TEST REPORT ADDENDUM - DFS

FROM

Test of: Test of: Mimosa Networks A5c, A5-14, A5-18

To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247 (DFS Bands)

Test Report Serial No.: MIMO09-U8_DFS Addendum Rev A

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Master Document Number	Addendum Reports
MIMO09 – U8 _Master	MIMO09 – U8 _Conducted
	MIMO09 – U8 _Radiated
	MIMO09 – U8 _DFS
	MIMO09 – U2 (FCC Part15B Emissions) A5C
	MIMO09 – U3 (FCC Part15B Emissions) A5-14, A5-18

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1. MEASUREMENT AND PRESENTATION OF TEST DATA

The measurement and graphical data presented in this test report was generated automatically using state-of-the-art technology creating an easy to read report structure. Numerical measurement data is separated from supporting graphical data (plots) through hyperlinks. Numerical measurement data can be reviewed without scrolling through numerous graphical pages to arrive at the next data matrix.

Plots have been relegated into the Appendix 'Graphical Data'.

Testing and report automation was performed by MiTest. MiTest is an automated test system developed by MiCOM Labs. MiTest is the first cloud based modular test system enabling end-to-end automation of regulatory compliance testing for regulatory compliance.

The MiCOM Labs "MiTest" Automated Test System" (Patent Pending)

2. TEST SUMMARY

List of Measurements

Test Header	Result	Data Link
(h)(2) Dynamic Frequency Selection (DFS)	Complies	
(ii) Channel Availability Check	Complies	
(a) Initial CAC	Complies	View Result
(b) Beginning CAC	Complies	View Result
(c) End CAC	Complies	View Result
(iii) Channel Close / Transmission Time	Complies	View Result
(iv) Non-Occupancy Period	Complies	View Result
Probability of Detection	Complies	View Result
Detection Bandwidth	Complies	View Result

3. TEST METHODOLOGY

3.1. Dynamic Frequency Selection (DFS) Overview

A U-NII network will employ a DFS function to detect signals from radar systems and to avoid co-channel operation with these systems. This applies to the 5250-5350 MHz and/or 5470-5725 MHz bands. Within the context of the operation of the DFS function, a U-NII device will operate in either Master Mode or Client Mode. U-NII devices operating in Client Mode can only operate in a network controlled by a U-NII device operating in Master Mode. The following tables summarize the requirements.

Requirement	Master Device or Client with Radar Detection	Client without Radar Detection
	Operational Mode	
DFS Detection Threshold	Yes	Not Required
Channel Closing Transmission Time	Yes	Yes
Channel Move Time	Yes	Yes
U-NII Detection Bandwidth	Yes	Not Required

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar Detection	Client without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required

NOTE: Frequencies selected for statistical performance check should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.

The operational behavior and individual DFS requirements associated with these modes are as follows:

3.1.1. Master Devices

a) The Master Device will use DFS in order to detect Radar Waveforms with received signal strength above the DFS Detection Threshold in the 5250 − 5350 MHz and 5470 − 5725 MHz bands. DFS is not required in the 5150 − 5250 MHz or 5725 – 5850 MHz bands.

b) Before initiating a network on a Channel, the Master Device will perform a Channel Availability Check for a specified time duration (Channel Availability Check Time) to ensure that there is no radar system operating on the Channel, using DFS described under subsection a) above.

c) The Master Device initiates a U-NII network by transmitting control signals that will enable other U-NII devices to Associate with the Master Device.

d) During normal operation, the Master Device will monitor the Channel (In-Service Monitoring) to ensure that there is no radar system operating on the Channel, using DFS described under a).

e) If the Master Device has detected a Radar Waveform during In-Service Monitoring as described under d), the Operating Channel of the U-NII network is no longer an Available Channel. The Master Device will instruct all associated Client Device(s) to stop transmitting on this Channel within the Channel Move Time. The transmissions during the Channel Move Time will be limited to the Channel Closing Transmission Time.

f) Once the Master Device has detected a Radar Waveform it will not utilize the Channel for the duration of the Non-Occupancy Period.

g) If the Master Device delegates the In-Service Monitoring to a Client Device, then the combination will be tested to the requirements described under d) through f) above.

3.1.2. Client Devices

a) A Client Device will not transmit before having received appropriate control signals from a Master Device.

b) A Client Device will stop all its transmissions whenever instructed by a Master Device to which it is associated and will meet the Channel Move Time and Channel Closing Transmission Time requirements. The Client Device will not resume any transmissions until it has again received control signals from a Master Device.

c) If a Client Device is performing In-Service Monitoring and detects a Radar Waveform above the DFS Detection Threshold, it will inform the Master Device. This is equivalent to the Master Device detecting the Radar Waveform and d) through f) of section 5.1.1 apply.

d) Irrespective of Client Device or Master Device detection the Channel Move Time and Channel Closing Transmission Time requirements remain the same.

e) The client test frequency must be monitored to ensure no transmission of any type has occurred for 30 minutes. Note: If the client moves with the master, the device is considered compliant if nothing appears in the client non-occupancy period test. For devices that shutdown (rather than moving channels), no beacons should appear.

3.2. DFS Detection Thresholds

The table below provides the DFS Detection Thresholds for Master Devices as well as Client Devices incorporating In-Service Monitoring.

DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

Maximum Transmit Power	Value (see Notes 1, 2 and 3)
EIRP ≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 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.

NOTE 3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

3.3. Response Requirements

The following table provides the response requirements for Master and Client Devices incorporating DFS.

DFS Response Requirement Values

Parameter	Value
Non-Occupancy Period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds, see NOTE 1
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period, see NOTES 1 and 2
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth, see NOTE 3

NOTE 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

NOTE 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

NOTE 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

3.4. 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.

3.4.1. Short Radar Pulses

Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (μS)	PRI (μS)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a	$\text{Roundup}\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot 10^6}{\text{PRI}_{\mu\text{sec}}}\right)\right\}$	60%	30
		Test B: 15 unique PRI values randomly selected in the range 518-3066 μS, with a minimum increment of 1 μS, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

Note 1: Short Radar Pulse Type 0 should be used for the Detection Bandwidth test, Channel Move Time and Channel Closing Time tests

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B.

3.4.2. Long Radar Pulse Test

Long Pulse Radar Test Waveforms

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

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 transmission period will have the same chirp width. 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.

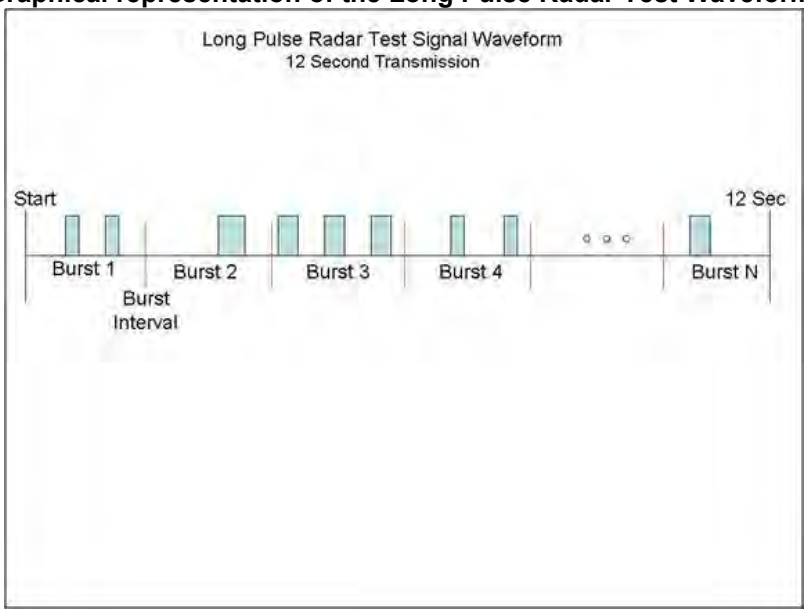
4. The pulse width (for both pulses) is randomly selected to be 75 microseconds.

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 the Long Pulse Radar Test Waveform.



3.4.3. Frequency Hopping Radar Test Waveform

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

3.5. Radar Waveform Calibration

The following equipment setup was used to calibrate the Radar Waveform. A spectrum analyzer was used to establish the test signal level for each radar type. During this process there were no transmissions by either the Master or Client Device. The spectrum analyzer was switched to the zero span (Time Domain) mode 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 3 MHz.

The signal generator amplitude was set so that the power level measured at the spectrum analyzer was equal to the DFS detection threshold +1dB (Ref Section 9.2).

3.6. Test Program Details

EUT Type: Master with radar detection

Frequency band(s): 5,250 - 5,350 MHz and 5,470 – 5,725 MHz

Uniform Loading: For the above frequency band(s) the manufacturer declared that the device provides an aggregate uniform loading of the spectrum across all devices by selecting an operating channel among the available channels using a random algorithm.

Test Environment: Conducted
Antenna Gain used for Testing: 5.0 dBi

Radio parameters:
802.11ac-80: Transmit Power: 23 dBm; Data Rate: 29 Mbit/s; Duty Cycle: ~10%

Number of Antenna Chains: 4
Test Communication Throughput Methodology
The requisite MPEG video file ("TestFile.mpg" available on the NTIA website at the following link http://ntiacsd.ntia.doc.gov/dfs/) is used during this video stream.

EUT Software Version: 202
EUT Build number: 93

Test Environmental Conditions - Ambient:
Temperature: 17 to 23 °C
Relative humidity: 31 to 57%
Pressure: 999 to 1012 mbar

4. TEST RESULTS

4.1. Dynamic Frequency Selection (DFS)

4.1.1. Channel Availability Check

4.1.1.1. Initial CAC

This test verifies that the EUT does not emit pulse, control, or data signals on the test Channel until the power-up sequence has been completed and the U-NII device checks for Radar Waveforms for one minute on the test Channel. This test does not use any Radar Waveforms.

The EUT is instructed to power up at the appropriate center frequency. The spectrum analyzer is set on zero span with a 1 MHz resolution bandwidth and 260 second sweep time to monitor the RF output of the EUT during power up. The analyzer's sweep will be started the same time power is applied to the U-NII device.

