



# VGAP-CLB-AS-A1 Specification

## 1. Features and Application :

- (1) This product is manufactured in ISO/TS16949 certified production factory.
- (2) This product is qualified according to AEC-Q200.
- (3) This product is for 2.4/5 GHz Dual Band WiFi, 802.11 b/g/n, Zigbee, Bluetooth,...

## 2. Explanation of Part Number :

**VGAP** -  $\frac{\text{C}}{(1)}$   $\frac{\text{LB}}{(2)}$  -  $\frac{\text{A}}{(3)}$   $\frac{\text{S}}{(4)}$  -  $\frac{\text{A1}}{(5)}$

- (1) Product Type : Chip Antenna
- (2) Center Frequency/Band Code : 2.4/5 GHz Dual-Band
- (3) Size Code : 5.0\*3.6 mm (Length \* Width)
- (4) Special Code : RoHS Compliant
- (5) Design Revision Code : Rev.1

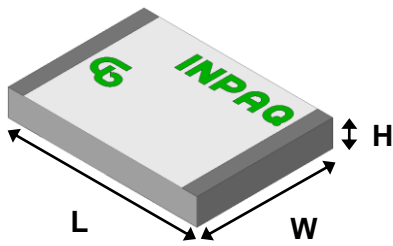
## 3. Electrical Specification :

Item	Specification	
Frequency Band	2400 ~ 2500 MHz	5000 ~ 6000 MHz
Polarization	Linear	
Impedance	50 ohm Typ.	
VSWR	Less than 2.0	Less than 2.0
*Peak Gain	3.2 dBi Typ.	3.5 dBi Typ.
*Peak Efficiency	74.8% Typ.	81.6% Typ.

\* Test condition : Test board size 80\*40 mm  
Matching circuit may be required

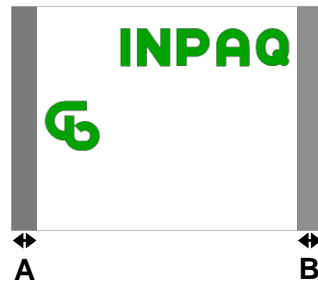
UNLESS OTHER SPECIFIED TOLERANCES ON : X=±            X.X=±            X.XX= ANGLES=±            HOLEDIA=±			<b>INPAQ TECHNOLOGY CO., LTD.</b>	
SCALE : -----	UNIT : mm			
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DESIGNED BY : 彭少君	APPROVED BY : 謝立庭			
TITLE : VGAP-CLB-AS-A1 Specification		DOCUMENT NO.	<b>ENS000061960</b>	SPEC REV. <b>A5</b>

#### 4. Physical Dimension :

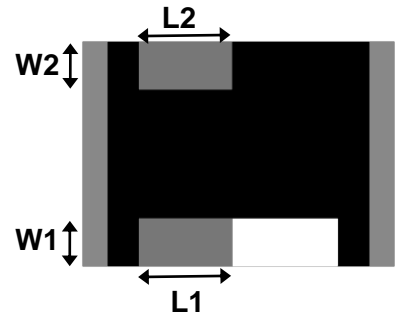


Marking is Green

Top view



Bottom view

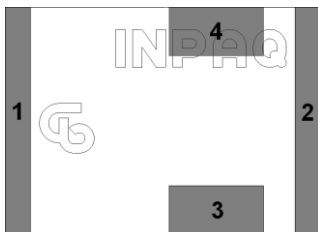


L	5.20 ± 0.30
W	3.70 ± 0.30
H	0.70 ± 0.15
A	0.45 ± 0.25
B	0.45 ± 0.25
L1	1.60 ± 0.20
W1	0.62 ± 0.20
L2	1.50 ± 0.20
W2	0.62 ± 0.20

(Unit: mm)

