

6.5 Peak Excursion Ratio – 802.11a/n

§15.407(a)(6)

The spectrum analyzer was connected to the antenna terminal while the EUT was operating in the continuous transmission mode at the appropriate center frequencies.

Method SA-1, as defined in KDB 789033 and with the settings described in Section 6.4 of this test report, was used to generate the average signal trace and the procedure outlined in section F) was used to generate the peak signal trace. A minimum of 100 trace averages were used for the average signal. The peak and average traces are then used to determine the peak excursion.

The largest permissible difference between the modulation envelope (measured using a peak hold function) and the maximum conducted output power is 13 dBm/MHz.

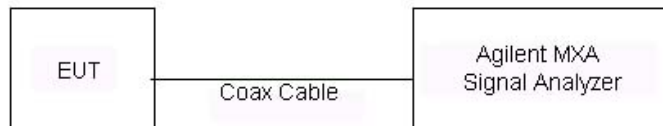


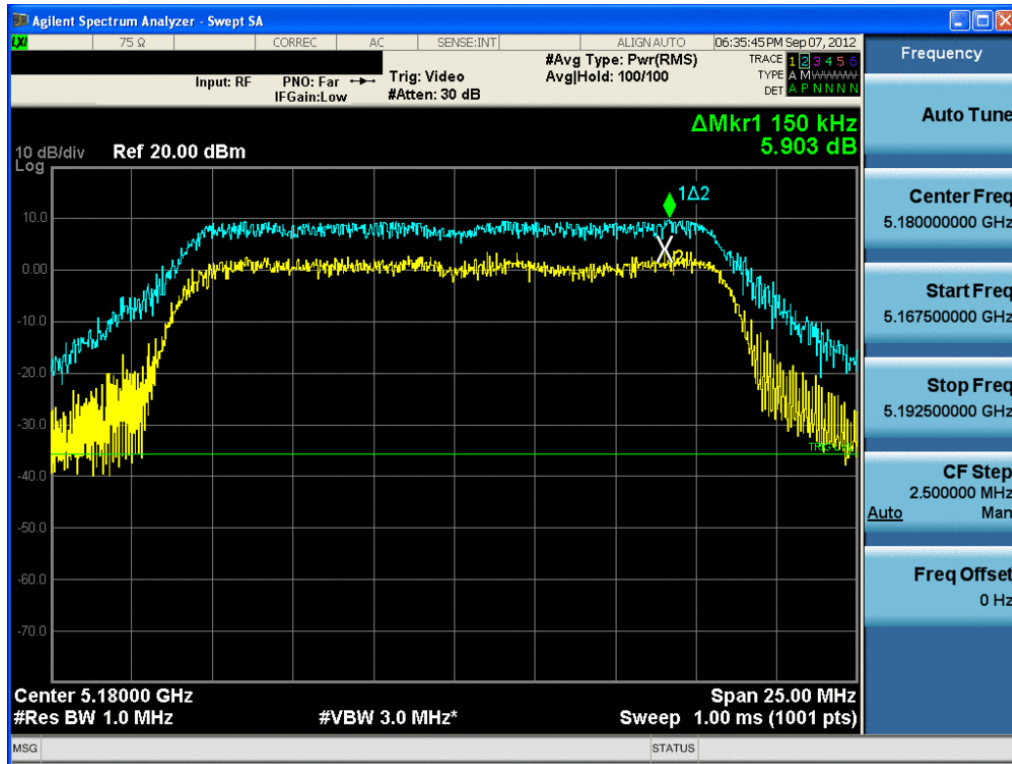
Figure 6-4. Test Instrument & Measurement Setup

FCC ID: A3LSHVE250S		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1208241221.A3L	Test Dates: September 1-18, 2012	EUT Type: Portable Handset		Page 42 of 84

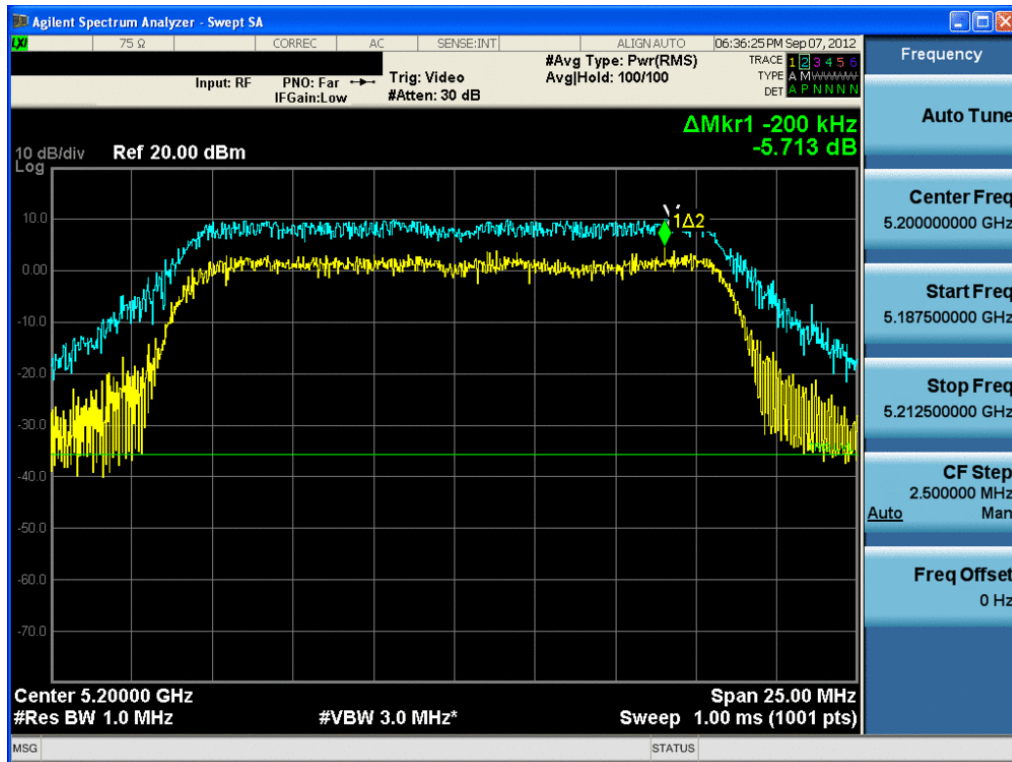
	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Peak Excursion Ratio [dBm]	Max Permissible Peak Excursion Ratio [dBm/MHz]	Margin [dB]
Band I	5180	36	a	6	5.90	13.0	-7.10
	5200	40	a	6	5.71	13.0	-7.29
	5240	48	a	6	5.70	13.0	-7.30
	5180	36	n (20MHz)	6.5/7.2 (MCS0)	5.28	13.0	-7.72
	5200	40	n (20MHz)	6.5/7.2 (MCS0)	4.36	13.0	-8.64
	5240	48	n (20MHz)	6.5/7.2 (MCS0)	7.77	13.0	-5.23
	5190	38	n (40MHz)	13.5/15 (MCS0)	8.20	13.0	-4.80
	5230	46	n (40MHz)	13.5/15 (MCS0)	8.30	13.0	-4.70
Band II	5260	52	a	6	5.44	13.0	-7.56
	5280	56	a	6	4.43	13.0	-8.57
	5320	64	a	6	6.17	13.0	-6.83
	5260	52	n (20MHz)	6.5/7.2 (MCS0)	5.40	13.0	-7.60
	5280	56	n (20MHz)	6.5/7.2 (MCS0)	5.30	13.0	-7.70
	5320	64	n (20MHz)	6.5/7.2 (MCS0)	5.45	13.0	-7.55
	5270	54	n (40MHz)	13.5/15 (MCS0)	8.14	13.0	-4.86
	5310	62	n (40MHz)	13.5/15 (MCS0)	7.81	13.0	-5.19
Band III	5500	100	a	6	5.93	13.0	-7.07
	5580	116	a	6	6.09	13.0	-6.91
	5700	140	a	6	7.15	13.0	-5.85
	5500	100	n (20MHz)	6.5/7.2 (MCS0)	5.10	13.0	-7.90
	5580	116	n (20MHz)	6.5/7.2 (MCS0)	8.11	13.0	-4.89
	5700	140	n (20MHz)	6.5/7.2 (MCS0)	5.65	13.0	-7.36
	5510	102	n (40MHz)	13.5/15 (MCS0)	7.56	13.0	-5.44
	5550	110	n (40MHz)	13.5/15 (MCS0)	7.86	13.0	-5.14
	5670	134	n (40MHz)	13.5/15 (MCS0)	7.26	13.0	-5.74

Table 6-7. Conducted Peak Excursion Ratio Measurements

FCC ID: A3LSHVE250S		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)				Reviewed by: Quality Manager
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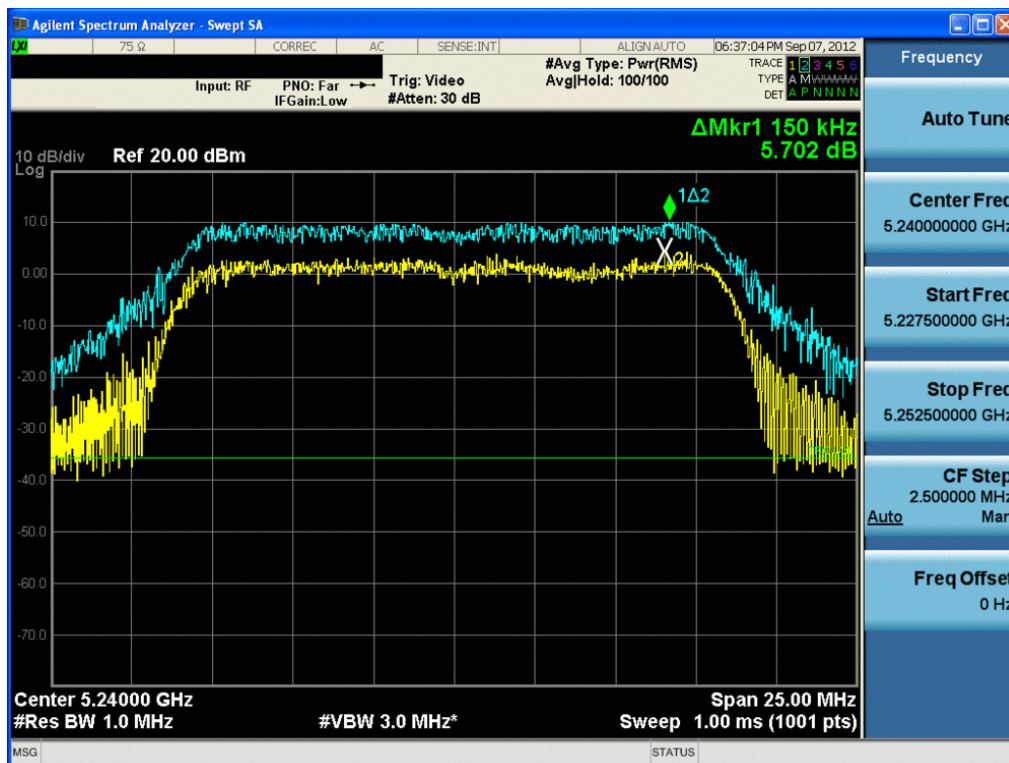


Plot 6-51. Peak Excursion Ratio Plot (802.11a (UNII Band 1) – Ch. 36)

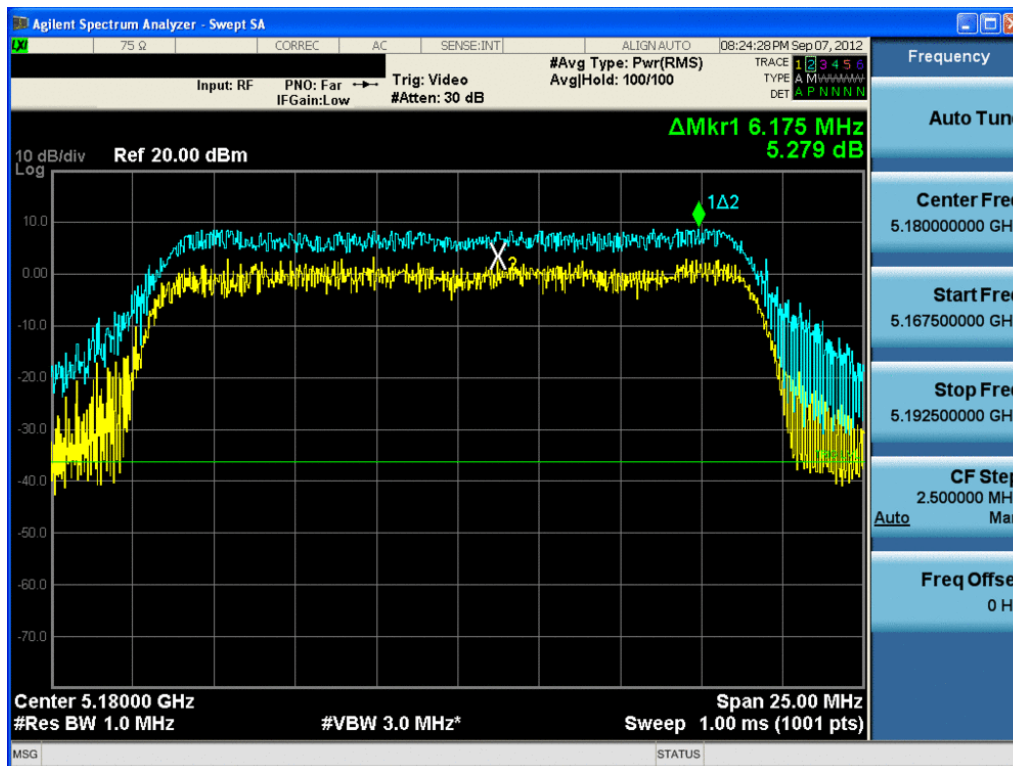


Plot 6-52. Peak Excursion Ratio Plot (802.11a (UNII Band 1) – Ch. 40)

