

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.

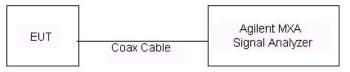


Figure 6-4. Test Instrument & Measurement Setup

Test Notes

None

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



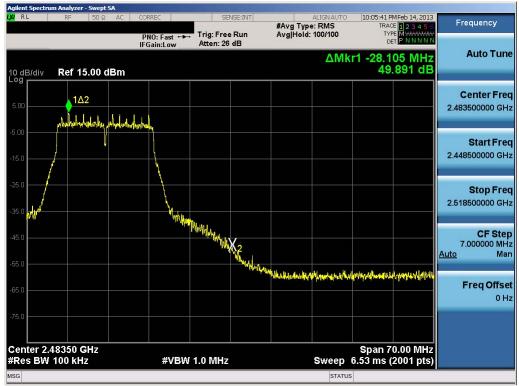
Plot 6-38. Band Edge Plot (802.11b - Ch. 11)

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



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

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



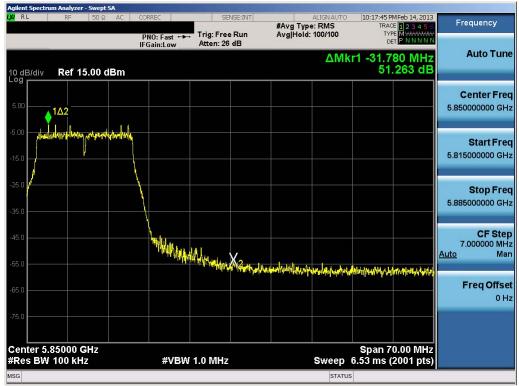
Plot 6-42. Band Edge Plot (802.11n (2.4GHz) – Ch. 11)

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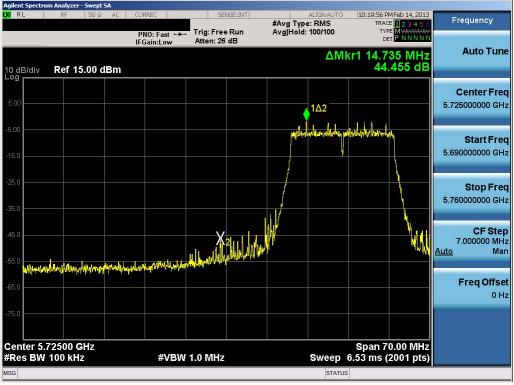


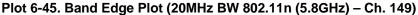


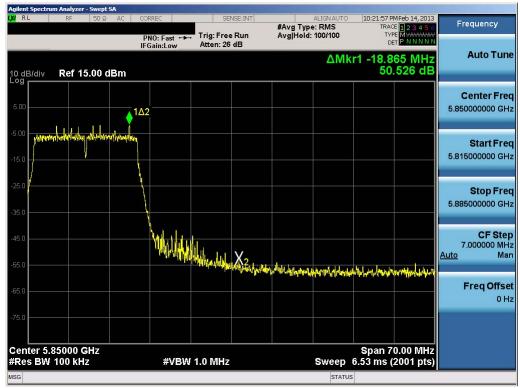
Plot 6-44. Band Edge Plot (802.11a - Ch. 165)

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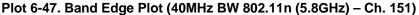


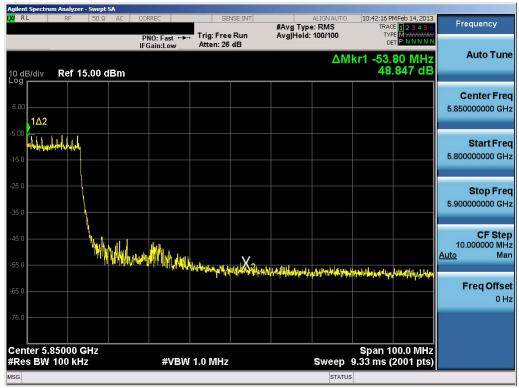
Plot 6-46. Band Edge Plot (20MHz BW 802.11n (5.8GHz) - Ch. 165)

