

APPENDIX A – TEST DATA OF CONDUCTED EMISSION

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate. Data rate below means worst-case rate of each test item.

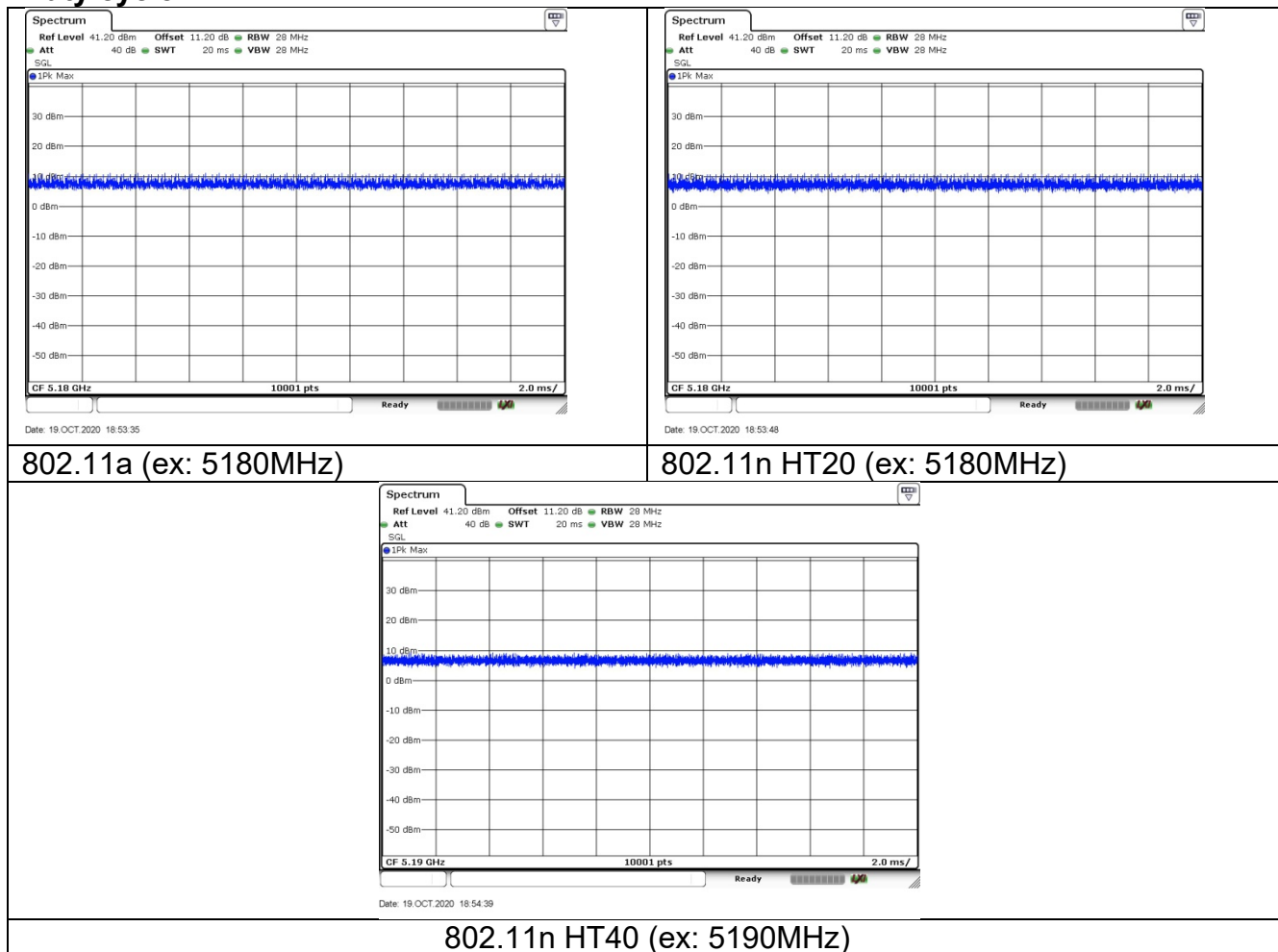
Worst-case data rates are shown as following table.

Test Mode	Data Rate
802.11a	6Mbps
802.11n HT20	MCS0(6.5 Mbps)
802.11n HT40	MCS0(13.5 Mbps)

Antenna Gain and Limits

Frequency band	Frequency (MHz)	Antenna Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
UNII-1	5180	2.85	24.0	11.0
	5200	2.85	24.0	11.0
	5240	2.85	24.0	11.0
	5190	2.85	24.0	11.0
	5230	2.85	24.0	11.0
	5210	2.85	24.0	11.0
UNII-2A	5260	2.83	24.0	11.0
	5280	2.83	24.0	11.0
	5320	2.83	24.0	11.0
	5270	2.83	24.0	11.0
	5310	2.83	24.0	11.0
	5290	2.83	24.0	11.0
UNII-2C	5500	3.34	24.0	11.0
	5600	3.34	24.0	11.0
	5700	3.34	24.0	11.0
	5510	3.34	24.0	11.0
	5590	3.34	24.0	11.0
	5670	3.34	24.0	11.0
	5210	3.34	24.0	11.0
	5530	3.34	24.0	11.0

Duty cycle



Output Power

UNII-1

Test Mode	Ant	Average Power(dBm)			Limit(dBm)
		5180 MHz	5200 MHz	5240MHz	
802.11a	Main Ant	2.22	2.38	2.91	24.0
802.11n HT20	Main Ant	2.08	2.32	2.66	24.0
Test Mode	Ant	Average Power(dBm)			Limit(dBm)
		5190 MHz		5230 MHz	
802.11n HT40	Main Ant	2.31		2.62	24.0

UNII-2A

Test Mode	Ant	Average Power(dBm)			Limit(dBm)
		5260 MHz	5280 MHz	5320MHz	
802.11a	Main Ant	2.98	3.43	3.61	24.0
802.11n HT20	Main Ant	2.92	3.42	3.62	24.0
Test Mode	Ant	Average Power(dBm)			Limit(dBm)
		5270 MHz		5310 MHz	
802.11n HT40	Main Ant	3.13		3.62	24.0

UNII-2C

Test Mode	Ant	Average Power(dBm)			Limit(dBm)
		5500 MHz	5600 MHz	5700MHz	
802.11a	Main Ant	4.76	4.62	4.14	24.0
802.11n HT20	Main Ant	4.91	4.71	4.16	24.0
Test Mode	Ant	Average Power(dBm)			Limit(dBm)
		5510 MHz	5590 MHz	5670MHz	
802.11n HT40	Main Ant	4.77	4.72	4.36	24.0

