

## 6.6 Conducted Emissions at the Band Edge

§15.247(d); RSS-210 [A8.5]

### Test Overview and Limit

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle (>98%), at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. For the following out of band conducted spurious emissions plots at the band edge, the EUT was set at a data rate of 1Mbps for “b” mode, 6 Mbps for “g” mode, 6 Mbps for “a” mode, 6.5/7.2Mbps for 20MHz BW “n” mode, 13.5/15Mbps for 40MHz “n” mode and 351/390Mbps for 80MHz “ac” mode as these settings produced the worst-case emissions.

***The limit for out-of-band spurious emissions at the band edge is 30dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100kHz bandwidth per the PSD procedure (Section 9.1).***

### Test Procedure Used

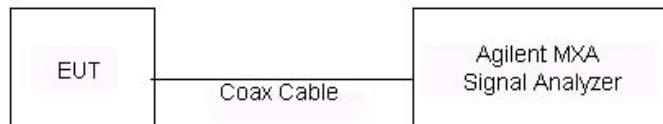
KDB 558074 v02 – Section 10.1.2

### Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW = 100kHz
4. VBW = 1MHz
5. Detector = Peak
6. Trace mode = max hold
7. Sweep time = auto couple
8. The trace was allowed to stabilize

### Test Setup



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

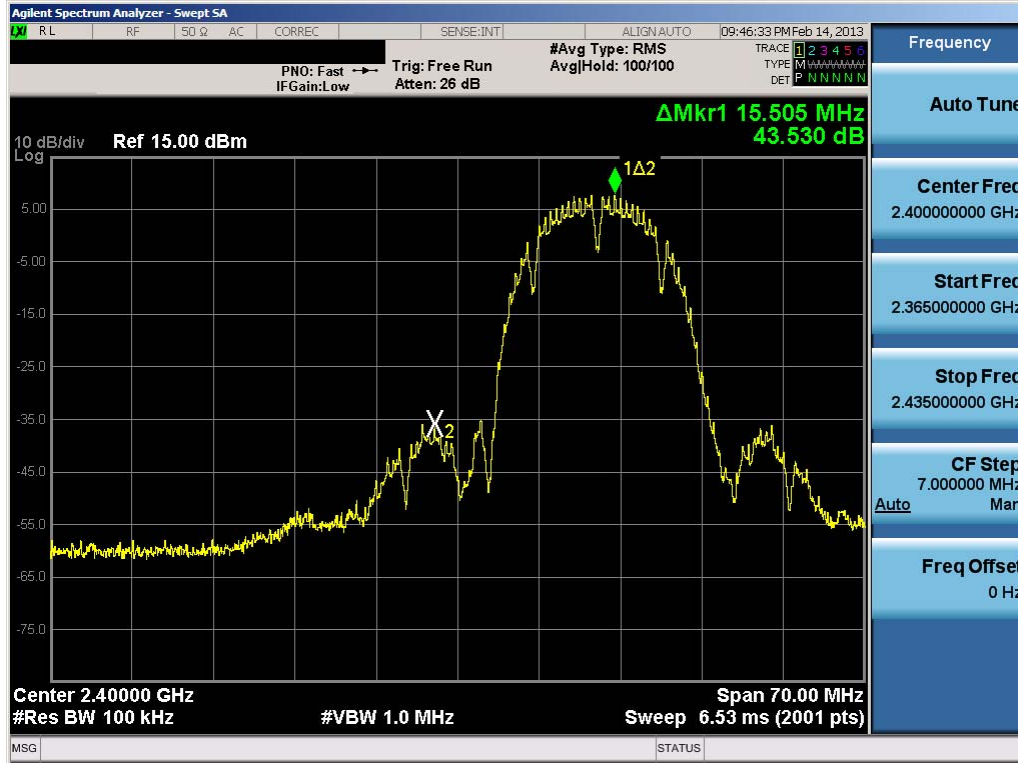


**Figure 6-4. Test Instrument & Measurement Setup**

### Test Notes

None

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset	Page 36 of 66	

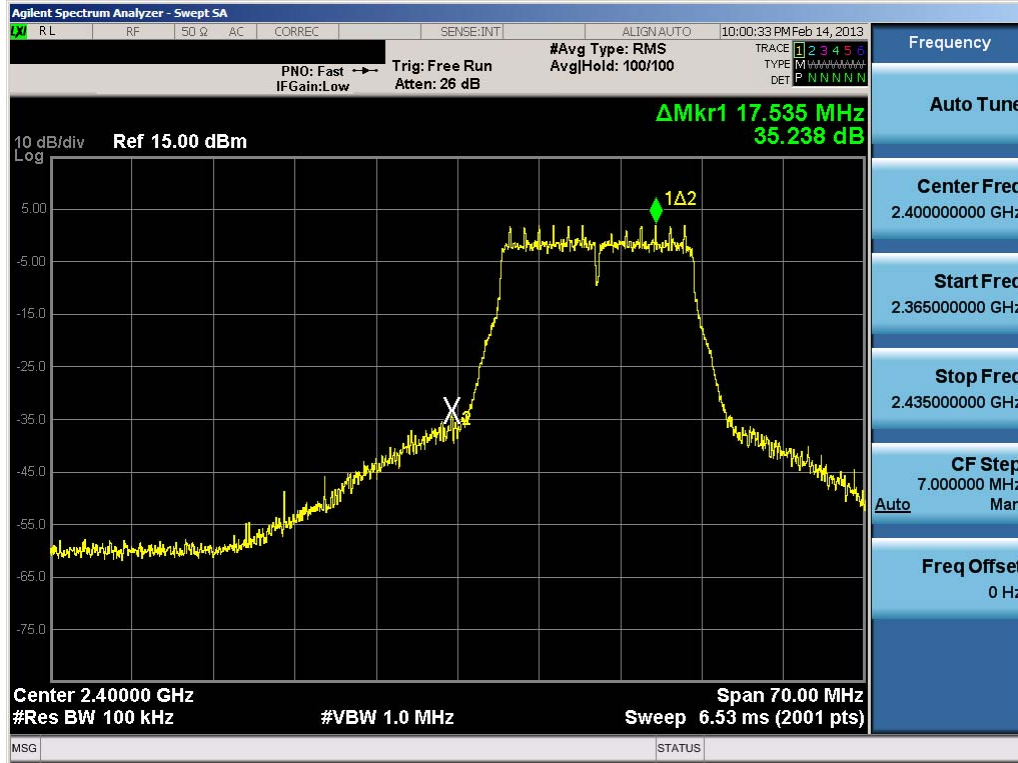


Plot 6-37. Band Edge Plot (802.11b – Ch. 1)

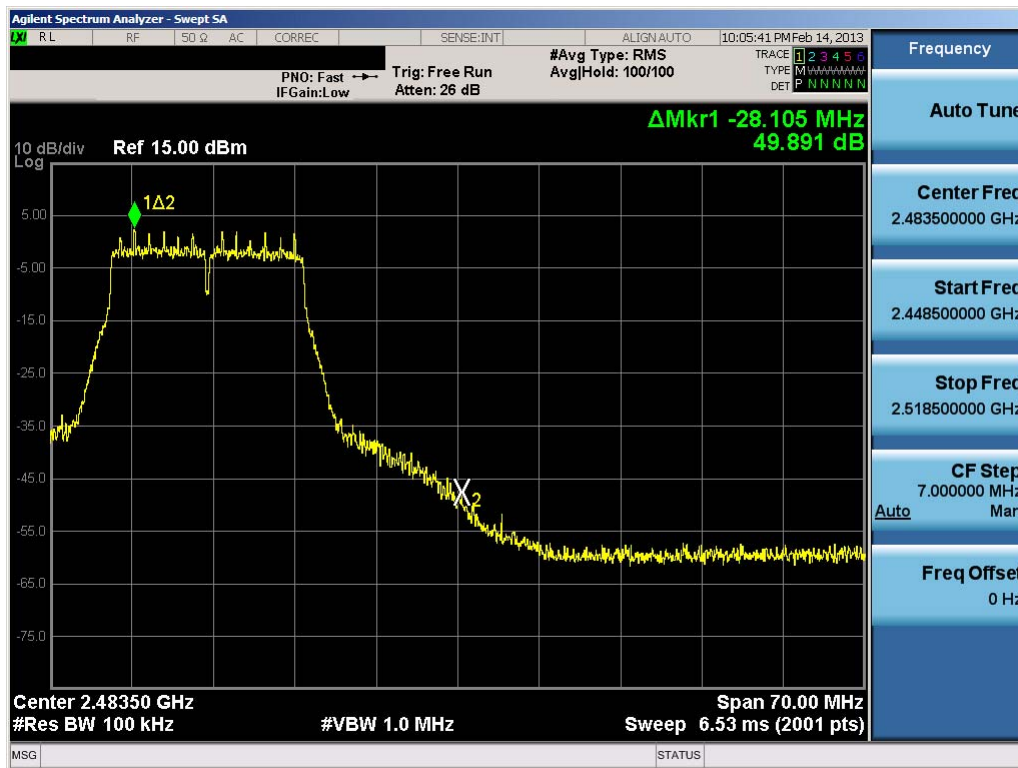


Plot 6-38. Band Edge Plot (802.11b – Ch. 11)

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset		Page 37 of 66

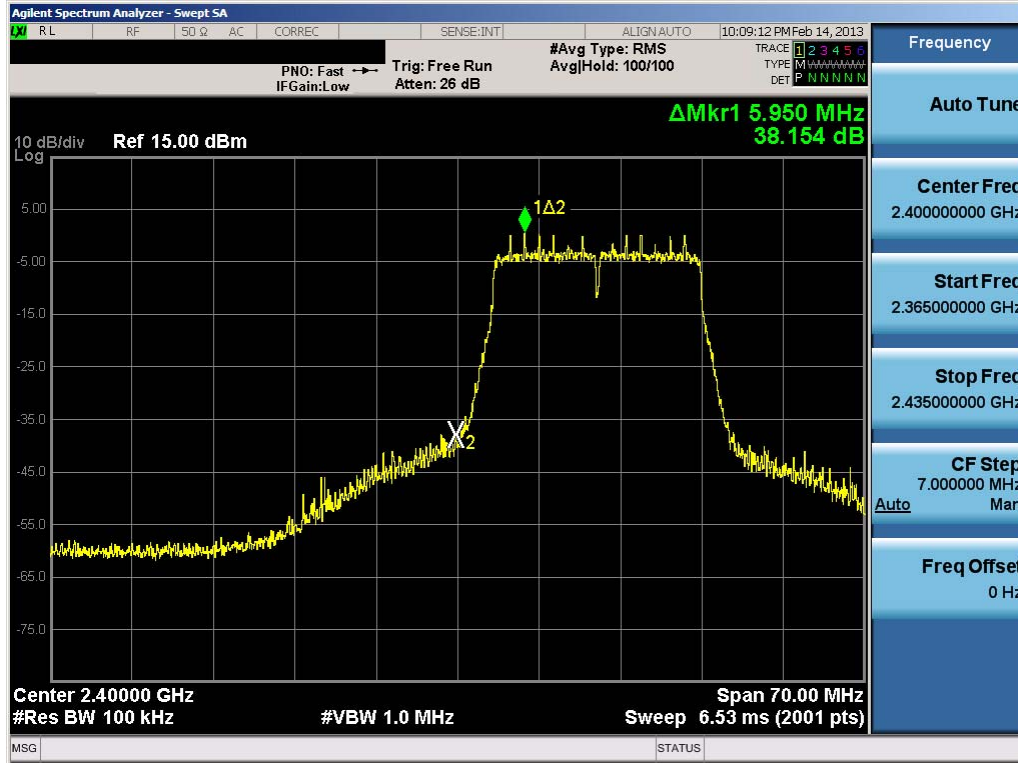


Plot 6-39. Band Edge Plot (802.11g– Ch. 1)

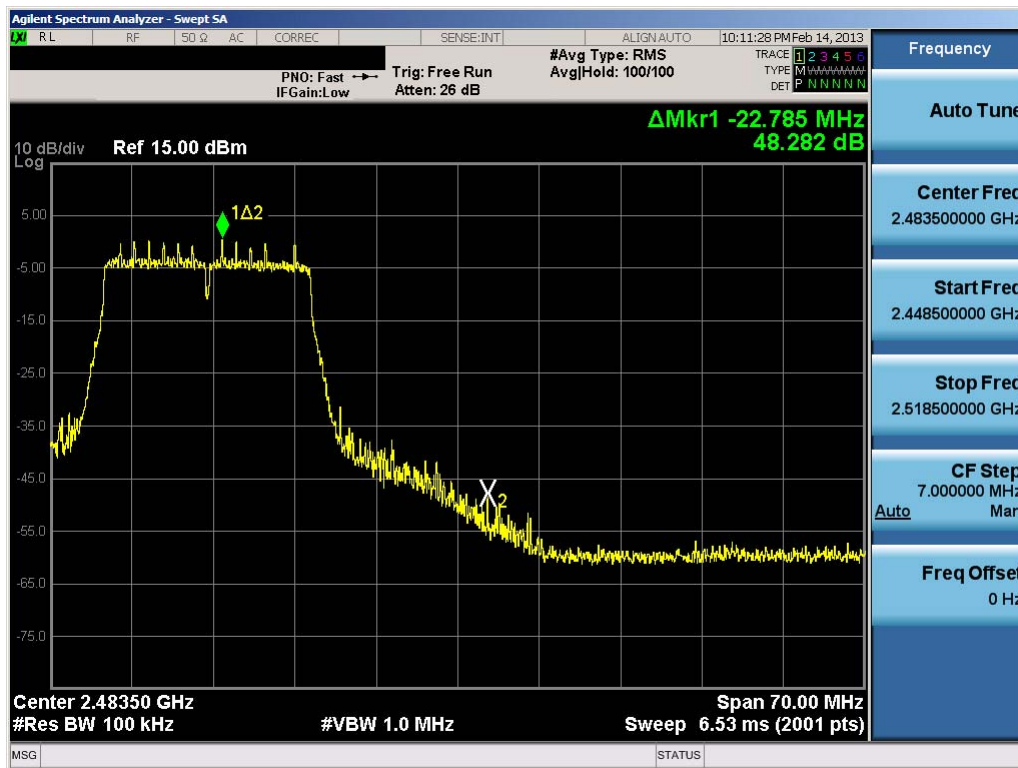


Plot 6-40. Band Edge Plot (802.11g – Ch. 11)



FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset		Page 38 of 66

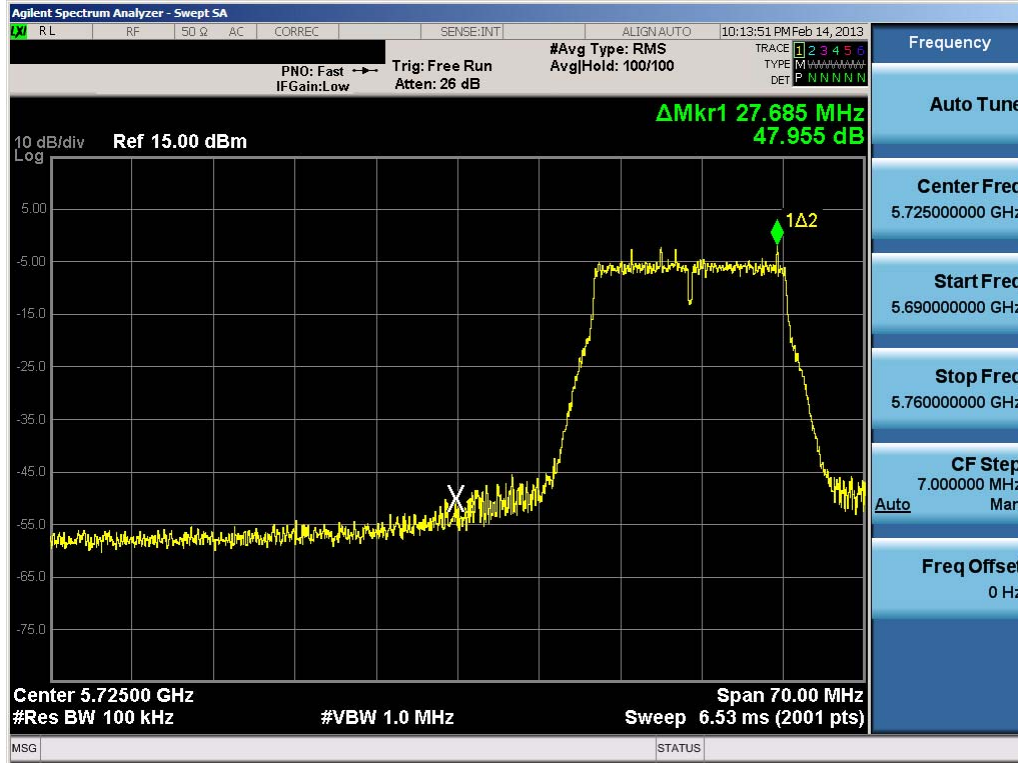


Plot 6-41. Band Edge Plot (802.11n (2.4GHz) – Ch. 1)

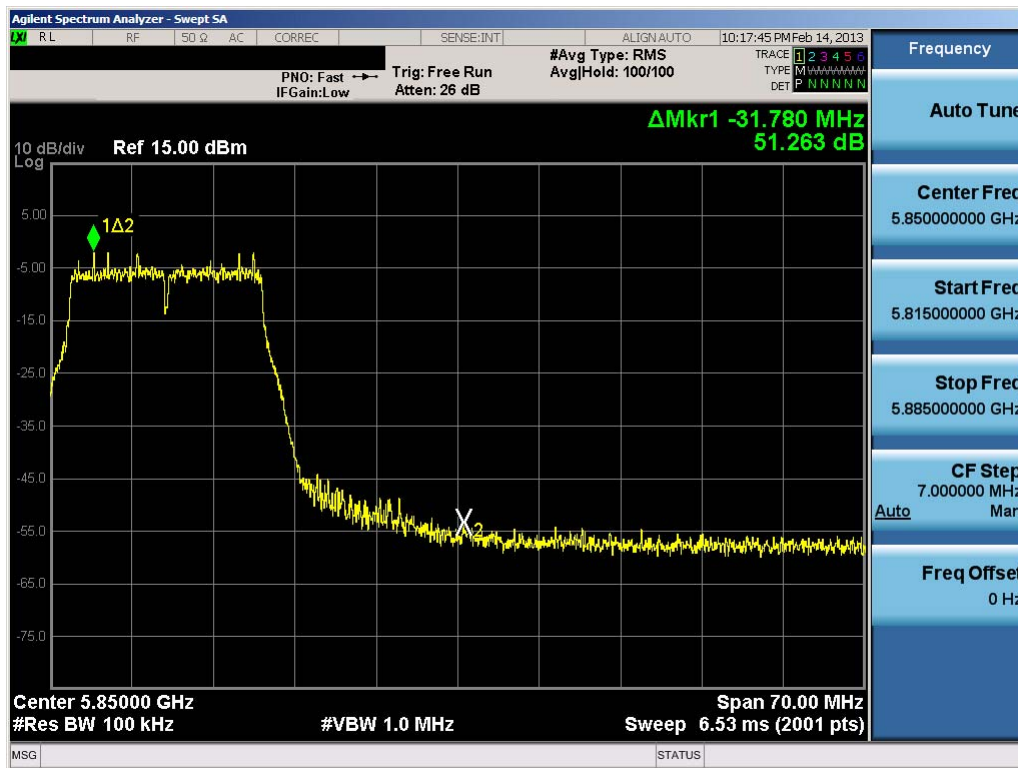


Plot 6-42. Band Edge Plot (802.11n (2.4GHz) – Ch. 11)

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset	Page 39 of 66	

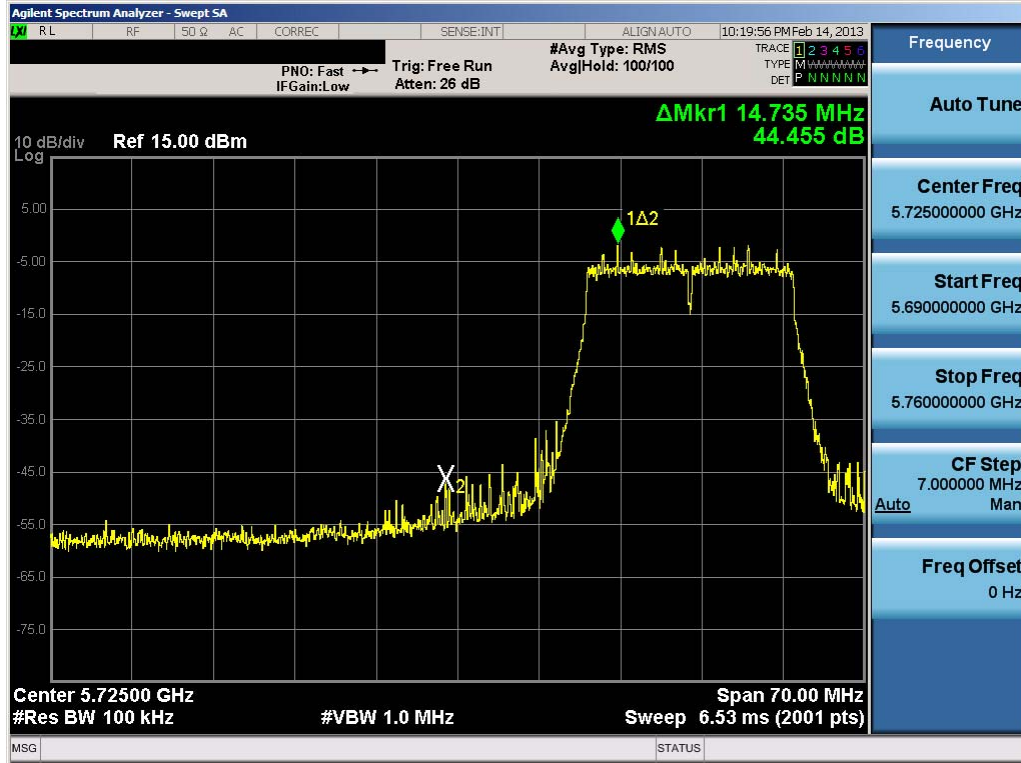


Plot 6-43. Band Edge Plot (802.11a – Ch. 149)

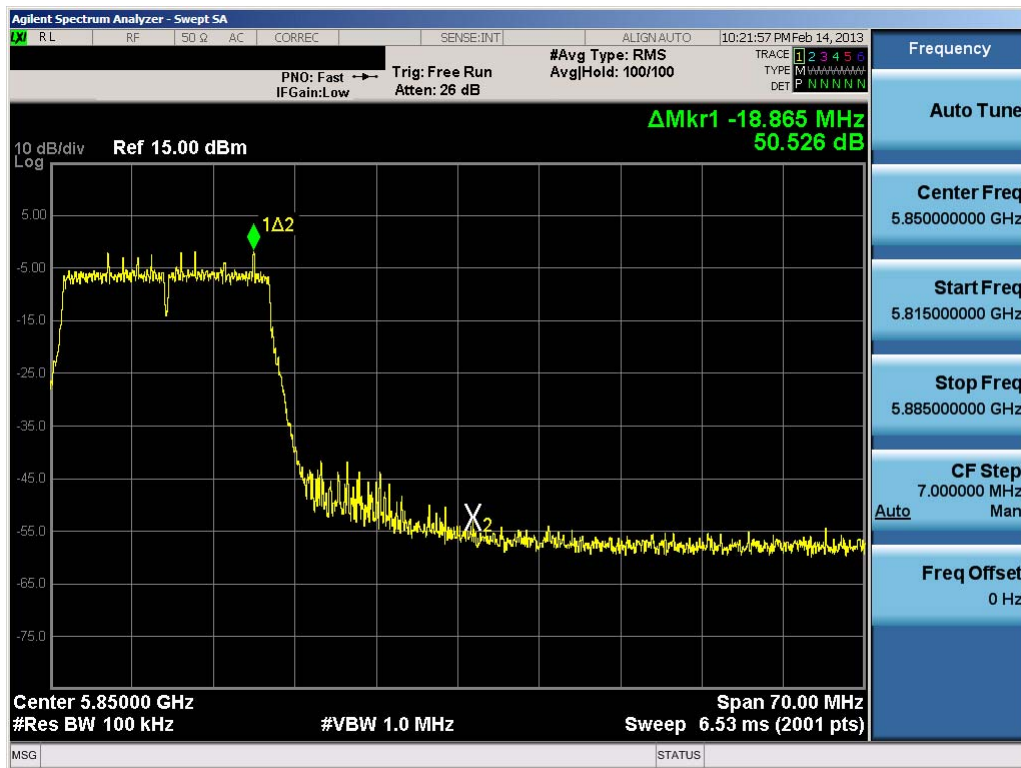


Plot 6-44. Band Edge Plot (802.11a – Ch. 165)

FCC ID: A3LSHVE300SA	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset	Page 40 of 66	

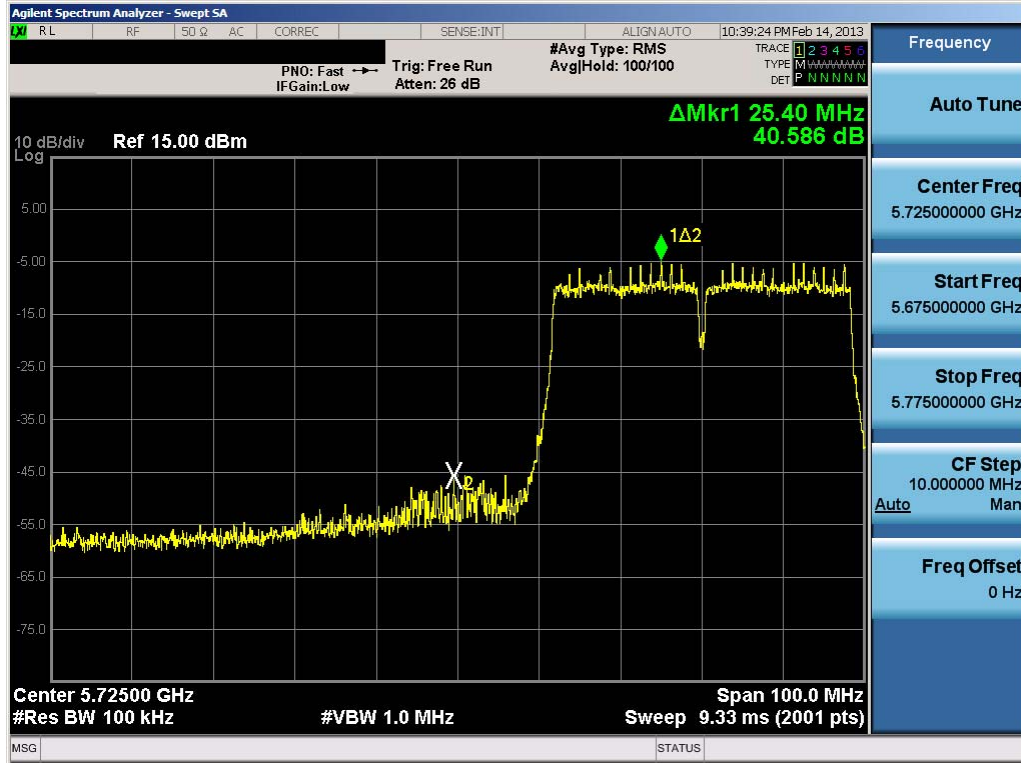


Plot 6-45. Band Edge Plot (20MHz BW 802.11n (5.8GHz) – Ch. 149)

