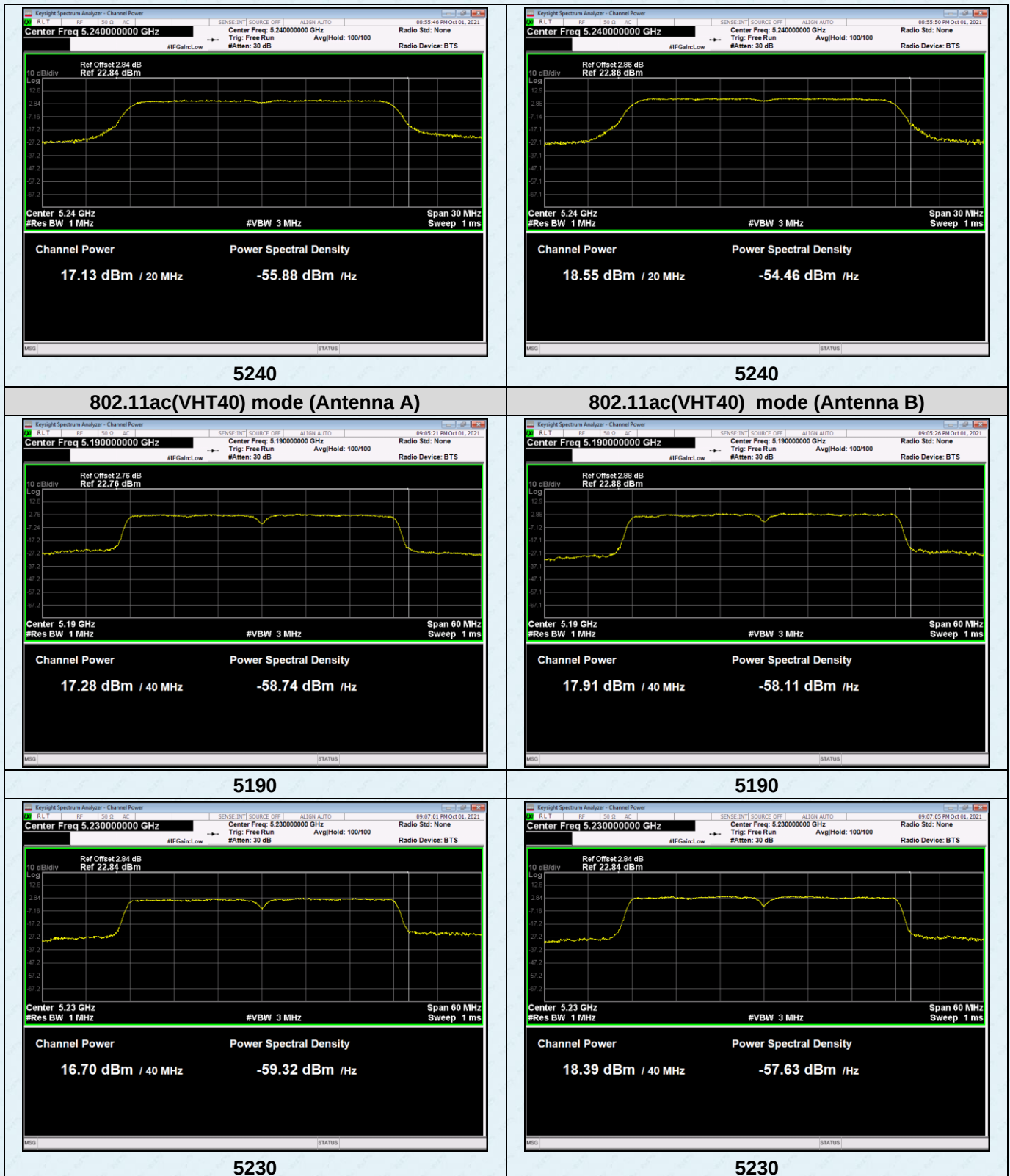
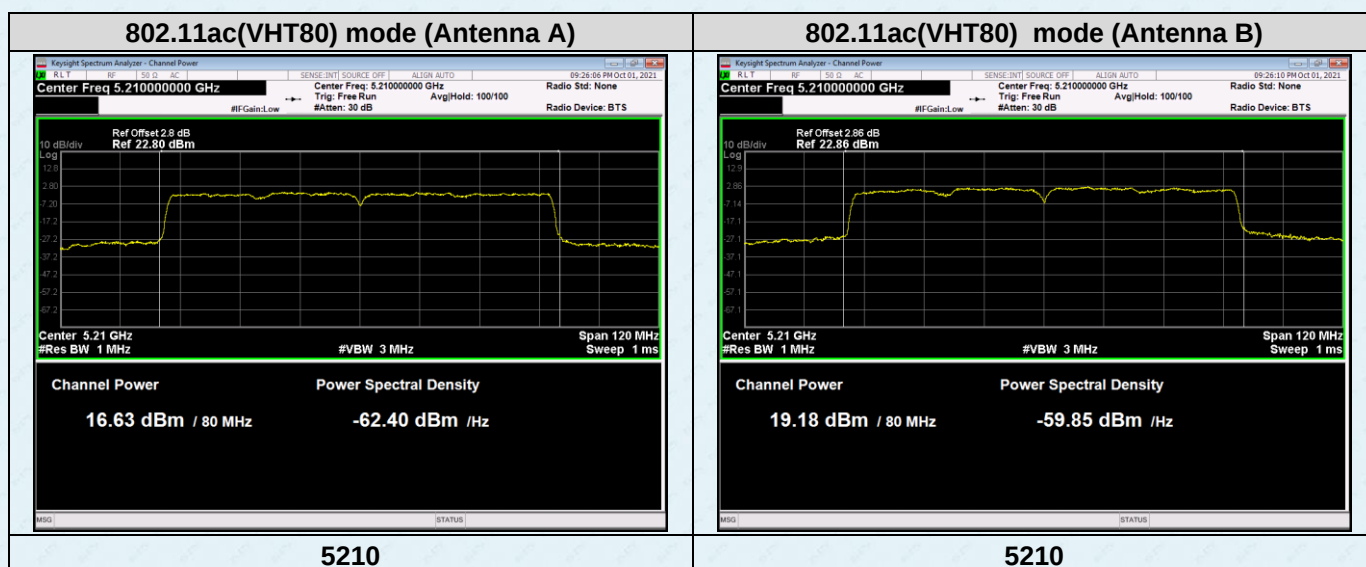
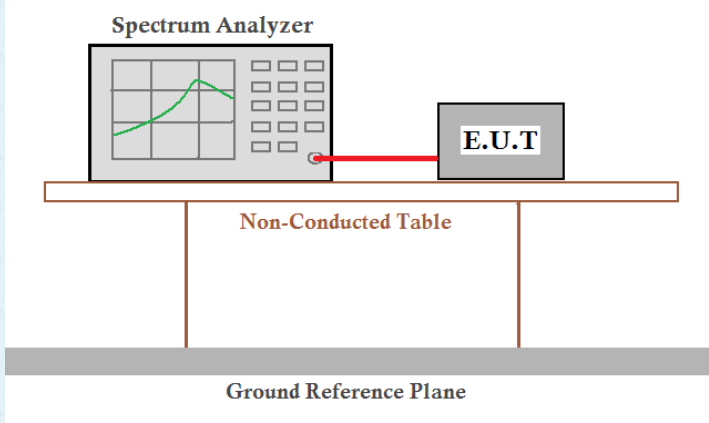






Note: Note: We tested 802.11a/n /ac/ax mode the all data rate and recorded the worst case data.

7.5 Power Spectral Density

Test Requirement:	FCC Part15 E Section 15.407	
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Limit:	Frequency band (MHz)	Limit
	5150-5250	≤17dBm in 1MHz for master device
		≤11dBm in 1MHz for client device
	5250-5350	≤11dBm in 1MHz for client device
	5470-5725	≤11dBm in 1MHz for client device
	Remark: The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test.	
Test setup:		
Test procedure:	1) Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power...". 2) Use the peak search function on the instrument to find the peak of the spectrum. 3) Make the following adjustments to the peak value of the spectrum, if applicable: a) If Method SA-2 or SA-2 Alternative was used, add $10 \log(1/x)$, where x is the duty cycle, to the peak of the spectrum. b) If Method SA-3 Alternative was used and the linear mode was used in step E)2)g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging. 4) The result is the PSD.	
Test Instruments:	Refer to section 6 for details	
Test mode:	Refer to section 5.2 for details	
Test results:	Pass	

Measurement Data

Modulation	Frequency (MHz)	Duty cycle(%)		Duty Factor	
		Antenna-A	Antenna-B	Antenna-A	Antenna-B
802.11a	5180	95.63	95.63	0.19	0.19
	5240	95.62	95.62	0.19	0.19
802.11n(HT20)	5180	92.92	92.94	0.32	0.32
	5240	92.84	92.83	0.32	0.32
802.11n(HT40)	5190	89.19	89.21	0.5	0.5
	5230	89.20	89.25	0.5	0.5
802.11ac(VHT20)	5180	95.55	95.53	0.2	0.2
	5240	95.41	95.45	0.2	0.2
802.11ac(VHT40)	5190	90.86	90.85	0.42	0.42
	5230	90.88	90.87	0.42	0.42
802.11ac(VHT80)	5210	87.94	87.96	0.56	0.56
802.11ax(HE20)	5180	86.96	86.95	0.61	0.61
	5240	86.97	86.98	0.61	0.61
802.11ax(HE40)	5190	89.17	89.15	0.5	0.5
	5230	89.10	89.11	0.5	0.5
802.11ax(HE80)	5210	84.93	84.92	0.71	0.71

802.11a mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT A	ANT B	ANT A+B		ANT A	ANT B	ANT A+B		
36	5180	6.589	6.802	--	0.19	6.779	6.992	--	17	Pass
48	5240	5.821	7.406	--	0.19	6.011	7.596	--		
802.11n(HT20) mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT A	ANT B	ANT A+B		ANT A	ANT B	ANT A+B		
36	5180	5.849	6.300	9.091	0.32	6.169	6.62	9.411	14.99	Pass
48	5240	5.454	6.885	9.238	0.32	5.774	7.205	9.558		
802.11n(HT40) mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT A	ANT B	ANT A+B		ANT A	ANT B	ANT A+B		
38	5190	2.811	3.633	6.252	0.5	3.311	4.133	6.752	14.99	Pass

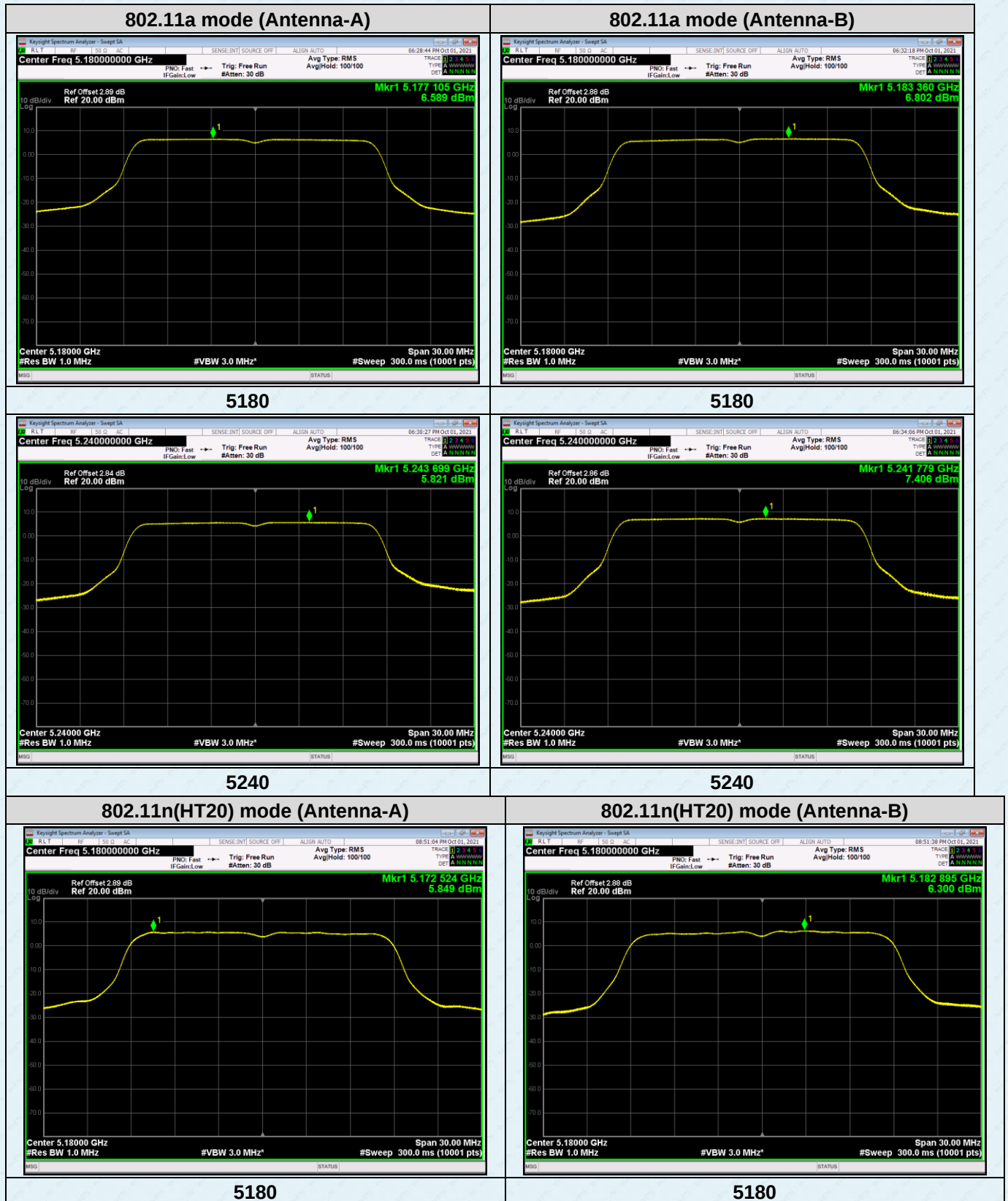
46	5230	2.398	4.191	6.397	0.5	2.898	4.691	6.897		
802.11ax(HE20) mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT A	ANT B	ANT A+B		ANT A	ANT B	ANT A+B		
36	5180	6.068	6.284	9.188	0.61	6.678	6.894	9.788	14.99	Pass
48	5240	5.043	6.601	8.902	0.61	5.653	7.211	7.512		
802.11ax(HE40) mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT A	ANT B	ANT A+B		ANT A	ANT B	ANT A+B		
38	5190	2.873	3.74	6.338	0.5	3.373	4.24	6.838	14.99	Pass
46	5230	2.454	4.093	6.361	0.5	2.954	4.593	6.861		
802.11ax(HE80) mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT A	ANT B	ANT A+B		ANT A	ANT B	ANT A+B		
42	5210	0.456	3.117	4.997	0.71	1.166	3.827	5.707	14.99	Pass
802.11ac(VHT20) mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT A	ANT B	ANT A+B		ANT A	ANT B	ANT A+B		
36	5180	6.205	6.219	9.222	0.2	6.405	6.419	9.422	14.99	Pass
48	5240	5.413	6.878	9.217	0.2	5.613	7.078	9.417		
802.11ac(VHT40) mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT A	ANT B	ANT A+B		ANT A	ANT B	ANT A+B		
38	5190	2.96	3.554	6.277	0.42	3.38	3.974	6.694	14.99	Pass
46	5230	2.463	3.984	6.3	0.42	2.883	4.402	6.72		
802.11ac(VHT80) mode										
CH No.	Frequency (MHz)	Measured PSD (dBm/MHz)			Duty Factor	Total PSD Power(dBm/MHz)			Limit (dBm/MHz)	Result
		ANT A	ANT B	ANT A+B		ANT A	ANT B	ANT A+B		
42	5210	0.13	3.087	4.866	0.56	0.69	3.647	5.426	14.99	Pass

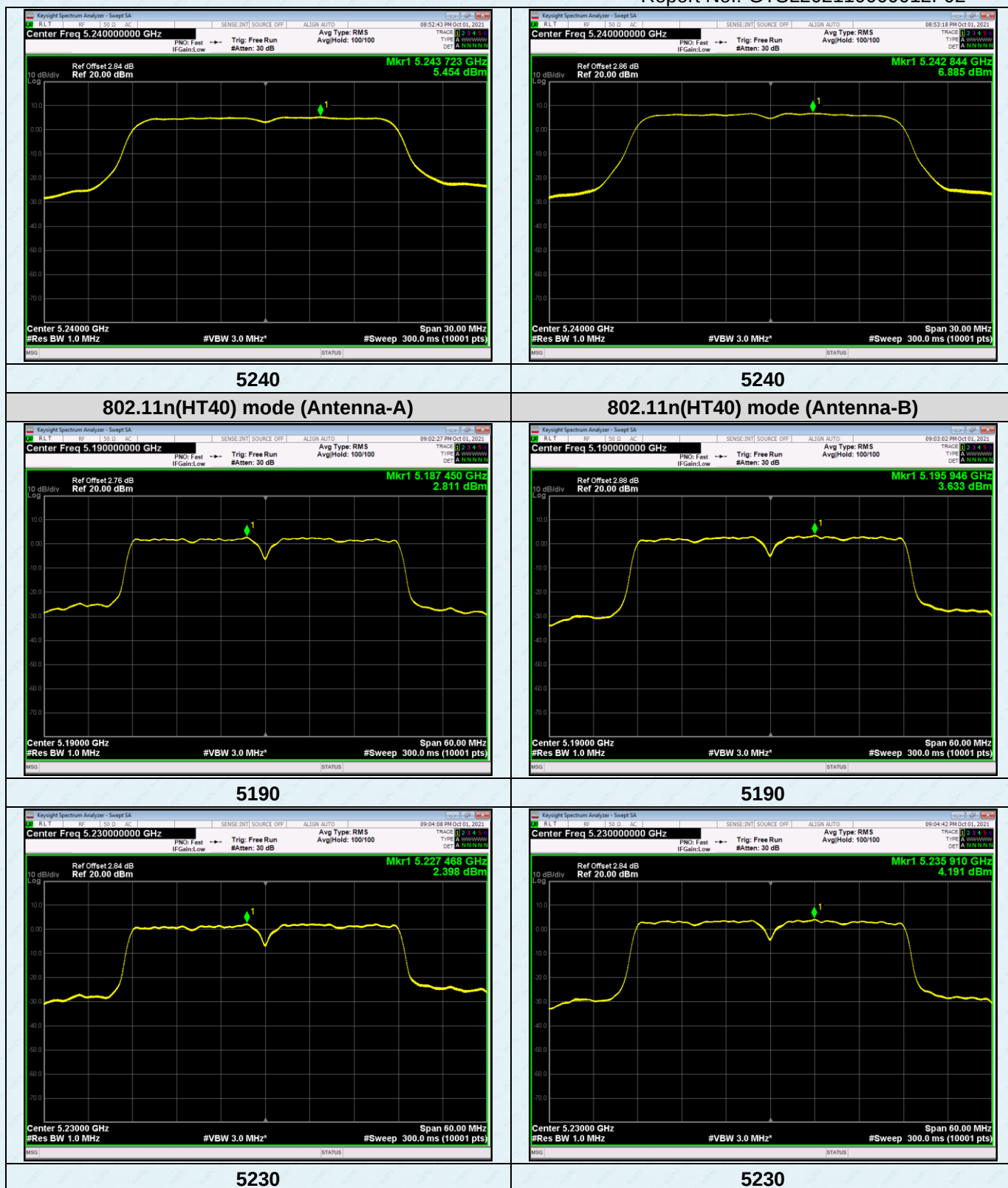
Note: Output Power = Measured Power + Duty Factor

