













port No.: WSCT-ANAB-R&E241100056A-Wi-Fi2



Page 133 of 178

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Freq. Stability NVNT ac40 5270MHz Ant1 0 Minutes Spectrum Analyzer 1 Swept SA + Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) KEYSIGHT Input: RF PNNNNN Mkr1 5.270 00 GHz 1 Spectrum Ref Lvi Offset 5.31 dB Ref Level 20.00 dBm -21.68 dBm Scale/Div 10 dB Span 80.00 MHz Sweep 765 ms (1001 pts) #Video BW 30 kHz Center 5.27000 GHz #Res BW 10 kHz Function Width Function Value Function 1 9 C Oct 12, 2024 Oct 12, 2024 Oct 12, 2024 Oct 12, 2024 \*\* Freq. Stability NVNT ac40 5310MHz Ant1 0 Minutes + Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) KEYSIGHT Input: RF Align: Auto PNNNNN Mkr1 5.309 96 GHz 1 Spectrum Ref LvI Offset 5.35 dB Ref Level 20.00 dBm -19.90 dBm Scale/Div 10 dB Span 80.00 MHz Sweep 765 ms (1001 pts) #Video BW 30 kHz Center 5.31000 GHz #Res BW 10 kHz

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-15.82 dBm -13.61 dBm **Function Width** 

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Function Value

Page 134 of 178

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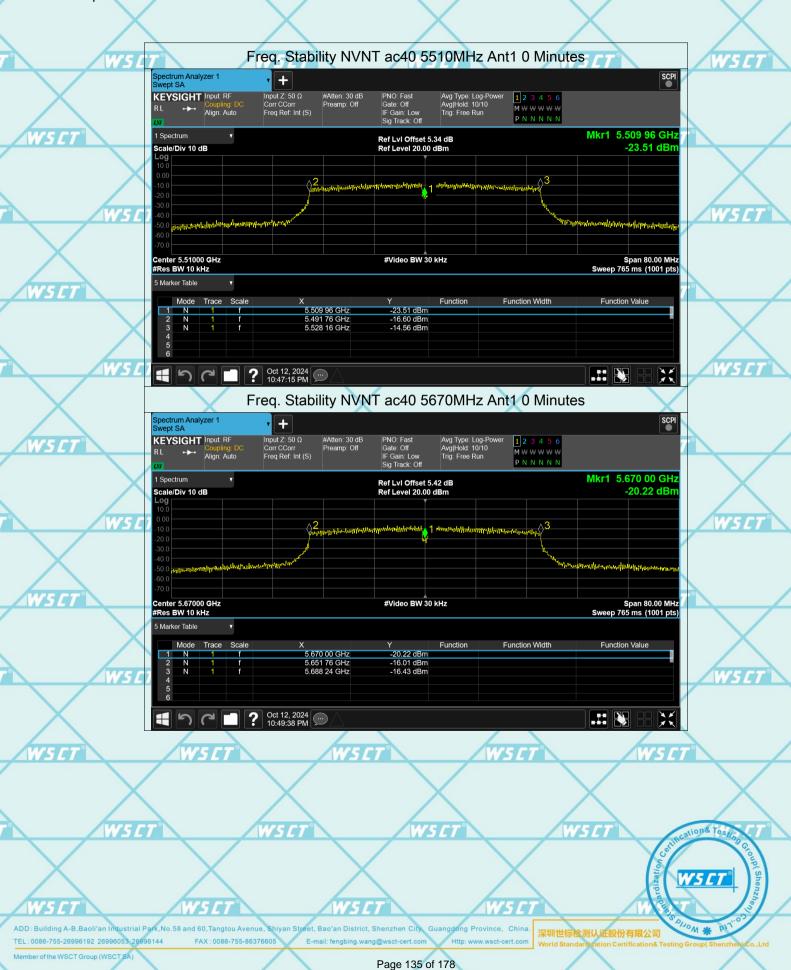
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Oct 12, 2024 11:02:24 PM



