



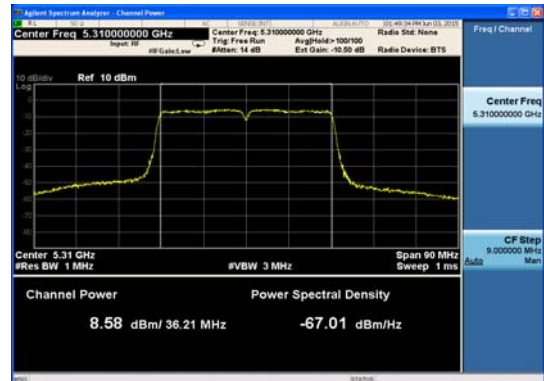
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Ant : A1_802.11ac_HT40 (1)



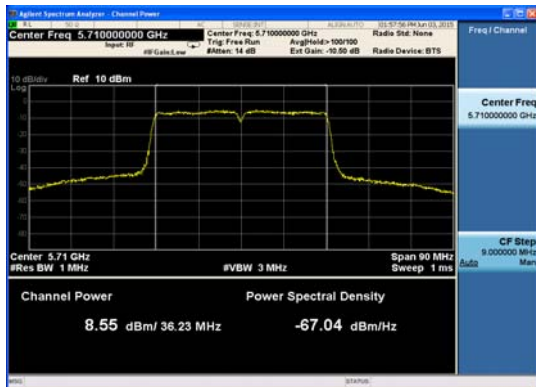
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Ant : A1_802.11ac_HT40 (2)



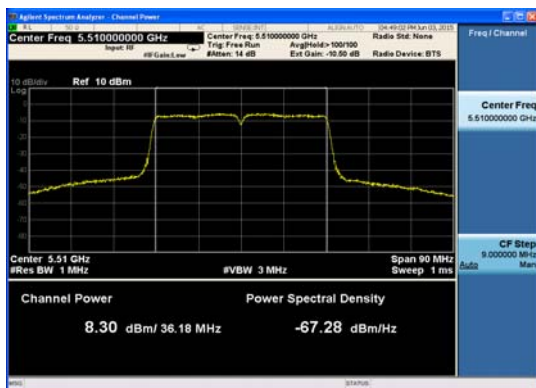
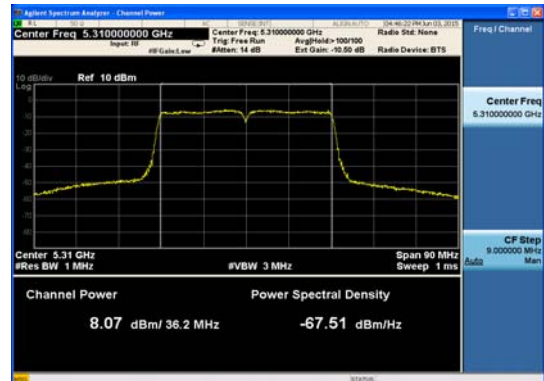
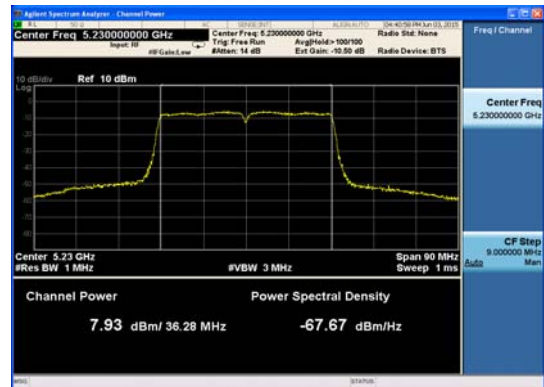
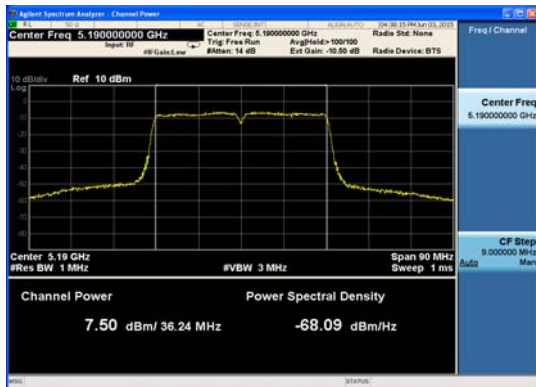
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Ant : A2_802.11ac_HT40 (1)



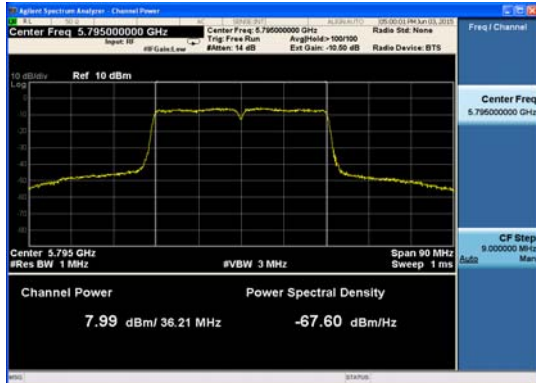
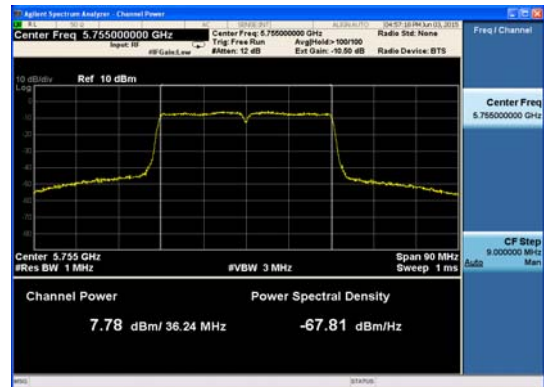
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Ant : A2_802.11ac_HT40 (2)



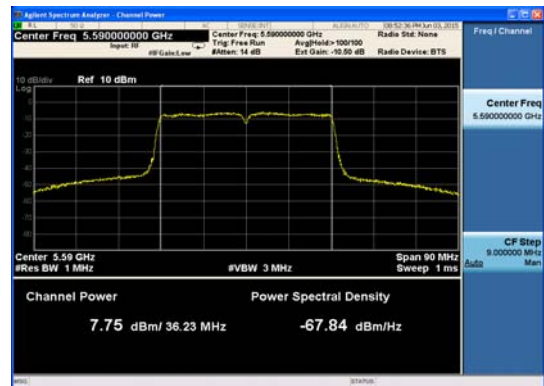
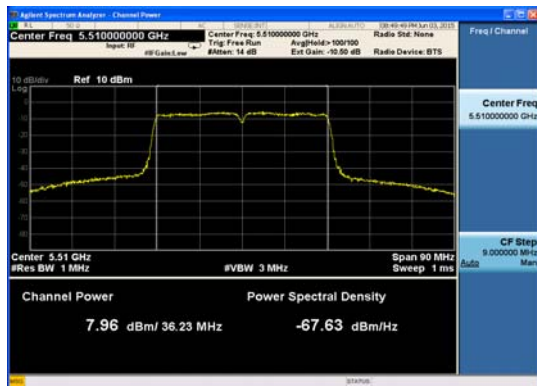
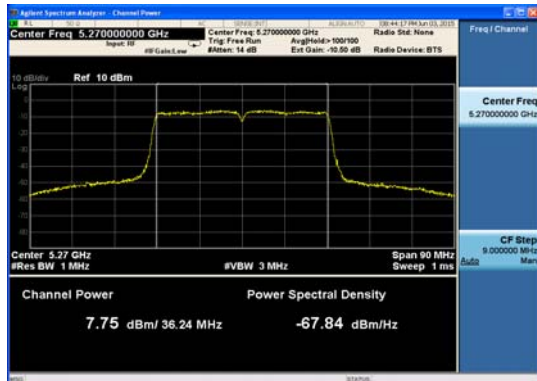
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Ant : A3_802.11ac_HT40 (1)



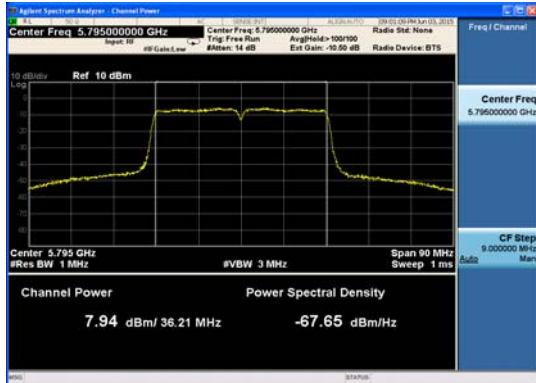
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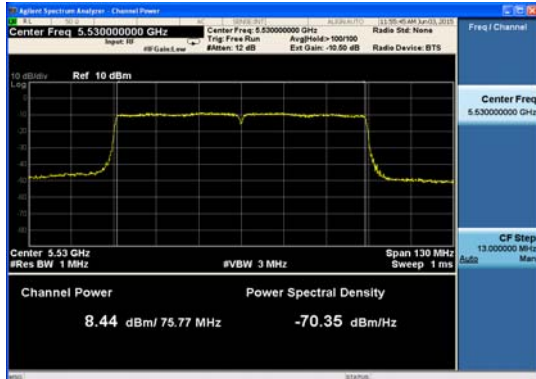
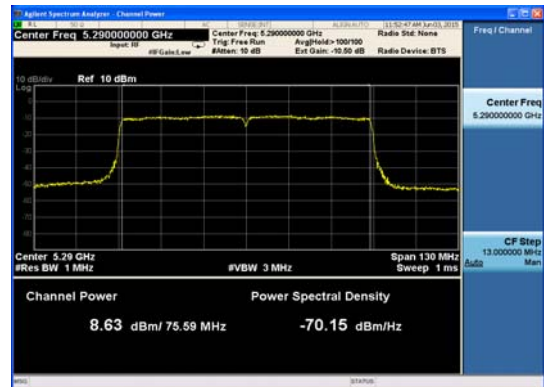
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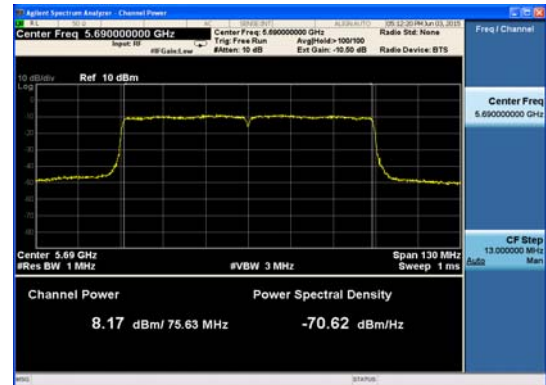
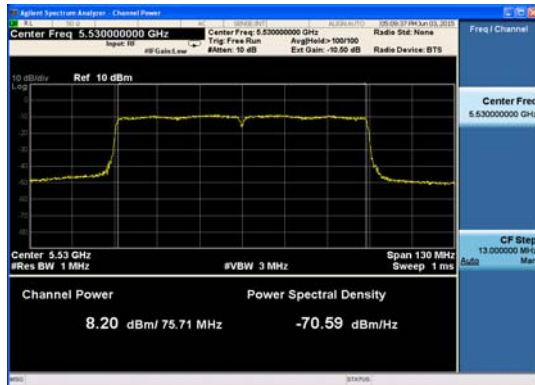
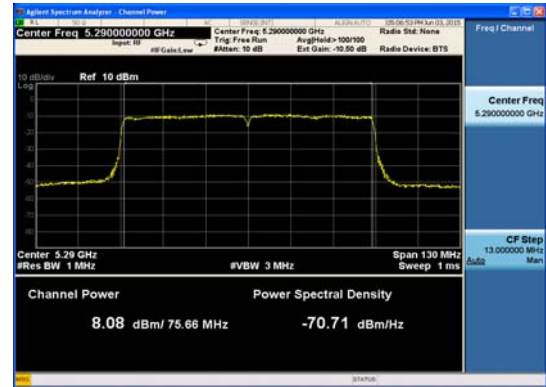
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Ant : A1_802.11ac_HT80



