

DFS Test Report

Report No.: RF161129C10A-1

FCC ID: G95-DWA1230

Equipment Name: Wireless .11ac Smart Ultra Broadband Gateway

Trade Name: technicolor

Model Number: DWA1230

Product Code: DSLYBA123GP, DSLYBA123WA

Received Date: Nov. 29, 2016

Test Date: Mar. 21 ~ Mar. 27, 2017

Issued Date: Mar. 28, 2017

Applicant: Technicolor Connected Home USA LLC

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Release Control Record

Issue No.	Description	Date Issued
RF161129C10A-1	Original release.	Mar. 28, 2017

1. Certificate of Conformity

Equipment Name: Wireless .11ac Smart Ultra Broadband Gateway

Trade Name: technicolor

Test Model: DWA1230

Product Code: DSLYBA123GP, DSLYBA123WA

Sample Status: Product Unit

Applicant: Technicolor Connected Home USA LLC

Test Date: Mar. 21 ~ Mar. 27, 2017

Standards: FCC Part 15, Subpart E (Section 15.407)

KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by :  , **Date:** Mar. 28, 2017
Polly Chien / Specialist

Approved by :  , **Date:** Mar. 28, 2017
Ken Liu / Senior Manager

2. Summary of Test Results

Applied Standard: KDB905462 D02 UNII DFS Compliance Procedures New Rules v02, 04/08/2016				
Part	Clause	Test Parameter	Remarks	Pass/Fail
7.6	7.8.1	U-NII Detection Bandwidth	Applicable	Pass
7.7	7.8.2.1 7.8.2.2 7.8.2.3	Channel Availability Check Time	Applicable	Pass
7.8	7.8.3	In-Service Monitoring for Channel Move Time (CMT).	Applicable	Pass
7.8	7.8.3	In-Service Monitoring for Channel Closing Transmission Time (CCTT).	Applicable	Pass
7.9	7.8.3	In-Service Monitoring for Non-Occupancy Period (NOP).	Applicable	Pass
7.10	7.8.4	Statistical Performance Check	Applicable	Pass

3. General Information

3.1 General Description of EUT (DFS Band)

Items	Description
Equipment Name	Wireless .11ac Smart Ultra Broadband Gateway
Trade Name	technicolor
Model Number	DWA1230
Product Code	DSLYBA123GP, DSLYBA123WA
FCC ID	G95-DWA1230
Power Type	From power adapter
Antenna	Refer section 3.10
EUT Stage	☒ Product Unit ☐ Pre-Sample
Operating Band and Conducted Output Power	☐ IEEE 802.11a:
	☐ IEEE 802.11ac (20MHz):
	☐ IEEE 802.11ac (40MHz):
	☐ IEEE 802.11ac (80MHz):
	☐ IEEE 802.11a
	☐ IEEE 802.11ac (20MHz)
	☒ IEEE 802.11ac (40MHz): CDD Mode: 23.85 dBm TxBF Mode: 23.33 dBm
	☒ IEEE 802.11ac (80MHz): CDD Mode: 22.72 dBm TxBF Mode: 22.74 dBm
	☐ IEEE 802.11a
	☐ IEEE 802.11ac (20MHz)
	☒ IEEE 802.11ac (40MHz): CDD Mode: 23.96 dBm TxBF Mode: 22.92 dBm
	☒ IEEE 802.11ac (80MHz): CDD Mode: 22.70 dBm TxBF Mode: 22.84 dBm
	☐ IEEE 802.11a:
	☐ IEEE 802.11ac (20MHz):
	☐ IEEE 802.11ac (40MHz):
	☐ IEEE 802.11ac (80MHz):

Product Type	For IEEE 802.11n: WLAN(4TX, 4RX) For IEEE 802.11ac: WLAN (4TX, 4RX)			
Nominal Bandwidth	40MHz / 80MHz			
Modulation	802.11n: (BPSK / QPSK / 16QAM / 64QAM) See the below table 802.11ac: (BPSK / QPSK / 16QAM / 64QAM/ 256QAM) See the below table			
Data Rate (Mbps)	11n(40MHz) mode : MCS0~MCS15 11ac(40MHz) mode : MCS0~MCS9 for NSS1~NSS4 See the below table 11ac(80MHz) mode : MCS0~MCS9 for NSS1~NSS4 See the below table			
TPC Function	☒	With TPC	☐	Without TPC
Beam forming Function	☒	With Beam forming	☐	Without Beam forming
DFS Operating Mode(s)	☒	Master	☐	Slave without radar detection
DFS Function	☒	5250~5350MHz		
	☒	5470~5725MHz		
	☒	5600~5650MHz		
Off Channel CAC Feature Implemented	☒	No		
Ad-hoc/Hotspot Mode	☒	No Ad-hoc/Hotspot operation in 5150 - 5350 MHz and 5470 - 5725 MHz.		
User Access Restrictions	☒	DFS controls (hardware or software) related to radar detection are NOT accessible to the user.		
I/O Ports	LAN Port x 4 USB Port x 1 DSL Port x 2 MoCA Port x 1(Coaxial type) SFP Port x 1			
Hardware Version	LAB2c			
Software Version	16.4.7517-2970000-20170125214108-d73085acc928a00222101d6c03846b721658b097			

802.11n Data Rate spec

Standard	INDEX	Data Rate (Mbps)		Standard	INDEX	Data Rate (Mbps)	
		LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)
11n 20MHz Nss=1	MCS0	6.5	7.2	11n 40MHz Nss=1	MCS0	13.5	15
	MCS1	13	14.4		MCS1	27	30
	MCS2	19.5	21.7		MCS2	40.5	45
	MCS3	26	28.9		MCS3	54	60
	MCS4	39	43.3		MCS4	81	90
	MCS5	52	57.8		MCS5	108	120
	MCS6	58.5	65		MCS6	121.5	135
	MCS7	65	72.2		MCS7	135	150
11n 20MHz Nss=2	MCS8	13	14.4	11n 40MHz Nss=2	MCS8	27	30
	MCS9	26	28.9		MCS9	54	60
	MCS10	39	43.3		MCS10	81	90
	MCS11	52	57.8		MCS11	108	120
	MCS12	78	86.7		MCS12	162	180
	MCS13	104	115.6		MCS13	216	240
	MCS14	117	130		MCS14	243	270
	MCS15	130	144.4		MCS15	270	300
11n 20MHz Nss=3	MCS16	19.5	21.7	11n 40MHz Nss=3	MCS16	40.5	45
	MCS17	39	43.3		MCS17	81	90
	MCS18	58.5	65		MCS18	121.5	135
	MCS19	78	86.7		MCS19	162	180
	MCS20	117	130		MCS20	243	270
	MCS21	156	173.3		MCS21	324	360
	MCS22	175.5	195		MCS22	364.5	405
	MCS23	195	216.7		MCS23	405	450
11n 20MHz Nss=4	MCS24	26	28.9	11n 40MHz Nss=4	MCS24	54	60
	MCS25	52	57.8		MCS25	108	120
	MCS26	78	86.7		MCS26	162	180
	MCS27	104	115.6		MCS27	216	240
	MCS28	156	173.3		MCS28	324	360
	MCS29	208	231.1		MCS29	432	480
	MCS30	234	260		MCS30	486	540
	MCS31	260	288.9		MCS31	540	600

802.11ac Data Rate spec

Standard	INDEX	Data Rate (Mbps)		Standard	INDEX	Data Rate (Mbps)		Standard	INDEX	Data Rate (Mbps)	
		LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)
11ac 20MHz NSS = 1	MCS0	6.5	7.2	11ac 40MHz NSS = 1	MCS0	13.5	15.0	11ac 80MHz NSS = 1	MCS0	29.3	32.5
	MCS1	13.0	14.4		MCS1	27	30.0		MCS1	58.5	65.0
	MCS2	19.5	21.7		MCS2	40.5	45.0		MCS2	87.8	97.5
	MCS3	26	28.9		MCS3	54	60.0		MCS3	117.0	130.0
	MCS4	39	43.3		MCS4	81	90.0		MCS4	175.5	195.0
	MCS5	52	57.8		MCS5	108	120.0		MCS5	234.0	260.0
	MCS6	58.5	65		MCS6	121.5	135.0		MCS6	263.3	292.5
	MCS7	65	72.2		MCS7	135.0	150.0		MCS7	292.5	325.0
	MCS8	78	86.7		MCS8	162.0	180.0		MCS8	351.0	390.0
	MCS9	Note	Note		MCS9	180.0	200.0		MCS9	390.0	433.3

NOTE: MCS 9 is invalid due to mod(NCBPS/NES, DR) not being equal to 0.

Standard	INDEX	Data Rate (Mbps)		Standard	INDEX	Data Rate (Mbps)		Standard	INDEX	Data Rate (Mbps)	
		LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)
11ac 20MHz NSS = 2	MCS0	13.0	14.4	11ac 40MHz NSS = 2	MCS0	27.0	30.0	11ac 80MHz NSS = 2	MCS0	58.5	65.0
	MCS1	26.0	28.9		MCS1	54.0	60.0		MCS1	117.0	130.0
	MCS2	39.0	43.3		MCS2	81.0	90.0		MCS2	175.5	195.0
	MCS3	52.0	57.8		MCS3	108.0	120.0		MCS3	234.0	260.0
	MCS4	78.0	86.7		MCS4	162.0	180.0		MCS4	351.0	390.0
	MCS5	104.0	115.6		MCS5	216.0	240.0		MCS5	468.0	520.0
	MCS6	117.0	130.0		MCS6	243.0	270.0		MCS6	526.5	585.0
	MCS7	130.0	144.4		MCS7	270.0	300.0		MCS7	585.0	650.0
	MCS8	156.0	173.3		MCS8	324.0	360.0		MCS8	702.0	780.0
	MCS9	13.0	14.4		MCS9	360.0	400.0		MCS9	780.0	866.7

Standard	INDEX	Data Rate (Mbps)		Standard	INDEX	Data Rate (Mbps)		Standard	INDEX	Data Rate (Mbps)	
		LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)
11ac 20MHz NSS = 3	MCS0	19.5	21.7	11ac 40MHz NSS = 3	MCS0	40.5	45.0	11ac 80MHz NSS = 3	MCS0	87.8	97.5
	MCS1	39.0	43.3		MCS1	81.0	90.0		MCS1	175.5	195.0
	MCS2	58.5	65.0		MCS2	121.5	135.0		MCS2	263.3	292.5
	MCS3	78.0	86.7		MCS3	162.0	180.0		MCS3	351.0	190.0
	MCS4	117.0	130		MCS4	243.0	270.0		MCS4	526.5	585.0
	MCS5	156.0	173.3		MCS5	324.0	360.0		MCS5	702.0	780.0
	MCS6	175.5	195.0		MCS6	364.5	405.0		MCS6	Note	Note
	MCS7	195.0	216.7		MCS7	405.0	450.0		MCS7	877.5	975.0
	MCS8	234.0	260.0		MCS8	486.0	540.0		MCS8	1053.0	1170.0
	MCS9	260.0	228.9		MCS9	540.0	600.0		MCS9	1170.0	1300.0

NOTE: MCS 6 is invalid due to mod(NCBPS/NES, DR) not being equal to 0.

Standard	INDEX	Data Rate (Mbps)		Standard	INDEX	Data Rate (Mbps)		Standard	INDEX	Data Rate (Mbps)	
		LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)
11ac 20MHz NSS = 4	MCS0	26.0	28.9	11ac 40MHz NSS = 4	MCS0	54.0	60.0	11ac 80MHz NSS = 4	MCS0	117.0	130.0
	MCS1	52.0	57.8		MCS1	108.0	120.0		MCS1	234.0	260.0
	MCS2	78.0	86.7		MCS2	162.0	180.0		MCS2	351.0	390.0
	MCS3	104.0	115.6		MCS3	216.0	240.0		MCS3	468.0	520.0
	MCS4	156.0	173.3		MCS4	324.0	360.0		MCS4	702.0	780.0
	MCS5	208.0	231.1		MCS5	432.0	480.0		MCS5	936.0	1040.0
	MCS6	234.0	260.0		MCS6	486.0	540.0		MCS6	1053.0	1170.0
	MCS7	260.0	288.9		MCS7	540.0	600.0		MCS7	1170.0	1300.0
	MCS8	312.0	346.7		MCS8	648.0	720.0		MCS8	1404.0	1560.0
	MCS9	Note	Note		MCS9	720.0	800.0		MCS9	1560.0	1733.3

NOTE: MCS 9 is invalid due to mod(NCBPS/NES, DR) not being equal to 0.

3.2 Accessories

Power supply:

Brand	AcBel
Model	WAC011
P/N	DSL37541960
Input Power	100-240Vac, 50/60Hz, 1A
Output Power	12Vdc, 2.8A
Power Line	1.5m power cable without core attached on adapter

3.3 Feature of Equipment Under Test

Please refer to user manual.

3.4 Information Provided by the Manufacturer

Interface Availability

Interface Model	DC Power	ADSL: (ADSL2+) VDSL2 17a: (US0 EU-32)	MOCA	Ethernet LAN 1000Mbps	Ethernet WAN 1000Mbps	USB 3. 0	WLAN IEEE 802.11n (2.4GHz)	WLAN IEEE 802.11ac (5GHz)	SFP
DWA1230	12Vdc, 2.8A	●Annex A	●(1 port)	●(4 port)	●(1 port)	●(1 port)	●	●	●

●: Equipped

○: Not Equipped

3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart E (Section 15.407)

KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02

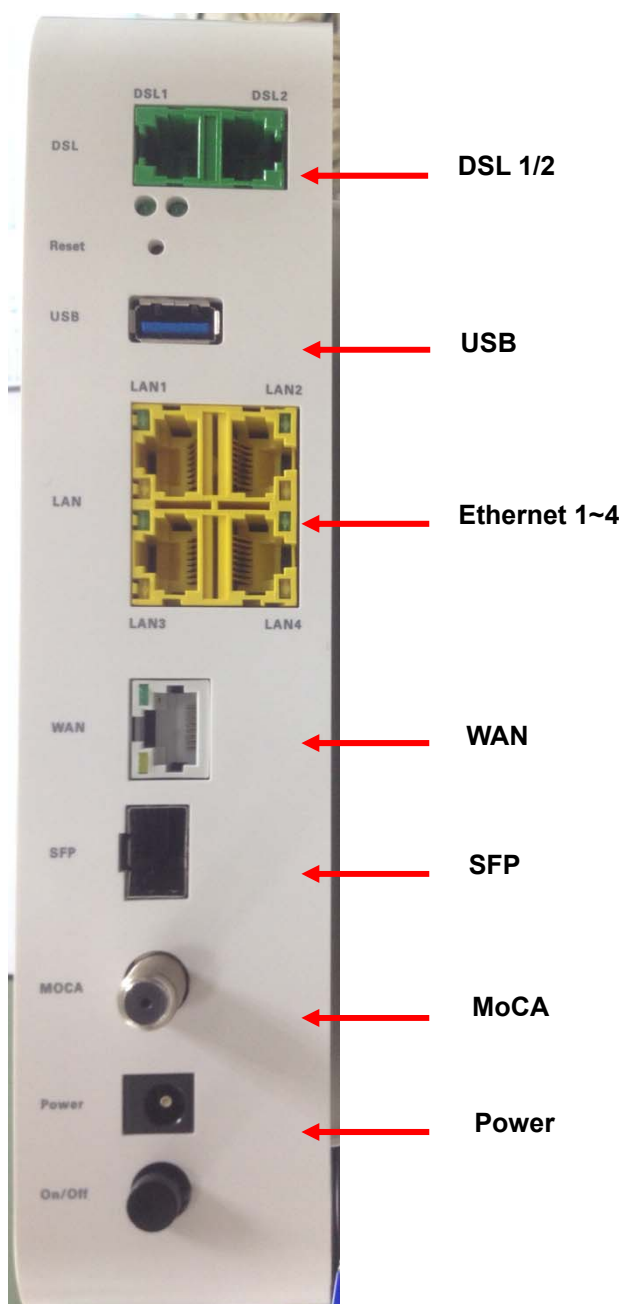
All test items have been performed and recorded as per the above standards.

3.6 Cabling Attached to the Equipment

Cable and Interconnection

Interface	Cable type	Cable length delivered with the modem	"Real life" Cable length that can be attached to this type of interface	Cable length to be used for testing	Internal/ external connection
DSL1/2	UTP Cat 3	2 meter flat cable	> 10 meter	10 meter	External
ETH1, WAN	UTP Cat 5	2 meter	> 10 meter	Two 10 meter cables;	Internal
MOCA	Coaxial	2 meter	> 10 meter	10 meter	External
USB	STP	NA	NA	NA	Internal
SFP (Fiber module)	Fiber	2 meter	> 10 meter	10 meter	External
AC power	UTP	1.5 meter	>10 meter	1.5 meter	External

3.7 Panel Drawing



3.8 Transmit Operating Mode

For 5250~5350MHz & 5470~5725MHz

Transmit Operating Mode						Transmit Multiple Antennas					
☐	Operating mode 1 (single antenna)					☐	1TX				
☒	Operating mode 2 (multiple antenna, no beam forming)					☐	2TX	☐	3TX	☒	4TX
☒	Operating mode 3 (multiple antenna, with beam forming)					☐	2TX	☐	3TX	☒	4TX
☐	802.11a	Operating mode	☐	1T	☐	2T	☐	3TX	☐	4TX	
☐	802.11n (20MHz)	Operating mode	☐	1T	☐	2T	☐	3TX	☐	4TX	
☒	802.11n (40MHz)	Operating mode	☐	1T	☐	2T	☐	3TX	☒	4TX	
☐	802.11ac (20MHz)	Operating mode	☐	1T	☐	2T	☐	3TX	☐	4TX	
☒	802.11ac (40MHz)	Operating mode	☐	1T	☐	2T	☐	3TX	☒	4TX	
☒	802.11ac (80MHz)	Operating mode	☐	1T	☐	2T	☐	3TX	☒	4TX	

Note:

For IEEE802.11n 40MHz, MCS0~MCS7: 1 Stream 4TX; MCS8~MCS15: 2 Stream 4TX; MCS16~MCS23: 3 Stream 4TX; MCS24~MCS31: 4 Stream 4TX

For IEEE802.11ac 40MHz/80MHz, Nss1MCS0~Nss1MCS9: 1 Stream 4TX; Nss2MCS0~Nss2MCS9: 2 Stream 4TX; Nss3MCS0~Nss3MCS9: 3 Stream 4TX; Nss4MCS0~Nss4MCS9: 4 Stream 4TX

3.9 Antenna Requirements

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

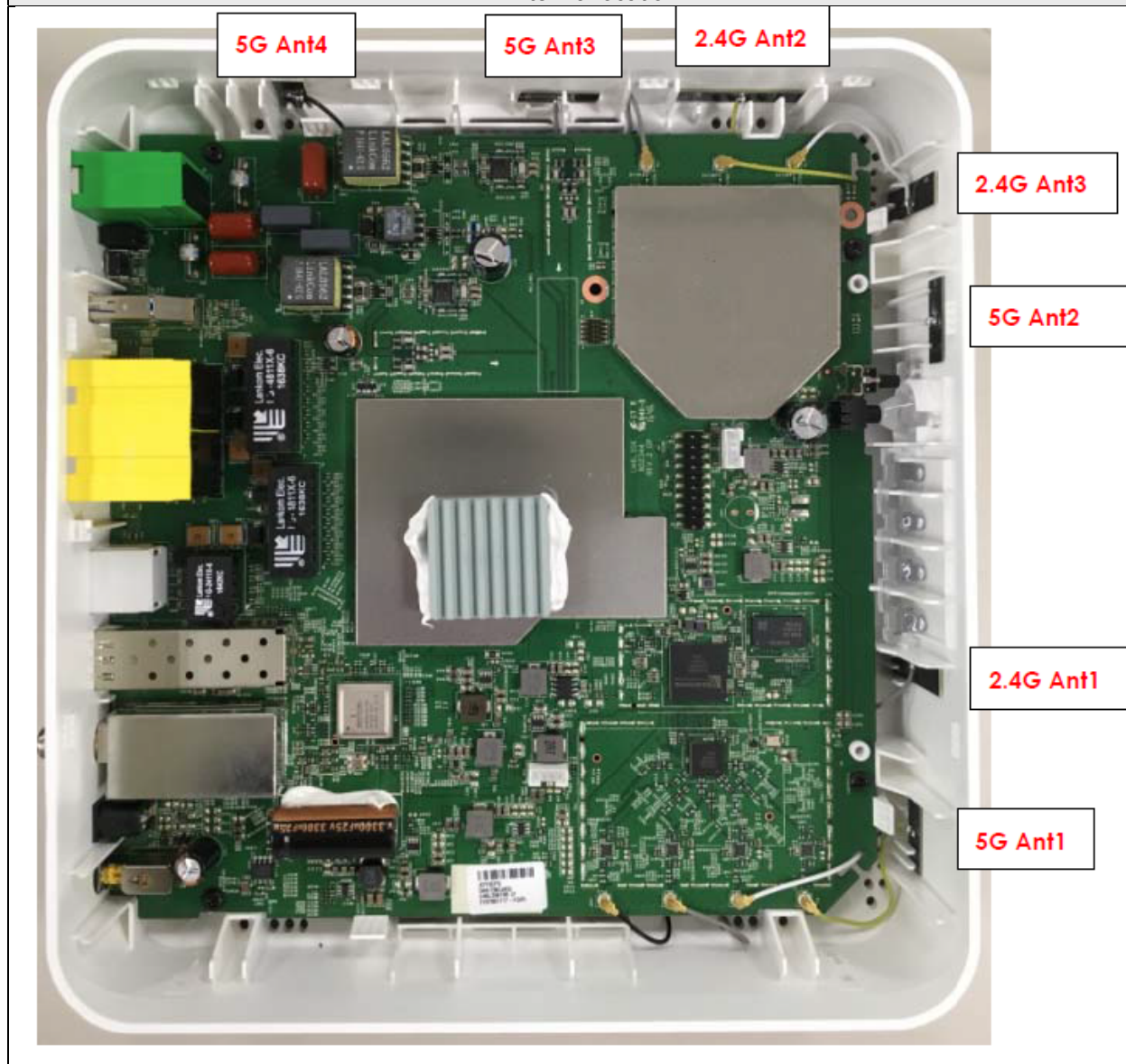
3.10 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector
1	WHAYU	C107-511313-A	PCB	I-Pex
2	WHAYU	C107-511312-A	PCB	I-Pex
3	WHAYU	C107-511311-A	PCB	I-Pex
4	WHAYU	C107-511310-A	PCB	I-Pex

Antenna & Bandwidth

Antenna	1st (TX)			2nd (TX)			3rd (TX)			4th (TX)		
Bandwidth Mode	20 MHz	40 MHz	80 MHz	20 MHz	40 MHz	80 MHz	20 MHz	40 MHz	80 MHz	20 MHz	40 MHz	80 MHz
802.11a	V	X	X	V	X	X	V	X	X	V	X	X
802.11n	V	V	X	V	V	X	V	V	X	V	V	X
802.11ac	V	V	V	V	V	V	V	V	V	V	V	V

Antenna location



3.11 Table for Carrier Frequency

8 channels are provided for 802.11n (40MHz) / 802.11ac (40MHz):

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5250~5350 MHz U-NII-2A	54	5270 MHz	62	5310 MHz
5470~5725 MHz U-NII-2C	102	5510 MHz	126	5630 MHz
	110	5550 MHz	134	5670 MHz
	118	5590 MHz	142	5720 MHz

4 channels are provided for 802.11ac (80MHz):

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5250~5350 MHz U-NII-2A	58	5290 MHz	-	-
5470~5725 MHz U-NII-2C	106	5530 MHz	138	5690 MHz
	122	5610 MHz	-	-

3.12 Table for Master Test Modes

Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Note	Channel	Data Rate	Antenna
UNII Detection Bandwidth Measurement and Statistical Performance Check (Radiated)	11ac(40MHz)	U-NII-2C /BPSK	102	Nss1MCS0	1+2+3+4
	11ac(80MHz)		106	Nss1MCS0	1+2+3+4
Channel Availability Check Time (Radiated)	11ac(80MHz)	U-NII-2C /BPSK	106	Nss1MCS0	1+2+3+4
Channel Move Time and Channel Closing Transmission Time (Radiated)	11ac(80MHz)	U-NII-2C /BPSK	106	Nss1MCS0	1+2+3+4
Non-Occupancy Period (Radiated)	11ac(80MHz)	U-NII-2C /BPSK	106	Nss1MCS0	1+2+3+4

Note:

1. Test mode refer to "KDB905462 D02 UNII DFS Compliance Procedures New Rules v02", Table 2 04/08/2016
2. The software does not support the 20MHz bandwidth of Band 2 and Band 3.

3.13 List of measurements for Master mode

Nominal Channel Bandwidth 802.11ac 40MHz/ch102

Temperature	25°C	Humidity	55%
Test Engineer	Edward Lin	Configurations	802.11ac 40MHz/ch102
■	EIRP $\geq$ 200mW, DFS Detection Threshold =-64dBm		
□	EIRP < 200mW and PSD < 10 dBm/MHz, DFS Detection Threshold =-62dBm		
□	EIRP < 200mW, that do not meet the PSD requirement, DFS Detection Threshold =-64dBm		
Parameter		Test Value	Test Result
U-NII Detection Bandwidth (Minimum 100% of the U-NII 99% transmission power bandwidth)		Type 0 Radar Detection >90%	Compiles
Statistical Performance Check (In-Service Monitoring)		30 time Type1~4 & 5 Radar Detection >80% Type 6 Radar Detection >70%	Compiles
Security features		country code, frequency range, modulation type, maximum output power can not be changed by unauthorized parties	

Nominal Channel Bandwidth 802.11ac 80MHz/ch106

Temperature	25°C	Humidity	55%
Test Engineer	Edward Lin	Configurations	802.11ac 80MHz/ch106
■	EIRP $\geq$ 200mW, DFS Detection Threshold =-64dBm		
□	EIRP < 200mW and PSD < 10 dBm/MHz, DFS Detection Threshold =-62dBm		
□	EIRP < 200mW, that do not meet the PSD requirement, DFS Detection Threshold =-64dBm		
Parameter		Test Value	Test Result
U-NII Detection Bandwidth (Minimum 100% of the U-NII 99% transmission power bandwidth)		Type 0 Radar Detection >90%	Compiles
Statistical Performance Check (In-Service Monitoring)		30 time Type1+4 & 5 Radar Detection >80% Type 6 Radar Detection >70%	Compiles
Channel Move Time		Type 0 < 10s	Compiles
Channel Closing Transmission Time		Type 0 < 200ms	Compiles
Non-Occupancy Period		Type 0 $\geq$ 30 min	Compiles
Security features		country code, frequency range, modulation type, maximum output power can not be changed by unauthorized parties	

4. EUT Information

4.1 Operating Frequency Bands and Mode of EUT

Table 1: Operating Frequency Bands and Mode of EUT

Operational Mode	Operating Frequency Range	
	5250~5350MHz	5470~5725MHz
Master	✓	✓

4.2 EUT Hardware, Software and Firmware Version

Table 2: The EUT Hardware/Software/Firmware Version

No.	Product	Model	Hardware/Software/Firmware Version
1	Wireless .11ac Smart Ultra Broadband Gateway	DWA1230	Firmware version : 16.4.7517-2970000-20170125214108

4.3 Description of Available Antennas to the EUT

Table 3: Directional Gain

Frequency	Maximum Gain (dBi) for CDD mode			
	CDD mode (1 Stream 4 TX) for Power Gain		CDD mode (1 Stream 4 TX) for PSD Gain	
	40 MHz	80MHz	40 MHz	80MHz
5270MHz	4.14		6.61	
5290MHz		3.52		6.65
5310MHz	3.94		6.48	
5510MHz	3.35		6.29	
5530MHz		3.71		6.71
5550MHz	3.43		6.33	
5610MHz		3.50		6.13
5670MHz	3.37		6.06	
5690MHz		4.21		6.58
5710MHz	3.85		6.18	

Frequency	Maximum Gain (dBi) for TXBF mode			
	TXBF mode (1 Stream 4 TX) for Power Gain		TXBF mode (1 Stream 4 TX) for PSD Gain	
	40 MHz	80MHz	40 MHz	80MHz
5270MHz	6.61		6.61	
5290MHz		6.65		6.65
5310MHz	6.48		6.48	
5510MHz	6.29		6.29	
5530MHz		6.71		6.71
5550MHz	6.33		6.33	
5610MHz		6.13		6.13
5670MHz	6.06		6.06	
5690MHz		6.58		6.58
5710MHz	6.18		6.18	

Note:

1. Maximum Correlated Directional Gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$ dBi
2. Maximum Uncorrelated Directional Gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10}) / N_{ANT}]$ dBi

4.4 EUT Maximum Conducted Power

Table 4: The Measured Conducted Output Power

11ac (40MHz)

ANT No.	Frequency Band (MHz)	MAX. Power	
		Output Power(dBm)	Output Power(mW)
1	5250~5350	23.85	242.661
1	5470~5725	23.96	248.886

11ac (80MHz)

ANT No.	Frequency Band (MHz)	MAX. Power	
		Output Power(dBm)	Output Power(mW)
1	5250~5350	22.74	187.932
1	5470~5725	22.84	192.309

4.5 EUT Maximum E.I.R.P. Power

Table 5: The EIRP Output Power List

11ac (40MHz)

ANT No.	Frequency Band (MHz)	MAX. Power	
		Output Power(dBm)	Output Power(mW)
1	5250~5350	29.94	986.279
1	5470~5725	28.98	790.678

11ac (80MHz)

ANT No.	Frequency Band (MHz)	MAX. Power	
		Output Power(dBm)	Output Power(mW)
1	5250~5350	29.39	868.96
1	5470~5725	29.55	901.571

4.6 Transmit Power Control (TPC)

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 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

Maximum E.I.R.P of this device is 986.279 mW which more than 500mW, therefore it's require TPC function.

The UUT can adjust a transmitter's output power based on the signal level present at the receiver. TPC is auto controlled by software.

TPC	E.I.R.P	FCC 15.407(h)(1)
√	> 500mW	The TPC mechanism is required for system with an E.I.R.P. of above 500mW
	< 500mW	The TPC mechanism is not required for system with an E.I.R.P. of less 500mW

4.7 Statement of Manufacturer

Manufacturer statement confirming that information regarding the parameters of the detected Radar Waveforms is not available to the end user.

5. U-NII DFS Rule Requirements

5.1 Working Modes and Required Test Items

47 CFR FCC Part 15 Subpart E § 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 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

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.

Master Device Requirements:

- (1) Before initiating a network on a channel, which has not been identified as an Available Channel, the master device shall perform a Channel Availability Check to ensure that there is no radar operating on the channel.
- (2) During normal operation, the master device shall monitor the Operating Channel (In-Service Monitoring) to ensure that there is no radar operating on the channel. When the master device has detected a radar signal during In-Service Monitoring, the Operating Channel is made unavailable. The master device shall instruct all its associated slave devices to stop transmitting on this (to become unavailable) channel.
- (3) The master device shall not resume any transmissions on this Unavailable Channel during a period of time after a radar signal was detected. This period is referred as the Non-Occupancy Period.

Table 6: Applicability of DFS Requirements Prior To Use a Channel

Requirement	Operational Mode		
	Master	Client without radar detection	Client with radar detection
Non-Occupancy Period	✓	✓ note	✓
DFS Detection Threshold	✓	Not required	✓
Channel Availability Check Time	✓	Not required	Not required
U-NII Detection Bandwidth	✓	Not required	✓

Note: Regarding KDB 905462 D03 Client Without DFS New Rules v01r01 section (b)(5/6), 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 shut down (rather than moving channels), no beacons should appear. An analyzer plot that contains a single 30-minute sweep on the original channel.

Table 7: Applicability of DFS Requirements during Normal Operation.

Requirement	Operational Mode	
	Master or Client with radar detection	Client without radar detection
DFS Detection Threshold	✓	Not required
Channel Closing Transmission Time	✓	✓
Channel Move Time	✓	✓
U-NII Detection Bandwidth	✓	Not required

Additional requirements for devices with multiple bandwidth modes	Master 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 (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.		

5.2 Test Limits and Radar Signal Parameters

Detection Threshold Values

Table 8: DFS Detection Thresholds For Master Devices And Client Devices With Radar Detection

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP $\geq$ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral 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. Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.	

Table 9: 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.

Parameters of DFS Test Signals

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.

Table 10: Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (μsec)	PRI (μsec)	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	Roundup $\left\{ \frac{1}{360} \cdot \left(\frac{19 \cdot 10^6}{\text{PRI}_{\mu \text{ sec}}} \right) \right\}$	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 μ sec, with a minimum increment of 1 μ sec, 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 Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.					

Table 11: Long Pulse Radar Test Waveform

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

Three subsets of trials will be performed with a minimum of ten trials per subset. The subset of trials differ in where the Long Pulse Type 5 Signal is tuned in frequency.

- a) the Channel center frequency
- b) tuned frequencies such that 90% of the Long Pulse Type 5 frequency modulation is within the low edge of the UUT Occupied Bandwidth
- c) tuned frequencies such that 90% of the Long Pulse Type 5 frequency modulation is within the high edge of the UUT Occupied Bandwidth

It include 10 trails for every subset, the formula as below,

For subset case 1: the center frequency of the signal generator will remain fixed at the center of the UUT Channel.

For subset case 2: to retain 90% frequency overlap between the radar signal and the UUT Occupied Bandwidth, the center frequency of the signal generator will vary for each of the ten trials in subset case 2. The center frequency of the signal generator for each trial is calculated by:

$$FL + (0.4 * \text{Chirp Width [in MHz]})$$

For subset case 3: to retain 90% frequency overlap between the radar signal and the UUT Occupied Bandwidth, the center frequency of the signal generator will vary for each of the ten trials in subset case 3. The center frequency of the signal generator for each trial is calculated by:

$$FH - (0.4 * \text{Chirp Width [in MHz]})$$

Table 12: 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 Number Of Trials
6	1	333	9	0.333	300	70%	30

6 Test & Support Equipment List

6.1 Test Instruments

Table 13: Test Instruments List

Description & Manufacturer	Model No.	Brand	Date Of Calibration	Due Date Of Calibration
R&S Spectrum analyzer	ESR	R&S	2017/02/20	2018/02/19
Signal generator	8645A	Agilent	2016/08/08	2017/08/07

6.2 Description of Support Units

Table 14: Support Unit Information.

No.	Product	Brand	Model No.	FCC ID
1	Intel Dual Band Wireless	Intel	AC7265	PD97265NG

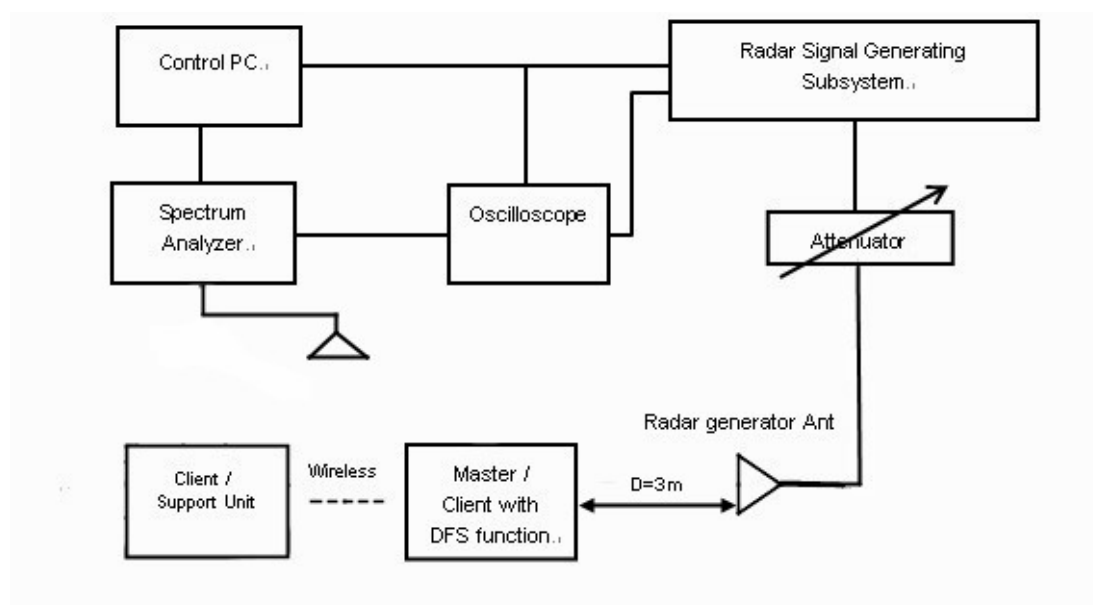
NOTE: This device was functioned as a ☐ Master ☒ Slave device during the DFS test.

7 Dynamic Frequency Selection Test Result

7.1 DFS Measurement System

A complete DFS Measurement System consists of two subsystems: (1) the Radar Signal Generating Subsystem and (2) the Traffic Monitoring Subsystem. The control PC is necessary for generating the Radar waveforms in Table 10, 11 and 12. The traffic monitoring subsystem is specified to the type of unit under test (UUT).

Radiated Setup Configuration of DFS Measurement System



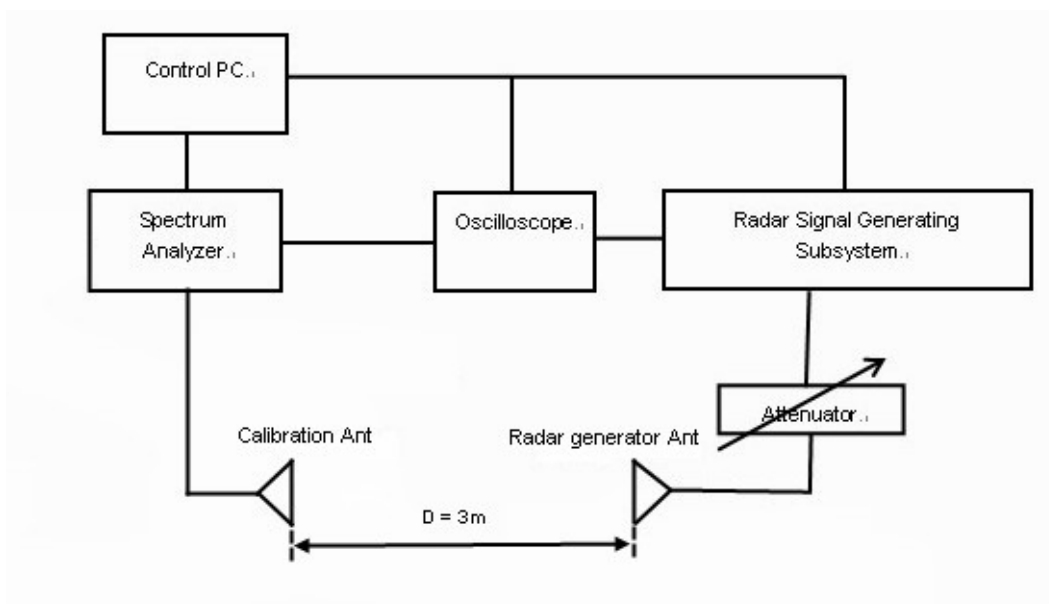
System testing will be performed with channel-loading using means appropriate to the data types that are used by the unlicensed device. The following requirements apply:

	a) The data file must be of a type that is typical for the device (i.e., MPEG-2, MPEG-4, WAV, MP3, MP4, AVI, etc.) and must generally be transmitting in a streaming mode.
	b) Software to ping the client is permitted to simulate data transfer but must have random ping intervals.
V	c) Timing plots are required with calculations demonstrating a minimum channel loading of approximately 17% or greater.
	d) Unicast or Multicast protocols are preferable but other protocols may be used. The appropriate protocol used must be described in the test procedures.

7.2 Calibration of DFS Detection Threshold Level

The measured channel is 5500MHz, 5510MHz and 5530MHz. The radar signal was the same as transmitted channels, and injected into the antenna of AP (master) or Client Device with Radar Detection, measured the channel closing transmission time and channel move time. The calibrated detection threshold level is set to -64dBm. The tested level is lower than required level hence it provides margin to the limit.

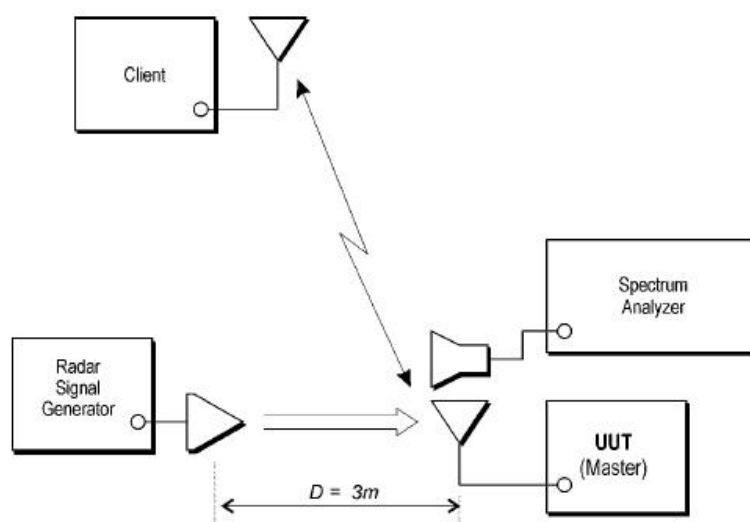
Radiated setup configuration of Calibration of DFS Detection Threshold Level



7.3 Deviation from Test Standard

No deviation.