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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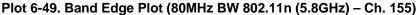


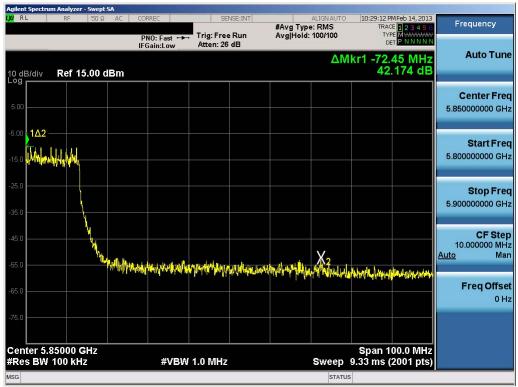
Plot 6-48. Band Edge Plot (40MHz BW 802.11n (5.8GHz) - Ch. 159)

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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Plot 6-50. Band Edge Plot (80MHz BW 802.11n (5.8GHz) - Ch. 155)

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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.

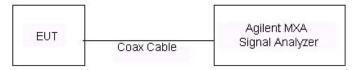


Figure 6-5. Test Instrument & Measurement Setup

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Test Notes

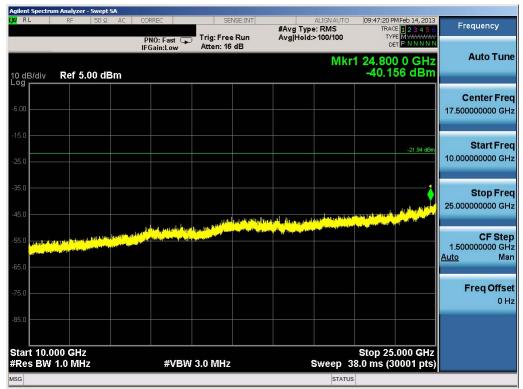
- 1. RBW was set to 1MHz rather than 100kHz in order to increase the measurement speed.
- 2. The display line shown in the following plots denotes the limit at 30dB below the fundamental emission level measured in a 100kHz bandwidth. However, since the traces in the following plots are measured with 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.

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	m Analyzer - Swept SA					
LXIRL	RF 50 Ω A	C CORREC	SENSE:INT	ALIGNAUTO #Avg Type: RMS	09:47:01 PMFeb 14, 2013 TRACE 1 2 3 4 5 6	Frequency
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		IFGain:Low	Atten: 26 dB		DET PNNNN	
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-5.00						
						Start Freq
-15.0						30.000000 MHz
					-21.94 dBm	
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-75.0						
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#Res BW		#VBW	3.0 MHz	Sweep 1	8.0 ms (30001 pts)	
MSG				STATUS		
wiba				STATUS		





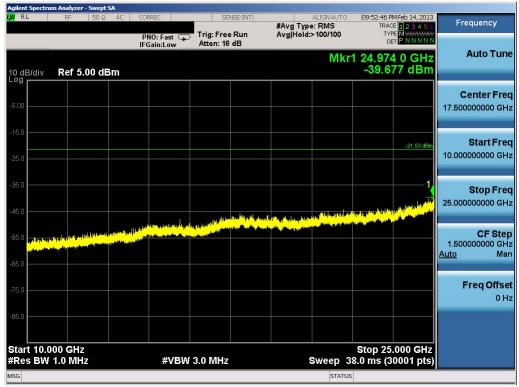
Plot 6-52. Conducted Spurious Plot (802.11b – Ch. 1)

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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	um Analyzer - Swep							
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		1	FGain:Low	Atten: 26 dB			DET PNNN	
						Mk	r1 3.615 2 GH:	Auto Tune
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-5.00								
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-15.0								30.000000 MHz
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-65.0								Freq Offset
-65.U								0 Hz
-75.0								
Start 30	VIHz						Stop 10.000 GH	
#Res BW			#VBW	3.0 MHz		Sweep 1	8.0 ms (30001 pts	
MSG						STATUS	1	
						onnoc		





