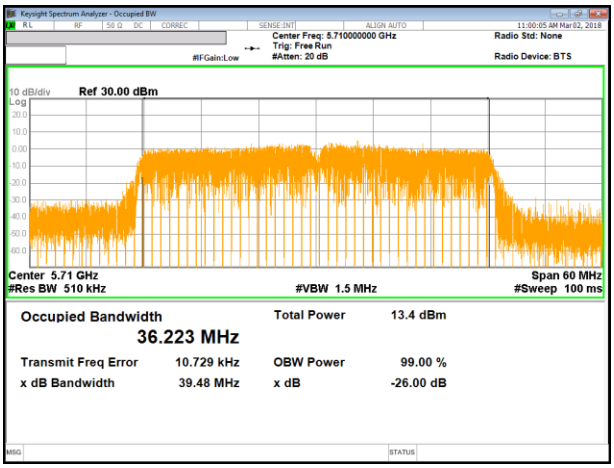
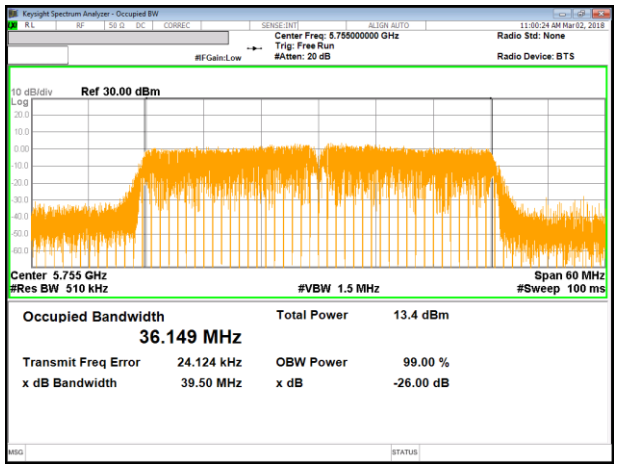
UNII 5.8 GHz IEEE 802.11n HT40 mode

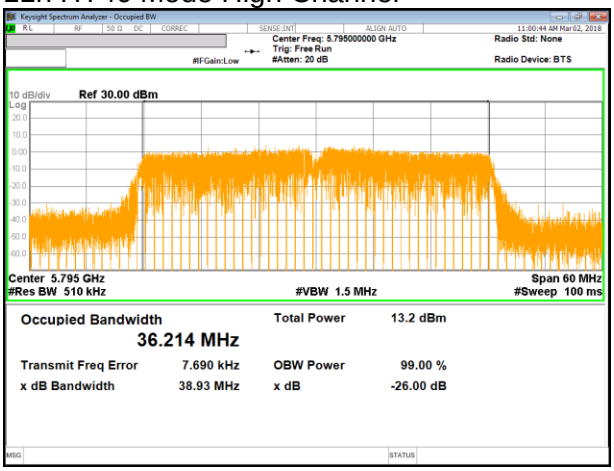
11n HT40 Mode Straddle Channel



11n HT40 Mode Low Channel



11n HT40 Mode High Channel



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10. ANTENNA PORT TEST RESULTS

10.1. 6 dB BANDWIDTH

LIMITS

FCC §15.407 (e)

The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

Reference to 789033 D02 General UNII Test Procedures New Rules v02r01: The transmitter output is connected to a spectrum analyzer with the RBW set to100KHz, the VBW >= 3 x RBW, peak detector and max hold.

NOTE

- Calculation for 6dB Bandwidth of UNII-3 Straddle Channel

ex) Fundamental frequency : 5720MHz
  - 6dB BW : 16.350MHz
  - Starting Frequency of UNII-3 band : 5725MHz
  - 6dB Bandwidth of UNII-3 band Portion
    = (5720 + (16.350 / 2) -5725) = 3.175 MHz

RESULTS

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10.1.1. 802.11a MODE IN THE 5.8 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	Minimum Limit [MHz]
Straddle	5720	3.180	0.5
Low	5745	16.330	0.5
Mid	5785	16.330	0.5
High	5825	16.330	0.5
Worst		3.180	

10.1.2. 802.11n HT20 MODE IN THE 5.8 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	Minimum Limit [MHz]
Straddle	5720	3.775	0.5
Low	5745	17.550	0.5
Mid	5785	17.530	0.5
High	5825	17.600	0.5
Worst		3.775	

10.1.3. 802.11n HT40 MODE IN THE 5.8 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	Minimum Limit [MHz]
Straddle	5710	2.860	0.5
Low	5755	35.300	0.5
High	5795	36.050	0.5
Worst		2.860	

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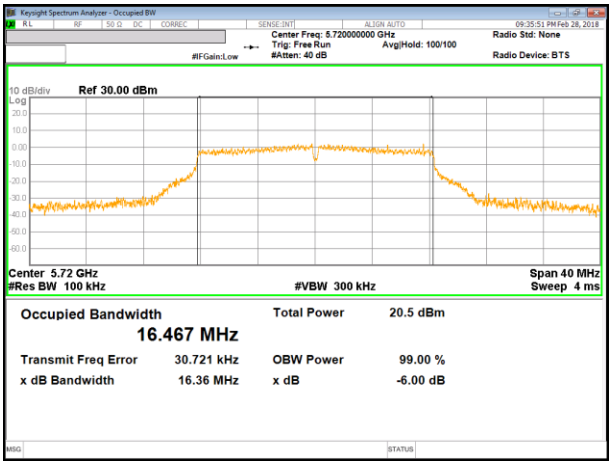
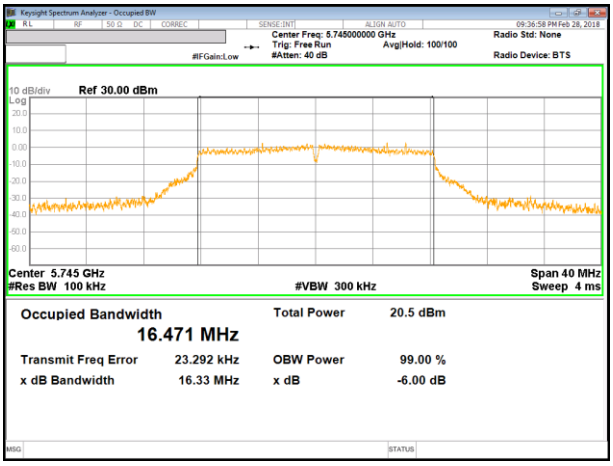
10.1.4. 6 dB BANDWIDTH PLOTS

UNII 5.8 GHz IEEE 802.11a mode

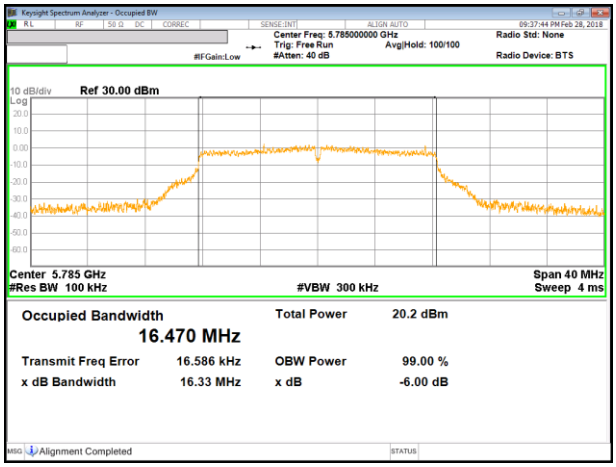
11a Mode Straddle Channel



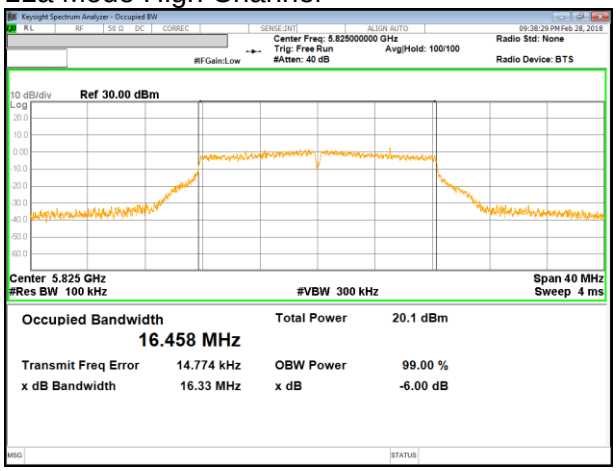
11a Mode Low Channel



11a Mode Middle Channel



11a Mode High Channel



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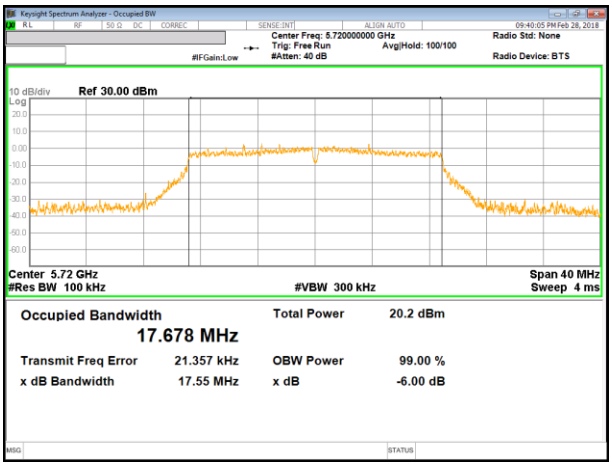
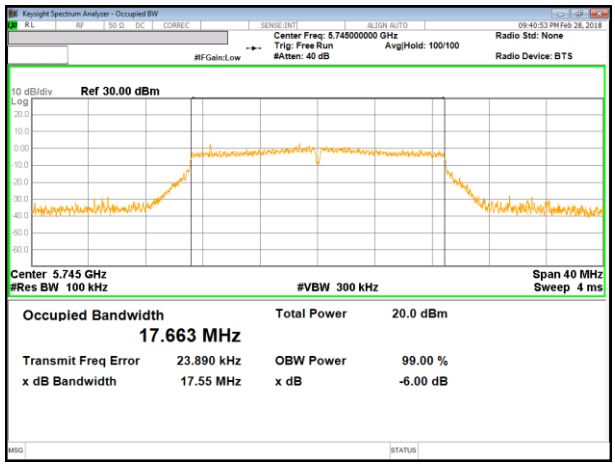
UNII 5.8 GHz IEEE 802.11n HT20 mode

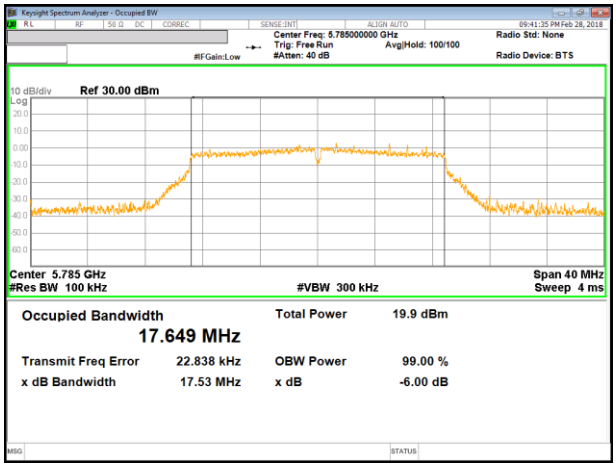
11n HT20 Mode Straddle Channel



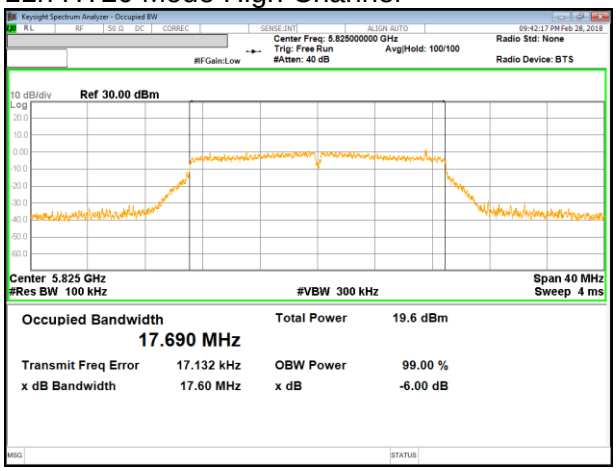
11n HT20 Mode Low Channel



11n HT20 Mode Middle Channel



11n HT20 Mode High Channel



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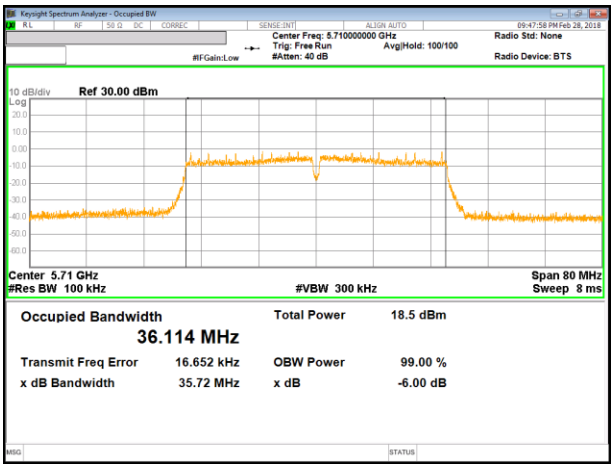
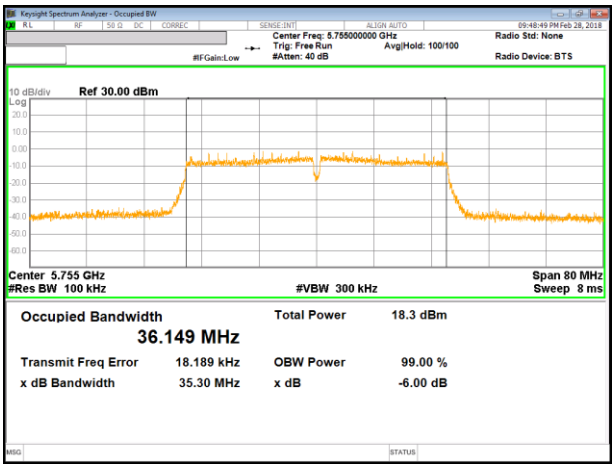
UNII 5.8 GHz IEEE 802.11n HT40 mode

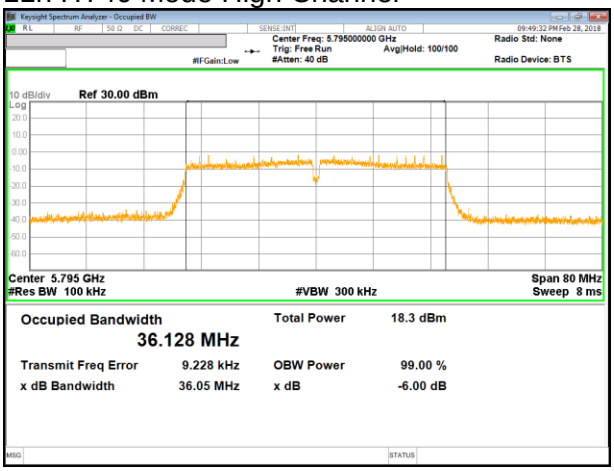
11n HT40 Mode Straddle Channel



11n HT40 Mode Low Channel



11n HT40 Mode High Channel



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10.2. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1) (2) (3)

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

TEST PROCEDURE

The Duty Cycle is less than 98% and consistent therefore KDB 789033 Method SA-2 is used for power and PPSD. RBW set to1MHz(500kHz for the band 5.725-5.85 GHz, the VBW >= 3 x RBW, RMS detector and trace averaging). Band power function used for power and peak marker value of the spectrum is used for PSD. Add duty cycle correction factor.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

5 GHz

Frequency Band [MHz]	Antenna Gain [dBi]
5150 - 5250	-1.17
5250 - 5350	-1.74
5470 - 5725	-1.74
5725 - 5850	-2.12

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RESULTS

10.2.1. 802.11a MODE IN THE 5.2 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency [MHz]	Min 26 dB BW [MHz]	Directional Gain for Power [dBi]	Directional Gain for PPSD [dBi]
Low	5180	21.07	-1.17	-1.17
Mid	5200	20.98	-1.17	-1.17
High	5240	21.35	-1.17	-1.17

Limits

Channel	Frequency [MHz]	FCC Power Limit [dBm]	Power Limit [dBm]	FCC PPSD Limit [dBm]
Low	5180	24.00	24.00	11.00
Mid	5200	24.00	24.00	11.00
High	5240	24.00	24.00	11.00

Duty Cycle CF [dB]	0.14	**Included in Calculations of Corr'd Power & PPSD**

Output Power Results

Channel	Frequency [MHz]	Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Power Margin [dB]
Low	5180	15.81	15.95	24.00	-8.05
Mid	5200	15.87	16.01	24.00	-7.99
High	5240	15.74	15.88	24.00	-8.12

PPSD Results

Channel	Frequency [MHz]	Meas PPSD [dBm]	Total Corr'd PPSD [dBm]	PPSD Limit [dBm]	PPSD Margin [dB]
Low	5180	5.95	6.09	11.00	-4.91
Mid	5200	6.52	6.66	11.00	-4.34
High	5240	6.42	6.56	11.00	-4.44

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10.2.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency [MHz]	Min 26 dB BW [MHz]	Directional Gain for Power [dBi]	Directional Gain for PPSD [dBi]
Low	5180	21.43	-1.17	-1.17
Mid	5200	21.31	-1.17	-1.17
High	5240	21.19	-1.17	-1.17

Limits

Channel	Frequency [MHz]	FCC Power Limit [dBm]	Power Limit [dBm]	FCC PPSD Limit [dBm]
Low	5180	24.00	24.00	11.00
Mid	5200	24.00	24.00	11.00
High	5240	24.00	24.00	11.00

Duty Cycle CF [dB]	0.15	**Included in Calculations of Corr'd Power & PPSD**

Output Power Results

Channel	Frequency [MHz]	Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Power Margin [dB]
Low	5180	15.38	15.53	24.00	-8.47
Mid	5200	15.34	15.49	24.00	-8.51
High	5240	15.42	15.57	24.00	-8.43

PPSD Results

Channel	Frequency [MHz]	Meas PPSD [dBm]	Total Corr'd PPSD [dBm]	PPSD Limit [dBm]	PPSD Margin [dB]
Low	5180	5.62	5.77	11.00	-5.23
Mid	5200	5.41	5.56	11.00	-5.44
High	5240	5.68	5.83	11.00	-5.17

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10.2.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency [MHz]	Min 26 dB BW [MHz]	Directional Gain for Power [dBi]	Directional Gain for PPSD [dBi]
Low	5190	39.41	-1.17	-1.17
High	5230	39.45	-1.17	-1.17

Limits

Channel	Frequency [MHz]	FCC Power Limit [dBm]	Power Limit [dBm]	FCC PPSD Limit [dBm]
Low	5190	24.00	24.00	11.00
High	5230	24.00	24.00	11.00

Duty Cycle CF [dB]	0.30	**Included in Calculations of Corr'd Power & PPSD**

Output Power Results

Channel	Frequency [MHz]	Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Power Margin [dB]
Low	5190	13.91	14.21	24.00	-9.79
High	5230	13.91	14.21	24.00	-9.79

PPSD Results

Channel	Frequency [MHz]	Meas PPSD [dBm]	Total Corr'd PPSD [dBm]	PPSD Limit [dBm]	PPSD Margin [dB]
Low	5190	1.41	1.70	11.00	-9.30
High	5230	1.25	1.54	11.00	-9.46

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10.2.4. 802.11a MODE IN THE 5.3 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency [MHz]	Min 26 dB BW [MHz]	Directional Gain for Power [dBi]	Directional Gain for PPSD [dBi]
Low	5260	21.06	-1.74	-1.74
Mid	5300	21.04	-1.74	-1.74
High	5320	20.87	-1.74	-1.74

Limits

Channel	Frequency [MHz]	FCC Power Limit [dBm]	Power Limit [dBm]	FCC PPSD Limit [dBm]
Low	5260	24.00	24.00	11.00
Mid	5300	24.00	24.00	11.00
High	5320	24.00	24.00	11.00

Duty Cycle CF [dB]	0.14	Included in Calculations of Corr'd Power & PPSD

Output Power Results

Channel	Frequency [MHz]	Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Power Margin [dB]
Low	5260	15.71	15.85	24.00	-8.15
Mid	5300	15.46	15.60	24.00	-8.40
High	5320	15.55	15.69	24.00	-8.31

PPSD Results

Channel	Frequency [MHz]	Meas PPSD [dBm]	Total Corr'd PPSD [dBm]	PPSD Limit [dBm]	PPSD Margin [dB]
Low	5260	6.40	6.54	11.00	-4.46
Mid	5300	6.14	6.28	11.00	-4.72
High	5320	6.15	6.29	11.00	-4.71

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10.2.5. 802.11n HT20 MODE IN THE 5.3 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency [MHz]	Min 26 dB BW [MHz]	Directional Gain for Power [dBi]	Directional Gain for PPSD [dBi]
Low	5260	22.56	-1.74	-1.74
Mid	5300	21.86	-1.74	-1.74
High	5320	21.86	-1.74	-1.74

Limits

Channel	Frequency [MHz]	FCC Power Limit [dBm]	Power Limit [dBm]	FCC PPSD Limit [dBm]
Low	5260	24.00	24.00	11.00
Mid	5300	24.00	24.00	11.00
High	5320	24.00	24.00	11.00

Duty Cycle CF [dB]	0.15	**Included in Calculations of Corr'd Power & PPSD**

Output Power Results

Channel	Frequency [MHz]	Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Power Margin [dB]
Low	5260	16.25	16.40	24.00	-7.60
Mid	5300	16.22	16.37	24.00	-7.63
High	5320	16.13	16.28	24.00	-7.72

PPSD Results

Channel	Frequency [MHz]	Meas PPSD [dBm]	Total Corr'd PPSD [dBm]	PPSD Limit [dBm]	PPSD Margin [dB]
Low	5260	6.76	6.91	11.00	-4.09
Mid	5300	6.34	6.49	11.00	-4.51
High	5320	6.23	6.38	11.00	-4.62

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10.2.6. 802.11n HT40 MODE IN THE 5.3 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency [MHz]	Min 26 dB BW [MHz]	Directional Gain for Power [dBi]	Directional Gain for PPSD [dBi]
Low	5270	39.66	-1.74	-1.74
High	5310	39.81	-1.74	-1.74

Limits

Channel	Frequency [MHz]	FCC Power Limit [dBm]	Power Limit [dBm]	FCC PPSD Limit [dBm]
Low	5270	24.00	24.00	11.00
High	5310	24.00	24.00	11.00

