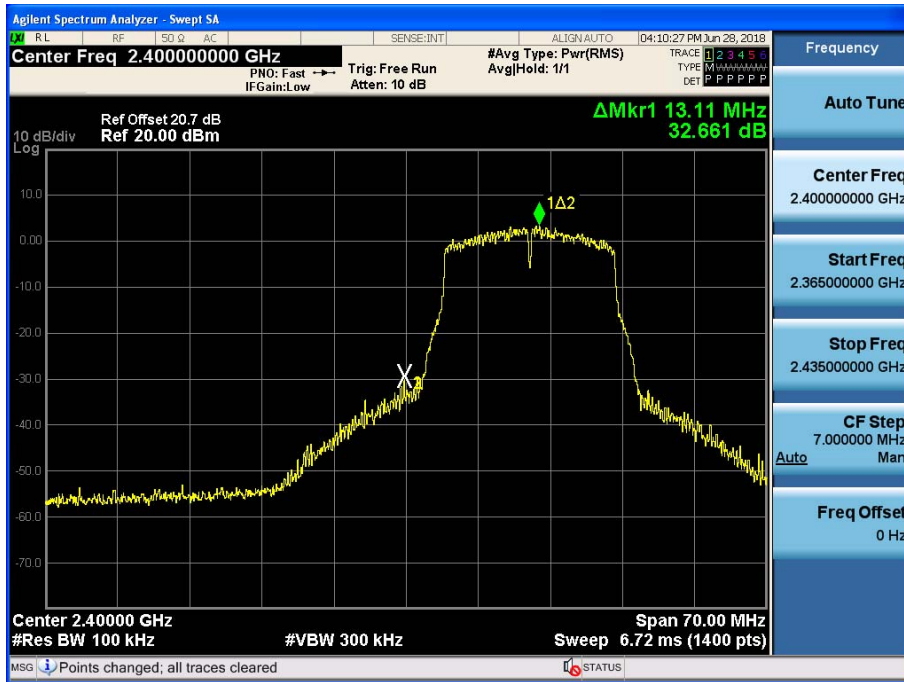


**Band Edge (802.11g-CH1)**



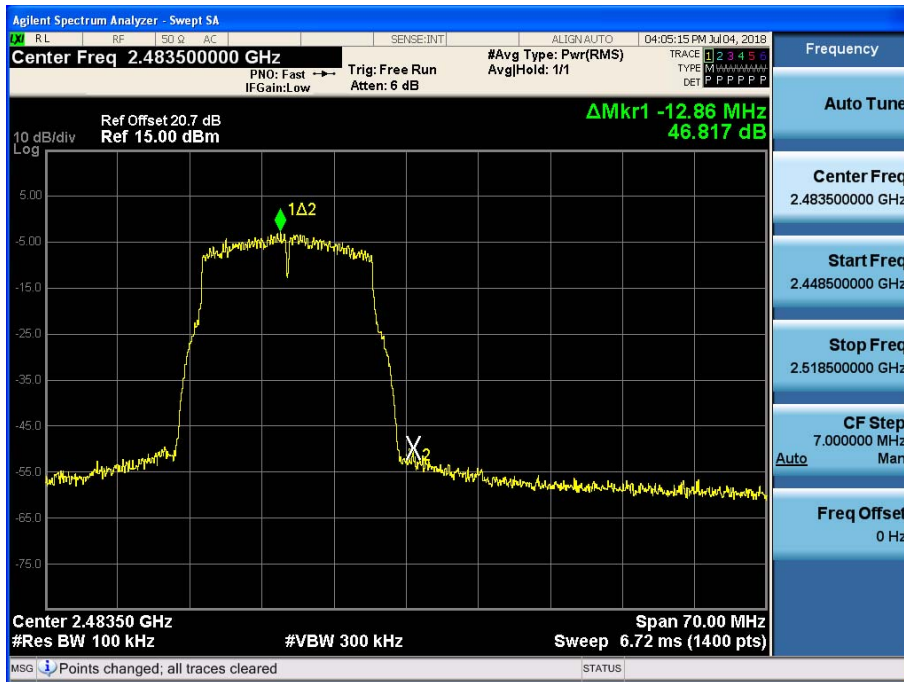
**Band Edge (802.11g-CH11)**



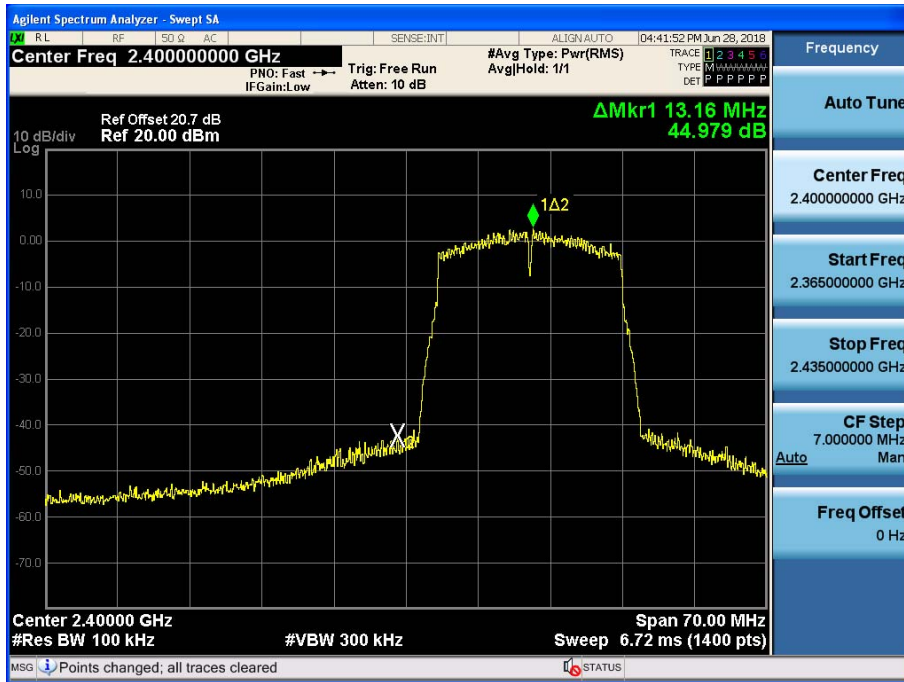
**Band Edge (802.11g-CH12)**



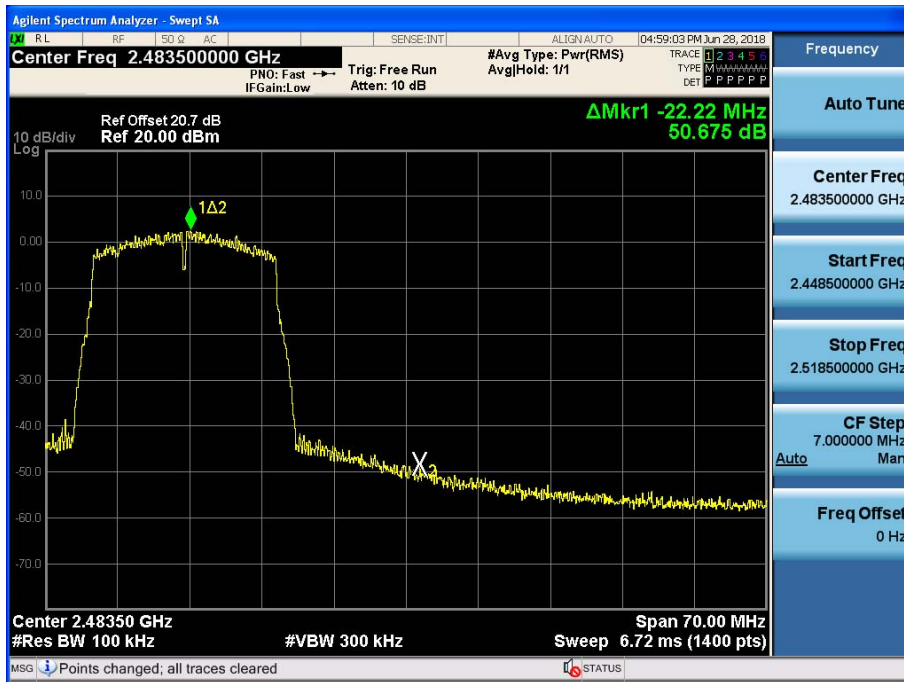
**Band Edge (802.11g-CH13)**



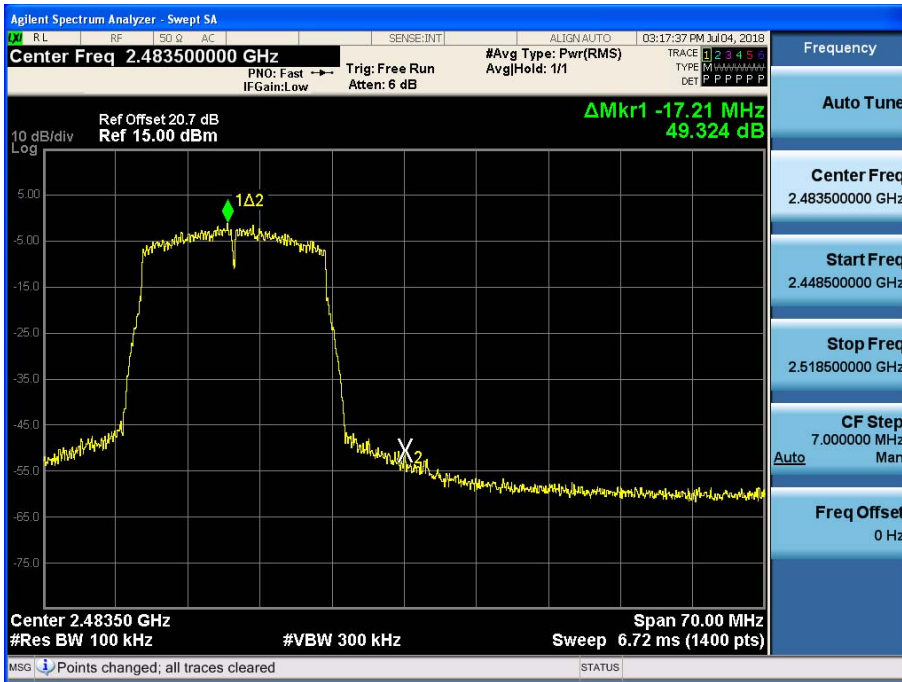
**Band Edge (802.11n\_HT20-CH1)**



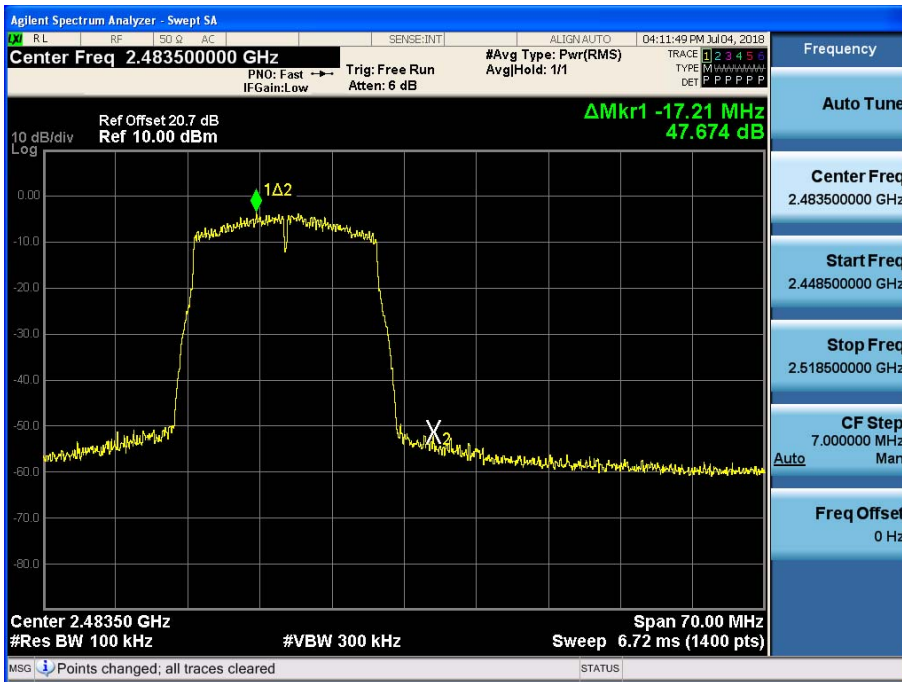
**Band Edge (802.11n\_HT20-CH11)**



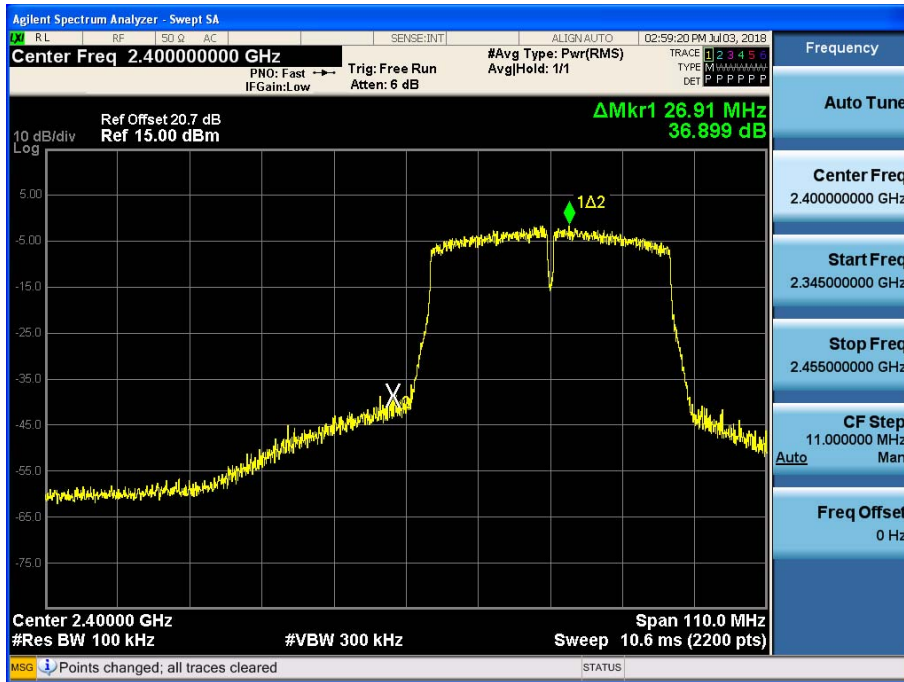
**Band Edge (802.11n\_HT20-CH12)**



**Band Edge (802.11n\_HT20-CH13)**



**Band Edge (802.11n\_HT40-CH3)**



**Band Edge (802.11n\_HT40-CH9)**

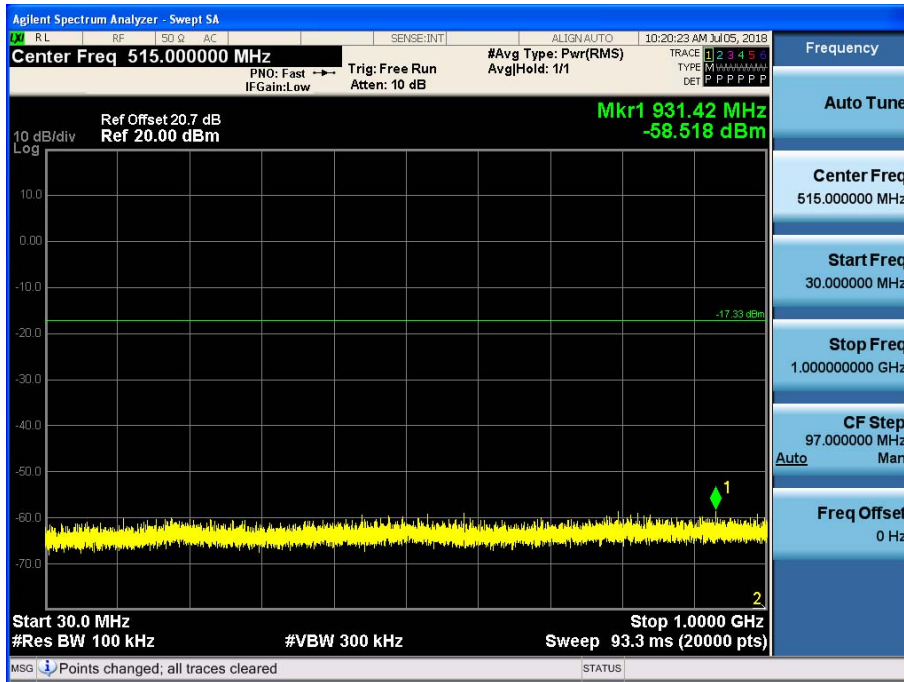




[Ant.0]

