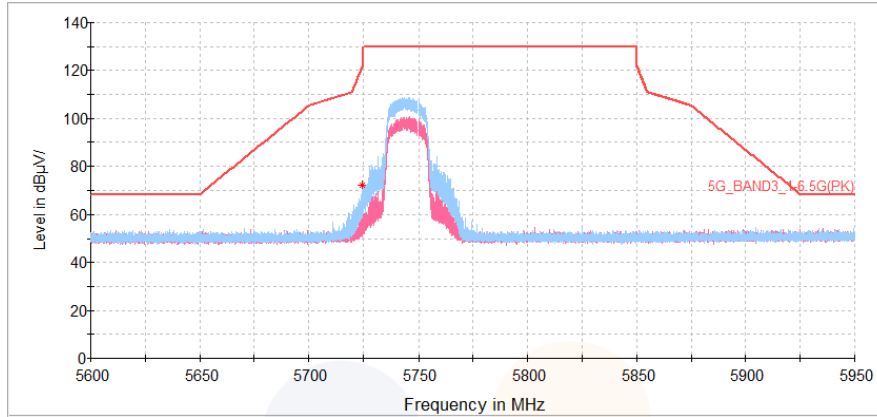


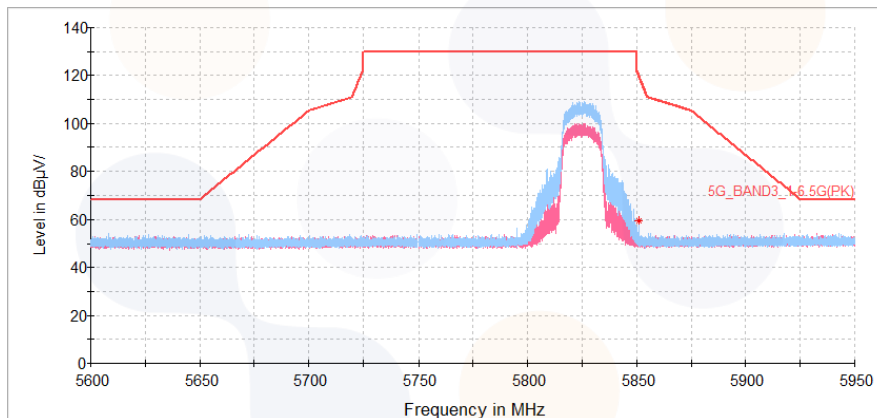
802.11n_HT20_Lowest Channel (5 745 MHz)

Horizontal/Vertical for Band-edge



802.11n_HT20_Highest Channel (5 825 MHz)

Horizontal/Vertical for Band-edge



802.11ac_VHT20_Lowest Channel (5 745 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
5 724.40	H	59.11	34.86	-23.15	-	70.82	120.84	50.01
11 492.92 ¹⁾	V	57.53	38.29	-48.52	-	47.30	74.00	26.70
17 187.33	V	56.08	41.47	-45.72	-	51.83	68.20	16.37
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11ac_VHT20_Middle Channel (5 785 MHz)

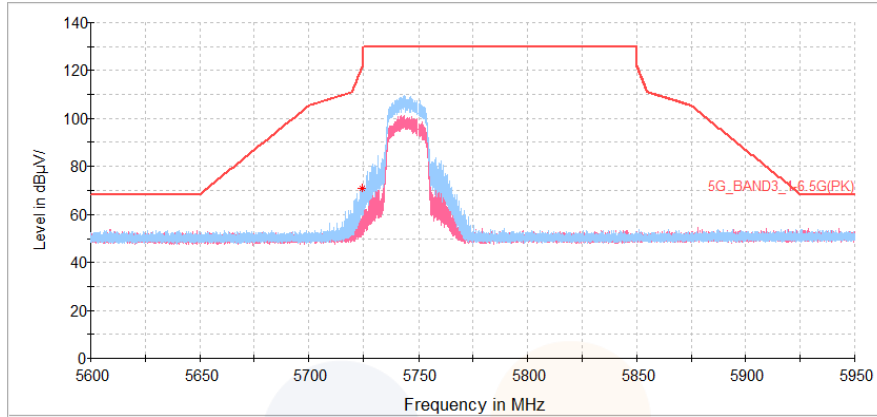
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
11 553.10 ¹⁾	H	58.59	38.36	-48.56	-	48.39	74.00	25.61
17 317.28	H	56.95	41.53	-45.56	-	52.92	68.20	15.28
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11ac_VHT20_Highest Channel (5 825 MHz)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(MHz)	(V/H)	(dB(μV))	(dB)	(dB)	(dB)	(dB(μV/m))	(dB(μV/m))	(dB)
Peak data								
5 851.71	H	44.19	35.06	-22.89	-	56.36	118.31	61.94
11 629.00 ¹⁾	V	58.02	38.45	-48.62	-	47.85	74.00	26.15
17 462.18	V	55.96	41.58	-45.40	-	52.14	68.20	16.06
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