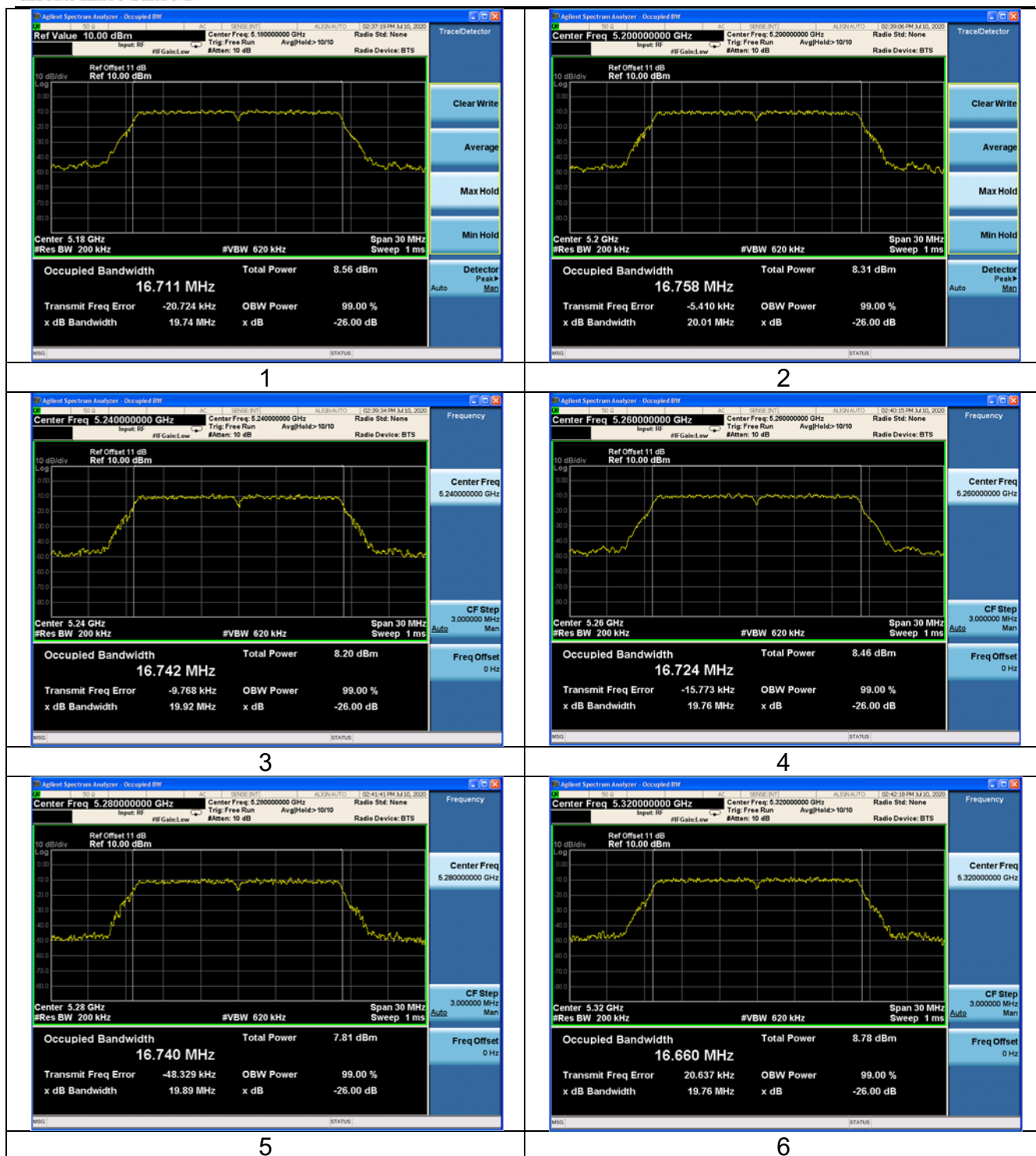
Occupied Bandwidth

Offset 11dB = Attenuator 9.8dB+ Temporary antenna connector loss 0.2dB+ Cable loss 1dB

Test Mode: SISO

20M BW

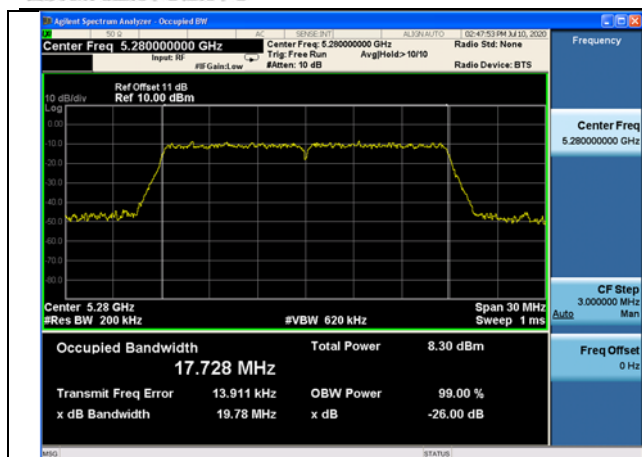
Band	Carrier frequency (MHz)	99% Bandwidth(MHz)		Minimum 26dB Bandwidth(MHz)	
		802.11a	Figure number	802.11a	Figure number
UNII-1	5180	NA	1	19.74	1
	5200	NA	2	20.01	2
	5240	NA	3	19.92	3
UNII-2A	5260	NA	4	19.76	4
	5280	NA	5	19.89	5
	5320	NA	6	19.76	6
UNII-2C	5500	NA	7	19.92	7
	5600	NA	8	20.03	8
	5700	NA	9	19.66	9



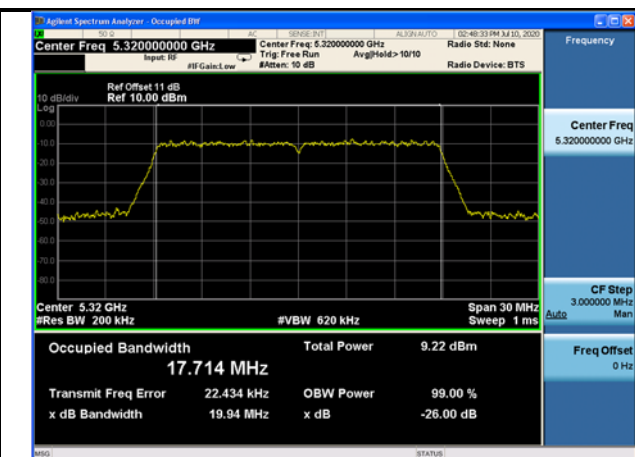


Band	Carrier frequency (MHz)	99% Bandwidth(MHz)		Minimum 26dB Bandwidth(MHz)	
		802.11n HT20	Figure number	802.11n HT20	Figure number
UNII-1	5180	NA	1	19.94	1
	5200	NA	2	19.95	2
	5240	NA	3	19.88	3
UNII-2A	5260	NA	4	19.97	4
	5280	NA	5	19.78	5
	5320	NA	6	19.94	6
UNII-2C	5500	NA	7	19.95	7
	5600	NA	8	19.89	8
	5700	NA	9	19.93	9

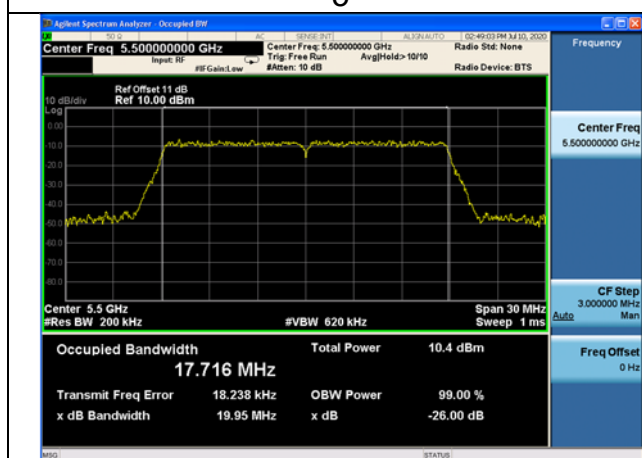




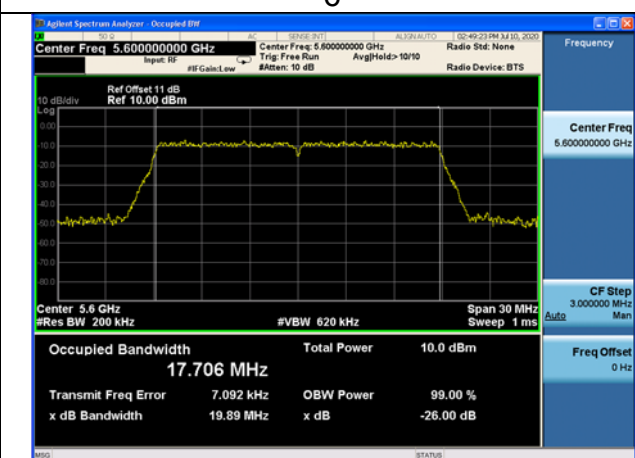
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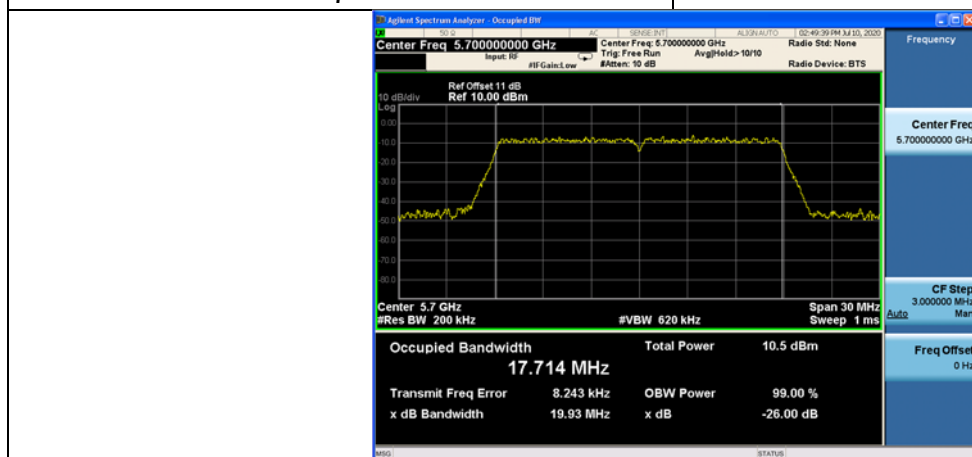
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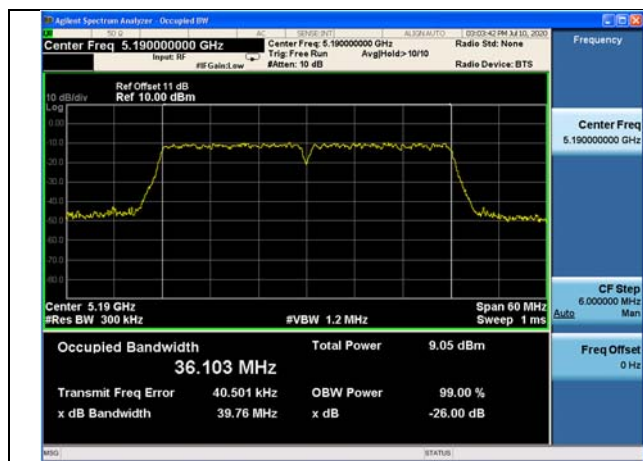
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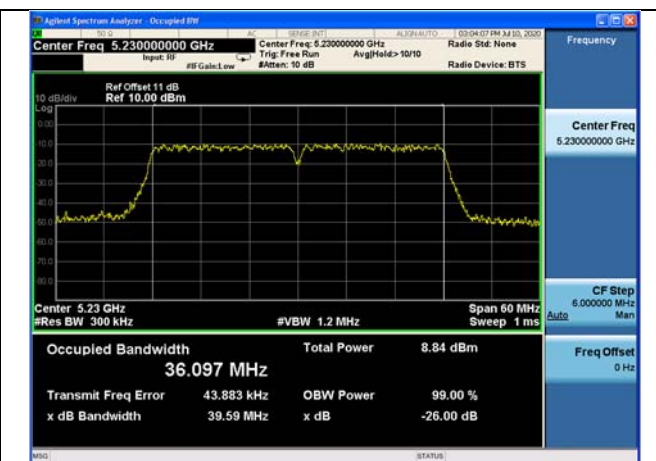
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40M BW

