

[illegible]

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

- (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=±



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SCALE : ----

UNIT : mm

DRAWN BY : 彭少君

CHECKED BY : 黃月碧

DESIGNED BY : 彭少君

APPROVED BY : 謝立庭

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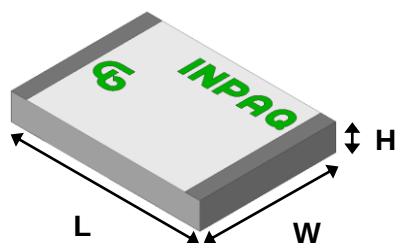
TITLE : VGAP-CLB-AS-A1 Specification

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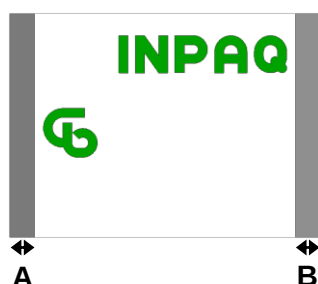
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4. Physical Dimension :

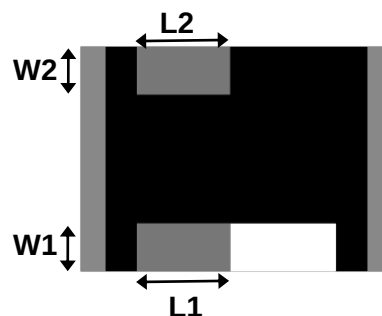


Marking is Green

Top view



Bottom view

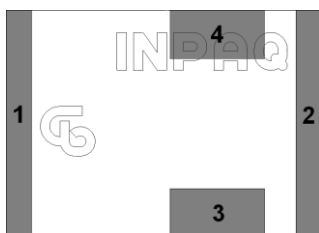


L	5.20 ± 0.30
W	3.70 ± 0.30
H	0.70 ± 0.15
A	0.45 ± 0.25
B	0.45 ± 0.25
L1	1.60 ± 0.20
W1	0.62 ± 0.20
L2	1.50 ± 0.20
W2	0.62 ± 0.20

(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

UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±

X.X=±

X.XX=

ANGLES=±

HOLEDIA=±



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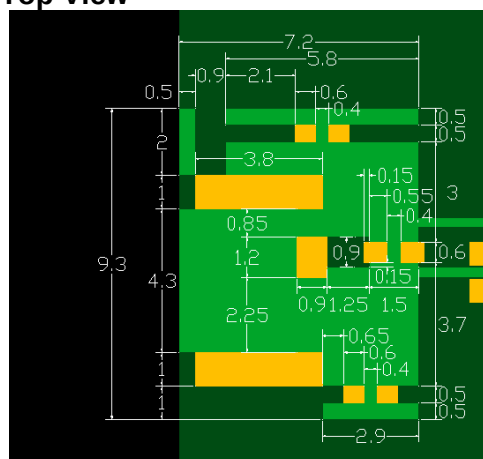
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5. Recommend PCB Layout :

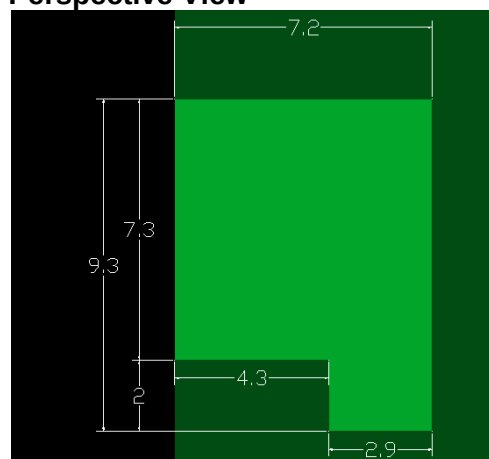
Layout	Usage
Pad (GND) 1 Pad (GND) 2 Pad (Feed) 3 Clearance Area (9.3*7.2 mm) Matching Circuit Feed Line Ground	Pad (GND) 1 Pad (GND) 2 Pad (Feed) 3 Clearance Area (9.3*7.2 mm) Matching Circuit Feed Line Ground
Pad (GND) 2 Pad (GND) 1 Pad (Feed) 4 Clearance Area (9.3*7.2 mm) Matching Circuit Feed Line Ground	Pad (GND) 2 Pad (GND) 1 Pad (Feed) 4 Clearance Area (9.3*7.2 mm) Matching Circuit Feed Line Ground