Ant : A2_802.11ac_HT80



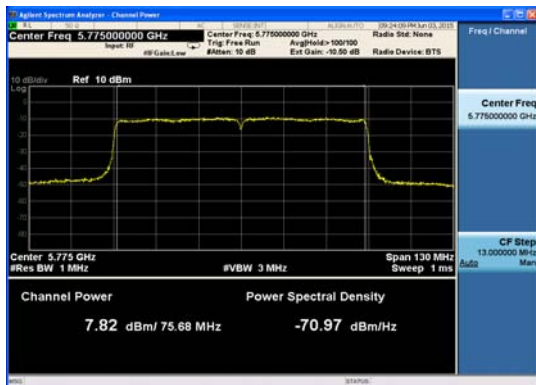
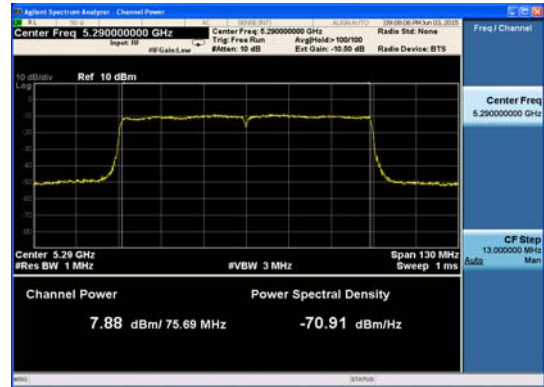
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Ant : A3_802.11ac_HT80

2.1.5 Power Spectral Density

Procedure:

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

The spectrum analyzer is set to:

RBW = 1 MHz, 500 KHz (UNII 3)

VBW = 3 MHz, 1.5 MHz (UNII 3)

Trace = average at least 100

Sweep = auto

Detector function = RMS

Limit

[Dipole ANT]

Operating Mode	Band	Mode	ANT Configuration	ANT Gain (dBi)	Limit (dBm)
					FCC, IC
SISO	UNII 1	802.11a/n/ac	ANT1, ANT2, ANT3	5.5	10
	UNII 2A				11
	UNII 2C				11
	UNII 3				30 /500KHz
MIMO (2Tx)	UNII 1		ANT1 + ANT2	8.51	7.49
	UNII 2A				8.49
	UNII 2C				8.49
	UNII 3				27.49 /500KHz
MIMO (3Tx)	UNII 1		ANT1 + ANT2+ ANT3	10.27	5.73
	UNII 2A				6.73
	UNII 2C				6.73
	UNII 3				25.73/500KHz

[Patch ANT]

Operating Mode	Band	Mode	ANT Configuration	ANT Gain (dBi)	Limit (dBm)
					FCC, IC
SISO	UNII 1	802.11a/n/ac	ANT1, ANT2, ANT3	7	9
	UNII 2A				10
	UNII 2C				10
	UNII 3				29 /500KHz
MIMO (2Tx)	UNII 1		ANT1 + ANT2	10.01	5.99
	UNII 2A				6.99
	UNII 2C				6.99
	UNII 3				25.99 /500KHz
MIMO (3Tx)	UNII 1		ANT1 + ANT2+ ANT3	11.77	4.23
	UNII 2A				5.23
	UNII 2C				5.23
	UNII 3				24.23 /500KHz

Test Results

Ant : A1

	Measured Power Density (dBm)		
Mode	802.11a	802.11n_HT20	802.11ac_VHT20
Frequency			
5180 MHz	-1.92	-2.37	-2.49
5200 MHz	-2.02	-2.17	-2.11
5240 MHz	-1.79	-2.06	-2.21
5260 MHz	-1.97	-2.07	-2.39
5300 MHz	-2.00	-2.03	-2.46
5320 MHz	-2.19	-2.46	-2.47
5500 MHz	-2.58	-2.87	-2.46
5600 MHz	-2.57	-2.89	-2.84
5720 MHz	-1.75	-1.94	-1.75
5745 MHz	-5.00	-5.33	-5.39
5785 MHz	-4.82	-5.27	-5.15
5825 MHz	-4.79	-5.40	-5.19
Measurement uncertainty	± 3 dB		

Ant : A2

	Measured Power Density (dBm)		
Mode	802.11a	802.11n_HT20	802.11ac_VHT20
Frequency			
5180 MHz	-2.92	-3.43	-3.53
5200 MHz	-2.41	-3.33	-3.36
5240 MHz	-2.34	-2.90	-2.82
5260 MHz	-2.19	-2.76	-2.92
5300 MHz	-2.62	-3.09	-2.74
5320 MHz	-2.32	-2.80	-2.88
5500 MHz	-2.27	-2.69	-2.80
5600 MHz	-2.10	-2.73	-2.55
5720 MHz	-2.46	-2.45	-2.48
5745 MHz	-5.15	-5.77	-5.59
5785 MHz	-5.69	-5.70	-5.72
5825 MHz	-5.12	-5.57	-5.60
Measurement uncertainty	± 3 dB		



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Ant : A3

	Measured Power Density (dBm)		
Mode	802.11a	802.11n_HT20	802.11ac_VHT20
Frequency			
5180 MHz	-4.26	-4.31	-4.47
5200 MHz	-4.05	-4.10	-4.28
5240 MHz	-3.42	-3.62	-3.86
5260 MHz	-3.23	-3.47	-3.54
5300 MHz	-3.12	-3.33	-2.95
5320 MHz	-2.69	-2.73	-3.17
5500 MHz	-2.52	-2.71	-3.07
5600 MHz	-2.42	-2.69	-2.96
5720 MHz	-1.99	-2.39	-2.53
5745 MHz	-5.98	-5.63	-5.88
5785 MHz	-5.92	-5.87	-5.92
5825 MHz	-5.42	-5.66	-5.63
Measurement uncertainty	± 3 dB		

Ant : A1 + A2

	Measured Power Density (dBm)		
Mode	802.11a	802.11n_HT20	802.11ac_VHT20
Frequency			
5180 MHz	0.62	0.14	0.03
5200 MHz	0.80	0.30	0.32
5240 MHz	0.95	0.55	0.51
5260 MHz	0.93	0.61	0.36
5300 MHz	0.71	0.48	0.41
5320 MHz	0.76	0.38	0.34
5500 MHz	0.59	0.23	0.38
5600 MHz	0.68	0.20	0.32
5720 MHz	0.92	0.82	0.91
5745 MHz	-2.06	-2.53	-2.48
5785 MHz	-2.22	-2.47	-2.42
5825 MHz	-1.94	-2.47	-2.38
Measurement uncertainty	± 3 dB		

Ant : A1 + A2 + A3

	Measured Power Density (dBm)		
Mode	802.11a	802.11n_HT20	802.11ac_VHT20
Frequency			
5180 MHz	1.84	1.47	1.35
5200 MHz	2.03	1.64	1.61
5240 MHz	2.31	1.96	1.86
5260 MHz	2.34	2.04	1.85
5300 MHz	2.22	1.99	2.06
5320 MHz	2.38	2.11	1.94
5500 MHz	2.32	2.02	2.00
5600 MHz	2.41	2.00	1.99
5720 MHz	2.71	2.52	2.53
5745 MHz	-0.58	-0.80	-0.84
5785 MHz	-0.68	-0.83	-0.81
5825 MHz	-0.33	-0.77	-0.70
Measurement uncertainty	± 3 dB		

Ant : M1, M2, M3

	Measured Power Density (dBm)		
Mode	Ant : M1_802.11a	Ant : M2_802.11a	Ant : M3_802.11a
Frequency			
5180 MHz	-1.36	-1.43	-0.81
5200 MHz	-1.76	-1.45	-1.36
5240 MHz	-2.00	-1.83	-1.59
5260 MHz	-1.91	-1.97	-1.47
5300 MHz	-1.81	-2.21	-1.66
5320 MHz	-2.25	-2.22	-1.73
5500 MHz	-1.84	-1.83	-1.82
5600 MHz	-2.14	-1.83	-1.54
5720 MHz	-1.53	-1.77	-1.13
5745 MHz	-4.80	-5.13	-4.34
5785 MHz	-5.27	-5.15	-4.26
5825 MHz	-5.17	-5.38	-4.44
Measurement uncertainty	± 3 dB		

Ant : M1 + M2

	Measured Power Density (dBm)
Mode	802.11a
Frequency	
5180 MHz	1.62
5200 MHz	1.41
5240 MHz	1.10
5260 MHz	1.07
5300 MHz	1.00
5320 MHz	0.78
5500 MHz	1.18
5600 MHz	1.03
5720 MHz	1.36
5745 MHz	-1.95
5785 MHz	-2.20
5825 MHz	-2.26
Measurement uncertainty	± 3 dB

Ant : M1 + M2 + M3

	Measured Power Density (dBm)
Mode	802.11a
Frequency	
5180 MHz	3.58
5200 MHz	3.25
5240 MHz	2.97
5260 MHz	2.99
5300 MHz	2.88
5320 MHz	2.71
5500 MHz	2.94
5600 MHz	2.94
5720 MHz	3.30
5745 MHz	0.03
5785 MHz	-0.10
5825 MHz	-0.21
Measurement uncertainty	± 3 dB



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Ant : A1

Mode Frequency	Measured Power Density (dBm)	
	802.11n__HT40	802.11ac__VHT40
5190 MHz	-4.81	-4.41
5230 MHz	-4.71	-5.00
5270 MHz	-5.09	-4.96
5310 MHz	-5.33	-5.42
5510 MHz	-5.54	-5.35
5590 MHz	-5.76	-5.73
5710 MHz	-5.29	-5.12
5755 MHz	-8.17	-7.75
5795 MHz	-7.58	-7.90
Measurement uncertainty	± 3 dB	

Ant : A2

Mode Frequency	Measured Power Density (dBm)	
	802.11n__HT40	802.11ac__VHT40
5190 MHz	-5.88	-6.02
5230 MHz	-5.95	-5.84
5270 MHz	-5.24	-5.69
5310 MHz	-5.62	-5.67
5510 MHz	-5.34	-5.65
5590 MHz	-5.72	-5.43
5710 MHz	-5.20	-5.01
5755 MHz	-8.78	-8.87
5795 MHz	-8.57	-8.49
Measurement uncertainty	± 3 dB	

Ant : A3

	Measured Power Density (dBm)	
Mode	802.11n__HT40	802.11ac__VHT40
Frequency		
5190 MHz	-7.01	-7.20
5230 MHz	-6.65	-6.87
5270 MHz	-6.24	-5.97
5310 MHz	-5.99	-6.01
5510 MHz	-5.85	-5.56
5590 MHz	-5.72	-6.16
5710 MHz	-5.46	-5.77
5755 MHz	-8.75	-8.93
5795 MHz	-8.60	-8.73
Measurement uncertainty	± 3 dB	

Ant : A1 + A2

	Measured Power Density (dBm)	
Mode	802.11n__HT40	802.11ac__VHT40
Frequency		
5190 MHz	-2.30	-2.13
5230 MHz	-2.28	-2.39
5270 MHz	-2.15	-2.30
5310 MHz	-2.46	-2.53
5510 MHz	-2.43	-2.49
5590 MHz	-2.73	-2.57
5710 MHz	-2.23	-2.05
5755 MHz	-5.45	-5.26
5795 MHz	-5.04	-5.17
Measurement uncertainty	± 3 dB	

