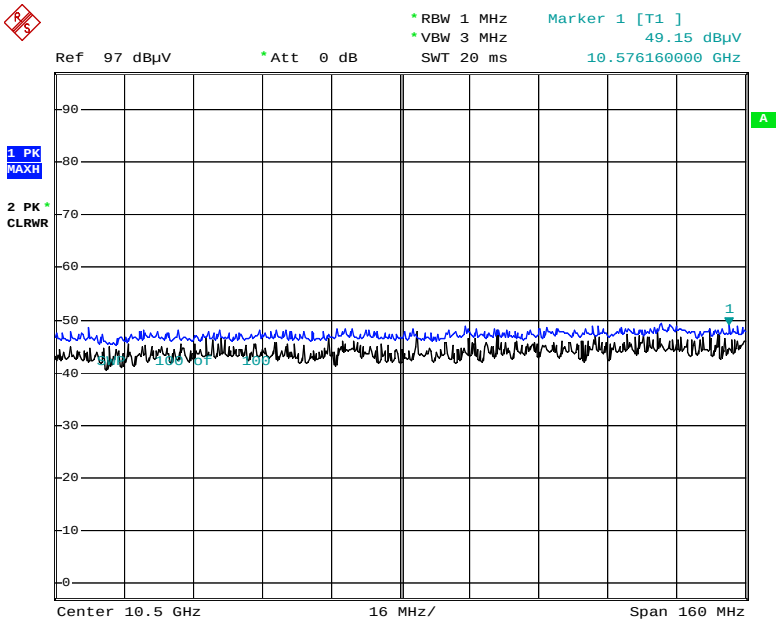
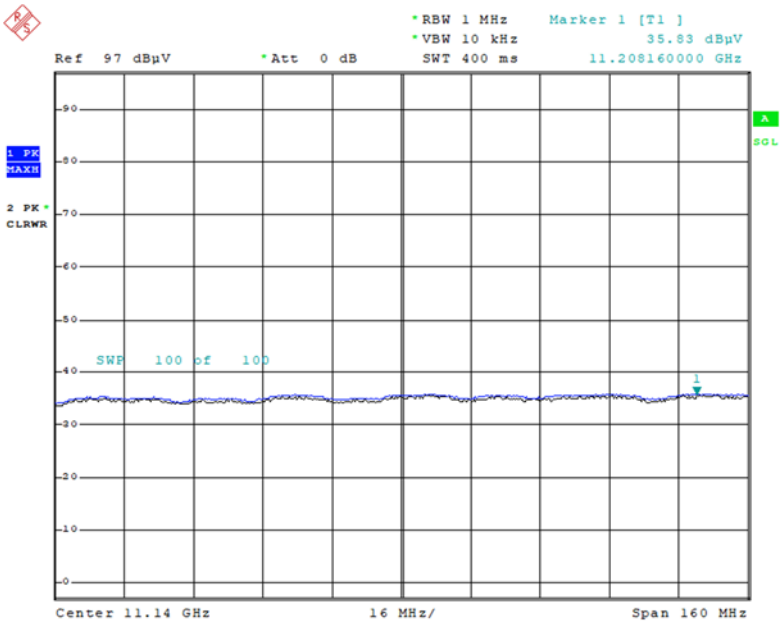
Radiated Spurious Emissions plot – Peak Reading (802.11ac_VHT160, Ch.50 2nd Harmonic, V)



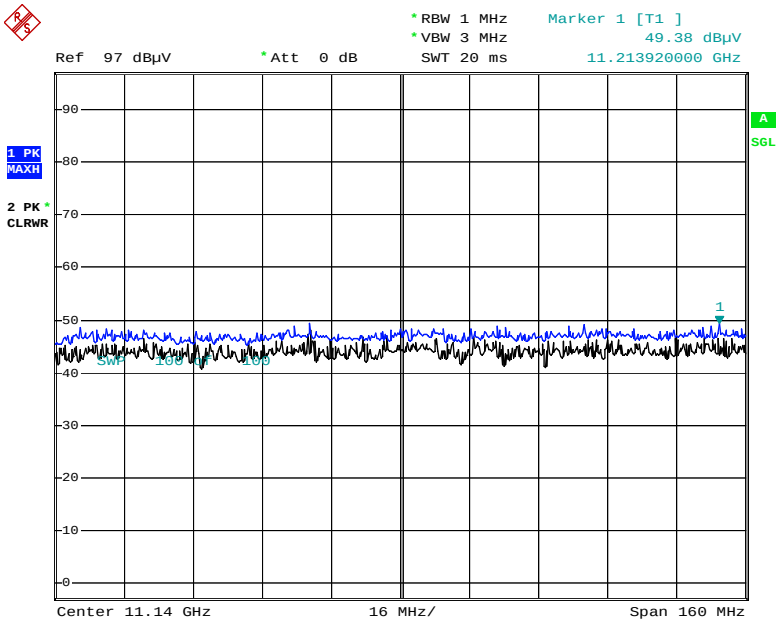
Date: 5.APR.2018 12:41:33

Radiated Spurious Emissions plot – Average Reading (802.11ac_VHT160, Ch.114 2nd Harmonic, V)



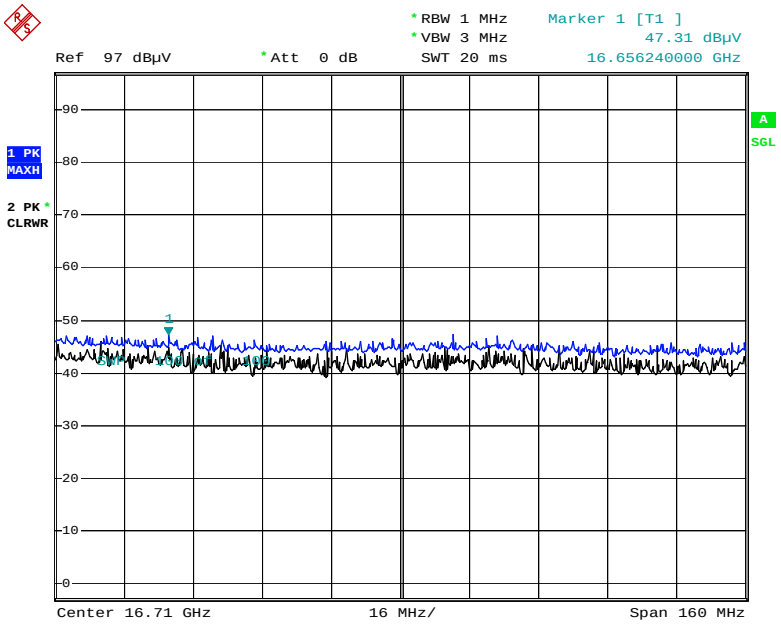
Date: 5.APR.2018 12:44:16

Radiated Spurious Emissions plot – Peak Reading (802.11ac_VHT160, Ch.114 2nd Harmonic, V)



Date: 5.APR.2018 12:46:57

Radiated Spurious Emissions plot –Peak Reading (802.11ac_VHT160, Ch.114 3rd Harmonic, V)



Date: 5.APR.2018 12:44:59

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

9.6.2 RADIATED RESTRICTED BAND EDGE MEASUREMENTS

Test Requirements and limit, §15.247(d) §15.205, §15.209

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)).

Band :	UNII 1
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5180 MHz
Channel No.	36 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5150	53.48	9.88	H	63.36	73.98	10.62	PK
5150	41.27	9.88	H	51.15	53.98	2.83	AV
5150	54.64	9.88	V	64.52	73.98	9.46	PK
5150	41.92	9.88	V	51.8	53.98	2.18	AV

Band :	UNII 1
Operation Mode:	802.11 n_HT20
Transfer MCS Index:	0
Operating Frequency	5180 MHz
Channel No.	36 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5150	57.78	9.88	H	67.66	73.98	6.32	PK
5150	40.59	9.88	H	50.47	53.98	3.51	AV
5150	57.13	9.88	V	67.01	73.98	6.97	PK
5150	41.91	9.88	V	51.79	53.98	2.19	AV

Band :	UNII 1
Operation Mode:	802.11 ac_VHT20
Transfer MCS Index:	0
Operating Frequency	5180 MHz
Channel No.	36 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5150	56.91	9.88	H	66.79	73.98	7.19	PK
5150	41.84	9.88	H	51.72	53.98	2.26	AV
5150	57.62	9.88	V	67.5	73.98	6.48	PK
5150	42.10	9.88	V	51.98	53.98	2.00	AV

Band :	UNII 1
Operation Mode:	802.11 n_HT40
Transfer MCS Index:	0
Operating Frequency	5190 MHz
Channel No.	38 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5150	55.71	9.88	H	65.59	73.98	8.39	PK
5150	41.50	9.88	H	51.38	53.98	2.60	AV
5150	56.57	9.88	V	66.45	73.98	7.53	PK
5150	42.00	9.88	V	51.88	53.98	2.10	AV

Band :	UNII 1
Operation Mode:	802.11 ac_VHT40
Transfer MCS Index:	0
Operating Frequency	5190 MHz
Channel No.	38 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5150	53.12	9.88	H	63.00	73.98	10.98	PK
5150	40.84	9.88	H	50.72	53.98	3.26	AV
5150	54.58	9.88	V	64.46	73.98	9.52	PK
5150	41.78	9.88	V	51.66	53.98	2.32	AV