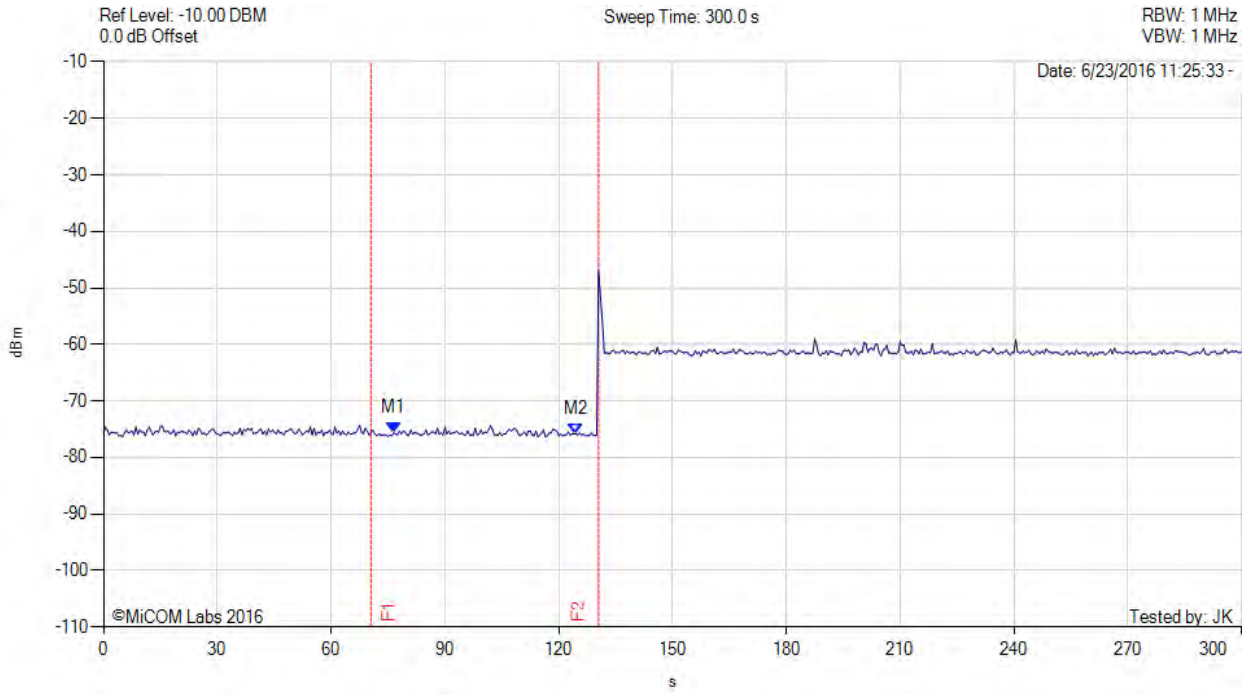
The EUT should not transmit any pulse or data transmissions until at least 1 minute after the completion of the power-on cycle.

The first red vertical line shown on the following plot denotes the instant when the EUT starts its power-up sequence i.e. T0 (as defined within the FCC's KDB 905462 D02 Section 4.1). The power-up reference T0 is determined by the time it takes for the EUT to start "beaconing" i.e. initial beacon – 60 secs = end of power-up.

The Channel Availability Check Time commences at instant T0 and will end no sooner than T0 + 60 seconds. T0 + 60 is indicated on the plot by the second vertical line.

INITIAL CAC

Variant: 802.11ac 80, Channel: 5530.00 MHz, Data Rate: 29 Mbit/s, Duty Cycle : 10.00%, Antenna Gain: 5.00 dBi



Analyzer Setup	Marker:Time:Amplitude	Test Results
Detector = POS Sweep Count = View RF Atten (dB) = 0 Trace Mode = 0	M1 : 76.500 s : -75.660 dBm M2 : 124.500 s : -75.830 dBm	Channel Frequency: 5530.00 MHz F2 – F1 = 130.50 – 70.50 = 60.00 s

4.1.1.2. Beginning CAC

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 +1dB (Ref Section 9.2) occurs at the beginning of the Channel Availability Check Time.

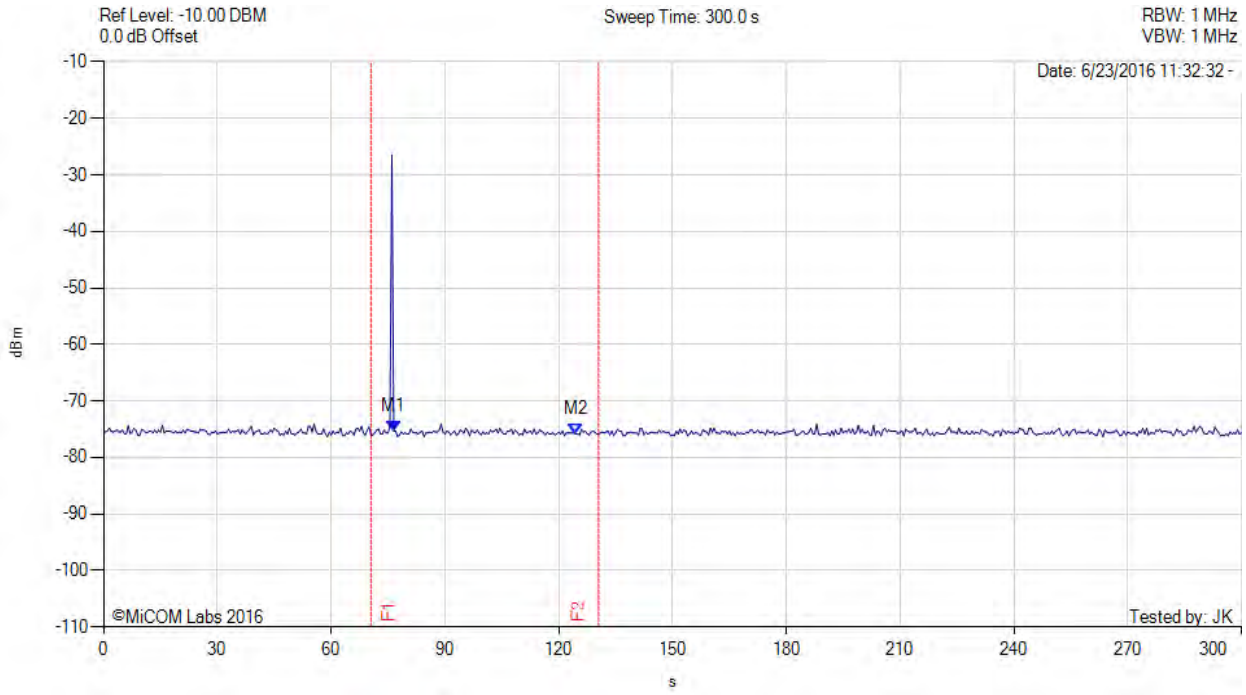
A single Burst of short pulse of radar Type 1 will commence within a 6 second window starting at T0 (first red vertical marker line on the plot).

Visual indication on the EUT of successful detection of the radar Burst is recorded and reported. Observation of emissions at the appropriate center frequency will continue for 2.5 minutes after the radar burst has been generated.

T0 + 60 is indicated on the plot by the second vertical line.

BEGINNING CAC

Variant: 802.11ac 80, Channel: 5530.00 MHz, Data Rate: 29 Mbit/s, Duty Cycle : 10.00%, Antenna Gain: 5.00 dBi



Analyzer Setup	Marker:Time:Amplitude	Test Results
Detector = POS Sweep Count = View RF Atten (dB) = 0 Trace Mode = 0	M1 : 76.500 s : -75.330 dBm M2 : 124.500 s : -75.830 dBm	Channel Frequency: 5530.00 MHz F2 – F1 = 130.50 – 70.50 = 60.00 s

4.1.1.3. End CAC

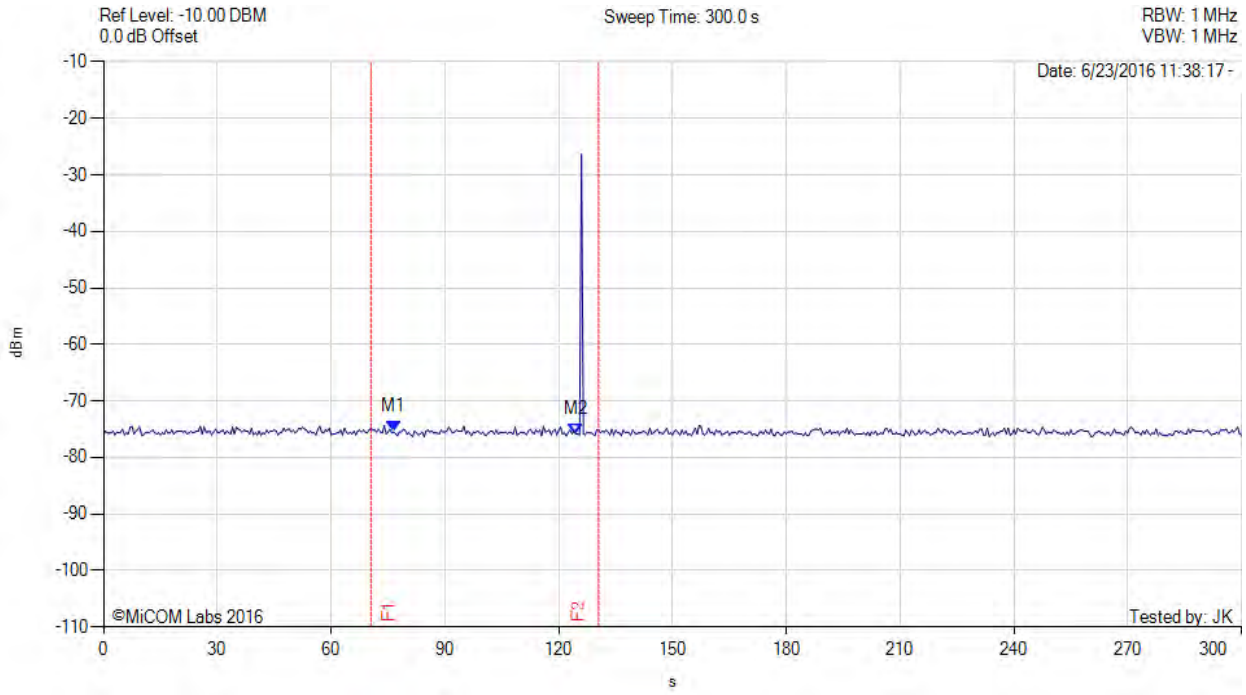
The steps below define the procedure to verify successful radar detection on the selected Channel during a period equal to the Channel Availability Check Time and avoidance of operation on that Channel when a radar Burst with a level equal to the DFS Detection Threshold occurs at the end of the Channel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

A single Burst of short pulse of radar Type 1 will commence within a 6 second window starting at T0 + 54 seconds. The window will commence at marker 3 and end at the red time line T2 (T0 + 60 secs)

Visual indication on the EUT of successful detection of the radar Burst is recorded and reported. Observation of emissions at the appropriate center frequency will continue for 2.5 minutes after the radar burst has been generated.

END CAC

Variant: 802.11ac 80, Channel: 5530.00 MHz, Data Rate: 29 Mbit/s, Duty Cycle : 10.00%, Antenna Gain: 5.00 dBi



Analyzer Setup	Marker:Time:Amplitude	Test Results
Detector = POS Sweep Count = View RF Atten (dB) = 0 Trace Mode = 0	M1 : 76.500 s : -75.500 dBm M2 : 124.500 s : -75.830 dBm	Channel Frequency: 5530.00 MHz F2 – F1 = 130.50 – 70.50 = 60.00 s

4.1.2. Channel Close / Transmission Time

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 is generated on the Operating Channel of the U-NII device.
The EUT will is associated with a support U-NII device in order to setup an appropriate transmission media in accordance with the FCC requirements.

