



11ac-HT20 5220MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
10440.00	2.7	44.9	46.2	48.9	68.2	19.3

11ac-HT20 5240MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
10480.00	2.8	45.8	44.1	48.6	68.2	19.6

11ac-HT20 5260MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
10520.00	2.9	45.6	45.2	48.5	68.2	19.7

11ac-HT20 5300MHz

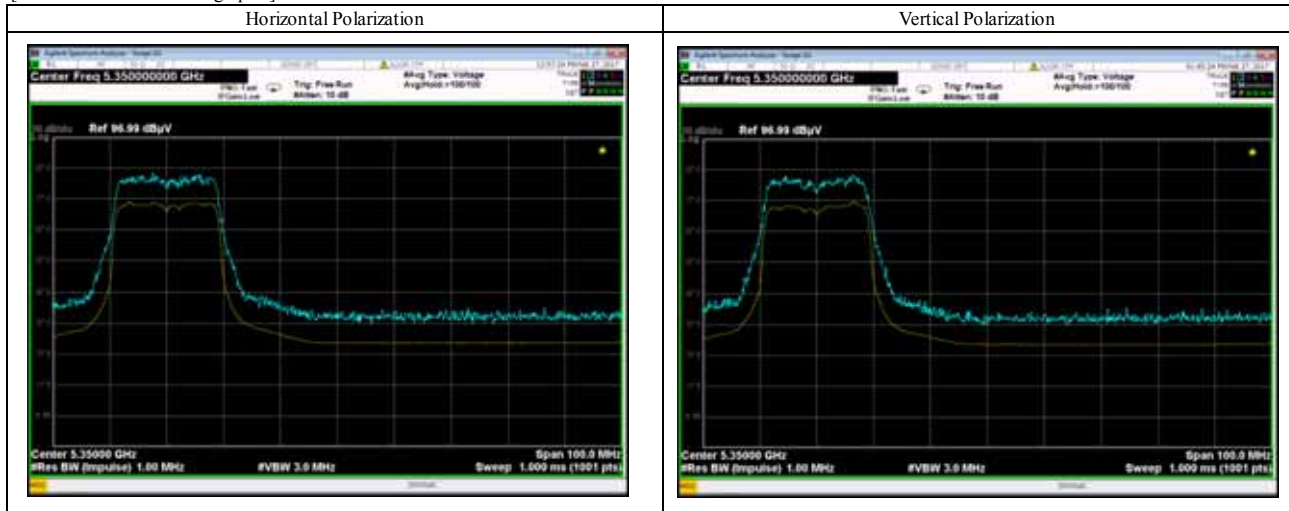
Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
10600.00	2.9	44.2	42.6	47.1	74.0	26.9
Measurement with the Average Detector						
10600.00	2.9	37.0	35.4	39.9	54.0	14.1



11ac-HT20 5320MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
5350.00	11.8	42.7	42.6	54.5	74.0	19.5
10640.00	2.9	43.8	41.2	46.7	74.0	27.3
Measurement with the Average Detector						
5350.00	11.8	32.0	32.1	43.9	54.0	10.1
10640.00	2.9	36.3	35.4	39.2	54.0	14.8

[Restricted-band band-edge plot]



[Note]

Blue trace : Peak Detector

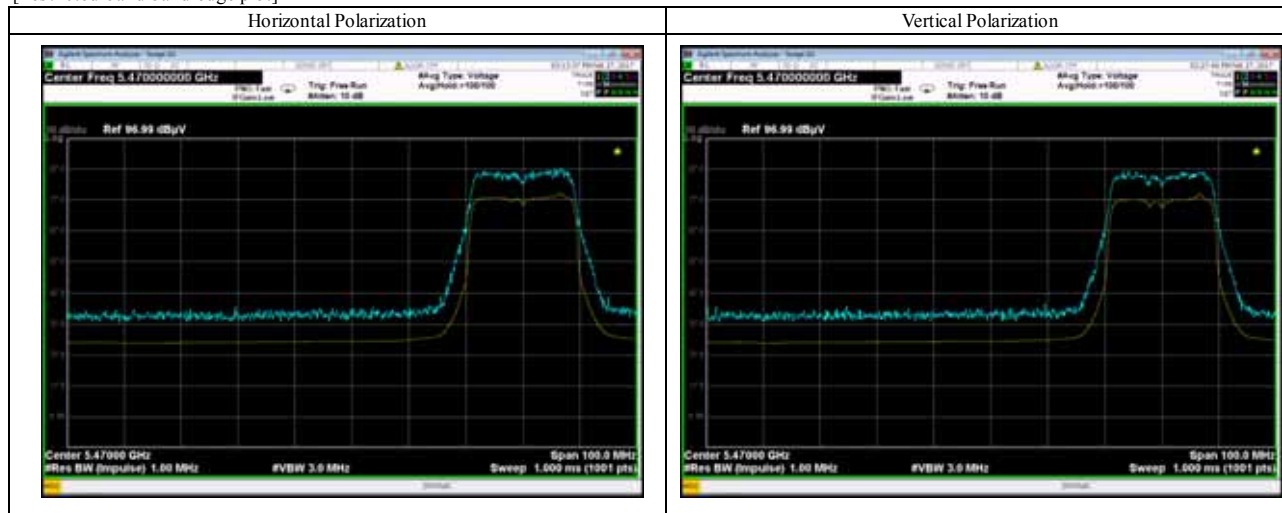
Yellow trace : Average Detector



11ac-HT20 5500MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
5460.00	12.1	43.1	43.5	55.6	74.0	18.4
5470.00	12.1	43.2	44.0	56.1	68.2	12.1
11000.00	3.7	42.5	41.1	46.2	74.0	27.8
Measurement with the Average Detector						
5460.00	12.1	32.4	32.6	44.7	54.0	9.3
11000.00	3.7	37.6	37.1	41.3	54.0	12.7

[Restricted-band band-edge plot]



[Note]

Blue trace : Peak Detector

Yellow trace : Average Detector



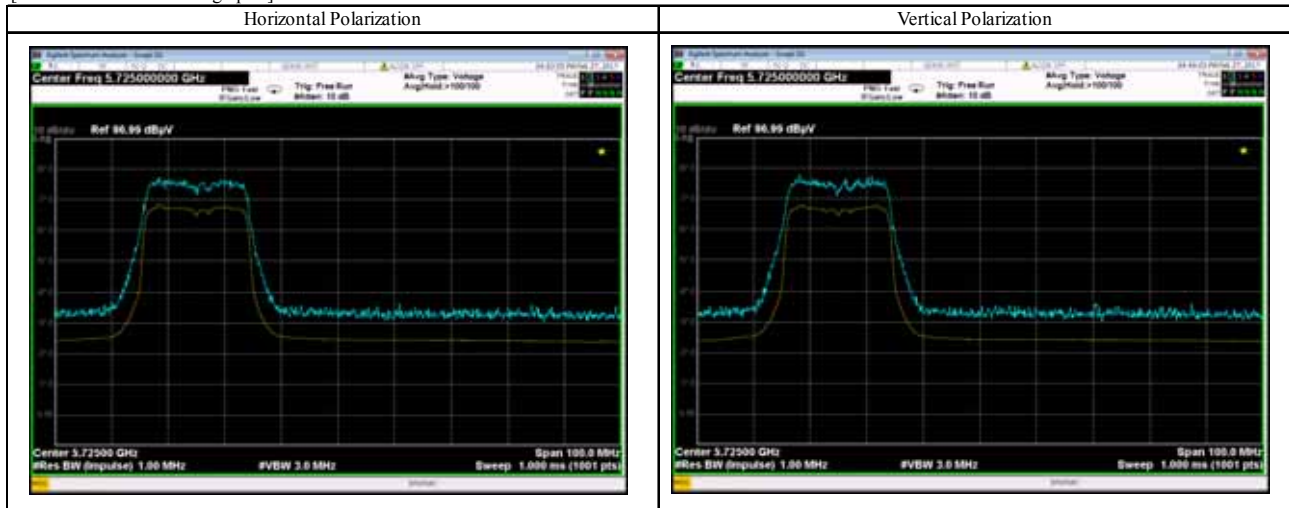
11ac-HT20 5580MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
11160.00	4.0	43.4	41.6	47.4	74.0	26.6
Measurement with the Average Detector						
11160.00	4.0	38.9	37.5	42.9	54.0	11.1

11ac-20 5700MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
5725.00	12.3	44.5	44.2	56.8	68.2	11.4
11400.00	4.5	43.1	43.0	47.6	74.0	26.4
Measurement with the Average Detector						
11400.00	4.5	40.2	39.1	44.7	54.0	9.3

[Restricted-band band-edge plot]



[Note]

Blue trace : Peak Detector

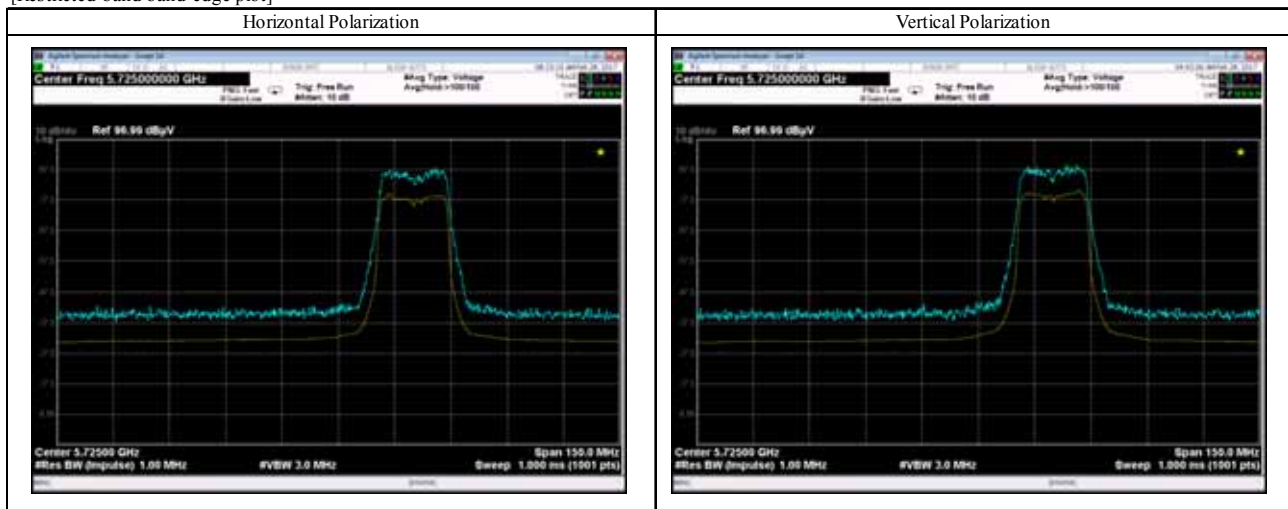
Yellow trace : Average Detector



11ac-20 5745MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
5650.00	12.1	43.0	42.8	55.1	68.2	13.1
5700.00	12.2	43.9	43.7	56.1	105.2	49.1
5715.00	12.2	44.0	44.0	56.2	109.4	53.2
5720.00	12.3	44.6	43.8	56.9	110.8	53.9
5725.00	12.3	44.8	45.1	57.4	122.2	64.8
11490.00	4.6	45.1	44.6	49.7	74.0	24.3
Measurement with the Average Detector						
11490.00	4.6	41.9	41.1	46.5	54.0	7.5

[Restricted-band band-edge plot]



[Note]

Blue trace : Peak Detector

Yellow trace : Average Detector



11ac-HT20 5785MHz

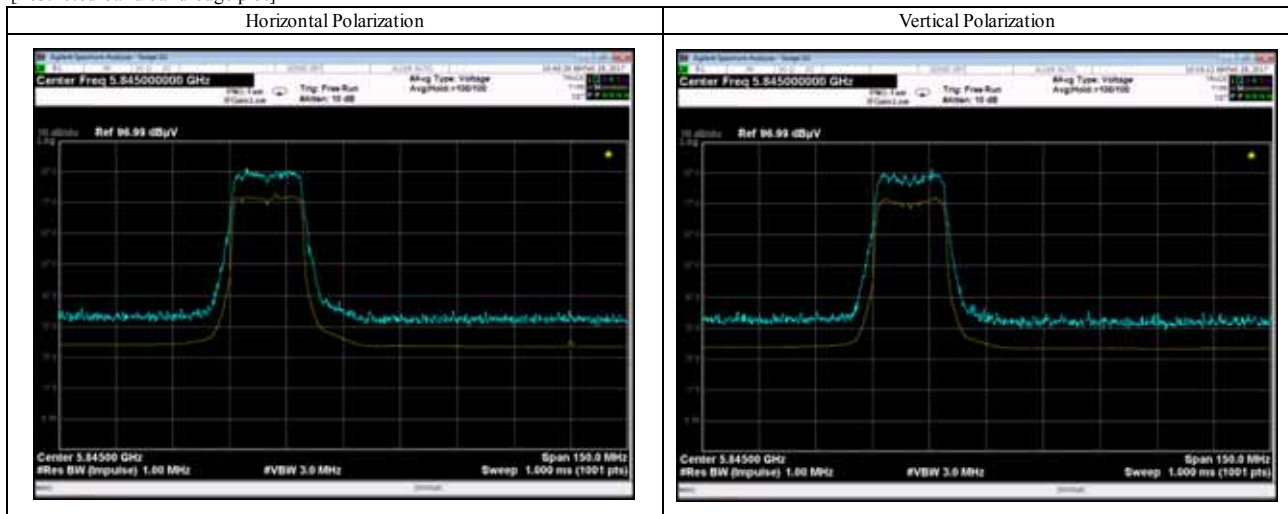
Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
11570.00	4.6	45.4	44.5	50.0	74.0	24.0
Measurement with the Average Detector						
11570.00	4.6	41.9	41.5	46.5	54.0	7.5



11ac-HT20 5825MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
5850.00	12.3	43.4	45.1	57.4	122.2	64.8
5855.00	12.3	43.2	42.6	55.5	110.8	55.3
5860.00	12.3	43.2	42.7	55.5	109.4	53.9
5875.00	12.4	43.8	42.4	56.2	105.2	49.0
5925.00	12.6	42.9	42.8	55.5	68.2	12.7
11650.00	4.7	45.1	45.3	50.0	74.0	24.0
Measurement with the Average Detector						
11650.00	4.7	41.6	41.4	46.3	54.0	7.7

[Restricted-band band-edge plot]



[Note]

Blue trace : Peak Detector

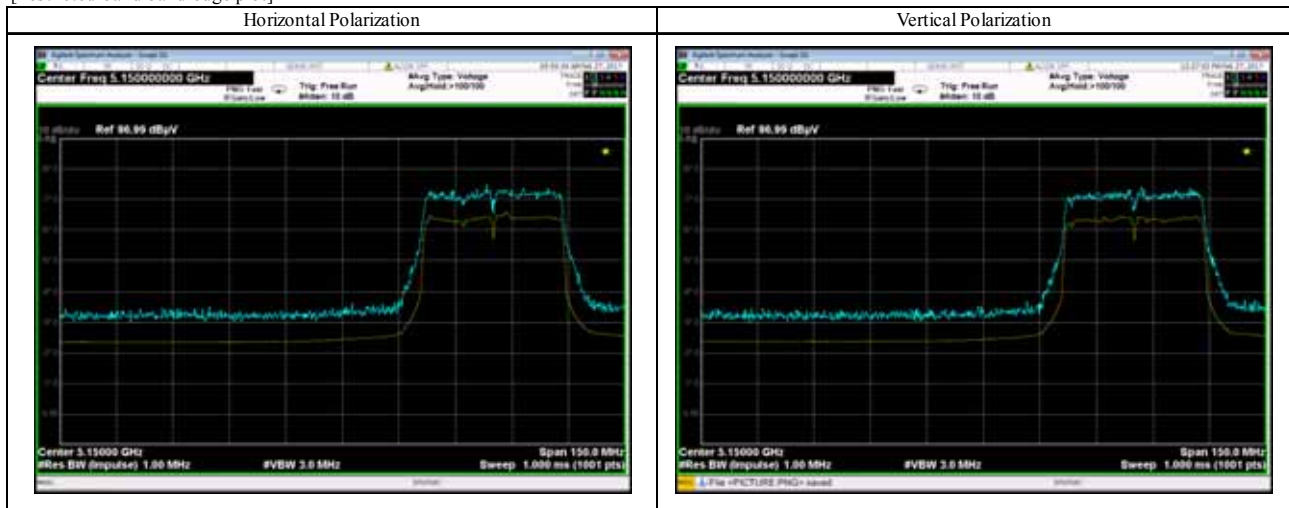
Yellow trace : Average Detector



11ac-HT40 5190MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
5150.00	11.5	43.3	43.4	54.9	74.0	19.1
10380.00	2.5	44.6	44.5	47.1	68.2	21.1
Measurement with the Average Detector						
5150.00	11.5	32.6	32.6	44.1	54.0	9.9

[Restricted-band band-edge plot]



[Note]

Blue trace : Peak Detector

Yellow trace : Average Detector



11ac-HT40 5230MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
10460.00	2.7	44.4	43.1	47.1	68.2	21.1

