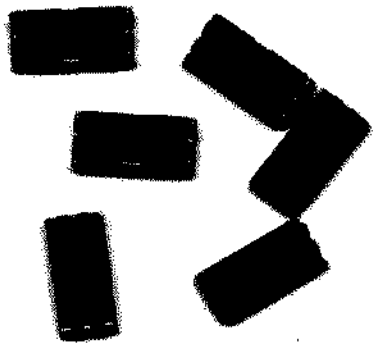
MULTILAYER CERAMIC ANTENNA
FOR BLUETOOTH & WLAN IEEE 802.11b (2.45G Hz ISM Band)
(Long Shape)

Product Specification

QUICK REFERENCE DATA

Dimension	7.8* 3.6 * 0.9 mm
Central Frequency*	2.45 GHz
Bandwidth	>100 MHz
Gain**	2.5dBi max
Average Gain**	-3 dBi
VSWR	2.0 max
Polarization	Linear
Azimuth	Omni-directional
Impedance	50Ω
Operating Temperature	-55~125 °C
Termination	Ni/Sn (Environmentally-Friendly Leadless)
Resistance to soldering heats	260°C, 10 sec.
Maximum Power	1W



* Four types of antenna are available for central frequency adjustment

(Type 245, type 260, type 270, type 230)

** Depending on ground plane layout

Special Environmental Concerns- Green Products Design: The foil making process is using environmentally-friendly aqueous solvent technology. Termination is lead free (Pb free) and packing materials can be re-cycled

2.45GHz Multilayer Ceramic Antenna				4311 115 11245 4311 115 11260 4311 115 11270 4311 115 11230					—	1	Apr. 10, 03
									—	2	Apr. 17, 03
									—	3	May, 5, 03
BY	YH/Cliff	SUPER		TLL.SH	12	PAGE	2	SH nr.	—	4	
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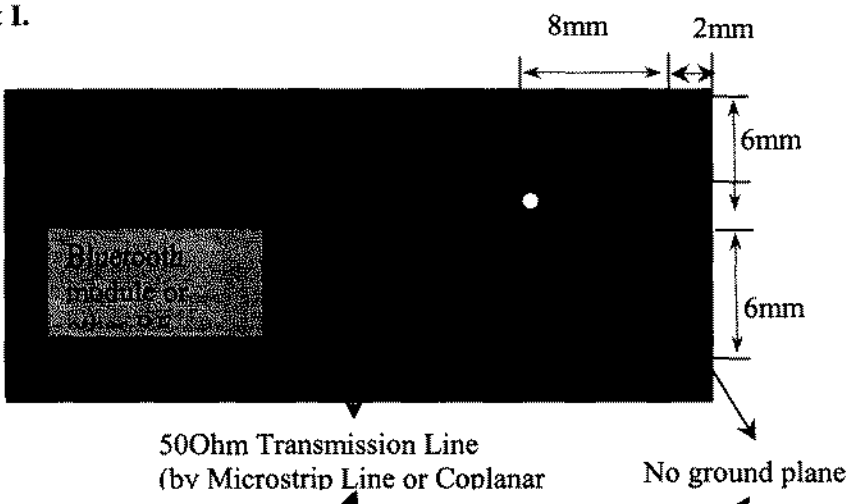
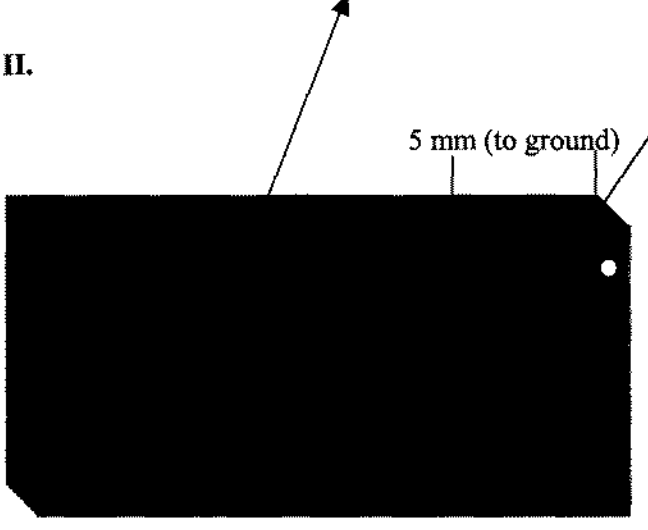
APPLICATION

Suggested Layout I.

