

Maximum Permissible Exposure Evaluation

FCC ID: 2AV29-56406

1. Client Information

Applicant	:	Zhongshan Jesmay Electronics Co.,Ltd
Address	:	No.1 Industry District, Tan Zhou Town, Zhongshan City, Guangdong, China
Manufacturer	:	Zhongshan Jesmay Electronics Co.,Ltd
Address	:	No.1 Industry District, Tan Zhou Town, Zhongshan City, Guangdong, China

2. General Description of EUT

EUT Name	:	NVR	
Models No.	:	56406, N029, N039, 56405, 56409, 56410, MZ-N208F	
Brand Name	:	Joustory, JSLBTECH, JouSecu, JouJou, TMEZON, JouLINK, Maysly	
Product Description	:	Operation Frequency:	802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz
Power Rating	:	Adapter(R241-1202000U): Input: AC 100-240V, 50/60Hz, 0.8A Output: DC 12V, 2A	
Software Version	:	WNVR-WNIP2_20200420	
Hardware Version	:	Hi3536D_V125P	
Connecting I/O Port(S)	:	Please refer to the User's Manual	
Remark	:	the MPE report used the EUT(20200525-17).	

MPE Calculations

1. Antenna Gain:

Antenna	Brand	Type	2.4G Antenna Gain(dBi)
ANT. A(module#1)	N/A	Dipole Ant	5.0
ANT. B(module#1)	N/A	Dipole Ant	5.0
ANT. A(module#2)	N/A	FPC Ant	5.0
Note: For MIMO mode: Directional Gain=ANT. Gain+10*LOG(N _{ANT}) =8.01dBi 2.4G working with 802.11b/g/n(HT20/HT40) has MIMO mode. When the product is working, only one of the Wi Fi templates can run.			

2. EUT Operation Condition:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3. Exposure Evaluation:

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=(PG)/4\pi R^2$$

Where

S: power density

P: power input to the antenna

G: power gain of the antenna in the direction of interest relative to an isotropic radiator.

R: distance to the center of radiation of the antenna

4. Simultaneous transmission MPE Considerations

According to KDB447498 :All transmitters and antennas in the host must be either evaluated for MPE compliance, by measurement or computational modeling, or qualify for the standalone MPE test exclusion in section 7.1.Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0 .

This means that:

$$\sum \text{ of MPE ratios } \leq 1.0$$

5. Standalone MPE Evaluation:

[2.4GHz WLAN](Module1)

Mode	Channel	Frequency	Peak Conducted Output Power (dBm)		Tolerance \pm (dB)	Turn-up Power Tolerance (dB)	
			Ant.A	Ant.B		Ant.A	Ant.B
IEEE 802.11b	1	2412	13.148	13.427	1.0	13 \pm 1	13 \pm 1
	6	2437	12.844	13.096	1.0	13 \pm 1	13 \pm 1
	11	2462	12.185	13.148	1.0	12 \pm 1	12 \pm 1
IEEE 802.11g	1	2412	12.521	13.019	1.0	12 \pm 1	13 \pm 1
	6	2437	12.692	12.951	1.0	12 \pm 1	13 \pm 1
	11	2462	13.256	11.304	1.0	13 \pm 1	11 \pm 1
IEEE 802.11n HT20	1	2412	13.346	12.695	1.0	13 \pm 1	12 \pm 1
	6	2437	13.178	12.824	1.0	13 \pm 1	13 \pm 1
	11	2462	12.824	12.421	1.0	13 \pm 1	12 \pm 1
IEEE 802.11n HT40	3	2422	13.838	12.937	1.0	13 \pm 1	13 \pm 1
	6	2437	13.720	12.999	1.0	13 \pm 1	13 \pm 1
	9	2452	13.142	12.960	1.0	13 \pm 1	13 \pm 1

[2.4GHz WLAN](Module2)

Worst Maximum MPE Result								
Mode	NT X	Freq. (MHz)	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/cm ²) [S]
802.11b	1	2412	16.430	16 \pm 1	17	5	20	0.0315
		2437	16.151	16 \pm 1	17	5	20	0.0315
		2462	15.843	15 \pm 1	16	5	20	0.0250
802.11g	1	2412	15.933	16 \pm 1	17	5	20	0.0315
		2437	16.112	16 \pm 1	17	5	20	0.0315
		2462	16.193	16 \pm 1	17	5	20	0.0315
802.11n (HT20)	1	2412	15.971	16 \pm 1	17	5	20	0.0315
		2437	16.052	16 \pm 1	17	5	20	0.0315
		2462	15.967	16 \pm 1	17	5	20	0.0315
802.11n (HT40)	1	2422	16.277	16 \pm 1	17	5	20	0.0315
		2437	16.146	16 \pm 1	17	5	20	0.0315
		2452	16.008	16 \pm 1	17	5	20	0.0315

Note:
 (1) N_{TX}= Number of Transmit Antennas
 (2) RF Output power specifies that Maximum Conducted Peak Output Power.