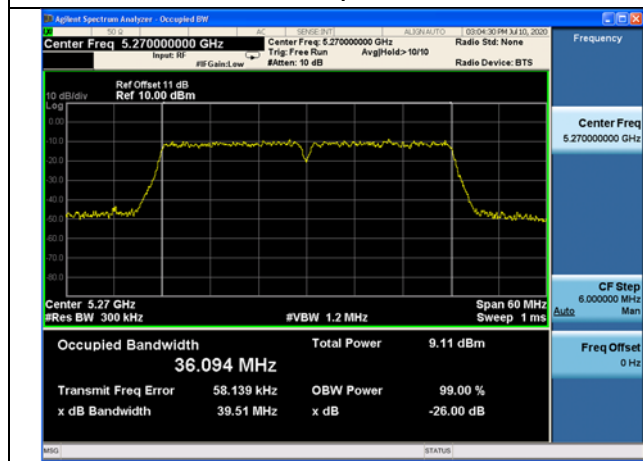
Band	Carrier frequency (MHz)	99% Bandwidth(MHz)		Minimum 26dB Bandwidth(MHz)	
		802.11n	Figure number	802.11n	Figure number
UNII-1	5190	NA	1	39.76	1
	5230	NA	2	39.59	2
UNII-2A	5270	NA	3	39.51	3
	5310	NA	4	39.79	4
UNII-2C	5510	NA	5	39.49	5
	5590	NA	6	39.55	6
	5670	NA	7	39.55	7



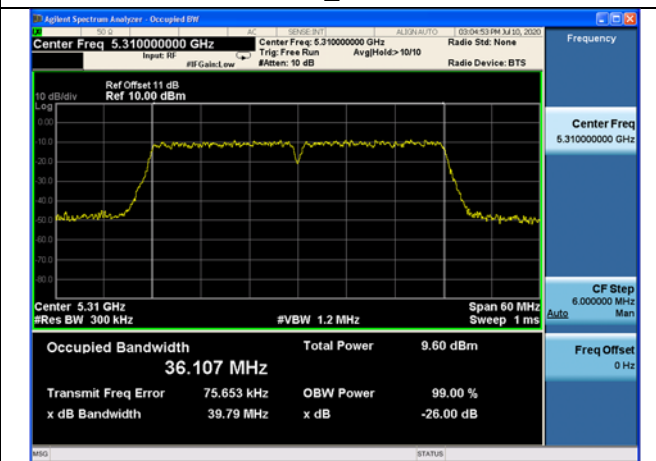
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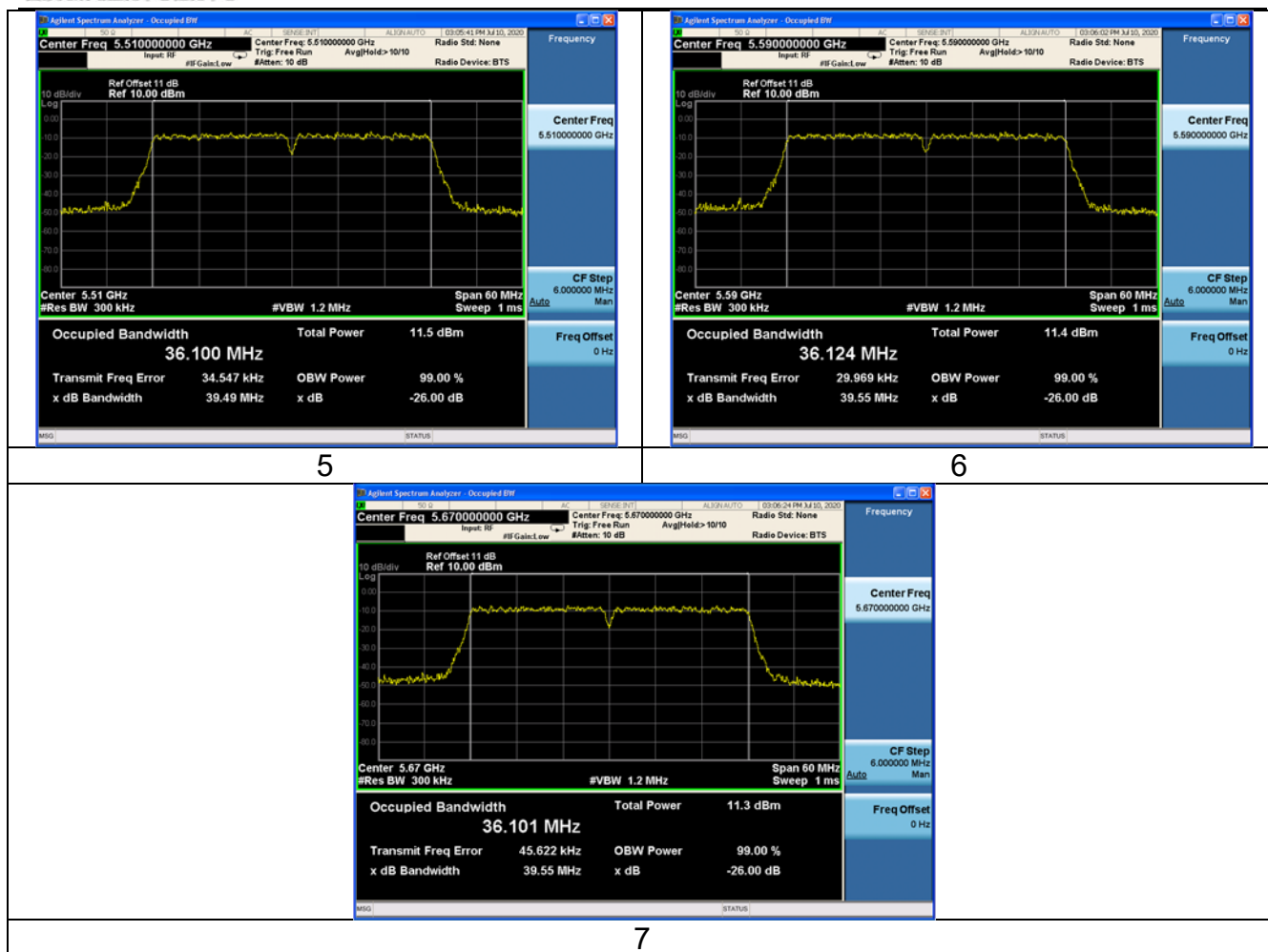
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3



4

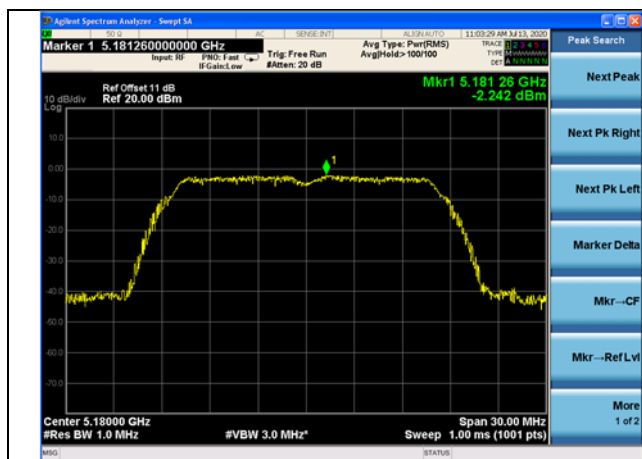


Transmitter Power Spectral Density

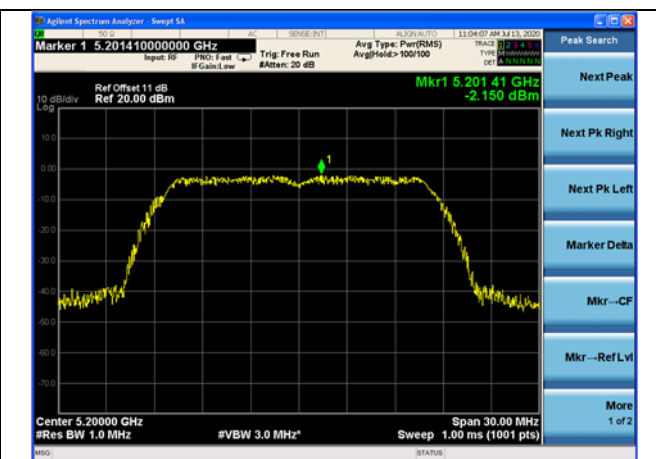
Offset 11dB = Attenuator 9.8dB+ Temporary antenna connector loss 0.2dB+ Cable loss 1dB
U-NII-1

