



**Conducted Spurious emissions**

15.247 & RSS-210 A8.5:

In any 100 kHz bandwidth outside the frequency band in which the digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

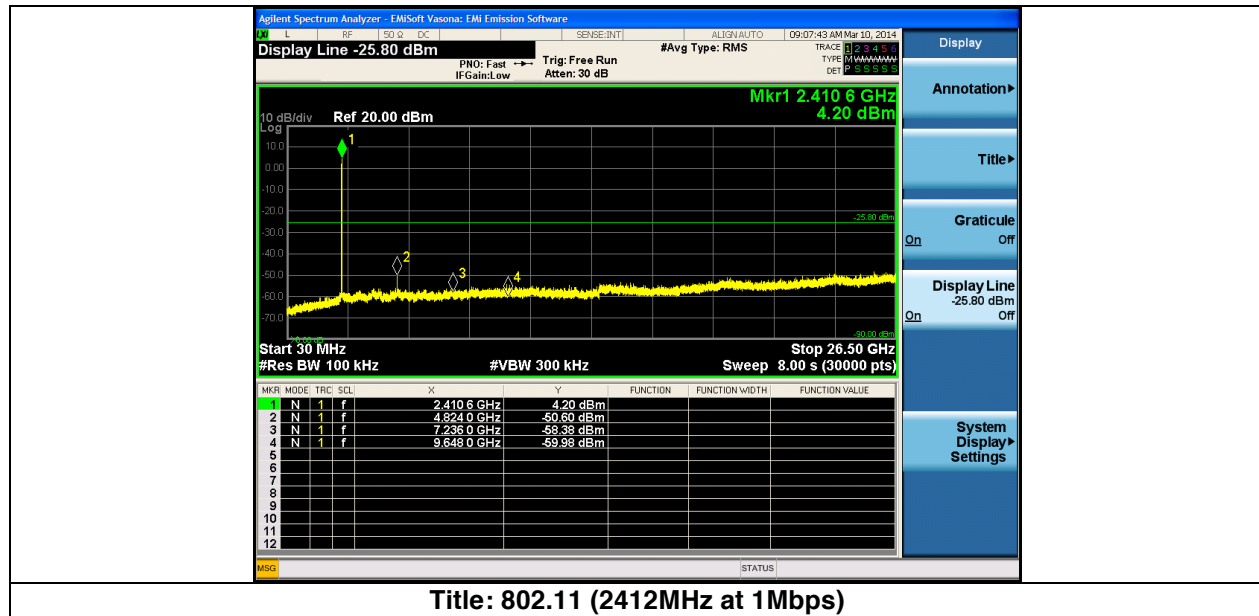
Connect the antenna port(s) to the spectrum analyzer input. Place the radio in continuous transmit mode. Configure the spectrum analyzer as shown below (be sure to enter all losses between the transmitter output and the spectrum analyzer).

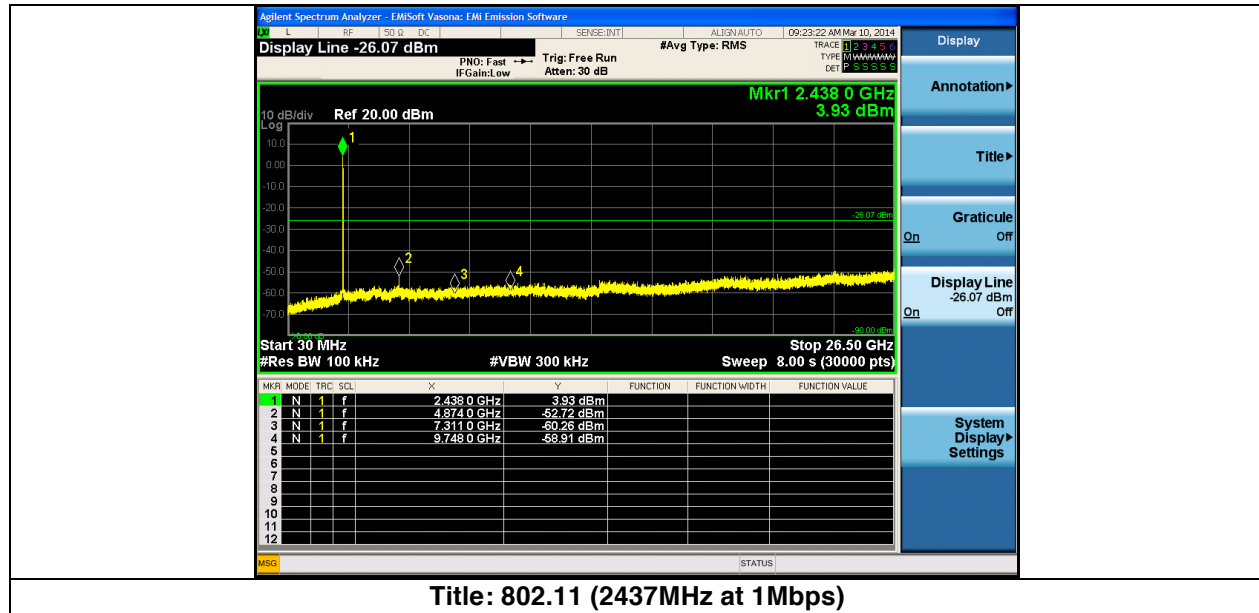
Span: 30 MHz-26.5 GHz  
 Reference Level: 20 dBm  
 Attenuation: 30 dB  
 Sweep Time: Auto  
 Resolution Bandwidth: 100 kHz  
 Video Bandwidth: 300 kHz  
 Detector: Peak  
 Trace: Single  
 Marker: Peak

Record the marker waveform peak to spur difference

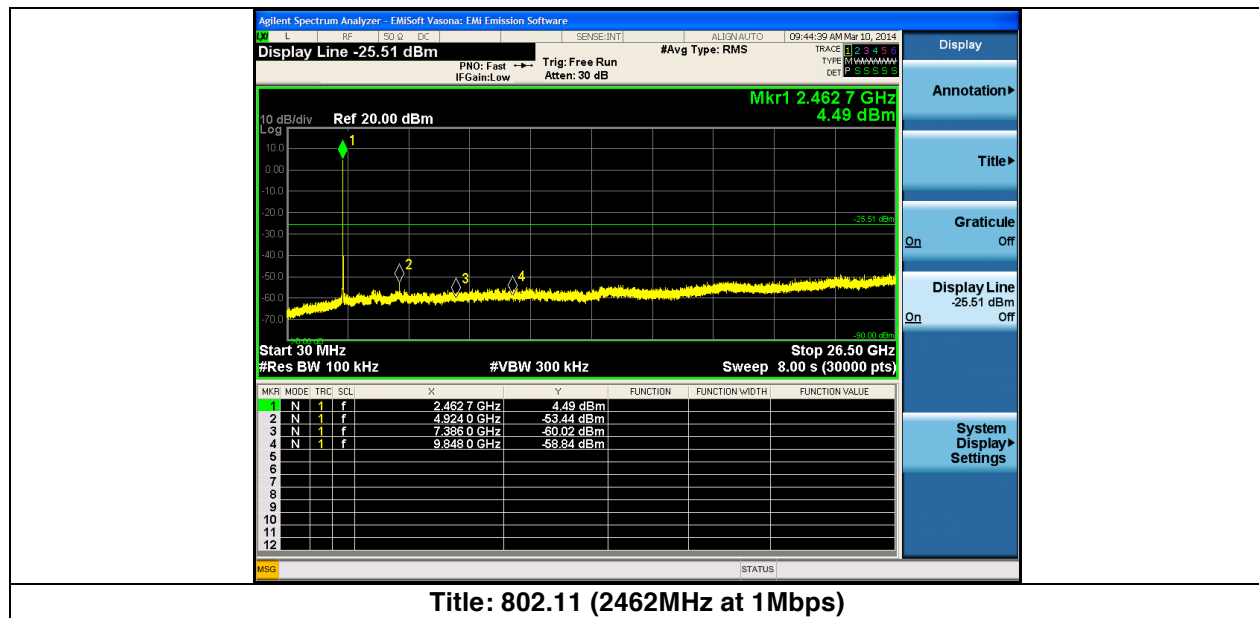
**Graphical Test Results**

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements (where applicable).

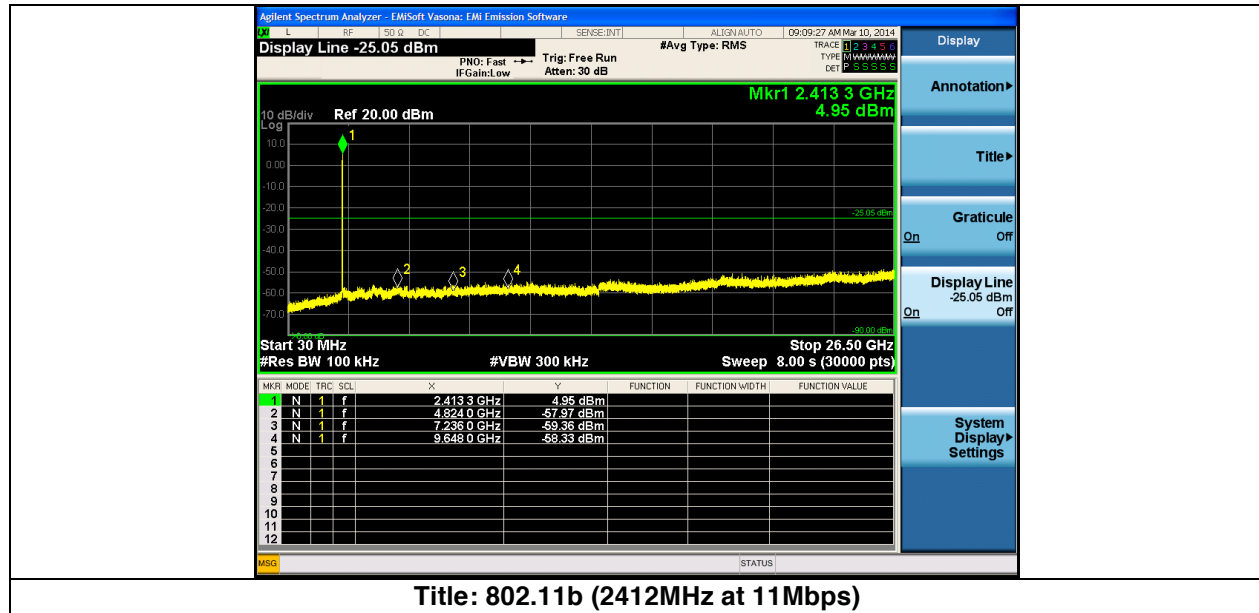




**Title: 802.11 (2437MHz at 1Mbps)**

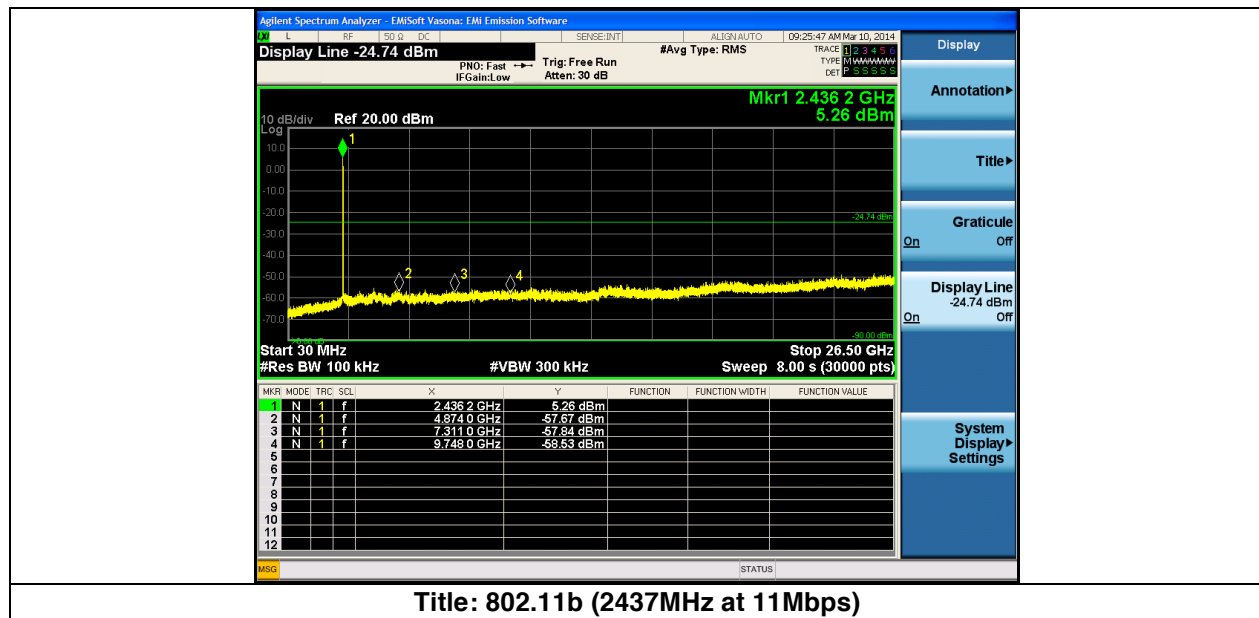


**Title: 802.11 (2462MHz at 1Mbps)**



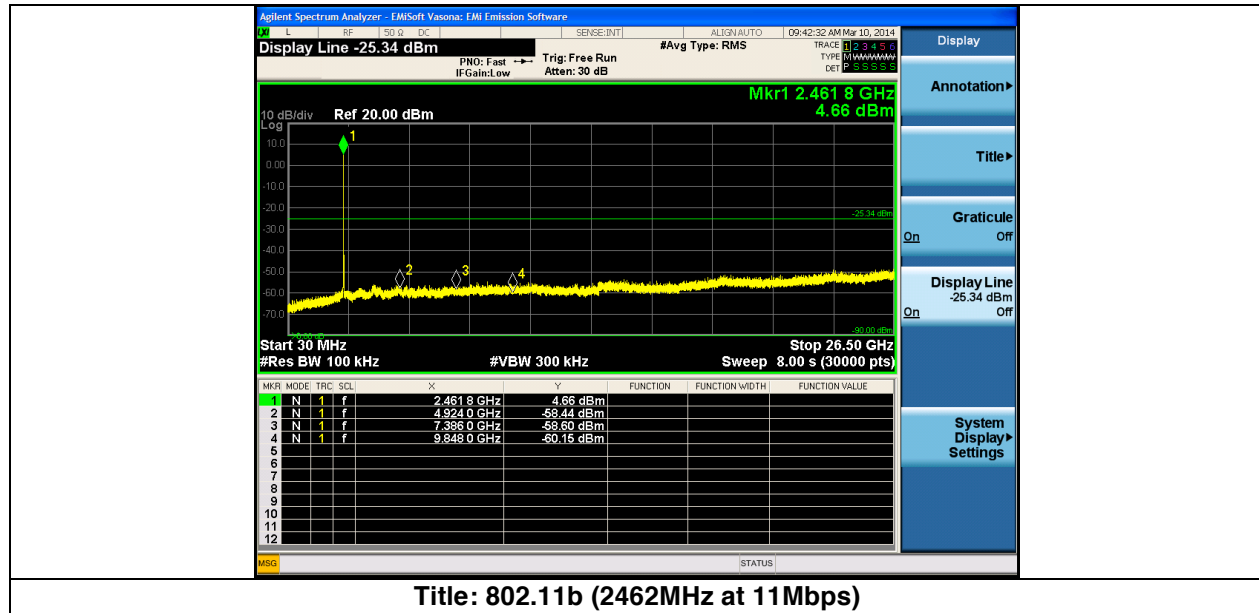
Title: 802.11b (2412MHz at 11Mbps)

Comments: No Signals seen within 6dB of the Limit.



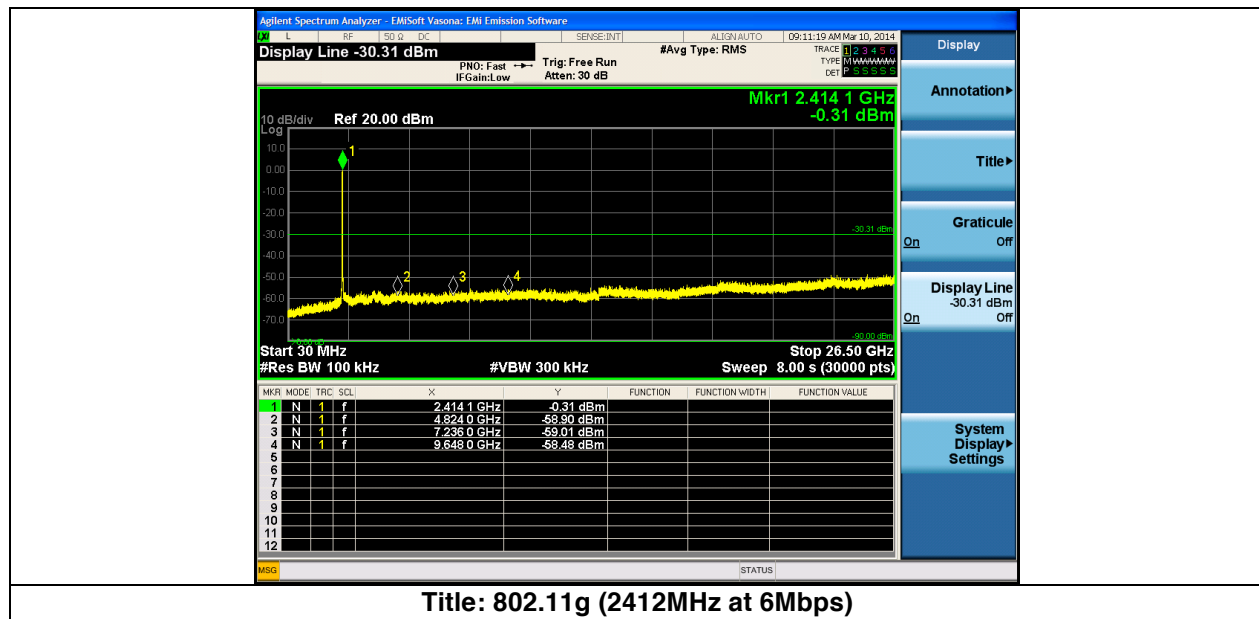
Title: 802.11b (2437MHz at 11Mbps)

Comments: No Signals seen within 6dB of the Limit.



