

		Data Rate	Power Level	Duty Cycle Correction (dB)	Cond. Power (dBm) combined		Antenna Gain (max.) (dBi)	Calculated EIRP (dBm)	Limit EIRP (dBm)
					AVG	Pk			
802.11 n20 UNII1	5200 MHz	mcs0	15	0	16.85	26.71	5.7	22.55	26
		mcs1	15	0.31	16.96	26.13	5.7	22.66	26
		mcs2	15	0.41	17.15	26.17	5.7	22.85	26
		mcs3	15	0.52	17.29	25.97	5.7	22.99	26
		mcs4	15	0.52	17.23	25.98	5.7	22.93	26
		mcs5	15	0.52	17.12	26.74	5.7	22.82	26
		mcs6	15	0.52	16.91	26.39	5.7	22.61	26
		mcs7	15	0.52	17.18	26.02	5.7	22.88	26
		mcs8	15	0.3	16.87	25.82	5.7	22.57	26
		mcs9	15	0.3	16.89	26.27	5.7	22.59	26
	5240 MHz	mcs0	15	0	16.94	26.88	5.7	22.64	26
		mcs1	15	0.31	16.67	26.07	5.7	22.37	26
		mcs2	15	0.41	16.79	26.42	5.7	22.49	26
		mcs3	15	0.52	16.87	25.74	5.7	22.57	26
		mcs4	15	0.52	16.88	26.27	5.7	22.58	26
		mcs5	15	0.52	16.85	26.17	5.7	22.55	26
		mcs6	15	0.52	16.81	26.5	5.7	22.51	26
		mcs7	15	0.52	16.79	26.37	5.7	22.49	26
		mcs8	15	0.3	16.9	26.08	5.7	22.6	26
		mcs9	15	0.3	16.85	26.09	5.7	22.55	26
802.11 n40 UNII1	5190 MHz	mcs0	13	0	14.54	24.6	5.7	20.24	26
		mcs1	13	0.31	14.82	25.32	5.7	20.52	26
		mcs2	13	0.41	14.89	24.9	5.7	20.59	26
		mcs3	13	0.52	14.96	25.86	5.7	20.66	26
		mcs4	13	0.52	14.87	25.07	5.7	20.57	26
		mcs5	13	0.52	14.59	25.67	5.7	20.29	26
		mcs6	13	0.52	14.38	25.46	5.7	20.08	26
		mcs7	13	0.52	13.96	24.94	5.7	19.66	26
		mcs8	13	0.3	14.9	24.32	5.7	20.6	26
		mcs9	13	0.3	14.9	24.66	5.7	20.6	26

		Data Rate	Power Level	Duty Cycle Correction (dB)	Cond. Power (dBm) combined		Antenna Gain (max.) (dBi)	Calculated EIRP (dBm)	Limit EIRP (dBm)
					AVG	Pk			
802.11 n40 UNII1	5230 MHz	mcs0	13	0	14.54	25.43	5.7	20.24	26
		mcs1	13	0.31	15.31	25.9	5.7	21.01	26
		mcs2	13	0.41	15.44	26.37	5.7	21.14	26
		mcs3	13	0.52	15.44	25.68	5.7	21.14	26
		mcs4	13	0.52	15.46	25.56	5.7	21.16	26
		mcs5	13	0.52	15.21	26.89	5.7	20.91	26
		mcs6	13	0.52	14.87	26.27	5.7	20.57	26
		mcs7	13	0.52	14.61	25.14	5.7	20.31	26
		mcs8	13	0.3	15.08	25.47	5.7	20.78	26
		mcs9	13	0.3	15.01	24.9	5.7	20.71	26
802.11 ac20 UNII1	5180 MHz	mcs0	15	0.16	16.76	26.03	5.7	22.46	26
		mcs1	15	0.31	16.84	26.05	5.7	22.54	26
		mcs2	15	0.41	16.97	25.64	5.7	22.67	26
		mcs3	15	0.52	17.17	26.1	5.7	22.87	26
		mcs4	15	0.52	17.01	25.86	5.7	22.71	26
		mcs5	15	0.52	17.02	25.86	5.7	22.72	26
		mcs6	15	0.52	16.66	26.2	5.7	22.36	26
		mcs7	15	0.52	16.37	25.54	5.7	22.07	26
		mcs8	15	0.3	15.73	26.35	5.7	21.43	26
		mcs9	15	0.3	Not supported	Not supported	5.7	Not supported	26
	5200 MHz	mcs0	15	0.16	17	26.62	5.7	22.7	26
		mcs1	15	0.31	17.09	26.5	5.7	22.79	26
		mcs2	15	0.41	17.09	27.18	5.7	22.79	26
		mcs3	15	0.52	17.28	26.6	5.7	22.98	26
		mcs4	15	0.52	16.9	26.41	5.7	22.6	26
		mcs5	15	0.52	16.61	26.25	5.7	22.31	26
		mcs6	15	0.52	16.49	26.84	5.7	22.19	26
		mcs7	15	0.52	16.46	26.11	5.7	22.16	26
		mcs8	15	0.3	15.98	26.84	5.7	21.68	26
		mcs9	15	0.3	Not supported	Not supported	5.7	Not supported	26

		Data Rate	Power Level	Duty Cycle Correction (dB)	Cond. Power (dBm) combined		Antenna Gain (max.) (dBi)	Calculated EIRP (dBm)	Limit EIRP
					AVG	Pk			
802.11 ac20 UNII1	5240 MHz	mcs0	15	0.16	17.05	26.79	5.7	22.75	26
		mcs1	15	0.31	17.13	26.44	5.7	22.83	26
		mcs2	15	0.41	17.23	26.26	5.7	22.93	26
		mcs3	15	0.52	17.29	26.27	5.7	22.99	26
		mcs4	15	0.52	17.01	26.44	5.7	22.71	26
		mcs5	15	0.52	16.78	26.39	5.7	22.48	26
		mcs6	15	0.52	16.59	26.78	5.7	22.29	26
		mcs7	15	0.52	16.54	26.24	5.7	22.24	26
		mcs8	15	0.3	16.11	26.51	5.7	21.81	26
802.11 ac40 UNII1	5190 MHz	mcs0	13	0.3	15.11	24.83	5.7	20.81	26
		mcs1	13	0.31	14.82	26.27	5.7	20.52	26
		mcs2	13	0.41	14.76	25.34	5.7	20.46	26
		mcs3	13	0.52	14.67	25.83	5.7	20.37	26
		mcs4	13	0.52	14.24	25.04	5.7	19.94	26
		mcs5	13	0.52	14.21	25.7	5.7	19.91	26
		mcs6	13	0.52	14.22	25.52	5.7	19.92	26
		mcs7	13	0.52	14.12	26.15	5.7	19.82	26
		mcs8	13	0.3	13.8	25.54	5.7	19.5	26
	5230 MHz	mcs9	13	0.3	13.7	24.42	5.7	19.4	26
		mcs0	13	0.3	15.27	25.15	5.7	20.97	26
		mcs1	13	0.31	15.03	26.43	5.7	20.73	26
		mcs2	13	0.41	14.82	25.57	5.7	20.52	26
		mcs3	13	0.52	14.9	25.92	5.7	20.6	26
		mcs4	13	0.52	14.53	26.08	5.7	20.23	26
		mcs5	13	0.52	14.34	25.62	5.7	20.04	26
		mcs6	13	0.52	14.24	26.04	5.7	19.94	26
		mcs7	13	0.52	14.22	26.23	5.7	19.92	26
		mcs8	13	0.3	13.83	25.25	5.7	19.53	26
		mcs9	13	0.3	13.83	25.57	5.7	19.53	26

		Data Rate	Power Level	Duty Cycle Correction (dB)	Cond. Power (dBm) combined		Antenna Gain (max.) (dBi)	Calculated EIRP (dBm)	Limit EIRP (dBm)
					AVG	Pk			
802.11 ac80 UNII1	5210 MHz	mcs0	13	0.57	14.85	24.24	5.7	20.55	26
		mcs1	13	0.31	14.45	24.65	5.7	20.15	26
		mcs2	13	0.41	14.11	23.45	5.7	19.81	26
		mcs3	13	0.52	14.06	24.14	5.7	19.76	26
		mcs4	13	0.57	14.04	23.69	5.7	19.74	26
		mcs5	13	0.57	13.97	23.79	5.7	19.67	26
		mcs6	13	0.57	13.83	24.55	5.7	19.53	26
		mcs7	13	0.57	13.84	24.57	5.7	19.54	26
		mcs8	13	0.3	13.43	25.3	5.7	19.13	26
		mcs9	13	0.3	13.27	24.21	5.7	18.97	26
802.11a UNII2a NOHT	5260 MHz	6	15	0	16.98	26.38	5.7	22.68	30
		9	15	0.11	16.97	26.02	5.7	22.67	30
		12	15	0.22	17.05	26.23	5.7	22.75	30
		18	15	0.22	17.02	26.21	5.7	22.72	30
		24	15	0.22	16.92	26.54	5.7	22.62	30
	5280 MHz	6	15	0	16.4	26.11	5.7	22.1	30
		9	15	0.11	16.84	25.89	5.7	22.54	30
		12	15	0.22	16.94	26.09	5.7	22.64	30
		18	15	0.22	16.91	26	5.7	22.61	30
		24	15	0.22	16.73	26.37	5.7	22.43	30
	5320 MHz	6	15	0	16.11	25.46	5.7	21.81	30
		9	15	0.11	16.14	25.76	5.7	21.84	30
		12	15	0.22	16.15	25.4	5.7	21.85	30
		18	15	0.22	16.12	25.83	5.7	21.82	30
		24	15	0.22	16.04	25.51	5.7	21.74	30

		Data Rate	Power Level	Duty Cycle Correction (dB)	Cond. Power (dBm) combined		Antenna Gain (max.) (dBi)	Calculated EIRP (dBm)	Limit EIRP (dBm)
					AVG	Pk			
802.11 n20 UNII2a	5260 MHz	mcs0	15	0	16.96	26.73	5.7	22.66	30
		mcs1	15	0.31	16.63	26.43	5.7	22.33	30
		mcs2	15	0.41	16.84	26.37	5.7	22.54	30
		mcs3	15	0.52	16.92	25.46	5.7	22.62	30
		mcs4	15	0.52	16.68	26.19	5.7	22.38	30
		mcs5	15	0.52	16.78	26.11	5.7	22.48	30
		mcs6	15	0.52	16.73	26.29	5.7	22.43	30
		mcs7	15	0.52	16.57	26.35	5.7	22.27	30
		mcs8	15	0.3	16.92	26.11	5.7	22.62	30
		mcs9	15	0.3	16.76	26.53	5.7	22.46	30
	5280 MHz	mcs0	15	0	16.43	26.24	5.7	22.13	30
		mcs1	15	0.31	16.56	25.94	5.7	22.26	30
		mcs2	15	0.41	16.79	26.15	5.7	22.49	30
		mcs3	15	0.52	16.81	25.97	5.7	22.51	30
		mcs4	15	0.52	16.77	26.1	5.7	22.47	30
		mcs5	15	0.52	16.63	26.05	5.7	22.33	30
		mcs6	15	0.52	16.57	26.13	5.7	22.27	30
		mcs7	15	0.52	16.6	26.09	5.7	22.3	30
		mcs8	15	0.3	16.73	26.05	5.7	22.43	30
		mcs9	15	0.3	16.77	25.62	5.7	22.47	30
	5320 MHz	mcs0	15	0	15.75	25.59	5.7	21.45	30
		mcs1	15	0.31	15.86	24.89	5.7	21.56	30
		mcs2	15	0.41	15.92	25.45	5.7	21.62	30
		mcs3	15	0.52	16.01	25.09	5.7	21.71	30
		mcs4	15	0.52	16.07	25.39	5.7	21.77	30
		mcs5	15	0.52	15.76	25.27	5.7	21.46	30
		mcs6	15	0.52	15.88	25.48	5.7	21.58	30
		mcs7	15	0.52	15.85	25.33	5.7	21.55	30
		mcs8	15	0.3	15.99	25.23	5.7	21.69	30
		mcs9	15	0.3	15.9	24.83	5.7	21.6	30

		Data Rate	Power Level	Duty Cycle Correction (dB)	Cond. Power (dBm) combined		Antenna Gain (max.) (dBi)	Calculated EIRP (dBm)	Limit EIRP (dBm)
					AVG	Pk			
802.11 n40 UNII2a	5270 MHz	mcs0	13	0	14.41	24.52	5.7	20.11	30
		mcs1	13	0.31	15.08	24.92	5.7	20.78	30
		mcs2	13	0.41	15.14	25.79	5.7	20.84	30
		mcs3	13	0.52	15.04	25.47	5.7	20.74	30
		mcs4	13	0.52	14.94	25.44	5.7	20.64	30
		mcs5	13	0.52	14.58	26.58	5.7	20.28	30
		mcs6	13	0.52	15	26.58	5.7	20.7	30
		mcs7	13	0.52	14.4	25.66	5.7	20.1	30
		mcs8	13	0.3	14.8	25.39	5.7	20.5	30
		mcs9	13	0.3	14.61	24.65	5.7	20.31	30
	5310 MHz	mcs0	13	0	13.76	23.95	5.7	19.46	30
		mcs1	13	0.31	14.41	24.6	5.7	20.11	30
		mcs2	13	0.41	14.29	25.2	5.7	19.99	30
		mcs3	13	0.52	14.52	25	5.7	20.22	30
		mcs4	13	0.52	14.28	24.8	5.7	19.98	30
		mcs5	13	0.52	13.94	25.77	5.7	19.64	30
		mcs6	13	0.52	13.83	25.36	5.7	19.53	30
		mcs7	13	0.52	13.66	24.55	5.7	19.36	30
		mcs8	13	0.3	14.19	24.58	5.7	19.89	30
		mcs9	13	0.3	13.93	24.69	5.7	19.63	30
802.11 ac20 UNII2a	5260 MHz	mcs0	15	0.15	16.92	26.45	5.7	22.62	30
		mcs1	15	0.31	17.02	26.31	5.7	22.72	30
		mcs2	15	0.41	16.88	25.83	5.7	22.58	30
		mcs3	15	0.52	16.89	26.15	5.7	22.59	30
		mcs4	15	0.52	16.69	25.88	5.7	22.39	30
		mcs5	15	0.52	16.61	26.05	5.7	22.31	30
		mcs6	15	0.52	16.42	25.84	5.7	22.12	30
		mcs7	15	0.52	16.32	26.1	5.7	22.02	30
		mcs8	15	0.3	15.92	26.39	5.7	21.62	30
		mcs9	15	0.3	Not supported	Not supported	5.7	Not supported	30

		Data Rate	Power Level	Duty Cycle Correction (dB)	Cond. Power (dBm) combined		Antenna Gain (max.) (dBi)	Calculated EIRP (dBm)	Limit EIRP (dBm)
					AVG	Pk			
802.11 ac20 UNII2a	5280 MHz	mcs0	15	0.15	17.06	26.77	5.7	22.76	30
		mcs1	15	0.31	17.15	26.48	5.7	22.85	30
		mcs2	15	0.41	17.04	26.14	5.7	22.74	30
		mcs3	15	0.52	17.12	26.39	5.7	22.82	30
		mcs4	15	0.52	16.95	26.47	5.7	22.65	30
		mcs5	15	0.52	16.67	26.12	5.7	22.37	30
		mcs6	15	0.52	16.57	25.99	5.7	22.27	30
		mcs7	15	0.52	16.4	26.28	5.7	22.1	30
		mcs8	15	0.3	16.02	26.42	5.7	21.72	30
		mcs9	15	0.3	Not supported	Not supported	5.7	Not supported	30
	5320 MHz	mcs0	15	0.15	16.13	26.02	5.7	21.83	30
		mcs1	15	0.31	16.16	25.22	5.7	21.86	30
		mcs2	15	0.41	16.15	25.16	5.7	21.85	30
		mcs3	15	0.52	16.11	25.3	5.7	21.81	30
		mcs4	15	0.52	16.27	25.39	5.7	21.97	30
		mcs5	15	0.52	15.88	25.32	5.7	21.58	30
		mcs6	15	0.52	15.75	25.35	5.7	21.45	30
		mcs7	15	0.52	15.61	25.27	5.7	21.31	30
		mcs8	15	0.3	15.22	25.61	5.7	20.92	30
		mcs9	15	0.3	Not supported	Not supported	5.7	Not supported	30
802.11 ac40 UNII2a	5270 MHz	mcs0	13	0.3	14.98	25.92	5.7	20.68	30
		mcs1	13	0.31	14.96	25.7	5.7	20.66	30
		mcs2	13	0.41	14.89	25.09	5.7	20.59	30
		mcs3	13	0.52	14.77	25.64	5.7	20.47	30
		mcs4	13	0.52	14.32	25.92	5.7	20.02	30
		mcs5	13	0.52	14.25	25.18	5.7	19.95	30
		mcs6	13	0.52	14.16	24.98	5.7	19.86	30
		mcs7	13	0.52	14.15	25.75	5.7	19.85	30
		mcs8	13	0.3	13.86	25.36	5.7	19.56	30
		mcs9	13	0.3	13.88	26.65	5.7	19.58	30

		Data Rate	Power Level	Duty Cycle Correction (dB)	Cond. Power (dBm) combined		Antenna Gain (max.) (dBi)	Calculated EIRP (dBm)	Limit EIRP (dBm)
					AVG	Pk			
802.11 ac40 UNII2a	5310 MHz	mcs0	13	0.3	14.4	24.26	5.7	20.1	30
		mcs1	13	0.31	14.21	25.08	5.7	19.91	30
		mcs2	13	0.41	14.2	24.47	5.7	19.9	30
		mcs3	13	0.52	13.98	24.9	5.7	19.68	30
		mcs4	13	0.52	13.69	25.45	5.7	19.39	30
		mcs5	13	0.52	13.6	24.41	5.7	19.3	30
		mcs6	13	0.52	13.58	24.29	5.7	19.28	30
		mcs7	13	0.52	13.51	25.15	5.7	19.21	30
		mcs8	13	0.3	13.18	24.74	5.7	18.88	30
		mcs9	13	0.3	13.25	26.15	5.7	18.95	30
802.11 ac80 UNII2a	5290 MHz	mcs0	13	0.57	14.49	24.17	5.7	20.19	30
		mcs1	13	0.31	13.98	24.61	5.7	19.68	30
		mcs2	13	0.41	13.71	23.79	5.7	19.41	30
		mcs3	13	0.52	13.82	24.28	5.7	19.52	30
		mcs4	13	0.57	13.77	23.36	5.7	19.47	30
		mcs5	13	0.57	13.63	24.41	5.7	19.33	30
		mcs6	13	0.57	13.56	24.27	5.7	19.26	30
		mcs7	13	0.57	13.45	24.04	5.7	19.15	30
		mcs8	13	0.3	13.14	24.46	5.7	18.84	30
		mcs9	13	0.3	12.84	23.47	5.7	18.54	30
802.11a UNII2c	5500 MHz	6	15	0	16.02	25.69	5.7	21.72	30
		9	15	0.11	16.06	25.28	5.7	21.76	30
		12	15	0.22	16.15	26.06	5.7	21.85	30
		18	15	0.22	16.25	25.59	5.7	21.95	30
		24	15	0.22	15.99	25.8	5.7	21.69	30
	5600 MHz	6	15	0	16.35	25.29	5.7	22.05	30
		9	15	0.11	16.48	25.43	5.7	22.18	30
		12	15	0.22	16.54	25.55	5.7	22.24	30
		18	15	0.22	16.56	25.45	5.7	22.26	30
		24	15	0.22	16.36	25.68	5.7	22.06	30
	5700 MHz	6	15	0	13.31	22.75	5.7	19.01	30
		9	15	0.11	13.73	22.57	5.7	19.43	30
		12	15	0.22	13.56	23.28	5.7	19.26	30
		18	15	0.22	13.5	22.94	5.7	19.2	30
		24	15	0.22	13.46	23.84	5.7	19.16	30

		Data Rate	Power Level	Duty Cycle Correction (dB)	Cond. Power (dBm) combined		Antenna Gain (max.) (dBi)	Calculated EIRP (dBm)	Limit EIRP (dBm)
					AVG	Pk			
802.11 n20 UNII2c	5500 MHz	mcs0	13	0	14.32	24.3	5.7	20.02	30
		mcs1	13	0.31	14.37	24.05	5.7	20.07	30
		mcs2	13	0.41	14.53	23.79	5.7	20.23	30
		mcs3	13	0.52	14.59	23.82	5.7	20.29	30
		mcs4	13	0.52	14.54	24	5.7	20.24	30
		mcs5	13	0.52	14.37	24.37	5.7	20.07	30
		mcs6	13	0.52	14.39	24.28	5.7	20.09	30
		mcs7	13	0.52	14.36	23.62	5.7	20.06	30
		mcs8	13	0.16	14.28	24.66	5.7	19.98	30
		mcs9	13	0.3	14.27	23.85	5.7	19.97	30
	5600 MHz	mcs0	13	0	14.49	24.34	5.7	20.19	30
		mcs1	13	0.31	14.22	23.7	5.7	19.92	30
		mcs2	13	0.41	14.38	24.19	5.7	20.08	30
		mcs3	13	0.52	14.41	23.83	5.7	20.11	30
		mcs4	13	0.52	14.34	24	5.7	20.04	30
		mcs5	13	0.52	14.26	23.8	5.7	19.96	30
		mcs6	13	0.52	14.22	24.37	5.7	19.92	30
		mcs7	13	0.52	14.04	23.94	5.7	19.74	30
		mcs8	13	0.16	14.27	23.74	5.7	19.97	30
		mcs9	13	0.3	14.53	23.49	5.7	20.23	30
	5700 MHz	mcs0	13	0	13.62	23.56	5.7	19.32	30
		mcs1	13	0.31	13.78	23.29	5.7	19.48	30
		mcs2	13	0.41	13.98	23.5	5.7	19.68	30
		mcs3	13	0.52	13.85	22.86	5.7	19.55	30
		mcs4	13	0.52	13.88	23.46	5.7	19.58	30
		mcs5	13	0.52	13.69	23.33	5.7	19.39	30
		mcs6	13	0.52	13.75	23.17	5.7	19.45	30
		mcs7	13	0.52	13.74	23.43	5.7	19.44	30
		mcs8	13	0.16	13.8	23.15	5.7	19.5	30
		mcs9	13	0.3	13.89	23.82	5.7	19.59	30

		Data Rate	Power Level	Duty Cycle Correction (dB)	Cond. Power (dBm) combined		Antenna Gain (max.) (dBi)	Calculated EIRP (dBm)	Limit EIRP (dBm)
					AVG	Pk			
802.11 n40 UNII2c	5510 MHz	mcs0	13	0.3	14.43	24.8	5.7	20.13	30
		mcs1	13	0.31	14.36	24.61	5.7	20.06	30
		mcs2	13	0.41	14.31	24.16	5.7	20.01	30
		mcs3	13	0.52	14.48	25.29	5.7	20.18	30
		mcs4	13	0.52	14.21	24.78	5.7	19.91	30
		mcs5	13	0.52	13.91	25.31	5.7	19.61	30
		mcs6	13	0.52	13.71	25.12	5.7	19.41	30
		mcs7	13	0.52	13.54	24.45	5.7	19.24	30
		mcs8	13	0.3	14.53	24.44	5.7	20.23	30
		mcs9	13	0.3	14.33	24.28	5.7	20.03	30
	5590 MHz	mcs0	13	0.3	14.57	24.21	5.7	20.27	30
		mcs1	13	0.31	14.82	24.76	5.7	20.52	30
		mcs2	13	0.41	14.7	25.53	5.7	20.4	30
		mcs3	13	0.52	14.46	25.2	5.7	20.16	30
		mcs4	13	0.52	14.26	25.08	5.7	19.96	30
		mcs5	13	0.52	13.98	25.23	5.7	19.68	30
		mcs6	13	0.52	14.16	25.42	5.7	19.86	30
		mcs7	13	0.52	14.02	24.37	5.7	19.72	30
		mcs8	13	0.3	14.55	24.19	5.7	20.25	30
		mcs9	13	0.3	14.43	24.39	5.7	20.13	30
802.11 ac20 UNII2c	5500 MHz	mcs0	13	0.16	14.45	25.13	5.7	20.15	30
		mcs1	13	0.31	14.55	24.13	5.7	20.25	30
		mcs2	13	0.41	14.39	24.95	5.7	20.09	30
		mcs3	13	0.52	14.76	24.26	5.7	20.46	30
		mcs4	13	0.52	14.15	24.93	5.7	19.85	30
		mcs5	13	0.52	14.01	24.05	5.7	19.71	30
		mcs6	13	0.52	13.9	24.97	5.7	19.6	30
		mcs7	13	0.52	13.75	24.21	5.7	19.45	30
		mcs8	13	0.3	13.35	24.41	5.7	19.05	30
		mcs9	13	0.3	Not supported	Not supported	5.7	Not supported	30

		Data Rate	Power Level	Duty Cycle Correction (dB)	Cond. Power (dBm) combined		Antenna Gain (max.) (dBi)	Calculated EIRP (dBm)	Limit EIRP (dBm)
					AVG	Pk			
802.11 ac20 UNII2c	5600 MHz	mcs0	13	0.16	14.53	25.07	5.7	20.23	30
		mcs1	13	0.31	14.59	23.95	5.7	20.29	30
		mcs2	13	0.41	14.6	23.85	5.7	20.3	30
		mcs3	13	0.52	14.73	24.29	5.7	20.43	30
		mcs4	13	0.52	14.41	24.33	5.7	20.11	30
		mcs5	13	0.52	14.24	23.8	5.7	19.94	30
		mcs6	13	0.52	14.15	23.9	5.7	19.85	30
		mcs7	13	0.52	13.97	24.28	5.7	19.67	30
		mcs8	13	0.3	13.6	24.77	5.7	19.3	30
		mcs9	13	0.3	Not supported	Not supported	5.7	Not supported	30
	5700 MHz	mcs0	13	0.16	14.03	23.63	5.7	19.73	30
		mcs1	13	0.31	14.18	23.16	5.7	19.88	30
		mcs2	13	0.41	14.06	23.33	5.7	19.76	30
		mcs3	13	0.52	14.17	23.18	5.7	19.87	30
		mcs4	13	0.52	13.92	23.32	5.7	19.62	30
		mcs5	13	0.52	13.66	23.45	5.7	19.36	30
		mcs6	13	0.52	13.55	23.35	5.7	19.25	30
		mcs7	13	0.52	13.52	23.16	5.7	19.22	30
		mcs8	13	0.3	13.13	23.55	5.7	18.83	30
		mcs9	13	0.3	Not supported	Not supported	5.7	Not supported	30
802.11 ac40 UNII2c	5510 MHz	mcs0	13	0.3	14.49	24.25	5.7	20.19	30
		mcs1	13	0.31	14.28	25.36	5.7	19.98	30
		mcs2	13	0.41	14.14	24.52	5.7	19.84	30
		mcs3	13	0.52	13.98	25.05	5.7	19.68	30
		mcs4	13	0.52	13.48	24.53	5.7	19.18	30
		mcs5	13	0.52	13.46	25.17	5.7	19.16	30
		mcs6	13	0.52	13.48	25.23	5.7	19.18	30
		mcs7	13	0.52	13.43	25.24	5.7	19.13	30
		mcs8	13	0.3	13.14	24.86	5.7	18.84	30
		mcs9	13	0.3	13.03	24.78	5.7	18.73	30

		Data Rate	Power Level	Duty Cycle Correction (dB)	Cond. Power (dBm) combined		Antenna Gain (max.) (dBi)	Calculated EIRP (dBm)	Limit EIRP (dBm)
					AVG	Pk			
802.11 ac40 UNII2c	5590 MHz	mcs0	13	0.3	14.57	23.95	5.7	20.27	30
		mcs1	13	0.31	14.45	24.66	5.7	20.15	30
		mcs2	13	0.41	14.3	24.51	5.7	20	30
		mcs3	13	0.52	14.22	25.02	5.7	19.92	30
		mcs4	13	0.52	13.76	25.11	5.7	19.46	30
		mcs5	13	0.52	13.68	24.25	5.7	19.38	30
		mcs6	13	0.52	13.66	24.27	5.7	19.36	30
		mcs7	13	0.52	13.58	24.77	5.7	19.28	30
		mcs8	13	0.3	13.41	24.37	5.7	19.11	30
		mcs9	13	0.3	13.13	24.3	5.7	18.83	30
	5670 MHz	mcs0	13	0.3	14.13	23.56	5.7	19.83	30
		mcs1	13	0.31	14.06	24.22	5.7	19.76	30
		mcs2	13	0.41	14.01	24.11	5.7	19.71	30
		mcs3	13	0.52	13.79	24.22	5.7	19.49	30
		mcs4	13	0.52	13.44	24.7	5.7	19.14	30
		mcs5	13	0.52	13.39	24.55	5.7	19.09	30
		mcs6	13	0.52	13.27	23.91	5.7	18.97	30
		mcs7	13	0.52	13.29	24.19	5.7	18.99	30
		mcs8	13	0.3	12.92	24.03	5.7	18.62	30
		mcs9	13	0.3	12.98	24.95	5.7	18.68	30
802.11 ac80 UNII2c	5530 MHz	mcs0	13	0.57	14.32	23.31	5.7	20.02	30
		mcs1	13	0.31	13.5	23.17	5.7	19.2	30
		mcs2	13	0.41	13.25	22.58	5.7	18.95	30
		mcs3	13	0.52	13.35	23.06	5.7	19.05	30
		mcs4	13	0.57	13.18	23.37	5.7	18.88	30
		mcs5	13	0.57	13.01	23.05	5.7	18.71	30
		mcs6	13	0.57	12.92	23.34	5.7	18.62	30
		mcs7	13	0.57	12.94	23.36	5.7	18.64	30
		mcs8	13	0.3	12.72	24.02	5.7	18.42	30
		mcs9	13	0.3	12.54	23.13	5.7	18.24	30

		Data Rate	Power Level	Duty Cycle Correction (dB)	Cond. Power (dBm) combined		Antenna Gain (max.) (dBi)	Calculated EIRP (dBm)	Limit EIRP (dBm)
					AVG	Pk			
802.11 ac80 UNII2c	5610 MHz	mcs0	13	0.57	14.38	23.23	5.7	20.27	30
		mcs1	13	0.31	13.74	23.95	5.7	20.15	30
		mcs2	13	0.41	13.5	23.07	5.7	20	30
		mcs3	13	0.52	13.61	23.79	5.7	19.92	30
		mcs4	13	0.57	13.39	23.07	5.7	19.46	30
		mcs5	13	0.57	13.33	23.74	5.7	19.38	30
		mcs6	13	0.57	13.1	23.32	5.7	19.36	30
		mcs7	13	0.57	13.07	23.18	5.7	19.28	30
		mcs8	13	0.3	13.02	24.19	5.7	19.11	30
		mcs9	13	0.3	12.57	22.61	5.7	18.83	30
802.11a UNII3 NOHT	5745 MHz	6	15	0	12.73	22.29	5.7	19.83	30
		9	15	0.11	12.67	21.87	5.7	19.76	30
		12	15	0.22	12.72	22.33	5.7	19.71	30
		18	15	0.22	12.72	21.91	5.7	19.49	30
		24	15	0.22	12.66	22.31	5.7	19.14	30
	5785 MHz	6	15	0	12.74	21.69	5.7	19.09	30
		9	15	0.11	12.61	21.22	5.7	18.97	30
		12	15	0.22	12.68	22.24	5.7	18.99	30
		18	15	0.22	12.66	21.76	5.7	18.62	30
		24	15	0.22	12.56	22.27	5.7	18.68	30
	5825 MHz	6	15	0	12.82	21.77	5.7	20.02	30
		9	15	0.11	12.77	21.74	5.7	19.2	30
		12	15	0.22	12.78	21.97	5.7	18.95	30
		18	15	0.22	12.72	21.71	5.7	19.05	30
		24	15	0.22	12.63	22.57	5.7	18.88	30

		Data Rate	Power Level	Duty Cycle Correction (dB)	Cond. Power (dBm) combined		Antenna Gain (max.) (dBi)	Calculated EIRP (dBm)	Limit EIRP (dBm)
					AVG	Pk			
802.11 n20 UNII3	5745 MHz	mcs0	15	0	12.87	23.48	5.7	20.08	30
		mcs1	15	0.31	12.55	22.18	5.7	19.44	30
		mcs2	15	0.41	12.75	22.43	5.7	19.2	30
		mcs3	15	0.52	12.76	22.24	5.7	19.31	30
		mcs4	15	0.52	12.62	22.2	5.7	19.09	30
		mcs5	15	0.52	12.61	22.11	5.7	19.03	30
		mcs6	15	0.52	12.53	22.01	5.7	18.8	30
		mcs7	15	0.52	12.44	22.07	5.7	18.77	30
		mcs8	15	0.3	12.66	22.39	5.7	18.72	30
		mcs9	15	0.3	12.59	21.57	5.7	18.27	30
	5785 MHz	mcs0	15	0	12.31	22.17	5.7	18.43	36
		mcs1	15	0.31	12.4	21.82	5.7	18.37	36
		mcs2	15	0.41	12.52	22.14	5.7	18.42	36
		mcs3	15	0.52	12.58	21.98	5.7	18.42	36
		mcs4	15	0.52	12.42	21.97	5.7	18.36	36
		mcs5	15	0.52	12.41	21.98	5.7	18.44	36
		mcs6	15	0.52	12.32	21.64	5.7	18.31	36
		mcs7	15	0.52	12.38	21.91	5.7	18.38	36
		mcs8	15	0.3	12.57	21.92	5.7	18.36	36
		mcs9	15	0.3	12.47	21.8	5.7	18.26	36
	5825 MHz	mcs0	15	0	12.39	22.15	5.7	18.52	36
		mcs1	15	0.31	12.47	21.56	5.7	18.47	36
		mcs2	15	0.41	12.79	22.19	5.7	18.48	36
		mcs3	15	0.52	12.64	22.03	5.7	18.42	36
		mcs4	15	0.52	12.5	21.84	5.7	18.33	36
		mcs5	15	0.52	12.56	21.84	5.7	20.08	30
		mcs6	15	0.52	12.32	21.59	5.7	19.44	30
		mcs7	15	0.52	12.35	21.97	5.7	19.2	30
		mcs8	15	0.3	12.63	22.17	5.7	19.31	30
		mcs9	15	0.3	12.62	21.73	5.7	19.09	30

		Data Rate	Power Level	Duty Cycle Correction (dB)	Cond. Power (dBm) combined		Antenna Gain (max.) (dBi)	Calculated EIRP (dBm)	Limit EIRP (dBm)
					AVG	Pk			
802.11 n40 UNII3	5755 MHz	mcs0	15	0.16	12.76	22.71	5.7	18.46	36
		mcs1	15	0.31	12.76	22.19	5.7	18.46	36
		mcs2	15	0.41	12.87	22.94	5.7	18.57	36
		mcs3	15	0.52	12.86	22.68	5.7	18.56	36
		mcs4	15	0.52	12.73	22.24	5.7	18.43	36
		mcs5	15	0.52	12.37	23.76	5.7	18.07	36
		mcs6	15	0.52	12.33	22.99	5.7	18.03	36
		mcs7	15	0.52	12.04	22.25	5.7	17.74	36
		mcs8	15	0.3	12.62	22.38	5.7	18.32	36
		mcs9	15	0.3	12.54	22.39	5.7	18.24	36
	5795 MHz	mcs0	15	0.16	12.94	23	5.7	18.64	36
		mcs1	15	0.31	13	22.25	5.7	18.7	36
		mcs2	15	0.41	12.84	22.94	5.7	18.54	36
		mcs3	15	0.52	13	22.79	5.7	18.7	36
		mcs4	15	0.52	12.87	22.64	5.7	18.57	36
		mcs5	15	0.52	12.58	23.55	5.7	18.28	36
		mcs6	15	0.52	12.42	22.87	5.7	18.12	36
		mcs7	15	0.52	12.23	22.51	5.7	17.93	36
		mcs8	15	0.3	12.61	22.27	5.7	18.31	36
		mcs9	15	0.3	12.44	22.13	5.7	18.14	36
802.11 ac20 UNII3	5745 MHz	mcs0	15	0.15	12.62	22.37	5.7	18.32	36
		mcs1	15	0.29	12.74	21.78	5.7	18.44	36
		mcs2	15	0.41	12.72	21.91	5.7	18.42	36
		mcs3	15	0.52	12.58	22.31	5.7	18.28	36
		mcs4	15	0.52	12.65	21.88	5.7	18.35	36
		mcs5	15	0.52	12.38	22.16	5.7	18.08	36
		mcs6	15	0.52	12.2	21.78	5.7	17.9	36
		mcs7	15	0.52	12.17	21.87	5.7	17.87	36
		mcs8	15	0.3	11.71	21.87	5.7	17.41	36
		mcs9	15	0.3	Not supported	Not supported	5.7	Not supported	36

		Data Rate	Power Level	Duty Cycle Correction (dB)	Cond. Power (dBm) combined		Antenna Gain (max.) (dBi)	Calculated EIRP (dBm)	Limit EIRP (dBm)
					AVG	Pk			
802.11 ac20 UNII3	5785 MHz	mcs0	15	0.15	12.59	22.46	5.7	18.29	36
		mcs1	15	0.29	12.66	22.32	5.7	18.36	36
		mcs2	15	0.41	12.83	21.9	5.7	18.53	36
		mcs3	15	0.52	12.65	22.26	5.7	18.35	36
		mcs4	15	0.52	12.47	22.35	5.7	18.17	36
		mcs5	15	0.52	12.39	21.89	5.7	18.09	36
		mcs6	15	0.52	12.22	21.8	5.7	17.92	36
		mcs7	15	0.52	12.17	21.8	5.7	17.87	36
		mcs8	15	0.3	11.73	21.74	5.7	17.43	36
		mcs9	15	0.3	Not supported	Not supported	5.7	Not supported	36
	5825 MHz	mcs0	15	0.15	12.73	22.62	5.7	18.43	36
		mcs1	15	0.29	12.88	21.87	5.7	18.58	36
		mcs2	15	0.41	12.85	21.92	5.7	18.55	36
		mcs3	15	0.52	12.73	22.3	5.7	18.43	36
		mcs4	15	0.52	12.7	21.79	5.7	18.4	36
		mcs5	15	0.52	12.53	21.95	5.7	18.23	36
		mcs6	15	0.52	12.3	21.92	5.7	18	36
		mcs7	15	0.52	12.27	21.88	5.7	17.97	36
		mcs8	15	0.3	11.86	22.55	5.7	17.56	36
		mcs9	15	0.3	Not supported	Not supported	5.7	Not supported	36
802.11 ac40 UNII3	5755 MHz	mcs0	15	0.3	12.75	22.52	5.7	18.45	36
		mcs1	15	0.31	12.5	23.23	5.7	18.2	36
		mcs2	15	0.41	12.48	22.49	5.7	18.18	36
		mcs3	15	0.52	12.26	22.76	5.7	17.96	36
		mcs4	15	0.52	11.91	22.95	5.7	17.61	36
		mcs5	15	0.52	11.86	22.16	5.7	17.56	36
		mcs6	15	0.52	11.81	22.04	5.7	17.51	36
		mcs7	15	0.52	11.77	22.58	5.7	17.47	36
		mcs8	15	0.3	11.41	22.46	5.7	17.11	36
		mcs9	15	0.3	11.53	23.89	5.7	17.23	36

		Data Rate	Power Level	Duty Cycle Correction (dB)	Cond. Power (dBm) combined		Antenna Gain (max.) (dBi)	Calculated EIRP (dBm)	Limit EIRP (dBm)
					AVG	Pk			
802.11 ac40 UNII3	5795 MHz	mcs0	15	0.3	13.01	22.96	5.7	18.71	36
		mcs1	15	0.31	12.77	23.22	5.7	18.47	36
		mcs2	15	0.41	12.6	22.3	5.7	18.3	36
		mcs3	15	0.52	12.39	22.57	5.7	18.09	36
		mcs4	15	0.52	12.01	22.82	5.7	17.71	36
		mcs5	15	0.52	11.92	22.38	5.7	17.62	36
		mcs6	15	0.52	11.88	22.23	5.7	17.58	36
		mcs7	15	0.52	11.94	22.68	5.7	17.64	36
		mcs8	15	0.3	11.68	22.97	5.7	17.38	36
		mcs9	15	0.3	11.63	24.02	5.7	17.33	36
802.11 ac80 UNII3	5775 MHz	mcs0	15	0.57	12.58	21.49	5.7	18.28	36
		mcs1	15	0.31	11.91	22.35	5.7	17.61	36
		mcs2	15	0.41	11.57	20.86	5.7	17.27	36
		mcs3	15	0.52	11.68	22.1	5.7	17.38	36
		mcs4	15	0.57	11.6	20.58	5.7	17.3	36
		mcs5	15	0.57	11.52	21.5	5.7	17.22	36
		mcs6	15	0.57	11.41	21.41	5.7	17.11	36
		mcs7	15	0.57	11.41	21.23	5.7	17.11	36
		mcs8	15	0.3	10.9	21.76	5.7	16.6	36
		mcs9	15	0.3	11.01	21.05	5.7	16.71	36

Example screen shots from the power meter:

Low Channel – 802.11a NOHT, (5180MHz, 6 Mbps)

combined (both chains)



5 Undesirable Emissions

5.1 Test Result

Test Description	Test Specification	Test Result
Spurious Emissions	15.407(b)	Compliant

5.2 Test Method

The test data was measured using a spectrum analyzer with

- Peak detector, max hold
- Resolution bandwidth of at least 100 kHz
- Video bandwidth at least 3x RBW
- Frequency range: 30 MHz to 40 GHz

The limit is -27dBm/MHz or 68.2 dBuV/m @3m

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where *FS* = Field Strength

CL = Cable Attenuation Factor (Cable Loss)

RA = Reading Amplitude

AG = Amplifier Gain

AF = Antenna Factor

The limit of the emission level is expressed in dBuV/m, which converts $20 \cdot \log(\mu V/m)$

Actual *FS*(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

5.3 Test Site

EMC Laboratory, San Diego, CA

Environmental Conditions

Temperature: 16.5 - 26 °C

Relative Humidity: 36 - 56 %

5.4 Additional Observation

- The low frequency band started from 9kHz to 30MHz was pre-scanned and the results was 20dB lower than the limit per 15.31(o); therefore, no data was presented in this test report.
- The high frequency band beyond 18GHz was pre-scanned and the results was 20dB lower than the limit; therefore, no data was presented in this test report.