Band :	UNII 1
Operation Mode:	802.11 ac_VHT80
Transfer MCS Index:	0
Operating Frequency	5210 MHz
Channel No.	42 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5150	59.81	9.88	H	69.69	73.98	4.29	PK
5150	40.49	9.88	H	50.37	53.98	3.61	AV
5150	60.20	9.88	V	70.08	73.98	3.90	PK
5150	41.94	9.88	V	51.82	53.98	2.16	AV

Band :	UNII 2A
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5320 MHz
Channel No.	64 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5350	60.37	9.39	H	69.76	73.98	4.22	PK
5350	41.58	9.39	H	50.97	53.98	3.01	AV
5350	61.13	9.39	V	70.52	73.98	3.46	PK
5350	42.17	9.39	V	51.56	53.98	2.42	AV

Band :	UNII 2A
Operation Mode:	802.11 n_HT20
Transfer MCS Index:	0
Operating Frequency	5320 MHz
Channel No.	64 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5350	60.86	9.39	H	70.25	73.98	3.73	PK
5350	40.92	9.39	H	50.31	53.98	3.67	AV
5350	61.86	9.39	V	71.25	73.98	2.73	PK
5350	41.82	9.39	V	51.21	53.98	2.77	AV

Band :	UNII 2A
Operation Mode:	802.11 ac_VHT20
Transfer MCS Index:	0
Operating Frequency	5320 MHz
Channel No.	64 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5350	55.78	9.39	H	65.17	73.98	8.81	PK
5350	40.92	9.39	H	50.31	53.98	3.67	AV
5350	56.60	9.39	V	65.99	73.98	7.99	PK
5350	41.90	9.39	V	51.29	53.98	2.69	AV

Band :	UNII 2A
Operation Mode:	802.11 n_HT40
Transfer MCS Index:	0
Operating Frequency	5310 MHz
Channel No.	62 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5350	57.21	9.39	H	66.60	73.98	7.38	PK
5350	41.86	9.39	H	51.25	53.98	2.73	AV
5350	58.25	9.39	V	67.64	73.98	6.34	PK
5350	42.20	9.39	V	51.59	53.98	2.39	AV

Band :	UNII 2A
Operation Mode:	802.11 ac_VHT40
Transfer MCS Index:	0
Operating Frequency	5310 MHz
Channel No.	62 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5350	57.79	9.39	H	67.18	73.98	6.80	PK
5350	41.28	9.39	H	50.67	53.98	3.31	AV
5350	58.89	9.39	V	68.28	73.98	5.70	PK
5350	42.35	9.39	V	51.74	53.98	2.24	AV

Band :	UNII 2A
Operation Mode:	802.11 ac_VHT80
Transfer MCS Index:	0
Operating Frequency	5290 MHz
Channel No.	58 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5350	58.46	9.39	H	67.85	73.98	6.13	PK
5350	42.00	9.39	H	51.39	53.98	2.59	AV
5350	59.36	9.39	V	68.75	73.98	5.23	PK
5350	42.56	9.39	V	51.95	53.98	2.03	AV

Band :	UNII 2C
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5500 MHz
Channel No.	100 Ch

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5460	53.16	9.62	H	62.78	73.98	11.20	PK
5460	41.55	9.62	H	51.17	53.98	2.81	AV
5470	52.49	10.20	H	62.69	68.20	5.51	PK
5460	54.70	9.62	V	64.32	73.98	9.66	PK
5428	42.08	9.62	V	51.7	53.98	2.28	AV
5470	53.15	10.20	V	63.35	68.20	4.85	PK

Band :	UNII 2C
Operation Mode:	802.11 n_HT20
Transfer MCS Index:	0
Operating Frequency	5500 MHz
Channel No.	100 Ch

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5460	54.76	9.62	H	64.38	73.98	9.60	PK
5460	41.57	9.62	H	51.19	53.98	2.79	AV
5470	52.37	10.20	H	62.57	68.20	5.63	PK
5460	55.54	9.62	V	65.16	73.98	8.82	PK
5460	42.20	9.62	V	51.82	53.98	2.16	AV
5470	53.45	10.20	V	63.65	68.20	4.55	PK

Band :	UNII 2C
Operation Mode:	802.11 ac_VHT20
Transfer MCS Index:	0
Operating Frequency	5500 MHz
Channel No.	100 Ch

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5460	53.81	9.62	H	63.43	73.98	10.55	PK
5460	41.76	9.62	H	51.38	53.98	2.60	AV
5470	53.26	10.20	H	63.46	68.20	4.74	PK
5460	54.59	9.62	V	64.21	73.98	9.77	PK
5460	42.27	9.62	V	51.89	53.98	2.09	AV
5470	54.36	10.20	V	64.56	68.20	3.64	PK

Band :	UNII 2C
Operation Mode:	802.11 n_HT40
Transfer MCS Index:	0
Operating Frequency	5510 MHz
Channel No.	102 Ch

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5460	55.74	9.62	H	65.36	73.98	8.62	PK
5460	41.89	9.62	H	51.51	53.98	2.47	AV
5470	52.68	10.20	H	62.88	68.20	5.32	PK
5460	56.31	9.62	V	65.93	73.98	8.05	PK
5460	42.30	9.62	V	51.92	53.98	2.06	AV
5470	53.41	10.20	V	63.61	68.20	4.59	PK

Band :	UNII 2C
Operation Mode:	802.11 ac_VHT40
Transfer MCS Index:	0
Operating Frequency	5510 MHz
Channel No.	102 Ch

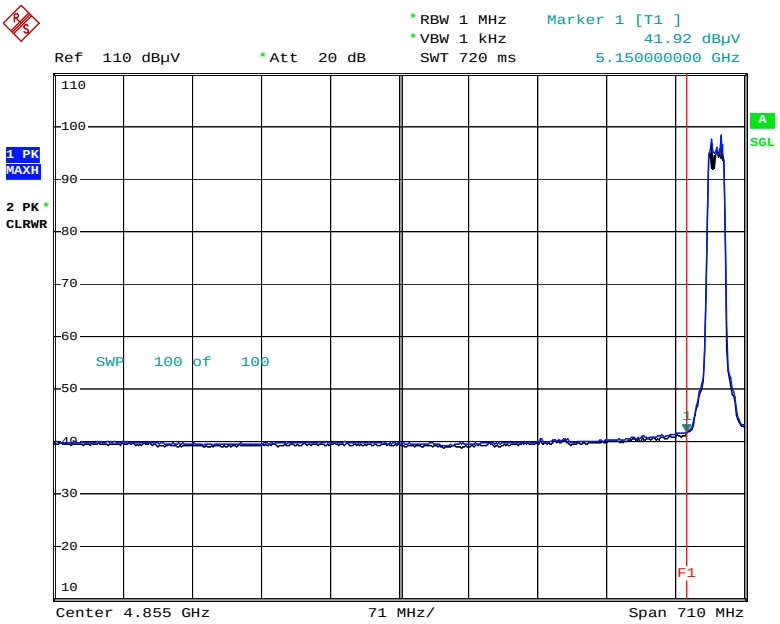
Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5460	53.49	9.62	H	63.11	73.98	10.87	PK
5460	41.08	9.62	H	50.7	53.98	3.28	AV
5470	52.99	10.20	H	63.19	68.20	5.01	PK
5460	54.23	9.62	V	63.85	73.98	10.13	PK
5460	41.99	9.62	V	51.61	53.98	2.37	AV
5470	53.86	10.20	V	64.06	68.20	4.14	PK

Band :	UNII 2C
Operation Mode:	802.11 ac_VHT80
Transfer MCS Index:	0
Operating Frequency	5530 MHz
Channel No.	106 Ch

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. +D.F. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
5460	57.86	9.62	H	67.48	73.98	6.50	PK
5460	41.57	9.62	H	51.19	53.98	2.79	AV
5470	53.74	10.20	H	63.94	68.20	4.26	PK
5460	58.90	9.62	V	68.52	73.98	5.46	PK
5460	42.03	9.62	V	51.65	53.98	2.33	AV
5470	54.42	10.20	V	64.62	68.20	3.58	PK

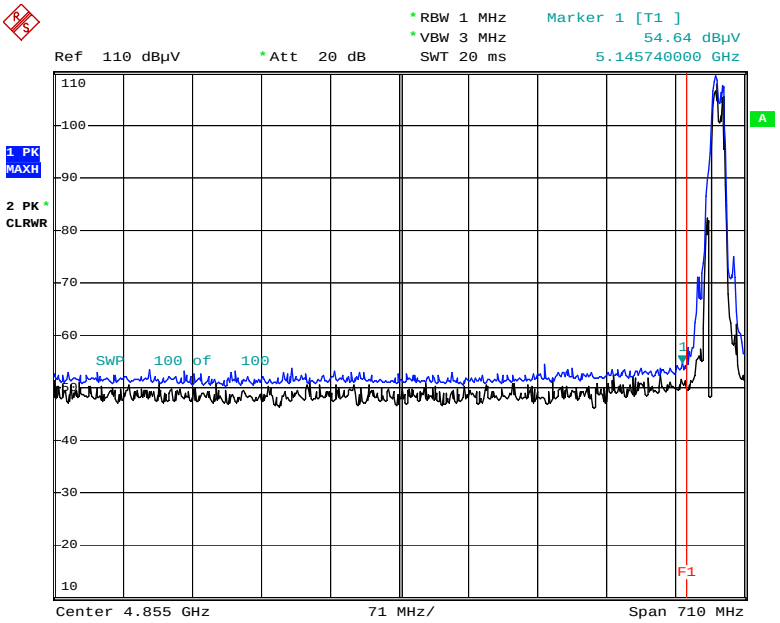
▣ RESULT PLOTS

Radiated Restricted Band Edges plot – Average Reading (802.11a, Ch.36, Ant 90-V)



