


品名 P/N : ACA-3216-P1-MC-S

1.Explanation of part number :

<b>AC</b>	<b>A</b>	-	<b>3216</b>	-	<b>P1</b>	-	<b>MC</b>	-	<b>S</b>
<b>Product Type</b>	<b>Center Frequency/Band Code</b>		<b>Product Code (Unit: mm)</b>		<b>Design Revision Code</b>		<b>Antenna Type</b>		<b>Special Code</b>
Chip Antenna	A: 2.4GHz E: Cellular G:868MHz H:915MHz L:5GHz M3:2G+5GHz N:NFC		Per 2 digits of length, width  e.g.: 3216 3.2*1.6 (Length * Width)		P1:Rev.1		CC: Coupling Ceramic GF: On Ground, FR4 LC: Loop ceramic MC: Monopole Ceramic MF: Monopole FR4 PF: PIFA FR4		S: RoHS Compliant

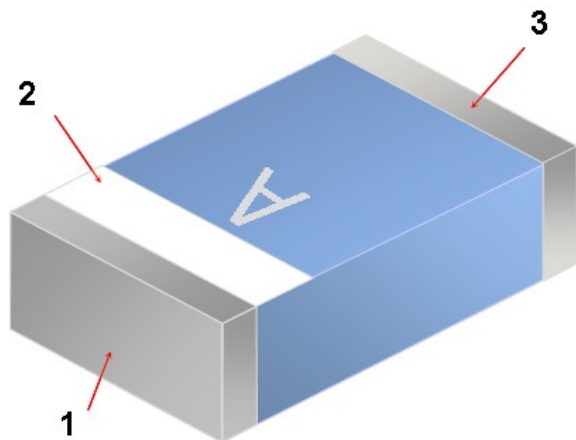
2.Electrical Specification :

		Specification
<b>Working Frequency Range</b>		2450 ± 50 MHz
<b>Fc (GHz)</b>		2.5
<b>Gain (dBi)</b>		2 (Typical)
<b>Matching component valve</b>	<b>Series 1</b>	2.7nH
	<b>Series 2</b>	-

UNLESS OTHER SPECIFIED TOLERANCES ON : X=N/A      X.X=N/A      X.XX=N/A ANGLES=N/A      HOLEDIA=N/A			<b>INPAQ TECHNOLOGY CO., LTD.</b>	
<b>SCALE : N/A</b>	<b>UNIT : mm</b>			
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<b>DESIGNED BY : 黄瑞郎</b>	<b>APPROVED BY : 陳振榮</b>			
<b>TITLE : ACA-3216-P1-MC-S</b>		<b>DOCUMENT NO.</b>	<b>ENS070001720-000824000076</b>	<b>SPEC REV.</b> <b>A1</b>