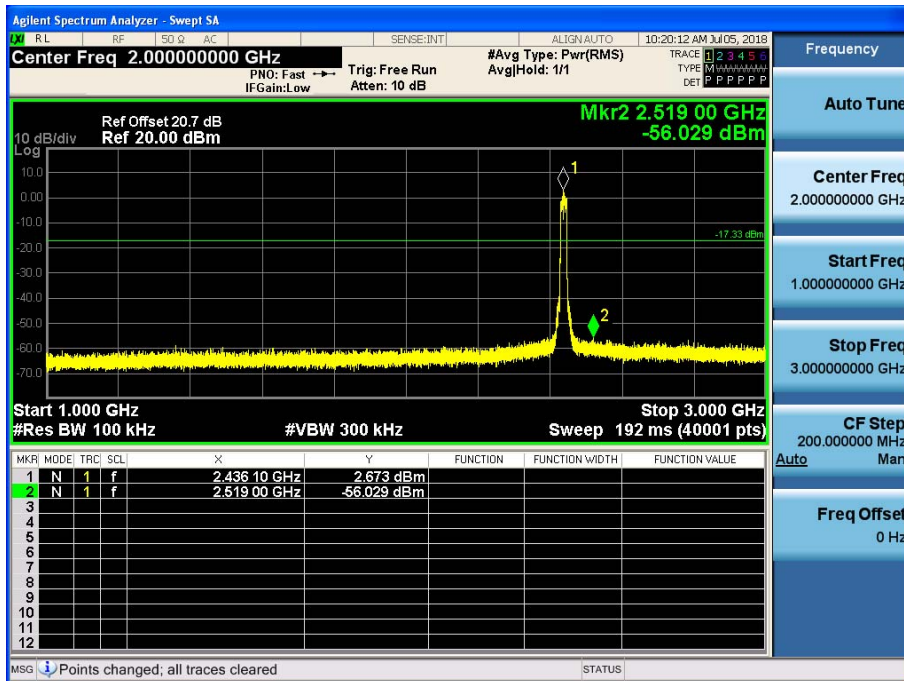
30 MHz ~ 1 GHz

**Conducted Spurious Emission (802.11g\_Ch.6)**



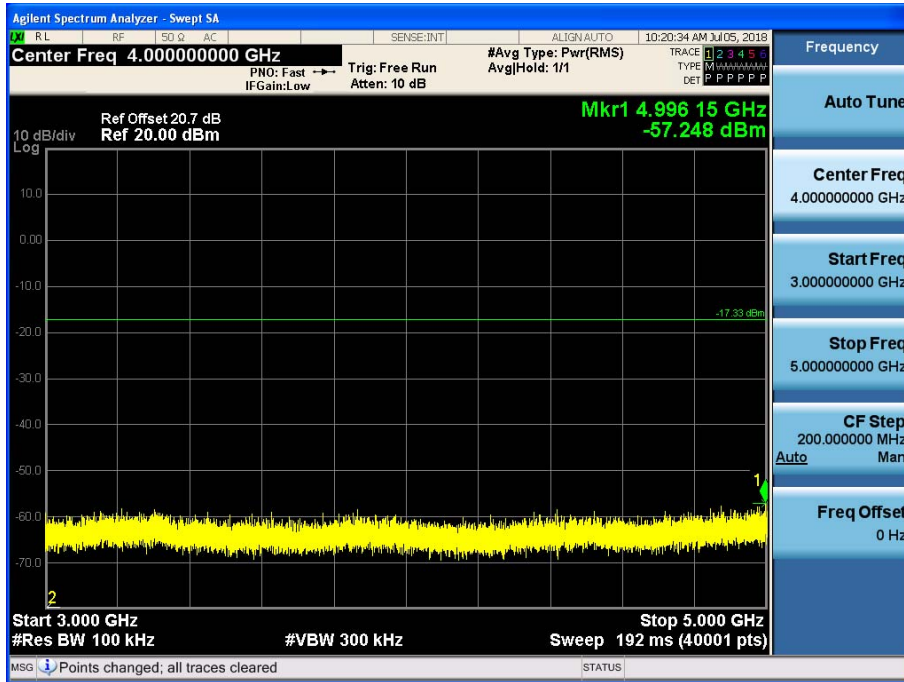
1 GHz ~ 3 GHz

**Conducted Spurious Emission (802.11g\_Ch.6)**



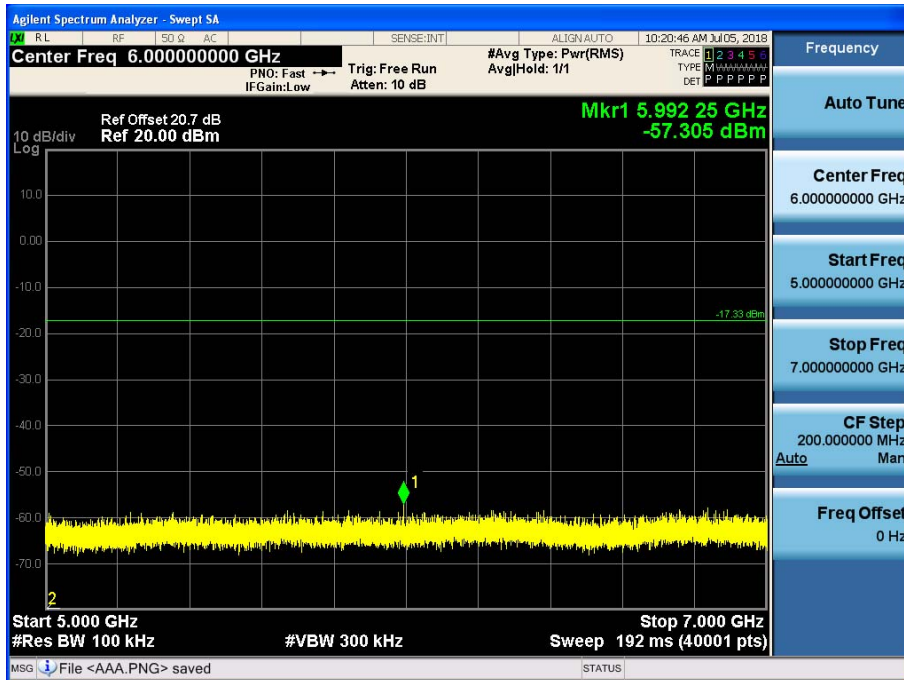
3 GHz ~ 5 GHz

Conducted Spurious Emission (802.11g\_Ch.6)



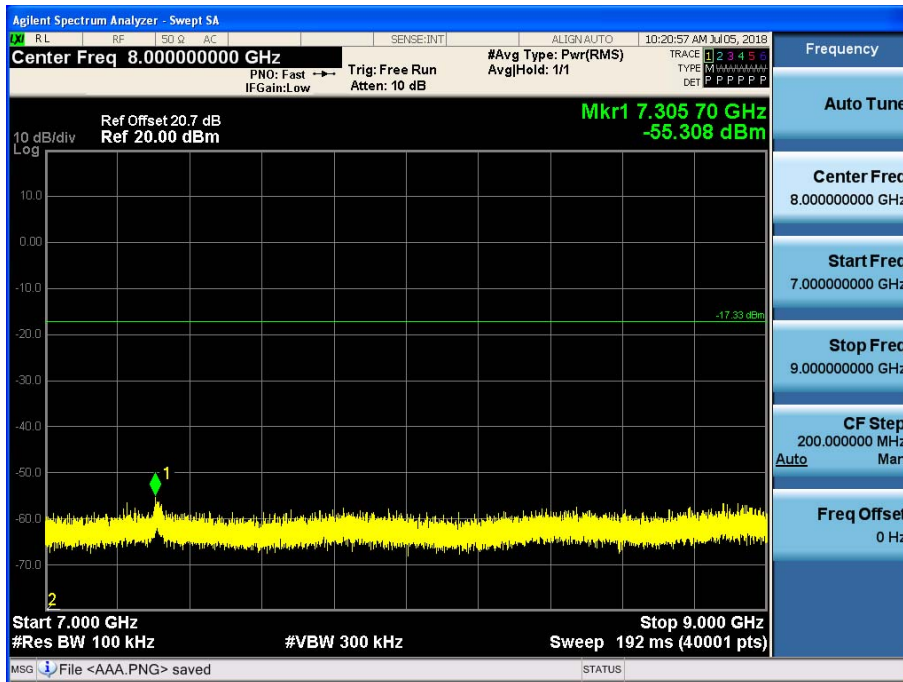
5 GHz ~ 7 GHz

Conducted Spurious Emission (802.11g\_Ch.6)



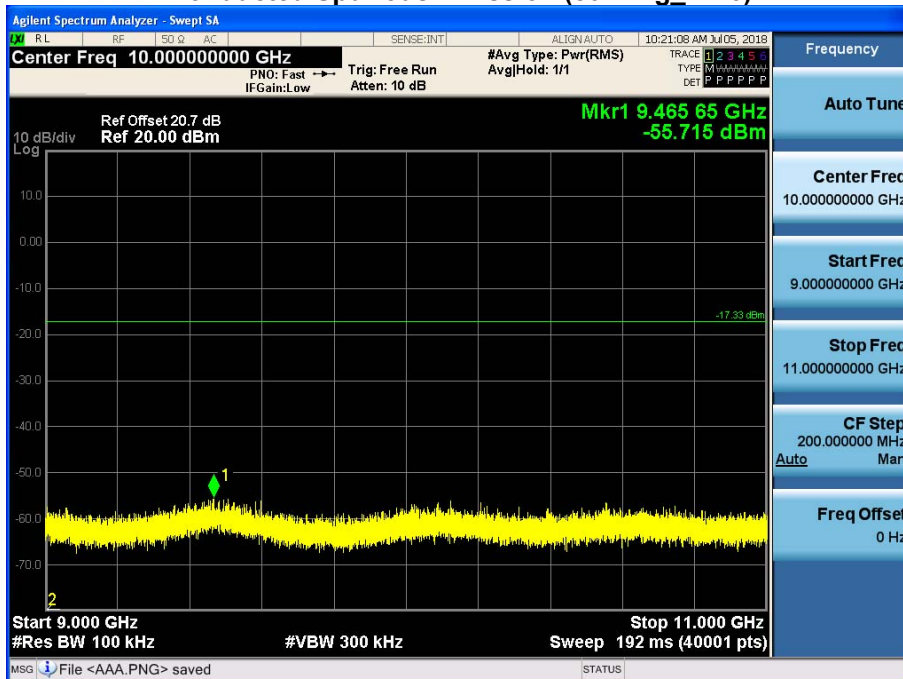
7 GHz ~ 9 GHz

Conducted Spurious Emission (802.11g\_Ch.6)



9 GHz ~ 11 GHz

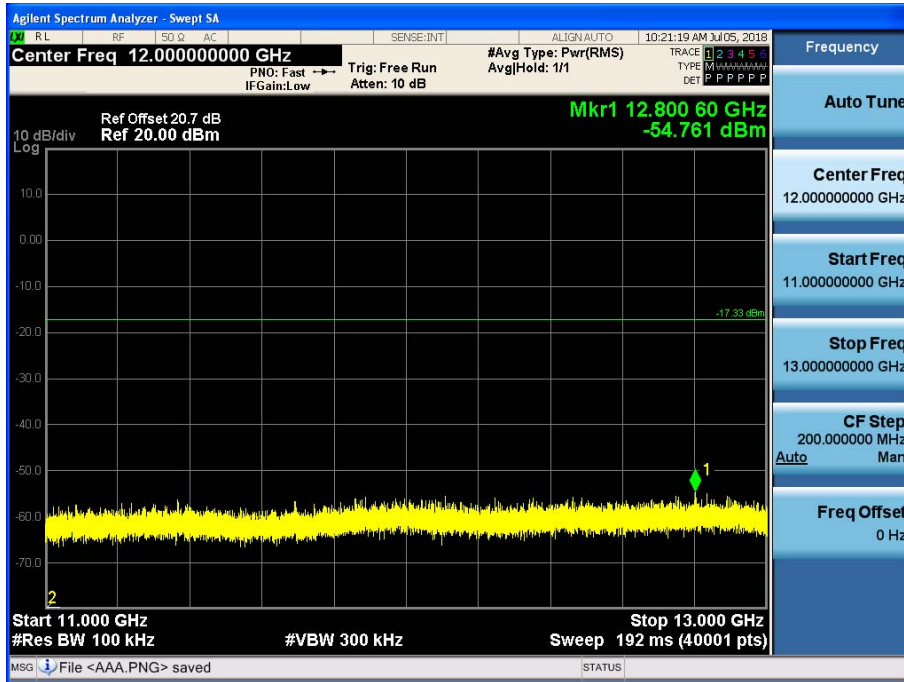
Conducted Spurious Emission (802.11g\_Ch.6)