Channel Closing Transmission Time and Channel Mode Time - Measurement
The test system was set-up to capture all transmission data for access point events above a threshold level of -50 dBm. The test equipment time stamps all captured events.
A Type 0 waveform was introduced to the EUT, from which a 12 second transmission record was digitally captured. The start of the Type 0 radar waveform is indicated in the test result plot as “Start Waveform”, the end of the waveform is indicated as “End waveform”.
Channel Closing Transmission Time, and the Channel Move Time start immediately after the last radar pulse is transmitted.
The aggregate of all pulses seen after the end of the radar injection are measured as the “Channel Closing Transmission time”.
The last EUT activity after the end of the radar pulse is identified and used to determine the “Channel Move Time”

Frequency 5500 MHz Channel 100

The PXI system measures and aggregates the pulses occurring after the end of the radar pulse to determine; -

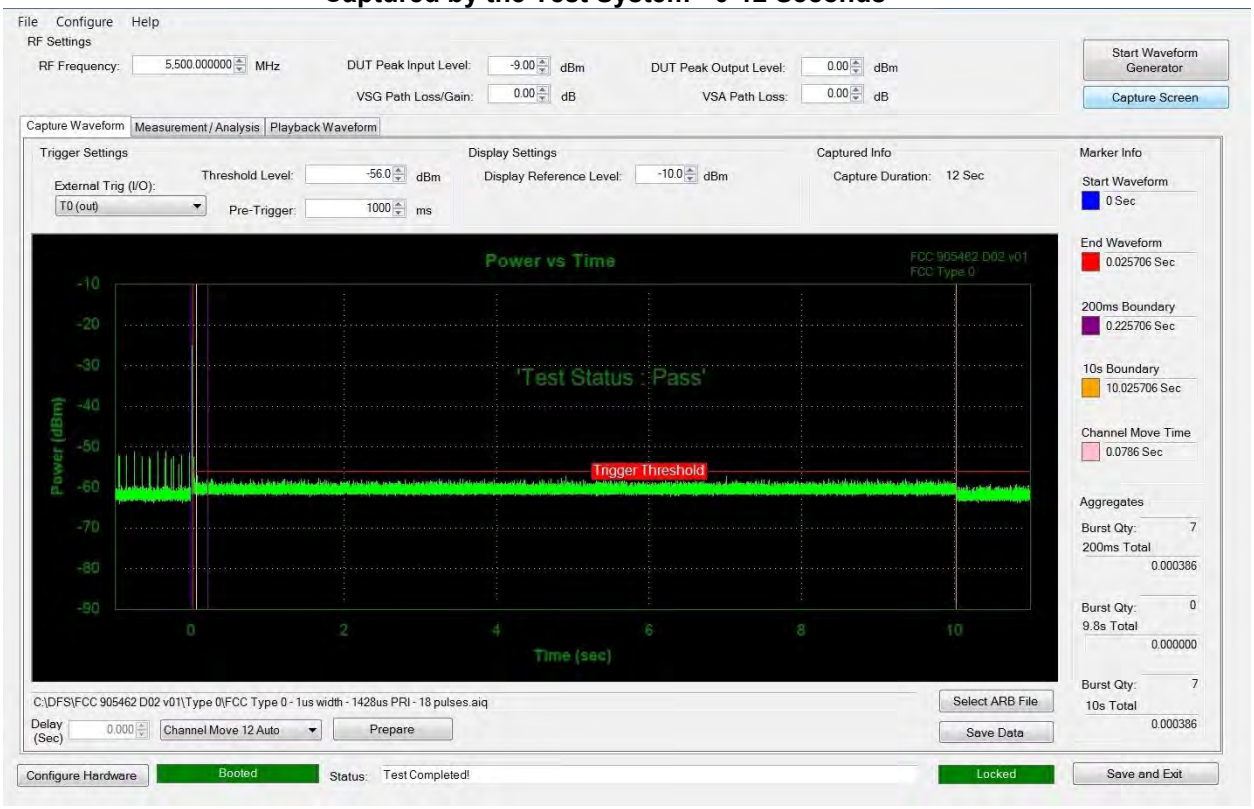
1) Channel Closing Transmission Time (limit is 1 second)

2) Channel Move Time (limit is 10 seconds)

1) Channel Closing Transmission Time = <u>0.386 mSecs (limit 250 mSec)</u>

2) Channel Move Time = <u>0.0786 Secs (limit is 10 seconds)</u>

Channel Move Time, Channel Closing Transmission Time for Type 1 Radar Captured by the Test System - 0-12 Seconds

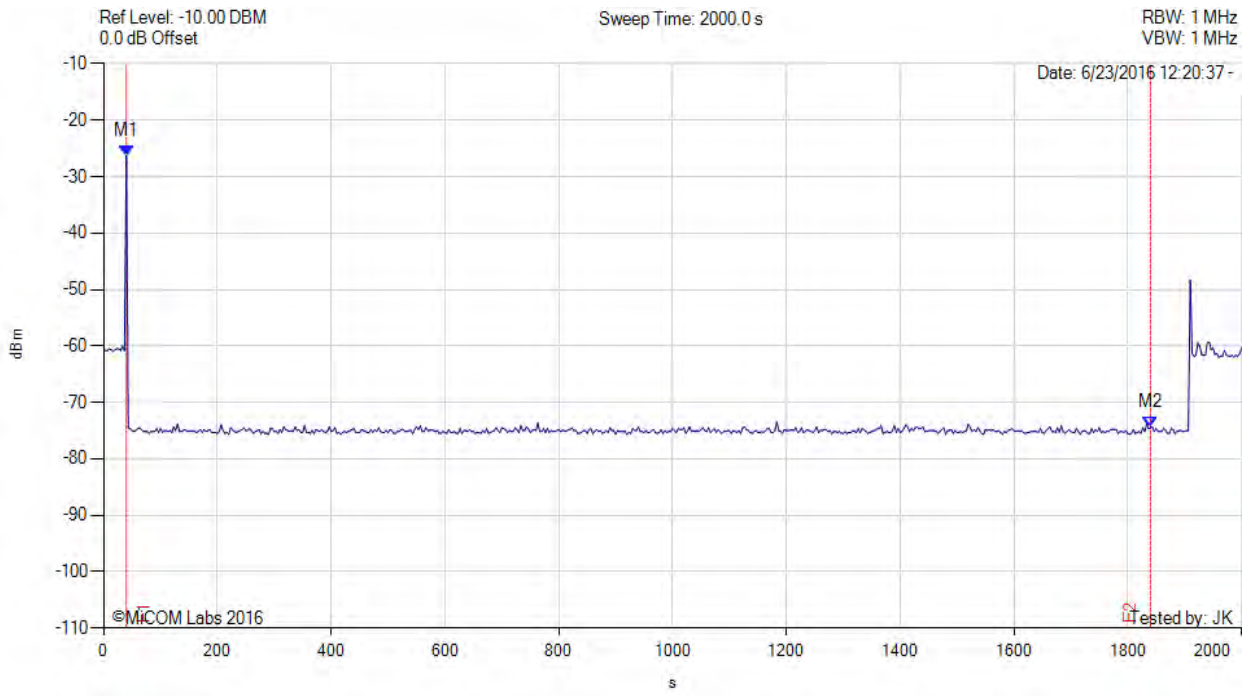


4.1.3. Non-Occupancy Period

The EUT is monitored for more than 30 minutes following the channel close/move time to verify no transmissions resume on this Channel. There should be no transmissions on the frequency of interest during the non-occupancy period.

NON-OCCUPANCY PERIOD

Variant: 802.11ac 80, Channel: 5530.00 MHz, Data Rate: 29 Mbit/s, Duty Cycle : 10.00%, Antenna Gain: 5.00 dBi



Analyzer Setup	Marker:Time:Amplitude	Test Results
Detector = POS Sweep Count = View RF Atten (dB) = 0 Trace Mode = 0	M1 : 40.000 s : -26.330 dBm M2 : 1840.000 s : -74.500 dBm	Channel Frequency: 5530.00 MHz F2 – F1 = 1840.0 – 40.0 = 1800 s

4.1.4. Probability of Detection

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 is generated on the Operating Channel of the U-NII device.

The Radar Waveform generator sends the individual waveform for each of the radar Types 1-6. 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. The percentage of successful detection is calculated by:

Total # of detections ÷ Total # of Trials × 100 = Probability of Detection

The Minimum number of trails, minimum percentage of successful detection and the average minimum percentage of successful detection are found in the Radar Test Waveforms section.

The aggregate is the average of the percentage of successful detections of Short Pulse Radar Types 1-4. For example, the following table indicates how to compute the aggregate of percentage of successful detections;

Example - Calculation of Aggregate Percentage

Radar Type	Number of Trials	Number of Successful Detections	Minimum Percentage of Successful Detections
1	35	29	82.9%
2	30	18	60.0%
3	30	27	90.0%
4	30	44	88.0%
Aggregate (82.9% + 60.0% + 90.0% +88.0%) / 4 = 80.2%			

802.11ac 80 - 5530 MHz

Statistical Performance Check					
Radar Type	**Number of Trials**	**Number of Successful Detections**	**Percentage of Successful Detections**	**Result**	**Data Link**
Radar Type 1	11	11	100.00%	Complies	View Data
Radar Type 2	11	11	100.00%	Complies	View Data
Radar Type 3	10	10	100.00%	Complies	View Data
Radar Type 4	9	9	100.00%	Complies	View Data
Aggregate (100.00% + 100.00% + 100.00% + 100.00%) / 4 = 100.00%				Complies	
Radar Type 5	30	30	100.00%	Complies	View Data
Radar Type 6	11	11	100.00%	Complies	View Data

Equipment Configuration for Radar Type 1

Variant:	802.11ac 80	**Duty Cycle (%):**	10.00
Data Rate:	29 Mbit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
Channel Frequency:	5530.00 MHz	**Tested By:**	JK
Engineering Test Notes:	Radar type was spot checked		

Test Measurement Results

Pulse Width (us)	PRF (Hz)	PRI	# Pulses	Injections	Detections	Detection Rate	Result
1	1433	698	76	Not Tested			
1	1520	658	81	1	1	100.00%	DETECTED
1	1253	798	67	1	1	100.00%	DETECTED
1	1618	618	86	Not Tested			
1	1792	558	95	1	1	100.00%	DETECTED
1	1672	598	89	Not Tested			
1	1114	898	59	Not Tested			
1	1355	738	72	Not Tested			
1	1931	518	102	Not Tested			
1	1139	878	61	1	1	100.00%	DETECTED
1	1730	578	92	Not Tested			
1	1166	858	62	Not Tested			
1	1285	778	68	Not Tested			
1	1319	758	70	1	1	100.00%	DETECTED
1	1089	918	58	1	1	100.00%	DETECTED
1	1634	612	87	1	1	100.00%	DETECTED
1	531	1885	28	1	1	100.00%	DETECTED
1	919	1088	49	1	1	100.00%	DETECTED
1	738	1355	39	Not Tested			
1	1245	803	66	Not Tested			
1	786	1273	42	1	1	100.00%	DETECTED
1	508	1968	27	Not Tested			
1	1316	760	70	Not Tested			
1	887	1128	47	Not Tested			
1	1585	631	84	Not Tested			
1	416	2401	22	1	1	100.00%	DETECTED
1	335	2981	18	Not Tested			
1	641	1561	34	Not Tested			
1	500	1999	27	Not Tested			
1	905	1105	48	Not Tested			
			Aggregate:	**11.00**	**11.00**	**100.00%**	**Pass**