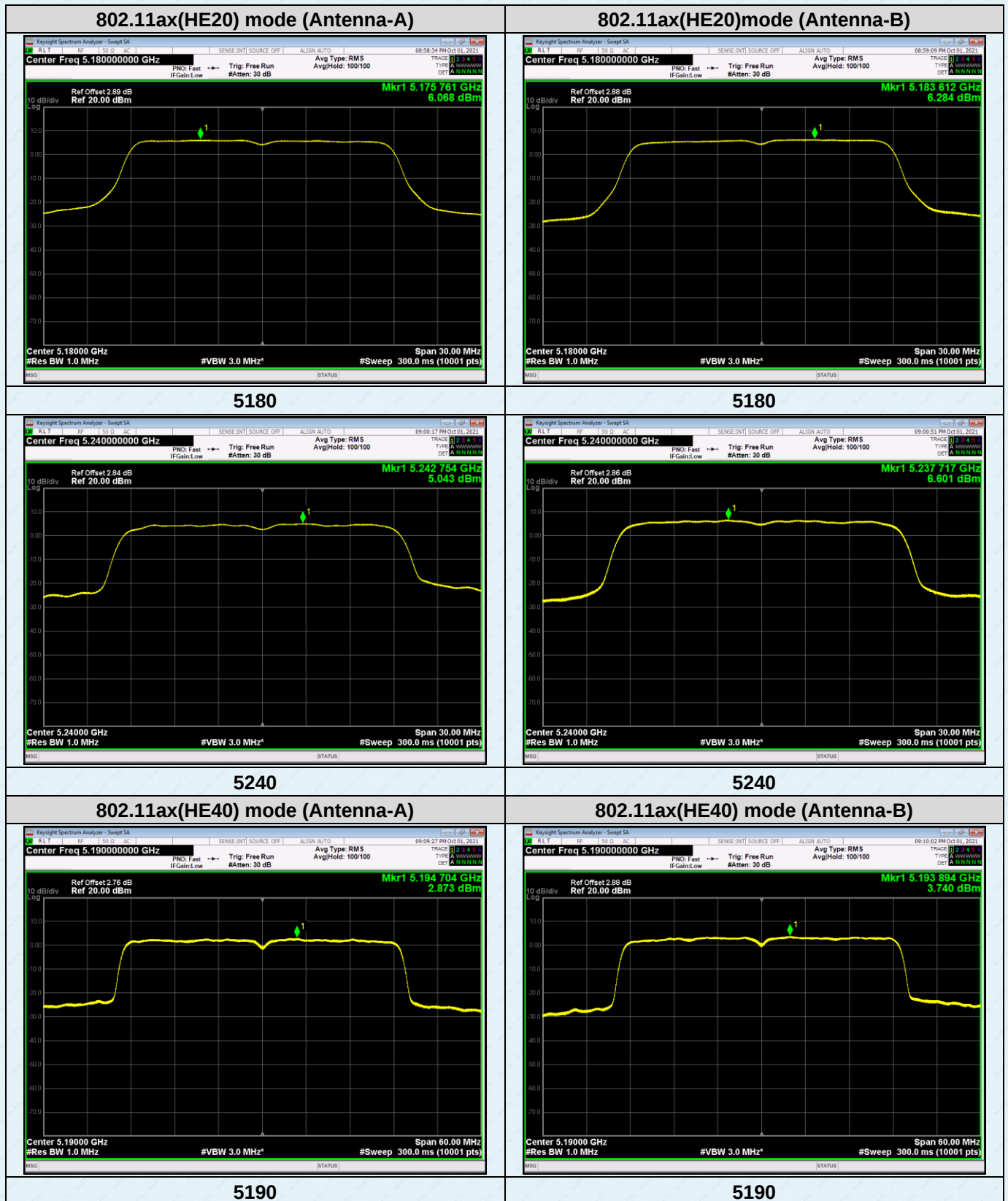
Duty Factor = 10 log (1/Duty Cycle)

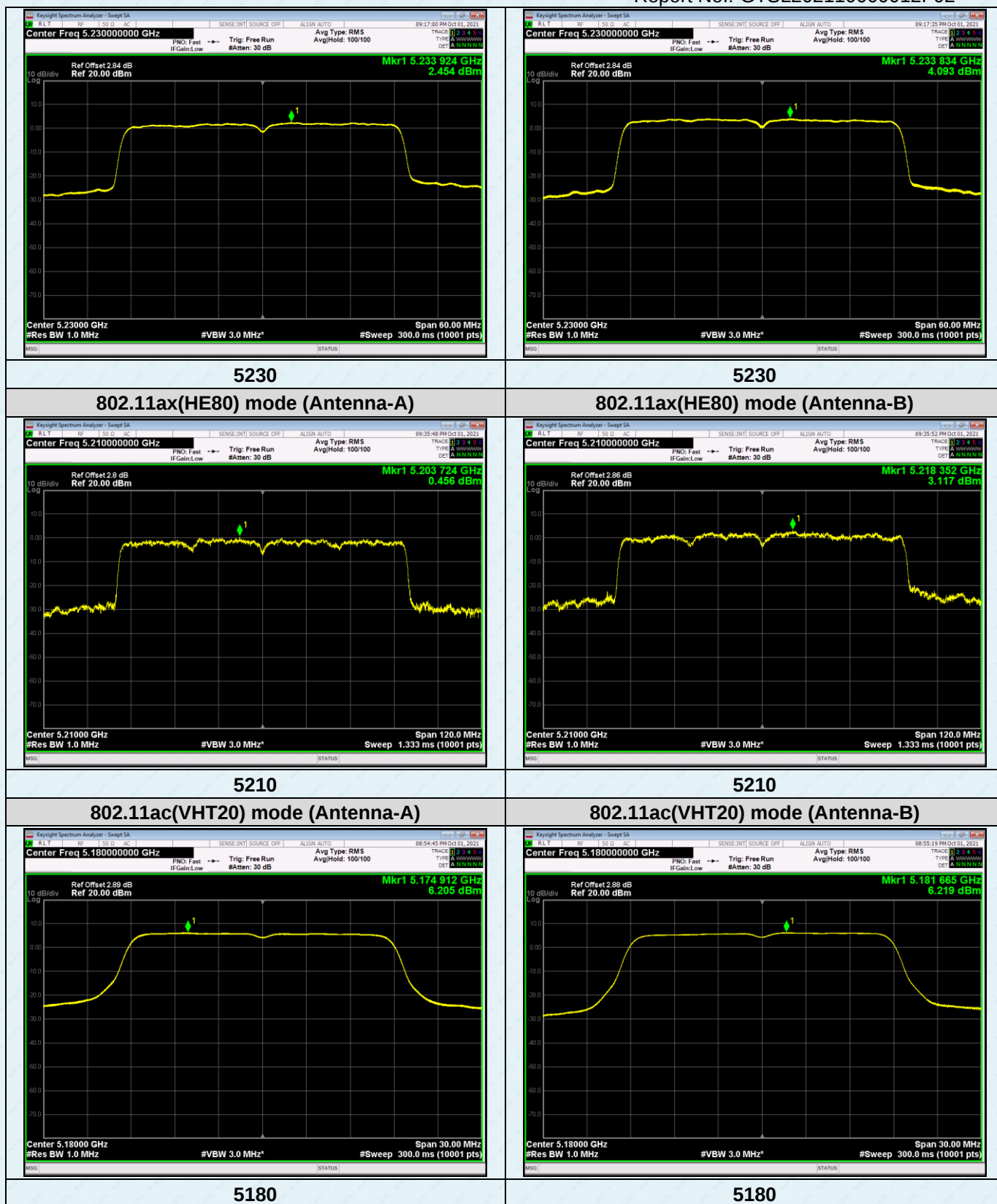
Note:For MIMO mode , PSD Limit = 17 - 2.01 = 14.99 dBm/3KHz

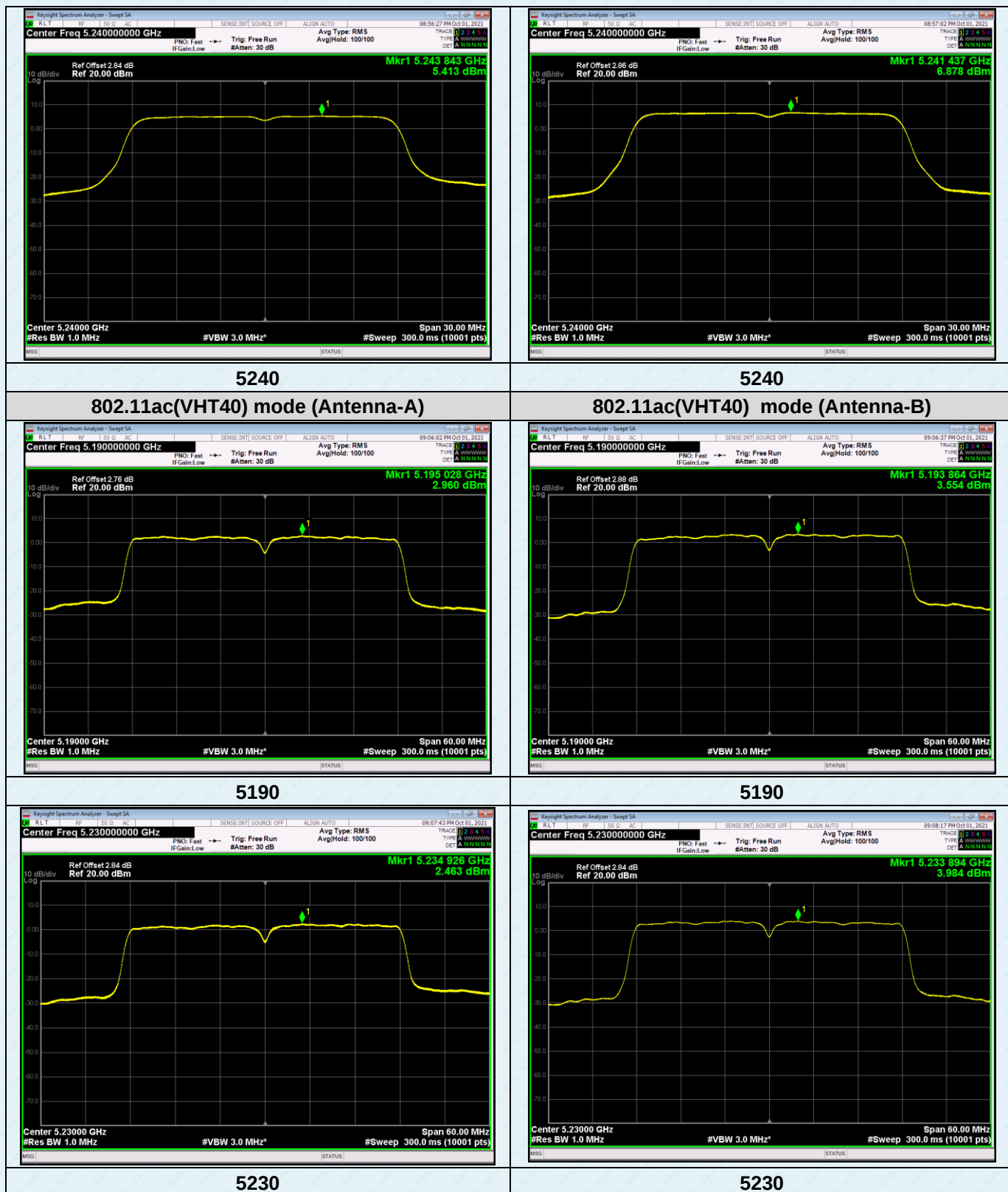
Test plots as followed:

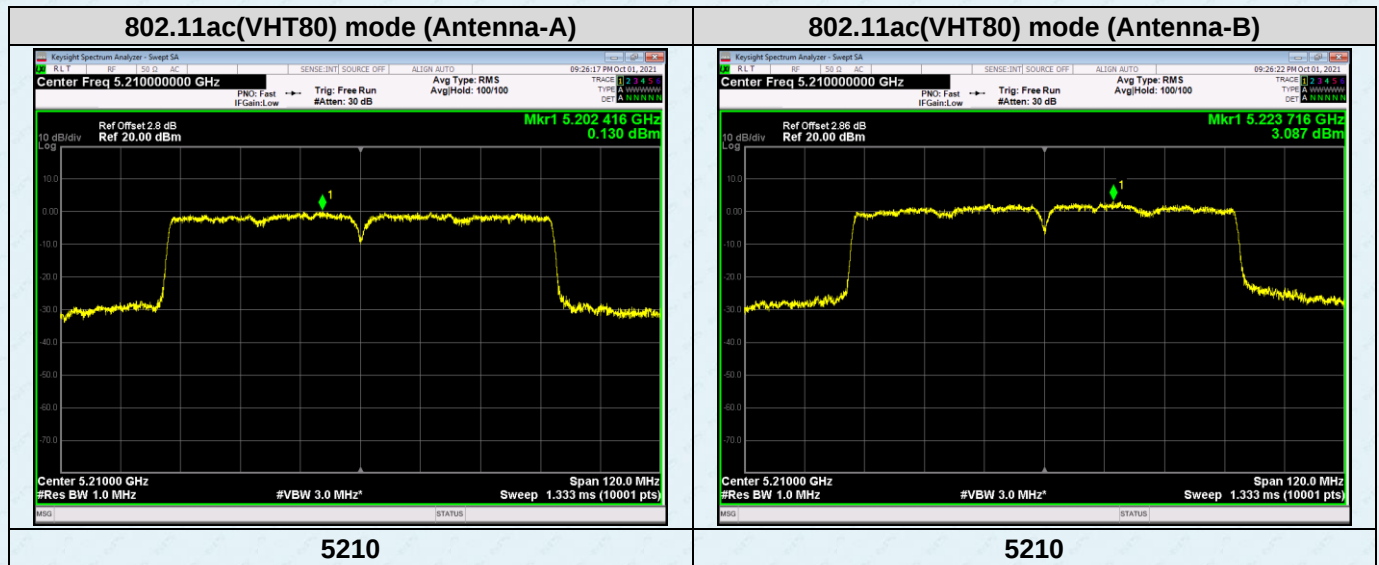








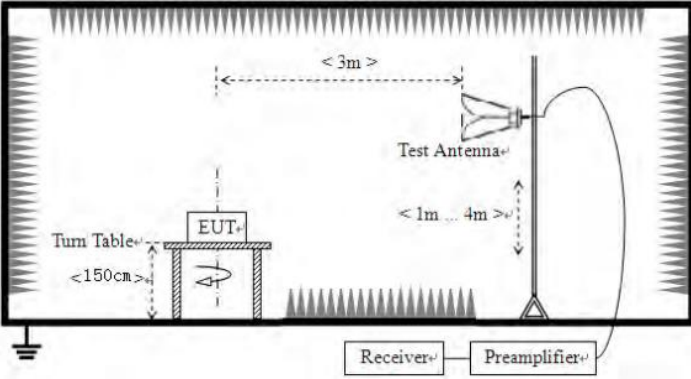




Note: Note: We tested 802.11a/n /ac/ax mode the all data rate and recorded the worst case data.

7.6 Band Edge

Test Requirement:	FCC Part15 E Section 15.407 and 5.205				
Test Method:	ANSI C63.10:2013				
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		AV	1MHz	3MHz	Average Value
Limit:	Frequency				
	Limit (dBuV/m @3m)				
	Remark				
	30MHz-88MHz				
	40.0				
	Quasi-peak Value				
	88MHz-216MHz				
	43.5				
	Quasi-peak Value				
	216MHz-960MHz				
	46.0				
	Quasi-peak Value				
	960MHz-1GHz				
54.0					
Quasi-peak Value					
Above 1GHz					
54.0					
Average Value					
68.2					
Peak Value					
Undesirable emission limits:					
(1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.					
(2) For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.					
(3) For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.					
Test Procedure:	a. The EUT was placed on the top of a rotating table 1.5 m above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.				
	b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.				
	c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.				
	d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.				
	e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.				
	f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data				

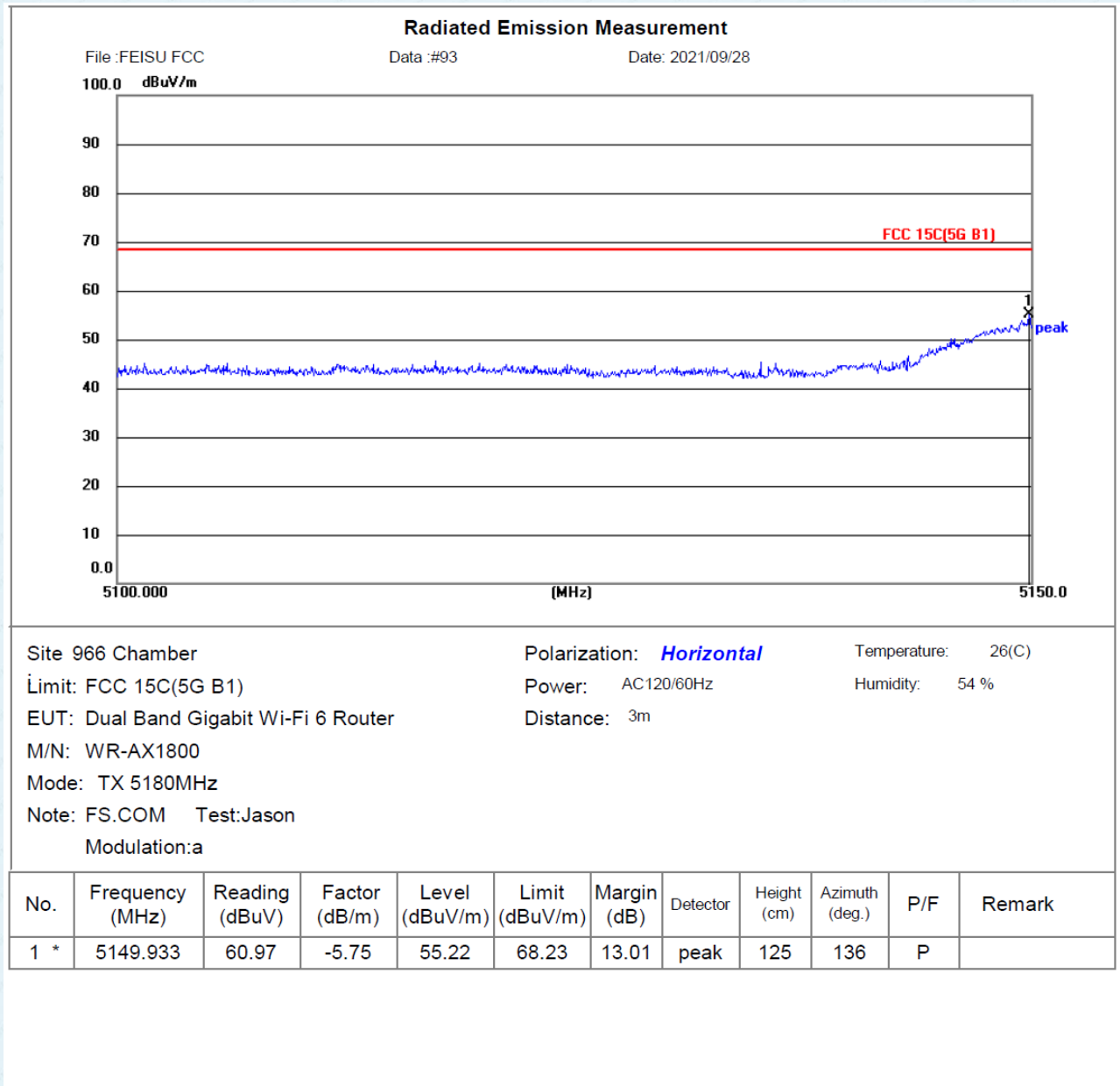
	sheet.
Test setup:	For radiated emissions above 1GHz 
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Remarks:

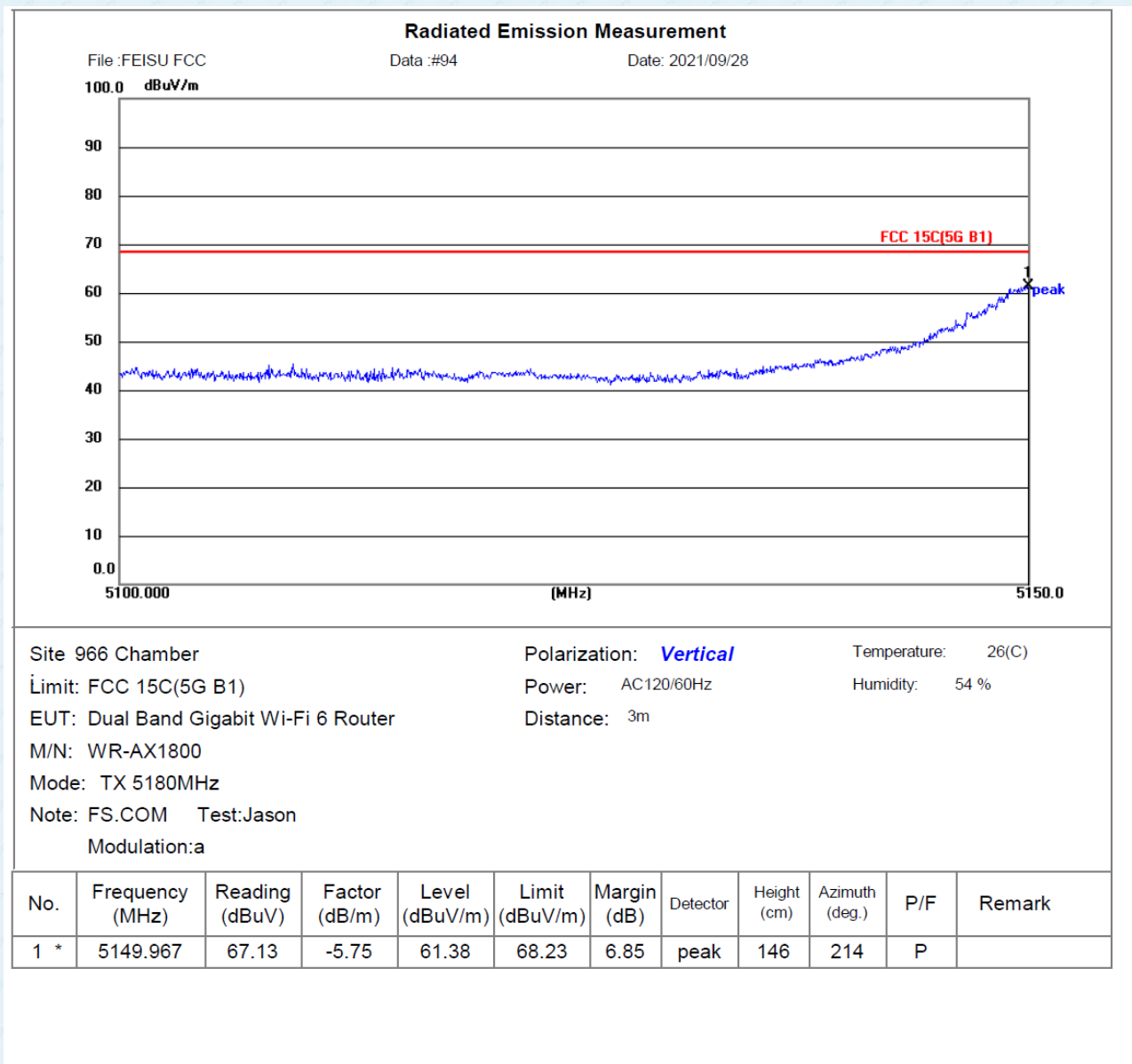
- Only the worst case Main Antenna test data.
- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- The emission levels of other frequencies are very lower than the limit and not show in test report.
- The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.
- According to KDB 789033 D02 v02r01 section G) 1) (d), for For measurements above 1000 MHz @ 3m distance, the limit of field strength is computed as follows:
 $E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2;$
For example, if $\text{EIRP} = -27\text{dBm}$
 $E[\text{dBuV/m}] = -27 + 95.2 = 68.2\text{dBuV/m}.$

