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ACA-3216-P1-CC-S

Specification

Product Name	INPAQ RF Chip Antenna
Series/PN	ACA-3216-P1-CC-S
Size	EIAJ 3216

PN : ACA-3216-P1-CC-S

1.Explanation of part number :

AC	A	-	3216	-	P1	-	CC	-	S
Product Type	Center Frequency/Band Code		Product Code (Unit: mm)		Design Revision Code		Antenna Type		Special Code
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 :

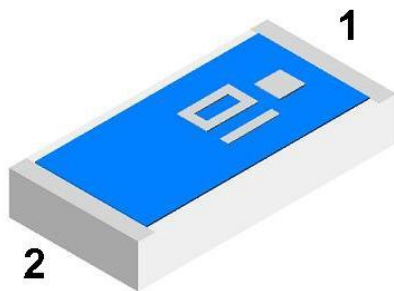
TYPE-1 TEST BOARD ELECTRONIC CHARACTERISTICS

Item	Specification
Working Frequency Range	2.4GHz~2.4835GHz (Note-1)
Gain	2 dBi (Typical)
VSWR	2.0 max.
Polarization	Linear
Azimuth Beamwidth	Omni-directional
Impedance	50Ω
Power Capacity	3 W max.
Maximum Input Power	5 Watts for 5 minutes

TYPE-2 TEST BOARD ELECTRONIC CHARACTERISTICS

Item	Specification
Working Frequency Range	2.4GHz~2.4835GHz (Note-1)
Gain	2 dBi (Typical)
VSWR	3.0 max.
Polarization	Linear
Azimuth Beamwidth	Omni-directional
Impedance	50Ω
Power Capacity	3 W max.
Maximum Input Power	5 Watts for 5 minutes

3. Antenna Drawing : CONSTRUCTION



PIN	Connection
1	Feeding
2	Soldering terminal

DIMENSIONS

Figure	Symbol	Dimension (mm)
	L	3.10 ± 0.20
	W	1.60 ± 0.20
	T	0.60 ± 0.10
	A	0.25 ± 0.20

4. Performance Report :

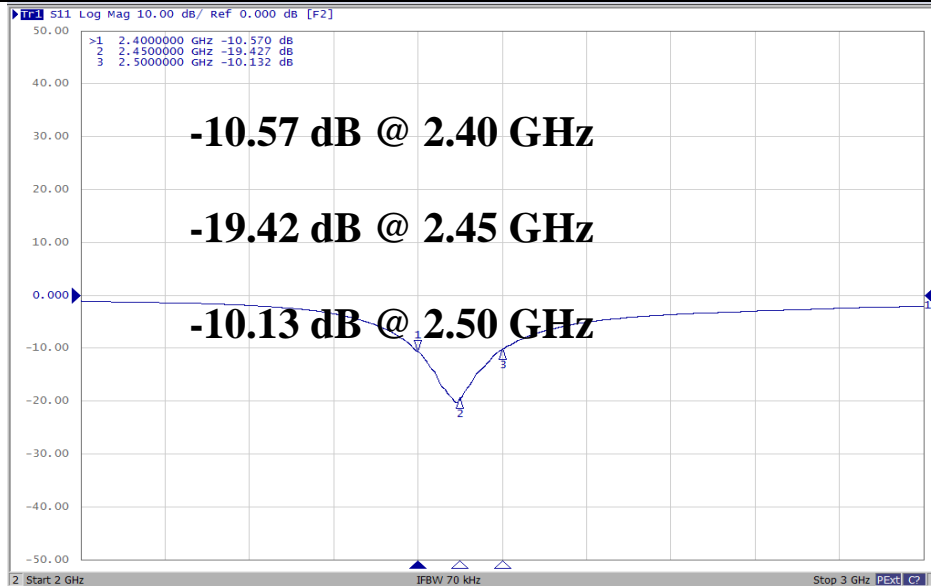
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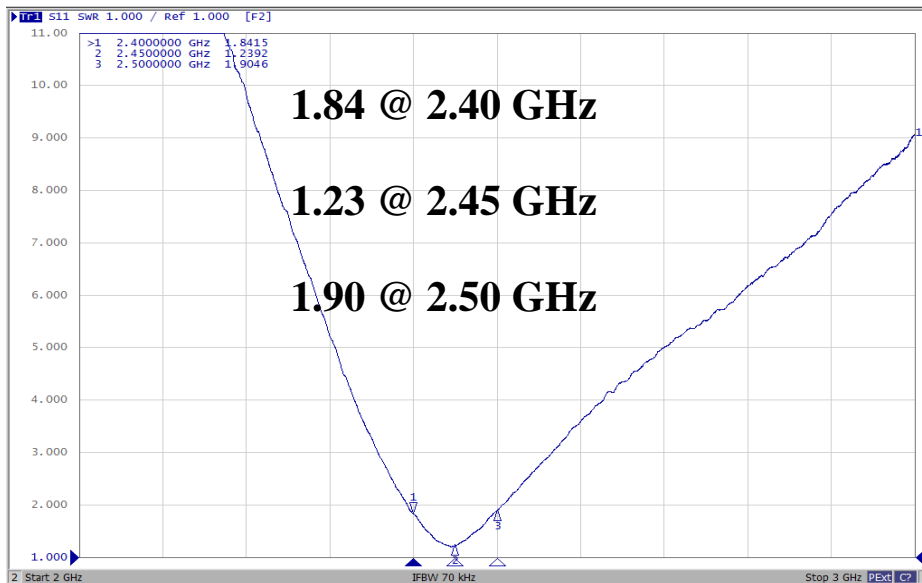
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Antenna S11 on Type-1 Test Board