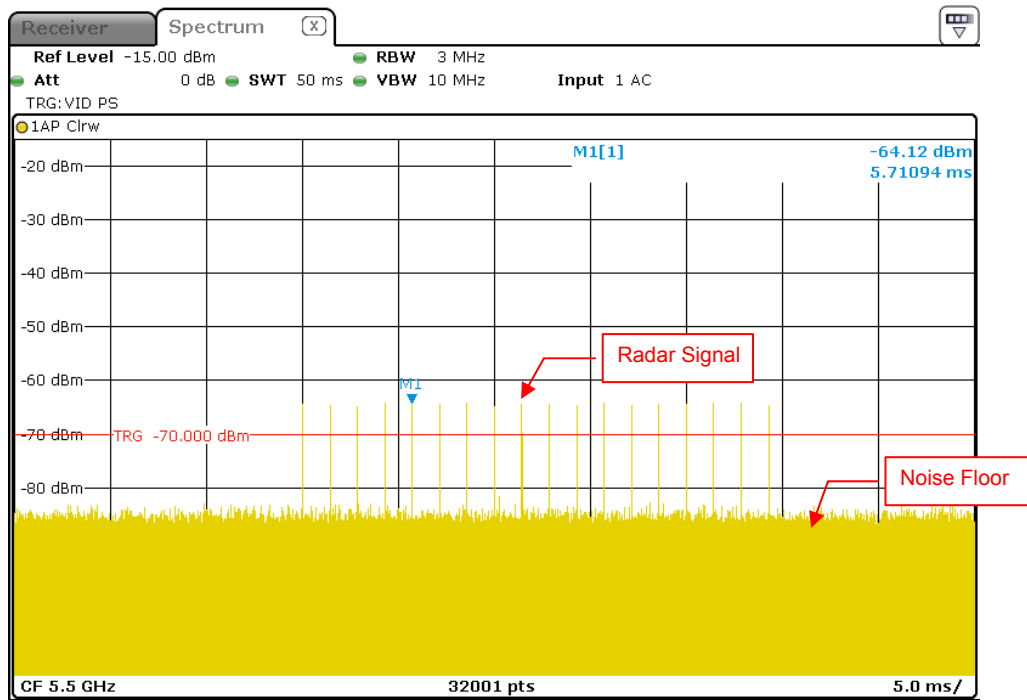
7.4 Radiated Test Setup Configuration



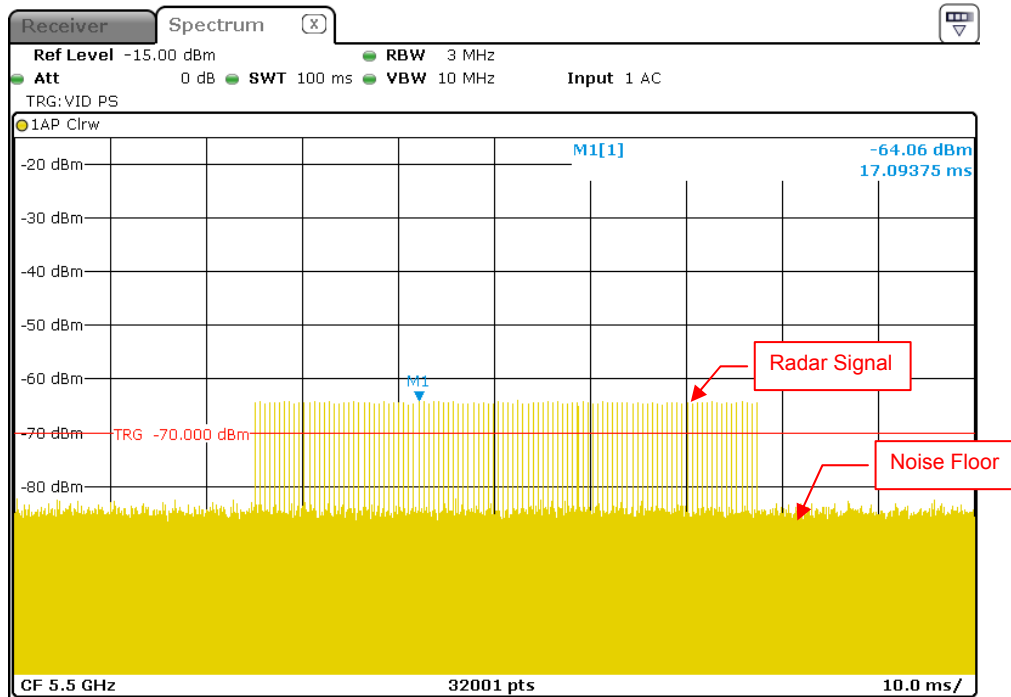
The EUT is a U-NII Device operating in Master mode. The radar test signals are injected into the Master Device.

7.5 DFS Detection Threshold

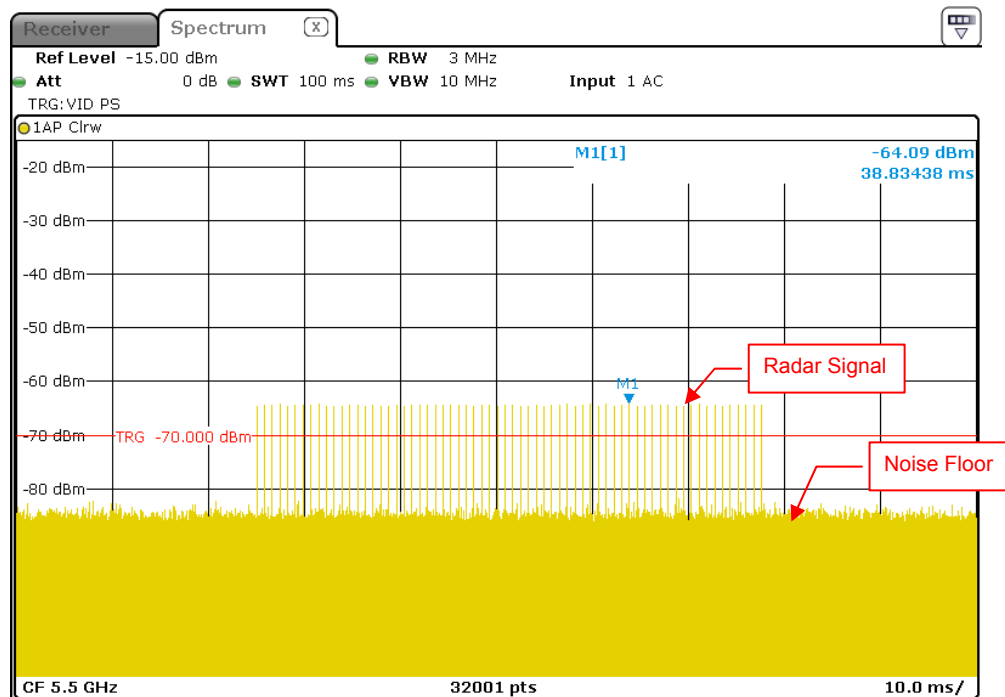
For a detection threshold level of -64dBm, the required signal strength at EUT antenna location is -64 dBm. The tested level is lower than required level hence it provides margin to the limit.



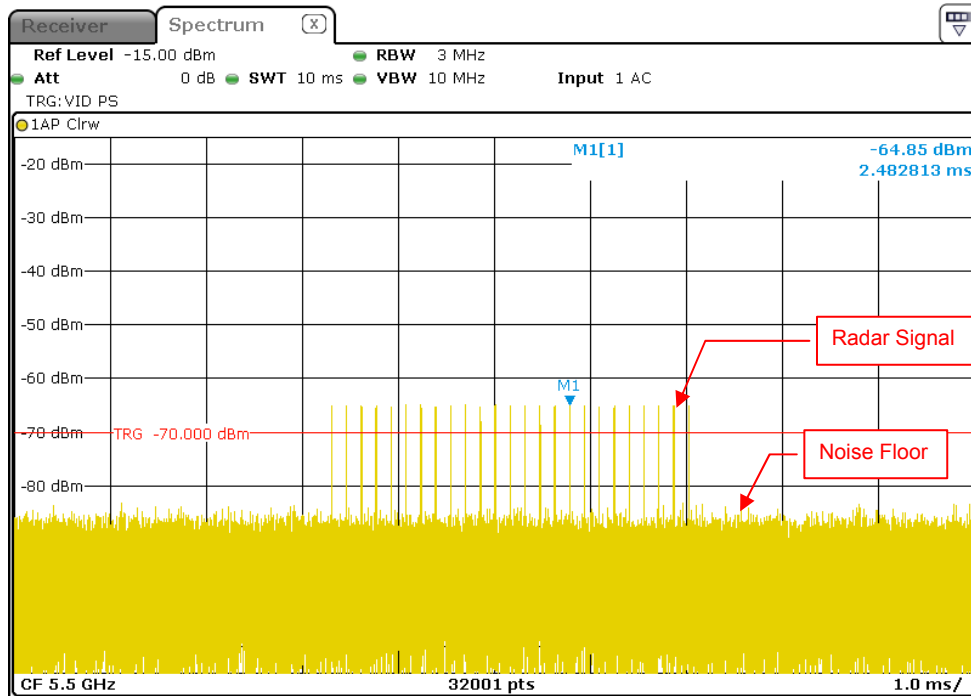
Radar Signal 0



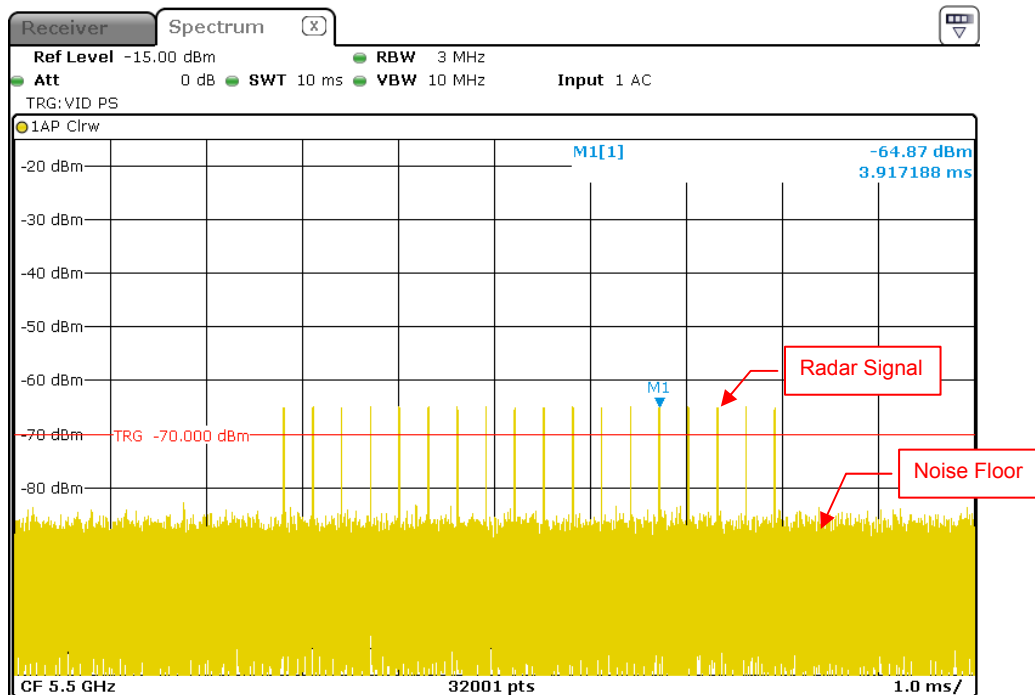
Radar Signal 1 (Test A)



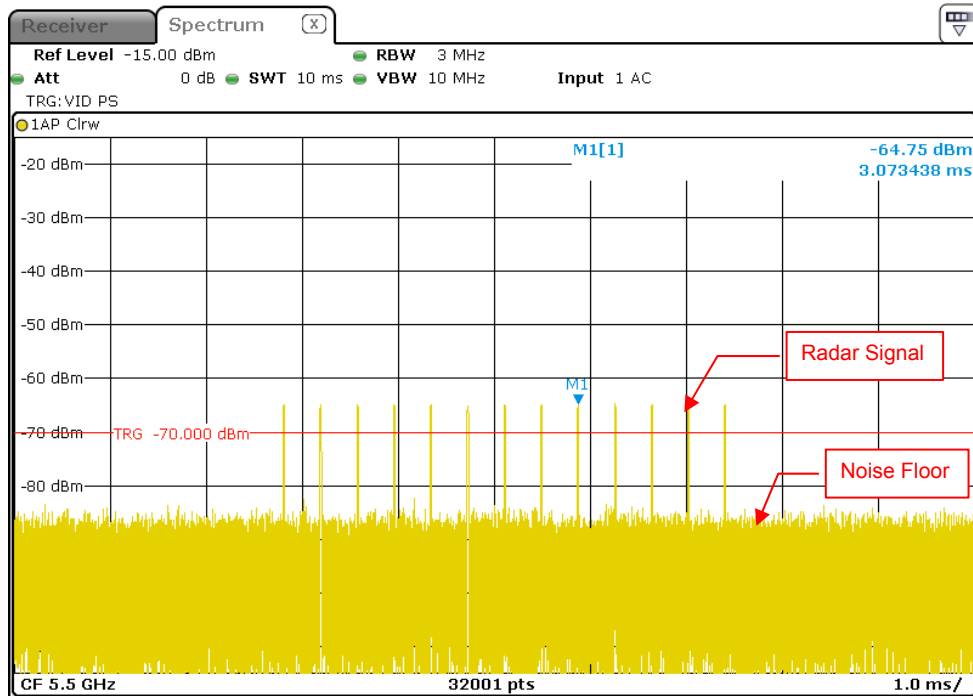
Radar Signal 1 (Test B)



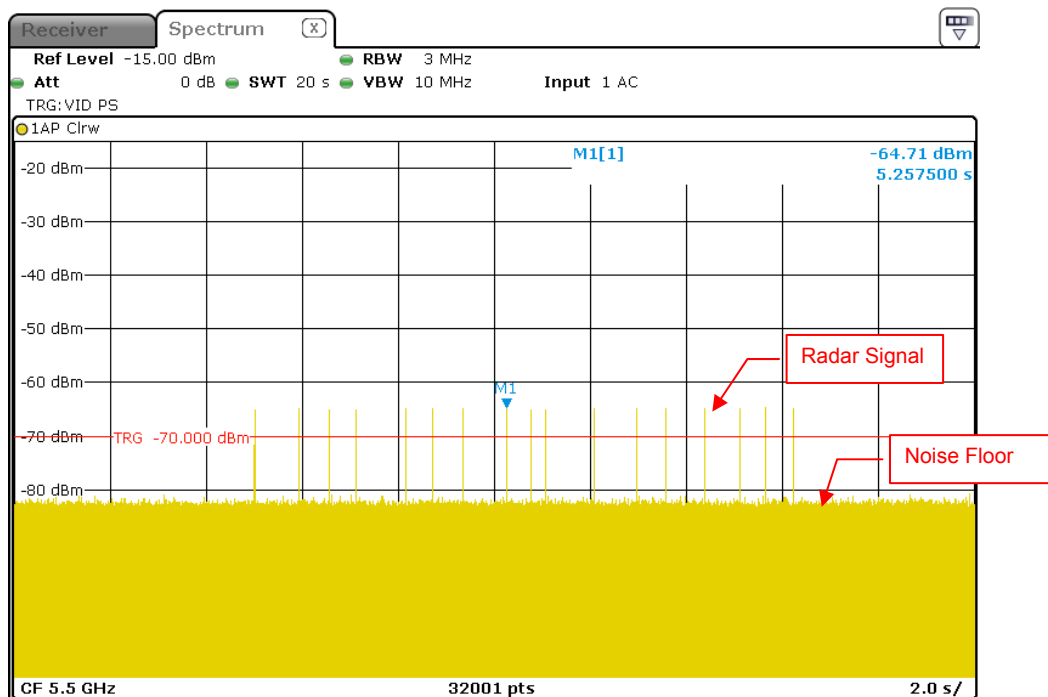
Radar Signal 2



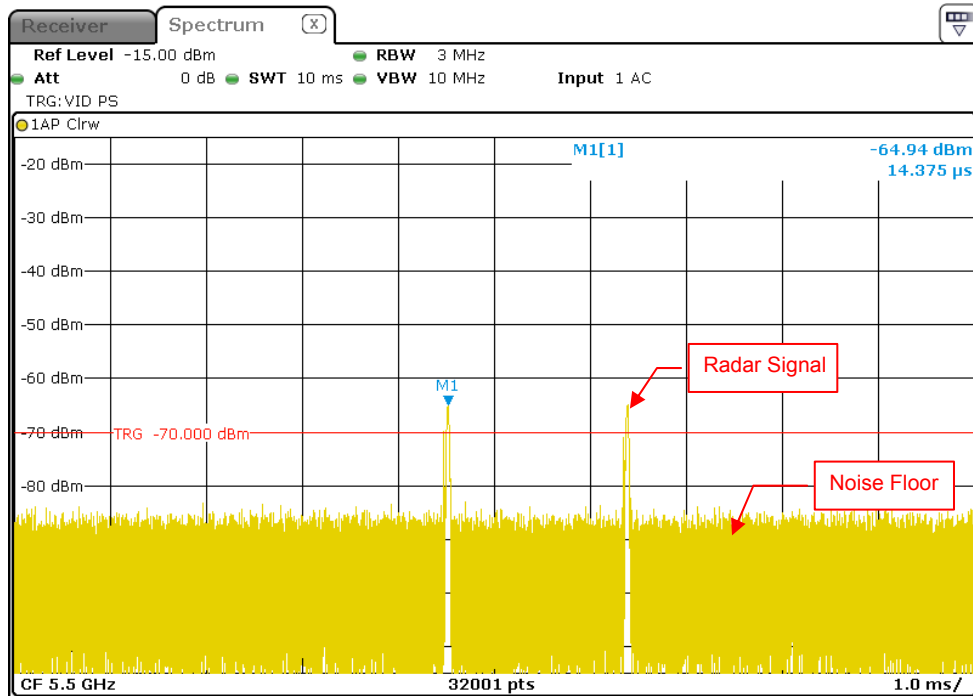
Radar Signal 3



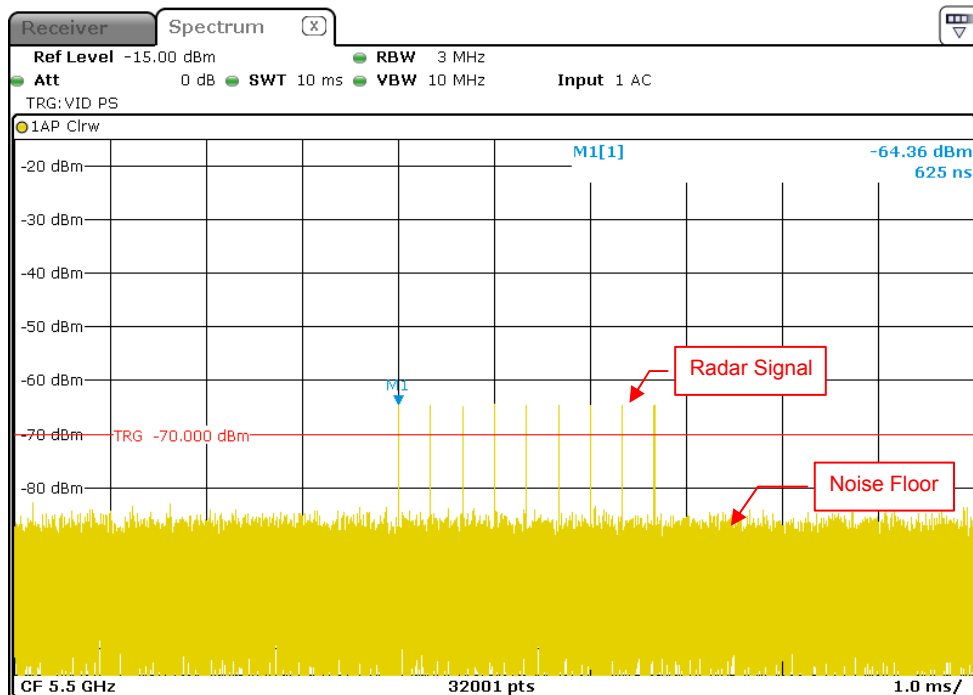
Radar Signal 4



Radar Signal 5



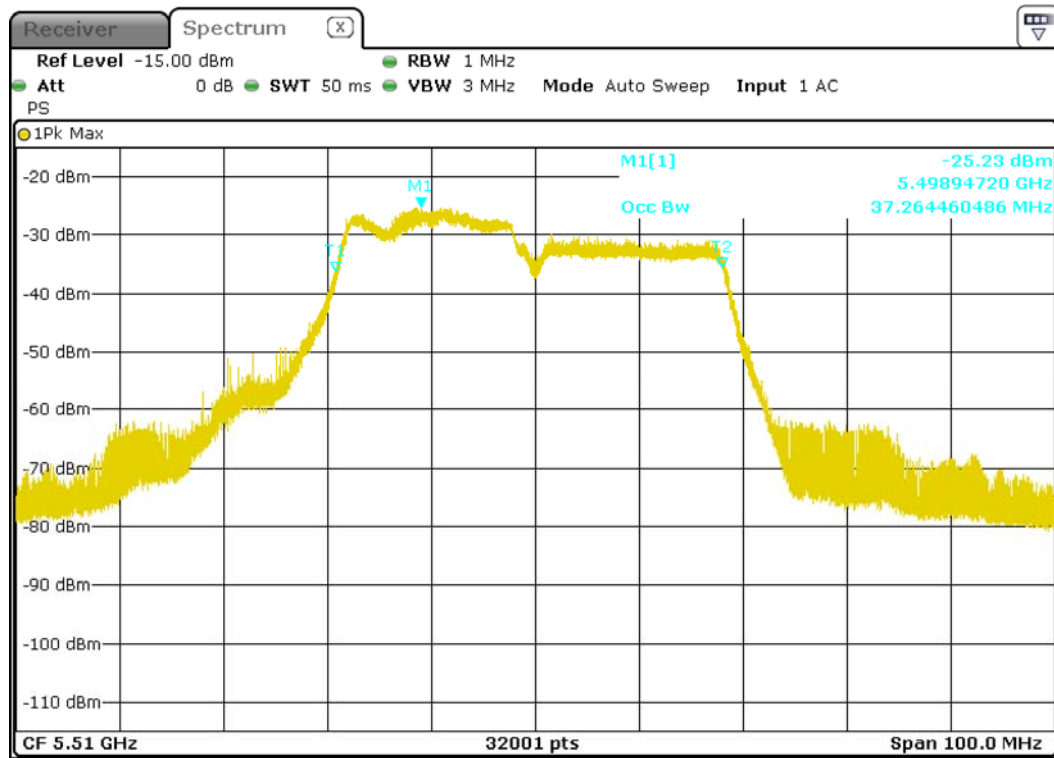
Single Burst of Radar Signal 5



Radar Signal 6

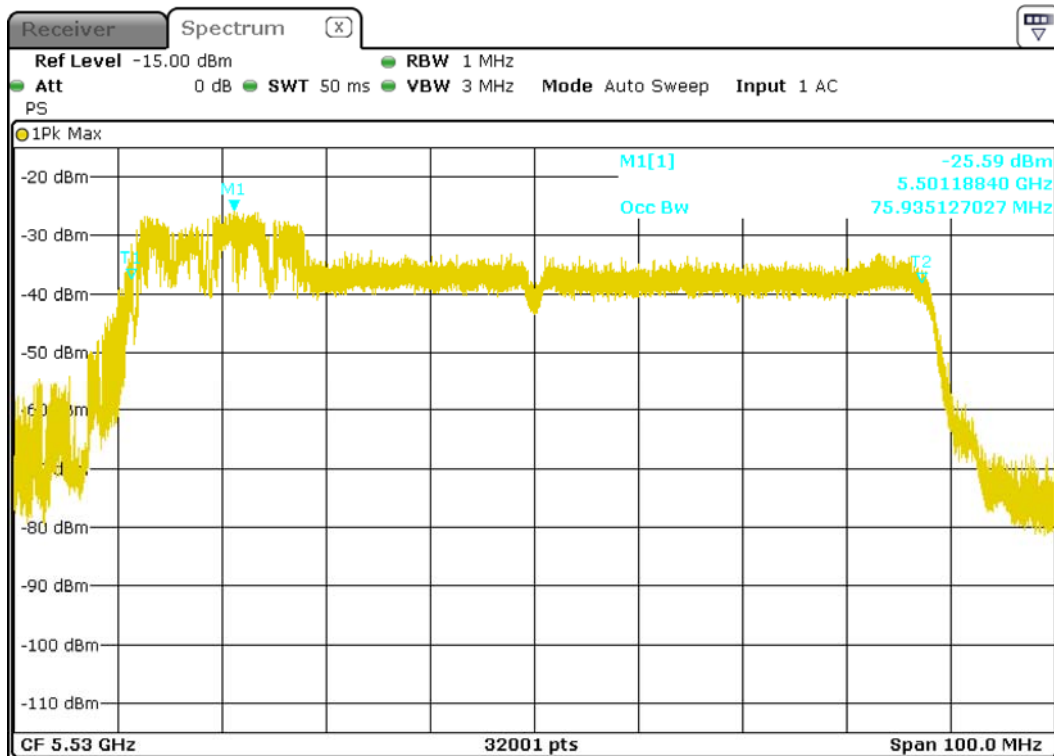
7.6 UNII Detection Bandwidth Measurement

IEEE 802.11ac 40MHz



U-NII 99% Channel bandwidth

IEEE 802.11ac 80MHz



U-NII 99% Channel bandwidth

7.6.1 Limit

Minimum 100% of the UNII 99% transmission power bandwidth. During the *U-NII Detection Bandwidth* detection test, radar type 0 is used and for each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

7.6.2 Test Procedures

1. Adjust the equipment to produce a single Burst of the Short Pulse Radar Type 0 at the center frequency of the UUT Operating Channel at the specified DFS Detection Threshold level.
2. The generating equipment is configured as shown in the Radiated Test Setup above section 7.4.
3. The UUT is set up as a stand-alone device (no associated Client and no traffic). Frame based systems will be set to a talk/listen ratio of 0%/100% during this test.
4. Generate single radar Burst, and note the response of the UUT. Repeat for a minimum of 10 trials. The UUT must detect the Radar Waveform using the specified U-NII Detection Bandwidth criterion.
5. Starting at the center frequency of the UUT operating Channel, increase the radar frequency in 1 MHz steps, repeating the above item 4 test sequence, until the detection rate falls below the U-NII Detection Bandwidth criterion. Record the highest frequency (denote as FH) at which detection is greater than or equal to the U-NII Detection Bandwidth criterion. Recording the detection rate at frequencies above FH is not required to demonstrate compliance.
6. Starting at the center frequency of the UUT operating Channel, decrease the radar frequency in 1 MHz steps, repeating the above item 4 test sequence, until the detection rate falls below the U-NII Detection Bandwidth criterion. Record the lowest frequency (denote as FL) at which detection is greater than or equal to the U-NII Detection Bandwidth criterion. Recording the detection rate at frequencies below FL is not required to demonstrate compliance.
7. The U-NII Detection Bandwidth is calculated as follows: $\text{U-NII Detection Bandwidth} = \text{FH} - \text{FL}$
8. The U-NII Detection Bandwidth must be at least 100% of the UUT transmitter 99% power, otherwise, the UUT does not comply with DFS requirements.

7.6.3 Test Deviation

There is no deviation with the original standard.

7.6.4 Test Result for UNII Detection Bandwidth

Detection Bandwidth Test - IEEE 802.11ac 40MHz

Radar Type 0

EUT Frequency: 5510MHz

EUT 99% Power bandwidth: 37.26MHz

Detection bandwidth limit (100% of EUT 99% Power bandwidth): 37.26MHz

Detection bandwidth (5534(FH) – 5486(FL)) : 48MHz

Test Result : PASS

Radar Frequency (MHz)	Trial Number / Detection										Detection Rate (%)
	1	2	3	4	5	6	7	8	9	10	
5485	N	N	N	N	N	N	N	N	N	N	0
5486(FL)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5487	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5488	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5489	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5490	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5491	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5492	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5493	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5494	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5495	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5496	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5497	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5498	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5499	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5500	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5501	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5502	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5503	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5504	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5505	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5506	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5507	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5508	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5509	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5510	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5511	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5512	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5513	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5514	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5515	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5516	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5517	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5518	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5519	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5520	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5521	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5522	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5523	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5524	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5525	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100

Detection Bandwidth Test - IEEE 802.11ac 40MHz

Radar Type 0

EUT Frequency: 5510MHz

EUT 99% Power bandwidth: 37.26MHz

Detection bandwidth limit (100% of EUT 99% Power bandwidth): 37.26MHz

Detection bandwidth (5534(FH) – 5486(FL)) : 48MHz

Test Result : PASS

Radar Frequency (MHz)	Trial Number / Detection										Detection Rate (%)
	1	2	3	4	5	6	7	8	9	10	
5526	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5527	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5528	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5529	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5530	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5531	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5532	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5533	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5534(FH)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5535	N	N	N	N	N	N	N	N	N	N	0

Detection Bandwidth Test - IEEE 802.11ac 80MHz

Radar Type 0

EUT Frequency: 5530MHz

EUT 99% Power bandwidth: 75.93MHz

Detection bandwidth limit (100% of EUT 99% Power bandwidth): 75.93MHz

Detection bandwidth (5579(FH) – 5481(FL)) : 98MHz

Test Result : PASS

Radar Frequency (MHz)	Trial Number / Detection										Detection Rate (%)
	1	2	3	4	5	6	7	8	9	10	
5489	N	N	N	N	N	N	N	N	N	N	0
5481(FL)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5482	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5483	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5484	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5485	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5486	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5487	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5488	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5489	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5490	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5491	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5492	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5493	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5494	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5495	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5496	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5497	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5498	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5499	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5500	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5501	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5502	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5503	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5504	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5505	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5506	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5507	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5508	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5509	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5510	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5511	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5512	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5513	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5514	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5515	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5516	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5517	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5518	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5519	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5520	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100

Detection Bandwidth Test - IEEE 802.11ac 80MHz

Radar Type 0

EUT Frequency: 5530MHz

EUT 99% Power bandwidth: 75.93MHz

Detection bandwidth limit (100% of EUT 99% Power bandwidth): 75.93MHz

Detection bandwidth (5579(FH) – 5481(FL)) : 98MHz

Test Result : PASS

Radar Frequency (MHz)	Trial Number / Detection										Detection Rate (%)
	1	2	3	4	5	6	7	8	9	10	
5521	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5522	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5523	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5524	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5525	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5526	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5527	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5528	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5529	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5530	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5531	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5532	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5533	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5534	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5535	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5536	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5537	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5538	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5539	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5540	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5541	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5542	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5543	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5544	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5545	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5546	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5547	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5548	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5549	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5550	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5551	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5552	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5553	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5554	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5555	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5556	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5557	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5558	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5559	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5560	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100

Detection Bandwidth Test - IEEE 802.11ac 80MHz

Radar Type 0

EUT Frequency: 5530MHz

EUT 99% Power bandwidth: 75.93MHz

Detection bandwidth limit (100% of EUT 99% Power bandwidth): 75.93MHz

Detection bandwidth (5579(FH) – 5481(FL)) : 98MHz

Test Result : PASS

Radar Frequency (MHz)	Trial Number / Detection										Detection Rate (%)
	1	2	3	4	5	6	7	8	9	10	
5561	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5562	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5563	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5564	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5565	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5566	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5567	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5568	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5569	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5570	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5571	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5572	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5573	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5574	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5575	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5576	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5577	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5578	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5579(FH)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100
5580	N	N	N	N	N	N	N	N	N	N	0

7.7 Initial Channel Availability Check Time Measurement

7.7.1 Channel Availability Check Limit

The UUT shall perform a Channel Availability Check to ensure that there is no radar operating on the channel. After power-up sequence, receive at least 1 minute on the intended operating frequency.

7.7.2 Initial Channel Availability Check Time

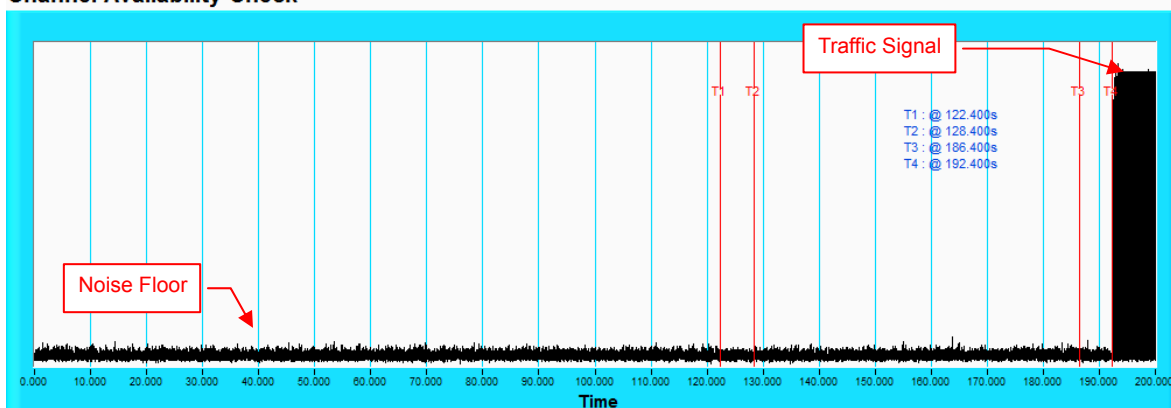
7.7.3 Test Procedures

1. Set configuration as section 7.4.
2. Power on the UUT and observe the information from console. T1 is the timing showing 'start CAC message' from power on. T4 is the timing showing 'end CAC message' from power on and start to link on DFS channel.
3. Use spectrum analyzer to monitor T1 & T4
4. Channel Availability Check time (T4 – T1) should not less than 70 seconds.
5. T1 and T4 shall be recorded in the report

If the EUT successfully detected the radar burst, it should be observed as the EUT has no transmissions occurred until the EUT starts transmitting on another channel.

Timing of Radar Signal	Observation	
	EUT	Spectrum Analyzer
Within 1 to 6 second	Detected	No transmissions
Within 64 to 70 second	Detected	No transmissions

Initial Channel Availability Check Time Channel Availability Check



Note: T1 denotes the end of power-up time period is 122.4 second. T4 denotes the end of Channel Availability Check time is 192.4 second. Channel Availability Check time is equal to (T4 – T1) 70 seconds.

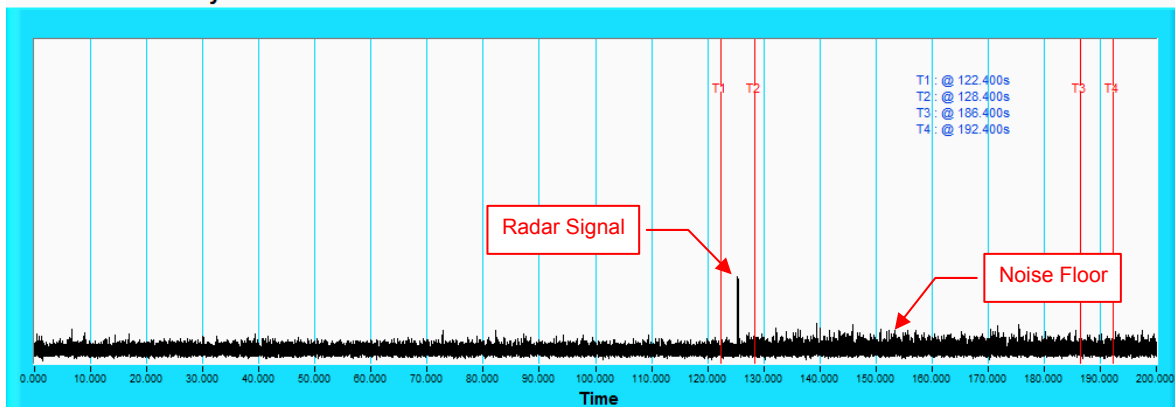
7.7.4 Beginning and End of the Channel Availability Check Time

7.7.5 Test Procedures

1. Set configuration as section 7.2 and do DFS calibration, and then adjust attenuator to make sure that the threshold value of the reference test signal defined in Table 8 is (-64dBm) at the UUT's antenna port.
2. Set configuration as section 7.4.
3. A single Burst of one of the Short Pulse Radar Types 1-4 will commence within a 6 second window starting at T1(for beginning).
4. A single Burst of one of the Short Pulse Radar Types 1-4 will commence within a 6 second window starting at T1 + 64 seconds. (for end).
5. Verify that during the 2.5 minute measurement window no UUT transmissions occurred on Chr. The Channel Availability Check results will be recorded.

Radar Burst at the Beginning of the Channel Availability Check Time

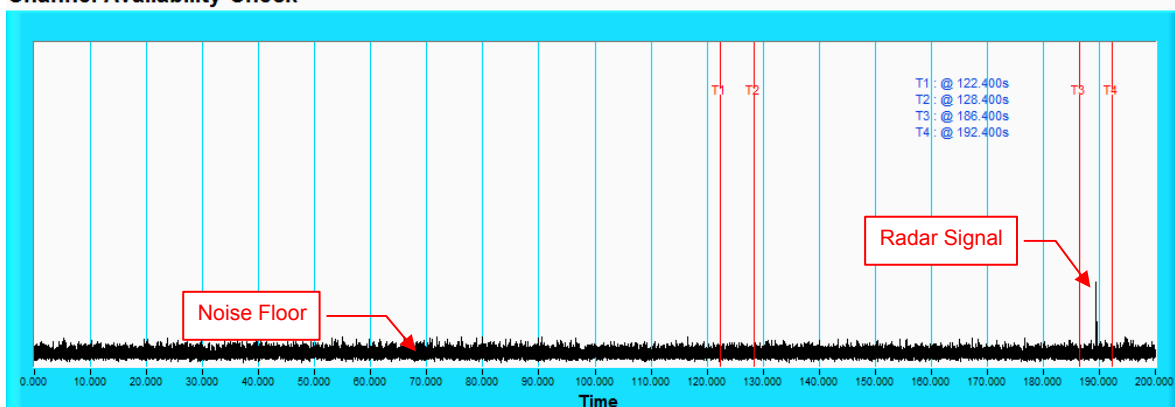
Channel Availability Check



Note: T1 denotes the end of power up time period is 122.4 second. T2 denotes 128.4 second, the radar burst was commenced within a 6 second window starting from the end of power-up sequence. T4 denotes the 192.4 second.

Radar Burst at the End of the Channel Availability Check Time

Channel Availability Check



Note: T1 denotes the end of power up time period is 122.4 second. T3 denotes 186.4 second and radar burst was commenced within 64th second to 70th second window starting from the end of power-up sequence. T4 denotes the 192.4 second.

7.8 Channel Closing Transmission and Channel Move Time

The UUT has In-Service Monitoring function to continuously monitor the radar signals, If radar is detected, must leave the channel.

7.8.1 Closing Transmission and Channel Move Time limit

1. The Channel Move Time to cease all transmissions on the current Channel upon detection of a Radar Waveform above the DFS Detection Threshold within 10 sec.
2. The total duration of Channel Closing Transmission Time is 200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period consisting of data signals and the aggregate of control signals, by a U-NII device during the Channel Move Time.

7.8.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

7.8.3 Test Setup

Refer a clause 7.4 in this test report.

7.8.4 Test Procedures

1. Set configuration as section 7.2 and do DFS calibration, and then adjust attenuator to make sure that the threshold value of the reference test signal is -64dBm at the UUT's antenna port and traffic signal is lower than radar burst signal.
2. Set configuration as section 7.4.
3. Use Lan Test software to reach duty cycle 17 % traffic from Slave to UUT
4. The frequency of a radar is as same as transmitting frequency of UUT.
5. The Channel Closing Transmission Time and the Channel Move Time are illustrated in figure 17. T1 denotes the end of the radar burst
6. The transmissions of the UUT following instant T1 shall be observed for a period greater than 10 s. The aggregate duration (*Channel Closing Transmission Time*) of all transmissions from the UUT on Chr during the *Channel Move Time* shall be compared to the limit (200ms).
NOTE: The aggregate duration of all transmissions of the UUT does not include quiet periods in between transmissions of the UUT.
7. T2 denotes the instant when the UUT has ceased all transmissions on the channel Chr. The time difference between T1 and T2 shall be measured. This value (*Channel Move Time*) shall be noted and compared with the limit (10 s).
8. A timing trace or description of the observed timing and behaviour of the UUT shall be recorded in the report

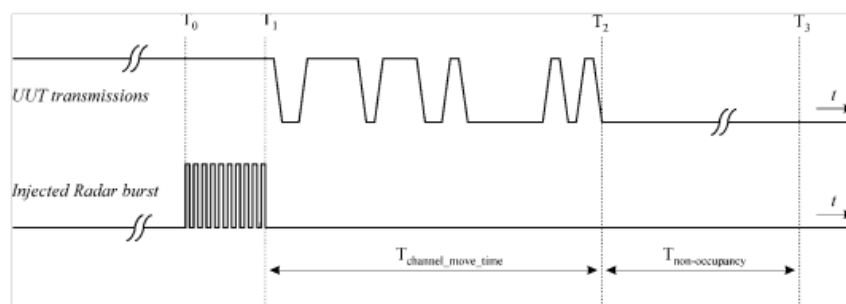
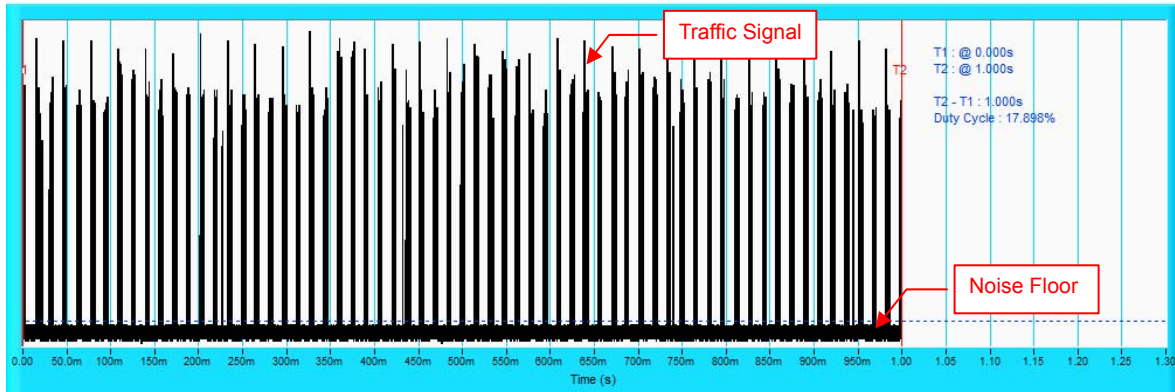
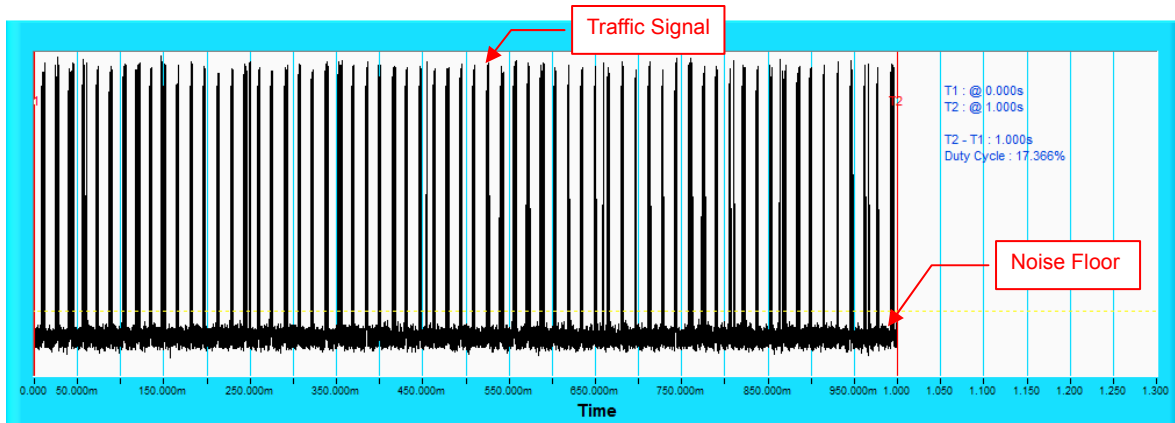


Figure 17: Example of Channel Closing Transmission Time & Channel Closing Time

Wireless Traffic Loading IEEE 802.11ac 40Mhz



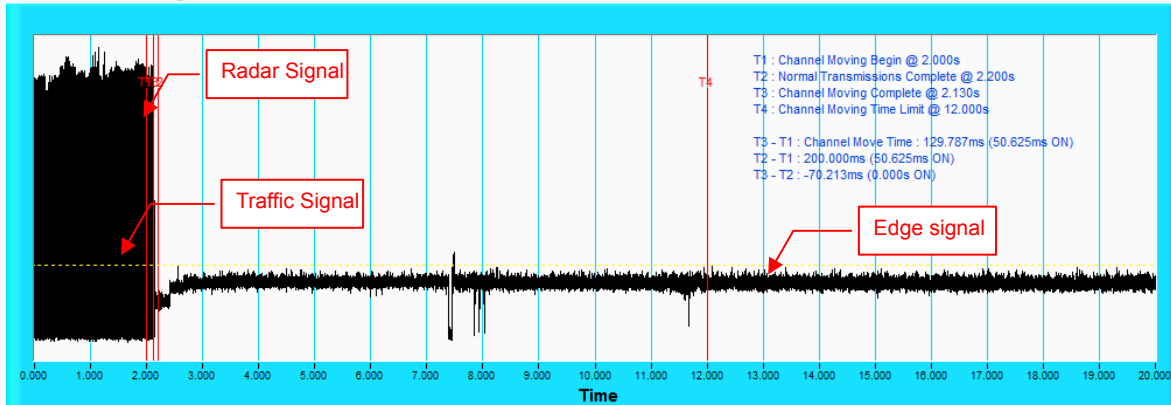
IEEE 802.11ac 80MHz



Channel Closing Transmission and Channel Move Time Result

Modulation Mode	Freq. (MHz)	Radar Test Signal	Channel Closing Transmission Time (ms)	Channel Move Time (s)
802.11ac 80MHz	5530	Type 0	50.625	0.13
802.11ac 80MHz	5530	Type 1	78.750	0.104
802.11ac 80MHz	5530	Type 2	41.875	0.118
802.11ac 80MHz	5530	Type 3	53.125	0.161
802.11ac 80MHz	5530	Type 4	46.250	0.134
Limit			200 ms	10 s
Result			Complies	Complies

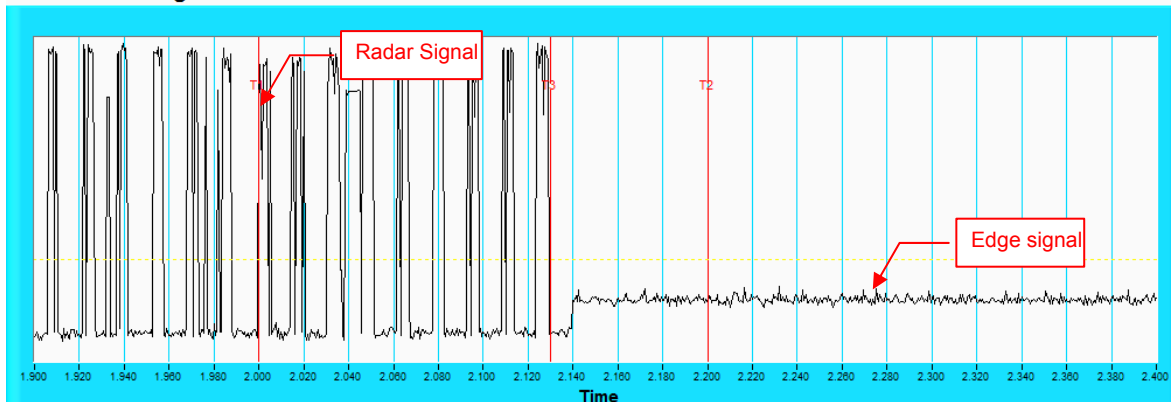
Radar signal 0 **IEEE 802.11ac 80MHz** **Channel Closing Transmission Time & Channel Move Time**



NOTE:

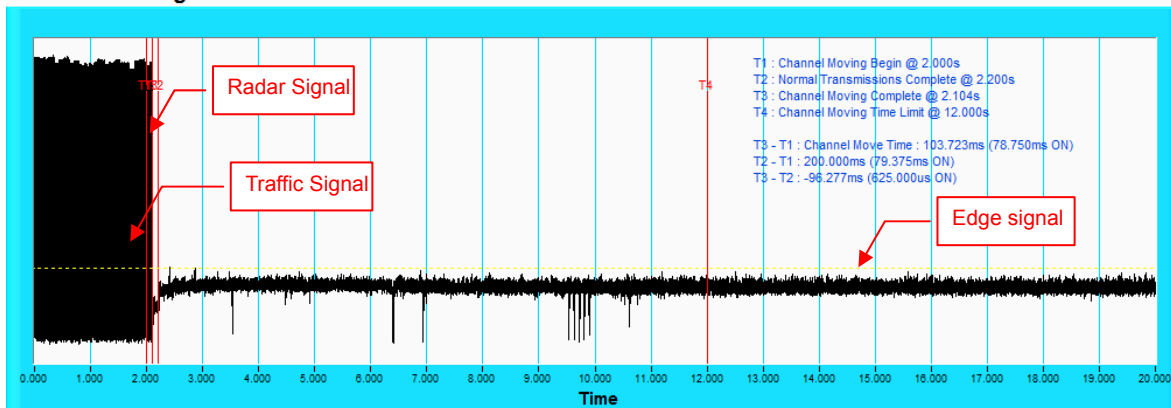
1. T1 denotes the start of Channel Move Time upon the end of the last Radar burst. T2 denotes the data transmission time of 200ms from T1. T3 denotes the end of Channel Move Time. T4 denotes the 10 second from T1 to observe the aggregate duration of transmissions.
2. T2 to T4 denotes Channel Closing Transmission Time comply with an aggregate of 60 milliseconds over remaining 10 second period.

