

Mid Channel – 5785MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

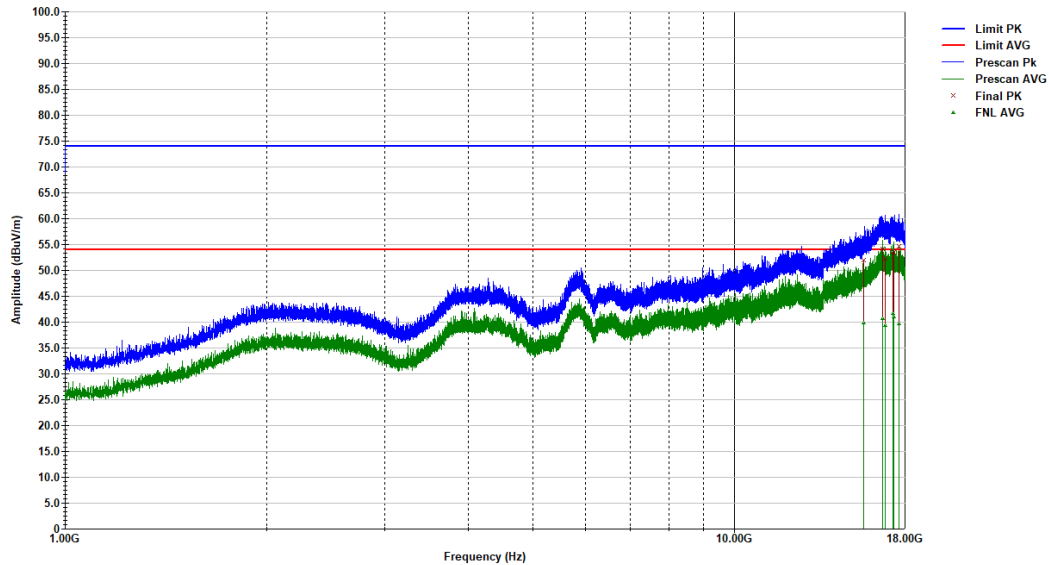
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5785MHz, 802.11n20 HT20, pwr 15, mcs0



5785 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024 - Copy.tif

Last Data Update 11:47:57 PM, Wednesday, March 20, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
15635.84917	51.97	29.97	-22.03	74	400	74
16672.99533	54.21	33.62	-19.79	74	209	9
16812.345	52.37	33.53	-21.63	74	155	380
17261.55166	53.63	32.63	-20.37	74	163	110
17322.89085	53.45	32.46	-20.55	74	171	53
17647.57468	54.58	32	-19.42	74	309	146

Average

Freq. (MHz)	Final AVG (dBuV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
15635.84917	39.87	0	29.97	-14.13	54	400	74
16672.99533	40.63	0	33.62	-13.37	54	209	9
16812.345	39.36	0	33.53	-14.64	54	155	380
17261.55166	41.61	0	32.63	-12.39	54	163	110
17322.89085	41	0	32.46	-13	54	171	53
17647.57468	39.71	0	32	-14.29	54	309	146

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

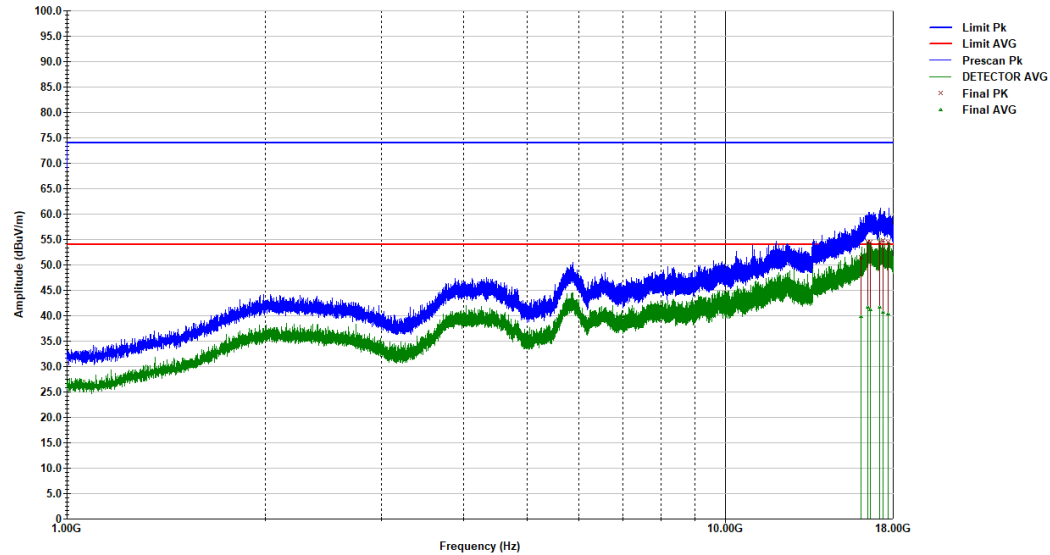
Test Mode - TX, 6GHz HPF

Operator - AG

Vertical AVG

Standard - FCC Class B

Comments - 5785MHz, 802.11n20 HT20, pwr 15, mcs0



5785 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024 - Copy.tif

Last Data Update 11:29:44 PM, Wednesday, March 20, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
16085.7671	51.45	31.31	-22.55	74	203	-20
16458.0965	54.48	32.91	-19.52	74	287	294
16596.74625	54.43	33.52	-19.57	74	150	310
17174.49475	54.52	32.8	-19.48	74	280	355
17373.19875	54.88	32.33	-19.12	74	230	325
17710.38125	54.45	31.93	-19.55	74	389	212

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
16085.7671	39.84	0	31.31	-14.16	54	203	-20
16458.0965	41.66	0	32.91	-12.34	54	287	294
16596.74625	41.16	0	33.52	-12.84	54	150	310
17174.49475	41.68	0	32.8	-12.32	54	280	355
17373.19875	40.63	0	32.33	-13.37	54	230	325
17710.38125	40.39	0	31.93	-13.61	54	389	212

High Channel – 5825MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

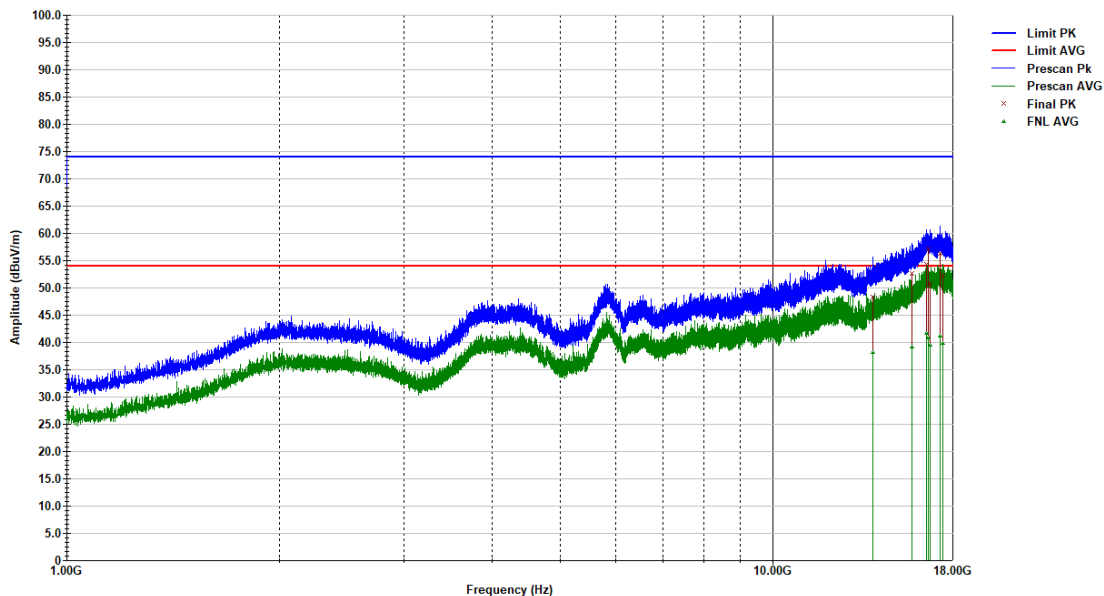
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5825MHz, 802.11n20 HT20, pwr 15, mcs0



5825 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 02:42:08 PM, Monday, March 25, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
13873.13572	48.33	26.47	-25.67	74	309	339
15747.9737	52.73	30.22	-21.27	74	232	-13
16520.30972	54.33	33.19	-19.67	74	194	217
16608.44275	57.14	33.57	-16.86	74	294	28
16711.72196	50.89	33.6	-23.11	74	332	20
17274.09401	56.33	32.59	-17.67	74	233	330
17433.51751	52.25	32.2	-21.75	74	210	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.)
13873.13572	38.1	0	26.47	-15.9	54	309	339
15747.9737	39.1	0	30.22	-14.9	54	232	-13
16520.30972	41.67	0	33.19	-12.33	54	194	217
16608.44275	40.86	0	33.57	-13.14	54	294	28
16711.72196	39.5	0	33.6	-14.5	54	332	20
17274.09401	41.21	0	32.59	-12.79	54	233	330
17433.51751	39.79	0	32.2	-14.21	54	210	14

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

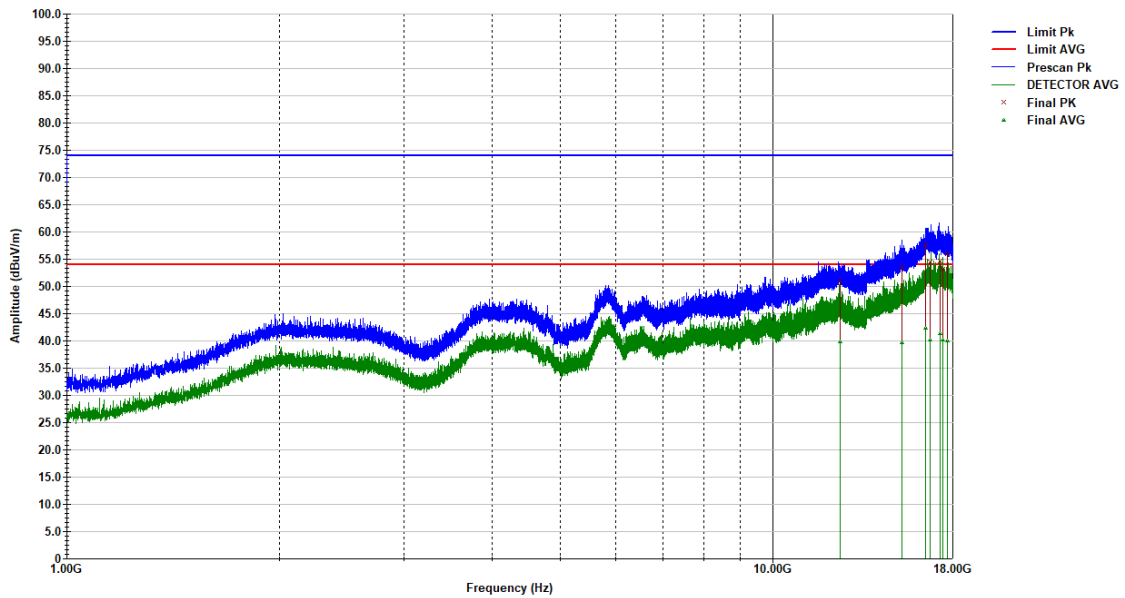
Test Mode - TX, 6GHz HPF

Operator - AG

Vertical AVG

Standard - FCC Class B

Comments - 5825MHz, 802.11n20 HT20, pwr 15, mcs0



5825 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 02:19:57 PM, Monday, March 25, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
12456.582	51.03	25.98	-22.97	74	364	261
15249.2729	53.7	29	-20.3	74	342	-20
16486.07835	57.61	33.04	-16.39	74	218	-6
16716.56675	54.44	33.6	-19.56	74	353	260
17273.70485	54.66	32.59	-19.34	74	163	92
17412.19615	53.13	32.23	-20.87	74	390	380
17687.4429	56.06	31.95	-17.94	74	400	61

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
12456.582	39.78	0	25.98	-14.22	54	364	261
15249.2729	39.69	0	29	-14.31	54	342	-20
16486.07835	42.36	0	33.04	-11.64	54	218	-6
16716.56675	40.08	0	33.6	-13.92	54	353	260
17273.70485	41.26	0	32.59	-12.74	54	163	92
17412.19615	40.15	0	32.23	-13.85	54	390	380
17687.4429	40.03	0	31.95	-13.97	54	400	61

Upper band edge Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

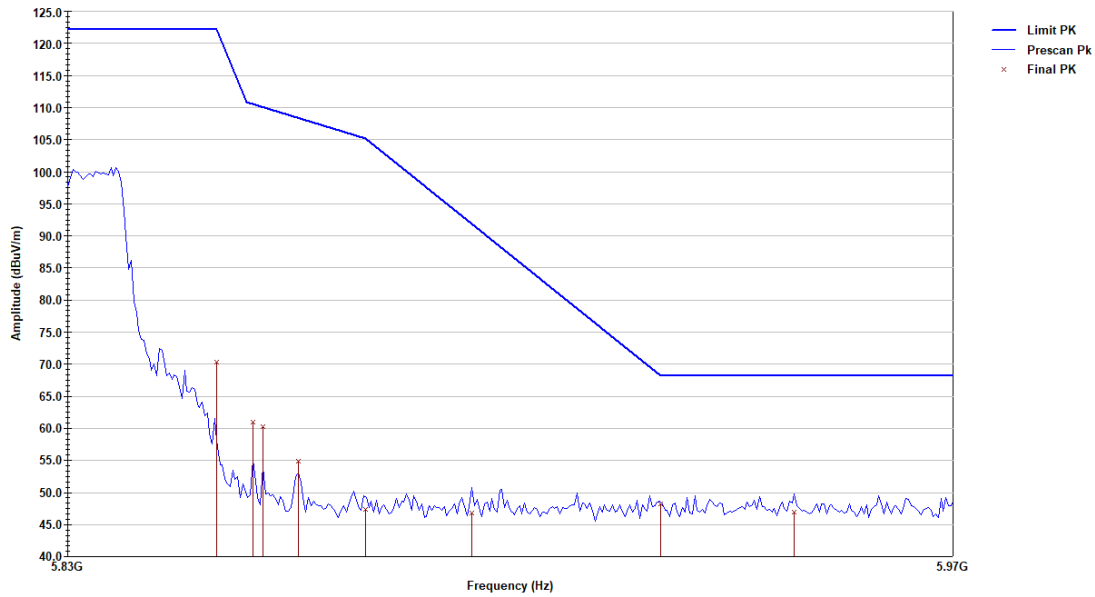
Model # - comma.ai

Test Mode - Tx mode, Upper Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5825MHz, 802.11n20 HT20, pwr 15, mcs2



5825 15 mcs2 RE Upper Band-Edge.ttl

Last Data Update 10:55:20 AM, Wednesday, May 29, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
5850	70.25	9.56	-51.95	122.2	386	347
5856.05	60.97	9.6	-49.53	110.51	386	347
5857.75	60.25	9.61	-49.78	110.03	386	348
5863.7	54.87	9.65	-53.49	108.36	382	352
5875.00001	47.44	9.73	-57.76	105.2	178	-7
5893.025	46.73	9.83	-45.13	91.86	400	205
5925	48.18	9.97	-20.02	68.2	271	53
5947.85001	46.98	10.03	-21.22	68.2	150	127

No Average limit is defined for the upper band edge.

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 - 5825MHz, 802.11n20 HT20, pwr 15, mcs2



5825 15 mcs2 RE Upper Band-Edge.til

Last Data Update 10:31:52 AM, Wednesday, May 29, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5850	60.02	9.56	-62.18	122.2	400	99
5855.00001	52.75	9.59	-58.05	110.8	400	107
5863.7	49.64	9.65	-58.73	108.36	388	215
5875.00001	47.58	9.73	-57.62	105.2	350	283
5897.70001	47.17	9.85	-41.23	88.4	226	107
5925.00001	47.17	9.97	-21.03	68.2	210	9
5935.10001	46.9	10.02	-21.3	68.2	333	159

No Average limit is defined for the upper band edge.

UNII3: 802.11n40

30 to 1000 MHz High Channel – 5795MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal QP

Customer / Model # - comma.ai / LightningHard SOM

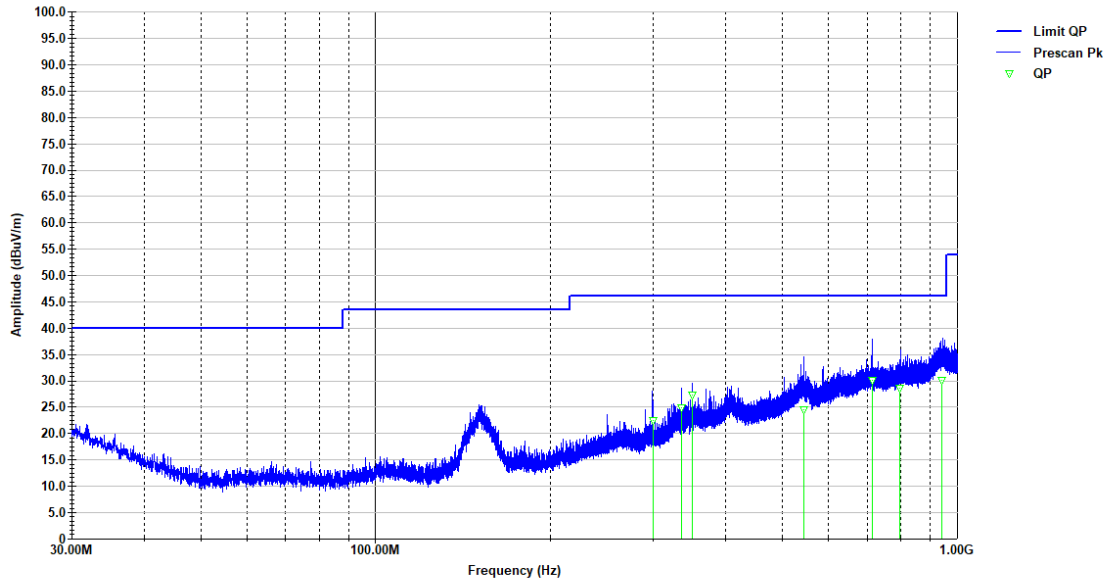
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - AG

Standard - FCC Class B

Comments - 5795MHz, 802.11n40 UNII3 HT40, pwr 15, mcs0



5795 15 mcs0 FCC 15.407 RE 30M-1GHz.ttl

Last Data Update 09:02:58 PM, 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.)
299.938986	22.55	-23.49	-23.47	46.02	129	101
335.962389	24.82	-22.21	-21.2	46.02	192	273
349.987163	27.36	-21.02	-18.66	46.02	100	33
545.446392	24.49	-13.84	-21.53	46.02	384	220
713.767187	30.03	-11.91	-15.99	46.02	106	305
798.493117	28.68	-11.41	-17.34	46.02	100	198
941.349402	30.15	-8.3	-15.87	46.02	185	262

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical QP

Customer / Model # - comma.ai / LightningHard SOM

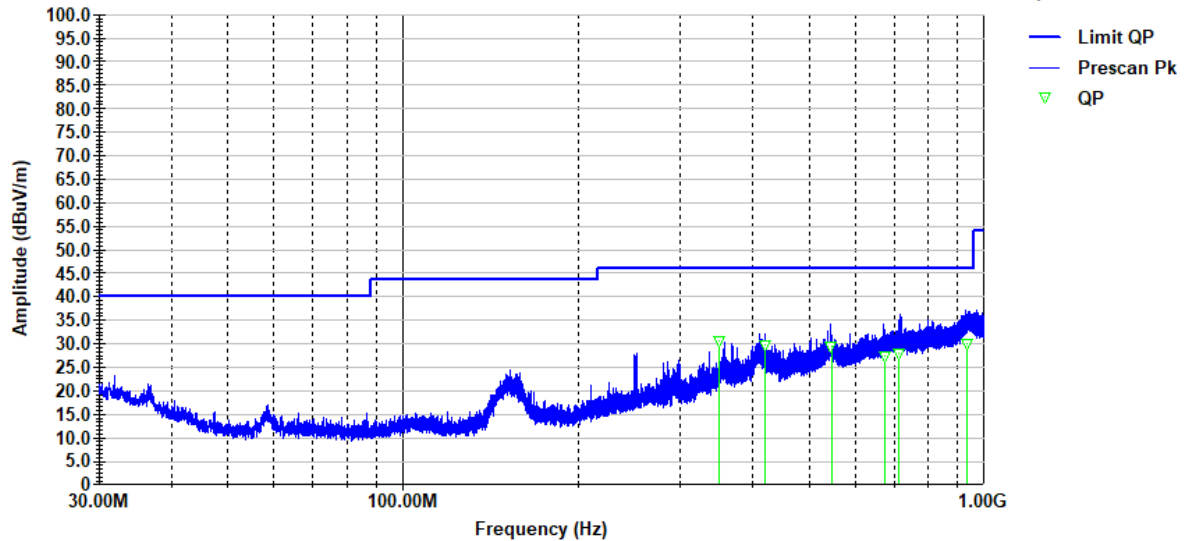
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - AG