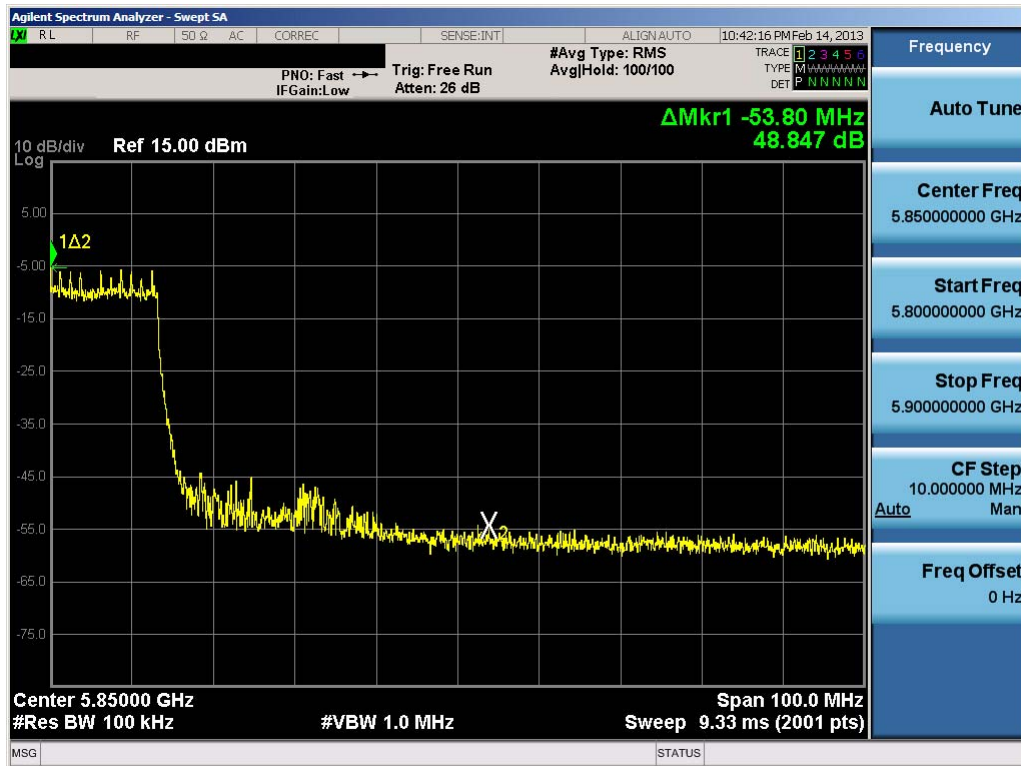


Plot 6-46. Band Edge Plot (20MHz BW 802.11n (5.8GHz) – Ch. 165)

FCC ID: A3LSHVE300SA	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset		Page 41 of 66

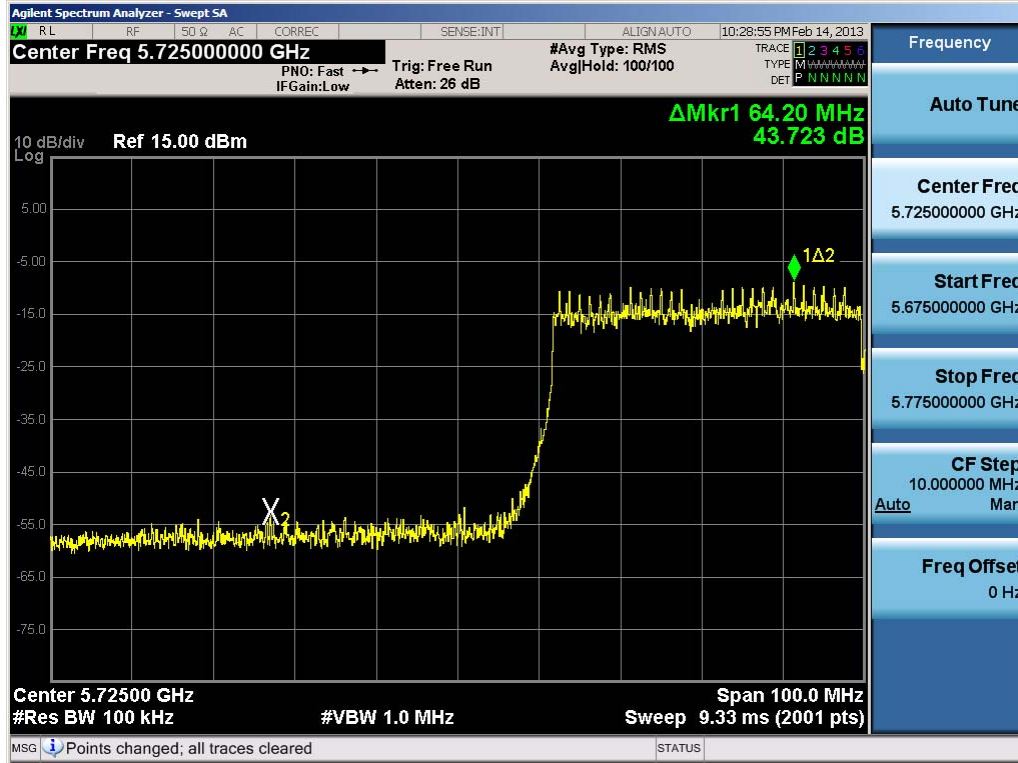


Plot 6-47. Band Edge Plot (40MHz BW 802.11n (5.8GHz) – Ch. 151)

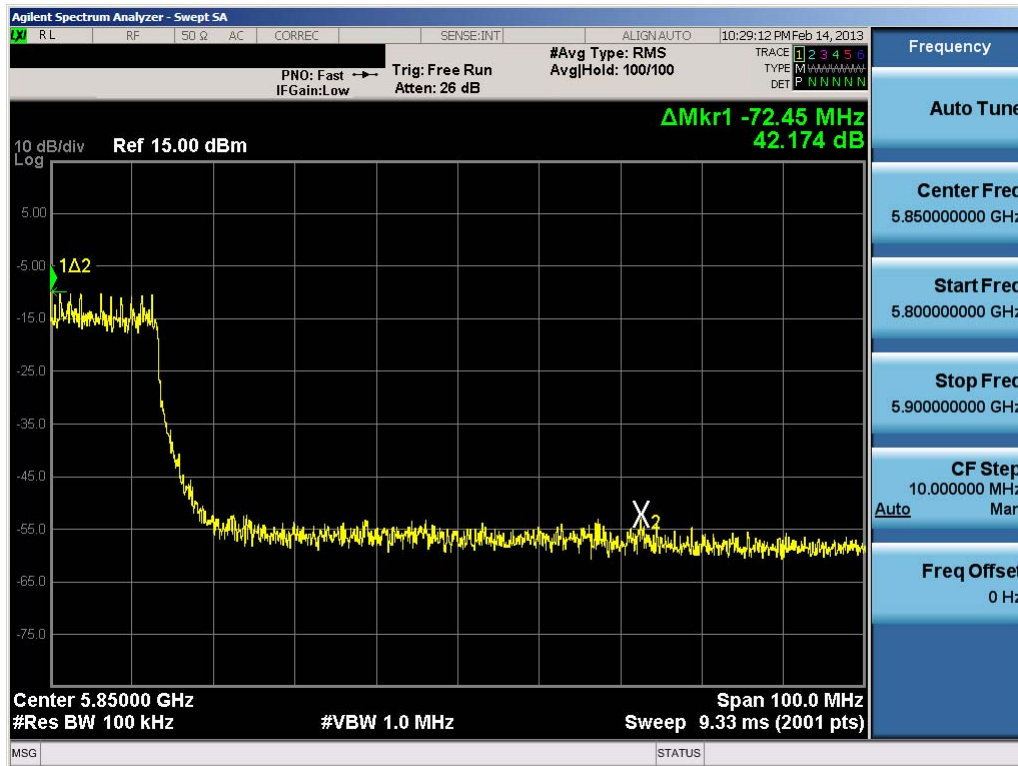


Plot 6-48. Band Edge Plot (40MHz BW 802.11n (5.8GHz) – Ch. 159)

FCC ID: A3LSHVE300SA	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset		Page 42 of 66



Plot 6-49. Band Edge Plot (80MHz BW 802.11n (5.8GHz) – Ch. 155)



Plot 6-50. Band Edge Plot (80MHz BW 802.11n (5.8GHz) – Ch. 155)

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset		Page 43 of 66



## 6.7 Conducted Spurious Emissions

§15.247(d); RSS-210 [A8.5]

### Test Overview and Limit

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle (>98%), at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. For the following out of band conducted spurious emissions plots, the EUT was investigated in all available data rates for “b”, “g”, “a”, “n”, and “ac” modes. The worst case spurious emissions for the 2.4GHz band were found while transmitting in “b” mode at 1 Mbps and are shown in the plots below. The worst case spurious emissions for the 5.8GHz band were found while transmitting in “a” mode at 6 Mbps and are shown in the plots below.

***The limit for out-of-band spurious emissions at the band edge is 30dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100kHz bandwidth per the PSD procedure (Section 9.1).***

### Test Procedure Used

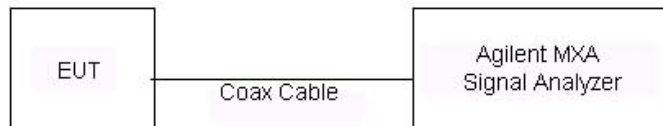
KDB 558074 v02 – Section 10.1.2

### Test Settings



1. Start frequency was set to 30MHz and stop frequency was set to 25GHz (separated into two plots per channel)
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = Peak
5. Trace mode = max hold
6. Sweep time = auto couple
7. The trace was allowed to stabilize

### Test Setup

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





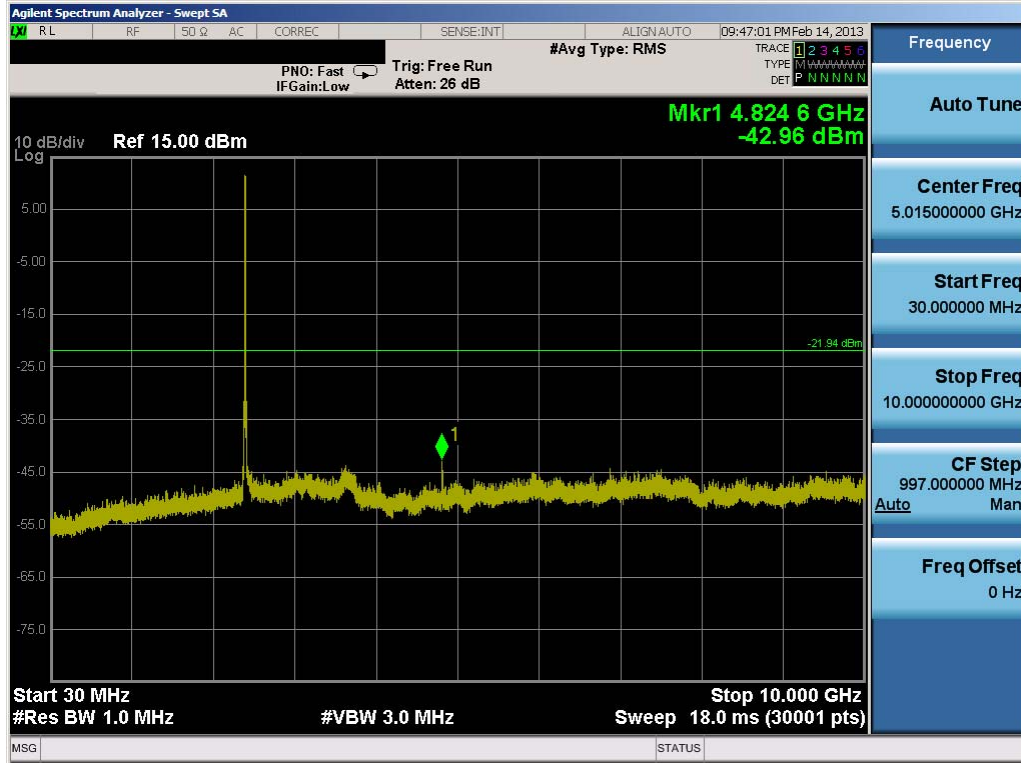
**Figure 6-5. Test Instrument & Measurement Setup**

