MULTILAYER CERAMIC ANTENNA (LINEAR POLARIZATION MODE) FOR 433MHz

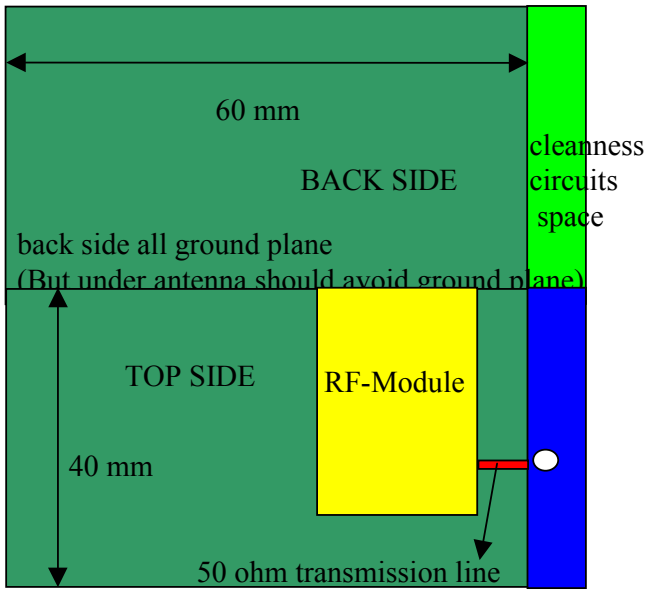
Preliminary Product Specification

QUICK REFERENCE DATA

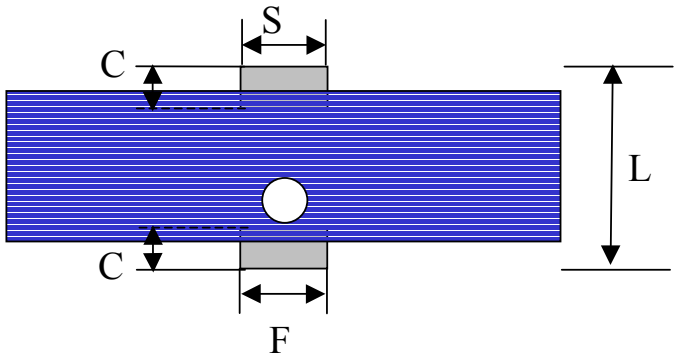
Working Frequency	433 MHz
Bandwidth	20 MHz (Min)
Frequency Range	421 ~ 445 MHz
Gain	0.5 dBi (Max)
VSWR	2.0 max
Polarization	Linear
Azimuth	Omni-directional
Impedance	50Ω
Operating Temperature	-55~125 ^{O}C
Termination	Ni/Sn (Environmentally-Friendly Leadless)
Resistance to soldering heat	260^{O}C, 10 sec.