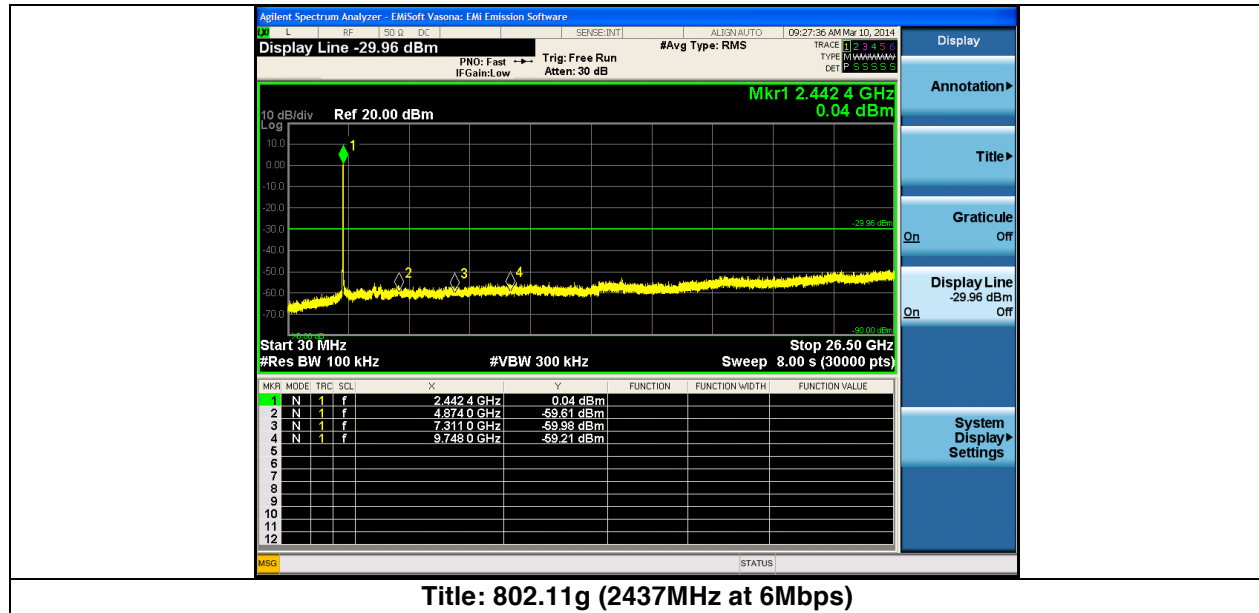
**Title: 802.11b (2462MHz at 11Mbps)**

**Comments:** No Signals seen within 6dB of the Limit.

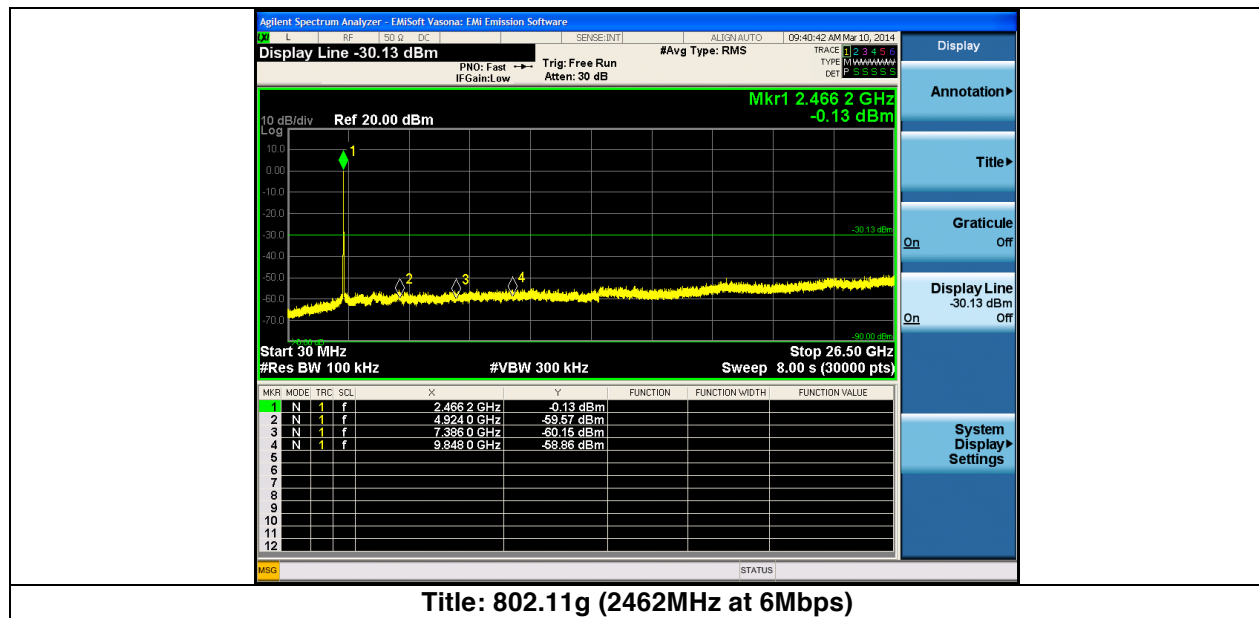


**Title: 802.11g (2412MHz at 6Mbps)**

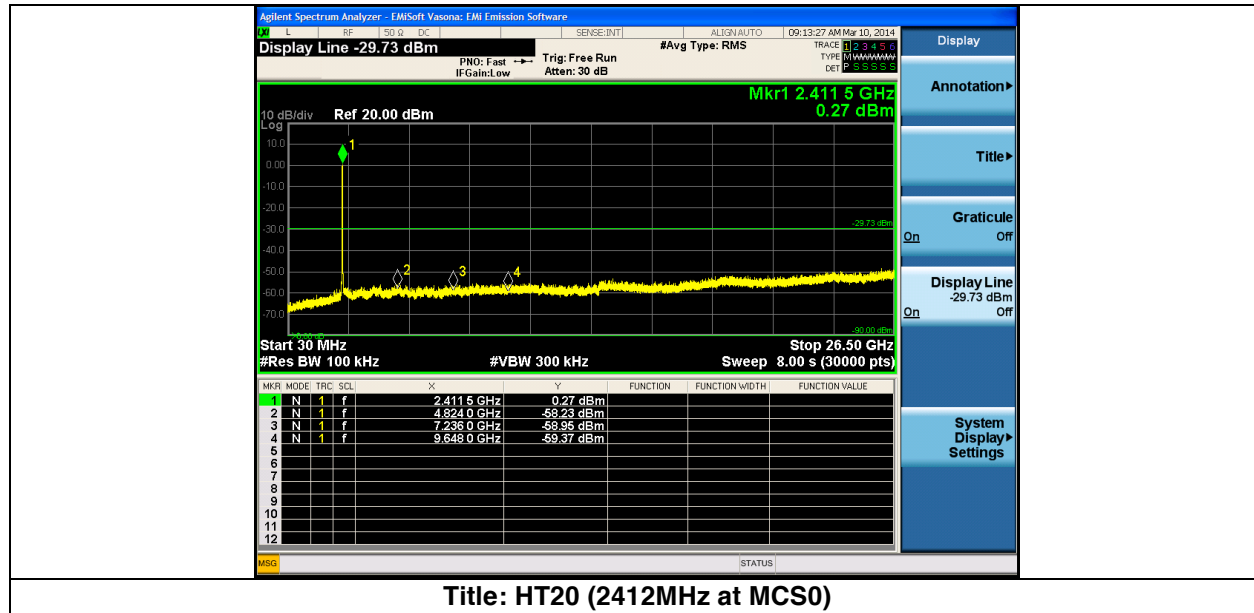
**Comments:** No Signals seen within 6dB of the Limit.



**Comments:** No Signals seen within 6dB of the Limit.

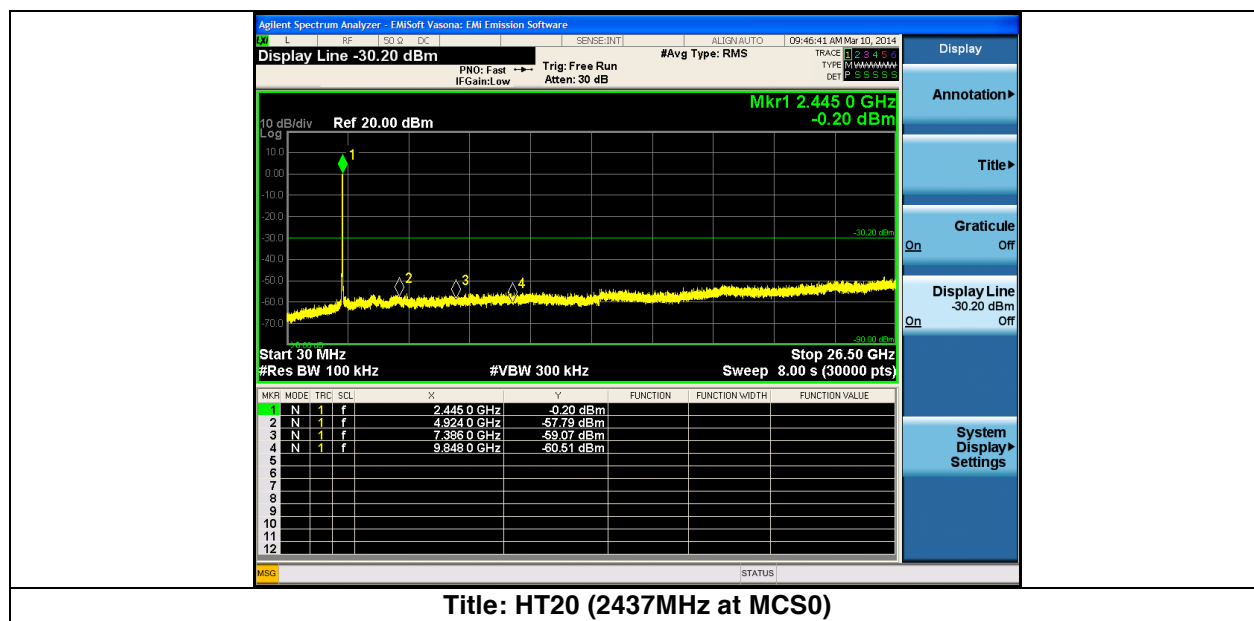


**Comments:** No Signals seen within 6dB of the Limit.



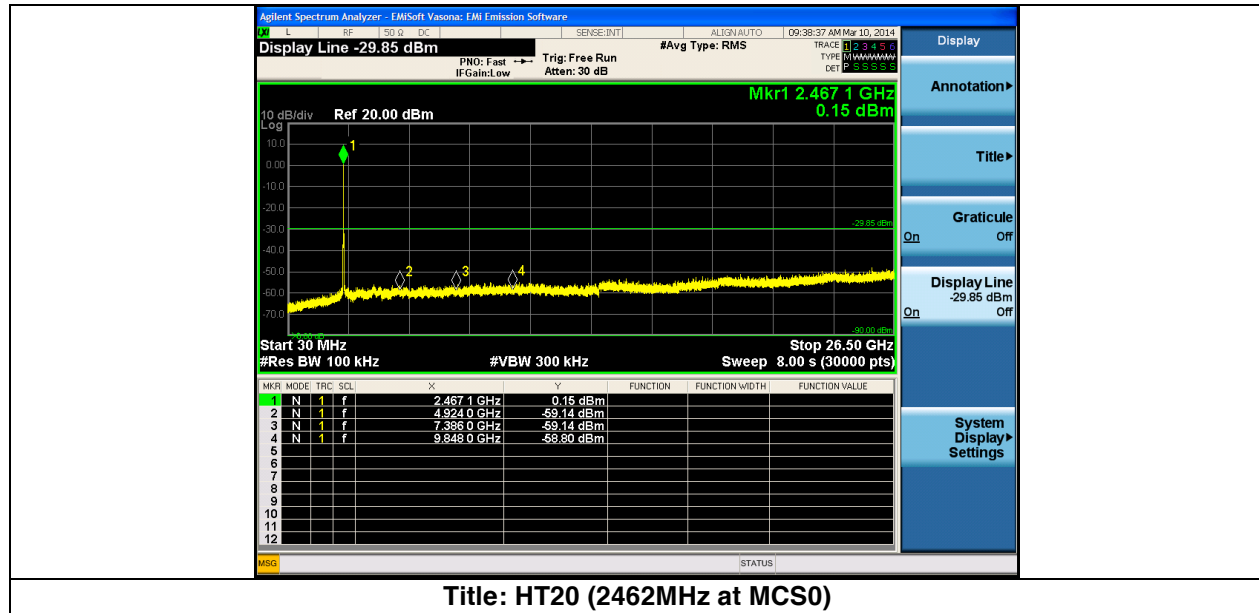
Title: HT20 (2412MHz at MCS0)

Comments: No Signals seen within 6dB of the Limit.



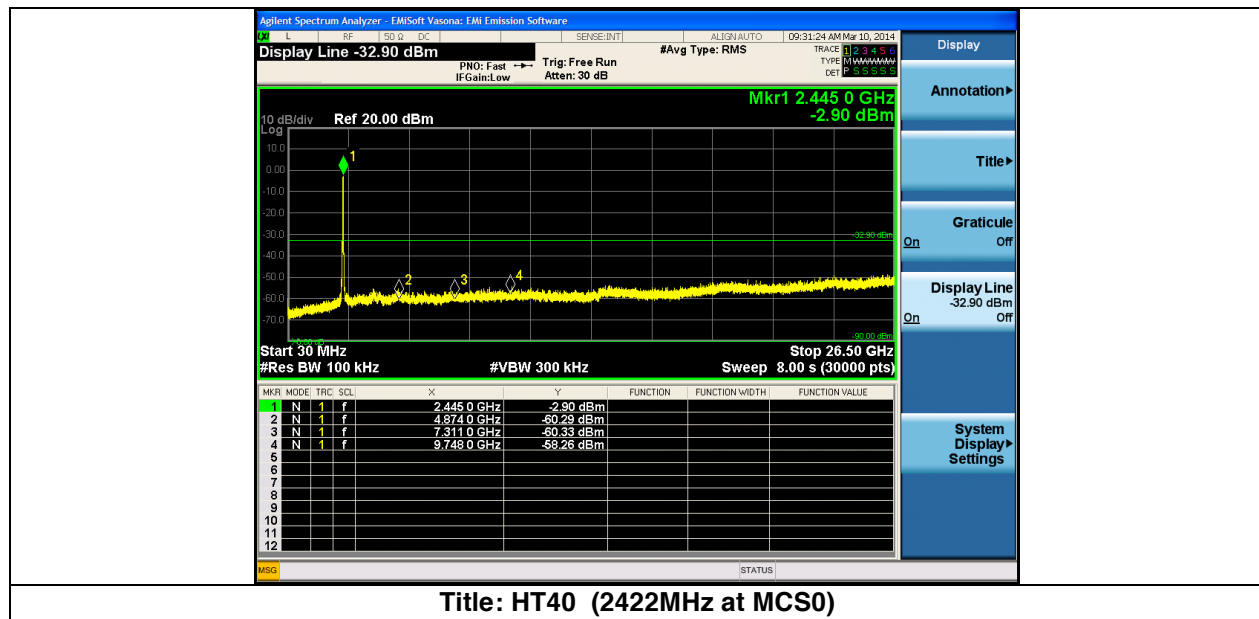
Title: HT20 (2437MHz at MCS0)

Comments: No Signals seen within 6dB of the Limit.



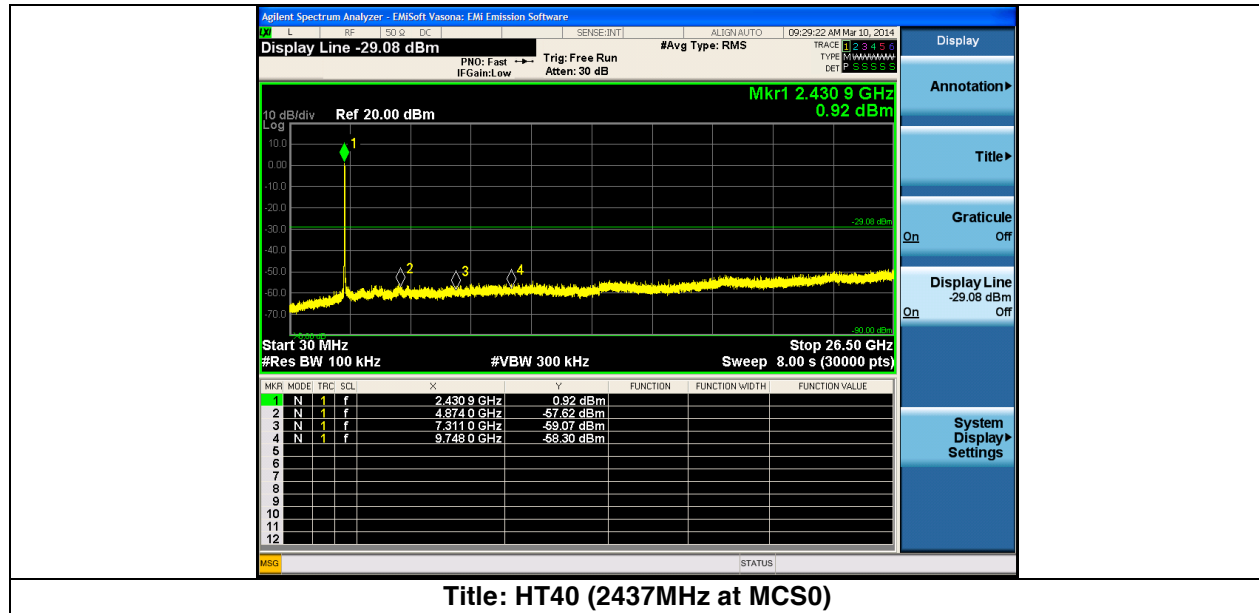
Title: HT20 (2462MHz at MCS0)

Comments: No Signals seen within 6dB of the Limit.



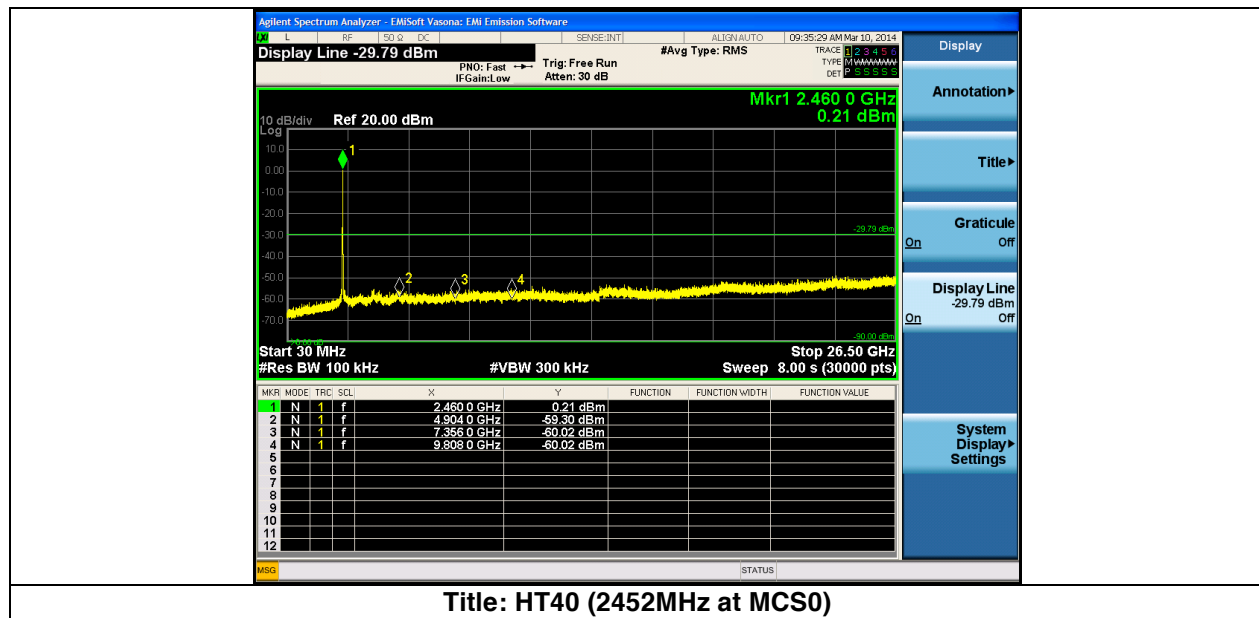
Title: HT40 (2422MHz at MCS0)

Comments: No Signals seen within 6dB of the Limit.



**Title: HT40 (2437MHz at MCS0)**

**Comments:** No Signals seen within 6dB of the Limit.

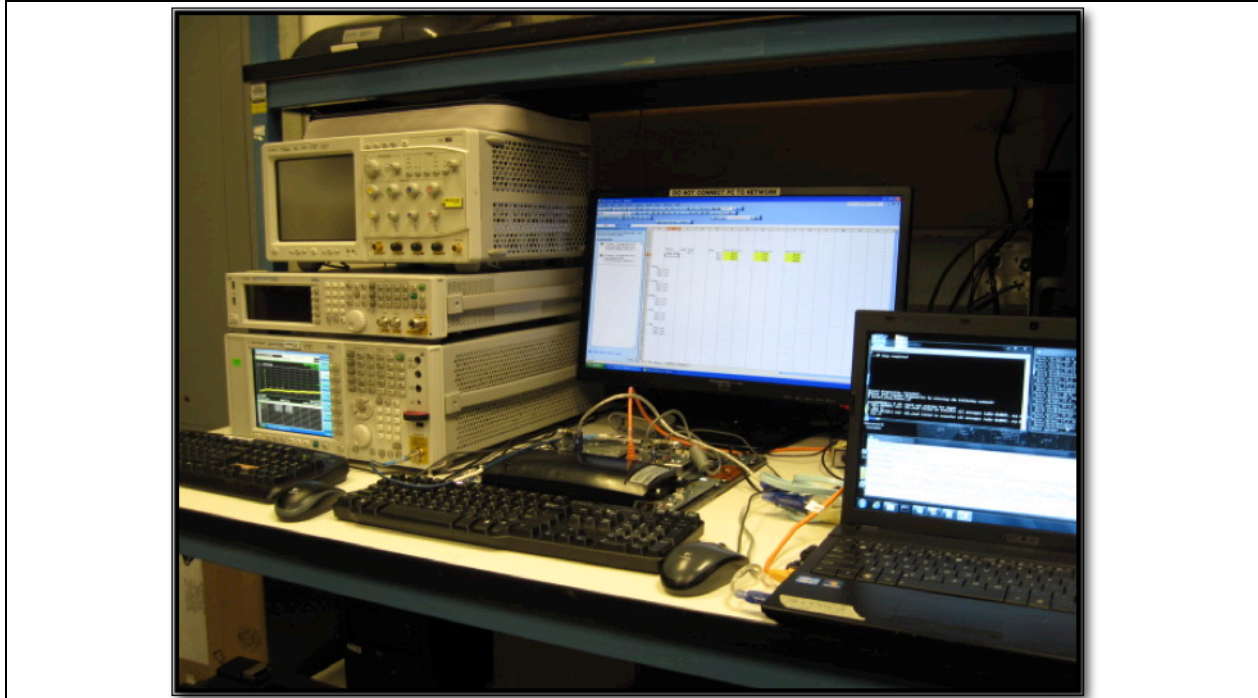


**Title: HT40 (2452MHz at MCS0)**

**Comments:** No Signals seen within 6dB of the Limit.



**Physical Test arrangement Photograph:**



**Title:** setup test Bench

**Comments on the above Photograph:**

No further comments



**Conducted Band Edge Measurements**

15.205 & RSS-210 sec2.7:

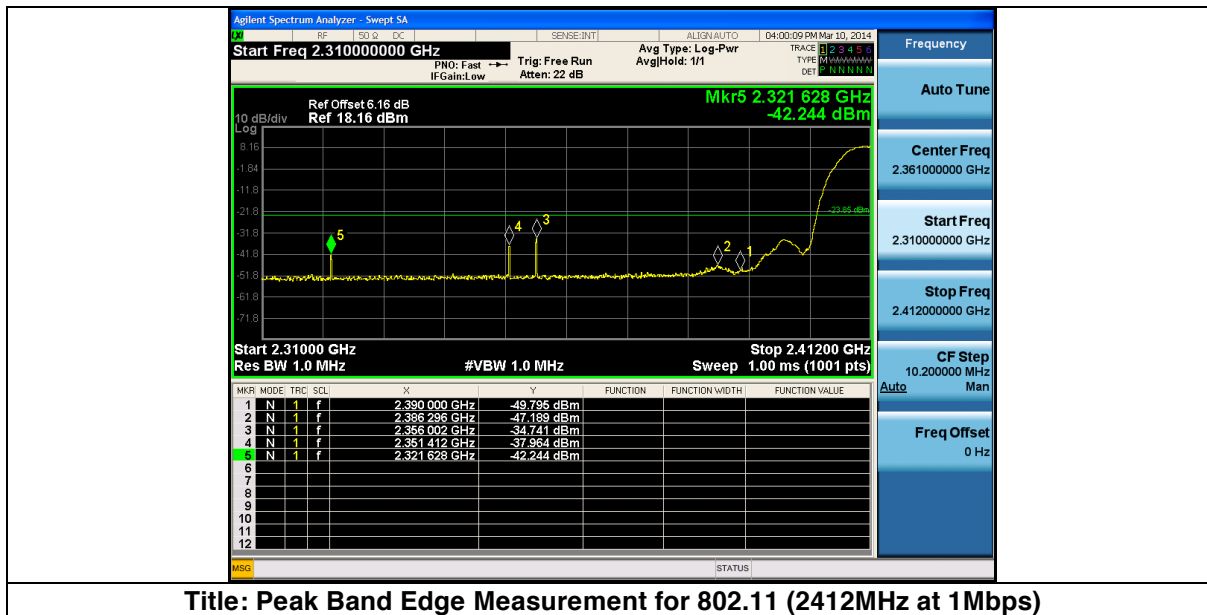
Conducted emissions which fall in the restricted bands, as defined in Sec. 15.205(a), must also comply with the radiated emission limits specified in Sec. 15.209(a).