### 3. Antenna Drawing :

#### CONSTRUCTION




- 1. Feeding
- 2. Identification Mark
- 3. Soldering terminal

#### DIMENSIONS

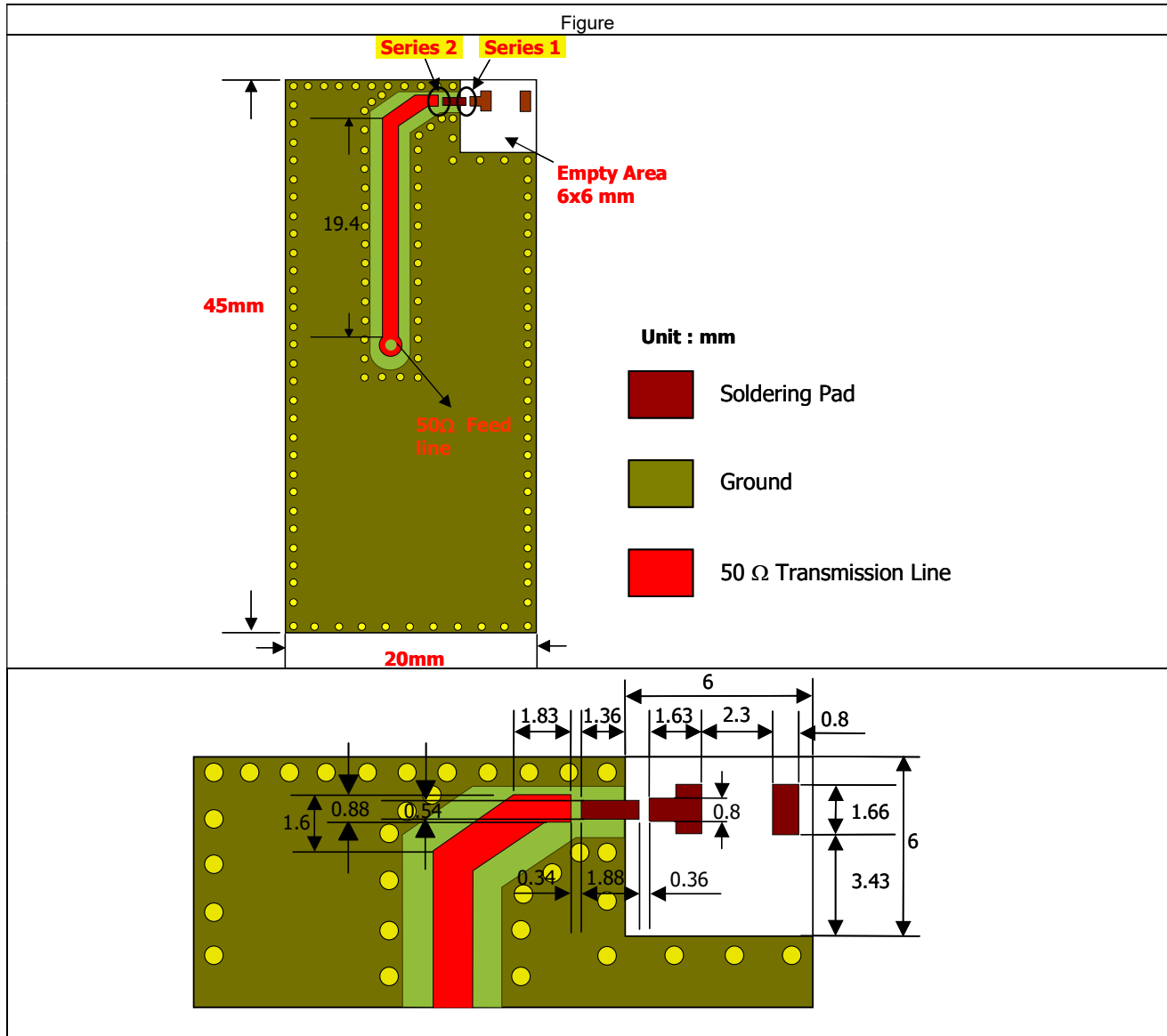
Figure	Symbol	Dimension (mm)
	L	3.20 ± 0.20
	W	1.60 ± 0.10
	T	1.20 ± 0.10
	a	0.25 ± 0.15


\* This frequency must be adjusted to 2.45GHz with matching circuit.

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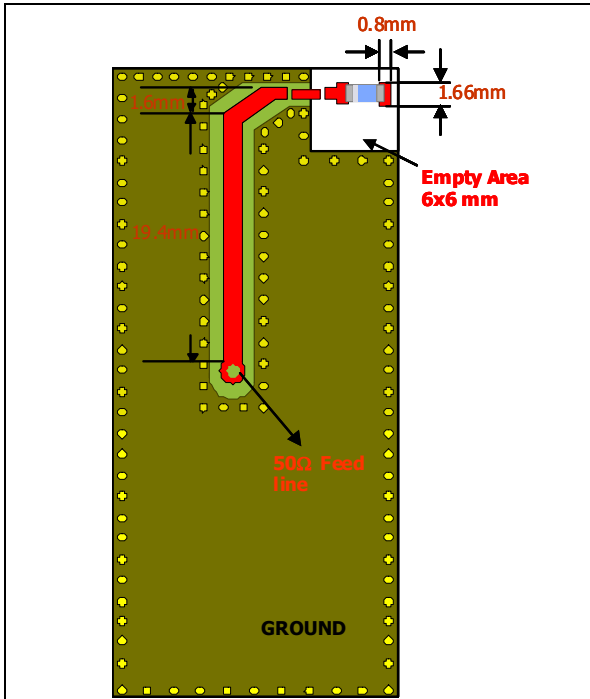
### 4. Performance Report :