Channel Closing Transmission Time & Channel Move Time



NOTE: Room-in of the first 500ms after radar signal applied.

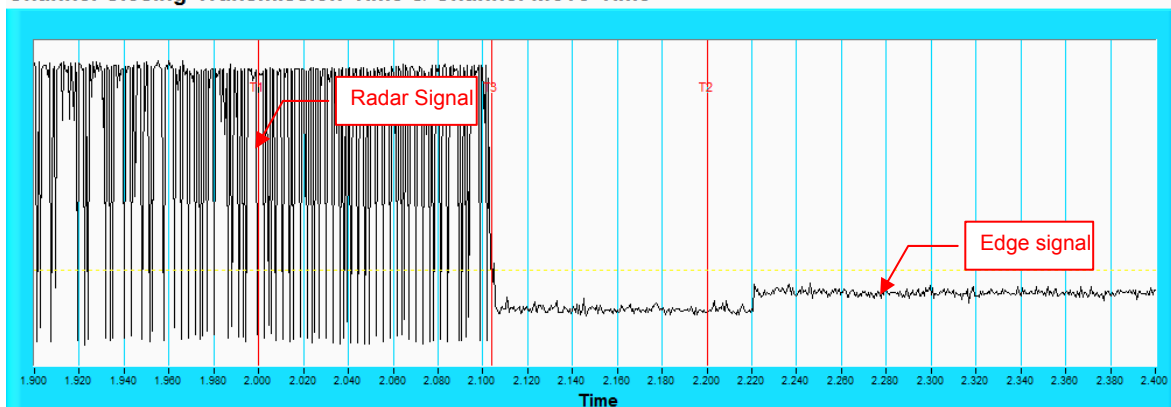
Radar signal 1 IEEE 802.11ac 80MHz Channel Closing Transmission Time & Channel Move Time



NOTE:

1. T1 denotes the start of Channel Move Time upon the end of the last Radar burst. T2 denotes the data transmission time of 200ms from T1. T3 denotes the end of Channel Move Time. T4 denotes the 10 second from T1 to observe the aggregate duration of transmissions.
2. T2 to T4 denotes Channel Closing Transmission Time comply with an aggregate of 60 milliseconds over remaining 10 second period.

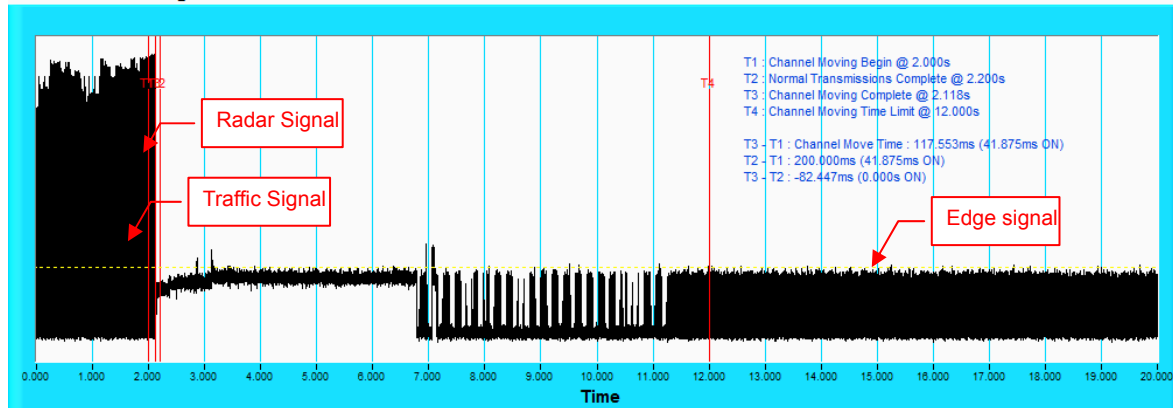
Channel Closing Transmission Time & Channel Move Time



NOTE: Room-in of the first 500ms after radar signal applied.

Radar signal 2 IEEE 802.11ac 80MHz

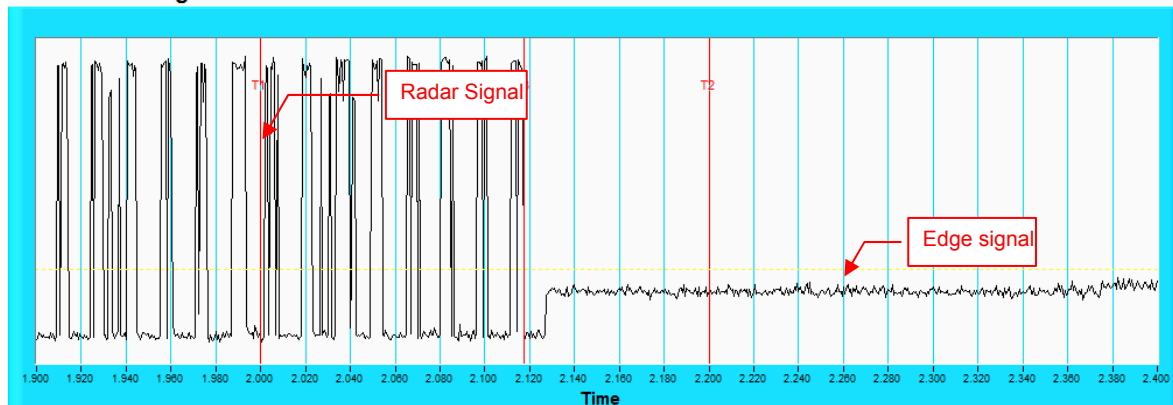
Channel Closing Transmission Time & Channel Move Time



NOTE:

1. T1 denotes the start of Channel Move Time upon the end of the last Radar burst. T2 denotes the data transmission time of 200ms from T1. T3 denotes the end of Channel Move Time. T4 denotes the 10 second from T1 to observe the aggregate duration of transmissions.
2. T2 to T4 denotes Channel Closing Transmission Time comply with an aggregate of 60 milliseconds over remaining 10 second period.

Channel Closing Transmission Time & Channel Move Time

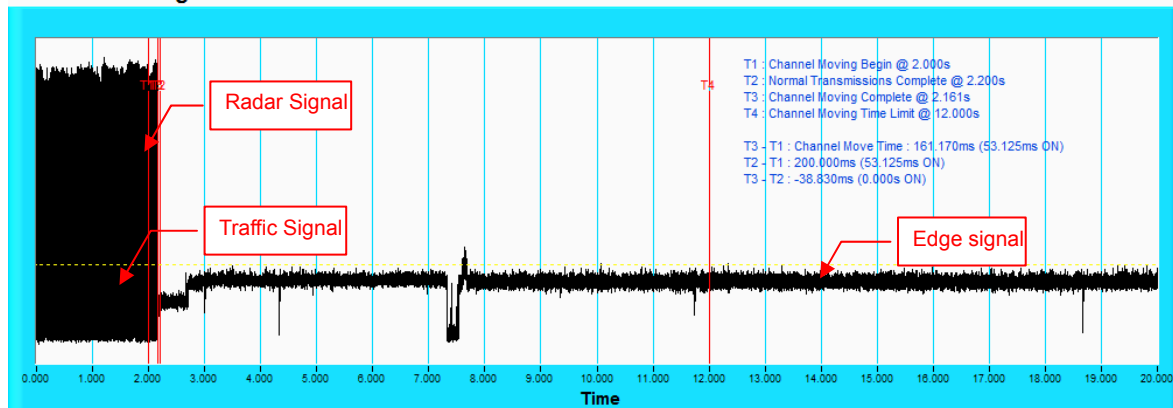


NOTE: Room-in of the first 500ms after radar signal applied.

Radar signal 3

IEEE 802.11ac 80MHz

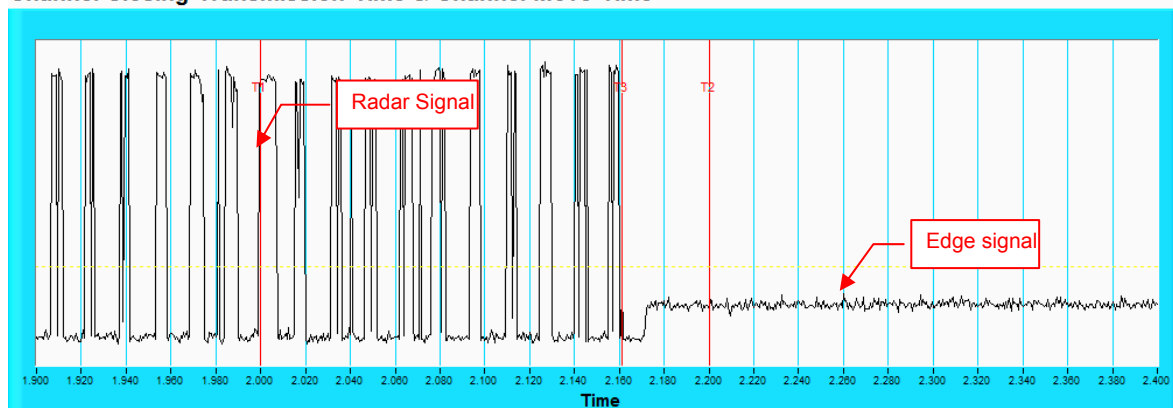
Channel Closing Transmission Time & Channel Move Time



NOTE:

1. T1 denotes the start of Channel Move Time upon the end of the last Radar burst. T2 denotes the data transmission time of 200ms from T1. T3 denotes the end of Channel Move Time. T4 denotes the 10 second from T1 to observe the aggregate duration of transmissions.
2. T2 to T4 denotes Channel Closing Transmission Time comply with an aggregate of 60 milliseconds over remaining 10 second period.

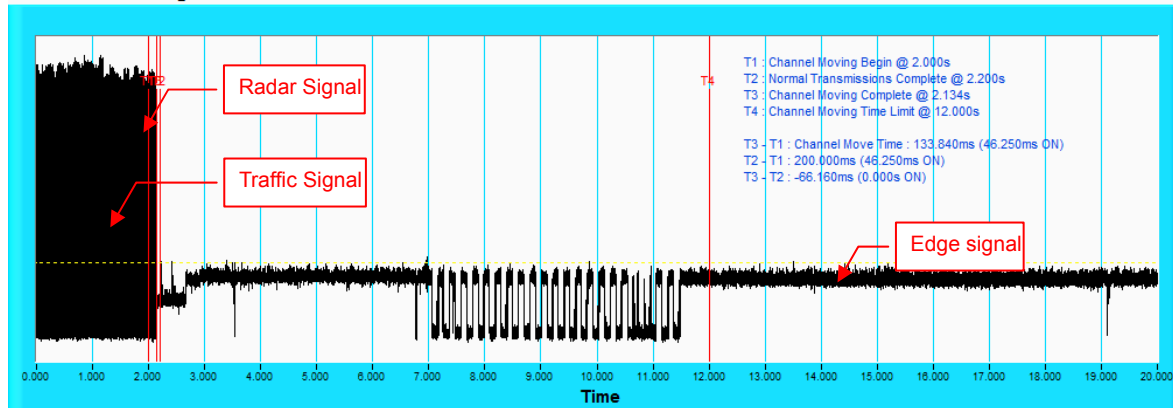
Channel Closing Transmission Time & Channel Move Time



NOTE: Room-in of the first 500ms after radar signal applied.

Radar signal 4 IEEE 802.11ac 80MHz

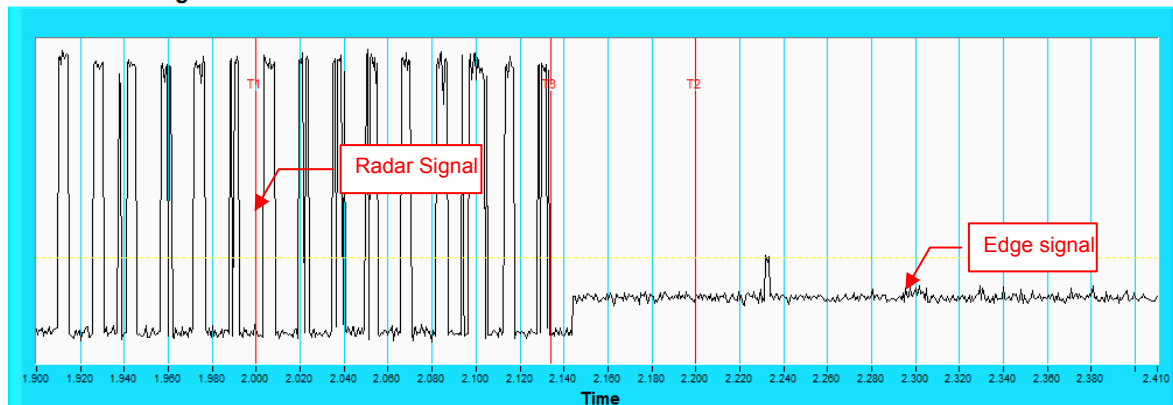
Channel Closing Transmission Time & Channel Move Time



NOTE:

1. T1 denotes the start of Channel Move Time upon the end of the last Radar burst. T2 denotes the data transmission time of 200ms from T1. T3 denotes the end of Channel Move Time. T4 denotes the 10 second from T1 to observe the aggregate duration of transmissions.
2. T2 to T4 denotes Channel Closing Transmission Time comply with an aggregate of 60 milliseconds over remaining 10 second period.

Channel Closing Transmission Time & Channel Move Time



NOTE: Room-in of the first 500ms after radar signal applied.

7.9 Non-Occupancy Period

The Non-Occupancy Period time is 30 minute during which a Channel will not be utilized after a Radar Waveform is detected on that Channel.

7.9.1 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

7.9.2 Test Setup

Refer a clause 7.4 in this test report.

7.9.3 Test Procedures

Non-Occupancy Period

1. Following instant T_2 of channel shutdown, the selected channel Chr shall be observed for a period equal to the Non-Occupancy Period ($T_3 - T_2$) to verify that the UUT does not resume any transmissions on this channel.
2. A timing trace or description of the observed timing and behaviour of the UUT shall be recorded in the report.

During the 30 minutes observation time, UUT did not make any transmissions on a channel after a radar signal was detected on that channel by either the Channel Availability Check or the In-Service Monitoring.

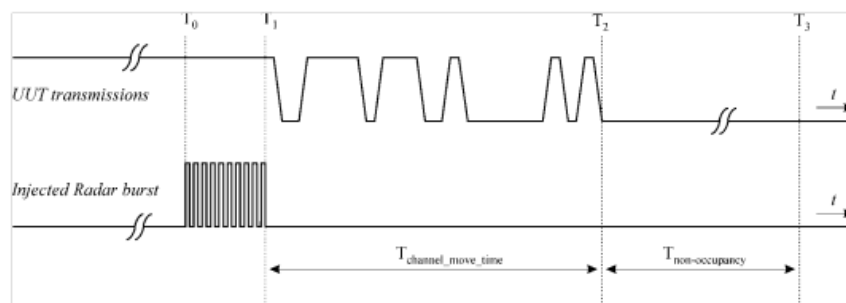
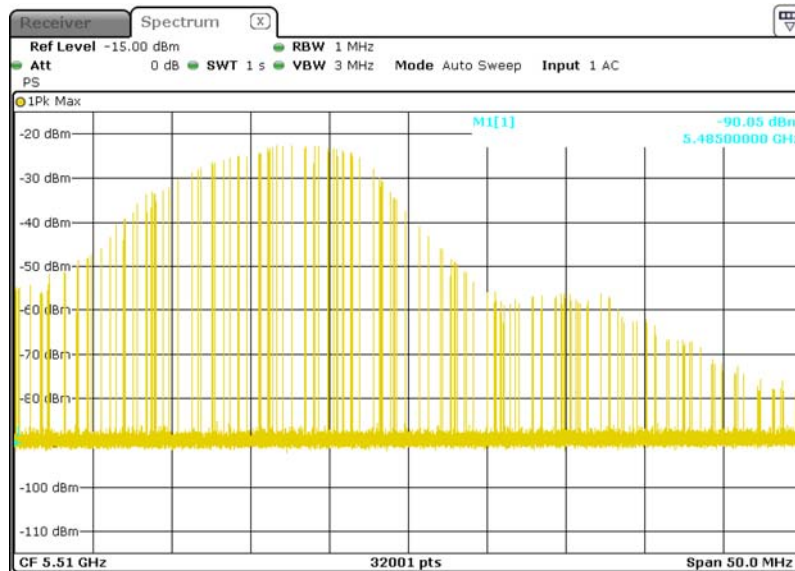


Figure 17: Example of Channel Closing Transmission Time & Channel Closing Time

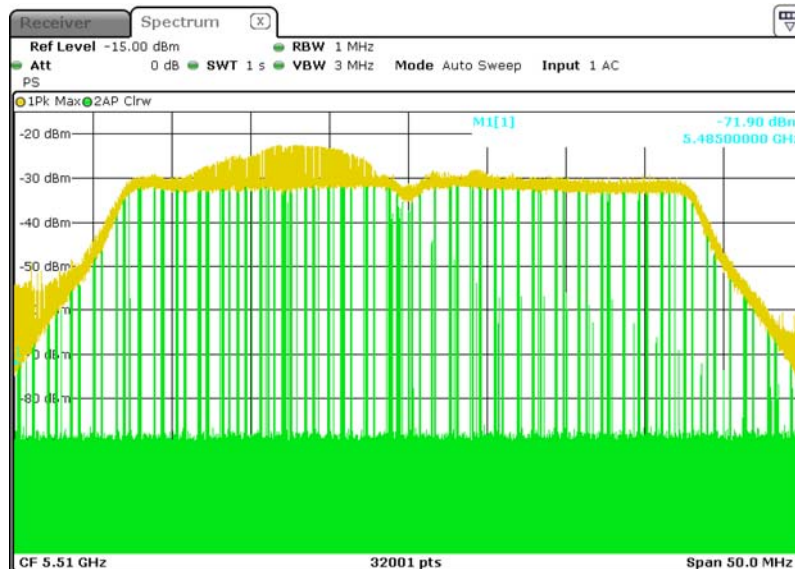
- 1) EUT links with master on 5510MHz.

Waveform of EUT links up with Master



- 2) Client plays specified files via master.

Waveform of transmission

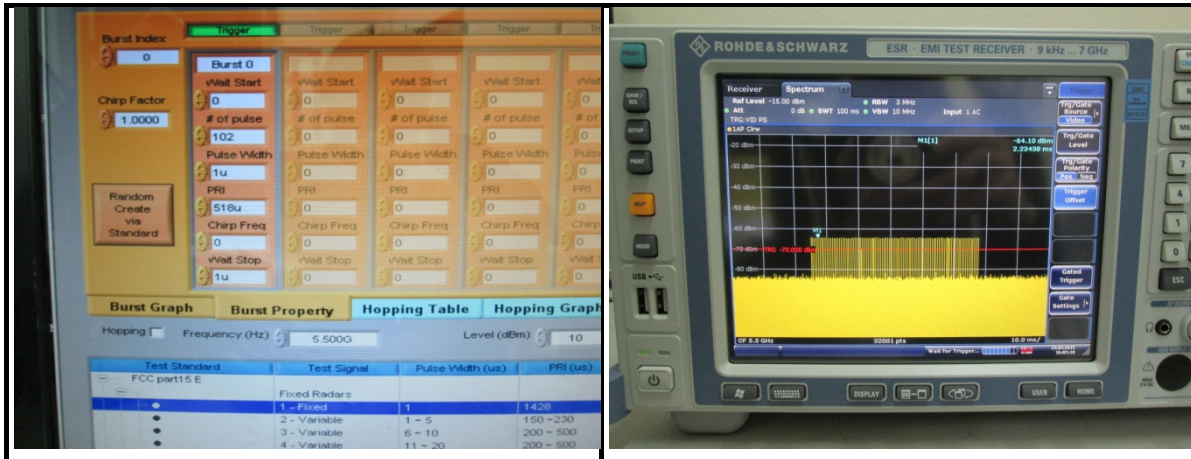


3) Radar signal is applied to the Master device and WiFi traffic signal stop immediately.

Radar 0



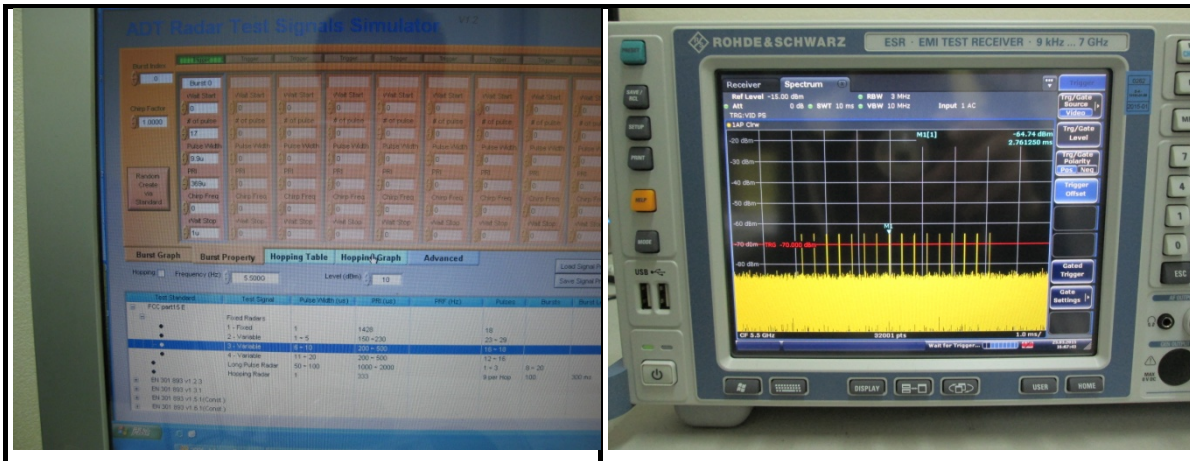
Radar 1



Radar 2



Radar 3



Radar 4



Radar 5



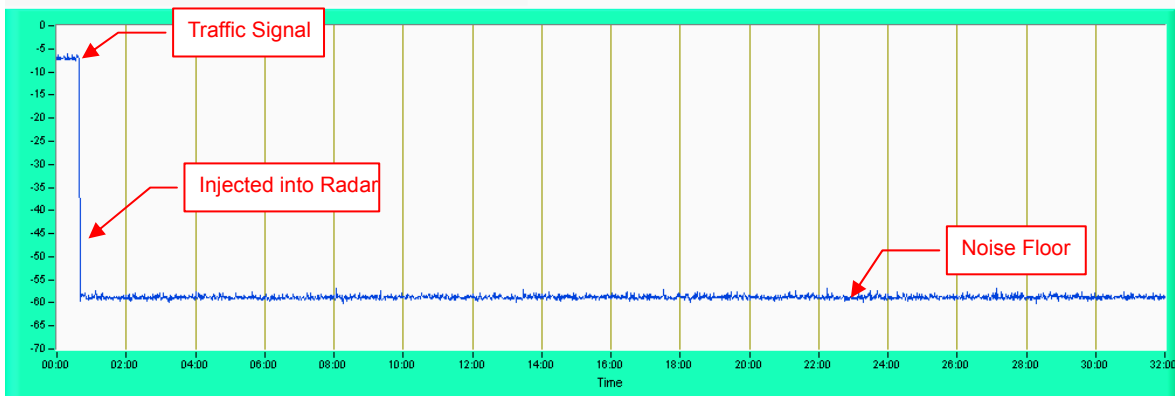
Radar 6



4) 5500MHz has been monitored in 30 minutes period. In this period, no any transmission occurs.

Plot of 30minutes period

802.11ac 80MHz



Note: Test setup are shown on Test setup photo.pdf

7.10 Statistical Performance Check Measurement

7.10.1 Limit

The minimum percentage of successful detection requirements found in below table when a radar burst with a level equal to the DFS Detection Threshold is generated on the Operating Channel of the U-NII device (In-Service Monitoring).

Radar Type	Minimum Number of Trails	DETECTION PROBABILITY
1	30	Pd > 60%
2	30	Pd > 60%
3	30	Pd > 60%
4	30	Pd > 60%
Aggregate (Radar Types 1-4)	120	Pd > 80%
5	30	Pd > 80%
6	30	Pd > 70%

● Short Pulse Radar Test

The percentage of successful detection is calculated by:

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

In addition an aggregate minimum percentage of successful detection across all Short Pulse Radar Types 1-4 is required and is calculated as follows: $\frac{Pd1 + Pd2 + Pd3 + Pd4}{4}$

● Long Pulse Radar Test

Three subsets of trials will be performed with a minimum of ten trials per subset. The subset of trials differ in where the Long Pulse Type 5 Signal is tuned in frequency:

- the Channel center frequency (Figure 18);
- tuned frequencies such that 90% of the Long Pulse Type 5 frequency modulation is within the low edge of the UUT Occupied Bandwidth (Figure 19); and
- tuned frequencies such that 90% of the Long Pulse Type 5 frequency modulation is within the high edge of the UUT Occupied Bandwidth (Figure 20).

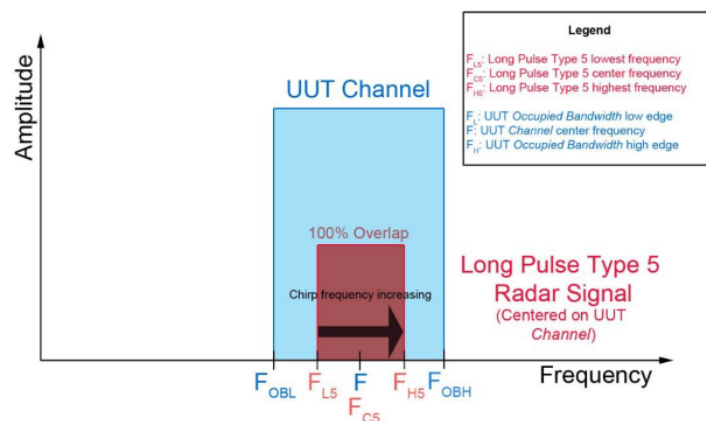


Figure 18: Example of the Relationship Between Long Pulse Type 5 Signal and the U-NII channel when the Signal is Tuned to the UUT Channel Center Frequency

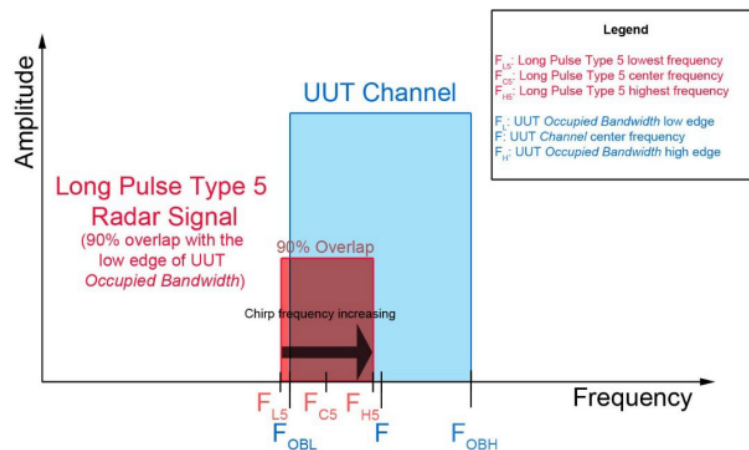


Figure 19: Example of the Relationship Between Long Pulse Type 5 Signal and the U-NII channel when the Signal is Tuned so that 90% of the Radar Signal Overlaps with the Low Edge of the UUT Occupied Bandwidth

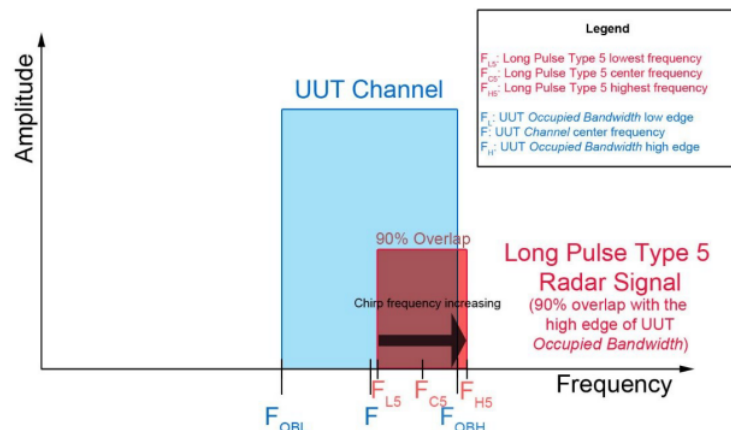


Figure 20: Example of the Relationship Between Long Pulse Type 5 Signal and the U-NII channel when the Signal is Tuned so that 90% of the Radar Signal Overlaps with the High Edge of the UUT Occupied Bandwidth

For subset case 1: the center frequency of the signal generator will remain fixed at the center of the UUT Channel.

For subset case 2: to retain 90% frequency overlap between the radar signal and the UUT Occupied Bandwidth, the center frequency of the signal generator will vary for each of the ten trials in subset case 2. The center frequency of the signal generator for each trial is calculated by:

$$F_L + (0.4 * \text{Chirp Width [in MHz]})$$

For subset case 3: to retain 90% frequency overlap between the radar signal and the UUT Occupied Bandwidth, the center frequency of the signal generator will vary for each of the ten trials in subset case 3. The center frequency of the signal generator for each trial is calculated by:

$$F_H - (0.4 * \text{Chirp Width [in MHz]})$$

The percentage of successful detection is calculated by dividing the sum of the detections for the three subsets by the sum of trials for the three subsets:

$$\frac{\text{TotalWaveformDetections}}{\text{TotalWaveformTrials}} \times 100$$

● Frequency Hopping Radar Test

The percentage of successful detection is calculated by:

$$\frac{\text{TotalWaveformDetections}}{\text{TotalWaveformTrials}} \times 100$$

7.10.2 Test Procedures

1. Stream the MPEG test file from the Master Device to the Client Device on the test Channel for the entire period of the test.
2. Set configuration as section 7.2 and do DFS calibration, and then adjust attenuator to make sure that the threshold value of the radar test signals defined in table 10-12 (Type1~6) is -64dBm at the UUT's antenna port and traffic signal is higher than radar burst signal.
3. Set configuration as section 7.4.
4. Use Lan test software to reach duty cycle 17 % traffic from Slave to UUT
5. Enter "debug command" from console.
6. The frequency of a radar is as same as transmitting frequency of UUT. If the UUT successfully detects the radar burst, it will appear "detected DFS message" from console.
7. Observe the transmissions of the EUT at the end of the Burst on the Operating Channel for duration greater than 10 seconds for Short Pulse Radar Types 1-4 and 6 to ensure detection occurs.
8. Observe the transmissions of the EUT at the end of the Burst on the Operating Channel for duration greater than 22 seconds for Long Pulse Radar Type 5 to ensure detection occurs.
9. The Minimum number of trails, minimum percentage of successful detection and the average minimum percentage of successful detection are found in below table.

7.10.3 Test Deviation

There is no deviation with the original standard.

7.10.4 Test Result of Statistical Performance Check

The Detailed Radar pattern and Statistical Performance IEEE 802.11ac 40MHz

Type 1 Radar Statistical Performances					
Trial #	Pulses per Burst	Pulse Width (s)	PRI (s)	Radar Frequency (MHz)	Detection
1	102	1.0u	518.0u	5490	Yes
2	99	1.0u	538.0u	5491	Yes
3	95	1.0u	558.0u	5492	Yes
4	92	1.0u	578.0u	5493	Yes
5	89	1.0u	598.0u	5494	Yes
6	83	1.0u	638.0u	5496	Yes
7	81	1.0u	658.0u	5498	Yes
8	78	1.0u	678.0u	5500	Yes
9	76	1.0u	698.0u	5502	Yes
10	74	1.0u	718.0u	5504	Yes
11	72	1.0u	738.0u	5506	Yes
12	67	1.0u	798.0u	5507	Yes
13	65	1.0u	818.0u	5508	Yes
14	63	1.0u	838.0u	5509	Yes
15	59	1.0u	898.0u	5510	Yes
16	78	1.0u	679.0u	5511	Yes
17	66	1.0u	807.0u	5512	Yes
18	59	1.0u	907.0u	5513	Yes
19	69	1.0u	769.0u	5514	Yes
20	57	1.0u	929.0u	5515	Yes
21	84	1.0u	631.0u	5517	Yes
22	60	1.0u	891.0u	5519	Yes
23	100	1.0u	533.0u	5521	Yes
24	69	1.0u	773.0u	5523	Yes
25	57	1.0u	933.0u	5525	Yes
26	79	1.0u	675.0u	5526	Yes
27	64	1.0u	835.0u	5527	Yes
28	65	1.0u	817.0u	5528	Yes
29	76	1.0u	701.0u	5529	Yes
30	18	1.0u	3.065m	5530	Yes
Detection Rate: 100.0 %					

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Type 2 Radar Statistical Performances

Trial #	Pulses per Burst	Pulse Width (s)	PRI (s)	Radar Frequency (MHz)	Detection
1	24	1.8u	180.0u	5490	Yes
2	23	4.8u	213.0u	5491	Yes
3	24	1.2u	177.0u	5492	Yes
4	27	2.4u	206.0u	5493	Yes
5	26	1.5u	153.0u	5494	Yes
6	26	1.0u	158.0u	5496	Yes
7	25	4.4u	193.0u	5498	Yes
8	27	4.9u	167.0u	5500	Yes
9	28	3.9u	197.0u	5502	Yes
10	26	3.4u	152.0u	5504	Yes
11	26	3.0u	175.0u	5506	Yes
12	25	1.1u	185.0u	5507	Yes
13	24	3.9u	174.0u	5508	Yes
14	24	1.4u	175.0u	5509	Yes
15	28	2.5u	188.0u	5510	Yes
16	24	3.8u	209.0u	5511	Yes
17	28	1.6u	200.0u	5512	Yes
18	25	1.7u	187.0u	5513	Yes
19	25	4.8u	164.0u	5514	Yes
20	25	2.5u	172.0u	5515	Yes
21	29	4.7u	179.0u	5517	Yes
22	26	4.1u	181.0u	5519	Yes
23	25	4.1u	223.0u	5521	Yes
24	29	1.4u	195.0u	5523	Yes
25	26	1.2u	185.0u	5525	Yes
26	26	2.8u	171.0u	5526	Yes
27	27	4.5u	156.0u	5527	Yes
28	25	1.1u	203.0u	5528	Yes
29	29	1.3u	180.0u	5529	Yes
30	28	2.4u	207.0u	5530	Yes
Detection Rate: 100.0 %					

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Type 3 Radar Statistical Performances

Trial #	Pulses per Burst	Pulse Width (s)	PRI (s)	Radar Frequency (MHz)	Detection
1	17	7.6u	336.0u	5490	Yes
2	18	7.7u	499.0u	5491	Yes
3	17	7.4u	451.0u	5492	Yes
4	17	9.3u	319.0u	5493	Yes
5	17	9.1u	293.0u	5494	Yes
6	17	8.0u	403.0u	5496	Yes
7	16	9.7u	481.0u	5498	Yes
8	17	7.6u	333.0u	5500	Yes
9	18	8.6u	348.0u	5502	Yes
10	18	6.6u	487.0u	5504	Yes
11	17	6.4u	217.0u	5506	No
12	18	6.9u	472.0u	5507	Yes
13	17	9.6u	210.0u	5508	Yes
14	16	9.6u	349.0u	5509	Yes
15	16	6.1u	271.0u	5510	Yes
16	18	7.8u	306.0u	5511	Yes
17	18	9.1u	431.0u	5512	Yes
18	18	9.2u	267.0u	5513	Yes
19	18	9.0u	230.0u	5514	No
20	17	6.6u	363.0u	5515	Yes
21	17	8.0u	358.0u	5517	Yes
22	16	8.5u	496.0u	5519	Yes
23	16	8.5u	472.0u	5521	Yes
24	18	9.0u	392.0u	5523	Yes
25	18	9.8u	284.0u	5525	Yes
26	18	7.0u	231.0u	5526	Yes
27	17	8.6u	348.0u	5527	Yes
28	17	8.2u	293.0u	5528	Yes
29	17	8.9u	499.0u	5529	No
30	17	7.2u	264.0u	5530	Yes

Detection Rate: 90.0 %

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Type 4 Radar Statistical Performances

Trial #	Pulses per Burst	Pulse Width (s)	PRI (s)	Radar Frequency (MHz)	Detection
1	15	19.6u	390.0u	5490	Yes
2	12	12.2u	297.0u	5491	Yes
3	16	16.1u	379.0u	5492	Yes
4	14	12.9u	383.0u	5493	Yes
5	12	12.8u	409.0u	5494	Yes
6	16	18.7u	486.0u	5496	Yes
7	13	14.8u	490.0u	5498	No
8	13	12.8u	369.0u	5500	Yes
9	14	15.4u	298.0u	5502	Yes
10	14	13.8u	312.0u	5504	Yes
11	16	11.3u	472.0u	5506	Yes
12	15	16.1u	443.0u	5507	Yes
13	13	19.6u	317.0u	5508	Yes
14	14	12.4u	245.0u	5509	Yes
15	13	11.1u	277.0u	5510	Yes
16	14	16.6u	235.0u	5511	Yes
17	13	18.0u	204.0u	5512	Yes
18	16	11.8u	266.0u	5513	Yes
19	12	12.4u	318.0u	5514	Yes
20	12	14.3u	463.0u	5515	Yes
21	14	14.3u	472.0u	5517	Yes
22	12	15.2u	434.0u	5519	Yes
23	13	13.9u	395.0u	5521	Yes
24	13	15.0u	457.0u	5523	Yes
25	13	13.7u	335.0u	5525	Yes
26	14	13.2u	343.0u	5526	Yes
27	15	14.5u	387.0u	5527	No
28	16	11.4u	444.0u	5528	Yes
29	14	19.4u	317.0u	5529	Yes
30	16	16.4u	429.0u	5530	Yes

Detection Rate: 93.3 %

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Type 1~4 Radar Statistical Performance

