VGAP-CLK-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 3-4GHz.

2. Explanation of Part Number：

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

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

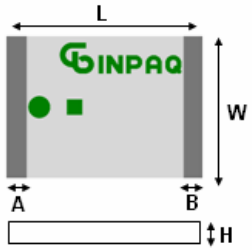
3. Electrical Specification：

Item	Specification
Frequency Band	3000 ~ 4000 MHz
VSWR	Less than 3.5
Polarization	Linear
*Peak Gain	3.2 dBi Typ.
*Peak Efficiency	69 % Typ.
Impedance	50 ohm Typ.

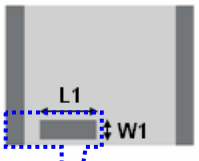
* Test condition：Test board size 53*31 mm
Matching circuit may be required

4. Physical Dimension：

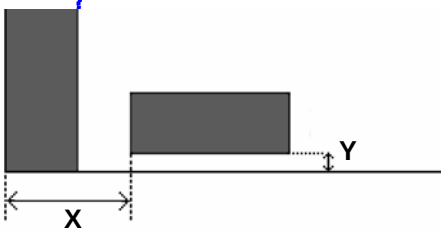
Top View



Bottom View



Marking is Green



(Unit: mm)

Chip Antenna	L	W	A	B	L1	W1	H	X	Y
VGAP-CLK-AS-A1	5.2±0.3	3.7±0.3	0.45±0.25	0.45±0.25	1.55±0.20	0.55±0.20	0.70±0.15	0.85±0.25	0.12±0.06

