Interval (us)	Successful Detection (Yes/No)
3001	17	5.50	398	Yes
3002	17	5.60	500	Yes
3003	18	9.40	489	Yes
3004	17	5.90	400	Yes
3005	18	5.10	488	Yes
3006	17	9.00	260	Yes
3007	18	9.40	450	Yes
3008	18	6.10	395	Yes
3009	18	8.70	378	Yes
3010	18	7.80	332	Yes
3011	18	8.70	462	Yes
3012	16	8.60	426	Yes
3013	18	8.20	466	Yes
3014	16	9.70	444	Yes
3015	17	8.30	448	Yes
3016	18	8.50	312	Yes
3017	18	6.60	361	Yes
3018	18	5.50	499	Yes
3019	17	9.60	448	Yes
3020	16	9.00	291	Yes
3021	17	9.60	476	Yes
3022	18	10.00	422	Yes
3023	16	5.50	486	Yes
3024	18	6.10	287	Yes
3025	16	5.70	375	Yes
3026	17	6.20	341	Yes
3027	18	7.70	252	Yes
3028	17	6.70	480	Yes
3029	16	7.00	358	Yes
3030	16	6.80	495	Yes

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TYPE 4 DETECTION PROBABILITY

Data Sheet for Short Pulse Radar Type 4				
Waveform No.	# Pulses per burst	Pulse Width (us)	Pulse repetition Interval (us)	Successful Detection (Yes/No)
4001	16	15.00	280	Yes
4002	13	11.60	393	Yes
4003	14	11.10	272	Yes
4004	16	10.70	359	Yes
4005	12	13.70	446	Yes
4006	14	11.90	475	Yes
4007	15	18.40	391	Yes
4008	16	18.90	271	Yes
4009	12	16.00	419	Yes
4010	14	19.00	405	Yes
4011	15	17.70	388	Yes
4012	13	18.30	251	Yes
4013	13	18.90	349	Yes
4014	16	19.80	466	Yes
4015	16	12.90	281	Yes
4016	14	16.80	373	Yes
4017	13	10.70	292	Yes
4018	14	18.30	311	Yes
4019	12	18.50	461	Yes
4020	12	12.40	446	Yes
4021	14	14.30	305	Yes
4022	13	16.60	404	Yes
4023	14	11.20	492	Yes
4024	12	19.50	320	Yes
4025	14	13.40	416	Yes
4026	16	19.00	476	Yes
4027	12	20.00	429	Yes
4028	12	10.80	435	Yes
4029	12	12.10	270	Yes
4030	12	11.30	313	Yes

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TYPE 5 DETECTION PROBABILITY

Data Sheet for Long Pulse Radar Type 5	
Waveform No.	Successful Detection (Yes/No)
5001	Yes
5002	Yes
5003	Yes
5004	Yes
5005	Yes
5006	Yes
5007	Yes
5008	Yes
5009	Yes
5010	Yes
5011	Yes
5012	Yes
5013	Yes
5014	Yes
5015	Yes
5016	Yes
5017	Yes
5018	Yes
5019	Yes
5020	Yes
5021	Yes
5022	Yes
5023	Yes
5024	Yes
5025	Yes
5026	Yes
5027	Yes
5028	Yes
5029	Yes
5030	Yes

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TYPE 5 WAVEFORM PARAMETERS

Waveform Parameters for Long Pulse Radar Test Signal 5						
Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	Starting Location Within Interval (usec)
Waveform Num = 1; Num of Bursts = 19; Burst Interval (us) = 631579.0; Total number of pulses in waveform = 38						
1	1	75	10	---	---	593885
2	1	55	17	---	---	505731
3	2	80	19	1261	---	531526
4	2	85	5	1047	---	854700
5	3	50	16	1587	1154	324451
6	3	55	7	1365	1362	770254
7	2	70	18	1938	---	534151
8	2	65	7	1792	---	480680
9	3	100	9	1750	1550	656789
10	3	100	20	1460	1072	732139
11	2	95	14	1270	---	822925
12	2	55	11	1793	---	194120
13	1	65	5	---	---	808640
14	1	100	8	---	---	362156
15	3	55	17	1698	1506	962719
16	2	100	13	1705	---	726173
17	3	70	11	1276	1625	322986
18	1	95	6	---	---	976702
19	1	60	9	---	---	474354
Waveform Num = 2; Num of Bursts = 9; Burst Interval (us) = 1333333.0; Total number of pulses in waveform = 18						
1	2	60	18	1486	---	97429
2	2	95	11	1059	---	2228975
3	2	55	6	1394	---	365196
4	1	55	9	---	---	2370737
5	2	60	20	1066	---	446966
6	2	50	18	1027	---	1966368
7	2	55	18	1388	---	671303
8	3	90	17	1993	1438	1650596
9	2	50	8	1622	---	1711889
Waveform Num = 3; Num of Bursts = 20; Burst Interval (us) = 600000.0; Total number of pulses in waveform = 47						
1	3	70	6	1250	1390	557230
2	3	90	7	1195	1901	291560
3	2	65	10	1937	---	578607
4	2	50	11	1936	---	956697
5	3	60	12	1263	1817	260659
6	2	100	9	1346	---	408193
7	3	100	16	1962	1672	925042
8	1	100	7	---	---	400034
9	3	75	14	1155	1509	877938
10	2	95	19	1324	---	282703
11	1	65	8	---	---	696486
12	2	50	7	1094	---	658134
13	3	85	16	1614	1946	325100
14	3	55	20	1348	1611	637775
15	1	95	6	---	---	897680
16	3	85	10	1215	1515	667641
17	3	60	11	1085	1237	205429
18	3	55	13	1700	1559	898373
19	2	55	17	1233	---	282719
20	2	95	20	1500	---	1000374

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	Starting Location Within Interval (usec)
Waveform Num = 4; Num of Bursts = 19; Burst Interval (us) = 631579.0; Total number of pulses in waveform = 36						
1	2	95	13	1115	---	29839
2	3	95	14	1673	1295	1108642
3	1	60	6	---	---	702889
4	2	85	14	1238	---	561868
5	2	55	7	1753	---	609532
6	1	75	16	---	---	247672
7	1	80	16	---	---	753659
8	3	50	20	1045	1910	684801
9	1	80	9	---	---	700359
10	2	70	18	1767	---	297326
11	2	85	12	1784	---	829609
12	1	50	16	---	---	628275
13	3	65	19	1449	1200	768351
14	1	60	20	---	---	636666
15	3	60	14	1408	1779	479361
16	3	100	6	1024	1906	964357
17	2	90	10	1101	---	273335
18	2	75	5	1891	---	926071
19	1	60	13	---	---	651122
Waveform Num = 5; Num of Bursts = 19; Burst Interval (us) = 631579.0; Total number of pulses in waveform = 38						
1	1	50	19	---	---	292967
2	1	55	13	---	---	756895
3	1	50	5	---	---	797990
4	2	80	12	1865	---	48160
5	2	95	12	1225	---	1234820
6	1	80	15	---	---	304494
7	3	60	8	1393	1177	965475
8	1	80	16	---	---	72876
9	3	65	12	1375	1625	1141057
10	3	55	13	1370	1472	511631
11	3	70	13	1334	1634	524901
12	2	95	8	1225	---	613760
13	1	85	13	---	---	379969
14	1	55	9	---	---	584127
15	3	80	9	1308	1010	968325
16	3	75	18	1424	1791	750544
17	3	55	9	1261	1767	508191
18	1	60	9	---	---	790044
19	3	95	19	1343	1454	166921

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	Starting Location Within Interval (usec)
Waveform Num = 6; Num of Bursts = 13; Burst Interval (us) = 923077.0; Total number of pulses in waveform = 27						
1	2	90	17	1221	---	555196
2	1	50	20	---	---	922880
3	3	85	18	1250	1676	604990
4	2	60	13	1668	---	843743
5	1	100	20	---	---	1514320
6	3	55	11	1871	1351	283184
7	2	75	19	1511	---	1152911
8	2	55	13	1566	---	1386487
9	3	60	15	1811	1245	229472
10	2	65	11	1607	---	1015447
11	3	50	5	1201	1233	1169442
12	2	95	13	1070	---	626590
13	1	80	11	---	---	777807
Waveform Num = 7; Num of Bursts = 15; Burst Interval (us) = 800000.0; Total number of pulses in waveform = 30						
1	3	55	17	1546	1080	607775
2	1	95	17	---	---	565223
3	1	65	7	---	---	580054
4	2	90	14	1396	---	1210800
5	3	60	10	1755	1179	530723
6	2	100	11	1118	---	851579
7	2	65	7	1657	---	1115517
8	1	70	10	---	---	212643
9	2	100	19	1447	---	1392395
10	1	100	5	---	---	428908
11	3	90	15	1690	1090	1097246
12	2	80	7	1944	---	484903
13	3	100	8	1209	1287	762368
14	3	80	13	1242	1842	984965
15	1	80	12	---	---	578087
Waveform Num = 8; Num of Bursts = 18; Burst Interval (us) = 666667.0; Total number of pulses in waveform = 40						
1	2	50	5	1536	---	593427
2	3	85	17	1149	1080	163173
3	3	75	11	1058	1299	1159481
4	3	95	5	1855	1105	661439
5	2	70	5	1774	---	312348
6	2	55	10	1984	---	471292
7	1	85	10	---	---	1093641
8	3	80	8	1371	1971	378064
9	1	65	6	---	---	897615
10	3	90	17	1158	1270	383146
11	1	65	15	---	---	772568
12	3	100	13	1129	1366	887032
13	2	75	20	1106	---	439166
14	2	80	6	1986	---	816709
15	3	100	19	1904	1388	391384
16	3	95	20	1761	1267	668415
17	1	95	12	---	---	594532
18	2	90	14	1839	---	930790

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	Starting Location Within Interval (usec)
Waveform Num = 9; Num of Bursts = 14; Burst Interval (us) = 857143.0; Total number of pulses in waveform = 30						
1	3	50	10	1301	1445	294479
2	1	95	7	---	---	837637
3	1	100	16	---	---	1132230
4	1	65	11	---	---	565960
5	2	65	17	1099	---	1114443
6	2	55	12	1015	---	1041528
7	3	70	10	1249	1090	402777
8	1	55	20	---	---	870635
9	3	50	19	1615	1363	831299
10	2	90	8	1207	---	1043625
11	3	55	7	1109	1975	855732
12	2	85	11	1588	---	774652
13	3	75	14	1818	1142	911864
14	3	65	20	1812	1165	468447
Waveform Num = 10; Num of Bursts = 19; Burst Interval (us) = 631579.0; Total number of pulses in waveform = 36						
1	1	60	5	---	---	531095
2	1	65	13	---	---	477364
3	3	90	11	1464	1817	860910
4	3	70	10	1911	1583	138328
5	1	80	9	---	---	944490
6	3	80	16	1698	1671	607712
7	2	80	13	1477	---	686179
8	2	80	5	1256	---	157116
9	3	65	16	1240	1621	927446
10	2	90	7	1673	---	338350
11	1	75	16	---	---	841458
12	1	55	7	---	---	994883
13	2	75	15	1871	---	244240
14	1	70	18	---	---	610169
15	1	90	13	---	---	740167
16	1	60	11	---	---	421702
17	2	80	11	1325	---	998848
18	3	75	17	1391	1792	548054
19	3	50	15	1934	1382	587567
Waveform Num = 11; Num of Bursts = 16; Burst Interval (us) = 750000.0; Total number of pulses in waveform = 27						
1	1	65	18	---	---	593491
2	1	60	10	---	---	580986
3	1	60	20	---	---	721631
4	1	95	16	---	---	942703
5	3	85	18	1721	1139	289006
6	1	75	20	---	---	624310
7	2	70	16	1225	---	847619
8	1	85	16	---	---	1263697
9	2	50	15	1507	---	412102
10	3	65	16	1265	1256	758377
11	3	85	5	1006	1863	739647
12	1	70	6	---	---	1014853
13	2	85	6	1171	---	515694
14	1	70	17	---	---	995594
15	1	60	11	---	---	679463
16	3	50	14	1672	1450	938969

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	Starting Location Within Interval (usec)
Waveform Num = 12; Num of Bursts = 14; Burst Interval (us) = 857143.0; Total number of pulses in waveform = 21						
1	1	70	13	---	---	644185
2	1	80	17	---	---	294402
3	1	80	14	---	---	851429
4	1	90	15	---	---	830163
5	2	85	5	1862	---	991556
6	2	90	8	1441	---	933390
7	2	90	8	1566	---	1342820
8	3	80	18	1381	1800	485344
9	1	70	18	---	---	685008
10	1	70	7	---	---	1136029
11	1	85	13	---	---	423735
12	1	80	17	---	---	1001211
13	2	90	7	1968	---	885264
14	2	55	5	1150	---	1263326
Waveform Num = 13; Num of Bursts = 11; Burst Interval (us) = 1090909.0; Total number of pulses in waveform = 24						
1	1	50	10	---	---	200375
2	3	80	11	1207	1589	1511093
3	1	75	7	---	---	905233
4	1	65	9	---	---	1414908
5	2	75	14	1428	---	1131324
6	3	100	5	1405	1591	1122014
7	3	70	18	1928	1561	1232800
8	3	80	14	1937	1287	324517
9	2	60	8	1455	---	946056
10	2	75	20	1102	---	2047721
11	3	65	16	1220	1021	148789
Waveform Num = 14; Num of Bursts = 8; Burst Interval (us) = 1500000.0; Total number of pulses in waveform = 15						
1	2	95	8	1850	---	450919
2	2	95	15	1235	---	1278211
3	2	85	7	1693	---	1321791
4	3	65	6	1784	1387	2886983
5	1	50	16	---	---	652505
6	3	90	19	1487	1666	2095568
7	1	95	14	---	---	1312495
8	1	95	19	---	---	1327266

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	Starting Location Within Interval (usec)
Waveform Num = 15; Num of Bursts = 20; Burst Interval (us) = 600000.0; Total number of pulses in waveform = 37						
1	3	85	5	1987	1887	22122
2	3	55	9	1961	1644	851422
3	1	50	6	---	---	584399
4	1	60	15	---	---	899644
5	2	100	16	1186	---	436313
6	2	50	11	1072	---	580297
7	1	95	15	---	---	514541
8	1	65	14	---	---	685724
9	1	60	15	---	---	698719
10	1	80	8	---	---	392926
11	2	100	5	1844	---	636050
12	1	60	13	---	---	735438
13	3	70	8	1141	1986	597922
14	1	75	19	---	---	478782
15	1	75	13	---	---	493301
16	2	75	15	1381	---	593370
17	3	100	8	1468	1396	721547
18	2	50	18	1158	---	398788
19	3	80	6	1505	1961	933158
20	3	60	18	1353	1012	485021
Waveform Num = 16; Num of Bursts = 15; Burst Interval (us) = 800000.0; Total number of pulses in waveform = 31						
1	2	80	5	1875	---	433711
2	2	50	9	1951	---	654165
3	3	50	18	1558	1523	1260670
4	3	70	12	1352	1322	171098
5	1	90	5	---	---	748045
6	2	90	15	1029	---	942383
7	2	55	5	1892	---	881314
8	2	55	19	1418	---	1019789
9	1	50	18	---	---	818900
10	2	75	10	1088	---	438184
11	3	65	7	1713	1204	793632
12	2	100	15	1922	---	1051036
13	3	100	18	1677	1700	1021054
14	1	65	12	---	---	825261
15	2	90	9	1704	---	351694

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	Starting Location Within Interval (usec)
Waveform Num = 17; Num of Bursts = 20; Burst Interval (us) = 600000.0; Total number of pulses in waveform = 38						
1	3	100	8	1828	1541	37052
2	1	85	18	---	---	1085321
3	3	50	5	1462	1470	661578
4	2	85	5	1618	---	186109
5	2	85	14	1202	---	471686
6	1	75	18	---	---	1066629
7	2	100	16	1875	---	97311
8	3	85	15	1741	1403	1144650
9	1	90	7	---	---	458712
10	1	100	17	---	---	714897
11	3	80	15	1353	1137	489311
12	1	80	9	---	---	601502
13	1	60	18	---	---	272977
14	2	70	11	1585	---	1021642
15	1	90	7	---	---	584030
16	3	55	5	1486	1190	425139
17	2	55	9	1266	---	788915
18	2	55	14	1690	---	163969
19	2	75	9	1138	---	798538
20	2	75	20	1793	---	737896
Waveform Num = 18; Num of Bursts = 14; Burst Interval (us) = 857143.0; Total number of pulses in waveform = 30						
1	2	65	13	1861	---	101961
2	2	95	10	1477	---	813938
3	3	90	16	1917	1776	1276512
4	2	60	12	1245	---	1089499
5	3	80	19	1650	1593	803958
6	1	90	5	---	---	596385
7	1	60	16	---	---	447300
8	3	60	5	1043	1213	1345032
9	3	70	7	1660	1243	476775
10	3	95	14	1052	1516	1204914
11	1	75	20	---	---	822859
12	3	95	10	1978	1566	753527
13	1	65	14	---	---	636007
14	2	70	18	1663	---	904252

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	Starting Location Within Interval (usec)
Waveform Num = 19; Num of Bursts = 11; Burst Interval (us) = 1090909.0; Total number of pulses in waveform = 17						
1	2	75	17	1773	---	1001073
2	1	60	13	---	---	817515
3	1	85	18	---	---	952840
4	2	100	18	1327	---	1062545
5	1	90	18	---	---	678080
6	2	85	7	1855	---	1582327
7	2	70	13	1053	---	1073387
8	3	75	12	1225	1546	546011
9	1	50	14	---	---	1198772
10	1	60	15	---	---	1560689
11	1	65	7	---	---	513161
Waveform Num = 20; Num of Bursts = 14; Burst Interval (us) = 857143.0; Total number of pulses in waveform = 24						
1	3	80	8	1431	1715	560641
2	2	55	9	1022	---	333453
3	1	65	14	---	---	1506365
4	2	70	7	1069	---	874661
5	2	95	6	1421	---	685614
6	3	50	7	1996	1539	825257
7	1	65	9	---	---	347487
8	3	70	18	1098	1593	1594829
9	1	70	17	---	---	419740
10	1	70	8	---	---	1254104
11	1	65	6	---	---	685394
12	1	90	19	---	---	625259
13	2	80	15	1006	---	1134084
14	1	65	18	---	---	1003402
Waveform Num = 21; Num of Bursts = 15; Burst Interval (us) = 800000.0; Total number of pulses in waveform = 31						
1	1	70	16	---	---	674347
2	3	85	20	1267	1611	194481
3	2	55	20	1406	---	1171901
4	3	60	6	1803	1066	350680
5	2	50	7	1296	---	979218
6	1	95	19	---	---	989420
7	2	50	13	1666	---	622927
8	3	100	8	1518	1282	1164700
9	2	80	9	1528	---	706786
10	2	75	6	1281	---	391772
11	1	65	14	---	---	747662
12	1	90	11	---	---	852238
13	3	90	11	1594	1829	1460213
14	2	85	10	1550	---	567924
15	3	55	18	1707	1965	449779

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	Starting Location Within Interval (usec)
Waveform Num = 22; Num of Bursts = 16; Burst Interval (us) = 750000.0; Total number of pulses in waveform = 30						
1	2	75	13	1090	---	268044
2	1	60	6	---	---	1228537
3	2	75	19	1404	---	136161
4	2	70	20	1852	---	618683
5	2	55	16	1587	---	993927
6	1	60	10	---	---	1214205
7	2	100	6	1804	---	189726
8	2	85	6	1727	---	673930
9	2	75	12	1653	---	1008352
10	2	80	8	1895	---	870022
11	2	60	8	1706	---	908731
12	1	80	13	---	---	351550
13	3	70	13	1113	1239	1153595
14	2	75	10	1735	---	844983
15	3	75	16	1570	1831	630340
16	1	95	14	---	---	176636
Waveform Num = 23; Num of Bursts = 12; Burst Interval (us) = 1000000.0; Total number of pulses in waveform = 25						
1	1	60	16	---	---	416238
2	2	50	12	1214	---	1569376
3	3	80	9	1222	1354	899314
4	3	100	16	1021	1540	941754
5	3	100	19	1347	1744	211340
6	1	95	16	---	---	1657588
7	1	100	11	---	---	971500
8	1	55	5	---	---	639528
9	3	60	10	1671	1594	1456038
10	2	65	19	1098	---	740152
11	3	50	12	1480	1900	1141185
12	2	85	16	1316	---	484779
Waveform Num = 24; Num of Bursts = 17; Burst Interval (us) = 705882.0; Total number of pulses in waveform = 28						
1	1	60	17	---	---	568081
2	3	70	8	1329	1390	686335
3	1	55	6	---	---	275898
4	1	85	16	---	---	1281129
5	1	55	11	---	---	134191
6	3	85	7	1249	1134	870618
7	2	85	16	1640	---	780144
8	1	65	17	---	---	423471
9	2	80	14	1138	---	639471
10	1	80	7	---	---	1148523
11	2	100	12	1378	---	864000
12	1	65	13	---	---	150537
13	3	85	16	1948	1303	661810
14	1	80	15	---	---	1296648
15	2	50	8	1610	---	106128
16	2	100	16	1744	---	1289545
17	1	90	7	---	---	226131