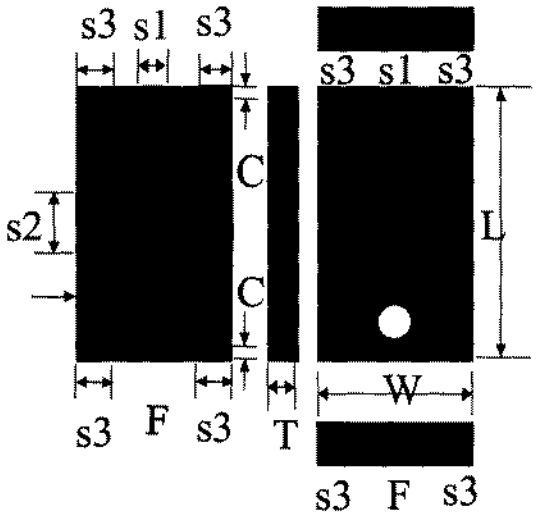


Suggested Layout II.

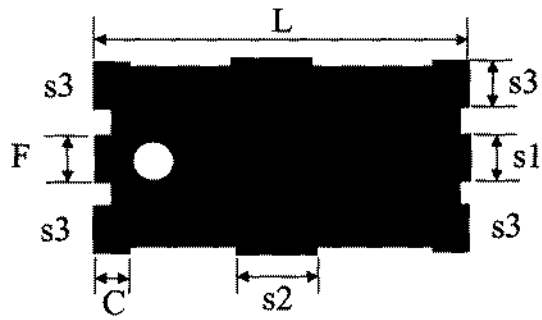


Note: Optional matching network may be necessary if 5mm isolation distance to ground is reduced.

DIMENSIONAL DATA

Figure	Dimension		Port
	L	7.8± 0.25 mm	-
	W	3.6± 0.2 mm	-
	T	0.9± 0.2 mm	-
	F	0.5± 0.2 mm	Feed Termination
	C	0.4± 0.2 mm	-
	S1	0.5± 0.2 mm	NC Solder Termination Only
	S2	1.20 ± 0.2 mm	NC Solder Termination Only
	S3	0.8± 0.2 mm	NC Solder Termination Only

SOLDER LAND PATTERN

Figure	Dimensions		Remark
	L	9 ± 0.10 mm	
	W	3.7 ± 0.20 mm	
	F	0.80 ± 0.20 mm	Feed Pad
	C	0.90 ± 0.20 mm	
	S1	0.80 ± 0.2 mm	NC Mount Pad Only
	S2	1.60 ± 0.2 mm	NC Mount Pad Only
	S3	0.90 ± 0.2 mm	NC Mount Pad Only