Standard - FCC Class B

Comments - 5795MHz, 802.11n40 UNII3 HT40, pwr 15, mcs0



5795 15 mcs0 FCC 15.407 RE 30M-1GHz.til

Last Data Update 08:44:52 PM, 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.)
349.992985	30.47	-21.02	-15.55	46.02	100	11
419.994478	29.58	-18.22	-16.44	46.02	100	176
545.475699	29.33	-13.84	-16.69	46.02	100	325
675.126963	27.49	-12.49	-18.53	46.02	394	83
712.12893	27.87	-11.89	-18.15	46.02	306	335
931.768822	29.89	-8.45	-16.13	46.02	306	354

1 to 18 GHz Low Channel – 5755MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

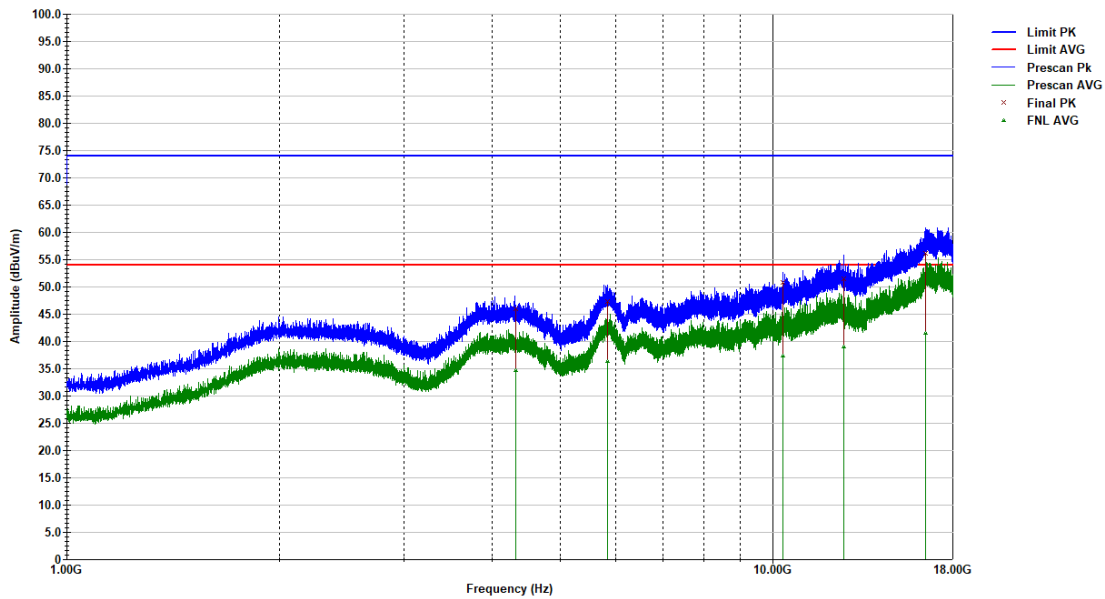
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5755MHz, 802.11n40 HT40, pwr 15, mcs0



5755 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 04:22:53 PM, Monday, March 25, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4318.816012	45.91	5.36	-28.09	74	309	270
5838.380475	47.29	9.47	-26.71	74	256	314
10335.80414	50.79	20.24	-23.21	74	255	285
12623.16089	51.48	26.1	-22.52	74	155	266
16460.24202	56.16	32.92	-17.84	74	317	-9

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
4318.816012	34.74	0.16	5.36	-19.26	54	309	270
5838.380475	36.55	0.16	9.47	-17.45	54	256	314
10335.80414	37.52	0.16	20.24	-16.48	54	255	285
12623.16089	39.19	0.16	26.1	-14.81	54	155	266
16460.24202	41.67	0.16	32.92	-12.33	54	317	-9

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

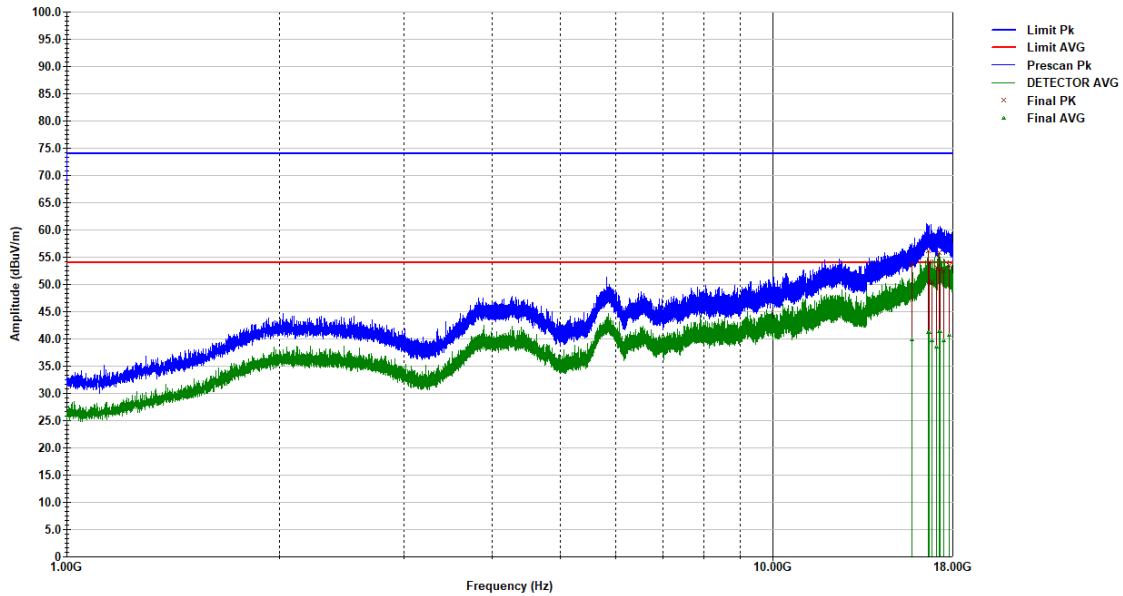
Test Mode - TX, 6GHz HPF

Operator - AG

Vertical AVG

Standard - FCC Class B

Comments - 5755MHz, 802.11n40 HT40, pwr 15, mcs0



5755 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 03:18:10 PM, Monday, March 25, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
15772.7811	53.78	30.27	-20.22	74	195	289
16635.08675	56.16	33.63	-17.84	74	179	355
16646.84825	54.18	33.63	-19.82	74	318	28
16812.397	50.52	33.53	-23.48	74	400	160
17046.8151	53.18	32.95	-20.82	74	400	215
17212.0776	55.81	32.77	-18.19	74	273	107
17273.08235	52.9	32.59	-21.1	74	150	224
17448.61665	52.55	32.17	-21.45	74	388	304
17773.8731	53.49	31.86	-20.51	74	265	351

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
15772.7811	39.95	0.16	30.27	-14.05	54	195	289
16635.08675	41.38	0.16	33.63	-12.62	54	179	355
16646.84825	41.38	0.16	33.63	-12.62	54	318	28
16812.397	39.84	0.16	33.53	-14.16	54	400	160
17046.8151	38.7	0.16	32.95	-15.3	54	400	215
17212.0776	41.43	0.16	32.77	-12.57	54	273	107
17273.08235	41.47	0.16	32.59	-12.53	54	150	224
17448.61665	39.9	0.16	32.17	-14.1	54	388	304
17773.8731	40.75	0.16	31.86	-13.25	54	265	351

Lower band edge Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

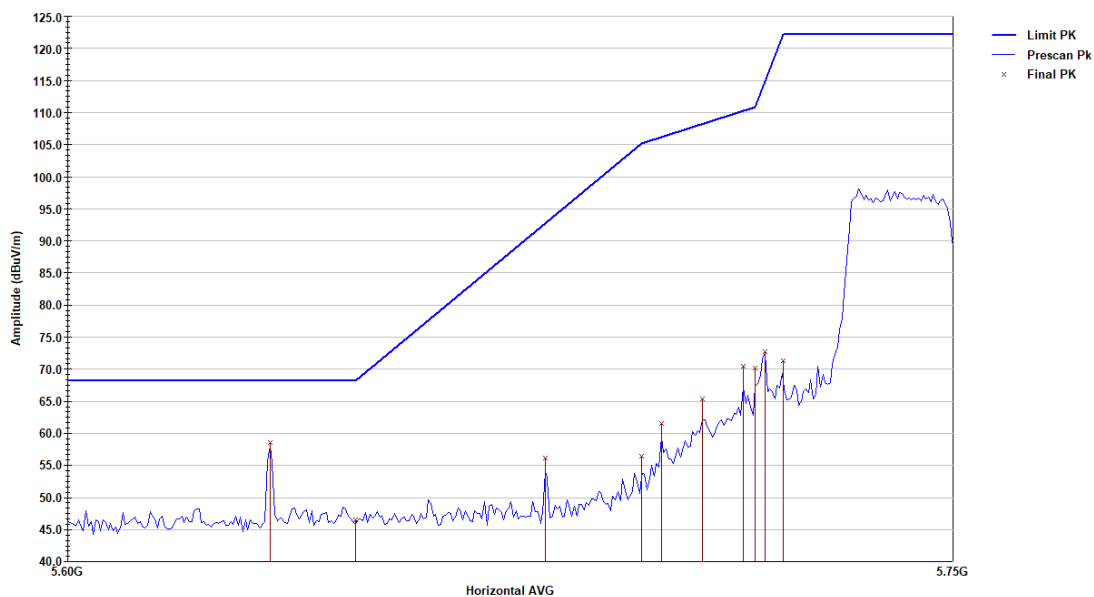
Model # - comma.ai

Test Mode - Tx mode, Lower Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5755MHz, 802.11n40 HT40, pwr 15, mcs2



5755 15 mcs2 RE Lower Band-Edge.ttl

Last Data Update 11:54:44 AM, Wednesday, May 29, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5635.05	58.6	8.74	-9.6	68.2	271	341
5650.00001	46.55	8.92	-21.65	68.2	394	162
5683.07501	56.09	9.07	-36.59	92.68	394	1
5700.00001	56.49	9.12	-48.71	105.2	400	342
5703.47501	61.52	9.13	-44.65	106.17	179	344
5710.70001	65.29	9.15	-42.91	108.2	400	-8
5717.925	70.44	9.15	-39.78	110.22	400	345
5720	70.18	9.15	-40.62	110.8	186	380
5721.75001	72.73	9.15	-42.06	114.79	171	-20
5725	71.3	9.15	-50.9	122.2	339	-10

No Average limit is defined for the upper band edge.

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical AVG

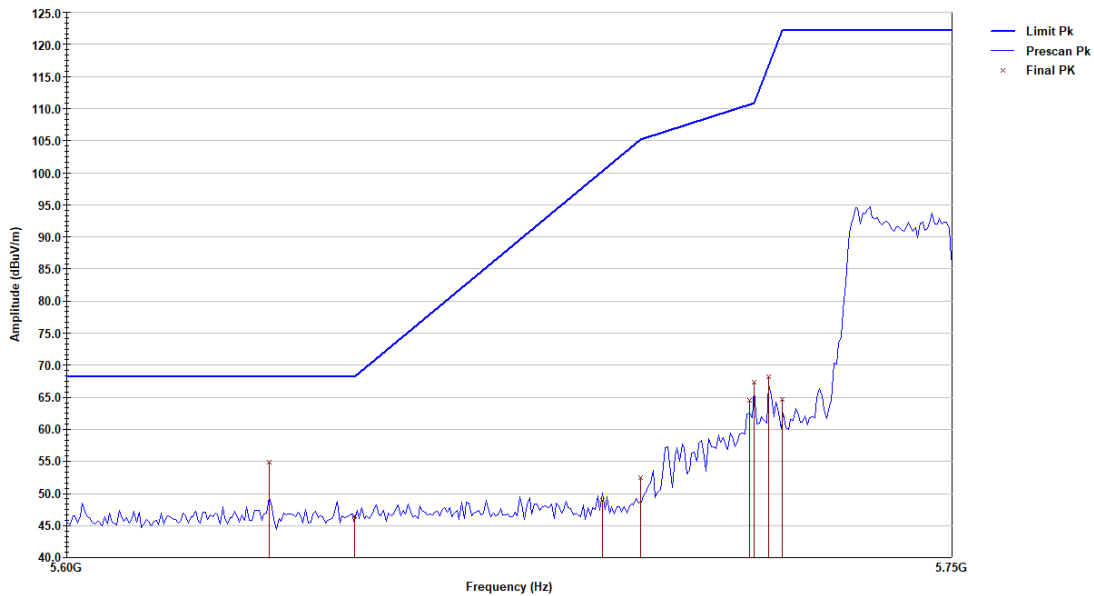
Model # - comma.ai

Test Mode - Tx mode, Lower Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5755MHz, 802.11n40 HT40, pwr 15, mcs2



5755 15 mcs2 RE Lower Band-Edge.ttl

Last Data Update 11:29:42 AM, Wednesday, May 29, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5635.05001	54.88	8.74	-13.32	68.2	388	87
5650.00001	46.55	8.92	-21.65	68.2	248	76
5693.275	48.95	9.1	-51.27	100.22	163	91
5700.00001	52.41	9.12	-52.79	105.2	344	99
5719.20001	64.48	9.15	-46.09	110.58	400	140
5720	67.36	9.15	-43.44	110.8	400	129
5722.6	68.18	9.15	-48.55	116.73	400	106
5725	64.7	9.15	-57.5	122.2	334	103

No Average limit is defined for the upper band edge.

High Channel – 5795MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

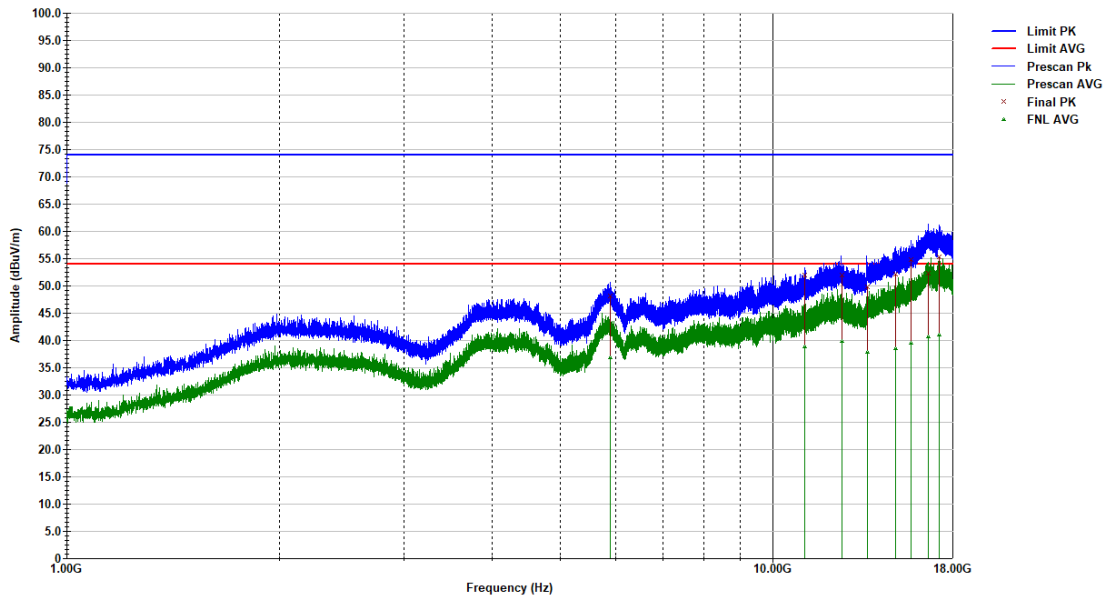
Test Mode - Tx, 6GHz HPF

Horizontal AVG

Operator - Alex C

Standard - FCC Class B

Comments - 5795MHz, 802.11n40 HT40, pwr 15, mcs0



5795 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 12:12:38 AM, Tuesday, March 26, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5888.031887	48.11	9.8	-25.89	74	255	-17
11106.07569	52.03	22.55	-21.97	74	150	108
12523.45977	52.04	26.03	-21.96	74	255	79
13605.77959	49.86	26.29	-24.14	74	371	303
14935.18468	52.12	28.31	-21.88	74	325	110
15684.30643	54.77	30.08	-19.23	74	394	242
16607.94488	52.24	33.57	-21.76	74	317	100
17236.22783	55.38	32.7	-18.62	74	179	353

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5888.031887	36.92	0.16	9.8	-17.08	54	255	-17
11106.07569	39.02	0.16	22.55	-14.98	54	150	108
12523.45977	40.02	0.16	26.03	-13.98	54	255	79
13605.77959	38.04	0.16	26.29	-15.96	54	371	303
14935.18468	38.74	0.16	28.31	-15.26	54	325	110
15684.30643	39.64	0.16	30.08	-14.36	54	394	242
16607.94488	40.81	0.16	33.57	-13.19	54	317	100
17236.22783	41.22	0.16	32.7	-12.78	54	179	353

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

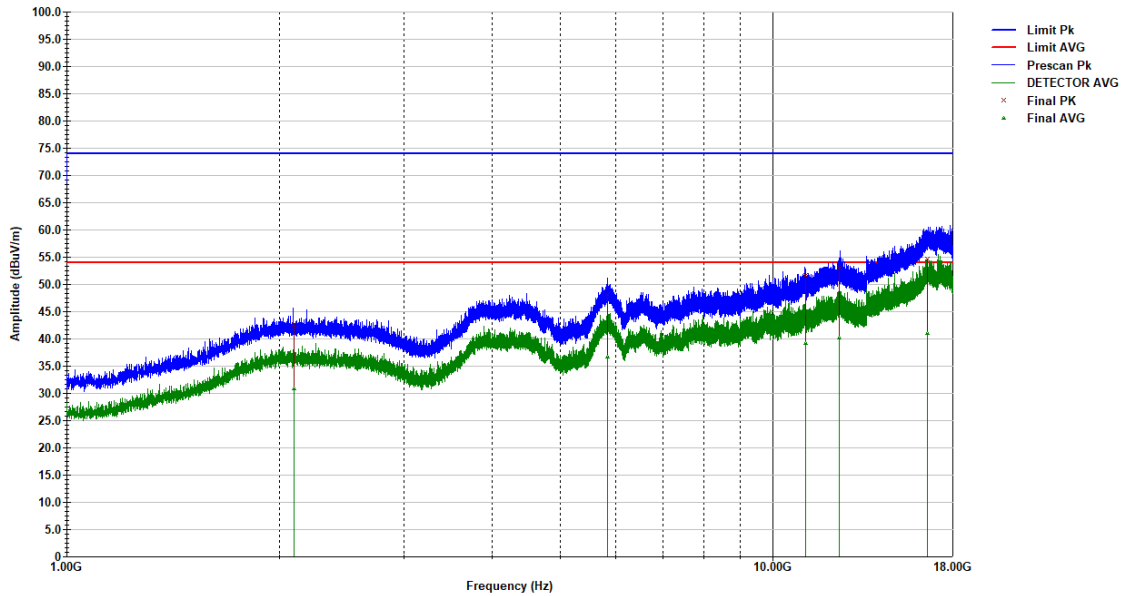
Test Mode - Tx, 6GHz HPF

Operator - Alex C

Vertical AVG

Standard - FCC Class B

Comments - 5795MHz, 802.11n40 HT40, pwr 15, mcs0



5795 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 11:37:04 PM, Monday, March 25, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
2095.748875	42.65	-1.78	-31.35	74	213	100
5837.626	48.14	9.47	-25.86	74	303	126
11122.50475	51.59	22.6	-22.41	74	280	245
12441.23885	52.98	25.97	-21.02	74	202	351
16574.1615	54.61	33.42	-19.39	74	150	48

