



## 13. Dynamic Frequency Selection

### 13.1. List of Measurement and Examinations

#### EUT Applicability of DFS requirements and Frequency Range

Operation Mode		Operating Frequency Range	
		5250-5350MHz	5470-5725MHz
Master	--	--	--
Client without radar detection	√	√	√
Client with radar detection	--	--	--

#### Minimum limit for DFS testing

Maximum Transmit Power	Value*	Minimum Antenna Gain(dBi)	Attach	limit
$\geq 200\text{milli}$	-64	--	1dB	--
$< 200\text{milli}$	-62	6		-55dBm
<p>*1 This is the level at the input of the receiver assuming a 0dBi receive antenna.</p> <p>*2 Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.</p>				



### 13.2. Test Setup

#### Setup for Master with injection at the Master

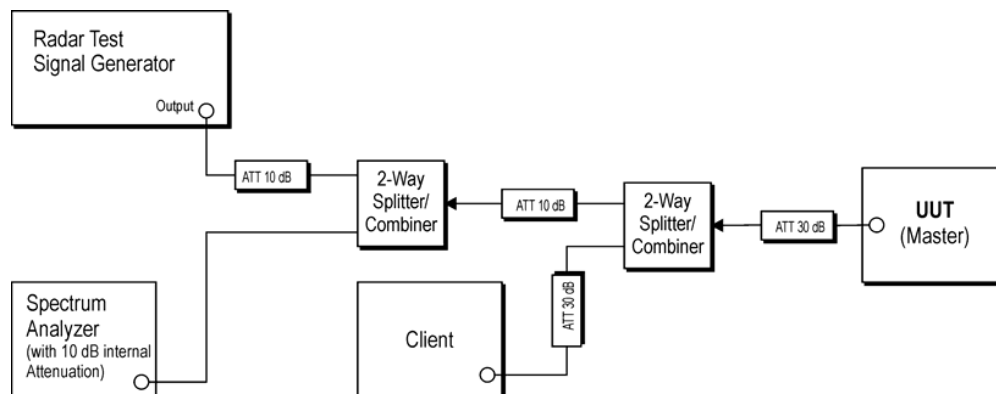


Figure 1: Example Conducted Setup where UUT is a Master and Radar Test Waveforms are injected into the Master

#### Setup for Client with injection at the Master

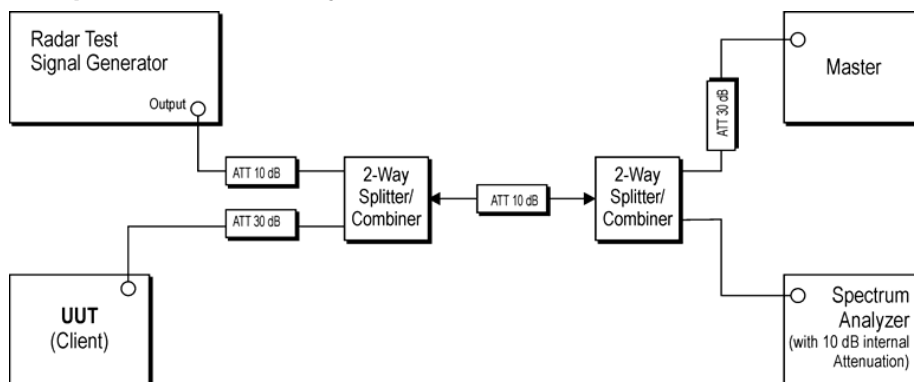


Figure 2: Example Conducted Setup where UUT is a Client and Radar Test Waveforms are injected into the Master

#### Setup for Client with injection at the Client

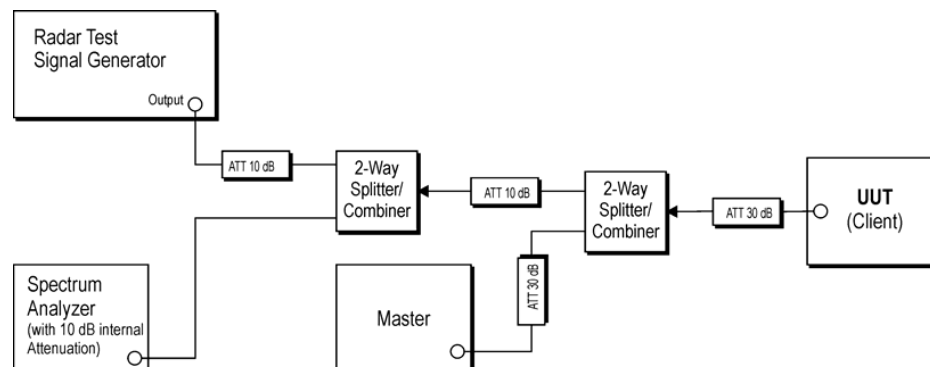


Figure 3: Example Conducted Setup where UUT is a Client and Radar Test Waveforms are injected into the Client



### 13.3.Non-Occupancy Period

The Channel Shutdown is defined as the process initiated by the RLAN device immediately after a radar signal has been detected on an Operating Channel.

The master device shall instruct all associated slave devices to stop transmitting on this channel, which they shall do within the Channel Move Time.

Slave devices with a Radar Interference Detection function, shall stop their own transmissions within the Channel Move Time.

The aggregate duration of all transmissions of the RLAN device on this channel during the Channel Move Time shall be limited to the Channel Closing Transmission Time. The aggregate duration of all transmissions shall not include quiet periods in between transmissions.