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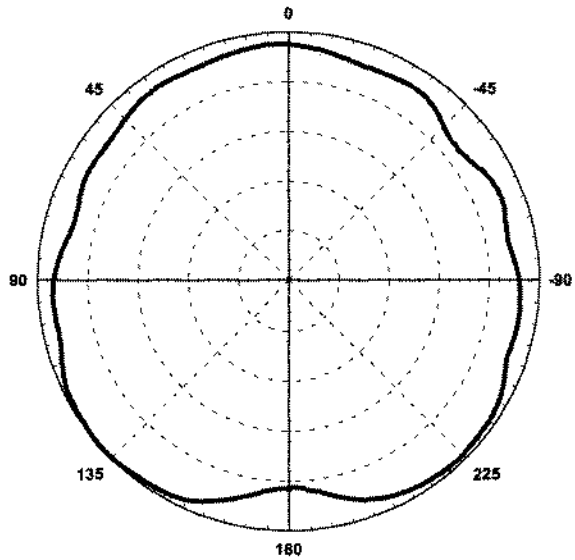
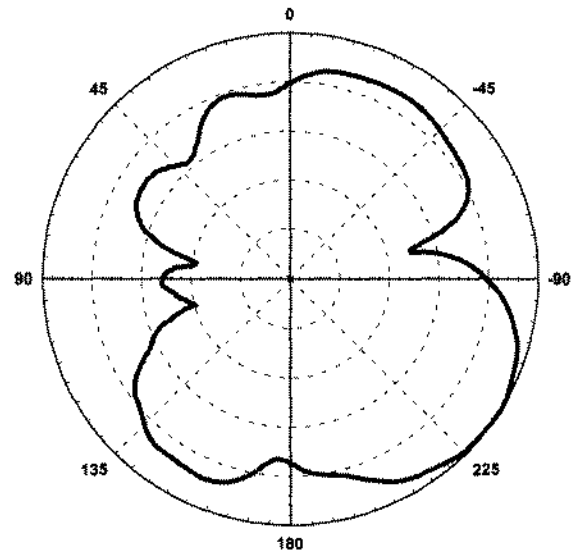
Radiation Pattern Polar Plot (Based on Suggested Layout)



H-Plane



E-Plane

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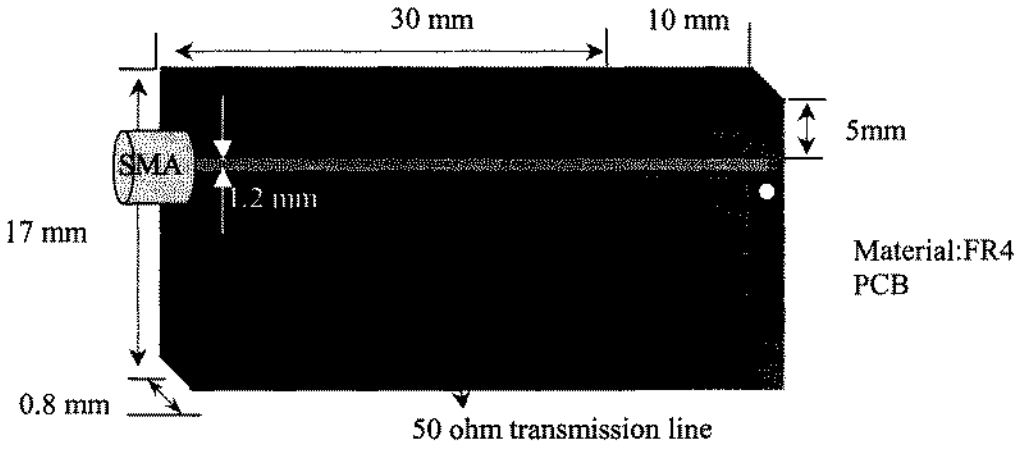
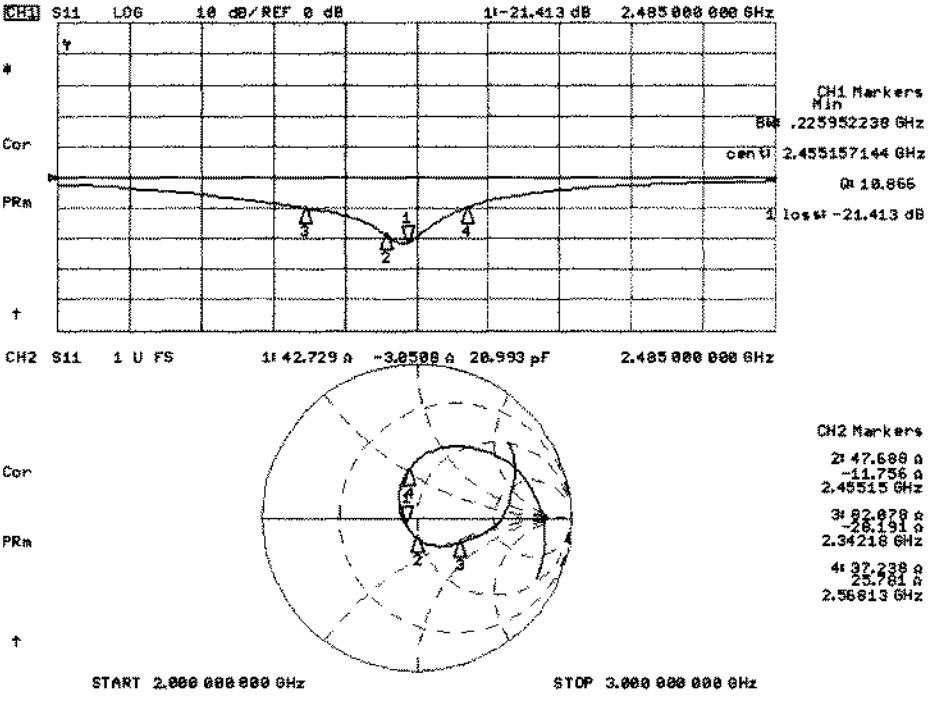
CHECK				DATE		May, 5, 03			—	5	

