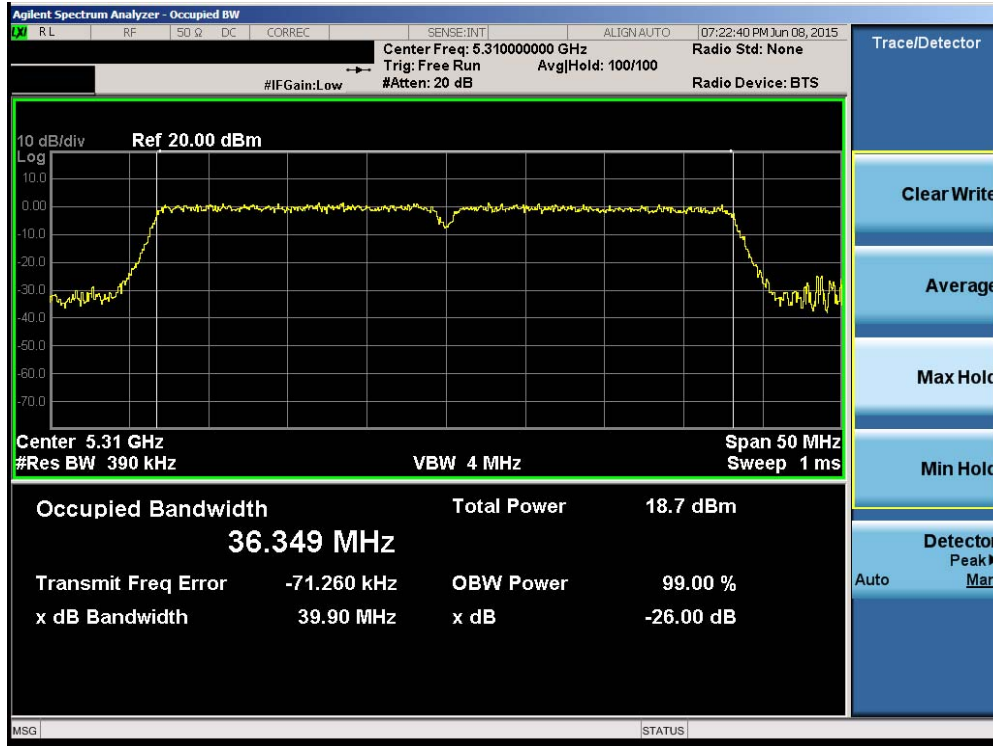
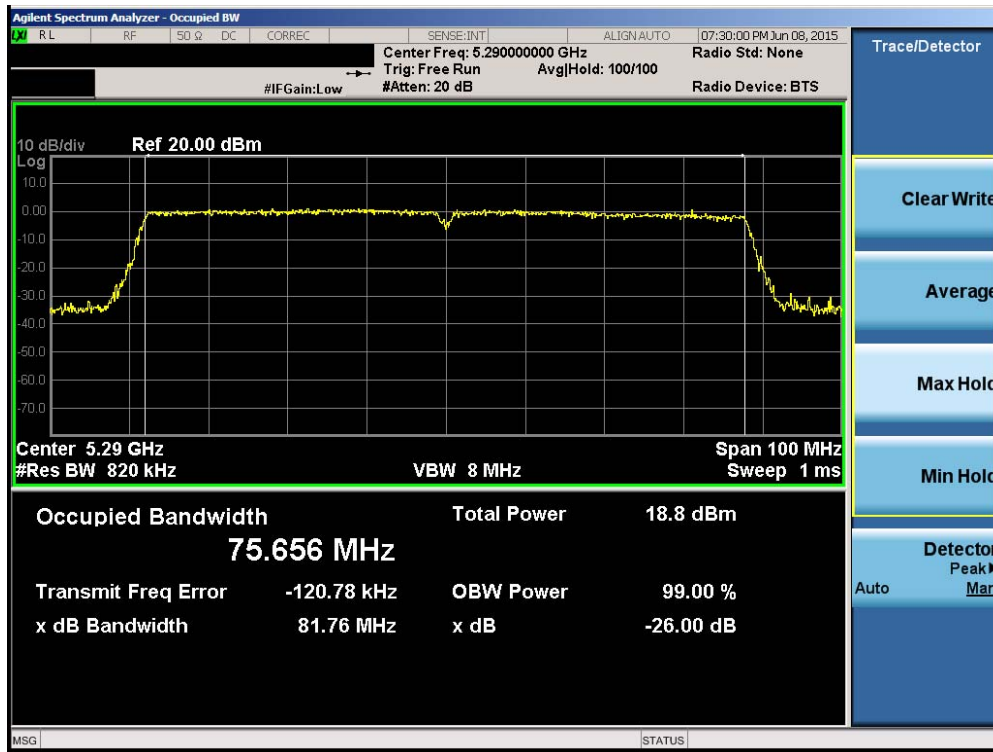


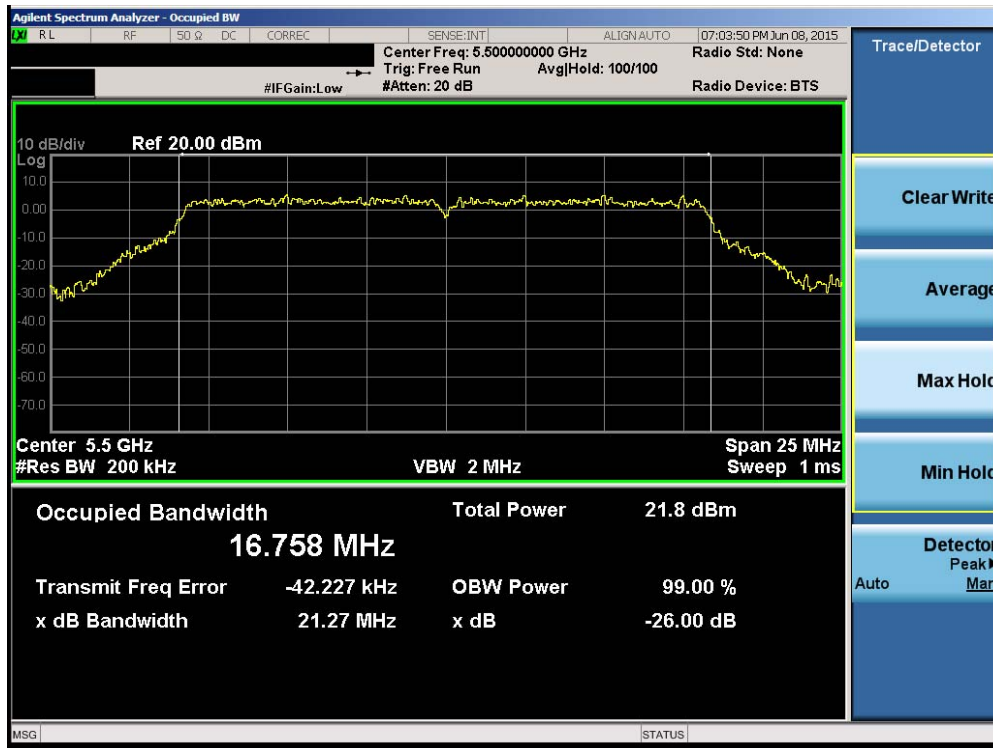


Plot 6-46. 26dB Bandwidth Plot (40MHz BW 802.11n (UNII Band 2A) – Ch. 62)

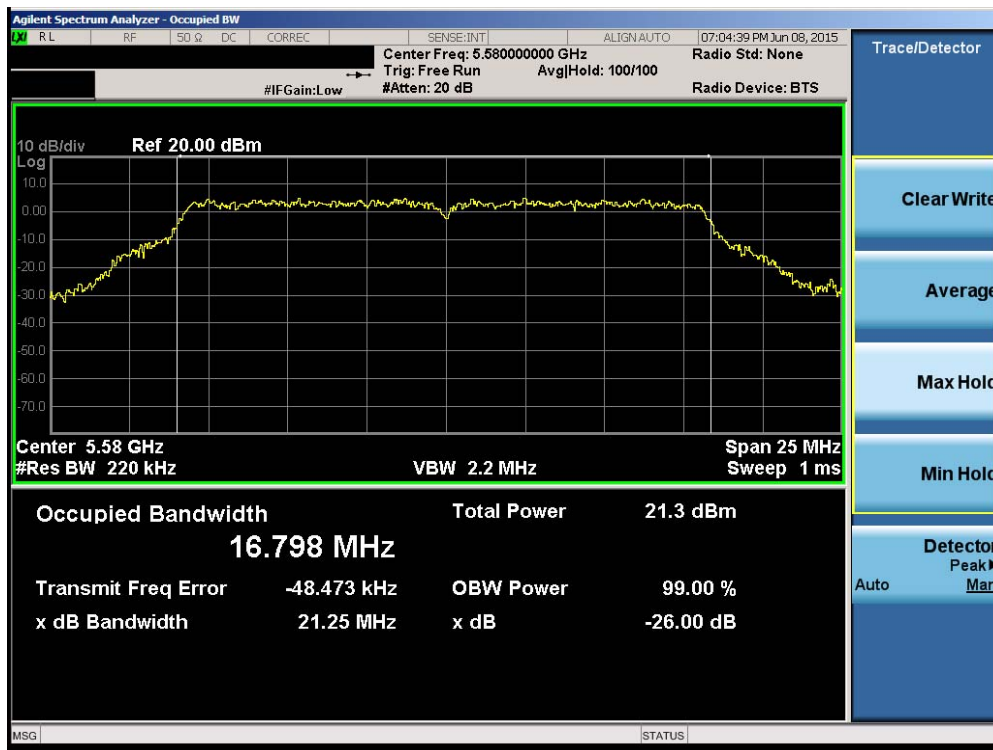


Plot 6-47. 26dB Bandwidth Plot (80MHz BW 802.11ac (UNII Band 2A) – Ch. 58)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 38 of 193

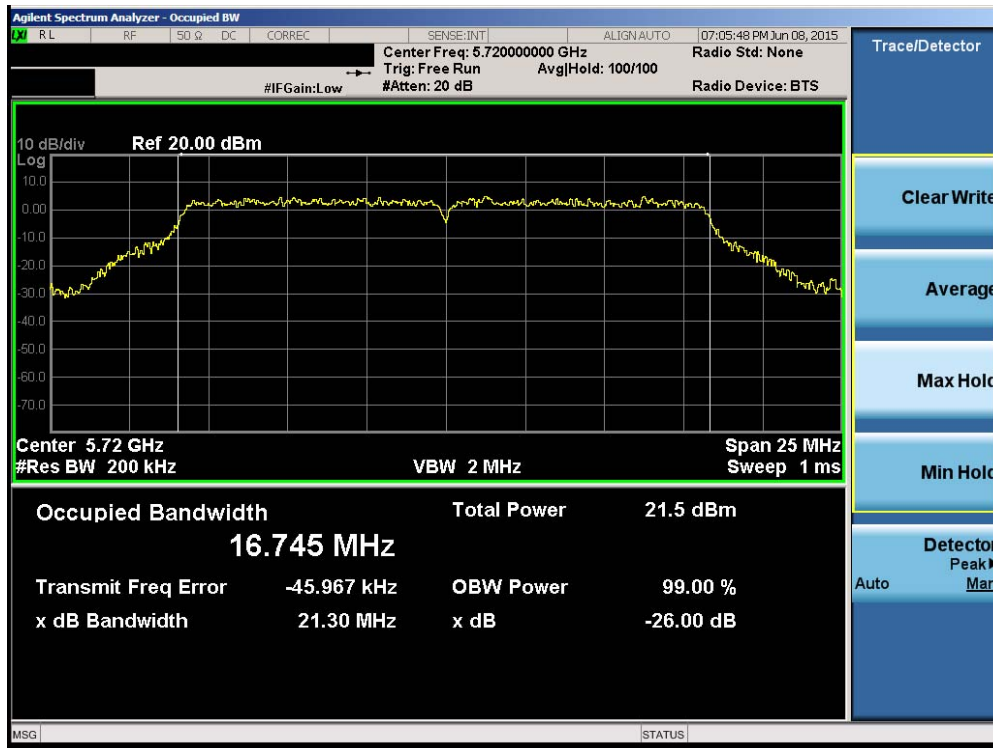


Plot 6-48. 26dB Bandwidth Plot (802.11a (UNII Band 2C) – Ch. 100)

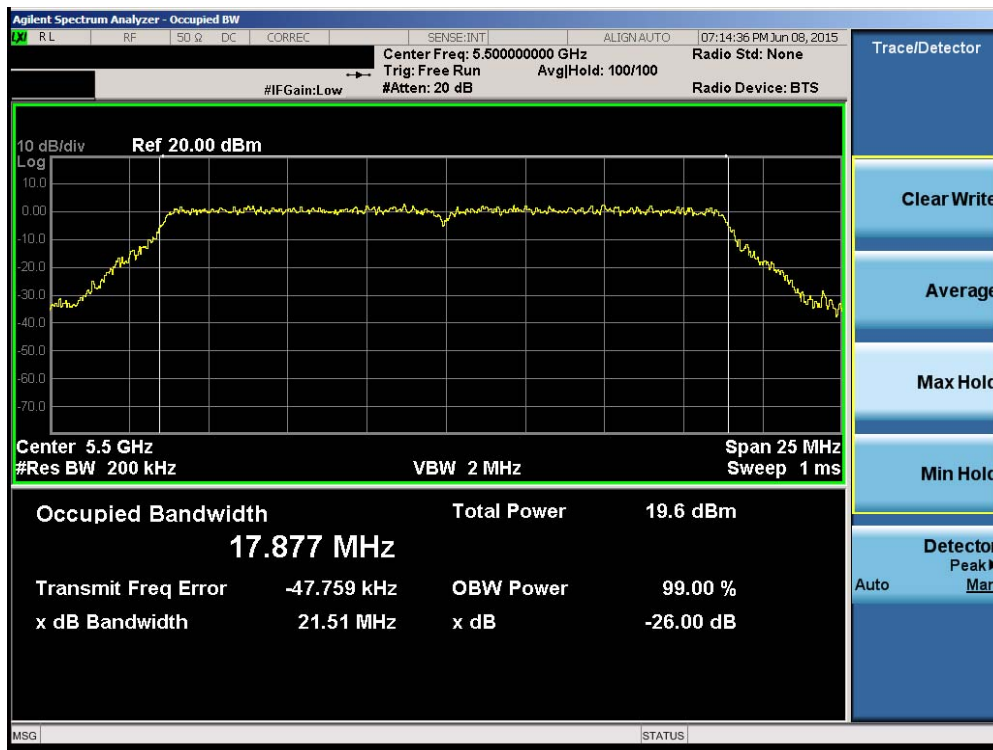


Plot 6-49. 26dB Bandwidth Plot (802.11a (UNII Band 2C) – Ch. 116)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 39 of 193