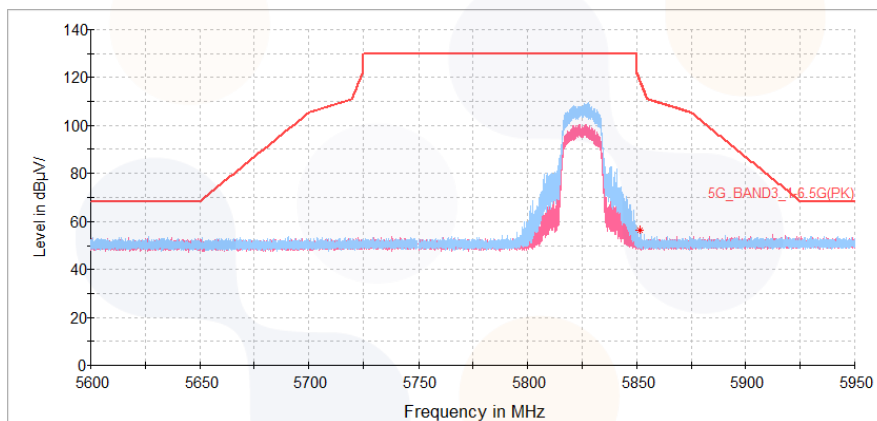
802.11ac_VHT20_Lowest Channel (5 745 MHz)

Horizontal/Vertical for Band-edge



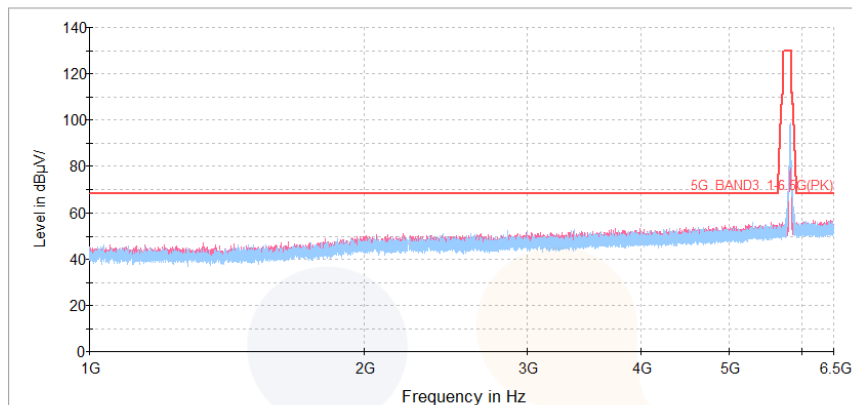
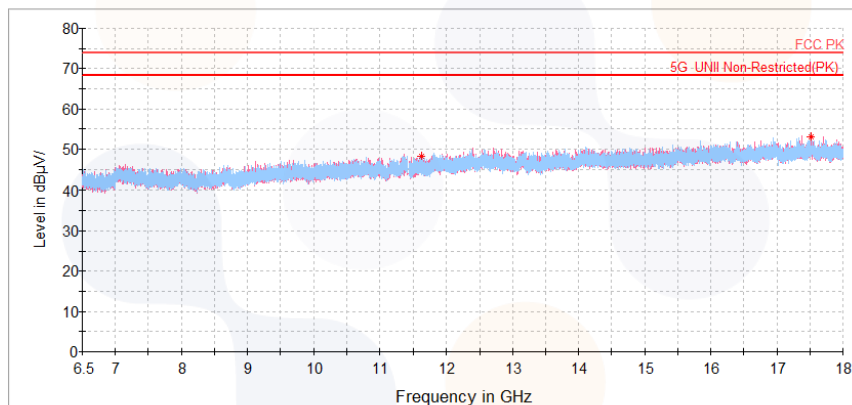
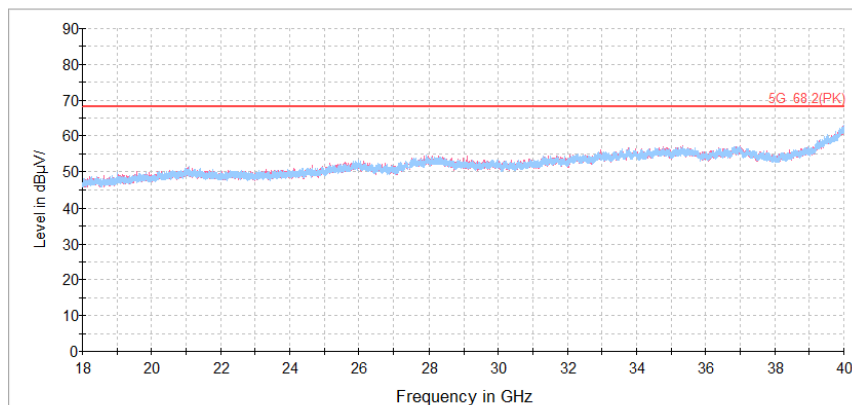
802.11ac_VHT20_Highest Channel (5 825 MHz)

