VGAP-CLP-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 6 GHz to 9 GHz,

2. Explanation of Part Number：

VGAP	-	C (1)	LP (2)	-	A (3)	S (4)	-	A1 (5)

(1) Product Type：Chip Antenna
(2) Center Frequency/Band Code：6 GHz to 9 GHz
(3) Size Code：5.0*3.6 mm (Length * Width)
(4) Special Code：RoHS Compliant
(5) Design Revision Code：Rev.1

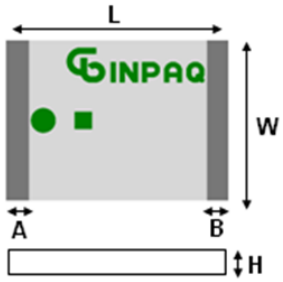
3. Electrical Specification：

Item	Specification
Frequency Band	6000 ~ 9000 MHz
Polarization	Linear
Impedance	50 ohm Typ.
VSWR	Less than 2.5
*Peak Gain	3.52 dBi Typ.
*Peak Efficiency	90.86 % Typ.

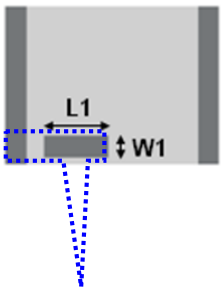
* Test condition：Test board size 50*40 mm
Matching circuit may be required

4. Physical Dimension：

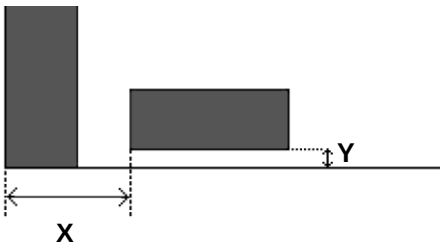
Top View



Bottom View



Marking is Green



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	1.55 ± 0.20
W1	0.55 ± 0.20
X	0.85 ± 0.25
Y	0.12 ± 0.06

(Unit：mm)

UNLESS OTHER SPECIFIED TOLERANCES ON： X＝±　　X.X＝±　　X.XX＝ ANGLES＝±　　HOLEDIA＝±		INPAQ TECHNOLOGY CO., LTD.	
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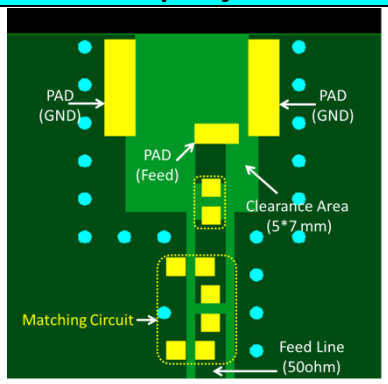
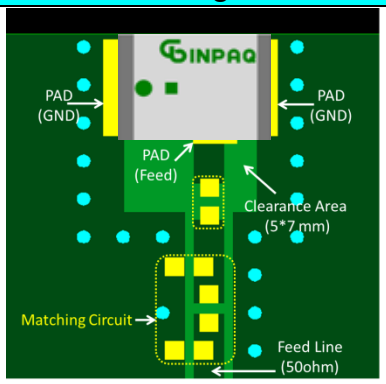
DESIGNED BY：彭少君	APPROVED BY：謝立庭		
TITLE：VGAP-CLP-AS-A1 Specification		DOCUMENT NO.	ENS000138310 / SPEC REV. A2

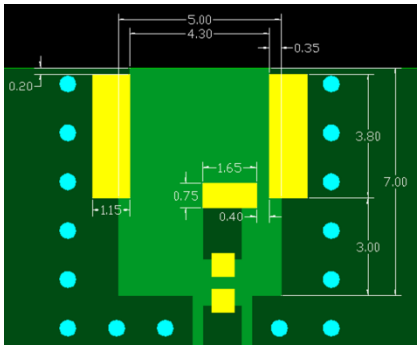
5. Recommend PCB Layout ：

Top Layout	Usage
	

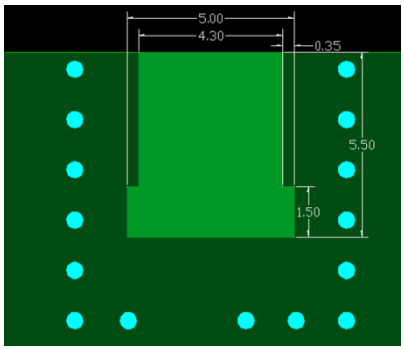
:Copper with paint
:Clearance area
:PAD

Pad Dimensions on PCB Layout

Top View



Perspective View



(Unit：mm)