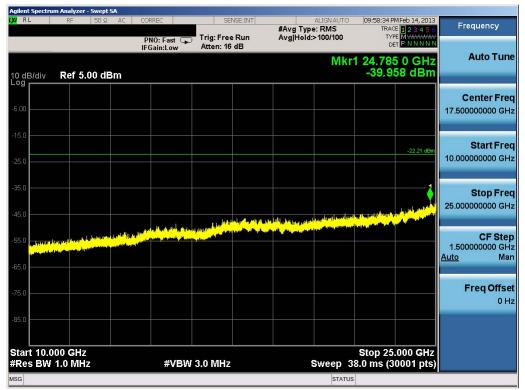
Plot 6-54. Conducted Spurious Plot (802.11b - Ch. 6)

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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	um Analyzer - Swept S									
LXI RL	RF 50 Ω	AC CO	RREC	SEN	VSE:INT	#Avg Typ	ALIGNAUTO		MFeb 14, 2013 E 1 2 3 4 5 6	Frequency
		Р	NO: Fast 😱	Trig: Free				TYP		
		IF	Gain:Low	Atten: 26	dB			1000		Auto Tune
							Mk	r1 9.754	4 4 GHz	Auto Tune
10 dB/div Log	Ref 15.00 d	Bm			-	<u></u>		-44.	24 dBm	
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										5.015000000 GHZ
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-35.0			-							10.00000000 GH2
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										0 Hz
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	1.0 MHz		#VBW	3.0 MHz			Sweep 1	8.0 ms (3	000 GHZ 0001 pts)	
MSG							STATUS			
mod							314103	1		





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)	SAMSUNG	Reviewed by: Quality Manager			
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Agilent Spectr	um Analyzer - Swe		0055	0.5						
KL	RF 50 Ω		RREC		NSE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRAC	M Feb 27, 2013	Frequency
		P IF	NO: Fast G Gain:Low	Atten: 26						
10 dB/div Log	Ref 15.00 d	IBm					Mk	r1 3.830 -38.0) 8 GHz 62 dBm	Auto Tune
5.00										Center Fred 10.015000000 GHz
-5.00										Start From
-15.0										Start Free 30.000000 MH:
-25.0									-29.84 dBm	Stop Free 20.000000000 GH
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-76:0										
Start 30 N #Res BW			#VBV	V 3.0 MHz			Sweep 3	Stop 20 4.7 ms (4	.000 GHz 0001 pts)	
MSG							STATUS			

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



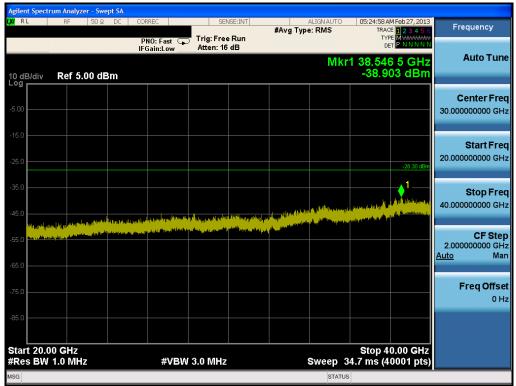
Plot 6-58. Conducted Spurious Plot (802.11a - Ch. 149)

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager				
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Agilent Spe	c <mark>trum Analyze</mark> RF	<mark>r - Swept SA</mark> 50 Ω DC	CORREC	CEA	ISE:INT		ALIGNAUTO	05-04-00-4	M Feb 27, 2013	
KL.	KP	20 % DC	PNO: Fast			#Avg Typ		TRA	CE 1 2 3 4 5 6	Frequency
			IFGain:Low	Atten: 26						Auto Tune
10 dB/div Log	Ref 15	.00 dBm					Mkr	1 19.10 ⁻ -37.	3 3 GHz 52 dBm	Auto Tunc
			1							Center Fred
5.00										10.015000000 GHz
-5.00										
-15.0										Start Free 30.000000 MHz
10.0										
-25.0									-28.30 dBm	Stop Fred
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	V 1.0 MHz	:	#VBV	/ 3.0 MHz				34.7 ms (4	.0001 pts)	
MSG							STATUS			