Pad Dimensions on PCB Layout

Top View



Perspective View

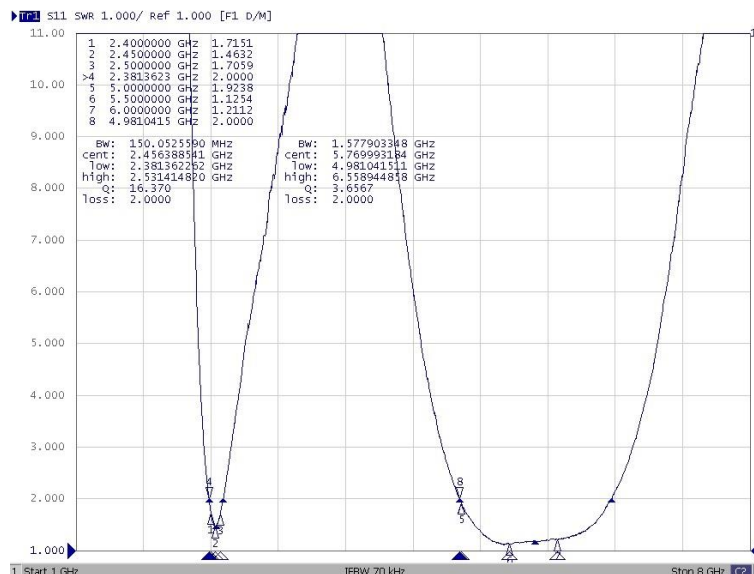


(Unit : mm)

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ANGLES=± HOLEDIA=±				
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DESIGNED BY : 彭少君	APPROVED BY : 謝立庭			
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6. Electrical Characteristics :

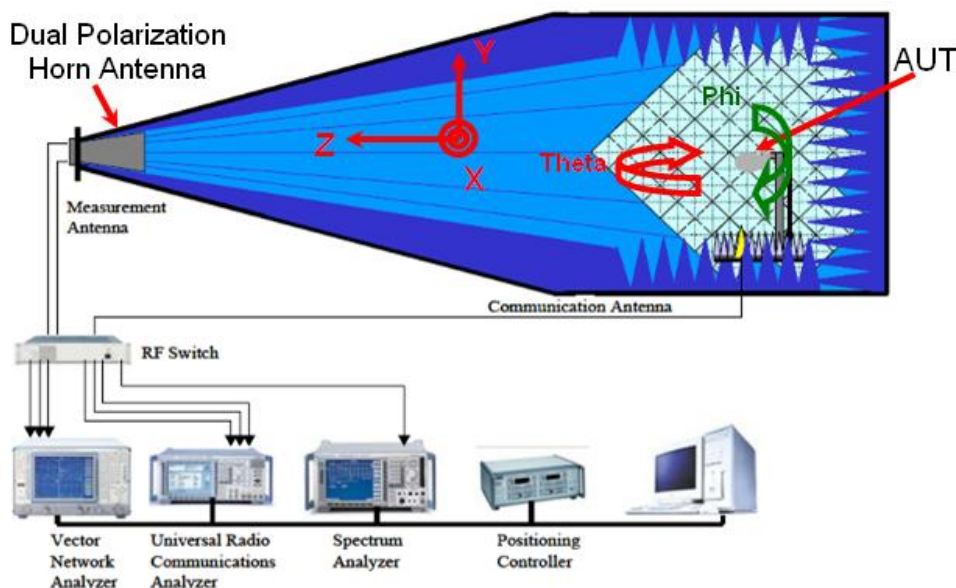
VSWR



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

Radiation Pattern

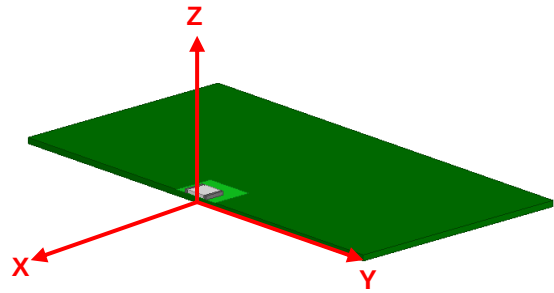
The Gain pattern is measured in INPAQ's FAR-field chamber. DUT is placed on the table of rotator, a standard horn antenna and Vector Network Analyzer is used to collect data.



