

## 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: 2ADFS-ELANBOX

### EUT Specification

EUT	EZCast Pro
<b>Frequency band (Operating)</b>	<input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz <input type="checkbox"/> WLAN: 5.745GHz ~ 5825GHz <input type="checkbox"/> Others
<b>Device category</b>	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others ____
<b>Exposure classification</b>	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm <sup>2</sup> ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> )
<b>Antenna diversity</b>	<input type="checkbox"/> Single antenna <input checked="" type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
<b>Max. output power</b>	18.48dBm (0.0705W)
<b>Antenna gain (Max)</b>	-0.5 dBi
<b>Evaluation applied</b>	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> 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 <sup>2</sup> )	Average Time
<b>(A) Limits for Occupational/Control Exposures</b>				
<b>300-1500</b>	--	--	<b>F/300</b>	<b>6</b>
<b>1500-100000</b>	--	--	<b>5</b>	<b>6</b>
<b>(B) Limits for General Population/Uncontrol Exposures</b>				
<b>300-1500</b>	--	--	<b>F/1500</b>	<b>6</b>
<b>1500-100000</b>	--	--	<b>1</b>	<b>30</b>

## Friis transmission formula: $P_d = \frac{P_{out} * G}{4 * \pi * R^2}$

Where

$P_d$  = Power density in mW/cm<sup>2</sup>

$P_{out}$  = 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

$P_d$  the limit of MPE, 1mW/cm<sup>2</sup>. 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

### ANT A:

Operating Mode	Channel Frequency (MHz)	Measured Power (dBm)	Tune up tolerance (dBm)	Max. Tune up Power (dBm)	Antenna Gain (dBi)	Power density at 20cm (mW/ cm <sup>2</sup> )	Power density Limits (mW/cm <sup>2</sup> )
802.11b	2412	14.79	14.79±1	15.79	-0.5	0.00673	1
	2437	14.43	14.43±1	15.43	-0.5	0.00619	1
	2462	13.74	13.74±1	14.74	-0.5	0.00528	1
802.11g	2412	14.02	14.02±1	15.02	-0.5	0.00563	1
	2437	14.75	14.75±1	15.75	-0.5	0.00666	1
	2462	12.27	12.27±1	13.27	-0.5	0.00376	1
802.11n (HT20)	2412	14.03	14.03±1	15.03	-0.5	0.00565	1
	2437	14.64	14.64±1	15.64	-0.5	0.00650	1
	2462	12.22	12.22±1	13.22	-0.5	0.00372	1
802.11n (HT40)	2422	13.17	13.17±1	14.17	-0.5	0.00463	1
	2437	13.32	13.32±1	14.32	-0.5	0.00479	1
	2452	11.77	11.77±1	12.77	-0.5	0.00335	1

**ANT B:**

Operating Mode	Channel Frequency (MHz)	Measured Power (dBm)	Tune up tolerance (dBm)	Max. Tune up Power (dBm)	Antenna Gain (dBi)	Power density at 20cm (mW/ cm <sup>2</sup> )	Power density Limits (mW/cm <sup>2</sup> )
802.11b	2412	15.37	15.37±1	16.37	-0.5	0.00769	1
	2437	15.61	15.61±1	16.61	-0.5	0.00812	1
	2462	15.77	15.77±1	16.77	-0.5	0.00843	1
802.11g	2412	14.93	14.93±1	15.93	-0.5	0.00695	1
	2437	16.31	16.31±1	17.31	-0.5	0.00954	1
	2462	14.52	14.52±1	15.52	-0.5	0.00632	1
802.11n (HT20)	2412	14.79	14.79±1	15.79	-0.5	0.00673	1
	2437	16.16	16.16±1	17.16	-0.5	0.00922	1
	2462	14.38	14.38±1	15.38	-0.5	0.00612	1
802.11n (HT40)	2422	14.31	14.31±1	15.31	-0.5	0.00602	1
	2437	14.73	14.73±1	15.73	-0.5	0.00663	1
	2452	13.56	13.56±1	14.56	-0.5	0.00507	1

Antenna A Gain= -0.5 dBi

Antenna B Gain= -0.5 dBi

Array Gain= 2.51 dBi=  $G_{ANT}+10*\log(N_{ANT})$ dBi

Operating Mode	Channel Frequency (MHz)	ANT A Power density at 20cm (mW/ cm <sup>2</sup> )	ANT B Power density at 20cm (mW/ cm <sup>2</sup> )	Power density at 20cm (mW/ cm <sup>2</sup> )	Power density Limits (mW/cm <sup>2</sup> )
802.11n (HT20)	2412	0.00565	0.00673	0.01238	1
	2437	0.00650	0.00922	0.01572	1
	2462	0.00372	0.00612	0.00984	1
802.11n (HT40)	2422	0.00463	0.00602	0.01065	1
	2437	0.00479	0.00663	0.01142	1
	2452	0.00335	0.00507	0.00842	1