

## DFS Test Report

**Report No.:** RJBAOZ-WTW-P21081104-5

**Test Model:** NSD-G1000TS

**Received Date:** 2021/9/6

**Test Date:** 2021/10/26 ~ 2021/11/3

**Issued Date:** 2021/11/19

**Applicant:** Sony Network Communications Inc.

**Address:** 4-12-3, Higashi-shinagawa, Shinagawa-ku, Tokyo, 140-0002, Japan

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Hsin Chu Laboratory

**Lab Address:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan

**Test Location:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan



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**Release Control Record**

Issue No.	Description	Date Issued
RJBAOZ-WTW-P21081104-5	Original release.	2021/11/19

## 1 Certificate of Conformity

**Product:** ONU INTEGRATED SERVICE ROUTER

**Brand:** SONY

**Test Model:** NSD-G1000TS

**Sample Status:** Engineering sample

**Applicant:** Sony Network Communications Inc.

**Test Date:** 2021/10/26 ~ 2021/11/3

**Standards:** Certification Ordinance Article 2-1-19-3

Measurement was conducted by the temporary test method which TELEC submitted to the Minister for Internal Affairs and Communications based on the Ordinance Concerning Technical Regulations Conformity Certification etc. of Specified Radio Equipment in Annex 1, the Ministry of Internal Affairs and Communication notification in Article 88, Paragraph 2

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 :** Vivian Huang , **Date:** 2021/11/19  
Vivian Huang / Specialist

**Approved by :** Clark Lin , **Date:** 2021/11/19  
Clark Lin / Technical Manager

## 2 Dynamic Frequency Selection

The manufacturer shall state whether the UUT is capable of operating as a Master and/or a Slave. If the UUT is capable of operating in more than one operating mode then each operating mode shall be tested separately. See tables A and B for the applicability of DFS requirements prior to use a channel (Channel Availability Check) and during normal operation (In-Service Monitoring) for each of the operational modes.

**Table A: Applicability of DFS requirements prior to use a channel**

Requirement	Operational Mode
	Master
Interference Detection Threshold	✓
Channel Availability Check Time	✓
Non-Occupancy Period	✓

**Table B: Applicability of DFS requirements during normal operation**

Requirement	Operational Mode
	Master
Interference Detection Threshold	✓
Channel Closing Transmission Time	✓
Channel Move Time	✓
Non-Occupancy Period	✓

## 2.1 Test Limits and Radar Signal Parameters

### Interference Threshold Values

Maximum Transmit Power	Power Value
$\geq 200\text{mW}$ ( $\geq 23\text{dBm}$ )	-64dBm
$< 200\text{mW}$ ( $< 23\text{dBm}$ )	-62dBm
This level is only for 0dBi EUT antenna gain	

### DFS Requirement Time Values

Parameter	Value
Channel Availability Check Time	60 s
Non-occupancy Period	30 minutes
Channel Move Time	10 s
Channel Closing Transmission Time	260 ms

## Parameters of DFS Test Signals

### W53

Radar Test Signal	Pulse Repetition Frequency (Hz)	Pulse Width (μsec)	Number of Pulses per Burst	Radar Detection Probability
DFS-J1-1	200 – 1000	0.5 – 5	10	60% or more
DFS-J1-2	200 – 1600	0.5 – 15	15	60% or more
DFS-J1-3	200 – 1000	0.5 – 5	$22 \leq \text{PRF} \cdot 0.026 \leq 30$	60% or more
DFS-J1-4	200 – 1600	0.5 – 15	$22 \leq \text{PRF} \cdot 0.026 \leq 30$	60% or more
DFS-J1-5	1114 – 1118	0.5 – 1.5	30	60% or more
DFS-J1-6	928 – 932	0.5 – 1.5	25	60% or more
DFS-J1-7	886 – 890	0.5 – 1.5	24	60% or more
DFS-J1-8	738 – 742	0.5 – 1.5	20	60% or more

\*1. The detection probability is the total transmission time in any 100ms from the master station radio equipment (connection method is limited to carrier sense multiple access type) to the slave station radio equipment. It refers to the case of performing transmission of 30ms or more.

\*2. The receiving threshold level is the following. (This is the average power while receiving radar with an absolute gain 0 dBi antenna.)

The case of  $P_o \geq 200\text{mW}$ ;  $\geq -64\text{dBm}(\text{avg.})$  / The case of  $P_o < 200\text{mW}$ ;  $P_o \geq -62\text{dBm}(\text{avg.})$

( $P_o$ ; Max. Transmit Power (EIRP) of EUT)

\*3. Number of Pulses per Burst the  $\text{PRF} \cdot 0.026$  which round up to less than 1, "22" whichever is larger or "30", whichever is smaller.

\*4. DFS-J1-3 to DFS-J1-8 Each pulse has a linear frequency modulated chirp between 0.5 and 1 MHz

**W56**

Radar Type	Pulse Repetition Frequency (Hz)	Pulse Width (μsec)	Number of Pulses	Radar Detection Probability
DFS-J2-1	720	0.5	18	60% or more
DFS-J2-2	700	1	18	60% or more
DFS-US-1	250	2	18	60% or more
DFS-US-2	4347 – 6667	1-5	23-29	60% or more
DFS-US-3	2000 – 5000	6-10	16-18	60% or more
DFS-US-4	2000 – 5000	11-20	12-16	60% or more
Aggregate (Radar Types 1-6)				80% or more
*1. In the transmission of the 17% of maximum signal access speed, when the master station is transmitting to the slave station. *2. The aggregate is the average of the percentage of successful detections of 6 Radar Types. *3. The receiving threshold level is the following. (This is the average power while receiving radar with an absolute gain 0 dBi antenna.) The case of $P_o \geq 200\text{mW}$ ; $\geq -64\text{dBm}(\text{avg.})$ / The case of $P_o < 200\text{mW}$ ; $P_o \geq -62\text{dBm}(\text{avg.})$ (Po; Max. Transmit Power (EIRP) of EUT)				

Radar Type	Pulse Repetition Frequency (pps)	Pulse Width (μsec)	Number of Pulses per Burst	Radar Detection Probability
DFS-US-5	500-1000	50 - 100	1-3	80% or more
*1. In the transmission of the 17% of maximum signal access speed, when the master station is transmitting to the slave station. *2. The transmission period for Long Pulse Radar test signal is 12 seconds. *3. Each pulse has a liner frequency modulated chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a Burst will have the same chirp width. Pulse in different Bursts may have different chirp widths. *4. There are a total of 8 to 20 Bursts in the 12 second period. The interval of Burst is the time when divided 12 seconds by the number of the bursts. *5. In the case of being lots pulse in the Burst, each pulse is same as them. *6. In the case of being lots pulse in the Burst, each Burst within the 12 second sequence must have a different number of pulses. *7. The receiving threshold level is the following. (This is the average power while receiving radar with an absolute gain 0 dBi antenna.) The case of $P_o \geq 200\text{mW}$ ; $\geq -64\text{dBm}(\text{avg.})$ / The case of $P_o < 200\text{mW}$ ; $P_o \geq -62\text{dBm}(\text{avg.})$ (Po; Max. Transmit Power (EIRP) of EUT)				



Radar Type	Pulse Repetition Frequency (pps)	Pulse Width (μsec)	Pulses per Hop	Radar Detection Probability
DFS-US-6	3000	1	9	70% or more
<p>*1. In the transmission of the 17% of maximum signal access speed, when the master station is transmitting to the slave station.</p> <p>*2. The frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250MHz to 5724MHz.</p> <p>*3. The Switching Interval of Hopping Sequence is 3 millisecond, and the Hopping Sequence Length is 300 millisecond.</p> <p>*4. The Burst Interval is 3 millisecond.</p> <p>*5. The receiving threshold level is the following. (This is the average power while receiving radar with an absolute gain 0 dBi antenna.)</p> <p>The case of <math>P_o \geq 200\text{mW}</math>; <math>\geq -64\text{dBm}(\text{avg.})</math> / The case of <math>P_o &lt; 200\text{mW}</math>; <math>P_o \geq -62\text{dBm}(\text{avg.})</math></p> <p>(<math>P_o</math>; Max. Transmit Power (EIRP) of EUT)</p>				

## 2.2 Test instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL	Calibration Authority	Calibration Method
Spectrum Analyzer R&S	FSV40	101516	2021/3/8	2022/3/7	ETC	(c)
MXG X-Series RF Vector Signal Generator Agilent	N5182B	MY53051263	2021/8/31	2022/8/30	ETC	(c)
DFS Control Box	BV-DFS-CB	001	2020/11/27	2021/11/26	BV CPS E&E	(d)

- NOTE:**
1. The test was performed in DFS-1 room.
  2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
  3. Calibration method :
    - a) : Calibration conducted by the National Institute of Information and Communications Technology (NICT) or a designated calibration agency under Article 102-18 paragraph (1).
    - b) : Calibration conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992) Japan Calibration Service System.
    - c) : Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).
    - d) : Calibration conducted by using other equipment that listed above from a) to c).
  4. Tested Date: 2021/10/26 ~ 2021/11/3

### 2.3 EUT Information

#### Operating Frequency Bands and Mode of EUT

Operational Mode	Operating Frequency Range	
	5250~5350MHz	5470~5730MHz
Master	✓	✓

#### EUT Software and Firmware Version

No.	Product	Model No.	Software/Firmware Version
1	ONU INTEGRATED SERVICE ROUTER	NSD-G1000TS	V1.0A.3110A

#### Description of Available Antennas to the EUT

Antenna NO.	RF Chain NO.	Brand	Model	Antenna Net Gain(dBi)	Frequency range (MHz)	Antenna Type	Connector Type	Cable Length
1	0	HONGBO	290-20473	3.54	2400~2483.5	PCB	ipex(MHF)	213mm
	3			4.81	5150~5850			
2	1	HONGBO	290-20474	3.23	2400~2483.5	PCB	ipex(MHF)	93mm
	2			4.52	5150~5850			
3	2	HONGBO	290-20475	3.99	2400~2483.5	PCB	ipex(MHF)	116mm
	1			5.47	5150~5850			
4	3	HONGBO	290-20476	3.95	2400~2483.5	PCB	ipex(MHF)	34mm
	0			5.51	5150~5850			
BT	0	HONGBO	290-20477	2.24	2400~2483.5	PCB	ipex(MHF)	127mm
Z-wave	0	HONGBO	290-20478	-0.2	920~928	Monopole	Dip	NA

Note: The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

## 2.4 Description of support units

### Support Unit information

No.	Product	Brand	Model No.
1	Intel® Wi-Fi 6 AX200	Intel	AX200NGW

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

### Software/Firmware information

No.	Product	Model No.	Software/Firmware Version
1	Intel® Wi-Fi 6 AX200	AX200NGW	21.80.2.1

## 2.5 Test Procedure

The measured channels are in the W53 and W56 bands. The radar signal was the same as transmitted channels, and injected into the antenna port of UUT (master), measured the Channel Availability Check time and channel closing transmission time and channel move time and Non-Occupancy Period.

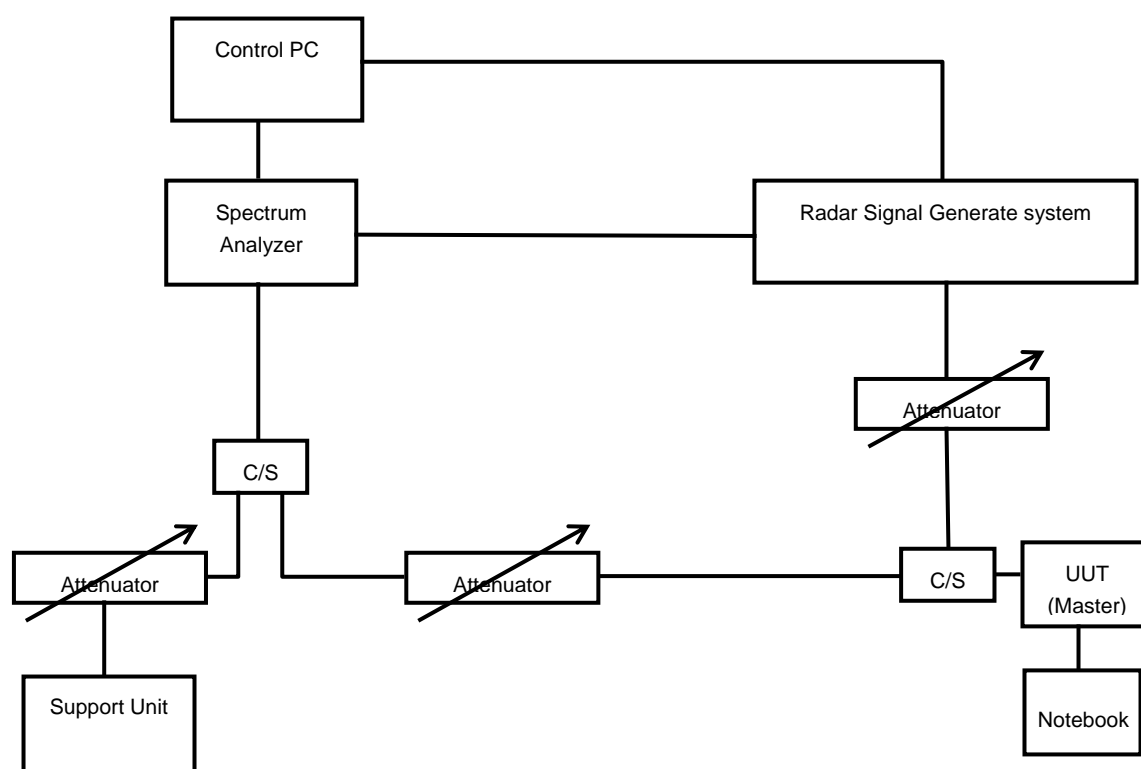
The master transmitted the test data to slave, the channel loading as below:

The channel loading in W53 band shall not be less 30% and W56 band shall not be less 17%.

## 2.6 Deviation form Test Standard

No deviation.

## 2.7 Test Setup Configuration



The UUT is capable of operating as a Master mode. The radar test signals are injected into the Master Device.

## 2.8 List of Measurements

Test Parameter	Remarks	Pass/Fail
Interference Detection Threshold	Applicable	Pass
Channel Availability Check Time	Applicable	Pass
Channel Closing Transmission Time	Applicable	Pass
Channel Move Time	Applicable	Pass
Non-Occupancy Period	Applicable	Pass

**Note:**

1. This UUT is capable of operating as a master (with radar detection).
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

**Test Condition:**

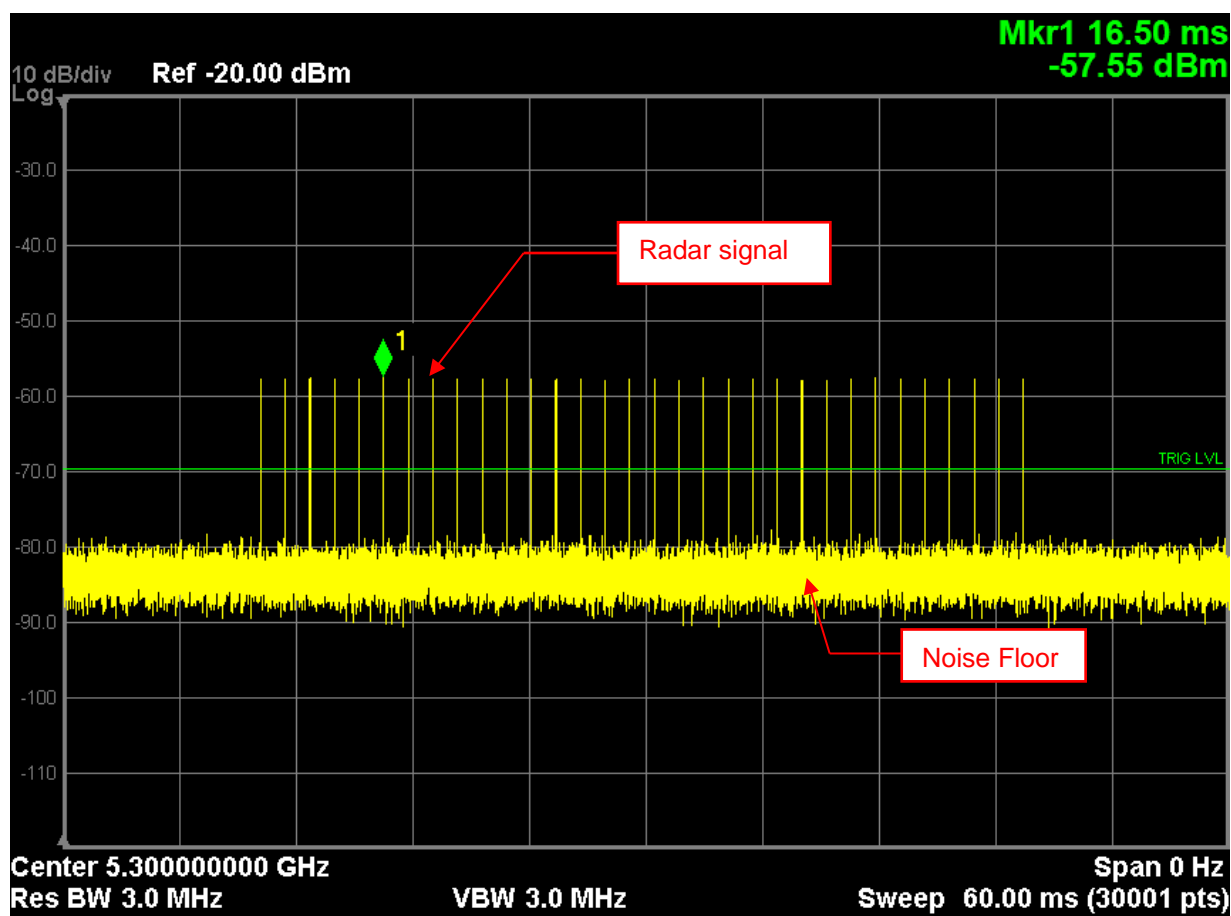
Applicable To	Environmental conditions	Voltage
Interference Detection Threshold	21deg. C, 63%RH	12Vdc
Channel Availability Check Time	22deg. C, 62%RH	12Vdc
Channel Closing Transmission Time	21deg. C, 61%RH	12Vdc
Channel Move Time	21deg. C, 63%RH	12Vdc
Non-Occupancy Period	20deg. C, 62%RH	12Vdc