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
2095.748875	30.91	0.16	-1.78	-23.09	54	213	100
5837.626	36.86	0.16	9.47	-17.14	54	303	126
11122.50475	39.35	0.16	22.6	-14.65	54	280	245
12441.23885	40.32	0.16	25.97	-13.68	54	202	351
16574.1615	41.19	0.16	33.42	-12.81	54	150	48

Upper band edge Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

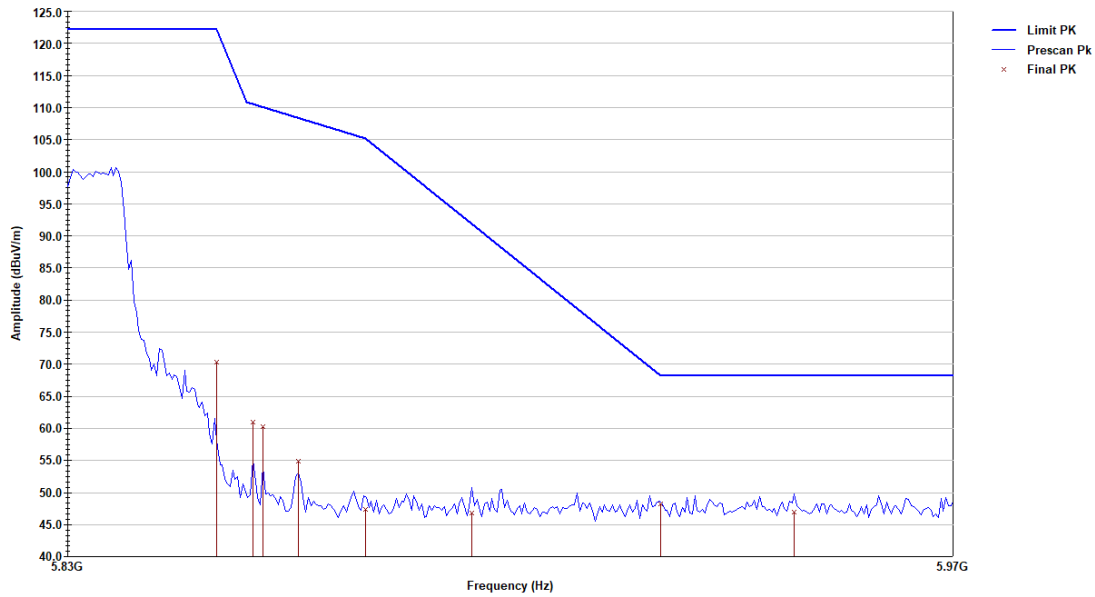
Model # - comma.ai

Test Mode - Tx mode, Upper Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5825MHz, 802.11n20 HT20, pwr 15, mcs2



5795 15 mcs0 RE Upper Band-Edge.ttl

Last Data Update 10:55:20 AM, Wednesday, May 29, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
5850	70.25	9.56	-51.95	122.2	386	347
5856.05	60.97	9.6	-49.53	110.51	386	347
5857.75	60.25	9.61	-49.78	110.03	386	348
5863.7	54.87	9.65	-53.49	108.36	382	352
5875.00001	47.44	9.73	-57.76	105.2	178	-7
5893.025	46.73	9.83	-45.13	91.86	400	205
5925	48.18	9.97	-20.02	68.2	271	53
5947.85001	46.98	10.03	-21.22	68.2	150	127

No Average limit is defined for the upper band edge.

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical AVG

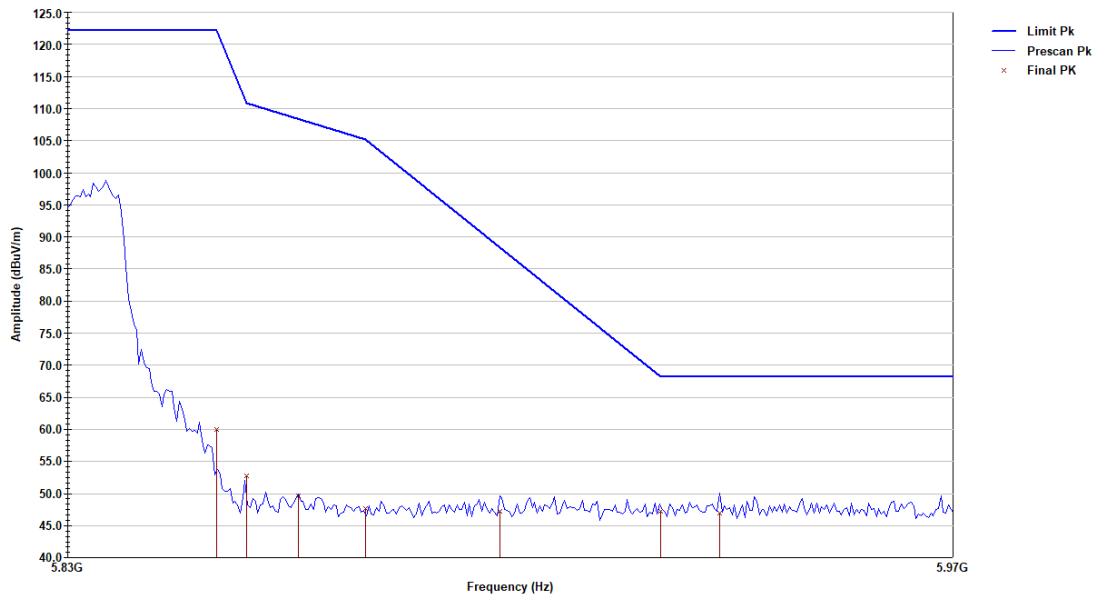
Model # - comma.ai

Test Mode - Tx mode, Upper Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5825MHz, 802.11n20 HT20, pwr 15, mcs2



5795 15 mcs0 RE Upper Band-Edge.til

Last Data Update 10:31:52 AM, Wednesday, May 29, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5850	60.02	9.56	-62.18	122.2	400	99
5855.00001	52.75	9.59	-58.05	110.8	400	107
5863.7	49.64	9.65	-58.73	108.36	388	215
5875.00001	47.58	9.73	-57.62	105.2	350	283
5897.70001	47.17	9.85	-41.23	88.4	226	107
5925.00001	47.17	9.97	-21.03	68.2	210	9
5935.10001	46.9	10.02	-21.3	68.2	333	159

No Average limit is defined for the upper band edge.

UNII3: 802.11ac20

30 to 1000 MHz High Channel – 5825MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal QP

Customer / Model # - comma.ai / LightningHard SOM

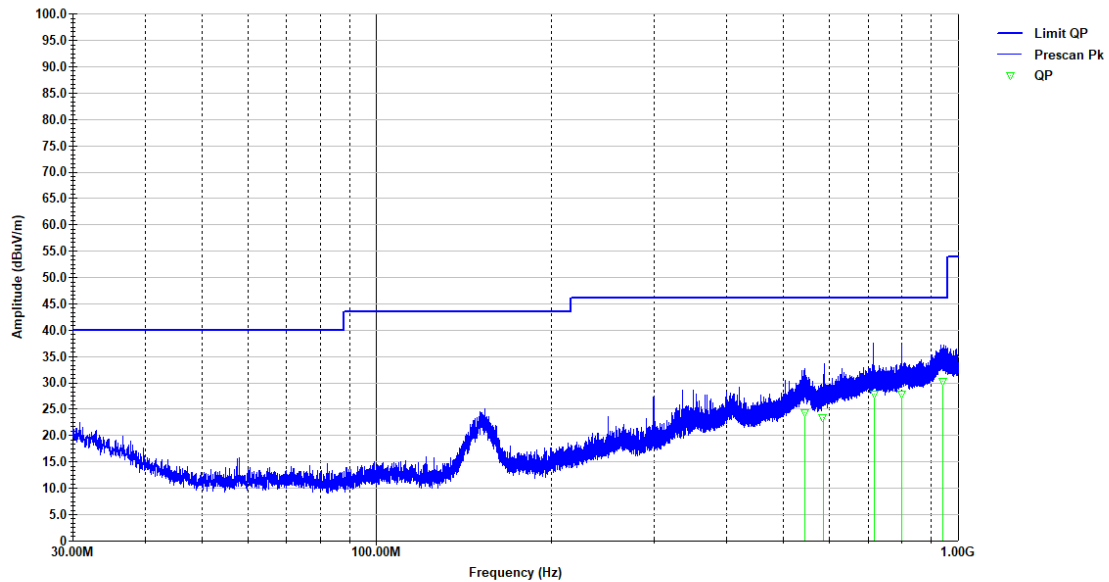
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - AG

Standard - FCC Class B

Comments - 5825MHz, 802.11ac20 UNII3 VHT20, pwr 15, mcs1



5825 15 mcs1 FCC 15.407 RE 30M-1GHz.til

Last Data Update 10:05:28 PM, 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.)
544.252214	24.38	-13.83	-21.64	46.02	208	292
585.676716	23.34	-14.84	-22.68	46.02	240	289
717.40893	27.83	-11.9	-18.19	46.02	100	64
800.348484	27.86	-11.34	-18.16	46.02	390	364
942.633531	30.23	-8.3	-15.79	46.02	366	259

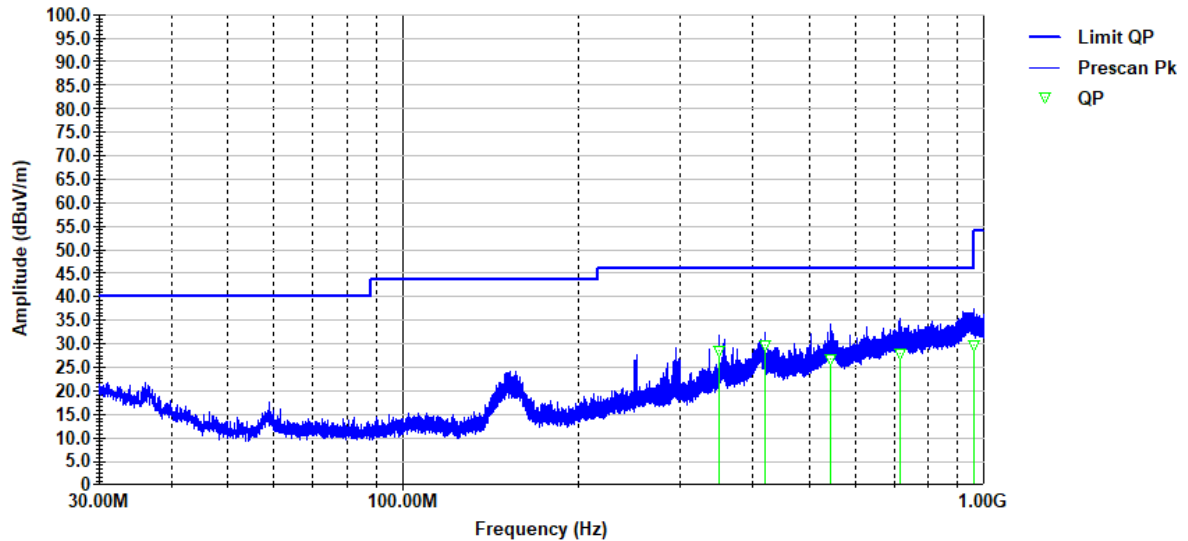
Vertical Polarization

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 - 5825MHz, 802.11ac20 UNII3 VHT20, pwr 15, mcs1



5825 15 mcs1 FCC 15.407 RE 30M-1GHz.til

Last Data Update 09:52:12 PM, 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.)
349.998906	28.47	-21.02	-17.55	46.02	146	281
419.994478	29.62	-18.22	-16.4	46.02	100	223
544.992607	26.62	-13.82	-19.4	46.02	298	335
716.590972	28.02	-11.9	-18	46.02	201	130
957.806213	29.71	-8.68	-16.31	46.02	113	357

1 to 18 GHz Low Channel – 5745MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

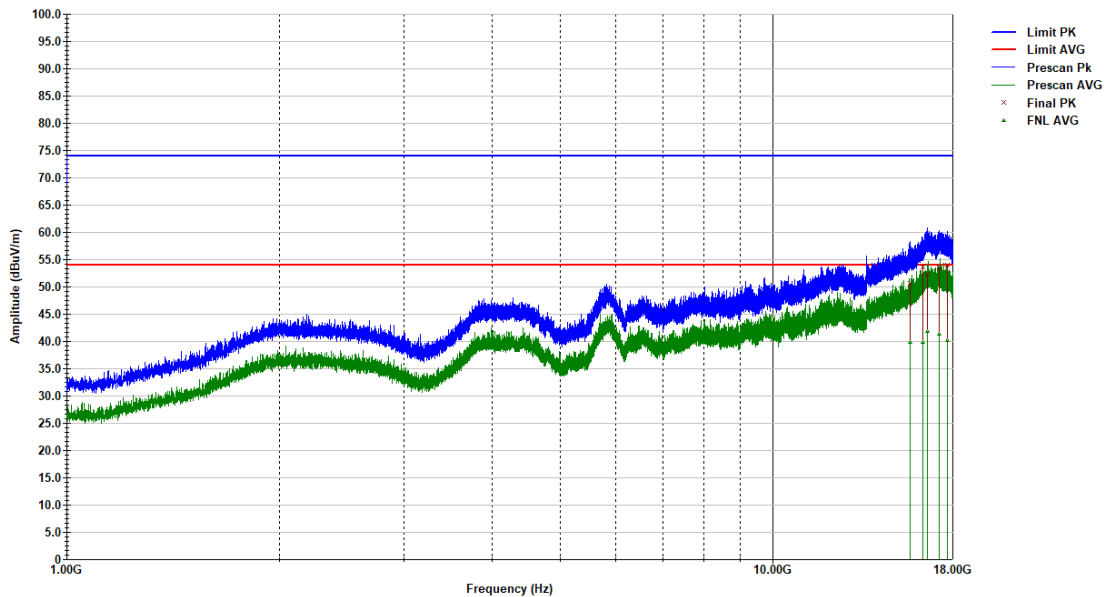
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5745MHz, 802.11ac20 VHT20, pwr 15, mcs0



5745 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 09:48:28 AM, Tuesday, March 26, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
15647.00534	50.67	30	-23.33	74	171	98
16347.27578	53.67	32.41	-20.33	74	178	116
16548.00398	52.31	33.31	-21.69	74	262	326
17245.80017	53.56	32.67	-20.44	74	150	348
17687.05768	54.05	31.95	-19.95	74	182	214

Average

Freq. (MHz)	Final AVG (dBuV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
15647.00534	39.9	0.15	30	-14.1	54	171	98
16347.27578	40	0.15	32.41	-14	54	178	116
16548.00398	42.01	0.15	33.31	-11.99	54	262	326
17245.80017	41.53	0.15	32.67	-12.47	54	150	348
17687.05768	40.37	0.15	31.95	-13.63	54	182	214

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

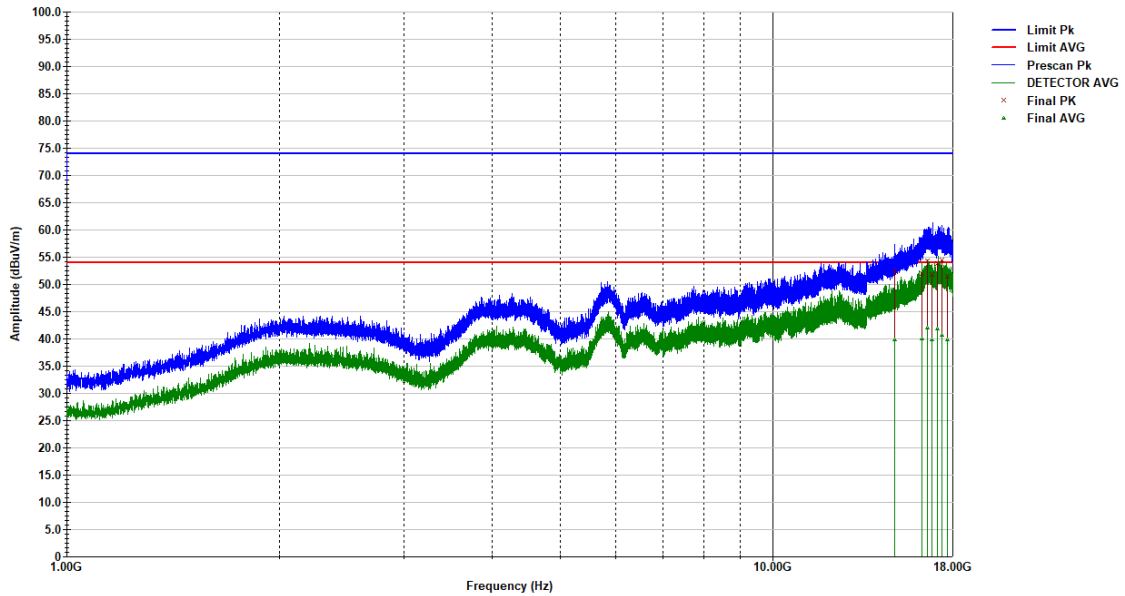
Test Mode - TX, 6GHz HPF

Operator - AG

Standard - FCC Class B

Comments - 5745MHz, 802.11ac20 VHT20, pwr 15, mcs0

Vertical AVG



5745 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 09:23:37 AM, Tuesday, March 26, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
14897.86665	52.52	28.22	-21.48	74	373	370
16298.2954	51.97	32.19	-22.03	74	288	162
16541.90075	54.36	33.28	-19.64	74	217	326
16836.01635	51.88	33.51	-22.12	74	288	332
17110.6196	53.88	32.77	-20.12	74	327	-20
17362.13975	54.53	32.35	-19.47	74	194	344
17661.711	51.52	31.98	-22.48	74	264	73

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
14897.86665	39.96	0.15	28.22	-14.04	54	373	370
16298.2954	40.17	0.15	32.19	-13.83	54	288	162
16541.90075	42.15	0.15	33.28	-11.85	54	217	326
16836.01635	39.92	0.15	33.51	-14.08	54	288	332
17110.6196	41.97	0.15	32.77	-12.03	54	327	-20
17362.13975	40.76	0.15	32.35	-13.24	54	194	344
17661.711	40	0.15	31.98	-14	54	264	73

Lower band edge Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

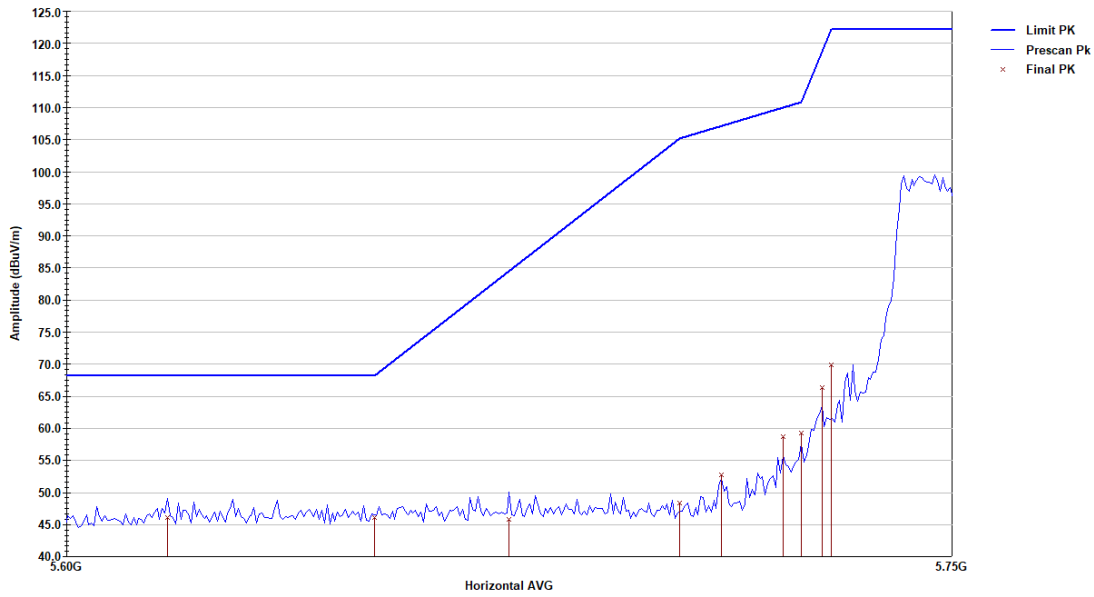
Model # - comma.ai

Test Mode - Tx mode, Lower Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5745MHz, 802.11ac20 VHT20, pwr 15, mcs1



5745 15 mcs1 RE Lower Band-Edge.ttl

Last Data Update 12:53:03 PM, Wednesday, May 29, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
5616.35	46.12	8.5	-22.08	68.2	178	5
5650.00001	46.1	8.92	-22.1	68.2	271	68
5672.025	45.83	9.02	-38.66	84.5	400	341
5700.00001	48.4	9.12	-56.8	105.2	178	352
5706.875	52.75	9.14	-54.37	107.13	150	22
5717.07501	58.62	9.15	-51.36	109.98	400	-6
5720	59.23	9.15	-51.57	110.8	171	335
5723.45001	66.29	9.15	-52.38	118.67	340	352
5725.00001	69.87	9.15	-52.33	122.2	333	-2

No Average limit is defined for the upper band edge.