Test Mode: 802.11a (SISO Main Ant)

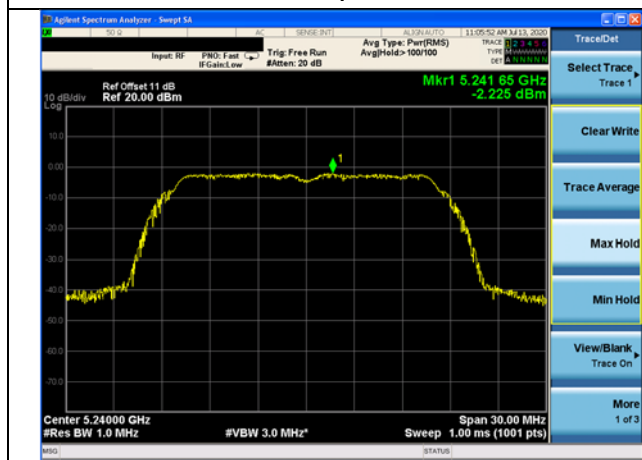
Carrier frequency (MHz)	Corrected Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Figure	Conclusion
5180	-2.242	11.0	1	pass
5200	-2.150	11.0	2	pass
5240	-2.225	11.0	3	pass
5260	-1.737	11.0	4	Pass
5280	-1.976	11.0	5	Pass
5320	-1.293	11.0	6	Pass
5500	0.292	11.0	7	Pass
5600	0.539	11.0	8	Pass
5700	0.163	11.0	9	Pass



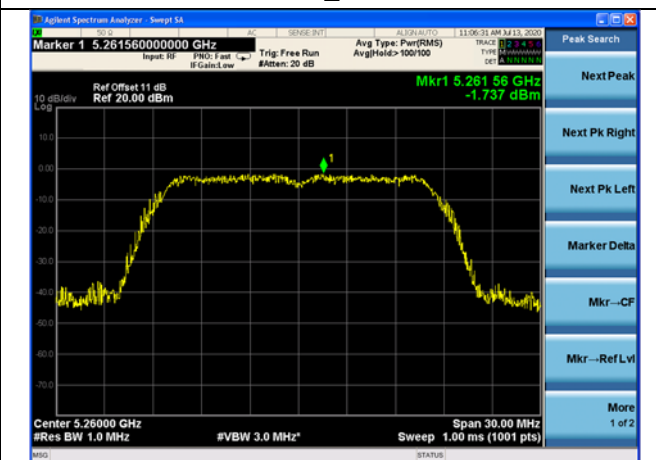
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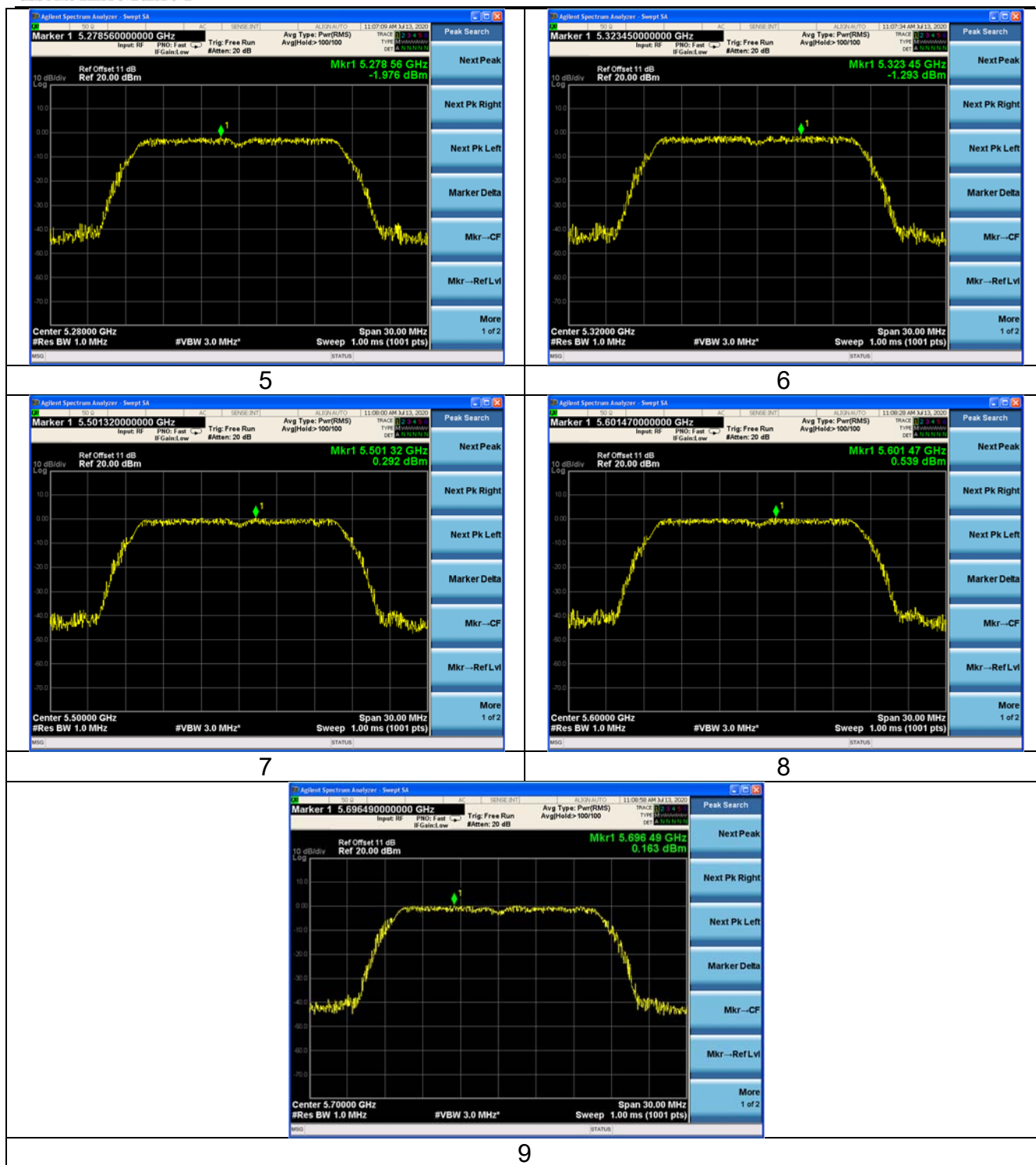
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3

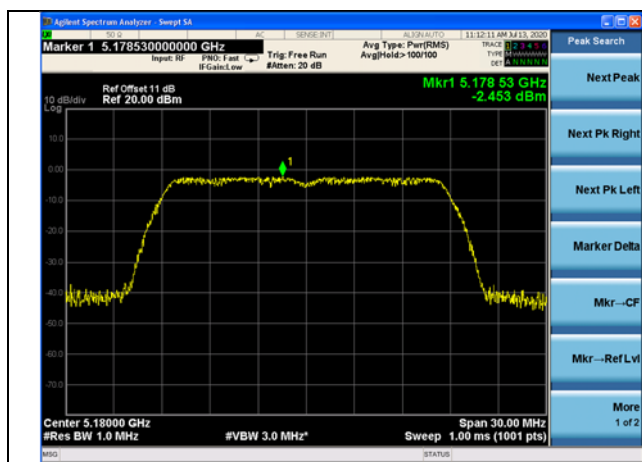


4

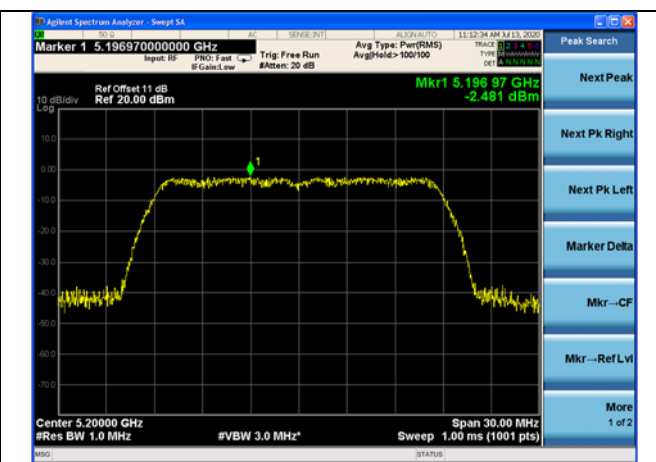


Test Mode: 802.11n HT20 (SISO Main Ant)