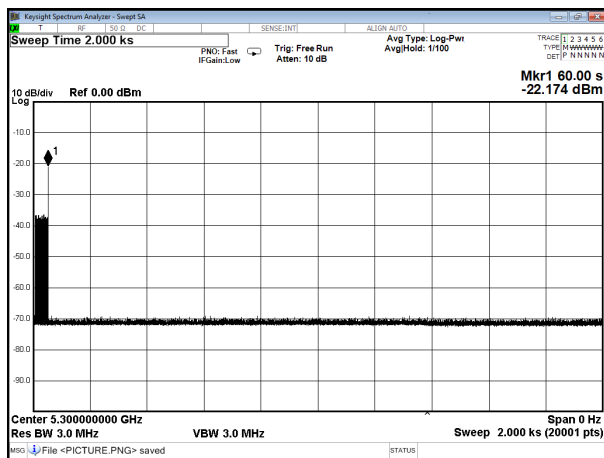
#### 13.3.1 Test Limit

Radar Test Signal	Master (min)	Client (min)
1	> 30	> 30
2	> 30	> 30
3	> 30	> 30
4	> 30	> 30
5	> 30	> 30
6	> 30	> 30

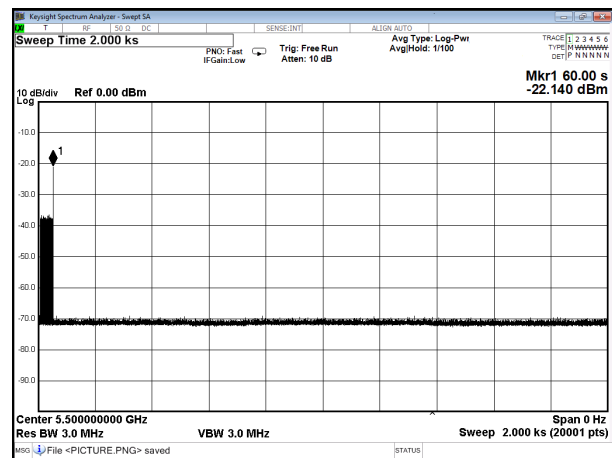


### 13.3.2 Test Result of Non-Occupancy Period

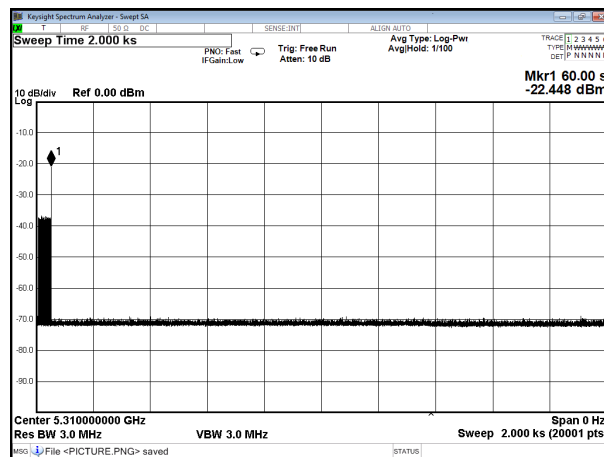
Signal 1 at 5300MHz, HT20



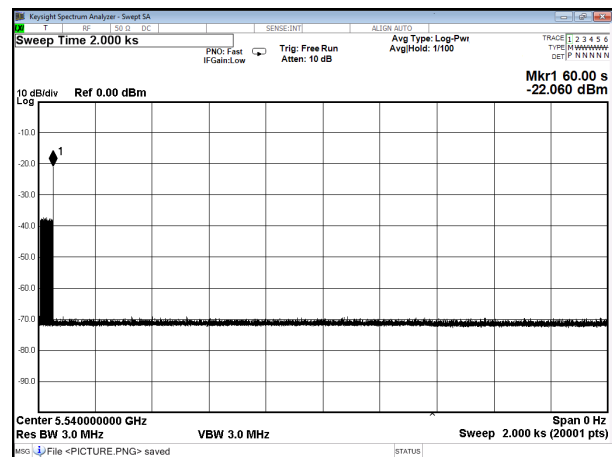
Signal 1 at 5500MHz, HT20



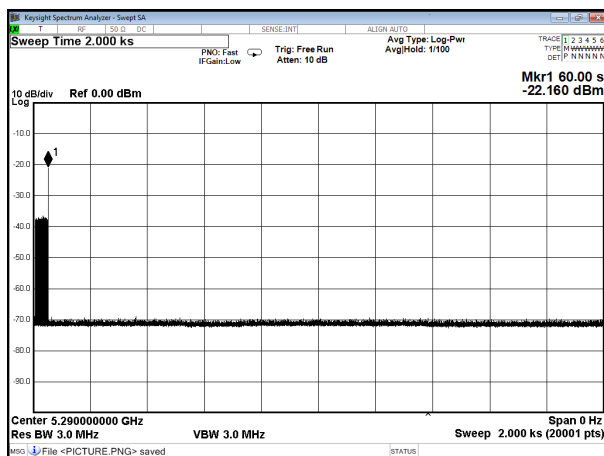
Signal 1 at 5310MHz, HT40



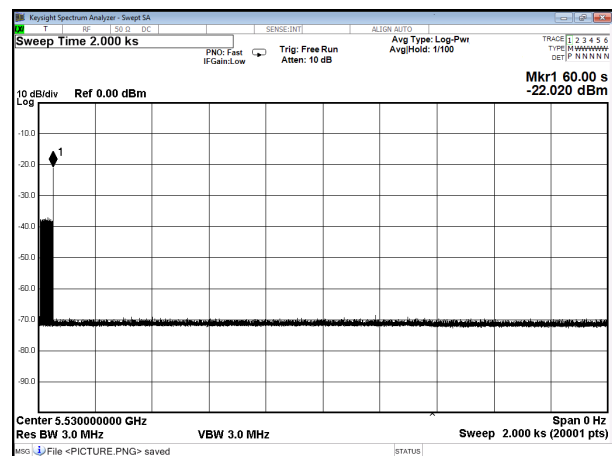
Signal 1 at 5540MHz, HT40



Signal 1 at 5290MHz, VHT80



Signal 1 at 5530MHz, VHT80





#### **13.4.DFS Detection Threshold**

This is a client without radar detection device, this test item is not applicable.



### **13.5. Channel Availability Check**

This is a client without radar detection device, this test item is not applicable.



### **13.6.U-NII Detection Bandwidth**

This is a client without radar detection device, this test item is not applicable.



### **13.7.Uniform Spreading**

This is a client without radar detection device, this test item is not applicable.





### 13.8. In-Service Monitoring

The In-Service Monitoring is defined as the process by which an RLAN monitors the Operating Channel for the presence of radar signals.