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical AVG

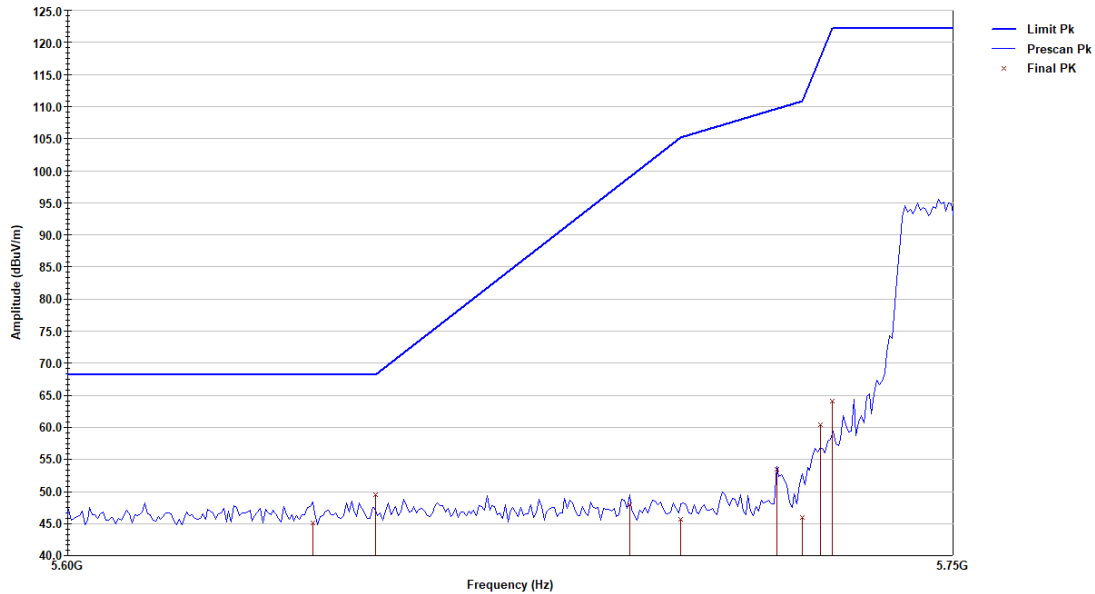
Model # - comma.ai

Test Mode - Tx mode, Lower Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5745MHz, 802.11ac20 VHT20, pwr 15, mcs1



5745 15 mcs1 RE Lower Band-Edge.ttl

Last Data Update 12:30:44 PM, Wednesday, May 29, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5639.725	45.16	8.79	-23.04	68.2	155	380
5650.00001	49.56	8.92	-18.64	68.2	187	163
5691.575	47.92	9.1	-51.05	98.97	150	260
5700	45.67	9.12	-59.53	105.2	304	224
5715.8	53.45	9.15	-56.17	109.62	381	115
5720	46	9.15	-64.8	110.8	279	-20
5723.025	60.38	9.15	-57.32	117.7	342	106
5725.00001	64.02	9.15	-58.18	122.2	342	106

No Average limit is defined for the upper band edge.

Mid Channel – 5785MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

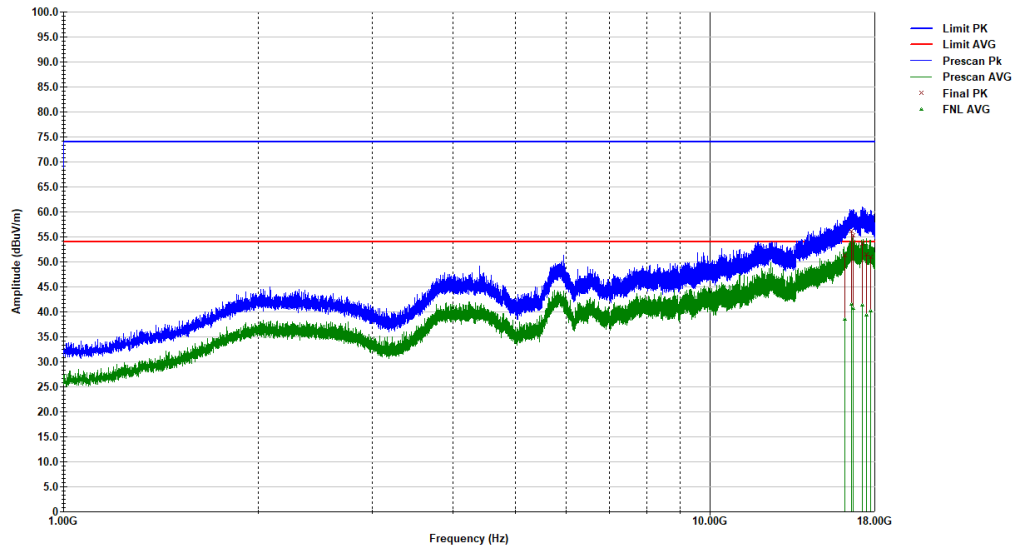
Customer / Model # - comma.ai / LightningHard SOM

Test Mode - TX, 6GHz HPF

Operator - AG

Standard - FCC Class B

Comments - 5785MHz, 802.11ac20 VHT20, pwr 15, mcs0



5785 15 mcs0 RE CISPR SW1A NC 3117 w lambda Ina AVG 1G-18G 06Feb2024.ttl

Last Data Update 10:36:46 AM, Tuesday, March 26, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
16181.73971	51.37	31.7	-22.63	74	337	16
16547.3242	56.17	33.31	-17.83	74	264	53
16654.05044	55.4	33.62	-18.6	74	155	139
17195.95248	53.73	32.81	-20.27	74	201	142
17484.05798	51.53	32.13	-22.47	74	287	358
17720.19323	50.95	31.91	-23.05	74	278	374

Average

Freq. (MHz)	Final AVG (dBuV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
16181.73971	38.72	0.15	31.7	-15.28	54	337	16
16547.3242	41.67	0.15	33.31	-12.33	54	264	53
16654.05044	40.78	0.15	33.62	-13.22	54	155	139
17195.95248	41.53	0.15	32.81	-12.47	54	201	142
17484.05798	39.46	0.15	32.13	-14.54	54	287	358
17720.19323	40.31	0.15	31.91	-13.69	54	278	374

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

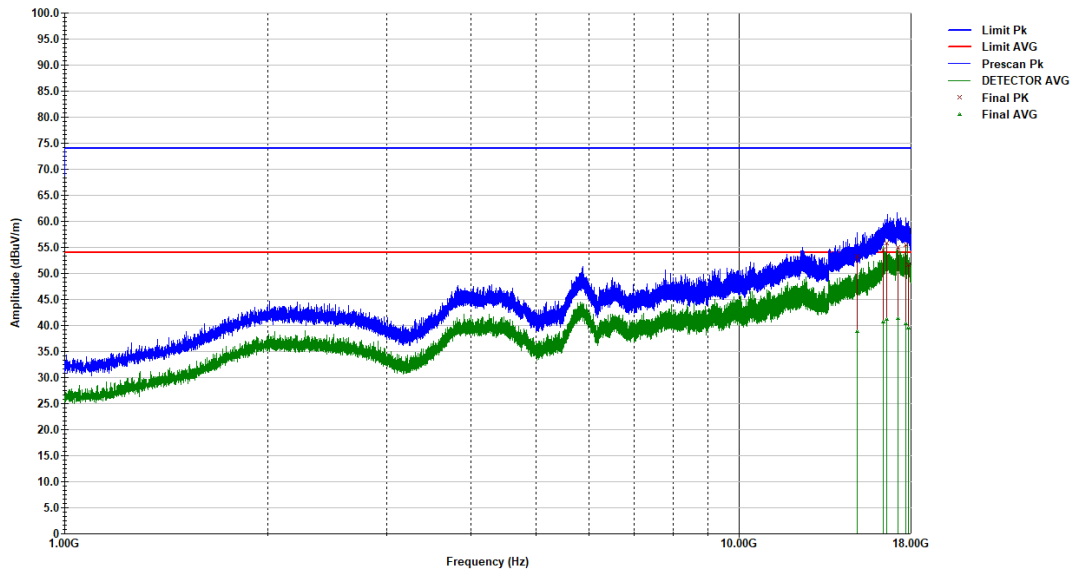
Test Mode - TX, 6GHz HPF

Vertical AVG

Operator - AG

Standard - FCC Class B

Comments - 5785MHz, 802.11ac20 VHT20, pwr 15, mcs0



5785 15 mcs0 RE CISPR SW1A NC 3117 w lambda Ina AVG 1G-18G 06Feb2024.ttl

Last Data Update 10:19:05 AM, Tuesday, March 26, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
14961.4204	53.31	28.37	-20.69	74	155	380
16386.37275	54.43	32.59	-19.57	74	312	201
16591.6219	55.75	33.5	-18.25	74	272	328
17211.8329	54.91	32.77	-19.09	74	311	204
17698.06175	55.54	31.94	-18.46	74	179	225
17849.1955	51.6	31.92	-22.4	74	400	137

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
14961.4204	38.98	0.15	28.37	-15.02	54	155	380
16386.37275	40.87	0.15	32.59	-13.13	54	312	201
16591.6219	41.29	0.15	33.5	-12.71	54	272	328
17211.8329	41.42	0.15	32.77	-12.58	54	311	204
17698.06175	40.53	0.15	31.94	-13.47	54	179	225
17849.1955	39.66	0.15	31.92	-14.34	54	400	137

High Channel – 5825MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

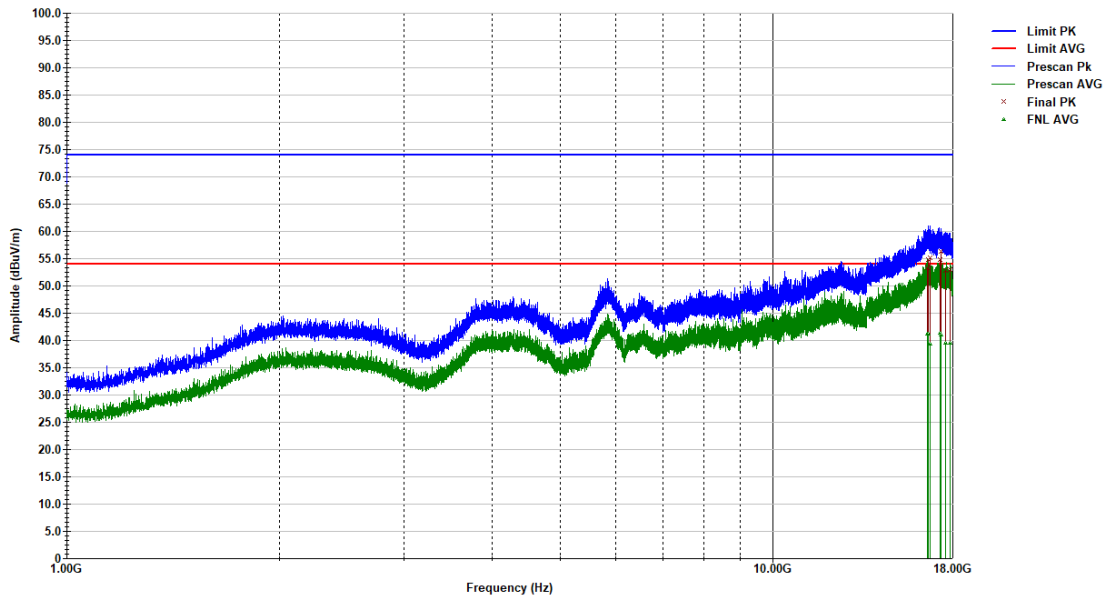
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5825MHz, 802.11ac20 VHT20, pwr 15, mcs1



5825 15 mcs1 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 11:25:06 AM, Tuesday, March 26, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
16546.89654	53.27	33.3	-20.73	74	279	250
16604.96424	54.85	33.55	-19.15	74	217	53
16724.43835	55.1	33.59	-18.9	74	340	42
17261.00294	54.85	32.63	-19.15	74	351	380
17332.03278	56.31	32.43	-17.69	74	150	43
17599.82656	52.88	32.06	-21.12	74	248	-17
17832.06139	53.01	31.89	-20.99	74	255	324

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
16546.89654	41.46	0.29	33.3	-12.54	54	279	250
16604.96424	41.53	0.29	33.55	-12.47	54	217	53
16724.43835	39.64	0.29	33.59	-14.36	54	340	42
17261.00294	41.61	0.29	32.63	-12.39	54	351	380
17332.03278	41.21	0.29	32.43	-12.79	54	150	43
17599.82656	39.7	0.29	32.06	-14.3	54	248	-17
17832.06139	39.83	0.29	31.89	-14.17	54	255	324

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

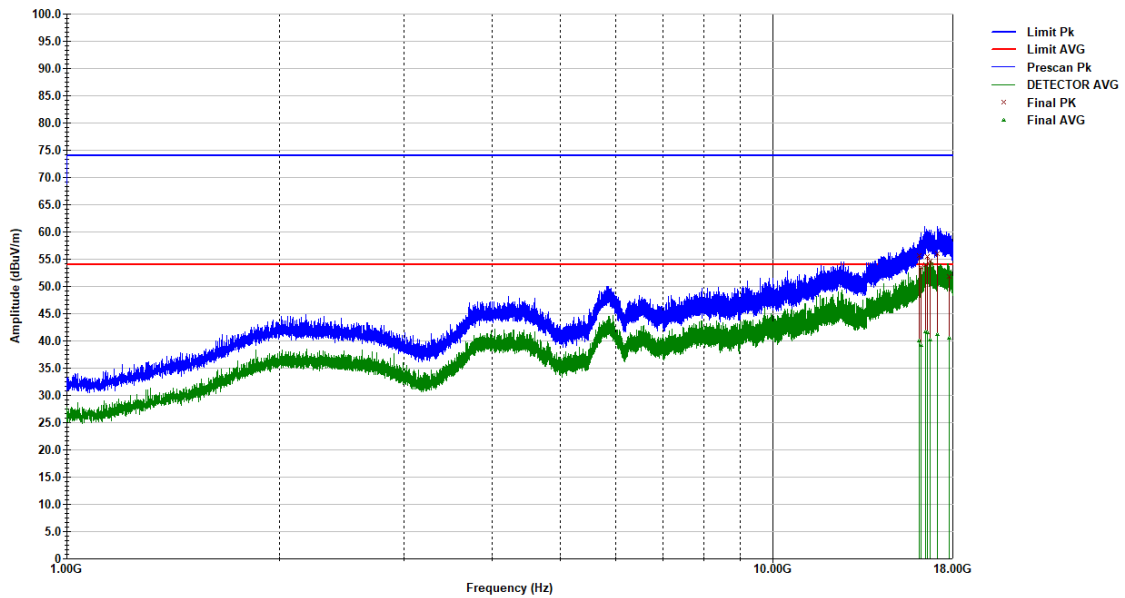
Test Mode - TX, 6GHz HPF

Operator - AG

Vertical AVG

Standard - FCC Class B

Comments - 5825MHz, 802.11ac20 VHT20, pwr 15, mcs1



5825 15 mcs1 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 11:08:11 AM, Tuesday, March 26, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
16123.15615	55.7	31.46	-18.3	74	318	10
16224.5475	53.51	31.88	-20.49	74	400	314
16461.27725	54.06	32.93	-19.94	74	296	21
16546.50935	55.44	33.3	-18.56	74	163	216
16737.30915	54.59	33.58	-19.41	74	350	163
17121.37515	55.96	32.78	-18.04	74	381	58
17783.71415	51.76	31.85	-22.24	74	241	133

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
16123.15615	40.33	0.29	31.46	-13.67	54	318	10
16224.5475	39.52	0.29	31.88	-14.48	54	400	314
16461.27725	41.95	0.29	32.93	-12.05	54	296	21
16546.50935	41.83	0.29	33.3	-12.17	54	163	216
16737.30915	40.44	0.29	33.58	-13.56	54	350	163
17121.37515	41.38	0.29	32.78	-12.62	54	381	58
17783.71415	40.71	0.29	31.85	-13.29	54	241	133

Upper band edge Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

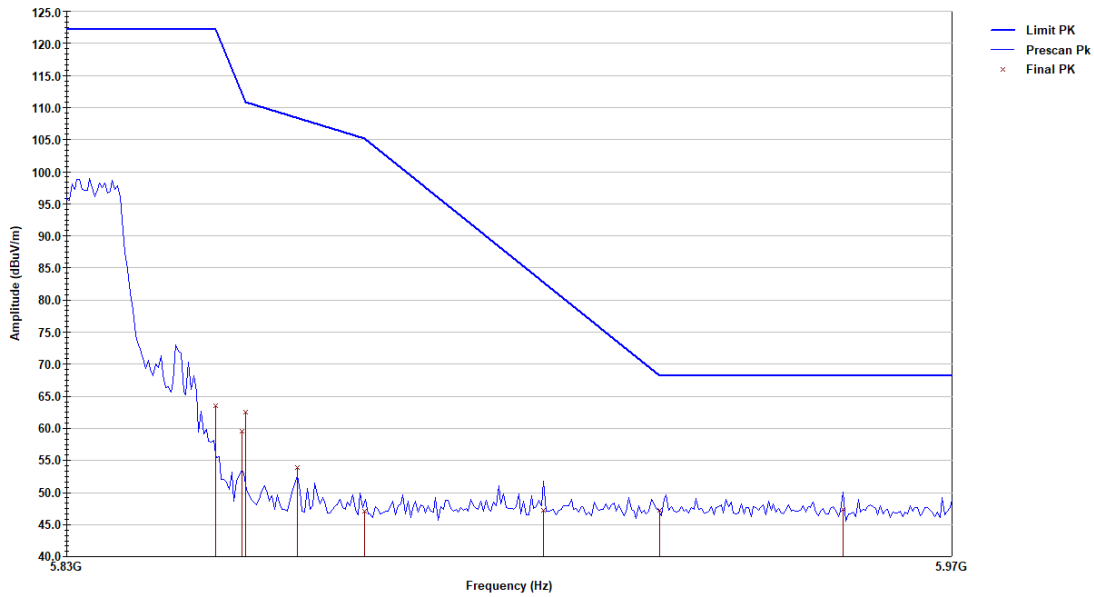
Model # - comma.ai

Test Mode - Tx mode, Upper Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5825MHz, 802.11ac20 VHT20, pwr 15, mcs1



5825 15 mcs1 RE Upper Band-Edge.ttl

Last Data Update 01:53:16 PM, Wednesday, May 29, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
5850	63.53	9.56	-58.67	122.2	394	1
5854.35001	59.55	9.59	-52.73	112.28	394	362
5855	62.46	9.59	-48.34	110.8	400	348
5863.7	53.84	9.65	-54.53	108.36	400	370
5875.00001	47.1	9.73	-58.1	105.2	247	314
5905.35	47.23	9.88	-35.51	82.74	178	281
5925.00001	47.21	9.97	-20.99	68.2	332	67
5956.35	47.31	10.03	-20.89	68.2	201	296

No Average limit is defined for the upper band edge.

