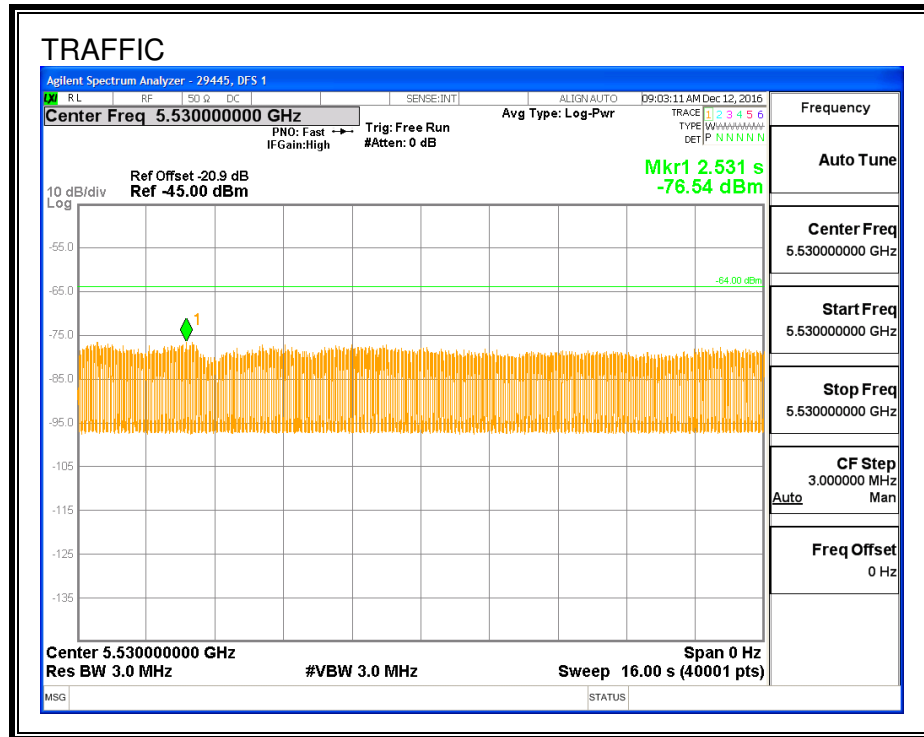
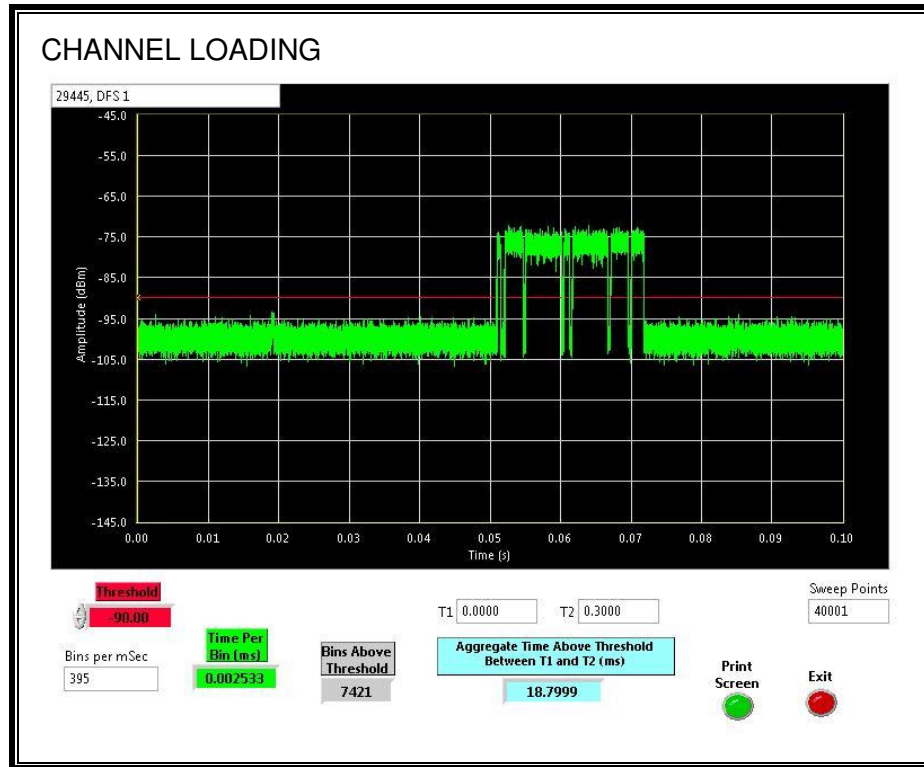


**TRAFFIC**



## CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 18.8%

### 5.8.3. OVERLAPPING CHANNEL TESTS

#### RESULTS

The channel spacing is not less than the channel bandwidth therefore the EUT does not have an overlapping channel plan.

## **5.8.4. CHANNEL AVAILABILITY CHECK TIME**

### **PROCEDURE TO DETERMINE CAC CYCLE TIME**

A sweep was started on the spectrum analyzer set to the DFS test channel when a software command was issued by the operator to the EUT to change to the DFS test channel. After the command to change channels was issued a CAC period commenced on the DFS test channel for at least 60 seconds. The time from the beginning of the sweep to the re-initialization of traffic was measured as the time required for the EUT to complete the CAC period.

### **PROCEDURE FOR TIMING OF RADAR BURST**

A sweep was started on the spectrum analyzer when a software command was issued by the operator to the EUT to change to the DFS test channel. A radar signal was triggered on the DFS test channel within 0 to 6 seconds after the beginning of the CAC period and transmissions on the DFS test channel were monitored on the spectrum analyzer.

A sweep was started on the spectrum analyzer when a software command was issued by the operator to the EUT to change to the DFS test channel. A radar signal was triggered on the DFS test channel within 54 to 60 seconds after the beginning of the CAC period and transmissions on the DFS test channel were monitored on the spectrum analyzer.

## **QUANTITATIVE RESULTS**

### **No Radar Triggered**

<b>Beginning of CAC (sec)</b>	<b>Timing of Start of Traffic (sec)</b>	<b>CAC Period Time (sec)</b>
0	61.6	61.62

### **Radar Near Beginning of CAC**

<b>Beginning of CAC (sec)</b>	<b>Timing of Radar Burst (sec)</b>	<b>Radar Relative to Start of CAC (sec)</b>
0	3.233	3.23

### **Radar Near End of CAC**

<b>Beginning of CAC (sec)</b>	<b>Timing of Radar Burst (sec)</b>	<b>Radar Relative to Start of CAC (sec)</b>
0	58.52	58.52

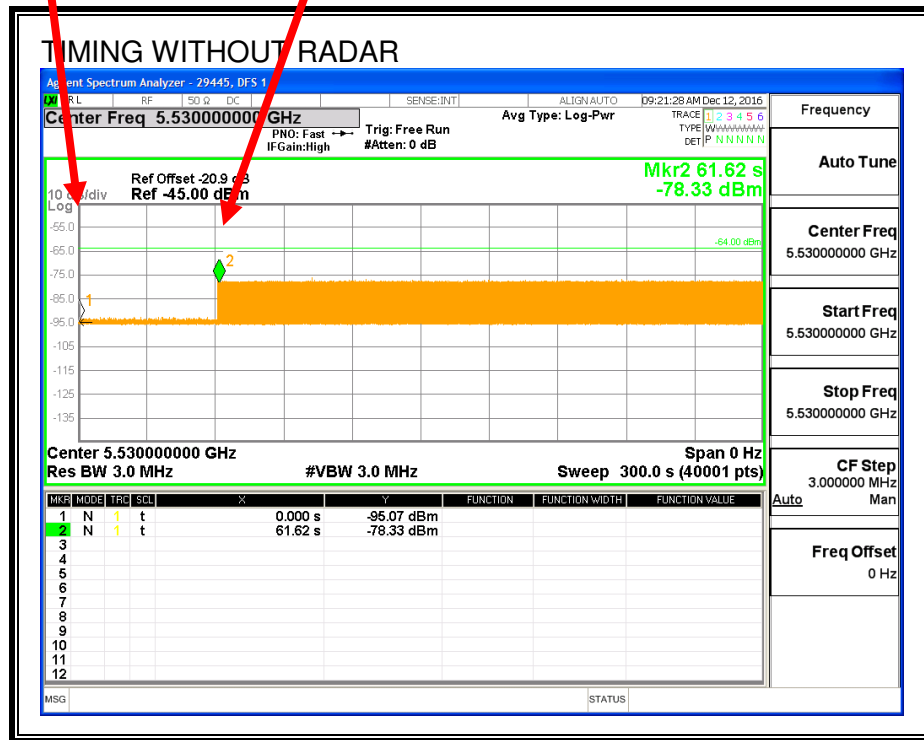
## **QUALITATIVE RESULTS**

<b>Timing of Radar Burst</b>	<b>Display on Control Computer</b>	<b>Spectrum Analyzer Display</b>
No Radar Triggered	EUT marks Channel as active	Transmissions begin on channel after completion of the CAC
Within 0 to 6 second window	EUT indicates radar detected	No transmissions on channel
Within 54 to 60 second window	EUT indicates radar detected	No transmissions on channel

# **TIMING WITHOUT RADAR DURING CAC**

Command to  
Switch Channels  
Start of CAC

End of CAC  
Begin Transmissions

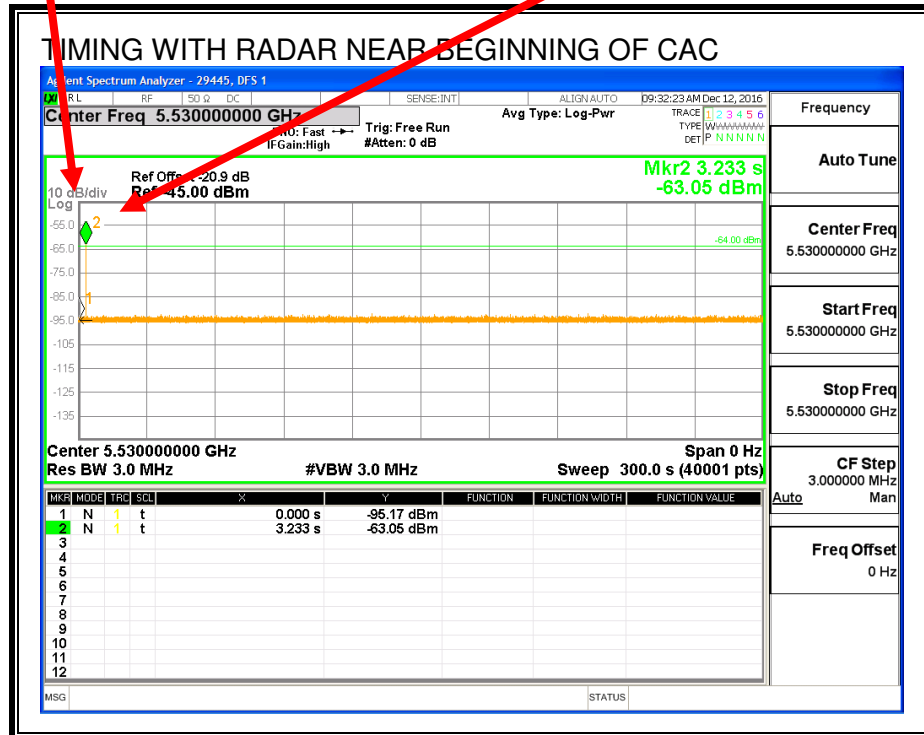


Transmissions begin on channel after completion of the CAC period.

# **TIMING WITH RADAR NEAR BEGINNING OF CAC**

Command to  
Switch Channels  
Start of CAC

Radar Signal Applied

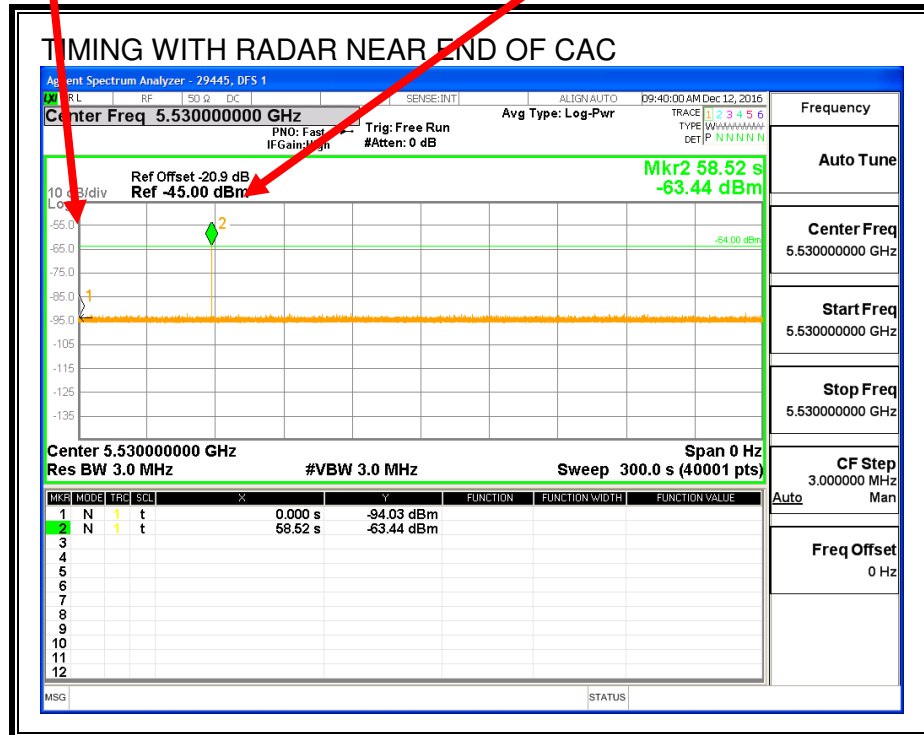


No EUT transmissions were observed after the radar signal.

## TIMING WITH RADAR NEAR END OF CAC

Command to  
Switch Channels  
Start of CAC

Radar Signal Applied



No EUT transmissions were observed after the radar signal.

### **5.8.5. ZERO WAIT CHANNEL AVAILABILITY CHECK TIME (NON-DFS CHANNEL TO DFS CHANNEL)**

#### **PROCEDURE TO DETERMINE CAC CYCLE TIME**

A link was established and traffic with a channel loading of less than 16% was started on a Non-DFS channel. When the traffic loading is greater than 16% the Zero-Wait CAC function will be abandoned per manufacturer design and declaration.

A sweep was started on the spectrum analyzer set to the DFS test channel when a software command was issued by the operator to the EUT to change from the Non-DFS channel to the DFS test channel. After the command to change channels was issued a CAC period commenced on the test channel for at least 60 seconds. The time from the beginning of the sweep to the re-initialization of traffic was measured as the time required for the EUT to complete the CAC period.

#### **PROCEDURE FOR TIMING OF RADAR BURST**

A sweep was started on the spectrum analyzer when a software command was issued by the operator to the EUT to change to the DFS test channel and commence a CAC period. A radar signal was triggered on the DFS test channel within 0 to 6 seconds after the beginning of the CAC period and transmissions on the DFS test channel were monitored on the spectrum analyzer. A log file indicating that the radar was detected on the DFS test channel and that the DFS test channel was temporarily removed from service for a period of 31-minutes.

After the EUT was reset a sweep was started on the spectrum analyzer when a software command was issued by the operator to the EUT to change to the DFS test channel and commence a CAC period. A radar signal was triggered on the DFS test channel within 54 to 60 seconds after the beginning of the CAC period and transmissions on the DFS test channel were monitored on the spectrum analyzer. A log file was created indicating that the radar was detected on the DFS test channel and that the DFS test channel was temporarily removed from service for a period of 31-minutes.



## QUANTITATIVE RESULTS BASED UPON SPECTRUM ANALYZER PLOTS

### **No Radar Triggered**

<b>Beginning of CAC (sec)</b>	<b>Timing of Start of Traffic (sec)</b>	<b>CAC Period Time (sec)</b>
0	61.93	61.9

### **Radar Near Beginning of CAC**

<b>Beginning of CAC (sec)</b>	<b>Timing of Radar Burst (sec)</b>	<b>Radar Relative to Start of CAC (sec)</b>
0	3.098	3.098

### **Radar Near End of CAC**

<b>Beginning of CAC (sec)</b>	<b>Timing of Radar Burst (sec)</b>	<b>Radar Relative to Start of CAC (sec)</b>
0	57.60	57.60

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

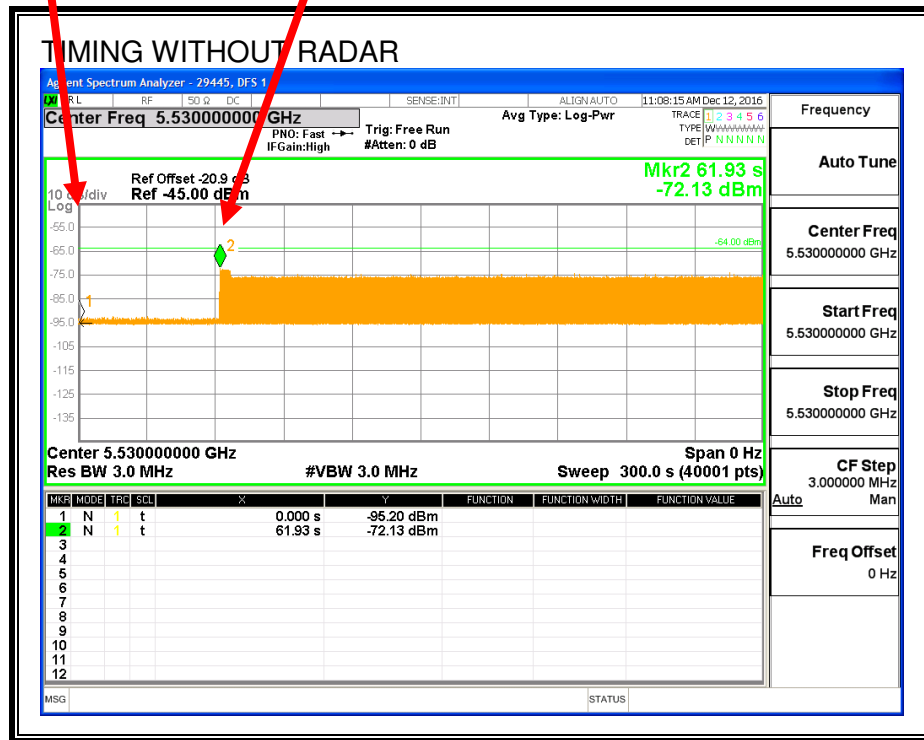
## QUALITATIVE RESULTS

<b>Timing of Radar Burst</b>	<b>Display on Control Computer</b>	<b>Spectrum Analyzer Display</b>
No Radar Triggered	EUT marks Channel as active	Transmissions begin on channel after completion of the initial power-up cycle and the CAC
Within 0 to 6 second window	EUT indicates radar detected	No transmissions on channel
Within 54 to 60 second window	EUT indicates radar detected	No transmissions on channel

# **TIMING WITHOUT RADAR DURING CAC**

Command to  
Switch Channels  
Start of CAC

End of CAC  
Begin Transmissions



Transmissions begin on channel after completion of the CAC period.

**Log File of CAC Timing Without Radar**

```
# wl chanspec
36/80 (0xe02a)

# wl dfs_ap_move 104/80

# CONSOLE: 035700.798 wlc_dfs_doiovar scan channel: e16a, current
channel e02a

CONSOLE: 035701.082 wl0: downgraded phy to 3+1

CONSOLE: 035701.082 wl0 wlc_dfs_handle_modeswitch: downgrade completed
1390

CONSOLE: 035701.083 wl0: since phymode is 3x1 using scan core with
chanspec e16a

CONSOLE: 035701.083 wl0: chanspec e16a, 60 second CAC time

CONSOLE: 035701.083 DFS State In-Service Monitoring(ISM) -> PRE-ISM
Channel Availability Check

@0: state: IDLE, time elapsed: 48150ms, chanspec: 36/80 (0xE02A),
chanspec last cleared: 60/160 (0xEE32), sub type: 0x00
@1: state: PRE-ISM Channel Availability Check(CAC), time elapsed:
48150ms, chanspec: 104/80 (0xE16A), chanspec last cleared: none, sub
type: 0x01
# CONSOLE: 035749.316 wlc_dfs_get_dfs_status_all: len=252,
all_min_sz=20, sub_sz=16, max_num_sub=15
CONSOLE: 035749.316 dfs_scan->status=2 move_status=2

CONSOLE: 035761.233 wl0.. wlc_dfs_get_chan_separation ch0:0xe02a
freq0: 5210MHz ch1:0xe16a freq1: 5530MHz sep: 320MHz

CONSOLE: 035761.487 wl0: chanspec e16a, 60 second CAC time

CONSOLE: 035761.487 DFS State PRE-ISM Channel Availability Check ->
In-Service Monitoring(ISM)

CONSOLE: 035761.863 wl0: dfs : state to In-Service Monitoring(ISM)
chanspec 104/80 at 60300ms

CONSOLE: 035761.863 wl0: Skip CAC - channel 0xe16a is already
available. Zero duration.

CONSOLE: 035762.016 wl0: upgraded phy to 4x4

CONSOLE: 035762.016 wl0 wlc_dfs_handle_modeswitch: upgrade completed
1402

# wl chanspec
```

104/80 (0xe16a)

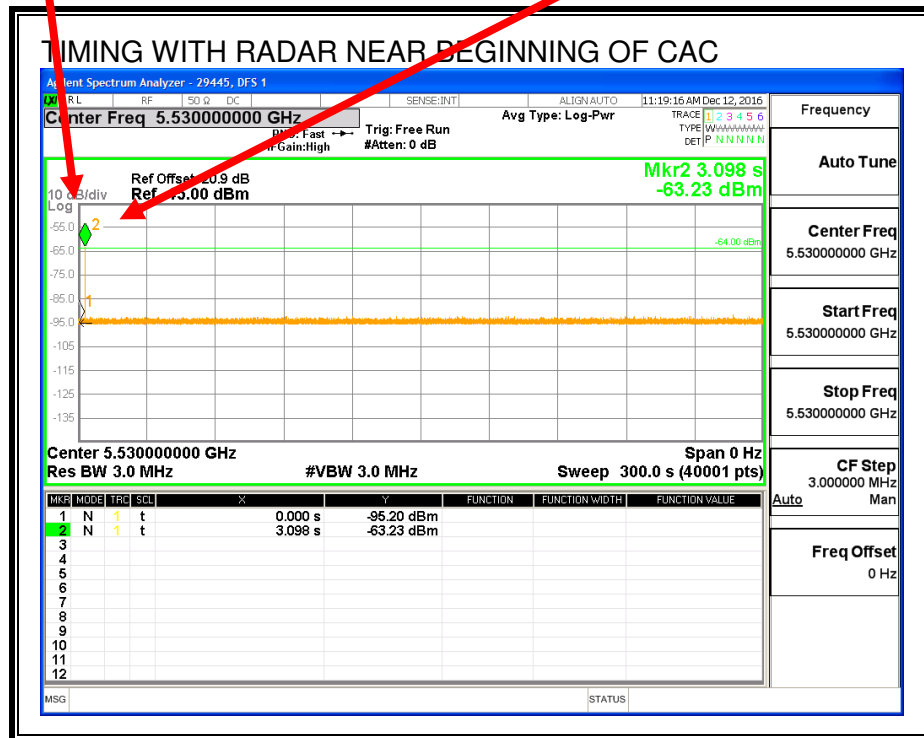
# wl chan\_info

Channel 36 A Band, Passive  
Channel 40 A Band, Passive  
Channel 44 A Band, Passive  
Channel 48 A Band, Passive  
Channel 52 A Band, RADAR Sensitive, Passive  
Channel 56 A Band, RADAR Sensitive, Passive  
Channel 60 A Band, RADAR Sensitive, Passive  
Channel 64 A Band, RADAR Sensitive, Passive  
Channel 100 A Band, RADAR Sensitive  
Channel 104 A Band, RADAR Sensitive  
Channel 108 A Band, RADAR Sensitive  
Channel 112 A Band, RADAR Sensitive  
Channel 116 A Band, RADAR Sensitive, Passive  
Channel 120 A Band, RADAR Sensitive, Passive  
Channel 124 A Band, RADAR Sensitive, Passive  
Channel 128 A Band, RADAR Sensitive, Passive  
Channel 132 A Band, RADAR Sensitive, Passive  
Channel 136 A Band, RADAR Sensitive, Passive  
Channel 140 A Band, RADAR Sensitive, Passive  
Channel 144 A Band, RADAR Sensitive, Passive  
Channel 149 A Band  
Channel 153 A Band  
Channel 157 A Band  
Channel 161 A Band  
Channel 165 A Band

# **TIMING WITH RADAR NEAR BEGINNING OF CAC**

Command to  
Switch Channels  
Start of CAC

Radar Signal Applied



No EUT transmissions were observed after the radar signal.