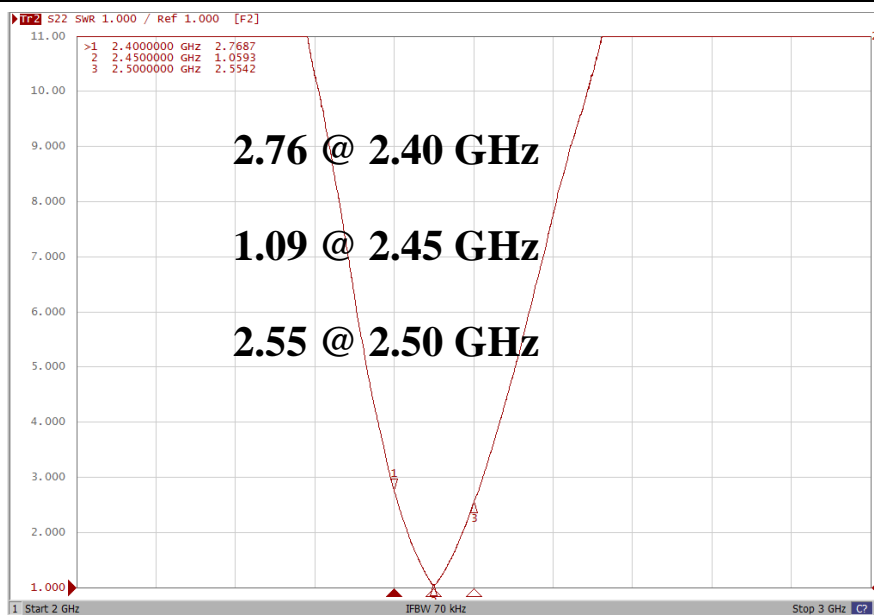
Antenna VSWR on Type-1 Test Board



Antenna S11 on Type-2 Test Board



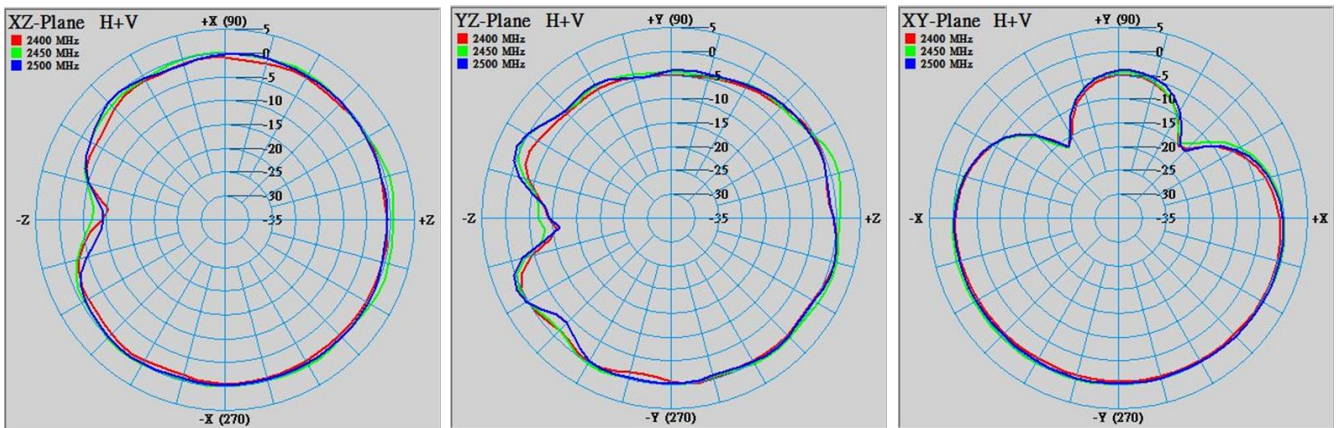
Antenna VSWR on Type-2 Test Board



RADIATION PATTERN

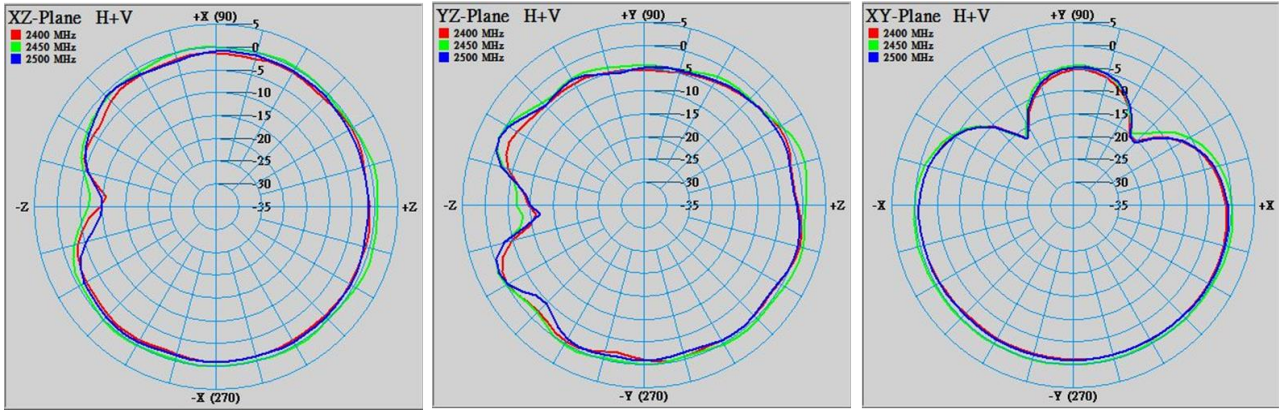
Radiation Pattern and Gain were dependent on measurement board design. The specification of ACA-3216-P1-CC-S antenna was measured based on the PCB size and installation position as shown in the below figure Test Board.