Measurement Data: Radiated Band Edge Result

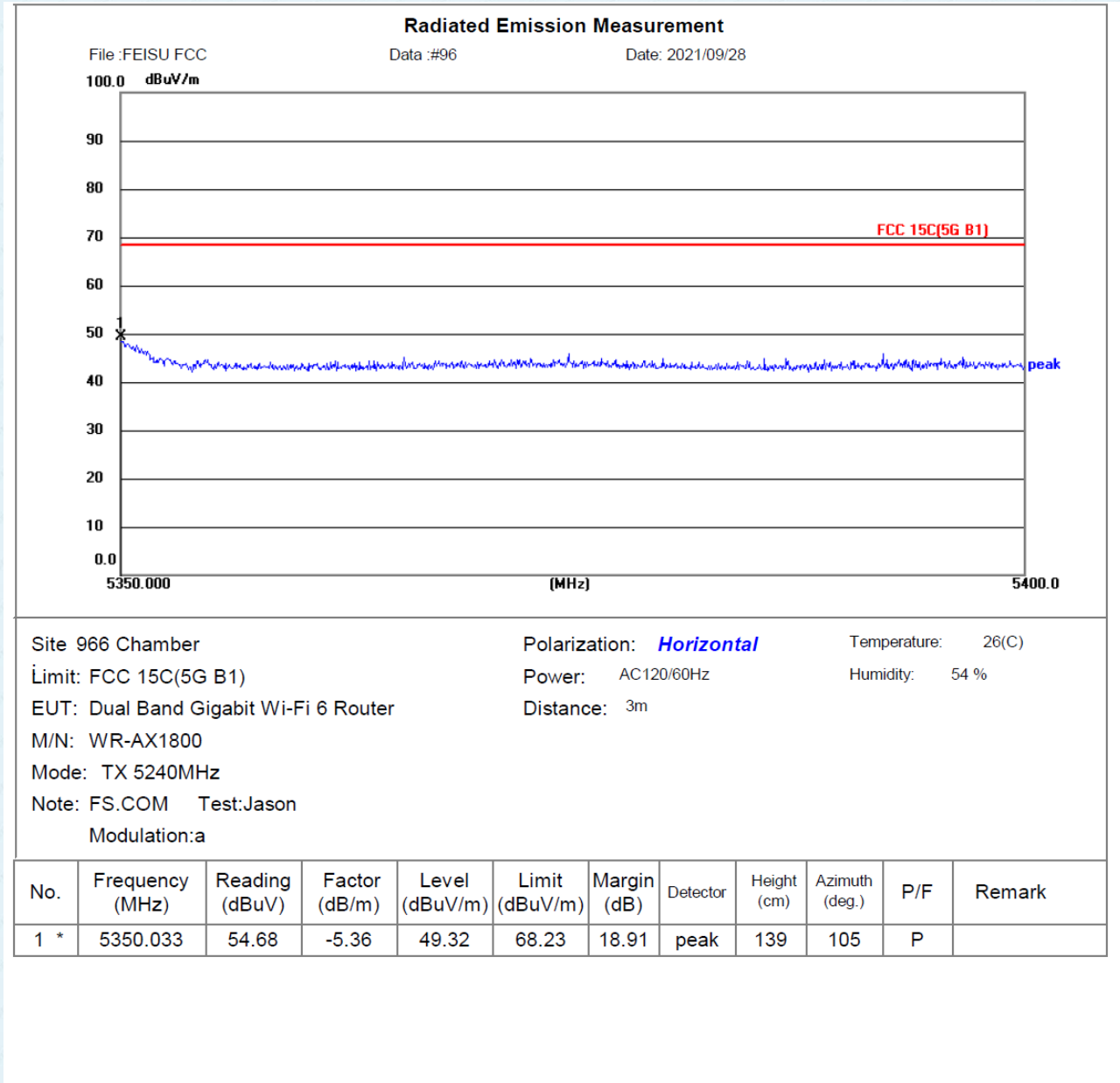
Horizontal: 802.11a (TX 5180MHz)



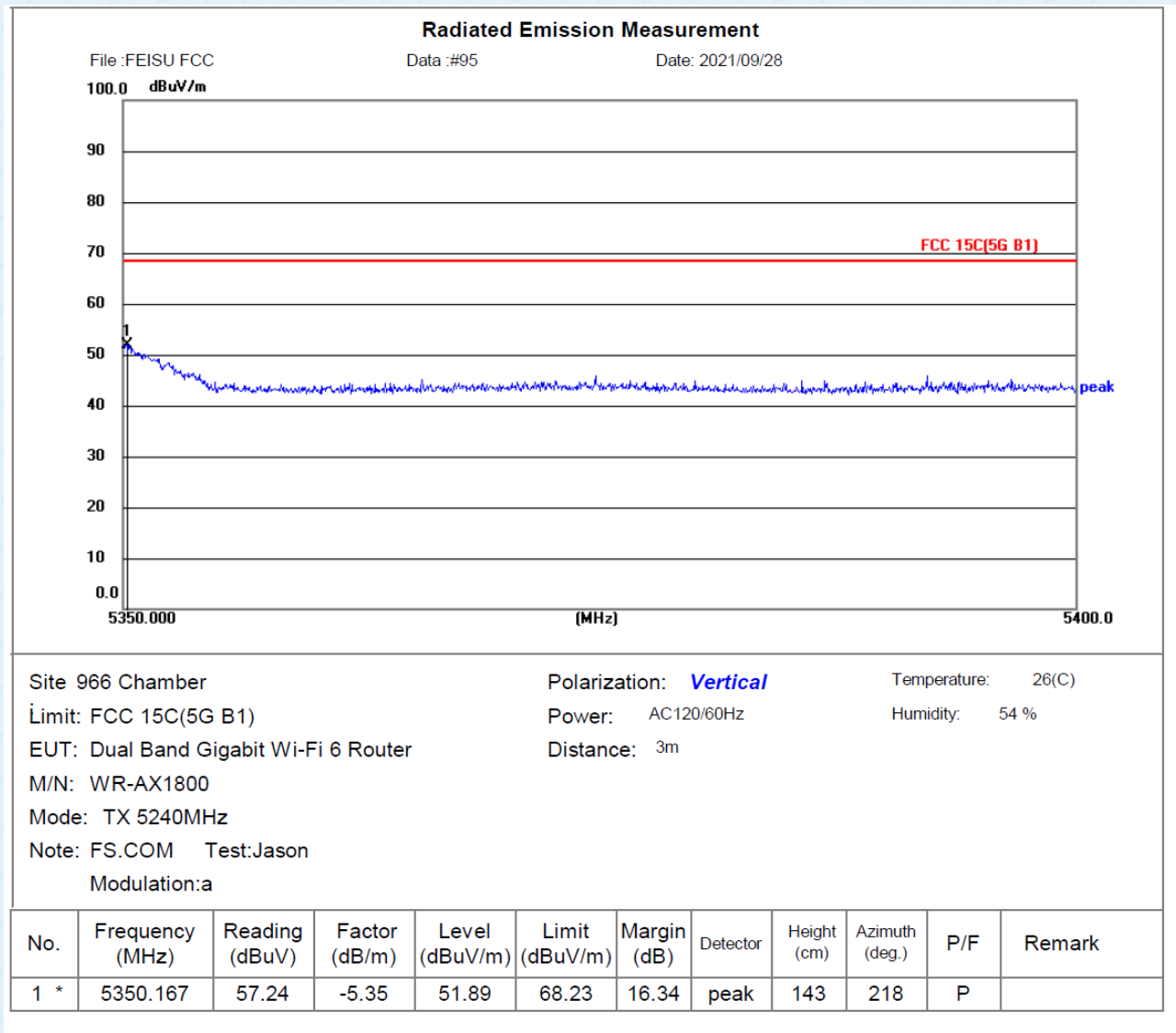
Vertical: 802.11a (TX 5180MHz)



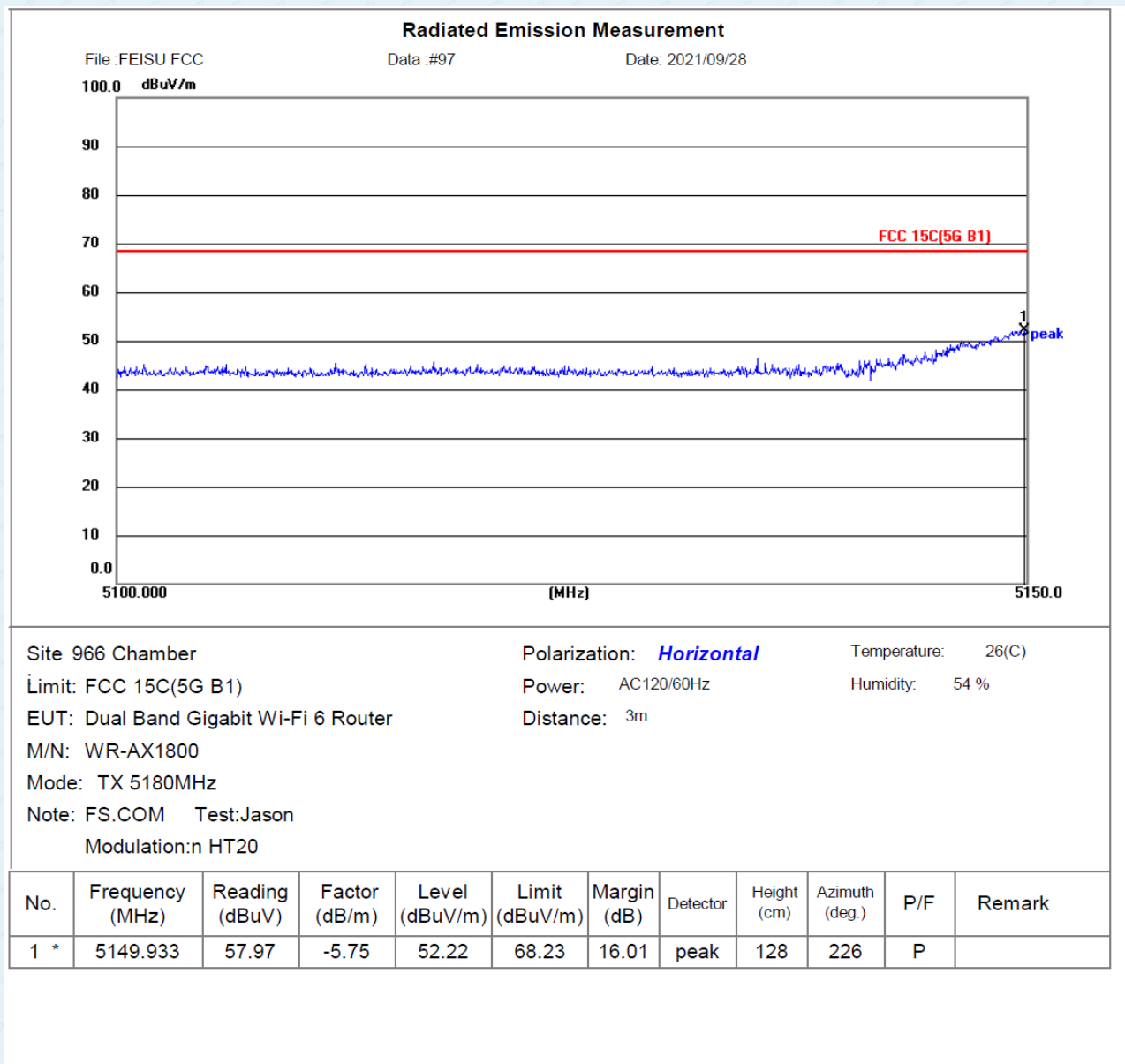
Horizontal: 802.11a (TX 5240MHz)



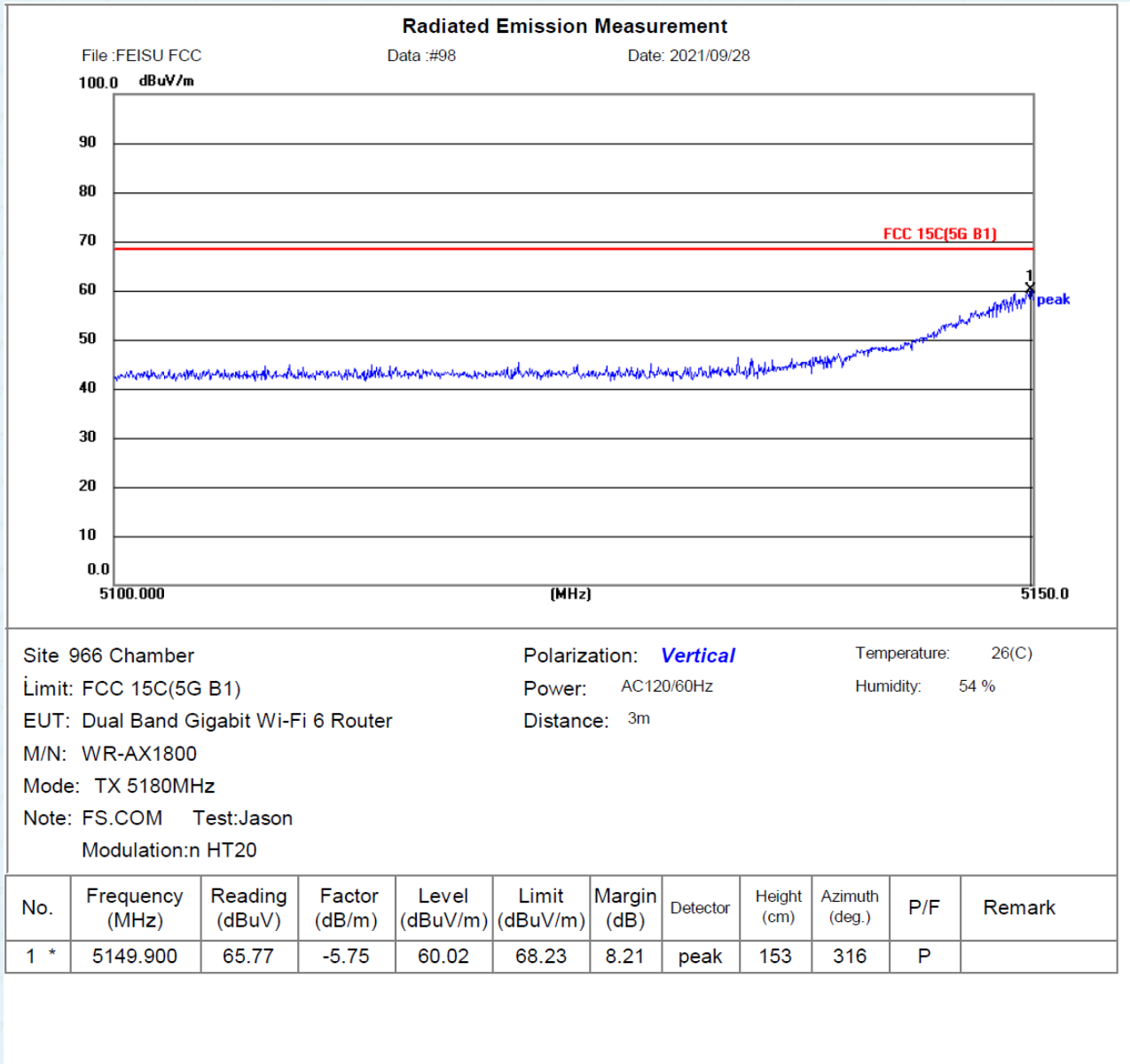
Vertical: 802.11a (TX 5240MHz)



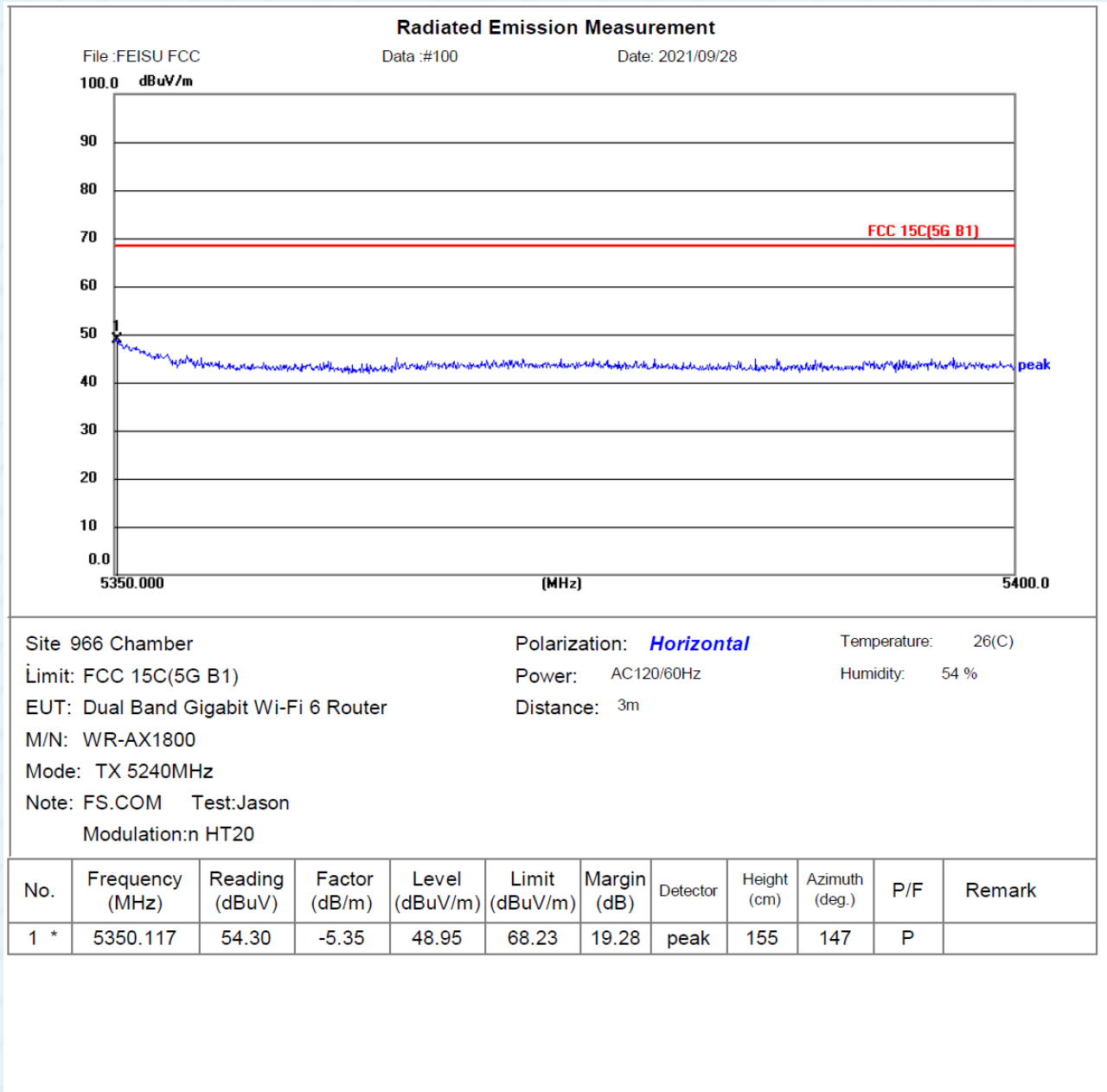
Horizontal: 802.11n HT20 (TX 5180MHz)