2.4GHz WLAN ANT. A(Module1)

Modulation Type	Output power (Turn-up Procedure)		Antenna Gain (dBi)	Antenna Gain (Numeric)	Distance (cm) [R]	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW					
IEEE 802.11b	13.148	20.64	5.0	3.162	20	0.0130	1.0000
IEEE 802.11g	13.256	21.16	5.0	3.162	20	0.0133	1.0000
IEEE 802.11n HT20	13.346	21.60	5.0	3.162	20	0.0136	1.0000
IEEE 802.11n HT40	13.838	24.19	5.0	3.162	20	0.0152	1.0000

2.4GHz WLAN ANT. B(Module1)

Modulation Type	Output power (Turn-up Procedure)		Antenna Gain (dBi)	Antenna Gain (Numeric)	Distance (cm) [R]	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW					
IEEE 802.11b	13.427	22.01	5.0	3.162	20	0.0138	1.0000
IEEE 802.11g	13.019	20.04	5.0	3.162	20	0.0126	1.0000
IEEE 802.11n HT20	12.824	19.16	5.0	3.162	20	0.0120	1.0000
IEEE 802.11n HT40	12.999	19.94	5.0	3.162	20	0.0125	1.0000

2.4GHz WLAN ANT. B(Module2)

Modulation Type	Output power (Turn-up Procedure)		Antenna Gain (dBi)	Antenna Gain (Numeric)	Distance (cm) [R]	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW					
IEEE 802.11b	16.430	43.95	5.0	3.162	20	0.0276	1.0000
IEEE 802.11g	16.193	41.62	5.0	3.162	20	0.0261	1.0000
IEEE 802.11n HT20	16.052	40.29	5.0	3.162	20	0.0253	1.0000
IEEE 802.11n HT40	16.277	42.43	5.0	3.162	20	0.0267	1.0000

Remark:

1. Output power (Average) including turn-up tolerance;
2. Output power was adjust to duty cycle at 100% if measured duty cycle less than 98%;
3. MPE evaluate distance is 25cm from user manual provide by manufacturer.

6. Summary simultaneous transmission information

Modulation Type(Module1)	Work Frequency Band	Transmit Antenna		Antenna A Antenna B Synchronization transmit
		Antenna A	Antenna B	
IEEE 802.11b	2.4GHz	Yes	Yes	Yes
IEEE 802.11g	2.4GHz	Yes	Yes	Yes
IEEE 802.11n HT20	2.4GHz	Yes	Yes	Yes
IEEE 802.11n HT40	2.4GHz	Yes	Yes	Yes

7. Summary simultaneous transmission results

Antenna A and Antenna B for 2.4GWLAN(Module1)

Modulation Type	MPE Antenna A (mW/cm ²)	MPE Antenna B (mW/cm ²)	ΣMPE ratios	Limit	Results
IEEE 802.11b	0.0130	0.0138	0.0268	1.0	PASS
IEEE 802.11g	0.0133	0.0126	0.0259	1.0	PASS
IEEE 802.11n HT20	0.0136	0.0120	0.0256	1.0	PASS
IEEE 802.11n HT40	0.0152	0.0125	0.0277	1.0	PASS

Antenna A for 2.4GWLAN(Module2)

Modulation Type	MPE Antenna A (mW/cm ²)	Limit	Results
IEEE 802.11b	0.0276	1.0	PASS
IEEE 802.11g	0.0261	1.0	PASS
IEEE 802.11n HT20	0.0253	1.0	PASS
IEEE 802.11n HT40	0.0267	1.0	PASS

Maximum Simultaneous transmission MPE Ratios for 2.4GHz WLAN

Maximum MPE ratio 2.4GWLAN Module#1(Antenna A+ Antenna B)	Maximum MPE ratio 2.4GWLAN Module#2(Antenna A)	Limit	Results
0.0277	0.0276	1.0	PASS

8. Conclusion:

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

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