Use to substitute conducted measurements in place of radiated measurements.  
 Connect the antenna port(s) to the spectrum analyzer input. Place the radio in continuous transmit mode. Be sure to enter all losses between the transmitter output and the spectrum analyzer.

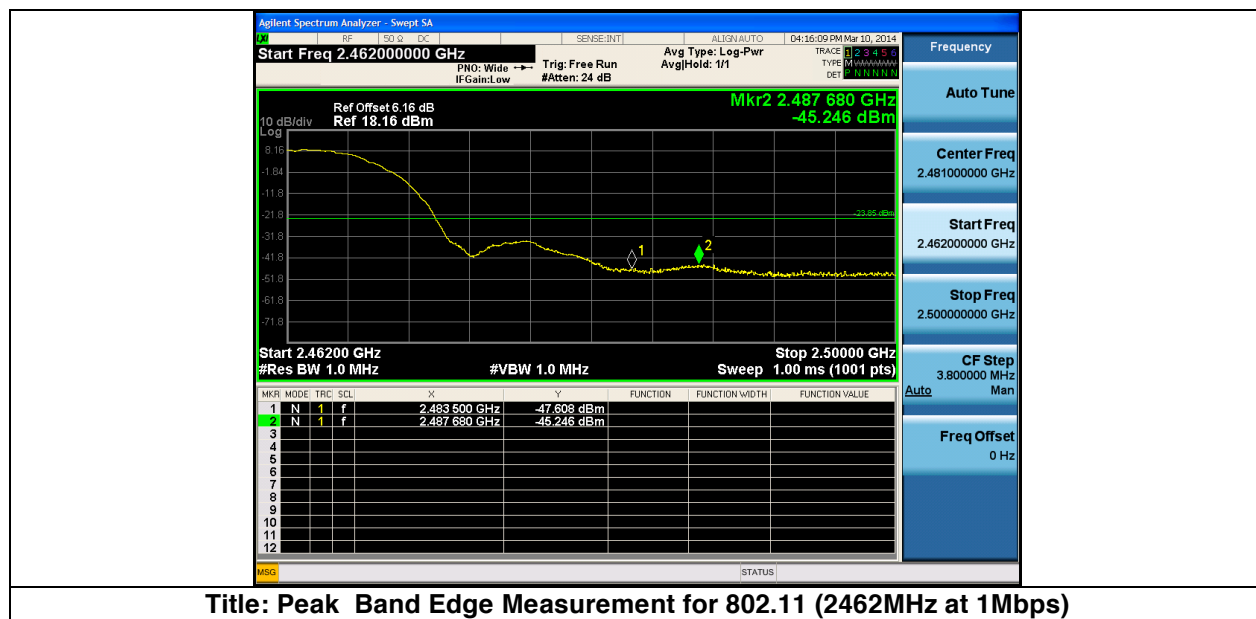
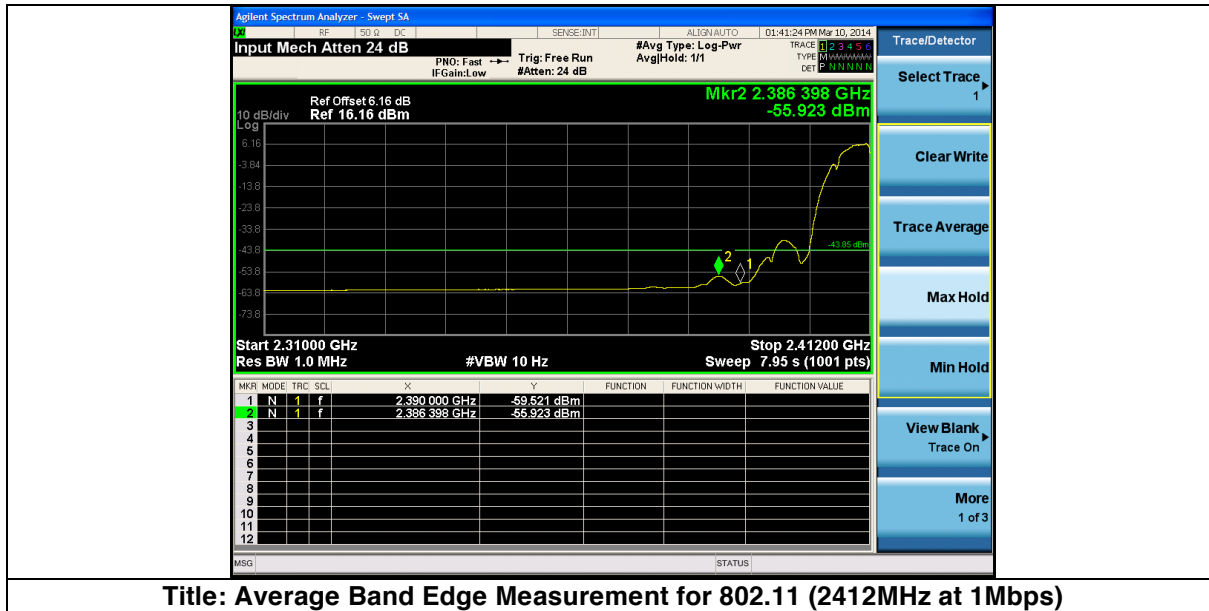
Reference Level: 18.16 dBm  
 Attenuation: 22 dB  
 Sweep Time: Coupled  
 Resolution Bandwidth: 1MHz  
 Video Bandwidth: 1 MHz for peak, 10 Hz for average  
 Detector: Peak

- Save 2 plots: 1) Average Plot (Vertical and Horizontal), Limit= -41.25 dBm eirp (54dBuV/m @3m)  
 2) Peak plot (Vertical and Horizontal), Limit = -21.25 dBm eirp (74dBuV/m @3m)

Place a marker at the end of the restricted band closest to the transmit frequency to show compliance.  
 Also measure any emissions in the restricted bands

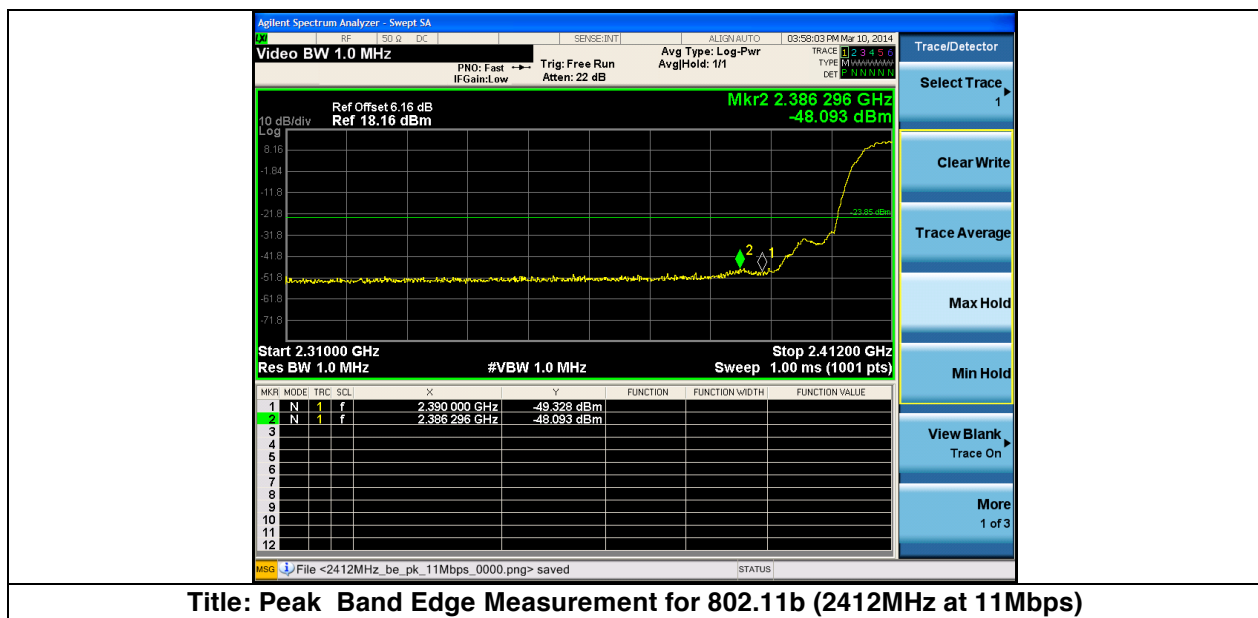


**Title: Peak Band Edge Measurement for 802.11 (2412MHz at 1Mbps)**

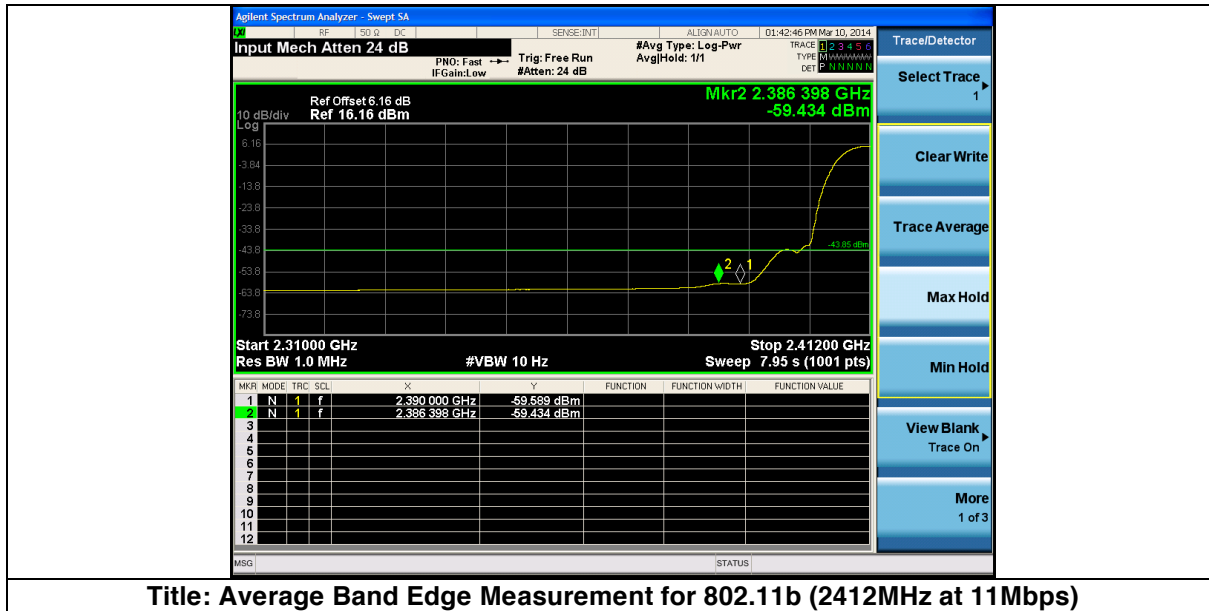




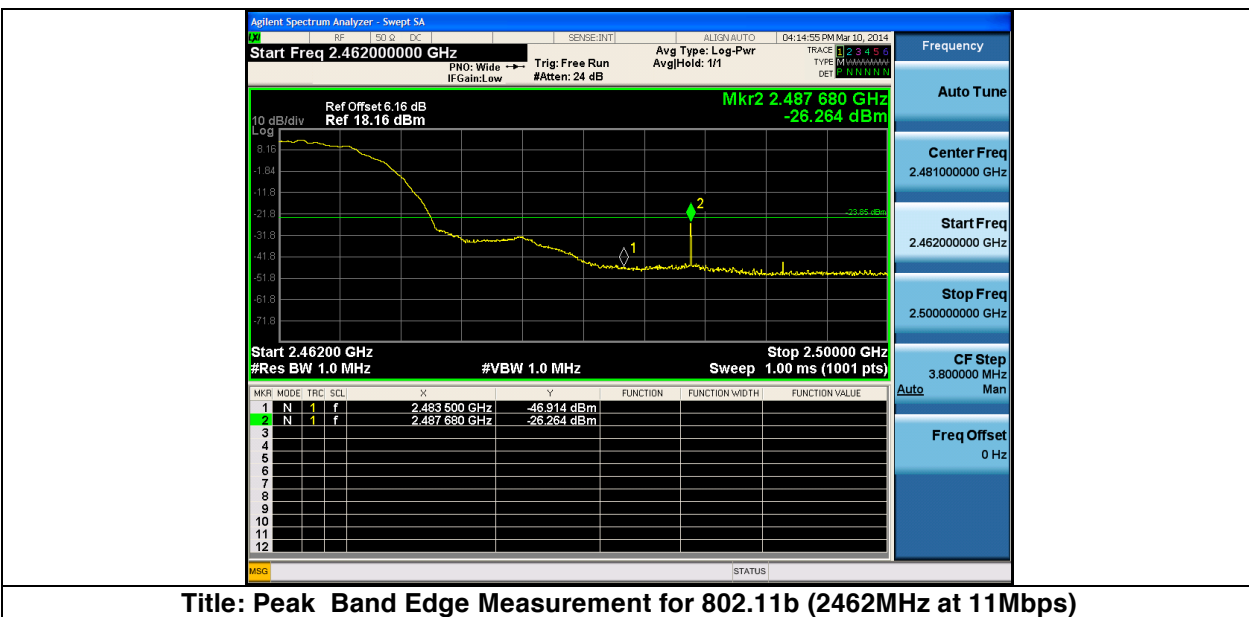
Title: Average Band Edge Measurement for 802.11 (2462MHz at 1Mbps)



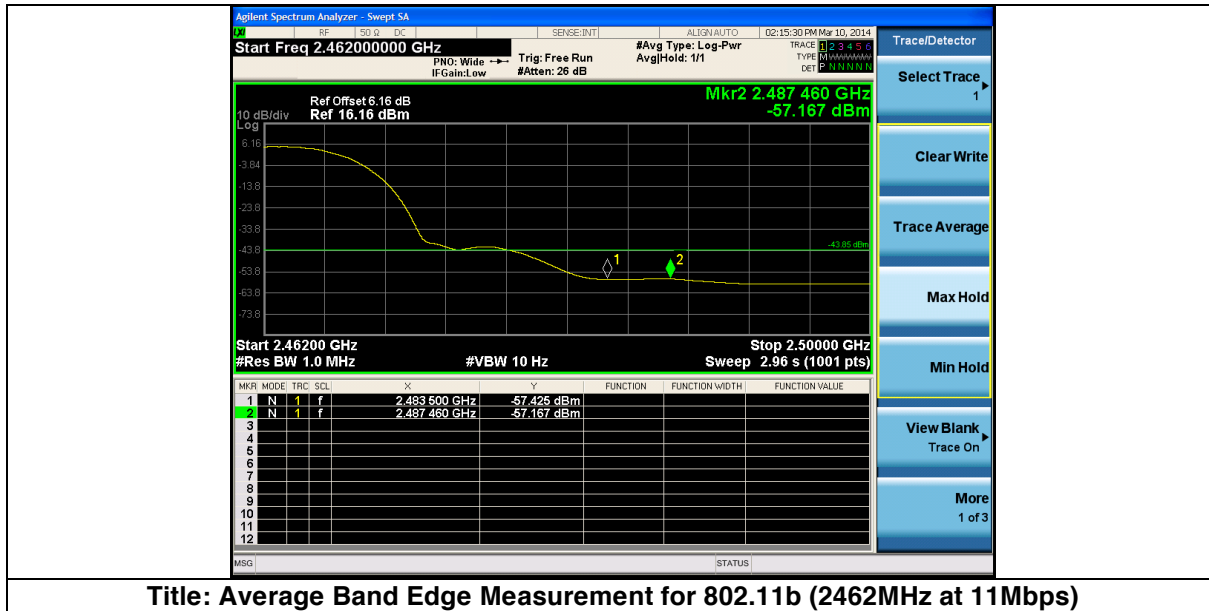
Title: Peak Band Edge Measurement for 802.11b (2412MHz at 11Mbps)



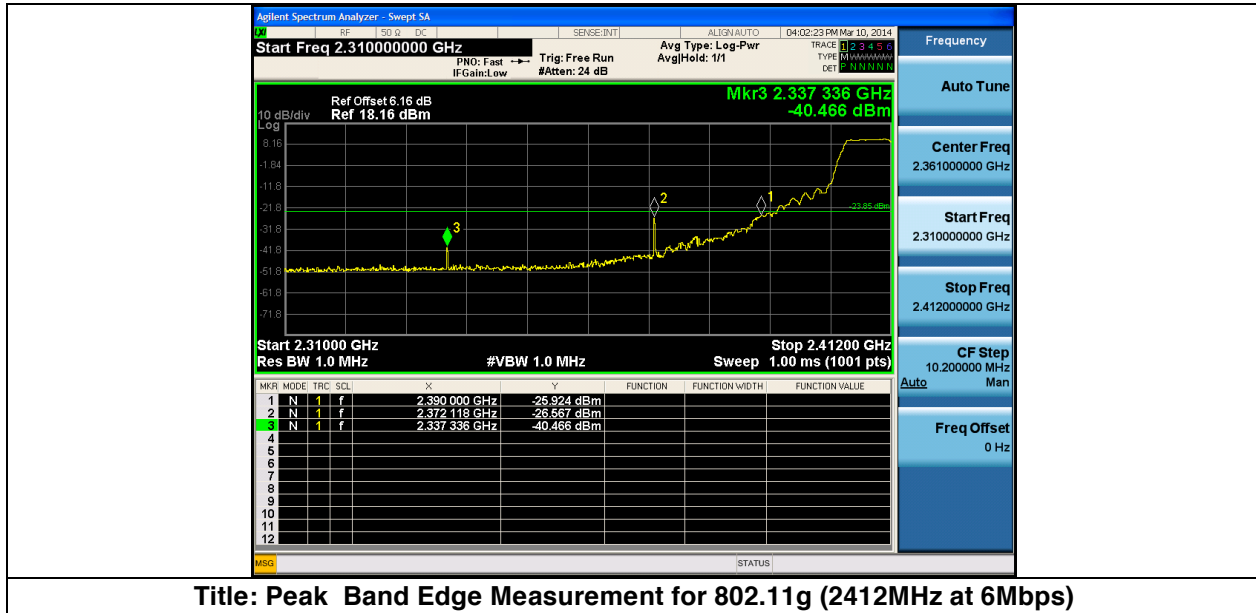
Title: Average Band Edge Measurement for 802.11b (2412MHz at 11Mbps)



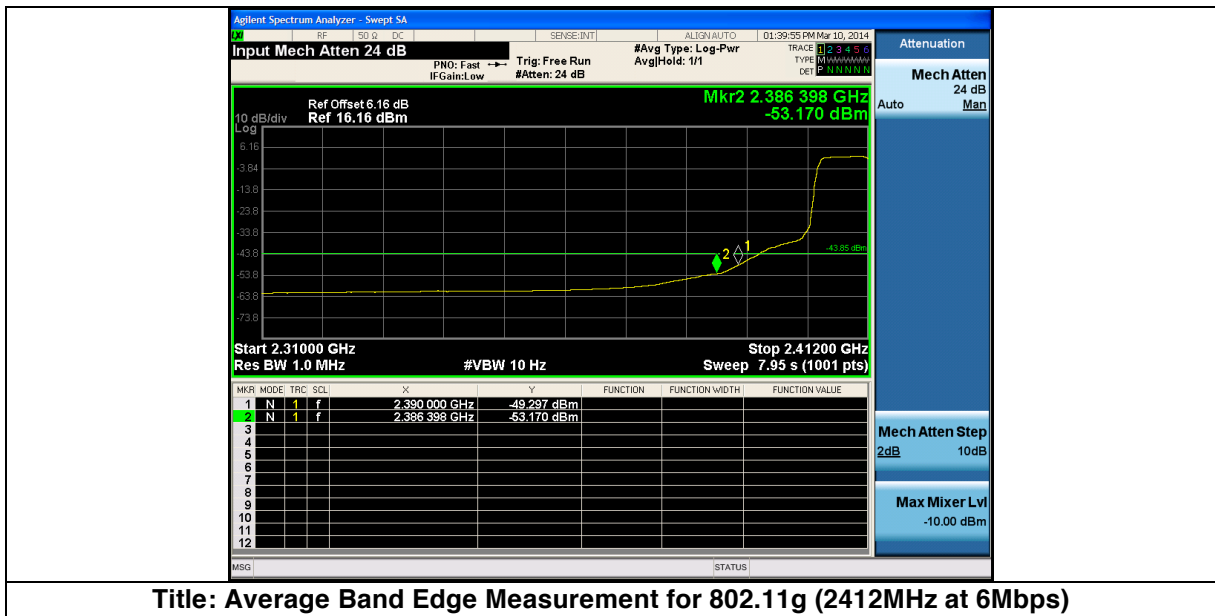
Title: Peak Band Edge Measurement for 802.11b (2462MHz at 11Mbps)