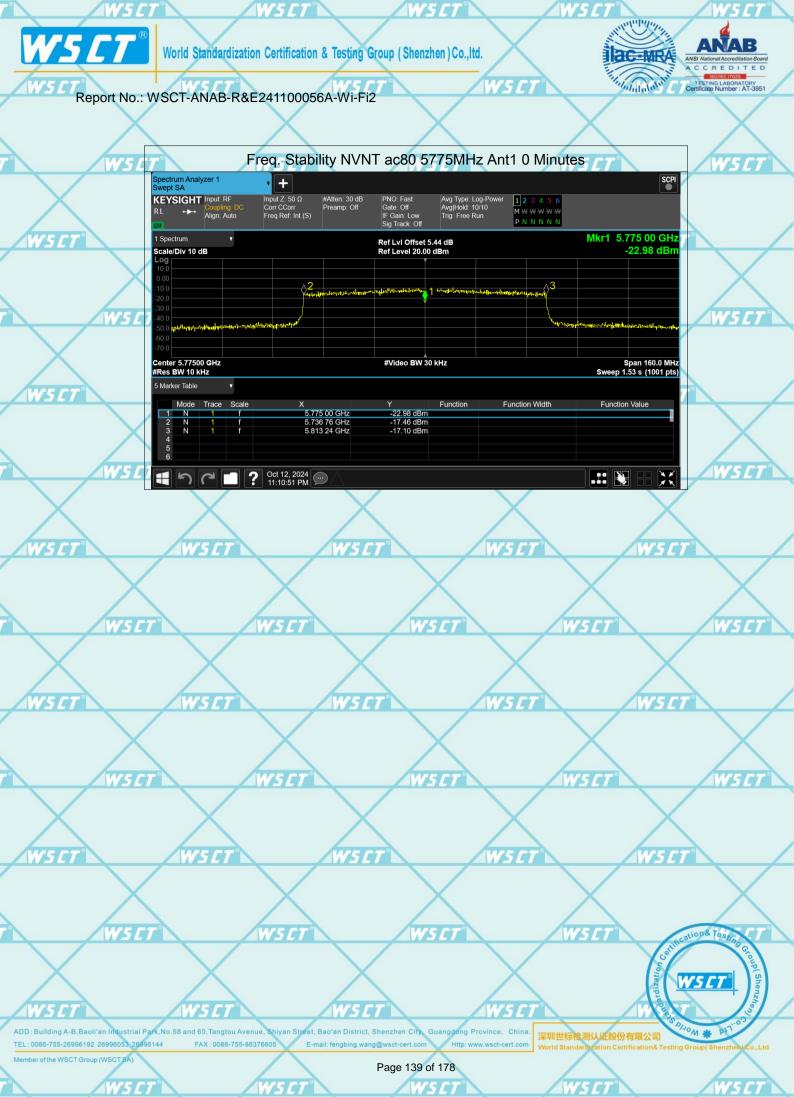


Freq. Stability NVNT ac80 5530MHz Ant1 0 Minutes Spectrum Analyzer 1 Swept SA + Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) KEYSIGHT Input: RF PNNNNN Mkr1 5.530 00 GHz 1 Spectrum Ref Lvi Offset 5.34 dB Ref Level 20.00 dBm -22.70 dBm Scale/Div 10 dB Span 160.0 MHz Sweep 1.53 s (1001 pts) #Video BW 30 kHz Center 5.53000 GHz #Res BW 10 kHz Function Width Function Value Function -22.70 dBm -18.10 dBm -17.83 dBm 1 9 C Oct 12, 2024 Oct 12:05:02 PM \*\* Freq. Stability NVNT ac80 5610MHz Ant1 0 Minutes + Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) KEYSIGHT Input: RF #Atten: 30 dB Preamp: Off Align: Auto PNNNNN Mkr1 5.610 00 GHz 1 Spectrum Ref LvI Offset 5.40 dB Ref Level 20.00 dBm -22.42 dBm Scale/Div 10 dB Span 160.0 MHz Sweep 1.53 s (1001 pts) #Video BW 30 kHz Center 5.61000 GHz #Res BW 10 kHz **Function Width** Function Value -17.23 dBm -16.53 dBm

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# 7.9 BAND EDGE EMISSIONS

7.9.1 TEST EQUIPMENT

Please refer to Section 4 this report.

#### TEST PROCEDURE 7.9.2

### **Band Edge Emissions Measurement:**

Test Method:

- a.) The EUT was tested according to ANSI C63.10.
- b) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 1.5 m. All set up is according to ANSI C63.10.
- c)The frequency spectrum from 9 kHz to 40 GHz was investigated. All readings from 9 kHz to 150 kHz are quasi-peak values with a resolution bandwidth of 200 Hz. All readings from 150 kHz to 30 MHz are quasi-peak values with a resolution bandwidth of 9 KHz. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 KHz. All readings are above 1 GHz, peak values with a resolution bandwidth of 1 MHz. Measurements were made at 3 meters.
- d)The emissions from the EUT were measured continuously at every azimuth by rotating the turntable. The Receiving antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency. Emissions below 30MHz were measured with a loop antenna while emission above 30MHz were measured using a broadband E-field antenna.
- e) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the
- f)Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter(EUT) was rotated through three orthogonal axes according to the requirements in

Section 8 and 13 of ANSI C63.10.

#### **Band Edge Emissions Measurement:**

Test Equipment Setting:

a)Attenuation: Auto b)Span Frequency: 100 MHz

c)RBW/VBW (Emission in restricted band):

1MHz / 3MHz for Peak. 1MHz / 1/T for Average

d)RBW/VBW(Emission in non-restricted band) 1MHz/3MHz for peak

#### TEST SETUP

Same as section 3.4 of this report

## CONFIGURATION OF THE EUT

Same as section 3.4 of this report

Same as section 3.4 of this report.

7.9.5 EUT OPERATING CONDITION

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Page 140 of 178

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Report No.: WSCT-ANAB-R&E241100056A-Wi-Fi2