## 2.9 Test Results

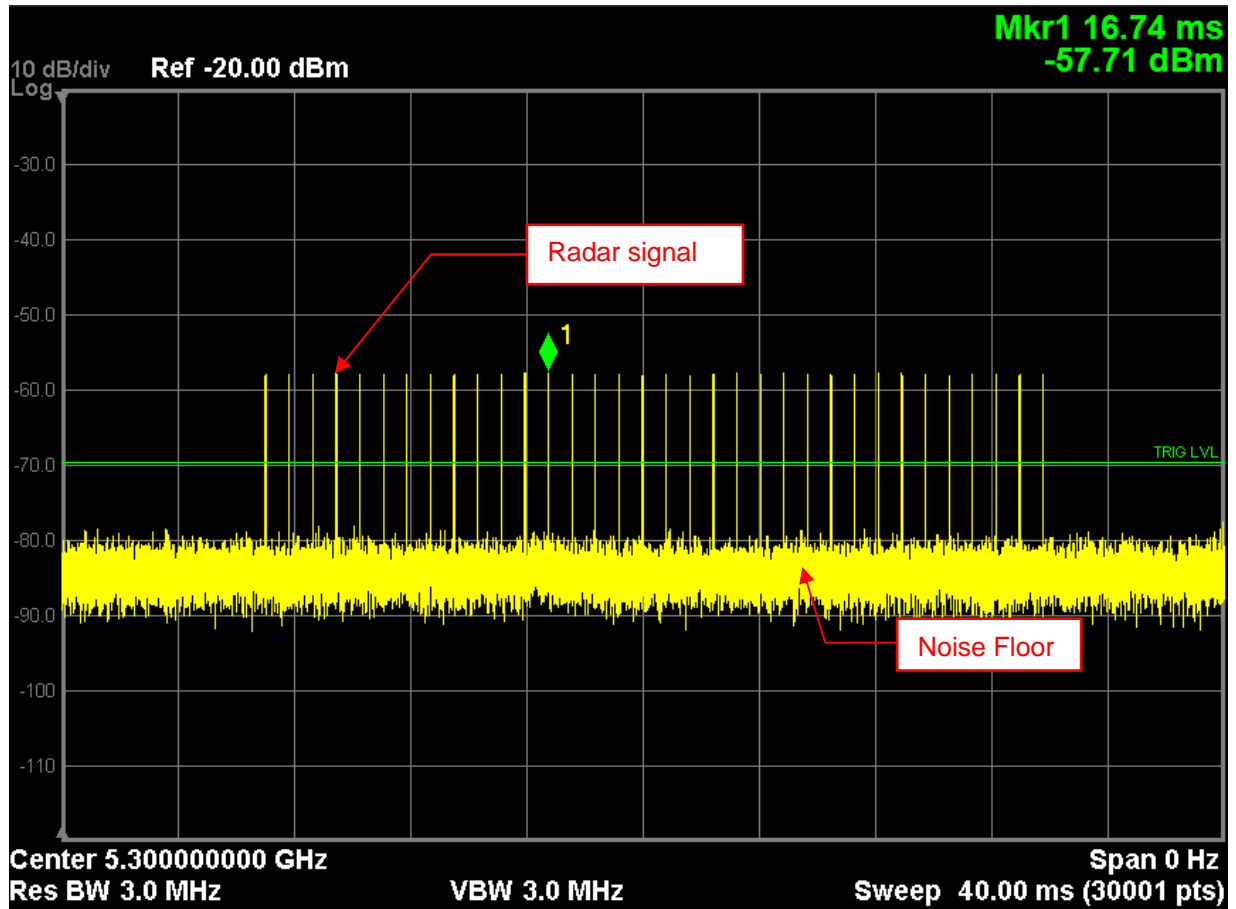
### Interference Threshold Values Injected into UUT

#### W53 band

For an interference threshold level of  $-62\text{dBm}$  and the UUT antenna gain is  $4.52\text{dBi}$ . Then the radar Burst signal level to the AP connector is lower than  $-57.48\text{dBm}$ .