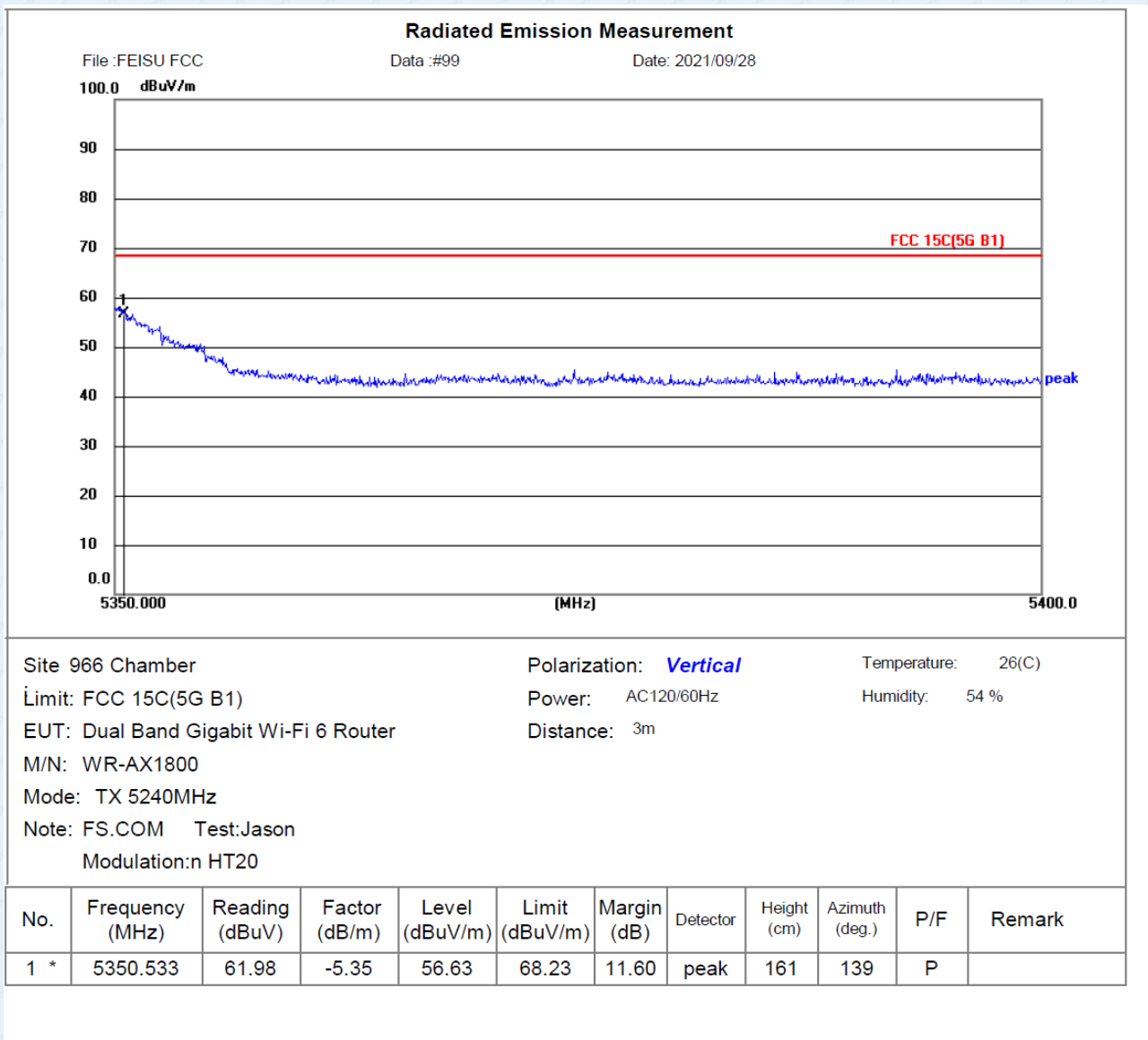
Vertical: 802.11n HT20 (TX 5180MHz)

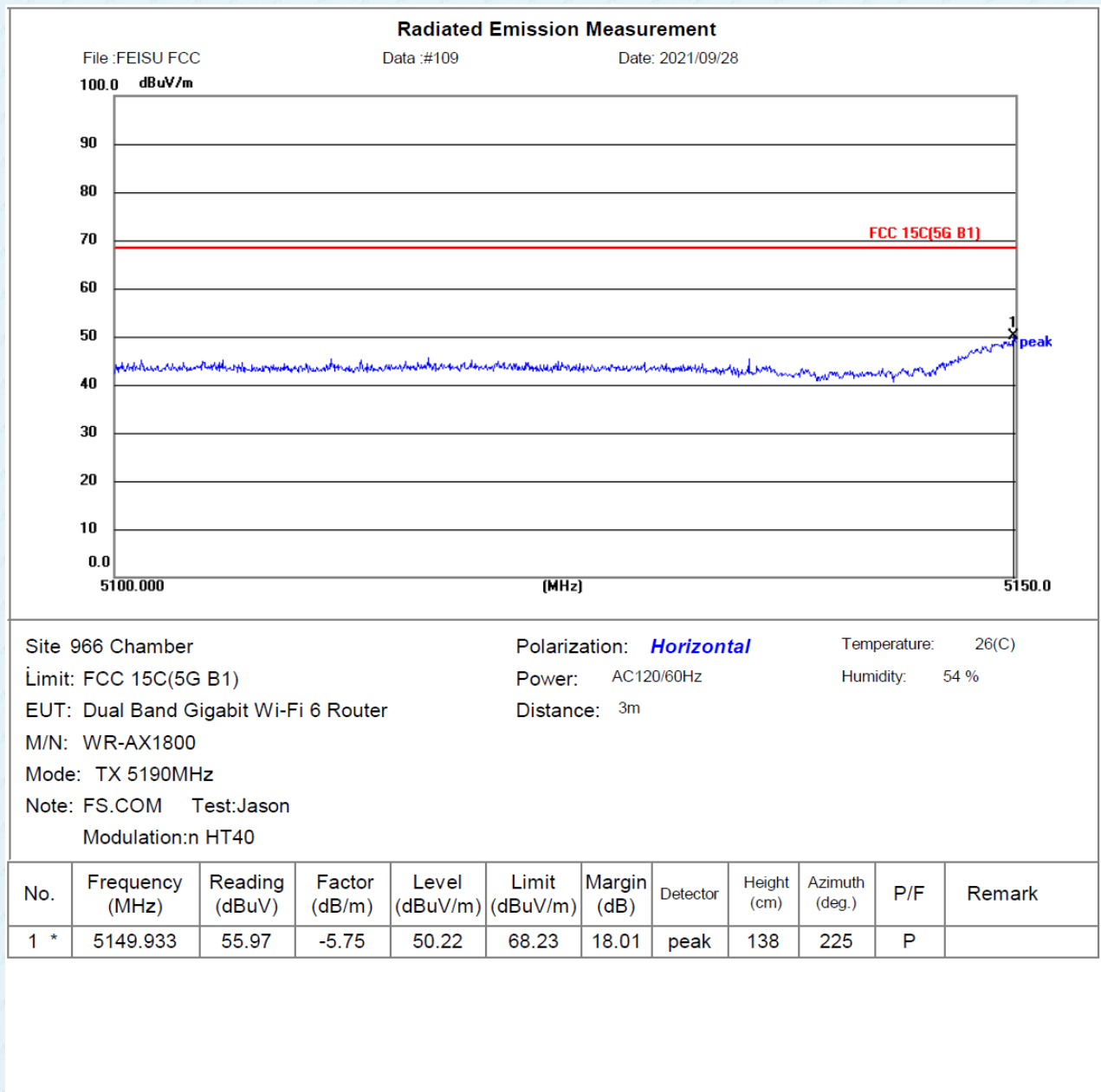


Horizontal: 802.11n HT20 (TX 5240MHz)

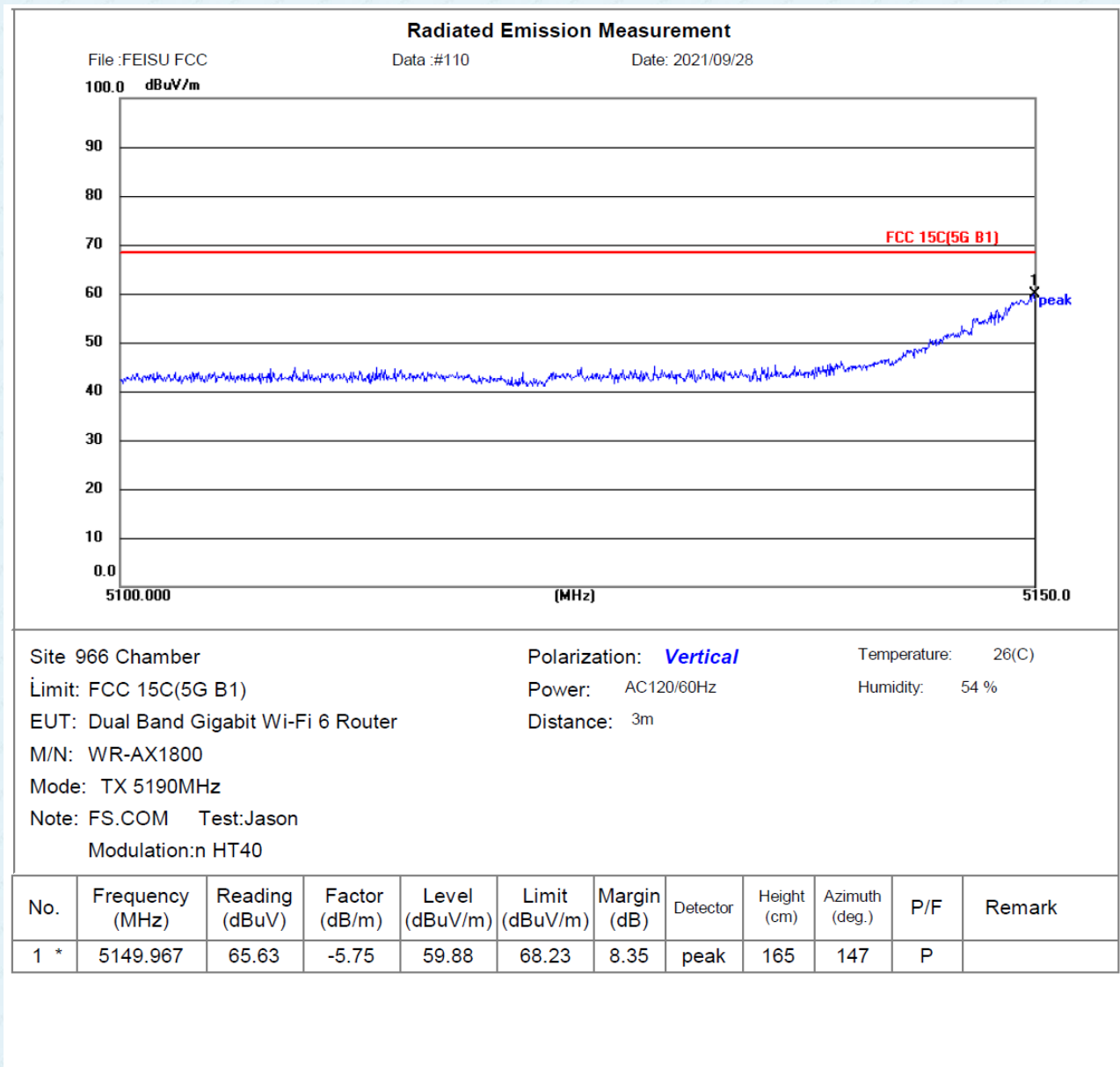


Vertical: 802.11n HT20 (TX 5240MHz)

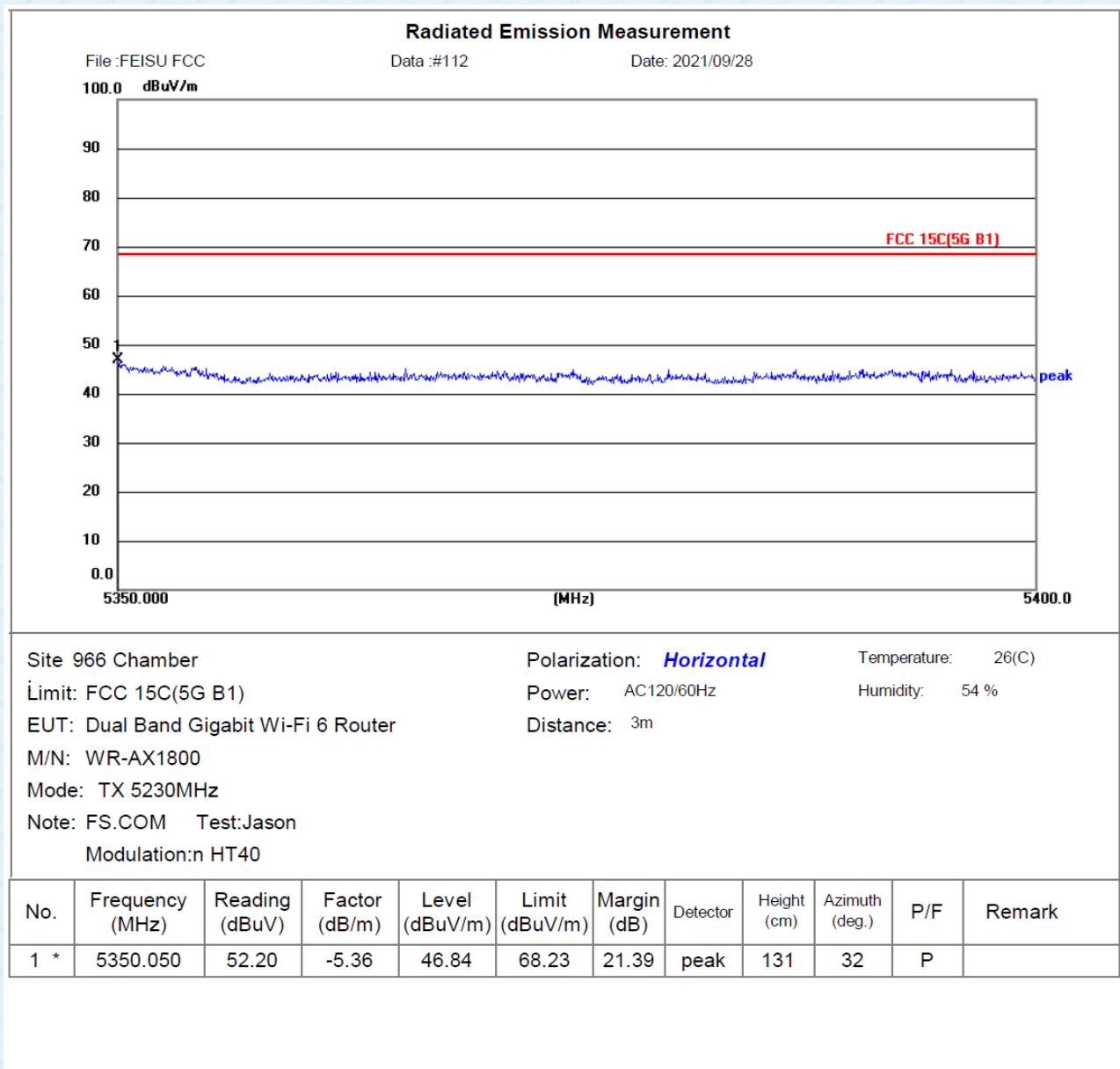


Horizontal: 802.11n HT40 (TX 5190MHz)


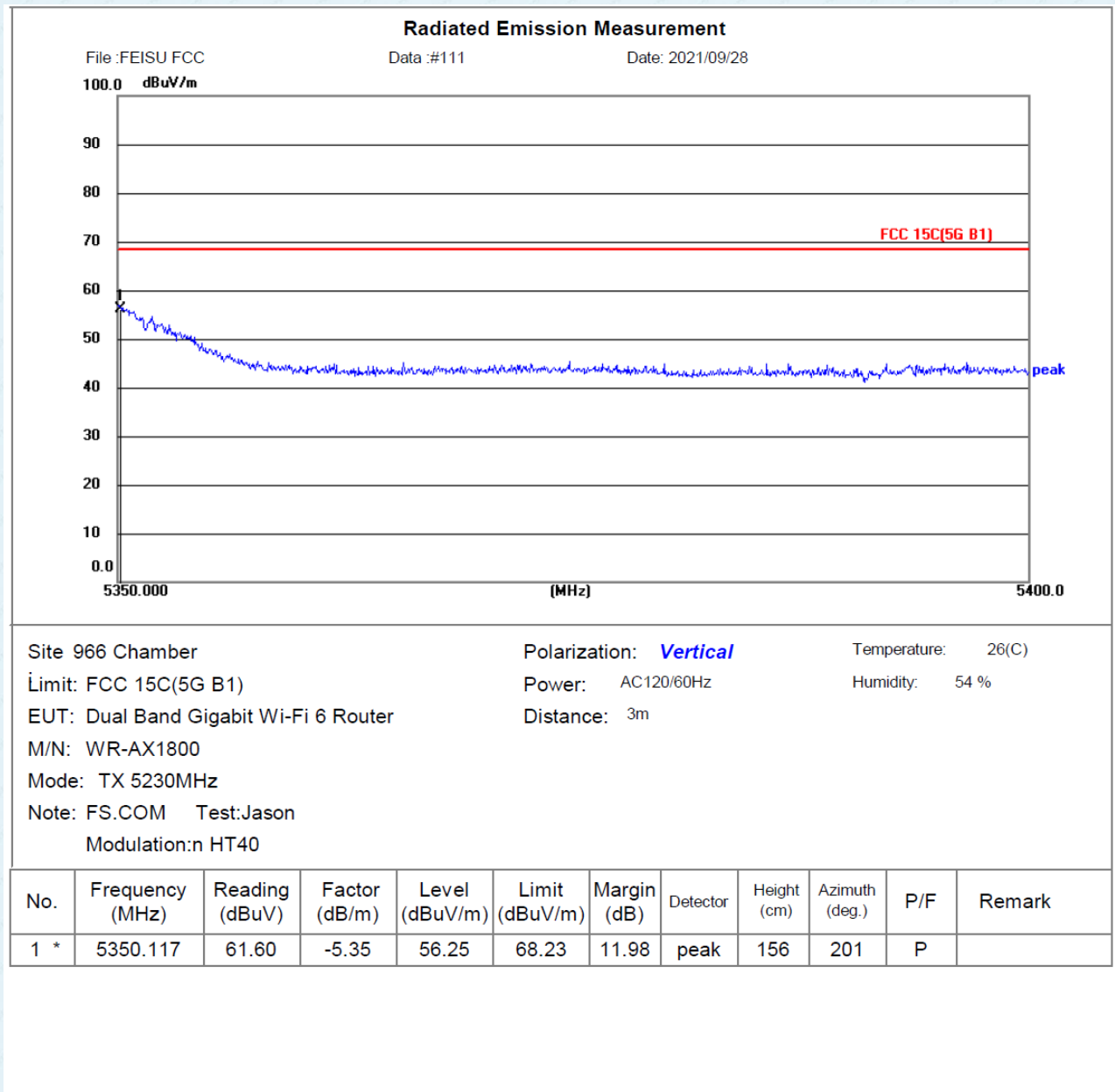
Vertical: 802.11n HT40 (TX 5190MHz)