	7.9.6 LIMIT			_		
			/ \			
	Spurious Radiate	ed Emission & Band Edg	e Emissions Measureme	nt: W5	77°\	WS CT
_	Limit:		g in the 5.15-5.35 GHz bar		f the 5.15-5.35	VELTE
		GHz band shall not exce	ed an e.i.r.p. of −27 dBm/N	ИHz.		
X			g in the 5.470-5.725 GHz l		e of the	
			all not exceed an e.i.r.p. of			
harry.			g in the 5.725-5.85 GHz ba		ne frequency	
<b>W5</b> C1			e to 10 MHz above or belo			
			for frequencies 10 MHz or			
			ed an e.i.r.p. of −27 dBm/N		9 /	
			$\wedge$	_		
		In any 100 KHz bandwid	th outside the operating fre	quency band, the radio fre	equency power	
	WSCT		ulation products of the spre			W5CT"
		sequence and the carrie	frequency shall be either	at least 20 dB below that i	n any 100 KHz	
		bandwidth within the bar	d that contains the highest	level of the desired powe	r or shall not	
X			s specified in section 15.20			
		All other emissions inside	e restricted bands specified	d in section 15.205(a) shal	I not exceed	
<b>W5</b> €1		the general radiated emi	ssion limits specified in sec	ction 15.209(a)	WSCT	
	Note:					
	Applies to harmor	nics/spurious emissions tha	t fall in the restricted band	s listed in section 15.205.	The maximum	
		e field strength is listed in s		_		
			specified above are based	on measurement instrume	ent employing	
			on 15.35 for limiting peak e			W5CT
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202151		11-13-1		11213	/ 11/1/4	<del>\</del>
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Aure		(mar)	Anna Carlo	(m)	August 1	
<u> 4W5L1</u>		WSET	WSET	WSET	W5 CT 1	
				_		
	W5 ET	W5 CT°	W5 C1	W5	778	W5CT°
$\overline{}$			11-14		7	
X		×		$\sim$	X	
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			\ /			
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	W5CT <sup>®</sup>	W5CT <sup>®</sup>	W5 C1	W5	Contincation	1& Testin
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Page 141 of 178



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# 7.9.7 TEST RESULT

Band Edge an	d Fundamental Emissions	WELT	WEFT	WEFT
Product:	EUT-Sample	Test Mode: 20MHzIEEE 80	2.11a/n/ac	JUE LA

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	Product:	EU I-Sample	lest Mode:	ZUMHZIEEE 802.TTa/n/ac	
			Tool Model		
(	Test Item:	Band Edge and Fundamental	Temperature:	25 ℃	X
/		Emissions			
	Test	DC 3.85V	Humidity:	56%RH	
	Voltage:	WSCT <sup>®</sup> WSC	7°	WSCT	WSCT

Test Result: PASS

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Page 142 of 178

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Test Graphs

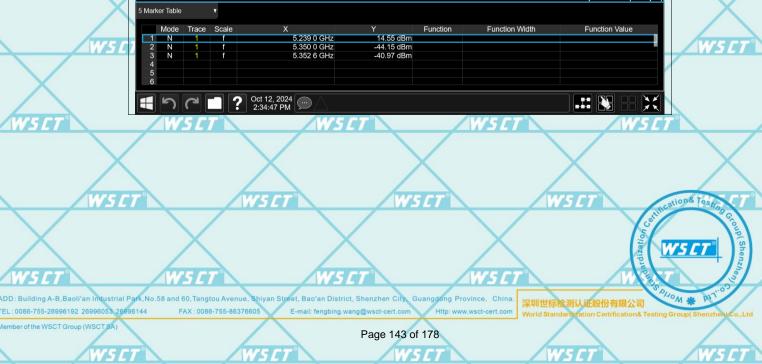
Band Edge NVNT a 5180MHz Low Ant1

Spectrum Analyzer 1
Swept SA

KEYSIGHT Input RF Control of Beams of Base Off Analytic 1904 (In)

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Band Edge NVNT a 5260MHz Low Ant1

Spectrum Analyzer 1
Swept SA

Sectrum Analyzer 1
Sectrum Analyzer 1
Swept SA









Band Edge NVNT a 5500MHz Low Ant1 WS Spectrum Analyzer 1 Swept SA + Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) KEYSIGHT Input: RF PNNNNN Mkr1 5.498 0 GHz 1 Spectrum Ref Lvi Offset 6.34 dB Ref Level 20.00 dBm 13.95 dBm Scale/Div 10 dB Start 5.3200 GHz #Res BW 1.0 MHz Stop 5.5200 GHz Sweep 1.00 ms (1001 pts) #Video BW 3.0 MHz Function Width Function Value Function 5.498 0 GHz 5.470 0 GHz 5.466 0 GHz 13.95 dBm -37.40 dBm -30.83 dBm 1 9 6 7 Oct 12, 2024 3:00:04 PM \*\* Band Edge NVNT a 5700MHz High Ant1 + Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) KEYSIGHT Input: RF #Atten: 30 dB Preamp: Off Align: Auto PNNNNN Mkr1 5.701 4 GHz 1 Spectrum Ref LvI Offset 6.43 dB Ref Level 20.00 dBm 12.67 dBm Scale/Div 10 dB Stop 5.8800 GHz Start 5.6800 GHz #Video BW 3.0 MHz #Res BW 1.0 MHz Sweep 1.00 ms (1001 pts) Function **Function Width** Function Value 12.67 dBm -30.53 dBm -30.35 dBm 5.726 0 GHz

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Band Edge NVNT a 5745MHz Low Ant1