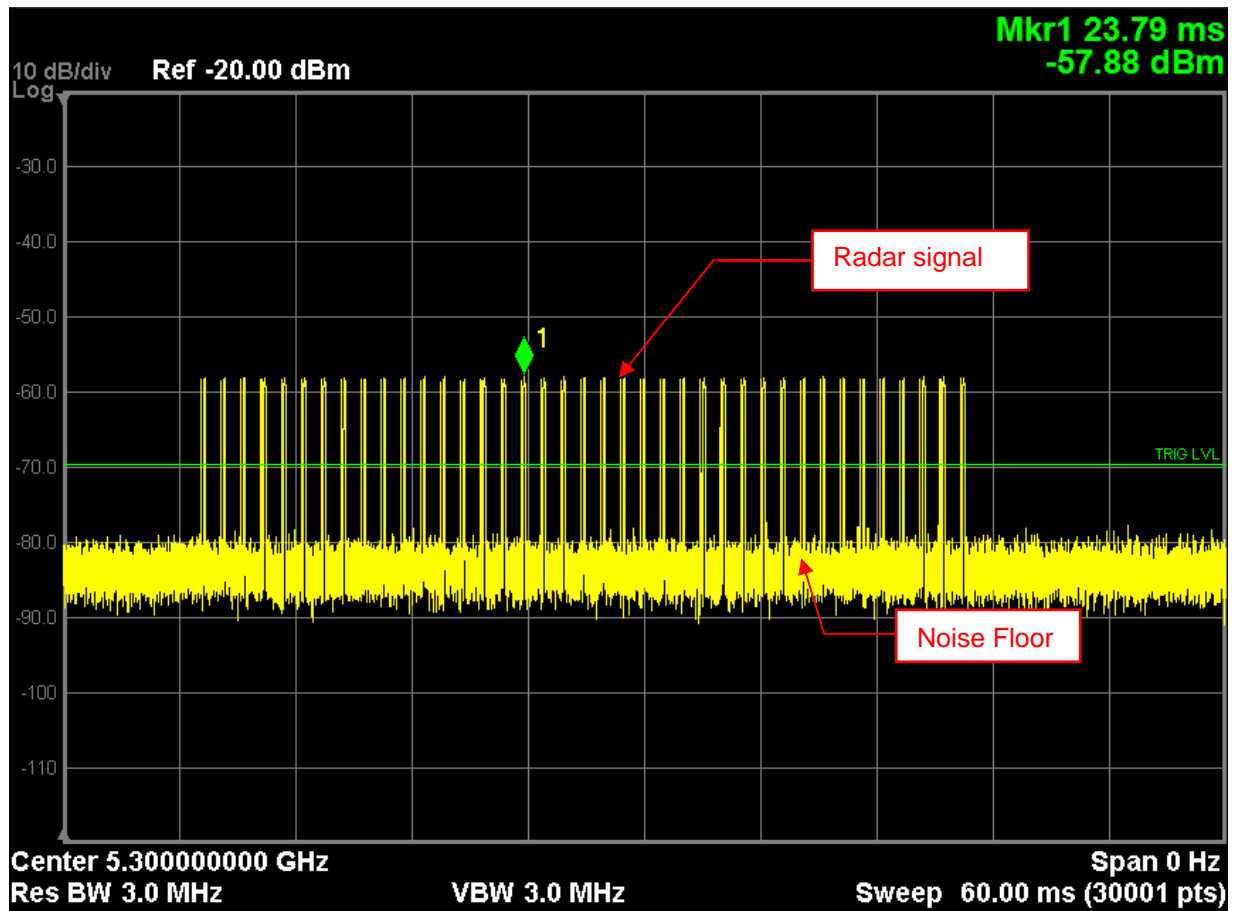


DFS-J1-1

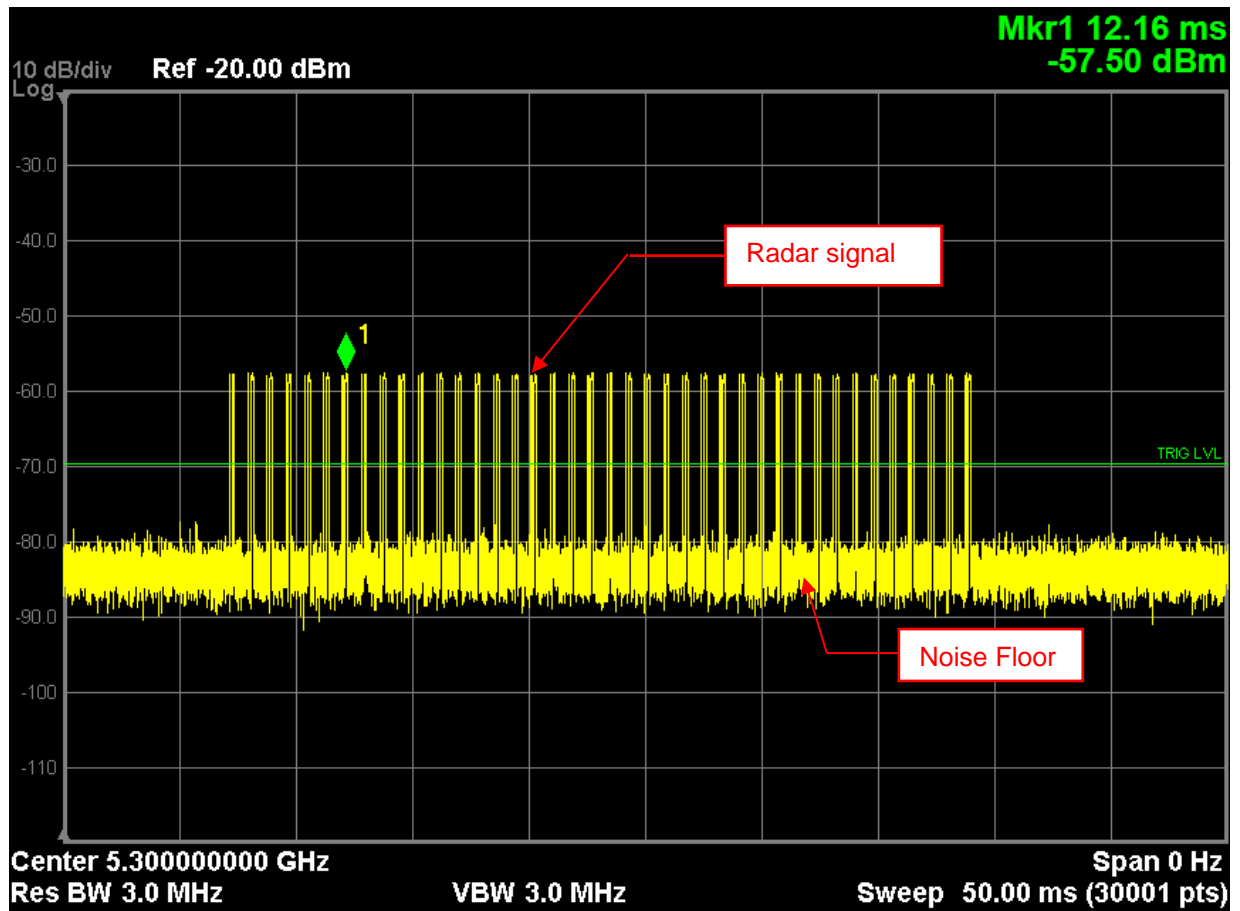


DFS-J1-2

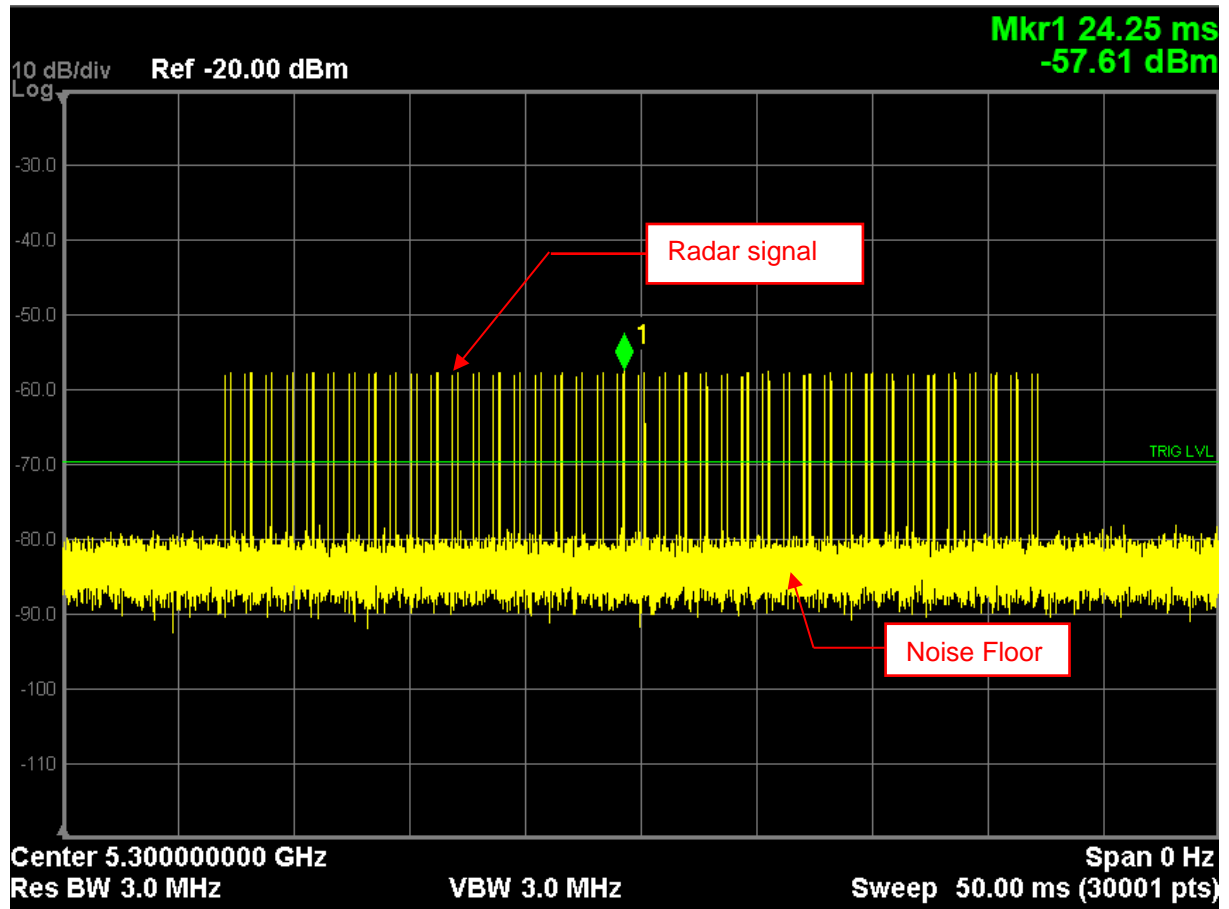




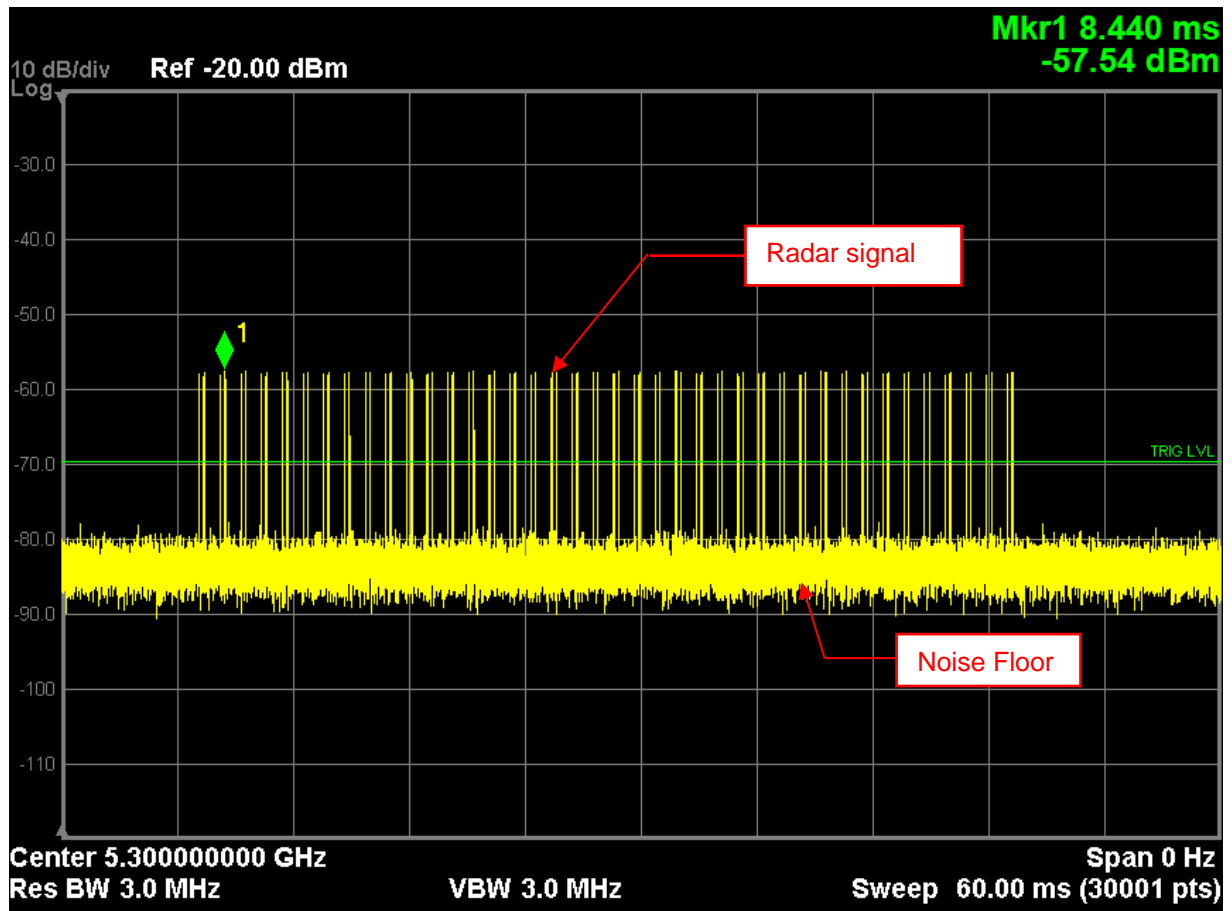
DFS-J1-3



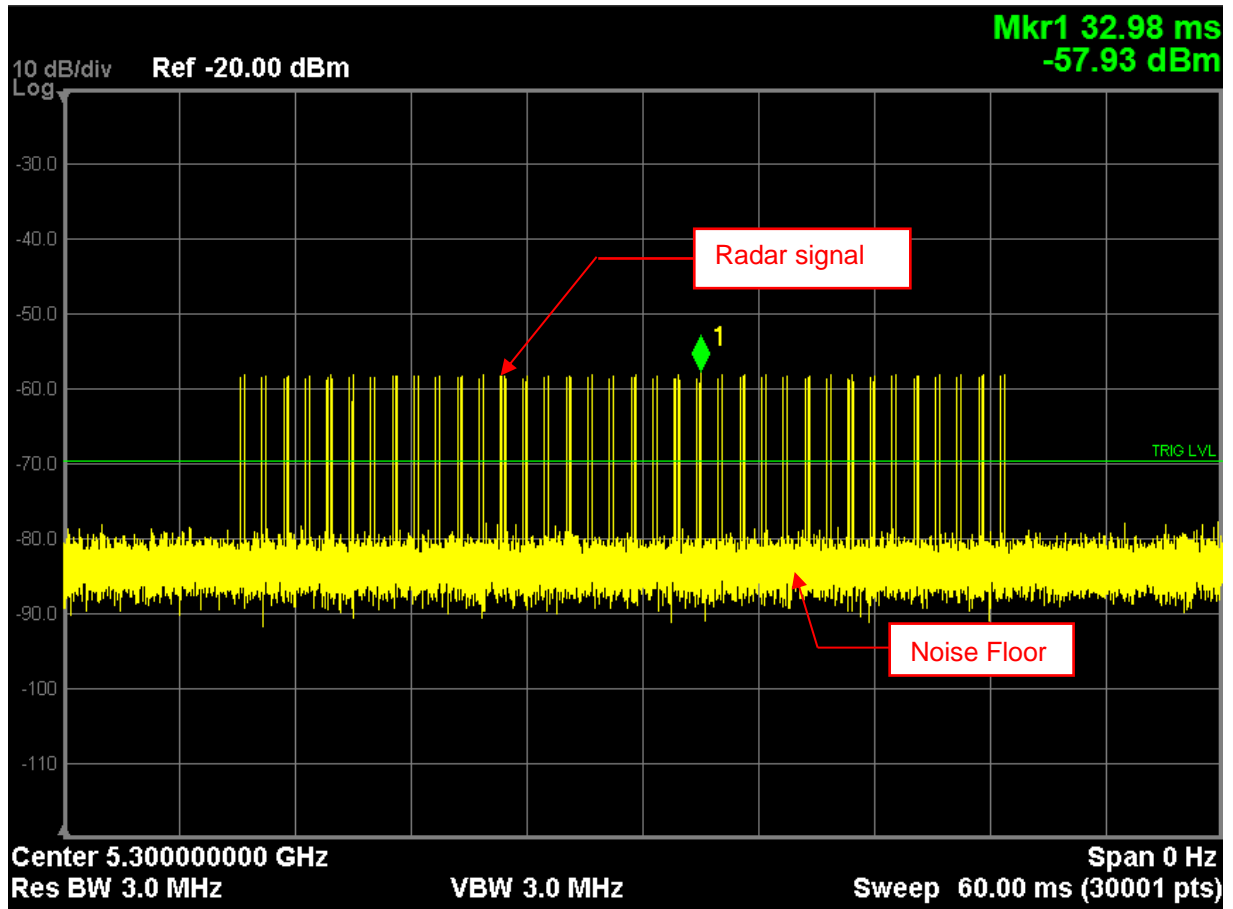
DFS-J1-4



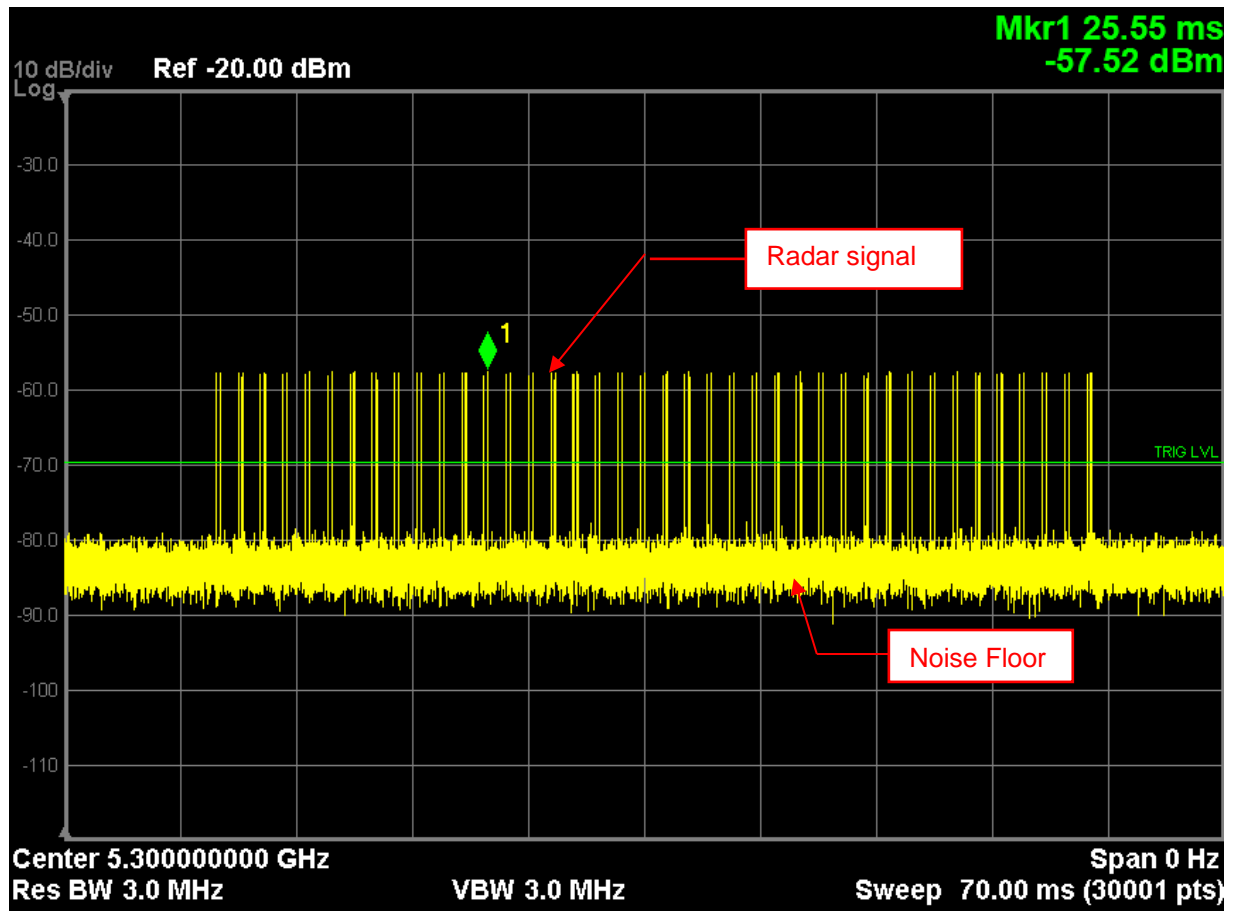
DFS-J1-5



DFS-J1-6



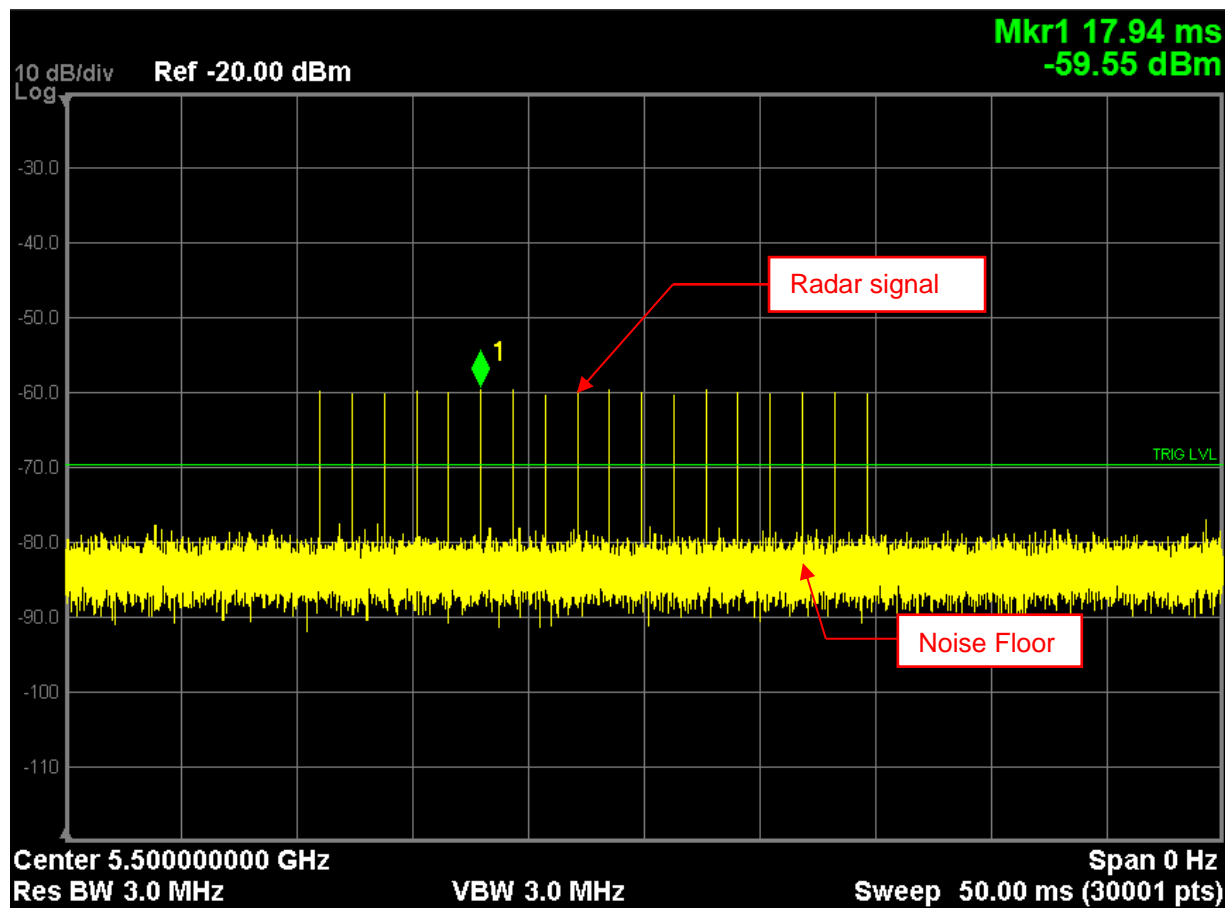
DFS-J1-7



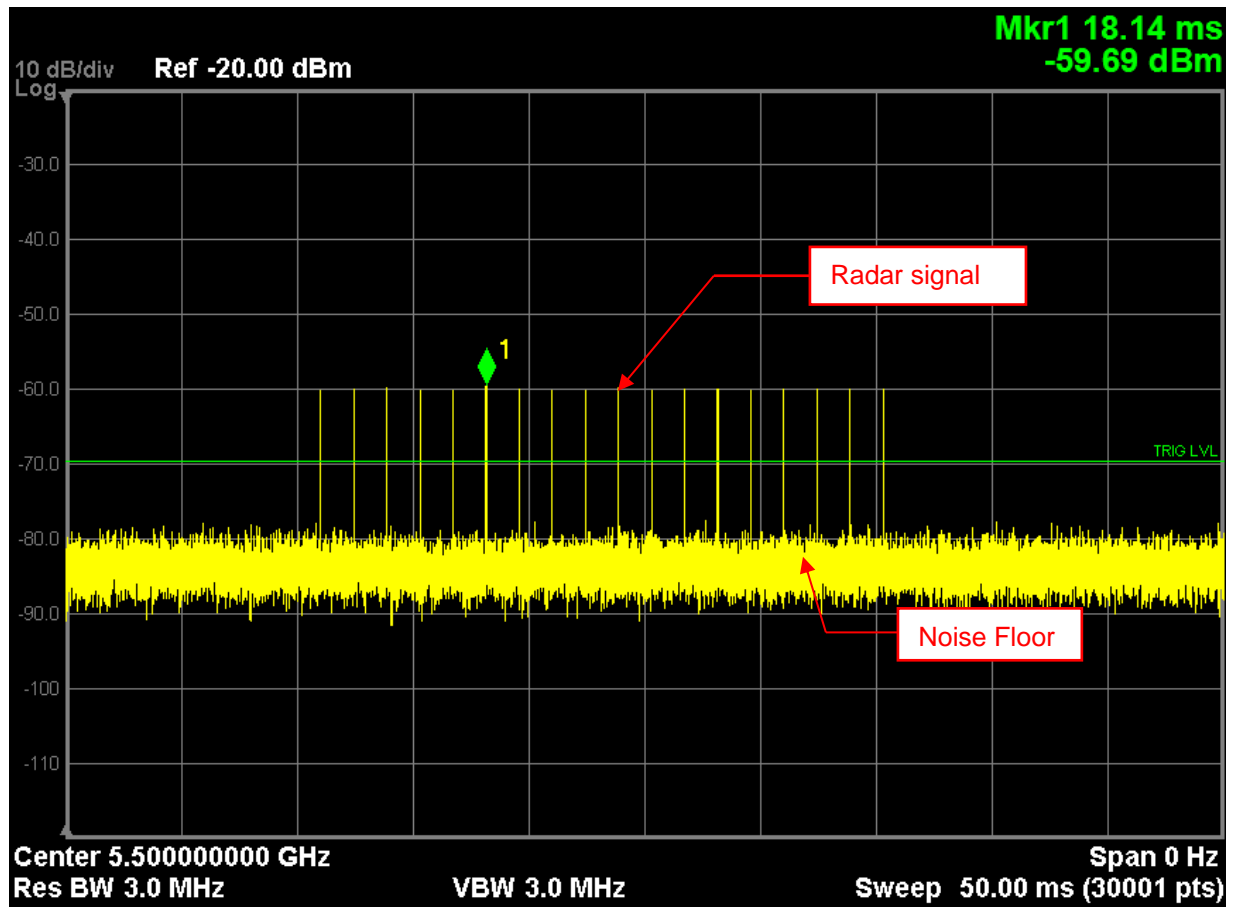
DFS-J1-8

## W56 band

For an interference threshold level of  $-64\text{dBm}$  and the UUT antenna gain is  $4.52\text{dBi}$ . Then the radar Burst signal level to the AP connector is lower than  $-59.48\text{dBm}$ .