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical AVG

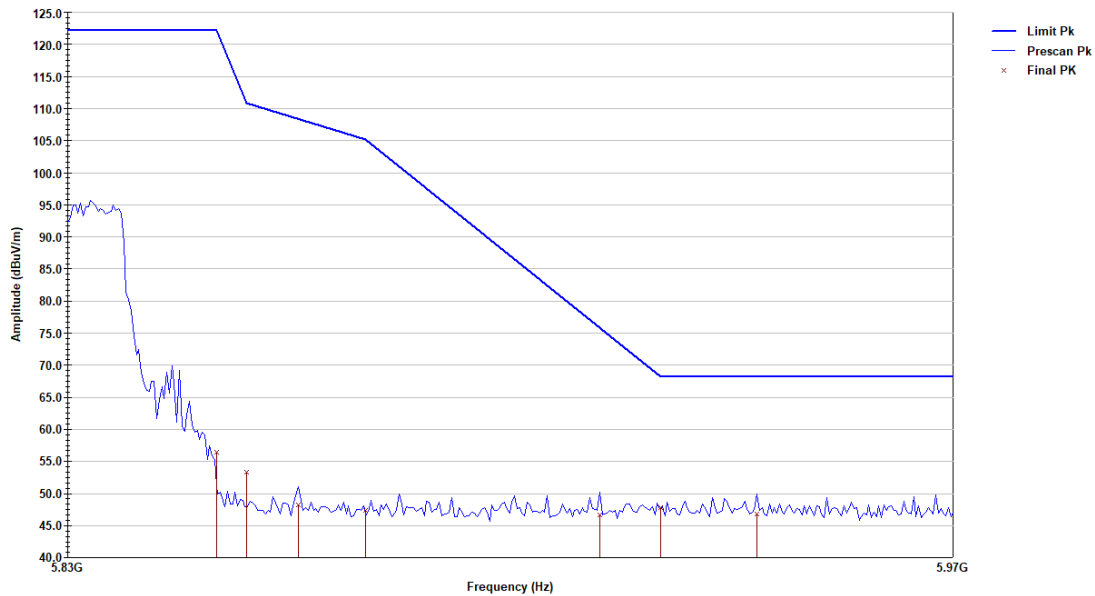
Model # - comma.ai

Test Mode - Tx mode, Upper Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5825MHz, 802.11ac20 VHT20, pwr 15, mcs1



5825 15 mcs1 RE Upper Band-Edge.til

Last Data Update 01:31:39 PM, Wednesday, May 29, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5850.00001	56.45	9.56	-65.75	122.2	400	72
5855.00001	53.35	9.59	-57.45	110.8	400	109
5863.7	48.28	9.65	-60.08	108.36	171	-20
5875	47.4	9.73	-57.8	105.2	365	121
5914.70001	46.67	9.93	-29.15	75.82	186	-20
5925.00001	47.81	9.97	-20.39	68.2	163	61
5941.47501	46.84	10.04	-21.36	68.2	400	174

No Average limit is defined for the upper band edge.

UNII3: 802.11ac40

30 to 1000 MHz High Channel – 5795MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal QP

Customer / Model # - comma.ai / LightningHard SOM

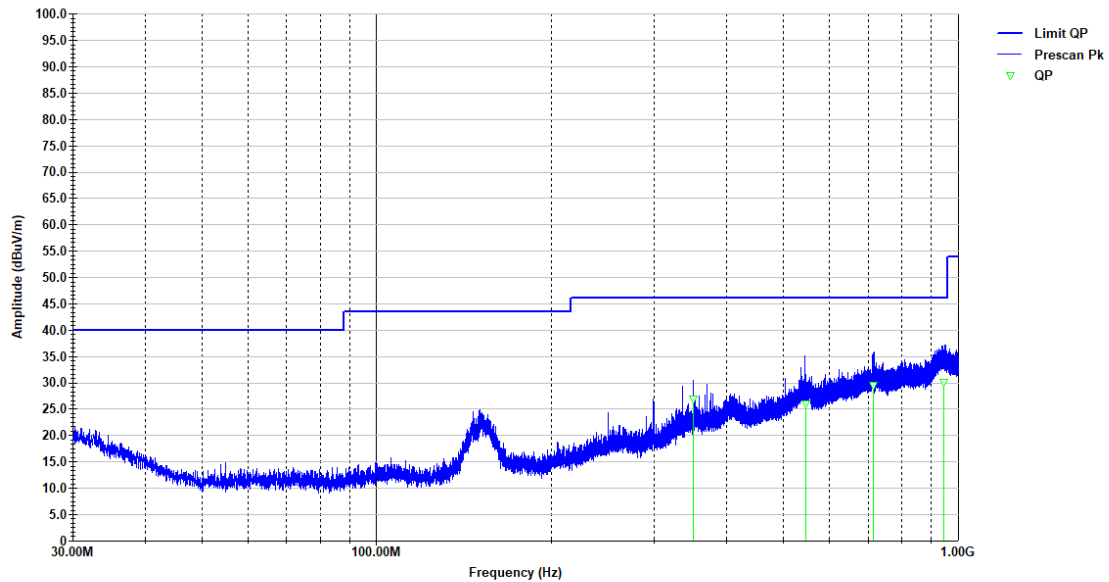
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - AG

Standard - FCC Class B

Comments - 5795MHz, 802.11ac40 UNII3 VHT40, pwr 15, mcs0



5795 15 mcs0 FCC 15.407 RE 30M-1GHz.ttl

Last Data Update 10:53:43 PM, 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.)
349.998906	26.97	-21.02	-19.05	46.02	248	285
546.412214	26.02	-13.89	-20	46.02	224	335
715.166061	29.54	-11.92	-16.48	46.02	100	316
944.266483	30.17	-8.3	-15.85	46.02	170	5

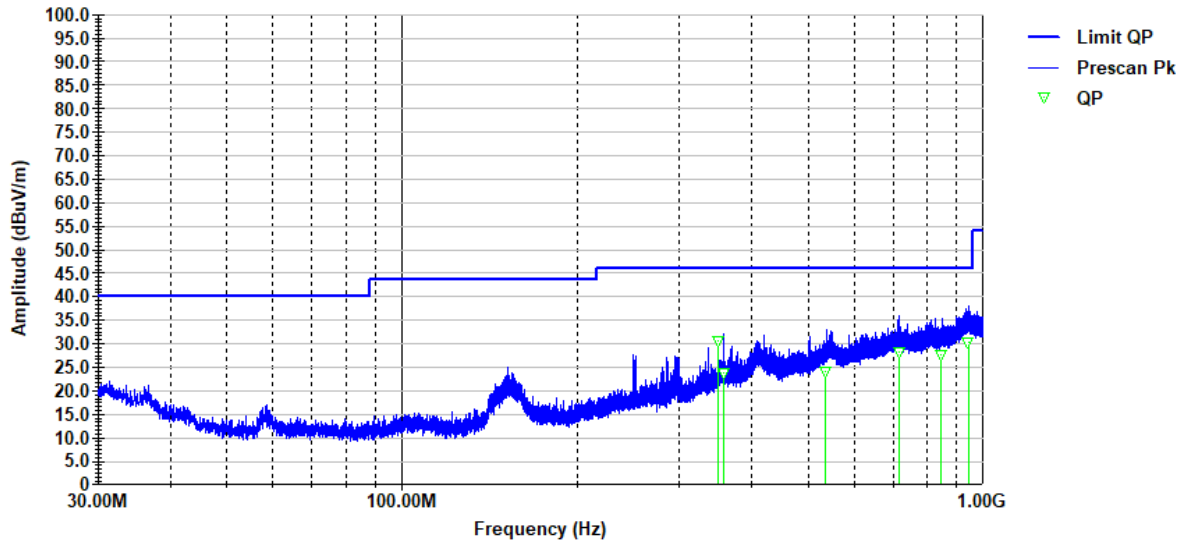
Vertical Polarization

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 - 5795MHz, 802.11ac40 UNII3 VHT40, pwr 15, mcs0



5795 15 mcs0 FCC 15.407 RE 30M-1GHz.til

Last Data Update 10:42:27 PM, 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.)
350.004727	30.61	-21.02	-15.41	46.02	100	253
358.203275	23.87	-20.59	-22.15	46.02	106	369
535.764737	24.03	-14.14	-21.99	46.02	346	377
718.030972	28.09	-11.89	-17.93	46.02	218	339
847.384247	27.66	-11.1	-18.36	46.02	400	49
941.742776	30.22	-8.3	-15.8	46.02	400	37

1 to 18 GHz Low Channel – 5755MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

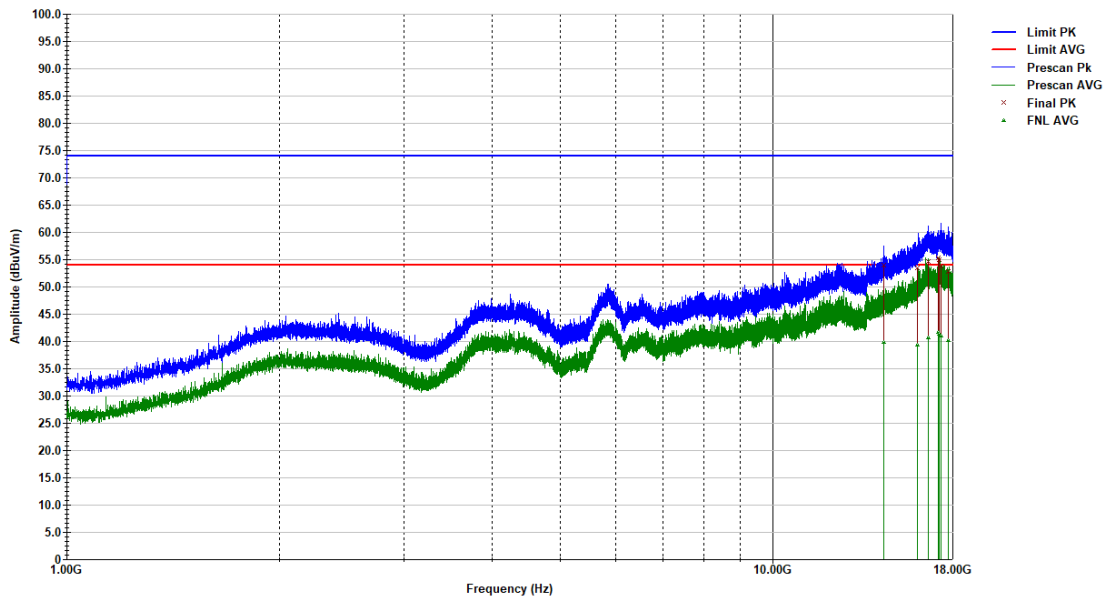
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5755MHz, 802.11ac40 VHT40, pwr 15, mcs0



5755 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 01:08:24 PM, Tuesday, March 26, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
14384.1071	54.07	27.14	-19.93	74	348	360
16061.06645	53.48	31.24	-20.52	74	240	114
16597.52721	54.6	33.52	-19.4	74	255	207
17161.16863	55.29	32.79	-18.71	74	400	248
17208.1495	55.01	32.78	-18.99	74	232	165
17309.72106	53.85	32.49	-20.15	74	194	265
17749.67198	52.85	31.88	-21.15	74	400	270

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
14384.1071	40.09	0.3	27.14	-13.91	54	348	360
16061.06645	39.63	0.3	31.24	-14.37	54	240	114
16597.52721	41.01	0.3	33.52	-12.99	54	255	207
17161.16863	41.93	0.3	32.79	-12.07	54	400	248
17208.1495	41.7	0.3	32.78	-12.3	54	232	165
17309.72106	41.26	0.3	32.49	-12.74	54	194	265
17749.67198	40.5	0.3	31.88	-13.5	54	400	270

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

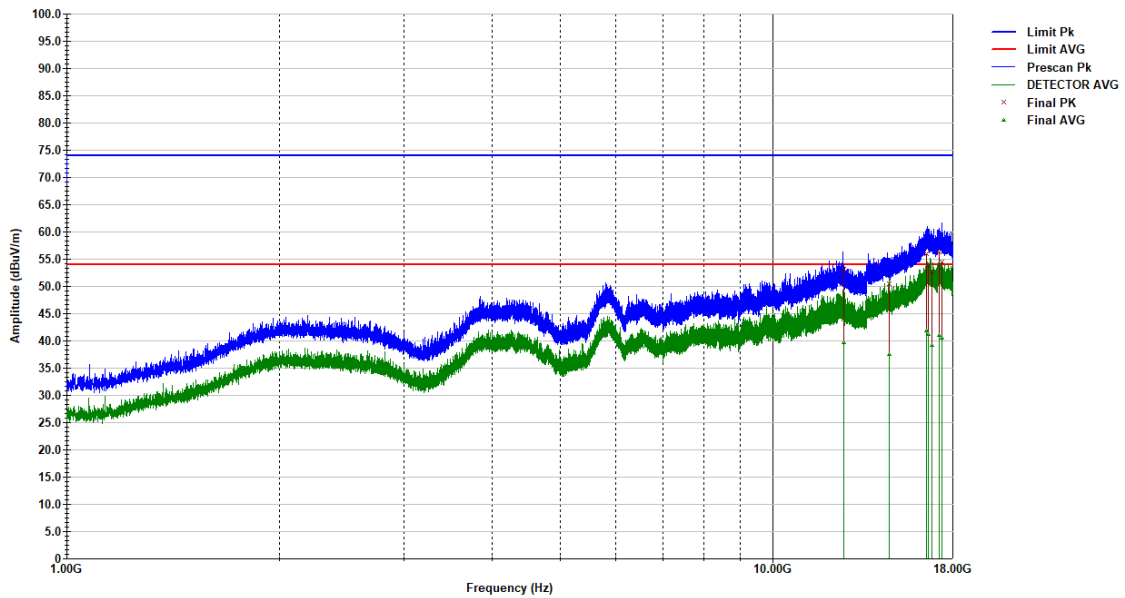
Test Mode - TX, 6GHz HPF

Operator - AG

Vertical AVG

Standard - FCC Class B

Comments - 5755MHz, 802.11ac40 VHT40, pwr 15, mcs0



5755 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 12:49:30 PM, Tuesday, March 26, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
12598.28525	53.21	26.09	-20.79	74	400	179
14609.8754	50.56	27.63	-23.44	74	156	188
16522.08885	56.03	33.2	-17.97	74	388	128
16595.8635	53.78	33.52	-20.22	74	156	54
16837.27425	52.69	33.51	-21.31	74	373	55
17222.2345	56.39	32.74	-17.61	74	388	87
17361.80475	54.57	32.36	-19.43	74	256	24

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
12598.28525	39.95	0.3	26.09	-14.05	54	400	179
14609.8754	37.81	0.3	27.63	-16.19	54	156	188
16522.08885	42.13	0.3	33.2	-11.87	54	388	128
16595.8635	41.53	0.3	33.52	-12.47	54	156	54
16837.27425	39.47	0.3	33.51	-14.53	54	373	55
17222.2345	41.35	0.3	32.74	-12.65	54	388	87
17361.80475	40.77	0.3	32.36	-13.23	54	256	24

Lower band edge Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

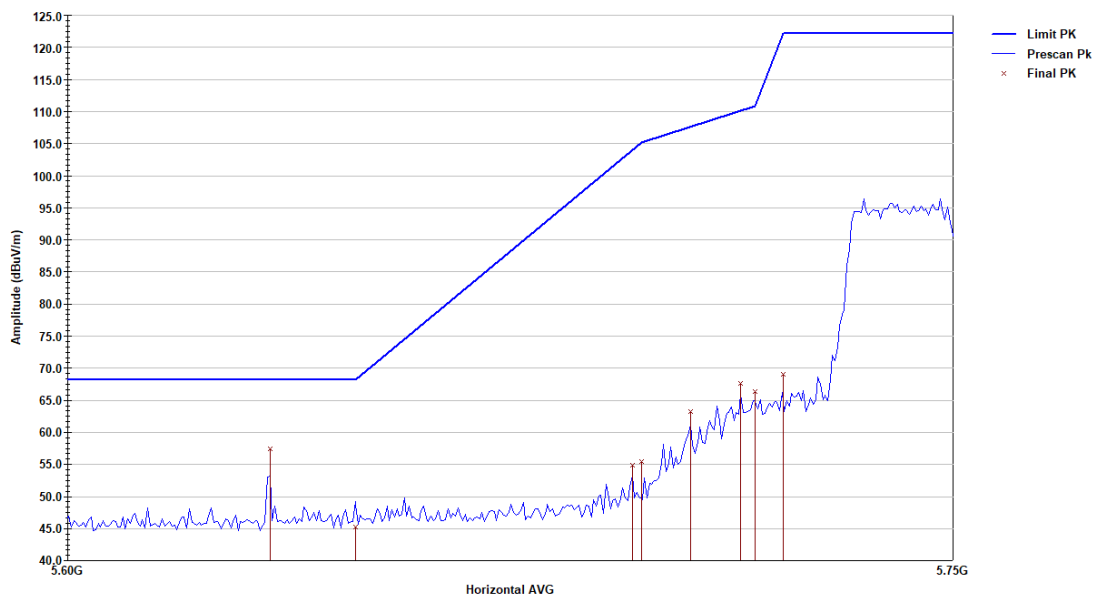
Model # - comma.ai

Test Mode - Tx mode, Lower Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5755MHz, 802.11ac40 VHT40, pwr 15, mcs0



5755 15 mcs0 RE Lower Band-Edge.ttl

Last Data Update 02:45:14 PM, Wednesday, May 29, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5635.05	57.36	8.74	-10.84	68.2	155	343
5650	45.29	8.92	-22.91	68.2	248	229
5698.37501	54.93	9.12	-49.07	104	400	-4
5700.00001	55.47	9.12	-49.73	105.2	171	349
5708.57501	63.18	9.15	-44.43	107.6	400	352
5717.50001	67.65	9.15	-42.45	110.1	400	-20
5720.00001	66.32	9.15	-44.48	110.8	400	5
5725	69.05	9.15	-53.15	122.2	340	348

No Average limit is defined for the upper band edge.

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical AVG

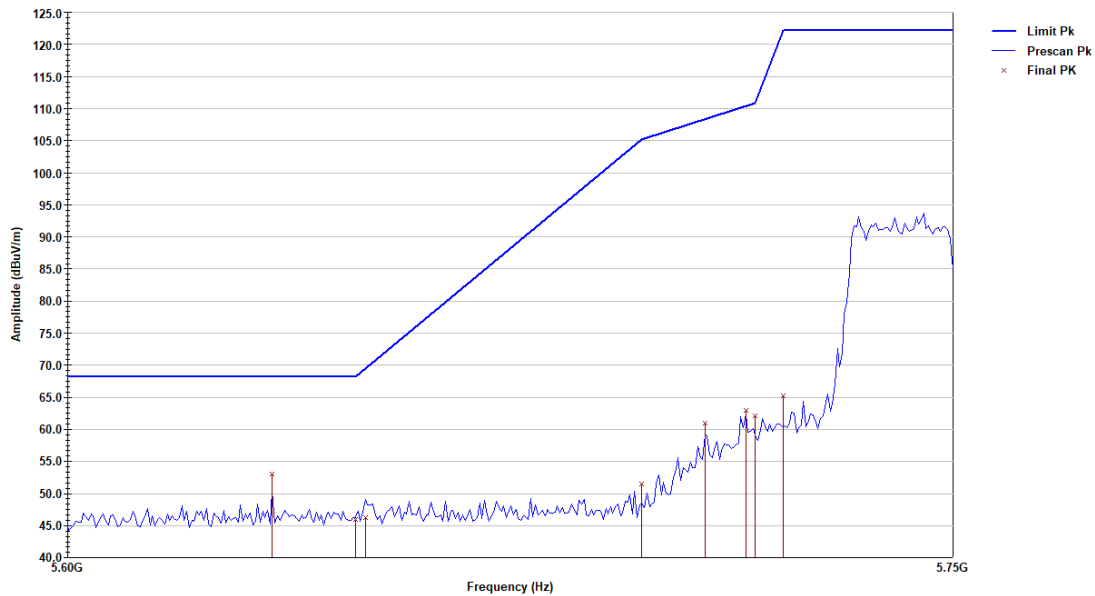
Model # - comma.ai

Test Mode - Tx mode, Lower Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5755MHz, 802.11ac40 VHT40, pwr 15, mcs0



5755 15 mcs0 RE Lower Band-Edge.ttl

Last Data Update 02:27:24 PM, Wednesday, May 29, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5635.475	53.06	8.74	-15.14	68.2	233	94
5650	45.94	8.92	-22.26	68.2	150	334
5651.625	46.18	8.93	-23.23	69.4	321	67
5700.00001	51.4	9.12	-53.8	105.2	280	72
5711.12501	60.92	9.15	-47.4	108.32	327	110
5718.35	62.87	9.15	-47.47	110.34	380	110
5720.00001	62.15	9.15	-48.65	110.8	400	117
5725.00001	65.17	9.15	-57.03	122.2	400	91

No Average limit is defined for the upper band edge.