5.5 Test Equipment

Test Dates: March 23 to May 30, 2024

Tester: Andreas Gillmeier, Alex Chang

Asset No.	Type of Equipment	Model	Serial No.	Manufacturer	Cal Date	Cal Due Date
Radiated Emission < 1 GHz						
2017	EMI Receiver	N9038B	MY59050132	Keysight	10/24/2023	10/24/2024
2029	ETS Lindgren	Loop Antenna, H-Field	6512	00249642	08/31/2022	08/31/2024
2034	Biconilog Antenna 26M-6000MHz	3142E	00243882	ETS Lindgren	06/29/2023	06/29/2025
-	Test Software	TILE!	V7.8.1.7	ETS Lindgren	N/A	-
Radiated Emission > 1 GHz						
2017	EMI Receiver	N9038B	MY59050132	Keysight	10/24/2023	10/24/2024
2026	RF Microwave Systems Amplifier	RAMP00M45GA	00089204010	RF-Lambda	NCR	NCR
2033	DRG Horn Antenna 1G-18GHz	3117	00251986	ETS Lindgren	07/27/2022	07/27/2024
2032	ETS Lindgren	DRG Horn Antenna 10G-40GHz	3116C	00251668	06/16/2022	06/16/2024
-	Test Software	TILE!	V7.8.1.7	ETS Lindgren	N/A	-
Miscellaneous						
2036	Temp/Humidity Data Logger	GSP-8	CMA231100002	Elitech	05/24/2023	

5.6 Test Setup Photographs

Test setup photographs are located in a separate exhibit.

5.7 Test Data

UNIII1: 802.11a NOHT

30 to 1000 MHz High Channel – 5240MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal QP

Customer / Model # - comma.ai / LightningHard SOM

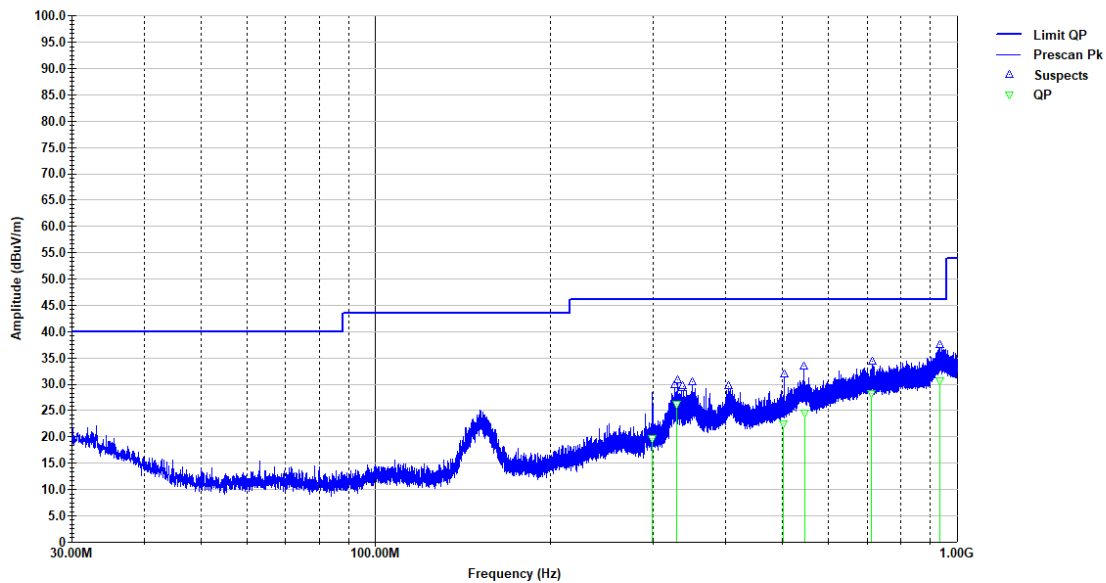
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - AG

Standard - FCC Class B

Comments - 5240MHz, 802.11a NOHT, pwr 15, 9Mbps



5240 15 9 FCC 15-247 RE 30M-1GHz.til

Last Data Update 07:55:15 PM, Thursday, March 21, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
299.074807	19.75	-23.54	-26.27	46.02	161	308
329.78347	26.16	-22.66	-19.86	46.02	106	316
501.950547	22.47	-16.72	-23.55	46.02	193	347
547.546392	24.5	-13.94	-21.52	46.02	384	193
713.405228	28.27	-11.9	-17.75	46.02	248	100
935.198967	30.63	-8.35	-15.39	46.02	391	282

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical QP

Customer / Model # - comma.ai / LightningHard SOM

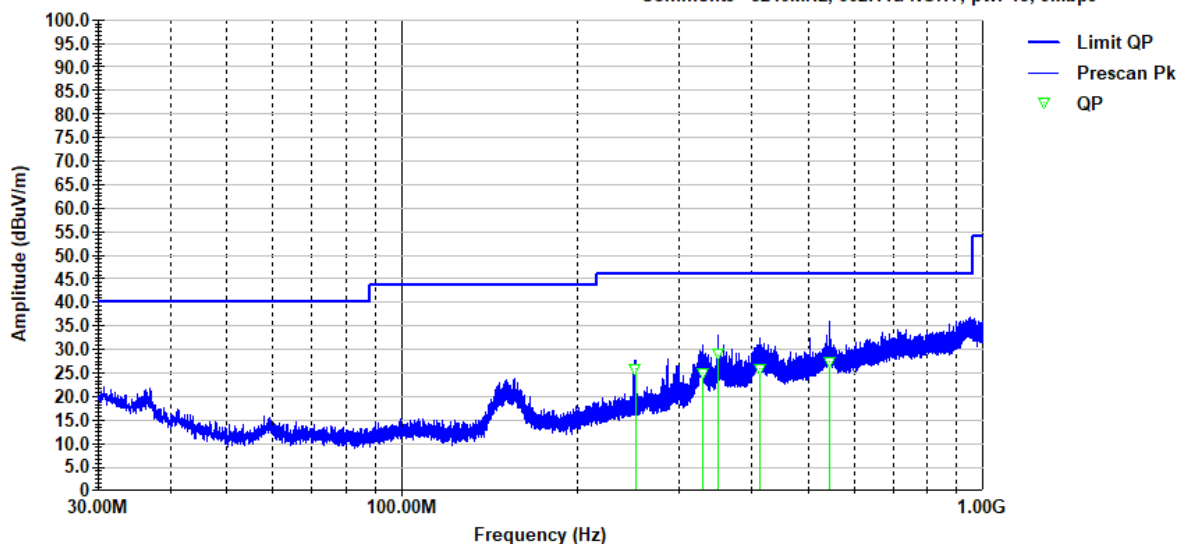
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - AG

Standard - FCC Class B

Comments - 5240MHz, 802.11a NOHT, pwr 15, 9Mbps



5240 15 9 FCC 15-247 RE 30M-1GHz.til

Last Data Update 07:36:42 PM, Thursday, March 21, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
251.990498	25.99	-24.28	-20.03	46.02	100	350
329.864974	25	-22.66	-21.02	46.02	170	16
350.02	28.98	-21.02	-17.04	46.02	154	10
413.932885	25.81	-17.97	-20.21	46.02	114	305
545.008828	27.43	-13.82	-18.59	46.02	100	346

1 to 18 GHz Low Channel – 5180MHz - - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

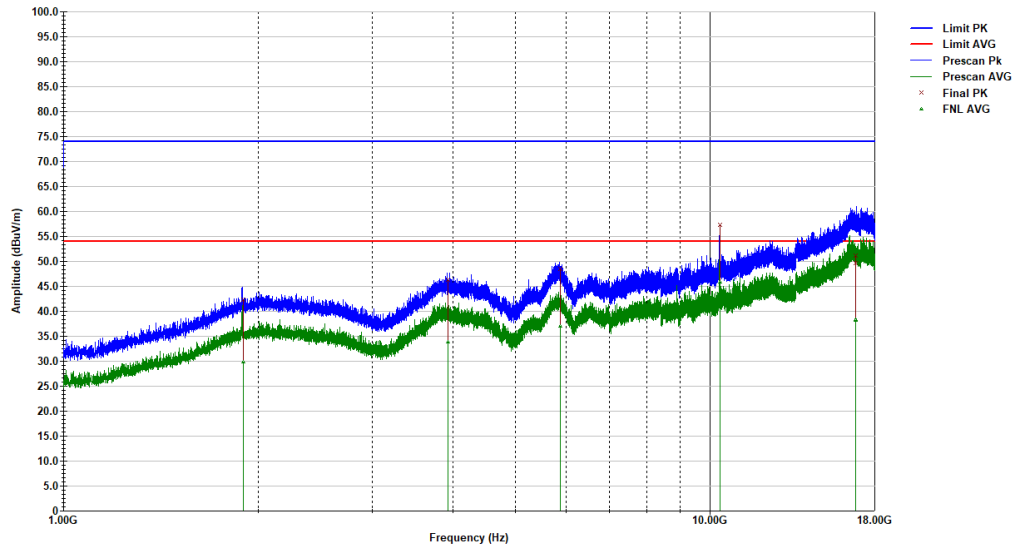
Model # - comma.ai

Test Mode - TX, 6GHz HPF

Operator - Alex C

Standard - FCC Class B

Comments - 5180MHz, 802.11a NOHT, pwr 15, 18Mbps



5180 15 18 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 03:26:07 PM, Wednesday, March 13, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
1899.096	42.33	-2.48	-31.67	74	308	-20
3935.59275	46.35	4.02	-27.65	74	286	265
5862.92925	48.52	9.65	-25.48	74	233	325
10360.67025	57.25	20.3	-16.75	74	217	318
16810.7034	51.21	33.53	-22.79	74	324	22
16824.7034	49.69	33.52	-24.31	74	201	281

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
1899.096	30	0.22	-2.48	-24.00	54	308	-20
3935.59275	34.11	0.22	4.02	-19.89	54	286	265
5862.92925	37.19	0.22	9.65	-16.81	54	233	325
10360.67025	46.06	0.22	20.3	-7.94	54	217	318
16810.7034	38.62	0.22	33.53	-15.38	54	324	22
16824.7034	38.42	0.22	33.52	-15.8	54	201	281

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Radiated Emissions

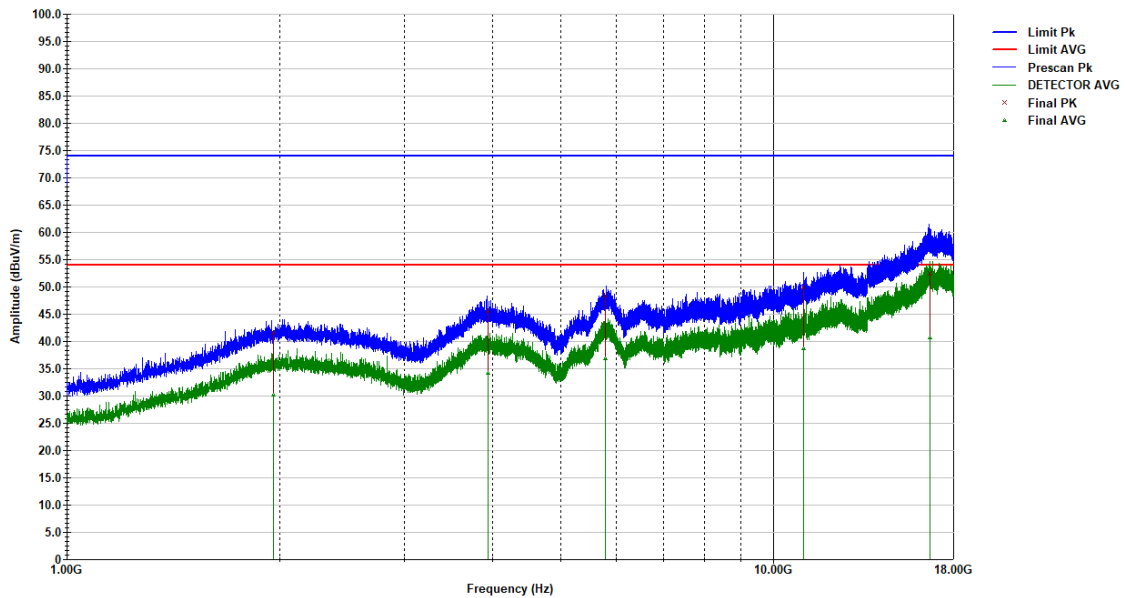
Test Mode - TX, 6GHz HPF

Operator - Alex C

Standard - FCC Class B

Vertical AVG

Comments - 5180MHz, 802.11a NOHT, pwr 15, 18mbps



5180 15 18 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 03:11:12 PM, Wednesday, March 13, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
1957.625625	41.6	-2.16	-32.4	74	317	135
3943.164625	45.71	4.07	-28.29	74	303	358
5789.2535	48.48	9.23	-25.52	74	280	92
1104.74754	49.94	22.18	-24.06	74	400	141
16674.9889	52.5	33.62	-21.5	74	150	88

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
1957.625625	30.35	0.22	-2.16	-23.65	54	317	135
3943.164625	34.42	0.22	4.07	-19.58	54	303	358
5789.2535	36.98	0.22	9.23	-17.02	54	280	92
1104.74754	38.96	0.22	22.18	-15.04	54	400	141
16674.9889	40.96	0.22	33.62	-13.04	54	150	88

Lower band edge falling to restricted band Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Test Mode - Tx mode, Lower Band-Edge

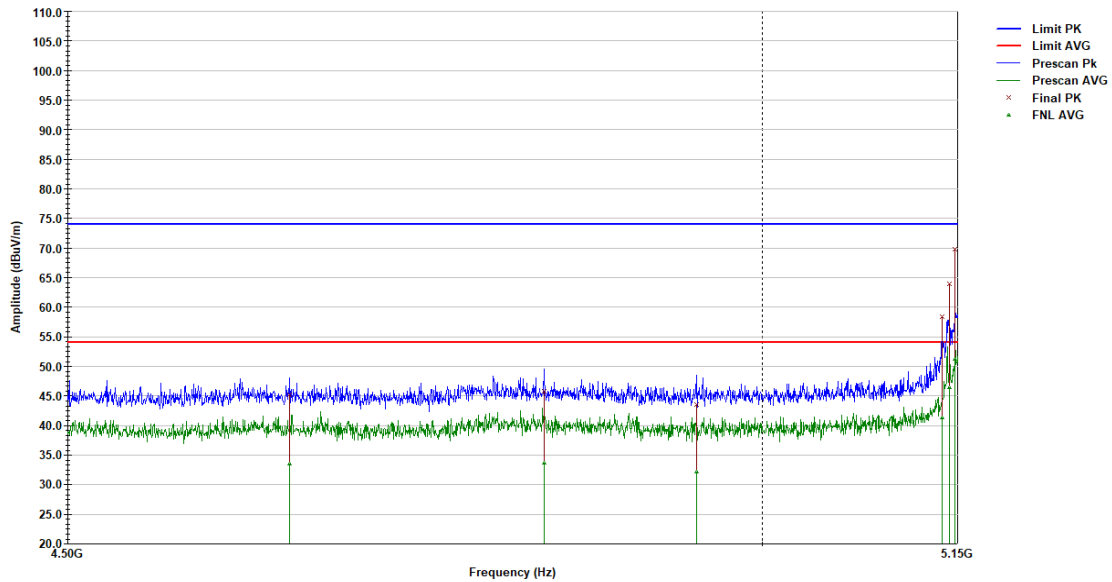
Radiated Emissions

Operator - Alex C

Horizontal AVG

Standard - FCC Class B

Comments - 5180MHz, 802.11a NOHT, pwr 15, 18mbps



5180 15 18 RE Lower Band-Edge.til

Last Data Update 10:19:12 AM, Monday, May 20, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4654.14	45.17	6.58	-28.83	74	150	236
4836.90001	45.76	6.85	-28.24	74	150	265
4949.95001	43.53	6.44	-30.47	74	178	162
5137.80001	58.36	7.12	-15.64	74	350	-17
5143.75001	63.94	7.16	-10.06	74	347	-17
5148.00001	69.83	7.19	-4.17	74	354	-14

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4654.14	33.72	0.22	6.58	-20.28	54	150	236
4836.90001	33.9	0.22	6.85	-20.1	54	150	265
4949.95001	32.35	0.22	6.44	-21.65	54	178	162
5137.80001	41.58	0.22	7.12	-12.42	54	350	-17
5143.75001	46.64	0.22	7.16	-7.36	54	347	-17
5148.00001	51.42	0.22	7.19	-2.58	54	354	-14

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Radiated Emissions

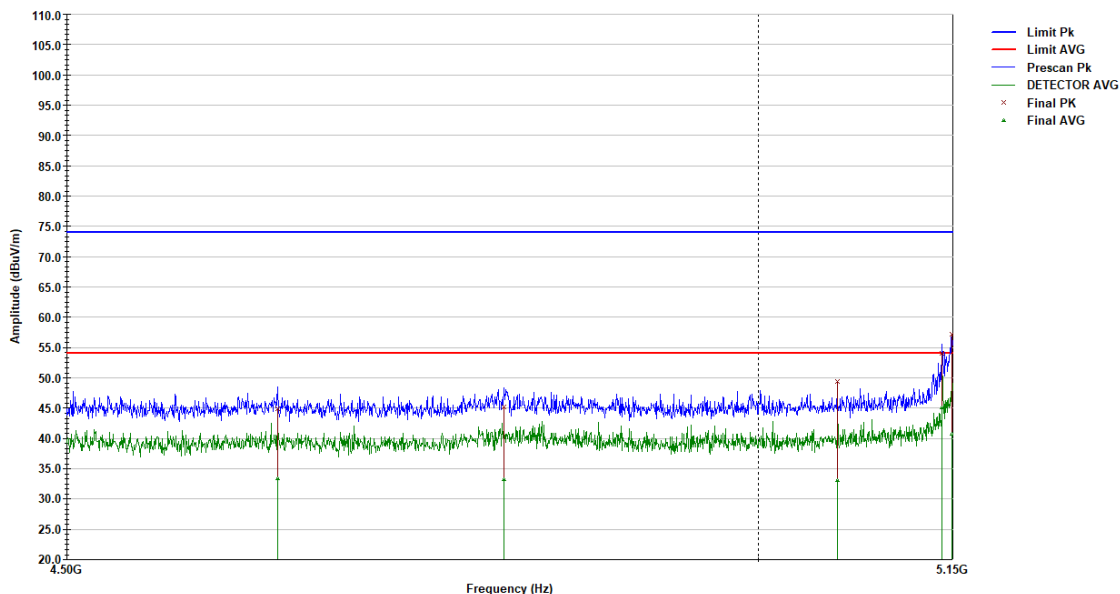
Test Mode - Tx mode, Lower Band-Edge

Vertical AVG

Operator - Alex C

Standard - FCC Class B

Comments - 5180MHz, 802.11a NOHT, pwr 15, 18mbps



5180 15 18 RE Lower Band-Edge.ttl

Last Data Update 10:00:38 AM, Monday, May 20, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4646.92501	44.95	6.49	-29.05	74	271	16
4809.70001	45.16	6.71	-28.84	74	302	181
5060.02501	49.4	6.46	-24.6	74	171	114
5141.62501	54	7.15	-20	74	400	47
5149.275	57.22	7.2	-16.78	74	333	32

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4646.92501	33.59	0.22	6.49	-20.41	54	271	16
4809.70001	33.47	0.22	6.71	-20.53	54	302	181
5060.02501	33.27	0.22	6.46	-20.73	54	171	114
5141.62501	45.25	0.22	7.15	-8.75	54	400	47
5149.275	40.84	0.22	7.2	-13.16	54	333	32

1 to 18 GHz Mid Channel – 5200MHz - - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

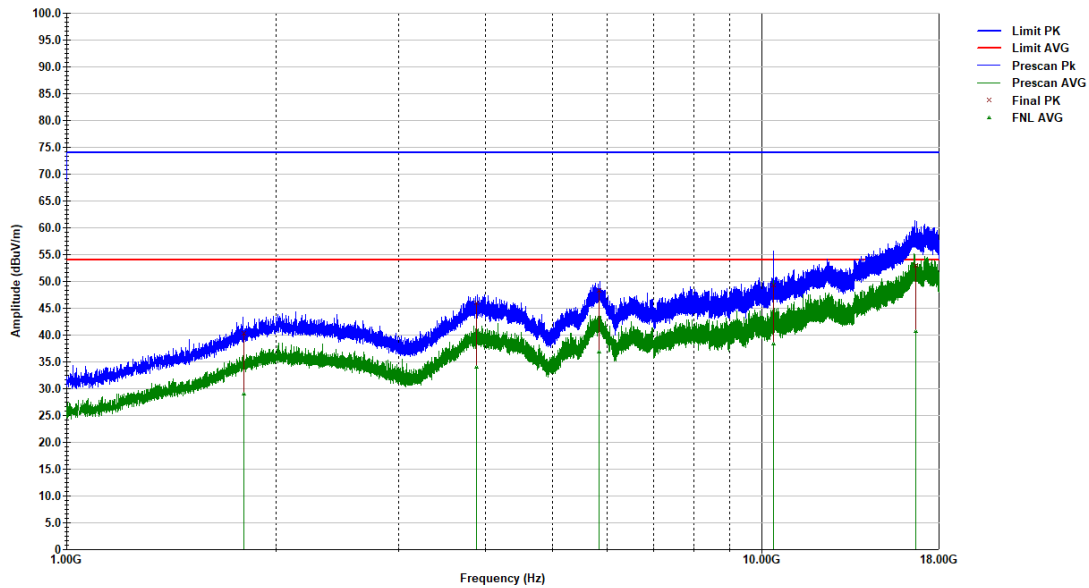
Model # - comma.ai

Test Mode - TX, 6GHz HPF

Operator - Alex C

Standard - FCC Class B

Comments - 5200MHz, 802.11a NOHT, pwr 15, 18mbps



5200 15 18 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 04:01:52 PM, Wednesday, March 13, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
1799.89325	40.4	-3.46	-33.6	74	356	380
3888.73625	46.07	3.79	-27.93	74	150	314
5832.21125	48.27	9.43	-25.73	74	224	169
10398.0695	49.33	20.4	-24.67	74	341	35
16671.3795	53.06	33.62	-20.94	74	309	206

Average

Freq. (MHz)	Final AVG (dBuV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
1799.89325	29.15	0.22	-3.46	-24.85	54	356	380
3888.73625	33.99	0.22	3.79	-20.01	54	150	314
5832.21125	36.86	0.22	9.43	-17.14	54	224	169
10398.0695	38.28	0.22	20.4	-15.72	54	341	35
16671.3795	40.62	0.22	33.62	-13.38	54	309	206

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Radiated Emissions

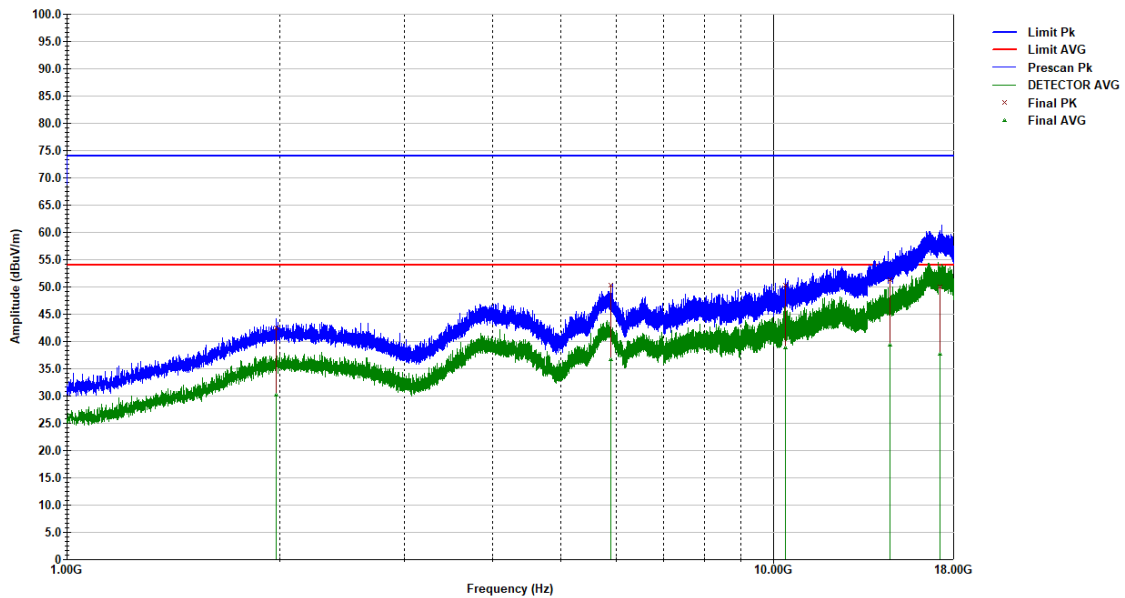
Test Mode - TX, 6GHz HPF

Operator - Alex C

Standard - FCC Class B

Vertical AVG

Comments - 5200MHz, 802.11a NOHT, pwr 15, 18Mbps



5200 15 18 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 03:49:06 PM, Wednesday, March 13, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
1976.921	42.44	-2.04	-31.56	74	150	372
5888.97225	50.3	9.81	-23.7	74	179	227
10399.23975	50.37	20.4	-23.63	74	202	295
14612.1569	51.4	27.63	-22.6	74	218	231
17235.05425	50.01	32.71	-23.99	74	319	370

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
1976.921	30.41	0.22	-2.04	-23.59	54	150	372
5888.97225	36.89	0.22	9.81	-17.11	54	179	227
10399.23975	39.01	0.22	20.4	-14.99	54	202	295
14612.1569	39.54	0.22	27.63	-14.46	54	218	231
17235.05425	37.9	0.22	32.71	-16.1	54	319	370

1 to 18 GHz High Channel – 5240MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

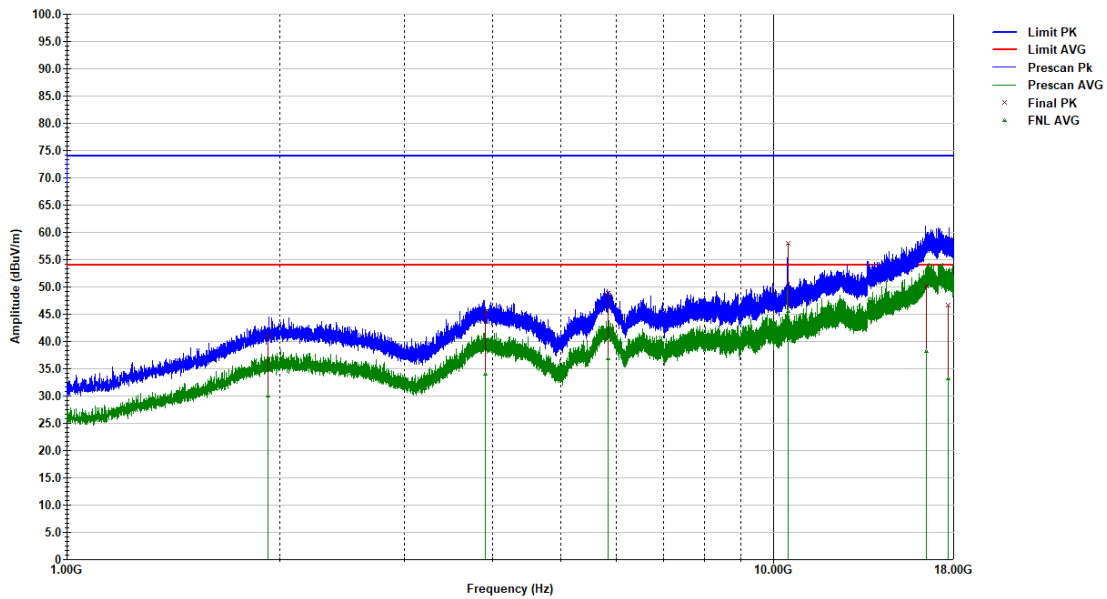
Model # - comma.ai

Test Mode - TX, 6GHz HPF

Operator - Alex C

Standard - FCC Class B

Comments - 5240MHz, 802.11a NOHT, pwr 15, 9mbps



5240 15 9 RE CISPR SW1A NC 3117 w lambda Ina AVG 1G-18G 06Feb2024.ttl

Last Data Update 04:43:22 PM, Wednesday, March 13, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
1925.306375	41.13	-2.3	-32.87	74	316	2
3913.797375	45.43	3.89	-28.57	74	364	258
5837.899875	48.76	9.47	-25.24	74	386	46
10485.0776	58.03	20.54	-15.97	74	225	35
16461.2513	50.1	32.93	-23.9	74	301	42

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
1925.306375	30.07	0.11	-2.3	-23.93	54	316	2
3913.797375	34.07	0.11	3.89	-19.93	54	364	258
5837.899875	36.89	0.11	9.47	-17.11	54	386	46
10485.0776	45.53	0.11	20.54	-8.47	54	225	35
16461.2513	38.27	0.11	32.93	-15.73	54	301	42

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Radiated Emissions

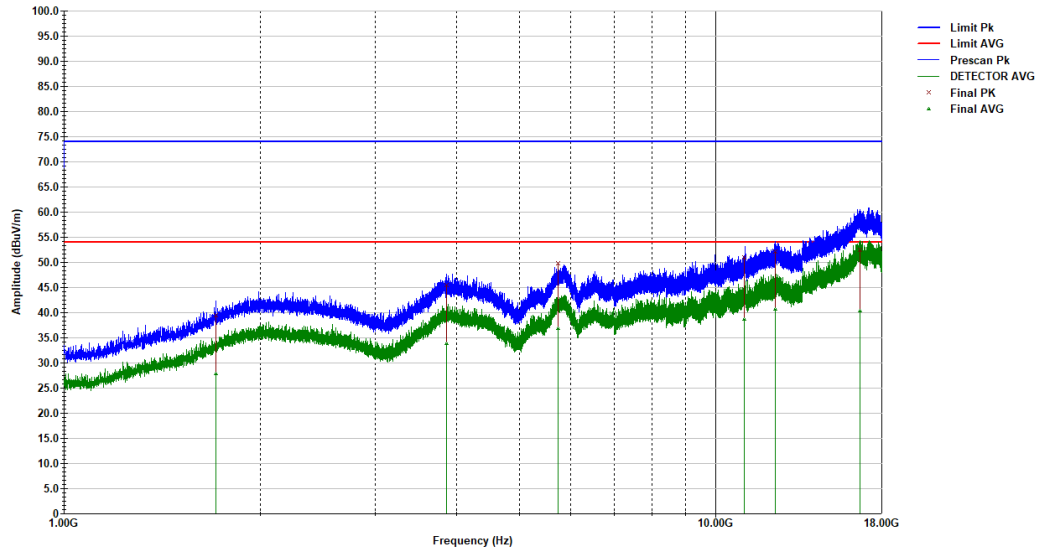
Test Mode - TX, 6GHz HPF

Operator - Alex C

Vertical AVG

Standard - FCC Class B

Comments - 5240MHz, 802.11a NOHT, pwr 15, 9mbps



5240 15 9 RE CISPR SW1A NC 3117 w lambda Ina AVG 1G-18G 06Feb2024.ttl

Last Data Update 04:29:25 PM, Wednesday, March 13, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
1712.3555	39.43	-4.41	-34.57	74	294	247
3863.103	45.46	3.69	-28.54	74	150	80
5730.402	49.83	9.15	-24.17	74	280	327
11060.44625	50.91	22.26	-23.09	74	172	156
12348.03375	52.2	25.91	-21.8	74	202	132
16659.013	52.55	33.62	-21.45	74	357	268

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
1712.3555	27.87	0.11	-4.41	-26.13	54	294	247
3863.103	33.87	0.11	3.69	-20.13	54	150	80
5730.402	36.95	0.11	9.15	-17.05	54	280	327
11060.44625	38.74	0.11	22.26	-15.26	54	172	156
12348.03375	40.8	0.11	25.91	-13.2	54	202	132
16659.013	40.49	0.11	33.62	-13.51	54	357	268

UNII1: 802.11n20

30 to 1000 MHz High Channel – 5240MHz - both chains transmitting

Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal QP

Customer / Model # - comma.ai / LightningHard SOM

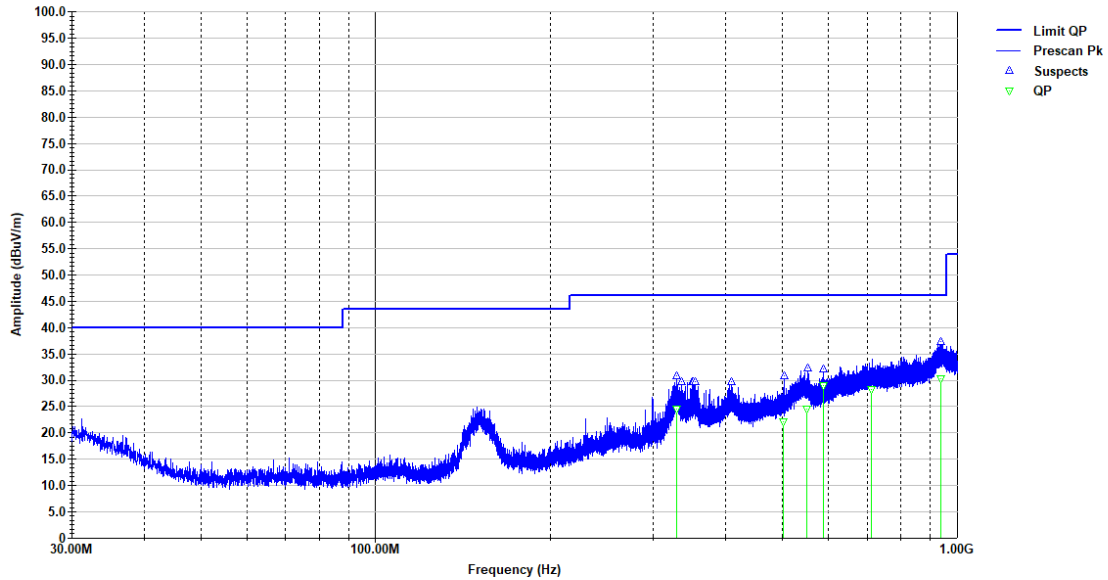
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - AG

