

Project No.: 2407T76694E-RF

FCC Part 15.407

17354.40

17913.60

17913.60

43.29

35.10

45.84

5.91

7.60

7.60

49.20

42.70

53.44

68.20

54.00

74.00

19.00

11.30

20.56

horizontal

horizontal

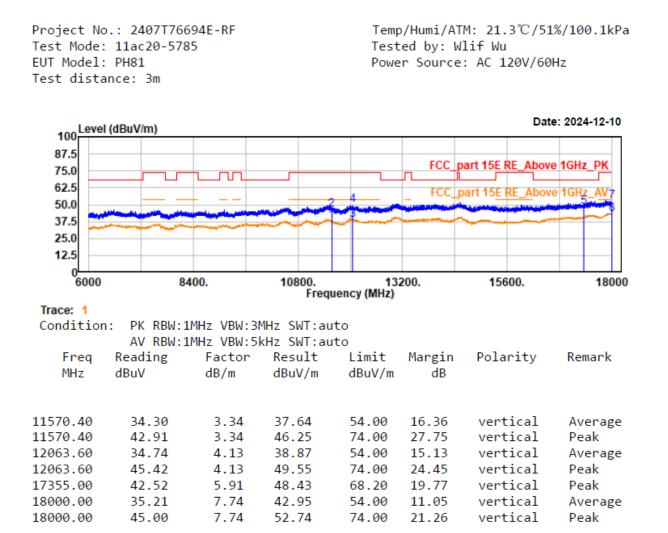
horizontal

Peak

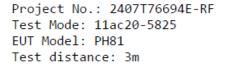
Peak

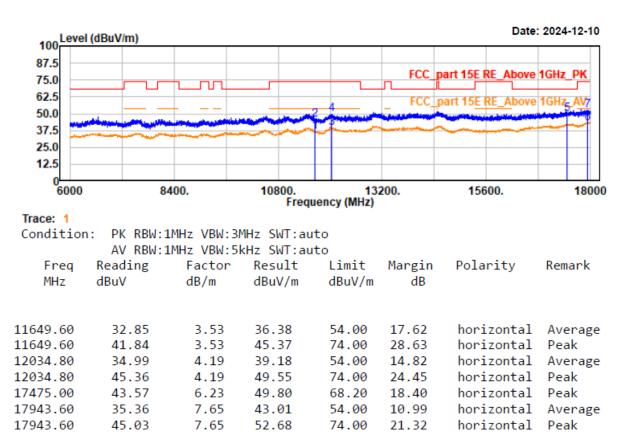
Average

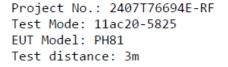
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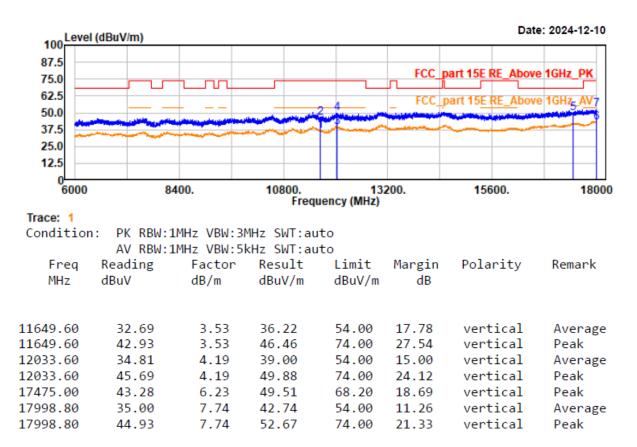


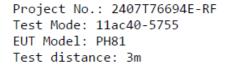
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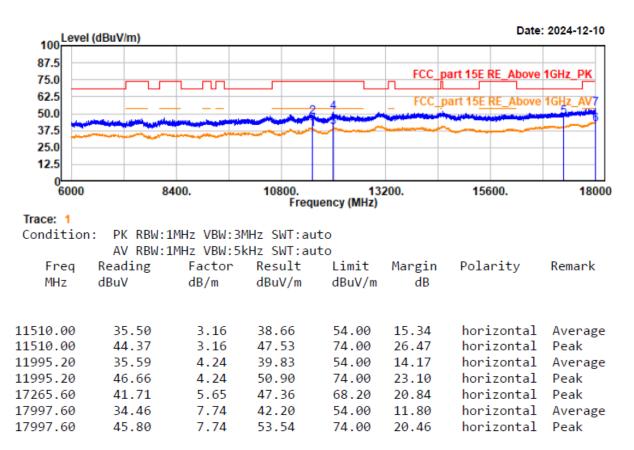


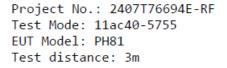


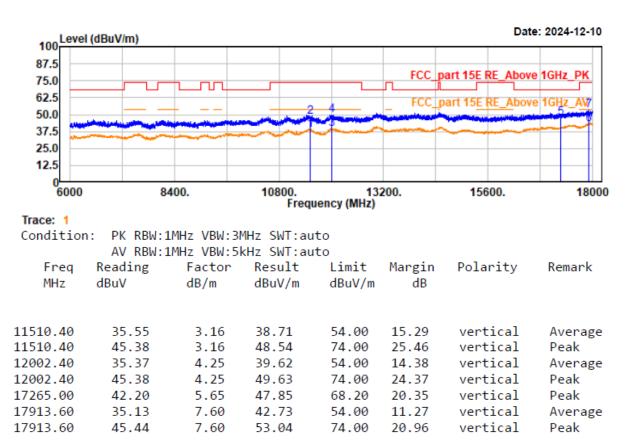


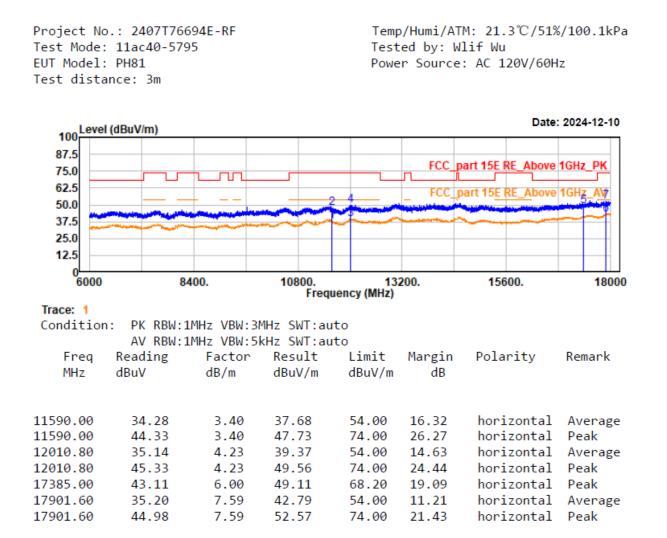






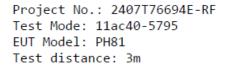


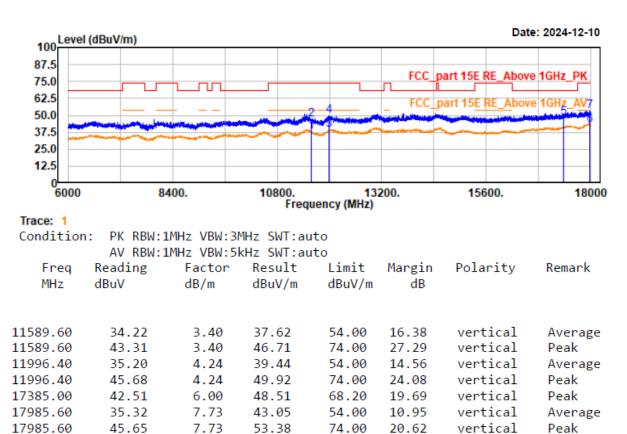


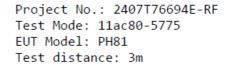


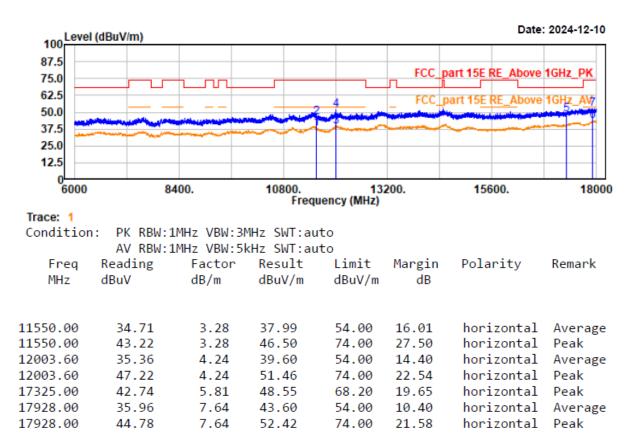
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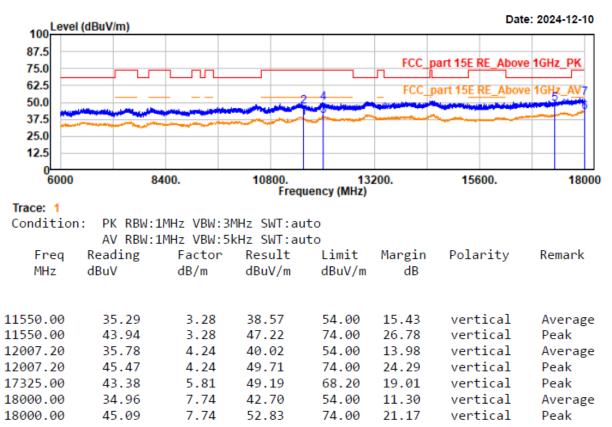