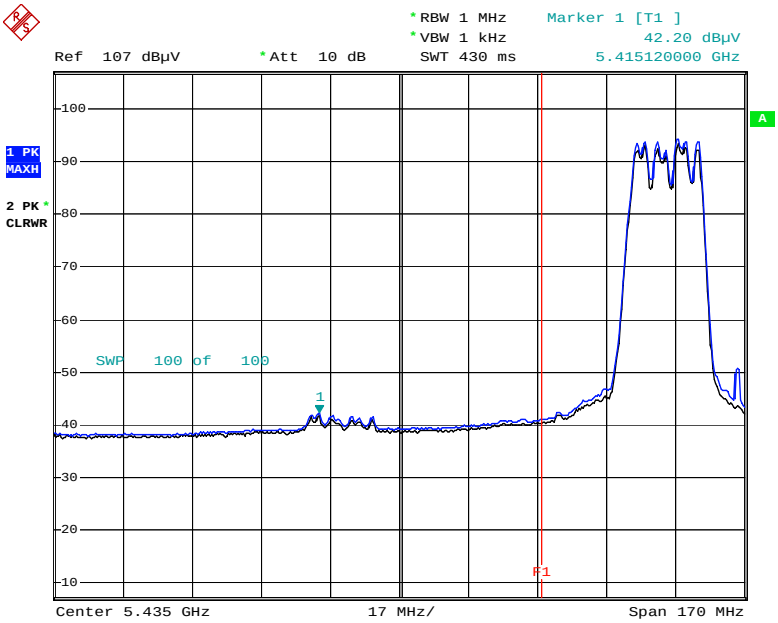
Date: 5.APR.2018 03:13:48

Radiated Restricted Band Edges plot – Peak Reading (802.11a, Ch.36 Ant 90-V)



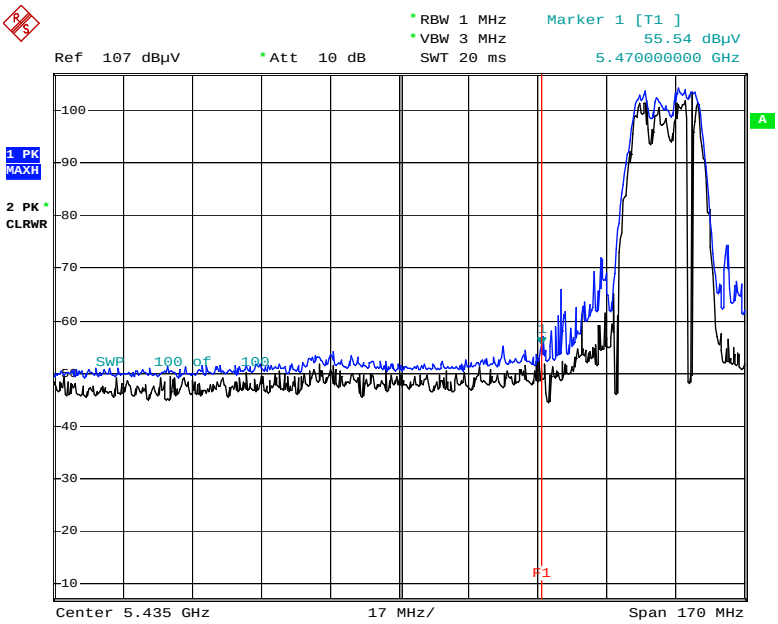
Date: 5.APR.2018 03:22:15

Radiated Restricted Band Edges plot – Average Reading (802.11n_HT20, Ch.100, Ant 90-V)



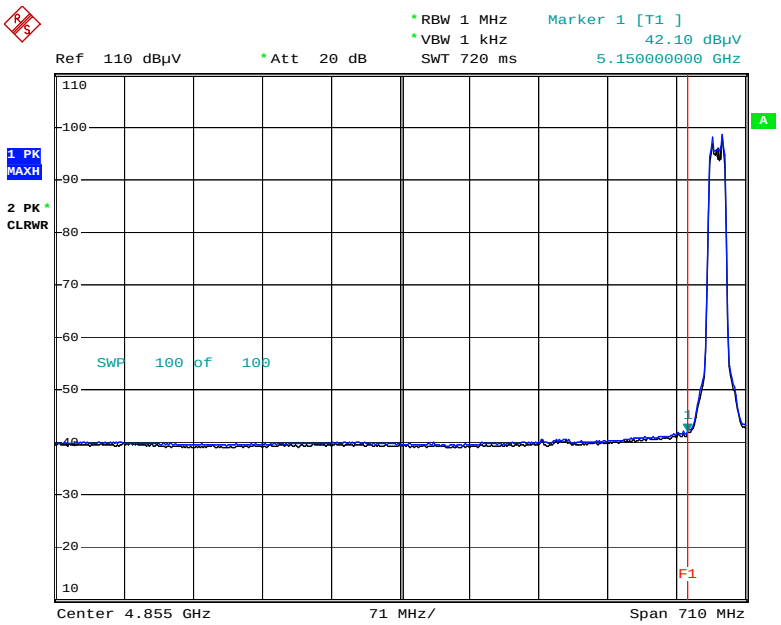
Date: 5.APR.2018 03:41:31

Radiated Restricted Band Edges plot – Peak Reading (802.11n_HT20, Ch.100, Ant 90-V)



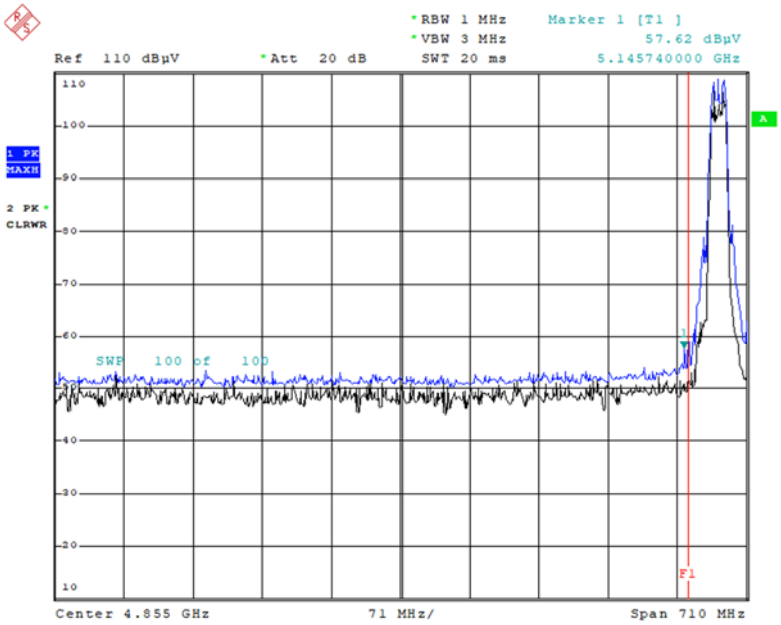
Date: 5.APR.2018 03:42:24

Radiated Restricted Band Edges plot – Average Reading (802.11ac_VHT20, Ch.36, Ant 90-V)



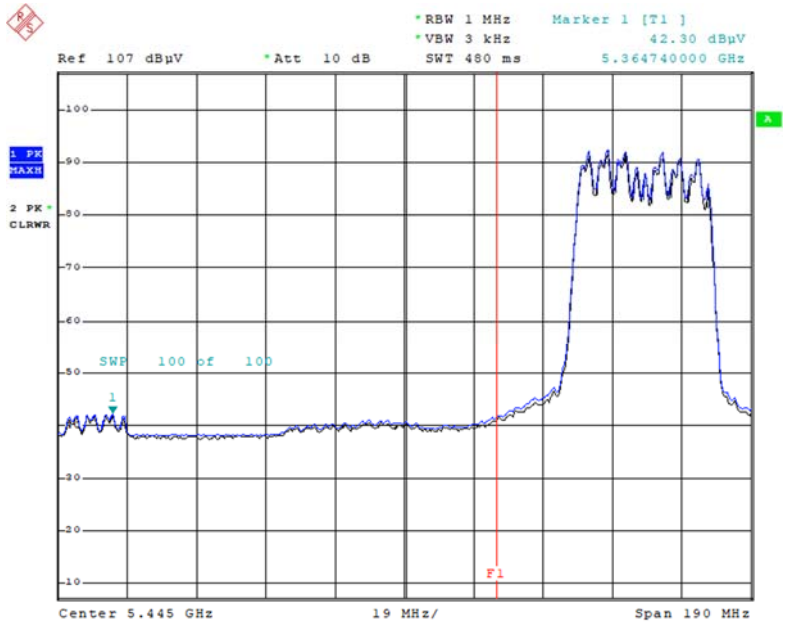
Date: 5.APR.2018 03:20:46

Radiated Restricted Band Edges plot – Peak Reading (802.11ac_VHT20, Ch.36, Ant 90-V)