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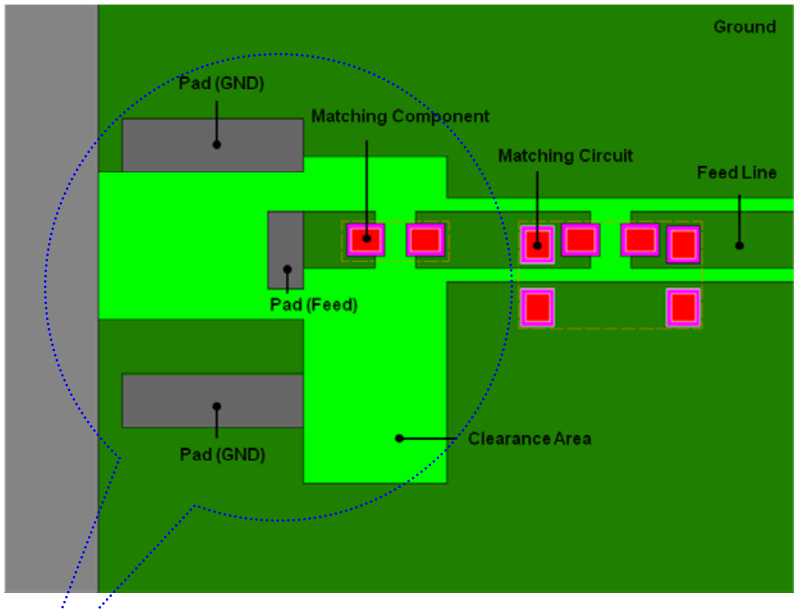
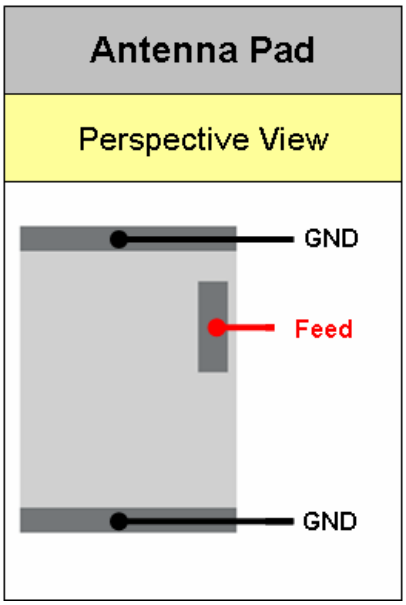
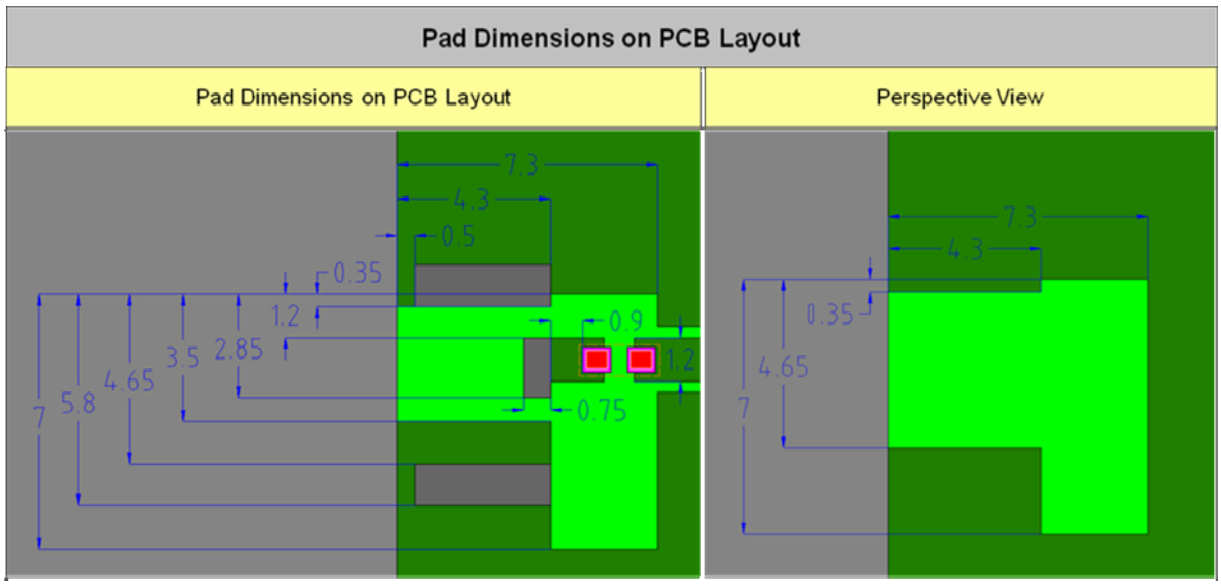
DESIGNED BY:林豪建 Stan	APPROVED BY:黃月碧		
TITLE：VGAP-CLK-AS-A1 Specification		DOCUMENT NO. ENS000062850	SPEC REV. A0

5. Recommend PCB Layout：





(Unit：mm)



PCB pad dimensions　　Tolerance：±2

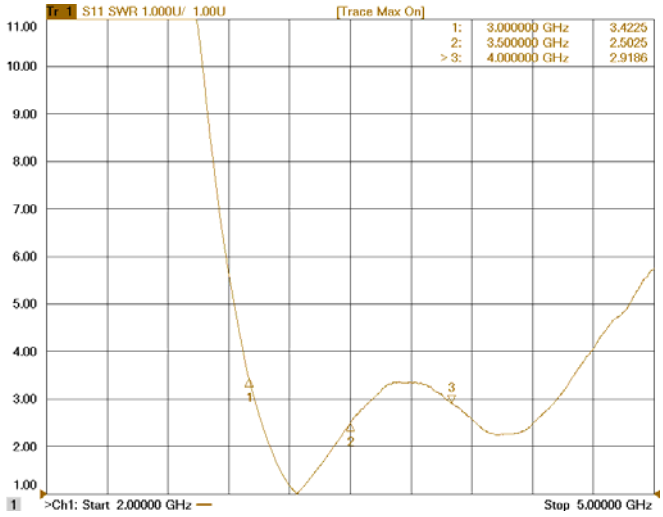
Terminal Name	Terminal Dimensions
Pad (Feed)	1.65*0.75
Pad (GND)	3.8*1.15
Pad (GND)	3.8*1.15