#### 13.8.1 Test Limit

Parameter	Value
Channel Move Time	< 10 s (See Note 1)
Channel Closing Transmission Time	< 200 ms+ an aggregate of 60 milliseconds over remaining 10 second period. (See Notes 1 and Notes 2.)
<p>Note 1: The instant that the Channel Move Time and the Channel Closing Transmission Time begins is as follows:</p> <ul style="list-style-type: none"><li>• For the Short Pulse Radar Test Signals this instant is the end of the Burst.</li><li>• For the Frequency Hopping radar Test Signal, this instant is the end of the last radar Burst generated.</li><li>• For the Long Pulse Radar Test Signal this instant is the end of the 12 second period defining the Radar Waveform.</li></ul> <p>Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.</p>	

#### Limits Clause 4.7.2.2.2

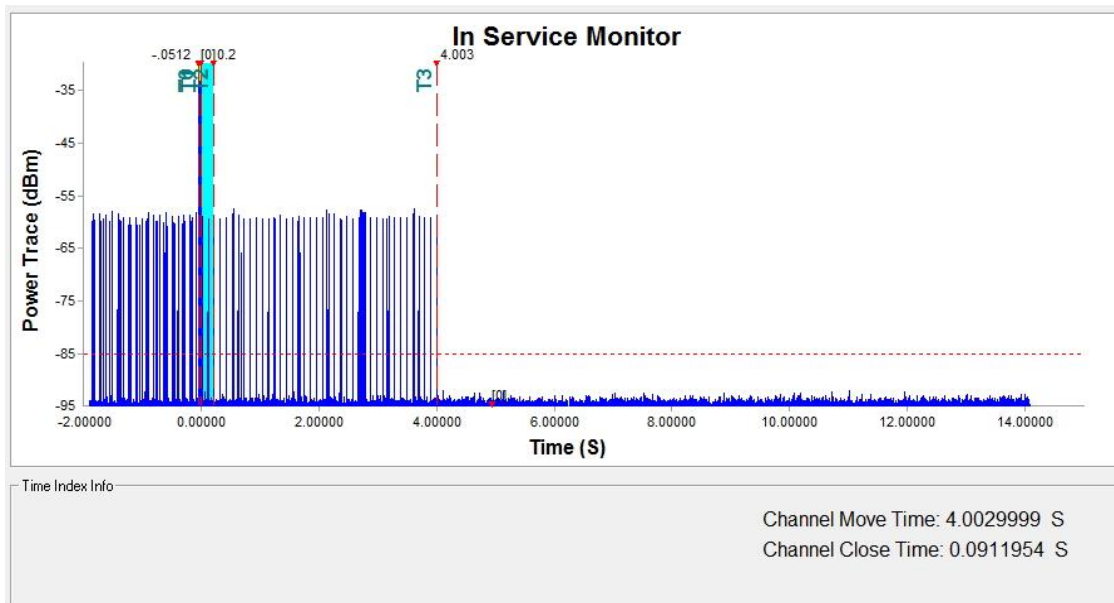
The In-Service Monitoring shall be used to continuously monitor an Operating Channel.

The In-Service-Monitoring shall start immediately after the RLAN has started transmissions on an Operating Channel.



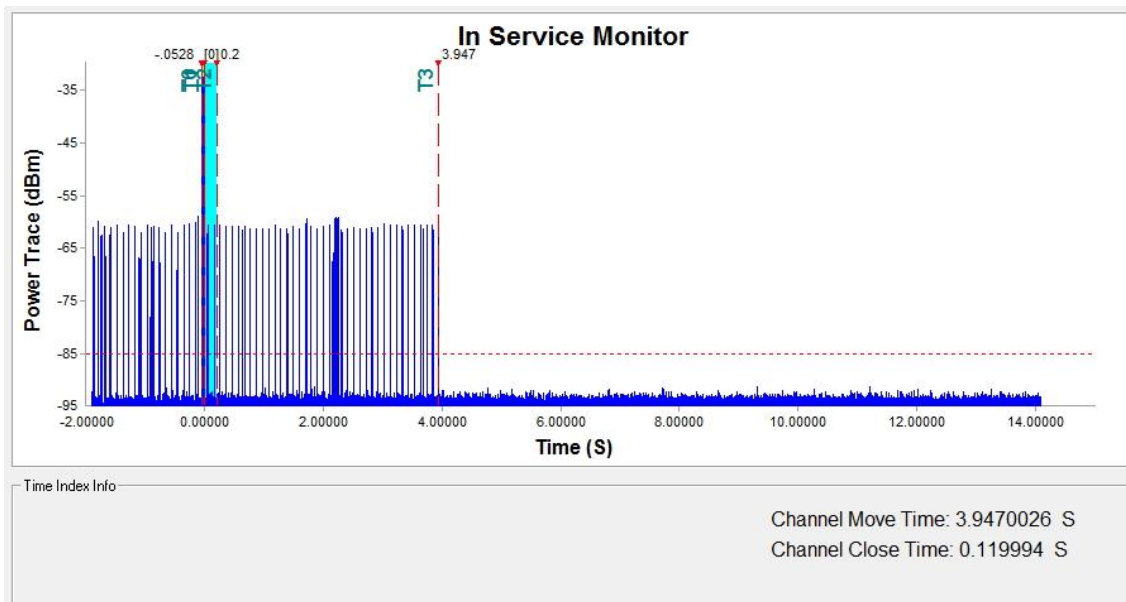
### 13.8.2 Test Result

Signal 1 at 5300MHz, HT20



	Value(S)	Result
Channel Move Time	4.0030	Pass
Channel Closing Transmission Time	0.0912	pass