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	Starting Location Within Interval (usec)
Waveform Num = 25; Num of Bursts = 14; Burst Interval (us) = 857143.0; Total number of pulses in waveform = 31						
1	3	65	14	1755	1806	419642
2	1	85	9	---	---	654008
3	3	70	18	1400	1857	1363560
4	1	100	10	---	---	449008
5	2	50	11	1859	---	662276
6	3	80	19	1524	1601	1462939
7	2	100	15	1825	---	462650
8	2	55	10	1496	---	1303093
9	2	70	10	1317	---	527409
10	3	75	6	1931	1608	964715
11	1	90	20	---	---	939510
12	2	80	10	1882	---	992531
13	3	60	18	1365	1285	510871
14	3	50	7	1494	1413	1197743
Waveform Num = 26; Num of Bursts = 13; Burst Interval (us) = 923077.0; Total number of pulses in waveform = 22						
1	2	90	7	1594	---	449591
2	1	70	6	---	---	915771
3	2	80	18	1745	---	557391
4	3	85	9	1330	1424	914075
5	3	60	17	1899	1729	1602841
6	1	70	5	---	---	925243
7	1	90	9	---	---	533540
8	1	100	11	---	---	1387845
9	2	85	9	1424	---	574298
10	2	80	8	1791	---	451822
11	1	80	10	---	---	1527652
12	1	75	7	---	---	1000719
13	2	65	20	1837	---	605299
Waveform Num = 27; Num of Bursts = 19; Burst Interval (us) = 631579.0; Total number of pulses in waveform = 33						
1	2	50	20	1627	---	353131
2	1	75	12	---	---	281079
3	2	50	16	1038	---	1246101
4	1	100	14	---	---	125894
5	3	90	12	1959	1464	583880
6	1	90	18	---	---	666422
7	1	90	17	---	---	1086043
8	3	50	5	1301	1224	270288
9	1	95	12	---	---	600209
10	1	100	7	---	---	504747
11	2	70	10	1372	---	1186054
12	2	60	7	1970	---	67195
13	3	60	19	1633	1032	729903
14	3	60	9	1476	1502	993453
15	1	90	14	---	---	683347
16	1	95	12	---	---	319292
17	1	100	9	---	---	874187
18	3	50	12	1923	1389	123654
19	1	55	16	---	---	1090044

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TYPE 6 DETECTION PROBABILITY

Data Sheet for Hopping Signal				
Trial No.	Starting Index within NTIA August 2005 Sequence	Signal Generator Frequency (MHz)	Hops within Detection BW	Successful Detection (Yes/No)
1	368	5531	2	Yes
2	843	5532	7	Yes
3	1318	5533	4	Yes
4	1793	5534	7	Yes
5	2268	5535	6	Yes
6	2743	5536	5	Yes
7	3218	5537	2	Yes
8	3693	5538	1	Yes
9	4168	5539	2	Yes
10	4643	5540	5	Yes
11	5118	5541	4	Yes
12	5593	5542	5	Yes
13	6068	5543	4	Yes
14	6543	5544	5	Yes
15	7018	5545	2	Yes
16	7493	5546	2	Yes
17	7968	5547	6	Yes
18	8443	5548	7	Yes
19	8918	5531	5	Yes
20	9393	5532	2	Yes
21	9868	5533	2	Yes
22	10343	5534	7	Yes
23	10818	5535	6	Yes
24	11293	5536	2	Yes
25	11768	5537	6	Yes
26	12243	5538	4	Yes
27	12718	5539	3	Yes
28	13193	5540	3	Yes
29	13668	5541	4	Yes
30	14143	5542	5	Yes

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8.3. RESULTS FOR MASTER CONFIGURATION AT –42 dBm THRESHOLD

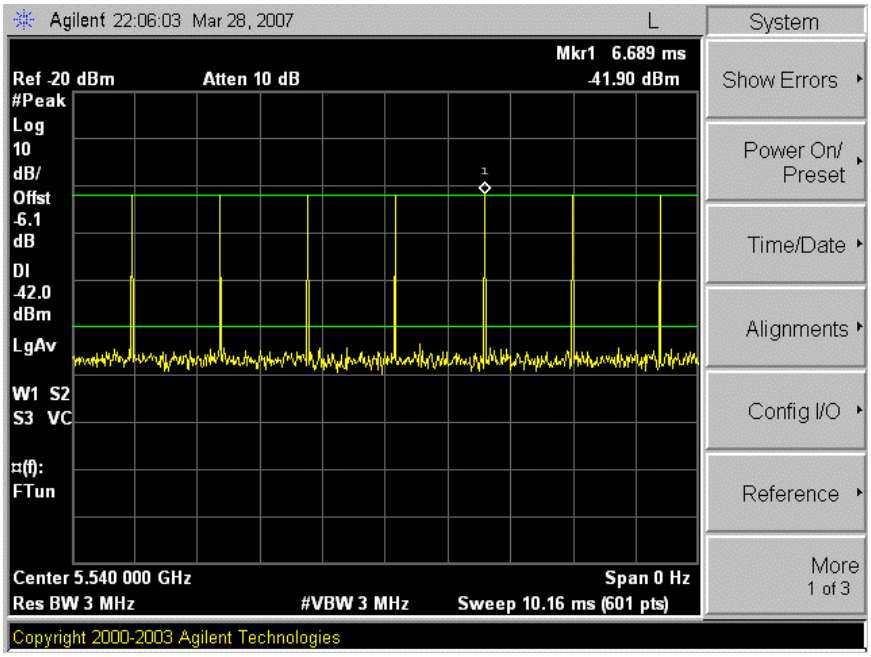
8.3.1. TEST CHANNEL AND METHOD

All tests were performed at a channel center frequency of 5540 MHz. Measurements were performed using conducted test methods.

8.3.2. PLOTS OF RADAR WAVEFORM, AND WLAN TRAFFIC

PLOTS OF RADAR WAVEFORMS

SHORT PULSE RADAR TYPE 1



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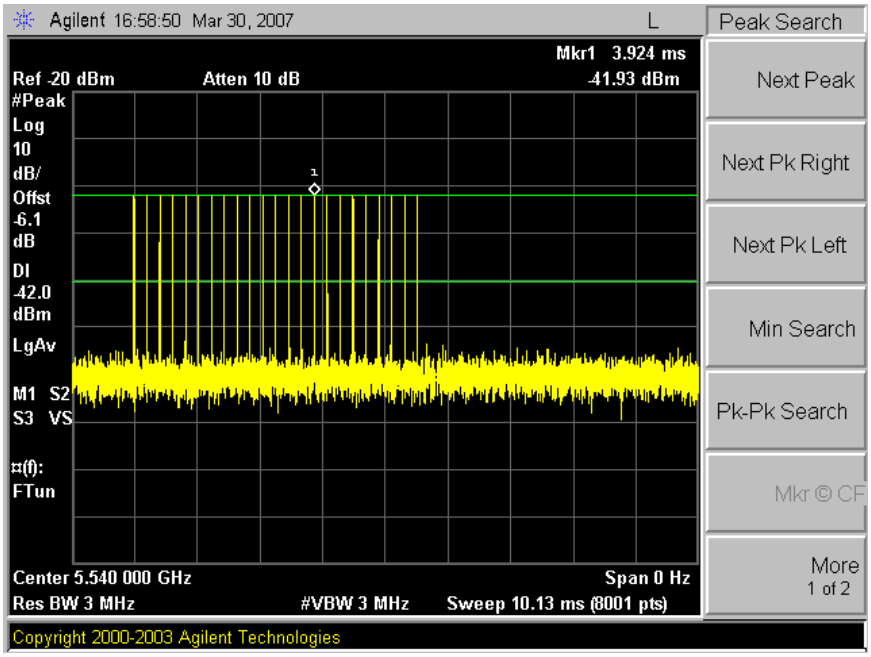
SAMPLE OF RADAR TYPE 2



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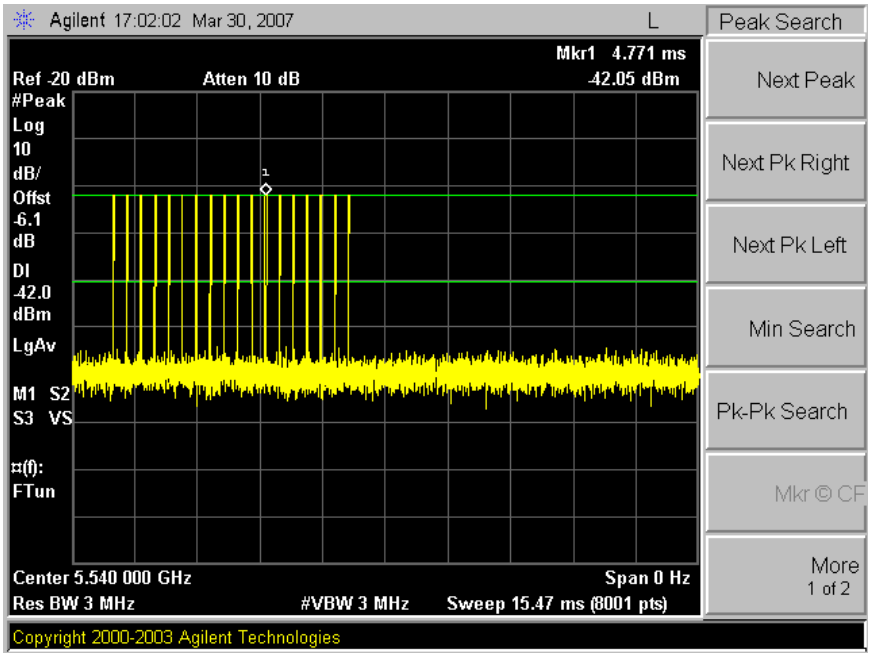
SAMPLE OF RADAR TYPE 3



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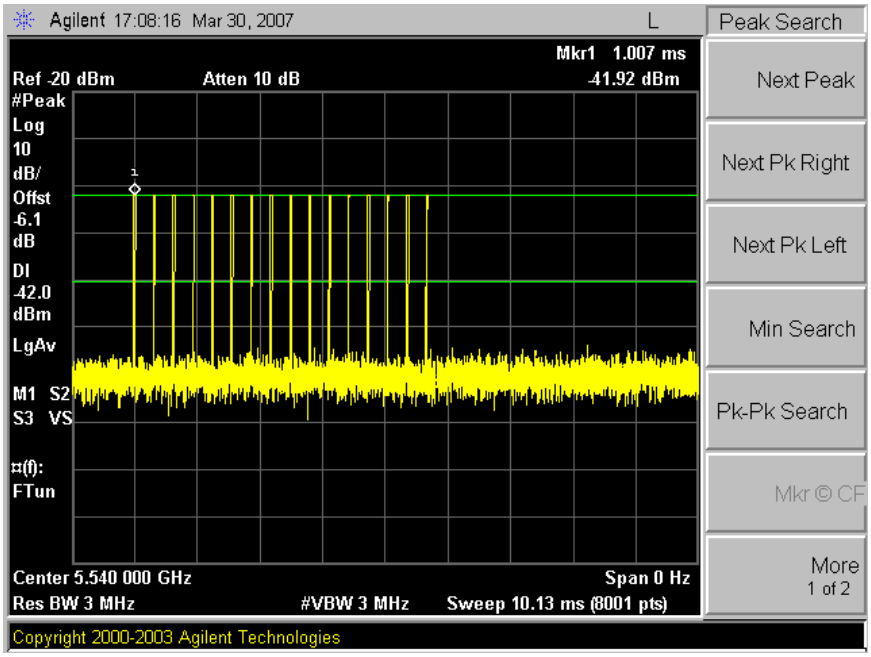
SAMPLE OF RADAR TYPE 4



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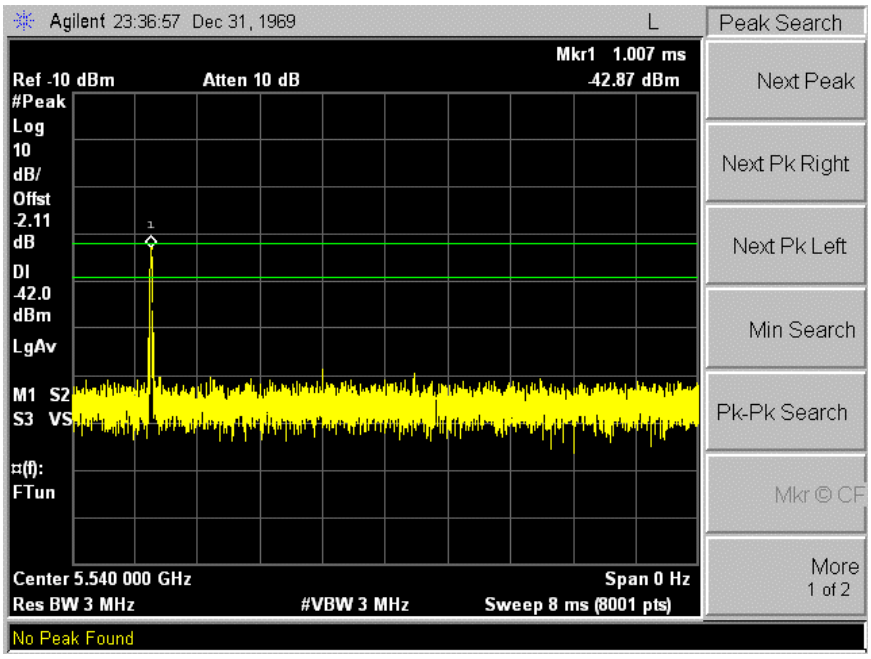
SAMPLE OF SINGLE BURST OF RADAR TYPE 5



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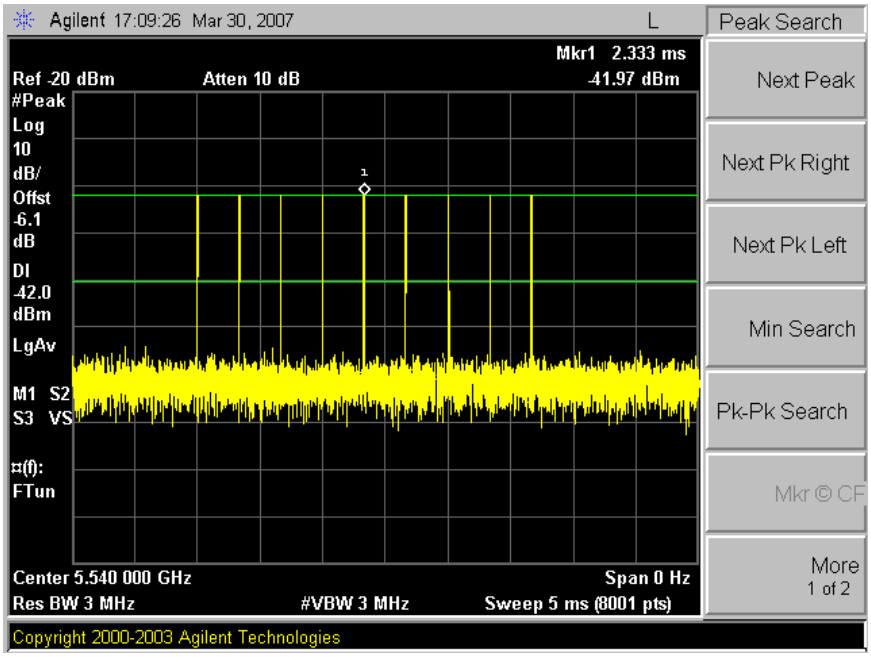
SINGLE BURST OF RADAR TYPE 6



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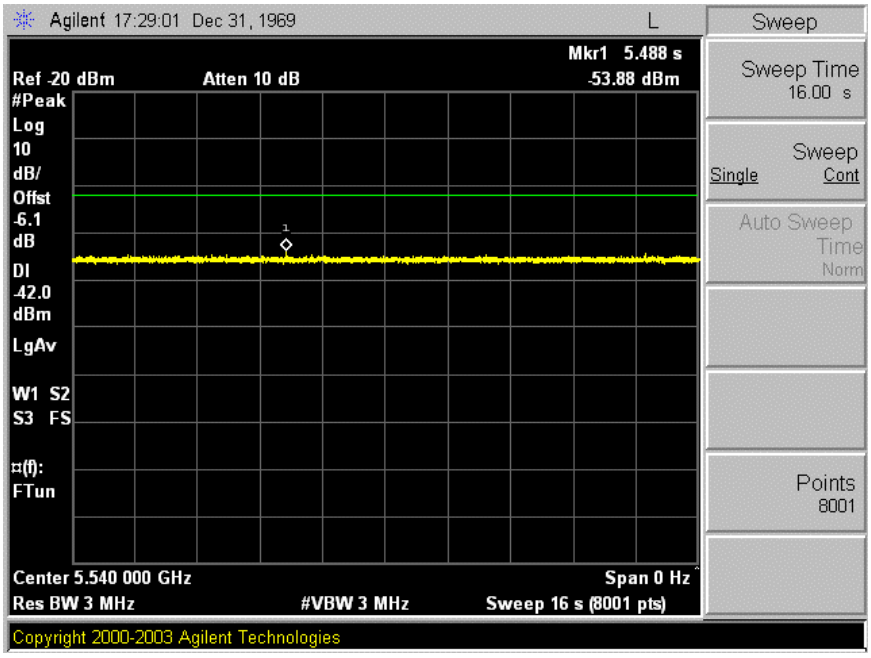
PLOT OF WLAN TRAFFIC FROM MASTER

WLAN TRAFIC



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8.3.3. CHANNEL AVAILABILITY CHECK TIME

TEST PROCEDURE TO DETERMINE INITIAL POWER-UP CYCLE TIME

A link was established on channel, then the EUT was rebooted. The time from the cessation of traffic to the re-initialization of traffic was measured as the time required for the EUT to complete the total power-up cycle. The time to complete the initial power-up period is 60 seconds less than this total power-up time.

TEST PROCEDURE FOR TIMING OF RADAR BURST

With a link established on channel, the EUT was rebooted. A radar signal was triggered within 0 to 6 seconds after the initial power-up period, and transmissions on the channel were monitored on the spectrum analyzer.

The Non-Occupancy list was cleared. With a link established on channel, the EUT was rebooted. A radar signal was triggered within 54 to 60 seconds after the initial power-up period, and transmissions on the channel were monitored on the spectrum analyzer.

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CHANNEL AVAILABILITY CHECK TIME RESULTS

No non-compliance noted:

Time required for EUT to complete the initial power-up cycle (sec)
96.89

If a radar signal is detected during the channel availability check then the PC controlling the EUT displays a message stating that radar was detected.

Timing of Radar Burst	Display on Control Computer	Spectrum Analyzer Display
No Radar Triggered	EUT marks Channel as active	Transmissions begin on channel after completion of the initial power-up cycle and the 60 second CAC
Within 0 to 6 second window	EUT indicates radar detected EUT does not display any radar parameter values	No transmissions on channel
Within 54 to 60 second window	EUT indicates radar detected EUT does not display any radar parameter values	No transmissions on channel

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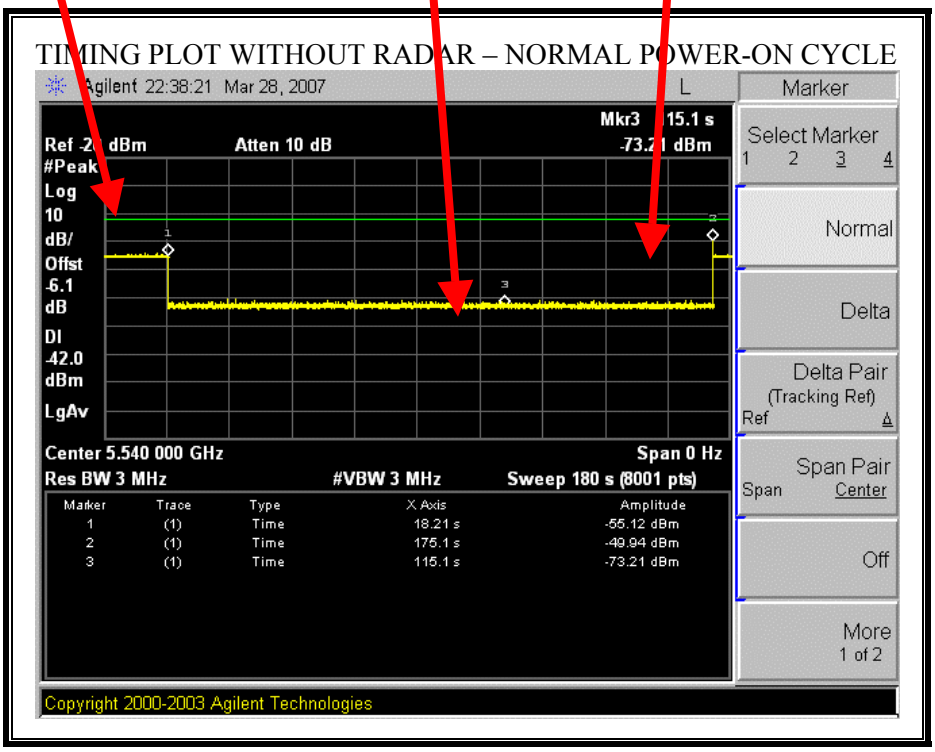
TIMING PLOT WITHOUT RADAR DURING CAC

AP is rebooted
Traffic ceases
Start of Initial Power-up cycle

End of Initial Power-up cycle
Start of CAC

End of CAC
Traffic is Initiated



The initial power-up cycle requires (175.1 – 18.21 – 60) = 96.89 seconds.