Antenna pad dimensions

Terminal Name	Terminal Dimensions
Feed	1.55*0.55
GND	3.7*0.45
GND	3.7*0.45

6. Electrical Characteristics：

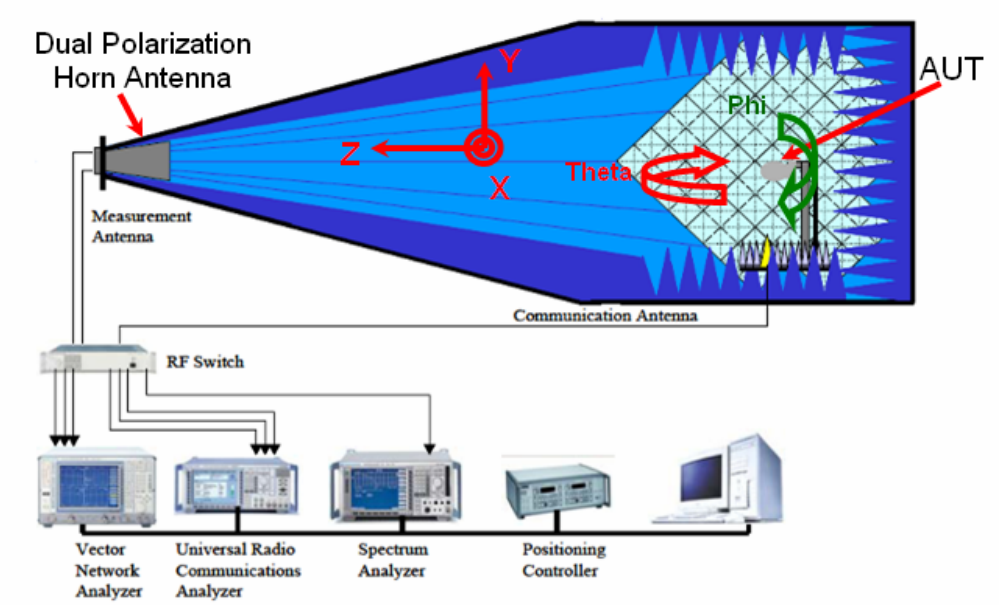
VSWR



Mark	Frequency (MHz)	VSWR
1	3000	3.4
2	3500	2.5
3	4000	2.9

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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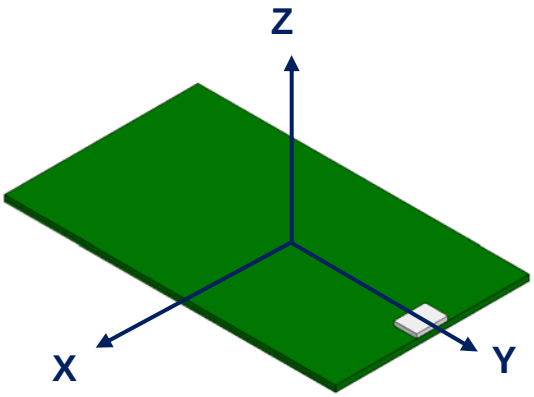