Antenna on Type-1 Test Board



Frequency [MHz]	ZX plane		ZY plane		XY plane	
	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]
2400	-0.18	-1.35	0.88	-1.72	-0.20	-2.31
2450	1.02	-0.42	1.71	-0.96	0.48	-1.61
2500	0.05	-0.90	0.97	-1.39	0.38	-1.83

Antenna on Type-2 Test Board



Frequency [MHz]	ZX plane		ZY plane		XY plane	
	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]
2400	-0.82	-1.83	0.27	-2.11	-0.58	-2.55
2450	0.94	-0.79	1.58	-1.15	0.47	-1.72
2500	-0.64	-1.10	0.35	-1.66	-0.44	-1.99

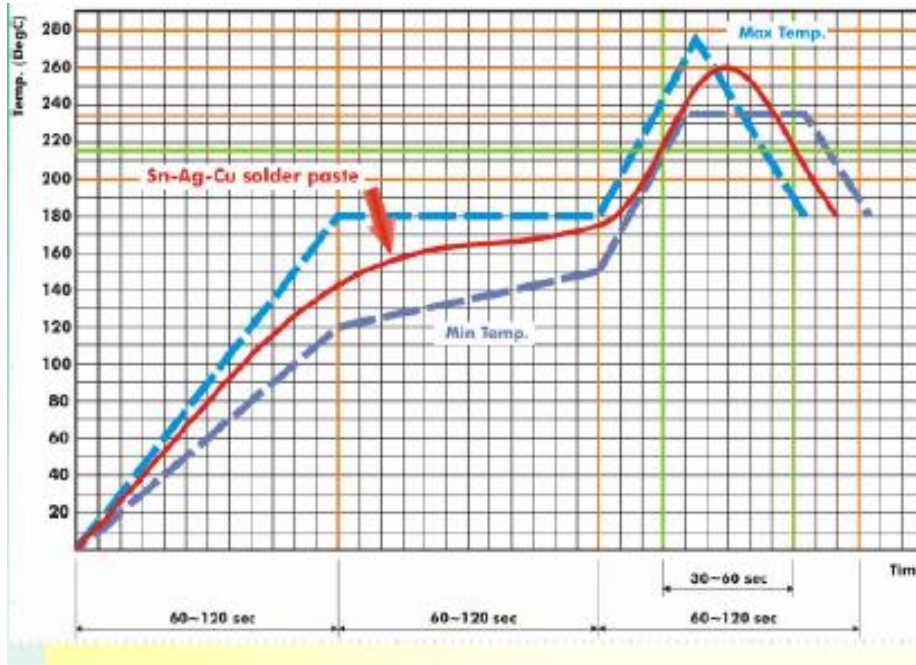
5.RELIABILITY TEST

Test item	Test condition / Test method	Specification
Solderability JIS C 0050-4.6 JESD22-B102D	*Solder bath temperature : $235 \pm 5^{\circ}\text{C}$ *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.
Leaching (Resistance to dissolution of metallization) IEC 60068-2-58	*Solder bath temperature : $260 \pm 5^{\circ}\text{C}$ *Leaching immersion time : 30 ± 0.5 sec *Solder : SN63A	Loss of metallization on the edges of each electrode shall not exceed 25%.
Resistance to soldering heat JIS C 0050-5.4	*Preheating temperature : $120\sim 150^{\circ}\text{C}$, 1 minute. *Solder temperature : $270\pm 5^{\circ}\text{C}$ *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 : $5\text{N}(\leq 0603)$; $10\text{N}(>0603)$ *Test time : 10 ± 1 sec	No remarkable damage or removal of the termination.