Duty Cycle CF [dB]	0.30	**Included in Calculations of Corr'd Power & PPSD**

Output Power Results

Channel	Frequency [MHz]	Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Power Margin [dB]
Low	5270	13.88	14.18	24.00	-9.82
High	5310	14.01	14.31	24.00	-9.69

PPSD Results

Channel	Frequency [MHz]	Meas PPSD [dBm]	Total Corr'd PPSD [dBm]	PPSD Limit [dBm]	PPSD Margin [dB]
Low	5270	1.26	1.55	11.00	-9.45
High	5310	1.27	1.56	11.00	-9.44

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10.2.7. 802.11a MODE IN THE 5.5 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency [MHz]	Min 26 dB BW [MHz]	Directional Gain for Power [dBi]	Directional Gain for PPSD [dBi]
Low	5500	21.22	-1.74	-1.74
Mid	5580	20.99	-1.74	-1.74
High	5700	21.05	-1.74	-1.74

Limits

Channel	Frequency [MHz]	FCC Power Limit [dBm]	Power Limit [dBm]	FCC PPSD Limit [dBm]
Low	5500	24.00	24.00	11.00
Mid	5580	24.00	24.00	11.00
High	5700	24.00	24.00	11.00

Duty Cycle CF [dB]	0.14	**Included in Calculations of Corr'd Power & PPSD**

Output Power Results

Channel	Frequency [MHz]	Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Power Margin [dB]
Low	5500	16.16	16.29	24.00	-7.71
Mid	5580	16.00	16.14	24.00	-7.86
High	5700	15.94	16.08	24.00	-7.92

PPSD Results

Channel	Frequency [MHz]	Meas PPSD [dBm]	Total Corr'd PPSD [dBm]	PPSD Limit [dBm]	PPSD Margin [dB]
Low	5500	7.11	7.25	11.00	-3.75
Mid	5580	6.46	6.60	11.00	-4.40
High	5700	6.54	6.68	11.00	-4.32

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10.2.8. 802.11n HT20 MODE IN THE 5.5 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency [MHz]	Min 26 dB BW [MHz]	Directional Gain for Power [dBi]	Directional Gain for PPSD [dBi]
Low	5500	21.08	-1.74	-1.74
Mid	5580	21.36	-1.74	-1.74
High	5700	21.23	-1.74	-1.74

Limits

Channel	Frequency [MHz]	FCC Power Limit [dBm]	Power Limit [dBm]	FCC PPSD Limit [dBm]
Low	5500	24.00	24.00	11.00
Mid	5580	24.00	24.00	11.00
High	5700	24.00	24.00	11.00

Duty Cycle CF [dB]	0.15	**Included in Calculations of Corr'd Power & PPSD**

Output Power Results

Channel	Frequency [MHz]	Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Power Margin [dB]
Low	5500	15.85	16.00	24.00	-8.00
Mid	5580	15.20	15.35	24.00	-8.65
High	5700	15.58	15.73	24.00	-8.27

PPSD Results

Channel	Frequency [MHz]	Meas PPSD [dBm]	Total Corr'd PPSD [dBm]	PPSD Limit [dBm]	PPSD Margin [dB]
Low	5500	6.18	6.33	11.00	-4.67
Mid	5580	5.55	5.70	11.00	-5.30
High	5700	5.85	6.00	11.00	-5.00

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10.2.9. 802.11n HT40 MODE IN THE 5.5 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency [MHz]	Min 26 dB BW [MHz]	Directional Gain for Power [dBi]	Directional Gain for PPSD [dBi]
Low	5510	39.56	-1.74	-1.74
Mid	5590	39.65	-2.12	-2.12
High	5670	39.82	-1.74	-1.74

Limits

Channel	Frequency [MHz]	FCC Power Limit [dBm]	Power Limit [dBm]	FCC PPSD Limit [dBm]
Low	5510	24.00	24.00	11.00
Mid	5590	24.00	24.00	11.00
High	5670	24.00	24.00	11.00

Duty Cycle CF [dB]	0.30	**Included in Calculations of Corr'd Power & PPSD**

Output Power Results

Channel	Frequency [MHz]	Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Power Margin [dB]
Low	5510	13.44	13.74	24.00	-10.26
Mid	5590	13.47	13.76	24.00	-10.24
High	5670	13.23	13.53	24.00	-10.47

PPSD Results

Channel	Frequency [MHz]	Meas PPSD [dBm]	Total Corr'd PPSD [dBm]	PPSD Limit [dBm]	PPSD Margin [dB]
Low	5510	0.67	0.96	11.00	-10.04
Mid	5590	0.58	0.87	11.00	-10.13
High	5670	1.01	1.31	11.00	-9.69

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10.2.10. 802.11a MODE IN THE 5.8 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency [MHz]	Min 26 dB BW [MHz]	Directional Gain for Power [dBi]	Directional Gain for PPSD [dBi]
Low	5745	21.28	-2.12	-2.12
Mid	5785	21.03	-2.12	-2.12
High	5825	21.16	-2.12	-2.12

Limits

Channel	Frequency [MHz]	FCC Power Limit [dBm]	Power Limit [dBm]	FCC PPSD Limit [dBm/500kHz]
Low	5745	30.00	30.00	30.00
Mid	5785	30.00	30.00	30.00
High	5825	30.00	30.00	30.00

Duty Cycle CF [dB]	0.14	**Included in Calculations of Corr'd Power & PPSD**

Output Power Results

Channel	Frequency [MHz]	Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Power Margin [dB]
Low	5745	16.03	16.17	30.00	-13.83
Mid	5785	16.05	16.19	30.00	-13.81
High	5825	15.87	16.01	30.00	-13.99

PPSD Results

Channel	Frequency [MHz]	Meas PPSD [dBm/500kHz]	Total Corr'd PPSD [dBm/500kHz]	PPSD Limit [dBm/500kHz]	PPSD Margin [dB]
Low	5745	3.95	4.09	30.00	-25.91
Mid	5785	3.76	3.90	30.00	-26.10
High	5825	3.52	3.66	30.00	-26.34

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10.2.11. 802.11n HT20 MODE IN THE 5.8 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency [MHz]	Min 26 dB BW [MHz]	Directional Gain for Power [dBi]	Directional Gain for PPSD [dBi]
Low	5745	21.07	-2.12	-2.12
Mid	5785	21.30	-2.12	-2.12
High	5825	21.24	-2.12	-2.12

Limits

Channel	Frequency [MHz]	FCC Power Limit [dBm]	Power Limit [dBm]	FCC PPSD Limit [dBm/500kHz]
Low	5745	30.00	30.00	30.00
Mid	5785	30.00	30.00	30.00
High	5825	30.00	30.00	30.00

Duty Cycle CF [dB]	0.15	**Included in Calculations of Corr'd Power & PPSD**

Output Power Results

Channel	Frequency [MHz]	Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Power Margin [dB]
Low	5745	15.54	15.69	30.00	-14.31
Mid	5785	15.61	15.76	30.00	-14.24
High	5825	15.53	15.68	30.00	-14.32

PPSD Results

Channel	Frequency [MHz]	Meas PPSD [dBm/500kHz]	Total Corr'd PPSD [dBm/500kHz]	PPSD Limit [dBm/500kHz]	PPSD Margin [dB]
Low	5745	3.25	3.40	30.00	-26.60
Mid	5785	3.04	3.19	30.00	-26.81
High	5825	2.79	2.94	30.00	-27.06

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10.2.12. 802.11n HT40 MODE IN THE 5.8 GHz BAND

Bandwidth and Antenna Gain

Channel	Frequency [MHz]	Min 26 dB BW [MHz]	Directional Gain for Power [dBi]	Directional Gain for PPSD [dBi]
Low	5755	39.58	-2.12	-2.12
High	5795	39.80	-2.12	-2.12

Limits

Channel	Frequency [MHz]	FCC Power Limit [dBm]	Power Limit [dBm]	FCC PPSD Limit [dBm/500kHz]
Low	5755	30.00	30.00	30.00
High	5795	30.00	30.00	30.00

Duty Cycle CF [dB]	0.30	**Included in Calculations of Corr'd Power & PPSD**

Output Power Results

Channel	Frequency [MHz]	Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Power Margin [dB]
Low	5755	13.43	13.72	30.00	-16.28
High	5795	13.33	13.63	30.00	-16.37

PPSD Results

Channel	Frequency [MHz]	Meas PPSD [dBm/500kHz]	Total Corr'd PPSD [dBm/500kHz]	PPSD Limit [dBm/500kHz]	PPSD Margin [dB]
Low	5755	-1.16	-0.87	30.00	-30.87
High	5795	-1.36	-1.06	30.00	-31.06

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10.2.13. 802.11a MODE AT STRADDLE CHANNEL

Bandwidth and Antenna Gain

Portion	Frequency [MHz]	Min 26 dB BW [MHz]	Directional Gain for Power [dBi]	Directional Gain for PPSD [dBi]
UNII-2C	5720	15.58	-1.74	-1.74
UNII-3	5720	5.58	-1.74	-1.74
Whole	5720	21.16	-1.74	-1.74

Limits

Portion	Frequency [MHz]	FCC Power Limit [dBm]	Power Limit [dBm]	FCC PPSD Limit [dBm] or [dBm/kHz]
UNII-2C	5720	22.93	22.93	11.00
UNII-3	5720	30.00	30.00	30.00
Whole	5720	24.00	24.00	11.00

Duty Cycle CF [dB]	0.14	Included in Calculations of Corr'd Power & PPSD

Output Power Results

Portion	Frequency [MHz]	Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Power Margin [dB]
UNII-2C	5720	15.12	15.26	22.93	-7.67
UNII-3	5720	7.89	8.03	30.00	-21.97
Whole	5720	15.87	16.01	24.00	-7.99

PPSD Results

Channel	Frequency [MHz]	Meas PPSD [dBm] or [dBm/kHz]	Total Corr'd PPSD [dBm] or [dBm/kHz]	PPSD Limit [dBm] or [dBm/kHz]	PPSD Margin [dB]
UNII-2C	5720	6.69	6.83	11.00	-4.17
UNII-3	5720	1.14	1.28	30.00	-28.72

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10.2.14. 802.11n HT20 MODE AT STRADDLE CHANNEL

Bandwidth and Antenna Gain

Portion	Frequency [MHz]	Min 26 dB BW [MHz]	Directional Gain for Power [dBi]	Directional Gain for PPSD [dBi]
UNII-2C	5720	15.70	-1.74	-1.74
UNII-3	5720	5.70	-1.74	-1.74
Whole	5720	21.40	-1.74	-1.74

Limits

Portion	Frequency [MHz]	FCC Power Limit [dBm]	Power Limit [dBm]	FCC PPSD Limit [dBm] or [dBm/kHz]
UNII-2C	5720	22.96	22.96	11.00
UNII-3	5720	30.00	30.00	11.00
Whole	5720	24.00	24.00	11.00

Duty Cycle CF [dB]	0.15	Included in Calculations of Corr'd Power & PPSD

Output Power Results

Portion	Frequency [MHz]	Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Power Margin [dB]
UNII-2C	5720	14.74	14.89	22.96	-8.07
UNII-3	5720	7.98	8.13	30.00	-21.87
Whole	5720	15.59	15.74	24.00	-8.26

PPSD Results

Channel	Frequency [MHz]	Meas PPSD [dBm] or [dBm/kHz]	Total Corr'd PPSD [dBm] or [dBm/kHz]	PPSD Limit [dBm] or [dBm/kHz]	PPSD Margin [dB]
UNII-2C	5720	5.69	5.84	11.00	-5.16
UNII-3	5720	0.60	0.75	30.00	-29.25

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10.2.15. 802.11n HT40 MODE AT STRADDLE CHANNEL

Bandwidth and Antenna Gain

Portion	Frequency [MHz]	Min 26 dB BW [MHz]	Directional Gain for Power [dBi]	Directional Gain for PPSD [dBi]
UNII-2C	5710	34.68	-1.74	-1.74
UNII-3	5710	4.68	-1.74	-1.74
Whole	5710	39.36	-1.74	-1.74

Limits

Portion	Frequency [MHz]	FCC Power Limit [dBm]	Power Limit [dBm]	FCC PPSD Limit [dBm] or [dBm/kHz]
UNII-2C	5710	24.00	24.00	11.00
UNII-3	5710	30.00	30.00	11.00
Whole	5710	24.00	24.00	11.00

Duty Cycle CF [dB]	0.30	Included in Calculations of Corr'd Power & PPSD

Output Power Results

Portion	Frequency [MHz]	Meas Power [dBm]	Total Corr'd Power [dBm]	Power Limit [dBm]	Power Margin [dB]
UNII-2C	5710	12.97	13.26	24.00	-10.74
UNII-3	5710	1.85	2.15	30.00	-27.85
Whole	5710	13.29	13.59	24.00	-10.41

PPSD Results

Channel	Frequency [MHz]	Meas PPSD [dBm] or [dBm/kHz]	Total Corr'd PPSD [dBm] or [dBm/kHz]	PPSD Limit [dBm] or [dBm/kHz]	PPSD Margin [dB]
UNII-2C	5710	0.88	1.17	11.00	-9.83
UNII-3	5710	-4.51	-4.22	30.00	-34.22

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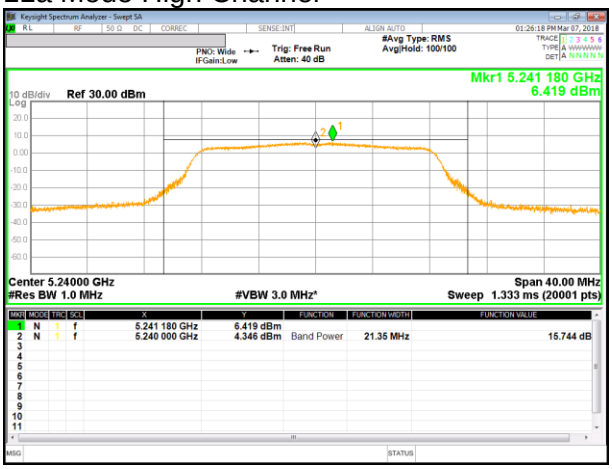
10.2.16. OUTPUT POWER AND PPSD PLOTS

UNII 5.2 GHz IEEE 802.11a mode

11a Mode Low Channel

11a Mode Middle Channel

11a Mode High Channel



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UNII 5.2 GHz IEEE 802.11n HT20 mode

11n HT20 Mode Low Channel

11n HT20 Mode Middle Channel

11n HT20 Mode High Channel

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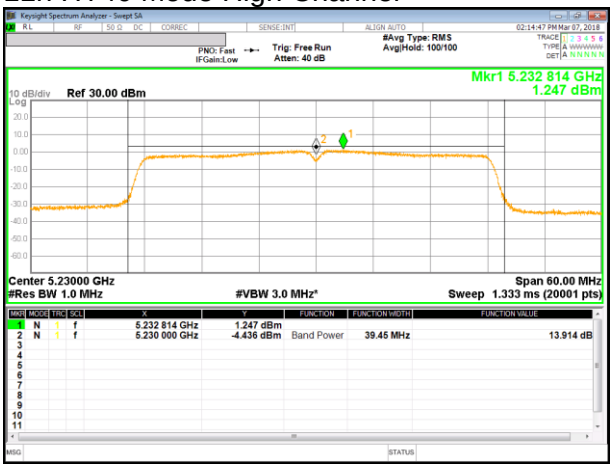
UNII 5.2 GHz IEEE 802.11n HT40 mode

11n HT40 Mode Low Channel

11n HT40 Mode High Channel



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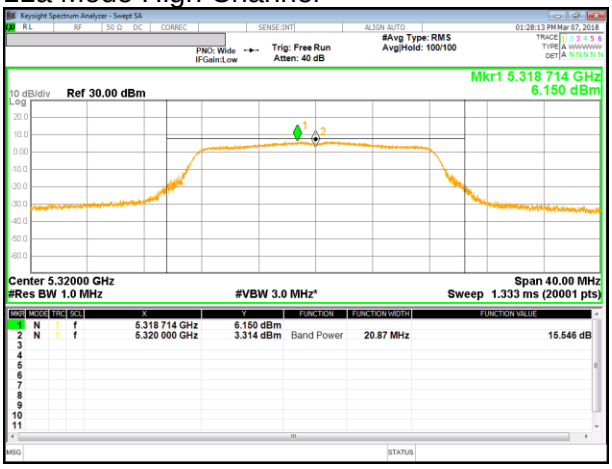
UNII 5.3 GHz IEEE 802.11a mode

11a Mode Low Channel

11a Mode Middle Channel

11a Mode High Channel



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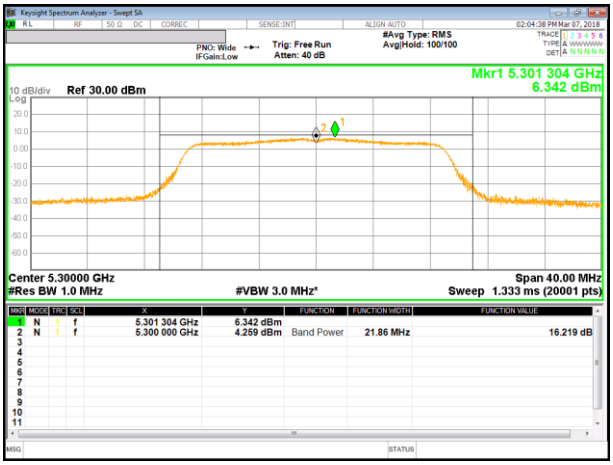
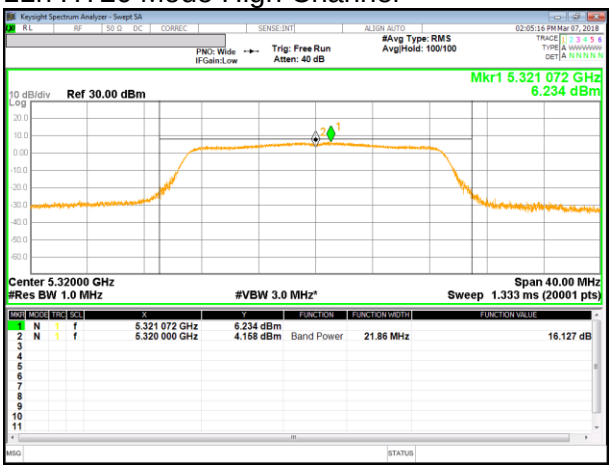
UNII 5.3 GHz IEEE 802.11n HT20 mode

11n HT20 Mode Low Channel

11n HT20 Mode Middle Channel



11n HT20 Mode High Channel



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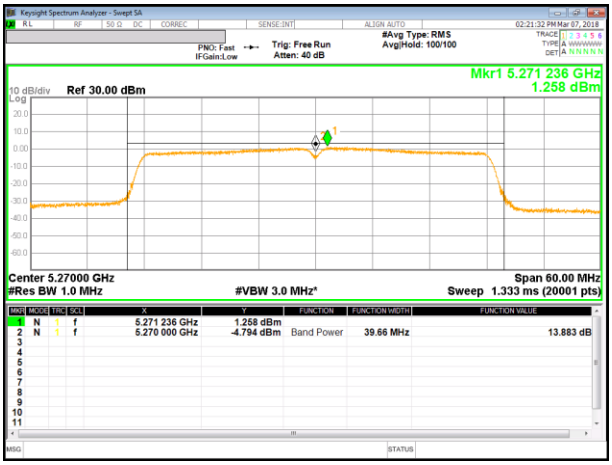
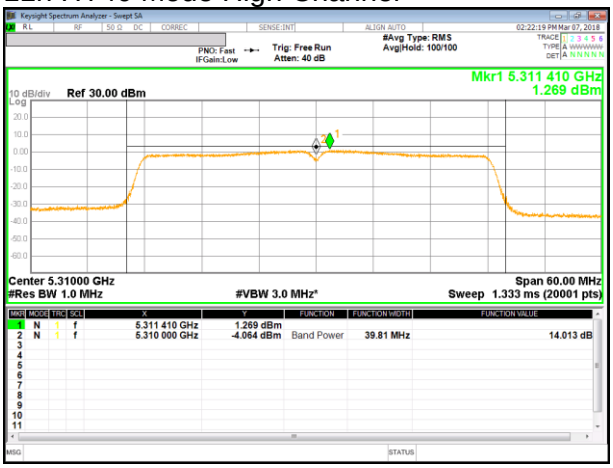
UNII 5.3 GHz IEEE 802.11n HT40 mode

11n HT40 Mode Low Channel



11n HT40 Mode High Channel



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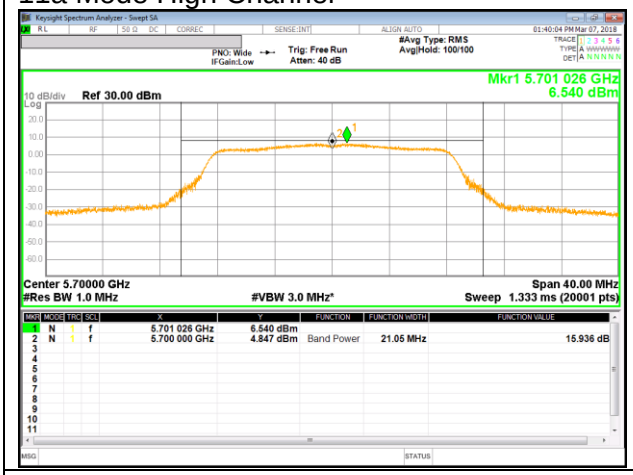
UNII 5.5 GHz IEEE 802.11a mode