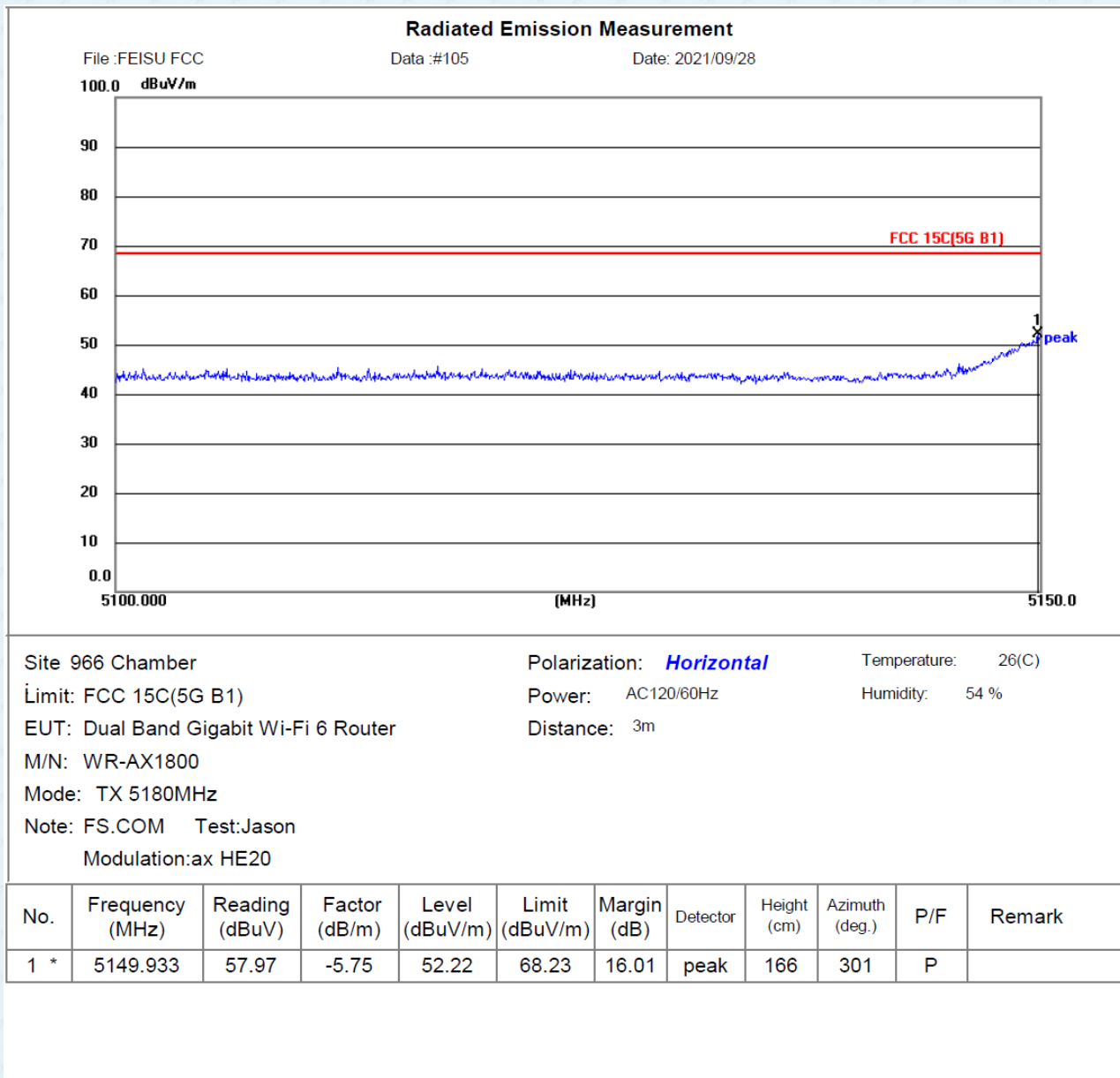
Horizontal: 802.11n HT40 (TX 5230MHz)



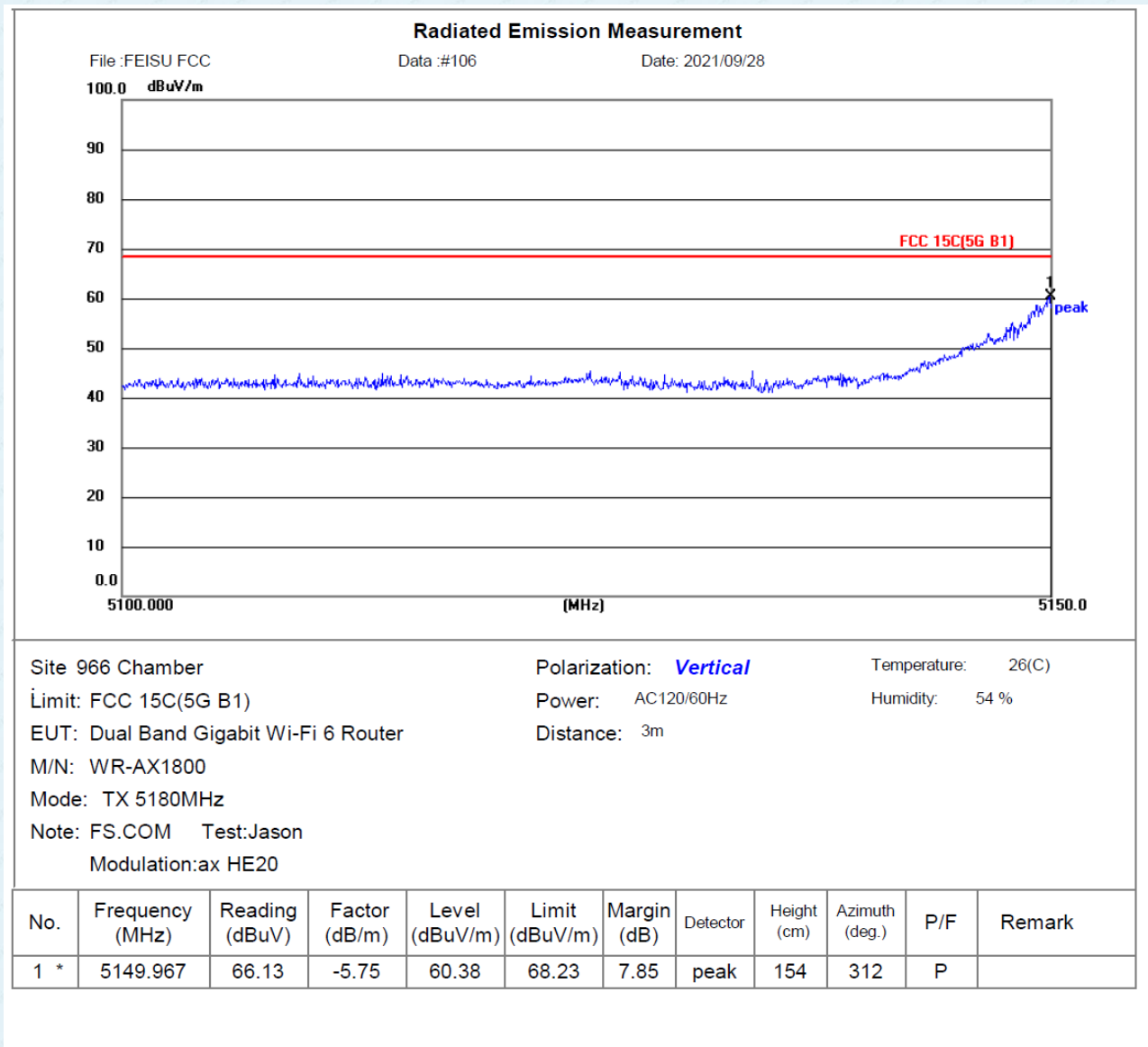
Vertical: 802.11n HT40 (TX 5230MHz)



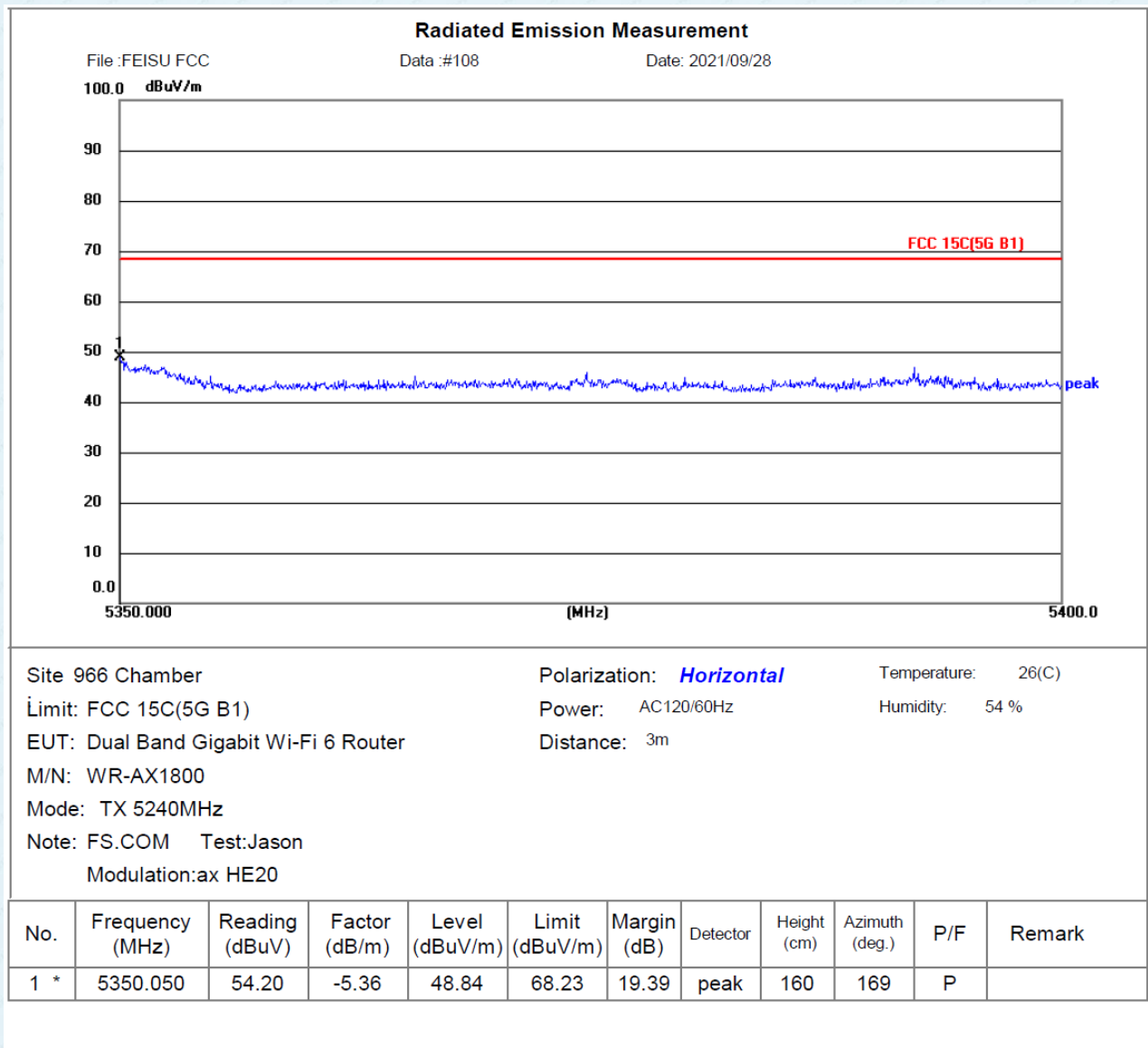
Horizontal: 802.11ax HE20 (TX 5180MHz)



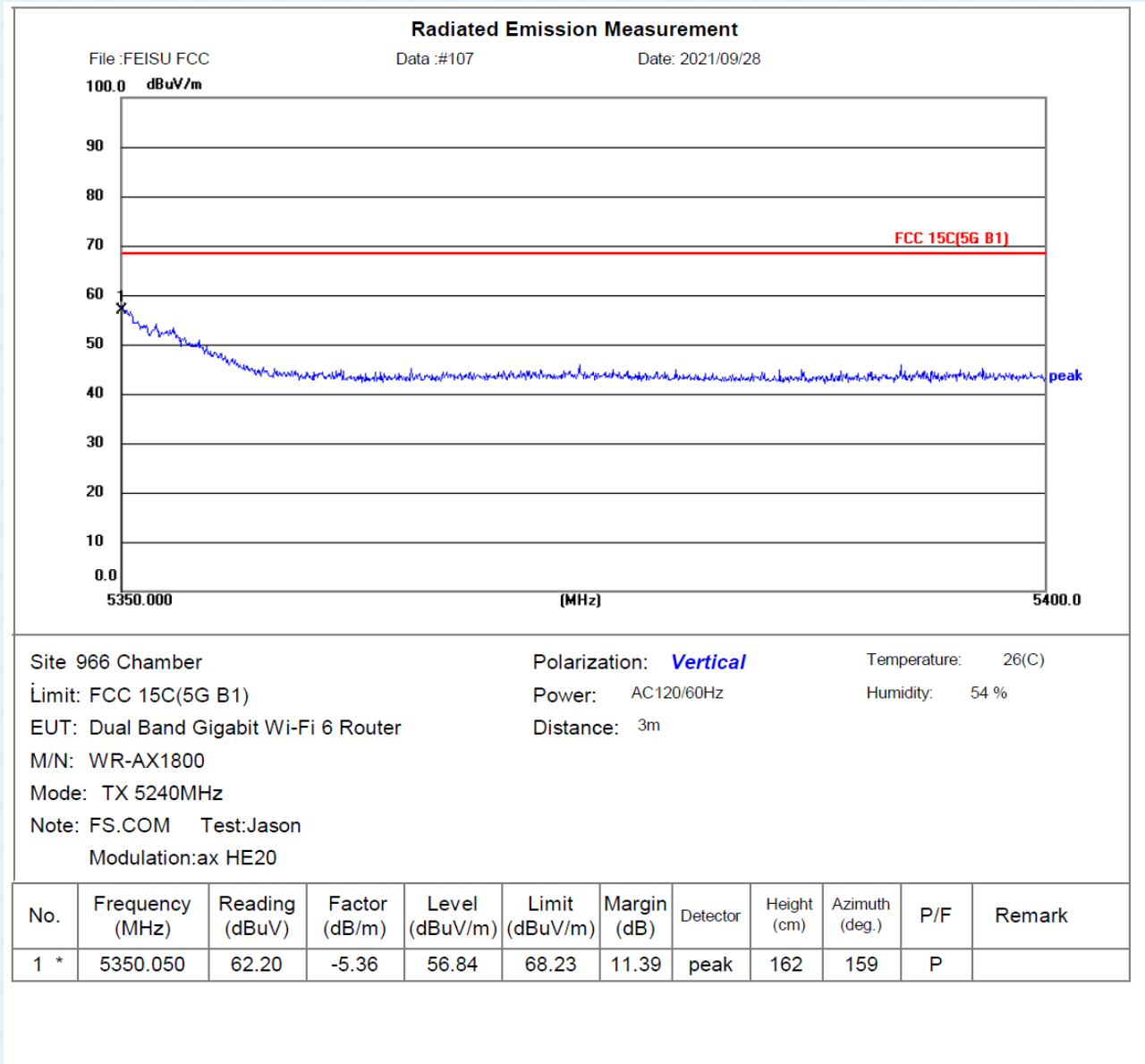
Vertical: 802.11ax HE20 (TX 5180MHz)



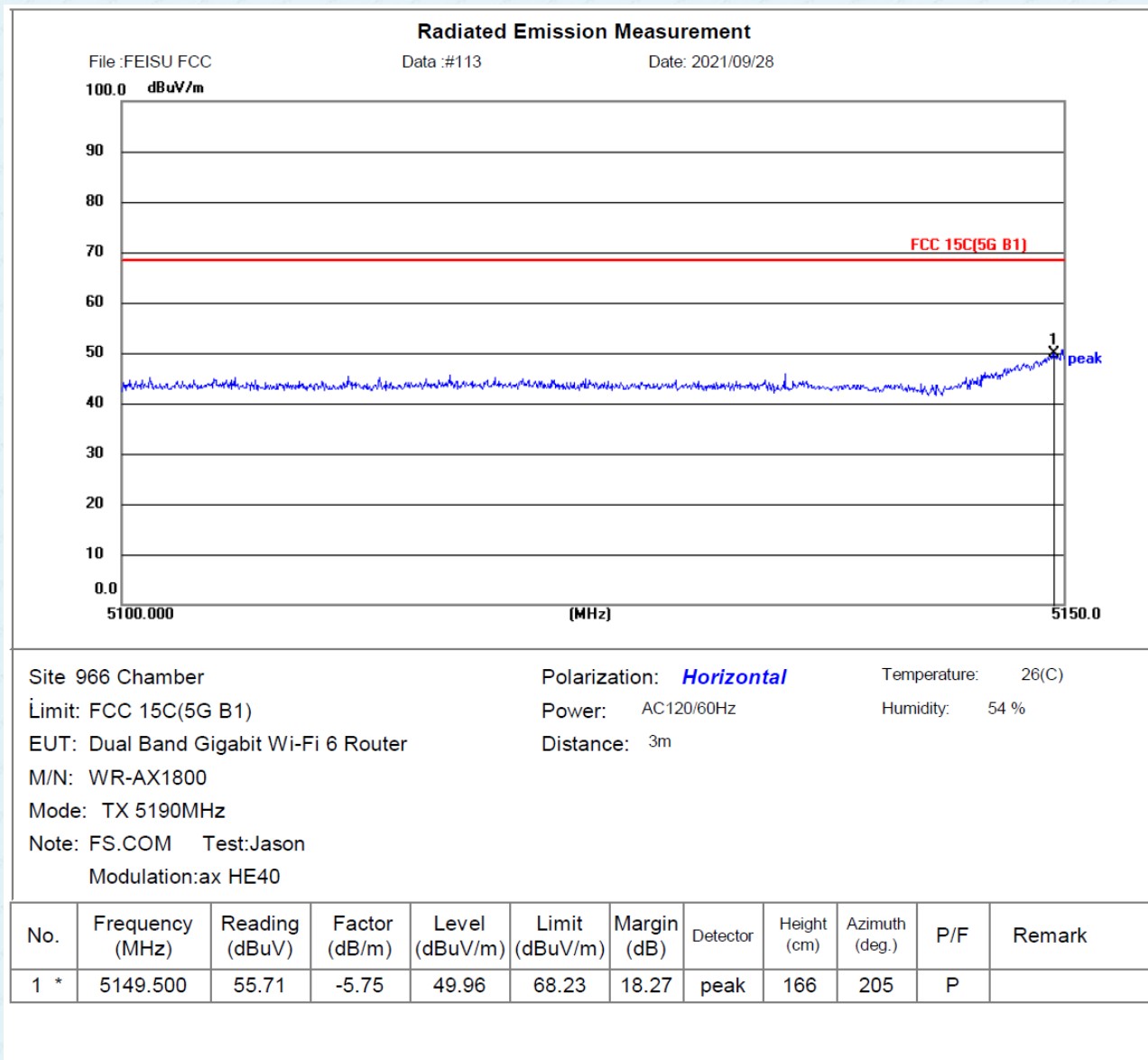
Horizontal: 802.11ax HE20 (TX 5240MHz)



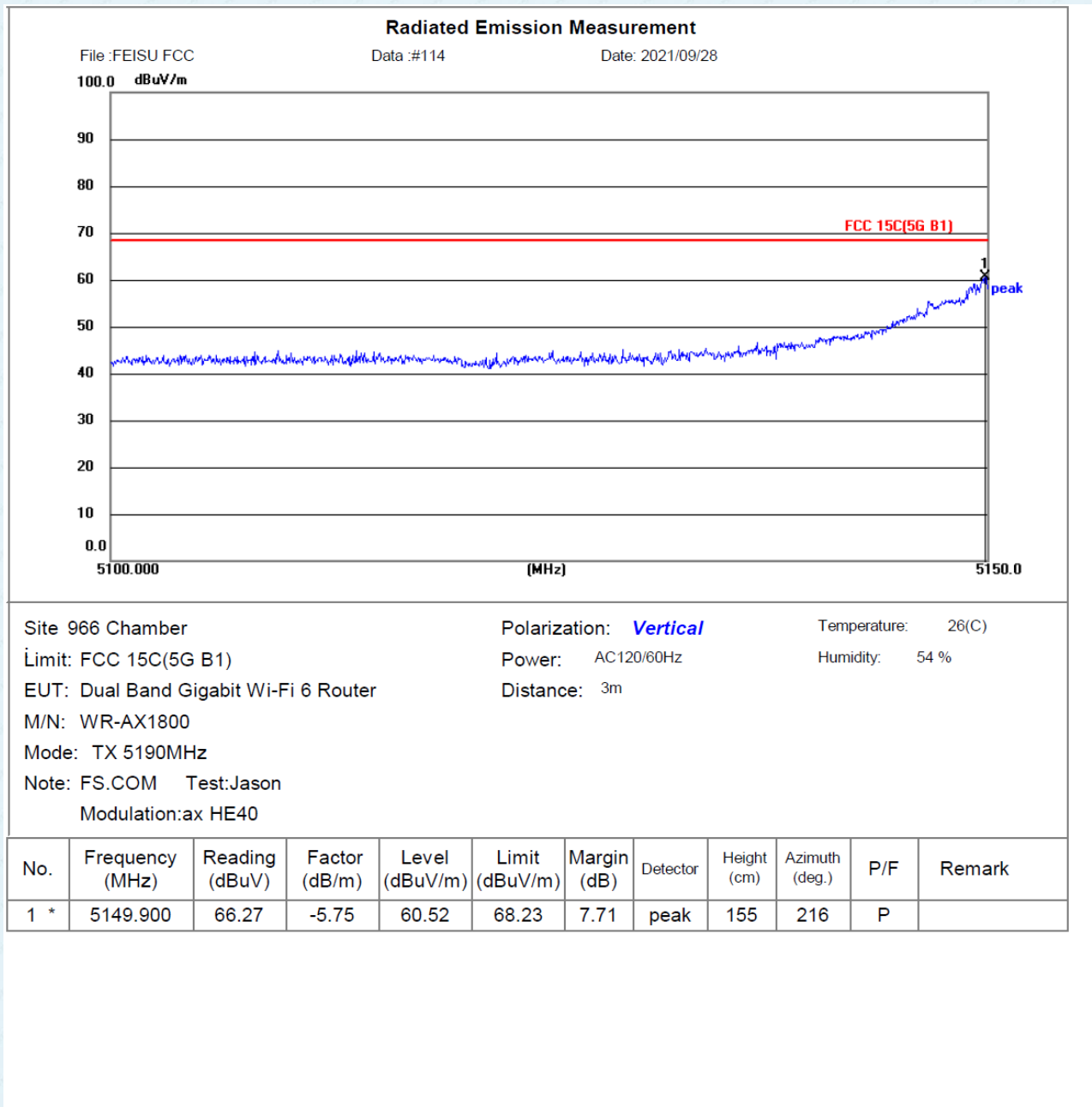
Vertical: 802.11ax HE20 (TX 5240MHz)