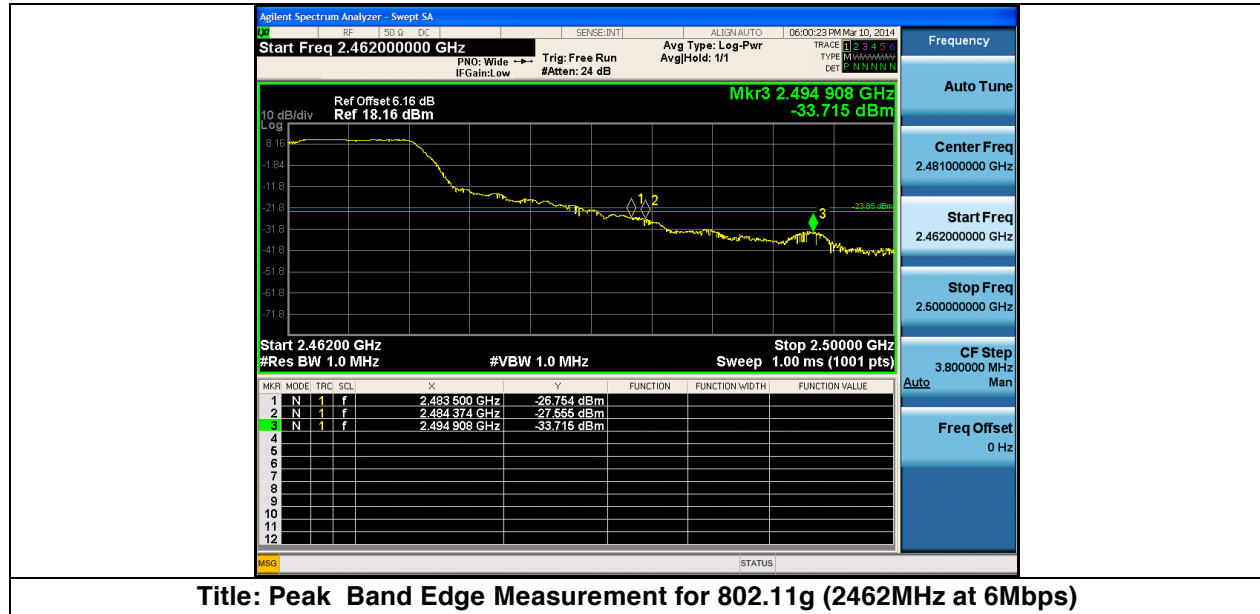
Title: Average Band Edge Measurement for 802.11b (2462MHz at 11Mbps)



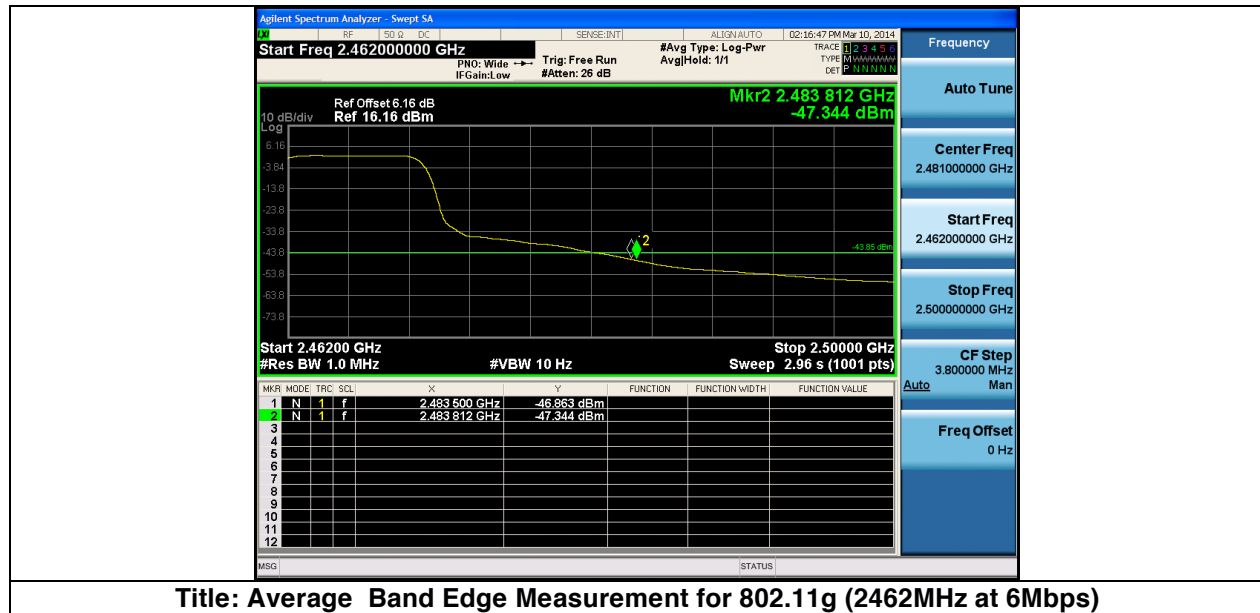
Title: Peak Band Edge Measurement for 802.11g (2412MHz at 6Mbps)



Title: Average Band Edge Measurement for 802.11g (2412MHz at 6Mbps)



Title: Peak Band Edge Measurement for 802.11g (2462MHz at 6Mbps)

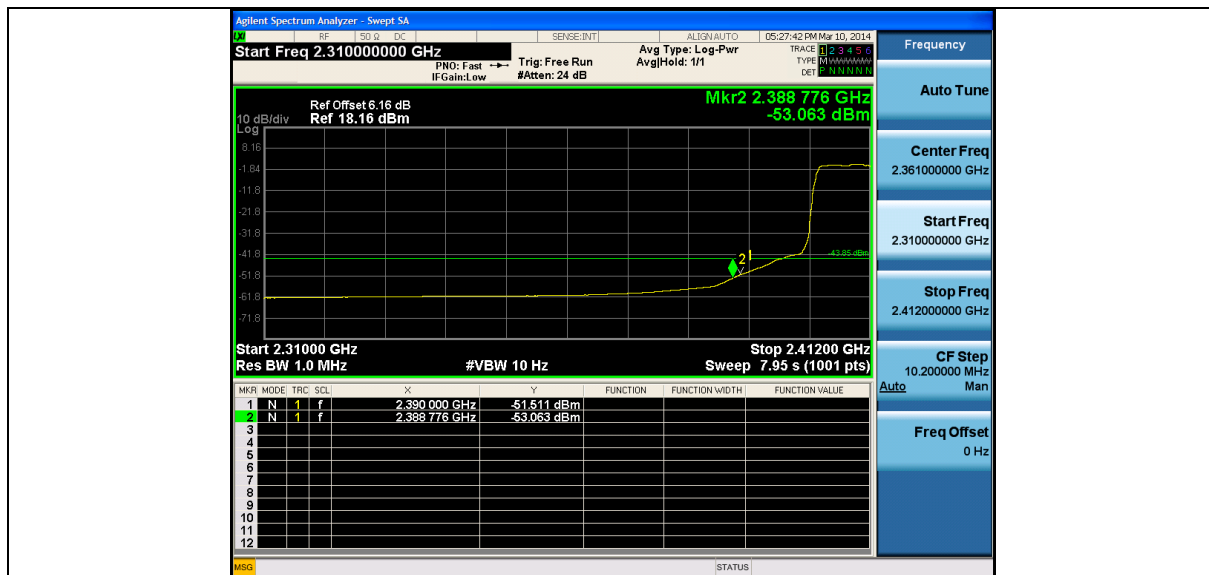


Title: Average Band Edge Measurement for 802.11g (2462MHz at 6Mbps)





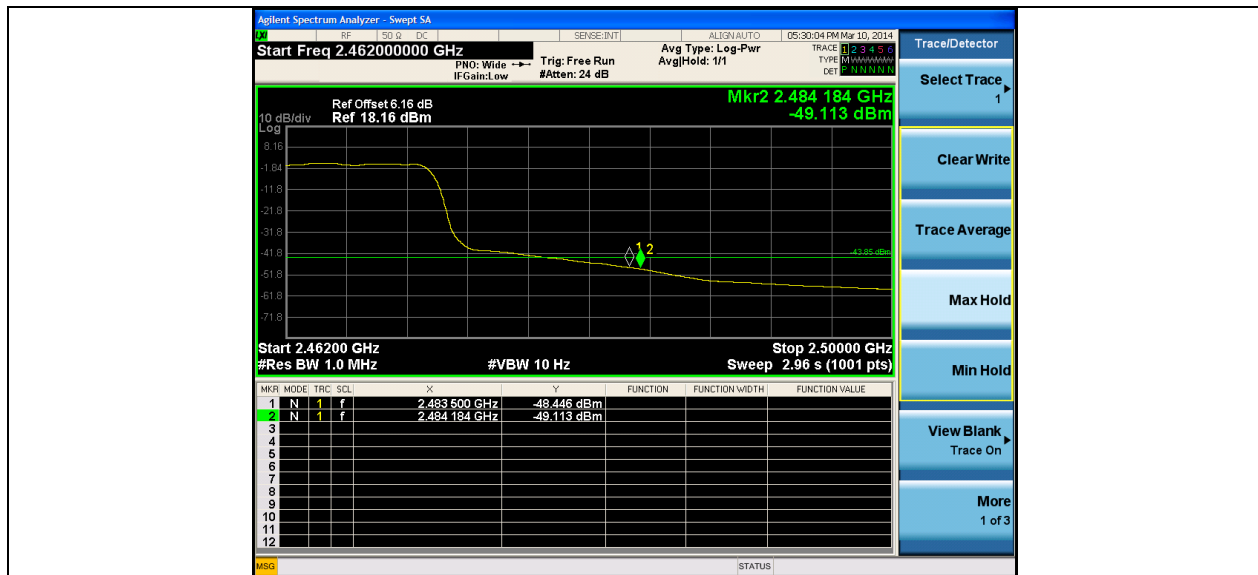
Title: Peak Band Edge Measurement for HT20 802.11n (2412MHz at MCS0)



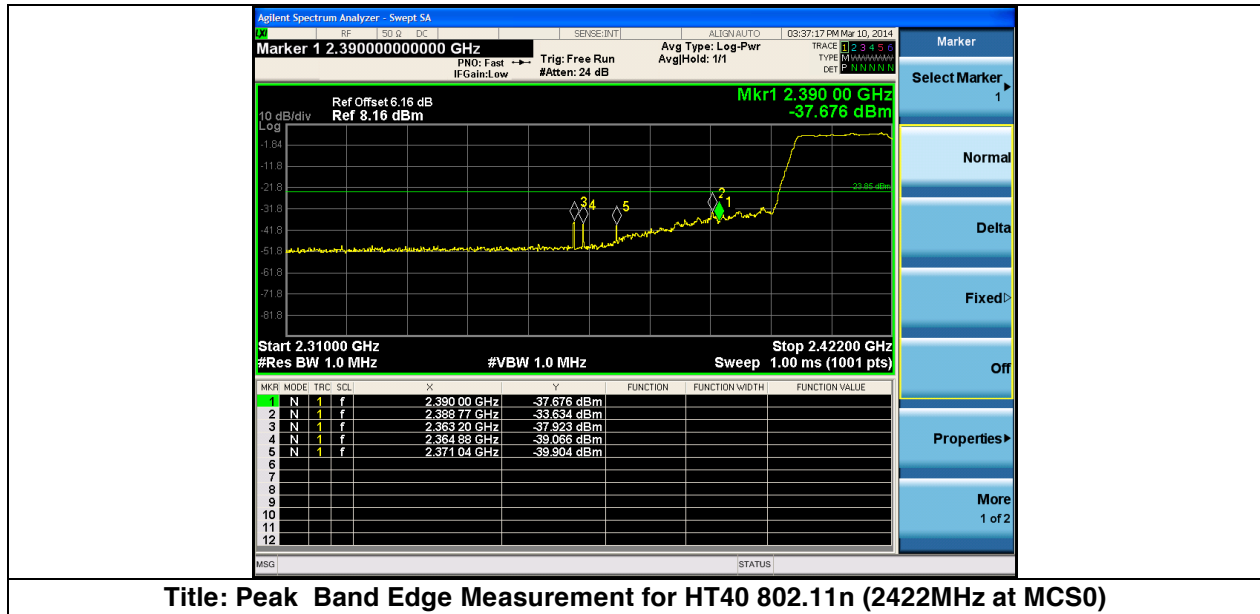
Title: Average Band Edge Measurement for HT20 802.11n (2412MHz at MCS0)



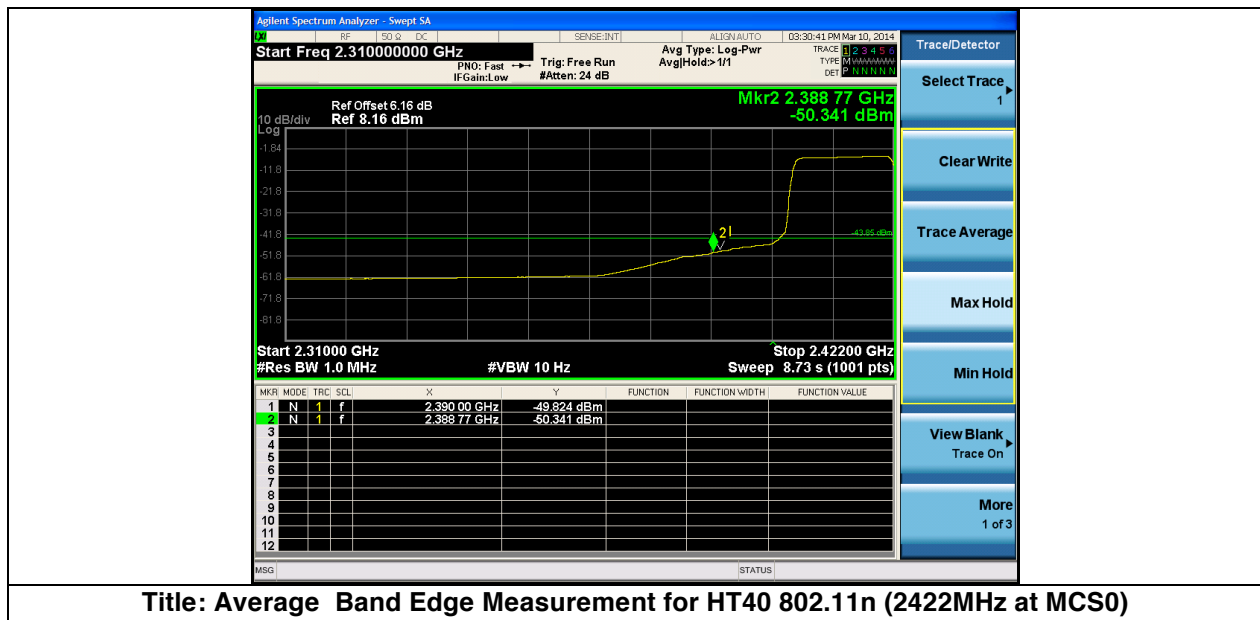
Title: Peak Band Edge Measurement for HT20 802.11n (2462MHz at MCS0)



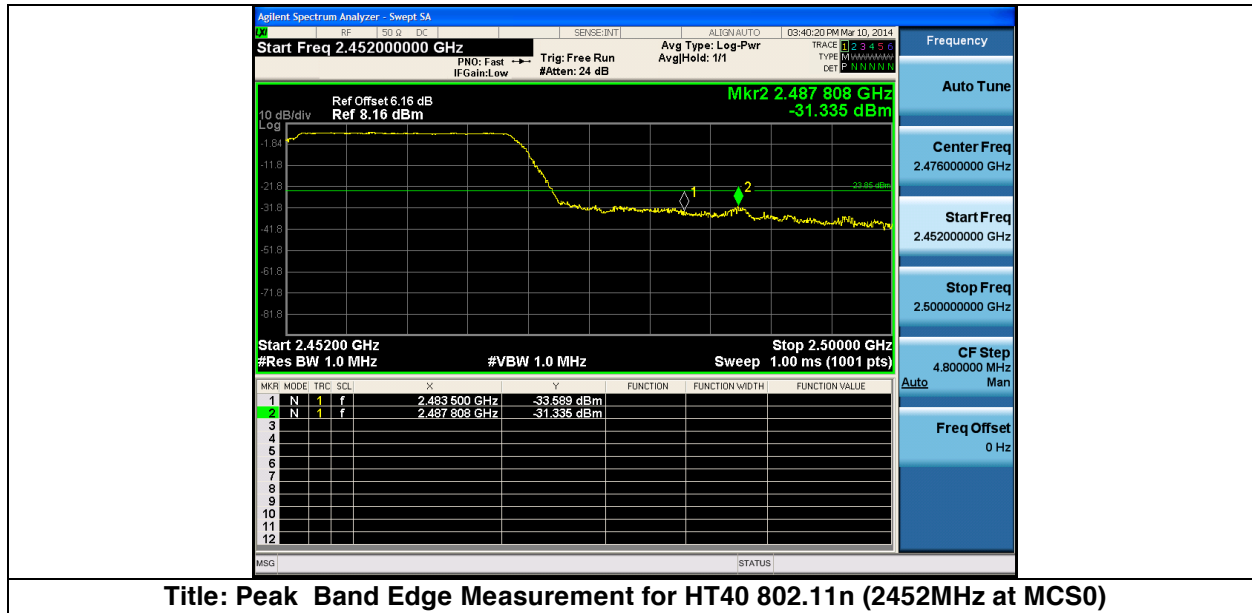
Title: Average Band Edge Measurement for HT20 802.11n (2462MHz at MCS0)



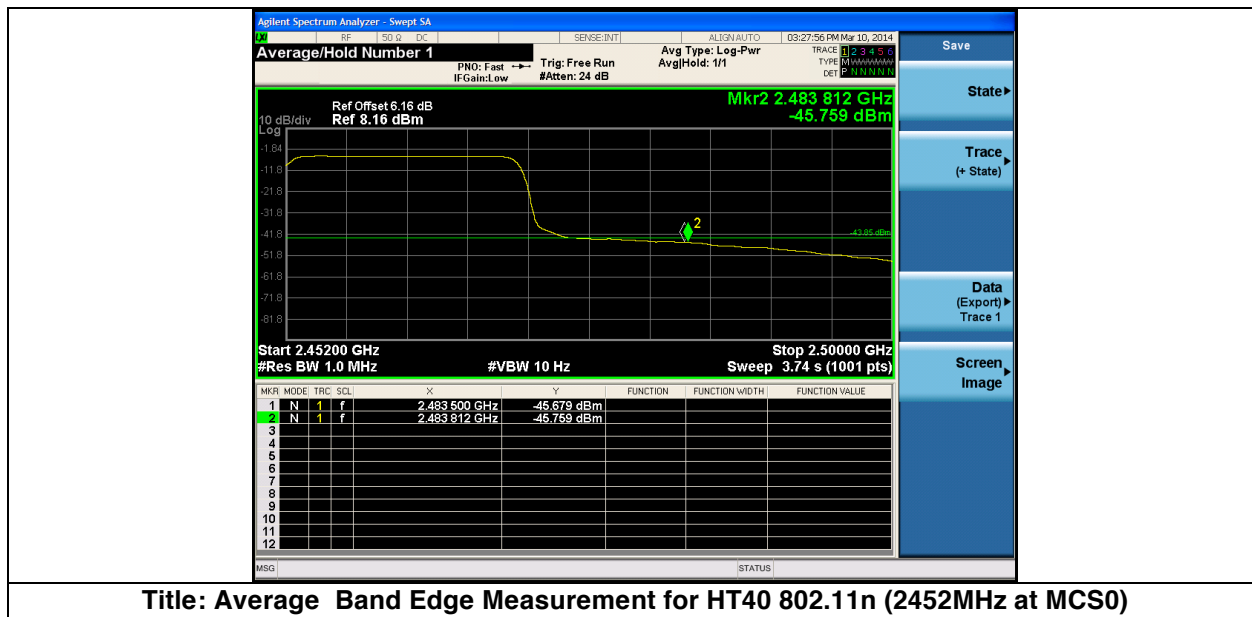
Title: Peak Band Edge Measurement for HT40 802.11n (2422MHz at MCS0)



Title: Average Band Edge Measurement for HT40 802.11n (2422MHz at MCS0)



Title: Peak Band Edge Measurement for HT40 802.11n (2452MHz at MCS0)



Title: Average Band Edge Measurement for HT40 802.11n (2452MHz at MCS0)



**Radiated Spurious and Harmonics Emissions**

15.205 & RSS-210 sec2.7:

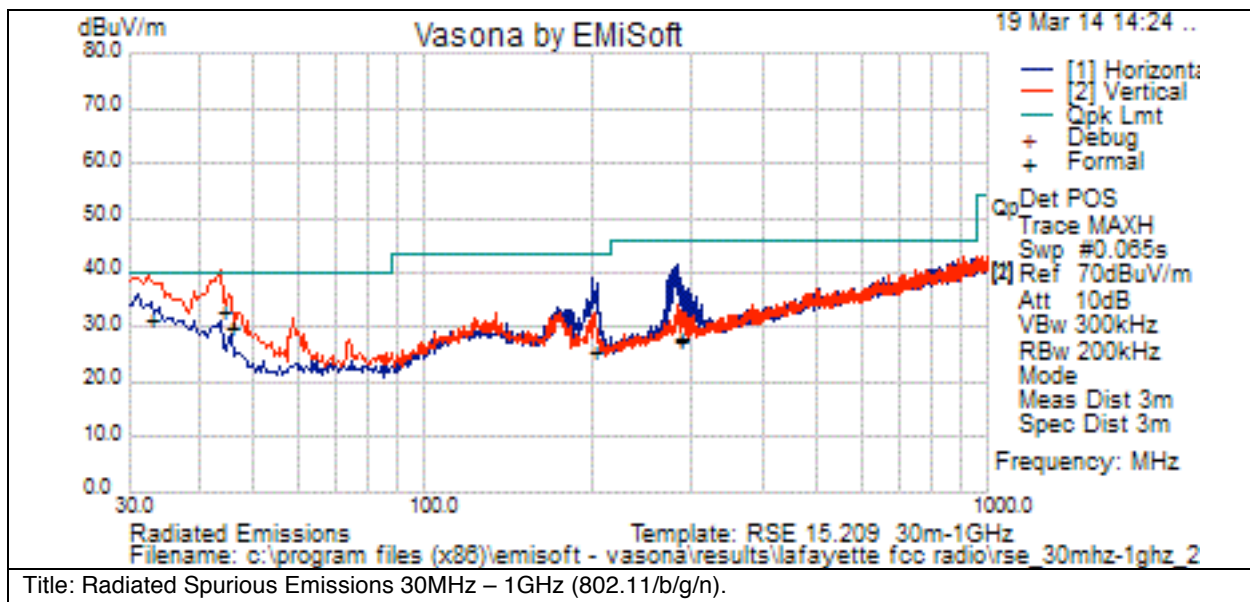
Radiated emissions which fall in the restricted bands, as defined in Sec. 15.205(a), must also comply with the radiated emission limits specified in Sec. 15.209(a).