Equipment Configuration for Radar Type 2

Variant:	802.11ac 80	**Duty Cycle (%):**	10.00
Data Rate:	29 Mbit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
Channel Frequency:	5530.00 MHz	**Tested By:**	JK
Engineering Test Notes:	Radar type was spot checked		

Test Measurement Results

Pulse Width (us)	PRF (Hz)	PRI	# Pulses	Injections	Detections	Detection Rate	Result
1	4695	213	23	Not Tested			
1	5988	167	24	1	1	100.00%	DETECTED
1.1	4484	223	26	Not Tested			
1.2	5587	179	27	Not Tested			
1.2	5848	171	28	1	1	100.00%	DETECTED
1.3	5155	194	23	Not Tested			
1.3	4425	226	26	1	1	100.00%	DETECTED
1.4	5076	197	23	Not Tested			
1.4	4505	222	29	Not Tested			
1.5	5618	178	27	1	1	100.00%	DETECTED
1.7	5587	179	28	Not Tested			
1.7	4348	230	28	Not Tested			
1.8	4739	211	26	1	1	100.00%	DETECTED
2.4	5556	180	23	Not Tested			
2.4	4566	219	24	Not Tested			
2.5	5181	193	24	1	1	100.00%	DETECTED
2.5	4386	228	23	Not Tested			
2.7	4505	222	25	1	1	100.00%	DETECTED
2.7	4673	214	23	Not Tested			
3	5814	172	23	Not Tested			
3	4673	214	29	Not Tested			
3.2	4902	204	25	1	1	100.00%	DETECTED
3.3	4926	203	29	Not Tested			
3.7	4464	224	27	Not Tested			
3.8	5348	187	26	1	1	100.00%	DETECTED
4	4444	225	25	Not Tested			
4.6	4348	230	27	1	1	100.00%	DETECTED
4.6	6135	163	23	Not Tested			
4.7	6024	166	29	Not Tested			
4.8	5376	186	29	1	1	100.00%	DETECTED
			Aggregate:	**11.00**	**11.00**	**100.00%**	**Pass**

Equipment Configuration for Radar Type 3

Variant:	802.11ac 80	**Duty Cycle (%):**	10.00
Data Rate:	29 Mbit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
Channel Frequency:	5530.00 MHz	**Tested By:**	JK
Engineering Test Notes:	Radar type was spot checked		

Test Measurement Results

Pulse Width (us)	PRF (Hz)	PRI	# Pulses	Injections	Detections	Detection Rate	Result
6.1	2028	493	18	1	1	100.00%	DETECTED
6.1	2392	418	16	Not Tested			
6.2	2506	399	17	Not Tested			
6.4	4762	210	18	1	1	100.00%	DETECTED
6.6	2632	380	16	Not Tested			
6.8	2681	373	18	Not Tested			
6.9	3759	266	17	1	1	100.00%	DETECTED
7.2	4255	235	17	Not Tested			
7.5	2907	344	17	Not Tested			
7.5	4405	227	17	Not Tested			
7.5	3891	257	18	1	1	100.00%	DETECTED
7.7	2041	490	17	Not Tested			
7.7	2110	474	16	Not Tested			
8	2353	425	18	1	1	100.00%	DETECTED
8.1	2976	336	17	Not Tested			
8.1	4630	216	16	Not Tested			
8.1	2874	348	16	1	1	100.00%	DETECTED
8.5	2445	409	17	Not Tested			
8.5	2137	468	16	1	1	100.00%	DETECTED
8.5	3344	299	17	Not Tested			
8.7	4630	216	17	Not Tested			
8.8	3460	289	18	1	1	100.00%	DETECTED
8.8	4425	226	17	Not Tested			
8.9	2364	423	18	Not Tested			
9	2268	441	16	1	1	100.00%	DETECTED
9	2404	416	17	Not Tested			
9.5	2262	442	16	Not Tested			
9.7	2755	363	16	Not Tested			
9.7	3289	304	17	1	1	100.00%	DETECTED
9.9	2488	402	18	Not Tested			
			Aggregate:	**10.00**	**10.00**	**100.00%**	**Pass**

Equipment Configuration for Radar Type 4

Variant:	802.11ac 80	**Duty Cycle (%):**	10.00
Data Rate:	29 Mbit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
Channel Frequency:	5530.00 MHz	**Tested By:**	JK
Engineering Test Notes:	Radar type was spot checked		

Test Measurement Results

Pulse Width (us)	PRF (Hz)	PRI	# Pulses	Injections	Detections	Detection Rate	Result
11.1	3759	266	16	1	1	100.00%	DETECTED
11.3	2857	350	14	Not Tested			
11.8	2304	434	13	Not Tested			
12.3	3745	267	16	1	1	100.00%	DETECTED
12.6	2252	444	12	Not Tested			
12.7	4587	218	15	Not Tested			
12.8	3704	270	15	1	1	100.00%	DETECTED
13.1	2070	483	16	Not Tested			
13.3	3401	294	14	Not Tested			
13.6	3953	253	15	1	1	100.00%	DETECTED
14	2347	426	12	Not Tested			
14.1	4651	215	13	Not Tested			
14.2	3584	279	13	Not Tested			
14.6	4545	220	13	1	1	100.00%	DETECTED
14.7	2212	452	15	Not Tested			
14.8	4219	237	14	Not Tested			
15.6	4386	228	16	1	1	100.00%	DETECTED
15.7	2778	360	16	Not Tested			
16.8	3448	290	12	Not Tested			
17.1	4237	236	12	Not Tested			
17.1	3584	279	12	1	1	100.00%	DETECTED
17.2	2625	381	12	Not Tested			
17.4	5000	200	12	Not Tested			
17.7	4098	244	13	Not Tested			
17.8	2114	473	14	Not Tested			
18	2681	373	13	1	1	100.00%	DETECTED
19.1	2096	477	13	Not Tested			
19.2	2033	492	12	Not Tested			
19.4	4255	235	16	Not Tested			
19.6	2137	468	15	1	1	100.00%	DETECTED
			Aggregate:	**9.00**	**9.00**	**100.00%**	**Pass**

Equipment Configuration for Radar Type 5

Variant:	802.11ac 80	**Duty Cycle (%):**	12.00
Data Rate:	29 Mbit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
Channel Frequency:	5530.00 MHz	**Tested By:**	JK
Engineering Test Notes:			

Test Measurement Results

Burst Segment	Injections	Detections	Detection Rate	Result
Type 5 #0 5492.80	1	1	100.00%	DETECTED
Type 5 #1 5567.20	1	1	100.00%	DETECTED
Type 5 #2 5568.00	1	1	100.00%	DETECTED
Type 5 #3 5494.00	1	1	100.00%	DETECTED
Type 5 #4 5563.60	1	1	100.00%	DETECTED
Type 5 #5 5566.00	1	1	100.00%	DETECTED
Type 5 #6 5567.20	1	1	100.00%	DETECTED
Type 5 #7 5530.00	1	1	100.00%	DETECTED
Type 5 #8 5494.00	1	1	100.00%	DETECTED
Type 5 #9 5530.00	1	1	100.00%	DETECTED
Type 5 #10 5494.40	1	1	100.00%	DETECTED
Type 5 #11 5530.00	1	1	100.00%	DETECTED
Type 5 #12 5493.20	1	1	100.00%	DETECTED
Type 5 #13 5530.00	1	1	100.00%	DETECTED
Type 5 #14 5530.00	1	1	100.00%	DETECTED
Type 5 #15 5563.60	1	1	100.00%	DETECTED
Type 5 #16 5563.20	1	1	100.00%	DETECTED
Type 5 #17 5567.20	1	1	100.00%	DETECTED
Type 5 #18 5496.00	1	1	100.00%	DETECTED
Type 5 #19 5566.40	1	1	100.00%	DETECTED
Type 5 #20 5493.20	1	1	100.00%	DETECTED
Type 5 #21 5530.00	1	1	100.00%	DETECTED
Type 5 #22 5494.00	1	1	100.00%	DETECTED
Type 5 #23 5530.00	1	1	100.00%	DETECTED
Type 5 #24 5568.00	1	1	100.00%	DETECTED
Type 5 #25 5530.00	1	1	100.00%	DETECTED
Type 5 #26 5530.00	1	1	100.00%	DETECTED
Type 5 #27 5496.00	1	1	100.00%	DETECTED
Type 5 #28 5530.00	1	1	100.00%	DETECTED
Type 5 #29 5494.80	1	1	100.00%	DETECTED
Aggregate:	**30.00**	**30.00**	**100.00%**	**Pass**

Equipment Configuration for Radar Type 6			
Variant:	802.11ac 80	**Duty Cycle (%):**	10.00
Data Rate:	29 Mbit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
Channel Frequency:	5530.00 MHz	**Tested By:**	JK
Engineering Test Notes:	Radar type was spot checked		

Test Measurement Results

Burst Segment	Detections	Injection #	Detection Rate	Pass/Fail
Type 6 #1	1	1	100.00%	DETECTED
Type 6 #2	1	1	100.00%	DETECTED
Type 6 #3	1	1	100.00%	DETECTED
Type 6 #4	1	1	100.00%	DETECTED
Type 6 #5	Not Tested			
Type 6 #6	Not Tested			
Type 6 #7	Not Tested			
Type 6 #8	Not Tested			
Type 6 #9	Not Tested			
Type 6 #10	1	1	100.00%	DETECTED
Type 6 #11	Not Tested			
Type 6 #12	Not Tested			
Type 6 #13	Not Tested			
Type 6 #14	1	1	100.00%	DETECTED
Type 6 #15	Not Tested			
Type 6 #16	Not Tested			
Type 6 #17	Not Tested			
Type 6 #18	Not Tested			
Type 6 #19	1	1	100.00%	DETECTED
Type 6 #20	Not Tested			
Type 6 #21	Not Tested			
Type 6 #22	1	1	100.00%	DETECTED
Type 6 #23	Not Tested			
Type 6 #24	Not Tested			
Type 6 #25	1	1	100.00%	DETECTED
Type 6 #26	Not Tested			
Type 6 #27	Not Tested			
Type 6 #28	1	1	100.00%	DETECTED
Type 6 #29	Not Tested			
Type 6 #30	Not Tested			
Aggregate:	**10.00**	**10.00**	**100.00%**	**Pass**

4.1.5. Detection Bandwidth

To determine the equipment Detection Bandwidth for each applicable operational mode a single burst of the short pulse radar Type 0 was produced at the appropriate power level. The EUT was set up as a standalone device (no associated Client or Master, as appropriate) and no traffic. Frame based systems will be set to a talk/listen ratio reflecting the worst case (maximum) that is user configurable during this test.