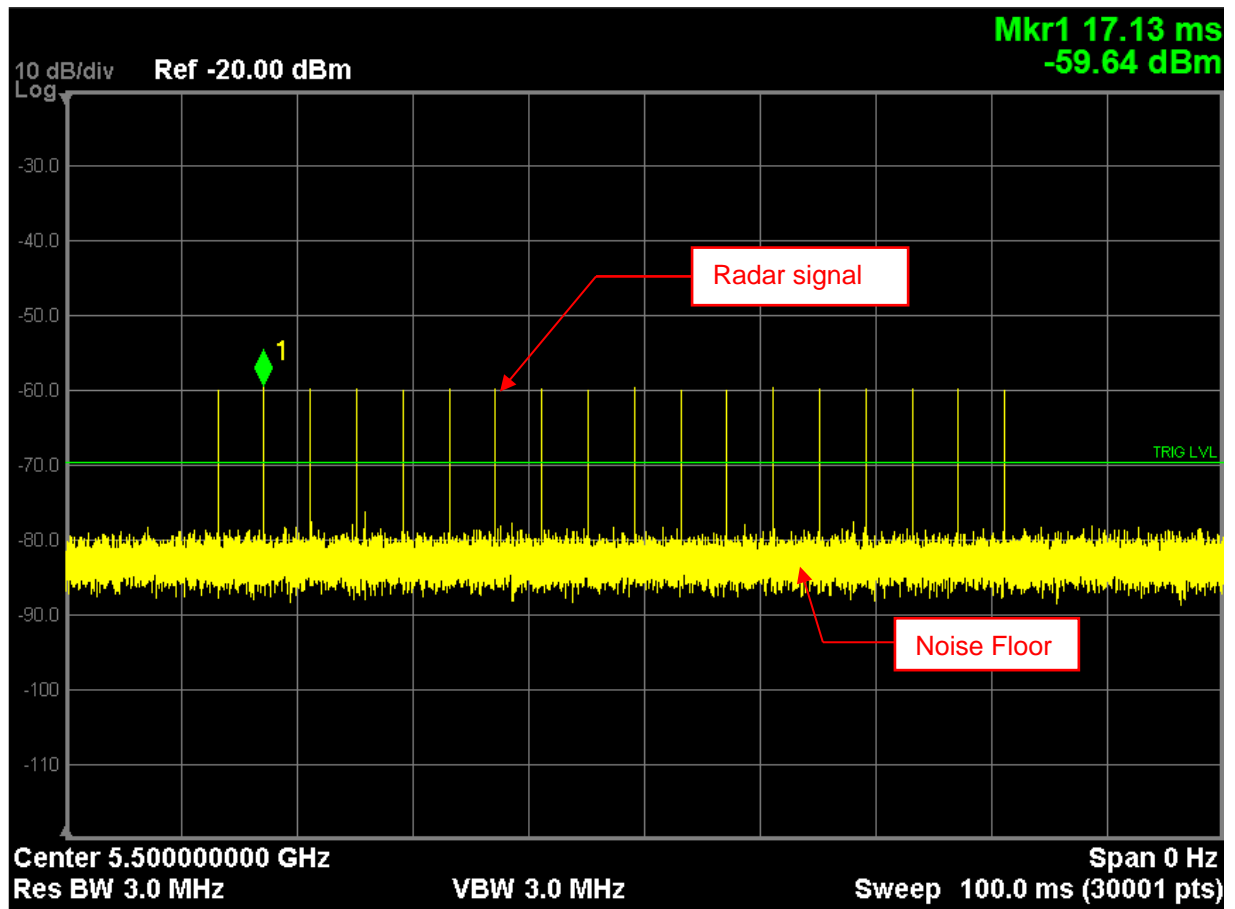


DFS-J2-1

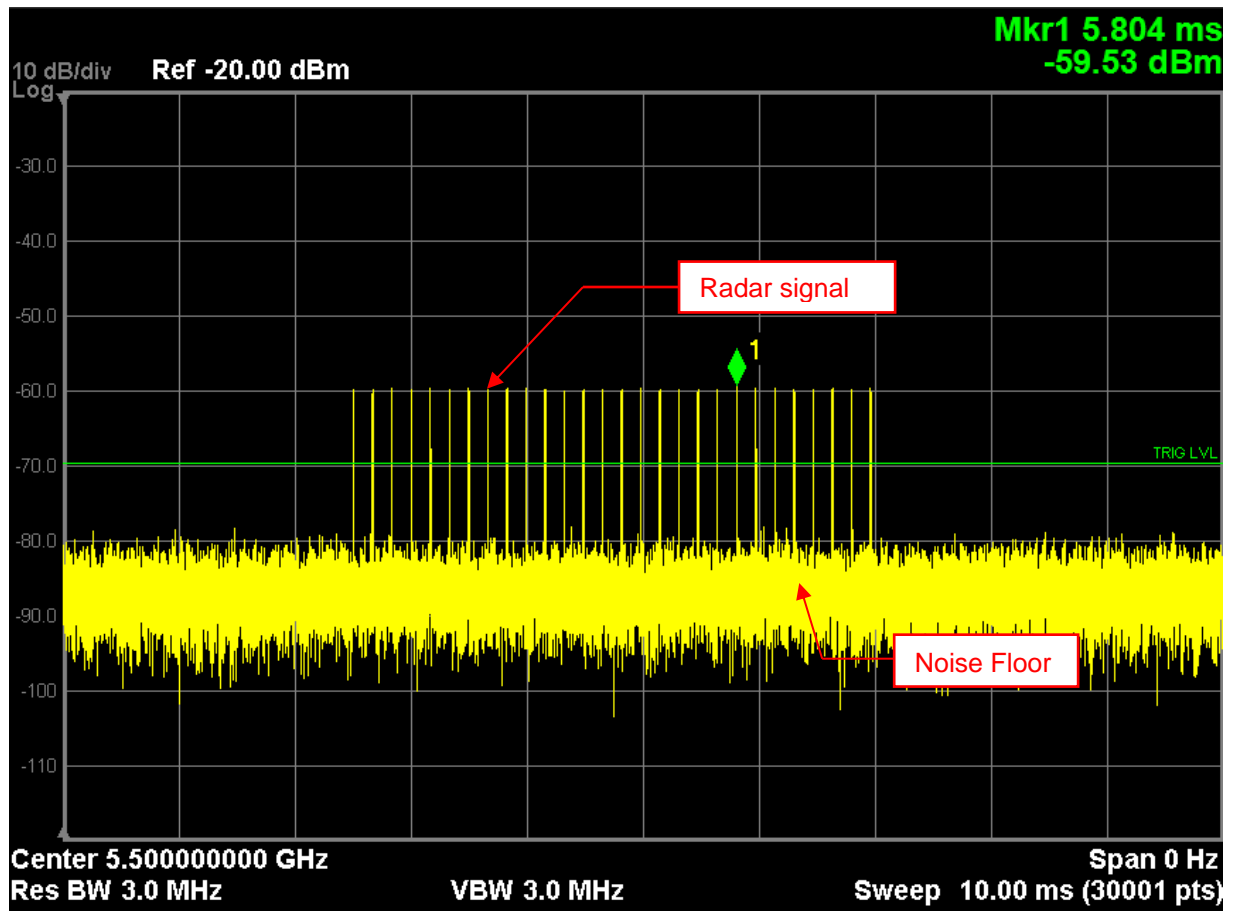


DFS-J2-2

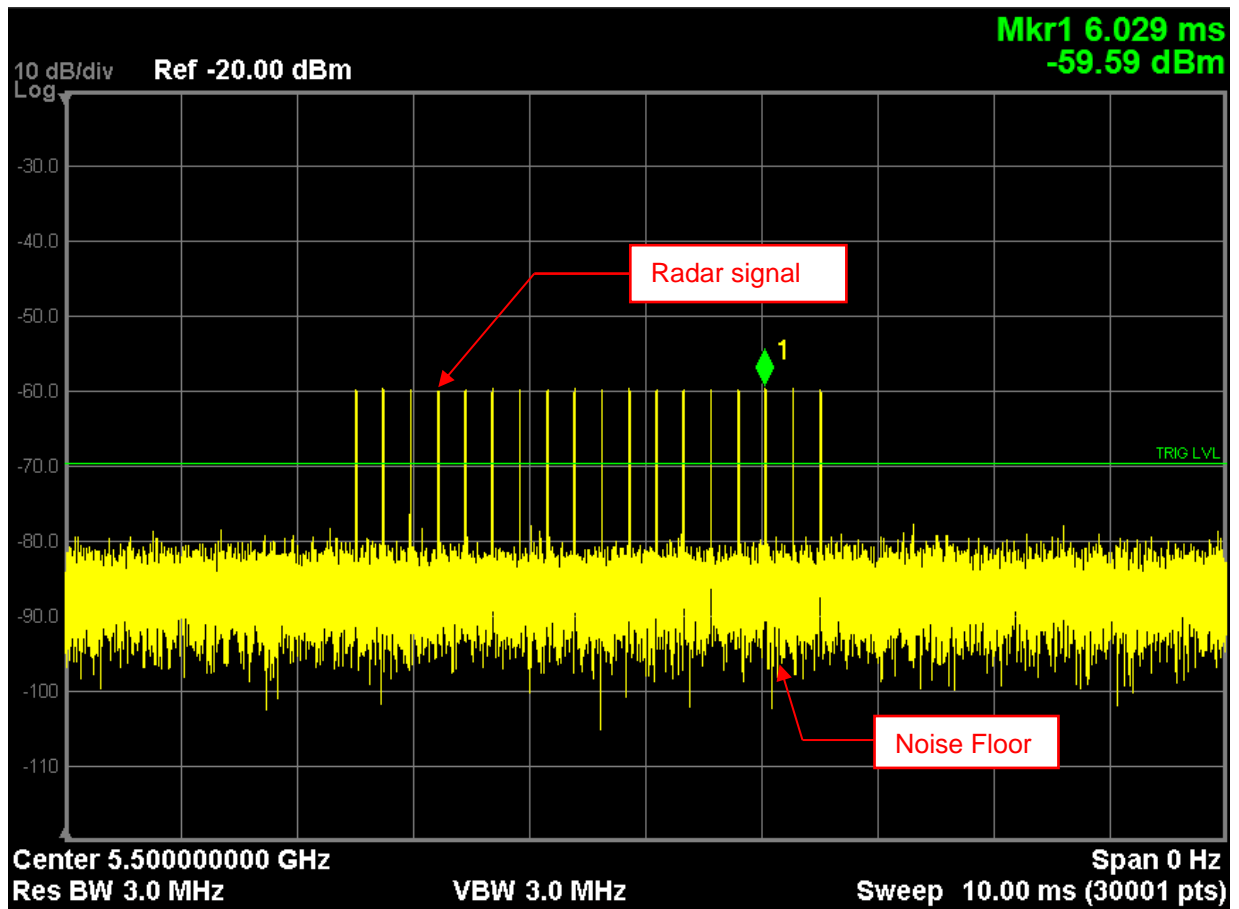




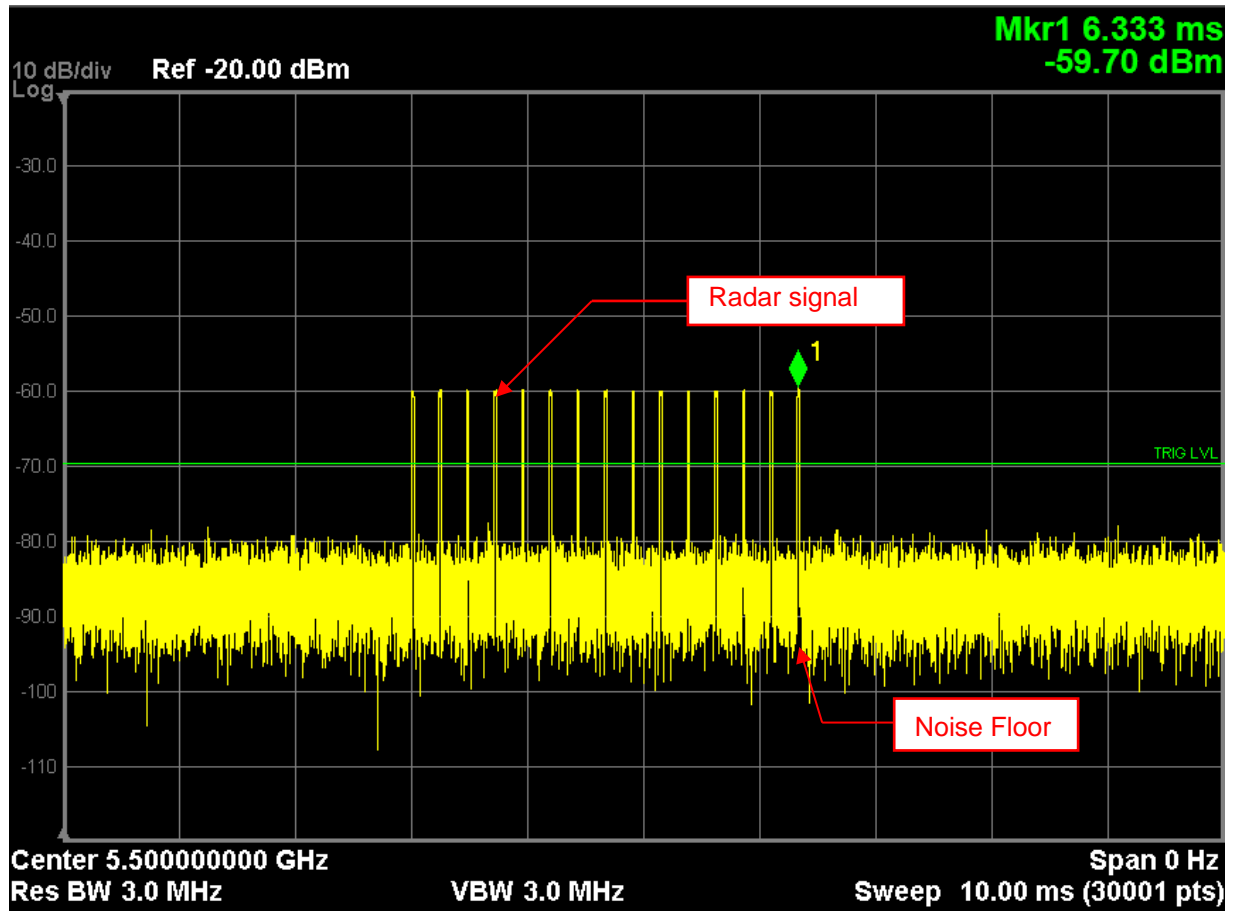
DFS-US-1



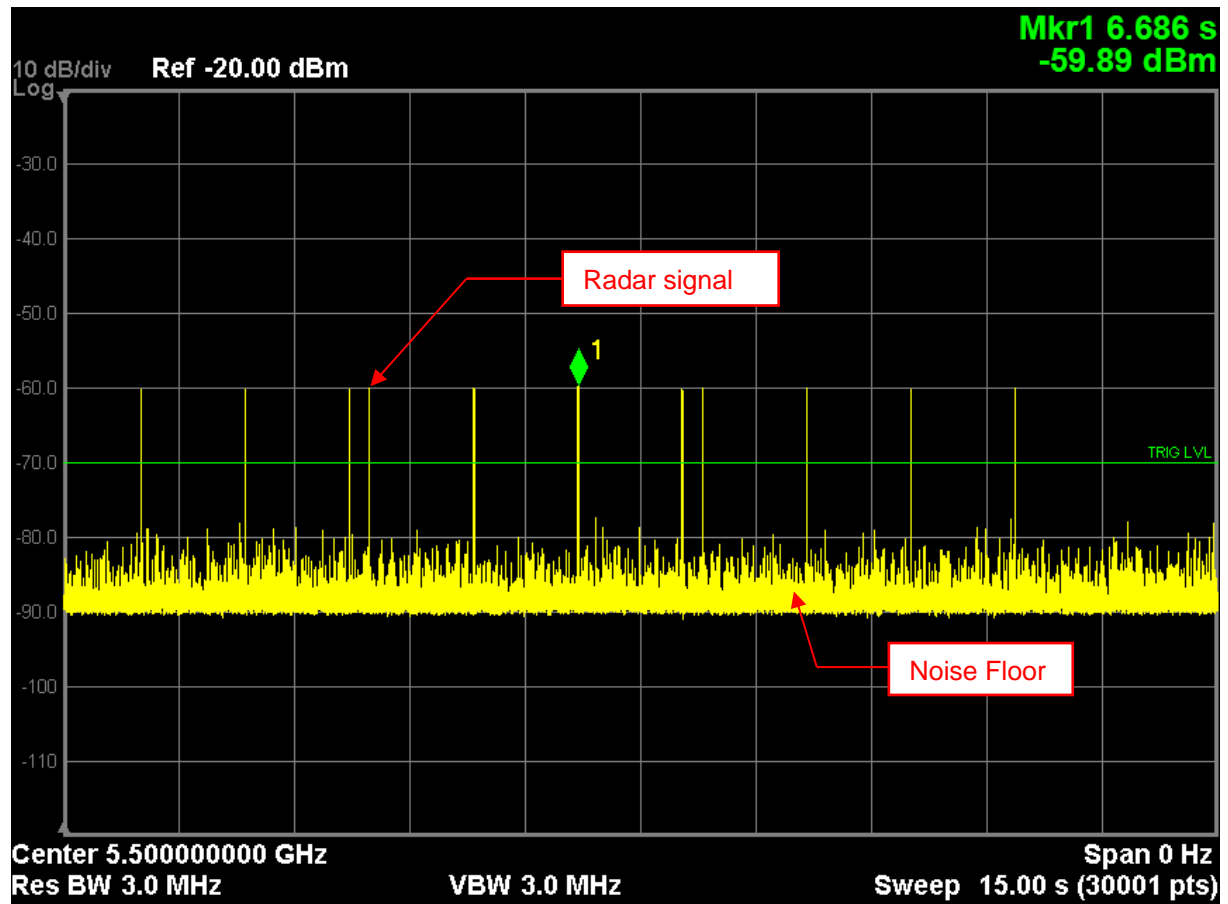
DFS-US-2



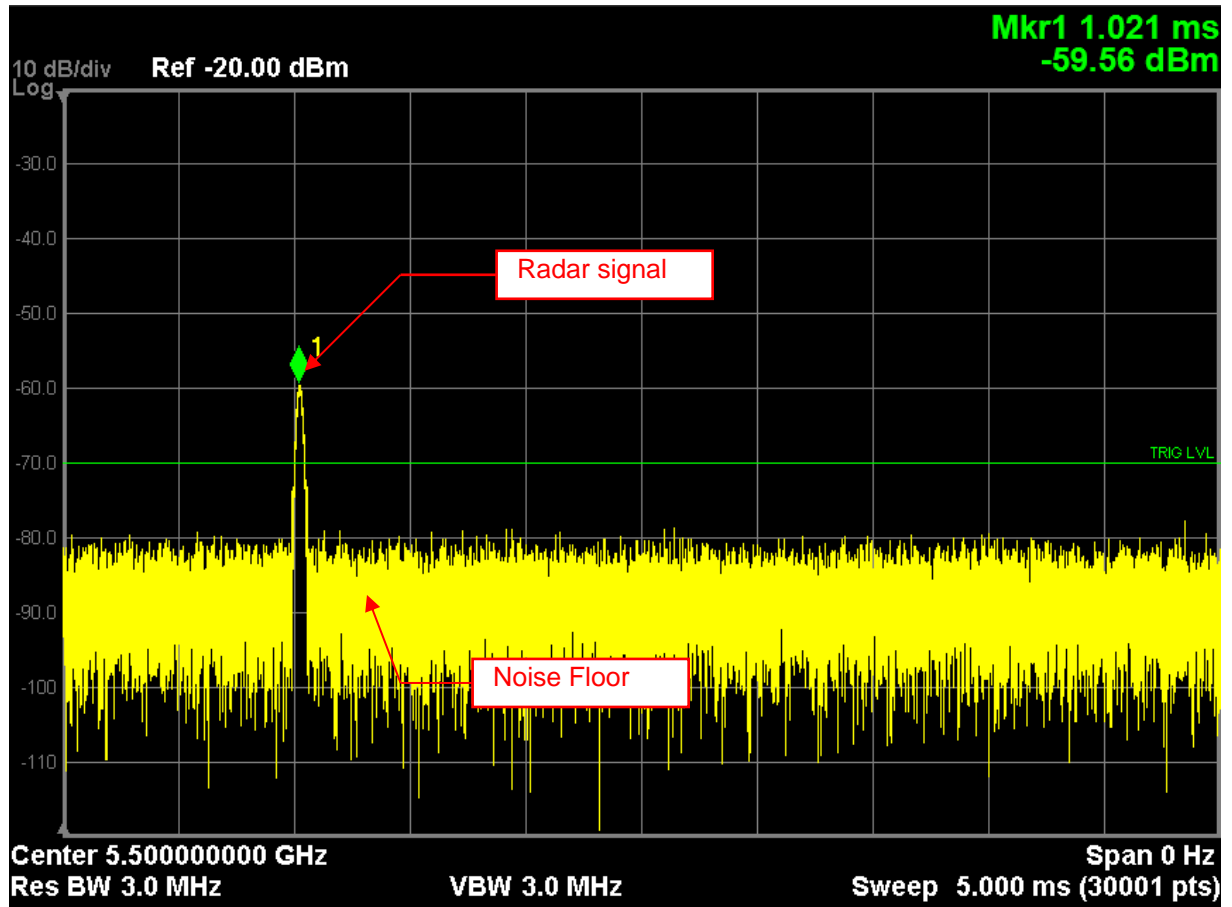
DFS-US-3



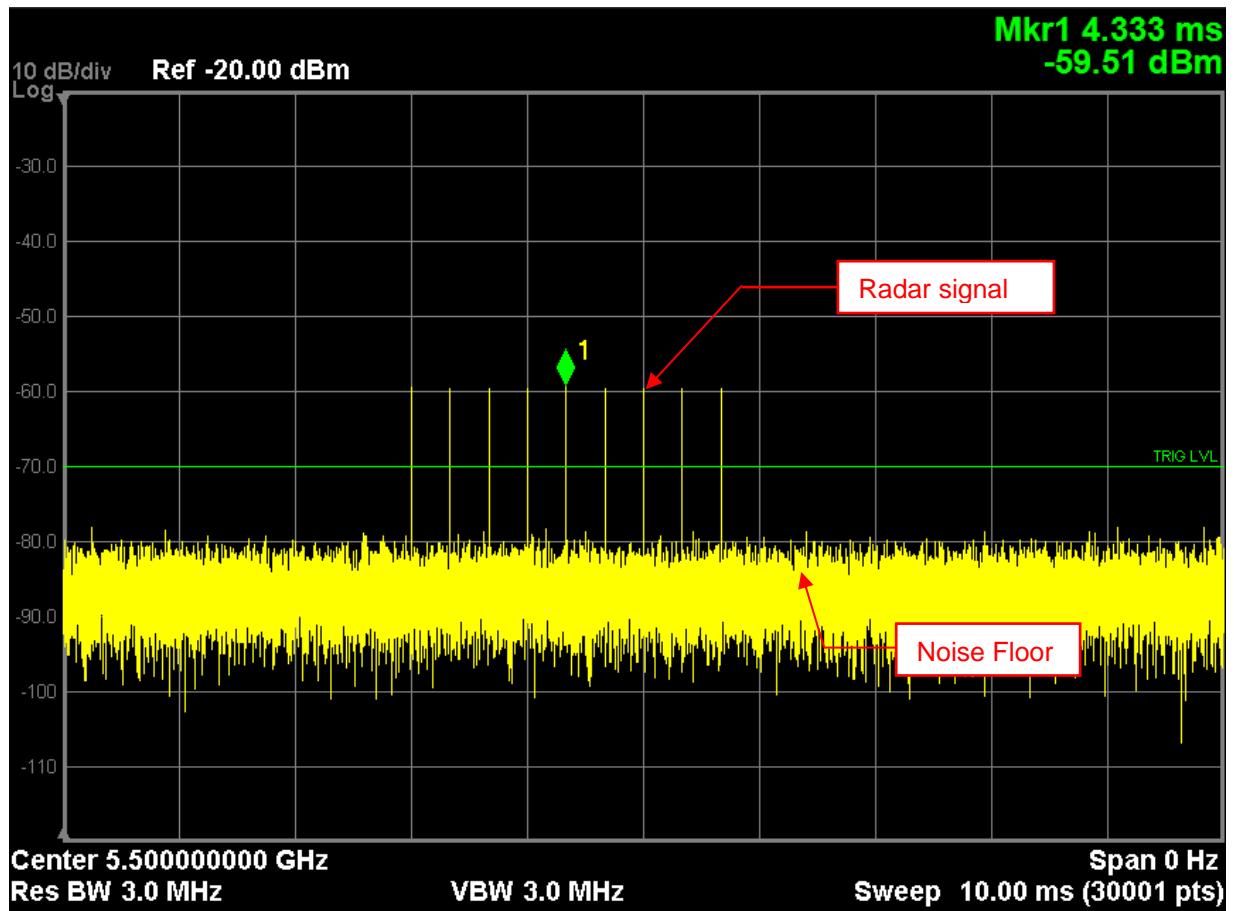
DFS-US-4



DFS-US-5  
Long Pulse Radar



DFS-US-5  
Long Pulse Radar Signal



DFS-US-6  
Frequency Hopping Radar Signal

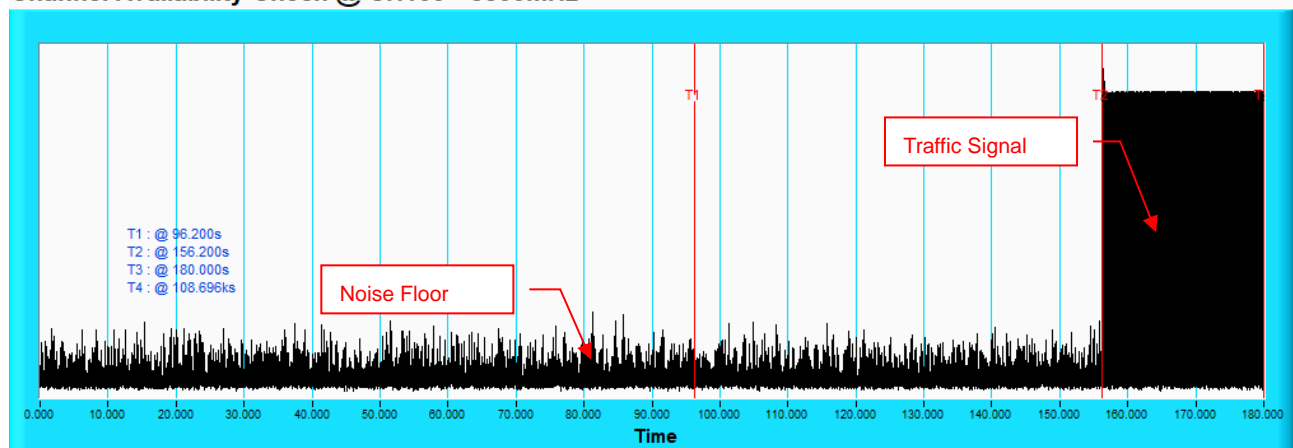
### Channel Availability Check Time

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

Timing of Radar Signal	Observation	
	UUT	Spectrum Analyzer
Within 1 to 6 second	Detected	No transmissions
Within 54 to 60 second	Detected	No transmissions

### Initial Channel Availability Check Time

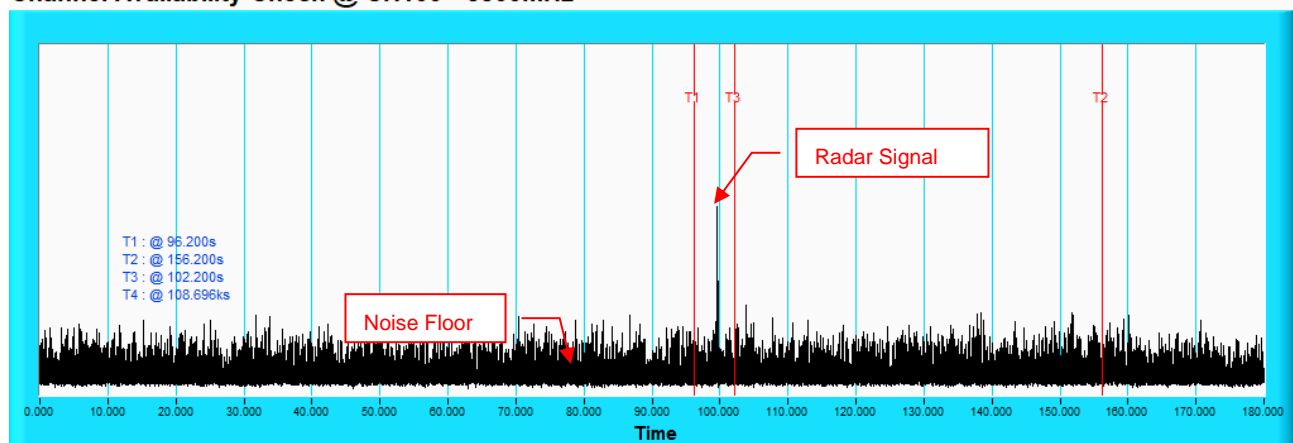
#### Channel Availability Check @ CH100 - 5500MHz



**NOTE:** T1 denotes the end of power-up time period and is 96.2<sup>th</sup> second. T2 denotes the end of Channel Availability Check time and is 156.2<sup>th</sup> second. Channel Availability Check time is equal to (T2 – T1) 60 seconds.

### Radar Burst at the Beginning of the Channel Availability Check Time

#### Channel Availability Check @ CH100 - 5500MHz

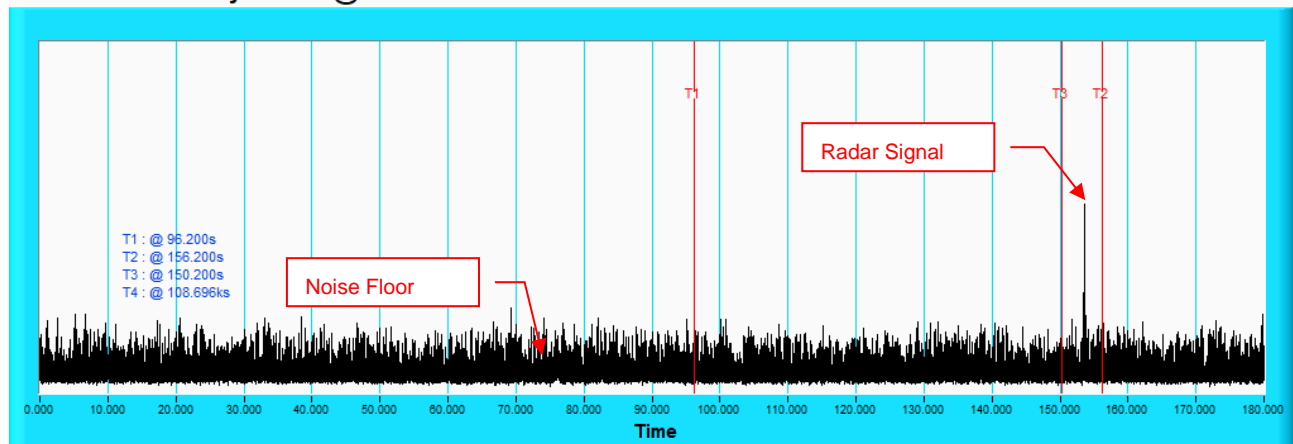


**NOTE:** T1 denotes the end of power up time period and is 96.2<sup>th</sup> second. The radar burst was commenced within a 6 second window starting from the end of power-up sequence. T3 denotes the 102.2<sup>th</sup> second.



## Radar Burst at the End of the Channel Availability Check Time

### Channel Availability Check @ CH100 - 5500MHz



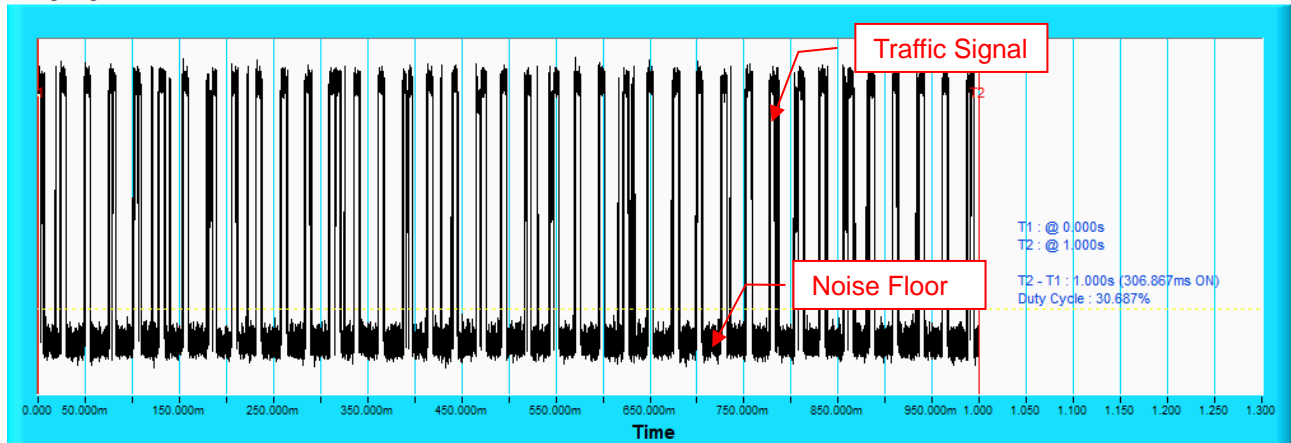