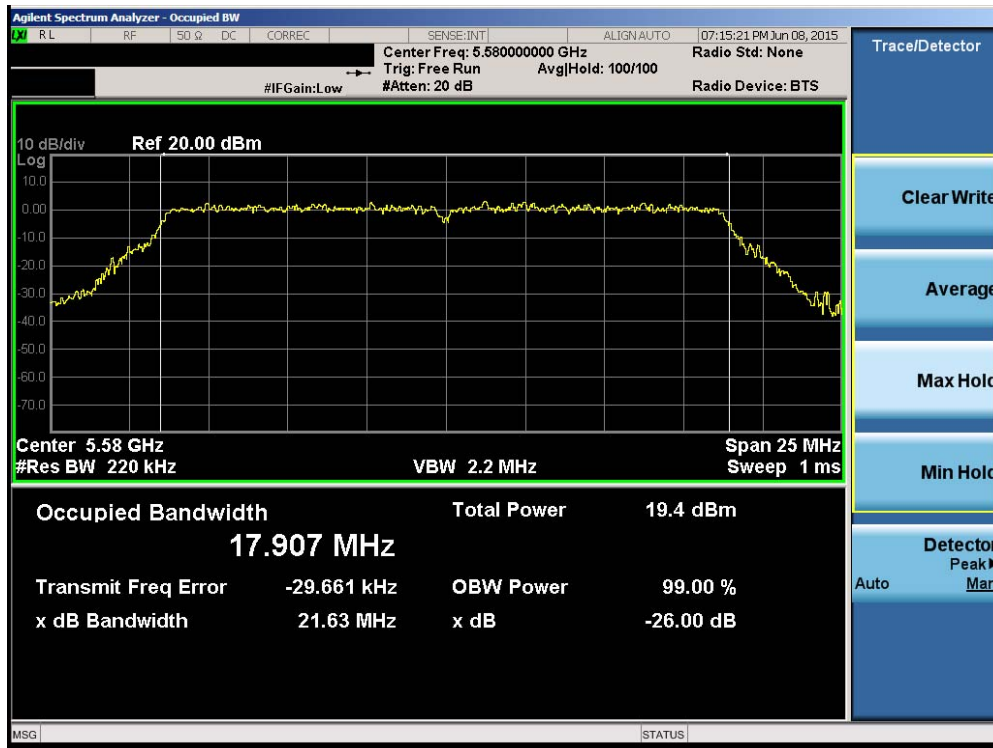


Plot 6-50. 26dB Bandwidth Plot (802.11a (UNII Band 2C) – Ch. 144)

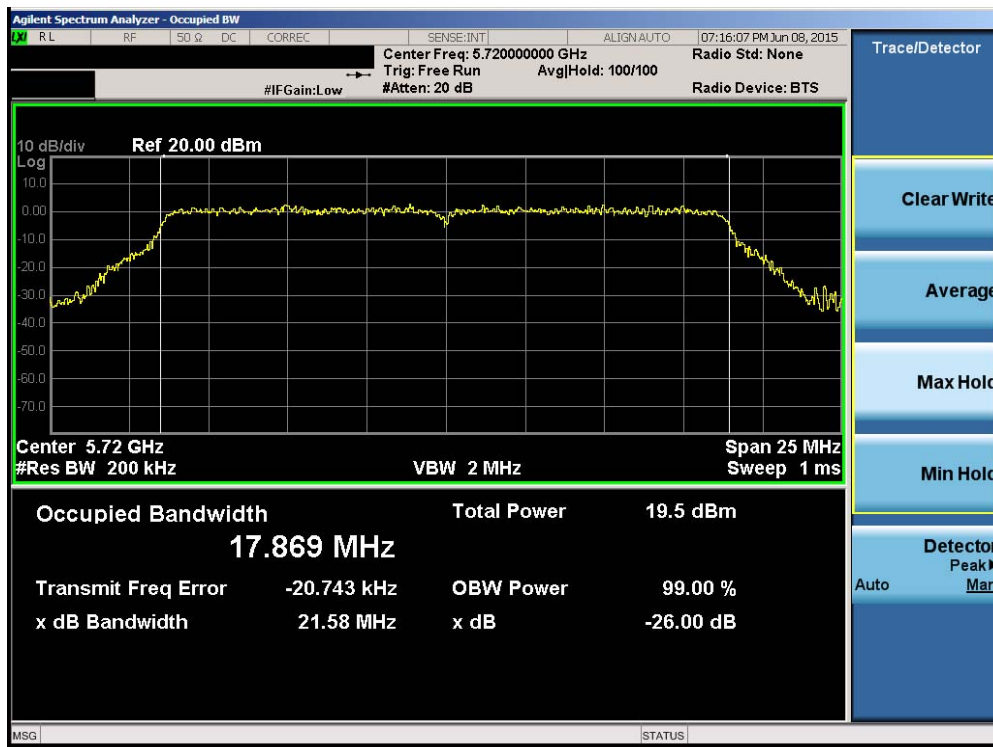


Plot 6-51. 26dB Bandwidth Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 100)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 40 of 193

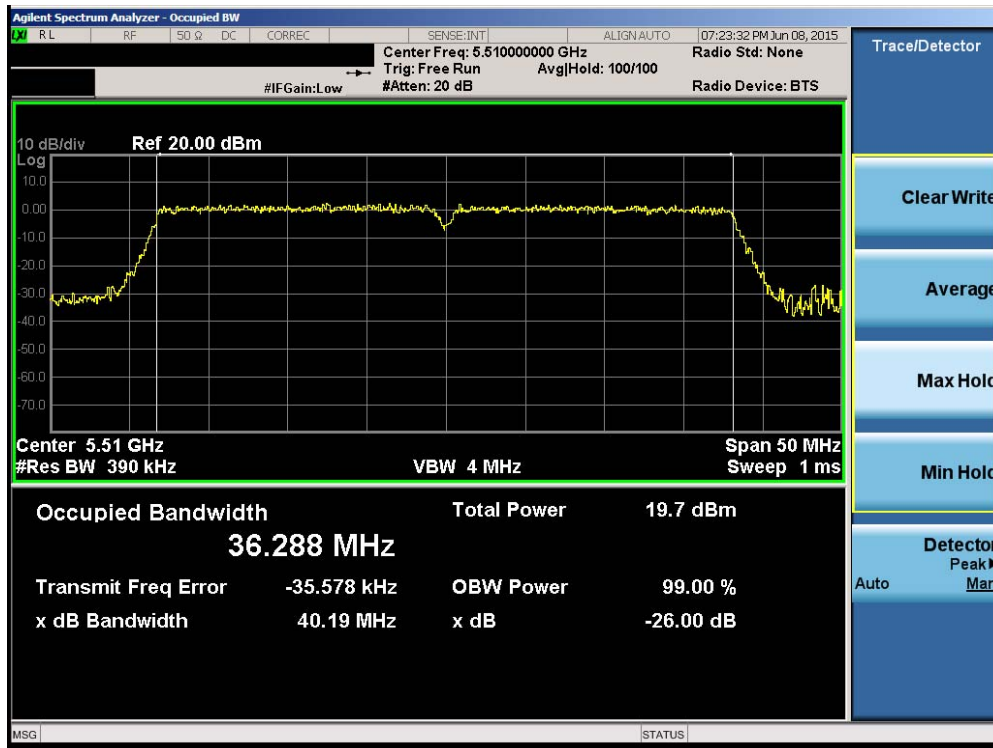


Plot 6-52. 26dB Bandwidth Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 116)

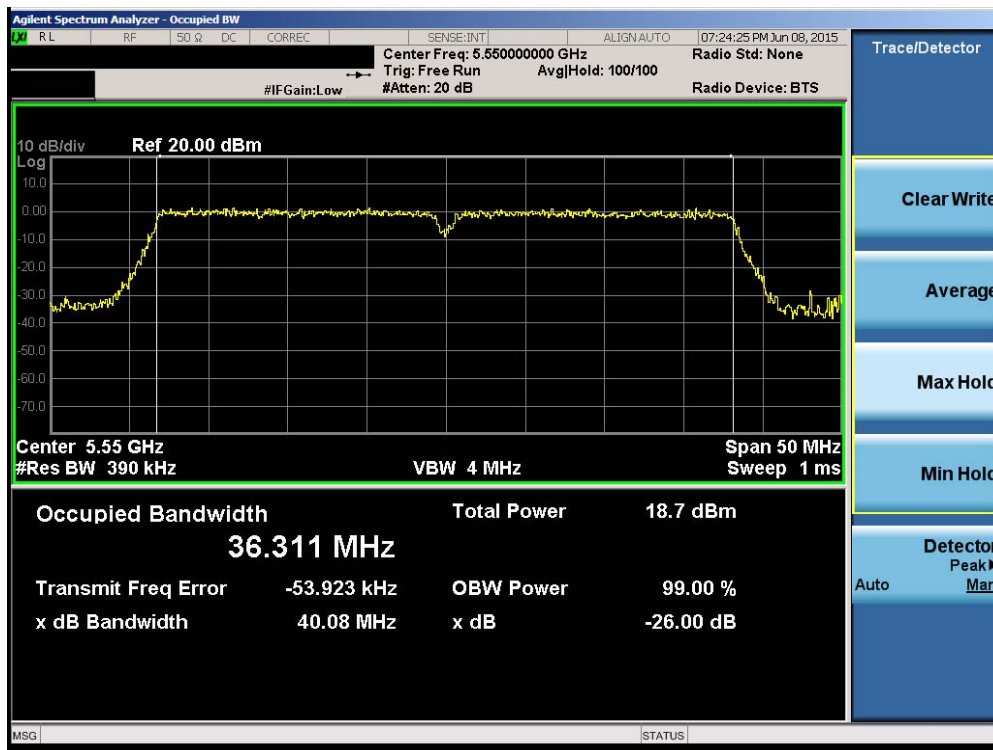


Plot 6-53. 26dB Bandwidth Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 144)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 41 of 193

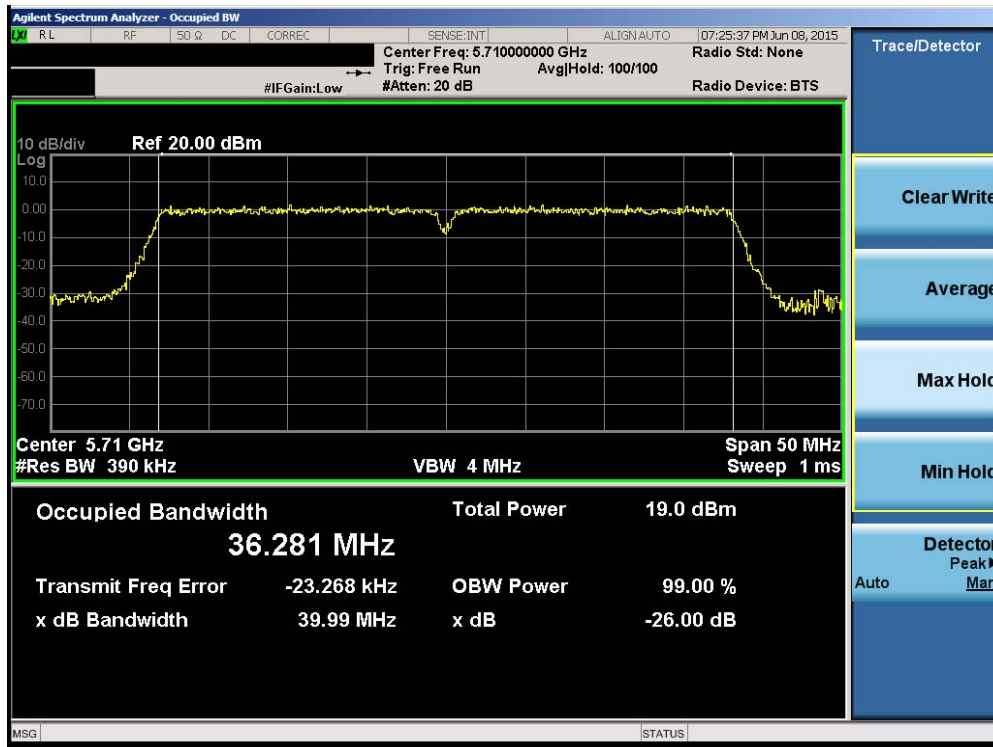


Plot 6-54. 26dB Bandwidth Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 102)

