P68 Terminal - RF Exposure evaluation

Contactless interface (13.56MHz Radio port) V0.1

The Following device was evaluated against the limits for general population uncontrolled exposure specified in FCC 2.1093 according to SAR evaluation exclusion requirements specified in FCC regulations as listed KDB 447498.

	Manufacturer	Payter B.V.
	Identification	P68.x.xx (all models)

4.3 GENERAL SAR test exclusion guidance

Device operating below 100MHz and <= 50mm
SAR Test Exclusion Threshold calculations

A) 3 for 1-g SAR 474.34 mW
7.5 for 10-g SAR 1185.85 mW

B) 474.34 mW for 1-g SAR
1185.85 mW for 10-g SAR

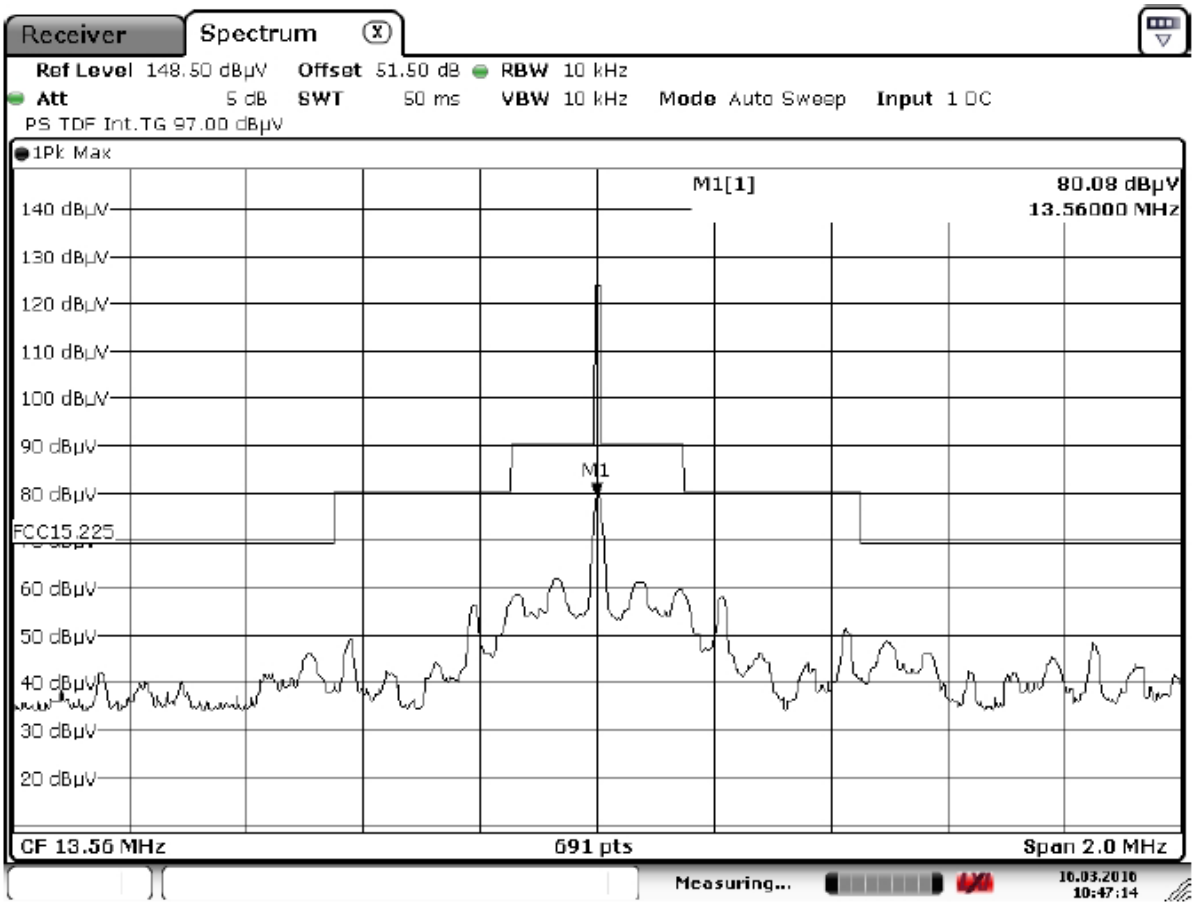
C)

P_{max}	=	**442,97**	mW	1-g SAR
P_{max}	=	1107,43	mW	10-g SAR

@13,56 MHz

$$P_{max} = \left\{\left[\left(\frac{NT}{\sqrt{F_{GHz}}}\right) * TSD\right] + \left[(TSD - 50) * \left(\frac{F_{MHz}}{150}\right)\right]\right\} * \left(1 + \log\left(\frac{100}{F_{MHz}}\right)\right) * \frac{1}{2}$$

P_{max}	=	Maximum Power of Channel(mW)
NT	=	Numeric Threshold (3.0 - 1-g SAR, 7.5 - 10g SAR)
TSD	=	Minimum Test Separation Distance, minimum value is 50(mm)
F_{GHz}	=	Frequency in GHz
F_{MHz}	=	Frequency in MHz



The Peak Field Strength(E) measured@3m distance (80.1dBµV/m)

r =	3	m			
E =	80.1	dBuV/m	->	0.010116	V/m
Z_0 =	377	Ω			
Pd =	2.714E-07	W/m2			
Peirp =	30.7	µW			

$$P_d = \frac{P_{eirp}}{4\pi r^2} = \frac{E^2}{Z_0}$$

$$P_{eirp} = \frac{4\pi r^2 E^2}{Z_0}$$

The calculated output power 30.7µW(eirp) is less than the SAR Exclusion Threshold of 442mW, at 50mm test separation distance, for general population and uncontrolled exposure. Therefore, standalone SAR evaluation for general population exposure conditions by measurement or numerical simulation is not required.