FCC ID: A3LSHVE250S	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1208241221.A3L	Test Dates: September 1-18, 2012	EUT Type: Portable Handset		Page 44 of 84

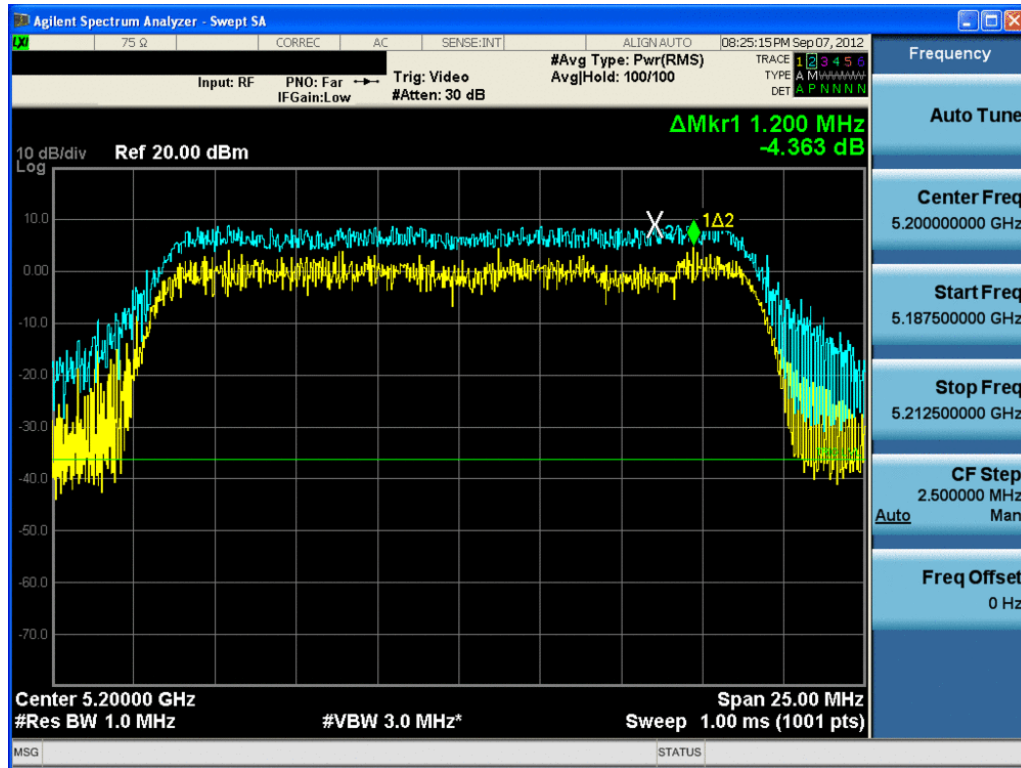


Plot 6-53. Peak Excursion Ratio Plot (802.11a (UNII Band 1) – Ch. 48)

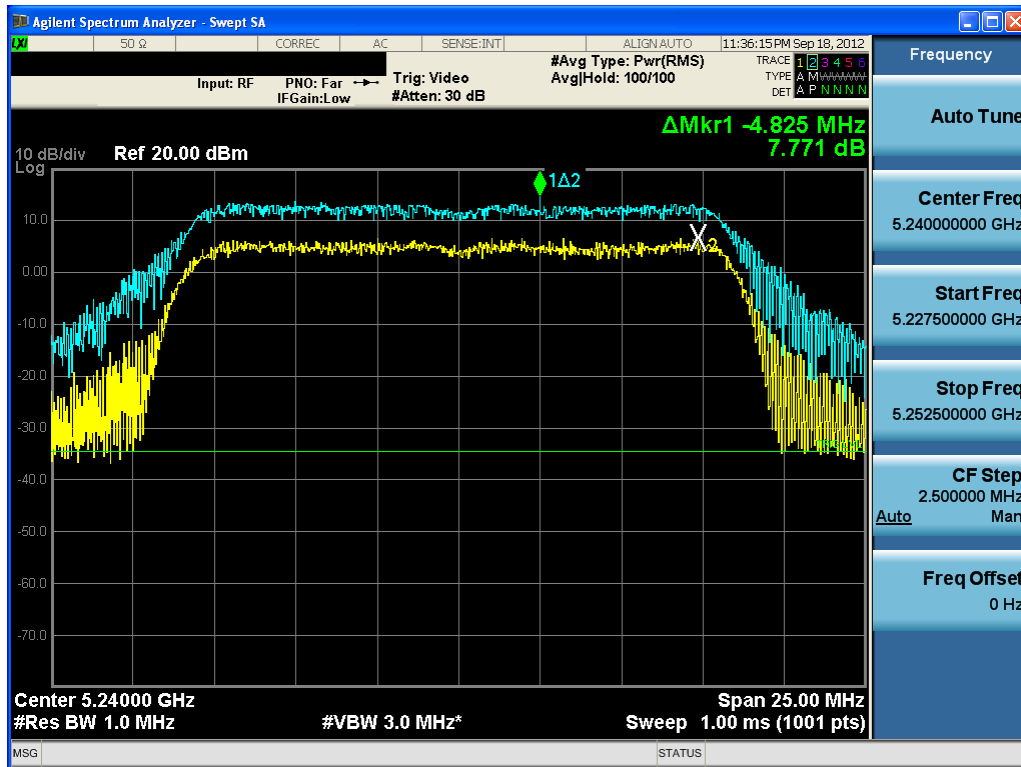


Plot 6-54. Peak Excursion Ratio Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 36)

FCC ID: A3LSHVE250S	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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Plot 6-55. Peak Excursion Ratio Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 40)



Plot 6-56. Peak Excursion Ratio Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 48)

FCC ID: A3LSHVE250S	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1208241221.A3L	Test Dates: September 1-18, 2012	EUT Type: Portable Handset		Page 46 of 84

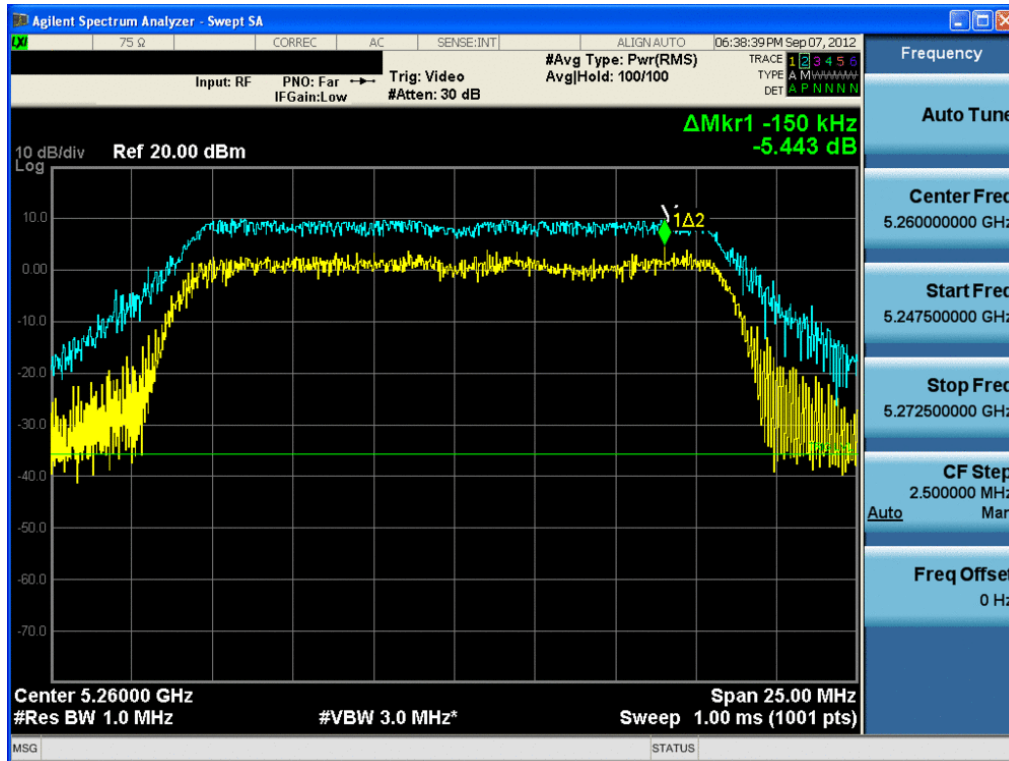


Plot 6-57. Peak Excursion Ratio Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 38)

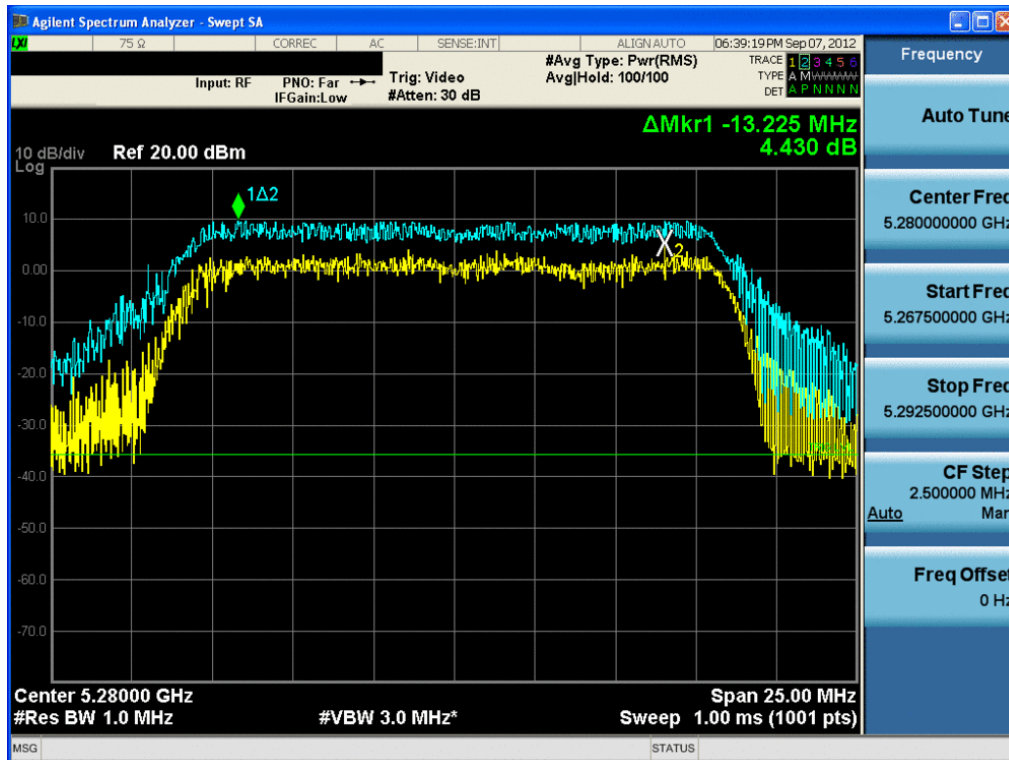


Plot 6-58. Peak Excursion Ratio Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 46)

FCC ID: A3LSHVE250S	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1208241221.A3L	Test Dates: September 1-18, 2012	EUT Type: Portable Handset		Page 47 of 84