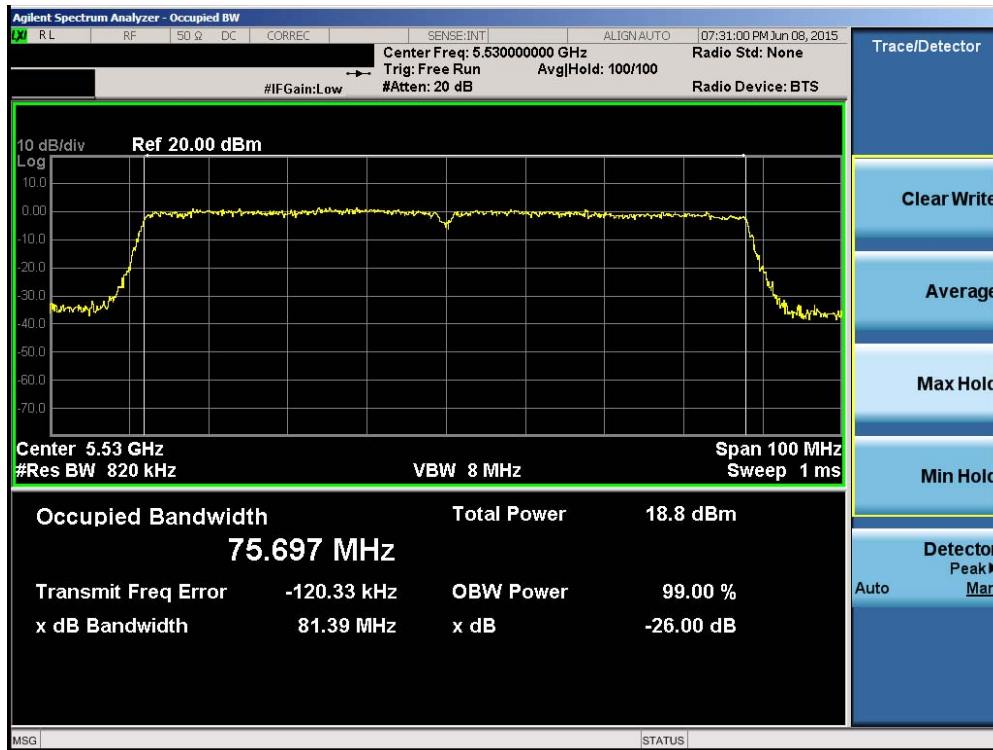


Plot 6-55. 26dB Bandwidth Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 110)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 42 of 193

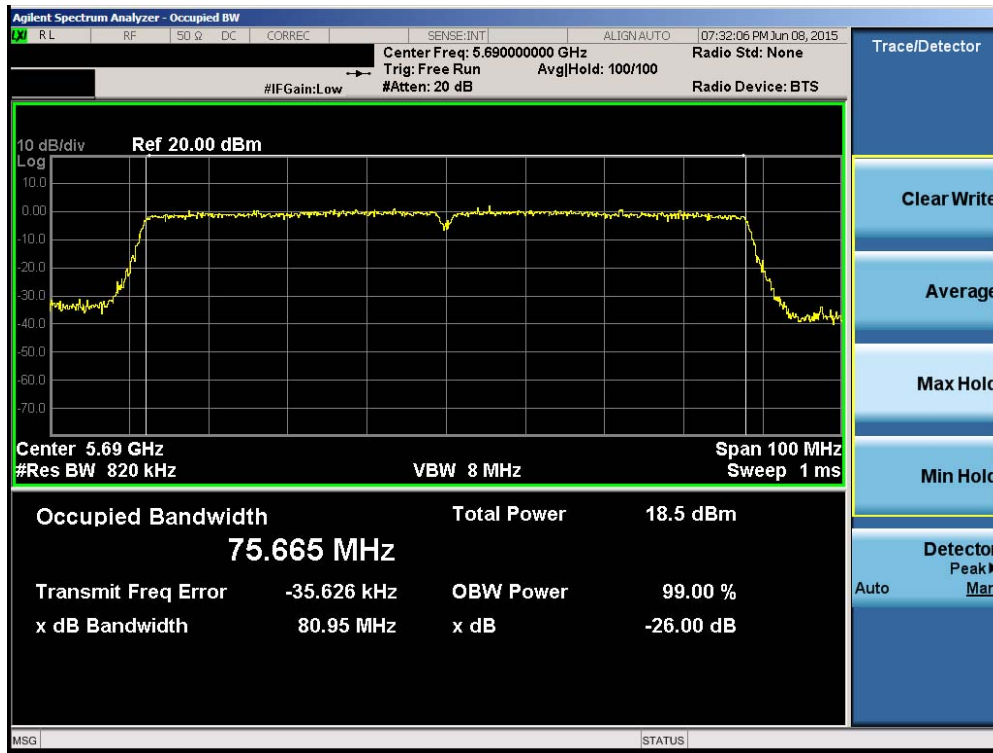


Plot 6-56. 26dB Bandwidth Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 142)



Plot 6-57. 26dB Bandwidth Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 106)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 43 of 193



Plot 6-58. 26dB Bandwidth Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 138)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 44 of 193

6.3 6dB Bandwidth Measurement – 802.11a/n/ac §15.407 (e)

Test Overview and Limit

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in KDB 789033 D02 v01, and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 6dB bandwidth.

In the 5.725 – 5.850GHz band, the 6dB bandwidth must be ≥ 500 kHz.

Test Procedure Used

KDB 789033 D02 v01 – Section C

Test Settings

1. The signal analyzers' automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to $X = 6$. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 100 kHz
3. VBW $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

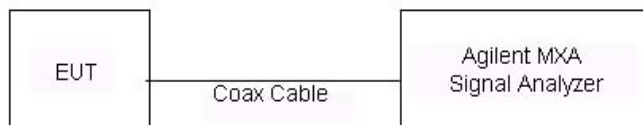


Figure 6-2. Test Instrument & Measurement Setup

Test Notes

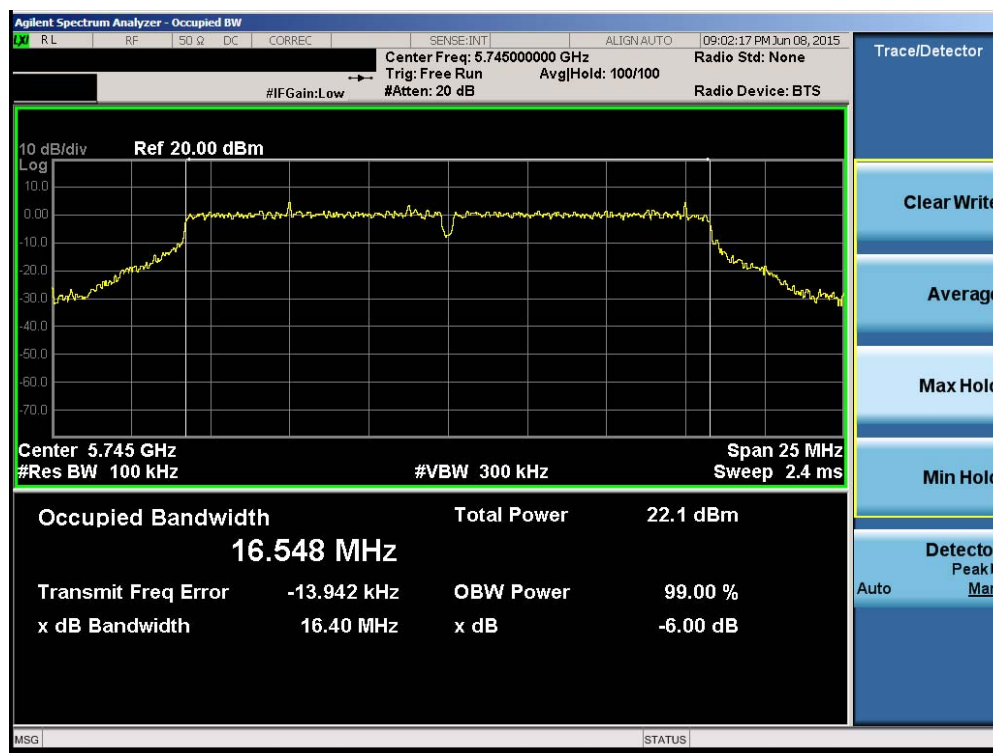
None.

FCC ID: A3LSMN920R4		FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset	Page 45 of 193	

Antenna-1 6 dB Bandwidth Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3	5745	149	a	6	16.40
	5785	157	a	6	16.38
	5825	165	a	6	16.36
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	17.63
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	17.65
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	17.61
	5755	151	n (40MHz)	13.5/15 (MCS0)	36.38
	5795	159	n (40MHz)	13.5/15 (MCS0)	36.37
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	75.74

Table 6-4. Conducted Bandwidth Measurements

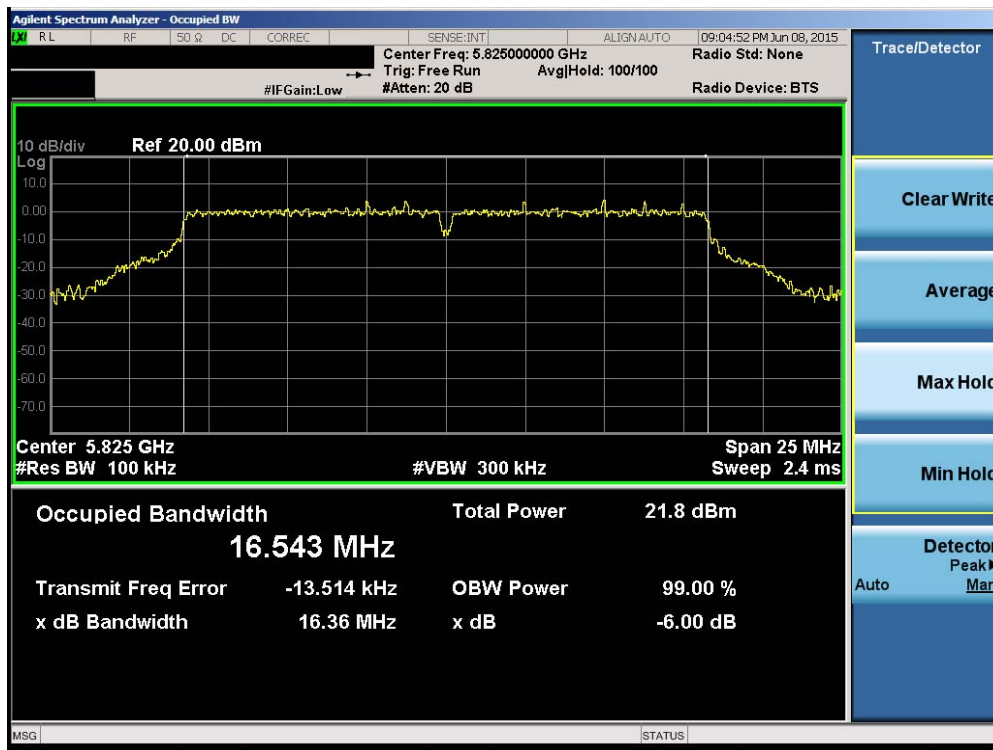


Plot 6-59. 6dB Bandwidth Plot (802.11a (UNII Band 3) – Ch. 149)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 46 of 193



Plot 6-60. 6dB Bandwidth Plot (802.11a (UNII Band 3) – Ch. 157)

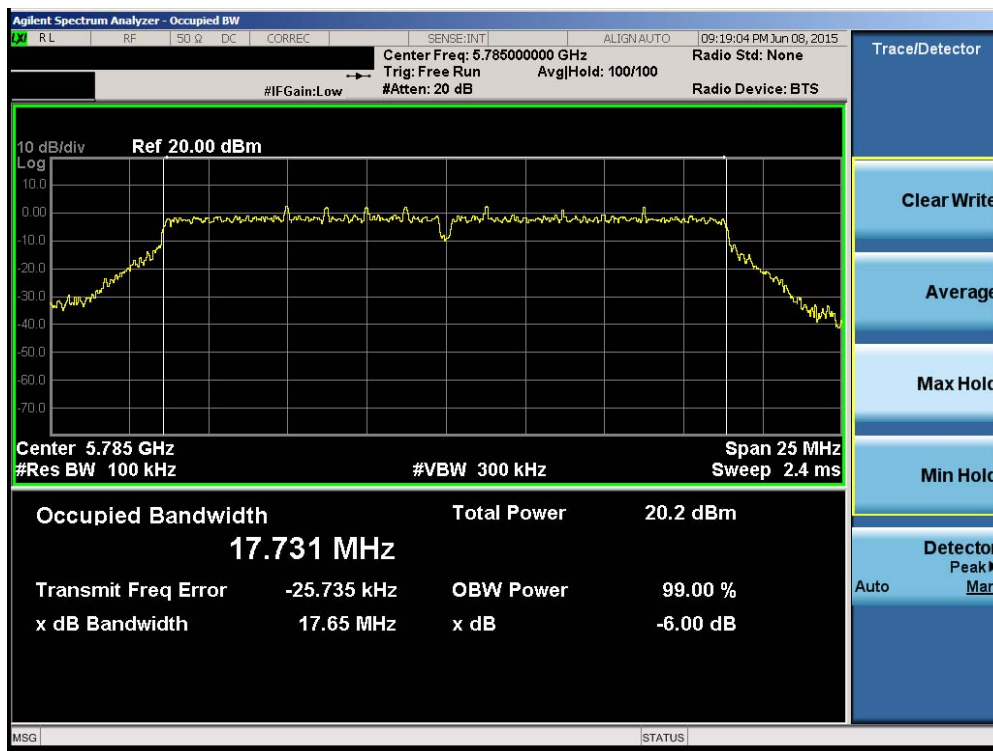


Plot 6-61. 6dB Bandwidth Plot (802.11a (UNII Band 3) – Ch. 165)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 47 of 193