Standard - FCC Class B

Comments - 5240MHz, 802.11n HT20, pwr 15, mcs0



5240 15 mcs0 FCC 15.247 RE 30M-1GHz.ttl

Last Data Update 08:42:02 PM, Thursday, March 21, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
329.61923	24.55	-22.66	-21.47	46.02	106	143
503.300547	22.05	-16.63	-23.97	46.02	358	37
552.275317	24.52	-13.8	-21.5	46.02	264	48
587.975567	28.93	-14.74	-17.09	46.02	194	332
711.649007	28.25	-11.88	-17.77	46.02	137	358
939.466537	30.34	-8.3	-15.68	46.02	169	2

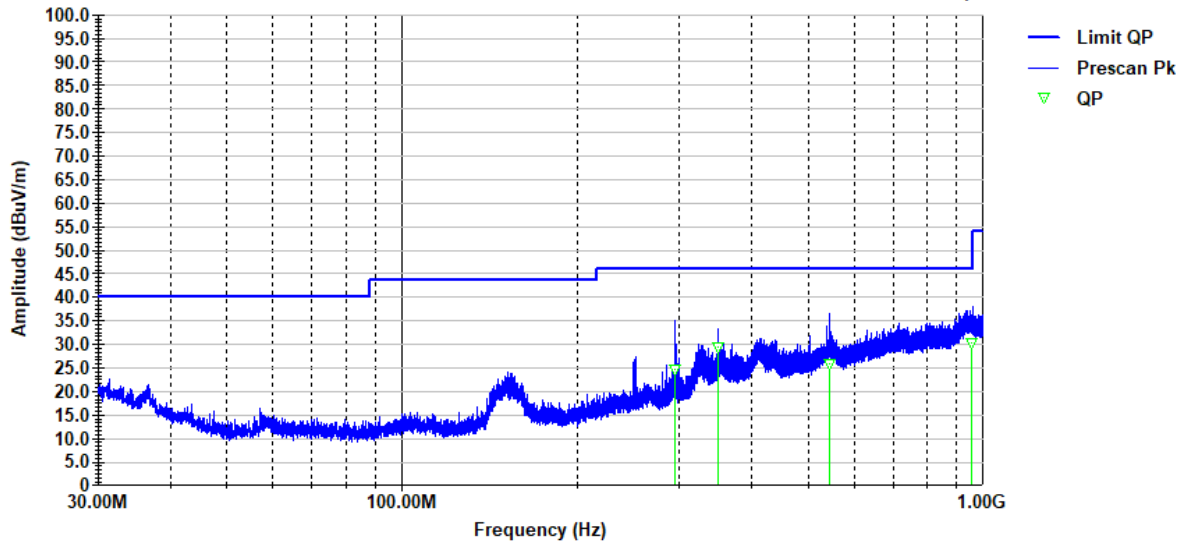
Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical QP

Customer / Model # - comma.ai / LightningHard SOM
Serial # - N/A
Test Mode - TX99, ext. DC power supply
Operator - AG
Standard - FCC Class B
Comments - 5240MHz, 802.11n HT20, pwr 15, mcs0



5240 15 mcs0 FCC 15-247 RE 30M-1GHz.til

Last Data Update 08:24:16 PM, Thursday, March 21, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
294.986643	24.56	-23.84	-21.46	46.02	145	342
349.998906	29.44	-21.02	-16.58	46.02	130	265
543.26162	25.92	-13.85	-20.1	46.02	154	335
956.542019	30.17	-8.63	-15.85	46.02	106	139

1 to 18 GHz Low Channel – 5180MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

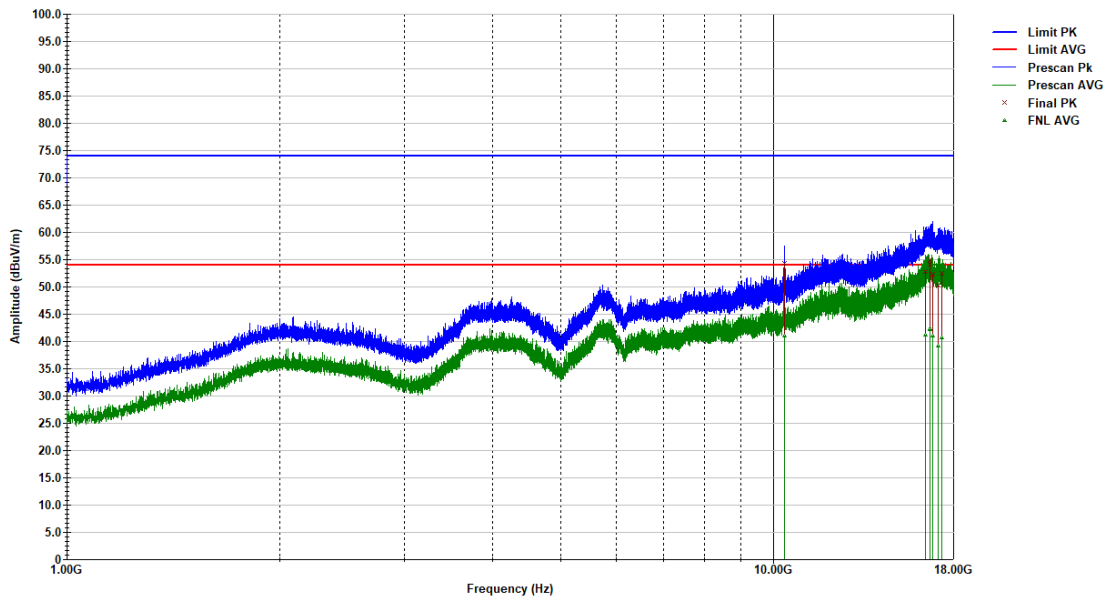
Model # - comma.ai

Test Mode - TX, 6GHz HPF

Operator - Alex C

Standard - FCC Class B

Comments - 5180MHz, 802.11n20 HT20, pwr 15, mcs0



5180 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 09:37:18 AM, Thursday, March 14, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10360.07685	54.35	20.3	-19.65	74	286	61
16398.4399	52.73	32.64	-21.27	74	278	105
16647.4645	54.94	33.63	-19.06	74	233	184
16648.12975	54.12	33.63	-19.88	74	163	243
16835.21575	52.39	33.51	-21.61	74	170	151
17098.9415	50.33	32.77	-23.67	74	302	218
17312.36225	52.49	32.48	-21.51	74	225	112

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10360.07685	41.05	0.0	20.3	-12.95	54	286	61
16398.4399	41.14	0.0	32.64	-12.86	54	278	105
16647.4645	42.32	0.0	33.63	-11.68	54	233	184
16648.12975	42.19	0.0	33.63	-11.81	54	163	243
16835.21575	40.96	0.0	33.51	-13.04	54	170	151
17098.9415	39.09	0.0	32.77	-14.91	54	302	218
17312.36225	40.7	0.0	32.48	-13.3	54	225	112

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Radiated Emissions

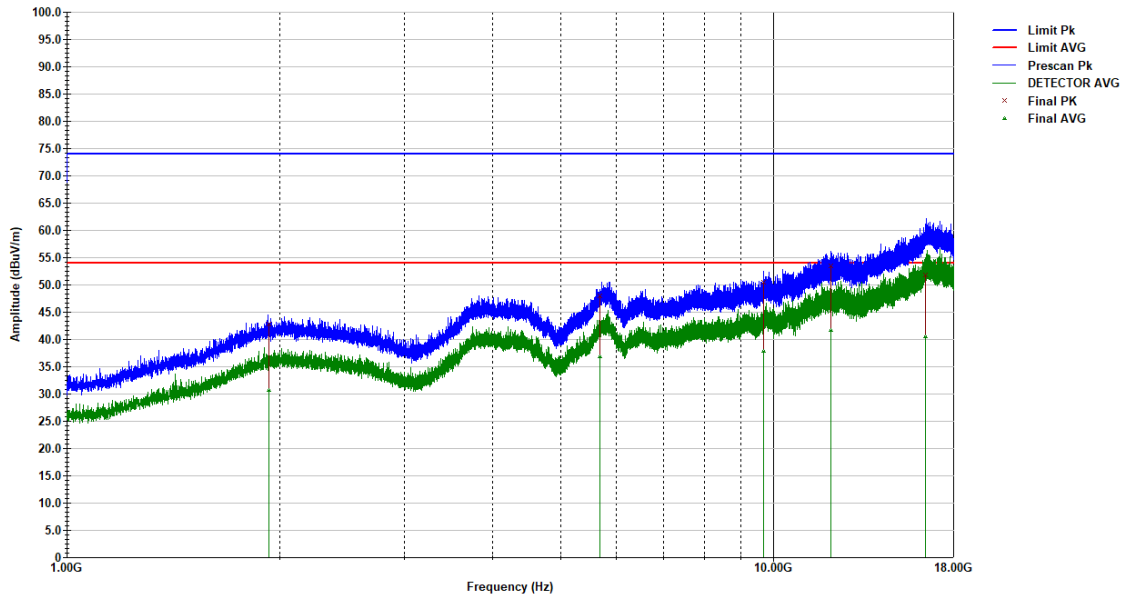
Test Mode - TX, 6GHz HPF

Operator - Alex C

Vertical AVG

Standard - FCC Class B

Comments - 5180MHz, 802.11n20 HT20, pwr 15, mcs0



5180 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.til

Last Data Update 08:51:51 AM, Thursday, March 14, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
1928.7345	42.88	-2.29	-31.12	74	172	34
5687.877875	47.98	9.09	-26.02	74	357	96
9699.331	50.52	18.8	-23.48	74	295	-20
12081.29485	53.54	25.41	-20.46	74	373	160
16412.10985	51.84	32.7	-22.16	74	163	96

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
1928.7345	30.65	0.0	-2.29	-23.35	54	172	34
5687.877875	36.76	0.0	9.09	-17.24	54	357	96
9699.331	37.89	0.0	18.8	-16.11	54	295	-20
12081.29485	41.61	0.0	25.41	-12.39	54	373	160
16412.10985	40.41	0.0	32.7	-13.59	54	163	96

Lower band edge falling to restricted band Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Radiated Emissions

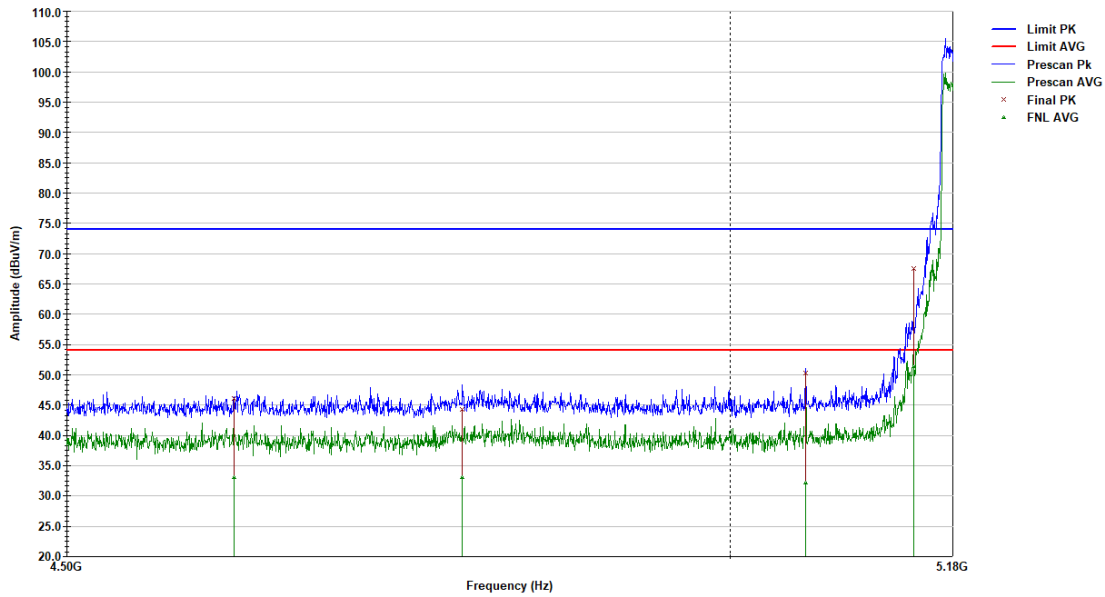
Test Mode - Tx mode, Lower Band-Edge

Horizontal AVG

Operator - Alex C

Standard - FCC Class B

Comments - 5180MHz, 802.11a HT20, pwr 15, mcs4



5180 15 mcs4 RE Lower Band-Edge.ttl

Last Data Update 11:33:10 AM, Monday, May 20, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4621.425	46.15	6.17	-27.85	74	302	285
4791.85001	44.36	6.47	-29.64	74	216	49
5060.025	50.36	6.46	-23.64	74	163	12
5148.00001	67.53	7.19	-6.47	74	278	361

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4621.425	33.62	0.52	6.17	-20.38	54	302	285
4791.85001	33.6	0.52	6.47	-20.4	54	216	49
5060.025	32.68	0.52	6.46	-21.32	54	163	12
5148.00001	51.9	0.52	7.19	-2.1	54	278	361

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Radiated Emissions

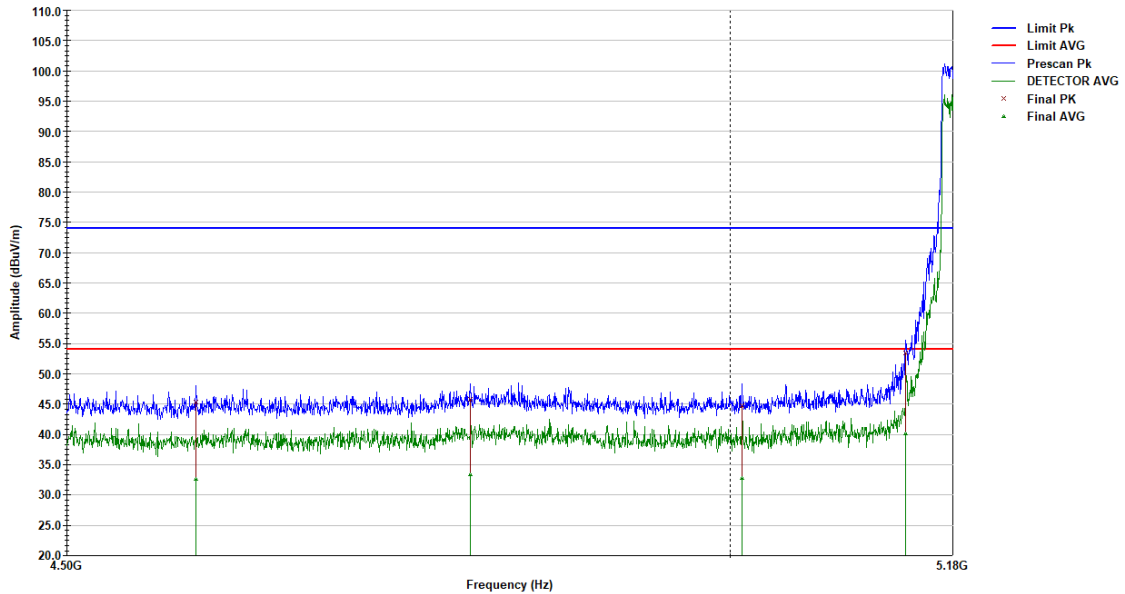
Test Mode - Tx mode, Lower Band-Edge

Vertical AVG

Operator - Alex C

Standard - FCC Class B

Comments - 5180MHz, 802.11a HT20, pwr 15, mcs4



5180 15 mcs4 RE Lower Band-Edge.ttl

Last Data Update 11:23:14 AM, Monday, May 20, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4593.375	45.35	5.82	-28.65	74	326	-13
4797.70001	45.78	6.55	-28.22	74	325	-20
5009.45	44.8	6.32	-29.2	74	302	368
5141.20001	53.48	7.14	-20.52	74	388	254

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4593.375	33.18	0.52	5.82	-20.82	54	326	-13
4797.70001	33.86	0.52	6.55	-20.14	54	325	-20
5009.45	33.28	0.52	6.32	-20.72	54	302	368
5141.20001	40.62	0.52	7.14	-13.38	54	388	254

1 to 18 GHz Mid Channel – 5200MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

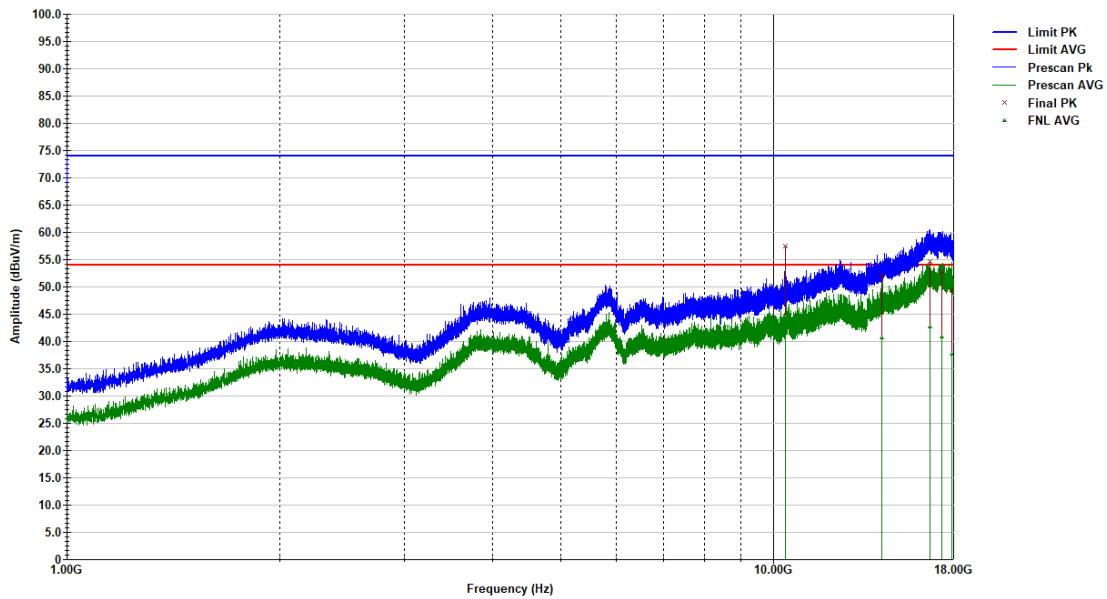
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5200MHz, 802.11n20 HT20, pwr 15, mcs0



5200 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 10:19:37 AM, Thursday, March 14, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10399.0535	57.57	20.4	-16.43	74	202	305
14223.631	52.11	26.97	-21.89	74	263	343
16660.4805	54.65	33.62	-19.35	74	239	146
17347.06	52.77	32.39	-21.23	74	217	49
17899.6139	49.55	32.02	-24.45	74	400	90

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10399.0535	44.41	0.0	20.4	-9.59	54	202	305
14223.631	40.69	0.0	26.97	-13.31	54	263	343
16660.4805	42.73	0.0	33.62	-11.27	54	239	146
17347.06	40.79	0.0	32.39	-13.21	54	217	49
17899.6139	37.6	0.0	32.02	-16.4	54	400	90

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

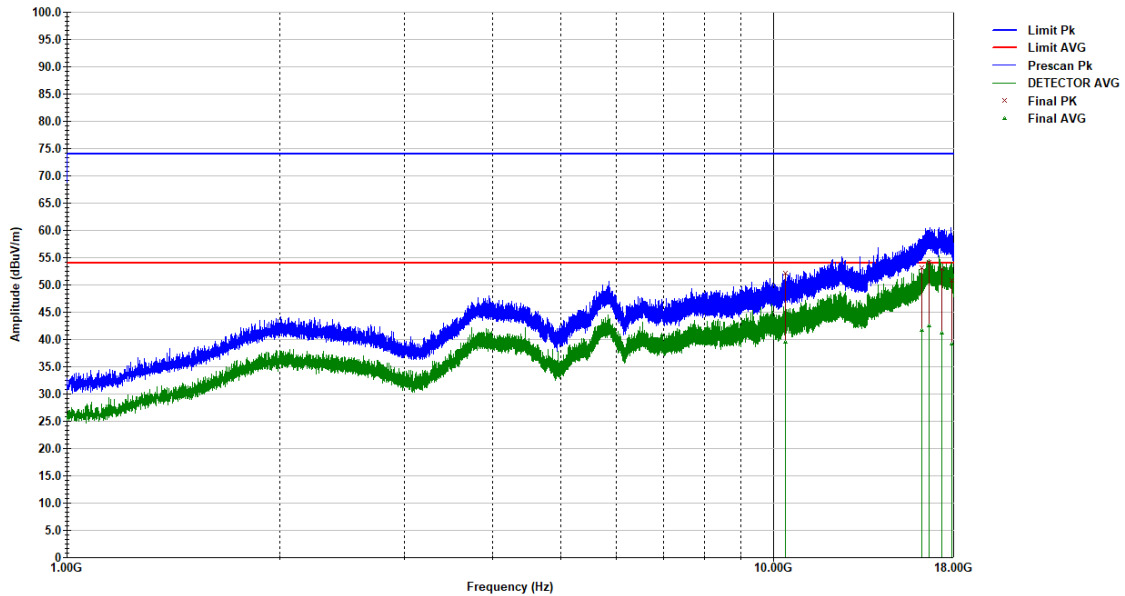
Test Mode - TX, 6GHz HPF

Operator - AG

Standard - FCC Class B

Comments - 5200MHz, 802.11n20 HT20, pwr 15, mcs0

Vertical AVG



5200 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.til

Last Data Update 10:04:39 AM, Thursday, March 14, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10398.3035	52.23	20.4	-21.77	74	163	300
16224.94965	53.09	31.88	-20.91	74	400	65
16637.4805	54.17	33.63	-19.83	74	350	329
17336.81	52.93	32.42	-21.07	74	264	15
17873.3639	50.77	31.97	-23.23	74	372	103

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10398.3035	39.48	0.0	20.4	-14.52	54	163	300
16224.94965	41.68	0.0	31.88	-12.32	54	400	65
16637.4805	42.46	0.0	33.63	-11.54	54	350	329
17336.81	41.1	0.0	32.42	-12.9	54	264	15
17873.3639	39.12	0.0	31.97	-14.88	54	372	103

1 to 18 GHz High Channel – 5240MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

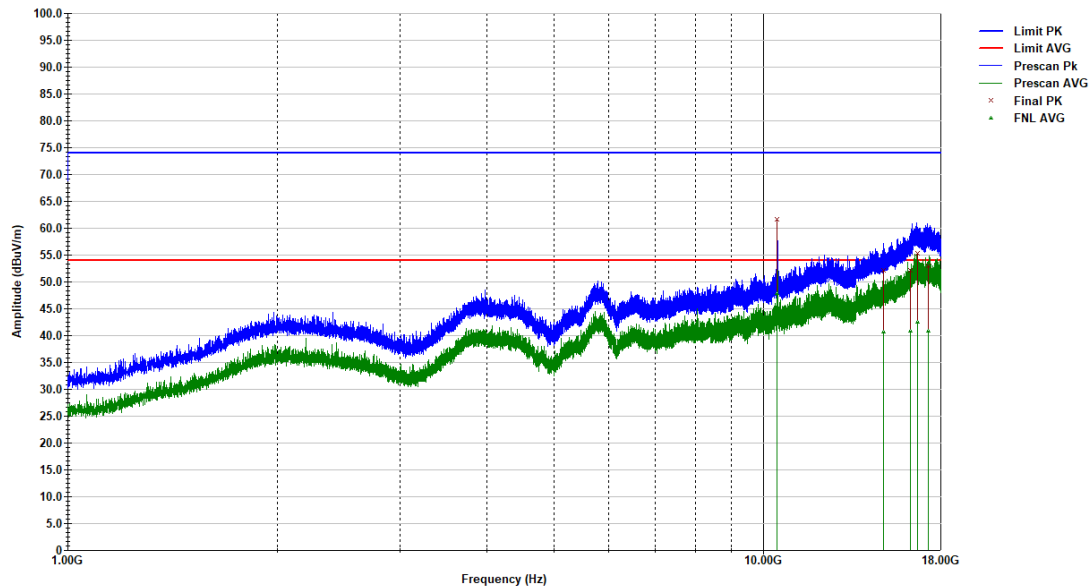
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5240MHz, 802.11n20 HT20, pwr 15, mcs0



5240 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 11:13:02 AM, Thursday, March 14, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10479.70825	61.72	20.53	-12.28	74	217	314
149079.38	52.19	28.25	-21.81	74	279	295
16299.90475	52.14	32.2	-21.86	74	246	180
16659.92225	55.37	33.62	-18.63	74	340	214
17260.3006	53.06	32.63	-20.94	74	225	325

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10479.70825	47.9	0.0	20.53	-6.1	54	217	314
149079.38	40.74	0.0	28.25	-13.26	54	279	295
16299.90475	40.85	0.0	32.2	-13.15	54	246	180
16659.92225	42.44	0.0	33.62	-11.56	54	340	214
17260.3006	40.81	0.0	32.63	-13.19	54	225	325

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

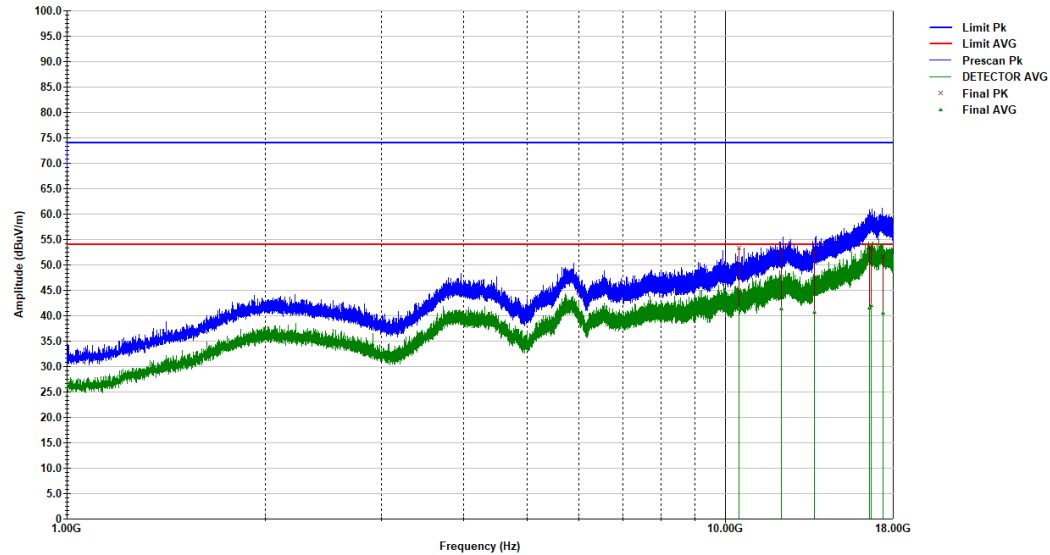
Test Mode - TX, 6GHz HPF

Operator - AG

Vertical AVG

Standard - FCC Class B

Comments - 5240MHz, 802.11n20 HT20, pwr 15, mcs0



5240 15 mcs0 RE CISPR SW1A NC 3117 w lambda Ina AVG 1G-18G 06Feb2024.ttl

Last Data Update 10:54:17 AM, Thursday, March 14, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10481.85	53.27	20.54	-20.73	74	217	313
12185.35225	53.08	25.65	-20.92	74	357	231
13673.14115	52.42	26.37	-21.58	74	155	321
16561.52465	53.48	33.37	-20.52	74	150	231
16659.51035	53.12	33.62	-20.88	74	319	336
17359.8491	51.58	32.36	-22.42	74	372	317

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10481.85	41.26	0.0	20.54	-12.74	54	217	313
12185.35225	41.37	0.0	25.65	-12.63	54	357	231
13673.14115	40.59	0.0	26.37	-13.41	54	155	321
16561.52465	41.53	0.0	33.37	-12.47	54	150	231
16659.51035	41.96	0.0	33.62	-12.04	54	319	336
17359.8491	40.42	0.0	32.36	-13.58	54	372	317

UNII1: 802.11n40

30 to 1000 MHz
High Channel – 5230MHz - both chains transmitting
Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal QP

Customer / Model # - comma.ai / LightningHard SOM

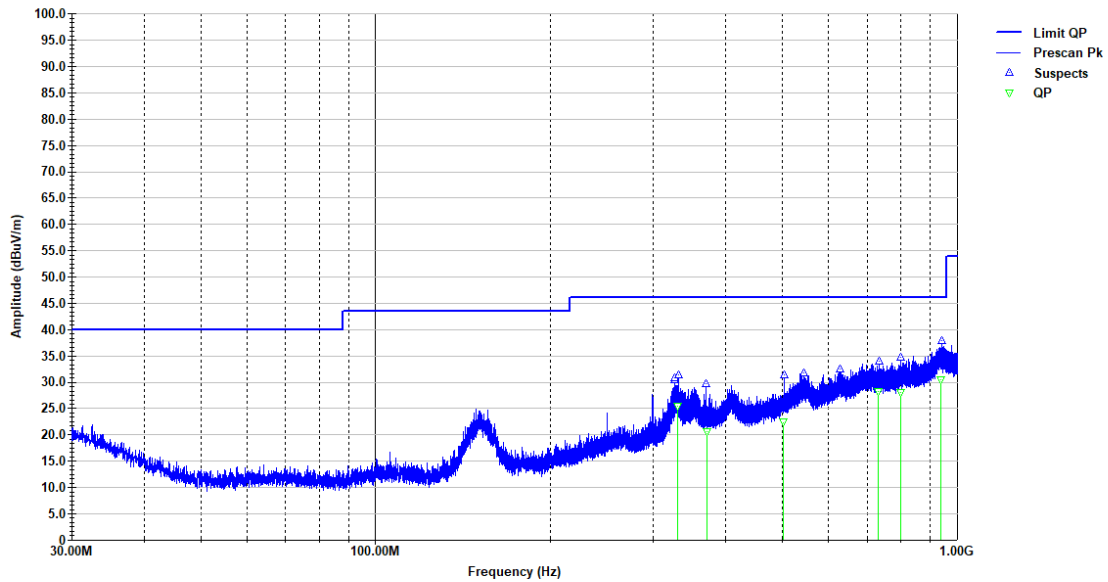
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - AG

Standard - FCC Class B

Comments - 5230MHz, 802.11n HT40, pwr 13, mcs2



5230 13 mcs2 FCC 15.247 RE 30M-1GHz.ttl

Last Data Update 09:32:55 PM, Thursday, March 21, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
331.077849	25.37	-22.58	-20.65	46.02	100	324
371.271451	20.52	-20.11	-25.5	46.02	267	347
502.490547	22.37	-16.68	-23.65	46.02	344	177
730.96496	28.28	-11.7	-17.74	46.02	308	51
801.14607	28.06	-11.31	-17.96	46.02	240	240
939.216571	30.5	-8.31	-15.52	46.02	185	13

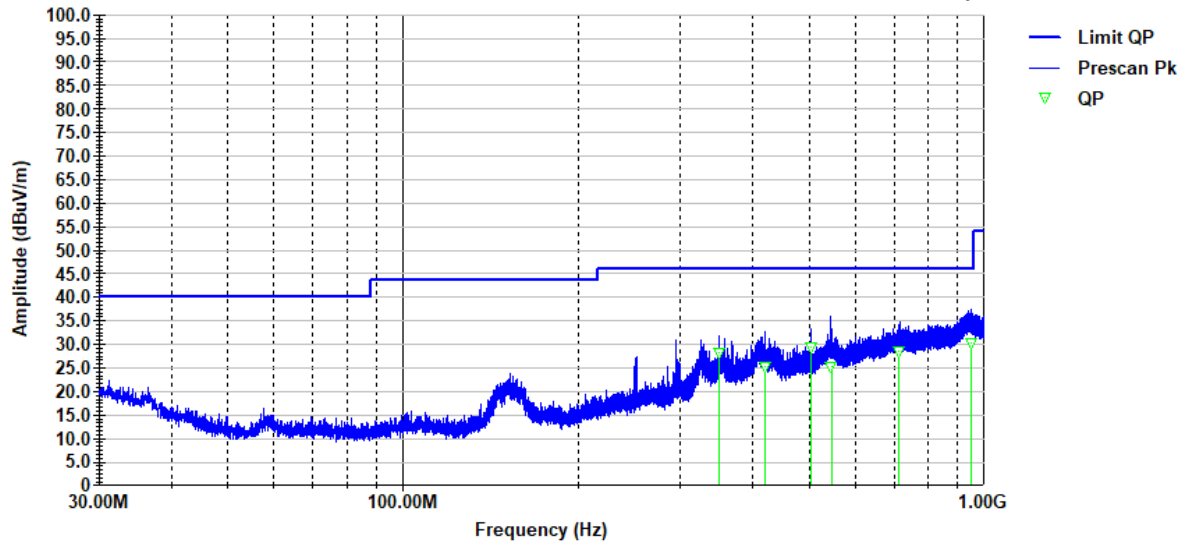
Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical QP

Customer / Model # - comma.ai / LightningHard SOM
Serial # - N/A
Test Mode - TX99, ext. DC power supply
Operator - AG
Standard - FCC Class B
Comments - 5230MHz, 802.11n HT40, pwr 13, mcs2



5230 13 mcs2 FCC 15-247 RE 30M-1GHz.til

Last Data Update 09:14:41 PM, Thursday, March 21, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
349.968906	28.37	-21.02	-17.65	46.02	137	-17
420.2103	25.34	-18.23	-20.68	46.02	130	272
504.026369	29.51	-16.59	-16.51	46.02	100	358
545.422214	25.34	-13.84	-20.68	46.02	315	323
712.375445	28.58	-11.89	-17.44	46.02	138	218
951.772122	30.18	-8.44	-15.84	46.02	250	112

1 to 18 GHz Low Channel – 5190MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

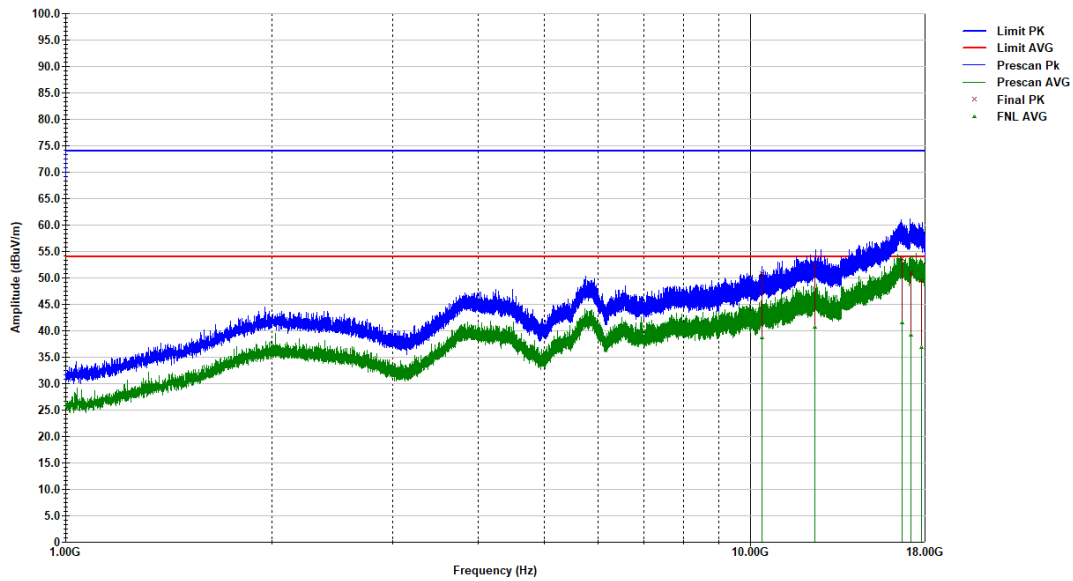
Customer / Model # - comma.ai / LightningHard SOM

Test Mode - TX, 6GHz HPF

Operator - AG

Standard - FCC Class B

Comments - 5190MHz, 802.11n40 HT40, pwr 13, mcs8



5190 13 mcs8 RE CISPR SW1A NC 3117 w lambda Ina AVG 1G-18G 06Feb2024.ttl

Last Data Update 01:01:18 PM, Thursday, March 14, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10413.35	50.86	20.43	-23.14	74	247	355
12436.8695	52.45	25.96	-21.55	74	150	-20
16674.50725	53.68	33.62	-20.32	74	282	355
17185.84785	51.03	32.8	-22.97	74	248	329
17787.35525	49.47	31.84	-24.53	74	178	206

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10413.35	39.01	0.3	20.43	-14.99	54	247	355
12436.8695	41.04	0.3	25.96	-12.96	54	150	-20
16674.50725	41.84	0.3	33.62	-12.16	54	282	355
17185.84785	39.46	0.3	32.8	-14.54	54	248	329
17787.35525	37.16	0.3	31.84	-16.84	54	178	206