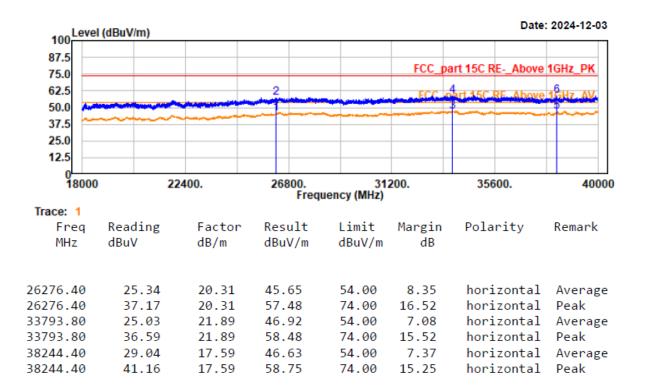




5) 18GHz-40GHz

EUT operation mode: Transmitting in 802.11 ac20 5320MHz in Z-axis of orientation (worst case)

Project No.: 2407T76694E-RF Test Mode: 802.11ac20 5320 EUT Model: PH81 Test distance: 1m



Project No.: 2407T76694E-RF Test Mode: 802.11ac20 5320 EUT Model: PH81 Test distance: 1m Temp/Humi/ATM: 24.3°C/49%/99.9kPa Tested by: Wlif Wu Power Source: AC 120V/60Hz

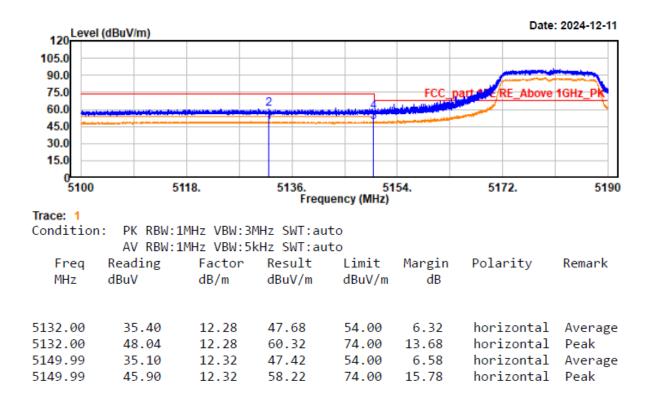
l (dBuV/m)						Dat	e: 2024-12-0
				FCC	part 15C RE-	Abov	e 1GHz_PK
		2		FCC	part 45C PE	Aboy	
			ملكوس الإبريدامين والبرد				1
0 18000 22400.		26800. 31200. Frequency (MHz)		3560	0.	400	
Reading	Factor	Result	Limit		Polar	ity	Remark
dBuV	dB/m	dBuV/m	dBuV/m	dB			
24.98	20.31	45.29	54.00	8.71	verti	cal	Averag
37.17	20.31	57.48	74.00	16.52	verti	cal	Peak
24.96	21.76	46.72	54.00	7.28			Averag
							Peak
29.21 41.16	17.59 17.59	46.80 58.75	54.00 74.00	1.20		cal cal	Averag
	22 Reading dBuV 24.98 37.17	Reading dBuV Factor dB/m 24.98 20.31 37.17 20.31 24.96 21.76 37.32 21.76	2 2 2 2 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 2 3 2 3 2 3 2 3 2 3 2 3 2 3 2 3 2 3 2 3 2 3 2 3 2 3 2 3 2 3 2 3 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3	22400. 26800. 31. Reading dBuV Factor dB/m Result dBuV/m Limit dBuV/m 24.98 20.31 45.29 54.00 37.17 20.31 57.48 74.00 24.96 21.76 46.72 54.00 37.32 21.76 59.08 74.00	24.98 20.31 45.29 54.00 8.71 37.17 20.31 57.48 74.00 16.52 24.96 21.76 46.72 54.00 7.28 37.32 21.76 59.08 74.00 14.92	Image: Product of the second	I(dBuV/m) FCC_part 15C RE_Abov FCC_part 15C RE_Abov 2 ECC_part 15C RE_Abov 3 ECC_part 15C RE_Abov 3

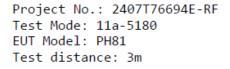
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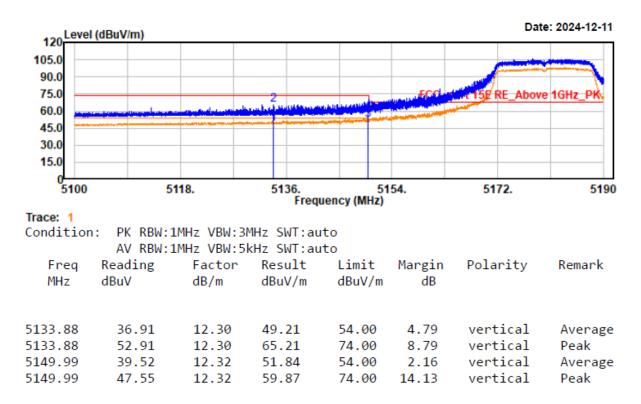
Restricted Bands Emissions:

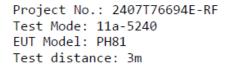
For 5150-5250 MHz:

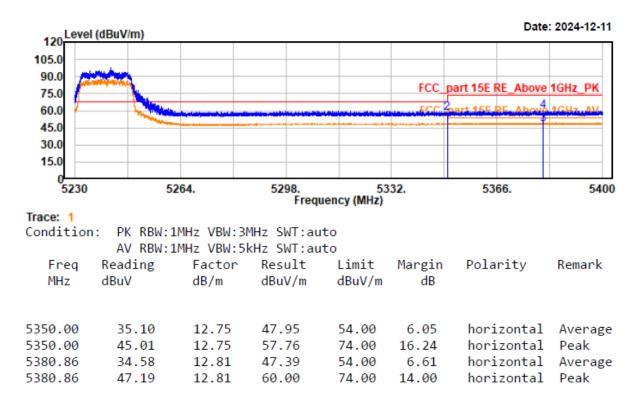
Project No.: 2407T76694E-RF Test Mode: 11a-5180 EUT Model: PH81 Test distance: 3m

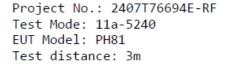


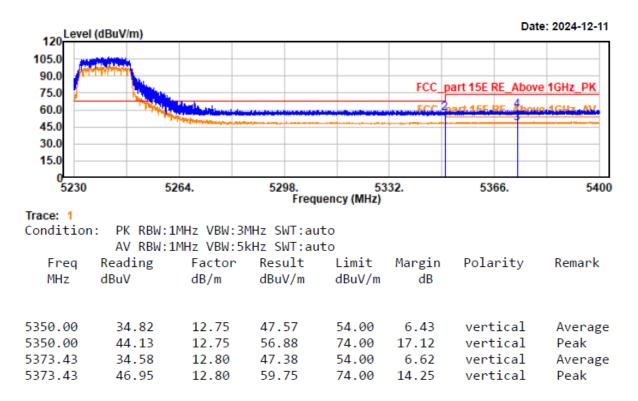


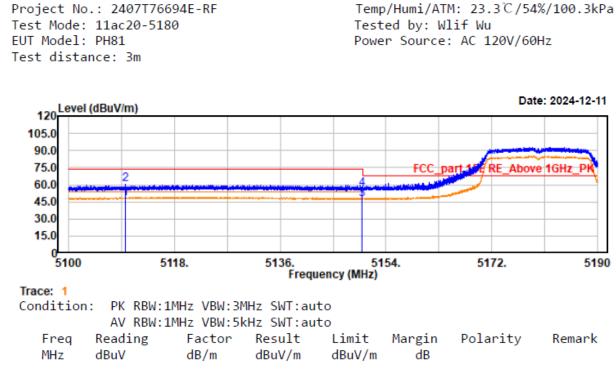












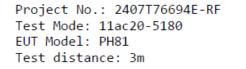
5109.61	35.61	12.24	47.85	54.00	6.15	horizontal	Average
5109.61	47.94	12.24	60.18	74.00	13.82	horizontal	Peak
5149.99	35.15	12.32	47.47	54.00	6.53	horizontal	Average
5149.99	44.01	12.32	56.33	74.00	17.67	horizontal	Peak

