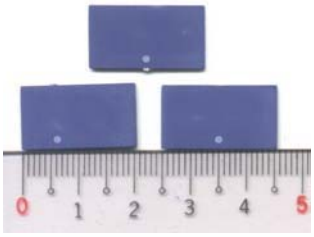
# MULTILAYER CERAMIC ANTENNA
# FOR GSM/DCS (900/1800MHz)

**Product Specification[1] (Preliminary)**

## QUICK REFERENCE DATA



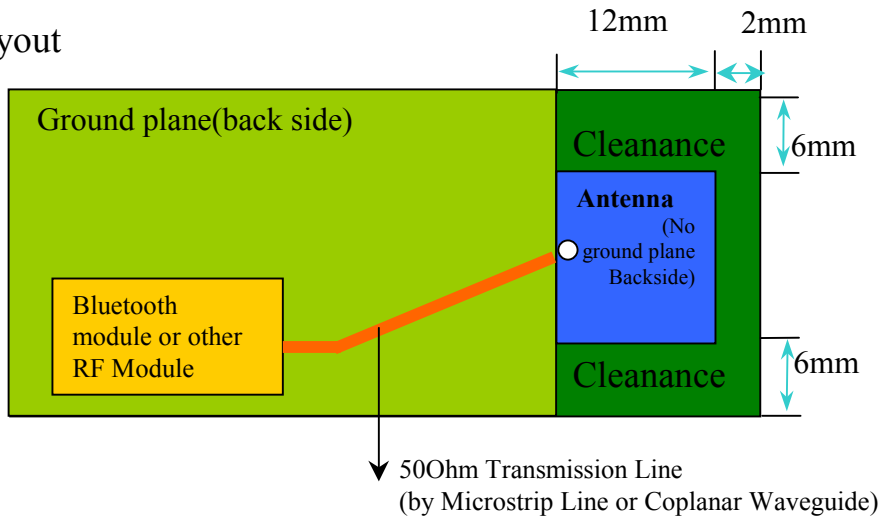
| | | |
|---|---|---|
| Frequency Range | 880-960 MHz | |
| | 1710-1880 MHz | |
| Bandwidth | 30 MHz | |
| | 170 MHz | |
| (Dependant on ground plane size and tuning circuit of customer) | | |
| Peak Gain | 900MHz | 0.5~1 dBi |
| | 1800MHz | 0.5~1 dBi |
| (Dependant on ground plane size and tuning circuit of customer) | | |
| VSWR | | 2.7 |
| (Dependant on ground plane size and tuning circuit of customer) | | |
| Polarization | | Linear |
| Impedance | | 50Ω |
| Operating Temperature | | -55~125 $^{O}$C |
| Size | | 21*12*0.9 mm |

*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*

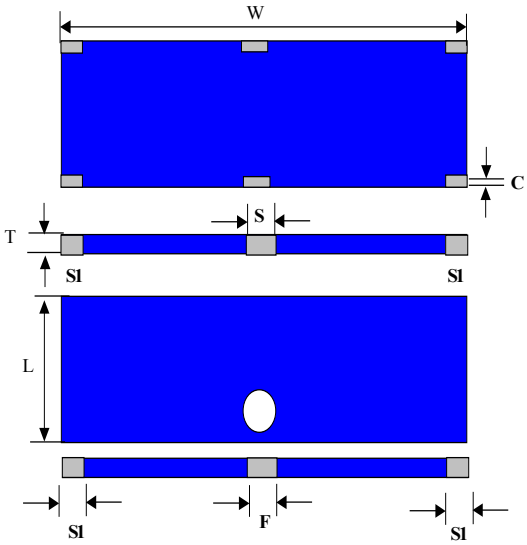
[1] All the technical data and information contained herein are subject to change without prior notice