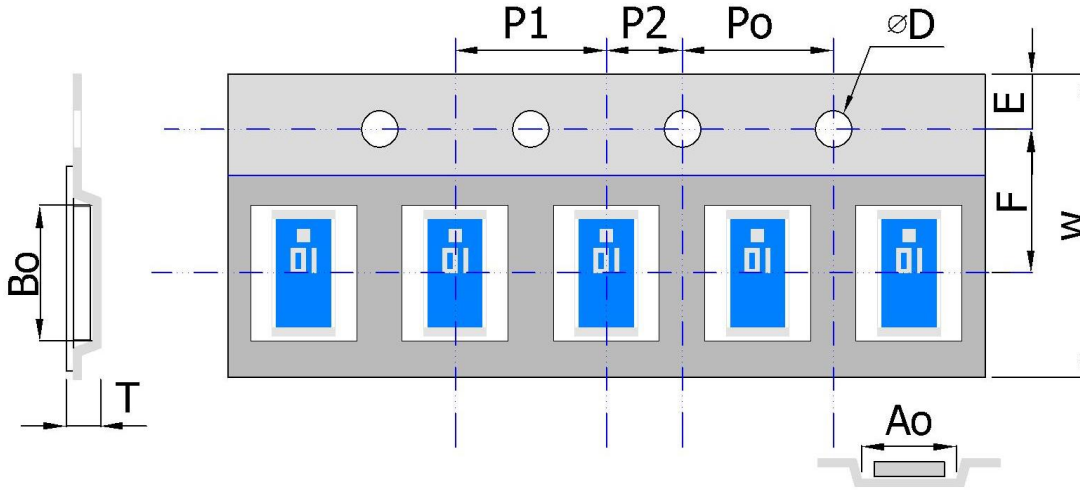
<p>Bending test JIS C 0051- 7.4.1</p>	<p>The middle part of substrate shall be pressurized by means of the pressurizing rod at a rate of about 1 mm/s per second until the deflection becomes 1mm/s and then pressure shall be maintained for 5±1 sec. Measurement to be made after keeping at room temperature for 24±2 hours</p>	<p>No mechanical damage. Samples shall satisfy electrical specification after test.</p>
<p>Temperature cycle JIS C 0025</p>	<p>1. 30±3 minutes at -40°C±3°C, 2. 10~15 minutes at room temperature, 3. 30±3 minutes at +85°C±3°C, 4. 10~15 minutes at room temperature, Total 100 continuous cycles Measurement to be made after keeping at room temperature for 24±2 hrs</p>	<p>No mechanical damage. Samples shall satisfy electrical specification after test.</p>
<p>Vibration JIS C 0040</p>	<p>*Frequency : 10Hz~55Hz~10Hz(1min) *Total amplitude : 1.5mm *Test times : 6hrs.(Two hrs each in three mutually perpendicular directions)</p>	<p>No mechanical damage. Samples shall satisfy electrical specification after test.</p>
<p>High temperature JIS C 0021</p>	<p>*Temperature : 85°C±2°C *Test duration : 1000+24/-0 hours Measurement to be made after keeping at room temperature for 24±2 hrs</p>	<p>No mechanical damage. Samples shall satisfy electrical specification after test.</p>
<p>Humidity (steady conditions) JIS C 0022</p>	<p>*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</p>	<p>No mechanical damage. Samples shall satisfy electrical specification after test.</p>
<p>Low temperature JIS C 0020</p>	<p>*Temperature : -40°C±2°C *Test duration : 1000+24/-0 hours Measurement to be made after keeping at room temperature for 24±2 hrs</p>	<p>No mechanical damage. Samples shall satisfy electrical specification after test.</p>

SOLDERING CONDITION

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



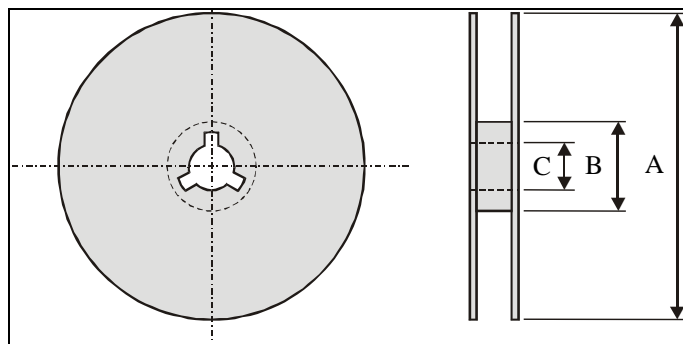
6.Package



Plastic Tape specifications (unit :mm)

Index	Ao	Bo	ΦD	T	W
Dimension (mm)	1.85 ± 0.10	3.45 ± 0.10	1.55 ± 0.05	0.75 ± 0.10	8.00 ± 0.30
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)	Φ178.0	Φ60.0	Φ13.0

Taping Quantity:2000 pieces per 7" reel