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

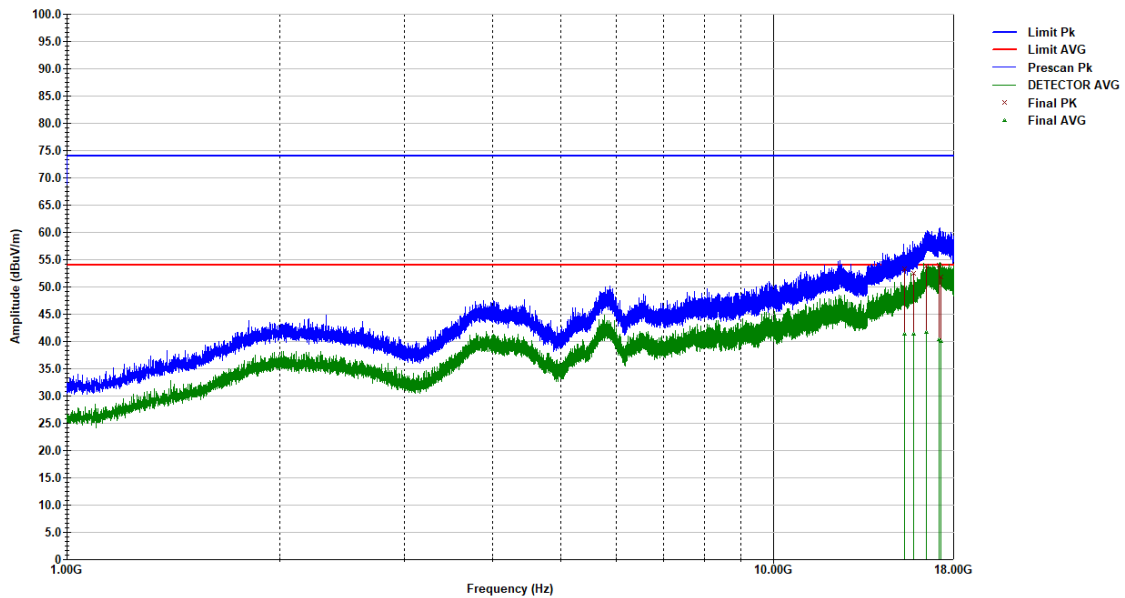
Test Mode - TX, 6GHz HPF

Operator - AG

Standard - FCC Class B

Comments - 5190MHz, 802.11n40 HT40, pwr 13, mcs8

Vertical AVG



5190 13 mcs8 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.til

Last Data Update 12:47:13 PM, Thursday, March 14, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
15336.74375	53.39	29.26	-20.61	74	310	53
15786.6699	52.51	30.31	-21.49	74	400	170
16484.57575	53.78	33.03	-20.22	74	194	223
17161.484	54.08	32.79	-19.92	74	297	144
17274.7901	51.82	32.59	-22.18	74	150	380

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
15336.74375	41.56	0.3	29.26	-12.44	54	310	53
15786.6699	41.67	0.3	30.31	-12.33	54	400	170
16484.57575	41.9	0.3	33.03	-12.1	54	194	223
17161.484	40.7	0.3	32.79	-13.3	54	297	144
17274.7901	40.21	0.3	32.59	-13.79	54	150	380

Lower band edge falling to restricted band Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Radiated Emissions

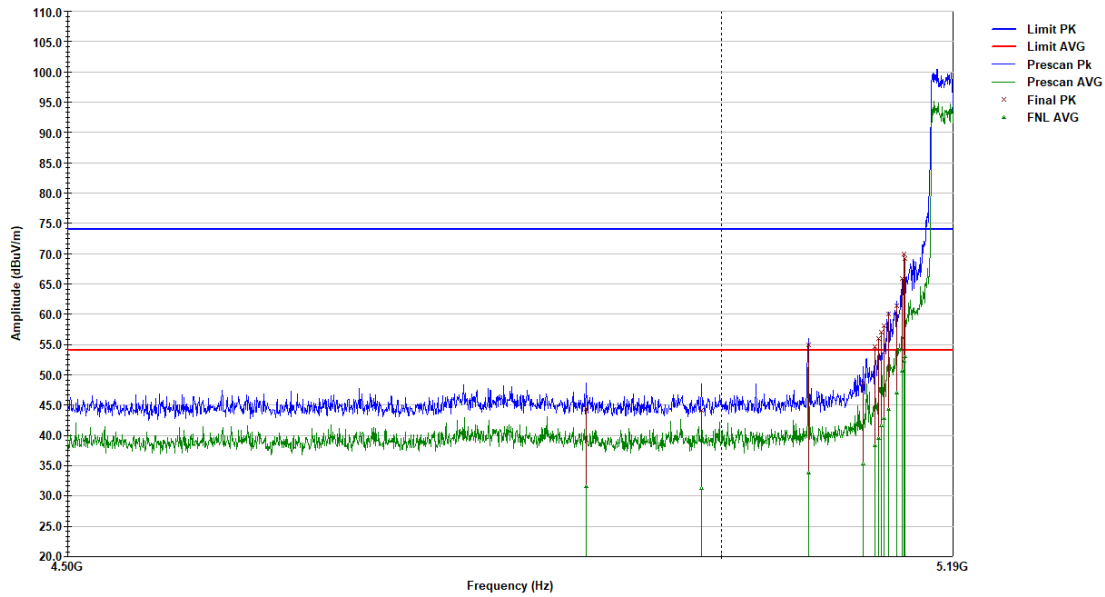
Test Mode - Tx mode, Lower Band-Edge

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5190MHz, 802.11n40 HT40, pwr 13, mcs3



5190 13 mcs3 RE Lower Band-Edge.ttl

Last Data Update 11:44:28 AM, Thursday, May 30, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4892.15	44.49	6.62	-29.51	74	244	307
4983.52501	44.2	6.41	-29.8	74	201	192
5070.65	54.99	6.52	-19.01	74	150	-8
5115.27501	48.7	6.94	-25.3	74	255	24
5125.47501	54.72	7.03	-19.28	74	347	-20
5128.45	55.98	7.05	-18.02	74	263	5
5130.575	57.09	7.06	-16.91	74	355	338
5132.70001	58.06	7.08	-15.94	74	264	-12
5136.1	60.1	7.11	-13.9	74	347	-20
5142.90001	61.45	7.16	-12.55	74	278	331
5147.57501	65.92	7.19	-8.08	74	270	22
5148.85001	69.96	7.2	-4.04	74	270	-20
5150	69.18	7.21	-4.82	74	270	336

Average

Freq. (MHz)	Final AVG (dBµV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
4892.15	32.01	0.52	6.62	-21.99	54	244	307
4983.52501	31.7	0.52	6.41	-22.3	54	201	192
5070.65	34.27	0.52	6.52	-19.73	54	150	-8
5115.27501	35.74	0.52	6.94	-18.26	54	255	24
5125.47501	38.84	0.52	7.03	-15.16	54	347	-20
5128.45	40.03	0.52	7.05	-13.97	54	263	5
5130.575	42.05	0.52	7.06	-11.95	54	355	338
5132.70001	43.32	0.52	7.08	-10.68	54	264	-12
5136.1	44.76	0.52	7.11	-9.24	54	347	-20
5142.90001	47.53	0.52	7.16	-6.47	54	278	331
5147.57501	51.1	0.52	7.19	-2.9	54	270	22
5148.85001	52.74	0.52	7.2	-1.26	54	270	-20
5150	53.54	0.52	7.21	-0.46	54	270	336

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Radiated Emissions

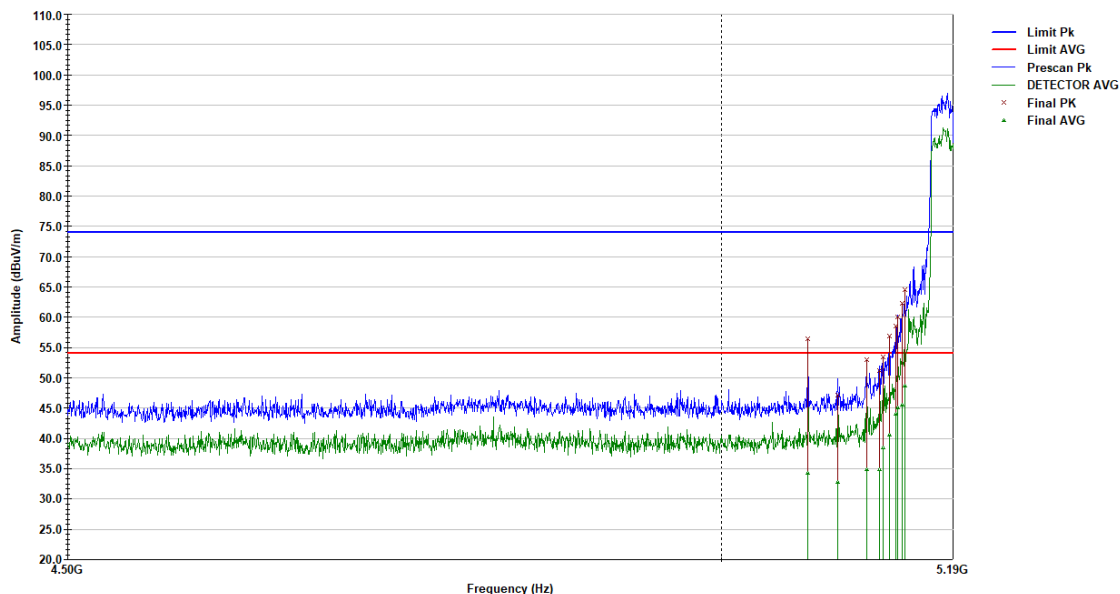
Test Mode - Tx mode, Lower Band-Edge

Operator - AG

Vertical AVG

Standard - FCC Class B

Comments - 5190MHz, 802.11a HT40, pwr 13, mcs0



5190 13 mcs3 RE Lower Band-Edge.ttl

Last Data Update 11:11:59 AM, Thursday, May 30, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5070.22501	56.38	6.51	-17.62	74	400	80
5094.45	47.22	6.74	-26.78	74	302	103
5118.25	53.07	6.97	-20.93	74	380	71
5128.875	51.19	7.05	-22.81	74	264	46
5131.85001	53.41	7.07	-20.59	74	326	32
5137.375	56.85	7.12	-17.15	74	400	47
5142.05001	58.54	7.15	-15.46	74	400	51
5143.75001	60.11	7.16	-13.89	74	379	65
5147.57501	62.34	7.19	-11.66	74	372	69
5150	64.61	7.21	-9.39	74	400	256

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5070.22501	34.7	0.52	6.51	-19.3	54	400	80
5094.45	33.21	0.52	6.74	-20.79	54	302	103
5118.25	35.3	0.52	6.97	-18.7	54	380	71
5128.875	35.3	0.52	7.05	-18.7	54	264	46
5131.85001	38.89	0.52	7.07	-15.11	54	326	32
5137.375	41.08	0.52	7.12	-12.92	54	400	47
5142.05001	44.46	0.52	7.15	-9.54	54	400	51
5143.75001	45.53	0.52	7.16	-8.47	54	379	65
5147.57501	46.02	0.52	7.19	-7.98	54	372	69
5150	49.23	0.52	7.21	-4.77	54	400	256

High Channel – 5230MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

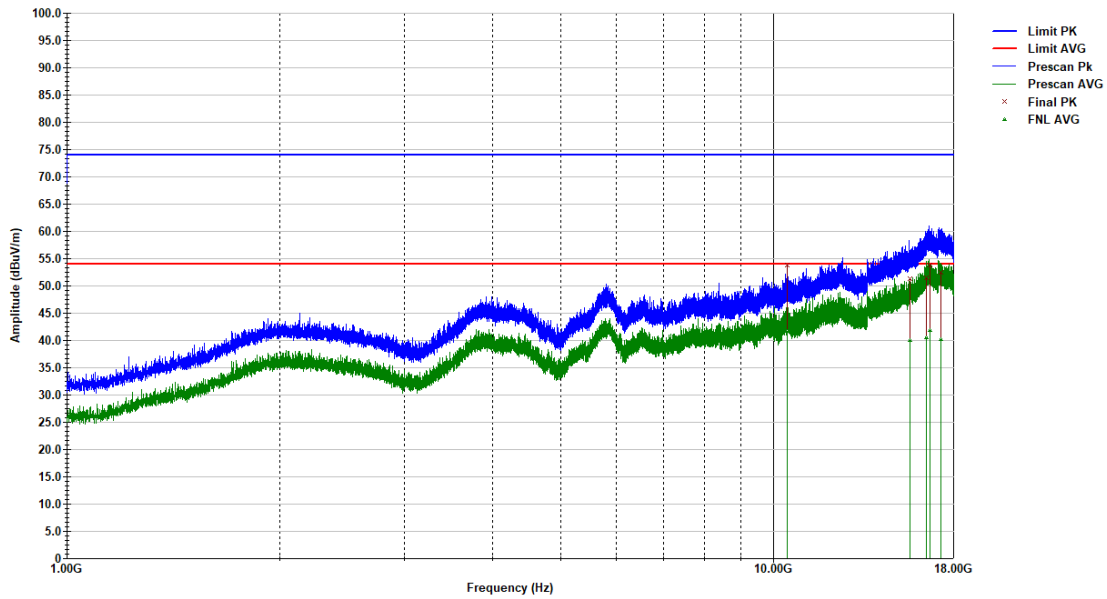
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5230MHz, 802.11n40 HT40, pwr 13, mcs2



5230 13 mcs2 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 12:11:49 PM, Thursday, March 14, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10479.7	53.88	20.53	-20.12	74	232	310
15634.37245	51.36	29.97	-22.64	74	224	62
16486.39809	51.56	33.04	-22.44	74	209	53
16674.67384	53.79	33.62	-20.21	74	194	362
17247.8725	52.46	32.67	-21.54	74	163	130

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10479.7	42.09	0.41	20.53	-11.91	54	232	310
15634.37245	40.38	0.41	29.97	-13.62	54	224	62
16486.39809	40.89	0.41	33.04	-13.11	54	209	53
16674.67384	42.23	0.41	33.62	-11.77	54	194	362
17247.8725	40.59	0.41	32.67	-13.41	54	163	130

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

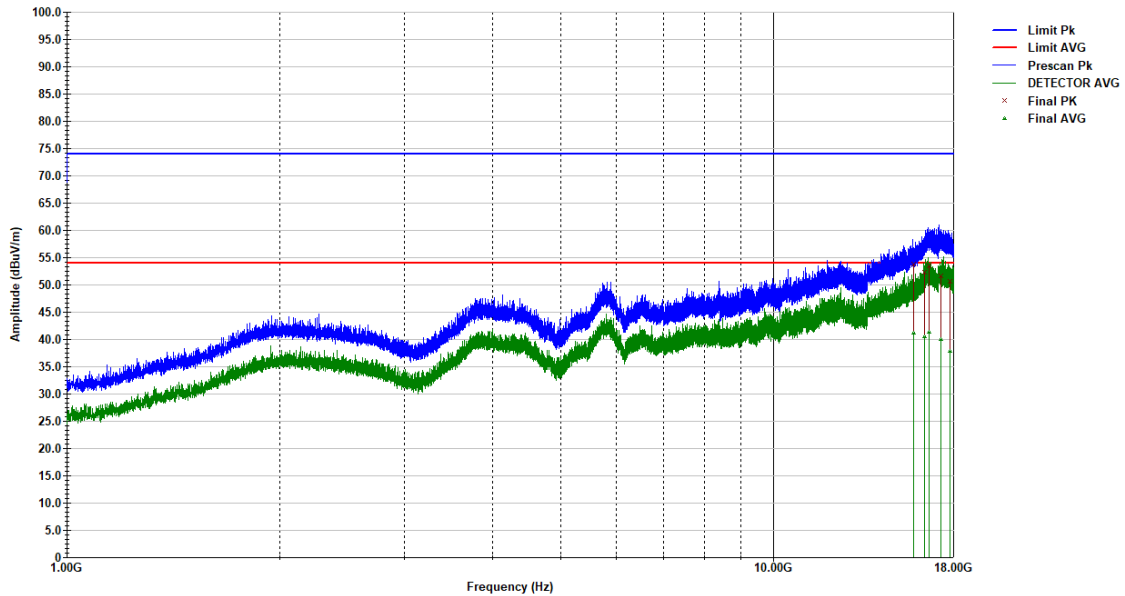
Test Mode - TX, 6GHz HPF

Operator - AG

Standard - FCC Class B

Vertical AVG

Comments - 5230MHz, 802.11n40 HT40, pwr 13, mcs2



5230 13 mcs2 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.til

Last Data Update 11:58:55 AM, Thursday, March 14, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
15785.96475	53.89	30.3	-20.11	74	271	-10
16372.96875	52.27	32.53	-21.73	74	240	282
16623.0815	53.42	33.63	-20.58	74	310	269
17249.94465	51.59	32.66	-22.41	74	209	62
17785.4639	50.59	31.84	-23.41	74	171	5

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
15785.96475	41.59	0.41	30.3	-12.41	54	271	-10
16372.96875	40.82	0.41	32.53	-13.18	54	240	282
16623.0815	41.78	0.41	33.63	-12.22	54	310	269
17249.94465	40.35	0.41	32.66	-13.65	54	209	62
17785.4639	38.31	0.41	31.84	-15.69	54	171	5

UNII1: 802.11ac20

30 to 1000 MHz High Channel – 5240MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal QP

Customer / Model # - comma.ai / LightningHard SOM

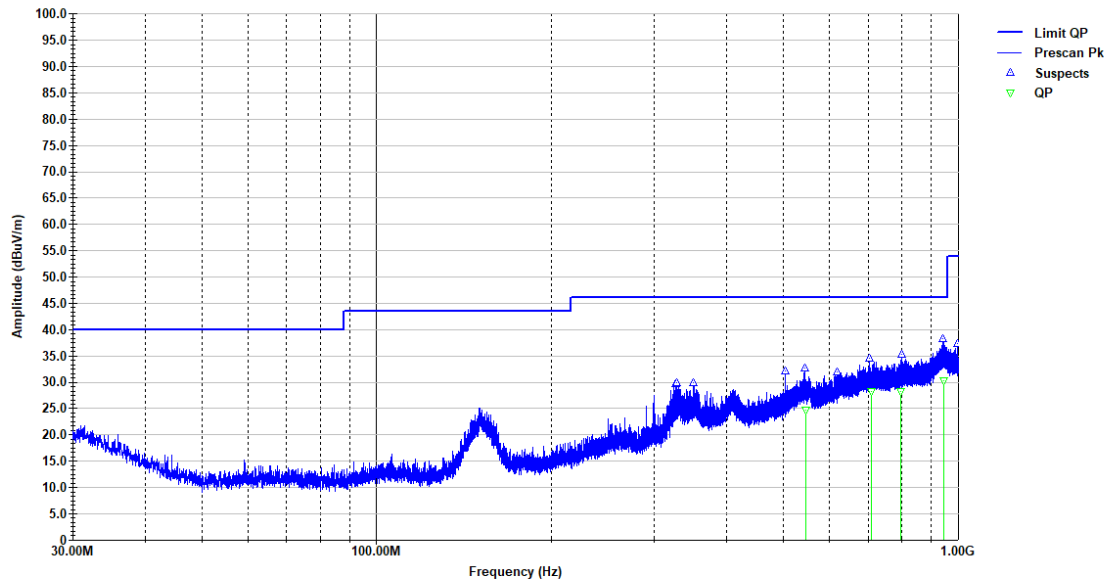
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - AG

Standard - FCC Class B

Comments - 5240MHz, 802.11ac VHT20, pwr 15, mcs0



5240 15 mcs0 FCC 15.247 RE 30M-1GHz.ttl

Last Data Update 10:15:43 PM, Thursday, March 21, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
546.519877	24.76	-13.89	-21.26	46.02	400	339
708.308578	28.25	-11.85	-17.77	46.02	100	300
798.450781	28.26	-11.41	-17.76	46.02	193	251
944.43979	30.27	-8.3	-15.75	46.02	100	106

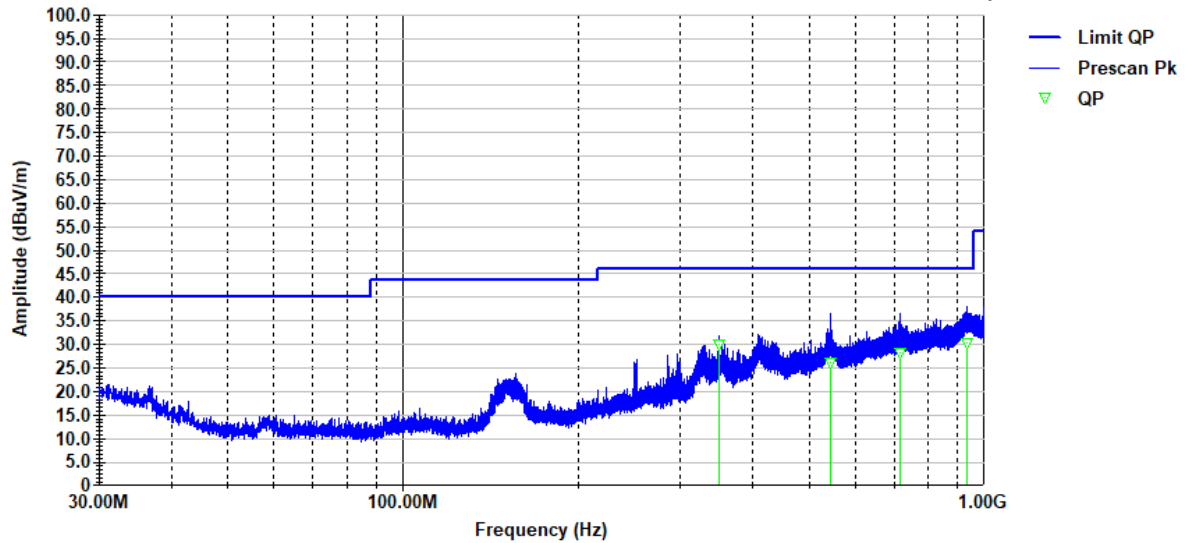
Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical QP

Customer / Model # - comma.ai / LightningHard SOM
Serial # - N/A
Test Mode - TX99, ext. DC power supply
Operator - AG
Standard - FCC Class B
Comments - 5240MHz, 802.11ac VHT20, pwr 15, mcs0



5240 15 mcs0 FCC 15-247 RE 30M-1GHz.til

Last Data Update 10:01:23 PM, Thursday, March 21, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
349.998906	30.14	-21.02	-15.88	46.02	100	366
543.600171	26.21	-13.84	-19.81	46.02	178	334
715.968852	28.3	-11.91	-17.72	46.02	170	192
934.357525	30.36	-8.38	-15.66	46.02	225	373

1 to 18 GHz Low Channel – 5180MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

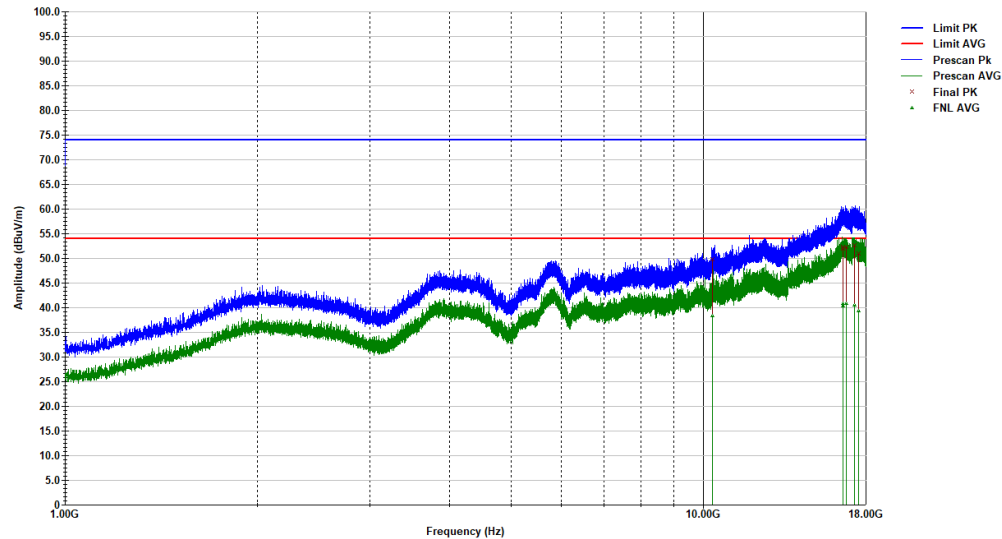
Customer / Model # - comma.ai / LightningHard SOM

Test Mode - TX, 6GHz HPF

Operator - AG

Standard - FCC Class B

Comments - 5180MHz, 802.11ac20 VHT20, pwr 15, mcs3



5180 15 mcs3 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 02:09:00 PM, Thursday, March 14, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10329.45	49.89	20.22	-24.11	74	278	158
16548.4131	52.01	33.31	-21.99	74	340	222
16559.9131	52.33	33.36	-21.67	74	385	202
16772.57465	52.37	33.56	-21.63	74	163	300
17261.06735	52.64	32.63	-21.36	74	217	255
17521.05365	50.93	32.1	-23.07	74	400	277

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10329.45	38.78	0.52	20.22	-15.22	54	278	158
16548.4131	40.91	0.52	33.31	-13.09	54	340	222
16559.9131	41.38	0.52	33.36	-12.62	54	385	202
16772.57465	41.34	0.52	33.56	-12.66	54	163	300
17261.06735	41.07	0.52	32.63	-12.93	54	217	255
17521.05365	39.85	0.52	32.1	-14.15	54	400	277

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

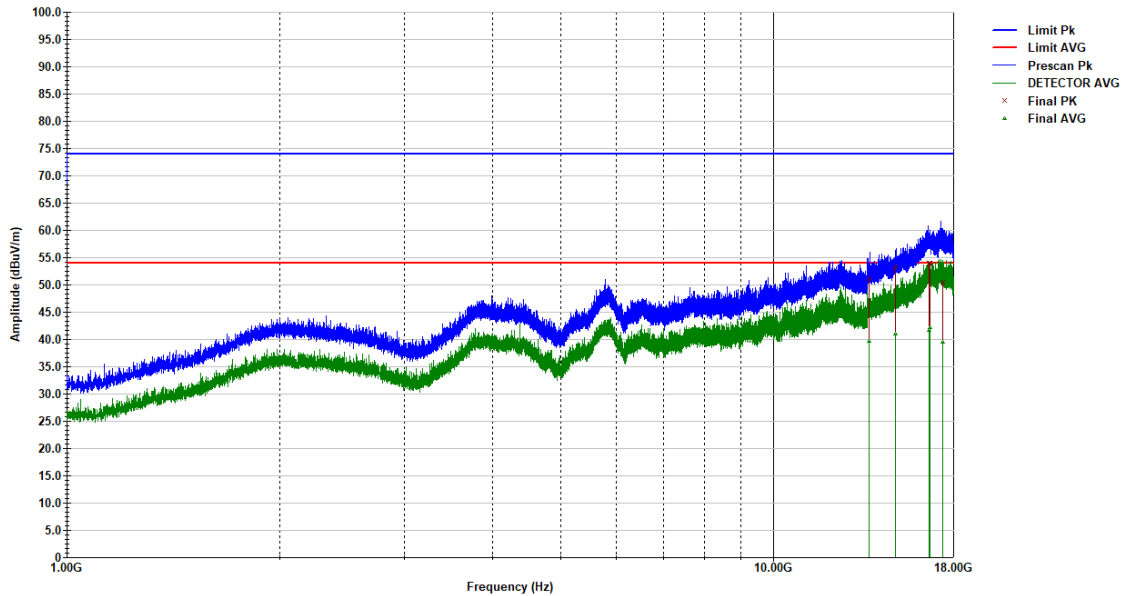
Test Mode - TX, 6GHz HPF

Operator - AG

Standard - FCC Class B

Vertical AVG

Comments - 5180MHz, 802.11ac20 VHT20, pwr 15, mcs3



5180 15 mcs3 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.til

Last Data Update 01:47:39 PM, Thursday, March 14, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
13649.0955	51.2	26.34	-22.8	74	187	310
14907.465	53.25	28.24	-20.75	74	400	190
16634.241	54.04	33.63	-19.96	74	225	377
16660.95925	53.97	33.62	-20.03	74	280	138
17362.01385	50.48	32.35	-23.52	74	248	189

Average

Freq. (MHz)	Final AVG (dBuV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
13649.0955	40.21	0.52	26.34	-13.79	54	187	310
14907.465	41.59	0.52	28.24	-12.41	54	400	190
16634.241	42.16	0.52	33.63	-11.84	54	225	377
16660.95925	42.67	0.52	33.62	-11.33	54	280	138
17362.01385	39.95	0.52	32.35	-14.05	54	248	189

Lower band edge falling to restricted band Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Radiated Emissions

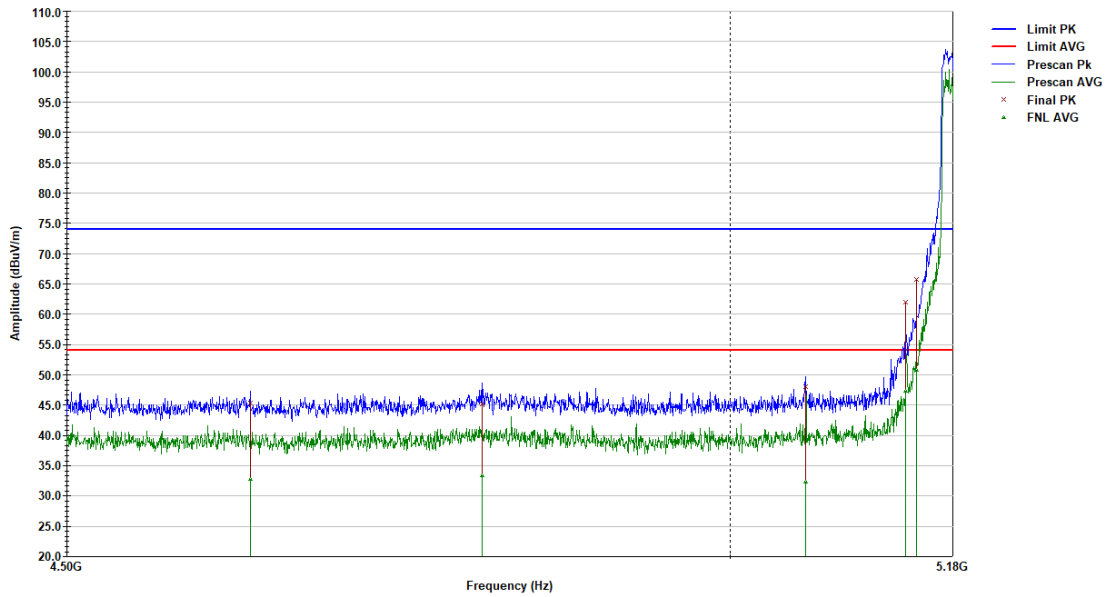
Test Mode - Tx mode, Lower Band-Edge

Horizontal AVG

Operator - Alex C

Standard - FCC Class B

Comments - 5180MHz, 802.11a VHT20, pwr 15, mcs3



5180 15 mcs3 RE Lower Band-Edge.ttl

Last Data Update 03:27:55 PM, Monday, May 20, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4632.9	45.38	6.31	-28.62	74	262	131
4806.72501	45.14	6.67	-28.86	74	312	116
5060.025	48.1	6.46	-25.9	74	194	23
5141.625	62.07	7.15	-11.93	74	347	342
5150	65.69	7.21	-8.31	74	279	359

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4632.9	33.28	0.52	6.31	-20.72	54	262	131
4806.72501	33.82	0.52	6.67	-20.18	54	312	116
5060.025	32.79	0.52	6.46	-21.21	54	194	23
5141.625	47.87	0.52	7.15	-6.13	54	347	342
5150	51.29	0.52	7.21	-2.71	54	279	359

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Radiated Emissions

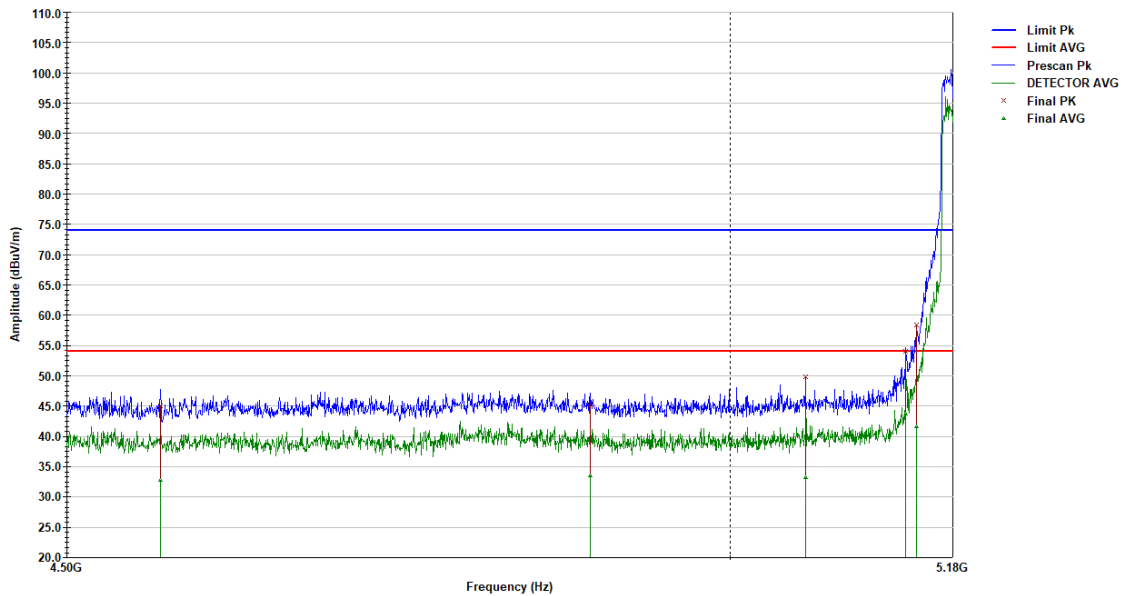
Test Mode - Tx mode, Lower Band-Edge

Vertical AVG

Operator - Alex C

Standard - FCC Class B

Comments - 5180MHz, 802.11a VHT20, pwr 15, mcs3



5180 15 mcs3 RE Lower Band-Edge.ttl

Last Data Update 02:59:50 PM, Monday, May 20, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4567.45001	45.04	5.81	-28.96	74	240	356
4890.45	45.27	6.64	-28.73	74	356	-4
5060.02501	49.82	6.46	-24.18	74	179	83
5141.62501	53.98	7.15	-20.02	74	379	297
5150.00001	58.46	7.21	-15.54	74	400	44

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4567.45001	33.33	0.52	5.81	-20.67	54	240	356
4890.45	34.03	0.52	6.64	-19.97	54	356	-4
5060.02501	33.71	0.52	6.46	-20.29	54	179	83
5141.62501	44.17	0.52	7.15	-9.83	54	379	297
5150.00001	42.09	0.52	7.21	-11.91	54	400	44

Mid Channel – 5200MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

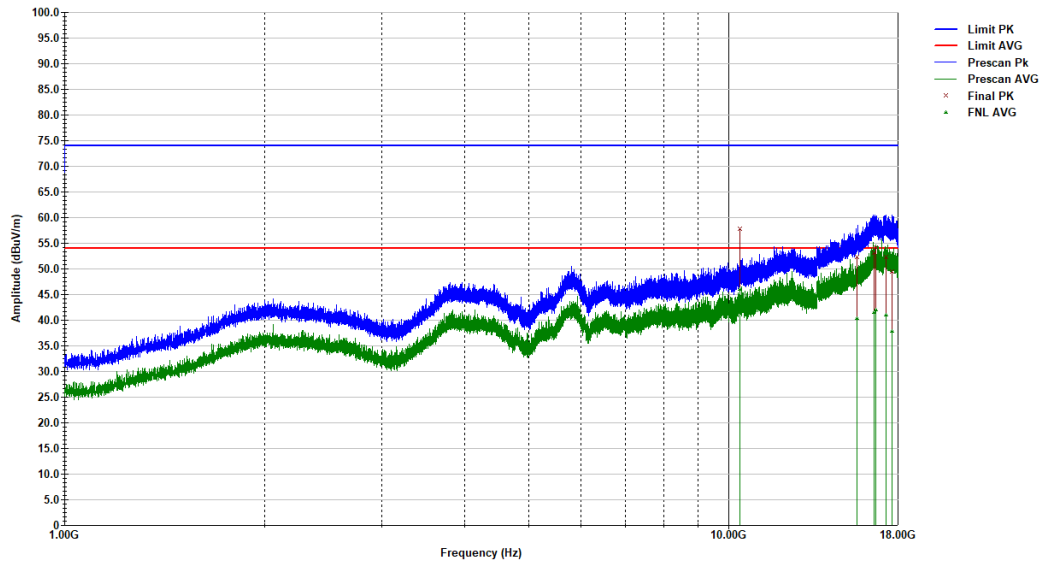
Customer / Model # - comma.ai / LightningHard SOM

Test Mode - TX, 6GHz HPF

Operator - AG

Standard - FCC Class B

Comments - 5200MHz, 802.11ac20 VHT20, pwr 15, mcs0



5200 15 mcs0 RE CISPR SW1A NC 3117 w lambda Ina AVG 1G-18G 06Feb2024.ttl

Last Data Update 03:00:02 PM, Thursday, March 14, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10397.11435	57.77	20.4	-16.23	74	209	311
15597.93225	52.37	29.89	-21.63	74	171	288
16561.7751	53.22	33.37	-20.78	74	303	117
16671.7625	54.14	33.62	-19.86	74	286	31
17260.4155	52.26	32.63	-21.74	74	178	206
17611.63915	49.41	32.04	-24.59	74	163	199

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10397.11435	46.13	0.16	20.4	-7.87	54	209	311
15597.93225	40.54	0.16	29.89	-13.46	54	171	288
16561.7751	41.72	0.16	33.37	-12.28	54	303	117
16671.7625	42.1	0.16	33.62	-11.9	54	286	31
17260.4155	41.07	0.16	32.63	-12.93	54	178	206
17611.63915	37.97	0.16	32.04	-16.03	54	163	199