Radar Type #	Detection Percentage (%)	Detection Probability
1	100%	Pd > 60%
2	100%	Pd > 60%
3	90%	Pd > 60%
4	93.3%	Pd > 60%
Aggregate (Radar Types 1-4)	95.83%	Pd > 80%

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Type 5 Radar Statistical Performances

Trial #	Test Signal Name	Radar Frequency (MHz)	Detection
1	LP_Signal_01	5493	Yes
2	LP_Signal_02	5493	Yes
3	LP_Signal_03	5494	Yes
4	LP_Signal_04	5495	Yes
5	LP_Signal_05	5495	Yes
6	LP_Signal_06	5495	Yes
7	LP_Signal_07	5496	Yes
8	LP_Signal_08	5497	No
9	LP_Signal_09	5498	No
10	LP_Signal_10	5499	Yes
11	LP_Signal_11	5500	Yes
12	LP_Signal_12	5501	Yes
13	LP_Signal_13	5499	Yes
14	LP_Signal_14	5498	No
15	LP_Signal_15	5502	Yes
16	LP_Signal_16	5503	Yes
17	LP_Signal_17	5496	Yes
18	LP_Signal_18	5495	Yes
19	LP_Signal_19	5504	Yes
20	LP_Signal_20	5505	Yes
21	LP_Signal_21	5527	Yes
22	LP_Signal_22	5527	Yes
23	LP_Signal_23	5526	Yes
24	LP_Signal_24	5525	Yes
25	LP_Signal_25	5525	Yes
26	LP_Signal_26	5525	Yes
27	LP_Signal_27	5524	Yes
28	LP_Signal_28	5523	Yes
29	LP_Signal_29	5522	Yes
30	LP_Signal_30	5521	Yes

Detection Rate: 90.0 %

Long Pulse Radar Test Signal
Test Signal Name: LP_Signal_01
Number of Bursts in Trial: 19
Chirp Center Frequency: 5493MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	1	5M	59.2u	-	-	243.0m
2	2	5M	94.5u	1.834m	-	299.3m
3	2	5M	95.4u	1.641m	-	566.0m
4	3	5M	59.5u	1.313m	1.332m	354.8m
5	2	5M	62.1u	1.158m	-	618.4m
6	3	5M	73.9u	1.671m	1.534m	629.7m
7	2	5M	50.4u	1.155m	-	384.7m
8	3	5M	62.7u	1.675m	1.571m	94.54m
9	1	5M	52.4u	-	-	45.93m
10	3	5M	55.9u	1.743m	1.537m	37.45m
11	2	5M	62.1u	1.725m	-	173.9m
12	3	5M	65.1u	1.567m	1.369m	549.6m
13	3	5M	80.3u	1.548m	1.117m	530.8m
14	2	5M	85.5u	1.063m	-	265.8m
15	3	5M	54.7u	1.134m	1.657m	49.43m
16	2	5M	85.8u	1.450m	-	382.0m

Long Pulse Radar Test Signal
Test Signal Name: LP_Signal_02
Number of Bursts in Trial: 12
Chirp Center Frequency: 5493MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	1	6M	74.4u	-	-	870.4m
2	2	6M	73.0u	1.799m	-	254.4m
3	1	6M	69.1u	-	-	695.0m
4	2	6M	80.4u	1.729m	-	818.0m
5	2	6M	80.1u	1.222m	-	775.0m
6	3	6M	61.6u	1.022m	1.568m	773.7m
7	2	6M	72.5u	1.562m	-	260.7m
8	3	6M	69.9u	1.863m	1.712m	187.4m
9	2	6M	98.9u	1.750m	-	407.2m
10	1	6M	86.5u	-	-	242.1m
11	2	6M	67.5u	1.178m	-	608.3m
12	3	6M	85.8u	1.665m	1.754m	944.7m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_03

Number of Bursts in Trial: 12

Chrip Center Frequency: 5494MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	7M	80.8u	1.909m	-	739.1m
2	3	7M	72.8u	1.611m	1.582m	706.3m
3	2	7M	90.5u	1.287m	-	462.3m
4	1	7M	63.9u	-	-	784.5m
5	2	7M	88.9u	1.779m	-	930.2m
6	3	7M	62.5u	1.149m	1.301m	45.25m
7	2	7M	80.7u	996.3u	-	723.7m
8	2	7M	53.8u	1.508m	-	526.5m
9	1	7M	60.9u	-	-	969.6m
10	3	7M	70.9u	1.208m	1.123m	654.9m
11	2	7M	60.0u	1.424m	-	233.5m
12	2	7M	80.6u	1.042m	-	8.643m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_04

Number of Bursts in Trial: 9

Chrip Center Frequency: 5495MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	3	9M	67.5u	1.874m	1.749m	1.014
2	2	9M	52.7u	1.446m	-	898.7m
3	2	9M	78.3u	1.619m	-	302.3m
4	2	9M	80.3u	1.362m	-	195.1m
5	3	9M	74.5u	1.854m	1.629m	36.47m
6	1	9M	99.7u	-	-	578.0m
7	1	9M	52.7u	-	-	881.2m
8	1	9M	83.6u	-	-	702.5m
9	1	9M	55.4u	-	-	243.8m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_05

Number of Bursts in Trial: 9

Chrip Center Frequency: 5495MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	3	10M	80.2u	1.716m	1.208m	458.3m
2	2	10M	99.0u	1.877m	-	80.24m
3	1	10M	70.5u	-	-	705.0m
4	1	10M	88.3u	-	-	69.65m
5	2	10M	56.4u	1.516m	-	922.0m
6	1	10M	100.0u	-	-	179.3m
7	2	10M	58.2u	994.8u	-	1.187
8	1	10M	98.0u	-	-	223.9m
9	1	10M	92.7u	-	-	927.1m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_06

Number of Bursts in Trial: 12

Chrip Center Frequency: 5495MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	1	11M	51.0u	-	-	563.8m
2	2	11M	90.6u	980.4u	-	842.7m
3	2	11M	98.0u	1.517m	-	891.3m
4	1	11M	86.3u	-	-	18.60m
5	2	11M	83.6u	1.461m	-	229.3m
6	1	11M	69.2u	-	-	831.7m
7	1	11M	88.5u	-	-	690.5m
8	2	11M	52.0u	1.323m	-	189.2m
9	2	11M	93.8u	1.880m	-	173.7m
10	2	11M	93.5u	1.138m	-	816.3m
11	2	11M	67.3u	1.623m	-	196.4m
12	1	11M	92.5u	-	-	496.3m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_07

Number of Bursts in Trial: 18

Chrip Center Frequency: 5496MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	12M	86.4u	1.763m	-	5.231m
2	2	12M	84.4u	1.841m	-	546.8m
3	1	12M	62.7u	-	-	648.5m
4	3	12M	77.1u	1.868m	1.513m	380.7m
5	2	12M	99.6u	1.304m	-	205.8m
6	2	12M	99.2u	1.534m	-	198.4m
7	2	12M	57.0u	1.343m	-	473.0m
8	2	12M	92.2u	1.240m	-	629.2m
9	2	12M	54.7u	1.338m	-	653.5m
10	2	12M	95.9u	1.771m	-	571.9m
11	2	12M	82.8u	1.713m	-	403.3m
12	3	12M	61.0u	1.144m	1.057m	92.42m
13	2	12M	72.4u	1.185m	-	365.5m
14	1	12M	86.4u	-	-	28.99m
15	2	12M	89.8u	1.119m	-	169.9m
16	3	12M	56.5u	958.5u	1.068m	439.0m
17	2	12M	80.4u	958.6u	-	474.9m
18	2	12M	93.3u	1.452m	-	398.0m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_08

Number of Bursts in Trial: 17

Chirp Center Frequency: 5497MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	14M	54.4u	1.544m	-	171.5m
2	2	14M	93.6u	1.320m	-	246.1m
3	3	14M	89.8u	1.720m	1.895m	347.7m
4	1	14M	85.1u	-	-	489.6m
5	2	14M	61.4u	1.507m	-	311.2m
6	3	14M	55.4u	1.798m	1.313m	540.6m
7	2	14M	92.1u	1.250m	-	66.91m
8	2	14M	63.5u	1.130m	-	241.9m
9	1	14M	86.9u	-	-	447.3m
10	3	14M	80.5u	1.568m	1.605m	7.248m
11	3	14M	55.0u	1.245m	1.865m	527.1m
12	1	14M	63.9u	-	-	76.76m
13	3	14M	79.9u	1.689m	1.894m	16.80m
14	2	14M	55.4u	1.846m	-	214.0m
15	1	14M	93.7u	-	-	330.3m
16	2	14M	86.8u	1.529m	-	638.0m
17	2	14M	52.9u	1.784m	-	245.7m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_09

Number of Bursts in Trial: 19

Chirp Center Frequency: 5498MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	3	17M	56.6u	1.081m	1.442m	264.5m
2	2	17M	77.0u	1.479m	-	411.6m
3	1	17M	64.7u	-	-	502.4m
4	2	17M	66.3u	1.533m	-	128.2m
5	2	17M	66.5u	1.654m	-	32.33m
6	2	17M	53.9u	1.723m	-	368.5m
7	2	17M	95.4u	1.678m	-	502.6m
8	2	17M	79.6u	1.481m	-	375.6m
9	2	17M	94.7u	1.774m	-	335.2m
10	3	17M	86.7u	1.256m	1.147m	567.5m
11	2	17M	65.2u	1.373m	-	55.52m
12	3	17M	53.6u	1.336m	1.086m	350.4m
13	1	17M	93.6u	-	-	549.5m
14	3	17M	99.9u	1.866m	961.1u	222.0m
15	2	17M	98.7u	1.242m	-	603.9m
16	3	17M	99.5u	992.5u	1.138m	514.9m
17	2	17M	88.7u	1.906m	-	388.1m
18	2	17M	98.4u	1.185m	-	429.7m
19	2	17M	84.8u	1.718m	-	344.7m

Long Pulse Radar Test Signal
Test Signal Name: LP_Signal_10
Number of Bursts in Trial: 17
Chirp Center Frequency: 5499MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	19M	78.0u	1.167m	-	269.8m
2	3	19M	82.8u	1.545m	1.544m	640.4m
3	2	19M	73.0u	1.679m	-	88.41m
4	2	19M	67.7u	1.793m	-	557.7m
5	2	19M	55.9u	1.359m	-	651.0m
6	2	19M	92.9u	1.029m	-	485.5m
7	3	19M	70.2u	1.756m	1.342m	179.1m
8	1	19M	55.1u	-	-	407.5m
9	3	19M	67.9u	1.910m	1.250m	285.0m
10	1	19M	50.3u	-	-	147.8m
11	3	19M	50.3u	1.543m	1.185m	550.6m
12	3	19M	93.9u	1.670m	1.112m	207.5m
13	3	19M	54.3u	1.260m	1.333m	689.3m
14	1	19M	73.3u	-	-	595.0m
15	2	19M	86.5u	1.506m	-	78.29m
16	3	19M	53.8u	1.088m	1.261m	105.6m
17	2	19M	89.3u	1.368m	-	145.9m

Long Pulse Radar Test Signal
Test Signal Name: LP_Signal_11
Number of Bursts in Trial: 19
Chirp Center Frequency: 5500MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	6M	63.4u	1.190m	-	443.9m
2	3	6M	80.5u	1.004m	1.265m	336.8m
3	3	6M	50.7u	1.606m	1.092m	55.57m
4	2	6M	79.5u	1.382m	-	212.2m
5	2	6M	94.6u	1.233m	-	328.1m
6	3	6M	55.0u	1.056m	1.768m	444.8m
7	3	6M	75.9u	1.371m	1.684m	593.3m
8	1	6M	77.9u	-	-	619.0m
9	2	6M	56.6u	1.414m	-	336.8m
10	2	6M	67.2u	1.523m	-	322.4m
11	2	6M	95.0u	1.424m	-	68.14m
12	1	6M	65.7u	-	-	445.9m
13	1	6M	90.7u	-	-	618.0m
14	3	6M	52.0u	1.175m	1.483m	346.1m
15	2	6M	61.0u	1.493m	-	358.6m
16	2	6M	75.0u	1.176m	-	461.7m
17	1	6M	63.3u	-	-	215.0m
18	1	6M	72.4u	-	-	83.81m
19	2	6M	52.0u	1.430m	-	198.0m

Long Pulse Radar Test Signal
Test Signal Name: LP_Signal_12
Number of Bursts in Trial: 9
Chirp Center Frequency: 5501MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	3	8M	71.1u	1.222m	1.413m	444.6m
2	2	8M	59.0u	1.893m	-	289.7m
3	2	8M	60.7u	1.211m	-	933.9m
4	3	8M	68.6u	1.430m	1.751m	827.1m
5	3	8M	78.0u	1.707m	1.351m	65.79m
6	3	8M	95.0u	1.577m	1.175m	1.235
7	2	8M	94.0u	1.043m	-	1.170
8	2	8M	82.2u	1.181m	-	463.7m
9	1	8M	55.8u	-	-	543.3m

Long Pulse Radar Test Signal
Test Signal Name: LP_Signal_13
Number of Bursts in Trial: 18
Chirp Center Frequency: 5499MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	3	10M	54.2u	1.942m	1.494m	592.2m
2	3	10M	71.2u	1.558m	1.925m	239.4m
3	2	10M	96.1u	1.640m	-	300.6m
4	3	10M	90.5u	1.811m	1.633m	351.7m
5	2	10M	76.9u	1.123m	-	637.0m
6	3	10M	50.0u	1.335m	1.347m	297.1m
7	1	10M	75.1u	-	-	128.3m
8	1	10M	67.8u	-	-	292.2m
9	2	10M	88.2u	1.658m	-	55.83m
10	2	10M	52.3u	1.229m	-	382.0m
11	1	10M	64.4u	-	-	649.6m
12	2	10M	80.0u	1.813m	-	186.8m
13	3	10M	71.2u	1.625m	1.030m	289.9m
14	3	10M	52.9u	1.884m	1.728m	105.0m
15	3	10M	72.4u	932.6u	1.559m	96.61m
16	2	10M	74.9u	1.418m	-	493.8m
17	1	10M	76.4u	-	-	528.7m
18	2	10M	62.3u	1.001m	-	468.6m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_14

Number of Bursts in Trial: 18

Chirp Center Frequency: 5498MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	1	11M	56.6u	-	-	5.676m
2	2	11M	77.1u	1.058m	-	585.8m
3	3	11M	81.5u	1.661m	1.329m	451.6m
4	2	11M	97.9u	1.357m	-	206.6m
5	1	11M	84.7u	-	-	627.8m
6	1	11M	84.1u	-	-	252.8m
7	1	11M	53.3u	-	-	482.1m
8	1	11M	51.5u	-	-	86.47m
9	2	11M	98.0u	957.0u	-	299.9m
10	3	11M	96.3u	1.449m	1.373m	304.0m
11	1	11M	98.7u	-	-	220.4m
12	2	11M	60.5u	1.736m	-	138.8m
13	2	11M	57.3u	1.002m	-	462.9m
14	1	11M	73.5u	-	-	62.34m
15	3	11M	82.9u	1.787m	1.296m	105.5m
16	2	11M	92.5u	1.491m	-	78.23m
17	1	11M	63.3u	-	-	292.8m
18	1	11M	99.3u	-	-	28.14m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_15

Number of Bursts in Trial: 18

Chirp Center Frequency: 5502MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	12M	86.4u	1.763m	-	5.231m
2	2	12M	84.4u	1.841m	-	546.8m
3	1	12M	62.7u	-	-	648.5m
4	3	12M	77.1u	1.868m	1.513m	380.7m
5	2	12M	99.6u	1.304m	-	205.8m
6	2	12M	99.2u	1.534m	-	198.4m
7	2	12M	57.0u	1.343m	-	473.0m
8	2	12M	92.2u	1.240m	-	629.2m
9	2	12M	54.7u	1.338m	-	653.5m
10	2	12M	95.9u	1.771m	-	571.9m
11	2	12M	82.8u	1.713m	-	403.3m
12	3	12M	61.0u	1.144m	1.057m	92.42m
13	2	12M	72.4u	1.185m	-	365.5m
14	1	12M	86.4u	-	-	28.99m
15	2	12M	89.8u	1.119m	-	169.9m
16	3	12M	56.5u	958.5u	1.068m	439.0m
17	2	12M	80.4u	958.6u	-	474.9m
18	2	12M	93.3u	1.452m	-	398.0m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_16

Number of Bursts in Trial: 12

Chrip Center Frequency: 5503MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	1	13M	98.7u	-	-	633.0m
2	1	13M	57.3u	-	-	438.3m
3	3	13M	68.6u	1.493m	1.610m	875.1m
4	2	13M	97.5u	1.612m	-	685.6m
5	1	13M	55.5u	-	-	747.3m
6	2	13M	62.8u	967.2u	-	788.4m
7	2	13M	80.7u	1.417m	-	652.7m
8	1	13M	65.9u	-	-	782.6m
9	3	13M	79.9u	1.732m	1.557m	410.0m
10	2	13M	76.4u	1.761m	-	78.51m
11	1	13M	58.1u	-	-	580.4m
12	2	13M	78.0u	961.0u	-	162.0m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_17

Number of Bursts in Trial: 19

Chrip Center Frequency: 5496MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	14M	94.8u	1.833m	-	253.8m
2	2	14M	94.0u	1.277m	-	188.2m
3	2	14M	73.4u	1.353m	-	312.0m
4	3	14M	72.4u	1.274m	1.237m	65.56m
5	1	14M	99.7u	-	-	153.2m
6	1	14M	72.3u	-	-	541.4m
7	1	14M	68.9u	-	-	226.9m
8	3	14M	76.0u	1.169m	1.912m	1.325m
9	3	14M	53.8u	1.926m	1.757m	118.8m
10	1	14M	93.7u	-	-	376.4m
11	2	14M	88.8u	1.386m	-	151.7m
12	3	14M	93.9u	1.399m	1.175m	51.10m
13	1	14M	53.5u	-	-	24.10m
14	2	14M	91.7u	1.059m	-	402.9m
15	2	14M	92.7u	1.304m	-	113.0m
16	1	14M	69.2u	-	-	473.0m
17	1	14M	77.9u	-	-	422.4m
18	1	14M	63.2u	-	-	591.5m
19	3	14M	74.1u	1.402m	1.848m	550.6m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_18

Number of Bursts in Trial: 20

Chrip Center Frequency: 5495MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	3	16M	98.2u	1.077m	1.585m	592.3m
2	1	16M	79.3u	-	-	162.3m
3	2	16M	77.2u	1.088m	-	375.3m
4	2	16M	81.1u	1.530m	-	302.2m
5	3	16M	74.2u	1.573m	1.596m	49.31m
6	3	16M	97.4u	1.523m	1.198m	319.5m
7	2	16M	51.2u	1.709m	-	416.9m
8	2	16M	66.0u	1.111m	-	371.6m
9	3	16M	62.6u	1.384m	943.4u	70.93m
10	2	16M	56.2u	1.075m	-	33.71m
11	3	16M	59.4u	1.155m	1.871m	552.0m
12	2	16M	65.3u	1.262m	-	556.8m
13	2	16M	80.9u	1.317m	-	441.0m
14	3	16M	69.9u	1.450m	1.540m	346.3m
15	1	16M	62.1u	-	-	104.6m
16	3	16M	95.2u	1.573m	1.376m	413.7m
17	2	16M	63.6u	1.451m	-	489.3m
18	2	16M	77.5u	1.642m	-	286.8m
19	1	16M	69.7u	-	-	370.6m
20	2	16M	59.4u	1.193m	-	372.9m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_19

Number of Bursts in Trial: 11

Chrip Center Frequency: 5504MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	1	18M	64.2u	-	-	494.2m
2	2	18M	97.0u	1.292m	-	114.8m
3	2	18M	52.3u	1.620m	-	1.064
4	2	18M	60.6u	1.251m	-	410.6m
5	3	18M	84.8u	1.723m	1.288m	300.7m
6	1	18M	50.7u	-	-	53.23m
7	3	18M	89.9u	1.262m	1.445m	710.3m
8	2	18M	97.5u	1.135m	-	685.6m
9	1	18M	64.6u	-	-	299.5m
10	3	18M	54.2u	1.045m	1.103m	829.1m
11	1	18M	71.8u	-	-	490.9m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_20

Number of Bursts in Trial: 16

Chrip Center Frequency: 5505MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	20M	80.2u	1.739m	-	720.6m
2	3	20M	50.1u	1.816m	1.933m	558.9m
3	1	20M	96.2u	-	-	211.8m
4	3	20M	72.6u	1.275m	1.410m	628.1m
5	2	20M	92.6u	1.262m	-	295.1m
6	2	20M	70.1u	1.814m	-	404.0m
7	2	20M	96.2u	1.463m	-	89.45m
8	2	20M	78.6u	1.436m	-	275.4m
9	2	20M	85.9u	1.077m	-	726.5m
10	3	20M	86.3u	1.689m	1.395m	279.8m
11	1	20M	88.0u	-	-	142.6m
12	3	20M	58.3u	1.051m	995.7u	248.6m
13	2	20M	95.3u	1.642m	-	392.4m
14	3	20M	93.1u	1.100m	1.481m	639.1m
15	1	20M	96.7u	-	-	614.9m
16	2	20M	67.1u	1.370m	-	471.2m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_21

Number of Bursts in Trial: 18

Chrip Center Frequency: 5527MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	1	5M	53.6u	-	-	504.6m
2	3	5M	97.1u	1.798m	1.565m	441.5m
3	3	5M	53.5u	1.548m	1.068m	291.7m
4	2	5M	52.2u	1.395m	-	212.8m
5	2	5M	95.3u	1.226m	-	96.33m
6	2	5M	92.6u	1.470m	-	303.7m
7	1	5M	82.6u	-	-	516.6m
8	1	5M	53.5u	-	-	141.6m
9	2	5M	57.4u	999.6u	-	95.05m
10	2	5M	96.4u	1.888m	-	567.5m
11	2	5M	66.0u	1.443m	-	271.3m
12	1	5M	98.5u	-	-	442.6m
13	2	5M	68.3u	1.114m	-	512.5m
14	2	5M	85.3u	1.613m	-	105.4m
15	3	5M	99.4u	1.752m	1.843m	647.8m
16	2	5M	97.8u	1.644m	-	259.0m
17	1	5M	77.1u	-	-	649.5m
18	1	5M	58.2u	-	-	539.5m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_22

Number of Bursts in Trial: 15

Chirp Center Frequency: 5527MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	1	6M	68.7u	-	-	13.44m
2	1	6M	92.8u	-	-	618.8m
3	2	6M	73.7u	1.459m	-	424.4m
4	2	6M	97.6u	1.294m	-	736.2m
5	1	6M	93.2u	-	-	795.7m
6	2	6M	97.1u	1.871m	-	787.0m
7	2	6M	89.4u	948.6u	-	601.5m
8	2	6M	92.5u	922.5u	-	499.5m
9	2	6M	94.8u	1.066m	-	562.5m
10	2	6M	78.1u	1.629m	-	68.89m
11	1	6M	88.1u	-	-	749.7m
12	3	6M	98.0u	1.708m	999.0u	541.0m
13	2	6M	74.6u	1.001m	-	9.908m
14	1	6M	80.3u	-	-	107.8m
15	1	6M	66.7u	-	-	643.2m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_23

Number of Bursts in Trial: 16

Chirp Center Frequency: 5526MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	8M	50.8u	1.048m	-	635.9m
2	2	8M	70.8u	1.468m	-	352.0m
3	3	8M	68.7u	1.131m	1.113m	508.5m
4	3	8M	84.0u	960.0u	1.557m	350.7m
5	1	8M	84.2u	-	-	566.7m
6	1	8M	87.3u	-	-	579.0m
7	2	8M	73.0u	1.901m	-	701.4m
8	2	8M	91.1u	1.679m	-	488.0m
9	2	8M	51.0u	1.246m	-	601.8m
10	2	8M	95.4u	1.222m	-	729.3m
11	1	8M	56.7u	-	-	201.7m
12	2	8M	98.1u	1.743m	-	373.6m
13	2	8M	94.0u	1.634m	-	611.5m
14	3	8M	69.7u	1.922m	1.481m	560.7m
15	1	8M	63.3u	-	-	463.6m
16	3	8M	96.1u	964.9u	1.369m	190.4m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_24

Number of Bursts in Trial: 12

Chirp Center Frequency: 5525MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	9M	81.2u	1.556m	-	256.2m
2	1	9M	86.7u	-	-	131.1m
3	2	9M	77.8u	1.026m	-	504.6m
4	2	9M	55.6u	1.700m	-	485.5m
5	2	9M	92.8u	1.848m	-	535.0m
6	3	9M	54.8u	974.2u	1.487m	763.2m
7	2	9M	65.7u	1.884m	-	681.3m
8	2	9M	89.7u	1.572m	-	624.8m
9	2	9M	57.8u	1.208m	-	12.28m
10	2	9M	54.6u	1.123m	-	881.4m
11	1	9M	65.0u	-	-	637.4m
12	2	9M	72.7u	1.336m	-	662.2m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_25

Number of Bursts in Trial: 17

Chirp Center Frequency: 5525MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	3	10M	57.7u	1.500m	1.773m	139.7m
2	1	10M	84.4u	-	-	463.8m
3	2	10M	95.4u	1.392m	-	560.7m
4	3	10M	78.1u	1.719m	1.868m	251.1m
5	2	10M	53.6u	1.058m	-	496.7m
6	3	10M	74.2u	1.825m	1.135m	60.31m
7	2	10M	76.2u	1.302m	-	261.3m
8	2	10M	61.3u	1.462m	-	272.8m
9	2	10M	81.2u	1.721m	-	336.6m
10	3	10M	82.5u	1.729m	1.073m	352.7m
11	3	10M	89.3u	1.642m	1.308m	46.89m
12	2	10M	81.2u	1.227m	-	477.2m
13	2	10M	85.9u	1.560m	-	14.30m
14	1	10M	50.7u	-	-	618.4m
15	1	10M	92.4u	-	-	463.8m
16	2	10M	96.5u	1.415m	-	505.9m
17	3	10M	71.5u	1.838m	1.303m	682.0m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_26

Number of Bursts in Trial: 20

Chirp Center Frequency: 5525MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	3	11M	83.2u	1.644m	1.165m	247.3m
2	2	11M	59.0u	1.897m	-	528.2m
3	2	11M	65.4u	938.6u	-	344.7m
4	2	11M	81.5u	1.723m	-	322.6m
5	3	11M	76.3u	1.820m	1.145m	27.03m
6	2	11M	88.5u	1.700m	-	209.2m
7	2	11M	82.8u	1.612m	-	306.0m
8	1	11M	59.6u	-	-	204.1m
9	2	11M	51.5u	1.110m	-	235.1m
10	3	11M	93.5u	1.872m	1.143m	350.1m
11	2	11M	81.6u	1.092m	-	370.2m
12	3	11M	50.5u	1.928m	1.706m	363.2m
13	1	11M	53.1u	-	-	37.77m
14	1	11M	52.2u	-	-	316.9m
15	3	11M	58.3u	1.014m	1.238m	172.4m
16	2	11M	71.5u	1.270m	-	446.4m
17	3	11M	95.0u	1.172m	1.527m	127.9m
18	3	11M	76.8u	1.802m	1.280m	370.9m
19	2	11M	70.9u	1.096m	-	297.7m
20	3	11M	71.6u	1.254m	1.111m	489.0m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_27

Number of Bursts in Trial: 12

Chirp Center Frequency: 5524MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	1	13M	98.7u	-	-	633.0m
2	1	13M	57.3u	-	-	438.3m
3	3	13M	68.6u	1.493m	1.610m	875.1m
4	2	13M	97.5u	1.612m	-	685.6m
5	1	13M	55.5u	-	-	747.3m
6	2	13M	62.8u	967.2u	-	788.4m
7	2	13M	80.7u	1.417m	-	652.7m
8	1	13M	65.9u	-	-	782.6m
9	3	13M	79.9u	1.732m	1.557m	410.0m
10	2	13M	76.4u	1.761m	-	78.51m
11	1	13M	58.1u	-	-	580.4m
12	2	13M	78.0u	961.0u	-	162.0m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_28

Number of Bursts in Trial: 19

Chirp Center Frequency: 5523MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	14M	85.7u	1.367m	-	603.6m
2	3	14M	78.6u	1.641m	1.199m	161.4m
3	3	14M	80.1u	1.820m	1.882m	517.0m
4	2	14M	62.7u	979.3u	-	319.0m
5	2	14M	85.2u	1.237m	-	559.3m
6	3	14M	98.1u	1.761m	1.255m	106.3m
7	1	14M	72.0u	-	-	136.6m
8	2	14M	68.4u	1.583m	-	562.6m
9	1	14M	82.6u	-	-	591.2m
10	2	14M	82.9u	1.029m	-	339.8m
11	1	14M	66.1u	-	-	277.3m
12	2	14M	72.6u	1.029m	-	514.5m
13	1	14M	87.3u	-	-	169.0m
14	2	14M	77.9u	1.828m	-	416.6m
15	2	14M	69.3u	1.609m	-	602.9m
16	1	14M	56.2u	-	-	104.6m
17	1	14M	99.7u	-	-	399.8m
18	2	14M	53.6u	1.552m	-	494.2m
19	1	14M	79.0u	-	-	195.2m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_29

Number of Bursts in Trial: 13

Chirp Center Frequency: 5522MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	17M	95.6u	1.309m	-	798.4m
2	2	17M	89.4u	1.847m	-	293.0m
3	2	17M	53.8u	1.798m	-	916.5m
4	1	17M	57.0u	-	-	912.5m
5	2	17M	73.3u	984.7u	-	502.7m
6	2	17M	78.4u	1.529m	-	428.2m
7	2	17M	69.4u	1.479m	-	250.3m
8	2	17M	70.0u	1.557m	-	822.3m
9	3	17M	66.9u	1.078m	952.1u	814.9m
10	3	17M	83.6u	1.564m	1.482m	788.7m
11	2	17M	51.3u	1.508m	-	757.3m
12	2	17M	52.7u	1.562m	-	875.4m
13	3	17M	64.5u	961.5u	1.073m	611.6m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_30

Number of Bursts in Trial: 14

Chrip Center Frequency: 5521MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	1	19M	96.6u	-	-	363.1m
2	1	19M	51.9u	-	-	739.2m
3	1	19M	76.1u	-	-	386.4m
4	2	19M	73.2u	1.121m	-	703.9m
5	2	19M	63.6u	1.058m	-	622.0m
6	1	19M	79.6u	-	-	34.99m
7	3	19M	82.5u	1.213m	1.864m	794.1m
8	3	19M	53.7u	1.356m	1.081m	215.9m
9	1	19M	80.9u	-	-	611.8m
10	2	19M	95.4u	1.890m	-	620.4m
11	2	19M	50.1u	1.778m	-	549.3m
12	1	19M	78.5u	-	-	569.2m
13	2	19M	63.2u	1.648m	-	480.1m
14	2	19M	65.0u	965.0u	-	762.0m

IEEE 802.11ac 40MHz
Type 6 Radar Statistical Performances

Trial #	Hopping Frequency Sequence Name	Pulses per Burst	Pulse Width (s)	PRI (s)	Detection
1	HOP_FREQ_SEQ_01	9	1.0u	333.0u	Yes
2	HOP_FREQ_SEQ_02	9	1.0u	333.0u	Yes
3	HOP_FREQ_SEQ_03	9	1.0u	333.0u	Yes
4	HOP_FREQ_SEQ_04	9	1.0u	333.0u	Yes
5	HOP_FREQ_SEQ_05	9	1.0u	333.0u	Yes
6	HOP_FREQ_SEQ_06	9	1.0u	333.0u	Yes
7	HOP_FREQ_SEQ_07	9	1.0u	333.0u	Yes
8	HOP_FREQ_SEQ_08	9	1.0u	333.0u	Yes
9	HOP_FREQ_SEQ_09	9	1.0u	333.0u	Yes
10	HOP_FREQ_SEQ_10	9	1.0u	333.0u	Yes
11	HOP_FREQ_SEQ_11	9	1.0u	333.0u	Yes
12	HOP_FREQ_SEQ_12	9	1.0u	333.0u	Yes
13	HOP_FREQ_SEQ_13	9	1.0u	333.0u	Yes
14	HOP_FREQ_SEQ_14	9	1.0u	333.0u	Yes
15	HOP_FREQ_SEQ_15	9	1.0u	333.0u	Yes
16	HOP_FREQ_SEQ_16	9	1.0u	333.0u	Yes
17	HOP_FREQ_SEQ_17	9	1.0u	333.0u	Yes
18	HOP_FREQ_SEQ_18	9	1.0u	333.0u	Yes
19	HOP_FREQ_SEQ_19	9	1.0u	333.0u	Yes
20	HOP_FREQ_SEQ_20	9	1.0u	333.0u	Yes
21	HOP_FREQ_SEQ_21	9	1.0u	333.0u	Yes
22	HOP_FREQ_SEQ_22	9	1.0u	333.0u	Yes
23	HOP_FREQ_SEQ_23	9	1.0u	333.0u	Yes
24	HOP_FREQ_SEQ_24	9	1.0u	333.0u	Yes
25	HOP_FREQ_SEQ_25	9	1.0u	333.0u	Yes
26	HOP_FREQ_SEQ_26	9	1.0u	333.0u	Yes
27	HOP_FREQ_SEQ_27	9	1.0u	333.0u	Yes
28	HOP_FREQ_SEQ_28	9	1.0u	333.0u	Yes
29	HOP_FREQ_SEQ_29	9	1.0u	333.0u	Yes
30	HOP_FREQ_SEQ_30	9	1.0u	333.0u	Yes
					Detection Rate: 100.0 %

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_01

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.661G	2	5.682G	3	5.347G	4	5.275G
5	5.582G	6	5.334G	7	5.691G	8	5.453G
9	5.693G	10	5.601G	11	5.713G	12	5.585G
13	5.341G	14	5.511G	15	5.445G	16	5.670G
17	5.666G	18	5.296G	19	5.465G	20	5.679G
21	5.256G	22	5.714G	23	5.494G	24	5.454G
25	5.317G	26	5.290G	27	5.376G	28	5.612G
29	5.648G	30	5.439G	31	5.474G	32	5.563G
33	5.416G	34	5.721G	35	5.351G	36	5.668G
37	5.435G	38	5.440G	39	5.664G	40	5.369G
41	5.600G	42	5.292G	43	5.534G	44	5.708G
45	5.624G	46	5.537G	47	5.652G	48	5.655G
49	5.374G	50	5.336G	51	5.643G	52	5.437G
53	5.533G	54	5.482G	55	5.285G	56	5.443G
57	5.501G	58	5.547G	59	5.274G	60	5.650G
61	5.683G	62	5.615G	63	5.280G	64	5.469G
65	5.628G	66	5.639G	67	5.426G	68	5.379G
69	5.393G	70	5.479G	71	5.706G	72	5.604G
73	5.315G	74	5.605G	75	5.371G	76	5.409G
77	5.282G	78	5.572G	79	5.333G	80	5.272G
81	5.645G	82	5.588G	83	5.402G	84	5.399G
85	5.442G	86	5.258G	87	5.673G	88	5.575G
89	5.309G	90	5.570G	91	5.313G	92	5.701G
93	5.678G	94	5.510G	95	5.622G	96	5.580G
97	5.700G	98	5.250G	99	5.456G	100	5.633G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_02

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.414G	2	5.439G	3	5.282G	4	5.592G
5	5.714G	6	5.570G	7	5.685G	8	5.466G
9	5.529G	10	5.637G	11	5.396G	12	5.708G
13	5.298G	14	5.361G	15	5.663G	16	5.651G
17	5.601G	18	5.690G	19	5.522G	20	5.557G
21	5.589G	22	5.391G	23	5.511G	24	5.263G
25	5.636G	26	5.284G	27	5.615G	28	5.408G
29	5.721G	30	5.318G	31	5.463G	32	5.562G
33	5.290G	34	5.250G	35	5.706G	36	5.452G
37	5.526G	38	5.588G	39	5.400G	40	5.399G
41	5.357G	42	5.541G	43	5.269G	44	5.552G
45	5.431G	46	5.481G	47	5.697G	48	5.724G
49	5.461G	50	5.322G	51	5.474G	52	5.476G
53	5.330G	54	5.359G	55	5.698G	56	5.358G
57	5.464G	58	5.547G	59	5.346G	60	5.386G
61	5.676G	62	5.560G	63	5.673G	64	5.543G
65	5.275G	66	5.691G	67	5.581G	68	5.598G
69	5.616G	70	5.471G	71	5.374G	72	5.405G
73	5.254G	74	5.537G	75	5.442G	76	5.315G
77	5.546G	78	5.274G	79	5.342G	80	5.671G
81	5.416G	82	5.545G	83	5.658G	84	5.512G
85	5.555G	86	5.381G	87	5.567G	88	5.672G
89	5.296G	90	5.595G	91	5.421G	92	5.299G
93	5.540G	94	5.701G	95	5.411G	96	5.376G
97	5.494G	98	5.329G	99	5.264G	100	5.270G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_03

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.679G	2	5.317G	3	5.547G	4	5.700G
5	5.503G	6	5.452G	7	5.250G	8	5.582G
9	5.521G	10	5.374G	11	5.535G	12	5.340G
13	5.686G	14	5.430G	15	5.264G	16	5.364G
17	5.306G	18	5.462G	19	5.309G	20	5.516G
21	5.499G	22	5.315G	23	5.639G	24	5.636G
25	5.724G	26	5.417G	27	5.335G	28	5.444G
29	5.458G	30	5.536G	31	5.432G	32	5.551G
33	5.477G	34	5.661G	35	5.677G	36	5.344G
37	5.675G	38	5.693G	39	5.441G	40	5.287G
41	5.681G	42	5.328G	43	5.712G	44	5.454G
45	5.357G	46	5.561G	47	5.271G	48	5.515G
49	5.608G	50	5.538G	51	5.506G	52	5.376G
53	5.584G	54	5.355G	55	5.705G	56	5.406G
57	5.260G	58	5.683G	59	5.422G	60	5.343G
61	5.605G	62	5.518G	63	5.316G	64	5.459G
65	5.722G	66	5.689G	67	5.577G	68	5.423G
69	5.702G	70	5.527G	71	5.500G	72	5.716G
73	5.587G	74	5.710G	75	5.528G	76	5.562G
77	5.568G	78	5.349G	79	5.523G	80	5.609G
81	5.481G	82	5.378G	83	5.637G	84	5.684G
85	5.261G	86	5.615G	87	5.299G	88	5.410G
89	5.358G	90	5.548G	91	5.715G	92	5.534G
93	5.370G	94	5.289G	95	5.600G	96	5.553G
97	5.525G	98	5.520G	99	5.572G	100	5.273G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_04

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.400G	2	5.348G	3	5.316G	4	5.506G
5	5.301G	6	5.657G	7	5.382G	8	5.300G
9	5.524G	10	5.617G	11	5.349G	12	5.646G
13	5.273G	14	5.283G	15	5.446G	16	5.588G
17	5.330G	18	5.417G	19	5.669G	20	5.528G
21	5.580G	22	5.679G	23	5.628G	24	5.621G
25	5.673G	26	5.651G	27	5.391G	28	5.444G
29	5.564G	30	5.685G	31	5.361G	32	5.454G
33	5.404G	34	5.690G	35	5.439G	36	5.380G
37	5.614G	38	5.516G	39	5.535G	40	5.536G
41	5.302G	42	5.388G	43	5.658G	44	5.426G
45	5.561G	46	5.550G	47	5.513G	48	5.451G
49	5.393G	50	5.560G	51	5.365G	52	5.703G
53	5.671G	54	5.684G	55	5.337G	56	5.256G
57	5.332G	58	5.571G	59	5.372G	60	5.544G
61	5.274G	62	5.723G	63	5.456G	64	5.520G
65	5.472G	66	5.425G	67	5.634G	68	5.702G
69	5.309G	70	5.710G	71	5.670G	72	5.533G
73	5.366G	74	5.724G	75	5.680G	76	5.595G
77	5.517G	78	5.287G	79	5.375G	80	5.574G
81	5.495G	82	5.328G	83	5.548G	84	5.668G
85	5.407G	86	5.579G	87	5.682G	88	5.291G
89	5.315G	90	5.586G	91	5.529G	92	5.584G
93	5.263G	94	5.541G	95	5.359G	96	5.340G
97	5.523G	98	5.543G	99	5.480G	100	5.485G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_05

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.319G	2	5.719G	3	5.506G	4	5.714G
5	5.382G	6	5.638G	7	5.336G	8	5.350G
9	5.416G	10	5.352G	11	5.309G	12	5.381G
13	5.517G	14	5.669G	15	5.534G	16	5.540G
17	5.705G	18	5.637G	19	5.551G	20	5.471G
21	5.287G	22	5.608G	23	5.541G	24	5.606G
25	5.709G	26	5.500G	27	5.689G	28	5.527G
29	5.422G	30	5.710G	31	5.568G	32	5.346G
33	5.575G	34	5.514G	35	5.347G	36	5.391G
37	5.362G	38	5.625G	39	5.640G	40	5.258G
41	5.398G	42	5.270G	43	5.511G	44	5.499G
45	5.684G	46	5.314G	47	5.272G	48	5.303G
49	5.647G	50	5.379G	51	5.476G	52	5.392G
53	5.494G	54	5.501G	55	5.377G	56	5.467G
57	5.507G	58	5.295G	59	5.686G	60	5.254G
61	5.306G	62	5.572G	63	5.290G	64	5.373G
65	5.302G	66	5.632G	67	5.320G	68	5.578G
69	5.539G	70	5.327G	71	5.487G	72	5.515G
73	5.571G	74	5.370G	75	5.666G	76	5.604G
77	5.368G	78	5.528G	79	5.414G	80	5.695G
81	5.429G	82	5.641G	83	5.436G	84	5.417G
85	5.269G	86	5.649G	87	5.529G	88	5.457G
89	5.283G	90	5.444G	91	5.603G	92	5.372G
93	5.664G	94	5.503G	95	5.680G	96	5.563G
97	5.712G	98	5.673G	99	5.650G	100	5.296G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_06

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.464G	2	5.500G	3	5.454G	4	5.723G
5	5.711G	6	5.679G	7	5.623G	8	5.303G
9	5.639G	10	5.651G	11	5.289G	12	5.657G
13	5.435G	14	5.551G	15	5.608G	16	5.335G
17	5.321G	18	5.467G	19	5.503G	20	5.543G
21	5.584G	22	5.481G	23	5.618G	24	5.650G
25	5.306G	26	5.366G	27	5.695G	28	5.328G
29	5.533G	30	5.461G	31	5.452G	32	5.708G
33	5.477G	34	5.479G	35	5.412G	36	5.407G
37	5.548G	38	5.683G	39	5.620G	40	5.315G
41	5.495G	42	5.416G	43	5.317G	44	5.327G
45	5.457G	46	5.641G	47	5.526G	48	5.309G
49	5.665G	50	5.636G	51	5.266G	52	5.675G
53	5.422G	54	5.271G	55	5.569G	56	5.288G
57	5.434G	58	5.505G	59	5.272G	60	5.643G
61	5.534G	62	5.259G	63	5.252G	64	5.592G
65	5.662G	66	5.267G	67	5.382G	68	5.433G
69	5.485G	70	5.682G	71	5.688G	72	5.590G
73	5.332G	74	5.269G	75	5.716G	76	5.427G
77	5.549G	78	5.456G	79	5.348G	80	5.357G
81	5.458G	82	5.440G	83	5.692G	84	5.693G
85	5.638G	86	5.509G	87	5.567G	88	5.409G
89	5.307G	90	5.715G	91	5.552G	92	5.360G
93	5.292G	94	5.470G	95	5.441G	96	5.587G
97	5.444G	98	5.365G	99	5.310G	100	5.394G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_07