3D Chamber Definition

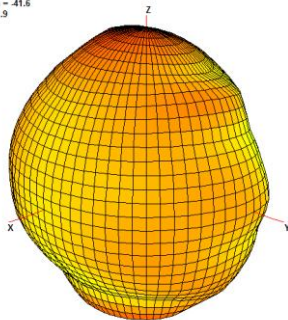
UNLESS OTHER SPECIFIED TOLERANCES ON : X=± X.X=± X.XX=± ANGLES=± HOLEDIA=±		 INPAQ TECHNOLOGY CO., LTD.
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3D Gain Pattern

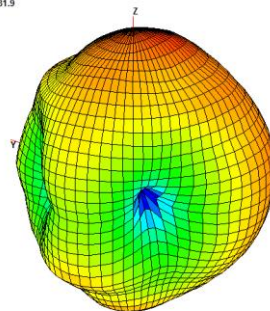


2450 MHz

Azimuth = 109.4
Elevation = -41.6
Roll = -51.9

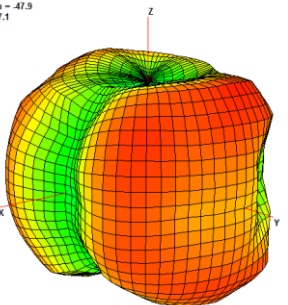


Azimuth = -74.4
Elevation = 31.9
Roll = -51.8

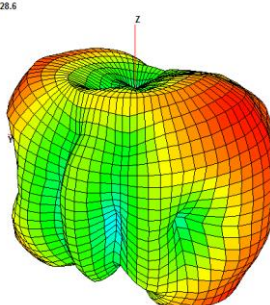


5500 MHz

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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SCALE : ----

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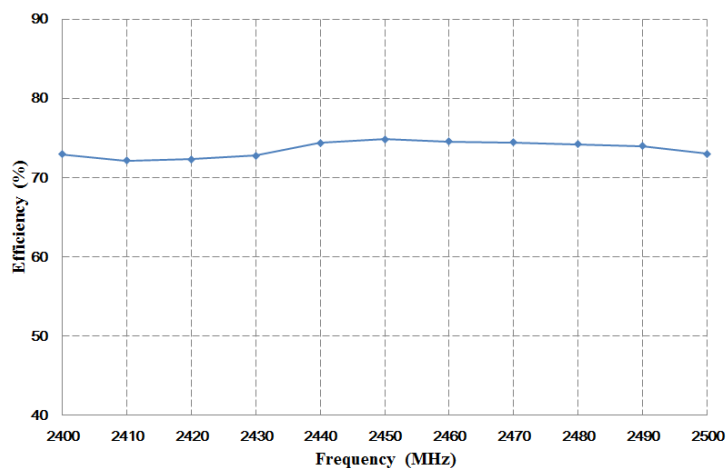
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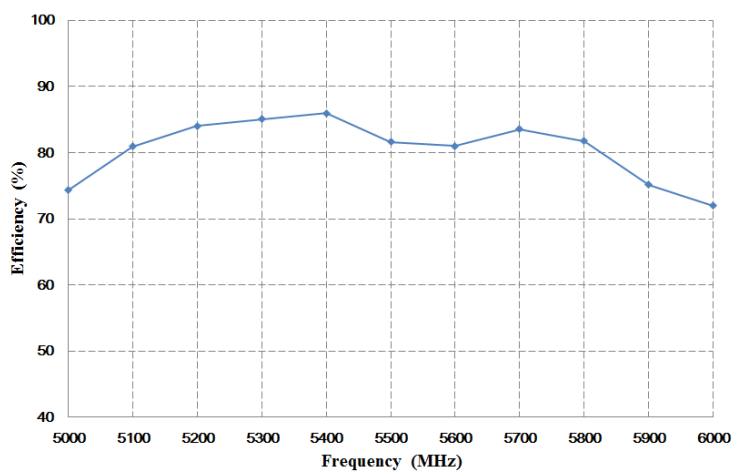
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Efficiency