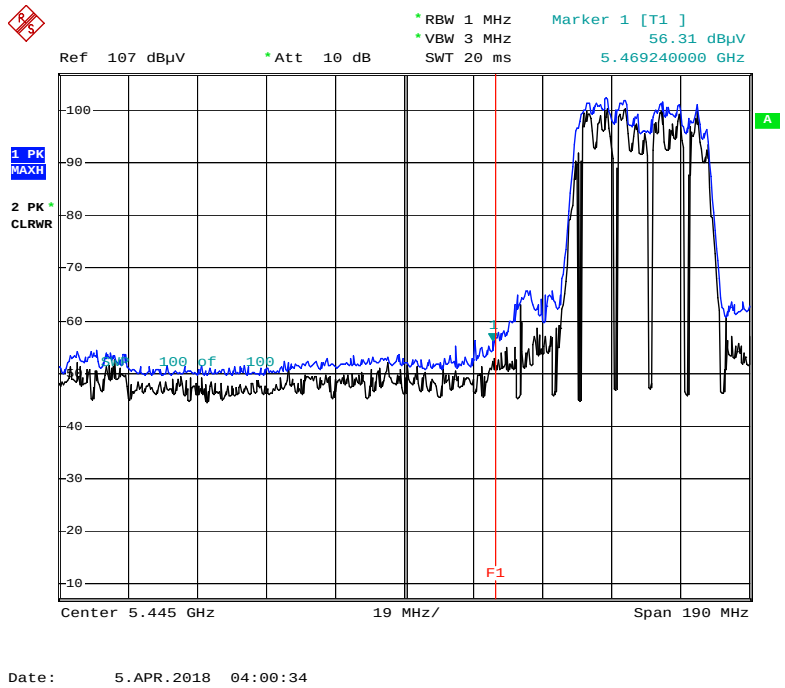


Date: 5.APR.2018 03:21:23

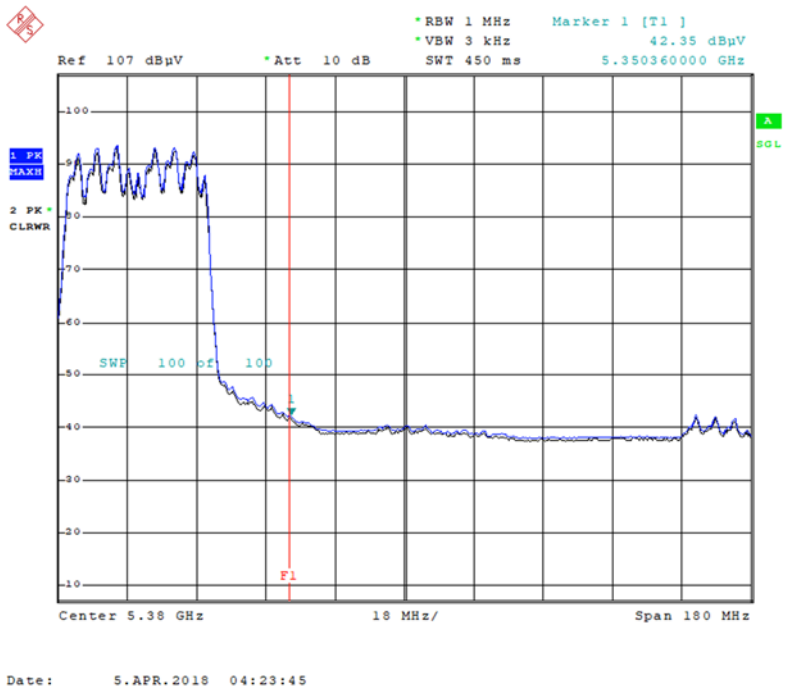
Radiated Restricted Band Edges plot – Average Reading (802.11n_HT40, Ch.102, Ant 90-V)



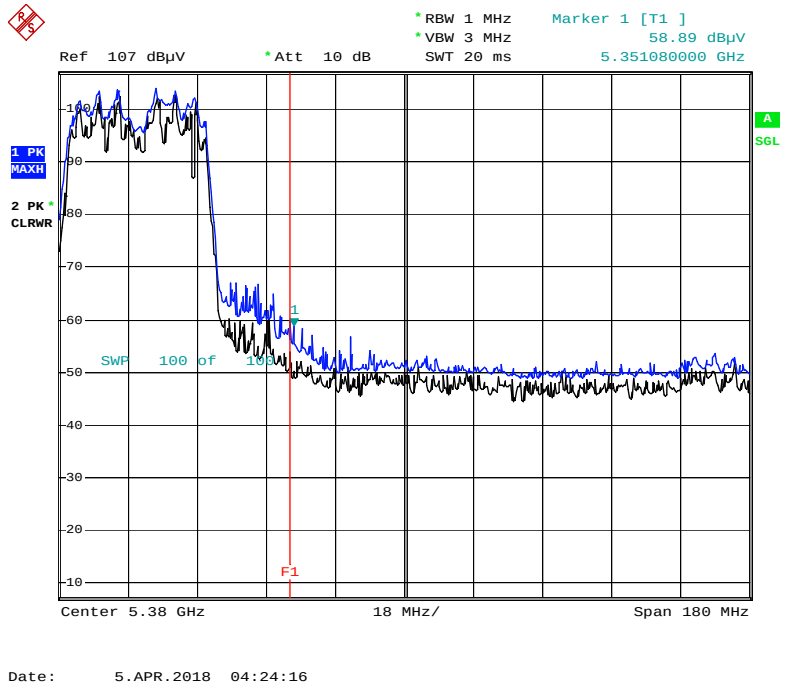
Radiated Restricted Band Edges plot – Peak Reading (802.11n_HT40, Ch.102, Ant 90-V)



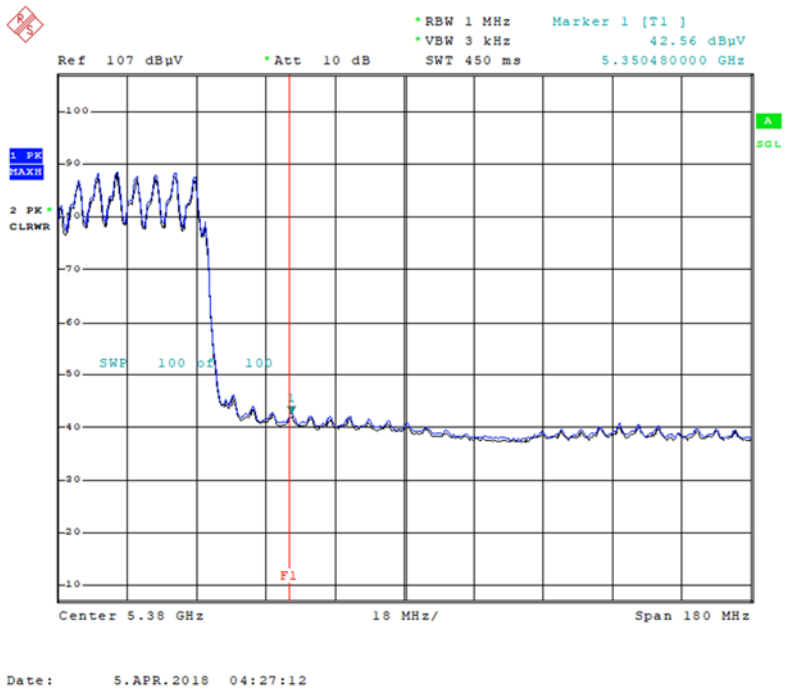
Radiated Restricted Band Edges plot – Average Reading (802.11ac_VHT40, Ch.62, Ant 90-V)



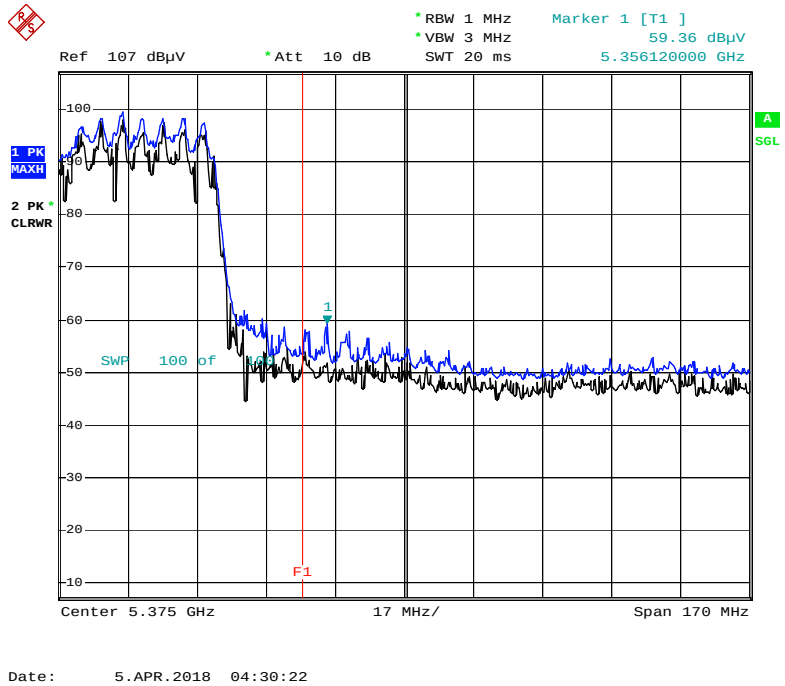
Radiated Restricted Band Edges plot – Peak Reading (802.11ac_VHT40, Ch.62, Ant 90-V)



