

No. TRJC-

Technical Report

Product name : Surface Mountable Dielectric Chip Antenna

Part number : AHD1103-244ST01

Subject : Input and Radiation properties (DRJC-3E02)

Mitsubishi Materials Corporation
Advanced products Strategic Company

Input and radiation properties	Approval	No.	DRJC-3E02
AHD1103-244ST01	Drawn	Date	May 19, 2003

Sample Name : AHD1103-244ST01

DRJC-3E02

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(1).Evaluation board and land pattern (unit: mm)

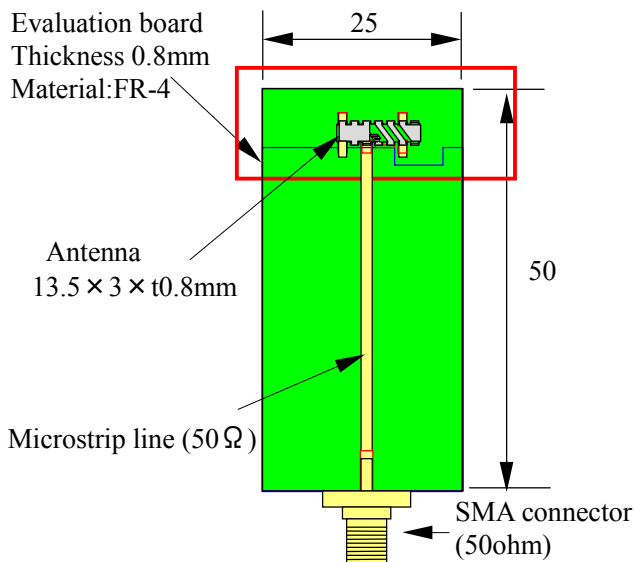


Fig.1 Evaluation board

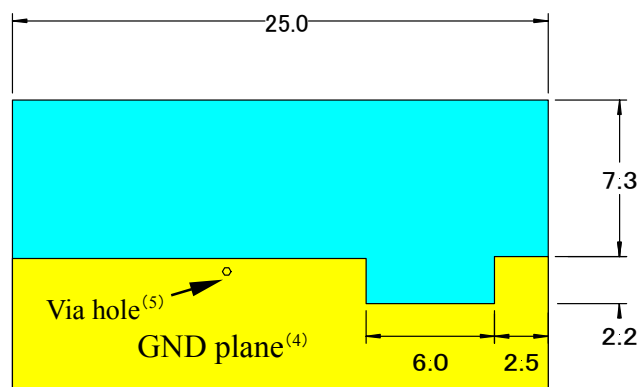
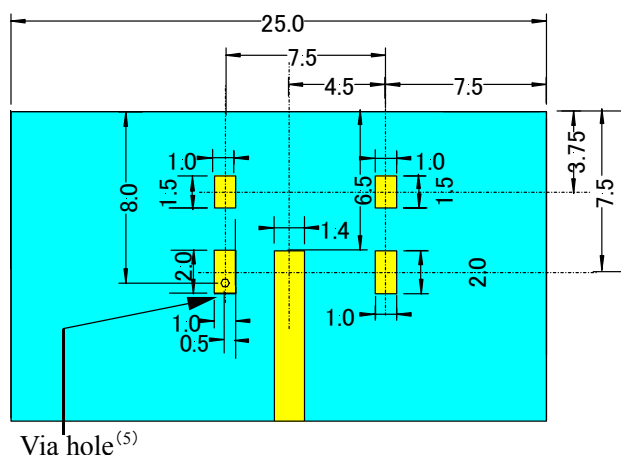


Fig.2 GND Pattern
(Backside of the Substrate)



Via hole⁽⁵⁾

Fig.3 Land pattern
(Surface of the Substrate)

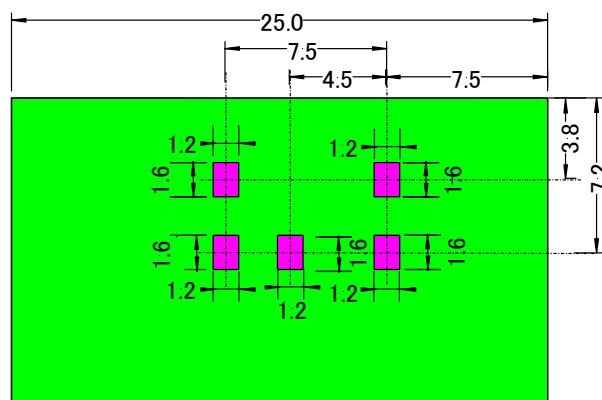


Fig.4 Solder resist pattern
(Surface of the Substrate)