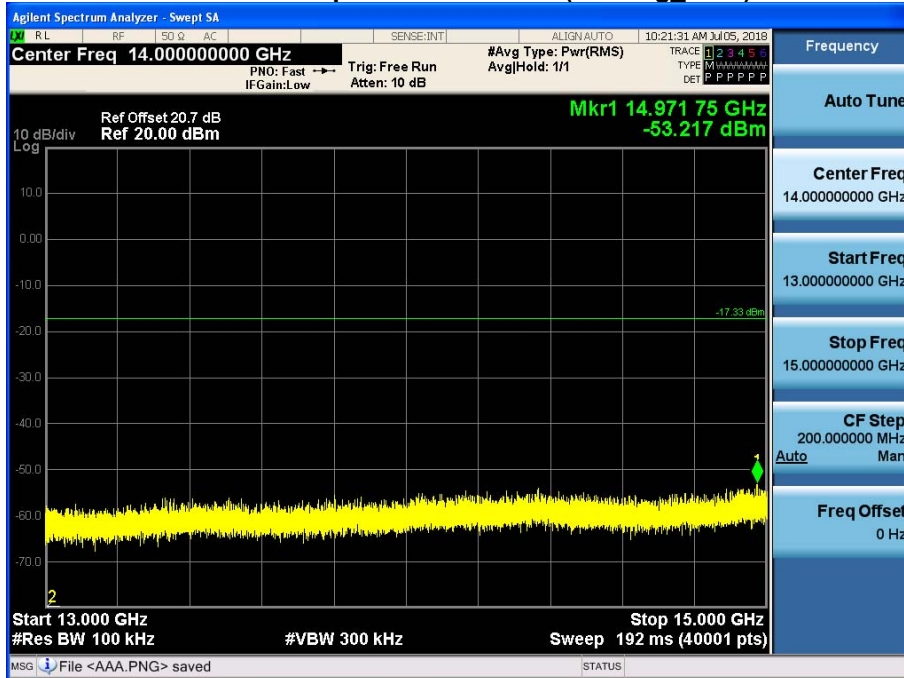
11 GHz ~ 13 GHz

Conducted Spurious Emission (802.11g\_Ch.6)



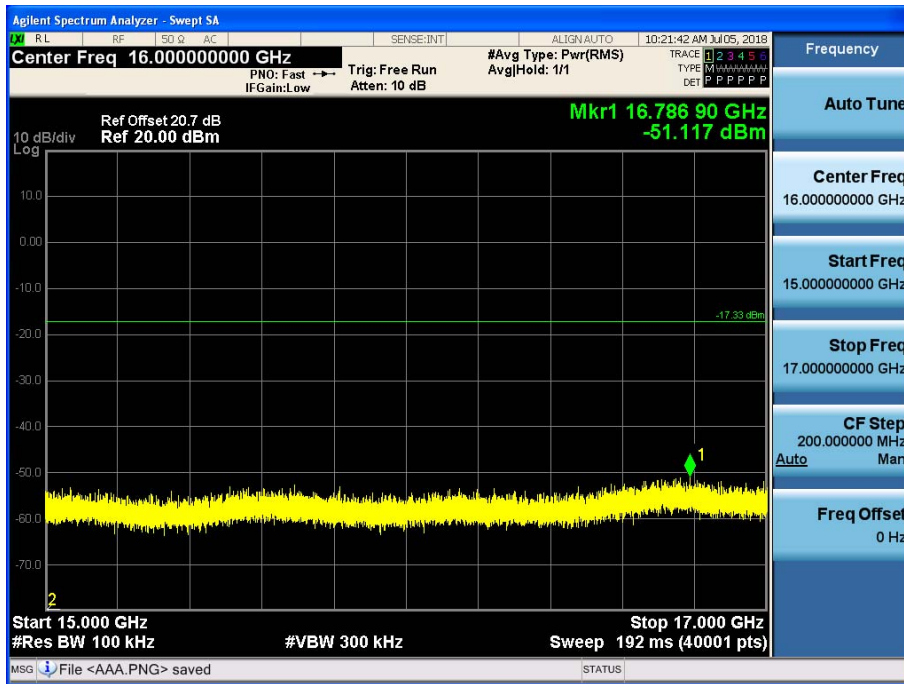
13 GHz ~ 15 GHz

Conducted Spurious Emission (802.11g\_Ch.6)



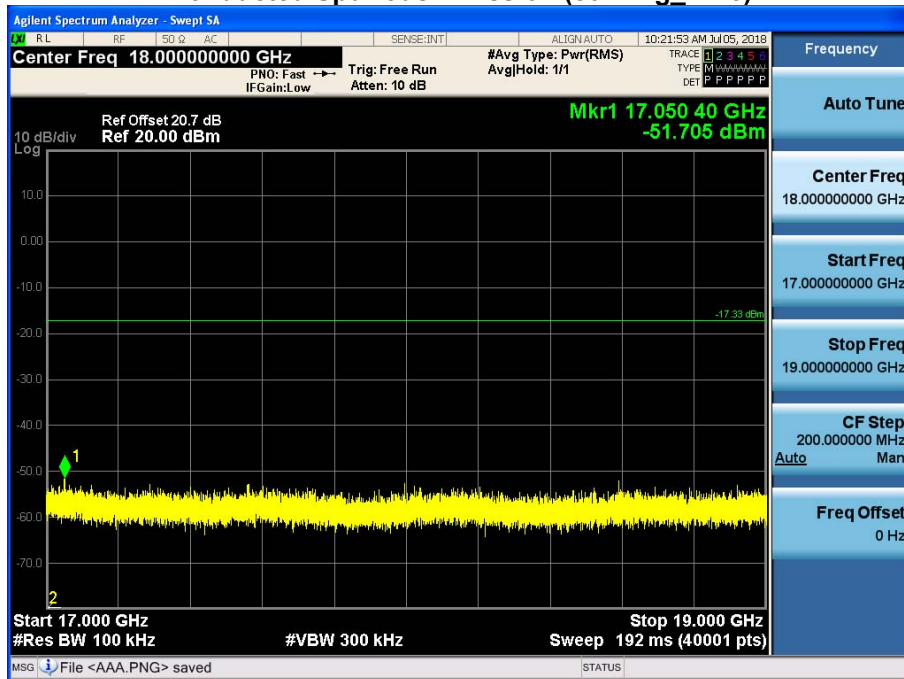
15 GHz ~ 17 GHz

Conducted Spurious Emission (802.11g\_Ch.6)



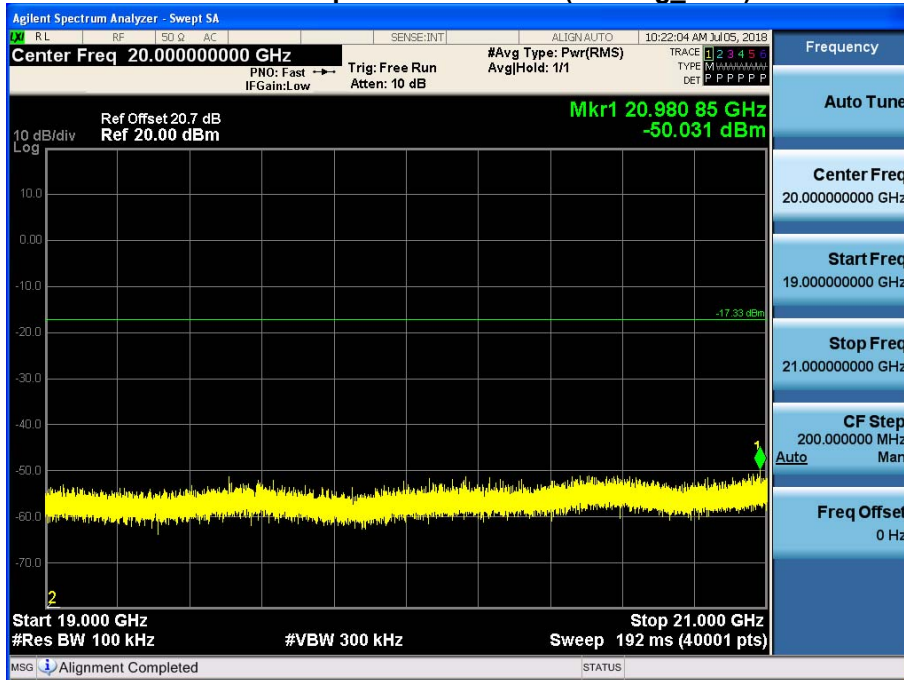
17 GHz ~ 19 GHz

Conducted Spurious Emission (802.11g\_Ch.6)



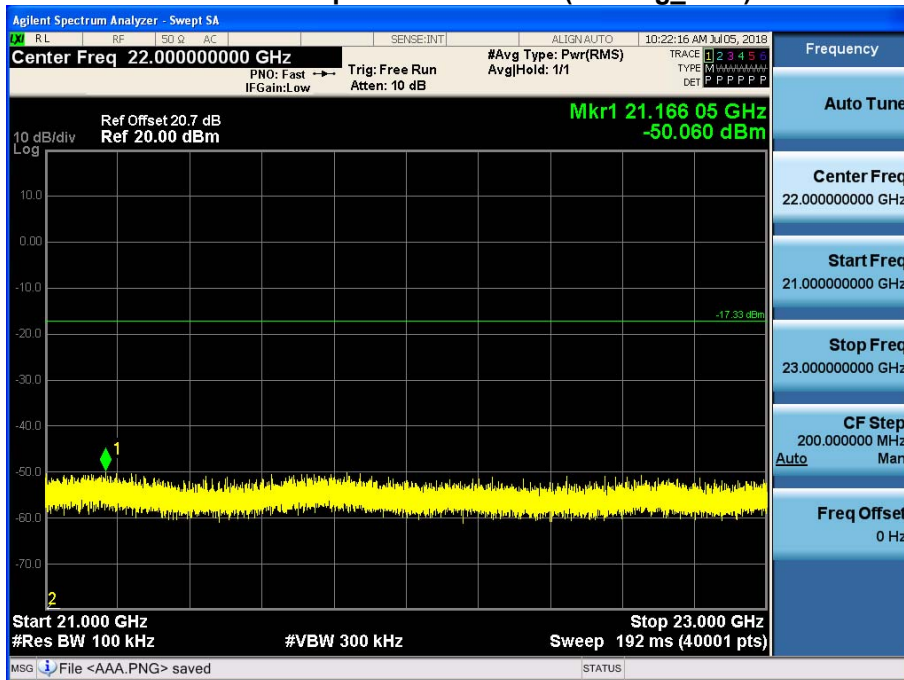
19 GHz ~ 21 GHz

Conducted Spurious Emission (802.11g\_Ch.6)



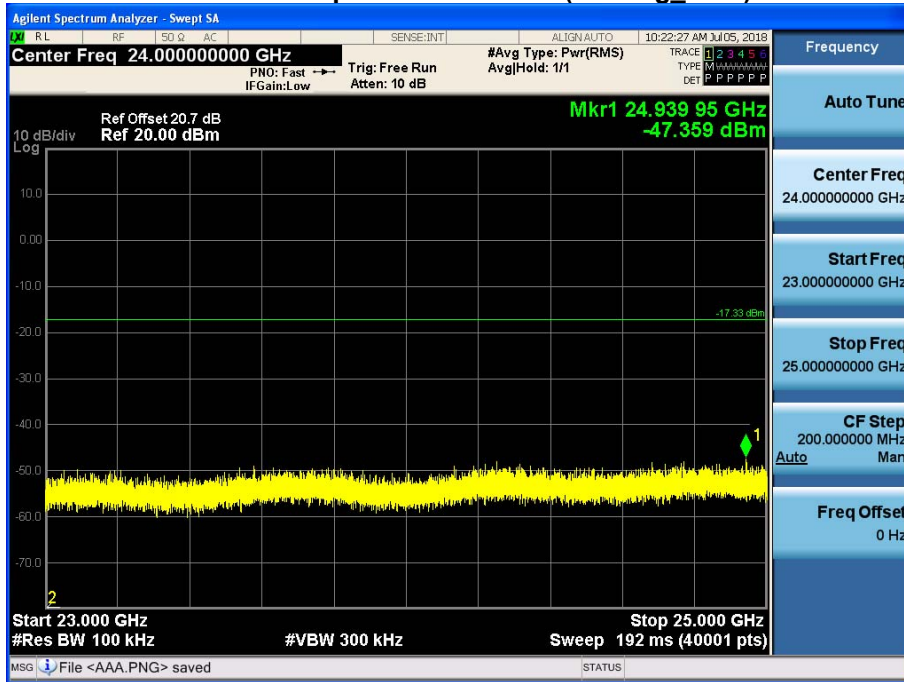
21 GHz ~ 23 GHz

Conducted Spurious Emission (802.11g\_Ch.6)



23 GHz ~ 25 GHz

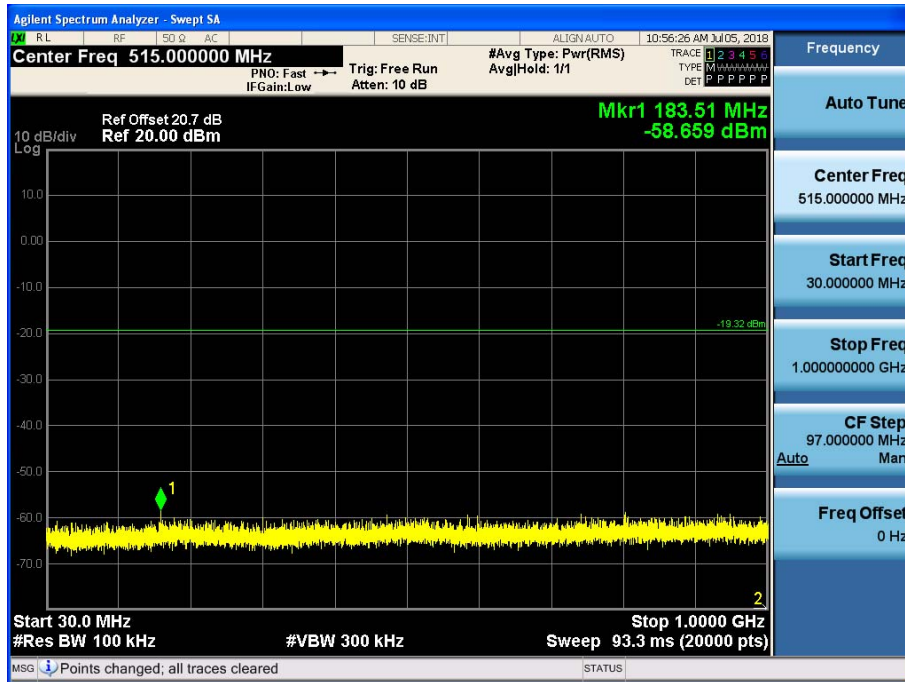
Conducted Spurious Emission (802.11g\_Ch.6)



[Ant.1]

