

1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 General Information

Client Information

Applicant: Shenzhen 3Nod Digital Technology Co., Ltd.
Address of applicant: WORKSHOP 15,ZHONGFU ROAD,TANGXIAYONG
COMMUNITY,SONGGANG NEIGHBOURHOOD,BAOAN
DISTRICT,SHENZHEN CITY Guangdong 518105

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General Description of EUT:

Product Name: onn 5.1.2 Atmos Soundbar, Onn 5.1.2 Atmos Soundbar
Trade Name: /
Model No.: 100002634
Adding Model(s): /
Rated Voltage: AC120V/60Hz
FCC ID: 2AA3H-S6064

Technical Characteristics of EUT:	
Wi-Fi(5G)	
Support Standards:	802.11a, 802.11n(HT20) , 802.11n-HT40, 802.11ac-VHT20, 802.11ac-VHT40,802.11ac-VHT80
Frequency Range:	5150-5250MHz, 5725-5850MHz
RF Output Power:	5150-5250MHz:15.76dBm (Conducted) 5725-5850MHz:16.55dBm (Conducted)
Type of Modulation:	BPSK, QPSK,16QAM,64QAM, 256QAM
Data Rate:	6-54Mbps, up to 200Mbps
Type of Antenna:	Integral Antenna
Antenna Gain:	3.3dBi
Wi-Fi(2.4G)	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20) 2422-2452MHz for 802.11n(HT40)
RF Output Power:	20.7dBm (Conducted)
Type of Modulation:	DBPSK,BPSK,DQPSK,QPSK,16QAM,64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 300Mbps
Quantity of Channels:	11 for 802.11b/g/n(HT20); 7 for 802.11n(HT40)
Channel Separation:	5MHz

Type of Antenna:	Integral Antenna
Antenna Gain:	3.4dBi
BT	
Bluetooth Version:	V5.0 (BR/EDR/LE mode)
Frequency Range:	2402-2480MHz
Max. Field Strength:	100.4dBuV/m
Data Rate:	1Mbps, 2Mbps, 3Mbps
Modulation:	GFSK, Pi/4 DQPSK, 8DPSK
Quantity of Channels:	79/40
Channel Separation:	1MHz/2MHz
Type of Antenna:	Integral Antenna
Antenna Gain:	3.4dBi
SRD	
Frequency Range:	2403.35MHz-2477.35MHz
Max. Field Strength:	0.93dBm
Modulation:	GFSK
Antenna Type:	Integral Antenna
Antenna Gain:	0dBi

1.2 Standard Applicable

According to § 1.1307(b)(1) and KDB 447498 D01 General RF Exposure Guidance v06, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

(a) Limits for Occupational / Controlled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	F/300	6
1500-100000	/	/	5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-100000	/	/	1	30

Note: f = frequency in MHz: * = Plane-wave equivalent power density

1.3 MPE Calculation Method

$$S = (30 * P * G) / (377 * R^2)$$

S = power density (in appropriate units, e.g., mw/cm²)

P = power input to the antenna (in appropriate units, e.g., mw)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

1.4 MPE Calculation Result

Wi-Fi (5150-5250MHz)

Maximum Tune-Up output power: 16(dBm)

Maximum peak output power at antenna input terminal: 39.81(mW)

Prediction distance: >20(cm)

Prediction frequency: 5180 (MHz)

Antenna gain:3.3(dBi)

Directional gain (numeric gain): 2.14

The worst case is power density at prediction frequency at 20cm: 0.0169(mw/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

Wi-Fi (5725-5850MHz)

Maximum Tune-Up output power: 17(dBm)

Maximum peak output power at antenna input terminal: 50.12(mW)

Prediction distance: >20(cm)

Prediction frequency: 5745 (MHz)

Antenna gain:3.3(dBi)

Directional gain (numeric gain): 2.14

The worst case is power density at prediction frequency at 20cm: 0.0213(mw/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

Wi-Fi (2412-2462MHz)

Maximum Tune-Up output power: 21(dBm)

Maximum peak output power at antenna input terminal: 125.89(mW)

Prediction distance: >20(cm)

Prediction frequency: 2412 (MHz)

Antenna gain: 3.4(dBi)

Directional gain (numeric gain): 2.19

The worst case is power density at prediction frequency at 20cm: 0.0548(mw/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

SRD (2.4G)

Maximum Tune-Up output power: 1(dBm)

Maximum peak output power at antenna input terminal: 1.26(mW)

Prediction distance: >20(cm)

Prediction frequency: 2403.35 (MHz)

Antenna gain: 0(dBi)

Directional gain (numeric gain): 1

The worst case is power density at prediction frequency at 20cm: 0.0003(mw/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

Result: Pass