Horizontal/Vertical for Band-edge



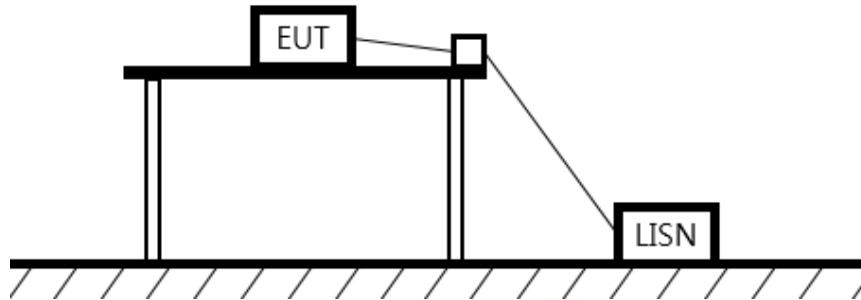
Plot of Harmonics and Spurious Emissions

In order to simplify the report, attached plots were only the lowest margin condition

802.11n HT20_UNII-3_Highest Channel (5 825 MHz)**Horizontal/Vertical for 1 GHz ~ 6.5 GHz****Horizontal/Vertical for 6.5 GHz ~ 18 GHz****Horizontal/Vertical for 18 GHz ~ 40 GHz**

7.8. AC Conducted emission

Test setup



Limit

§15.407

According to 15.207(a) and RSS-Gen (8.8), for an intentional radiator that 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 the limits in the following table, as measured using a 50 μ H/50 ohm line impedance stabilization network (LISN). Compliance with the provision of this paragraph shall be on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequencies ranges.

Frequency of Emission (MHz)	Conducted limit (dB μ V/m)	
	Quasi-peak	Average
0.15 – 0.50	66 - 56*	56 - 46*
0.50 – 5.00	56	46
5.00 – 30.0	60	50