**Notes:**

- Notch Filter was used during formal testing from 1 – 18GHz to help prevent the front end of the analyzer from over loading. The Notch filters used are designed to suppress Tx fundamental frequency but do not effect harmonics of the fundamental frequency from being measured.
- This report represents the worst case data for all channels, supported operating modes and antennas.
- A1MHz Video Bandwidth and peak detector was used for the average preview plots resulting in a higher level. The correct bandwidth of 10Hz was used for any formal measurements.
- The emissions between 2GHz and 3GHz will be evaluated during EMC testing and assessed against the applicable limits. These emissions were not caused by the radio. A scan was performed with the radio transmitting. Another scan was performed with the radio transmitter turned off, and the emissions were present in both cases. It can also be seen in the conducted emission plots that emissions at these frequencies were not present, showing they were not emitting from the rf port making them emc related.

**Graphical Test Results for 30 – 1000MHz:**

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements.



**Test Results Table**

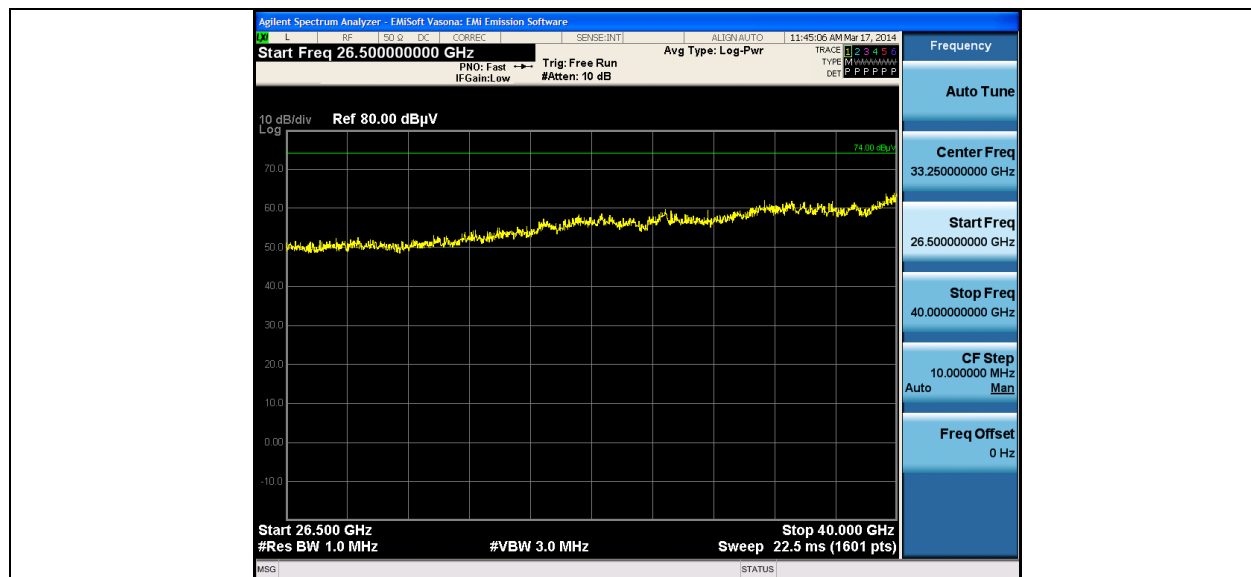
Formal Data
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No	Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1	43.791	21.3	.6	11.1	33.0	Quasi Max	V	100	110	40.0	-7.0	Pass	
2	32.664	12.4	.5	18.5	31.4	Quasi Max	V	100	358	40.0	-8.6	Pass	
3	45.219	19.4	.6	10.2	30.2	Quasi Max	V	100	34	40.0	-9.8	Pass	
4	200.062	11.8	1.3	12.6	25.6	Quasi Max	H	100	328	43.5	-17.9	Pass	
5	283.787	13.2	1.5	13.3	28.1	Quasi Max	H	100	92	46.0	-17.9	Pass	
6	285.396	12.4	1.5	13.3	27.3	Quasi Max	H	100	122	46.0	-18.7	Pass	

**Graphical Test Results for 802.11/b/g/n all modes and data rates: 26.5GHz – 40GHz (Peak):**

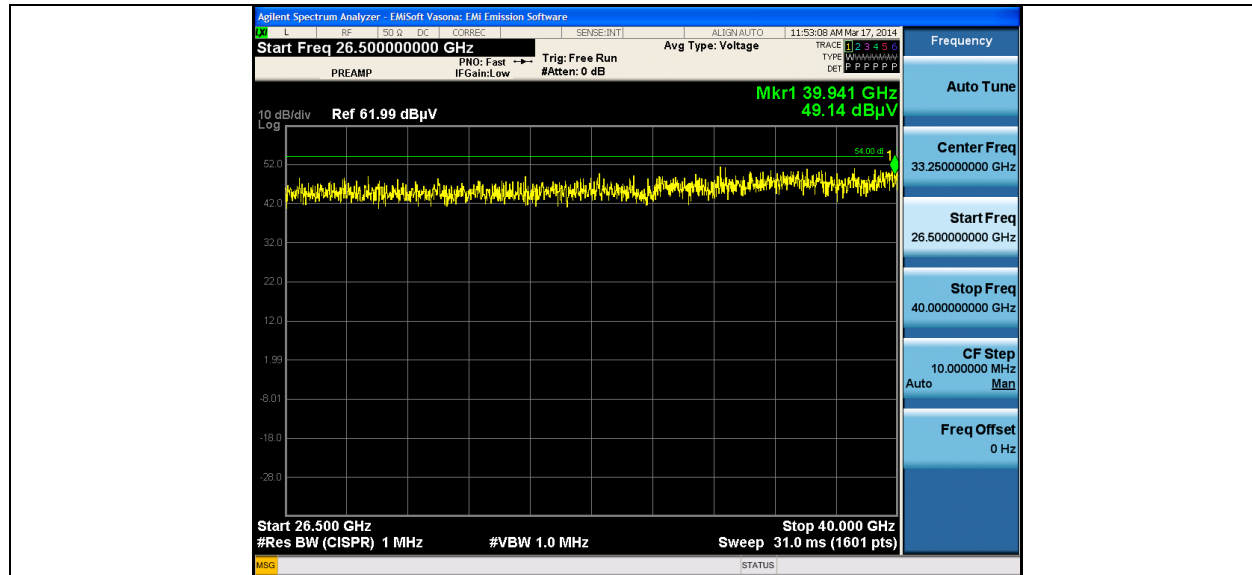
Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'.



Title: RSE 26.5GHz - 40GHz for 802.11/b/g/n (Peak).  
 Comments: There were no measurable emissions in this range.

**Graphical Test Results for 802.11/b/g/n all modes and data rates: 26.5GHz – 40GHz (Average):**

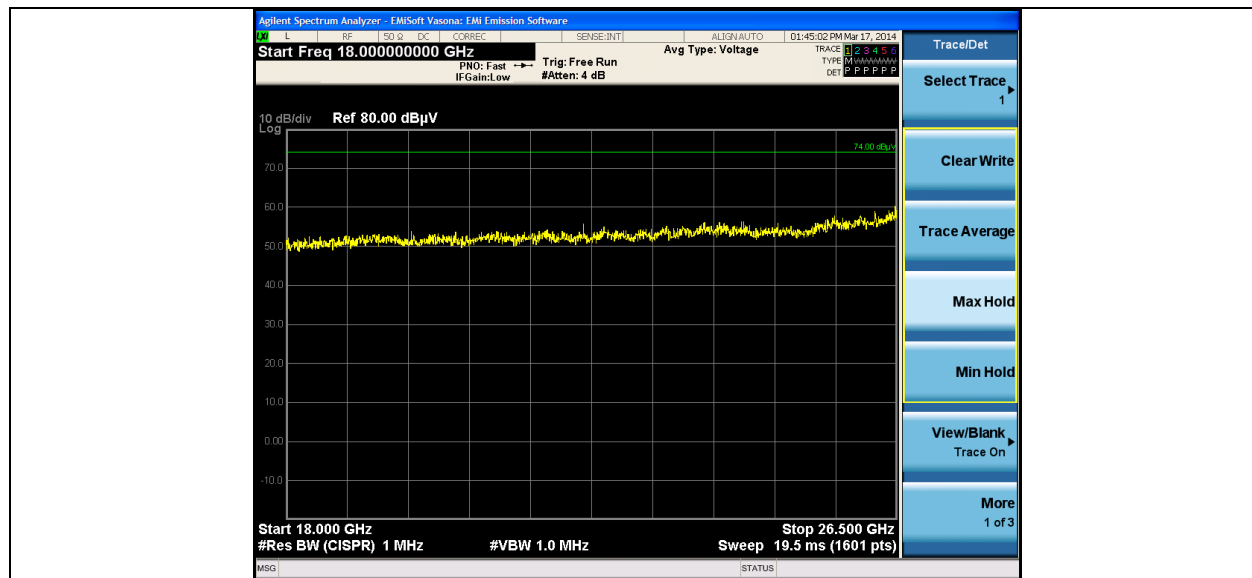
Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'.



Title: RSE 26.5GHz - 40GHz for 802.11/b/g/n (Average)  
 Comments: There were no measurable emissions in this range.

**Graphical Test Results for 802.11/b/g/n all modes and data rates: 18GHz – 26.5GHz (Peak):**

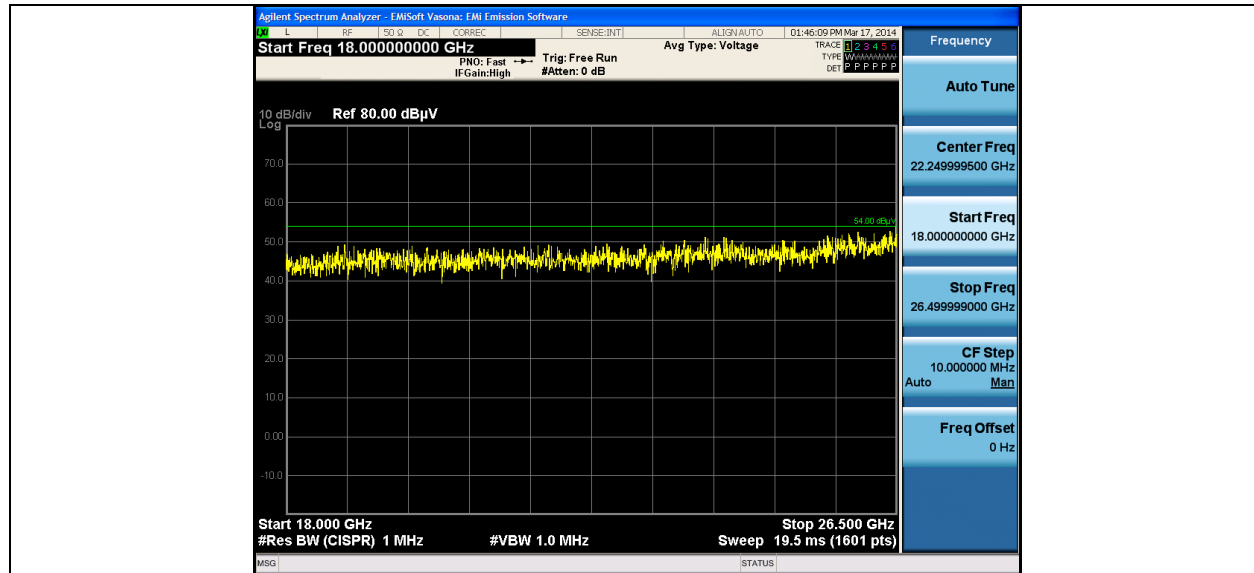
Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'.



Title: RSE 18GHz – 26.5GHz for 802.11/b/g/n (Peak).  
 Comments: There were no measurable emissions in this range.

**Graphical Test Results for 802.11/b/g/n all modes and data rates: 18GHz – 26.5GHz (Average):**

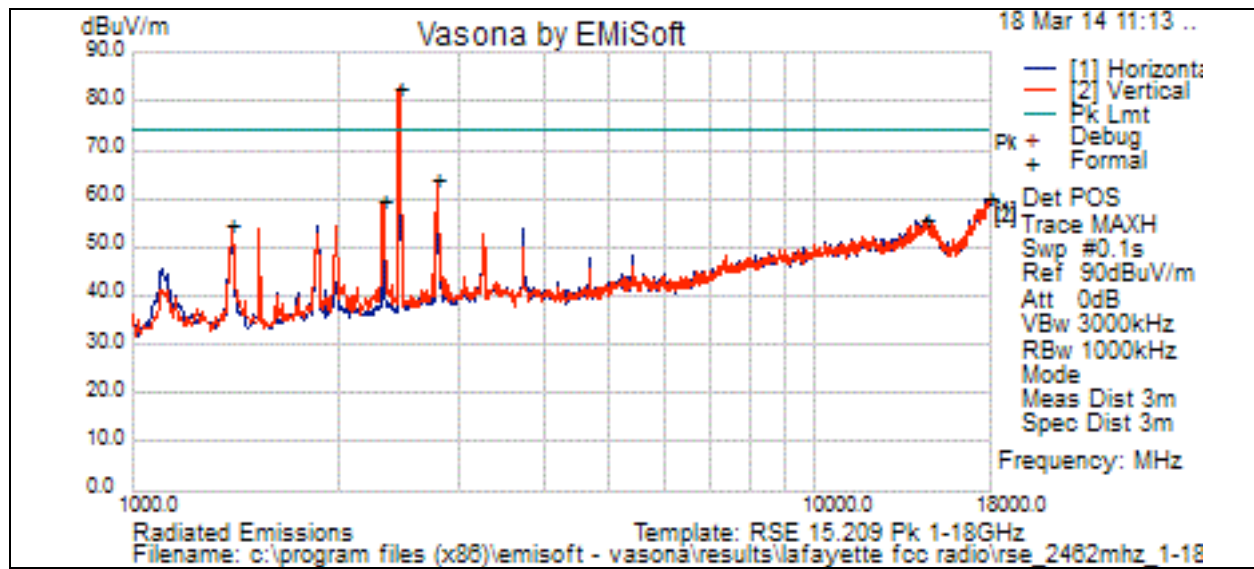
Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'.



Title: RSE 18GHz – 26.5GHz for 802.11/b/g/n (Average)  
 Comments: There were no measurable emissions in this range.

**Graphical Test Results for 802.11/b/g/n: 1 – 18GHz (Peak)**

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Title: RSE 1-18GHz for 802.11/b/g/n (Peak).

**Test Results Table**

Formal Data													
No	Frequency	Raw	Cable	AF	Level	Measurement	Pol	Hgt	Azt	Limit	Margin	Pass	Comments



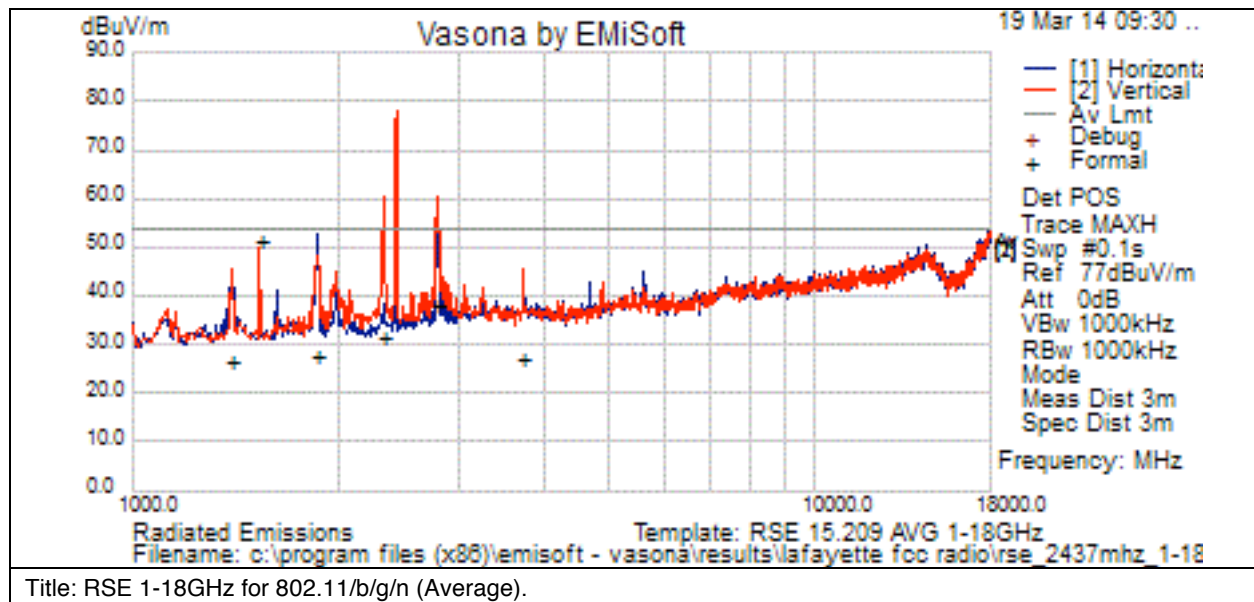


	MHz	dBuV	Loss	dB	dBuV/m	Type		cm	Deg	dBuV/m	dB	/Fail	
1	2462.000	83.3	5.8	-6.2	82.9	Peak	V	100	0	74.0	8.9	N/A	TX Fundamental Frequency
2	2799.617	63.4	6.3	-5.9	63.8	Peak	V	100	0	74.0	-10.2	Pass	
3	18000.000	34.0	16.4	9.7	60.2	Peak	H	200	0	74.0	-13.8	Pass	Noise Floor
4	2333.459	59.6	5.7	-5.8	59.4	Peak	V	100	0	74.0	-14.6	Pass	
5	14481.000	34.1	14.3	7.6	56.0	Peak	H	100	0	74.0	-18.0	Pass	
6	1400.342	57.8	4.3	-7.6	54.4	Peak	V	200	0	74.0	-19.6	Pass	



**Graphical Test Results for 802.11/b/g/n: 1 – 18GHz (Average)**

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector' and a 1MHz VBW. Please refer to the results table for the detectors used during formal measurements.



**Test Results Table**

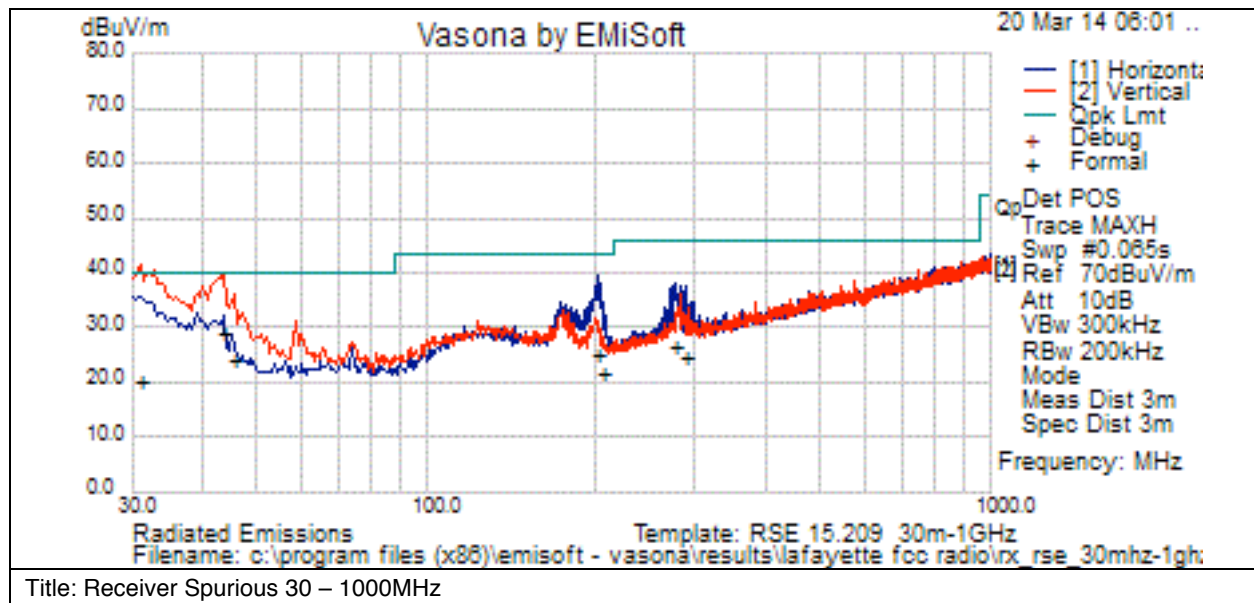
Formal Data													
No	Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1	1536.113	55.2	4.0	-7.9	51.3	Average Max	V	112	174	54.0	-2.7	Pass	
2	2799.736	38.6	5.5	-5.9	38.3	Average Max	V	126	188	54.0	-15.7	Pass	
3	2333.078	32.3	5.0	-5.8	31.5	Average	V	127	178	54.0	-22.5	Pass	
4	1866.380	29.9	4.4	-7.0	27.4	Average Max	H	130	184	54.0	-26.6	Pass	
5	3733.668	24.1	6.5	-3.5	27.1	Average Max	V	120	97	54.0	-26.9	Pass	
6	1400.142	30.1	3.8	-7.6	26.3	Average Max	V	165	147	54.0	-27.7	Pass	



**Radiated Receiver Spurious Measurements**

**Graphical Test Results**

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



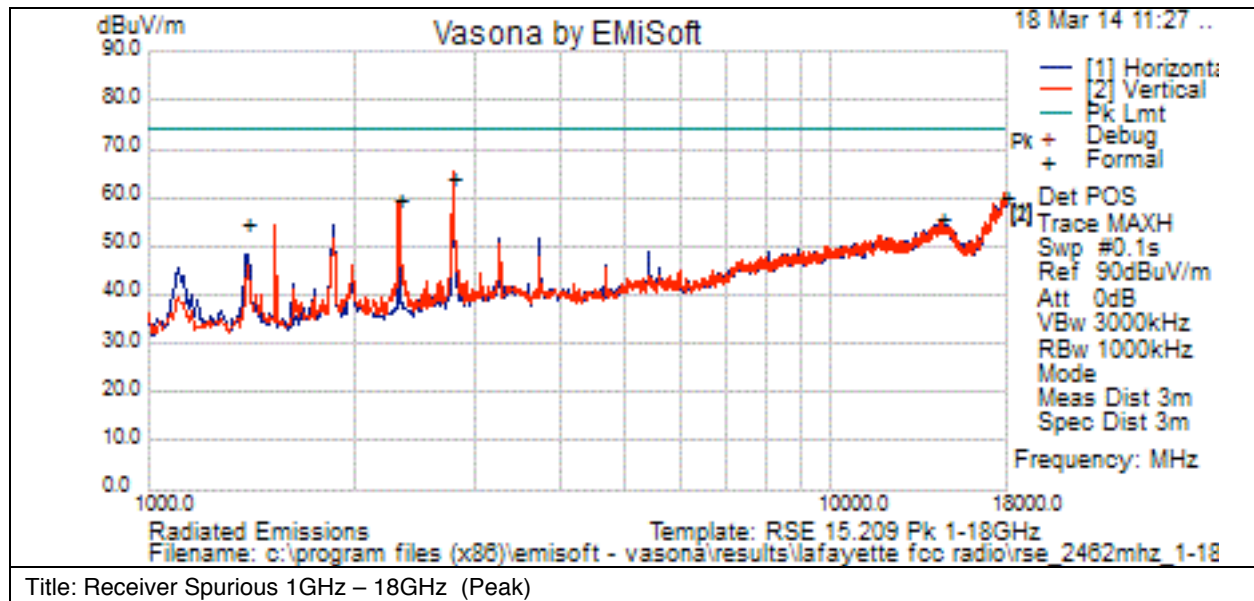
**Test Results Table**

Formal Data													
No	Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1	43.580	17.2	.6	11.2	29.0	Quasi Max	V	102	18	40.0	-11.0	Pass	
2	45.520	13.6	.6	10.0	24.3	Quasi Max	V	102	92	40.0	-15.7	Pass	
3	201.205	11.7	1.3	12.2	25.2	Quasi Max	H	102	50	43.5	-18.3	Pass	
4	275.410	11.6	1.5	13.5	26.6	Quasi Max	H	102	50	46.0	-19.4	Pass	
5	30.970	-2	.5	19.6	19.9	Quasi Max	V	102	114	40.0	-20.1	Pass	
6	205.085	9.1	1.3	11.0	21.4	Quasi Max	H	102	44	43.5	-22.1	Pass	
7	287.535	9.5	1.6	13.3	24.4	Quasi Max	H	102	46	46.0	-21.6	Pass	



**Graphical Test Results 1GHz-18GHz (Peak)**

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'.