**Log File of Radar at the Beginning of CAC**

```
# wl chanspec
36/80 (0xe02a)

# wl dfs_ap_move 104/80

# CONSOLE: 036372.651 wlc_dfs_doiovar scan channel: e16a, current
channel e02a

CONSOLE: 036372.651 wl0 wlc_dfs_scan 1355 chspec=e16a

CONSOLE: 036372.651 wl0: mode switch down scheduled = 1 opmode: 0x22,
bw: 0x02

CONSOLE: 036372.784 wl0: downgraded phy to 3+1

CONSOLE: 036372.784 wl0 wlc_dfs_handle_modeswitch: downgrade completed
1390

CONSOLE: 036372.785 wl0: since phymode is 3x1 using scan core with
chanspec e16a

CONSOLE: 036372.785 wl0: chanspec e16a, 60 second CAC time

CONSOLE: 036372.785 DFS State In-Service Monitoring(ISM) -> PRE-ISM
Channel Availability Check

CONSOLE: 036375.035 wl0: DFS: radar_info=0x181f7, radar_info_2=0x00000

CONSOLE: 036375.035 WL0: DFS: UNCLASSIFIED ##### RADAR_SC
DETECTED ON CHANNEL 104/80 ##### min_pw=31, subband_result=6, AT
2100MS

CONSOLE: 036375.035 wl0: dfs : state to IDLE chanspec 36/80 at 2100ms

CONSOLE: 036375.035 wl0: since phymode is 3x1 using scan core with
chanspec e16a

CONSOLE: 036375.035 wl0: chanspec e16a, 60 second CAC time
CONSOLE: 036375.036 wl0: upgraded phy to 4x4

CONSOLE: 036375.036 wl0 wlc_dfs_handle_modeswitch: upgrade completed
1402

CONSOLE: 036375.036 wl0: channel 104 put out of service chspecd068

CONSOLE: 036375.036 wl0: channel 108 put out of service chspecd06c
```

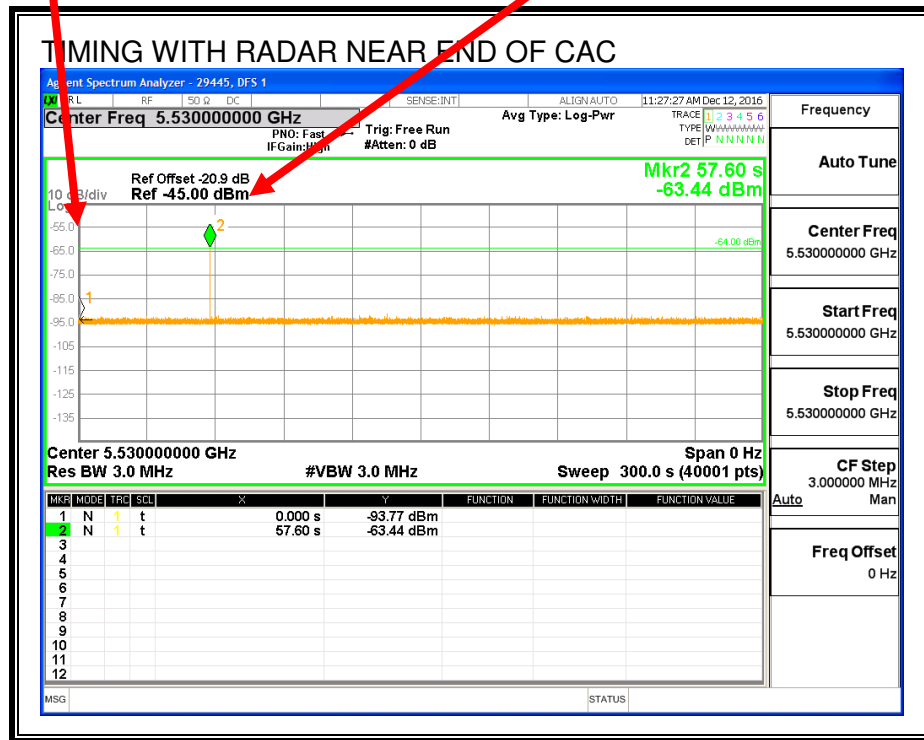
# wl chanspec  
36/80 (0xe02a)

# wl chan\_info  
Channel 36 A Band  
Channel 40 A Band  
Channel 44 A Band  
Channel 48 A Band  
Channel 52 A Band, RADAR Sensitive, Passive  
Channel 56 A Band, RADAR Sensitive, Passive  
Channel 60 A Band, RADAR Sensitive, Passive  
Channel 64 A Band, RADAR Sensitive, Passive  
Channel 100 A Band, RADAR Sensitive, Passive  
Channel 104 A Band, RADAR Sensitive, Passive, Temporarily Out of  
Service for 31 minutes  
Channel 108 A Band, RADAR Sensitive, Passive, Temporarily Out of  
Service for 31 minutes  
Channel 112 A Band, RADAR Sensitive, Passive  
Channel 116 A Band, RADAR Sensitive, Passive  
Channel 120 A Band, RADAR Sensitive, Passive  
Channel 124 A Band, RADAR Sensitive, Passive  
Channel 128 A Band, RADAR Sensitive, Passive  
Channel 132 A Band, RADAR Sensitive, Passive  
Channel 136 A Band, RADAR Sensitive, Passive  
Channel 140 A Band, RADAR Sensitive, Passive  
Channel 144 A Band, RADAR Sensitive, Passive  
Channel 149 A Band  
Channel 153 A Band  
Channel 157 A Band  
Channel 161 A Band  
Channel 165 A Band

# **TIMING WITH RADAR NEAR END OF CAC**

Command to  
Switch Channels  
Start of CAC

Radar Signal Applied



No EUT transmissions were observed after the radar signal.



**Log File of Radar at the End of CAC**

```
# wl chanspec
36/80 (0xe02a)

# wl dfs_ap_move 104/80

# CONSOLE: 036756.081 wlc_dfs_doiovar scan channel: e16a, current
channel e02a

CONSOLE: 036756.082 wl0 wlc_dfs_scan 1355 chspec=e16a

CONSOLE: 036756.082 wl0: mode switch down scheduled = 1 opmode: 0x22,
bw: 0x02

CONSOLE: 036756.253 wl0: downgraded phy to 3+1

CONSOLE: 036756.253 wl0 wlc_dfs_handle_modeswitch: downgrade completed
1390

CONSOLE: 036756.254 wl0: since phymode is 3x1 using scan core with
chanspec e16a

CONSOLE: 036756.254 wl0: chanspec e16a, 60 second CAC time
CONSOLE: 036756.254 DFS State IDLE -> PRE-ISM Channel Availability
Check

# CONSOLE: 036812.954 wl0: DFS: radar_info=0x181e7,
radar_info_2=0x00000

CONSOLE: 036812.954 WL0: DFS: UNCLASSIFIED ##### RADAR_SC
DETECTED ON CHANNEL 104/80 ##### min_pw=30, subband_result=6, AT
56550MS

CONSOLE: 036812.954 wl0: dfs : state to IDLE chanspec 36/80 at 56550ms

CONSOLE: 036812.954 wl0: since phymode is 3x1 using scan core with
chanspec e16a

CONSOLE: 036812.955 wl0: upgraded phy to 4x4

CONSOLE: 036812.955 wl0 wlc_dfs_handle_modeswitch: upgrade completed
1402

CONSOLE: 036812.955 wl0: channel 104 put out of service chspecd068

CONSOLE: 036812.955 wl0: channel 108 put out of service chspecd06c

# wl chanspec
36/80 (0xe02a)

# wl chan_info
```

Channel 36 A Band  
Channel 40 A Band  
Channel 44 A Band  
Channel 48 A Band  
Channel 52 A Band, RADAR Sensitive, Passive  
Channel 56 A Band, RADAR Sensitive, Passive  
Channel 60 A Band, RADAR Sensitive, Passive  
Channel 64 A Band, RADAR Sensitive, Passive  
Channel 100 A Band, RADAR Sensitive, Passive  
Channel 104 A Band, RADAR Sensitive, Passive, Temporarily Out of  
Service for 31 minutes  
Channel 108 A Band, RADAR Sensitive, Passive, Temporarily Out of  
Service for 31 minutes  
Channel 112 A Band, RADAR Sensitive, Passive  
Channel 116 A Band, RADAR Sensitive, Passive  
Channel 120 A Band, RADAR Sensitive, Passive  
Channel 124 A Band, RADAR Sensitive, Passive  
Channel 128 A Band, RADAR Sensitive, Passive  
Channel 132 A Band, RADAR Sensitive, Passive  
Channel 136 A Band, RADAR Sensitive, Passive  
Channel 140 A Band, RADAR Sensitive, Passive  
Channel 144 A Band, RADAR Sensitive, Passive  
Channel 149 A Band  
Channel 153 A Band  
Channel 157 A Band  
Channel 161 A Band  
Channel 165 A Band

### **5.8.6. ZERO WAIT CHANNEL AVAILABILITY CHECK TIME (DFS CHANNEL TO DFS CHANNEL / RADAR APPLIED TO THE CHANNEL PERFORMING CAC)**

#### **PROCEDURE TO DETERMINE CAC CYCLE TIME**

A link was established and traffic with a channel loading of less than 16% was started on an operating DFS channel. When the traffic loading is greater than 16% the Zero-Wait CAC function will be abandoned per manufacturer design and declaration.

A sweep was started on the spectrum analyzer set to the DFS test channel when a software command was issued by the operator to the EUT to change from the operating DFS channel to the DFS test channel. After the command to change channels was issued a CAC period commenced on the DFS test channel for at least 60 seconds. The time from the beginning of the sweep to the re-initialization of traffic was measured as the time required for the EUT to complete the CAC period.

#### **PROCEDURE FOR TIMING OF RADAR BURST**

A sweep was started on the spectrum analyzer set to the DFS test channel and a CAC period was commenced when a software command was issued by the operator to the EUT to change from the operating DFS channel to the DFS test channel. A radar signal was triggered on the DFS test channel within 0 to 6 seconds after the beginning of the CAC period and transmissions on the DFS test channel were monitored on the spectrum analyzer. A log file was generated indicating that the radar was detected on the DFS test channel and that the DFS test channel was temporarily removed from service for a period of 31-minutes.

After the EUT was reset a sweep was started on the spectrum analyzer set to the DFS test channel and a CAC period was commenced when a software command was issued by the operator to the EUT to change from the operating DFS channel to the DFS test channel. A radar signal was triggered on the DFS test channel within 54 to 60 seconds after the beginning of the CAC period and transmissions on the DFS test channel were monitored on the spectrum analyzer. A log file was generated indicating that the radar was detected on the DFS test channel and that the DFS test channel was temporarily removed from service for a period of 31-minutes.

## **QUANTITATIVE RESULTS BASED UPON SPECTRUM ANALYZER PLOTS**

### **No Radar Triggered**

<b>Beginning of CAC (sec)</b>	<b>Timing of Start of Traffic (sec)</b>	<b>CAC Period Time (sec)</b>
0	61.49	61.5

### **Radar Near Beginning of CAC**

<b>Beginning of CAC (sec)</b>	<b>Timing of Radar Burst (sec)</b>	<b>Radar Relative to Start of CAC (sec)</b>
0	3.053	3.053

### **Radar Near End of CAC**

<b>Beginning of CAC (sec)</b>	<b>Timing of Radar Burst (sec)</b>	<b>Radar Relative to Start of CAC (sec)</b>
0	57.38	57.38

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

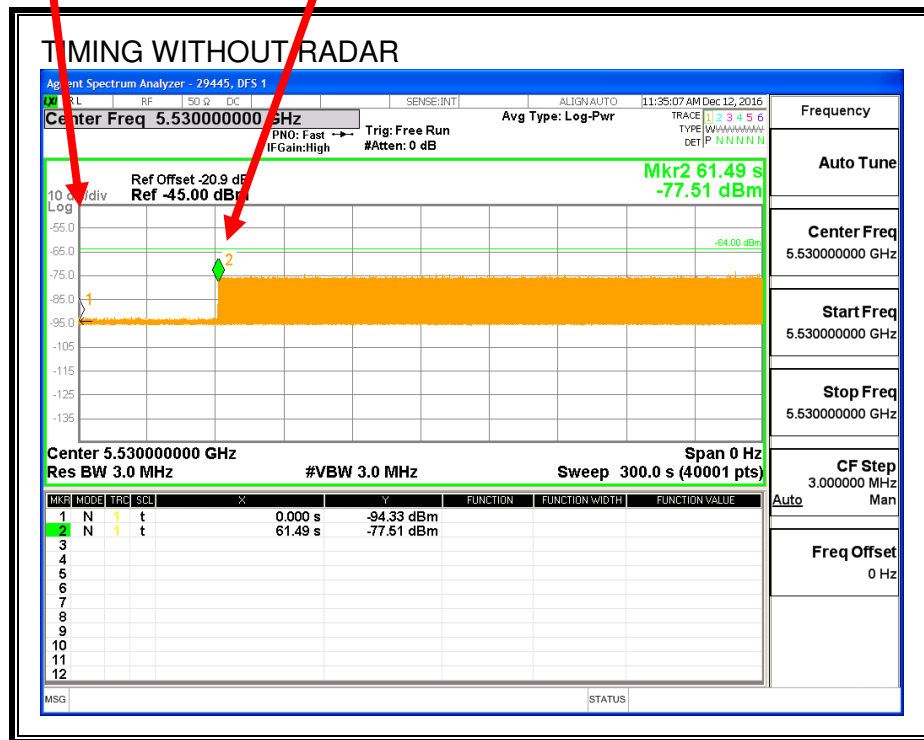
## **QUALITATIVE RESULTS**

<b>Timing of Radar Burst</b>	<b>Display on Control Computer</b>	<b>Spectrum Analyzer Display</b>
No Radar Triggered	EUT marks Channel as active	Transmissions begin on channel after completion of the CAC
Within 0 to 6 second window	EUT indicates radar detected	No transmissions on channel
Within 54 to 60 second window	EUT indicates radar detected	No transmissions on channel

# **TIMING WITHOUT RADAR DURING CAC**

Command to  
Switch Channels  
Start of CAC

End of CAC  
Begin Transmissions



Transmissions begin on channel after completion of the CAC period.

**Log File of CAC Timing Without Radar**

```
# wl chanspec
60/80 (0xe23a)

# wl dfs_ap_move 104/80

# CONSOLE: 037306.897 wlc_dfs_doiovar scan channel: e16a, current
channel e23a

CONSOLE: 037306.897 wl0 wlc_dfs_scan 1355 chspec=e16a

CONSOLE: 037306.897 wl0: mode switch down scheduled = 1 opmode: 0x22,
bw: 0x02

CONSOLE: 037307.029 wl0: downgraded phy to 3+1

CONSOLE: 037307.029 wl0 wlc_dfs_handle_modeswitch: downgrade completed
1390

CONSOLE: 037307.030 wl0: since phymode is 3x1 using scan core with
chanspec e16a

CONSOLE: 037307.030 wl0: chanspec e16a, 60 second CAC time

CONSOLE: 037307.030 DFS State In-Service Monitoring(ISM) -> PRE-ISM
Channel Availability Check

CONSOLE: 037367.061 wl0.. wlc_dfs_scan_complete_sc chan=e16a (106)
reason 0

CONSOLE: 037367.061 DFS State PRE-ISM Channel Availability Check ->
In-Service Monitoring(ISM)

CONSOLE: 037367.062 wl0: since phymode is 3x1 using scan core with
chanspec e16a

CONSOLE: 037367.062 wl0: chanspec e16a, 60 second CAC time

CONSOLE: 037367.063 Started DFS CSA...

CONSOLE: 037367.211 wl0: upgraded phy to 4x4

CONSOLE: 037367.211 wl0 wlc_dfs_handle_modeswitch: upgrade completed
1402

CONSOLE: 037367.211 wl0 wlc_dfs_handle_modeswitch: new state 4 in idle
state

CONSOLE: 037367.211 wl0: mode switch up scheduled = 1 opmode: 0x32,
bw: 0x02
```

CONSOLE: 037367.702 wl0: dfs : state to In-Service Monitoring (ISM)  
chanspec 104/80 at 300ms

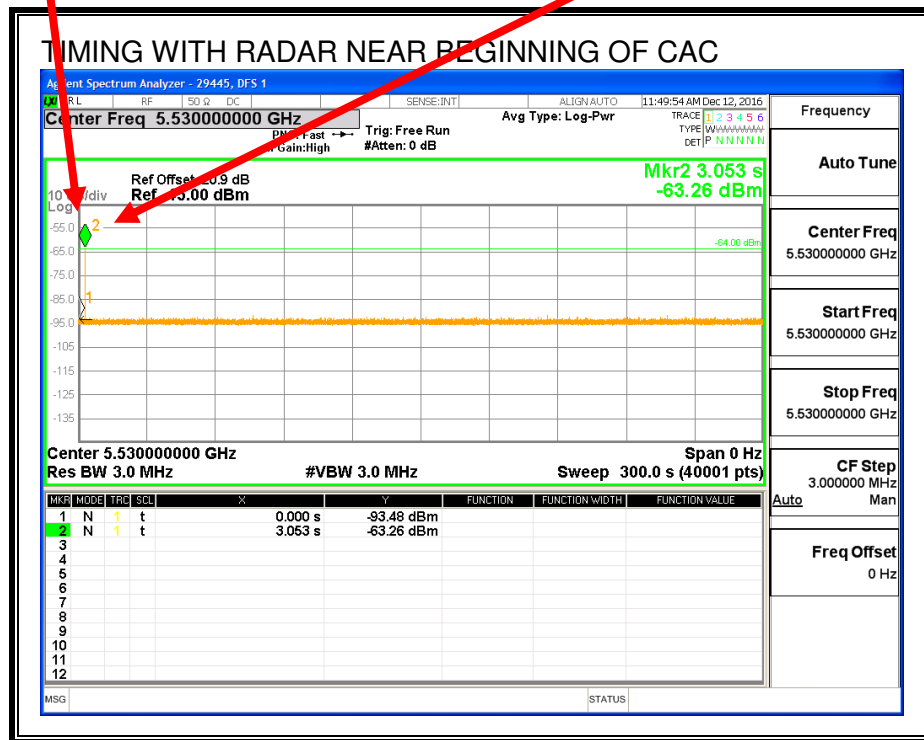
CONSOLE: 037367.703 wl0: Skip CAC - channel 0xe16a is already  
available. Zero duration.

```
# wl chan_info
Channel 36 A Band
Channel 40 A Band
Channel 44 A Band
Channel 48 A Band
Channel 52 A Band, RADAR Sensitive, Passive
Channel 56 A Band, RADAR Sensitive, Passive
Channel 60 A Band, RADAR Sensitive, Passive
Channel 64 A Band, RADAR Sensitive, Passive
Channel 100      A Band, RADAR Sensitive
Channel 104      A Band, RADAR Sensitive
Channel 108      A Band, RADAR Sensitive
Channel 112      A Band, RADAR Sensitive
Channel 116      A Band, RADAR Sensitive, Passive
Channel 120      A Band, RADAR Sensitive, Passive
Channel 124      A Band, RADAR Sensitive, Passive
Channel 128      A Band, RADAR Sensitive, Passive
Channel 132      A Band, RADAR Sensitive, Passive
Channel 136      A Band, RADAR Sensitive, Passive
Channel 140      A Band, RADAR Sensitive, Passive
Channel 144      A Band, RADAR Sensitive, Passive
Channel 149      A Band
Channel 153      A Band
Channel 157      A Band
Channel 161      A Band
Channel 165      A Band
```

# **TIMING WITH RADAR NEAR BEGINNING OF CAC**

Command to  
Switch Channels  
Start of CAC

Radar Signal Applied



No EUT transmissions were observed after the radar signal.



**Log File of Radar at the Beginning of CAC**

```
# wl chanspec
60/80 (0xe23a)

# wl dfs_ap_move 104/80

# CONSOLE: 038152.248 wlc_dfs_doiovar scan channel: e16a, current
channel e23a

CONSOLE: 038152.249 wl0 wlc_dfs_scan 1355 chspec=e16a

CONSOLE: 038152.249 wl0: mode switch down scheduled = 1 opmode: 0x22,
bw: 0x02

CONSOLE: 038152.600 wl0: downgraded phy to 3+1

CONSOLE: 038152.600 wl0 wlc_dfs_handle_modeswitch: downgrade completed
1390

CONSOLE: 038152.601 wl0: since phymode is 3x1 using scan core with
chanspec e16a

CONSOLE: 038152.601 wl0: chanspec e16a, 60 second CAC time

CONSOLE: 038152.601 DFS State In-Service Monitoring(ISM) -> PRE-ISM
Channel Availability Check

CONSOLE: 038154.805 wl0: DFS: radar_info=0x181e7, radar_info_2=0x00000

CONSOLE: 038154.805 WL0: DFS: UNCLASSIFIED ##### RADAR_SC
DETECTED ON CHANNEL 104/80 ##### min_pw=30, subband_result=6, AT
2100MS

CONSOLE: 038154.806 wl0: dfs : state to In-Service Monitoring(ISM)
chanspec 60/80 at 2100ms

CONSOLE: 038154.806 wl0: since phymode is 3x1 using scan core with
chanspec e16a

CONSOLE: 038154.806 wl0: channel 104 put out of service chspecd068

CONSOLE: 038154.806 wl0: channel 108 put out of service chspecd06c

CONSOLE: 038154.956 wl0: upgraded phy to 4x4

CONSOLE: 038154.957 wl0 wlc_dfs_handle_modeswitch: upgrade completed
1402
```

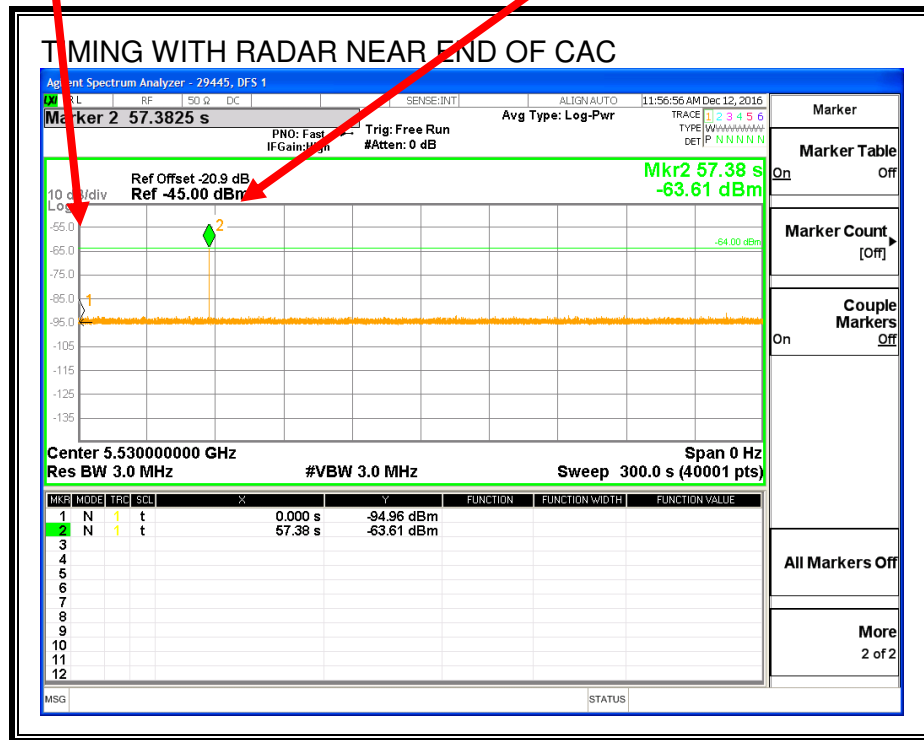
# wl chanspec  
60/80 (0xe23a)

# wl chan\_info  
Channel 36 A Band  
Channel 40 A Band  
Channel 44 A Band  
Channel 48 A Band  
Channel 52 A Band, RADAR Sensitive  
Channel 56 A Band, RADAR Sensitive  
Channel 60 A Band, RADAR Sensitive  
Channel 64 A Band, RADAR Sensitive  
Channel 100 A Band, RADAR Sensitive, Passive  
Channel 104 A Band, RADAR Sensitive, Passive, Temporarily Out of  
Service for 31 minutes  
Channel 108 A Band, RADAR Sensitive, Passive, Temporarily Out of  
Service for 31 minutes  
Channel 112 A Band, RADAR Sensitive, Passive  
Channel 116 A Band, RADAR Sensitive, Passive  
Channel 120 A Band, RADAR Sensitive, Passive  
Channel 124 A Band, RADAR Sensitive, Passive  
Channel 128 A Band, RADAR Sensitive, Passive  
Channel 132 A Band, RADAR Sensitive, Passive  
Channel 136 A Band, RADAR Sensitive, Passive  
Channel 140 A Band, RADAR Sensitive, Passive  
Channel 144 A Band, RADAR Sensitive, Passive  
Channel 149 A Band  
Channel 153 A Band  
Channel 157 A Band  
Channel 161 A Band  
Channel 165 A Band

# **TIMING WITH RADAR NEAR END OF CAC**

Command to  
Switch Channels  
Start of CAC

Radar Signal Applied



No EUT transmissions were observed after the radar signal.