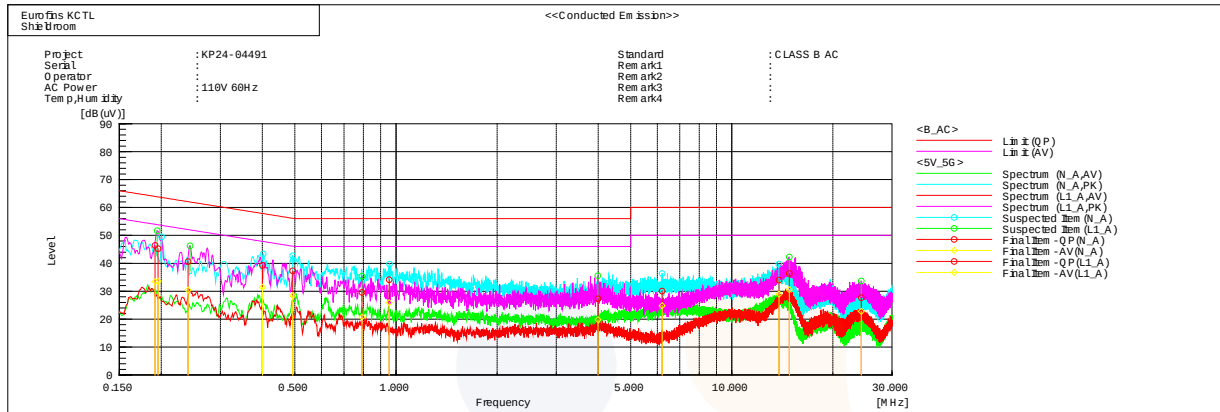
Measurement procedure

1. The EUT was placed on a wooden table of size, 1 m by 1.5 m, raised 80 cm in which is located 40 cm away from the vertical wall and 1.5m away from the side wall of the shielded room.
2. Each current-carrying conductor of the EUT power cord was individually connected through a 50 Ω /50 μ H LISN, which is an input transducer to a spectrum analyzer or an EMI/Field Intensity Meter, to the input power source.
3. Exploratory measurements were made to identify the frequency of the emission that had the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable position, and with a typical system equipment configuration and arrangement. Based on the exploratory tests of the EUT, the one EUT cable configuration and arrangement and mode of operation that had produced the emission with the highest amplitude relative to the limit was selected for the final measurement.
4. The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment in the system) was then performed over the frequency range of 0.15 MHz to 30 MHz.
5. The measurements were made with the detector set to peak amplitude within a bandwidth of 10 kHz or to quasi-peak and average within a bandwidth of 9 kHz. The EUT was in transmitting mode during the measurements.

Test results

[DC 5 V]

Worst case: 802.11ac VHT20 / UNII-2C_5 700 MHz



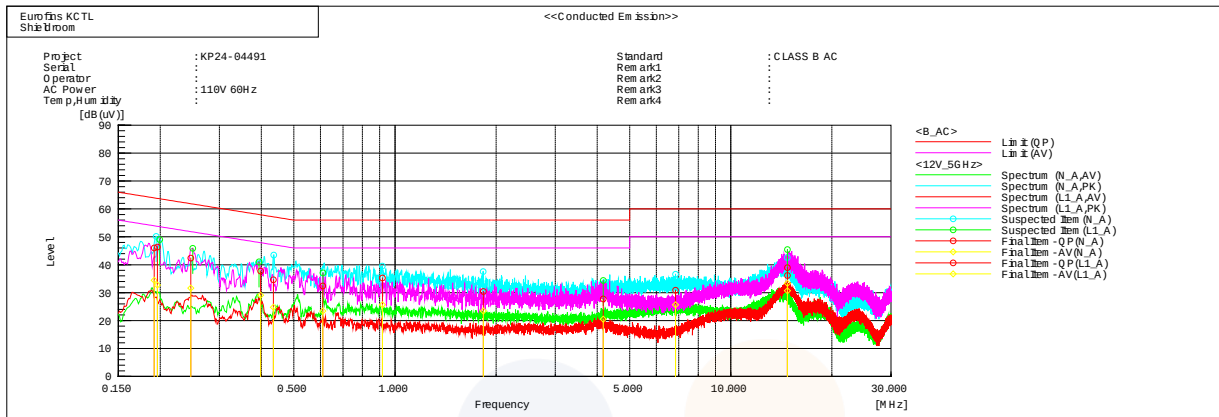
Final Result

--- N_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result CAV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin CAV [dB]
1	0.19571	35.2	23.4	10.1	45.3	33.5	63.8	53.8	18.5	20.3
2	0.40026	29.2	21.5	10.0	39.2	31.5	57.8	47.8	18.6	16.3
3	0.49245	27.3	18.4	10.0	37.3	28.4	56.1	46.1	18.8	17.7
4	0.95417	24.2	16.0	9.9	34.1	25.9	56.0	46.0	21.9	20.1
5	6.20104	19.9	14.7	10.1	30.0	24.8	60.0	50.0	30.0	25.2
6	13.81814	23.5	18.4	10.5	34.0	28.9	60.0	50.0	26.0	21.1

