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Maximum Permissible Exposure Evaluation

FCC ID: 2AITMSV-1082X

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) Radiation as specified in §1.1307(b)

EUT Specification

Product Name:	Smart Pass Management Module
Trade Mark:	N/A
Model/Type reference:	SV-1082X
Listed Model(s):	N/A
Frequency band (Operating)	☐BT: 2.402GHz ~ 2.480GHz ☐BLE: 2.402GHz ~ 2.480GHz ☒WLAN: 2.412GHz ~ 2.462GHz ☐RLAN: 5.180GHz ~ 5.240GHz ☐RLAN: 5.745GHz ~ 5.825GHz ☐Others
Device category	☐Portable (<20cm separation) ☐Mobile (>20cm separation) ☒fixed (>20cm separation) ☐Others ___
Exposure classification	☐Occupational/Controlled exposure (S=5mW/cm2) ☒General Population/Uncontrolled exposure (S=1mW/cm2)
Antenna diversity	☐Single antenna ☒Multiple antennas ☐Tx diversity ☐Rx diversity ☐Tx/Rx diversity
Antenna gain (Max)	-1dBi
Evaluation applied	☒MPE Evaluation ☐SAR Evaluation

Limits for Maximum Permissible Exposure (MPE)

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density(mW/cm^2)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

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Friis transmission formula: Pd=(Pout*G)\(4*pi*R^2)
Where
Pd= Power density in mW/cm^2
Pout= output power to antenna in mW
G= gain of antenna in linear scale
Pi= 3.1416
R= distance between observation point and center of the radiator in cm
Pd the limit of MPE 1mW/cm^2. If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

Measurement Result

Type	Channel frequency (MHz)	Max. Measured Power (dBm)	Tune up tolerance (dBm)	Max. Tune up Power (dBm)	Antenna Gain (dBi)	Power density at 20cm (mW/cm^2)	Power density Limits (mW/cm^2)
802.11 b	2412	19.06	19±1	20	-1	0.01580	1
	2437	19.18	19±1	20	-1	0.01580	1
	2462	19.09	19±1	20	-1	0.01580	1
802.11g	2412	23.02	23±1	24	-1	0.03970	1
	2437	23.11	23±1	24	-1	0.03970	1
	2462	23.16	23±1	24	-1	0.03970	1
802.11n(HT20)	2412	22.34	22±1	23	-1	0.03153	1
	2437	22.51	22±1	23	-1	0.03153	1
	2462	22.37	22±1	23	-1	0.03153	1

13.56MHz: 52.10dBuV/m@ 3m
@20cm=@3m+40*$\log^{(3/0.02)}$=139.14dBuV/m
For 13.56MHz: 139.14dBuV/m=9.06V/m< 60.77V/m.

13.56MHz and WiFi modules can simultaneous transmitting, so the maximum rate of MPE is 9.06/60.77+0.03153/1.0 =0.18<=1.0. according to the KDB447498 section 7.2 determine the device is exclusion from SAR test.

Note
For a more detailed features description, please refer to the RF Test Report.

**************************THE END**************************