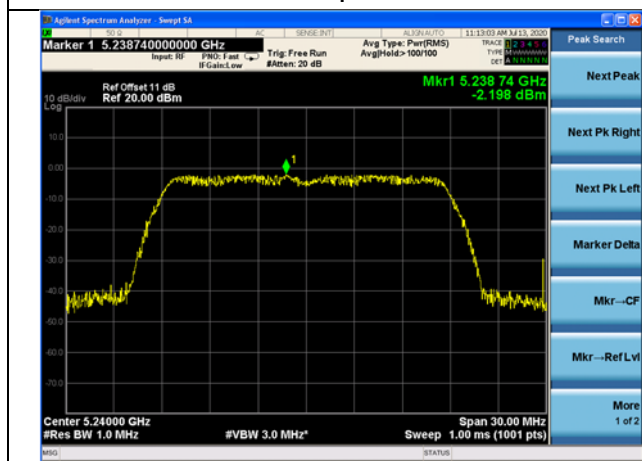
Carrier frequency (MHz)	Corrected Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Figure	Conclusion
5180	-2.453	11.0	1	pass
5200	-2.481	11.0	2	pass
5240	-2.198	11.0	3	pass
5260	-2.403	11.0	4	Pass
5280	-2.822	11.0	5	Pass
5320	-1.637	11.0	6	Pass
5500	-0.285	11.0	7	Pass
5600	-0.039	11.0	8	Pass
5700	-0.367	11.0	9	Pass



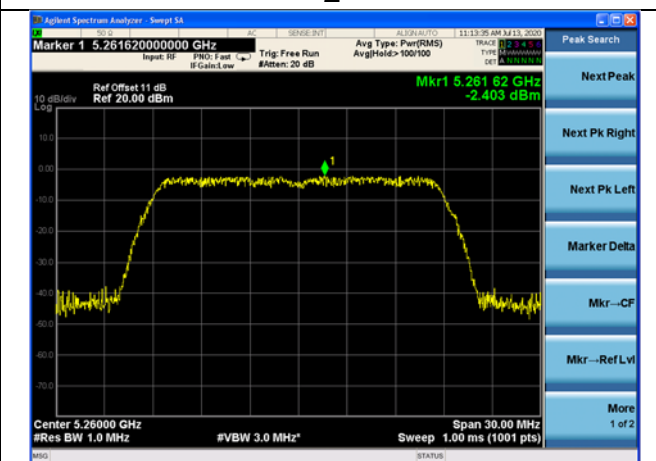
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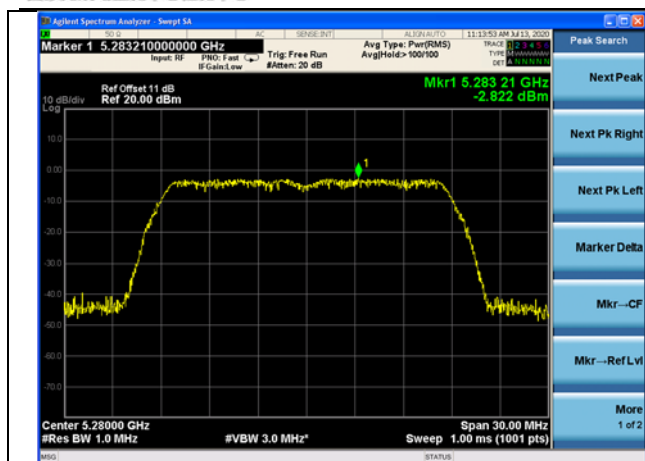
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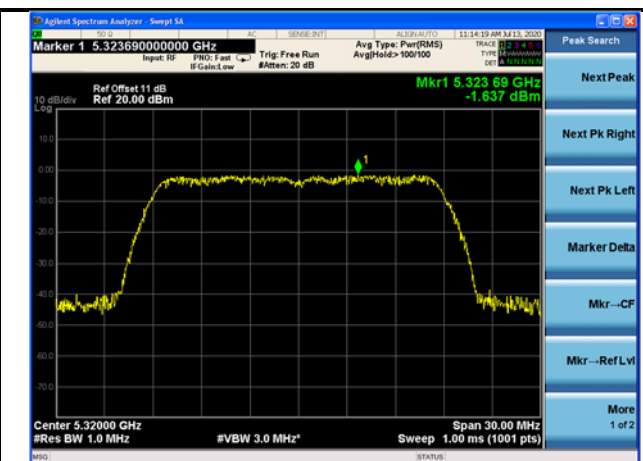
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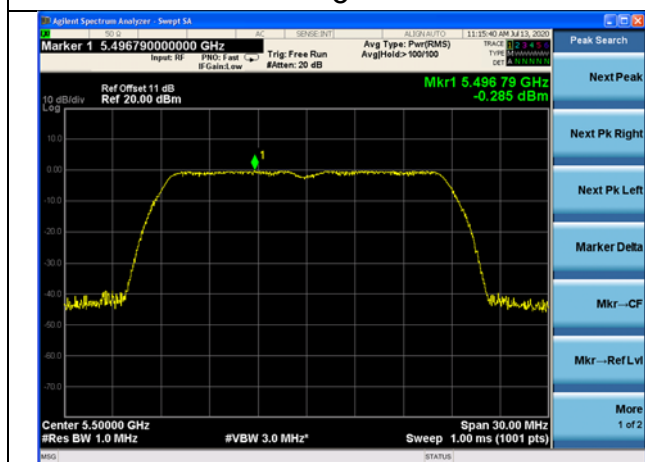
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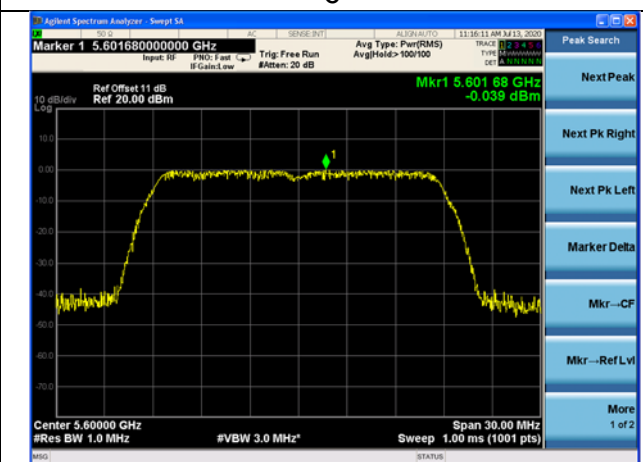
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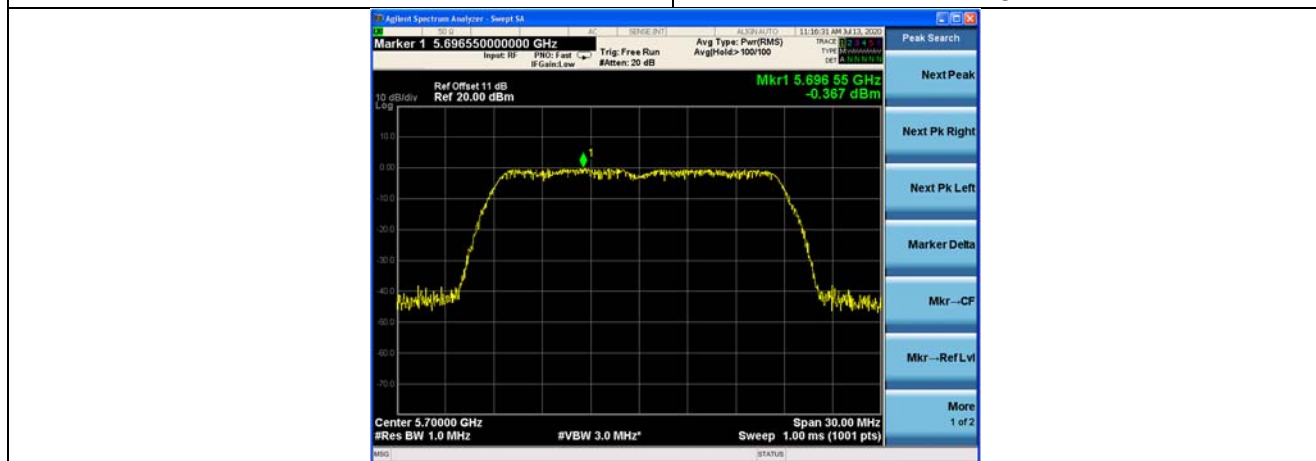
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7