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Page 149 of 178

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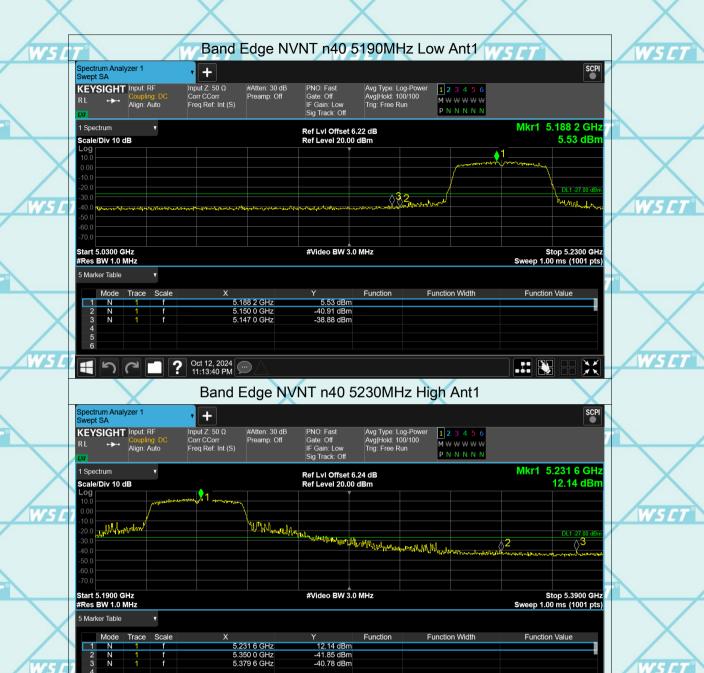
Band Edge NVNT n20 5745MHz Low Ant1













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Page 151 of 178

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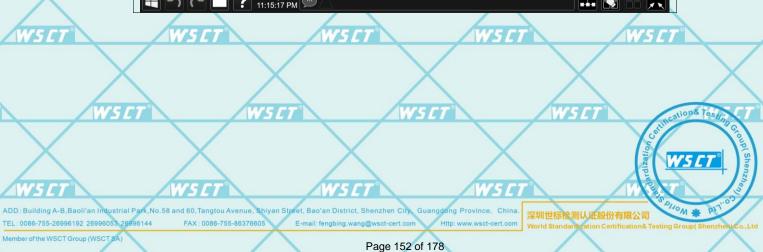
Band Edge NVNT n40 5270MHz Low Ant1

Spectrum Analyzer 1

Swept SA

Spectrum Analyzer 1





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Function Value



Band Edge NVNT ac20 5180MHz Low Ant1

Spectrum Analyzer 1
Swept SA

KEYSIGHT Input RF
Clupling DC
Align: Auto Corr CCorr
Freq Ref: Int (S)

Ref Lvi Offset 6.21 dB
Ref Level 20.00 dBm

Band Edge NVNT ac20 5180MHz Low Ant1

Script Avg Type: Log-Power Avg Type: Log-Power Avg Hold: 100/100
Tig: Free Run

Mkr1 5.182 4 GHz
Ref Level 20.00 dBm

13.42 dBm

Band Edge NVNT ac20 5240MHz High Ant1

Function

Function Width

#Video BW 3.0 MHz

Start 5.2200 GHz
#Res BW 1.0 MHz

Sweep ~1.28 ms (1001 pts)

Mode Trace Scale X Y Function Function Width Function Value

1 N 1 f 5.241 4 GHz 14.09 dBm
2 N 1 f 5.350 0 GHz
3 N 1 f 5.391 4 GHz 40.86 dBm

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Page 155 of 178

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Page 156 of 178









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Band Edge NVNT ac40 5190MHz Low Ant1 Spectrum Analyzer 1 Swept SA + Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) KEYSIGHT Input: RF PNNNNN Mkr1 5.188 2 GHz Ref Lvi Offset 6.22 dB Ref Level 20.00 dBm 5.76 dBm Scale/Div 10 dB Start 5.0300 GHz #Res BW 1.0 MHz Stop 5.2300 GHz Sweep 1.00 ms (1001 pts) #Video BW 3.0 MHz Function Width Function Value Function 5.76 dBm -41.43 dBm -39.03 dBm 5.188 2 GHz 5.150 0 GHz 5.140 4 GHz 11:17:51 PM \*\* Band Edge NVNT ac40 5230MHz High Ant1 + Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) KEYSIGHT Input: RF Align: Auto PNNNNN Mkr1 5.225 0 GHz 1 Spectrum Ref LvI Offset 6.24 dB Ref Level 20.00 dBm 11.32 dBm Scale/Div 10 dB n mount that Start 5.1900 GHz #Video BW 3.0 MHz Stop 5.3900 GHz #Res BW 1.0 MHz Sweep 1.00 ms (1001 pts) **Function Width** Function Value 11.32 dBm -43.72 dBm -40.16 dBm