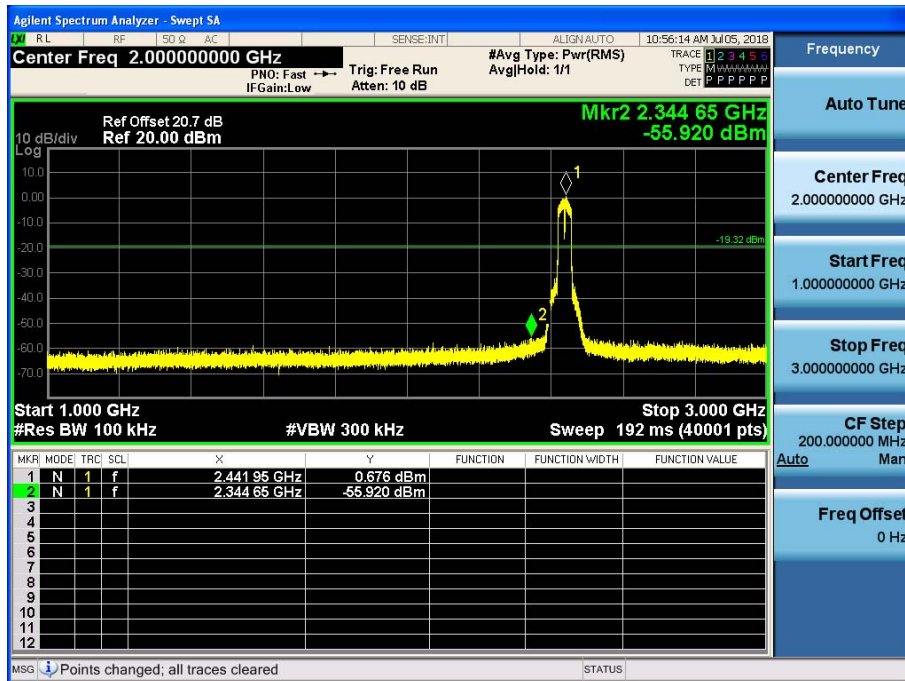
30 MHz ~ 1 GHz

**Conducted Spurious Emission (802.11n\_HT40 Ch.6)**



1 GHz ~ 3 GHz

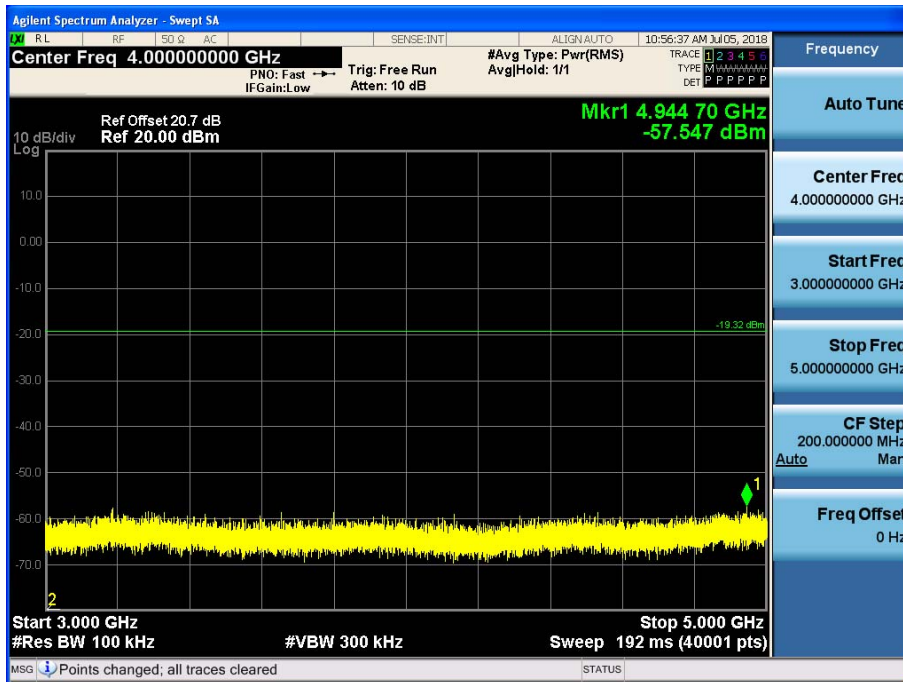
**Conducted Spurious Emission (802.11n\_HT40 Ch.6)**





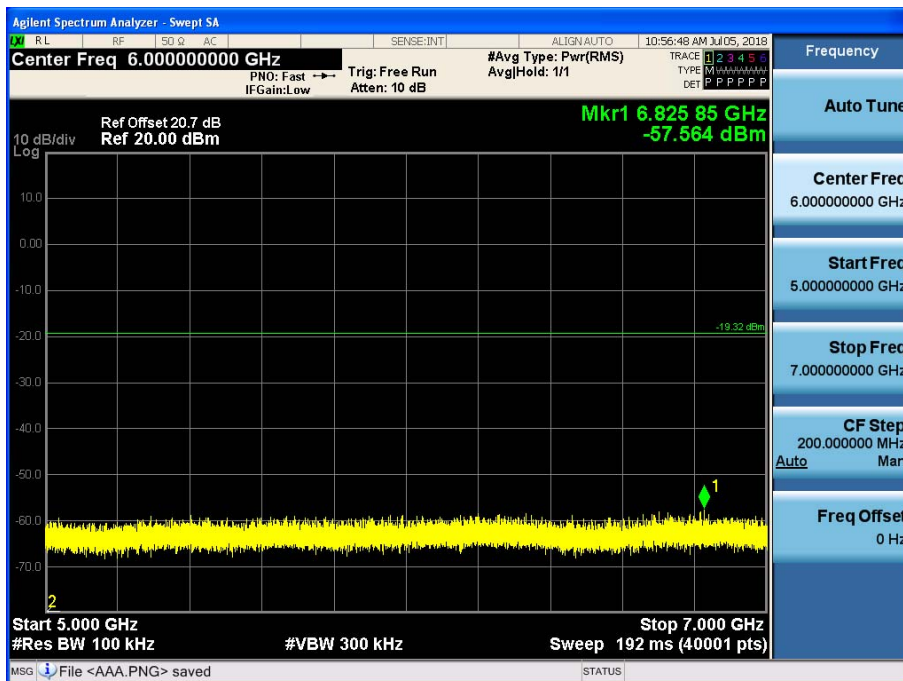
3 GHz ~ 5 GHz

Conducted Spurious Emission (802.11n\_HT40 Ch.6)



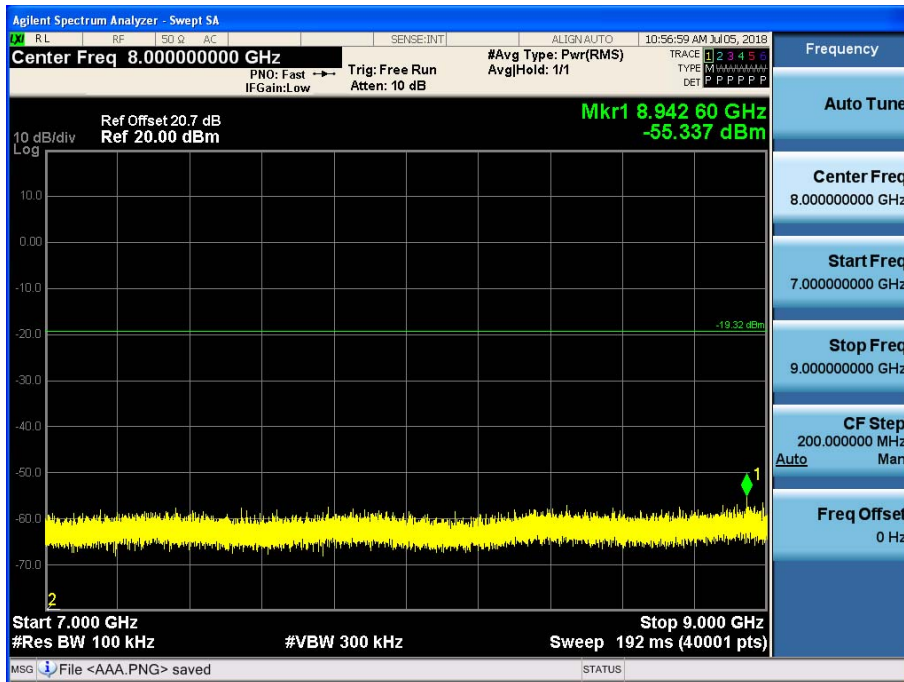
5 GHz ~ 7 GHz

Conducted Spurious Emission (802.11n\_HT40 Ch.6)



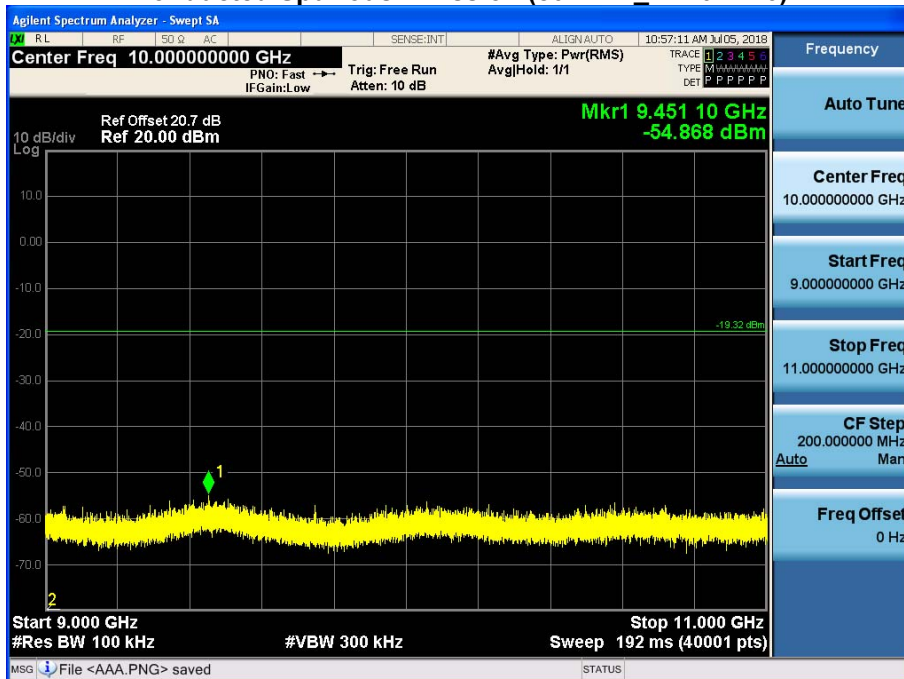
7 GHz ~ 9 GHz

Conducted Spurious Emission (802.11n\_HT40 Ch.6)



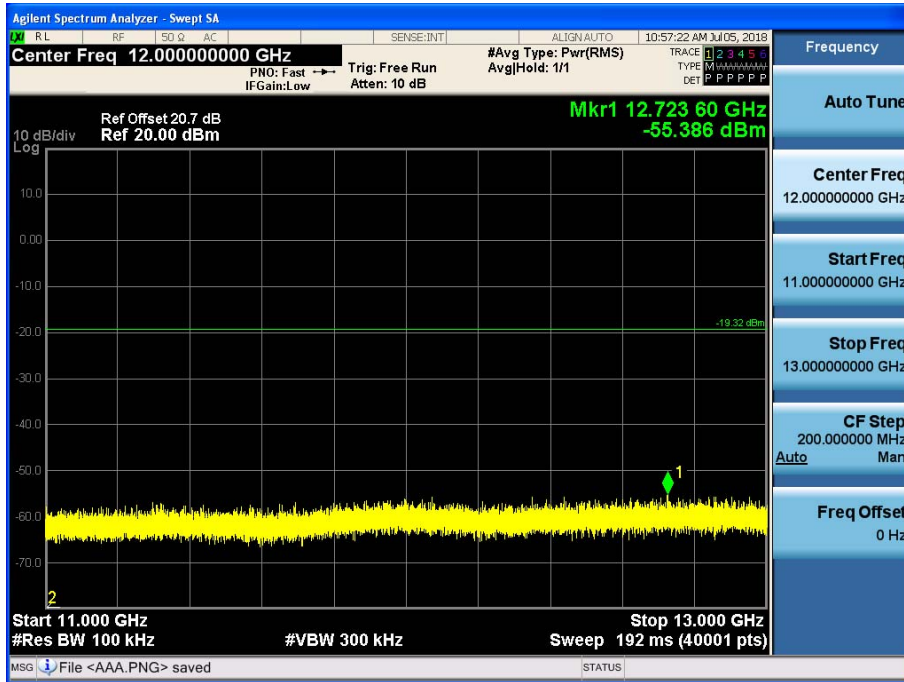
9 GHz ~ 11 GHz

Conducted Spurious Emission (802.11n\_HT40 Ch.6)



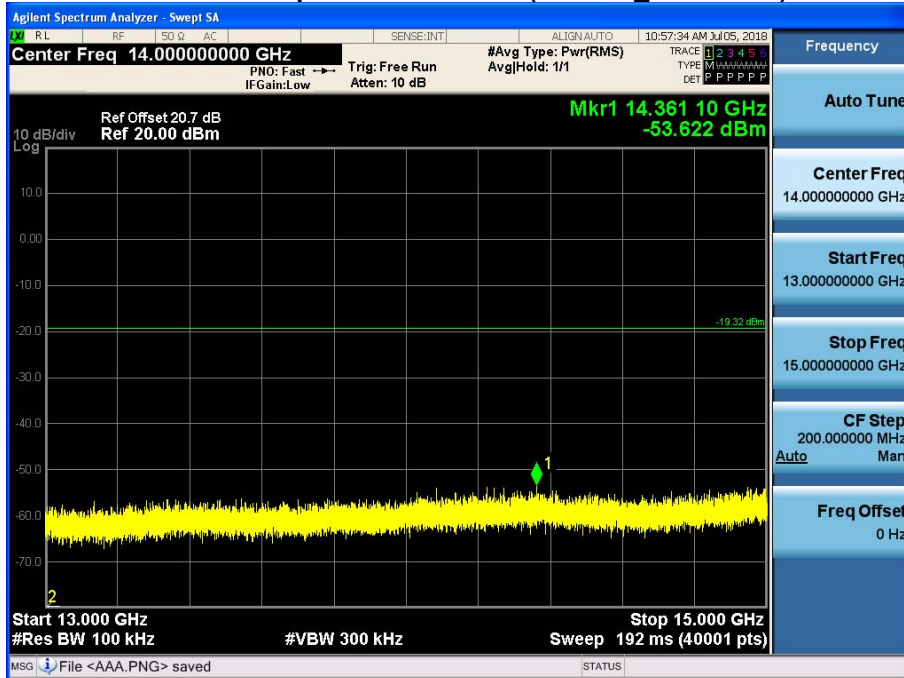
11 GHz ~ 13 GHz

Conducted Spurious Emission (802.11n\_HT40 Ch.6)



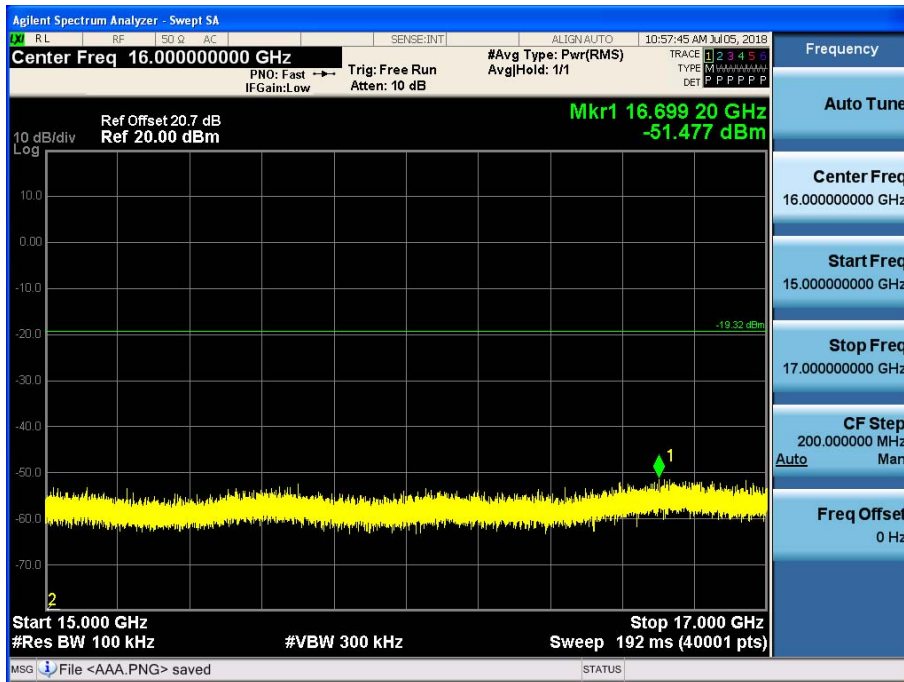
13 GHz ~ 15 GHz

Conducted Spurious Emission (802.11n\_HT40 Ch.6)