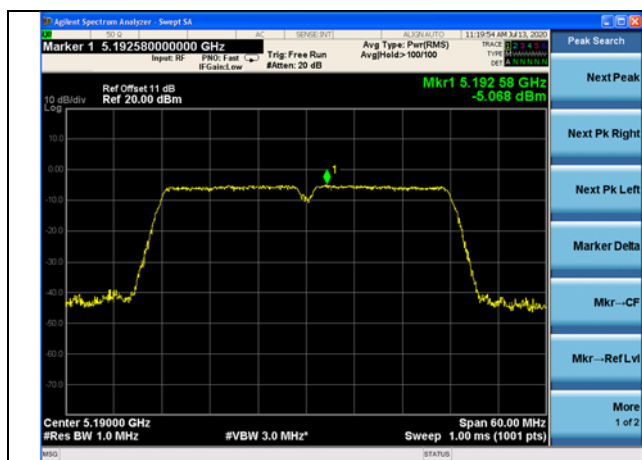
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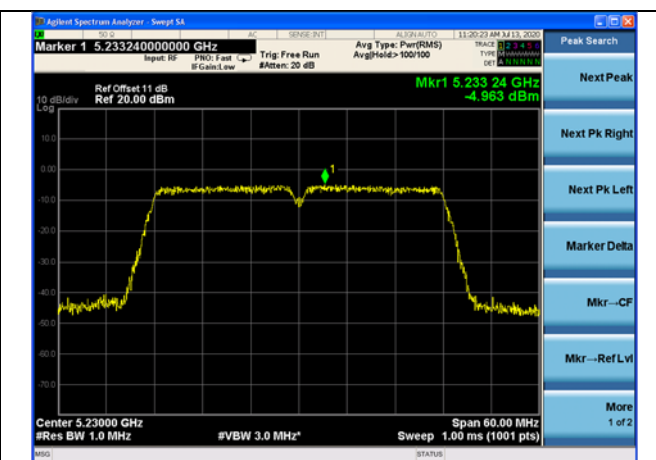
9

Test Mode: 802.11n HT40 (SISO Main Ant)

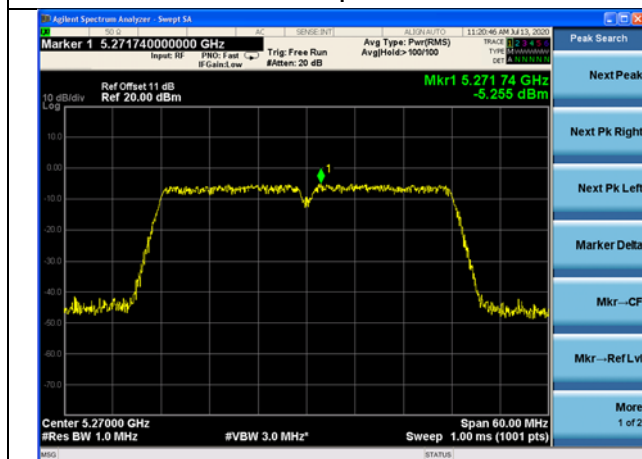
Carrier frequency (MHz)	Corrected Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Figure	Conclusion
5190	-5.068	11.0	1	pass
5230	-4.963	11.0	2	pass
5270	-5.255	11.0	3	pass
5310	-4.485	11.0	4	pass
5510	-2.592	11.0	5	pass
5590	-2.852	11.0	6	pass
5670	-2.883	11.0	7	pass



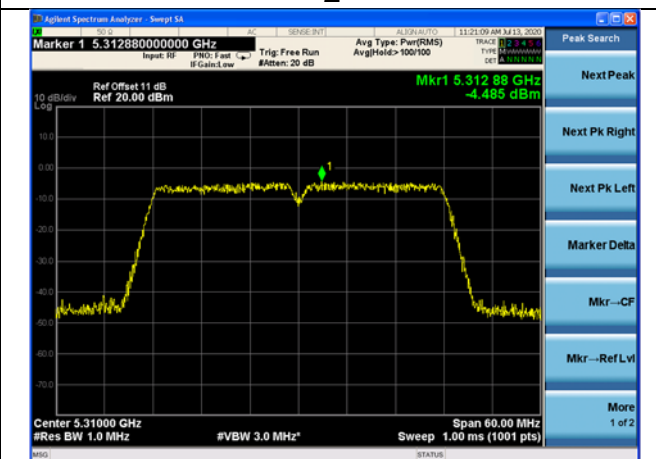
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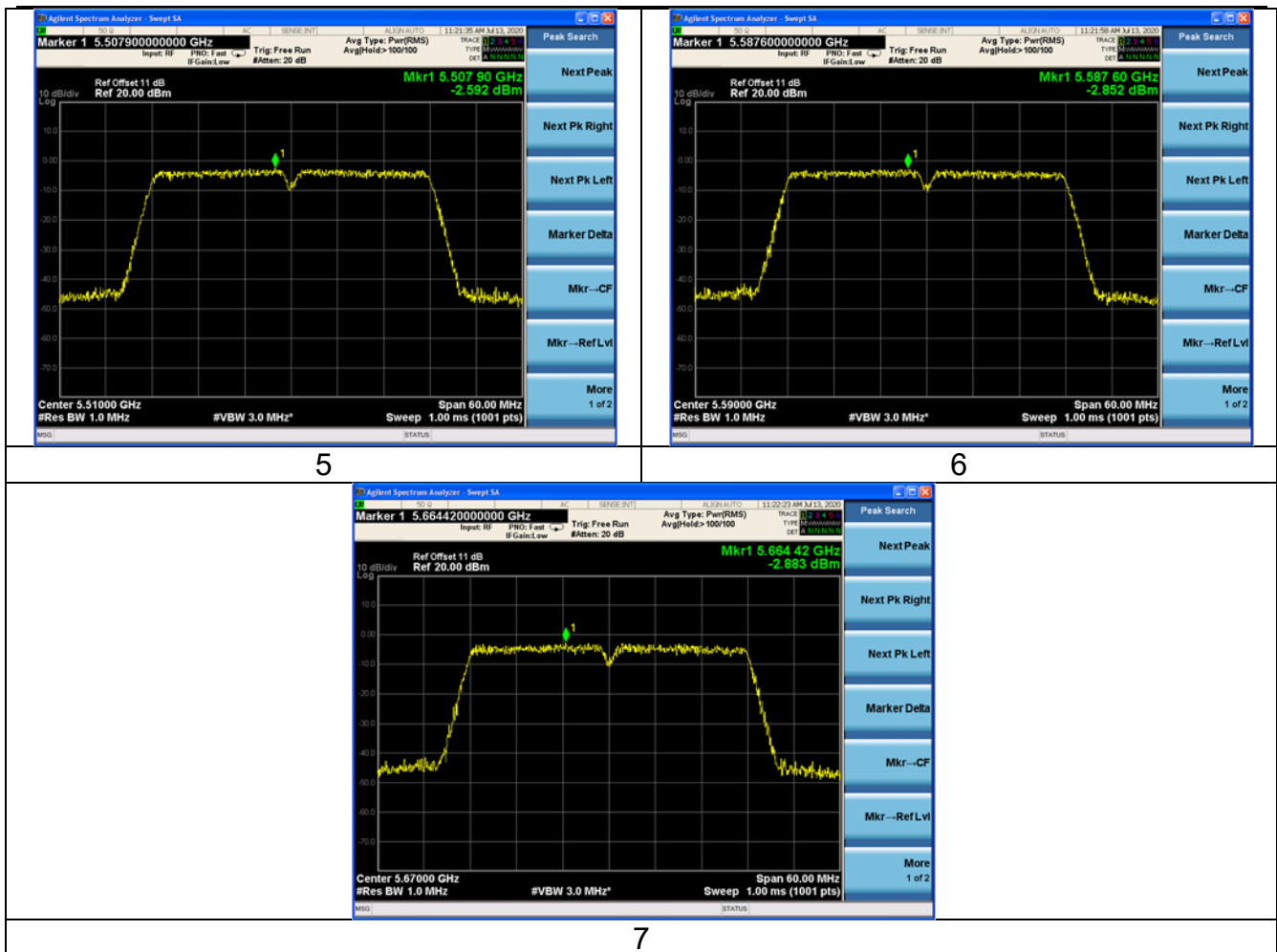
2



3



4



Frequency Stability

U-NII-1

Mod.	Data Rate	Ant	Frequency (MHz)	Frequency Stability(ppm)	Voltage(V)	Temperature(°C)
11a	6Mbps	1	5180	1.23	NV	-20
11a	6Mbps	1	5180	1.18	NV	-10
11a	6Mbps	1	5180	1.43	NV	0
11a	6Mbps	1	5180	1.90	NV	+10
11a	6Mbps	1	5180	1.55	HV	+20
11a	6Mbps	1	5180	-0.56	LV	+20
11a	6Mbps	1	5180	0.00	NV	+20
11a	6Mbps	1	5180	3.78	NV	+30
11a	6Mbps	1	5180	1.94	NV	+40
11a	6Mbps	1	5180	2.15	NV	+50