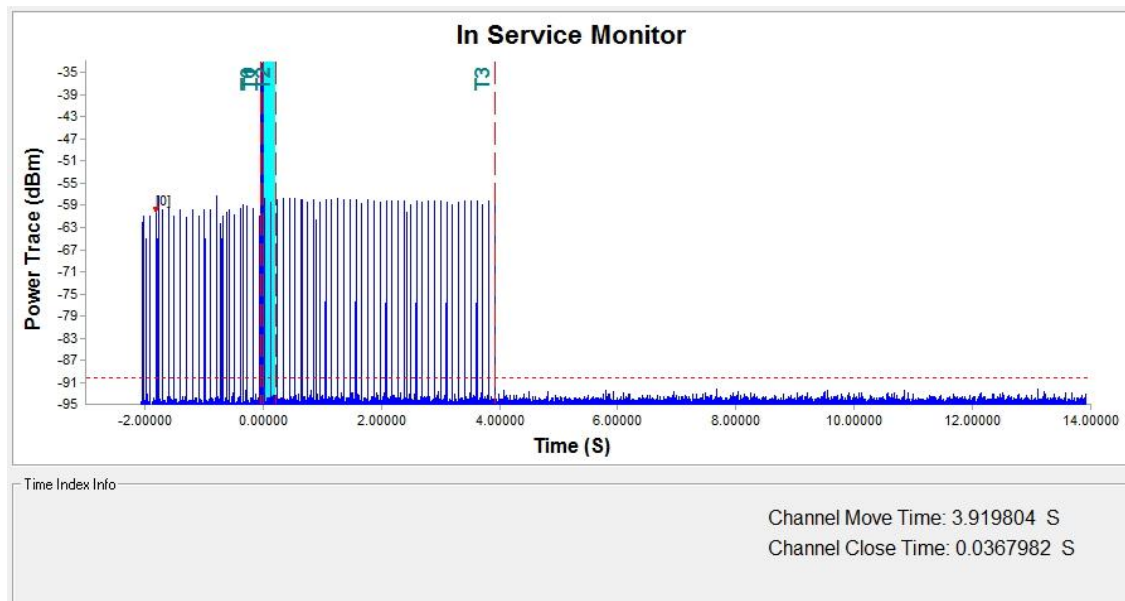
Signal 1 at 5500MHz, HT20



	Value(S)	Result
Channel Move Time	3.9470	Pass
Channel Closing Transmission Time	0.1120	pass

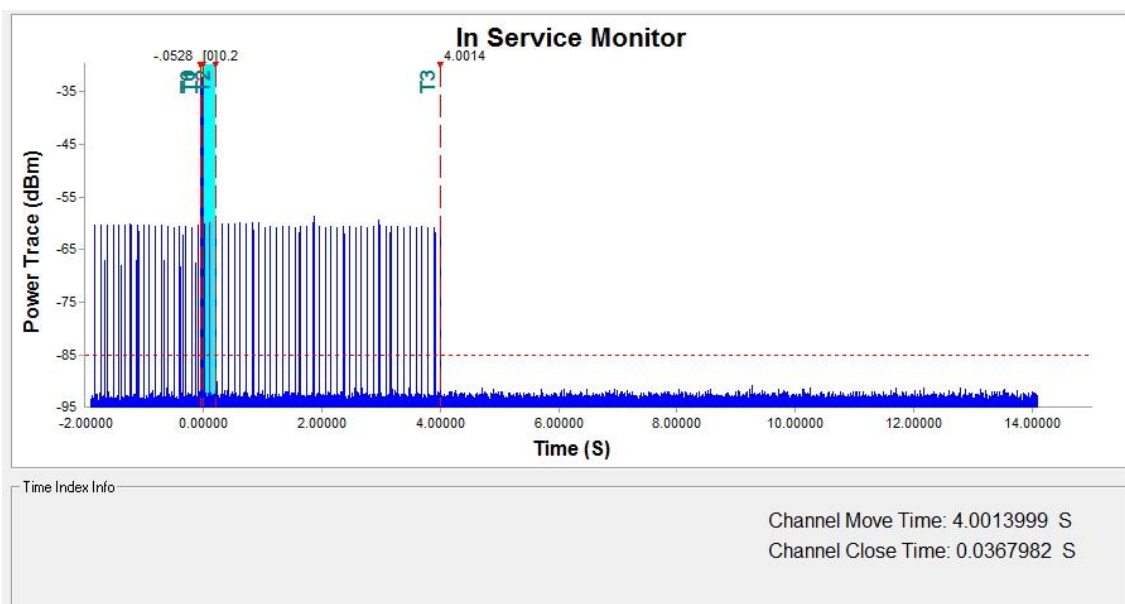


Signal 1 at 5310MHz, HT40



	Value(S)	Result
Channel Move Time	3.9198	Pass
Channel Closing Transmission Time	0.03680	pass

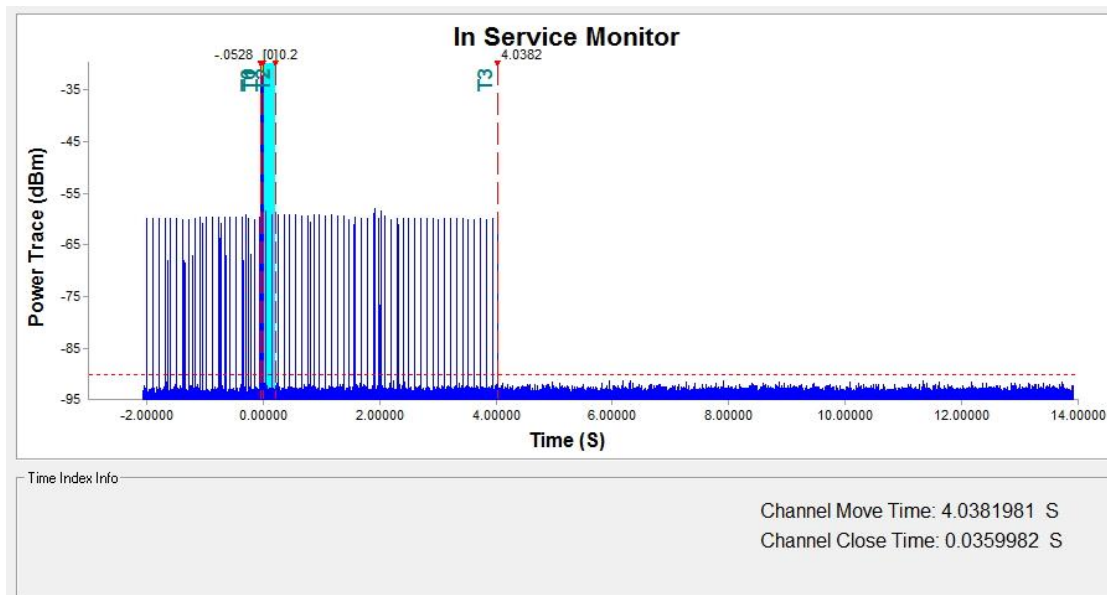
Signal 1 at 5540MHz, HT40



	Value(S)	Result
Channel Move Time	4.0014	Pass
Channel Closing Transmission Time	0.0368	pass