#### SOLDER LAND PATTERN DESIGN

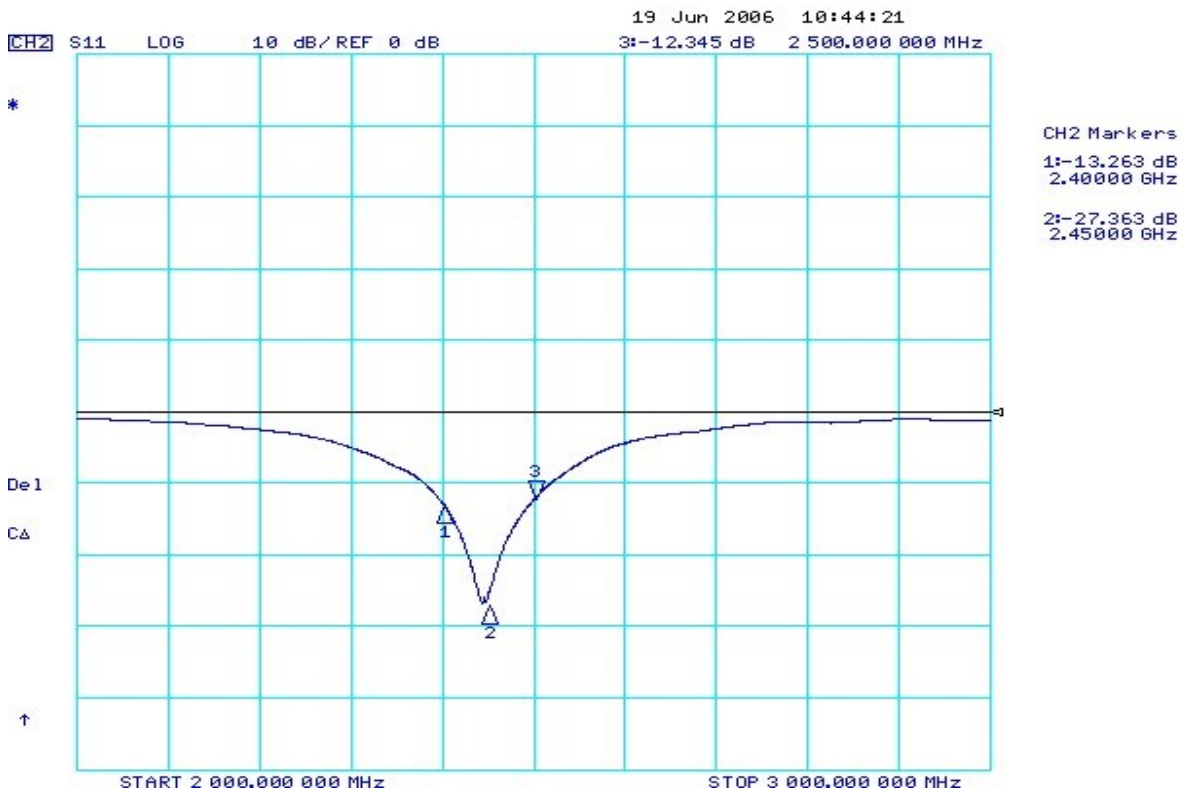



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Antenna on Test Board (Thickness 1.2mm)



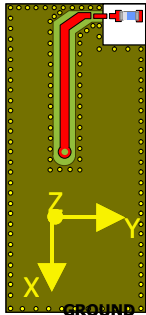
Antenna S11 on Test Board



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RADIATION PATTERN

Radiation Pattern and Gain were dependent on measurement board design. The specification of RFANT3216120A1T antenna was measured based on the PCB size and installation position as shown in the below figure Test Board



	Vertical	Horizontal
<b>Y - Z Plane</b>  Average Gain= 0.859 dBi	<p>Peak Gain = 2.13dBi Average Gain = 0.62 dBi</p>	<p>Peak Gain= -6.47dBi Average Gain=-11.86dBi</p>
<b>X - Z Plane</b>  Average Gain= -1.804 dBi	<p>Peak Gain= -7.43 dBi Average Gain= -12.30dBi</p>	<p>Peak Gain= 1.07 dBi Average Gain= -2.21 dBi</p>
<b>X - Y Plane</b>  Average Gain= -2.365 dBi	<p>Peak Gain= -9.98 dBi Average Gain= -15.53dBi</p>	<p>Peak Gain= 1.84 dBi Average Gain= -2.57 dBi</p>