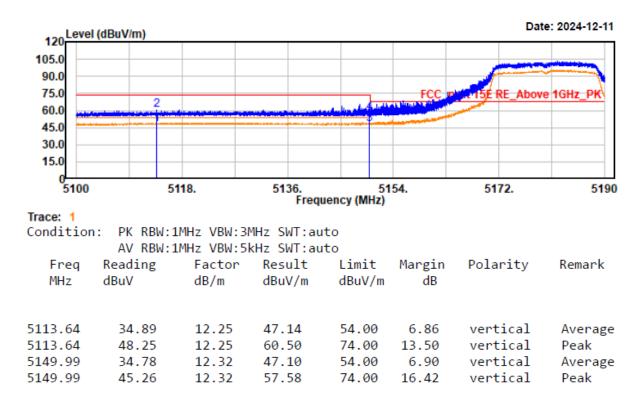
FCC Part 15.407

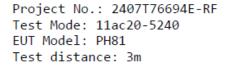
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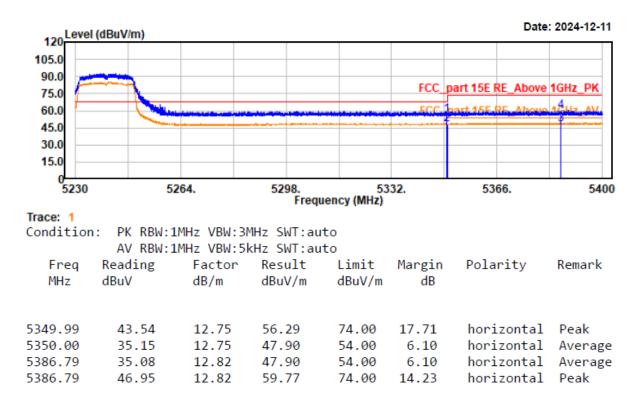
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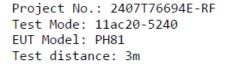
Remark

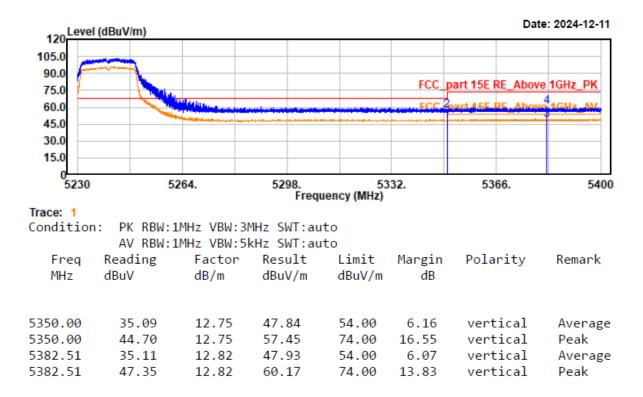


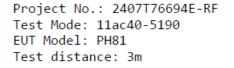


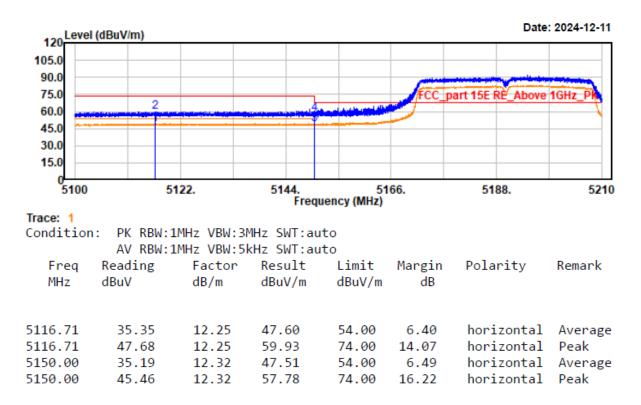






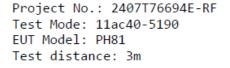


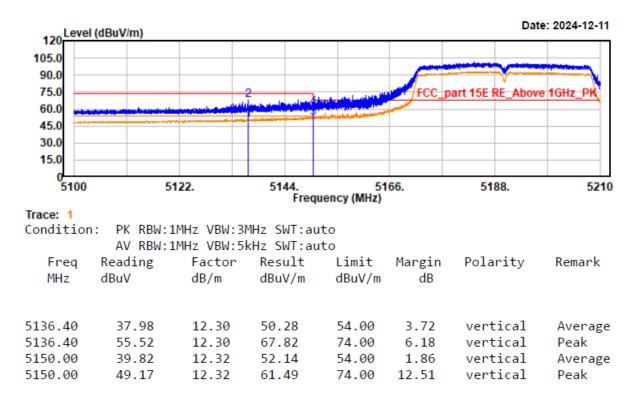




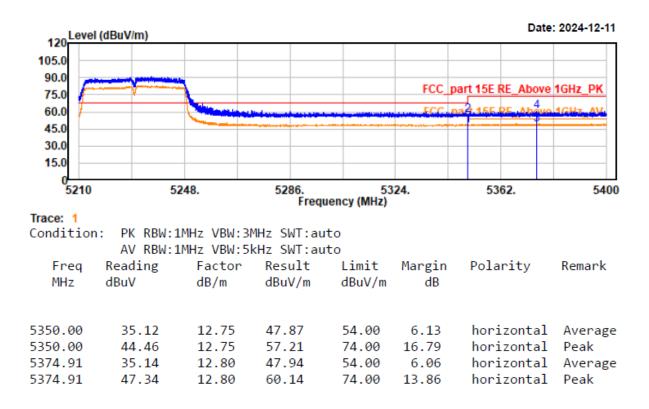
FCC Part 15.407

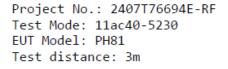
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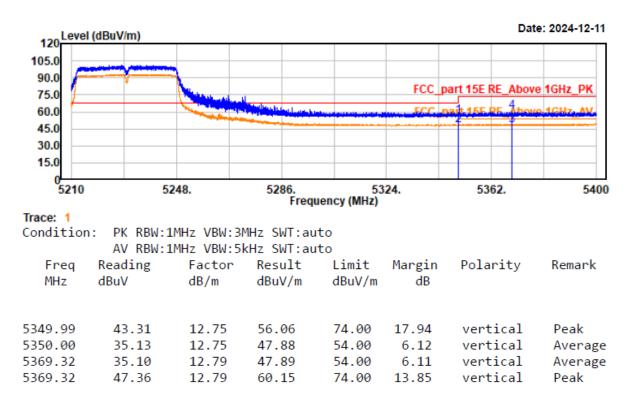




Project No.: 2407T76694E-RF Test Mode: 11ac40-5230 EUT Model: PH81 Test distance: 3m

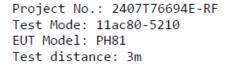


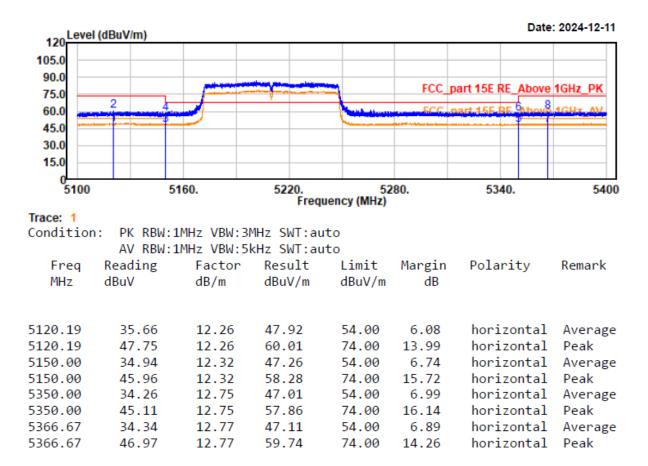


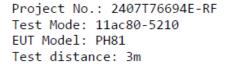


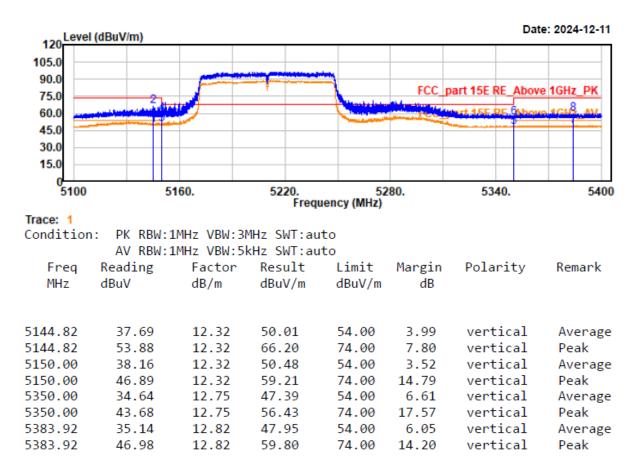
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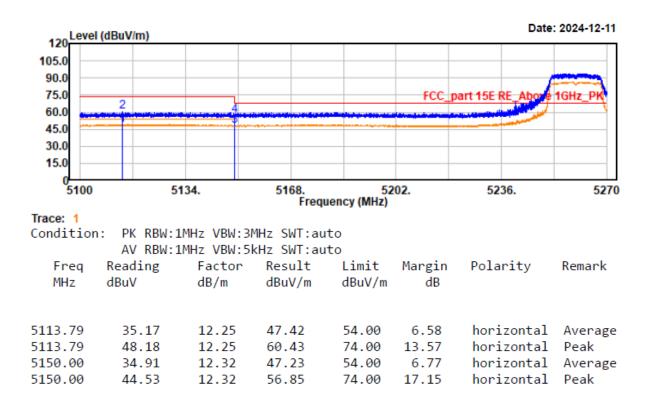


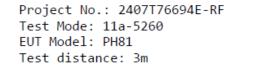


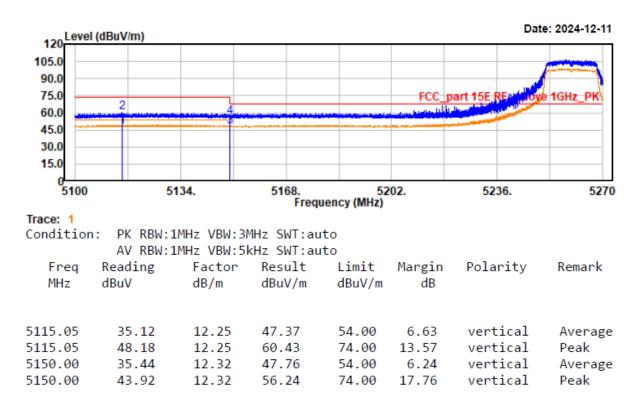


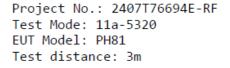
For 5250-5350 MHz:

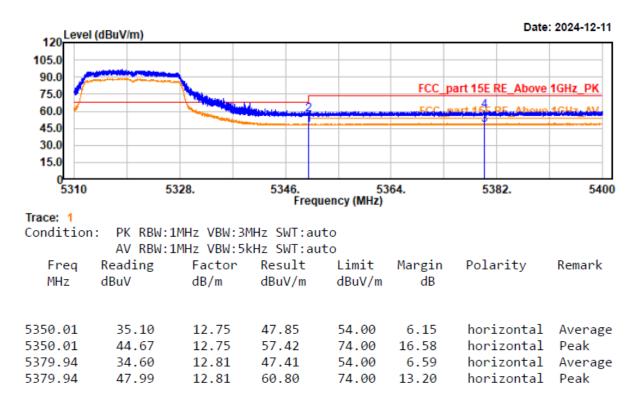
Project No.: 2407T76694E-RF Test Mode: 11a-5260 EUT Model: PH81 Test distance: 3m

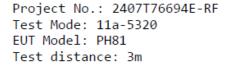


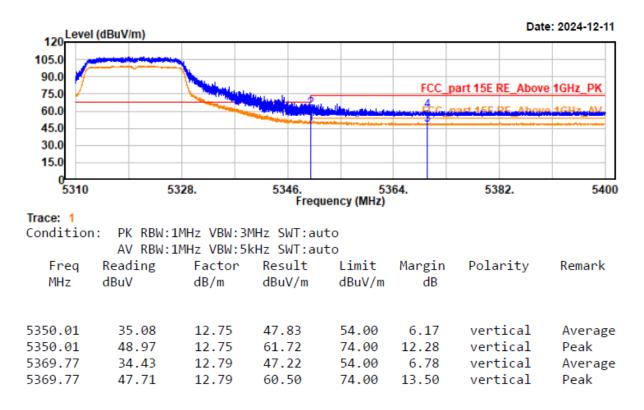


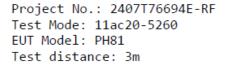


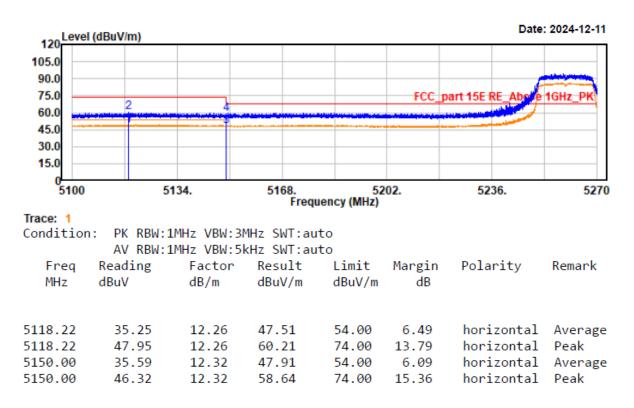


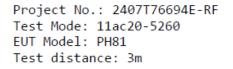


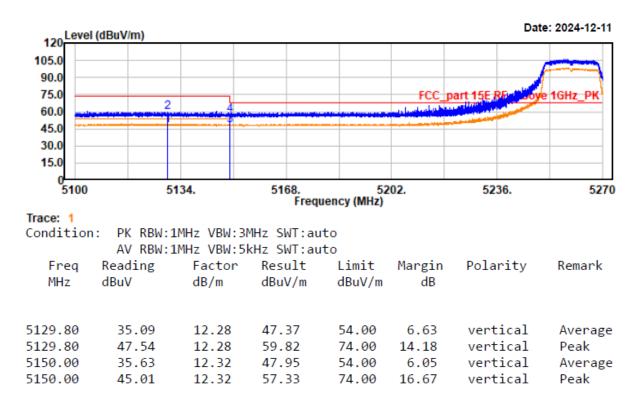


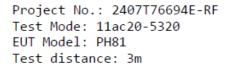


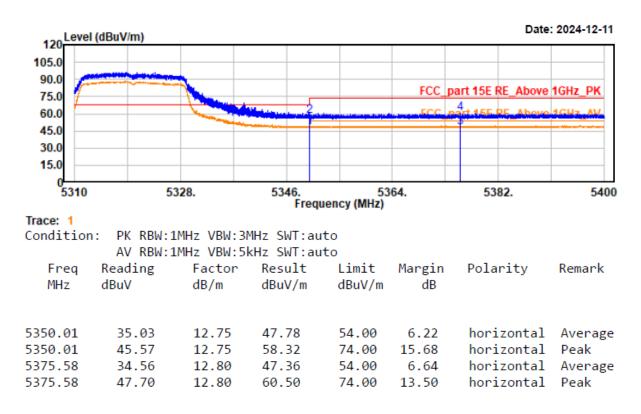


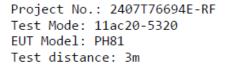


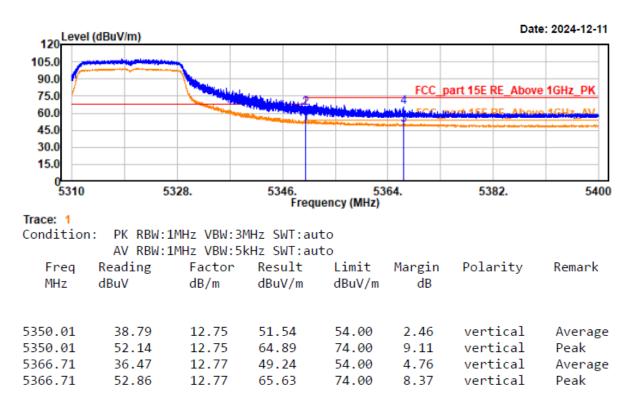


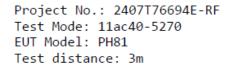


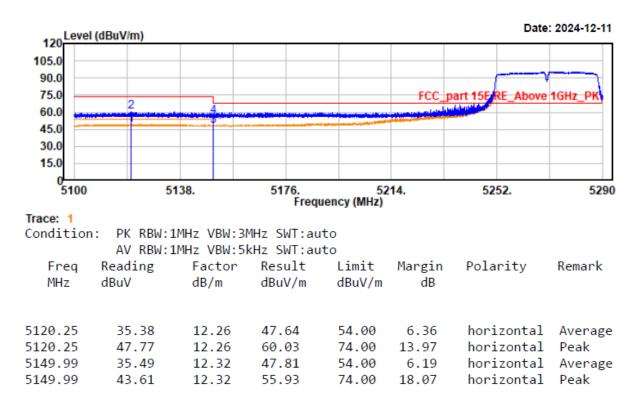


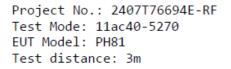