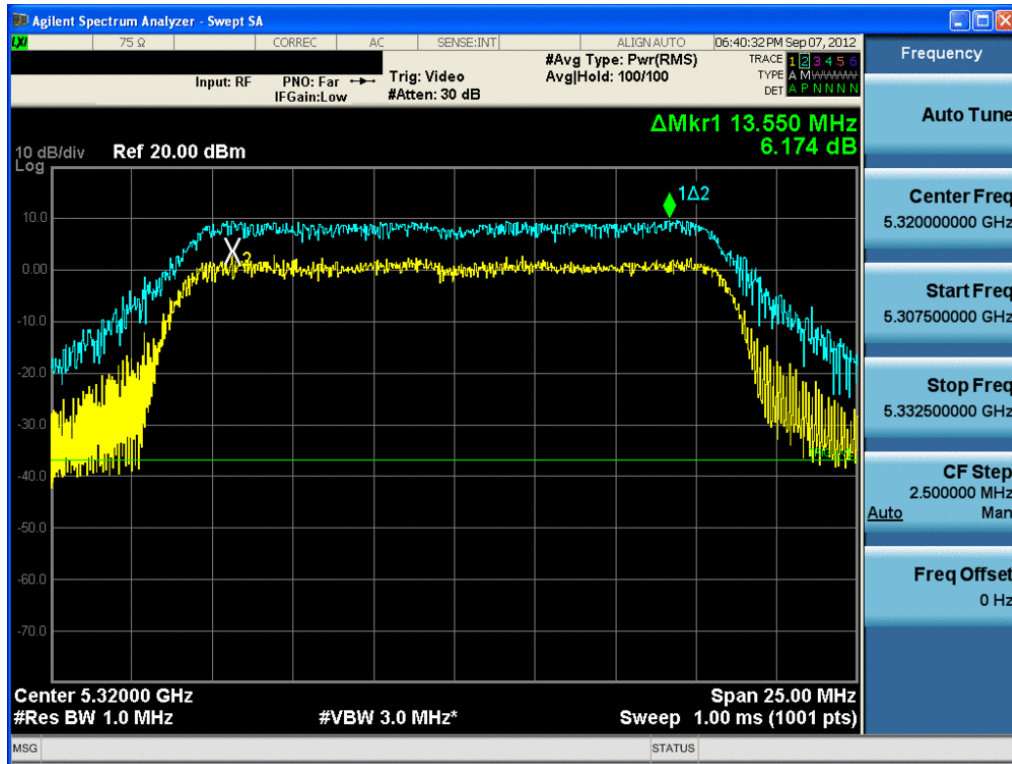


Plot 6-59. Peak Excursion Ratio Plot (802.11a (UNII Band 2) – Ch. 52)

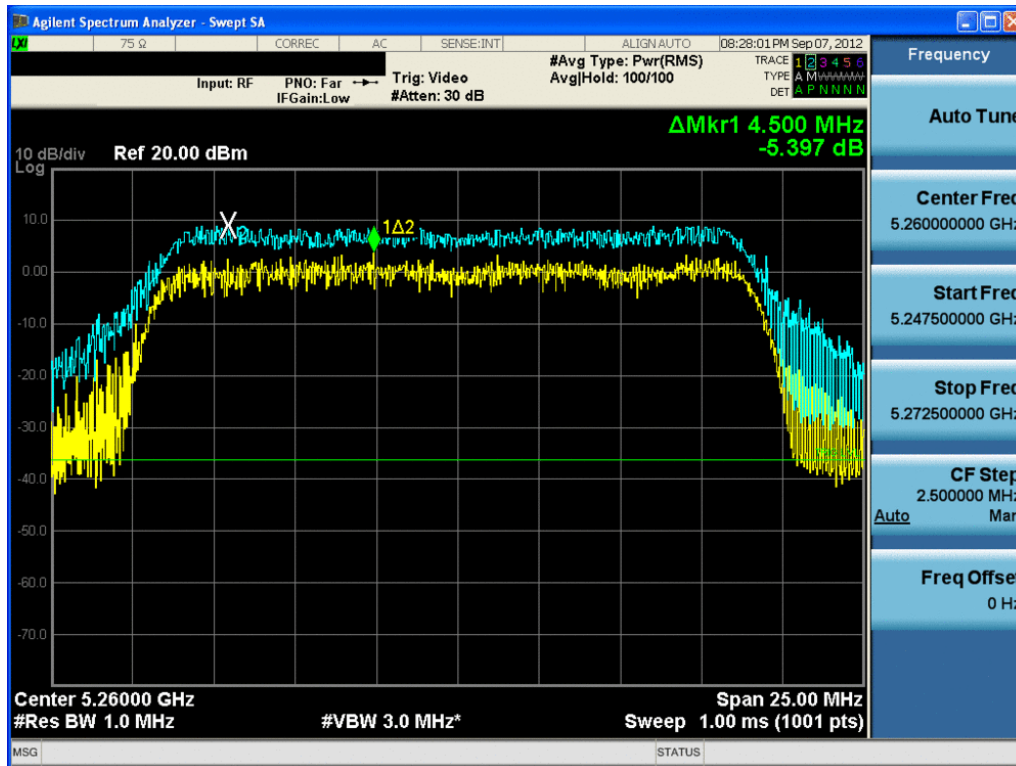


Plot 6-60. Peak Excursion Ratio Plot (802.11a (UNII Band 2) – Ch. 56)

FCC ID: A3LSHVE250S	 FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
Test Report S/N: 0Y1208241221.A3L	Test Dates: September 1-18, 2012	EUT Type: Portable Handset	Page 48 of 84

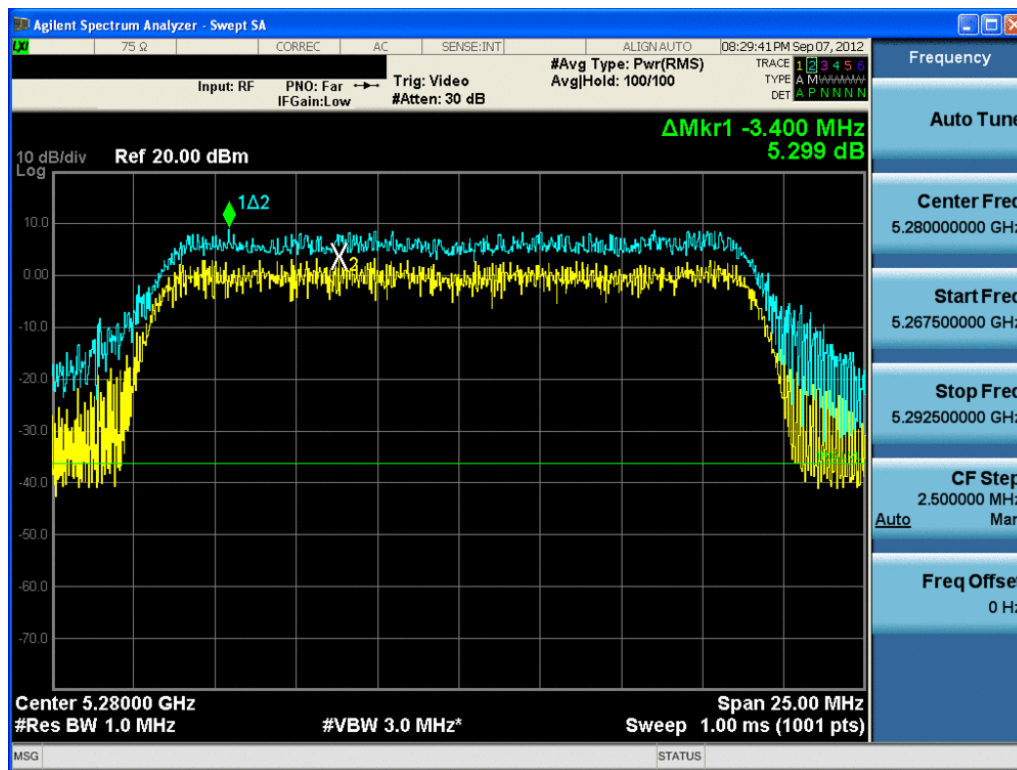


Plot 6-61. Peak Excursion Ratio Plot (802.11a (UNII Band 2) – Ch. 64)

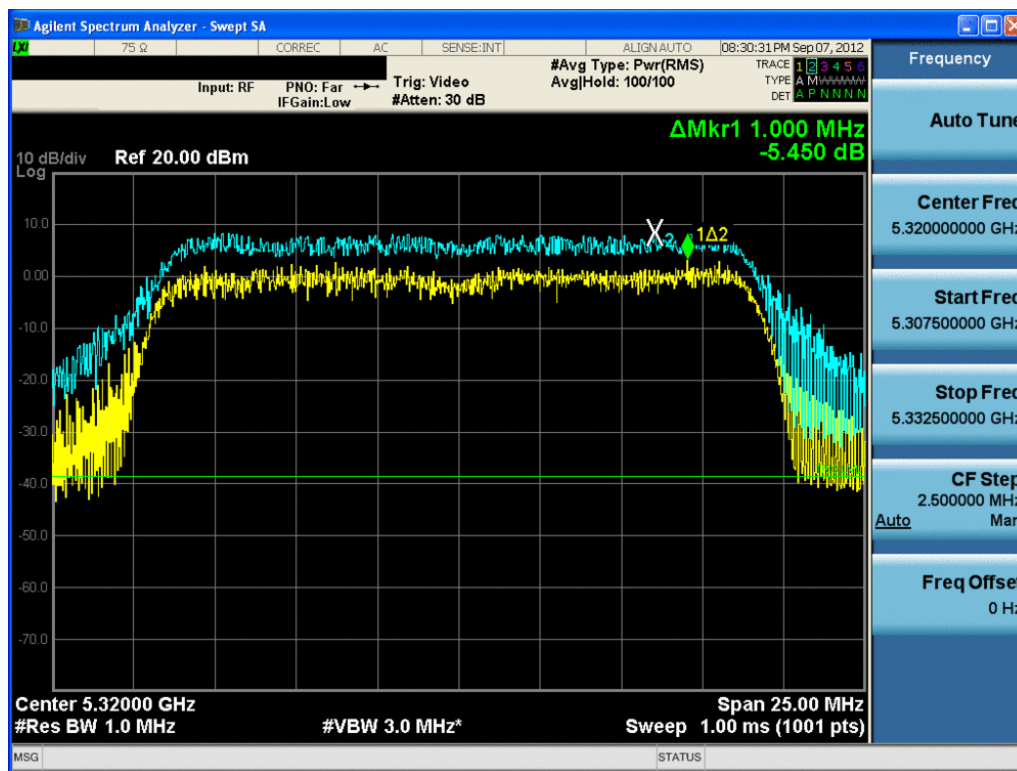


Plot 6-62. Peak Excursion Ratio Plot (20MHz BW 802.11n (UNII Band 2) – Ch. 52)

FCC ID: A3LSHVE250S	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1208241221.A3L	Test Dates: September 1-18, 2012	EUT Type: Portable Handset		Page 49 of 84

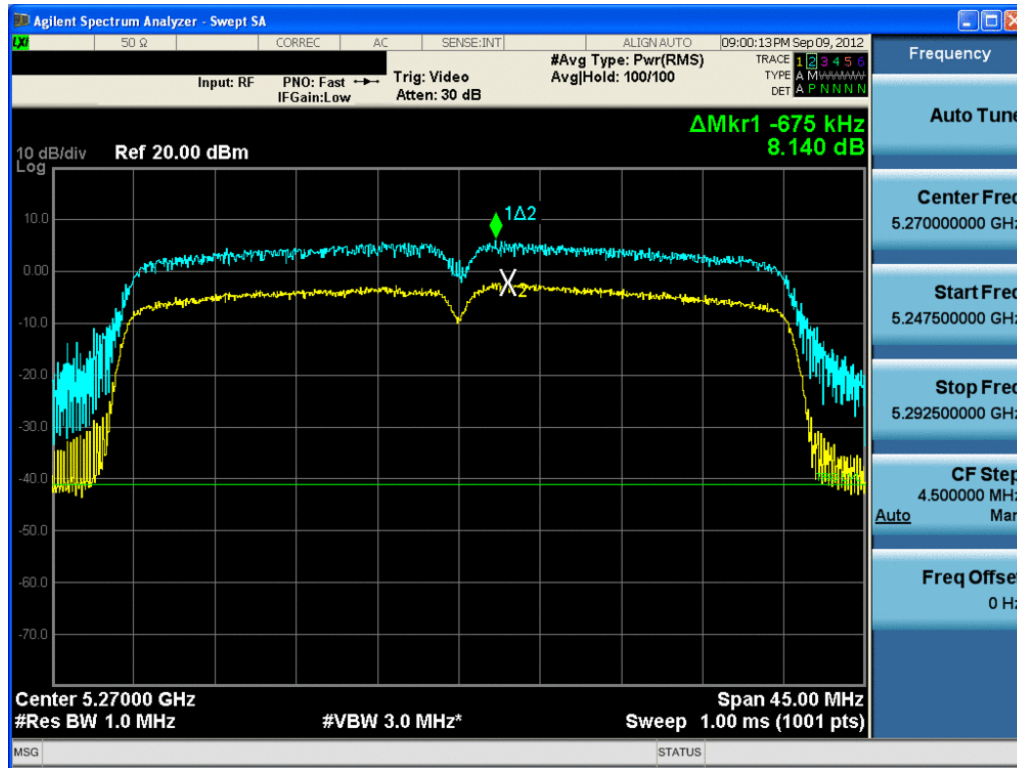


Plot 6-63. Peak Excursion Ratio Plot (20MHz BW 802.11n (UNII Band 2) – Ch. 56)

