Dynamic Frequency Selection (DFS)

Test Report

Product Name	IEEE 802.11a/b/g miniPCI module
Model No	WAPA003
FCC ID	SLE-WAPA003
Host Product	AWK-3121, AWK-3121-T

Applicant	Moxa Inc.
Address	Fl.4, No. 135, Lane 235, Pao-Chiao Rd., Shing Tien City, Taipei, Taiwan.

Date of Receipt	June 04, 2010
Issued Date	June 4, 2010
Report No.	102190R-RFUSP45V01
Report Version	V1.0

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Product Name	IEEE 802.11a/b/g miniPCI module
Applicant	Moxa Inc.
Address	Fl.4, No. 135, Lane 235, Pao-Chiao Rd., Shing Tien City, Taipei, Taiwan.
Manufacturer	Moxa Inc.
Model No.	WAPA003
FCC ID.	SLE-WAPA003
Host Product	AWK-3121, AWK-3121-T
Host Rated Voltage	DC 12~48V
Host Test Voltage	DC 12V
Trade Name	MOXA
Applicable Standard	FCC CFR Title 47 Part 15 Subpart E 15.407 (h): 2009 FCC 06-96
Test Result	Complied

NVLAP Lab Code: 200533-0

The Test Results relate only to the samples tested.
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Testing Laboratory
0914

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1. GENERAL INFORMATION

1.1. Standard Requirement

FCC Part 15.407:

U-NII devices operating in the 5.25-5.35 GHz band and the 5.47-5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30dBm. A TPC mechanism is not required for systems with an E.I.R.P. of less than 500mW.

U-NII devices operating in the 5.25-5.35 GHz and 5.47-5.725 GHz bands shall employ a DFS radar detection mechanism to detect the presence of radar systems and to avoid co-channel operation with radar systems.

1.2. EUT Description

Product Name	IEEE 802.11a/b/g miniPCI module
Trade Name	MOXA
FCC ID.	SLE-WAPA003
Model No.	WAPA003
Host Product	AWK-3121, AWK-3121-T
DFS Frequency Range	5260-5320MHz, 5500-5580,5660-5700MHz
Number of Channels	802.11a: 12
Data Rate	802.11a: 6-54Mbps
Channel Control	Auto
Type of Modulation	802.11a:OFDM BPSK, QPSK, 16QAM, 64QAM
Channel Bandwidth	20MHz
DFS Function	■ Master ☐ Slave
TPC Function	■ <500mW not required ☐ ≧ 500mW employ a TPC
Communication Mode	■ IP Based Systems ☐ Frame Based System ☐ Other System
Antenna type	Dipole
Antenna Gain	Refer to the table “Antenna List”

Antenna List

No.	Manufacturer	Part No.	Peak Gain (dBi)
1	KINSUN	ANT-WDB-O-2 BK	2dBi for 5.0 GHz

Note:

1. The antennas are the same the original application.
2. The major change filed under this application is:

   Change #1: Additional Chassis added, model number: AWK-3121, AWK-3121-T

   Change #2: Change software and set device to Master device.

802.11a Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 52:	5260 MHz	Channel 56:	5280 MHz	Channel 60:	5300 MHz	Channel 64:	5320 MHz
Channel 100:	5500 MHz	Channel 104:	5520 MHz	Channel 108:	5540 MHz	Channel 112:	5560 MHz
Channel 116:	5580 MHz	Channel 132:	5660 MHz	Channel 136:	5680 MHz	Channel 140:	5700 MHz

Test Mode	Mode 1: Transmit (802.11a)

1.3. UNII Device Description

(1) The EUT operates in the following DFS band:

1. 5250-5350 MHz
2. 5470-5725 MHz

(2) The maximum EIRP of the 5GHz equipment is 25.33dBm.

Below are the available 50 ohm antenna assemblies and their corresponding gains. 0dBi gain was used to set the -63 dBm threshold level (-64dBm +1 dB) during calibration of the test setup.

Part No.	Peak Gain (dBi)
ANT-WDB-O-2 BK	2dBi

(3) WLAN traffic is generated by streaming the video file “TestFile.mp2” from the Master device to the Slave device in full motion video mode using the media player with the V2.61 Codec package.

(4) For the 5250-5350 MHz and 5470-5725 MHz bands, the Master device provides, on aggregate, uniform loading of the spectrum across all devices by selecting an operating channel among the available channels using a random algorithm.

(5) This device does not exceed 27dBm eirp, so no transmit power control is implemented.

(6) The client device is an Compaq 511 Notebook pc contains Intel WLAN radio Module card (Model 512AN_MMW). The Intel WLAN Module card FCC ID: PD9512ANMU

1.4. Test Equipment

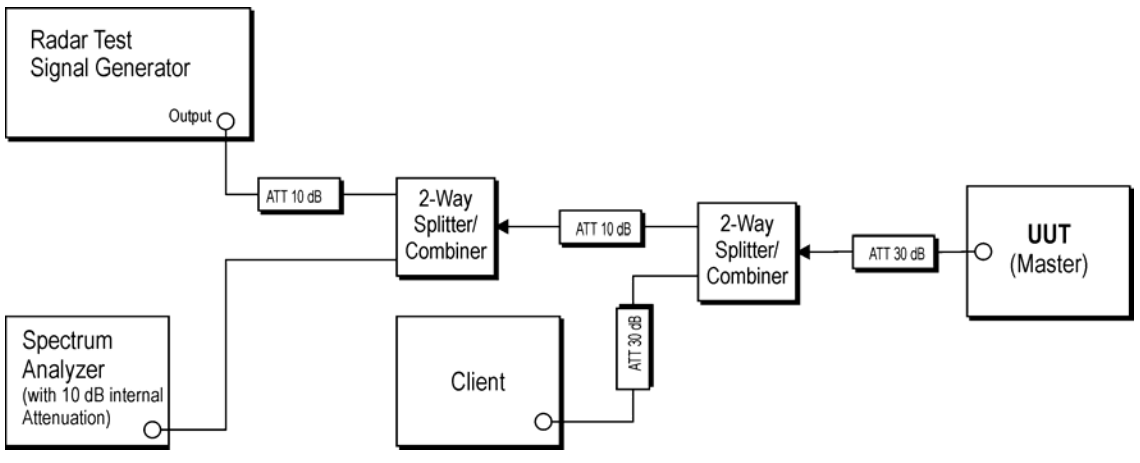
Dynamic Frequency Selection (DFS) / CTR

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Spectrum Analyzer	HP	E4407B	US39440758	Sep, 03, 2010
Vector Signal Generator	Agilent	E4438C	MY49070137	Apr, 01, 2010

Instrument	Manufacturer	Type No.	Serial No
Splitter/Combiner (Qty: 2)	Mini-Circuits	ZFRSC-123-S+	SN331000910
8-WAY Power Divider	JFW	50PD-647-SMA	517518
8-WAY Power Divider	JFW	50PD-647-SMA	526770 0916
ATT (Qty: 2)	Mini-Circuits	15542	30912
ATT (Qty: 2)	Mini-Circuits	15542	30909
Notebook Pc	Hp	HSTNN-155C	CNU8476RVZ
Notebook Pc	Compaq	CPQ511VT5870Q4X320MIBNC N2Pa	CNU0060M23
RF Cable (Qty: 4)	GORE	C86	N/A

Software	Manufacturer	Function
Agilent Signal Studio for Pulse Building V1.3.13.0	Agilent	Radar Signal Generation Software
Agilent DFS_TEST V1.0.0.73	Agilent	Radar Signal Generation Software
Media Player Classic v6.4.8.6	Gabest.org	Multimedia Player

1.5. Test Setup



1.6. DFS Detection Thresholds

(1) Interference Threshold value, 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.

(2) 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 seconds period (See Notes 1 and 2)
U-NII Detection Bandwidth	Minimum 80% of the 99% power bandwidth See Note 3.

Note1:

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 seconds period defining the radar transmission.

Note 2:

The channel closing transmission time is comprised of 200 milliseconds starting at the beginning of the channel move time plus any additional intermittent control signals required facilitating channel changes (an aggregate of approximately 60 milliseconds) during the remainder of the 10 seconds period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3:

During the *U-NII Detection Bandwidth* detection test, radar type 1 is used and for each frequency step the minimum percentage of detection is 90%. Measurements are performed with no data traffic.

1.7. Radar Test Waveforms

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

(1) Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (μsec)	PRI (μsec)	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

A minimum of 30 unique waveforms is required for each of the short pulse radar type 2 through 4. For short pulse radar type 1, then same waveform is used a minimum of 30 times. If more than 30 waveforms are used for short pulse radar type 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. The aggregate is the average of the percentage of successful detections of short pulse radar type 1-4.

(2) 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

The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the long pulse radar test signal. If more than 30 waveforms are used for the long pulse radar test signal, then each additional waveform must also be unique and not repeated from the previous waveforms.

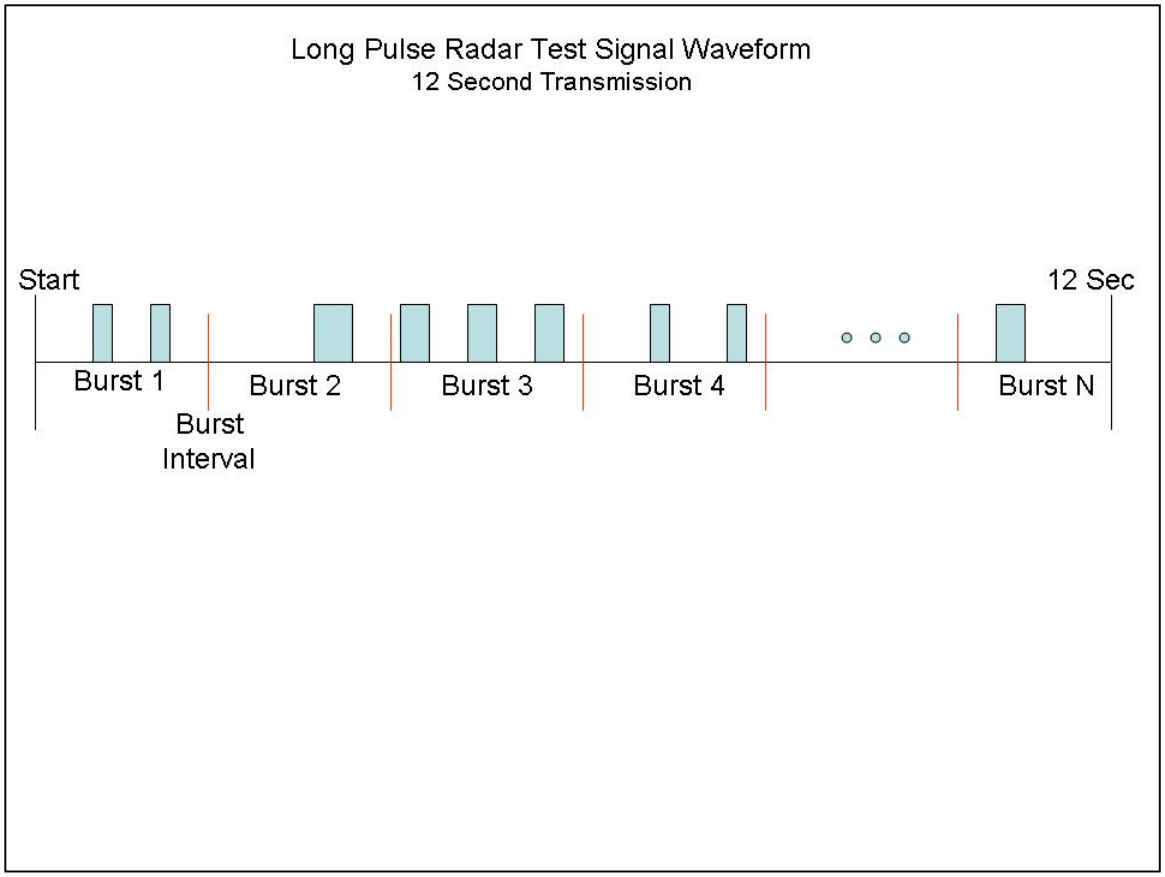
Each waveform is defined as follows:

1) The transmission period for the Long Pulse Radar test signal is 12 seconds.
2) There are a total of 8 to 20 Bursts in the 12 second period, with the number of Bursts being randomly chosen. This number is Burst_Count.
3) Each Burst consists of 1 to 3 pulses, with the number of pulses being randomly chosen. Each Burst within the 12 second sequence may have a different number of pulses.
4) The pulse width is between 50 and 100 microseconds, with the pulse width being randomly chosen. Each pulse within a Burst will have the same pulse width. Pulses in different Bursts may have different pulse widths.
5) Each pulse has a linear FM chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a Burst will have the same chirp width. Pulses in different Bursts may have different chirp widths. The chirp is centered on the pulse. For example, with a radar frequency of 5300 MHz and a 20 MHz chirped signal, the chirp starts at 5290 MHz and ends at 5310 MHz.
6) If more than one pulse is present in a Burst, the time between the pulses will be between 1000 and 2000 microseconds, with the time being randomly chosen. If three pulses are present in a Burst, the time between the first and second pulses is chosen independently of the time between the second and third pulses.
7) The 12 second transmission period is divided into even intervals. The number of intervals is equal to Burst_Count. Each interval is of length (12,000,000 / Burst_Count) microseconds. Each interval contains one Burst. The start time for the Burst, relative to the beginning of the interval, is between 1 and [(12,000,000 / Burst_Count) – (Total Burst Length) + (One Random PRI Interval)] microseconds, with the start time being randomly chosen. The step interval for the start time is 1 microsecond. The start time for each Burst is chosen independently.

A representative example of a Long Pulse radar test waveform:

1) The total test signal length is 12 seconds.
2) 8 Bursts are randomly generated for the Burst_Count.
3) Burst 1 has 2 randomly generated pulses.
4) The pulse width (for both pulses) is randomly selected to be 75 microseconds.
5) The PRI is randomly selected to be at 1213 microseconds.
6) Bursts 2 through 8 are generated using steps 3 – 5.
7) Each Burst is contained in even intervals of 1,500,000 microseconds. The starting location for Pulse 1, Burst 1 is randomly generated (1 to 1,500,000 minus the total Burst 1 length + 1 random PRI interval) at the 325,001 microsecond step. Bursts 2 through 8 randomly fall in successive 1,500,000 microsecond intervals (i.e. Burst 2 falls in the 1,500,001 – 3,000,000 microsecond range).

Graphical Representation of a Long Pulse radar Test Waveform



(3) Frequency Hopping Radar Test Signal

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

For the Frequency Hopping Radar Type, the same *Burst* parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected[1] from the hopping sequence defined by the following algorithm:

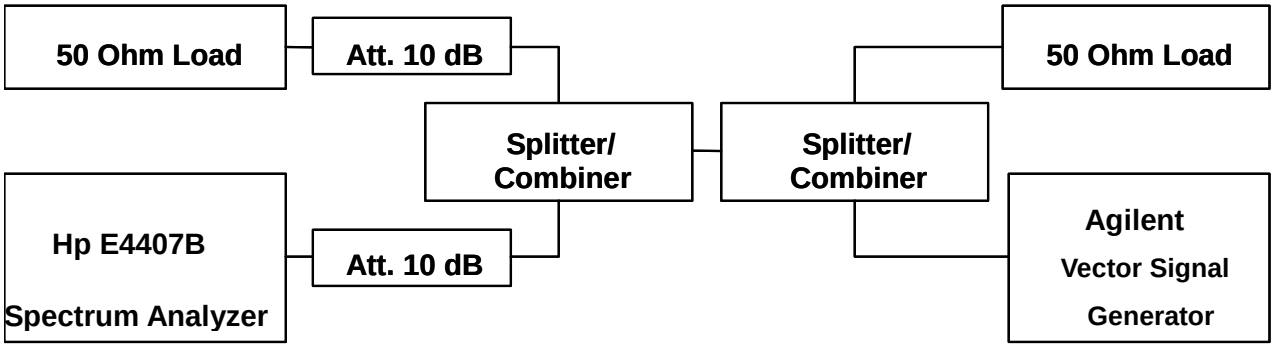
The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250 – 5724 MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of a random frequency, the frequencies remaining within the group are always treated as equally likely.

1.8. Radar Waveform Calibration

The following equipment setup was used to calibrate the conducted radar waveform. A spectrum analyzer was used to establish the test signal level for each radar type. During this process there were replace 50ohm terminal from master and client device and no transmissions by either the master or client device. The spectrum analyzer was switched to the zero span (time domain) at the frequency of the radar waveform generator. Peak detection was utilized. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3MHz and 3 MHz.

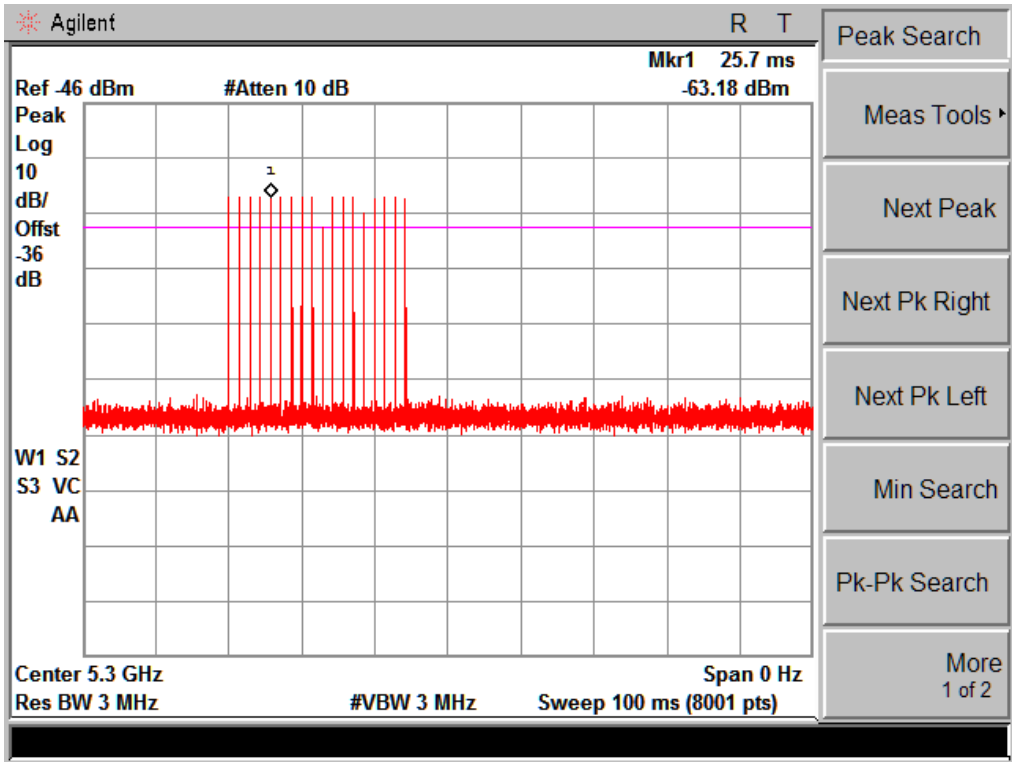
The signal generator amplitude was set so that the power level measured at the spectrum analyzer was -61dBm due to the interference threshold level is not required.