STANDARD TEST BOARD FOR SWR





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RELIABILITY DATA (Reference to IEC Specification)

IEC 384-10/ CECC 32 100 CLAUSE	IEC 60068-2 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS
4.4		Mounting	The antenna can be mounted on printed-circuit boards or ceramic substrates by applying wave soldering, reflow soldering (including vapour phase soldering) or conductive adhesive	No visible damage
4.5		Visual inspection and dimension check	Any applicable method using × 10 magnification	In accordance with specification (chip off 4mm)
4.6.1		Antenna	Central Frequency at 20 °C	Standard test board in page 4
4.8		Adhesion	A force of 3 N applied for 10 s to the line joining the terminations and in a plane parallel to the substrate	No visible damage
4.9		Bond strength of plating on end face	Mounted in accordance with CECC 32 100, paragraph 4.4	No visible damage
			Conditions: bending 0.5 mm at a rate of 1mm/s, radius jig. 340 mm, 1.6 mm FR4 board of 90 mm length	No visible damage
4.10	20(Tb)	Resistance to soldering heat	260 ± 5 °C for 10 ± 0.5 s in a static solder bath	The terminations shall be well tinned after recovery and Central Freq. Change ± 6%

IEC 384-10/ CECC 32 100 CLAUSE	IEC 60068-2 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS
		Resistance to leaching	260 ± 5 °C for 30 ± 1 s in a static solder bath	Using visual enlargement of × 10, dissolution of the termination shall not exceed 10%
4.11	20(Ta)	Solderability	Zero hour test, and test after storage (20 to 24 months) in original atmosphere; un-mounted chips completely immersed for 2 ± 0.5 s in 235 ± 5°C.	The termination must be well tinned, at least 75% is well tinned at termination
4.12	4(Na)	Rapid change of temperature	-55 °C (30 minutes) to +125 °C (30 minutes); 100 cycles	No visible damage Central Freq. Change ± 6%
4.14	3(Ca)	Damp heat	500 ± 12 hours at 60 °C; 90 to 95 % RH	No visible damage 2 hours recovery Central Freq. Change ± 6%
4.15		Endurance	500 ± 12 hours at 125 °C;	No visible damage 2 hours recovery Central Freq. Change ± 6%

ORDERING INFORMATION: Method I- by 12NC Ordering Code

The antennas may be ordered by using the 12 NC ordering code. These code numbers can be determined by the following rules:

43 11 1 15 11 245
F C M S T A

F. Family Code
43 = Antenna

C. Packing Type Code
11 = 180 mm/ 7" blister (1000pcs) , **12** = 330 mm/13" blister (4000 pcs)
13 = Bulk (1000 pcs)

M. Materials Code
1 = High Frequency Material

S. Size Code
15 = 7.8 * 3.6 * 0.9 mm

T. Tolerance/Style
11 = larger than 100 M Hz Band Width with 8 terminations

A. Working Frequency (three types of antenna are available)

245 = 2.45 GHz	Type 245 (No Marking)
260 = (2.45+0.15) GHz * Intention for shift up 150MHz	Type 260 (Marking 6)
270 = (2.45+0.25) GHz * Intention for shift up 250MHz	Type 270 (Marking 7)
230 = (2.45-0.15) GHz * Intention for shift down 150MHz	Type 230 (Marking 3)

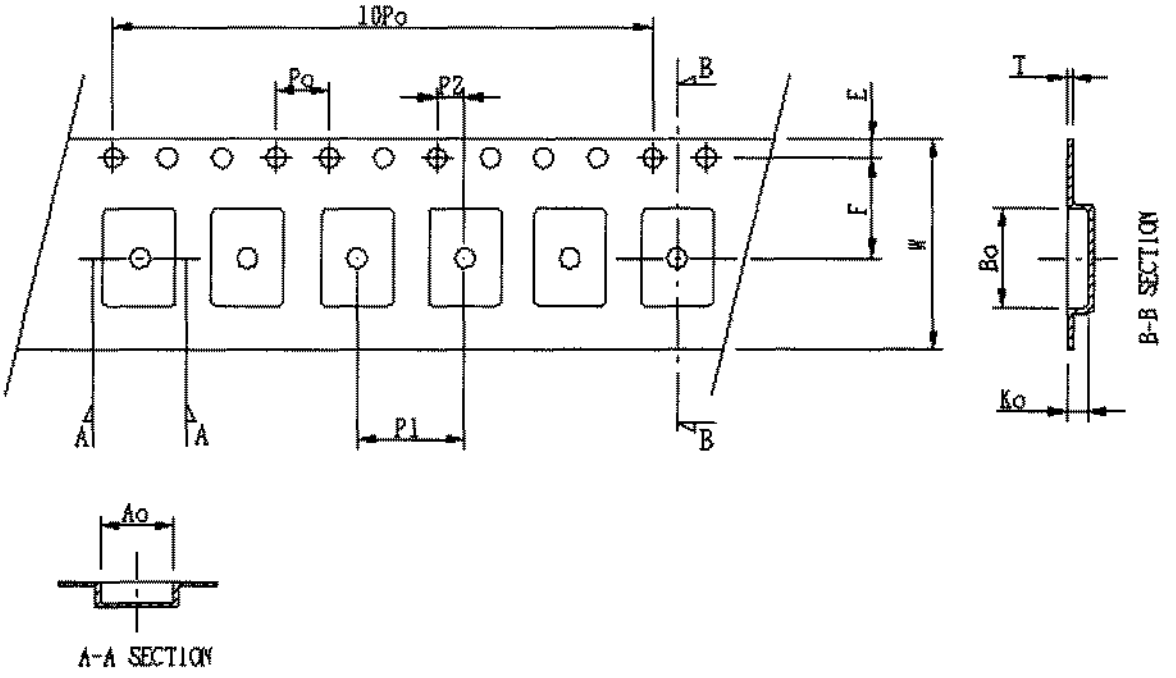
Example: 12NC 4311 115 11245
Product description: Antenna (43) by 180 mm blister (11) of High Frequency Material (1), Size 7.8*3.6*0.9 mm (1);
Tolerance (11) of 100 MHz (VSWR<2) with 8 termination
Working Frequency (245) = 2.45G Hz

ORDERING INFORMATION: Method II- by Clear Text Code

The antennas may be ordered by using the 16-digit clear text ordering code. These code numbers can be determined by the following rules:

AN2450110708031K (Clear Text Code Example)						
AN	2450	11	07	0803	1	K
Product	Central Freq.	Bandwidth	Material	Size	Quantities	Packing
AN= Antenna	2450=2.45GHz 2600=2.60GHz 2700=2.70GHz 2300=2.30GHz	00= >100MHz	07=K7	0803=7.8* 3.6*0.9 mm	1 = 1K 4 = 4K	K=7" plastic F =13" plastic B = Bulk