Ant : A1 + A2 + A3

	Measured Power Density (dBm)	
Mode	802.11n__HT40	802.11ac__VHT40
Frequency		
5190 MHz	-1.04	-0.95
5230 MHz	-0.92	-1.07
5270 MHz	-0.72	-0.75
5310 MHz	-0.87	-0.92
5510 MHz	-0.80	-0.75
5590 MHz	-0.96	-0.99
5710 MHz	-0.54	-0.52
5755 MHz	-3.79	-3.71
5795 MHz	-3.45	-3.59
Measurement uncertainty	± 3 dB	

Ant : A1, A2, A3

	Measured Power Density (dBm)		
Mode	Ant : A1	Ant : A2	Ant : A3
Frequency	802.11ac__VHT80	802.11ac__VHT80	802.11ac__VHT80
5210 MHz	-7.80	-8.97	-10.03
5290 MHz	-8.11	-8.76	-8.95
5530 MHz	-8.52	-8.51	-8.79
5690 MHz	-8.04	-8.48	-8.61
5775 MHz	-8.37	-8.72	-8.70
Measurement uncertainty	± 3 dB		

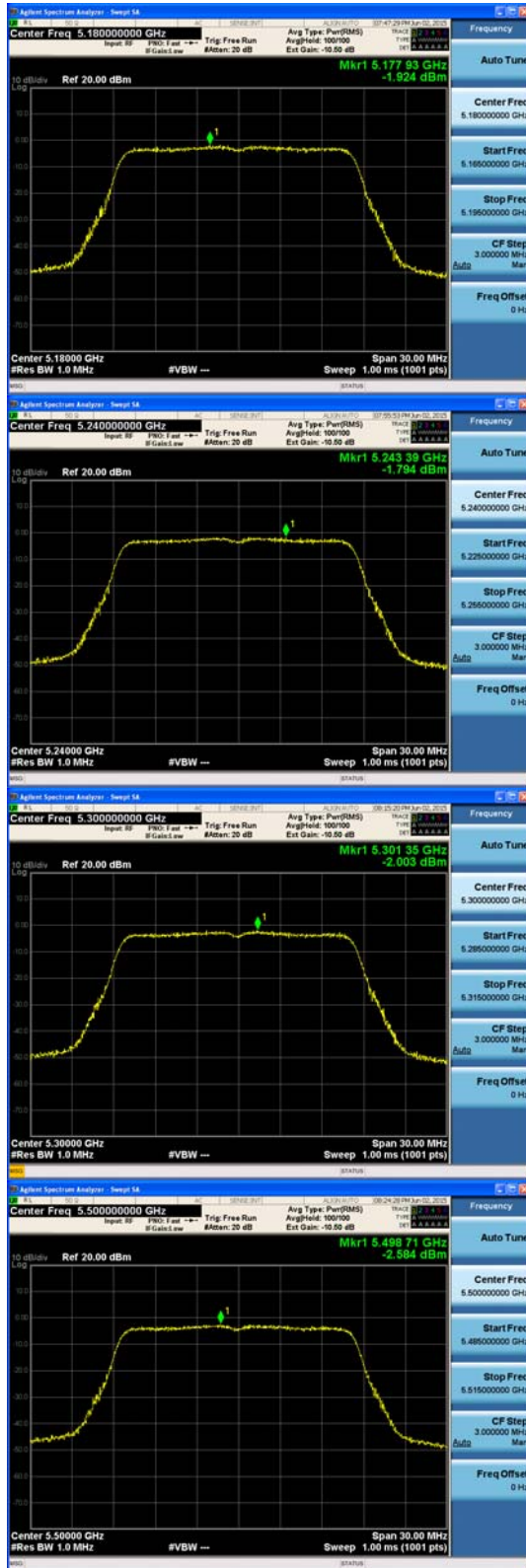
Ant : A1 + A2

	Measured Power Density (dBm)
Mode	Ant : A1_802.11ac__VHT80
Frequency	
5210 MHz	-5.34
5290 MHz	-5.41
5530 MHz	-5.50
5690 MHz	-5.24
5775 MHz	-5.53
Measurement uncertainty	± 3 dB

Ant : A1 + A2 + A3

	Measured Power Density (dBm)
Mode	Ant : A1_802.11ac__VHT80
Frequency	
5210 MHz	-4.07
5290 MHz	-3.82
5530 MHz	-3.83
5690 MHz	-3.60
5775 MHz	-3.82
Measurement uncertainty	± 3 dB

See next pages for actual measured spectrum plots.



Ant : A1_802.11a (1)