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

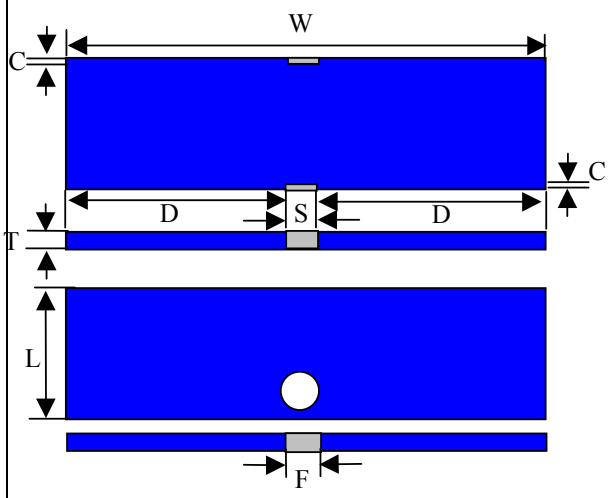
1. APPLICATION



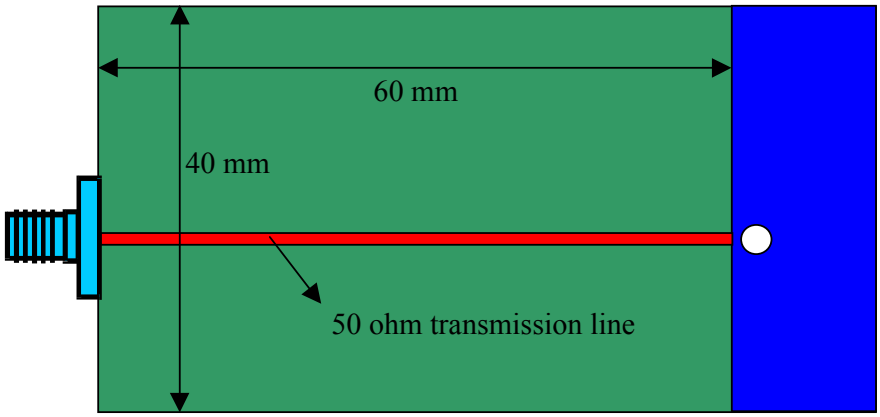
2. SOLDER LAND PATTERN FOR ANTENNA

Figure	**Dimensions**		*Remark*
	L	8.0 ± 0.50 mm	
	F	3.50 ± 0.50 mm	Feed pad
	C	0.90 ± 0.10 mm	
	S	3.50 ± 0.50 mm	Mount pad

3. MECHANICAL DATA

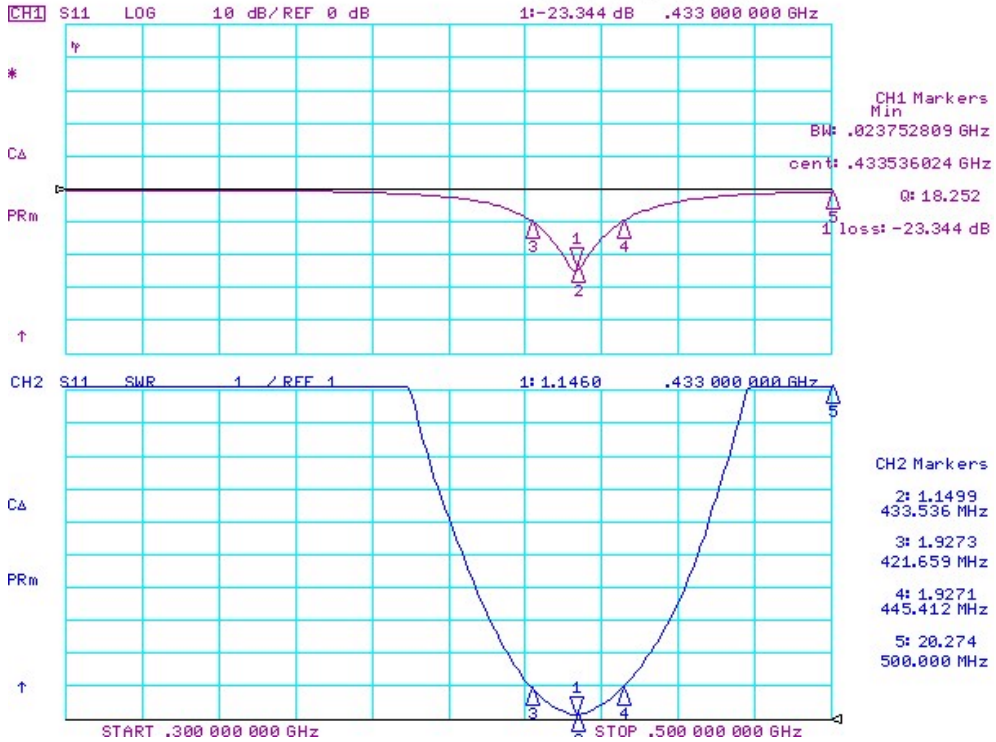
Figure	Dimension	Port
	L 7.2±0.5mm W 38.0±0.5mm T 0.90±0.1mm F 3.0±0.8mm C 0.5±0.3mm D 17.5±0.3mm S 2.0±0.8mm	- - - Feed termination - Solder termination -