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset	Page 44 of 66	

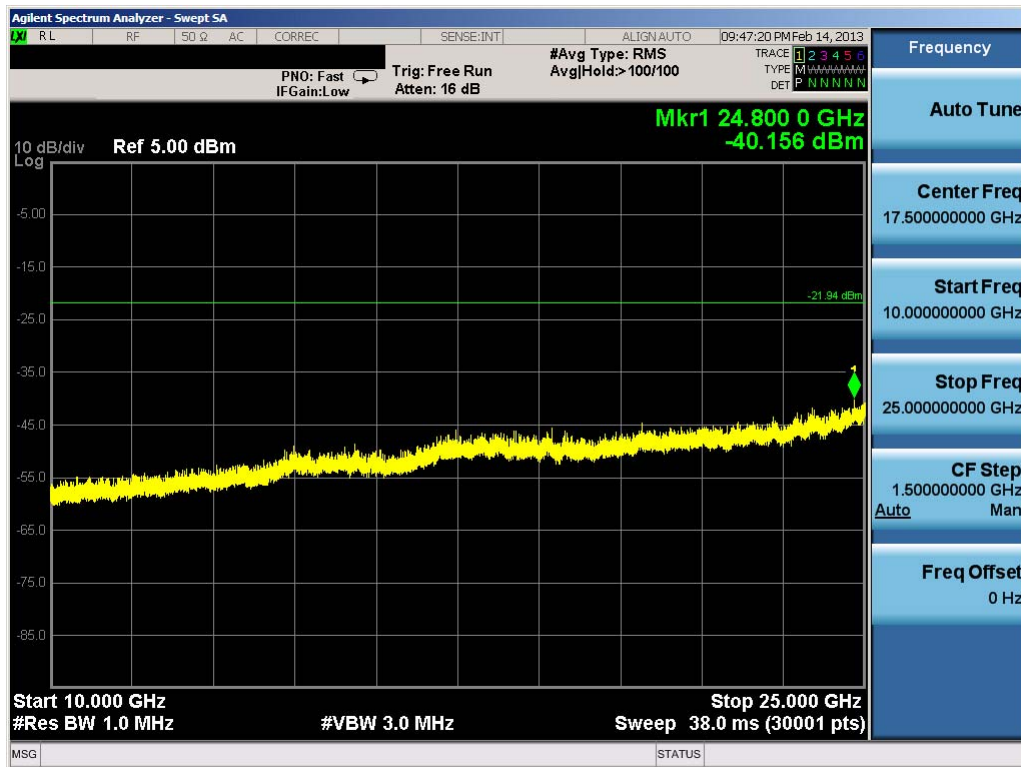
**Test Notes**

1. RBW was set to 1MHz rather than 100kHz in order to increase the measurement speed.
2. The display line shown in the following plots denotes the limit at 30dB below the fundamental emission level measured in a 100kHz bandwidth. However, since the traces in the following plots are measured with a 1MHz RBW, the display line may not necessarily appear to be 30dB below the level of the fundamental in a 1MHz bandwidth.
3. For plots showing conducted spurious emissions near the limit, the frequencies were investigated with a reduced RBW to ensure that no emissions were present.



<b>FCC ID:</b> A3LSHVE300SA		<b>FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Reviewed by:</b> Quality Manager
<b>Test Report S/N:</b> 0Y1303130491.A3L	<b>Test Dates:</b> 2/15, 2/17, 3/28/13	<b>EUT Type:</b> Portable Handset	Page 45 of 66	

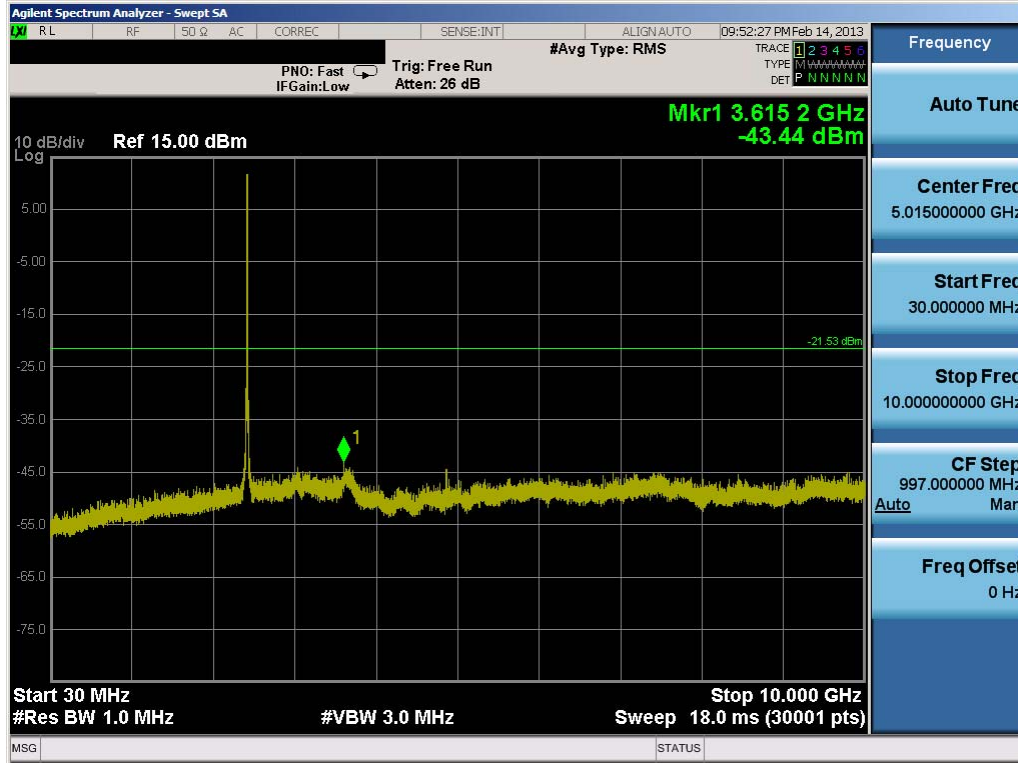


Plot 6-51. Conducted Spurious Plot (802.11b – Ch. 1)

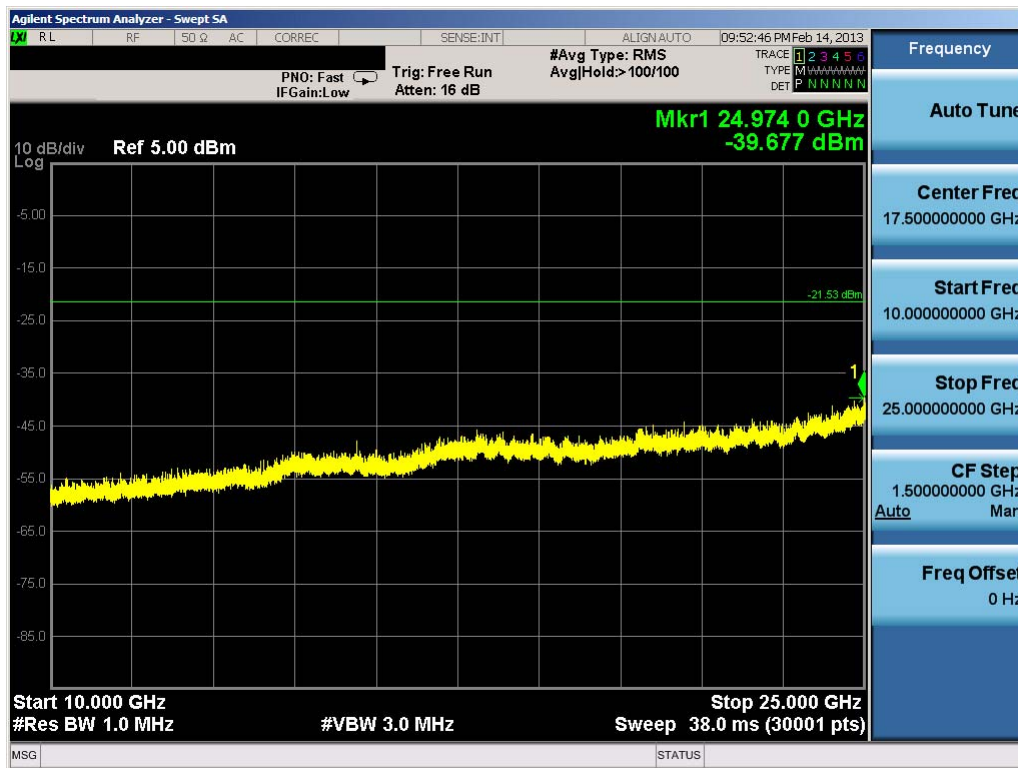


Plot 6-52. Conducted Spurious Plot (802.11b – Ch. 1)



FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset		Page 46 of 66

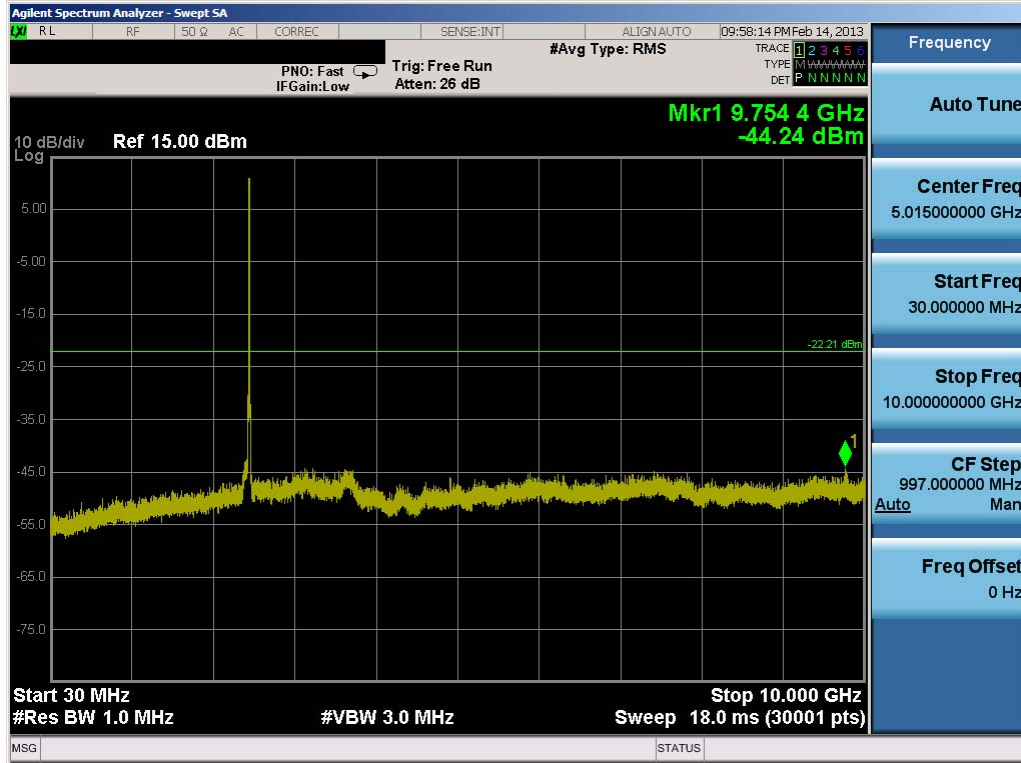


Plot 6-53. Conducted Spurious Plot (802.11b – Ch. 6)

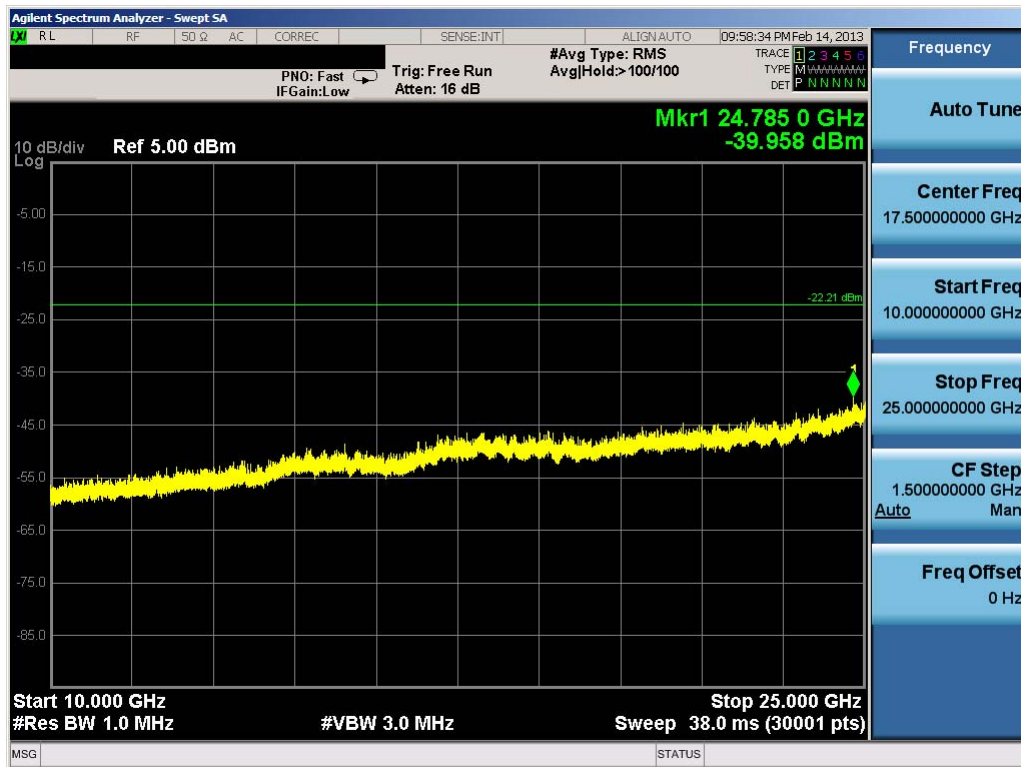


Plot 6-54. Conducted Spurious Plot (802.11b – Ch. 6)



FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset		Page 47 of 66

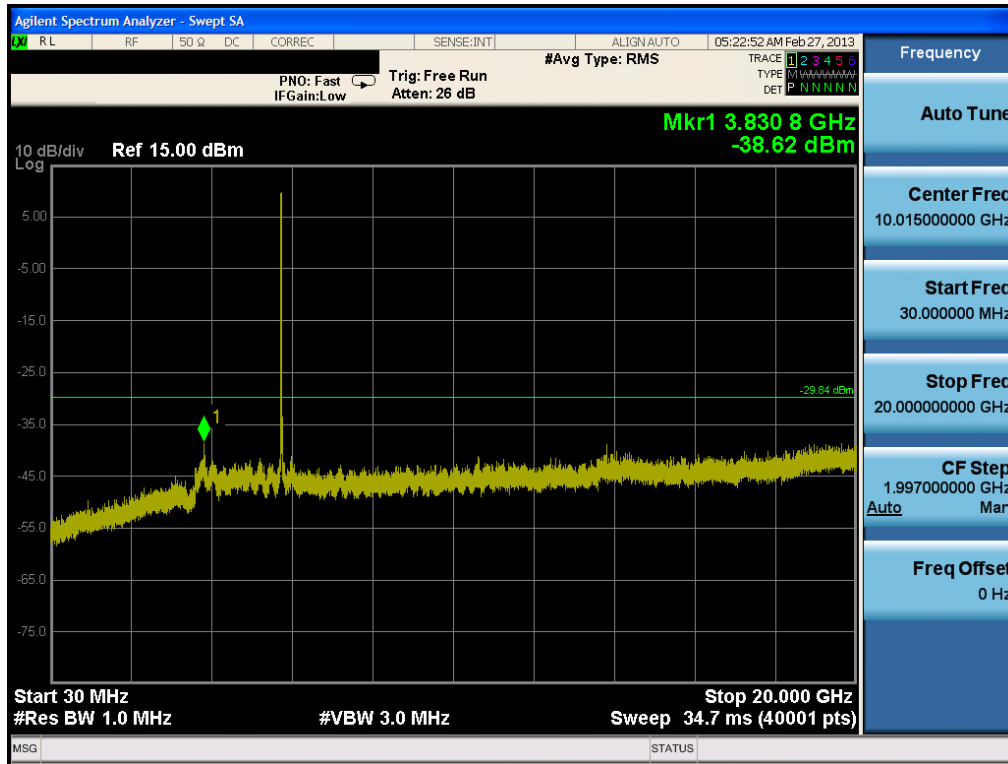


Plot 6-55. Conducted Spurious Plot (802.11b – Ch. 11)

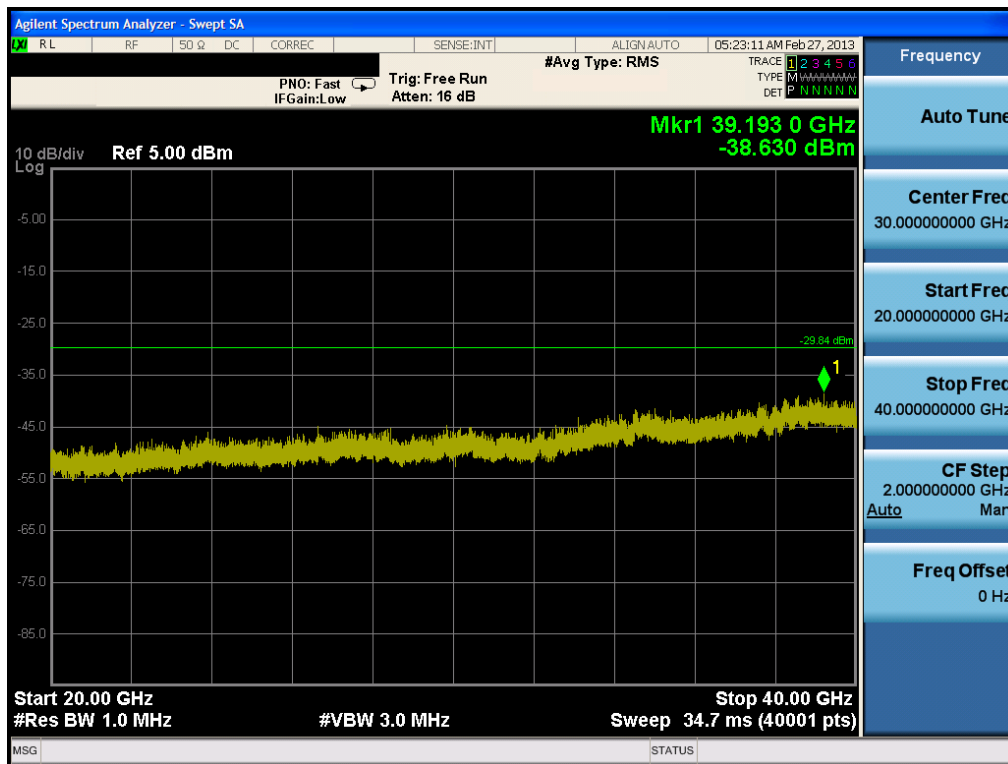


Plot 6-56. Conducted Spurious Plot (802.11b – Ch. 11)



FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset		Page 48 of 66

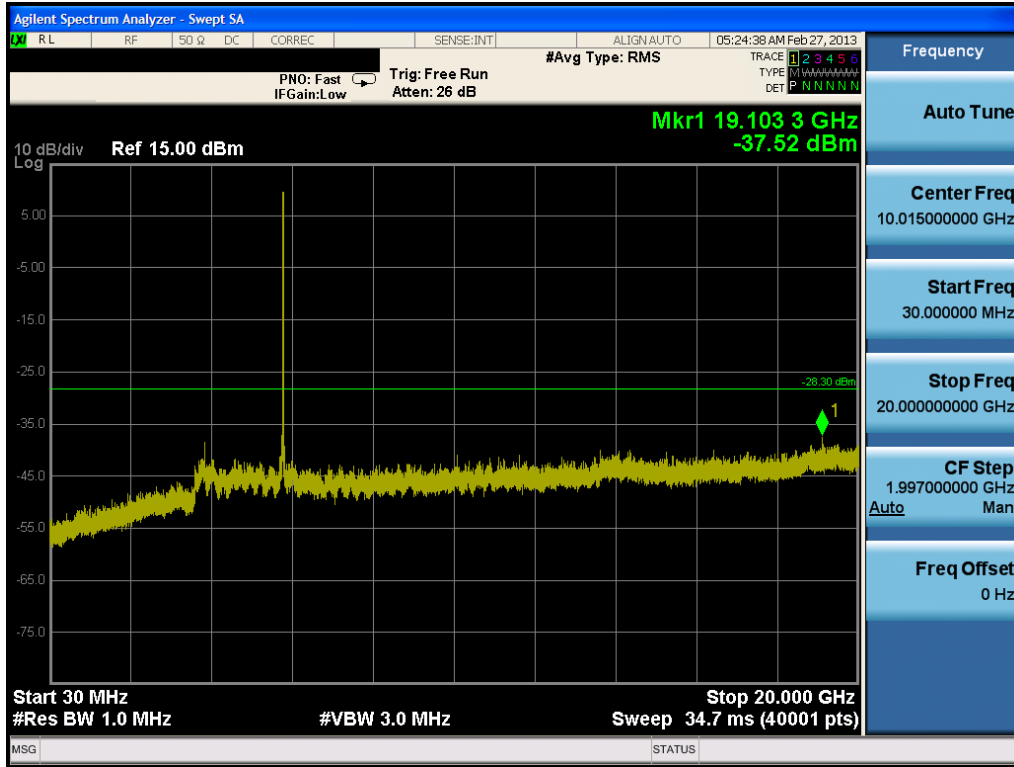


Plot 6-57. Conducted Spurious Plot (802.11a – Ch. 149)

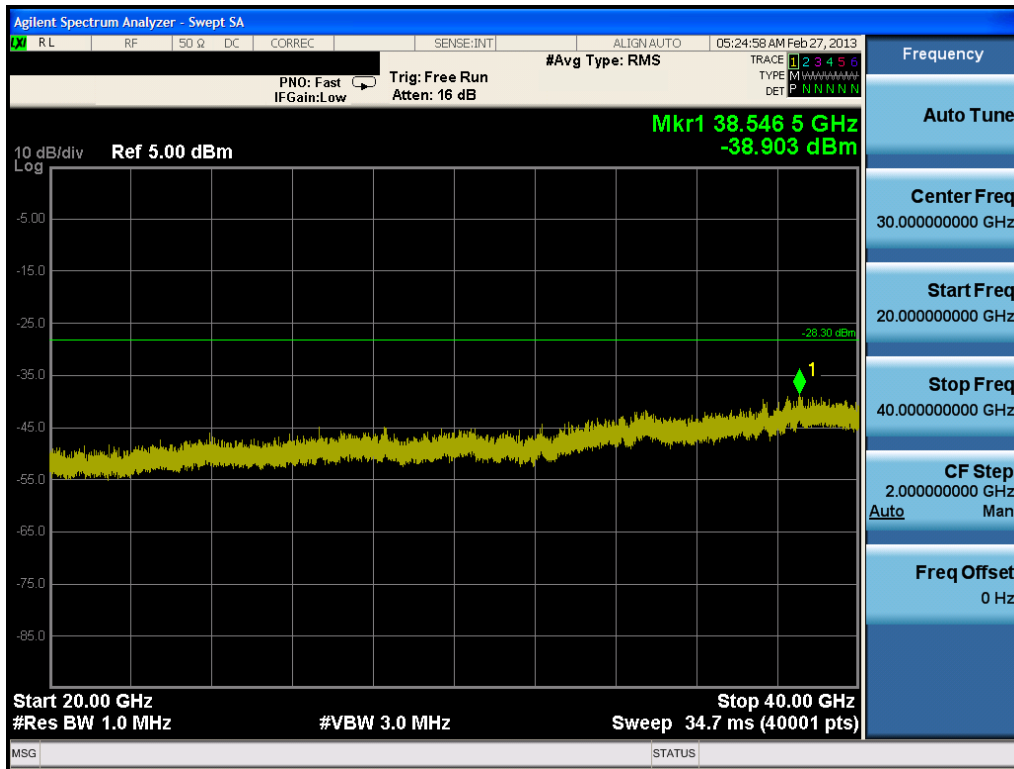


Plot 6-58. Conducted Spurious Plot (802.11a – Ch. 149)



FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset		Page 49 of 66

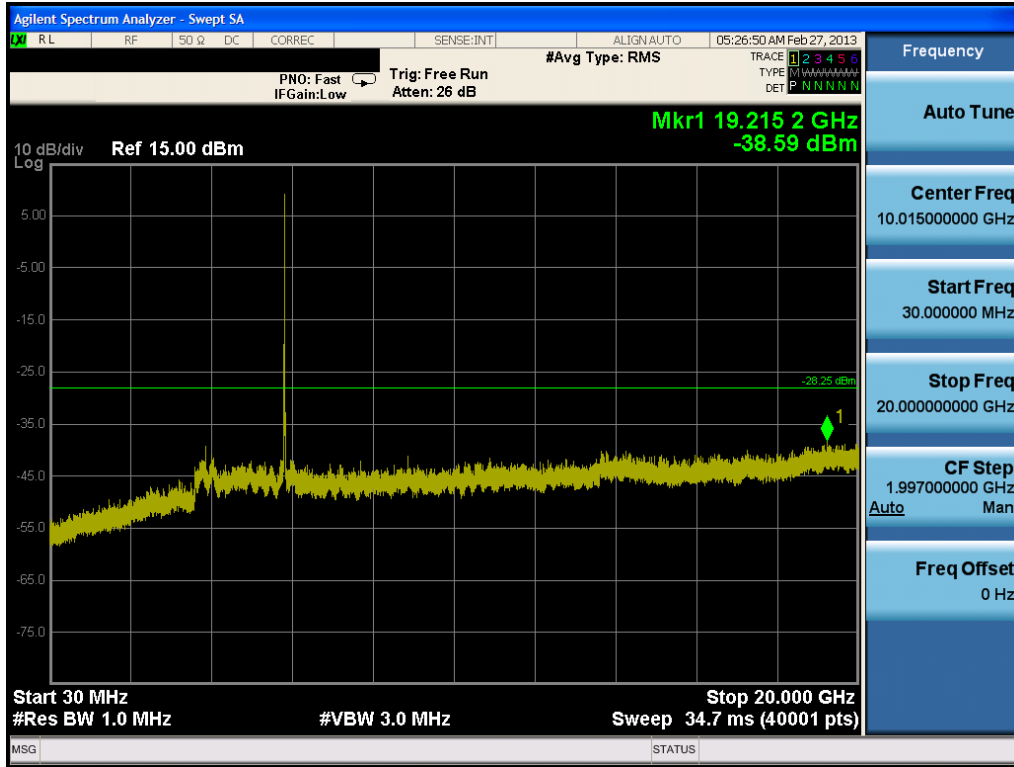


Plot 6-59. Conducted Spurious Plot (802.11a – Ch. 157)