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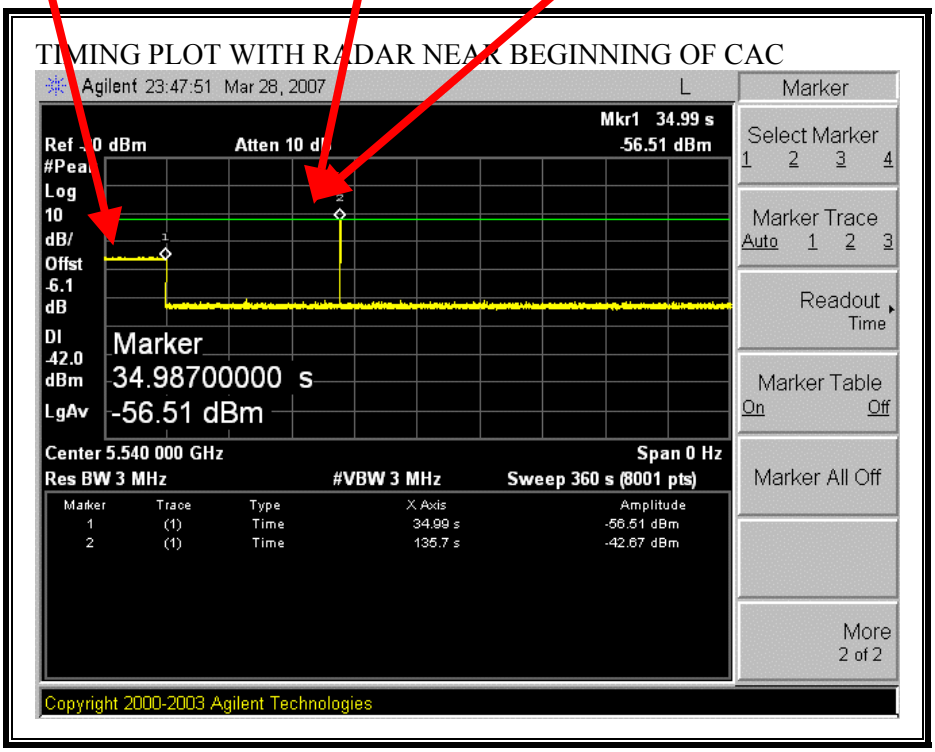
TIMING PLOT WITH RADAR NEAR BEGINNING OF CAC

AP is rebooted
Traffic ceases
Start of Initial Power-up cycle
End of Initial Power-up cycle
Start of CAC
Radar Signal Applied



The radar signal is applied (135.7 – 34.99) = 100.71 seconds after reboot, which is (100.71 – 96.89) = 3.82 seconds after the start of the CAC period.

No EUT transmissions were observed after the radar signal.

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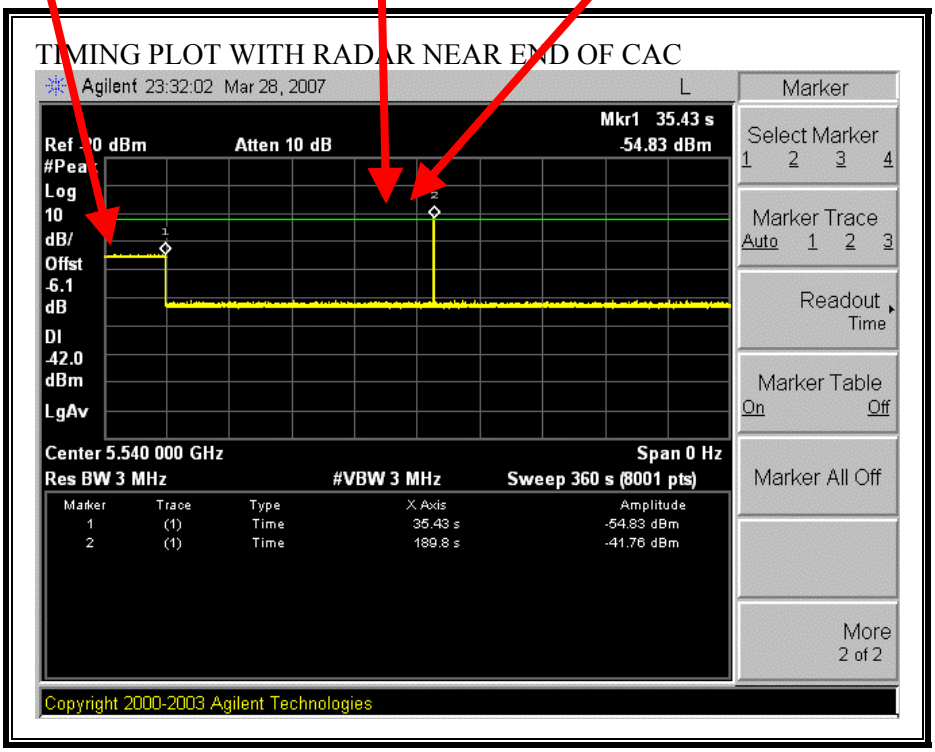
TIMING PLOT WITH RADAR NEAR END OF CAC

AP is rebooted
Traffic ceases
Start of Initial Power-up cycle
End of Initial Power-up cycle
Start of CAC
Radar Signal Applied



The radar signal is applied (189.8 – 35.43) = 154.37 seconds after reboot, which is (154.37 – 96.89) = 57.48 seconds after the start of the CAC period.

No EUT transmissions were observed after the radar signal.

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8.3.4. CHANNEL MOVE TIME AND CHANNEL CLOSING TRANSMISSION TIME

GENERAL REPORTING NOTES

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

SHORT PULSE RADAR REPORTING NOTES

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).

LONG PULSE RADAR REPORTING NOTES

The delta marker is set to 10 seconds after the end of the radar pulse.

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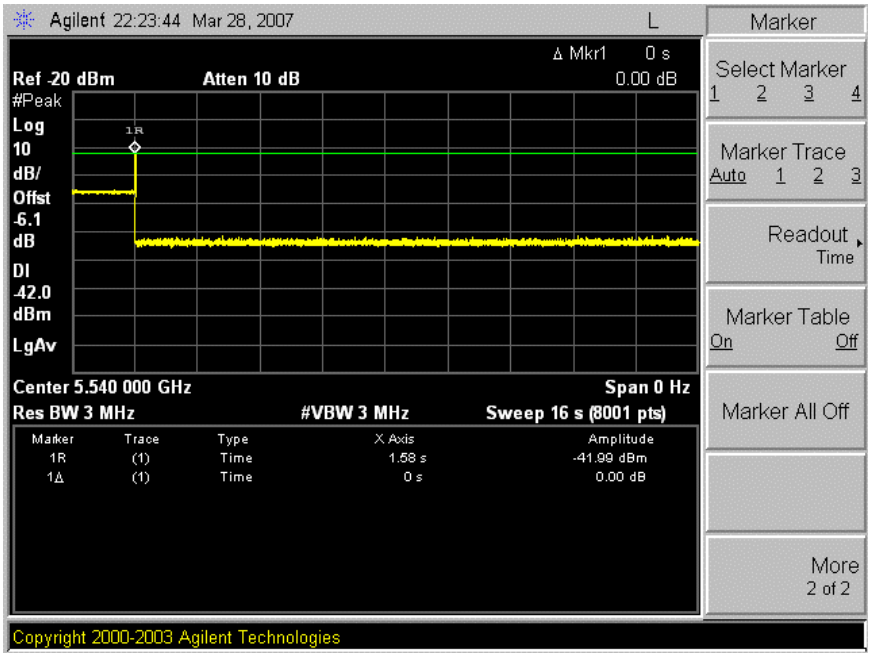
CHANNEL MOVE TIME RESULTS

No non-compliance noted:

Channel Move Time (s)	Limit (s)
0.000	10

MOVE TIME PLOT FOR SHORT PULSE RADAR



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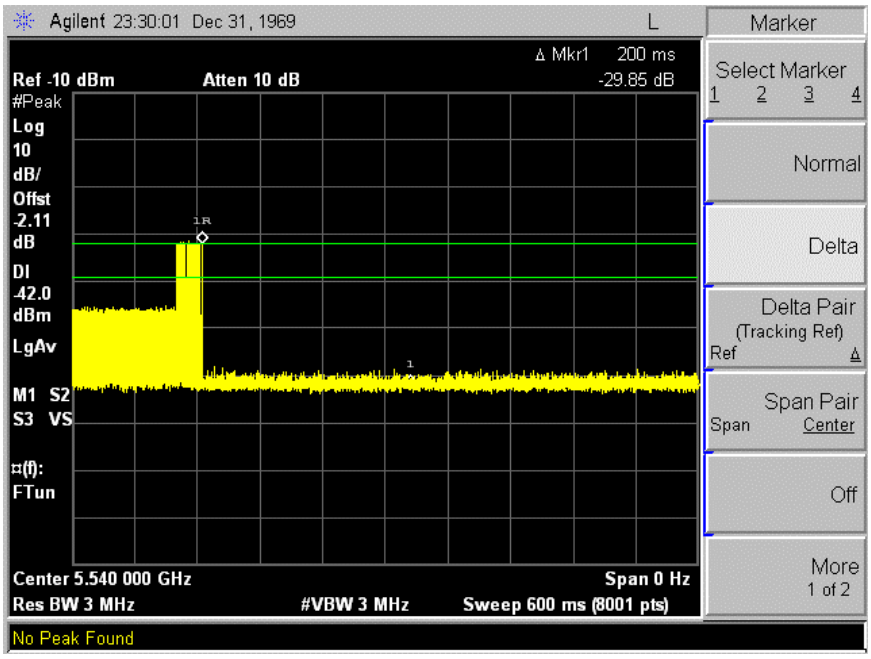
CHANNEL CLOSING TIME RESULTS

CLOSE-UP PLOT OF CLOSING TIME



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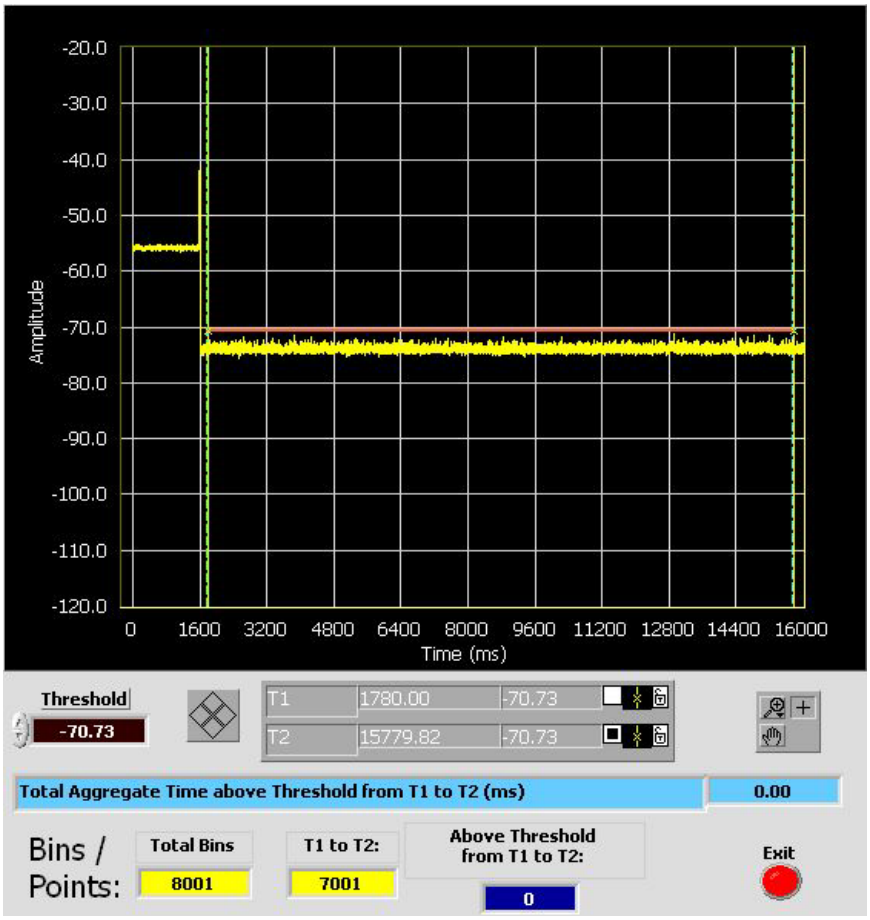
FCC AGGREGATE CHANNEL CLOSING TRANSMISSION TIME RESULTS

No non-compliance noted:

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
0.00	60	60.00

No transmissions are observed during the aggregate monitoring period.

AGGREGATE CLOSING TIME PLOT



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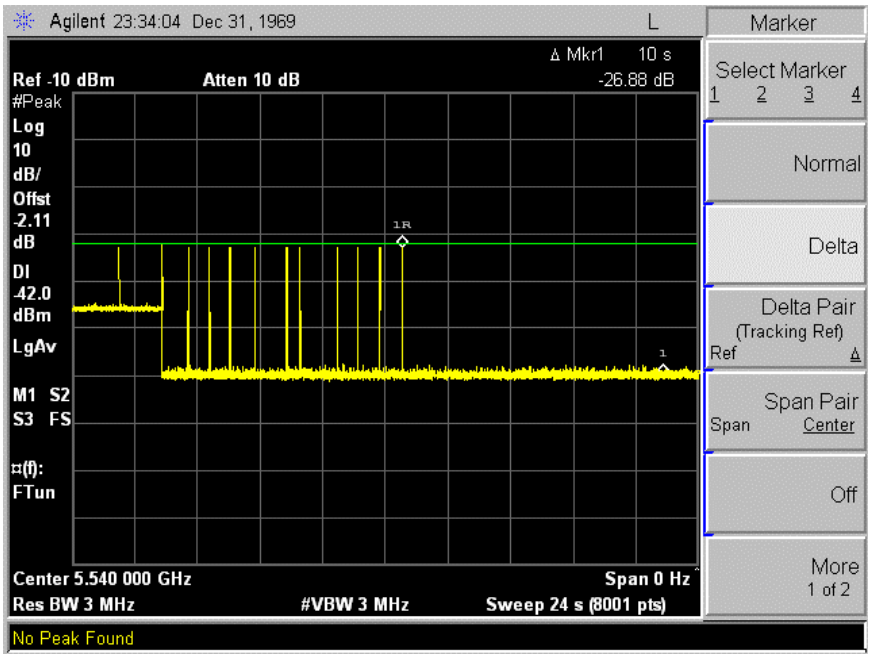
LONG PULSE CHANNEL MOVE TIME RESULTS

No non-compliance noted:

The traffic ceases prior to 10 seconds after the end of the radar waveform.

MOVE TIME PLOT FOR LONG PULSE RADAR



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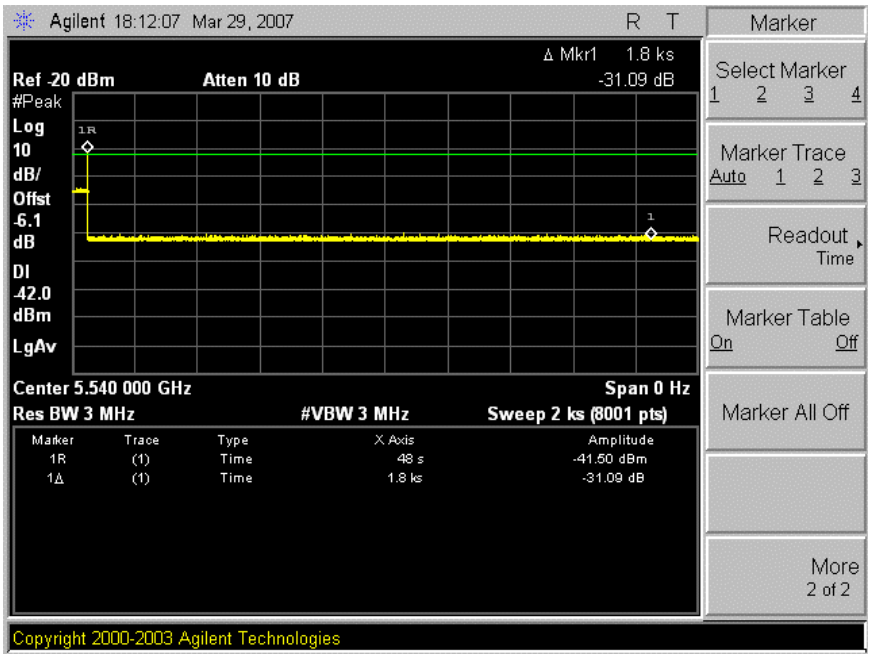
8.3.5. NON-OCCUPANCY PERIOD

RESULTS

No non-compliance noted: No EUT transmissions were observed on the test channel during the 30 minute observation time.

NON-OCCUPANCY PERIOD PLOT



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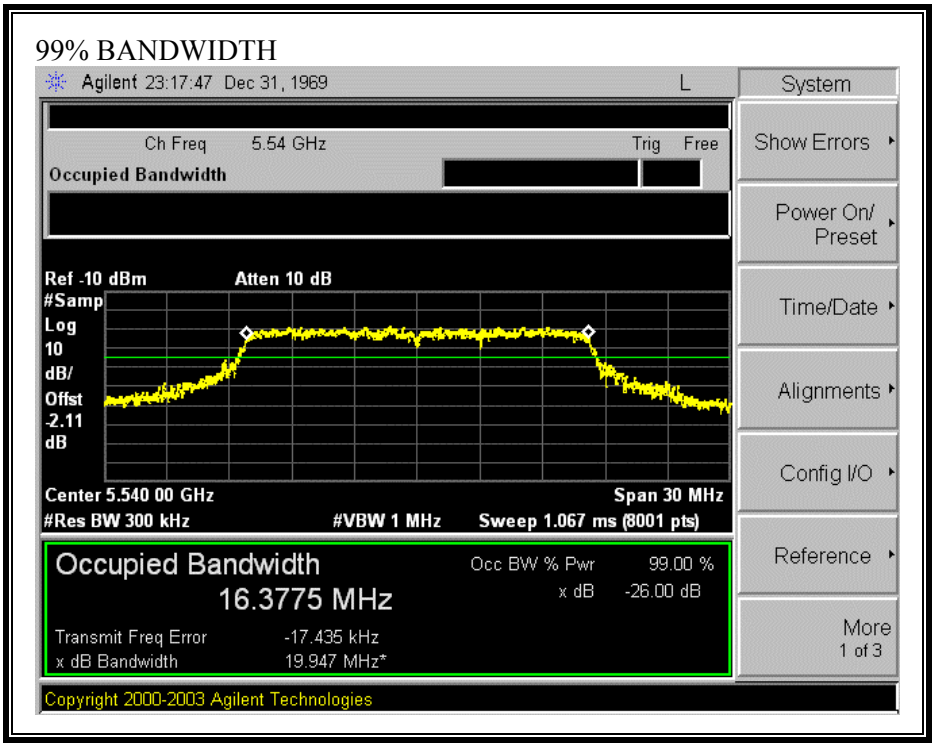
8.3.6. DETECTION BANDWIDTH

REFERENCE PLOT OF 99% POWER BANDWIDTH



RESULTS

No non-compliance noted:

FL (MHz)	FH (MHz)	Detection Bandwidth (MHz)	99% Power Bandwidth (MHz)	Ratio of Detection BW to 99% Power BW (%)	Minimum Limit (%)
5532	5548	16	16.378	97.7	80

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DETECTION BANDWIDTH PROBABILITY

DETECTION BANDWIDTH PROBABILITY RESULTS

Detection Bandwidth Test Results:		Waveform Name: FCC TYPE 1		
Frequency (MHz)	Number of Trials	Number Detected	Detection (%)	Mark
5531	10	3	30.00	
5532	10	9	90.00	FL
5533	10	10	100.00	
5534	10	10	100.00	
5535	10	10	100.00	
5536	10	10	100.00	
5537	10	10	100.00	
5538	10	10	100.00	
5539	10	10	100.00	
5540	10	10	100.00	
5541	10	10	100.00	
5542	10	10	100.00	
5543	10	10	100.00	
5544	10	10	100.00	
5545	10	10	100.00	
5546	10	10	100.00	
5547	10	10	100.00	
5548	10	10	100.00	FH
5549	10	0	0.00	

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8.3.7. IN-SERVICE MONITORING

RESULTS

No non-compliance noted:

Radar Test Summary:				
Signal Type	**Number of Trials**	**Detection (%)**	**Limit (%)**	**Pass/Fail**
FCC TYPE 1	30	93.33	60.00	Pass
FCC TYPE 2	30	100.00	60.00	Pass
FCC TYPE 3	30	93.33	60.00	Pass
FCC TYPE 4	30	96.67	60.00	Pass
Aggregate		95.83	80.00	Pass
FCC TYPE 5	30	100.00	80.00	Pass
FCC TYPE 6	34	91.18	70.00	Pass

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TYPE 1 DETECTION PROBABILITY

Data Sheet for Short Pulse Radar Type 1	
Trial No.	Successful Detection (Yes/No)
1	Yes
2	Yes
3	Yes
4	Yes
5	Yes
6	Yes
7	Yes
8	Yes
9	Yes
10	No
11	Yes
12	Yes
13	Yes
14	Yes
15	Yes
16	Yes
17	Yes
18	No
19	Yes
20	Yes
21	Yes
22	Yes
23	Yes
24	Yes
25	Yes
26	Yes
27	Yes
28	Yes
29	Yes
30	Yes

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TYPE 2 DETECTION PROBABILITY