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Page 159 of 178

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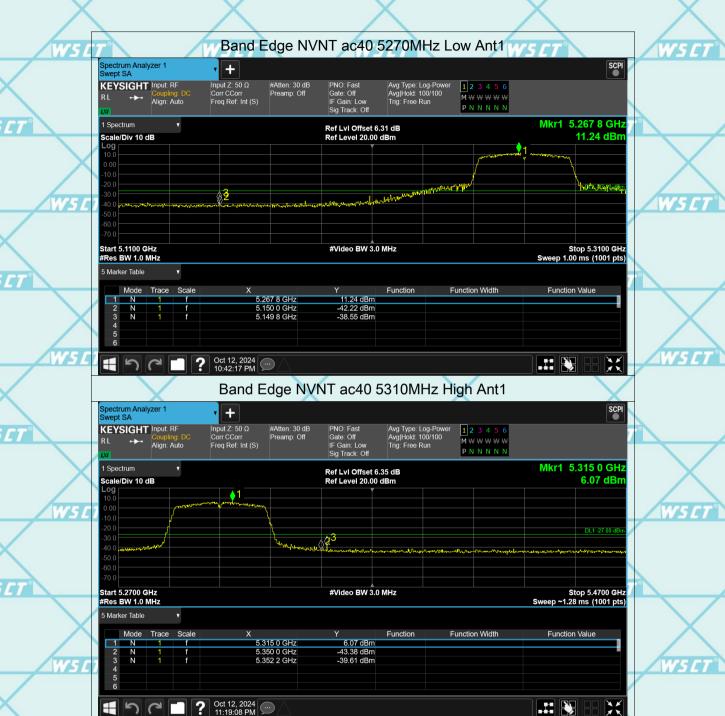
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Band Edge NVNT ac40 5510MHz Low Ant1 Spectrum Analyzer 1 Swept SA + Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) KEYSIGHT Input: RF PNNNNN Mkr1 5.511 8 GHz 1 Spectrum Ref Lvi Offset 6.34 dB Ref Level 20.00 dBm 5.77 dBm Scale/Div 10 dB Start 5.3500 GHz #Res BW 1.0 MHz Stop 5.5500 GHz Sweep 1.00 ms (1001 pts) #Video BW 3.0 MHz Function Width Function Value Function 5.77 dBm -41.23 dBm -39.69 dBm 11:19:59 PM Oct 12, 2024 Oct 12:19:59 PM \*\* Band Edge NVNT ac40 5670MHz High Ant1 + Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) KEYSIGHT Input: RF #Atten: 30 dB Preamp: Off Align: Auto PNNNNN Mkr1 5.671 8 GHz 1 Spectrum Ref LvI Offset 6.42 dB Ref Level 20.00 dBm 11.63 dBm Scale/Div 10 dB Stop 5.8300 GHz Start 5.6300 GHz #Video BW 3.0 MHz #Res BW 1.0 MHz Sweep 1.00 ms (1001 pts) **Function Width** Function Value

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Page 161 of 178

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Band Edge NVNT ac80 5210MHz Low Ant1 WS

Spectrum Analyzer 1 Swept SA + Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) KEYSIGHT Input: RF PNNNNN Mkr1 5.203 4 GHz 1 Spectrum Ref Lvi Offset 6.23 dB Ref Level 20.00 dBm 2.82 dBm Scale/Div 10 dB **∂**3 Start 5.0900 GHz #Res BW 1.0 MHz Stop 5.2900 GHz Sweep 1.00 ms (1001 pts) #Video BW 3.0 MHz Function Function Width Function Value 2.82 dBm -38.08 dBm -36.06 dBm 1 9 6 Oct 12, 2024 Oct 12, 2024 Oct 12, 2024 Oct 12, 2024 \*\* Band Edge NVNT ac80 5290MHz Low Ant1 + Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) KEYSIGHT Input: RF #Atten: 30 dB Preamp: Off Align: Auto PNNNNN Mkr1 5.287 5 GHz 1 Spectrum Ref LvI Offset 6.33 dB Ref Level 20.00 dBm 3.40 dBm Scale/Div 10 dB Stop 5.3700 GHz #Sweep 1.00 s (1001 pts) Start 5.0700 GHz #Video BW 3.0 MHz #Res BW 1.0 MHz **Function Width** Function Value 5.287 5 GHz 5.150 0 GHz 5.076 9 GHz 3.40 dBm -39.02 dBm -37.40 dBm Oct 12, 2024 11:25:20 PM

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Page 163 of 178







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# 7.10 DYNAMIC FREQUENCY SELECTION (DFS) 7.10.1 DFS OVERVIEW

A U-NII network will employ a DFS function to detect signals from radar systems and to avoid co-channel operation with these systems. This applies to the 5250-5350 MHz and/or 5470-5725 MHz bands.

Within the context of the operation of the DFS function, a U-NII device will operate in either Master Mode or Client Mode. U-NII devices operating in Client Mode can only operate in a network controlled by a U-NII device operating in Master Mode.

Tables 1 and 2 shown below summarize the information contained in sections 5.1.1 and 5.1.2

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

Requirement	Operational Mode			
	Master	Client Without Radar Detection	Client With Radar Detection	
Non-Occupancy Period	Yes	Not required	Yes	
DFS Detection Threshold	Yes	Not required	Yes	
Channel Availability Check Time	Yes	Not required	Not required	
U-NII Detection Bandwidth	Yes	Not required	Yes	

Table 2: Applicability of DFS requirements during normal operation

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

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

Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency

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Page 166 of 178







Report No.: WSCT-ANAB-R&E241100056A-Wi-Fi2

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

#### **DFS Detection Thresholds**

Table 3 below provides the DFS Detection Thresholds for Master Devices as well as Client Devices incorporating *In-Service Monitoring*.

### Table 3: DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

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

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.

Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

## **Response Requirements**

Table 4 provides the response requirements for *Master* and *Client Devices* incorporating DFS.

#### Table 4: DFS Response Requirement Values

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds
	See Note 1.
Channel Closing Transmission Time	200 milliseconds + an
	aggregate of 60
	milliseconds over remaining
	10 second period.
	See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the U-
	NII 99% transmission
	power bandwidth. See Note
	3.

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

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

FAX: 0086-755-86376605

Page 167 of 178







Report No.: WSCT-ANAB-R&E241100056A-Wi-Fi2

## RADAR TEST WAVEFORMS

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

#### **Short Pulse Radar Test Waveforms**

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

Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.