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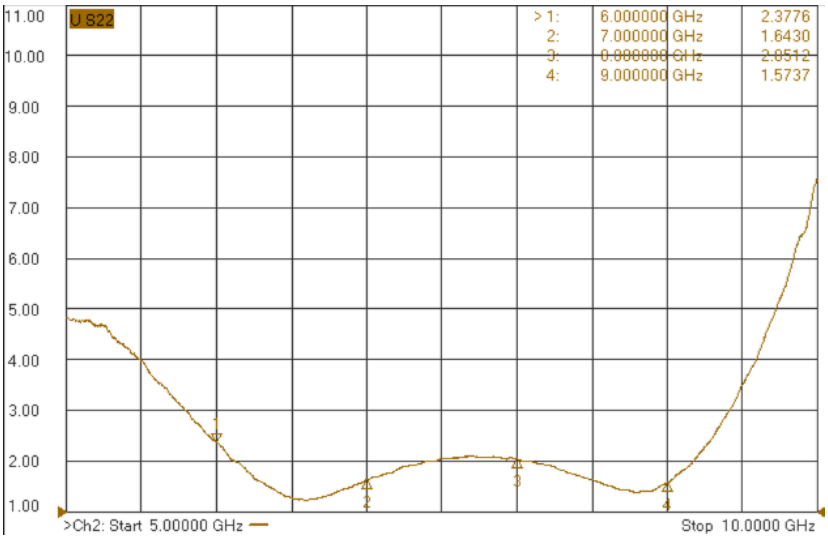
6. Electrical Characteristics：