High Channel – 5795MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

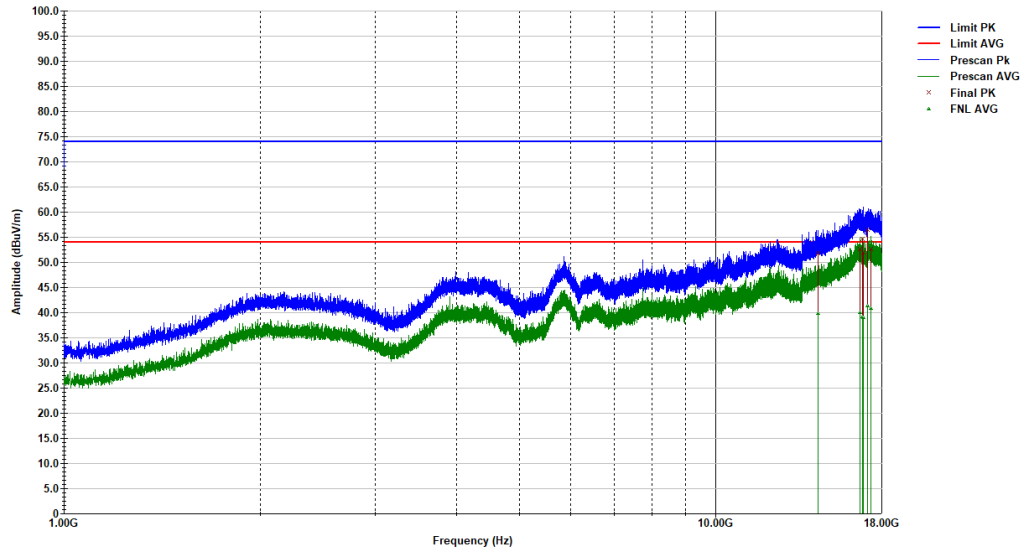
Customer / Model # - comma.ai / LightningHard SOM

Test Mode - TX, 6GHz HPF

Operator - AG

Standard - FCC Class B

Comments - 5795MHz, 802.11ac40 VHT40, pwr 15, mcs0



5795 15 mcs0 RE CISPR SW1A NC 3117 w lambda Ina AVG 1G-18G 06Feb2024.til

Last Data Update 12:19:33 PM, Tuesday, March 26, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
14381.7088	51.8	27.14	-22.2	74	332	352
16671.41087	52.62	33.62	-21.38	74	217	22
16799.07202	54.62	33.54	-19.38	74	302	320
16847.17332	51.94	33.5	-22.06	74	150	318
17111.6454	56.46	32.77	-17.54	74	186	109
17310.39085	52.58	32.49	-21.42	74	217	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.)
14381.7088	40.11	0.3	27.14	-13.89	54	332	352
16671.41087	40.37	0.3	33.62	-13.63	54	217	22
16799.07202	39.45	0.3	33.54	-14.55	54	302	320
16847.17332	39.31	0.3	33.5	-14.69	54	150	318
17111.6454	41.57	0.3	32.77	-12.43	54	186	109
17310.39085	41.05	0.3	32.49	-12.95	54	217	268

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

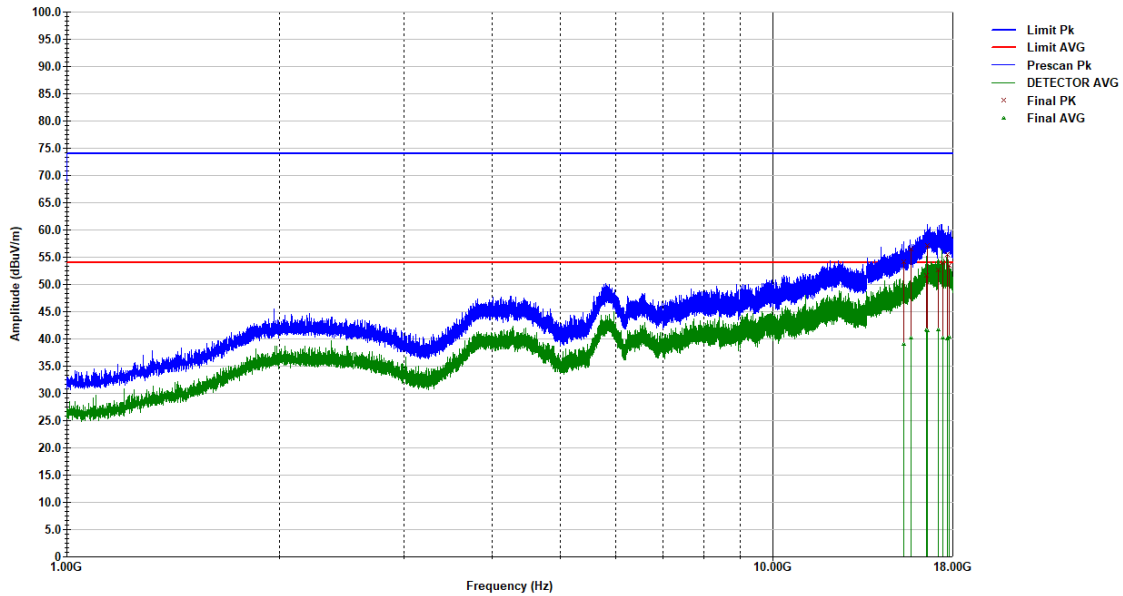
Test Mode - TX, 6GHz HPF

Operator - AG

Vertical AVG

Standard - FCC Class B

Comments - 5795MHz, 802.11ac40 VHT40, pwr 15, mcs0



5795 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 12:03:50 PM, Tuesday, March 26, 2024

Peak Data

Freq. (MHz)	Final PK (dB μ V/m)	Total Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Ant. Height (cm)	Azimuth (deg.)
15345.38775	54.21	29.28	-19.79	74	334	9
15685.0044	56.41	30.08	-17.59	74	171	125
16536.7969	51.71	33.26	-22.29	74	194	283
16572.57625	57.11	33.42	-16.89	74	150	291
17161.266	52.63	32.79	-21.37	74	150	332
17409.7035	53.96	32.24	-20.04	74	280	310
17685.97625	55.57	31.95	-18.43	74	334	380
17795.84715	53.54	31.83	-20.46	74	155	246

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
15345.38775	39.22	0.3	29.28	-14.78	54	334	9
15685.0044	40.52	0.3	30.08	-13.48	54	171	125
16536.7969	42	0.3	33.26	-12	54	194	283
16572.57625	41.78	0.3	33.42	-12.22	54	150	291
17161.266	41.93	0.3	32.79	-12.07	54	150	332
17409.7035	40.5	0.3	32.24	-13.5	54	280	310
17685.97625	40.21	0.3	31.95	-13.79	54	334	380
17795.84715	40.64	0.3	31.83	-13.36	54	155	246

Upper band edge Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

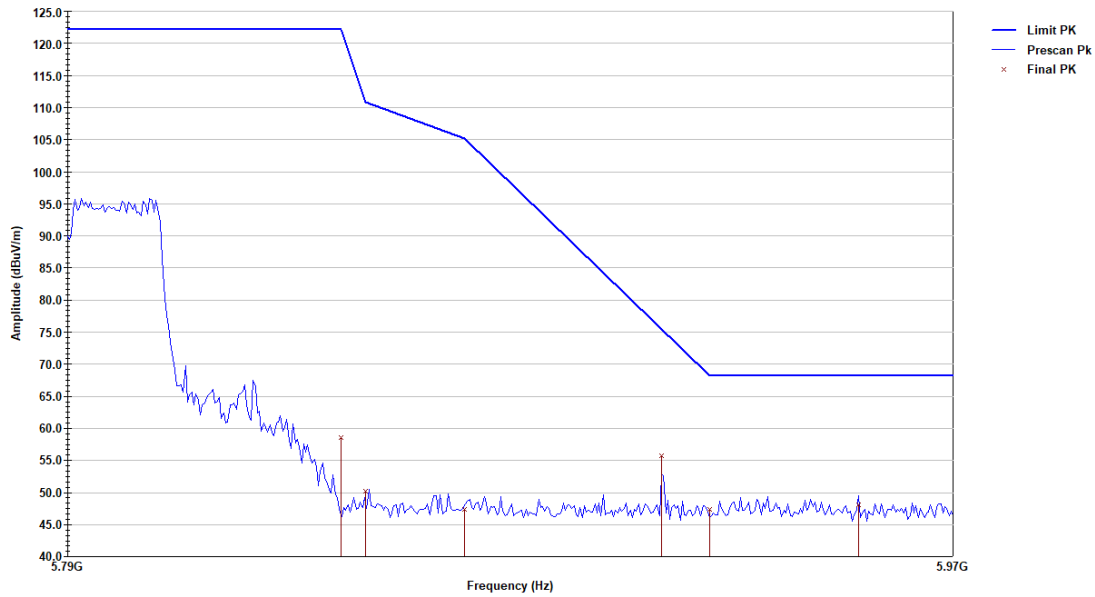
Model # - comma.ai

Test Mode - Tx mode, Upper Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5795MHz, 802.11ac40 VHT40, pwr 15, mcs0



5795 15 mcs0 RE Upper Band-Edge.ttl

Last Data Update 03:27:44 PM, Wednesday, May 29, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
5850.00001	58.55	9.56	-63.65	122.2	400	335
5855	50.18	9.59	-60.62	110.8	150	185
5875.00001	47.4	9.73	-57.8	105.2	194	366
5915.125	55.65	9.93	-19.86	75.51	378	-20
5925.00001	47.4	9.97	-20.8	68.2	225	123
5955.50001	48.12	10.03	-20.08	68.2	163	138

No Average limit is defined for the upper band edge.

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical AVG

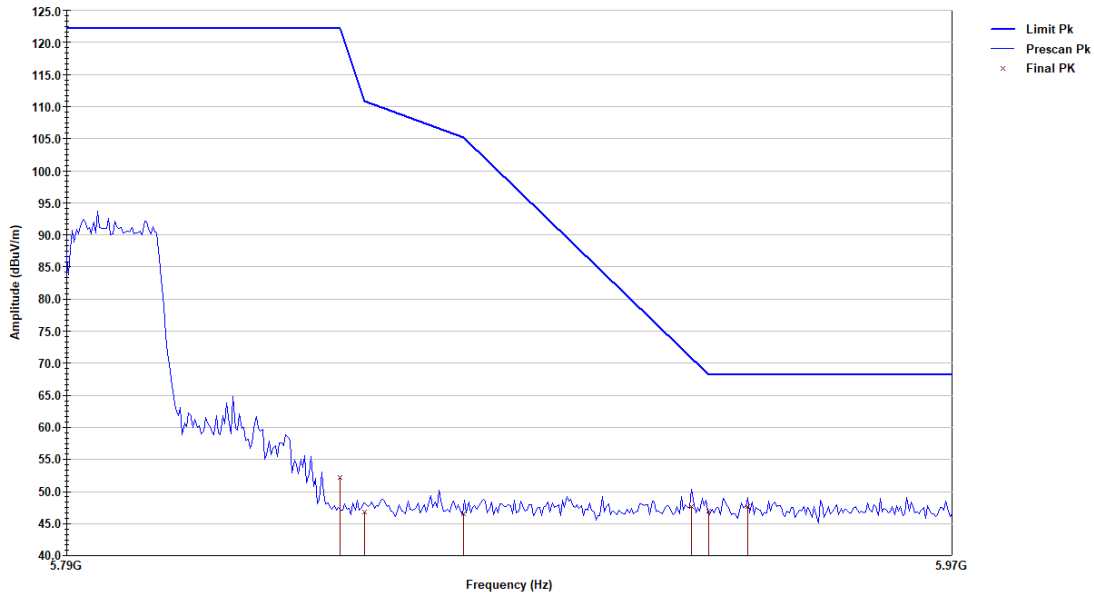
Model # - comma.ai

Test Mode - Tx mode, Upper Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5795MHz, 802.11ac40 VHT40, pwr 15, mcs0



5795 15 mcs0 RE Upper Band-Edge.til

Last Data Update 03:13:29 PM, Wednesday, May 29, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5850.00001	52.23	9.56	-69.97	122.2	400	105
5855.00001	46.82	9.59	-63.98	110.8	326	185
5875	46.51	9.73	-58.69	105.2	217	239
5921.5	47.69	9.96	-23.1	70.79	264	363
5925	46.91	9.97	-21.29	68.2	303	145
5932.975	47.64	10.01	-20.56	68.2	155	84

No Average limit is defined for the upper band edge.

UNII3: 802.11ac80

30 to 1000 MHz Mid Channel – 5775MHz - both chains transmitting Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal QP

Customer / Model # - comma.ai / LightningHard SOM

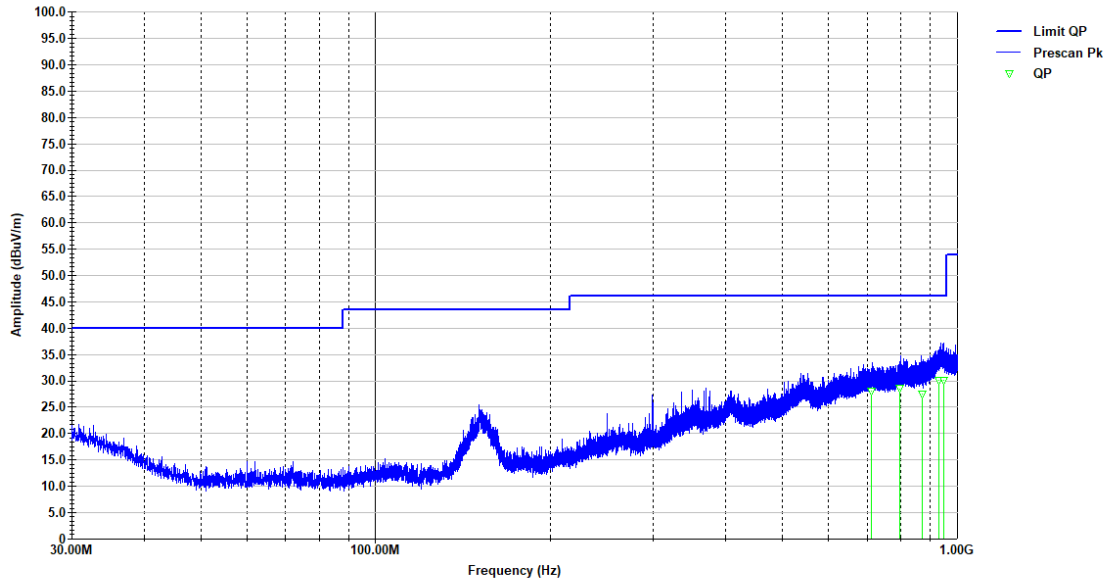
Serial # - N/A

Test Mode - TX99, ext. DC power supply

Operator - AG

Standard - FCC Class B

Comments - 5775MHz, 802.11ac80 UNII3 VHT80, pwr 15, mcs0



5775 15 mcs0 FCC 15.407 RE 30M-1GHz.til

Last Data Update 11:51:44 PM, 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.)
712.122492	28	-11.89	-18.02	46.02	375	380
798.254327	28.52	-11.42	-17.5	46.02	122	204
871.652491	27.46	-11.15	-18.56	46.02	321	151
931.889645	30.06	-8.45	-15.96	46.02	345	286
948.932732	30.11	-8.36	-15.91	46.02	146	280

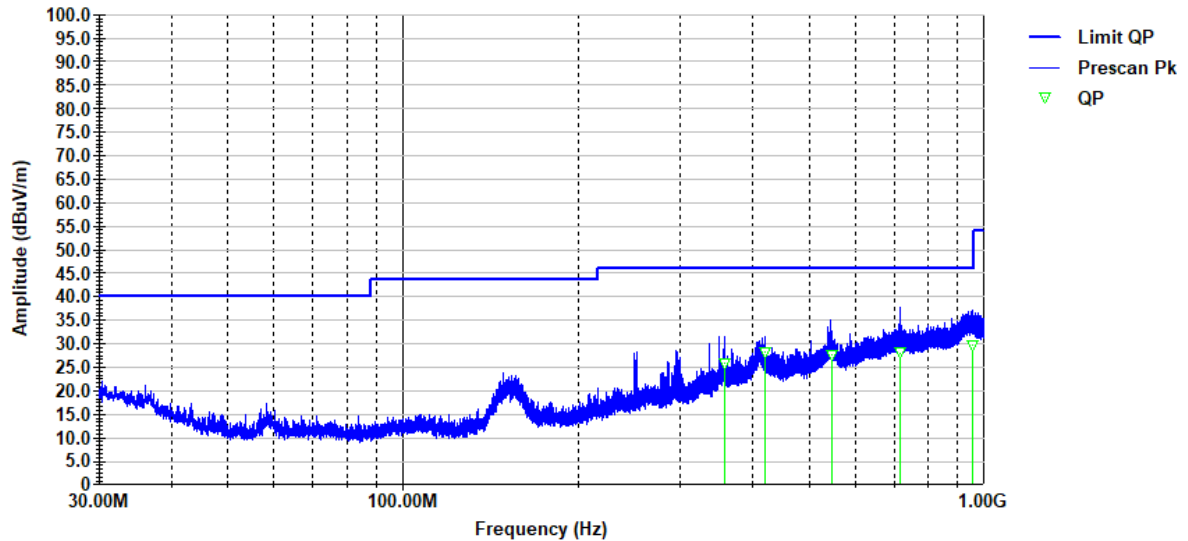
Vertical Polarization

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 - 5775MHz, 802.11ac80 UNII3 VHT80, pwr 15, mcs0



5775 15 mcs0 FCC 15-407 RE 30M-1GHz.til

Last Data Update 11:37:25 PM, 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.)
358.515711	25.99	-20.58	-20.03	46.02	100	348
419.94	28.25	-18.22	-17.77	46.02	138	229
545.655876	27.63	-13.85	-18.39	46.02	100	327
717.810672	28.08	-11.89	-17.94	46.02	122	202
955.725142	29.8	-8.6	-16.22	46.02	387	179

1 to 18 GHz
Mid Channel – 5775MHz - both chains transmitting

Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

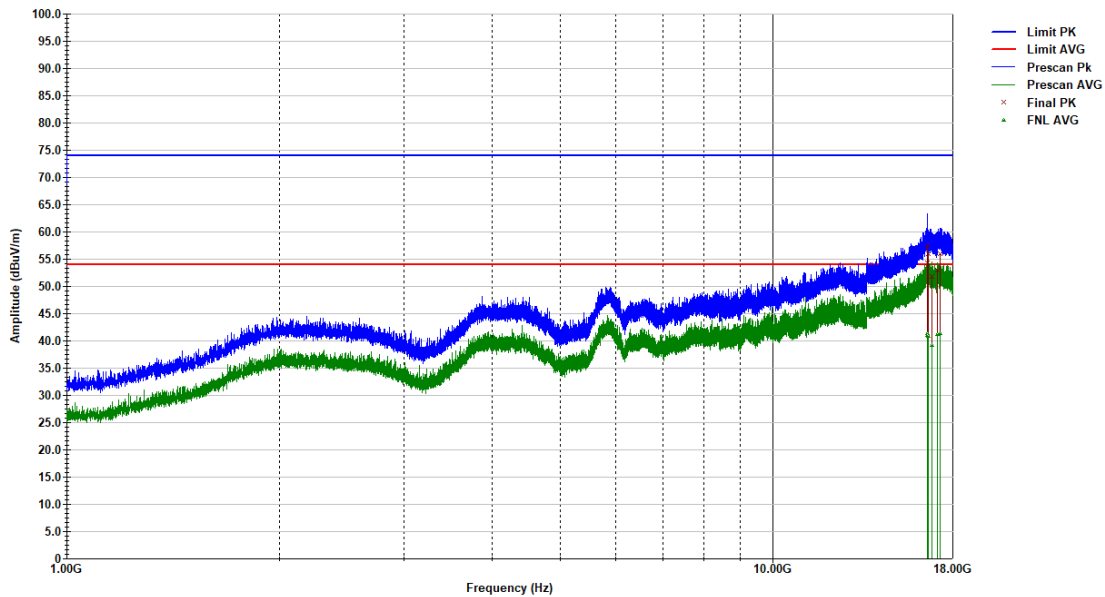
Test Mode - TX, 6GHz HPF

Horizontal AVG

Operator - AG

Standard - FCC Class B

Comments - 5775MHz, 802.11ac80 VHT80, pwr 15, mcs0



5775 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 02:08:07 PM, Tuesday, March 26, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
16572.51235	57.55	33.41	-16.45	74	186	143
16587.25423	54.24	33.48	-19.76	74	263	60
16635.06106	55.93	33.63	-18.07	74	400	-20
16799.9001	51.9	33.54	-22.1	74	302	343
17112.32306	53.02	32.77	-20.98	74	340	185
17273.68934	55.94	32.59	-18.06	74	370	110