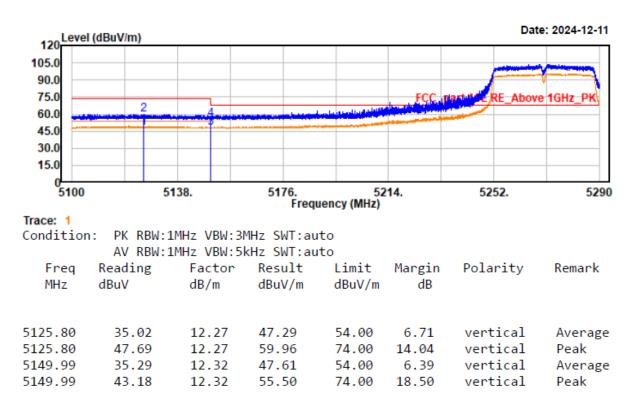


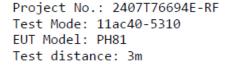


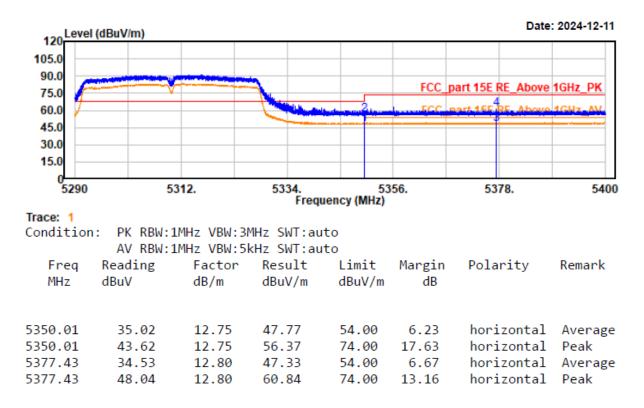




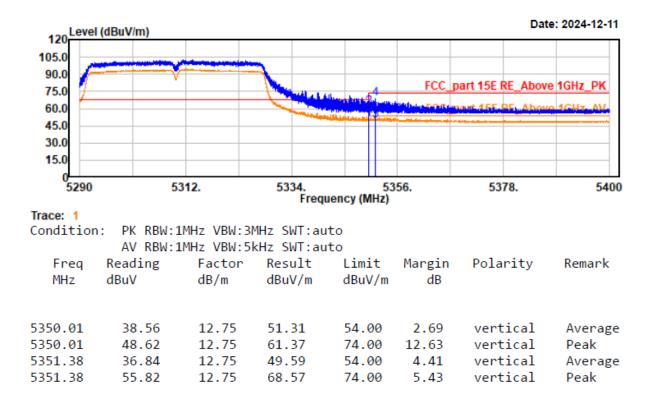




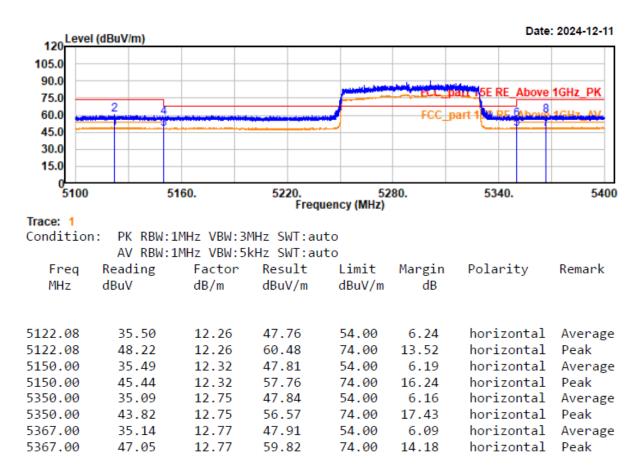


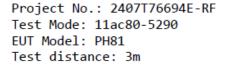


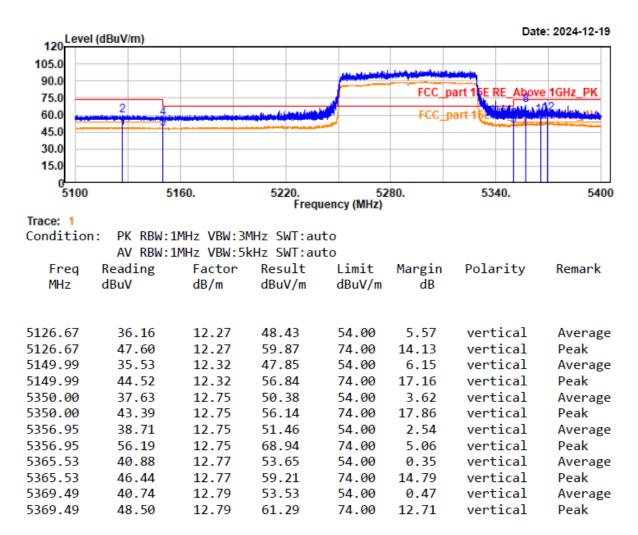
Project No.: 2407T76694E-RF Test Mode: 11ac40-5310 EUT Model: PH81 Test distance: 3m





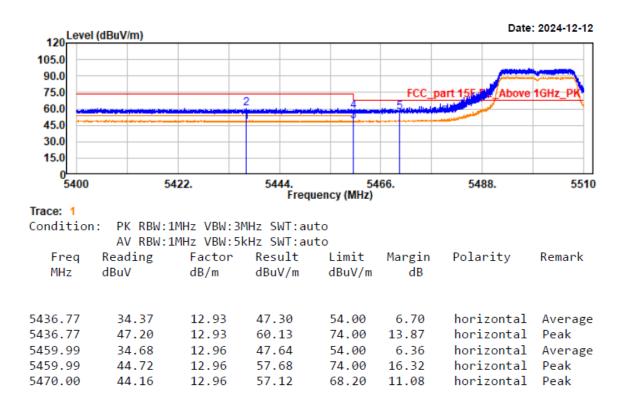


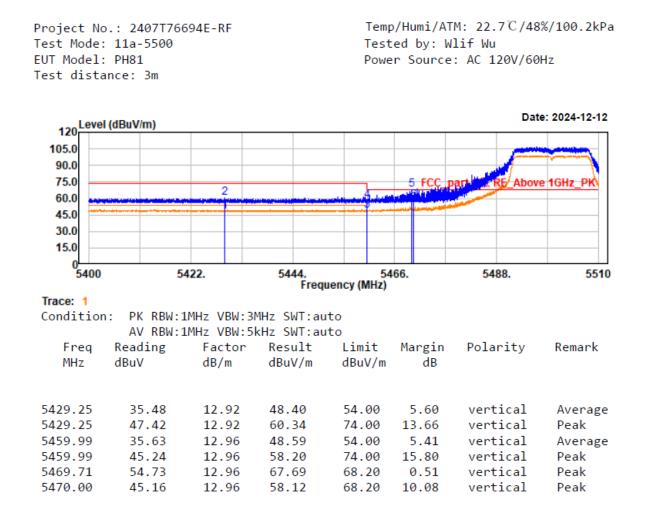


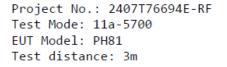


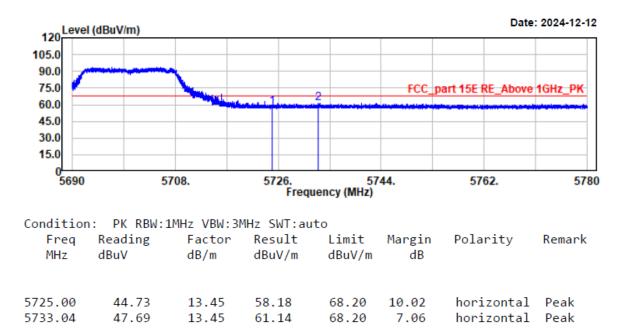
For 5470-5725 MHz:

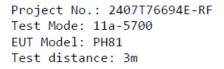
Project No.: 2407T76694E-RF Test Mode: 11a-5500 EUT Model: PH81 Test distance: 3m