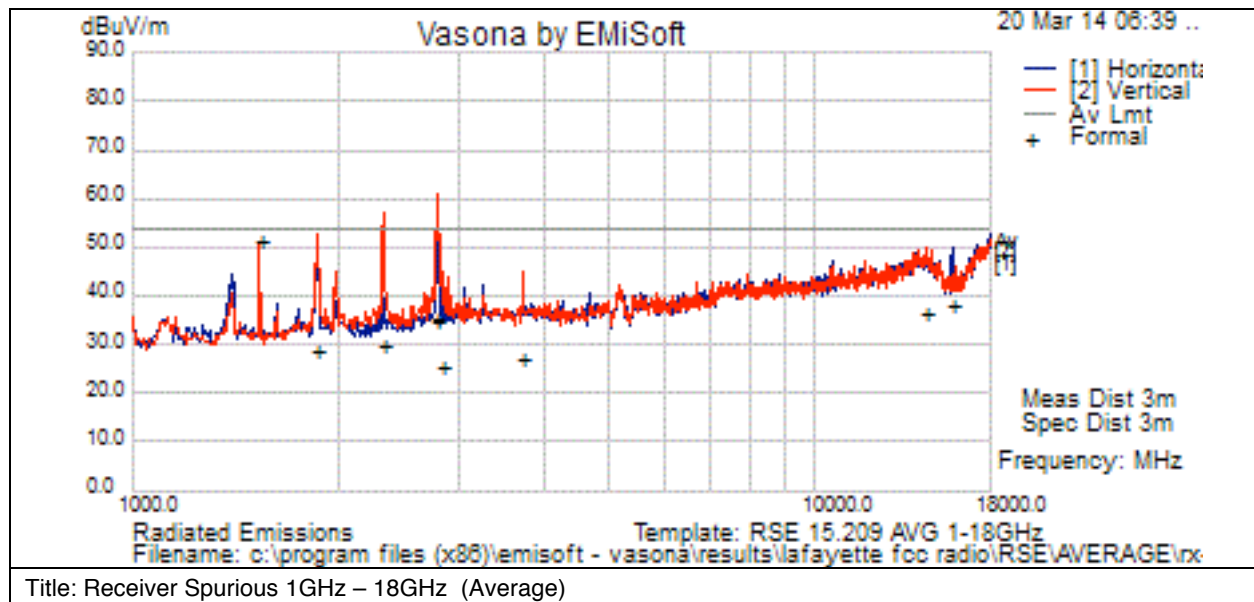


There were no emissions within 6dB of the specification limit when measured with a peak detector.



**Graphical Test Results 1GHz-18GHz (Average)**

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector' and a 1MHz VBW. Please refer to the results table for the detectors used during formal measurements.



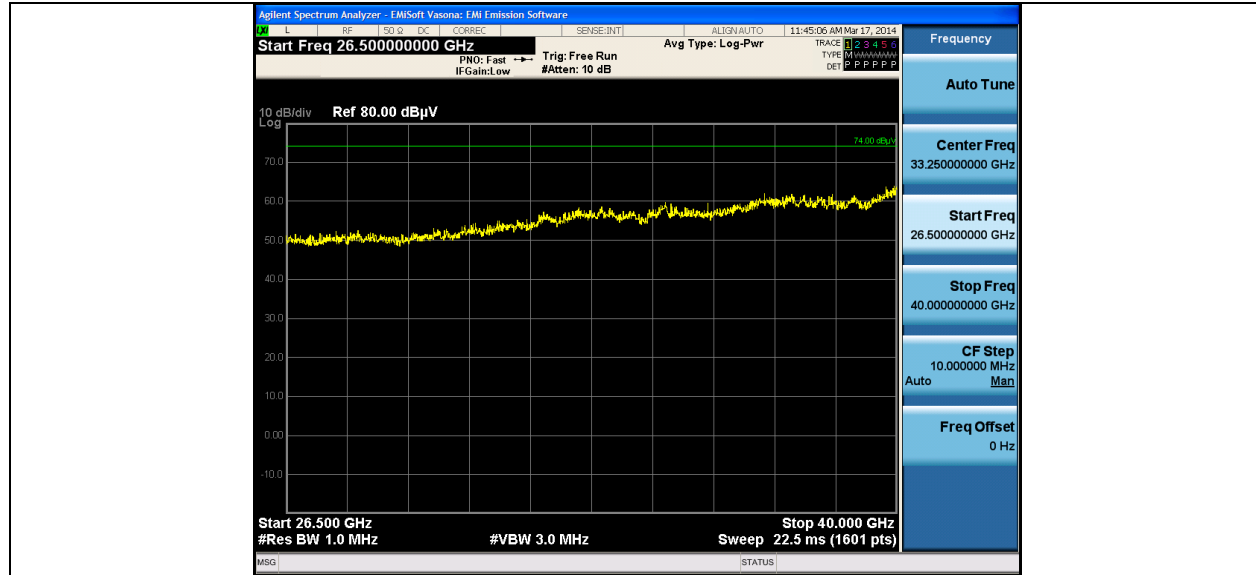
**Test Results Table**

Formal Data													
No	Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1	1536.113	55.2	4.0	-7.9	51.3	Average Max	V	112	174	54.0	-2.7	Pass	
2	2799.736	38.6	5.5	-5.9	38.3	Average Max	V	126	188	54.0	-15.7	Pass	
3	2333.078	32.3	5.0	-5.8	31.5	Average	V	127	178	54.0	-22.5	Pass	
4	1866.380	29.9	4.4	-7.0	27.4	Average Max	H	130	184	54.0	-26.6	Pass	
5	3733.668	24.1	6.5	-3.5	27.1	Average Max	V	120	97	54.0	-26.9	Pass	
6	1400.142	30.1	3.8	-7.6	26.3	Average Max	V	165	147	54.0	-27.7	Pass	



**Graphical Test Results for 802.11/b/g/n all modes and data rates: 26.5GHz – 40GHz (Peak):**

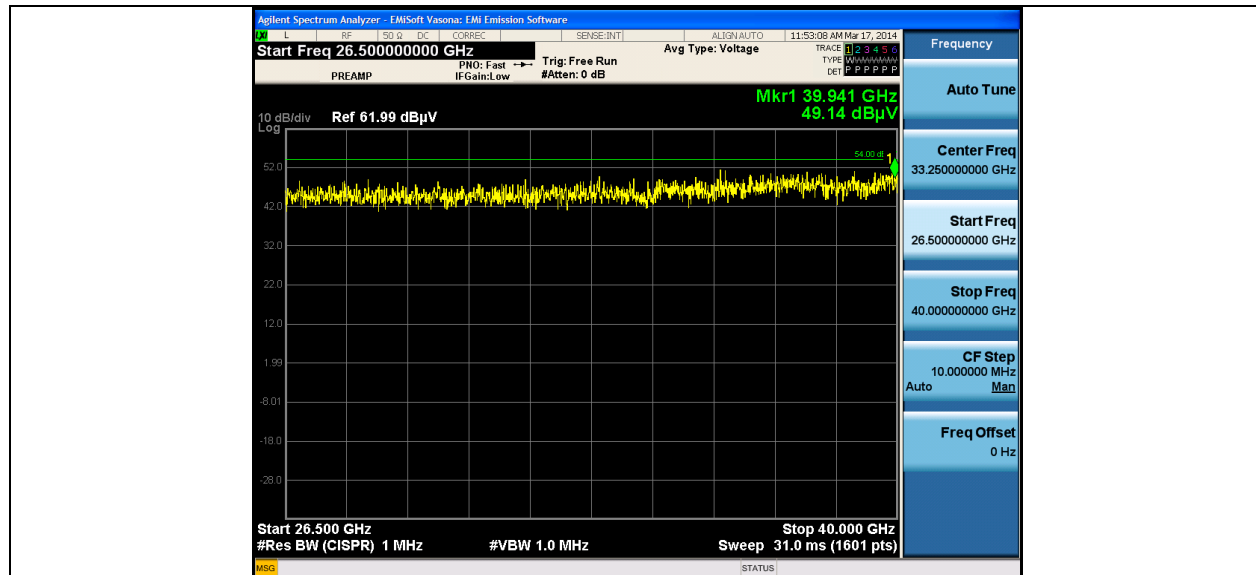
Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'.



Title: RX RSE 26.5GHz - 40GHz for 802.11/b/g/n (Peak).  
 Comments: There were no measurable emissions in this range.

**Graphical Test Results for 802.11/b/g/n all modes and data rates: 26.5GHz – 40GHz (Average):**

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'.

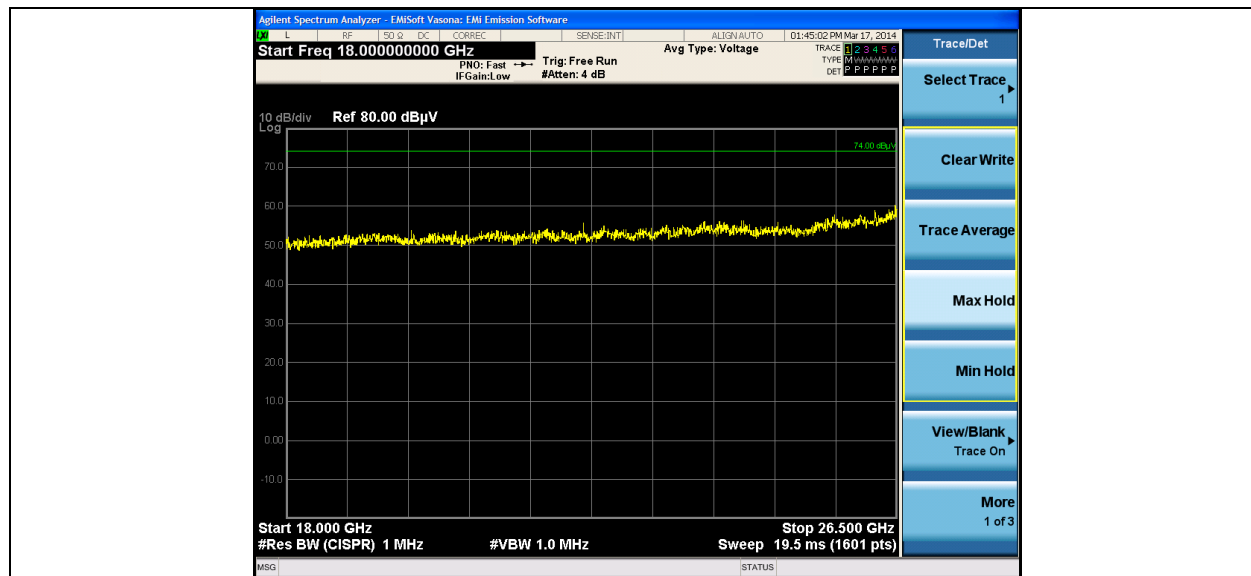


Title: RX RSE 26.5GHz - 40GHz for 802.11/b/g/n (Average)  
 Comments: There were no measurable emissions in this range.



**Graphical Test Results for 802.11/b/g/n all modes and data rates: 18GHz – 26.5GHz (Peak):**

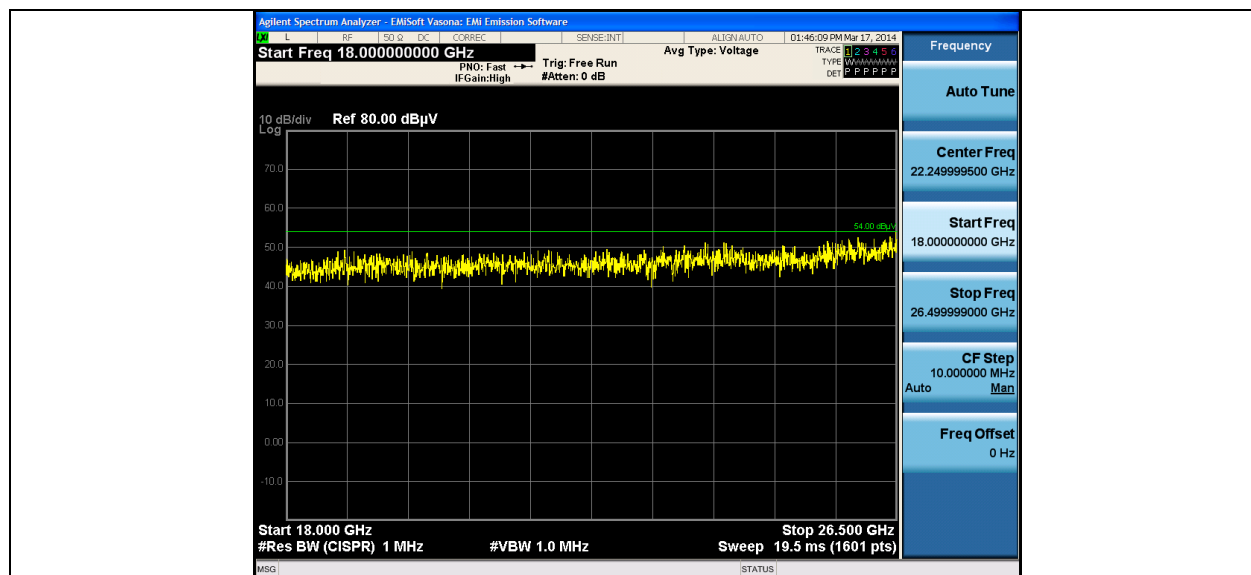
Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'.



Title: RX RSE 18GHz – 26.5GHz for 802.11/b/g/n (Peak).  
 Comments: There were no measurable emissions in this range.

**Graphical Test Results for 802.11/b/g/n all modes and data rates: 18GHz – 26.5GHz (Average):**

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'.



Title: RX RSE 18GHz – 26.5GHz for 802.11/b/g/n (Average)  
 Comments: There were no measurable emissions in this range.



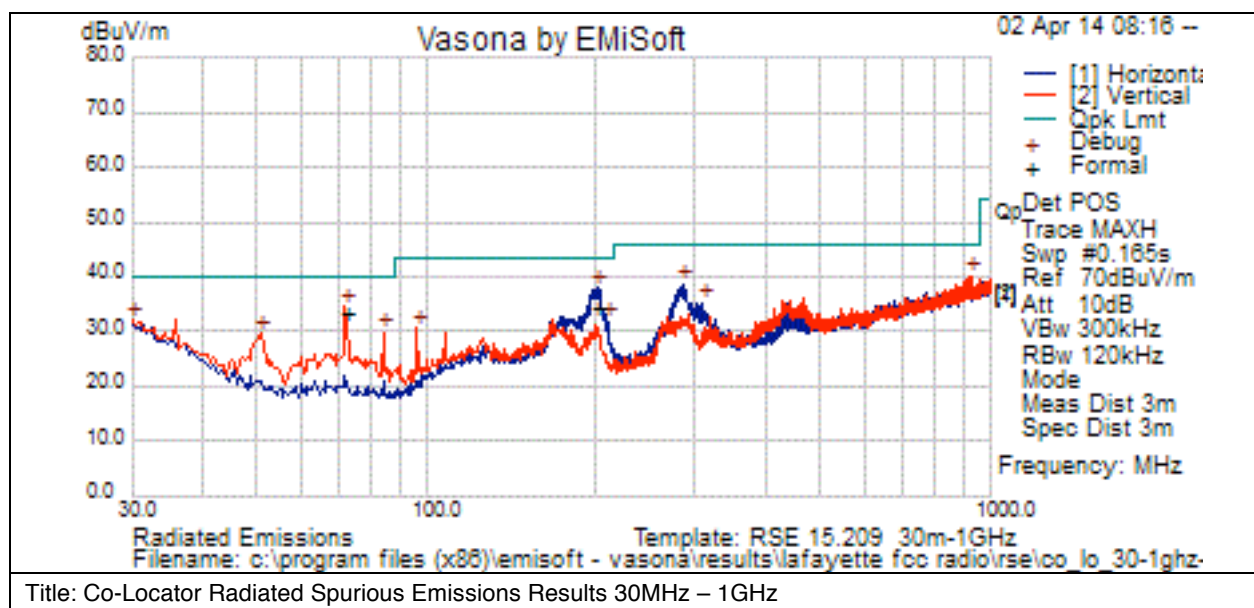
## Co-Locator Radiated Spurious Emissions

15.205 & RSS-210 sec2.7:

Radiated emissions which fall in the restricted bands, as defined in Sec. 15.205(a), must also comply with the radiated emission limits specified in Sec. 15.209(a).

### Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



### Test Results Table

Formal Data													
No	Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1	71.995	24.5	.8	8.1	33.4	Quasi Max	V	152	324	40.0	-6.6	Pass	
2	200.532	20.5	1.4	12.4	34.3	Quasi Max	H	114	353	43.5	-9.2	Pass	





15.205 / RSS-210 2.7: Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Using Vasona, configure the spectrum analyzer as shown below (be sure to enter all losses between the transmitter output and the spectrum analyzer). Place the radio in continuous transmit mode.

Span:	1GHz – 18 GHz
Reference Level:	80 dBuV
Attenuation:	10 dB
Sweep Time:	Coupled
Resolution Bandwidth:	1MHz
Video Bandwidth:	1 MHz for peak, 1kHz for average
Detector:	Peak

Maximize Turntable (find worst case table angle), Maximize Antenna (find worst case height)

Save 2 plots: 1) Average Plot (Vertical and Horizontal), Limit= 54dBuV/m @3m  
2) Peak plot (Vertical and Horizontal), Limit = 74dBuV/m @3m

Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands.

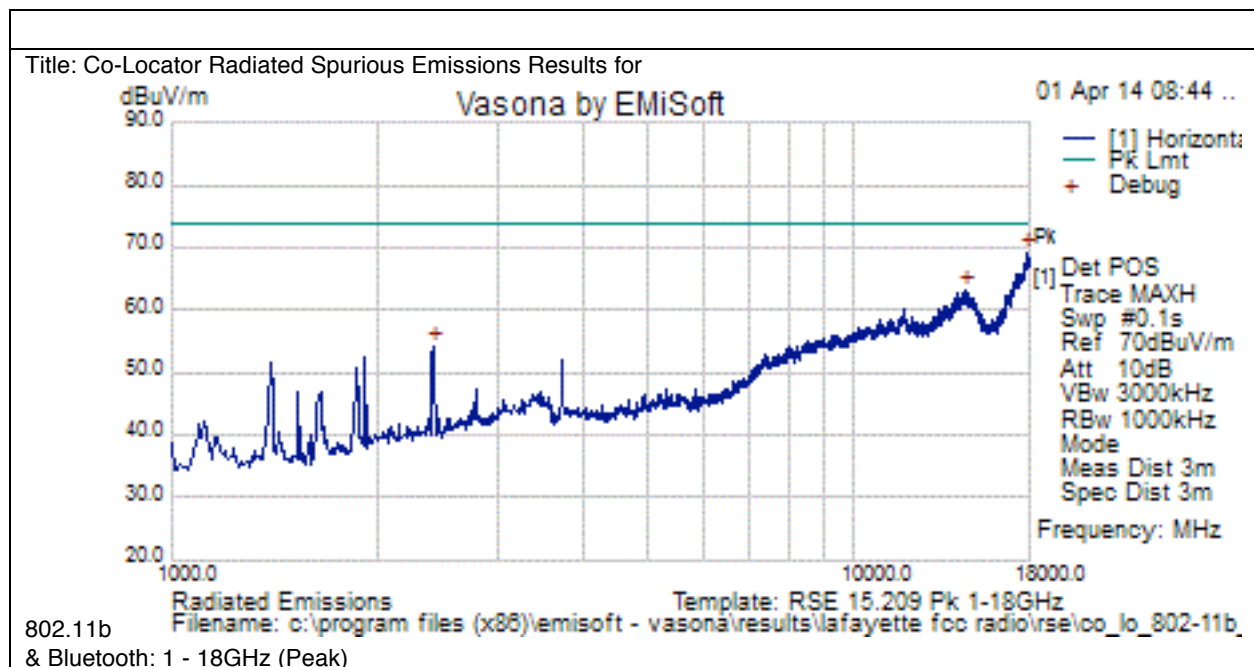
This report represents the worst case data for all supported operating modes and antennas. System was evaluated up to 40GHz but there were no measurable emissions above 18 GHz.