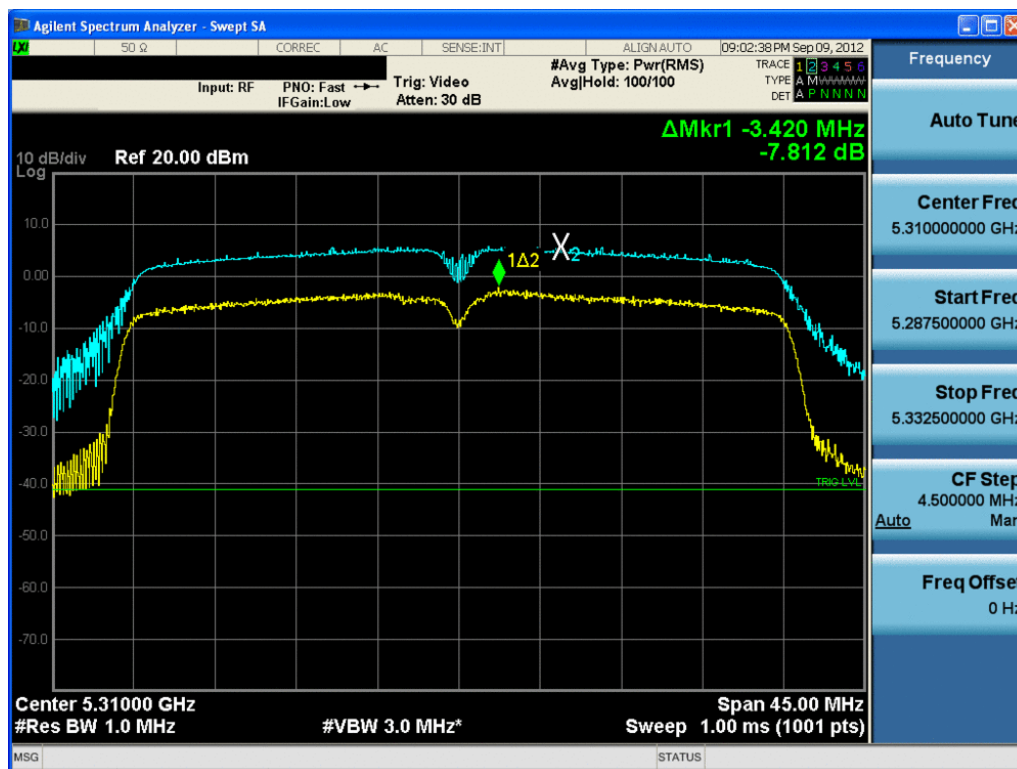


Plot 6-64. Peak Excursion Ratio Plot (20MHz BW 802.11a/n (UNII Band 2) – Ch. 64)

FCC ID: A3LSHVE250S	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1208241221.A3L	Test Dates: September 1-18, 2012	EUT Type: Portable Handset		Page 50 of 84

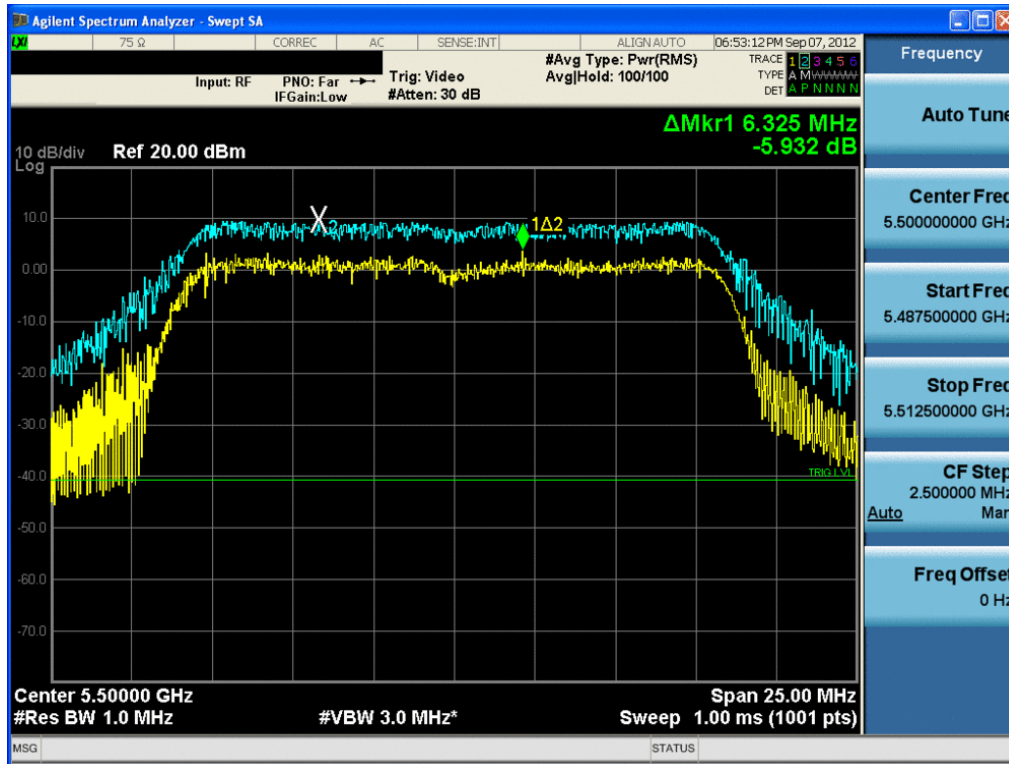


Plot 6-65. Peak Excursion Ratio Plot (40MHz BW 802.11n (UNII Band 2) – Ch. 54)

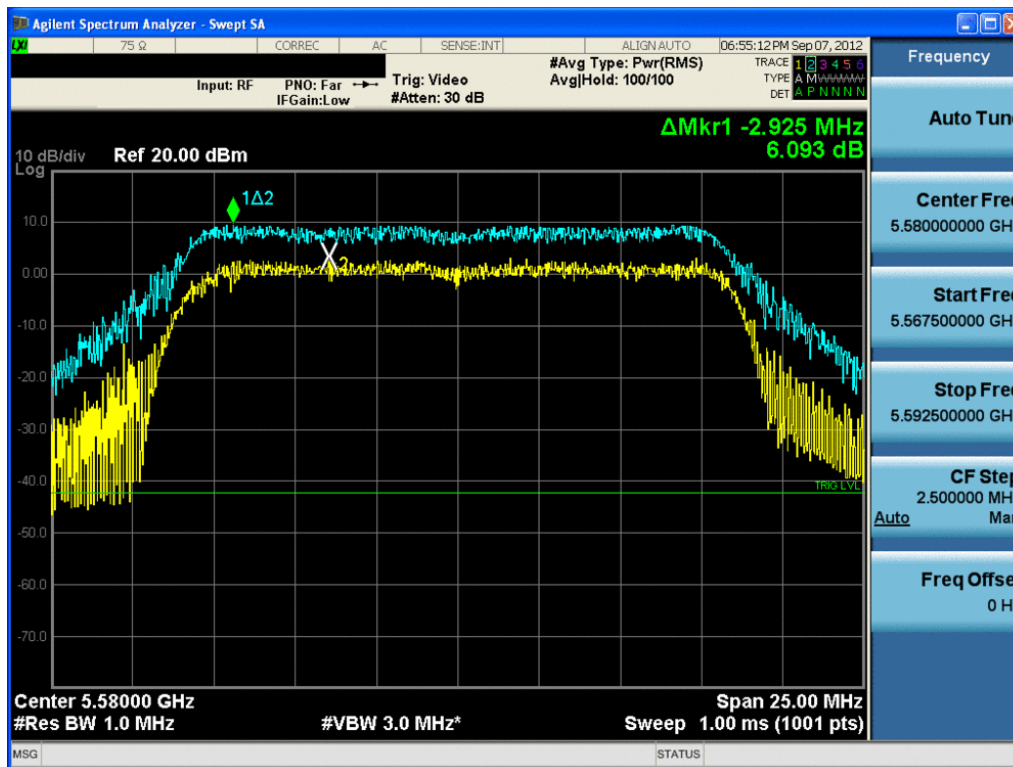


Plot 6-66. Peak Excursion Ratio Plot (40MHz BW 802.11n (UNII Band 2) – Ch. 62)

FCC ID: A3LSHVE250S	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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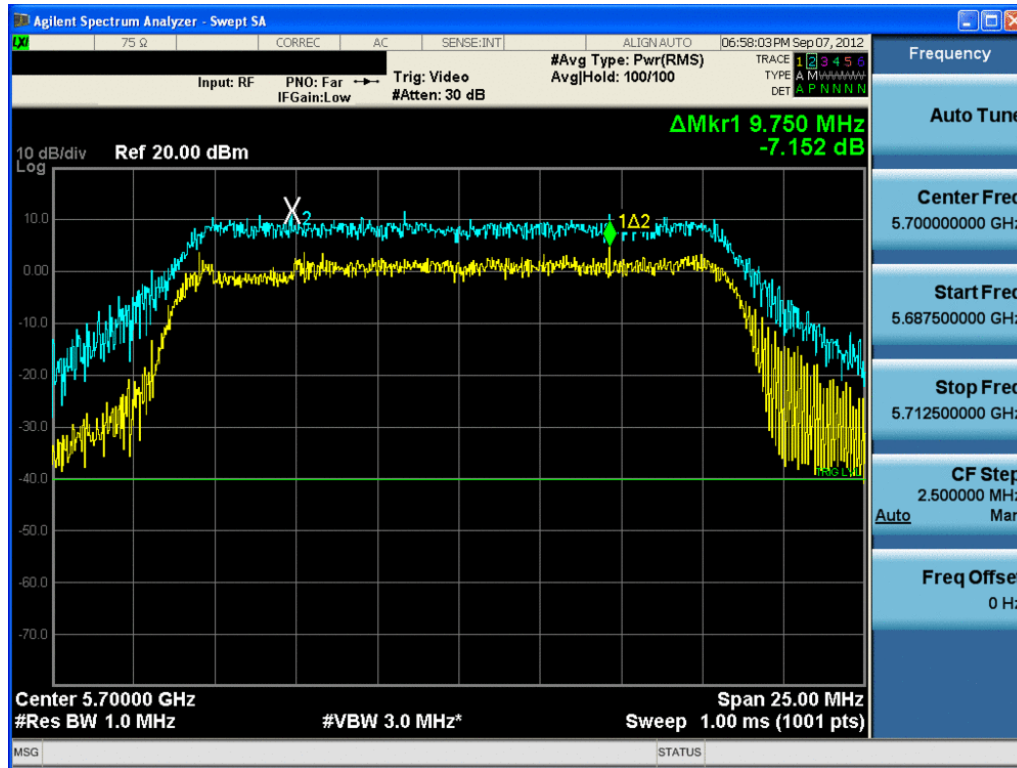


Plot 6-67. Peak Excursion Ratio Plot (802.11a (UNII Band 3) – Ch. 100)

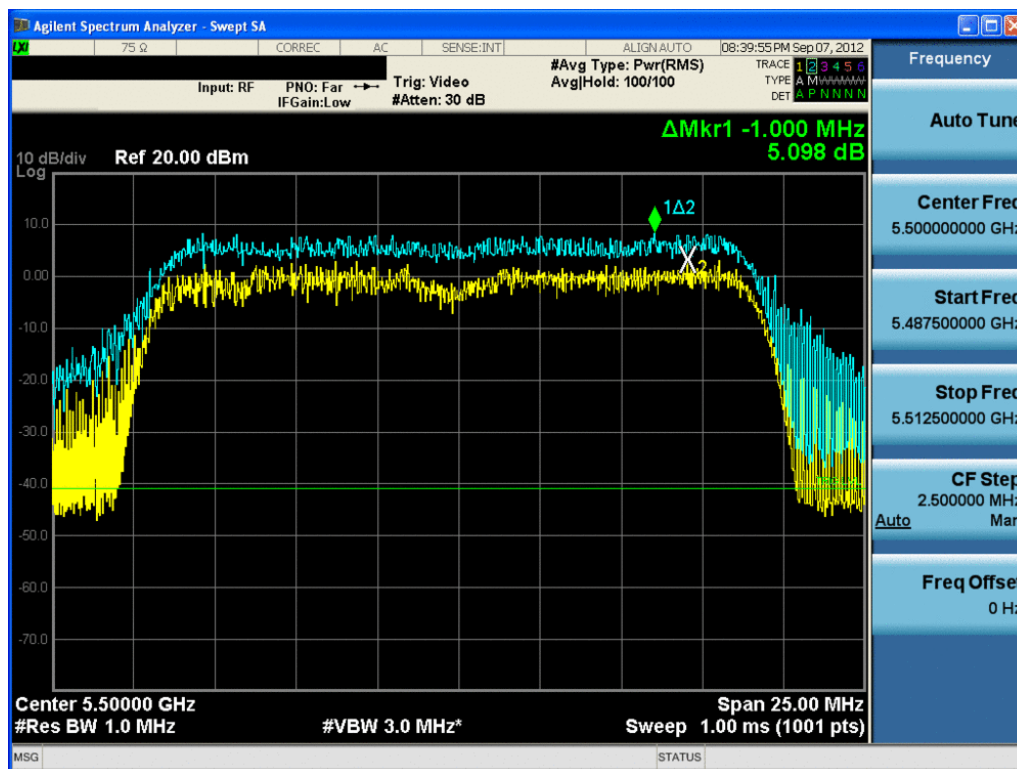


Plot 6-68. Peak Excursion Ratio Plot (802.11a (UNII Band 3) – Ch. 116)