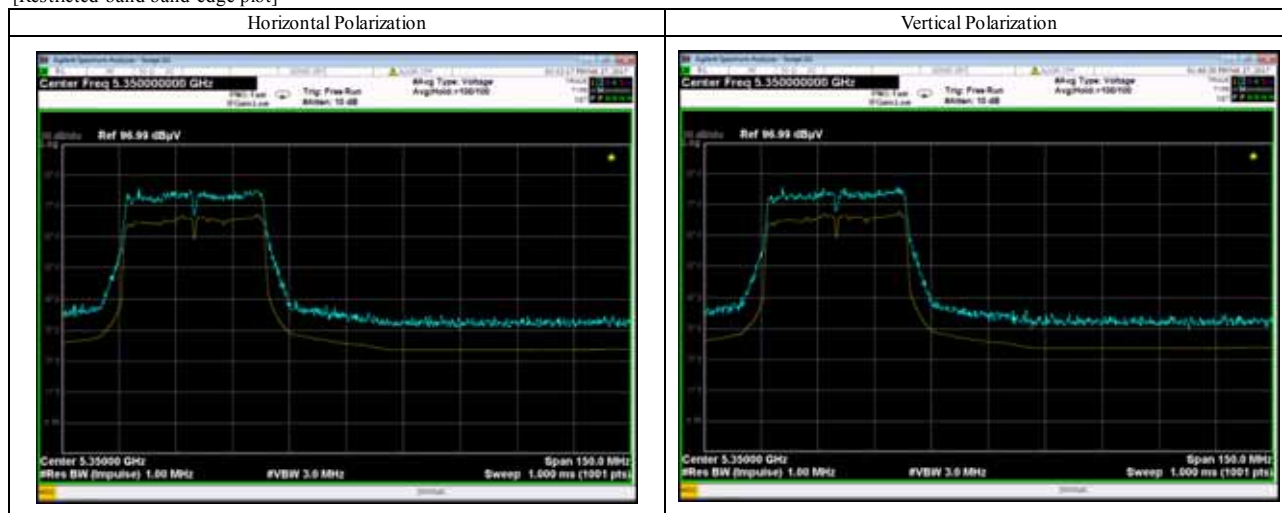
11ac-HT40 5270MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
10540.00	2.9	43.4	41.9	46.3	68.2	21.9

11ac-HT40 5310MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
5350.00	11.8	44.8	44.7	56.6	74.0	17.4
10620.00	2.9	42.4	41.2	45.3	74.0	28.7
Measurement with the Average Detector						
5350.00	11.8	34.1	33.9	45.9	54.0	8.1
10620.00	2.9	35.9	35.2	38.8	54.0	15.2

[Restricted-band band-edge plot]



[Note]

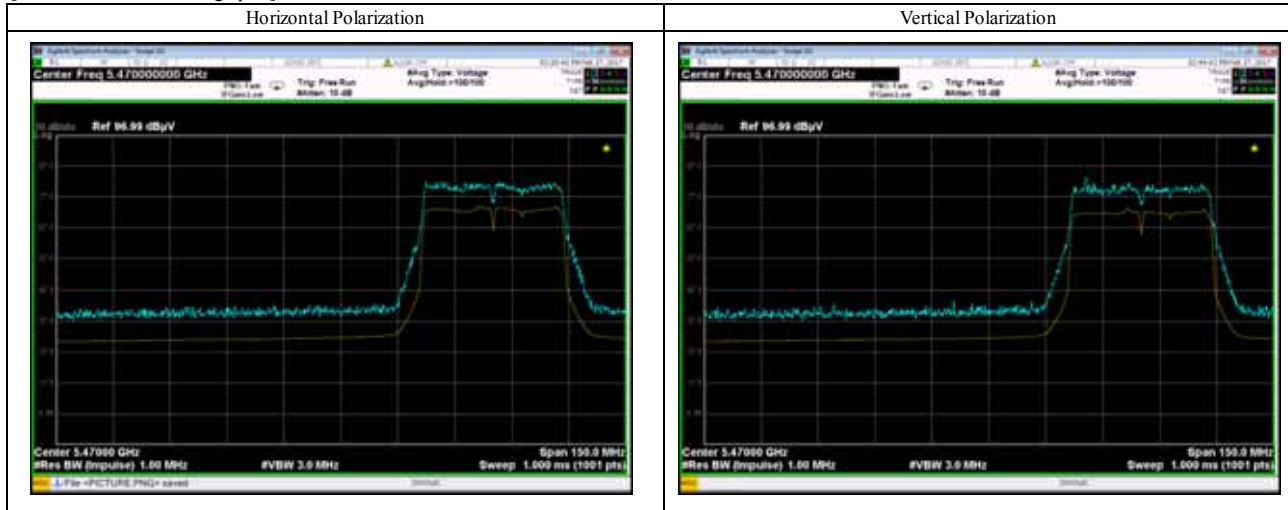
Blue trace : Peak Detector

Yellow trace : Average Detector

11ac-HT40 5510MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
5460.00	12.1	43.1	43.0	55.2	74.0	18.8
5470.00	12.1	43.6	43.5	55.7	68.2	12.5
11020.00	3.7	41.1	41.6	45.3	74.0	28.7
Measurement with the Average Detector						
5460.00	12.1	32.4	32.5	44.6	54.0	9.4
11020.00	3.7	36.9	37.2	40.9	54.0	13.1

[Restricted-band band-edge plot]



[Note]

Blue trace : Peak Detector

Yellow trace : Average Detector

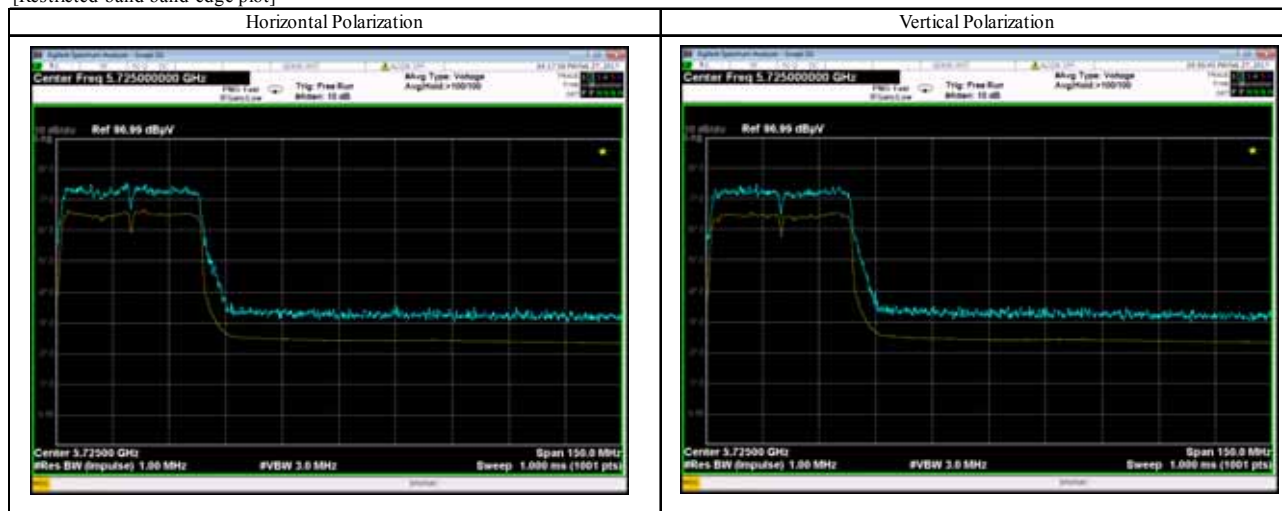
11ac-HT40 5550MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
11100.00	3.7	42.5	42.2	46.2	74.0	27.8
Measurement with the Average Detector						
11100.00	3.7	37.6	37.2	41.3	54.0	12.7

11ac-HT40 5670MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
5725.00	12.3	44.2	43.5	56.5	68.2	11.7
11340.00	4.3	43.2	42.5	47.5	74.0	26.5
Measurement with the Average Detector						
11340.00	4.3	40.0	37.9	44.3	54.0	9.7

[Restricted-band band-edge plot]



[Note]

Blue trace : Peak Detector

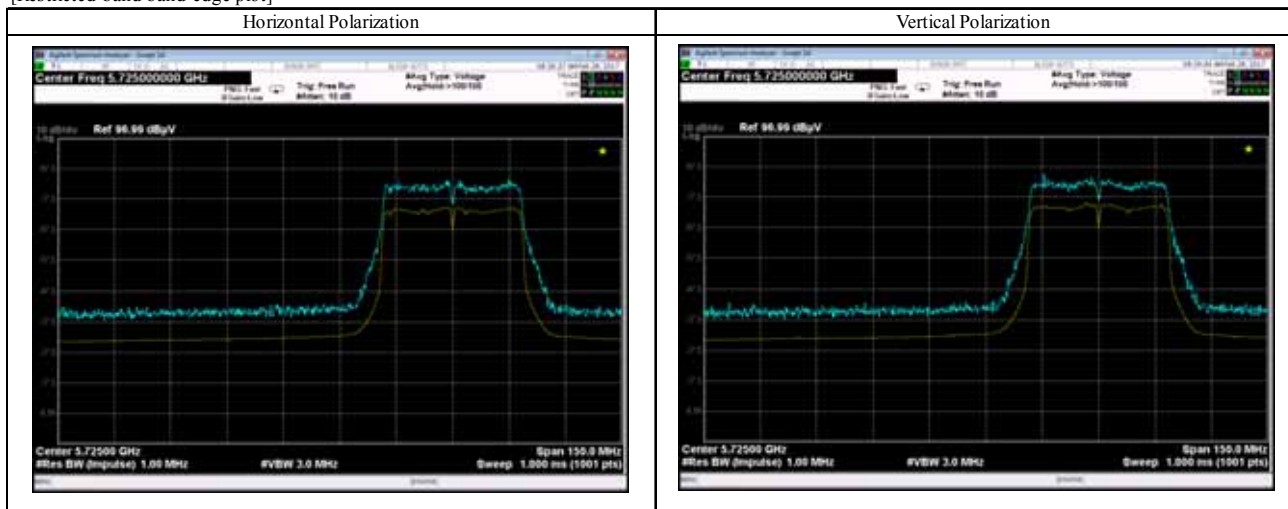
Yellow trace : Average Detector



11ac-HT40 5755MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
5650.00	12.1	43.3	42.1	55.4	68.2	12.8
5700.00	12.2	43.2	43.9	56.1	105.2	49.1
5715.00	12.2	44.1	45.0	57.2	109.4	52.2
5720.00	12.3	44.5	44.5	56.8	110.8	54.0
5725.00	12.3	44.9	44.7	57.2	122.2	65.0
11510.00	4.6	44.6	44.3	49.2	74.0	24.8
Measurement with the Average Detector						
11510.00	4.6	41.1	40.9	45.7	54.0	8.3

[Restricted-band band-edge plot]



[Note]

Blue trace : Peak Detector

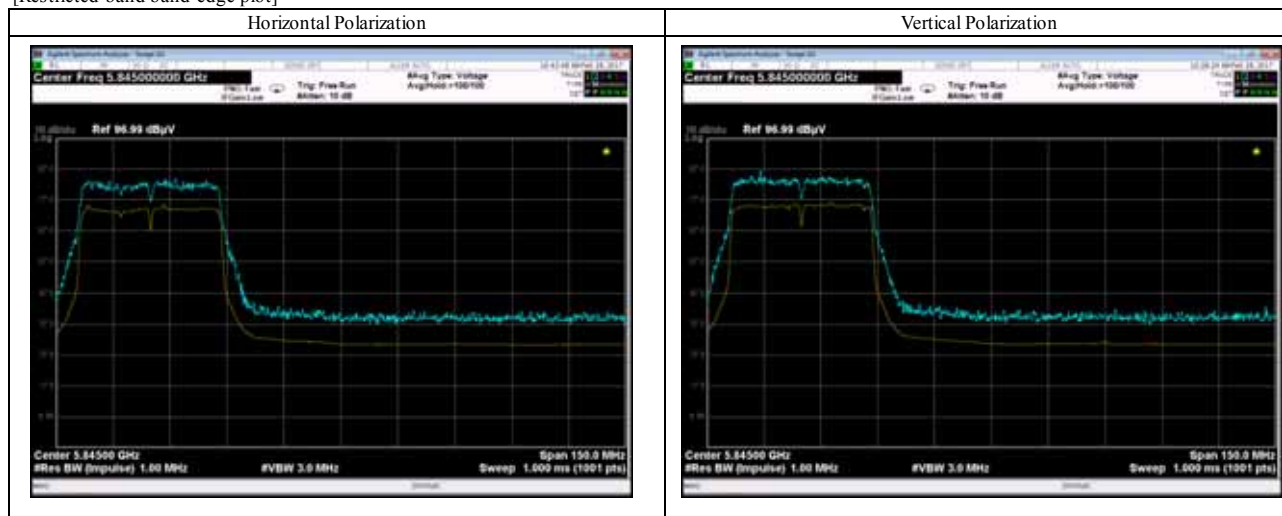
Yellow trace : Average Detector



11ac-HT40 5795MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
5850.00	12.3	43.2	42.7	55.5	122.2	66.7
5855.00	12.3	42.4	42.7	55.0	110.8	55.8
5860.00	12.3	42.6	42.6	54.9	109.4	54.5
5875.00	12.4	43.2	43.1	55.6	105.2	49.6
5925.00	12.6	43.2	43.6	56.2	68.2	12.0
11590.00	4.6	44.7	44.5	49.3	74.0	24.7
Measurement with the Average Detector						
11590.00	4.6	41.7	41.2	46.3	54.0	7.7

[Restricted-band band-edge plot]



[Note]

Blue trace : Peak Detector

Yellow trace : Average Detector



11ac-HT80 5210MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
5150.00	11.5	43.2	44.3	55.8	74.0	18.2
10420.00	2.7	41.2	40.9	43.9	68.2	24.3
Measurement with the Average Detector						
5150.00	11.5	32.6	32.5	44.1	54.0	9.9

[Restricted-band band-edge plot]



[Note]

Blue trace : Peak Detector

Yellow trace : Average Detector

11ac-HT80 5290MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
5350.00	11.8	43.5	43.2	55.3	74.0	18.7
10580.00	2.9	41.3	40.0	44.2	68.2	24.0
Measurement with the Average Detector						
5350.00	11.8	32.6	32.4	44.4	54.0	9.6

[Restricted-band band-edge plot]



[Note]

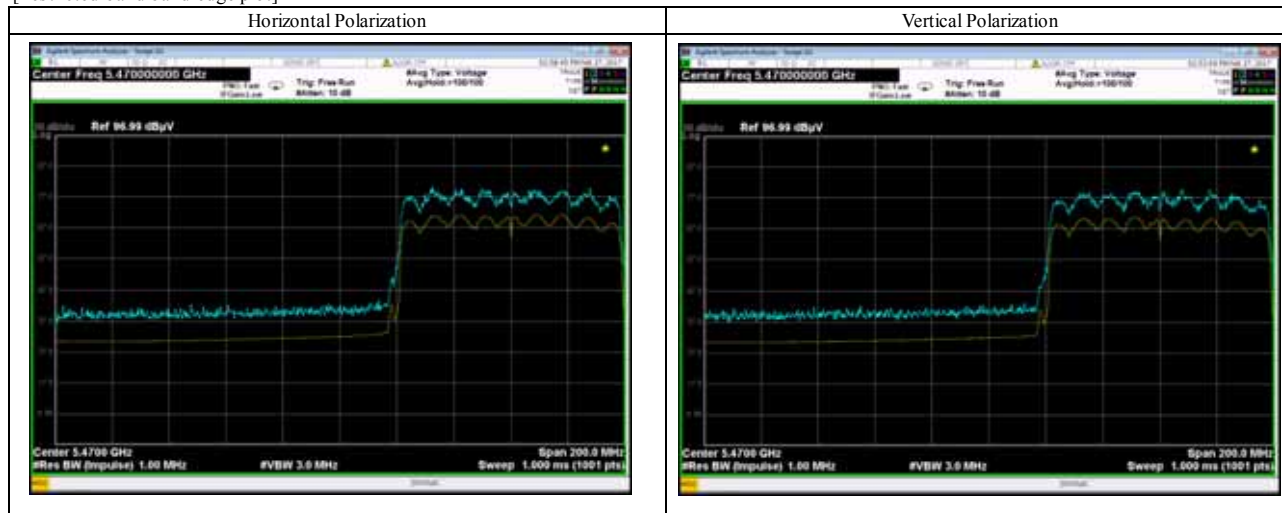
Blue trace : Peak Detector

Yellow trace : Average Detector

11acHT80 5530MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
5460.00	12.1	44.2	43.3	56.3	74.0	17.7
5470.00	12.1	44.4	44.5	56.6	68.2	11.6
11060.00	3.7	41.8	40.1	45.5	74.0	28.5
Measurement with the Average Detector						
5460.00	12.1	33.0	32.7	45.1	54.0	8.9
11060.00	3.7	36.1	34.7	39.8	54.0	14.2

[Restricted-band band-edge plot]



[Note]

Blue trace : Peak Detector

Yellow trace : Average Detector



11ac-HT80 5610MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
5725.00	12.3	42.1	43.2	55.5	68.2	12.7
11220.00	4.1	42.5	42.1	46.6	74.0	27.4
Measurement with the Average Detector						
11220.00	4.1	37.9	36.5	42.0	54.0	12.0

[Restricted-band band-edge plot]



[Note]