Conducted Calibration Setup

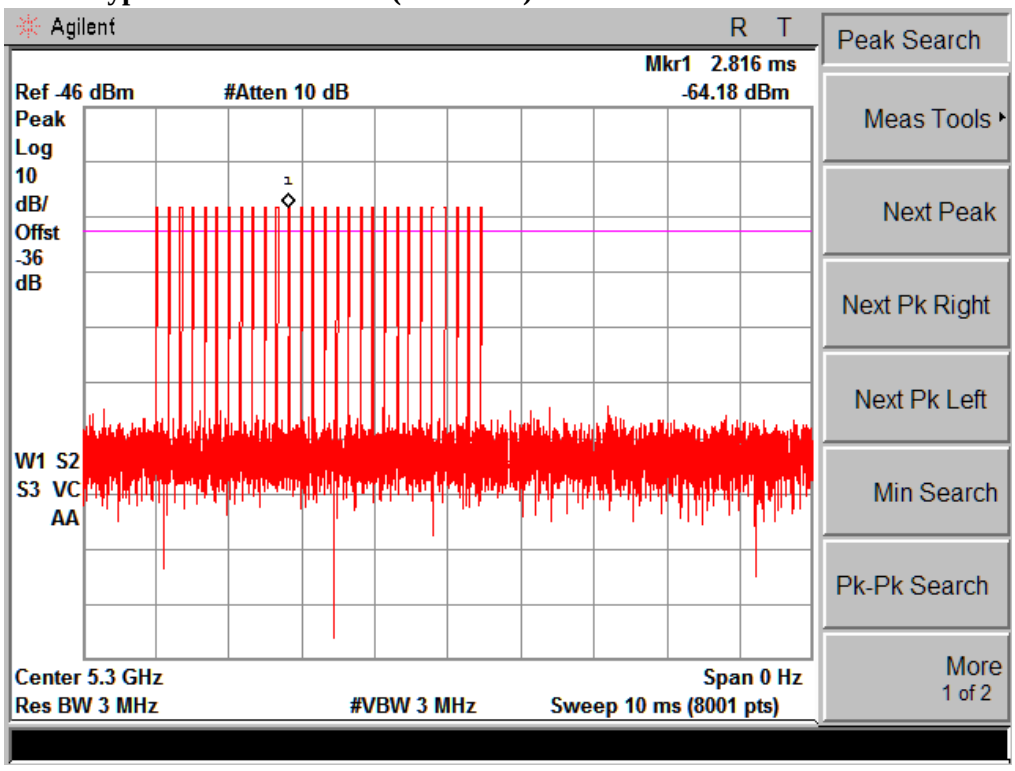


1.9. Radar Waveform Calibration Result

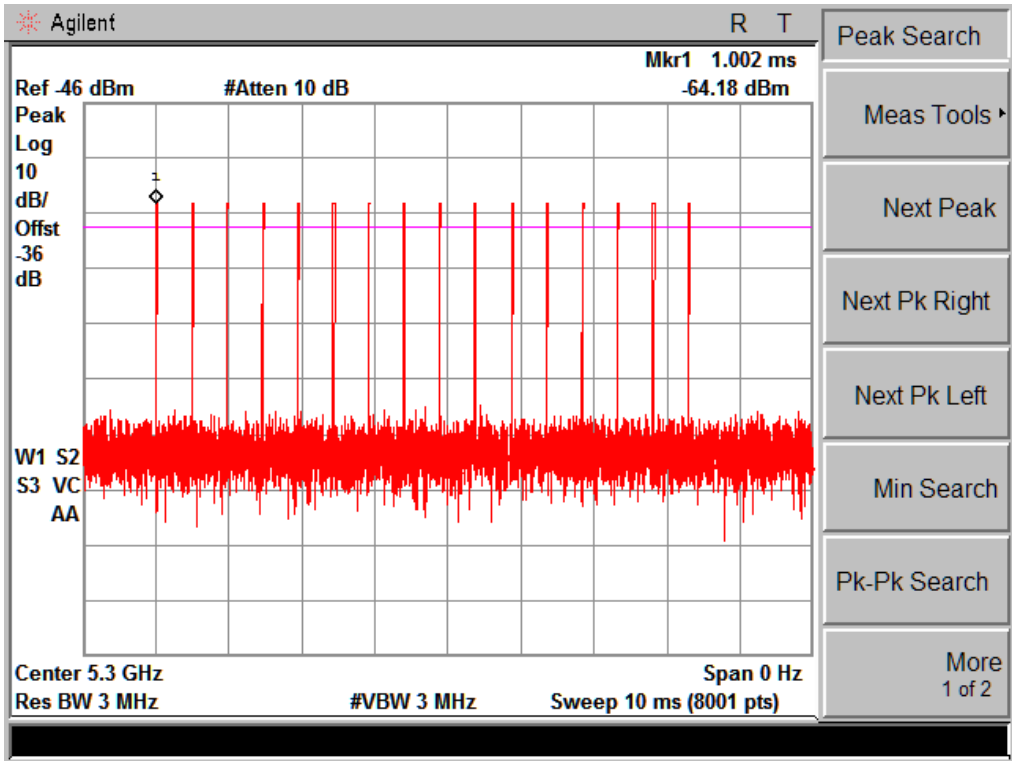
Radar Type 1 Calibration Plot (5300MHz)



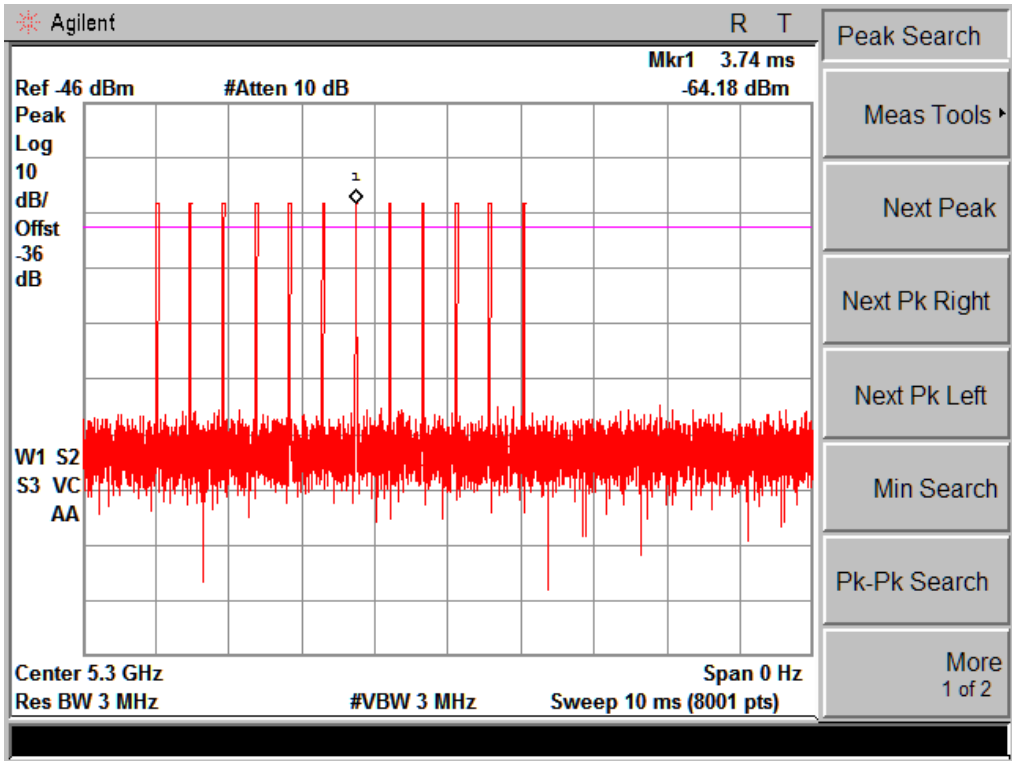
Radar Type 2 Calibration Plot (5300MHz)



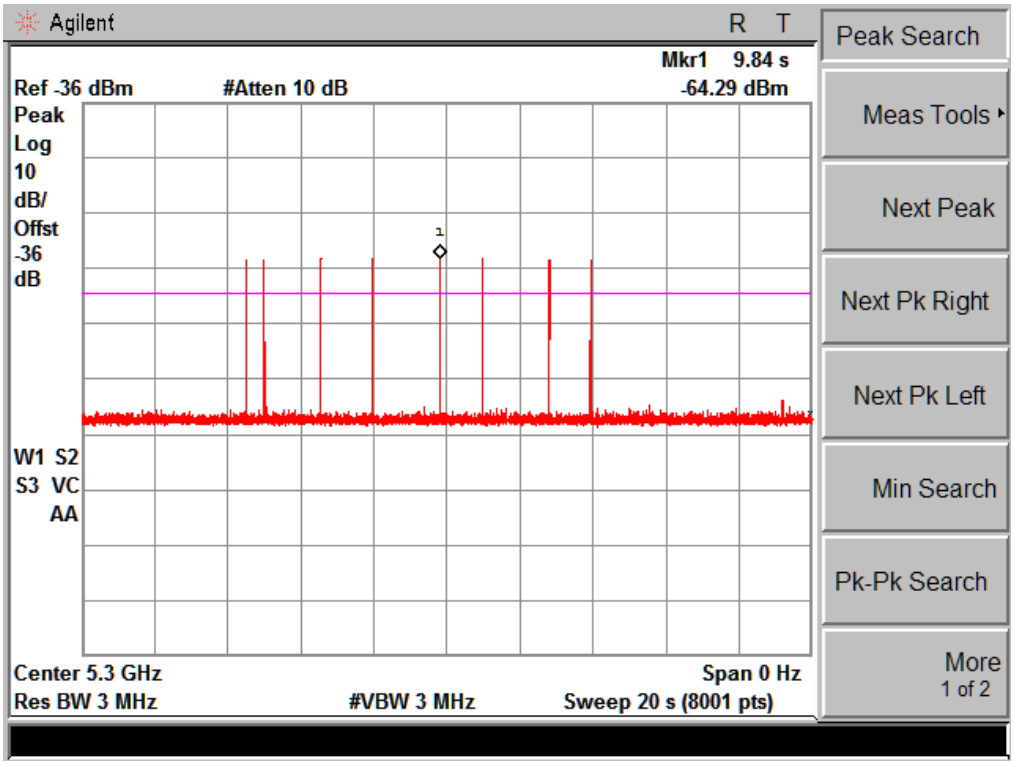
Radar Type 3 Calibration Plot (5300MHz)



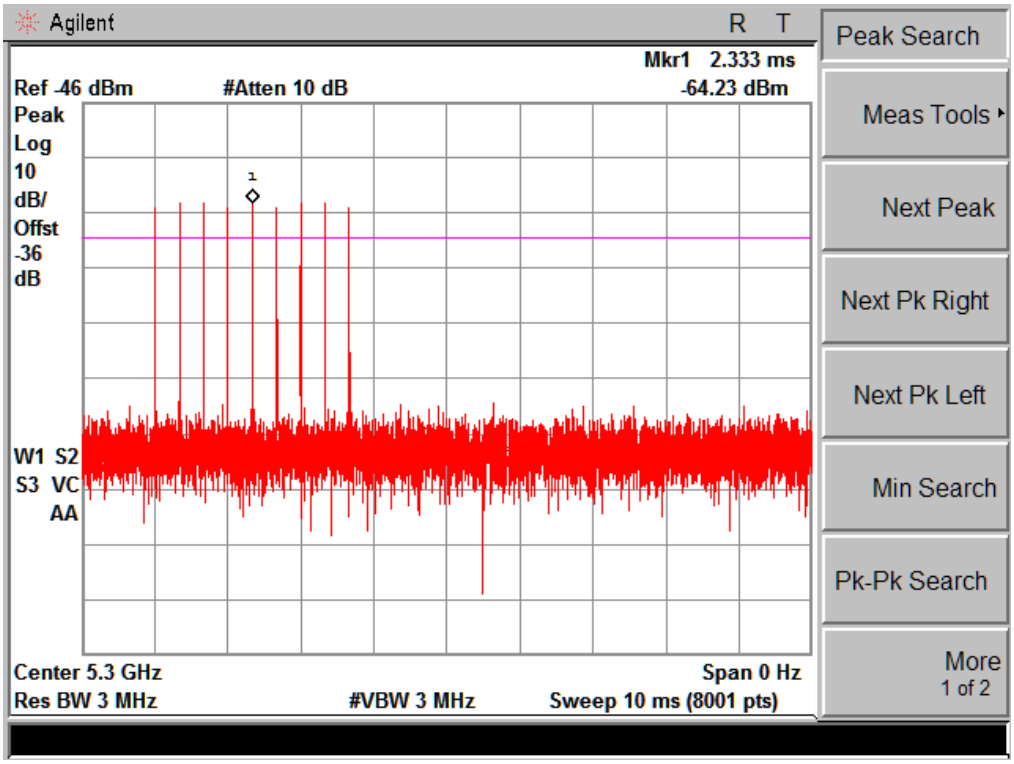
Radar Type 4 Calibration Plot (5300MHz)



Radar Type 5 Calibration Plot (5300MHz)

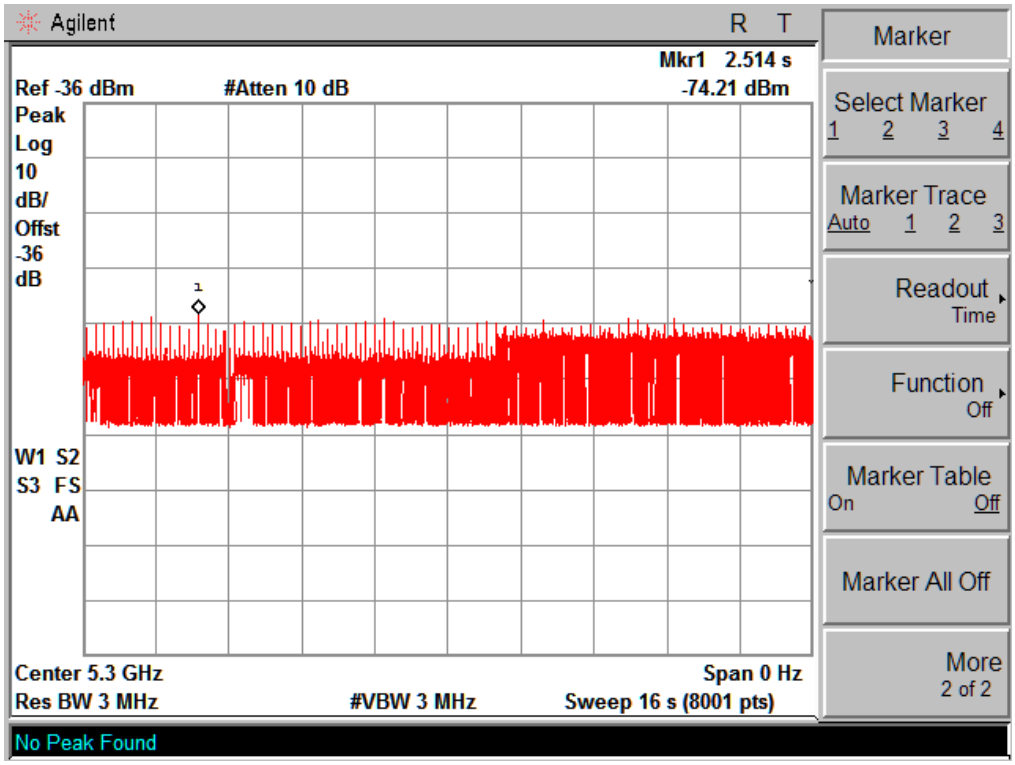


Radar Type 6 Calibration Plot (5300MHz)

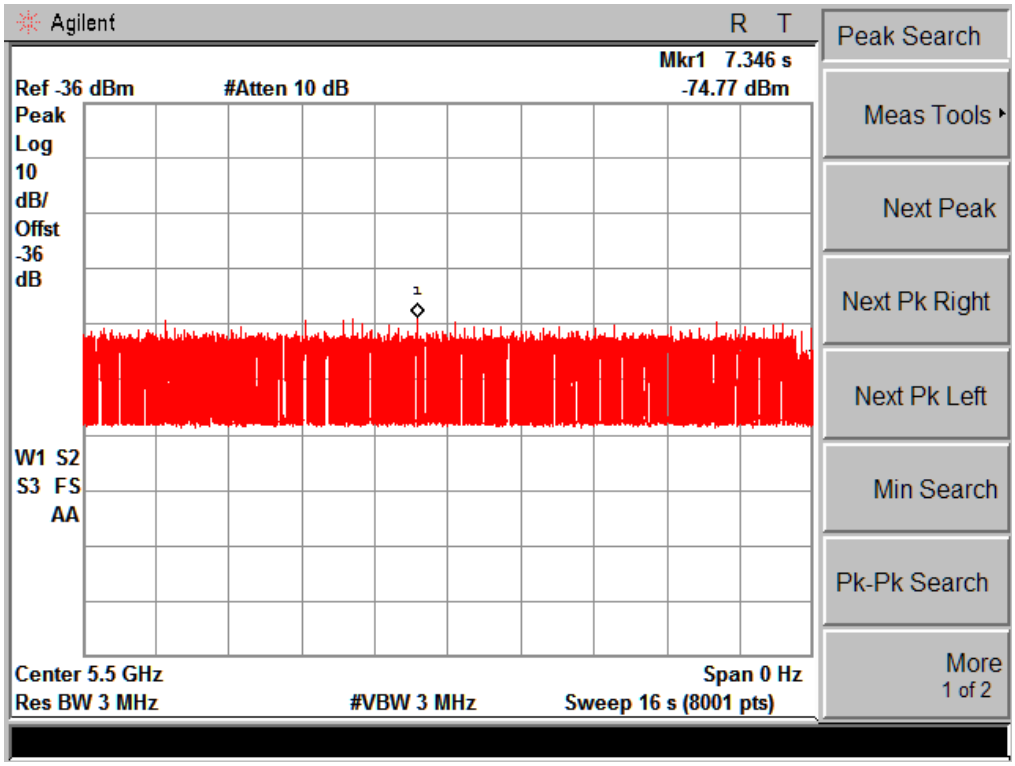


1.10. Master Data Traffic Plot Result

Plot of WLAN Traffic at 5300MHz



Plot of WLAN Traffic at 5500MHz



2. UNII Detection Bandwidth

2.1. Test Procedure

The generating equipment is configured as shown in the Conducted Test Setup above. A single *Burst* of the short pulse radar type 1 is produced at 5500MHz at a -63dBm level. The EUT is set up as a standalone device (no associated Client and no traffic).

A single radar Burst is generated for a minimum of 10 trials, and the response of the EUT is noted.

The EUT must detect the Radar Waveform 90% or more of the time. The radar frequency is increased in 1 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The highest frequency at which detection is greater than or equal to 90% is denoted as Fh.

The radar frequency is decreased in 1 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The lowest frequency at which detection is greater than or equal to 90% is denoted as Fl.

The U-NII Detection Bandwidth is calculated as follows:

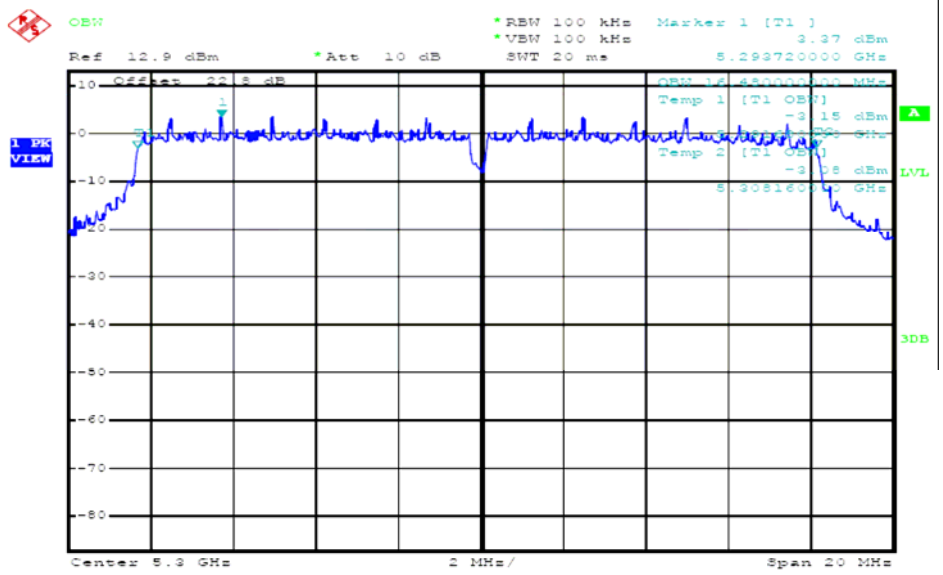
U-NII Detection Bandwidth = $F_H - F_L$

The U-NII Detection Bandwidth must be at least 80% of the EUT transmitter 99% power, otherwise, the EUT does not comply with DFS requirements.

