VBGO-5G Product Specification

VBGO-5G is an industrial-grade 5.8G single-frequency Gigabit wireless relay and bridge product carefully developed by Houtian Network, which adopts digital-analogue temperature and complementary frequency stabilisation technology (TAFC), and the WiFi signal is more stable and not easy to fall off.

Hardware characteristics:

- Supports wide voltage DC12V-48V power supply, two-stage automatic overvoltage protection 58V;
- Supports 802.11ac, 802.11an, 802.11a, 802.11n and other WiFi transmission protocols;
- Built-in 7dBi directional antenna delivers extended transmission range and wider bandwidth, supporting multiple HD cameras. Tested point-to-point pairing transmission distance exceeds 2000 meters;
- Wireless transmission rate: 1800Mbps (5.8G);
- Transmit power: 19dBm/25dBm for 5.8G;
- Waterproof level: IP65;
- Built-in 4 high power FEMs, built-in intelligent auto start/stop cooling fan;
- Dual network port device, network port 1: supports POE output (network port 1 outputs 48V voltage, effective when powered by DC48V), network port 2: supports POE input (not both effective at the same time, POE output is a normal network port when POE input is used, and POE input/output is a normal network port when powered below DC48V voltage), and also supports lightning protection and anti-static protection;
- Adopts digital-mode temperature complementary frequency stabilisation technology, WiFi signal is more stable and not easy to drop;
- Built-in heat sink, the lower end of the shell with convection cooling holes, cooling more effective;
- Working environment temperature: -20℃ to 55℃;

Functional characteristics:

- Supports dipswitch pairing:
  Bit 4: ‘Pull Code Configuration Mode Bit’
  Bit 3: ‘Hide SSID bit’
  Bit 2: ‘Switch off local hotspot bit’
  Bit 1: ‘Switch MAC layer pass-through bit’
- supports both routing mode (fat AP) and bridge relay mode (thin AP);
- WiFi intelligent bridge relay for wireless to wired and wired to wireless functions;
- WiFi hotspot auto-reconnect, two hotspot matching modes (exact match authentication mode, SSID and password authentication mode);

- WiFi hotspot memory, maximum memory 100 hotspots;
- supports simultaneous connection of more than 20 WiFi terminal devices;
- Support SSA signal strength detection reporting function, to achieve WiFi mobile positioning;
- Hotspot connection parameters import and export function;
- Adopts VDNS virtual domain name configuration technology to alleviate user configuration difficulties;
- Adopts WEB management and can freely switch between Chinese and English configuration interface;
- Supports two bridge modes: IP layer pass-through and MAC layer pass-through to meet various bridge applications;
- IP layer pass-through (factory default), transparently transmits IP layer data, which can meet most bridge applications;
- MAC layer passthrough can transparently transmit MAC layer (link layer) and all data above MAC layer, including IP layer data, MAC layer passthrough can solve some special applications for MAC layer encryption, such as AP managed by AC, GoPro camera, Cisco AP, Hikvision surveillance system and so on.

One: Hardware Spec

Protocol Standards	IEEE 802.11ac、IEEE 802.11an、 IEEE 802.11a、 IEEE 802.11n;
Transmission rate	5.8GHz band: 1800Mbps;
External interface	One DC power supply port; Two 10/100/1000M adaptive gigabit network ports；
Button	Reset button (long press 5 seconds, then release, the device will automatically restore the factory)
LED	Status indication: Ethernet port status indicator (yellow); System indicator (green); Weak signal indicator (red); Moderate signal indicator (yellow); Strong signal indicator (blue); Very strong signal indicator (green); Connecting 48V/1.2A power supply, POE output status light (red);
Antenna	Built-in smart directional 5.8G antenna;
Product size	224*105*55mm（L x W x H）
Item weight	340.8g

Two: WiFi Related

Basic Function	1) Dial-up pairing function; 2) Transparent bridge (IP layer passthrough, MAC layer passthrough), TCP/UDP protocol; 3) Routing mode, support WiFi WAN access and WAN/LAN swap; 4) 5.8G WiFi modes available: 11AC, 11AN, 11A, 11N; 5) WiFi hotspot auto-reconnection, two hotspot matching modes (full match authentication mode, SSID and password authentication mode); 6) SSA signal strength detection reporting function;
Supported band	5.8G band channel: 36、40、44、48、52、56、60、64、100、104、108、112、116、120、124、128、132、136、140、149、153、157、161、165;
WiFi transmit power	5.8G: ordinary power: 19dBm; enhanced power: 25dBm;
Compliance acceptance sensitivity	-76dbm (5.8G)
Application Method	WiFi Repeater (WiFi signal repeater), can extend WiFi transmission distance; WiFi Bridge: IP layer transparent transmission, MAC layer transparent transmission WiFi access point (AP);
WiFi Security	64/128/WEP encryption; WPA-PSK/WPA2-PSK、WPA/WPA2 security mechanism;
System Function	Firmware Upgrade Reboot device Reset factory Account and password revise