Notes

- (1) The tolerance of Fig.1, Fig.2, Fig.3, and Fig.4 are ± 0.1 mm.
- (2) Fig.2, Fig.3, Fig.4 and Fig.5 are enlargements of the area surrounded by the red line in Fig.1 (Fig.2 is the perspective view of Fig.1).
- (3) Yellow areas show conductor, light blue areas show FR-4 substrate and green areas show solder resist.
- (4) In Fig.2 the yellow area is a GND plane.
- (5) Via hole ($\phi 0.4$ mm) connects GND land and ground plane.
- (6) We recommend to make solder resist on the surface of the substrate but no solder resist on the pink areas shown in Fig.4.
- (7) An antenna is separated from the GND 0.3mm, and mounted (shown in Fig.5).

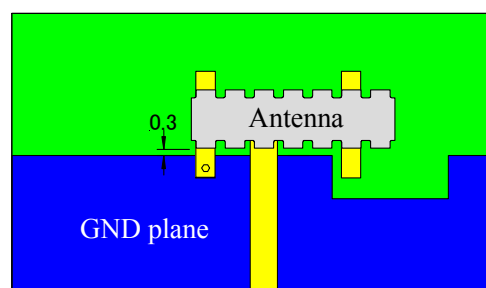


Fig.5 Mount position

(2) Dimension (Unit:mm)

[1] : In/Out Terminal

[2] : GND Terminal

[3] : Fixing Electrode (Should be connected with the floating pad)