Data Sheet for Short Pulse Radar Type 2				
Waveform No.	# Pulses per burst	Pulse Width (us)	Pulse repetition Interval (us)	Successful Detection (Yes/No)
2001	26	1.80	167	Yes
2002	27	4.10	203	Yes
2003	25	1.10	169	Yes
2004	26	4.50	197	Yes
2005	25	4.00	189	Yes
2006	24	3.50	174	Yes
2007	23	4.70	153	Yes
2008	25	4.50	221	Yes
2009	29	4.20	207	Yes
2010	26	2.10	164	Yes
2011	24	3.70	152	Yes
2012	29	2.50	194	Yes
2013	26	3.80	158	Yes
2014	26	4.70	221	Yes
2015	23	1.70	204	Yes
2016	28	3.20	194	Yes
2017	23	2.80	169	Yes
2018	29	1.60	230	Yes
2019	25	3.80	200	Yes
2020	27	4.40	214	Yes
2021	23	3.80	216	Yes
2022	24	2.40	226	Yes
2023	23	3.10	191	Yes
2024	28	3.60	230	Yes
2025	23	1.00	200	Yes
2026	24	1.00	198	Yes
2027	26	3.50	216	Yes
2028	24	3.50	162	Yes
2029	25	1.30	178	Yes
2030	23	1.60	226	Yes

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TYPE 3 DETECTION PROBABILITY

Data Sheet for Short Pulse Radar Type 3				
Waveform No.	# Pulses per burst	Pulse Width (us)	Pulse repetition Interval (us)	Successful Detection (Yes/No)
3001	17	7.20	296	Yes
3002	16	5.30	348	Yes
3003	17	7.40	448	Yes
3004	16	6.10	253	Yes
3005	17	6.10	483	Yes
3006	18	7.10	318	Yes
3007	17	7.00	332	Yes
3008	18	5.30	432	Yes
3009	16	5.20	460	Yes
3010	16	5.70	313	Yes
3011	16	6.40	474	Yes
3012	18	9.20	427	Yes
3013	16	9.80	399	Yes
3014	18	9.90	442	Yes
3015	18	8.20	384	Yes
3016	16	5.90	421	No
3017	17	8.10	419	Yes
3018	17	9.70	310	Yes
3019	18	8.70	305	Yes
3020	16	7.90	408	Yes
3021	16	5.40	478	Yes
3022	18	5.10	415	Yes
3023	17	9.50	314	Yes
3024	17	9.50	273	Yes
3025	17	9.90	336	Yes
3026	16	7.00	410	Yes
3027	18	7.90	295	No
3028	18	5.30	442	Yes
3029	18	5.30	378	Yes
3030	18	5.90	388	Yes

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TYPE 4 DETECTION PROBABILITY

Data Sheet for Short Pulse Radar Type 4				
Waveform No.	# Pulses per burst	Pulse Width (us)	Pulse repetition Interval (us)	Successful Detection (Yes/No)
4001	12	15.10	335	Yes
4002	13	14.40	486	Yes
4003	14	12.20	477	Yes
4004	16	14.70	338	Yes
4005	15	19.70	487	Yes
4006	14	14.40	315	Yes
4007	16	10.90	388	Yes
4008	12	11.50	491	Yes
4009	15	13.70	442	Yes
4010	14	13.00	464	Yes
4011	13	19.50	300	Yes
4012	15	10.60	486	Yes
4013	12	11.60	358	Yes
4014	14	16.30	303	Yes
4015	16	14.60	481	Yes
4016	12	17.30	288	Yes
4017	15	19.90	499	Yes
4018	14	15.00	339	Yes
4019	14	18.60	251	Yes
4020	15	12.10	424	Yes
4021	13	18.20	489	No
4022	15	12.10	456	Yes
4023	14	10.90	458	Yes
4024	13	18.90	277	Yes
4025	12	18.40	493	Yes
4026	14	13.30	432	Yes
4027	15	18.10	389	Yes
4028	15	15.40	267	Yes
4029	12	19.20	456	Yes
4030	13	13.70	274	Yes

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TYPE 5 DETECTION PROBABILITY

Data Sheet for Long Pulse Radar Type 5	
Waveform No.	Successful Detection (Yes/No)
5001	Yes
5002	Yes
5003	Yes
5004	Yes
5005	Yes
5006	Yes
5007	Yes
5008	Yes
5009	Yes
5010	Yes
5011	Yes
5012	Yes
5013	Yes
5014	Yes
5015	Yes
5016	Yes
5017	Yes
5018	Yes
5019	Yes
5020	Yes
5021	Yes
5022	Yes
5023	Yes
5024	Yes
5025	Yes
5026	Yes
5027	Yes
5028	Yes
5029	Yes
5030	Yes

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TYPE 5 WAVEFORM PARAMETERS

Waveform Parameters for Long Pulse Radar Test Signal 5						
Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	Starting Location Within Interval (usec)
Waveform Num = 1; Num of Bursts = 12; Burst Interval (us) = 1000000.0; Total pulses in waveform = 23						
1	1	65	11	---	---	338336
2	1	100	17	---	---	1623170
3	2	90	20	1007	---	1024035
4	2	100	19	1310	---	788450
5	2	75	10	1967	---	814865
6	2	100	9	1065	---	944070
7	3	80	6	1401	1663	1228200
8	3	55	15	1659	1090	513234
9	1	55	13	---	---	1451348
10	2	90	12	1625	---	747246
11	2	50	10	1112	---	847802
12	2	50	12	1049	---	853296
Waveform Num = 2; Num of Bursts = 19; Burst Interval (us) = 631579.0; Total pulses in waveform = 40						
1	1	100	14	---	---	197813
2	3	65	11	1520	1201	487476
3	3	80	8	1727	1287	619019
4	3	90	17	1277	1118	1130326
5	1	80	12	---	---	465130
6	3	75	6	1207	1269	503522
7	3	70	20	1559	1232	917172
8	1	100	8	---	---	435956
9	3	75	6	1571	1627	610494
10	1	100	18	---	---	741166
11	2	55	15	1016	---	282911
12	2	60	5	1011	---	1085258
13	3	55	5	1155	1086	614130
14	1	75	14	---	---	601924
15	1	60	18	---	---	401435
16	2	60	20	1428	---	336452
17	3	75	8	1519	1020	813191
18	3	85	6	1925	1510	1030777
19	1	80	17	---	---	547887

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	Starting Location Within Interval (usec)
Waveform Num = 3; Num of Bursts = 20; Burst Interval (us) = 600000.0; Total pulses in waveform = 43						
1	2	80	9	1964	---	234034
2	2	75	7	1167	---	788170
3	2	70	14	1651	---	717125
4	3	75	5	1533	1890	517694
5	1	85	14	---	---	592706
6	1	65	12	---	---	656362
7	2	70	15	1625	---	467423
8	2	70	20	1600	---	582245
9	3	70	19	1978	1344	558155
10	2	55	16	1950	---	313356
11	2	75	20	1691	---	589603
12	3	85	18	1808	1236	930325
13	3	100	17	1882	1475	440050
14	1	85	6	---	---	481620
15	3	90	15	1675	1858	613623
16	3	75	15	1149	1178	918580
17	2	85	5	1416	---	700293
18	1	55	12	---	---	355185
19	2	65	15	1222	---	474478
20	3	65	7	1185	1814	672248
Waveform Num = 4; Num of Bursts = 13; Burst Interval (us) = 923077.0; Total pulses in waveform = 27						
1	1	80	18	---	---	727027
2	3	75	18	1132	1973	380849
3	2	65	8	1581	---	867060
4	2	80	15	1467	---	1255579
5	2	50	13	1823	---	590878
6	3	50	20	1898	1494	1480755
7	3	80	20	1585	1994	430418
8	2	95	8	1519	---	1310246
9	1	100	12	---	---	1088662
10	1	65	18	---	---	823189
11	2	80	11	1783	---	826712
12	2	80	12	1770	---	832420
13	3	55	12	1454	1349	483208
Waveform Num = 5; Num of Bursts = 12; Burst Interval (us) = 1000000.0; Total pulses in waveform = 23						
1	1	70	18	---	---	127986
2	3	80	15	1177	1032	1000299
3	1	50	6	---	---	1391912
4	3	80	5	1868	1927	1298876
5	1	95	5	---	---	394862
6	2	80	5	1088	---	1566500
7	2	95	10	1333	---	265610
8	1	50	19	---	---	1078394
9	2	65	14	1357	---	1680509
10	3	80	13	1536	1818	989933
11	2	100	8	1110	---	552270
12	2	75	5	1165	---	1129947

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	Starting Location Within Interval (usec)
Waveform Num = 6; Num of Bursts = 19; Burst Interval (us) = 631579.0; Total pulses in waveform = 39						
1	1	60	12	---	---	629389
2	3	80	19	1334	1365	4972
3	2	65	10	1825	---	1205840
4	2	55	13	1238	---	577119
5	2	85	13	1325	---	342597
6	3	65	19	1780	1544	542626
7	1	85	14	---	---	542866
8	1	100	20	---	---	712735
9	1	60	8	---	---	998449
10	2	90	11	1003	---	451717
11	3	75	16	1386	1532	462996
12	2	100	20	1300	---	1064085
13	2	50	12	1344	---	92010
14	1	70	6	---	---	606948
15	3	80	19	1281	1339	1094120
16	3	95	17	1832	1095	197714
17	2	75	17	1255	---	808704
18	2	85	13	1024	---	549173
19	3	100	14	1583	1198	948607
Waveform Num = 7; Num of Bursts = 9; Burst Interval (us) = 1333333.0; Total pulses in waveform = 19						
1	1	80	12	---	---	1276686
2	1	95	15	---	---	431676
3	3	50	12	1741	1502	1759199
4	3	55	11	1070	1268	690980
5	1	100	6	---	---	1700395
6	3	75	16	1987	1939	1817185
7	3	95	20	1249	1389	938842
8	2	75	16	1789	---	1230368
9	2	85	9	1177	---	1063224

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	Starting Location Within Interval (usec)
Waveform Num = 8; Num of Bursts = 20; Burst Interval (us) = 600000.0; Total pulses in waveform = 34						
1	1	60	12	---	---	288809
2	1	55	15	---	---	516794
3	1	55	8	---	---	596118
4	2	75	6	1476	---	765998
5	1	50	8	---	---	639856
6	3	80	14	1217	1497	610270
7	1	75	17	---	---	741689
8	3	75	15	1830	1565	260838
9	1	90	5	---	---	876469
10	2	90	12	1825	---	671890
11	1	95	16	---	---	256111
12	3	80	7	1121	1335	405162
13	1	70	18	---	---	666843
14	3	55	15	1978	1628	747683
15	1	85	10	---	---	898563
16	2	85	15	1011	---	335940
17	1	65	6	---	---	864007
18	2	80	15	1669	---	46769
19	2	60	17	1692	---	690231
20	2	65	6	1620	---	578655
Waveform Num = 9; Num of Bursts = 18; Burst Interval (us) = 666667.0; Total pulses in waveform = 32						
1	3	50	10	1040	1086	601625
2	3	80	6	1775	1305	243072
3	2	90	10	1452	---	974120
4	3	60	13	1466	1995	400289
5	2	60	10	1466	---	909865
6	1	70	11	---	---	660807
7	1	95	13	---	---	778717
8	2	80	7	1805	---	90908
9	2	55	19	1869	---	667397
10	1	60	20	---	---	963298
11	2	75	15	1284	---	489585
12	1	60	8	---	---	880333
13	1	50	11	---	---	591177
14	2	85	19	1645	---	666532
15	3	50	5	1797	1388	905169
16	1	60	13	---	---	170782
17	1	75	16	---	---	932686
18	1	100	19	---	---	903550

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	Starting Location Within Interval (usec)
Waveform Num = 10; Num of Bursts = 16; Burst Interval (us) = 750000.0; Total pulses in waveform = 29						
1	1	55	18	---	---	155230
2	1	55	8	---	---	782992
3	3	85	15	1350	1702	1297552
4	2	65	9	1176	---	147456
5	1	95	18	---	---	824873
6	3	95	6	1166	1784	1034796
7	3	90	5	1851	1913	492455
8	1	95	11	---	---	1088416
9	3	100	18	1578	1388	568960
10	1	90	19	---	---	586178
11	2	95	13	1245	---	1112127
12	2	65	12	1046	---	793492
13	1	100	5	---	---	278998
14	2	80	5	1984	---	716991
15	1	70	19	---	---	959410
16	2	100	16	1660	---	583546
Waveform Num = 11; Num of Bursts = 20; Burst Interval (us) = 600000.0; Total pulses in waveform = 38						
1	1	50	12	---	---	549200
2	2	65	19	1218	---	301564
3	3	60	12	1622	1161	497735
4	1	75	12	---	---	802672
5	1	95	15	---	---	268643
6	2	80	12	1260	---	991007
7	1	70	5	---	---	234634
8	3	90	14	1642	1050	1028657
9	3	80	14	1875	1907	690672
10	3	55	12	1892	1004	12575
11	3	80	19	1483	1486	933486
12	1	65	8	---	---	731989
13	2	60	18	1873	---	555786
14	1	80	13	---	---	402741
15	1	75	14	---	---	572529
16	2	90	18	1355	---	449017
17	3	70	15	1873	1347	856554
18	2	85	15	1903	---	337927
19	1	75	10	---	---	815595
20	2	65	9	1306	---	532187

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	Starting Location Within Interval (usec)
Waveform Num = 12; Num of Bursts = 19; Burst Interval (us) = 631579.0; Total pulses in waveform = 37						
1	1	95	9	---	---	480687
2	3	55	8	1590	1065	694514
3	3	80	10	1102	1365	466081
4	2	80	5	1114	---	845935
5	1	50	17	---	---	84072
6	3	100	18	1466	1562	1195064
7	3	85	7	1995	1371	265480
8	3	55	16	1625	1054	965006
9	3	75	11	1399	1304	88756
10	1	95	11	---	---	1091293
11	1	75	14	---	---	590902
12	1	85	18	---	---	640715
13	1	50	20	---	---	644710
14	1	100	11	---	---	329882
15	1	55	19	---	---	1032451
16	3	50	13	1768	1455	512712
17	1	55	8	---	---	530550
18	3	75	5	1226	1781	352382
19	2	85	15	1386	---	664882
Waveform Num = 13; Num of Bursts = 20; Burst Interval (us) = 600000.0; Total pulses in waveform = 41						
1	2	90	11	1471	---	54307
2	2	60	10	1808	---	896580
3	3	80	18	1401	1399	341034
4	1	75	16	---	---	707340
5	1	75	12	---	---	423684
6	2	75	20	1678	---	692129
7	1	55	13	---	---	863355
8	1	95	12	---	---	495837
9	3	70	18	1987	1745	797696
10	3	90	5	1213	1022	322106
11	3	95	14	1779	1396	806008
12	2	90	20	1950	---	413561
13	3	75	15	1431	1213	698679
14	3	95	16	1016	1346	325574
15	3	95	14	1527	1909	527560
16	1	85	8	---	---	1074733
17	1	55	13	---	---	201975
18	2	55	17	1478	---	673305
19	3	60	18	1979	1427	498269
20	1	60	16	---	---	637644

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	Starting Location Within Interval (usec)
Waveform Num = 14; Num of Bursts = 18; Burst Interval (us) = 666667.0; Total pulses in waveform = 37						
1	3	50	7	1437	1567	649573
2	2	90	15	1122	---	408641
3	3	75	6	1301	1023	855109
4	2	95	17	1248	---	613391
5	1	55	14	---	---	274528
6	1	90	11	---	---	1065539
7	3	85	13	1744	1388	770268
8	3	50	11	1358	1301	70975
9	2	95	18	1805	---	1199237
10	2	60	18	1813	---	725116
11	3	95	19	1698	1419	238227
12	1	70	12	---	---	981073
13	1	85	13	---	---	486738
14	3	50	18	1909	1063	495755
15	2	100	11	1271	---	986454
16	1	55	16	---	---	284870
17	1	50	8	---	---	1043304
18	3	95	5	1004	1429	266163

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TYPE 6 DETECTION PROBABILITY

Data Sheet for Hopping Signal				
Trial No.	Starting Index within NTIA August 2005 Sequence	Signal Generator Frequency (MHz)	Hops within Detection BW	Successful Detection (Yes/No)
1	Starting Index within NTIA August 2005 Sequence			
1	323	5532	2	Yes
2	798	5533	6	Yes
3	1273	5534	7	Yes
4	1748	5535	9	Yes
5	2223	5536	3	Yes
6	2698	5537	3	Yes
7	3173	5538	1	No
8	3648	5539	1	Yes
9	4123	5540	8	Yes
10	4598	5541	4	Yes
11	5073	5542	1	Yes
12	5548	5543	6	Yes
13	6023	5544	3	Yes
14	6498	5545	5	Yes
15	6973	5546	4	Yes
16	7448	5547	5	Yes
17	7923	5548	4	Yes
18	8398	5532	5	Yes
19	8873	5533	6	Yes
20	9348	5534	2	Yes
21	9823	5535	6	Yes
22	10298	5536	6	Yes
23	10773	5537	5	Yes
24	11248	5538	2	Yes
25	11723	5539	2	Yes
26	12198	5540	2	Yes
27	12673	5541	4	Yes
28	13148	5542	1	Yes
29	13623	5543	1	No
30	14098	5544	4	Yes
31	14573	5545	2	Yes
32	15048	5546	2	Yes
33	15523	5547	3	Yes
34	15998	5548	2	No

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8.4. RESULTS FOR MASTER CONFIGURATION AT –38 dBm THRESHOLD

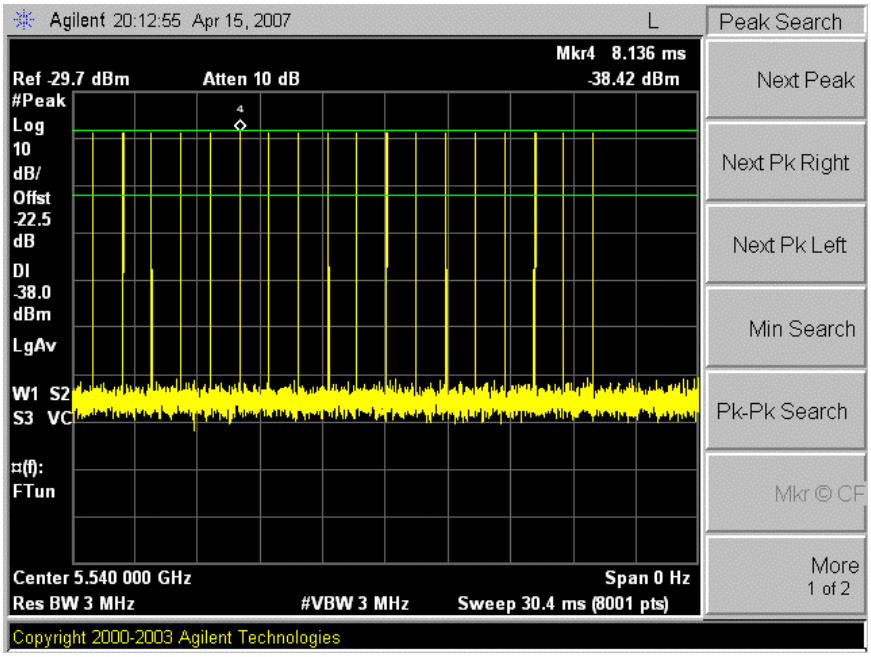
8.4.1. TEST CHANNEL AND METHOD

All tests were performed at a channel center frequency of 5540 MHz. Measurements were performed using conducted test methods.