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
16572.51235	41.93	0.57	33.41	-12.07	54	186	143
16587.25423	41.49	0.57	33.48	-12.51	54	263	60
16635.06106	41.35	0.57	33.63	-12.65	54	400	-20
16799.9001	39.79	0.57	33.54	-14.21	54	302	343
17112.32306	41.78	0.57	32.77	-12.22	54	340	185
17273.68934	41.93	0.57	32.59	-12.07	54	370	110

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Customer / Model # - comma.ai / LightningHard SOM

Radiated Emissions

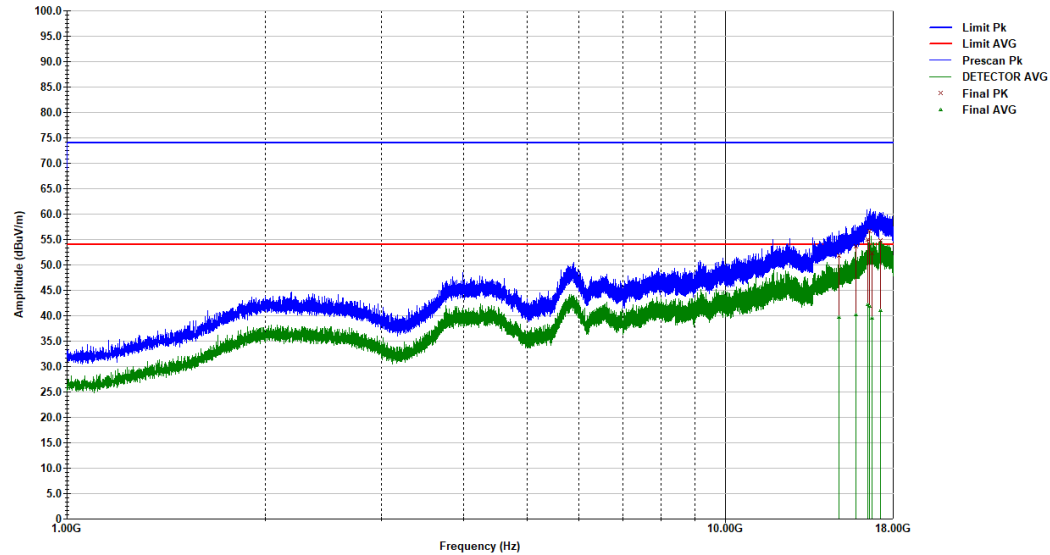
Test Mode - TX, 6GHz HPF

Operator - AG

Vertical AVG

Standard - FCC Class B

Comments - 5775MHz, 802.11ac80 VHT80, pwr 15, mcs0



5775 15 mcs0 RE CISPR SW1A NC 3117 w lambda lna AVG 1G-18G 06Feb2024.ttl

Last Data Update 01:48:54 PM, Tuesday, March 26, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
14899.9805	51.81	28.23	-22.19	74	335	362
15783.55735	53.6	30.3	-20.4	74	381	380
16471.51675	55	32.97	-19	74	163	136
16562.1426	56.63	33.37	-17.37	74	264	143
16736.3564	52.33	33.58	-21.67	74	310	-20
17210.41735	54.77	32.78	-19.23	74	194	226

Average

Freq. (MHz)	Final AVG (dBμV/m)	Duty Cycle Corr. (dB)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
14899.9805	40.31	0.57	28.23	-13.69	54	335	362
15783.55735	40.75	0.57	30.3	-13.25	54	381	380
16471.51675	42.71	0.57	32.97	-11.29	54	163	136
16562.1426	42.39	0.57	33.37	-11.61	54	264	143
16736.3564	40.02	0.57	33.58	-13.98	54	310	-20
17210.41735	41.53	0.57	32.78	-12.47	54	194	226

Lower band edge Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

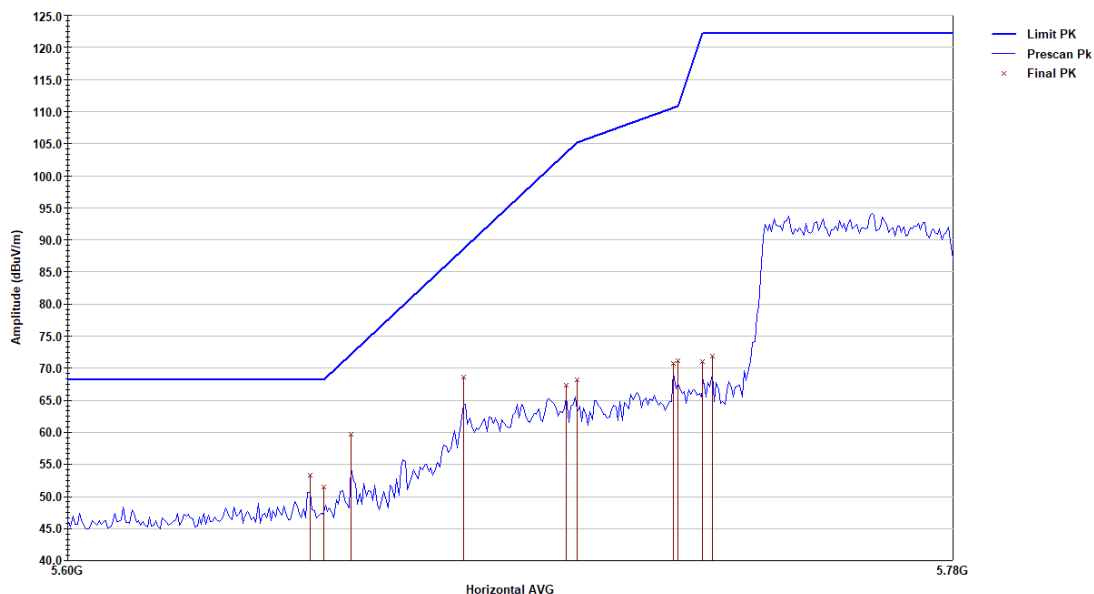
Model # - comma.ai

Test Mode - Tx mode, Lower Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5775MHz, 802.11ac80 VHT80, pwr 15, mcs0



5775 15 mcs0 RE Lower Band-Edge.ttl

Last Data Update 05:06:23 PM, Wednesday, May 29, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5647.375	53.25	8.89	-14.95	68.2	150	-20
5650	51.44	8.92	-16.76	68.2	400	341
5655.45	59.62	8.95	-12.61	72.23	400	348
5677.55	68.57	9.05	-20.02	88.59	400	344
5697.95	67.28	9.11	-36.41	103.68	393	344
5700.00001	68.18	9.12	-37.02	105.2	400	-12
5719.2	70.73	9.15	-39.85	110.58	400	335
5720	71.15	9.15	-39.65	110.8	400	-20
5725	71.04	9.15	-51.16	122.2	400	337
5726.85	71.84	9.15	-50.36	122.2	400	-20

No Average limit is defined for the upper band edge.

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical AVG

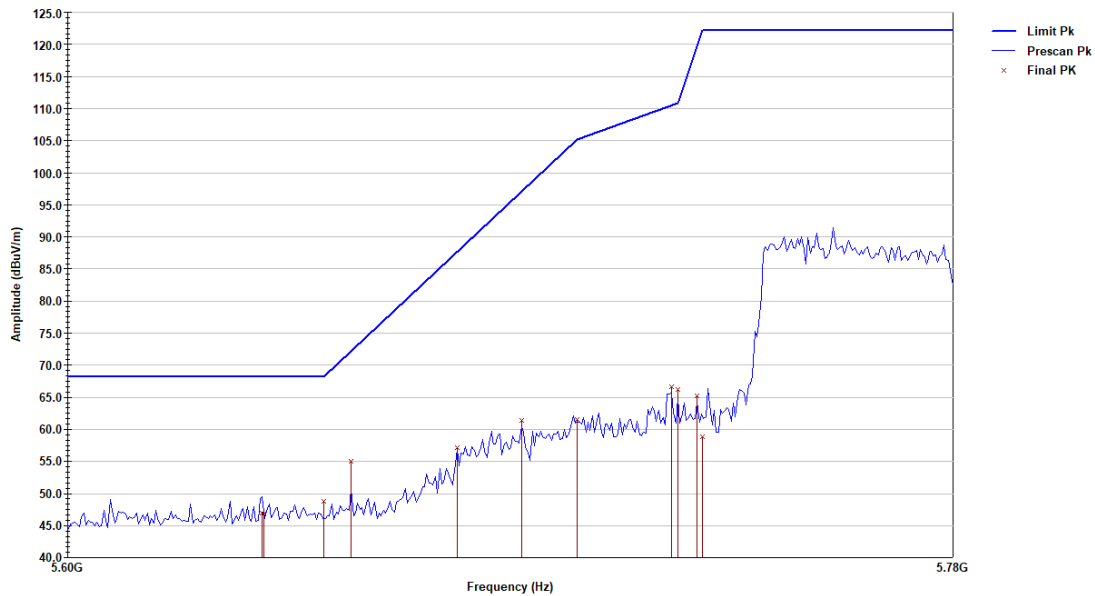
Model # - comma.ai

Test Mode - Tx mode, Lower Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5775MHz, 802.11ac80 VHT80, pwr 15, mcs0



5775 15 mcs0 RE Lower Band-Edge.ttl

Last Data Update 04:33:41 PM, Wednesday, May 29, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5638.02501	46.93	8.77	-21.27	68.2	240	117
5638.3075	46.8	8.78	-21.4	68.2	326	83
5650	48.75	8.92	-19.45	68.2	368	42
5655.45	55.08	8.95	-17.15	72.23	388	39
5676.275	57.14	9.04	-30.5	87.64	400	113
5689.02501	61.39	9.09	-35.68	97.08	400	69
5700.00001	61.59	9.12	-43.61	105.2	256	95
5718.77501	66.64	9.15	-43.82	110.46	400	98
5720.00001	66.22	9.15	-44.58	110.8	400	98
5723.875	65.2	9.15	-54.44	119.64	341	104
5725	58.79	9.15	-63.41	122.2	178	-20

No Average limit is defined for the upper band edge.

Upper band edge Horizontal Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Horizontal AVG

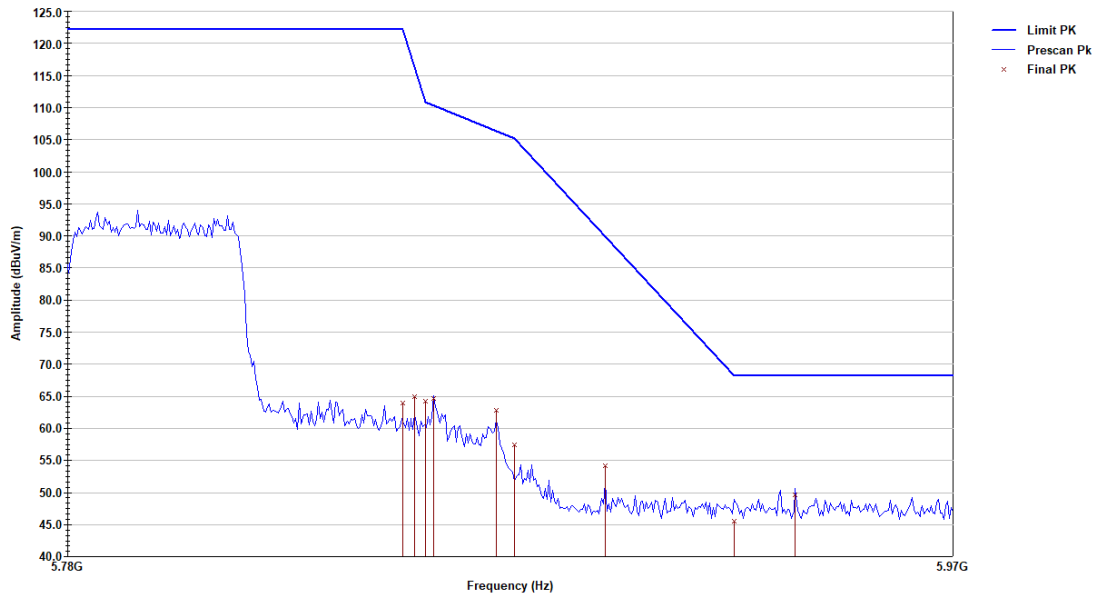
Model # - comma.ai

Test Mode - Tx mode, Upper Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5775MHz, 802.11ac80 VHT80, pwr 15, mcs0



5775 15 mcs0 RE Upper Band-Edge.ttl

Last Data Update 06:15:28 PM, Wednesday, May 29, 2024

Peak Data

Freq. (MHz)	Final PK (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
5850	63.91	9.56	-58.29	122.2	324	5
5852.65001	64.96	9.58	-51.2	116.16	400	-20
5855	64.21	9.59	-46.59	110.8	324	352
5856.90001	64.58	9.61	-45.68	110.27	400	2
5870.92501	62.84	9.7	-43.5	106.34	394	-10
5875	57.37	9.73	-47.83	105.2	386	-14
5895.575	54.19	9.84	-35.78	89.97	400	-20
5925	45.54	9.97	-22.66	68.2	293	16
5938.92501	49.67	10.03	-18.53	68.2	308	20

No Average limit is defined for the upper band edge.

Vertical Polarization

SGS NA, San Diego Regulatory Lab

Radiated Emissions

Vertical AVG

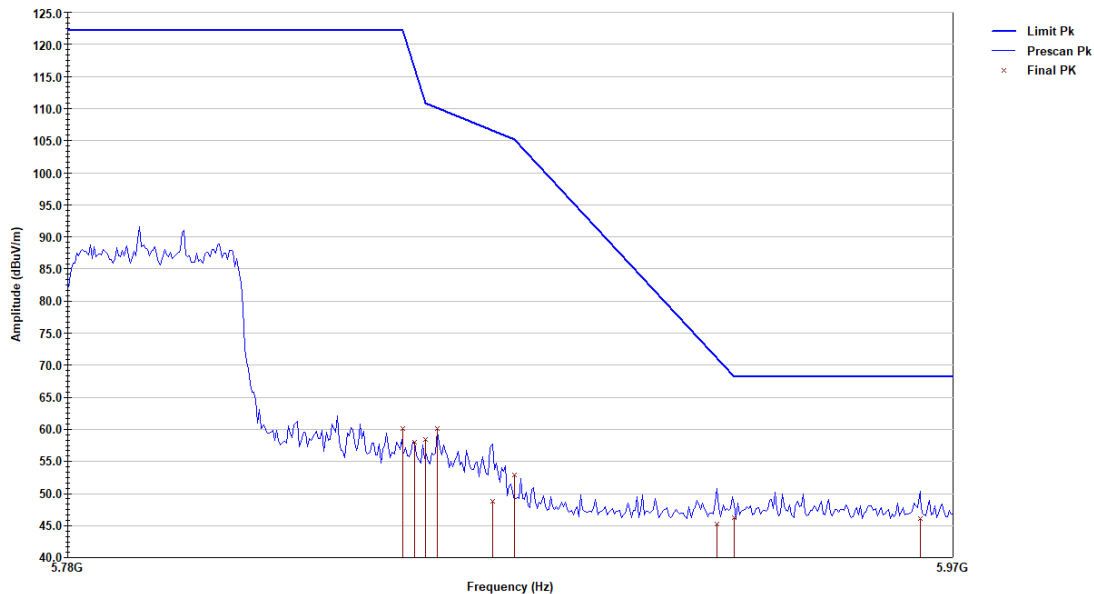
Model # - comma.ai

Test Mode - Tx mode, Upper Band-Edge

Operator - AG

Standard - FCC Class B

Comments - 5775MHz, 802.11ac80 VHT80, pwr 15, mcs0



5775 15 mcs0 RE Upper Band-Edge.ttl

Last Data Update 05:53:10 PM, Wednesday, May 29, 2024

Peak Data

Freq. (MHz)	Final PK (dBμV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Ant. Height (cm)	Azimuth (deg.)
5850	60.05	9.56	-62.15	122.2	400	95
5852.65001	57.95	9.58	-58.21	116.16	327	80
5855.00001	58.4	9.59	-52.4	110.8	400	111
5857.75001	60.12	9.61	-49.91	110.03	400	102
5870.075	48.72	9.69	-57.85	106.58	179	-20
5875	52.84	9.73	-52.36	105.2	187	117
5921.075	45.22	9.95	-25.88	71.1	372	-14
5925.00001	46.29	9.97	-21.91	68.2	326	57
5967.40001	46.02	10.02	-22.18	68.2	311	98

No Average limit is defined for the upper band edge.

5.8 Power Spectral Density

5.9 Test Result

Test Description	Test Specification	Test Result
Power Spectral Density	15.407(1)(2)(5)	Compliant

5.10 Test Method

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the Antenna port to the spectrum analyzer.
4. For UNII1, UNII2a and UNII2c band:
Set the spectrum analyzer to RBW = 1 MHz, VBW = 3 x RBW, where the span is enough to capture the entire bandwidth, Sweep time = Auto, Detector = power averaging (rms), if available. Otherwise use sample detector mode, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth).
For UNII3 band:
Set the spectrum analyzer to RBW = 300 kHz, VBW = 1 MHz RBW, where the span is enough to capture the entire bandwidth, Sweep time = Auto, Detector = power averaging (rms), if available. Otherwise use sample detector mode, traces 100 sweeps of video averaging.
In addition, measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log (500 kHz/RBW) to the measurement result.
5. Set the cursor on spectrum to peak search the highest level of trace.
6. (1) Duty cycle $\geq 98\%$: Record the max reading
(2) Duty cycle $< 98\%$: Record the max reading and add 10 log (1/duty cycle)
7. Repeat above procedures until all the default channel (low/mid/high) is completed.

The antenna gain is not greater than 6 dBi, therefore reduction of power is not required.

The limits are as following:

Operation Bands	EUT CATEGORY		e-CRF Title 47 §15.407 Power Spectral Density	Antenna Directional Gain Requirements
U-NII-1		Outdoor Access Point (Master)	1. 17dBm/ MHz 2. EIRP<=125mW(21dBm) at any elevation angle > 30°	6dBi
		Indoor Access Point (Master)	17dBm / MHz	6dBi
		Fixed point-to-point Access Point	17dBm / MHz	23dBi
	V	Client device	11dBm / MHz	6dBi
U-NII-2A	V	All	11dBm / MHz	6dBi
U-NII-2C	V	All	11dBm / MHz	6dBi
U-NII-3	V	All	30dBm / 500kHz	6dBi
U-NII-4		Indoor AP	20dBm / MHz e.i.r.p.	Not required
		indoor client	14dBm / MHz e.i.r.p.	Not required
		subordinate device	20dBm / MHz e.i.r.p.	Not required
If transmitting antennas of directional gain greater than the antenna requirements column, the Maximum transmit power shall be reduced by the amount in dB that the direction-al gain of the antenna.				