Blue trace : Peak Detector

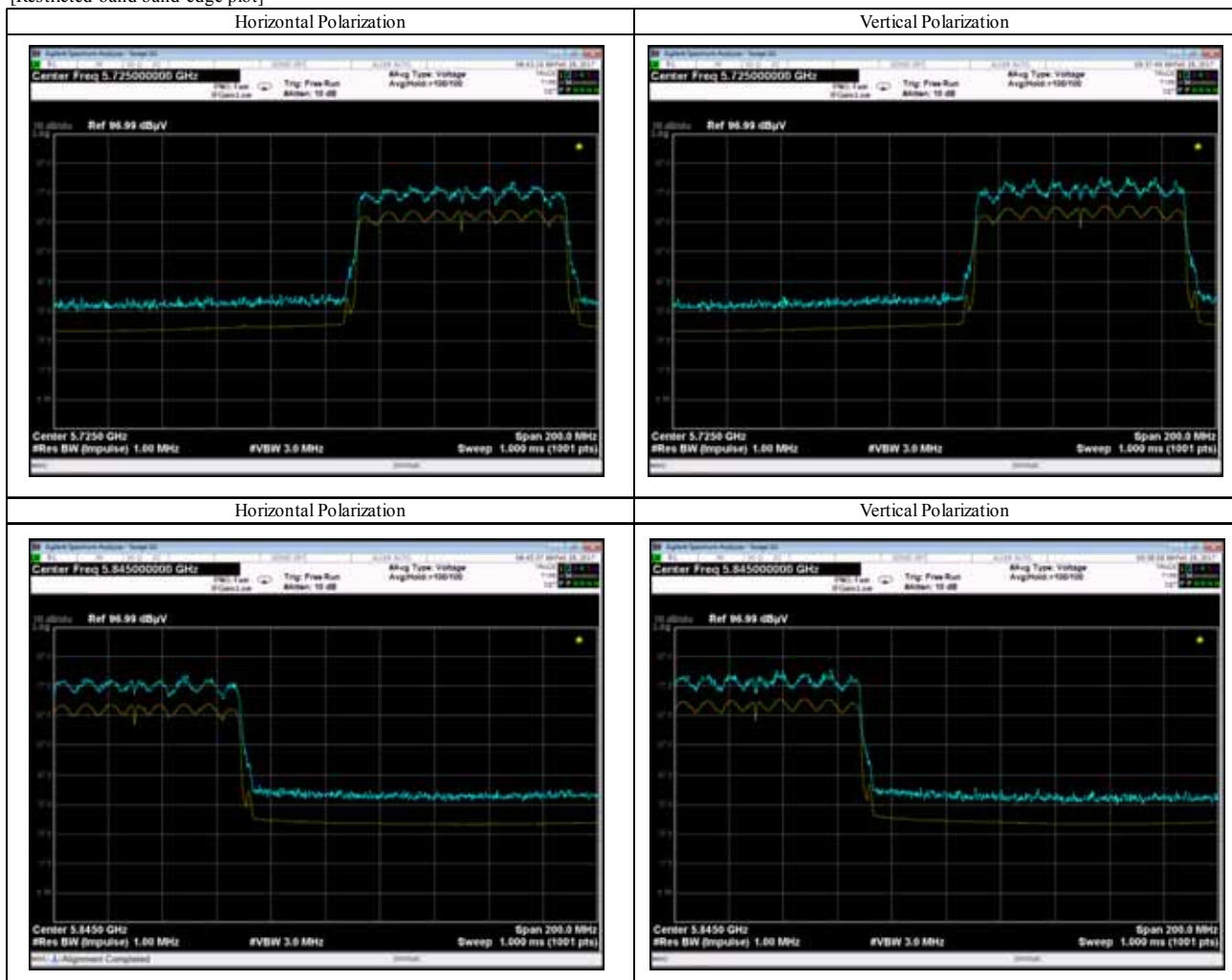
Yellow trace : Average Detector



11ac-HT80 5775MHz

Measured Frequency (MHz)	Correction Factor (dB/m)	Meter Reading		Maximum Field Strength (dBμV/m)	Limit (dBμV/m)	Margin for Limit (dB)
		Horizontal Polarization (dBμV)	Vertical Polarization (dBμV)			
Measurement with the Peak Detector						
5650.00	12.1	42.5	42.5	54.6	68.2	13.6
5700.00	12.2	44.0	43.4	56.2	105.2	49.0
5715.00	12.2	43.8	44.3	56.5	109.4	52.9
5720.00	12.3	44.1	43.7	56.4	110.8	54.4
5725.00	12.3	44.7	44.2	57.0	122.2	65.2
5850.00	12.3	43.1	42.9	55.4	122.2	66.8
5855.00	12.3	42.8	42.8	55.1	110.8	55.7
5860.00	12.3	43.1	43.0	55.4	109.4	54.0
5875.00	12.4	42.6	43.7	56.1	105.2	49.1
5925.00	12.6	42.8	43.1	55.7	68.2	12.5
11550.00	4.6	44.6	44.2	49.2	74.0	24.8
Measurement with the Average Detector						
11550.00	4.6	40.5	40.5	45.1	54.0	8.9

[Restricted-band band-edge plot]



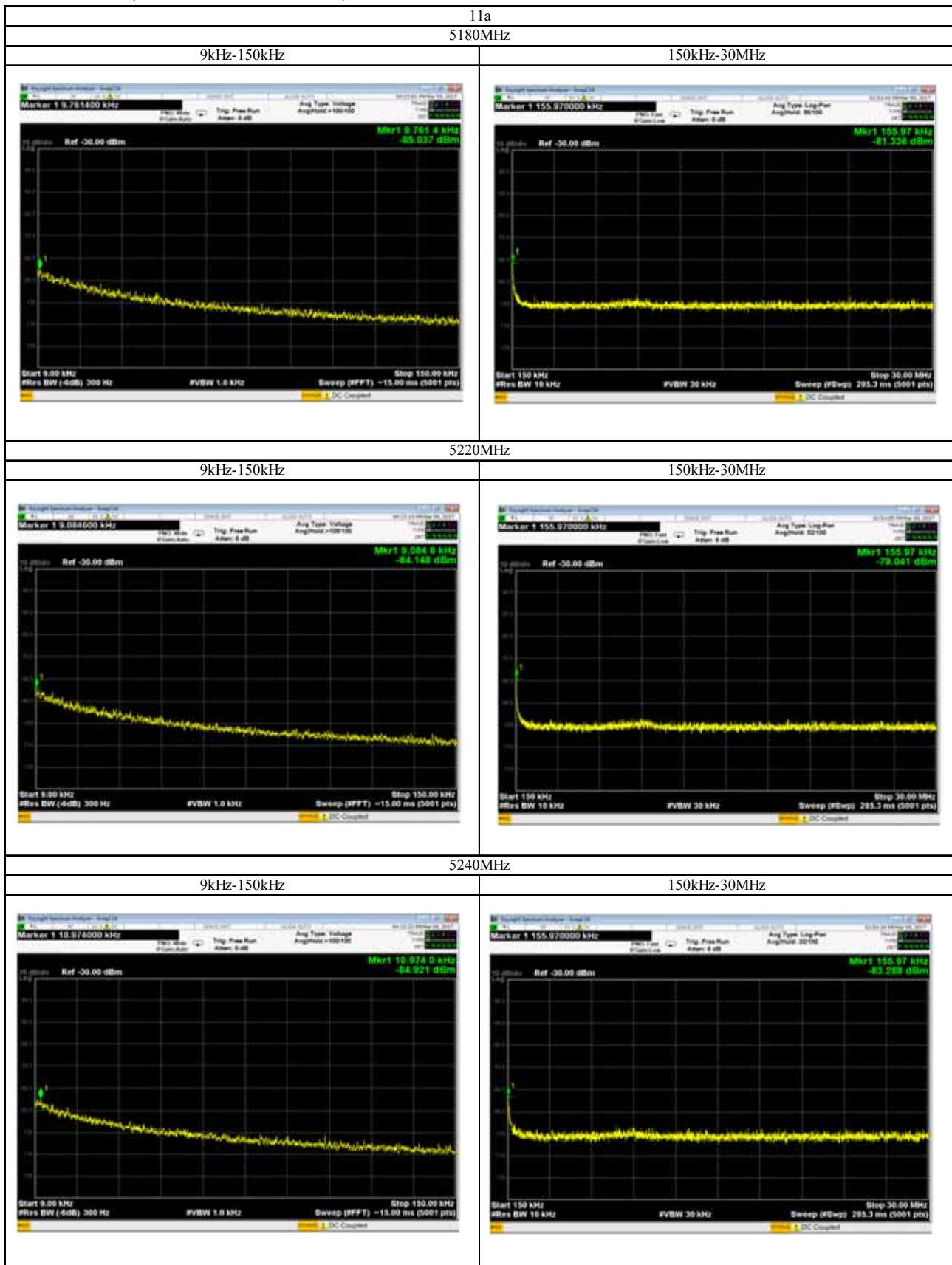
[Note]