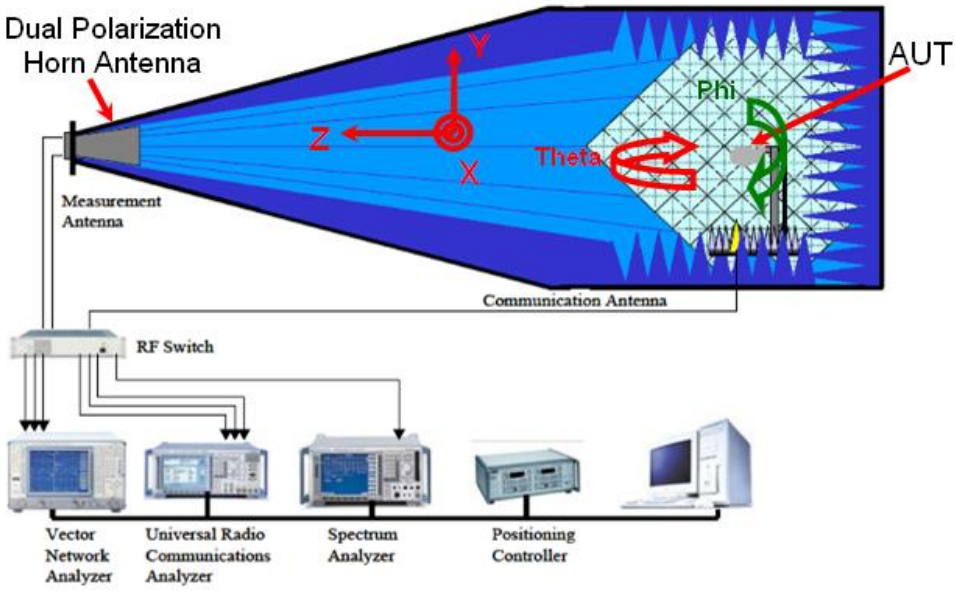
VSWR



Mark	Frequency (MHz)	VSWR
1	6000	2.37
2	7000	1.64
3	8000	2.05
4	9000	1.57

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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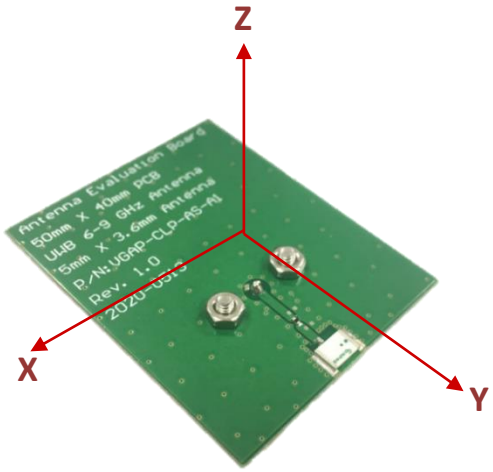
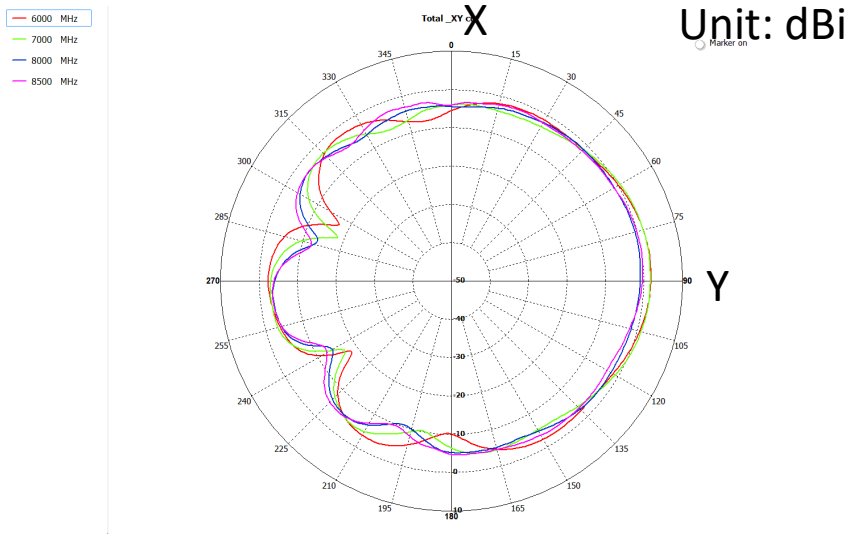
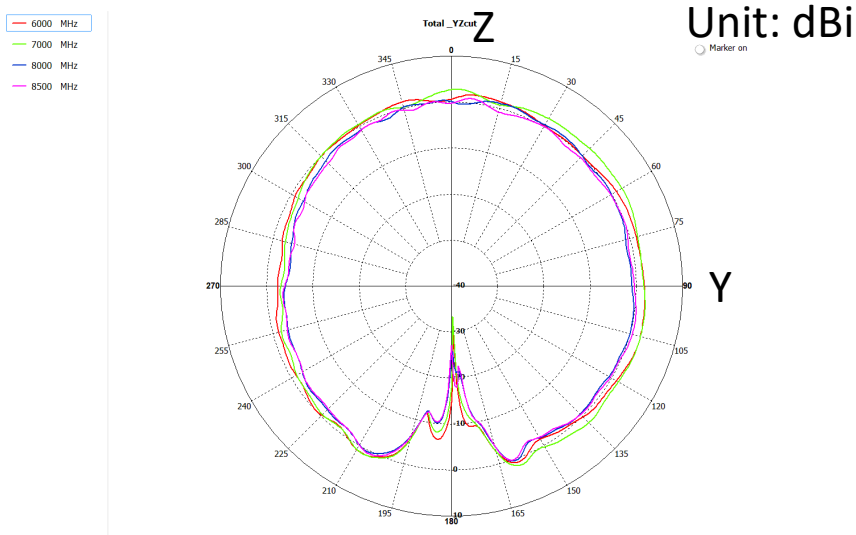
2D Gain Pattern



XY-Plane



YZ-Plane



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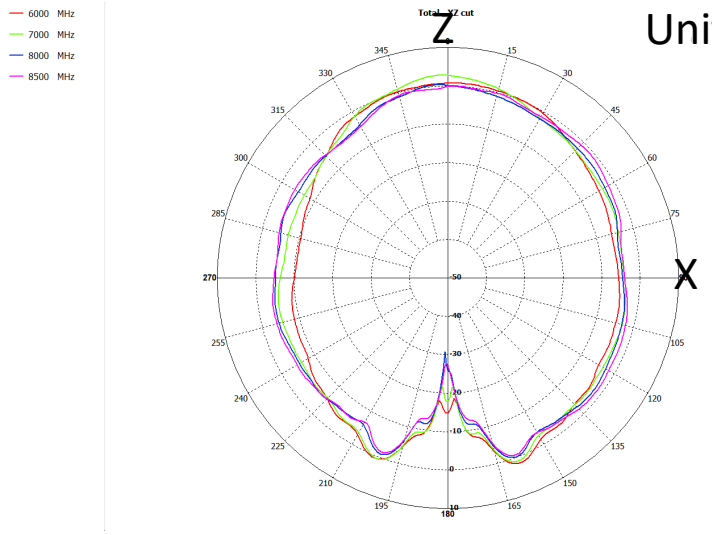
XZ-Plane



Efficiency and Peak Gain

Frequency (MHz)	Efficiency (%)	Peak Gain (dBi)
6000	75.27	2.97
7000	79.78	2.77
8000	75.64	2.51
9000	73.36	2.17