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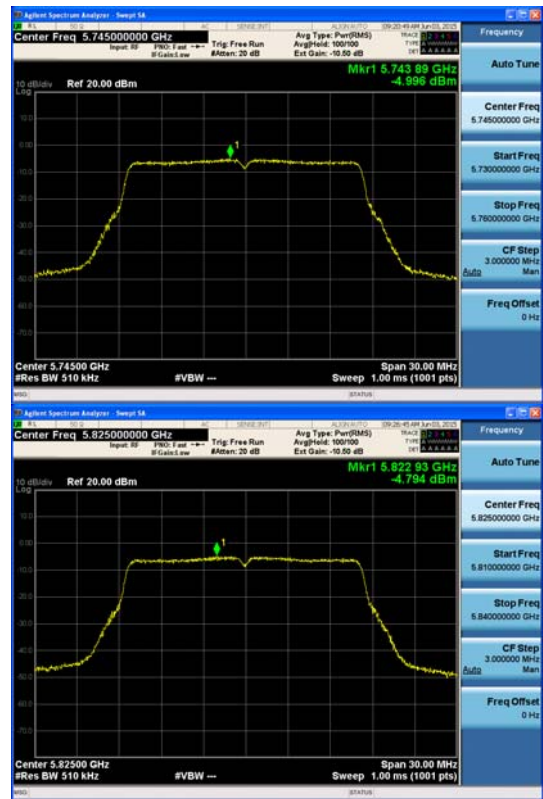
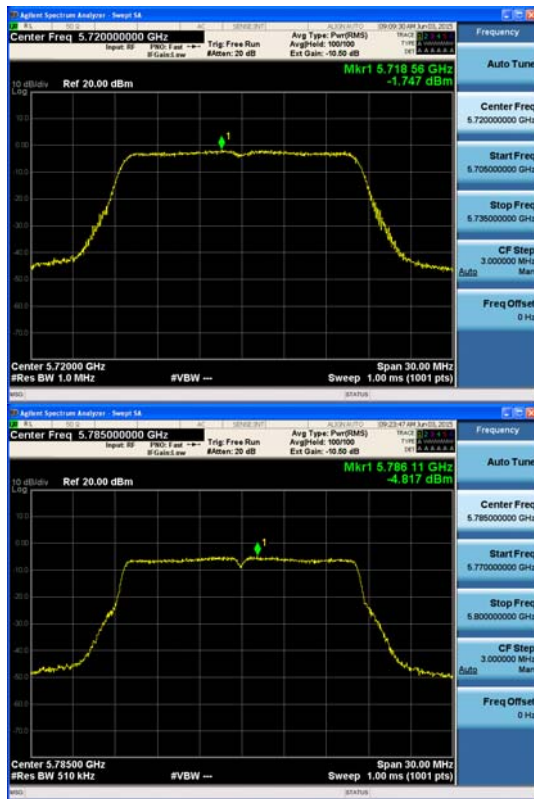
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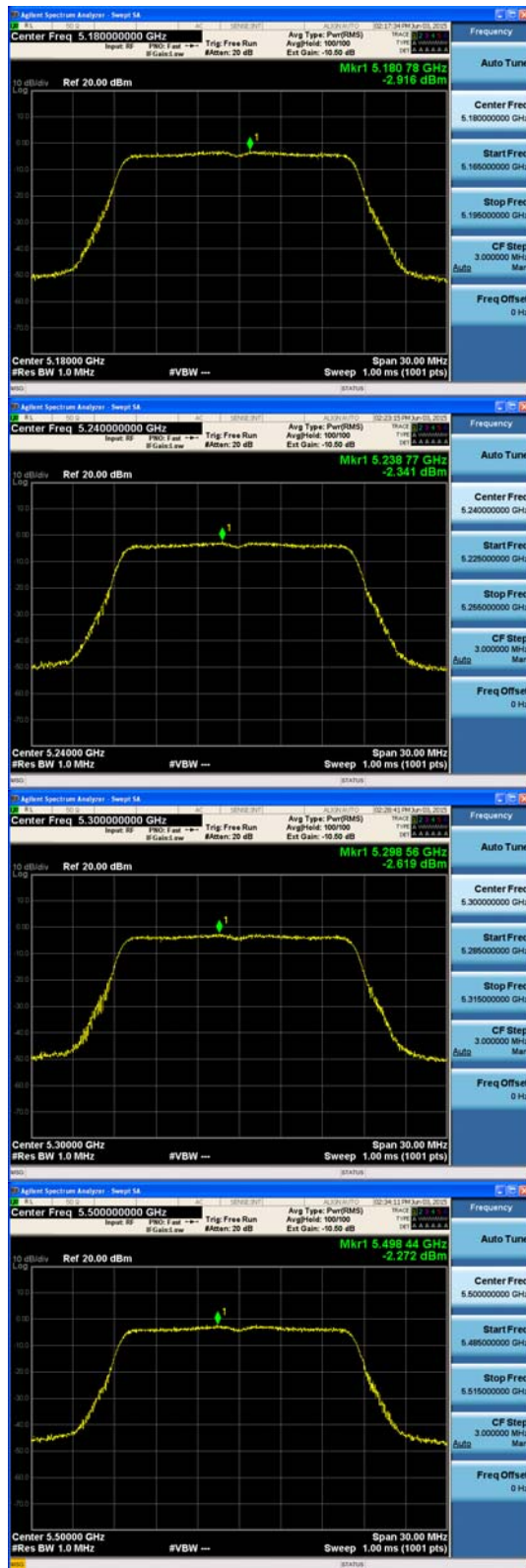
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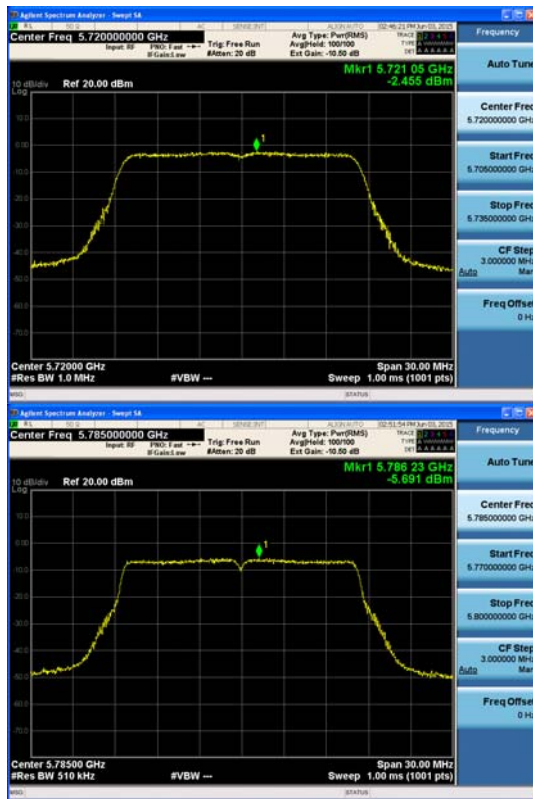
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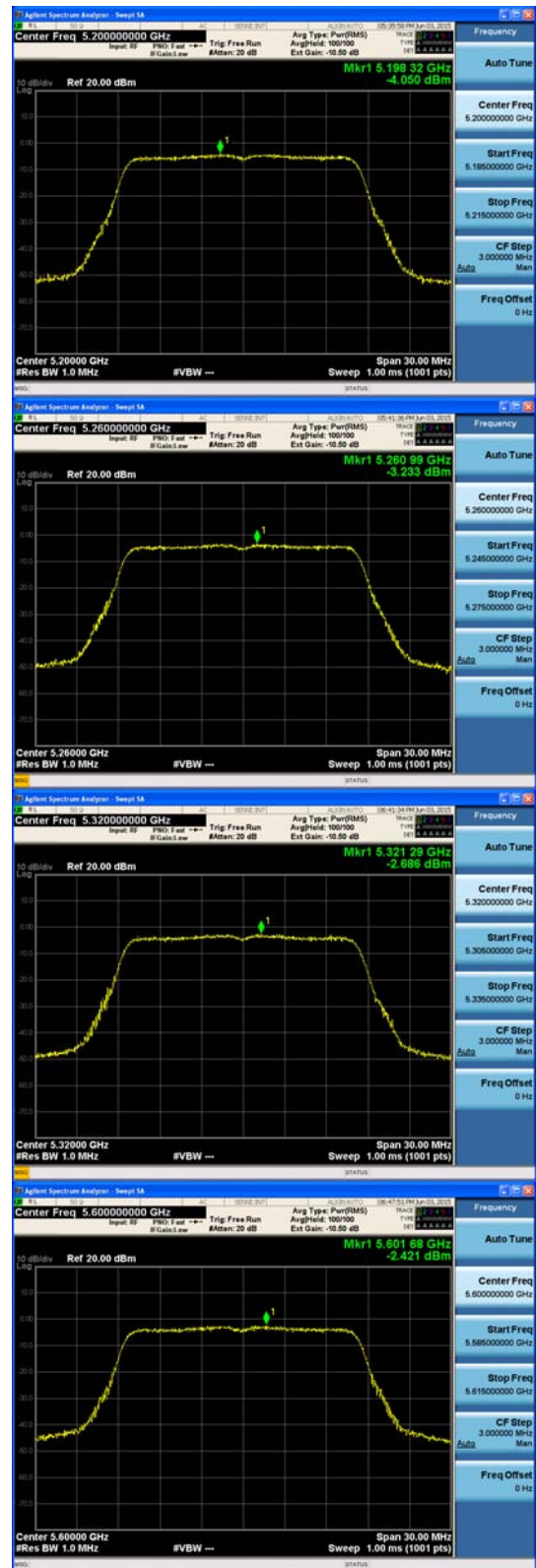
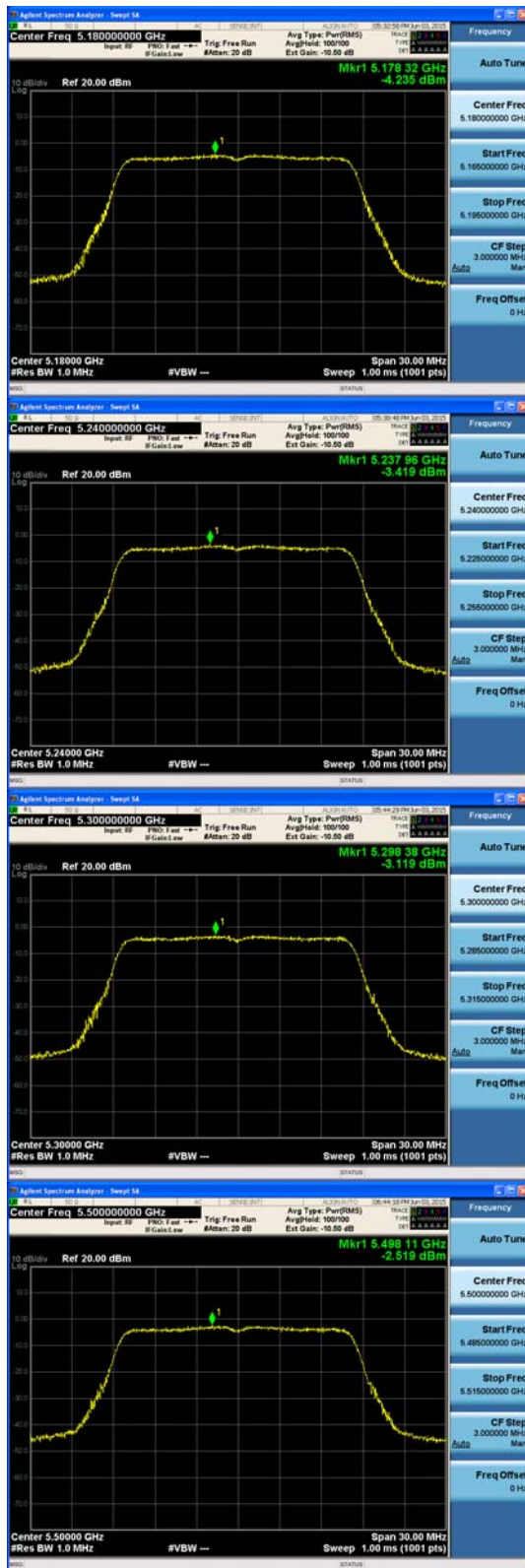
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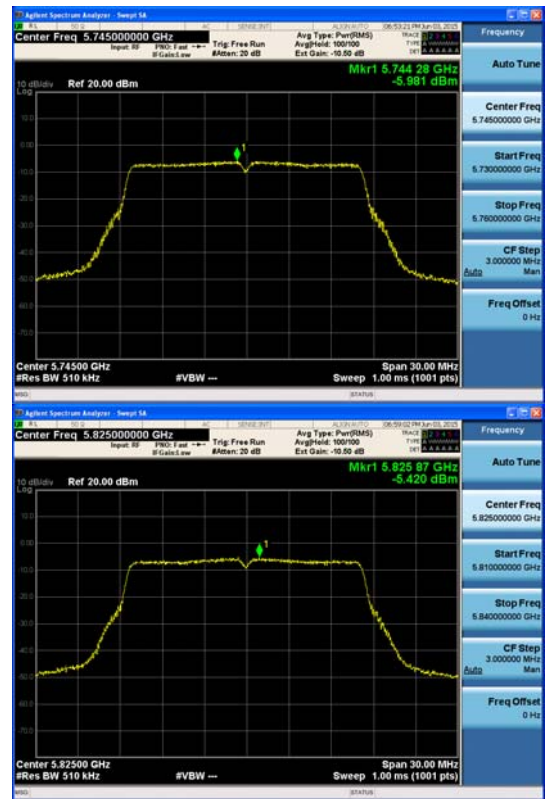
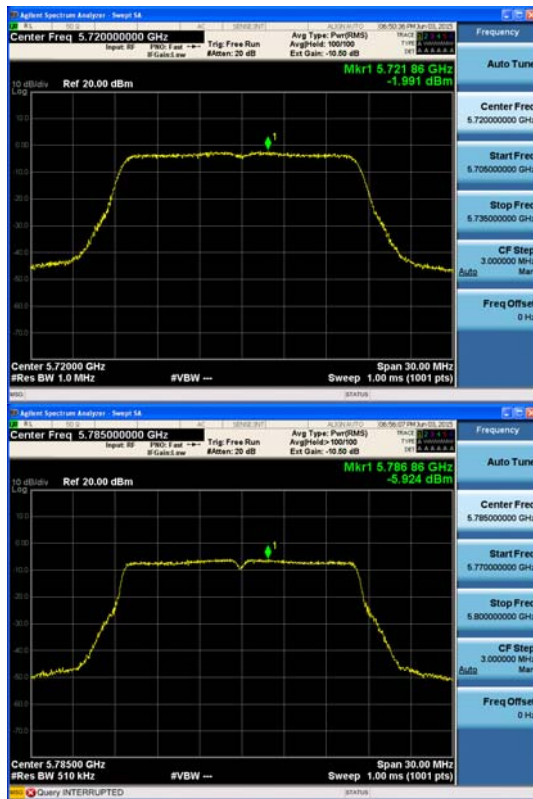
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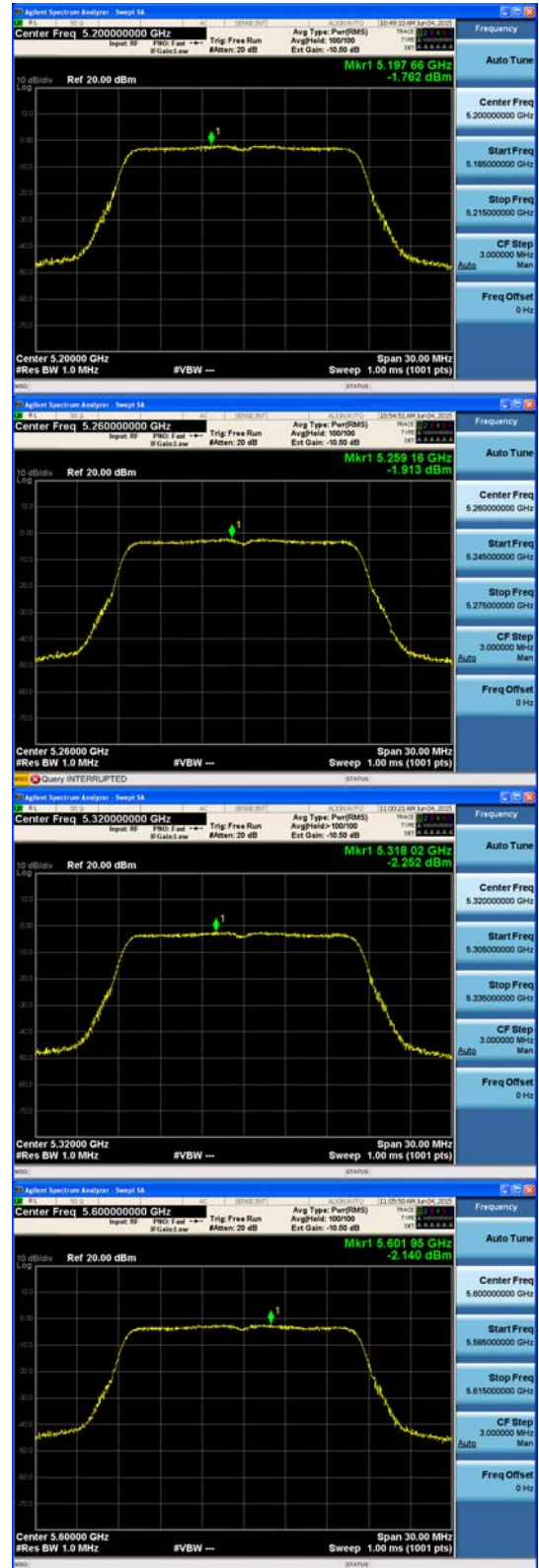
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Ant : A3_802.11a (1)



Ant : A3_802.11a (2)



Ant : M1_802.11a (1)