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



UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±

X.X=±

X.XX=

ANGLES=±

HOLEDIA=±



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SCALE : ----

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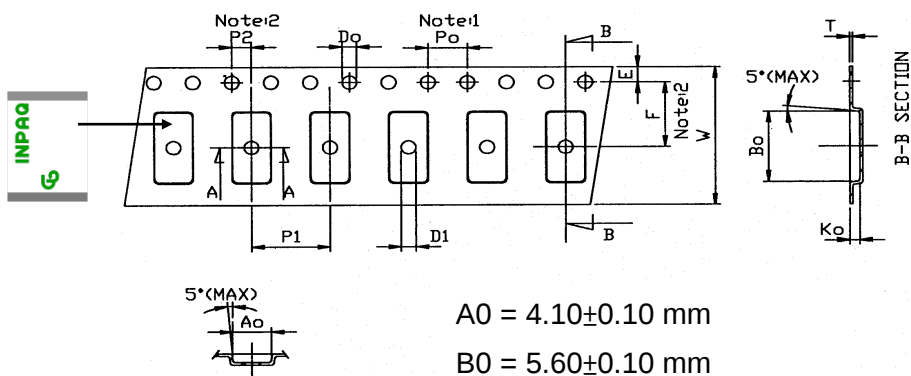
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7. Taping Package and Label Marking :

- (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

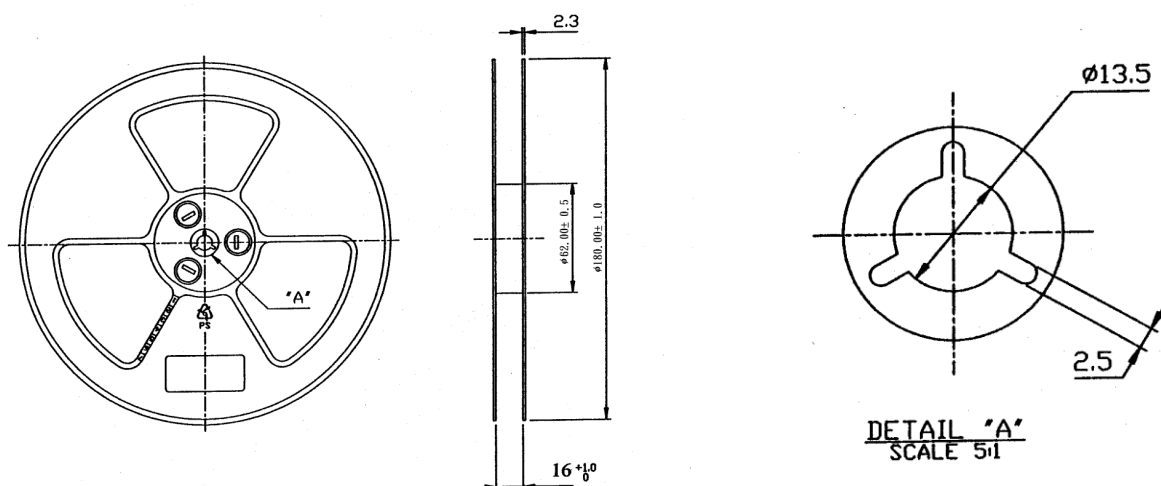
B0 = 5.60±0.10 mm

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



UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±

X.X=±

X.XX=

ANGLES=±

HOLEDIA=±

SCALE : ----

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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.

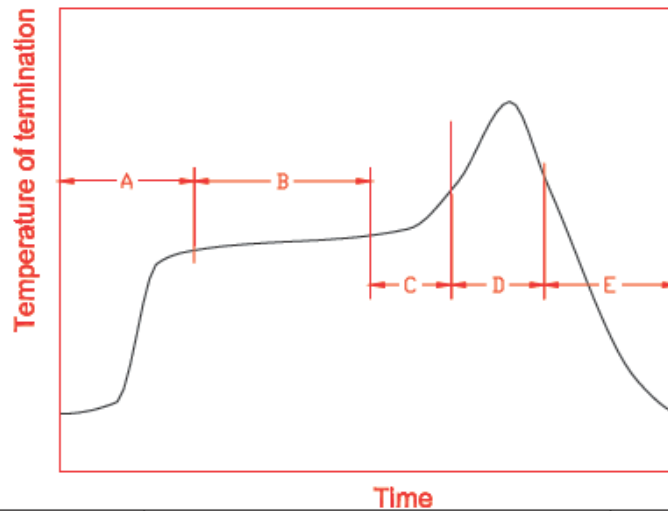
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(3) Operating temperature range

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

9. Recommended reflow soldering :

Reference : J-STD-020C



A	1 st rising temperature	The normal to Preheating temperature	30s to 60s
B	Preheating	140°C to 160°C	60s to 120s
C	2 nd 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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