8.4.2. PLOTS OF RADAR WAVEFORM, AND WLAN TRAFFIC

PLOTS OF RADAR WAVEFORMS

SHORT PULSE RADAR TYPE 1



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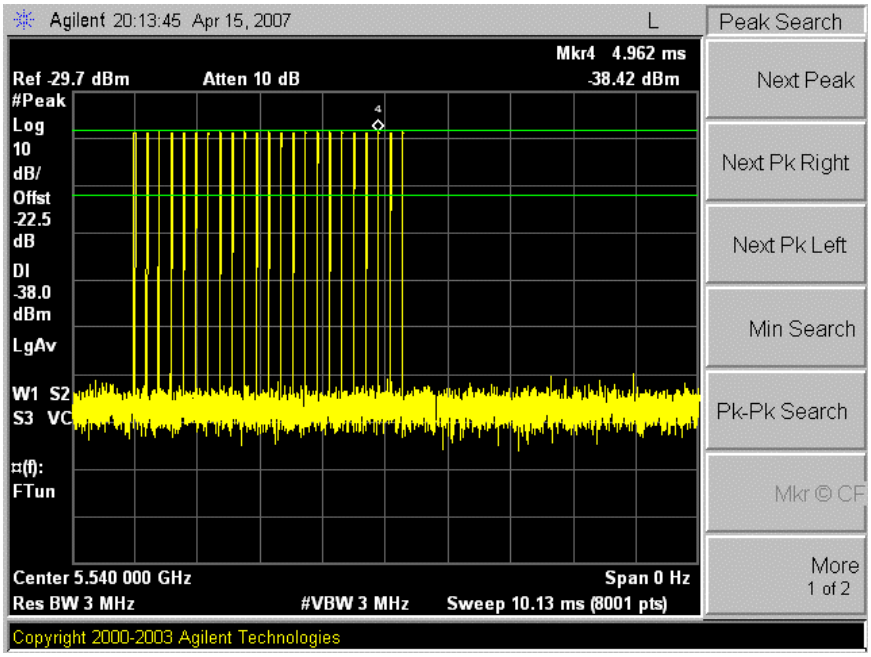
SAMPLE OF RADAR TYPE 2



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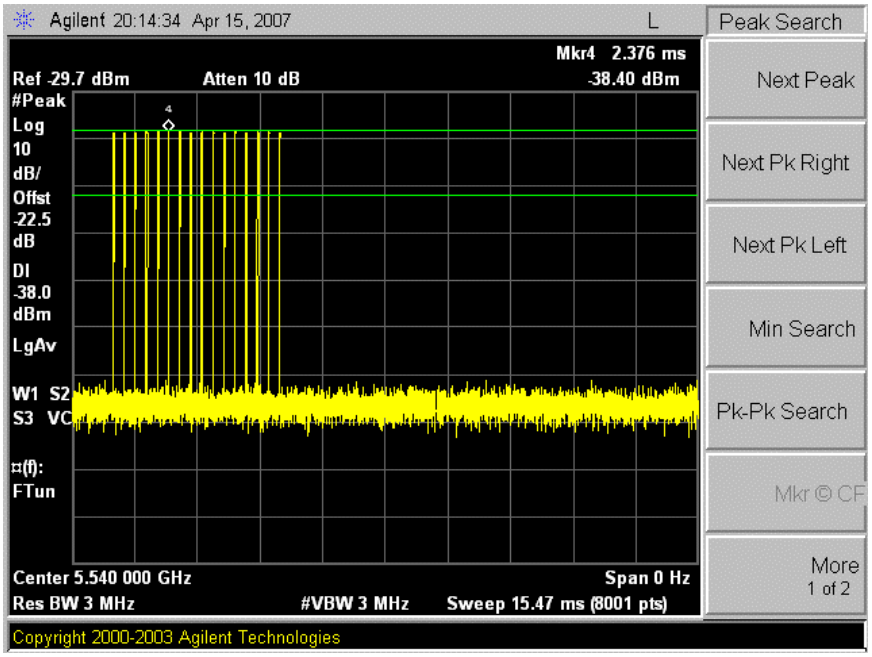
SAMPLE OF RADAR TYPE 3



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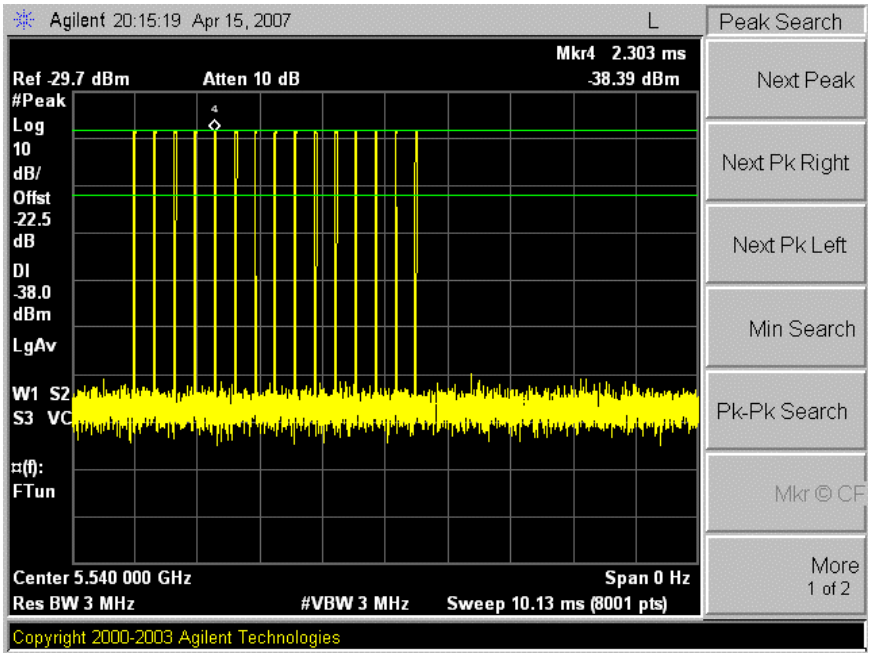
SAMPLE OF RADAR TYPE 4



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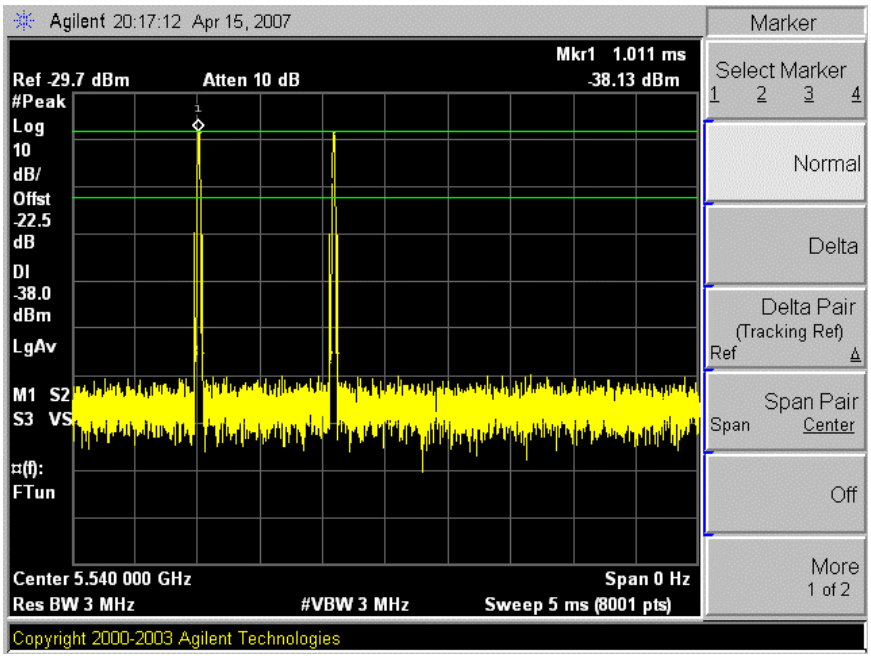
SAMPLE OF SINGLE BURST OF RADAR TYPE 5



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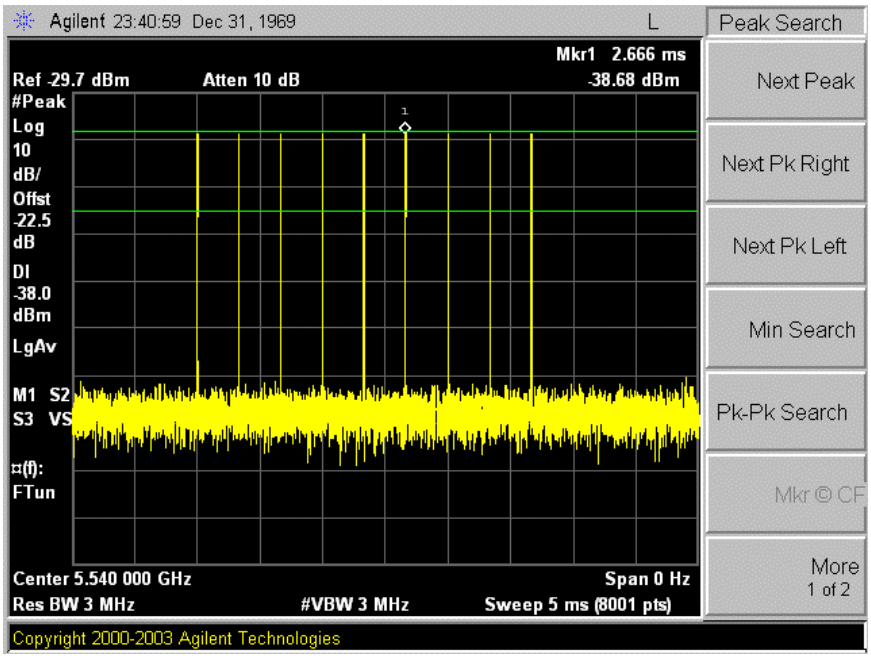
SINGLE BURST OF RADAR TYPE 6



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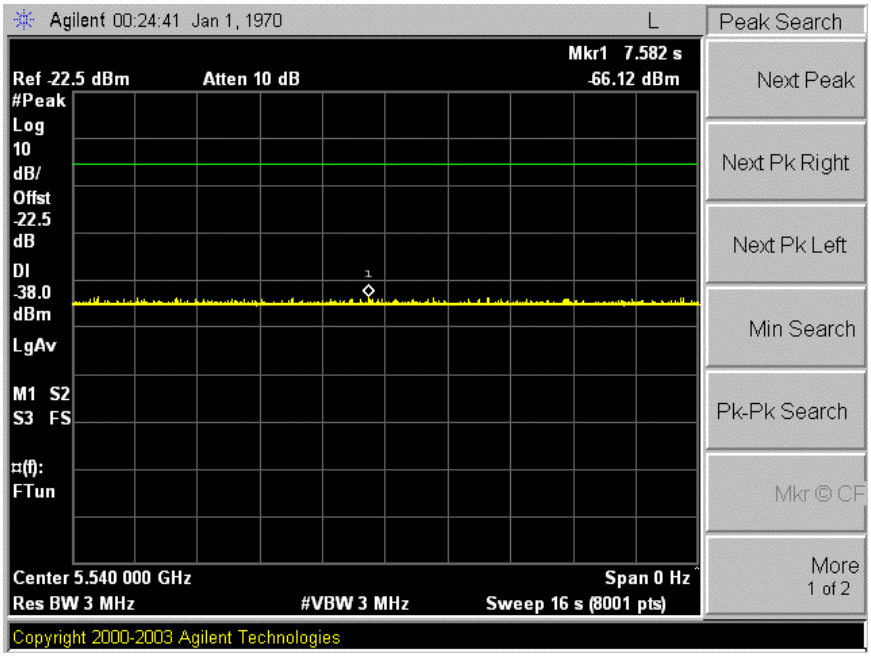
PLOT OF WLAN TRAFFIC FROM MASTER

WLAN TRAFIC



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8.4.3. CHANNEL AVAILABILITY CHECK TIME

TEST PROCEDURE TO DETERMINE INITIAL POWER-UP CYCLE TIME

A link was established on channel, then the EUT was rebooted. The time from the cessation of traffic to the re-initialization of traffic was measured as the time required for the EUT to complete the total power-up cycle. The time to complete the initial power-up period is 60 seconds less than this total power-up time.

TEST PROCEDURE FOR TIMING OF RADAR BURST

With a link established on channel, the EUT was rebooted. A radar signal was triggered within 0 to 6 seconds after the initial power-up period, and transmissions on the channel were monitored on the spectrum analyzer.

The Non-Occupancy list was cleared. With a link established on channel, the EUT was rebooted. A radar signal was triggered within 54 to 60 seconds after the initial power-up period, and transmissions on the channel were monitored on the spectrum analyzer.

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CHANNEL AVAILABILITY CHECK TIME RESULTS

No non-compliance noted:

Time required for EUT to complete the initial power-up cycle (sec)
95.95

If a radar signal is detected during the channel availability check then the PC controlling the EUT displays a message stating that radar was detected.

Timing of Radar Burst	Display on Control Computer	Spectrum Analyzer Display
No Radar Triggered	EUT marks Channel as active	Transmissions begin on channel after completion of the initial power-up cycle and the 60 second CAC
Within 0 to 6 second window	EUT indicates radar detected EUT does not display any radar parameter values	No transmissions on channel
Within 54 to 60 second window	EUT indicates radar detected EUT does not display any radar parameter values	No transmissions on channel

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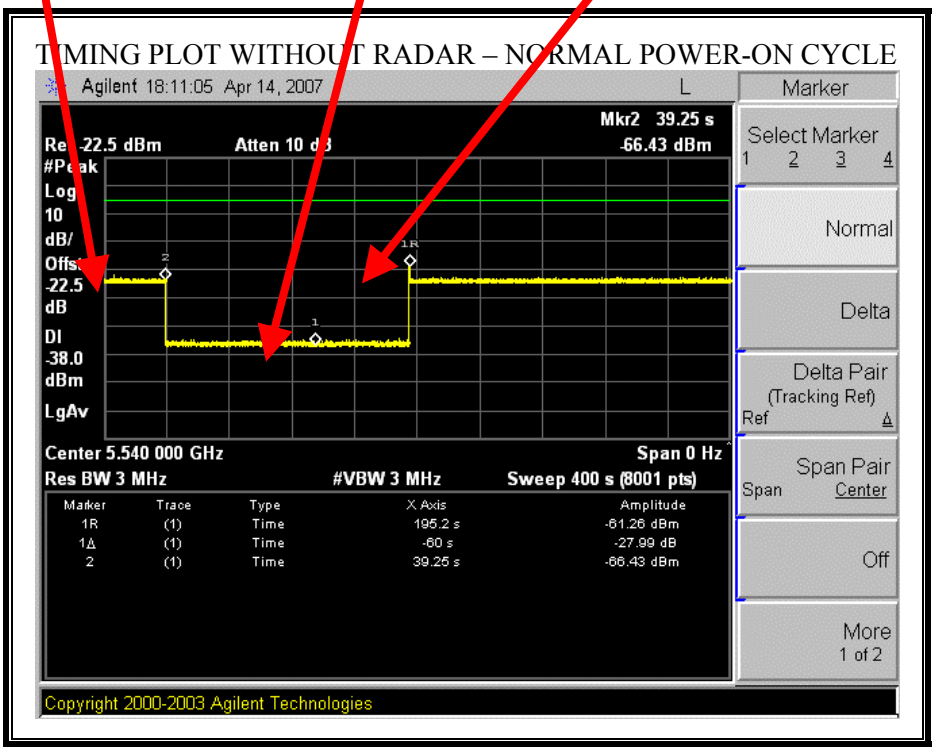
TIMING PLOT WITHOUT RADAR DURING CAC

AP is rebooted
Traffic ceases
Start of Initial Power-up cycle

End of Initial Power-up cycle
Start of CAC

End of CAC
Traffic is Initiated



The initial power-up cycle requires (195.2 – 39.25 – 60) = 95.95 seconds.

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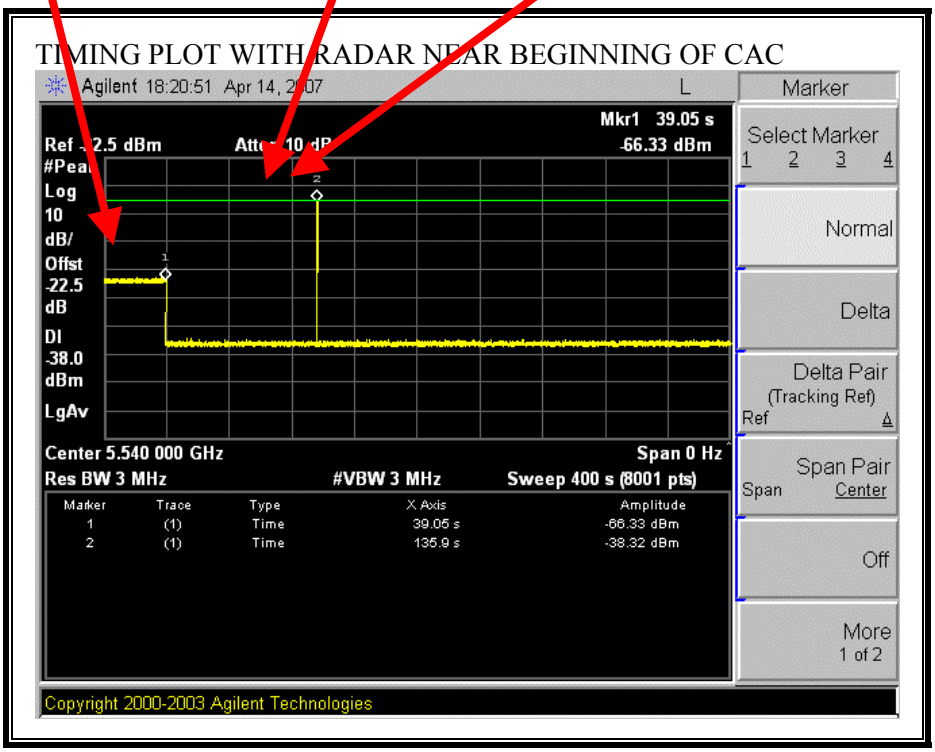
TIMING PLOT WITH RADAR NEAR BEGINNING OF CAC

AP is rebooted
Traffic ceases
Start of Initial Power-up cycle

End of Initial Power-up cycle
Start of CAC

Radar Signal Applied



The radar signal is applied (135.9 – 39.05) = 96.85 seconds after reboot, which is (96.85 – 95.95) = 0.9 seconds after the start of the CAC period.

No EUT transmissions were observed after the radar signal.

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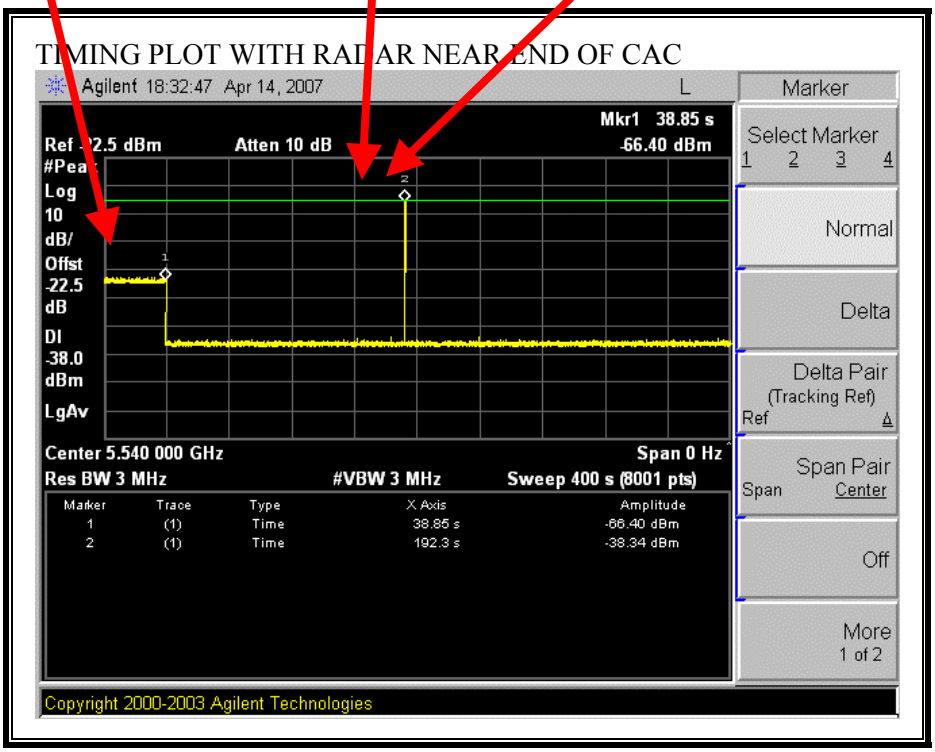
TIMING PLOT WITH RADAR NEAR END OF CAC

AP is rebooted
Traffic ceases
Start of Initial Power-up cycle

End of Initial Power-up cycle
Start of CAC

Radar Signal Applied



The radar signal is applied (192.3 – 38.85) = 153.45 seconds after reboot, which is (153.45 – 95.95) = 57.5 seconds after the start of the CAC period.

No EUT transmissions were observed after the radar signal.

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8.4.4. CHANNEL MOVE TIME AND CHANNEL CLOSING TRANSMISSION TIME

GENERAL REPORTING NOTES

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

SHORT PULSE RADAR REPORTING NOTES

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).

LONG PULSE RADAR REPORTING NOTES

The delta marker is set to 10 seconds after the end of the radar pulse.