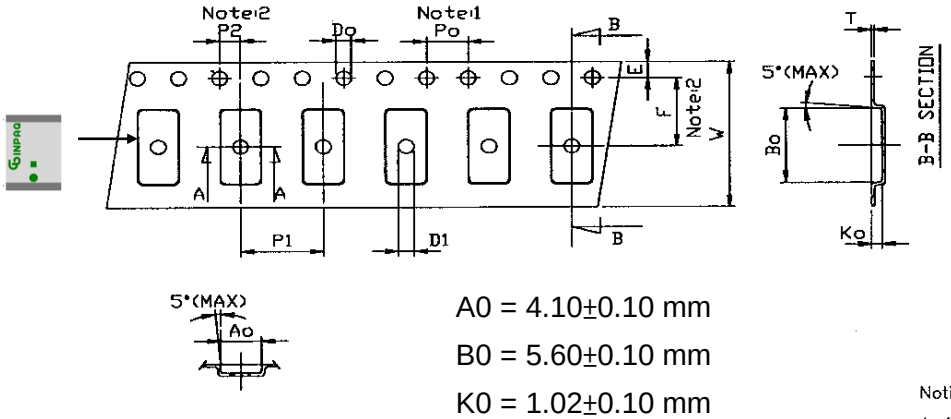
7. Taping Package and Label Marking：

(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

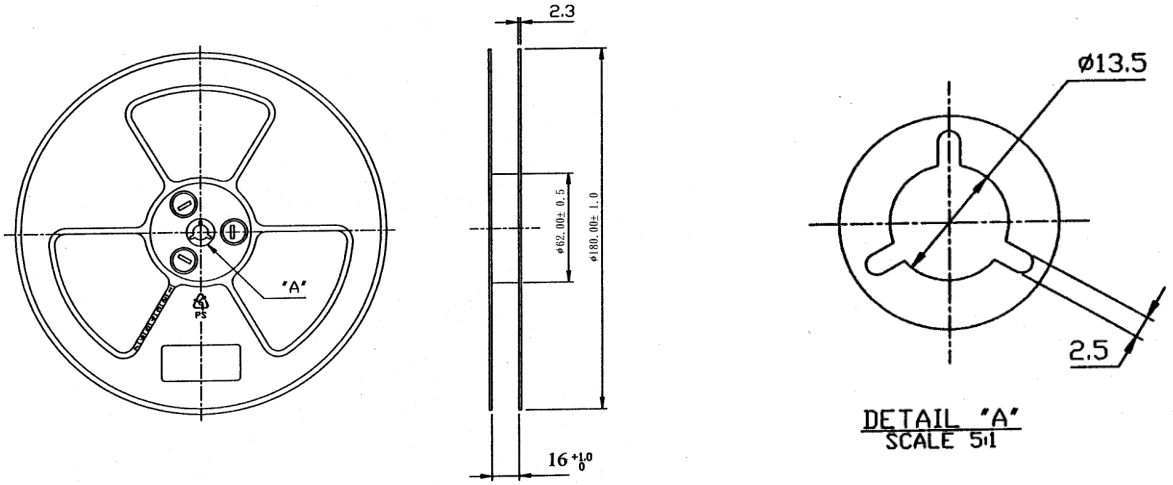
B0 = 5.60±0.10 mm

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. Ao & Bo measured on a place 0.3mm above the bottom of the pocket to top surface of the carrier.
4. Ko 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℃，1000hours	No Damaged
Temperature Cycling	-55℃ 30min/125℃ 30min，1000 cycle	No Damaged
Biased Humidity	85℃、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℃ , 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℃ , 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：

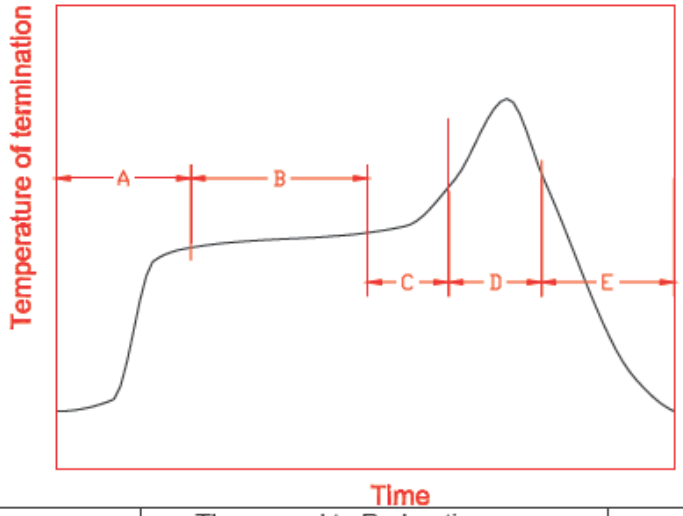
The temperature should be within -40 ~ 85°C and humidity should be less than 85% RH.

(3) Operating temperature range

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

9. Recommended reflow soldering：

Reference：J-STD-020C



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