**Log File of Radar at the End of CAC**

```
# wl chanspec
60/80 (0xe23a)

# wl dfs_ap_move 104/80

# CONSOLE: 038610.967 wlc_dfs_doiovar scan channel: e16a, current
channel e23a

CONSOLE: 038610.967 wl0 wlc_dfs_scan 1355 chspec=e16a

CONSOLE: 038610.967 wl0: mode switch down scheduled = 1 opmode: 0x22,
bw: 0x02

CONSOLE: 038611.302 wl0: downgraded phy to 3+1

CONSOLE: 038611.302 wl0 wlc_dfs_handle_modeswitch: downgrade completed
1390

CONSOLE: 038611.303 wl0: since phymode is 3x1 using scan core with
chanspec e16a

CONSOLE: 038611.303 wl0: chanspec e16a, 60 second CAC time

CONSOLE: 038611.303 DFS State In-Service Monitoring(ISM) -> PRE-ISM
Channel Availability Check

CONSOLE: 038667.808 wl0: DFS: radar_info=0x181e7, radar_info_2=0x00000

CONSOLE: 038667.808 WL0: DFS: UNCLASSIFIED ##### RADAR_SC
DETECTED ON CHANNEL 104/80 ##### min_pw=30, subband_result=6, AT
56400MS

CONSOLE: 038667.809 wl0: dfs : state to In-Service Monitoring(ISM)
chanspec 60/80 at 56400ms

CONSOLE: 038667.809 wl0: since phymode is 3x1 using scan core with
chanspec e16a

CONSOLE: 038667.809 wl0: channel 104 put out of service chspecd068

CONSOLE: 038667.809 wl0: channel 108 put out of service chspecd06c

CONSOLE: 038667.958 wl0: upgraded phy to 4x4

CONSOLE: 038667.958 wl0 wlc_dfs_handle_modeswitch: upgrade completed
1402
```

```
# wl chan_info
Channel 36 A Band
Channel 40 A Band
Channel 44 A Band
Channel 48 A Band
Channel 52 A Band, RADAR Sensitive
Channel 56 A Band, RADAR Sensitive
Channel 60 A Band, RADAR Sensitive
Channel 64 A Band, RADAR Sensitive
Channel 100      A Band, RADAR Sensitive, Passive
Channel 104      A Band, RADAR Sensitive, Passive, Temporarily Out of
Service for 31 minutes
Channel 108      A Band, RADAR Sensitive, Passive, Temporarily Out of
Service for 31 minutes
Channel 112      A Band, RADAR Sensitive, Passive
Channel 116      A Band, RADAR Sensitive, Passive
Channel 120      A Band, RADAR Sensitive, Passive
Channel 124      A Band, RADAR Sensitive, Passive
Channel 128      A Band, RADAR Sensitive, Passive
Channel 132      A Band, RADAR Sensitive, Passive
Channel 136      A Band, RADAR Sensitive, Passive
Channel 140      A Band, RADAR Sensitive, Passive
Channel 144      A Band, RADAR Sensitive, Passive
Channel 149      A Band
Channel 153      A Band
Channel 157      A Band
Channel 161      A Band
Channel 165      A Band
```

### **5.8.7. ZERO WAIT CHANNEL AVAILABILITY CHECK TIME (DFS CHANNEL TO DFS CHANNEL / RADAR APPLIED TO THE OPERATING DFS CHANNEL)**

#### **PROCEDURE TO DETERMINE CAC CYCLE TIME**

A link was established and traffic with a channel loading of less than 16% was started on an operating DFS channel. When the traffic loading is greater than 16% the Zero-Wait CAC function will be abandoned per manufacturer design and declaration.

A sweep was started on the spectrum analyzer set to the DFS test channel when a software command was issued by the operator to the EUT to change from the operating DFS channel to the DFS test channel. After the command to change channels was issued a CAC period commenced on the DFS test channel for at least 60 seconds. The time from the beginning of the sweep to the re-initialization of traffic was measured as the time required for the EUT to complete the CAC period.

#### **PROCEDURE FOR TIMING OF RADAR BURST**

A sweep was started on the spectrum analyzer set to the DFS test channel and a CAC period was commenced when a software command was issued by the operator to the EUT to change from the operating DFS channel to the DFS test channel. A radar signal was triggered on the operating DFS channel within 0 to 6 seconds after the beginning of the CAC period and transmissions on the DFS test channel were monitored on the spectrum analyzer. A log file was generated indicating that the radar was detected on the operating DFS channel and that the operating DFS channel was temporarily removed from service for a period of 31-minutes. In addition the CAC being performed on the DFS test channel was abandoned and the EUT moved service to a Non-DFS channel.

After the EUT was reset a sweep was started on the spectrum analyzer set to the DFS test channel and a CAC period was commenced when a software command was issued by the operator to the EUT to change from the operating DFS channel to the DFS test channel. A radar signal was triggered on the operating DFS channel within 54 to 60 seconds after the beginning of the CAC period and transmissions on the DFS test channel were monitored on the spectrum analyzer. A log file was generated indicating that the radar was detected on the operating DFS channel and that the operating DFS channel was temporarily removed from service for a period of 31-minutes. In addition the CAC being performed on the DFS test channel was abandoned and the EUT moved service to a Non-DFS channel.

## **QUANTITATIVE RESULTS BASED UPON SPECTRUM ANALYZER PLOTS**

### **No Radar Triggered**

<b>Beginning of CAC (sec)</b>	<b>Timing of Start of Traffic (sec)</b>	<b>CAC Period Time (sec)</b>
0	61.5	61.5

### **Radar Near Beginning of CAC**

<b>Beginning of CAC (sec)</b>	<b>Timing of Radar Burst (sec)</b>	<b>Radar Relative to Start of CAC (sec)</b>
0	3.000	3.000

### **Radar Near End of CAC**

<b>Beginning of CAC (sec)</b>	<b>Timing of Radar Burst (sec)</b>	<b>Radar Relative to Start of CAC (sec)</b>
0	57.00	57.00

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

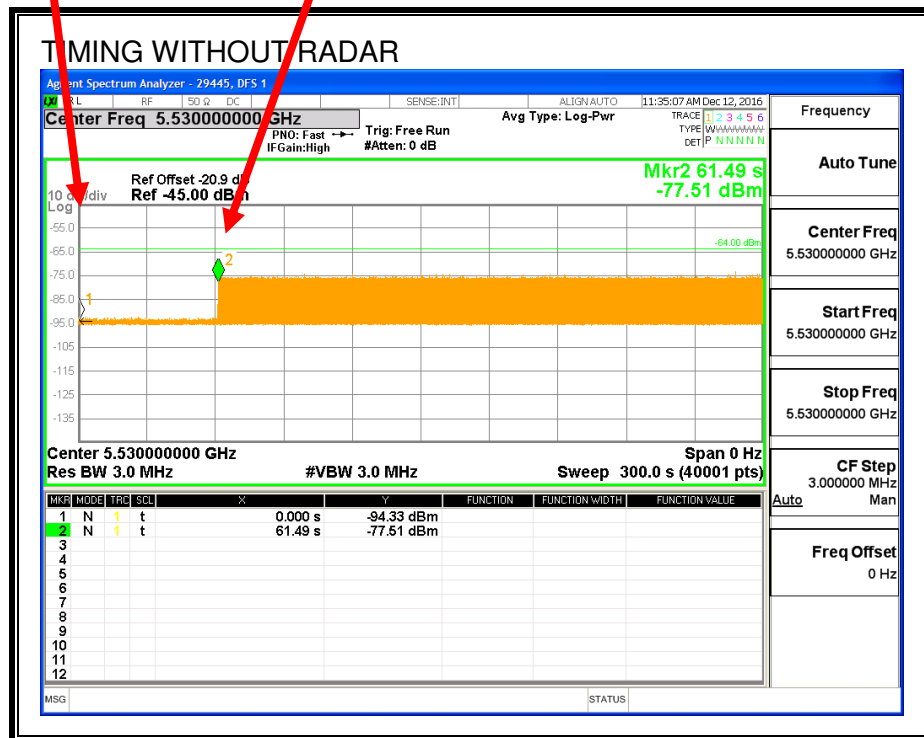
## **QUALITATIVE RESULTS**

<b>Timing of Radar Burst</b>	<b>Display on Control Computer</b>	<b>Spectrum Analyzer Display</b>
No Radar Triggered	EUT marks Channel as active	Transmissions begin on channel after completion of the CAC
Within 0 to 6 second window	EUT indicates radar detected	No transmissions on channel
Within 54 to 60 second window	EUT indicates radar detected	No transmissions on channel

# **TIMING WITHOUT RADAR DURING CAC**

Command to  
Switch Channels  
Start of CAC

End of CAC  
Begin Transmissions



Transmissions begin on channel after completion of the CAC period.



**Log File of CAC Timing Without Radar**

```
# wl chanspec
60/80 (0xe23a)

# wl dfs_ap_move 104/80

# CONSOLE: 037306.897 wlc_dfs_doiovar scan channel: e16a, current
channel e23a

CONSOLE: 037306.897 wl0 wlc_dfs_scan 1355 chspec=e16a

CONSOLE: 037306.897 wl0: mode switch down scheduled = 1 opmode: 0x22,
bw: 0x02

CONSOLE: 037307.029 wl0: downgraded phy to 3+1

CONSOLE: 037307.029 wl0 wlc_dfs_handle_modeswitch: downgrade completed
1390

CONSOLE: 037307.030 wl0: since phymode is 3x1 using scan core with
chanspec e16a

CONSOLE: 037307.030 wl0: chanspec e16a, 60 second CAC time

CONSOLE: 037307.030 DFS State In-Service Monitoring(ISM) -> PRE-ISM
Channel Availability Check

CONSOLE: 037367.061 wl0.. wlc_dfs_scan_complete_sc chan=e16a (106)
reason 0

CONSOLE: 037367.061 DFS State PRE-ISM Channel Availability Check ->
In-Service Monitoring(ISM)

CONSOLE: 037367.062 wl0: since phymode is 3x1 using scan core with
chanspec e16a

CONSOLE: 037367.062 wl0: chanspec e16a, 60 second CAC time

CONSOLE: 037367.063 Started DFS CSA...

CONSOLE: 037367.211 wl0: upgraded phy to 4x4

CONSOLE: 037367.211 wl0 wlc_dfs_handle_modeswitch: upgrade completed
1402

CONSOLE: 037367.211 wl0 wlc_dfs_handle_modeswitch: new state 4 in idle
state

CONSOLE: 037367.211 wl0: mode switch up scheduled = 1 opmode: 0x32,
bw: 0x02
```

CONSOLE: 037367.702 wl0: dfs : state to In-Service Monitoring (ISM)  
chanspec 104/80 at 300ms

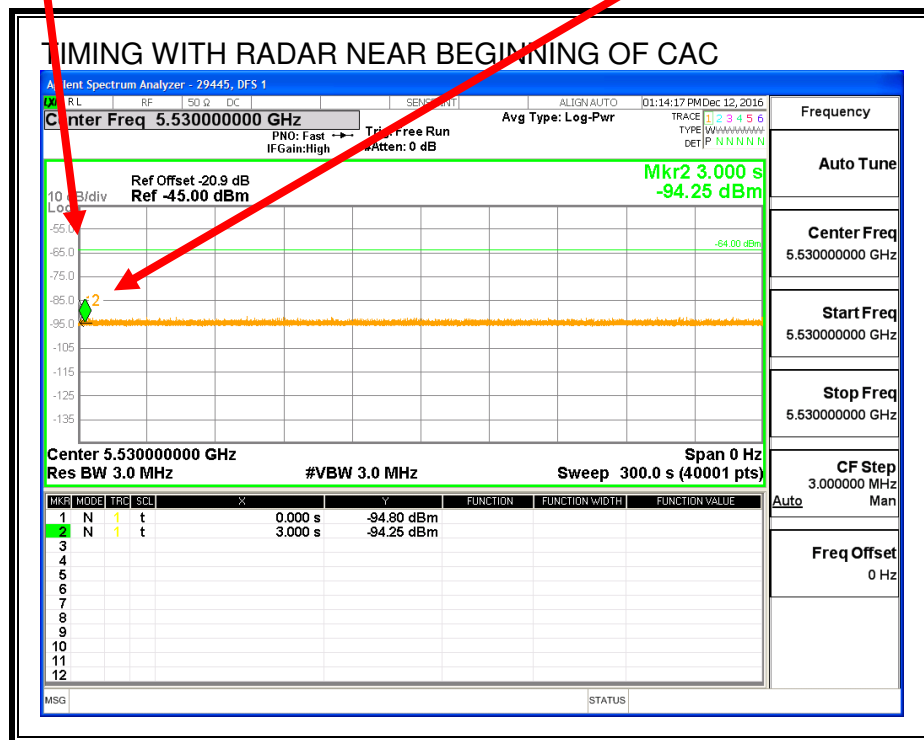
CONSOLE: 037367.703 wl0: Skip CAC - channel 0xe16a is already  
available. Zero duration.

```
# wl chan_info
Channel 36 A Band
Channel 40 A Band
Channel 44 A Band
Channel 48 A Band
Channel 52 A Band, RADAR Sensitive, Passive
Channel 56 A Band, RADAR Sensitive, Passive
Channel 60 A Band, RADAR Sensitive, Passive
Channel 64 A Band, RADAR Sensitive, Passive
Channel 100      A Band, RADAR Sensitive
Channel 104      A Band, RADAR Sensitive
Channel 108      A Band, RADAR Sensitive
Channel 112      A Band, RADAR Sensitive
Channel 116      A Band, RADAR Sensitive, Passive
Channel 120      A Band, RADAR Sensitive, Passive
Channel 124      A Band, RADAR Sensitive, Passive
Channel 128      A Band, RADAR Sensitive, Passive
Channel 132      A Band, RADAR Sensitive, Passive
Channel 136      A Band, RADAR Sensitive, Passive
Channel 140      A Band, RADAR Sensitive, Passive
Channel 144      A Band, RADAR Sensitive, Passive
Channel 149      A Band
Channel 153      A Band
Channel 157      A Band
Channel 161      A Band
Channel 165      A Band
```

### TIMING WITH RADAR NEAR BEGINNING OF CAC

Command to  
Switch Channels  
Start of CAC

Radar Signal Applied



No EUT transmissions were observed after the radar signal.

**Log File of Radar at the Beginning of CAC**

```
# wl chanspec
60/80 (0xe23a)

# wl dfs_ap_move 104/80

# CONSOLE: 043257.336 wlc_dfs_doiovar scan channel: e16a, current
channel e23a

CONSOLE: 043257.336 wl0 wlc_dfs_scan 1355 chspec=e16a

CONSOLE: 043257.336 wl0: mode switch down scheduled = 1 opmode: 0x22,
bw: 0x02

CONSOLE: 043257.591 wl0: downgraded phy to 3+1

CONSOLE: 043257.591 wl0 wlc_dfs_handle_modeswitch: downgrade completed
1390

CONSOLE: 043257.592 wl0: since phymode is 3x1 using scan core with
chanspec e16a

CONSOLE: 043257.592 wl0: chanspec e16a, 60 second CAC time

CONSOLE: 043257.592 DFS State In-Service Monitoring(ISM) -> PRE-ISM
Channel Availability Check

CONSOLE: 043257.592 wl0.. wlc_dfs_scan_start txdur_start 2244644us

CONSOLE: 043259.811 wl0: DFS: radar_info=0x181d7, radar_info_2=0x00000

CONSOLE: 043259.811 WL0: DFS: UNCLASSIFIED ##### RADAR DETECTED
ON CHANNEL 60/80 ##### min_pw=29, subband_result=6, AT 2100MS

CONSOLE: 043259.811 wl0: since phymode is 3x1 using scan core with
chanspec e16a

CONSOLE: 043259.811 wl0: chanspec e16a, 60 second CAC time
CONSOLE: 043259.812 wl0: upgraded phy to 4x4

CONSOLE: 043259.812 wl0 wlc_dfs_handle_modeswitch: upgrade completed
1402

CONSOLE: 043259.812 wl0 wlc_dfs_handle_modeswitch: new state 4 in idle
state

CONSOLE: 043259.812 wl0: channel 56 put out of service chspecd038

CONSOLE: 043259.812 wl0: channel 60 put out of service chspecd03c
```

CONSOLE: 043259.812 wl0: DFS WLC\_E\_RADAR\_DETECTED 181d7/0000 on ch  
0xe23a going to ch 0xe29b

CONSOLE: 043259.818 wl0: dfs : state to IDLE chanspec 157/80 at 0ms

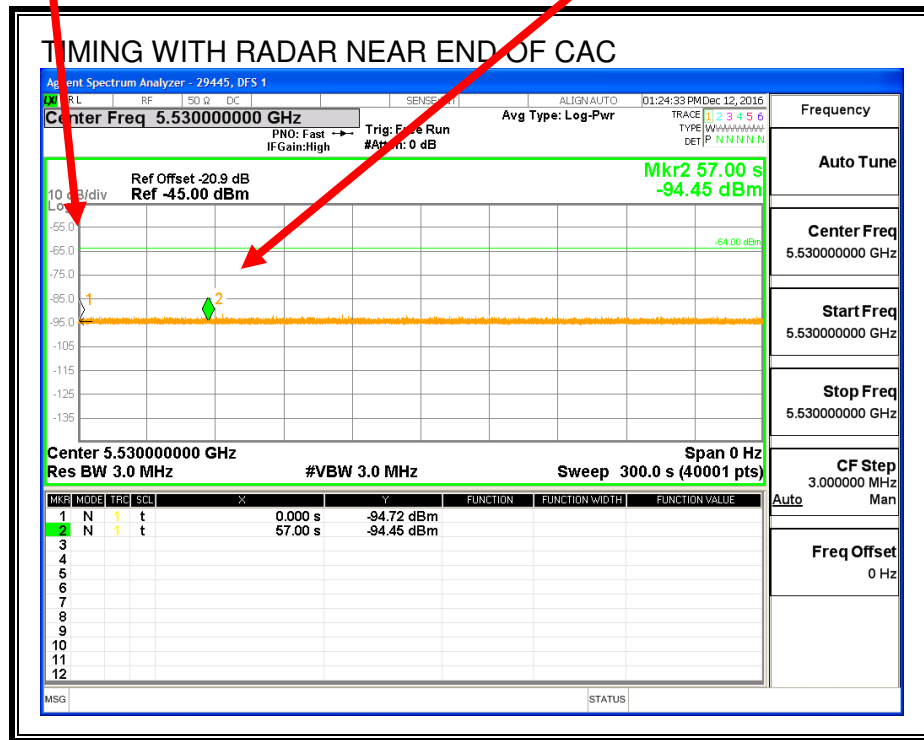
# wl chanspec  
157/80 (0xe29b)

# wl chan\_info  
Channel 36 A Band  
Channel 40 A Band  
Channel 44 A Band  
Channel 48 A Band  
Channel 52 A Band, RADAR Sensitive, Passive  
Channel 56 A Band, RADAR Sensitive, Passive, Temporarily Out of  
Service for 31 minutes  
Channel 60 A Band, RADAR Sensitive, Passive, Temporarily Out of  
Service for 31 minutes  
Channel 64 A Band, RADAR Sensitive, Passive  
Channel 100 A Band, RADAR Sensitive, Passive  
Channel 104 A Band, RADAR Sensitive, Passive  
Channel 108 A Band, RADAR Sensitive, Passive  
Channel 112 A Band, RADAR Sensitive, Passive  
Channel 116 A Band, RADAR Sensitive, Passive  
Channel 120 A Band, RADAR Sensitive, Passive  
Channel 124 A Band, RADAR Sensitive, Passive  
Channel 128 A Band, RADAR Sensitive, Passive  
Channel 132 A Band, RADAR Sensitive, Passive  
Channel 136 A Band, RADAR Sensitive, Passive  
Channel 140 A Band, RADAR Sensitive, Passive  
Channel 144 A Band, RADAR Sensitive, Passive  
Channel 149 A Band  
Channel 153 A Band  
Channel 157 A Band  
Channel 161 A Band  
Channel 165 A Band

# **TIMING WITH RADAR NEAR END OF CAC**

Command to  
Switch Channels  
Start of CAC

Radar Signal Applied



No EUT transmissions were observed after the radar signal.