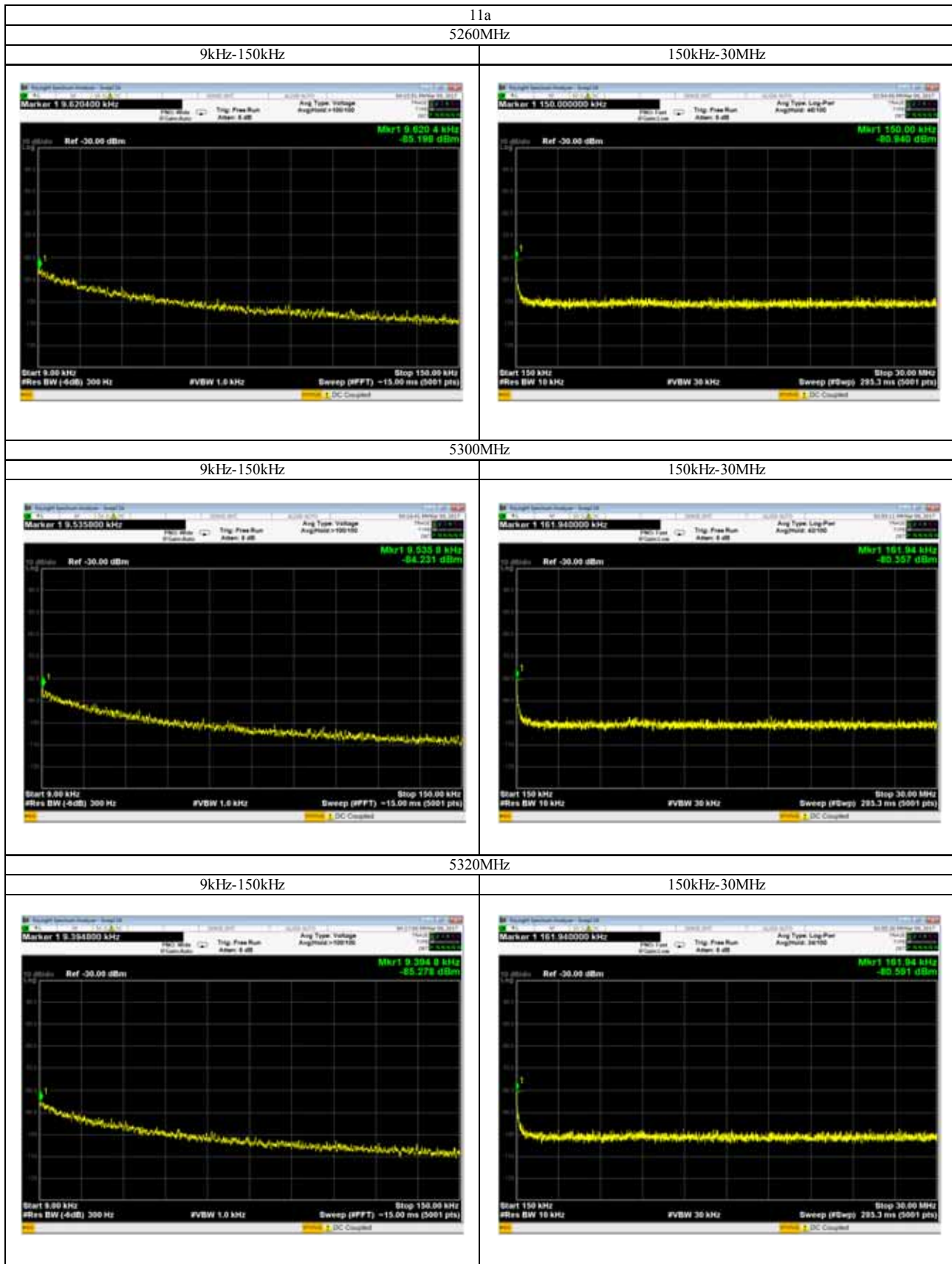
Blue trace : Peak Detector

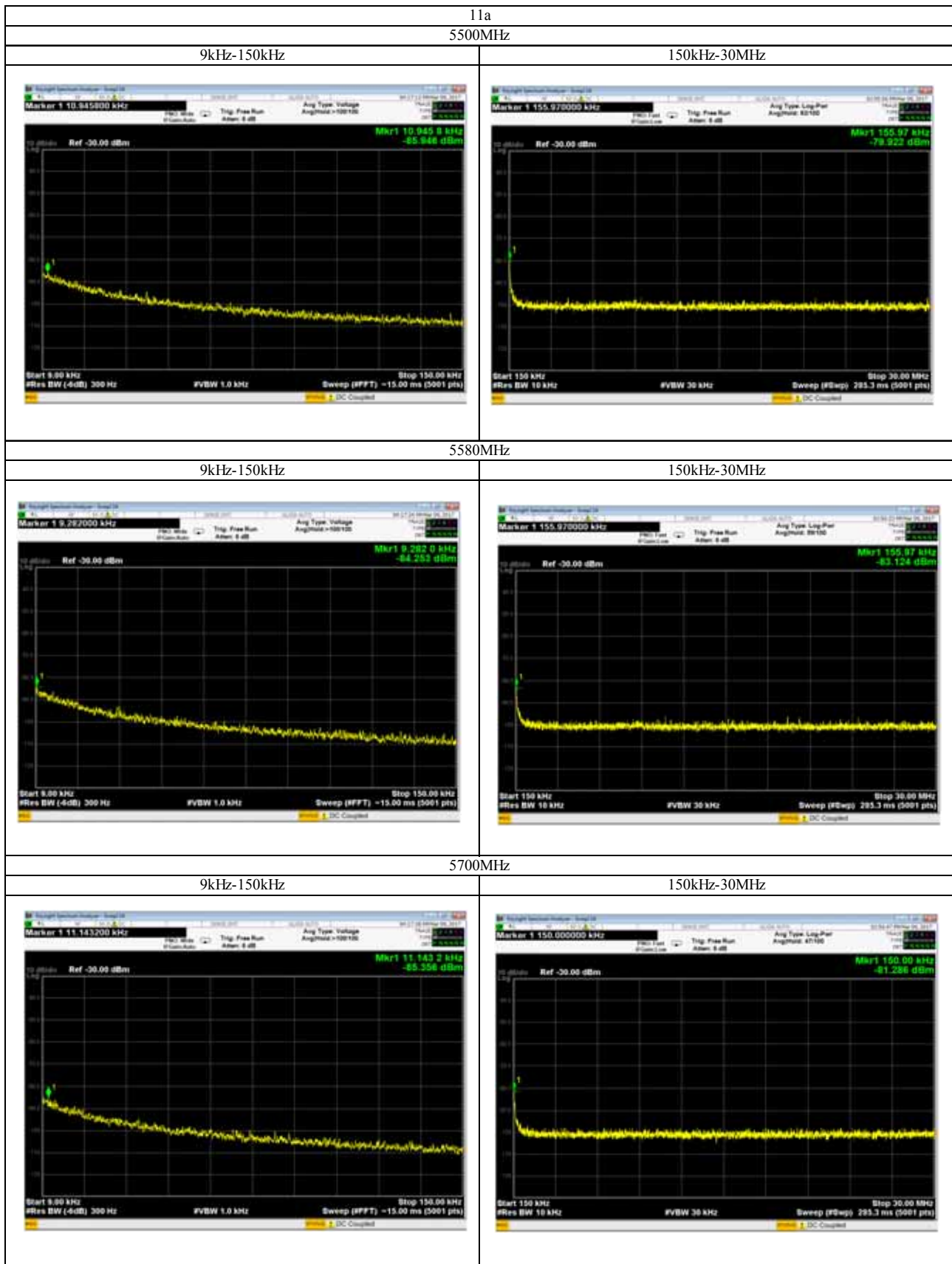
Yellow trace : Average Detector

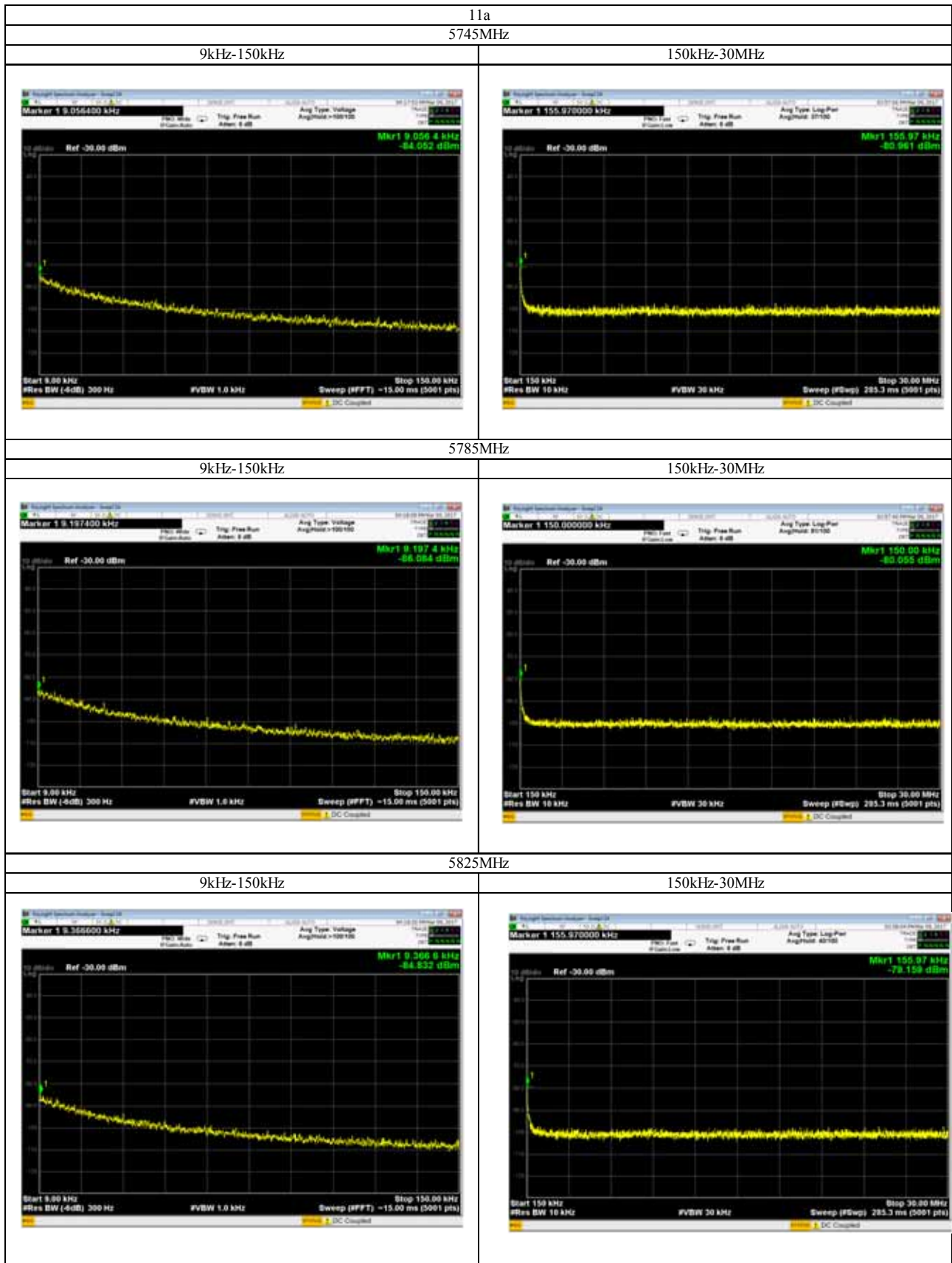


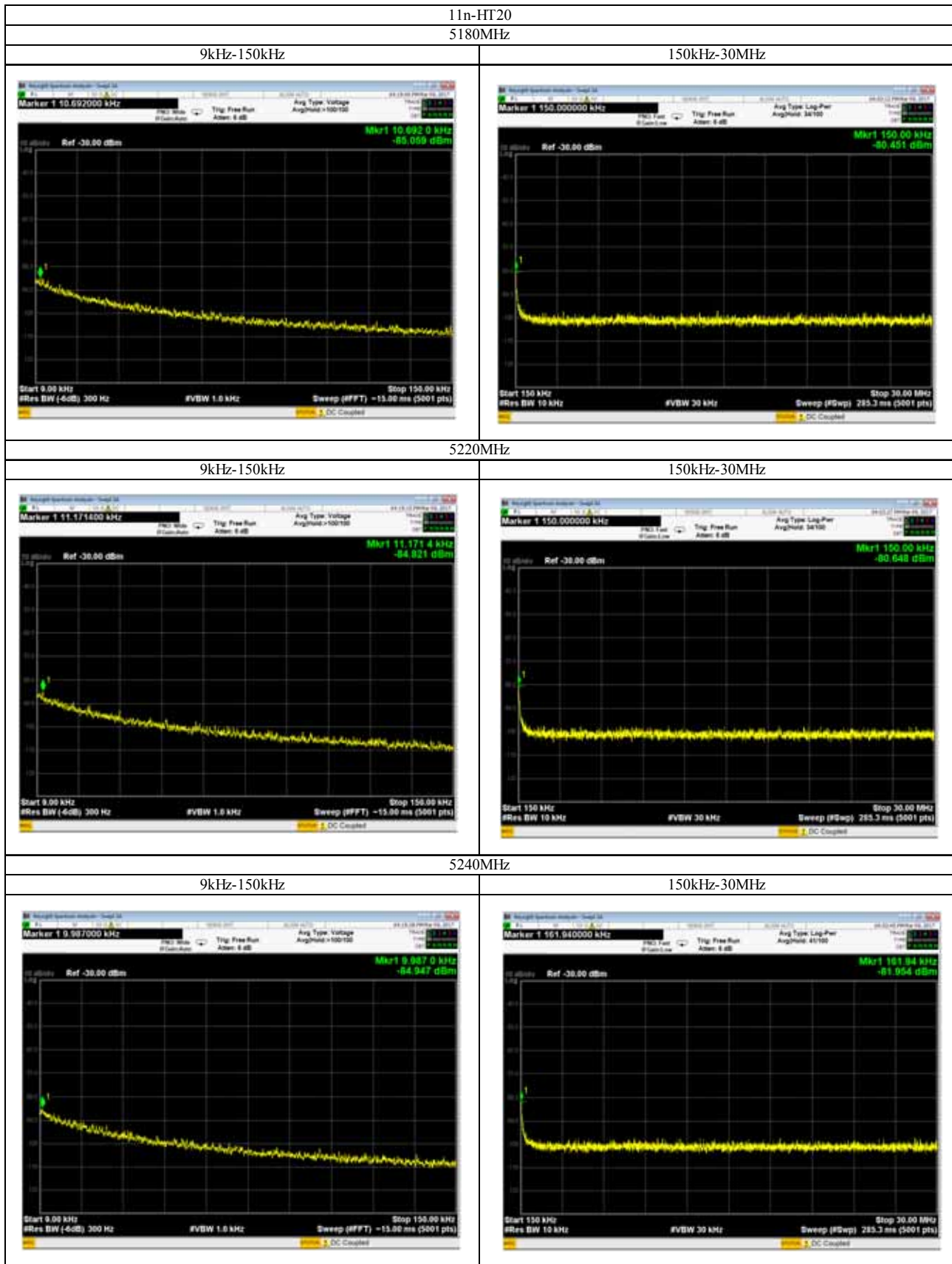
Below 30MHz (Conducted measurement)