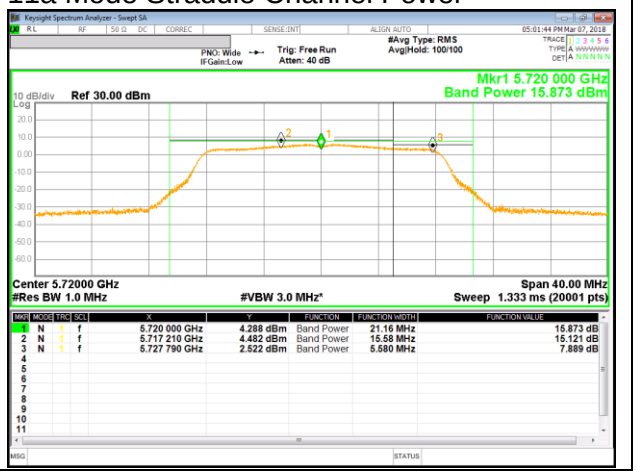
11a Mode Low Channel

11a Mode Middle Channel

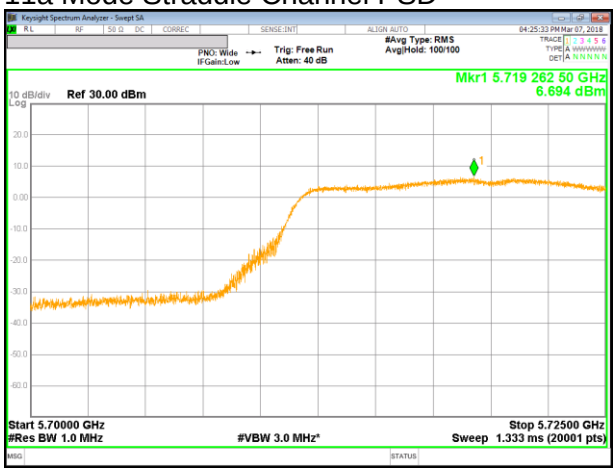
11a Mode High Channel



11a Mode Straddle Channel Power



11a Mode Straddle Channel PSD



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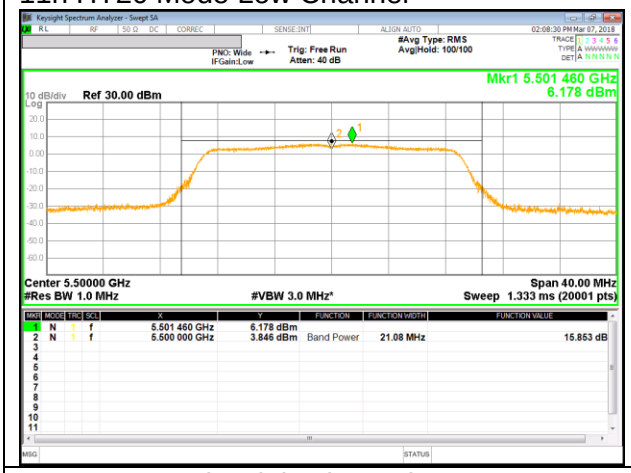
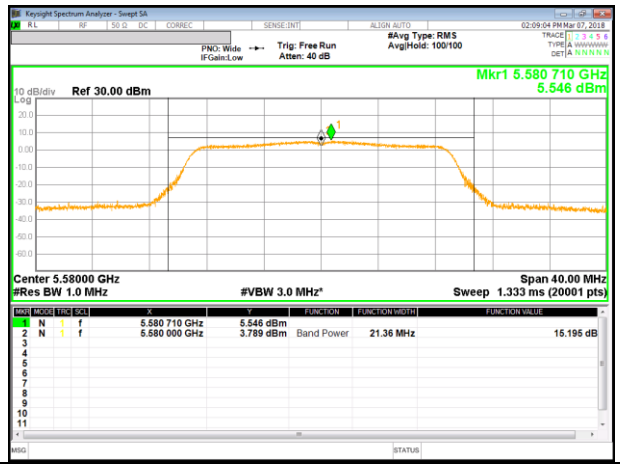
UNII 5.5 GHz IEEE 802.11n HT20 mode

11n HT20 Mode Low Channel



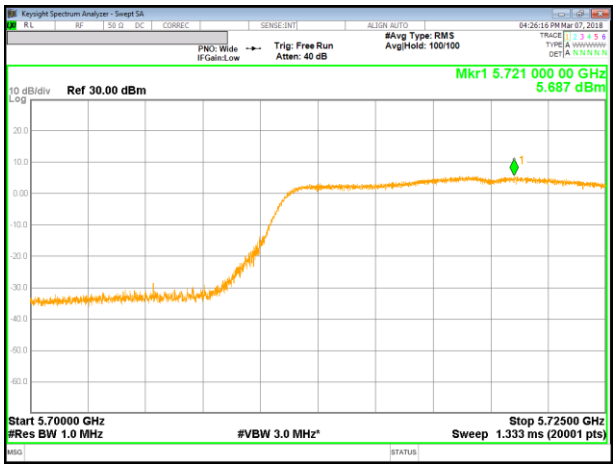
11n HT20 Mode Middle Channel



11n HT20 Mode High Channel

11n HT20 Mode Straddle Channel Power

11n HT20 Mode Straddle Channel PSD



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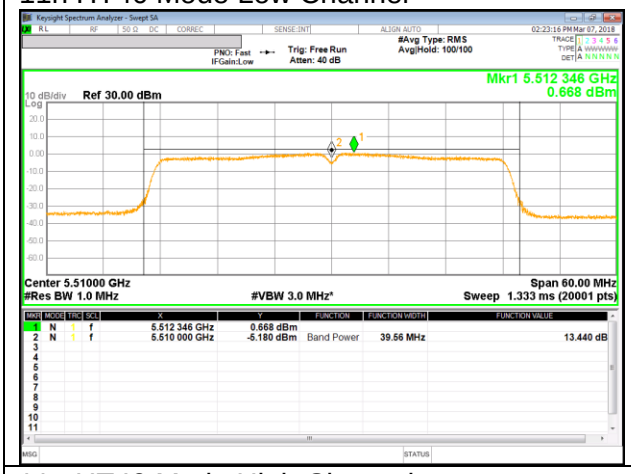
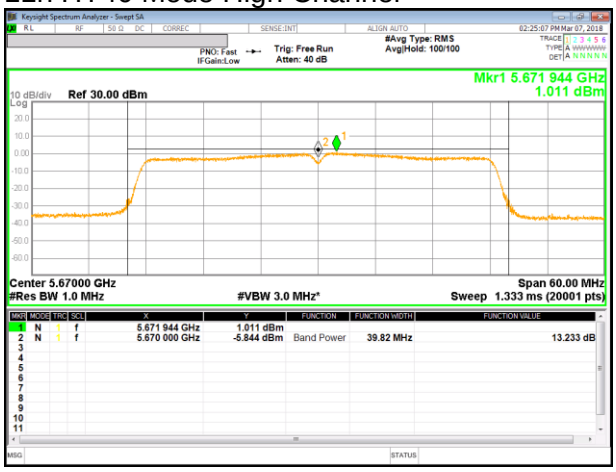
UNII 5.5 GHz IEEE 802.11n HT40 mode

11n HT40 Mode Low Channel

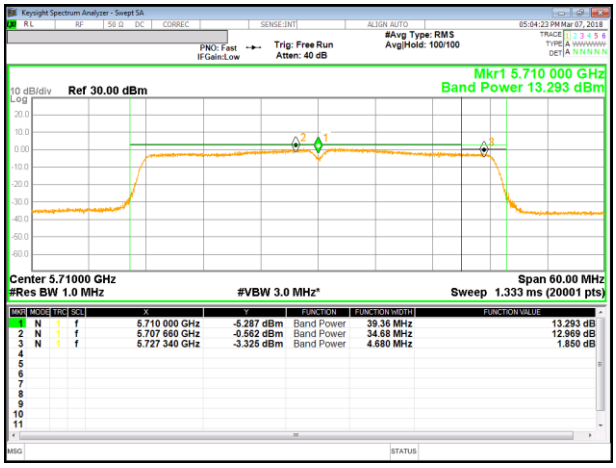


11n HT40 Mode Middle Channel

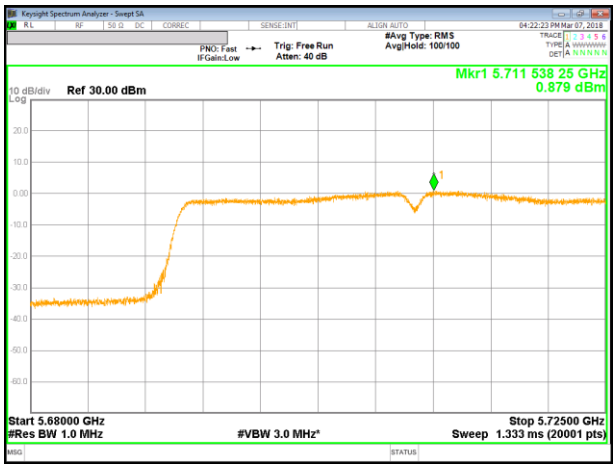
11n HT40 Mode High Channel



11n HT40 Mode Straddle Channel Power



11n HT40 Mode Straddle Channel PSD



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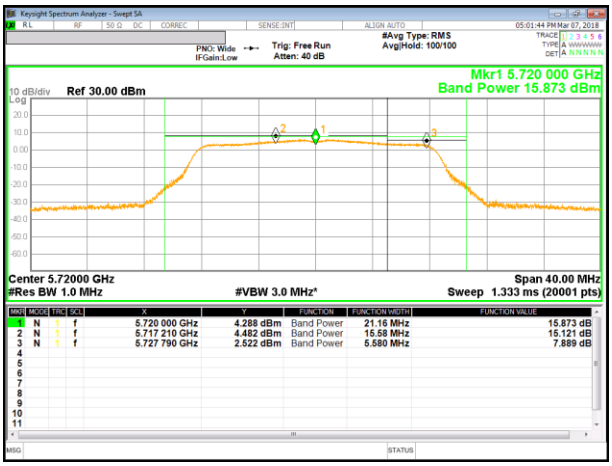
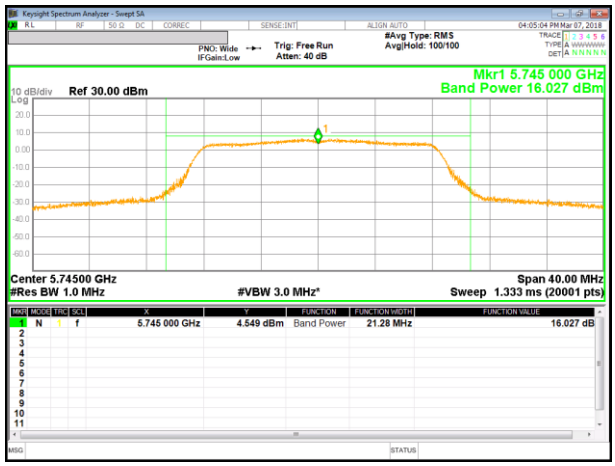
UNII 5.8 GHz IEEE 802.11a mode for POWER

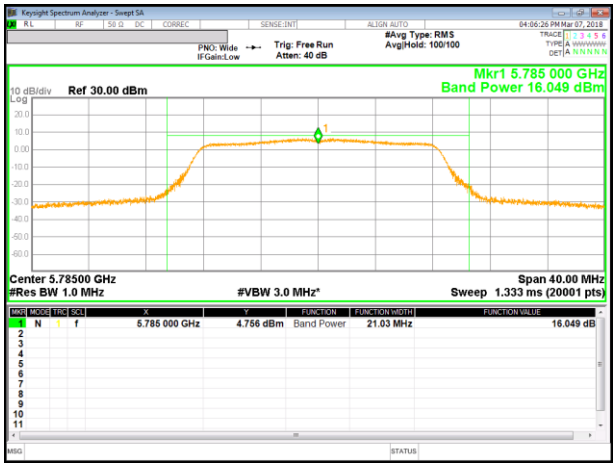
11a Mode Straddle Channel



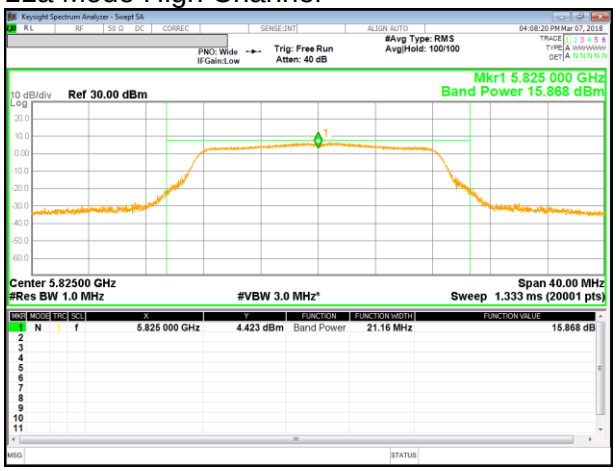
11a Mode Low Channel



11a Mode Middle Channel



11a Mode High Channel



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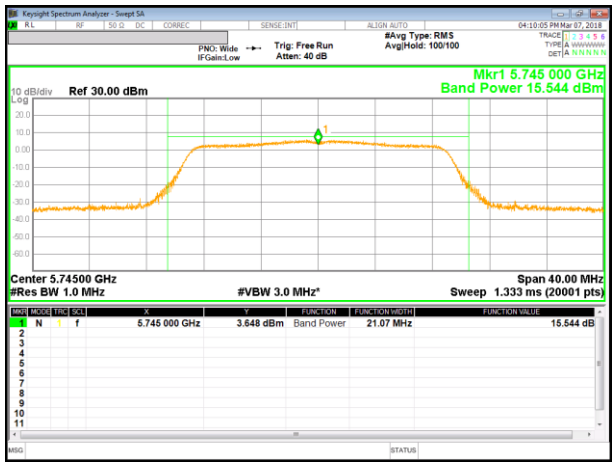
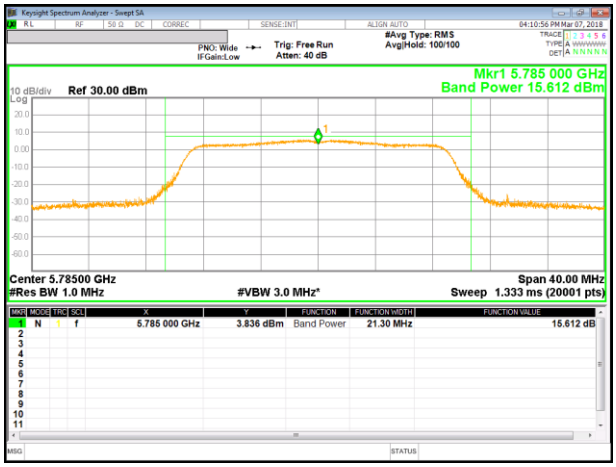
UNII 5.8 GHz IEEE 802.11n HT20 mode for POWER

11n HT20 Mode Straddle Channel

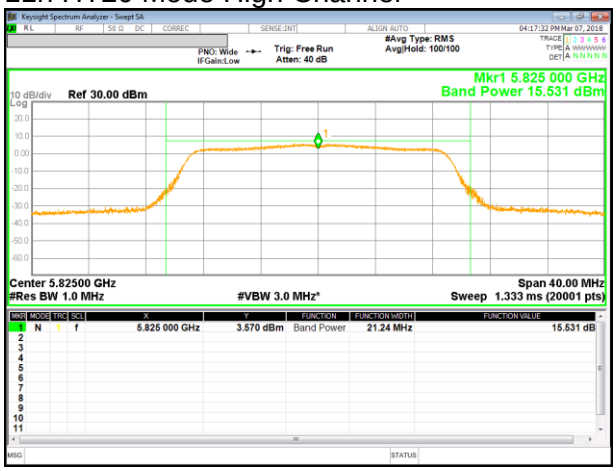
11n HT20 Mode Low Channel



11n HT20 Mode Middle Channel



11n HT20 Mode High Channel



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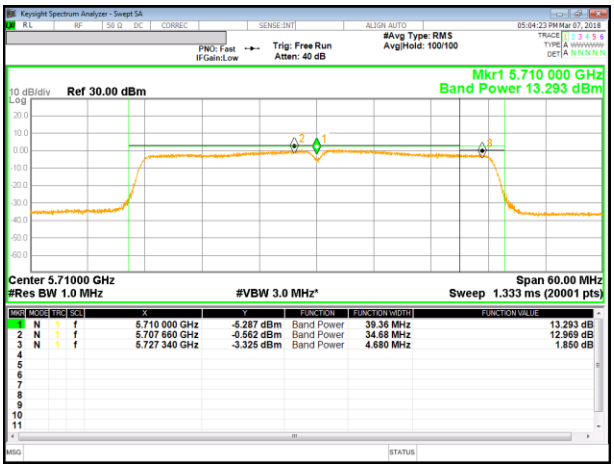
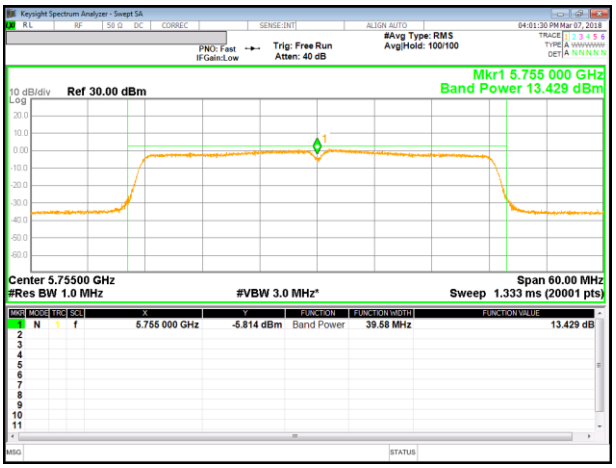
UNII 5.8 GHz IEEE 802.11n HT40 mode for POWER

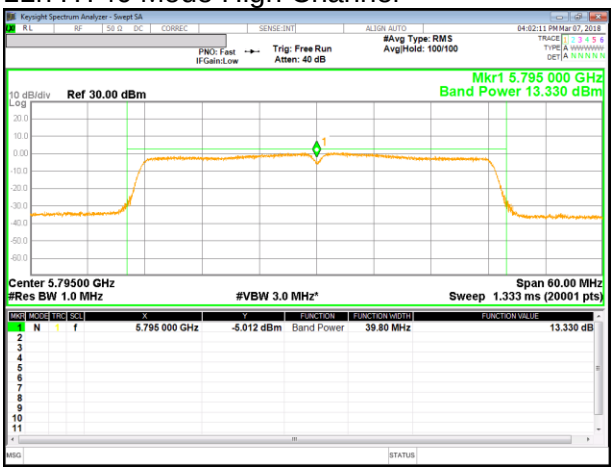
11n HT40 Mode Straddle Channel



11n HT40 Mode Low Channel



11n HT40 Mode High Channel



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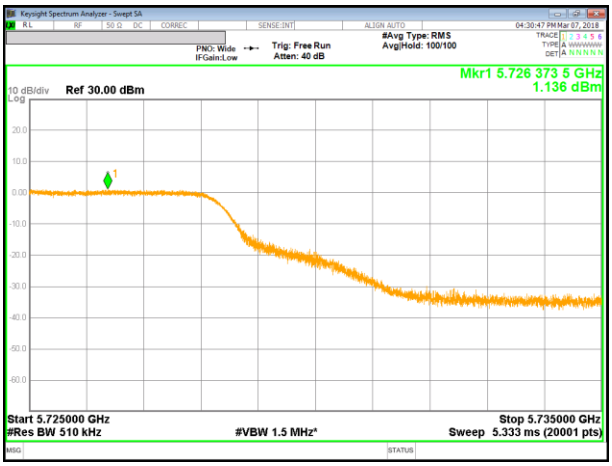
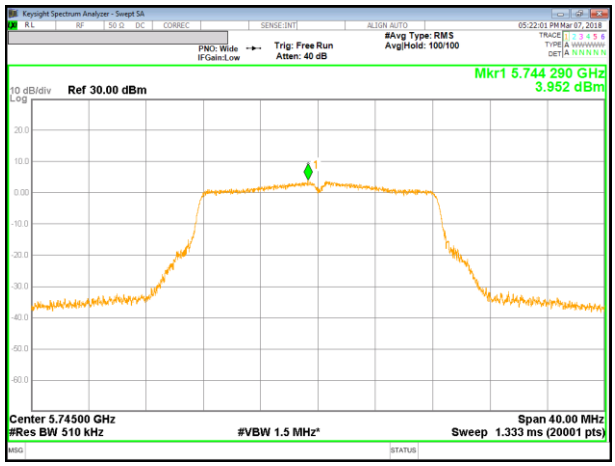
UNII 5.8 GHz IEEE 802.11a mode for PSD

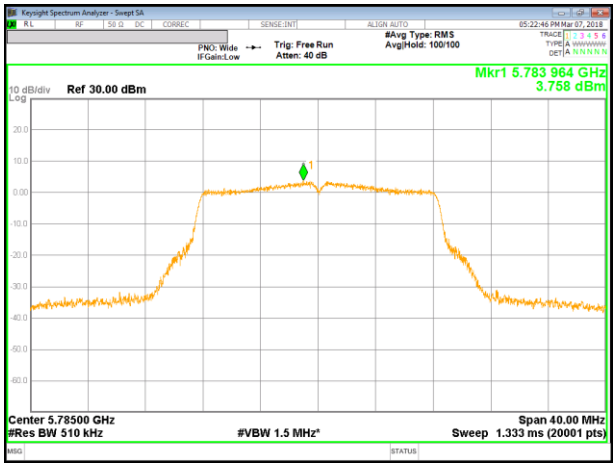
11a Mode Straddle Channel



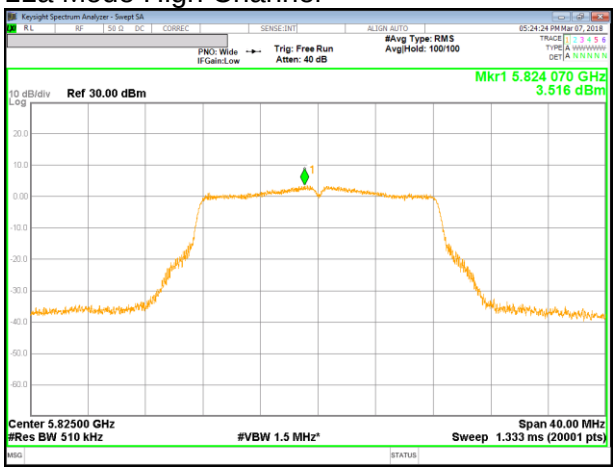
11a Mode Low Channel



11a Mode Middle Channel



11a Mode High Channel



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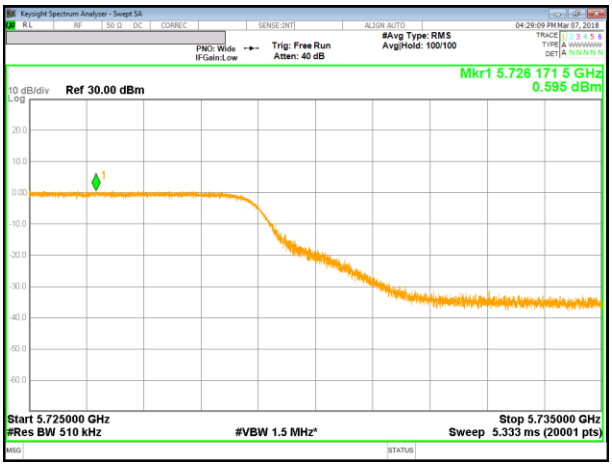
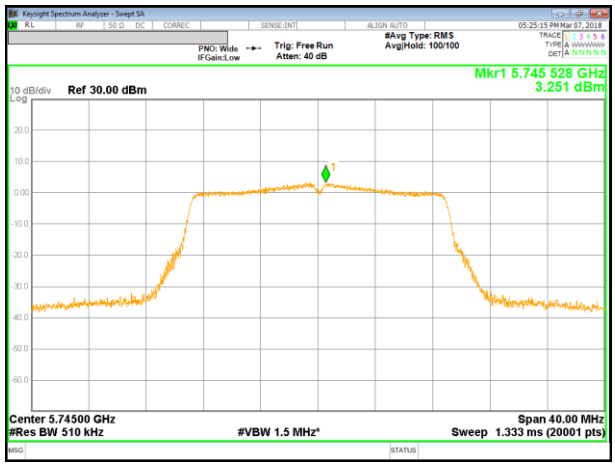
UNII 5.8 GHz IEEE 802.11n HT20 mode for PSD