**NOTE:** T1 denotes the end of power up time period and is 96.2<sup>th</sup> second. T2 denotes 156.2<sup>th</sup> second and T3 denotes the 150.2<sup>th</sup> second. The radar burst was commenced within 54<sup>th</sup> second to 60<sup>th</sup> second window starting from the end of power-up sequence.

### Channel Closing Transmission Time and Channel Move Time

The channel closing time is aggregated duration of all transmissions from the UUT during the channel move time. The Aggregate duration of all transmission of the UUT does not include quiet periods in between transmissions of the UUT.

#### W53 WLAN Traffic Signal

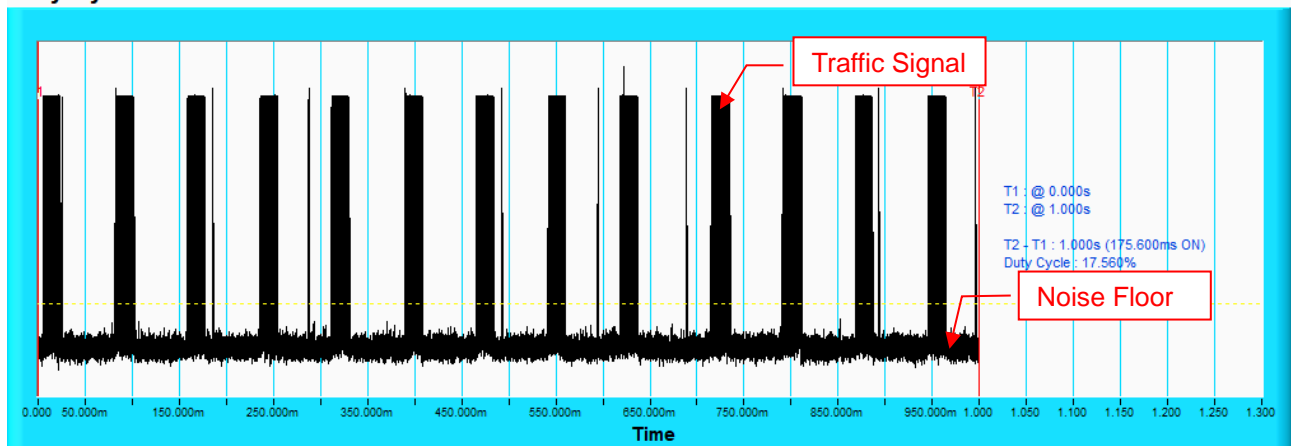
##### Duty Cycle



**Note:** T1 denotes the start of duty cycle period and is 0 second. T2 denotes the end of duty cycle period and is 1<sup>st</sup> second. T2 – T1= 1 seconds. Duty Cycle = 30.687%,

#### W56 WLAN Traffic Signal

##### Duty Cycle



**Note:** T1 denotes the start of duty cycle period and is 0 second. T2 denotes the end of duty cycle period and is 1<sup>st</sup> second. T2 – T1= 1 seconds. Duty Cycle = 17.56%,

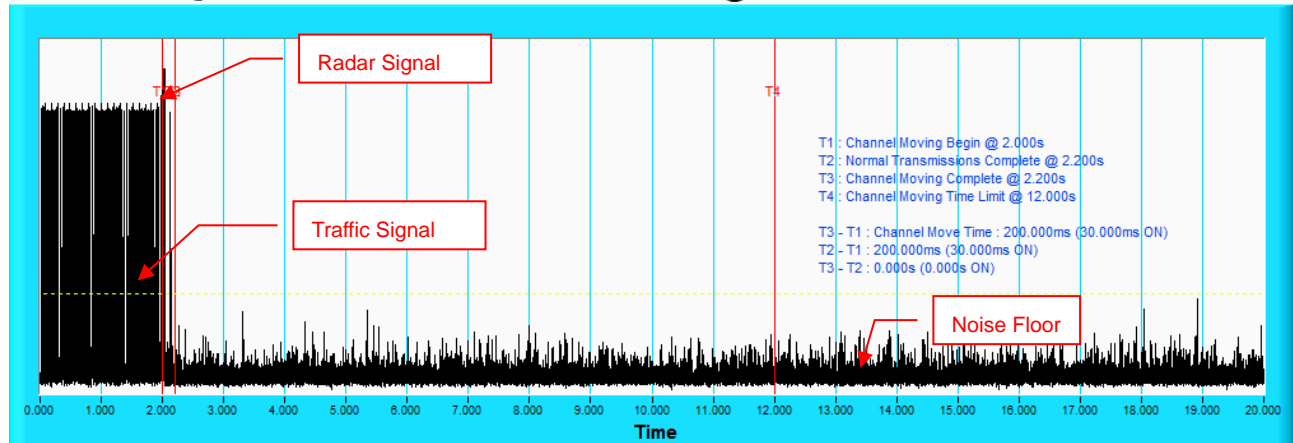
**W53 802.11a**

Radar Test Signal	Pulse Repetition Frequency (Hz)	Pulse Width (us)	Number of Pulses per Burst	Minimum Percentage of Successful Detection (%)	Percentage of Successful Detection (%)
DFS-J1-1	200 – 1000	0.5 – 5	10	60	90
DFS-J1-2	200 – 1600	0.5 – 15	15	60	85
DFS-J1-3	200 – 1000	0.5 – 5	$22 \leq \text{PRF} \cdot 0.026 \leq 30$	60	67.5
DFS-J1-4	200 – 1600	0.5 – 15	$22 \leq \text{PRF} \cdot 0.026 \leq 30$	60	60
DFS-J1-5	1114 – 1118	0.5 – 1.5	30	60	67.5
DFS-J1-6	928 – 932	0.5 – 1.5	25	60	72.5
DFS-J1-7	886 – 890	0.5 – 1.5	24	60	60
DFS-J1-8	738 – 742	0.5 – 1.5	20	60	75