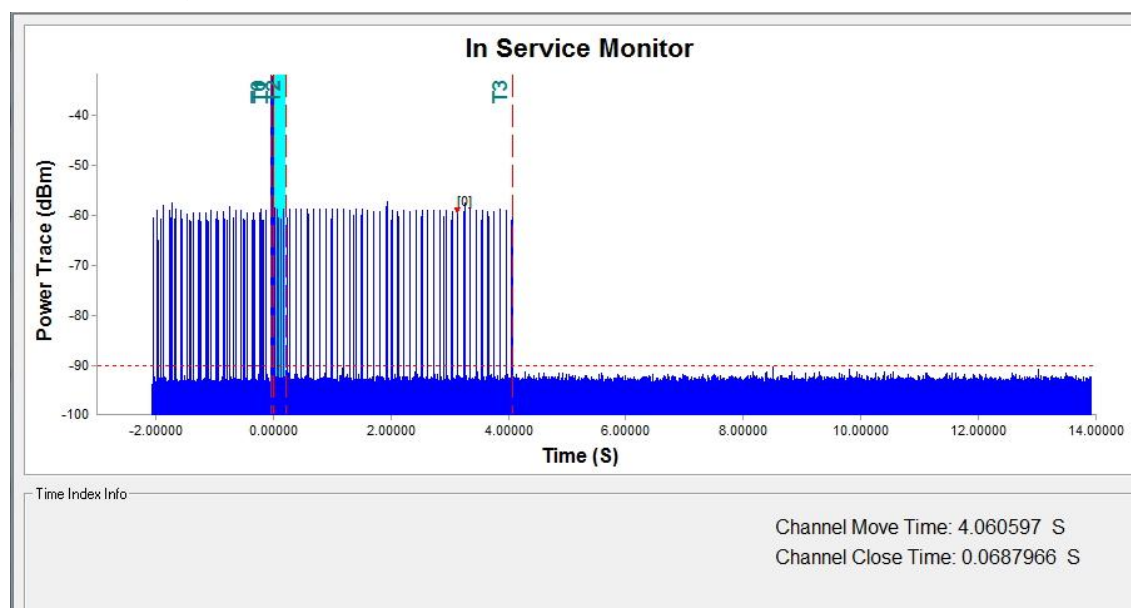


Signal 1 at 5290MHz, VHT80



	Value(S)	Result
Channel Move Time	4.0382	Pass
Channel Closing Transmission Time	0.0360	pass

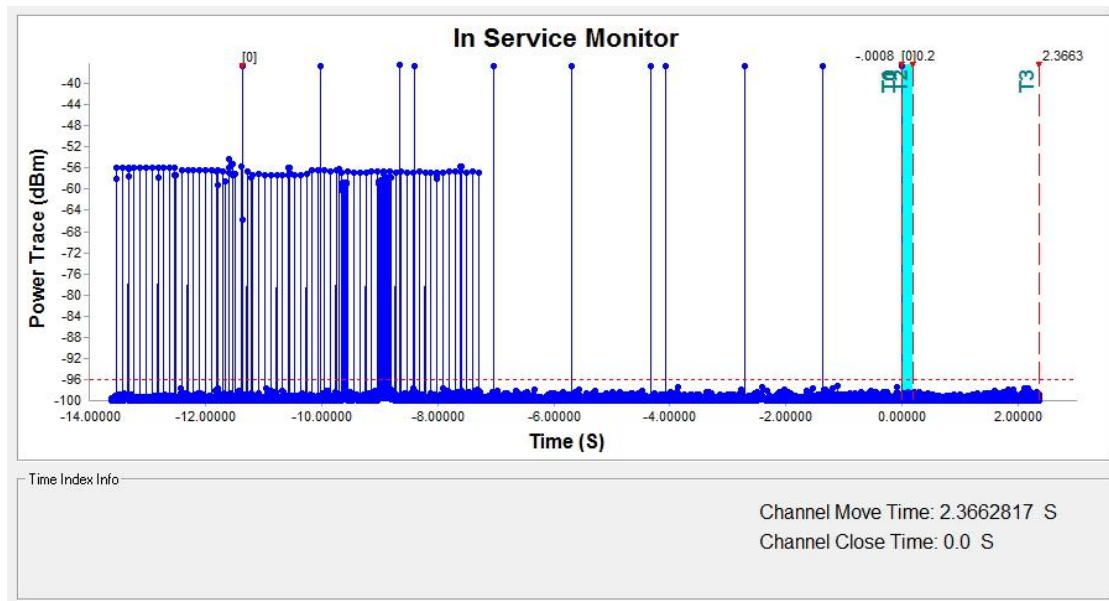
Signal 1 at 5530MHz, VHT80



	Value(S)	Result
Channel Move Time	4.0606	Pass
Channel Closing Transmission Time	0.0688	pass