Plot 6-62. 6dB Bandwidth Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 149)

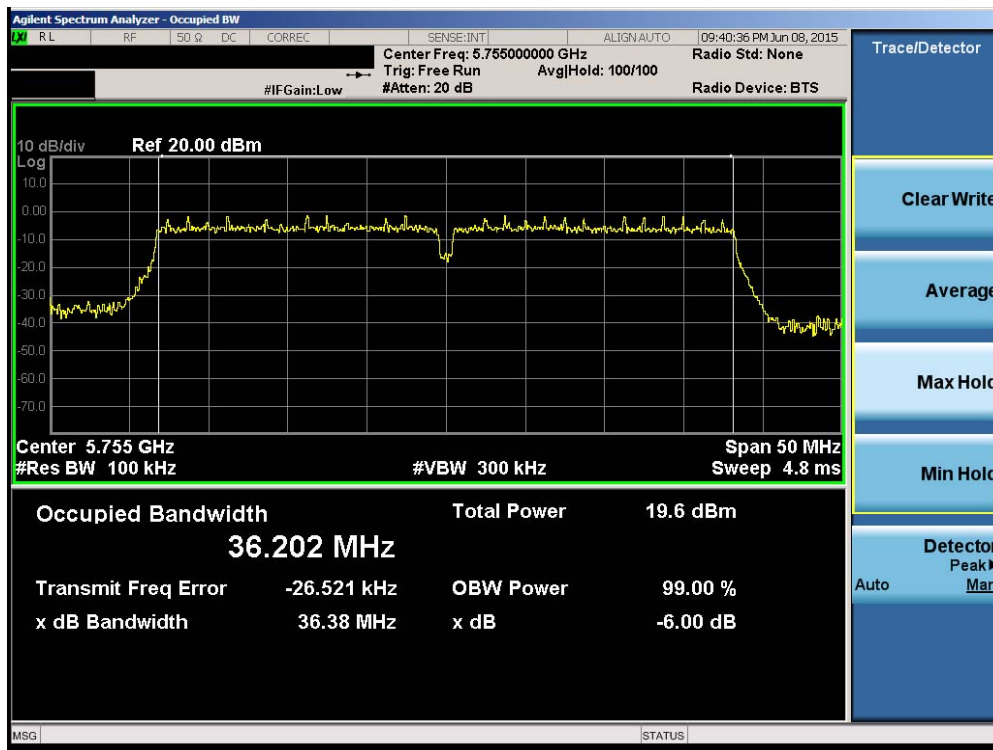


Plot 6-63. 6dB Bandwidth Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 157)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 48 of 193

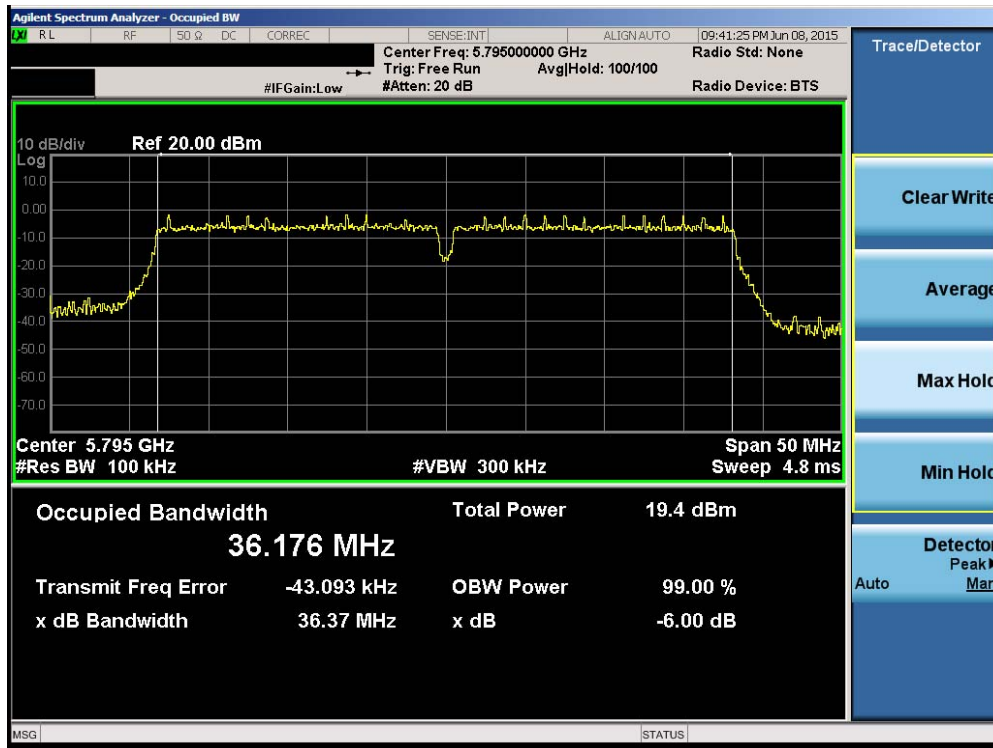


Plot 6-64. 6dB Bandwidth Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 165)

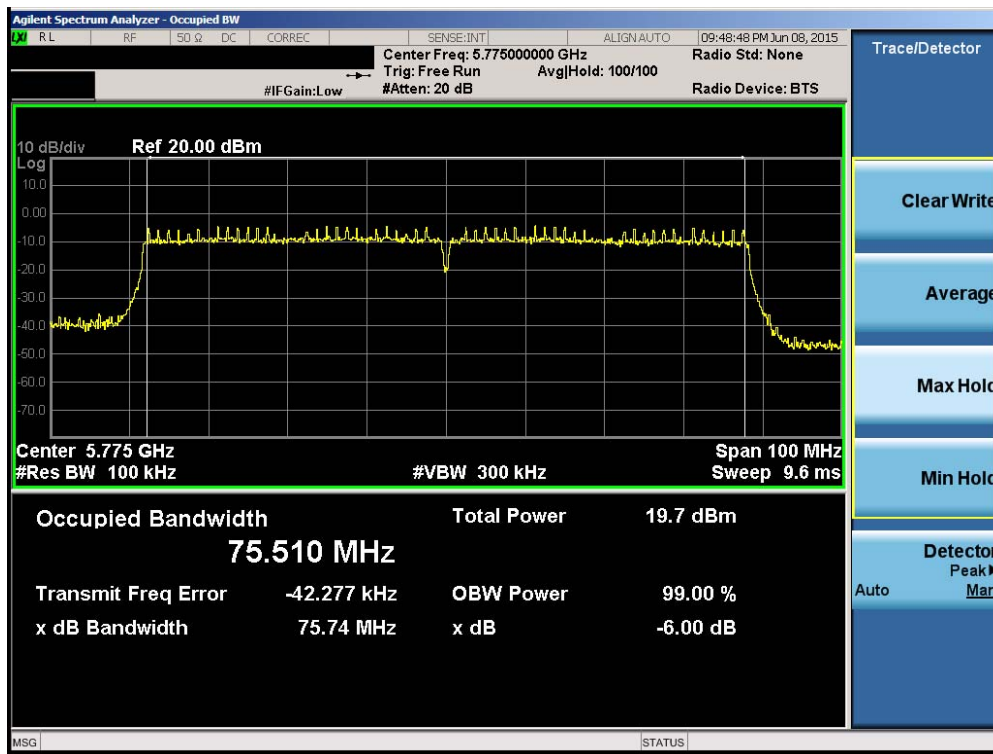


Plot 6-65. 6dB Bandwidth Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 151)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 49 of 193



Plot 6-66. 6dB Bandwidth Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 159)



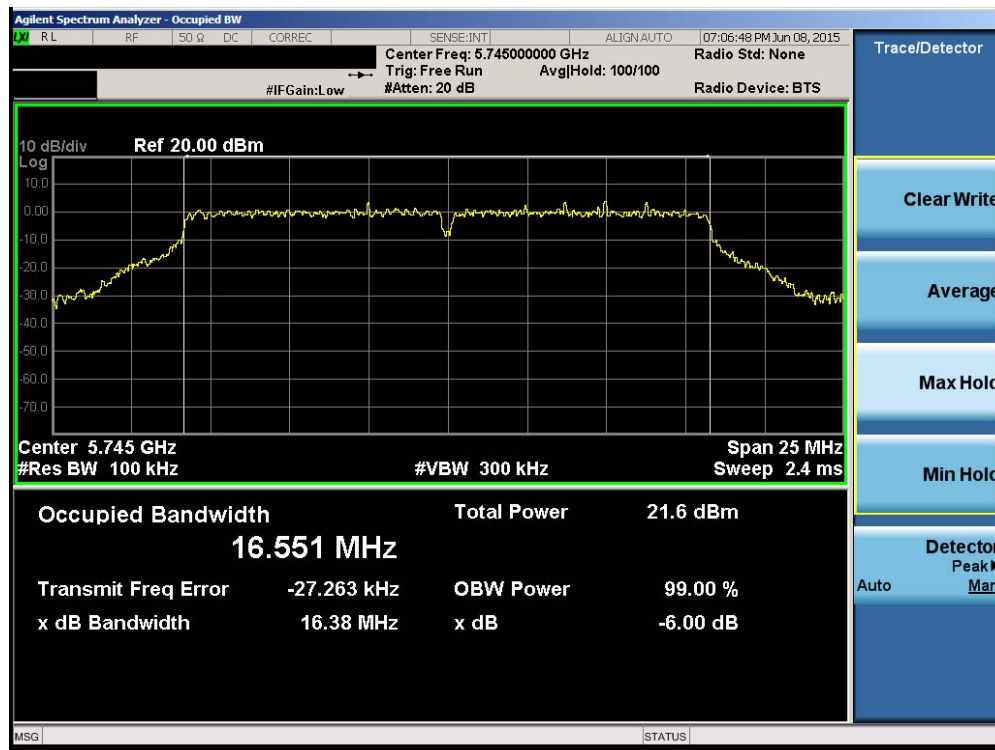
Plot 6-67. 6dB Bandwidth Plot (80MHz BW 802.11ac (UNII Band 3) – Ch. 155)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 50 of 193

Antenna-2 6dB Bandwidth Measurements

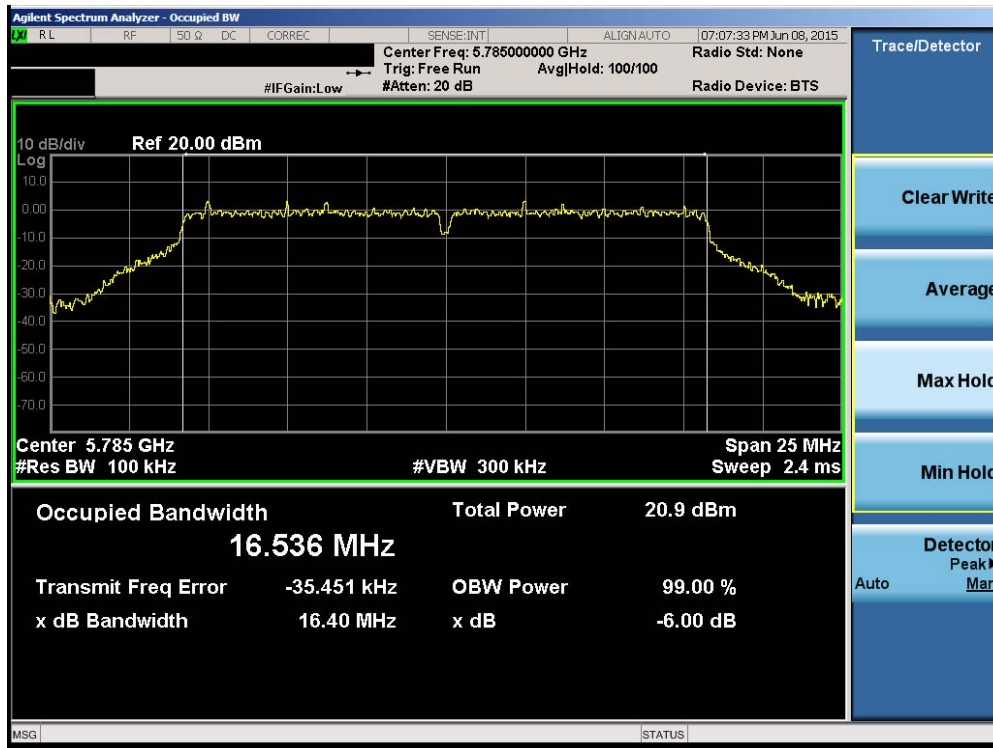
	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured 6dB Bandwidth [MHz]
Band 3	5745	149	a	6	16.38
	5785	157	a	6	16.40
	5825	165	a	6	16.37
	5745	149	n (20MHz)	6.5/7.2 (MCS0)	17.62
	5785	157	n (20MHz)	6.5/7.2 (MCS0)	17.60
	5825	165	n (20MHz)	6.5/7.2 (MCS0)	17.64
	5755	151	n (40MHz)	13.5/15 (MCS0)	36.34
	5795	159	n (40MHz)	13.5/15 (MCS0)	36.39
	5775	155	ac (80MHz)	29.3/32.5 (MCS0)	75.62

Table 6-5. Conducted Bandwidth Measurements



Plot 6-68. 6dB Bandwidth Plot (802.11a (UNII Band 3) – Ch. 149)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 51 of 193



Plot 6-69. 6dB Bandwidth Plot (802.11a (UNII Band 3) – Ch. 157)