To determine the actual receiver bandwidth a single radar burst is generated for a minimum of 10 trials and the response of the EUT noted. The EUT must detect the Radar Waveform until it fails to detect, at this point testing is stopped and the frequency noted.

Starting from the actual channel center frequency the radar frequency is increased in 5 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The previous 5 MHz are tested again with a 1 MHz step size. The highest frequency at which detection is greater than or equal to 90% is denoted as F_H. Note for the higher bandwidths ac-80 etc. the step size can be increased.

The radar frequency is decreased in 5 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 F_L.

The U-NII Detection Bandwidth is calculated as follows:
U-NII Detection Bandwidth = $F_H - F_L$

The U-NII Detection Bandwidth must meet the U-NII Detection Bandwidth criterion specified. Otherwise, the UUT does not comply with DFS requirements. This is essential to ensure that the UUT is capable of detecting Radar Waveforms across the same frequency spectrum that contains the significant energy from the system. In the case that the U-NII Detection Bandwidth is greater than or equal to the 99% power bandwidth for the measured F_H and F_L, the test can be truncated and the U-NII Detection Bandwidth can be reported as the measured F_H and F_L

Equipment Configuration for Detection Bandwidth

Variant:	802.11ac 80	**Duty Cycle (%):**	10.00
Data Rate:	29 Mbit/s	**Antenna Gain (dBi):**	5.00
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
Channel Frequency:	5530.00 MHz	**Tested By:**	JK
Engineering Test Notes:			

Test Measurement Results

Frequency	Injections	Detections	Detection Rate	Result
5480 MHz	10	0		
5481 MHz	10	10	100.00%	Detected
5482 MHz	10	10	100.00%	Detected
5483 MHz	10	10	100.00%	Detected
5484 MHz	10	10	100.00%	Detected
5485 MHz	10	10	100.00%	Detected
5490 MHz	10	10	100.00%	Detected
5500 MHz	10	10	100.00%	Detected
5510 MHz	10	10	100.00%	Detected
5520 MHz	10	10	100.00%	Detected
5530	10	10	100.00%	Detected
5540 MHz	10	10	100.00%	Detected
5550 MHz	10	10	100.00%	Detected
5560 MHz	10	10	100.00%	Detected
5570 MHz	10	10	100.00%	Detected
5575 MHz	10	10	100.00%	Detected
5576 MHz	10	10	100.00%	Detected
5577 MHz	10	10	100.00%	Detected
5578 MHz	10	10	100.00%	Detected
5579 MHz	10	10	100.00%	Detected
5580 MHz	10	0		
Result				
F_H (MHz)	F_L (MHz)	Detection Bandwidth ($F_H - F_L$) (MHz)	99% OBW (MHz)	Result
5579	5481	98	75.7	Pass

A. APPENDIX – SUPPORTING DATA

Type 5 #0 5492.80 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	1	16	320186	50	0	0	536906	857142
2	1	12	466285	59	0	0	390798	857142
3	2	7	579432	52	1857	0	275749	857142
4	2	9	290108	89	1337	0	565519	857142
5	2	6	144017	72	1604	0	711377	857142
6	3	15	74372	68	1393	1221	779952	857142
7	3	19	799487	61	1352	1887	54233	857142
8	2	12	182273	86	1332	0	673365	857142
9	2	19	91334	88	1908	0	763724	857142
10	3	15	519106	95	1041	1618	335092	857142
11	2	7	439704	62	1309	0	416005	857142
12	3	5	173242	50	1612	1675	680463	857142
13	2	18	424365	88	1121	0	431480	857142
14	3	9	786242	86	1467	1875	67300	857142

Type 5 #1 5567.20 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	3	16	454818	67	1106	1510	465441	923076
2	3	7	572415	89	1285	970	348139	923076
3	3	14	633744	61	1362	1595	286192	923076
4	2	12	278554	88	1284	0	643062	923076
5	1	19	346611	58	0	0	576407	923076
6	1	18	146956	99	0	0	776021	923076
7	2	18	26489	85	1240	0	895177	923076
8	3	12	874037	84	1430	1829	45528	923076
9	1	16	187885	54	0	0	735137	923076
10	2	7	560541	63	1232	0	361177	923076
11	3	7	37332	75	1866	1411	882242	923076
12	2	15	534980	50	1068	0	386928	923076
13	3	8	778973	64	1348	1870	140693	923076

Type 5 #2 5568.00 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	2	20	595026	83	1164	0	35222	631578
2	3	10	607650	77	1143	1413	21141	631578
3	2	5	166342	55	1620	0	463506	631578
4	1	13	556455	57	0	0	75066	631578
5	3	8	248108	100	1570	1663	379937	631578
6	1	17	547500	57	0	0	84021	631578
7	1	16	229293	63	0	0	402222	631578
8	2	14	351799	82	1535	0	278080	631578
9	1	7	518286	70	0	0	113222	631578
10	1	10	6251	51	0	0	625276	631578
11	2	5	168364	56	1865	0	461237	631578
12	2	6	288208	99	1460	0	341712	631578
13	1	13	322349	74	0	0	309155	631578
14	2	10	438832	78	1135	0	191455	631578
15	2	11	403192	88	948	0	227262	631578
16	3	8	105206	79	1399	1597	523139	631578
17	1	12	243221	82	0	0	388275	631578
18	3	17	540458	50	1897	959	88114	631578
19	3	5	83779	65	1116	1245	545243	631578

Type 5 #3 5494.00 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	3	14	509616	50	1418	1815	987001	1500000
2	2	7	564781	63	1031	0	934062	1500000
3	1	8	731410	84	0	0	768506	1500000
4	2	10	64315	69	1612	0	1433935	1500000
5	1	11	1198323	87	0	0	301590	1500000
6	2	18	668919	60	1878	0	829083	1500000
7	2	10	863978	93	1451	0	634385	1500000
8	2	6	385100	73	1627	0	1113127	1500000

Type 5 #4 5563.60 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	3	14	765120	56	1866	1321	322434	1090909
2	1	8	994237	83	0	0	96589	1090909
3	2	15	921401	93	997	0	168325	1090909
4	1	17	66876	82	0	0	1023951	1090909
5	2	16	868150	75	1743	0	220866	1090909
6	1	16	114251	52	0	0	976606	1090909
7	3	10	422919	51	1641	1028	665168	1090909
8	1	7	495510	52	0	0	595347	1090909
9	2	19	759932	85	1101	0	329706	1090909
10	2	5	494582	85	1615	0	594542	1090909
11	3	18	648733	66	1187	1572	439219	1090909

Type 5 #5 5566.00 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	1	17	455097	65	0	0	211504	666666
2	1	8	553102	50	0	0	113514	666666
3	1	20	510350	80	0	0	156236	666666
4	1	17	623153	92	0	0	43421	666666
5	1	10	523763	69	0	0	142834	666666
6	1	9	62038	51	0	0	604577	666666
7	1	8	249078	67	0	0	417521	666666
8	2	6	321445	59	994	0	344109	666666
9	2	16	513286	59	1262	0	152000	666666
10	1	15	237579	85	0	0	429002	666666
11	2	16	304992	98	1146	0	360332	666666
12	2	11	573686	97	1555	0	91231	666666
13	1	12	27492	91	0	0	639083	666666
14	1	12	653340	86	0	0	13240	666666
15	3	10	604584	93	938	1426	59439	666666
16	1	15	42000	82	0	0	624584	666666
17	2	9	89362	70	1591	0	575573	666666
18	3	10	590426	77	1276	1908	72825	666666

Type 5 #6 5567.20 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	2	13	579267	55	1152	0	169471	750000
2	3	7	237468	56	1663	1546	509155	750000
3	1	17	20138	97	0	0	729765	750000
4	2	18	611767	71	1891	0	136200	750000
5	3	17	462918	94	1149	1472	284179	750000
6	3	12	349940	75	1610	1291	396934	750000
7	1	11	161214	57	0	0	588729	750000
8	2	7	381969	65	1545	0	366356	750000
9	2	5	137097	67	1024	0	611745	750000
10	3	19	391064	66	1032	1843	355863	750000
11	1	15	434740	53	0	0	315207	750000
12	2	15	745968	64	1090	0	2814	750000
13	2	5	636018	83	1152	0	112664	750000
14	1	11	608842	90	0	0	141068	750000
15	3	16	376321	55	1296	1252	370966	750000
16	2	7	671233	88	1295	0	77296	750000

Type 5 #7 5530.00 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	2	17	444425	70	1773	0	553662	1000000
2	1	18	872189	75	0	0	127736	1000000
3	1	20	613940	84	0	0	385976	1000000
4	3	9	159139	92	1685	1149	837751	1000000
5	3	6	828361	97	1051	1696	168601	1000000
6	3	7	140173	89	969	1494	857097	1000000
7	1	15	47212	63	0	0	952725	1000000
8	1	11	404215	63	0	0	595722	1000000
9	1	14	939572	65	0	0	60363	1000000
10	3	16	675795	72	1666	1346	320977	1000000
11	1	19	223602	100	0	0	776298	1000000
12	3	12	11871	70	1180	1914	984825	1000000

Type 5 #8 5494.00 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	1	17	192962	68	0	0	473636	666666
2	1	16	640484	71	0	0	26111	666666
3	3	5	102051	78	1306	1760	561315	666666
4	2	7	230949	68	1333	0	434248	666666
5	1	10	302523	97	0	0	364046	666666
6	3	8	163901	80	953	1205	500367	666666
7	2	9	419625	50	1331	0	245610	666666
8	3	17	21334	97	1553	1587	641901	666666
9	3	14	398192	89	1022	1070	266115	666666
10	1	10	27355	53	0	0	639258	666666
11	1	15	593857	93	0	0	72716	666666
12	3	19	552187	96	1824	1594	110773	666666
13	2	16	371412	72	1174	0	293936	666666
14	3	8	372131	50	1351	1655	291379	666666
15	2	10	104985	86	1050	0	560459	666666
16	3	16	639673	67	1933	1089	23770	666666
17	3	10	325116	60	1099	1578	338693	666666
18	3	5	564119	93	1792	1868	98608	666666

Type 5 #9 5530.00 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	2	10	285625	53	1500	0	462769	750000
2	2	15	359307	94	1545	0	388960	750000
3	3	10	101739	56	1699	1625	644769	750000
4	2	16	310545	61	1616	0	437717	750000
5	2	19	104347	75	1324	0	644179	750000
6	2	13	505631	71	1628	0	242599	750000
7	2	15	71270	94	1499	0	677043	750000
8	2	9	216655	90	1314	0	531851	750000
9	1	16	444528	65	0	0	305407	750000
10	1	16	82812	66	0	0	667122	750000
11	3	15	177866	71	1199	1103	569619	750000
12	1	11	115516	78	0	0	634406	750000
13	1	12	86013	54	0	0	663933	750000
14	3	7	120520	91	1175	1568	626464	750000
15	2	17	214068	85	1840	0	533922	750000
16	2	8	243441	56	1727	0	504720	750000