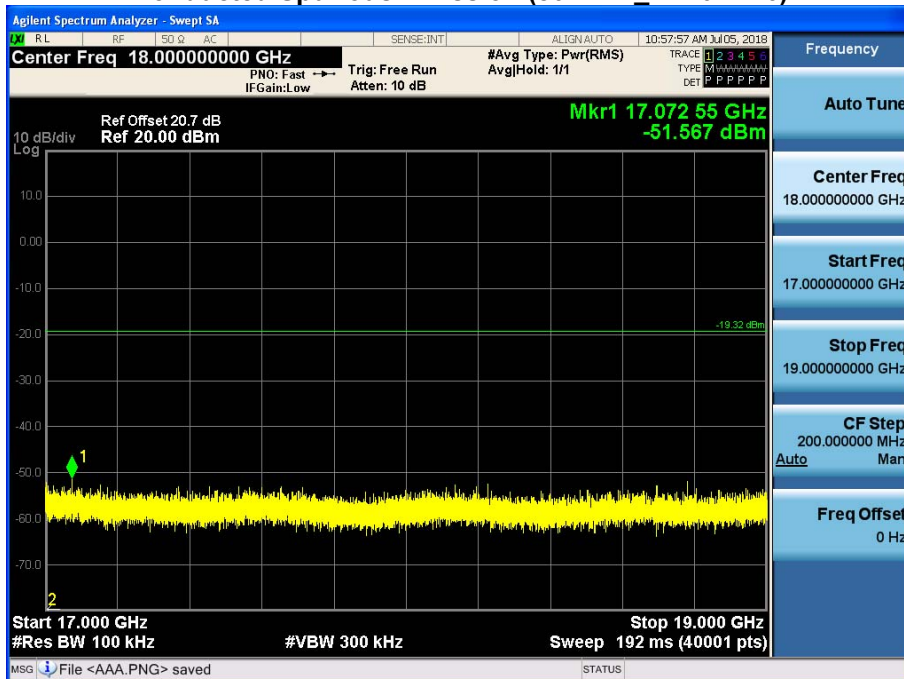
15 GHz ~ 17 GHz

Conducted Spurious Emission (802.11n\_HT40 Ch.6)



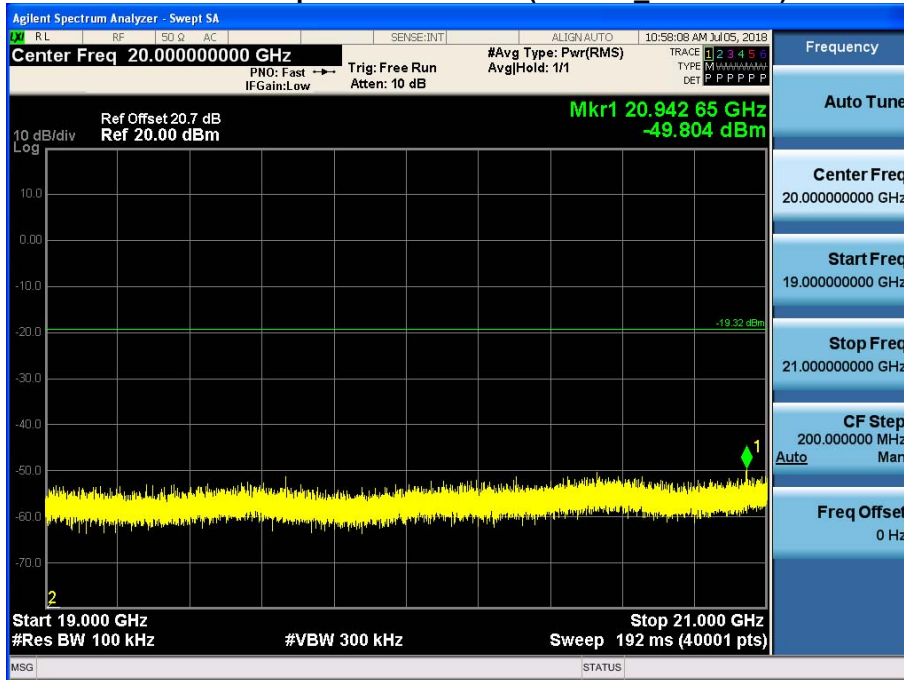
17 GHz ~ 19 GHz

Conducted Spurious Emission (802.11n\_HT40 Ch.6)



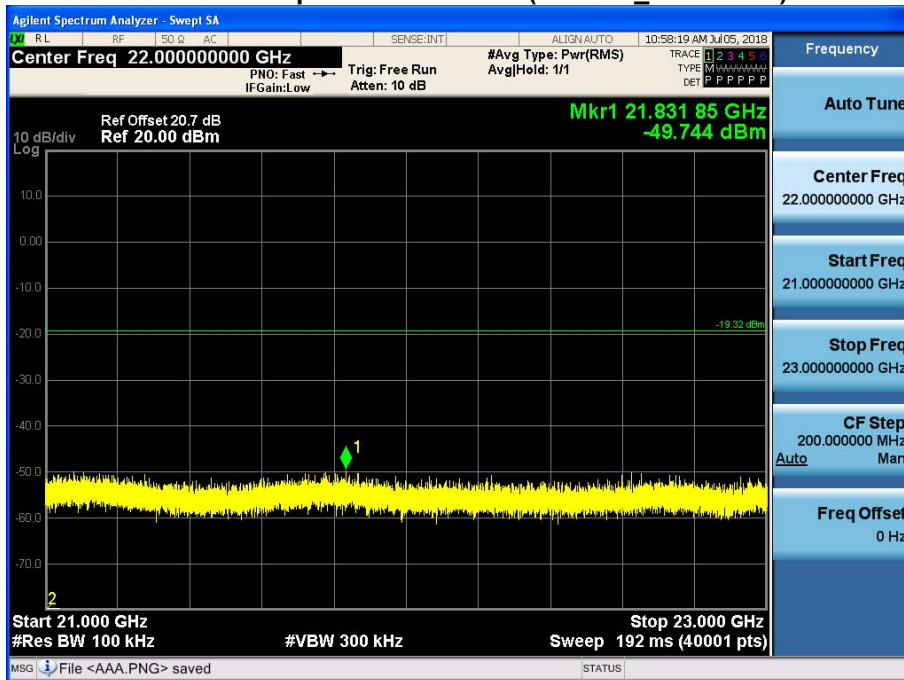
19 GHz ~ 21 GHz

Conducted Spurious Emission (802.11n\_HT40 Ch.6)



21 GHz ~ 23 GHz

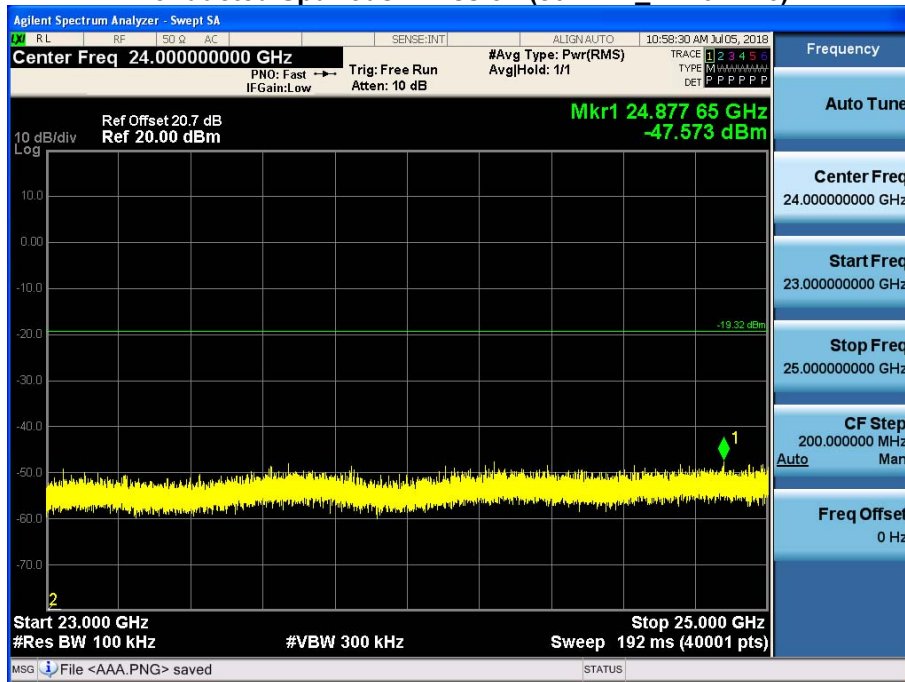
Conducted Spurious Emission (802.11n\_HT40 Ch.6)





23 GHz ~ 25 GHz

Conducted Spurious Emission (802.11n\_HT40 Ch.6)



## 9.7 RADIATED MEASUREMENT

### 9.7.1 RADIATED SPURIOUS EMISSIONS.

Test Requirements and limit, §15.205, §15.209/ RSS-Gen(Issue 5) Section 8.9.

Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

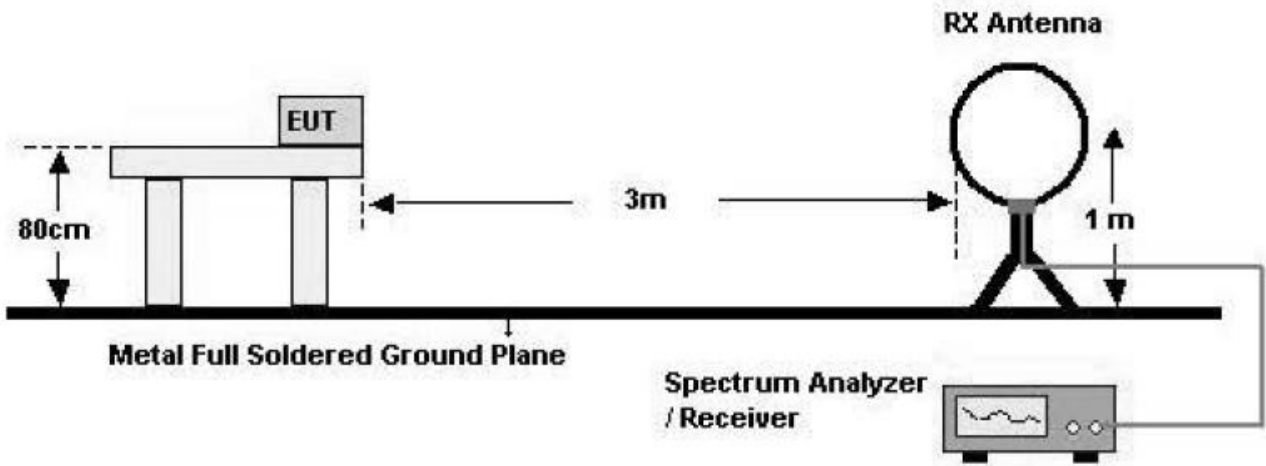
#### ■ Test case

Mode	Operating Mode	Operating Ant.
802.11b/g/n	SISO	Ant 0
		Ant 1
802.11g/n	MIMO	Ant 0 & 1

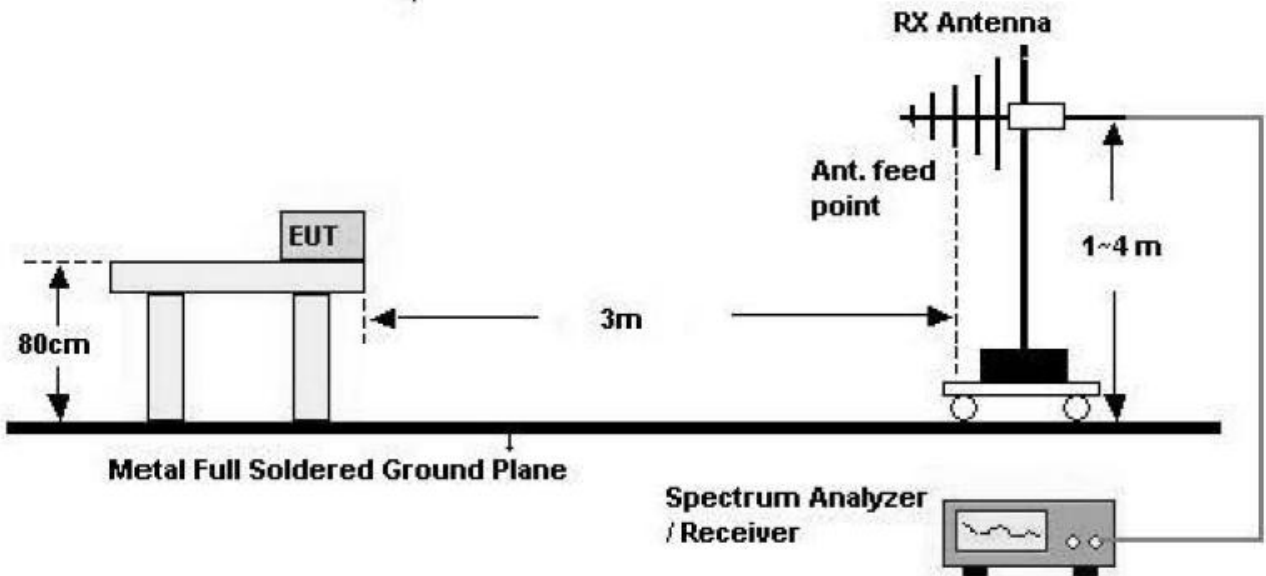
Note : In case of radiation test, we have done all test case. Worst case is MIMO(CDD) for 802.11g/n mode and SISO for 802.11b mode. So, we attached the result of MIMO for 802.11g/n mode and SISO for 802.11b mode.