**Log File of Radar at the End of CAC**

```
# wl chanspec
60/80 (0xe23a)

# wl dfs_ap_move 104/80

# CONSOLE: 043647.923 wlc_dfs_doiovar scan channel: e16a, current
channel e23a

CONSOLE: 043647.997 wl0: downgraded phy to 3+1

CONSOLE: 043647.997 wl0 wlc_dfs_handle_modeswitch: downgrade completed
1390

CONSOLE: 043647.998 wl0: since phymode is 3x1 using scan core with
chanspec e16a

CONSOLE: 043647.998 wl0: chanspec e16a, 60 second CAC time

CONSOLE: 043647.998 DFS State In-Service Monitoring(ISM) -> PRE-ISM
Channel Availability Check

CONSOLE: 043704.696 wl0: DFS: radar_info=0x181c7, radar_info_2=0x00000

CONSOLE: 043704.696 WL0: DFS: UNCLASSIFIED ##### RADAR DETECTED
ON CHANNEL 60/80 ##### min_pw=28, subband_result=6, AT 56550MS

CONSOLE: 043704.696 DFS State PRE-ISM Channel Availability Check ->
IDLE

CONSOLE: 043704.696 wl0: dfs : state to IDLE chanspec 60/80 at 56550ms

CONSOLE: 043704.696 wl0: since phymode is 3x1 using scan core with
chanspec e16a

CONSOLE: 043704.696 wl0: chanspec e16a, 60 second CAC time
CONSOLE: 043704.697 wl0: upgraded phy to 4x4

CONSOLE: 043704.697 wl0 wlc_dfs_handle_modeswitch: upgrade completed
1402

CONSOLE: 043704.697 wl0: channel 56 put out of service chspecd038

CONSOLE: 043704.697 wl0: channel 60 put out of service chspecd03c

CONSOLE: 043704.703 wl0: dfs : state to IDLE chanspec 44/80 at 0ms

# wl chanspec
44/80 (0xe22a)

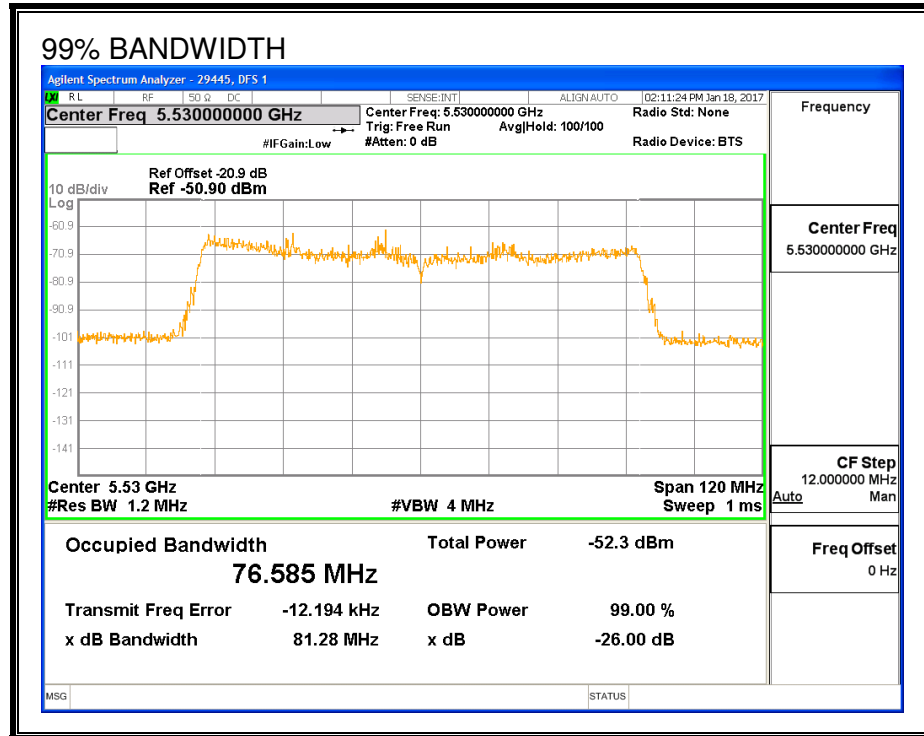
# wl chan_info
```

Channel 36 A Band  
Channel 40 A Band  
Channel 44 A Band  
Channel 48 A Band  
Channel 52 A Band, RADAR Sensitive, Passive  
Channel 56 A Band, RADAR Sensitive, Passive, Temporarily Out of  
Service for 31 minutes  
Channel 60 A Band, RADAR Sensitive, Passive, Temporarily Out of  
Service for 31 minutes  
Channel 64 A Band, RADAR Sensitive, Passive  
Channel 100 A Band, RADAR Sensitive, Passive  
Channel 104 A Band, RADAR Sensitive, Passive  
Channel 108 A Band, RADAR Sensitive, Passive  
Channel 112 A Band, RADAR Sensitive, Passive  
Channel 116 A Band, RADAR Sensitive, Passive  
Channel 120 A Band, RADAR Sensitive, Passive  
Channel 124 A Band, RADAR Sensitive, Passive  
Channel 128 A Band, RADAR Sensitive, Passive  
Channel 132 A Band, RADAR Sensitive, Passive  
Channel 136 A Band, RADAR Sensitive, Passive  
Channel 140 A Band, RADAR Sensitive, Passive  
Channel 144 A Band, RADAR Sensitive, Passive  
Channel 149 A Band  
Channel 153 A Band  
Channel 157 A Band  
Channel 161 A Band  
Channel 165 A Band



## 5.8.8. DETECTION BANDWIDTH

### REFERENCE PLOT OF 99% POWER BANDWIDTH



### RESULTS

FL	FH	Detection Bandwidth	99% Power Bandwidth	Ratio of Detection BW to 99% Power BW	Minimum Limit
(MHz)	(MHz)	(MHz)	(MHz)	(%)	(%)
5490	5569	79	76.585	103.2	100

**DETECTION BANDWIDTH PROBABILITY**

DETECTION BANDWIDTH PROBABILITY RESULTS				
Detection Bandwidth Test Results				
29445 DFS 1				
FCC Type 0 Waveform: 1 us Pulse Width, 1428 us PRI, 18 Pulses per Burst				
Frequency (MHz)	Number of Trials	Number Detected	Detection (%)	Mark
5490	10	10	100	FL
5495	10	10	100	
5500	10	10	100	
5505	10	10	100	
5510	10	10	100	
5515	10	10	100	
5520	10	10	100	
5525	10	10	100	
5530	10	9	90	
5535	10	10	100	
5540	10	10	100	
5545	10	10	100	
5550	10	10	100	
5555	10	10	100	
5560	10	10	100	
5565	10	10	100	
5566	10	10	100	
5567	10	10	100	
5568	10	10	100	
5569	10	10	100	FH

## 5.8.9. IN-SERVICE MONITORING

### RESULTS

FCC Radar Test Summary										
Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth		OBW	Test Location	Employee Number	In-Service Monitoring Version
					FL	FH				
FCC Short Pulse Type 1	30	96.67	60	Pass	5490	5569	76.58	DFS 1	29445	Version 3.0
FCC Short Pulse Type 2	30	80.00	60	Pass	5490	5569	76.58	DFS 1	29445	Version 3.0
FCC Short Pulse Type 3	30	73.33	60	Pass	5490	5569	76.58	DFS 1	29445	Version 3.0
FCC Short Pulse Type 4	30	80.00	60	Pass	5490	5569	76.58	DFS 1	29445	Version 3.0
Aggregate		82.50	80	Pass						
FCC Long Pulse Type 5	30	90.00	80	Pass	5490	5569	76.58	DFS 1	29445	Version 3.0
FCC Hopping Type 6	80	97.50	70	Pass	5490	5569	76.58	DFS 1	29445	Version 3.0

**TYPE 1 DETECTION PROBABILITY**

Data Sheet for FCC Short Pulse Radar Type 1						
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Test (A/B)	Frequency (MHz)	Successful Detection (Yes/No)
1001	1	3066	18	A	5530	No
1002	1	578	92	A	5530	Yes
1003	1	598	89	A	5530	Yes
1004	1	718	74	A	5530	Yes
1005	1	678	78	A	5530	Yes
1006	1	818	65	A	5530	Yes
1007	1	778	68	A	5530	Yes
1008	1	838	63	A	5530	Yes
1009	1	698	76	A	5530	Yes
1010	1	518	102	A	5530	Yes
1011	1	658	81	A	5530	Yes
1012	1	798	67	A	5530	Yes
1013	1	898	59	A	5530	Yes
1014	1	618	86	A	5530	Yes
1015	1	738	72	A	5530	Yes
1016	1	1638	33	B	5530	Yes
1017	1	2465	22	B	5530	Yes
1018	1	1226	44	B	5530	Yes
1019	1	2182	25	B	5530	Yes
1020	1	1073	50	B	5530	Yes
1021	1	964	55	B	5530	Yes
1022	1	2532	21	B	5530	Yes
1023	1	2553	21	B	5530	Yes
1024	1	1703	31	B	5530	Yes
1025	1	1291	41	B	5530	Yes
1026	1	2924	19	B	5530	Yes
1027	1	1138	47	B	5530	Yes
1028	1	2900	19	B	5530	Yes
1029	1	2597	21	B	5530	Yes
1030	1	747	71	B	5530	Yes

**TYPE 2 DETECTION PROBABILITY**

Data Sheet for FCC Short Pulse Radar Type 2					
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Frequency (MHz)	Successful Detection (Yes/No)
2001	3.8	194	26	5530	Yes
2002	2.8	188	26	5530	Yes
2003	1.1	154	24	5530	Yes
2004	2.2	195	24	5530	Yes
2005	3	208	23	5530	Yes
2006	2.4	172	27	5530	Yes
2007	3.3	189	26	5530	Yes
2008	2.9	157	27	5530	Yes
2009	2.2	222	27	5530	Yes
2010	4.2	156	28	5530	No
2011	3.6	182	25	5530	Yes
2012	3.6	163	26	5530	No
2013	1.4	155	27	5530	No
2014	3.8	178	29	5530	Yes
2015	1.7	217	23	5530	Yes
2016	4.3	206	29	5530	No
2017	4.7	168	24	5530	Yes
2018	1.5	162	23	5530	Yes
2019	3.9	209	29	5530	Yes
2020	3.1	169	29	5530	Yes
2021	1.7	182	28	5530	No
2022	1.1	227	24	5530	Yes
2023	2	164	28	5530	Yes
2024	3.8	213	25	5530	Yes
2025	5	196	28	5530	No
2026	2.9	211	26	5530	Yes
2027	2.3	199	23	5530	Yes
2028	4.5	218	24	5530	Yes
2029	4.2	210	25	5530	Yes
2030	2.5	195	27	5530	Yes

### TYPE 3 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 3					
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Frequency (MHz)	Successful Detection (Yes/No)
3001	9.5	379	18	5530	Yes
3002	6.1	347	17	5530	No
3003	8.4	480	18	5530	Yes
3004	9.3	460	18	5530	Yes
3005	7.6	488	17	5530	No
3006	6.8	395	16	5530	Yes
3007	8.1	436	16	5530	No
3008	7.5	325	17	5530	Yes
3009	6.5	378	16	5530	No
3010	6.1	413	17	5530	Yes
3011	7.3	479	16	5530	Yes
3012	9.2	275	18	5530	Yes
3013	8.7	488	17	5530	Yes
3014	6.8	297	16	5530	No
3015	6.5	271	18	5530	Yes
3016	8.9	477	18	5530	Yes
3017	6.8	464	16	5530	No
3018	7.5	432	16	5530	Yes
3019	9.8	314	16	5530	Yes
3020	6.5	294	16	5530	Yes
3021	9	323	18	5530	Yes
3022	8.2	316	17	5530	Yes
3023	9	357	16	5530	No
3024	6.2	496	16	5530	Yes
3025	9.3	299	18	5530	No
3026	8.9	333	17	5530	Yes
3027	6	400	18	5530	Yes
3028	7.9	447	17	5530	Yes
3029	7.4	408	17	5530	Yes
3030	9.6	468	18	5530	Yes

**TYPE 4 DETECTION PROBABILITY**

Data Sheet for FCC Short Pulse Radar Type 4					
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Frequency (MHz)	Successful Detection (Yes/No)
4001	18.3	443	13	5530	Yes
4002	14.5	398	12	5530	Yes
4003	19.1	385	16	5530	Yes
4004	11.5	352	15	5530	No
4005	16.6	485	16	5530	Yes
4006	18.5	348	13	5530	Yes
4007	14.9	494	15	5530	Yes
4008	13.1	370	12	5530	Yes
4009	14.8	277	16	5530	Yes
4010	13.4	417	14	5530	No
4011	15.5	470	14	5530	Yes
4012	14.6	254	12	5530	Yes
4013	13	320	14	5530	No
4014	12.5	368	15	5530	Yes
4015	11.3	329	13	5530	Yes
4016	16.2	389	14	5530	No
4017	15.5	363	12	5530	Yes
4018	16.5	318	16	5530	No
4019	16.2	305	14	5530	Yes
4020	17.7	273	13	5530	Yes
4021	13.7	406	12	5530	Yes
4022	15.6	269	12	5530	Yes
4023	16.9	415	13	5530	No
4024	19.3	290	16	5530	Yes
4025	11.9	449	15	5530	Yes
4026	19.6	337	13	5530	Yes
4027	12.7	273	12	5530	Yes
4028	11.7	425	13	5530	Yes
4029	14.9	374	15	5530	Yes
4030	14.5	421	16	5530	Yes

**TYPE 5 DETECTION PROBABILITY**

Data Sheet for FCC Long Pulse Radar Type 5		
Trial	Frequency (MHz)	Successful Detection (Yes/No)
1	5530	Yes
2	5530	Yes
3	5530	Yes
4	5530	Yes
5	5530	Yes
6	5530	Yes
7	5530	Yes
8	5530	Yes
9	5530	Yes
10	5530	Yes
11	5498	Yes
12	5498	Yes
13	5500	Yes
14	5498	No
15	5496	Yes
16	5498	Yes
17	5500	Yes
18	5499	Yes
19	5498	Yes
20	5500	Yes
21	5563	Yes
22	5562	Yes
23	5562	Yes
24	5560	Yes
25	5562	Yes
26	5562	Yes
27	5564	No
28	5561	No
29	5564	Yes
30	5563	Yes

Note: The Type 5 randomized parameters tested are shown in a separate document.



**TYPE 6 DETECTION PROBABILITY**

Data Sheet for FCC Hopping Radar Type 6				
1 us Pulse Width, 333 us PRI, 9 Pulses per Burst, 1 Burst per Hop				
NTIA August 2005 Hopping Sequence				
Trial	Starting Index Within Sequence	Signal Generator Frequency (MHz)	Hops within Detection BW	Successful Detection (Yes/No)
1	126	5490	16	No
2	601	5491	21	Yes
3	1076	5492	11	Yes
4	1551	5493	18	Yes
5	2026	5494	10	Yes
6	2501	5495	18	Yes
7	2976	5496	17	Yes
8	3451	5497	19	Yes
9	3926	5498	8	Yes
10	4401	5499	18	Yes
11	4876	5500	17	Yes
12	5351	5501	16	Yes
13	5826	5502	15	Yes
14	6301	5503	16	Yes
15	6776	5504	16	Yes
16	7251	5505	15	Yes
17	7726	5506	13	Yes
18	8201	5507	19	Yes
19	8676	5508	18	Yes
20	9151	5509	24	Yes
21	9626	5510	15	Yes
22	10101	5511	9	Yes
23	10576	5512	17	Yes
24	11051	5513	14	Yes
25	11526	5514	15	Yes
26	12001	5515	16	Yes
27	12476	5516	17	Yes
28	12951	5517	28	Yes
29	13426	5518	17	Yes
30	13901	5519	12	Yes
31	14376	5520	17	Yes
32	14851	5521	19	Yes
33	15326	5522	18	Yes
34	15801	5523	15	Yes
35	16276	5524	12	Yes
36	16751	5525	19	Yes
37	17226	5526	14	Yes
38	17701	5527	17	Yes
39	18176	5528	22	Yes

**TYPE 6 DETECTION PROBABILITY (CONTINUED)**

40	18651	5529	16	Yes
41	19126	5530	20	Yes
42	19601	5531	13	Yes
43	20076	5532	23	Yes
44	20551	5533	16	Yes
45	21026	5534	15	Yes
46	21501	5535	17	Yes
47	21976	5536	17	Yes
48	22451	5537	20	Yes
49	22926	5538	15	Yes
50	23401	5539	11	Yes
51	23876	5540	14	Yes
52	24351	5541	22	Yes
53	24826	5542	16	Yes
54	25301	5543	15	Yes
55	25776	5544	23	Yes
56	26251	5545	15	Yes
57	26726	5546	17	Yes
58	27201	5547	13	Yes
59	27676	5548	14	Yes
60	28151	5549	16	Yes
61	28626	5550	20	Yes
62	29101	5551	10	Yes
63	29576	5552	14	Yes
64	30051	5553	17	Yes
65	30526	5554	15	Yes
66	31001	5555	16	Yes
67	31476	5556	22	Yes
68	31951	5557	12	Yes
69	32426	5558	17	Yes
70	32901	5559	14	Yes
71	33376	5560	9	Yes
72	33851	5561	13	Yes
73	34326	5562	15	Yes
74	34801	5563	16	Yes
75	35276	5564	16	Yes
76	35751	5565	11	Yes
77	36226	5566	22	Yes
78	36701	5567	22	Yes
79	37176	5568	18	Yes
80	37651	5569	14	No

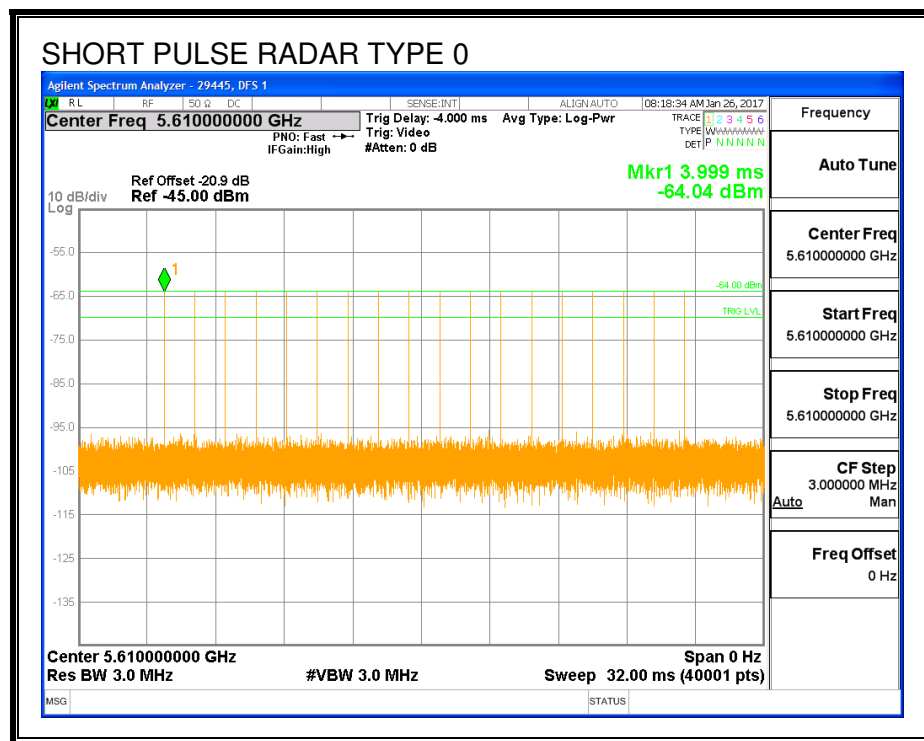
## 5.9. HIGH BAND RESULTS FOR 160 MHz BANDWIDTH (80 MHz HIGH COMPONENT)

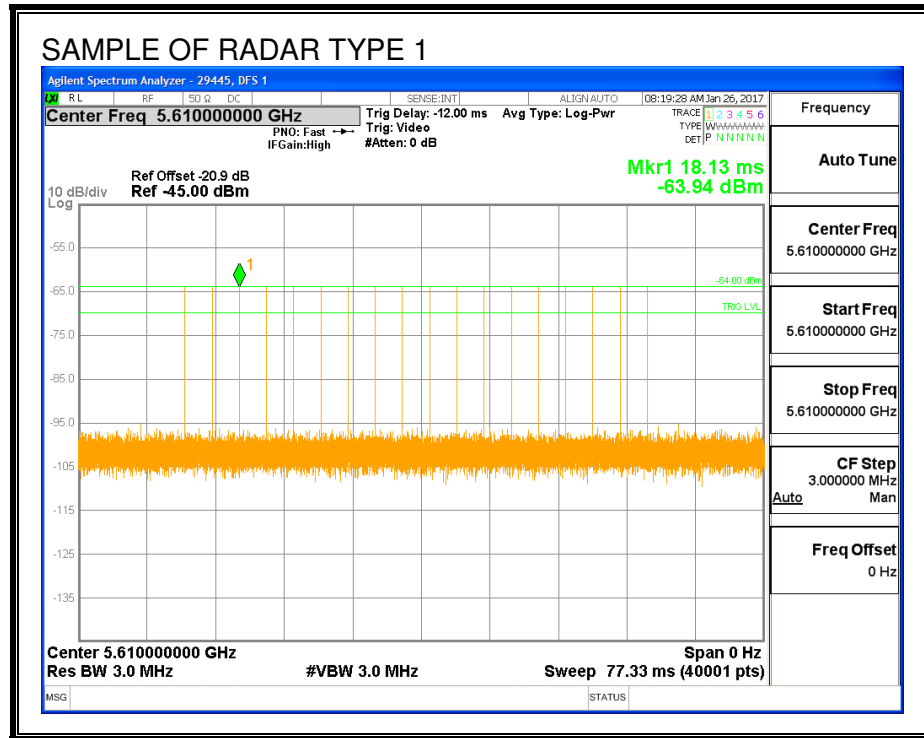
### 5.9.1. TEST CHANNEL

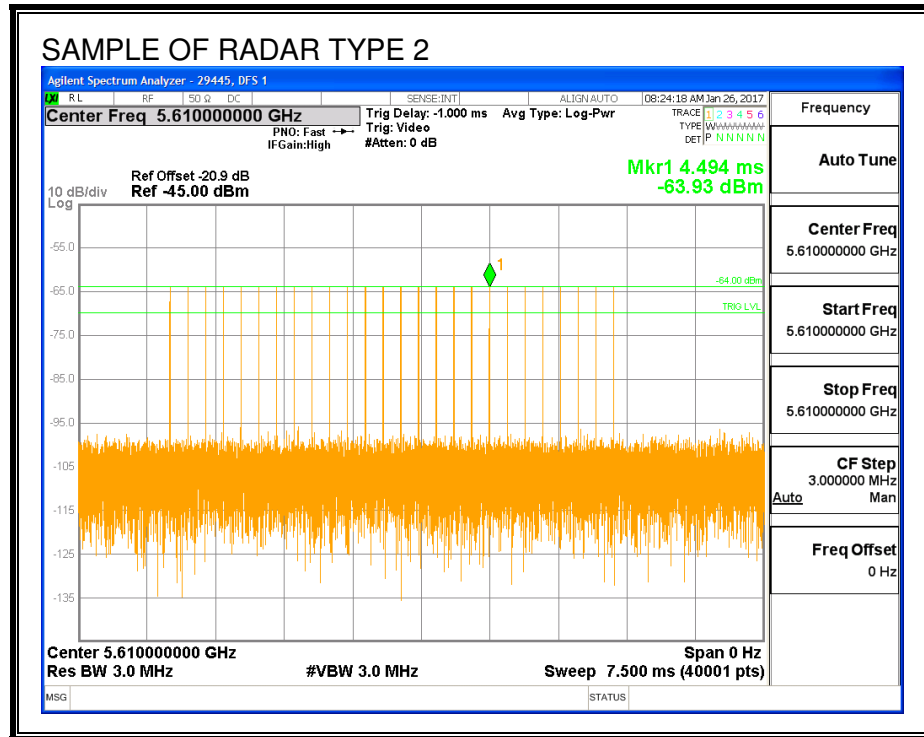
All tests were performed at a channel center frequency of 5610 MHz.