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

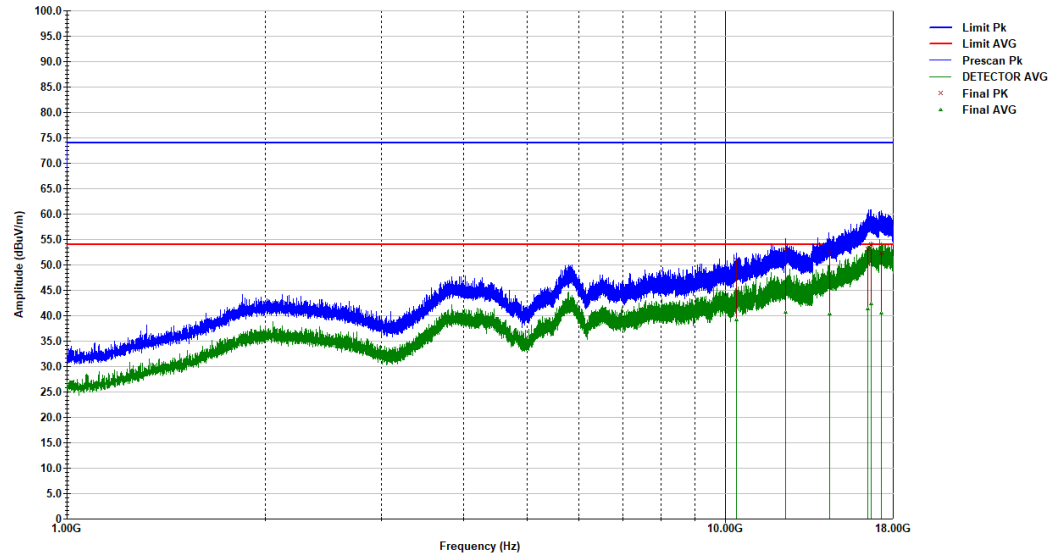
Test Mode - TX, 6GHz HPF

Operator - AG

Vertical AVG

Standard - FCC Class B

Comments - 5200MHz, 802.11ac20 VHT20, pwr 15, mcs0



5200 15 mcs0 RE CISPR SW1A NC 3117 w lambda Ina AVG 1G-18G 06Feb2024.ttl

Last Data Update 02:41:22 PM, Thursday, March 14, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10405.5375	50.97	20.41	-23.03	74	368	29
12337.23365	52.95	25.9	-21.05	74	327	99
14394.79125	52.47	27.14	-21.53	74	150	276
16496.2961	53.13	33.09	-20.87	74	194	380
16673.1295	54.05	33.62	-19.95	74	349	265
17274.96115	52.35	32.59	-21.65	74	241	304

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10405.5375	39.35	0.16	20.41	-14.65	54	368	29
12337.23365	40.89	0.16	25.9	-13.11	54	327	99
14394.79125	40.45	0.16	27.14	-13.55	54	150	276
16496.2961	41.49	0.16	33.09	-12.51	54	194	380
16673.1295	42.5	0.16	33.62	-11.5	54	349	265
17274.96115	40.63	0.16	32.59	-13.37	54	241	304

High Channel – 5240MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

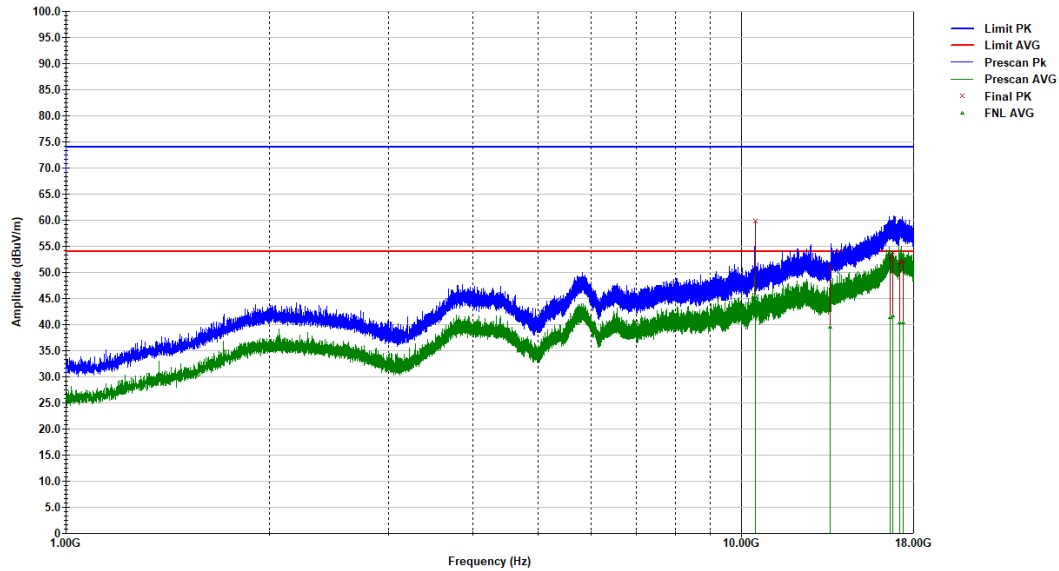
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5240MHz, 802.11ac20 VHT20, pwr 15, mcs0



5240 15 mcs0 RE CISPR SW1A NC 3117 w lambda Ina AVG 1G-18G 06Feb2024.ttl

Last Data Update 03:58:00 PM, Thursday, March 14, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10485.73185	59.88	20.54	-14.12	74	316	314
13537.07585	51.21	26.21	-22.79	74	163	377
16612.46685	53.05	33.58	-20.95	74	233	200
16772.918	53.75	33.56	-20.25	74	179	-9
17185.66865	52.02	32.8	-21.98	74	301	373
17349.50625	52.09	32.39	-21.91	74	378	159

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10485.73185	45.47	0.15	20.54	-8.53	54	316	314
13537.07585	39.64	0.15	26.21	-14.36	54	163	377
16612.46685	41.54	0.15	33.58	-12.46	54	233	200
16772.918	41.74	0.15	33.56	-12.26	54	179	-9
17185.66865	40.43	0.15	32.8	-13.57	54	301	373
17349.50625	40.51	0.15	32.39	-13.49	54	378	159

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

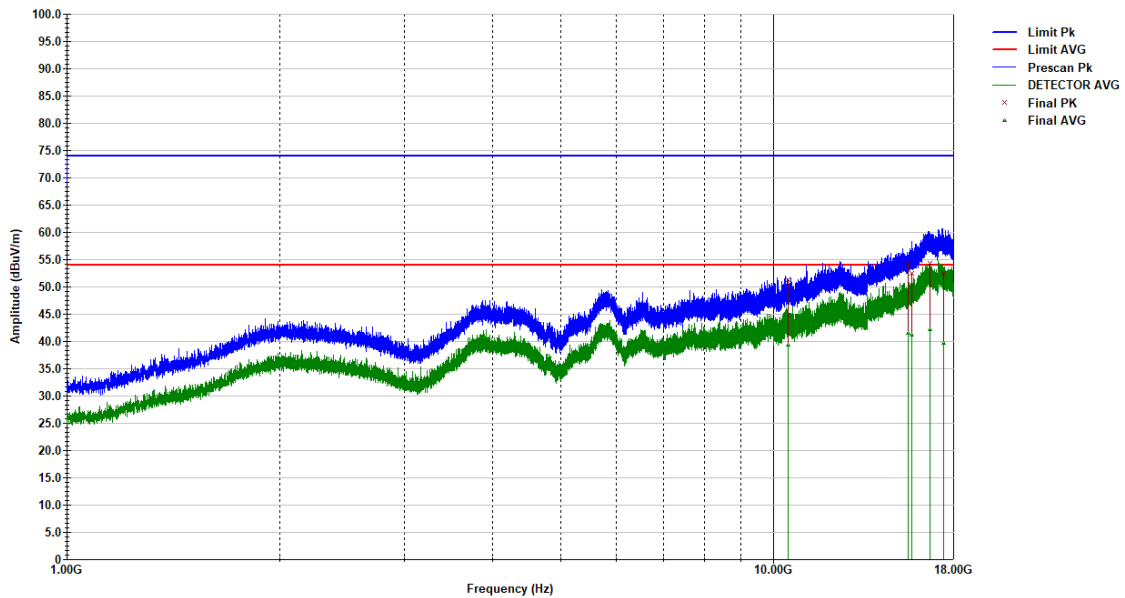
Test Mode - TX, 6GHz HPF

Operator - AG

Standard - FCC Class B

Vertical AVG

Comments - 5240MHz, 802.11ac20 VHT20, pwr 15, mcs0



5240 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.til

Last Data Update 03:40:59 PM, Thursday, March 14, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
10485.671	51.35	20.54	-22.65	74	150	28
15523.0875	54.13	29.73	-19.87	74	240	129
15697.9354	52.52	30.1	-21.48	74	326	47
16649.6906	54.3	33.63	-19.7	74	400	73
17412.41335	52.42	32.23	-21.58	74	202	326

Average

Freq. (MHz)	Final AVG (dBuV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
10485.671	39.45	0.15	20.54	-14.55	54	150	28
15523.0875	41.71	0.15	29.73	-12.29	54	240	129
15697.9354	41.29	0.15	30.1	-12.71	54	326	47
16649.6906	42.3	0.15	33.63	-11.7	54	400	73
17412.41335	39.8	0.15	32.23	-14.2	54	202	326

UNII1: 802.11ac40

30 to 1000 MHz
High Channel – 5230MHz - both chains transmitting
Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal QP

Customer / Model # - comma.ai / LightningHard SOM

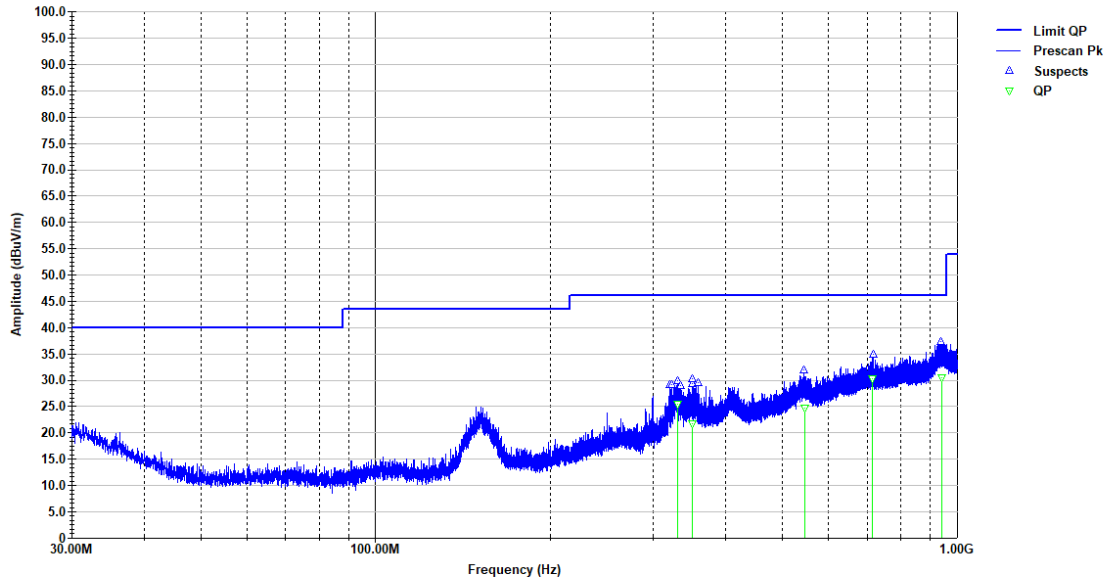
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - AG

Standard - FCC Class B

Comments - 5230MHz, 802.11ac VHT40, pwr 13, mcs0



5230 13 mcs0 FCC 15.247 RE 30M-1GHz.ttl

Last Data Update 11:03:03 PM, Thursday, March 21, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
330.873331	25.49	-22.59	-20.53	46.02	100	326
351.134966	21.79	-20.95	-24.23	46.02	284	331
547.155699	24.64	-13.92	-21.38	46.02	122	165
714.9462	30.22	-11.92	-15.8	46.02	100	182
940.298091	30.5	-8.3	-15.52	46.02	361	43

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical QP

Customer / Model # - comma.ai / LightningHard SOM

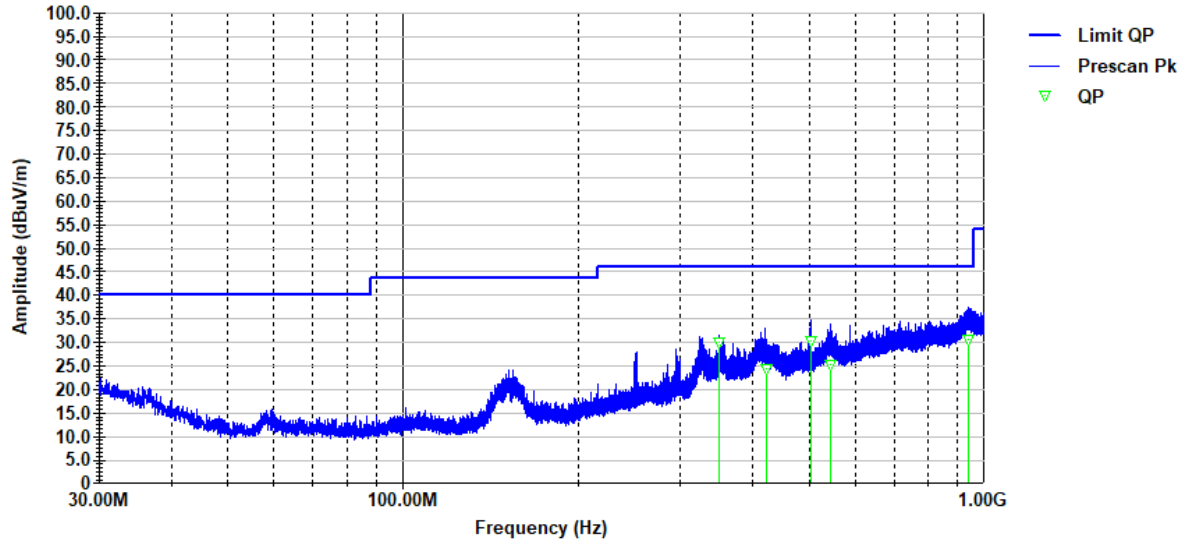
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - AG

Standard - FCC Class B

Comments - 5230MHz, 802.11ac VHT40, pwr 13, mcs0



5230 13 mcs0 FCC 15-247 RE 30M-1GHz.til

Last Data Update 10:46:06 PM, Thursday, March 21, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
349.998906	30.11	-21.02	-15.91	46.02	114	366
421.986121	24.29	-18.33	-21.73	46.02	100	36
503.978211	30.39	-16.59	-15.63	46.02	100	-20
543.840865	25.18	-13.84	-20.84	46.02	170	-20
939.730433	30.52	-8.3	-15.5	46.02	122	53

1 to 18 GHz Low Channel – 5190MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

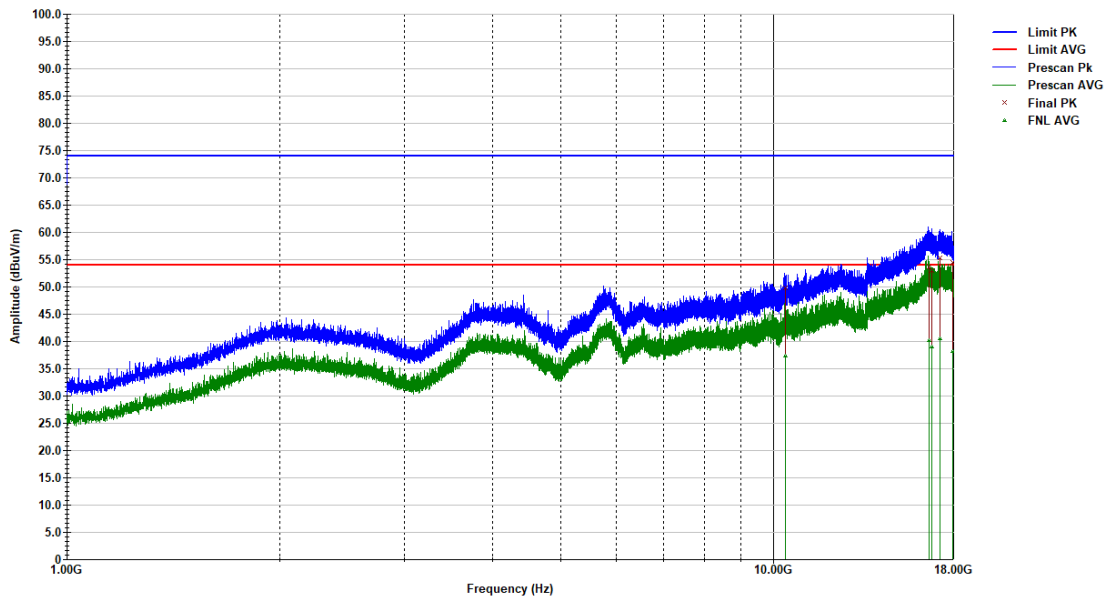
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5190MHz, 802.11ac40 VHT40, pwr 13, mcs0



5190 13 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 04:44:12 PM, Thursday, March 14, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10395.6894	49.87	20.39	-24.13	74	354	177
16624.305	53.7	33.63	-20.3	74	400	198
16772.80915	52.99	33.56	-21.01	74	270	-5
17229.18675	55.24	32.72	-18.76	74	271	324
17943.8109	54.44	31.45	-19.56	74	310	266

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10395.6894	37.65	0.3	20.39	-16.35	54	354	177
16624.305	40.4	0.3	33.63	-13.6	54	400	198
16772.80915	39.28	0.3	33.56	-14.72	54	270	-5
17229.18675	40.72	0.3	32.72	-13.28	54	271	324
17943.8109	38.5	0.3	31.45	-15.5	54	310	266

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

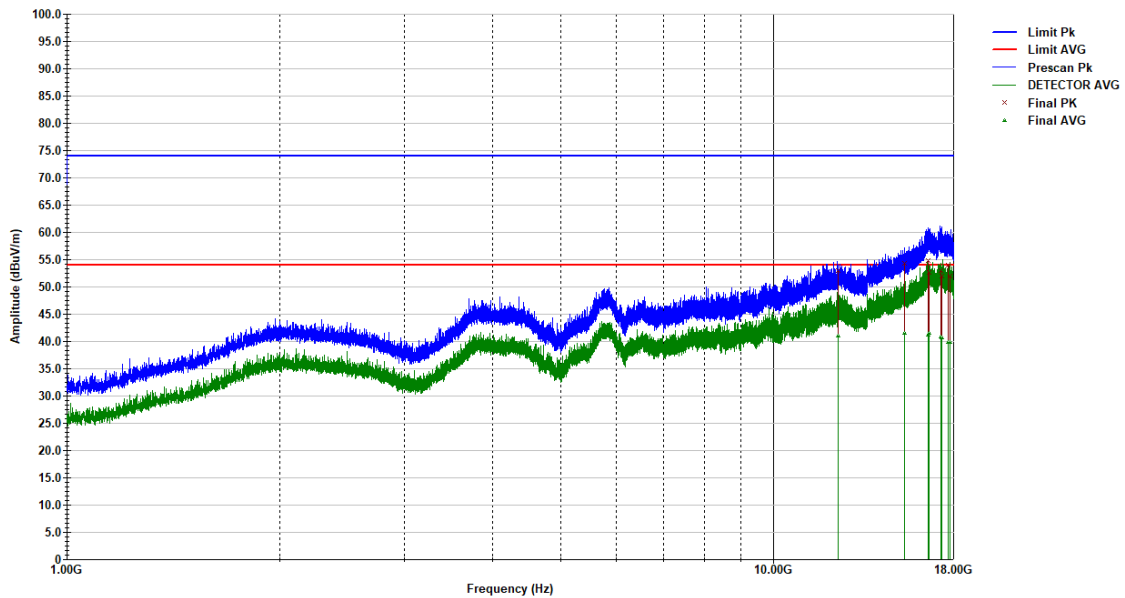
Test Mode - TX, 6GHz HPF

Operator - AG

Standard - FCC Class B

Vertical AVG

Comments - 5190MHz, 802.11ac40 VHT40, pwr 13, mcs0



5190 13 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.til

Last Data Update 04:30:50 PM, Thursday, March 14, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
12349.48575	52.96	25.91	-21.04	74	150	342
15345.97565	54.31	29.28	-19.69	74	279	30
16585.1324	54.83	33.47	-19.17	74	280	20
16597.0356	52.72	33.52	-21.28	74	163	-6
17260.70485	52.97	32.63	-21.03	74	340	143
17311.92935	52.01	32.48	-21.99	74	326	132
17712.27815	54.01	31.92	-19.99	74	326	5
17783.8159	51.96	31.85	-22.04	74	209	282

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
12349.48575	41.34	0.3	25.91	-12.66	54	150	342
15345.97565	41.77	0.3	29.28	-12.23	54	279	30
16585.1324	41.41	0.3	33.47	-12.59	54	280	20
16597.0356	41.85	0.3	33.52	-12.15	54	163	-6
17260.70485	41.09	0.3	32.63	-12.91	54	340	143
17311.92935	40.88	0.3	32.48	-13.12	54	326	132
17712.27815	40.11	0.3	31.92	-13.89	54	326	5
17783.8159	40.1	0.3	31.85	-13.9	54	209	282

Lower band edge falling to restricted band Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Radiated Emissions

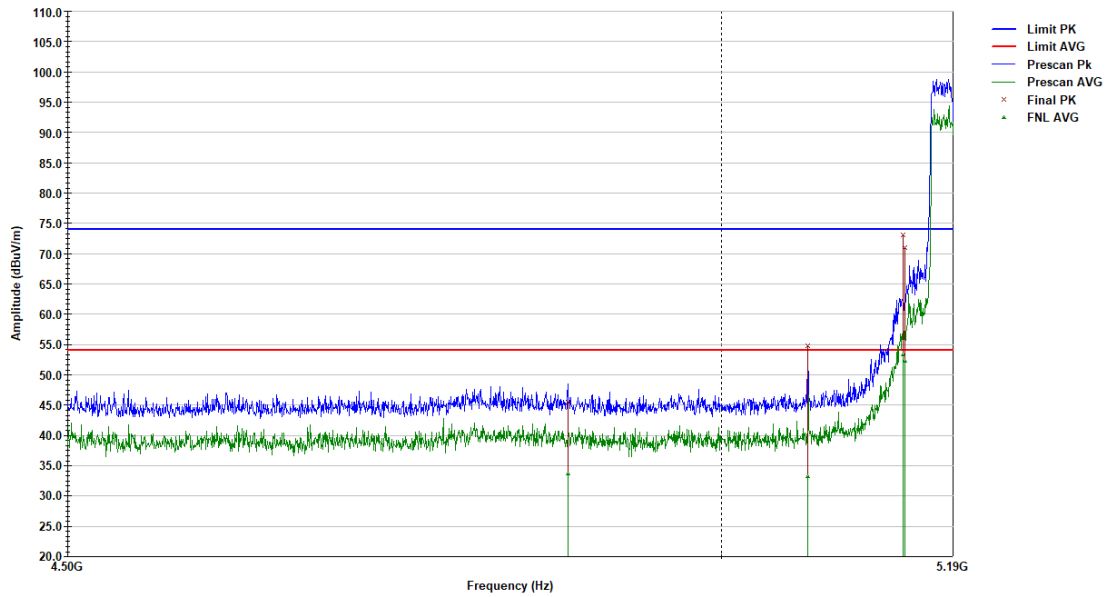
Test Mode - Tx mode, Lower Band-Edge

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5190MHz, 802.11ac40 VHT40, pwr 13, mcs0



5190 13 mcs0 RE Lower Band-Edge.ttl

Last Data Update 12:51:31 PM, Friday, May 24, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4877.70001	45.55	6.77	-28.45	74	301	244
5069.80001	54.74	6.51	-19.26	74	150	7
5148.425	73.17	7.2	-0.83	74	347	357
5150.00001	70.97	7.21	-3.03	74	339	380

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4877.70001	33.93	0.3	6.77	-20.07	54	301	244
5069.80001	33.49	0.3	6.51	-20.51	54	150	7
5148.425	53.56	0.3	7.2	-0.44	54	347	357
5150.00001	52.61	0.3	7.21	-1.39	54	339	380

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Radiated Emissions

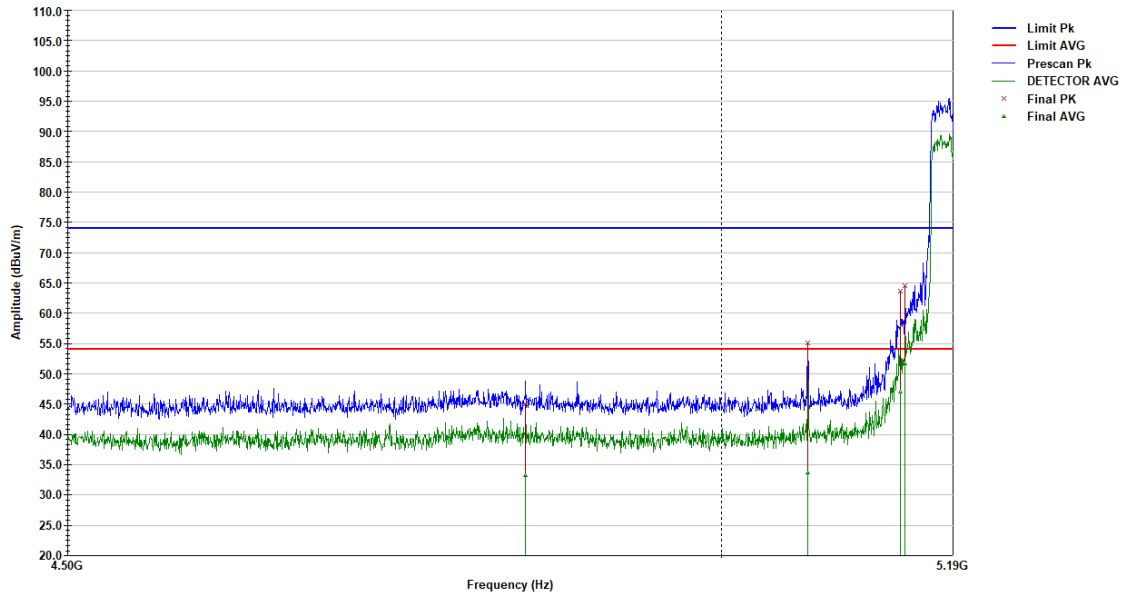
Test Mode - Tx mode, Lower Band-Edge

Operator - AG

Vertical AVG

Standard - FCC Class B

Comments - 5190MHz, 802.11ac40 VHT40, pwr 13, mcs0



5190 13 mcs0 RE Lower Band-Edge.ttl

Last Data Update 05:45:42 PM, Monday, May 20, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4844.55001	45.11	6.85	-28.89	74	248	126
5070.225	55.04	6.51	-18.96	74	248	106
5146.3	63.57	7.18	-10.43	74	343	43
5150.00001	64.61	7.21	-9.39	74	380	264

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4844.55001	33.57	0.3	6.85	-20.43	54	248	126
5070.225	34.01	0.3	6.51	-19.99	54	248	106
5146.3	47.22	0.3	7.18	-6.78	54	343	43
5150.00001	51.93	0.3	7.21	-2.07	54	380	264

High Channel – 5230MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

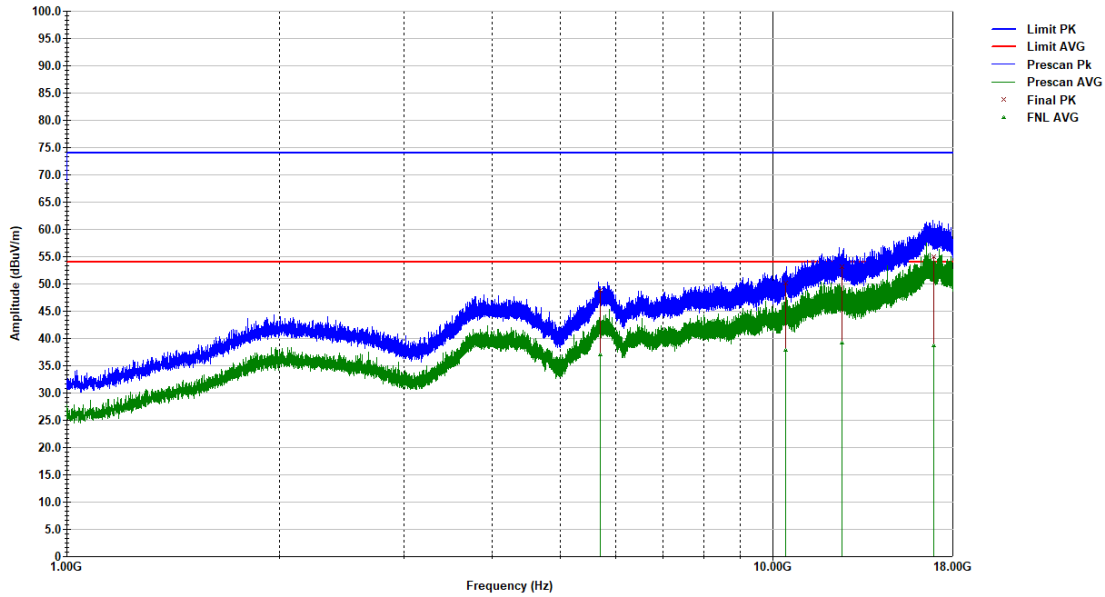
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - Alex C

Standard - FCC Class B

Comments - 5230MHz, 802.11ac40 VHT40, pwr 13, mcs0



5230 13 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 08:53:34 AM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5692.64625	48.9	9.1	-25.1	74	362	72
10433.89135	50.14	20.46	-23.86	74	194	296
12544.78235	53.2	26.05	-20.8	74	363	91
16924.9639	55.07	33.36	-18.93	74	347	306

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5692.64625	37.21	0.28	9.1	-16.79	54	362	72
10433.89135	38.1	0.28	20.46	-15.9	54	194	296
12544.78235	39.39	0.28	26.05	-14.61	54	363	91
16924.9639	38.94	0.28	33.36	-15.06	54	347	306

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

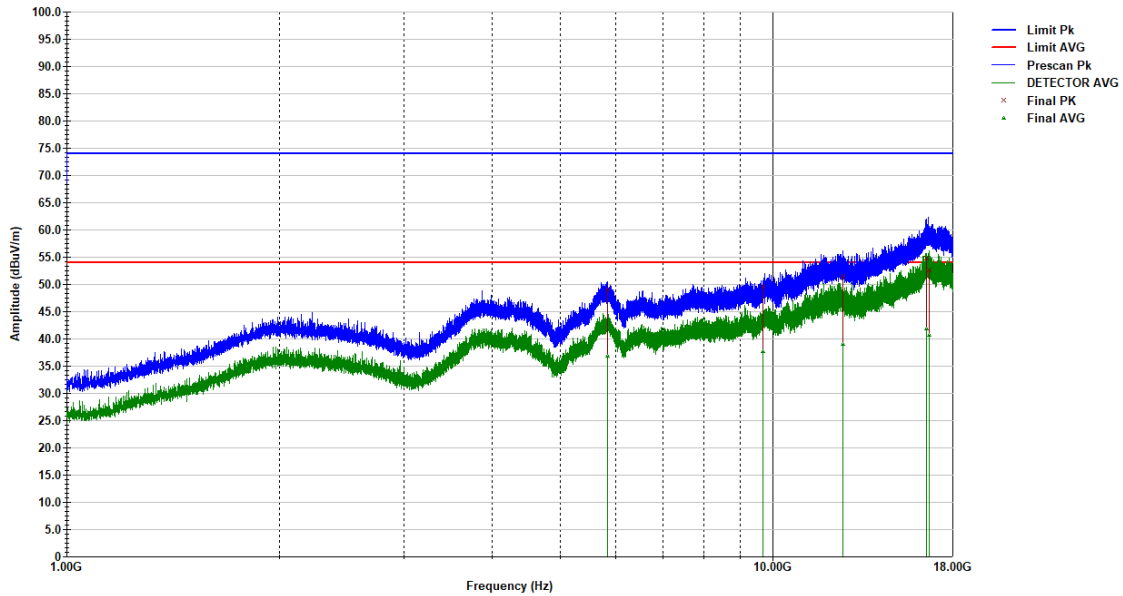
Test Mode - TX, 6GHz HPF

Operator - Alex C

Vertical AVG

Standard - FCC Class B

Comments - 5230MHz, 802.11ac40 VHT40, pwr 13, mcs0



5230 13 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 08:44:42 AM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
5839.2005	49.19	9.48	-24.81	74	341	35
9697.78325	49.69	18.79	-24.31	74	349	164
12585.3385	51.54	26.08	-22.46	74	178	43
16522.50335	54.87	33.2	-19.13	74	379	380
16661.89575	52.6	33.62	-21.4	74	195	227

Average

Freq. (MHz)	Final AVG (dBuV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
5839.2005	37.06	0.28	9.48	-16.94	54	341	35
9697.78325	37.93	0.28	18.79	-16.07	54	349	164
12585.3385	39.2	0.28	26.08	-14.8	54	178	43
16522.50335	42.13	0.28	33.2	-11.87	54	379	380
16661.89575	41	0.28	33.62	-13	54	195	227

UNII1: 802.11ac80

30 to 1000 MHz
Mid Channel – 5210MHz - both chains transmitting
Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal QP

Customer / Model # - comma.ai / LightningHard SOM

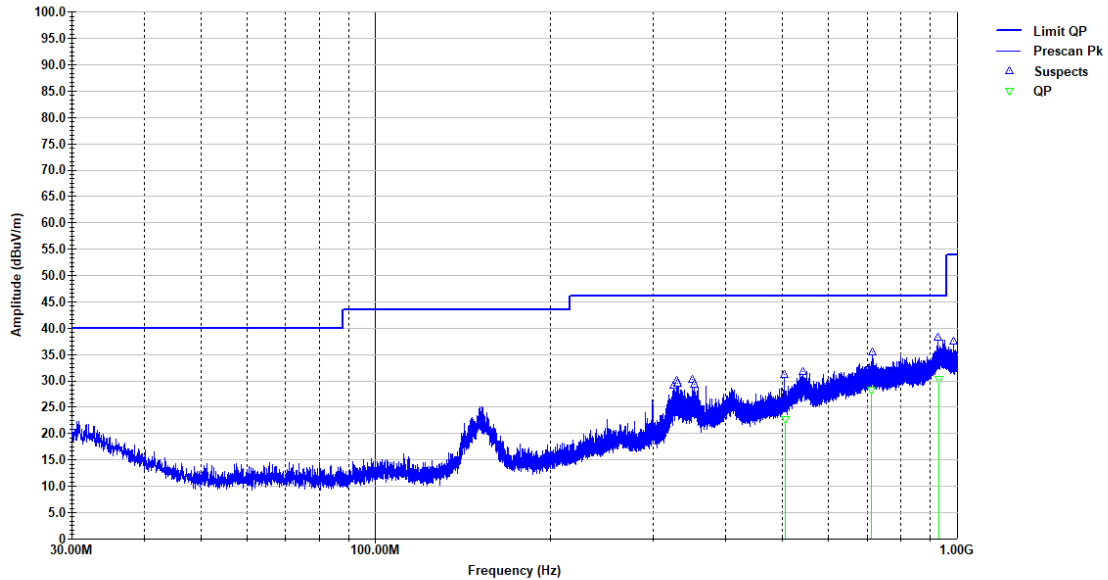
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - AG

Standard - FCC Class B

Comments - 5210MHz, 802.11ac VHT80, pwr 13, mcs0



5210 13 mcs0 FCC 15.247 RE 30M-1GHz.til

Last Data Update 11:48:26 PM, Thursday, March 21, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
505.946418	22.59	-16.45	-23.43	46.02	297	-10
713.202415	28.25	-11.9	-17.77	46.02	384	309
931.636513	30.31	-8.46	-15.71	46.02	145	263

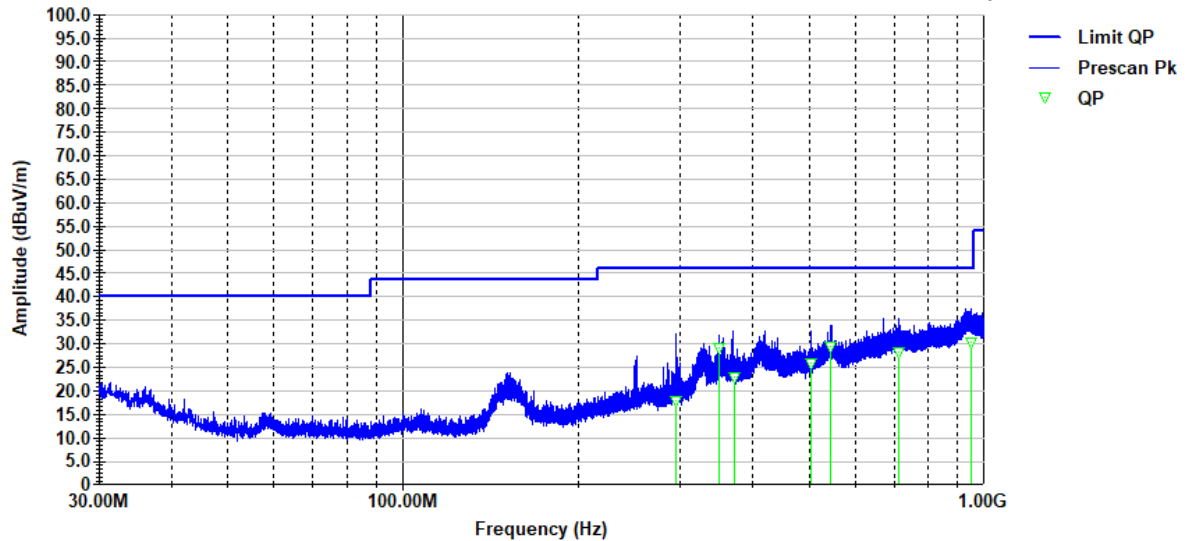
Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical QP