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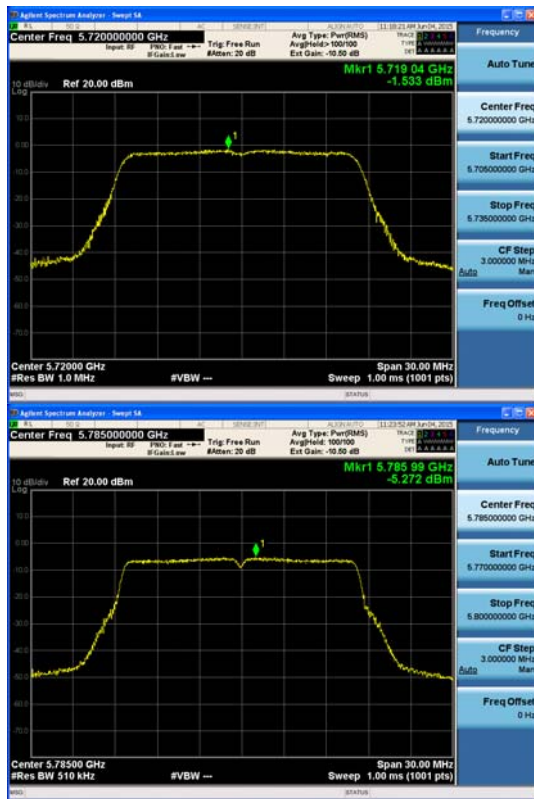
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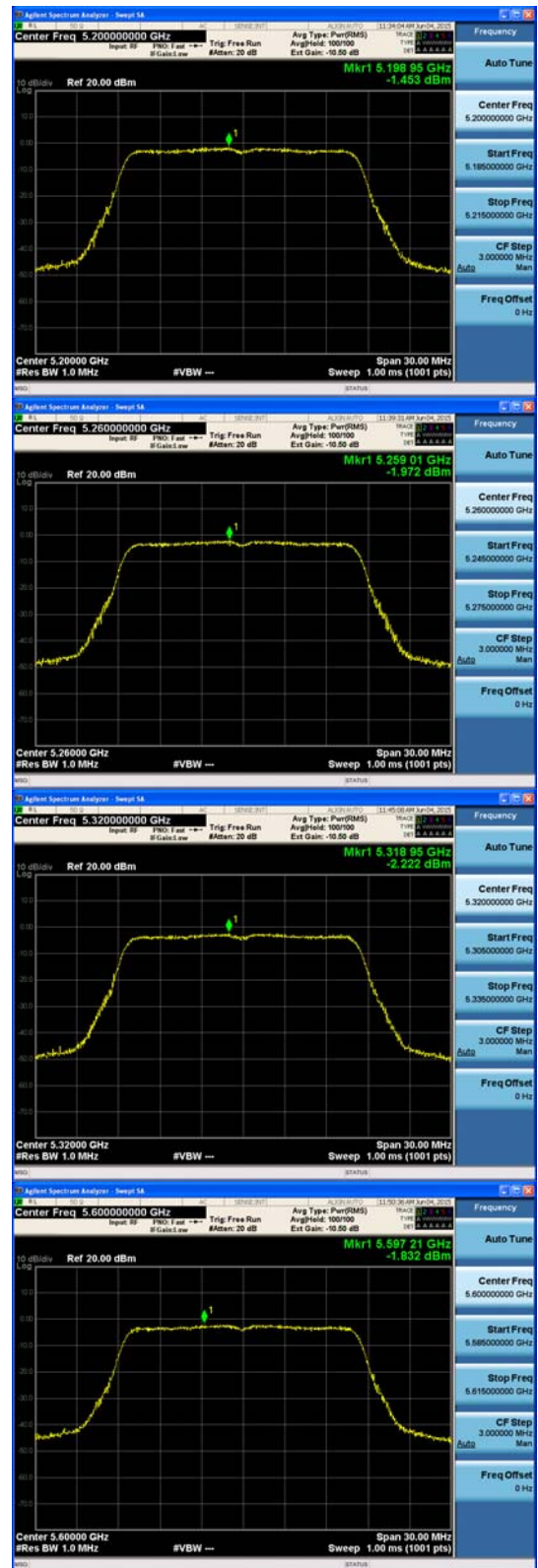
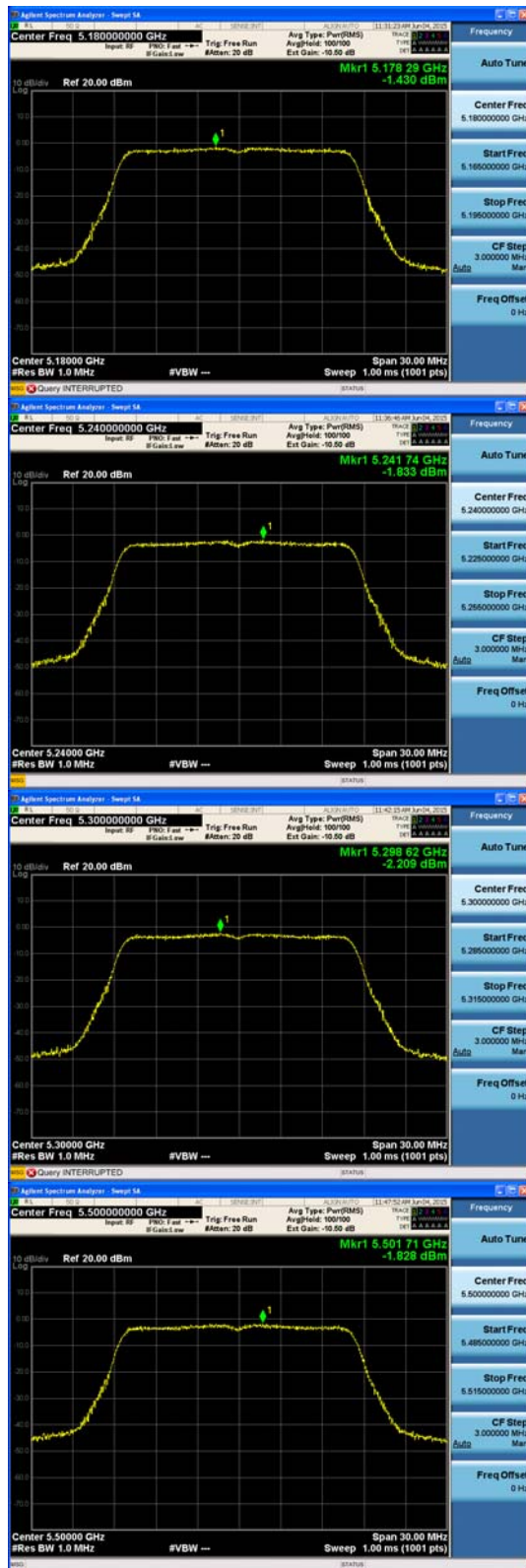
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Ant : M2_802.11a (1)



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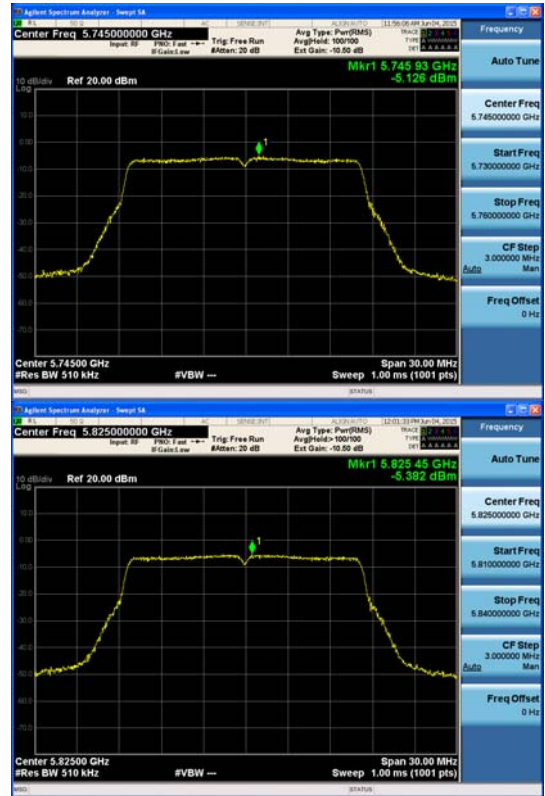
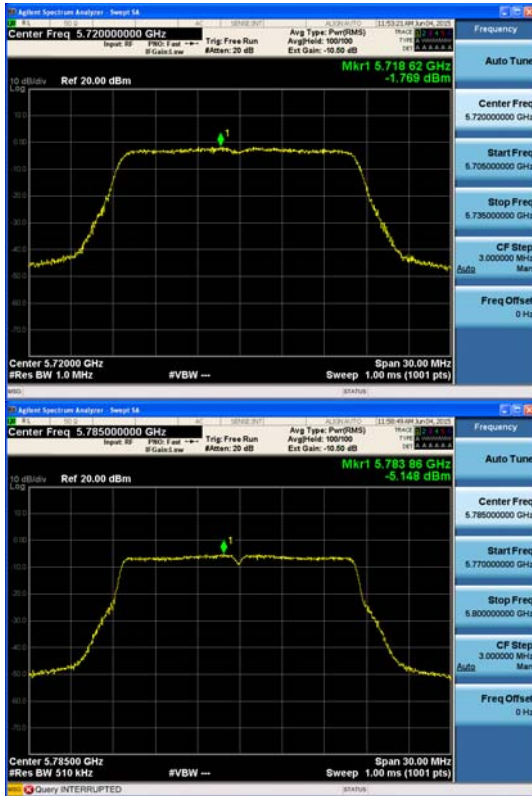
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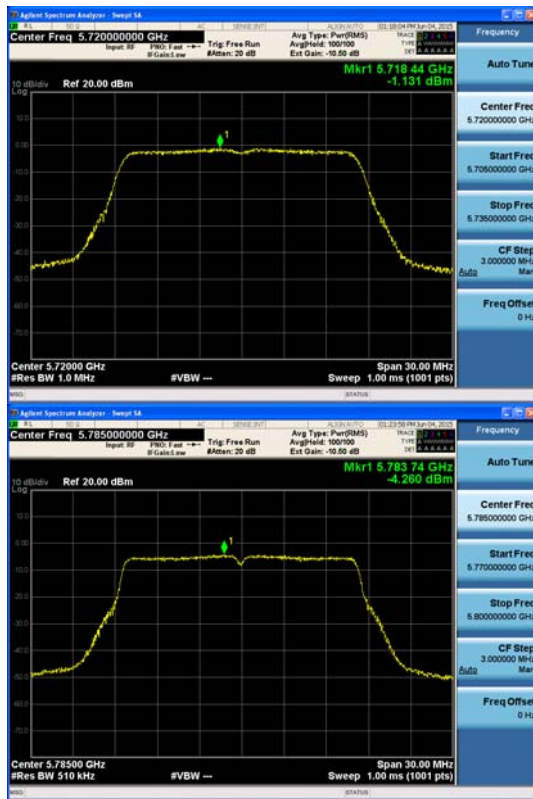
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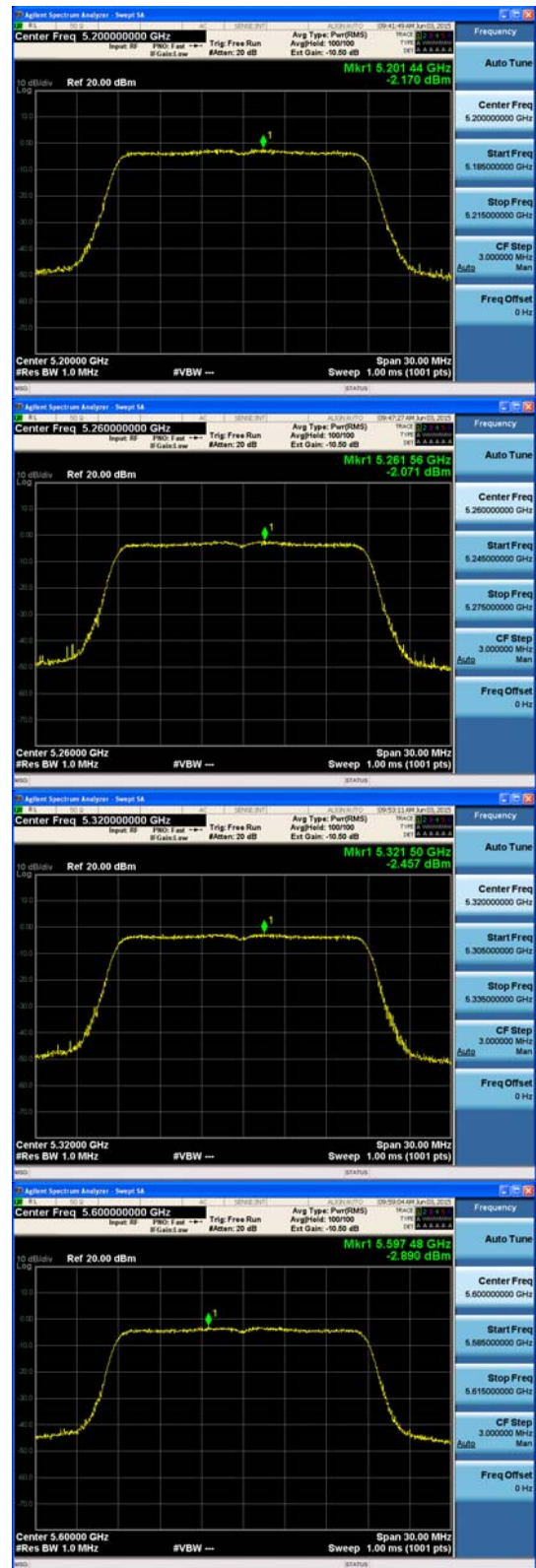
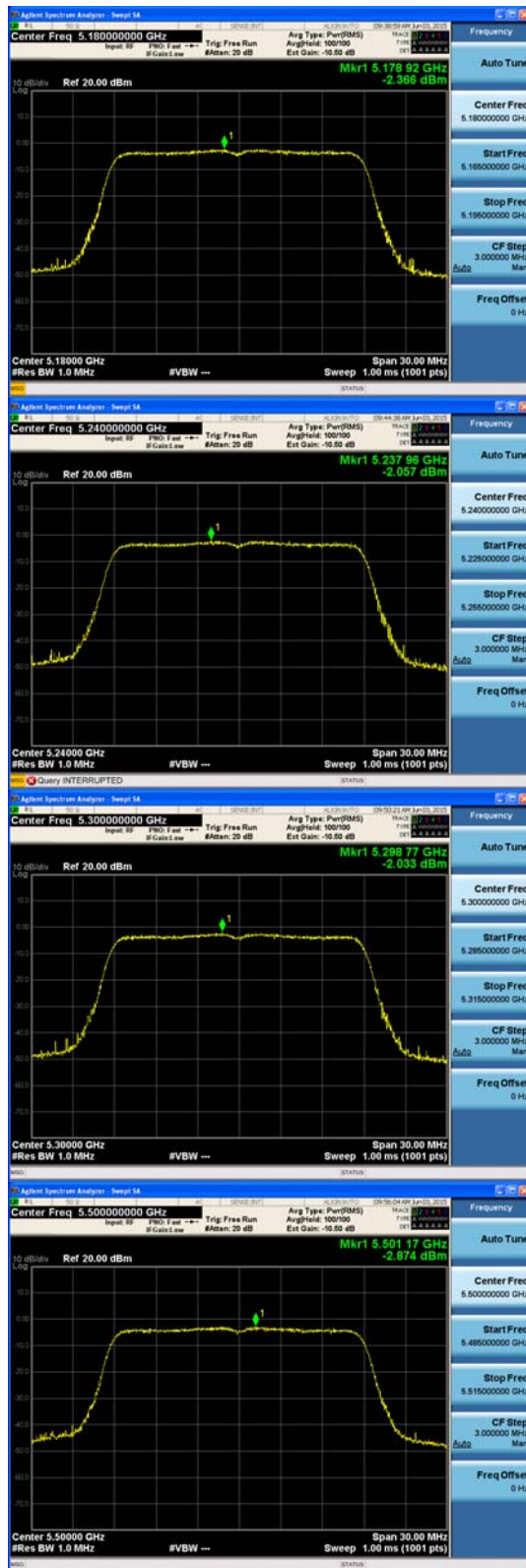
Ant : M2_802.11a (2)