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.458G	2	5.662G	3	5.310G	4	5.348G
5	5.655G	6	5.508G	7	5.547G	8	5.650G
9	5.415G	10	5.350G	11	5.550G	12	5.474G
13	5.551G	14	5.450G	15	5.722G	16	5.417G
17	5.494G	18	5.409G	19	5.499G	20	5.327G
21	5.699G	22	5.403G	23	5.390G	24	5.448G
25	5.561G	26	5.632G	27	5.564G	28	5.618G
29	5.513G	30	5.260G	31	5.339G	32	5.437G
33	5.463G	34	5.406G	35	5.446G	36	5.690G
37	5.671G	38	5.723G	39	5.588G	40	5.712G
41	5.709G	42	5.328G	43	5.451G	44	5.438G
45	5.428G	46	5.479G	47	5.320G	48	5.413G
49	5.529G	50	5.554G	51	5.517G	52	5.663G
53	5.642G	54	5.331G	55	5.715G	56	5.677G
57	5.528G	58	5.330G	59	5.526G	60	5.570G
61	5.675G	62	5.600G	63	5.654G	64	5.595G
65	5.361G	66	5.633G	67	5.540G	68	5.357G
69	5.278G	70	5.300G	71	5.641G	72	5.258G
73	5.373G	74	5.273G	75	5.656G	76	5.408G
77	5.649G	78	5.500G	79	5.421G	80	5.630G
81	5.396G	82	5.251G	83	5.533G	84	5.433G
85	5.370G	86	5.524G	87	5.386G	88	5.605G
89	5.353G	90	5.256G	91	5.640G	92	5.591G
93	5.488G	94	5.312G	95	5.295G	96	5.364G
97	5.646G	98	5.599G	99	5.697G	100	5.696G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_08

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.495G	2	5.553G	3	5.386G	4	5.410G
5	5.686G	6	5.417G	7	5.287G	8	5.575G
9	5.292G	10	5.356G	11	5.537G	12	5.589G
13	5.291G	14	5.624G	15	5.453G	16	5.485G
17	5.607G	18	5.339G	19	5.650G	20	5.660G
21	5.601G	22	5.486G	23	5.431G	24	5.328G
25	5.515G	26	5.678G	27	5.448G	28	5.371G
29	5.556G	30	5.661G	31	5.659G	32	5.599G
33	5.536G	34	5.521G	35	5.261G	36	5.305G
37	5.337G	38	5.646G	39	5.588G	40	5.527G
41	5.574G	42	5.642G	43	5.695G	44	5.380G
45	5.358G	46	5.484G	47	5.713G	48	5.629G
49	5.676G	50	5.704G	51	5.267G	52	5.555G
53	5.293G	54	5.326G	55	5.461G	56	5.544G
57	5.499G	58	5.342G	59	5.420G	60	5.437G
61	5.290G	62	5.579G	63	5.597G	64	5.426G
65	5.277G	66	5.389G	67	5.257G	68	5.557G
69	5.593G	70	5.393G	71	5.341G	72	5.405G
73	5.644G	74	5.618G	75	5.594G	76	5.477G
77	5.696G	78	5.447G	79	5.577G	80	5.325G
81	5.474G	82	5.616G	83	5.647G	84	5.679G
85	5.309G	86	5.440G	87	5.652G	88	5.627G
89	5.428G	90	5.382G	91	5.419G	92	5.501G
93	5.637G	94	5.600G	95	5.306G	96	5.517G
97	5.387G	98	5.545G	99	5.497G	100	5.488G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_09

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.307G	2	5.564G	3	5.439G	4	5.660G
5	5.654G	6	5.676G	7	5.652G	8	5.527G
9	5.422G	10	5.452G	11	5.378G	12	5.550G
13	5.387G	14	5.542G	15	5.563G	16	5.290G
17	5.431G	18	5.516G	19	5.575G	20	5.671G
21	5.470G	22	5.696G	23	5.580G	24	5.591G
25	5.599G	26	5.703G	27	5.421G	28	5.679G
29	5.688G	30	5.395G	31	5.257G	32	5.388G
33	5.335G	34	5.390G	35	5.364G	36	5.666G
37	5.535G	38	5.450G	39	5.322G	40	5.686G
41	5.677G	42	5.325G	43	5.578G	44	5.344G
45	5.655G	46	5.295G	47	5.430G	48	5.522G
49	5.331G	50	5.424G	51	5.508G	52	5.368G
53	5.457G	54	5.285G	55	5.673G	56	5.689G
57	5.362G	58	5.698G	59	5.401G	60	5.691G
61	5.624G	62	5.482G	63	5.473G	64	5.310G
65	5.610G	66	5.558G	67	5.365G	68	5.273G
69	5.298G	70	5.380G	71	5.567G	72	5.708G
73	5.600G	74	5.269G	75	5.303G	76	5.398G
77	5.308G	78	5.404G	79	5.718G	80	5.499G
81	5.373G	82	5.593G	83	5.358G	84	5.468G
85	5.311G	86	5.488G	87	5.606G	88	5.363G
89	5.533G	90	5.700G	91	5.485G	92	5.346G
93	5.642G	94	5.256G	95	5.415G	96	5.721G
97	5.500G	98	5.381G	99	5.576G	100	5.585G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_10

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.512G	2	5.624G	3	5.511G	4	5.656G
5	5.314G	6	5.708G	7	5.617G	8	5.352G
9	5.544G	10	5.669G	11	5.391G	12	5.671G
13	5.416G	14	5.501G	15	5.568G	16	5.318G
17	5.643G	18	5.275G	19	5.661G	20	5.567G
21	5.424G	22	5.274G	23	5.650G	24	5.276G
25	5.581G	26	5.418G	27	5.290G	28	5.395G
29	5.550G	30	5.601G	31	5.413G	32	5.468G
33	5.358G	34	5.534G	35	5.285G	36	5.600G
37	5.553G	38	5.638G	39	5.625G	40	5.506G
41	5.559G	42	5.305G	43	5.526G	44	5.717G
45	5.539G	46	5.542G	47	5.427G	48	5.484G
49	5.251G	50	5.269G	51	5.715G	52	5.478G
53	5.454G	54	5.359G	55	5.252G	56	5.353G
57	5.514G	58	5.436G	59	5.316G	60	5.343G
61	5.255G	62	5.604G	63	5.626G	64	5.340G
65	5.310G	66	5.482G	67	5.450G	68	5.431G
69	5.546G	70	5.645G	71	5.447G	72	5.623G
73	5.572G	74	5.723G	75	5.566G	76	5.449G
77	5.477G	78	5.356G	79	5.459G	80	5.465G
81	5.547G	82	5.532G	83	5.517G	84	5.380G
85	5.437G	86	5.594G	87	5.648G	88	5.637G
89	5.503G	90	5.474G	91	5.422G	92	5.589G
93	5.655G	94	5.333G	95	5.344G	96	5.635G
97	5.412G	98	5.504G	99	5.652G	100	5.607G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_11

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.652G	2	5.570G	3	5.614G	4	5.430G
5	5.628G	6	5.368G	7	5.343G	8	5.681G
9	5.266G	10	5.707G	11	5.389G	12	5.409G
13	5.426G	14	5.458G	15	5.309G	16	5.330G
17	5.428G	18	5.598G	19	5.300G	20	5.621G
21	5.694G	22	5.566G	23	5.600G	24	5.423G
25	5.543G	26	5.644G	27	5.673G	28	5.528G
29	5.351G	30	5.503G	31	5.577G	32	5.595G
33	5.303G	34	5.572G	35	5.499G	36	5.632G
37	5.688G	38	5.525G	39	5.396G	40	5.315G
41	5.615G	42	5.436G	43	5.620G	44	5.386G
45	5.468G	46	5.712G	47	5.537G	48	5.534G
49	5.394G	50	5.697G	51	5.280G	52	5.488G
53	5.668G	54	5.716G	55	5.316G	56	5.591G
57	5.502G	58	5.392G	59	5.366G	60	5.255G
61	5.308G	62	5.292G	63	5.427G	64	5.327G
65	5.671G	66	5.610G	67	5.254G	68	5.660G
69	5.556G	70	5.553G	71	5.533G	72	5.522G
73	5.719G	74	5.446G	75	5.364G	76	5.439G
77	5.407G	78	5.440G	79	5.624G	80	5.265G
81	5.538G	82	5.710G	83	5.563G	84	5.500G
85	5.259G	86	5.271G	87	5.613G	88	5.698G
89	5.262G	90	5.622G	91	5.561G	92	5.687G
93	5.506G	94	5.648G	95	5.419G	96	5.541G
97	5.575G	98	5.701G	99	5.649G	100	5.551G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_12

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.711G	2	5.453G	3	5.383G	4	5.419G
5	5.398G	6	5.591G	7	5.470G	8	5.534G
9	5.411G	10	5.405G	11	5.306G	12	5.264G
13	5.354G	14	5.581G	15	5.406G	16	5.439G
17	5.340G	18	5.585G	19	5.697G	20	5.723G
21	5.274G	22	5.500G	23	5.368G	24	5.358G
25	5.446G	26	5.393G	27	5.332G	28	5.580G
29	5.283G	30	5.372G	31	5.300G	32	5.296G
33	5.321G	34	5.420G	35	5.499G	36	5.484G
37	5.661G	38	5.409G	39	5.478G	40	5.565G
41	5.437G	42	5.506G	43	5.634G	44	5.612G
45	5.289G	46	5.626G	47	5.445G	48	5.620G
49	5.495G	50	5.712G	51	5.665G	52	5.644G
53	5.386G	54	5.452G	55	5.527G	56	5.691G
57	5.288G	58	5.519G	59	5.337G	60	5.258G
61	5.388G	62	5.532G	63	5.394G	64	5.299G
65	5.702G	66	5.682G	67	5.327G	68	5.608G
69	5.267G	70	5.385G	71	5.466G	72	5.415G
73	5.362G	74	5.716G	75	5.647G	76	5.587G
77	5.455G	78	5.520G	79	5.704G	80	5.414G
81	5.444G	82	5.720G	83	5.713G	84	5.373G
85	5.604G	86	5.292G	87	5.593G	88	5.542G
89	5.689G	90	5.325G	91	5.632G	92	5.539G
93	5.594G	94	5.524G	95	5.347G	96	5.724G
97	5.281G	98	5.521G	99	5.605G	100	5.262G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_13

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.329G	2	5.719G	3	5.325G	4	5.419G
5	5.606G	6	5.510G	7	5.281G	8	5.571G
9	5.690G	10	5.423G	11	5.716G	12	5.266G
13	5.696G	14	5.607G	15	5.435G	16	5.394G
17	5.308G	18	5.665G	19	5.322G	20	5.600G
21	5.508G	22	5.518G	23	5.348G	24	5.471G
25	5.603G	26	5.724G	27	5.630G	28	5.330G
29	5.318G	30	5.278G	31	5.598G	32	5.405G
33	5.294G	34	5.464G	35	5.649G	36	5.583G
37	5.523G	38	5.663G	39	5.364G	40	5.382G
41	5.358G	42	5.353G	43	5.384G	44	5.277G
45	5.699G	46	5.406G	47	5.527G	48	5.470G
49	5.451G	50	5.568G	51	5.416G	52	5.386G
53	5.656G	54	5.389G	55	5.356G	56	5.501G
57	5.301G	58	5.346G	59	5.480G	60	5.367G
61	5.711G	62	5.529G	63	5.434G	64	5.581G
65	5.547G	66	5.307G	67	5.655G	68	5.582G
69	5.272G	70	5.631G	71	5.713G	72	5.556G
73	5.251G	74	5.397G	75	5.540G	76	5.537G
77	5.392G	78	5.381G	79	5.585G	80	5.575G
81	5.365G	82	5.579G	83	5.459G	84	5.404G
85	5.520G	86	5.639G	87	5.496G	88	5.331G
89	5.366G	90	5.624G	91	5.360G	92	5.698G
93	5.625G	94	5.553G	95	5.669G	96	5.532G
97	5.641G	98	5.629G	99	5.491G	100	5.474G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_14

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.564G	2	5.296G	3	5.603G	4	5.441G
5	5.598G	6	5.358G	7	5.287G	8	5.590G
9	5.672G	10	5.569G	11	5.412G	12	5.445G
13	5.377G	14	5.428G	15	5.385G	16	5.500G
17	5.512G	18	5.701G	19	5.258G	20	5.354G
21	5.432G	22	5.717G	23	5.436G	24	5.324G
25	5.298G	26	5.722G	27	5.525G	28	5.661G
29	5.602G	30	5.687G	31	5.562G	32	5.494G
33	5.716G	34	5.269G	35	5.348G	36	5.647G
37	5.585G	38	5.297G	39	5.684G	40	5.643G
41	5.253G	42	5.612G	43	5.375G	44	5.401G
45	5.664G	46	5.678G	47	5.433G	48	5.523G
49	5.652G	50	5.680G	51	5.314G	52	5.552G
53	5.670G	54	5.695G	55	5.316G	56	5.460G
57	5.535G	58	5.620G	59	5.450G	60	5.439G
61	5.359G	62	5.502G	63	5.313G	64	5.328G
65	5.368G	66	5.681G	67	5.263G	68	5.578G
69	5.294G	70	5.629G	71	5.310G	72	5.607G
73	5.322G	74	5.616G	75	5.534G	76	5.673G
77	5.411G	78	5.615G	79	5.536G	80	5.285G
81	5.648G	82	5.330G	83	5.498G	84	5.458G
85	5.374G	86	5.389G	87	5.610G	88	5.274G
89	5.676G	90	5.601G	91	5.495G	92	5.520G
93	5.644G	94	5.521G	95	5.407G	96	5.404G
97	5.437G	98	5.633G	99	5.654G	100	5.267G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_15

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.371G	2	5.447G	3	5.295G	4	5.475G
5	5.315G	6	5.417G	7	5.576G	8	5.543G
9	5.274G	10	5.354G	11	5.487G	12	5.286G
13	5.495G	14	5.521G	15	5.527G	16	5.296G
17	5.458G	18	5.549G	19	5.476G	20	5.445G
21	5.613G	22	5.653G	23	5.510G	24	5.656G
25	5.383G	26	5.506G	27	5.273G	28	5.702G
29	5.312G	30	5.331G	31	5.492G	32	5.443G
33	5.522G	34	5.427G	35	5.338G	36	5.674G
37	5.638G	38	5.694G	39	5.636G	40	5.572G
41	5.570G	42	5.419G	43	5.715G	44	5.384G
45	5.645G	46	5.307G	47	5.300G	48	5.633G
49	5.707G	50	5.260G	51	5.683G	52	5.374G
53	5.632G	54	5.666G	55	5.689G	56	5.609G
57	5.563G	58	5.682G	59	5.435G	60	5.252G
61	5.272G	62	5.469G	63	5.375G	64	5.423G
65	5.639G	66	5.403G	67	5.542G	68	5.471G
69	5.512G	70	5.455G	71	5.278G	72	5.405G
73	5.253G	74	5.438G	75	5.473G	76	5.292G
77	5.626G	78	5.343G	79	5.667G	80	5.267G
81	5.498G	82	5.545G	83	5.400G	84	5.655G
85	5.451G	86	5.529G	87	5.285G	88	5.416G
89	5.577G	90	5.325G	91	5.554G	92	5.568G
93	5.519G	94	5.566G	95	5.380G	96	5.693G
97	5.479G	98	5.298G	99	5.481G	100	5.442G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_16

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.517G	2	5.386G	3	5.347G	4	5.448G
5	5.356G	6	5.667G	7	5.291G	8	5.538G
9	5.714G	10	5.257G	11	5.387G	12	5.644G
13	5.293G	14	5.504G	15	5.657G	16	5.596G
17	5.480G	18	5.638G	19	5.631G	20	5.682G
21	5.699G	22	5.519G	23	5.696G	24	5.558G
25	5.721G	26	5.705G	27	5.358G	28	5.365G
29	5.641G	30	5.399G	31	5.462G	32	5.340G
33	5.625G	34	5.254G	35	5.713G	36	5.272G
37	5.343G	38	5.712G	39	5.686G	40	5.666G
41	5.264G	42	5.718G	43	5.273G	44	5.430G
45	5.453G	46	5.537G	47	5.630G	48	5.674G
49	5.385G	50	5.455G	51	5.433G	52	5.389G
53	5.550G	54	5.336G	55	5.577G	56	5.582G
57	5.529G	58	5.578G	59	5.408G	60	5.594G
61	5.524G	62	5.518G	63	5.307G	64	5.417G
65	5.299G	66	5.338G	67	5.393G	68	5.319G
69	5.405G	70	5.516G	71	5.391G	72	5.560G
73	5.411G	74	5.655G	75	5.653G	76	5.328G
77	5.499G	78	5.348G	79	5.722G	80	5.521G
81	5.341G	82	5.506G	83	5.422G	84	5.324G
85	5.645G	86	5.583G	87	5.597G	88	5.684G
89	5.271G	90	5.419G	91	5.672G	92	5.364G
93	5.279G	94	5.315G	95	5.366G	96	5.624G
97	5.494G	98	5.255G	99	5.382G	100	5.440G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_17

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.506G	2	5.256G	3	5.686G	4	5.406G
5	5.443G	6	5.716G	7	5.719G	8	5.660G
9	5.519G	10	5.690G	11	5.569G	12	5.365G
13	5.645G	14	5.654G	15	5.417G	16	5.402G
17	5.625G	18	5.477G	19	5.277G	20	5.388G
21	5.580G	22	5.581G	23	5.682G	24	5.289G
25	5.607G	26	5.720G	27	5.634G	28	5.263G
29	5.395G	30	5.513G	31	5.511G	32	5.677G
33	5.692G	34	5.463G	35	5.383G	36	5.604G
37	5.687G	38	5.614G	39	5.315G	40	5.502G
41	5.309G	42	5.526G	43	5.662G	44	5.352G
45	5.495G	46	5.508G	47	5.487G	48	5.366G
49	5.313G	50	5.343G	51	5.599G	52	5.320G
53	5.430G	54	5.408G	55	5.629G	56	5.722G
57	5.585G	58	5.706G	59	5.280G	60	5.387G
61	5.415G	62	5.381G	63	5.510G	64	5.471G
65	5.299G	66	5.566G	67	5.550G	68	5.468G
69	5.563G	70	5.393G	71	5.691G	72	5.539G
73	5.721G	74	5.707G	75	5.681G	76	5.591G
77	5.536G	78	5.701G	79	5.708G	80	5.621G
81	5.453G	82	5.715G	83	5.446G	84	5.254G
85	5.649G	86	5.276G	87	5.449G	88	5.357G
89	5.396G	90	5.622G	91	5.638G	92	5.287G
93	5.616G	94	5.680G	95	5.610G	96	5.601G
97	5.259G	98	5.483G	99	5.596G	100	5.640G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_18

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.710G	2	5.546G	3	5.289G	4	5.331G
5	5.419G	6	5.552G	7	5.663G	8	5.543G
9	5.467G	10	5.330G	11	5.435G	12	5.603G
13	5.724G	14	5.634G	15	5.469G	16	5.495G
17	5.259G	18	5.581G	19	5.487G	20	5.563G
21	5.610G	22	5.651G	23	5.407G	24	5.699G
25	5.398G	26	5.612G	27	5.387G	28	5.277G
29	5.712G	30	5.571G	31	5.444G	32	5.607G
33	5.290G	34	5.388G	35	5.601G	36	5.297G
37	5.293G	38	5.465G	39	5.349G	40	5.381G
41	5.723G	42	5.428G	43	5.448G	44	5.284G
45	5.510G	46	5.527G	47	5.504G	48	5.598G
49	5.609G	50	5.362G	51	5.640G	52	5.458G
53	5.393G	54	5.347G	55	5.478G	56	5.568G
57	5.451G	58	5.320G	59	5.459G	60	5.368G
61	5.644G	62	5.673G	63	5.449G	64	5.391G
65	5.375G	66	5.570G	67	5.309G	68	5.540G
69	5.692G	70	5.539G	71	5.698G	72	5.691G
73	5.285G	74	5.361G	75	5.281G	76	5.486G
77	5.628G	78	5.721G	79	5.573G	80	5.605G
81	5.295G	82	5.376G	83	5.298G	84	5.355G
85	5.536G	86	5.338G	87	5.709G	88	5.390G
89	5.575G	90	5.475G	91	5.429G	92	5.503G
93	5.505G	94	5.516G	95	5.464G	96	5.493G
97	5.574G	98	5.311G	99	5.319G	100	5.565G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_19

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.538G	2	5.393G	3	5.323G	4	5.571G
5	5.643G	6	5.353G	7	5.660G	8	5.668G
9	5.459G	10	5.454G	11	5.665G	12	5.573G
13	5.400G	14	5.277G	15	5.498G	16	5.406G
17	5.424G	18	5.595G	19	5.696G	20	5.597G
21	5.664G	22	5.255G	23	5.639G	24	5.389G
25	5.514G	26	5.576G	27	5.536G	28	5.642G
29	5.366G	30	5.336G	31	5.431G	32	5.518G
33	5.482G	34	5.345G	35	5.532G	36	5.297G
37	5.321G	38	5.589G	39	5.474G	40	5.686G
41	5.445G	42	5.362G	43	5.702G	44	5.288G
45	5.456G	46	5.631G	47	5.259G	48	5.577G
49	5.282G	50	5.387G	51	5.372G	52	5.303G
53	5.593G	54	5.635G	55	5.477G	56	5.691G
57	5.339G	58	5.446G	59	5.275G	60	5.533G
61	5.697G	62	5.606G	63	5.414G	64	5.268G
65	5.652G	66	5.442G	67	5.687G	68	5.348G
69	5.318G	70	5.542G	71	5.319G	72	5.616G
73	5.250G	74	5.556G	75	5.486G	76	5.419G
77	5.695G	78	5.379G	79	5.545G	80	5.401G
81	5.485G	82	5.280G	83	5.548G	84	5.262G
85	5.363G	86	5.581G	87	5.516G	88	5.554G
89	5.579G	90	5.596G	91	5.376G	92	5.479G
93	5.563G	94	5.505G	95	5.298G	96	5.347G
97	5.549G	98	5.524G	99	5.410G	100	5.291G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_20

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.674G	2	5.475G	3	5.290G	4	5.341G
5	5.404G	6	5.336G	7	5.428G	8	5.429G
9	5.583G	10	5.611G	11	5.608G	12	5.511G
13	5.427G	14	5.305G	15	5.701G	16	5.619G
17	5.303G	18	5.626G	19	5.684G	20	5.719G
21	5.614G	22	5.301G	23	5.355G	24	5.252G
25	5.327G	26	5.379G	27	5.682G	28	5.395G
29	5.576G	30	5.575G	31	5.293G	32	5.461G
33	5.538G	34	5.493G	35	5.348G	36	5.268G
37	5.665G	38	5.332G	39	5.699G	40	5.679G
41	5.598G	42	5.484G	43	5.307G	44	5.559G
45	5.331G	46	5.383G	47	5.660G	48	5.451G
49	5.328G	50	5.573G	51	5.693G	52	5.387G
53	5.636G	54	5.605G	55	5.285G	56	5.691G
57	5.506G	58	5.510G	59	5.597G	60	5.476G
61	5.666G	62	5.517G	63	5.600G	64	5.337G
65	5.500G	66	5.460G	67	5.703G	68	5.425G
69	5.670G	70	5.555G	71	5.564G	72	5.250G
73	5.570G	74	5.507G	75	5.596G	76	5.482G
77	5.519G	78	5.662G	79	5.257G	80	5.491G
81	5.412G	82	5.292G	83	5.400G	84	5.295G
85	5.525G	86	5.453G	87	5.560G	88	5.592G
89	5.364G	90	5.494G	91	5.687G	92	5.351G
93	5.297G	94	5.577G	95	5.612G	96	5.463G
97	5.349G	98	5.552G	99	5.492G	100	5.546G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_21

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.270G	2	5.525G	3	5.527G	4	5.628G
5	5.402G	6	5.639G	7	5.615G	8	5.369G
9	5.302G	10	5.456G	11	5.250G	12	5.407G
13	5.362G	14	5.435G	15	5.252G	16	5.698G
17	5.660G	18	5.442G	19	5.385G	20	5.359G
21	5.685G	22	5.263G	23	5.404G	24	5.387G
25	5.661G	26	5.510G	27	5.449G	28	5.395G
29	5.704G	30	5.496G	31	5.467G	32	5.554G
33	5.257G	34	5.393G	35	5.305G	36	5.572G
37	5.700G	38	5.373G	39	5.548G	40	5.320G
41	5.392G	42	5.296G	43	5.274G	44	5.610G
45	5.611G	46	5.581G	47	5.409G	48	5.390G
49	5.451G	50	5.376G	51	5.417G	52	5.523G
53	5.282G	54	5.432G	55	5.546G	56	5.497G
57	5.355G	58	5.276G	59	5.342G	60	5.327G
61	5.637G	62	5.289G	63	5.293G	64	5.539G
65	5.627G	66	5.379G	67	5.299G	68	5.427G
69	5.595G	70	5.553G	71	5.315G	72	5.669G
73	5.709G	74	5.405G	75	5.587G	76	5.360G
77	5.663G	78	5.461G	79	5.565G	80	5.275G
81	5.308G	82	5.487G	83	5.620G	84	5.540G
85	5.469G	86	5.561G	87	5.545G	88	5.597G
89	5.536G	90	5.506G	91	5.318G	92	5.697G
93	5.295G	94	5.519G	95	5.560G	96	5.389G
97	5.719G	98	5.654G	99	5.336G	100	5.608G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_22

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.288G	2	5.441G	3	5.682G	4	5.304G
5	5.313G	6	5.446G	7	5.442G	8	5.612G
9	5.345G	10	5.337G	11	5.557G	12	5.638G
13	5.427G	14	5.303G	15	5.298G	16	5.592G
17	5.267G	18	5.717G	19	5.568G	20	5.320G
21	5.697G	22	5.541G	23	5.667G	24	5.506G
25	5.423G	26	5.518G	27	5.575G	28	5.413G
29	5.527G	30	5.283G	31	5.709G	32	5.469G
33	5.554G	34	5.418G	35	5.250G	36	5.495G
37	5.366G	38	5.681G	39	5.716G	40	5.471G
41	5.302G	42	5.628G	43	5.534G	44	5.698G
45	5.439G	46	5.510G	47	5.673G	48	5.408G
49	5.624G	50	5.280G	51	5.473G	52	5.676G
53	5.582G	54	5.400G	55	5.648G	56	5.383G
57	5.626G	58	5.358G	59	5.296G	60	5.641G
61	5.690G	62	5.608G	63	5.365G	64	5.397G
65	5.629G	66	5.647G	67	5.620G	68	5.493G
69	5.417G	70	5.570G	71	5.596G	72	5.581G
73	5.285G	74	5.606G	75	5.654G	76	5.445G
77	5.318G	78	5.404G	79	5.553G	80	5.335G
81	5.378G	82	5.505G	83	5.694G	84	5.487G
85	5.715G	86	5.269G	87	5.552G	88	5.287G
89	5.315G	90	5.289G	91	5.422G	92	5.431G
93	5.569G	94	5.507G	95	5.478G	96	5.464G
97	5.702G	98	5.347G	99	5.275G	100	5.409G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_23

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.521G	2	5.425G	3	5.711G	4	5.694G
5	5.679G	6	5.449G	7	5.723G	8	5.440G
9	5.279G	10	5.442G	11	5.700G	12	5.326G
13	5.286G	14	5.608G	15	5.664G	16	5.265G
17	5.395G	18	5.687G	19	5.258G	20	5.656G
21	5.348G	22	5.319G	23	5.306G	24	5.412G
25	5.624G	26	5.556G	27	5.420G	28	5.457G
29	5.404G	30	5.693G	31	5.640G	32	5.606G
33	5.627G	34	5.367G	35	5.387G	36	5.401G
37	5.441G	38	5.580G	39	5.398G	40	5.274G
41	5.323G	42	5.651G	43	5.386G	44	5.683G
45	5.300G	46	5.283G	47	5.655G	48	5.638G
49	5.487G	50	5.705G	51	5.358G	52	5.600G
53	5.559G	54	5.261G	55	5.614G	56	5.581G
57	5.409G	58	5.424G	59	5.322G	60	5.292G
61	5.263G	62	5.667G	63	5.682G	64	5.397G
65	5.264G	66	5.482G	67	5.713G	68	5.302G
69	5.650G	70	5.572G	71	5.464G	72	5.686G
73	5.351G	74	5.562G	75	5.573G	76	5.355G
77	5.724G	78	5.550G	79	5.476G	80	5.603G
81	5.450G	82	5.601G	83	5.684G	84	5.592G
85	5.354G	86	5.255G	87	5.359G	88	5.568G
89	5.702G	90	5.692G	91	5.336G	92	5.639G
93	5.484G	94	5.637G	95	5.477G	96	5.520G
97	5.327G	98	5.378G	99	5.461G	100	5.501G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_24

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.461G	2	5.451G	3	5.572G	4	5.600G
5	5.561G	6	5.338G	7	5.515G	8	5.403G
9	5.527G	10	5.628G	11	5.654G	12	5.544G
13	5.367G	14	5.353G	15	5.665G	16	5.573G
17	5.377G	18	5.534G	19	5.432G	20	5.621G
21	5.302G	22	5.414G	23	5.560G	24	5.574G
25	5.381G	26	5.533G	27	5.546G	28	5.404G
29	5.700G	30	5.325G	31	5.355G	32	5.685G
33	5.588G	34	5.625G	35	5.294G	36	5.505G
37	5.344G	38	5.352G	39	5.630G	40	5.599G
41	5.430G	42	5.495G	43	5.431G	44	5.253G
45	5.714G	46	5.258G	47	5.691G	48	5.719G
49	5.287G	50	5.557G	51	5.623G	52	5.343G
53	5.682G	54	5.717G	55	5.408G	56	5.526G
57	5.569G	58	5.393G	59	5.452G	60	5.549G
61	5.705G	62	5.375G	63	5.271G	64	5.264G
65	5.470G	66	5.674G	67	5.312G	68	5.389G
69	5.341G	70	5.358G	71	5.394G	72	5.440G
73	5.493G	74	5.538G	75	5.604G	76	5.699G
77	5.554G	78	5.586G	79	5.380G	80	5.454G
81	5.662G	82	5.304G	83	5.443G	84	5.267G
85	5.649G	86	5.364G	87	5.487G	88	5.636G
89	5.276G	90	5.360G	91	5.722G	92	5.694G
93	5.616G	94	5.255G	95	5.351G	96	5.424G
97	5.279G	98	5.663G	99	5.382G	100	5.373G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_25

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.536G	2	5.267G	3	5.257G	4	5.254G
5	5.720G	6	5.325G	7	5.329G	8	5.393G
9	5.689G	10	5.621G	11	5.601G	12	5.464G
13	5.700G	14	5.261G	15	5.418G	16	5.270G
17	5.417G	18	5.702G	19	5.341G	20	5.565G
21	5.573G	22	5.310G	23	5.537G	24	5.612G
25	5.495G	26	5.314G	27	5.714G	28	5.723G
29	5.292G	30	5.369G	31	5.401G	32	5.378G
33	5.716G	34	5.311G	35	5.667G	36	5.455G
37	5.467G	38	5.336G	39	5.520G	40	5.600G
41	5.535G	42	5.595G	43	5.604G	44	5.363G
45	5.696G	46	5.472G	47	5.677G	48	5.598G
49	5.425G	50	5.391G	51	5.660G	52	5.650G
53	5.352G	54	5.586G	55	5.360G	56	5.371G
57	5.532G	58	5.420G	59	5.692G	60	5.454G
61	5.579G	62	5.539G	63	5.617G	64	5.516G
65	5.498G	66	5.649G	67	5.452G	68	5.514G
69	5.412G	70	5.293G	71	5.668G	72	5.574G
73	5.547G	74	5.424G	75	5.326G	76	5.722G
77	5.524G	78	5.289G	79	5.258G	80	5.713G
81	5.451G	82	5.251G	83	5.618G	84	5.357G
85	5.446G	86	5.348G	87	5.427G	88	5.681G
89	5.544G	90	5.260G	91	5.606G	92	5.280G
93	5.501G	94	5.438G	95	5.474G	96	5.284G
97	5.382G	98	5.376G	99	5.444G	100	5.496G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_26

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.635G	2	5.651G	3	5.269G	4	5.372G
5	5.328G	6	5.410G	7	5.344G	8	5.563G
9	5.250G	10	5.420G	11	5.549G	12	5.565G
13	5.346G	14	5.682G	15	5.548G	16	5.632G
17	5.573G	18	5.614G	19	5.376G	20	5.690G
21	5.495G	22	5.409G	23	5.348G	24	5.648G
25	5.469G	26	5.666G	27	5.272G	28	5.408G
29	5.584G	30	5.571G	31	5.553G	32	5.425G
33	5.512G	34	5.619G	35	5.386G	36	5.368G
37	5.318G	38	5.620G	39	5.609G	40	5.336G
41	5.560G	42	5.424G	43	5.610G	44	5.429G
45	5.433G	46	5.680G	47	5.313G	48	5.366G
49	5.576G	50	5.396G	51	5.669G	52	5.663G
53	5.283G	54	5.562G	55	5.270G	56	5.697G
57	5.481G	58	5.668G	59	5.533G	60	5.688G
61	5.487G	62	5.305G	63	5.389G	64	5.589G
65	5.296G	66	5.364G	67	5.597G	68	5.494G
69	5.419G	70	5.698G	71	5.427G	72	5.662G
73	5.397G	74	5.261G	75	5.444G	76	5.465G
77	5.678G	78	5.498G	79	5.684G	80	5.629G
81	5.464G	82	5.282G	83	5.251G	84	5.700G
85	5.473G	86	5.634G	87	5.567G	88	5.380G
89	5.460G	90	5.468G	91	5.362G	92	5.527G
93	5.539G	94	5.720G	95	5.439G	96	5.704G
97	5.438G	98	5.339G	99	5.583G	100	5.486G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_27

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.370G	2	5.453G	3	5.644G	4	5.308G
5	5.373G	6	5.503G	7	5.257G	8	5.336G
9	5.387G	10	5.669G	11	5.319G	12	5.548G
13	5.273G	14	5.334G	15	5.663G	16	5.428G
17	5.492G	18	5.638G	19	5.295G	20	5.388G
21	5.512G	22	5.513G	23	5.455G	24	5.405G
25	5.496G	26	5.538G	27	5.596G	28	5.654G
29	5.368G	30	5.674G	31	5.279G	32	5.696G
33	5.277G	34	5.718G	35	5.600G	36	5.327G
37	5.660G	38	5.714G	39	5.723G	40	5.631G
41	5.539G	42	5.420G	43	5.482G	44	5.353G
45	5.345G	46	5.702G	47	5.390G	48	5.668G
49	5.349G	50	5.480G	51	5.534G	52	5.583G
53	5.256G	54	5.526G	55	5.643G	56	5.304G
57	5.435G	58	5.377G	59	5.264G	60	5.656G
61	5.450G	62	5.448G	63	5.298G	64	5.697G
65	5.282G	66	5.468G	67	5.586G	68	5.430G
69	5.561G	70	5.576G	71	5.401G	72	5.402G
73	5.553G	74	5.568G	75	5.323G	76	5.281G
77	5.285G	78	5.381G	79	5.270G	80	5.635G
81	5.577G	82	5.486G	83	5.684G	84	5.602G
85	5.374G	86	5.708G	87	5.501G	88	5.592G
89	5.499G	90	5.484G	91	5.682G	92	5.607G
93	5.507G	94	5.375G	95	5.678G	96	5.641G
97	5.646G	98	5.557G	99	5.588G	100	5.691G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_28

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.347G	2	5.450G	3	5.355G	4	5.604G
5	5.544G	6	5.673G	7	5.325G	8	5.523G
9	5.721G	10	5.585G	11	5.703G	12	5.475G
13	5.390G	14	5.525G	15	5.337G	16	5.267G
17	5.285G	18	5.320G	19	5.322G	20	5.281G
21	5.682G	22	5.675G	23	5.718G	24	5.669G
25	5.279G	26	5.269G	27	5.265G	28	5.636G
29	5.677G	30	5.483G	31	5.376G	32	5.495G
33	5.535G	34	5.335G	35	5.601G	36	5.275G
37	5.349G	38	5.368G	39	5.552G	40	5.521G
41	5.411G	42	5.417G	43	5.457G	44	5.303G
45	5.366G	46	5.709G	47	5.437G	48	5.292G
49	5.536G	50	5.298G	51	5.405G	52	5.333G
53	5.658G	54	5.354G	55	5.657G	56	5.623G
57	5.403G	58	5.421G	59	5.534G	60	5.491G
61	5.582G	62	5.713G	63	5.546G	64	5.428G
65	5.459G	66	5.435G	67	5.512G	68	5.352G
69	5.280G	70	5.440G	71	5.338G	72	5.487G
73	5.426G	74	5.288G	75	5.722G	76	5.705G
77	5.704G	78	5.628G	79	5.538G	80	5.478G
81	5.602G	82	5.434G	83	5.710G	84	5.441G
85	5.315G	86	5.717G	87	5.714G	88	5.569G
89	5.592G	90	5.461G	91	5.344G	92	5.622G
93	5.511G	94	5.460G	95	5.409G	96	5.668G
97	5.264G	98	5.517G	99	5.584G	100	5.259G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_29

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.449G	2	5.476G	3	5.473G	4	5.397G
5	5.508G	6	5.695G	7	5.656G	8	5.679G
9	5.435G	10	5.293G	11	5.618G	12	5.439G
13	5.468G	14	5.521G	15	5.563G	16	5.462G
17	5.633G	18	5.641G	19	5.533G	20	5.669G
21	5.486G	22	5.627G	23	5.403G	24	5.348G
25	5.614G	26	5.529G	27	5.671G	28	5.549G
29	5.638G	30	5.295G	31	5.518G	32	5.255G
33	5.432G	34	5.277G	35	5.709G	36	5.535G
37	5.286G	38	5.557G	39	5.619G	40	5.719G
41	5.259G	42	5.320G	43	5.639G	44	5.429G
45	5.451G	46	5.603G	47	5.382G	48	5.341G
49	5.357G	50	5.714G	51	5.377G	52	5.423G
53	5.580G	54	5.314G	55	5.335G	56	5.543G
57	5.278G	58	5.406G	59	5.676G	60	5.454G
61	5.591G	62	5.433G	63	5.632G	64	5.532G
65	5.697G	66	5.422G	67	5.478G	68	5.321G
69	5.381G	70	5.569G	71	5.398G	72	5.272G
73	5.500G	74	5.635G	75	5.280G	76	5.323G
77	5.516G	78	5.299G	79	5.710G	80	5.620G
81	5.675G	82	5.345G	83	5.362G	84	5.498G
85	5.322G	86	5.339G	87	5.552G	88	5.648G
89	5.541G	90	5.523G	91	5.337G	92	5.380G
93	5.650G	94	5.326G	95	5.418G	96	5.502G
97	5.351G	98	5.264G	99	5.626G	100	5.565G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_30

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.672G	2	5.293G	3	5.512G	4	5.436G
5	5.415G	6	5.447G	7	5.336G	8	5.636G
9	5.316G	10	5.650G	11	5.392G	12	5.567G
13	5.600G	14	5.668G	15	5.696G	16	5.459G
17	5.305G	18	5.396G	19	5.574G	20	5.587G
21	5.623G	22	5.644G	23	5.724G	24	5.442G
25	5.294G	26	5.548G	27	5.253G	28	5.443G
29	5.542G	30	5.258G	31	5.261G	32	5.353G
33	5.515G	34	5.430G	35	5.648G	36	5.344G
37	5.296G	38	5.462G	39	5.514G	40	5.709G
41	5.562G	42	5.622G	43	5.540G	44	5.365G
45	5.417G	46	5.255G	47	5.513G	48	5.639G
49	5.621G	50	5.494G	51	5.358G	52	5.398G
53	5.700G	54	5.569G	55	5.378G	56	5.420G
57	5.444G	58	5.572G	59	5.362G	60	5.297G
61	5.712G	62	5.519G	63	5.303G	64	5.505G
65	5.486G	66	5.466G	67	5.597G	68	5.427G
69	5.448G	70	5.460G	71	5.310G	72	5.502G
73	5.590G	74	5.487G	75	5.625G	76	5.581G
77	5.431G	78	5.723G	79	5.545G	80	5.264G
81	5.651G	82	5.338G	83	5.301G	84	5.299G
85	5.346G	86	5.713G	87	5.282G	88	5.286G
89	5.559G	90	5.593G	91	5.533G	92	5.278G
93	5.266G	94	5.332G	95	5.380G	96	5.350G
97	5.483G	98	5.682G	99	5.414G	100	5.428G

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Type 1 Radar Statistical Performances

Trial #	Pulses per Burst	Pulse Width (s)	PRI (s)	Radar Frequency (MHz)	Detection
1	102	1.0u	518.0u	5490	Yes
2	99	1.0u	538.0u	5492	Yes
3	95	1.0u	558.0u	5495	Yes
4	92	1.0u	578.0u	5498	Yes
5	89	1.0u	598.0u	5503	Yes
6	86	1.0u	618.0u	5508	Yes
7	83	1.0u	638.0u	5510	Yes
8	81	1.0u	658.0u	5513	Yes
9	76	1.0u	698.0u	5518	Yes
10	72	1.0u	738.0u	5523	Yes
11	70	1.0u	758.0u	5525	Yes
12	68	1.0u	778.0u	5527	Yes
13	67	1.0u	798.0u	5528	Yes
14	65	1.0u	818.0u	5529	Yes
15	63	1.0u	838.0u	5530	Yes
16	89	1.0u	599.0u	5530	Yes
17	71	1.0u	747.0u	5531	Yes
18	60	1.0u	887.0u	5532	Yes
19	82	1.0u	649.0u	5533	Yes
20	69	1.0u	769.0u	5535	Yes
21	57	1.0u	929.0u	5537	Yes
22	77	1.0u	691.0u	5542	Yes
23	63	1.0u	851.0u	5547	Yes
24	96	1.0u	553.0u	5550	Yes
25	75	1.0u	713.0u	5552	Yes
26	61	1.0u	873.0u	5557	Yes
27	96	1.0u	555.0u	5562	Yes
28	72	1.0u	735.0u	5565	Yes
29	19	1.0u	2.853m	5568	Yes
30	83	1.0u	637.0u	5570	Yes

Detection Rate: 100.0 %

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Type 2 Radar Statistical Performances