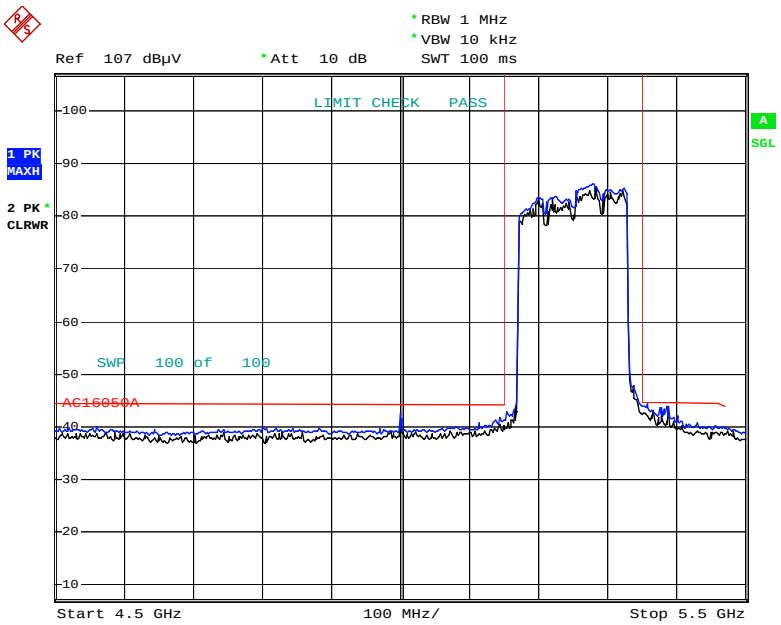
Radiated Restricted Band Edges plot – Average Reading (802.11ac_VHT80, Ch.58, Ant 90-V)



Radiated Restricted Band Edges plot – Peak Reading (802.11ac_VHT80, Ch.58, Ant 90-V)

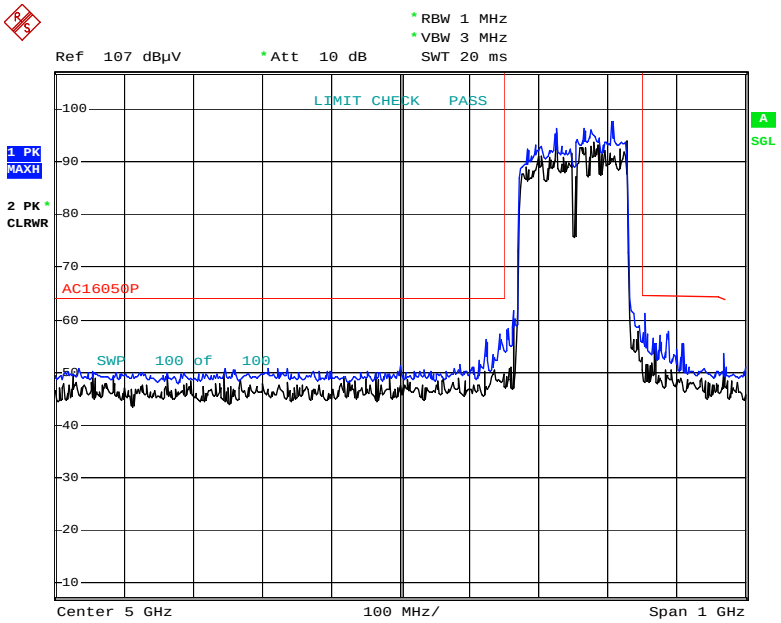


Radiated Restricted Band Edges plot – Average Reading (802.11ac_VHT160, Ch.50)



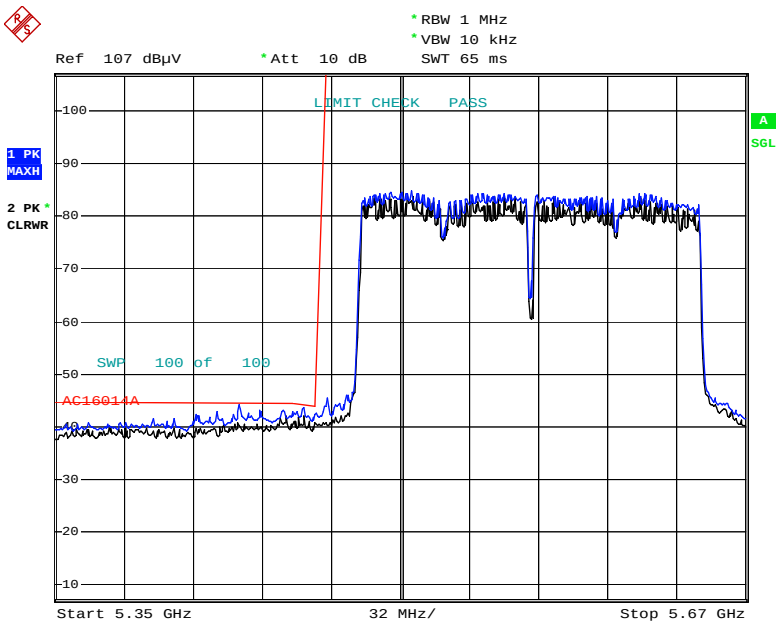
Date: 6.APR.2018 04:07:31

Radiated Restricted Band Edges plot – Peak Reading (802.11ac_VHT160, Ch.50)



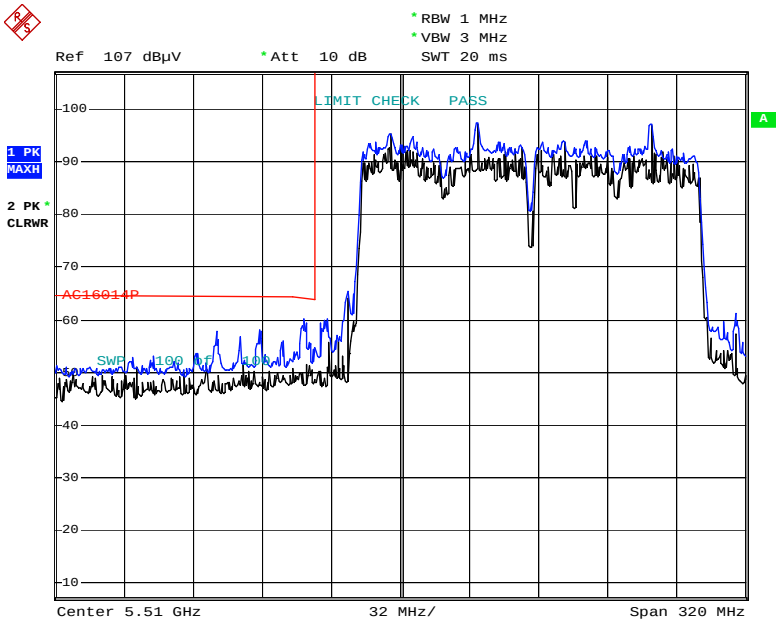
Date: 6.APR.2018 04:08:11

Radiated Restricted Band Edges plot – Average Reading (802.11ac_VHT160, Ch.114)



Date: 6.APR.2018 04:04:10

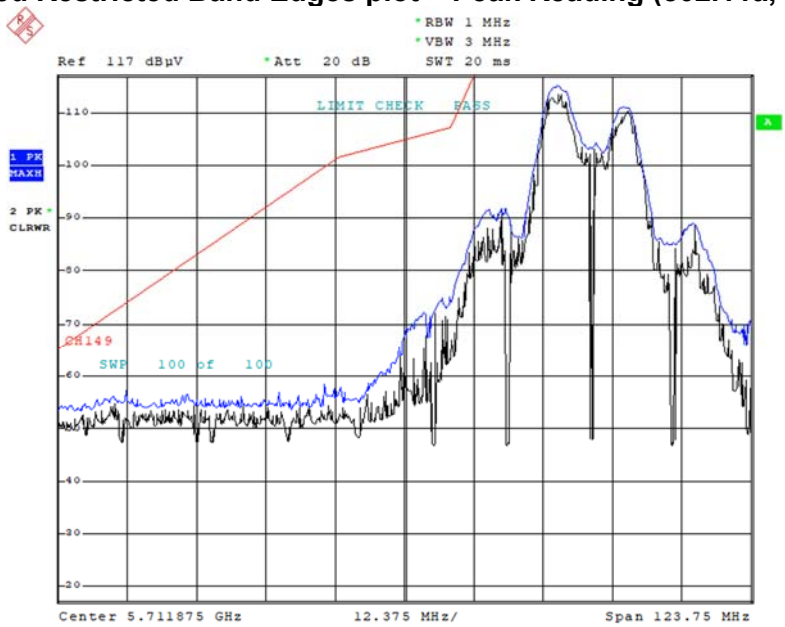
Radiated Restricted Band Edges plot – Peak Reading (802.11ac_VHT160, Ch.114)



Date: 6.APR.2018 04:05:10

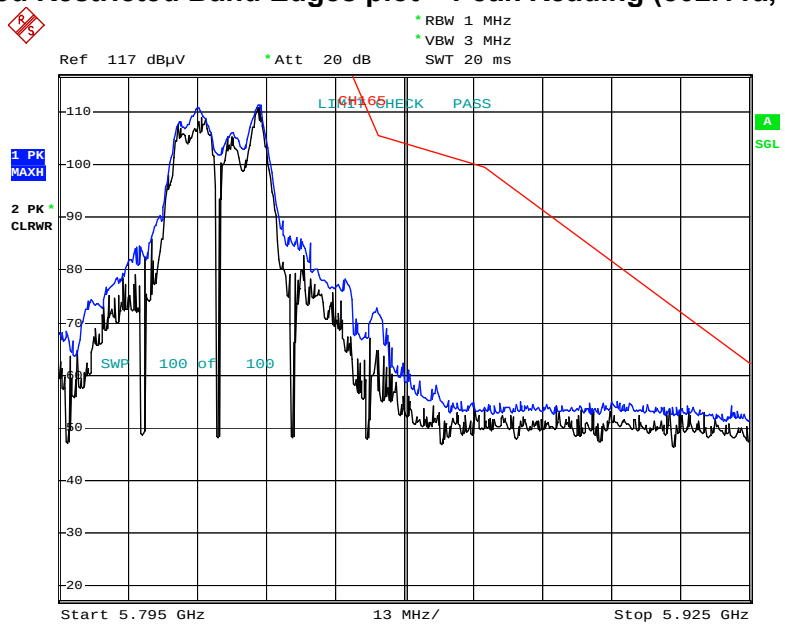
▣ RESULT PLOTS (UNII 3 – ch.165)