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)	SAMSUNG	Reviewed by: Quality Manager
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Agilent Spect	r <mark>um Analyzer - Swe</mark> RF 50 Ω		RREC	SEN	ISE:INT		ALIGN AUTO	05:26:50.4	AM Feb 27, 2013	
	10 00 3	P	NO: Fast 🕟	Trig: Free	Run	#Avg Typ		TRA	CE 123456 PE MWWWWWW ET P N N N N N	Frequency
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5.00										Center Free 10.015000000 GH
-5.00										Start Fre 30.000000 MH
-25.0									-28.25 dBm	Stop Fre 20.000000000 GH
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-75.0 Start 30 M	лц _э							Stop 20		
#Res BW			#VBW	3.0 MHz			Sweep 3	4.7 ms (4	.000 GHz 0001 pts)	
ISG							STATUS	5		





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

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Radiated Spurious Emission Measurements 6.8 §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 [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

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 $> 2 \times \text{span/RBW}$)

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- 7. Sweep time = 1 second (Sweep time must be ≥ 10 x (number of measurement points in sweep) x (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.

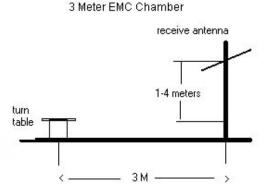


Figure 6-6. Test Instrument & Measurement Setup

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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

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

Determining Minimum Sweep Times

- o "Transmission Symbol Period" is defined as the reciprocal of the symbol rate, Rs
- 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
- \circ Transmission Symbol Period = 1/R_s = 2µs
- Minimum sweep time = $10 \times (number of measurement points in sweep) \times (transmission symbol period) = <math>10 \times 1001$ 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:

Offset (dB) = (Antenna Factor + Cable Loss + 10 dB Attenuator) – Preamplifier Gain

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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 [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4824.00	-102.45	Avg	Н	40.24	44.79	53.98	-9.19
4824.00	-97.61	Peak	Н	40.24	49.63	73.98	-24.35
12060.00	-135.00	Avg	Н	50.17	22.17	53.98	-31.81
12060.00	-125.00	Peak	Н	50.17	32.17	73.98	-41.81

Table 6-12. Radiated Measurements

Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: **Operating Frequency:** Channel:

802.11b
1 Mbps
3 Meters
2437MHz
06

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

Table 6-13. Radiated Measurements

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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 [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4924.00	-94.46	Avg	Н	40.28	52.82	53.98	-1.16
4924.00	-92.00	Peak	Н	40.28	55.28	73.98	-18.70
7386.00	-107.37	Avg	Н	43.81	43.44	53.98	-10.54
7386.00	-99.07	Peak	Н	43.81	51.74	73.98	-22.24
12310.00	-135.00	Avg	Н	50.82	22.82	53.98	-31.16
12310.00	-125.00	Peak	Н	50.82	32.82	73.98	-41.16

Table 6-14. Radiated Measurements

Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: Operating Frequency: Channel:

802.11a	
6 Mbps	
1 & 3 Meters	
5745MHz	
149	

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]
11490.00	-111.25	Avg	Н	48.54	0.00	44.29	53.98	-9.69
11490.00	-99.57	Peak	Н	48.54	0.00	55.97	73.98	-18.01
22980.00	-135.00	Avg	Н	46.01	-9.54	18.01	53.98	-35.97
22980.00	-125.00	Peak	Н	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)	SAMSUNG	Reviewed by: Quality Manager
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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]	y Analyzer Level Dete [dBm]		Pol. [H/V]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
11570.00	-110.86	Avg	Н	48.53	44.67	53.98	-9.31
11570.00	-99.01	Peak	Н	48.53	56.52	73.98	-17.46

Table	6-16.	Radiated	Measurements
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Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: Operating Frequency: Channel:

802.11a
6 Mbps
1 & 3 Meters
5825MHz
165

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

Table 6-17. Radiated Measurements

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager				
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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 C	ase Mo	de:		802.11	g					
	Worst C	ase Tra	insfer R	ate:	6Mbps						
	Distanc	e of Mea	asureme	ents:	3 Mete	rs					
	Operati	ng Freq	uency:		2412M	Hz					
	Channe	el:			1						
R S	Ref 115	5 dBµV		* Att	10 dB	* RBW 1 * VBW 3 * SWT 1	MHz	Marke	er 1 [T2 41. 2.390000	51 dBµV	
	Offs 110		9 dB]
											A
	-100										LVI
2 RM MAXH	90										
	-80										PS
	-70										
	-60										6DB AC
	-50	D1 53.9	79 dBµV								
	-40										
	-30										
	-20										
	Center	2.39 GH:	<u> </u>		3 1	MHz/			Span	30 MHz	d

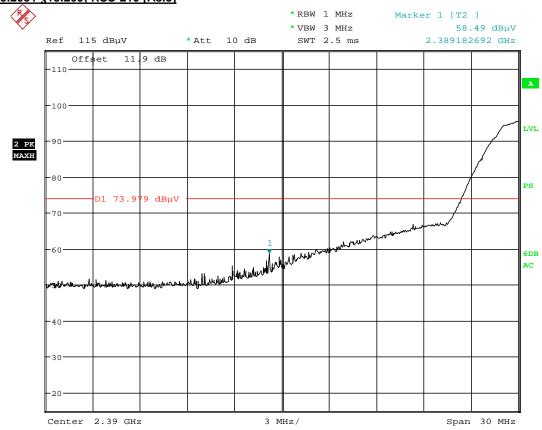
Date: 15.FEB.2013 05:37:50

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

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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Radiated Restricted Band Edge Measurements (Cont'd) §15.205 / §15.209; RSS-210 [A8.5]



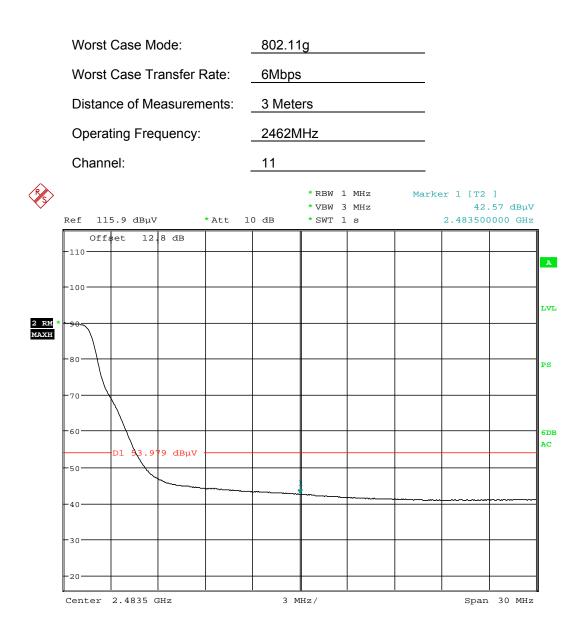
Date: 15.FEB.2013 05:38:23

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

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager				
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Radiated Restricted Band Edge Measurements (Cont'd) §15.205 / §15.209; RSS-210 [A8.5]



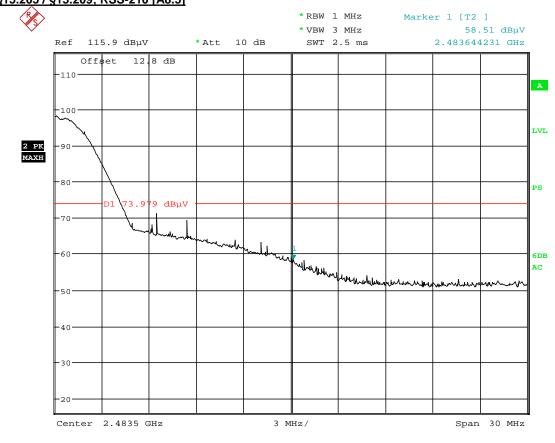
Date: 15.FEB.2013 05:45:06

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

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager	
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Radiated Restricted Band Edge Measurements (Cont'd) §15.205 / §15.209; RSS-210 [A8.5]