### TEST CONFIGURATION

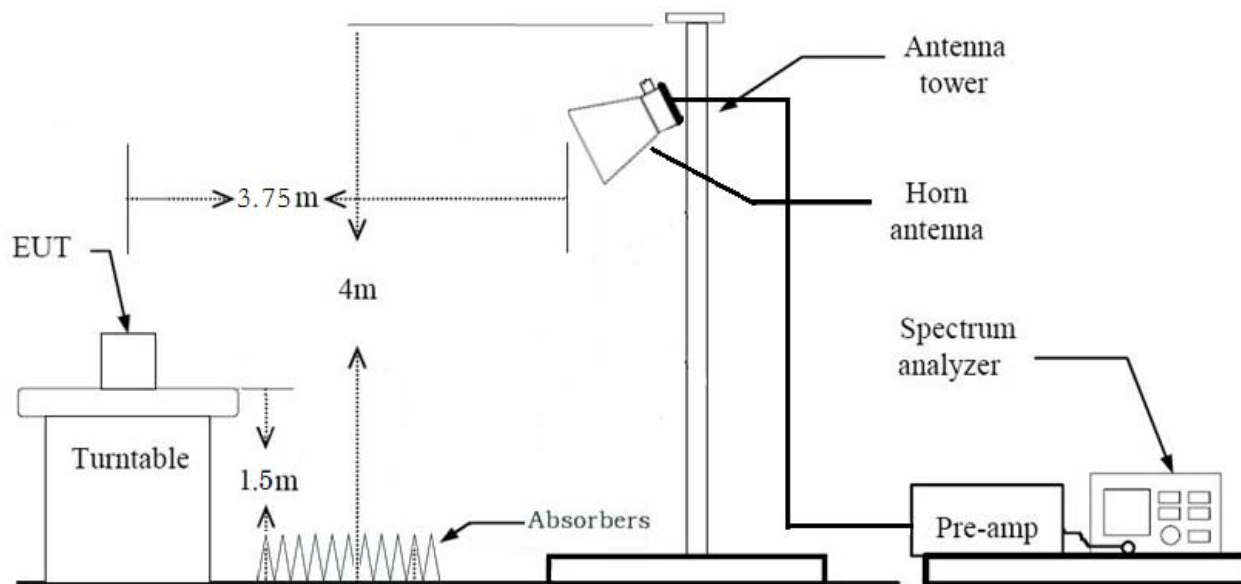
#### Below 30 MHz



#### 30 MHz - 1 GHz



**Above 1 GHz**



**TEST PROCEDURE USED**

Method 12.1 in KDB 558074 v04

**Spectrum Setting**

- Peak

Peak emission levels are measured by setting the instrument as follows:

RBW = cf. Table 1.

VBW  $\geq$  3 x RBW.

Detector = Peak.

Sweep time = auto.

Trace mode = max hold.

Allow sweeps to continue until the trace stabilizes.

(Note that the required measurement time may be longer for low duty cycle applications).

**Table 1 —RBW as a function of frequency**

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

- Average (duty cycle  $\geq$  98%)

Set RBW = 1 MHz

Set VBW  $\geq$  3 x RBW

Detector = RMS

Averaging type = power (*i.e.*, RMS).

Sweep time = auto.

Trace mode = average (at least 100 traces).

- Average (duty cycle < 98%, duty cycle variations are less than  $\pm 2\%$ )

Set RBW = 1 MHz

Set VBW  $\geq$  3 x RBW

Detector = RMS.

Averaging type = power (*i.e.*, RMS).

Sweep time = auto.

Trace mode = average (at least 100 traces).

A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle.

**Note :**

1. We are performed the RSE and radiated band edge using standard radiated method(RMS).
2. According to SVSWR requirement in ANSI 63.4-2014, We performed the radiated test at 3.75 m distance from center of turn table. So, we applied the distance factor( reference distance : 3 m).
3. Distance extrapolation factor =  $20 \log (\text{test distance} / \text{specific distance})$  (dB)



**TEST RESULTS**

**9 kHz – 30MHz**

**Operation Mode:** Normal Mode

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dB $\mu$ V	dB /m	dB	(H/V)	dB $\mu$ V/m	dB $\mu$ V/m	dB
No Critical peaks found							

**Notes:**

1. Measuring frequencies from 9 kHz to the 30MHz.
2. The reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
3. Distance extrapolation factor = 40 log (specific distance / test distance) (dB)
4. Limit line = specific Limits (dBuV) + Distance extrapolation factor
5. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
6. The test results for below 30 MHz is correlated to an open site.  
The result on OATS is about 2 dB higher than semi-anechoic chamber (10 m chamber)

**TEST RESULTS****Below 1 GHz****Operation Mode:** Normal Mode

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	$\text{dB}_{\mu\text{V}}$	$\text{dB /m}$	$\text{dB}$	(H/V)	$\text{dB}_{\mu\text{V/m}}$	$\text{dB}_{\mu\text{V/m}}$	$\text{dB}$
No Critical peaks found							

**Notes:**

1. Measuring frequencies from 30 MHz to the 1 GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

**[MIMO]**

Above 1 GHz

Operation Mode: 802.11 b  
 Operating Frequency 2412  
 Channel No. 01 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	51.27	2.24	V	53.51	73.98	20.47	PK
4824	39.23	2.24	V	41.47	53.98	12.51	AV
7236	50.75	9.70	V	60.45	73.98	13.53	PK
7236	38.50	9.70	V	48.20	53.98	5.78	AV
4824	52.50	2.24	H	54.74	73.98	19.24	PK
4824	41.20	2.24	H	43.44	53.98	10.54	AV
7236	50.80	9.70	H	60.50	73.98	13.48	PK
7236	38.56	9.70	H	48.26	53.98	5.72	AV

Operation Mode: 802.11 g  
 Operating Frequency 2412  
 Channel No. 01 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	51.69	2.24	V	53.93	73.98	20.05	PK
4824	39.51	2.24	V	41.75	53.98	12.23	AV
7236	50.47	9.70	V	60.17	73.98	13.81	PK
7236	38.53	9.70	V	48.23	53.98	5.75	AV
4824	52.80	2.24	H	55.04	73.98	18.94	PK
4824	40.42	2.24	H	42.66	53.98	11.32	AV
7236	50.54	9.70	H	60.24	73.98	13.74	PK
7236	38.54	9.70	H	48.24	53.98	5.74	AV

Operation Mode: 802.11 n\_HT20  
 Operating Frequency 2412  
 Channel No. 01 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	51.17	2.24	V	53.41	73.98	20.57	PK
4824	39.12	2.24	V	41.36	53.98	12.62	AV
7236	50.42	9.70	V	60.12	73.98	13.86	PK
7236	38.51	9.70	V	48.21	53.98	5.77	AV
4824	51.78	2.24	H	54.02	73.98	19.96	PK
4824	39.84	2.24	H	42.08	53.98	11.90	AV
7236	50.50	9.70	H	60.20	73.98	13.78	PK
7236	38.52	9.70	H	48.22	53.98	5.76	AV

Operation Mode: 802.11 n\_HT40  
 Operating Frequency 2422  
 Channel No. 03 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4844	50.89	2.21	V	53.10	73.98	20.88	PK
4844	39.56	2.21	V	41.77	53.98	12.21	AV
7266	50.23	9.97	V	60.20	73.98	13.78	PK
7266	37.90	9.97	V	47.87	53.98	6.11	AV
4844	51.05	2.21	H	53.26	73.98	20.72	PK
4844	39.68	2.21	H	41.89	53.98	12.09	AV
7266	50.36	9.97	H	60.33	73.98	13.65	PK
7266	37.92	9.97	H	47.89	53.98	6.09	AV

\* A.F.: Ant. Factor / C.L.: Cable Loss / A.G.: Amp. Gain / D.F.: Distance Factor

**Notes:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if

no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Distance Factor
5. Distance extrapolation factor =  $20 \log (\text{test distance} / \text{specific distance})$  (dB)
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.



Operation Mode: 802.11 b  
 Operating Frequency 2437  
 Channel No. 06 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	51.36	2.62	V	53.98	73.98	20.00	PK
4874	39.30	2.62	V	41.92	53.98	12.06	AV
7311	50.19	9.86	V	60.05	73.98	13.93	PK
7311	38.15	9.86	V	48.01	53.98	5.97	AV
4874	52.04	2.62	H	54.66	73.98	19.32	PK
4874	41.24	2.62	H	43.86	53.98	10.12	AV
7311	50.24	9.86	H	60.10	73.98	13.88	PK
7311	38.17	9.86	H	48.03	53.98	5.95	AV

Operation Mode: 802.11 g  
 Operating Frequency 2437  
 Channel No. 06 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	50.45	2.62	V	53.07	73.98	20.91	PK
4874	39.13	2.62	V	41.75	53.98	12.23	AV
7311	50.08	9.86	V	59.94	73.98	14.04	PK
7311	38.10	9.86	V	47.96	53.98	6.02	AV
4874	51.02	2.62	H	53.64	73.98	20.34	PK
4874	39.89	2.62	H	42.51	53.98	11.47	AV
7311	50.11	9.86	H	59.97	73.98	14.01	PK
7311	38.15	9.86	H	48.01	53.98	5.97	AV

Operation Mode: 802.11 n\_HT20  
 Operating Frequency 2437  
 Channel No. 06 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	51.05	2.62	V	53.67	73.98	20.31	PK
4874	39.16	2.62	V	41.78	53.98	12.20	AV
7311	50.14	9.86	V	60.00	73.98	13.98	PK
7311	38.15	9.86	V	48.01	53.98	5.97	AV
4874	51.27	2.62	H	53.89	73.98	20.09	PK
4874	39.91	2.62	H	42.53	53.98	11.45	AV
7311	50.20	9.86	H	60.06	73.98	13.92	PK
7311	38.16	9.86	H	48.02	53.98	5.96	AV

Operation Mode: 802.11 n\_HT40  
 Operating Frequency 2437  
 Channel No. 06 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	50.88	2.62	V	53.50	73.98	20.48	PK
4874	39.29	2.62	V	41.91	53.98	12.07	AV
7311	50.04	9.86	V	59.90	73.98	14.08	PK
7311	38.12	9.86	V	47.98	53.98	6.00	AV
4874	50.98	2.62	H	53.60	73.98	20.38	PK
4874	39.32	2.62	H	41.94	53.98	12.04	AV
7311	50.19	9.86	H	60.05	73.98	13.93	PK
7311	38.15	9.86	H	48.01	53.98	5.97	AV

\* A.F.: Ant. Factor / C.L.: Cable Loss / A.G.: Amp. Gain / D.F.: Distance Factor

**Notes:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable

limit) and considered that's already beyond the background noise floor.

3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Distance Factor
5. Distance extrapolation factor =  $20 \log (\text{test distance} / \text{specific distance})$  (dB)
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Operation Mode: 802.11 b  
 Operating Frequency 2462  
 Channel No. 11 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	50.94	2.69	V	53.63	73.98	20.35	PK
4924	38.95	2.69	V	41.64	53.98	12.34	AV
7386	49.84	10.21	V	60.05	73.98	13.93	PK
7386	38.05	10.21	V	48.26	53.98	5.72	AV
4924	51.69	2.69	H	54.38	73.98	19.60	PK
4924	40.27	2.69	H	42.96	53.98	11.02	AV
7386	50.09	10.21	H	60.30	73.98	13.68	PK
7386	38.10	10.21	H	48.31	53.98	5.67	AV

Operation Mode: 802.11 g  
 Operating Frequency 2462  
 Channel No. 11 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	50.11	2.69	V	52.80	73.98	21.18	PK
4924	38.53	2.69	V	41.22	53.98	12.76	AV
7386	49.76	10.21	V	59.97	73.98	14.01	PK
7386	38.05	10.21	V	48.26	53.98	5.72	AV
4924	50.25	2.69	H	52.94	73.98	21.04	PK
4924	38.72	2.69	H	41.41	53.98	12.57	AV
7386	49.96	10.21	H	60.17	73.98	13.81	PK
7386	38.08	10.21	H	48.29	53.98	5.69	AV

Operation Mode: 802.11 n\_HT20  
 Operating Frequency 2462  
 Channel No. 11 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	50.01	2.69	V	52.70	73.98	21.28	PK
4924	38.33	2.69	V	41.02	53.98	12.96	AV
7386	49.94	10.21	V	60.15	73.98	13.83	PK
7386	38.07	10.21	V	48.28	53.98	5.70	AV
4924	50.19	2.69	H	52.88	73.98	21.10	PK
4924	38.60	2.69	H	41.29	53.98	12.69	AV
7386	50.02	10.21	H	60.23	73.98	13.75	PK
7386	38.09	10.21	H	48.30	53.98	5.68	AV

Operation Mode: 802.11 n\_HT40  
 Operating Frequency 2452  
 Channel No. 09 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4904	49.74	2.58	V	52.32	73.98	21.66	PK
4904	38.15	2.58	V	40.73	53.98	13.25	AV
7356	49.52	10.02	V	59.54	73.98	14.44	PK
7356	37.36	10.02	V	47.38	53.98	6.60	AV
4904	49.93	2.58	H	52.51	73.98	21.47	PK
4904	38.17	2.58	H	40.75	53.98	13.23	AV
7356	49.66	10.02	H	59.68	73.98	14.30	PK
7356	37.39	10.02	H	47.41	53.98	6.57	AV

\* A.F.: Ant. Factor / C.L.: Cable Loss / A.G.: Amp. Gain / D.F.: Distance Factor

#### Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable

limit) and considered that's already beyond the background noise floor.

3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Distance Factor
5. Distance extrapolation factor =  $20 \log (\text{test distance} / \text{specific distance})$  (dB)
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Operation Mode: 802.11 b  
 Operating Frequency 2467  
 Channel No. 12 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4934	51.25	2.69	V	53.94	73.98	20.04	PK
4934	38.85	2.69	V	41.54	53.98	12.44	AV
7401	49.58	10.21	V	59.79	73.98	14.19	PK
7401	37.96	10.21	V	48.17	53.98	5.81	AV
4934	51.42	2.69	H	54.11	73.98	19.87	PK
4934	38.87	2.69	H	41.56	53.98	12.42	AV
7401	49.61	10.21	H	59.82	73.98	14.16	PK
7401	37.97	10.21	H	48.18	53.98	5.80	AV

Operation Mode: 802.11 g  
 Operating Frequency 2467  
 Channel No. 12 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4934	50.33	2.69	V	53.02	73.98	20.96	PK
4934	38.84	2.69	V	41.53	53.98	12.45	AV
7401	49.69	10.21	V	59.90	73.98	14.08	PK
7401	37.97	10.21	V	48.18	53.98	5.80	AV
4934	50.96	2.69	H	53.65	73.98	20.33	PK
4934	38.86	2.69	H	41.55	53.98	12.43	AV
7401	49.86	10.21	H	60.07	73.98	13.91	PK
7401	37.98	10.21	H	48.19	53.98	5.79	AV

Operation Mode:	802.11 n_HT20
Operating Frequency	2467
Channel No.	12 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4934	50.51	2.69	V	53.20	73.98	20.78	PK
4934	38.85	2.69	V	41.54	53.98	12.44	AV
7401	50.40	10.21	V	60.61	73.98	13.37	PK
7401	37.95	10.21	V	48.16	53.98	5.82	AV
4934	50.84	2.69	H	53.53	73.98	20.45	PK
4934	38.88	2.69	H	41.57	53.98	12.41	AV
7401	50.43	10.21	H	60.64	73.98	13.34	PK
7401	37.97	10.21	H	48.18	53.98	5.80	AV

\* A.F.: Ant. Factor / C.L.: Cable Loss / A.G.: Amp. Gain / D.F: Distance Factor

#### Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Distance Factor
5. Distance extrapolation factor =  $20 \log (\text{test distance} / \text{specific distance})$  (dB)
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.



