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Maximum Permissible Exposure Evaluation

FCC ID: WNA-GN256VH

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:	GPON ONT
Trade Mark:	/
Model/Type reference:	GN256VH
Listed Model(s):	WN37A, GN256V, GN256
Frequency band (Operating)	WLAN: 2412MHz ~ 2462MHz RLAN: 5150MHz ~ 5350MHz RLAN: 5470MHz ~ 5725MHz RLAN: 5725MHz ~ 5850MHz
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)	WLAN: ANT1: 5dBi, ANT2: 5dBi RLAN: ANT1: 5dBi, ANT2: 5dBi
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

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$P_i = 3.1416$

R= distance between observation point and center of the radiator in cm

P_d the limit of MPE $1\text{mW}/\text{cm}^2$. 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

Band	Frequency (MHz)	Directional 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(ANT1)	2412	5	/	17.82	17 ± 1	18	0.0397	1.000
RLAN U-NII-1 802.11n(HT20)	5180	8	/	20.1	20 ± 1	21	0.15803	1.000
RLAN U-NII-2A 802.11a(ANT2)	5320	5	/	19.85	19 ± 1	20	0.06291	1.000
RLAN U-NII-2C 802.11a(ANT2)	5580	5	/	19.76	19 ± 1	20	0.06291	1.000
RLAN U-NII-3 802.11n(HT20)	5825	8	/	23.6	23 ± 1	24	0.31531	1.000

Worst case					
Type	Frequency (MHz)	Antenna Gain (dBi)	Power density at 20cm (mW/cm^2)	WLAN+RLAN Power density at 20cm (mW/cm^2)	Power density Limits (mW/cm^2)
WLAN 802.11b(ANT1)	2412	5	0.0397	0.35501	1
RLAN U-NII-3 802.11n(HT20)	5825	8	0.31531		

Note:

- For a more detailed features description, Please refer to the RF Test Report.
- Antenna Gain=5 dBi, this EUT supports MIMO 2X2, any transmit signals are correlated with each other, so Directional gain = $G_{\text{Ant}} + 10\log(N)\text{dBi}$, that is Directional gain = $5 + 10\log(2)\text{dBi} = 8$.

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