## PPLICATION

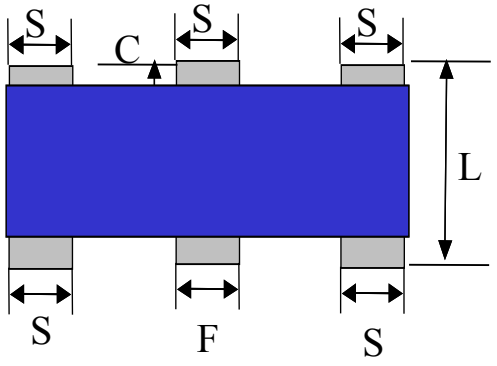
Suggested Layout




## DIMENSIONAL DATA

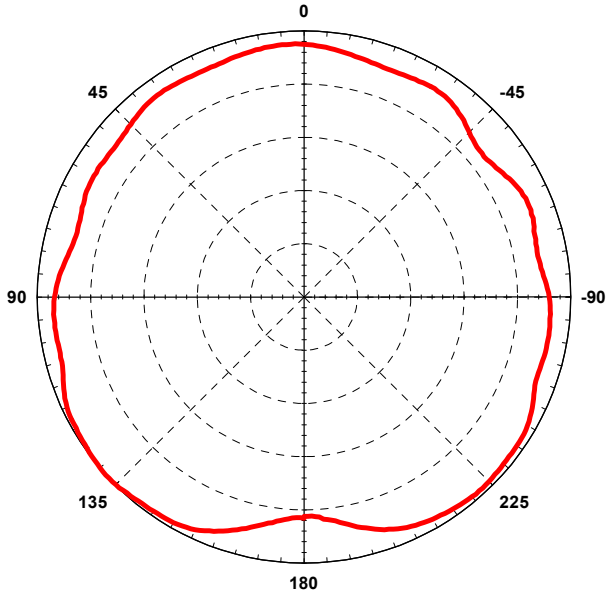
| Figure | Dimension | Port |
|---|---|---|
|  | W 20.5 ± 0.25 mm<br>L 11.8±0.2 mm<br>T 0.90±0.2 mm<br>F 2.85±0.35 mm<br>C 1.55±0.55 mm<br>S 2.85±0.35mm<br>S1 2.65±0.65 mm | |

## SOLDER LAND PATTERN

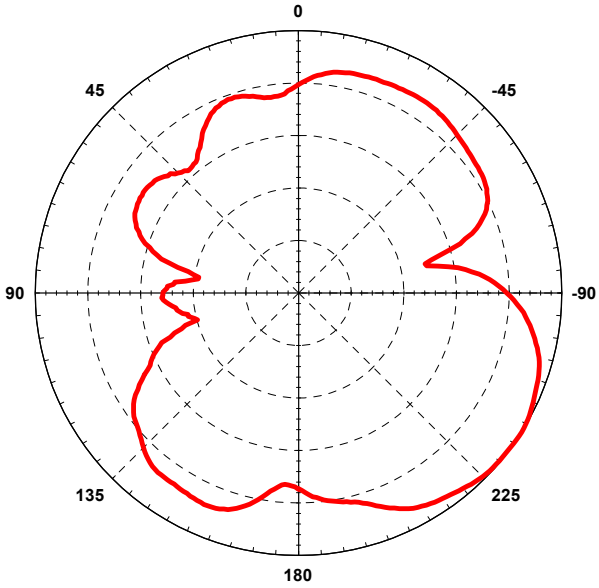
| Figure | Dimensions | | Remark |
|---|---|---|---|
|  | L | 13 ± 0.10 mm | |
| | F | 1.40 ± 0.10 mm | Feed Pad |
| | C | 0.90 ± 0.10 mm | |
| | S | 1.40 ± 0.10 mm | NC Mount Pad |