Type 5 #10 5494.40 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	3	9	21967	89	1755	1179	974832	1000000
2	1	11	548918	85	0	0	450997	1000000
3	2	15	320899	51	1013	0	677986	1000000
4	3	10	757608	59	1863	1372	238980	1000000
5	2	13	644893	79	934	0	354015	1000000
6	3	17	768904	100	1018	1747	228031	1000000
7	1	11	304554	89	0	0	695357	1000000
8	1	15	782330	63	0	0	217607	1000000
9	3	8	667518	79	1533	966	329746	1000000
10	1	20	549829	93	0	0	450078	1000000
11	3	18	164630	92	1803	1520	831771	1000000
12	1	18	622295	89	0	0	377616	1000000

Type 5 #11 5530.00 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	1	9	765896	96	0	0	324917	1090909
2	3	18	749749	97	1548	919	338402	1090909
3	3	7	459398	85	1486	1099	628671	1090909
4	3	10	20566	74	1422	1795	1066904	1090909
5	1	5	992127	59	0	0	98723	1090909
6	1	9	109824	58	0	0	981027	1090909
7	2	5	588520	72	1417	0	500828	1090909
8	3	19	322232	97	1178	1632	765576	1090909
9	1	18	32146	98	0	0	1058665	1090909
10	1	10	466263	86	0	0	624560	1090909
11	3	9	462549	62	1424	1064	625686	1090909

Type 5 #12 5493.20 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	2	16	814877	56	1805	0	274115	1090909
2	3	19	698441	69	1252	1400	389609	1090909
3	2	13	56115	51	1442	0	1033250	1090909
4	1	8	711316	81	0	0	379512	1090909
5	1	7	948491	69	0	0	142349	1090909
6	1	16	557796	94	0	0	533019	1090909
7	3	20	261223	53	1870	1011	826646	1090909
8	1	8	452457	90	0	0	638362	1090909
9	3	18	609765	81	951	1459	478491	1090909
10	2	9	272343	53	1863	0	816597	1090909
11	1	18	1011320	54	0	0	79535	1090909

Type 5 #13 5530.00 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	1	20	546664	64	0	0	119938	666666
2	3	20	167972	94	1785	963	495664	666666
3	2	14	335318	86	1705	0	329471	666666
4	3	17	548110	92	1543	1495	115242	666666
5	1	14	245550	92	0	0	421024	666666
6	1	18	174152	79	0	0	492435	666666
7	3	6	7066	99	1897	1192	656214	666666
8	3	11	445824	92	1649	1009	217908	666666
9	3	9	323971	99	946	1683	339769	666666
10	2	13	204031	70	1290	0	461205	666666
11	1	20	127372	67	0	0	539227	666666
12	2	12	201837	69	1492	0	463199	666666
13	1	11	187713	81	0	0	478872	666666
14	2	9	521960	86	1695	0	142839	666666
15	3	5	583137	71	1463	1845	80008	666666
16	1	13	390931	78	0	0	275657	666666
17	2	11	204860	53	1649	0	460051	666666
18	2	15	545206	93	1251	0	120023	666666

Type 5 #14 5530.00 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	2	7	607381	98	1700	0	481632	1090909
2	1	5	671568	79	0	0	419262	1090909
3	1	16	682968	59	0	0	407882	1090909
4	3	9	73239	97	1605	1328	1014446	1090909
5	1	18	943811	95	0	0	147003	1090909
6	3	16	670990	61	1855	1020	416861	1090909
7	2	20	563011	53	1908	0	525884	1090909
8	2	18	389295	74	1662	0	699804	1090909
9	2	13	575120	74	1854	0	513787	1090909
10	2	17	412576	68	939	0	677258	1090909
11	2	8	754103	57	1220	0	335472	1090909

Type 5 #15 5563.60 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	2	8	858153	54	1515	0	140224	1000000
2	2	11	988996	75	958	0	9896	1000000
3	1	6	264673	88	0	0	735239	1000000
4	2	20	516683	69	998	0	482181	1000000
5	2	19	504399	68	1269	0	494196	1000000
6	3	19	434077	96	1607	1114	562914	1000000
7	3	9	396491	84	1066	1754	600437	1000000
8	2	12	973499	58	1078	0	25307	1000000
9	1	13	186822	95	0	0	813083	1000000
10	2	16	17188	84	1847	0	980797	1000000
11	1	17	43031	58	0	0	956911	1000000
12	1	16	738705	84	0	0	261211	1000000

Type 5 #16 5563.20 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	3	17	107034	75	1103	1524	595996	705882
2	2	20	35540	75	1352	0	668840	705882
3	3	14	140703	90	1290	1585	562034	705882
4	1	10	199456	90	0	0	506336	705882
5	1	17	136144	58	0	0	569680	705882
6	1	19	159200	84	0	0	546598	705882
7	1	15	625355	58	0	0	80469	705882
8	2	15	688953	77	1097	0	15678	705882
9	1	14	71215	69	0	0	634598	705882
10	3	19	417052	66	1186	1316	286130	705882
11	2	17	667251	68	1583	0	36912	705882
12	2	16	19946	70	1270	0	684526	705882
13	3	12	576010	67	1592	1199	126880	705882
14	1	19	228579	70	0	0	477233	705882
15	1	13	157019	88	0	0	548775	705882
16	3	16	596760	71	1110	1435	106364	705882
17	3	18	602574	97	985	1436	100596	705882

Type 5 #17 5567.20 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	2	12	822731	85	978	0	176121	1000000
2	1	20	951584	57	0	0	48359	1000000
3	3	18	479155	98	1805	954	517792	1000000
4	2	14	866589	52	1578	0	131729	1000000
5	2	13	228484	97	1621	0	769701	1000000
6	1	7	45162	75	0	0	954763	1000000
7	2	7	489638	70	1339	0	508883	1000000
8	3	11	457406	85	1175	1114	540050	1000000
9	2	17	745443	61	1444	0	252991	1000000
10	2	17	565742	80	1332	0	432766	1000000
11	3	19	587933	76	1913	1665	408261	1000000
12	1	18	606636	88	0	0	393276	1000000

Type 5 #18 5496.00 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	1	12	342245	98	0	0	324323	666666
2	3	11	637343	71	1230	1714	26166	666666
3	3	7	96798	68	1445	1289	566930	666666
4	1	19	408590	99	0	0	257977	666666
5	3	12	147294	86	1571	1798	515745	666666
6	2	7	442414	88	1439	0	222637	666666
7	2	15	188410	80	1265	0	476831	666666
8	1	19	614678	100	0	0	51888	666666
9	1	15	403971	75	0	0	262620	666666
10	1	16	317232	57	0	0	349377	666666
11	2	7	633694	72	1705	0	31123	666666
12	3	9	417863	55	1413	1769	245456	666666
13	2	15	171845	50	1090	0	493631	666666
14	1	17	341113	69	0	0	325484	666666
15	1	18	25848	53	0	0	640765	666666
16	1	11	133245	98	0	0	533323	666666
17	1	15	495182	94	0	0	171390	666666
18	2	10	257521	98	1619	0	407330	666666

Type 5 #19 5566.40 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	2	13	513654	80	979	0	116785	631578
2	2	9	333369	68	1850	0	296223	631578
3	2	9	227992	68	1574	0	401876	631578
4	1	9	375540	65	0	0	255973	631578
5	1	20	361799	86	0	0	269693	631578
6	3	14	74466	59	1122	1828	553985	631578
7	1	11	549980	65	0	0	81533	631578
8	2	7	68263	95	1861	0	561264	631578
9	1	15	472461	69	0	0	159048	631578
10	1	18	459624	95	0	0	171859	631578
11	2	11	401143	100	1170	0	229065	631578
12	1	9	104945	56	0	0	526577	631578
13	2	15	137798	51	1819	0	491859	631578
14	1	8	541756	74	0	0	89748	631578
15	1	12	570539	97	0	0	60942	631578
16	3	9	137139	59	1140	990	492132	631578
17	2	20	37263	99	1583	0	592534	631578
18	2	7	534539	51	1455	0	95482	631578
19	2	9	151830	62	1522	0	478102	631578

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Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	1	8	37664	65	0	0	885347	923076
2	1	13	169822	60	0	0	753194	923076
3	2	8	237904	96	1563	0	683417	923076
4	1	11	6245	50	0	0	916781	923076
5	3	8	546083	94	1433	1250	374028	923076
6	2	6	313224	59	1909	0	607825	923076
7	2	15	610174	100	1814	0	310888	923076
8	1	20	887332	51	0	0	35693	923076
9	1	8	382295	56	0	0	540725	923076
10	3	7	850512	51	1180	1325	69906	923076
11	1	20	216063	92	0	0	706921	923076
12	2	5	745971	86	1811	0	175122	923076
13	3	18	201942	92	1885	1143	717830	923076

Type 5 #21 5530.00 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	3	10	119889	64	1932	1876	581993	705882
2	1	20	544558	74	0	0	161250	705882
3	2	17	314593	89	1232	0	389879	705882
4	1	7	466206	91	0	0	239585	705882
5	2	17	136547	72	1161	0	568030	705882
6	2	8	92701	71	1181	0	611858	705882
7	1	20	137370	57	0	0	568455	705882
8	1	18	646221	68	0	0	59593	705882
9	2	7	359736	100	1700	0	344246	705882
10	1	6	190893	81	0	0	514908	705882
11	1	9	460651	74	0	0	245157	705882
12	1	14	510001	90	0	0	195791	705882
13	1	5	86225	96	0	0	619561	705882
14	2	20	242111	76	1715	0	461904	705882
15	3	15	678809	81	1503	1660	23667	705882
16	2	11	369229	63	1138	0	335389	705882
17	3	13	241396	97	1511	1021	461663	705882

Type 5 #22 5494.00 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	3	12	444502	100	1005	1265	643837	1090909
2	2	12	864017	86	1732	0	224988	1090909
3	3	7	425437	73	935	1094	663224	1090909
4	1	15	433194	71	0	0	657644	1090909
5	2	11	642914	84	1534	0	446293	1090909
6	1	10	424126	51	0	0	666732	1090909
7	2	5	242873	50	1183	0	846753	1090909
8	3	16	121391	94	1156	1158	966922	1090909
9	1	17	510656	76	0	0	580177	1090909
10	2	10	838667	87	1602	0	250466	1090909
11	1	16	716084	80	0	0	374745	1090909

Type 5 #23 5530.00 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	1	6	308355	65	0	0	323158	631578
2	3	12	238090	68	1285	988	391011	631578
3	3	8	189825	98	1863	1109	438487	631578
4	2	7	235526	88	1487	0	394389	631578
5	1	19	117404	96	0	0	514078	631578
6	3	10	529209	86	1508	1172	99431	631578
7	1	10	9592	69	0	0	621917	631578
8	2	9	564111	89	1386	0	65903	631578
9	2	12	427554	84	1300	0	202556	631578
10	2	11	294796	75	1406	0	335226	631578
11	2	13	323646	92	989	0	306759	631578
12	1	7	190944	69	0	0	440565	631578
13	3	6	336971	82	1677	1716	290968	631578
14	2	19	449978	79	1867	0	179575	631578
15	2	9	573859	70	1196	0	56383	631578
16	3	13	221536	77	1167	1636	407008	631578
17	1	7	491994	93	0	0	139491	631578
18	1	9	526024	88	0	0	105466	631578
19	3	14	156449	55	1894	1501	471569	631578