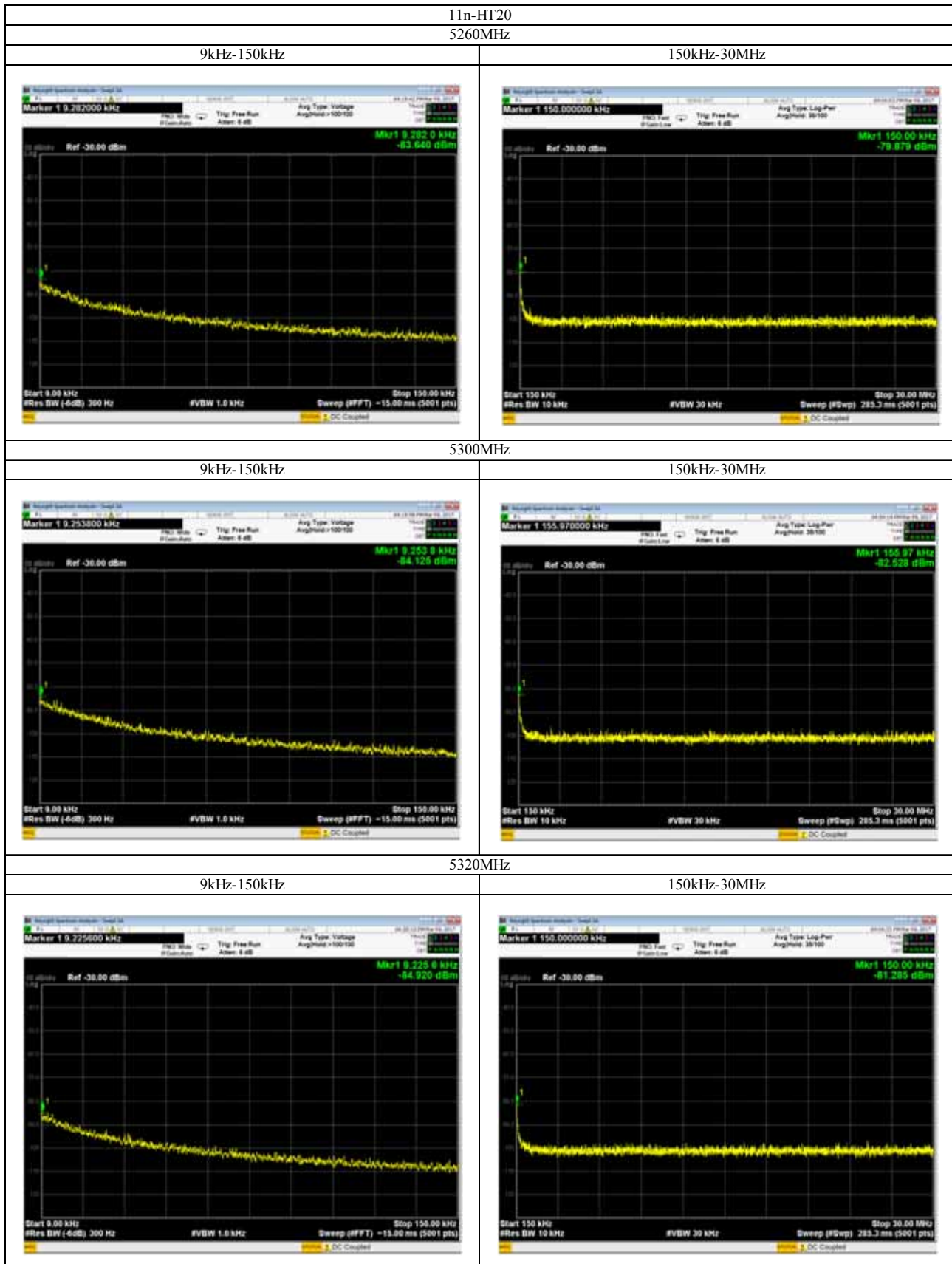


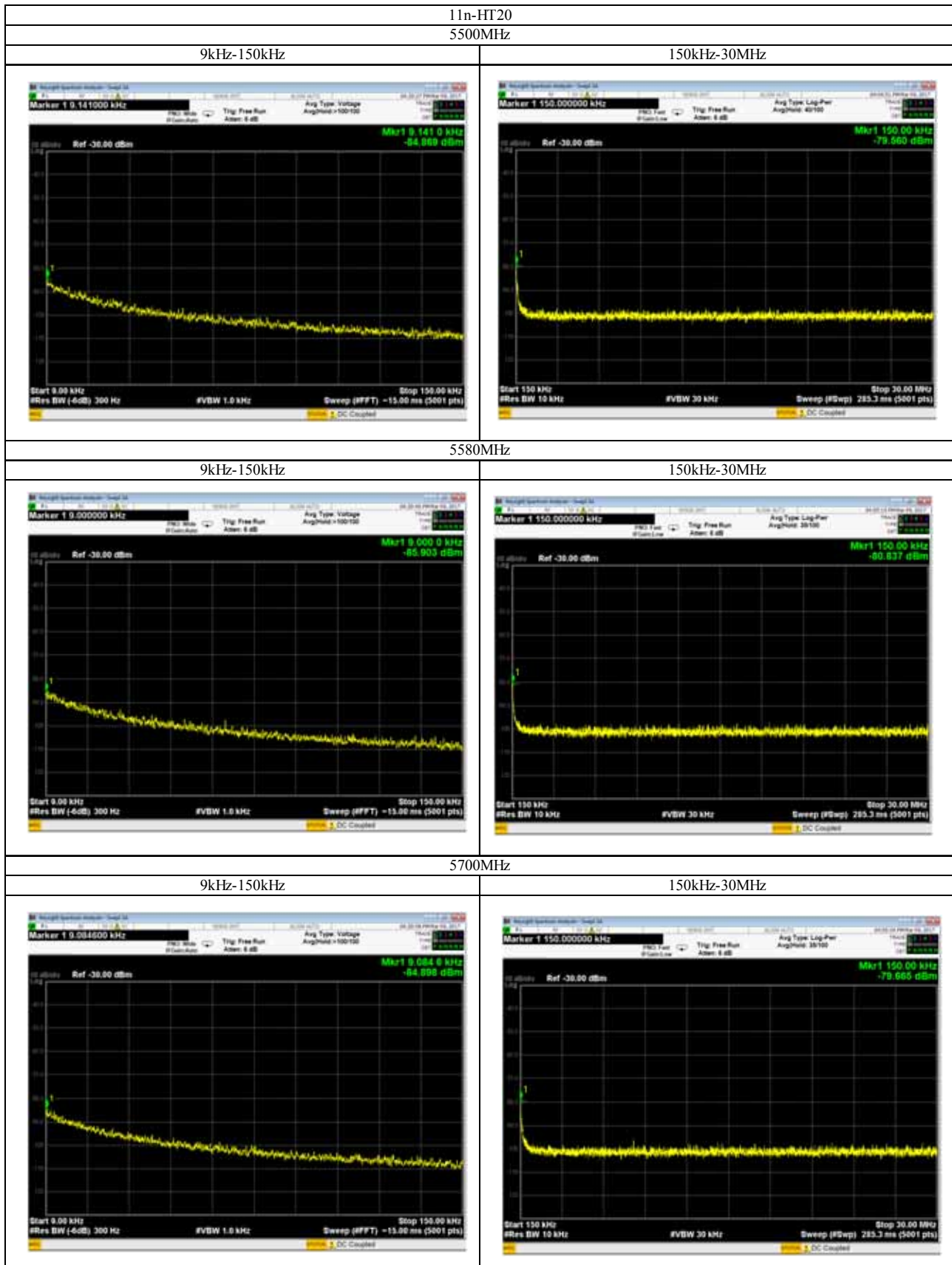


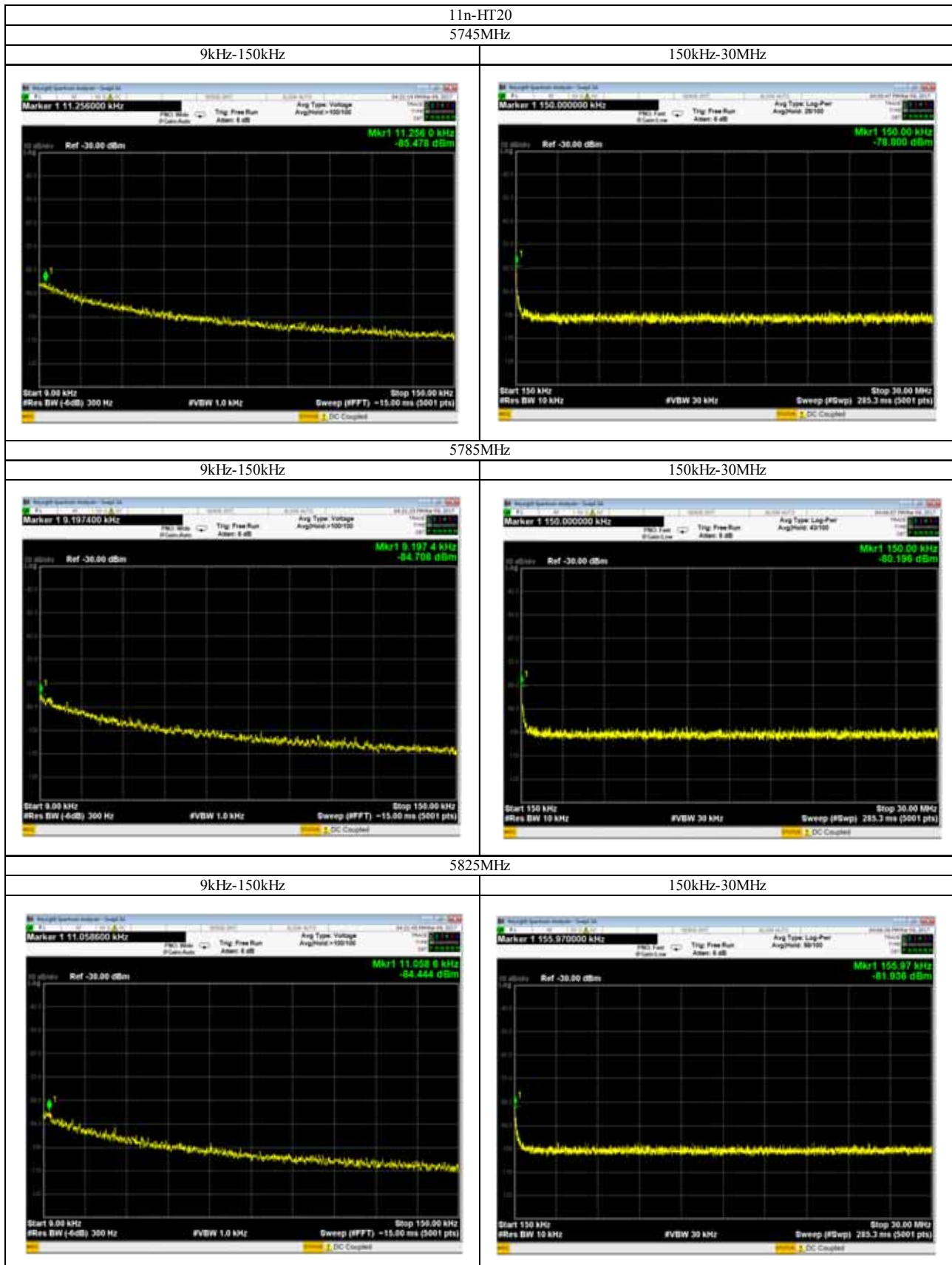


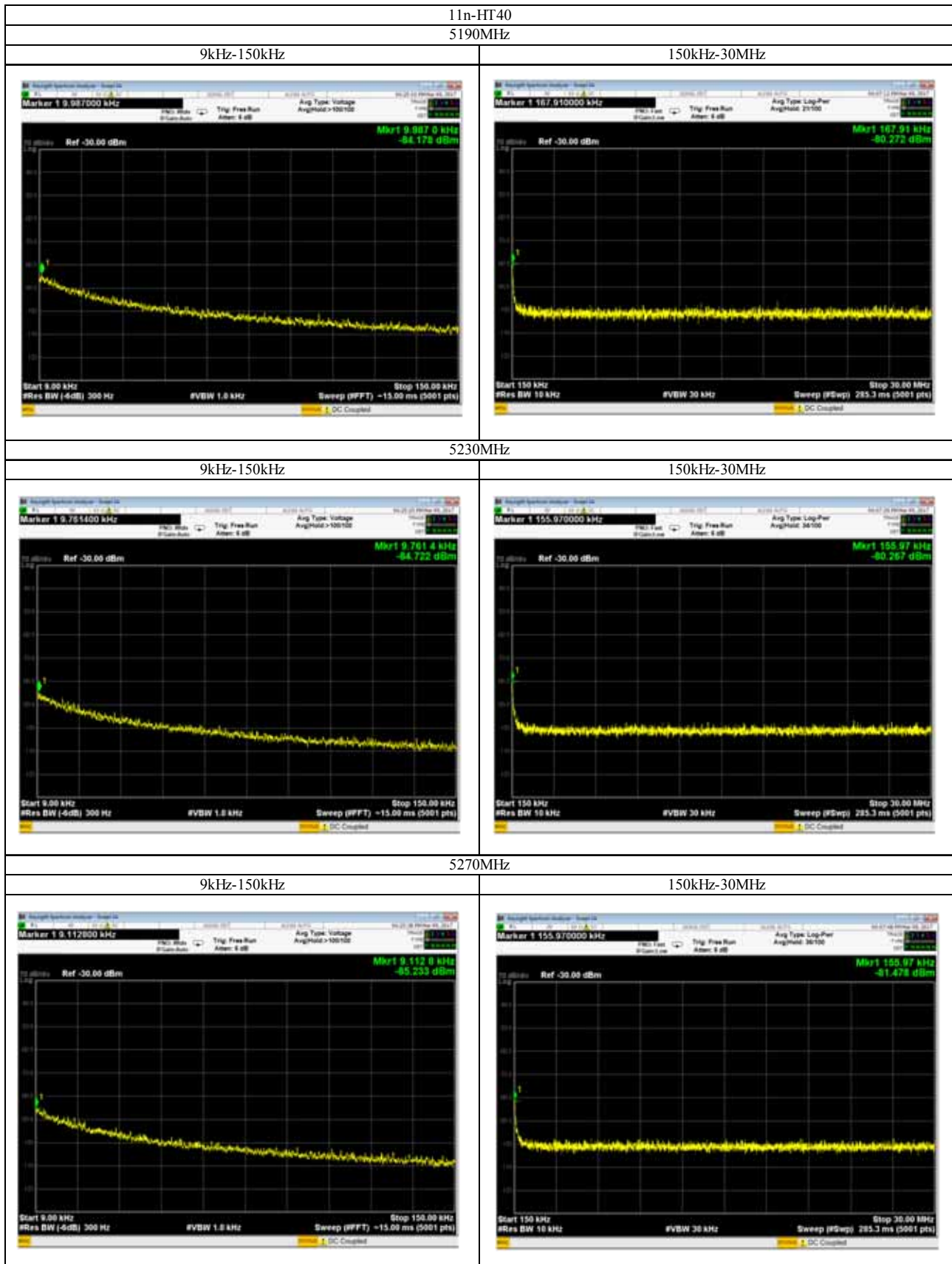


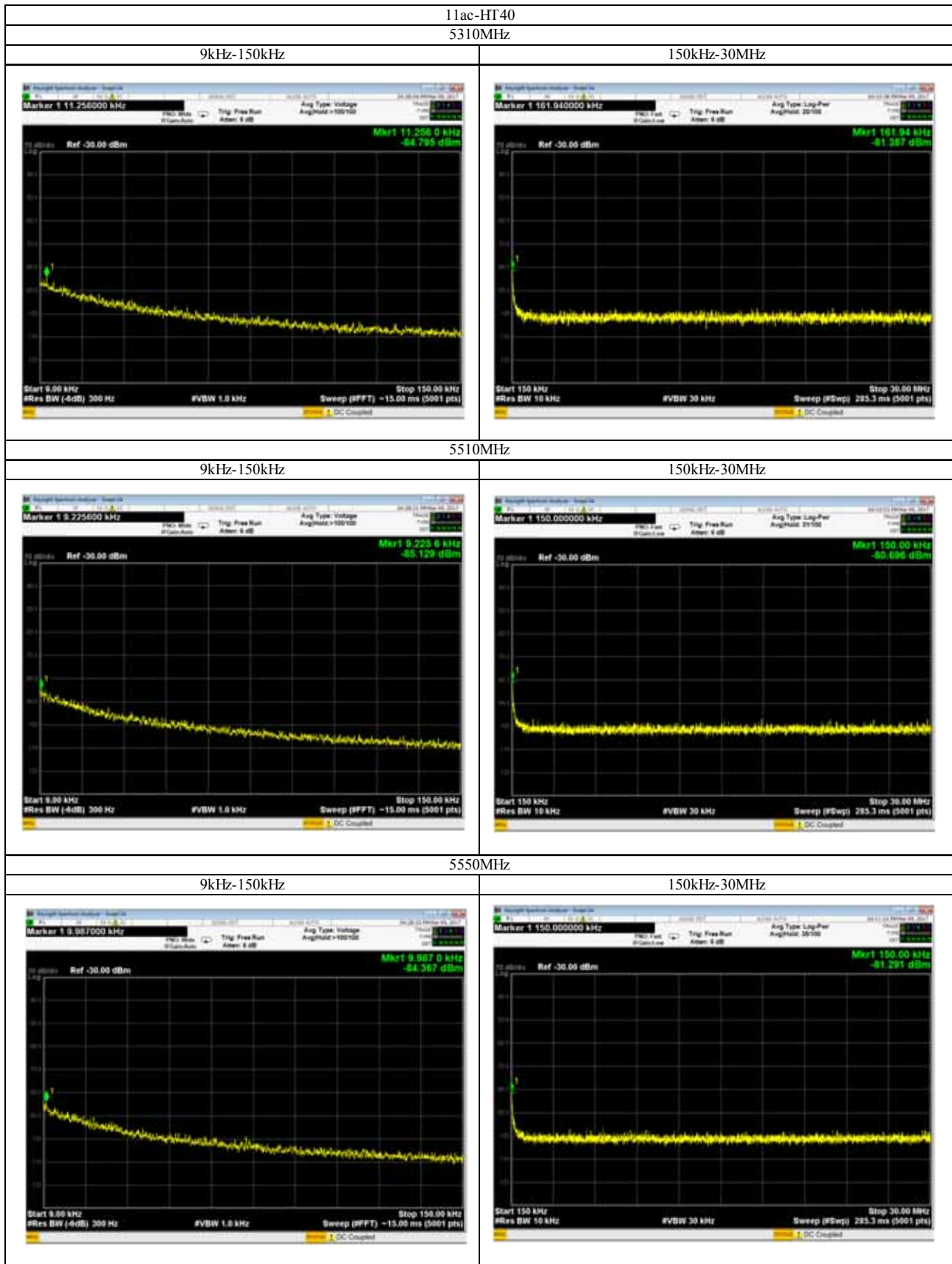


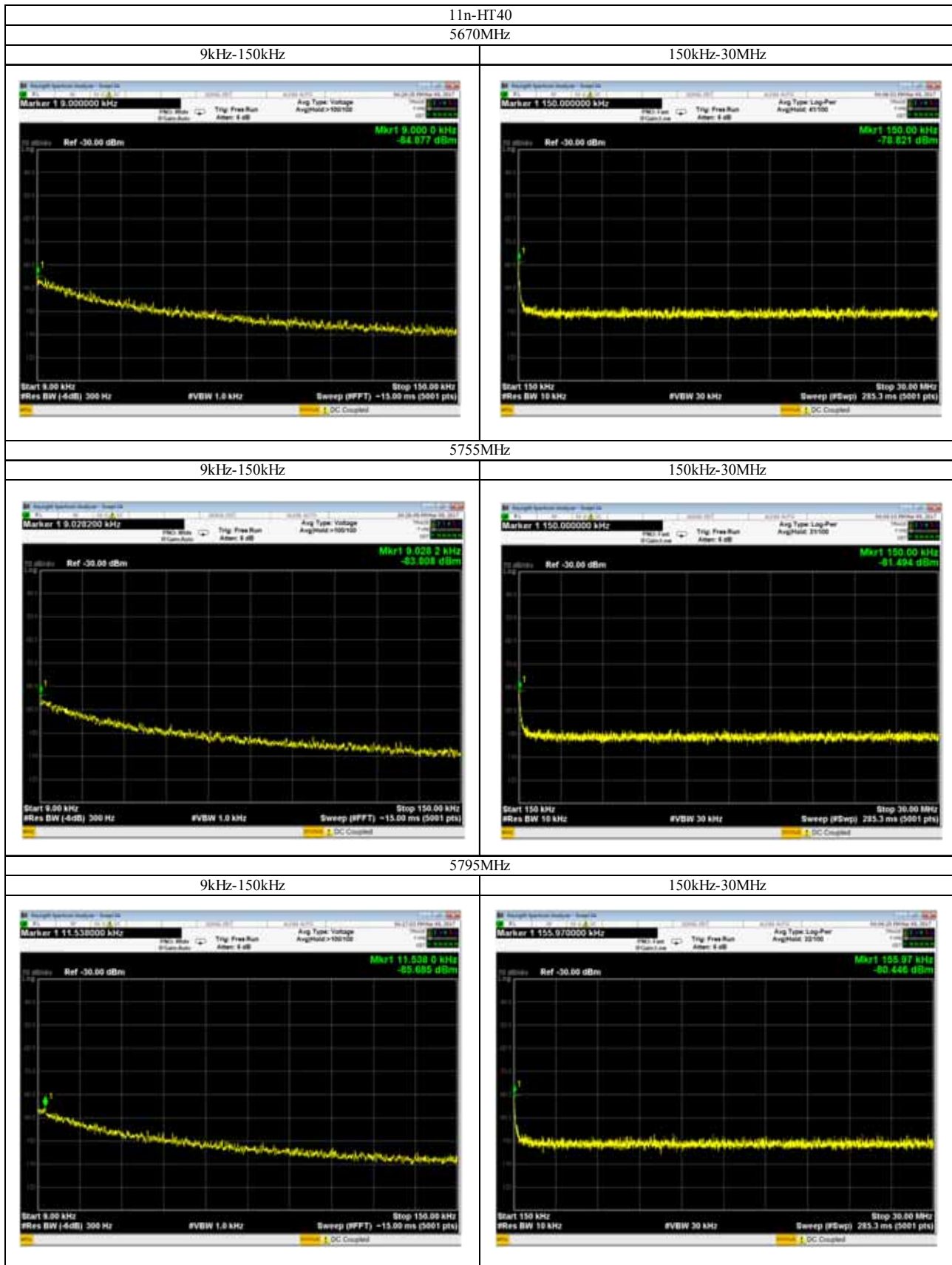


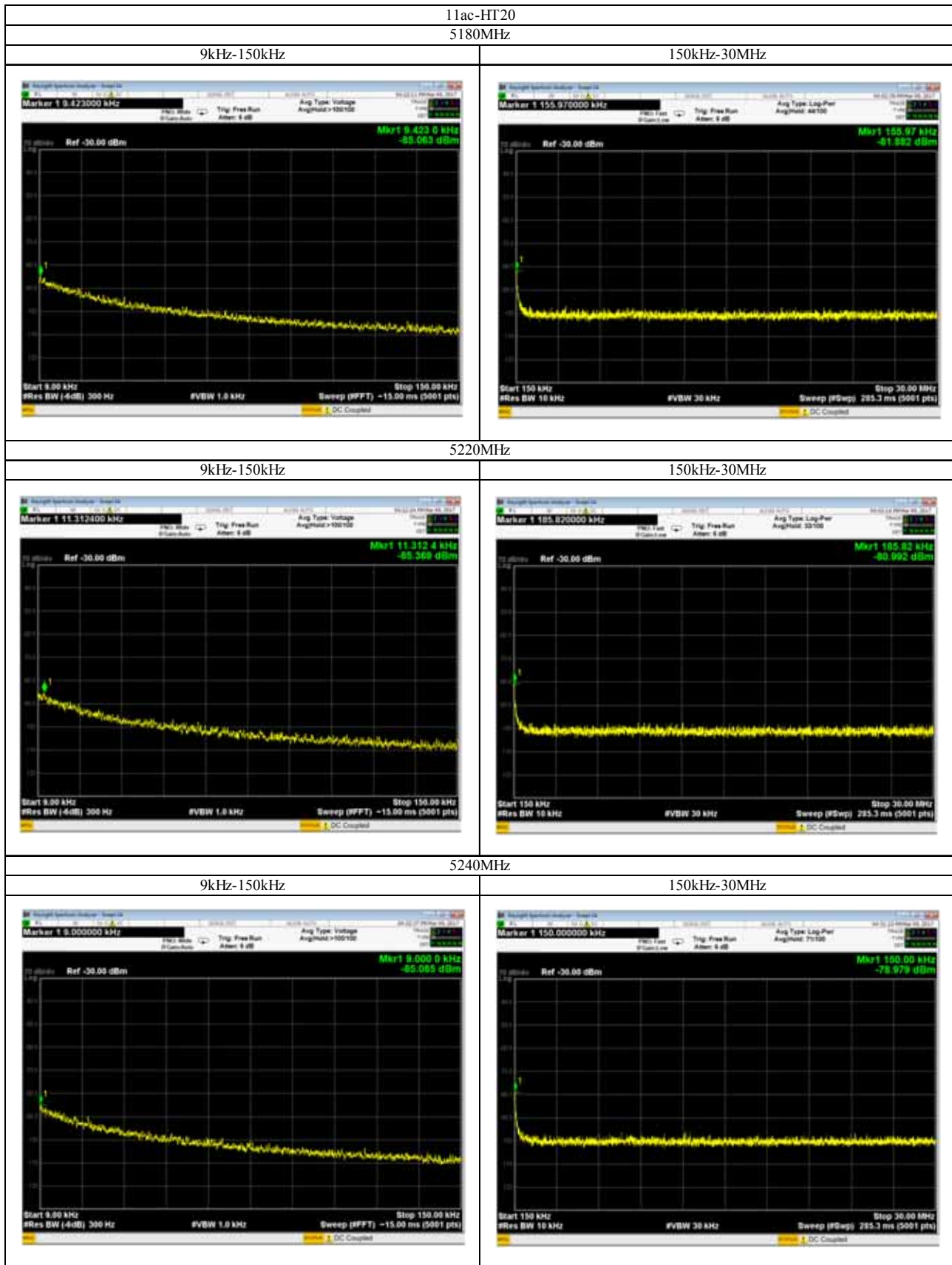


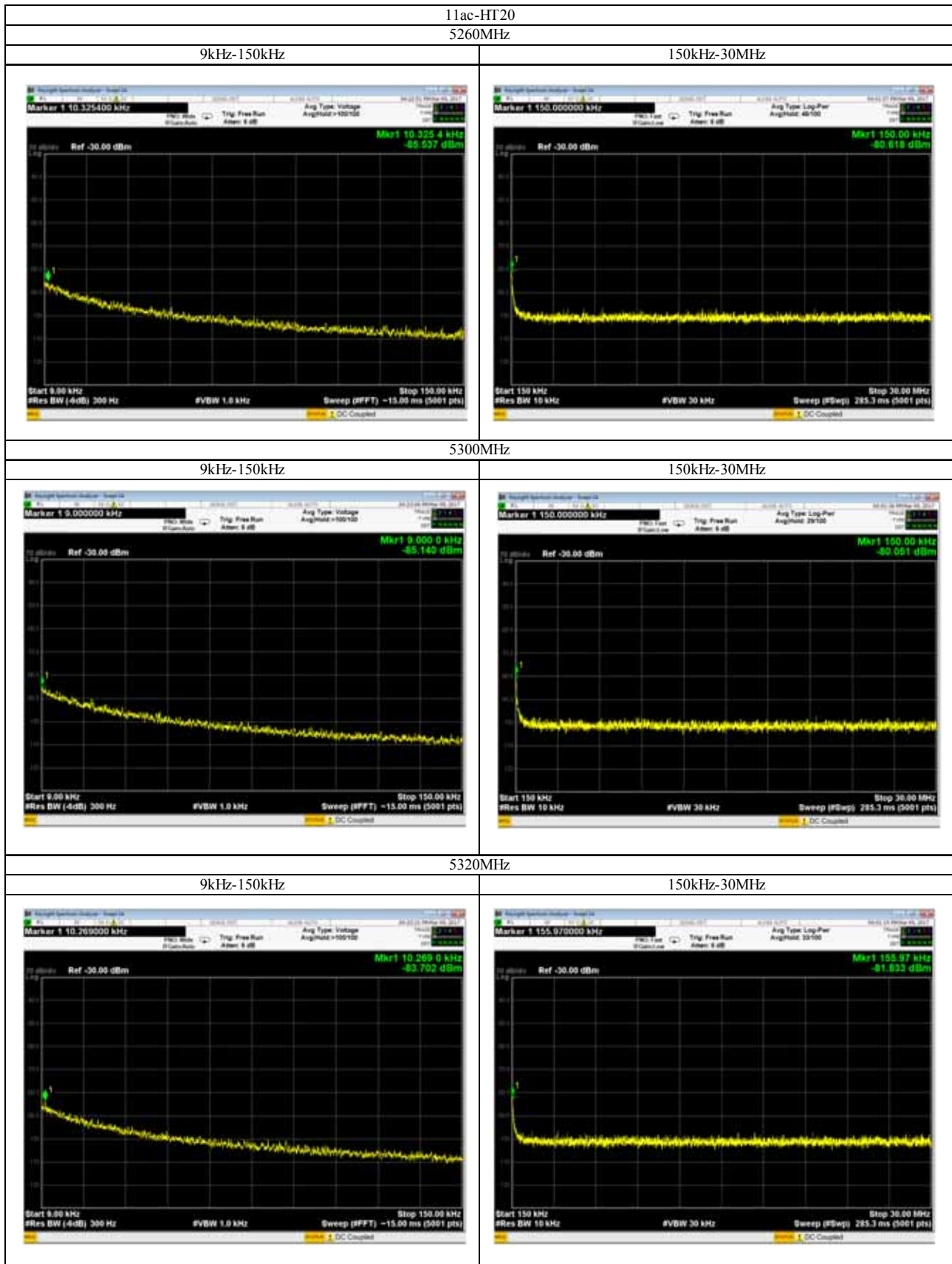


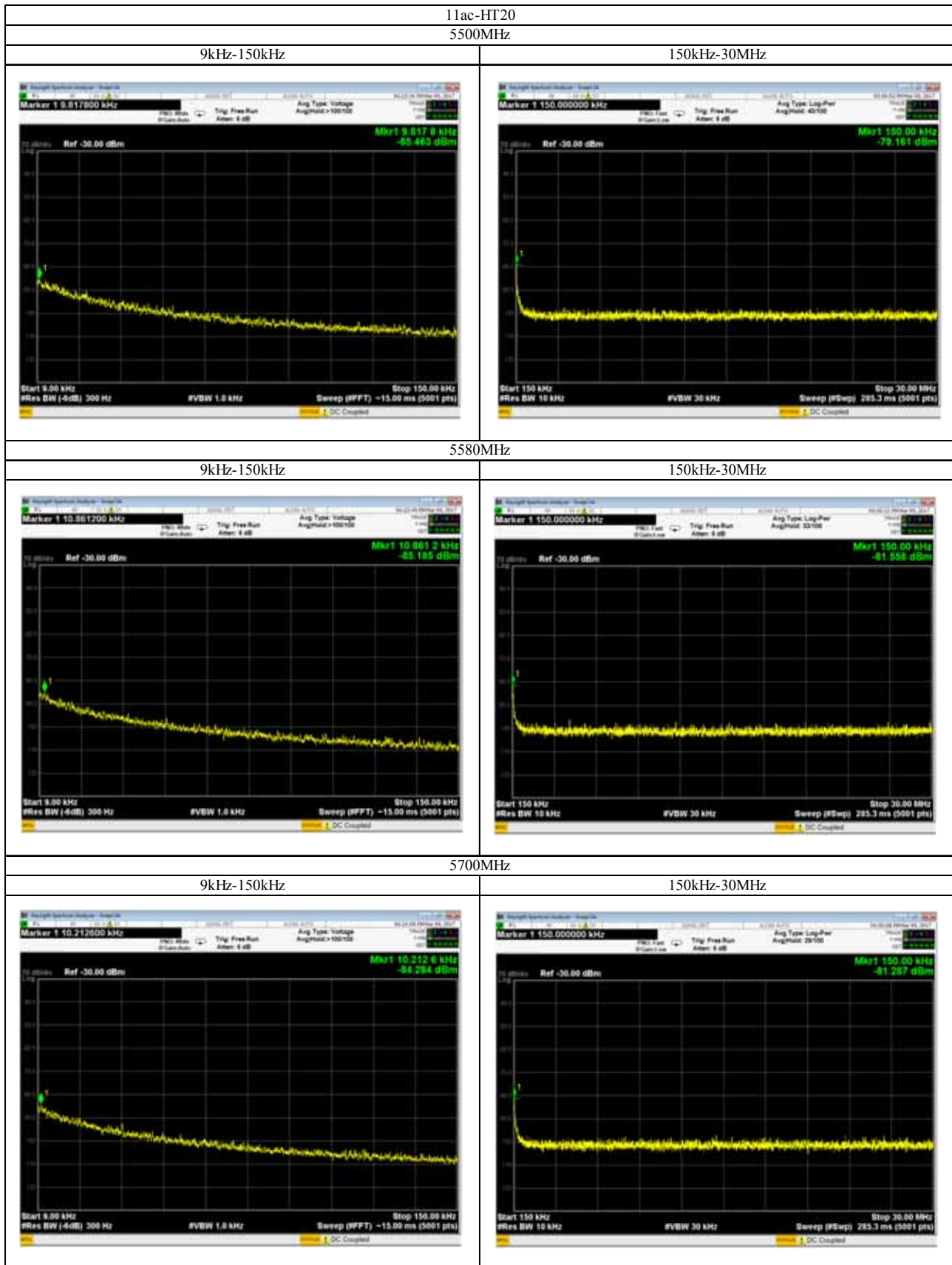


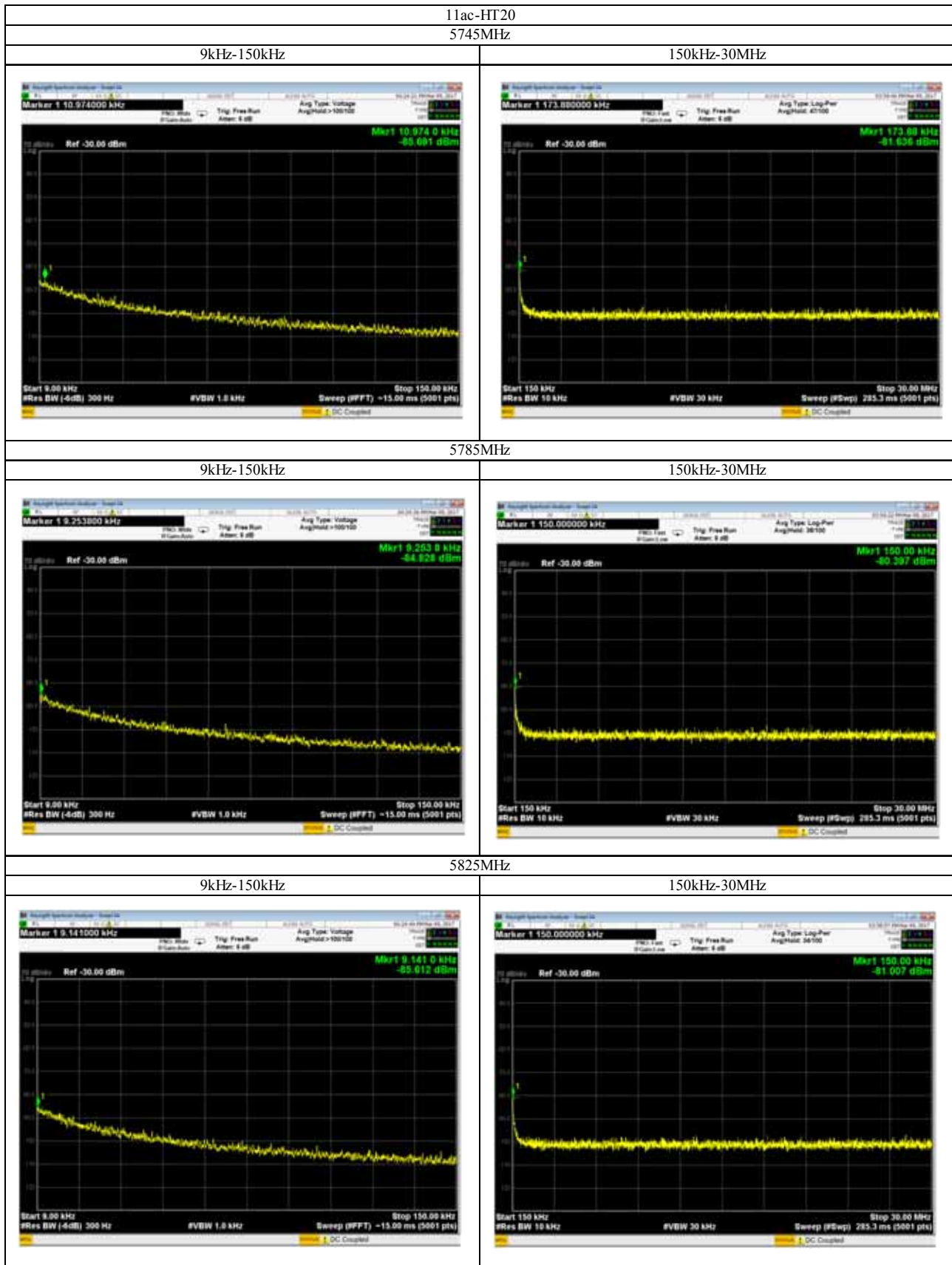


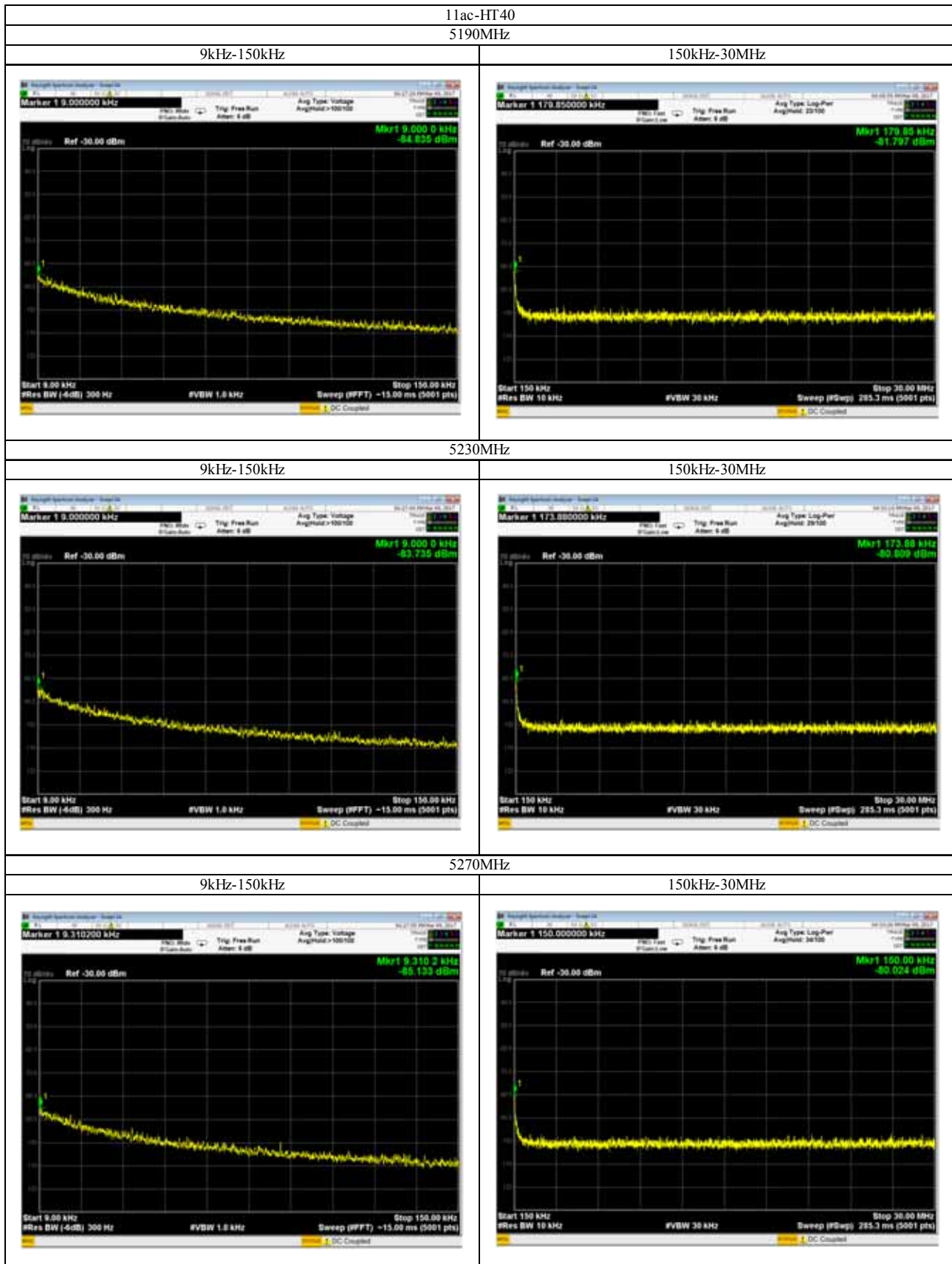


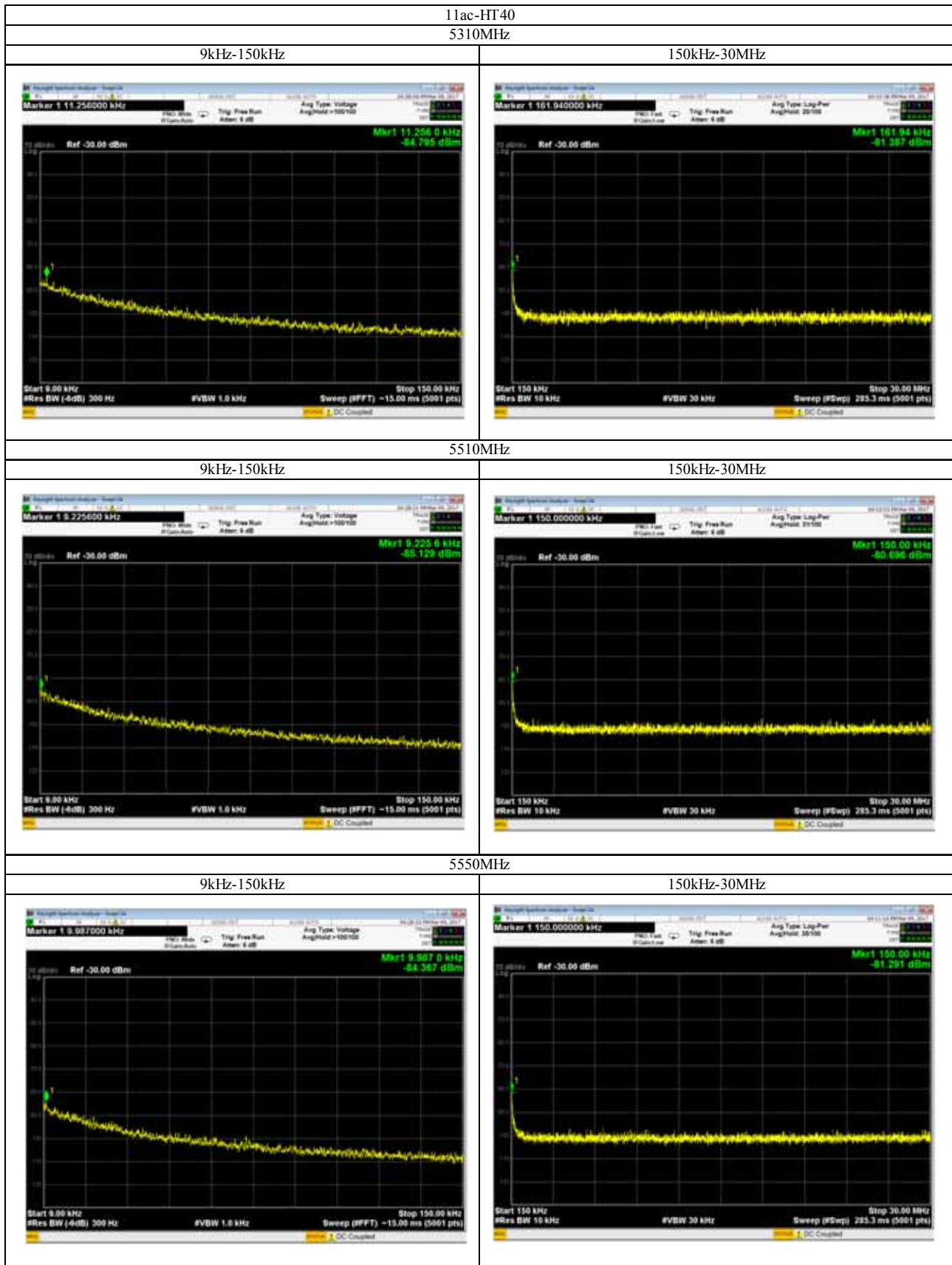


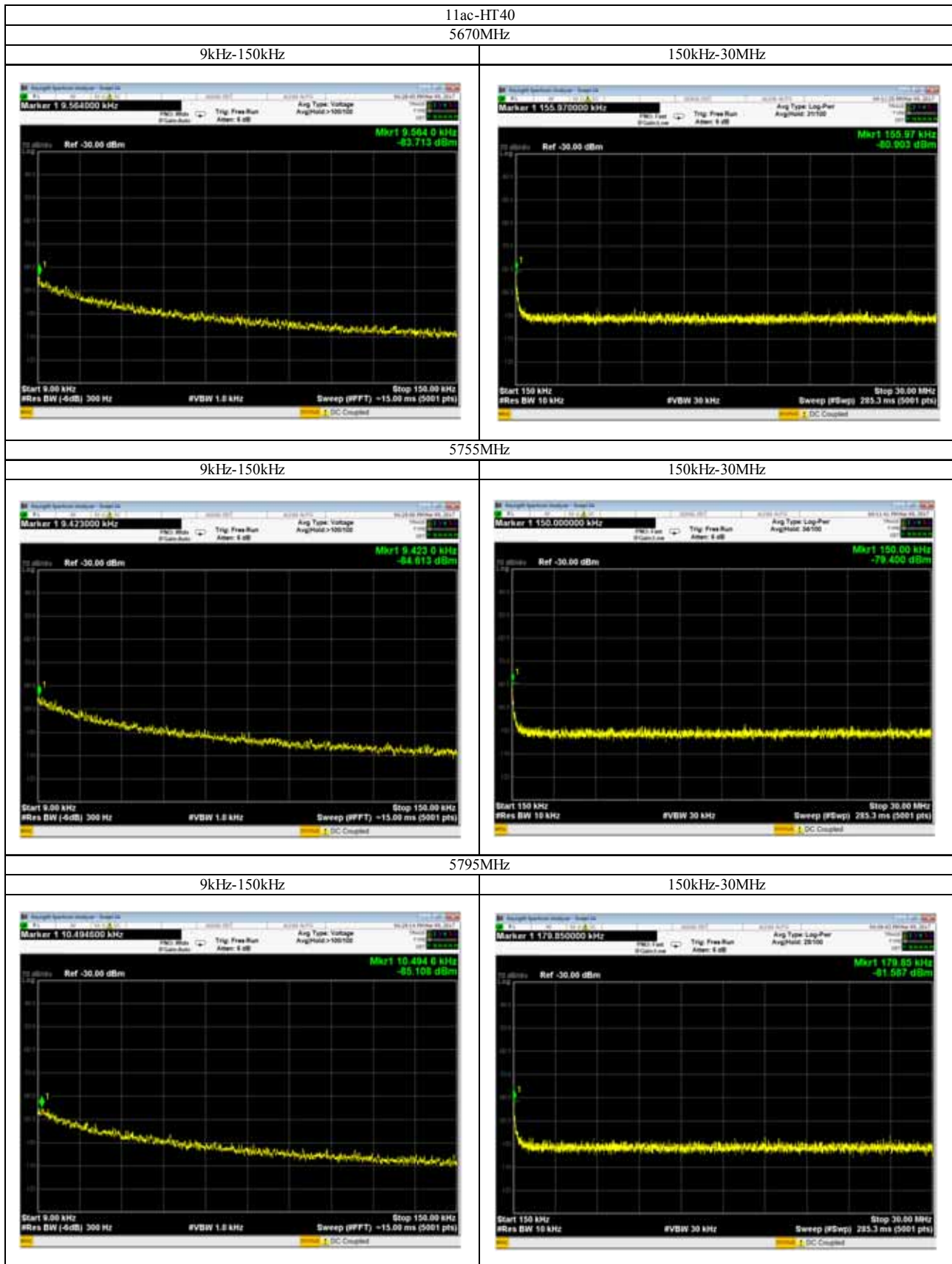


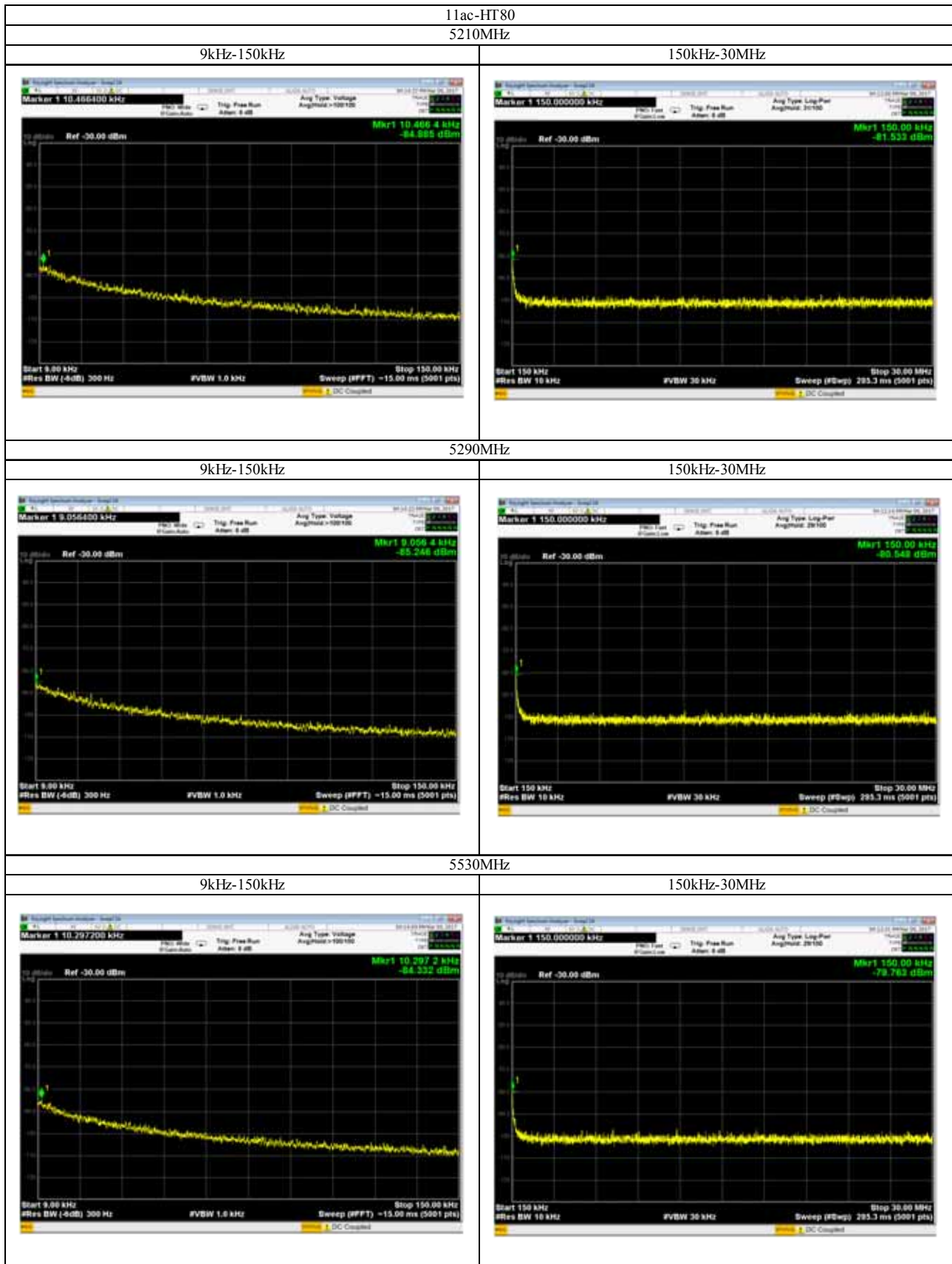


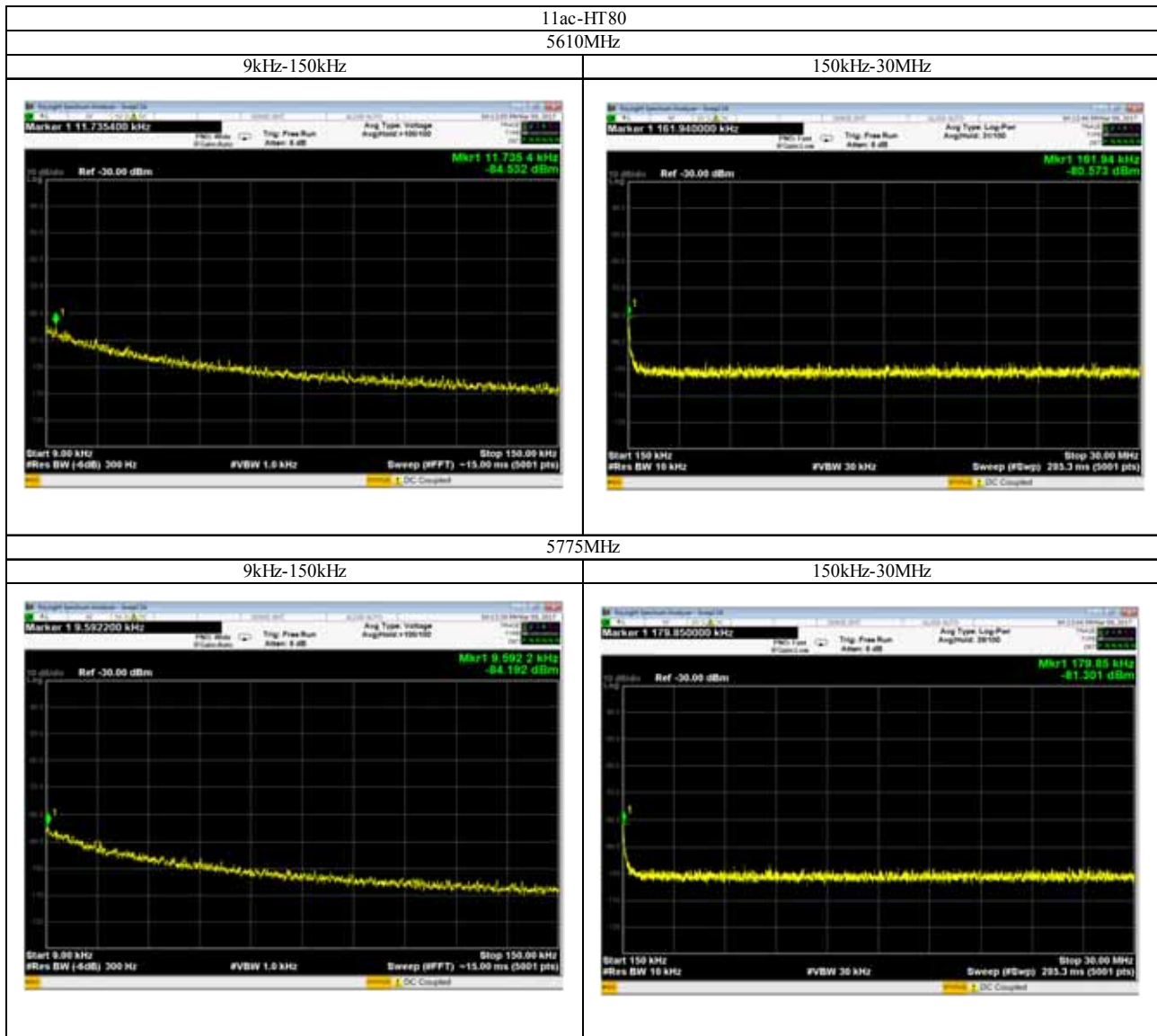












[Note]

- (1) ☐ Correction Factor includes the antenna factor, cable loss, attenuator loss and pre-amplifier gain.
☒ Correction Factor includes the cable loss and attenuator loss.
Above 1000MHz, the antenna factor includes the cable loss, pre-amplifier gain and attenuator loss (if necessary).

- (2) * mark in Measured Frequency : Measured with the tuned dipole antenna.
no mark in Measured Frequency : Measured with the broadband antenna.

- (3) Upper Frequency : ☒ Transmitter Frequency (TX): TX < 10GHz
☐ 1GHz ☐ 10th harmonic of the highest frequency / ☒ Up to 40GHz
☐ Transmitter Frequency (TX): 10GHz TX < 30GHz
☐ 10th harmonic of the highest frequency / ☐ Up to 100GHz
☐ Transmitter Frequency (TX): 30GHz TX
☐ 10th harmonic of the highest frequency / ☐ Up to 200GHz

The emissions were checked to the upper frequency, and the lower emissions than the listed emissions in the above tables were omitted.

- (4) Measurement Distance : <below 1GHz> ☒ 3m ☐ 10m
<above 1GHz> ☒ 3m ☐ 10m
<above 12.4GHz> 1m

- (5) Bore-sight method setting: horn antenna orientation was center of Turn Table

[Calculation method]

Maximum Field Strength (dB μ V/m)

= Meter Reading (at maximum level of Horizontal or Vertical) (dB μ V) + Correction Factor (dB/m) + Distance factor (*)

(*) Applied for Radiated Emission Measurement (above 12.4GHz) only.

Distance factor : $20 \times \log_{10} (1\text{m}/3\text{m}) = -9.5\text{dB}$