5.11 Test Site

EMC Laboratory, San Diego, CA

Environmental Conditions

Temperature: 18.4 – 24.7 °C

Relative Humidity: 46- 58 %

5.12 Test Equipment

Test Dates: March 29, 2024

Tester: Andreas Gillmeier

Asset No.	Type of Equipment	Model	Serial No.	Manufacturer	Cal Date	Cal Due Date
Conducted Testing						
2003	Signal Analyzer	N9030B	MY61330812	Keysight	01/29/2024	01/29/2025
-	Test Software	Radio Test Software	v.23	SGS Taiwan	N/A	-
2036	Temp/Humidity Data Logger	GSP-8	CMA231100002	Elitech	05/24/2023	

5.13 Test Data

UNII1

Mode	Frequency (MHz)	Power Level	Data Rate (Mbps)	Duty Cycle Correction (dB)	Power Spectral Density (dBm/MHz) (including Duty Cycle Correction)		Verdict
					Both Antennas Combined	Limit	
802.11a NOHT	5180	15	18	0.22	8.60	11	Pass
	5200	15	18	0.22	9.10	11	Pass
	5240	15	9	0.11	8.27	11	Pass
802.11 n20	5180	15	mcs0	0.00	8.41	11	Pass
	5200	15	mcs0	0.00	8.43	11	Pass
	5240	15	mcs0	0.00	8.48	11	Pass
802.11 n40	5190	13	mcs8	0.30	1.04	11	Pass
	5230	13	mcs2	0.41	3.54	11	Pass
802.11 ac20	5180	15	mcs3	0.52	7.03	11	Pass
	5200	15	mcs0	0.16	6.75	11	Pass
	5240	15	mcs0	0.15	6.53	11	Pass
802.11 ac40	5190	13	mcs0	0.30	1.12	11	Pass
	5230	13	mcs0	0.28	1.02	11	Pass
802.11 ac80	5210	13	mcs0	0.57	-1.61	11	Pass

Mode	Frequency (MHz)	Power Level	Data Rate (Mbps)	Duty Cycle Correction (dB)	Power Spectral Density (dBm/MHz) (including Duty Cycle Correction)		Verdict
					Both Antennas Combined	Limit	
802.11a NOHT	5260	15	6	0.00	8.32	11	Pass
	5280	15	9	0.11	7.865	11	Pass
	5320	15	6	0.00	7.62	11	Pass
802.11 n20	5260	15	mcs0	0.00	8.6	11	Pass
	5280	15	mcs9	0.30	5.779	11	Pass
	5320	15	mcs0	0.00	7.994	11	Pass
802.11 n40	5270	13	mcs1	0.31	2.956	11	Pass
	5310	13	mcs1	0.31	2.11	11	Pass
802.11 ac20	5260	15	mcs0	0.15	6.422	11	Pass
	5280	15	mcs0	0.15	6.413	11	Pass
	5320	15	mcs0	0.15	5.121	11	Pass
802.11 ac40	5270	13	mcs0	0.28	0.589	11	Pass
	5310	13	mcs0	0.30	-0.095	11	Pass
802.11 ac80	5290	13	mcs0	0.57	-1.84	11	Pass

UNII2c

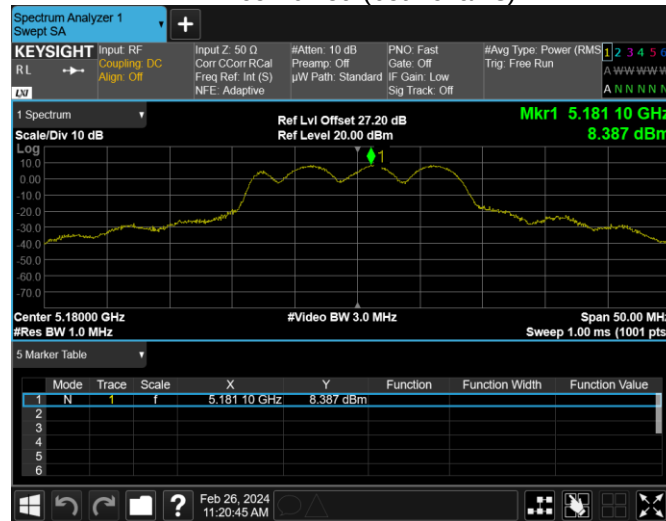
Mode	Frequency (MHz)	Power Level	Data Rate (Mbps)	Duty Cycle Correction (dB)	Power Spectral Density (dBm/MHz) (including Duty Cycle Correction)		Verdict
					Both Antennas Combined	Limit	
802.11a NOHT	5500	15	18	0.22	7.96	11	Pass
	5600	15	9	0.11	6.82	11	Pass
	5700	15	9	0.11	7.33	11	Pass
802.11 n20	5500	13	mcs0	0.00	5.84	11	Pass
	5600	13	mcs0	0.00	4.70	11	Pass
	5700	13	mcs8	0.16	2.86	11	Pass
802.11 n40	5510	13	mcs8	0.30	0.30	11	Pass
	5590	13	mcs1	0.31	2.27	11	Pass
802.11 ac20	5500	13	mcs0	0.16	3.67	11	Pass
	5600	13	mcs0	0.16	2.85	11	Pass
	5700	13	mcs0	0.16	3.05	11	Pass
802.11 ac40	5510	13	mcs0	0.30	0.52	11	Pass
	5590	13	mcs0	0.28	-0.41	11	Pass
	5670	13	mcs0	0.30	-0.05	11	Pass
802.11 ac80	5530	13	mcs0	0.57	-2.02	11	Pass
	5610	13	mcs0	0.57	-2.98	11	Pass

UNII3

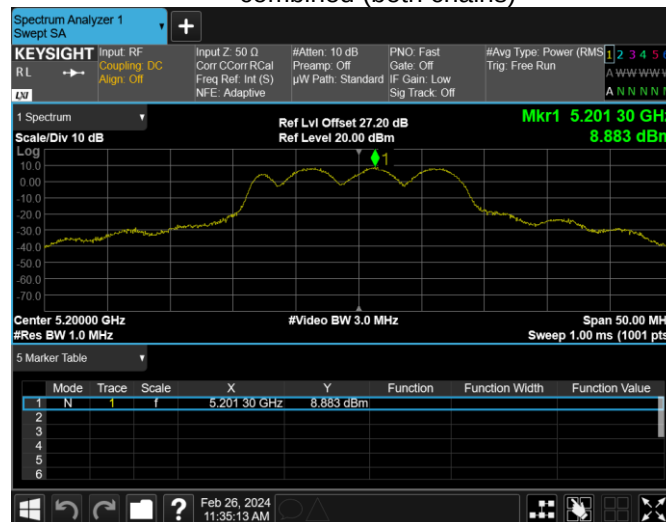
Mode	Fre- quency (MHz)	Power Level	Data Rate (Mbps) / Modulation	Duty Cycle Correction (dB)	Power Spectral Density (including Duty Cycle Correction)				Verdict
					Both Antennas Combined (dBm/ 300kHz)	Correction from dBm/300kHz to dBm/500kHz	Both Antennas Combined (dBm/300kHz)	Limit	
802.11a NOHT	5745	15	6	0.00	0.094	2.218	2.312	30	Pass
	5785	15	6	0.00	-0.804	2.218	1.414	30	Pass
	5825	15	6	0.00	-1.469	2.218	0.749	30	Pass
802.11 n20	5745	15	mcs0	0.00	-1.087	2.218	1.131	30	Pass
	5785	15	mcs0	0.00	-1.054	2.218	1.164	30	Pass
	5825	15	mcs0	0.00	-1.349	2.218	0.869	30	Pass
802.11 n40	5755	15	mcs0	0.16	-4.376	2.218	-2.158	30	Pass
	5795	15	mcs0	0.16	-4.998	2.218	-2.780	30	Pass
802.11 ac20	5745	15	mcs0	0.15	-1.984	2.218	0.234	30	Pass
	5785	15	mcs0	0.15	-3.022	2.218	-0.804	30	Pass
	5825	15	mcs1	0.29	-2.734	2.218	-0.516	30	Pass
802.11 ac40	5755	15	mcs0	0.30	-5.622	2.218	-3.404	30	Pass
	5795	15	mcs0	0.30	-6.152	2.218	-3.934	30	Pass
802.11 ac80	5775	15	mcs0	0.57	-8.78	2.218	-6.562	30	Pass

UNIII1:

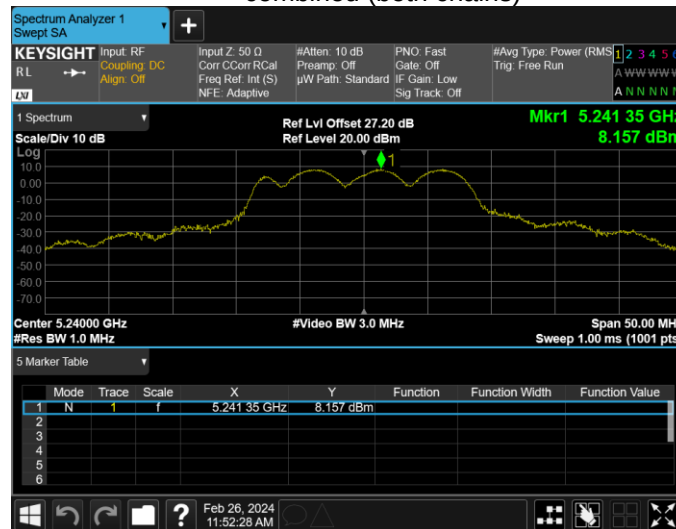
Low Channel – 802.11a NOHT, (5180MHz) combined (both chains)



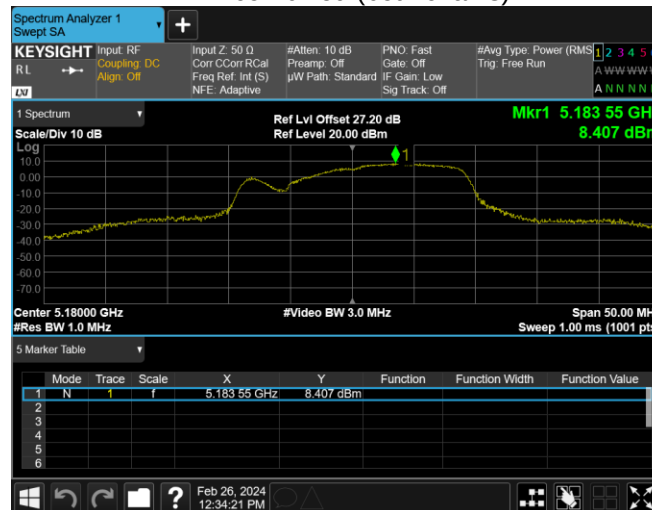
Mid Channel – 802.11a NOHT, (5200MHz) combined (both chains)



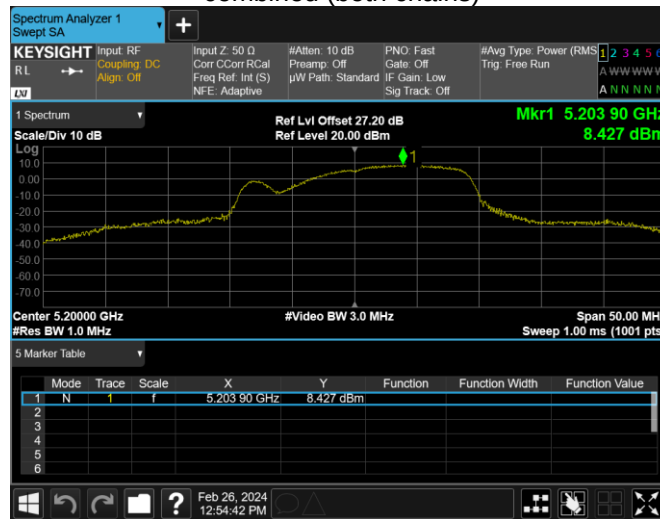
High Channel – 802.11a NOHT, (5240MHz) combined (both chains)



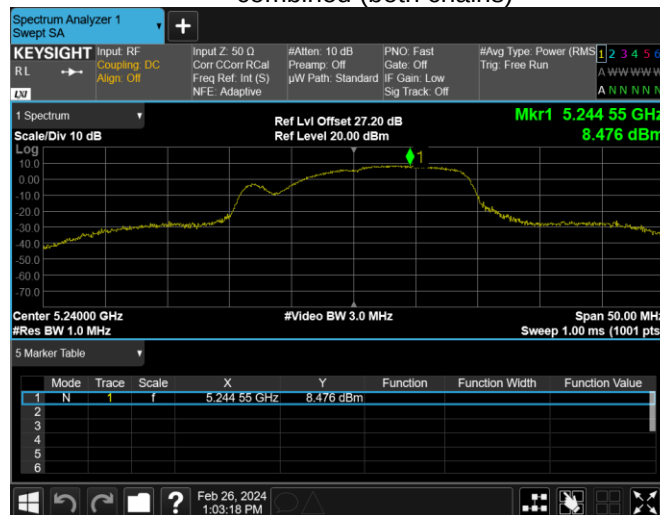
Low Channel – 802.11n20, (5180MHz) combined (both chains)



Mid Channel – 802.11n20, (5200MHz) combined (both chains)

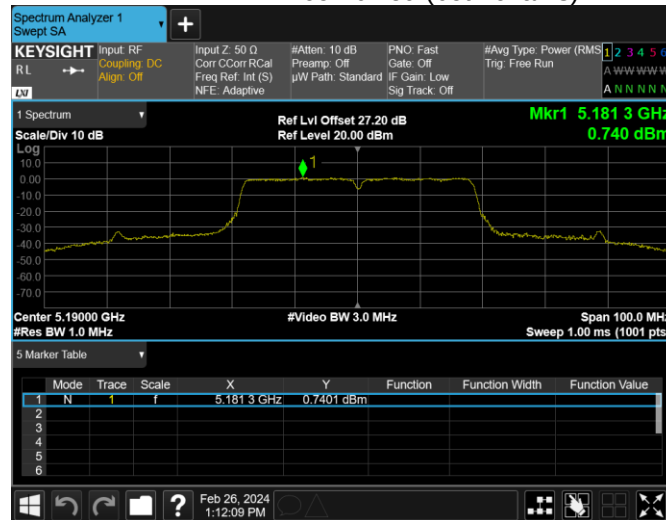


High Channel – 802.11n20, (5240MHz) combined (both chains)



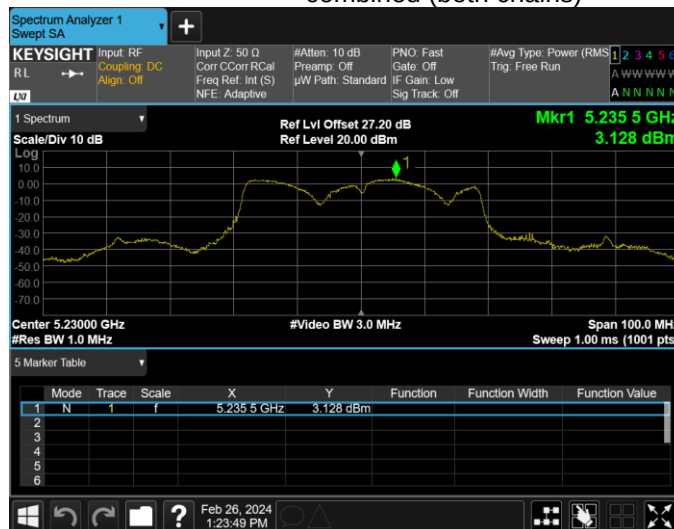
Low Channel – 802.11n40, (5190MHz)

combined (both chains)

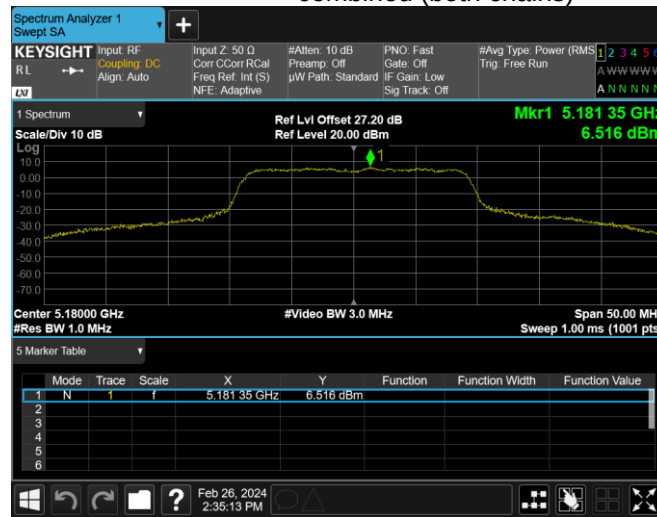


High Channel – 802.11n40, (5230MHz)

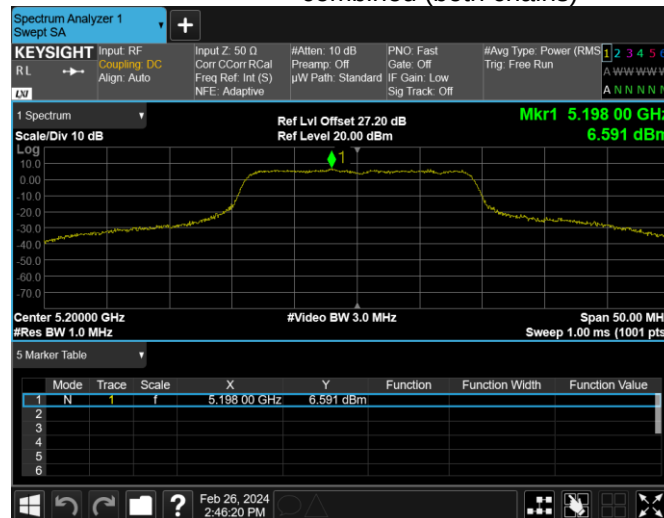
combined (both chains)



Low Channel – 802.11ac20, (5180MHz) combined (both chains)

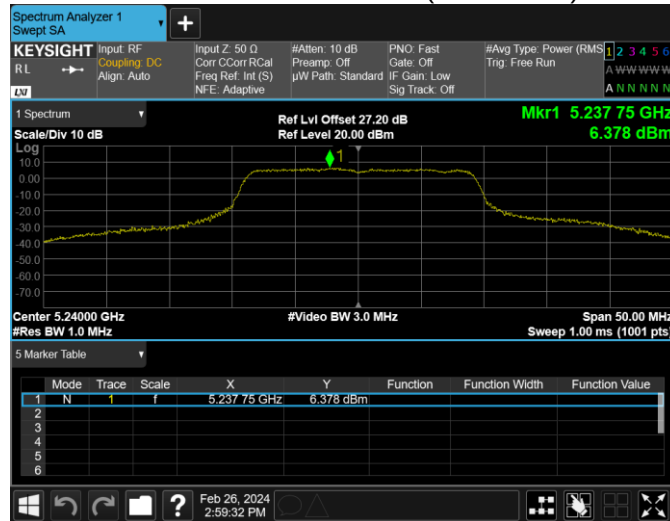


Mid Channel – 802.11ac20, (5200MHz) combined (both chains)



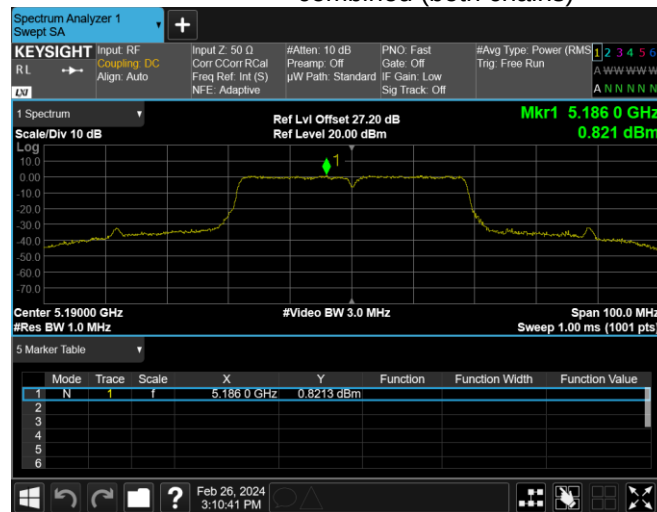
High Channel – 802.11ac20, (5240MHz)

combined (both chains)



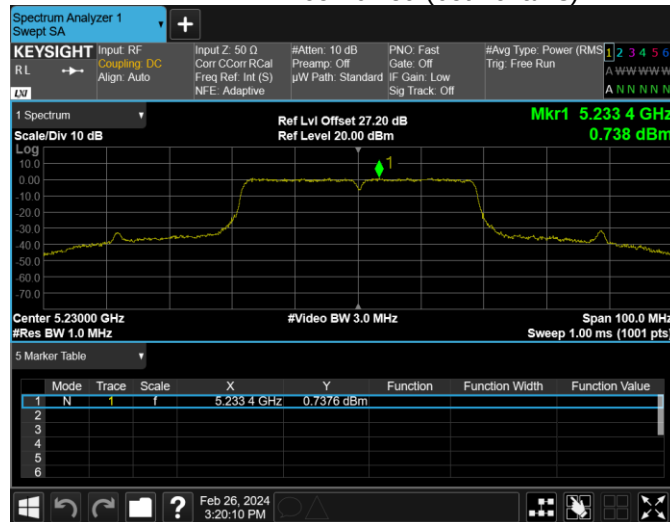
Low Channel – 802.11ac40, (5190MHz)

combined (both chains)



High Channel – 802.11ac40, (5230MHz)

combined (both chains)



Mid Channel – 802.11ac80, (5210MHz)

combined (both chains)