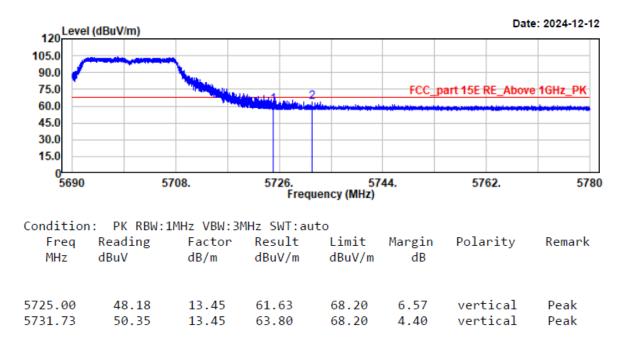


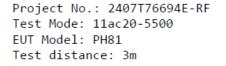


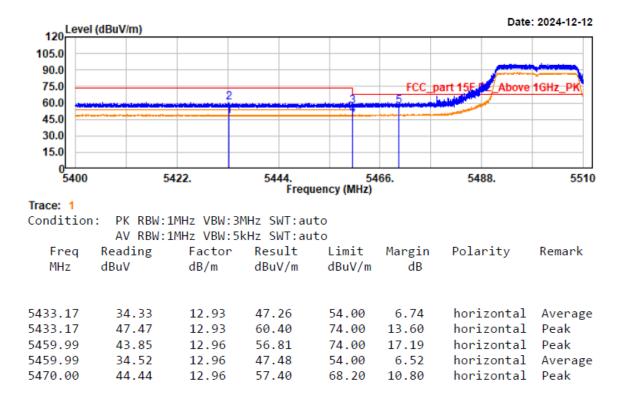


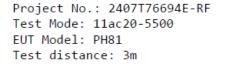


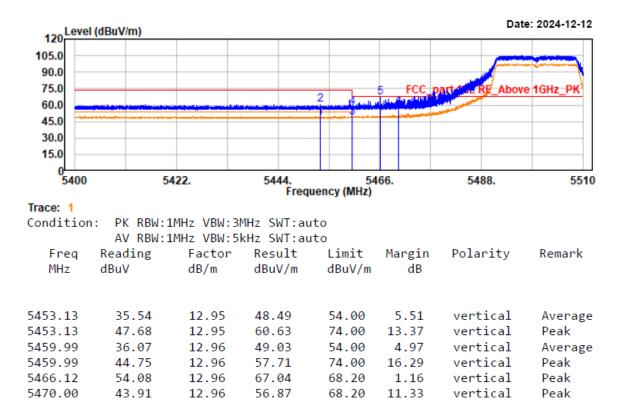


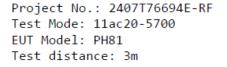


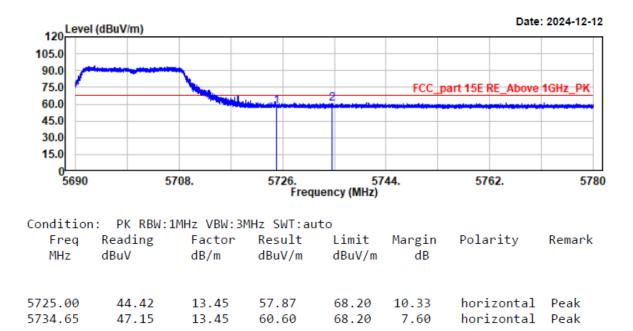


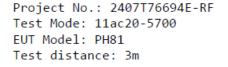


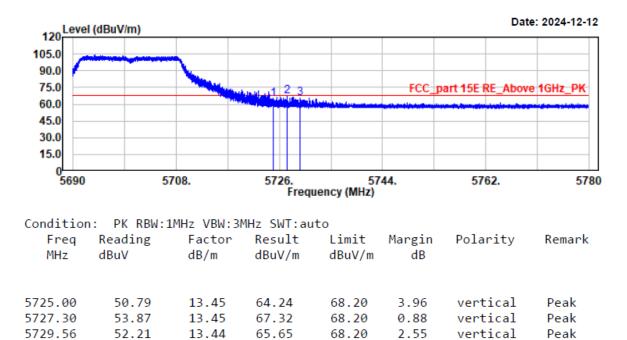


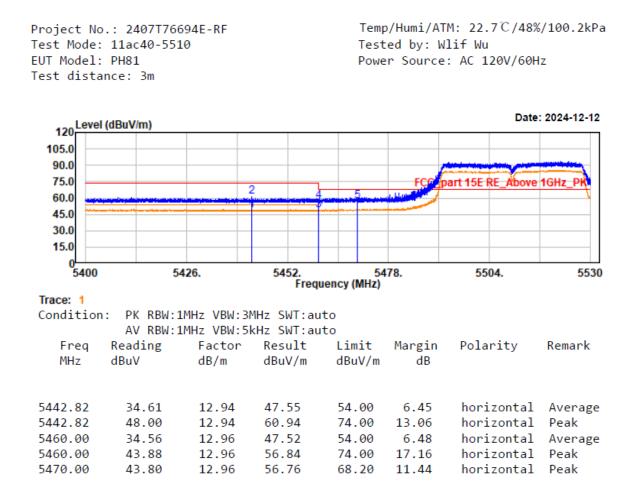






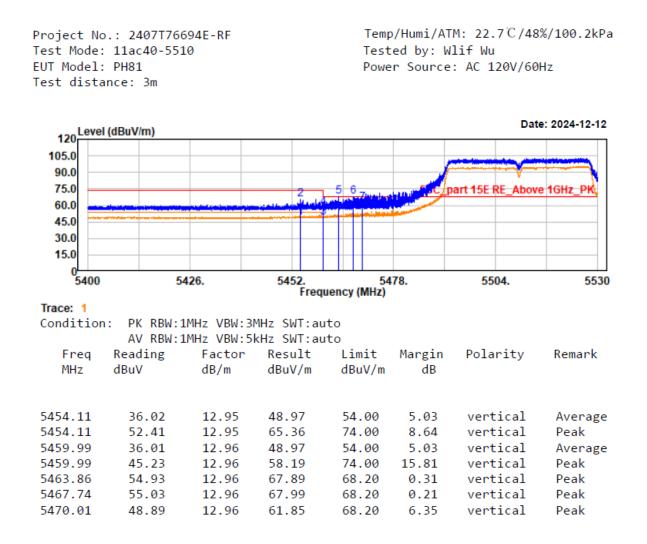


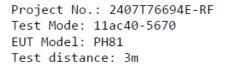


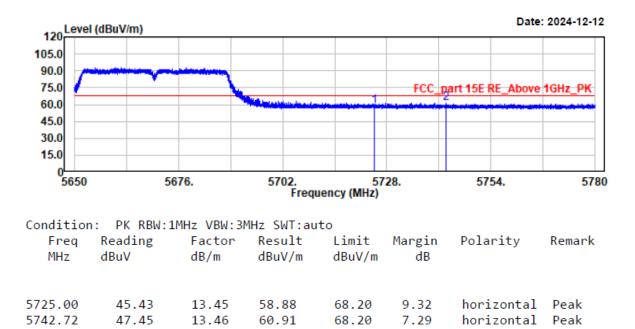


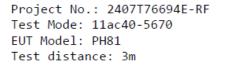
FCC Part 15.407

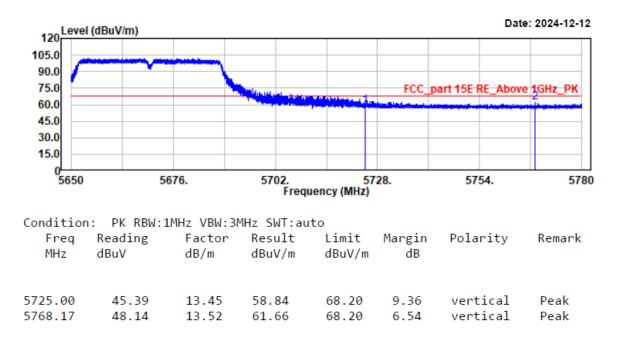
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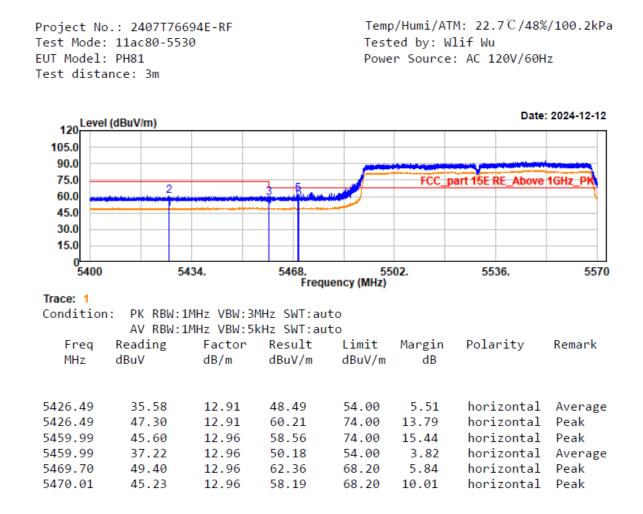


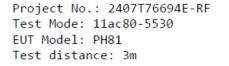


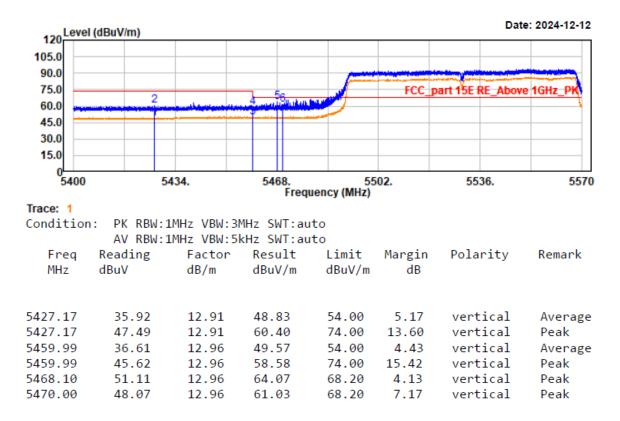


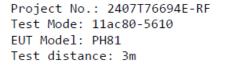


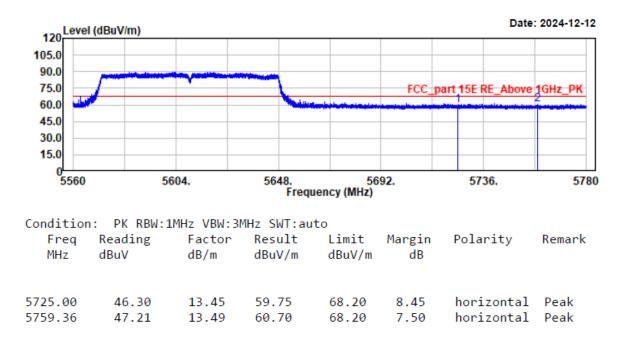


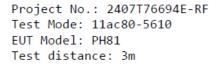


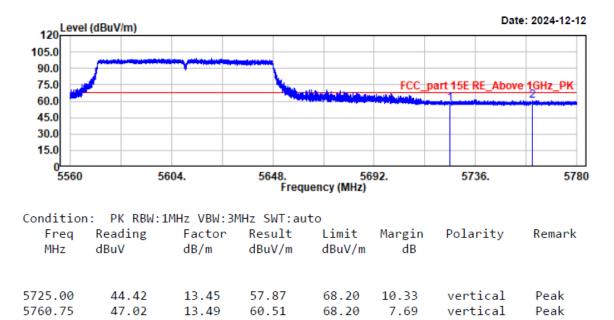






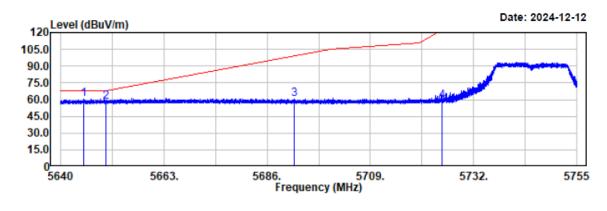




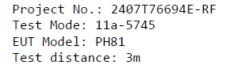


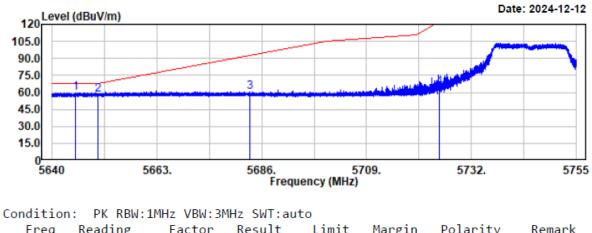
For 5725-5850 MHz:

Project No.: 2407T76694E-RF Test Mode: 11a-5745 EUT Model: PH81 Test distance: 3m