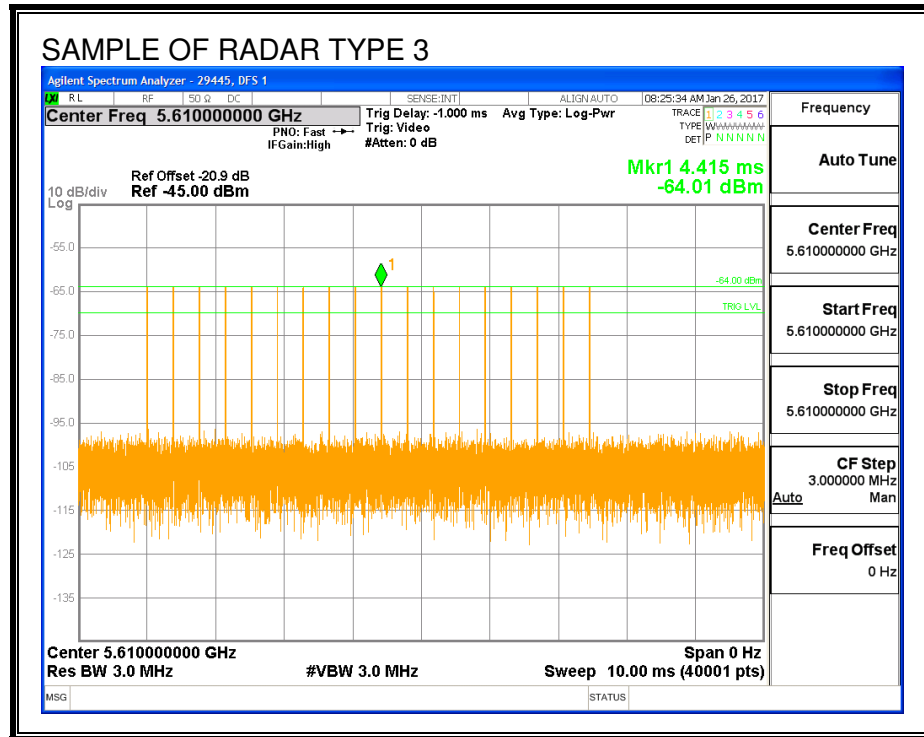
### 5.9.2. RADAR WAVEFORMS AND TRAFFIC

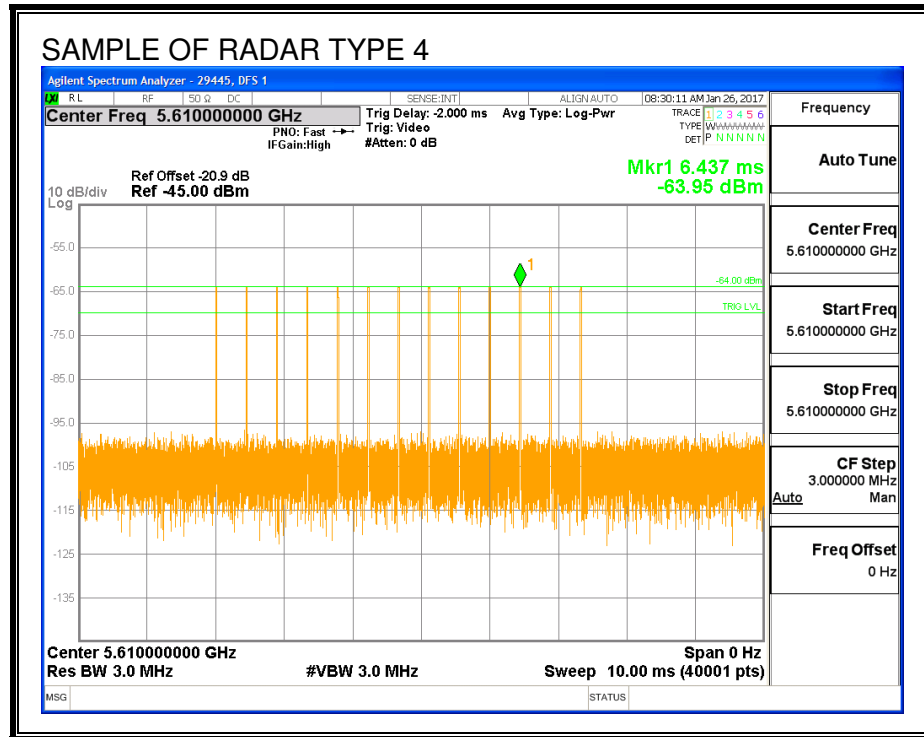
#### RADAR WAVEFORMS

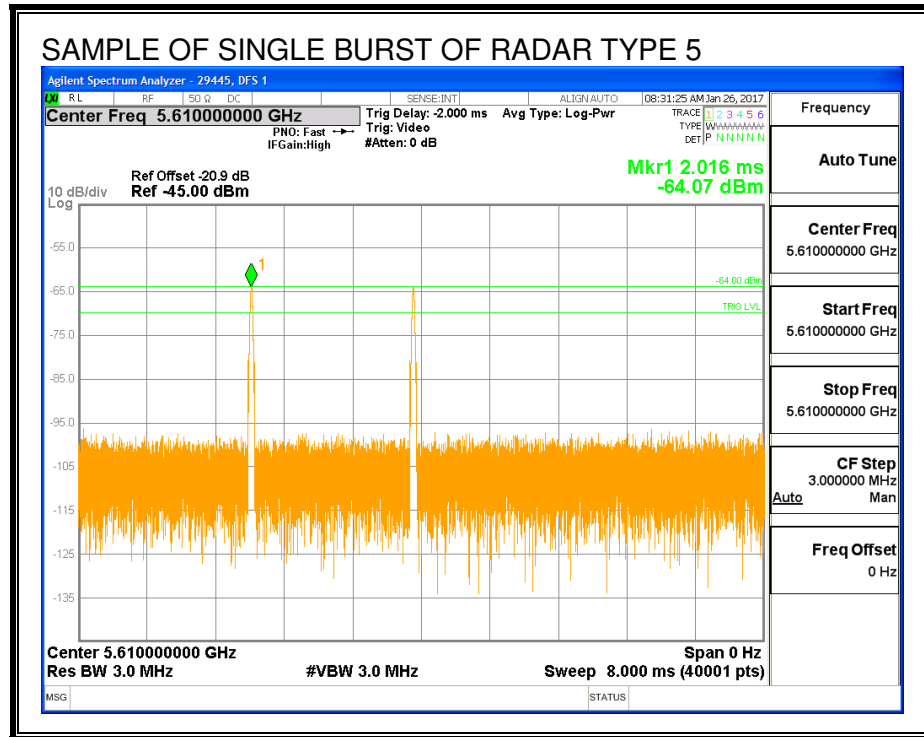




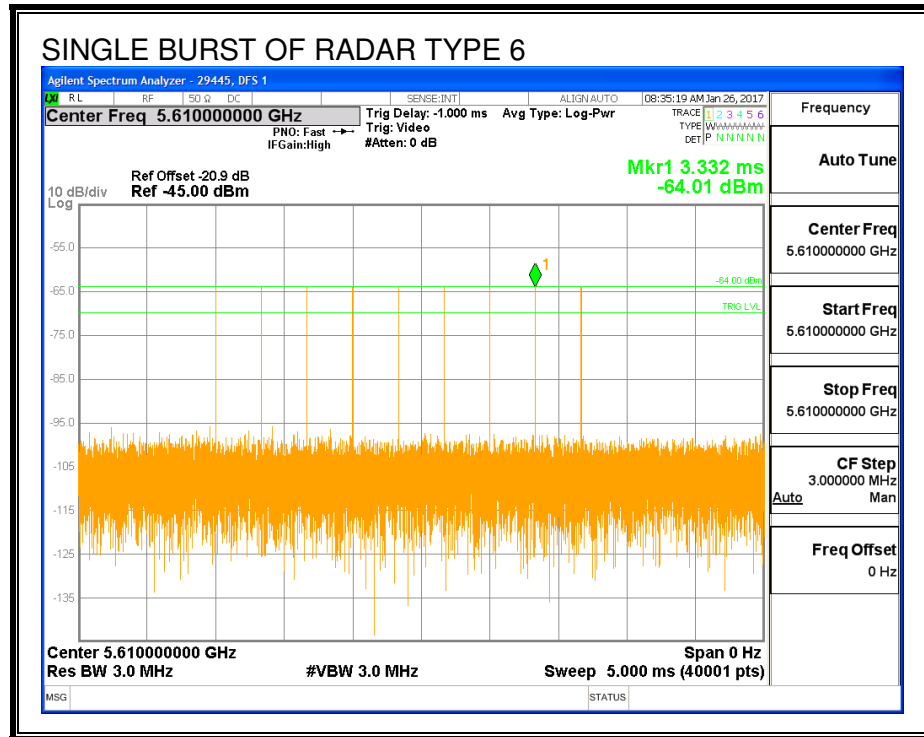




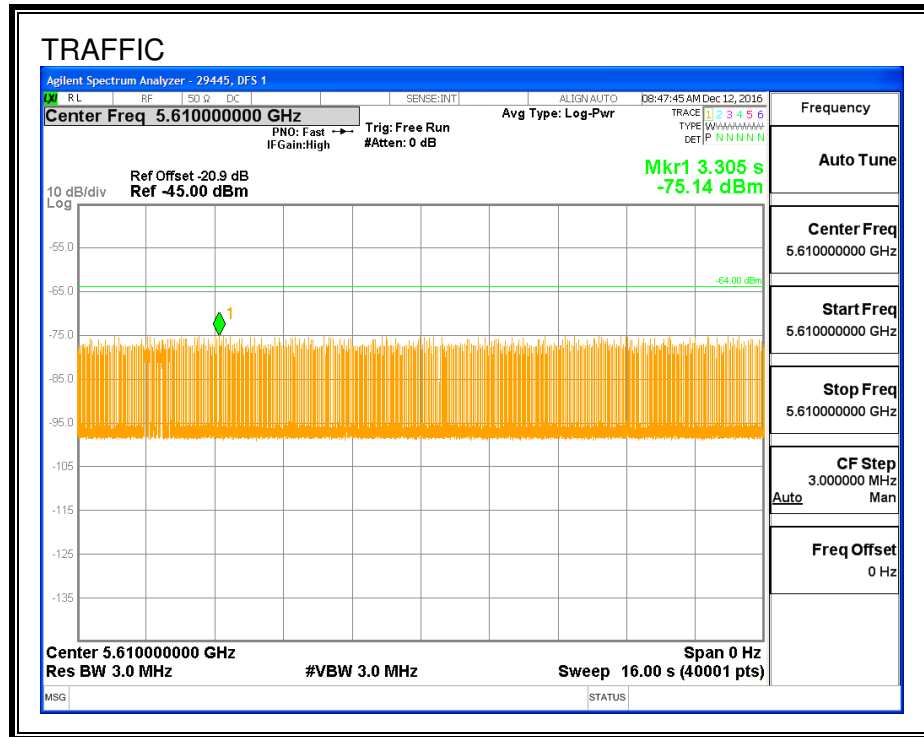




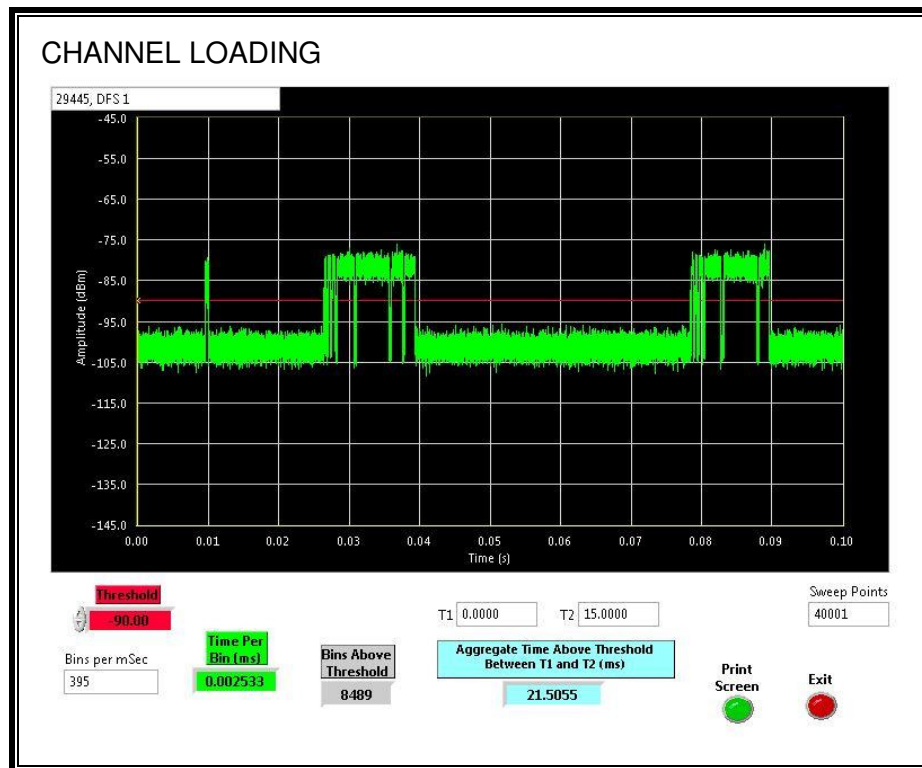




**TRAFFIC**



## CHANNEL LOADING



The level of traffic loading on the channel by the EUT is 21.5%

### 5.9.3. OVERLAPPING CHANNEL TESTS

#### RESULTS

The channel spacing is not less than the channel bandwidth therefore the EUT does not have an overlapping channel plan.

## **5.9.1. CHANNEL AVAILABILITY CHECK TIME**

### **PROCEDURE TO DETERMINE CAC CYCLE TIME**

A sweep was started on the spectrum analyzer set to the DFS test channel when a software command was issued by the operator to the EUT to change to the DFS test channel. After the command to change channels was issued a CAC period commenced on the DFS test channel for at least 60 seconds. The time from the beginning of the sweep to the re-initialization of traffic was measured as the time required for the EUT to complete the CAC period.

### **PROCEDURE FOR TIMING OF RADAR BURST**

A sweep was started on the spectrum analyzer when a software command was issued by the operator to the EUT to change to the DFS test channel. A radar signal was triggered on the DFS test channel within 0 to 6 seconds after the beginning of the CAC period and transmissions on the DFS test channel were monitored on the spectrum analyzer.

A sweep was started on the spectrum analyzer when a software command was issued by the operator to the EUT to change to the DFS test channel. A radar signal was triggered on the DFS test channel within 54 to 60 seconds after the beginning of the CAC period and transmissions on the DFS test channel were monitored on the spectrum analyzer.

## **QUANTITATIVE RESULTS**

### **No Radar Triggered**

<b>Beginning of CAC (sec)</b>	<b>Timing of Start of Traffic (sec)</b>	<b>CAC Period Time (sec)</b>
0	61.0	60.99

### **Radar Near Beginning of CAC**

<b>Beginning of CAC (sec)</b>	<b>Timing of Radar Burst (sec)</b>	<b>Radar Relative to Start of CAC (sec)</b>
0	3.218	3.218

### **Radar Near End of CAC**

<b>Beginning of CAC (sec)</b>	<b>Timing of Radar Burst (sec)</b>	<b>Radar Relative to Start of CAC (sec)</b>
0	58.19	58.19

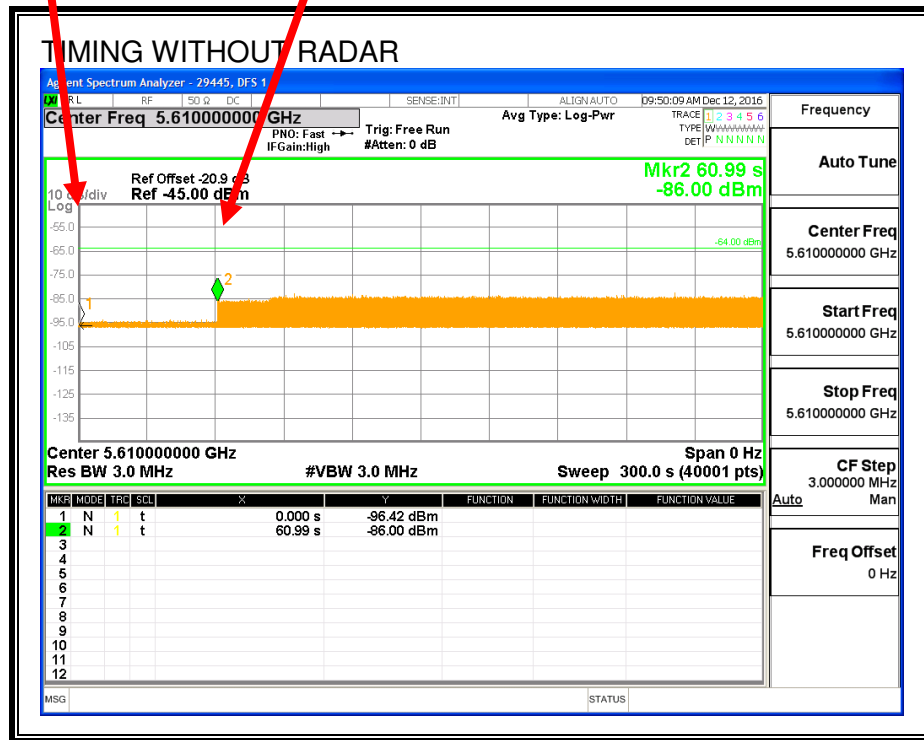
## **QUALITATIVE RESULTS**

<b>Timing of Radar Burst</b>	<b>Display on Control Computer</b>	<b>Spectrum Analyzer Display</b>
No Radar Triggered	EUT marks Channel as active	Transmissions begin on channel after completion of the CAC
Within 0 to 6 second window	EUT indicates radar detected	No transmissions on channel
Within 54 to 60 second window	EUT indicates radar detected	No transmissions on channel

# **TIMING WITHOUT RADAR DURING CAC**

Command to  
Switch Channels  
Start of CAC

End of CAC  
Begin Transmissions



Transmissions begin on channel after completion of the CAC period.

**Log File of CAC Timing Without Radar**

```
# wl chanspec
120/160 (0xed72)

# wl up

# CONSOLE: 035097.913 wl0: wl_open

CONSOLE: 035097.944 wl0: chanspec ed72, 60 second CAC time

CONSOLE: 035097.944 DFS State IDLE -> PRE-ISM Channel
Availability Check

CONSOLE: 035097.944 wl0: link up (wl0)

CONSOLE: 035158.094 wl0: dfs : state to In-Service Monitoring(ISM)
chanspec 120/160 at 60000ms

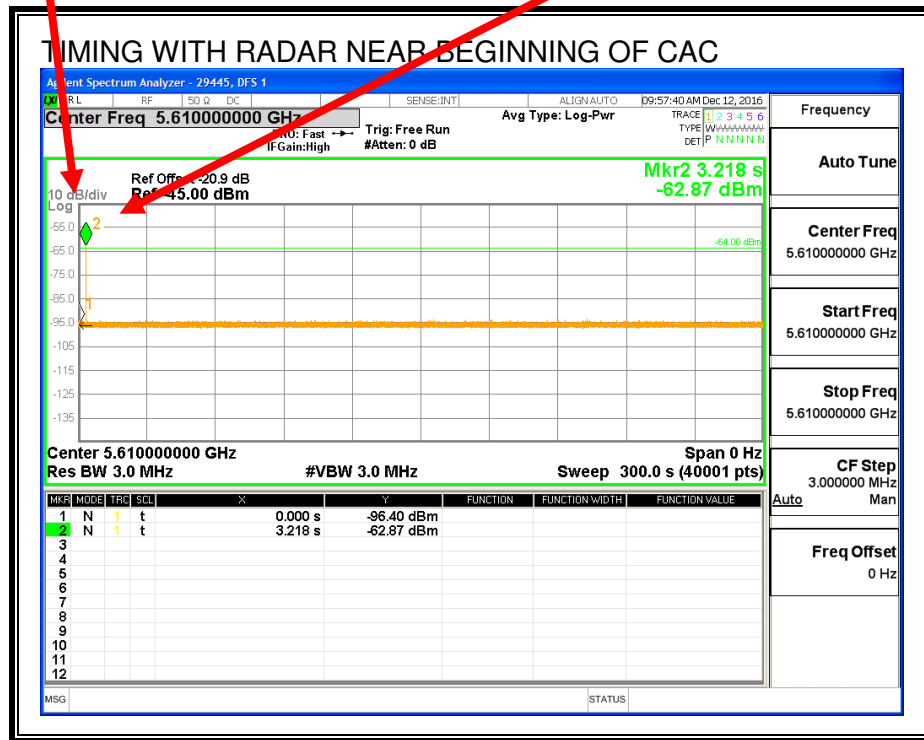
CONSOLE: 035158.094 wl0: Skip CAC - channel 0xed72 is already
available. Zero duration.

# wl chan_info
Channel 36 A Band
Channel 40 A Band
Channel 44 A Band
Channel 48 A Band
Channel 52 A Band, RADAR Sensitive, Passive
Channel 56 A Band, RADAR Sensitive, Passive
Channel 60 A Band, RADAR Sensitive, Passive
Channel 64 A Band, RADAR Sensitive, Passive
Channel 100 A Band, RADAR Sensitive
Channel 104 A Band, RADAR Sensitive
Channel 108 A Band, RADAR Sensitive
Channel 112 A Band, RADAR Sensitive
Channel 116 A Band, RADAR Sensitive
Channel 120 A Band, RADAR Sensitive
Channel 124 A Band, RADAR Sensitive
Channel 128 A Band, RADAR Sensitive
Channel 132 A Band, RADAR Sensitive, Passive
Channel 136 A Band, RADAR Sensitive, Passive
Channel 140 A Band, RADAR Sensitive, Passive
Channel 144 A Band, RADAR Sensitive, Passive
Channel 149 A Band
Channel 153 A Band
Channel 157 A Band
Channel 161 A Band
Channel 165 A Band
```

# **TIMING WITH RADAR NEAR BEGINNING OF CAC**

Command to  
Switch Channels  
Start of CAC

Radar Signal Applied



No EUT transmissions were observed after the radar signal.



**TIMING WITH RADAR NEAR BEGINNING OF CAC**

# wl chanspec  
120/160 (0xed72)

# wl up

CONSOLE: 031424.593 wl0: chanspec ed72, 60 second CAC time

CONSOLE: 031424.593 DFS State In-Service Monitoring(ISM) -> PRE-ISM  
Channel Availability Check

CONSOLE: 031460.839 wl0: chanspec ed72, 60 second CAC time

CONSOLE: 031460.839 DFS State PRE-ISM Channel Availability Check ->  
PRE-ISM Channel Availability Check

CONSOLE: 031463.389 wl0: DFS: radar\_info=0x00000, radar\_info\_2=0x181c7

CONSOLE: 031463.389 WL0: DFS: UNCLASSIFIED ##### RADAR DETECTED  
ON U80 CHANNEL 120/160 ##### min\_pw=28, subband\_result=6, AT  
2400MS

CONSOLE: 031463.389 wl0: channel 120 put out of service chspecd078

CONSOLE: 031463.389 wl0: channel 124 put out of service chspecd07c

CONSOLE: 031463.389 wl0: DFS WLC\_E\_RADAR\_DETECTED 0000/181c7 on ch  
0xed72 going to ch 0xe02a

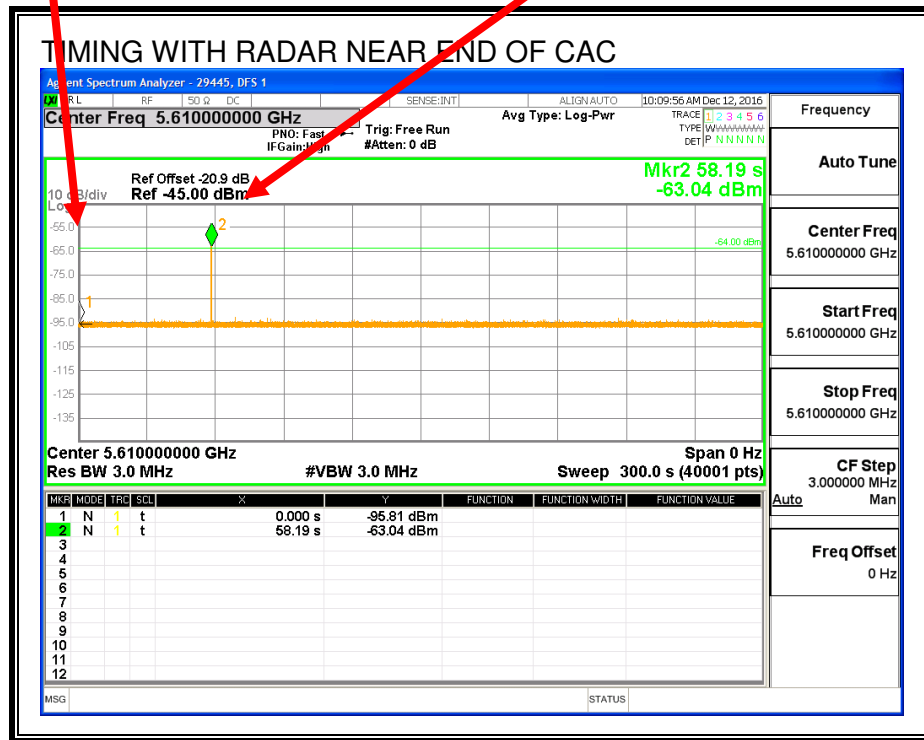
CONSOLE: 031463.395 wl0: dfs : state to IDLE chanspec 36/80 at 2400ms

```
# wl chan_info
Channel 36 A Band
Channel 40 A Band
Channel 44 A Band
Channel 48 A Band
Channel 52 A Band, RADAR Sensitive, Passive
Channel 56 A Band, RADAR Sensitive, Passive
Channel 60 A Band, RADAR Sensitive, Passive
Channel 64 A Band, RADAR Sensitive, Passive
Channel 100      A Band, RADAR Sensitive, Passive
Channel 104      A Band, RADAR Sensitive, Passive
Channel 108      A Band, RADAR Sensitive, Passive
Channel 112      A Band, RADAR Sensitive, Passive
Channel 116      A Band, RADAR Sensitive, Passive, Temporarily Out of
Service for 26 minutes
Channel 120      A Band, RADAR Sensitive, Passive, Temporarily Out of
Service for 26 minutes
Channel 124      A Band, RADAR Sensitive, Passive, Temporarily Out of
Service for 26 minutes
Channel 128      A Band, RADAR Sensitive, Passive, Temporarily Out of
Service for 26 minutes
Channel 132      A Band, RADAR Sensitive, Passive
Channel 136      A Band, RADAR Sensitive, Passive
Channel 140      A Band, RADAR Sensitive, Passive
Channel 144      A Band, RADAR Sensitive, Passive
Channel 149      A Band
Channel 153      A Band
Channel 157      A Band
Channel 161      A Band
Channel 165      A Band
```

## TIMING WITH RADAR NEAR END OF CAC

Command to  
Switch Channels  
Start of CAC

Radar Signal Applied



No EUT transmissions were observed after the radar signal.