## W53

### DFS-J1-1

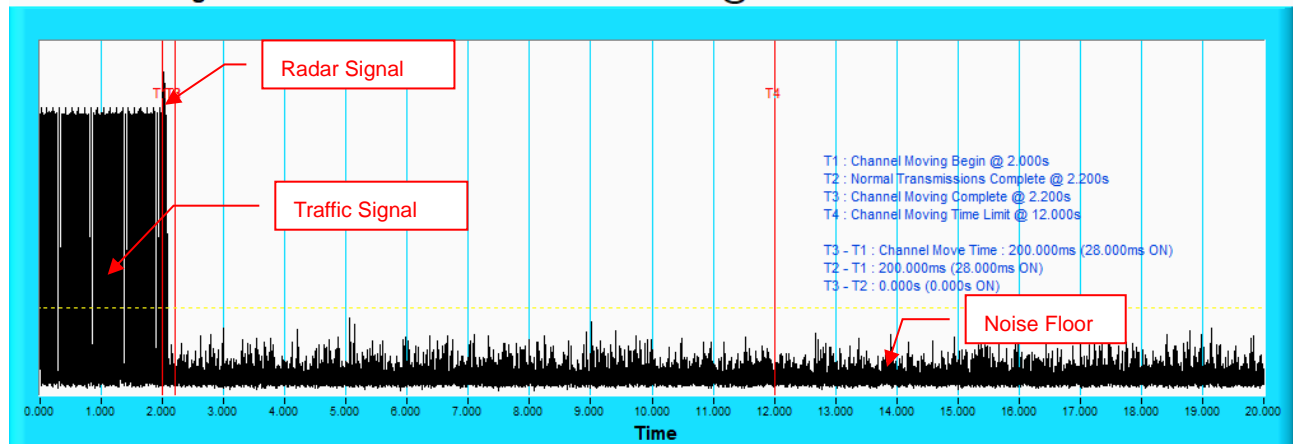
#### Channel Closing Transmission Time & Channel Move Time @ CH60 - 5300MHz



**NOTE:** 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.

### DFS-J1-2

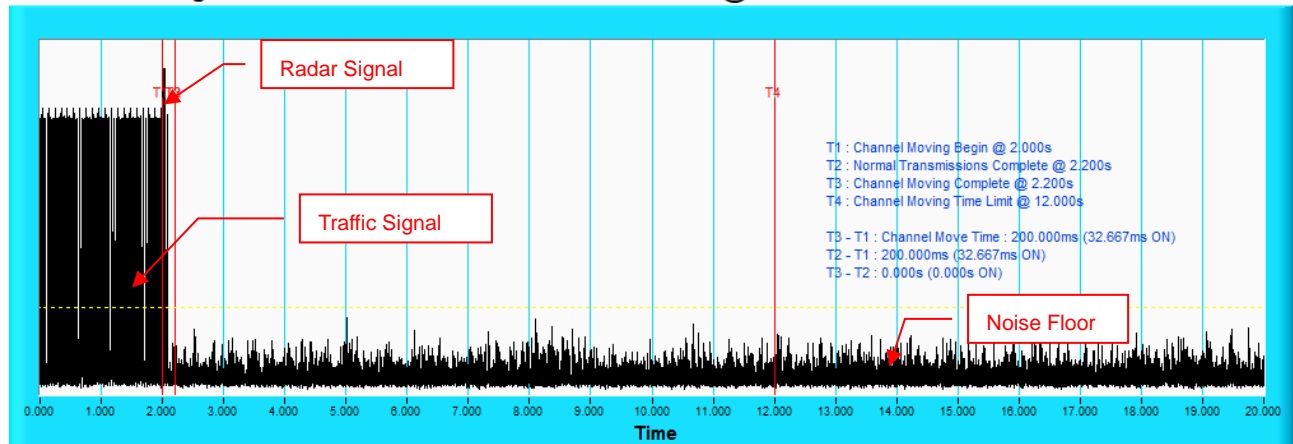
#### Channel Closing Transmission Time & Channel Move Time @ CH60 - 5300MHz



**NOTE:** 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.

### DFS-J1-3

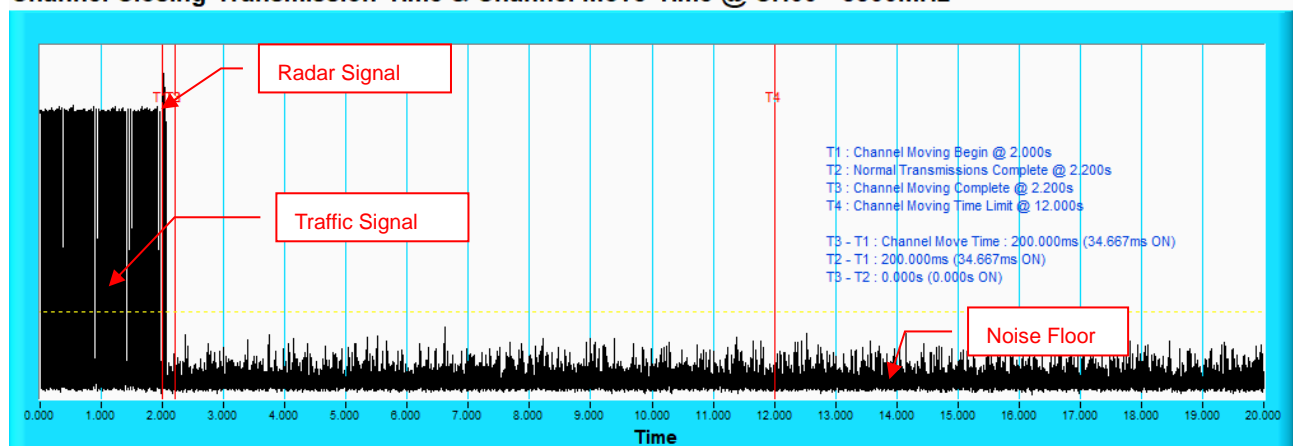
#### Channel Closing Transmission Time & Channel Move Time @ CH60 - 5300MHz



**NOTE:** 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

### DFS-J1-4

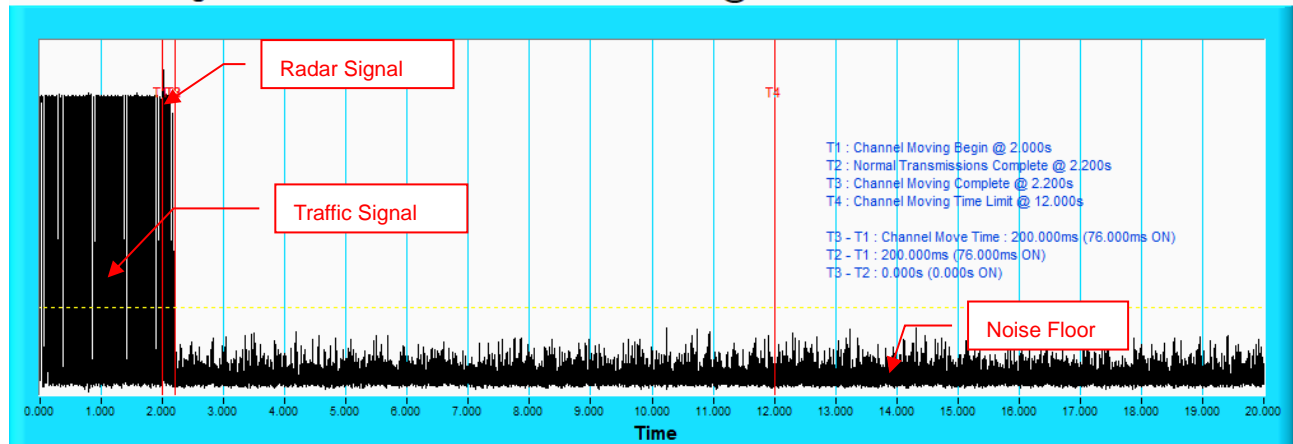
#### Channel Closing Transmission Time & Channel Move Time @ CH60 - 5300MHz



**NOTE:** 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

## DFS-J1-5

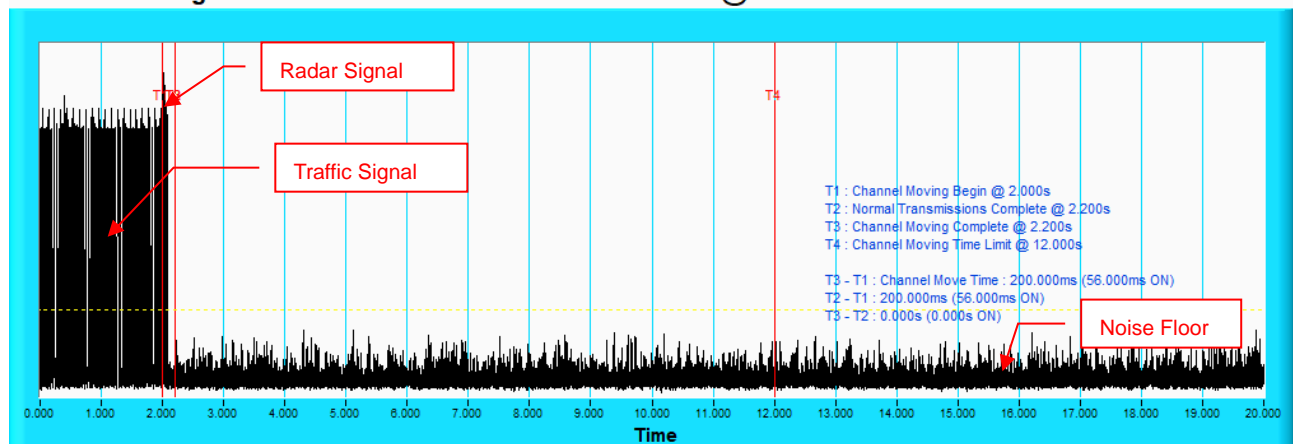
### Channel Closing Transmission Time & Channel Move Time @ CH60 - 5300MHz



**NOTE:** 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

## DFS-J1-6

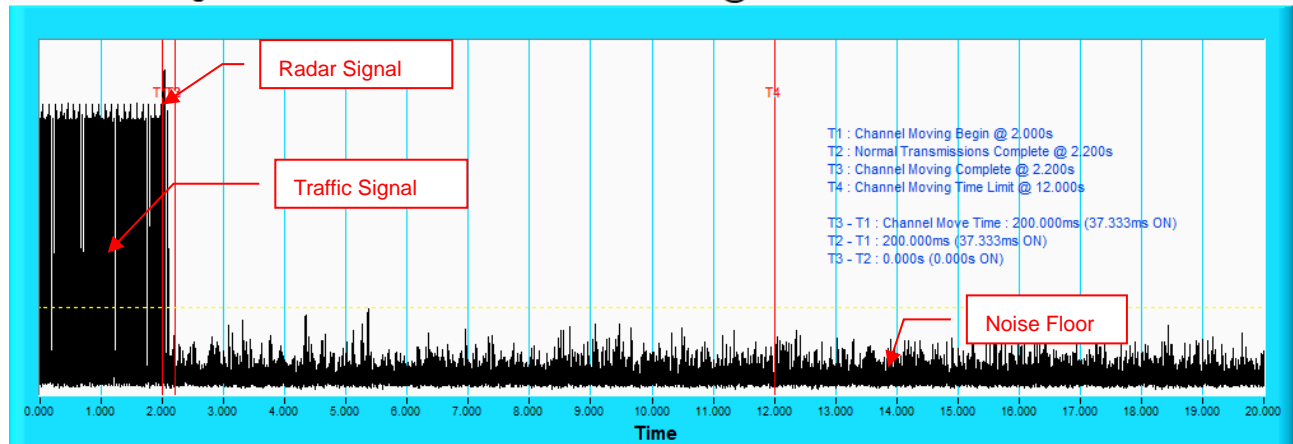
### Channel Closing Transmission Time & Channel Move Time @ CH60 - 5300MHz



**NOTE:** 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

## DFS-J1-7

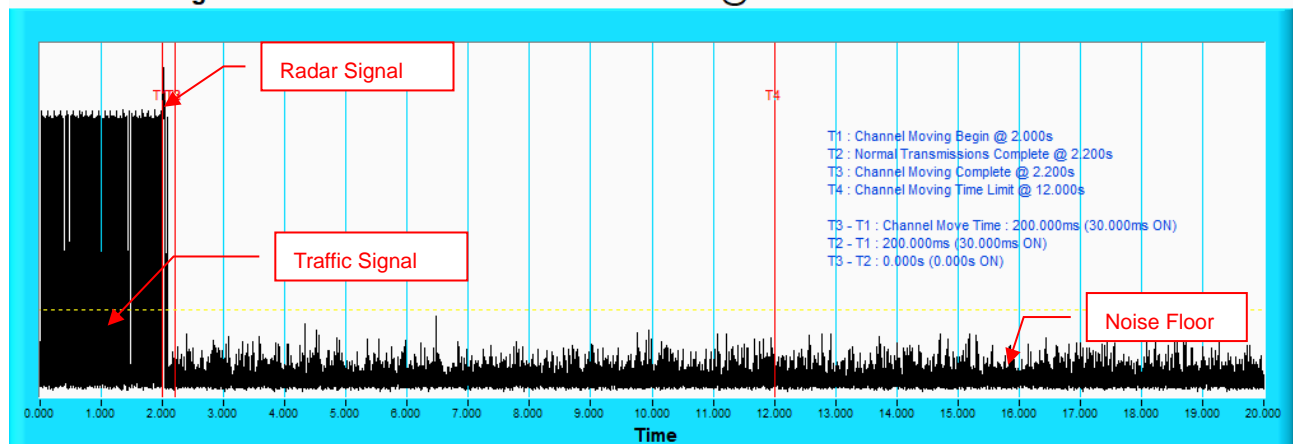
### Channel Closing Transmission Time & Channel Move Time @ CH60 - 5300MHz



**NOTE:** 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

## DFS-J1-8

### Channel Closing Transmission Time & Channel Move Time @ CH60 - 5300MHz



**NOTE:** 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

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DFS-J1-1 Radar Statistical Performances		
Trial #	Channel (MHz)	Channel Closing Transmission Time & Channel move Time
1	5320	Yes
2	5320	Yes
3	5320	Yes
4	5280	Yes
5	5320	Yes
6	5320	Yes
7	5320	Yes
8	5320	Yes
9	5320	Yes
10	5260	Yes
11	5320	<b>No</b>
12	5320	Yes
13	5320	Yes
14	5320	Yes
15	5320	Yes
16	5320	Yes
17	5320	Yes
18	5320	Yes
19	5320	Yes
20	5300	<b>No</b>
21	5320	Yes
22	5320	Yes
23	5320	Yes
24	5320	<b>No</b>
25	5300	Yes
26	5320	<b>No</b>
27	5320	Yes
28	5320	Yes
29	5320	Yes
30	5320	Yes
31	5320	Yes
32	5280	Yes
33	5320	Yes
34	5260	Yes
35	5320	Yes
36	5320	Yes
37	5300	Yes
38	5320	Yes
39	5300	Yes
40	5320	Yes
Detection Rate		90%
Minimum Percentage of Successful Detection		60%
Result		PASS



DFS-J1-2 Radar Statistical Performances		
Trial #	Channel (MHz)	Channel Closing Transmission Time & Channel move Time
1	5320	Yes
2	5320	Yes
3	5320	Yes
4	5320	Yes
5	5320	Yes
6	5320	Yes
7	5300	No
8	5320	Yes
9	5320	Yes
10	5320	Yes
11	5280	Yes
12	5260	Yes
13	5320	Yes
14	5280	Yes
15	5280	No
16	5320	Yes
17	5320	Yes
18	5280	Yes
19	5320	No
20	5320	No
21	5320	Yes
22	5280	Yes
23	5320	Yes
24	5320	Yes
25	5320	Yes
26	5320	Yes
27	5320	No
28	5320	Yes
29	5280	Yes
30	5320	Yes
31	5300	Yes
32	5320	No
33	5320	Yes
34	5280	Yes
35	5320	Yes
36	5320	Yes
37	5320	Yes
38	5320	Yes
39	5300	Yes
40	5260	Yes
Detection Rate		85%
Minimum Percentage of Successful Detection		60%
Result		PASS

DFS-J1-3 Radar Statistical Performances		
Trial #	Channel (MHz)	Channel Closing Transmission Time & Channel move Time
1	5320	No
2	5320	Yes
3	5300	Yes
4	5320	Yes
5	5320	No
6	5320	Yes
7	5320	Yes
8	5300	Yes
9	5320	Yes
10	5320	Yes
11	5300	No
12	5320	No
13	5320	No
14	5280	Yes
15	5320	Yes
16	5320	Yes
17	5320	Yes
18	5320	No
19	5320	No
20	5320	Yes
21	5320	Yes
22	5300	No
23	5320	Yes
24	5320	Yes
25	5320	No
26	5280	Yes
27	5320	Yes
28	5300	Yes
29	5320	Yes
30	5260	No
31	5300	Yes
32	5320	Yes
33	5300	Yes
34	5260	No
35	5320	Yes
36	5260	No
37	5260	Yes
38	5260	Yes
39	5320	No
40	5320	Yes
Detection Rate		67.5%
Minimum Percentage of Successful Detection		60%
Result		PASS

DFS-J1-4 Radar Statistical Performances		
Trial #	Channel (MHz)	Channel Closing Transmission Time & Channel move Time
1	5320	No
2	5280	Yes
3	5320	No
4	5320	No
5	5300	Yes
6	5320	No
7	5320	Yes
8	5260	Yes
9	5260	Yes
10	5320	Yes
11	5320	No
12	5320	No
13	5260	Yes
14	5320	Yes
15	5320	Yes
16	5320	Yes
17	5320	Yes
18	5320	No
19	5320	Yes
20	5320	No
21	5320	Yes
22	5320	Yes
23	5260	Yes
24	5320	No
25	5320	Yes
26	5320	No
27	5320	No
28	5320	Yes
29	5320	Yes
30	5320	Yes
31	5320	Yes
32	5320	Yes
33	5320	No
34	5320	No
35	5300	Yes
36	5320	No
37	5320	No
38	5320	Yes
39	5320	No
40	5320	Yes
Detection Rate		60%
Minimum Percentage of Successful Detection		60%
Result		PASS