--- L1_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result CAV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin CAV [dB]
1	0.19149	36.3	23.3	10.1	46.4	33.4	64.0	54.0	17.6	20.6
2	0.24044	30.9	20.7	9.7	40.6	30.4	62.1	52.1	21.5	21.7
3	0.7921	19.7	10.9	9.9	29.6	20.8	56.0	46.0	26.4	25.2
4	3.99851	17.3	9.8	10.0	27.3	19.8	56.0	46.0	28.7	26.2
5	14.84494	25.7	19.9	10.6	36.3	30.5	60.0	50.0	23.7	19.5
6	24.2984	16.7	11.8	11.0	27.7	22.8	60.0	50.0	32.3	27.2

[DC 12 V]**Worst case: 802.11ac VHT20 / UNII-2C_5 700 MHz****Final Result****--- N_A Phase ---**

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.19184	35.9	24.4	10.1	46.0	34.5	64.0	54.0	18.0	19.5
2	0.43447	24.6	14.7	10.0	34.6	24.7	57.2	47.2	22.6	22.5
3	0.918	25.4	15.7	9.9	35.3	25.6	56.0	46.0	20.7	20.4
4	1.83296	20.5	13.6	9.9	30.4	23.5	56.0	46.0	25.6	22.5
5	6.84742	20.8	15.5	10.1	30.9	25.6	60.0	50.0	29.1	24.4
6	14.74162	25.6	20.1	10.6	36.2	30.7	60.0	50.0	23.8	19.3

--- L1_A Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.19602	36.3	22.7	10.0	46.3	32.7	63.8	53.8	17.5	21.1
2	0.24645	32.7	21.9	9.7	42.4	31.6	61.9	51.9	19.5	20.3
3	0.39783	27.7	19.1	10.0	37.7	29.1	57.9	47.9	20.2	18.8
4	0.60936	22.4	13.4	10.0	32.4	23.4	56.0	46.0	23.6	22.6
5	4.16972	17.8	10.5	10.0	27.8	20.5	56.0	46.0	28.2	25.5
6	14.7596	28.4	22.8	10.6	39.0	33.4	60.0	50.0	21.0	16.6

8. Measurement equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
Spectrum Analyzer	R&S	FSV30	100732	25.07.02
DC Power Supply	AGILENT	E3632A	MY40016393	25.07.01
Signal Generator	R&S	SMB100A	176206	25.01.18
Vector Signal Generator	R&S	SMBV100A	257566	25.07.01
Attenuator	HUBER+SUHNER	6610_SK-50-1/199_NE	ATT01	24.10.16
Power Sensor	R&S	NRP-Z81	1137.9009.02-106224-tg	25.07.01
Attenuator	R&S	DNF	0008	25.01.18
Antenna Mast	Innco Systems	MA4640-XP-ET	MA4000/396/30810213/L	-
Controller	Innco Systems	CO3000	1175/45850319/P	-
Spectrum Analyzer	R&S	FSV40	100989	24.10.12
Horn antenna	ETS.lindgren	3117	00251528	25.01.26
Horn antenna	ETS.lindgren	3116	00086635	25.01.25
AMPLIFIER	B&Z Technologies	BZRT-00504000-481055-382525	26299-27735	25.06.24
AMPLIFIER	B&Z Technologies	BZR-0050400-551028-252525	27736	25.06.24
Attenuator	API Inmet	40AH2W-10	12	25.04.30
High pass Filter	WT	WT-A1698-HS	WT160411001	25.04.25
High pass Filter	WT	WT-A1699-HS	WT160411002	25.04.25
High pass Filter	Qotana	DBHF058004000A	20070100016	25.06.24
Signal Generator	R&S	SMB100A	176206	25.01.18
EMI TEST RECEIVER	R&S	ESC17	100732	25.02.28
Bi-Log Antenna	TESEQ	CBL 6112D	62438	25.05.25
Amplifier	SONOMA INSTRUMENT	310N	284608	25.08.13
ATTENUATOR	KEYSIGHT	8491B-6dB	MY39271082	25.05.25
LOOP Antenna	R&S	HFH2-Z2	100355	26.06.25
ISOLATION TRANSFORMER	ONETECH CO.,LTD	OT-IT500VA	OTR1-16026	25.03.21
Antenna Mast	Innco Systems	MA4640/800-XP-ET	-	-
Turn Table	Innco Systems	DT2000	79	-
TWO-LINE V - NETWORK	R&S	ENV216	101358	25.03.27
EMI TEST RECEIVER	R&S	ESC13	100001	25.08.12
Temp & Humid Chamber	ESPEC	SH-642	93016978	25.01.18

End of test report