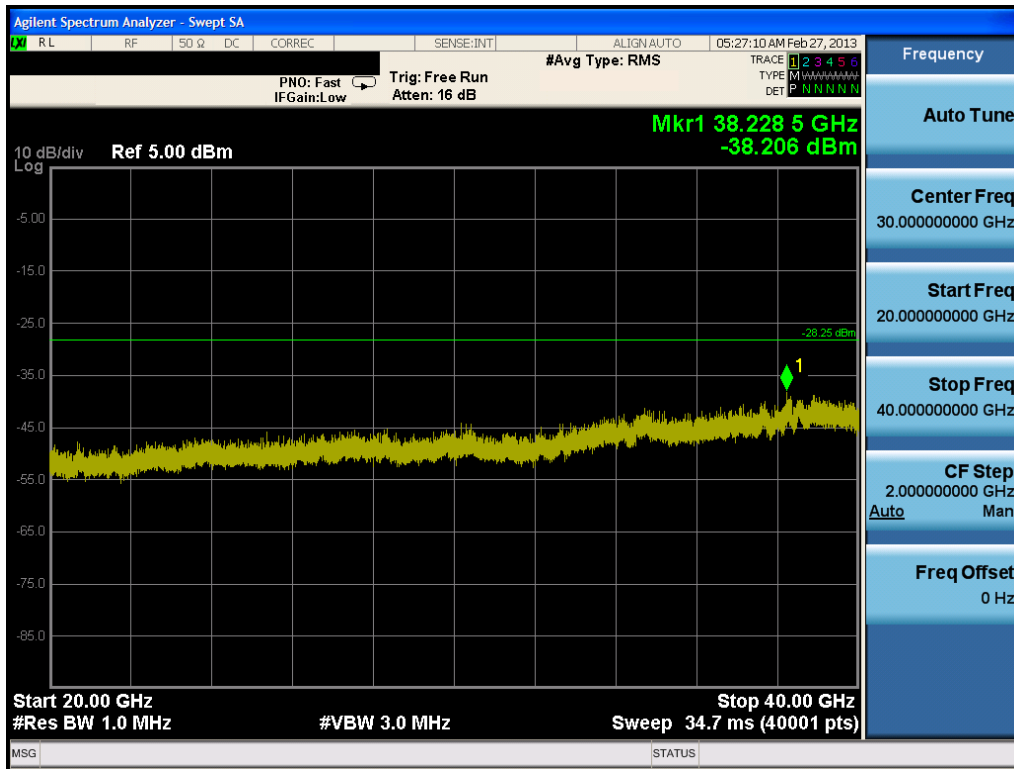


Plot 6-60. Conducted Spurious Plot (802.11a – Ch. 157)



FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Plot 6-61. Conducted Spurious Plot (802.11a – Ch. 165)



Plot 6-62. Conducted Spurious Plot (802.11a – Ch. 165)

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset	Page 51 of 66	



## 6.8 Radiated Spurious Emission Measurements

§15.247(d) / §15.205 & §15.209; RSS-210 [A8.5]

### Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle (>98%), at maximum power, and at the appropriate frequencies. 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 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.**

Frequency	Field Strength [ $\mu\text{V/m}$ ]	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**

### Test Procedures Used

KDB 558074 v02 – Section 10.2.3.3 (average power measurements)



KDB 558074 v02 – Section 10.2.3.2 (peak power measurements)

ANSI C63.10-2009 (for reference, per KDB 558074, Section 10.2)

### Test Settings

#### Average Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz (per KDB 558074 v02 Section 10.2.3.3)
3. RBW = 1MHz
4. VBW = 3MHz
5. Detector = power average (RMS)
6. Number of measurement points = 1001 (Number of points must be  $\geq 2 \times \text{span/RBW}$ )

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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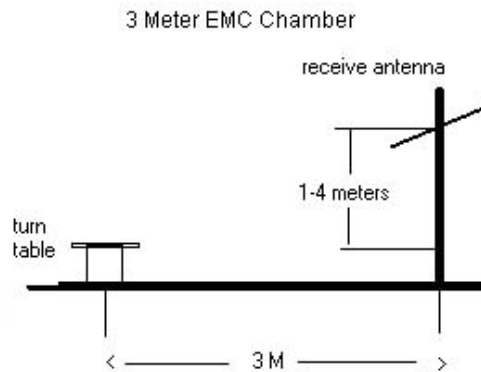
7. Sweep time = 1 second (Sweep time must be  $\geq 10 \times$  (number of measurement points in sweep)  $\times$  (transmission symbol period), where the transmission symbol period (in seconds) is defined as the reciprocal of the symbol rate (in bauds or symbols per second). See “Sample Calculations” section below for sample calculations on determining the minimum sweep time based on the EUT transmission data rate)
8. Measurement was performed over a single sweep

**Peak Measurements**



1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = 1MHz (per KDB 558074 v02 Section 10.2.3.2)
4. VBW = 3MHz
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Trace was allowed to stabilize

**Test Setup**

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



**Figure 6-6. Test Instrument & Measurement Setup**

<b>FCC ID:</b> A3LSHVE300SA		<b>FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Reviewed by:</b> Quality Manager
<b>Test Report S/N:</b> 0Y1303130491.A3L	<b>Test Dates:</b> 2/15, 2/17, 3/28/13	<b>EUT Type:</b> Portable Handset	Page 53 of 66	

## Test Notes

1. The optional test procedures for antenna port conducted measurements of unwanted emissions per the guidance of KDB 558074 v02 were not used to evaluate this device.
2. All emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 6-10.
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. The standard battery for this model is one that contains an embedded NFC antenna.
5. The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. Above 1 GHz, average and peak measurements were taken using linearly polarized horn antennas. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
6. Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

## Sample Calculations

### Determining Spurious Emissions Levels

- Field Strength Level  $_{[dB\mu V/m]} = \text{Analyzer Level }_{[dBm]} + 107 + \text{AFCL }_{[dB/m]}$
- $\text{AFCL }_{[dB/m]} = \text{Antenna Factor }_{[dB/m]} + \text{Cable Loss }_{[dB]}$
- $\text{Margin }_{[dB]} = \text{Field Strength Level }_{[dB\mu V/m]} - \text{Limit }_{[dB\mu V/m]}$



### Determining Minimum Sweep Times

- “Transmission Symbol Period” is defined as the reciprocal of the symbol rate,  $R_s$
- An 802.11b signal operating at 1Mbps uses BPSK modulation which uses 2 bits/symbol and, thus, has a symbol rate,  $R_s$ , of 0.5Msps
- $\text{Transmission Symbol Period} = 1/R_s = 2\mu s$
- $\text{Minimum sweep time} = 10 \times (\text{number of measurement points in sweep}) \times (\text{transmission symbol period}) = 10 \times 1001 \text{ points} \times 2\mu s = 20ms$

### Radiated Band Edge Measurement Offset

- The amplitude offset shown in the radiated restricted band edge plots in Section 6.8 was calculated using the formula:

$$\text{Offset (dB)} = (\text{Antenna Factor} + \text{Cable Loss} + 10 \text{ dB Attenuator}) - \text{Preamplifier Gain}$$

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<b>Test Report S/N:</b> 0Y1303130491.A3L	<b>Test Dates:</b> 2/15, 2/17, 3/28/13	<b>EUT Type:</b> Portable Handset	Page 54 of 66	

## Radiated Spurious Emission Measurements (Cont'd)

§15.247(d) / §15.205 & §15.209; RSS-210 [A8.5]

Worst Case Mode: 802.11b  
 Worst Case Transfer Rate: 1 Mbps  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 2412MHz  
 Channel: 01



Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Field Strength [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]
4824.00	-102.45	Avg	H	40.24	44.79	53.98	-9.19
4824.00	-97.61	Peak	H	40.24	49.63	73.98	-24.35
12060.00	-135.00	Avg	H	50.17	22.17	53.98	-31.81
12060.00	-125.00	Peak	H	50.17	32.17	73.98	-41.81

**Table 6-12. Radiated Measurements**

Worst Case Mode: 802.11b  
 Worst Case Transfer Rate: 1 Mbps  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 2437MHz  
 Channel: 06

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Field Strength [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]
4874.00	-98.73	Avg	H	40.26	48.53	53.98	-5.45
4874.00	-95.30	Peak	H	40.26	51.96	73.98	-22.02
7311.00	-110.99	Avg	H	43.68	39.69	53.98	-14.29
7311.00	-100.84	Peak	H	43.68	49.84	73.98	-24.14
12185.00	-135.00	Avg	H	50.49	22.49	53.98	-31.49
12185.00	-125.00	Peak	H	50.49	32.49	73.98	-41.49

**Table 6-13. Radiated Measurements**

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset	Page 55 of 66	

## Radiated Spurious Emission Measurements (Cont'd)

§15.247(d) / §15.205 & §15.209; RSS-210 [A8.5]

Worst Case Mode: 802.11b  
 Worst Case Transfer Rate: 1 Mbps  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 2462MHz  
 Channel: 11



Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Field Strength [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]
4924.00	-94.46	Avg	H	40.28	52.82	53.98	-1.16
4924.00	-92.00	Peak	H	40.28	55.28	73.98	-18.70
7386.00	-107.37	Avg	H	43.81	43.44	53.98	-10.54
7386.00	-99.07	Peak	H	43.81	51.74	73.98	-22.24
12310.00	-135.00	Avg	H	50.82	22.82	53.98	-31.16
12310.00	-125.00	Peak	H	50.82	32.82	73.98	-41.16

**Table 6-14. Radiated Measurements**

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5745MHz  
 Channel: 149

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]
11490.00	-111.25	Avg	H	48.54	0.00	44.29	53.98	-9.69
11490.00	-99.57	Peak	H	48.54	0.00	55.97	73.98	-18.01
22980.00	-135.00	Avg	H	46.01	-9.54	18.01	53.98	-35.97
22980.00	-125.00	Peak	H	46.01	-9.54	28.01	73.98	-45.97

**Table 6-15. Radiated Measurements**

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset	Page 56 of 66	

### Radiated Spurious Emission Measurements (Cont'd) §15.247(d) / §15.205 & §15.209; RSS-210 [A8.5]

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5785MHz  
 Channel: 157

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Field Strength [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]
11570.00	-110.86	Avg	H	48.53	44.67	53.98	-9.31
11570.00	-99.01	Peak	H	48.53	56.52	73.98	-17.46

**Table 6-16. Radiated Measurements**

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5825MHz  
 Channel: 165

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Field Strength [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]
11650.00	-110.61	Avg	H	48.54	44.93	53.98	-9.05
11650.00	-98.80	Peak	H	48.54	56.74	73.98	-17.24

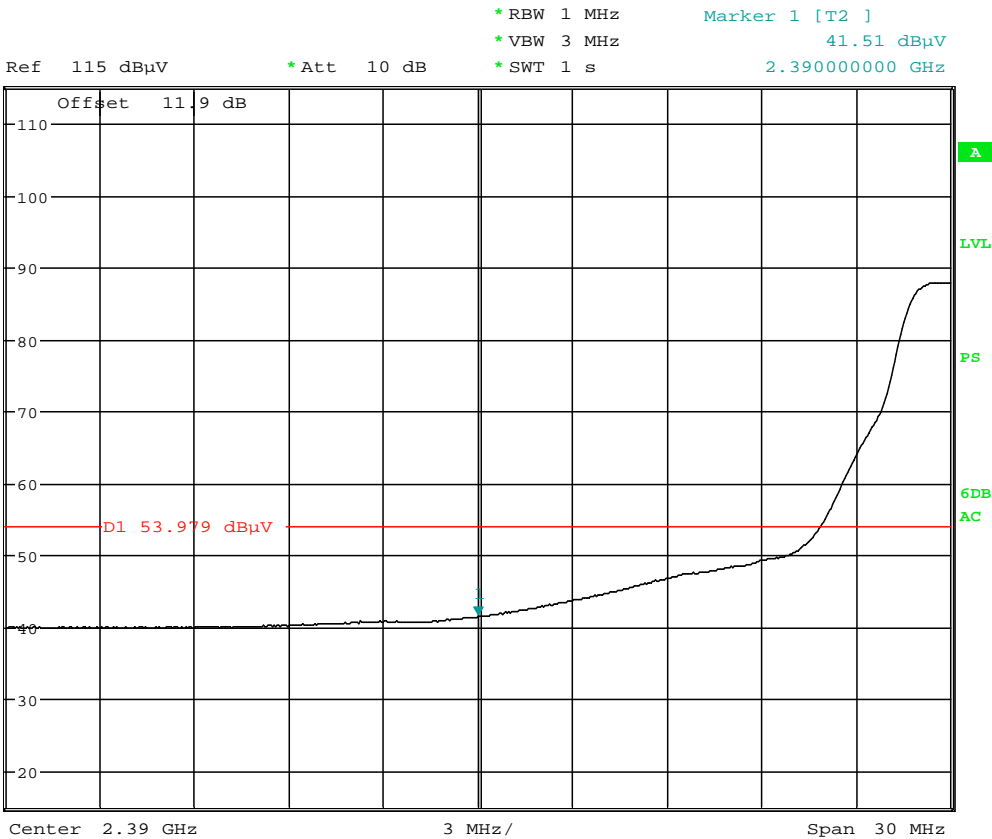
**Table 6-17. Radiated Measurements**

## 6.9 Radiated Restricted Band Edge Measurements

§15.205 / §15.209; RSS-210 [A8.5]

The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting.