2.2. Test Requirement

All UNII 20 MHz channels for this device have identical Channel bandwidths. The 99% channel bandwidth for 20MHz signals is 16.48 MHz.

802.11a CH60 5300MHz



802.11a 5300MHz
Date: 15.JUN.2009 11:16:28

2.3. Uncertainty

± 1ms.

2.4. Test Result of UNII Detection Bandwidth

Product : IEEE 802.11a/b/g miniPCI module
Test Item : UNII Detection Bandwidth
Radar Type : Type 1
Test Mode : Mode 1: Transmit (802.11a)

Test Channel: 5300MHz											
Radar Frequency	DFS Detection Trials (1= Detection, 0= No Detection)										Detection Rate
(MHz)	1	2	3	4	5	6	7	8	9	10	(%)
5290	0	0	0	0	0	0	0	0	0	0	100
5291 (Fl)	1	1	1	1	0	1	1	1	1	0	100
5292	1	1	1	1	1	1	1	1	1	1	100
5293	1	1	1	1	1	1	1	1	1	1	100
5294	1	1	1	1	1	1	1	1	1	1	100
5295	1	1	1	1	1	1	1	1	1	1	100
5296	1	1	1	1	1	1	1	1	1	1	100
5297	1	1	1	1	1	1	1	1	1	1	100
5298	1	1	1	1	1	1	1	1	1	1	100
5299	1	1	1	1	1	1	1	1	1	1	100
5300	1	1	1	1	1	1	1	1	1	1	100
5301	1	1	1	1	1	1	1	1	1	1	100
5302	1	1	1	1	1	1	1	1	1	1	100
5303	1	1	1	1	1	1	1	1	1	1	100
5304	1	1	1	1	1	1	1	1	1	1	100
5305	1	1	1	1	1	1	1	1	1	1	100
5306	1	1	1	1	1	1	1	1	1	1	100
5307	1	1	1	1	1	1	1	1	1	1	100
5308	1	1	1	1	1	1	1	1	1	1	100
5309 (Fh)	1	1	0	0	1	1	1	1	1	1	100
5310	0	0	0	0	0	0	0	0	0	0	100
Detection Bandwidth = FH - FL = 5309MHz - 5291MHz = 18MHz											
EUT 99% Bandwidth = 16.48MHz											
UNII Detection Bandwidth Min. Limit = 16.48MHz X 80% = 13.184MHz											

Product : IEEE 802.11a/b/g miniPCI module
Test Item : UNII Detection Bandwidth
Radar Type : Type 1
Test Mode : Mode 1: Transmit (802.11a)

Test Channel: 5500MHz											
Radar Frequency	**DFS Detection Trials (1= Detection, 0= No Detection)**										**Detection Rate**
(MHz)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**(%)**
5290	0	0	0	0	0	0	0	0	0	0	100
5291 (Fl)	0	0	0	0	0	0	0	0	0	0	100
5292	1	1	1	1	1	1	1	1	1	1	100
5293	1	1	1	1	1	1	1	1	1	1	100
5294	1	1	1	1	1	1	1	1	1	1	100
5295	1	1	1	1	1	1	1	1	1	1	100
5296	1	1	1	1	1	1	1	1	1	1	100
5297	1	1	1	1	1	1	1	1	1	1	100
5298	1	1	1	1	1	1	1	1	1	1	100
5299	1	1	1	1	1	1	1	1	1	1	100
5300	1	1	1	1	1	1	1	1	1	1	100
5301	1	1	1	1	1	1	1	1	1	1	100
5302	1	1	1	1	1	1	1	1	1	1	100
5303	1	1	1	1	1	1	1	1	1	1	100
5304	1	1	1	1	1	1	1	1	1	1	100
5305	1	1	1	1	1	1	1	1	1	1	100
5306	1	1	1	1	1	1	1	1	1	1	100
5307	1	1	1	1	1	1	1	1	1	1	100
5308	1	1	1	1	1	1	1	1	1	1	100
5309 (Fh)	0	0	0	0	0	0	0	0	0	0	100
5310	0	0	0	0	0	0	0	0	0	0	100
Detection Bandwidth = FH - FL = 5508MHz - 5492MHz = 16MHz											
EUT 99% Bandwidth = 16.48MHz											
UNII Detection Bandwidth Min. Limit = 16.48MHz X 80% = 13.184MHz											

3. Initial Channel Availability Check Time

3.1. Test Procedure

The U-NII device is powered on and instructed to operate at 5500 MHz. At the same time the UUT is powered on, the spectrum analyzer is set to zero span mode with a 3 MHz resolution bandwidth at 5300Mhz and 5500MHz with a 2.5 minute sweep time. The analyzer's sweep will be started the same time power is applied to the U-NII device.

The EUT should not transmit any beacon or data transmissions until at least 1 minute after the completion of the power-on cycle.

The initial power up time of the EUT is indicated by marker 1 in the plot, Initial beacons/data transmissions are indicated by marker 1R.

3.2. Test Requirement

The EUT shall perform a channel availability check to ensure that there is no radar operation on the channel, after power-up sequence, receiver at least 1 minute on the intended operation frequency.

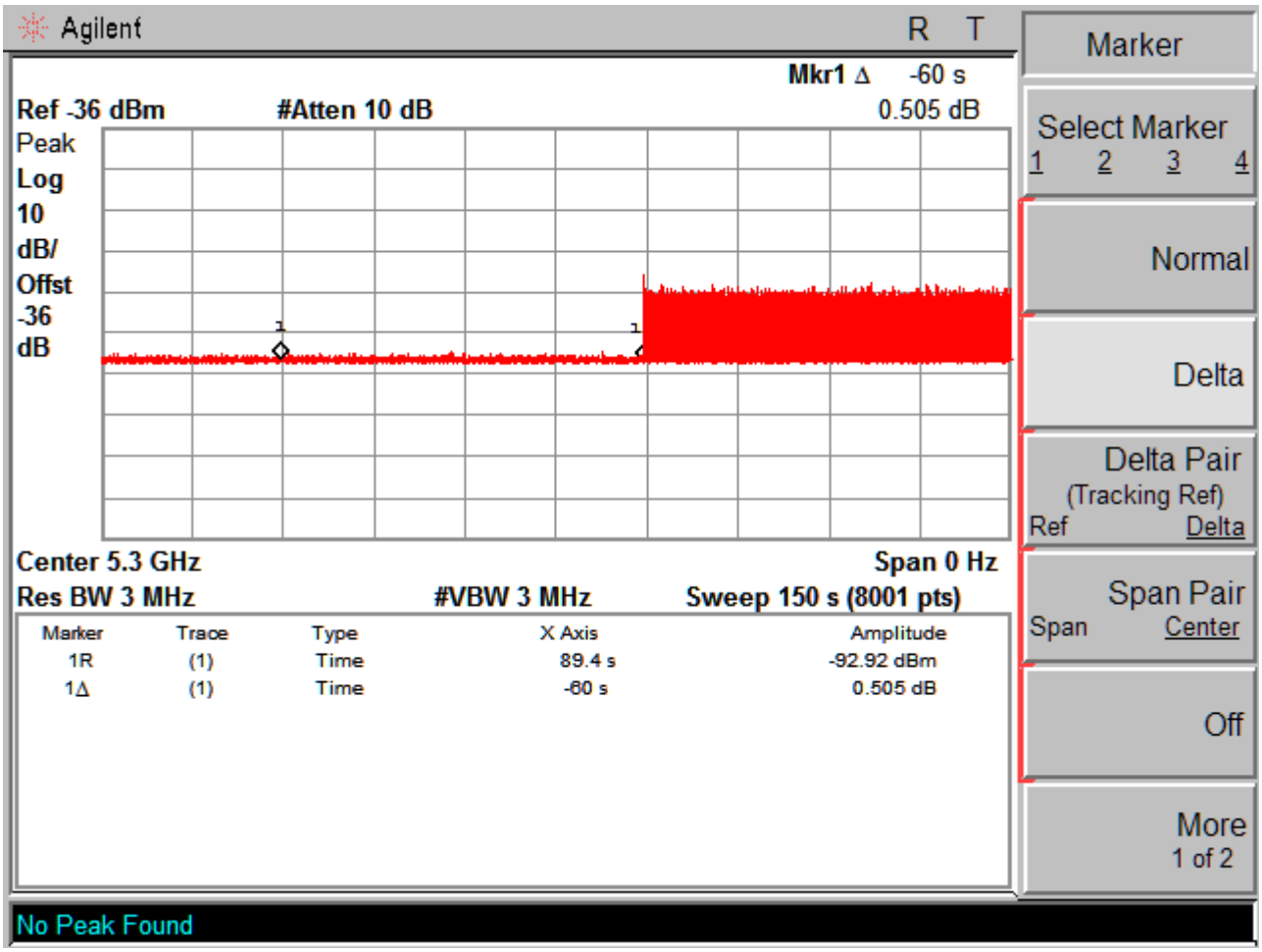
3.3. Uncertainty

± 1ms.

3.4. Test Result of Initial Channel Availability Check Time

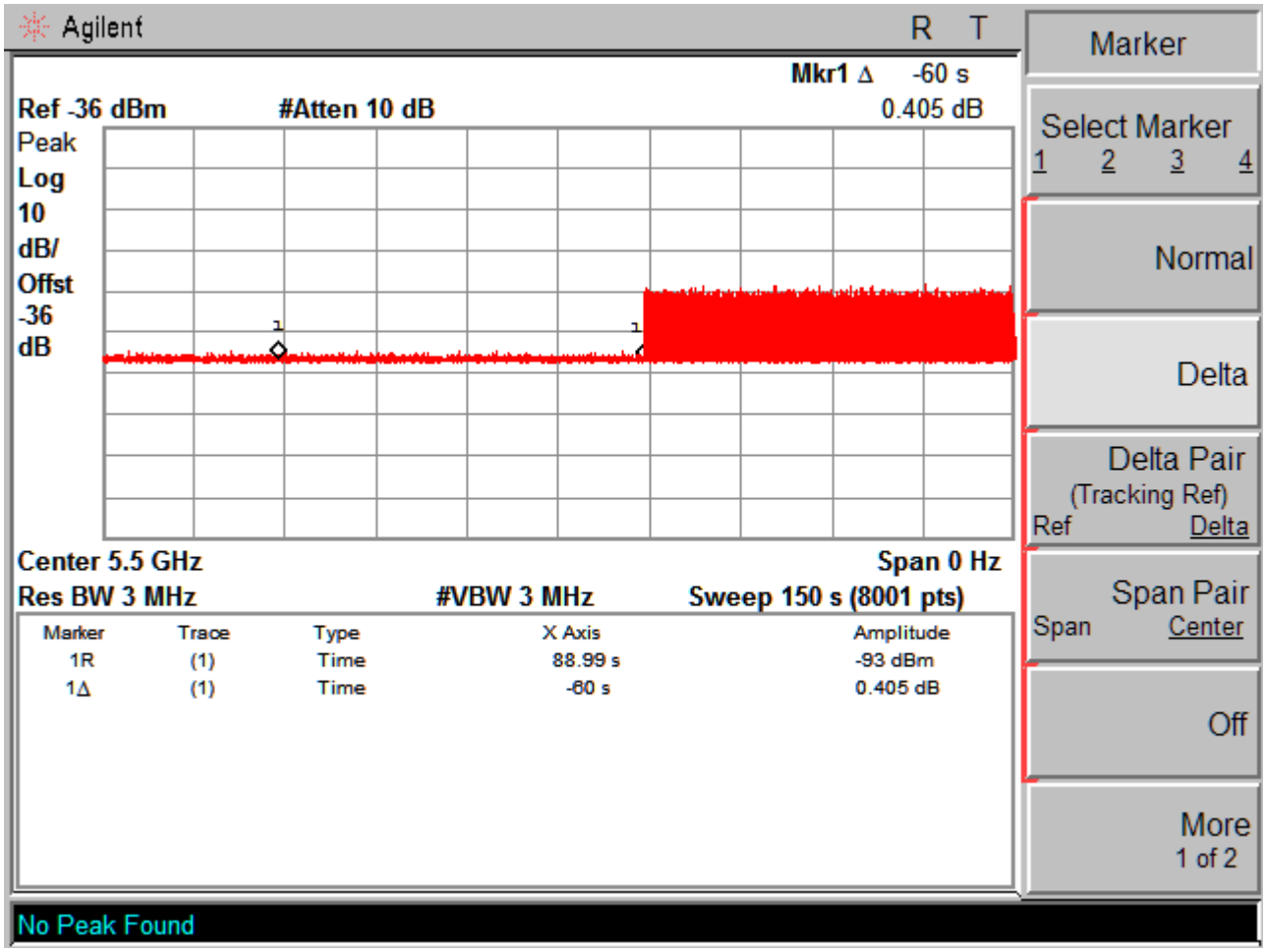
Product : IEEE 802.11a/b/g miniPCI module
Test Item : Initial Channel Availability Check Time
Radar Type : Type 1
Test Mode : Mode 1: Transmit (802.11a)-CH60

The EUT does not transmit any beacon or data transmission until at least 1 minute after the completion of the power-on cycle (29.4sec). The initial power up time of the EUT is indicated by Marker 1R (89.4 sec) – CAC (60 sec). Initial beacons/data transmission are indicated by Marker 1R (89.4 sec)



Product	:	IEEE 802.11a/b/g miniPCI module
Test Item	:	Initial Channel Availability Check Time
Radar Type	:	Type 1
Test Mode	:	Mode 1: Transmit (802.11a)-CH100

The EUT does not transmit any beacon or data transmission until at least 1 minute after the completion of the power-on cycle (28.99sec). The initial power up time of the EUT is indicated by Marker 1R (88.99 sec) – CAC (60 sec). Initial beacons/data transmission are indicated by Marker 1R (88.99 sec)



4. Radar Burst at the Beginning of the Channel Availability Check Time

4.1. Test Procedure

The steps below define the procedure to verify successful radar detection on the selected Channel during a period equal to the Channel Availability Check Time and avoidance of operation on that Channel when a radar Burst with a level equal to the DFS Detection Threshold + 1 dB (-63dBm) occurs at the beginning of the Channel Availability Check Time.

The EUT is powered on at T0. T1 denotes the instant when the EUT has completed its power-up sequence. The Channel Availability Check Time commences at instant T_1 and will end no sooner than T1 + 60 seconds.

A single Burst of short pulse of radar type 1 at -63 dBm will commence within a 6 second window starting at T1.

Visual indication on the EUT of successful detection of the radar Burst will be recorded and reported. Observation of emissions at 5300MHz and 5500MHz will continue for 2.5 minutes after the radar Burst, Verify that during the 2.5 minute measurement window no EUT transmissions occurred at 5300MHz and 5500MHz.

4.2. Test Requirement

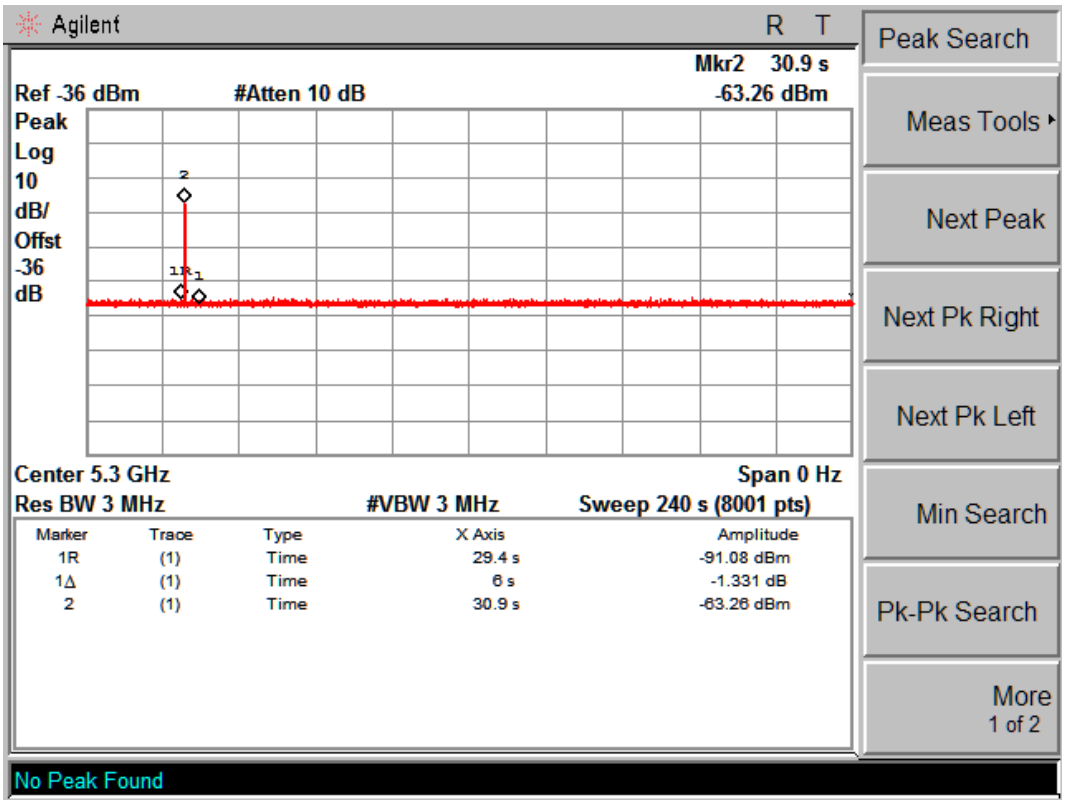
In beginning of the Channel Availability Check (CAC) Time, radar is detected on this channel, select another intended channel and perform a CAC that channel.

4.3. Uncertainty

± 1ms.

4.4. Test Result of Radar Burst at the Beginning of the Channel Availability Check Time

Product : IEEE 802.11a/b/g miniPCI module
Test Item : Radar Burst at the Beginning of the Channel Availability Check Time
Radar Type : Type 1
Test Mode : Mode 1: Transmit (802.11a)-CH60

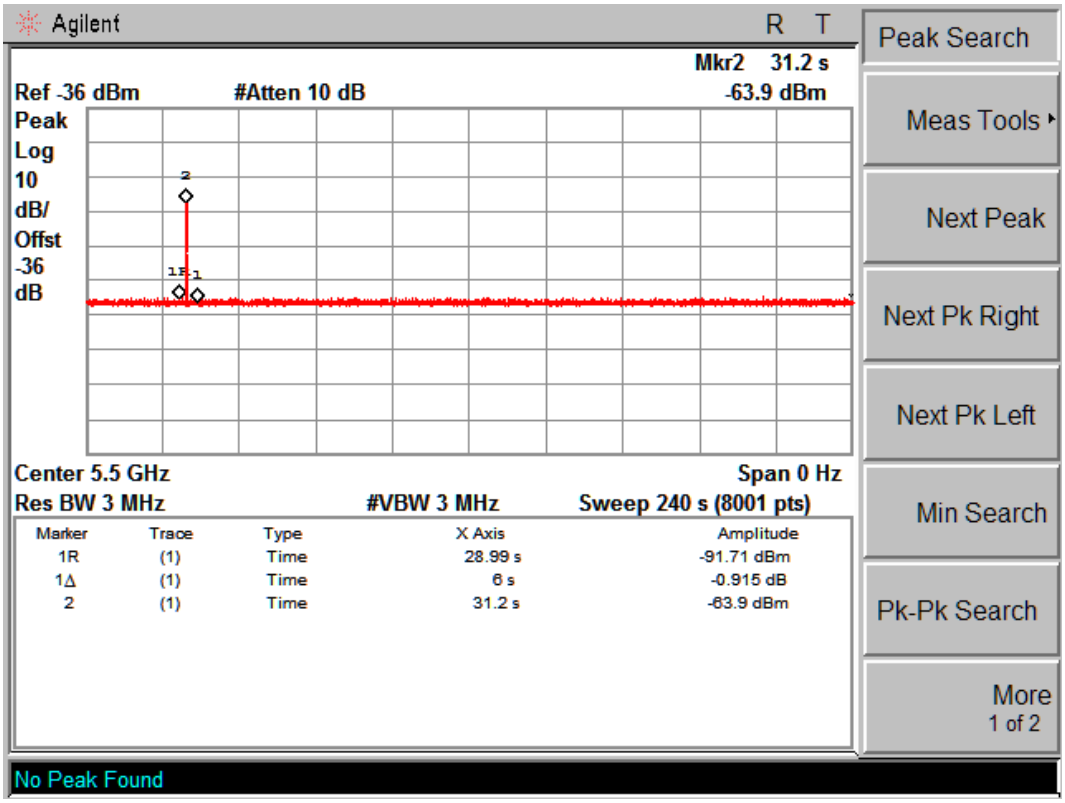


Product : IEEE 802.11a/b/g miniPCI module

Test Item : Radar Burst at the Beginning of the Channel Availability Check Time

Radar Type : Type 1

Test Mode : Mode 1: Transmit (802.11a)-CH100



5. Radar Burst at the End of the Channel Availability Check Time

5.1. Test Procedure

The steps below define the procedure to verify successful radar detection on the selected Channel during a period equal to the Channel Availability Check Time and avoidance of operation on that Channel when a radar Burst with a level equal to the DFS Detection Threshold + 1 dB (-63dBm) occurs at the end of the Channel Availability Check Time.