Three: Electrical performance parameters

1.Power supply parameters

Supply Voltage Range	Input Power	Typical Power Supply	Over Voltage Protection
DC12V-48V	≥36W	12V/3A、48V/1.2A	58V

2. Working Electrical Performance Parameter Measurement Form (Environment Temperature: 27℃)

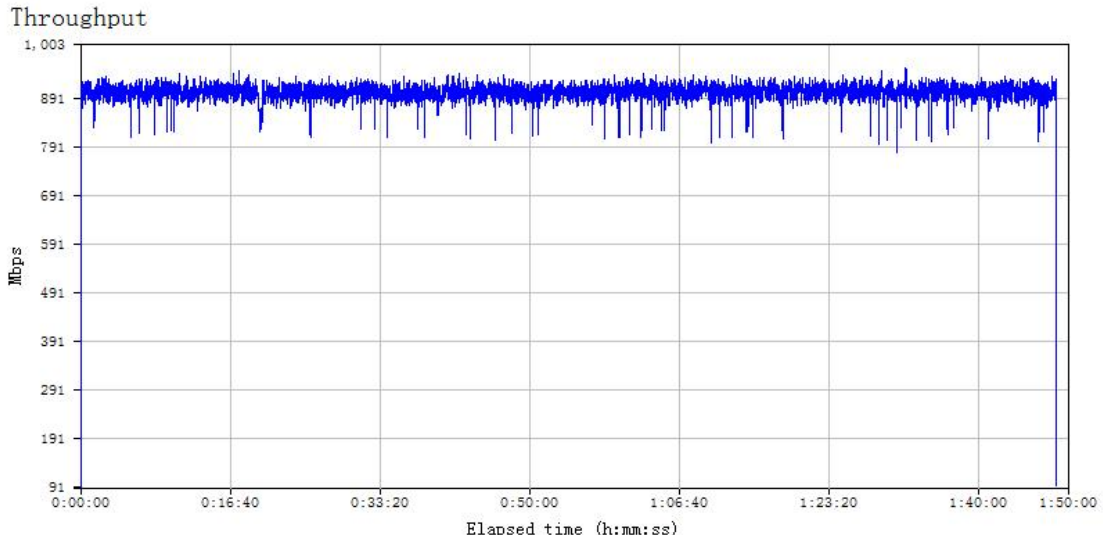
Work Band	Supply	Work Stage	Work Current	Main chip	Status Page

	Voltage		(mA)	temperature (℃)	Display Temperature
VBGO-5G	12V	Booting Up	160-600	27-48	30-50
		Standby	280-750	50-62	55-65
		Transfer Data	600-900	65-85	65-85
Note: PSE function requires 48V power supply voltage to use! If the POE output port (PSE) is connected to a non-POE network port (PD is an access network port), please use it with caution and ensure that the access network port is isolated from the ground, otherwise it may cause damage to the access device!					

Four: Network Throughput Test Report

Device	2pcs VBGO-5G, 2pcs Computers	
Test Tool	IxChariot Software	
Top relationship	PC1 ---->VBGO-5G(AP) ((((VBGO-5G(Client)---->PC2	
Test Result:		
Band	WiFi Protocol	Throughput (Mbps)
5.8G	B/G/N	928

5.8G (B/G/N) Throughput Test Fluctuation Chart:



Five: RF Test Report

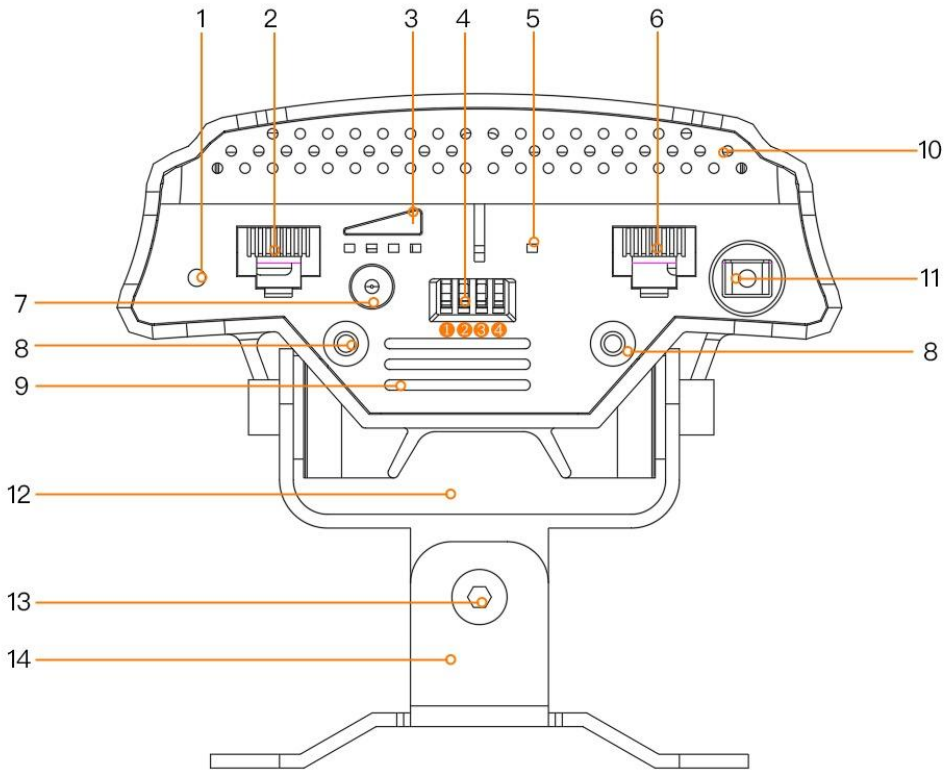
5.8G RF Parameters Form (Hardware Version: 7.0)