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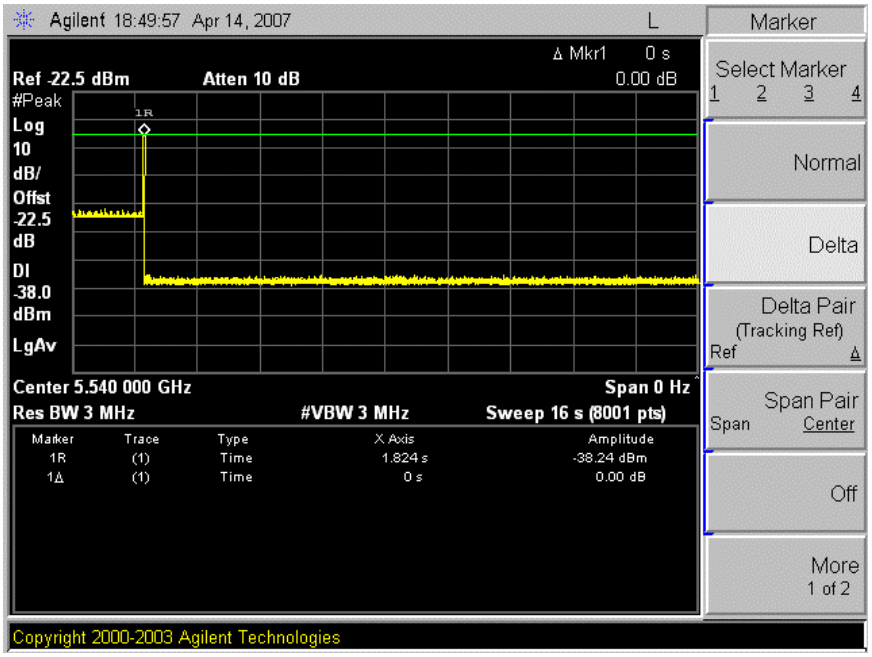
CHANNEL MOVE TIME RESULTS

No non-compliance noted:

Channel Move Time (s)	Limit (s)
0.000	10

MOVE TIME PLOT FOR SHORT PULSE RADAR



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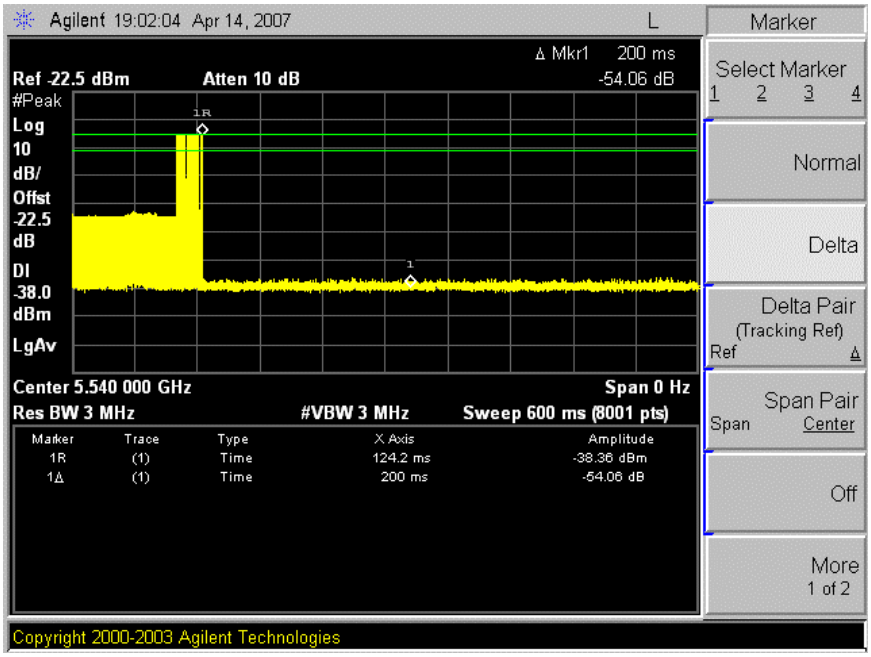
CHANNEL CLOSING TIME RESULTS

CLOSE-UP PLOT OF CLOSING TIME



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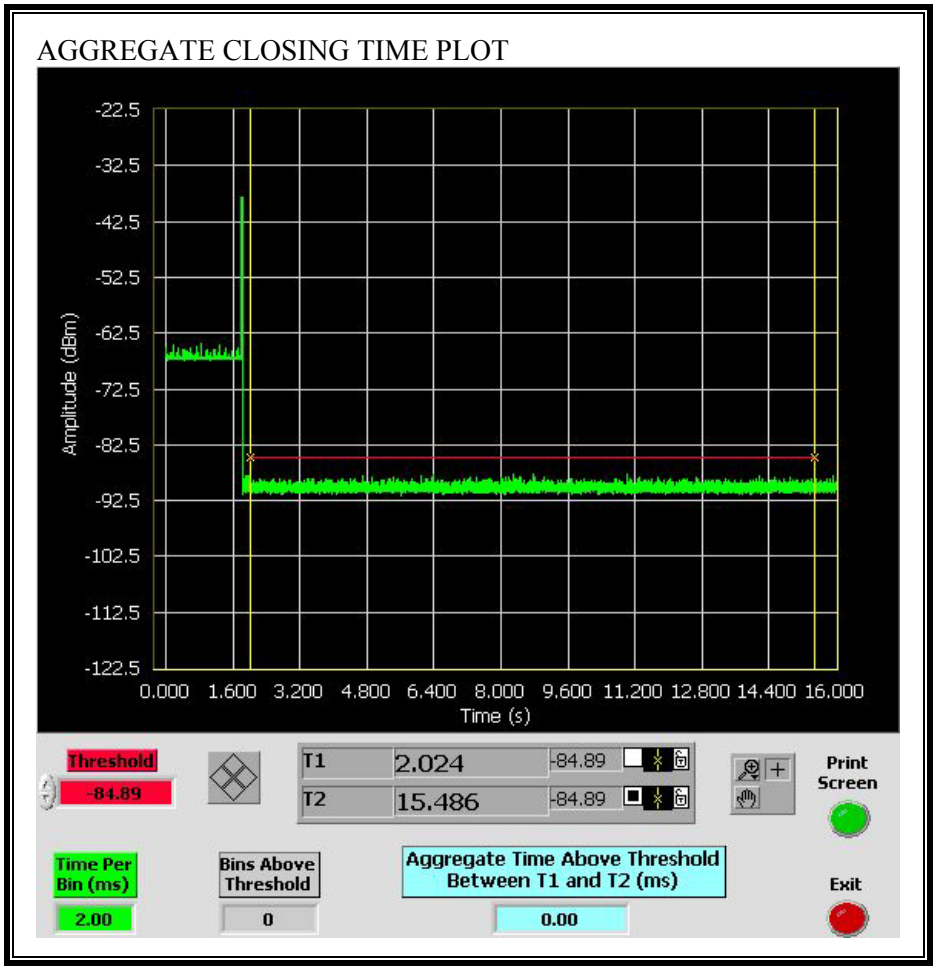
FCC AGGREGATE CHANNEL CLOSING TRANSMISSION TIME RESULTS

No non-compliance noted:

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
0.00	60	60.00

No transmissions are observed during the aggregate monitoring period.

AGGREGATE CLOSING TIME PLOT



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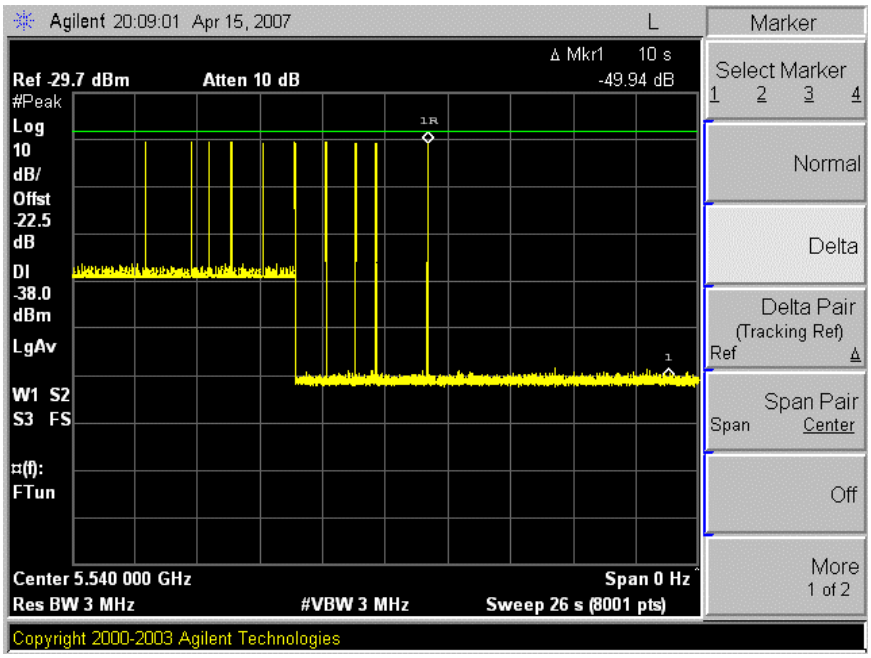
LONG PULSE CHANNEL MOVE TIME RESULTS

No non-compliance noted:

The traffic ceases prior to 10 seconds after the end of the radar waveform.

MOVE TIME PLOT FOR LONG PULSE RADAR



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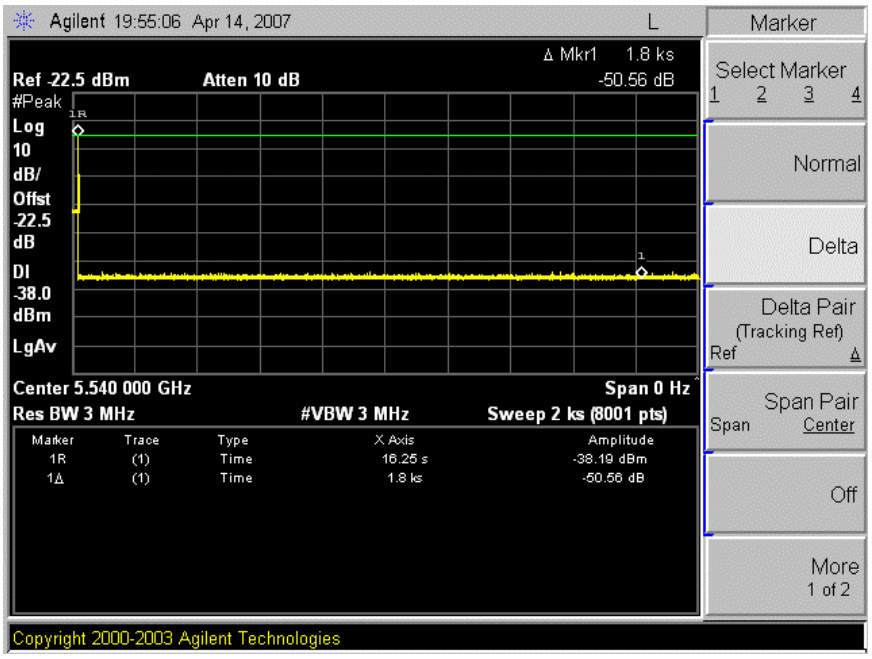
8.4.5. NON-OCCUPANCY PERIOD

RESULTS

No non-compliance noted: No EUT transmissions were observed on the test channel during the 30 minute observation time.

NON-OCCUPANCY PERIOD PLOT



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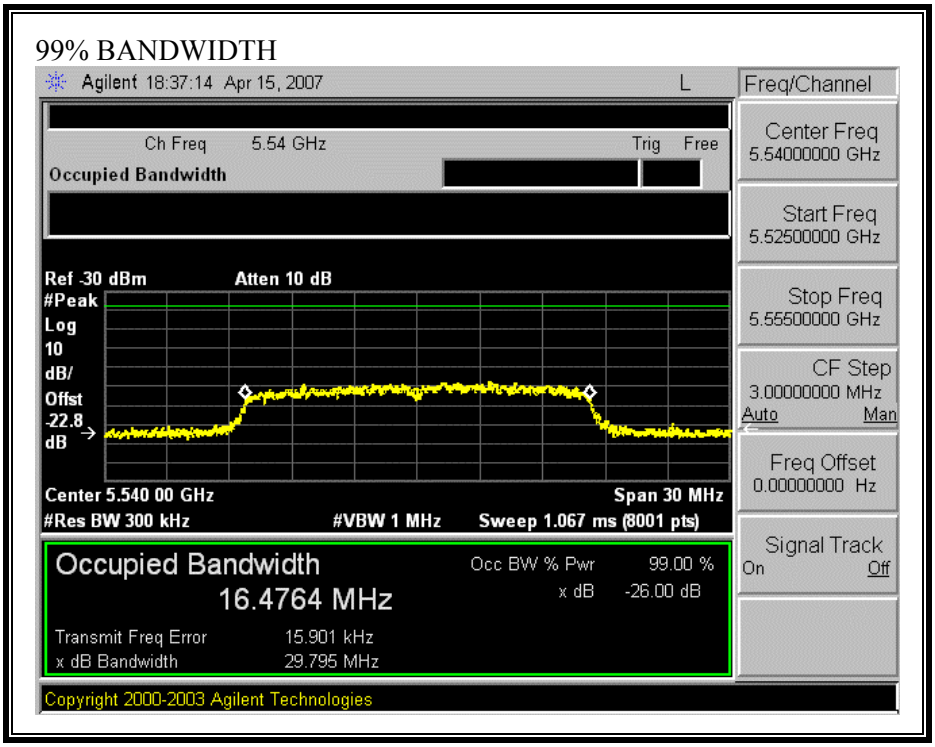
8.4.6. DETECTION BANDWIDTH

REFERENCE PLOT OF 99% POWER BANDWIDTH



RESULTS

No non-compliance noted:

FL (MHz)	FH (MHz)	Detection Bandwidth (MHz)	99% Power Bandwidth (MHz)	Ratio of Detection BW to 99% Power BW (%)	Minimum Limit (%)
5532	5546	14	16.476	85.0	80

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DETECTION BANDWIDTH PROBABILITY

DETECTION BANDWIDTH PROBABILITY RESULTS

Detection Bandwidth Test Results:		Waveform Name: FCC TYPE 1		
Frequency (MHz)	Number of Trials	Number Detected	Detection (%)	Mark
5531	10	6	60.00	
5532	10	10	100.00	FL
5533	10	10	100.00	
5534	10	10	100.00	
5535	10	10	100.00	
5536	10	10	100.00	
5537	10	10	100.00	
5538	10	10	100.00	
5539	10	10	100.00	
5540	10	10	100.00	
5541	10	10	100.00	
5542	10	10	100.00	
5543	10	10	100.00	
5544	10	10	100.00	
5545	10	10	100.00	
5546	10	10	100.00	FH
5547	10	3	30.00	

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8.4.7. IN-SERVICE MONITORING

RESULTS

No non-compliance noted:

Radar Test Summary:				
Signal Type	**Number of Trials**	**Detection (%)**	**Limit (%)**	**Pass/Fail**
FCC TYPE 1	30	83.33	60.00	Pass
FCC TYPE 2	30	100.00	60.00	Pass
FCC TYPE 3	30	100.00	60.00	Pass
FCC TYPE 4	30	96.67	60.00	Pass
Aggregate		95.00	80.00	Pass
FCC TYPE 5	30	100.00	80.00	Pass
FCC TYPE 6	30	100.00	70.00	Pass

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TYPE 1 DETECTION PROBABILITY

Data Sheet for Short Pulse Radar Type 1	
Trial No.	Successful Detection (Yes/No)
1	Yes
2	Yes
3	Yes
4	Yes
5	Yes
6	No
7	Yes
8	Yes
9	Yes
10	Yes
11	Yes
12	Yes
13	Yes
14	No
15	Yes
16	Yes
17	Yes
18	Yes
19	Yes
20	Yes
21	Yes
22	No
23	Yes
24	Yes
25	Yes
26	Yes
27	Yes
28	Yes
29	No
30	No

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TYPE 2 DETECTION PROBABILITY

Data Sheet for Short Pulse Radar Type 2				
Waveform No.	# Pulses per burst	Pulse Width (us)	Pulse repetition Interval (us)	Successful Detection (Yes/No)
2001	23	3.80	198	Yes
2002	25	3.70	174	Yes
2003	29	2.70	219	Yes
2004	29	2.60	209	Yes
2005	28	5.00	210	Yes
2006	27	3.70	159	Yes
2007	28	1.50	170	Yes
2008	27	4.70	226	Yes
2009	25	3.30	158	Yes
2010	29	4.60	188	Yes
2011	25	2.70	151	Yes
2012	25	1.70	191	Yes
2013	29	2.90	180	Yes
2014	23	3.40	220	Yes
2015	25	3.80	227	Yes
2016	26	1.00	224	Yes
2017	29	4.80	188	Yes
2018	27	1.40	226	Yes
2019	29	1.10	188	Yes
2020	25	3.90	187	Yes
2021	25	4.20	200	Yes
2022	27	4.10	229	Yes
2023	25	1.70	188	Yes
2024	23	4.50	201	Yes
2025	28	4.50	156	Yes
2026	23	3.20	152	Yes
2027	28	1.10	205	Yes
2028	25	4.40	165	Yes
2029	25	1.90	228	Yes
2030	29	4.20	181	Yes

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TYPE 3 DETECTION PROBABILITY

Data Sheet for Short Pulse Radar Type 3				
Waveform No.	# Pulses per burst	Pulse Width (us)	Pulse repetition Interval (us)	Successful Detection (Yes/No)
3001	16	6.70	275	Yes
3002	18	8.10	458	Yes
3003	17	7.30	252	Yes
3004	18	5.30	339	Yes
3005	16	9.10	260	Yes
3006	16	7.90	274	Yes
3007	18	8.30	474	Yes
3008	18	8.60	449	Yes
3009	16	9.60	455	Yes
3010	17	6.00	255	Yes
3011	18	5.50	284	Yes
3012	17	9.90	426	Yes
3013	17	7.60	285	Yes
3014	17	6.60	378	Yes
3015	18	8.90	259	Yes
3016	17	9.50	492	Yes
3017	17	8.00	335	Yes
3018	17	8.70	320	Yes
3019	18	6.20	255	Yes
3020	18	8.90	474	Yes
3021	17	6.10	500	Yes
3022	17	7.70	295	Yes
3023	16	5.20	259	Yes
3024	18	6.10	393	Yes
3025	18	7.30	434	Yes
3026	16	8.90	446	Yes
3027	17	7.60	457	Yes
3028	18	8.00	440	Yes
3029	17	9.90	427	Yes
3030	17	10.00	290	Yes

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TYPE 4 DETECTION PROBABILITY

Data Sheet for Short Pulse Radar Type 4				
Waveform No.	# Pulses per burst	Pulse Width (us)	Pulse repetition Interval (us)	Successful Detection (Yes/No)
4001	15	18.00	326	Yes
4002	16	18.70	492	Yes
4003	16	14.70	346	Yes
4004	16	14.70	363	Yes
4005	14	19.60	471	Yes
4006	13	12.00	252	Yes
4007	15	19.80	447	Yes
4008	15	19.50	356	Yes
4009	16	17.00	358	Yes
4010	13	13.50	378	Yes
4011	16	10.60	488	Yes
4012	12	14.50	303	No
4013	15	19.60	272	Yes
4014	12	16.20	425	Yes
4015	15	20.00	388	Yes
4016	13	16.80	414	Yes
4017	15	17.40	387	Yes
4018	15	19.00	356	Yes
4019	13	14.50	373	Yes
4020	13	15.20	398	Yes
4021	14	16.70	406	Yes
4022	15	10.80	358	Yes
4023	13	15.10	322	Yes
4024	16	17.80	448	Yes
4025	14	16.50	260	Yes
4026	15	11.60	406	Yes
4027	15	11.10	409	Yes
4028	13	11.30	305	Yes
4029	12	13.70	346	Yes
4030	12	16.50	302	Yes

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TYPE 5 DETECTION PROBABILITY

Data Sheet for Long Pulse Radar Type 5	
Waveform No.	Successful Detection (Yes/No)
5001	Yes
5002	Yes
5003	Yes
5004	Yes
5005	Yes
5006	Yes
5007	Yes
5008	Yes
5009	Yes
5010	Yes
5011	Yes
5012	Yes
5013	Yes
5014	Yes
5015	Yes
5016	Yes
5017	Yes
5018	Yes
5019	Yes
5020	Yes
5021	Yes
5022	Yes
5023	Yes
5024	Yes
5025	Yes
5026	Yes
5027	Yes
5028	Yes
5029	Yes
5030	Yes

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TYPE 5 WAVEFORM PARAMETERS

Waveform Parameters for Long Pulse Radar Test Signal 5						
Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	30
Waveform Num = 1; Num of Bursts = 10; Burst Interval (us) = 1200000.0; Total pulses in waveform = 21						
1	2	95	15	1062	---	209629
2	1	75	16	---	---	1888018
3	2	65	17	1488	---	714633
4	2	55	12	1831	---	901662
5	1	100	20	---	---	1339170
6	3	65	17	1647	1810	1346695
7	2	90	10	1976	---	1286878
8	2	80	18	1100	---	1224965
9	3	85	18	1308	1949	817189
10	3	75	13	1849	1304	2173161
Waveform Num = 2; Num of Bursts = 14; Burst Interval (us) = 857143.0; Total pulses in waveform = 30						
1	3	75	6	1474	1469	185929
2	1	90	13	---	---	849854
3	1	80	20	---	---	1129966
4	1	80	5	---	---	654169
5	3	55	18	1655	1152	1278766
6	2	55	13	1737	---	467899
7	3	90	11	1058	1779	1343354
8	3	95	11	1145	1799	735380
9	1	80	12	---	---	873938
10	2	55	17	1923	---	330441
11	3	70	19	1272	1708	1351083
12	1	90	12	---	---	643018
13	3	100	20	1377	1706	1122122
14	3	70	19	1538	1294	174431
Waveform Num = 3; Num of Bursts = 17; Burst Interval (us) = 705882.0; Total pulses in waveform = 34						
1	3	80	6	1295	1897	397169
2	2	60	8	1949	---	442379
3	2	80	6	1008	---	1145124
4	3	100	9	1001	1832	456766
5	2	90	7	1005	---	375317
6	2	100	7	1250	---	1246479
7	2	80	5	1863	---	735860
8	2	85	10	1947	---	533366
9	3	55	19	1280	1221	949316
10	1	90	18	---	---	626151
11	1	85	15	---	---	164435
12	3	100	13	1957	1065	832690
13	2	85	17	1015	---	853851
14	1	90	20	---	---	619377
15	1	55	20	---	---	928143
16	1	65	20	---	---	376013
17	3	70	19	1662	1710	608854