FCC ID: A3LSHVE250S	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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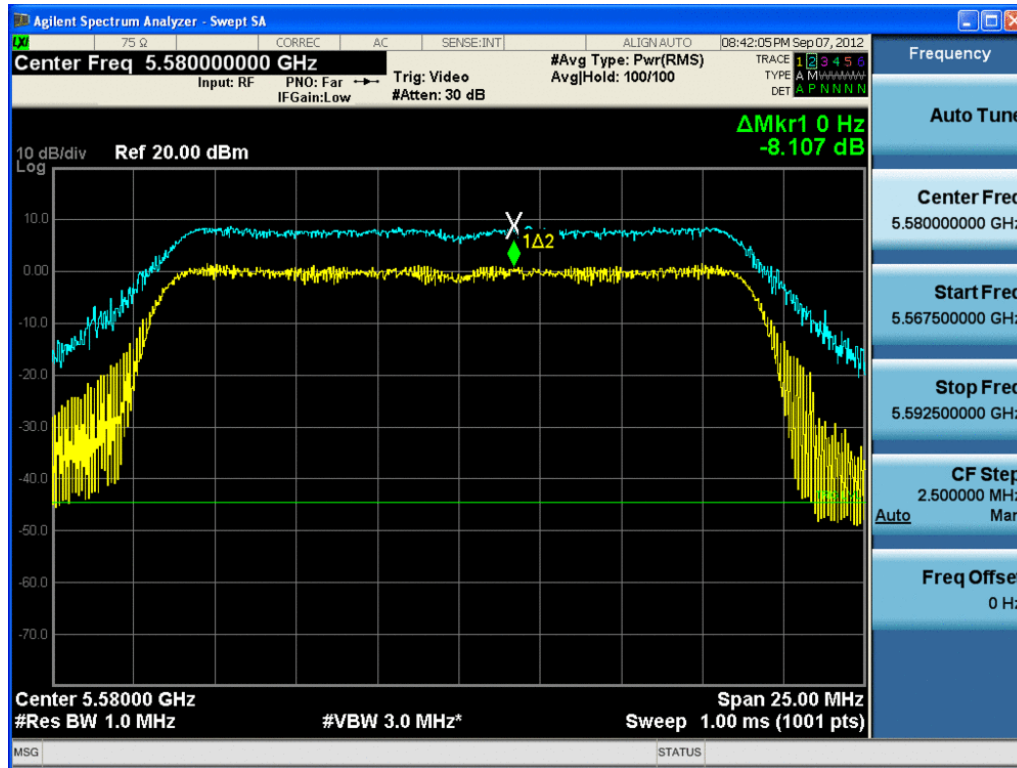


Plot 6-69. Peak Excursion Ratio Plot (802.11a (UNII Band 3) – Ch. 140)

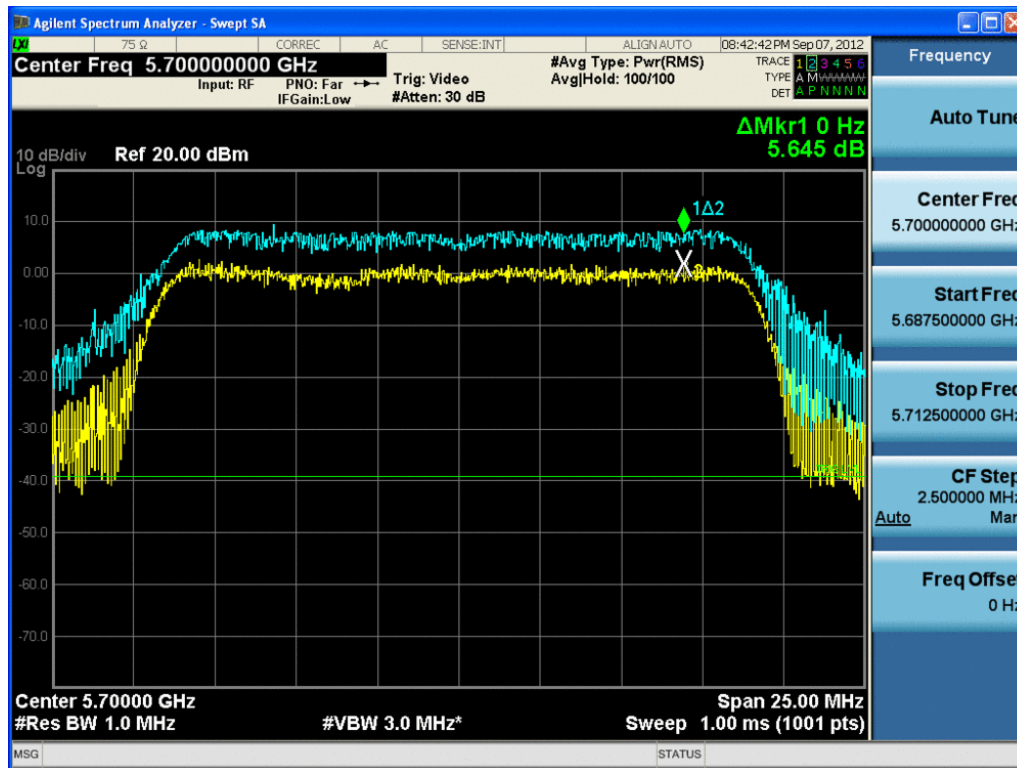


Plot 6-70. Peak Excursion Ratio Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 100)

FCC ID: A3LSHVE250S	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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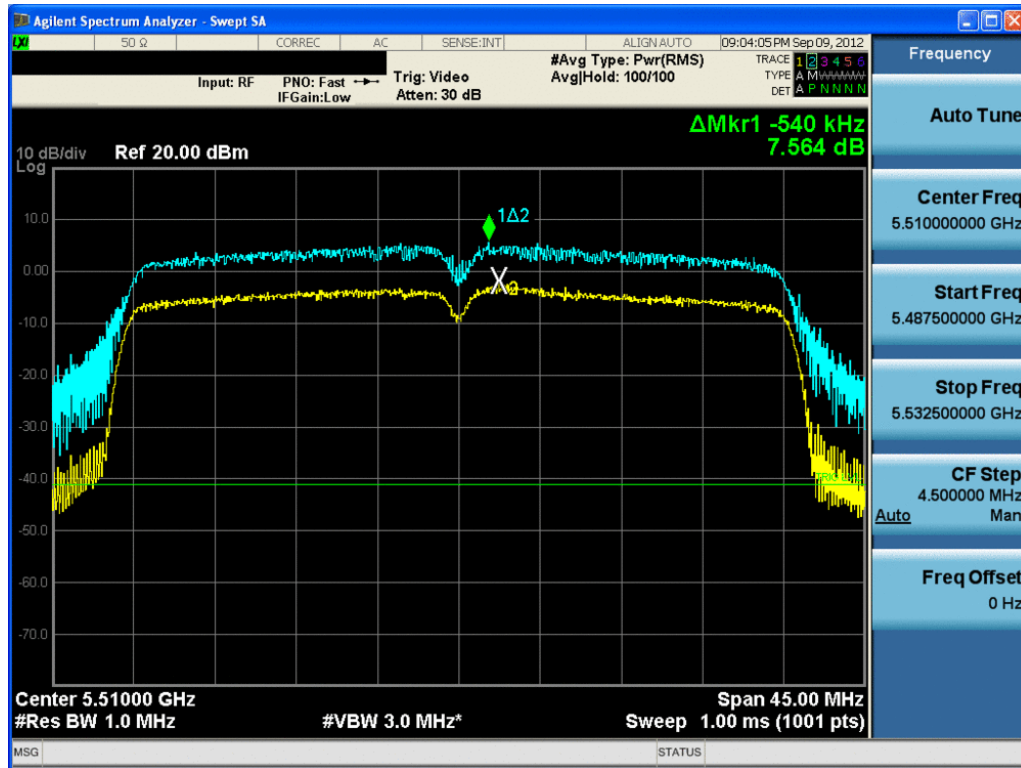


Plot 6-71. Peak Excursion Ratio Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 116)

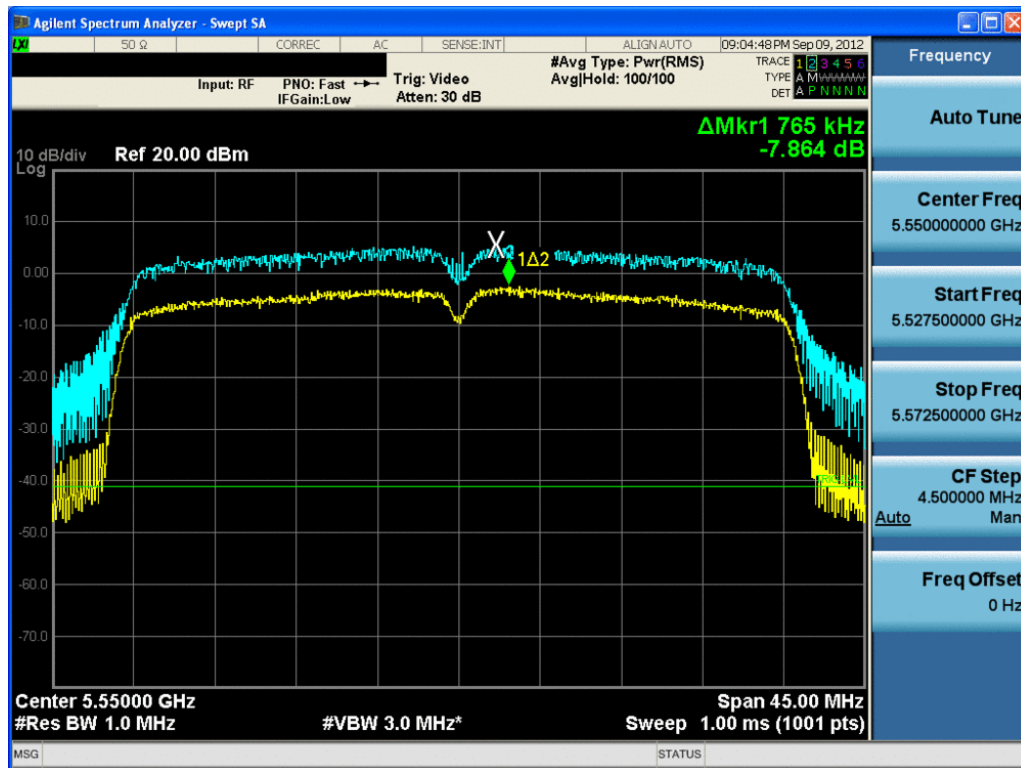


Plot 6-72. Peak Excursion Ratio Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 140)

FCC ID: A3LSHVE250S	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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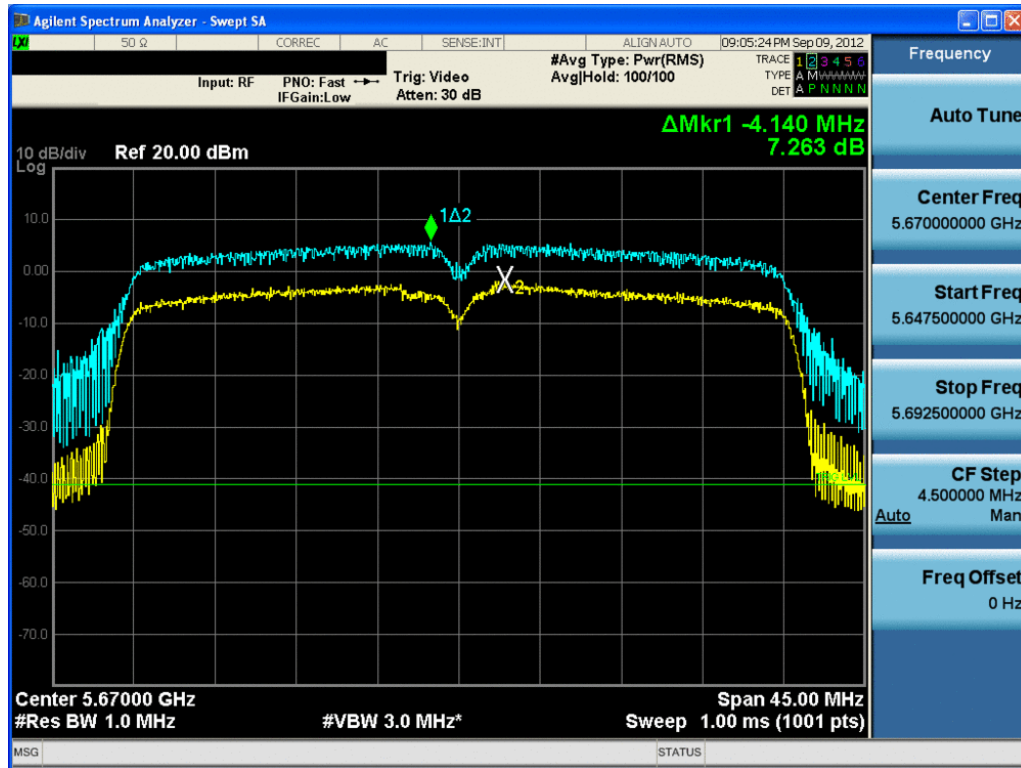


Plot 6-73. Peak Excursion Ratio Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 102)