Worst Case Mode: 802.11g  
 Worst Case Transfer Rate: 6Mbps  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 2412MHz  
 Channel: 1



Date: 15.FEB.2013 05:37:50

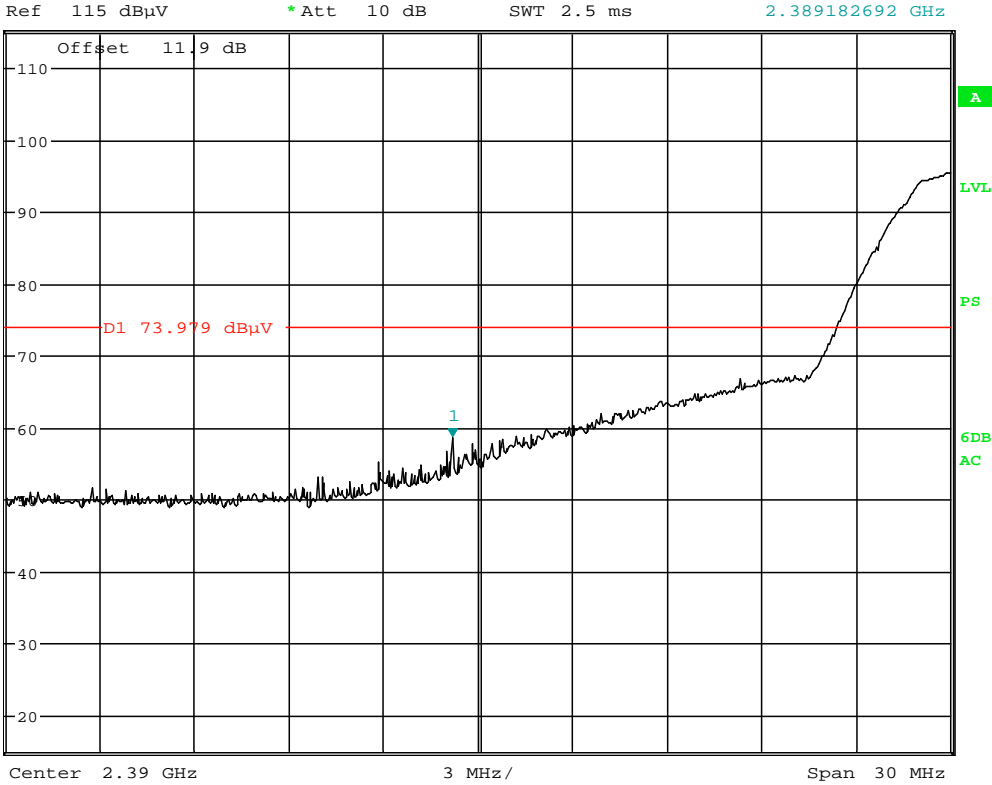
**Plot 6-63. Radiated Restricted Lower Band Edge Measurement (Average)**

FCC ID: A3LSHVE300SA	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset	Page 58 of 66	

**Radiated Restricted Band Edge Measurements (Cont'd)**  
**§15.205 / §15.209; RSS-210 [A8.5]**



\* RBW 1 MHz                      Marker 1 [T2 ]  
\* VBW 3 MHz                      58.49 dBμV  
SWT 2.5 ms                      2.389182692 GHz



Date: 15.FEB.2013 05:38:23

**Plot 6-64. Radiated Restricted Lower Band Edge Measurement (Peak)**

FCC ID: A3LSHVE300SA	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset	Page 59 of 66	



## Radiated Restricted Band Edge Measurements (Cont'd)

§15.205 / §15.209; RSS-210 [A8.5]

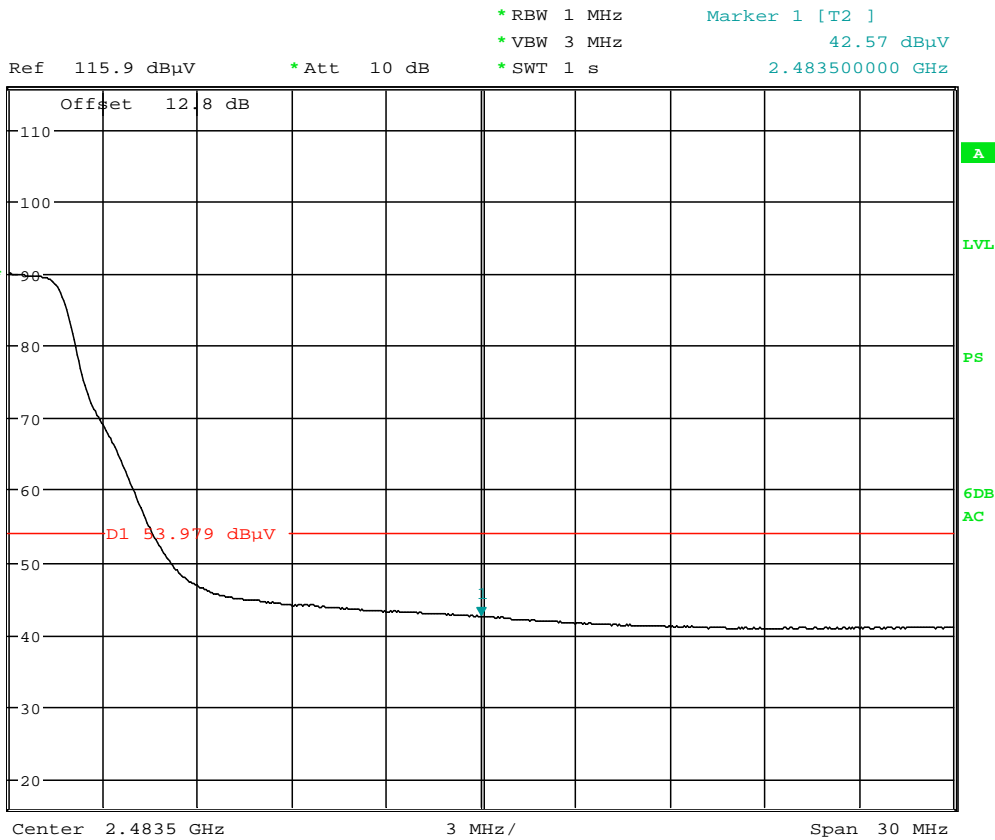
Worst Case Mode: 802.11g

Worst Case Transfer Rate: 6Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 2462MHz

Channel: 11



Date: 15.FEB.2013 05:45:06

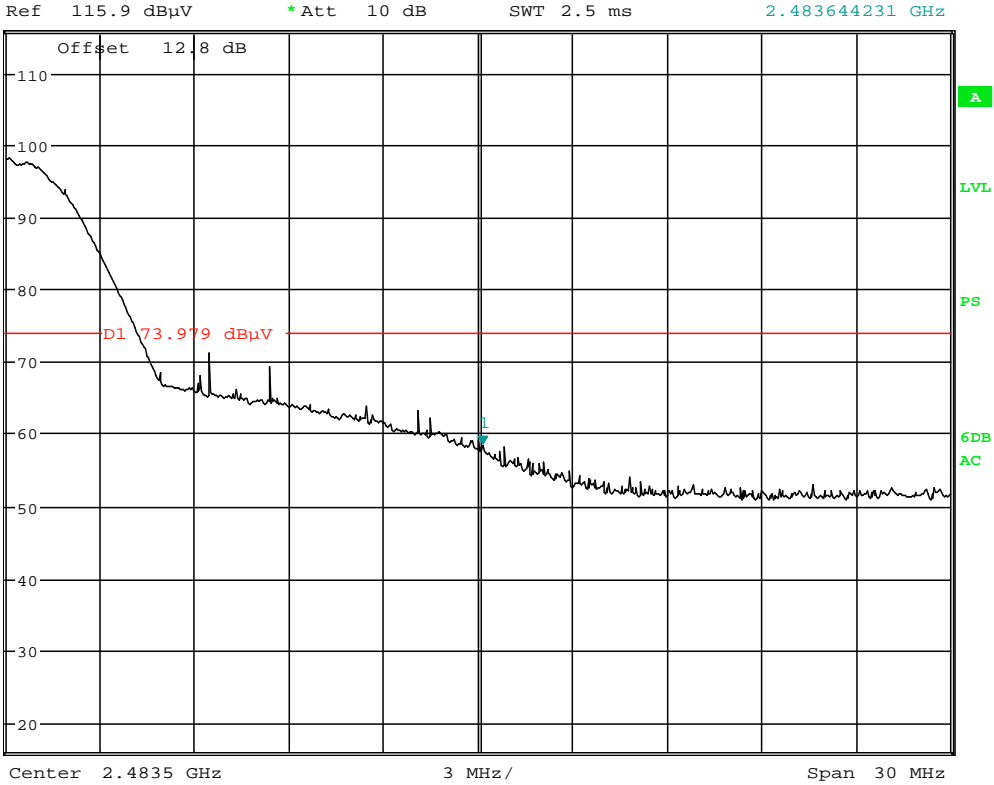
**Plot 6-65. Radiated Restricted Upper Band Edge Measurement (Average)**

FCC ID: A3LSHVE300SA	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset	Page 60 of 66	

**Radiated Restricted Band Edge Measurements (Cont'd)**  
**§15.205 / §15.209; RSS-210 [A8.5]**



\* RBW 1 MHz      Marker 1 [T2 ]  
\* VBW 3 MHz      58.51 dBμV  
SWT 2.5 ms      2.483644231 GHz



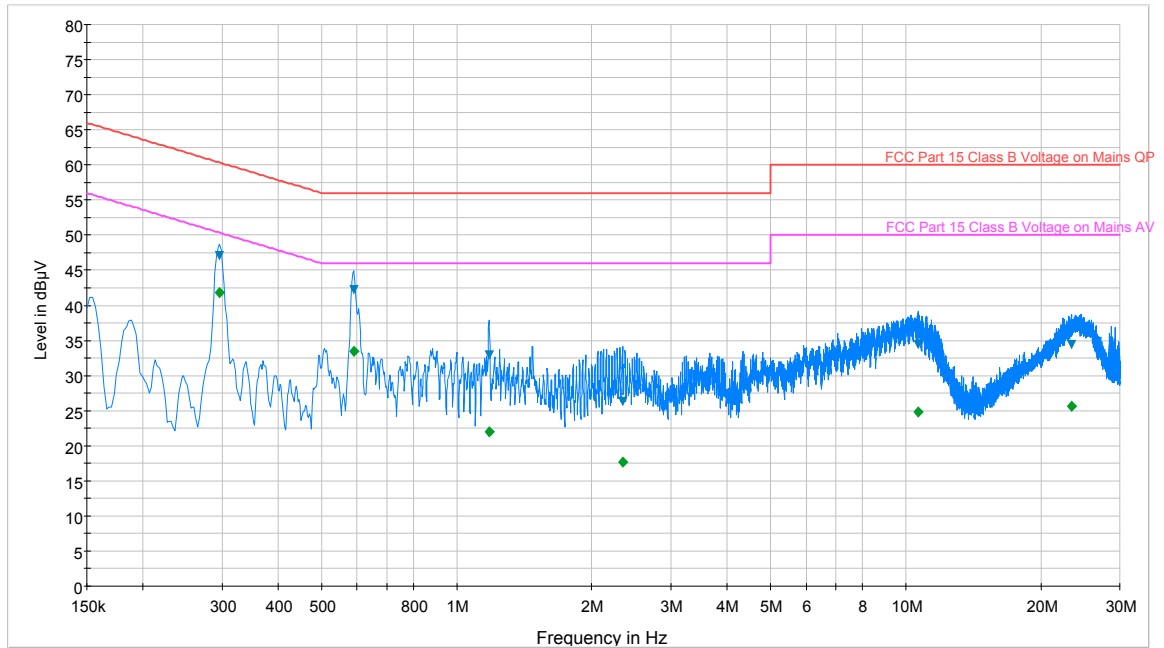
Date: 15.FEB.2013 05:47:37

**Plot 6-66. Radiated Restricted Upper Band Edge Measurement (Peak)**

FCC ID: A3LSHVE300SA	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset	Page 61 of 66	

## 6.10 Line-Conducted Test Data

### §15.207; RSS-Gen [7.2.2]



— FCC Part 15 Class B Voltage on Mains QP.LimitLine   
 — FCC Part 15 Class B Voltage on Mains AV.LimitLine   
 — Preview Result 1-PK+  
▼ Final Result 1-QPK   
◆ Final Result 2-AVG

**Plot 6-67. Line Conducted Plot with 802.11b (L1)**

Frequency MHz	Line	Corr. dB	QuasiPeak dBµV	Limit dBµV	Margin dB	Average dBµV	Limit dBµV	Margin dB
0.296	L1	0.1	47.10	60.30	13.20	41.90	50.30	8.40
0.589	L1	0.1	42.20	56.00	13.80	33.50	46.00	12.50
1.181	L1	0.2	32.90	56.00	23.10	22.00	46.00	24.00
2.342	L1	0.2	26.30	56.00	29.70	17.60	46.00	28.40
10.680	L1	0.4	34.40	60.00	25.60	24.90	50.00	25.10
23.375	L1	0.8	34.40	60.00	25.60	25.70	50.00	24.30