Trial #	Pulses per Burst	Pulse Width (s)	PRI (s)	Radar Frequency (MHz)	Detection
1	26	4.5u	178.0u	5490	Yes
2	28	2.4u	183.0u	5492	Yes
3	25	3.0u	208.0u	5495	Yes
4	26	3.5u	157.0u	5498	Yes
5	26	3.1u	189.0u	5503	Yes
6	29	2.9u	176.0u	5508	Yes
7	28	3.5u	177.0u	5510	Yes
8	27	4.3u	211.0u	5513	Yes
9	28	3.7u	168.0u	5518	Yes
10	26	2.7u	181.0u	5523	Yes
11	23	2.7u	217.0u	5525	Yes
12	27	3.8u	225.0u	5527	Yes
13	26	2.0u	216.0u	5528	Yes
14	25	4.3u	164.0u	5529	Yes
15	29	4.3u	170.0u	5530	Yes
16	28	4.9u	180.0u	5530	Yes
17	29	2.1u	196.0u	5531	Yes
18	28	4.5u	207.0u	5532	Yes
19	25	4.4u	157.0u	5533	Yes
20	26	2.6u	212.0u	5535	Yes
21	29	3.9u	184.0u	5537	Yes
22	26	3.9u	197.0u	5542	Yes
23	25	4.6u	157.0u	5547	Yes
24	28	1.3u	175.0u	5550	Yes
25	26	1.9u	212.0u	5552	Yes
26	26	3.1u	191.0u	5557	Yes
27	29	3.6u	174.0u	5562	Yes
28	25	4.0u	174.0u	5565	Yes
29	27	2.5u	197.0u	5568	Yes
30	27	3.2u	226.0u	5570	Yes
Detection Rate: 100.0 %					

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Type 3 Radar Statistical Performances

Trial #	Pulses per Burst	Pulse Width (s)	PRI (s)	Radar Frequency (MHz)	Detection
1	16	7.5u	305.0u	5490	Yes
2	16	9.7u	274.0u	5492	Yes
3	17	7.6u	422.0u	5495	Yes
4	17	7.4u	436.0u	5498	Yes
5	17	8.7u	460.0u	5503	Yes
6	17	9.0u	389.0u	5508	Yes
7	17	8.3u	381.0u	5510	Yes
8	17	6.8u	273.0u	5513	Yes
9	17	9.4u	346.0u	5518	Yes
10	16	8.1u	342.0u	5523	Yes
11	17	9.8u	497.0u	5525	Yes
12	18	6.6u	254.0u	5527	Yes
13	17	9.7u	384.0u	5528	Yes
14	17	7.6u	243.0u	5529	Yes
15	18	7.5u	348.0u	5530	Yes
16	16	6.9u	284.0u	5530	Yes
17	17	8.0u	272.0u	5531	Yes
18	17	8.8u	395.0u	5532	Yes
19	17	7.5u	453.0u	5533	Yes
20	18	7.7u	263.0u	5535	Yes
21	17	9.1u	384.0u	5537	Yes
22	17	8.2u	226.0u	5542	Yes
23	17	6.7u	474.0u	5547	Yes
24	16	8.5u	429.0u	5550	Yes
25	16	7.3u	301.0u	5552	Yes
26	17	9.6u	271.0u	5557	Yes
27	18	9.3u	375.0u	5562	Yes
28	18	8.5u	254.0u	5565	Yes
29	16	9.2u	428.0u	5568	Yes
30	17	8.5u	318.0u	5570	Yes

Detection Rate: 100.0 %

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Type 4 Radar Statistical Performances

Trial #	Pulses per Burst	Pulse Width (s)	PRI (s)	Radar Frequency (MHz)	Detection
1	14	16.1u	359.0u	5490	Yes
2	12	19.9u	419.0u	5492	Yes
3	15	19.1u	300.0u	5495	Yes
4	12	16.5u	497.0u	5498	Yes
5	16	11.5u	347.0u	5503	Yes
6	15	17.7u	333.0u	5508	Yes
7	15	13.0u	396.0u	5510	Yes
8	16	12.4u	326.0u	5513	Yes
9	14	17.7u	309.0u	5518	Yes
10	14	17.9u	416.0u	5523	Yes
11	14	14.4u	441.0u	5525	Yes
12	14	11.4u	305.0u	5527	Yes
13	13	17.2u	203.0u	5528	Yes
14	16	16.1u	371.0u	5529	Yes
15	15	19.9u	204.0u	5530	Yes
16	12	12.8u	444.0u	5530	Yes
17	15	15.6u	415.0u	5531	Yes
18	14	19.7u	321.0u	5532	Yes
19	14	19.9u	499.0u	5533	Yes
20	13	13.1u	438.0u	5535	Yes
21	15	16.6u	432.0u	5537	No
22	13	18.1u	351.0u	5542	Yes
23	16	18.6u	382.0u	5547	Yes
24	15	19.2u	484.0u	5550	Yes
25	16	15.7u	496.0u	5552	Yes
26	15	13.7u	368.0u	5557	Yes
27	13	17.7u	311.0u	5562	Yes
28	13	13.8u	368.0u	5565	Yes
29	13	19.1u	404.0u	5568	Yes
30	13	15.2u	226.0u	5570	Yes

Detection Rate: 96.7 %

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Type 1~4 Radar Statistical Performance

Radar Type #	Detection Percentage (%)	Detection Probability
1	100%	Pd > 60%
2	100%	Pd > 60%
3	100%	Pd > 60%
4	96.7%	Pd > 60%
Aggregate (Radar Types 1-4)	99.17%	Pd > 80%

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Type 5 Radar Statistical Performances

Trial #	Test Signal Name	Radar Frequency (MHz)	Detection
1	LP_Signal_01	5493	No
2	LP_Signal_02	5494	Yes
3	LP_Signal_03	5495	Yes
4	LP_Signal_04	5495	Yes
5	LP_Signal_05	5495	Yes
6	LP_Signal_06	5496	Yes
7	LP_Signal_07	5496	Yes
8	LP_Signal_08	5497	Yes
9	LP_Signal_09	5498	Yes
10	LP_Signal_10	5499	Yes
11	LP_Signal_11	5530	Yes
12	LP_Signal_12	5531	Yes
13	LP_Signal_13	5532	Yes
14	LP_Signal_14	5533	Yes
15	LP_Signal_15	5529	Yes
16	LP_Signal_16	5528	Yes
17	LP_Signal_17	5527	Yes
18	LP_Signal_18	5534	Yes
19	LP_Signal_19	5526	Yes
20	LP_Signal_20	5525	Yes
21	LP_Signal_21	5568	No
22	LP_Signal_22	5567	Yes
23	LP_Signal_23	5566	Yes
24	LP_Signal_24	5565	Yes
25	LP_Signal_25	5565	Yes
26	LP_Signal_26	5564	Yes
27	LP_Signal_27	5564	No
28	LP_Signal_28	5563	Yes
29	LP_Signal_29	5563	Yes
30	LP_Signal_30	5561	Yes

Detection Rate: 90.0 %

Long Pulse Radar Test Signal
Test Signal Name: LP_Signal_01
Number of Bursts in Trial: 19
Chrip Center Frequency: 5493MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	5M	50.4u	1.916m	-	334.6m
2	2	5M	54.2u	1.760m	-	40.17m
3	2	5M	66.7u	1.591m	-	375.0m
4	1	5M	81.8u	-	-	224.8m
5	3	5M	85.3u	1.562m	1.550m	598.5m
6	2	5M	50.9u	1.097m	-	247.8m
7	3	5M	71.5u	1.403m	1.250m	384.9m
8	1	5M	57.3u	-	-	545.1m
9	1	5M	99.4u	-	-	327.7m
10	2	5M	81.7u	1.762m	-	346.5m
11	3	5M	87.0u	1.625m	1.683m	237.2m
12	2	5M	94.9u	1.522m	-	585.4m
13	2	5M	83.5u	1.529m	-	480.1m
14	2	5M	66.1u	1.677m	-	545.9m
15	2	5M	52.9u	1.709m	-	563.8m
16	3	5M	51.5u	1.865m	1.887m	433.2m
17	1	5M	82.8u	-	-	4.846m
18	2	5M	84.6u	957.4u	-	397.1m
19	3	5M	70.6u	1.247m	1.791m	432.2m

Long Pulse Radar Test Signal
Test Signal Name: LP_Signal_02
Number of Bursts in Trial: 9
Chrip Center Frequency: 5494MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	3	8M	71.1u	1.222m	1.413m	444.6m
2	2	8M	59.0u	1.893m	-	289.7m
3	2	8M	60.7u	1.211m	-	933.9m
4	3	8M	68.6u	1.430m	1.751m	827.1m
5	3	8M	78.0u	1.707m	1.351m	65.79m
6	3	8M	95.0u	1.577m	1.175m	1.235
7	2	8M	94.0u	1.043m	-	1.170
8	2	8M	82.2u	1.181m	-	463.7m
9	1	8M	55.8u	-	-	543.3m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_03

Number of Bursts in Trial: 15

Chrip Center Frequency: 5495MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	1	9M	89.4u	-	-	338.0m
2	3	9M	68.3u	1.753m	1.438m	613.1m
3	2	9M	63.6u	1.362m	-	303.8m
4	2	9M	80.5u	993.5u	-	595.4m
5	2	9M	73.6u	1.540m	-	78.46m
6	1	9M	87.3u	-	-	160.7m
7	2	9M	74.5u	1.600m	-	607.5m
8	2	9M	77.4u	1.693m	-	479.2m
9	2	9M	78.4u	989.6u	-	115.9m
10	2	9M	93.1u	1.366m	-	724.2m
11	1	9M	84.2u	-	-	81.00m
12	1	9M	74.9u	-	-	557.2m
13	2	9M	81.2u	1.048m	-	738.1m
14	2	9M	55.9u	1.240m	-	186.3m
15	3	9M	76.3u	1.412m	1.545m	715.8m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_04

Number of Bursts in Trial: 9

Chrip Center Frequency: 5495MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	10M	71.0u	1.700m	-	593.5m
2	2	10M	88.3u	1.451m	-	88.29m
3	1	10M	85.0u	-	-	525.7m
4	2	10M	79.7u	1.341m	-	774.4m
5	3	10M	79.3u	1.573m	921.7u	729.8m
6	1	10M	66.1u	-	-	928.6m
7	2	10M	54.9u	1.834m	-	366.6m
8	3	10M	55.2u	1.238m	1.195m	1.308
9	2	10M	62.7u	1.728m	-	250.5m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_05

Number of Bursts in Trial: 12

Chrip Center Frequency: 5495MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	1	11M	51.0u	-	-	563.8m
2	2	11M	90.6u	980.4u	-	842.7m
3	2	11M	98.0u	1.517m	-	891.3m
4	1	11M	86.3u	-	-	18.60m
5	2	11M	83.6u	1.461m	-	229.3m
6	1	11M	69.2u	-	-	831.7m
7	1	11M	88.5u	-	-	690.5m
8	2	11M	52.0u	1.323m	-	189.2m
9	2	11M	93.8u	1.880m	-	173.7m
10	2	11M	93.5u	1.138m	-	816.3m
11	2	11M	67.3u	1.623m	-	196.4m
12	1	11M	92.5u	-	-	496.3m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_06

Number of Bursts in Trial: 20

Chirp Center Frequency: 5496MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	12M	56.8u	1.408m	-	81.99m
2	3	12M	70.9u	945.1u	1.661m	283.0m
3	3	12M	65.7u	1.142m	1.041m	439.5m
4	2	12M	58.0u	1.801m	-	349.9m
5	2	12M	73.9u	1.694m	-	397.3m
6	1	12M	96.2u	-	-	347.6m
7	3	12M	93.6u	1.448m	1.841m	14.77m
8	1	12M	60.5u	-	-	507.8m
9	2	12M	72.6u	1.175m	-	167.9m
10	2	12M	70.0u	1.656m	-	219.2m
11	1	12M	63.7u	-	-	97.59m
12	1	12M	77.8u	-	-	388.7m
13	2	12M	62.1u	1.154m	-	66.51m
14	1	12M	89.0u	-	-	281.6m
15	3	12M	85.7u	1.038m	1.800m	25.93m
16	2	12M	80.4u	1.201m	-	297.9m
17	2	12M	58.1u	1.088m	-	277.1m
18	2	12M	56.4u	1.441m	-	479.7m
19	2	12M	80.8u	983.2u	-	555.5m
20	1	12M	93.2u	-	-	46.87m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_07

Number of Bursts in Trial: 12

Chirp Center Frequency: 5496MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	13M	71.5u	982.5u	-	86.36m
2	1	13M	89.8u	-	-	993.6m
3	1	13M	83.2u	-	-	30.83m
4	1	13M	59.2u	-	-	837.0m
5	1	13M	68.7u	-	-	229.0m
6	2	13M	96.4u	1.547m	-	543.5m
7	2	13M	84.2u	1.813m	-	108.2m
8	1	13M	61.5u	-	-	194.1m
9	2	13M	87.9u	1.451m	-	603.2m
10	1	13M	94.3u	-	-	285.9m
11	2	13M	61.6u	1.018m	-	423.4m
12	2	13M	55.8u	1.245m	-	287.7m

Long Pulse Radar Test Signal
Test Signal Name: LP_Signal_08
Number of Bursts in Trial: 8
Chrip Center Frequency: 5497MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	14M	100.0u	1.316m	-	574.2m
2	2	14M	67.5u	1.529m	-	280.0m
3	3	14M	52.4u	1.833m	955.6u	312.3m
4	3	14M	74.3u	1.451m	1.391m	1.205
5	2	14M	82.0u	1.489m	-	1.470
6	2	14M	65.4u	1.871m	-	1.159
7	2	14M	56.9u	1.758m	-	300.0m
8	1	14M	67.1u	-	-	431.5m

Long Pulse Radar Test Signal
Test Signal Name: LP_Signal_09
Number of Bursts in Trial: 15
Chrip Center Frequency: 5498MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	17M	83.3u	1.461m	-	505.3m
2	1	17M	80.8u	-	-	348.6m
3	2	17M	63.4u	1.265m	-	374.7m
4	2	17M	90.4u	949.6u	-	40.99m
5	3	17M	53.6u	1.350m	1.625m	117.0m
6	2	17M	83.2u	1.632m	-	58.99m
7	2	17M	58.1u	1.629m	-	501.3m
8	2	17M	79.4u	1.903m	-	759.4m
9	1	17M	53.6u	-	-	210.0m
10	1	17M	80.1u	-	-	651.0m
11	2	17M	76.2u	935.8u	-	650.7m
12	2	17M	82.5u	1.394m	-	582.6m
13	3	17M	68.6u	1.491m	1.582m	401.2m
14	1	17M	76.7u	-	-	703.8m
15	1	17M	79.2u	-	-	563.3m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_10

Number of Bursts in Trial: 13

Chirp Center Frequency: 5499MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	3	20M	99.7u	1.511m	1.864m	57.55m
2	2	20M	62.6u	1.651m	-	208.8m
3	2	20M	78.6u	1.897m	-	188.5m
4	3	20M	92.7u	1.075m	1.701m	713.1m
5	2	20M	84.2u	1.551m	-	875.0m
6	2	20M	71.6u	1.165m	-	311.7m
7	1	20M	67.9u	-	-	735.6m
8	3	20M	54.0u	1.098m	1.873m	138.9m
9	1	20M	82.3u	-	-	262.2m
10	2	20M	63.4u	1.368m	-	14.73m
11	2	20M	64.4u	1.845m	-	637.0m
12	2	20M	90.9u	1.294m	-	356.2m
13	1	20M	96.9u	-	-	536.0m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_11

Number of Bursts in Trial: 11

Chirp Center Frequency: 5530MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	3	5M	77.4u	928.6u	1.433m	748.0m
2	2	5M	76.8u	1.792m	-	106.4m
3	2	5M	80.6u	1.265m	-	687.9m
4	3	5M	91.4u	1.357m	1.842m	327.9m
5	3	5M	90.0u	1.712m	1.217m	846.9m
6	2	5M	64.2u	1.792m	-	764.9m
7	2	5M	97.3u	1.153m	-	266.8m
8	2	5M	52.9u	952.1u	-	132.9m
9	3	5M	95.0u	1.657m	1.029m	423.4m
10	2	5M	87.7u	1.304m	-	303.7m
11	3	5M	69.8u	1.737m	1.511m	612.5m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_12

Number of Bursts in Trial: 10

Chirp Center Frequency: 5531MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	1	6M	63.2u	-	-	639.7m
2	3	6M	51.2u	1.477m	1.835m	678.8m
3	3	6M	64.0u	1.440m	1.154m	534.7m
4	2	6M	70.2u	1.135m	-	1.023
5	2	6M	82.2u	1.368m	-	565.5m
6	2	6M	90.8u	1.524m	-	59.60m
7	2	6M	61.5u	985.5u	-	1.004
8	1	6M	52.3u	-	-	775.3m
9	3	6M	75.8u	1.274m	1.399m	123.2m
10	1	6M	83.4u	-	-	1.109

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_13

Number of Bursts in Trial: 12

Chrip Center Frequency: 5532MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	8M	85.6u	1.082m	-	874.1m
2	2	8M	81.6u	1.669m	-	781.7m
3	2	8M	76.3u	1.051m	-	469.8m
4	2	8M	53.4u	1.109m	-	579.4m
5	2	8M	60.3u	1.288m	-	972.5m
6	1	8M	73.5u	-	-	379.7m
7	2	8M	90.0u	1.601m	-	302.6m
8	1	8M	58.0u	-	-	883.6m
9	2	8M	77.8u	1.348m	-	110.6m
10	2	8M	74.6u	1.921m	-	292.1m
11	1	8M	94.1u	-	-	793.6m
12	2	8M	52.0u	1.449m	-	437.9m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_14

Number of Bursts in Trial: 10

Chrip Center Frequency: 5533MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	3	10M	81.8u	1.808m	1.698m	72.39m
2	3	10M	76.6u	1.509m	1.487m	279.1m
3	1	10M	97.8u	-	-	1.124
4	3	10M	91.4u	1.843m	1.006m	24.01m
5	2	10M	74.5u	1.380m	-	1.025
6	2	10M	59.7u	1.379m	-	870.2m
7	2	10M	79.5u	1.094m	-	565.8m
8	2	10M	86.0u	1.148m	-	702.2m
9	2	10M	61.7u	1.400m	-	1.076
10	3	10M	87.5u	1.460m	1.499m	297.4m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_15

Number of Bursts in Trial: 19

Chirp Center Frequency: 5529MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	3	11M	53.1u	1.523m	1.293m	78.52m
2	3	11M	56.1u	1.129m	1.009m	582.4m
3	3	11M	60.5u	1.643m	1.002m	582.7m
4	1	11M	69.2u	-	-	92.56m
5	1	11M	85.3u	-	-	451.9m
6	2	11M	83.3u	1.132m	-	112.9m
7	2	11M	56.0u	1.460m	-	265.4m
8	2	11M	74.8u	1.526m	-	451.7m
9	2	11M	73.8u	1.249m	-	245.7m
10	2	11M	97.2u	1.449m	-	200.5m
11	1	11M	79.4u	-	-	423.5m
12	1	11M	58.5u	-	-	507.8m
13	2	11M	93.6u	1.176m	-	63.82m
14	2	11M	67.8u	1.019m	-	463.3m
15	2	11M	74.6u	1.168m	-	235.0m
16	2	11M	69.7u	1.319m	-	266.1m
17	3	11M	85.8u	964.2u	1.187m	47.90m
18	2	11M	56.8u	1.662m	-	222.1m
19	2	11M	99.2u	1.348m	-	254.0m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_16

Number of Bursts in Trial: 19

Chirp Center Frequency: 5528MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	14M	94.8u	1.833m	-	253.8m
2	2	14M	94.0u	1.277m	-	188.2m
3	2	14M	73.4u	1.353m	-	312.0m
4	3	14M	72.4u	1.274m	1.237m	65.56m
5	1	14M	99.7u	-	-	153.2m
6	1	14M	72.3u	-	-	541.4m
7	1	14M	68.9u	-	-	226.9m
8	3	14M	76.0u	1.169m	1.912m	1.325m
9	3	14M	53.8u	1.926m	1.757m	118.8m
10	1	14M	93.7u	-	-	376.4m
11	2	14M	88.8u	1.386m	-	151.7m
12	3	14M	93.9u	1.399m	1.175m	51.10m
13	1	14M	53.5u	-	-	24.10m
14	2	14M	91.7u	1.059m	-	402.9m
15	2	14M	92.7u	1.304m	-	113.0m
16	1	14M	69.2u	-	-	473.0m
17	1	14M	77.9u	-	-	422.4m
18	1	14M	63.2u	-	-	591.5m
19	3	14M	74.1u	1.402m	1.848m	550.6m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_17

Number of Bursts in Trial: 10

Chrip Center Frequency: 5527MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	15M	66.1u	1.398m	-	532.7m
2	3	15M	58.1u	1.693m	1.008m	686.4m
3	2	15M	71.5u	1.567m	-	1.058
4	2	15M	53.9u	1.265m	-	682.7m
5	2	15M	63.7u	1.637m	-	814.6m
6	2	15M	64.5u	1.031m	-	127.8m
7	1	15M	54.9u	-	-	1.015
8	1	15M	75.5u	-	-	1.122
9	2	15M	75.5u	1.551m	-	612.6m
10	2	15M	72.8u	1.435m	-	459.0m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_18

Number of Bursts in Trial: 11

Chrip Center Frequency: 5534MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	17M	93.2u	1.823m	-	278.1m
2	3	17M	96.9u	1.005m	1.409m	588.9m
3	2	17M	66.9u	1.184m	-	447.4m
4	2	17M	56.3u	1.242m	-	234.3m
5	2	17M	55.9u	1.736m	-	1.059
6	3	17M	82.1u	1.679m	1.064m	608.4m
7	2	17M	82.4u	1.814m	-	24.27m
8	2	17M	50.5u	1.216m	-	789.1m
9	1	17M	95.4u	-	-	772.6m
10	2	17M	84.8u	1.071m	-	511.0m
11	2	17M	51.2u	1.552m	-	1.030

Long Pulse Radar Test Signal
Test Signal Name: LP_Signal_19
Number of Bursts in Trial: 17
Chirp Center Frequency: 5526MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	1	18M	99.1u	-	-	365.0m
2	2	18M	80.2u	1.073m	-	218.9m
3	1	18M	98.4u	-	-	62.40m
4	2	18M	79.9u	924.1u	-	28.38m
5	3	18M	85.7u	1.729m	1.103m	59.49m
6	3	18M	83.1u	1.033m	1.823m	360.0m
7	1	18M	93.9u	-	-	207.7m
8	2	18M	92.9u	1.657m	-	307.2m
9	2	18M	93.9u	1.164m	-	269.1m
10	3	18M	71.8u	1.516m	1.207m	433.3m
11	2	18M	60.1u	1.913m	-	334.1m
12	2	18M	65.1u	1.569m	-	471.0m
13	2	18M	70.1u	1.020m	-	403.4m
14	2	18M	54.7u	1.505m	-	537.2m
15	2	18M	71.7u	1.764m	-	569.9m
16	2	18M	98.5u	1.729m	-	505.7m
17	2	18M	90.2u	1.677m	-	644.0m

Long Pulse Radar Test Signal
Test Signal Name: LP_Signal_20
Number of Bursts in Trial: 17
Chirp Center Frequency: 5525MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	19M	78.0u	1.167m	-	269.8m
2	3	19M	82.8u	1.545m	1.544m	640.4m
3	2	19M	73.0u	1.679m	-	88.41m
4	2	19M	67.7u	1.793m	-	557.7m
5	2	19M	55.9u	1.359m	-	651.0m
6	2	19M	92.9u	1.029m	-	485.5m
7	3	19M	70.2u	1.756m	1.342m	179.1m
8	1	19M	55.1u	-	-	407.5m
9	3	19M	67.9u	1.910m	1.250m	285.0m
10	1	19M	50.3u	-	-	147.8m
11	3	19M	50.3u	1.543m	1.185m	550.6m
12	3	19M	93.9u	1.670m	1.112m	207.5m
13	3	19M	54.3u	1.260m	1.333m	689.3m
14	1	19M	73.3u	-	-	595.0m
15	2	19M	86.5u	1.506m	-	78.29m
16	3	19M	53.8u	1.088m	1.261m	105.6m
17	2	19M	89.3u	1.368m	-	145.9m

Long Pulse Radar Test Signal
Test Signal Name: LP_Signal_21
Number of Bursts in Trial: 18
Chirp Center Frequency: 5568MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	1	5M	53.6u	-	-	504.6m
2	3	5M	97.1u	1.798m	1.565m	441.5m
3	3	5M	53.5u	1.548m	1.068m	291.7m
4	2	5M	52.2u	1.395m	-	212.8m
5	2	5M	95.3u	1.226m	-	96.33m
6	2	5M	92.6u	1.470m	-	303.7m
7	1	5M	82.6u	-	-	516.6m
8	1	5M	53.5u	-	-	141.6m
9	2	5M	57.4u	999.6u	-	95.05m
10	2	5M	96.4u	1.888m	-	567.5m
11	2	5M	66.0u	1.443m	-	271.3m
12	1	5M	98.5u	-	-	442.6m
13	2	5M	68.3u	1.114m	-	512.5m
14	2	5M	85.3u	1.613m	-	105.4m
15	3	5M	99.4u	1.752m	1.843m	647.8m
16	2	5M	97.8u	1.644m	-	259.0m
17	1	5M	77.1u	-	-	649.5m
18	1	5M	58.2u	-	-	539.5m

Long Pulse Radar Test Signal
Test Signal Name: LP_Signal_22
Number of Bursts in Trial: 16
Chirp Center Frequency: 5567MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	6M	61.5u	1.386m	-	311.0m
2	3	6M	67.1u	1.513m	1.138m	208.0m
3	2	6M	96.6u	1.844m	-	387.8m
4	1	6M	82.7u	-	-	224.5m
5	2	6M	67.8u	1.718m	-	627.0m
6	2	6M	87.2u	1.177m	-	181.9m
7	2	6M	67.9u	1.705m	-	545.1m
8	3	6M	92.8u	1.251m	1.284m	255.7m
9	1	6M	68.4u	-	-	724.0m
10	3	6M	70.6u	1.617m	1.276m	638.6m
11	2	6M	79.2u	1.690m	-	1.461m
12	2	6M	66.8u	1.231m	-	710.1m
13	2	6M	79.3u	1.785m	-	297.6m
14	3	6M	52.6u	1.716m	1.394m	154.1m
15	1	6M	51.5u	-	-	341.0m
16	2	6M	60.8u	1.100m	-	636.3m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_23

Number of Bursts in Trial: 15

Chrip Center Frequency: 5566MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	7M	53.0u	969.0u	-	746.8m
2	1	7M	63.4u	-	-	742.3m
3	2	7M	50.2u	1.509m	-	409.2m
4	3	7M	60.1u	1.447m	1.300m	473.9m
5	2	7M	80.0u	1.361m	-	541.6m
6	2	7M	54.0u	1.276m	-	751.9m
7	2	7M	86.4u	1.372m	-	5.669m
8	3	7M	67.1u	1.234m	1.548m	681.3m
9	1	7M	83.2u	-	-	569.4m
10	2	7M	89.6u	1.288m	-	710.9m
11	2	7M	68.4u	1.713m	-	305.7m
12	2	7M	98.4u	1.105m	-	659.4m
13	2	7M	53.8u	1.651m	-	260.7m
14	3	7M	90.7u	971.3u	1.297m	64.39m
15	3	7M	88.5u	1.396m	1.731m	619.3m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_24

Number of Bursts in Trial: 12

Chrip Center Frequency: 5565MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	9M	81.2u	1.556m	-	256.2m
2	1	9M	86.7u	-	-	131.1m
3	2	9M	77.8u	1.026m	-	504.6m
4	2	9M	55.6u	1.700m	-	485.5m
5	2	9M	92.8u	1.848m	-	535.0m
6	3	9M	54.8u	974.2u	1.487m	763.2m
7	2	9M	65.7u	1.884m	-	681.3m
8	2	9M	89.7u	1.572m	-	624.8m
9	2	9M	57.8u	1.208m	-	12.28m
10	2	9M	54.6u	1.123m	-	881.4m
11	1	9M	65.0u	-	-	637.4m
12	2	9M	72.7u	1.336m	-	662.2m

Long Pulse Radar Test Signal
Test Signal Name: LP_Signal_25
Number of Bursts in Trial: 18
Chirp Center Frequency: 5565MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	3	10M	54.2u	1.942m	1.494m	592.2m
2	3	10M	71.2u	1.558m	1.925m	239.4m
3	2	10M	96.1u	1.640m	-	300.6m
4	3	10M	90.5u	1.811m	1.633m	351.7m
5	2	10M	76.9u	1.123m	-	637.0m
6	3	10M	50.0u	1.335m	1.347m	297.1m
7	1	10M	75.1u	-	-	128.3m
8	1	10M	67.8u	-	-	292.2m
9	2	10M	88.2u	1.658m	-	55.83m
10	2	10M	52.3u	1.229m	-	382.0m
11	1	10M	64.4u	-	-	649.6m
12	2	10M	80.0u	1.813m	-	186.8m
13	3	10M	71.2u	1.625m	1.030m	289.9m
14	3	10M	52.9u	1.884m	1.728m	105.0m
15	3	10M	72.4u	932.6u	1.559m	96.61m
16	2	10M	74.9u	1.418m	-	493.8m
17	1	10M	76.4u	-	-	528.7m
18	2	10M	62.3u	1.001m	-	468.6m

Long Pulse Radar Test Signal
Test Signal Name: LP_Signal_26
Number of Bursts in Trial: 17
Chirp Center Frequency: 5564MHz

Burst	Pulses per Burst	Chirp (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	12M	64.3u	1.686m	-	488.5m
2	1	12M	83.8u	-	-	656.3m
3	2	12M	82.0u	1.771m	-	101.7m
4	2	12M	67.4u	993.6u	-	652.8m
5	1	12M	55.6u	-	-	667.4m
6	1	12M	72.0u	-	-	530.3m
7	2	12M	65.8u	1.161m	-	132.8m
8	2	12M	72.8u	1.137m	-	613.4m
9	2	12M	55.5u	1.051m	-	415.1m
10	2	12M	97.0u	1.184m	-	682.1m
11	1	12M	97.8u	-	-	245.7m
12	1	12M	68.8u	-	-	294.0m
13	2	12M	57.4u	1.581m	-	257.3m
14	2	12M	68.2u	1.423m	-	596.0u
15	2	12M	97.2u	1.703m	-	654.0m
16	2	12M	74.1u	1.138m	-	102.3m
17	1	12M	98.1u	-	-	550.1m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_27

Number of Bursts in Trial: 11

Chrip Center Frequency: 5564MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	3	13M	51.2u	1.554m	1.600m	938.5m
2	2	13M	62.1u	1.523m	-	66.65m
3	2	13M	84.1u	1.237m	-	333.2m
4	1	13M	83.6u	-	-	226.5m
5	2	13M	94.4u	1.354m	-	662.1m
6	3	13M	73.6u	1.860m	1.455m	990.1m
7	1	13M	72.7u	-	-	690.2m
8	2	13M	84.4u	1.778m	-	809.3m
9	2	13M	72.2u	1.660m	-	636.3m
10	2	13M	95.6u	1.055m	-	474.9m
11	1	13M	70.9u	-	-	98.17m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_28

Number of Bursts in Trial: 17

Chrip Center Frequency: 5563MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	2	14M	54.4u	1.544m	-	171.5m
2	2	14M	93.6u	1.320m	-	246.1m
3	3	14M	89.8u	1.720m	1.895m	347.7m
4	1	14M	85.1u	-	-	489.6m
5	2	14M	61.4u	1.507m	-	311.2m
6	3	14M	55.4u	1.798m	1.313m	540.6m
7	2	14M	92.1u	1.250m	-	66.91m
8	2	14M	63.5u	1.130m	-	241.9m
9	1	14M	86.9u	-	-	447.3m
10	3	14M	80.5u	1.568m	1.605m	7.248m
11	3	14M	55.0u	1.245m	1.865m	527.1m
12	1	14M	63.9u	-	-	76.76m
13	3	14M	79.9u	1.689m	1.894m	16.80m
14	2	14M	55.4u	1.846m	-	214.0m
15	1	14M	93.7u	-	-	330.3m
16	2	14M	86.8u	1.529m	-	638.0m
17	2	14M	52.9u	1.784m	-	245.7m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_29

Number of Bursts in Trial: 10

Chrip Center Frequency: 5563MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	1	18M	91.4u	-	-	1.193
2	2	18M	59.0u	1.416m	-	691.9m
3	3	18M	75.5u	1.576m	1.710m	949.0m
4	3	18M	57.2u	1.495m	1.274m	98.67m
5	2	18M	86.9u	1.499m	-	1.077
6	3	18M	59.2u	1.913m	1.856m	327.0m
7	1	18M	79.4u	-	-	681.2m
8	3	18M	98.1u	1.764m	1.499m	780.6m
9	2	18M	79.1u	1.785m	-	22.12m
10	3	18M	75.5u	1.187m	1.373m	229.5m

Long Pulse Radar Test Signal

Test Signal Name: LP_Signal_30

Number of Bursts in Trial: 15

Chrip Center Frequency: 5561MHz

Burst	Pulses per Burst	Chrip (Hz)	Pulse Width (s)	Pulse 1 to 2 Spacing (s)	Pulse 2 to 3 Spacing (s)	Start Location (s)
1	1	20M	63.9u	-	-	77.33m
2	2	20M	94.7u	1.807m	-	47.69m
3	2	20M	55.2u	1.653m	-	235.8m
4	1	20M	88.6u	-	-	734.4m
5	3	20M	58.9u	1.448m	1.576m	594.5m
6	3	20M	80.2u	1.051m	1.328m	738.1m
7	2	20M	51.8u	1.771m	-	610.0m
8	1	20M	58.2u	-	-	187.6m
9	3	20M	51.5u	1.442m	1.642m	91.17m
10	2	20M	54.6u	1.066m	-	128.0m
11	3	20M	92.5u	1.718m	1.207m	337.4m
12	3	20M	88.1u	1.794m	1.583m	438.5m
13	2	20M	63.5u	1.643m	-	214.3m
14	2	20M	73.1u	959.9u	-	235.5m
15	1	20M	71.4u	-	-	509.1m

IEEE 802.11ac 80MHz

Type 6 Radar Statistical Performances

Trial #	Hopping Frequency Sequence Name	Pulses per Burst	Pulse Width (s)	PRI (s)	Detection
1	HOP_FREQ_SEQ_01	9	1.0u	333.0u	Yes
2	HOP_FREQ_SEQ_02	9	1.0u	333.0u	Yes
3	HOP_FREQ_SEQ_03	9	1.0u	333.0u	Yes
4	HOP_FREQ_SEQ_04	9	1.0u	333.0u	Yes
5	HOP_FREQ_SEQ_05	9	1.0u	333.0u	Yes
6	HOP_FREQ_SEQ_06	9	1.0u	333.0u	Yes
7	HOP_FREQ_SEQ_07	9	1.0u	333.0u	Yes
8	HOP_FREQ_SEQ_08	9	1.0u	333.0u	Yes
9	HOP_FREQ_SEQ_09	9	1.0u	333.0u	Yes
10	HOP_FREQ_SEQ_10	9	1.0u	333.0u	Yes
11	HOP_FREQ_SEQ_11	9	1.0u	333.0u	Yes
12	HOP_FREQ_SEQ_12	9	1.0u	333.0u	Yes
13	HOP_FREQ_SEQ_13	9	1.0u	333.0u	Yes
14	HOP_FREQ_SEQ_14	9	1.0u	333.0u	Yes
15	HOP_FREQ_SEQ_15	9	1.0u	333.0u	Yes
16	HOP_FREQ_SEQ_16	9	1.0u	333.0u	Yes
17	HOP_FREQ_SEQ_17	9	1.0u	333.0u	Yes
18	HOP_FREQ_SEQ_18	9	1.0u	333.0u	Yes
19	HOP_FREQ_SEQ_19	9	1.0u	333.0u	Yes
20	HOP_FREQ_SEQ_20	9	1.0u	333.0u	Yes
21	HOP_FREQ_SEQ_21	9	1.0u	333.0u	Yes
22	HOP_FREQ_SEQ_22	9	1.0u	333.0u	Yes
23	HOP_FREQ_SEQ_23	9	1.0u	333.0u	Yes
24	HOP_FREQ_SEQ_24	9	1.0u	333.0u	Yes
25	HOP_FREQ_SEQ_25	9	1.0u	333.0u	Yes
26	HOP_FREQ_SEQ_26	9	1.0u	333.0u	Yes
27	HOP_FREQ_SEQ_27	9	1.0u	333.0u	Yes
28	HOP_FREQ_SEQ_28	9	1.0u	333.0u	Yes
29	HOP_FREQ_SEQ_29	9	1.0u	333.0u	Yes
30	HOP_FREQ_SEQ_30	9	1.0u	333.0u	Yes

Detection Rate: 100.0 %

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_01

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.584G	2	5.650G	3	5.556G	4	5.372G
5	5.441G	6	5.637G	7	5.635G	8	5.288G
9	5.697G	10	5.412G	11	5.323G	12	5.452G
13	5.659G	14	5.460G	15	5.641G	16	5.681G
17	5.374G	18	5.301G	19	5.510G	20	5.468G
21	5.585G	22	5.486G	23	5.314G	24	5.677G
25	5.655G	26	5.570G	27	5.687G	28	5.675G
29	5.572G	30	5.583G	31	5.505G	32	5.698G
33	5.350G	34	5.551G	35	5.597G	36	5.707G
37	5.333G	38	5.617G	39	5.259G	40	5.663G
41	5.620G	42	5.398G	43	5.366G	44	5.685G
45	5.516G	46	5.630G	47	5.633G	48	5.445G
49	5.458G	50	5.345G	51	5.680G	52	5.592G
53	5.396G	54	5.463G	55	5.469G	56	5.672G
57	5.518G	58	5.648G	59	5.435G	60	5.297G
61	5.332G	62	5.526G	63	5.586G	64	5.609G
65	5.657G	66	5.430G	67	5.274G	68	5.471G
69	5.310G	70	5.504G	71	5.673G	72	5.281G
73	5.682G	74	5.498G	75	5.688G	76	5.544G
77	5.712G	78	5.634G	79	5.608G	80	5.282G
81	5.631G	82	5.415G	83	5.699G	84	5.360G
85	5.283G	86	5.316G	87	5.472G	88	5.449G
89	5.694G	90	5.269G	91	5.700G	92	5.294G
93	5.692G	94	5.286G	95	5.501G	96	5.689G
97	5.324G	98	5.588G	99	5.536G	100	5.579G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_02

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.346G	2	5.501G	3	5.272G	4	5.295G
5	5.403G	6	5.712G	7	5.613G	8	5.429G
9	5.263G	10	5.351G	11	5.476G	12	5.323G
13	5.606G	14	5.355G	15	5.603G	16	5.402G
17	5.721G	18	5.330G	19	5.557G	20	5.354G
21	5.315G	22	5.465G	23	5.590G	24	5.704G
25	5.551G	26	5.303G	27	5.638G	28	5.493G
29	5.480G	30	5.709G	31	5.438G	32	5.255G
33	5.344G	34	5.256G	35	5.651G	36	5.460G
37	5.660G	38	5.343G	39	5.277G	40	5.436G
41	5.658G	42	5.370G	43	5.286G	44	5.446G
45	5.655G	46	5.517G	47	5.394G	48	5.360G
49	5.648G	50	5.425G	51	5.612G	52	5.620G
53	5.592G	54	5.570G	55	5.518G	56	5.298G
57	5.632G	58	5.600G	59	5.448G	60	5.258G
61	5.487G	62	5.701G	63	5.297G	64	5.449G
65	5.691G	66	5.450G	67	5.565G	68	5.348G
69	5.679G	70	5.629G	71	5.380G	72	5.453G
73	5.584G	74	5.335G	75	5.591G	76	5.705G
77	5.398G	78	5.270G	79	5.622G	80	5.514G
81	5.434G	82	5.369G	83	5.485G	84	5.301G
85	5.345G	86	5.618G	87	5.452G	88	5.441G
89	5.474G	90	5.250G	91	5.616G	92	5.710G
93	5.468G	94	5.513G	95	5.692G	96	5.334G
97	5.504G	98	5.347G	99	5.280G	100	5.400G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_03

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.520G	2	5.463G	3	5.410G	4	5.684G
5	5.482G	6	5.448G	7	5.370G	8	5.610G
9	5.413G	10	5.667G	11	5.326G	12	5.381G
13	5.443G	14	5.583G	15	5.334G	16	5.642G
17	5.414G	18	5.457G	19	5.385G	20	5.412G
21	5.382G	22	5.578G	23	5.670G	24	5.465G
25	5.483G	26	5.257G	27	5.323G	28	5.674G
29	5.536G	30	5.384G	31	5.596G	32	5.722G
33	5.269G	34	5.643G	35	5.560G	36	5.628G
37	5.580G	38	5.415G	39	5.369G	40	5.636G
41	5.660G	42	5.477G	43	5.678G	44	5.492G
45	5.624G	46	5.337G	47	5.400G	48	5.698G
49	5.640G	50	5.260G	51	5.564G	52	5.403G
53	5.427G	54	5.627G	55	5.350G	56	5.611G
57	5.566G	58	5.691G	59	5.358G	60	5.648G
61	5.262G	62	5.429G	63	5.378G	64	5.590G
65	5.393G	66	5.278G	67	5.718G	68	5.312G
69	5.529G	70	5.305G	71	5.552G	72	5.650G
73	5.454G	74	5.330G	75	5.422G	76	5.341G
77	5.356G	78	5.485G	79	5.551G	80	5.588G
81	5.544G	82	5.716G	83	5.304G	84	5.659G
85	5.277G	86	5.703G	87	5.472G	88	5.575G
89	5.537G	90	5.294G	91	5.690G	92	5.380G
93	5.614G	94	5.362G	95	5.423G	96	5.311G
97	5.637G	98	5.540G	99	5.270G	100	5.302G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_04

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.397G	2	5.383G	3	5.462G	4	5.338G
5	5.267G	6	5.261G	7	5.454G	8	5.500G
9	5.603G	10	5.568G	11	5.328G	12	5.467G
13	5.629G	14	5.612G	15	5.544G	16	5.375G
17	5.325G	18	5.507G	19	5.514G	20	5.433G
21	5.718G	22	5.526G	23	5.497G	24	5.520G
25	5.555G	26	5.389G	27	5.628G	28	5.511G
29	5.435G	30	5.424G	31	5.319G	32	5.453G
33	5.493G	34	5.311G	35	5.641G	36	5.415G
37	5.547G	38	5.655G	39	5.711G	40	5.579G
41	5.702G	42	5.260G	43	5.336G	44	5.278G
45	5.314G	46	5.587G	47	5.688G	48	5.598G
49	5.443G	50	5.719G	51	5.291G	52	5.428G
53	5.441G	54	5.377G	55	5.385G	56	5.315G
57	5.609G	58	5.274G	59	5.409G	60	5.546G
61	5.431G	62	5.288G	63	5.324G	64	5.341G
65	5.376G	66	5.689G	67	5.541G	68	5.422G
69	5.695G	70	5.679G	71	5.618G	72	5.465G
73	5.255G	74	5.590G	75	5.634G	76	5.388G
77	5.406G	78	5.420G	79	5.309G	80	5.362G
81	5.425G	82	5.605G	83	5.624G	84	5.374G
85	5.366G	86	5.360G	87	5.645G	88	5.297G
89	5.556G	90	5.554G	91	5.351G	92	5.596G
93	5.302G	94	5.470G	95	5.654G	96	5.299G
97	5.481G	98	5.606G	99	5.487G	100	5.343G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_05