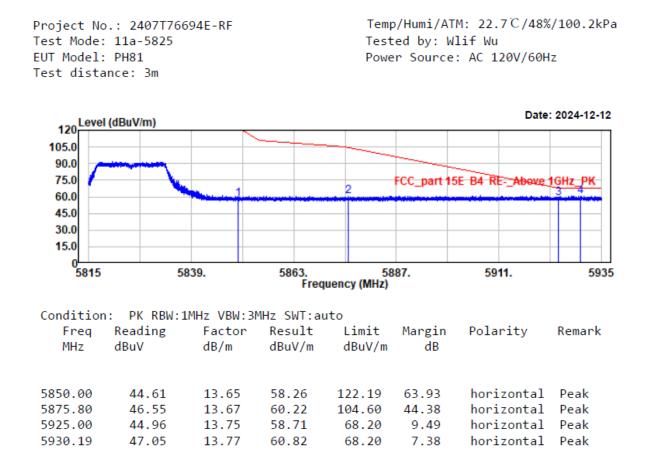


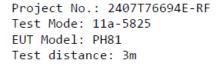
Condition	: PK RBW:1M	Hz VBW:3M	Hz SWT:au	to			
Freq	Reading	Factor	Result	Limit	Margin	Polarity	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
5645.19	47.10	13.28	60.38	68.20	7.82	horizontal	Peak
5649.99	44.38	13.28	57.66	68.20	10.54	horizontal	Peak
5692.07	47.26	13.40	60.66	99.33	38.67	horizontal	Peak
5725.00	45.15	13.45	58.60	122.19	63.59	horizontal	Peak

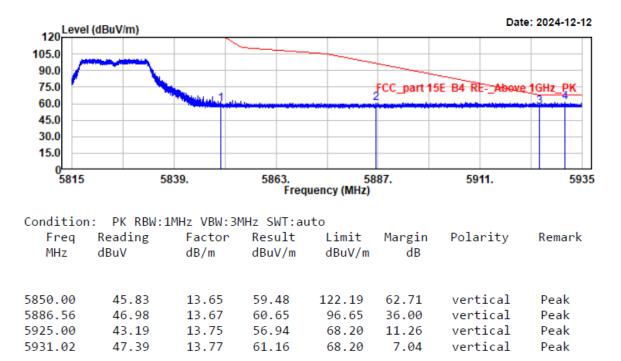


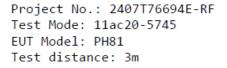


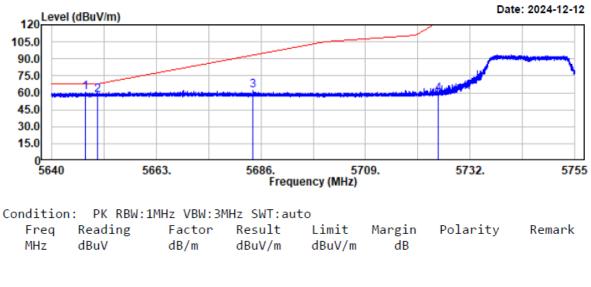
Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
5645.11	46.61	13.28	59.89	68.20	8.31	vertical	Peak
5650.00	44.87	13.28	58.15	68.20	10.05	vertical	Peak
5683.33	47.22	13.38	60.60	92.87	32.27	vertical	Peak
5725.00	50.80	13.45	64.25	122.19	57.94	vertical	Peak



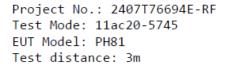


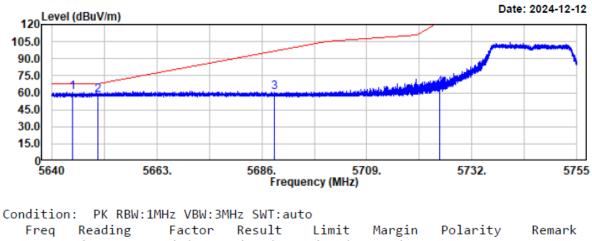




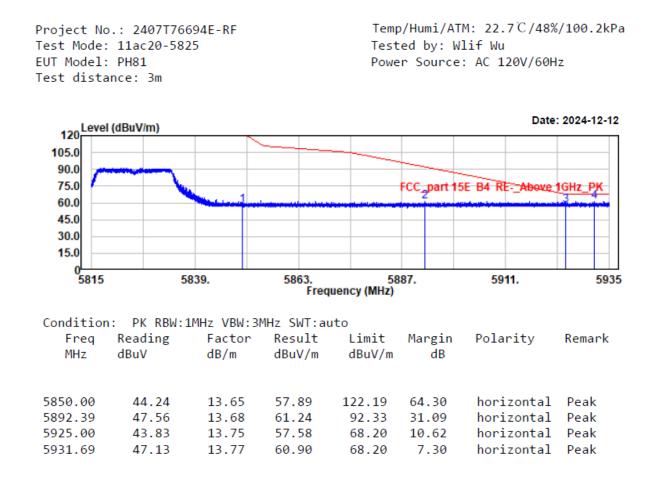


5647.30	47.11	13.28	60.39	68.20	7.81	horizontal	Peak
5650.00	45.00	13.28	58.28	68.20	9.92	horizontal	Peak
5684.30	48.56	13.39	61.95	93.58	31.63	horizontal	Peak
5725.00	45.57	13.45	59.02	122.19	63.17	horizontal	Peak

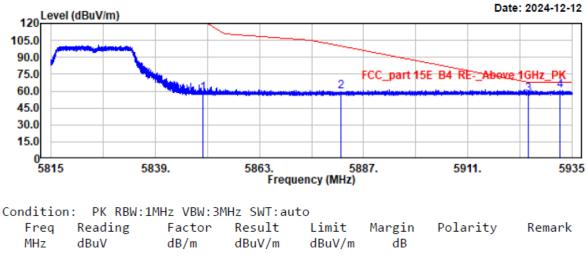




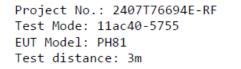
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	-		
5644.43	46.82	13.27	60.09	68.20	8.11	vertical	Peak	
5650.00	44.63	13.28	57.91	68.20	10.29	vertical	Peak	
5688.79	46.99	13.39	60.38	96.91	36.53	vertical	Peak	
5725.00	51.04	13.45	64.49	122.19	57.70	vertical	Peak	

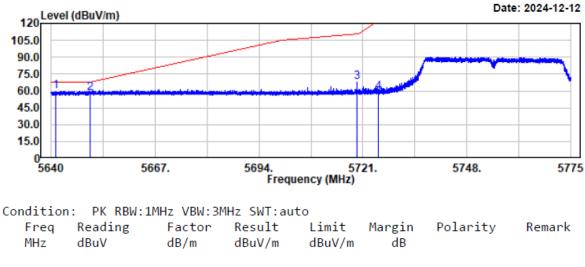




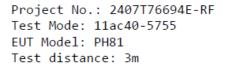


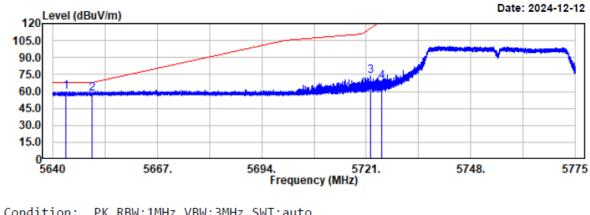
5850.00	44.44	13.65	58.09	122.19	64.10	vertical	Peak
5881.82	46.23	13.67	59.90	100.16	40.26	vertical	Peak
5925.00	43.01	13.75	56.76	68.20	11.44	vertical	Peak
5932.17	46.84	13.77	60.61	68.20	7.59	vertical	Peak



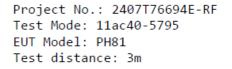


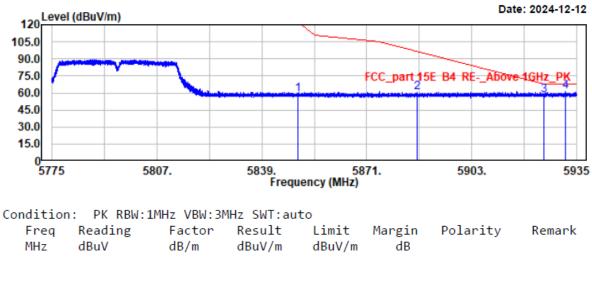
5641.07	46.56	13.28	59.84	68.20	8.36	horizontal	Peak
5650.00	44.56	13.28	57.84	68.20	10.36	horizontal	Peak
5719.54	54.18	13.44	67.62	110.67	43.05	horizontal	Peak
5725.00	45.71	13.45	59.16	122.19	63.03	horizontal	Peak



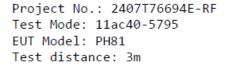


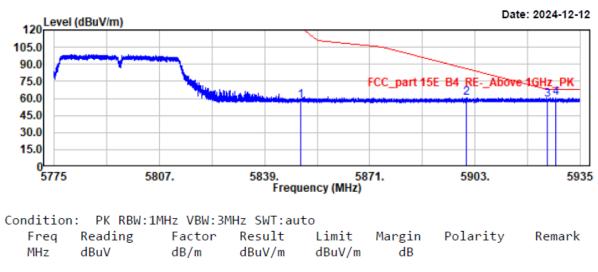
Freq MHz	Reading dBuV	Factor dB/m		Limit dBuV/m	Margin dB	Polarity	Remark
5643.46	46.52	13.27	59.79	68.20	8.41	vertical	Peak
5650.00	45.00	13.28	58.28	68.20	9.92	vertical	Peak
5722.04	60.25	13.44	73.69	115.45	41.76	vertical	Peak
5725.00	55.28	13.45	68.73	122.19	53.46	vertical	Peak