**TIMING WITH RADAR NEAR END OF CAC**

```
# wl chanspec
120/160 (0xed72)

# wl up

CONSOLE: 031893.885 wl0: chanspec ed72, 60 second CAC time
CONSOLE: 031893.885 DFS State IDLE -> PRE-ISM Channel Availability
Check

CONSOLE: 031893.885 enable 1: q0 frmcnt 0, wrdcnt 0, q1 frmcnt 0,
wrdcnt 0

CONSOLE: 031893.885 wl0: link up (wl0)

CONSOLE: 031894.885 pciedev_send_ltr:Giving up:0x302
wl dfs_status

CONSOLE:state PRE-ISM Channel Availability Check(CAC) time elapsed
4650ms radar channel cleared by dfs none

CONSOLE: 031951.184 WL0: DFS: UNCLASSIFIED ##### RADAR DETECTED
ON U80 CHANNEL 120/160 ##### min_pw=28, subband_result=6, AT
57150MS

CONSOLE: 031951.184 wl0: channel 120 put out of service chspecd078

CONSOLE: 031951.184 wl0: channel 124 put out of service chspecd07c

CONSOLE: 031951.184 no usable channels found in dfs_channel_forced
list; going random now

CONSOLE: 031951.184 wl0: DFS WLC_E_RADAR_DETECTED 0000/181c7 on ch
0xed72 going to ch 0xe02a

CONSOLE: 031951.190 DFS State PRE-ISM Channel Availability Check ->
IDLE
CONSOLE: 031951.190 wl0: dfs : state to IDLE chanspec 36/80 at 57150ms

CONSOLE: 031951.190 wl0: dfs : state to IDLE chanspec 36/80 at 0ms

CONSOLE: 031951.190 wl0: Skip CAC - channel 0xe02a is already
available. Zero duration.
```

```
# wl chan_info
Channel 36 A Band
Channel 40 A Band
Channel 44 A Band
Channel 48 A Band
Channel 52 A Band, RADAR Sensitive, Passive
Channel 56 A Band, RADAR Sensitive, Passive
Channel 60 A Band, RADAR Sensitive, Passive
Channel 64 A Band, RADAR Sensitive, Passive
Channel 100      A Band, RADAR Sensitive, Passive
Channel 104      A Band, RADAR Sensitive, Passive
Channel 108      A Band, RADAR Sensitive, Passive
Channel 112      A Band, RADAR Sensitive, Passive
Channel 116      A Band, RADAR Sensitive, Passive, Temporarily Out of
Service for 23 minutes
Channel 120      A Band, RADAR Sensitive, Passive, Temporarily Out of
Service for 23 minutes
Channel 124      A Band, RADAR Sensitive, Passive, Temporarily Out of
Service for 23 minutes
Channel 128      A Band, RADAR Sensitive, Passive, Temporarily Out of
Service for 23 minutes
Channel 132      A Band, RADAR Sensitive, Passive
Channel 136      A Band, RADAR Sensitive, Passive
Channel 140      A Band, RADAR Sensitive, Passive
Channel 144      A Band, RADAR Sensitive, Passive
Channel 149      A Band
Channel 153      A Band
Channel 157      A Band
Channel 161      A Band
Channel 165      A Band
```

## 5.9.2. MOVE AND CLOSING TIME

### REPORTING NOTES

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

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =  
(Number of analyzer bins showing transmission) \* (dwell time per bin)

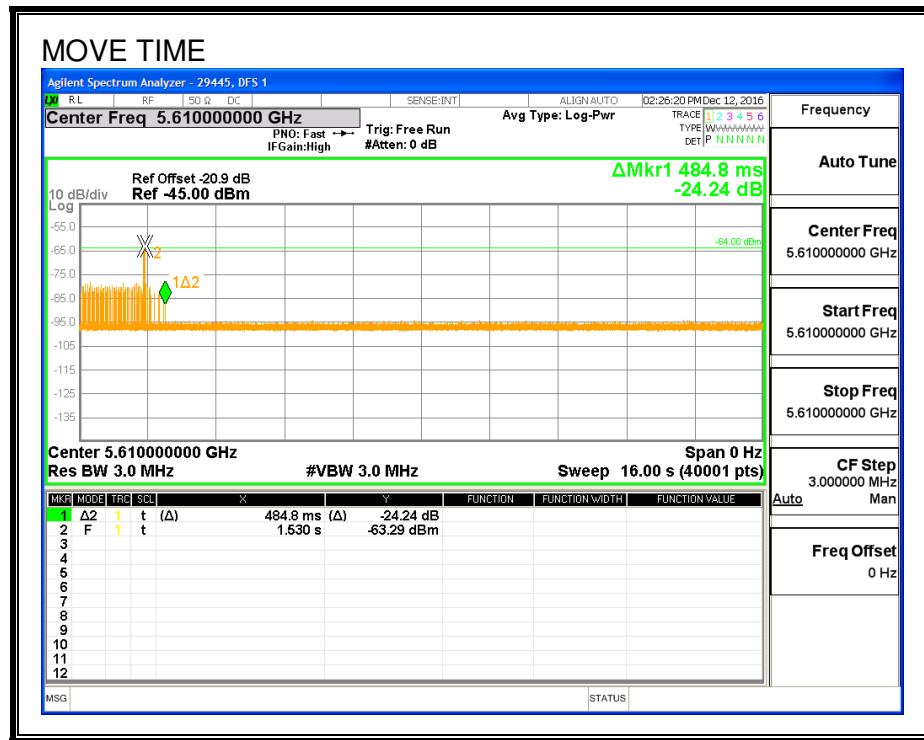
The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

### RESULTS

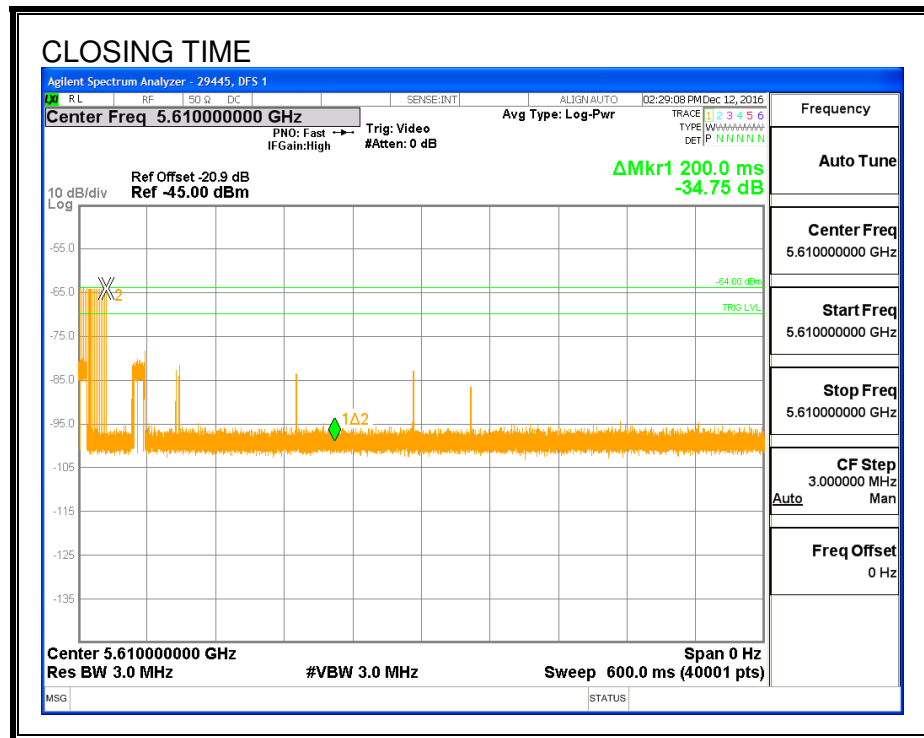
Channel Move Time (sec)	Limit (sec)
0.4848	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
3.2	60

## MOVE TIME



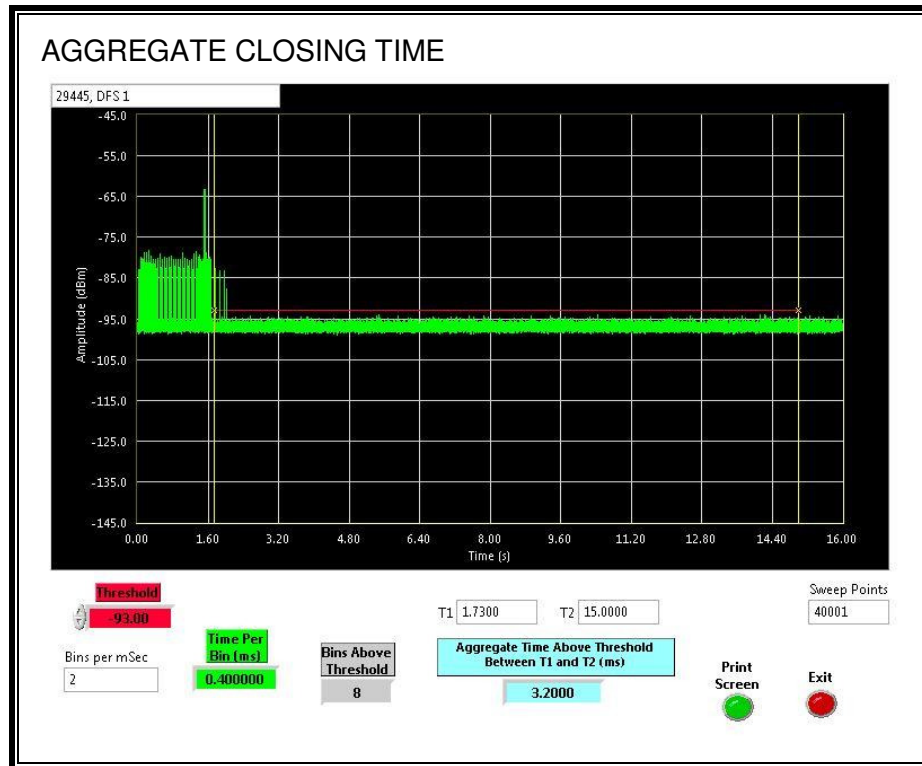
## CHANNEL CLOSING TIME





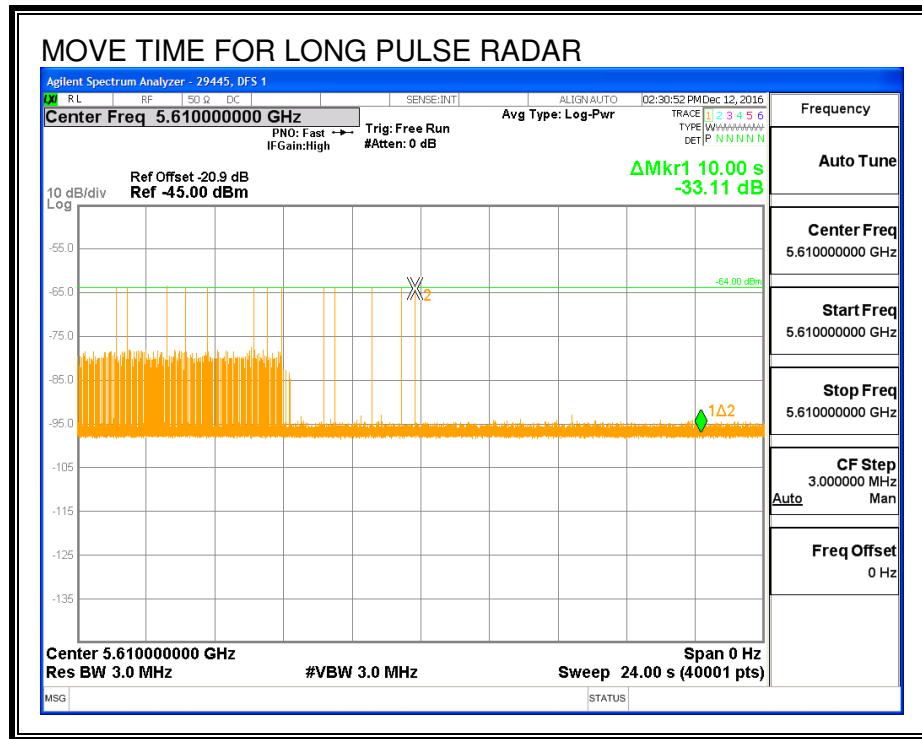
## AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

Only intermittent transmissions are observed during the aggregate monitoring period.



## LONG PULSE CHANNEL MOVE TIME

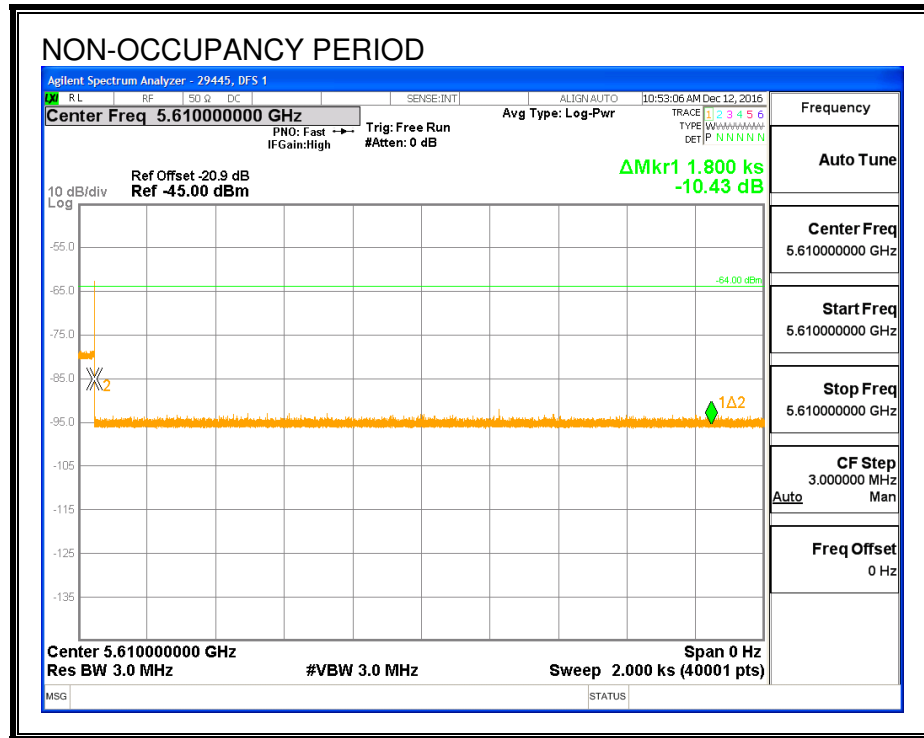
The traffic ceases prior to 10 seconds after the end of the radar waveform.



### 5.9.3. NON-OCCUPANCY PERIOD

#### RESULTS

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



## **5.9.4. 20 MHZ SUB-BAND CHANNEL RADAR DETECTION**

### **THEORY OF OPERATION**

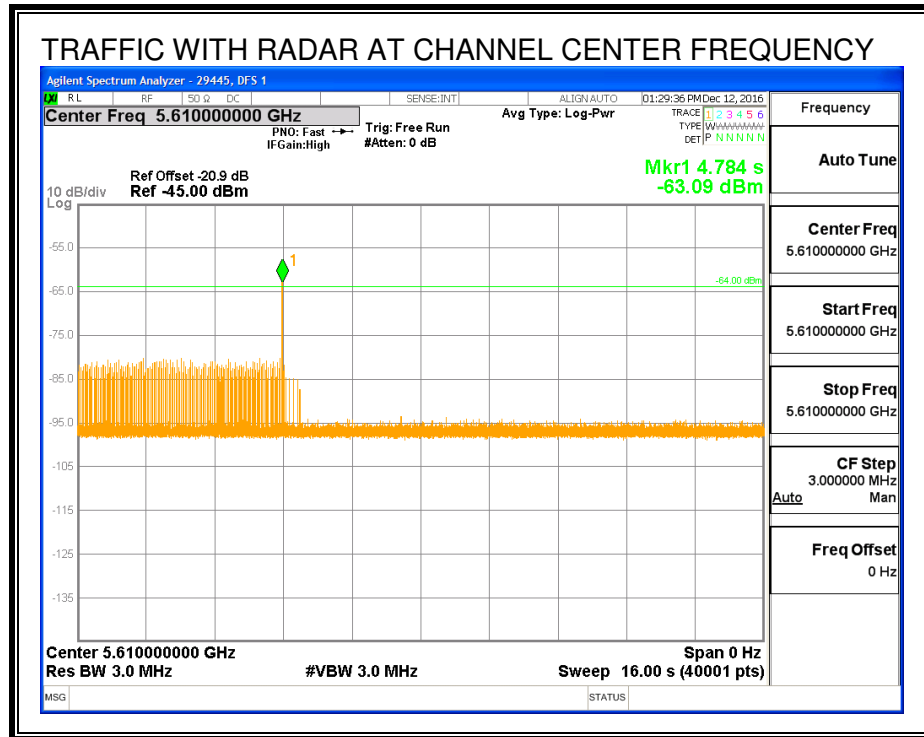
The EUT radio is capable of distinguishing radar within any 20 MHz sub-band of a channel. When radar is detected at least one 20 MHz channel is removed from service. The quantity of 20 MHz channels removed from service is determined by the radar frequency within the DFS test channel.

### **TEST PROCEDURE**

A link was established on the DFS test channel then traffic was initiated. Radar was then triggered on the center frequency of the DFS test channel, a sample plot was captured and a log file was generated. Subsequent trials were conducted and radar was triggered upon various center frequencies within the DFS test channel.

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

**SAMPLE PLOT WITH RADAR BURST ON THE DFS TEST CHANNEL CENTER FREQUENCY**



**Log File of Channel Status After Radar Burst Triggered at 5610 MHz**

# wl chanspec  
120/160 (0xed72)

# CONSOLE: 044469.688 wl0: DFS: radar\_info=0x00000, radar\_info\_2=0x181c7

CONSOLE: 044469.688 WL0: DFS: UNCLASSIFIED ##### RADAR DETECTED ON  
U80 CHANNEL 120/160 ##### min\_pw=28, subband\_result=6, AT 121200MS

CONSOLE: 044469.688 wl0: channel 120 put out of service chspecd078

CONSOLE: 044469.688 wl0: channel 124 put out of service chspecd07c

# wl chanspec  
36/80 (0xe02a)

# wl chan\_info  
Channel 36 A Band  
Channel 40 A Band  
Channel 44 A Band  
Channel 48 A Band  
Channel 52 A Band, RADAR Sensitive, Passive  
Channel 56 A Band, RADAR Sensitive, Passive  
Channel 60 A Band, RADAR Sensitive, Passive  
Channel 64 A Band, RADAR Sensitive, Passive  
Channel 100 A Band, RADAR Sensitive, Passive  
Channel 104 A Band, RADAR Sensitive, Passive  
Channel 108 A Band, RADAR Sensitive, Passive  
Channel 112 A Band, RADAR Sensitive, Passive  
Channel 116 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 120 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 124 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 128 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 132 A Band, RADAR Sensitive, Passive  
Channel 136 A Band, RADAR Sensitive, Passive  
Channel 140 A Band, RADAR Sensitive, Passive  
Channel 144 A Band, RADAR Sensitive, Passive  
Channel 149 A Band  
Channel 153 A Band  
Channel 157 A Band  
Channel 161 A Band  
Channel 165 A Band

**Log File of Channel Status After Radar Burst Triggered at 5530 MHz**

# wl chanspec  
120/160 (0xed72)

CONSOLE: 044704.001 wl0: DFS: radar\_info=0x18187, radar\_info\_2=0x00000

CONSOLE: 044704.001 WL0: DFS: UNCLASSIFIED ##### RADAR DETECTED ON  
CHANNEL 120/160 ##### min\_pw=24, subband\_result=6, AT 101250MS

CONSOLE: 044704.001 wl0: channel 104 put out of service chspecd068

CONSOLE: 044704.001 wl0: channel 108 put out of service chspecd06c

wl chanspec  
36/80 (0xe02a)

# wl chan\_info  
Channel 36 A Band  
Channel 40 A Band  
Channel 44 A Band  
Channel 48 A Band  
Channel 52 A Band, RADAR Sensitive, Passive  
Channel 56 A Band, RADAR Sensitive, Passive  
Channel 60 A Band, RADAR Sensitive, Passive  
Channel 64 A Band, RADAR Sensitive, Passive  
Channel 100 A Band, RADAR Sensitive, Passive  
Channel 104 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 108 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 112 A Band, RADAR Sensitive, Passive  
Channel 116 A Band, RADAR Sensitive, Passive  
Channel 120 A Band, RADAR Sensitive, Passive  
Channel 124 A Band, RADAR Sensitive, Passive  
Channel 128 A Band, RADAR Sensitive, Passive  
Channel 132 A Band, RADAR Sensitive, Passive  
Channel 136 A Band, RADAR Sensitive, Passive  
Channel 140 A Band, RADAR Sensitive, Passive  
Channel 144 A Band, RADAR Sensitive, Passive  
Channel 149 A Band  
Channel 153 A Band  
Channel 157 A Band  
Channel 161 A Band  
Channel 165 A Band

**Log File of Channel Status After Radar Burst Triggered at 5510 MHz**

# wl chanspec  
120/160 (0xed72)

CONSOLE: 044746.467 wl0: DFS: radar\_info=0x30177, radar\_info\_2=0x00000

CONSOLE: 044746.467 WL0: DFS: UNCLASSIFIED ##### RADAR DETECTED ON  
CHANNEL 120/160 ##### min\_pw=23, subband\_result=12, AT 18450MS

CONSOLE: 044746.467 wl0: channel 100 put out of service chspecd064

CONSOLE: 044746.467 wl0: channel 104 put out of service chspecd068

# wl chanspec  
36/80 (0xe02a)

# wl chan\_info

Channel 36 A Band  
Channel 40 A Band  
Channel 44 A Band  
Channel 48 A Band  
Channel 52 A Band, RADAR Sensitive, Passive  
Channel 56 A Band, RADAR Sensitive, Passive  
Channel 60 A Band, RADAR Sensitive, Passive  
Channel 64 A Band, RADAR Sensitive, Passive  
Channel 100 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 30 minutes  
Channel 104 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 30 minutes  
Channel 108 A Band, RADAR Sensitive, Passive  
Channel 112 A Band, RADAR Sensitive, Passive  
Channel 116 A Band, RADAR Sensitive, Passive  
Channel 120 A Band, RADAR Sensitive, Passive  
Channel 124 A Band, RADAR Sensitive, Passive  
Channel 128 A Band, RADAR Sensitive, Passive  
Channel 132 A Band, RADAR Sensitive, Passive  
Channel 136 A Band, RADAR Sensitive, Passive  
Channel 140 A Band, RADAR Sensitive, Passive  
Channel 144 A Band, RADAR Sensitive, Passive  
Channel 149 A Band  
Channel 153 A Band  
Channel 157 A Band  
Channel 161 A Band  
Channel 165 A Band  
#



**Log File of Channel Status After Radar Burst Triggered at 5500 MHz**

# wl chanspec  
120/160 (0xed72)

# CONSOLE: 044893.519 wl0: DFS: radar\_info=0x200e7, radar\_info\_2=0x00000

CONSOLE: 044893.519 WL0: DFS: UNCLASSIFIED ##### RADAR DETECTED ON  
CHANNEL 120/160 ##### min\_pw=14, subband\_result=8, AT 17550MS