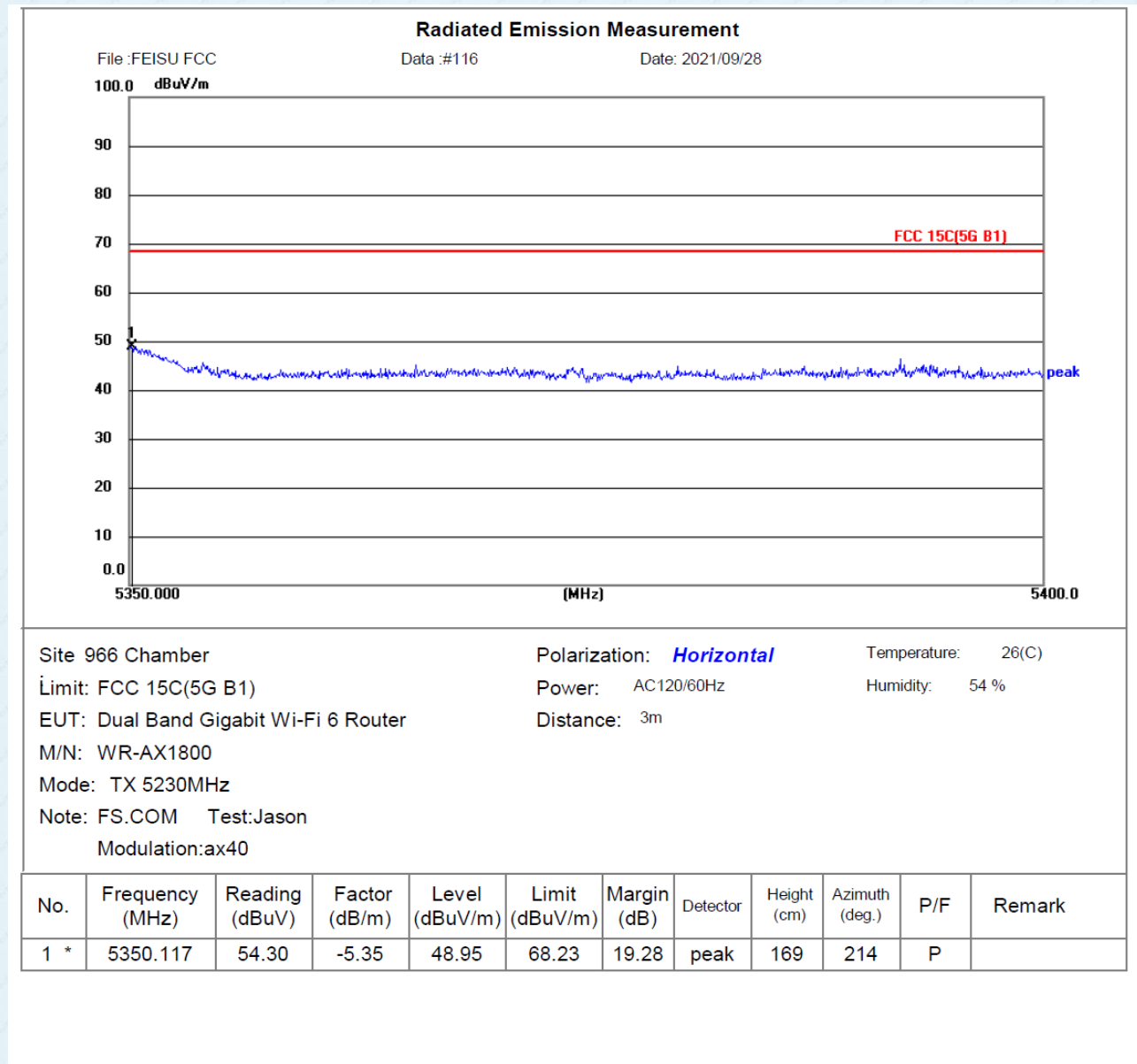
Horizontal: 802.11ax HE40 (TX 5190MHz)



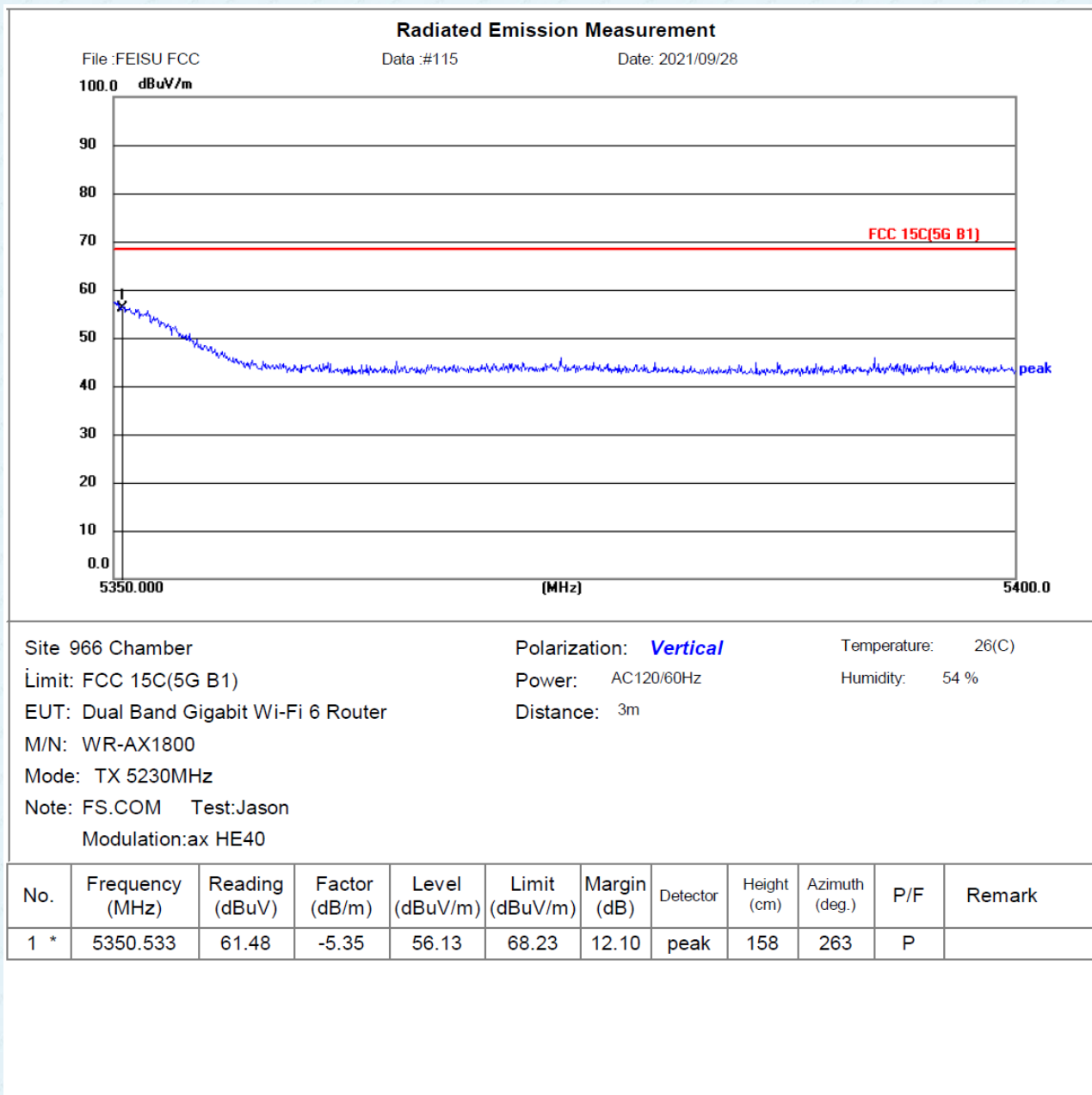
Vertical: 802.11ax HE40 (TX 5190MHz)



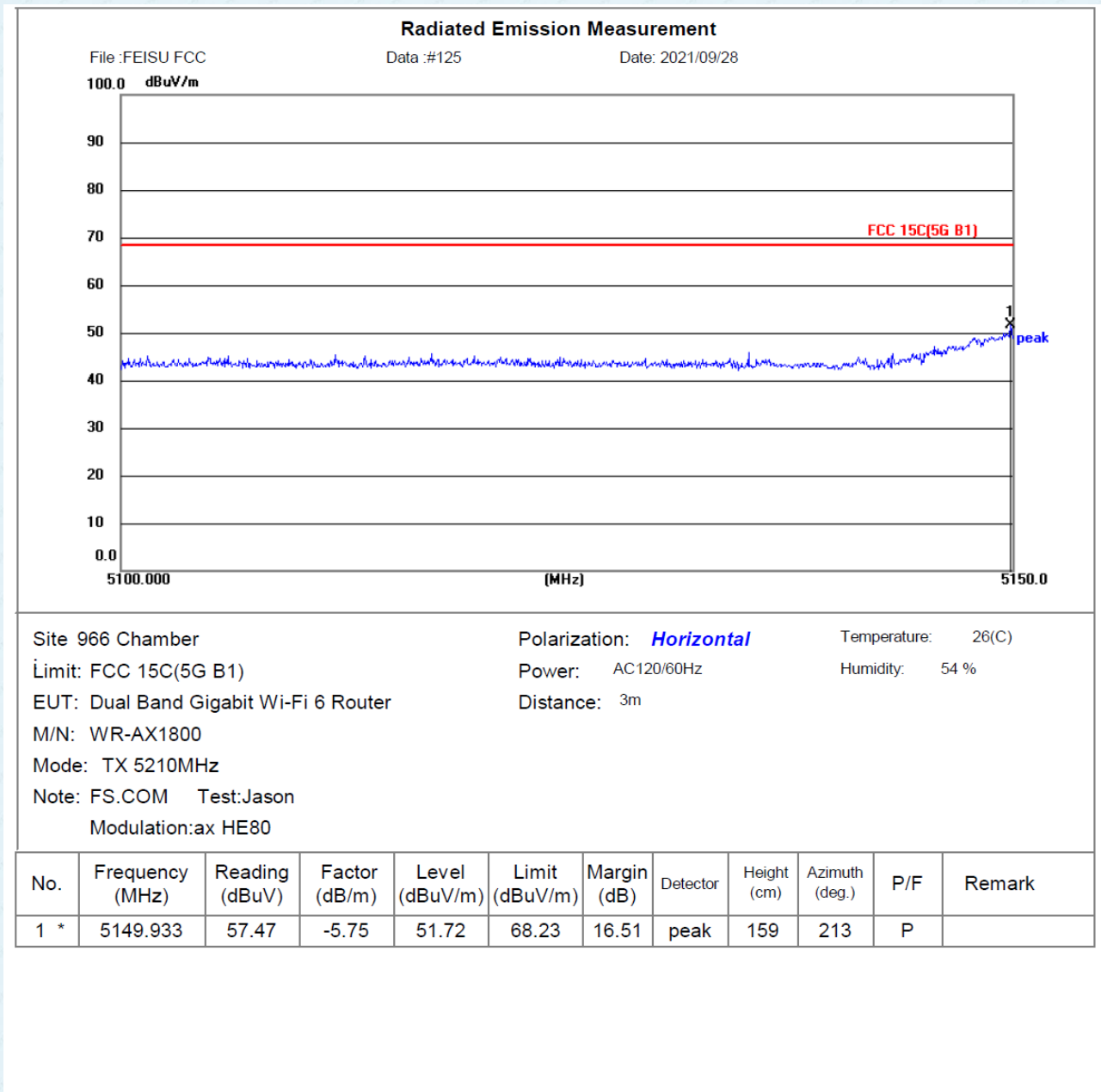
Horizontal: 802.11ax HE40 (TX 5230MHz)



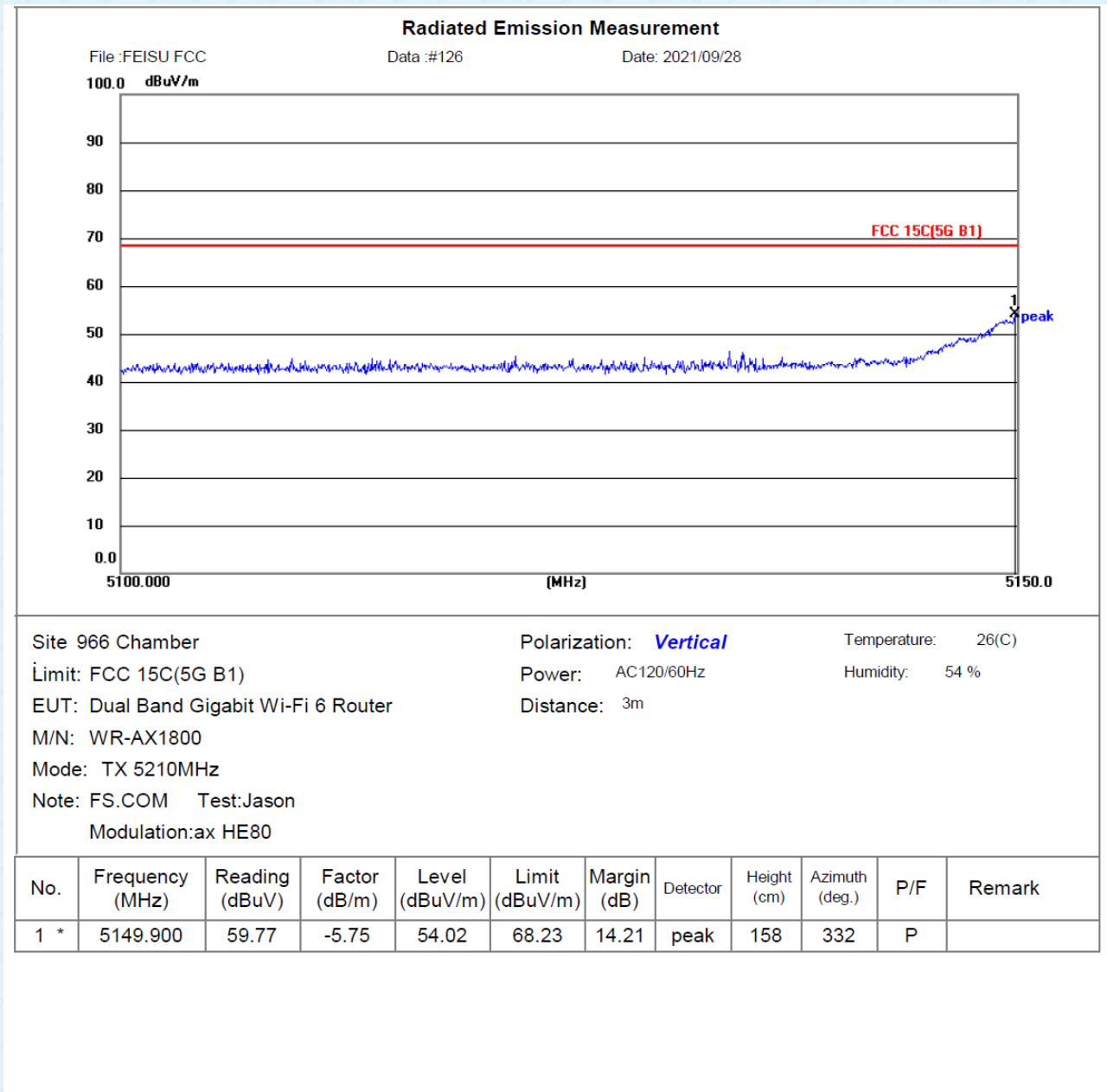
Vertical: 802.11ax HE40 (TX 5230MHz)



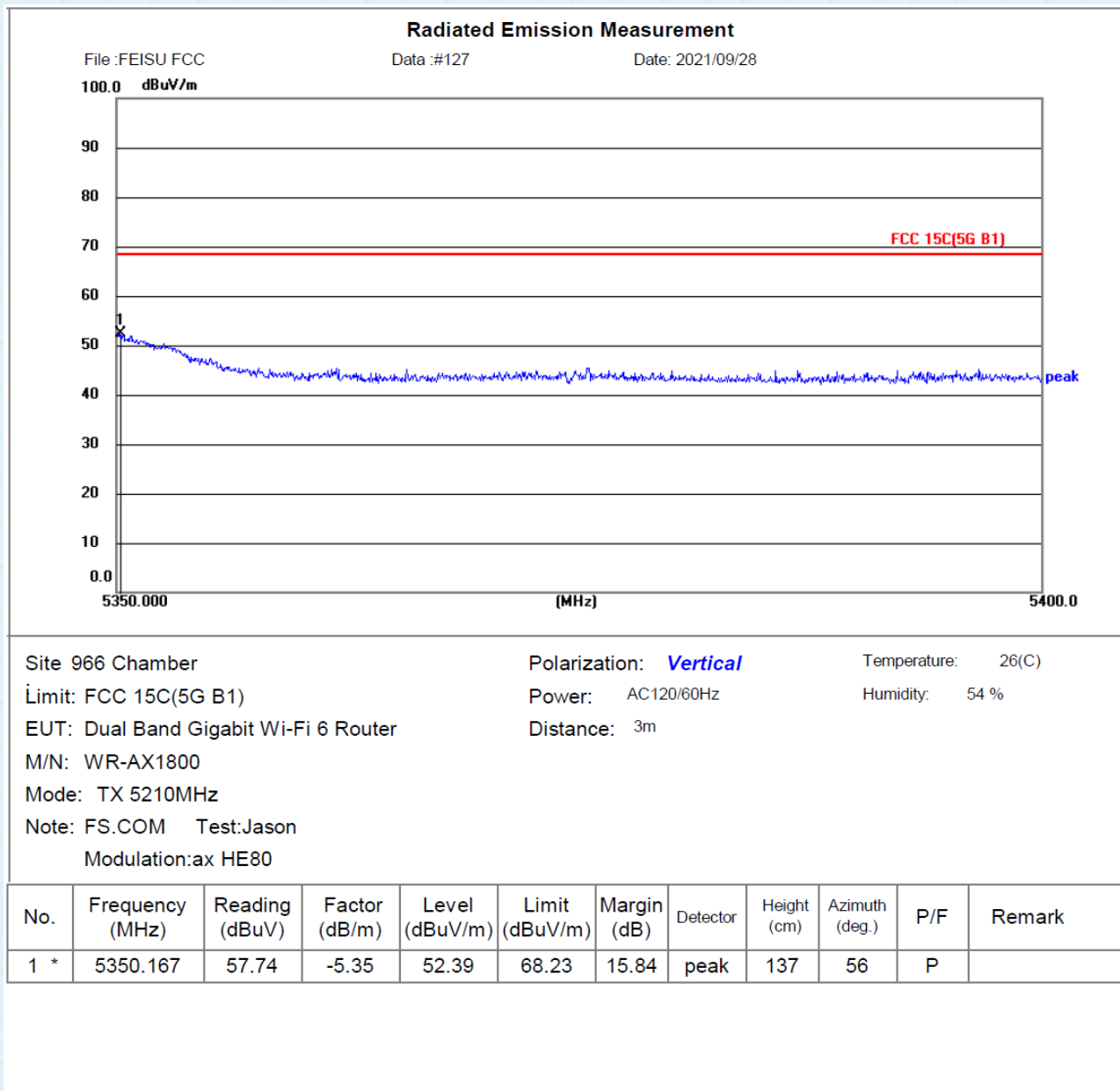
Horizontal: 802.11ax HE80 (TX 5210MHz)