Channel(Band)	36 (5180M)	52 (5260M)	64 (5320M)	100 (5500M)	128 (5640M)	149 (5745M)	157 (5785M)
Standard power	19.0	19.0	19.2	18.6	19.0	18.3	18.6
EVM1	-36	-36	-36	-36	-36	-36	-36
Enhanced power	25.1	24.5	24.7	24.6	25.7	25.6	25.4
EVM1	-30	-30	-30	-30	-30	-39	-31
Standard power	18.5	18.5	19.3	18.9	19.1	19.4	19.2
EVM2	-36	-36	-36	-36	-36	-36	-36
Enhanced power	24.3	24.4	24.8	24.6	25.4	25.7	24.8
EVM2	-31	-30	-30	-30	-30	-30	-31
Standard power	19.2	18.9	19.7	19.3	19.3	19.4	19.4
EVM3	-36	-36	-36	-36	-36	-36	-36
Enhanced power	25.5	24.8	24.5	24.7	25.5	25.9	25.2
EVM3	-30	-30	-30	-30	-30	-39	-31
Standard power	19.1	19.2	19.2	18.6	19.0	18.3	18.6
EVM4	-36	-36	-36	-36	-36	-36	-36
Enhanced power	25.2	24.6	24.8	24.5	25.2	25.1	25.4
EVM4	-30	-30	-30	-30	-30	-39	-31

Sixth: Antenna Matching Test Report:

Standing Wave Ratio Parameters Form (Hardware Version: 7.0)					
Band / Antenna / Channel	（5170M）	(5320M)	(5460M)	(5620M)	(5790M)
ANT1	1.66	1.71	1.27	1.44	1.29
ANT2	1.55	1.95	1.45	1.44	1.39
ANT3	1.70	1.70	1.34	1.47	1.18
ANT4	1.58	1.39	1.20	1.77	1.29