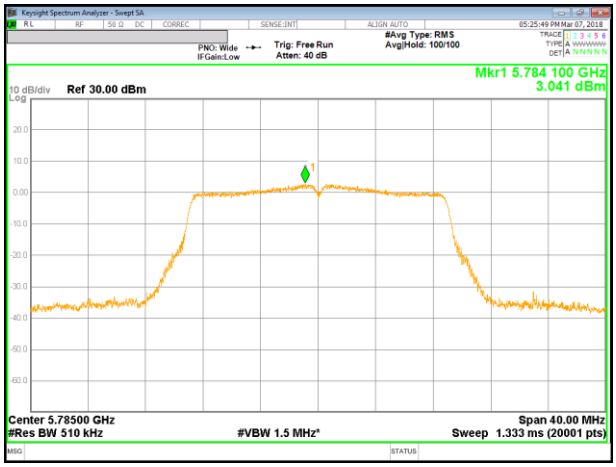
11n HT20 Mode Straddle Channel



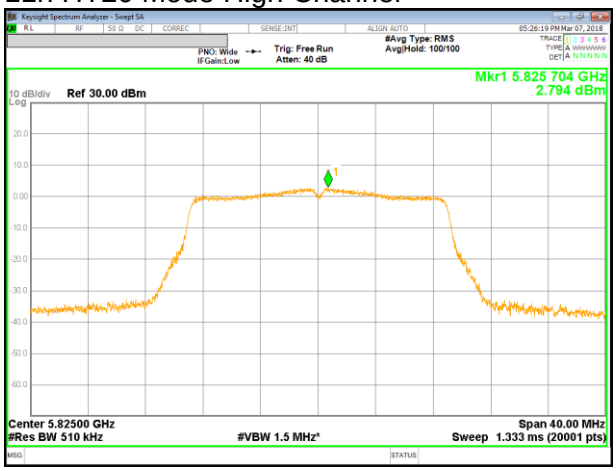
11n HT20 Mode Low Channel



11n HT20 Mode Middle Channel



11n HT20 Mode High Channel



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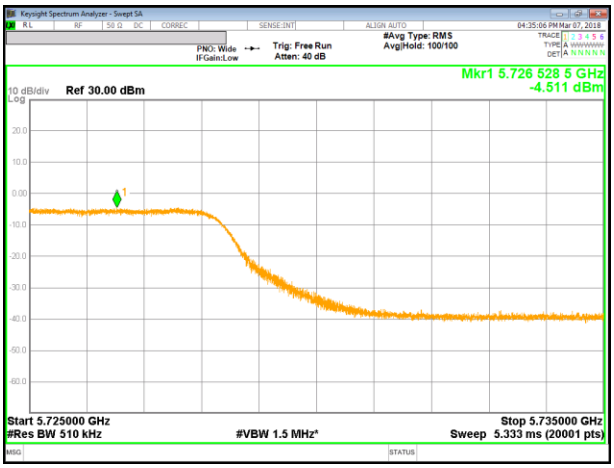
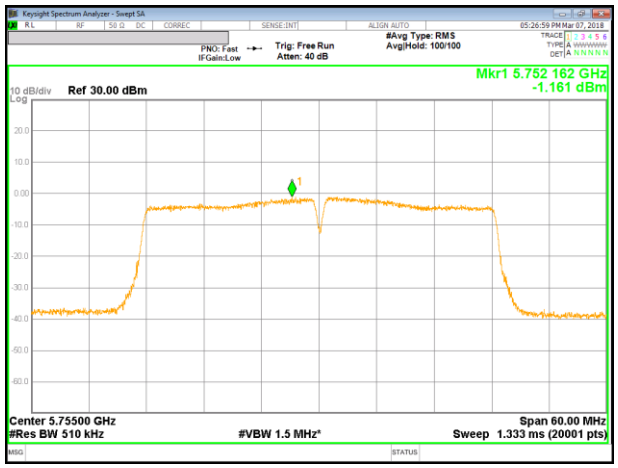
UNII 5.8 GHz IEEE 802.11n HT40 mode for PSD

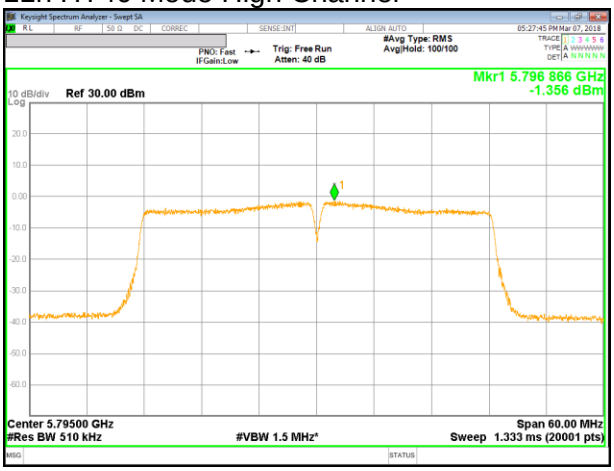
11n HT40 Mode Straddle Channel



11n HT40 Mode Low Channel



11n HT40 Mode High Channel



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11. TRANSMITTER ABOVE 1 GHz

LIMITS

FCC §15.205 and §15.209

Limits for radiated disturbance of an intentional radiator		
Frequency range (MHz)	Limits (µV/m)	Measurement Distance (m)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 – 88	100**	3
88 - 216	150**	3
216 – 960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.

FCC §15.407 (b)

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth

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in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

(7) The provisions of §15.205 apply to intentional radiators operating under this section.

(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

Note

- Limit translation to field strength level (FCC §15.407)

E[dBuV/m] = EIRP[dBm] + 95.2 = -27dBm + 95.2 = 68.2dBuV/m
E[dBuV/m] = EIRP[dBm] + 95.2 = -17dBm + 95.2 = 78.2dBuV/m

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150 cm for above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Reference to KDB 789033 D02 v02r01 UNII part G) 6) c) Method AD:
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor to the reading offset for average measurements.
Pre-scans to detect harmonic and spurious emissions, the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

The spectrum from 1 GHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.
(From 30MHz to 1GHz, test was performed with the EUT set to transmit at the channel with highest output power)

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

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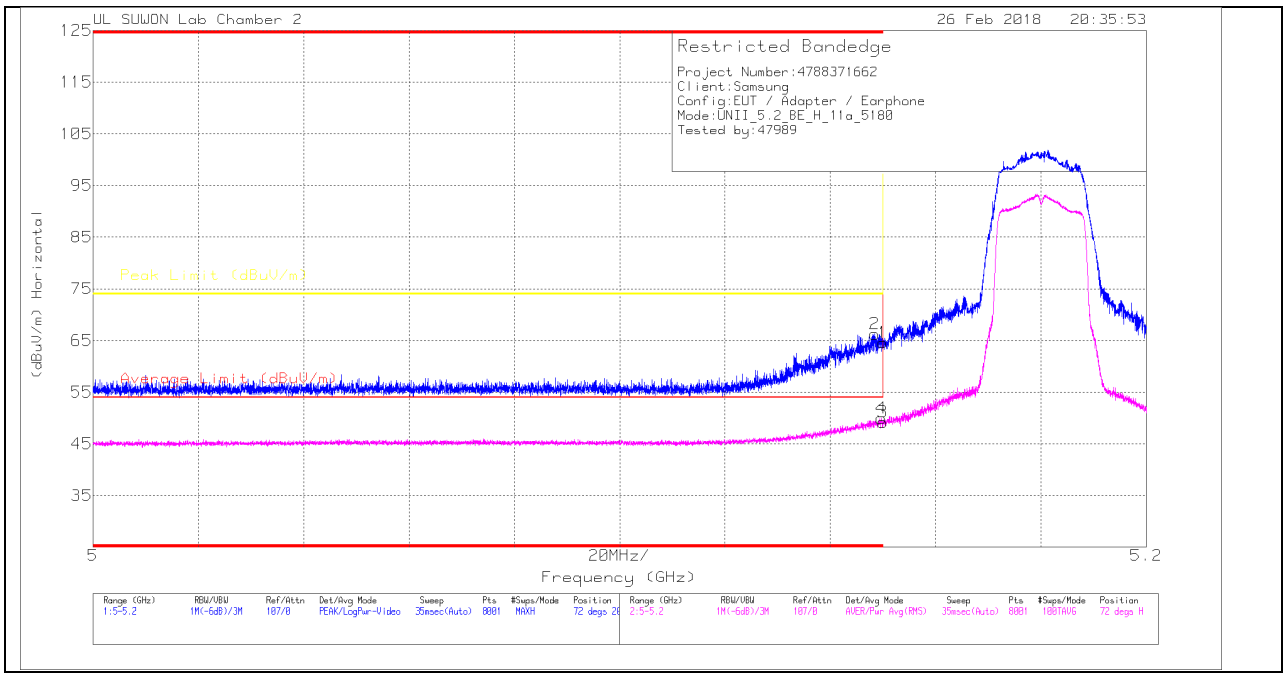
11.1. 5.2 GHz

11.1.1. TX Above 1GHz 802.11a MODE IN THE 5.2GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	10dB[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.15	45.89	Pk	34	-15.3	0	64.59	-	-	74	-9.41	72	207	H
2	* 5.148	47.56	Pk	34	-15.3	0	66.26	-	-	74	-7.74	72	207	H
3	5.15	30.38	RMS	34	-15.3	.14	49.22	54	-4.78	-	-	72	207	H
4	* 5.15	31.11	RMS	34	-15.3	.14	49.95	54	-4.05	-	-	72	207	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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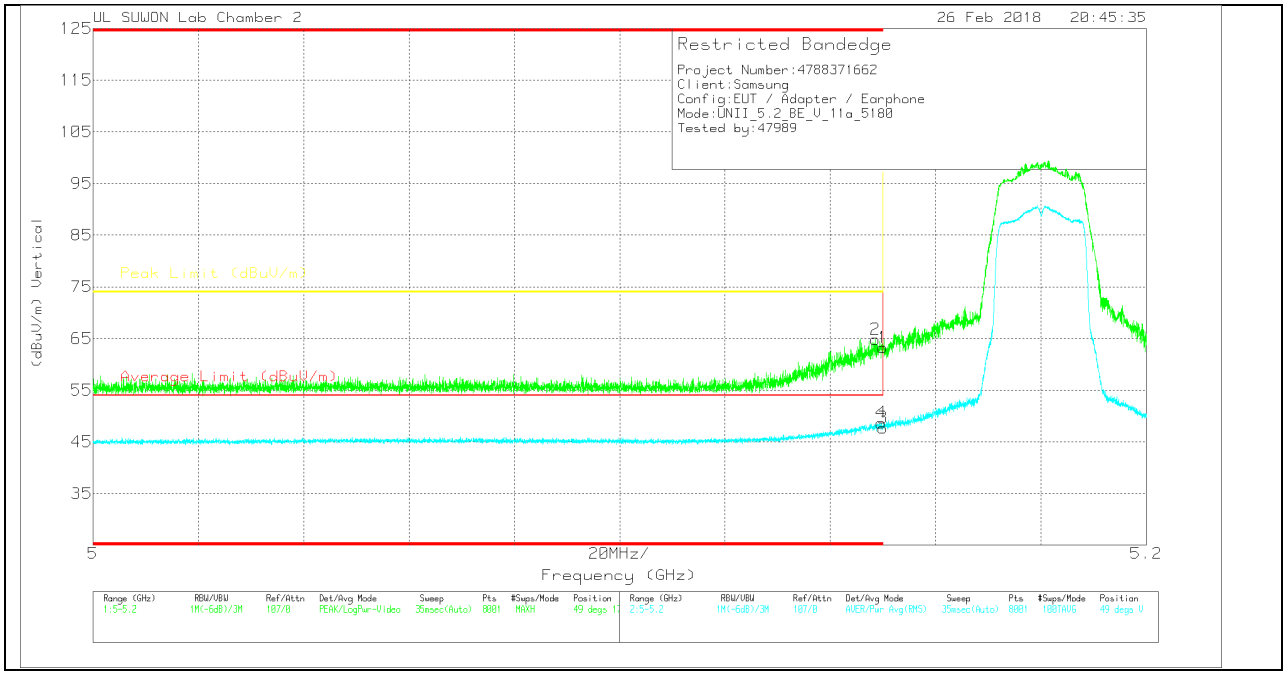
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	10dB[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.15	44.55	Pk	34	-15.3	0	63.25	-	-	74	-10.75	49	171	V
2	* 5.149	46.13	Pk	34	-15.3	0	64.83	-	-	74	-9.17	49	171	V
3	5.15	28.89	RMS	34	-15.3	.14	47.73	54	-6.27	-	-	49	171	V
4	* 5.15	29.87	RMS	34	-15.3	.14	48.71	54	-5.29	-	-	49	171	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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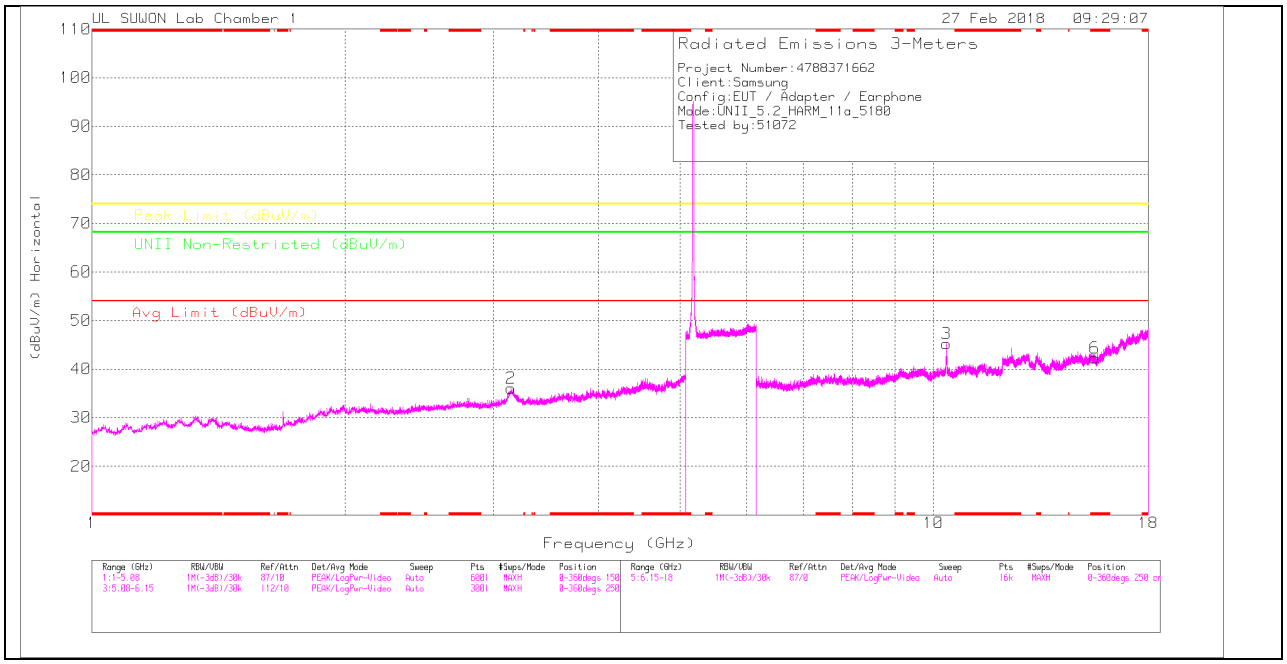
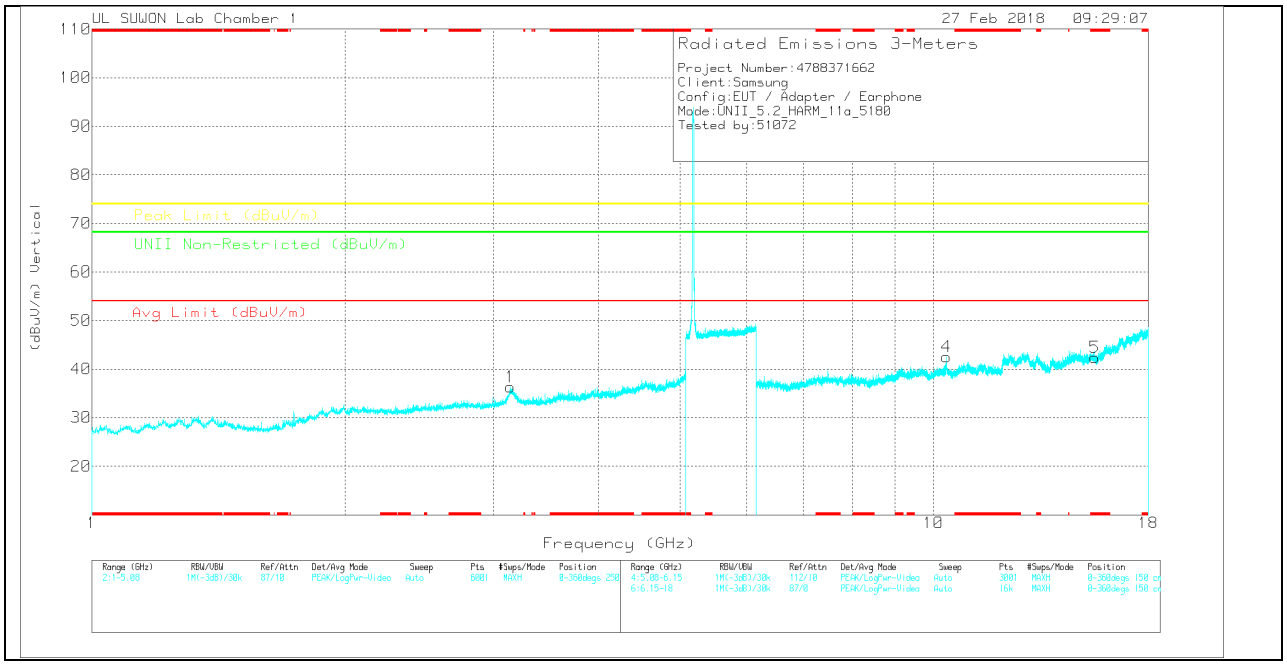
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	20170531_3117_001 68717	5GHz_LP(dB)_170809	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	3.148	34.74	PK	34.8	-33.5	0	36.04	-	-	-	-	68.2	-32.16	0-360	150	H
1	3.143	35.15	PK	34.6	-33.4	0	36.35	-	-	-	-	68.2	-31.85	0-360	150	V
3	10.359	30.19	PK	37.5	-22.5	0	45.19	-	-	-	-	68.2	-23.01	0-360	150	H
6	* 15.54	23.72	PK	39.8	-21.2	0	42.32	-	-	74	-31.68	-	-	0-360	150	H
4	10.363	27.55	PK	37.5	-22.5	0	42.55	-	-	-	-	68.2	-25.65	0-360	250	V
5	* 15.541	23.81	PK	39.8	-21.2	0	42.41	-	-	74	-31.59	-	-	0-360	250	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	20170531_3117_001687 17	6GHz_HP(dB)_170809	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
10.359	41.38	PK-U	37.5	-22.5	0	56.38	-	-	-	-	68.2	-11.82	255	381	H
10.36	40.37	PK-U	37.5	-22.5	0	55.37	-	-	-	-	68.2	-12.83	260	104	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak

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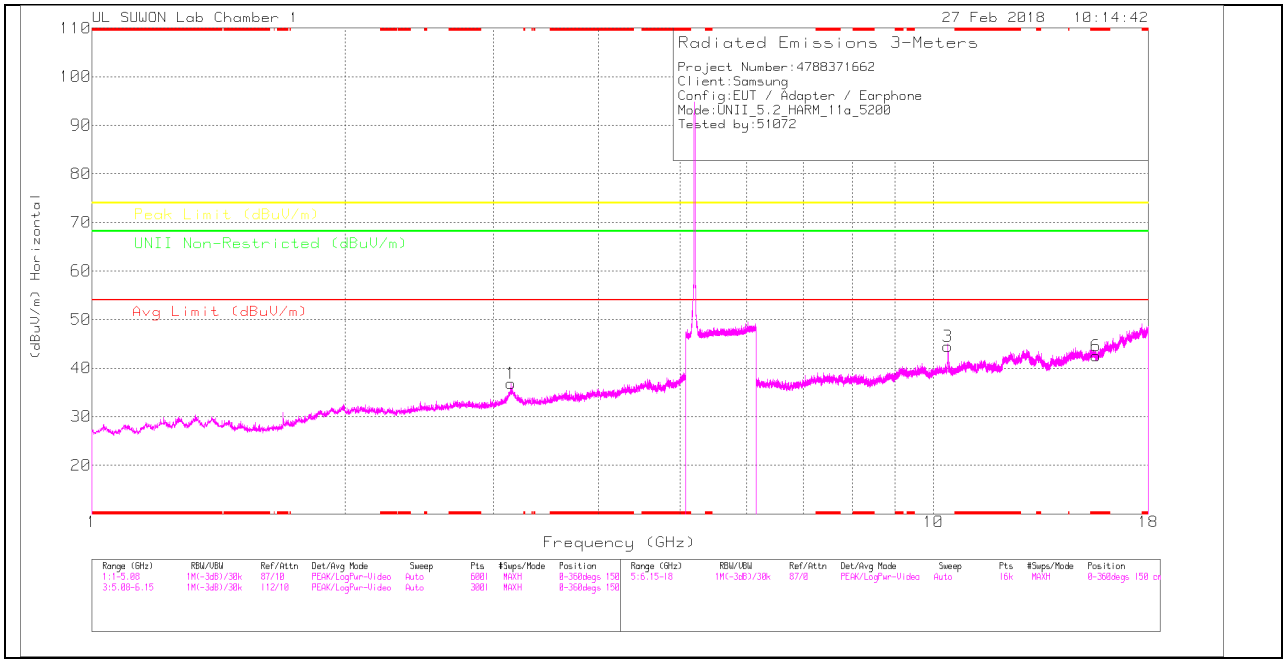
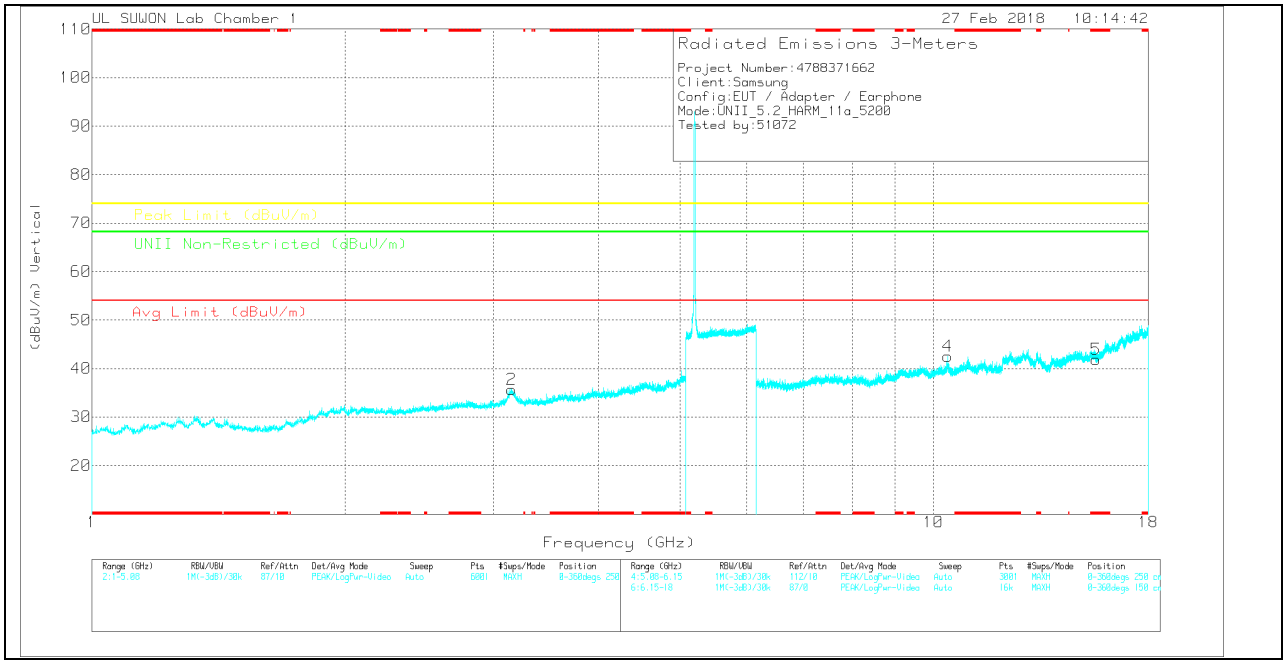
MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	20170531_3117_001 68717	5GHz_LP(dB)_170809	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.15	35.38	PK	34.9	-33.5	0	36.78	-	-	-	-	68.2	-31.42	0-360	150	H
2	3.152	34.29	PK	34.9	-33.5	0	35.69	-	-	-	-	68.2	-32.51	0-360	150	V
3	10.402	28.98	PK	37.5	-22	0	44.48	-	-	-	-	68.2	-23.72	0-360	251	H
6	* 15.602	24.49	PK	39.8	-21.8	0	42.49	-	-	74	-31.51	-	-	0-360	251	H
4	10.401	27	PK	37.5	-22	0	42.5	-	-	-	-	68.2	-25.7	0-360	150	V
5	* 15.602	23.9	PK	39.8	-21.8	0	41.9	-	-	74	-32.1	-	-	0-360	251	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	20170531_3117_001687 17	6GHz_HP(dB)_170809	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
10.399	42.85	PK-U	37.5	-22.1	0	58.25	-	-	-	-	68.2	-9.95	256	380	H
10.397	36.16	PK-U	37.5	-22.1	0	51.56	-	-	-	-	68.2	-16.64	258	103	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak

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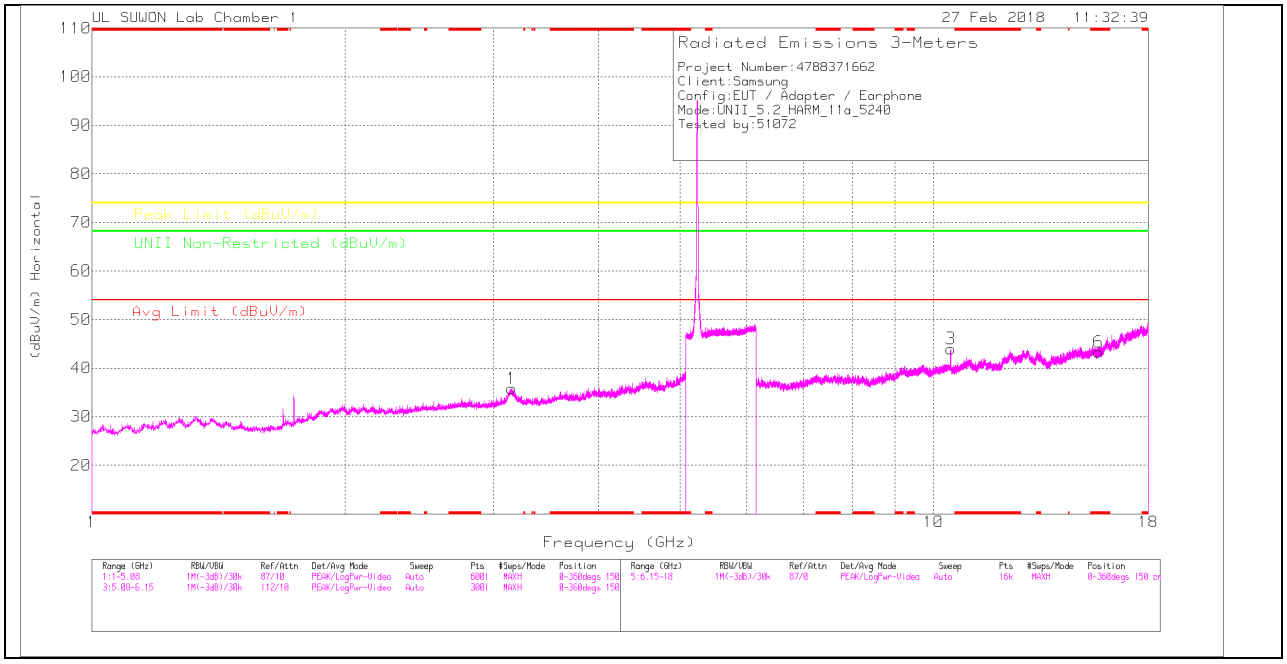
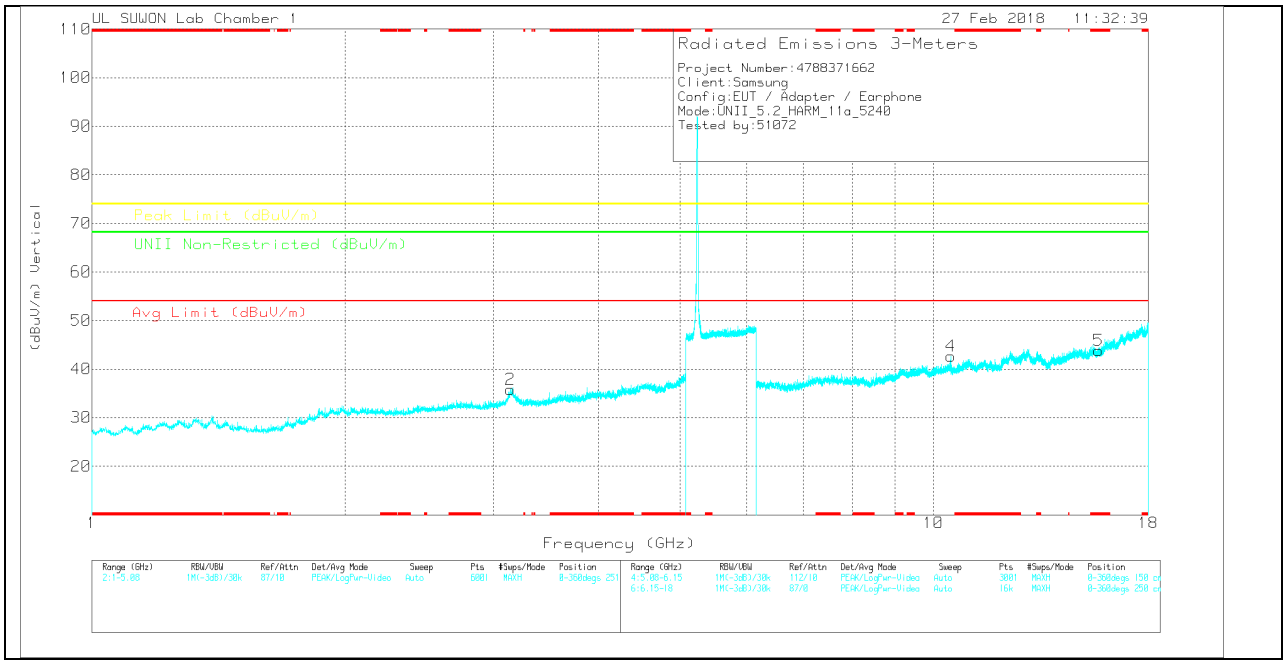
HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	20170531_3117_001 68717	5GHz_LP(dB)_170809	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.152	34.4	PK	34.9	-33.5	0	35.8	-	-	-	-	68.2	-32.4	0-360	150	H
2	3.141	34.7	PK	34.5	-33.4	0	35.8	-	-	-	-	68.2	-32.4	0-360	251	V
3	10.481	28.81	PK	37.5	-22.3	0	44.01	-	-	-	-	68.2	-24.19	0-360	250	H
6	* 15.722	24.93	PK	39.9	-21.5	0	43.33	-	-	74	-30.67	-	-	0-360	250	H
4	10.483	27.55	PK	37.5	-22.4	0	42.65	-	-	-	-	68.2	-25.55	0-360	250	V
5	* 15.721	25.37	PK	39.9	-21.5	0	43.77	-	-	74	-30.23	-	-	0-360	150	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	20170531_3117_001687 17	6GHz_HP(dB)_170809	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
10.482	42.92	PK-U	37.5	-22.3	0	58.12	-	-	-	-	68.2	-10.08	251	100	H
10.479	39.29	PK-U	37.5	-22.3	0	54.49	-	-	-	-	68.2	-13.71	254	103	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak

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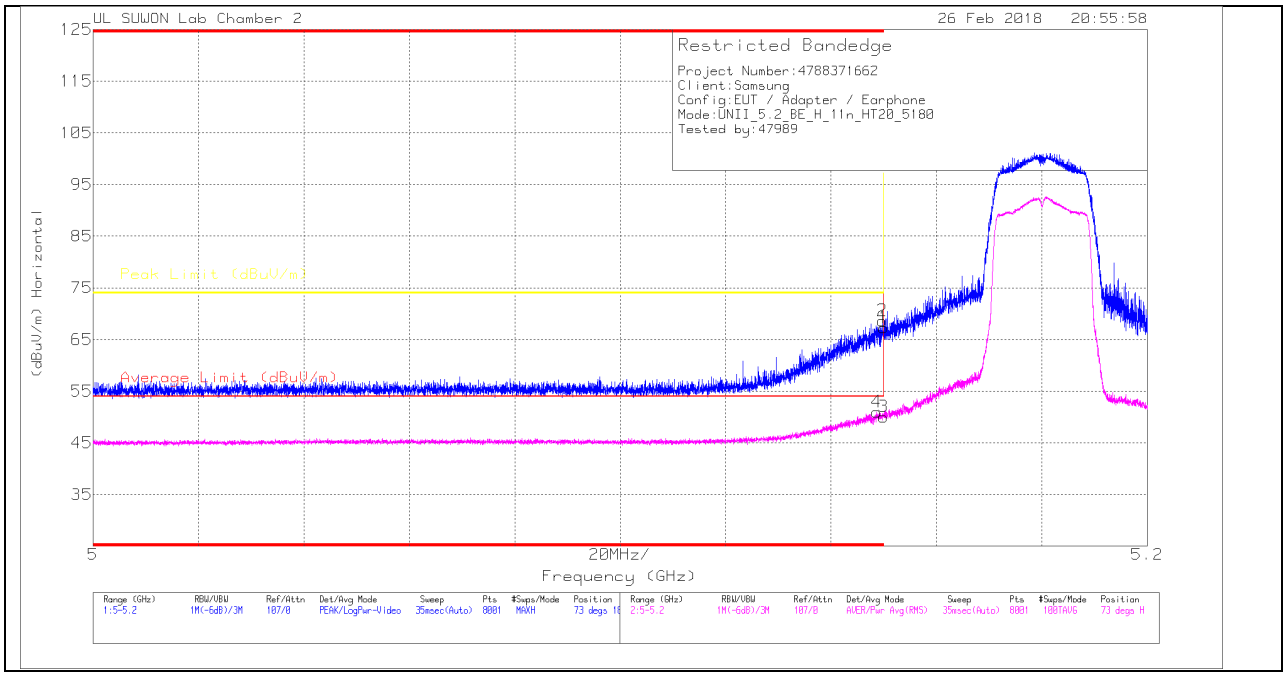
11.1.2. TX Above 1GHz 802.11n HT20 MODE IN THE 5.2GHz BAND RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	10dB[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.15	48.63	Pk	34	-15.3	0	67.33	-	-	74	-6.67	73	184	H
2	* 5.15	49.94	Pk	34	-15.3	0	68.64	-	-	74	-5.36	73	184	H
3	5.15	31.21	RMS	34	-15.3	.15	50.06	54	-3.94	-	-	73	184	H
4	* 5.149	32.15	RMS	34	-15.3	.15	51	54	-3	-	-	73	184	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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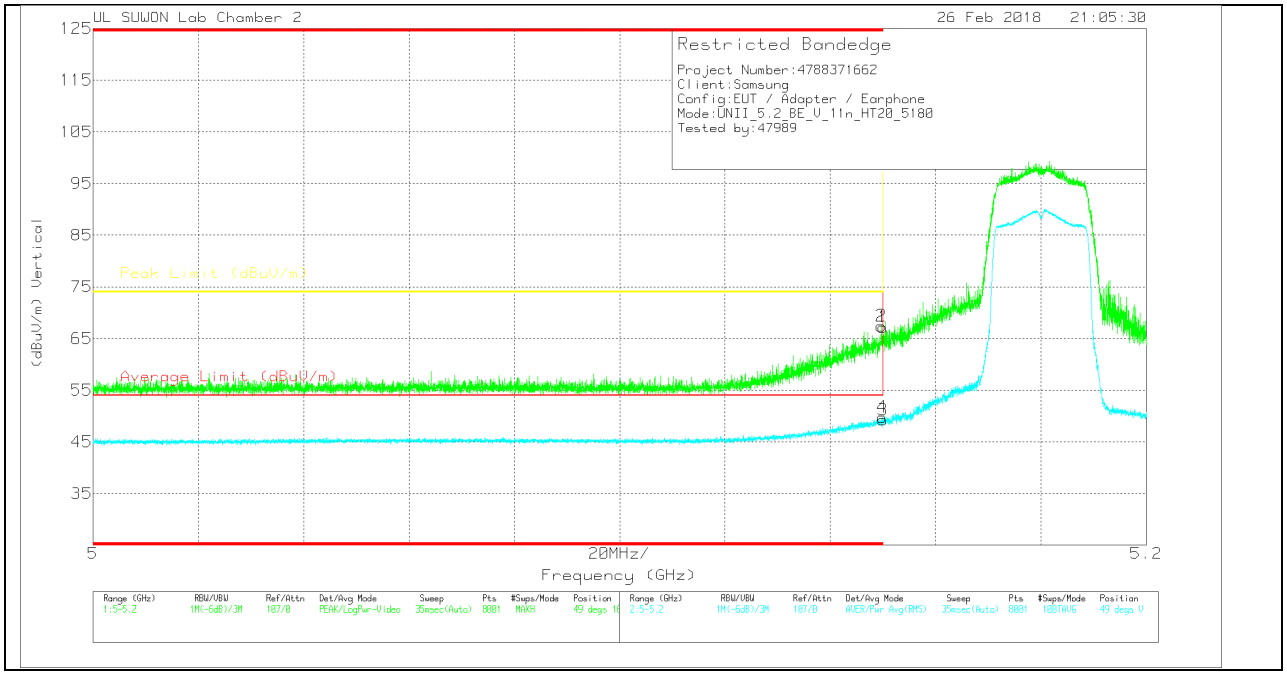
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	10dB[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.15	48.52	Pk	34	-15.3	0	67.22	-	-	74	-6.78	49	165	V
2	* 5.15	48.72	Pk	34	-15.3	0	67.42	-	-	74	-6.58	49	165	V
3	5.15	30.42	RMS	34	-15.3	.15	49.27	54	-4.73	-	-	49	165	V
4	* 5.15	30.93	RMS	34	-15.3	.15	49.78	54	-4.22	-	-	49	165	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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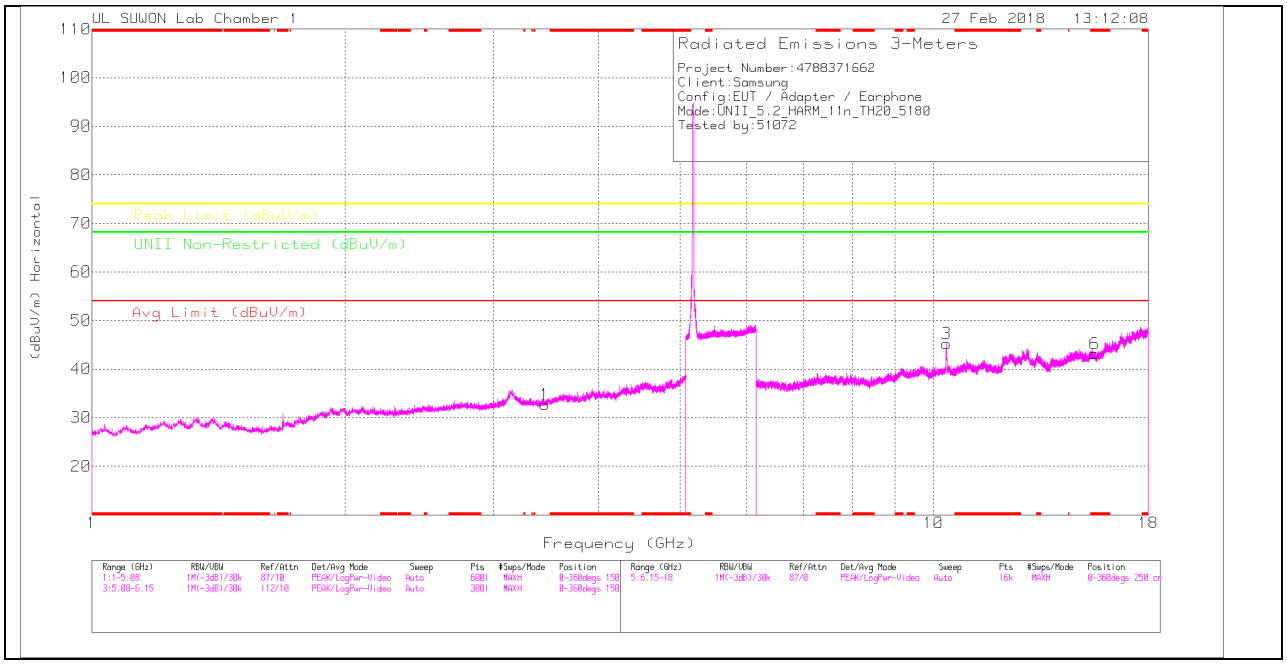
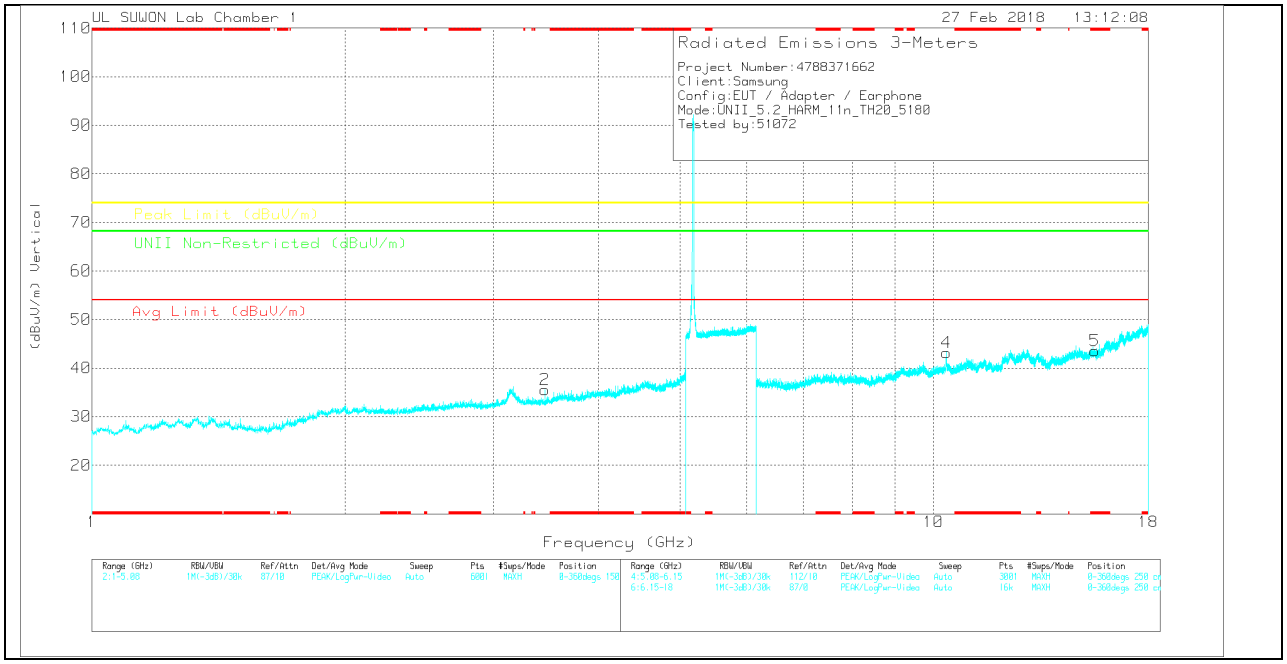
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	20170531_3117_001 68717	5GHz_LP(dB)_170809	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.453	33.28	PK	32.5	-33.1	0	32.68	-	-	-	-	68.2	-35.52	0-360	250	H
2	3.453	36.11	PK	32.5	-33.1	0	35.51	-	-	-	-	68.2	-32.69	0-360	250	V
3	10.361	30.28	PK	37.5	-22.5	0	45.28	-	-	-	-	68.2	-22.92	0-360	250	H
6	* 15.541	24.61	PK	39.8	-21.2	0	43.21	-	-	74	-30.79	-	-	0-360	150	H
4	10.36	28.16	PK	37.5	-22.5	0	43.16	-	-	-	-	68.2	-25.04	0-360	150	V
5	* 15.541	24.93	PK	39.8	-21.2	0	43.53	-	-	74	-30.47	-	-	0-360	150	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	20170531_3117_001687 17	5GHz_LP(dB)_170809	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3.455	43.87	PK-U	32.5	-33.1	0	43.27	-	-	-	-	68.2	-24.93	193	344	H
3.453	44.83	PK-U	32.5	-33.1	0	44.23	-	-	-	-	68.2	-23.97	57	372	V
10.361	41.11	PK-U	37.5	-22.5	0	56.11	-	-	-	-	68.2	-12.09	250	381	H
10.362	42.87	PK-U	37.5	-22.5	0	57.87	-	-	-	-	68.2	-10.33	253	382	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak

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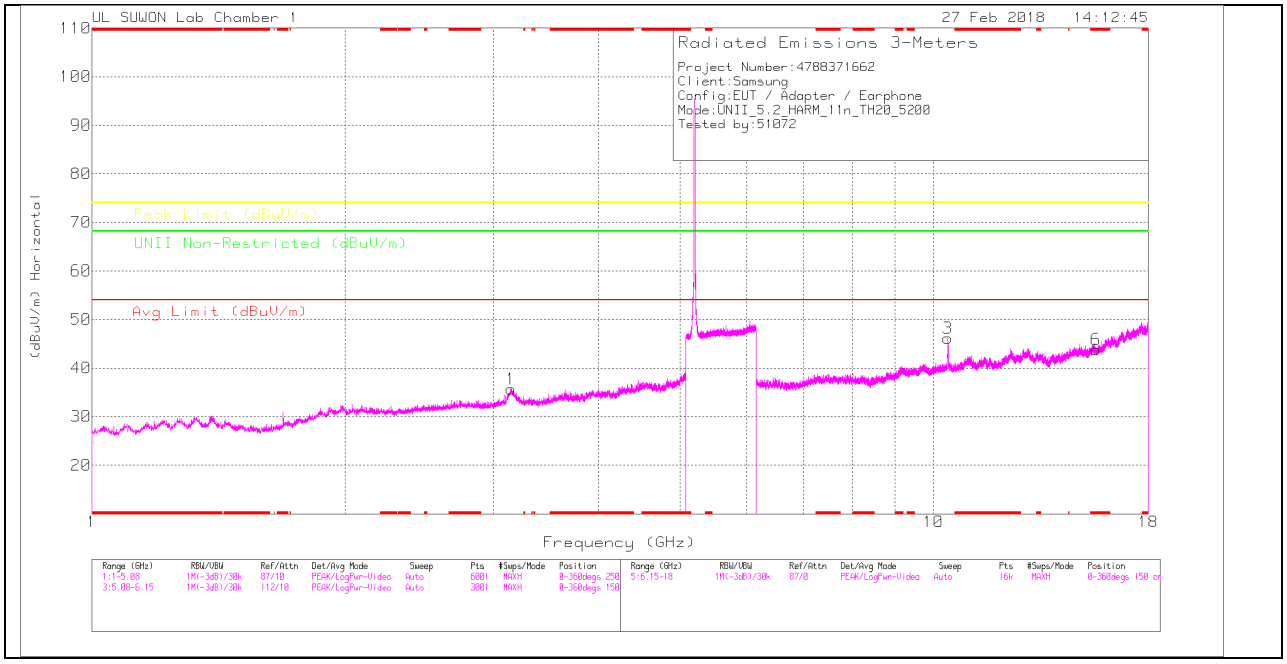
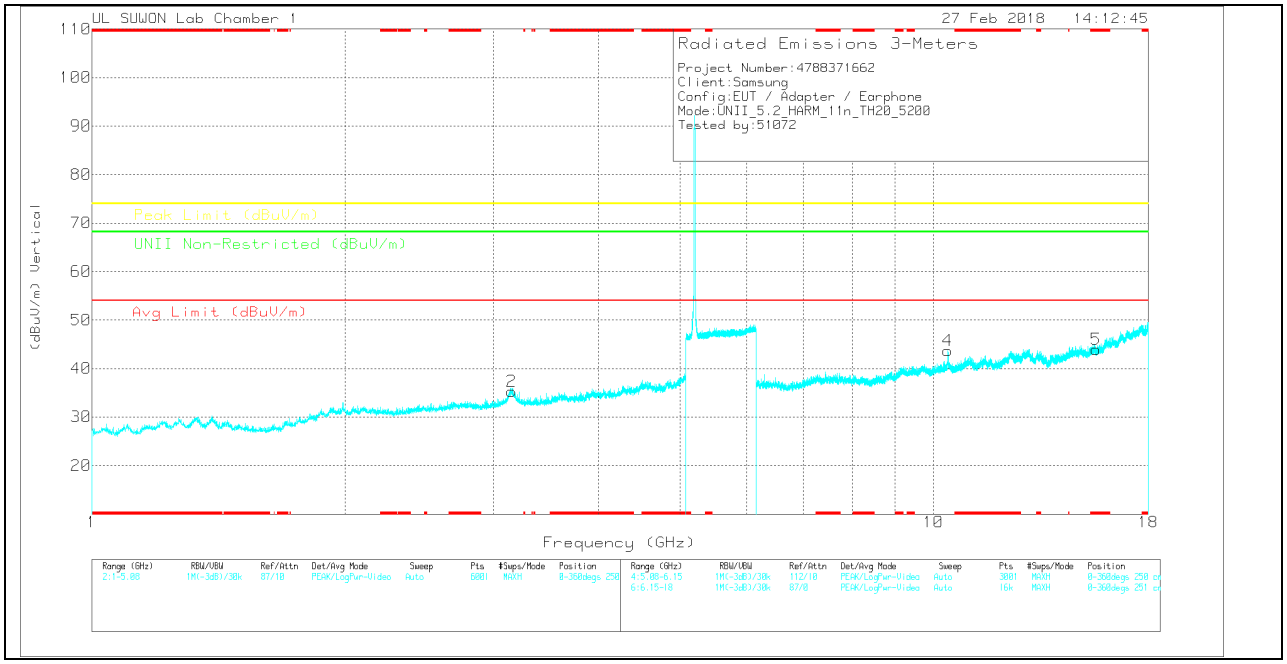
MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	20170531_3117_001 68717	5GHz_LP(dB)_170809	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.149	34.36	PK	34.8	-33.5	0	35.66	-	-	-	-	68.2	-32.54	0-360	150	H
2	3.152	34.03	PK	34.8	-33.5	0	35.33	-	-	-	-	68.2	-32.87	0-360	150	V
3	10.396	30.83	PK	37.5	-22.2	0	46.13	-	-	-	-	68.2	-22.07	0-360	250	H
6	* 15.598	25.74	PK	39.8	-21.7	0	43.84	-	-	74	-30.16	-	-	0-360	250	H
4	10.399	28.26	PK	37.5	-22.1	0	43.66	-	-	-	-	68.2	-24.54	0-360	150	V
5	* 15.599	25.93	PK	39.8	-21.8	0	43.93	-	-	74	-30.07	-	-	0-360	150	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	20170531_3117_001687 17	6GHz_HP(dB)_170809	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
10.402	39.87	PK-U	37.5	-22.1	0	55.27	-	-	-	-	68.2	-12.93	255	113	H
10.361	41.11	PK-U	37.5	-22.5	0	56.11	-	-	-	-	68.2	-12.09	250	381	H
10.401	40	PK-U	37.5	-22	0	55.5	-	-	-	-	68.2	-12.7	254	114	V
10.362	42.87	PK-U	37.5	-22.5	0	57.87	-	-	-	-	68.2	-10.33	253	382	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak

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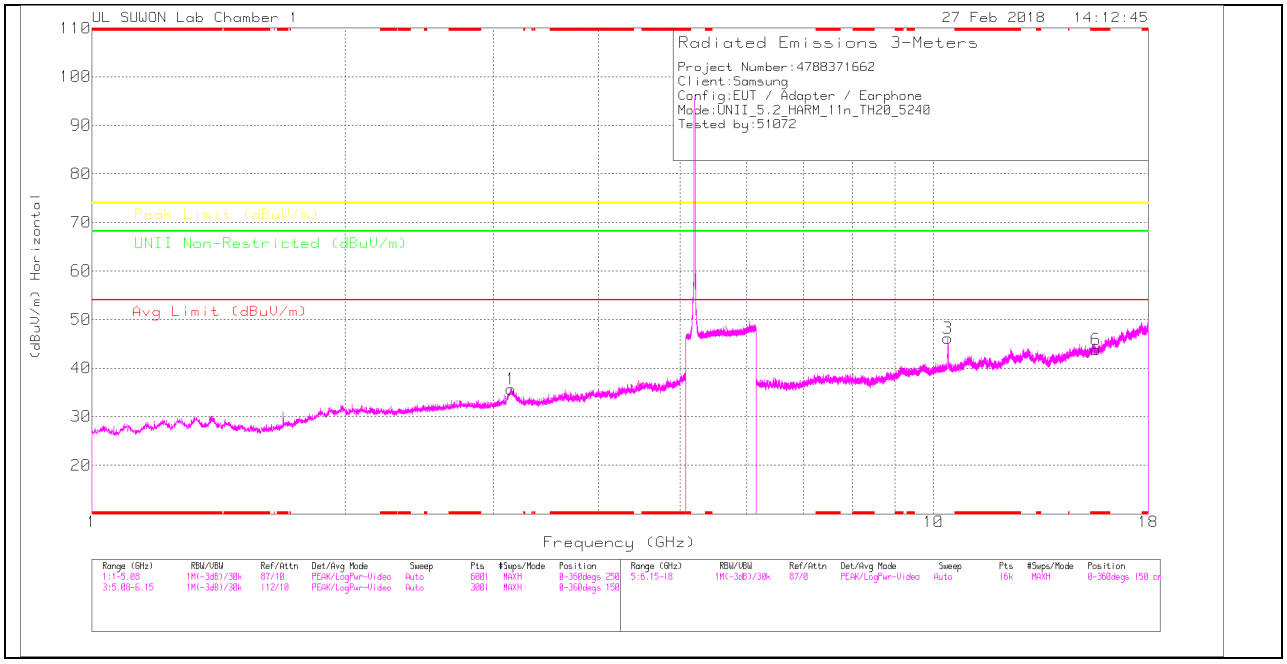
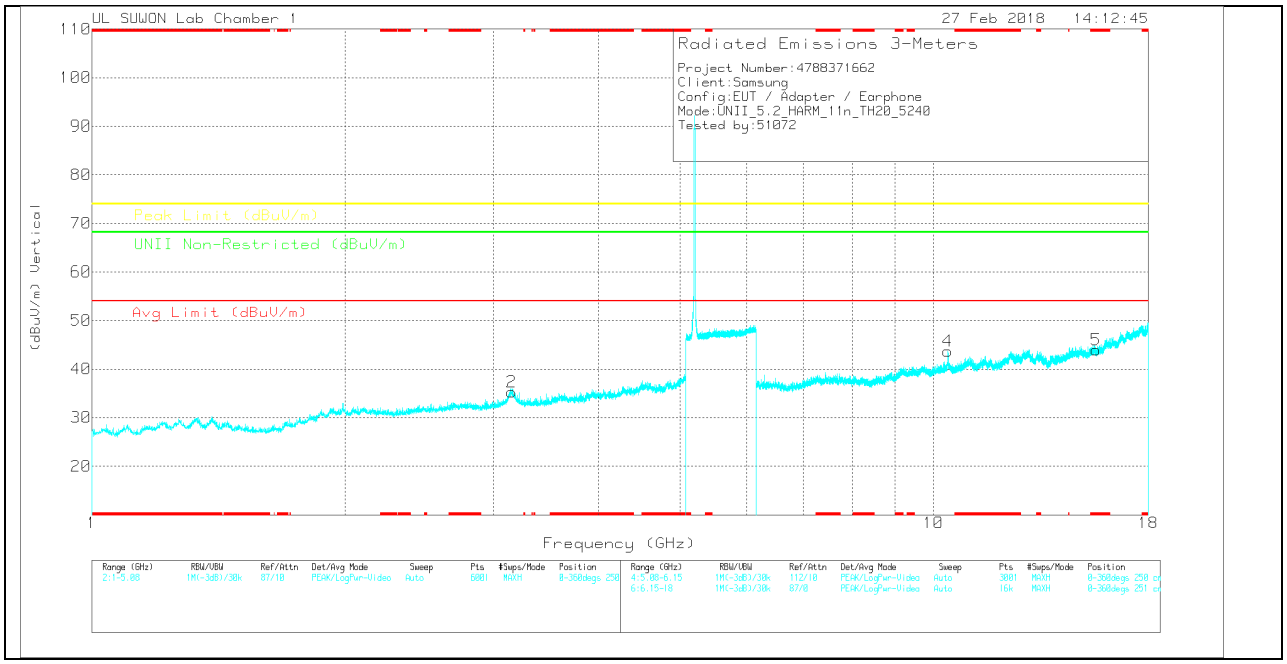
HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	20170531_3117_001 68717	5GHz_LP(dB)_170809	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.149	34.36	Avg	34.8	-33.5	0	35.66	-	-	-	-	68.2	-32.54	0-360	150	H
2	3.152	34.03	Avg	34.8	-33.5	0	35.33	-	-	-	-	68.2	-32.87	0-360	150	V
3	10.396	30.83	Avg	37.5	-22.2	0	46.13	-	-	-	-	68.2	-22.07	0-360	250	H
6	* 15.598	25.74	Avg	39.8	-21.7	0	43.84	-	-	74	-30.16	-	-	0-360	250	H
4	10.399	28.26	Avg	37.5	-22.1	0	43.66	-	-	-	-	68.2	-24.54	0-360	150	V
5	* 15.599	25.93	Avg	39.8	-21.8	0	43.93	-	-	74	-30.07	-	-	0-360	150	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	20170531_3117_001687 17	6GHz_HP(dB)_170809	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
10.402	39.87	PK-U	37.5	-22.1	0	55.27	-	-	-	-	68.2	-12.93	255	113	H
10.361	41.11	PK-U	37.5	-22.5	0	56.11	-	-	-	-	68.2	-12.09	250	381	H
10.401	40	PK-U	37.5	-22	0	55.5	-	-	-	-	68.2	-12.7	254	114	V
10.362	42.87	PK-U	37.5	-22.5	0	57.87	-	-	-	-	68.2	-10.33	253	382	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak

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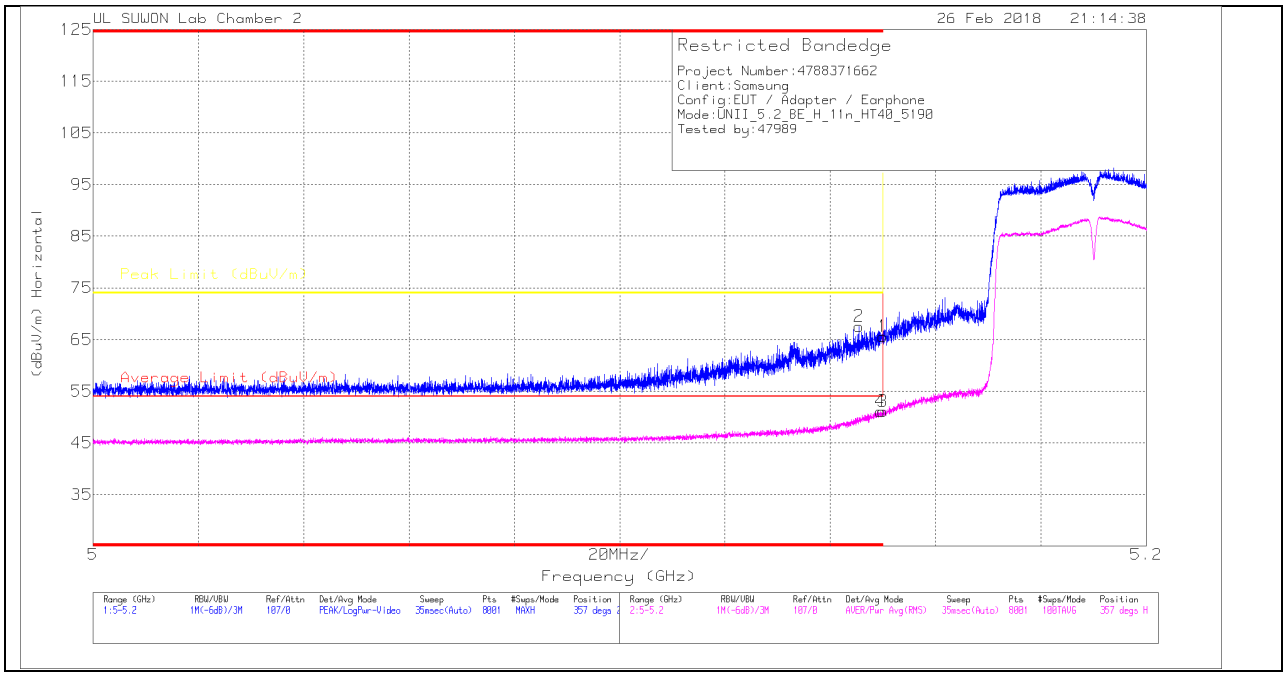
11.1.3. TX Above 1GHz 802.11n HT40 MODE IN THE 5.2GHz BAND RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	10dB[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.15	46.92	Pk	34	-15.3	0	65.62	-	-	74	-8.38	357	287	H
2	* 5.145	48.86	Pk	34	-15.3	0	67.56	-	-	74	-6.44	357	287	H
3	5.15	32.11	RMS	34	-15.3	.3	51.11	54	-2.89	-	-	357	287	H
4	* 5.149	32.12	RMS	34	-15.3	.3	51.12	54	-2.88	-	-	357	287	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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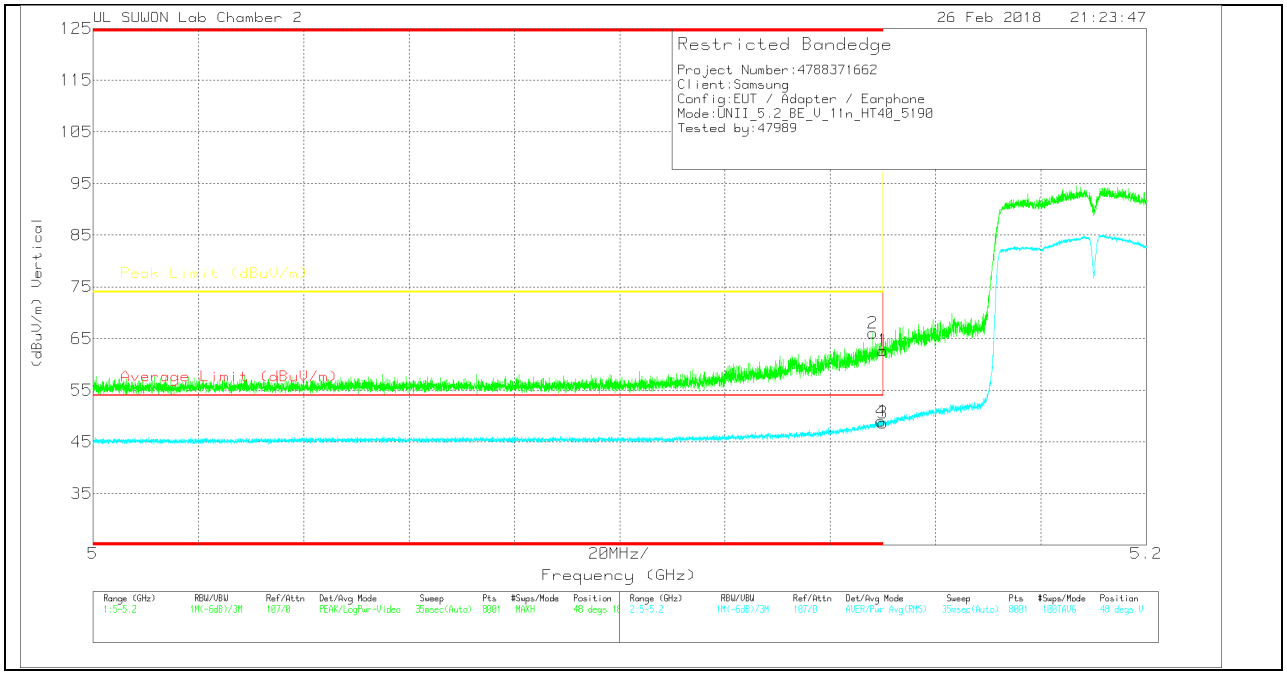
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	10dB[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.15	43.99	Pk	34	-15.3	0	62.69	-	-	74	-11.31	48	184	V
2	* 5.148	47.34	Pk	34	-15.3	0	66.04	-	-	74	-7.96	48	184	V
3	5.15	29.69	RMS	34	-15.3	.3	48.69	54	-5.31	-	-	48	184	V
4	* 5.15	30.03	RMS	34	-15.3	.3	49.03	54	-4.97	-	-	48	184	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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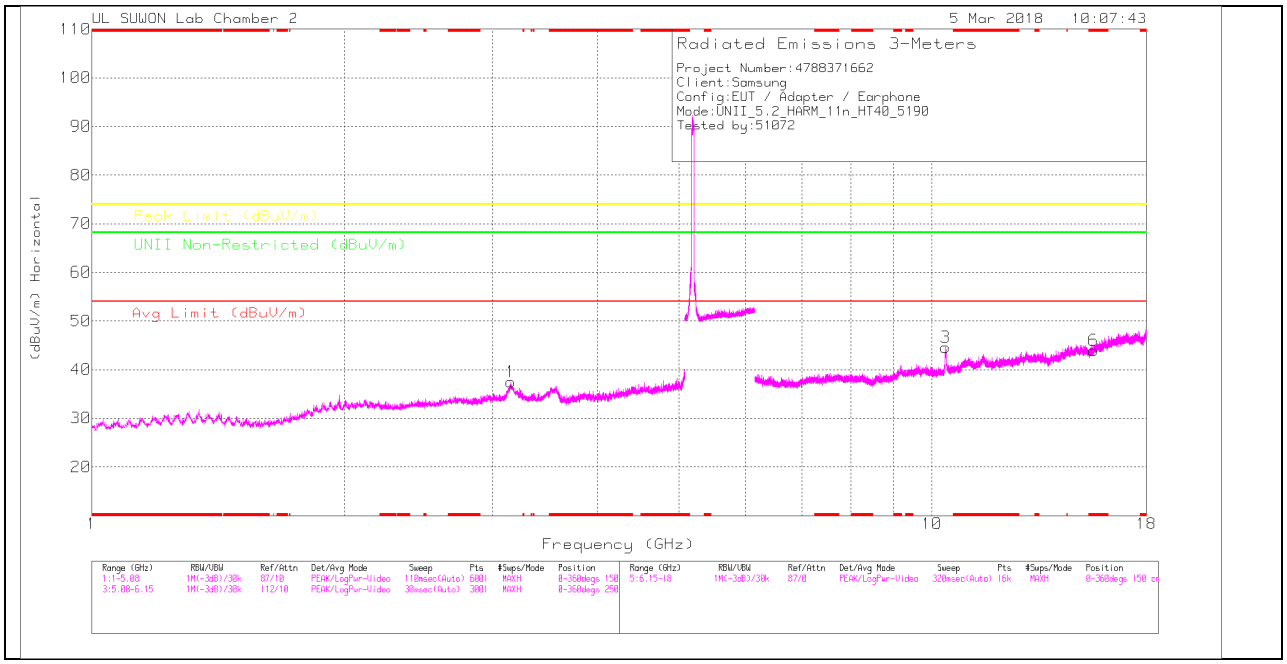
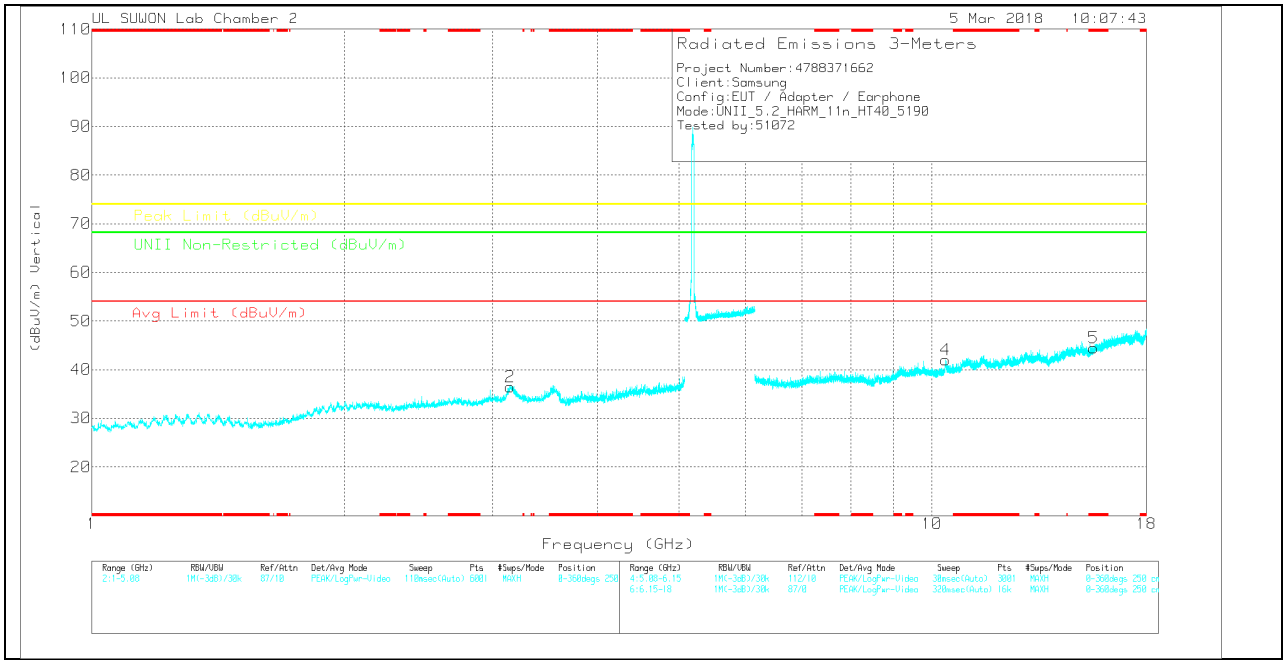
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	5GHz_LP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.154	28.7	PK	34.8	-26	0	37.5	-	-	-	-	68.2	-30.7	0-360	150	H
2	3.148	27.84	PK	34.8	-26.2	0	36.44	-	-	-	-	68.2	-31.76	0-360	250	V
3	10.381	23.58	PK	37.5	-16.5	0	44.58	-	-	-	-	68.2	-23.62	0-360	250	H
6	* 15.571	18.76	PK	39.8	-14.6	0	43.96	-	-	74	-30.04	-	-	0-360	250	H
4	10.381	21.04	PK	37.5	-16.5	0	42.04	-	-	-	-	68.2	-26.16	0-360	150	V
5	* 15.571	19.28	PK	39.8	-14.6	0	44.48	-	-	74	-29.52	-	-	0-360	250	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Avg - Video bandwidth < Resolution bandwidth