CONSOLE: 044893.519 wl0: channel 100 put out of service chspecd064

# wl chanspec  
149/80 (0xe09b)

# wl chan\_info  
Channel 36 A Band  
Channel 40 A Band  
Channel 44 A Band  
Channel 48 A Band  
Channel 52 A Band, RADAR Sensitive, Passive  
Channel 56 A Band, RADAR Sensitive, Passive  
Channel 60 A Band, RADAR Sensitive, Passive  
Channel 64 A Band, RADAR Sensitive, Passive  
Channel 100 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 104 A Band, RADAR Sensitive, Passive  
Channel 108 A Band, RADAR Sensitive, Passive  
Channel 112 A Band, RADAR Sensitive, Passive  
Channel 116 A Band, RADAR Sensitive, Passive  
Channel 120 A Band, RADAR Sensitive, Passive  
Channel 124 A Band, RADAR Sensitive, Passive  
Channel 128 A Band, RADAR Sensitive, Passive  
Channel 132 A Band, RADAR Sensitive, Passive  
Channel 136 A Band, RADAR Sensitive, Passive  
Channel 140 A Band, RADAR Sensitive, Passive  
Channel 144 A Band, RADAR Sensitive, Passive  
Channel 149 A Band  
Channel 153 A Band  
Channel 157 A Band  
Channel 161 A Band  
Channel 165 A Band  
#

**Log File of Channel Status After Radar Burst Triggered at 5520 MHz**

# wl chanspec  
120/160 (0xed72)

# CONSOLE: 044989.902 wl0: DFS: radar\_info=0x10177, radar\_info\_2=0x00000

CONSOLE: 044989.902 WL0: DFS: UNCLASSIFIED ##### RADAR DETECTED ON  
CHANNEL 120/160 ##### min\_pw=23, subband\_result=4, AT 18450MS

CONSOLE: 044989.902 wl0: channel 104 put out of service chspecd068

wl chan\_info  
Channel 36 A Band  
Channel 40 A Band  
Channel 44 A Band  
Channel 48 A Band  
Channel 52 A Band, RADAR Sensitive, Passive  
Channel 56 A Band, RADAR Sensitive, Passive  
Channel 60 A Band, RADAR Sensitive, Passive  
Channel 64 A Band, RADAR Sensitive, Passive  
Channel 100 A Band, RADAR Sensitive, Passive  
Channel 104 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 108 A Band, RADAR Sensitive, Passive  
Channel 112 A Band, RADAR Sensitive, Passive  
Channel 116 A Band, RADAR Sensitive, Passive  
Channel 120 A Band, RADAR Sensitive, Passive  
Channel 124 A Band, RADAR Sensitive, Passive  
Channel 128 A Band, RADAR Sensitive, Passive  
Channel 132 A Band, RADAR Sensitive, Passive  
Channel 136 A Band, RADAR Sensitive, Passive  
Channel 140 A Band, RADAR Sensitive, Passive  
Channel 144 A Band, RADAR Sensitive, Passive  
Channel 149 A Band  
Channel 153 A Band  
Channel 157 A Band  
Channel 161 A Band  
Channel 165 A Band

**Log File of Channel Status After Radar Burst Triggered at 5540 MHz**

# wl chanspec  
120/160 (0xed72)

# CONSOLE: 045067.585 wl0: DFS: radar\_info=0x08187, radar\_info\_2=0x00000

CONSOLE: 045067.585 WL0: DFS: UNCLASSIFIED ##### RADAR DETECTED ON  
CHANNEL 120/160 ##### min\_pw=24, subband\_result=2, AT 13950MS

CONSOLE: 045067.585 wl0: channel 108 put out of service chspecd06c

# wl chan\_info  
Channel 36 A Band  
Channel 40 A Band  
Channel 44 A Band  
Channel 48 A Band  
Channel 52 A Band, RADAR Sensitive, Passive  
Channel 56 A Band, RADAR Sensitive, Passive  
Channel 60 A Band, RADAR Sensitive, Passive  
Channel 64 A Band, RADAR Sensitive, Passive  
Channel 100 A Band, RADAR Sensitive, Passive  
Channel 104 A Band, RADAR Sensitive, Passive  
Channel 108 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 112 A Band, RADAR Sensitive, Passive  
Channel 116 A Band, RADAR Sensitive, Passive  
Channel 120 A Band, RADAR Sensitive, Passive  
Channel 124 A Band, RADAR Sensitive, Passive  
Channel 128 A Band, RADAR Sensitive, Passive  
Channel 132 A Band, RADAR Sensitive, Passive  
Channel 136 A Band, RADAR Sensitive, Passive  
Channel 140 A Band, RADAR Sensitive, Passive  
Channel 144 A Band, RADAR Sensitive, Passive  
Channel 149 A Band  
Channel 153 A Band  
Channel 157 A Band  
Channel 161 A Band  
Channel 165 A Band

**Log File of Channel Status After Radar Burst Triggered at 5560 MHz**

# wl chanspec 120/160  
Chanspec set to 0xed72

CONSOLE: 045125.038 wl0: DFS: radar\_info=0x04177, radar\_info\_2=0x00000

CONSOLE: 045125.038 WL0: DFS: UNCLASSIFIED ##### RADAR DETECTED ON  
CHANNEL 120/160 ##### min\_pw=23, subband\_result=1, AT 10800MS

CONSOLE: 045125.038 wl0: channel 112 put out of service chspecd070

# wl chanspec  
149/80 (0xe09b)

# wl chan\_info  
Channel 36 A Band  
Channel 40 A Band  
Channel 44 A Band  
Channel 48 A Band  
Channel 52 A Band, RADAR Sensitive, Passive  
Channel 56 A Band, RADAR Sensitive, Passive  
Channel 60 A Band, RADAR Sensitive, Passive  
Channel 64 A Band, RADAR Sensitive, Passive  
Channel 100 A Band, RADAR Sensitive, Passive  
Channel 104 A Band, RADAR Sensitive, Passive  
Channel 108 A Band, RADAR Sensitive, Passive  
Channel 112 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 116 A Band, RADAR Sensitive, Passive  
Channel 120 A Band, RADAR Sensitive, Passive  
Channel 124 A Band, RADAR Sensitive, Passive  
Channel 128 A Band, RADAR Sensitive, Passive  
Channel 132 A Band, RADAR Sensitive, Passive  
Channel 136 A Band, RADAR Sensitive, Passive  
Channel 140 A Band, RADAR Sensitive, Passive  
Channel 144 A Band, RADAR Sensitive, Passive  
Channel 149 A Band  
Channel 153 A Band  
Channel 157 A Band  
Channel 161 A Band  
Channel 165 A Band

**Log File of Channel Status After Radar Burst Triggered at 5580 MHz**

# wl chanspec 120/160  
Chanspec set to 0xed72

CONSOLE: 045180.083 wl0: DFS: radar\_info=0x00000, radar\_info\_2=0x20157

CONSOLE: 045180.083 WL0: DFS: UNCLASSIFIED ##### RADAR DETECTED ON  
U80 CHANNEL 120/160 ##### min\_pw=21, subband\_result=8, AT 9750MS

CONSOLE: 045180.083 wl0: channel 116 put out of service chspecd074

# wl chanspec  
149/80 (0xe09b)

# wl chan\_info  
Channel 36 A Band  
Channel 40 A Band  
Channel 44 A Band  
Channel 48 A Band  
Channel 52 A Band, RADAR Sensitive, Passive  
Channel 56 A Band, RADAR Sensitive, Passive  
Channel 60 A Band, RADAR Sensitive, Passive  
Channel 64 A Band, RADAR Sensitive, Passive  
Channel 100 A Band, RADAR Sensitive, Passive  
Channel 104 A Band, RADAR Sensitive, Passive  
Channel 108 A Band, RADAR Sensitive, Passive  
Channel 112 A Band, RADAR Sensitive, Passive  
Channel 116 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 120 A Band, RADAR Sensitive, Passive  
Channel 124 A Band, RADAR Sensitive, Passive  
Channel 128 A Band, RADAR Sensitive, Passive  
Channel 132 A Band, RADAR Sensitive, Passive  
Channel 136 A Band, RADAR Sensitive, Passive  
Channel 140 A Band, RADAR Sensitive, Passive  
Channel 144 A Band, RADAR Sensitive, Passive  
Channel 149 A Band  
Channel 153 A Band  
Channel 157 A Band  
Channel 161 A Band  
Channel 165 A Band  
#

**Log File of Channel Status After Radar Burst Triggered at 5600 MHz**

# wl chanspec  
120/160 (0xed72)

# CONSOLE: 045218.812 wl0: DFS: radar\_info=0x00000, radar\_info\_2=0x10187

CONSOLE: 045218.812 WL0: DFS: UNCLASSIFIED ##### RADAR DETECTED ON  
U80 CHANNEL 120/160 ##### min\_pw=24, subband\_result=4, AT 20100MS

CONSOLE: 045218.812 wl0: channel 120 put out of service chspecd078

# wl chanspec  
149/80 (0xe09b)

# wl chan\_info  
Channel 36 A Band  
Channel 40 A Band  
Channel 44 A Band  
Channel 48 A Band  
Channel 52 A Band, RADAR Sensitive, Passive  
Channel 56 A Band, RADAR Sensitive, Passive  
Channel 60 A Band, RADAR Sensitive, Passive  
Channel 64 A Band, RADAR Sensitive, Passive  
Channel 100 A Band, RADAR Sensitive, Passive  
Channel 104 A Band, RADAR Sensitive, Passive  
Channel 108 A Band, RADAR Sensitive, Passive  
Channel 112 A Band, RADAR Sensitive, Passive  
Channel 116 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 120 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 124 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 128 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 132 A Band, RADAR Sensitive, Passive  
Channel 136 A Band, RADAR Sensitive, Passive  
Channel 140 A Band, RADAR Sensitive, Passive  
Channel 144 A Band, RADAR Sensitive, Passive  
Channel 149 A Band  
Channel 153 A Band  
Channel 157 A Band  
Channel 161 A Band  
Channel 165 A Band

**Log File of Channel Status After Radar Burst Triggered at 5620 MHz**

# wl chanspec  
120/160 (0xed72)

# CONSOLE: 045260.955 wl0: DFS: radar\_info=0x00000, radar\_info\_2=0x08187

CONSOLE: 045260.955 WL0: DFS: UNCLASSIFIED ##### RADAR DETECTED ON  
U80 CHANNEL 120/160 ##### min\_pw=24, subband\_result=2, AT 11400MS

CONSOLE: 045260.955 wl0: channel 124 put out of service chspecd07c

# wl chanspec  
149/80 (0xe09b)

# wl chsn\_info  
Channel 36 A Band  
Channel 40 A Band  
Channel 44 A Band  
Channel 48 A Band  
Channel 52 A Band, RADAR Sensitive, Passive  
Channel 56 A Band, RADAR Sensitive, Passive  
Channel 60 A Band, RADAR Sensitive, Passive  
Channel 64 A Band, RADAR Sensitive, Passive  
Channel 100 A Band, RADAR Sensitive, Passive  
Channel 104 A Band, RADAR Sensitive, Passive  
Channel 108 A Band, RADAR Sensitive, Passive  
Channel 112 A Band, RADAR Sensitive, Passive  
Channel 116 A Band, RADAR Sensitive, Passive  
Channel 120 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 124 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 128 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 132 A Band, RADAR Sensitive, Passive  
Channel 136 A Band, RADAR Sensitive, Passive  
Channel 140 A Band, RADAR Sensitive, Passive  
Channel 144 A Band, RADAR Sensitive, Passive  
Channel 149 A Band  
Channel 153 A Band  
Channel 157 A Band  
Channel 161 A Band  
Channel 165 A Band

**Log File of Channel Status After Radar Burst Triggered at 5640 MHz**

# wl chanspec  
120/160 (0xed72)

# CONSOLE: 045310.672 wl0: DFS: radar\_info=0x00000, radar\_info\_2=0x04187

CONSOLE: 045310.672 WL0: DFS: UNCLASSIFIED ##### RADAR DETECTED ON  
U80 CHANNEL 120/160 ##### min\_pw=24, subband\_result=1, AT 19200MS

CONSOLE: 045310.672 wl0: channel 128 put out of service chspecd080

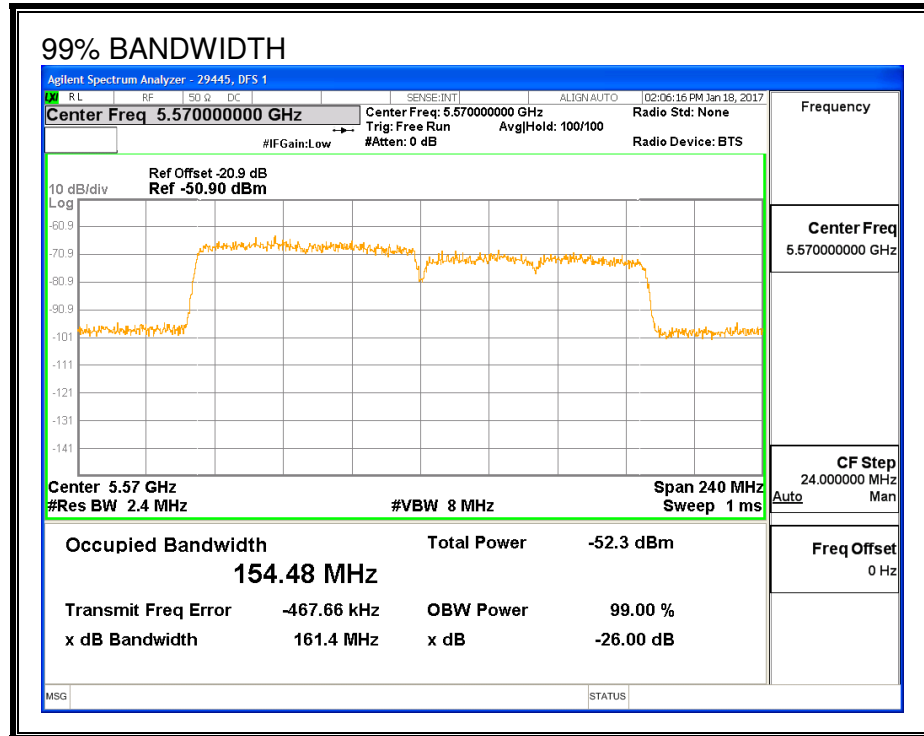
# wl chanspec  
36/80 (0xe02a)

# wl chan\_info  
Channel 36 A Band  
Channel 40 A Band  
Channel 44 A Band  
Channel 48 A Band  
Channel 52 A Band, RADAR Sensitive, Passive  
Channel 56 A Band, RADAR Sensitive, Passive  
Channel 60 A Band, RADAR Sensitive, Passive  
Channel 64 A Band, RADAR Sensitive, Passive  
Channel 100 A Band, RADAR Sensitive, Passive  
Channel 104 A Band, RADAR Sensitive, Passive  
Channel 108 A Band, RADAR Sensitive, Passive  
Channel 112 A Band, RADAR Sensitive, Passive  
Channel 116 A Band, RADAR Sensitive, Passive  
Channel 120 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 124 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 128 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 132 A Band, RADAR Sensitive, Passive, Temporarily Out of Service for 31 minutes  
Channel 136 A Band, RADAR Sensitive, Passive  
Channel 140 A Band, RADAR Sensitive, Passive  
Channel 144 A Band, RADAR Sensitive, Passive  
Channel 149 A Band  
Channel 153 A Band  
Channel 157 A Band  
Channel 161 A Band  
Channel 165 A Band

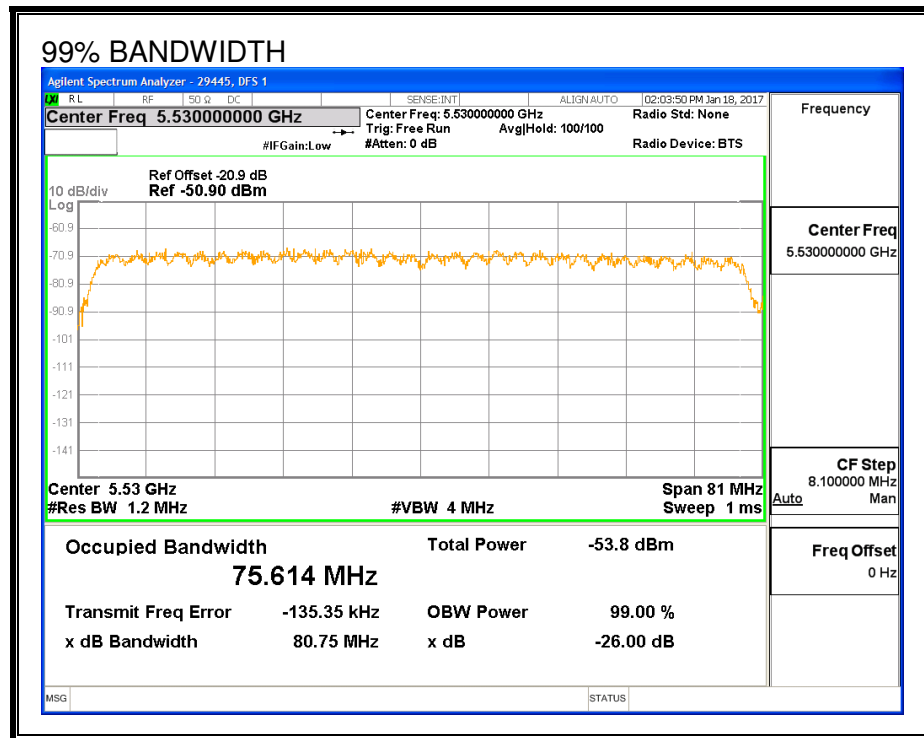


## 5.9.5. DETECTION BANDWIDTH

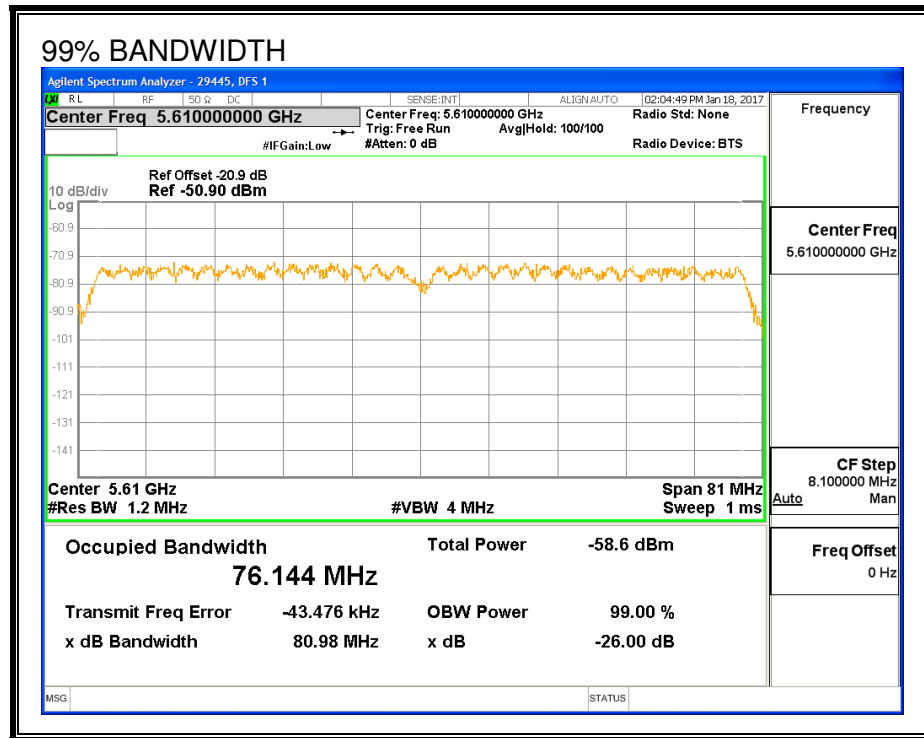
### REFERENCE PLOT OF 99% POWER BANDWIDTH (80 PLUS 80 MODE)



**REFERENCE PLOT OF 99% POWER BANDWIDTH (80 MHz LOW COMPONENT)**



**REFERENCE PLOT OF 99% POWER BANDWIDTH (80 MHz HIGH COMPONENT)**



**RESULTS (80 MHz HIGH COMPONENT)**

FL	FH	Detection Bandwidth	99% Power Bandwidth	Ratio of Detection BW to 99% Power BW	Minimum Limit
(MHz)	(MHz)	(MHz)	(MHz)	(%)	(%)
5572	5649	77	76.144	101.1	100

**DETECTION BANDWIDTH PROBABILITY**

DETECTION BANDWIDTH PROBABILITY RESULTS				
Detection Bandwidth Test Results 29445 DFS 1				
FCC Type 0 Waveform: 1 us Pulse Width, 1428 us PRI, 18 Pulses per Burst				
Frequency (MHz)	Number of Trials	Number Detected	Detection (%)	Mark
5572	10	10	100	FL
5573	10	10	100	
5574	10	10	100	
5575	10	10	100	
5580	10	10	100	
5585	10	10	100	
5590	10	10	100	
5595	10	10	100	
5600	10	10	100	
5605	10	10	100	
5610	10	9	90	
5615	10	10	100	
5620	10	10	100	
5625	10	10	100	
5630	10	10	100	
5635	10	10	100	
5640	10	10	100	
5645	10	10	100	
5646	10	10	100	
5647	10	10	100	
5648	10	10	100	
5649	10	10	100	FH

## 5.9.6. IN-SERVICE MONITORING

### RESULTS

FCC Radar Test Summary										
Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth		OBW	Test Location	Employee Number	In-Service Monitoring Version
					FL	FH				
FCC Short Pulse Type 1	30	100.00	60	Pass	5572	5649	76.14	DFS 1	29445	Version 3.0
FCC Short Pulse Type 2	30	86.67	60	Pass	5572	5649	76.14	DFS 1	29445	Version 3.0
FCC Short Pulse Type 3	30	76.67	60	Pass	5572	5649	76.14	DFS 1	29445	Version 3.0
FCC Short Pulse Type 4	30	80.00	60	Pass	5572	5649	76.14	DFS 1	29445	Version 3.0
Aggregate		85.83	80	Pass						
FCC Long Pulse Type 5	30	90.00	80	Pass	5572	5649	76.14	DFS 1	29445	Version 3.0
FCC Hopping Type 6	78	100.00	70	Pass	5572	5649	76.14	DFS 1	29445	Version 3.0

**TYPE 1 DETECTION PROBABILITY**

Data Sheet for FCC Short Pulse Radar Type 1						
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Test (A/B)	Frequency (MHz)	Successful Detection (Yes/No)
1001	1	3066	18	A	5610	Yes
1002	1	578	92	A	5610	Yes
1003	1	598	89	A	5610	Yes
1004	1	718	74	A	5610	Yes
1005	1	678	78	A	5610	Yes
1006	1	818	65	A	5610	Yes
1007	1	778	68	A	5610	Yes
1008	1	838	63	A	5610	Yes
1009	1	698	76	A	5610	Yes
1010	1	518	102	A	5610	Yes
1011	1	658	81	A	5610	Yes
1012	1	798	67	A	5610	Yes
1013	1	898	59	A	5610	Yes
1014	1	618	86	A	5610	Yes
1015	1	738	72	A	5610	Yes
1016	1	1638	33	B	5610	Yes
1017	1	2465	22	B	5610	Yes
1018	1	1226	44	B	5610	Yes
1019	1	2182	25	B	5610	Yes
1020	1	1073	50	B	5610	Yes
1021	1	964	55	B	5610	Yes
1022	1	2532	21	B	5610	Yes
1023	1	2553	21	B	5610	Yes
1024	1	1703	31	B	5610	Yes
1025	1	1291	41	B	5610	Yes
1026	1	2924	19	B	5610	Yes
1027	1	1138	47	B	5610	Yes
1028	1	2900	19	B	5610	Yes
1029	1	2597	21	B	5610	Yes
1030	1	747	71	B	5610	Yes