Pin Configuration

Top View



Pin Assignments

Layout	
Pin	Function
1	GND
2	GND
3	Feed
4	No connect

Mirror Layout	
Pin	Function
1	GND
2	GND
3	No connect
4	Feed

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 ANGLES=±      HOLEDIA=±



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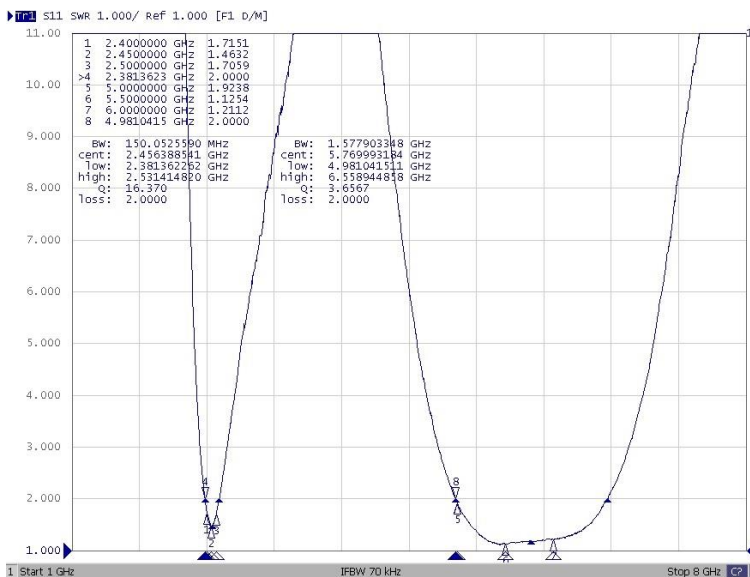
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## 6. Electrical Characteristics :

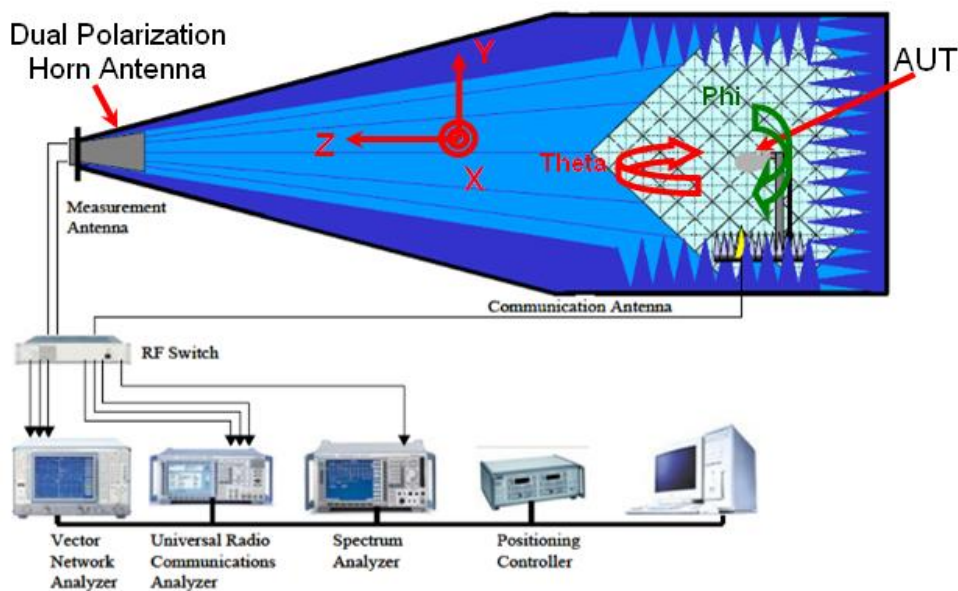
### VSWR



Frequency (MHz)	VSWR
2400	1.7
2450	1.5
2500	1.7
5000	1.9
5500	1.1
6000	1.2

### Radiation Pattern

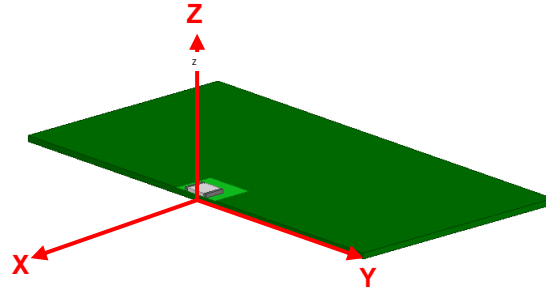
The Gain pattern is measured in INPAQ's FAR-field chamber. DUT is placed on the table of rotator, a standard horn antenna and Vector Network Analyzer is used to collect data.