DFS-J1-5 Radar Statistical Performances		
Trial #	Channel (MHz)	Channel Closing Transmission Time & Channel move Time
1	5320	Yes
2	5320	Yes
3	5280	Yes
4	5260	Yes
5	5320	Yes
6	5320	No
7	5320	No
8	5320	Yes
9	5320	No
10	5320	No
11	5320	Yes
12	5320	Yes
13	5280	Yes
14	5300	Yes
15	5320	Yes
16	5320	Yes
17	5320	Yes
18	5320	Yes
19	5280	Yes
20	5320	Yes
21	5320	No
22	5320	No
23	5280	No
24	5320	Yes
25	5320	Yes
26	5320	No
27	5300	No
28	5320	Yes
29	5260	Yes
30	5280	Yes
31	5320	Yes
32	5320	Yes
33	5320	Yes
34	5320	No
35	5320	Yes
36	5320	Yes
37	5300	No
38	5320	Yes
39	5320	No
40	5320	No
Detection Rate		67.5%
Minimum Percentage of Successful Detection		60%
Result		PASS

DFS-J1-6 Radar Statistical Performances		
Trial #	Channel (MHz)	Channel Closing Transmission Time & Channel move Time
1	5320	Yes
2	5320	Yes
3	5320	Yes
4	5320	Yes
5	5320	No
6	5320	Yes
7	5320	No
8	5280	Yes
9	5320	Yes
10	5320	Yes
11	5300	Yes
12	5320	No
13	5320	Yes
14	5320	Yes
15	5320	No
16	5320	Yes
17	5260	No
18	5320	No
19	5320	Yes
20	5320	No
21	5280	Yes
22	5320	Yes
23	5320	Yes
24	5320	Yes
25	5280	Yes
26	5260	Yes
27	5320	Yes
28	5280	Yes
29	5320	No
30	5320	Yes
31	5320	Yes
32	5320	No
33	5320	No
34	5260	Yes
35	5320	Yes
36	5280	Yes
37	5300	Yes
38	5320	Yes
39	5320	No
40	5320	Yes
Detection Rate		72.5%
Minimum Percentage of Successful Detection		60%
Result		PASS

DFS-J1-7 Radar Statistical Performances		
Trial #	Channel (MHz)	Channel Closing Transmission Time & Channel move Time
1	5320	No
2	5320	No
3	5260	Yes
4	5320	No
5	5320	No
6	5320	Yes
7	5320	Yes
8	5320	Yes
9	5300	Yes
10	5320	Yes
11	5320	No
12	5320	Yes
13	5300	No
14	5260	Yes
15	5320	No
16	5320	No
17	5320	Yes
18	5320	Yes
19	5260	No
20	5320	No
21	5320	Yes
22	5260	Yes
23	5280	No
24	5320	Yes
25	5320	No
26	5320	Yes
27	5320	Yes
28	5320	Yes
29	5320	Yes
30	5320	Yes
31	5320	Yes
32	5320	No
33	5320	No
34	5320	No
35	5300	No
36	5320	Yes
37	5320	Yes
38	5320	Yes
39	5320	Yes
40	5320	Yes
Detection Rate		60%
Minimum Percentage of Successful Detection		60%
Result		PASS

DFS-J1-8 Radar Statistical Performances		
Trial #	Channel (MHz)	Channel Closing Transmission Time & Channel move Time
1	5320	Yes
2	5320	Yes
3	5260	Yes
4	5320	Yes
5	5320	Yes
6	5320	Yes
7	5320	Yes
8	5320	Yes
9	5280	<b>No</b>
10	5320	Yes
11	5320	Yes
12	5300	Yes
13	5260	<b>No</b>
14	5320	<b>No</b>
15	5320	Yes
16	5320	<b>No</b>
17	5300	Yes
18	5280	Yes
19	5320	<b>No</b>
20	5320	Yes
21	5280	Yes
22	5260	Yes
23	5320	<b>No</b>
24	5320	Yes
25	5320	Yes
26	5280	Yes
27	5320	<b>No</b>
28	5320	Yes
29	5320	Yes
30	5320	Yes
31	5320	Yes
32	5320	<b>No</b>
33	5320	Yes
34	5320	Yes
35	5320	Yes
36	5320	<b>No</b>
37	5320	Yes
38	5320	Yes
39	5320	<b>No</b>
40	5320	Yes
Detection Rate		75%
Minimum Percentage of Successful Detection		60%
Result		PASS

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Radar Type	Pulse Repetition Frequency (pps)	Pulse Width (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Percentage of Successful Detection (%)
DFS-J2-1	720	0.5	18	60%	87.5
DFS-J2-2	700	1	18	60%	72.5
DFS-US-1	250	2	18	60%	92.5
DFS-US-2	4347 – 6667	1-5	23-29	60%	85
DFS-US-3	2000 – 5000	6-10	16-18	60%	77.5
DFS-US-4	2000 - 5000	11-20	12-16	60%	87.5
Aggregate (Radar Types 1-6)				80%	83.7

Radar Type	Pulse Repetition Frequency (pps)	Pulse Width (μsec)	Number of Pulses per Burst	Minimum Percentage of Successful Detection	Percentage of Successful Detection (%)
DFS-US-5	500-1000	50 - 100	1-3	80%	90

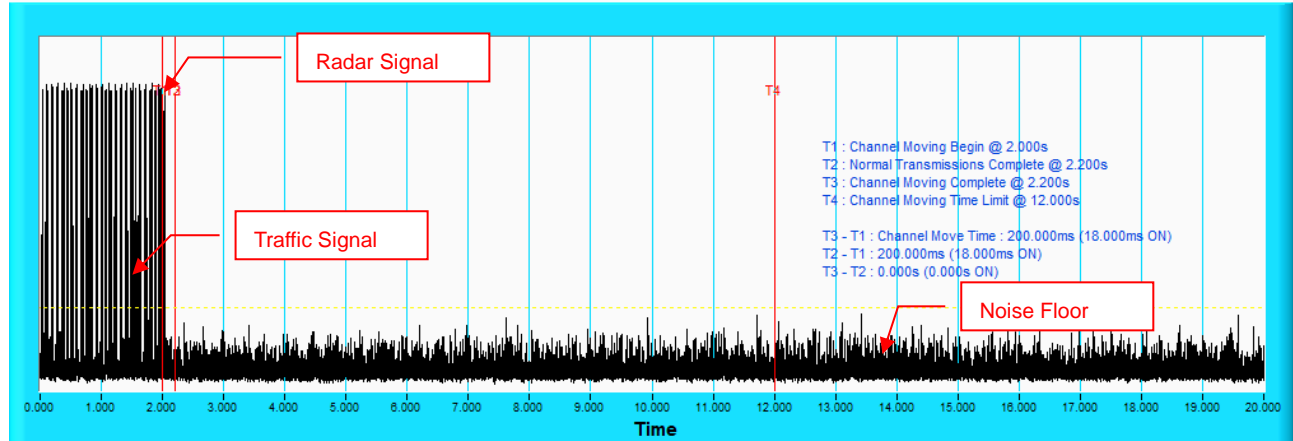
Radar Type	Pulse Repetition Frequency (pps)	Pulse Width (μsec)	Pulses per Hop	Minimum Percentage of Successful Detection	Percentage of Successful Detection (%)
DFS-US-6	3000	1	9	70%	92.5



W56

DFS-J2-1

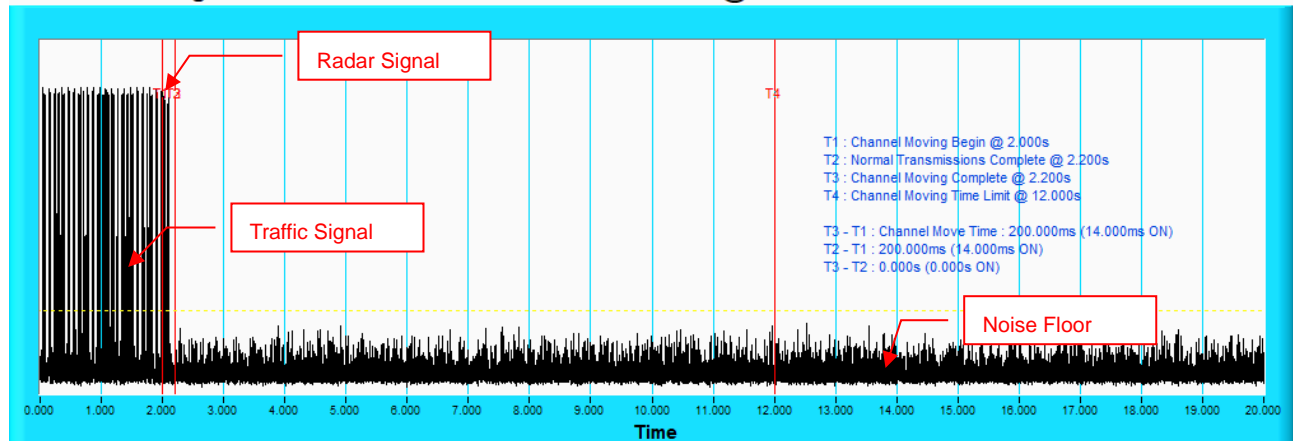
### Channel Closing Transmission Time & Channel Move Time @ CH100 - 5500MHz



**NOTE:** 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.

DFS-J2-2

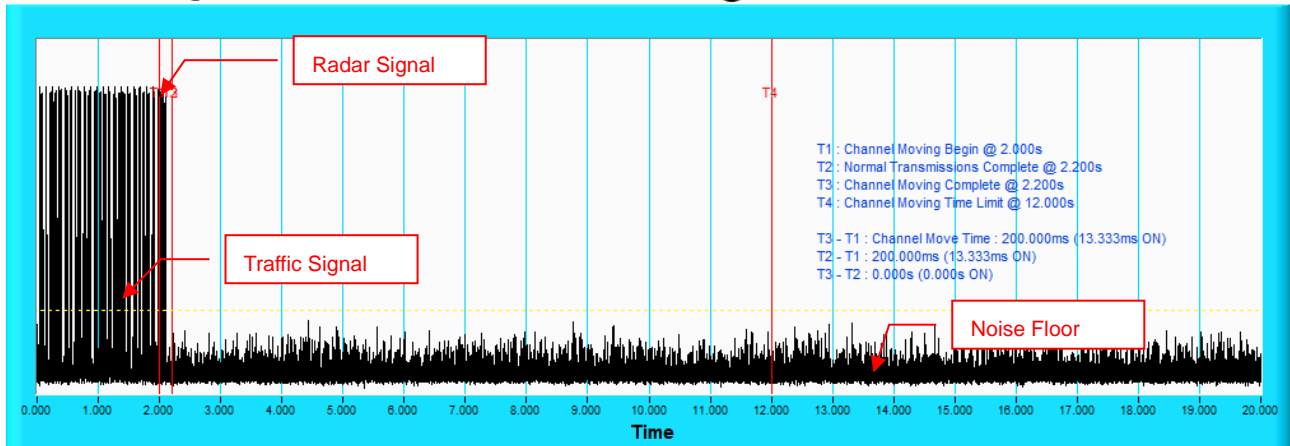
### Channel Closing Transmission Time & Channel Move Time @ CH100 - 5500MHz



**NOTE:** 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.

## DFS-US-1

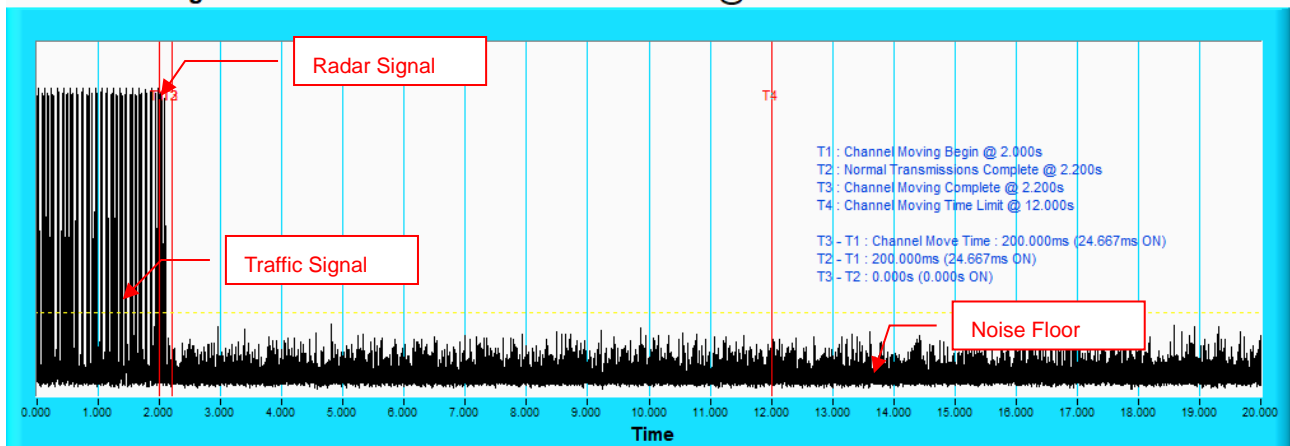
### Channel Closing Transmission Time & Channel Move Time @ CH100 - 5500MHz



**NOTE:** 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.

## DFS-US-2

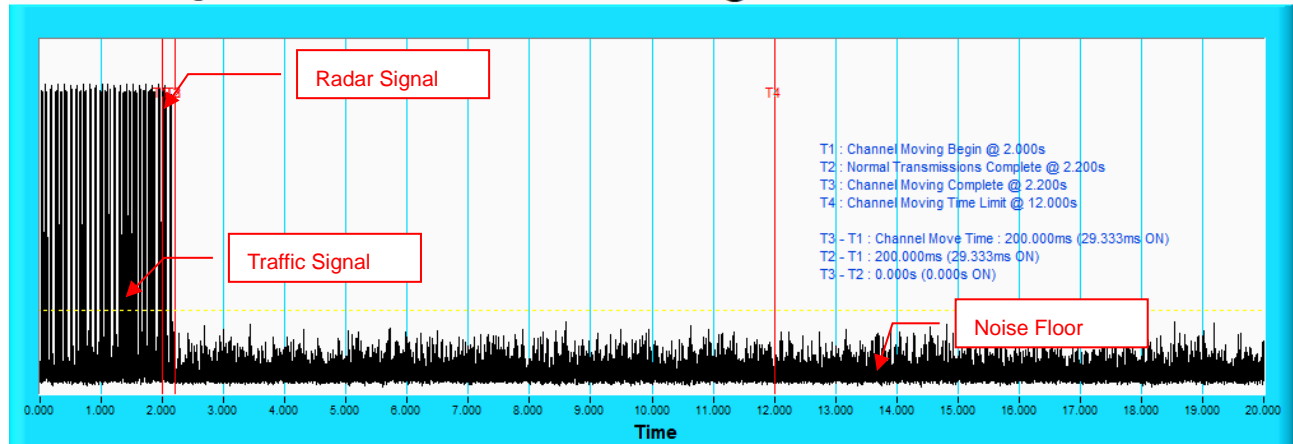
### Channel Closing Transmission Time & Channel Move Time @ CH100 - 5500MHz



**NOTE:** 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.

### DFS-US-3

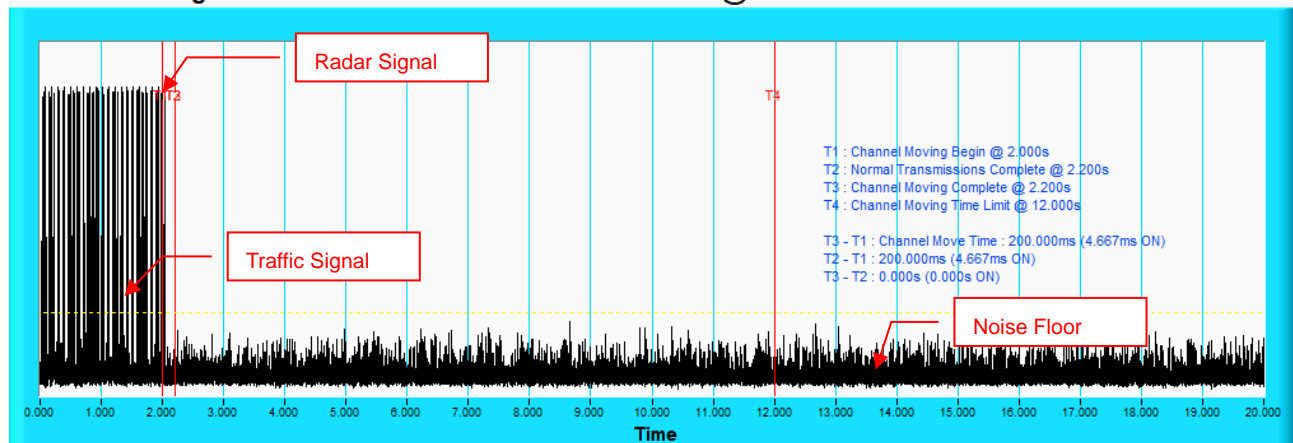
#### Channel Closing Transmission Time & Channel Move Time @ CH100 - 5500MHz