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.421G	2	5.644G	3	5.275G	4	5.412G
5	5.320G	6	5.350G	7	5.652G	8	5.620G
9	5.548G	10	5.601G	11	5.640G	12	5.450G
13	5.582G	14	5.702G	15	5.311G	16	5.349G
17	5.489G	18	5.605G	19	5.698G	20	5.407G
21	5.478G	22	5.545G	23	5.267G	24	5.658G
25	5.376G	26	5.707G	27	5.592G	28	5.696G
29	5.655G	30	5.504G	31	5.271G	32	5.416G
33	5.667G	34	5.673G	35	5.347G	36	5.700G
37	5.307G	38	5.723G	39	5.357G	40	5.522G
41	5.417G	42	5.257G	43	5.383G	44	5.419G
45	5.714G	46	5.393G	47	5.261G	48	5.508G
49	5.485G	50	5.260G	51	5.318G	52	5.628G
53	5.278G	54	5.430G	55	5.520G	56	5.392G
57	5.358G	58	5.270G	59	5.627G	60	5.557G
61	5.558G	62	5.305G	63	5.526G	64	5.314G
65	5.528G	66	5.555G	67	5.540G	68	5.380G
69	5.573G	70	5.268G	71	5.459G	72	5.482G
73	5.653G	74	5.353G	75	5.306G	76	5.324G
77	5.497G	78	5.693G	79	5.362G	80	5.514G
81	5.581G	82	5.415G	83	5.368G	84	5.599G
85	5.291G	86	5.704G	87	5.503G	88	5.564G
89	5.611G	90	5.634G	91	5.560G	92	5.300G
93	5.646G	94	5.561G	95	5.692G	96	5.633G
97	5.635G	98	5.492G	99	5.312G	100	5.690G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_06

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.510G	2	5.475G	3	5.466G	4	5.512G
5	5.665G	6	5.493G	7	5.595G	8	5.412G
9	5.488G	10	5.435G	11	5.408G	12	5.263G
13	5.569G	14	5.713G	15	5.269G	16	5.687G
17	5.554G	18	5.392G	19	5.455G	20	5.592G
21	5.264G	22	5.670G	23	5.660G	24	5.614G
25	5.715G	26	5.560G	27	5.591G	28	5.461G
29	5.290G	30	5.278G	31	5.714G	32	5.365G
33	5.650G	34	5.307G	35	5.432G	36	5.641G
37	5.490G	38	5.417G	39	5.265G	40	5.457G
41	5.367G	42	5.598G	43	5.308G	44	5.669G
45	5.287G	46	5.413G	47	5.312G	48	5.389G
49	5.495G	50	5.530G	51	5.532G	52	5.525G
53	5.697G	54	5.619G	55	5.494G	56	5.577G
57	5.563G	58	5.342G	59	5.288G	60	5.313G
61	5.513G	62	5.636G	63	5.316G	64	5.428G
65	5.304G	66	5.326G	67	5.681G	68	5.584G
69	5.272G	70	5.363G	71	5.460G	72	5.468G
73	5.710G	74	5.362G	75	5.722G	76	5.262G
77	5.385G	78	5.482G	79	5.336G	80	5.390G
81	5.688G	82	5.277G	83	5.407G	84	5.393G
85	5.334G	86	5.372G	87	5.422G	88	5.322G
89	5.581G	90	5.559G	91	5.346G	92	5.380G
93	5.515G	94	5.258G	95	5.606G	96	5.406G
97	5.564G	98	5.444G	99	5.613G	100	5.526G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_07

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.551G	2	5.676G	3	5.484G	4	5.572G
5	5.380G	6	5.718G	7	5.660G	8	5.644G
9	5.397G	10	5.438G	11	5.410G	12	5.256G
13	5.538G	14	5.542G	15	5.550G	16	5.480G
17	5.413G	18	5.461G	19	5.463G	20	5.369G
21	5.640G	22	5.383G	23	5.375G	24	5.488G
25	5.570G	26	5.281G	27	5.613G	28	5.282G
29	5.310G	30	5.273G	31	5.724G	32	5.622G
33	5.633G	34	5.267G	35	5.715G	36	5.523G
37	5.632G	38	5.620G	39	5.567G	40	5.589G
41	5.318G	42	5.263G	43	5.378G	44	5.716G
45	5.289G	46	5.568G	47	5.710G	48	5.516G
49	5.606G	50	5.337G	51	5.283G	52	5.717G
53	5.424G	54	5.651G	55	5.711G	56	5.707G
57	5.698G	58	5.462G	59	5.518G	60	5.445G
61	5.360G	62	5.653G	63	5.307G	64	5.341G
65	5.581G	66	5.457G	67	5.601G	68	5.345G
69	5.658G	70	5.431G	71	5.648G	72	5.253G
73	5.683G	74	5.384G	75	5.398G	76	5.459G
77	5.254G	78	5.607G	79	5.301G	80	5.417G
81	5.347G	82	5.643G	83	5.712G	84	5.514G
85	5.576G	86	5.610G	87	5.386G	88	5.381G
89	5.476G	90	5.680G	91	5.272G	92	5.477G
93	5.565G	94	5.450G	95	5.414G	96	5.343G
97	5.497G	98	5.405G	99	5.503G	100	5.577G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_08

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.452G	2	5.443G	3	5.458G	4	5.492G
5	5.281G	6	5.280G	7	5.290G	8	5.685G
9	5.655G	10	5.636G	11	5.369G	12	5.320G
13	5.272G	14	5.644G	15	5.250G	16	5.695G
17	5.303G	18	5.268G	19	5.384G	20	5.351G
21	5.620G	22	5.588G	23	5.447G	24	5.283G
25	5.658G	26	5.566G	27	5.457G	28	5.476G
29	5.626G	30	5.325G	31	5.679G	32	5.590G
33	5.282G	34	5.538G	35	5.269G	36	5.539G
37	5.408G	38	5.400G	39	5.604G	40	5.371G
41	5.520G	42	5.499G	43	5.274G	44	5.352G
45	5.436G	46	5.505G	47	5.394G	48	5.617G
49	5.330G	50	5.652G	51	5.700G	52	5.317G
53	5.592G	54	5.473G	55	5.398G	56	5.573G
57	5.393G	58	5.674G	59	5.635G	60	5.546G
61	5.370G	62	5.542G	63	5.376G	64	5.561G
65	5.385G	66	5.606G	67	5.516G	68	5.613G
69	5.701G	70	5.510G	71	5.397G	72	5.332G
73	5.642G	74	5.651G	75	5.430G	76	5.551G
77	5.560G	78	5.316G	79	5.302G	80	5.382G
81	5.714G	82	5.341G	83	5.429G	84	5.693G
85	5.523G	86	5.470G	87	5.252G	88	5.420G
89	5.266G	90	5.563G	91	5.472G	92	5.601G
93	5.273G	94	5.340G	95	5.296G	96	5.333G
97	5.441G	98	5.550G	99	5.475G	100	5.678G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_09

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.618G	2	5.628G	3	5.634G	4	5.468G
5	5.711G	6	5.257G	7	5.588G	8	5.445G
9	5.625G	10	5.675G	11	5.527G	12	5.470G
13	5.707G	14	5.438G	15	5.559G	16	5.499G
17	5.388G	18	5.662G	19	5.594G	20	5.394G
21	5.354G	22	5.678G	23	5.418G	24	5.332G
25	5.696G	26	5.716G	27	5.621G	28	5.450G
29	5.348G	30	5.434G	31	5.452G	32	5.368G
33	5.382G	34	5.254G	35	5.578G	36	5.377G
37	5.269G	38	5.554G	39	5.449G	40	5.430G
41	5.383G	42	5.623G	43	5.401G	44	5.399G
45	5.550G	46	5.586G	47	5.581G	48	5.308G
49	5.512G	50	5.275G	51	5.362G	52	5.363G
53	5.576G	54	5.671G	55	5.342G	56	5.381G
57	5.284G	58	5.390G	59	5.605G	60	5.455G
61	5.503G	62	5.547G	63	5.562G	64	5.429G
65	5.704G	66	5.426G	67	5.411G	68	5.613G
69	5.584G	70	5.311G	71	5.501G	72	5.537G
73	5.451G	74	5.717G	75	5.709G	76	5.695G
77	5.303G	78	5.369G	79	5.514G	80	5.570G
81	5.665G	82	5.592G	83	5.631G	84	5.253G
85	5.622G	86	5.463G	87	5.469G	88	5.518G
89	5.437G	90	5.642G	91	5.630G	92	5.398G
93	5.491G	94	5.367G	95	5.346G	96	5.425G
97	5.414G	98	5.640G	99	5.321G	100	5.393G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_10

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.314G	2	5.430G	3	5.302G	4	5.313G
5	5.617G	6	5.493G	7	5.598G	8	5.300G
9	5.712G	10	5.573G	11	5.578G	12	5.340G
13	5.359G	14	5.593G	15	5.351G	16	5.451G
17	5.354G	18	5.389G	19	5.275G	20	5.625G
21	5.515G	22	5.574G	23	5.404G	24	5.552G
25	5.426G	26	5.561G	27	5.685G	28	5.555G
29	5.592G	30	5.363G	31	5.717G	32	5.347G
33	5.252G	34	5.701G	35	5.614G	36	5.608G
37	5.671G	38	5.449G	39	5.556G	40	5.371G
41	5.373G	42	5.652G	43	5.365G	44	5.304G
45	5.537G	46	5.634G	47	5.281G	48	5.647G
49	5.324G	50	5.544G	51	5.447G	52	5.437G
53	5.400G	54	5.289G	55	5.325G	56	5.505G
57	5.603G	58	5.279G	59	5.416G	60	5.446G
61	5.326G	62	5.419G	63	5.550G	64	5.409G
65	5.605G	66	5.316G	67	5.360G	68	5.540G
69	5.370G	70	5.495G	71	5.613G	72	5.467G
73	5.362G	74	5.514G	75	5.298G	76	5.559G
77	5.380G	78	5.636G	79	5.589G	80	5.470G
81	5.551G	82	5.428G	83	5.429G	84	5.716G
85	5.361G	86	5.330G	87	5.441G	88	5.402G
89	5.271G	90	5.297G	91	5.696G	92	5.691G
93	5.376G	94	5.424G	95	5.707G	96	5.307G
97	5.435G	98	5.385G	99	5.638G	100	5.563G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_11

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.583G	2	5.494G	3	5.698G	4	5.598G
5	5.625G	6	5.370G	7	5.326G	8	5.606G
9	5.498G	10	5.328G	11	5.694G	12	5.709G
13	5.613G	14	5.481G	15	5.418G	16	5.677G
17	5.448G	18	5.343G	19	5.357G	20	5.554G
21	5.659G	22	5.396G	23	5.303G	24	5.419G
25	5.362G	26	5.428G	27	5.469G	28	5.268G
29	5.394G	30	5.492G	31	5.663G	32	5.720G
33	5.567G	34	5.356G	35	5.635G	36	5.372G
37	5.386G	38	5.345G	39	5.600G	40	5.412G
41	5.258G	42	5.411G	43	5.301G	44	5.618G
45	5.699G	46	5.604G	47	5.463G	48	5.542G
49	5.680G	50	5.670G	51	5.368G	52	5.589G
53	5.553G	54	5.515G	55	5.446G	56	5.304G
57	5.441G	58	5.424G	59	5.620G	60	5.263G
61	5.592G	62	5.629G	63	5.466G	64	5.556G
65	5.636G	66	5.722G	67	5.302G	68	5.656G
69	5.252G	70	5.286G	71	5.369G	72	5.723G
73	5.573G	74	5.569G	75	5.558G	76	5.250G
77	5.500G	78	5.457G	79	5.462G	80	5.562G
81	5.716G	82	5.614G	83	5.347G	84	5.565G
85	5.288G	86	5.627G	87	5.342G	88	5.696G
89	5.712G	90	5.337G	91	5.649G	92	5.538G
93	5.688G	94	5.549G	95	5.272G	96	5.447G
97	5.519G	98	5.323G	99	5.314G	100	5.706G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_12

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.511G	2	5.597G	3	5.289G	4	5.670G
5	5.617G	6	5.438G	7	5.491G	8	5.682G
9	5.526G	10	5.298G	11	5.352G	12	5.714G
13	5.689G	14	5.688G	15	5.360G	16	5.431G
17	5.530G	18	5.549G	19	5.478G	20	5.411G
21	5.658G	22	5.356G	23	5.265G	24	5.345G
25	5.520G	26	5.624G	27	5.562G	28	5.674G
29	5.284G	30	5.707G	31	5.464G	32	5.502G
33	5.315G	34	5.297G	35	5.639G	36	5.469G
37	5.407G	38	5.353G	39	5.542G	40	5.458G
41	5.545G	42	5.367G	43	5.569G	44	5.687G
45	5.680G	46	5.722G	47	5.312G	48	5.465G
49	5.574G	50	5.319G	51	5.648G	52	5.702G
53	5.664G	54	5.515G	55	5.613G	56	5.504G
57	5.662G	58	5.251G	59	5.322G	60	5.448G
61	5.395G	62	5.582G	63	5.350G	64	5.563G
65	5.508G	66	5.261G	67	5.577G	68	5.393G
69	5.280G	70	5.374G	71	5.380G	72	5.519G
73	5.460G	74	5.587G	75	5.720G	76	5.653G
77	5.611G	78	5.657G	79	5.596G	80	5.642G
81	5.684G	82	5.604G	83	5.538G	84	5.415G
85	5.692G	86	5.423G	87	5.258G	88	5.336G
89	5.436G	90	5.349G	91	5.287G	92	5.427G
93	5.283G	94	5.711G	95	5.316G	96	5.638G
97	5.507G	98	5.691G	99	5.399G	100	5.610G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_13

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.524G	2	5.546G	3	5.257G	4	5.323G
5	5.303G	6	5.498G	7	5.585G	8	5.653G
9	5.540G	10	5.413G	11	5.482G	12	5.462G
13	5.296G	14	5.656G	15	5.626G	16	5.631G
17	5.567G	18	5.711G	19	5.418G	20	5.374G
21	5.666G	22	5.623G	23	5.382G	24	5.408G
25	5.615G	26	5.394G	27	5.593G	28	5.657G
29	5.441G	30	5.395G	31	5.714G	32	5.607G
33	5.254G	34	5.612G	35	5.677G	36	5.717G
37	5.684G	38	5.660G	39	5.273G	40	5.415G
41	5.351G	42	5.484G	43	5.673G	44	5.610G
45	5.442G	46	5.478G	47	5.661G	48	5.563G
49	5.560G	50	5.617G	51	5.463G	52	5.459G
53	5.469G	54	5.417G	55	5.525G	56	5.555G
57	5.493G	58	5.371G	59	5.516G	60	5.663G
61	5.347G	62	5.288G	63	5.580G	64	5.350G
65	5.378G	66	5.700G	67	5.597G	68	5.324G
69	5.458G	70	5.471G	71	5.538G	72	5.599G
73	5.426G	74	5.310G	75	5.688G	76	5.333G
77	5.475G	78	5.258G	79	5.419G	80	5.701G
81	5.600G	82	5.590G	83	5.690G	84	5.528G
85	5.362G	86	5.342G	87	5.502G	88	5.414G
89	5.457G	90	5.297G	91	5.357G	92	5.509G
93	5.274G	94	5.451G	95	5.328G	96	5.539G
97	5.596G	98	5.479G	99	5.474G	100	5.284G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_14

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.284G	2	5.688G	3	5.520G	4	5.344G
5	5.339G	6	5.657G	7	5.545G	8	5.607G
9	5.538G	10	5.297G	11	5.658G	12	5.600G
13	5.460G	14	5.285G	15	5.398G	16	5.264G
17	5.303G	18	5.465G	19	5.708G	20	5.443G
21	5.421G	22	5.630G	23	5.386G	24	5.357G
25	5.723G	26	5.684G	27	5.483G	28	5.551G
29	5.529G	30	5.275G	31	5.381G	32	5.444G
33	5.639G	34	5.345G	35	5.326G	36	5.506G
37	5.531G	38	5.679G	39	5.355G	40	5.649G
41	5.560G	42	5.377G	43	5.331G	44	5.428G
45	5.575G	46	5.500G	47	5.509G	48	5.656G
49	5.693G	50	5.376G	51	5.434G	52	5.327G
53	5.542G	54	5.368G	55	5.321G	56	5.349G
57	5.389G	58	5.353G	59	5.606G	60	5.494G
61	5.315G	62	5.568G	63	5.559G	64	5.278G
65	5.680G	66	5.288G	67	5.557G	68	5.405G
69	5.589G	70	5.634G	71	5.721G	72	5.350G
73	5.485G	74	5.481G	75	5.433G	76	5.296G
77	5.691G	78	5.544G	79	5.587G	80	5.599G
81	5.713G	82	5.632G	83	5.676G	84	5.307G
85	5.497G	86	5.328G	87	5.653G	88	5.578G
89	5.332G	90	5.608G	91	5.310G	92	5.445G
93	5.419G	94	5.576G	95	5.503G	96	5.549G
97	5.322G	98	5.683G	99	5.707G	100	5.698G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_15

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.522G	2	5.425G	3	5.421G	4	5.722G
5	5.369G	6	5.553G	7	5.395G	8	5.265G
9	5.669G	10	5.543G	11	5.266G	12	5.490G
13	5.724G	14	5.250G	15	5.405G	16	5.579G
17	5.520G	18	5.608G	19	5.686G	20	5.404G
21	5.494G	22	5.560G	23	5.446G	24	5.367G
25	5.545G	26	5.388G	27	5.350G	28	5.402G
29	5.640G	30	5.286G	31	5.273G	32	5.680G
33	5.256G	34	5.292G	35	5.308G	36	5.481G
37	5.304G	38	5.600G	39	5.397G	40	5.299G
41	5.386G	42	5.586G	43	5.602G	44	5.444G
45	5.684G	46	5.505G	47	5.723G	48	5.613G
49	5.532G	50	5.319G	51	5.595G	52	5.370G
53	5.318G	54	5.314G	55	5.487G	56	5.531G
57	5.604G	58	5.272G	59	5.572G	60	5.598G
61	5.384G	62	5.591G	63	5.619G	64	5.695G
65	5.372G	66	5.452G	67	5.443G	68	5.269G
69	5.462G	70	5.568G	71	5.346G	72	5.422G
73	5.257G	74	5.523G	75	5.671G	76	5.307G
77	5.361G	78	5.416G	79	5.433G	80	5.617G
81	5.398G	82	5.351G	83	5.485G	84	5.650G
85	5.347G	86	5.334G	87	5.442G	88	5.276G
89	5.392G	90	5.360G	91	5.456G	92	5.468G
93	5.309G	94	5.328G	95	5.497G	96	5.337G
97	5.294G	98	5.261G	99	5.557G	100	5.665G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_16

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.587G	2	5.395G	3	5.533G	4	5.319G
5	5.473G	6	5.361G	7	5.697G	8	5.549G
9	5.680G	10	5.507G	11	5.526G	12	5.374G
13	5.377G	14	5.723G	15	5.444G	16	5.457G
17	5.347G	18	5.517G	19	5.313G	20	5.412G
21	5.720G	22	5.719G	23	5.380G	24	5.410G
25	5.692G	26	5.323G	27	5.466G	28	5.506G
29	5.386G	30	5.286G	31	5.643G	32	5.681G
33	5.370G	34	5.333G	35	5.476G	36	5.498G
37	5.655G	38	5.368G	39	5.612G	40	5.254G
41	5.602G	42	5.627G	43	5.335G	44	5.404G
45	5.718G	46	5.656G	47	5.667G	48	5.431G
49	5.686G	50	5.651G	51	5.585G	52	5.649G
53	5.265G	54	5.474G	55	5.268G	56	5.631G
57	5.376G	58	5.260G	59	5.488G	60	5.521G
61	5.672G	62	5.618G	63	5.403G	64	5.610G
65	5.315G	66	5.556G	67	5.659G	68	5.420G
69	5.596G	70	5.270G	71	5.324G	72	5.546G
73	5.358G	74	5.675G	75	5.295G	76	5.568G
77	5.281G	78	5.630G	79	5.499G	80	5.263G
81	5.325G	82	5.541G	83	5.490G	84	5.371G
85	5.634G	86	5.464G	87	5.352G	88	5.326G
89	5.330G	90	5.606G	91	5.711G	92	5.381G
93	5.580G	94	5.280G	95	5.554G	96	5.362G
97	5.626G	98	5.510G	99	5.716G	100	5.441G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_17

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.293G	2	5.283G	3	5.433G	4	5.556G
5	5.494G	6	5.344G	7	5.320G	8	5.656G
9	5.405G	10	5.606G	11	5.323G	12	5.358G
13	5.274G	14	5.521G	15	5.434G	16	5.546G
17	5.644G	18	5.487G	19	5.313G	20	5.676G
21	5.609G	22	5.297G	23	5.565G	24	5.377G
25	5.288G	26	5.397G	27	5.470G	28	5.299G
29	5.645G	30	5.292G	31	5.667G	32	5.473G
33	5.615G	34	5.513G	35	5.558G	36	5.447G
37	5.549G	38	5.362G	39	5.365G	40	5.465G
41	5.483G	42	5.370G	43	5.361G	44	5.702G
45	5.369G	46	5.723G	47	5.328G	48	5.278G
49	5.311G	50	5.539G	51	5.419G	52	5.554G
53	5.262G	54	5.379G	55	5.713G	56	5.493G
57	5.294G	58	5.603G	59	5.304G	60	5.340G
61	5.614G	62	5.350G	63	5.551G	64	5.626G
65	5.295G	66	5.671G	67	5.336G	68	5.694G
69	5.621G	70	5.540G	71	5.648G	72	5.391G
73	5.373G	74	5.682G	75	5.463G	76	5.672G
77	5.559G	78	5.477G	79	5.518G	80	5.607G
81	5.647G	82	5.442G	83	5.720G	84	5.590G
85	5.403G	86	5.580G	87	5.591G	88	5.637G
89	5.506G	90	5.411G	91	5.587G	92	5.543G
93	5.601G	94	5.455G	95	5.697G	96	5.668G
97	5.695G	98	5.271G	99	5.430G	100	5.514G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_18

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.715G	2	5.594G	3	5.450G	4	5.473G
5	5.287G	6	5.338G	7	5.346G	8	5.288G
9	5.542G	10	5.306G	11	5.333G	12	5.472G
13	5.490G	14	5.551G	15	5.644G	16	5.651G
17	5.618G	18	5.434G	19	5.691G	20	5.666G
21	5.648G	22	5.558G	23	5.397G	24	5.316G
25	5.602G	26	5.545G	27	5.336G	28	5.701G
29	5.401G	30	5.582G	31	5.576G	32	5.429G
33	5.367G	34	5.527G	35	5.344G	36	5.286G
37	5.304G	38	5.660G	39	5.687G	40	5.631G
41	5.622G	42	5.677G	43	5.383G	44	5.296G
45	5.619G	46	5.503G	47	5.708G	48	5.482G
49	5.624G	50	5.599G	51	5.667G	52	5.298G
53	5.414G	54	5.349G	55	5.548G	56	5.615G
57	5.568G	58	5.424G	59	5.720G	60	5.271G
61	5.369G	62	5.559G	63	5.276G	64	5.356G
65	5.256G	66	5.681G	67	5.540G	68	5.263G
69	5.275G	70	5.629G	71	5.303G	72	5.433G
73	5.481G	74	5.523G	75	5.285G	76	5.407G
77	5.378G	78	5.512G	79	5.650G	80	5.278G
81	5.446G	82	5.546G	83	5.486G	84	5.564G
85	5.613G	86	5.390G	87	5.348G	88	5.468G
89	5.565G	90	5.518G	91	5.600G	92	5.311G
93	5.506G	94	5.484G	95	5.438G	96	5.381G
97	5.553G	98	5.364G	99	5.423G	100	5.343G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_19

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.666G	2	5.487G	3	5.470G	4	5.359G
5	5.338G	6	5.472G	7	5.390G	8	5.708G
9	5.589G	10	5.366G	11	5.485G	12	5.519G
13	5.337G	14	5.659G	15	5.501G	16	5.405G
17	5.295G	18	5.369G	19	5.284G	20	5.425G
21	5.661G	22	5.447G	23	5.483G	24	5.267G
25	5.285G	26	5.549G	27	5.306G	28	5.473G
29	5.637G	30	5.578G	31	5.513G	32	5.605G
33	5.623G	34	5.573G	35	5.536G	36	5.663G
37	5.511G	38	5.479G	39	5.611G	40	5.510G
41	5.403G	42	5.301G	43	5.711G	44	5.706G
45	5.259G	46	5.554G	47	5.494G	48	5.254G
49	5.250G	50	5.497G	51	5.291G	52	5.543G
53	5.495G	54	5.376G	55	5.481G	56	5.325G
57	5.506G	58	5.697G	59	5.340G	60	5.378G
61	5.579G	62	5.558G	63	5.664G	64	5.364G
65	5.290G	66	5.467G	67	5.446G	68	5.417G
69	5.684G	70	5.700G	71	5.408G	72	5.545G
73	5.316G	74	5.305G	75	5.616G	76	5.329G
77	5.255G	78	5.601G	79	5.455G	80	5.486G
81	5.478G	82	5.383G	83	5.450G	84	5.358G
85	5.678G	86	5.407G	87	5.514G	88	5.718G
89	5.331G	90	5.468G	91	5.698G	92	5.507G
93	5.312G	94	5.719G	95	5.372G	96	5.570G
97	5.271G	98	5.528G	99	5.582G	100	5.644G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_20

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.388G	2	5.645G	3	5.618G	4	5.275G
5	5.406G	6	5.363G	7	5.279G	8	5.639G
9	5.665G	10	5.617G	11	5.579G	12	5.691G
13	5.295G	14	5.602G	15	5.372G	16	5.484G
17	5.516G	18	5.345G	19	5.649G	20	5.597G
21	5.394G	22	5.404G	23	5.487G	24	5.483G
25	5.543G	26	5.722G	27	5.574G	28	5.353G
29	5.528G	30	5.522G	31	5.401G	32	5.467G
33	5.325G	34	5.585G	35	5.277G	36	5.264G
37	5.525G	38	5.586G	39	5.430G	40	5.350G
41	5.445G	42	5.635G	43	5.675G	44	5.285G
45	5.674G	46	5.307G	47	5.328G	48	5.338G
49	5.286G	50	5.540G	51	5.657G	52	5.313G
53	5.546G	54	5.370G	55	5.358G	56	5.611G
57	5.495G	58	5.410G	59	5.268G	60	5.640G
61	5.311G	62	5.513G	63	5.584G	64	5.562G
65	5.518G	66	5.572G	67	5.456G	68	5.680G
69	5.461G	70	5.348G	71	5.505G	72	5.340G
73	5.409G	74	5.699G	75	5.362G	76	5.714G
77	5.706G	78	5.684G	79	5.431G	80	5.463G
81	5.288G	82	5.418G	83	5.374G	84	5.270G
85	5.571G	86	5.414G	87	5.266G	88	5.322G
89	5.547G	90	5.272G	91	5.710G	92	5.327G
93	5.331G	94	5.282G	95	5.403G	96	5.560G
97	5.342G	98	5.321G	99	5.701G	100	5.504G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_21

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.637G	2	5.337G	3	5.452G	4	5.302G
5	5.278G	6	5.606G	7	5.696G	8	5.579G
9	5.363G	10	5.285G	11	5.275G	12	5.484G
13	5.427G	14	5.468G	15	5.309G	16	5.607G
17	5.494G	18	5.684G	19	5.272G	20	5.697G
21	5.447G	22	5.367G	23	5.338G	24	5.504G
25	5.465G	26	5.381G	27	5.368G	28	5.471G
29	5.310G	30	5.455G	31	5.553G	32	5.626G
33	5.457G	34	5.420G	35	5.362G	36	5.621G
37	5.700G	38	5.599G	39	5.653G	40	5.615G
41	5.402G	42	5.379G	43	5.490G	44	5.715G
45	5.695G	46	5.595G	47	5.421G	48	5.609G
49	5.664G	50	5.642G	51	5.628G	52	5.674G
53	5.507G	54	5.617G	55	5.656G	56	5.493G
57	5.266G	58	5.714G	59	5.319G	60	5.441G
61	5.478G	62	5.444G	63	5.474G	64	5.575G
65	5.294G	66	5.282G	67	5.328G	68	5.462G
69	5.289G	70	5.724G	71	5.454G	72	5.306G
73	5.380G	74	5.332G	75	5.677G	76	5.374G
77	5.712G	78	5.387G	79	5.472G	80	5.542G
81	5.533G	82	5.426G	83	5.254G	84	5.669G
85	5.271G	86	5.577G	87	5.502G	88	5.403G
89	5.543G	90	5.571G	91	5.513G	92	5.479G
93	5.601G	94	5.482G	95	5.428G	96	5.614G
97	5.336G	98	5.372G	99	5.600G	100	5.470G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_22

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.335G	2	5.570G	3	5.334G	4	5.433G
5	5.464G	6	5.451G	7	5.687G	8	5.586G
9	5.254G	10	5.634G	11	5.438G	12	5.722G
13	5.386G	14	5.607G	15	5.290G	16	5.262G
17	5.515G	18	5.441G	19	5.636G	20	5.270G
21	5.256G	22	5.279G	23	5.620G	24	5.447G
25	5.471G	26	5.417G	27	5.473G	28	5.708G
29	5.468G	30	5.362G	31	5.572G	32	5.563G
33	5.328G	34	5.601G	35	5.541G	36	5.629G
37	5.393G	38	5.667G	39	5.531G	40	5.313G
41	5.633G	42	5.403G	43	5.613G	44	5.553G
45	5.465G	46	5.716G	47	5.329G	48	5.356G
49	5.320G	50	5.391G	51	5.255G	52	5.276G
53	5.324G	54	5.271G	55	5.500G	56	5.646G
57	5.404G	58	5.265G	59	5.671G	60	5.616G
61	5.371G	62	5.606G	63	5.477G	64	5.467G
65	5.561G	66	5.359G	67	5.603G	68	5.407G
69	5.426G	70	5.715G	71	5.663G	72	5.680G
73	5.463G	74	5.274G	75	5.567G	76	5.721G
77	5.678G	78	5.657G	79	5.443G	80	5.338G
81	5.293G	82	5.325G	83	5.724G	84	5.402G
85	5.581G	86	5.478G	87	5.507G	88	5.669G
89	5.409G	90	5.495G	91	5.627G	92	5.519G
93	5.508G	94	5.322G	95	5.373G	96	5.382G
97	5.530G	98	5.589G	99	5.587G	100	5.580G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_23

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.295G	2	5.251G	3	5.536G	4	5.257G
5	5.694G	6	5.615G	7	5.373G	8	5.529G
9	5.255G	10	5.542G	11	5.604G	12	5.280G
13	5.288G	14	5.479G	15	5.706G	16	5.600G
17	5.420G	18	5.640G	19	5.256G	20	5.260G
21	5.605G	22	5.349G	23	5.466G	24	5.576G
25	5.310G	26	5.696G	27	5.658G	28	5.284G
29	5.286G	30	5.651G	31	5.324G	32	5.570G
33	5.627G	34	5.610G	35	5.541G	36	5.505G
37	5.527G	38	5.481G	39	5.270G	40	5.301G
41	5.667G	42	5.516G	43	5.409G	44	5.299G
45	5.348G	46	5.482G	47	5.617G	48	5.586G
49	5.442G	50	5.297G	51	5.470G	52	5.296G
53	5.417G	54	5.282G	55	5.671G	56	5.676G
57	5.506G	58	5.421G	59	5.438G	60	5.345G
61	5.402G	62	5.350G	63	5.483G	64	5.577G
65	5.573G	66	5.537G	67	5.635G	68	5.426G
69	5.278G	70	5.303G	71	5.276G	72	5.591G
73	5.686G	74	5.568G	75	5.559G	76	5.712G
77	5.621G	78	5.414G	79	5.669G	80	5.398G
81	5.630G	82	5.521G	83	5.662G	84	5.619G
85	5.262G	86	5.578G	87	5.335G	88	5.401G
89	5.645G	90	5.312G	91	5.546G	92	5.292G
93	5.654G	94	5.663G	95	5.557G	96	5.628G
97	5.504G	98	5.305G	99	5.632G	100	5.624G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_24

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.471G	2	5.508G	3	5.494G	4	5.442G
5	5.648G	6	5.621G	7	5.433G	8	5.405G
9	5.339G	10	5.302G	11	5.546G	12	5.502G
13	5.268G	14	5.607G	15	5.673G	16	5.406G
17	5.669G	18	5.307G	19	5.453G	20	5.670G
21	5.274G	22	5.570G	23	5.636G	24	5.484G
25	5.599G	26	5.458G	27	5.294G	28	5.595G
29	5.308G	30	5.606G	31	5.556G	32	5.402G
33	5.392G	34	5.626G	35	5.603G	36	5.416G
37	5.645G	38	5.709G	39	5.665G	40	5.407G
41	5.290G	42	5.298G	43	5.628G	44	5.314G
45	5.363G	46	5.366G	47	5.557G	48	5.321G
49	5.722G	50	5.525G	51	5.351G	52	5.390G
53	5.309G	54	5.614G	55	5.464G	56	5.281G
57	5.639G	58	5.293G	59	5.424G	60	5.413G
61	5.332G	62	5.478G	63	5.305G	64	5.398G
65	5.619G	66	5.507G	67	5.642G	68	5.299G
69	5.488G	70	5.480G	71	5.396G	72	5.682G
73	5.450G	74	5.592G	75	5.403G	76	5.374G
77	5.538G	78	5.287G	79	5.282G	80	5.537G
81	5.710G	82	5.641G	83	5.615G	84	5.358G
85	5.613G	86	5.438G	87	5.346G	88	5.386G
89	5.680G	90	5.255G	91	5.486G	92	5.379G
93	5.304G	94	5.320G	95	5.446G	96	5.720G
97	5.503G	98	5.690G	99	5.269G	100	5.306G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_25

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.545G	2	5.281G	3	5.677G	4	5.635G
5	5.287G	6	5.663G	7	5.632G	8	5.290G
9	5.395G	10	5.614G	11	5.260G	12	5.396G
13	5.646G	14	5.538G	15	5.390G	16	5.611G
17	5.402G	18	5.647G	19	5.561G	20	5.397G
21	5.373G	22	5.444G	23	5.315G	24	5.300G
25	5.501G	26	5.407G	27	5.670G	28	5.514G
29	5.448G	30	5.343G	31	5.294G	32	5.382G
33	5.580G	34	5.606G	35	5.261G	36	5.329G
37	5.334G	38	5.527G	39	5.480G	40	5.666G
41	5.276G	42	5.422G	43	5.301G	44	5.639G
45	5.661G	46	5.684G	47	5.616G	48	5.369G
49	5.385G	50	5.317G	51	5.590G	52	5.253G
53	5.689G	54	5.375G	55	5.714G	56	5.693G
57	5.496G	58	5.596G	59	5.583G	60	5.529G
61	5.340G	62	5.477G	63	5.723G	64	5.656G
65	5.252G	66	5.662G	67	5.629G	68	5.622G
69	5.335G	70	5.592G	71	5.360G	72	5.333G
73	5.391G	74	5.603G	75	5.374G	76	5.665G
77	5.420G	78	5.681G	79	5.674G	80	5.368G
81	5.324G	82	5.312G	83	5.468G	84	5.319G
85	5.559G	86	5.518G	87	5.367G	88	5.275G
89	5.709G	90	5.262G	91	5.692G	92	5.582G
93	5.584G	94	5.473G	95	5.282G	96	5.331G
97	5.298G	98	5.565G	99	5.470G	100	5.626G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_26

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.475G	2	5.337G	3	5.544G	4	5.723G
5	5.509G	6	5.506G	7	5.328G	8	5.327G
9	5.260G	10	5.716G	11	5.542G	12	5.256G
13	5.441G	14	5.349G	15	5.634G	16	5.680G
17	5.545G	18	5.661G	19	5.469G	20	5.704G
21	5.478G	22	5.446G	23	5.393G	24	5.521G
25	5.400G	26	5.306G	27	5.295G	28	5.280G
29	5.367G	30	5.557G	31	5.681G	32	5.471G
33	5.573G	34	5.637G	35	5.554G	36	5.444G
37	5.292G	38	5.552G	39	5.413G	40	5.588G
41	5.252G	42	5.447G	43	5.496G	44	5.582G
45	5.502G	46	5.373G	47	5.311G	48	5.415G
49	5.354G	50	5.412G	51	5.418G	52	5.685G
53	5.267G	54	5.483G	55	5.334G	56	5.626G
57	5.368G	58	5.600G	59	5.307G	60	5.498G
61	5.428G	62	5.341G	63	5.693G	64	5.569G
65	5.495G	66	5.647G	67	5.266G	68	5.481G
69	5.624G	70	5.477G	71	5.399G	72	5.422G
73	5.452G	74	5.689G	75	5.282G	76	5.296G
77	5.344G	78	5.333G	79	5.301G	80	5.595G
81	5.503G	82	5.501G	83	5.277G	84	5.358G
85	5.253G	86	5.419G	87	5.593G	88	5.456G
89	5.673G	90	5.629G	91	5.656G	92	5.671G
93	5.375G	94	5.650G	95	5.459G	96	5.678G
97	5.635G	98	5.615G	99	5.434G	100	5.575G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_27

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.289G	2	5.560G	3	5.603G	4	5.697G
5	5.449G	6	5.529G	7	5.462G	8	5.262G
9	5.570G	10	5.701G	11	5.340G	12	5.274G
13	5.651G	14	5.673G	15	5.536G	16	5.712G
17	5.411G	18	5.566G	19	5.686G	20	5.376G
21	5.717G	22	5.531G	23	5.692G	24	5.295G
25	5.611G	26	5.719G	27	5.661G	28	5.667G
29	5.311G	30	5.470G	31	5.287G	32	5.561G
33	5.316G	34	5.517G	35	5.286G	36	5.604G
37	5.556G	38	5.398G	39	5.446G	40	5.350G
41	5.282G	42	5.380G	43	5.549G	44	5.480G
45	5.522G	46	5.408G	47	5.623G	48	5.416G
49	5.263G	50	5.352G	51	5.621G	52	5.674G
53	5.714G	54	5.644G	55	5.665G	56	5.412G
57	5.305G	58	5.315G	59	5.710G	60	5.251G
61	5.471G	62	5.302G	63	5.357G	64	5.575G
65	5.432G	66	5.630G	67	5.456G	68	5.720G
69	5.707G	70	5.513G	71	5.303G	72	5.330G
73	5.482G	74	5.296G	75	5.595G	76	5.457G
77	5.297G	78	5.371G	79	5.632G	80	5.643G
81	5.540G	82	5.687G	83	5.310G	84	5.684G
85	5.721G	86	5.658G	87	5.465G	88	5.341G
89	5.553G	90	5.506G	91	5.563G	92	5.463G
93	5.691G	94	5.417G	95	5.481G	96	5.472G
97	5.581G	98	5.500G	99	5.304G	100	5.568G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_28

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.388G	2	5.252G	3	5.315G	4	5.290G
5	5.590G	6	5.638G	7	5.636G	8	5.550G
9	5.335G	10	5.642G	11	5.254G	12	5.566G
13	5.549G	14	5.640G	15	5.279G	16	5.499G
17	5.649G	18	5.267G	19	5.491G	20	5.587G
21	5.712G	22	5.309G	23	5.393G	24	5.260G
25	5.416G	26	5.271G	27	5.293G	28	5.366G
29	5.596G	30	5.446G	31	5.594G	32	5.624G
33	5.438G	34	5.343G	35	5.319G	36	5.313G
37	5.310G	38	5.341G	39	5.650G	40	5.263G
41	5.560G	42	5.403G	43	5.580G	44	5.508G
45	5.265G	46	5.272G	47	5.684G	48	5.479G
49	5.456G	50	5.701G	51	5.277G	52	5.620G
53	5.588G	54	5.289G	55	5.258G	56	5.611G
57	5.327G	58	5.300G	59	5.405G	60	5.564G
61	5.628G	62	5.409G	63	5.670G	64	5.255G
65	5.529G	66	5.497G	67	5.326G	68	5.496G
69	5.711G	70	5.717G	71	5.357G	72	5.724G
73	5.526G	74	5.618G	75	5.274G	76	5.441G
77	5.678G	78	5.544G	79	5.614G	80	5.418G
81	5.386G	82	5.721G	83	5.668G	84	5.379G
85	5.463G	86	5.396G	87	5.664G	88	5.353G
89	5.703G	90	5.298G	91	5.644G	92	5.307G
93	5.509G	94	5.553G	95	5.681G	96	5.589G
97	5.513G	98	5.547G	99	5.527G	100	5.295G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_29

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.351G	2	5.612G	3	5.484G	4	5.268G
5	5.493G	6	5.636G	7	5.631G	8	5.693G
9	5.284G	10	5.413G	11	5.451G	12	5.706G
13	5.580G	14	5.382G	15	5.683G	16	5.344G
17	5.712G	18	5.288G	19	5.355G	20	5.361G
21	5.460G	22	5.305G	23	5.584G	24	5.594G
25	5.336G	26	5.358G	27	5.633G	28	5.335G
29	5.696G	30	5.386G	31	5.267G	32	5.517G
33	5.289G	34	5.489G	35	5.313G	36	5.568G
37	5.271G	38	5.514G	39	5.605G	40	5.511G
41	5.473G	42	5.270G	43	5.446G	44	5.626G
45	5.596G	46	5.378G	47	5.718G	48	5.582G
49	5.505G	50	5.297G	51	5.573G	52	5.672G
53	5.603G	54	5.639G	55	5.640G	56	5.346G
57	5.688G	58	5.678G	59	5.258G	60	5.657G
61	5.668G	62	5.512G	63	5.450G	64	5.254G
65	5.327G	66	5.308G	67	5.320G	68	5.434G
69	5.454G	70	5.495G	71	5.326G	72	5.457G
73	5.458G	74	5.577G	75	5.667G	76	5.622G
77	5.647G	78	5.274G	79	5.364G	80	5.628G
81	5.585G	82	5.620G	83	5.250G	84	5.609G
85	5.474G	86	5.420G	87	5.390G	88	5.638G
89	5.311G	90	5.463G	91	5.713G	92	5.412G
93	5.499G	94	5.306G	95	5.348G	96	5.279G
97	5.572G	98	5.559G	99	5.275G	100	5.680G

Hopping Frequency Sequence Name: HOP_FREQ_SEQ_30

SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)	SEQ#	Frequency (Hz)
1	5.673G	2	5.315G	3	5.496G	4	5.668G
5	5.371G	6	5.565G	7	5.279G	8	5.577G
9	5.487G	10	5.664G	11	5.641G	12	5.649G
13	5.386G	14	5.545G	15	5.687G	16	5.393G
17	5.455G	18	5.467G	19	5.480G	20	5.642G
21	5.362G	22	5.602G	23	5.704G	24	5.499G
25	5.260G	26	5.591G	27	5.357G	28	5.605G
29	5.459G	30	5.403G	31	5.328G	32	5.586G
33	5.651G	34	5.520G	35	5.684G	36	5.384G
37	5.677G	38	5.601G	39	5.259G	40	5.251G
41	5.502G	42	5.432G	43	5.346G	44	5.648G
45	5.353G	46	5.612G	47	5.283G	48	5.718G
49	5.321G	50	5.349G	51	5.369G	52	5.627G
53	5.524G	54	5.708G	55	5.381G	56	5.274G
57	5.544G	58	5.409G	59	5.611G	60	5.380G
61	5.580G	62	5.498G	63	5.468G	64	5.257G
65	5.584G	66	5.266G	67	5.509G	68	5.629G
69	5.305G	70	5.324G	71	5.395G	72	5.676G
73	5.533G	74	5.688G	75	5.449G	76	5.388G
77	5.703G	78	5.603G	79	5.262G	80	5.686G
81	5.394G	82	5.661G	83	5.450G	84	5.342G
85	5.355G	86	5.483G	87	5.540G	88	5.538G
89	5.401G	90	5.276G	91	5.526G	92	5.400G
93	5.457G	94	5.654G	95	5.559G	96	5.377G
97	5.513G	98	5.678G	99	5.549G	100	5.301G

Appendix A - Initial CAC log

Quantenna Mini U-Boot

Version: v36.7.0.6 Built: Sep 13 2016 at 16:38:20

QTN-EMAC

Using 'ipaddr' from early config: 55.55.55.53

Using 'serverip' from early config: 48.48.0.49

1G-FD

Using QTN-EMAC device

L2_TFTP start

Filename 'qtn-uboot'.