3D Chamber Definition

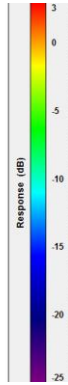
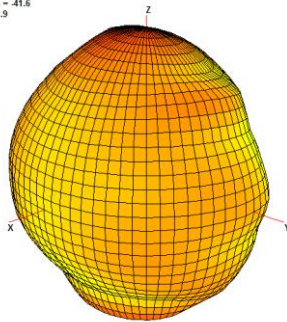
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# 3D Gain Pattern

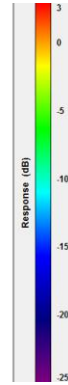
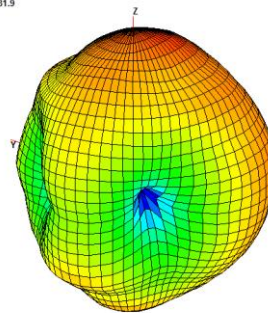


## 2450 MHz

Azimuth = 109.4  
Elevation = -41.6  
Roll = -51.0

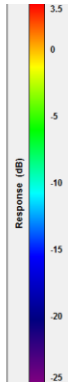
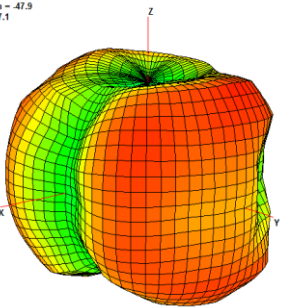


Azimuth = -74.4  
Elevation = 31.9  
Roll = 51.2

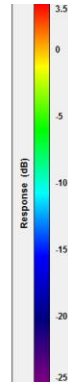
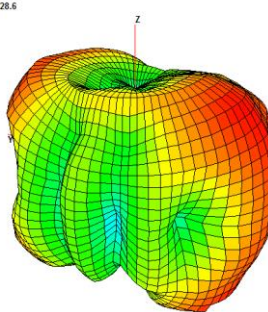


## 5500 MHz

Azimuth = 107.9  
Elevation = -47.9  
Roll = -57.1



Azimuth = -71.5  
Elevation = 28.6  
Roll = 55.7



UNLESS OTHER SPECIFIED TOLERANCES ON :

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 ANGLES=±            HOLEDIA=±



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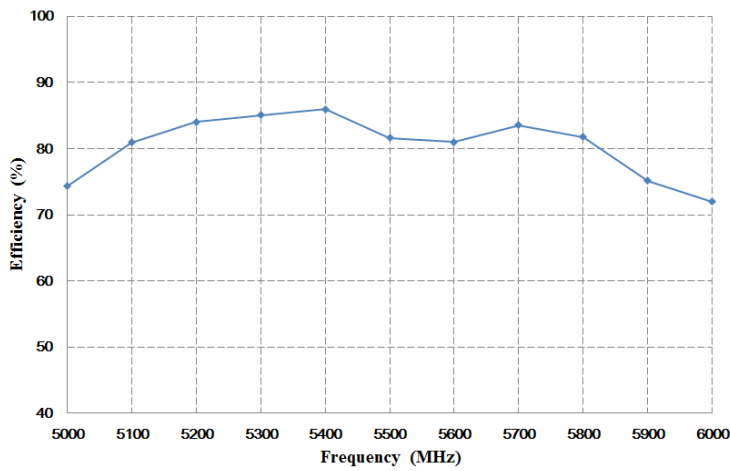
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# Efficiency