Customer / Model # - comma.ai / LightningHard SOM
Serial # - N/A
Test Mode - TX99, ext. DC power supply
Operator - AG
Standard - FCC Class B
Comments - 5210MHz, 802.11ac VHT80, pwr 13, mcs0



5210 13 mcs0 FCC 15-247 RE 30M-1GHz.til

Last Data Update 11:40:00 PM, Thursday, March 21, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
294.18898	17.85	-23.88	-28.17	46.02	193	342
349.998856	29.24	-21.02	-16.78	46.02	114	25
370.87553	22.79	-20.1	-23.23	46.02	106	14
504.025775	25.78	-16.59	-20.24	46.02	154	332
545.029611	29.41	-13.82	-16.61	46.02	106	213
713.981127	28.25	-11.91	-17.77	46.02	400	253
949.714741	30.44	-8.37	-15.58	46.02	339	130

1 to 18 GHz Mid Channel – 5110MHz - both chains transmitting

Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

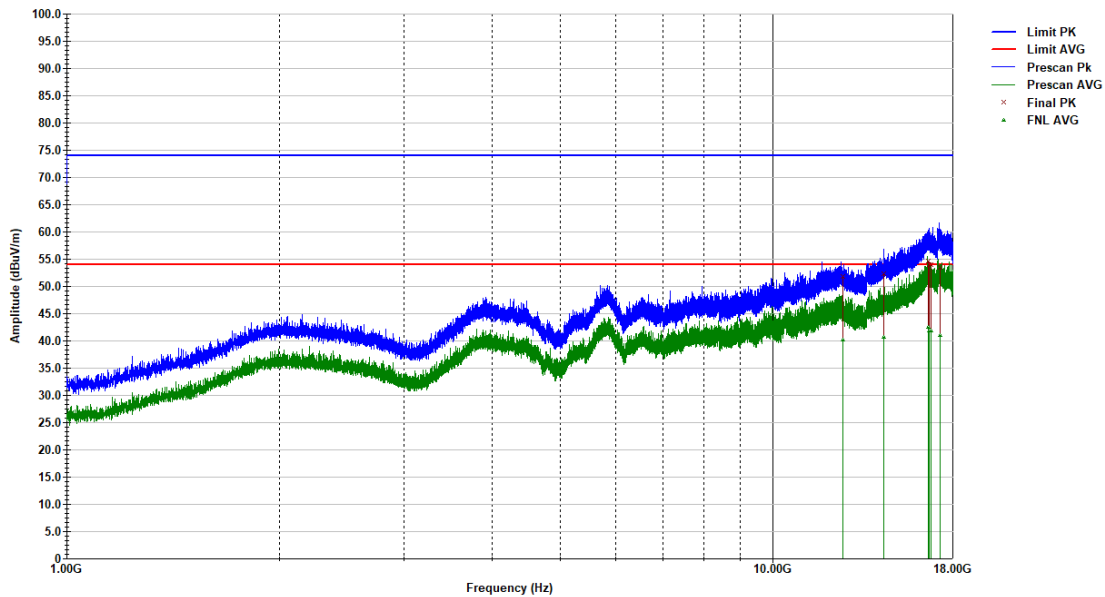
Customer / Model # - comma.ai / LightningHard SOM

Test Mode - TX, 6GHz HPF

Operator - Alex C

Standard - FCC Class B

Comments - 5210MHz, 802.11ac80 VHT80, pwr 13, mcs0



5210 13 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 09:41:26 AM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
12558.8729	51.77	26.06	-22.23	74	317	12
14374.3946	52.24	27.13	-21.76	74	286	351
16632.47025	54.71	33.63	-19.29	74	163	73
16647.37635	53.92	33.63	-20.08	74	171	188
16772.46915	53.91	33.56	-20.09	74	186	326
17271.40685	53.55	32.6	-20.45	74	325	69

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
12558.8729	40.81	0.57	26.06	-13.19	54	317	12
14374.3946	41.2	0.57	27.13	-12.8	54	286	351
16632.47025	43.02	0.57	33.63	-10.98	54	163	73
16647.37635	42.46	0.57	33.63	-11.54	54	171	188
16772.46915	42.33	0.57	33.56	-11.67	54	186	326
17271.40685	41.48	0.57	32.6	-12.52	54	325	69

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

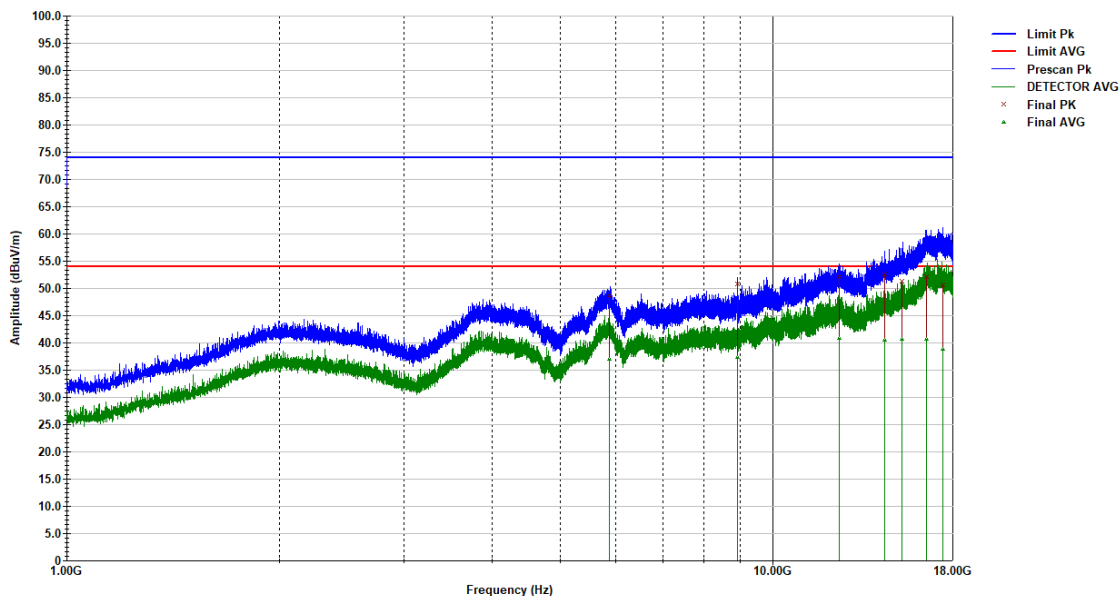
Test Mode - TX, 6GHz HPF

Operator - Alex C

Standard - FCC Class B

Comments - 5210MHz, 802.11ac80 VHT80, pwr 13, mcs0

Vertical AVG



5210 13 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 09:23:52 AM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5863.948125	48.75	9.65	-25.25	74	400	118
8912.45375	50.76	16.83	-23.24	74	334	243
12434.9705	52.18	25.96	-21.82	74	295	380
14393.903	52.64	27.14	-21.36	74	400	219
15257.3471	51.29	29.03	-22.71	74	210	174
16510.1235	52.14	33.15	-21.86	74	179	230
17447.71295	50.6	32.17	-23.4	74	319	325

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5863.948125	37.57	0.57	9.65	-16.43	54	400	118
8912.45375	37.86	0.57	16.83	-16.14	54	334	243
12434.9705	41.4	0.57	25.96	-12.6	54	295	380
14393.903	41.07	0.57	27.14	-12.93	54	400	219
15257.3471	41.21	0.57	29.03	-12.79	54	210	174
16510.1235	41.25	0.57	33.15	-12.75	54	179	230
17447.71295	39.44	0.57	32.17	-14.56	54	319	325

Lower band edge falling to restricted band Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Test Mode - Tx mode, Lower Band-Edge

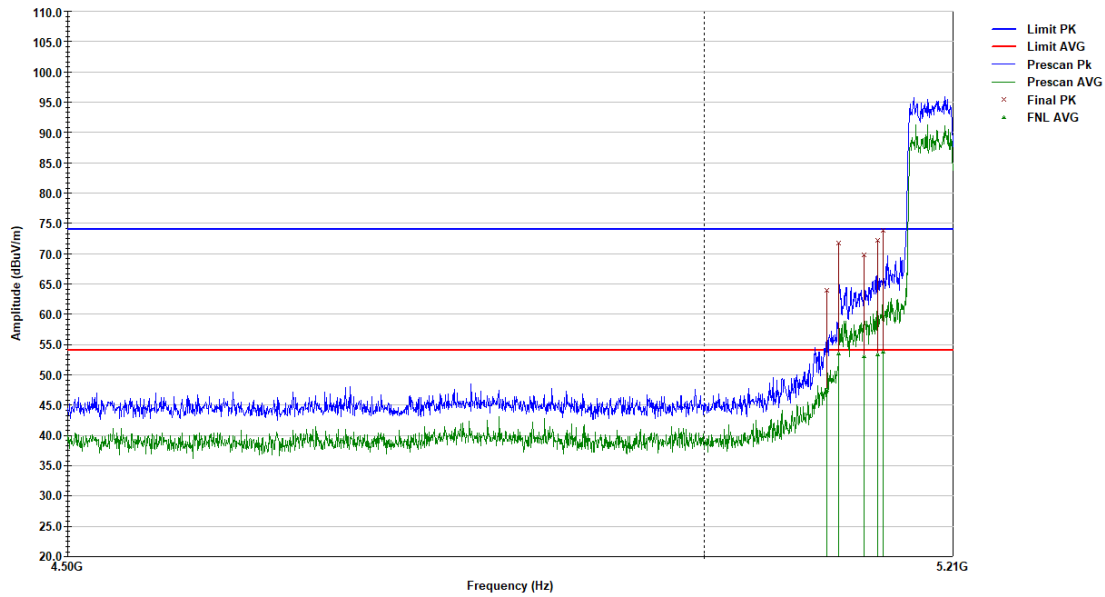
Radiated Emissions

Operator - AG

Horizontal AVG

Standard - FCC Class B

Comments - 5210MHz, 802.11ac80 VHT80, pwr 13, mcs0



5210 13 mcs0 RE Lower Band-Edge.ttl

Last Data Update 02:53:17 PM, Thursday, May 30, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5102.525	63.89	6.82	-10.11	74	340	354
5112.72501	71.78	6.91	-2.22	74	279	351
5133.975	69.79	7.09	-4.21	74	347	377
5145.45	72.19	7.18	-1.81	74	347	-10
5150	73.79	7.21	-0.21	74	347	-17

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5102.525	48.08	0.57	6.82	-5.92	54	340	354
5112.72501	53.94	0.57	6.91	-0.06	54	279	351
5133.975	53.57	0.57	7.09	-0.43	54	347	377
5145.45	53.87	0.57	7.18	-0.13	54	347	-10
5150	53.27	0.57	7.21	-0.73	54	347	-17

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Radiated Emissions

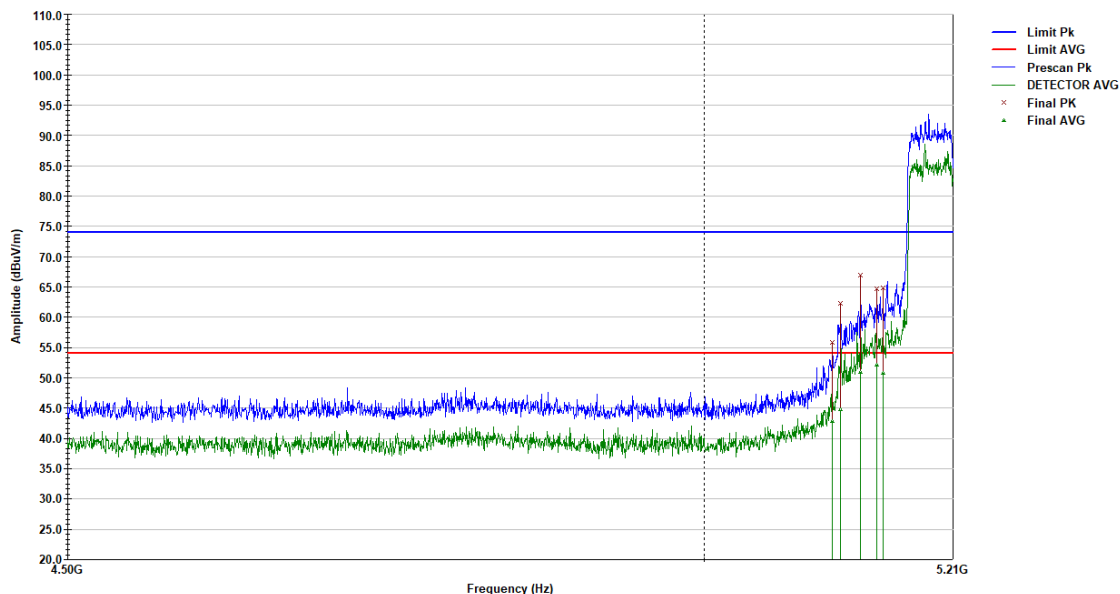
Test Mode - Tx mode, Lower Band-Edge

Operator - AG

Vertical AVG

Standard - FCC Class B

Comments - 5210MHz, 802.11ac80 VHT80, pwr 13, mcs0



5210 13 mcs0 RE Lower Band-Edge.ttl

Last Data Update 11:47:11 AM, Tuesday, May 21, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5107.2	55.89	6.86	-18.11	74	372	238
5114	62.32	6.93	-11.68	74	400	43
5131	66.96	7.07	-7.04	74	389	242
5145.02501	64.75	7.17	-9.25	74	400	49
5150	64.81	7.21	-9.19	74	400	39

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5107.2	43.32	0.57	6.86	-10.68	54	372	238
5114	45.24	0.57	6.93	-8.76	54	400	43
5131	51.4	0.57	7.07	-2.6	54	389	242
5145.02501	52.6	0.57	7.17	-1.4	54	400	49
5150	51.3	0.57	7.21	-2.7	54	400	39

UNII2a: 802.11a NOHT

30 to 1000 MHz Low Channel – 5260MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal QP

Customer / Model # - comma.ai / LightningHard SOM

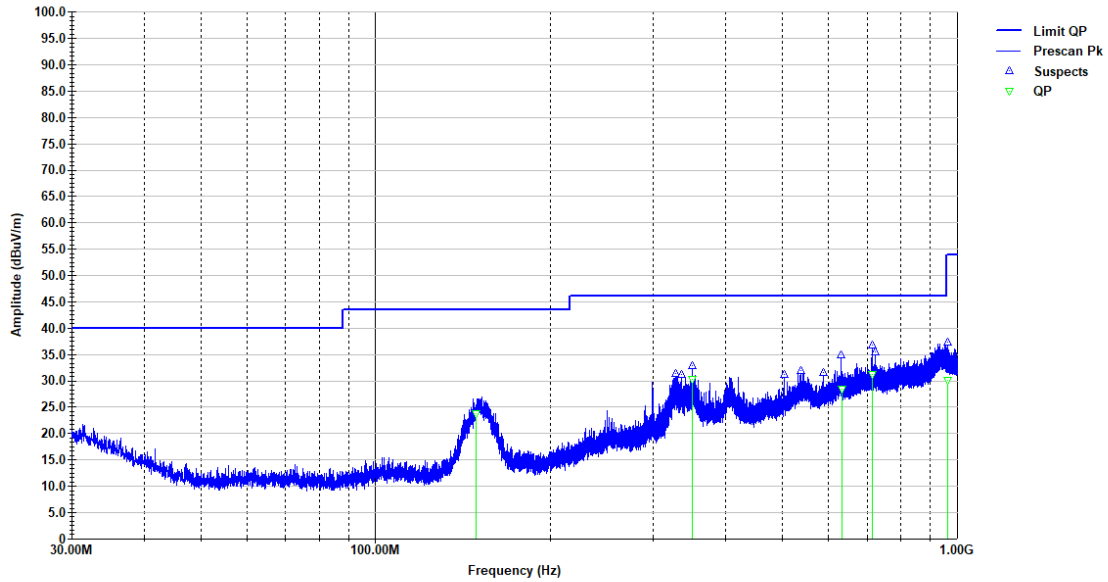
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - Alex C

Standard - FCC Class B

Comments - 5260MHz, 802.11a NOHT, pwr 15, 6Mbps



5260 15 6 FCC 15-247 RE 30M-1GHz.ttl

Last Data Update 08:06:04 AM, Friday, March 22, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
148.907074	23.77	-28.2	-19.75	43.52	193	170
349.992985	30.28	-21.02	-15.74	46.02	161	286
633.166346	28.38	-13.18	-17.64	46.02	280	273
714.673108	31.15	-11.92	-14.87	46.02	100	289
961.819905	30.13	-8.85	-23.85	53.98	114	147

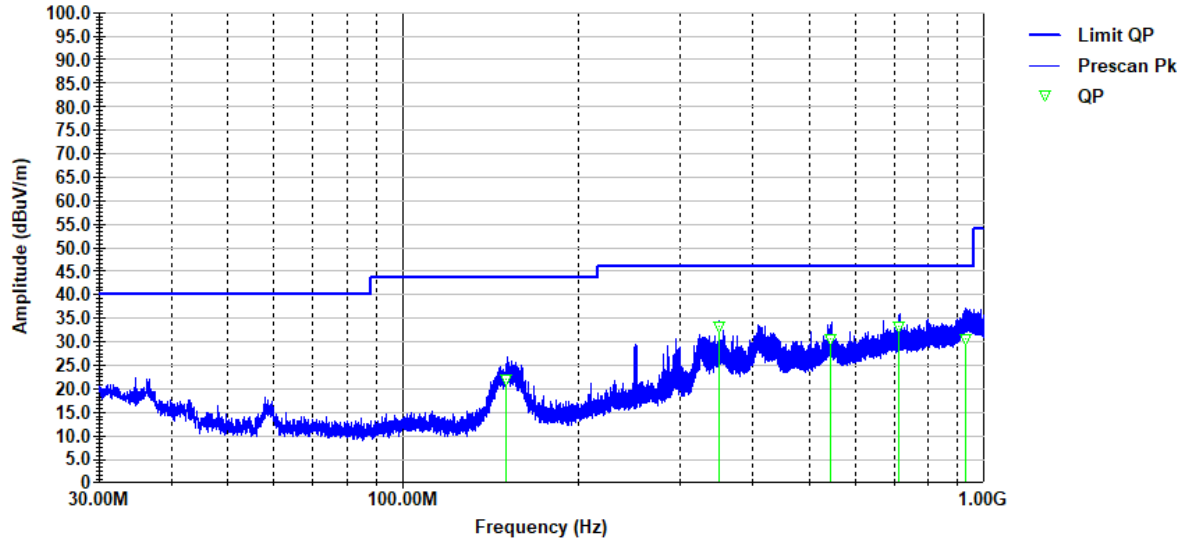
Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical QP

Customer / Model # - comma.ai / LightningHard SOM
Serial # - N/A
Test Mode - TX99, ext. DC power supply
Operator - Alex C
Standard - FCC Class B
Comments - 5260MHz, 802.11a NOHT, pwr 15, 6Mbps



5260 15 6 FCC 15-247 RE 30M-1GHz.til

Last Data Update 07:53:07 AM, Friday, March 22, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
150.438284	22.09	-27.69	-21.43	43.52	114	241
350.02	33.15	-21.02	-12.87	46.02	130	380
544.94677	30.64	-13.82	-15.38	46.02	100	194
713.595506	33.14	-11.91	-12.88	46.02	101	210
927.626941	30.65	-8.61	-15.37	46.02	114	317

1 to 18 GHz Low Channel – 5260MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

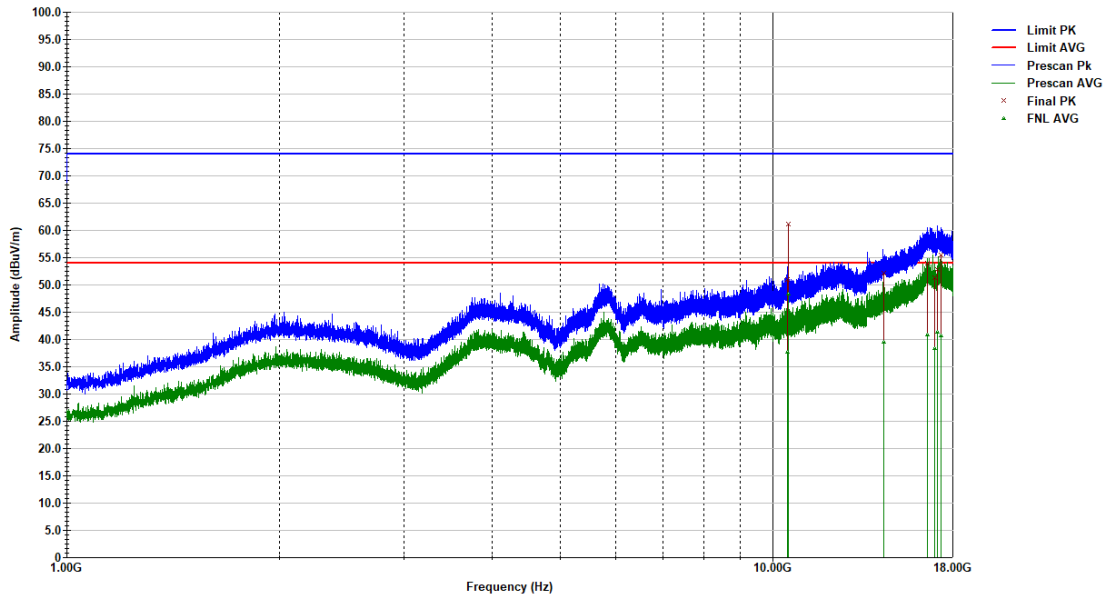
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5260MHz, 802.11a NOHT, pwr 15, 6 Mbps



5260 15 6 RE CISPR SW1A NC 3117 w lambda Ina AVG 1G-18G 06Feb2024.ttl

Last Data Update 10:30:55 AM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10493.9236	51	20.55	-23	74	186	298
10521.049	61.23	20.57	-12.77	74	202	314
14378.41325	52.14	27.14	-21.86	74	171	46
16584.2675	53.97	33.47	-20.03	74	150	198
16947.5704	51.27	33.29	-22.73	74	293	10
17110.55535	52.85	32.77	-21.15	74	370	217
17299.92125	55.56	32.52	-18.44	74	295	33

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10493.9236	37.73	0	20.55	-16.27	54	186	298
10521.049	48.35	0	20.57	-5.65	54	202	314
14378.41325	39.53	0	27.14	-14.47	54	171	46
16584.2675	40.81	0	33.47	-13.19	54	150	198
16947.5704	38.36	0	33.29	-15.64	54	293	10
17110.55535	41.36	0	32.77	-12.64	54	370	217
17299.92125	40.7	0	32.52	-13.3	54	295	33

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

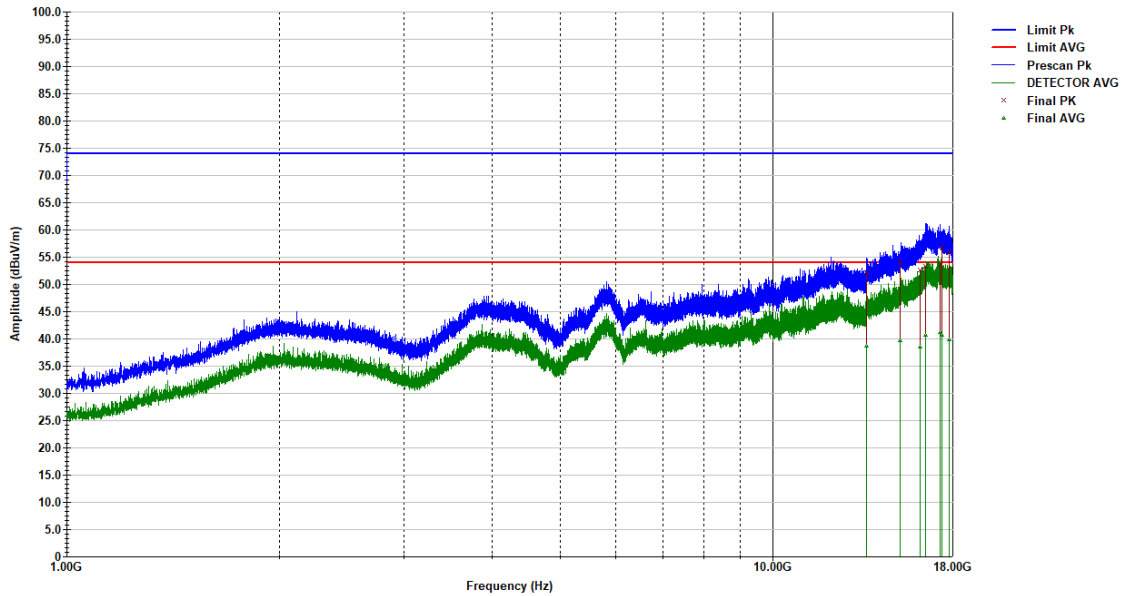
Test Mode - TX, 6GHz HPF

Operator - AG

Standard - FCC Class B

Comments - 5260MHz, 802.11a NOHT, pwr 15, 6 Mbps

Vertical AVG



5260 15 6 RE CISPR SW1A NC 3117 w lambda Ina AVG 1G-18G 06Feb2024.ttl

Last Data Update 10:13:04 AM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
13586.4801	52.09	26.27	-21.91	74	150	32
15169.58665	54.18	28.76	-19.82	74	380	17
16185.0499	52.6	31.72	-21.4	74	303	24
16447.863	53.34	32.86	-20.66	74	381	166
17260.30875	53.72	32.63	-20.28	74	342	361
17349.39975	56.81	32.39	-17.19	74	234	34
17797.395150	55.9	31.83	-18.1	74	155	117

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
13586.4801	38.6	0	26.27	-15.4	54	150	32
15169.58665	39.64	0	28.76	-14.36	54	380	17
16185.0499	38.46	0	31.72	-15.54	54	303	24
16447.863	40.67	0	32.86	-13.33	54	381	166
17260.30875	41.22	0	32.63	-12.78	54	342	361
17349.39975	40.74	0	32.39	-13.26	54	234	34
17797.395150	39.77	0	31.83	-14.23	54	155	117

Mid Channel – 5280MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

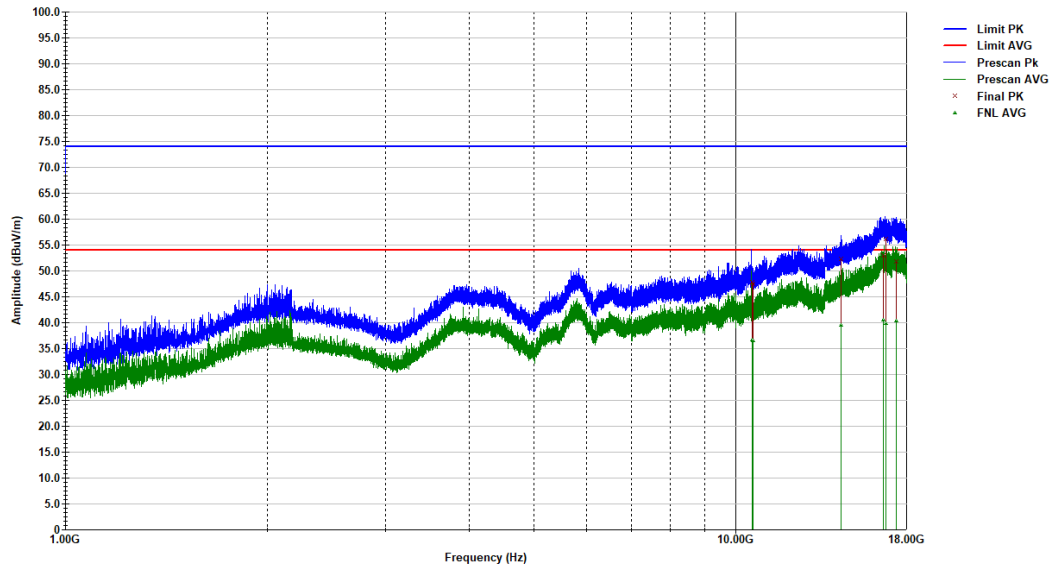
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5280MHz, 802.11a NOHT, pwr 15, 9 Mbps



5280 15 9 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.til

Last Data Update 11:27:56 AM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
10598.3205	47.87	20.6	-26.13	74	217	240
10605.32575	47.46	20.64	-26.54	74	150	220
14382.64985	52.38	27.14	-21.62	74	370	325
16596.981	52.95	33.52	-21.05	74	150	89
16746.29525	56.08	33.58	-17.92	74	302	255
17347.71715	51.74	32.39	-22.26	74	266	170

Average

Freq. (MHz)	Final AVG (dBuV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
10598.3205	36.76	0.11	20.6	-17.24	54	217	240
10605.32575	36.63	0.11	20.64	-17.37	54	150	220
14382.64985	39.52	0.11	27.14	-14.48	54	370	325
16596.981	40.65	0.11	33.52	-13.35	54	150	89
16746.29525	39.88	0.11	33.58	-14.12	54	302	255
17347.71715	40.43	0.11	32.39	-13.57	54	266	170

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

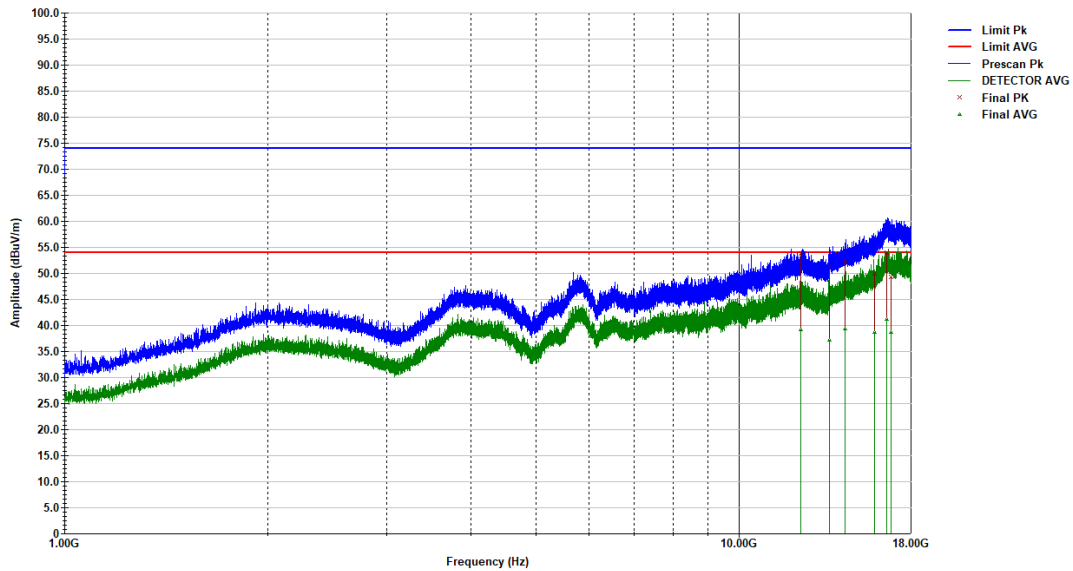
Test Mode - TX, 6GHz HPF

Vertical AVG

Operator - AG

Standard - FCC Class B

Comments - 5280MHz, 802.11a NOHT, pwr 15, 9 Mbps



5280 15 9 RE CISPR SW1A NC 3117 w lambda Ina AVG 1G-18G 06Feb2024.ttl

Last Data Update 11:01:43 AM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
12344.02875	53.75	25.9	-20.25	74	387	62
13632.4809	51.29	26.32	-22.71	74	333	-10
14368.3736	52.25	27.13	-21.75	74	202	132
15873.31335	49.91	30.63	-24.09	74	341	42
16572.736	54.07	33.42	-19.93	74	325	28
16794.02475	49.39	33.54	-24.61	74	302	99

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
12344.02875	39.32	0.11	25.9	-14.68	54	387	62
13632.4809	37.26	0.11	26.32	-16.74	54	333	-10
14368.3736	39.42	0.11	27.13	-14.58	54	202	132
15873.31335	38.72	0.11	30.63	-15.28	54	341	42
16572.736	41.21	0.11	33.42	-12.79	54	325	28
16794.02475	38.83	0.11	33.54	-15.17	54	302	99

High Channel – 5320MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

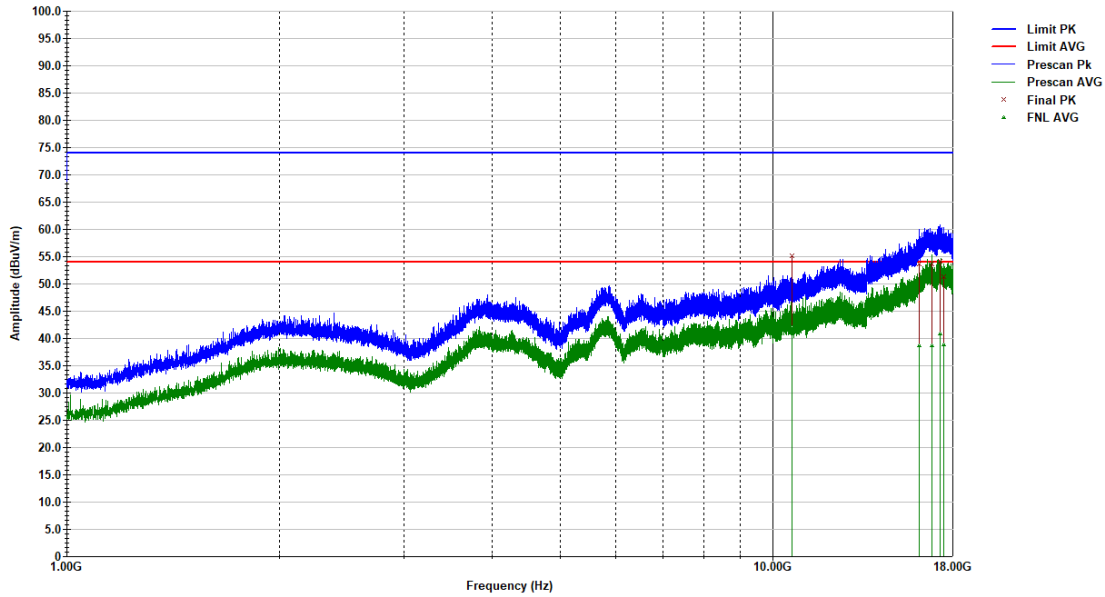
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5320MHz, 802.11a NOHT, pwr 15, 6 Mbps



5320 15 6 RE CISPR SW1A NC 3117 w lambda Ina AVG 1G-18G 06Feb2024.ttl

Last Data Update 12:35:46 PM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10642.32668	55.08	20.87	-18.92	74	332	310
16149.29331	53.71	31.57	-20.29	74	279	43
16823.06926	53.6	33.52	-20.4	74	400	178
17262.07315	54.17	32.63	-19.83	74	193	288
17486.4584	51.26	32.13	-22.74	74	278	39

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10642.32668	41.94	0	20.87	-12.06	54	332	310
16149.29331	38.71	0	31.57	-15.29	54	279	43
16823.06926	38.73	0	33.52	-15.27	54	400	178
17262.07315	40.9	0	32.63	-13.1	54	193	288
17486.4584	38.84	0	32.13	-15.16	54	278	39

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

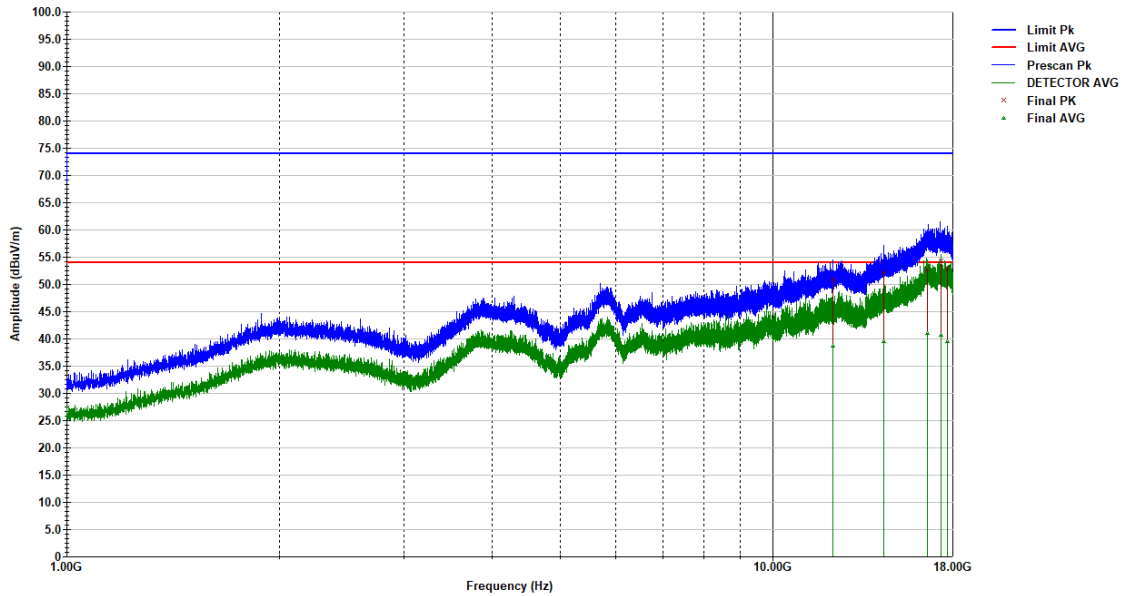
Test Mode - TX, 6GHz HPF

Operator - AG

Vertical AVG

Standard - FCC Class B

Comments - 5320MHz, 802.11a NOHT, pwr 15, 6 Mbps



5320 15 6 RE CISPR SW1A NC 3117 w lambda Ina AVG 1G-18G 06Feb2024.ttl

Last Data Update 12:22:42 PM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
12160.79325	50.99	25.6	-23.01	74	334	100
14384.8125	52.33	27.14	-21.67	74	150	-2
16548.46475	52.85	33.31	-21.15	74	209	362
17321.53565	54.3	32.46	-19.7	74	341	142
17673.5885	53.02	31.97	-20.98	74	264	-20