The UUT is powered on at T_0. T_1 denotes the instant when the UUT has completed its power-up sequence. The Channel Availability Check Time commences at instant T1 and will end no sooner than T_1 + 60 seconds. A single Burst of short pulse of radar type 1 at -63 dBm will commence within a 6 second window starting at T_1+ 54 seconds.

Visual indication on the UUT of successful detection of the radar Burst will be recorded and reported. Observation of emissions at 5300MHz and 5500MHz will continue for 2.5 minutes after the radar Burst has been generated.

Verify that during the 2.5 minute measurement window no UUT transmissions occurred at 5300MHz and 5510MHz.

5.2. Test Requirement

In the end of Channel Availability Check (CAC) Time, radar is detected on this channel, select another intended channel and perform a CAC that channel.

5.3. Uncertainty

± 1ms.

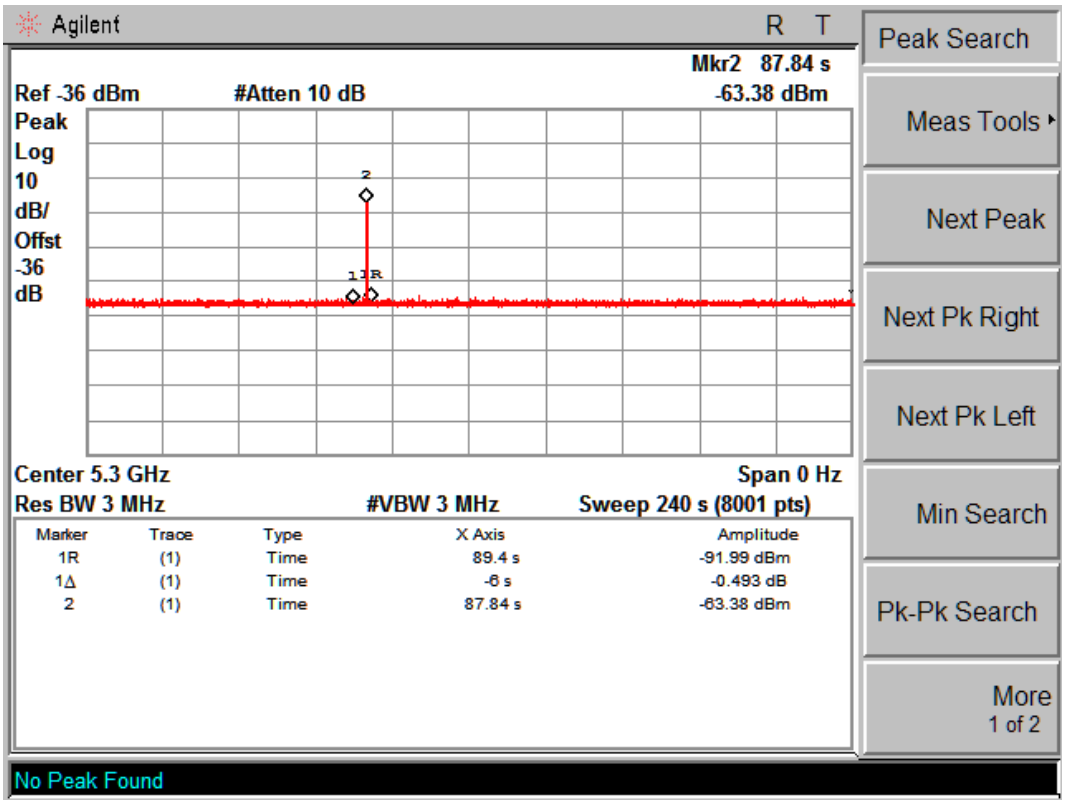
5.4. Test Result of Radar Burst at the End of the Channel Availability Check Time

Product : IEEE 802.11a/b/g miniPCI module

Test Item : Radar Burst at the End of the Channel Availability Check Time

Radar Type : Type 1

Test Mode : Mode 1: Transmit (802.11a)-CH60

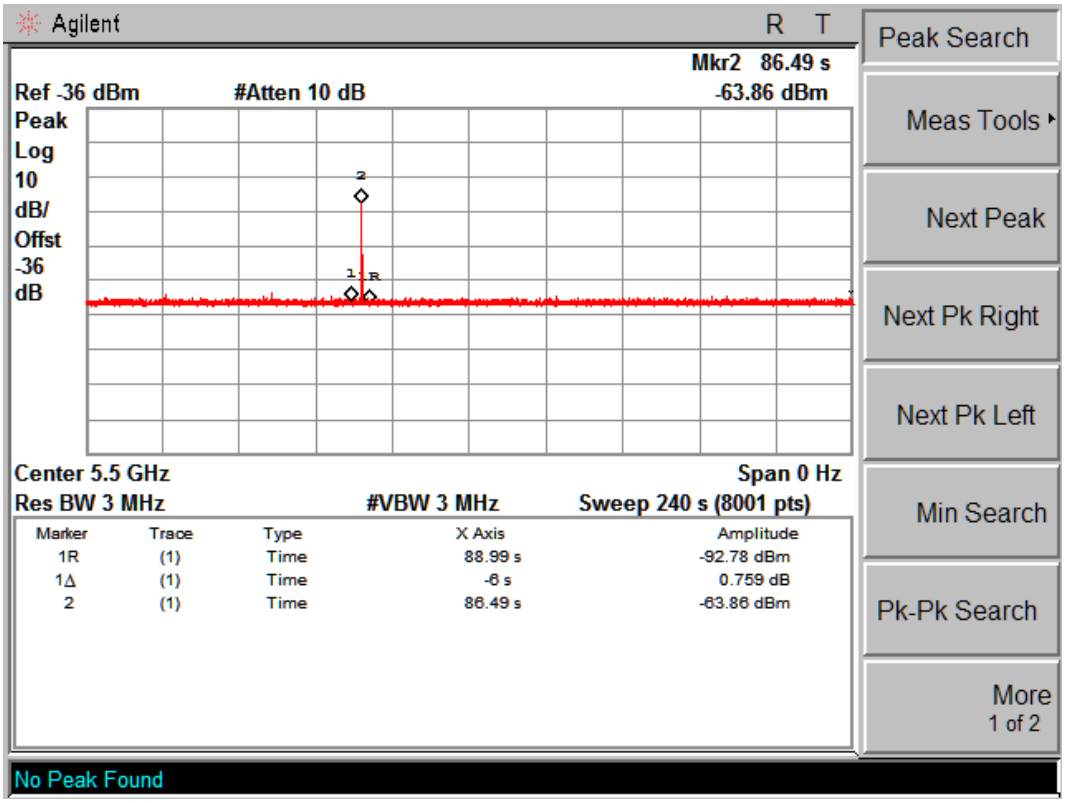


Product : IEEE 802.11a/b/g miniPCI module

Test Item : Radar Burst at the End of the Channel Availability Check Time

Radar Type : Type 1

Test Mode : Mode 1: Transmit (802.11a)-CH100



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

6.1. Test Procedure

These tests define how the following DFS parameters are verified during In-Service Monitoring;

Channel Closing Transmission Time, Channel Move Time, and Non-Occupancy Period.. The steps below define the procedure to determine the above mentioned parameters when a radar Burst with a level equal to the DFS Detection Threshold + 1dB (-63dBm) is generated on the Operating Channel of the U-NII device.

A U-NII device operating as a Client Device will associate with the UUT (Master) at 5300 MHz and 5500MHz.

Stream the MPEG test file from the Master Device to the Client Device on the selected Channel for the entire period of the test.

At time T_0 the Radar Waveform generator sends a Burst of pulses for each of the radar types at -63dBm.

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

Transmission Time results to the limits defined in the DFS Response requirement values table.

Measure the UUT for more than 30 minutes following the channel close/move time to verify that the UUT does not resume any transmissions on this Channel.

6.2. Test Requirement

Parameter	Value
Channel Move Time	10 Seconds
Channel Closing Transmission Time	200 milliseconds + approx. 60 milliseconds over remaining 10 seconds period
Non-Occupancy Period	Minimum 30 minutes

6.3. Uncertainty

± 1ms.

6.4. Test Result of Channel Move Time and Channel Closing Transmission Time and Non-Occupancy Period

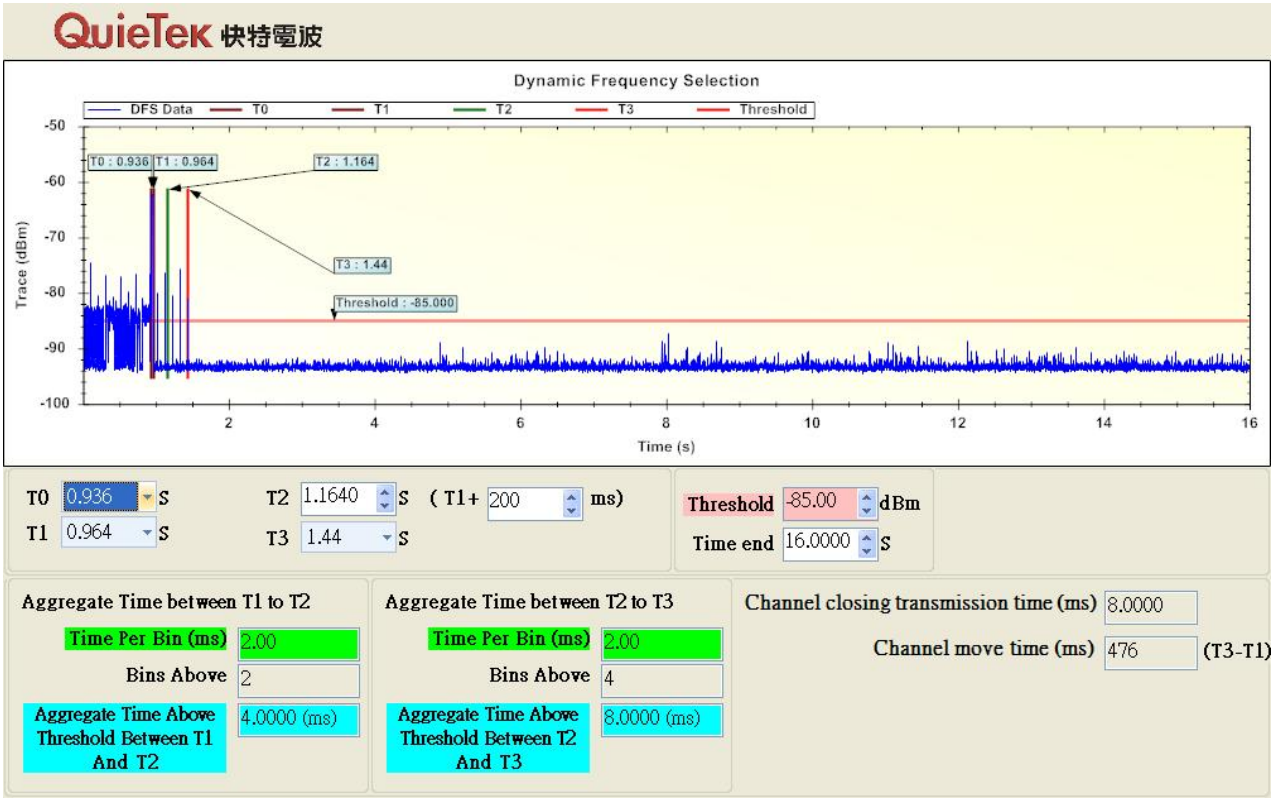
Product : IEEE 802.11a/b/g miniPCI module

Test Item : Channel Move Time Test

Radar Type : Type 1

Test Mode : Mode 1: Transmit (802.11a)-CH60

Channel Move Time for Radar Test Type 1 at 5300MHz

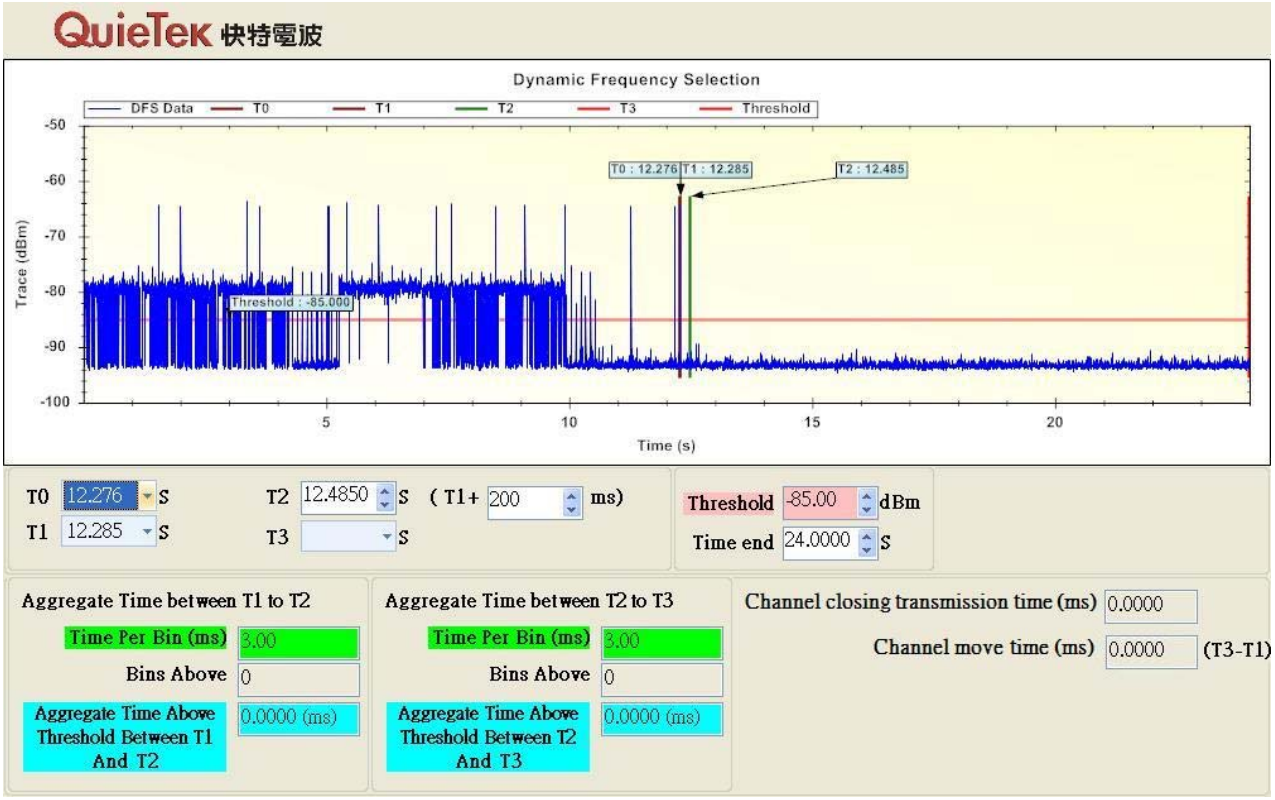


Test Item	Test Result (Sec)	Limit (Sec)
Channel Move Time	0.476	10

The results showed that after radar signal injected the channel move time was less than 10 seconds.

Product : IEEE 802.11a/b/g miniPCI module
Test Item : Channel Move Time Test
Radar Type : Type 5
Test Mode : Mode 1: Transmit (802.11a)-CH60

Channel Move Time for Radar Test Type 5 at 5300MHz

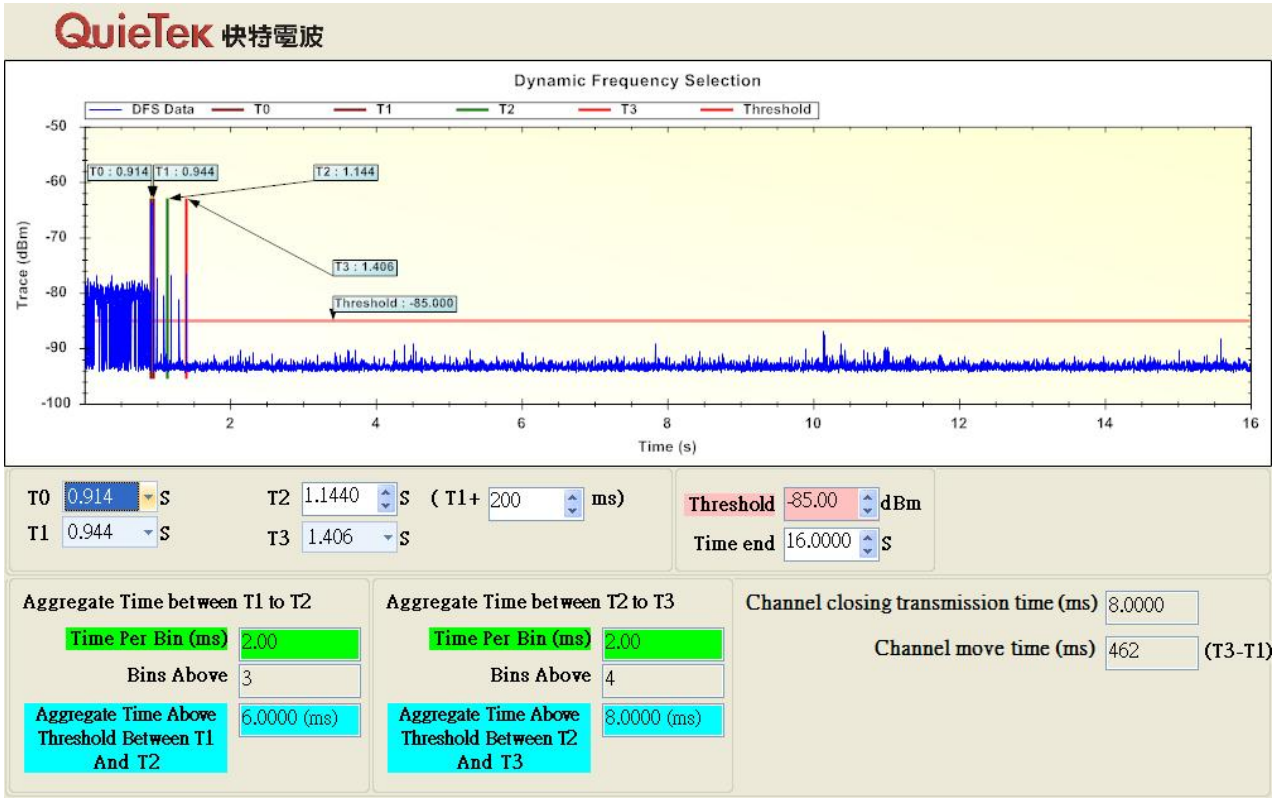


Test Item	Test Result (Sec)	Limit (Sec)
Channel Move Time	0	10

The results showed that after radar signal injected the channel move time was less than 10 seconds.