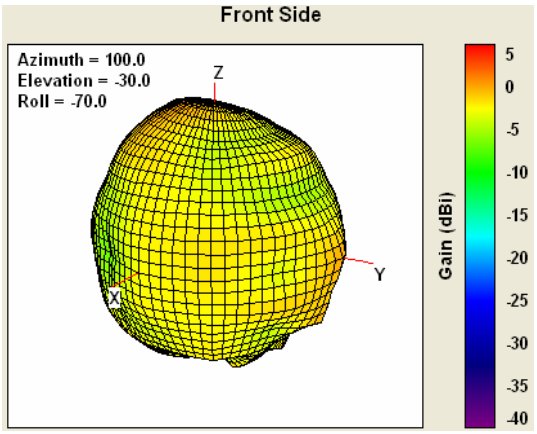
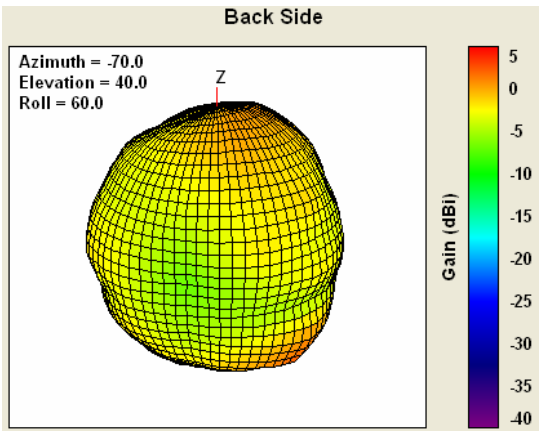
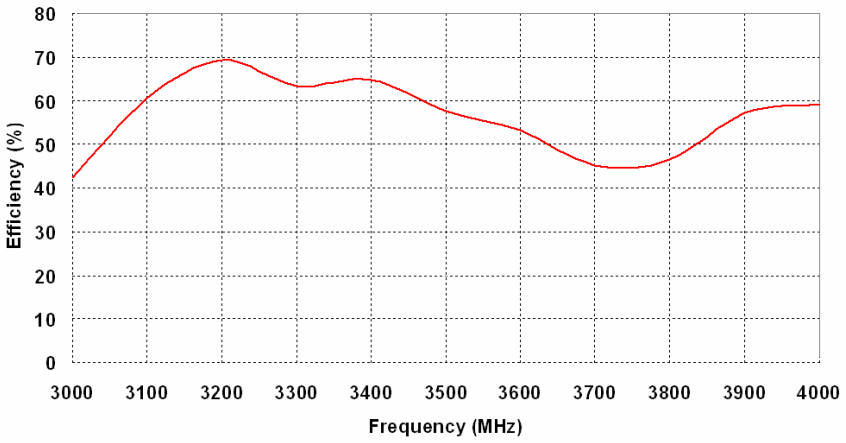
3D Gain Pattern (3500 MHz)







Efficiency



Frequency (MHz)	Efficiency (%)
3000	42.3
3500	57.5
4000	59.2

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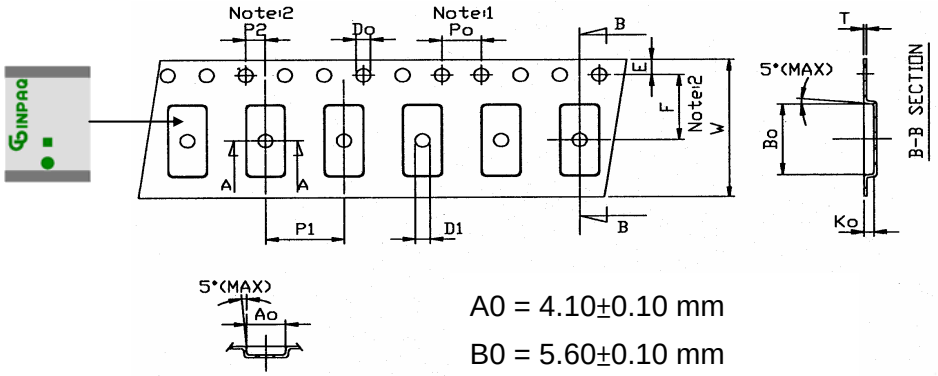
7. Taping Package and Label Marking：

