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Maximum Permissible Exposure Evaluation

FCC ID: 2ALYRHG-F09

IC: 30768-F09

EUT Specification

Product Name	Hula
Trade Mark	/
Model/Type reference:	HG-F09
Listed Model(s):	/
Frequency band (Operating)	WLAN: 2412MHz ~ 2462MHz RLAN: 5745MHz ~ 5825MHz
Device category	☐ Portable (<5mm separation) ☒ Mobile (>20cm separation) ☐ Fixed (>20cm separation) ☐ Others ____
Antenna diversity	☒ Single antenna ☐ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Antenna gain (Max)	WLAN Antenna gain: 3.41dBi RLAN Antenna gain: 2.31dBi
Evaluation applied	☒ MPE Evaluation ☐ SAR 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)
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	30
1500-100000	--	--	1	30

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

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

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antenna, through the calculation, We will know the distance where the MPE limit is reached.

RF exposure evaluation Limits for IC

RSS-102 Issue 6 Section 5.3.2

Table 7: RF field strength and power density limits for devices used by the general public (uncontrolled environment)

Frequency range (MHz)	Electric field (V _{RMS} /m)	Magnetic field (A _{RMS} /m)	Power density (W/m ²)	Reference period (minutes)
10-20	27.46	0.0728	2	6
20-48	$58.07 / f^{0.25}$	$0.1540 / f^{0.25}$	$8.944 / f^{0.5}$	6
48-300	22.06	0.05852	1.291	6
300-6000	$3.142 f^{0.3417}$	$0.008335 f^{0.3417}$	$0.02619 f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	$616000 / f^{1.2}$
150000-300000	$0.158 f^{0.5}$	$4.21 \times 10^{-4} f^{0.5}$	$6.67 \times 10^{-5} f$	$616000 / f^{1.2}$

Note: f is frequency in MHz.

FCC Measurement Result

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Tune up tolerance (dBm)	Max. Tune up Power (dBm)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)	Verdict
802.11b	2412	3.41	16.49	16 ± 1	17	0.02055	1.000	PASS
802.11g	2462	3.41	14.65	15 ± 1	16	0.01632	1.000	PASS
802.11n(HT20)	2412	3.41	14.18	14 ± 1	15	0.01296	1.000	PASS
802.11n(HT40)	2422	3.41	14.33	14 ± 1	15	0.01296	1.000	PASS
802.11a	5825	2.31	15.14	15 ± 1	16	0.01348	1.000	PASS

IC Measurement Result

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power E.I.R.P (dBm)	Maximum Power (dBm)	Tune up tolerance (dBm)	Max. Tune up Power (dBm)	Power Density (mW) 20cm	Limit (W/m ²)	Verdict
802.11b	2412	3.41	19.90	/	20 ± 1	21	125.89	5.35	PASS
802.11g	2462	3.41	18.06	/	18 ± 1	19	79.43	5.35	PASS
802.11n(HT20)	2412	3.41	17.59	/	18 ± 1	19	79.43	5.35	PASS
802.11n(HT40)	2422	3.41	17.74	/	18 ± 1	19	79.43	5.35	PASS
802.11a	5825	2.31	/	15.14	15 ± 1	16	67.76	9.71	PASS

Note:

1. For a more detailed features description, Please refer to the RF Test Report.
2. The WLAN and RLAN can't transmit simultaneously.

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

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