Product	:	IEEE 802.11a/b/g miniPCI module
Test Item	:	Channel Move Time
Radar Type	:	Type 1
Test Mode	:	Mode 1: Transmit (802.11a)-CH100

Channel Move Time for Radar Test Type 1 at 5500MHz

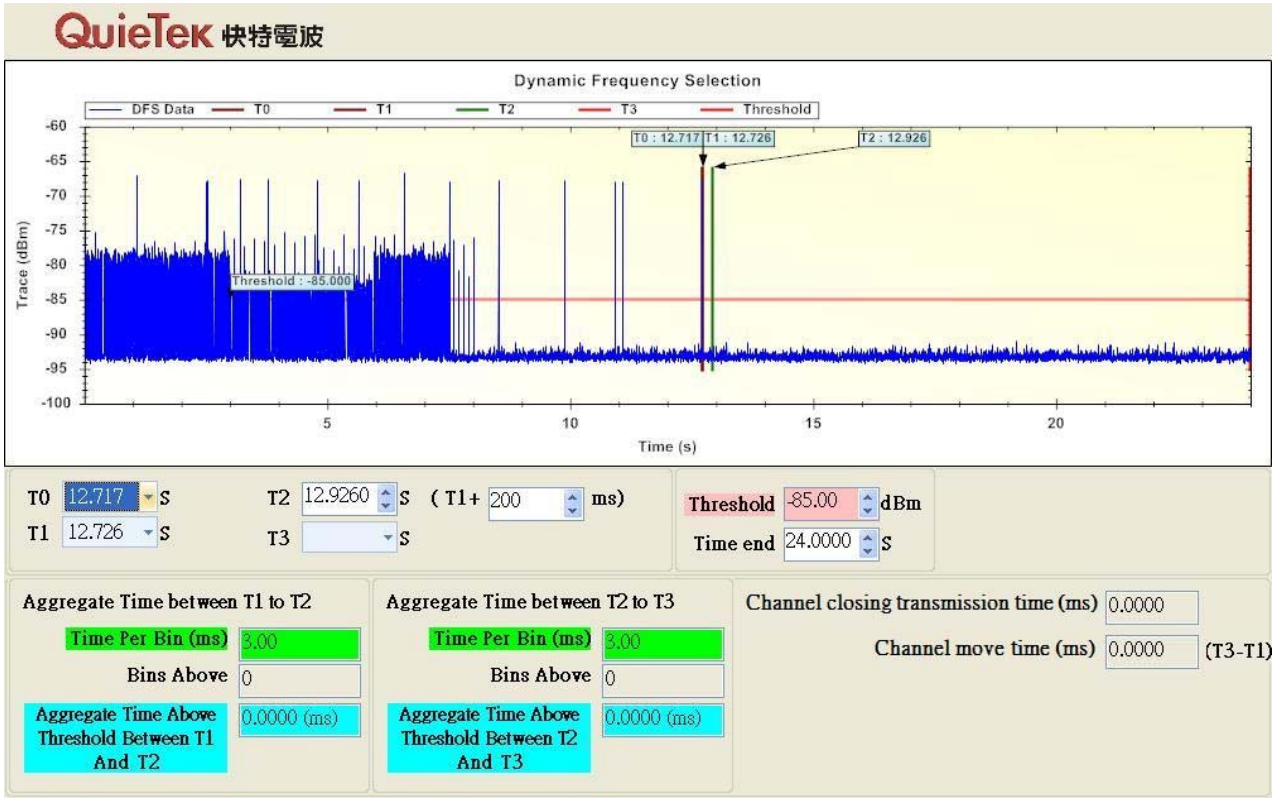


Test Item	Test Result (Sec)	Limit (Sec)
Channel Move Time	0.462	10

The results showed that after radar signal injected the channel move time was less than 10 seconds.

Product	:	IEEE 802.11a/b/g miniPCI module
Test Item	:	Channel Move Time
Radar Type	:	Type 5
Test Mode	:	Mode 1: Transmit (802.11a)-CH100

Channel Move Time for Radar Test Type 5 at 5500MHz

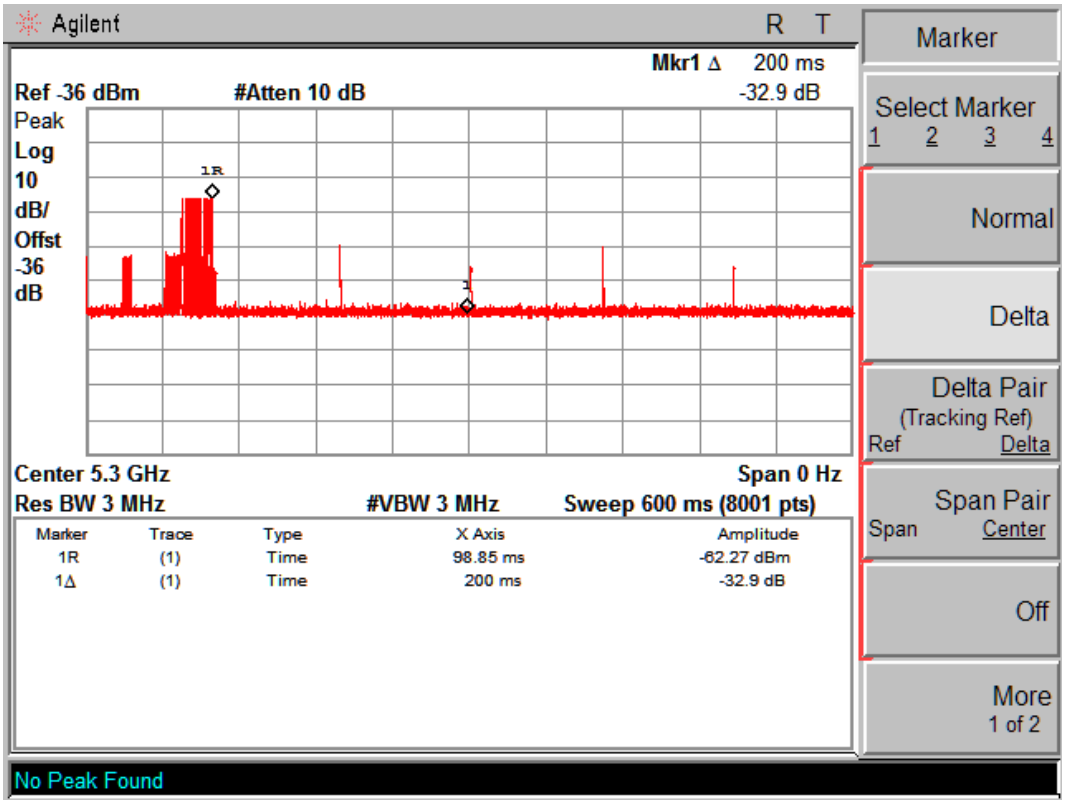


Test Item	Test Result (Sec)	Limit (Sec)
Channel Move Time	0	10

The results showed that after radar signal injected the channel move time was less than 10 seconds.

Product : IEEE 802.11a/b/g miniPCI module
Test Item : Channel Closing Transmission Time Test
Radar Type : Type 1
Test Mode : Mode 1: Transmit (802.11a)-CH60

Channel Closing Transmission Time for Radar Test Type 1 at 5300 MHz



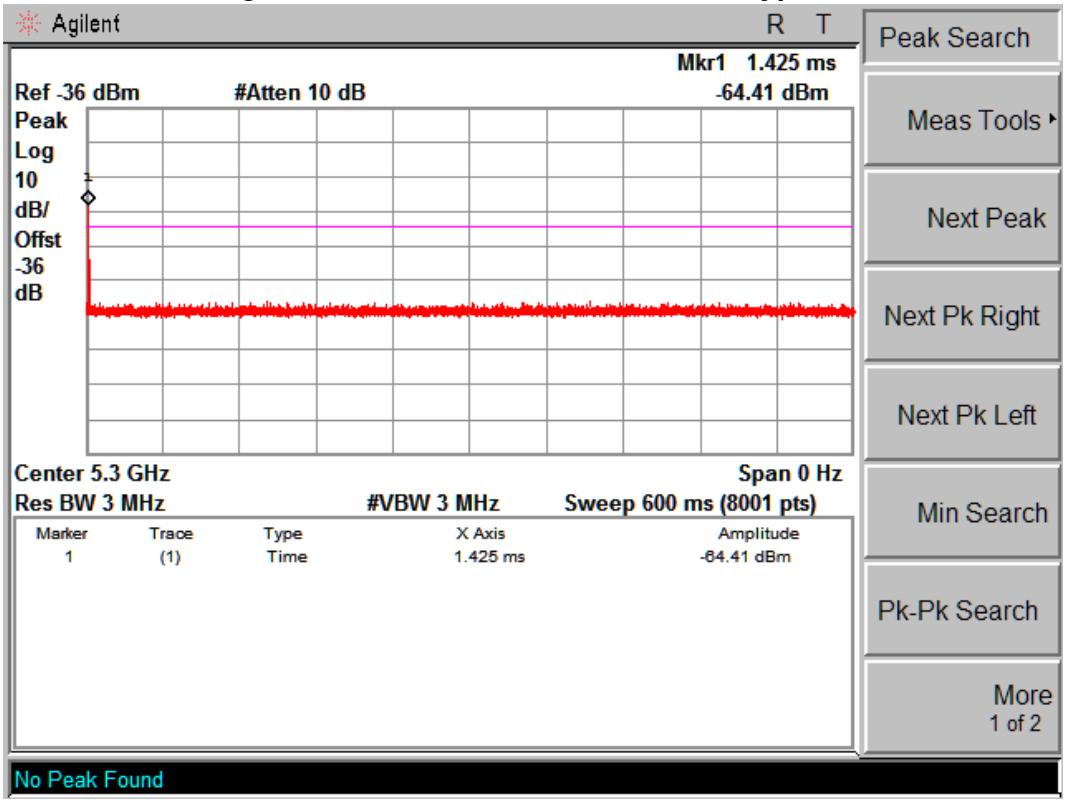
Test Item	Test Result (ms)	Limit (ms)
Channel Closing Transmission	*0.22	200 milliseconds + approx. 60 milliseconds over remaining 10 seconds period

*Note: The test result is “bin number X time per bin (600 ms / 8001)”

The results showed that after radar signal injected the channel transmission closing time less than 200 milliseconds and an aggregate of no more than 60 milliseconds.

Product : IEEE 802.11a/b/g miniPCI module
Test Item : Channel Closing Transmission Time Test
Radar Type : Type 5
Test Mode : Mode 1: Transmit (802.11a)-CH60

Channel Closing Transmission Time for Radar Test Type 5 at 5300 MHz



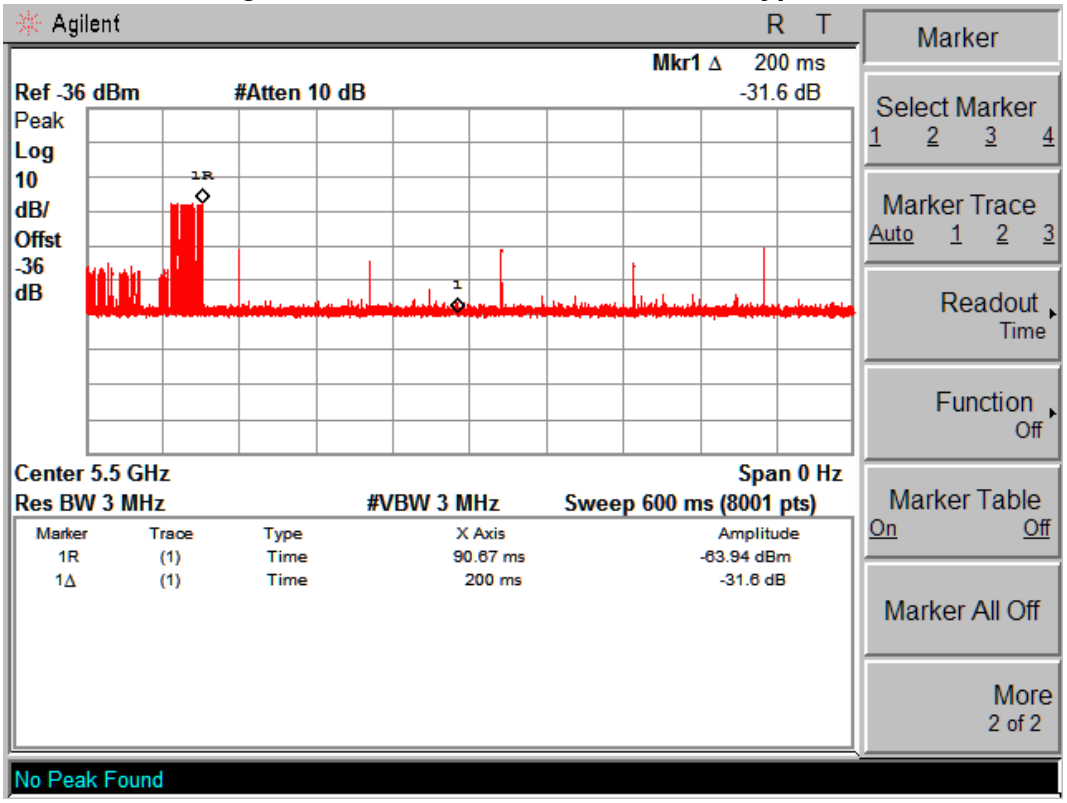
Test Item	Test Result (ms)	Limit (ms)
Channel Closing Transmission	*0	200 milliseconds + approx. 60 milliseconds over remaining 10 seconds period

*Note: The test result is “bin number X time per bin (600 ms / 8001)”

The results showed that after radar signal injected the channel transmission closing time less than 200 milliseconds and an aggregate of no more than 60 milliseconds.

Product : IEEE 802.11a/b/g miniPCI module
Test Item : Channel Closing Transmission Time Test
Radar Type : Type 1
Test Mode : Mode 1: Transmit (802.11a)-CH100

Channel Closing Transmission Time for Radar Test Type 1 at 5500 MHz



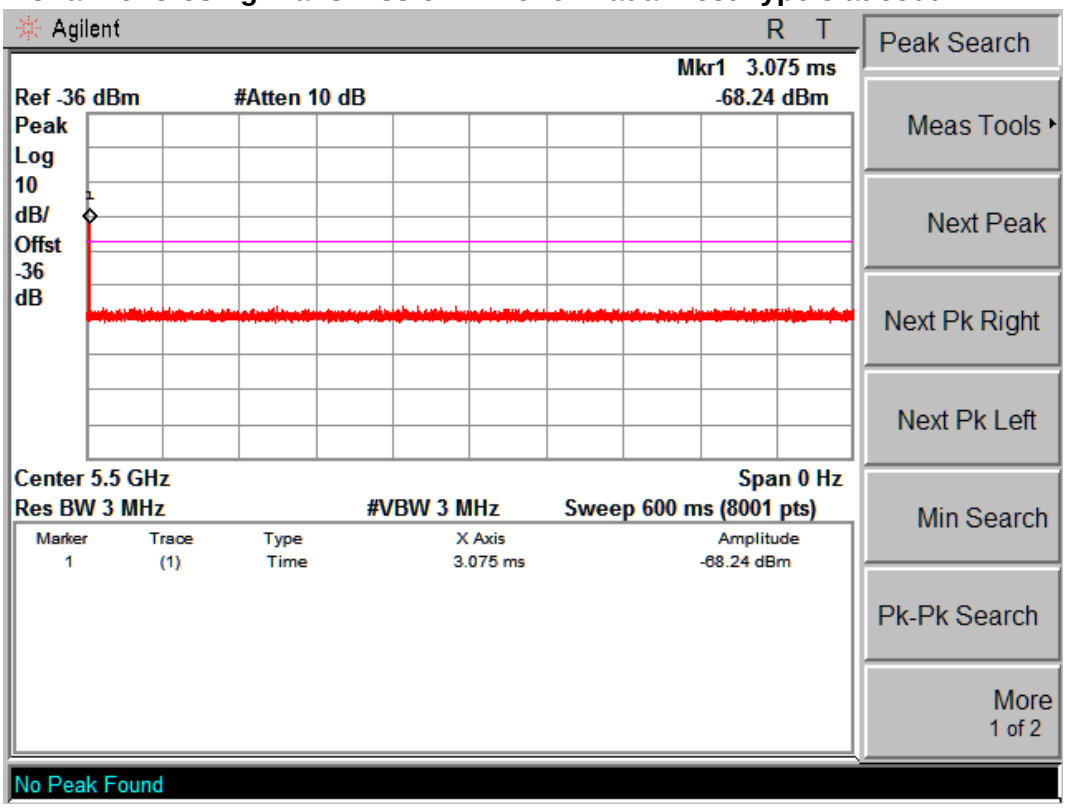
Test Item	Test Result (ms)	Limit (ms)
Channel Closing Transmission	*0.22	200 milliseconds + approx. 60 milliseconds over remaining 10 seconds period

*Note: The test result is “bin number X time per bin (600 ms / 8001)”

The results showed that after radar signal injected the channel transmission closing time less than 200 milliseconds and an aggregate of no more than 60 milliseconds.

Product : IEEE 802.11a/b/g miniPCI module
Test Item : Channel Closing Transmission Time Test
Radar Type : Type 5
Test Mode : Mode 1: Transmit (802.11a)-CH100

Channel Closing Transmission Time for Radar Test Type 5 at 5500 MHz



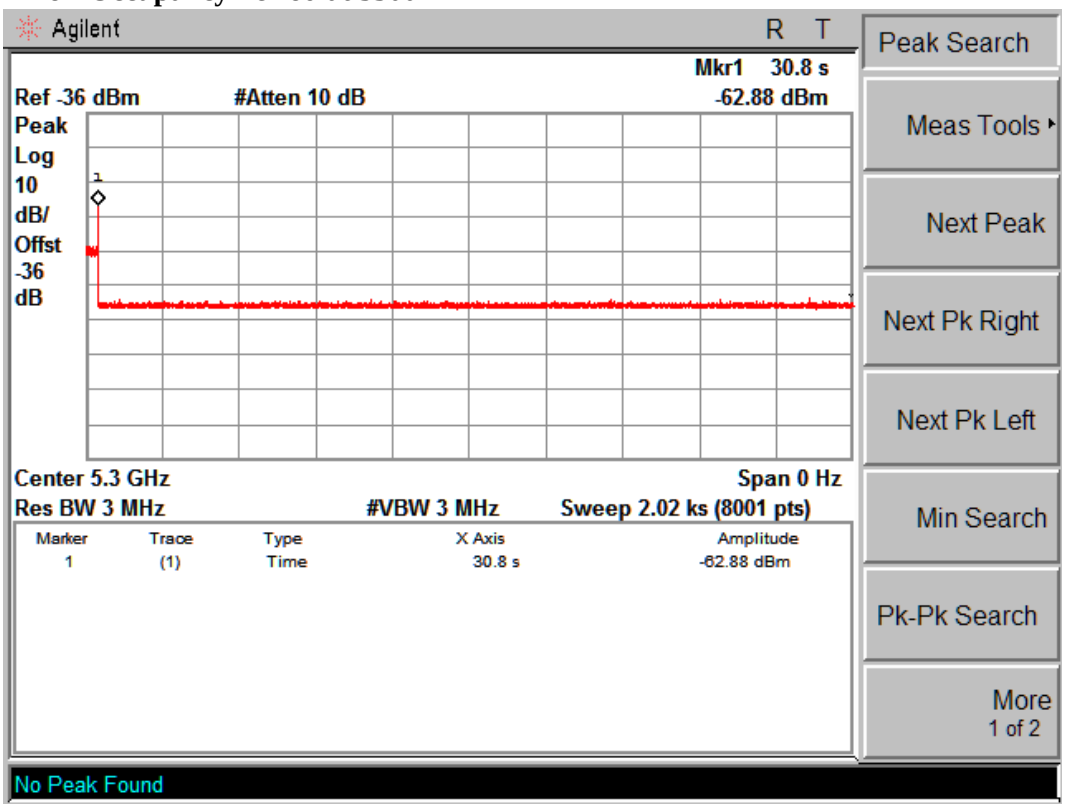
Test Item	Test Result (ms)	Limit (ms)
Channel Closing Transmission	*0	200 milliseconds + approx. 60 milliseconds over remaining 10 seconds period

*Note: The test result is “bin number X time per bin (600 ms / 8001)”

The results showed that after radar signal injected the channel transmission closing time less than 200 milliseconds and an aggregate of no more than 60 milliseconds.