Plot 6-74. Peak Excursion Ratio Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 110)

FCC ID: A3LSHVE250S	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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Plot 6-75. Peak Excursion Ratio Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 134)

FCC ID: A3LSHVE250S	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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6.6 Frequency Stability

§15.407(g)

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -30°C and +50°C. The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

OPERATING FREQUENCY: 5,180,000,000 Hz
 CHANNEL: 36
 REFERENCE VOLTAGE: 3.7 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.70	+ 20 (Ref)	5,179,999,998	-2	-0.0000000423
100 %		- 30	5,179,999,983	-17	-0.0000003340
100 %		- 20	5,179,999,988	-12	-0.0000002371
100 %		- 10	5,179,999,985	-15	-0.0000002920
100 %		0	5,179,999,981	-19	-0.0000003710
100 %		+ 10	5,179,999,994	-6	-0.0000001137
100 %		+ 20	5,179,999,996	-4	-0.0000000785
100 %		+ 30	5,180,000,000	0	-0.0000000018
100 %		+ 40	5,179,999,987	-13	-0.0000002494
100 %		+ 50	5,179,999,998	-2	-0.0000000387
115 %	4.26	+ 20	5,179,999,990	-10	-0.0000001890
BATT. ENDPOINT	3.40	+ 20	5,179,999,986	-14	-0.0000002618

Table 6-8. Frequency Stability Measurements for UNII Band 1 (Ch. 36)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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Frequency Stability (Cont'd)

§15.407(g)

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -30°C and +50°C. The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

OPERATING FREQUENCY: 5,260,000,000 Hz
 CHANNEL: 52
 REFERENCE VOLTAGE: 3.7 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.70	+ 20 (Ref)	5,259,999,986	-14	-0.0000002710
100 %		- 30	5,259,999,996	-4	-0.0000000801
100 %		- 20	5,259,999,990	-10	-0.0000001891
100 %		- 10	5,259,999,994	-6	-0.0000001117
100 %		0	5,259,999,997	-3	-0.0000000488
100 %		+ 10	5,260,000,000	0	-0.0000000092
100 %		+ 20	5,259,999,981	-19	-0.0000003540
100 %		+ 30	5,259,999,990	-10	-0.0000001948
100 %		+ 40	5,259,999,999	-1	-0.0000000212
100 %		+ 50	5,259,999,991	-9	-0.0000001643
115 %	4.26	+ 20	5,259,999,992	-8	-0.0000001523
BATT. ENDPOINT	3.40	+ 20	5,259,999,989	-11	-0.0000002084

Table 6-9. Frequency Stability Measurements for UNII Band 2 (Ch. 52)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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Frequency Stability (Cont'd)

§15.407(g)

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -30°C and +50°C. The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

OPERATING FREQUENCY: 5,500,000,000 Hz
 CHANNEL: 100
 REFERENCE VOLTAGE: 3.7 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.70	+ 20 (Ref)	5,499,999,998	-2	-0.0000000337
100 %		- 30	5,499,999,994	-6	-0.0000001044
100 %		- 20	5,499,999,996	-4	-0.0000000816
100 %		- 10	5,499,999,993	-7	-0.0000001311
100 %		0	5,499,999,982	-18	-0.0000003235
100 %		+ 10	5,499,999,987	-13	-0.0000002287
100 %		+ 20	5,499,999,982	-18	-0.0000003253
100 %		+ 30	5,499,999,995	-5	-0.0000000868
100 %		+ 40	5,499,999,983	-17	-0.0000003171
100 %		+ 50	5,499,999,994	-6	-0.0000001171
115 %	4.26	+ 20	5,499,999,982	-18	-0.0000003315
BATT. ENDPOINT	3.40	+ 20	5,499,999,992	-8	-0.0000001485

Table 6-10. Frequency Stability Measurements for UNII Band 3 (Ch. 100)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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6.7 Radiated Spurious Emission Measurements

§15.407(b)(1), (6), §15.205, §15.209; RSS-210 [A9.2]

The EUT was tested from 9kHz and up to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. Above 1 GHz, peak measurements were taken using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033 and linearly polarized horn antennas. All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table 6-11 per Section 15.209.

All data rates and modes were investigated for radiated spurious emissions. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section. All measurements shown in this section were obtained using traditional radiated test methods as defined in C63.10-2009. The optional test procedures for antenna port conducted measurements of unwanted emissions per the guidance of KDB 789033 were not used to evaluate this device.

Frequency	Field Strength [μV/m]	Measured Distance [Meters]
0.009 – 0.490 MHz	2400/F (kHz)	300
0.490 – 1.705 MHz	24000/F (kHz)	30
1.705 – 30.00 MHz	30	30
30.00 – 88.00 MHz	100	3
88.00 – 216.0 MHz	150	3
216.0 – 960.0 MHz	200	3
Above 960.0 MHz	500	3

Table 6-11. Radiated Limits

Sample Calculation

- o Field Strength Level [dBμV/m] = Analyzer Level [dBm] + 107 + AFCL [dB/m]
- o AFCL [dB/m] = Antenna Factor [dB/m] + Cable Loss [dB]
- o Margin [dB] = Field Strength Level [dBμV/m] – Limit [dBμV/m]

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Radiated Spurious Emission Measurements (Cont'd)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5180MHz

Channel: 36

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10360.00	-96.62	Peak	H	55.24	-9.54	56.08	68.20	-12.12
* 15540.00	-135.00	Average	H	58.29	0.00	30.29	53.98	-23.69
* 15540.00	-125.00	Peak	H	58.29	0.00	40.29	73.98	-33.69
* 20720.00	-135.00	Average	H	65.96	0.00	37.96	53.98	-16.02
* 20720.00	-125.00	Peak	H	65.96	0.00	47.96	73.98	-26.02
25900.00	-125.00	Peak	H	71.94	0.00	53.94	68.20	-14.26

Table 6-12. Radiated Measurements @ 1 meter

NOTES:

- All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
- All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-11.
- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the second harmonic for this device.
- Levels at -135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μV/m (54dBμV/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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Radiated Spurious Emission Measurements (Cont'd)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5200MHz

Channel: 40

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10400.00	-96.67	Peak	H	55.52	-9.54	56.31	68.20	-11.89
* 15600.00	-135.00	Average	H	58.17	0.00	30.17	53.98	-23.81
* 15600.00	-125.00	Peak	H	58.17	0.00	40.17	73.98	-33.81
* 20800.00	-135.00	Average	H	65.55	0.00	37.55	53.98	-16.43
* 20800.00	-125.00	Peak	H	65.55	0.00	47.55	73.98	-26.43
26000.00	-125.00	Peak	H	71.49	0.00	53.49	68.20	-14.71

Table 6-13. Radiated Measurements @ 1 meter

NOTES:

- All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dBμV/m). At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
- All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-11.
- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the second harmonic for this device.
- Levels at -135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μV/m (54dBμV/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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Radiated Spurious Emission Measurements (Cont'd)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5240MHz

Channel: 48

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10480.00	-96.62	Peak	H	56.07	-9.54	56.90	68.20	-11.30
* 15720.00	-135.00	Average	H	58.13	0.00	30.13	53.98	-23.85
* 15720.00	-125.00	Peak	H	58.13	0.00	40.13	73.98	-33.85
* 20960.00	-135.00	Average	H	66.16	0.00	38.16	53.98	-15.82
* 20960.00	-125.00	Peak	H	66.16	0.00	48.16	73.98	-25.82
26200.00	-125.00	Peak	H	71.43	0.00	53.43	68.20	-14.77

Table 6-14. Radiated Measurements @ 1 meter

NOTES:

- All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dBμV/m). At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
- All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-11.
- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the second harmonic for this device.
- Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μV/m (54dBμV/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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Radiated Spurious Emission Measurements (Cont'd)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5260MHz

Channel: 52

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10520.00	-92.40	Peak	H	56.48	-9.54	61.53	68.20	-6.67
* 15780.00	-135.00	Average	H	58.17	0.00	30.17	53.98	-23.81
* 15780.00	-125.00	Peak	H	58.17	0.00	40.17	73.98	-33.81
* 21040.00	-135.00	Average	H	59.00	0.00	31.00	53.98	-22.98
* 21040.00	-125.00	Peak	H	59.00	0.00	41.00	73.98	-32.98
26300.00	-125.00	Peak	H	71.66	0.00	53.66	68.20	-14.54

Table 6-15. Radiated Measurements @ 1 meter

NOTES:

- All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dBμV/m). At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
- All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-11.
- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the second harmonic for this device.
- Levels at -135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μV/m (54dBμV/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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Radiated Spurious Emission Measurements (Cont'd)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5280MHz

Channel: 56

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10560.00	-96.00	Peak	H	57.02	-9.54	58.48	68.20	-9.72
* 15840.00	-135.00	Average	H	58.16	0.00	30.16	53.98	-23.81
* 15840.00	-125.00	Peak	H	58.16	0.00	40.16	73.98	-33.81
* 21120.00	-135.00	Average	H	57.02	0.00	29.02	53.98	-24.96
* 21120.00	-125.00	Peak	H	57.02	0.00	39.02	73.98	-34.96
26400.00	-125.00	Peak	H	71.65	0.00	53.65	68.20	-14.55

Table 6-16. Radiated Measurements @ 1 meter

NOTES:

- All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dBμV/m). At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
- All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-11.
- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the second harmonic for this device.
- Levels at -135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μV/m (54dBμV/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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Radiated Spurious Emission Measurements (Cont'd)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5320MHz

Channel: 64

	Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
*	10640.00	-107.59	Average	H	58.07	-9.54	47.94	53.98	-6.04
*	10640.00	-97.62	Peak	H	58.07	-9.54	57.90	73.98	-16.08
*	15960.00	-135.00	Average	H	58.04	0.00	30.04	53.98	-23.94
*	15960.00	-125.00	Peak	H	58.04	0.00	40.04	73.98	-33.94
*	21280.00	-135.00	Average	H	55.08	0.00	27.08	53.98	-26.90
*	21280.00	-125.00	Peak	H	55.08	0.00	37.08	73.98	-36.90
	26600.00	-125.00	Peak	H	71.43	0.00	53.43	68.20	-14.77

Table 6-17. Radiated Measurements @ 1 meter

NOTES:

- All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dBμV/m). At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
- All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-11.
- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the second harmonic for this device.
- Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μV/m (54dBμ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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Radiated Spurious Emission Measurements (Cont'd)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5500MHz

Channel: 100

	Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
*	11000.00	-107.62	Average	H	55.43	-9.54	45.27	53.98	-8.71
*	11000.00	-97.57	Peak	H	55.43	-9.54	55.32	73.98	-18.66
	16500.00	-125.00	Peak	H	60.89	0.00	42.89	68.20	-25.31
	22000.00	-125.00	Peak	H	59.00	0.00	41.00	68.20	-27.20
	27500.00	-125.00	Peak	H	71.55	0.00	53.55	68.20	-14.65

Table 6-18. Radiated Measurements @ 1 meter

NOTES:

- All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dBμV/m). At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
- All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-11.
- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the second harmonic for this device.
- Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μV/m (54dBμV/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5580MHz

Channel: 116

	Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
*	11160.00	-106.78	Average	H	55.69	-9.54	46.37	53.98	-7.61
*	11160.00	-96.70	Peak	H	55.69	-9.54	56.45	73.98	-17.53
	16740.00	-125.00	Peak	H	61.46	0.00	43.46	68.20	-24.74
*	22320.00	-135.00	Average	H	57.02	0.00	29.02	53.98	-24.96
*	22320.00	-125.00	Peak	H	57.02	0.00	39.02	73.98	-34.96
	27900.00	-125.00	Peak	H	71.51	0.00	53.51	68.20	-14.69

Table 6-19. Radiated Measurements @ 1 meter

NOTES:

- All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dBμV/m). At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
- All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-11.
- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the second harmonic for this device.
- Levels at -135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μV/m (54dBμV/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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Radiated Spurious Emission Measurements (Cont'd)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5700MHz

Channel: 140

	Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
*	11400.00	-107.25	Average	H	55.55	-9.54	45.75	53.98	-8.23
*	11400.00	-96.50	Peak	H	55.55	-9.54	56.50	73.98	-17.48
	17100.00	-125.00	Peak	H	64.50	0.00	46.50	68.20	-21.70
*	22800.00	-135.00	Average	H	55.08	0.00	27.08	53.98	-26.90
*	22800.00	-125.00	Peak	H	55.08	0.00	37.08	73.98	-36.90
	28500.00	-125.00	Peak	H	71.27	0.00	53.27	68.20	-14.93

Table 6-20. Radiated Measurements @ 1 meter

NOTES:

- All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dBμV/m). At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
- All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-11.
- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the second harmonic for this device.
- Levels at -135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μV/m (54dBμV/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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6.8 Radiated Band Edge Measurements

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5180MHz

Channel: 36

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
5150.00	-100.94	Average	H	43.02	-9.54	39.53	53.98	-14.45
5150.00	-83.53	Peak	H	43.02	-9.54	56.95	73.98	-17.03
5149.59	-101.62	Average	H	43.02	-9.54	38.85	53.98	-15.13
5149.59	-83.79	Peak	H	43.02	-9.54	56.68	73.98	-17.30
5149.34	-102.07	Average	H	43.01	-9.54	38.40	53.98	-15.58
5149.34	-84.67	Peak	H	43.01	-9.54	55.81	73.98	-18.17

Table 6-21. Radiated Restricted Band Measurements at 1-meter (4.5 – 5.15GHz)

NOTES:

- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μV/m (54dBμV/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

FCC ID: A3LSHVE250S		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Radiated Band Edge Measurements (Cont'd)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5320MHz

Channel: 64

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
5350.00	-101.05	Average	H	43.39	-9.54	39.80	53.98	-14.18
5350.00	-89.34	Peak	H	43.39	-9.54	51.51	73.98	-22.47
5350.57	-101.51	Average	H	43.39	-9.54	39.34	53.98	-14.64
5350.57	-90.03	Peak	H	43.39	-9.54	50.82	73.98	-23.16
5351.51	-101.95	Average	H	43.39	-9.54	38.90	53.98	-15.08
5351.51	-89.23	Peak	H	43.39	-9.54	51.62	73.98	-22.36

Table 6-22. Radiated Restricted Band Measurements at 1-meter (5.35 – 5.46GHz, 5.46 – 5.47GHz)

NOTES:

1. Emissions within 5.35 – 5.46GHz lie in a restricted band and are subject to the radiated emissions limits specified in §15.209. Emission within 5.46 – 5.47GHz are at the lower band edge of UNII Band 3 transmission and are subject to the -27dBm/MHz (68.2dBμV/m) EIRP limit specified in §15.407.
2. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
5. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
6. Above 960MHz the limit is 500 μV/m (54dBμV/m) at 3 meters radiated for emissions that lie in restricteds band specified in §15.205.