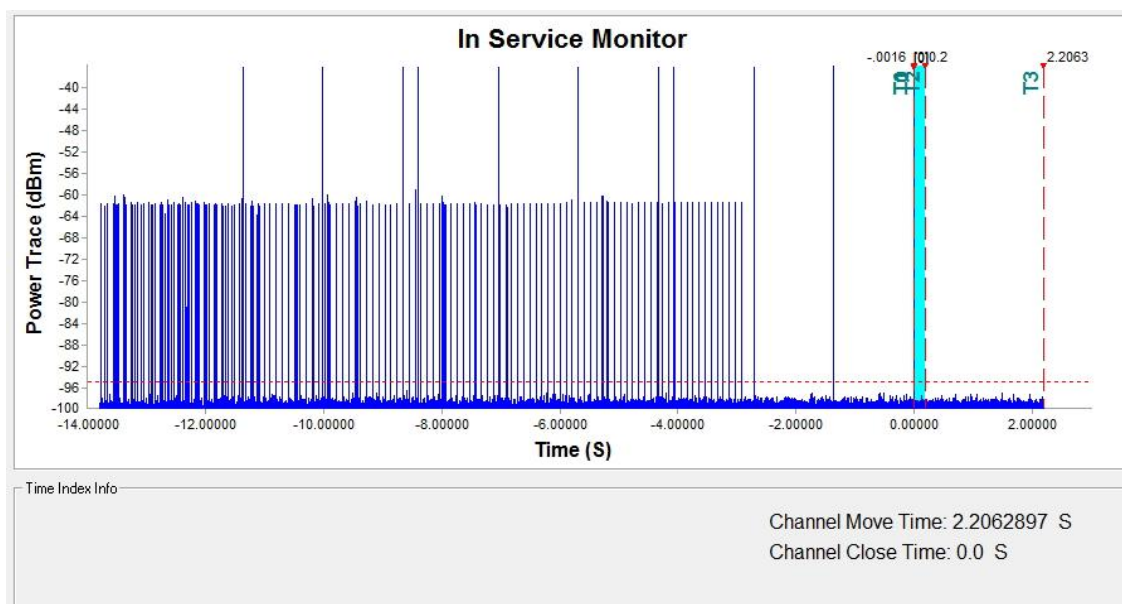


Signal 5 at 5300MHz, HT20



	Value(S)	Result
Channel Move Time	2.3663	Pass
Channel Closing Transmission Time	0	pass

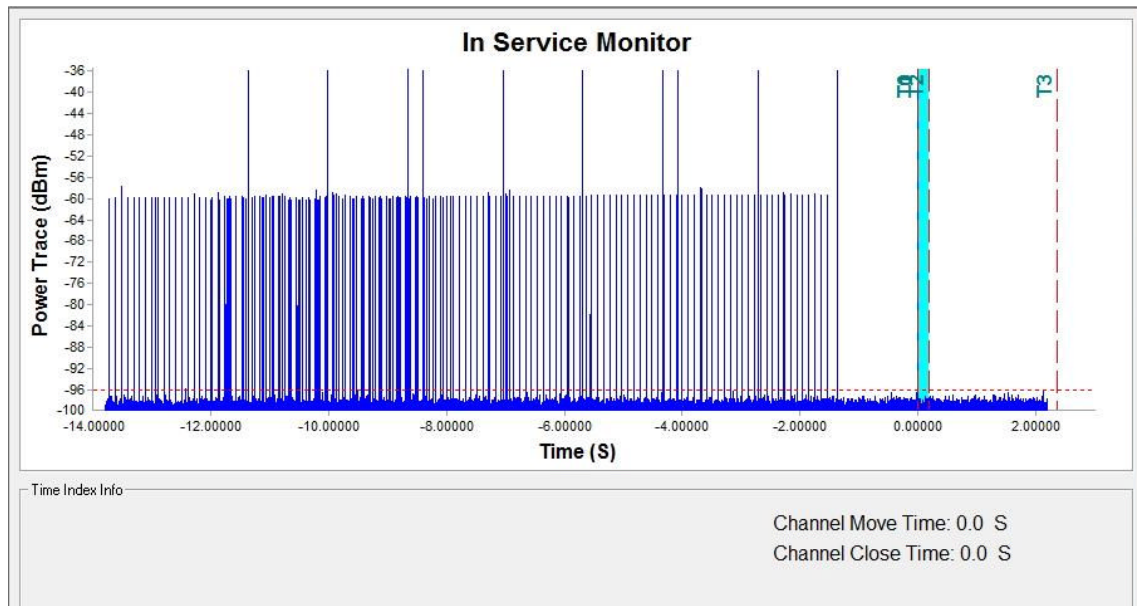
Signal 5 at 5500MHz, HT20



	Value(S)	Result
Channel Move Time	2.2063	Pass
Channel Closing Transmission Time	0	pass

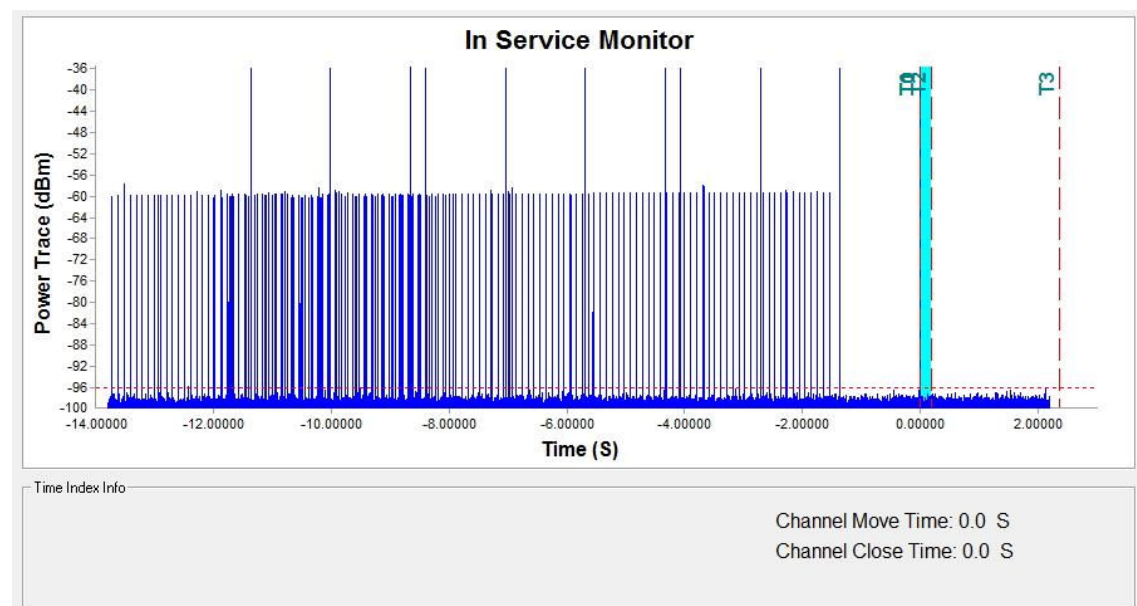


Signal 5 at 5310MHz, HT40



	Value(S)	Result
Channel Move Time	0	Pass
Channel Closing Transmission Time	0	pass