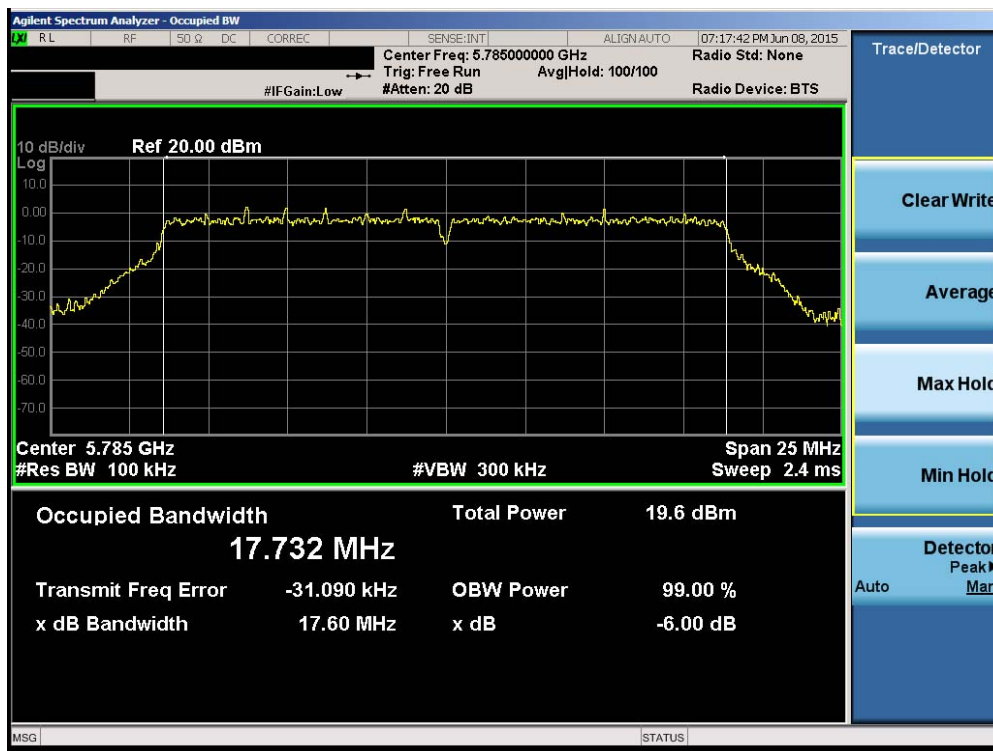


Plot 6-70. 6dB Bandwidth Plot (802.11a (UNII Band 3) – Ch. 165)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 52 of 193

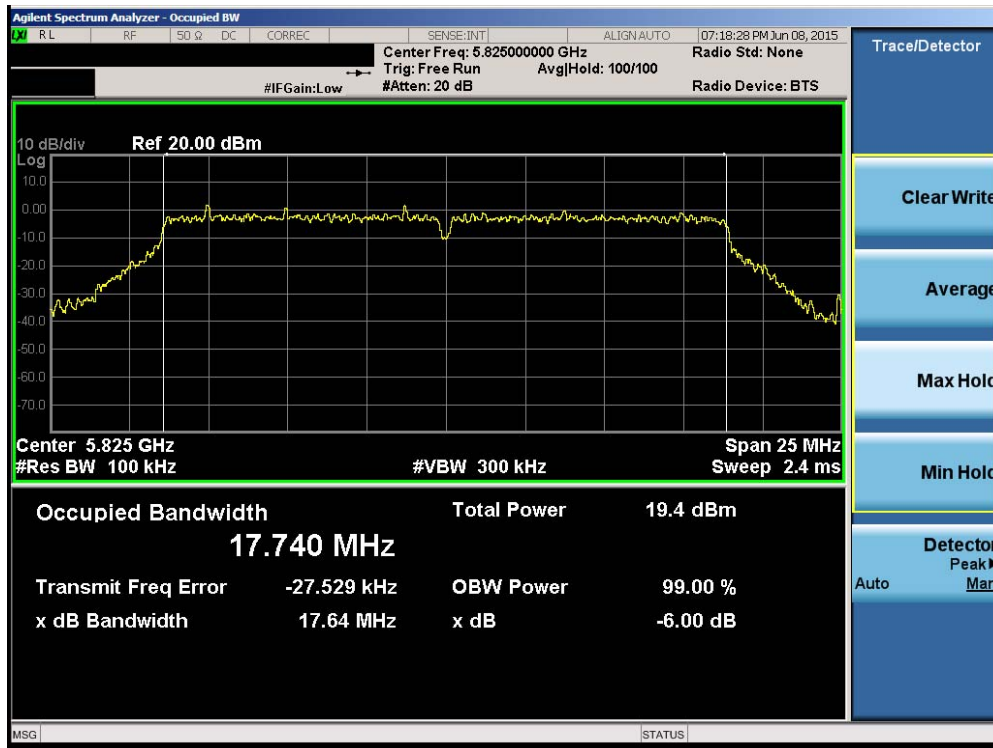


Plot 6-71. 6dB Bandwidth Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 149)

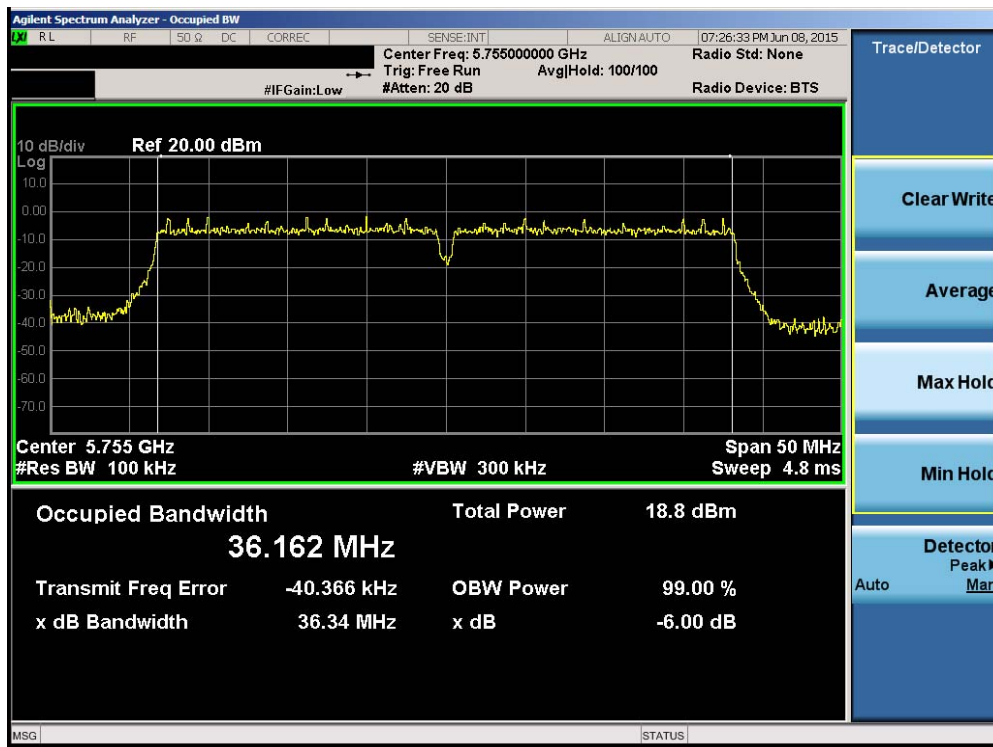


Plot 6-72. 6dB Bandwidth Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 157)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 53 of 193

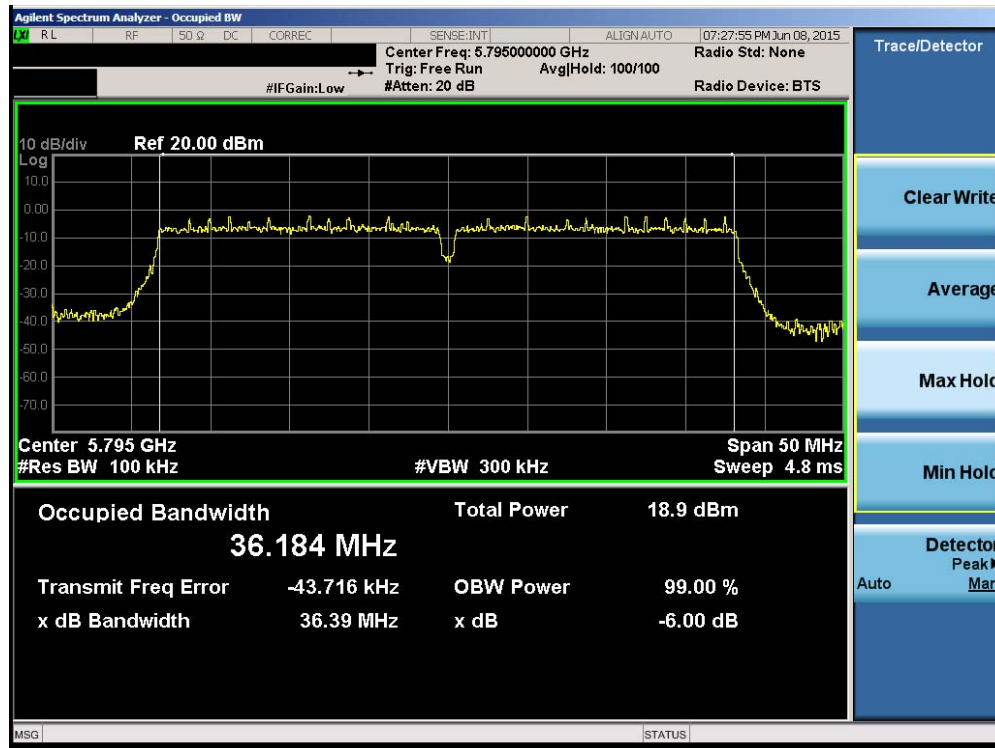


Plot 6-73. 6dB Bandwidth Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 165)

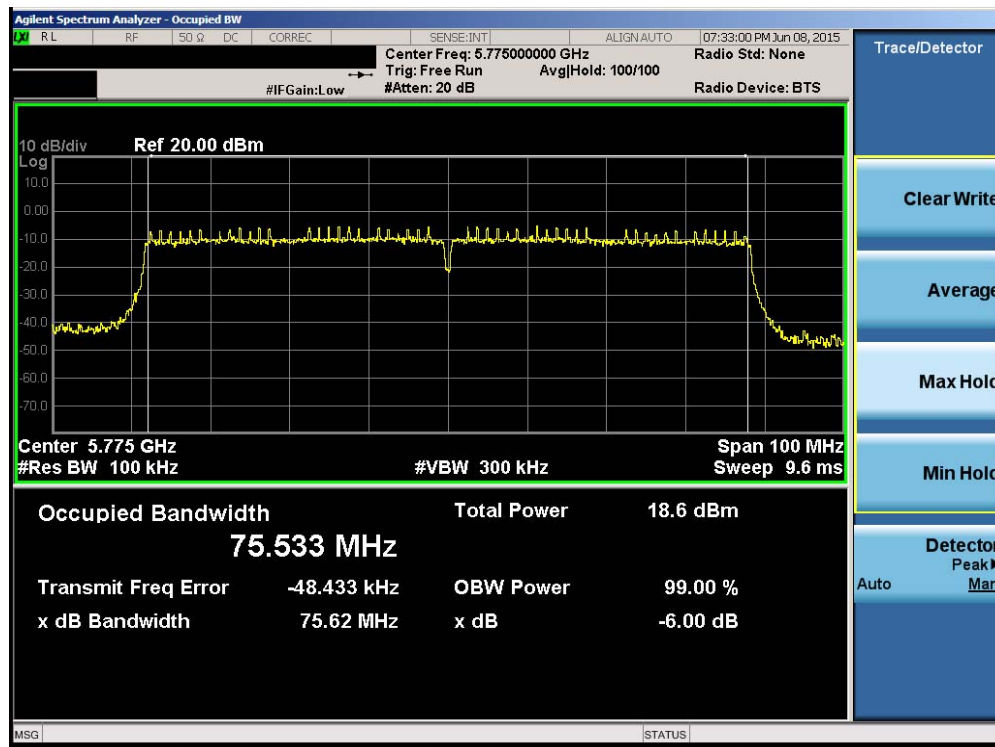


Plot 6-74. 6dB Bandwidth Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 151)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 54 of 193



Plot 6-75. 6dB Bandwidth Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 159)



Plot 6-76. 6dB Bandwidth Plot (80MHz BW 802.11ac (UNII Band 3) – Ch. 155)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 55 of 193

6.4 UNII Output Power Measurement – 802.11a/n/ac §15.407 (a.1)

Test Overview and Limits

A transmitter antenna terminal of the EUT is connected to the input of an RF pulse power sensor. Measurement is made using a broadband average power meter while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in KDB 789033 D02 v01, and at the appropriate frequencies.

In the 5.15 – 5.25GHz band, the maximum permissible conducted output power is 250mW (23.98dBm).

In the 5.25 – 5.35GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) and $11 \text{ dBm} + 10\log_{10}(26\text{dB BW}) = 11 \text{ dBm} + 10\log_{10}(21.30) = 24.28\text{dBm}$.

In the 5.47 – 5.725GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) and $11 \text{ dBm} + 10\log_{10}(26\text{dB BW}) = 11 \text{ dBm} + 10\log_{10}(21.50) = 24.32\text{dBm}$.

In the 5.725 – 5.850GHz band, the maximum permissible conducted output power is 1W (30dBm).

