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Maximum Permissible Exposure Evaluation

FCC ID: 2A3ABVB1-LH3200W

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:	DLP Laser Projector
Trade Mark:	
Model/Type reference:	VB1-LH3200W
Listed Model(s):	VB1-LX3200, VB1-LX3201, VB1-LX3202, VB1-LX3203, VB1-LX3204, VB1-LX3120, VB1-LX3121, VB1-LX3122, VB1-LX3123, VB1-LX3124, VB1-LX3105, VB1-LX3106, VB1-LX3107, VB1-LX3108, VB1-LX3109, VB1-LX3230, VB1-LX3231, VB1-LX3232, VB1-LX3233, VB1-LX3234, VB1-LX3600, VB1-LX3601, VB1-LX3602, VB1-LX3603, VB1-LX3604, VB1-LX3520, VB1-LX3521, VB1-LX3522, VB1-LX3523, VB1-LX3524, VB1-LX3505, VB1-LX3506, VB1-LX3507, VB1-LX3508, VB1-LX3509, VB1-LX3630, VB1-LX3631, VB1-LX3632, VB1-LX3633, VB1-LX3634, VB1-LX3200W, VB1-LX3201W, VB1-LX3202W, VB1-LX3203W, VB1-LX3204W, VB1-LX3120W, VB1-LX3121W, VB1-LX3122W, VB1-LX3123W, VB1-LX3124W, VB1-LX3105W, VB1-LX3106W, VB1-LX3107W, VB1-LX3108W, VB1-LX3109W, VB1-LX3230W, VB1-LX3231W, VB1-LX3232W, VB1-LX3233W, VB1-LX3234W, VB1-LX3600W, VB1-LX3601W, VB1-LX3602W, VB1-LX3603W, VB1-LX3604W, VB1-LX3520W, VB1-LX3521W, VB1-LX3522W, VB1-LX3523W, VB1-LX3524W, VB1-LX3505W, VB1-LX3506W, VB1-LX3507W, VB1-LX3508W, VB1-LX3509W, VB1-LX3630W, VB1-LX3631W, VB1-LX3632W, VB1-LX3633W, VB1-LX3634W, VB1-LX3200A, VB1-LX3201A, VB1-LX3202A, VB1-LX3203A, VB1-LX3204A, VB1-LX3120A, VB1-LX3121A, VB1-LX3122A, VB1-LX3123A, VB1-LX3124A, VB1-LX3105A, VB1-LX3106A, VB1-LX3107A, VB1-LX3108A, VB1-LX3109A, VB1-LX3230A, VB1-LX3231A, VB1-LX3232A, VB1-LX3233A, VB1-LX3234A, VB1-LX3600A, VB1-LX3601A, VB1-LX3602A, VB1-LX3603A, VB1-LX3604A, VB1-LX3520A, VB1-LX3521A, VB1-LX3522A, VB1-LX3523A, VB1-LX3524A, VB1-LX3505A, VB1-LX3506A, VB1-LX3507A, VB1-LX3508A, VB1-LX3509A, VB1-LX3630A, VB1-LX3631A, VB1-LX3632A, VB1-LX3633A, VB1-LX3634A, VB1-LW3200, VB1-LW3201, VB1-LW3202, VB1-LW3203, VB1-LW3204, VB1-LW3120, VB1-LW3121, VB1-LW3122, VB1-LW3123, VB1-LW3124, VB1-LW3105, VB1-LW3106, VB1-LW3107, VB1-LW3108, VB1-LW3109, VB1-LW3230, VB1-LW3231, VB1-LW3232, VB1-LW3233, VB1-LW3234, VB1-LW3600, VB1-LW3601, VB1-LW3602, VB1-LW3603, VB1-LW3604, VB1-LW3520, VB1-LW3521, VB1-LW3522, VB1-LW3523, VB1-LW3524, VB1-LW3505, VB1-LW3506, VB1-LW3507, VB1-LW3508, VB1-LW3509, VB1-LW3630, VB1-LW3631, VB1-LW3632, VB1-LW3633, VB1-LW3634, VB1-LW3200W, VB1-LW3201W, VB1-LW3202W, VB1-LW3203W, VB1-LW3204W, VB1-LW3120W, VB1-LW3121W, VB1-LW3122W, VB1-LW3123W, VB1-LW3124W, VB1-LW3105W, VB1-LW3106W, VB1-LW3107W, VB1-LW3108W, VB1-LW3109W, VB1-LW3230W, VB1-LW3231W, VB1-LW3232W, VB1-LW3233W, VB1-LW3234W, VB1-LW3600W, VB1-LW3601W, VB1-LW3602W, VB1-LW3603W, VB1-LW3604W, VB1-LW3520W, VB1-LW3521W, VB1-LW3522W, VB1-LW3523W, VB1-LW3524W, VB1-LW3505W, VB1-LW3506W, VB1-LW3507W, VB1-LW3508W, VB1-LW3509W, VB1-LW3630W, VB1-LW3631W, VB1-LW3632W, VB1-LW3633W, VB1-LW3634W,