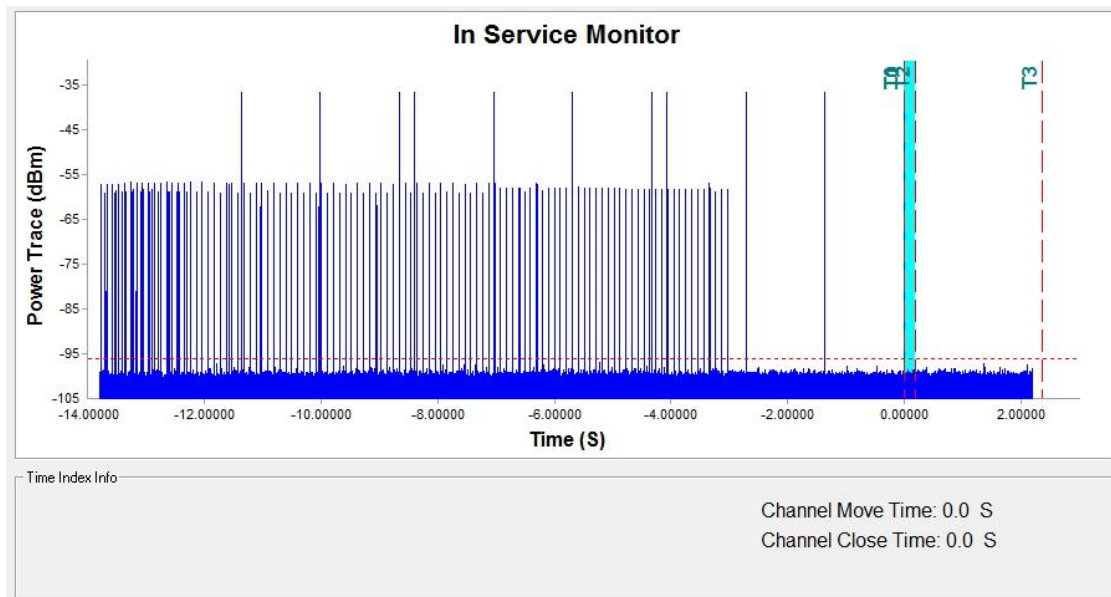
Signal 5 at 5540MHz, HT40



	Value(S)	Result
Channel Move Time	0	Pass
Channel Closing Transmission Time	0	pass

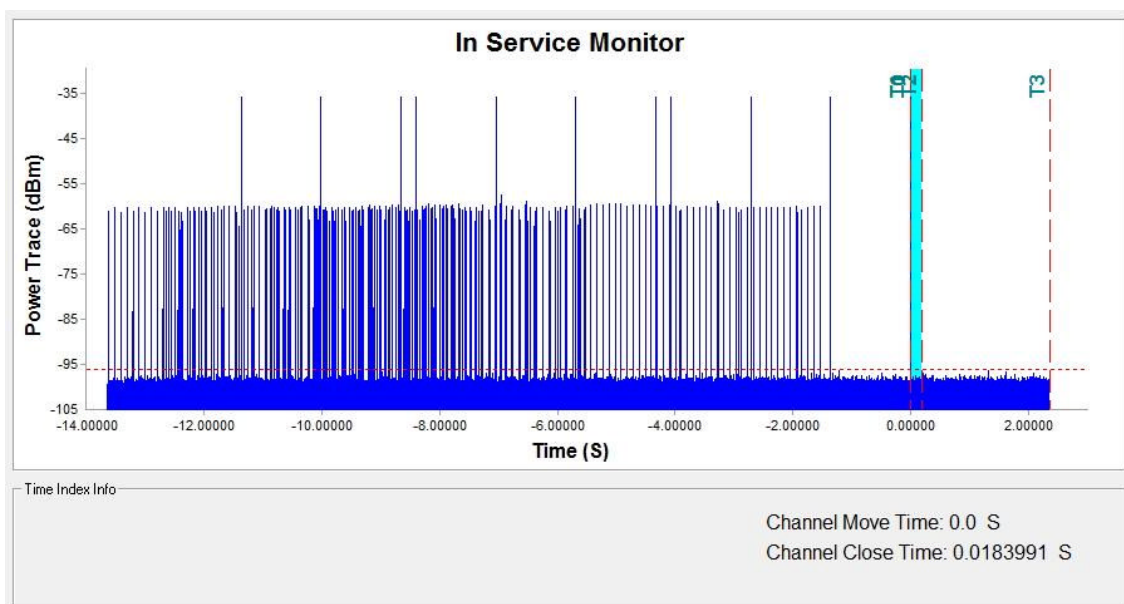


Signal 5 at 5290MHz, VHT80



	Value(S)	Result
Channel Move Time	0	Pass
Channel Closing Transmission Time	0	pass

Signal 1 at 5530MHz, VHT80



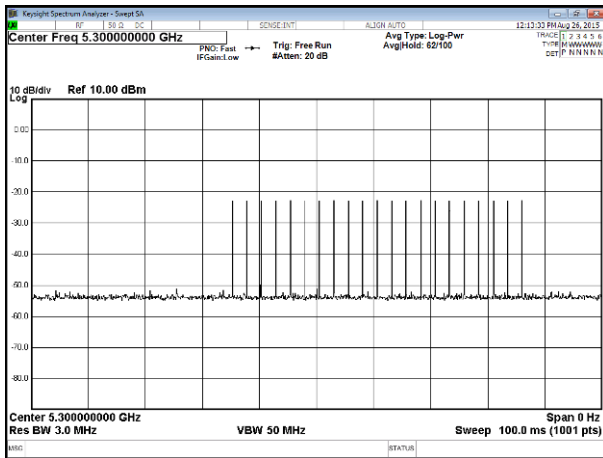
	Value(S)	Result
Channel Move Time	0	Pass
Channel Closing Transmission Time	0.0184	pass