Test Procedure Used

KDB 789033 D02 v01 – Section E)3)b) Method PM-G
KDB 662911 v02r01 – Section E)1) Measure-and-Sum Technique

Test Settings

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

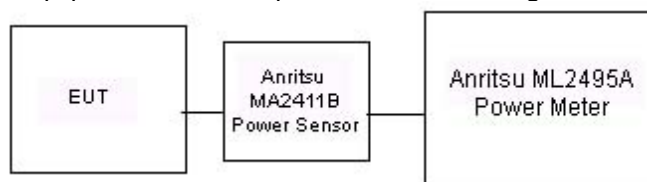


Figure 6-3. Test Instrument & Measurement Setup

Test Notes

None

FCC ID: A3LSMN920R4		FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 56 of 193

Antenna-1 Conducted Output Power Measurements

Freq [MHz]	Channel	Detector	5GHz (20MHz) Conducted Power [dBm]		
			IEEE Transmission Mode		
			802.11a	802.11n	802.11ac
5180	36	AVG	15.16	13.22	13.17
5200	40	AVG	15.05	13.16	13.04
5220	44	AVG	15.15	13.12	13.03
5240	48	AVG	15.19	13.18	13.00
5260	52	AVG	14.98	13.14	13.14
5280	56	AVG	14.97	12.98	13.05
5300	60	AVG	15.04	13.13	12.78
5320	64	AVG	14.91	12.92	13.03
5500	100	AVG	15.11	13.12	13.24
5520	104	AVG	15.05	13.05	13.12
5540	108	AVG	14.85	12.83	13.00
5560	112	AVG	14.82	12.78	13.01
5580	116	AVG	14.83	12.72	12.61
5600	120	AVG	14.74	12.85	12.74
5620	124	AVG	14.85	12.68	12.71
5640	128	AVG	14.69	12.63	12.61
5660	132	AVG	15.37	13.36	12.60
5680	136	AVG	15.28	13.38	13.48
5700	140	AVG	15.36	13.35	13.43
5720	144	AVG	15.18	13.15	13.39
5745	149	AVG	15.48	13.44	13.43
5785	157	AVG	15.31	13.34	12.80
5825	165	AVG	15.23	13.41	13.36

Table 6-6. 20MHz BW (UNII) Maximum Conducted Output Power

Freq [MHz]	Channel	Detector	5GHz (40MHz) Conducted Power [dBm]	
			IEEE Transmission Mode	
			802.11n	802.11ac
5190	38	AVG	12.02	11.97
5230	46	AVG	11.97	12.01
5270	54	AVG	11.91	12.01
5310	62	AVG	12.05	11.83
5510	102	AVG	11.86	11.84
5550	110	AVG	11.71	11.71
5590	118	AVG	12.48	11.87
5630	126	AVG	12.34	12.47
5670	134	AVG	12.31	12.22
5710	142	AVG	12.16	12.27
5755	151	AVG	12.42	12.08
5795	159	AVG	12.22	12.09

Table 6-7. 40MHz BW (UNII) Maximum Conducted Output Power

5GHz (80MHz) Conducted Power [dBm]			
Freq [MHz]	Channel	Detector	IEEE Transmission Mode
			802.11ac
5210	42	AVG	11.19
5290	58	AVG	11.16
5530	106	AVG	10.85
5610	122	AVG	11.44
5690	138	AVG	11.15
5775	155	AVG	11.21

Table 6-8. 80MHz BW (UNII) Maximum Conducted Output Power

FCC ID: A3LSMN920R4		FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 57 of 193	

Antenna-2 Conducted Output Power Measurements

Freq [MHz]	Channel	Detector	5GHz (20MHz) Conducted Power [dBm]		
			IEEE Transmission Mode		
			802.11a	802.11n	802.11ac
5180	36	AVG	15.22	13.29	13.38
5200	40	AVG	15.05	13.44	13.26
5220	44	AVG	15.04	13.46	13.34
5240	48	AVG	15.28	13.48	13.39
5260	52	AVG	15.33	12.70	13.46
5280	56	AVG	15.20	12.78	13.41
5300	60	AVG	15.19	12.73	13.44
5320	64	AVG	15.27	12.84	13.48
5500	100	AVG	15.15	13.39	13.33
5520	104	AVG	15.03	13.22	13.21
5540	108	AVG	14.95	13.35	13.19
5560	112	AVG	15.01	13.41	13.38
5580	116	AVG	15.02	13.33	13.21
5600	120	AVG	14.91	13.40	13.31
5620	124	AVG	14.92	13.19	13.09
5640	128	AVG	15.06	13.19	13.20
5660	132	AVG	15.04	13.23	13.14
5680	136	AVG	14.92	13.18	13.00
5700	140	AVG	14.82	13.31	13.11
5720	144	AVG	14.85	13.15	13.01
5745	149	AVG	14.83	13.14	13.03
5785	157	AVG	14.77	13.01	12.91
5825	165	AVG	14.71	12.81	12.90

Table 6-9. 20MHz BW (UNII) Maximum Conducted Output Power

Freq [MHz]	Channel	Detector	5GHz (40MHz) Conducted Power [dBm]	
			IEEE Transmission Mode	
			802.11n	802.11ac
5190	38	AVG	12.21	12.27
5230	46	AVG	12.27	12.44
5270	54	AVG	12.02	12.32
5310	62	AVG	12.04	12.32
5510	102	AVG	12.12	11.97
5550	110	AVG	12.21	12.02
5590	118	AVG	11.93	11.95
5630	126	AVG	12.04	11.93
5670	134	AVG	12.03	11.92
5710	142	AVG	11.87	11.95
5755	151	AVG	11.89	12.02
5795	159	AVG	11.81	11.75

Table 6-10. 40MHz BW (UNII) Maximum Conducted Output Power

5GHz (80MHz) Conducted Power [dBm]			
Freq [MHz]	Channel	Detector	IEEE Transmission Mode
			802.11ac
5210	42	AVG	11.47
5290	58	AVG	11.21
5530	106	AVG	11.24
5610	122	AVG	11.12
5690	138	AVG	10.95
5775	155	AVG	10.87

Table 6-11. 80MHz BW (UNII) Maximum Conducted Output Power

FCC ID: A3LSMN920R4		FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset	Page 58 of 193	

MIMO Maximum Conducted Output Power Measurements

Freq [MHz]	Channel	Detector	5GHz (20MHz) Conducted Power [dBm]		
			IEEE Transmission Mode		
			ANT1	ANT2	MIMO
5180	36	AVG	13.22	13.29	16.27
5200	40	AVG	13.16	13.44	16.31
5220	44	AVG	13.12	13.46	16.30
5240	48	AVG	13.18	13.48	16.34
5260	52	AVG	13.14	12.70	15.94
5280	56	AVG	12.98	12.78	15.89
5300	60	AVG	13.13	12.73	15.94
5320	64	AVG	12.92	12.84	15.89
5500	100	AVG	13.12	13.39	16.27
5520	104	AVG	13.05	13.22	16.15
5540	108	AVG	12.83	13.35	16.11
5560	112	AVG	12.78	13.41	16.12
5580	116	AVG	12.72	13.33	16.05
5600	120	AVG	12.85	13.40	16.14
5620	124	AVG	12.68	13.19	15.95
5640	128	AVG	12.63	13.19	15.93
5660	132	AVG	13.36	13.23	16.31
5680	136	AVG	13.38	13.18	16.29
5700	140	AVG	13.35	13.31	16.34
5720	144	AVG	13.15	13.15	16.16
5745	149	AVG	13.44	13.14	16.30
5785	157	AVG	13.34	13.01	16.19
5825	165	AVG	13.41	12.81	16.13

Table 6-12. MIMO 20MHz BW 802.11n (UNII) Maximum Conducted Output Power

Freq [MHz]	Channel	Detector	5GHz (20MHz) Conducted Power [dBm]		
			IEEE Transmission Mode		
			ANT1	ANT2	MIMO
5180	36	AVG	13.17	13.38	16.29
5200	40	AVG	13.04	13.26	16.16
5220	44	AVG	13.03	13.34	16.20
5240	48	AVG	13.00	13.39	16.21
5260	52	AVG	13.14	13.46	16.31
5280	56	AVG	13.05	13.41	16.24
5300	60	AVG	12.78	13.44	16.13
5320	64	AVG	13.03	13.48	16.27
5500	100	AVG	13.24	13.33	16.30
5520	104	AVG	13.12	13.21	16.18
5540	108	AVG	13.00	13.19	16.11
5560	112	AVG	13.01	13.38	16.21
5580	116	AVG	12.61	13.21	15.93
5600	120	AVG	12.74	13.31	16.04
5620	124	AVG	12.71	13.09	15.91
5640	128	AVG	12.61	13.20	15.93
5660	132	AVG	12.60	13.14	15.89
5680	136	AVG	13.48	13.00	16.26
5700	140	AVG	13.43	13.11	16.28
5720	144	AVG	13.39	13.01	16.21
5745	149	AVG	13.43	13.03	16.24
5785	157	AVG	12.80	12.91	15.87
5825	165	AVG	13.36	12.90	16.15

Table 6-13. MIMO 20MHz BW 802.11ac (UNII) Maximum Conducted Output Power

Freq [MHz]	Channel	Detector	5GHz (40MHz) Conducted Power [dBm]		
			IEEE Transmission Mode		
			ANT1	ANT2	MIMO
5190	38	AVG	12.02	12.21	15.13
5230	46	AVG	11.97	12.27	15.13
5270	54	AVG	11.91	12.02	14.98
5310	62	AVG	12.05	12.04	15.06
5510	102	AVG	11.86	12.12	15.00
5550	110	AVG	11.71	12.21	14.98
5590	118	AVG	12.48	11.93	15.22
5630	126	AVG	12.34	12.04	15.20
5670	134	AVG	12.31	12.03	15.18
5710	142	AVG	12.16	11.87	15.03
5755	151	AVG	12.42	11.89	15.17
5795	159	AVG	12.22	11.81	15.03

Table 6-14. MIMO 40MHz BW 802.11n (UNII) Maximum Conducted Output Power

FCC ID: A3LSMN920R4		FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Freq [MHz]	Channel	Detector	5GHz (40MHz) Conducted Power [dBm]		
			IEEE Transmission Mode		
			ANT1	ANT2	MIMO
5190	38	AVG	11.97	12.27	15.13
5230	46	AVG	12.01	12.44	15.24
5270	54	AVG	12.01	12.32	15.18
5310	62	AVG	11.83	12.32	15.09
5510	102	AVG	11.84	11.97	14.92
5550	110	AVG	11.71	12.02	14.88
5590	118	AVG	11.87	11.95	14.92
5630	126	AVG	12.47	11.93	15.22
5670	134	AVG	12.22	11.92	15.08
5710	142	AVG	12.27	11.95	15.12
5755	151	AVG	12.08	12.02	15.06
5795	159	AVG	12.09	11.75	14.93

Table 6-15. MIMO 40MHz BW 802.11ac (UNII) Maximum Conducted Output Power

5GHz (80MHz) Conducted Power [dBm]					
Freq [MHz]	Channel	Detector	IEEE Transmission Mode		
			ANT1	ANT2	MIMO
5210	42	AVG	11.19	11.47	14.34
5290	58	AVG	11.16	11.21	14.20
5530	106	AVG	10.85	11.24	14.06
5610	122	AVG	11.44	11.12	14.29
5690	138	AVG	11.15	10.95	14.06
5775	155	AVG	11.21	10.87	14.05

Table 6-16. MIMO 80MHz BW 802.11ac (UNII) Maximum Conducted Output Power

Note:

Per KDB 662911 v02r01 Section E)1), the conducted powers at Antenna 1 and Antenna 2 were first measured separately during MIMO transmission as shown in the section above. The measured values were then summed in linear power units then converted back to dBm.

Sample MIMO Calculation:

At 5180MHz the average conducted output power was measured to be 13.22 dBm for Antenna-1 and 13.29 dBm for Antenna-2.

$$\text{Antenna 1} + \text{Antenna 2} = \text{MIMO}$$

$$(13.22 \text{ dBm} + 13.29 \text{ dBm}) = (20.99 \text{ mW} + 21.33 \text{ mW}) = 42.32 \text{ mW} = 16.27 \text{ dBm}$$

FCC ID: A3LSMN920R4		FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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6.5 Maximum Power Spectral Density – 802.11a/n/ac §15.407(a.1)(2.5)

Test Overview and Limit

The spectrum analyzer was connected to the antenna terminal while the EUT was operating at its maximum duty cycle, at its maximum power control level, as defined in KDB 789033 D02 v01, and at the appropriate frequencies. Method SA-1, as defined in KDB 789033 D02 v01, was used to measure the power spectral density.

In the 5.15 – 5.25GHz, 5.25 – 5.35GHz, 5.47 – 5.725GHz bands, the maximum permissible power spectral density is 11dBm/MHz.

In the 5.725 – 5.850GHz band, the maximum permissible power spectral density is 30dBm/500kHz.

Test Procedure Used

KDB 789033 D02 v01 – Section F
KDB 662911 v02r01 – Section E)2) Measure-and-Sum Technique

Test Settings

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire emission bandwidth of the signal
3. RBW = 1MHz
4. VBW = 3MHz
5. Number of sweep points $\geq 2 \times (\text{span/RBW})$
6. Sweep time = auto
7. Detector = power averaging (RMS)
8. Trigger was set to free run for all modes
9. Trace was averaged over 100 sweeps
10. The peak search function of the spectrum analyzer was used to find the peak of the spectrum.