Tested Date	Environment	
	Temperature	Humidity
28 February 2017	22°C	27 %



10. FREQUENCY STABILITY

10.1. Test Procedure

- (1) Connect the EUT RF output port to spectrum analyzer via calibrated coaxial cable and suitable attenuator (if necessary).
- (2) Activates the EUT System and execute the software prepared for test, if necessary.
- (3) The operating frequency measured by using frequency counter function of spectrum analyzer (*1) .
- (4) Frequency stability measurement was carried out from the high temperature to low temperature in order.

[Note]

- (*1) Spectrum Analyzer Set Up Conditions
- | | |
|----------------------|---------------------|
| Center Frequency | : Carrier frequency |
| Resolution bandwidth | : 1kHz |
| Video bandwidth | : 10kHz |
| Detector function | : Peak |
| Function | : Frequency counter |



10.2. Test Results

11a/n-HT20/ac-HT20

Test Condition		Original Frequency (MHz)	Measured Frequency (MHz)	Tolerance (kHz)	Tolerance (ppm)
Temp.	Voltage				
20deg.C	3.3V	5180.00	5179.982597	-17.403	-3.3597
		5220.00	5219.983259	-16.741	-3.2071
		5240.00	5239.982128	-17.872	-3.4107
		5260.00	5259.982050	-17.950	-3.4125
		5300.00	5299.982095	-17.905	-3.3783
		5320.00	5319.981952	-18.048	-3.3925
		5500.00	5499.981353	-18.647	-3.3904
		5580.00	5579.980950	-19.050	-3.4140
		5700.00	5699.980499	-19.501	-3.4212
		5745.00	5744.980422	-19.578	-3.4078
		5785.00	5784.980247	-19.753	-3.4145
		5825.00	5824.980093	-19.907	-3.4175
0deg.C	3.3V	5180.00	5180.035403	35.403	6.8346
		5220.00	5220.034121	34.121	6.5366
		5240.00	5240.034698	34.698	6.6218
		5260.00	5260.035726	35.726	6.7920
		5300.00	5300.035708	35.708	6.7374
		5320.00	5320.036327	36.327	6.8284
		5500.00	5500.036165	36.165	6.5755
		5580.00	5580.037563	37.563	6.7317
		5700.00	5700.038622	38.622	6.7758
		5745.00	5745.039125	39.125	6.8103
		5785.00	5785.039384	39.384	6.8080
		5825.00	5825.039247	39.247	6.7377
	3.135V	5180.00	5180.035252	35.252	6.8054
		5220.00	5220.035244	35.244	6.7517
		5240.00	5240.035518	35.518	6.7782
		5260.00	5260.035853	35.853	6.8162
		5300.00	5300.036095	36.095	6.8104