Type 5 #24 5568.00 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	3	18	491538	84	1104	1812	305294	800000
2	2	20	441750	89	990	0	357082	800000
3	1	17	536727	58	0	0	263215	800000
4	3	14	202281	96	1471	1218	594742	800000
5	2	13	219907	50	1683	0	578310	800000
6	1	14	729978	57	0	0	69965	800000
7	2	5	632883	87	1268	0	165675	800000
8	3	5	715470	85	1733	1651	80891	800000
9	1	16	360969	59	0	0	438972	800000
10	2	5	198812	56	1081	0	599995	800000
11	3	20	221799	68	1867	1233	574897	800000
12	2	12	450214	66	1555	0	348099	800000
13	1	5	502057	57	0	0	297886	800000
14	3	18	134307	63	954	1739	662811	800000
15	3	18	358495	89	1327	1074	438837	800000

Type 5 #25 5530.00 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	1	7	29581	62	0	0	970357	1000000
2	1	8	91703	68	0	0	908229	1000000
3	3	5	369893	54	1460	1167	627318	1000000
4	2	7	933603	60	1543	0	64734	1000000
5	1	15	222449	53	0	0	777498	1000000
6	1	10	80393	50	0	0	919557	1000000
7	3	7	826514	79	1440	1058	170751	1000000
8	1	8	475602	61	0	0	524337	1000000
9	2	17	534902	65	1745	0	463223	1000000
10	1	17	502968	58	0	0	496974	1000000
11	2	9	658745	90	1485	0	339590	1000000
12	3	9	28465	61	1185	1393	968774	1000000

Type 5 #26 5530.00 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	1	9	262023	83	0	0	404560	666666
2	2	14	455534	79	1838	0	209136	666666
3	3	11	203375	56	1665	1581	459877	666666
4	1	13	361443	67	0	0	305156	666666
5	1	13	502848	78	0	0	163740	666666
6	1	5	331681	78	0	0	334907	666666
7	3	13	117351	96	987	1684	546356	666666
8	2	15	277250	76	1435	0	387829	666666
9	1	14	562198	75	0	0	104393	666666
10	3	15	14967	85	1787	1770	647887	666666
11	2	20	606429	54	1656	0	58473	666666
12	3	13	550653	63	1848	1936	112040	666666
13	2	18	102142	54	954	0	563462	666666
14	3	8	448790	68	1006	1058	215608	666666
15	2	13	288538	97	942	0	376992	666666
16	3	6	105015	84	1538	1607	558254	666666
17	2	18	248214	60	1518	0	416814	666666
18	3	10	339663	59	1932	1662	323232	666666

Type 5 #27 5496.00 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	2	17	530083	71	1765	0	268010	800000
2	3	15	662039	65	1715	1832	134219	800000
3	2	8	438095	51	1822	0	359981	800000
4	2	18	111816	92	1285	0	686715	800000
5	1	15	148233	81	0	0	651686	800000
6	2	12	561022	72	950	0	237884	800000
7	1	6	271950	98	0	0	527952	800000
8	3	15	147049	81	1796	940	649972	800000
9	1	11	462929	51	0	0	337020	800000
10	2	13	795427	68	1100	0	3337	800000
11	2	7	108055	91	1785	0	689978	800000
12	2	17	519277	60	1033	0	279570	800000
13	1	18	504892	72	0	0	295036	800000
14	1	19	269276	88	0	0	530636	800000
15	3	8	647670	62	1807	1624	148713	800000

Type 5 #28 5530.00 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	1	20	23265	55	0	0	726680	750000
2	1	5	200490	91	0	0	549419	750000
3	2	19	59209	69	1911	0	688742	750000
4	3	17	169060	95	1720	1492	577443	750000
5	3	13	611119	87	1319	1214	136087	750000
6	2	18	557919	51	1877	0	190102	750000
7	3	10	256254	56	1158	1019	491401	750000
8	1	17	624094	89	0	0	125817	750000
9	1	10	190250	59	0	0	559691	750000
10	1	17	265035	89	0	0	484876	750000
11	3	11	657838	74	1208	1385	89347	750000
12	3	16	600643	78	1575	1135	146413	750000
13	3	10	572900	58	1689	1543	173694	750000
14	2	19	377009	94	1457	0	371346	750000
15	1	11	652700	90	0	0	97210	750000
16	2	7	27223	59	1057	0	721602	750000

Type 5 #29 5494.80 [Back to Summary]

Burst Segment	Number of Pulses	Chirp Width MHz	t1 usec	Pulse Width (t2) usec	t3 usec	t4 usec	t5 usec	Total Segment Length usec
1	3	12	467822	53	1257	1441	235203	705882
2	2	13	422651	64	1581	0	281522	705882
3	2	5	589571	100	1798	0	114313	705882
4	2	11	657552	83	1062	0	47102	705882
5	2	20	348340	62	1336	0	356082	705882
6	1	10	268256	50	0	0	437576	705882
7	2	7	77159	77	1034	0	627535	705882
8	1	11	75623	95	0	0	630164	705882
9	1	14	275134	58	0	0	430690	705882
10	3	12	683354	96	1697	1253	19290	705882
11	3	12	533112	80	1618	1812	169100	705882
12	1	12	643670	92	0	0	62120	705882
13	3	12	70119	80	1854	1057	632612	705882
14	1	19	660493	69	0	0	45320	705882
15	3	7	682672	97	1448	1219	20252	705882
16	2	10	651582	52	1024	0	53172	705882
17	3	5	32298	86	1549	1693	670084	705882

Type 6 #1 [Back to Summary]									
This table contains a list of 100 hop frequencies, randomly selected from 5250-5724MHz in 1MHz steps									
#01-5648	#02-5385	#03-5417	#04-5667	#05-5379	#06-5456	#07-5499	#08-5301	#09-5488	#10-5592
#11-5552	#12-5369	#13-5632	#14-5291	#15-5681	#16-5446	#17-5331	#18-5622	#19-5469	#20-5703
#21-5431	#22-5687	#23-5438	#24-5333	#25-5481	#26-5433	#27-5719	#28-5391	#29-5670	#30-5447
#31-5420	#32-5275	#33-5356	#34-5298	#35-5502	#36-5277	#37-5500	#38-5490	#39-5542	#40-5457
#41-5636	#42-5368	#43-5594	#44-5631	#45-5501	#46-5362	#47-5647	#48-5626	#49-5393	#50-5661
#51-5654	#52-5400	#53-5293	#54-5466	#55-5423	#56-5583	#57-5272	#58-5505	#59-5634	#60-5543
#61-5395	#62-5410	#63-5674	#64-5607	#65-5718	#66-5429	#67-5418	#68-5556	#69-5381	#70-5652
#71-5495	#72-5519	#73-5568	#74-5569	#75-5426	#76-5704	#77-5320	#78-5321	#79-5489	#80-5526
#81-5511	#82-5462	#83-5270	#84-5706	#85-5615	#86-5599	#87-5523	#88-5602	#89-5467	#90-5287
#91-5548	#92-5343	#93-5697	#94-5682	#95-5619	#96-5545	#97-5699	#98-5354	#99-5473	#100-5672

Type 6 #2 [Back to Summary]									
This table contains a list of 100 hop frequencies, randomly selected from 5250-5724MHz in 1MHz steps									
#01-5580	#02-5384	#03-5407	#04-5643	#05-5676	#06-5434	#07-5394	#08-5266	#09-5609	#10-5673
#11-5654	#12-5625	#13-5651	#14-5368	#15-5631	#16-5250	#17-5678	#18-5638	#19-5615	#20-5672
#21-5425	#22-5595	#23-5385	#24-5468	#25-5335	#26-5500	#27-5391	#28-5293	#29-5551	#30-5406
#31-5664	#32-5521	#33-5433	#34-5668	#35-5269	#36-5388	#37-5261	#38-5684	#39-5516	#40-5577
#41-5403	#42-5327	#43-5338	#44-5484	#45-5278	#46-5719	#47-5618	#48-5536	#49-5540	#50-5699
#51-5401	#52-5583	#53-5576	#54-5496	#55-5709	#56-5723	#57-5663	#58-5558	#59-5426	#60-5292
#61-5351	#62-5440	#63-5453	#64-5259	#65-5382	#66-5441	#67-5708	#68-5349	#69-5492	#70-5714
#71-5372	#72-5287	#73-5518	#74-5348	#75-5507	#76-5341	#77-5606	#78-5579	#79-5478	#80-5254
#81-5304	#82-5582	#83-5421	#84-5284	#85-5390	#86-5322	#87-5376	#88-5340	#89-5535	#90-5302
#91-5611	#92-5475	#93-5621	#94-5527	#95-5634	#96-5437	#97-5297	#98-5710	#99-5487	#100-5546

Type 6 #3 [Back to Summary]									
This table contains a list of 100 hop frequencies, randomly selected from 5250-5724MHz in 1MHz steps									
#01-5307	#02-5398	#03-5452	#04-5348	#05-5473	#06-5467	#07-5544	#08-5438	#09-5598	#10-5588
#11-5448	#12-5680	#13-5443	#14-5584	#15-5537	#16-5314	#17-5352	#18-5641	#19-5593	#20-5282
#21-5477	#22-5466	#23-5461	#24-5622	#25-5400	#26-5543	#27-5538	#28-5697	#29-5392	#30-5430
#31-5590	#32-5572	#33-5541	#34-5367	#35-5524	#36-5273	#37-5556	#38-5291	#39-5573	#40-5634
#41-5520	#42-5346	#43-5428	#44-5411	#45-5667	#46-5347	#47-5372	#48-5670	#49-5318	#50-5455
#51-5319	#52-5566	#53-5661	#54-5555	#55-5672	#56-5655	#57-5653	#58-5295	#59-5418	#60-5722
#61-5600	#62-5388	#63-5325	#64-5310	#65-5513	#66-5482	#67-5683	#68-5486	#69-5380	#70-5287
#71-5460	#72-5604	#73-5365	#74-5596	#75-5599	#76-5269	#77-5485	#78-5522	#79-5283	#80-5336
#81-5298	#82-5251	#83-5344	#84-5643	#85-5706	#86-5673	#87-5300	#88-5260	#89-5275	#90-5535
#91-5382	#92-5607	#93-5559	#94-5615	#95-5609	#96-5250	#97-5579	#98-5694	#99-5663	#100-5528