FCC ID: A3LSHVE250S		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Radiated Band Edge Measurements (Cont'd)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5500MHz

Channel: 100

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
5457.80	-100.81	Average	H	43.74	-9.54	40.39	53.98	-13.59
5457.80	-90.46	Peak	H	43.74	-9.54	50.75	73.98	-23.23
5459.50	-100.54	Average	H	43.75	-9.54	40.67	53.98	-13.31
5459.70	-89.81	Peak	H	43.75	-9.54	51.40	73.98	-22.58
5469.50	-99.29	Peak	H	43.80	-9.54	41.97	68.20	-26.23

Table 6-23. Radiated Restricted Band Measurements at 1-meter (5.35 – 5.46GHz, 5.46 – 5.47GHz)

NOTES:

1. Emissions within 5.35 – 5.46GHz lie in a restricted band and are subject to the radiated emissions limits specified in §15.209. Emission within 5.46 – 5.47GHz are at the lower band edge of UNII Band 3 transmission and are subject to the -27dBm/MHz (68.2dBμV/m) EIRP limit specified in §15.407.
2. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
5. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
6. Above 960MHz the limit is 500 μV/m (54dBμ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

FCC ID: A3LSHVE250S		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Radiated Band Edge Measurements (Cont'd)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5700MHz

Channel: 140

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]
5625.00	-82.51	Peak	H	44.02	-9.54	58.97	68.20	-9.23
5725.32	-82.59	Peak	H	44.10	-9.54	58.97	68.20	-9.23
5725.42	-82.80	Peak	H	44.10	-9.54	58.75	68.20	-9.45

Table 6-24. Radiated Restricted Band Measurements at 1-meter

NOTES:

- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μ V/m (54dB μ V/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

FCC ID: A3LSHVE250S		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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6.9 Radiated Band Edge Measurements (40MHz BW)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5190MHz

Channel: 38

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
5150.00	-99.75	Average	H	43.02	-9.54	40.73	53.98	-13.25
5150.00	-87.05	Peak	H	43.02	-9.54	53.43	73.98	-20.55
5149.31	-100.13	Average	H	43.02	-9.54	40.34	53.98	-13.64
5149.31	-89.54	Peak	H	43.02	-9.54	50.93	73.98	-23.05
5148.30	-101.16	Average	H	43.01	-9.54	39.31	53.98	-14.67
5148.30	-88.72	Peak	H	43.01	-9.54	51.75	73.98	-22.23

Table 6-25. Radiated Restricted Band Measurements at 1-meter (4.5 – 5.15GHz)

NOTES:

- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μV/m (54dBμV/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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Radiated Band Edge Measurements (Cont'd)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5310MHz

Channel: 62

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]
5350.00	-101.15	Average	H	43.39	-9.54	39.70	53.98	-14.28
5350.00	-89.55	Peak	H	43.39	-9.54	51.29	73.98	-22.69
5350.31	-101.28	Average	H	43.39	-9.54	39.57	53.98	-14.41
5350.31	-92.53	Peak	H	43.39	-9.54	48.31	73.98	-25.67
5351.49	-102.69	Average	H	43.39	-9.54	38.15	53.98	-15.82
5351.49	-92.53	Peak	H	43.39	-9.54	48.32	73.98	-25.66

Table 6-26. Radiated Restricted Band Measurements at 1-meter (5.35 – 5.46GHz, 5.46 – 5.47GHz)

NOTES:

1. Emissions within 5.35 – 5.46GHz lie in a restricted band and are subject to the radiated emissions limits specified in §15.209. Emission within 5.46 – 5.47GHz are at the lower band edge of UNII Band 3 transmission and are subject to the -27dBm/MHz (68.2dB μ V/m) EIRP limit specified in §15.407.
2. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
5. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
6. Above 960MHz the limit is 500 μ V/m (54dB μ V/m) at 3 meters radiated for emissions that lie in restricteds band specified in §15.205.

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Radiated Band Edge Measurements (Cont'd)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5510MHz

Channel: 102

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
5458.18	-104.73	Average	H	43.75	-9.54	36.48	53.98	-17.50
5458.18	-93.46	Peak	H	43.75	-9.54	47.74	73.98	-26.24
5459.50	-103.71	Average	H	43.75	-9.54	37.50	53.98	-16.48
5459.50	-101.72	Peak	H	43.75	-9.54	39.49	73.98	-34.49
5469.50	-89.02	Peak	H	43.80	-9.54	52.24	68.20	-15.96

Table 6-27. Radiated Restricted Band Measurements at 1-meter (5.35 – 5.46GHz, 5.46 – 5.47GHz)

NOTES:

- Emissions within 5.35 – 5.46GHz lie in a restricted band and are subject to the radiated emissions limits specified in §15.209. Emission within 5.46 – 5.47GHz are at the lower band edge of UNII Band 3 transmission and are subject to the -27dBm/MHz (68.2dBμV/m) EIRP limit specified in §15.407.
- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- Levels at -135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μV/m (54dBμV/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

FCC ID: A3LSHVE250S		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Radiated Band Edge Measurements (Cont'd)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5670MHz

Channel: 134

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]
5725.00	-90.94	Peak	H	44.09	-9.54	50.61	68.20	-17.59
5728.80	-91.34	Peak	H	44.10	-9.54	50.22	68.20	-17.98
5729.82	-93.24	Peak	H	44.10	-9.54	48.33	68.20	-19.87

Table 6-28. Radiated Restricted Band Measurements at 1-meter

NOTES:

- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μ V/m (54dB μ V/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

FCC ID: A3LSHVE250S		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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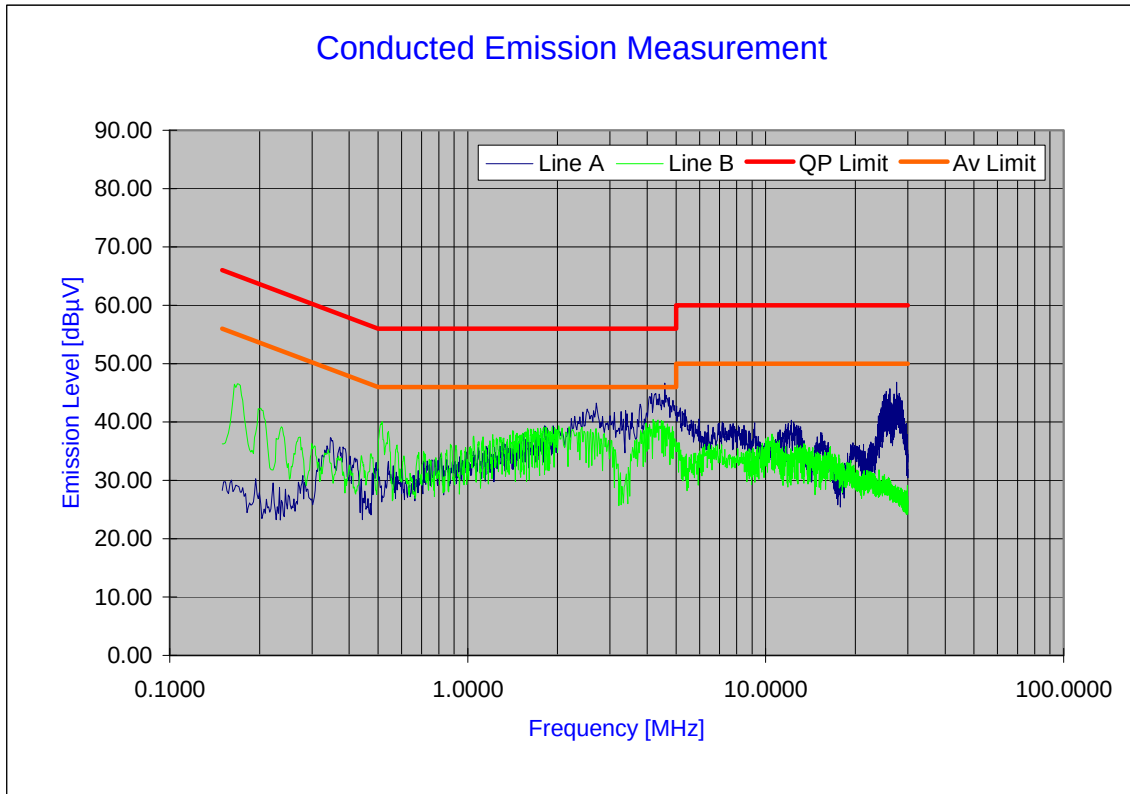
6.10 Line-Conducted Test Data

§15.207; RSS-Gen [7.2.2]

PCTEST Engineering Laboratory Inc.

Company : Samsung Electronics Co., Ltd.
Model Number : SHV-E250S, SHV-E250K
FCC ID Code : A3LSHVE250S
Standard : FCC Part 15C, 15.207

Power Source : AC120V/60Hz
Tested Date : 09/10/2012
Note : Tested with 802.11a
UNII Band 1 ON



Plot 6-76. Line Conducted Plot with 802.11a (UNII Band 1)

Notes:

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 36. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Line A = Phase; Line B = Neutral
4. Traces shown in plot made using a peak detector.
5. Deviations to the Specifications: None.

FCC ID: A3LSHVE250S	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1208241221.A3L	Test Dates: September 1-18, 2012	EUT Type: Portable Handset		Page 78 of 84

Line-Conducted Test Data (Cont'd)

§15.207; RSS-Gen [7.2.2]

No.	Line	Frequency [MHz]	Factor [dB]	QP [dBμV]	Limit [dBμV]	Margin [dB]	Average [dBμV]	Limit [dBμV]	Margin [dB]
1	A	2.553	7.22	34.48	56.00	-21.52	24.22	46.00	-21.78
2	A	2.680	7.23	33.50	56.00	-22.50	24.10	46.00	-21.90
3	A	3.057	7.27	33.37	56.00	-22.63	22.59	46.00	-23.41
4	A	3.480	7.31	32.00	56.00	-24.00	21.93	46.00	-24.07
5	A	3.831	7.33	34.69	56.00	-21.31	23.00	46.00	-23.00
6	A	4.319	7.37	36.15	56.00	-19.85	25.70	46.00	-20.30
7	A	4.605	7.39	37.70	56.00	-18.30	25.61	46.00	-20.39
8	A	25.367	9.10	35.21	60.00	-24.79	22.33	50.00	-27.67
9	A	26.174	9.19	34.94	60.00	-25.06	21.68	50.00	-28.32
10	A	27.531	9.32	34.52	60.00	-25.48	22.60	50.00	-27.40
11	B	0.507	6.97	33.73	56.00	-22.27	22.87	46.00	-23.13
12	B	1.702	7.12	28.50	56.00	-27.50	19.63	46.00	-26.37
13	B	1.798	7.13	31.08	56.00	-24.92	20.18	46.00	-25.82
14	B	1.833	7.14	29.91	56.00	-26.09	20.32	46.00	-25.68
15	B	1.933	7.14	31.92	56.00	-24.08	19.84	46.00	-26.16
16	B	1.998	7.15	32.59	56.00	-23.41	19.72	46.00	-26.28
17	B	2.170	7.17	31.95	56.00	-24.05	19.76	46.00	-26.24
18	B	2.341	7.19	30.09	56.00	-25.91	20.06	46.00	-25.94
19	B	4.191	7.36	32.36	56.00	-23.64	21.54	46.00	-24.46
20	B	4.465	7.38	32.14	56.00	-23.86	21.34	46.00	-24.66

Table 6-29. Line Conducted Data with 802.11a (UNII Band 1)

Notes:

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 36. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Line A = Phase; Line B = Neutral
4. Factor (dB) = Cable loss (dB) + LISN insertion factor (dB)
5. QP/AV Level (dBμV) = QP/AV Analyzer/Receiver Level (dBμV) + Factor (dB)
6. Margin (dB) = QP/AV Level (dBμV) – Limit (dBμV)
7. Traces shown in plot are made using a peak detector.
8. Deviations to the Specifications: None.