Radiated Restricted Band Edges plot – Peak Reading (802.11a, ch.149)



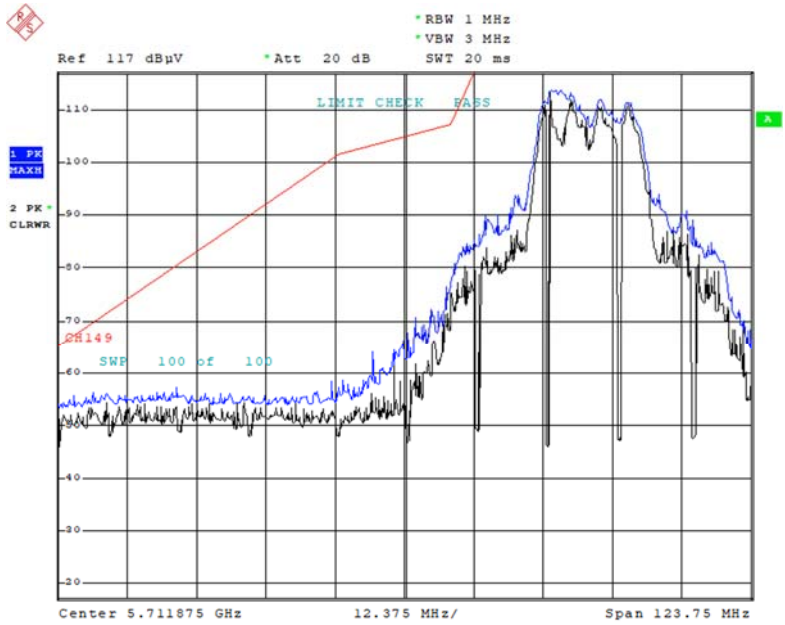
Date: 3.APR.2018 13:19:18

Radiated Restricted Band Edges plot – Peak Reading (802.11a, ch.165)

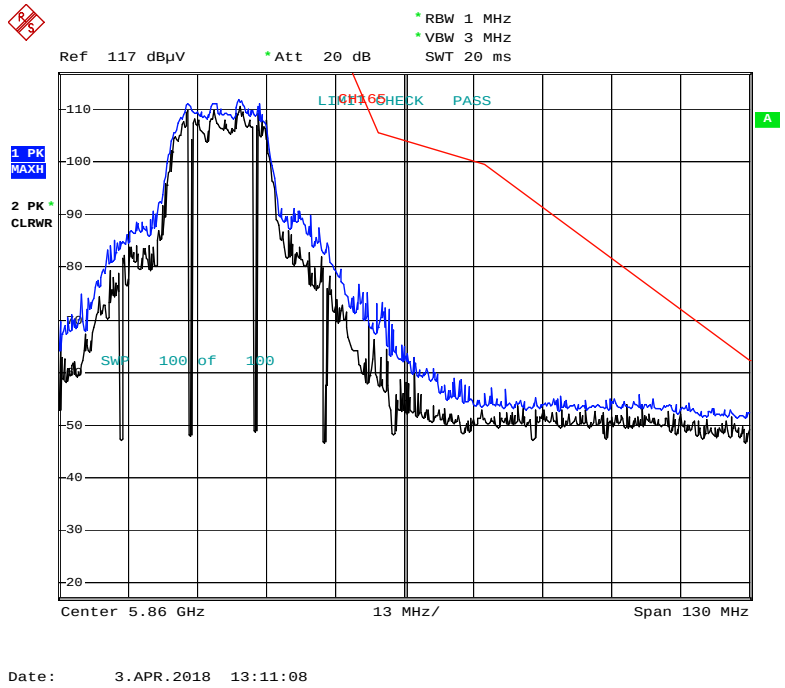


Date: 3.APR.2018 13:09:36

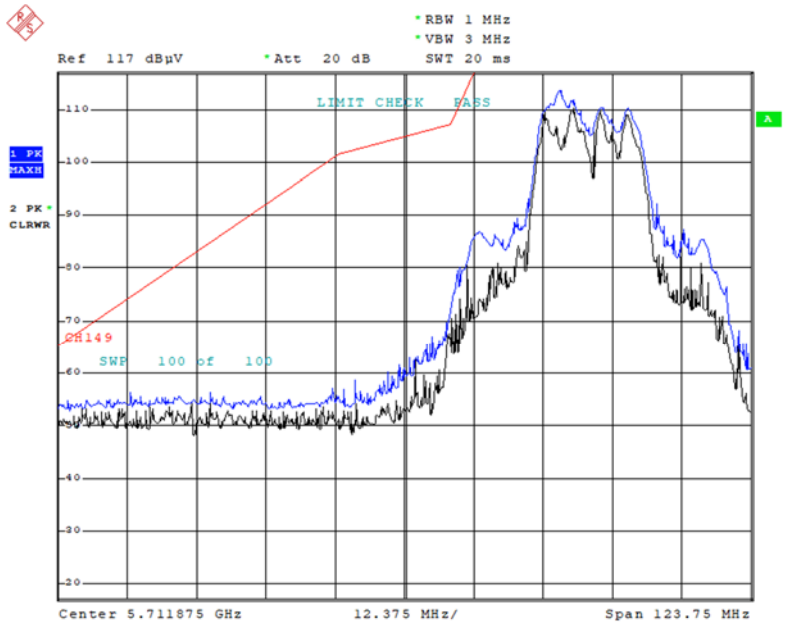
Radiated Restricted Band Edges plot – Peak Reading (802.11n_HT20 ch.149)



Radiated Restricted Band Edges plot – Peak Reading (802.11n_HT20 ch.165)

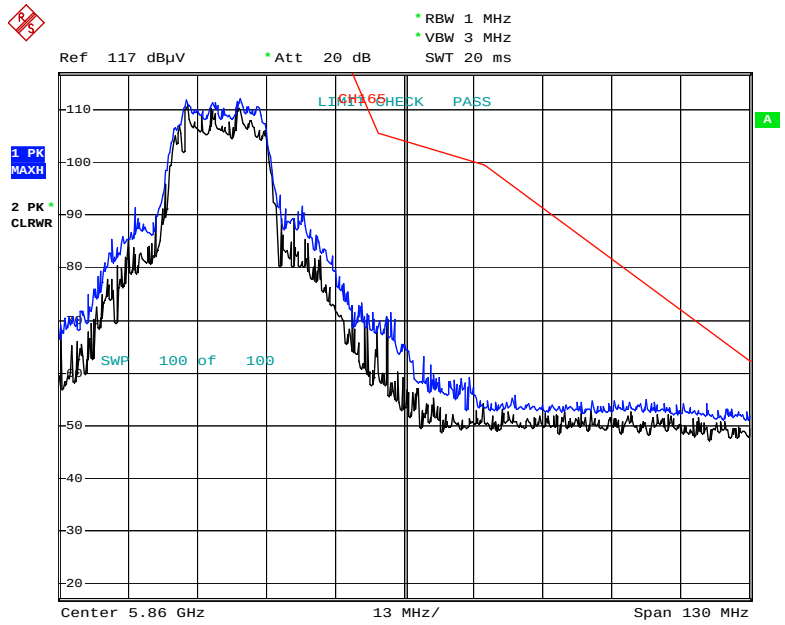


Radiated Restricted Band Edges plot – Peak Reading (802.11ac_VHT20 ch.149)



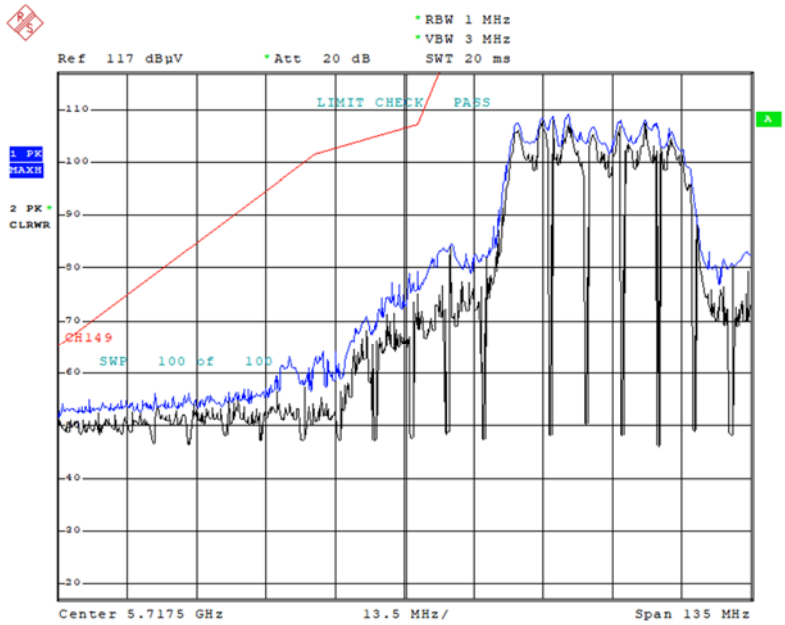
Date: 3.APR.2018 13:16:46

Radiated Restricted Band Edges plot – Peak Reading (802.11ac_VHT20 ch.165)