Type 6 #4 [Back to Summary]									
This table contains a list of 100 hop frequencies, randomly selected from 5250-5724MHz in 1MHz steps									
#01-5473	#02-5344	#03-5318	#04-5540	#05-5306	#06-5698	#07-5276	#08-5658	#09-5450	#10-5566
#11-5301	#12-5277	#13-5351	#14-5427	#15-5481	#16-5691	#17-5399	#18-5702	#19-5537	#20-5329
#21-5412	#22-5650	#23-5472	#24-5262	#25-5713	#26-5290	#27-5379	#28-5600	#29-5521	#30-5429
#31-5367	#32-5359	#33-5404	#34-5588	#35-5631	#36-5353	#37-5649	#38-5700	#39-5274	#40-5327
#41-5549	#42-5693	#43-5330	#44-5325	#45-5505	#46-5382	#47-5383	#48-5643	#49-5575	#50-5602
#51-5406	#52-5584	#53-5501	#54-5310	#55-5419	#56-5570	#57-5527	#58-5317	#59-5657	#60-5621
#61-5307	#62-5654	#63-5387	#64-5659	#65-5642	#66-5672	#67-5563	#68-5574	#69-5665	#70-5296
#71-5303	#72-5562	#73-5305	#74-5674	#75-5681	#76-5391	#77-5662	#78-5458	#79-5633	#80-5720
#81-5682	#82-5670	#83-5552	#84-5685	#85-5500	#86-5627	#87-5461	#88-5430	#89-5551	#90-5581
#91-5292	#92-5377	#93-5269	#94-5620	#95-5556	#96-5396	#97-5407	#98-5558	#99-5543	#100-5533

Type 6 #10 [Back to Summary]									
This table contains a list of 100 hop frequencies, randomly selected from 5250-5724MHz in 1MHz steps									
#01-5524	#02-5557	#03-5451	#04-5498	#05-5312	#06-5546	#07-5300	#08-5687	#09-5712	#10-5631
#11-5342	#12-5550	#13-5469	#14-5679	#15-5280	#16-5613	#17-5307	#18-5588	#19-5488	#20-5363
#21-5706	#22-5589	#23-5432	#24-5270	#25-5258	#26-5315	#27-5646	#28-5554	#29-5512	#30-5520
#31-5555	#32-5504	#33-5368	#34-5394	#35-5273	#36-5393	#37-5425	#38-5446	#39-5560	#40-5433
#41-5535	#42-5530	#43-5441	#44-5461	#45-5445	#46-5465	#47-5718	#48-5701	#49-5634	#50-5471
#51-5515	#52-5349	#53-5483	#54-5674	#55-5660	#56-5375	#57-5430	#58-5489	#59-5721	#60-5624
#61-5390	#62-5449	#63-5360	#64-5295	#65-5350	#66-5534	#67-5257	#68-5470	#69-5606	#70-5391
#71-5653	#72-5655	#73-5420	#74-5308	#75-5716	#76-5537	#77-5574	#78-5577	#79-5636	#80-5291
#81-5255	#82-5455	#83-5271	#84-5418	#85-5459	#86-5622	#87-5661	#88-5450	#89-5686	#90-5331
#91-5330	#92-5400	#93-5364	#94-5434	#95-5694	#96-5414	#97-5373	#98-5421	#99-5553	#100-5503

Type 6 #14 [Back to Summary]									
This table contains a list of 100 hop frequencies, randomly selected from 5250-5724MHz in 1MHz steps									
#01-5661	#02-5325	#03-5323	#04-5310	#05-5558	#06-5495	#07-5366	#08-5714	#09-5622	#10-5439
#11-5546	#12-5255	#13-5476	#14-5604	#15-5688	#16-5367	#17-5584	#18-5626	#19-5328	#20-5397
#21-5311	#22-5517	#23-5496	#24-5720	#25-5510	#26-5456	#27-5398	#28-5280	#29-5438	#30-5625
#31-5616	#32-5567	#33-5711	#34-5470	#35-5672	#36-5405	#37-5275	#38-5685	#39-5402	#40-5722
#41-5690	#42-5478	#43-5339	#44-5289	#45-5307	#46-5675	#47-5486	#48-5327	#49-5705	#50-5383
#51-5641	#52-5418	#53-5354	#54-5585	#55-5533	#56-5551	#57-5314	#58-5297	#59-5693	#60-5683
#61-5434	#62-5538	#63-5654	#64-5412	#65-5489	#66-5266	#67-5686	#68-5666	#69-5650	#70-5399
#71-5345	#72-5572	#73-5427	#74-5457	#75-5663	#76-5560	#77-5695	#78-5321	#79-5299	#80-5364
#81-5491	#82-5700	#83-5606	#84-5610	#85-5389	#86-5578	#87-5637	#88-5363	#89-5279	#90-5256
#91-5294	#92-5525	#93-5359	#94-5619	#95-5436	#96-5352	#97-5268	#98-5490	#99-5442	#100-5715

Type 6 #19 [Back to Summary]									
This table contains a list of 100 hop frequencies, randomly selected from 5250-5724MHz in 1MHz steps									
#01-5282	#02-5489	#03-5411	#04-5680	#05-5540	#06-5577	#07-5392	#08-5485	#09-5370	#10-5633
#11-5681	#12-5529	#13-5274	#14-5620	#15-5705	#16-5445	#17-5660	#18-5527	#19-5535	#20-5318
#21-5702	#22-5450	#23-5600	#24-5621	#25-5390	#26-5634	#27-5619	#28-5513	#29-5547	#30-5698
#31-5522	#32-5322	#33-5575	#34-5524	#35-5475	#36-5466	#37-5490	#38-5333	#39-5286	#40-5712
#41-5637	#42-5706	#43-5299	#44-5396	#45-5590	#46-5434	#47-5388	#48-5509	#49-5581	#50-5612
#51-5413	#52-5305	#53-5289	#54-5516	#55-5330	#56-5643	#57-5436	#58-5483	#59-5517	#60-5696
#61-5548	#62-5659	#63-5409	#64-5456	#65-5423	#66-5346	#67-5377	#68-5695	#69-5444	#70-5452
#71-5281	#72-5715	#73-5553	#74-5707	#75-5618	#76-5571	#77-5719	#78-5293	#79-5435	#80-5375
#81-5288	#82-5367	#83-5520	#84-5484	#85-5311	#86-5395	#87-5304	#88-5494	#89-5265	#90-5323
#91-5568	#92-5697	#93-5493	#94-5306	#95-5417	#96-5315	#97-5544	#98-5410	#99-5381	#100-5460

Type 6 #22 [Back to Summary]									
This table contains a list of 100 hop frequencies, randomly selected from 5250-5724MHz in 1MHz steps									
#01-5420	#02-5480	#03-5310	#04-5252	#05-5429	#06-5669	#07-5461	#08-5467	#09-5619	#10-5343
#11-5389	#12-5655	#13-5464	#14-5514	#15-5631	#16-5404	#17-5434	#18-5297	#19-5604	#20-5571
#21-5273	#22-5672	#23-5365	#24-5526	#25-5714	#26-5601	#27-5472	#28-5642	#29-5371	#30-5326
#31-5576	#32-5557	#33-5559	#34-5496	#35-5485	#36-5492	#37-5497	#38-5357	#39-5588	#40-5358
#41-5668	#42-5281	#43-5267	#44-5398	#45-5692	#46-5385	#47-5317	#48-5523	#49-5397	#50-5419
#51-5362	#52-5612	#53-5627	#54-5679	#55-5584	#56-5282	#57-5396	#58-5426	#59-5268	#60-5579
#61-5613	#62-5681	#63-5321	#64-5633	#65-5674	#66-5529	#67-5639	#68-5367	#69-5641	#70-5660
#71-5509	#72-5696	#73-5599	#74-5285	#75-5504	#76-5400	#77-5710	#78-5259	#79-5302	#80-5410
#81-5384	#82-5598	#83-5589	#84-5542	#85-5555	#86-5687	#87-5263	#88-5575	#89-5378	#90-5311
#91-5490	#92-5278	#93-5577	#94-5722	#95-5483	#96-5445	#97-5676	#98-5368	#99-5708	#100-5721

Type 6 #25 [Back to Summary]									
This table contains a list of 100 hop frequencies, randomly selected from 5250-5724MHz in 1MHz steps									
#01-5346	#02-5314	#03-5388	#04-5599	#05-5263	#06-5662	#07-5272	#08-5306	#09-5509	#10-5392
#11-5527	#12-5614	#13-5634	#14-5407	#15-5261	#16-5255	#17-5681	#18-5514	#19-5324	#20-5490
#21-5679	#22-5282	#23-5586	#24-5588	#25-5296	#26-5515	#27-5605	#28-5382	#29-5532	#30-5460
#31-5630	#32-5575	#33-5371	#34-5627	#35-5516	#36-5577	#37-5457	#38-5623	#39-5325	#40-5366
#41-5480	#42-5380	#43-5317	#44-5323	#45-5555	#46-5590	#47-5685	#48-5652	#49-5258	#50-5703
#51-5271	#52-5465	#53-5506	#54-5281	#55-5260	#56-5692	#57-5397	#58-5648	#59-5702	#60-5657
#61-5622	#62-5289	#63-5512	#64-5504	#65-5470	#66-5402	#67-5308	#68-5439	#69-5683	#70-5259
#71-5548	#72-5690	#73-5430	#74-5554	#75-5677	#76-5523	#77-5481	#78-5608	#79-5359	#80-5485
#81-5300	#82-5446	#83-5655	#84-5653	#85-5699	#86-5556	#87-5385	#88-5426	#89-5328	#90-5432
#91-5379	#92-5645	#93-5557	#94-5507	#95-5496	#96-5568	#97-5316	#98-5264	#99-5567	#100-5322

Type 6 #28 [Back to Summary]									
This table contains a list of 100 hop frequencies, randomly selected from 5250-5724MHz in 1MHz steps									
#01-5578	#02-5479	#03-5400	#04-5373	#05-5496	#06-5274	#07-5412	#08-5627	#09-5427	#10-5659
#11-5312	#12-5319	#13-5623	#14-5390	#15-5273	#16-5376	#17-5278	#18-5513	#19-5706	#20-5303
#21-5423	#22-5324	#23-5693	#24-5691	#25-5342	#26-5420	#27-5675	#28-5326	#29-5308	#30-5516
#31-5365	#32-5580	#33-5668	#34-5320	#35-5266	#36-5282	#37-5267	#38-5615	#39-5543	#40-5388
#41-5419	#42-5663	#43-5428	#44-5425	#45-5471	#46-5465	#47-5349	#48-5472	#49-5666	#50-5669
#51-5377	#52-5299	#53-5608	#54-5404	#55-5405	#56-5432	#57-5407	#58-5462	#59-5550	#60-5368
#61-5393	#62-5672	#63-5463	#64-5679	#65-5257	#66-5344	#67-5261	#68-5484	#69-5620	#70-5517
#71-5470	#72-5601	#73-5321	#74-5452	#75-5384	#76-5364	#77-5389	#78-5315	#79-5696	#80-5640
#81-5586	#82-5575	#83-5584	#84-5461	#85-5689	#86-5651	#87-5594	#88-5545	#89-5284	#90-5478
#91-5510	#92-5279	#93-5572	#94-5658	#95-5611	#96-5585	#97-5645	#98-5509	#99-5639	#100-5662

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