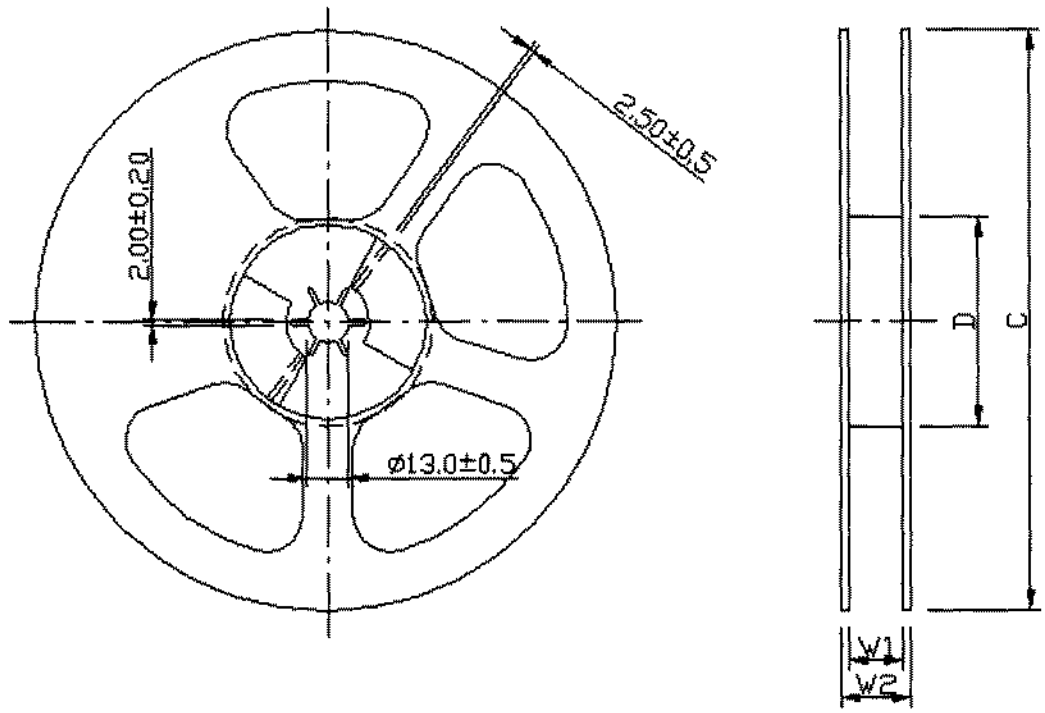
Taping Blister Tape



DIMENSION:

Serial no	Cecking note	Index	Spec(mm)
1	Sprocket hole	Do	1.55±0.10
2	Pocket hole	D1	1.50±0.10
3	Distance sprocket hole/sprocket hole	Po	4.0±0.10
4	Distance pocket/pocket	P1	8.0±0.10
5	Distance sprocket hole/pocket	P2	2.0±0.10
6	Tape width	W	16.0±0.30
7	Distance sprocket hole/outside	E	1.75±0.10
8	Distance sprocket hole/pocket	F	7.50±0.10
9	Pocket length	Ao	3.86±0.10
10	Pocket length	Bo	8.15±0.10
11	Pocket depth	Ko	1.20±0.10
12	Thickness of tape	T	0.25±0.10
13	10x sprocket hole pitch	10Po	40.0±0.20

7"(180mm) Reel Specifications



Product size code	Units per Reel	Tape Width (mm)	C (mm)	D (mm)	W_1 (mm)	W_2 (mm)
Antenna	1000	16	180.0±1.0	62±0.5	16.0^{+1}_{-0}	20.5±0.2

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Revision Control:

Revision	Date	Content	Remark
Rev. 1	April 10, 03	Sheet 190 New Issued with 8 termination	
Rev. 2	April 17, 03	Bending Specification updated	
Rev. 3	May 5, 03	Layout dimension change and 8 termination with new 12NC	