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	VB1-LW3200A, VB1-LW3201A, VB1-LW3202A, VB1-LW3203A, VB1-LW3204A, VB1-LW3120A, VB1-LW3121A, VB1-LW3122A, VB1-LW3123A, VB1-LW3124A, VB1-LW3105A, VB1-LW3106A, VB1-LW3107A, VB1-LW3108A, VB1-LW3109A, VB1-LW3230A, VB1-LW3231A, VB1-LW3232A, VB1-LW3233A, VB1-LW3234A, VB1-LW3600A, VB1-LW3601A, VB1-LW3602A, VB1-LW3603A, VB1-LW3604A, VB1-LW3520A, VB1-LW3521A, VB1-LW3522A, VB1-LW3523A, VB1-LW3524A, VB1-LW3505A, VB1-LW3506A, VB1-LW3507A, VB1-LW3508A, VB1-LW3509A, VB1-LW3630A, VB1-LW3631A, VB1-LW3632A, VB1-LW3633A, VB1-LW3634A, VB1-LH3200, VB1-LH3201, VB1-LH3202, VB1-LH3203, VB1-LH3204, VB1-LH3120, VB1-LH3121, VB1-LH3122, VB1-LH3123, VB1-LH3124, VB1-LH3105, VB1-LH3106, VB1-LH3107, VB1-LH3108, VB1-LH3109, VB1-LH3230, VB1-LH3231, VB1-LH3232, VB1-LH3233, VB1-LH3234, VB1-LH3201W, VB1-LH3202W, VB1-LH3203W, VB1-LH3204W, VB1-LH3120W, VB1-LH3121W, VB1-LH3122W, VB1-LH3123W, VB1-LH3124W, VB1-LH3105W, VB1-LH3106W, VB1-LH3107W, VB1-LH3108W, VB1-LH3109W, VB1-LH3230W, VB1-LH3231W, VB1-LH3232W, VB1-LH3233W, VB1-LH3234W, VB1-LH3200A, VB1-LH3201A, VB1-LH3202A, VB1-LH3203A, VB1-LH3204A, VB1-LH3120A, VB1-LH3121A, VB1-LH3122A, VB1-LH3123A, VB1-LH3124A, VB1-LH3105A, VB1-LH3106A, VB1-LH3107A, VB1-LH3108A, VB1-LH3109A, VB1-LH3230A, VB1-LH3231A, VB1-LH3232A, VB1-LH3233A, VB1-LH3234A
Frequency band (Operating)	WLAN: 2.412GHz ~ 2.462GHz RLAN: 5.150GHz ~ 5.250GHz RLAN: 5.725GHz ~ 5.850GHz
Device category	☐ Portable (<5mm separation) ☐ Mobile (>20cm separation) ☒ Fixed (>20cm separation) ☐ Others
Exposure classification	☐ Occupational/Controlled exposure (S=5mW/cm ²) ☒ General Population/Uncontrolled exposure (S=1mW/cm ²)
Antenna diversity	☒ Single antenna ☐ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Antenna gain (Max)	2.4GHz WIFI: 2dBi 5GHz WIFI U-NII-1: 2dBi 5GHz WIFI U-NII-3: 2dBi
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

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.

Measurement Result

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Average Power (dBm)	Tune up tolerance (dBm)	Max. Tune up Power (dBm)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)
WLAN 802.11b	2412	2	18.91	/	19±1	20	0.03153	1.000
WLAN 802.11g	2412	2	17.47	/	17±1	18	0.01989	1.000
WLAN 802.11n(HT20)	2412	2	16.58	/	16±1	17	0.01580	1.000
WLAN 802.11n(HT40)	2422	2	16.73	/	16±1	17	0.01580	1.000
RLAN U-NII-1 802.11n(HT20)	5180	2	/	8.77	9±1	10	0.00315	1.000
RLAN U-NII-3 802.11ac(VHT20)	5745	2	/	9.43	9±1	10	0.00315	1.000

Note:

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

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