		5320.00	5320.036279	36.279	6.8194
		5500.00	5500.037207	37.207	6.7649
		5580.00	5580.037860	37.860	6.7849
		5700.00	5700.038397	38.397	6.7363
		5745.00	5745.039117	39.117	6.8089
		5785.00	5785.039098	39.098	6.7585
		5825.00	5825.039359	39.359	6.7569
	3.465V	5180.00	5180.035864	35.864	6.9236
		5220.00	5220.035548	35.548	6.8100
		5240.00	5240.035853	35.853	6.8422
		5260.00	5260.036028	36.028	6.8494
		5300.00	5300.036349	36.349	6.8583
		5320.00	5320.036509	36.509	6.8626
		5500.00	5500.037634	37.634	6.8425
		5580.00	5580.038294	38.294	6.8627
		5700.00	5700.038900	38.900	6.8246
		5745.00	5745.039449	39.449	6.8667
		5785.00	5785.039670	39.670	6.8574
		5825.00	5825.039793	39.793	6.8314



60deg.C	3.3V	5180.00	5179.983802	-16.198	-3.1270
		5220.00	5219.983811	-16.189	-3.1013
		5240.00	5239.984397	-15.603	-2.9777
		5260.00	5259.986873	-13.127	-2.4956
		5300.00	5299.984424	-15.576	-2.9389
		5320.00	5319.984510	-15.490	-2.9117
		5500.00	5499.987371	-12.629	-2.2962
		5580.00	5579.983972	-16.028	-2.8724
		5700.00	5699.982071	-17.929	-3.1454
		5745.00	5744.982707	-17.293	-3.0101
		5785.00	5784.981540	-18.460	-3.1910
		5825.00	5824.982321	-17.679	-3.0350
	3.135V	5180.00	5179.983365	-16.635	-3.2114
		5220.00	5219.984710	-15.290	-2.9291
		5240.00	5239.983927	-16.073	-3.0674
		5260.00	5259.985186	-14.814	-2.8163
		5300.00	5299.983858	-16.142	-3.0457
		5320.00	5319.984592	-15.408	-2.8962
		5500.00	5499.984667	-15.333	-2.7878
		5580.00	5579.983448	-16.552	-2.9663
		5700.00	5699.983608	-16.392	-2.8758
		5745.00	5744.982738	-17.262	-3.0047
		5785.00	5784.982546	-17.454	-3.0171
		5825.00	5824.984541	-15.459	-2.6539
	3.465V	5180.00	5179.983767	-16.233	-3.1338
		5220.00	5219.984074	-15.926	-3.0510
		5240.00	5239.983936	-16.064	-3.0656
		5260.00	5259.984469	-15.531	-2.9527
		5300.00	5299.984618	-15.382	-2.9023
		5320.00	5319.984495	-15.505	-2.9145
		5500.00	5499.985113	-14.887	-2.7067
		5580.00	5579.983851	-16.149	-2.8941
		5700.00	5699.982948	-17.052	-2.9916
		5745.00	5744.982854	-17.146	-2.9845
		5785.00	5784.982978	-17.022	-2.9424
		5825.00	5824.983217	-16.783	-2.8812