Note: A Notch Filter was used during formal testing from 1 – 18GHz to help prevent the front end of the analyzer from over loading. The Notch filters used are designed to suppress Tx fundamental frequency but do not effect harmonics of the fundamental frequency from being measured



**Graphical Test Results for 802.11B & Bluetooth (Peak)**

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



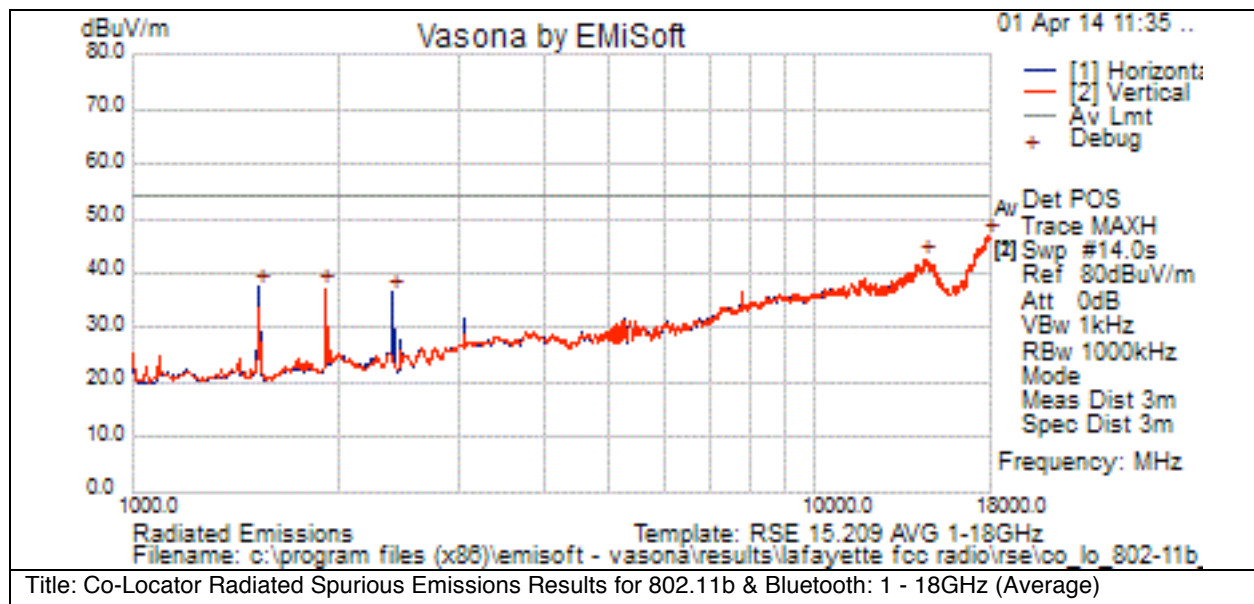
**Test Results Table**

Formal Data													
No	Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1	18000.000	20.8	16.3	9.7	46.8	Peak [Scan]	H	150	0	54.0	-7.2	Pass	
2	14472.500	20.6	14.1	7.7	42.5	Peak [Scan]	H	150	0	54.0	-11.5	Pass	
3	1535.500	41.3	4.0	-7.9	37.4	Peak [Scan]	H	150	0	54.0	-16.6	Pass	
4	1918.000	39.3	4.5	-6.5	37.2	Peak [Scan]	V	150	0	54.0	-16.8	Pass	
5	2411.000	37.5	5.1	-6.1	36.4	Peak [Scan]	H	150	0	54.0	-17.6	Pass	



**Graphical Test Results for 802.11B & Bluetooth (Average)**

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



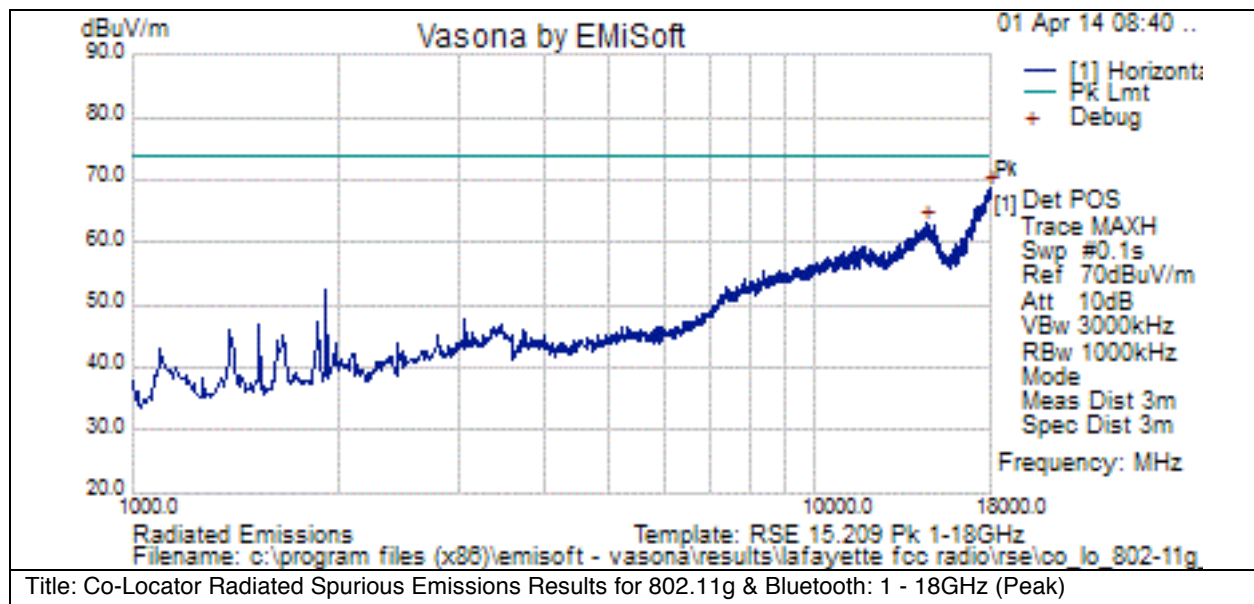
**Test Results Table**

Formal Data													
No	Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1	18000.000	20.8	16.3	9.7	46.8	Peak [Scan]	H	150	0	54.0	-7.2	Pass	
2	14472.500	20.6	14.1	7.7	42.5	Peak [Scan]	H	150	0	54.0	-11.5	Pass	
3	1918.000	39.6	4.5	-6.5	37.5	Peak [Scan]	V	150	0	54.0	-16.5	Pass	
4	1535.500	41.2	4.0	-7.9	37.3	Peak [Scan]	H	150	0	54.0	-16.7	Pass	



**Graphical Test Results for 802.11G & Bluetooth (Peak)**

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



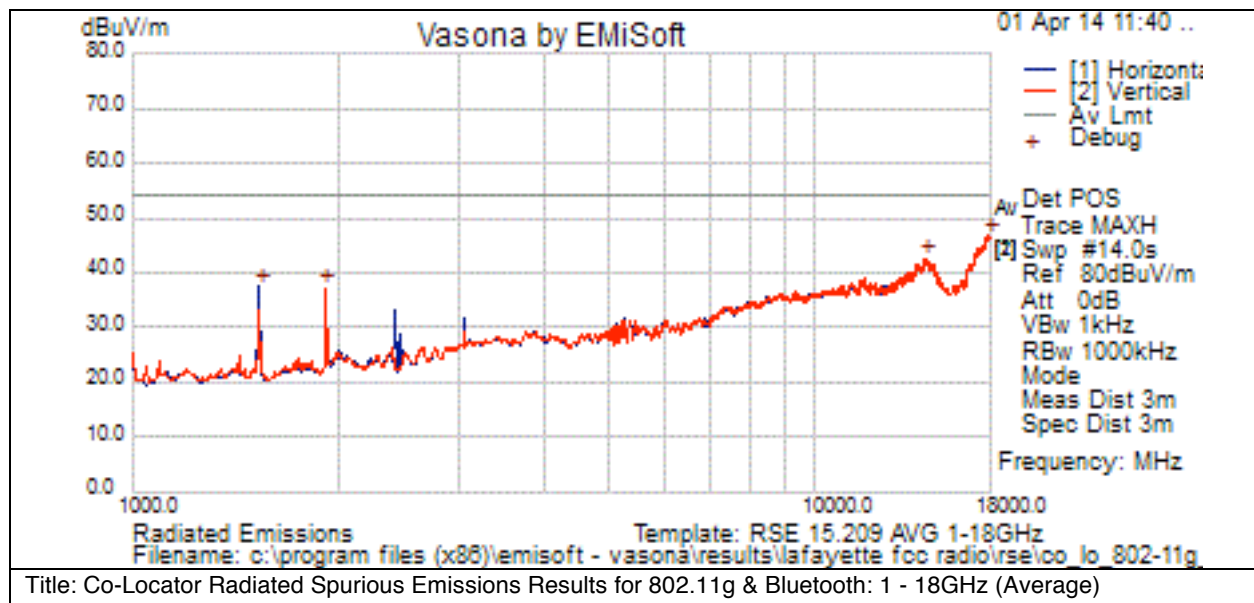
**Test Results Table**

Formal Data													
No	Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1	17991.500	42.7	16.3	9.7	68.7	Peak [Scan]	V	150	0	74.0	-5.3	Pass	
2	14481.000	41.3	14.1	7.6	63.0	Peak [Scan]	V	150	0	74.0	-11.0	Pass	



**Graphical Test Results for 802.11G & Bluetooth (Average)**

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



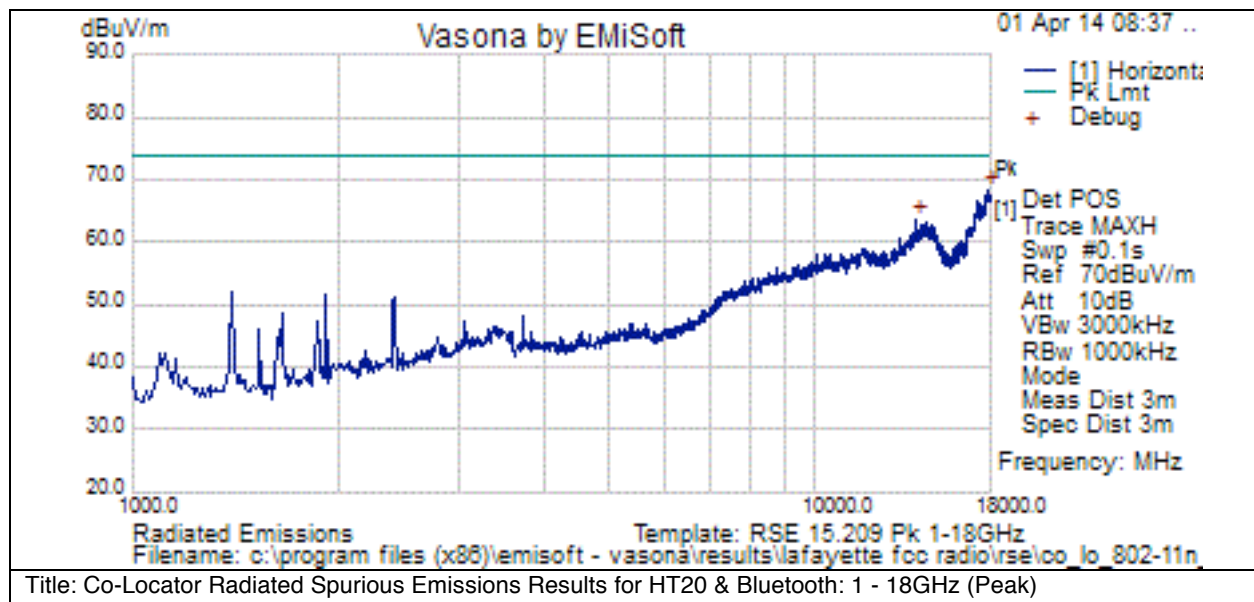
**Test Results Table**

Formal Data													
No	Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1	18000.000	20.8	16.3	9.7	46.8	Peak [Scan]	H	150	0	54.0	-7.2	Pass	
2	14472.500	20.6	14.1	7.7	42.5	Peak [Scan]	H	150	0	54.0	-11.5	Pass	
3	1535.500	41.3	4.0	-7.9	37.4	Peak [Scan]	H	150	0	54.0	-16.6	Pass	
4	1918.000	39.3	4.5	6.5	37.2	Peak [Scan]	V	150	0	54.0	-16.8	Pass	



**Graphical Test Results for HT20 & Bluetooth (Peak)**

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



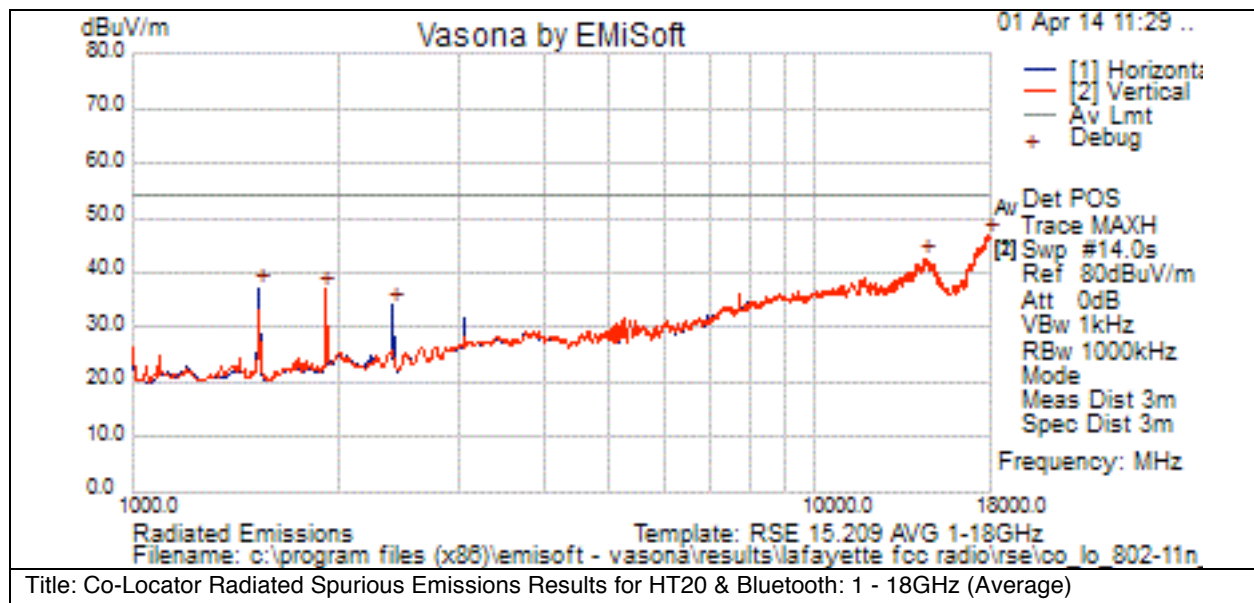
**Test Results Table**

Formal Data													
No	Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1	17923.500	42.4	16.3	9.7	68.3	Peak [Scan]	V	150	0	74.0	-5.7	Pass	
2	14073.000	42.4	14.0	7.2	63.6	Peak [Scan]	V	150	0	74.0	-10.4	Pass	



**Graphical Test Results for HT20 & Bluetooth (Average)**

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



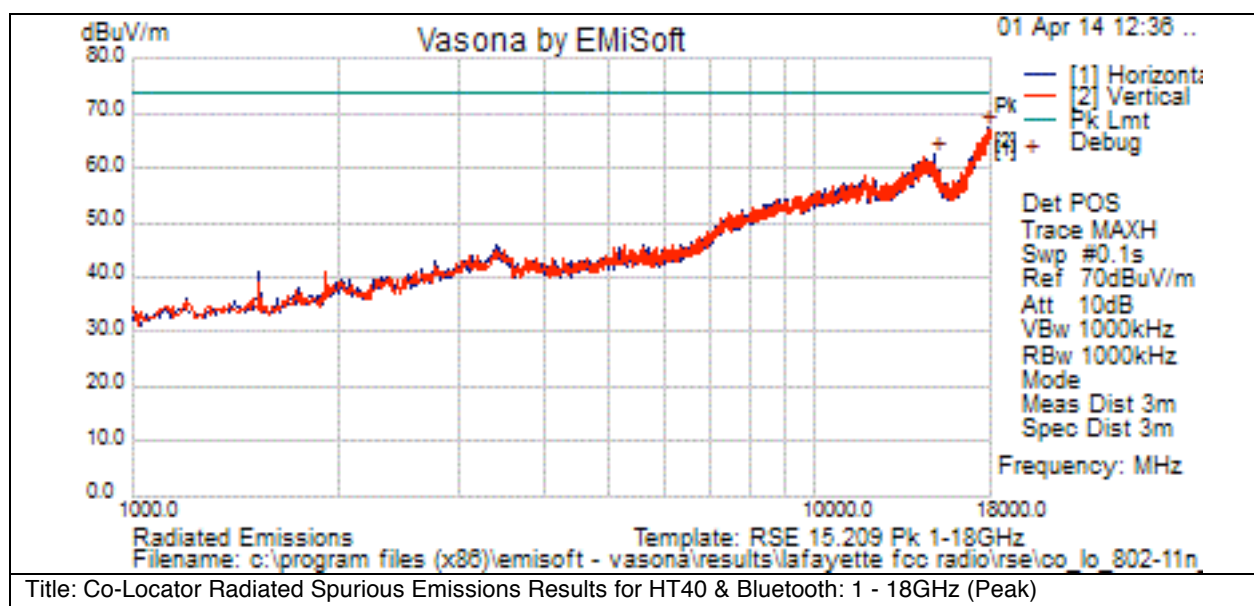
**Test Results Table**

Formal Data													
No	Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1	18000.000	20.8	16.3	9.7	46.8	Peak [Scan]	H	150	0	54.0	-7.2	Pass	
2	14472.500	20.6	14.1	7.7	42.5	Peak [Scan]	H	150	0	54.0	-11.5	Pass	
3	1535.500	41.0	4.0	-7.9	37.1	Peak [Scan]	H	150	0	54.0	-16.9	Pass	
4	1918.000	39.1	4.5	-6.5	37.0	Peak [Scan]	V	150	0	54.0	-17.0	Pass	
5	2411.000	35.1	5.1	-6.1	34.0	Peak [Scan]	H	150	0	54.0	-20.0	Pass	



**Graphical Test Results for HT40 & Bluetooth (Peak)**

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



**Test Results Table**

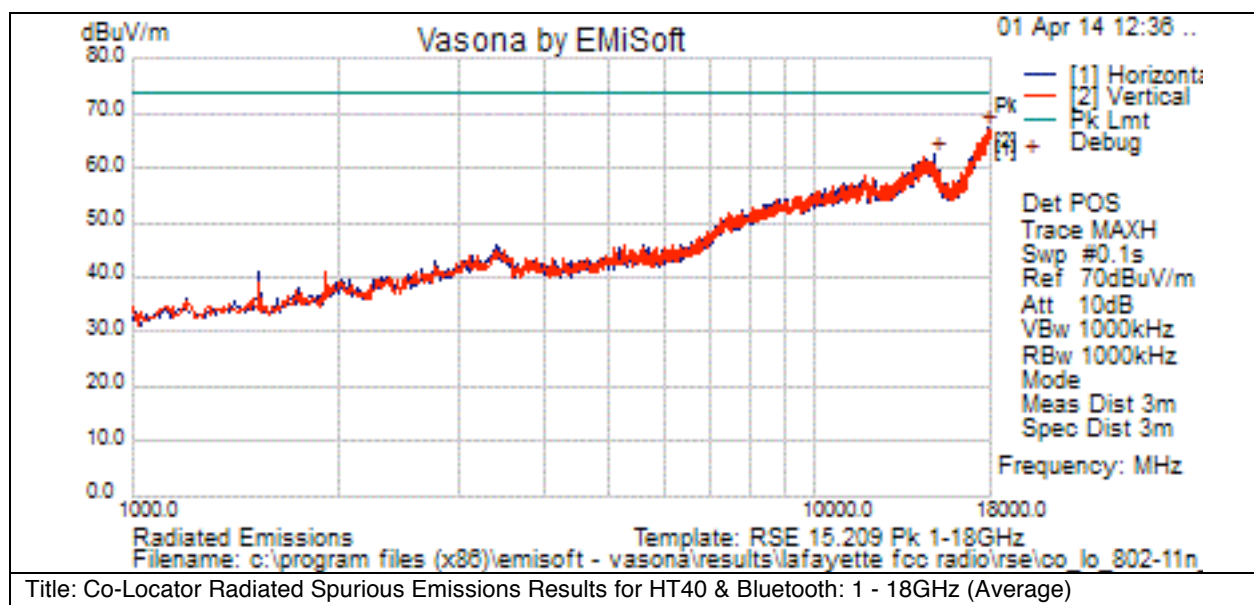
Formal Data													
No	Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1	17804.500	41.4	16.2	9.8	67.4	Peak [Scan]	H	150	0	74.0	-6.6	Pass	
2	14965.500	42.2	14.4	5.7	62.3	Peak [Scan]	H	150	0	74.0	-11.7	Pass	