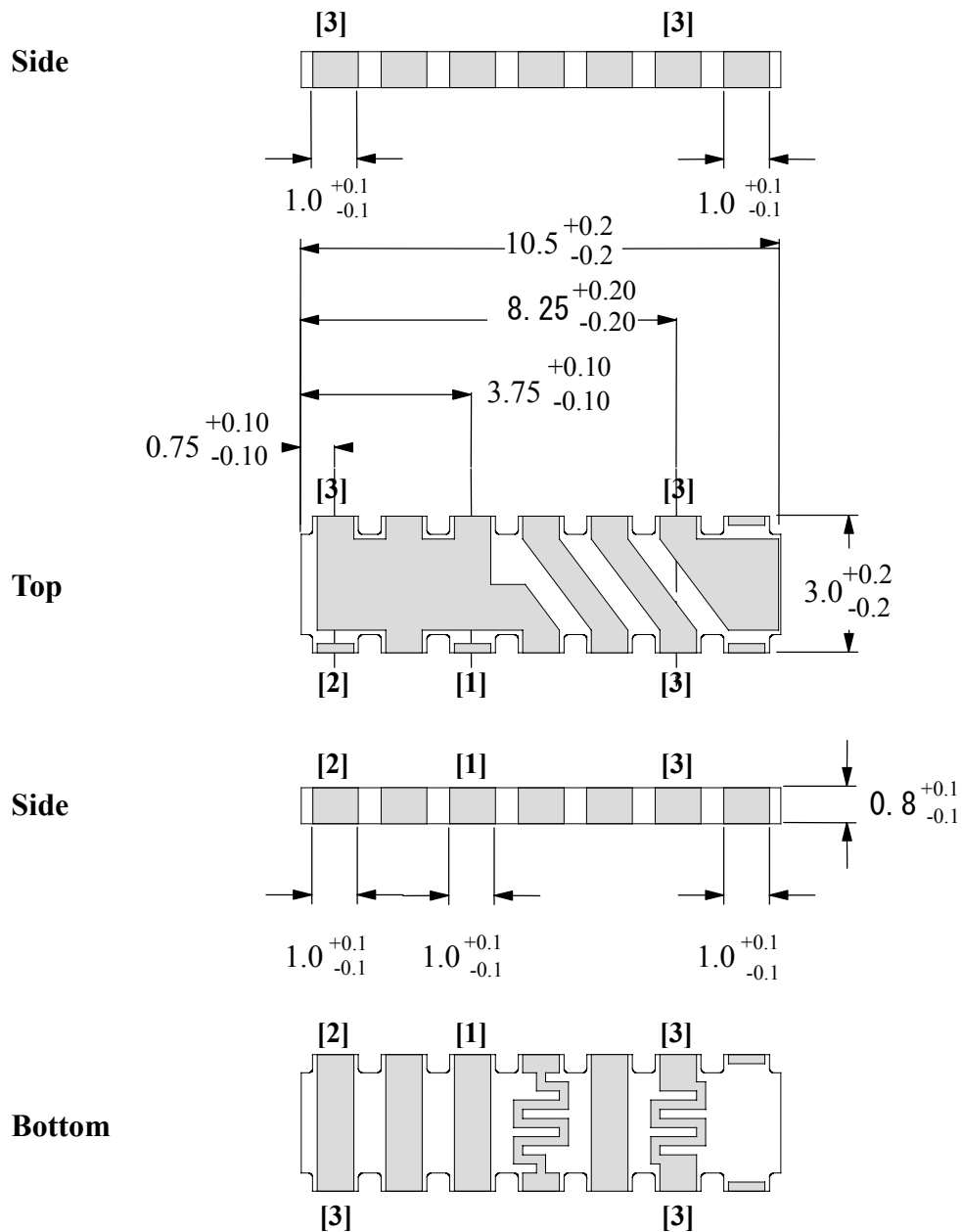


Fig.6 Dimension

(3) Typical data

(measured with HP8510 network analyzer)

[1] Input properties

- Input Impedance
- Return Loss
- Input Impedance (Smith's chart)

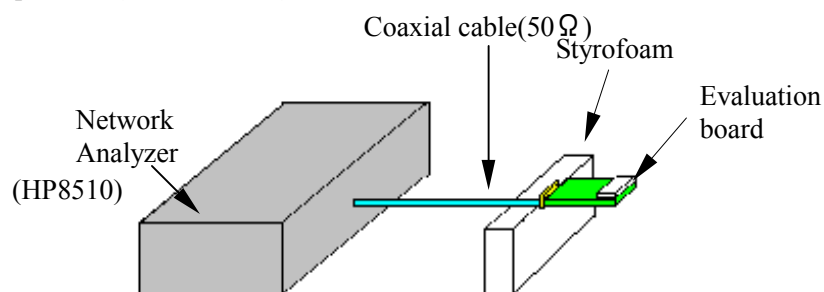


Fig.7 Input properties measuring :

[2] Radiation patterns

Radiation Pattern (Z-X, Y-Z, X-Y plane)

Note:

Radiation Pattern was measured with standard Dipole Antenna rotated in the direction of curved arrow.

ex. In the Y-Z plane Data, The direction of 0 degree represents Z-axis and the direction of 90 degree represents Y-axis.

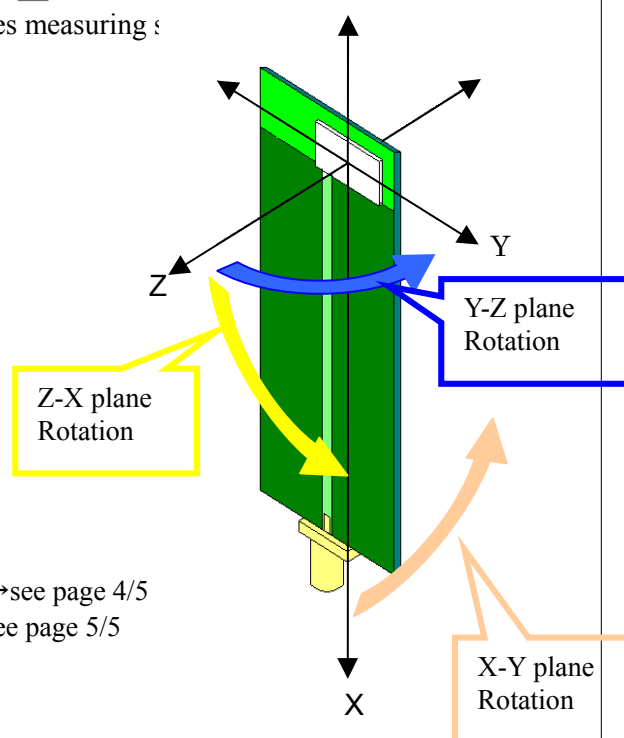
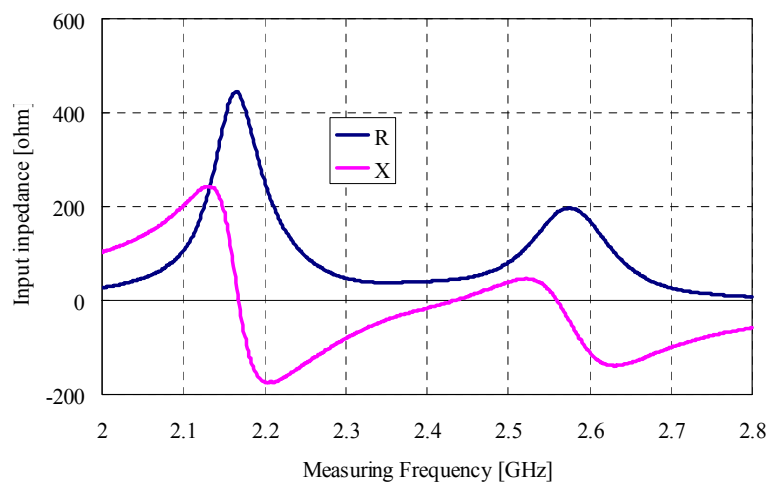
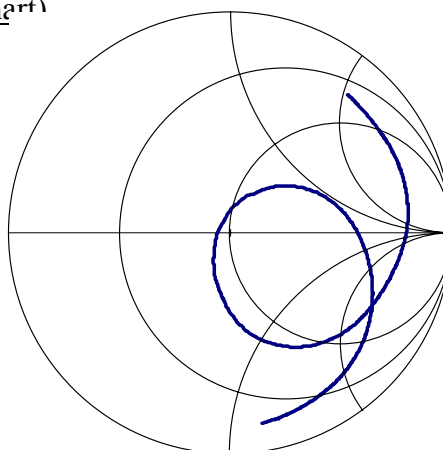
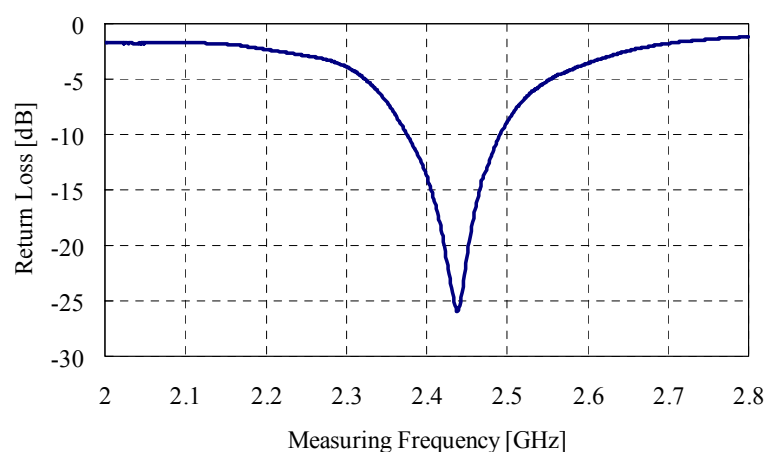