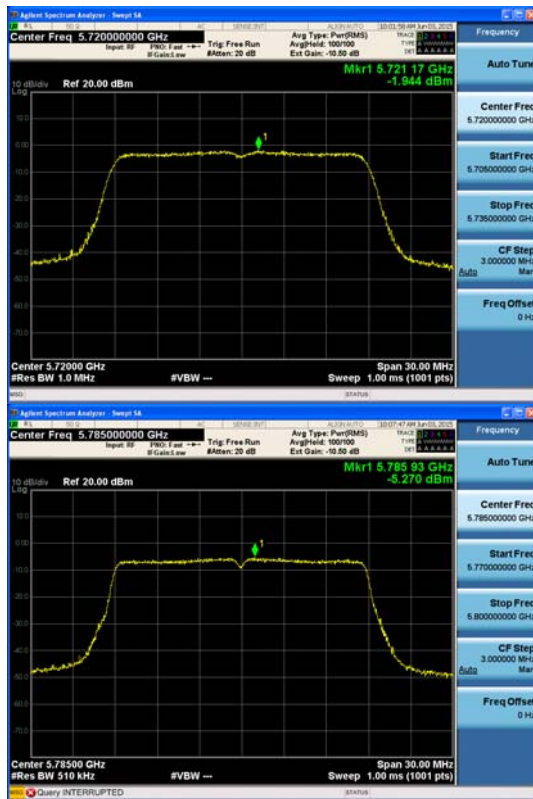
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Ant : M3_802.11a (2)



Ant : A1_802.11n_HT20 (1)



Ant : A1_802.11n_HT20 (2)



Ant : A2_802.11n_HT20 (1)



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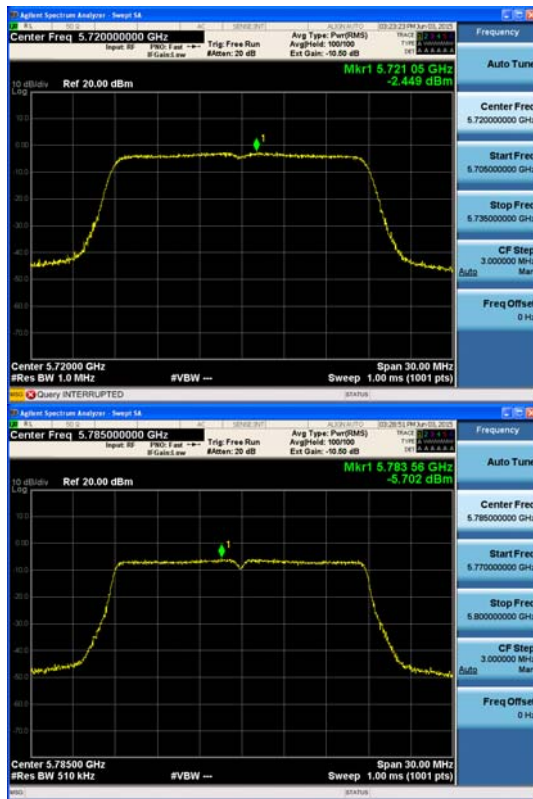
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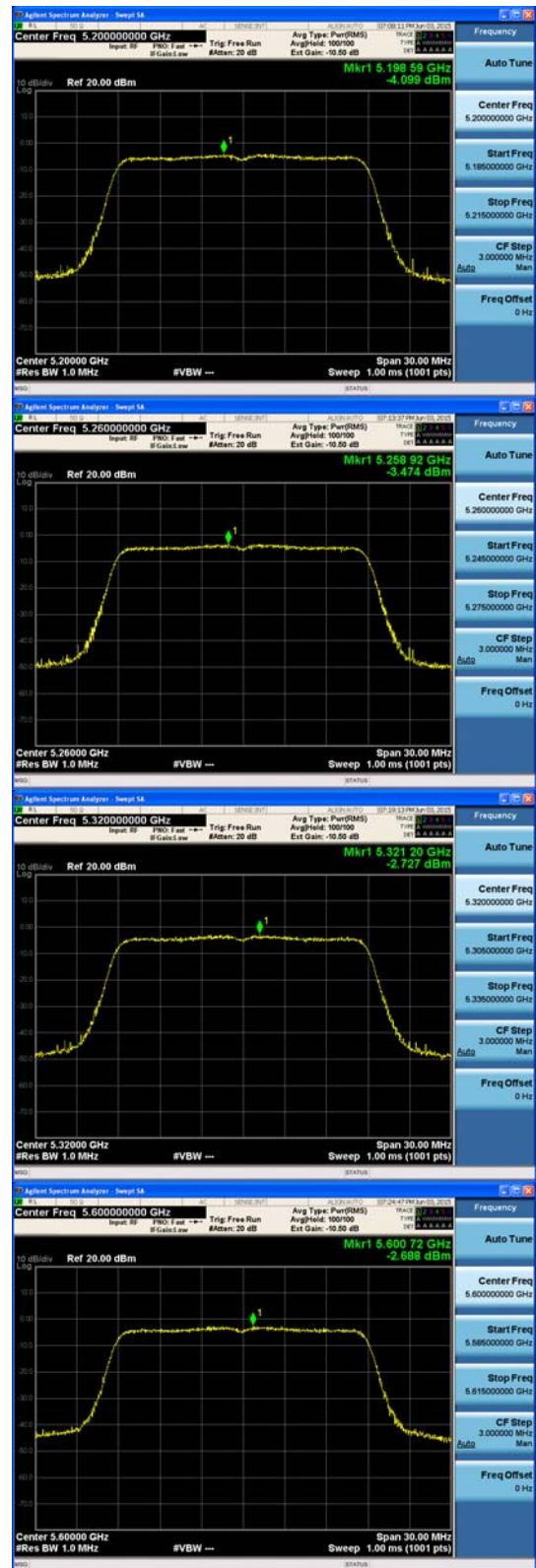
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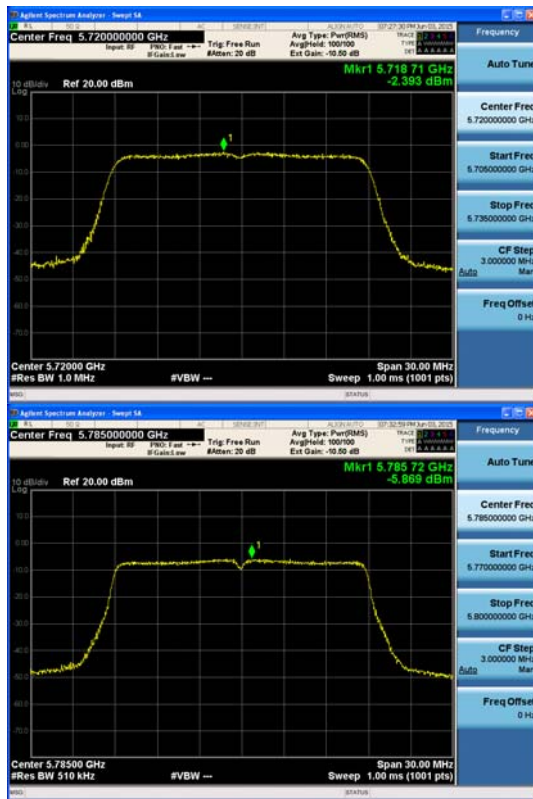
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Ant : A2_802.11n_HT20 (2)



Ant : A3_802.11n_HT20 (1)



Ant : A3_802.11n_HT20 (2)



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Ant : A1_802.11n_HT40 (1)



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Ant : A2_802.11n_HT40 (2)



Ant : A3_802.11n_HT40 (1)



