

Annex G. NFC SAR test exclusion

G.1 F.1 Evaluation Exclusion and Test Reductions

The SAR Test Exclusion Threshold in FCC OET KDB 447498 D01 v06 can be applied to determine SAR test exclusion for NFC device. (ISED ID: 4441A-XRAV1)

From section 4.3.1 c): For frequencies below 100 MHz, the following may be considered for SAR test exclusion

SAR Test Exclusion Thresholds for < 100 MHz and < 200 mm Approximate SAR test exclusion power thresholds at selected frequencies and test separation distances are illustrated in the following table.

MHz	< 50	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	mm
100	237	474	481	487	494	501	507	514	521	527	534	541	547	554	561	567	mW
50	308	617	625	634	643	651	660	669	677	686	695	703	712	721	729	738	
10	474	948	961	975	988	1001	1015	1028	1041	1055	1068	1081	1095	1108	1121	1135	
1	711	1422	1442	1462	1482	1502	1522	1542	1562	1582	1602	1622	1642	1662	1682	1702	
0.1	948	1896	1923	1949	1976	2003	2029	2056	2083	2109	2136	2163	2189	2216	2243	2269	
0.05	1019	2039	2067	2096	2125	2153	2182	2211	2239	2268	2297	2325	2354	2383	2411	2440	
0.01	1185	2370	2403	2437	2470	2503	2537	2570	2603	2637	2670	2703	2737	2770	2803	2837	

The highest output power for NFC and considering antenna gain of 0.5dB is 0.01mW which is smaller than all the values of the table, SAR is not required for all positions

$$\text{NFC Power} = 75.6 \text{ dBuV/m @ 3m} = 0.0075\text{mW} \sim 0.01\text{mW}$$

According to FCC OET KDB 447498 D01 section 4.3.2 b) When an antenna qualifies for the standalone SAR test exclusion of 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:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})/x}] \text{ W/kg}$, for test separation distances $\leq 50 \text{ mm}$; where $x = 7.5$ for 1-g SAR and $x = 18.75$ for 10-g SAR.

Where Max Power = 0.01mW

Antenna Gain = 0.5 dB

Min test separation distance = 3mm (measured)

Estimated SAR value = 0.00051

End of the report

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