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
10.38	34.07	PK-U	37.5	-16.5	0	55.07	-	-	-	-	68.2	-13.13	79	100	H
10.38	31.46	PK-U	37.5	-16.5	0	52.46	-	-	-	-	68.2	-15.74	72	169	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak

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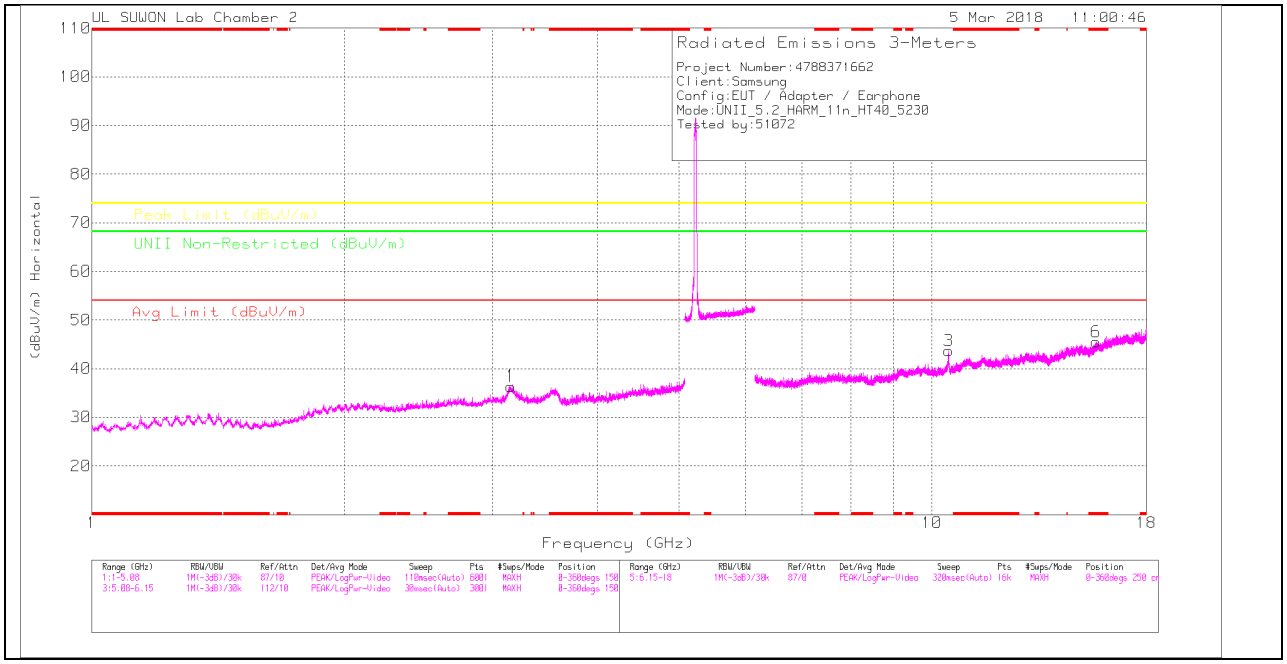
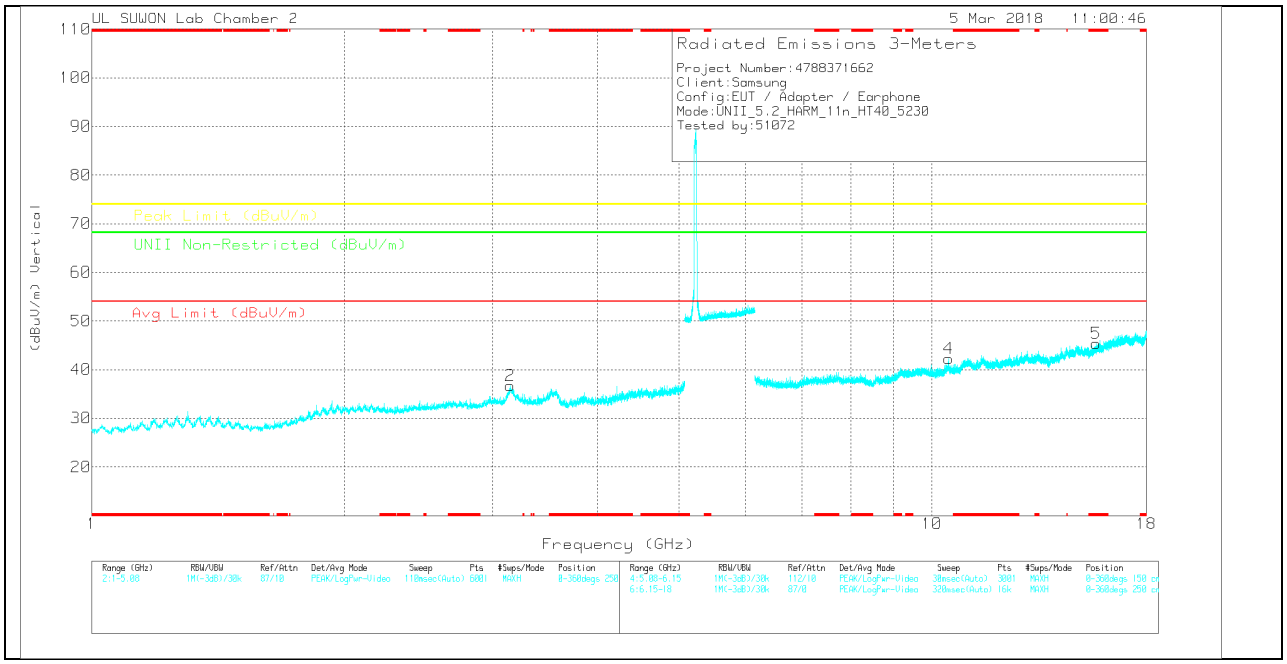
HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	5GHz_LP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.154	27.58	PK	34.8	-26	0	36.38	-	-	-	-	68.2	-31.82	0-360	250	H
2	3.147	28.1	PK	34.8	-26.2	0	36.7	-	-	-	-	68.2	-31.5	0-360	150	V
3	10.463	22.51	PK	37.5	-16.3	0	43.71	-	-	-	-	68.2	-24.49	0-360	250	H
6	* 15.69	20.36	PK	39.9	-14.7	0	45.56	-	-	74	-28.44	-	-	0-360	150	H
4	10.47	21.13	PK	37.5	-16.4	0	42.23	-	-	-	-	68.2	-25.97	0-360	150	V
5	* 15.69	20.14	PK	39.9	-14.7	0	45.34	-	-	74	-28.66	-	-	0-360	150	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Avg - Video bandwidth < Resolution bandwidth

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
10.46	33.29	PK-U	37.5	-16.3	0	54.49	-	-	-	-	68.2	-13.71	70	231	H
10.464	31.51	PK-U	37.5	-16.3	0	52.71	-	-	-	-	68.2	-15.49	72	163	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak

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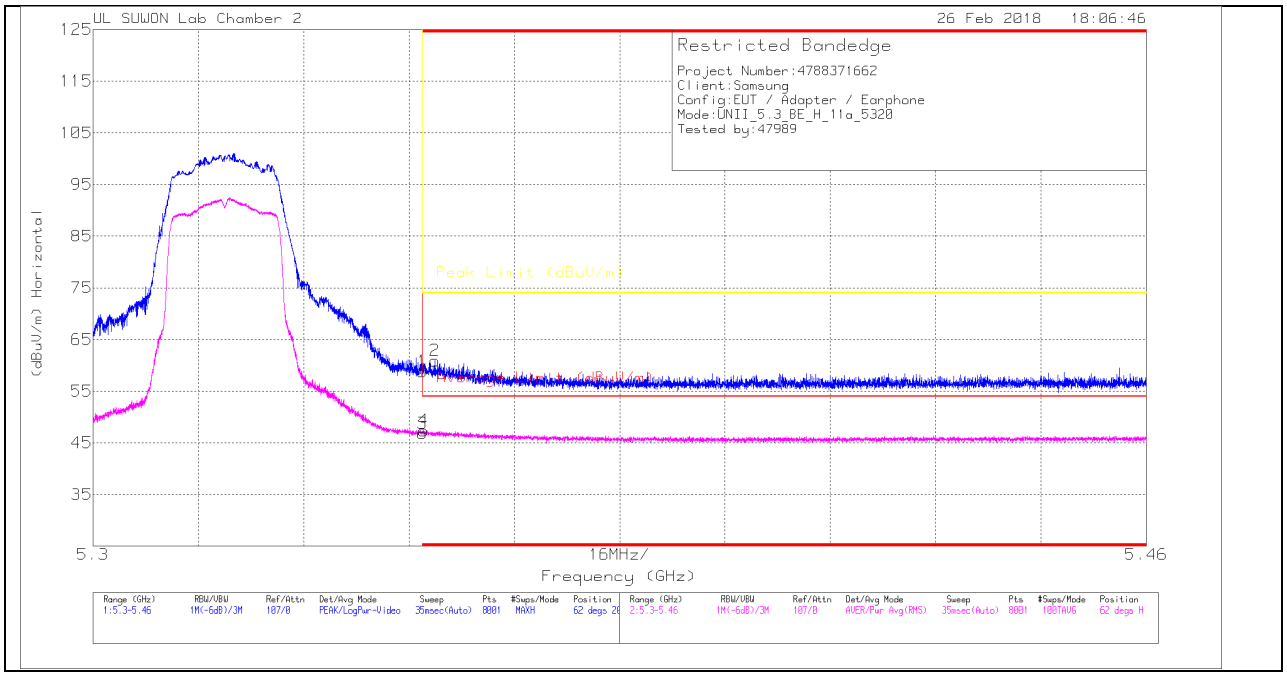
11.2. 5.3 GHz

11.2.1. TX ABOVE 1 GHz 802.11a MODE IN THE 5.3 GHz BAND AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	10dB[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35	39.84	Pk	34.2	-15.2	0	58.84	-	-	74	-15.16	62	200	H
2	* 5.352	41.91	Pk	34.2	-15.2	0	60.91	-	-	74	-13.09	62	200	H
3	* 5.35	27.67	RMS	34.2	-15.2	.14	46.81	54	-7.19	-	-	62	200	H
4	* 5.35	28.26	RMS	34.2	-15.2	.14	47.4	54	-6.6	-	-	62	200	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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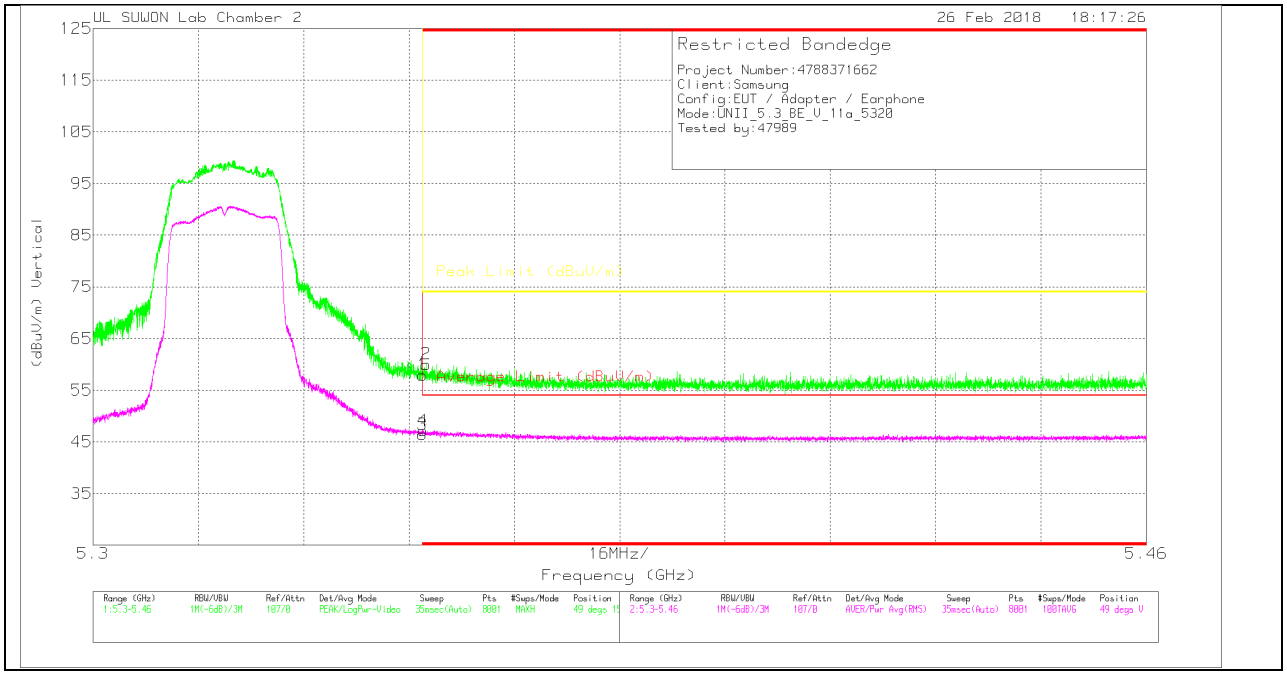
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	10dB[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35	38.96	Pk	34.2	-15.2	0	57.96	-	-	74	-16.04	49	154	V
2	* 5.351	41.04	Pk	34.2	-15.2	0	60.04	-	-	74	-13.96	49	154	V
3	* 5.35	27.32	RMS	34.2	-15.2	.14	46.46	54	-7.54	-	-	49	154	V
4	* 5.35	28.03	RMS	34.2	-15.2	.14	47.17	54	-6.83	-	-	49	154	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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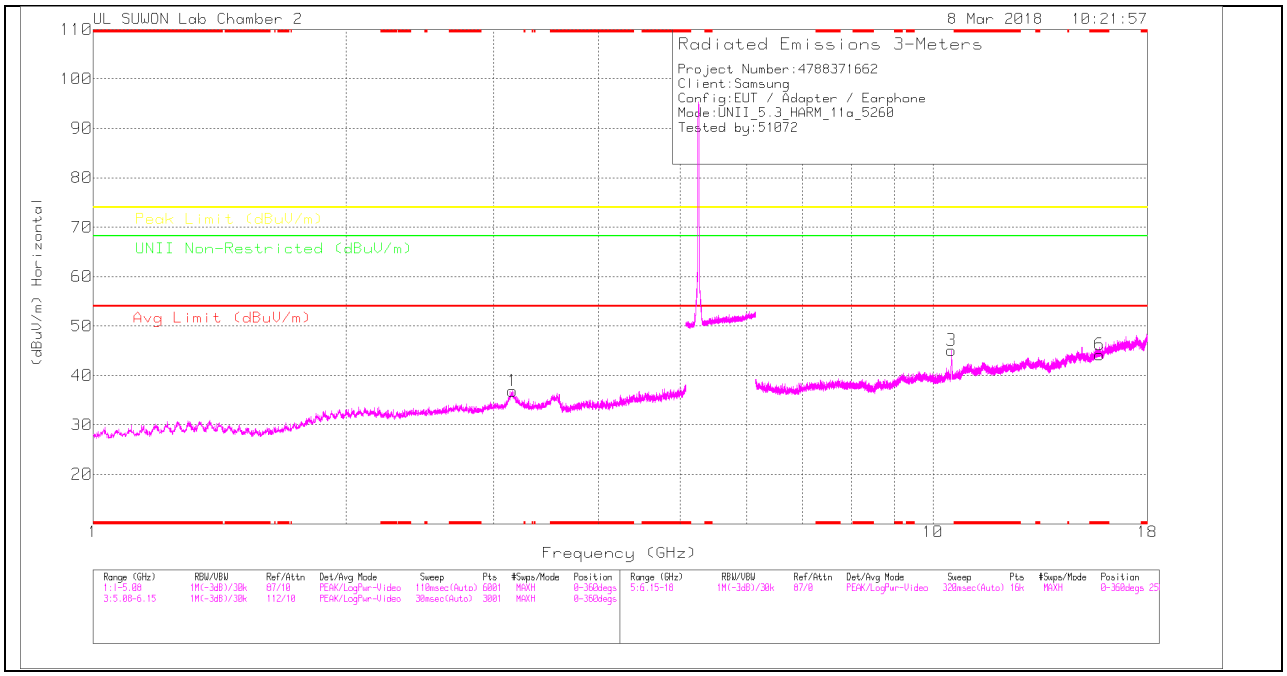
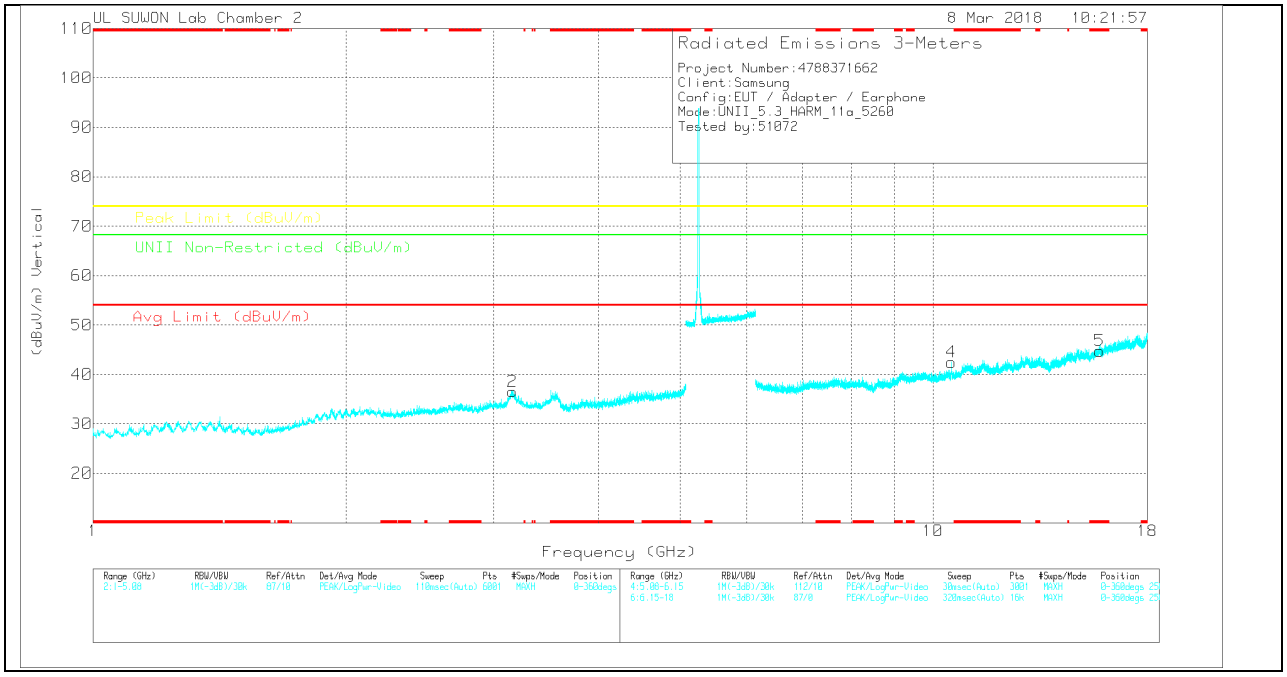
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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LOW CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	5GHz_LP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.159	28.28	PK	34.6	-26	0	36.88	-	-	-	-	68.2	-31.32	0-360	250	H
2	3.156	27.83	PK	34.7	-26	0	36.53	-	-	-	-	68.2	-31.67	0-360	250	V
3	10.522	24.19	PK	37.5	-16.6	0	45.09	-	-	-	-	68.2	-23.11	0-360	250	H
6	* 15.78	18.93	PK	40.1	-14.8	0	44.23	-	-	74	-29.77	-	-	0-360	250	H
4	10.522	21.58	PK	37.5	-16.6	0	42.48	-	-	-	-	68.2	-25.72	0-360	150	V
5	* 15.781	19.47	PK	40.1	-14.8	0	44.77	-	-	74	-29.23	-	-	0-360	150	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
10.52	37.42	PK-U	37.5	-16.6	0	58.32	-	-	-	-	68.2	-9.88	32	207	H
10.518	33.83	PK-U	37.5	-16.6	0	54.73	-	-	-	-	68.2	-13.47	72	145	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak