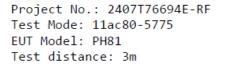


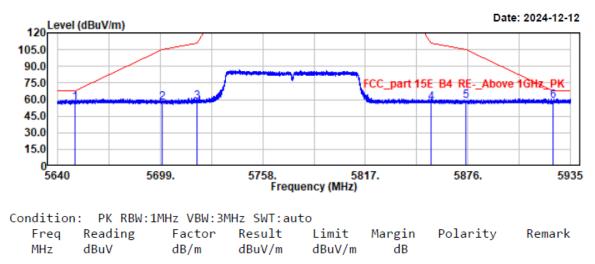
5850.01	45.32	13.65	58.97	122.18	63.21	horizontal	Peak
5886.25	46.75	13.67	60.42	96.88	36.46	horizontal	Peak
5925.00	44.11	13.75	57.86	68.20	10.34	horizontal	Peak
5931.53	47.23	13.77	61.00	68.20	7.20	horizontal	Peak



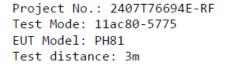


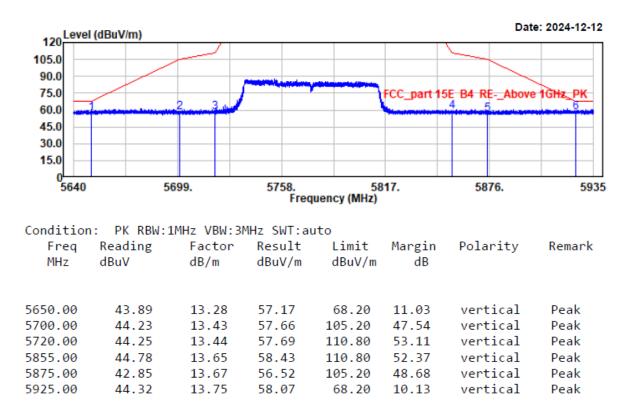
5850.01	44.10	13.65	57.75	122.18	64.43	vertical	Peak
5900.42	46.55	13.69	60.24	86.39	26.15	vertical	Peak
5925.00	44.83	13.75	58.58	68.20	9.62	vertical	Peak
5927.70	46.84	13.77	60.61	68.20	7.59	vertical	Peak





5650.00	43.83	13.28	57.11	68.20	11.09	horizontal	Peak
5700.00	44.06	13.43	57.49	105.20	47.71	horizontal	Peak
5720.00	44.78	13.44	58.22	110.80	52.58	horizontal	Peak
5855.00	43.19	13.65	56.84	110.80	53.96	horizontal	Peak
5875.00	44.79	13.67	58.46	105.20	46.74	horizontal	Peak
5925.00	44.65	13.75	58.40	68.20	9.80	horizontal	Peak





FCC §15.407(a) (e)–EMISSION BANDWIDTH

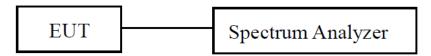
Applicable Standard

FCC §15.407 (a), (h), (h)(2) Radar Detection Function of Dynamic Frequency Selection (DFS). U-NII devices operating with any part of its 26 dB emission bandwidth in the 5.25-5.35 GHz and 5.47-5.725 GHz bands shall employ a DFS radar detection mechanism to detect the presence of radar systems and to avoid cochannel operation with radar systems.

FCC §15.407 (e)

Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

EUT Setup



Test Procedure

26dB Emission Bandwidth:

According to ANSI C63.10-2013 Section 12.4.1

a) Set RBW = approximately 1% of the emission bandwidth.

b) Set the VBW > RBW.

c) Detector = peak.

d) Trace mode = max hold

e) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

6 dB emission bandwidth:

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01

a) Set RBW = 100 kHz.

b) Set the video bandwidth (VBW) \geq 3 RBW.

- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.

g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described in this section. For devices that use channel aggregation refer to III.A and III.C for determining emission bandwidth.

99% Occupied Bandwidth:

According to ANSI C63.10-2013 Section 12.4.2&6.9.3

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.

c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.

d) Step a) through step c) might require iteration to adjust within the specified range.

e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

f) Use the 99% power bandwidth function of the instrument (if available) and report the measured andwidth.

g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

Test Data

Test Mode:	Transmitting	Test Engineer:	Stein Peng
Test Date:	2024-05-24	Test Voltage:	AC120V/60Hz
Test Result:	Compliance	Environment:	Temp.: 24.3°C Humi.: 59% Atm :100.5kPa
5150-5250 MHz:			99% Occupied
Test Modes	Test Frequency (MHz)	26 dB Bandwidth (MHz)	Bandwidth (MHz)
	5180	21.52	16.5
802.11a	5200	22.778	16.45
	5240	25.687	16.55
	5180	23.279	17.65
802.11ac vht20	5200	25.436	17.7
	5240	23.407	17.65
90 2 11 1 440	5190	55.216	36.4
802.11ac vht40	5230	65.696	36.4
802.11ac vht80	5210	128.54	75.6
5250-5350 MHz:			
Test Modes	Test Frequency (MHz)	26 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
	5260	24.907	16.55
802.11a	5280	24.385	16.55
	5320	21.096	16.5
	5260	23.265	17.65
802.11ac vht20	5280	24.893	17.65
	5320	24.357	17.65
802.11ac vht40	5270	56.304	36.3
002.11ac viii40	5310	61.778	36.4
802.11ac vht80	5290	101.867	75.6

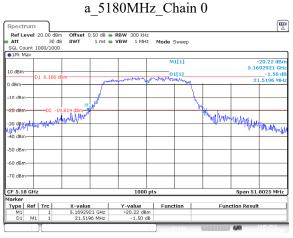
Report No.: 2407T76694E-RF-04

Test Modes	Test Frequency (MHz)	26 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
	5500	39.16	17.2
802.11a	5580	33.099	16.7
802.11a	5700	23.359	16.6
	5720	22.406	16.6
	5500	32.105	17.85
802 111+20	5580	27.097	17.8
802.11ac vht20	5700	22.827	17.75
	5720	21.957	17.75
	5510	78.678	37
802.11ac vht40	5550	79.84	36.9
802.11ac vnt40	5670	44.745	36.6
	5710	42.543	36.5
	5530	152.379	76.2
802.11ac vht80	5610	122.565	75.8
	5690	90.29	75.6
25-5850 MHz:			
Test Modes	Test Frequency (MHz)	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
	5745	16.416	16.55
802.11a	5785	16.416	16.55
	5825	16.416	16.6
	5745	17.668	17.75
802.11ac vht20	5785	17.668	17.7
	5825	17.668	17.75
802.11ac vht40	5755	36.036	36.4
002.11ac VIII40	5795	36.436	36.5
802.11ac vht80	5775	73.874	75.6

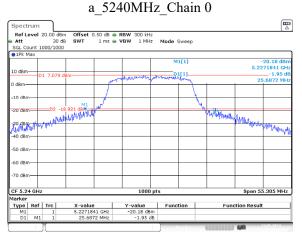
Report No.: 2407T76694E-RF-04

26dB Emission Bandwidth:

5150-5250MHz:



ProjectNo.:2407T76694E-RF Tester:Stein Peng Date: 24.MAY.2024 09:15:06

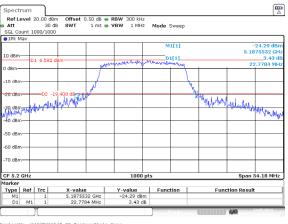


ProjectNo.:2407T76694E-RF Tester:Stein Peng Date: 24.MAY.2024 09:19:03

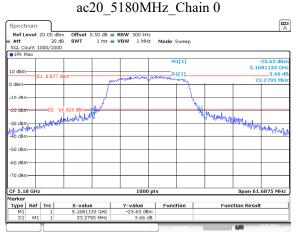
ac20_5200MHz_Chain 0 Att 30 dB
 Offset
 0.50 dB ●
 RBW
 300 kHz

 SWT
 1 ms ●
 VBW
 1 MHz
 Mode
 Sweep
SGL Count 1Pk Max -19.92 dBn 5.1891803 GH 0.36 dE 25.4359 MH M1[1] 10 dBr D1[1] 6.845 nha dBm· 10 dBm whill the work with which D2 -19.155 dBm -20 dBm 30 dBmwww 40 dBm -50 dBm -60 dBm -70 dBm CF 5.2 GH Span 54.18 MHz Type Ref Trc Function Result M1

ProjectNo.:2407T76694E-RF Tester:Stein Peng Date: 24.MAY.2024 10:38:49

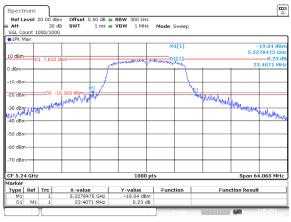


ProjectNo.:2407776694E-RF Tester:Stein Peng Date: 24.MAY.2024 09:17:03



ProjectNo.:2407T76694E-RF Tester:Stein Peng Date: 24.MAY.2024 10:37:48

ac20_5240MHz_Chain 0



ProjectNo.:2407T76694E-RF Tester:Stein Peng

Date: 24.MAY.2024 10:40:19

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a_5200MHz_Chain 0