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

For example if in Short Pulse Radar Type 1 Test B a PRI of 3066 µsec is selected, the number of pulses would be

 $\left\{ \left( \frac{1}{360} \right) \cdot \left( \frac{19 \cdot 10^6}{3066} \right) \right\}$ 

= Round up  $\{17.2\} = 18$ .

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Page 168 of 178

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Report No.: WSCT-ANAB-R&E241100056A-Wi-Fi2

Pulse Renetition Intervals Values

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Pulse Repetition Frequency	Pulse Repetition Frequency (Pulses Per Second)	Pulse Repetition Interval
Number		(Microseconds)
1	1930.5	518
2	1858.7	538
3	1792.1	558
4	1730.1	578
5	1672.2	598
6	1618.1	618
7	1567.4	638
8	1519.8	658
9	1474.9	678
10	1432.7	698
11	1392.8	718
12	1355	738
13	1319.3	758
14	1285.3	778
15	1253.1	798
16	1222.5	818
17	1193.3	838
18	1165.6	858
19	1139	878
20	1113.6	898
21	1089.3	918
22	1066.1	938
23	326.2	3066

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

Radar Type	Number of Trials	Number of Successful Detections	Minimum Percentage of Successful		
			Detection		
1	35	29	82.9%		
2	30	18	60%		
3	30	27	90%		
4	50	44	88%		
Aggregate $(82.9\% + 60\% + 90\% + 88\%)/4 = 80.2\%$					

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Page 169 of 178







Report No.: WSCT-ANAB-R&E241100056A-Wi-Fi2

#### Long Pulse Radar Test Waveform

Table 6 – Long Pulse Radar Test Waveform

Table 0 - Long I use Radar Test Waveform							
Radar	Pulse	Chirp	PRI	Number	Number	Minimum	Minimum
Type	Width	Width	(µsec)	of Pulses	of Bursts	Percentage of	Number of
	(µsec)	(MHz)		per <i>Burst</i>		Successful	Trials
						Detection	
5	50-100	5-20	1000-	1-3	8-20	80%	30
			2000				

The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the Long Pulse Radar Type waveforms. If more than 30 waveforms are used for the Long Pulse Radar Type waveforms, then each additional waveform must also be unique and not repeated from the previous waveforms.

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Each waveform is defined as follows:

- 1) The transmission period for the Long Pulse Radar test signal is 12 seconds.
- 2) There are a total of 8 to 20 *Bursts* in the 12 second period, with the number of *Bursts* being randomly chosen. This number is *Burst Count*.
- 3) Each *Burst* consists of 1 to 3 pulses, with the number of pulses being randomly chosen. Each *Burst* within the 12 second sequence may have a different number of pulses.
- 4) The pulse width is between 50 and 100 microseconds, with the pulse width being randomly chosen. Each pulse within a *Burst* will have the same pulse width. Pulses in different *Bursts* may have different pulse widths.
- 5) Each pulse has a linear frequency modulated chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a *transmission period* will have the same chirp width. The chirp is centered on the pulse. For example, with a radar frequency of 5300 MHz and a 20 MHz chirped signal, the chirp starts at 5290 MHz and ends at 5310 MHz.
- 6) If more than one pulse is present in a *Burst*, the time between the pulses will be between 1000 and 2000 microseconds, with the time being randomly chosen. If three pulses are present in a *Burst*, the random time interval between the first and second pulses is chosen independently of the random time interval between the second and third pulses.
- 7) The 12 second transmission period is divided into even intervals. The number of intervals is equal to *Burst Count*. Each interval is of length (12,000,000 / *Burst Count*) microseconds. Each interval contains one *Burst*. The start time for the *Burst*, relative to the beginning of the interval, is between 1 and [(12,000,000 / *Burst Count*) (Total *Burst* Length) + (One Random PRI Interval)] microseconds, with the start time being randomly chosen. The step interval for the start time is 1 microsecond. The start time for each *Burst* is chosen randomly.

A representative example of a Long Pulse Radar Type waveform:

- 1) The total test waveform length is 12 seconds.
- 2) Eight (8) *Bursts* are randomly generated for the *Burst Count*.

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Page 170 of 178

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- 3) Burst 1 has 2 randomly generated pulses.
- 4) The pulse width (for both pulses) is randomly selected to be 75 microseconds.

- 5) The PRI is randomly selected to be at 1213 microseconds.
- 6) Bursts 2 through 8 are generated using steps 3-5.
- 7) Each Burst is contained in even intervals of 1,500,000 microseconds. The starting location for Pulse 1, Burst 1 is randomly generated (1 to 1,500,000 minus the total *Burst* 1 length + 1 random

PRI interval) at the 325,001 microsecond step. Bursts 2 through 8 randomly fall in successive 1,500,000 microsecond intervals (i.e. Burst 2 falls in the 1,500,001 – 3,000,000 microsecond range).

Figure 1 provides a graphical representation of the Long Pulse Radar Test Waveform.