Frequency (MHz)	Efficiency (%)
2400	72.9
2450	74.8
2500	73.0
5000	74.3
5500	81.6
6000	71.9



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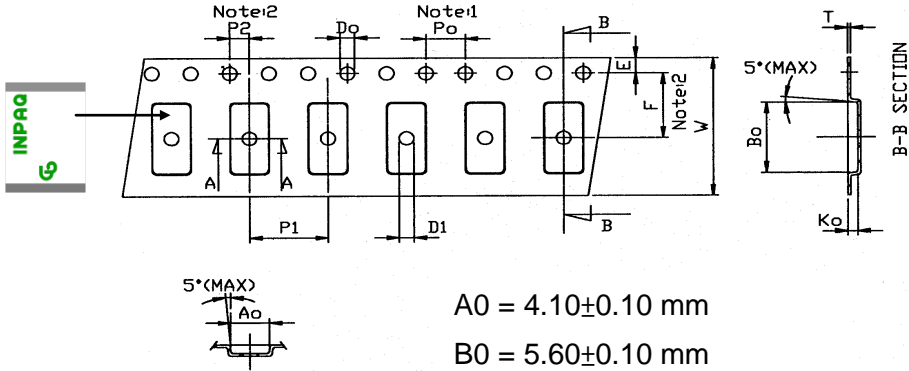
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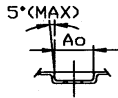
## 7. Taping Package and Label Marking :

- (1) Quantity/Reel : 2000pcs/Reel
- (2) Carrier tape dimensions

(Unit : mm)



Symbol	Spec.
Po	4.00±0.1
P1	8.00±0.1
P2	2.00±0.05
Do	1.55±0.05
D1	1.50(MIN)
E	1.75±0.1
F	5.50±0.05
10Po	40.00±0.2
W	12.00±0.1
T	0.25±0.05

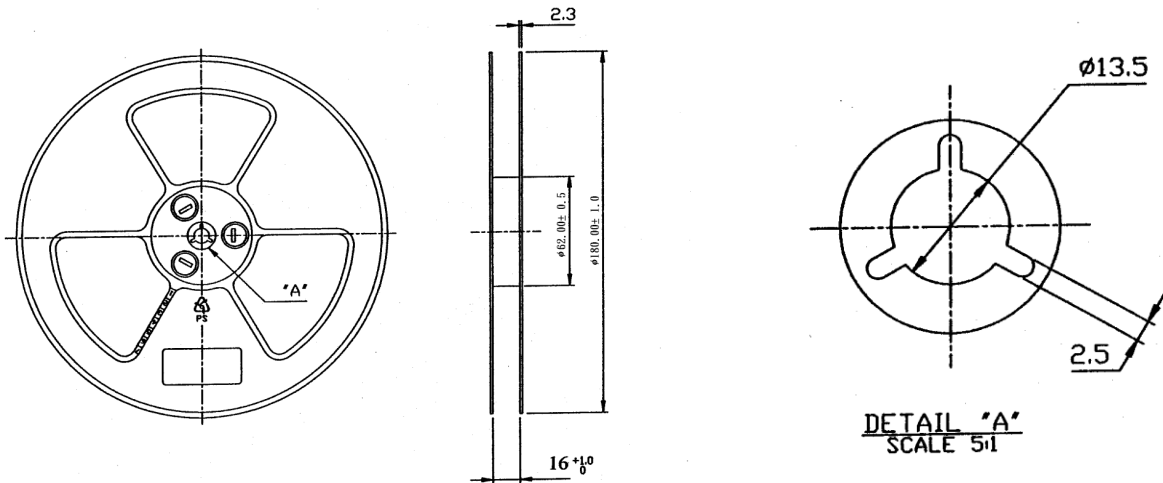


A0 = 4.10±0.10 mm  
 B0 = 5.60±0.10 mm  
 K0 = 1.02±0.10 mm

Notice:

1. 10 Sprocket hole pitch cumulative tolerance is ±0.1mm
2. Pocket position relative to sprocket hole measured as true position of pocket not pocket hole.
3. A0 & B0 measured on a place 0.3mm above the bottom of the pocket to top surface of the carrier.
4. K0 measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
5. Carrier camber shall be not than 1mm per 100mm through a length of 250mm.