Load address: 0x88000000

Loading: *T T T T

Retry count exceeded; starting again

1G-FD

Using QTN-EMAC device

TFTP from server 48.48.0.49; our IP address is 55.55.55.53

Filename 'qtn-uboot'.

Load address: 0x88000000

Loading: *

ARP Retry count exceeded; starting again

T Transmit timeout

1G-FD

Using QTN-EMAC device

L2_TFTP start

Filename 'qtn-uboot'.

Load address: 0x88000000

Loading: *T T T T

Retry count exceeded; starting again

1G-FD

Using QTN-EMAC device

TFTP from server 48.48.0.49; our IP address is 55.55.55.53

Filename 'qtn-uboot'.

Load address: 0x88000000

Loading: *T T T T

Retry count exceeded; starting again

1G-FD

Using QTN-EMAC device

L2_TFTP start

Filename 'qtn-uboot'.

Load address: 0x88000000

Loading: *T T T T

Retry count exceeded; starting again

1G-FD

Using QTN-EMAC device

TFTP from server 48.48.0.49; our IP address is 55.55.55.53

Filename 'qtn-uboot'.

Load address: 0x88000000

Loading: *

ARP Retry count exceeded; starting again

```

T Transmit timeout
1G-FD
Using QTN-EMAC device
L2_TFTP start
Filename 'qtn-uboot'.
Load address: 0x88000000
Loading: *T T T T
Retry count exceeded; starting again
1G-FD
Using QTN-EMAC device
TFTP from server 48.48.0.49; our IP address is 55.55.55.53
Filename 'qtn-uboot'.
Load address: 0x88000000
Loading: *
ARP Retry count exceeded; starting again
T Transmit timeout
1G-FD
Using QTN-EMAC device
L2_TFTP start
Filename 'qtn-uboot'.
Load address: 0x88000000
Loading: *#####
done
Bytes transferred = 68564 (0x10bd4)
Boot reached stage 13
Boot reached stage 12
Valid CRC found in flash restoring env...
Boot reached stage 11
hw_config_id 65535: 'QTM840_5S1_MS_MAC'
UART1 enabled: GPIO_PIN1 (input) Rx, GPIO_PIN9 (output) Tx
Cold boot
Reset status: 0x00000001

Info: data uncached: addr=0xc0000000 size=1024MB
Info: text at 0x88040000, stack at 0x88013ffc(8192), heap at 0x88000000(73728), uboot size 170944
Info: i-cache is enabled
Info: d-cache is enabled
Info: CPU freq is 500000000, dev freq is 125000000

Info: Quantenna U-Boot version:v37.4.0.29
Info: TCH bootloader version:0.0.0
Info: build date 'Jan 25 2017', time '21:19:14'

SPI flash info:
    name           : mx25l4006ek
    jedec_id       : 0xc22013
    sector size    : 4096
    number of sector : 16
    frequency      : 50000000
    flags          : 0x2

```

```
lock      :
DDR_INIT: type = 16, speed = 2, size = 134217728
500MHz
BDA at 0x80002000
In:  serial
Out: serial
Err: serial
Boot reached stage 64
Boot reached stage 65
br
Hit any key to stop autoboot:  0
Boot reached stage 80
1G-FD
1G-FD
Using br device
L2_TFTP start
Filename 'qtn-linux.lzma'.
Load address: 0x83000000
Loading: *#####
          #####
          #####
          #####
          #####
done
Bytes transferred = 4698489 (0x47b179)
Boot reached stage 81
Boot reached stage 84
Boot reached stage 1
## Booting kernel from Legacy Image at 83000000 ...
Boot reached stage 2
Boot reached stage 3
  Image Name:  topaz-linux
  Image Type:  arc Linux Kernel Image (lzma compressed)
  Data Size:  4690297 Bytes =  4.5 MB
  Load Address: 8493a000
  Entry Point:  8493a000
  Qtn flags:   00000001
  Verifying Checksum ... OK
Boot reached stage 4
Boot reached stage 5
Boot reached stage 6
Boot reached stage 14
  Uncompressing Kernel Image ... OK
Boot reached stage 7
Boot reached stage 8
Command line TAG setup
Params->u.cmdline.cmdline console=ttyS0,115200n8 earlyprintk=1 hw_config_id=65535
p console=ttyS0,115200n8 earlyprintk=1 hw_config_id=65535
##  Unset TAG qtn_flags 1
##  Transferring control to Linux (at address 8493a000) ATAG parameters 880672d0 - 88067328...
```

```
[ 0.000000] Linux version 2.6.35.12 (repowrt-builder@d29cd35ccfb9) (gcc version 4.2.1 (ARC_2.3)) #2 Wed Jan 25 21:28:26 UTC
2017
[ 0.000000] Parsing ATAG parameters from bootloader
[ 0.000000] ATAG_CORE: successful parsing
[ 0.000000] ATAG_CMDLINE: command line = console=ttyS0,115200n8 earlyprintk=1 hw_config_id=65535
[ 0.000000] Board id: 65535
[ 0.000000] ATAG_HW_CONFIG_ID: hw_config_id = 65535
[ 0.000000]
[ 0.000000] Processor Family: ARC 700 [0x33]
[ 0.000000] CPU speed : 500.00 Mhz
[ 0.000000] Timers: TIMER1 TIMER0
[ 0.000000] Interrupt Vect Base: 0x88052000
[ 0.000000] Peripheral Base: NOT present; assuming 0xCOFC0000
[ 0.000000] Data UNCACHED Base (I/O): start 0xc0 Sz, 1024 MB
[ 0.000000] ARC700 MMU Ver [2]
[ 0.000000] PAGE SIZE 8k
[ 0.000000] JTLB 128 x 2 = 256 entries
[ 0.000000] uDTLB 8 entr, uTLB 4 entr
[ 0.000000] TLB Refill "will NOT" Flush uTLBs
[ 0.000000] Detected I-cache :
[ 0.000000] Type=2 way set-associ, Line length=32, Size=16K (enabled)
[ 0.000000] Detected D-cache :
[ 0.000000] Type=4 way set-associ, Line length=32, Size=16K (enabled)
[ 0.000000] Extensions:
[ 0.000000] MPY: 32x32 with ANY Result Reg MAC MPY: Dual 16 x 16 and 32 x 16
[ 0.000000] DCCM: N/A ICCM: N/A
[ 0.000000] CRC: N/A, SWAP: Present NORM: Present
[ 0.000000] Min-Max: Present, Barrel Shifter: Present
[ 0.000000] Ext Arith Insn: Present
[ 0.000000] Floating Point Extension: N/A
[ 0.000000] On node 0 totalpages: 16383
[ 0.000000] free_area_init_node: node 0, pgdat 856bdd90, node_mem_map 8576e024
[ 0.000000] Normal zone: 72 pages used for memmap
[ 0.000000] Normal zone: 0 pages reserved
[ 0.000000] Normal zone: 16311 pages, LIFO batch:3
[ 0.000000] Built 1 zonelists in Zone order, mobility grouping on. Total pages: 16311
[ 0.000000] Kernel command line: console=ttyS0,115200n8 earlyprintk=1 hw_config_id=65535
[ 0.000000] bootconsole [ruby_early0] enabled
[ 0.000000] PID hash table entries: 512 (order: -2, 2048 bytes)
[ 0.000000] Dentry cache hash table entries: 16384 (order: 3, 65536 bytes)
[ 0.000000] Inode-cache hash table entries: 8192 (order: 2, 32768 bytes)
[ 0.000000] Memory: 40792KB available (2163K code,1204K data, 11168K init)
[ 0.000000] Hierarchical RCU implementation.
[ 0.000000] RCU debugfs-based tracing is enabled.
[ 0.000000] Verbose stalled-CPU's detection is disabled.
[ 0.000000] clockevent mode switch to [1]
[ 0.000000] clockevent mode switch to [2]
[ 0.000000] Calibrating delay loop... 249.03 BogoMIPS (lpj=622592)
[ 0.115000] pid_max: default: 4096 minimum: 301
[ 0.120000] Mount-cache hash table entries: 1024
```

[0.125000] Starting run_ksoftirqd, stack (thread_info) at 856e2000 cpu 0
[0.130000] NET: Registered protocol family 16
[0.135000] Topaz heap in SRAM 88016780<->88020000, B2 BASE 17800
[0.150000] bio: create slab <bio-0> at 0
[0.155000] watch64: 2003/08/22 Josef 'Jeff' Sipek <jeffpc@xxxxxxxxxxxx>
[0.160000] watch64: Enabling Watch64 extensions...done.
[0.165000] Switching to clocksource ARC Timer1
[0.175000] NET: Registered protocol family 2
[0.180000] IP route cache hash table entries: 2048 (order: 0, 8192 bytes)
[0.185000] TCP established hash table entries: 4096 (order: 2, 32768 bytes)
[0.190000] TCP bind hash table entries: 4096 (order: 1, 16384 bytes)
[0.195000] TCP: Hash tables configured (established 4096 bind 4096)
[0.200000] TCP reno registered
[0.205000] NET: Registered protocol family 1
[0.685000] JFFS2 version 2.2. (NAND) ? 2001-2006 Red Hat, Inc.
[0.690000] msgmni has been set to 79
[0.695000] io scheduler noop registered (default)
[1.120000] Serial: 8250/16550 driver, 2 ports, IRQ sharing enabled
[1.125000] serial8250.0: ttyS0 at MMIO 0xf0000000 (irq = 48) is a 16550A
[1.130000] console [ttyS0] enabled, bootconsole disabled
[1.130000] console [ttyS0] enabled, bootconsole disabled
[1.135000] serial8250.0: ttyS1 at MMIO 0xf5000000 (irq = 49) is a 16550A
[1.140000] brd: module loaded
[1.150000] loop: module loaded
[1.155000] spi_flash: Force not to support Protect Mode
[1.160000] Creating 3 MTD partitions on "spi_flash":
[1.165000] 0x000000000000-0x000000005000 : "uboot"
[1.175000] 0x000000005000-0x00000000b000 : "uboot_env"
[1.180000] 0x00000000b000-0x000000010000 : "data"
[1.190000] spi_flash: SPI flash driver initialized successfully!
[1.195000] ruby_health loading
[1.200000] HBM pool: emac rx 0x0 to 0x8000, wmac rx 0x8000 to 0xa000
[1.715000] HBM meta: emac rx 0x63c040 to 0x6bc040, wmac rx 0x6bc080 to 0x6dc080
[1.720000] topaz_hbm_init_pool_list pool 0 pool_list 0x88000000 bus_range 0x6ec400 to 0x26ec400 sz 4096 count 8192
[1.720000] topaz_hbm_init_pool_list pool 1 pool_list 0x88008000 bus_range 0x26fc400 to 0x48fc400 sz 17408 count 2048
[1.720000] topaz_hbm_init_pool_list pool 3 pool_list 0x8800a000 bus_range 0x0 to 0x0 sz 0 count 4096
[1.725000] topaz_busmon_init success
[1.730000] topaz_temp_sens_init success
[1.735000] u32 classifier
[1.735000] input device check on
[1.740000] Actions configured
[1.745000] Netfilter messages via NETLINK v0.30.
[1.750000] nf_conntrack version 0.5.0 (637 buckets, 2548 max)
[1.755000] ip_tables: (C) 2000-2006 Netfilter Core Team
[1.760000] TCP cubic registered
[1.765000] NET: Registered protocol family 10
[1.770000] NET: Registered protocol family 17
[1.775000] 802.1Q VLAN Support v1.8 Ben Greear <greearb@candelatech.com>
[1.780000] All bugs added by David S. Miller <davem@redhat.com>
[1.790000] Freeing unused kernel memory: 11168k freed [8493a000] TO [85422000]

```
[ 1.795000] Common mmap addr-space starts 2c0f0000
init started: BusyBox v1.10.3 (2017-01-25 21:19:43 UTC)
starting pid 48, tty ": /etc/init.d/rcS"
[ 2.135000] load_module: 'bootcfg' using DRAM (offset:0x86230000, size:0x8e44)
Initializing random number generator... done.
Starting network...
[ 2.835000] load_module: 'rtl8367b' using DRAM (offset:0x85840000, size:0x31eab)
[ 2.840000] rtl8367b: module license 'unspecified' taints kernel.
[ 2.845000] Disabling lock debugging due to kernel taint
[ 2.895000] load_module: 'emaclib' using DRAM (offset:0x86280000, size:0x5868)
[ 3.010000] load_module: 'switch_vlan' using DRAM (offset:0x85830000, size:0x2240)
[ 3.105000] load_module: 'switch_tqe' using DRAM (offset:0x86278000, size:0x5623)
[ 3.150000] tqe_descs_alloc: 2048 tqe_rx_descriptors at kern uncached 0x580e0788 bus 0x80016788
[ 3.230000] load_module: 'dpi' using DRAM (offset:0x85838000, size:0x1b89)
[ 3.255000] load_module: 'fw_t_if' using DRAM (offset:0x86288000, size:0x1684)
[ 3.280000] load_module: 'fw_t_ctrl' using DRAM (offset:0x862c0000, size:0x236a5)
[ 3.335000] load_module: 'switch_emac' using DRAM (offset:0x861f8000, size:0x25b7), SRAM (offset:0x8801eda8, size:0x1d0)
[ 3.400000] emac wbsp: 0
[ 3.400000] enable A2 (single)
[ 3.460000] topaz_emac_init, emac0
[ 3.465000] Random stuff C0
[ 3.485000] topaz_emac_init, emac1
emac0 is eth1_1, emac1 is eth1_0
/sbin/ifup -a
[ 3.645000] emac_lib eth1_0: force link (1000/Full)
ifconfig: SIOCSIFNETMASK: Cannot assign requested address
[ 3.700000] emac_lib eth1_1: force link (1000/Full)
ifconfig: SIOCSIFNETMASK: Cannot assign requested address
Downloading qtn_prod.env (1).
[ 3.890000] FWT: [00:08:55:41:00:c0] add entry, port:drop node:0 entries:1
Downloading qtn_custo.env (1).
Downloading qtn_custo.sh (1).
Updating eth_macaddr
Updating wifi_mac_addrs
Updating wireless_conf.txt
Updating hostapd.conf
Updating tch_upgrade.conf
Updating tch_ntp.conf
Updating tch_monitor.conf
Updating admin.conf
[ 4.890000] FWT: [00:08:55:41:00:c0] delete entry, index:540
Updating tch_cwmp_conf
/sbin/ifdown -a
[ 5.590000] emac_lib eth1_0: force link (1000/Full)
[ 5.635000] device eth1_0 entered promiscuous mode
[ 5.660000] br0: port 1(eth1_0) entering forwarding state
[ 5.665000] br0: port 1(eth1_0) entering forwarding state
[ 5.760000] device eth1_1 entered promiscuous mode
/sbin/ifup eth1_1; /sbin/ifconfig eth1_0 down
[ 5.845000] emac_lib eth1_1: force link (1000/Full)
```

```
[ 5.850000] br0: port 2(eth1_1) entering forwarding state
[ 5.855000] br0: port 2(eth1_1) entering forwarding state
ifconfig: SIOCSIFNETMASK: Cannot assign requested address
[ 5.890000] br0: port 1(eth1_0) entering forwarding state
Starting inetd ...
/scripts/cmdloop starting tch_events, at 00:00:06 up 0 min, load average: 0.16, 0.03, 0.01
Starting wireless...
[ 6.790000] FWT: [10:13:31:16:04:3c] add entry, port:emac0 node:0 entries:1
Loading modules
[ 8.085000] load_module: 'qtn_debug' using DRAM (offset:0x8741f000, size:0x403)
[ 8.160000] load_module: 'i2cbus' using DRAM (offset:0x86276000, size:0x1ce2)
[ 8.265000] load_module: 'qtsens' using DRAM (offset:0x8741e800, size:0x7b6)
[ 8.345000] load_module: 'pm_interval' using DRAM (offset:0x859da000, size:0x13b2)
[ 8.470000] load_module: 'wlan' using DRAM (offset:0x87500000, size:0x8f102)
[ 8.755000] wlan: 0.8.4.2 (0.9.3.3)
[ 8.920000] load_module: 'auc_fw' using DRAM (offset:0x8788c040, size:0x115b)
[ 9.025000] load_module: 'radar' using DRAM (offset:0x85900000, size:0x1a394)
[ 9.080000] load_module: 'qvspmod' using DRAM (offset:0x859a0000, size:0x10de1)
[ 9.170000] load_module: 'qdrv' using DRAM (offset:0x87100000, size:0x9b956)
[ 9.435000] qdrv wbsp: 0
[ 9.435000] Auc SRAM start 0x88040000 end 0x88070000 size 196608
[ 9.445000] Auc SRAM bank 0 start 0x88040000 end 0x88050000
[ 9.450000] Auc SRAM bank 1 start 0x88050000 end 0x88060000
[ 9.455000] Auc SRAM bank 2 start 0x88060000 end 0x88070000
[ 9.540000] load_module: 'wlan_xauth' using DRAM (offset:0x870fa800, size:0x32f)
[ 9.630000] load_module: 'wlan_ccmp' using DRAM (offset:0x85924000, size:0x177e)
[ 9.740000] load_module: 'wlan_tkip' using DRAM (offset:0x858ac000, size:0x2632)
Loading MuC driver (qtn_driver.qtn_ruby.0.bin)
Waiting for Wireless Events from interfaces...
Found power table in /etc/power_tables
[ 10.420000] QDRV: power table checksum for /etc/power_tables/tx_power_QSR1000_ca.txt
[ 10.445000] QDRV: power table checksum for /etc/power_tables/tx_power_QSR1000_ca.vbnt-m.txt
[ 10.475000] QDRV: power table checksum for /etc/power_tables/tx_power_QSR1000_eu.gant-z.txt
[ 10.500000] QDRV: power table checksum for /etc/power_tables/tx_power_QSR1000_eu.txt
[ 10.530000] QDRV: power table checksum for /etc/power_tables/tx_power_QSR1000_eu.vant-9.txt
[ 10.560000] QDRV: power table checksum for /etc/power_tables/tx_power_QSR1000_eu.vant-g.txt
[ 10.590000] QDRV: power table checksum for /etc/power_tables/tx_power_QSR1000_eu.vant-h.txt
[ 10.620000] QDRV: power table checksum for /etc/power_tables/tx_power_QSR1000_eu.vant-i.txt
[ 10.650000] QDRV: power table checksum for /etc/power_tables/tx_power_QSR1000_eu.vant-w.txt
[ 10.680000] QDRV: power table checksum for /etc/power_tables/tx_power_QSR1000_eu.vbnt-g.txt
[ 10.705000] QDRV: power table checksum for /etc/power_tables/tx_power_QSR1000_us.gant-z.txt
[ 10.735000] QDRV: power table checksum for /etc/power_tables/tx_power_QSR1000_us.txt
[ 10.760000] QDRV: power table checksum for /etc/power_tables/tx_power_QSR1000_us.vant-t.txt
[ 10.790000] QDRV: power table checksum for /etc/power_tables/tx_power_QSR1000_us.vbnt-g.txt
[ 10.820000] QDRV: power table checksum for /etc/power_tables/tx_power_QSR1000_us.vbnt-m.txt
[ 10.980000] set power_selection 3
[ 10.985000] qdrv_soc_publish_params: parames->tqe_sem_en 0, auc_tqe_sem_en 0
[ 10.990000] ..... Current RFIC Chip ID -- 0
[ 11.210000] qdrv_mu_stat_init
[ 11.220000] MuC: g_tqe_sem_en 0
```

```
[ 11.220000] MuC: build date Fri, 09 Sep 2016 21:44:06 -0700
[ 11.225000] MuC: slow heap begin=0x002245a0 end=0x003a15a0
[ 11.230000] MuC: fast heap begin=0x80030800 end=0x80037000
[ 11.235000] MuC: stack start=0x8003efc0 sp=0x8003f724
[ 11.240000] MuC: calstate is 3 (prod), dcache on
[ 11.245000] MuC: RFIC version 1
[ 11.260000] MuC: bb_init: FEM 0x7 bw_mode 0 chan 0 11b 0 11a 1
[ 11.265000] MuC: rf_optimizing_rf_register_map, set rf to 0x75
[ 11.270000] MuC: os_uc, after bb_rf_complete_attach.
[ 11.275000] MuC: WMAC0: hal fd start=0xe5040300 count=48 size=108 end=0xe5041740
[ 11.280000] MuC: WMAC1: hal fd start=0xe5140d50 count=8 size=84 end=0xe5140ff0
[ 11.285000] MuC: dynamic one-bit autocorrelation enabled
[ 11.290000] MuC: freq 1 proj 1
[ 11.295000] MuC: QMAT SRAM base 0x80070000
[ 11.295000] MuC: enable IRQs
[ 11.300000] MuC: AuC enabled 0xe5101bcc/0x6005b0b8 il 0xe5101288/0xe510128c stats 0x600591f8/0x6005adf80x6006e3c4
[ 11.305000] MuC: Can't allocate more fcs for AuC. Bad... WMAC = 1
[ 11.310000] MuC: Update MU debug flag from 0x00000000 to 0x20000000
[ 11.315000] AuC: Update mu flag : 0x20000000. Max delay = 0
[ 11.325000] qdrv_mac_reserve_clear: mac reservation table cleared
[ 11.350000] se95: probe of 0-0049 failed with error -121
[ 11.360000] QDRV: no external temperature sensor found
[ 11.370000] QDRV: hardware is 4x4 11ac FO RGMII/PCIe QV840
[ 11.375000] MuC boot succeeded 0.160 seconds
[ 11.645000] load_module: 'wlan_scan_ap' using DRAM (offset:0x87440000, size:0x2a32)
[ 11.800000] MuC: freq 1 proj 1
[ 11.800000] MuC: qtn_mu_ndpa_setup: bw_cap 2 done
[ 11.830000] VAP create succeeded 0.020 seconds
[ 12.375000] MuC: calibration ver 0x801
```

radar in 80MHZ mode

Setting mode to 11ac80

Version of /proc/bootcfg/qtn_regulatory_db.bin is Regulatory db version: v36.5.0.2

Version of /etc/qtn_regulatory_db.bin is Regulatory db version: v37.4.0.48

Selected database version: Regulatory db version: v37.4.0.48

Using /etc/qtn_regulatory_db.bin

```
[ 13.680000] channel 116 is added into non-primary channel list
[ 13.685000] channel 120 is added into non-primary channel list
[ 13.690000] channel 124 is added into non-primary channel list
[ 13.700000] channel 128 is added into non-primary channel list
[ 13.705000] Warning: all the sub channels are not in primary channel list!
[ 13.715000] channel 140 is added into non-primary channel list
[ 13.720000] channel 144 is added into non-primary channel list
```

radar start with[13.725000] DFS_s_radio: parameters updated, region: us
regulatory us

dfs_s_radio 0 dfs 100 non-dfs 0 scan 0 auto-channel 0 channel 100

Set channel 100

```
[ 14.600000] RADAR: CAC started for channel 100 (5500 MHz)
```

Configure max_boot_cac to -1

```
[ 14.850000] device wifi0 entered promiscuous mode
```

```
[ 14.965000] Enabling SSDP flooding
```

Enable ap pin setup in all BSSes

```
[ 16.600000] MuC: #RX data path optimal flag 0
[ 16.605000] MuC: rx_post_init: free 0 rxq 9 9 394 descr 0x8000f000/6592 cache 0x8002c900/13184
[ 16.610000] MuC: auto cs is enabled
[ 16.615000] WPS: push button is not configured
[ 16.620000] RADAR: CAC stopped for channel 100 (5500 MHz)
[ 16.630000] br0: port 3(wifi0) entering forwarding state
[ 16.635000] br0: port 3(wifi0) entering forwarding state
```

Beamforming enabled

802.11ac Enabled

```
[ 17.240000] Warning: heap_sram_alloc failed to allocate 0x1d3 bytes from caller 855797fc
```

SCS disabled

QTM: load profile off

```
[ 17.660000] qvsp_strm_reset: stream reset
```

QTM enabled: 0

```
[ 18.520000] BRIDGE WLAN report flood-forwarding enabled
```

No core dump generated

```
[ 18.795000] FWT: [00:11:6b:73:af:1d] add entry, port:emac0 node:0 entries:2
[ 19.150000] qdrv_radar_is_rdetecction_required: ERROR - channel not yet set
[ 19.195000] Build name:          v37.4.15.62
[ 19.200000] Build revision:     50667
[ 19.205000] Build type:        SDK
[ 19.210000] Build timestamp:    1485379638
[ 19.215000] Platform ID:       410
[ 19.220000] Hardware ID:       QV840
[ 19.220000] Hardware revision:  bbic4_rev_a2
[ 19.225000] Band:              5GHz
[ 19.230000] Kernel version:    2.6.35
[ 19.235000] Calibration version: disabled
[ 19.240000] DC/IQ cal version:  V8.1
[ 19.245000] Power cal version:  V8.1
[ 19.245000] MuC firmware:      qtn_driver.qtn_ruby.0.bin
[ 19.250000] DSP firmware:      rdsp_driver.0.bin
[ 19.255000] AuC firmware:      auc_driver.0.bin
[ 19.260000] MAC address 0:      12:13:31:16:04:46
[ 19.265000] MAC address 1:      00:00:00:00:00:00
[ 19.270000] U-Boot version:     v37.4.0.29
```

tch_monitor.sh: no url defined

complete

```
[ 23.835000] RADAR: CAC started for channel 100 (5500 MHz)
```

```
[ 24.640000] RADAR: CAC stopped for channel 100 (5500 MHz)
```

complete

complete

complete

complete

complete

qtn_custo.sh executed

qtn_custo.sh: Disabling DFS

complete

```

/scripts/cmdloop starting /sbin/call_qcsapi, at 00:00:27 up 0 min, load average: 0.46, 0.11, 0.03
/scripts/cmdloop starting /sbin/tch_vb_discover, at 00:00:27 up 0 min, load average: 0.46, 0.11, 0.03
killall: udhcpd: no process killed
[ 27.460000] QDRV: src ip addr 192.168.1.252
[ 27.490000] Enabling eth pm
[ 27.500000] Enabling eth pm
udhcpd (v1.19.4) started
Sending discover...

```

```

tch_monitor.sh: no url defined
Carrier ID 0, uboot update flag 0
[ 28.585000] MuC: Update MU debug flag from 0x20000000 to 0x00000000
[ 28.585000] MuC: MU enabled
[ 28.585000] AuC: Update mu flag : 0x00000000. Max delay = 0
'monitor_temperature' is not enabled/set
Maui service is not enabled in wireless_conf.txt
httpd is not enabled
starting pid 1472, tty '/dev/console': '/bin/login'
TG234 login: Sending select for 192.168.1.185...
Lease of 192.168.1.185 obtained, lease time 43200
[ 30.450000] deleting routers Q
DRV: src ip addr 192.168.1.185
route: SIOCDELRT: No such process
adding dns 192.168.1.1
DHCP Lease obtained, notifying tch_vb_discover daemon
[ 31.850000] RADAR: CAC started for channel 100 (5500 MHz)
[ 32.805000] RADAR: CAC stopped for channel 100 (5500 MHz)
radar start with regulatory us
[ 34.335000] MuC: Update MU debug flag from 0x00000000 to 0x20000000
[ 34.335000] MuC: MU disabled
[ 34.335000] AuC: Update mu flag : 0x20000000. Max delay = 0
[ 40.555000] RADAR: CAC started for channel 100 (5500 MHz)

```

Channel	Status	Status_string
110.560000	36	2 Available
110.560000	40	2 Available
110.560000	44	2 Available
110.560000	48	2 Available
110.560000	52	8 Not-Available-CAC-Required
110.560000	56	8 Not-Available-CAC-Required
110.560000	60	8 Not-Available-CAC-Required
110.560000	64	8 Not-Available-CAC-Required
110.560000	100	2 Available
110.560000	104	2 Available
110.560000	108	8 Not-Available-CAC-Required
110.560000	112	8 Not-Available-CAC-Required
110.560000	116	8 Not-Available-CAC-Required
110.560000	120	8 Not-Available-CAC-Required
110.560000	124	8 Not-Available-CAC-Required
110.560000	128	8 Not-Available-CAC-Required
110.560000	132	8 Not-Available-CAC-Required

[110.560000]	136	8	Not-Available-CAC-Required
[110.560000]	140	8	Not-Available-CAC-Required
[110.560000]	144	8	Not-Available-CAC-Required
[110.560000]	149	2	Available
[110.560000]	153	2	Available
[110.560000]	157	2	Available
[110.560000]	161	2	Available
[110.560000] RADAR: CAC completed for channel 100 (5500 MHz)			
[140.650000] MuC: ioctl_power_save, level: 0 -> 5			

40	18	16	21
40	18	16	21
40	18	16	21
44	17	21	21
44	17	21	21
44	17	21	21
44	17	21	21
44	18	21	21
44	18	21	21
44	18	21	21
44	18	21	21
48	17	21	21
48	17	21	21
48	17	21	21
48	17	21	21
48	18	21	21
48	18	21	21
48	18	21	21
48	18	21	21
52	17	18	18
52	17	18	18
52	17	18	18
52	17	18	18
52	17	18	18
52	17	18	18
52	17	18	18
52	17	18	18
56	17	18	18
56	17	18	18
56	17	18	18
56	17	18	18
56	17	18	18
56	17	18	18
56	17	18	18
56	17	18	18
60	17	17	18
60	17	17	18
60	17	17	18
60	17	17	18
60	17	17	17
60	17	17	17
60	17	17	17
60	17	17	17
60	17	17	17
64	17	17	18
64	17	17	18
64	17	17	18
64	17	17	18
64	17	17	17
64	17	17	17
64	17	17	17
64	17	17	17
100	16	17	18
100	16	17	18
100	16	17	18
100	16	17	18
100	16	15	16
100	16	15	16
100	16	15	16
100	16	15	16
104	16	17	18

104	16	17	18
104	16	17	18
104	16	17	18
104	16	15	16
104	16	15	16
104	16	15	16
104	16	15	16
108	16	17	18
108	16	17	18
108	16	17	18
108	16	17	18
108	16	16	16
108	16	16	16
108	16	16	16
108	16	16	16
112	16	17	18
112	16	17	18
112	16	17	18
112	16	17	18
112	16	16	16
112	16	16	16
112	16	16	16
112	16	16	16
116	17	17	18
116	17	17	18
116	17	17	18
116	17	17	18
116	17	16	17
116	17	16	17
116	17	16	17
116	17	16	17
120	17	17	18
120	17	17	18
120	17	17	18
120	17	17	18
120	17	16	16
120	17	16	16
120	17	16	16
120	17	16	16
124	17	17	18
124	17	17	18
124	17	17	18
124	17	17	18
124	17	17	16
124	17	17	16
124	17	17	16
124	17	17	16
128	17	17	18
128	17	17	18
128	17	17	18
128	17	17	18
128	17	17	16
128	17	17	16
128	17	17	16
128	17	17	16
132	18	18	18
132	18	18	18
132	18	18	18
132	18	18	18
132	17	17	16

132	17	17	16
132	17	17	16
132	17	17	16
136	18	18	18
136	18	18	18
136	18	18	18
136	18	18	18
136	17	17	16
136	17	17	16
136	17	17	16
136	17	17	16
140	18	17	18
140	18	17	18
140	18	17	18
140	18	17	18
140	17	16	17
140	17	16	17
140	17	16	17
144	18	17	18
144	18	17	18
144	18	17	18
144	18	17	18
144	17	16	18
144	17	16	18
144	17	16	18
144	17	16	18
149	21	21	21
149	21	21	21
149	21	21	21
149	21	21	21
149	21	21	21
149	21	21	21
149	21	21	21
149	21	21	21
153	21	21	21
153	21	21	21
153	21	21	21
153	21	21	21
153	21	21	21
153	21	21	21
153	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
161	21	21	21
161	21	21	21
161	21	21	21
161	21	21	21
161	21	21	21
161	21	21	21
161	21	21	21
165	-1	-1	21

```

165      -1      -1      21
165      -1      -1      21
165      -1      -1      21
165      -1      -1      21
165      -1      -1      21
165      -1      -1      21
165      -1      -1      21

```

```

=====
40MHz power table
=====

```

```

{Administrator}>call_qcsapi set_bw wifi0 40
radar start with regulatory us
complete
{Administrator}>show_tx_power_table
Regulatory Region: us

```

TX Power			
Channel	80M	40M	20M
36	17	17	21
36	17	17	21
36	17	17	21
36	17	17	21
36	18	16	20
36	18	16	20
36	18	16	20
36	18	16	20
40	17	17	21
40	17	17	21
40	17	17	21
40	17	17	21
40	18	16	21
40	18	16	21
40	18	16	21
40	18	16	21
44	17	21	21
44	17	21	21
44	17	21	21
44	17	21	21
44	18	21	21
44	18	21	21
44	18	21	21
44	18	21	21
48	17	21	21
48	17	21	21
48	17	21	21
48	17	21	21
48	18	21	21
48	18	21	21
48	18	21	21
48	18	21	21
52	17	18	18
52	17	18	18
52	17	18	18
52	17	18	18
52	17	18	18
52	17	18	18
52	17	18	18
56	17	18	18

56	17	18	18
56	17	18	18
56	17	18	18
56	17	18	18
56	17	18	18
56	17	18	18
56	17	18	18
60	17	17	18
60	17	17	18
60	17	17	18
60	17	17	18
60	17	17	17
60	17	17	17
60	17	17	17
60	17	17	17
64	17	17	18
64	17	17	18
64	17	17	18
64	17	17	18
64	17	17	17
64	17	17	17
64	17	17	17
64	17	17	17
100	16	17	18
100	16	17	18
100	16	17	18
100	16	17	18
100	16	15	16
100	16	15	16
100	16	15	16
100	16	15	16
104	16	17	18
104	16	17	18
104	16	17	18
104	16	17	18
104	16	15	16
104	16	15	16
104	16	15	16
104	16	15	16
108	16	17	18
108	16	17	18
108	16	17	18
108	16	17	18
108	16	16	16
108	16	16	16
108	16	16	16
108	16	16	16
112	16	17	18
112	16	17	18
112	16	17	18
112	16	17	18
112	16	16	16
112	16	16	16
112	16	16	16
112	16	16	16
116	17	17	18
116	17	17	18
116	17	17	18
116	17	17	18
116	17	16	17

116	17	16	17
116	17	16	17
116	17	16	17
120	17	17	18
120	17	17	18
120	17	17	18
120	17	17	18
120	17	16	16
120	17	16	16
120	17	16	16
120	17	16	16
124	17	17	18
124	17	17	18
124	17	17	18
124	17	17	18
124	17	17	16
124	17	17	16
124	17	17	16
124	17	17	16
128	17	17	18
128	17	17	18
128	17	17	18
128	17	17	18
128	17	17	16
128	17	17	16
128	17	17	16
128	17	17	16
132	18	18	18
132	18	18	18
132	18	18	18
132	18	18	18
132	17	17	16
132	17	17	16
132	17	17	16
132	17	17	16
136	18	18	18
136	18	18	18
136	18	18	18
136	18	18	18
136	17	17	16
136	17	17	16
136	17	17	16
136	17	17	16
140	18	17	18
140	18	17	18
140	18	17	18
140	18	17	18
140	17	16	17
140	17	16	17
140	17	16	17
140	17	16	17
144	18	17	18
144	18	17	18
144	18	17	18
144	18	17	18
144	17	16	18
144	17	16	18
144	17	16	18
144	17	16	18
149	21	21	21

149	21	21	21
149	21	21	21
149	21	21	21
149	21	21	21
149	21	21	21
149	21	21	21
149	21	21	21
153	21	21	21
153	21	21	21
153	21	21	21
153	21	21	21
153	21	21	21
153	21	21	21
153	21	21	21
153	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
161	21	21	21
161	21	21	21
161	21	21	21
161	21	21	21
161	21	21	21
161	21	21	21
161	21	21	21
161	21	21	21

=====

80MHz power table

=====

```
{Administrator}>call_qcsapi set_bw wifi0 80
radar start with regulatory us
complete
{Administrator}>show_tx_power_table
Regulatory Region: us
```

Channel	TX Power		
	80M	40M	20M
36	17	17	21
36	17	17	21
36	17	17	21
36	17	17	21
36	18	16	20
36	18	16	20
36	18	16	20
36	18	16	20
40	17	17	21
40	17	17	21
40	17	17	21
40	17	17	21
40	18	16	21
40	18	16	21
40	18	16	21
40	18	16	21
44	17	21	21

44	17	21	21
44	17	21	21
44	17	21	21
44	18	21	21
44	18	21	21
44	18	21	21
44	18	21	21
48	17	21	21
48	17	21	21
48	17	21	21
48	17	21	21
48	18	21	21
48	18	21	21
48	18	21	21
48	18	21	21
52	17	18	18
52	17	18	18
52	17	18	18
52	17	18	18
52	17	18	18
52	17	18	18
52	17	18	18
52	17	18	18
56	17	18	18
56	17	18	18
56	17	18	18
56	17	18	18
56	17	18	18
56	17	18	18
56	17	18	18
56	17	18	18
60	17	17	18
60	17	17	18
60	17	17	18
60	17	17	18
60	17	17	17
60	17	17	17
60	17	17	17
60	17	17	17
64	17	17	18
64	17	17	18
64	17	17	18
64	17	17	18
64	17	17	17
64	17	17	17
64	17	17	17
64	17	17	17
100	16	17	18
100	16	17	18
100	16	17	18
100	16	17	18
100	16	15	16
100	16	15	16
100	16	15	16
100	16	15	16
104	16	17	18
104	16	17	18
104	16	17	18
104	16	17	18
104	16	15	16

104	16	15	16
104	16	15	16
104	16	15	16
108	16	17	18
108	16	17	18
108	16	17	18
108	16	17	18
108	16	16	16
108	16	16	16
108	16	16	16
108	16	16	16
112	16	17	18
112	16	17	18
112	16	17	18
112	16	17	18
112	16	16	16
112	16	16	16
112	16	16	16
112	16	16	16
116	17	17	18
116	17	17	18
116	17	17	18
116	17	17	18
116	17	16	17
116	17	16	17
116	17	16	17
116	17	16	17
120	17	17	18
120	17	17	18
120	17	17	18
120	17	17	18
120	17	16	16
120	17	16	16
120	17	16	16
120	17	16	16
124	17	17	18
124	17	17	18
124	17	17	18
124	17	17	18
124	17	17	16
124	17	17	16
124	17	17	16
124	17	17	16
128	17	17	18
128	17	17	18
128	17	17	18
128	17	17	18
128	17	17	16
128	17	17	16
128	17	17	16
128	17	17	16
132	18	18	18
132	18	18	18
132	18	18	18
132	18	18	18
132	17	17	16
132	17	17	16
132	17	17	16
132	17	17	16
136	18	18	18

136	18	18	18
136	18	18	18
136	18	18	18
136	17	17	16
136	17	17	16
136	17	17	16
136	17	17	16
140	18	17	18
140	18	17	18
140	18	17	18
140	18	17	18
140	17	16	17
140	17	16	17
140	17	16	17
140	17	16	17
144	18	17	18
144	18	17	18
144	18	17	18
144	18	17	18
144	17	16	18
144	17	16	18
144	17	16	18
144	17	16	18
149	21	21	21
149	21	21	21
149	21	21	21
149	21	21	21
149	21	21	21
149	21	21	21
149	21	21	21
149	21	21	21
149	21	21	21
153	21	21	21
153	21	21	21
153	21	21	21
153	21	21	21
153	21	21	21
153	21	21	21
153	21	21	21
153	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
157	21	21	21
161	21	21	21
161	21	21	21
161	21	21	21
161	21	21	21
161	21	21	21
161	21	21	21
161	21	21	21
161	21	21	21

```

=====
=====TPC Script =====
=====
{Administrator}>cd /mnt/jffs2
{Administrator}>ls
admin.conf          hostapd.deny.wifi2      tch_upgrade.conf
enable_autostart    httpd-disabled         tpc_eur_band2_new.sh
eth_macaddr         per_ssid_config.txt    wifi_mac_addrs
hostapd.conf        tch_cwmp_conf          wireless_conf.txt
hostapd.deny.wifi0  tch_monitor.conf       wireless_conf.txt.bak
hostapd.deny.wifi1  tch_ntp.conf

{Administrator}>./tpc_eur_band2_new.sh

=====
=====tpc_eur_band2_new_2.sh programming=====
=====
#!/bin/sh
sleep_time=5
band2_ch="52"
band2_ch_max="144"
start_pow=18
threshold=-40

iwpriv wifi0 pppc 0
backoff_pow=$((start_pow-7))

#echo "Infinite loop [ hit CTRL+C to stop ]"
while true ;
do
    ch=`call_qcsapi get_channel wifi0`
    if [ "${ch}" -lt "${band2_ch}" -o "${ch}" -gt "${band2_ch_max}" ]; then
        continue
    fi

    cur_rssi="$(call_qcsapi get_rssi_dbm wifi0 0)"
    #echo "Current distance ${cur_rssi}dBm"
    if [ "${cur_rssi}" -lt "$((threshold + 1))" ]; then

        #echo "set_tx_pow ${start_pow}"
        set_tx_pow ${start_pow}
    else

        #echo "set_tx_pow ${backoff_pow}"
        set_tx_pow ${backoff_pow}
    fi

    #show_transmit_power
    #tell_pd_voltage_level
    sleep ${sleep_time}
done

```

Appendix C - Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

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