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 ANGLES=N/A      HOLEDIA=N/A



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### 5. RELIABILITY TEST

Test item	Test condition / Test method	Specification
Solderability JIS C 0050-4.6 JESD22-B102D	*Solder bath temperature : 235 ± 5°C  *Immersion time : 2 ± 0.5 sec  *Solder : Sn3Ag0.5Cu for lead-free	At least 95% of a surface of each terminal electrode must be covered by fresh solder.
Resistance to soldering heat JIS C 0050-5.4	*Preheating temperature : 120~150°C, 1 minute.  *Solder temperature : 270±5°C  *Immersion time : 10±1 sec  *Solder : Sn3Ag0.5Cu for lead-free  Measurement to be made after keeping at room temperature for 24±2 hrs	No mechanical damage. Samples shall satisfy electrical specification after test.  Loss of metallization on the edges of each electrode shall not exceed 25%.
Drop Test JIS C 0044	*Height : 75 cm  *Test Surface : Rigid surface of concrete or steel.  *Times : 6 surfaces for each units ; 2 times for each side.	No mechanical damage. Samples shall satisfy electrical specification after test.
Adhesive Strength of Termination JIS C 0051- 7.4.3	*Pressurizing force : 5N (LGA terminal series) ; 5N(≤0603) ; 10N(>0603) <b>*Test time : 10±1 sec</b>	No remarkable damage or removal of the termination.
Bending test JIS C 0051- 7.4.1	The middle part of substrate shall be pressurized by means of the pressurizing rod at a rate of about 1 mm/s per second until the deflection becomes 1mm/s and then pressure shall be maintained for 5±1 sec.  Measurement to be made after keeping at room temperature for 24±2 hours	No mechanical damage. Samples shall satisfy electrical specification after test.

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 ANGLES = N/A            HOLEDIA = N/A



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Temperature cycle JIS C 0025	2. 30±3 minutes at -40°C±3°C, 3. 10~15 minutes at room temperature, 4. 30±3 minutes at +85°C±3°C, 5. 10~15 minutes at room temperature, Total 100 continuous cycles Measurement to be made after keeping at room temperature for 24±2 hrs	No mechanical damage. Samples shall satisfy electrical specification after test.
Vibration JIS C 0040	*Frequency : 10Hz~55Hz~10Hz(1min) *Total amplitude : 1.5mm *Test times : 6hrs.(Two hrs each in three mutually perpendicular directions)	No mechanical damage. Samples shall satisfy electrical specification after test.
High temperature JIS C 0021	*Temperature : 85°C±2°C *Test duration : 1000+24/-0 hours Measurement to be made after keeping at room temperature for 24±2 hrs	No mechanical damage. Samples shall satisfy electrical specification after test.
Humidity (steady conditions) JIS C 0022	*Humidity : 90% to 95% R.H. *Temperature : 40±2°C *Time : 1000+24/-0 hrs. Measurement to be made after keeping at room temperature for 24±2 hrs ※ 500hrs measuring the first data then 1000hrs data	No mechanical damage. Samples shall satisfy electrical specification after test.
Low temperature JIS C 0020	*Temperature : -40°C±2°C *Test duration : 1000+24/-0 hours Measurement to be made after keeping at room temperature for 24±2 hrs	No mechanical damage. Samples shall satisfy electrical specification after test.

**SOLDERING CONDITION**

Typical examples of soldering processes that provide reliable joints without any damage are given in Fig 2.