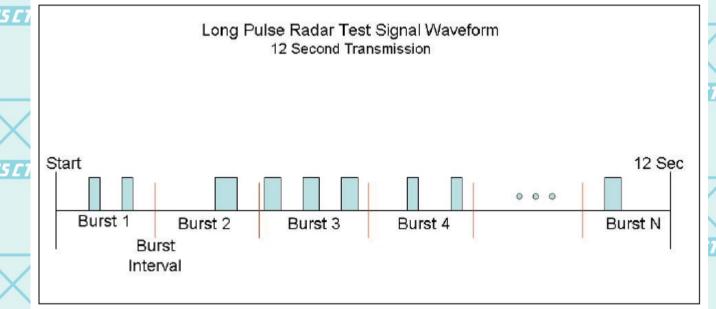
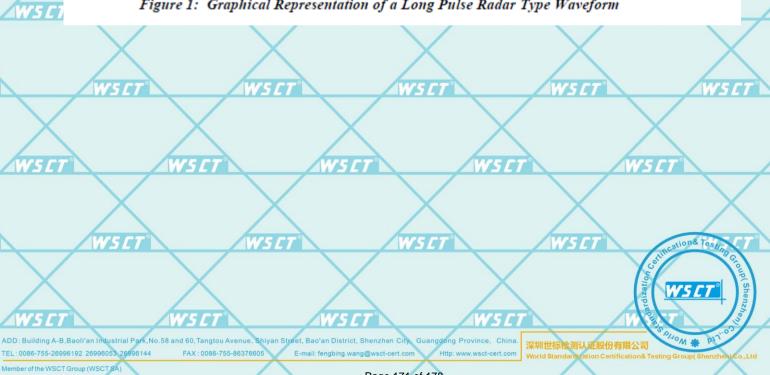


Figure 1: Graphical Representation of a Long Pulse Radar Type Waveform



Page 171 of 178





Report No.: WSCT-ANAB-R&E241100056A-Wi-Fi2

### **Frequency Hopping Radar Test Waveform**

Table 7 – Frequency Hopping Radar Test Waveform

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		1		quency mop	Table / Treducine Just philip reader rese waveform						
Radar	Pulse	PRI	Pulses	Hopping	Hopping	Minimum	Minimum				
Type	Width	(µsec)	per	Rate	Sequence	Percentage of	Number of				
	(µsec)		Hop	(kHz)	Length	Successful	Trials				
					(msec)	Detection					
6	1	333	9	0.333	300	70%	30				

For the Frequency Hopping Radar Type, the same *Burst* parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected from the hopping sequence defined by the following algorithm: 4

The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250 – 5724 MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of a random frequency, the frequencies remaining within the group are always treated as equally likely

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Page 172 of 178

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Report No.: WSCT-ANAB-R&E241100056A-Wi-Fi2

### 7.10.2 TEST PROCEDURE

### **DFS MEASUREMENT SYSTEM**

A complete DFS Measurement System consists of two subsystems:

(1) The Radar Signal Generating Subsystem and

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(2) The Traffic Monitoring Subsystem.

The control PC is necessary for generating the Radar waveforms in Table 10, 11 and 12. The traffic monitoring subsystem is specified to the type of unit under test (UUT).

Radar Signal Generating Control PC Subsystem Spectrum Oscilloscope Analyzer C/S nuator C/S Traffic Monitoring Support Unit Master / Client with DFS function

The test transmission will always be from the Master Device to the Client Device. While the Client device is set up to associate with the Master device and play the MPEG file (6 y Magic Hours) from Master device, the designated MPEG test file and instructions are located at: http://ntiacsd.ntia.doc.gov/dfs/.

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Page 173 of 178







Report No.: WSCT-ANAB-R&E241100056A-Wi-Fi2

# CALIBRATION OF DFS DETECTION THRESHOLD LEVEL

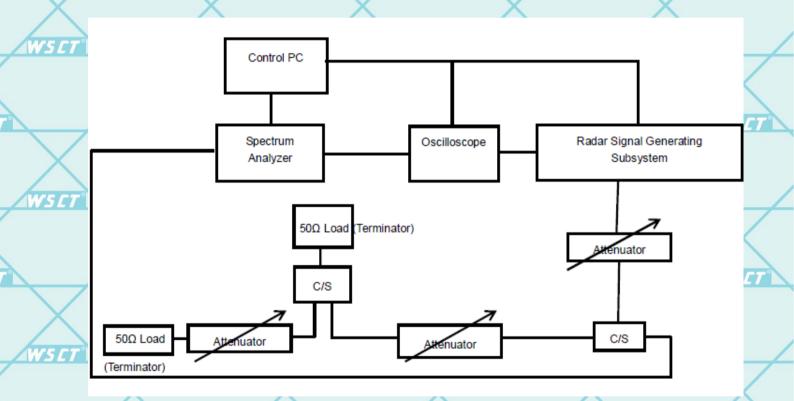
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The measured channel is 5260MHz. The radar signal was the same as transmitted channels, and injected into the antenna port of Client Device with Radar Detection, measured the channel closing transmission time and channel move time.

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# **SLAVE WITHOUT RADAR DETECTION MODE**

The antenna gain is -4dBi and required detection threshold is -65dBm (= -62 +1 - 4)dBm. The calibrated conducted detection threshold level is set to -65dBm.



**DEVIATION FROM TEST STANDARD** 

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No deviation.

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#### 7.10.3 TEST RESULT

W5 Test Items W5	Remark	Result
Channel Closing Transmission Time	Applicable	PASS
Channel Move Time	Applicable	PASS

Note: This phone can only be used as a slave without radar detection function.

