FCC 47 CFR MPE REPORT

AV INDUSTRY

Stream S300 Xi

Model Number: Stream S300 Xi

FCC ID: 2AY2I-ELISS300XI

Applicant:	AV INDUSTRY
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Maximum Permissible Exposure

1. Applicable Standards

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

1.1. Limits for Maximum Permissible Exposure (MPE)

(a) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-10000			5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-10000			1.o	30

Note: f=frequency in MHz; *Plane-wave equivalent power density

1.2. MPE Calculation Method

$$E\ (V/m) = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } Pd\ (W/m^2) = \frac{E^2}{377}$$

E = Electric Field (V/m)

P = Peak RF output Power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained

2. Conducted Power Result

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)
GFSK	2402	3.54	2.259
	2441	4.18	2.618
	2480	5.50	3.548
π /4-DQPSK	2402	3.30	2.138
	2441	3.68	2.333
	2480	4.98	3.148
8-DPSK	2402	3.55	2.265
	2441	3.92	2.466
	2480	5.19	3.304
BLE 1M	2402	3.00	1.995
	2440	3.37	2.173
	2480	4.51	2.825
BLE 2M	2402	3.17	2.075
	2440	3.62	2.301
	2480	4.66	2.924
IEEE 802.11b	2412	13.19	20.845
	2437	13.57	22.751
	2462	14.00	25.119
IEEE 802.11g	2412	20.32	107.647
	2437	20.49	111.944
	2462	20.68	116.950
IEEE 802.11n HT20	2412	19.73	93.972
	2437	19.96	99.083
	2462	20.11	102.565
IEEE 802.11a	5180	11.85	15.311
	5200	11.22	13.243
	5240	11.30	13.490
	5260	11.74	14.928
	5300	11.83	15.241
	5320	11.70	14.791
	5500	12.93	19.634

	5580	12.23	16.711
	5700	11.76	14.997
	5745	12.91	19.543
	5785	12.88	19.409
	5825	13.08	20.324
IEEE 802.11n HT20	5180	11.75	14.962
	5200	11.46	13.996
	5240	11.54	14.256
	5260	11.48	14.060
	5300	11.60	14.454
	5320	11.27	13.397
	5500	12.54	17.947
	5580	12.03	15.959
	5700	11.54	14.256
	5745	12.70	18.621
	5785	12.58	18.113
	5825	12.75	18.836
IEEE 802.11ac VHT20	5180	11.68	14.723
	5200	11.53	14.223
	5240	11.60	14.454
	5260	11.40	13.804
	5300	11.62	14.521
	5320	11.48	14.060
	5500	12.67	18.493
	5580	12.02	15.922
	5700	11.42	13.868
	5745	12.66	18.450
	5785	12.56	18.030
	5825	12.84	19.231

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)
IEEE 802.11n HT40	5190	11.63	14.555
	5230	11.33	13.583
	5270	11.26	13.366
	5310	11.29	13.459
	5510	12.33	17.100
	5550	11.44	13.932
	5670	11.07	12.794
	5755	12.59	18.155
	5795	12.37	17.258
IEEE 802.11ac VHT40	5190	11.60	14.454
	5230	11.46	13.996
	5270	11.35	13.646
	5310	11.23	13.274
	5510	12.48	17.701
	5550	11.64	14.588
	5670	10.84	12.134
	5755	12.38	17.298
	5795	12.31	17.022
IEEE 802.11ac VHT80	5210	11.10	12.882
	5290	11.08	12.823
	5530	12.40	17.378
	5610	11.15	13.032
	5775	12.14	16.368

3. Calculated Result and Limit

Mode	Peak output power (dBm)	Target power（dBm）	MAX Target power（dBm）	Antenna gain		Power Density (S) (mW /cm2)	Limited of Power Density (S) (mW /cm2)	Test Result
				(dBi)	(Linear)			
2.4G Band								
GFSK	5.5	5±1	6	2.69	1.858	0.0015	1	Complies
π/4-DQPSK	4.98	4±1	5	2.69	1.858	0.0012	1	Complies
8-DPSK	5.19	5±1	6	2.69	1.858	0.0015	1	Complies
BLE 1M	4.51	4±1	5	2.69	1.858	0.0012	1	Complies
BLE 2M	4.66	4±1	5	2.69	1.858	0.0012	1	Complies
IEEE 802.11b	14	14±1	15	2.69	1.858	0.0117	1	Complies
IEEE 802.11g	20.68	20±1	21	2.69	1.858	0.0465	1	Complies
IEEE 802.11n HT20	20.11	20±1	21	2.69	1.858	0.0465	1	Complies
5G Band								
IEEE 802.11a	13.08	13±1	14	4.07	2.553	0.0128	1	Complies
IEEE 802.11n HT20	12.75	12±1	13	4.07	2.553	0.0101	1	Complies
IEEE802.11acVHT20	12.84	12±1	13	4.07	2.553	0.0101	1	Complies
IEEE 802.11n HT40	12.59	12±1	13	4.07	2.553	0.0101	1	Complies
IEEE802.11acVHT40	12.48	12±1	13	4.07	2.553	0.0101	1	Complies
IEEE802.11acVHT80	12.40	12±1	13	4.07	2.553	0.0101	1	Complies

Note: 2.4 and 5GHz bands are share an antenna, Cann't both the 2.4 and 5 GHz bands operate simultaneously.

End of Test Report