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	30
Waveform Num = 4; Num of Bursts = 13; Burst Interval (us) = 923077.0; Total pulses in waveform = 25						
1	3	60	12	1894	1691	549849
2	1	75	12	---	---	436197
3	3	90	18	1631	1266	1420860
4	2	85	15	1267	---	482424
5	2	80	15	1180	---	1414139
6	2	60	15	1048	---	1183598
7	3	95	19	1440	1951	175761
8	2	95	17	1176	---	993891
9	2	80	16	1605	---	751304
10	1	50	16	---	---	1230165
11	1	55	11	---	---	787893
12	1	90	19	---	---	1456650
13	2	90	18	1186	---	661297
Waveform Num = 5; Num of Bursts = 17; Burst Interval (us) = 705882.0; Total pulses in waveform = 36						
1	1	75	20	---	---	688663
2	2	75	6	1655	---	497729
3	3	80	7	1994	1226	327625
4	3	80	15	1499	1200	1025988
5	3	85	20	1218	1410	735210
6	2	100	11	1921	---	315536
7	1	70	17	---	---	1134971
8	2	95	19	1236	---	365820
9	3	85	13	1707	1227	728342
10	2	75	19	1912	---	578395
11	2	75	11	1177	---	1161260
12	2	90	16	1763	---	685254
13	1	100	7	---	---	599746
14	1	85	7	---	---	883121
15	3	80	18	1477	1929	420776
16	2	75	6	1346	---	788497
17	3	55	6	1764	1500	965757
Waveform Num = 6; Num of Bursts = 15; Burst Interval (us) = 800000.0; Total pulses in waveform = 25						
1	1	85	6	---	---	430377
2	2	55	13	1414	---	562272
3	2	70	18	1743	---	760662
4	1	70	20	---	---	1111691
5	2	90	9	1978	---	651398
6	1	65	11	---	---	904170
7	2	60	11	1572	---	921729
8	2	100	15	1644	---	584889
9	2	80	14	1606	---	464654
10	2	75	5	1980	---	800528
11	1	50	7	---	---	1557982
12	3	95	7	1888	1104	318875
13	2	75	16	1103	---	526411
14	1	90	14	---	---	1226034
15	1	70	18	---	---	770180

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	30
Waveform Num = 7; Num of Bursts = 11; Burst Interval (us) = 1090909.0; Total pulses in waveform = 20						
1	1	55	14	---	---	208682
2	1	100	8	---	---	1145960
3	2	65	18	1779	---	1812268
4	3	65	12	1427	1923	817076
5	1	100	18	---	---	936403
6	2	75	11	1132	---	1521230
7	2	100	18	1073	---	392142
8	2	65	18	1248	---	1520044
9	3	80	5	1353	1637	595480
10	2	100	13	1864	---	1549395
11	1	100	20	---	---	1004097
Waveform Num = 8; Num of Bursts = 8; Burst Interval (us) = 1500000.0; Total pulses in waveform = 17						
1	3	50	6	1004	1777	153668
2	1	55	5	---	---	2789934
3	3	80	20	1040	1217	262902
4	1	90	7	---	---	2432994
5	3	85	16	1480	1085	704255
6	2	85	18	1593	---	2541615
7	3	100	7	1362	1619	383815
8	1	100	18	---	---	2141153
Waveform Num = 9; Num of Bursts = 18; Burst Interval (us) = 666667.0; Total pulses in waveform = 33						
1	1	90	20	---	---	523506
2	1	70	19	---	---	499904
3	1	90	13	---	---	745566
4	2	80	8	1565	---	392809
5	3	50	16	1197	1517	918012
6	1	75	5	---	---	477787
7	1	70	6	---	---	661164
8	2	85	12	1581	---	648933
9	2	90	8	1046	---	1039745
10	2	70	5	1756	---	377752
11	3	60	17	1829	1890	650055
12	2	50	18	1937	---	455838
13	2	80	18	1314	---	860897
14	2	60	5	1710	---	598342
15	3	50	12	1670	1823	678125
16	1	55	16	---	---	662990
17	1	85	5	---	---	535929
18	3	60	15	1806	1165	670603

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	30
Waveform Num = 10; Num of Bursts = 19; Burst Interval (us) = 631579.0; Total pulses in waveform = 36						
1	1	100	11	---	---	574587
2	1	100	11	---	---	481509
3	2	90	10	1987	---	520888
4	2	55	17	1146	---	546351
5	3	90	7	1604	1889	661118
6	1	85	9	---	---	739591
7	2	60	12	1319	---	626415
8	1	100	13	---	---	653057
9	2	75	17	1875	---	376521
10	1	100	18	---	---	577565
11	2	50	12	1576	---	1002030
12	3	65	16	1122	1615	279437
13	3	80	11	1583	1417	574374
14	2	100	14	1090	---	668801
15	1	90	7	---	---	1124553
16	1	90	18	---	---	384265
17	3	65	9	1841	1820	769473
18	2	75	8	1741	---	588077
19	3	60	12	1320	1849	603254
Waveform Num = 11; Num of Bursts = 15; Burst Interval (us) = 800000.0; Total pulses in waveform = 29						
1	1	90	16	---	---	555282
2	1	50	14	---	---	692408
3	1	75	15	---	---	821033
4	2	60	15	1218	---	475686
5	1	85	17	---	---	1001120
6	3	55	14	1340	1359	1110169
7	3	75	14	1046	1280	429464
8	3	50	20	1201	1428	558349
9	2	80	18	1575	---	1122362
10	1	50	6	---	---	480220
11	1	90	16	---	---	1043233
12	3	70	5	1771	1195	536988
13	1	65	8	---	---	750805
14	3	65	11	1186	1908	799861
15	3	70	12	1963	1460	1132996

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	30
Waveform Num = 12; Num of Bursts = 14; Burst Interval (us) = 857143.0; Total pulses in waveform = 23						
1	3	95	13	1278	1959	129759
2	3	60	5	1358	1719	1084183
3	1	100	7	---	---	646457
4	3	60	17	1896	1925	739604
5	1	55	13	---	---	1544072
6	2	80	15	1677	---	515869
7	2	95	10	1703	---	1145054
8	1	100	8	---	---	914776
9	1	90	5	---	---	625549
10	2	90	8	1148	---	511967
11	1	50	8	---	---	1465538
12	1	70	9	---	---	394233
13	1	55	7	---	---	1096767
14	1	55	18	---	---	692129
Waveform Num = 13; Num of Bursts = 9; Burst Interval (us) = 1333333.0; Total pulses in waveform = 19						
1	2	70	20	1927	---	1090891
2	3	50	10	1665	1780	1110984
3	2	65	10	1392	---	1312274
4	3	65	8	1637	1930	1119004
5	1	100	9	---	---	1446288
6	2	60	11	1946	---	913649
7	3	85	7	1854	1711	1884862
8	2	100	19	1932	---	1182641
9	1	75	20	---	---	628465
Waveform Num = 14; Num of Bursts = 13; Burst Interval (us) = 923077.0; Total pulses in waveform = 25						
1	3	55	17	1174	1922	333802
2	1	65	14	---	---	918403
3	1	70	8	---	---	1388251
4	3	60	15	1927	1086	147548
5	2	50	7	1398	---	1780781
6	2	60	19	1624	---	333689
7	1	90	20	---	---	630335
8	2	95	7	1435	---	1106692
9	2	70	5	1990	---	1514323
10	1	65	13	---	---	897793
11	3	60	12	1589	1124	612268
12	3	70	10	1767	1266	468349
13	1	70	18	---	---	1747318

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	30
Waveform Num = 15; Num of Bursts = 11; Burst Interval (us) = 1090909.0; Total pulses in waveform = 22						
1	1	70	19	---	---	603689
2	1	60	18	---	---	906121
3	3	85	5	1878	1682	1049547
4	3	55	8	1887	1100	1677855
5	1	70	5	---	---	1148600
6	2	70	9	1678	---	1076936
7	3	65	18	1268	1496	1110811
8	2	50	8	1330	---	885199
9	3	95	20	1182	1070	792765
10	1	100	15	---	---	782088
11	2	50	6	1474	---	1562567
Waveform Num = 16; Num of Bursts = 13; Burst Interval (us) = 923077.0; Total pulses in waveform = 21						
1	1	55	20	---	---	136221
2	3	60	15	1609	1810	1096527
3	1	65	15	---	---	1216876
4	3	95	12	1126	1582	1169598
5	1	55	16	---	---	695648
6	2	75	16	1244	---	1000375
7	2	90	14	1922	---	249934
8	2	70	13	1187	---	1407660
9	1	85	20	---	---	894037
10	1	85	12	---	---	823060
11	1	90	5	---	---	1268131
12	2	85	12	1432	---	906880
13	1	95	11	---	---	993766
Waveform Num = 17; Num of Bursts = 14; Burst Interval (us) = 857143.0; Total pulses in waveform = 30						
1	2	80	20	1513	---	389976
2	3	50	17	1375	1139	738229
3	2	55	7	1546	---	826941
4	2	55	12	1883	---	1354867
5	3	90	11	1202	1851	320109
6	3	55	12	1044	1427	1212223
7	2	90	18	1549	---	354352
8	3	95	12	1197	1733	1305299
9	1	90	7	---	---	576661
10	1	90	6	---	---	1086120
11	2	95	12	1613	---	699787
12	3	95	9	1990	1674	1319815
13	1	95	15	---	---	197273
14	2	100	18	1321	---	779705

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	30
Waveform Num = 18; Num of Bursts = 9; Burst Interval (us) = 1333333.0; Total pulses in waveform = 18						
1	2	70	8	1410	---	1081189
2	1	95	7	---	---	797091
3	2	50	9	1457	---	1738846
4	3	50	11	1344	1714	432791
5	2	65	13	1518	---	2396932
6	1	75	11	---	---	1486504
7	1	90	12	---	---	482653
8	3	85	7	1974	1676	1879325
9	3	100	9	1849	1758	1428388
Waveform Num = 19; Num of Bursts = 9; Burst Interval (us) = 1333333.0; Total pulses in waveform = 19						
1	3	70	13	1182	1300	137984
2	3	100	11	1762	1859	2481728
3	2	85	20	1265	---	758922
4	2	50	8	1880	---	644162
5	1	90	13	---	---	1754760
6	2	50	12	1388	---	887736
7	1	55	19	---	---	1654701
8	2	80	10	1953	---	2320773
9	3	75	6	1393	1116	779153
Waveform Num = 20; Num of Bursts = 15; Burst Interval (us) = 800000.0; Total pulses in waveform = 33						
1	2	75	8	1447	---	596790
2	1	85	10	---	---	748641
3	3	95	15	1612	1346	279201
4	2	100	10	1507	---	1108745
5	1	55	17	---	---	496553
6	2	80	12	1119	---	887390
7	3	85	19	1845	1553	1234421
8	3	50	12	1063	1743	355049
9	2	65	10	1827	---	1433170
10	2	90	9	1109	---	802387
11	1	70	19	---	---	477711
12	3	65	15	1955	1990	679296
13	3	65	6	1600	1547	1023123
14	2	70	11	1089	---	520260
15	3	65	18	1517	1513	1133713

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	30
Waveform Num = 21; Num of Bursts = 20; Burst Interval (us) = 600000.0; Total pulses in waveform = 48						
1	3	85	19	1787	1046	445886
2	3	60	20	1461	1387	718212
3	2	80	9	1805	---	175955
4	3	65	16	1988	1875	861634
5	2	80	11	1620	---	718706
6	3	50	20	1436	1609	195570
7	2	70	10	1172	---	613592
8	2	95	10	1138	---	851721
9	3	95	18	1882	1743	379636
10	2	65	16	1520	---	462820
11	2	60	12	1282	---	622683
12	3	100	8	1409	1530	1073443
13	3	85	18	1847	1203	325821
14	3	85	15	1510	1054	752091
15	2	85	14	1403	---	344410
16	2	95	20	1502	---	988513
17	3	50	20	1697	1231	521456
18	1	100	5	---	---	179398
19	3	70	6	1344	1776	731758
20	1	60	18	---	---	780841
Waveform Num = 22; Num of Bursts = 19; Burst Interval (us) = 631579.0; Total pulses in waveform = 43						
1	3	80	20	1681	1190	345843
2	2	70	10	1718	---	696830
3	3	100	11	1526	1190	228507
4	3	85	12	1838	1054	788907
5	3	55	17	1298	1531	656655
6	2	95	17	1440	---	469043
7	2	75	14	1059	---	1015206
8	2	65	13	1388	---	248238
9	2	100	12	1050	---	1072356
10	3	50	12	1957	1166	539773
11	3	100	13	1091	1992	385253
12	1	60	7	---	---	836828
13	1	60	14	---	---	396166
14	3	60	9	1422	1051	852295
15	3	70	8	1023	1400	429262
16	1	95	18	---	---	664068
17	2	95	5	1552	---	964183
18	2	100	10	1360	---	137750
19	2	50	16	1031	---	1050136

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	30
Waveform Num = 23; Num of Bursts = 15; Burst Interval (us) = 800000.0; Total pulses in waveform = 25						
1	2	100	18	1154	---	598230
2	2	100	20	1331	---	599715
3	1	65	19	---	---	841058
4	1	70	8	---	---	852023
5	2	80	16	1418	---	1049530
6	2	50	14	1035	---	528785
7	1	60	18	---	---	434413
8	3	60	13	1216	1287	1385787
9	2	80	18	1575	---	699847
10	1	75	10	---	---	669506
11	2	55	16	1516	---	799667
12	2	55	18	1588	---	638575
13	2	100	8	1432	---	968149
14	1	90	8	---	---	1020935
15	1	70	5	---	---	557254
Waveform Num = 24; Num of Bursts = 10; Burst Interval (us) = 1200000.0; Total pulses in waveform = 26						
1	2	90	7	1749	---	926605
2	3	65	10	1889	1423	1254535
3	3	90	13	1076	1264	539716
4	2	60	20	1917	---	1028426
5	2	100	8	1531	---	1597774
6	2	100	20	1090	---	1378516
7	3	50	11	1152	1406	1531548
8	3	60	10	1648	1734	928116
9	3	70	19	1355	1986	462867
10	3	85	20	1883	1135	2223360
Waveform Num = 25; Num of Bursts = 8; Burst Interval (us) = 1500000.0; Total pulses in waveform = 13						
1	1	90	15	---	---	103002
2	1	75	12	---	---	1545764
3	3	65	7	1166	1270	1689926
4	1	90	10	---	---	1662395
5	1	85	5	---	---	1524712
6	2	70	9	1287	---	1055756
7	3	80	11	1375	1309	2715870
8	1	80	16	---	---	1457137

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	30
Waveform Num = 26; Num of Bursts = 17; Burst Interval (us) = 705882.0; Total pulses in waveform = 30						
1	3	60	10	1339	1239	643216
2	2	50	12	1901	---	576327
3	1	50	12	---	---	646395
4	2	80	6	1772	---	885187
5	2	95	12	1584	---	571439
6	1	65	19	---	---	452833
7	1	90	9	---	---	980250
8	3	50	10	1280	1639	343295
9	1	80	18	---	---	741748
10	2	65	14	1192	---	711664
11	1	75	6	---	---	958349
12	2	65	18	1664	---	871320
13	1	65	5	---	---	238124
14	1	80	12	---	---	1106592
15	2	95	6	1832	---	682429
16	3	75	5	1485	1093	177259
17	2	70	6	1856	---	1255793
Waveform Num = 27; Num of Bursts = 20; Burst Interval (us) = 600000.0; Total pulses in waveform = 42						
1	3	90	5	1283	1163	326640
2	3	75	18	1058	1106	362664
3	3	85	14	1512	1569	802582
4	1	65	18	---	---	551628
5	2	95	15	1534	---	636380
6	3	75	17	1901	1225	452265
7	1	55	19	---	---	633250
8	1	70	15	---	---	876673
9	3	70	17	1347	1831	465542
10	1	90	7	---	---	341433
11	2	65	20	1183	---	826352
12	3	60	18	1704	1244	562023
13	3	95	9	1843	1818	401881
14	1	55	19	---	---	709711
15	3	80	11	1691	1226	810884
16	1	60	8	---	---	654224
17	1	100	17	---	---	680481
18	2	90	7	1865	---	626242
19	2	95	10	1111	---	473251
20	3	70	12	1879	1171	504003
Waveform Num = 28; Num of Bursts = 9; Burst Interval (us) = 1333333.0; Total pulses in waveform = 17						
1	3	50	7	1684	1082	835280
2	2	100	16	1500	---	1593637
3	1	95	13	---	---	1312176
4	1	85	15	---	---	1053480
5	1	65	12	---	---	625657
6	3	90	17	1667	1472	2161709
7	1	90	10	---	---	592492
8	3	100	14	1762	1734	2106586
9	2	90	16	1648	---	485804

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Burst #	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1 to 2 Pri (usec)	Pulse 2 to 3 Pri (usec)	30
Waveform Num = 29; Num of Bursts = 9; Burst Interval (us) = 1333333.0; Total pulses in waveform = 18						
1	3	50	14	1084	1692	223870
2	1	75	9	---	---	2046312
3	2	60	9	1476	---	573036
4	2	60	11	1408	---	1409233
5	3	50	7	1926	1430	1644004
6	3	75	10	1444	1834	1475336
7	1	50	7	---	---	717036
8	2	95	6	1517	---	2364606
9	1	70	7	---	---	929317
Waveform Num = 30; Num of Bursts = 13; Burst Interval (us) = 923077.0; Total pulses in waveform = 26						
1	2	65	15	1355	---	627598
2	3	55	18	1078	1595	1091200
3	3	55	11	1195	1577	214371
4	1	65	5	---	---	1039437
5	1	55	19	---	---	984926
6	1	90	20	---	---	1253331
7	3	75	5	1996	1226	350861
8	1	85	16	---	---	1493741
9	1	55	5	---	---	347218
10	1	85	6	---	---	1721775
11	3	80	18	1840	1332	812558
12	3	90	10	1165	1562	264083
13	3	100	17	1362	1930	1016617

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TYPE 6 DETECTION PROBABILITY

Data Sheet for Hopping Signal				
Trial No.	Starting Index within NTIA August 2005 Sequence	Signal Generator Frequency (MHz)	Hops within Detection BW	Successful Detection (Yes/No)
1	312	5532	2	Yes
2	787	5533	6	Yes
3	1262	5534	5	Yes
4	1737	5535	8	Yes
5	2212	5536	1	Yes
6	2687	5537	2	Yes
7	3162	5538	1	Yes
8	3637	5539	7	Yes
9	4587	5540	4	Yes
10	5062	5541	1	Yes
11	5537	5542	3	Yes
12	6012	5543	3	Yes
13	6487	5544	6	Yes
14	6962	5545	6	Yes
15	7437	5546	5	Yes
16	7912	5532	4	Yes
17	8387	5533	3	Yes
18	8862	5534	4	Yes
19	9337	5535	6	Yes
20	10287	5536	5	Yes
21	10762	5537	4	Yes
22	11237	5538	4	Yes
23	11712	5539	2	Yes
24	12187	5540	3	Yes
25	12662	5541	4	Yes
26	13137	5542	1	Yes
27	13612	5543	3	Yes
28	14087	5544	5	Yes
29	14562	5545	2	Yes
30	15037	5546	2	Yes

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8.5. RESULTS FOR SLAVE CONFIGURATION

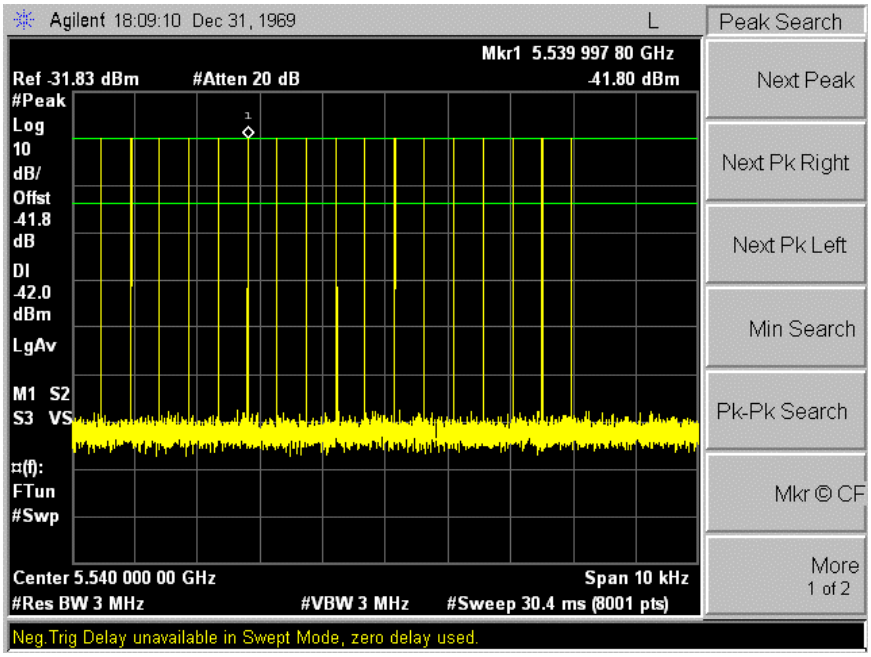
8.5.1. TEST CHANNEL AND METHOD

All tests were performed at a channel center frequency of 5540 MHz. Measurements were performed using conducted test methods. The EUT was associated with the Master device configured with a –42 dBm threshold.