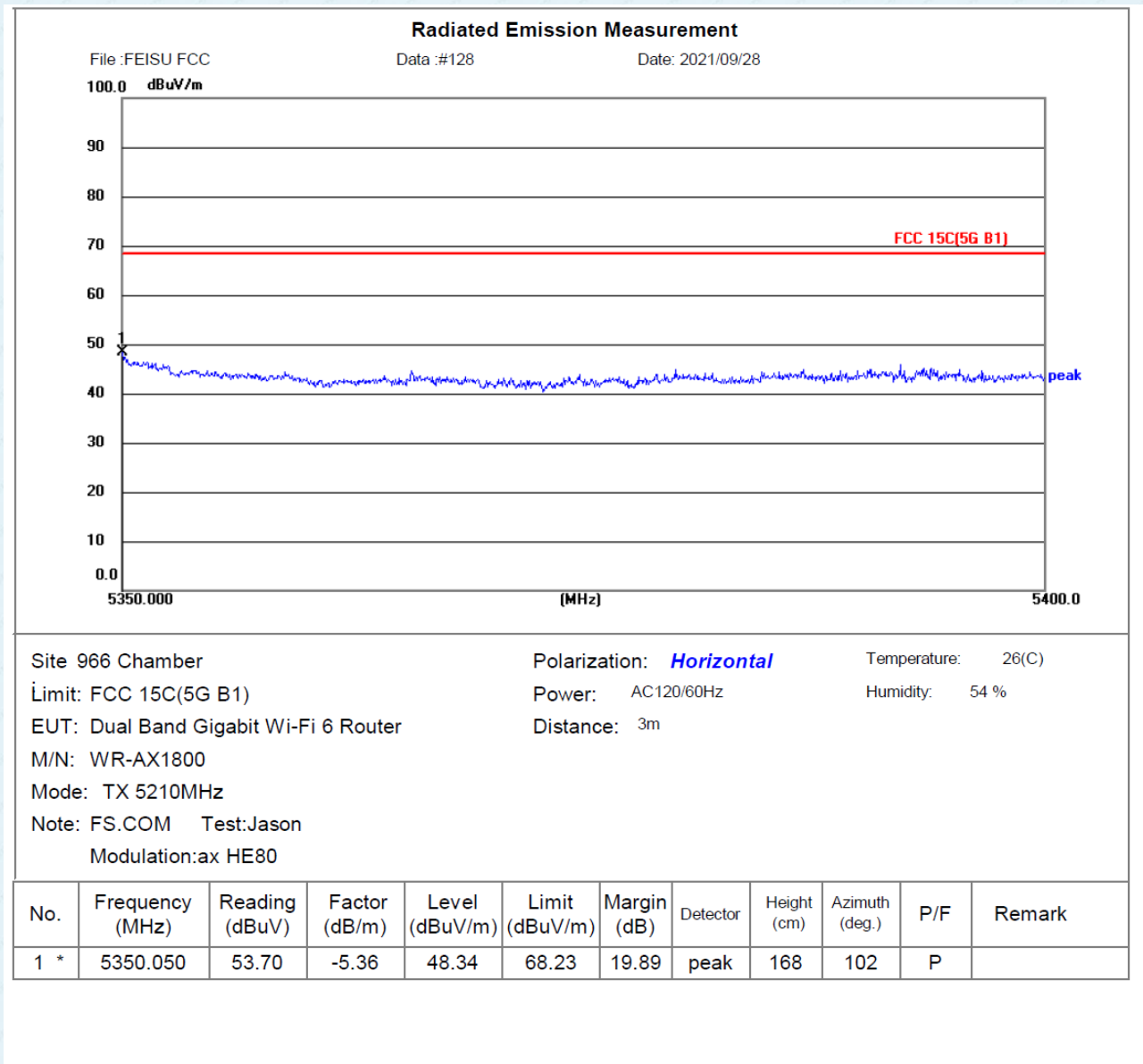
Vertical: 802.11ax HE80 (TX 5210MHz)



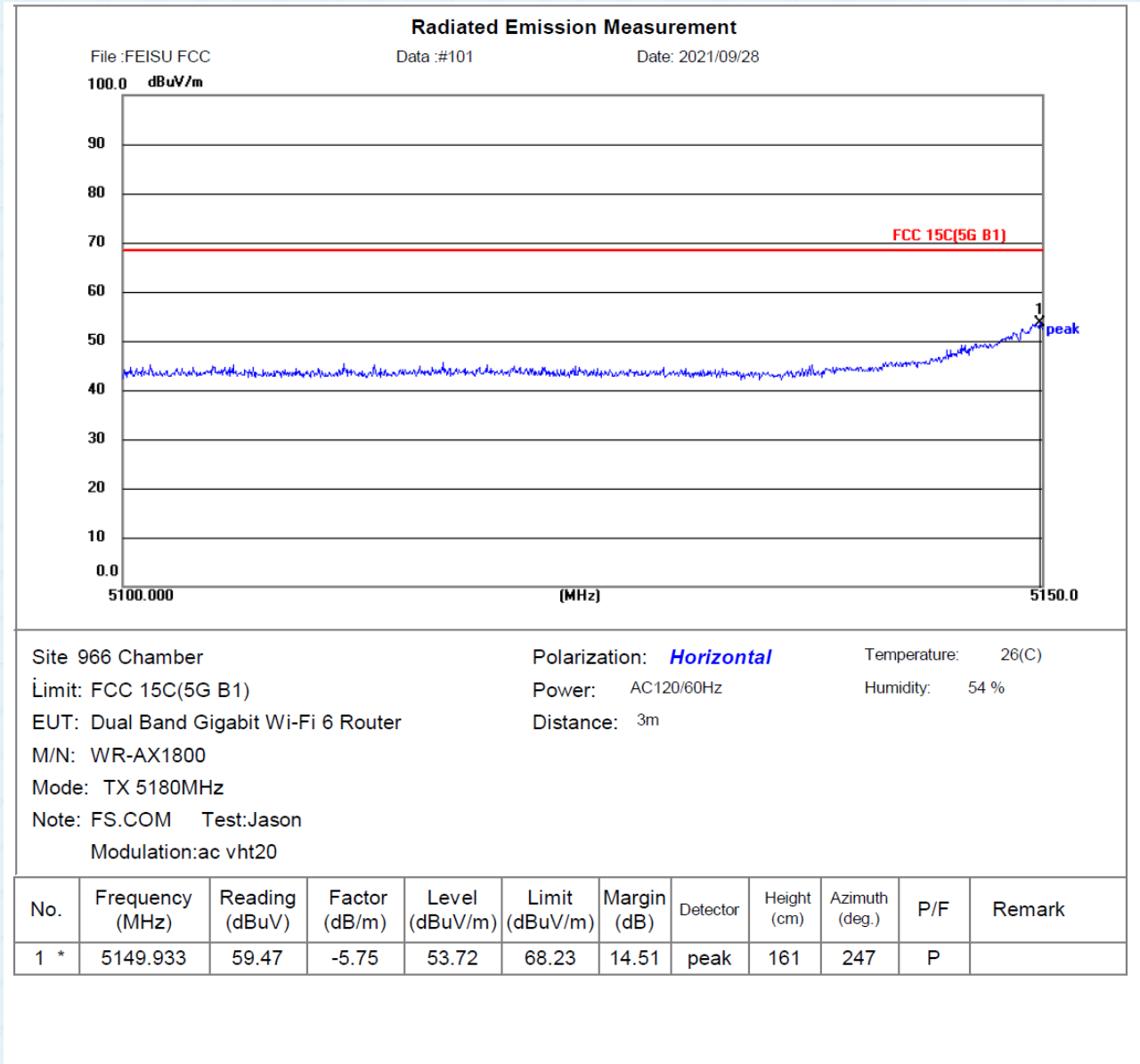
Vertical: 802.11ax HE80 (TX 5210MHz)



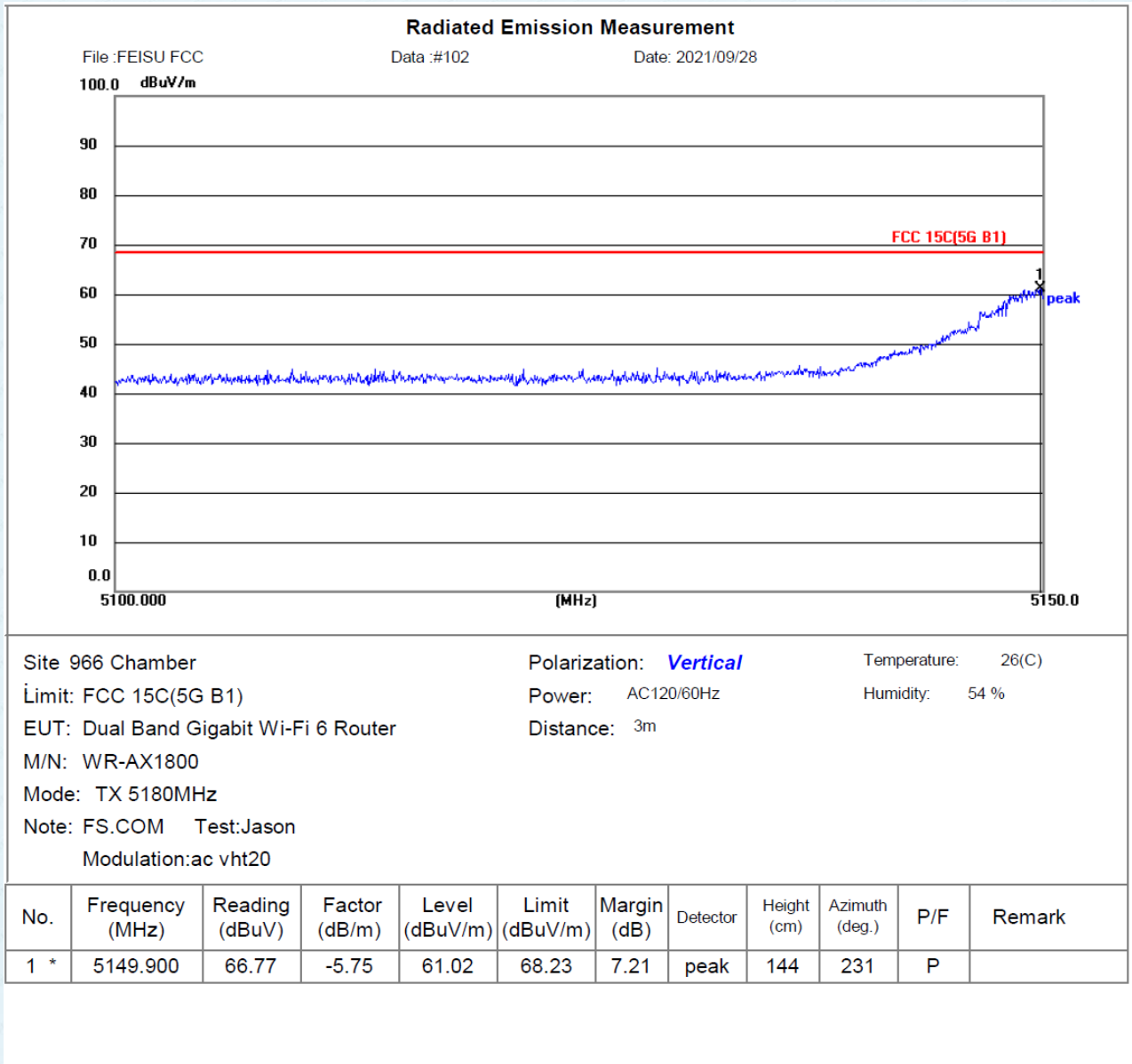
Horizontal: 802.11ax HE80 (TX 5210MHz)



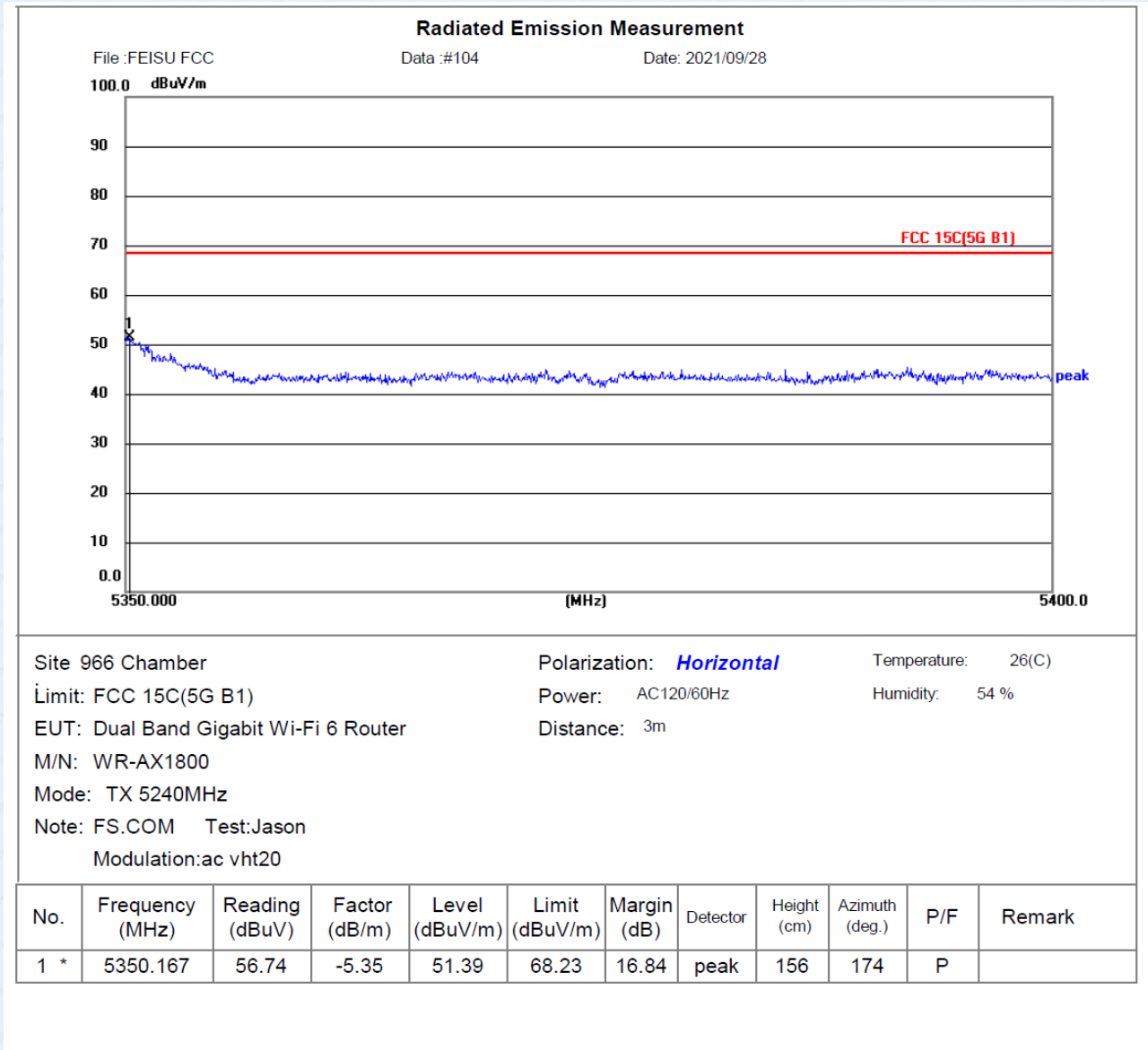
Horizontal: 802.11ac VHT20 (TX 5180MHz)



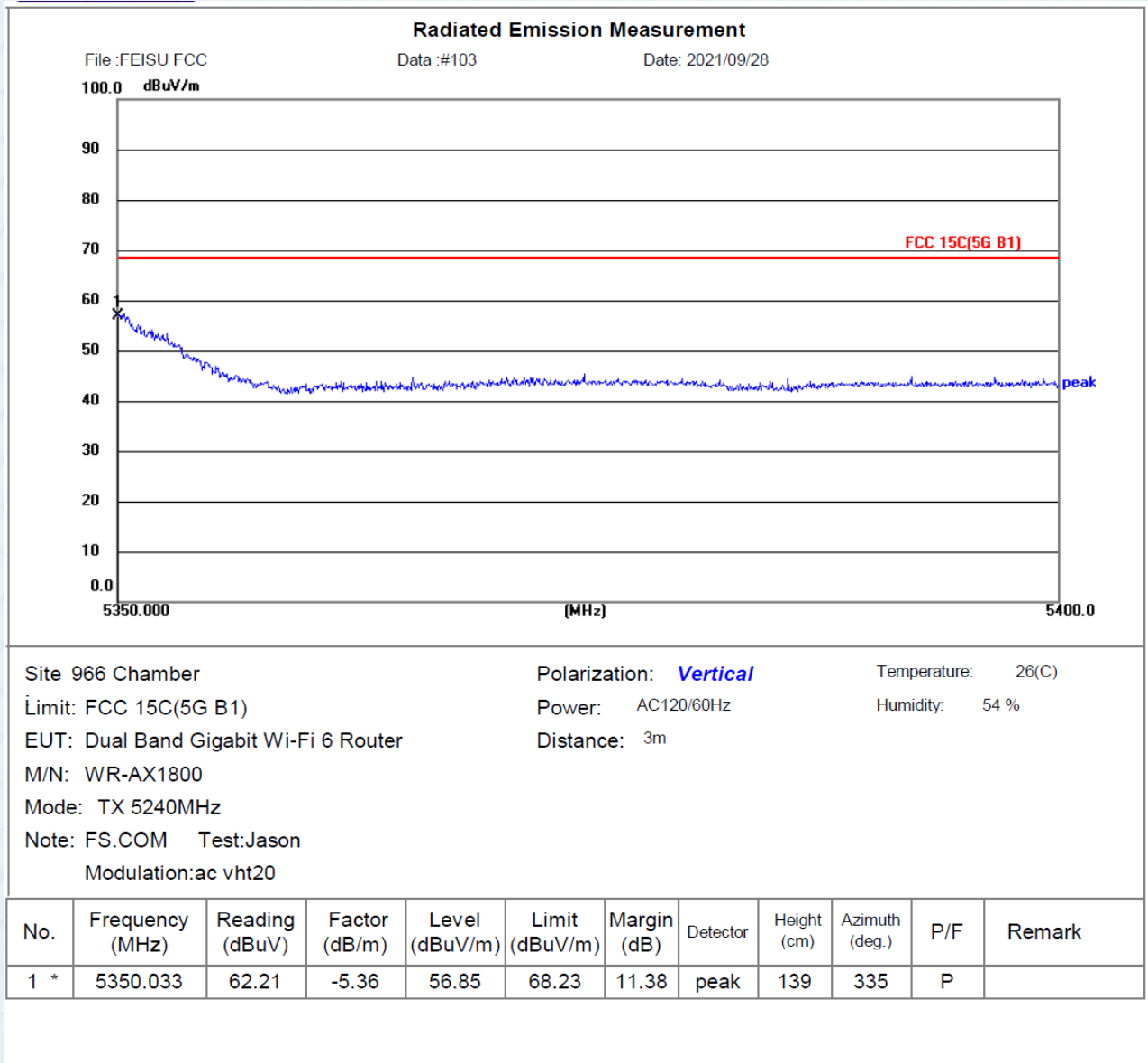
Vertical: 802.11ac VHT20 (TX 5180MHz)



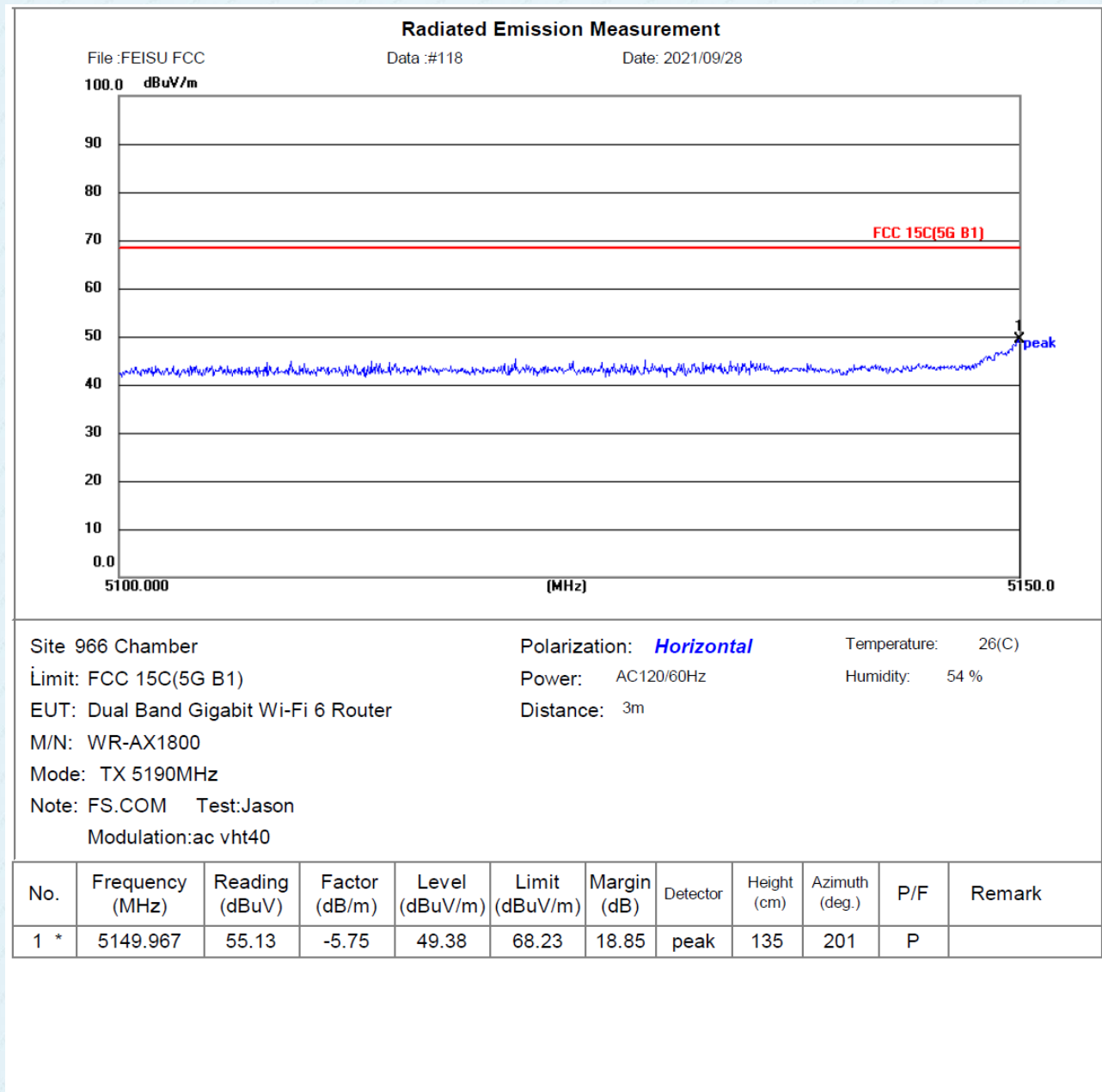
Horizontal: 802.11ac VHT20 (TX 5240MHz)