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

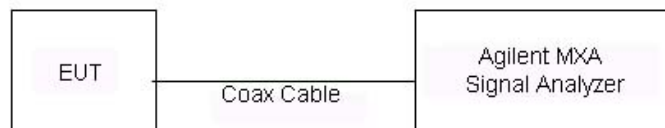


Figure 6-4. Test Instrument & Measurement Setup

Test Notes

None

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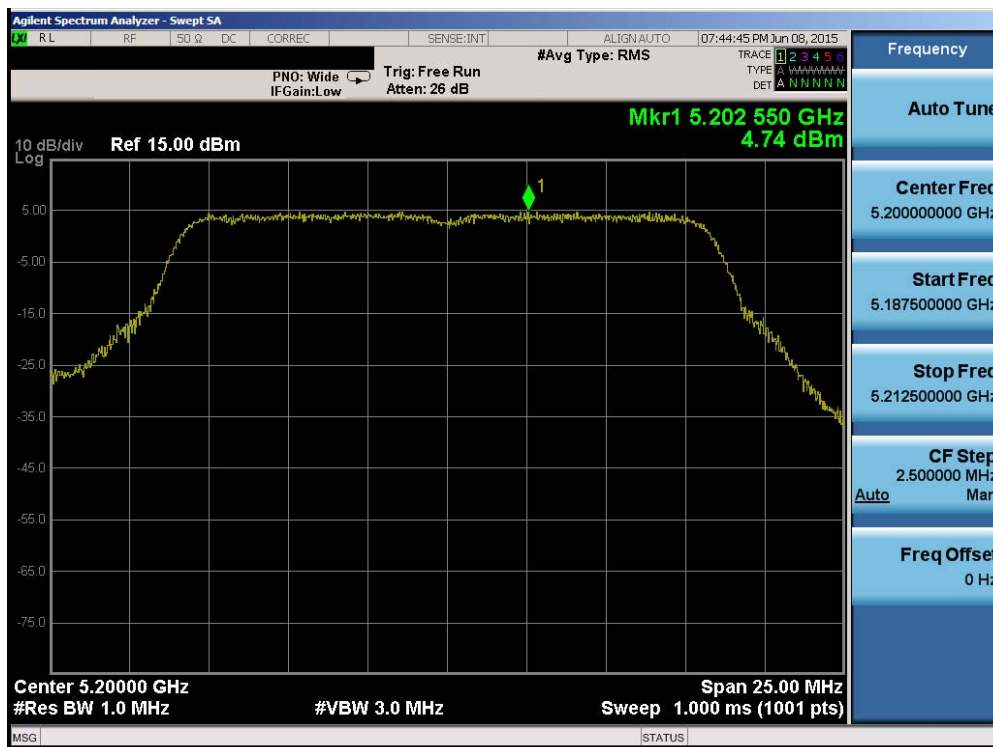
Antenna-1 Power Spectral Density Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density [dBm/MHz]	Margin [dB]	Pass / Fail
Band 1	5180	36	a	6	4.60	11.0	-6.40	Pass
	5200	40	a	6	4.74	11.0	-6.26	Pass
	5240	48	a	6	4.84	11.0	-6.16	Pass
	5180	36	n (20MHz)	6.5/7.2 (MCS0)	2.72	11.0	-8.28	Pass
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	2.59	11.0	-8.41	Pass
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	2.28	11.0	-8.72	Pass
	5190	38	n (40MHz)	13.5/15 (MCS0)	-1.35	11.0	-12.35	Pass
	5230	46	n (40MHz)	13.5/15 (MCS0)	-0.78	11.0	-11.78	Pass
	5210	42	ac (80MHz)	29.3/32.5 (MCS0)	-3.93	11.0	-14.93	Pass
Band 2A	5260	52	a	6	4.54	11.0	-6.46	Pass
	5280	56	a	6	4.36	11.0	-6.65	Pass
	5320	64	a	6	4.33	11.0	-6.67	Pass
	5260	52	n (20MHz)	6.5/7.2 (MCS0)	2.68	11.0	-8.32	Pass
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	2.54	11.0	-8.46	Pass
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	2.25	11.0	-8.75	Pass
	5270	54	n (40MHz)	13.5/15 (MCS0)	-0.66	11.0	-11.66	Pass
	5310	62	n (40MHz)	13.5/15 (MCS0)	-1.47	11.0	-12.47	Pass
	5290	58	ac (80MHz)	29.3/32.5 (MCS0)	-3.98	11.0	-14.98	Pass
Band 2C	5500	100	a	6	5.02	11.0	-5.98	Pass
	5580	116	a	6	3.77	11.0	-7.23	Pass
	5720	144	a	6	3.93	11.0	-7.07	Pass
	5500	100	n (20MHz)	6.5/7.2 (MCS0)	2.49	11.0	-8.51	Pass
	5580	116	n (20MHz)	6.5/7.2 (MCS0)	1.82	11.0	-9.18	Pass
	5720	144	n (20MHz)	6.5/7.2 (MCS0)	1.76	11.0	-9.24	Pass
	5510	102	n (40MHz)	13.5/15 (MCS0)	-1.51	11.0	-12.51	Pass
	5550	110	n (40MHz)	13.5/15 (MCS0)	-1.45	11.0	-12.45	Pass
	5710	142	n (40MHz)	13.5/15 (MCS0)	-2.03	11.0	-13.03	Pass
	5530	106	ac (80MHz)	29.3/32.5 (MCS0)	-4.35	11.0	-15.35	Pass
	5690	138	ac (80MHz)	29.3/32.5 (MCS0)	-5.55	11.0	-16.55	Pass

Table 6-17. Bands 1, 2A, 2C Conducted Power Spectral Density Measurements



Plot 6-77. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 36)

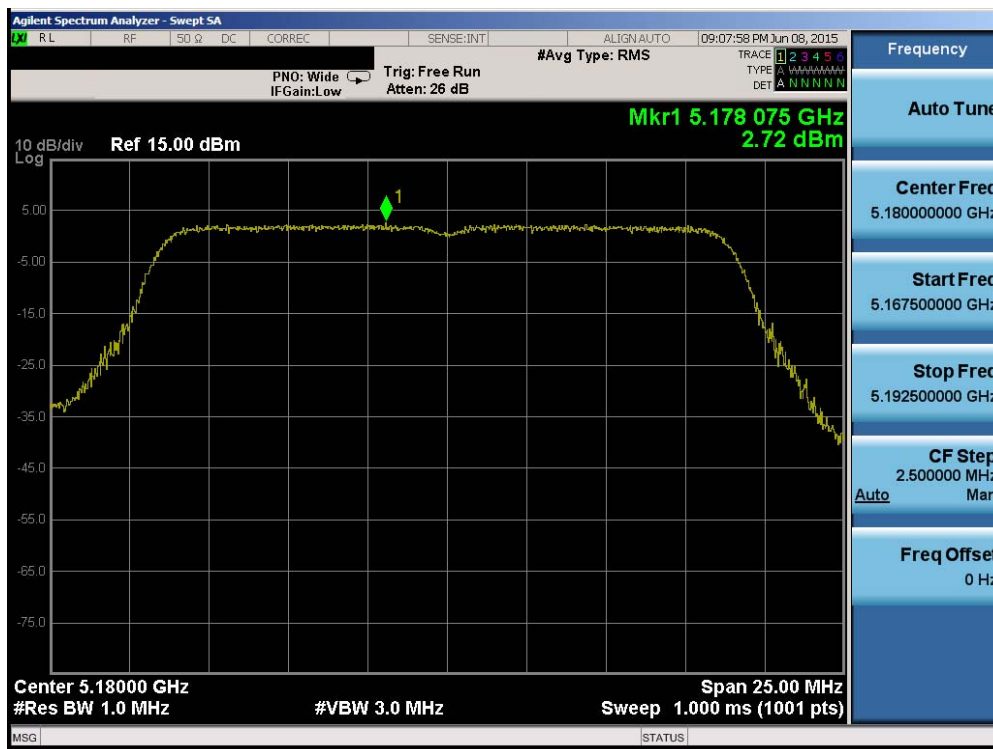


Plot 6-78. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 40)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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Plot 6-79. Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 48)



Plot 6-80. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 36)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 65 of 193

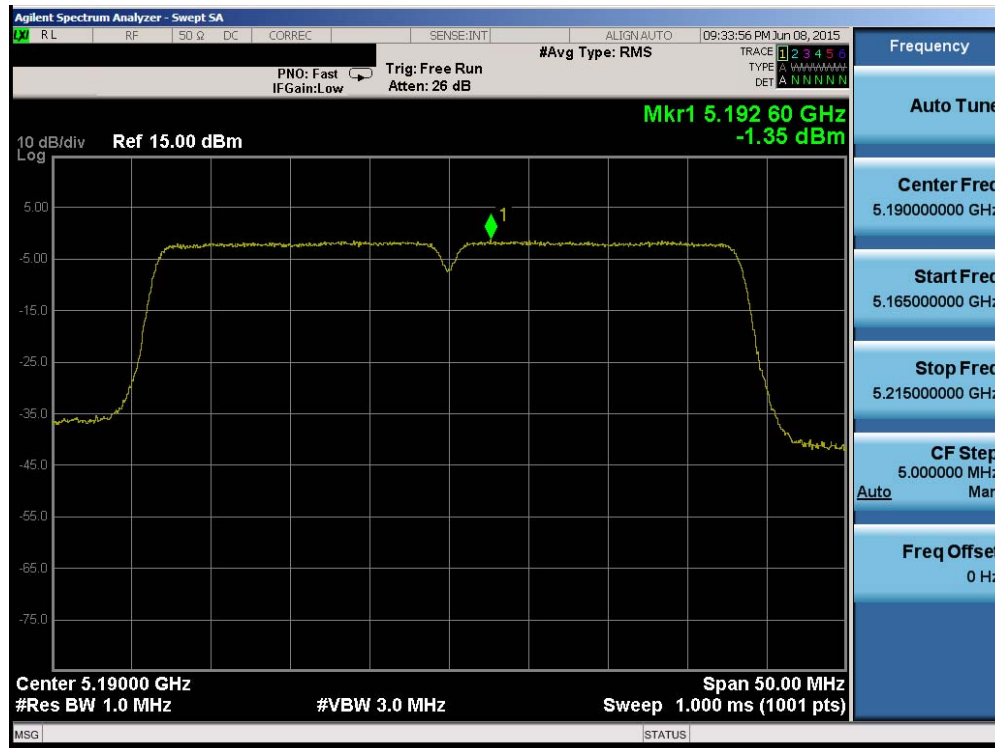


Plot 6-81. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 40)

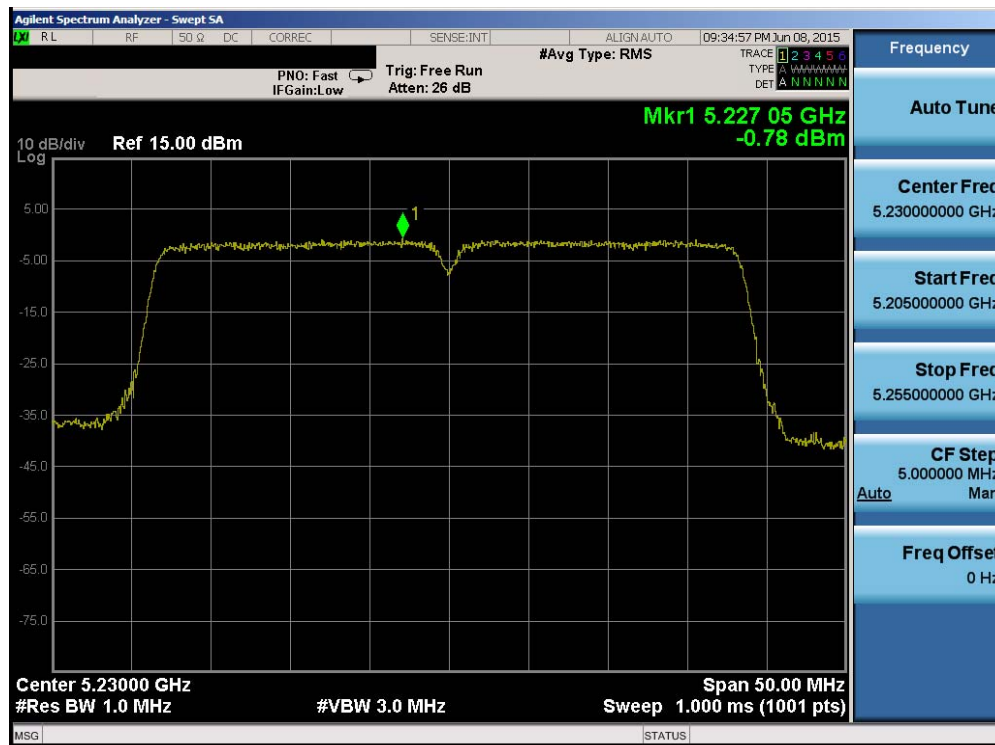


Plot 6-82. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 48)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 66 of 193

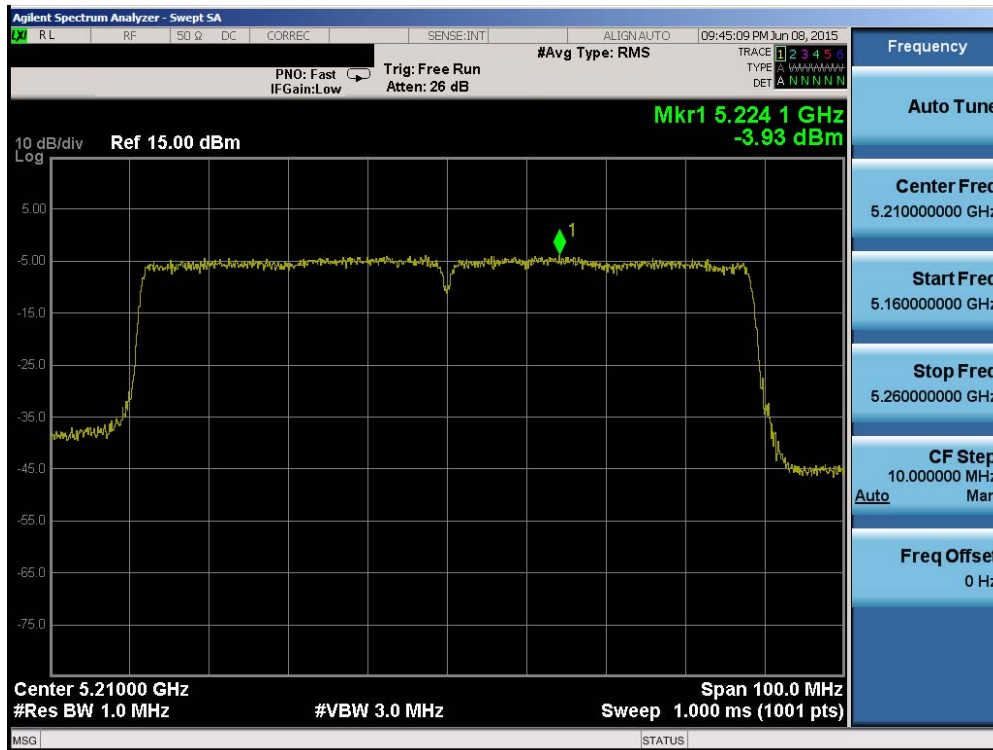


Plot 6-83. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 38)