Operation Mode: 802.11 b  
 Operating Frequency 2472  
 Channel No. 13 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4944	50.39	2.69	V	53.08	73.98	20.90	PK
4944	38.96	2.69	V	41.65	53.98	12.33	AV
7416	49.94	10.21	V	60.15	73.98	13.83	PK
7416	38.05	10.21	V	48.26	53.98	5.72	AV
4944	50.88	2.69	H	53.57	73.98	20.41	PK
4944	38.98	2.69	H	41.67	53.98	12.31	AV
7416	50.06	10.21	H	60.27	73.98	13.71	PK
7416	38.06	10.21	H	48.27	53.98	5.71	AV

Operation Mode: 802.11 g  
 Operating Frequency 2472  
 Channel No. 13 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4944	50.95	2.69	V	53.64	73.98	20.34	PK
4944	38.93	2.69	V	41.62	53.98	12.36	AV
7416	50.33	10.21	V	60.54	73.98	13.44	PK
7416	38.09	10.21	V	48.30	53.98	5.68	AV
4944	51.07	2.69	H	53.76	73.98	20.22	PK
4944	38.95	2.69	H	41.64	53.98	12.34	AV
7416	50.49	10.21	H	60.70	73.98	13.28	PK
7416	38.13	10.21	H	48.34	53.98	5.64	AV

Operation Mode:	802.11 n_HT20
Operating Frequency	2472
Channel No.	13 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.-A.G.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4944	50.67	2.69	V	53.36	73.98	20.62	PK
4944	38.94	2.69	V	41.63	53.98	12.35	AV
7416	50.12	10.21	V	60.33	73.98	13.65	PK
7416	38.03	10.21	V	48.24	53.98	5.74	AV
4944	50.94	2.69	H	53.63	73.98	20.35	PK
4944	38.96	2.69	H	41.65	53.98	12.33	AV
7416	50.21	10.21	H	60.42	73.98	13.56	PK
7416	38.07	10.21	H	48.28	53.98	5.70	AV

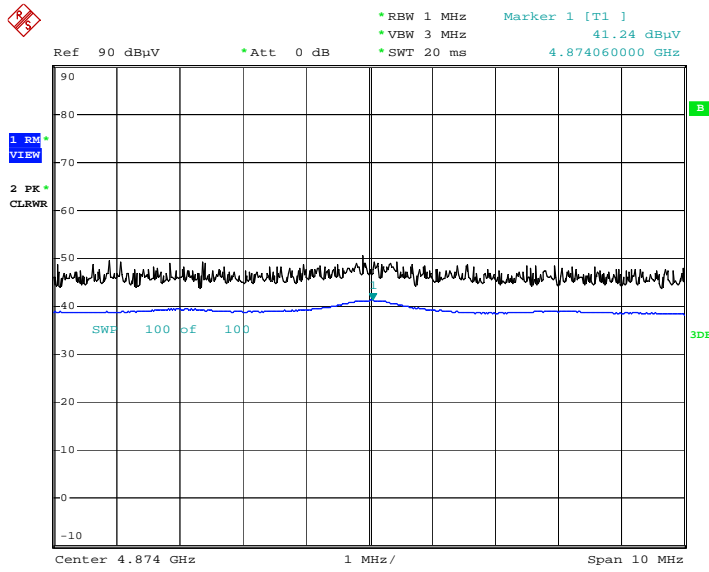
\* A.F.: Ant. Factor / C.L.: Cable Loss / A.G.: Amp. Gain / D.F: Distance Factor

#### Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Distance Factor
5. Distance extrapolation factor =  $20 \log (\text{test distance} / \text{specific distance})$  (dB)
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

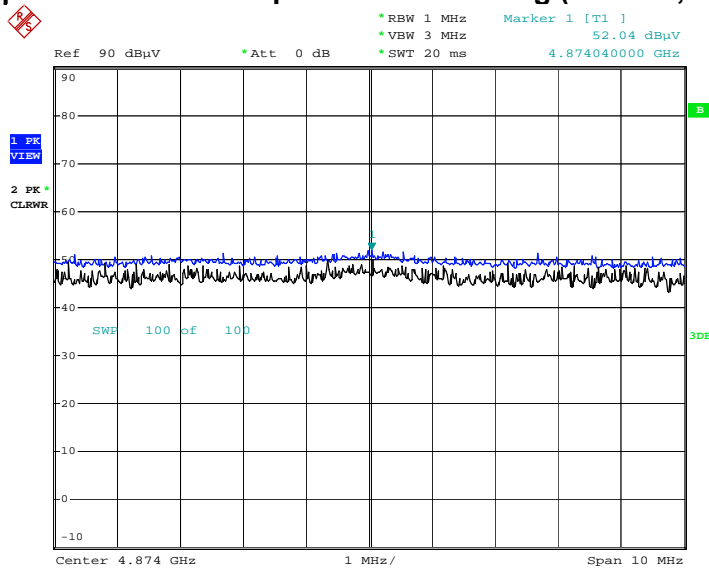
■ **RESULT PLOTS (Worst Case: Z-H) – MIMO**

**Radiated Spurious Emissions plot – Average Reading (802.11b, Ch.6 2nd Harmonic)**



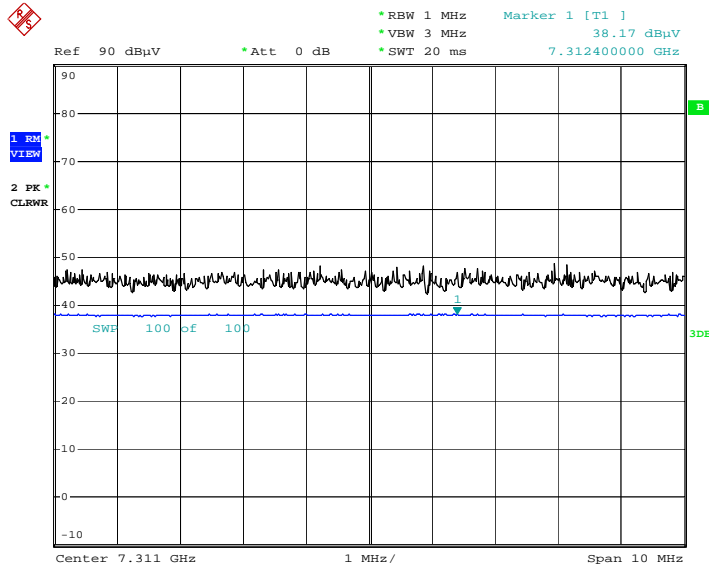
Date: 15.MAY.2003 06:56:47

**Radiated Spurious Emissions plot – Peak Reading (802.11b, Ch.6 2nd Harmonic)**



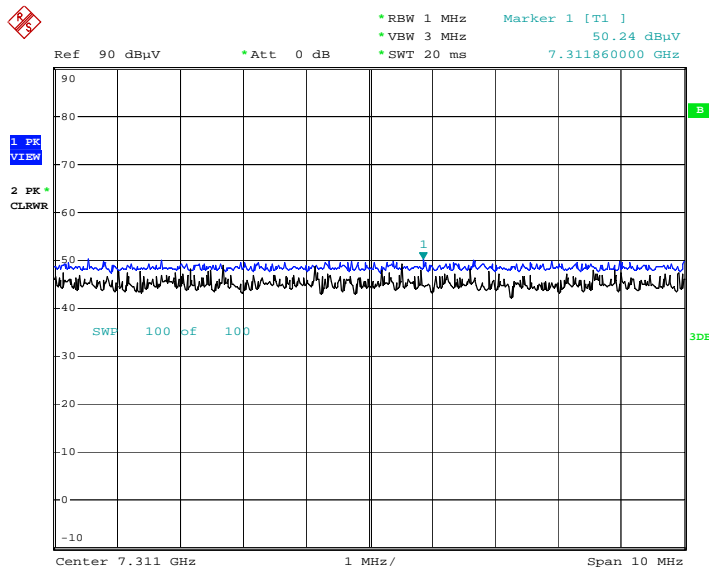
Date: 15.MAY.2003 06:57:17

**Radiated Spurious Emissions plot – Average Reading (802.11b, Ch.6 3rd Harmonic)**



Date: 15.MAY.2003 06:58:19

**Radiated Spurious Emissions plot – Peak Reading (802.11b, Ch.6 3rd Harmonic)**



Date: 15.MAY.2003 06:57:51

**Note : Only the worst case plots for Radiated Spurious Emissions.**

### 9.7.2 RADIATED RESTRICTED BAND EDGES

#### Test Requirements and limit, §15.247(d) §15.205, §15.209, RSS-Gen(Issue 5) 8.10

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, 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)).

#### [MIMO]

Operation Mode:	802.11b
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	54.49	1.12	H	55.61	73.98	18.37	PK
2390.0	42.82	1.12	H	43.94	53.98	10.04	AV
2390.0	53.84	1.12	V	54.96	73.98	19.02	PK
2390.0	42.35	1.12	V	43.47	53.98	10.51	AV
2483.5	55.56	1.38	H	56.94	73.98	17.04	PK
2483.5	43.97	1.38	H	45.35	53.98	8.63	AV
2483.5	54.97	1.38	V	56.35	73.98	17.63	PK
2483.5	43.09	1.38	V	44.47	53.98	9.51	AV

Operation Mode: 802.11b  
 Operating Frequency 2467 MHz  
 Channel No. 12 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2483.5	56.25	1.38	H	57.63	73.98	16.35	PK
2483.5	46.48	1.38	H	47.86	53.98	6.12	AV
2483.5	55.88	1.38	V	57.26	73.98	16.72	PK
2483.5	45.96	1.38	V	47.34	53.98	6.64	AV

Operation Mode: 802.11b  
 Operating Frequency 2472 MHz  
 Channel No. 13 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2483.5	57.70	1.38	H	59.08	73.98	14.90	PK
2483.5	49.54	1.38	H	50.92	53.98	3.06	AV
2483.5	57.23	1.38	V	58.61	73.98	15.37	PK
2483.5	49.21	1.38	V	50.59	53.98	3.39	AV

**[MIMO]**

Operation Mode: 802.11g  
 Operating Frequency 2412 MHz, 2462 MHz  
 Channel No. 01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	59.05	1.12	H	60.17	73.98	13.81	PK
2390.0	44.46	1.12	H	45.58	53.98	8.40	AV
2390.0	58.17	1.12	V	59.29	73.98	14.69	PK
2390.0	43.85	1.12	V	44.97	53.98	9.01	AV
2483.5	63.73	1.38	H	65.11	73.98	8.87	PK
2483.5	47.22	1.38	H	48.60	53.98	5.38	AV
2483.5	61.59	1.38	V	62.97	73.98	11.01	PK
2483.5	46.38	1.38	V	47.76	53.98	6.22	AV

Operation Mode: 802.11g  
 Operating Frequency 2467 MHz  
 Channel No. 12 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2483.5	61.33	1.38	H	62.71	73.98	11.27	PK
2483.5	48.98	1.38	H	50.36	53.98	3.62	AV
2483.5	60.69	1.38	V	62.07	73.98	11.91	PK
2483.5	48.51	1.38	V	49.89	53.98	4.09	AV

Operation Mode: 802.11g  
 Operating Frequency 2472 MHz  
 Channel No. 13 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2483.5	59.87	1.38	H	61.25	73.98	12.73	PK
2483.5	48.43	1.38	H	49.81	53.98	4.17	AV
2483.5	59.22	1.38	V	60.60	73.98	13.38	PK
2483.5	48.12	1.38	V	49.50	53.98	4.48	AV

Operation Mode: 802.11n\_HT20  
 Operating Frequency 2412 MHz, 2462 MHz  
 Channel No. 01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	56.94	1.12	H	58.06	73.98	15.92	PK
2390.0	43.79	1.12	H	44.91	53.98	9.07	AV
2390.0	55.77	1.12	V	56.89	73.98	17.09	PK
2390.0	42.82	1.12	V	43.94	53.98	10.04	AV
2483.5	68.03	1.38	H	69.41	73.98	4.57	PK
2483.5	48.24	1.38	H	49.62	53.98	4.36	AV
2483.5	66.91	1.38	V	68.29	73.98	5.69	PK
2483.5	47.53	1.38	V	48.91	53.98	5.07	AV



Operation Mode: 802.11n\_HT20  
 Operating Frequency 2467 MHz  
 Channel No. 12 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2483.5	59.97	1.38	H	61.35	73.98	12.63	PK
2483.5	48.30	1.38	H	49.68	53.98	4.30	AV
2483.5	59.12	1.38	V	60.50	73.98	13.48	PK
2483.5	47.86	1.38	V	49.24	53.98	4.74	AV

Operation Mode: 802.11n\_HT20  
 Operating Frequency 2472 MHz  
 Channel No. 13 Ch

Frequency [MHz]	Reading [dBuV]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2483.5	59.28	1.38	H	60.66	73.98	13.32	PK
2483.5	48.24	1.38	H	49.62	53.98	4.36	AV
2483.5	59.03	1.38	V	60.41	73.98	13.57	PK
2483.5	47.96	1.38	V	49.34	53.98	4.64	AV

Operation Mode: 802.11n\_HT40  
 Operating Frequency 2422 MHz, 2452 MHz  
 Channel No. 03 Ch, 09 Ch

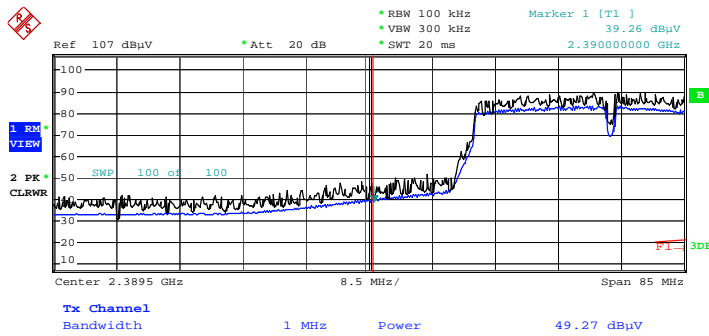
Frequency [MHz]	Reading [dBuV]	A.F.+C.L.+D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	59.47	1.12	H	60.59	73.98	13.39	PK
2390.0	49.27	1.12	H	50.39	53.98	3.59	AV
2390.0	58.69	1.12	V	59.81	73.98	14.17	PK
2390.0	48.18	1.12	V	49.30	53.98	4.68	AV
2483.5	59.01	1.38	H	60.39	73.98	13.59	PK
2483.5	48.72	1.38	H	50.10	53.98	3.88	AV
2483.5	58.03	1.38	V	59.41	73.98	14.57	PK
2483.5	47.59	1.38	V	48.97	53.98	5.01	AV

**Notes:**

1. Total = Reading Value + Antenna Factor + Cable Loss + Distance Factor
2. Distance extrapolation factor =  $20 \log (\text{test distance} / \text{specific distance})$  (dB)
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

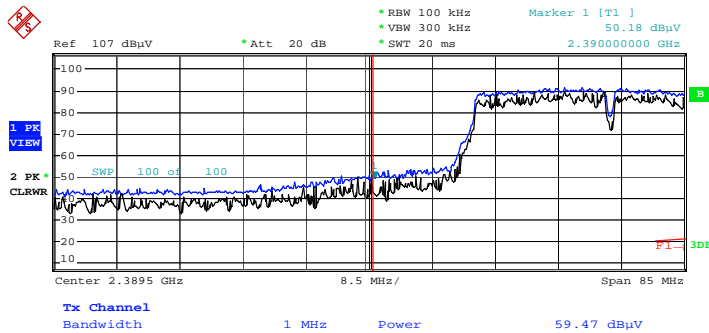
■ **RESULT PLOTS(Worst Case: X-H)\_MIMO**

**Radiated Restricted Band Edges plot – Average Reading (802.11n\_HT40, Ch.3)**



Date: 14.MAY.2003 12:02:38

**Radiated Restricted Band Edges plot – Peak Reading (802.11n\_HT40, Ch.3)**



Date: 14.MAY.2003 12:03:06

**Note : Only the worst case plots for Radiated Restricted Band Edges.**

### 9.7.3 RECEIVER SPURIOUS EMISSIONS

ISED Rule(s): **RSS-GEN**  
 Test Requirements: **Blow the table**  
 Operating conditions: **Under normal test conditions**  
 Method of testing: **Radiated**

S/A. Settings: **F < 1 GHz: RBW: 120 kHz, VBW: 300 kHz (Quasi Peak)**  
**F > 1 GHz: RBW: 1 MHz, VBW: 1 MHz (Peak)**  
 Mode of operation: **Receive**

Frequency (MHz)	Field Strength (microvolts/m at 3 meters)
30 – 88	100
88 - 216	150
216 – 960	200
Above 960	500

**Operation Mode: Receive:**

30 MHz ~ 1 GHz

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dB $\mu$ V	dB /m	dB	(H/V)	dB $\mu$ V/m	dB $\mu$ V/m	dB
No critical peaks found							

Above 1 GHz

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dB $\mu$ V	dB /m	dB	(H/V)	dB $\mu$ V/m	dB $\mu$ V/m	dB
No critical peaks found							

## 9.8 POWERLINE CONDUCTED EMISSIONS

### Test Requirements and limit, §15.207, RSS-Gen(Issue 5) Section 8.8

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dB $\mu$ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

### Test Configuration

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

### TEST PROCEDURE

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.
5. We are performed the AC Power Line Conducted Emission test for worst data rate, channel, operation mode.