8.5.2. PLOTS OF RADAR WAVEFORM, AND WLAN TRAFFIC

PLOT OF RADAR WAVEFORMS

SHORT PULSE RADAR TYPE 1



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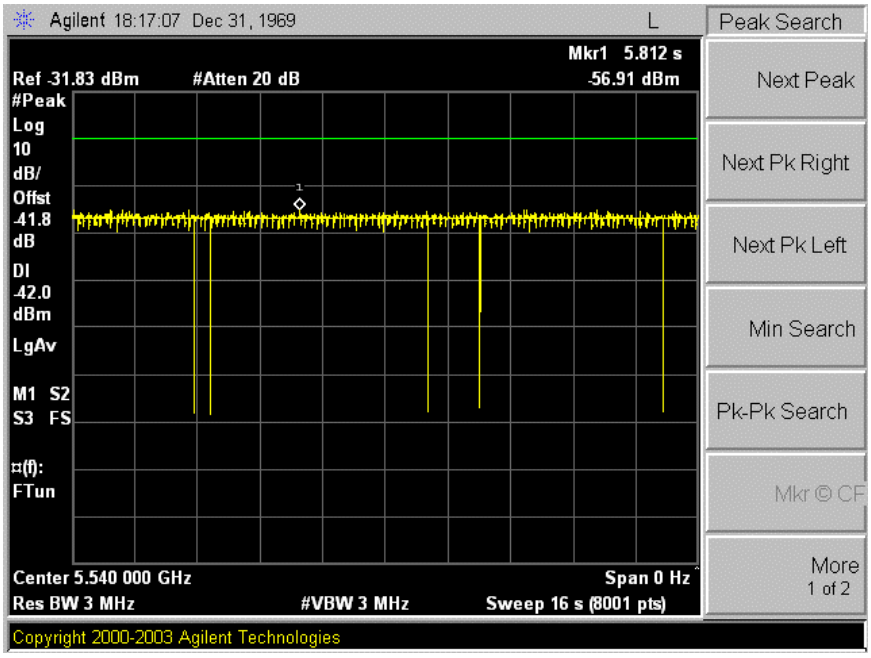
PLOT OF WLAN TRAFFIC FROM SLAVE

WLAN TRAFIC



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8.5.3. SLAVE DEVICE CONFIGURATION - CHANNEL MOVE TIME AND CHANNEL CLOSING TRANSMISSION 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).

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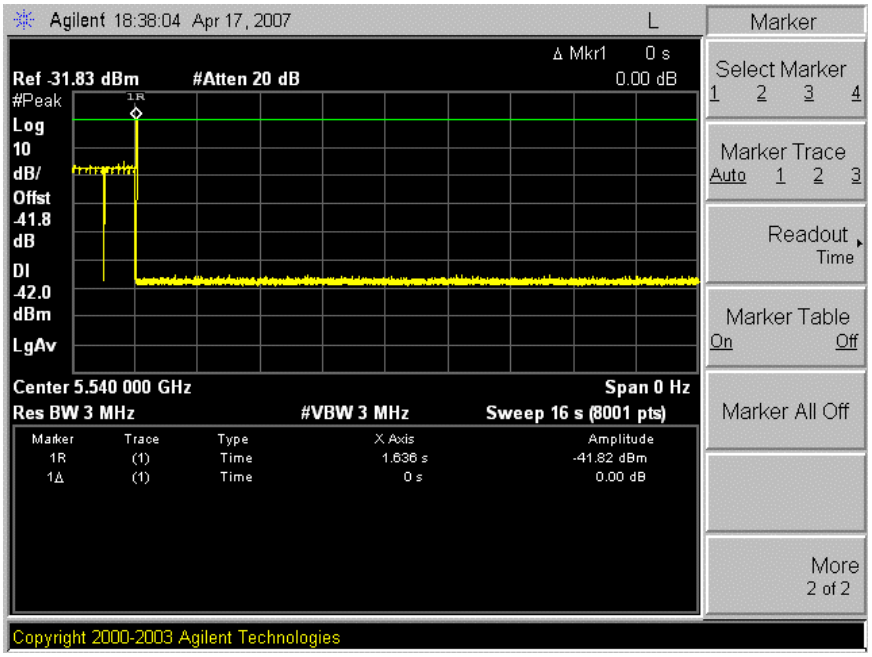
CHANNEL MOVE TIME RESULTS

No non-compliance noted:

Channel Move Time (s)	Limit (s)
0.000	10

MOVE TIME PLOT



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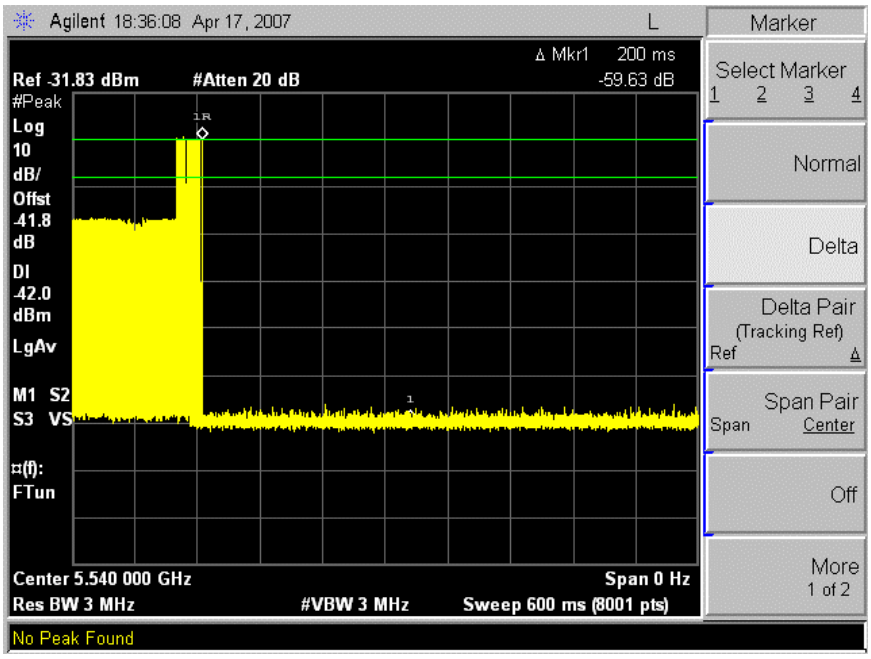
CHANNEL CLOSING TIME RESULTS

CLOSING TIME PLOT



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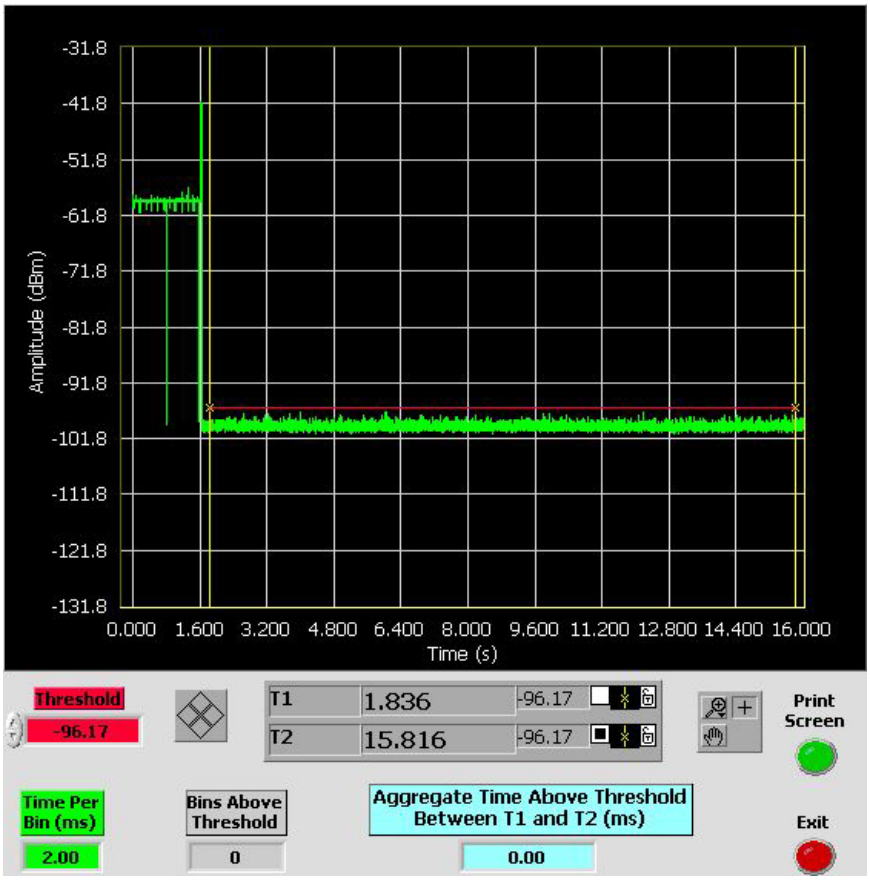
FCC AGGREGATE CHANNEL CLOSING TRANSMISSION TIME RESULTS

No non-compliance noted:

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
0.00	60	60.00

No transmissions are observed during the aggregate monitoring period.

FCC AGGREGATE CLOSING TIME PLOT



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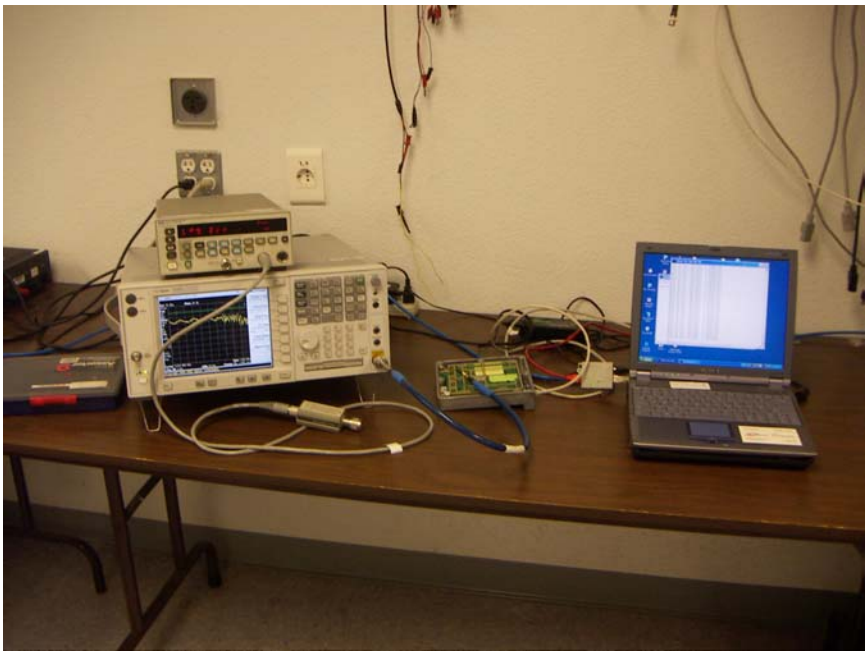
9. SETUP PHOTOS

ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP

ANTENNA PORT CONDUCTED PHOTO



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RADIATED RF MEASUREMENT SETUP:

33 dBi Dish Antenna:

RADIATED FRONT PHOTO

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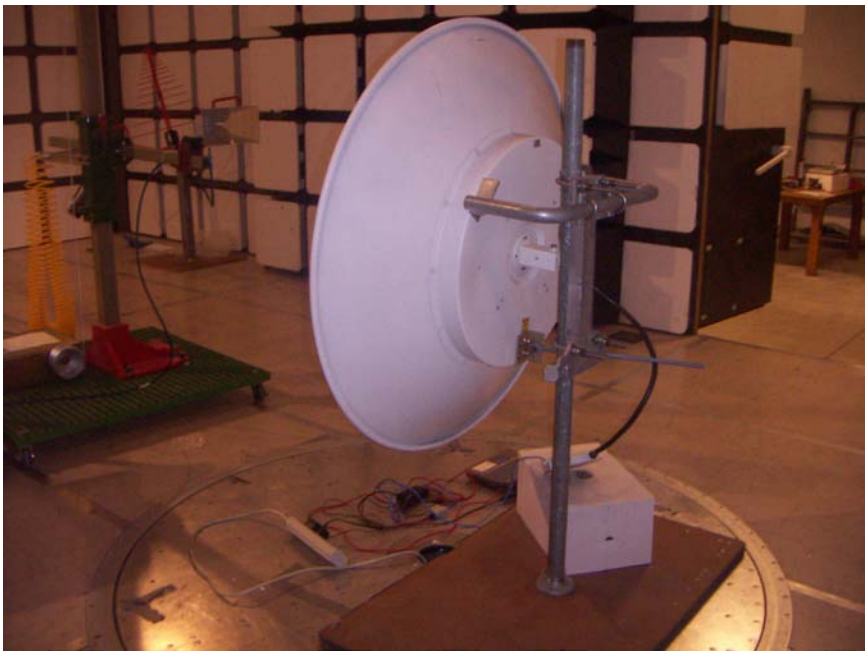
RADIATED BACK PHOTO



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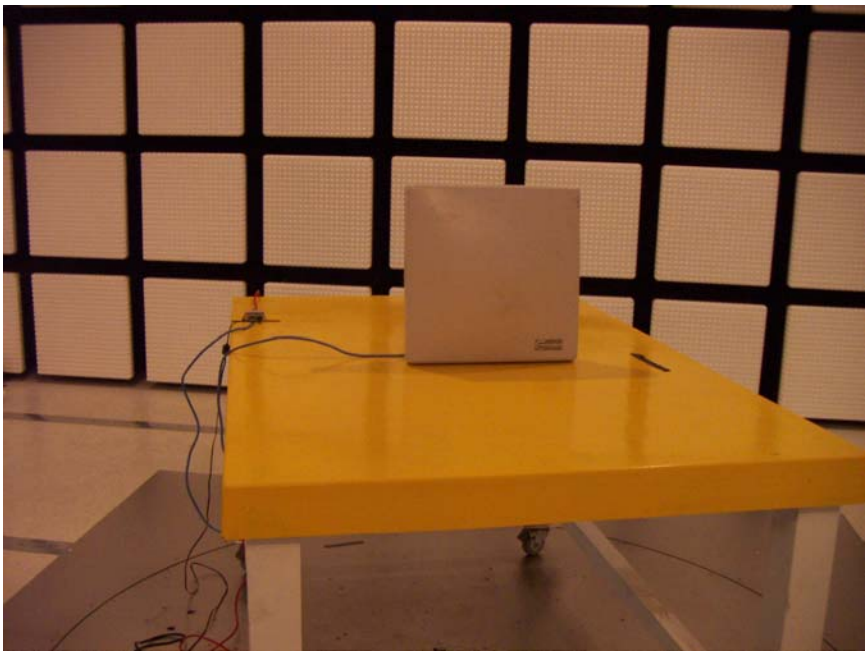
22 dBi Patch antenna:

RADIATED FRONT PHOTO



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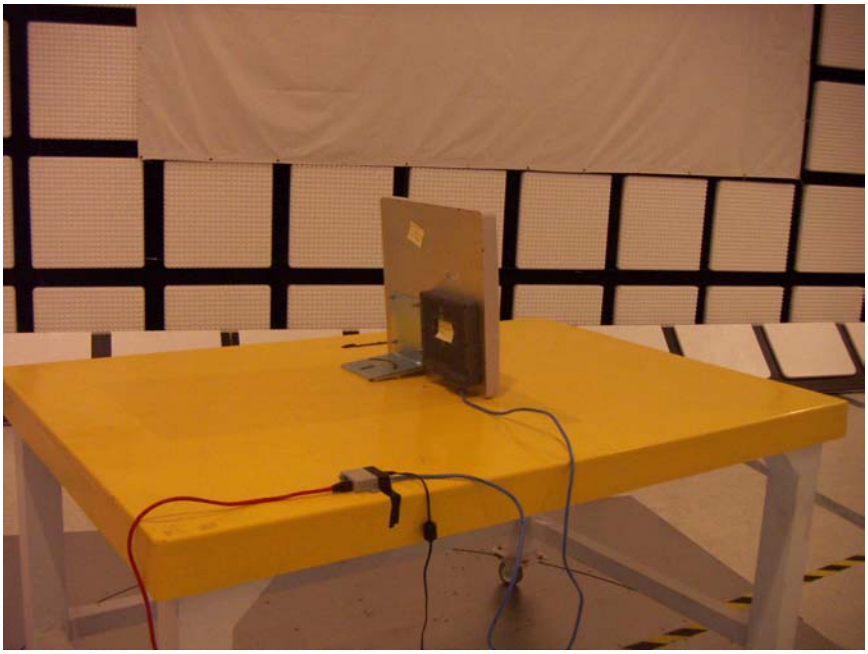
RADIATED BACK PHOTO



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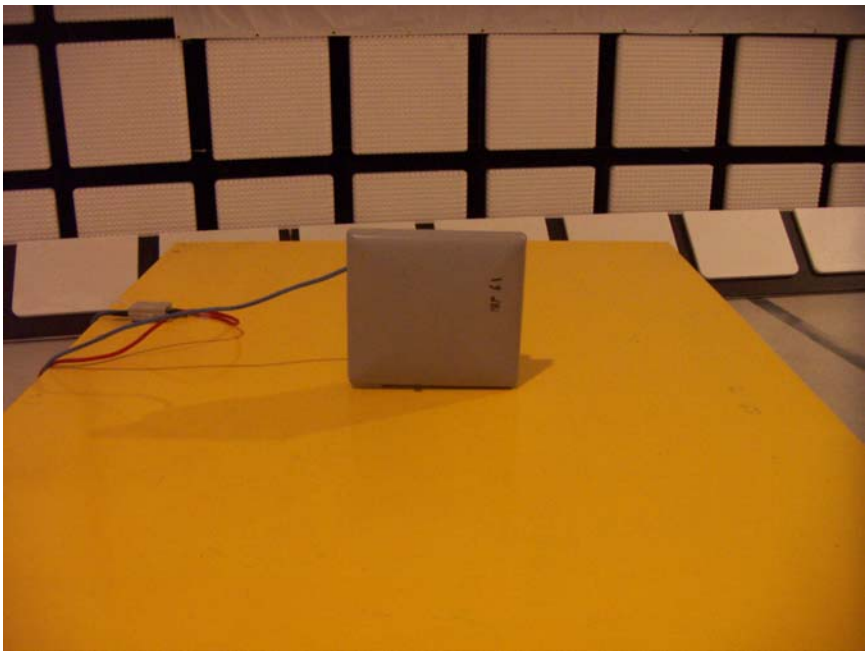
18 dBi Patch Antenna:

RADIATED FRONT PHOTO



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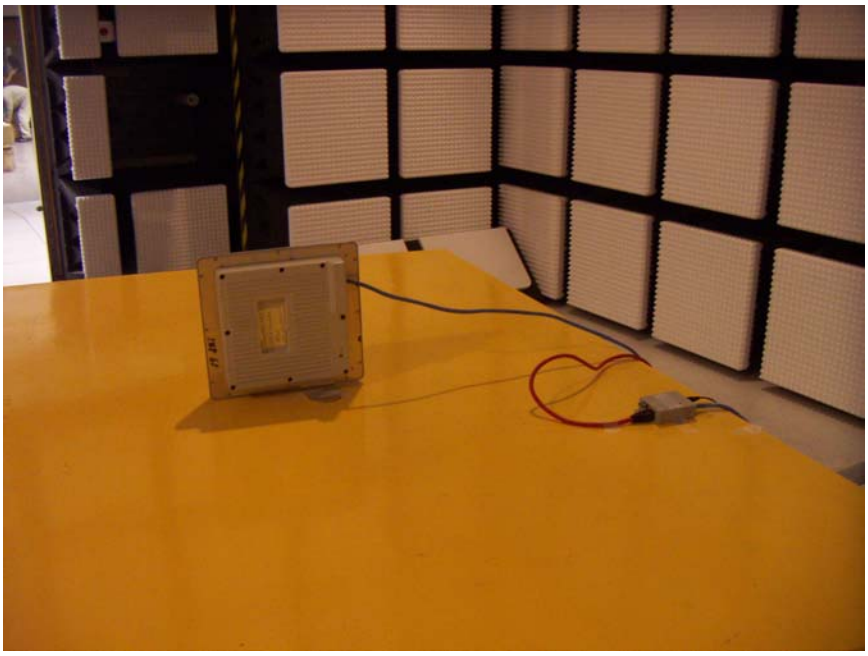
RADIATED BACK PHOTO



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POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP

LINE CONDUCTED FRONT PHOTO

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LINE CONDUCTED BACK PHOTO

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DFS MEASUREMENT SETUP

DFS PHOTO

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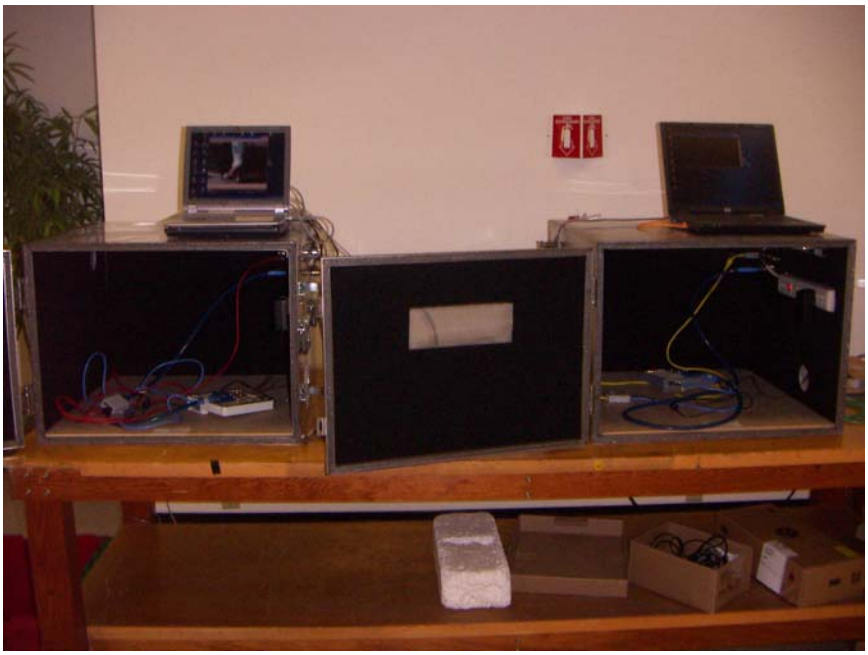
DFS FRONT PHOTO



END OF REPORT

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