Fig8.Coordinate

Evaluation results

3-1. Input properties (Input Impedance, Return Loss) → see page 4/5

3-2. Radiation patterns (ZX, YZ and XY plane) → see page 5/5

3-1. Input Properties**3-1-1. Input impedance****3-1-2. Input Impedance (Smith's Chart)****3-1-3. Return Loss**

Center frequency : 2438 MHz

Return Loss minimum(at f_0)=-26dB

f(lower)2338 MHz, f(upper)2533 MHz, Bandwidth : 195 MHz(V.S.W.R.<3)

f(lower)2372 MHz, f(upper)2495MHz, Bandwidth : 123 MHz(V.S.W.R.<2)

*These properties are not guaranteed properties but typical properties.

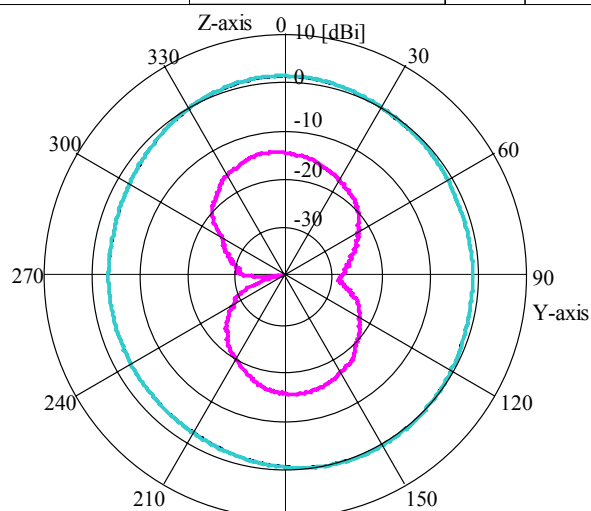
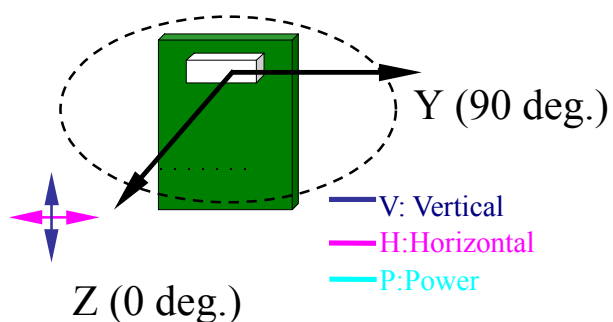
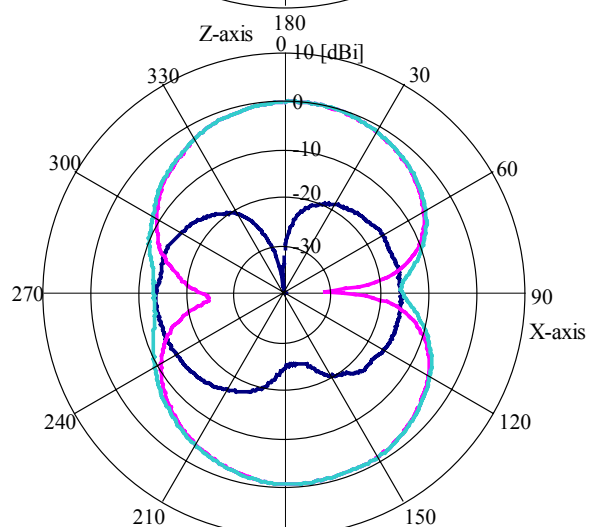
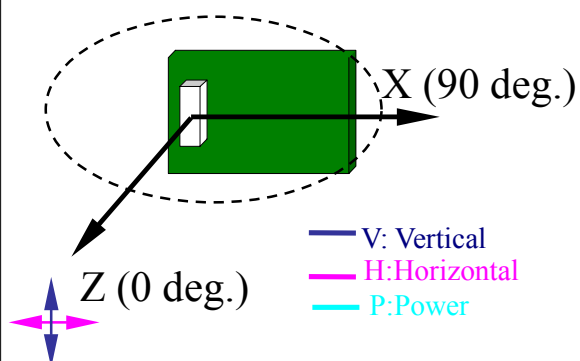
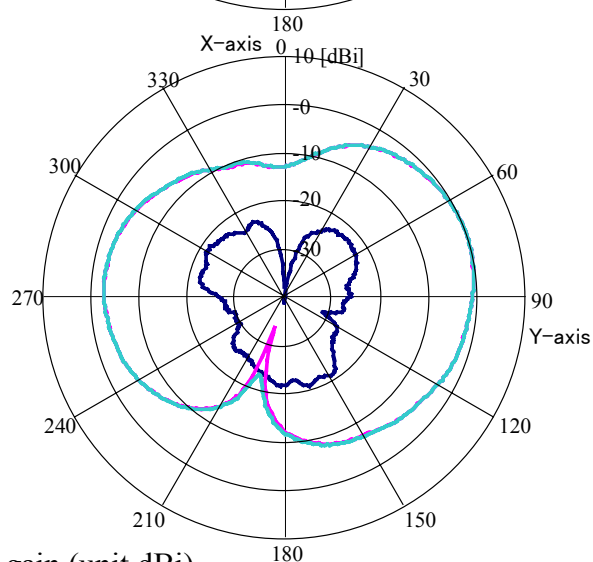
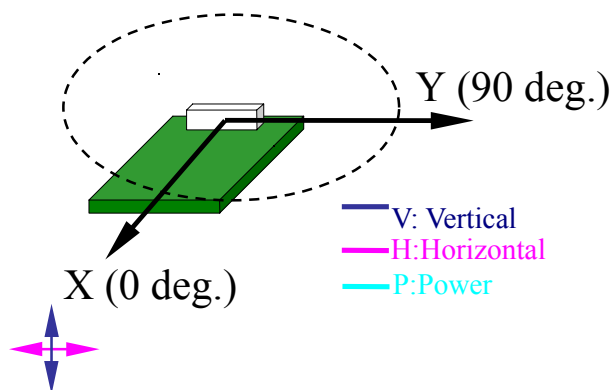
3-2. Radiation Pattern**YZ plane****ZX plane****XY plane**

Table.1 Mean gain and Maximum gain (unit dBi)

YZ Plane [dBi]		ZX Plane [dBi]		XY Plane [dBi]		Total Mean gain [dBi]	
Vertical (Maximum)	-0.8 1.1	Vertical (Maximum)	-16.9 -13.1	Vertical (Maximum)	-24.3 -20.7	Power	-2.6
Horizontal (Maximum)	-18.8 -14.4	Horizontal (Maximum)	-3.7 -0.0	Horizontal (Maximum)	-4.5 -0.1		
Power gain (Maximum)	-0.8 1.2	Power gain (Maximum)	-3.5 0.0	Power gain (Maximum)	-4.4 0.0		

*These properties are not guaranteed properties but typical properties.