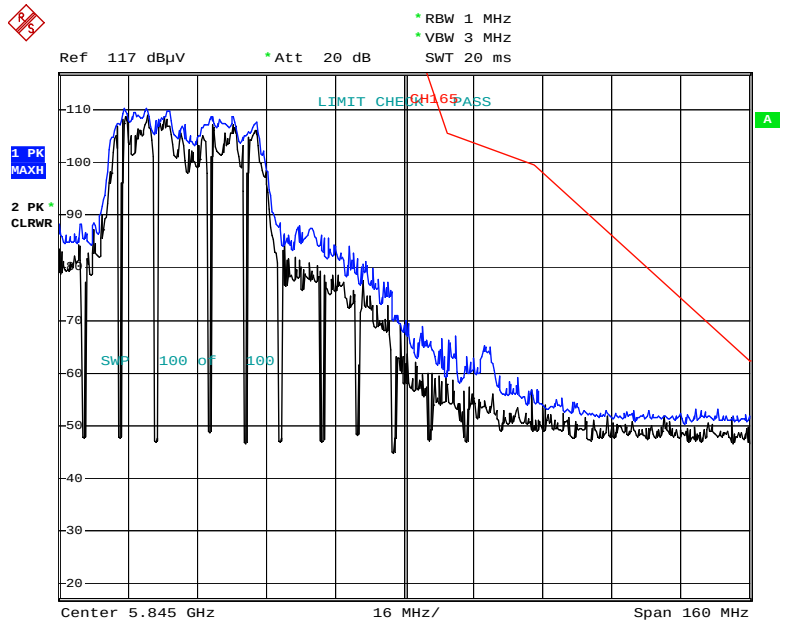
Date: 3.APR.2018 13:11:57

Radiated Restricted Band Edges plot – Peak Reading (802.11n_HT40 ch.151)



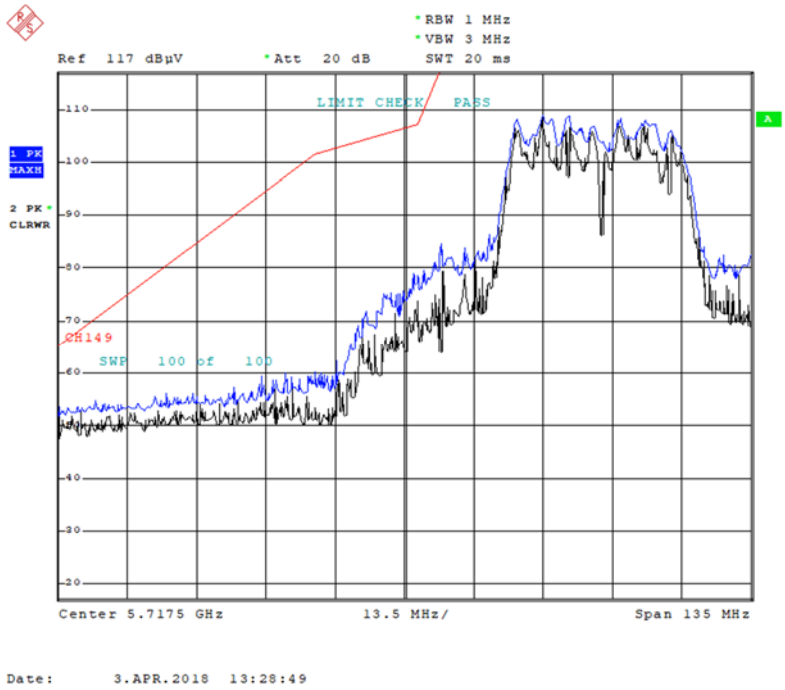
Date: 3.APR.2018 13:27:57

Radiated Restricted Band Edges plot – Peak Reading (802.11n_HT40 ch.159)

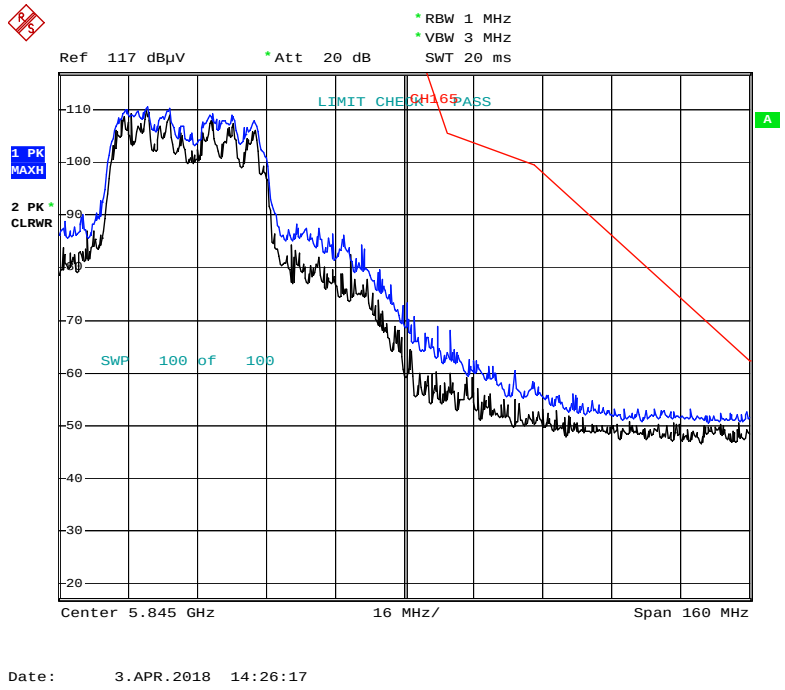


Date: 3.APR.2018 14:25:38

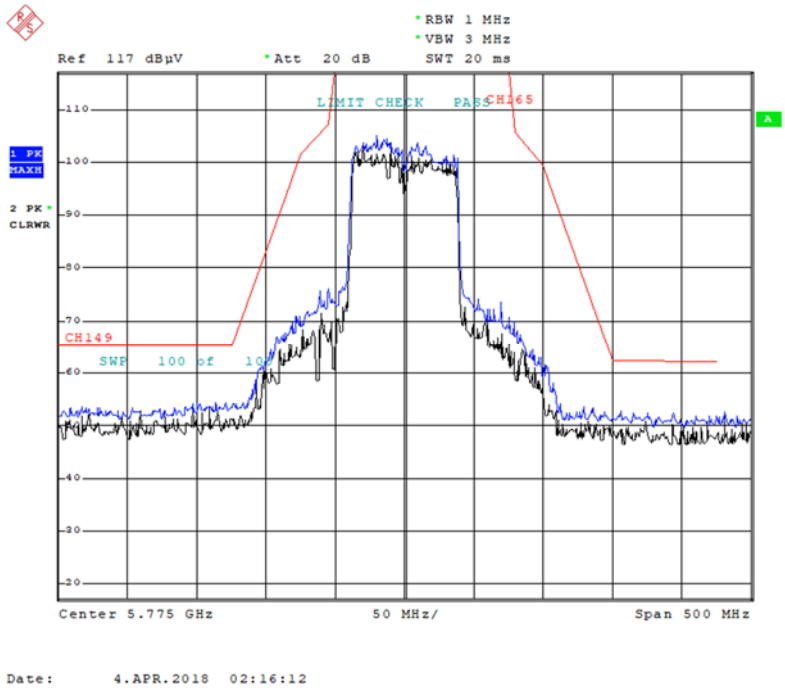
Radiated Restricted Band Edges plot – Peak Reading (802.11ac_VHT40 ch.151)



Radiated Restricted Band Edges plot – Peak Reading (802.11ac_VHT40 ch.159)



Radiated Restricted Band Edges plot – Peak Reading (802.11ac_VHT80 ch.155)



9.7 POWERLINE CONDUCTED EMISSIONS

Test Requirements and limit, §15.207

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 (dBμV)	
	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 groundplane.
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.