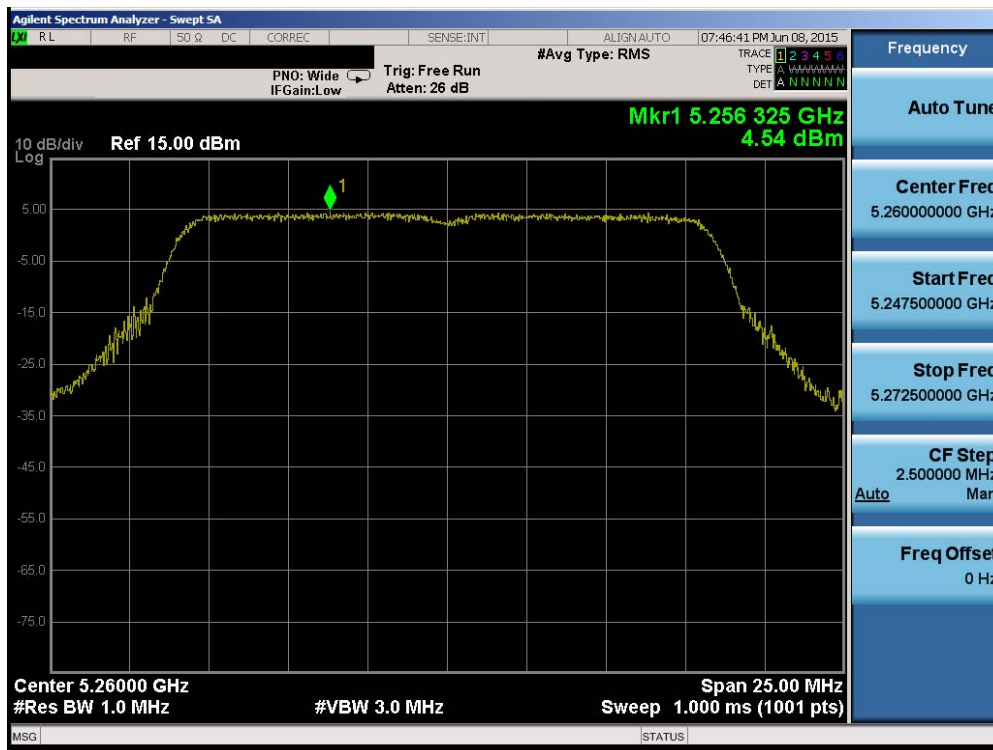


Plot 6-84. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 46)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 67 of 193



Plot 6-85. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 1) – Ch. 42)

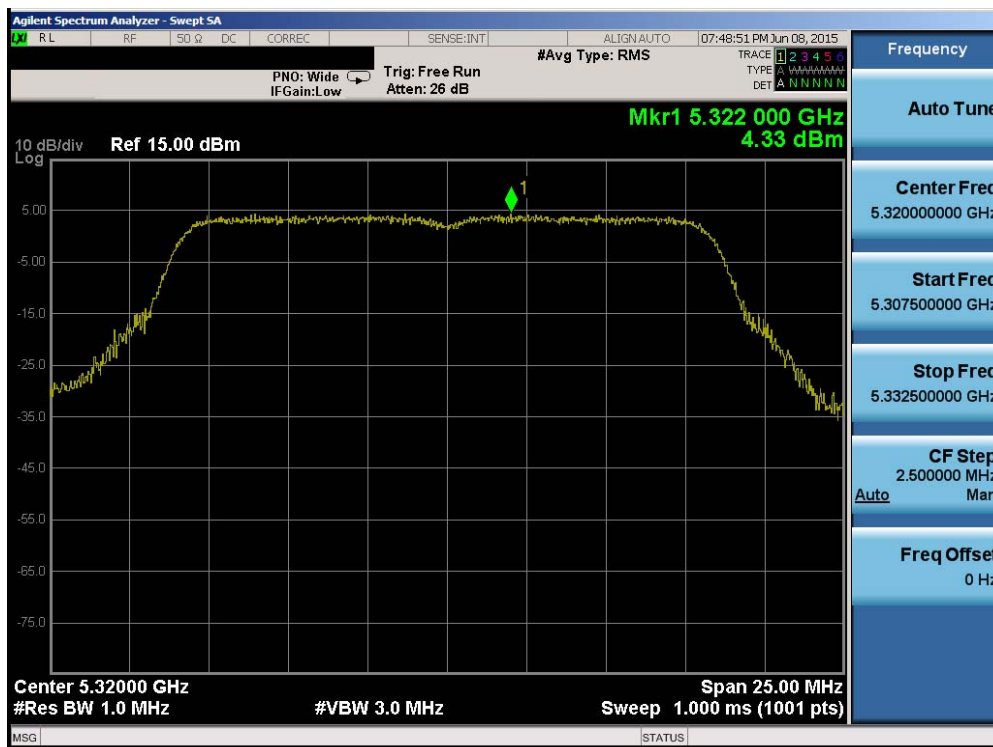


Plot 6-86. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 52)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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Plot 6-87. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 56)



Plot 6-88. Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 64)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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Plot 6-89. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 52)

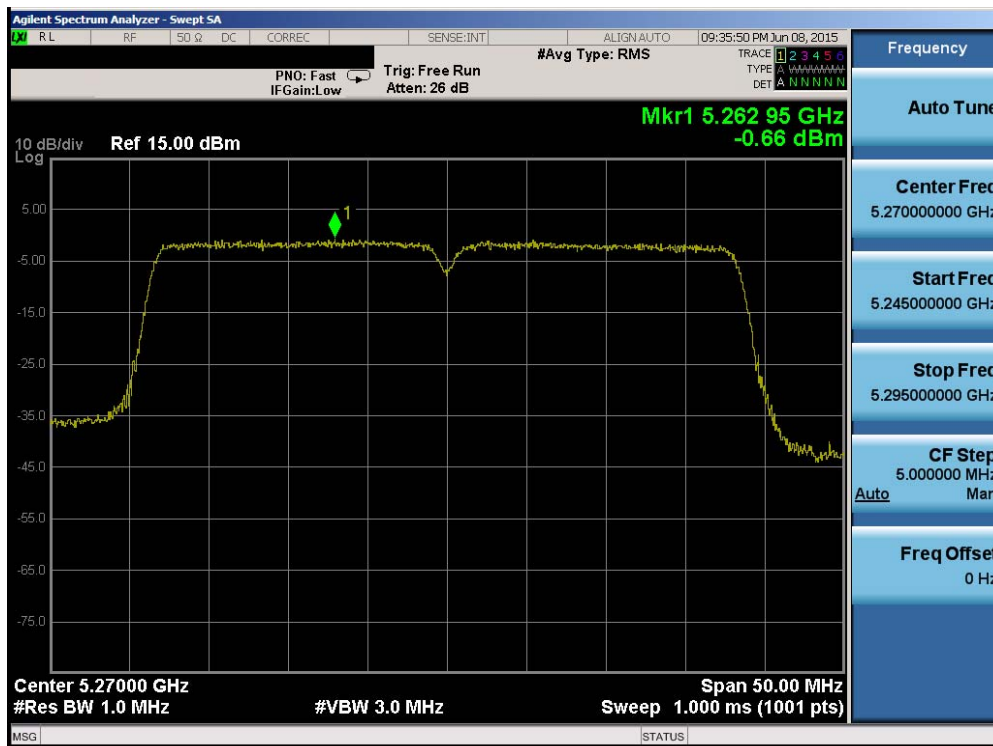


Plot 6-90. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 56)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 70 of 193

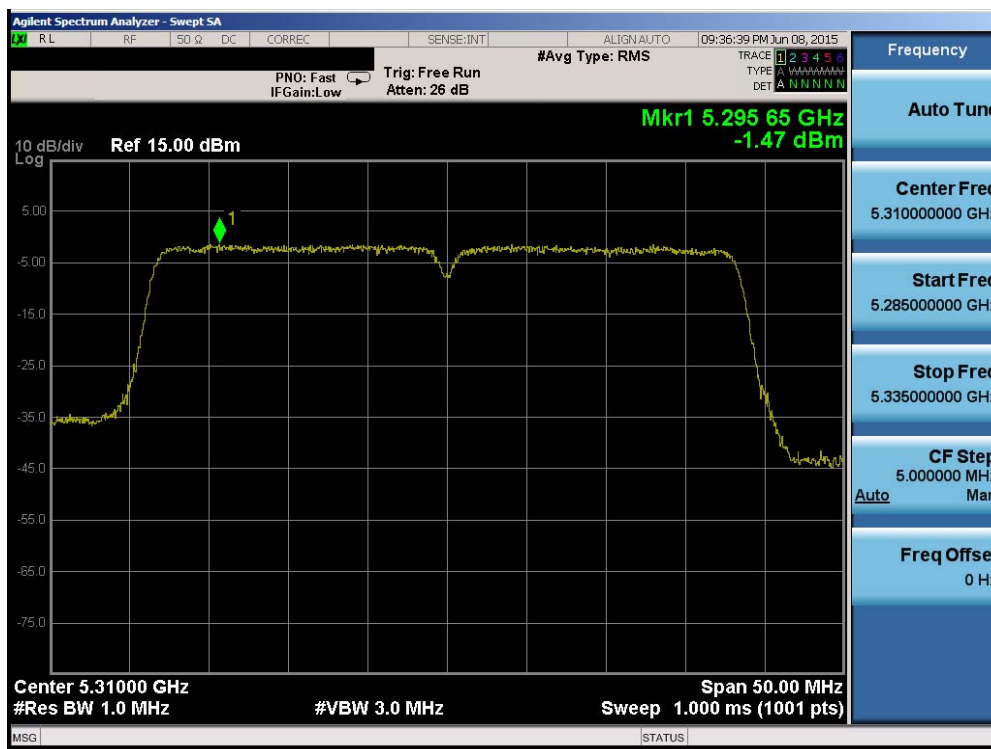


Plot 6-91. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 64)

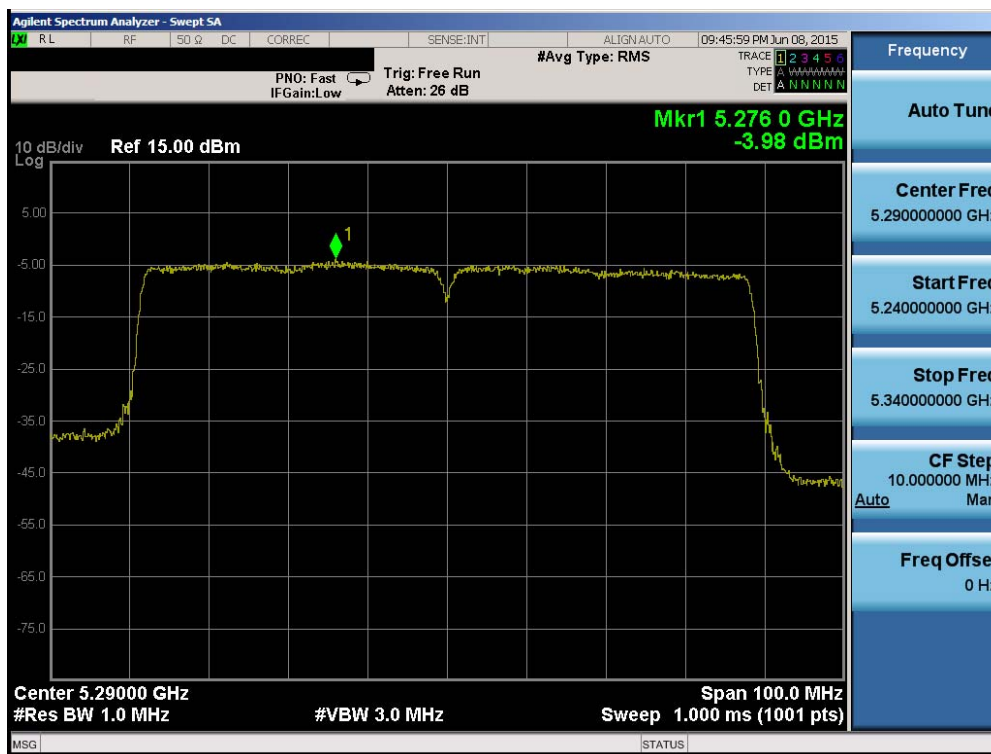


Plot 6-92. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2A) – Ch. 54)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 71 of 193



Plot 6-93. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2A) – Ch. 62)



Plot 6-94. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2A) – Ch. 58)

FCC ID: A3LSMN920R4	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1506101158.A3L-R1	Test Dates: 6/7 - 6/24/2015	EUT Type: Portable Handset		Page 72 of 193