11n-HT40/ac-HT40

Test Condition		Original Frequency (MHz)	Measured Frequency (MHz)	Tolerance (kHz)	Tolerance (ppm)
Temp.	Voltage				
20deg.C	3.3V	5190.00	5189.982274	-17.726	-3.4154
		5230.00	5229.982155	-17.845	-3.4120
		5270.00	5269.982046	-17.954	-3.4068
		5310.00	5309.983832	-16.168	-3.0448
		5510.00	5509.982024	-17.976	-3.2624
		5550.00	5549.982205	-17.795	-3.2063
		5670.00	5669.980893	-19.107	-3.3698
		5755.00	5754.980179	-19.821	-3.4441
		5795.00	5794.980352	-19.648	-3.3905
0deg.C	3.3V	5190.00	5190.035659	35.659	6.8707
		5230.00	5230.035712	35.712	6.8283
		5270.00	5270.035821	35.821	6.7972
		5310.00	5310.036007	36.007	6.7810
		5510.00	5510.037481	37.481	6.8024
		5550.00	5550.037892	37.892	6.8274
		5670.00	5670.038853	38.853	6.8524
		5755.00	5755.039060	39.060	6.7871
		5795.00	5795.039484	39.484	6.8135
	3.135V	5190.00	5190.035246	35.246	6.7911
		5230.00	5230.035522	35.522	6.7920
		5270.00	5270.035821	35.821	6.7972
		5310.00	5310.035747	35.747	6.7320
		5510.00	5510.037179	37.179	6.7475
		5550.00	5550.037560	37.560	6.7676
		5670.00	5670.038391	38.391	6.7709
		5755.00	5755.038612	38.612	6.7093
		5795.00	5795.039156	39.156	6.7569
	3.465V	5190.00	5190.035554	35.554	6.8505
		5230.00	5230.035429	35.429	6.7742
		5270.00	5270.035364	35.364	6.7104
		5310.00	5310.035568	35.568	6.6983
		5510.00	5510.037051	37.051	6.7243
		5550.00	5550.037473	37.473	6.7519
		5670.00	5670.038225	38.225	6.7416
		5755.00	5755.038928	38.928	6.7642
		5795.00	5795.038897	38.897	6.7122



60deg.C	3.3V	5190.00	5189.983579	-16.421	-3.1640
		5230.00	5229.983771	-16.229	-3.1031
		5270.00	5269.985685	-14.315	-2.7163
		5310.00	5309.983896	-16.104	-3.0328
		5510.00	5509.982636	-17.364	-3.1514
		5550.00	5549.983427	-16.573	-2.9861
		5670.00	5669.983378	-16.622	-2.9316
		5755.00	5754.983493	-16.507	-2.8683
		5795.00	5794.982215	-17.785	-3.0690
	3.135V	5190.00	5189.983978	-16.022	-3.0871
		5230.00	5229.985006	-14.994	-2.8669
		5270.00	5269.983358	-16.642	-3.1579
		5310.00	5309.983722	-16.278	-3.0655
		5510.00	5509.984250	-15.750	-2.8584
		5550.00	5549.982385	-17.615	-3.1739
		5670.00	5669.982919	-17.081	-3.0125
		5755.00	5754.982180	-17.820	-3.0964
		5795.00	5794.983883	-16.117	-2.7812
	3.465V	5190.00	5189.984316	-15.684	-3.0220
		5230.00	5229.984694	-15.306	-2.9266
		5270.00	5269.984295	-15.705	-2.9801
		5310.00	5309.984351	-15.649	-2.9471
		5510.00	5509.983796	-16.204	-2.9408
		5550.00	5549.983888	-16.112	-2.9031
		5670.00	5669.983579	-16.421	-2.8961
		5755.00	5754.983414	-16.586	-2.8820
		5795.00	5794.983295	-16.705	-2.8827



11ac-HT80

Test Condition		Original Frequency (MHz)	Measured Frequency (MHz)	Tolerance (kHz)	Tolerance (ppm)
Temp.	Voltage				
20deg.C	3.3V	5210.00	5209.982191	-17.809	-3.4182
		5290.00	5289.984390	-15.610	-2.9509
		5530.00	5529.981178	-18.822	-3.4036
		5610.00	5609.980803	-19.197	-3.4219
		5775.00	5774.980723	-19.277	-3.3380
0deg.C	3.3V	5210.00	5210.035595	35.595	6.8321
		5290.00	5290.036110	36.110	6.8261
		5530.00	5530.037589	37.589	6.7973
		5610.00	5610.038151	38.151	6.8005
		5775.00	5775.039323	39.323	6.8092
	3.135V	5210.00	5210.035424	35.424	6.7992
		5290.00	5290.035973	35.973	6.8002
		5530.00	5530.037517	37.517	6.7843
		5610.00	5610.037903	37.903	6.7563
		5775.00	5775.038691	38.691	6.6997
	3.465V	5210.00	5210.035214	35.214	6.7589
		5290.00	5290.035900	35.900	6.7864
		5530.00	5530.036299	36.299	6.5640
		5610.00	5610.037398	37.398	6.6663
		5775.00	5775.037618	37.618	6.5139
60deg.C	3.3V	5210.00	5209.982686	-17.314	-3.3232
		5290.00	5289.984003	-15.997	-3.0240
		5530.00	5529.983656	-16.344	-2.9555
		5610.00	5609.983013	-16.987	-3.0280
		5775.00	5774.983540	-16.460	-2.8502
	3.135V	5210.00	5209.983365	-16.635	-3.1929
		5290.00	5289.983201	-16.799	-3.1756
		5530.00	5529.982864	-17.136	-3.0987
		5610.00	5609.983367	-16.633	-2.9649
		5775.00	5774.983168	-16.832	-2.9146
	3.465V	5210.00	5209.983628	-16.372	-3.1424
		5290.00	5289.983772	-16.228	-3.0677
		5530.00	5529.983196	-16.804	-3.0387
		5610.00	5609.982980	-17.020	-3.0339
		5775.00	5774.982262	-17.738	-3.0715

[Calculation method]

Tolerance (kHz) = Result - Frequency

Tolerance (ppm) = Tolerance (kHz) / Channel Frequency * 10⁶

[Test Condition]

EUT operation : non-modulation

Tested Date	Environment	
	Temperature	Humidity
21 February 2017	20 °C	30 %



11. IN-SERVICE MONITORING FOR CHANNEL MOVE TIME, CHANNEL CLOSING TRANSMISSION TIME

11.1. DFS related operating mode

☐ Master
☐ Client with radar detection
☒ Client without radar detection

11.2. DFS Requirement

Table 1 : DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection

Maximum Transmit Power	Value (See Notes 1,2,and 3)
EIRP $\geq$ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm
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.	
Note 3 : EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.	

Table 2 : 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.	

Table 3 : Short Pulse Radar Test Waveform

Radar Type	Pulse Width (μsec)	PRI (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
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	Roundup $\{(1/360) * (19 * 10^6 / \text{PRI}_{\text{μsec}})\}$	60%	30
		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			
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 (Radar Type 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.					

Table 4 : Long Pulse Radar Test Waveform

Radar Type	Pulse Width (μsec)	Chip Width (MHz)	PRI (μsec)	Number of Pulses per Burst	Number of Burst	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

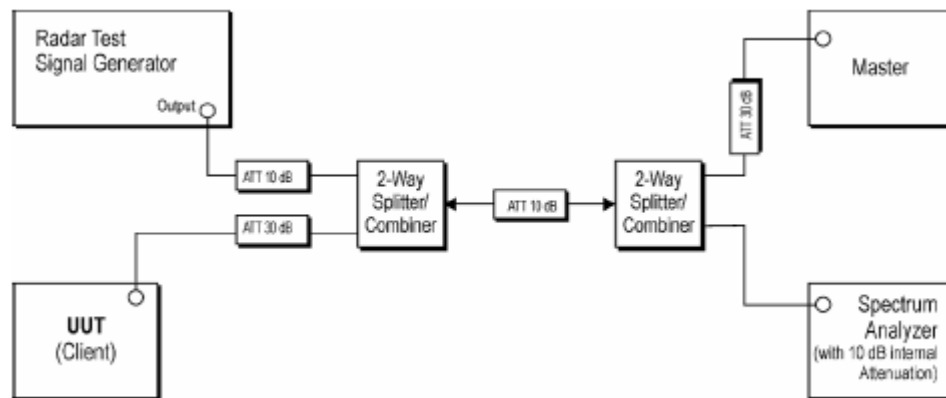
Table 5 : Frequency Hopping Radar Test Waveform

Radar Type	Pulse Width (μsec)	PRI (μsec)	Pulse per Hop (kHz)	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

11.3. Test Procedure

- (1) Configure the EUT for normal transmissions with a channel loading of approximately 17% or greater.
- (2) Refer as KDB Publication No. 905462 D02 UNII DFS Compliance Procedures New Rules v02.

[Test setup]





The rated output power of the Master unit is $\geq 200\text{mW}$. Therefore the required interference threshold level is -64dBm . After correction for antenna gain and procedural adjustments, the required conducted threshold at the antenna port is $-64 + 1 + 0 = -63.0\text{dBm}$ (threshold level + additional 1dB + antenna gain)

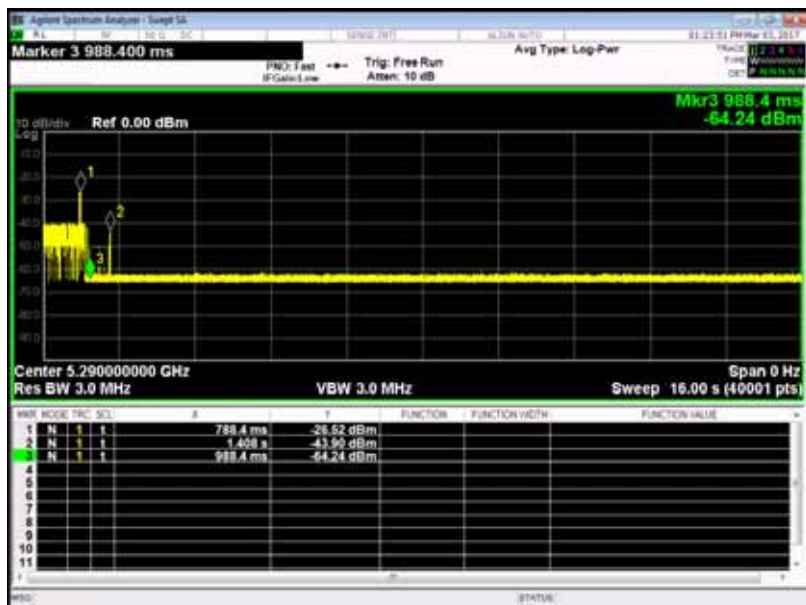
Radar Type 0

5290MHz



Channel Move Time, Channel Closing Transmission Time

11ac-HT80 5290MHz



Channel Move Time

Test Item	Unit	Measurement Time	Limit	Result
Channel Move Time	[sec]	0.620	10	Pass
Channel Closing Transmission Time	[msec]	2.400	60	Pass

[Note]

Marker1 : End of Burst
Marker2 : End of Transmission
Marker3 : End of Burst + 200ms

[Calculation method]

Channel Move Time = End of Transmission - End of Burst = 1.408 – 0.7884sec
Channel Closing Transmission Time is calculated from (End of Burst + 200ms)
to (End of Burst + 10sec)
Channel Closing Transmission Time
= (Number of analyzer bins showing transmission) × (dwell time per bin)

Tested Date	Environment	
	Temperature	Humidity
3 March 2017	20 °C	33 %



12. TEST EQUIPMENT

• Conducted Emission

KEC No.	Equipment	Manufacturer	Model No.	Last Cal.	Next Cal.
AT-144	Low Power Attenuator	HUBER+SUHNER	6810.01.A	2016/06	2017/06
FL-107	LISN	KYORITSU	KNW-407	2016/06	2017/06
MM-252	RF Relay Matrix	TSJ	RFM-E121	2016/06	2017/06
SA-067	Test Receiver	Keysight Technologies	N9038A	2016/09	2017/09

• Emission Bandwidth

• Peak Power Spectral Density

KEC No.	Equipment	Manufacturer	Model No.	Last Cal.	Next Cal.
AT-148	Fixed Attenuator	Anritsu	41KC-10	2016/05	2017/05
SA-065	Signal Analyzer	Agilent	N9030A	2016/12	2017/11

• Maximum Conducted Output Power

KEC No.	Equipment	Manufacturer	Model No.	Last Cal.	Next Cal.
AT-148	Fixed Attenuator	Anritsu	41KC-10	2016/05	2017/05
VV-061	Power Meter	Agilent	N1912A	2016/05	2017/06
VV-061-1	Wideband Power Sensor	Agilent	N1921A	2016/05	2017/06

• Frequency Stability

KEC No.	Equipment	Manufacturer	Model No.	Last Cal.	Next Cal.
AT-148	Fixed Attenuator	Anritsu	41KC-10	2016/05	2017/05
SA-065	Signal Analyzer	Agilent	N9030A	2016/12	2017/11
SF-093	Temperature Chamber	ESPEC CORP.	SH-641	2015/70	2017/07

• Frequency Stability

KEC No.	Equipment	Manufacturer	Model No.	Last Cal.	Next Cal.
AT-148	Fixed Attenuator	Anritsu	41KC-10	2016/05	2017/05
SA-065	Signal Analyzer	Agilent	N9030A	2016/12	2017/11
SF-093	Temperature Chamber	ESPEC CORP.	SH-641	2015/70	2017/07

• Spurious Emission (Radiated) 30-1000MHz

KEC No.	Equipment	Manufacturer	Model No.	Last Cal.	Next Cal.
AM-028	Pre-Amplifier	Anritsu	Anritsu	2016/04	2017/04
AN-094	Biconical Antenna	Schwarzbeck	VHA9103/BBA9106	2016/04	2017/04
AN-250	LPDA Antenna	Schwarzbeck	UHALP9108A	2016/04	2017/04
AT-159	Fixed Attenuator	Anritsu	MP721B	2016/04	2017/04
FS-099	Test Receiver	ROHDE & SCHWARZ	ESS	2017/01	2018/01
MM-530	RF Relay Matrix Unit	TSJ	RFM-E321	2016/04	2017/04
SA-059	Spectrum Analyzer	Agilent	N9010A	2016/07	2017/07



• Spurious Emission (Radiated) Above 1GHz

KEC No.	Equipment	Manufacturer	Model No.	Last Cal.	Next Cal.
AM-053	Pre-Amplifier	HP	8449B	2016/04	2017/04
AM-118	Xa Band Pre Amplifier	MITEQ	TTA1840-35-HG	2016/05	2017/04
AN-044	DRG Antenna	Electro-Metrics	RGA-180	2016/05	2017/05
AN-104	Std. Gain Horn Antenna	Scientific-Atlanta	12-5.8	2015/04	2017/04
AN-107	Std. Gain Horn Antenna	Scientific-Atlanta	12A-18	2016/01	2017/04
AN-109	Std. Gain Horn Antenna	Scientific-Atlanta	12A-26	2016/01	2017/04
AN-145	Std. Gain Horn Antenna	Scientific-Atlanta	12-12	2015/04	2017/04
AN-210	Std. Gain Horn Antenna	Scientific-Atlanta	12-8.2	2015/04	2017/04
AT-152	Precision Fixed Attenuator	Anritsu	43KC-6	2016/05	2017/04
FL-223	Band-stop Filter	TOYO	9BRM5250/T600	2016/04	2017/04
FL-224	Band-stop Filter	TOYO	6BRM5600/T700	2016/04	2017/04
SA-065	Spectrum Analyzer	Agilent	N9030A	2016/12	2017/11

• Spurious Emission (Conducted) Below 30MHz

KEC No.	Equipment	Manufacturer	Model No.	Last Cal.	Next Cal.
AT-148	Fixed Attenuator	Anritsu	41KC-10	2016/05	2017/04
SA-067	Test Receiver	Keysight Technologies	N9038A	2016/09	2017/09

• Channel Closing Transmission Time/ Channel Move Time

KEC No.	Equipment	Manufacturer	Model No.	Last Cal.	Next Cal.
AT-148	Fixed Attenuator	Anritsu	41KC-10	2016/05	2017/04
AT-149	Fixed Attenuator	Anritsu	43KC-10	2016/05	2017/04
AT-152	Precision Fixed Attenuator	Anritsu	43KC-6	2016/05	2017/04
AT-153	Precision Fixed Attenuator	Anritsu	43KC-6	2016/05	2017/04
AT-154	Precision Fixed Attenuator	Anritsu	43KC-20	2016/05	2017/04
AT-170	Step Attenuator	Agilent	8495B	2016/11	2017/11
AX-069	Power Splitter	HP	11667B	2016/05	2017/06
AX-070	Power Divider	HP	11636B	2016/05	2017/06
MM-325	Power Splitter	Mini-Circuits	ZFRSC-123-S+	2016/12	2017/12
MM-326	Power Splitter	Mini-Circuits	ZFRSC-123-S+	2016/12	2017/12
SA-065	Signal Analyzer	Agilent	N9030A	2016/12	2017/11
SG-069	Vector Signal Generator	Agilent	N5182B	2016/07	2017/03

Note : (*1) KEC checked the performance, before using this device.

The overall program of calibration and verification of equipment is designed and operated so as to ensure that measurements made by KEC are traceable to the national standards of measurement or equivalent abroad.



APPENDIX A (DECLARATION OF COMPLIANCE TO MAXIMUM PERMISSIBLE EXPOSURE LIMITS FOR HUMANS)

The Model U9W30X with 5150-5850MHz transmitter complies with Maximum permissible exposure limits for humans as called out in §1.1310. It is exempt from Maximum Permissible Exposure based on its operating frequency, and power density $0.004\text{mW}/\text{cm}^2$.

Calculation formula :

$$S = PG / 4\pi D^2$$

S : power density (W/m^2)

P : peak output power (W)

G: antenna gain (isotropic)

D: measurement distance (m)

Where :

P = 12.72dBm at 5240 MHz, 11a (see 50 page)

G = -0.1dBi

D = 0.2m

Therefore :

$$S(\text{W} / \text{m}^2) = \frac{10^{\frac{12.72}{10}} \times 10^{-3} \times 10^{\frac{-0.1}{10}}}{4 \times \pi \times 0.2 \times 0.2} = 0.036$$

$$S = 0.004 (\text{mW}/\text{cm}^2)$$

This would be less than $1\text{mW}/\text{cm}^2$ when the separation distance between the user and the device's radiating element is less than 20cm.