FCC ID: A3LSHVE250S		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Line-Conducted Test Data (Cont'd)

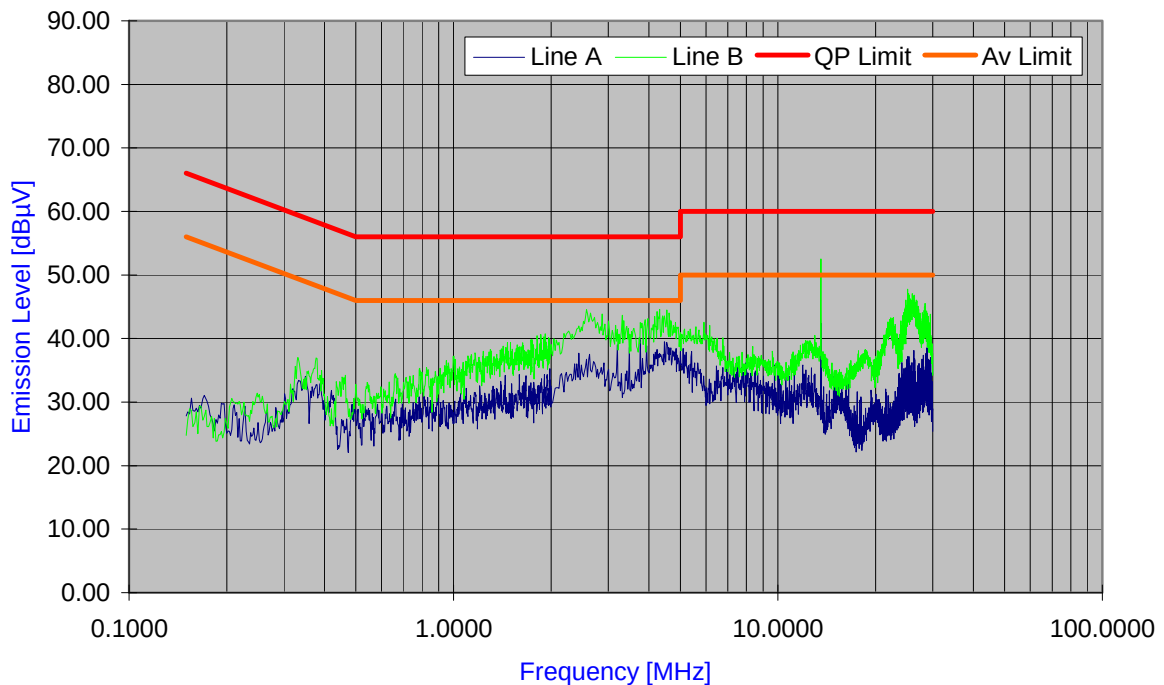
§15.207; RSS-Gen [7.2.2]

PCTEST Engineering Laboratory Inc.

Company : Samsung Electronics Co., Ltd.
Model Number : SHV-E250S, SHV-E250K
FCC ID Code : A3LSHVE250S
Standard : FCC Part 15C, 15.207

Power Source : AC120V/60Hz
Tested Date : 09/10/2012
Note : Tested with 802.11a
UNII Band 2 ON

Conducted Emission Measurement



Ver.1.1 ©PCTEST 2006.08

Plot 6-77. Line Conducted Plot with 802.11a (UNII Band 2)

Notes:

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 52. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Line A = Phase; Line B = Neutral
4. Traces shown in plot made using a peak detector.
5. Deviations to the Specifications: None.

FCC ID: A3LSHVE250S	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1208241221.A3L	Test Dates: September 1-18, 2012	EUT Type: Portable Handset		Page 80 of 84

Line-Conducted Test Data (Cont'd)

§15.207; RSS-Gen [7.2.2]

No.	Line	Frequency [MHz]	Factor [dB]	QP [dBμV]	Limit [dBμV]	Margin [dB]	Average [dBμV]	Limit [dBμV]	Margin [dB]
1	A	2.446	7.21	29.07	56.00	-26.93	19.81	46.00	-26.19
2	A	2.680	7.24	30.87	56.00	-25.13	20.33	46.00	-25.67
3	A	3.196	7.29	27.51	56.00	-28.49	18.99	46.00	-27.01
4	A	3.455	7.31	30.15	56.00	-25.85	18.81	46.00	-27.19
5	A	3.785	7.34	28.63	56.00	-27.37	20.02	46.00	-25.98
6	A	3.999	7.36	29.88	56.00	-26.12	20.72	46.00	-25.28
7	A	4.543	7.40	31.73	56.00	-24.27	22.23	46.00	-23.77
8	A	4.658	7.40	31.93	56.00	-24.07	21.82	46.00	-24.18
9	A	4.853	7.42	31.14	56.00	-24.86	22.01	46.00	-23.99
10	A	13.557	7.99	34.29	60.00	-25.71	20.38	50.00	-29.62
11	B	2.529	7.22	33.47	56.00	-22.53	25.52	46.00	-20.48
12	B	2.650	7.23	33.94	56.00	-22.06	24.89	46.00	-21.11
13	B	4.021	7.35	32.02	56.00	-23.98	23.82	46.00	-22.18
14	B	4.303	7.37	33.20	56.00	-22.80	24.56	46.00	-21.44
15	B	4.484	7.38	33.15	56.00	-22.85	25.06	46.00	-20.94
16	B	13.558	7.94	40.64	60.00	-19.36	22.99	50.00	-27.01
17	B	25.229	9.09	34.94	60.00	-25.06	23.65	50.00	-26.35
18	B	25.322	9.10	35.27	60.00	-24.73	23.77	50.00	-26.23
19	B	25.932	9.16	35.86	60.00	-24.14	25.40	50.00	-24.60
20	B	26.307	9.20	35.27	60.00	-24.73	25.84	50.00	-24.16

Table 6-30. Line Conducted Data with 802.11a (UNII Band 2)

Notes:

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 52. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Line A = Phase; Line B = Neutral
4. Factor (dB) = Cable loss (dB) + LISN insertion factor (dB)
5. QP/AV Level (dBμV) = QP/AV Analyzer/Receiver Level (dBμV) + Factor (dB)
6. Margin (dB) = QP/AV Level (dBμV) – Limit (dBμV)
7. Traces shown in plot are made using a peak detector.
8. Deviations to the Specifications: None.

FCC ID: A3LSHVE250S		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Line-Conducted Test Data (Cont'd)

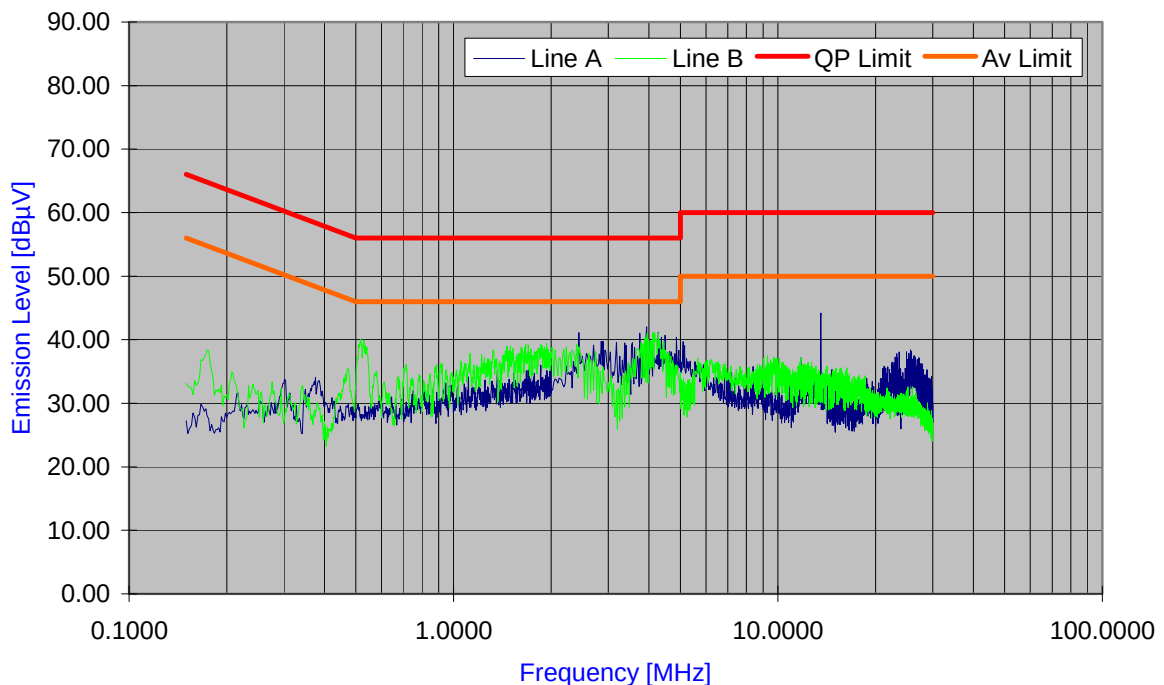
§15.207; RSS-Gen [7.2.2]

PCTEST Engineering Laboratory Inc.

Company : Samsung Electronics Co., Ltd.
Model Number : SHV-E250S, SHV-E250K
FCC ID Code : A3LSHVE250S
Standard : FCC Part 15C, 15.207

Power Source : AC120V/60Hz
Tested Date : 09/10/2012
Note : Tested with 802.11a
UNII Band 3 ON

Conducted Emission Measurement



Ver.1.1 ©PCTEST 2006.08

Plot 6-78. Line Conducted Plot with 802.11a (UNII Band 3)

Notes:

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 100. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Line A = Phase; Line B = Neutral
4. Traces shown in plot made using a peak detector.
5. Deviations to the Specifications: None.

FCC ID: A3LSHVE250S	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1208241221.A3L	Test Dates: September 1-18, 2012	EUT Type: Portable Handset		Page 82 of 84

Line-Conducted Test Data (Cont'd)

§15.207; RSS-Gen [7.2.2]

No.	Line	Frequency [MHz]	Factor [dB]	QP [dBμV]	Limit [dBμV]	Margin [dB]	Average [dBμV]	Limit [dBμV]	Margin [dB]
1	A	2.484	7.22	28.91	56.00	-27.09	21.24	46.00	-24.76
2	A	2.812	7.25	28.97	56.00	-27.03	21.27	46.00	-24.73
3	A	3.147	7.29	27.51	56.00	-28.49	20.36	46.00	-25.64
4	A	3.323	7.30	27.45	56.00	-28.55	19.69	46.00	-26.31
5	A	3.539	7.32	27.47	56.00	-28.53	19.89	46.00	-26.11
6	A	3.751	7.34	27.52	56.00	-28.48	20.32	46.00	-25.68
7	A	3.954	7.36	28.02	56.00	-27.98	20.84	46.00	-25.16
8	A	4.485	7.39	29.36	56.00	-26.64	22.18	46.00	-23.82
9	A	4.771	7.41	28.59	56.00	-27.41	21.66	46.00	-24.34
10	A	13.560	7.99	33.86	60.00	-26.14	21.70	50.00	-28.30
11	B	0.506	6.97	29.89	56.00	-26.11	19.80	46.00	-26.20
12	B	1.453	7.10	30.48	56.00	-25.52	20.49	46.00	-25.51
13	B	1.494	7.10	30.78	56.00	-25.22	20.09	46.00	-25.91
14	B	1.665	7.12	30.88	56.00	-25.12	20.15	46.00	-25.85
15	B	1.869	7.14	29.88	56.00	-26.12	20.96	46.00	-25.04
16	B	1.943	7.15	29.54	56.00	-26.46	20.04	46.00	-25.96
17	B	2.444	7.21	29.49	56.00	-26.51	20.03	46.00	-25.97
18	B	4.054	7.36	31.49	56.00	-24.51	21.77	46.00	-24.23
19	B	4.229	7.38	31.16	56.00	-24.84	21.63	46.00	-24.37
20	B	4.363	7.38	30.78	56.00	-25.22	20.99	46.00	-25.01

Table 6-31. Line Conducted Data with 802.11a (UNII Band 3)

Notes:

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 100. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Line A = Phase; Line B = Neutral
4. Factor (dB) = Cable loss (dB) + LISN insertion factor (dB)
5. QP/AV Level (dBμV) = QP/AV Analyzer/Receiver Level (dBμV) + Factor (dB)
6. Margin (dB) = QP/AV Level (dBμV) – Limit (dBμV)
7. Traces shown in plot are made using a peak detector.
8. Deviations to the Specifications: None.

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7.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSHVE250S** is in compliance with Part 15E of the FCC Rules and RSS-210 of the Industry Canada Rules.

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