**NOTE:** 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.

### DFS-US-4

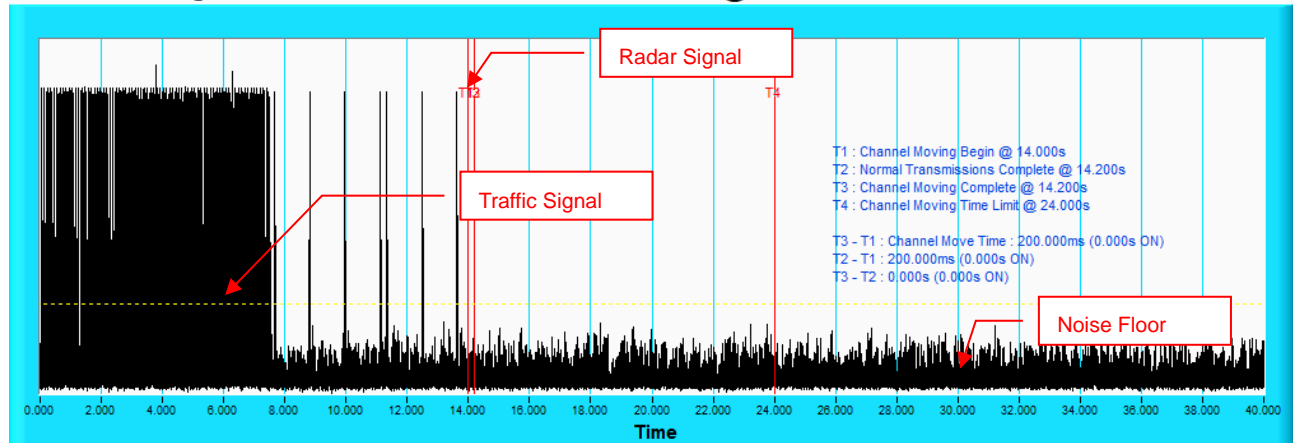
#### Channel Closing Transmission Time & Channel Move Time @ CH100 - 5500MHz



**NOTE:** 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.

## DFS-US-5

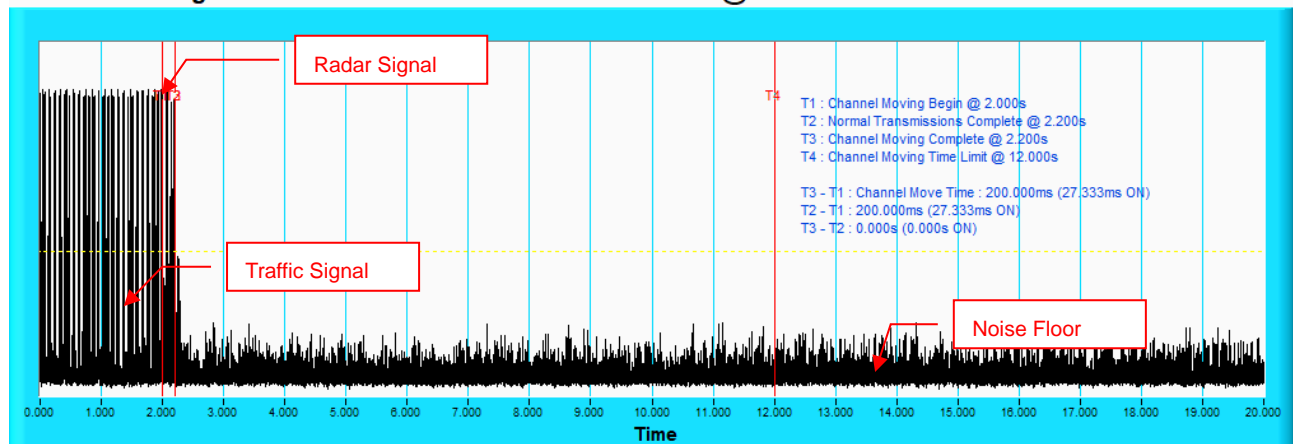
### Channel Closing Transmission Time & Channel Move Time @ CH100 - 5500MHz



**NOTE:** T1 denotes the start of Channel Move Time. 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.

## DFS-US-6

### Channel Closing Transmission Time & Channel Move Time @ CH100 - 5500MHz



**NOTE:** 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.

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DFS-J2-1 Radar Statistical Performances		
Trial #	Channel (MHz)	Channel Closing Transmission Time & Channel move Time
1	5660	No
2	5560	Yes
3	5700	Yes
4	5620	Yes
5	5520	Yes
6	5560	Yes
7	5680	Yes
8	5540	No
9	5680	No
10	5520	Yes
11	5540	Yes
12	5700	Yes
13	5700	Yes
14	5660	Yes
15	5700	Yes
16	5620	No
17	5600	Yes
18	5600	Yes
19	5660	Yes
20	5520	Yes
21	5540	Yes
22	5580	Yes
23	5640	Yes
24	5660	Yes
25	5520	Yes
26	5660	No
27	5500	Yes
28	5620	Yes
29	5580	Yes
30	5660	Yes
31	5700	Yes
32	5640	Yes
33	5600	Yes
34	5500	Yes
35	5540	Yes
36	5680	Yes
37	5600	Yes
38	5640	Yes
39	5580	Yes
40	5560	Yes
Detection Rate		87.5%
Minimum Percentage of Successful Detection		60%
Result		PASS

DFS-J2-2 Radar Statistical Performances		
Trial #	Channel (MHz)	Channel Closing Transmission Time & Channel move Time
1	5700	Yes
2	5540	Yes
3	5520	Yes
4	5620	No
5	5700	Yes
6	5700	No
7	5640	Yes
8	5560	Yes
9	5580	Yes
10	5600	Yes
11	5700	Yes
12	5520	Yes
13	5660	No
14	5620	Yes
15	5560	No
16	5580	No
17	5500	Yes
18	5600	Yes
19	5520	Yes
20	5620	Yes
21	5660	No
22	5600	Yes
23	5520	Yes
24	5700	Yes
25	5600	No
26	5700	Yes
27	5620	No
28	5700	Yes
29	5600	Yes
30	5580	No
31	5520	Yes
32	5640	Yes
33	5660	No
34	5540	Yes
35	5660	No
36	5620	Yes
37	5700	Yes
38	5700	Yes
39	5700	Yes
40	5640	Yes
Detection Rate		72.5%
Minimum Percentage of Successful Detection		60%
Result		PASS

DFS-US-1 Radar Statistical Performances		
Trial #	Channel (MHz)	Channel Closing Transmission Time & Channel move Time
1	5560	Yes
2	5500	Yes
3	5700	Yes
4	5600	Yes
5	5660	Yes
6	5580	Yes
7	5600	Yes
8	5600	Yes
9	5700	No
10	5700	Yes
11	5680	Yes
12	5500	Yes
13	5700	Yes
14	5620	Yes
15	5620	Yes
16	5640	Yes
17	5700	Yes
18	5660	Yes
19	5580	Yes
20	5620	Yes
21	5580	Yes
22	5700	Yes
23	5640	Yes
24	5600	Yes
25	5580	Yes
26	5540	Yes
27	5600	Yes
28	5700	Yes
29	5520	Yes
30	5620	Yes
31	5560	Yes
32	5500	Yes
33	5580	Yes
34	5700	Yes
35	5700	Yes
36	5700	Yes
37	5700	Yes
38	5700	No
39	5580	Yes
40	5600	No
Detection Rate		92.5%
Minimum Percentage of Successful Detection		60%
Result		PASS

DFS-US-2 Radar Statistical Performances		
Trial #	Channel (MHz)	Channel Closing Transmission Time & Channel move Time
1	5520	Yes
2	5620	<b>No</b>
3	5560	Yes
4	5620	Yes
5	5640	Yes
6	5620	<b>No</b>
7	5540	<b>No</b>
8	5560	<b>No</b>
9	5500	Yes
10	5700	<b>No</b>
11	5540	Yes
12	5700	Yes
13	5700	Yes
14	5520	Yes
15	5660	Yes
16	5540	Yes
17	5680	Yes
18	5700	Yes
19	5700	Yes
20	5700	Yes
21	5560	Yes
22	5680	Yes
23	5520	Yes
24	5600	Yes
25	5560	Yes
26	5640	Yes
27	5580	Yes
28	5700	Yes
29	5560	Yes
30	5660	Yes
31	5700	Yes
32	5560	<b>No</b>
33	5560	Yes
34	5640	Yes
35	5540	Yes
36	5700	Yes
37	5700	Yes
38	5560	Yes
39	5560	Yes
40	5560	Yes
Detection Rate		85%
Minimum Percentage of Successful Detection		60%
Result		PASS



DFS-US-3 Radar Statistical Performances		
Trial #	Channel (MHz)	Channel Closing Transmission Time & Channel move Time
1	5700	Yes
2	5600	Yes
3	5640	Yes
4	5680	Yes
5	5620	Yes
6	5640	Yes
7	5580	No
8	5700	Yes
9	5680	No
10	5580	Yes
11	5560	Yes
12	5560	Yes
13	5600	No
14	5620	Yes
15	5620	Yes
16	5700	Yes
17	5520	Yes
18	5640	Yes
19	5540	No
20	5620	Yes
21	5700	Yes
22	5540	Yes
23	5520	Yes
24	5700	Yes
25	5600	Yes
26	5660	Yes
27	5500	Yes
28	5640	No
29	5580	No
30	5680	Yes
31	5700	No
32	5600	Yes
33	5660	Yes
34	5520	No
35	5640	Yes
36	5540	Yes
37	5600	Yes
38	5620	No
39	5580	Yes
40	5520	Yes
Detection Rate		77.5%
Minimum Percentage of Successful Detection		60%
Result		PASS

DFS-US-4 Radar Statistical Performances		
Trial #	Channel (MHz)	Channel Closing Transmission Time & Channel move Time
1	5520	Yes
2	5600	Yes
3	5700	Yes
4	5520	<b>No</b>
5	5500	Yes
6	5580	Yes
7	5640	Yes
8	5580	<b>No</b>
9	5540	Yes
10	5540	Yes
11	5580	Yes
12	5520	Yes
13	5520	Yes
14	5620	Yes
15	5600	Yes
16	5660	Yes
17	5640	Yes
18	5500	Yes
19	5700	Yes
20	5620	Yes
21	5640	Yes
22	5620	Yes
23	5660	<b>No</b>
24	5520	Yes
25	5540	Yes
26	5660	Yes
27	5560	Yes
28	5700	Yes
29	5540	Yes
30	5580	Yes
31	5640	Yes
32	5520	<b>No</b>
33	5520	Yes
34	5700	Yes
35	5520	Yes
36	5700	Yes
37	5700	<b>No</b>
38	5680	Yes
39	5540	Yes
40	5600	Yes
Detection Rate		87.5%
Minimum Percentage of Successful Detection		60%
Result		PASS

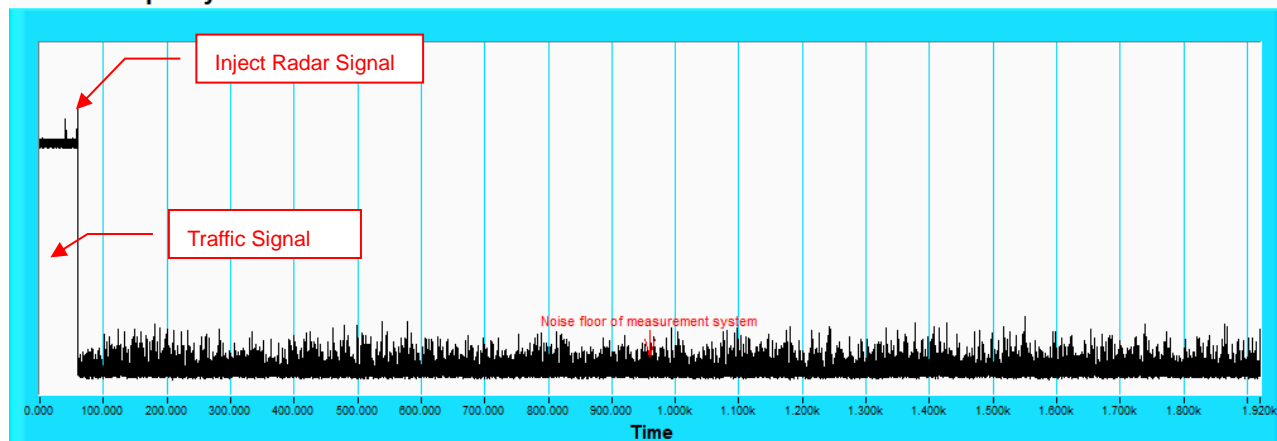
DFS-US-5 Radar Statistical Performances		
Trial #	Channel (MHz)	Channel Closing Transmission Time & Channel move Time
1	5520	Yes
2	5520	Yes
3	5640	Yes
4	5600	Yes
5	5600	Yes
6	5700	Yes
7	5620	Yes
8	5660	<b>No</b>
9	5540	Yes
10	5680	Yes
11	5500	Yes
12	5640	<b>No</b>
13	5700	Yes
14	5500	Yes
15	5640	Yes
16	5560	Yes
17	5700	Yes
18	5580	Yes
19	5560	Yes
20	5620	Yes
21	5700	<b>No</b>
22	5560	Yes
23	5600	Yes
24	5540	<b>No</b>
25	5640	Yes
26	5620	Yes
27	5560	Yes
28	5700	Yes
29	5680	Yes
30	5560	Yes
31	5540	Yes
32	5540	Yes
33	5660	Yes
34	5640	Yes
35	5560	Yes
36	5600	Yes
37	5600	Yes
38	5500	Yes
39	5560	Yes
40	5560	Yes
Detection Rate		90%
Minimum Percentage of Successful Detection		80%
Result		PASS

DFS-US-6 Radar Statistical Performances		
Trial #	Channel (MHz)	Channel Closing Transmission Time & Channel move Time
1	5540	Yes
2	5540	Yes
3	5540	Yes
4	5540	Yes
5	5700	Yes
6	5600	No
7	5640	Yes
8	5540	Yes
9	5520	Yes
10	5560	Yes
11	5580	Yes
12	5520	Yes
13	5520	Yes
14	5620	Yes
15	5560	Yes
16	5700	Yes
17	5700	Yes
18	5520	No
19	5580	Yes
20	5700	Yes
21	5600	Yes
22	5660	Yes
23	5680	Yes
24	5640	Yes
25	5560	Yes
26	5640	Yes
27	5580	Yes
28	5500	No
29	5700	Yes
30	5560	Yes
31	5560	Yes
32	5640	Yes
33	5540	Yes
34	5560	Yes
35	5500	Yes
36	5640	Yes
37	5700	Yes
38	5500	Yes
39	5600	Yes
40	5560	Yes
Detection Rate		92.5%
Minimum Percentage of Successful Detection		70%
Result		PASS

### **Non-Occupancy Period**

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.

### **Non - Occupancy Period**

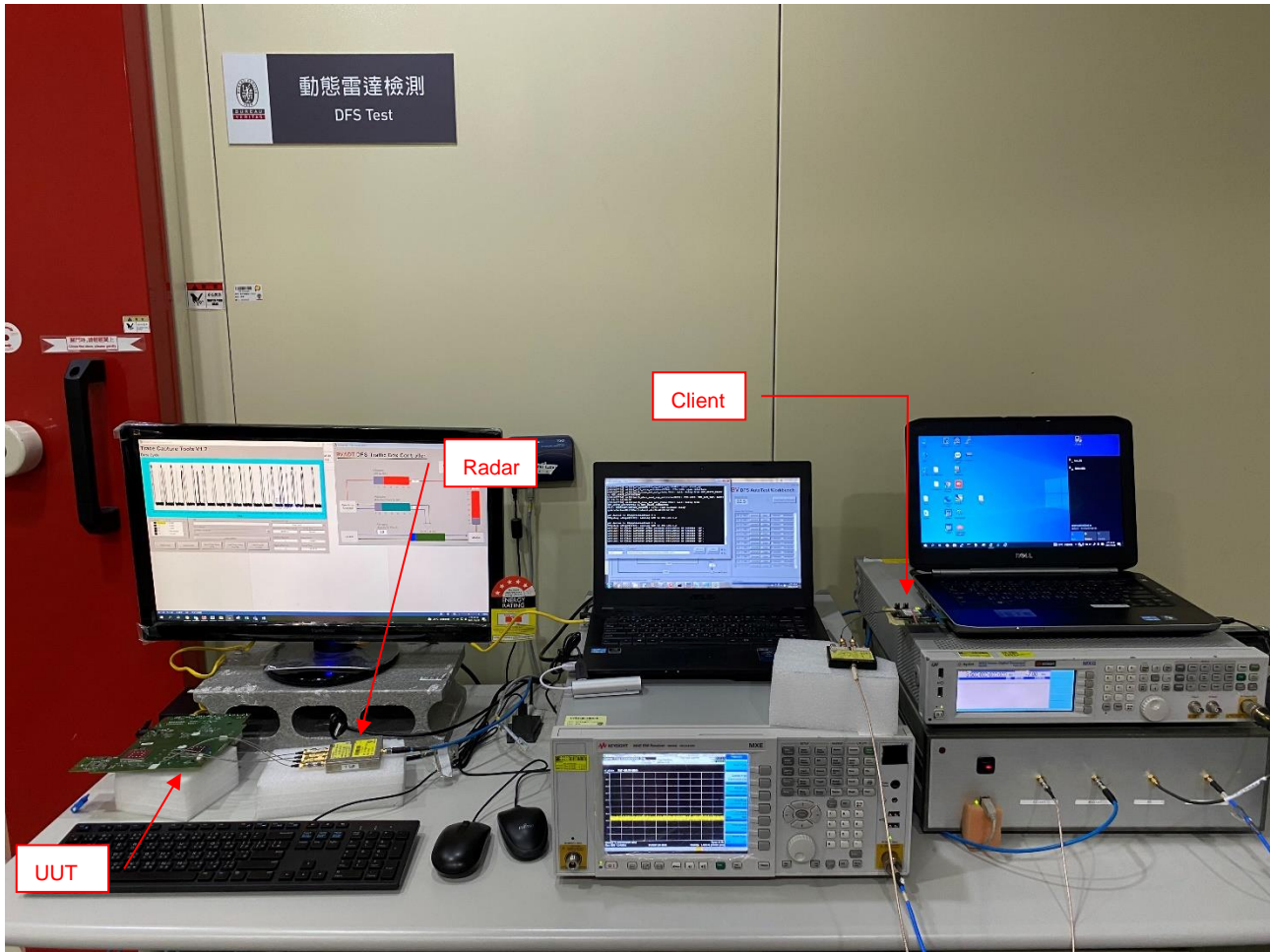


### **UNIFORM SPREADING**

The intention of the uniform spreading is to provide, on aggregate, a uniform loading of the spectrum. The UUT using the bands 5150 to 5730MHz shall select an operating channel out of the 20 channels, so that the probability of selecting a given channel shall be the same for all channels.

The UUT will select channel by random mode and remember this channel when detect radar signal, so that will select unused channel by random mode.

### 3 Photographs of the Test Configuration



## Appendix - Information of 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.

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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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