Product : IEEE 802.11a/b/g miniPCI module
Test Item : Non-Occupancy Period
Radar Type : Type 1
Test Mode : Mode 1: Transmit (802.11a)-CH60

Non-Occupancy Period at 5300 MHz

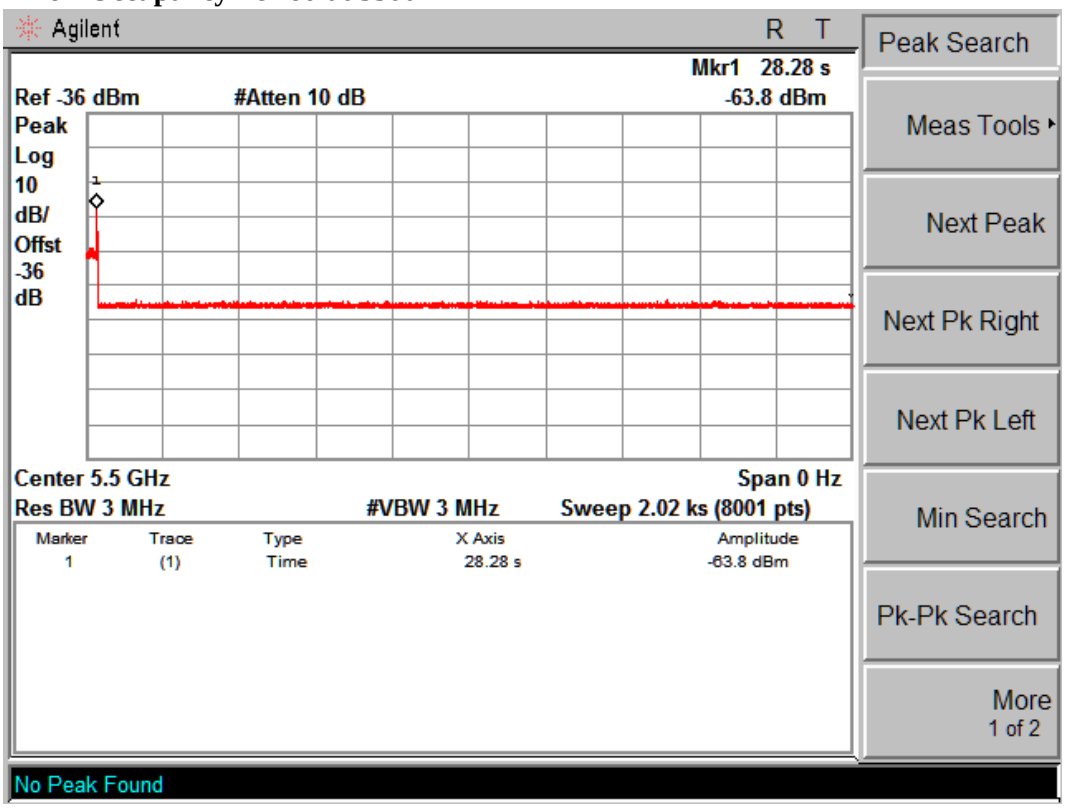


Test Item	Test Result (Minutes)	Limit (Minutes)
Non-Occupancy Period	>30	≧30

No EUT transmissions were observed on the test channel during 30 minutes observation time.

Product : IEEE 802.11a/b/g miniPCI module
Test Item : Non-Occupancy Period
Radar Type : Type 1
Test Mode : Mode 1: Transmit (802.11a)-CH100

Non-Occupancy Period at 5500 MHz



Test Item	Test Result (Minutes)	Limit (Minutes)
Non-Occupancy Period	>30	>30

No EUT transmissions were observed on the test channel during 30 minutes observation time.

7. Statistical Performance Check

7.1. Test Procedure

The steps below define the procedure to determine the minimum percentage of detection when a radar burst with a level equal to the DFS Detection Threshold + 1dB (-63dBm) is generated on the Operating Channel of the U-NII device.

A U-NII device operating as a Client Device will associate with the UUT (Master) at 5300MHz and 5500 MHz.

Stream the MPEG test file from the Master Device to the Client Device on the selected Channel for the entire period of the test.

The Radar Waveform generator sends the individual waveform for each of the radar types 1-6 at -61dbm. Statistical data will be gathered to determine the ability of the device to detect the radar test waveforms. The device can utilize a test mode to demonstrate when detection occurs to prevent the need to reset the device between trial runs.

7.2. Test Requirement

The minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

Minimum percentage of successful detections

Radar Type	Minimum Percentage of Successful Detection	Minimum Number of Trials
1	60%	30
2	60%	30
3	60%	30
4	60%	30
Aggregate (Radar Types 1-4)	80%	120
5	80%	30
6	70%	30

The percentage of successful detection is calculated by:

$$\frac{TotalWaveformDetections}{TotalWaveformTrials} \times 100 \quad \text{=Probability of Detection Radar Waveform}$$

In addition an aggregate minimum percentage of successful detection across all Short Pulse Radar Types 1-4 is required and is calculated as follows:

$$\frac{P_d 1 + P_d 2 + P_d 3 + P_d 4}{4}$$

7.3. Uncertainty

± 1ms.

7.4. Test Result of Statistical Performance Check

Product : IEEE 802.11a/b/g miniPCI module
Test Item : Statistical Performance Check
Radar Type : Type 1
Test Mode : Mode 1: Transmit (802.11a)-CH60

Trial #	Frequency (MHz)	Pulse Width (us)	PRI (us)	Pulses/Burs	1= Detection 0= No Detection
1	5300	1	1428	18	1
2	5300	1	1428	18	1
3	5300	1	1428	18	0
4	5300	1	1428	18	1
5	5300	1	1428	18	1
6	5300	1	1428	18	0
7	5300	1	1428	18	1
8	5300	1	1428	18	1
9	5300	1	1428	18	1
10	5300	1	1428	18	1
11	5300	1	1428	18	0
12	5300	1	1428	18	1
13	5300	1	1428	18	1
14	5300	1	1428	18	1
15	5300	1	1428	18	1
16	5300	1	1428	18	1
17	5300	1	1428	18	1
18	5300	1	1428	18	0
19	5300	1	1428	18	0
20	5300	1	1428	18	0
21	5300	1	1428	18	1
22	5300	1	1428	18	1
23	5300	1	1428	18	1
24	5300	1	1428	18	0
25	5300	1	1428	18	1
26	5300	1	1428	18	0
27	5300	1	1428	18	1
28	5300	1	1428	18	1
29	5300	1	1428	18	1
30	5300	1	1428	18	1
Detection Percentage(%)					73.33%

Product : IEEE 802.11a/b/g miniPCI module
Test Item : Statistical Performance Check
Radar Type : Type 1
Test Mode : Mode 1: Transmit (802.11a)-CH100

Trial #	Frequency (MHz)	Pulse Width (us)	PRI (us)	Pulses/Burs	1= Detection 0= No Detection
1	5500	1	1428	18	1
2	5500	1	1428	18	1
3	5500	1	1428	18	1
4	5500	1	1428	18	1
5	5500	1	1428	18	1
6	5500	1	1428	18	1
7	5500	1	1428	18	1
8	5500	1	1428	18	1
9	5500	1	1428	18	1
10	5500	1	1428	18	1
11	5500	1	1428	18	1
12	5500	1	1428	18	1
13	5500	1	1428	18	1
14	5500	1	1428	18	1
15	5500	1	1428	18	1
16	5500	1	1428	18	1
17	5500	1	1428	18	1
18	5500	1	1428	18	1
19	5500	1	1428	18	1
20	5500	1	1428	18	1
21	5500	1	1428	18	1
22	5500	1	1428	18	1
23	5500	1	1428	18	1
24	5500	1	1428	18	1
25	5500	1	1428	18	1
26	5500	1	1428	18	1
27	5500	1	1428	18	1
28	5500	1	1428	18	1
29	5500	1	1428	18	1
30	5500	1	1428	18	1
Detection Percentage(%)					100%

Product : IEEE 802.11a/b/g miniPCI module
Test Item : Statistical Performance Check
Radar Type : Type 2
Test Mode : Mode 1: Transmit (802.11a)-CH60

Trial #	Frequency (MHz)	Pulse Width (us)	PRI (us)	Pulses/Burs	1= Detection 0= No Detection
1	5300	2.2	156	29	1
2	5300	2.7	151	29	1
3	5300	3.6	156	25	1
4	5300	4.4	203	23	1
5	5300	3	220	28	1
6	5300	4.7	259	27	1
7	5300	3.8	159	25	1
8	5300	4.8	211	29	1
9	5300	2	176	26	1
10	5300	1.9	181	26	1
11	5300	1.3	211	29	1
12	5300	4.7	195	24	1
13	5300	1.4	225	29	1
14	5300	5	170	25	1
15	5300	2.8	219	27	1
16	5300	1.9	201	27	1
17	5300	4.6	218	24	1
18	5300	3.7	179	24	1
19	5300	4.1	192	28	1
20	5300	1.3	230	29	1
21	5300	1	195	29	1
22	5300	3.4	224	24	1
23	5300	2.3	210	25	1
24	5300	3.7	154	27	1
25	5300	1.1	212	26	1
26	5300	2.6	223	24	1
27	5300	1.3	220	24	1
28	5300	4	206	25	1
29	5300	3.8	206	24	1
30	5300	3.3	131	25	1
Detection Percentage(%)					100%

Product : IEEE 802.11a/b/g miniPCI module
Test Item : Statistical Performance Check
Radar Type : Type 2
Test Mode : Mode 1: Transmit (802.11a)-CH100

Trial #	Frequency (MHz)	Pulse Width (us)	PRI (us)	Pulses/Burs	1= Detection 0= No Detection
1	5500	5	169	28	1
2	5500	3.6	185	23	1
3	5500	5	200	25	1
4	5500	2.3	216	29	1
5	5500	2.2	221	29	1
6	5500	2.7	210	29	1
7	5500	4.1	190	29	1
8	5500	1.8	222	26	1
9	5500	1.1	158	28	1
10	5500	4.7	228	29	1
11	5500	3.1	214	24	1
12	5500	4.8	181	26	1
13	5500	1.5	206	23	1
14	5500	3.3	158	23	1
15	5500	3.4	199	24	1
16	5500	3.8	167	26	1
17	5500	4.9	183	23	1
18	5500	3.1	215	29	1
19	5500	1.2	181	24	1
20	5500	2.9	208	28	1
21	5500	3.5	198	24	1
22	5500	2.3	176	27	1
23	5500	1.9	158	25	1
24	5500	2	211	29	1
25	5500	3.9	193	28	1
26	5500	2.3	212	24	1
27	5500	2.5	158	23	1
28	5500	2.8	152	27	1
29	5500	1.2	157	28	1
30	5500	1.9	175	27	1
Detection Percentage(%)					100%

Product : IEEE 802.11a/b/g miniPCI module
Test Item : Statistical Performance Check
Radar Type : Type 3
Test Mode : Mode 1: Transmit (802.11a)-CH60

Trial #	Frequency (MHz)	Pulse Width (us)	PRI (us)	Pulses/Burs	1= Detection 0= No Detection
1	5300	6.5	340	18	1
2	5300	7.9	466	18	1
3	5300	7.6	445	16	1
4	5300	5.3	443	16	1
5	5300	6.1	444	18	1
6	5300	7.4	467	16	1
7	5300	5.7	373	16	1
8	5300	6.6	275	17	1
9	5300	8.8	434	16	1
10	5300	8.5	459	16	1
11	5300	9.6	328	18	1
12	5300	6.2	359	18	1
13	5300	7.1	381	16	1
14	5300	7.7	364	17	1
15	5300	6.5	466	18	1
16	5300	9.2	337	18	1
17	5300	9	497	17	1
18	5300	7.7	252	16	1
19	5300	6.3	384	16	1
20	5300	9.9	374	17	1
21	5300	5.1	395	16	1
22	5300	8.7	354	18	1
23	5300	7.1	325	17	1
24	5300	5.1	471	18	1
25	5300	6.5	269	18	1
26	5300	7.9	299	16	1
27	5300	5.9	402	17	1
28	5300	8.9	377	17	1
29	5300	8.8	415	18	1
30	5300	8.5	284	17	1
Detection Percentage(%)					100%

Product : IEEE 802.11a/b/g miniPCI module
Test Item : Statistical Performance Check
Radar Type : Type 3
Test Mode : Mode 1: Transmit (802.11a)-CH100

Trial #	Frequency (MHz)	Pulse Width (us)	PRI (us)	Pulses/Burs	1= Detection 0= No Detection
1	5500	5.7	416	18	1
2	5500	9.8	301	17	1
3	5500	8.2	392	16	1
4	5500	7.1	339	17	1
5	5500	7.1	329	17	1
6	5500	7.8	373	18	1
7	5500	9.5	453	16	1
8	5500	7.5	328	18	1
9	5500	5.6	353	16	1
10	5500	7.2	391	16	1
11	5500	9.1	408	17	1
12	5500	6.1	285	16	1
13	5500	5.5	296	17	1
14	5500	5	393	18	1
15	5500	6	433	16	1
16	5500	8.1	323	17	1
17	5500	7.8	352	18	1
18	5500	8.8	485	18	1
19	5500	6.1	405	17	1
20	5500	7.5	332	16	1
21	5500	8.6	296	17	1
22	5500	8.2	266	17	1
23	5500	7.4	275	18	1
24	5500	8.3	439	16	1
25	5500	7.8	365	17	1
26	5500	8.9	255	18	1
27	5500	7.3	367	18	1
28	5500	6.6	264	18	1
29	5500	7.1	304	17	1
30	5500	9.9	286	18	1
Detection Percentage(%)					100%

Product : IEEE 802.11a/b/g miniPCI module
Test Item : Statistical Performance Check
Radar Type : Type 4
Test Mode : Mode 1: Transmit (802.11a)-CH60

Trial #	Frequency (MHz)	Pulse Width (us)	PRI (us)	Pulses/Burs	1= Detection 0= No Detection
1	5300	17.8	369	15	1
2	5300	13.2	450	16	1
3	5300	17.9	446	13	1
4	5300	11.7	319	13	1
5	5300	16.5	273	16	1
6	5300	16.9	348	16	1
7	5300	18.3	428	12	1
8	5300	17.3	302	14	1
9	5300	19.9	418	13	1
10	5300	12.7	408	16	1
11	5300	17.3	408	12	1
12	5300	16.3	291	14	1
13	5300	19.6	476	16	1
14	5300	10.9	361	13	1
15	5300	10.1	483	14	1
16	5300	18.9	395	13	1
17	5300	18.1	334	13	1
18	5300	15.3	316	13	1
19	5300	13	321	15	1
20	5300	19.4	476	12	1
21	5300	17.7	430	16	1
22	5300	17.2	427	16	1
23	5300	10.6	463	14	1
24	5300	17.9	298	16	1
25	5300	18.6	303	13	1
26	5300	18.5	429	16	1
27	5300	19	333	13	1
28	5300	19.7	395	12	1
29	5300	19.2	258	12	1
30	5300	16.2	313	16	1
Detection Percentage(%)					100%

Product : IEEE 802.11a/b/g miniPCI module
Test Item : Statistical Performance Check
Radar Type : Type 4
Test Mode : Mode 1: Transmit (802.11a)-CH100

Trial #	Frequency (MHz)	Pulse Width (us)	PRI (us)	Pulses/Burs	1= Detection 0= No Detection
1	5500	15.9	342	16	1
2	5500	19.2	363	15	1
3	5500	10.6	304	14	1
4	5500	16	460	15	1
5	5500	14.1	308	12	1
6	5500	13.4	450	15	1
7	5500	18.9	348	15	1
8	5500	11.5	453	15	1
9	5500	16.5	325	13	1
10	5500	16.8	299	14	1
11	5500	18.3	314	15	1
12	5500	15.4	433	14	1
13	5500	17.9	329	16	1
14	5500	13.5	437	16	1
15	5500	10.5	456	16	1
16	5500	12.7	380	16	1
17	5500	19.2	374	14	1
18	5500	19.3	329	12	1
19	5500	10.1	383	16	1
20	5500	20	310	15	1
21	5500	13.1	327	12	1
22	5500	12.8	261	16	1
23	5500	14.6	462	14	1
24	5500	14.3	432	12	1
25	5500	19.6	441	15	1
26	5500	17.7	479	14	1
27	5500	11.1	422	16	1
28	5500	15.3	314	12	1
29	5500	13.8	475	13	1
30	5500	17.7	364	16	1
Detection Percentage (%)					100%

Total Type 1~4 Radar Statistical Performance			
Radar Type	Detection Percentage (%)	Limit (%)	Result
1	73.33	>60%	Pass
2	100	>60%	Pass
3	100	>60%	Pass
4	100	>60%	Pass
Total Type 1~4	93.33	>80%	Pass

Product : IEEE 802.11a/b/g miniPCI module
Test Item : Statistical Performance Check
Radar Type : Type 5
Test Mode : Mode 1: Transmit (802.11a)-CH60

Trial #	Frequency (MHz)	***Filename**	1= Detection 0= No Detection
1	5300	Statistical Check RandParm For Radar Type 5 1 trail	1
2	5300	Statistical Check RandParm For Radar Type 5 2 trail	1
3	5300	Statistical Check RandParm For Radar Type 5 3 trail	1
4	5300	Statistical Check RandParm For Radar Type 5 4 trail	1
5	5300	Statistical Check RandParm For Radar Type 5 5 trail	1
6	5300	Statistical Check RandParm For Radar Type 5 6 trail	1
7	5300	Statistical Check RandParm For Radar Type 5 7 trail	1
8	5300	Statistical Check RandParm For Radar Type 5 8 trail	1
9	5300	Statistical Check RandParm For Radar Type 5 9 trail	1
10	5300	Statistical Check RandParm For Radar Type 5 10 trail	1
11	5300	Statistical Check RandParm For Radar Type 5 11 trail	1
12	5300	Statistical Check RandParm For Radar Type 5 12 trail	1
13	5300	Statistical Check RandParm For Radar Type 5 13 trail	1
14	5300	Statistical Check RandParm For Radar Type 5 14 trail	1
15	5300	Statistical Check RandParm For Radar Type 5 15 trail	1
16	5300	Statistical Check RandParm For Radar Type 5 16 trail	1
17	5300	Statistical Check RandParm For Radar Type 5 17 trail	1
18	5300	Statistical Check RandParm For Radar Type 5 18 trail	1
19	5300	Statistical Check RandParm For Radar Type 5 19 trail	1
20	5300	Statistical Check RandParm For Radar Type 5 20 trail	1
21	5300	Statistical Check RandParm For Radar Type 5 21 trail	1
22	5300	Statistical Check RandParm For Radar Type 5 22 trail	1
23	5300	Statistical Check RandParm For Radar Type 5 23 trail	1
24	5300	Statistical Check RandParm For Radar Type 5 24 trail	1
25	5300	Statistical Check RandParm For Radar Type 5 25 trail	1
26	5300	Statistical Check RandParm For Radar Type 5 26 trail	1
27	5300	Statistical Check RandParm For Radar Type 5 27 trail	1
28	5300	Statistical Check RandParm For Radar Type 5 28 trail	1
29	5300	Statistical Check RandParm For Radar Type 5 29 trail	1
30	5300	Statistical Check RandParm For Radar Type 5 30 trail	1
Detection Percentage (%)			100

Product : IEEE 802.11a/b/g miniPCI module
Test Item : Statistical Performance Check
Radar Type : Type 5
Test Mode : Mode 1: Transmit (802.11a)-CH100