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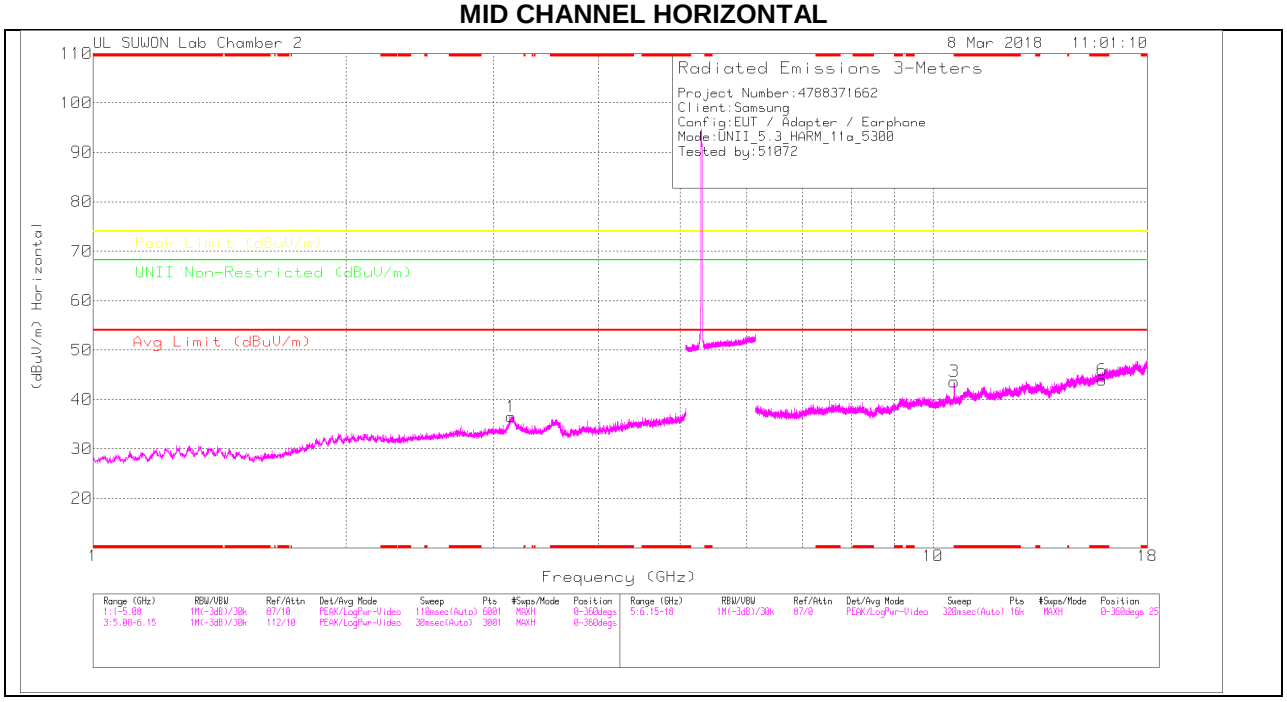
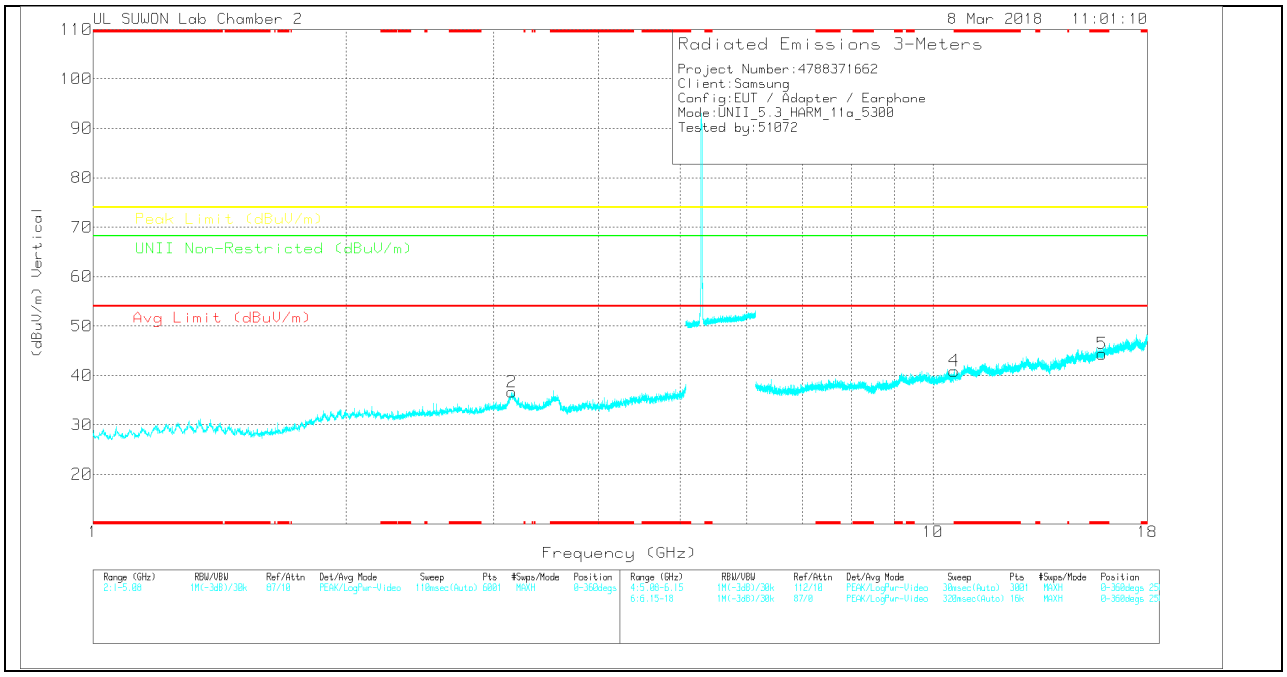
MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	5GHz_LP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.147	27.94	Avg	34.8	-26.2	0	36.54	-	-	-	-	68.2	-31.66	0-360	150	H
2	3.152	27.88	Avg	34.9	-26.1	0	36.68	-	-	-	-	68.2	-31.52	0-360	250	V
3	10.599	22.61	Avg	37.6	-16.6	0	43.61	-	-	-	-	68.2	-24.59	0-360	250	H
6	* 15.9	18.32	Avg	40.3	-14.7	0	43.92	-	-	74	-30.08	-	-	0-360	250	H
4	* 10.601	19.91	Avg	37.6	-16.6	0	40.91	-	-	74	-33.09	-	-	0-360	150	V
5	* 15.9	18.78	Avg	40.3	-14.7	0	44.38	-	-	74	-29.62	-	-	0-360	250	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 10.6	34.67	PK-U	37.6	-16.6	0	55.67	-	-	74	-18.33	-	-	333	321	H
* 10.602	21.66	ADR	37.6	-16.6	.14	42.8	54	-11.2	-	-	-	-	333	321	H
* 10.601	32.51	PK-U	37.6	-16.6	0	53.51	-	-	74	-20.49	-	-	74	155	V
* 10.601	19.41	ADR	37.6	-16.6	.14	40.55	54	-13.45	-	-	-	-	74	155	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

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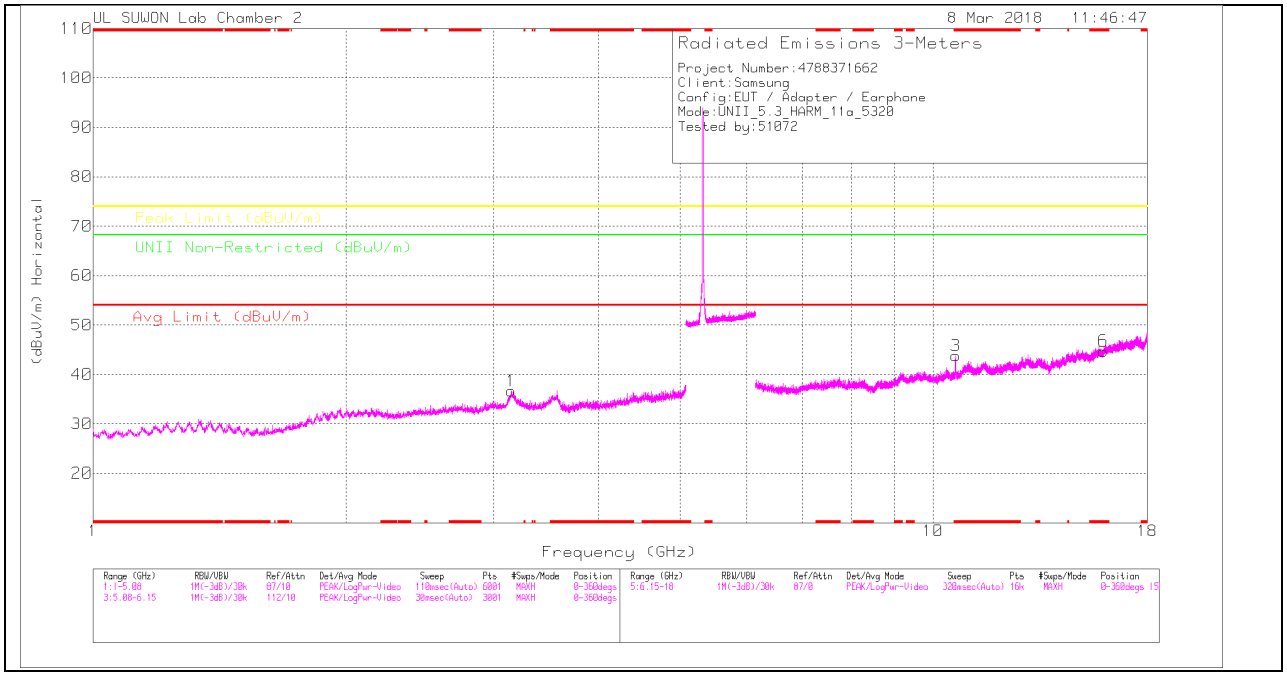
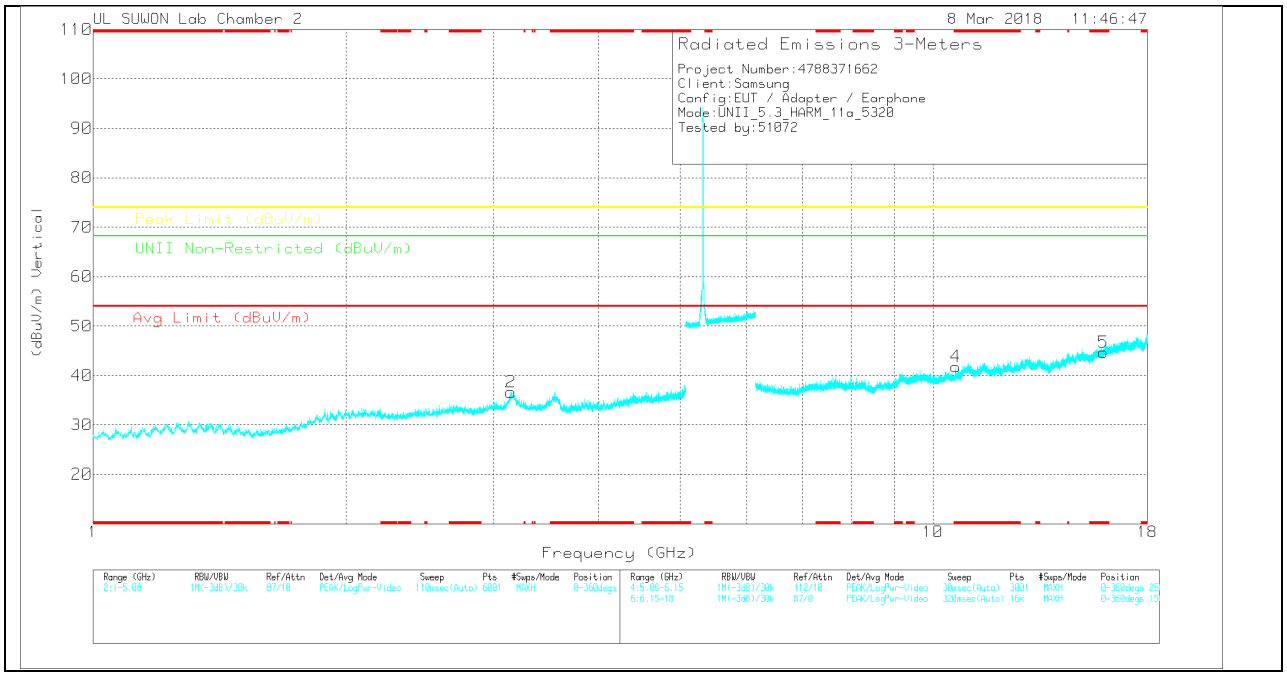
HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	5GHz_LP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.149	28.05	PK	34.8	-26.2	0	36.65	-	-	-	-	68.2	-31.55	0-360	250	H
2	3.145	28.12	PK	34.7	-26.2	0	36.62	-	-	-	-	68.2	-31.58	0-360	150	V
3	* 10.645	22.68	PK	37.7	-16.6	0	43.78	-	-	74	-30.22	-	-	0-360	250	H
6	* 15.96	18.74	PK	40.4	-14.4	0	44.74	-	-	74	-29.26	-	-	0-360	250	H
4	* 10.645	20.69	PK	37.7	-16.6	0	41.79	-	-	74	-32.21	-	-	0-360	250	V
5	* 15.96	18.66	PK	40.4	-14.4	0	44.66	-	-	74	-29.34	-	-	0-360	250	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 10.637	37.43	PK-U	37.7	-16.6	0	58.53	-	-	74	-15.47	-	-	340	235	H
* 10.641	22.19	ADR	37.7	-16.6	.14	43.43	54	-10.57	-	-	-	-	340	235	H
* 10.638	32.77	PK-U	37.7	-16.6	0	53.87	-	-	74	-20.13	-	-	73	166	V
* 10.643	19.05	ADR	37.7	-16.6	.14	40.29	54	-13.71	-	-	-	-	73	166	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

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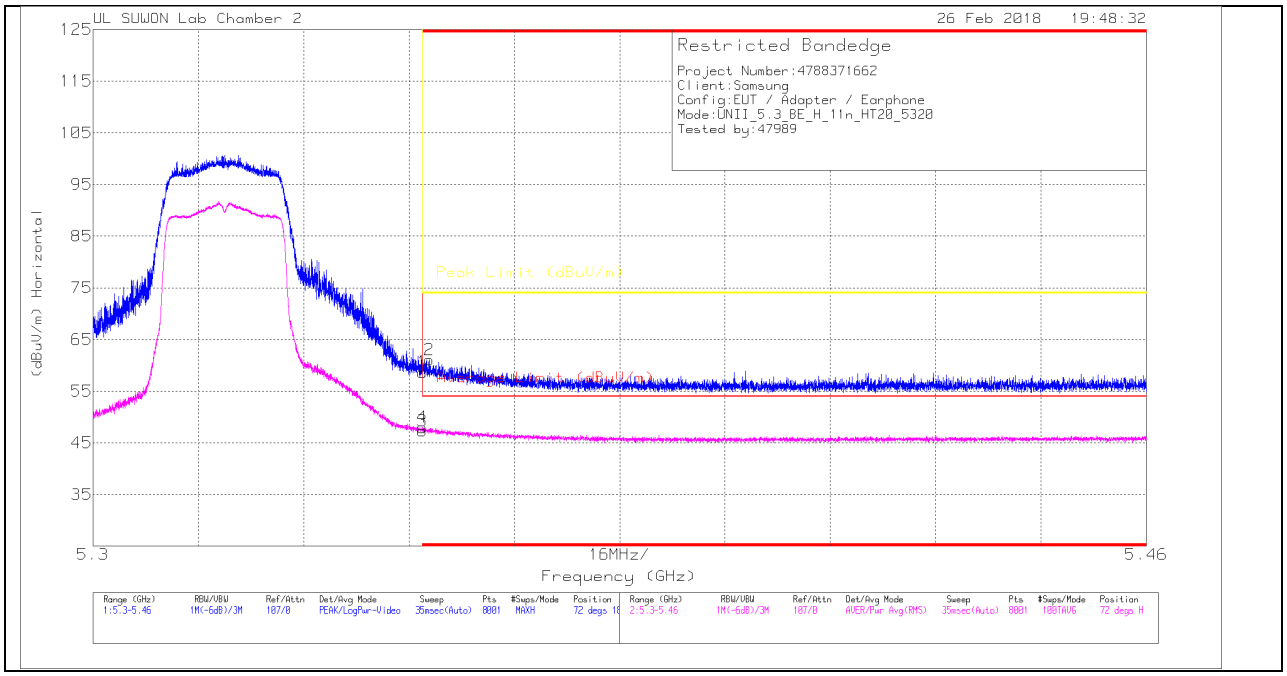
11.2.2. TX ABOVE 1GHz 802.11n HT20 MODE IN THE 5.3GHz BAND

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	10dB[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35	39.67	Pk	34.2	-15.2	0	58.67	-	-	74	-15.33	72	181	H
2	* 5.351	42.05	Pk	34.2	-15.2	0	61.05	-	-	74	-12.95	72	181	H
3	* 5.35	28.17	RMS	34.2	-15.2	.15	47.32	54	-6.68	-	-	72	181	H
4	* 5.35	28.86	RMS	34.2	-15.2	.15	48.01	54	-5.99	-	-	72	181	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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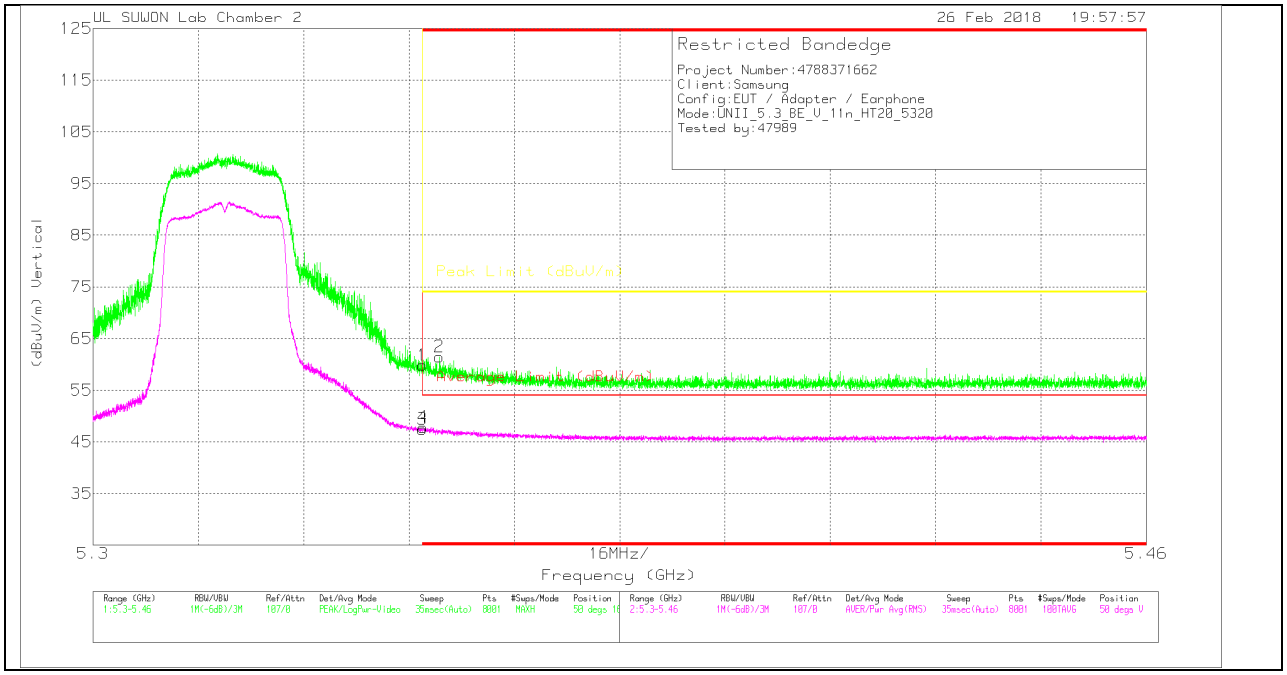
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	170531_3117[00168724]	10dB[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35	40.85	Pk	34.2	-15.2	0	59.85	-	-	74	-14.15	50	168	V
2	* 5.353	42.47	Pk	34.2	-15.2	0	61.47	-	-	74	-12.53	50	168	V
3	* 5.35	28.31	RMS	34.2	-15.2	.15	47.46	54	-6.54	-	-	50	168	V
4	* 5.35	28.67	RMS	34.2	-15.2	.15	47.82	54	-6.18	-	-	50	168	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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