### Sample Calculation

Quasi-peak(Final Result) = Reading Value + Correction Factor

■ **RESULT PLOTS**

**Conducted Emissions (Line 1)**

EMI Auto Test(3)

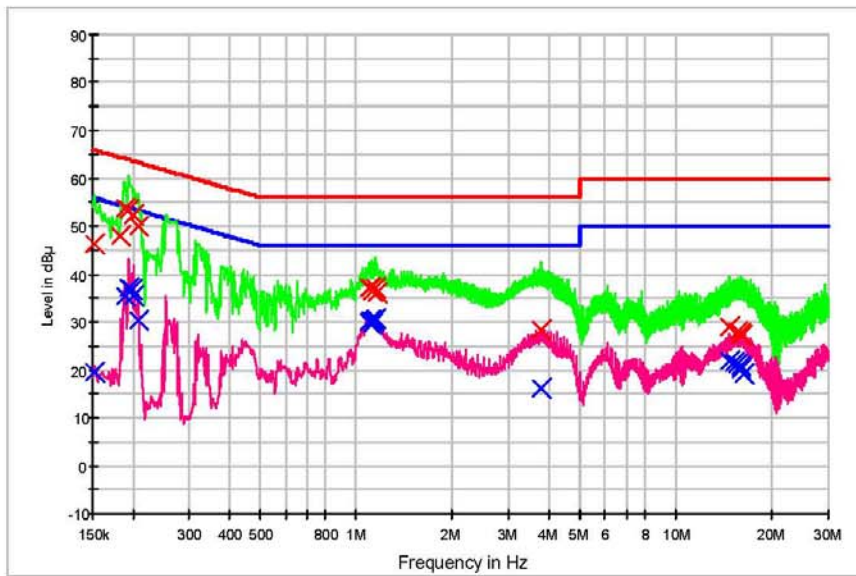
1 / 2

**HCT TEST Report**

**Common Information**

EUT: LGSBWAC92  
 Manufacturer: LG  
 Test Site: SHIELD ROOM  
 Operating Conditions: WLAN 2.4G\_MODE\_N

FCC CLASS B



— FCC CLASS B\_OP     — FCC CLASS B\_AV     — Preview Result 1-PK+  
— Preview Result 2-AVG     x Final Result 1-QPK     x Final Result 2-CAV

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.152000	46.2	9.000	Off	N	9.6	19.7	65.9
0.184000	47.9	9.000	Off	N	9.6	16.4	64.3
0.190000	53.8	9.000	Off	N	9.6	10.2	64.0
0.194000	53.3	9.000	Off	N	9.6	10.5	63.9
0.202000	52.3	9.000	Off	N	9.6	11.2	63.5
0.208000	50.1	9.000	Off	N	9.6	13.2	63.3
1.092000	37.1	9.000	Off	N	9.7	18.9	56.0
1.102000	37.2	9.000	Off	N	9.7	18.8	56.0
1.118000	36.6	9.000	Off	N	9.7	19.4	56.0
1.142000	37.1	9.000	Off	N	9.7	18.9	56.0
1.160000	36.1	9.000	Off	N	9.7	19.9	56.0
3.800000	28.5	9.000	Off	N	9.8	27.5	56.0
14.636000	29.0	9.000	Off	N	10.1	31.0	60.0
15.672000	27.9	9.000	Off	N	10.1	32.1	60.0
15.880000	27.5	9.000	Off	N	10.1	32.5	60.0
15.898000	27.2	9.000	Off	N	10.1	32.8	60.0
15.962000	27.3	9.000	Off	N	10.1	32.7	60.0
16.212000	27.4	9.000	Off	N	10.1	32.6	60.0

2018-07-18

오전 11:45:45

EMI Auto Test(3)

2 / 2

**Final Result 2**

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.152000	19.4	9.000	Off	N	9.6	36.5	55.9
0.190000	35.5	9.000	Off	N	9.6	18.5	54.0
0.194000	37.1	9.000	Off	N	9.6	16.8	53.9
0.198000	36.7	9.000	Off	N	9.6	17.0	53.7
0.202000	35.5	9.000	Off	N	9.6	18.1	53.5
0.208000	30.4	9.000	Off	N	9.6	22.8	53.3
1.092000	30.1	9.000	Off	N	9.7	15.9	46.0
1.102000	30.4	9.000	Off	N	9.7	15.6	46.0
1.120000	29.8	9.000	Off	N	9.7	16.2	46.0
1.136000	30.4	9.000	Off	N	9.7	15.6	46.0
1.142000	30.5	9.000	Off	N	9.7	15.5	46.0
3.800000	16.0	9.000	Off	N	9.8	30.0	46.0
14.638000	21.7	9.000	Off	N	10.1	28.3	50.0
15.274000	21.6	9.000	Off	N	10.1	28.4	50.0
15.674000	21.0	9.000	Off	N	10.1	29.0	50.0
15.882000	21.0	9.000	Off	N	10.1	29.0	50.0
15.960000	20.2	9.000	Off	N	10.1	29.8	50.0
16.402000	19.1	9.000	Off	N	10.1	30.9	50.0

2018-07-18

오전 11:45:45



**Conducted Emissions (Line 2)**

EMI Auto Test(3)

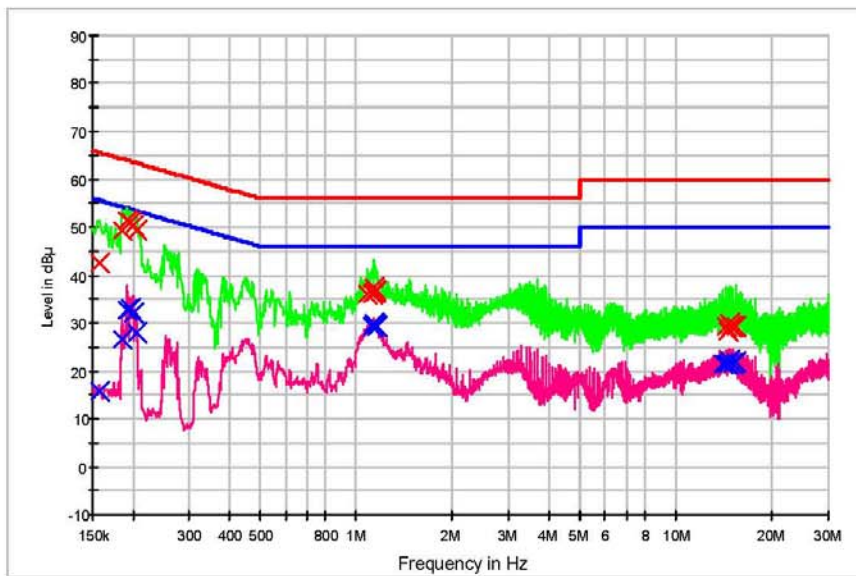
1 / 2

**HCT TEST Report**

**Common Information**

EUT: LGSBWAC92  
 Manufacturer: LG  
 Test Site: SHIELD ROOM  
 Operating Conditions: WLAN 2.4G\_MODE\_L1

FCC CLASS B



— FCC CLASS B\_QP      — FCC CLASS B\_AV      — Preview Result 1-PK+  
— Preview Result 2-AVG      X Final Result 1-QPK      X Final Result 2-CAV

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.158000	42.6	9.000	Off	L1	9.6	22.9	65.6
0.186000	49.4	9.000	Off	L1	9.6	14.9	64.2
0.192000	51.4	9.000	Off	L1	9.6	12.5	63.9
0.196000	50.9	9.000	Off	L1	9.6	12.9	63.8
0.200000	50.3	9.000	Off	L1	9.6	13.3	63.6
0.206000	49.2	9.000	Off	L1	9.6	14.1	63.4
1.086000	36.1	9.000	Off	L1	9.7	19.9	56.0
1.120000	36.0	9.000	Off	L1	9.7	20.0	56.0
1.132000	36.4	9.000	Off	L1	9.7	19.6	56.0
1.140000	37.3	9.000	Off	L1	9.7	18.7	56.0
1.144000	36.7	9.000	Off	L1	9.7	19.3	56.0
1.148000	36.3	9.000	Off	L1	9.7	19.7	56.0
14.280000	29.4	9.000	Off	L1	10.0	30.6	60.0
14.490000	28.4	9.000	Off	L1	10.0	31.6	60.0
14.696000	30.0	9.000	Off	L1	10.0	30.0	60.0
14.902000	29.2	9.000	Off	L1	10.0	30.8	60.0
15.110000	29.4	9.000	Off	L1	10.0	30.6	60.0
15.316000	29.5	9.000	Off	L1	10.0	30.5	60.0

2018-07-18

오전 11:58:43

EMI Auto Test(3)

2 / 2

**Final Result 2**

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.158000	15.7	9.000	Off	L1	9.6	39.9	55.6
0.186000	26.7	9.000	Off	L1	9.6	27.5	54.2
0.192000	32.7	9.000	Off	L1	9.6	21.2	53.9
0.196000	32.9	9.000	Off	L1	9.6	20.8	53.8
0.200000	32.1	9.000	Off	L1	9.6	21.5	53.6
0.206000	28.1	9.000	Off	L1	9.6	25.3	53.4
1.122000	29.4	9.000	Off	L1	9.7	16.6	46.0
1.132000	29.7	9.000	Off	L1	9.7	16.3	46.0
1.140000	30.0	9.000	Off	L1	9.7	16.0	46.0
1.148000	29.5	9.000	Off	L1	9.7	16.5	46.0
1.158000	29.2	9.000	Off	L1	9.7	16.8	46.0
1.162000	29.3	9.000	Off	L1	9.7	16.7	46.0
14.074000	21.7	9.000	Off	L1	10.0	28.3	50.0
14.280000	21.5	9.000	Off	L1	10.0	28.5	50.0
14.488000	21.7	9.000	Off	L1	10.0	28.3	50.0
14.696000	22.3	9.000	Off	L1	10.0	27.7	50.0
15.112000	21.4	9.000	Off	L1	10.0	28.6	50.0
15.318000	21.9	9.000	Off	L1	10.0	28.1	50.0

2018-07-18

오전 11:58:43

## 10. LIST OF TEST EQUIPMENT

### 10.1 LIST OF TEST EQUIPMENT(Conducted Test)

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Rohde & Schwarz	ENV216 / LISN	12/20/2017	Annual	102245
Rohde & Schwarz	ESCI / Test Receiver	06/27/2018	Annual	100033
ESPAC	SU-642 / Temperature Chamber	03/30/2018	Annual	0093008124
Agilent	N9020A / Signal Analyzer	06/08/2018	Annual	MY51110085
Agilent	N9030A / Signal Analyzer	11/22/2017	Annual	MY49431210
Agilent	N1911A / Power Meter	04/16/2018	Annual	MY45100523
Agilent	N1921A / Power Sensor	04/16/2018	Annual	MY52260025
Agilent	87300B / Directional Coupler	11/20/2017	Annual	3116A03621
Hewlett Packard	11667B / Power Splitter	06/07/2018	Annual	05001
Hewlett Packard	E3632A / DC Power Supply	06/26/2018	Annual	KR75303960
Agilent	8493C / Attenuator(10 dB)	07/10/2018	Annual	07560
Rohde & Schwarz	EMC32 / Software	N/A	N/A	N/A
HCT CO., LTD.	FCC WLAN&BT&BLE Conducted Test Software v3.0	N/A	N/A	N/A
Rohde & Schwarz	CBT / Bluetooth Tester	05/17/2018	Annual	100422

## 10.2 LIST OF TEST EQUIPMENT(Radiated Test)

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Innco system	CO3000 / Controller(Antenna mast)	N/A	N/A	CO3000-4p
Innco system	MA4640/800-XP-EP / Antenna Position Tower	N/A	N/A	N/A
Emco	2090 / Controller	N/A	N/A	060520
Ets	Turn Table	N/A	N/A	N/A
Rohde & Schwarz	Loop Antenna	04/19/2017	Biennial	1513-175
Schwarzbeck	VULB 9168 / Hybrid Antenna	04/06/2017	Biennial	760
Schwarzbeck	BBHA 9120D / Horn Antenna	11/21/2017	Biennial	9120D-1191
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	12/04/2017	Biennial	BBHA9170541
Rohde & Schwarz	FSP(9 kHz ~ 30 GHz) / Spectrum Analyzer	09/21/2017	Annual	836650/016
Rohde & Schwarz	FSV40-N / Spectrum Analyzer	09/27/2017	Annual	101068-SZ
Wainwright Instruments	WHKX10-2700-3000-18000-40SS / High Pass Filter	08/01/2017	Annual	4
Wainwright Instruments	WHKX8-6090-7000-18000-40SS / High Pass Filter	07/10/2018	Annual	5
Wainwright Instruments	WRCJV2400/2483.5-2370/2520-60/12SS / Band Reject Filter	01/03/2018	Annual	2
Wainwright Instruments	WRCJV5100/5850-40/50-8EEK / Band Reject Filter	01/03/2018	Annual	2
Api tech.	18B-03 / Attenuator (3 dB)	06/07/2018	Annual	2
WEINSCHL	56-10 / Attenuator(10 dB)	10/13/2017	Annual	72316
CERNEX	CBLU1183540 / Broadband Low Noise Amplifier	01/03/2018	Annual	24613
CERNEX	CBL06185030 / Broadband Low Noise Amplifier	01/03/2018	Annual	24615
CERNEX	CBL18265035 / Power Amplifier	01/10/2018	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	06/29/2018	Annual	25956
TESCOM	TC-3000C / Bluetooth Tester	03/27/2018	Annual	3000C000276

**11. APPENDIX A\_EUT AND TEST SETUP PHOTO**

Please refer to test setup photo file no. as follows;

No.	Description
1	HCT-RF-1807-FI011-P