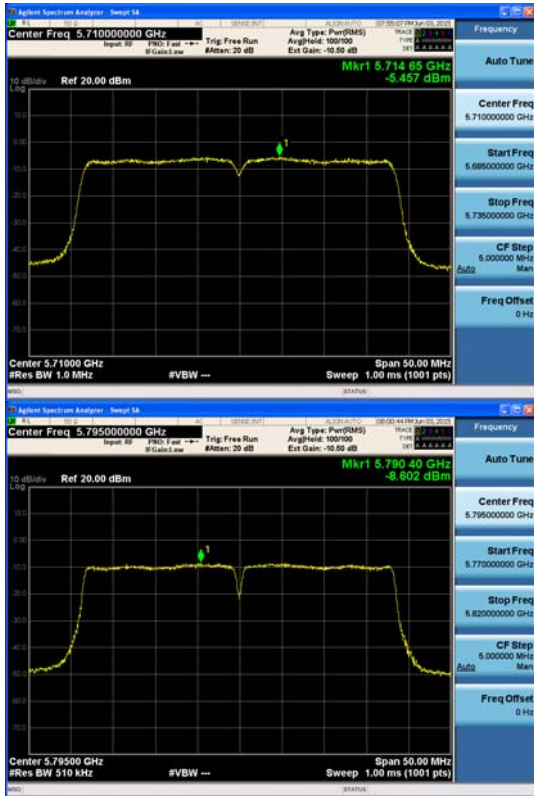
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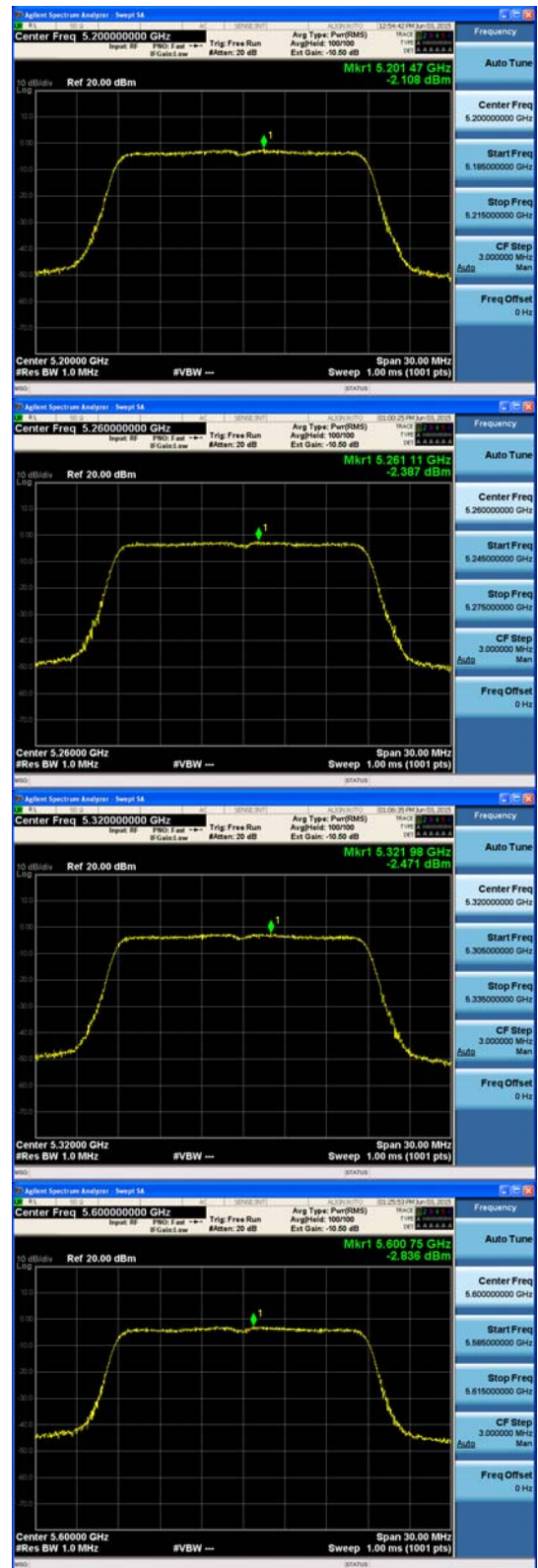
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Ant : A3_802.11n_HT40 (2)



Ant : A1_802.11ac_VHT20 (1)



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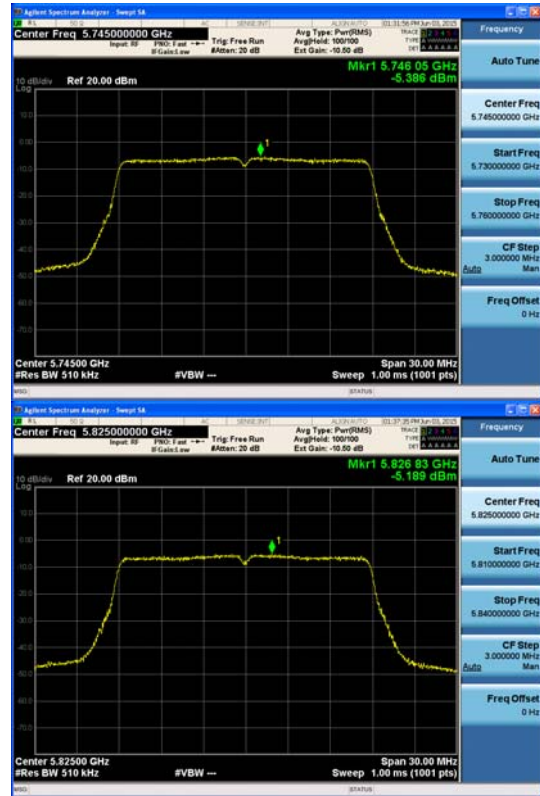
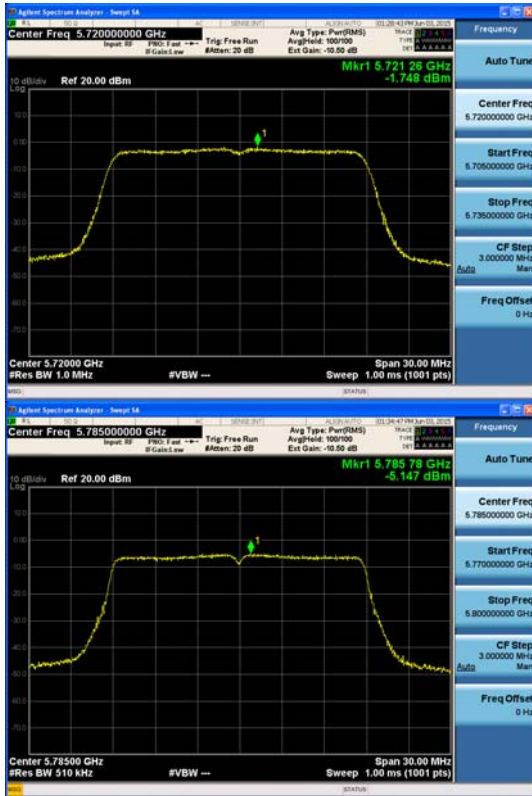
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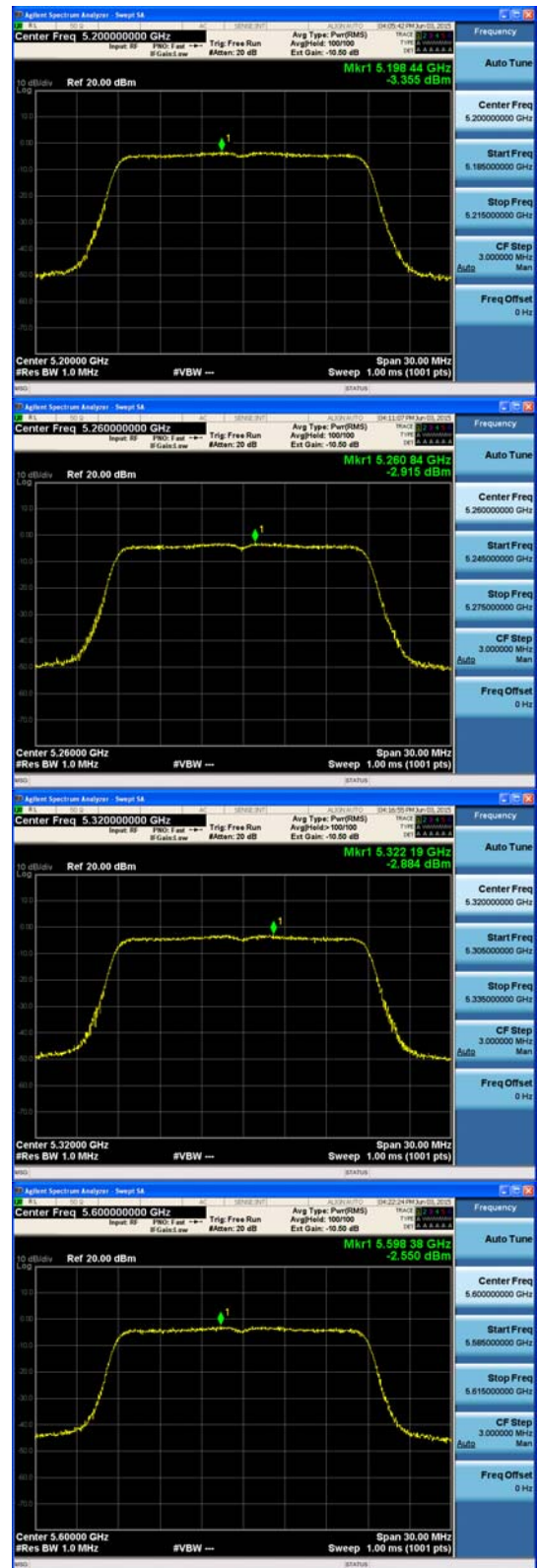
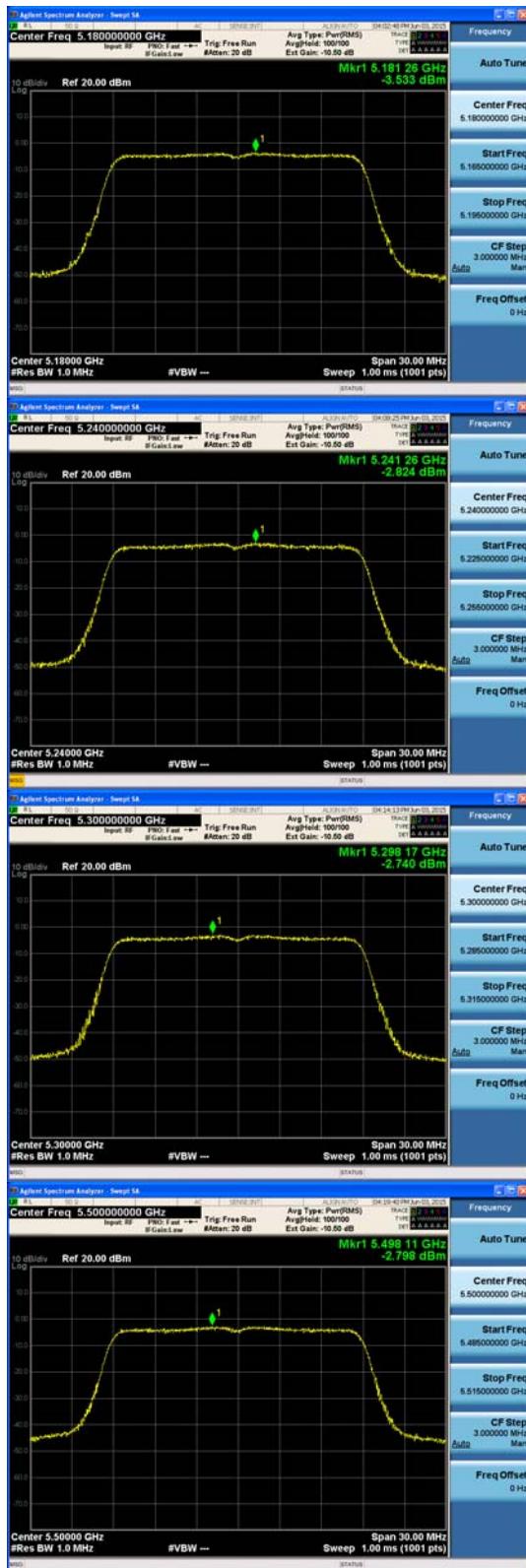
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Ant : A1_802.11ac_VHT20 (2)



Ant : A2_802.11ac_VHT20 (1)



