

RF EXPOSURE EVALUATION

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)

FCC ID: 2AXPI-TX-AH-R900ATR

EUT Specification

EUT	802.11ah WIFI module
Model Number	TX-AH-R900ATR
FCC ID	2AXPI-TX-AH-R900ATR
Antenna gain (Max)	0 dBi
Operation Frequency	903.5-926.5MHz
Input Rating	DC 5V
Classification Per Stipulated Test Standard	§15.247(i), §2.1093
Modulation	OFDM
Max. output power	26.25 dBm(0.421697 W)

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

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = Power density in mW/cm², P_{out} =output power to antenna in Mw

G = gain of antenna in linear scale, π =3.1416

R = distance between observation point and center of the radiator in cm

P_d the limit of MPE, 1mW/cm². 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

Operation Mode	Channel Number	Channel Frequency (MHz)	Measurement Level (dBm)	Limit (dBm)	Verdict
802.11ah 1M	1	903.5	26.25	30	PASS
	12	914.5	26.03	30	PASS
	24	926.5	25.98	30	PASS
802.11ah 2M	1	905	26.02	30	PASS
	6	915	25.96	30	PASS
	11	925	25.96	30	PASS
802.11ah 4M	1	906	26.13	30	PASS
	3	914	26.07	30	PASS
	6	926	25.98	30	PASS
802.11ah 8M	1	908	25.95	30	PASS
	2	916	26.03	30	PASS
	3	924	26.08	30	PASS

Operating Mode	Test Channel	Tune up tolerance (dBm)	Max tune up conducted power (dBm)	Output Peak power (mW)	Ant. Gain (dBi)	Ant. Gain (numeric)	Power density at 20cm (mW/cm ²)	Power density Limits (mW/cm ²)
802.11ah 1M	1	26 ± 1	27	501.187	0	1.000	0.099708	1
	12	26 ± 1	27	501.187	0	1.000	0.099708	1
	24	26 ± 1	27	501.187	0	1.000	0.099708	1
802.11ah 2M	1	26 ± 1	27	501.187	0	1.000	0.099708	1
	6	26 ± 1	27	501.187	0	1.000	0.099708	1
	11	26 ± 1	27	501.187	0	1.000	0.099708	1
802.11ah 4M	1	26 ± 1	27	501.187	0	1.000	0.099708	1
	3	26 ± 1	27	501.187	0	1.000	0.099708	1
	6	26 ± 1	27	501.187	0	1.000	0.099708	1
802.11ah 8M	1	26 ± 1	27	501.187	0	1.000	0.099708	1
	2	26 ± 1	27	501.187	0	1.000	0.099708	1
	3	26 ± 1	27	501.187	0	1.000	0.099708	1

Signature:

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Date: 2020-10-10