Average

Freq. (MHz)	Final AVG (dBuV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
12160.79325	38.73	0	25.6	-15.27	54	334	100
14384.8125	39.52	0	27.14	-14.48	54	150	-2
16548.46475	41	0	33.31	-13	54	209	362
17321.53565	40.74	0	32.46	-13.26	54	341	142
17673.5885	39.51	0	31.97	-14.49	54	264	-20

Upper band edge falling to restricted band Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Radiated Emissions

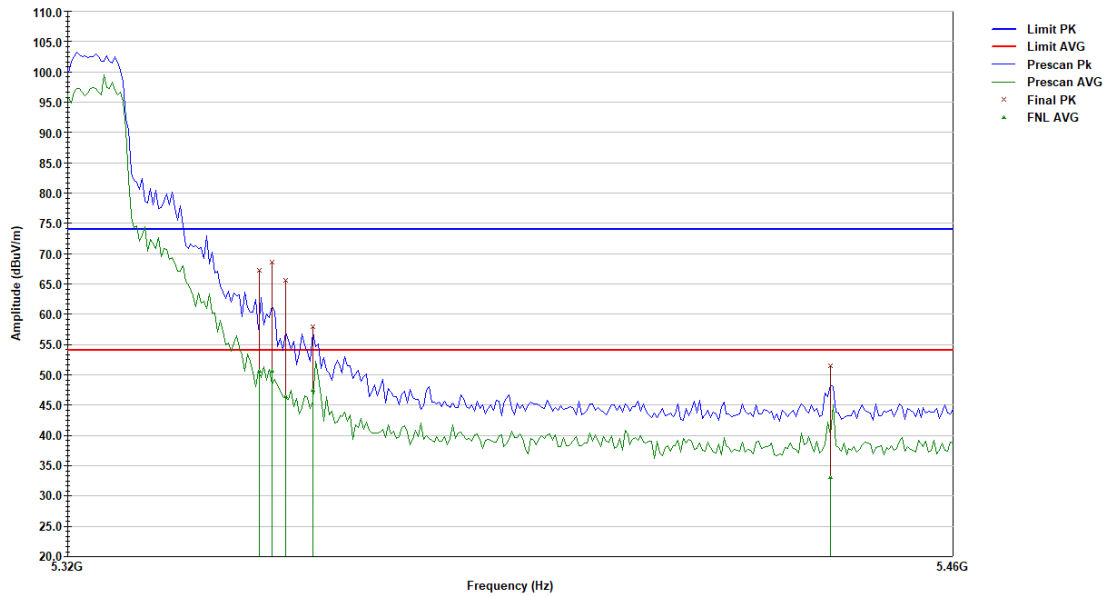
Test Mode - Tx mode, Upper Band-Edge

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5320MHz, 802.11a NOHT, pwr 15, 12Mbps



5320 15 12 RE Upper Band-Edge.ttl

Last Data Update 03:16:55 PM, Tuesday, May 21, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5350	67.22	7.62	-6.78	74	340	1
5352	68.59	7.63	-5.41	74	333	5
5354.125	65.59	7.64	-8.41	74	340	368
5358.375	58.01	7.66	-15.99	74	279	380
5440.4	51.54	7.93	-22.46	74	171	-20

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5350	50.83	0.22	7.62	-3.17	54	340	1
5352	50.79	0.22	7.63	-3.21	54	333	5
5354.125	46.57	0.22	7.64	-7.43	54	340	368
5358.375	47.66	0.22	7.66	-6.34	54	279	380
5440.4	33.27	0.22	7.93	-20.73	54	171	-20

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Radiated Emissions

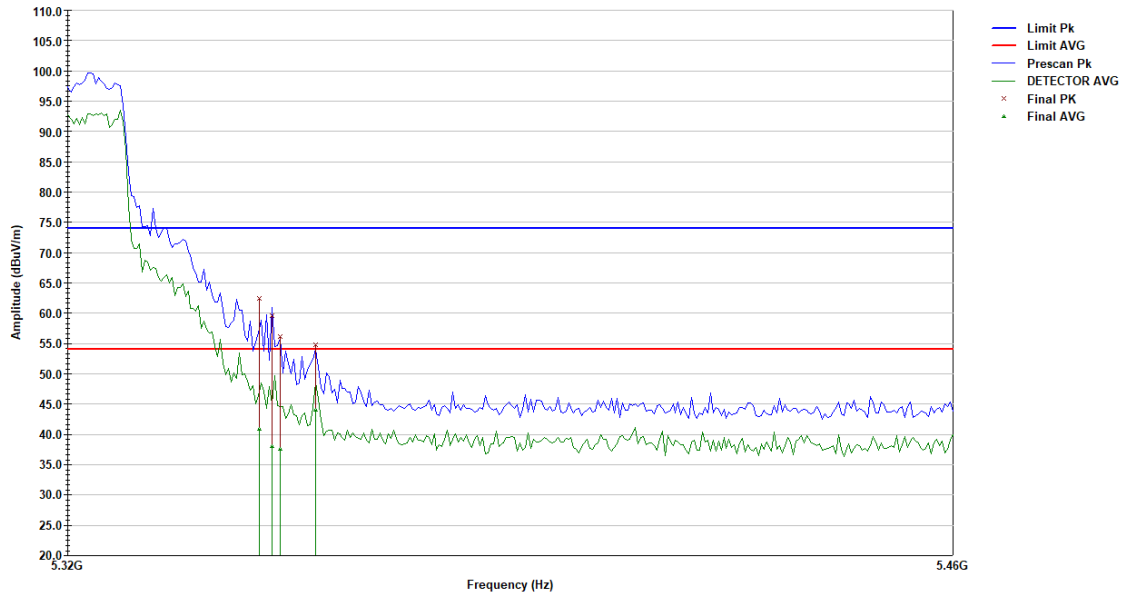
Test Mode - Tx mode, Upper Band-Edge

Vertical AVG

Operator - AG

Standard - FCC Class B

Comments - 5320MHz, 802.11a NOHT, pwr 15, 12Mbps



5320 15 12 RE Upper Band-Edge.til

Last Data Update 03:04:20 PM, Tuesday, May 21, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
5350	62.43	7.62	-11.57	74	311	272
5352	59.52	7.63	-14.48	74	267	133
5353.275	56.21	7.63	-17.79	74	288	204
5358.8	54.81	7.66	-19.19	74	400	44

Average

Freq. (MHz)	Final AVG (dBuV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
5350	41.12	0.22	7.62	-12.88	54	311	272
5352	38.23	0.22	7.63	-15.77	54	267	133
5353.275	37.73	0.22	7.63	-16.27	54	288	204
5358.8	44.26	0.22	7.66	-9.74	54	400	44

UNII2a: 802.11n20

30 to 1000 MHz Low Channel – 5260MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal QP

Customer / Model # - comma.ai / LightningHard SOM

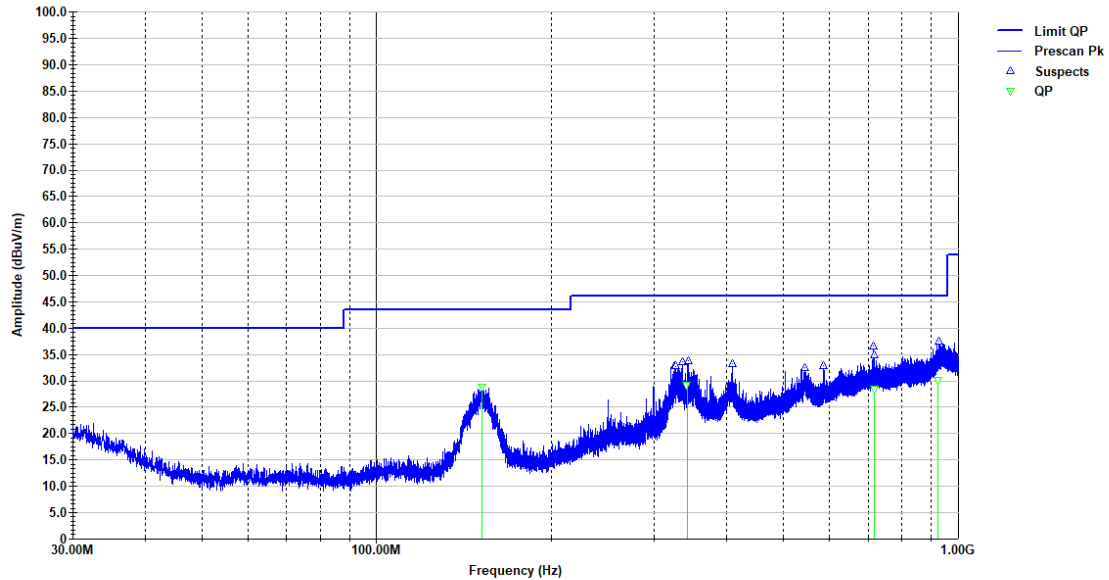
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - Alex C

Standard - FCC Class B

Comments - 5260MHz, 802.11n20 HT20, pwr 15, mcs0



5260 15 mcs0 FCC 15.407 RE 30M-1GHz.til

Last Data Update 09:14:07 AM, Friday, March 22, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
151.488284	28.75	-27.37	-14.77	43.52	177	319
341.676241	29.17	-21.71	-16.85	46.02	100	-6
717.235445	28.44	-11.9	-17.58	46.02	400	167
921.559965	30.15	-8.98	-15.87	46.02	106	309

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical QP

Customer / Model # - comma.ai / LightningHard SOM

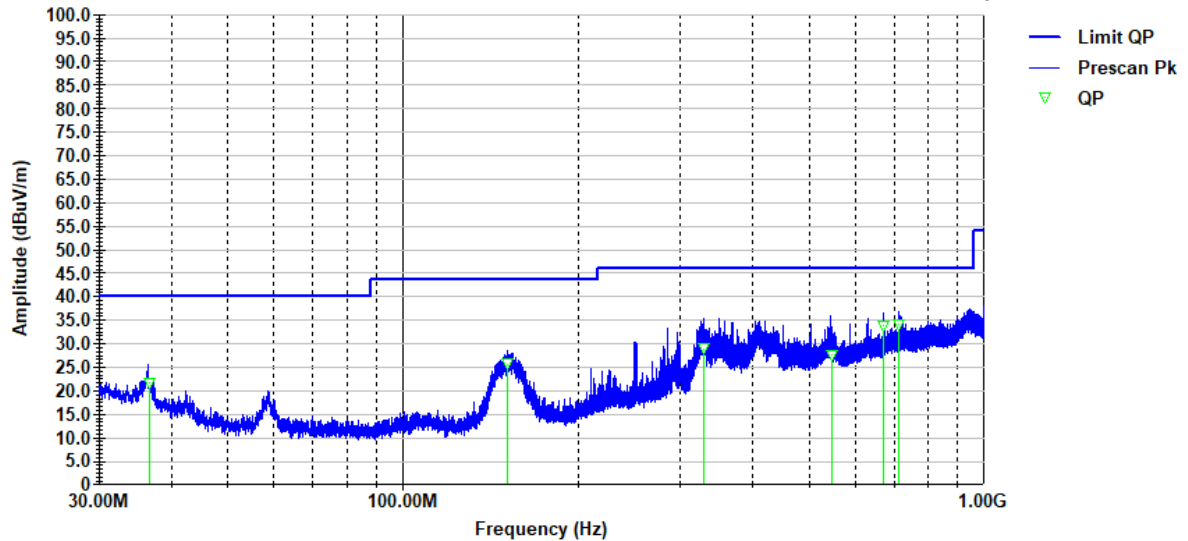
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - Alex C

Standard - FCC Class B

Comments - 5260MHz, 802.11n20 HT20, pwr 15, mcs0



5260 15 mcs0 FCC 15-407 RE 30M-1GHz.til

Last Data Update 08:34:32 AM, Friday, March 22, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
36.586505	21.57	-25.08	-18.43	40	153	87
151.053889	25.72	-27.51	-17.8	43.52	162	231
328.982715	28.96	-22.68	-17.06	46.02	122	65
546.555699	27.69	-13.89	-18.33	46.02	130	181
672.03627	33.88	-12.57	-12.14	46.02	100	196
713.115067	34.07	-11.9	-11.95	46.02	100	234

1 to 18 GHz Low Channel – 5260MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

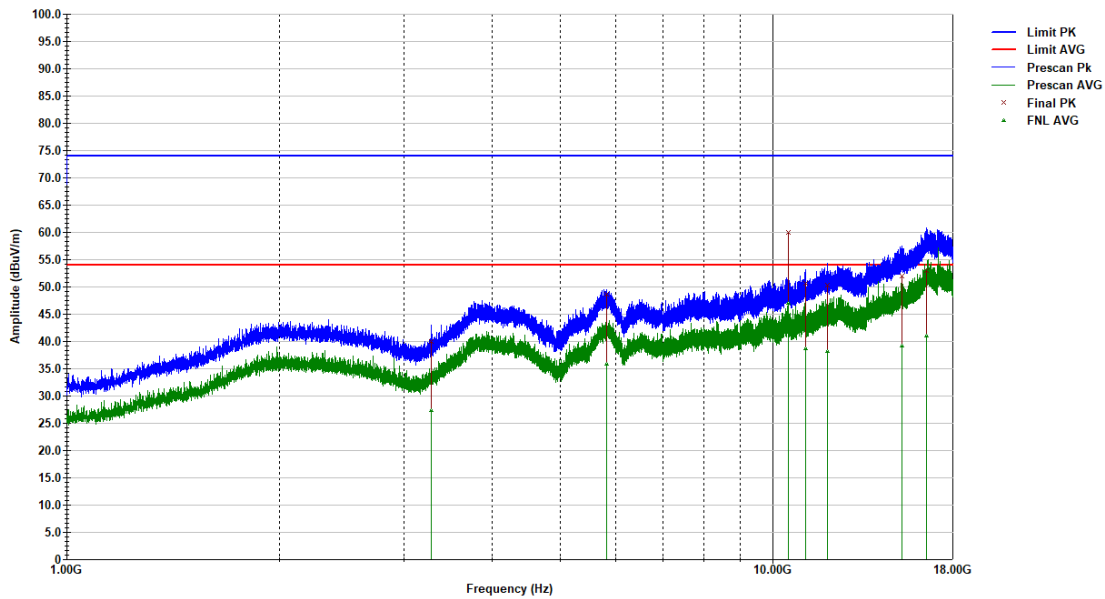
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5260MHz, 802.11n20 HT20, pwr 15, mcs 0



5260 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.tif

Last Data Update 02:09:53 PM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
3278.210575	39.95	2.39	-34.05	74	364	-9
5816.065887	48.66	9.33	-25.34	74	295	252
10524.08745	59.97	20.57	-14.03	74	218	314
11129.45549	50.63	22.63	-23.37	74	333	53
11940.24877	50.36	25.14	-23.64	74	232	257
15259.12275	52.07	29.03	-21.93	74	349	218
16524.51461	52.94	33.21	-21.06	74	248	44

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
3278.210575	27.34	0	2.39	-26.66	54	364	-9
5816.065887	35.84	0	9.33	-18.16	54	295	252
10524.08745	46.93	0	20.57	-7.07	54	218	314
11129.45549	38.65	0	22.63	-15.35	54	333	53
11940.24877	38.23	0	25.14	-15.77	54	232	257
15259.12275	39.2	0	29.03	-14.8	54	349	218
16524.51461	40.95	0	33.21	-13.05	54	248	44

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

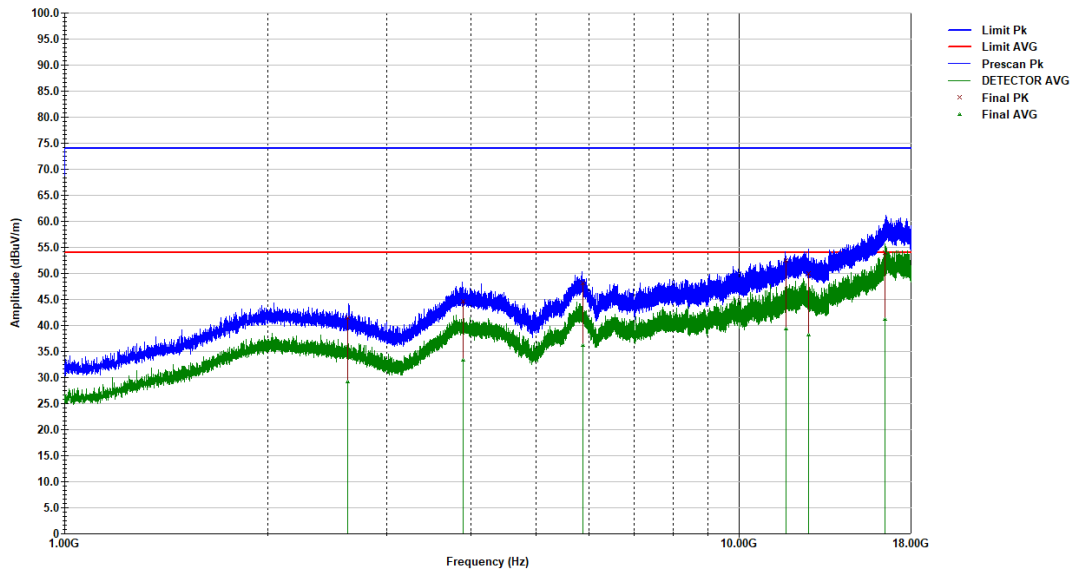
Test Mode - TX, 6GHz HPF

Vertical AVG

Operator - AG

Standard - FCC Class B

Comments - 5260MHz, 802.11n20 HT20, pwr 15, mcs 0



5260 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 01:53:55 PM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
2629.37725	41.48	0.68	-32.52	74	252	193
3898.010125	44.75	3.82	-29.25	74	372	217
5862.788375	48.22	9.65	-25.78	74	264	152
11747.69475	52.49	24.75	-21.51	74	333	274
12687.01475	49.97	26.12	-24.03	74	372	156
16459.79925	53.91	32.92	-20.09	74	364	181

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
2629.37725	29.15	0	0.68	-24.85	54	252	193
3898.010125	33.31	0	3.82	-20.69	54	372	217
5862.788375	36.17	0	9.65	-17.83	54	264	152
11747.69475	39.39	0	24.75	-14.61	54	333	274
12687.01475	38.1	0	26.12	-15.9	54	372	156
16459.79925	41.14	0	32.92	-12.86	54	364	181

Mid Channel – 5280MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

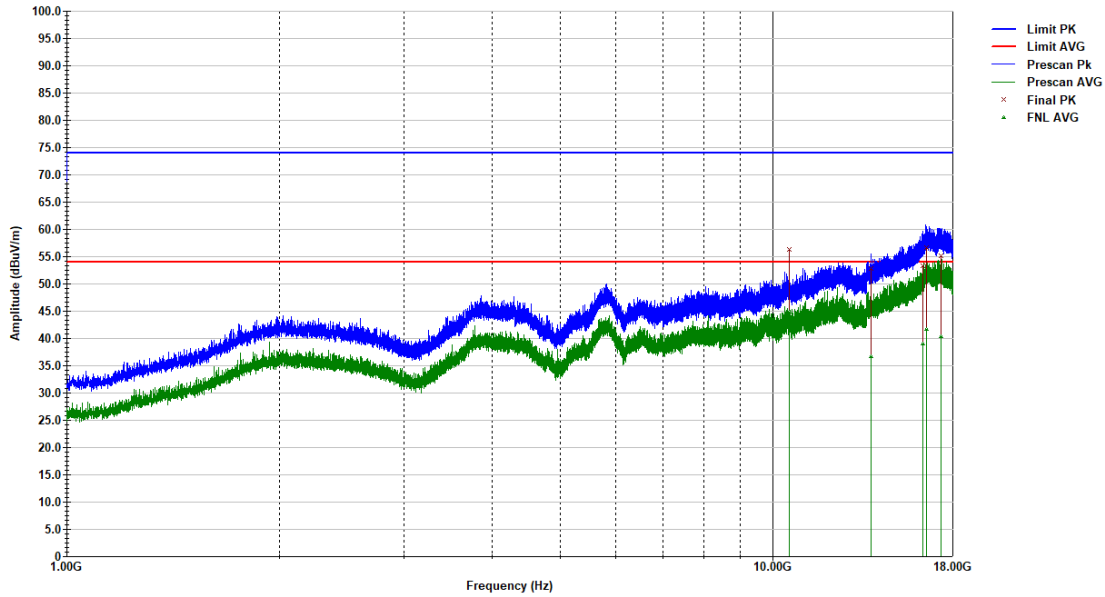
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5280MHz, 802.11n20 HT20, pwr 15, mcs 9



5280 15 mcs9 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.tif

Last Data Update 02:50:09 PM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
10561.58982	56.33	20.59	-17.67	74	333	309
13782.57864	52.74	26.39	-21.26	74	210	266
16333.95619	53.32	32.35	-20.68	74	247	175
16498.85183	56.64	33.1	-17.36	74	217	27
17299.04978	55.09	32.52	-18.91	74	209	117

Average

Freq. (MHz)	Final AVG (dBuV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
10561.58982	45.12	0.3	20.59	-8.88	54	333	309
13782.57864	37.01	0.3	26.39	-16.99	54	210	266
16333.95619	39.36	0.3	32.35	-14.64	54	247	175
16498.85183	41.96	0.3	33.1	-12.04	54	217	27
17299.04978	40.59	0.3	32.52	-13.41	54	209	117

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

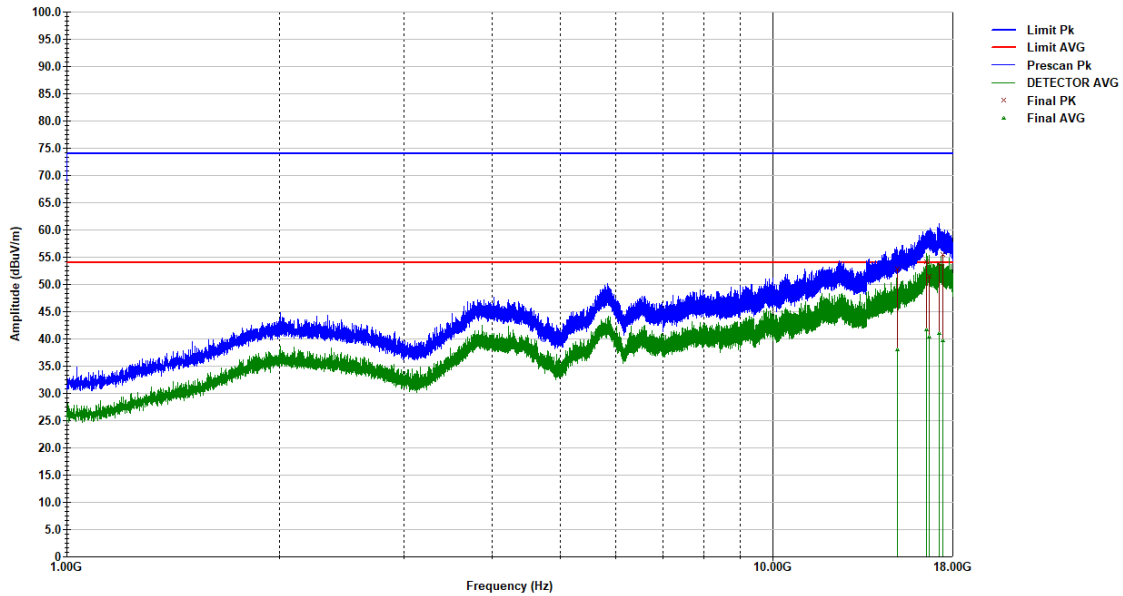
Test Mode - TX, 6GHz HPF

Operator - AG

Vertical AVG

Standard - FCC Class B

Comments - 5280MHz, 802.11n20 HT20, pwr 15, mcs 9



5280 15 mcs9 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.til

Last Data Update 02:33:31 PM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
15036.16435	52.77	28.5	-21.23	74	318	16
16510.0015	54.1	33.15	-19.9	74	287	346
16662.10115	51.56	33.62	-22.44	74	334	35
17223.0674	53.8	32.74	-20.2	74	171	204
17410.12115	55.54	32.24	-18.46	74	400	21

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
15036.16435	38.21	0.3	28.5	-15.79	54	318	16
16510.0015	42.01	0.3	33.15	-11.99	54	287	346
16662.10115	40.59	0.3	33.62	-13.41	54	334	35
17223.0674	41.23	0.3	32.74	-12.77	54	171	204
17410.12115	39.97	0.3	32.24	-14.03	54	400	21

High Channel – 5320MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

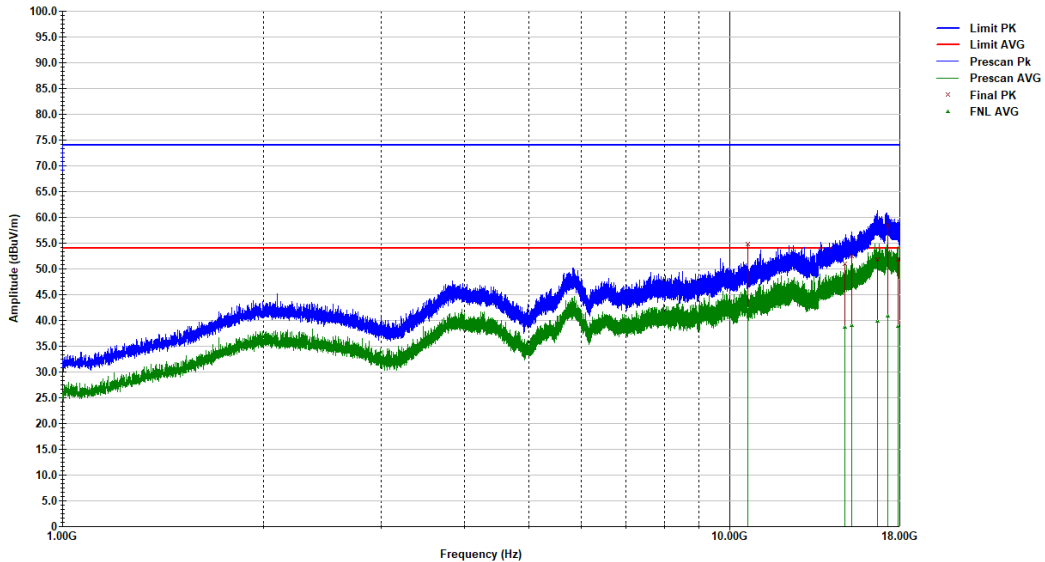
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5320MHz, 802.11n20 HT20, pwr 15, mcs 0



5320 15 mcs 0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 01:22:06 PM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
10640.60029	54.88	20.86	-19.12	74	339	309
14906.26339	51.02	28.24	-22.98	74	150	87
15245.20721	52.45	28.99	-21.55	74	355	-6
16674.18237	51.84	33.62	-22.16	74	202	31
17247.92698	58.48	32.67	-15.52	74	209	202
17899.91994	51.8	32.02	-22.2	74	340	203

Average

Freq. (MHz)	Final AVG (dBuV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
10640.60029	42.34	0	20.86	-11.66	54	339	309
14906.26339	38.68	0	28.24	-15.32	54	150	87
15245.20721	39.07	0	28.99	-14.93	54	355	-6
16674.18237	39.84	0	33.62	-14.16	54	202	31
17247.92698	40.78	0	32.67	-13.22	54	209	202
17899.91994	38.86	0	32.02	-15.14	54	340	203

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

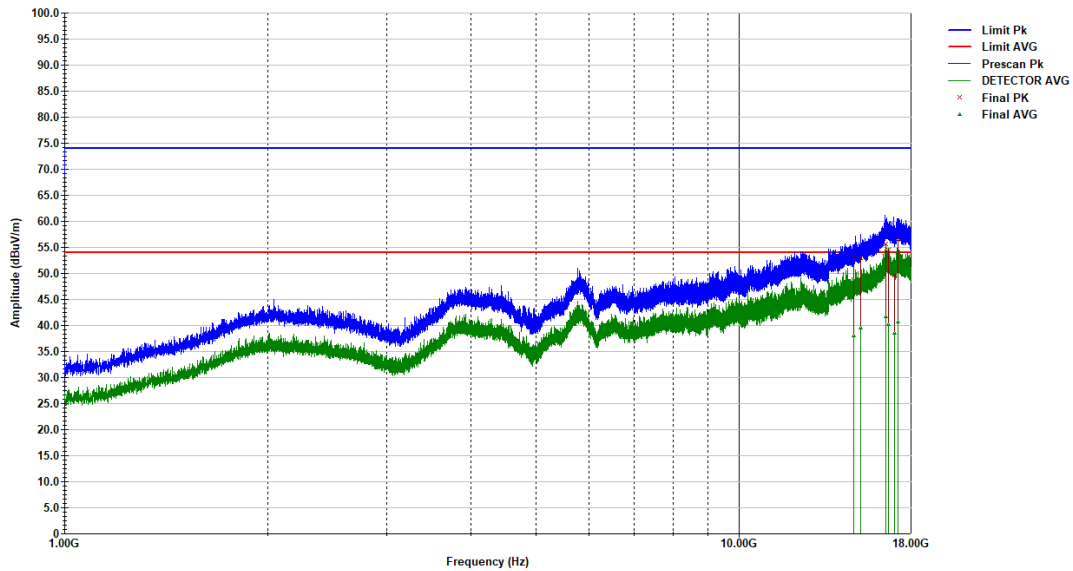
Test Mode - TX, 6GHz HPF

Vertical AVG

Operator - AG

Standard - FCC Class B

Comments - 5320MHz, 802.11n20 HT20, pwr 15, mcs 0



5320 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 01:06:07 PM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
14811.46215	53.24	28.03	-20.76	74	334	91
15169.3044	52.94	28.76	-21.06	74	248	272
16511.45035	55.72	33.15	-18.28	74	294	329
16673.68325	54.57	33.62	-19.43	74	150	362
17010.79385	49.73	33.08	-24.27	74	388	164
17242.78435	56.46	32.68	-17.54	74	365	46

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
14811.46215	38	0	28.03	-16	54	334	91
15169.3044	39.55	0	28.76	-14.45	54	248	272
16511.45035	41.66	0	33.15	-12.34	54	294	329
16673.68325	40.2	0	33.62	-13.8	54	150	362
17010.79385	38.56	0	33.08	-15.44	54	388	164
17242.78435	40.74	0	32.68	-13.26	54	365	46

Upper band edge falling to restricted band Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

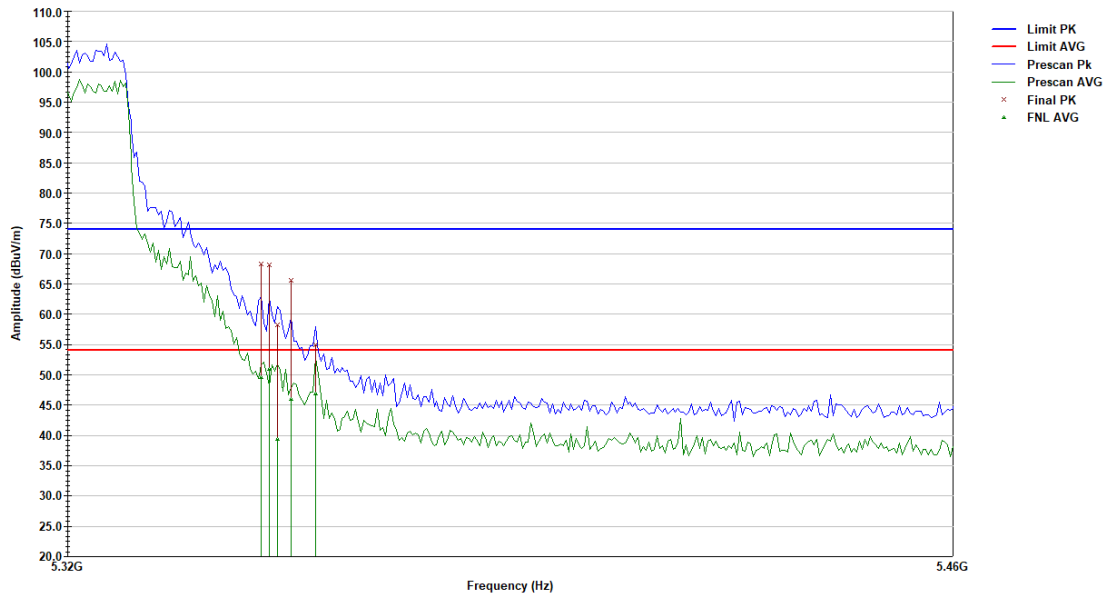
Model # - comma.ai

Test Mode - Tx mode, Upper Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5320MHz, 802.11n20 HT20, pwr 15, mcs4



5320 15 mcs4 RE Upper Band-Edge.ttl

Last Data Update 04:24:09 PM, Tuesday, May 21, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5350.30001	68.31	7.62	-5.69	74	340	9
5351.575	68.11	7.63	-5.89	74	341	365
5352.85001	58.3	7.63	-15.7	74	347	380
5354.975	65.58	7.64	-8.42	74	347	10
5358.8	54.92	7.66	-19.08	74	294	-20

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5350.30001	50.08	0.52	7.62	-3.92	54	340	9
5351.575	51.44	0.52	7.63	-2.56	54	341	365
5352.85001	39.86	0.52	7.63	-14.14	54	347	380
5354.975	46.52	0.52	7.64	-7.48	54	347	10
5358.8	47.33	0.52	7.66	-6.67	54	294	-20

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Radiated Emissions

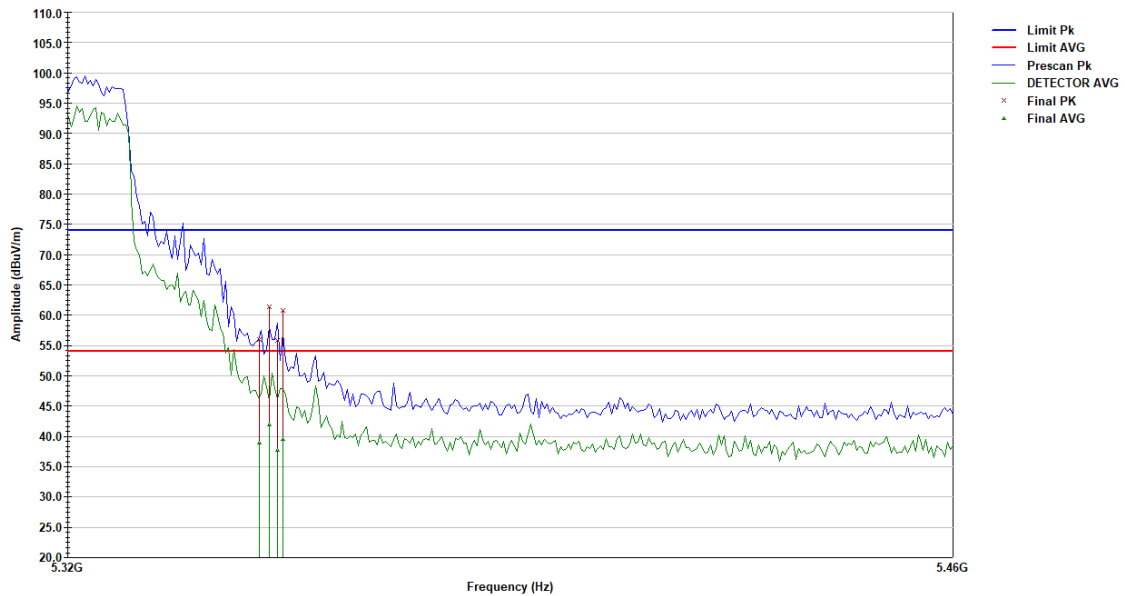
Test Mode - Tx mode, Upper Band-Edge

Operator - AG

Vertical AVG

Standard - FCC Class B

Comments - 5320MHz, 802.11n20 HT20, pwr 15, mcs4



5320 15 mcs4 RE Upper Band-Edge.til

Last Data Update 04:10:41 PM, Tuesday, May 21, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5350.00001	55.92	7.62	-18.08	74	400	316
5351.575	61.41	7.63	-12.59	74	358	103
5352.85	55.83	7.63	-18.17	74	342	-20
5353.7	60.83	7.64	-13.17	74	389	69

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5350.00001	39.38	0.52	7.62	-14.62	54	400	316
5351.575	42.35	0.52	7.63	-11.65	54	358	103
5352.85	38.19	0.52	7.63	-15.81	54	342	-20
5353.7	40	0.52	7.64	-14	54	389	69

UNII2a: 802.11n40

30 to 1000 MHz High Channel – 5310MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal QP

Customer / Model # - comma.ai / LightningHard SOM

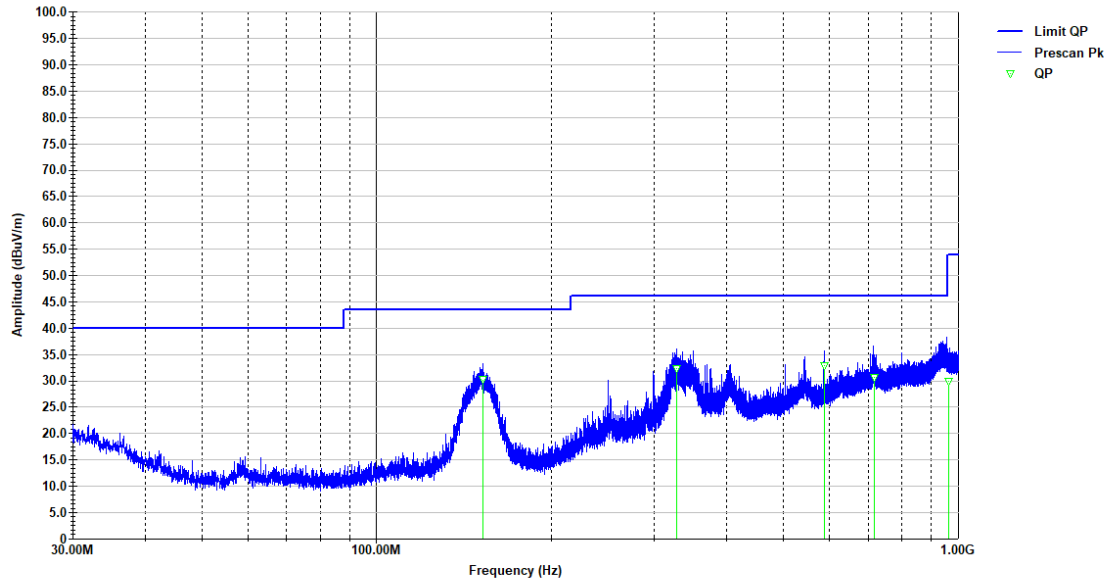
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - Alex C