4. TEST BOARD DIMENSION FOR S11 (RETURN LOSS) AND RADIATION PATTERN MEASURNMENT

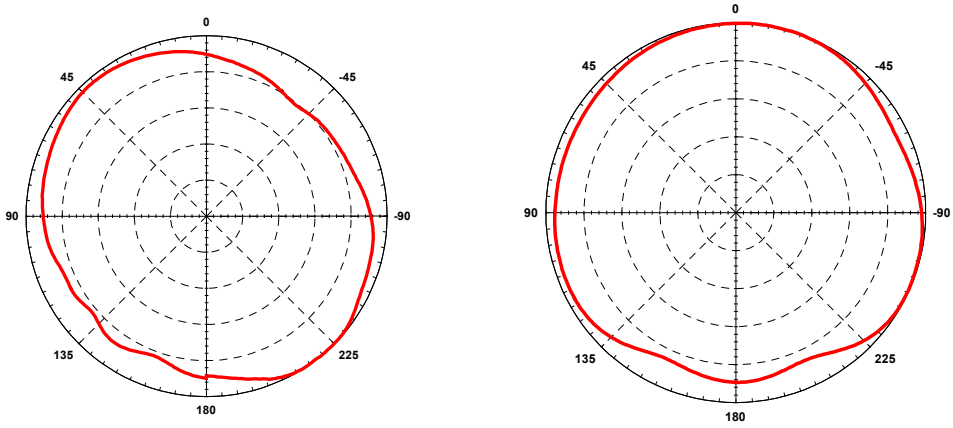


FR-4 PCB thickness = 0.8 mm
The length of transmission line = 1.35 mm (depends on PCB thickness)

5. S11 RETURN LOSS



6. RADIATION PATTERN



E Plane **H Plane**

Antenna Gain = 2.2 dBi

RELIABILITY DATA (Reference to IEC Specification)

R&D	Print date 02/03/21						Preliminary use only	
	Multilayer Ceramic Antenna for 433MHz			**4313 121 20043**			2001-10-06	
							2001-11-01	
Cliff Wang, Ph.D.		2001-10-06		Page 4/7	sheet 190-4			A4
spec.doc	PHYCOMP Ltd.							

IEC 384-10/ CECC 32 100 CLAUSE	IEC 6006868-2 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 (no chip off 3 mm)
4.6.1		Antenna	Frequency = 433MHz at 20°C	Standard test board on page 4
4.8		Adhesion	A force of 5 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 mm warp on FR4 board of 90 mm length	No visible damage
4.10	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 6006868-2 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	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	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	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: 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:

4313 1 21 20 043
F C M S T A

F. Family Code
43 = Antenna

C. Packing Type Code
13 = Bulk, 1000 pcs

M. Materials Code
1 = High Frequency Material

S. Size Code
21 = 7.2 * 38.0 * 0.9 mm

T. Tolerance
20 = 20 MHz Bandwidth

A. Working Frequency
043 = 433MHz

Example: 12NC 4313 121 20043
Product description: Antenna (43) by bulk 1000 pcs (13) of High Frequency Material (1), Size 7.2*38*0.9 mm (21);
Tolerance (20) of 20 MHz (VSWR<2)
Working Frequency (043) = 433MHz

ORDERING INFORMATION: Method II- by Clear Text Code (Temporary)

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

AN0433200707381B (Clear Text Code Example)						
AN	0433	20	07	0738	1	B
Product	Central Freq.	Bandwidth	Material	Size	Quantities	Packing
AN= Antenna	0433=433MHz	20= >20MHz	07=K7	0738=7.2*38* 0.9 mm	1 = 1K	B = Bulk