### (3) Taping reel dimensions



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## 8. Environmental Characteristics :

This product is qualified according to AEC-Q200.

### (1) Reliability Test

Item	Condition	Specification
High Temperature Storage	150°C , 1000hours	No Damaged
Temperature Cycling	-55°C 30min/125°C 30min , 1000 cycle	No Damaged
Biased Humidity	85°C 、85% RH , 1000hours	No Damaged
Resistance to Solvent	Add Aqueous wash chemical OKEMCLEAN for 5 min	No Damaged
Mechanical Shock	1500G 0.5 ms , X,Y,Z axis 3 time	No Damaged
Vibration	1. Frequency : 10 to 2000 Hz 2. 5g's for 20 min 3. Duration time : 2hr for each in X ,Y,Z	No Damaged
Resistance to Soldering Heat	Brush flux and put the board into solder bath 260°C , 10sec.	No Damaged
Solderability Test	1. 8 hours ± 15 min. steam conditioning 2. Put the sample on board by tape. 3. Brush flux and put the board into solder bath 260±5°C , 5±1 sec	No Damaged
Board Flex	2mm for 60sec.	No Damaged
Termination strength (SMD)	1.8Kgf , 60sec	No Damaged

### (2) Storage condition

#### (a) At warehouse :

The temperature should be within 0 ~ 30°C and humidity should be less than 60% RH.

The product should be used within 1 year from the time of delivery.

#### (b) On board :

The temperature should be within -40 ~ 85°C and humidity should be less than 85% RH.

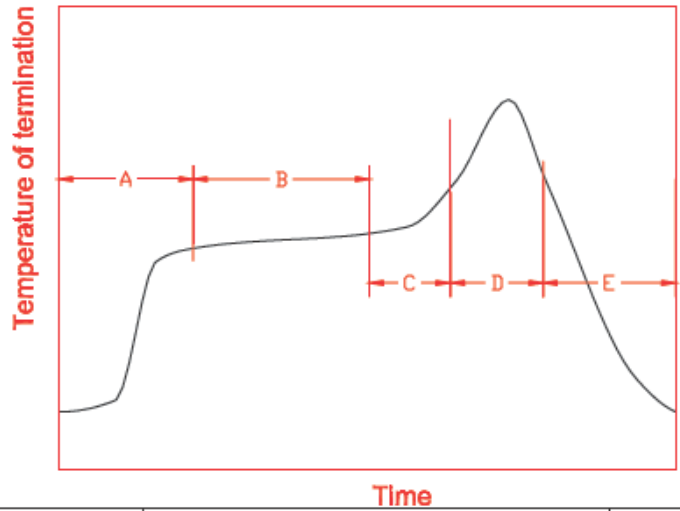
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**(3) Operating temperature range**

Operating temperature range : -40 ~ +125°C.

**9. Recommended reflow soldering :**

Reference : J-STD-020C



Time			
A	1 <sup>st</sup> rising temperature	The normal to Preheating temperature	30s to 60s
B	Preheating	140°C to 160°C	60s to 120s
C	2 <sup>nd</sup> rising temperature	Preheating to 200°C	20s to 40s
D	Main heating	if 220°C	50s~60s
		if 230°C	40s~50s
		if 240°C	30s~40s
		if 250°C	20s~40s
		if 260°C	20s~40s
E	Regular cooling	200°C to 100°C	1°C/s ~ 4°C/s

**(1) Soldering gun procedure**

Note the follows, in case of using solder gun for replacement.

- (a) The tip temperature must be less than 350°C for the period within 3 seconds by using soldering gun under 30 W.
- (b) The soldering gun tip shall not touch this product directly.

**(2) Soldering volume**

Note that excess of soldering volume will easily get crack the body of this product.

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