Standard - FCC Class B

Comments - 5270MHz, 802.11n40 HT40, pwr 13, mcs1



5270 13 mcs1 FCC 15.407 RE 30M-1GHz.til

Last Data Update 09:52:55 AM, Friday, March 22, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
152.096702	30.18	-27.17	-13.34	43.52	193	-20
328.650734	32.4	-22.69	-13.62	46.02	106	313
588.029646	32.94	-14.74	-13.08	46.02	138	335
716.859146	30.56	-11.9	-15.46	46.02	153	197
963.03	29.88	-8.9	-24.1	53.98	145	42

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical QP

Customer / Model # - comma.ai / LightningHard SOM

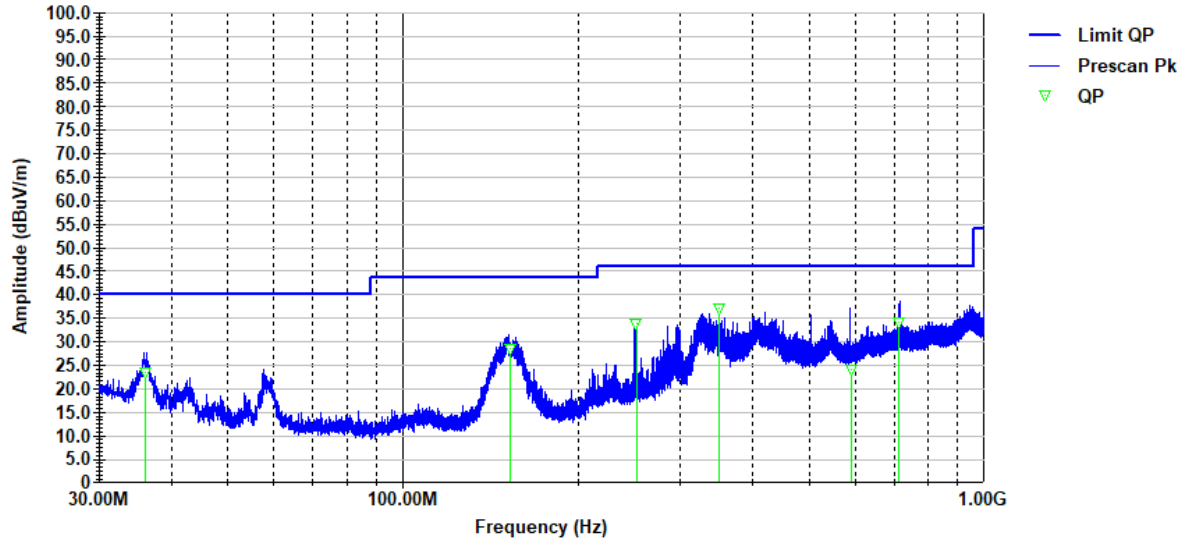
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - Alex C

Standard - FCC Class B

Comments - 5270MHz, 802.11n40 HT40, pwr 13, mcs1



5270 13 mcs1 FCC 15-407 RE 30M-1GHz.til

Last Data Update 09:40:49 AM, Friday, March 22, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
36.122831	23.38	-24.78	-16.62	40	100	6
152.713078	28.48	-26.96	-15.04	43.52	154	211
251.978062	33.84	-24.28	-12.18	46.02	100	346
349.998906	37.07	-21.02	-8.95	46.02	100	261
589.660101	24.05	-14.66	-21.97	46.02	274	20
712.944751	34.1	-11.9	-11.92	46.02	106	231

1 to 18 GHz Low Channel – 5270MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

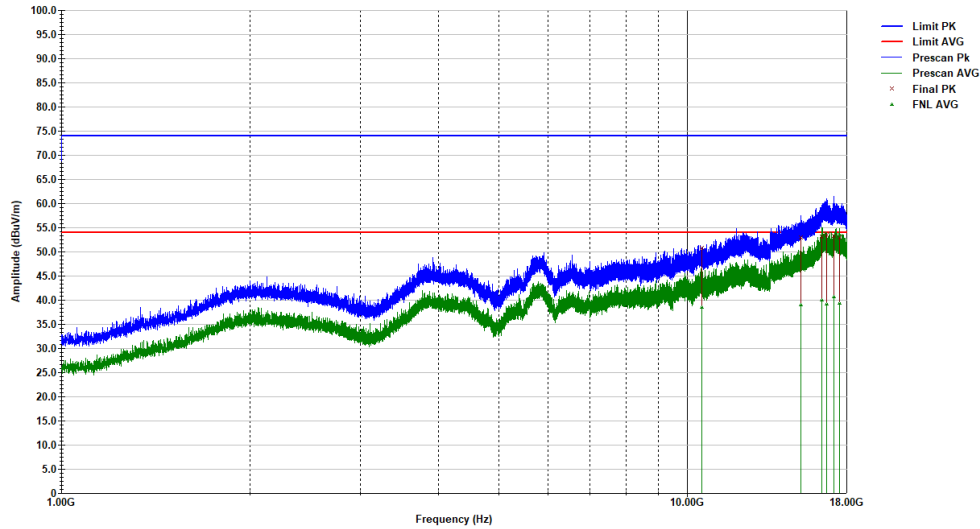
Customer / Model # - comma.ai / LightningHard SOM

Test Mode - TX, 6GHz HPF

Operator - AG

Standard - FCC Class B

Comments - 5270MHz, 802.11n40 HT40, pwr 13, mcs 1



5270 13 mcs1 RE CISPR SW1A NC 3117 w lambda Ina AVG 1G-18G 06Feb2024.ttl

Last Data Update 03:46:56 PM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
10545.97938	50.77	20.58	-23.23	74	348	305
15222.89188	53.01	28.92	-20.99	74	301	28
16421.99178	53.08	32.75	-20.92	74	194	349
16710.26494	53.53	33.6	-20.47	74	332	13
17149.39776	53.33	32.79	-20.67	74	232	261
17545.37355	52.98	32.09	-21.02	74	178	215

Average

Freq. (MHz)	Final AVG (dBuV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
10545.97938	38.8	0.31	20.58	-15.2	54	348	305
15222.89188	39.24	0.31	28.92	-14.76	54	301	28
16421.99178	40.36	0.31	32.75	-13.64	54	194	349
16710.26494	39.47	0.31	33.6	-14.53	54	332	13
17149.39776	40.95	0.31	32.79	-13.05	54	232	261
17545.37355	39.69	0.31	32.09	-14.31	54	178	215

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

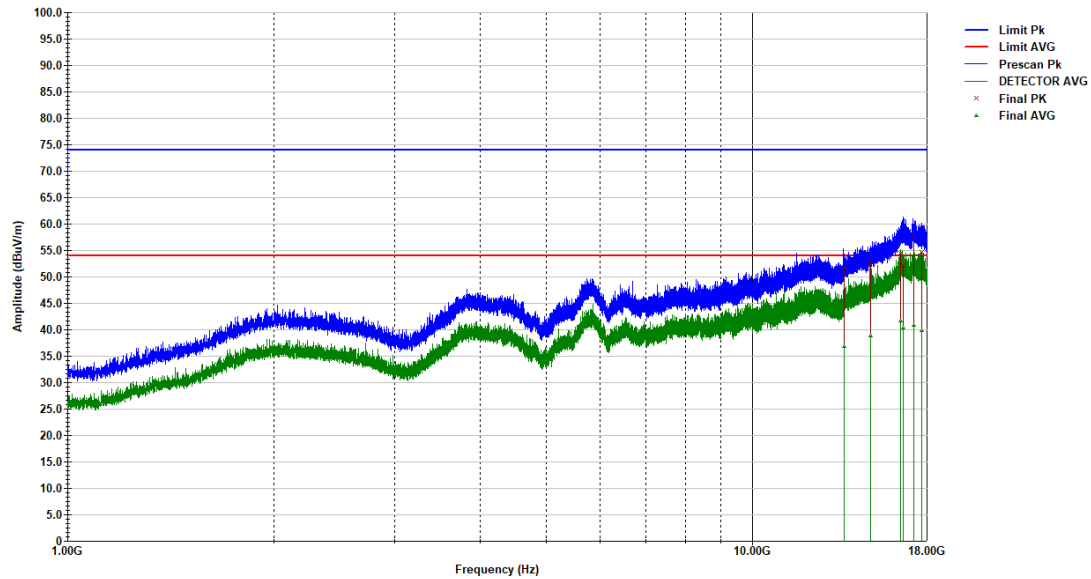
Test Mode - TX, 6GHz HPF

Vertical AVG

Operator - AG

Standard - FCC Class B

Comments - 5270MHz, 802.11n40 HT40, pwr 13, mcs 1



5270 13 mcs1 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.til

Last Data Update 03:24:52 PM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
13636.5895	51.74	26.32	-22.26	74	187	106
14903.69065	53.01	28.24	-20.99	74	218	335
16468.50885	54.56	32.96	-19.44	74	150	75
16609.7436	52.15	33.57	-21.85	74	319	237
17222.5236	57.59	32.74	-16.41	74	186	58
17692.498	54.69	31.95	-19.31	74	364	99

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
13636.5895	37.19	0.31	26.32	-16.81	54	187	106
14903.69065	39.14	0.31	28.24	-14.86	54	218	335
16468.50885	41.9	0.31	32.96	-12.1	54	150	75
16609.7436	40.65	0.31	33.57	-13.35	54	319	237
17222.5236	41.08	0.31	32.74	-12.92	54	186	58
17692.498	40.15	0.31	31.95	-13.85	54	364	99

High Channel – 5310MHz - both chains transmitting

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

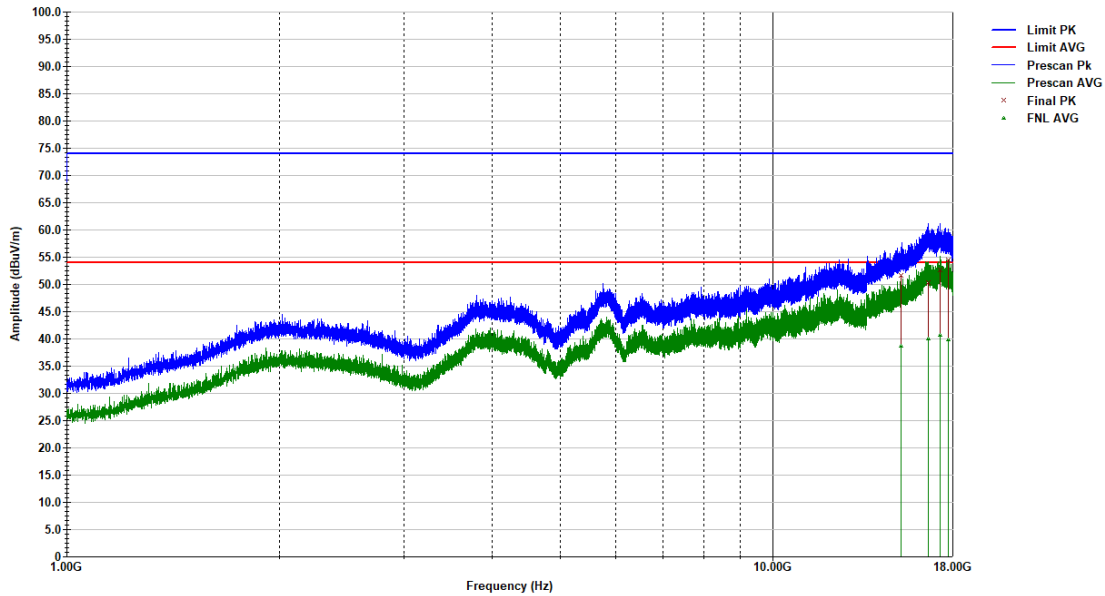
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5310MHz, 802.11n40 HT40, pwr 13, mcs 1



5310 13 mcs1 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.til

Last Data Update 04:27:37 PM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
15209.52294	51.58	28.88	-22.42	74	309	380
16623.7351	50.32	33.63	-23.68	74	155	106
17272.15998	52.65	32.6	-21.35	74	372	116
17744.60389	54.52	31.89	-19.48	74	348	191

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
12558.8729	39.06	0.31	28.88	-14.94	54	309	380
14374.3946	40.36	0.31	33.63	-13.64	54	155	106
16772.46915	40.91	0.31	32.6	-13.09	54	372	116
17271.40685	40.16	0.31	31.89	-13.84	54	348	191

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

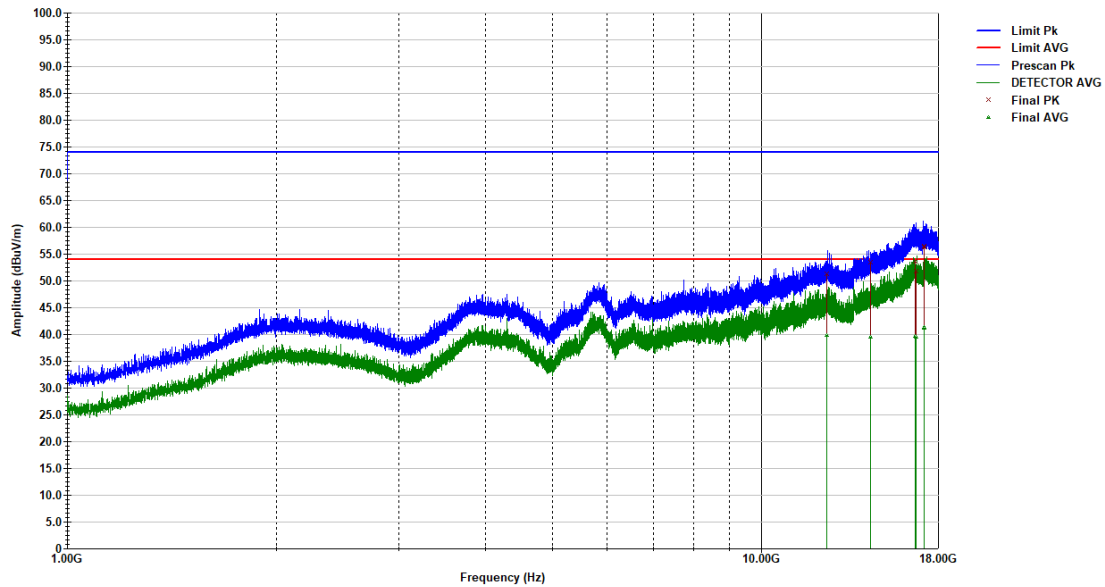
Test Mode - TX, 6GHz HPF

Vertical AVG

Operator - AG

Standard - FCC Class B

Comments - 5310MHz, 802.11n40 HT40, pwr 13, mcs 1



5310 13 mcs1 RE CISPR SW1A NC 3117 w lambda Ina AVG 1G-18G 06Feb2024.til

Last Data Update 04:15:51 PM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
12431.53975	51.35	25.96	-22.65	74	400	70
14382.0305	53.42	27.14	-20.58	74	265	369
16683.23675	53.68	33.61	-20.32	74	209	365
16697.7995	51.81	33.61	-22.19	74	194	6
17162.17575	56.38	32.79	-17.62	74	225	291
17169.6144	56.58	32.8	-17.42	74	202	303

Average

Freq. (MHz)	Final AVG (dBuV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
12431.53975	40.15	0.31	25.96	-13.85	54	400	70
14382.0305	39.84	0.31	27.14	-14.16	54	265	369
16683.23675	40.01	0.31	33.61	-13.99	54	209	365
16697.7995	39.88	0.31	33.61	-14.12	54	194	6
17162.17575	41.65	0.31	32.79	-12.35	54	225	291
17169.6144	41.48	0.31	32.8	-12.52	54	202	303

Upper band edge falling to restricted band Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Model # - comma.ai

Radiated Emissions

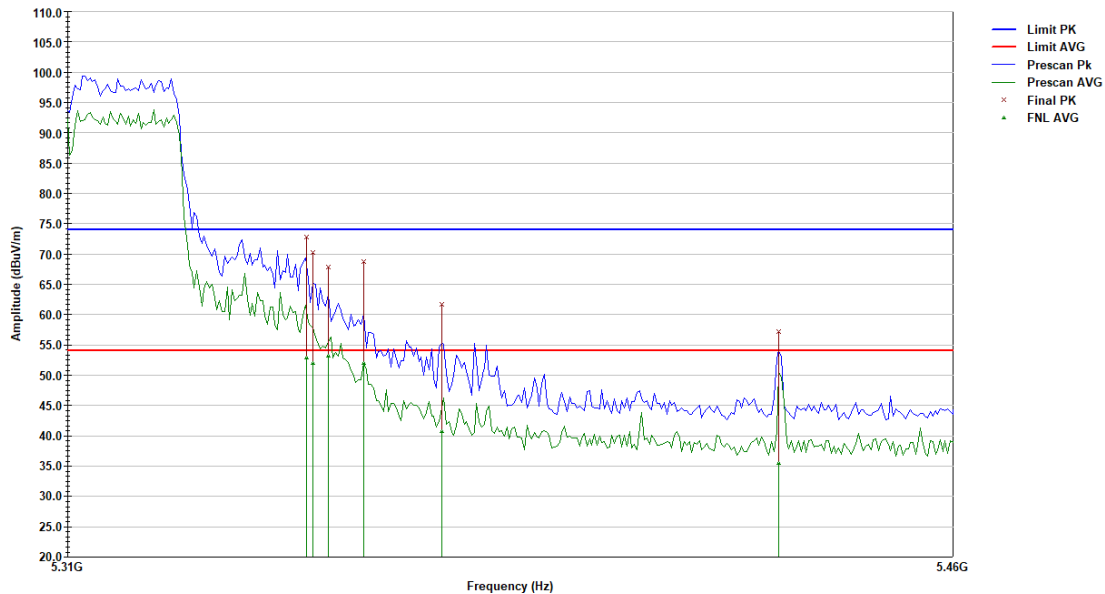
Test Mode - Tx mode, Upper Band-Edge

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5310MHz, 802.11n40 HT40, pwr 13, mcs3



5310 13 mcs3 RE Upper Band-Edge.ttl

Last Data Update 01:27:22 PM, Friday, May 24, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5350.00001	72.74	7.62	-1.26	74	271	-14
5351.15	70.27	7.62	-3.73	74	271	372
5353.7	67.89	7.64	-6.11	74	163	-8
5359.65	68.74	7.66	-5.26	74	271	-14
5372.825	61.66	7.72	-12.34	74	217	186
5430.2	57.14	7.93	-16.86	74	150	0

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5350.00001	53.42	0.52	7.62	-0.58	54	271	-14
5351.15	52.42	0.52	7.62	-1.58	54	271	372
5353.7	53.65	0.52	7.64	-0.35	54	163	-8
5359.65	52.44	0.52	7.66	-1.56	54	271	-14
5372.825	41.17	0.52	7.72	-12.83	54	217	186
5430.2	35.91	0.52	7.93	-18.09	54	150	0

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical AVG

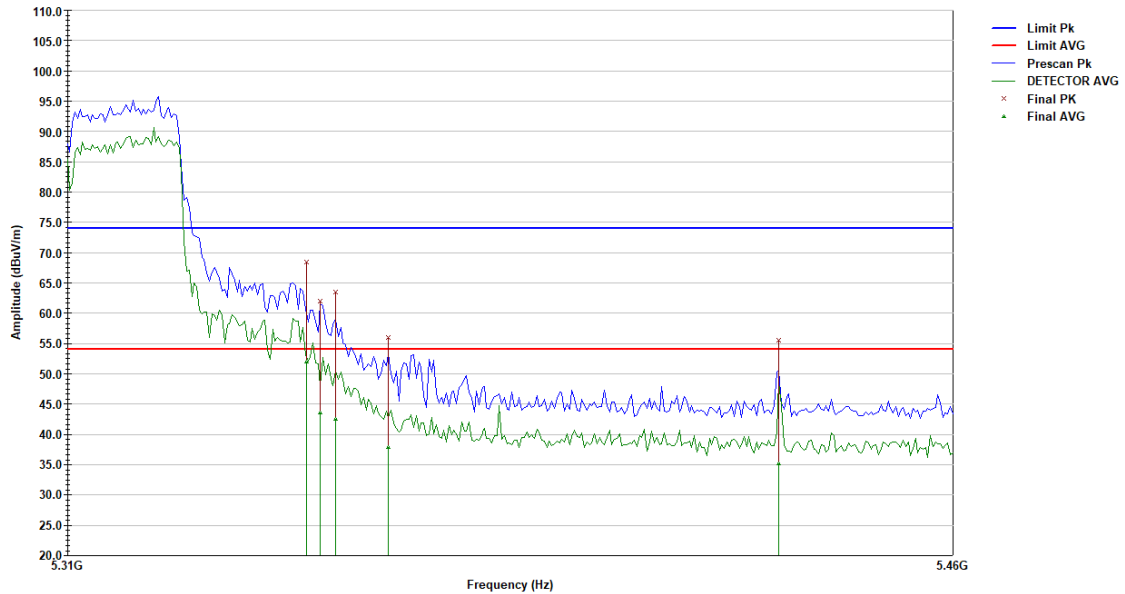
Model # - comma.ai

Test Mode - Tx mode, Upper Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5310MHz, 802.11n40 HT40, pwr 13, mcs3



5310 13 mcs3 RE Upper Band-Edge.ttl

Last Data Update 05:18:49 PM, Tuesday, May 21, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
5350	68.43	7.62	-5.57	74	400	246
5352.42501	61.92	7.63	-12.08	74	311	380
5354.975	63.44	7.64	-10.56	74	303	80
5363.90001	55.98	7.68	-18.02	74	358	84
5430.2	55.47	7.93	-18.53	74	365	84

Average

Freq. (MHz)	Final AVG (dBuV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
5350	52.46	0.52	7.62	-1.54	54	400	246
5352.42501	44.13	0.52	7.63	-9.87	54	311	380
5354.975	43	0.52	7.64	-11	54	303	80
5363.90001	38.4	0.52	7.68	-15.6	54	358	84
5430.2	35.7	0.52	7.93	-18.3	54	365	84

UNII2a: 802.11ac20

30 to 1000 MHz
Mid Channel – 5280MHz - both chains transmitting
Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal QP

Customer / Model # - comma.ai / LightningHard SOM

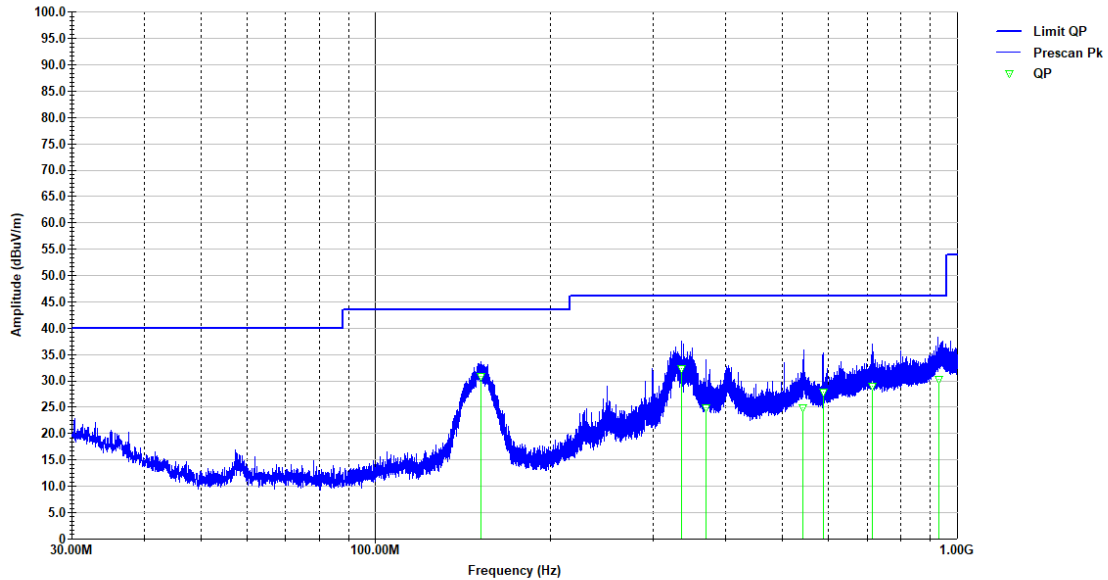
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - Alex C

Standard - FCC Class B

Comments - 5280MHz, 802.11ac20 VHT20, pwr 15, mcs0



5280 15 mcs0 FCC 15.407 RE 30M-1GHz.ttl

Last Data Update 10:41:14 AM, Friday, March 22, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
151.47981	30.89	-27.37	-12.63	43.52	177	331
336.02831	32.41	-22.21	-13.61	46.02	100	18
370.178321	24.86	-20.09	-21.16	46.02	279	144
542.643956	24.94	-13.86	-21.08	46.02	328	42
588.166716	27.86	-14.73	-18.16	46.02	201	313
714.146138	28.97	-11.91	-17.05	46.02	279	198
929.870581	30.31	-8.51	-15.71	46.02	280	83

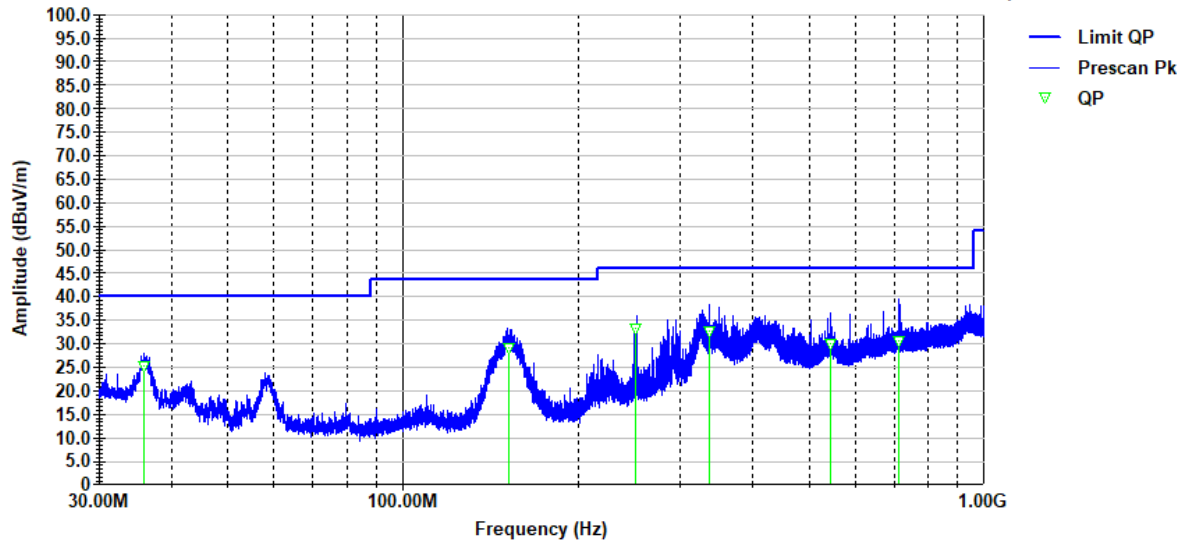
Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical QP

Customer / Model # - comma.ai / LightningHard SOM
Serial # - N/A
Test Mode - TX99, ext. DC power supply
Operator - Alex C
Standard - FCC Class B
Comments - 5280MHz, 802.11ac20 VHT20, pwr 15, mcs0



5280 15 mcs0 FCC 15-407 RE 30M-1GHz.til

Last Data Update 10:21:24 AM, Friday, March 22, 2024

Quasi-Peak Data

Freq. (MHz)	Final QP (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
35.826771	25.35	-24.61	-14.65	40	100	164
152.544644	29.04	-27.02	-14.48	43.52	186	204
251.936914	33.4	-24.28	-12.62	46.02	100	354
335.962389	32.79	-22.21	-13.23	46.02	154	245
545.020571	29.89	-13.82	-16.13	46.02	209	-20
712.723241	30.51	-11.9	-15.51	46.02	138	-17

1 to 18 GHz Low Channel – 5260MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

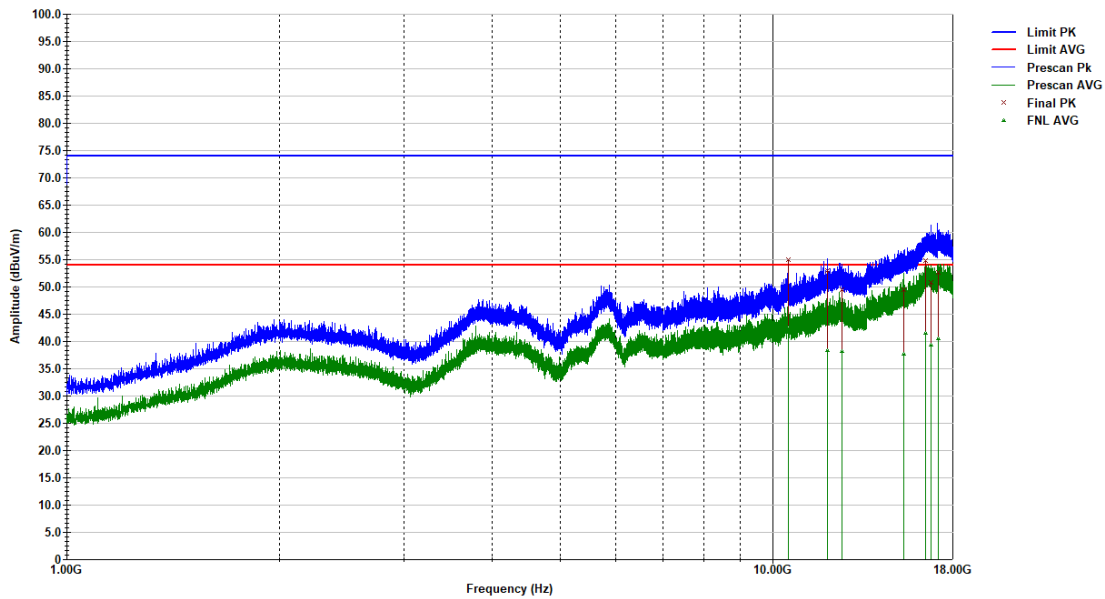
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5260MHz, 802.11ac20 VHT20, pwr 15, mcs 0



5260 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.tif

Last Data Update 05:23:28 PM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
10514.36107	55.05	20.57	-18.95	74	201	40
11970.18304	53.01	25.17	-20.99	74	400	111
12549.30234	49.5	26.05	-24.5	74	225	212
15357.70281	49.52	29.32	-24.48	74	186	380
16469.21628	54.74	32.96	-19.26	74	210	162
16760.86838	50.87	33.57	-23.13	74	239	142
17144.4801	52.71	32.79	-21.29	74	379	283

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10514.36107	42.58	0.15	20.57	-11.42	54	201	40
11970.18304	38.48	0.15	25.17	-15.52	54	400	111
12549.30234	38.27	0.15	26.05	-15.73	54	225	212
15357.70281	37.76	0.15	29.32	-16.24	54	186	380
16469.21628	41.68	0.15	32.96	-12.32	54	210	162
16760.86838	39.54	0.15	33.57	-14.46	54	239	142
17144.4801	40.56	0.15	32.79	-13.44	54	379	283

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

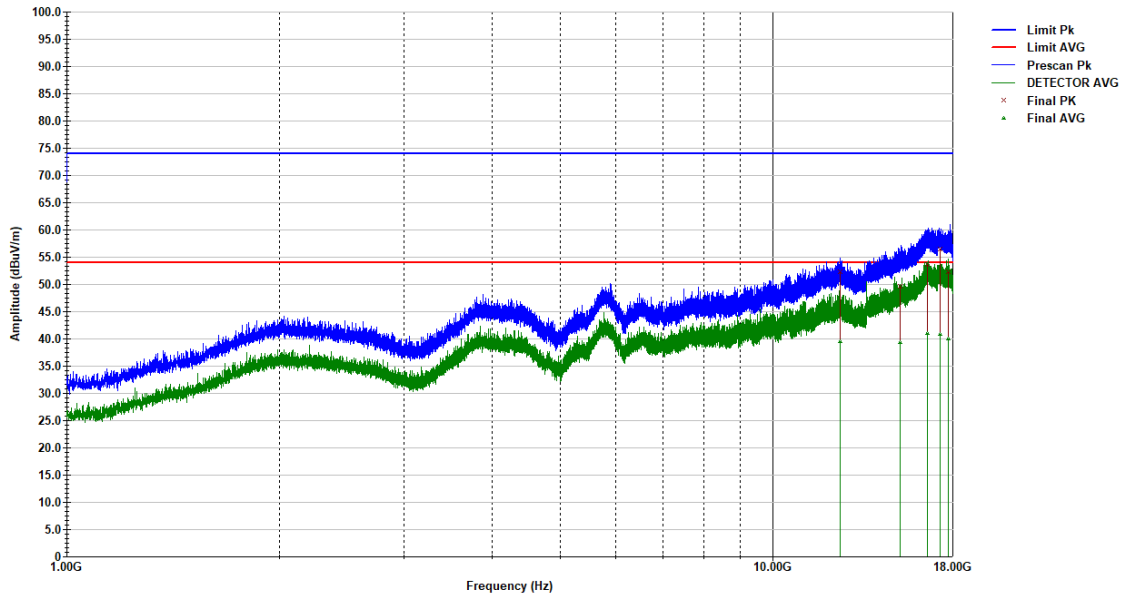
Test Mode - TX, 6GHz HPF

Operator - AG

Vertical AVG

Standard - FCC Class B

Comments - 5260MHz, 802.11ac20 VHT20, pwr 15, mcs 0



5260 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.til

Last Data Update 04:53:39 PM, Friday, March 15, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
12448.70765	52.37	25.97	-21.63	74	150	108
15180.4749	49.73	28.8	-24.27	74	356	363
16547.603	53.7	33.31	-20.3	74	155	258
17257.59885	56.48	32.64	-17.52	74	213	243
17731.60525	52.32	31.9	-21.68	74	241	380

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
12448.70765	39.62	0.15	25.97	-14.38	54	150	108
15180.4749	39.47	0.15	28.8	-14.53	54	356	363
16547.603	41.17	0.15	33.31	-12.83	54	155	258
17257.59885	40.99	0.15	32.64	-13.01	54	213	243
17731.60525	40.15	0.15	31.9	-13.85	54	241	380

Mid Channel – 5280MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

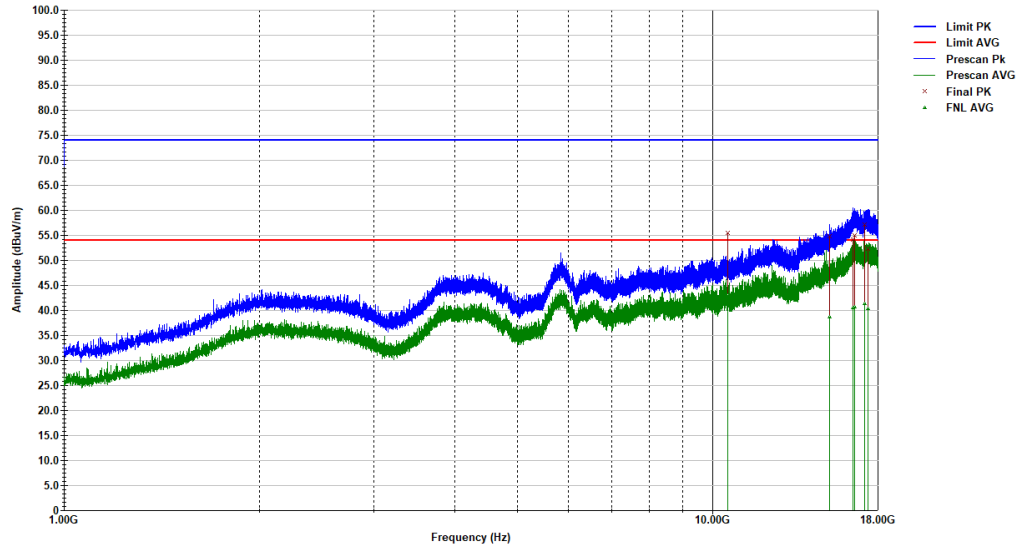
Customer / Model # - comma.ai / LightningHard SOM

Test Mode - TX, 6GHz HPF

Operator - AG

Standard - FCC Class B

Comments - 5280MHz, 802.11ac20 VHT20, pwr 15, mcs 0



5280 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 04:40:33 PM, Monday, March 18, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10555.5196	55.46	20.59	-18.54	74	325	305
15157.9195	54.77	28.73	-19.23	74	150	332
16449.32435	54.11	32.87	-19.89	74	194	272
16572.61655	55	33.42	-19	74	256	254
17174.88289	57.13	32.8	-16.87	74	326	131
17348.01228	52.33	32.39	-21.67	74	155	326

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
10555.5196	43.13	0.15	20.59	-10.87	54	325	305
15157.9195	38.8	0.15	28.73	-15.2	54	150	332
16449.32435	40.59	0.15	32.87	-13.41	54	194	272
16572.61655	40.85	0.15	33.42	-13.15	54	256	254
17174.88289	41.5	0.15	32.8	-12.5	54	326	131
17348.01228	40.46	0.15	32.39	-13.54	54	155	326