Sample Calculation

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

▣ RESULT PLOTS

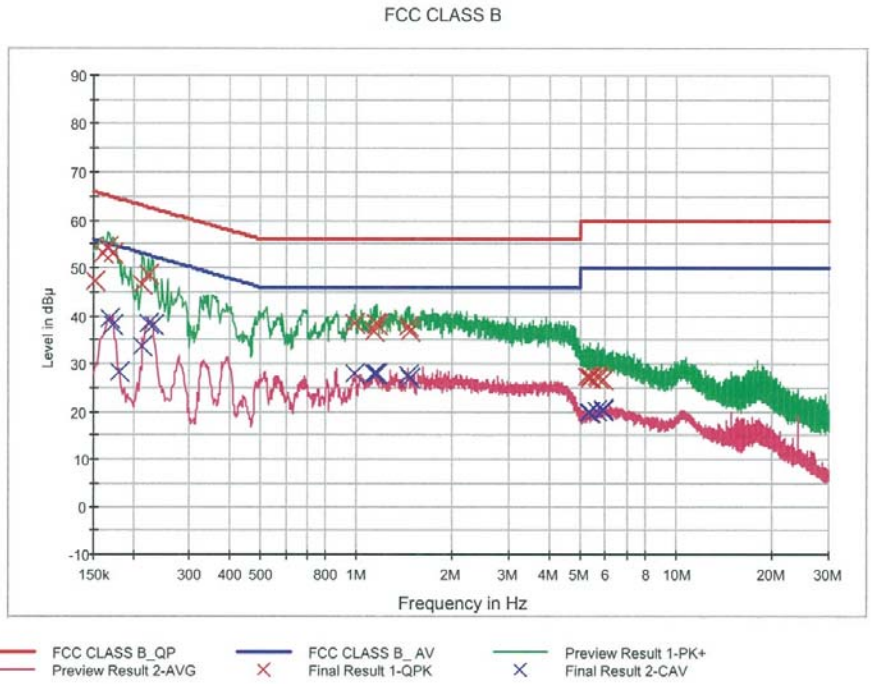
Conducted Emissions (Line 1)

EMI Auto Test(21) 1 / 2

HCT TEST Report

Common Information

EUT:	AR4520
Manufacturer:	가온미디어
Test Site:	SHIELD ROOM
Operating Conditions:	WLAN 5G MODE



Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.152000	47.3	9.000	Off	N	9.6	18.6	65.9
0.160000	52.9	9.000	Off	N	9.6	12.6	65.5
0.166000	54.3	9.000	Off	N	9.6	10.9	65.2
0.172000	53.0	9.000	Off	N	9.6	11.8	64.9
0.214000	46.5	9.000	Off	N	9.6	16.5	63.0
0.224000	48.6	9.000	Off	N	9.6	14.1	62.7
0.986000	38.3	9.000	Off	N	9.7	17.7	56.0
1.130000	36.6	9.000	Off	N	9.7	19.4	56.0
1.154000	38.4	9.000	Off	N	9.7	17.6	56.0
1.162000	38.3	9.000	Off	N	9.7	17.7	56.0
1.456000	37.8	9.000	Off	N	9.7	18.2	56.0
1.466000	36.8	9.000	Off	N	9.7	19.2	56.0
5.262000	27.2	9.000	Off	N	9.9	32.8	60.0
5.366000	27.2	9.000	Off	N	9.9	32.8	60.0
5.400000	27.0	9.000	Off	N	9.9	33.0	60.0
5.650000	27.3	9.000	Off	N	9.9	32.7	60.0
5.706000	26.9	9.000	Off	N	9.9	33.1	60.0
5.874000	26.7	9.000	Off	N	9.9	33.3	60.0

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EMI Auto Test(21) 2 / 2

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.168000	39.4	9.000	Off	N	9.6	15.6	55.1
0.172000	38.2	9.000	Off	N	9.6	16.6	54.9
0.180000	28.4	9.000	Off	N	9.6	26.1	54.5
0.214000	33.7	9.000	Off	N	9.6	19.4	53.0
0.222000	38.5	9.000	Off	N	9.6	14.2	52.7
0.230000	38.0	9.000	Off	N	9.6	14.5	52.4
0.988000	28.1	9.000	Off	N	9.7	17.9	46.0
1.140000	27.9	9.000	Off	N	9.7	18.1	46.0
1.154000	28.1	9.000	Off	N	9.7	17.9	46.0
1.162000	27.8	9.000	Off	N	9.7	18.2	46.0
1.456000	27.7	9.000	Off	N	9.7	18.3	46.0
1.466000	26.9	9.000	Off	N	9.7	19.1	46.0
5.332000	19.7	9.000	Off	N	9.9	30.3	50.0
5.366000	19.9	9.000	Off	N	9.9	30.1	50.0
5.406000	20.0	9.000	Off	N	9.9	30.0	50.0
5.650000	20.1	9.000	Off	N	9.9	29.9	50.0
5.874000	20.3	9.000	Off	N	9.9	29.7	50.0
5.888000	20.4	9.000	Off	N	9.9	29.6	50.0

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Conducted Emissions (Line 2)

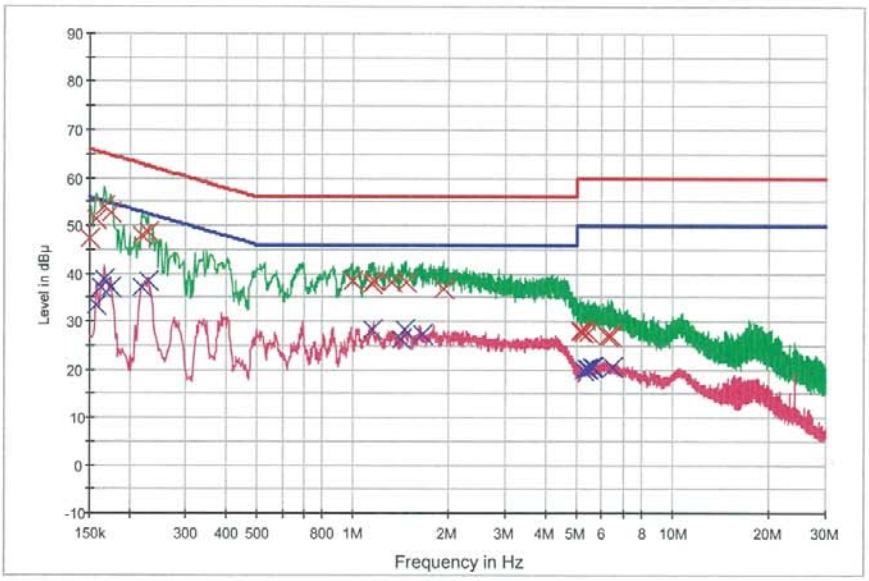
EMI Auto Test(21) 1 / 2

HCT TEST Report

Common Information

EUT:	AR4520
Manufacturer:	가온미디어
Test Site:	SHIELD ROOM
Operating Conditions:	WLAN 5G MODE

FCC CLASS B



FCC CLASS B_QP
Preview Result 2-AVG
FCC CLASS B_ AV
Final Result 1-QPK
Preview Result 1-PK+
Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	47.1	9.000	Off	L1	9.6	18.9	66.0
0.158000	51.5	9.000	Off	L1	9.6	14.1	65.6
0.166000	53.9	9.000	Off	L1	9.6	11.2	65.2
0.174000	52.8	9.000	Off	L1	9.6	12.0	64.8
0.218000	48.0	9.000	Off	L1	9.6	14.9	62.9
0.228000	48.5	9.000	Off	L1	9.6	14.0	62.5
0.994000	38.4	9.000	Off	L1	9.7	17.6	56.0
1.142000	37.6	9.000	Off	L1	9.7	18.4	56.0
1.162000	38.6	9.000	Off	L1	9.7	17.4	56.0
1.326000	38.1	9.000	Off	L1	9.7	17.9	56.0
1.460000	38.0	9.000	Off	L1	9.7	18.0	56.0
1.928000	36.9	9.000	Off	L1	9.7	19.1	56.0
5.132000	28.0	9.000	Off	L1	9.8	32.0	60.0
5.188000	28.0	9.000	Off	L1	9.8	32.0	60.0
5.224000	27.7	9.000	Off	L1	9.8	32.3	60.0
5.422000	27.5	9.000	Off	L1	9.8	32.5	60.0
6.248000	27.1	9.000	Off	L1	9.9	32.9	60.0
6.444000	26.9	9.000	Off	L1	9.9	33.1	60.0

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EMI Auto Test(21) 2 / 2

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.158000	33.2	9.000	Off	L1	9.6	22.3	55.6
0.162000	37.2	9.000	Off	L1	9.6	18.1	55.4
0.166000	38.9	9.000	Off	L1	9.6	16.3	55.2
0.174000	37.3	9.000	Off	L1	9.6	17.5	54.8
0.218000	37.1	9.000	Off	L1	9.6	15.8	52.9
0.228000	38.3	9.000	Off	L1	9.6	14.2	52.5
1.142000	28.2	9.000	Off	L1	9.7	17.8	46.0
1.152000	28.2	9.000	Off	L1	9.7	17.8	46.0
1.424000	26.3	9.000	Off	L1	9.7	19.7	46.0
1.450000	28.2	9.000	Off	L1	9.7	17.8	46.0
1.458000	28.3	9.000	Off	L1	9.7	17.7	46.0
1.642000	27.4	9.000	Off	L1	9.7	18.6	46.0
5.224000	19.9	9.000	Off	L1	9.8	30.1	50.0
5.362000	20.2	9.000	Off	L1	9.8	29.8	50.0
5.422000	20.0	9.000	Off	L1	9.8	30.0	50.0
5.574000	20.4	9.000	Off	L1	9.8	29.6	50.0
5.644000	20.4	9.000	Off	L1	9.8	29.6	50.0
6.446000	20.6	9.000	Off	L1	9.9	29.4	50.0

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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	06/27/2017	Annual	100033
ESPAC	SU-642 /Temperature Chamber	03/30/2018	Annual	0093008124
Agilent	N9020A / Signal Analyzer	06/13/2017	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	06/12/2017	Annual	05001
Hewlett Packard	E3632A / DC Power Supply	06/30/2017	Annual	KR75303960
Agilent	8493C / Attenuator(10 dB)	07/10/2017	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	05/16/2017	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	07/11/2017	Annual	5
Wainwright Instruments	WRCJV2400/2483.5-2370/2520-60/12SS / Band Reject Filter	06/30/2017	Annual	2
Wainwright Instruments	WRCJV5100/5850-40/50-8EEK / Band Reject Filter	01/03/2018	Annual	2
Api tech.	18B-03 / Attenuator (3 dB)	06/12/2017	Annual	2
WEINSCHEL	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	06/30/2017	Annual	25956
TESCOM	TC-3000C / Bluetooth Tester	03/27/2018	Annual	3000C000276