(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

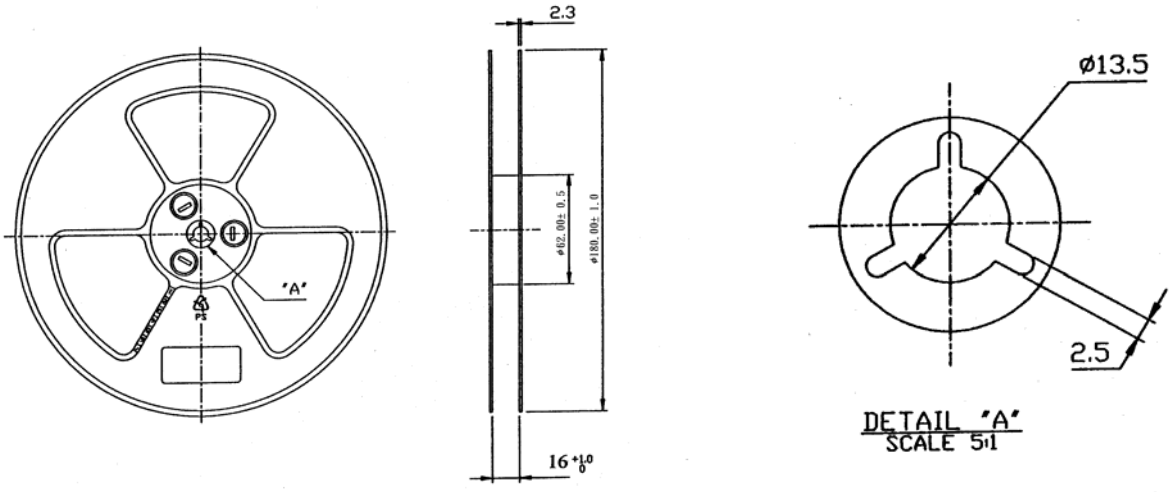
B0 = 5.60±0.10 mm

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. 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
Thermal shock	1. 30±3 minutes at -40°C±5°C, 2. Convert to +105°C (5 minutes) 3. 30±3 minutes at +105°C±5°C, 4. Convert to -40°C (5 minutes) 5. Total 100 continuous cycles	No damage
Humidity resistance	1. Humidity: 85% R.H. 2. Temperature: 85±5°C 3. Time: 1000 hours.	No damage
High temperature resistance	1. Temperature: 150°C±5°C 2. Time: 1000 hours.	No damage
Low temperature resistance	1. Temperature: -40°C±5°C 2. Time: 1000 hours.	No damage
Soldering heat resistance	1. Solder bath temperature: 260±5°C 2. Bathing time: 10±1 seconds	No damage
Solderability	The dipped surface of the terminal shall be at least 95% covered with solder after dipped in solder bath of 245±5°C for 3±1 seconds.	No damage

(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：

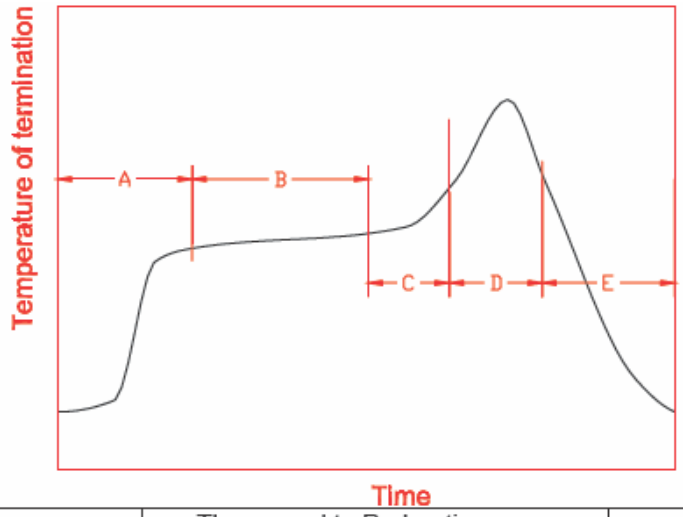
The temperature should be within -40 ~ 85°C and humidity should be less than 85% RH.

(3) Operating temperature range

Operating temperature range：-40 ~ +105°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.