Trial #	Frequency (MHz)	*Filename	1= Detection 0= No Detection
1	5500	Statistical Check RandParm For Radar Type 5 1 trail	1
2	5500	Statistical Check RandParm For Radar Type 5 2 trail	1
3	5510	Statistical Check RandParm For Radar Type 5 3 trail	1
4	5510	Statistical Check RandParm For Radar Type 5 4 trail	1
5	5510	Statistical Check RandParm For Radar Type 5 5 trail	1
6	5510	Statistical Check RandParm For Radar Type 5 6 trail	1
7	5510	Statistical Check RandParm For Radar Type 5 7 trail	1
8	5510	Statistical Check RandParm For Radar Type 5 8 trail	0
9	5510	Statistical Check RandParm For Radar Type 5 9 trail	1
10	5510	Statistical Check RandParm For Radar Type 5 10 trail	1
11	5510	Statistical Check RandParm For Radar Type 5 11 trail	1
12	5510	Statistical Check RandParm For Radar Type 5 12 trail	1
13	5510	Statistical Check RandParm For Radar Type 5 13 trail	1
14	5510	Statistical Check RandParm For Radar Type 5 14 trail	0
15	5510	Statistical Check RandParm For Radar Type 5 15 trail	1
16	5510	Statistical Check RandParm For Radar Type 5 16 trail	1
17	5510	Statistical Check RandParm For Radar Type 5 17 trail	1
18	5510	Statistical Check RandParm For Radar Type 5 18 trail	1
19	5510	Statistical Check RandParm For Radar Type 5 19 trail	1
20	5510	Statistical Check RandParm For Radar Type 5 20 trail	1
21	5510	Statistical Check RandParm For Radar Type 5 21 trail	1
22	5510	Statistical Check RandParm For Radar Type 5 22 trail	1
23	5510	Statistical Check RandParm For Radar Type 5 23 trail	1
24	5510	Statistical Check RandParm For Radar Type 5 24 trail	1
25	5510	Statistical Check RandParm For Radar Type 5 25 trail	1
26	5510	Statistical Check RandParm For Radar Type 5 26 trail	1
27	5510	Statistical Check RandParm For Radar Type 5 27 trail	1
28	5510	Statistical Check RandParm For Radar Type 5 28 trail	1
29	5510	Statistical Check RandParm For Radar Type 5 29 trail	0
30	5510	Statistical Check RandParm For Radar Type 5 30 trail	1
Detection Percentage (%)			90

Waveform Num = 1
Num of Bursts = 16
Burst Interval (us)= 750000

Statistical_Check_RandParm_For_Radar_Type_5_01_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	536022									
1		2	14	60	1433	1617	0	536022	0	749999
	498062									
2		1	14	65	1510	0	0	1037134	750000	1499999
	1149444									
3		1	7	65	1215	0	0	2188088	1500000	2249999
	689961									
4		1	16	95	2000	0	0	2879264	2250000	2999999
	578387									
5		1	17	90	1527	0	0	3459651	3000000	3749999
	816169									
6		3	15	90	1839	1238	1463	4277347	3750000	4499999
	469014									
7		2	12	50	1320	1631	0	4750901	4500000	5249999
	504375									
8		1	14	85	1650	0	0	5258227	5250000	5999999
	1158369									
9		2	19	90	1654	1103	0	6418246	6000000	6749999
	356520									
10		2	18	80	1227	1477	0	6777523	6750000	7499999
	1246549									
11		2	13	80	1066	1753	0	8026776	7500000	8249999
	746037									
12		2	6	80	1793	1810	0	8775632	8250000	8999999
	273562									
13		2	17	55	1335	1914	0	9052797	9000000	9749999
	1156546									
14		2	19	80	1474	1592	0	10212592	9750000	10499999
	402312									
15		2	20	80	1308	1731	0	10617970	10500000	11249999
	1190668									
16		2	14	50	1618	1981	0	11811677	11250000	11999999

Total number of pulses in waveform = 28
****

Waveform Num = 10
Num of Bursts = 20
Burst Interval (us)= 600000

Statistical_Check_RandParm_For_Radar_Type_5_02_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	94722	3	18	75	1337	1706	1739	94722	0	599999
2	708652	2	20	85	1231	1565	0	808156	600000	1199999
3	470231	1	10	85	1864	0	0	1281183	1200000	1799999
4	929163	1	5	55	1861	0	0	2212210	1800000	2399999
5	622487	1	18	95	1307	0	0	2836558	2400000	2999999
6	523890	3	18	55	1908	1127	1823	3361755	3000000	3599999
7	563408	3	19	60	1493	1966	1335	3930021	3600000	4199999
8	312581	3	10	65	1831	1738	1725	4247396	4200000	4799999
9	547483	3	12	70	1693	1818	1795	4800173	4800000	5399999
10	772865	2	17	95	1225	1529	0	5578344	5400000	5999999
11	706479	3	14	65	1049	1252	1929	6287577	6000000	6599999
12	663344	3	6	100	1345	1731	1701	6955151	6600000	7199999
13	812154	3	13	85	1310	1816	1064	7772082	7200000	7799999
14	400180	2	12	75	1028	1614	0	8176452	7800000	8399999
15	663905	3	18	95	1317	1172	1556	8842999	8400000	8999999
16	556927	2	11	85	1798	1025	0	9403971	9000000	9599999
17	526342	2	6	50	1149	1079	0	9933136	9600000	10199999
18	831037	3	19	50	1129	1104	1967	10766401	10200000	10799999
19	346010	2	19	60	1171	1750	0	11116611	10800000	11399999
20	811131	1	12	85	1574	0	0	11930663	11400000	11999999

Total number of pulses in waveform = 46
****

Waveform Num = 11

Statistical_Check_RandParm_For_Radar_Type_5_03_trail

Num of Bursts = 11

Burst Interval (us)= 1090909

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	979640									
1		3	10	95	1253	1412	1566	979640	0	1090908
	879589									
2		2	10	70	1385	1868	0	1863460	1090909	2181817
	1129360									
3		3	14	100	1217	1069	1386	2996073	2181818	3272726
	717409									
4		3	6	55	1182	1953	1212	3717154	3272727	4363635
	1531753									
5		3	16	50	1671	1752	1080	5253254	4363636	5454544
	1227625									
6		1	15	50	1233	0	0	6485382	5454545	6545453
	850435									
7		1	15	65	1810	0	0	7337050	6545454	7636362
	1313459									
8		3	19	75	1235	1663	1976	8652319	7636363	8727271
	735554									
9		1	15	80	1304	0	0	9392747	8727272	9818180
	620269									
10		3	15	80	1589	1659	1566	10014320	9818181	10909089
	1350145									
11		1	11	55	1959	0	0	11369279	10909090	11999998

Total number of pulses in waveform = 24

****

Waveform Num = 12
Num of Bursts = 17
Burst Interval (us)= 705882

Statistical_Check_RandParm_For_Radar_Type_5_04_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	445012	3	15	60	1999	1409	1813	445012	0	705881
2	951321	1	14	90	1596	0	0	1401554	705882	1411763
3	550991	3	8	75	1248	1684	1670	1954141	1411764	2117645
4	412144	2	18	55	1929	1517	0	2370887	2117646	2823527
5	554132	3	5	50	1118	1408	1176	2928465	2823528	3529409
6	890711	3	15	80	1967	1689	1430	3822878	3529410	4235291
7	952172	3	5	60	1735	1325	1509	4780136	4235292	4941173
8	744437	2	8	55	1474	1838	0	5529142	4941174	5647055
9	785701	1	15	55	1599	0	0	6318155	5647056	6352937
10	695669	2	12	60	1577	1427	0	7015423	6352938	7058819
11	70742	2	13	65	1063	1659	0	7089169	7058820	7764701
12	1063756	1	11	75	1638	0	0	8155647	7764702	8470583
13	316680	2	11	60	1722	1564	0	8473965	8470584	9176465
14	903455	1	15	100	1262	0	0	9380706	9176466	9882347
15	662095	1	15	100	1922	0	0	10044063	9882348	10588229
16	976257	3	19	75	1274	1474	1572	11022242	10588230	11294111
17	719130	1	13	90	1505	0	0	11745692	11294112	11999993

Total number of pulses in waveform = 34
****

Waveform Num = 13

Statistical_Check_RandParm_For_Radar_Type_5_05_trail

Num of Bursts = 10

Burst Interval (us)= 1200000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	1117490									
1		2	19	85	1051	1112	0	1117490	0	1199999
	679214									
2		1	11	55	1867	0	0	1798867	1200000	2399999
	1093776									
3		1	17	80	1800	0	0	2894510	2400000	3599999
	995722									
4		3	18	50	1467	1211	1602	3892032	3600000	4799999
	951164									
5		3	18	50	1380	1583	1213	4847476	4800000	5999999
	1515221									
6		1	8	50	1248	0	0	6366873	6000000	7199999
	1106820									
7		2	15	90	1124	1923	0	7474941	7200000	8399999
	1774274									
8		2	6	75	1932	1193	0	9252262	8400000	9599999
	472006									
9		1	18	100	1953	0	0	9727393	9600000	10799999
	1302990									
10		2	14	70	1905	1830	0	11032336	10800000	11999999

Total number of pulses in waveform = 18

****

Waveform Num = 14
Num of Bursts = 12
Burst Interval (us)= 1000000

Statistical_Check_RandParm_For_Radar_Type_5_06_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	343778									
1		2	10	100	1689	1807	0	343778	0	999999
	1155687									
2		2	12	65	1807	1665	0	1502961	1000000	1999999
	718695									
3		3	9	85	1709	1672	1716	2225128	2000000	2999999
	1179805									
4		2	11	90	1326	1349	0	3410030	3000000	3999999
	969948									
5		1	8	55	1695	0	0	4382653	4000000	4999999
	927031									
6		3	20	55	1197	1777	1815	5311379	5000000	5999999
	1411518									
7		1	20	55	1978	0	0	6727686	6000000	6999999
	909892									
8		3	18	80	1595	1170	1629	7639556	7000000	7999999
	608271									
9		2	6	60	1049	1854	0	8252221	8000000	8999999
	942932									
10		1	10	95	1766	0	0	9198056	9000000	9999999
	861143									
11		2	11	65	1316	1036	0	10060965	10000000	10999999
	1009038									
12		3	12	70	1492	1226	1722	11072355	11000000	11999999

Total number of pulses in waveform = 25

****

Waveform Num = 15
Num of Bursts = 18
Burst Interval (us)= 666667

Statistical_Check_RandParm_For_Radar_Type_5_07_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	281934	3	17	75	1537	1463	1391	281934	0	666666
2	847199	1	11	60	1913	0	0	1133524	666667	1333333
3	282075	2	18	95	1018	1576	0	1417512	1333334	2000000
4	1232457	3	9	50	1583	1433	1280	2652563	2000001	2666667
5	306803	3	11	75	1927	1201	1896	2963662	2666668	3333334
6	1026515	1	18	95	1035	0	0	3995201	3333335	4000001
7	80560	3	15	85	1683	1297	1265	4076796	4000002	4666668
8	680562	3	5	75	1030	1160	1518	4761603	4666669	5333335
9	747655	2	19	75	1091	1246	0	5512966	5333336	6000002
10	687263	2	9	55	1880	1203	0	6202566	6000003	6666669
11	984397	3	12	50	1881	1004	1363	7190046	6666670	7333336
12	587829	3	11	90	1170	1406	1414	7782123	7333337	8000003
13	872243	3	6	90	1937	1582	1775	8658356	8000004	8666670
14	528058	2	18	85	1687	1381	0	9191708	8666671	9333337
15	777016	1	7	85	1874	0	0	9971792	9333338	10000004
16	425591	1	11	70	1735	0	0	10399257	10000005	10666671
17	705668	1	5	50	1946	0	0	11106660	10666672	11333338
18	733433	3	14	90	1746	1242	1280	11842039	11333339	12000005

Total number of pulses in waveform = 40
****

Waveform Num = 16
Num of Bursts = 19
Burst Interval (us)= 631579

Statistical_Check_RandParm_For_Radar_Type_5_08_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	284474	2	6	55	1768	1931	0	284474	0	631578
2	427499	1	9	70	1641	0	0	715672	631579	1263157
3	608866	1	18	60	1598	0	0	1326179	1263158	1894736
4	685146	3	7	50	1904	1516	1716	2012923	1894737	2526315
5	841367	3	14	80	1296	1709	1589	2859426	2526316	3157894
6	781826	1	11	95	1537	0	0	3645846	3157895	3789473
7	543448	3	5	60	1304	1390	1173	4190831	3789474	4421052
8	391284	3	7	85	1786	1537	1776	4585982	4421053	5052631
9	972226	1	16	90	1894	0	0	5563307	5052632	5684210
10	493037	1	20	75	1317	0	0	6058238	5684211	6315789
11	601531	2	16	70	1741	1256	0	6661086	6315790	6947368
12	496247	1	11	55	1788	0	0	7160330	6947369	7578947
13	900418	1	12	75	1410	0	0	8062536	7578948	8210526
14	521819	2	12	95	1960	1254	0	8585765	8210527	8842105
15	792891	3	13	80	1635	1065	1020	9381870	8842106	9473684
16	495566	3	20	70	1820	1978	1196	9881156	9473685	10105263
17	604914	2	13	100	1206	1088	0	10491064	10105264	10736842
18	645177	2	18	70	1147	1235	0	11138535	10736843	11368421
19	553415	3	13	70	1520	1565	1681	11694332	11368422	12000000

Total number of pulses in waveform = 38
****

Waveform Num = 17
Num of Bursts = 14
Burst Interval (us)= 857143

Statistical_Check_RandParm_For_Radar_Type_5_09_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	738483	2	8	55	1281	1477	0	738483	0	857142
2	780230	3	9	75	1552	1358	1511	1521471	857143	1714285
3	746334	2	17	95	1010	1867	0	2272226	1714286	2571428
4	513966	2	8	65	1376	1029	0	2789069	2571429	3428571
5	1231639	3	18	50	1076	1883	1706	4023113	3428572	4285714
6	261449	3	5	80	1966	1229	1188	4289227	4285715	5142857
7	1199520	2	17	85	1902	1757	0	5493130	5142858	6000000
8	944378	2	6	100	1750	1947	0	6441167	6000001	6857143
9	1047242	2	18	80	1884	1354	0	7492106	6857144	7714286
10	1009490	3	14	65	1660	1651	1849	8504834	7714287	8571429
11	497256	1	20	50	1892	0	0	9007250	8571430	9428572
12	1011748	1	13	75	1891	0	0	10020890	9428573	10285715
13	369509	1	17	100	1999	0	0	10392290	10285716	11142858
14	903000	1	9	90	1274	0	0	11297289	11142859	12000001

Total number of pulses in waveform = 28
****

Waveform Num = 18
Num of Bursts = 15
Burst Interval (us)= 800000

Statistical_Check_RandParm_For_Radar_Type_5_10_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	733235	3	15	50	1681	1785	1608	733235	0	799999
2	193643	1	6	80	1461	0	0	931952	800000	1599999
3	799860	3	9	90	1440	1340	1191	1733273	1600000	2399999
4	744552	1	12	95	1147	0	0	2481796	2400000	3199999
5	843577	3	18	65	1504	1906	1970	3326520	3200000	3999999
6	844858	3	13	55	1900	1156	1468	4176758	4000000	4799999
7	637654	1	14	80	1130	0	0	4818936	4800000	5599999
8	1113834	1	17	60	1668	0	0	5933900	5600000	6399999
9	1008720	3	5	85	1696	1375	1928	6944288	6400000	7199999
10	386384	2	20	80	1026	1099	0	7335671	7200000	7999999
11	1146042	1	11	90	1739	0	0	8483838	8000000	8799999
12	443620	1	17	100	1613	0	0	8929197	8800000	9599999
13	1464247	2	18	80	1120	1488	0	10395057	9600000	10399999
14	84637	2	16	50	1513	1944	0	10482302	10400000	11199999
15	1356691	3	10	55	1971	1119	1301	11842450	11200000	11999999

Total number of pulses in waveform = 30
****

Waveform Num = 19
Num of Bursts = 19
Burst Interval (us)= 631579

Statistical_Check_RandParm_For_Radar_Type_5_11_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	544140	1	9	75	1574	0	0	544140	0	631578
2	575095	3	20	70	1618	1980	1006	1120809	631579	1263157
3	529483	1	17	55	1037	0	0	1654896	1263158	1894736
4	422705	3	16	75	1495	1085	1219	2078638	1894737	2526315
5	876296	1	10	80	1024	0	0	2958733	2526316	3157894
6	527093	2	5	50	1000	1737	0	3486850	3157895	3789473
7	330417	2	15	100	1518	1852	0	3820004	3789474	4421052
8	766957	2	16	70	1185	1960	0	4590331	4421053	5052631
9	711524	2	6	80	1174	1600	0	5305000	5052632	5684210
10	534472	2	19	100	1819	1637	0	5842246	5684211	6315789
11	1055935	2	12	75	1586	1853	0	6901637	6315790	6947368
12	585303	3	6	90	1934	1861	1628	7490379	6947369	7578947
13	631467	3	19	65	1678	1375	1407	8127269	7578948	8210526
14	493991	3	14	80	1091	1662	1774	8625720	8210527	8842105
15	326911	1	18	65	1924	0	0	8957158	8842106	9473684
16	833099	1	6	65	1296	0	0	9792181	9473685	10105263
17	682956	2	16	50	1401	1675	0	10476433	10105264	10736842
18	408598	2	15	95	1473	1522	0	10888107	10736843	11368421
19	622469	3	5	60	1223	1640	1159	11513571	11368422	12000000

Total number of pulses in waveform = 39
****

Waveform Num = 2
Num of Bursts = 8
Burst Interval (us)= 1500000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	632924									
1		3	19	85	1439	1464	1015	632924	0	1499999
	1913710									
2		1	9	65	1036	0	0	2550552	1500000	2999999
	1341650									
3		1	17	65	1557	0	0	3893238	3000000	4499999
	663371									
4		3	14	100	1373	1265	1743	4558166	4500000	5999999
	2653914									
5		2	9	90	1120	1893	0	7216461	6000000	7499999
	938753									
6		1	11	50	1960	0	0	8158227	7500000	8999999
	2336577									
7		2	20	95	1105	1562	0	10496764	9000000	10499999
	534473									
8		3	8	60	1321	1473	1460	11033904	10500000	11999999

Total number of pulses in waveform = 16
****

Statistical_Check_RandParm_For_Radar_Type_5_13_trail

Waveform Num = 20
Num of Bursts = 10
Burst Interval (us)= 1200000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	585547									
1		2	6	60	1851	1623	0	585547	0	1199999
	1401426									
2		3	19	65	1719	1265	1190	1990447	1200000	2399999
	1231498									
3		3	15	60	1950	1484	1618	3226119	2400000	3599999
	914782									
4		3	17	95	1013	1368	1801	4145953	3600000	4799999
	1701406									
5		1	8	65	1916	0	0	5851541	4800000	5999999
	981740									
6		3	6	100	1157	1525	1316	6835197	6000000	7199999
	775961									
7		3	18	70	1577	1963	1228	7615156	7200000	8399999
	979716									
8		3	9	80	1693	1985	1612	8599640	8400000	9599999
	1149895									
9		2	14	60	1430	1428	0	9754825	9600000	10799999
	1204109									
10		2	9	55	1763	1074	0	10961792	10800000	11999999

Total number of pulses in waveform = 25
****

Waveform Num = 21

Statistical_Check_RandParm_For_Radar_Type_5_14_trail

Num of Bursts = 10

Burst Interval (us)= 1200000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	283085									
1		3	19	50	1409	1045	1049	283085	0	1199999
	1965420									
2		1	18	95	1669	0	0	2252008	1200000	2399999
	936510									
3		2	11	50	1207	1038	0	3190187	2400000	3599999
	1389246									
4		2	15	50	1124	1031	0	4581678	3600000	4799999
	473692									
5		2	16	90	1710	1985	0	5057525	4800000	5999999
	1880252									
6		1	19	95	1423	0	0	6941472	6000000	7199999
	1292935									
7		2	6	60	1922	1901	0	8235830	7200000	8399999
	253473									
8		3	16	80	1737	1418	1298	8493126	8400000	9599999
	1853736									
9		3	13	60	1830	1478	1668	10351315	9600000	10799999
	1166843									
10		2	18	50	1113	1032	0	11523134	10800000	11999999

