

MPE Calculation

Model Name : **SP87**
FCC ID : **S7A-SP87**

Device Category : **Portable device**
Separation distance : **36.5 mm**

KDB 447498 - 4.3.1 a)
For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:
[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] $\cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR, where
- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

Modulation		Frequency (MHz)	Min. Test separation distance	Measured Maximum Average power	Tune-up tolerance	Max. Power with tune-up tolerance		Standalone SAR Test exclusion thresholds for 100MHz to 6GHz at test separation distance ≤ 50 mm	Limit	Result
			(mm)	(dBm)	(dB)	(dBm)	(mW)			
2.4GHz	GFSK	2402	36.50	15.97	± 1.00	16.97	49.77	2.1135	3.00	PASS
		2441		16.88		17.88	61.38	2.6272	3.00	PASS
		2480		15.99		16.99	50.00	2.1574	3.00	PASS
	$\pi/4$ DQPSK	2402	36.50	9.80	± 1.00	10.80	12.02	0.5105	3.00	PASS
		2441		11.78		12.78	18.97	0.8119	3.00	PASS
		2480		10.95		11.95	15.67	0.6760	3.00	PASS
	8DPSK	2402	36.50	10.75	± 1.00	11.75	14.96	0.6353	3.00	PASS
		2441		12.76		13.76	23.77	1.0174	3.00	PASS
		2480		11.71		12.71	18.66	0.8053	3.00	PASS
	BT LE	2402	36.50	3.85	± 1.00	4.85	3.05	0.1297	3.00	PASS
		2442		5.92		6.92	4.92	0.2107	3.00	PASS
		2480		4.90		5.90	3.89	0.1679	3.00	PASS
	MESH	2410	36.50	16.65	± 1.00	17.65	58.21	2.4758	3.00	PASS
		2445		16.52		17.52	56.49	2.4202	3.00	PASS
		2475		15.89		16.89	48.87	2.1062	3.00	PASS
	802.11b	2412	36.50	10.33	± 1.00	11.33	13.58	0.5780	3.00	PASS
		2442		11.22		12.22	16.67	0.7138	3.00	PASS
		2472		12.54		13.54	22.59	0.9733	3.00	PASS
	802.11g	2412	36.50	10.86	± 1.00	11.86	15.35	0.6530	3.00	PASS
		2442		11.64		12.64	18.37	0.7863	3.00	PASS
		2472		12.94		13.94	24.77	1.0672	3.00	PASS
	802.11n_HT 20	2412	36.50	10.17	± 1.00	11.17	13.09	0.5571	3.00	PASS
		2442		11.10		12.10	16.22	0.6944	3.00	PASS
		2472		12.40		13.40	21.88	0.9424	3.00	PASS

KDB 447498 - 4.3.2 b)
When an antenna qualifies for the standalone SAR test exclusion of 4.3.1 and also transmits simultaneously with other antennas, the standalone SAR value must be estimated according to the following to determine the simultaneous transmission SAR test exclusion criteria:
1) [(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] $\cdot [\sqrt{f(\text{GHz})/x}] \text{ W/kg}$, for test separation distances ≤ 50 mm;
where x = 7.5 for 1-g SAR and x = 18.75 for 10-g SAR.

Modulation	Frequency (MHz)	Min. Test separation distance	Max. Power with tune-up tolerance		Simultaneous transmission SAR Test exclusion thresholds for 100MHz to 6GHz at test separation distance ≤ 50 mm (x=7.5)	Limit	Result
		(mm)	(dBm)	(mW)			
Bluetooth	2480	36.50	17.88	61.38	0.8299	0.40	PASS
MESH	2475	36.50	17.65	58.21			
2.4GHz WLAN	2472	36.50	13.94	24.77			