**Graphical Test Results for HT40 & Bluetooth (Average)**

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



**Test Results Table**

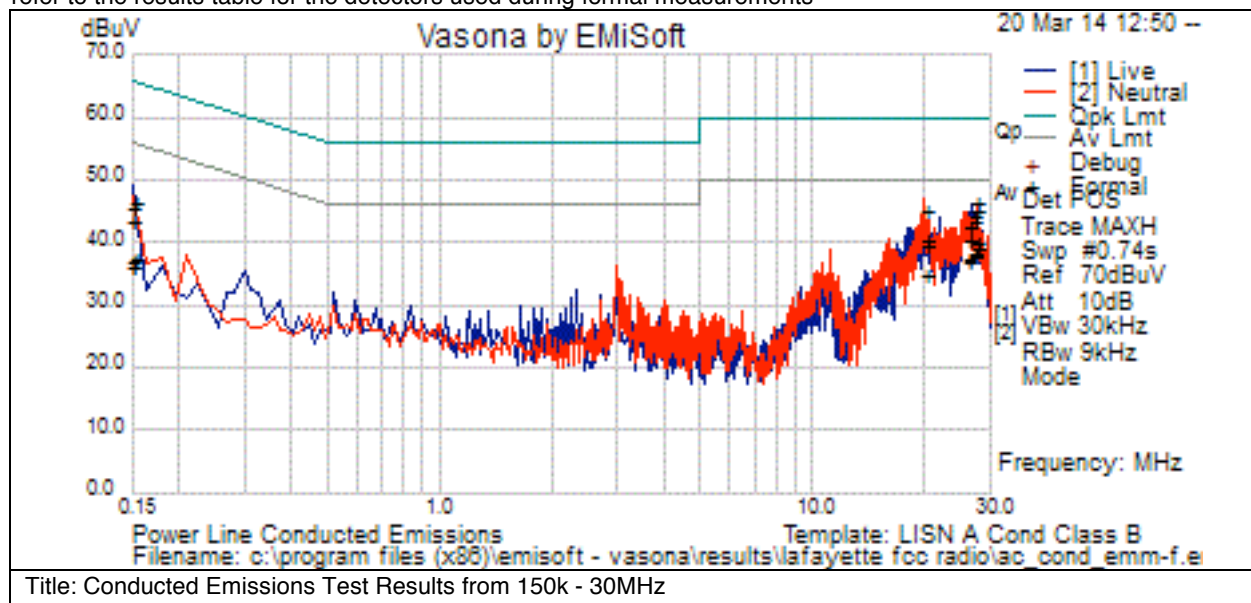
Debug Data													
No	Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1	17804.500	41.4	16.2	9.8	67.4	Peak [Scan]	H	150	0	74.0	-6.6	Pass	
2	14965.500	42.2	14.4	5.7	62.3	Peak [Scan]	H	150	0	74.0	-11.7	Pass	



**AC Conducted Emissions**

**Graphical Test Results**

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements

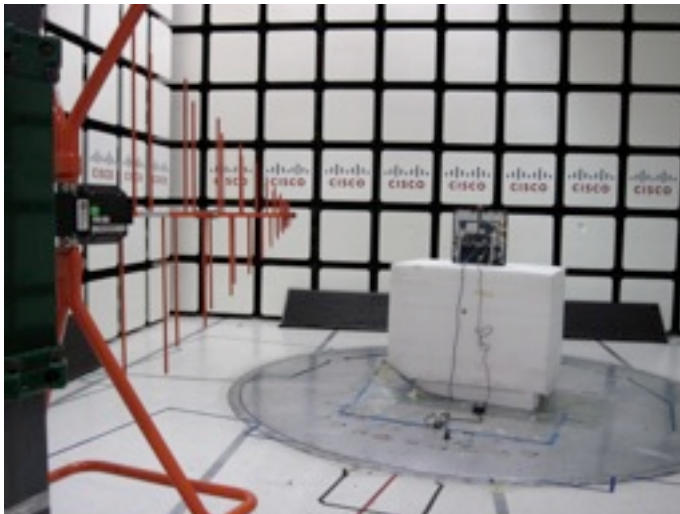
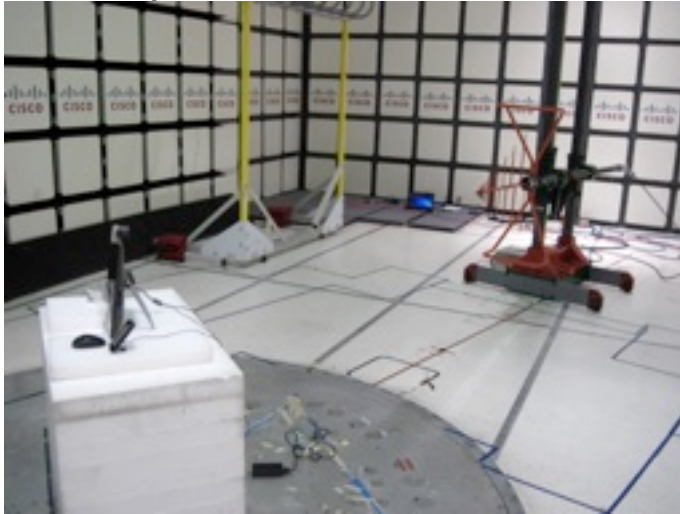


**Test Results Table**

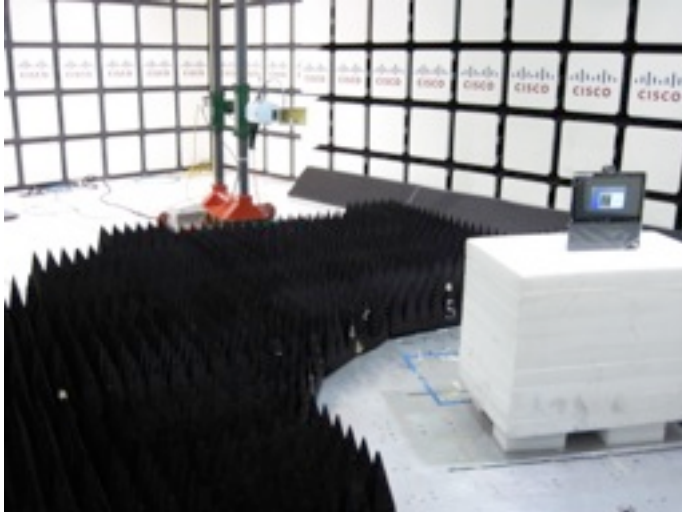
FORMAL DATA										
No	Frequency MHz	Raw dBuV	Cable Loss	Factors dB	Level dBuV	Measurement Type	Line	Limit dBuV	Margin dB	Pass /Fail
1	19.998	19.4	20.5	0.3	40.2	Average	Live	50	-9.8	Pass
2	27.759	18.8	20.6	0.5	39.9	Average	Neutral	50	-10.1	Pass
3	27.759	18	20.6	0.5	39	Average	Live	50	-11	Pass
4	27.017	17.2	20.6	0.4	38.2	Average	Neutral	50	-11.8	Pass
5	27.017	16.6	20.6	0.4	37.6	Average	Live	50	-12.4	Pass
6	26.406	16.5	20.5	0.4	37.4	Average	Neutral	50	-12.6	Pass
7	26.406	16.1	20.5	0.4	37.1	Average	Live	50	-12.9	Pass
8	27.759	25.3	20.6	0.5	46.3	Quasi Peak	Neutral	60	-13.7	Pass
9	19.998	24.4	20.5	0.3	45.2	Quasi Peak	Live	60	-14.8	Pass
10	27.759	24.1	20.6	0.5	45.1	Quasi Peak	Live	60	-14.9	Pass
11	19.997	14.1	20.5	0.3	34.8	Average	Neutral	50	-15.2	Pass
12	27.017	23.1	20.6	0.4	44.1	Quasi Peak	Neutral	60	-15.9	Pass
13	27.017	22.3	20.6	0.4	43.3	Quasi Peak	Live	60	-16.7	Pass
14	26.406	21.7	20.5	0.4	42.6	Quasi Peak	Live	60	-17.4	Pass
15	0.151	15.7	21.4	0.1	37.2	Average	Live	55.9	-18.7	Pass
16	0.15	15.6	21.4	0.1	37.1	Average	Live	56	-18.9	Pass
17	0.151	24.7	21.4	0.1	46.2	Quasi Peak	Live	65.9	-19.7	Pass
18	26.406	19.4	20.5	0.4	40.3	Quasi Peak	Neutral	60	-19.7	Pass
19	0.151	14.6	21.4	0.1	36.1	Average	Neutral	55.9	-19.9	Pass
20	0.15	14.4	21.4	0.1	36	Average	Neutral	56	-20	Pass
21	0.15	24	21.4	0.1	45.5	Quasi Peak	Live	66	-20.5	Pass
22	19.997	18.8	20.5	0.3	39.5	Quasi Peak	Neutral	60	-20.5	Pass
23	0.151	22	21.4	0.1	43.5	Quasi Peak	Neutral	65.9	-22.4	Pass
24	0.15	21.9	21.4	0.1	43.5	Quasi Peak	Neutral	66	-22.5	Pass

**Appendix B: Photographs of Test Setups**

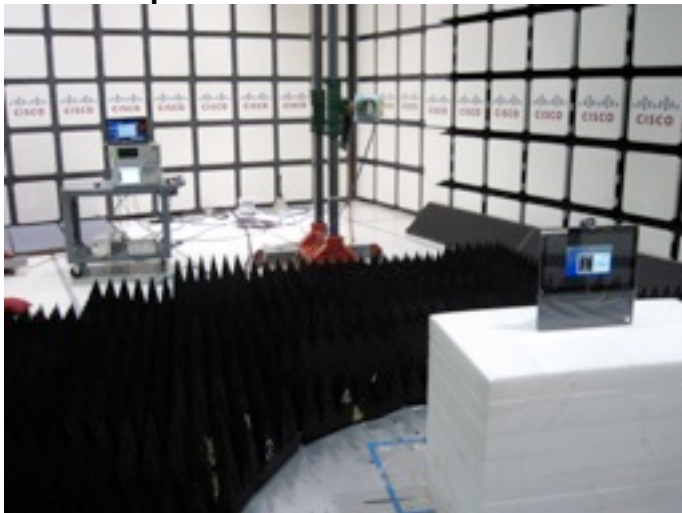
**Test Setup for Radiated Measurements 30MHz to 1GHz**



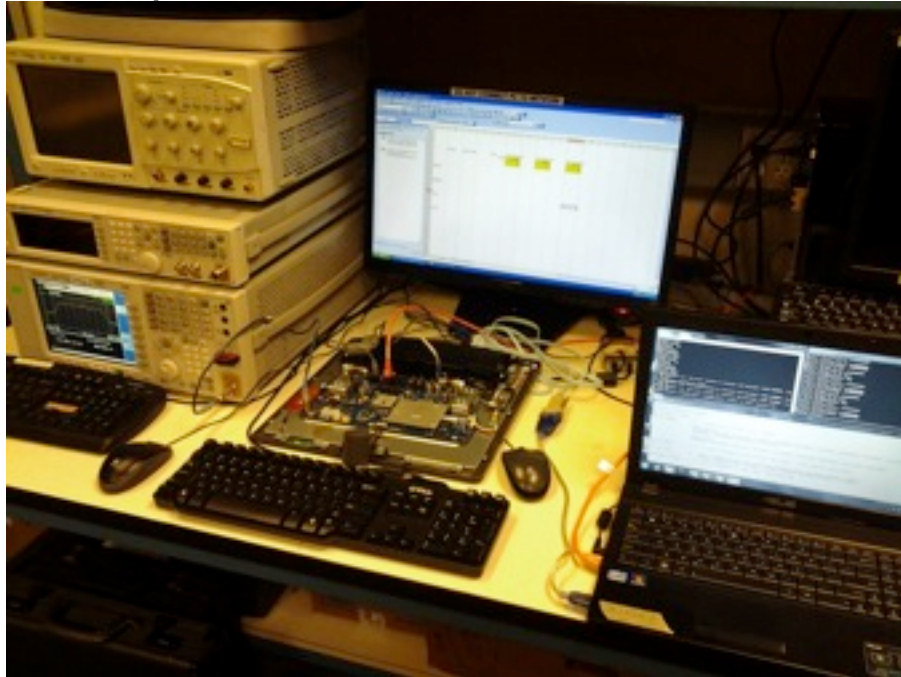
**Test Setup for Radiated Measurements 1GHz to 18GHz**



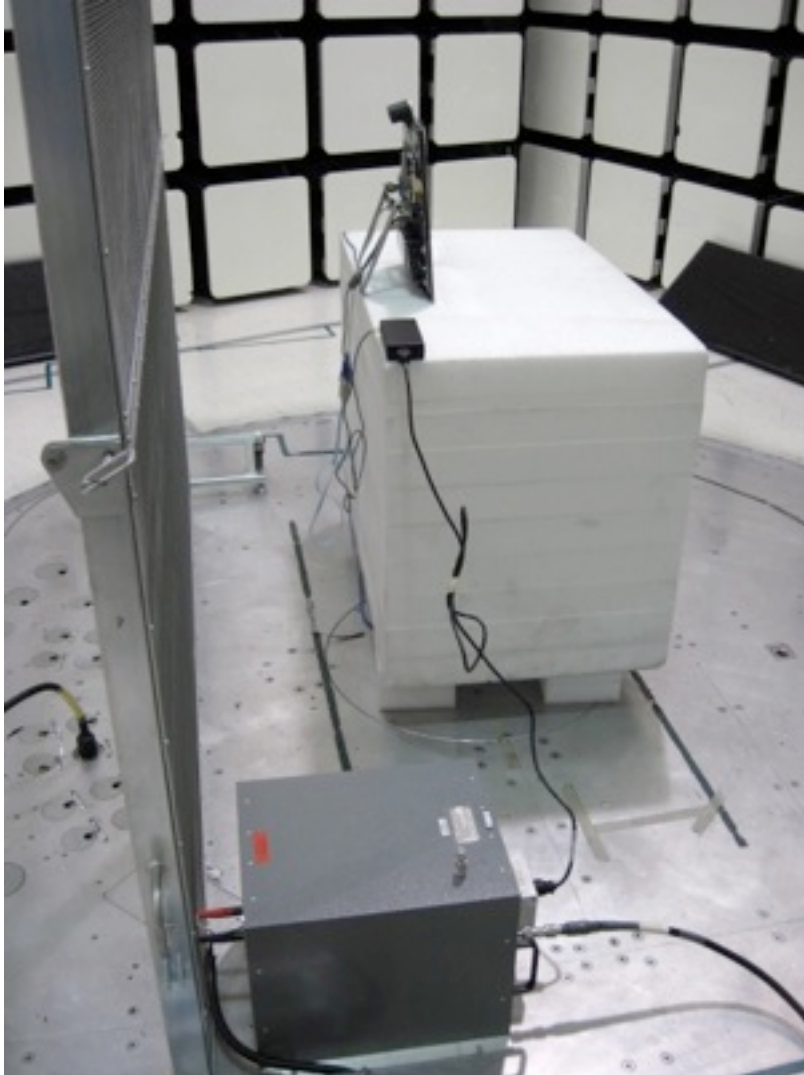
**Test Setup for Radiated Measurements 18GHz to 40GHz**



### Test Setup for RF Port Conducted Measurements



### Test Setup for AC Power Line Conducted Measurements



**Appendix C: Photographs of Equipment Under Test**

**CP-DX70 Front View**



**CP-DX70 Rear View**



**CP-DX70 Ports**



**AC/DC Adapter**





**Appendix D: Abbreviation Key and Definitions**

The following table defines abbreviations used within this test report.

Abbreviation	Description	Abbreviation	Description
EMC	Electro Magnetic Compatibility	°F	Degrees Fahrenheit
EMI	Electro Magnetic Interference	°C	Degrees Celsius
EUT	Equipment Under Test	Temp	Temperature
ITE	Information Technology Equipment	S/N	Serial Number
TAP	Test Assessment Schedule	Qty	Quantity
ESD	Electro Static Discharge	emf	Electromotive force
EFT	Electric Fast Transient	RMS	Root mean square
EDCS	Engineering Document Control System	Qp	Quasi Peak
Config	Configuration	Av	Average
CIS#	Cisco Number (unique identification number for Cisco test equipment)	Pk	Peak
Cal	Calibration	kHz	Kilohertz (1x10 <sup>3</sup> )
EN	European Norm	MHz	MegaHertz (1x10 <sup>6</sup> )
IEC	International Electro technical Commission	GHz	Gigahertz (1x10 <sup>9</sup> )
CISPR	International Special Committee on Radio Interference	H	Horizontal
CDN	Coupling/Decoupling Network	V	Vertical
LISN	Line Impedance Stabilization Network	dB	decibel
PE	Protective Earth	V	Volt
GND	Ground	kV	Kilovolt (1x10 <sup>3</sup> )
L1	Line 1	µV	Microvolt (1x10 <sup>-6</sup> )
L2	Line2	A	Amp
L3	Line 3	µA	Micro Amp (1x10 <sup>-6</sup> )
DC	Direct Current	mS	Milli Second (1x10 <sup>-3</sup> )
RAW	Uncorrected measurement value, as indicated by the measuring device	µS	Micro Second (1x10 <sup>-6</sup> )
RF	Radio Frequency	µS	Micro Second (1x10 <sup>-6</sup> )
SLCE	Signal Line Conducted Emissions	m	Meter
Meas dist	Measurement distance	Spec dist	Specification distance
N/A or NA	Not Applicable	SL	Signal Line (or Telecom Line)
P	Power Line	L	Live Line
N	Neutral Line	R	Return
S	Supply	AC	Alternating Current





**Appendix E: Test Equipment/Software Used to perform the test**

Equipment No	Manufacturer	Model	Description	Last Cal	Next Cal Due Date
CIS004882	EMC Test Systems	3115	Double Ridged Guide Horn Antenna	28-JUN-13	28-JUN-14
CIS004883	EMC Test Systems	3115	Double Ridged Guide Horn Antenna	Cal Not Required	N/A
CIS008166	HP	8491B Opt 010	10dB Attenuator	07-FEB-14	07-FEB-15
CIS005691	Miteq	NSP1800-25-S1	Broadband Preamplifier (1-18GHz)	27-JAN-14	27-JAN-15
CIS008448	Cisco	NSA 5m Chamber	NSA 5m Chamber	03-OCT-13	03-OCT-14
CIS018963	York	CNE V	Comparison Noise Emitter, 30 - 1000MHz	Cal Not Required	N/A
CIS019206	TTE	H785-150K-50-21378	High Pas Filter, Fo=150kHz	12-SEP-13	12-SEP-14
CIS021117	Micro-Coax	UFB311A-0-2484-520520	RF Coaxial Cable, to 18GHz, 248.4 in	23-AUG-13	23-AUG-14
CIS024998	Micro-Coax	UFB197C-1-0240-504504	RF Coaxial Cable, to 18GHz, 24 in	27-FEB-14	27-FEB-15
CIS027245	Stanley	33-158	Measuring tape	29-JUN-13	29-JUN-14
CIS029959	Fischer Custom Communications	FCC-LISN-PA-NEMA-5-15	Power Adaptor, Polarized 120VAC	02-AUG-13	02-AUG-14
CIS025658	Micro-Coax	UFB311A-1-0840-504504	RF Coaxial Cable, to 18GHz, 84 in	14-FEB-14	14-FEB-15
CIS034075	Schaffner	RSG 2000	Reference Spectrum Generator, 1-18GHz	Cal Not Required	N/A
CIS040597	Cisco	Above 1GHz Site Cal	Above 1GHz Cisp Site Verification	30-MAY-13	30-MAY-14
CIS040641	Rohde & Schwarz	ESU26	EMI Test Receiver	24-JUN-13	24-JUN-14



CIS040654	Spirent	XLW-3721A	Plug-in Module	Cal Not Required	N/A
CIS047287	Huber + Suhner	Sucoflex 102E	40GHz Cable K Connector	30-MAY-13	30-MAY-14
CIS049389	Rohde & Schwarz	NRP2	Power Meter	17-OCT-13	17-OCT-14
CIS049390	Rohde & Schwarz	NRP-Z21	Power Sensor	17-OCT-13	17-OCT-14
CIS049443	Micro-Tronics	BRM50702-02	Notch Filter, SB:2.4-2.5GHz, to 18GHz	20-MAR-14	20-MAR-15
CIS049488	JFW	50HF-010	SMA 10 dB Attenuator	21-MAR-14	21-MAR-15
CIS049516	Agilent	N9030A	Spectrum Analyzer	29-OCT-13	29-OCT-14
CIS049563	Huber + Suhner	Sucoflex 106A	N Type Cable 18GHz	23-AUG-13	23-AUG-14
CIS044440	Agilent	DSO80604B	40GSa/s, 6GHz 4 CH Oscilloscope	05-SEP-13	05-SEP-14
CIS051636	Agilent	N5182B	MXG-B RF Vector Signal Generator	27-JAN-14	27-JAN-15

**Software Used to perform Tests:**

**A: Vasona File Version 5.073, 5.089**

**B: WinSoft Radio Automation Software Version 1.2**



## Appendix F: Test Procedures

Measurements were made in accordance with

- ET docket 96-8, KDB Publication No. 558074
- Measurement method of spurious emission tolerance to the International Telecommunication Union (ITU) Recommendation SM329.
- ANSI C63.10
- ANSI C63.4

Test procedures are summarized below

6dB Bandwidth	EDCS # - 422115
Co-Located Transmitter	EDCS # - 422118
Conducted Spurious Test	EDCS # - 422119
Peak Transmit Power Measurement	EDCS # - 422123
Power Spectral Density	EDCS # - 422113
Band Edge	EDCS # - 422124
Radiated Spurious Test	EDCS # - 422125
AC Power Line Conducted Emissions	EDCS # - 36541