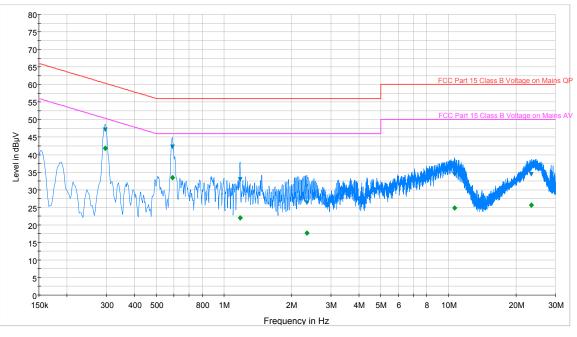
Date: 15.FEB.2013 05:47:37

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

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager	
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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 2-AVG

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

Line	Corr.	QuasiPeak	Limit	Margin	Average	Limit	Margin
	dB	dBµV	dBµV	dB	dBµV	dBµV	dB
L1	0.1	47.10	60.30	13.20	41.90	50.30	8.40
L1	0.1	42.20	56.00	13.80	33.50	46.00	12.50
L1	0.2	32.90	56.00	23.10	22.00	46.00	24.00
L1	0.2	26.30	56.00	29.70	17.60	46.00	28.40
L1	0.4	34.40	60.00	25.60	24.90	50.00	25.10
L1	0.8	34.40	60.00	25.60	25.70	50.00	24.30
	L1 L1 L1 L1 L1 L1	dB L1 0.1 L1 0.1 L1 0.2 L1 0.2 L1 0.4	dB dBμV L1 0.1 47.10 L1 0.1 42.20 L1 0.2 32.90 L1 0.2 26.30 L1 0.4 34.40	dB dBμV dBμV L1 0.1 47.10 60.30 L1 0.1 42.20 56.00 L1 0.2 32.90 56.00 L1 0.2 36.00 56.00 L1 0.4 34.40 60.00	dB dBµV dBµV dBµV dB L1 0.1 47.10 60.30 13.20 L1 0.1 42.20 56.00 13.80 L1 0.2 32.90 56.00 23.10 L1 0.2 26.30 56.00 29.70 L1 0.4 34.40 60.00 25.60	dB dBµV dBµV dBµV dB dBµV L1 0.1 47.10 60.30 13.20 41.90 L1 0.1 42.20 56.00 13.80 33.50 L1 0.2 32.90 56.00 23.10 22.00 L1 0.2 26.30 56.00 29.70 17.60 L1 0.4 34.40 60.00 25.60 24.90	dB dBµV dBµV dB dBµV dBµV L1 0.1 47.10 60.30 13.20 41.90 50.30 L1 0.1 42.20 56.00 13.80 33.50 46.00 L1 0.2 32.90 56.00 23.10 22.00 46.00 L1 0.2 26.30 56.00 29.70 17.60 46.00 L1 0.4 34.40 60.00 25.60 24.90 50.00

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

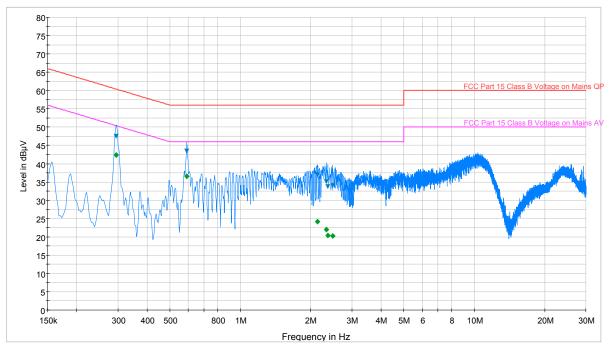
Notes:

- 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 (dB μ V) = QP/AV Analyzer/Receiver Level (dB μ V) + Factor (dB)
- 5. Margin (dB) = QP/AV Limit (dB μ V) QP/AV Level (dB μ V)
- 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)	SAMSUNG	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	Line	Corr.	QuasiPeak	Limit	Margin	Average	Limit	Margin
MHz		dB	dBµV	dBµV	dB	dBµV	dBµV	dB
0.294	Ν	0.2	47.50	60.40	12.90	42.30	50.40	8.10
0.591	Ν	0.1	43.40	56.00	12.60	36.50	46.00	9.50
2.139	Ν	0.2	37.00	56.00	19.00	24.10	46.00	21.90
2.333	Ν	0.2	35.10	56.00	20.90	22.00	46.00	24.00
2.364	Ν	0.2	33.80	56.00	22.20	20.40	46.00	25.60
2.483	Ν	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:

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 (dB μ V) = QP/AV Analyzer/Receiver Level (dB μ V) + Factor (dB)

5.Margin (dB) = QP/AV Limit (dB μ V) – QP/AV Level (dB μ V)

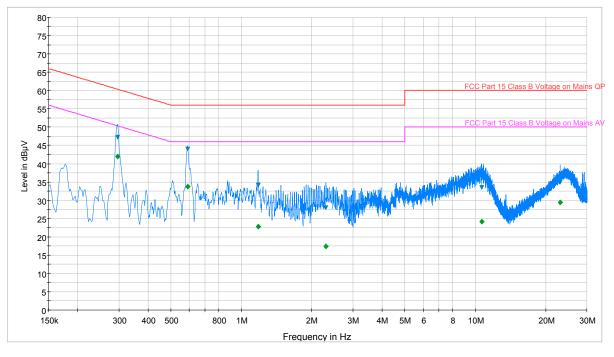
6.Traces shown in plot are made using a peak detector.

7. Deviations to the Specifications: None.

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	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 I	Plot with 802.11a (L1)
-----------------------------	------------------------

Frequency	Line	Corr.	QuasiPeak	Limit	Margin	Average	Limit	Margin
MHz		dB	dBµV	dBµV	dB	dBµV	dBµV	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:

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 157. 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 (dB μ V) = QP/AV Analyzer/Receiver Level (dB μ V) + Factor (dB)

5. Margin (dB) = QP/AV Limit (dB μ V) – QP/AV Level (dB μ V)

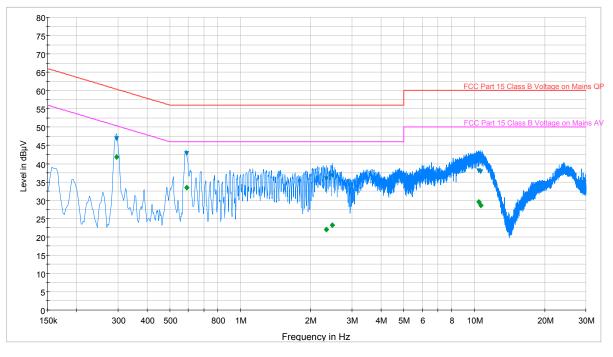
6.Traces shown in plot are made using a peak detector.

7. Deviations to the Specifications: None.

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	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	Line	Corr.	QuasiPeak	Limit	Margin	Average	Limit	Margin
MHz		dB	dBµV	dBµV	dB	dBµV	dBµV	dB
0.296	Ν	0.2	46.80	60.30	13.50	41.90	50.30	8.40
0.589	Ν	0.1	42.80	56.00	13.20	33.40	46.00	12.60
2.328	Ν	0.2	35.80	56.00	20.20	22.00	46.00	24.00
2.474	Ν	0.2	36.70	56.00	19.30	23.10	46.00	22.90
10.453	Ν	0.4	38.10	60.00	21.90	29.50	50.00	20.50
10.673	Ν	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:

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 157. 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 (dB μ V) = QP/AV Analyzer/Receiver Level (dB μ V) + Factor (dB)

5.Margin (dB) = QP/AV Limit (dB μ V) – QP/AV Level (dB μ V)

6.Traces shown in plot are made using a peak detector.

7. Deviations to the Specifications: None.

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CONCLUSION 7.0

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.

FCC ID: A3LSHVE300SA		FCC Pt. 15.247 802.11a/ac/b/g/n MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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