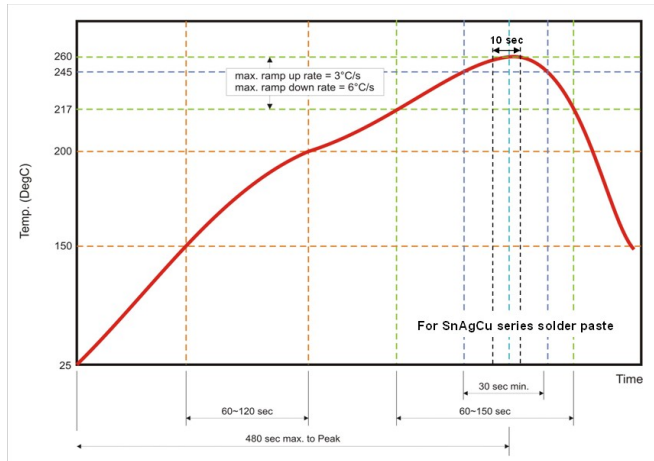

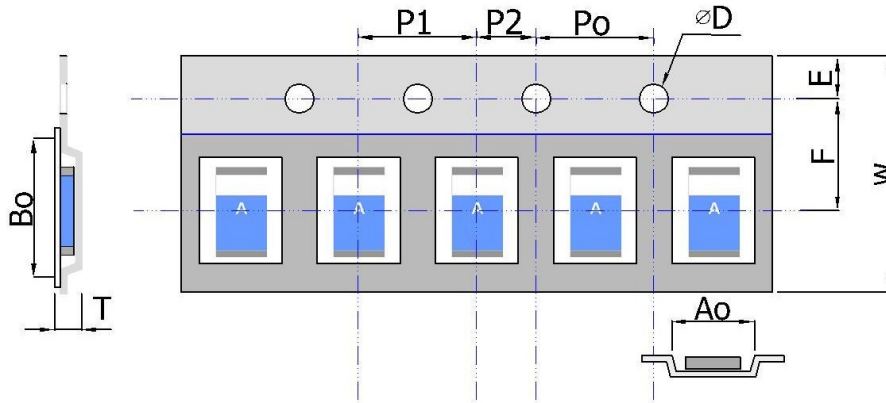


Fig 2. Infrared soldering profile

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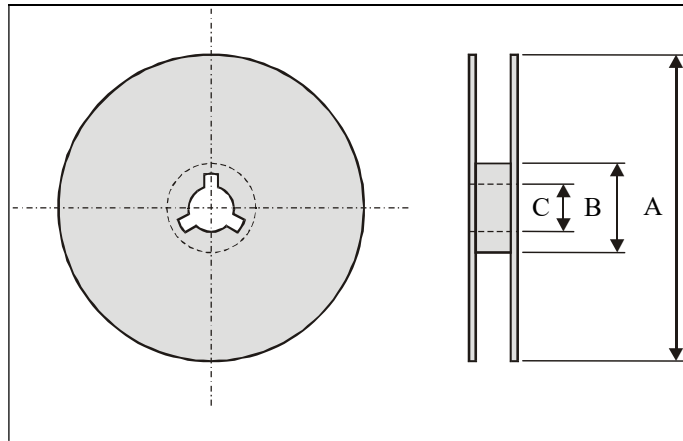
### 6. Package



Plastic Tape specifications (unit :mm)

Index	Ao	Bo	ΦD	T	W
Dimension (mm)	1.95 ± 0.10	3.45 ± 0.10	1.55 ± 0.05	1.30 ± 0.10	8.20 <sup>+0.10</sup> <sub>-0.30</sub>
Index	E	F	Po	P1	P2
Dimension (mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10

### Reel dimensions



Index	A	B	C
Dimension (mm)	Φ178	Φ60.0	Φ13.5

yping Quantity: 2000 pieces per 7" reel

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**CAUTION OF HANDLING**


**Limitation of Applications**

Please contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects, which might directly cause damage to the third party's life, body or property.

- (1) Aircraft equipment
- (2) Aerospace equipment
- (3) Undersea equipment
- (4) Medical equipment
- (5) Disaster prevention / crime prevention equipment
- (6) Traffic signal equipment
- (7) Transportation equipment (vehicles, trains, ships, etc.)
- (8) Applications of similar complexity and /or reliability requirements to the applications listed in the above.

**Storage condition**

- (1) Products should be used in 6 months from the day of WALSIN outgoing inspection.
- (2) Storage environment condition.
  - Products should be storage in the warehouse on the following conditions.
  - Temperature : +5 to +40℃
  - Humidity : 30 to 70% relative humidity
  - Don't keep products in corrosive gases such as sulfur. Chlorine gas or acid or it may cause oxidization of electrode, resulting in poor solderability.
  - Products should be storage on the palette for the prevention of the influence from humidity, dust and son on.
  - Products should be storage in the warehouse without heat shock, vibration, direct sunlight and so on.
  - Products should be storage under the airtight packaged condition.

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