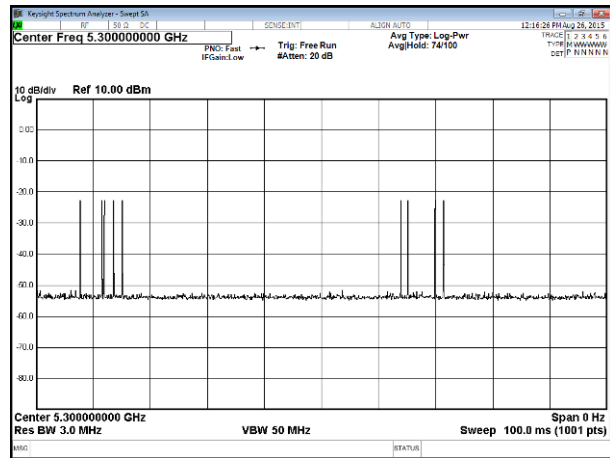


### 13.9.Radar Calibration

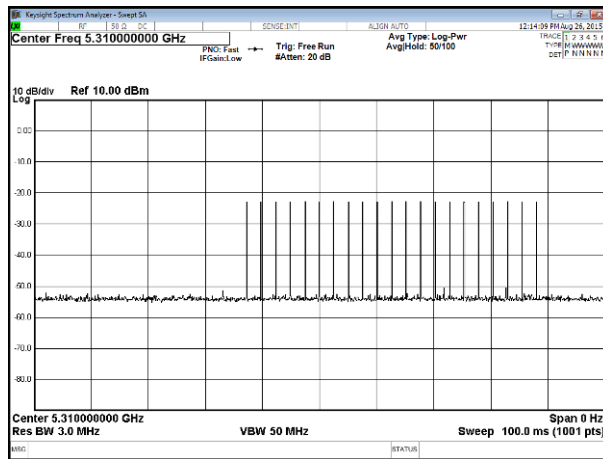
Signal 1, HT20



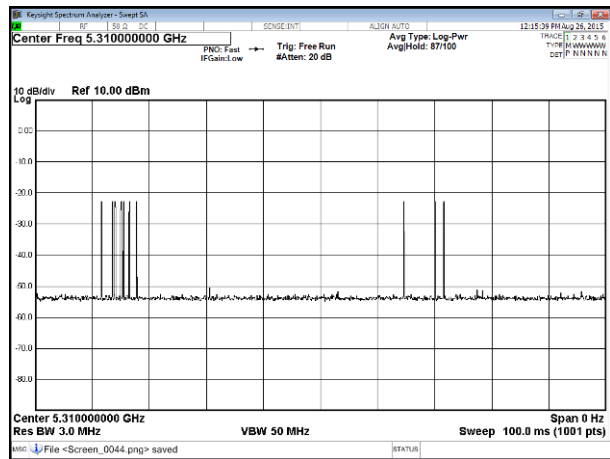
Signal 5, HT20



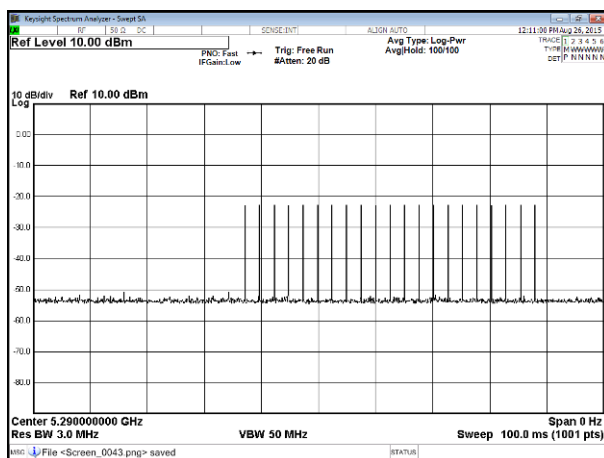
Signal 1, HT40



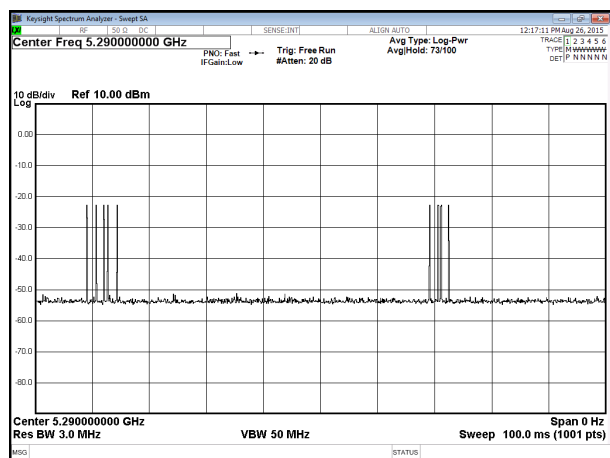
Signal 5, HT40



Signal 1, VHT80



Signal 5, VHT80

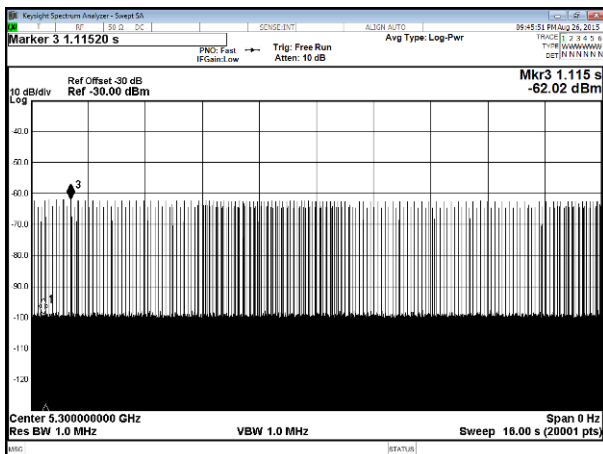




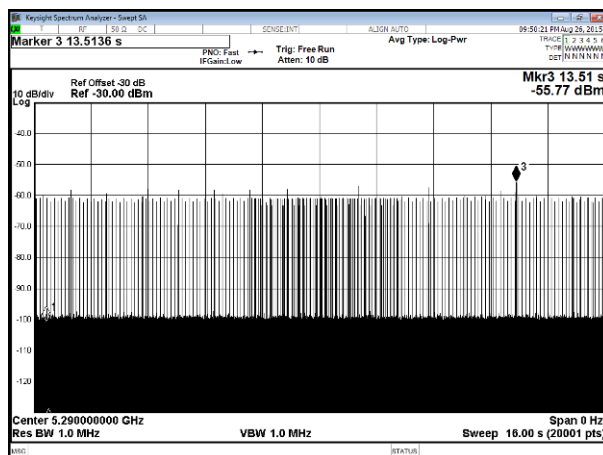


## Client Data traffic plot

Plot of slave traffic, 20MHz



Plot of slave traffic, 40MHz



Plot of slave traffic, 80MHz