U-NII-2A

Mod.	Data Rate	Ant	Frequency (MHz)	Frequency Stability(ppm)	Voltage(V)	Temperature(°C)
11a	6Mbps	1	5260	2.86	NV	-20
11a	6Mbps	1	5260	1.92	NV	-10
11a	6Mbps	1	5260	2.77	NV	0
11a	6Mbps	1	5260	2.42	NV	+10
11a	6Mbps	1	5260	2.43	HV	+20
11a	6Mbps	1	5260	1.34	LV	+20
11a	6Mbps	1	5260	0.00	NV	+20
11a	6Mbps	1	5260	4.34	NV	+30
11a	6Mbps	1	5260	3.98	NV	+40
11a	6Mbps	1	5260	3.81	NV	+50

U-NII-2C

Mod.	Data Rate	Ant	Frequency (MHz)	Frequency Stability(ppm)	Voltage(V)	Temperature(°C)
11a	6Mbps	1	5500	3.16	NV	-20
11a	6Mbps	1	5500	2.82	NV	-10
11a	6Mbps	1	5500	2.09	NV	0
11a	6Mbps	1	5500	2.10	NV	+10
11a	6Mbps	1	5500	1.94	HV	+20
11a	6Mbps	1	5500	0.25	LV	+20
11a	6Mbps	1	5500	0.00	NV	+20
11a	6Mbps	1	5500	4.42	NV	+30
11a	6Mbps	1	5500	1.94	NV	+40
11a	6Mbps	1	5500	3.21	NV	+50

Dynamic Frequency Selection

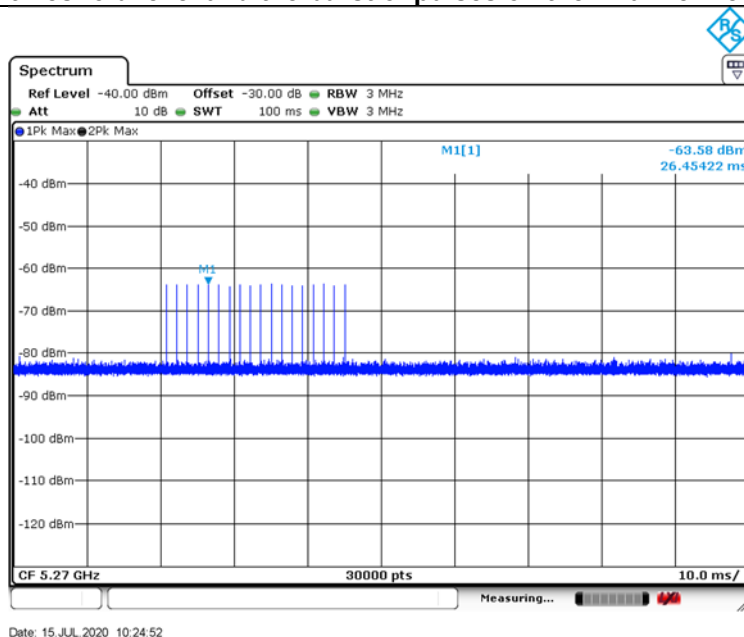
DESCRIPTION OF Master Device

The Master Device is a SKSpruce Technologies Co., Ltd., Indoor Access Point, FCC ID: 2AHKT-WIA3300-20. The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is -64 dBm.

Radar Waveform Calibration Result

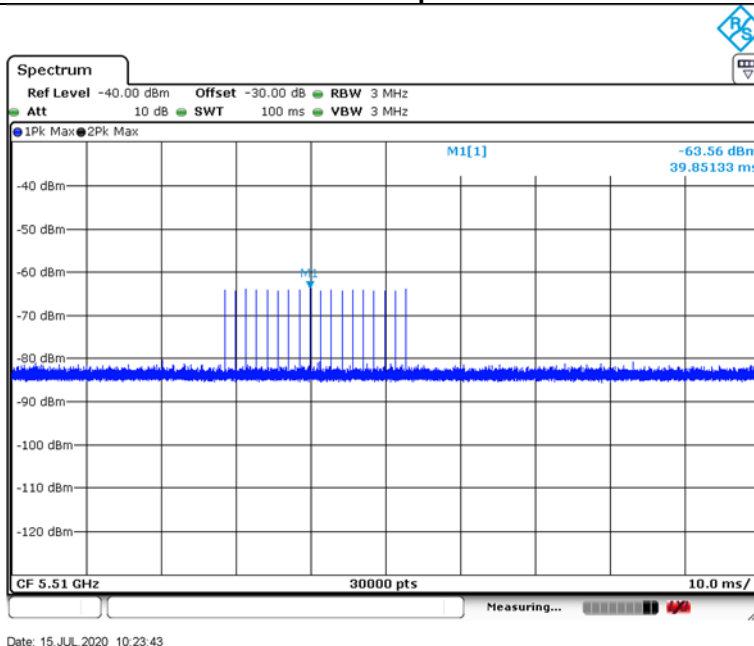
<40MHz / 5270 MHz> Radar Type 0

Radar / DFS detection threshold level and the burst of pulses on the Channel frequency

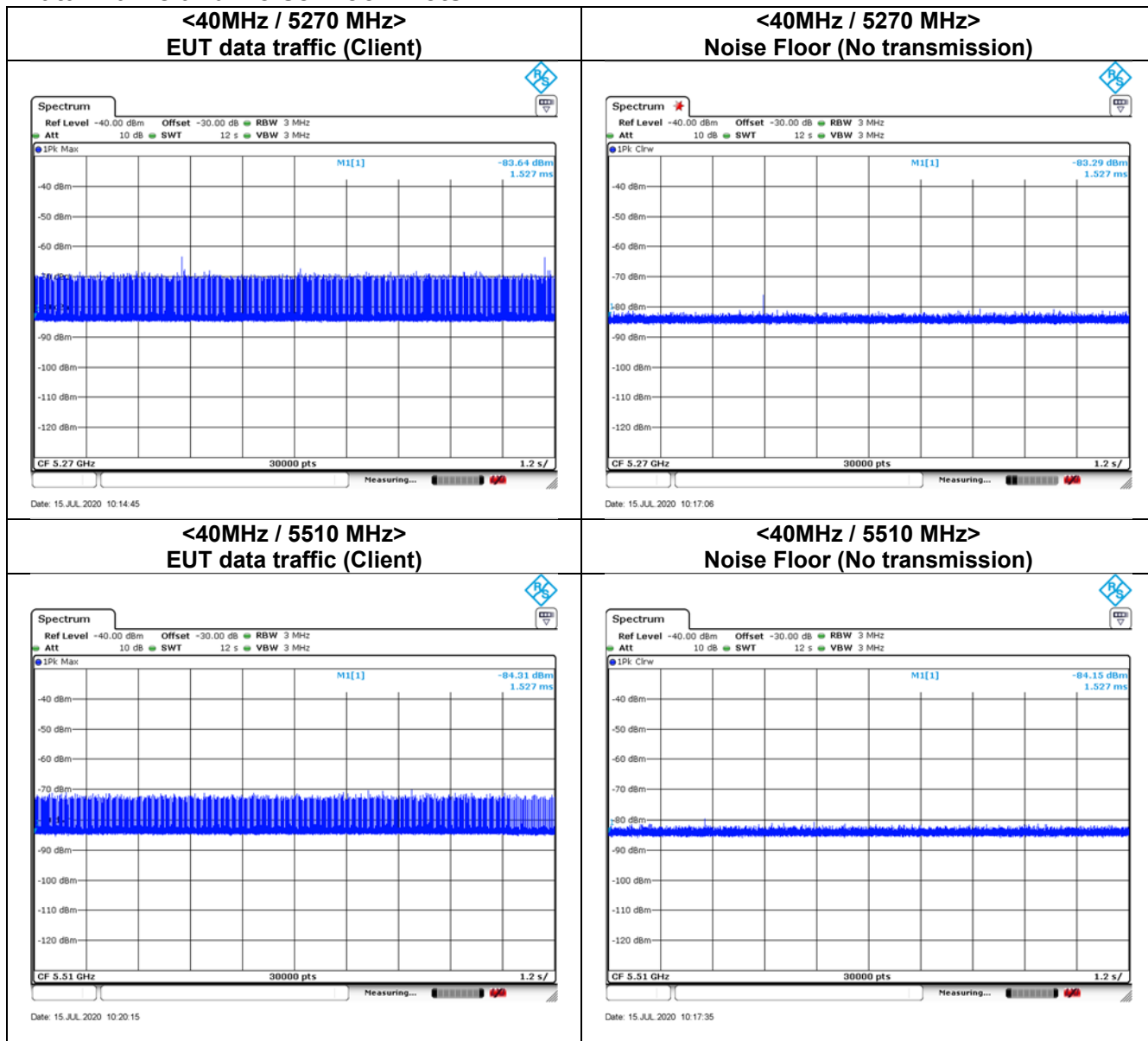


<40MHz / 5510 MHz> Radar Type 0

Radar / DFS detection threshold level and the burst of pulses on the Channel frequency