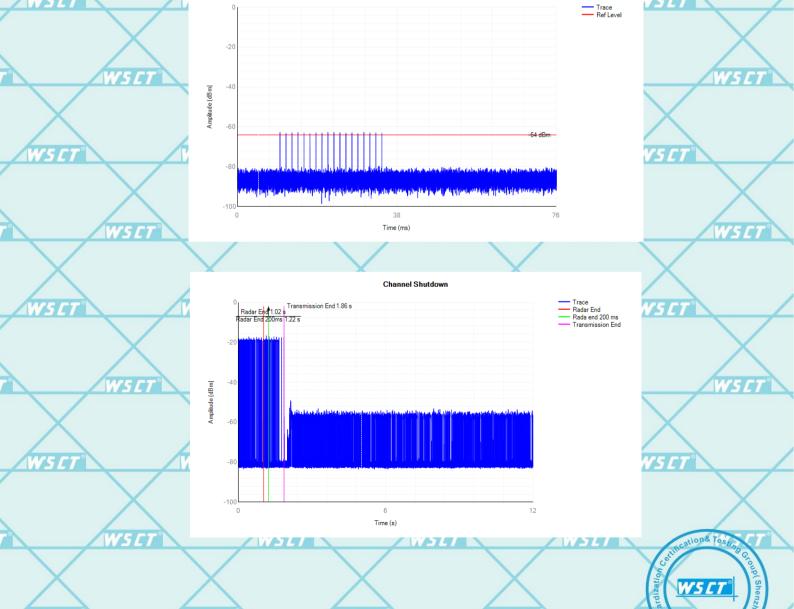
**Measurement Record (the wost case)** 

The worst mode is MIMO 802.11ax

Measurement data below:

		5290MHz			
	W5 Test Items W5 C	Value (s)	Limit (s)	Test Result	'5 C T
	Channel Closing Transmission Time	0.0852	0.26	Pass	
/	Channel Move Time	0.8309	10	Pass	

Radar Calibration



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Page 175 of 178

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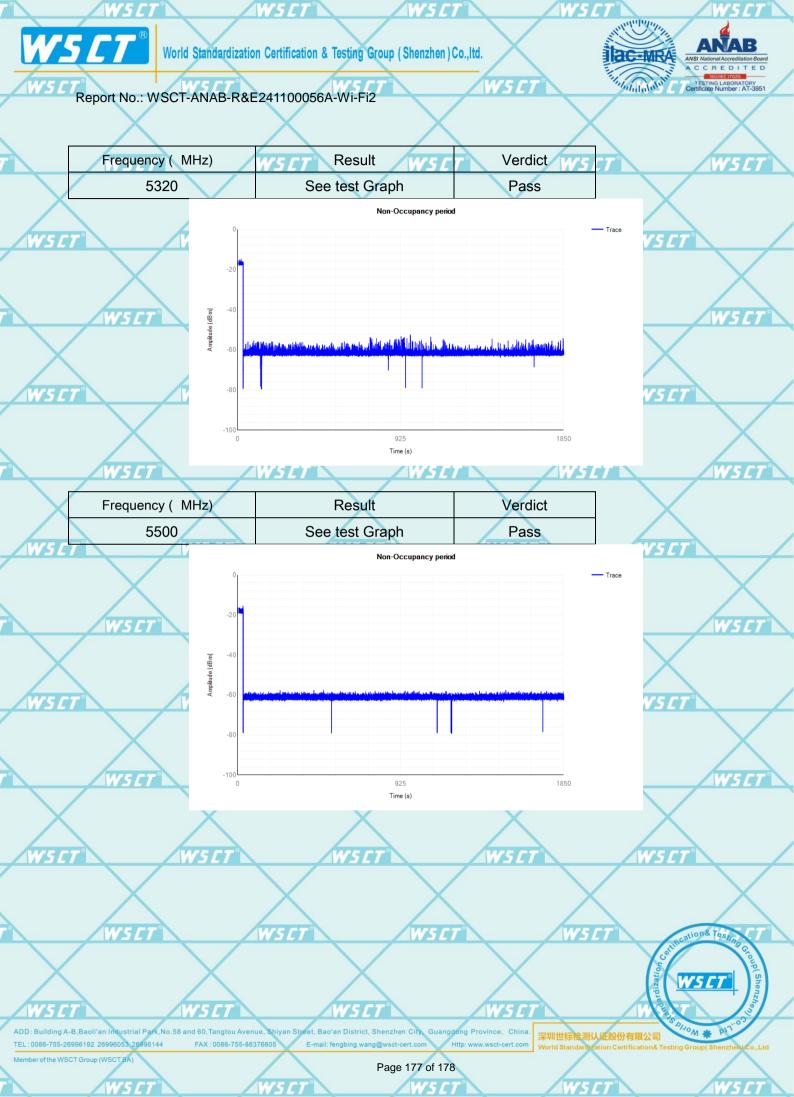
Report No.: WSCT-ANAB-R&E241100056A-Wi-Fi2

#### Measurement data below:

	WELT	5610MHz = F	TO	CT W	EE
	Test Items	Value (s)	Limit (s)	Test Result	J L
/	Channel Closing Transmission Time	0.016	0.26	Pass	
١	Channel Move Time	0.7685	10	Pass	



Page 176 of 178







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8	Test Setup Photo	ographs ws	W5	CT WS	<i>ET</i> *				
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			7100						
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