Total number of pulses in waveform = 21

****

Waveform Num = 22
Num of Bursts = 20
Burst Interval (us)= 600000

Statistical_Check_RandParm_For_Radar_Type_5_15_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	286316									
1		3	14	55	1775	1682	1127	286316	0	599999
	597139									
2		3	12	85	1454	1993	1712	888039	600000	1199999
	566441									
3		2	14	75	1719	1110	0	1459639	1200000	1799999
	389675									
4		2	11	60	1043	1328	0	1852143	1800000	2399999
	1113925									
5		1	10	60	1164	0	0	2968439	2400000	2999999
	315931									
6		1	14	55	1179	0	0	3285534	3000000	3599999
	788616									
7		3	8	50	1500	1921	1425	4075329	3600000	4199999
	325930									
8		2	18	75	1118	1933	0	4406105	4200000	4799999
	648602									
9		2	7	70	1568	1139	0	5057758	4800000	5399999
	763023									
10		3	17	50	1345	1404	1225	5823488	5400000	5999999
	753529									
11		2	10	75	1795	1074	0	6580991	6000000	6599999
	16748									
12		3	20	100	1539	1665	1608	6600608	6600000	7199999
	1136118									
13		2	8	55	1142	1136	0	7741538	7200000	7799999
	462260									
14		1	10	60	1308	0	0	8206076	7800000	8399999
	575168									
15		2	13	85	1899	1222	0	8782552	8400000	8999999
	479008									
16		3	12	90	1187	1809	1401	9264681	9000000	9599999
	593247									
17		1	12	80	1311	0	0	9862325	9600000	10199999
	747841									
18		1	5	85	1435	0	0	10611477	10200000	10799999
	362340									
19		2	17	85	1612	1889	0	10975252	10800000	11399999
	640574									
20		3	17	65	1680	1158	1442	11619327	11400000	11999999

Total number of pulses in waveform = 42
****

Waveform Num = 23
Num of Bursts = 15
Burst Interval (us)= 800000

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	15952	2	7	75	1587	1054	0	15952	0	799999
2	1084862	2	18	80	1801	1069	0	1103455	800000	1599999
3	725993	1	12	65	1034	0	0	1832318	1600000	2399999
4	657829	1	9	100	1117	0	0	2491181	2400000	3199999
5	939719	1	17	60	1867	0	0	3432017	3200000	3999999
6	735511	2	14	80	1977	1198	0	4169395	4000000	4799999
7	1095656	1	20	90	1992	0	0	5268226	4800000	5599999
8	588232	2	16	90	1840	1354	0	5858450	5600000	6399999
9	695333	3	10	55	1293	1402	1334	6556977	6400000	7199999
10	692342	1	17	55	1230	0	0	7253348	7200000	7999999
11	1122865	1	20	70	1401	0	0	8377443	8000000	8799999
12	509611	3	8	90	1393	1751	1774	8888455	8800000	9599999
13	725200	3	16	60	1428	1700	1834	9618573	9600000	10399999
14	1552438	2	13	80	1037	1481	0	11175973	10400000	11199999
15	497094	1	17	100	1708	0	0	11675585	11200000	11999999

Total number of pulses in waveform = 26
****

Waveform Num = 24
Num of Bursts = 15
Burst Interval (us)= 800000

Statistical_Check_RandParm_For_Radar_Type_5_17_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	618391									
1		2	6	100	1600	1316	0	618391	0	799999
	932313									
2		1	7	80	1270	0	0	1553620	800000	1599999
	691575									
3		3	13	85	1414	1813	1783	2246465	1600000	2399999
	459185									
4		2	14	85	1467	1850	0	2710660	2400000	3199999
	556302									
5		3	12	65	1230	1215	1204	3270279	3200000	3999999
	1372287									
6		3	15	80	1313	1355	1677	4646215	4000000	4799999
	224584									
7		3	15	100	1818	1351	1479	4875144	4800000	5599999
	1052878									
8		3	9	70	1632	1477	1956	5932670	5600000	6399999
	520221									
9		2	8	100	1287	1610	0	6457956	6400000	7199999
	1483302									
10		1	18	75	1116	0	0	7944155	7200000	7999999
	581286									
11		2	15	95	1562	1653	0	8526557	8000000	8799999
	393622									
12		1	11	50	1827	0	0	8923394	8800000	9599999
	1147084									
13		2	16	50	1738	1327	0	10072305	9600000	10399999
	811645									
14		3	8	70	1155	1811	1808	10887015	10400000	11199999
	353802									
15		3	19	60	1457	1911	1552	11245591	11200000	11999999

Total number of pulses in waveform = 34
****

Waveform Num = 25

Num of Bursts = 15

Burst Interval (us)= 800000

Statistical_Check_RandParm_For_Radar_Type_5_18_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	758924									
1		1	12	85	1759	0	0	758924	0	799999
	440836									
2		2	13	80	1968	1830	0	1201519	800000	1599999
	607588									
3		3	20	90	1052	1076	1133	1812905	1600000	2399999
	732465									
4		3	7	75	1895	1300	1279	2548631	2400000	3199999
	651086									
5		2	17	50	1490	1337	0	3204191	3200000	3999999
	928354									
6		2	15	95	1804	1319	0	4135372	4000000	4799999
	1145092									
7		1	16	90	1444	0	0	5283587	4800000	5599999
	935129									
8		2	14	70	1103	1320	0	6220160	5600000	6399999
	627887									
9		2	14	65	1565	1226	0	6850470	6400000	7199999
	1061712									
10		2	20	60	1278	1330	0	7914973	7200000	7999999
	193034									
11		2	15	65	1675	1925	0	8110615	8000000	8799999
	1379763									
12		2	11	50	1918	1667	0	9493978	8800000	9599999
	732030									
13		2	10	95	1670	1781	0	10229593	9600000	10399999
	516314									
14		3	12	60	1302	1930	1586	10749358	10400000	11199999
	1150140									
15		1	11	95	1736	0	0	11904316	11200000	11999999

Total number of pulses in waveform = 30

****

Waveform Num = 26
Num of Bursts = 15
Burst Interval (us)= 800000

Statistical_Check_RandParm_For_Radar_Type_5_19_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	362882	3	16	70	1230	1351	1199	362882	0	799999
2	582774	3	12	95	1344	1847	1512	949436	800000	1599999
3	823624	2	18	90	1953	1577	0	1777763	1600000	2399999
4	1122561	2	11	70	1509	1069	0	2903854	2400000	3199999
5	974650	2	7	100	1986	1046	0	3881082	3200000	3999999
6	703927	2	6	80	1046	1538	0	4588041	4000000	4799999
7	600182	2	13	60	1439	1386	0	5190807	4800000	5599999
8	1074904	1	17	50	1631	0	0	6268536	5600000	6399999
9	394845	2	12	85	1023	1045	0	6665012	6400000	7199999
10	1323604	1	18	90	1170	0	0	7990684	7200000	7999999
11	494372	1	15	75	1318	0	0	8486226	8000000	8799999
12	524074	2	11	70	1402	1488	0	9011618	8800000	9599999
13	1119415	2	20	60	1886	1008	0	10133923	9600000	10399999
14	763870	3	14	65	1432	1462	1912	10900687	10400000	11199999
15	1062419	1	12	55	1322	0	0	11967912	11200000	11999999

Total number of pulses in waveform = 29
****

Waveform Num = 27
Num of Bursts = 17
Burst Interval (us)= 705882

Statistical_Check_RandParm_For_Radar_Type_5_20_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	200231	2	14	95	1288	1020	0	200231	0	705881
2	1136326	1	9	75	1783	0	0	1338865	705882	1411763
3	71938	3	6	80	1289	1668	1458	1412586	1411764	2117645
4	1322286	2	12	70	1422	1908	0	2739287	2117646	2823527
5	122261	1	16	100	1014	0	0	2864878	2823528	3529409
6	1067731	1	17	95	1051	0	0	3933623	3529410	4235291
7	593729	3	20	70	1002	1499	1109	4528403	4235292	4941173
8	461228	3	18	75	1356	1848	1154	4993241	4941174	5647055
9	781494	1	16	70	1047	0	0	5779093	5647056	6352937
10	590172	2	13	90	1987	1381	0	6370312	6352938	7058819
11	1375551	3	17	80	1845	1222	1128	7749231	7058820	7764701
12	684426	2	8	60	1444	1030	0	8437852	7764702	8470583
13	75305	2	9	65	1557	1404	0	8515631	8470584	9176465
14	855972	2	13	55	1298	1819	0	9374564	9176466	9882347
15	594498	1	19	55	1995	0	0	9972179	9882348	10588229
16	1127644	2	17	85	1538	1311	0	11101818	10588230	11294111
17	301657	2	18	90	1645	1226	0	11406324	11294112	11999993

Total number of pulses in waveform = 33
****

Waveform Num = 28

Num of Bursts = 8

Burst Interval (us)= 1500000

Statistical_Check_RandParm_For_Radar_Type_5_21_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	935690									
1		3	9	80	1540	1481	1195	935690	0	1499999
	1188778									
2		1	9	100	1184	0	0	2128684	1500000	2999999
	1653171									
3		1	15	80	1509	0	0	3783039	3000000	4499999
	1243459									
4		3	10	75	1924	1952	1108	5028007	4500000	5999999
	1163656									
5		1	5	80	1640	0	0	6196647	6000000	7499999
	2700061									
6		3	6	75	1965	1400	1797	8898348	7500000	8999999
	597264									
7		1	8	95	1319	0	0	9500774	9000000	10499999
	2411515									
8		1	12	55	1340	0	0	11913608	10500000	11999999

Total number of pulses in waveform = 14

****

Waveform Num = 29
Num of Bursts = 20
Burst Interval (us)= 600000

Statistical_Check_RandParm_For_Radar_Type_5_22_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	292137									
1		3	13	55	1632	1442	1162	292137	0	599999
	842668									
2		1	9	100	1441	0	0	1139041	600000	1199999
	364219									
3		3	8	55	1361	1086	1484	1504701	1200000	1799999
	709620									
4		3	12	100	1118	1998	1012	2218252	1800000	2399999
	333594									
5		2	10	95	1519	1867	0	2555974	2400000	2999999
	845078									
6		1	16	50	1417	0	0	3404438	3000000	3599999
	631992									
7		3	7	65	1708	1845	1256	4037847	3600000	4199999
	746160									
8		2	18	85	1761	1070	0	4788816	4200000	4799999
	204870									
9		2	15	50	1083	1259	0	4996517	4800000	5399999
	844879									
10		3	8	75	1818	1765	1051	5843738	5400000	5999999
	502960									
11		1	16	60	1254	0	0	6351332	6000000	6599999
	730926									
12		1	8	60	1552	0	0	7083512	6600000	7199999
	195047									
13		3	17	80	1341	1379	1598	7280111	7200000	7799999
	720625									
14		2	17	60	1333	1026	0	8005054	7800000	8399999
	415320									
15		1	15	85	1360	0	0	8422733	8400000	8999999
	918081									
16		2	13	60	1940	1423	0	9342174	9000000	9599999
	296002									
17		1	5	65	1960	0	0	9641539	9600000	10199999
	980303									
18		2	15	80	1105	1371	0	10623802	10200000	10799999
	452282									
19		3	9	90	1139	1047	1717	11078560	10800000	11399999
	730065									
20		1	18	55	1557	0	0	11812528	11400000	11999999

Total number of pulses in waveform = 40

****

Waveform Num = 3

Num of Bursts = 9

Burst Interval (us)= 1333333

Statistical_Check_RandParm_For_Radar_Type_5_23_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	794822									
1		1	15	50	1920	0	0	794822	0	1333332
	703140									
2		3	13	90	1671	1671	1067	1499882	1333333	2666665
	1786997									
3		3	15	60	1278	1648	1055	3291288	2666666	3999998
	1031288									
4		3	5	95	1736	1392	1027	4326557	3999999	5333331
	1907582									
5		2	19	55	1370	1301	0	6238294	5333332	6666664
	1125459									
6		3	5	50	1691	1426	1920	7366424	6666665	7999997
	893290									
7		3	5	50	1971	1598	1936	8264751	7999998	9333330
	1982806									
8		3	11	50	1152	1930	1115	10253062	9333331	10666663
	529131									
9		2	15	100	1534	1206	0	10786390	10666664	11999996

Total number of pulses in waveform = 23

****

Statistical_Check_RandParm_For_Radar_Type_5_24_trail

Waveform Num = 30
Num of Bursts = 14
Burst Interval (us)= 857143

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	317536									
1		2	10	60	1667	1053	0	317536	0	857142
	1076448									
2		1	19	95	1489	0	0	1396704	857143	1714285
	749034									
3		2	9	100	1889	1834	0	2147227	1714286	2571428
	635425									
4		3	15	95	1187	1411	1728	2786375	2571429	3428571
	1155733									
5		3	5	80	1084	1698	1248	3946434	3428572	4285714
	828674									
6		3	11	80	1509	1702	1967	4779138	4285715	5142857
	1010482									
7		3	18	75	1212	1275	1002	5794798	5142858	6000000
	738493									
8		2	20	85	1807	1791	0	6536780	6000001	6857143
	469850									
9		1	5	50	1636	0	0	7010228	6857144	7714286
	905580									
10		1	5	95	1890	0	0	7917444	7714287	8571429
	1271592									
11		3	15	50	1535	1094	1248	9190926	8571430	9428572
	1070331									
12		1	8	65	1922	0	0	10265134	9428573	10285715
	330438									
13		3	15	90	1108	1815	1520	10597494	10285716	11142858
	1144801									
14		2	10	95	1963	1553	0	11746738	11142859	12000001

Total number of pulses in waveform = 30
****

Waveform Num = 4
Num of Bursts = 17
Burst Interval (us)= 705882

Statistical_Check_RandParm_For_Radar_Type_5_25_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	505819	3	9	55	1408	1470	1947	505819	0	705881
2	622100	1	19	55	1756	0	0	1132744	705882	1411763
3	330451	2	6	80	1523	1068	0	1464951	1411764	2117645
4	935175	1	9	55	1354	0	0	2402717	2117646	2823527
5	961458	2	11	60	1029	1328	0	3365529	2823528	3529409
6	761337	2	5	60	1708	1693	0	4129223	3529410	4235291
7	729391	2	5	50	1130	1115	0	4862015	4235292	4941173
8	115087	1	20	75	1860	0	0	4979347	4941174	5647055
9	978802	1	16	75	1897	0	0	5960009	5647056	6352937
10	808902	1	5	75	1105	0	0	6770808	6352938	7058819
11	824248	1	18	70	1889	0	0	7596161	7058820	7764701
12	854707	2	6	95	1451	1724	0	8452757	7764702	8470583
13	428796	2	7	90	1788	1513	0	8884728	8470584	9176465
14	713022	2	10	65	1656	1771	0	9601051	9176466	9882347
15	326088	1	17	75	1602	0	0	9930566	9882348	10588229
16	676517	3	17	95	1755	1279	1223	10608685	10588230	11294111
17	1124058	1	20	100	1500	0	0	11737000	11294112	11999993

Total number of pulses in waveform = 28
****

Waveform Num = 5
Num of Bursts = 14
Burst Interval (us)= 857143

Statistical_Check_RandParm_For_Radar_Type_5_26_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	637542	3	7	60	1665	1095	1077	637542	0	857142
2	279800	2	13	85	1847	1042	0	921179	857143	1714285
3	979411	1	6	50	1092	0	0	1903479	1714286	2571428
4	907020	2	13	55	1702	1526	0	2811591	2571429	3428571
5	899151	1	16	80	1046	0	0	3713970	3428572	4285714
6	755356	3	9	55	1668	1761	1240	4470372	4285715	5142857
7	1008661	3	17	70	1861	1478	1269	5483702	5142858	6000000
8	568375	1	9	100	1646	0	0	6056685	6000001	6857143
9	1139309	3	19	80	1935	1691	1075	7197640	6857144	7714286
10	1157785	3	5	80	1459	1870	1591	8360126	7714287	8571429
11	740737	3	8	80	1046	1470	1265	9105783	8571430	9428572
12	500611	2	13	65	1090	1215	0	9610175	9428573	10285715
13	1383625	3	9	65	1196	1370	1202	10996105	10285716	11142858
14	260742	1	5	70	1244	0	0	11260615	11142859	12000001

Total number of pulses in waveform = 31
****

Waveform Num = 6

Num of Bursts = 9

Burst Interval (us)= 1333333

Statistical_Check_RandParm_For_Radar_Type_5_27_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	255850									
1		3	20	90	1922	1615	1139	255850	0	1333332
	2290477									
2		3	11	70	1799	1030	1072	2551003	1333333	2666665
	318964									
3		3	5	70	1551	1686	1937	2873868	2666666	3999998
	1468933									
4		3	13	50	1086	1666	1042	4347975	3999999	5333331
	1396209									
5		2	9	90	1378	1528	0	5747978	5333332	6666664
	1915215									
6		3	5	75	1665	1675	1228	7666099	6666665	7999997
	1473151									
7		3	7	55	1094	1979	1348	9143818	7999998	9333330
	1394700									
8		2	17	60	1855	1756	0	10542939	9333331	10666663
	493323									
9		1	8	55	1491	0	0	11039873	10666664	11999996

Total number of pulses in waveform = 23

****

Waveform Num = 7

Num of Bursts = 10

Burst Interval (us)= 1200000

Statistical_Check_RandParm_For_Radar_Type_5_28_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	584380									
1		1	12	65	1754	0	0	584380	0	1199999
	1389309									
2		1	19	100	1765	0	0	1975443	1200000	2399999
	1244859									
3		3	15	55	1606	1651	1150	3222067	2400000	3599999
	835467									
4		1	20	80	1306	0	0	4061941	3600000	4799999
	1468485									
5		1	5	70	1209	0	0	5531732	4800000	5999999
	526418									
6		3	11	70	1459	1937	1692	6059359	6000000	7199999
	1673414									
7		2	5	80	1904	1237	0	7737861	7200000	8399999
	785023									
8		1	11	50	1331	0	0	8526025	8400000	9599999
	1730096									
9		3	8	55	1577	1113	1197	10257452	9600000	10799999
	1002542									
10		2	8	65	1862	1832	0	11263881	10800000	11999999

Total number of pulses in waveform = 18

****

Waveform Num = 8
Num of Bursts = 18
Burst Interval (us)= 666667

Statistical_Check_RandParm_For_Radar_Type_5_29_trail

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	582445	1	11	55	1021	0	0	582445	0	666666
2	509835	3	17	70	1139	1929	1052	1093301	666667	1333333
3	386531	3	7	65	1479	1523	1741	1483952	1333334	2000000
4	797217	3	16	50	1095	1449	1202	2285912	2000001	2666667
5	581875	2	15	50	1168	1957	0	2871533	2666668	3333334
6	964839	3	15	65	1041	1429	1501	3839497	3333335	4000001
7	627618	3	5	85	1575	1102	1219	4471086	4000002	4666668
8	551488	3	17	70	1699	1822	1594	5026470	4666669	5333335
9	634167	3	16	55	1298	1717	1894	5665752	5333336	6000002
10	590429	3	16	60	1724	1003	1660	6261090	6000003	6666669
11	937146	2	18	80	1232	1309	0	7202623	6666670	7333336
12	427304	1	8	75	1132	0	0	7632468	7333337	8000003
13	982379	1	6	85	1571	0	0	8615979	8000004	8666670
14	136746	1	12	85	1697	0	0	8754296	8666671	9333337
15	953173	3	10	75	1102	1946	1341	9709166	9333338	10000004
16	934142	1	14	85	1562	0	0	10647697	10000005	10666671
17	349222	2	5	95	1479	1313	0	10998481	10666672	11333338
18	344668	1	11	90	1128	0	0	11345941	11333339	12000005

Total number of pulses in waveform = 39
****