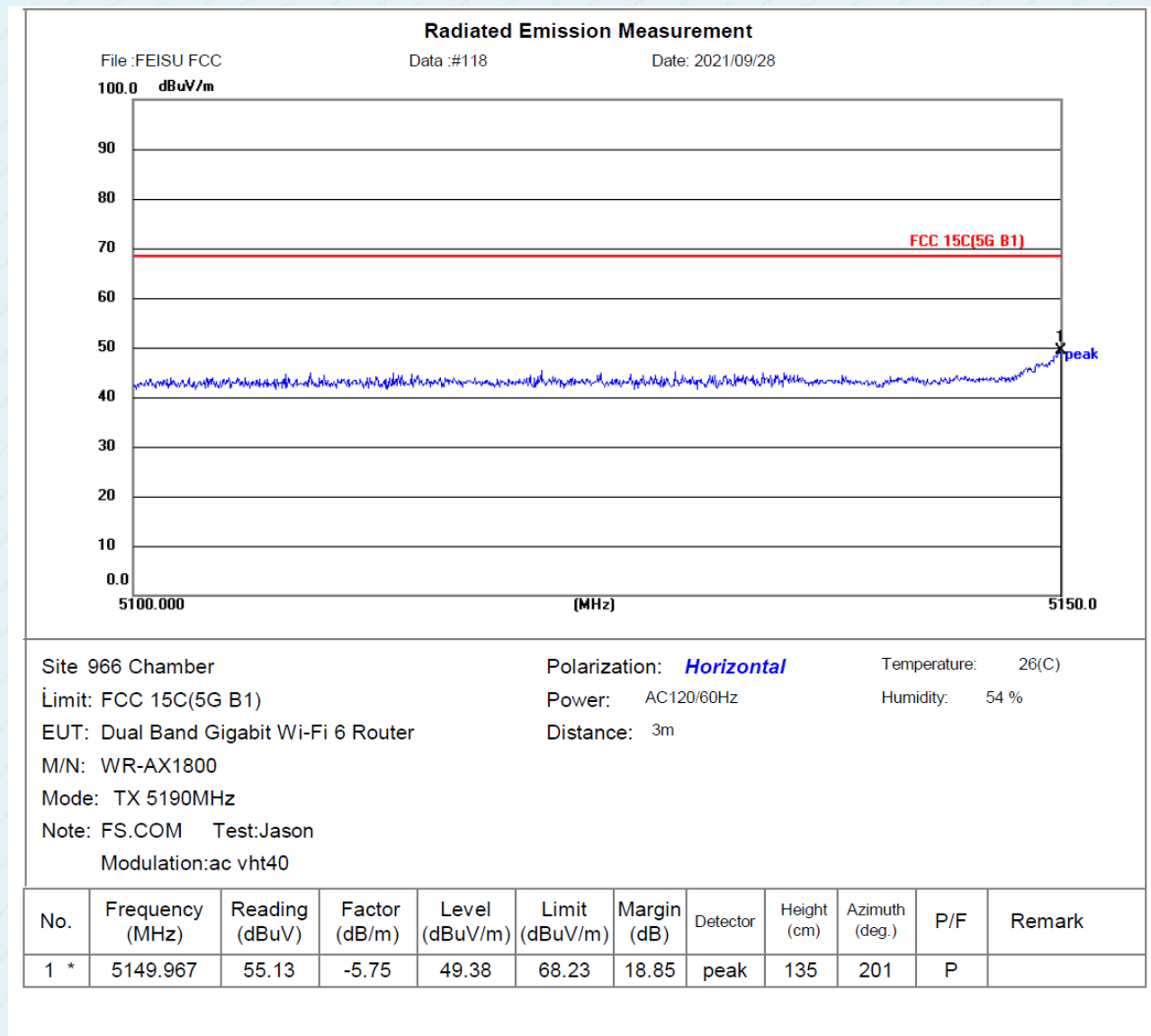
Vertical: 802.11ac VHT20 (TX 5240MHz)



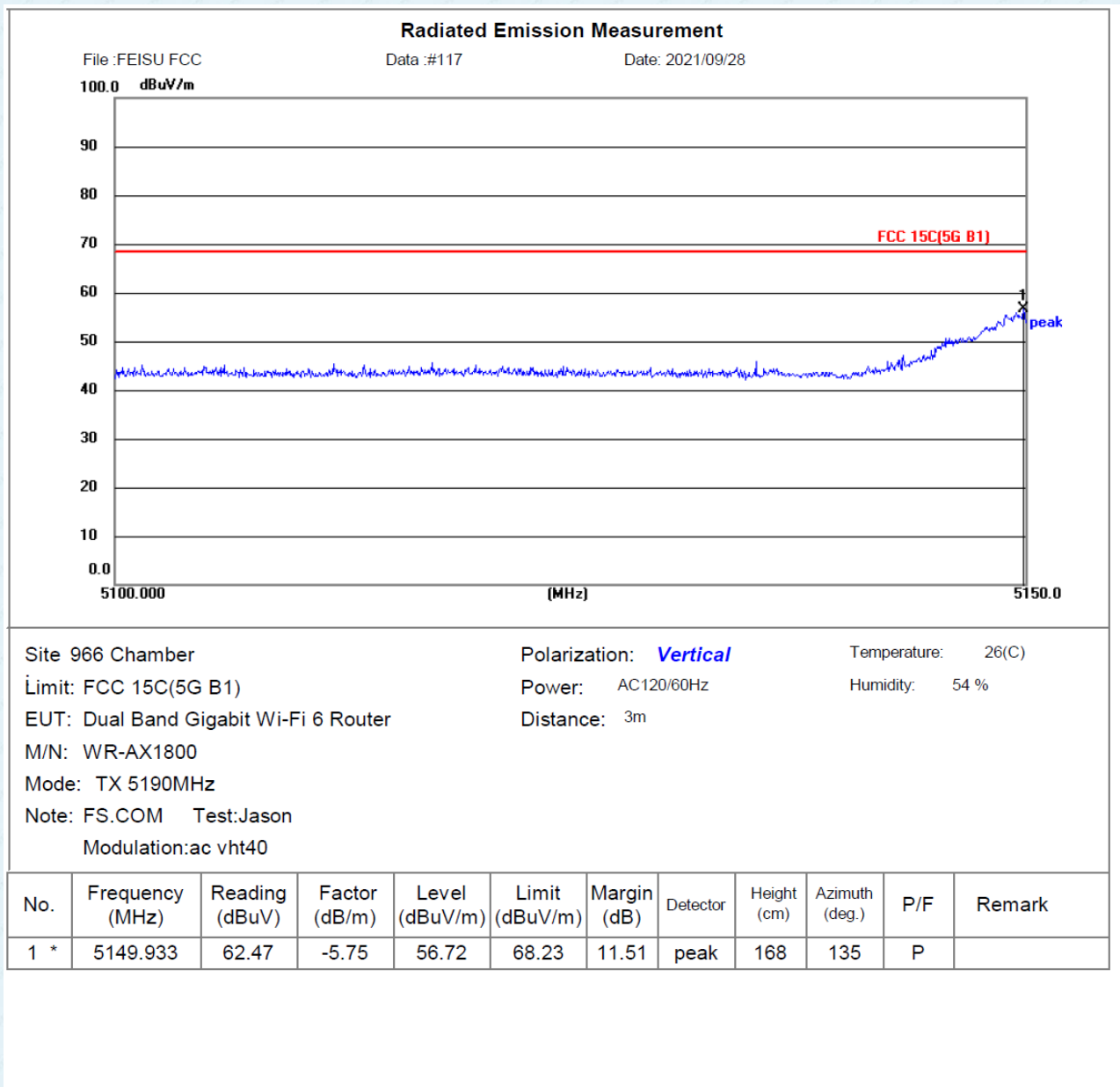
Vertical: 802.11ac VHT20 (TX 5240MHz)

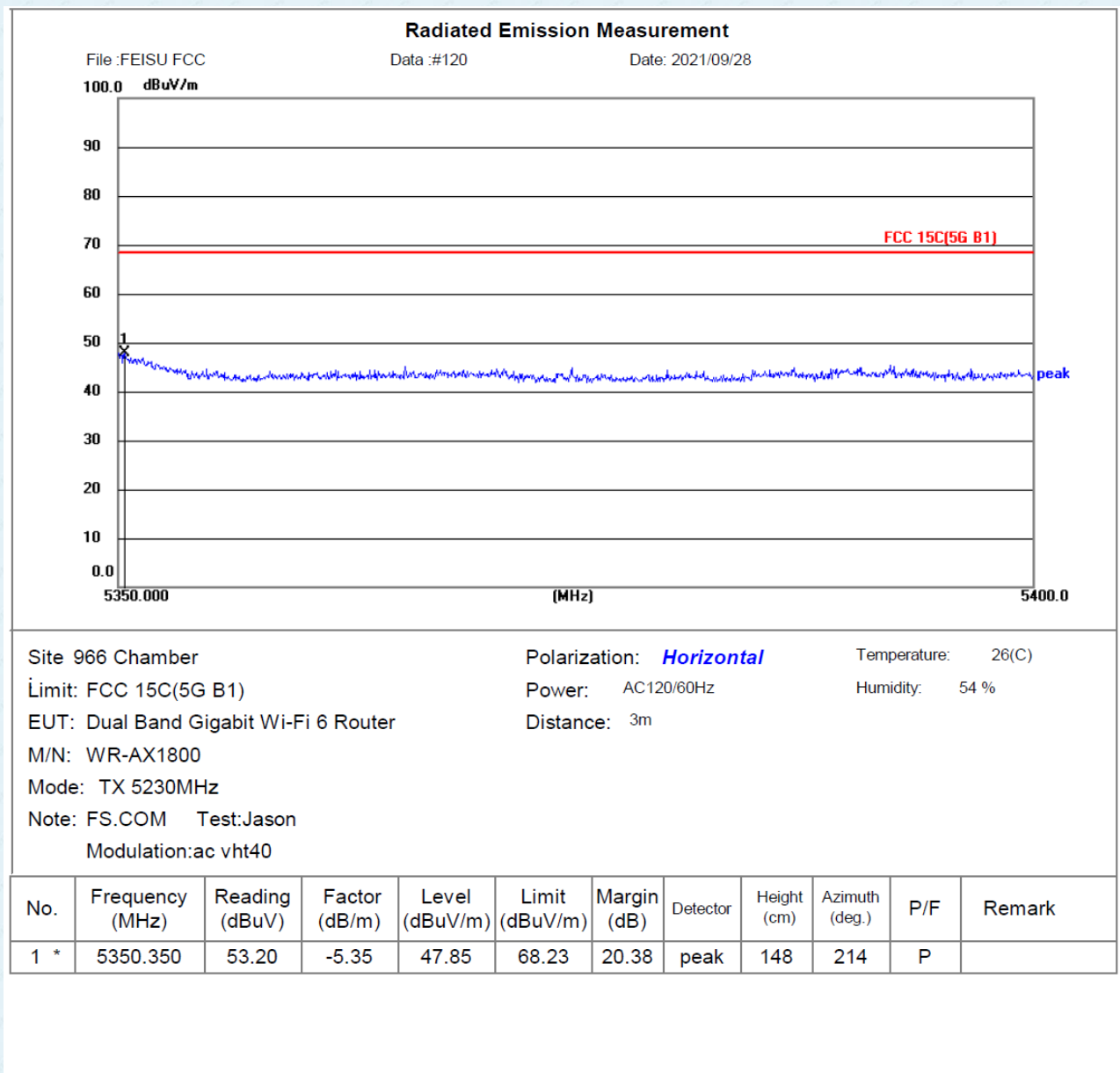


Horizontal: 802.11ac VHT40 (TX 5190MHz)

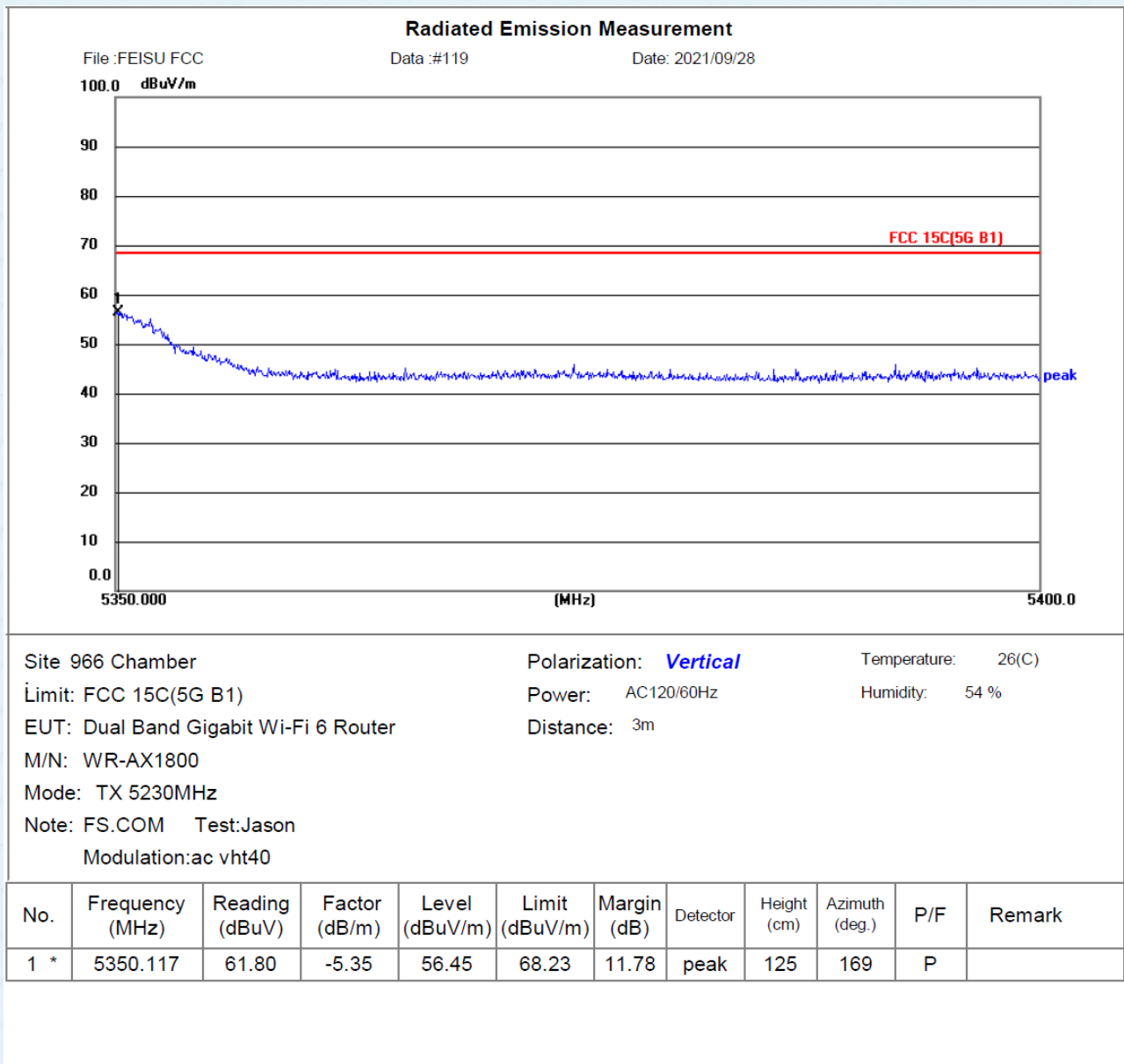


Vertical: 802.11ac VHT40 (TX 5190MHz)

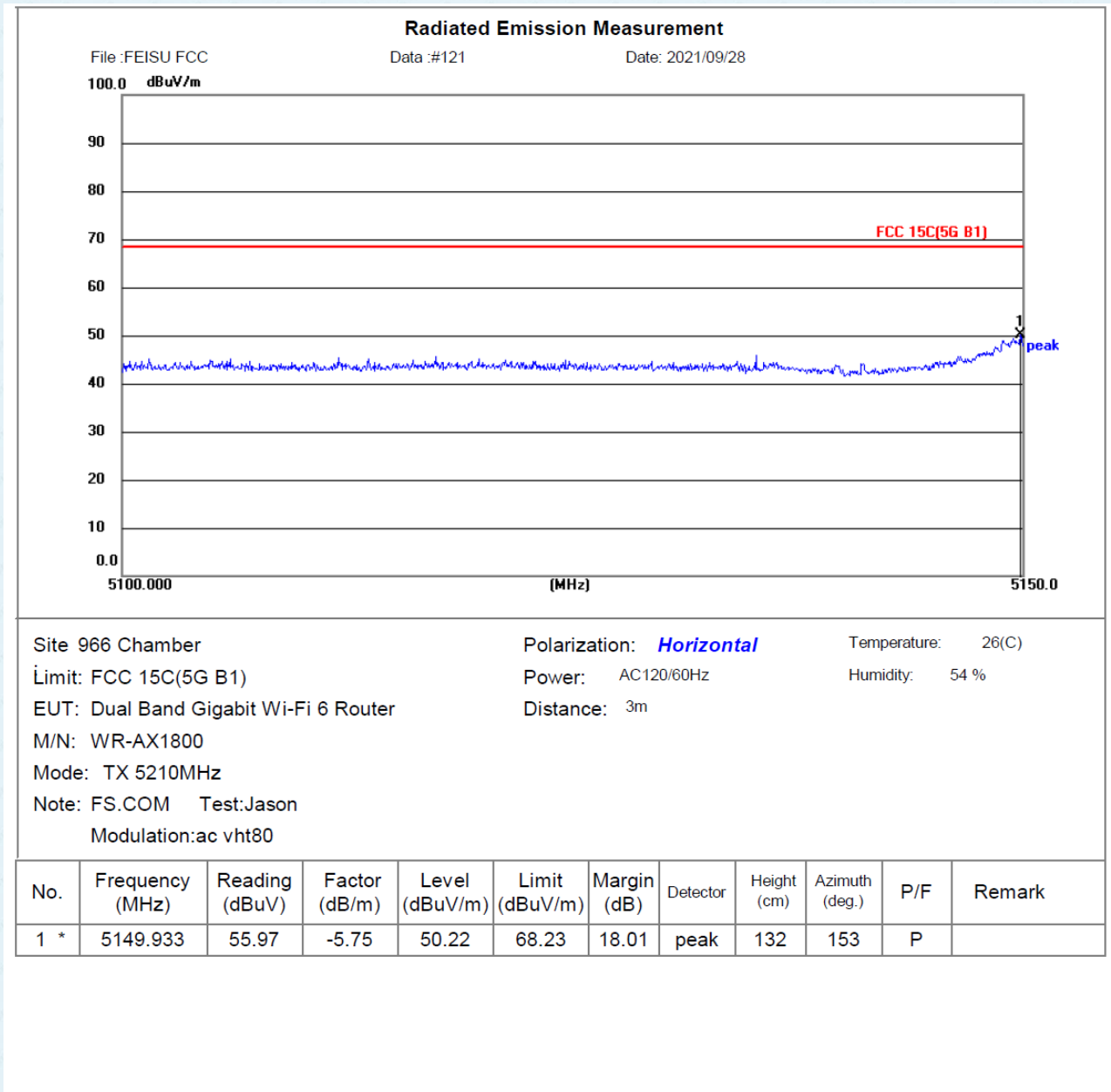


Horizontal: 802.11ac VHT40 (TX 5230MHz)


Vertical: 802.11ac VHT40 (TX 5230MHz)



Horizontal: 802.11ac VHT80 (TX 5210MHz)



Vertical: 802.11ac VHT80 (TX 5210MHz)