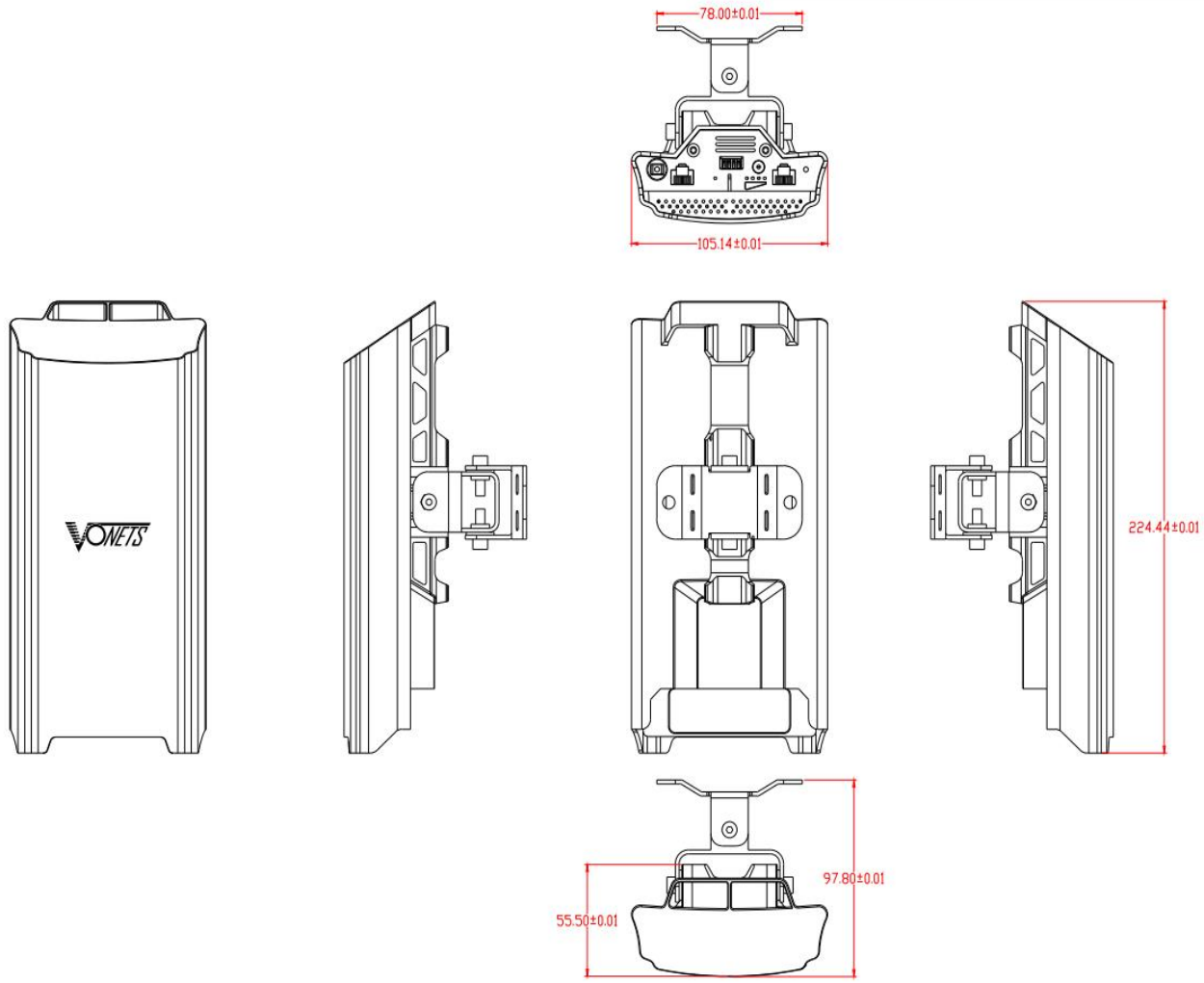
Seven、 Product Picture as below:



1. Reset
2. Ethernet/PoE Input
3. Hotspot Signal Strength Light

4. ①On/Off MAC layer pass-through bit、
   ②Turn on/off the local hotspot bit、
   ③Hide SSID bit、④Dial Configuration Mode Bits
5. System light
6. Ethernet/PoE Output
7. DC Input
8. Panel Mount Outlet
9. Air outlet
10. Air inlet
11. GND
12. B: Fixed bracket B
13. Bracket Screws
14. A: Fixing Bracket A

Eight、 Product size



Nine、Product accessories

1、Configure Ethernet Cable (1m/Standard Accessory)	2、Cable Ties (2 pieces/Standard Accessory)	3、DC Wiring Socket (Standard Accessories)	4、Dialing Code Tool (Standard Accessories)
			

5、Anti-slip Rubber Strip (length 14cm/Standard Accessory)	6、Fixed Bracket A&B (Option)	6.1、Hexagonal Nuts (2pcs/Option)	6.2、Hexagonal Screws (4pcs/Option)
			
6.3、Hexagonal Screw Wrench (1pc/Option)	7、Power Adapter (POE Option) (48V/1.2A)	8、Power Adapter (No POE Option) (12V/3A)	
			

Ten、Product application and secondary development precautions

1. Problems related to wireless interference:

1.1 Use the ping command to test the wireless transmission performance. If it is found that the delay of the ping packet response is extremely uneven, and there are many responses with a large delay, it can basically be judged that the wireless has been strongly interfered;

1.2 The product antenna should be kept as far away as possible from sources of interference, such as switching power supplies, antennas of other modules or wireless products, etc.;

1.3 If it is too close to the antenna of other wireless products, it will cause mutual interference, resulting in an increase in the transmission bit error rate and a slower transmission rate. At this point, the wireless signal must be properly attenuated. The methods of attenuating the signal include adding obstacles, extending the distance, and adding a resistor in series between the antenna feed point and the antenna, etc., to meet the actual application requirements;

2. Selecting a suitable power supply is the key to good and stable wireless transmission and stable operation of the product. Improper power supply will cause damage to the product or poor wireless performance. The selected power supply must meet the voltage range and input power requirements of the power supply input, and the ripple must be less than the required maximum power supply ripple (100mV);

3. POE related issues:

3.1 If the product has PSE function (POE output), it needs 48V power supply voltage and meets the power requirements of POE output before it can be used;

3.2 If the network port of the product has a POE output port, if it is connected to other non-POE network ports, please use it with caution, and ensure that the access network port is isolated from the ground, otherwise it may cause damage to the connected product!

A safe way is: let the product use a two-pin switching power supply without ground (AC TO DC, AC input is two-pin instead of three-pin).