**TYPE 2 DETECTION PROBABILITY**

Data Sheet for FCC Short Pulse Radar Type 2					
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Frequency (MHz)	Successful Detection (Yes/No)
2001	3.8	194	26	5610	No
2002	2.8	188	26	5610	Yes
2003	1.1	154	24	5610	Yes
2004	2.2	195	24	5610	Yes
2005	3	208	23	5610	Yes
2006	2.4	172	27	5610	Yes
2007	3.3	189	26	5610	No
2008	2.9	157	27	5610	Yes
2009	2.2	222	27	5610	Yes
2010	4.2	156	28	5610	Yes
2011	3.6	182	25	5610	Yes
2012	3.6	163	26	5610	Yes
2013	1.4	155	27	5610	Yes
2014	3.8	178	29	5610	No
2015	1.7	217	23	5610	Yes
2016	4.3	206	29	5610	Yes
2017	4.7	168	24	5610	Yes
2018	1.5	162	23	5610	Yes
2019	3.9	209	29	5610	Yes
2020	3.1	169	29	5610	Yes
2021	1.7	182	28	5610	Yes
2022	1.1	227	24	5610	Yes
2023	2	164	28	5610	Yes
2024	3.8	213	25	5610	Yes
2025	5	196	28	5610	Yes
2026	2.9	211	26	5610	Yes
2027	2.3	199	23	5610	Yes
2028	4.5	218	24	5610	No
2029	4.2	210	25	5610	Yes
2030	2.5	195	27	5610	Yes

**TYPE 3 DETECTION PROBABILITY**

Data Sheet for FCC Short Pulse Radar Type 3					
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Frequency (MHz)	Successful Detection (Yes/No)
3001	9.5	379	18	5610	Yes
3002	6.1	347	17	5610	Yes
3003	8.4	480	18	5610	No
3004	9.3	460	18	5610	Yes
3005	7.6	488	17	5610	Yes
3006	6.8	395	16	5610	Yes
3007	8.1	436	16	5610	Yes
3008	7.5	325	17	5610	Yes
3009	6.5	378	16	5610	No
3010	6.1	413	17	5610	No
3011	7.3	479	16	5610	Yes
3012	9.2	275	18	5610	Yes
3013	8.7	488	17	5610	Yes
3014	6.8	297	16	5610	Yes
3015	6.5	271	18	5610	Yes
3016	8.9	477	18	5610	No
3017	6.8	464	16	5610	Yes
3018	7.5	432	16	5610	Yes
3019	9.8	314	16	5610	Yes
3020	6.5	294	16	5610	No
3021	9	323	18	5610	Yes
3022	8.2	316	17	5610	Yes
3023	9	357	16	5610	Yes
3024	6.2	496	16	5610	No
3025	9.3	299	18	5610	Yes
3026	8.9	333	17	5610	Yes
3027	6	400	18	5610	Yes
3028	7.9	447	17	5610	No
3029	7.4	408	17	5610	Yes
3030	9.6	468	18	5610	Yes



**TYPE 4 DETECTION PROBABILITY**

Data Sheet for FCC Short Pulse Radar Type 4					
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Frequency (MHz)	Successful Detection (Yes/No)
4001	18.3	443	13	5610	Yes
4002	14.5	398	12	5610	No
4003	19.1	385	16	5610	Yes
4004	11.5	352	15	5610	Yes
4005	16.6	485	16	5610	No
4006	18.5	348	13	5610	No
4007	14.9	494	15	5610	No
4008	13.1	370	12	5610	No
4009	14.8	277	16	5610	Yes
4010	13.4	417	14	5610	Yes
4011	15.5	470	14	5610	Yes
4012	14.6	254	12	5610	Yes
4013	13	320	14	5610	Yes
4014	12.5	368	15	5610	Yes
4015	11.3	329	13	5610	Yes
4016	16.2	389	14	5610	Yes
4017	15.5	363	12	5610	Yes
4018	16.5	318	16	5610	Yes
4019	16.2	305	14	5610	Yes
4020	17.7	273	13	5610	Yes
4021	13.7	406	12	5610	Yes
4022	15.6	269	12	5610	Yes
4023	16.9	415	13	5610	No
4024	19.3	290	16	5610	Yes
4025	11.9	449	15	5610	Yes
4026	19.6	337	13	5610	Yes
4027	12.7	273	12	5610	Yes
4028	11.7	425	13	5610	Yes
4029	14.9	374	15	5610	Yes
4030	14.5	421	16	5610	Yes

**TYPE 5 DETECTION PROBABILITY**

Data Sheet for FCC Long Pulse Radar Type 5		
Trial	Frequency (MHz)	Successful Detection (Yes/No)
1	5610	No
2	5610	No
3	5610	Yes
4	5610	Yes
5	5610	Yes
6	5610	Yes
7	5610	Yes
8	5610	Yes
9	5610	Yes
10	5610	Yes
11	5578	Yes
12	5578	No
13	5581	Yes
14	5579	Yes
15	5576	Yes
16	5578	Yes
17	5580	Yes
18	5579	Yes
19	5578	Yes
20	5580	Yes
21	5643	Yes
22	5642	Yes
23	5642	Yes
24	5640	Yes
25	5642	Yes
26	5642	Yes
27	5644	Yes
28	5640	Yes
29	5644	Yes
30	5642	Yes

Note: The Type 5 randomized parameters tested are shown in a separate document.

**TYPE 6 DETECTION PROBABILITY**

Data Sheet for FCC Hopping Radar Type 6				
1 us Pulse Width, 333 us PRI, 9 Pulses per Burst, 1 Burst per Hop				
NTIA August 2005 Hopping Sequence				
Trial	Starting Index Within Sequence	Signal Generator Frequency (MHz)	Hops within Detection BW	Successful Detection (Yes/No)
1	212	5572	24	Yes
2	687	5573	23	Yes
3	1162	5574	29	Yes
4	1637	5575	23	Yes
5	2112	5576	20	Yes
6	2587	5577	26	Yes
7	3062	5578	22	Yes
8	3537	5579	21	Yes
9	4012	5580	17	Yes
10	4487	5581	14	Yes
11	4962	5582	30	Yes
12	5437	5583	24	Yes
13	5912	5584	18	Yes
14	6387	5585	27	Yes
15	6862	5586	20	Yes
16	7337	5587	29	Yes
17	7812	5588	26	Yes
18	8287	5589	25	Yes
19	8762	5590	25	Yes
20	9237	5591	23	Yes
21	9712	5592	25	Yes
22	10187	5593	22	Yes
23	10662	5594	24	Yes
24	11137	5595	21	Yes
25	11612	5596	18	Yes
26	12087	5597	23	Yes
27	12562	5598	28	Yes
28	13037	5599	22	Yes
29	13512	5600	20	Yes
30	13987	5601	23	Yes
31	14462	5602	23	Yes
32	14937	5603	20	Yes
33	15412	5604	22	Yes
34	15887	5605	29	Yes
35	16362	5606	26	Yes
36	16837	5607	20	Yes
37	17312	5608	21	Yes
38	17787	5609	27	Yes
39	18262	5610	22	Yes

**TYPE 6 DETECTION PROBABILITY (CONTINUED)**

40	18737	5611	26	Yes
41	19212	5612	19	Yes
42	19687	5613	20	Yes
43	20162	5614	18	Yes
44	20637	5615	20	Yes
45	21112	5616	26	Yes
46	21587	5617	17	Yes
47	22062	5618	19	Yes
48	22537	5619	14	Yes
49	23012	5620	28	Yes
50	23487	5621	21	Yes
51	23962	5622	22	Yes
52	24437	5623	27	Yes
53	24912	5624	21	Yes
54	25387	5625	26	Yes
55	25862	5626	25	Yes
56	26337	5627	22	Yes
57	26812	5628	26	Yes
58	27287	5629	18	Yes
59	27762	5630	27	Yes
60	28237	5631	23	Yes
61	28712	5632	27	Yes
62	29187	5633	20	Yes
63	29662	5634	19	Yes
64	30137	5635	19	Yes
65	30612	5636	25	Yes
66	31087	5637	20	Yes
67	31562	5638	24	Yes
68	32037	5639	18	Yes
69	32512	5640	24	Yes
70	32987	5641	26	Yes
71	33462	5642	26	Yes
72	33937	5643	18	Yes
73	34412	5644	24	Yes
74	34887	5645	29	Yes
75	35362	5646	22	Yes
76	35837	5647	16	Yes
77	36312	5648	27	Yes
78	36787	5649	22	Yes

## **5.10. BRIDGE MODE RESULTS**

Per KDB 905462, Section 5.1 (footnote 1):

Networks Access Points with Bridge and/or MESH modes of operation are permitted to operate in the DFS bands but must employ a DFS function. The functionality of the Bridge mode as specified in §15.403(a) must be validated in the DFS test report. Devices operating as relays must also employ DFS function. The method used to validate the functionality must be documented and validation data must be documented. Bridge mode can be validated by performing a test statistical performance check (Section 7.8.4) on any one of the radar types. This is an abbreviated test to verify DFS functionality. MESH mode operational methodology must be submitted in the application for certification for evaluation by the FCC.

### 5.10.1. LOW BAND 20 MHz BANDWIDTH BRIDGE MODE IN-SERVICE MONITORING

#### RESULTS

FCC Radar Test Summary										
Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth		OBW	Test Location	Employee Number	In-Service Monitoring Version
					FL	FH				
FCC Short Pulse Type 1	30	86.67	60	Pass	5290	5310	17.87	DFS 1	29445	Version 3.0

**TYPE 1 DETECTION PROBABILITY**

Data Sheet for FCC Short Pulse Radar Type 1						
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Test (A/B)	Frequency (MHz)	Successful Detection (Yes/No)
1001	1	3066	18	A	5300	Yes
1002	1	578	92	A	5300	Yes
1003	1	598	89	A	5300	Yes
1004	1	718	74	A	5300	Yes
1005	1	678	78	A	5300	Yes
1006	1	818	65	A	5300	Yes
1007	1	778	68	A	5300	Yes
1008	1	838	63	A	5300	Yes
1009	1	698	76	A	5300	Yes
1010	1	518	102	A	5300	No
1011	1	658	81	A	5300	Yes
1012	1	798	67	A	5300	Yes
1013	1	898	59	A	5300	Yes
1014	1	618	86	A	5300	No
1015	1	738	72	A	5300	No
1016	1	1638	33	B	5300	Yes
1017	1	2465	22	B	5300	Yes
1018	1	1226	44	B	5300	Yes
1019	1	2182	25	B	5300	No
1020	1	1073	50	B	5300	Yes
1021	1	964	55	B	5300	Yes
1022	1	2532	21	B	5300	Yes
1023	1	2553	21	B	5300	Yes
1024	1	1703	31	B	5300	Yes
1025	1	1291	41	B	5300	Yes
1026	1	2924	19	B	5300	Yes
1027	1	1138	47	B	5300	Yes
1028	1	2900	19	B	5300	Yes
1029	1	2597	21	B	5300	Yes
1030	1	747	71	B	5300	Yes

## 5.10.1. LOW BAND 40 MHz BANDWIDTH BRIDGE MODE IN-SERVICE MONITORING

### RESULTS

FCC Radar Test Summary										
Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth		OBW	Test Location	Employee Number	In-Service Monitoring Version
					FL	FH				
FCC Short Pulse Type 1	30	76.67	60	Pass	5290	5330	36.39	DFS 1	29445	Version 3.0



**TYPE 1 DETECTION PROBABILITY**

Data Sheet for FCC Short Pulse Radar Type 1						
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Test (A/B)	Frequency (MHz)	Successful Detection (Yes/No)
1001	1	3066	18	A	5310	No
1002	1	578	92	A	5310	Yes
1003	1	598	89	A	5310	Yes
1004	1	718	74	A	5310	Yes
1005	1	678	78	A	5310	Yes
1006	1	818	65	A	5310	Yes
1007	1	778	68	A	5310	No
1008	1	838	63	A	5310	Yes
1009	1	698	76	A	5310	Yes
1010	1	518	102	A	5310	Yes
1011	1	658	81	A	5310	Yes
1012	1	798	67	A	5310	Yes
1013	1	898	59	A	5310	Yes
1014	1	618	86	A	5310	Yes
1015	1	738	72	A	5310	Yes
1016	1	1638	33	B	5310	No
1017	1	2465	22	B	5310	Yes
1018	1	1226	44	B	5310	Yes
1019	1	2182	25	B	5310	Yes
1020	1	1073	50	B	5310	Yes
1021	1	964	55	B	5310	Yes
1022	1	2532	21	B	5310	Yes
1023	1	2553	21	B	5310	Yes
1024	1	1703	31	B	5310	Yes
1025	1	1291	41	B	5310	Yes
1026	1	2924	19	B	5310	No
1027	1	1138	47	B	5310	No
1028	1	2900	19	B	5310	No
1029	1	2597	21	B	5310	Yes
1030	1	747	71	B	5310	No

## 5.10.2. LOW BAND 80 MHz BANDWIDTH BRIDGE MODE IN-SERVICE MONITORING

### RESULTS

FCC Radar Test Summary										
Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth		OBW	Test Location	Employee Number	In-Service Monitoring Version
					FL	FH				
FCC Short Pulse Type 1	30	90.00	60	Pass	5251	5329	76.41	DFS 1	29445	Version 3.0

**TYPE 1 DETECTION PROBABILITY**

Data Sheet for FCC Short Pulse Radar Type 1						
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Test (A/B)	Frequency (MHz)	Successful Detection (Yes/No)
1001	1	3066	18	A	5290	Yes
1002	1	578	92	A	5290	Yes
1003	1	598	89	A	5290	Yes
1004	1	718	74	A	5290	Yes
1005	1	678	78	A	5290	Yes
1006	1	818	65	A	5290	Yes
1007	1	778	68	A	5290	Yes
1008	1	838	63	A	5290	Yes
1009	1	698	76	A	5290	Yes
1010	1	518	102	A	5290	Yes
1011	1	658	81	A	5290	Yes
1012	1	798	67	A	5290	Yes
1013	1	898	59	A	5290	Yes
1014	1	618	86	A	5290	Yes
1015	1	738	72	A	5290	Yes
1016	1	1638	33	B	5290	Yes
1017	1	2465	22	B	5290	No
1018	1	1226	44	B	5290	Yes
1019	1	2182	25	B	5290	Yes
1020	1	1073	50	B	5290	Yes
1021	1	964	55	B	5290	Yes
1022	1	2532	21	B	5290	Yes
1023	1	2553	21	B	5290	No
1024	1	1703	31	B	5290	Yes
1025	1	1291	41	B	5290	Yes
1026	1	2924	19	B	5290	Yes
1027	1	1138	47	B	5290	Yes
1028	1	2900	19	B	5290	No
1029	1	2597	21	B	5290	Yes
1030	1	747	71	B	5290	Yes

### 5.10.3. LOW BAND 160 MHz BANDWIDTH BRIDGE MODE IN-SERVICE MONITORING (80 MHz HIGH COMPONENT)

#### RESULTS

FCC Radar Test Summary										
Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth		OBW	Test Location	Employee Number	In-Service Monitoring Version
					FL	FH				
FCC Short Pulse Type 1	30	90.00	60	Pass	5251	5328	76.16	DFS 1	29445	Version 3.0

**TYPE 1 DETECTION PROBABILITY**

Data Sheet for FCC Short Pulse Radar Type 1						
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Test (A/B)	Frequency (MHz)	Successful Detection (Yes/No)
1001	1	3066	18	A	5290	Yes
1002	1	578	92	A	5290	Yes
1003	1	598	89	A	5290	Yes
1004	1	718	74	A	5290	Yes
1005	1	678	78	A	5290	Yes
1006	1	818	65	A	5290	Yes
1007	1	778	68	A	5290	Yes
1008	1	838	63	A	5290	Yes
1009	1	698	76	A	5290	Yes
1010	1	518	102	A	5290	Yes
1011	1	658	81	A	5290	Yes
1012	1	798	67	A	5290	Yes
1013	1	898	59	A	5290	Yes
1014	1	618	86	A	5290	Yes
1015	1	738	72	A	5290	Yes
1016	1	1638	33	B	5290	Yes
1017	1	2465	22	B	5290	Yes
1018	1	1226	44	B	5290	Yes
1019	1	2182	25	B	5290	Yes
1020	1	1073	50	B	5290	Yes
1021	1	964	55	B	5290	Yes
1022	1	2532	21	B	5290	No
1023	1	2553	21	B	5290	Yes
1024	1	1703	31	B	5290	No
1025	1	1291	41	B	5290	Yes
1026	1	2924	19	B	5290	No
1027	1	1138	47	B	5290	Yes
1028	1	2900	19	B	5290	Yes
1029	1	2597	21	B	5290	Yes
1030	1	747	71	B	5290	Yes

## 5.10.4. HIGH BAND 20 MHz BANDWIDTH BRIDGE MODE IN-SERVICE MONITORING

### RESULTS

FCC Radar Test Summary										
Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth		OBW	Test Location	Employee Number	In-Service Monitoring Version
					FL	FH				
FCC Short Pulse Type 1	30	93.33	60	Pass	5490	5509	17.94	DFS 1	29445	Version 3.0

**TYPE 1 DETECTION PROBABILITY**

Data Sheet for FCC Short Pulse Radar Type 1						
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Test (A/B)	Frequency (MHz)	Successful Detection (Yes/No)
1001	1	3066	18	A	5500	Yes
1002	1	578	92	A	5500	Yes
1003	1	598	89	A	5500	Yes
1004	1	718	74	A	5500	Yes
1005	1	678	78	A	5500	Yes
1006	1	818	65	A	5500	Yes
1007	1	778	68	A	5500	Yes
1008	1	838	63	A	5500	No
1009	1	698	76	A	5500	Yes
1010	1	518	102	A	5500	Yes
1011	1	658	81	A	5500	Yes
1012	1	798	67	A	5500	Yes
1013	1	898	59	A	5500	Yes
1014	1	618	86	A	5500	Yes
1015	1	738	72	A	5500	Yes
1016	1	1638	33	B	5500	Yes
1017	1	2465	22	B	5500	Yes
1018	1	1226	44	B	5500	Yes
1019	1	2182	25	B	5500	Yes
1020	1	1073	50	B	5500	Yes
1021	1	964	55	B	5500	Yes
1022	1	2532	21	B	5500	Yes
1023	1	2553	21	B	5500	Yes
1024	1	1703	31	B	5500	Yes
1025	1	1291	41	B	5500	Yes
1026	1	2924	19	B	5500	Yes
1027	1	1138	47	B	5500	Yes
1028	1	2900	19	B	5500	No
1029	1	2597	21	B	5500	Yes
1030	1	747	71	B	5500	Yes

## 5.10.5. HIGH BAND 40 MHz BANDWIDTH BRIDGE MODE IN-SERVICE MONITORING

### RESULTS

FCC Radar Test Summary								
Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth		Employee Number	In-Service Monitoring Version
					FL	FH		
FCC Short Pulse Type 1	30	83.33	60	Pass	5490	5529	29445	Version 3.0



**TYPE 1 DETECTION PROBABILITY**

Data Sheet for FCC Short Pulse Radar Type 1						
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Test (A/B)	Frequency (MHz)	Successful Detection (Yes/No)
1001	1	3066	18	A	5510	No
1002	1	578	92	A	5510	No
1003	1	598	89	A	5510	Yes
1004	1	718	74	A	5510	Yes
1005	1	678	78	A	5510	Yes
1006	1	818	65	A	5510	Yes
1007	1	778	68	A	5510	Yes
1008	1	838	63	A	5510	Yes
1009	1	698	76	A	5510	Yes
1010	1	518	102	A	5510	Yes
1011	1	658	81	A	5510	Yes
1012	1	798	67	A	5510	Yes
1013	1	898	59	A	5510	Yes
1014	1	618	86	A	5510	Yes
1015	1	738	72	A	5510	Yes
1016	1	1638	33	B	5510	Yes
1017	1	2465	22	B	5510	Yes
1018	1	1226	44	B	5510	Yes
1019	1	2182	25	B	5510	Yes
1020	1	1073	50	B	5510	No
1021	1	964	55	B	5510	Yes
1022	1	2532	21	B	5510	Yes
1023	1	2553	21	B	5510	Yes
1024	1	1703	31	B	5510	No
1025	1	1291	41	B	5510	No
1026	1	2924	19	B	5510	Yes
1027	1	1138	47	B	5510	Yes
1028	1	2900	19	B	5510	Yes
1029	1	2597	21	B	5510	Yes
1030	1	747	71	B	5510	Yes

## 5.10.6. HIGH BAND 80 MHz BANDWIDTH BRIDGE MODE IN-SERVICE MONITORING

### RESULTS

FCC Radar Test Summary										
Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth		OBW	Test Location	Employee Number	In-Service Monitoring Version
					FL	FH				
FCC Short Pulse Type 1	30	83.33	60	Pass	5490	5569	76.58	DFS 1	29445	Version 3.0

**TYPE 1 DETECTION PROBABILITY**

Data Sheet for FCC Short Pulse Radar Type 1						
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Test (A/B)	Frequency (MHz)	Successful Detection (Yes/No)
1001	1	3066	18	A	5530	No
1002	1	578	92	A	5530	Yes
1003	1	598	89	A	5530	Yes
1004	1	718	74	A	5530	Yes
1005	1	678	78	A	5530	Yes
1006	1	818	65	A	5530	No
1007	1	778	68	A	5530	Yes
1008	1	838	63	A	5530	Yes
1009	1	698	76	A	5530	Yes
1010	1	518	102	A	5530	Yes
1011	1	658	81	A	5530	Yes
1012	1	798	67	A	5530	Yes
1013	1	898	59	A	5530	Yes
1014	1	618	86	A	5530	Yes
1015	1	738	72	A	5530	Yes
1016	1	1638	33	B	5530	Yes
1017	1	2465	22	B	5530	Yes
1018	1	1226	44	B	5530	Yes
1019	1	2182	25	B	5530	Yes
1020	1	1073	50	B	5530	Yes
1021	1	964	55	B	5530	No
1022	1	2532	21	B	5530	Yes
1023	1	2553	21	B	5530	Yes
1024	1	1703	31	B	5530	Yes
1025	1	1291	41	B	5530	Yes
1026	1	2924	19	B	5530	No
1027	1	1138	47	B	5530	Yes
1028	1	2900	19	B	5530	No
1029	1	2597	21	B	5530	Yes
1030	1	747	71	B	5530	Yes

### 5.10.7. HIGH BAND 160 MHz BANDWIDTH BRIDGE MODE IN-SERVICE MONITORING (80 MHz HIGH COMPONENT)

#### RESULTS

FCC Radar Test Summary										
Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail	Detection Bandwidth		OBW	Test Location	Employee Number	In-Service Monitoring Version
					FL	FH				
FCC Short Pulse Type 1	30	76.67	60	Pass	5572	5649	76.14	DFS 1	29445	Version 3.0

**TYPE 1 DETECTION PROBABILITY**

Data Sheet for FCC Short Pulse Radar Type 1						
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Test (A/B)	Frequency (MHz)	Successful Detection (Yes/No)
1001	1	3066	18	A	5610	Yes
1002	1	578	92	A	5610	Yes
1003	1	598	89	A	5610	Yes
1004	1	718	74	A	5610	Yes
1005	1	678	78	A	5610	Yes
1006	1	818	65	A	5610	Yes
1007	1	778	68	A	5610	Yes
1008	1	838	63	A	5610	Yes
1009	1	698	76	A	5610	Yes
1010	1	518	102	A	5610	Yes
1011	1	658	81	A	5610	Yes
1012	1	798	67	A	5610	Yes
1013	1	898	59	A	5610	Yes
1014	1	618	86	A	5610	No
1015	1	738	72	A	5610	Yes
1016	1	1638	33	B	5610	Yes
1017	1	2465	22	B	5610	Yes
1018	1	1226	44	B	5610	Yes
1019	1	2182	25	B	5610	Yes
1020	1	1073	50	B	5610	No
1021	1	964	55	B	5610	Yes
1022	1	2532	21	B	5610	No
1023	1	2553	21	B	5610	No
1024	1	1703	31	B	5610	No
1025	1	1291	41	B	5610	No
1026	1	2924	19	B	5610	Yes
1027	1	1138	47	B	5610	Yes
1028	1	2900	19	B	5610	Yes
1029	1	2597	21	B	5610	No
1030	1	747	71	B	5610	Yes