Data Traffic and Noise Floor Plots



Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period for Client Beacon Test

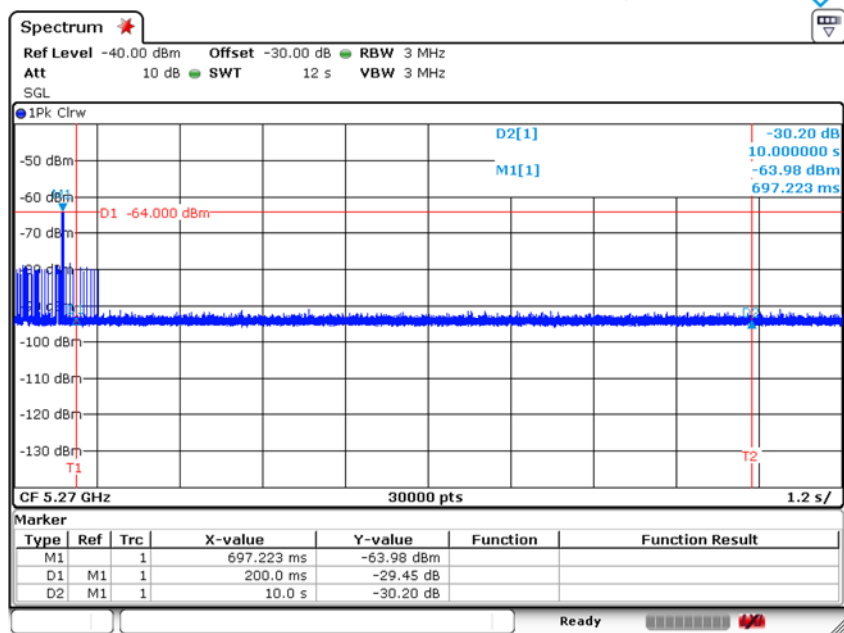
Frequency	Test Item	Test Result	Limit	Pass/Fail
5270MHz	Channel Move Time	< 10s*	< 10s	Pass
	Channel Closing Transmission Time	200ms +24ms	< 260ms	Pass
	Non-Occupancy Period	≥ 30	≥ 30 min	Pass
5510MHz	Channel Move Time	< 10s*	< 10s	Pass
	Channel Closing Transmission Time	200ms +24ms	< 260ms	Pass
	Non-Occupancy Period	≥ 30	≥ 30 min	Pass

Note*: We notice clearly that “Channel Move Time” is less than 10s from the figure. 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 seconds period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period for Client Beacon Test Plots

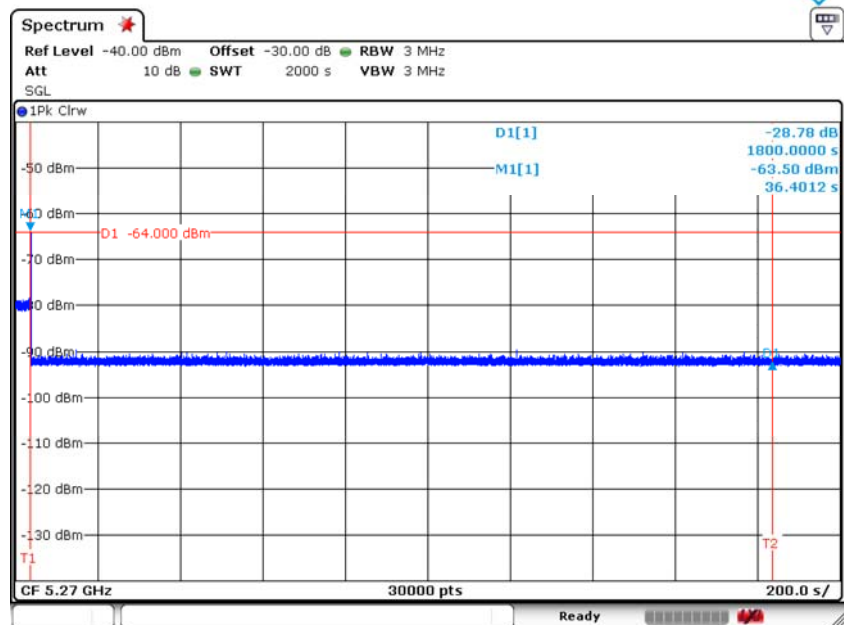
<40MHz / 5270 MHz>

Channel Move Time & Channel Closing Transmission Time



Date: 15.JUL.2020 11:11:00

Non-Occupancy Period



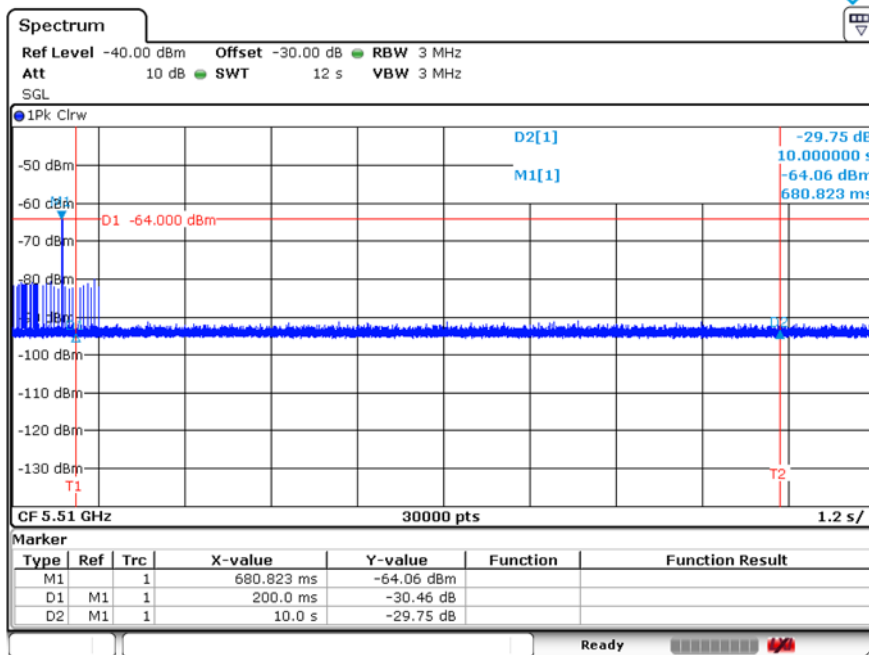
Date: 15.JUL.2020 11:55:53

Note:

Dwell (0.4 ms)= Sweep Time (12000 ms) / Sweep Point Bins (30000)

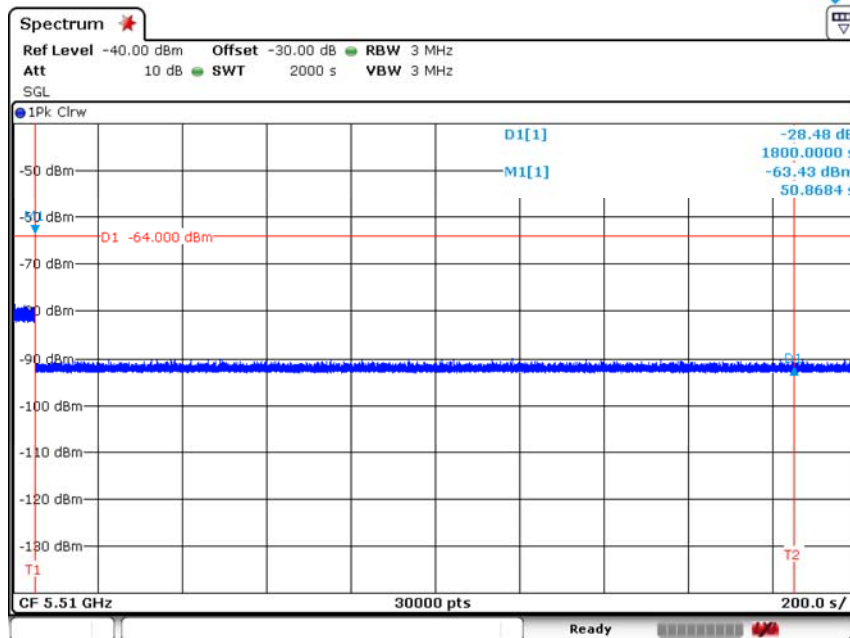
Channel Closing Transmission Time (200 + 24 ms) = 200 + Number of beacon after 200ms(6) X Dwell (0.4 ms)
< 260ms

<40MHz / 5510MHz>
Channel Move Time & Channel Closing Transmission Time



Date: 15.JUL.2020 11:03:39

Non-Occupancy Period



Date: 15.JUL.2020 12:35:24

Note:

Dwell (0.4 ms)= Sweep Time (12000 ms) / Sweep Point Bins (30000)
Channel Closing Transmission Time (200 + 24 ms) = 200 + Number of beacon after 200ms(6) X Dwell (0.4 ms)
< 260ms