**Table 6-18. Line Conducted Data with 802.11b (L1)**

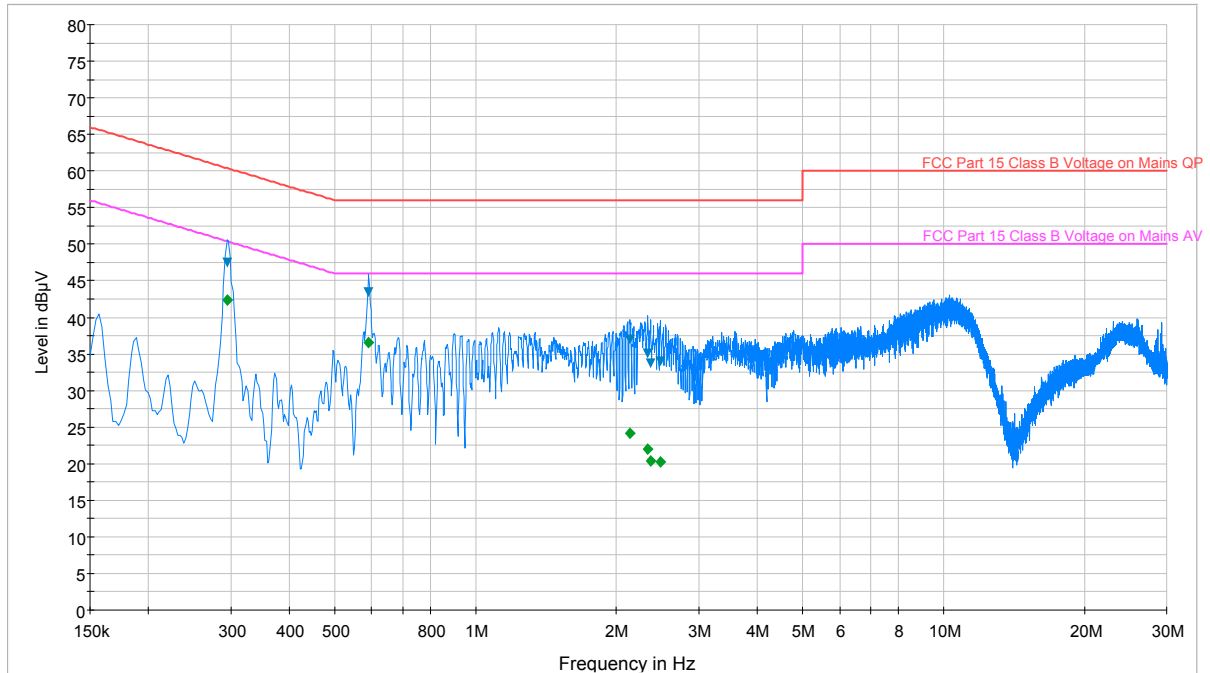
**Notes:**

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11b mode using 1Mbps on Channel 6. 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. Factor (dB) = Cable loss (dB) + LISN insertion factor (dB)
4. QP/AV Level (dBµV) = QP/AV Analyzer/Receiver Level (dBµV) + Factor (dB)
5. Margin (dB) = QP/AV Limit (dBµV) – QP/AV Level (dBµV)
6. Traces shown in plot are made using a peak detector.
7. Deviations to the Specifications: None.

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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# Line-Conducted Test Data (Cont'd)

## §15.207; RSS-Gen [7.2.2]



— FCC Part 15 Class B Voltage on Mains QP.LimitLine  
— FCC Part 15 Class B Voltage on Mains AV.LimitLine  
— Preview Result 1-PK+  
▼ Final Result 1-QPK  
◆ Final Result 2-AVG

**Plot 6-68. Line Conducted Plot with 802.11b (N)**

Frequency MHz	Line	Corr. dB	QuasiPeak dBµV	Limit dBµV	Margin dB	Average dBµV	Limit dBµV	Margin dB
0.294	N	0.2	47.50	60.40	12.90	42.30	50.40	8.10
0.591	N	0.1	43.40	56.00	12.60	36.50	46.00	9.50
2.139	N	0.2	37.00	56.00	19.00	24.10	46.00	21.90
2.333	N	0.2	35.10	56.00	20.90	22.00	46.00	24.00
2.364	N	0.2	33.80	56.00	22.20	20.40	46.00	25.60
2.483	N	0.2	34.00	56.00	22.00	20.30	46.00	25.70

**Table 6-19. Line Conducted Data with 802.11b (N)**

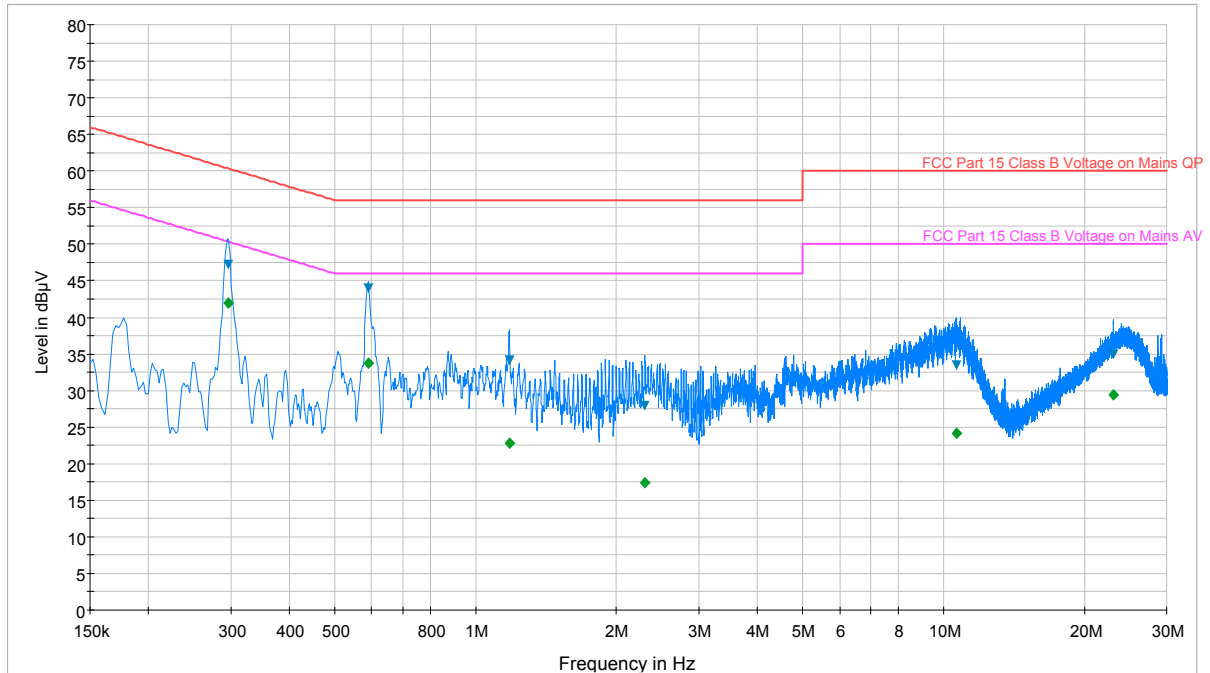
**Notes:**

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

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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## Line-Conducted Test Data (Cont'd)

### §15.207; RSS-Gen [7.2.2]



— FCC Part 15 Class B Voltage on Mains QP.LimitLine — FCC Part 15 Class B Voltage on Mains AV.LimitLine — Preview Result 1-PK+  
▼ Final Result 1-QPK ◆ Final Result 2-AVG

**Plot 6-69. Line Conducted Plot with 802.11a (L1)**

Frequency MHz	Line	Corr. dB	QuasiPeak dBµV	Limit dBµV	Margin dB	Average dBµV	Limit dBµV	Margin dB
0.296	L1	0.1	47.20	60.30	13.10	42.00	50.30	8.30
0.589	L1	0.1	44.00	56.00	12.00	33.70	46.00	12.30
1.181	L1	0.2	34.10	56.00	21.90	22.80	46.00	23.20
2.301	L1	0.2	28.00	56.00	28.00	17.50	46.00	28.50
10.662	L1	0.4	33.40	60.00	26.60	24.10	50.00	25.90
23.127	L1	0.8	35.00	60.00	25.00	29.40	50.00	20.60

**Table 6-20. Line Conducted Data with 802.11a (L1)**

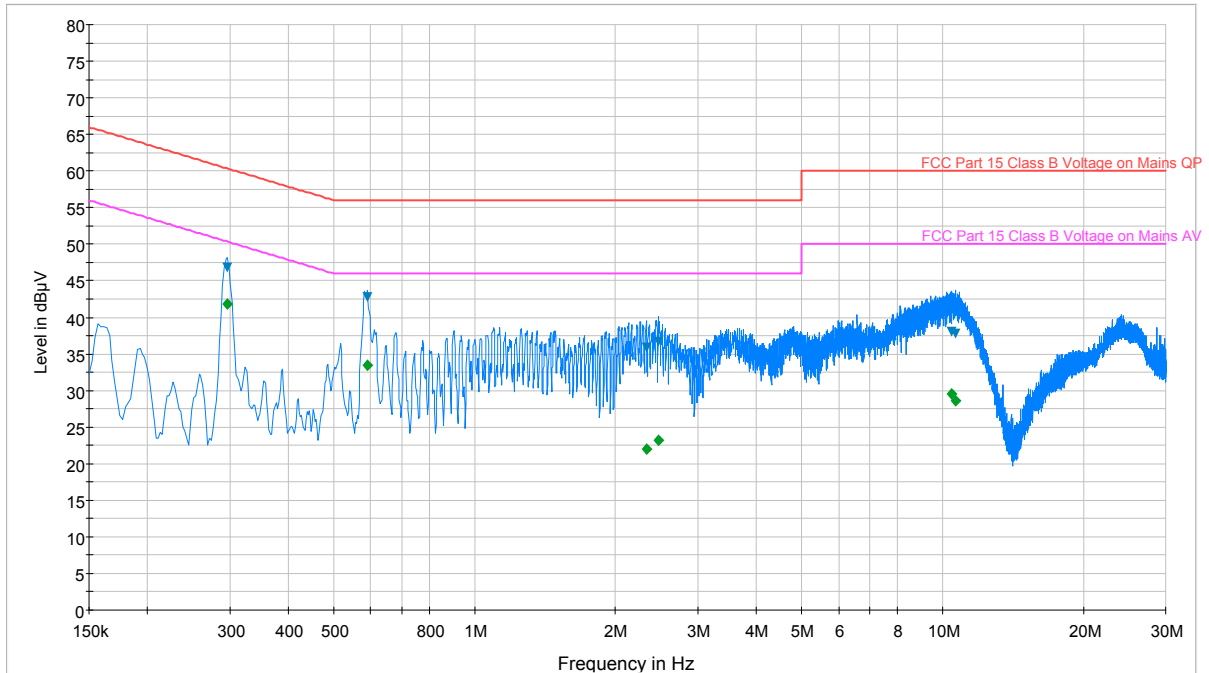
**Notes:**

- 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 157. The emissions found were not affected by the choice of channel used during testing.
- The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
- Factor (dB) = Cable loss (dB) + LISN insertion factor (dB)
- QP/AV Level (dBµV) = QP/AV Analyzer/Receiver Level (dBµV) + Factor (dB)
- Margin (dB) = QP/AV Limit (dBµV) – QP/AV Level (dBµV)
- Traces shown in plot are made using a peak detector.
- Deviations to the Specifications: None.

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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# Line-Conducted Test Data (Cont'd)

## §15.207; RSS-Gen [7.2.2]



— FCC Part 15 Class B Voltage on Mains QP.LimitLine  
— FCC Part 15 Class B Voltage on Mains AV.LimitLine  
— Preview Result 1-PK+  
▼ Final Result 1-QPK  
◆ Final Result 2-AVG

**Plot 6-70. Line Conducted Plot with 802.11a (N)**

Frequency MHz	Line	Corr. dB	QuasiPeak dBµV	Limit dBµV	Margin dB	Average dBµV	Limit dBµV	Margin dB
0.296	N	0.2	46.80	60.30	13.50	41.90	50.30	8.40
0.589	N	0.1	42.80	56.00	13.20	33.40	46.00	12.60
2.328	N	0.2	35.80	56.00	20.20	22.00	46.00	24.00
2.474	N	0.2	36.70	56.00	19.30	23.10	46.00	22.90
10.453	N	0.4	38.10	60.00	21.90	29.50	50.00	20.50
10.673	N	0.4	37.80	60.00	22.20	28.60	50.00	21.40

**Table 6-21. Line Conducted Data with 802.11a (N)**



**Notes:**

- 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 157. The emissions found were not affected by the choice of channel used during testing.
- The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
- Factor (dB) = Cable loss (dB) + LISN insertion factor (dB)
- QP/AV Level (dBµV) = QP/AV Analyzer/Receiver Level (dBµV) + Factor (dB)
- Margin (dB) = QP/AV Limit (dBµV) – QP/AV Level (dBµV)
- Traces shown in plot are made using a peak detector.
- Deviations to the Specifications: None.

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1303130491.A3L	Test Dates: 2/15, 2/17, 3/28/13	EUT Type: Portable Handset		Page 65 of 66

## 7.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSHVE300SA** is in compliance with Part 15C of the FCC Rules.

<b>FCC ID:</b> A3LSHVE300SA		<b>FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Reviewed by:</b> Quality Manager
<b>Test Report S/N:</b> 0Y1303130491.A3L	<b>Test Dates:</b> 2/15, 2/17, 3/28/13	<b>EUT Type:</b> Portable Handset	Page 66 of 66	