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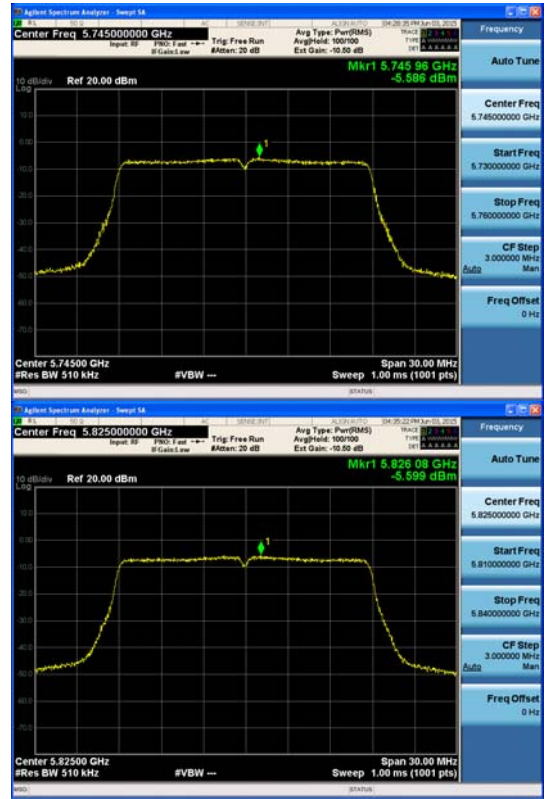
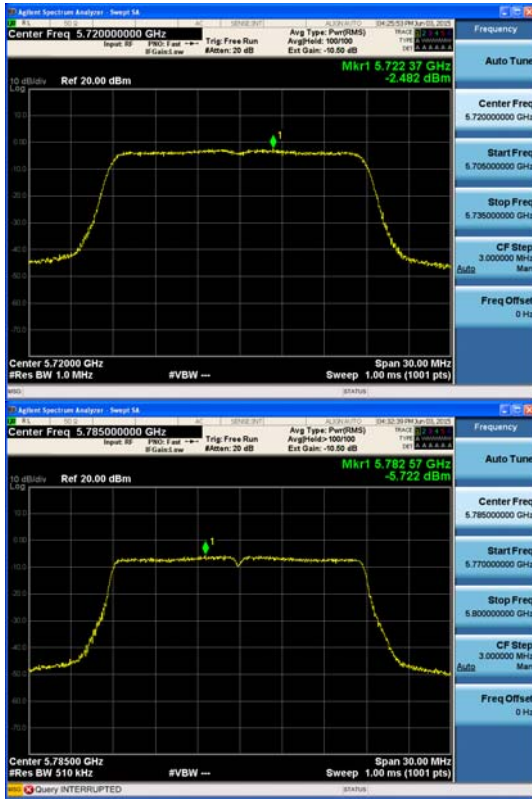
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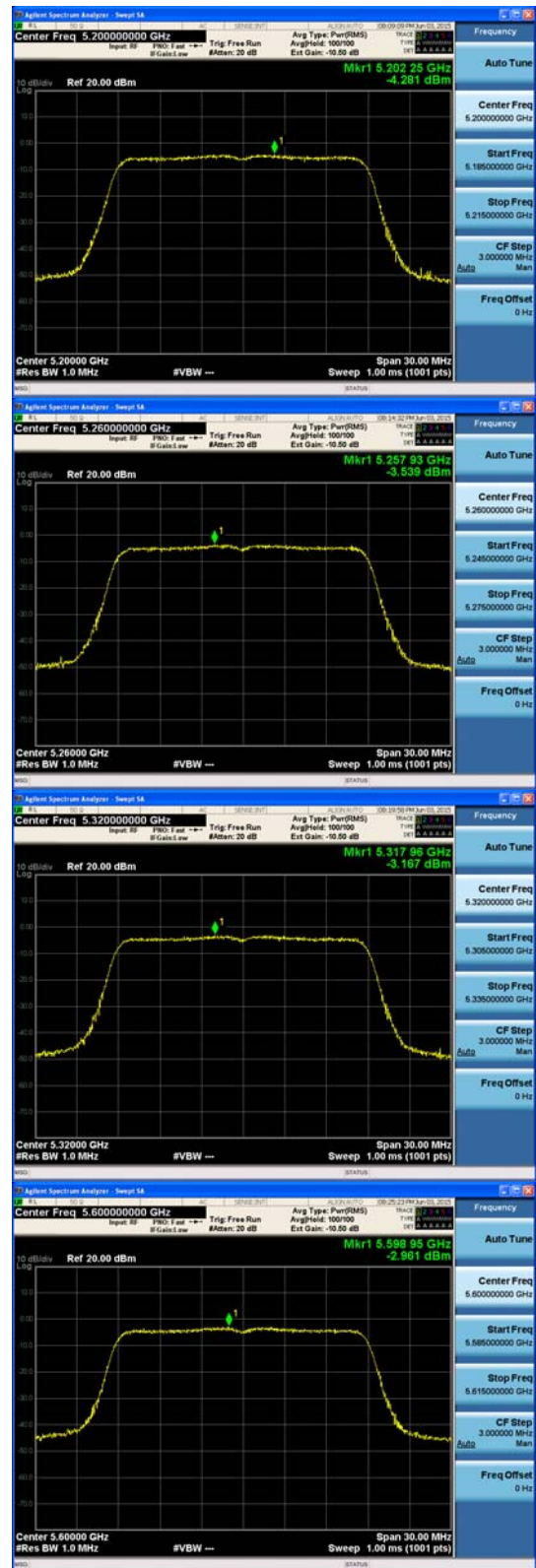
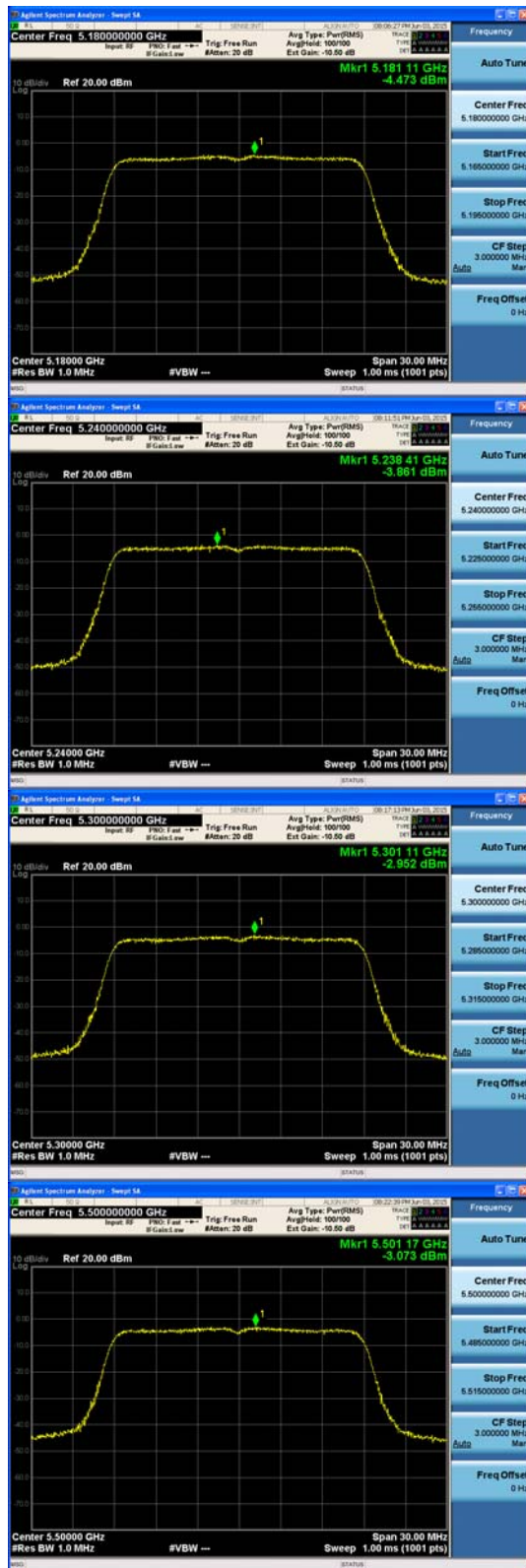
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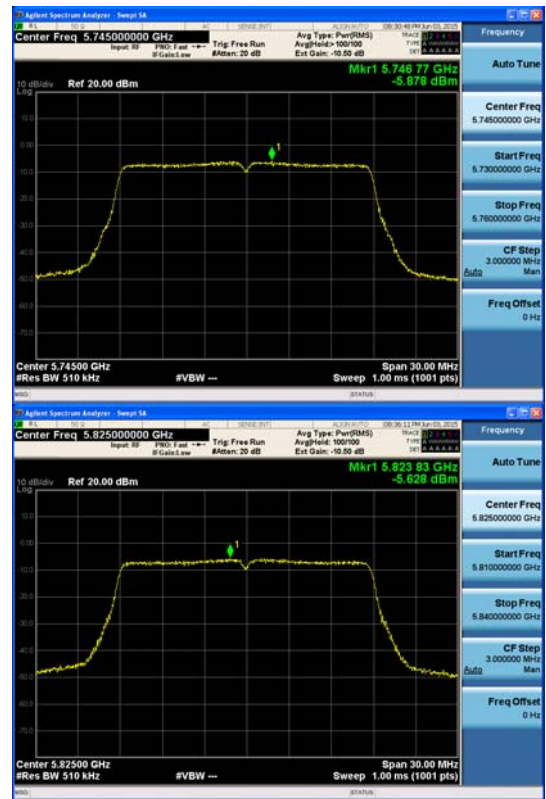
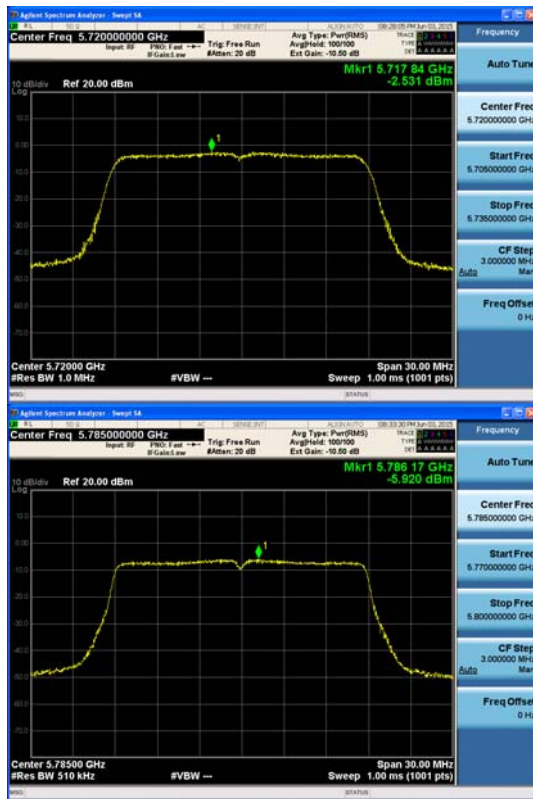
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Ant : A2_802.11ac_VHT20 (2)



Ant : A3_802.11ac_VHT20 (1)



Ant : A3_802.11ac_VHT20 (2)



Ant : A1_802.11ac_HT40 (1)



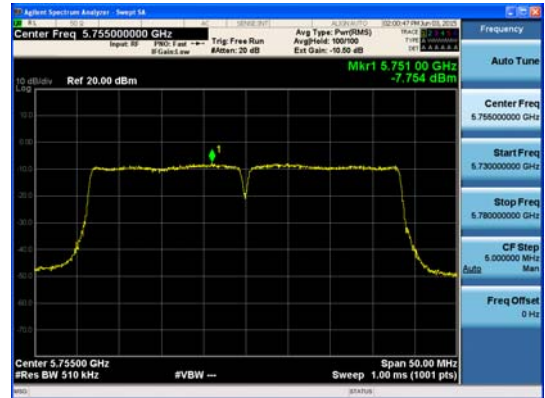
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