## Typical Radiation Pattern Polar Plot (Based on Suggested Layout)

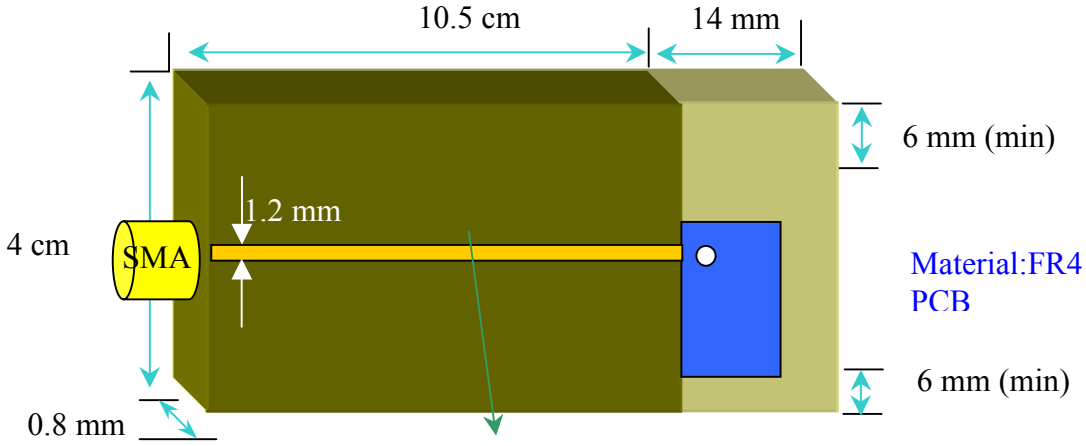



H-Plane

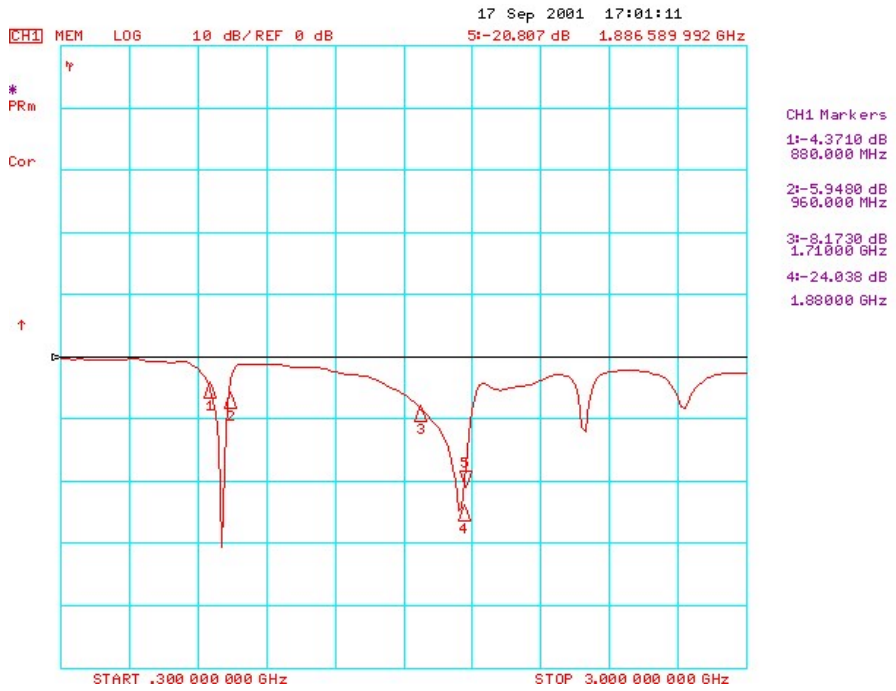



E-Plane

## STANDARD TEST BOARD FOR SWR




(Pre-Tuning Reference Only, after-tuning performance is depending on customer installation)



## 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 | Frequency = 900M/1800MHz;<br>at 20 $^{O}$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 0.25 mm at a rate of 1mm/s, radius jig. 340 mm, 2mm warp on FR4 board of 90 mm length | No visible damage |

| IEC 384-10/ CECC 32 100 CLAUSE | IEC 60068-2 TEST METHOD | TEST | PROCEDURE | REQUIREMENTS |
|---|---|---|---|---|
| 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% |
| | | 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); 5 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:

4313 1 18 00 918
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
**18** = 21 *12 * 0.9 mm

T. Tolerance
**00** = 80 M Hz GSM 900 Band Width
170 M Hz DCS1800 Band Width

A. Working Frequency
**918 =** GSM 900 880-960 MHz
DCS 1800 1710-1880 MHz

**Example: 12NC 4313 118 00918**
Product description: Antenna (43) by bulk (13) of High Frequency Material (1), Size 21*12*0.9 mm (18);
Tolerance (00) of 80 & 170 MHz (VSWR<2.7)
Working Frequency (918) = GSM 900 & DCS1800

## 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:

| **AN0918000721121B (Clear Text Code Example)** | | | | | | |
|---|---|---|---|---|---|---|
| AN | 0918 | 00 | 07 | 2112 | 1 | B |
| Product | Central Freq. | Bandwidth | Material | Size | Quantities | Packing |
| AN= Antenna | 900/1800MHz | GSM/DCS | 07=K7 | 2112=21*12mm*0.9mm | 1 = 1K | B = Bulk |

## Revision Control:

| Revision | Date | Content | Remark |
|---|---|---|---|
| | Oct. 6, 01 | New Issued | |
| | Oct. 14, 2002 | Modify dimension and termination width (S1, F, C, S2) | |