ANTENNA PRODUCTS

DATA SHEET

35*5*6 mm^3 Ceramic Bulk Antenna for WWAN Application

Feb, 2012 – V2

R&D	Print date 12/02/29				
	35*5*6 mm Ceramic Bulk Antenna for WWAN Application	CAN4313449009181B		V1	Feb, 2012
				V2	Feb, 2012
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Martin Lin	LTCC R&D Department / MLCC R&D Division				

WWAN Ceramic Bulk Antenna for WWAN Application

Product Specification

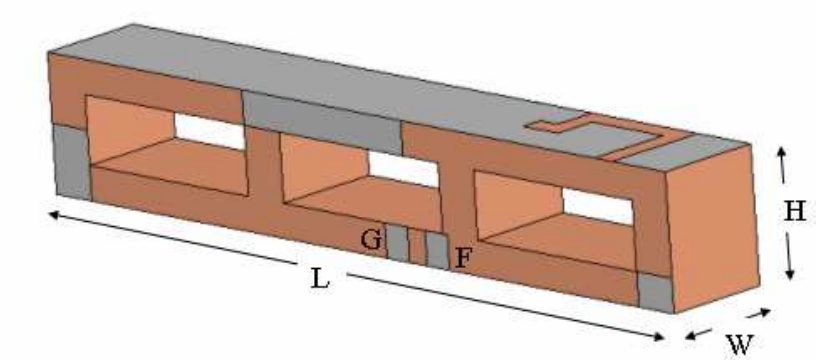
Quick Reference Data

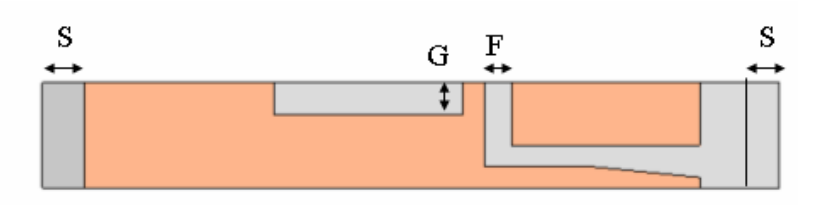
Working Frequency	824~960 MHz / 1710~2170MHz
Bandwidth	140MHz(Min) / 470MHz(Min)
VSWR	2.8 (Max.) / 3.5 (Max)
Polarization	Linear
Azimuth Beamwidth	Omni-directional
Peak Gain	2.91 dBi
Impedance	50Ω
Operating Temperature	-40~85 ^{o}C
Termination	Ni / Sn (Environmentally-Friendly Leadless)
Resistance to soldering heats	260℃ , 10sec.
Maximum Power	4W

Remark : The specification is defined on the YAGEO's test board

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. Mechanical Data

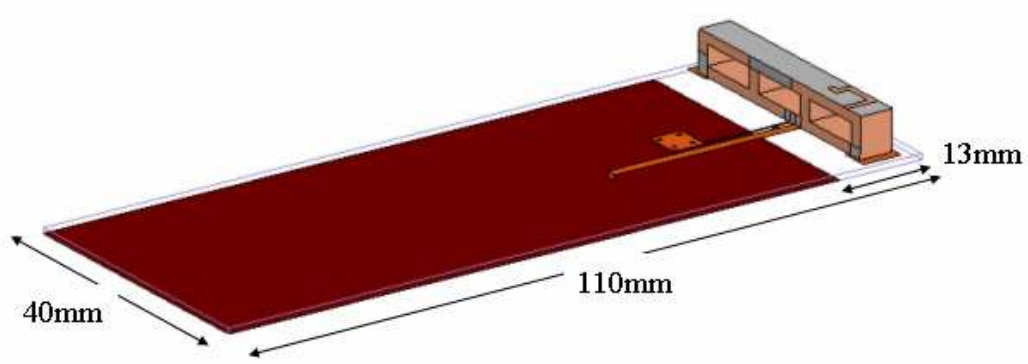


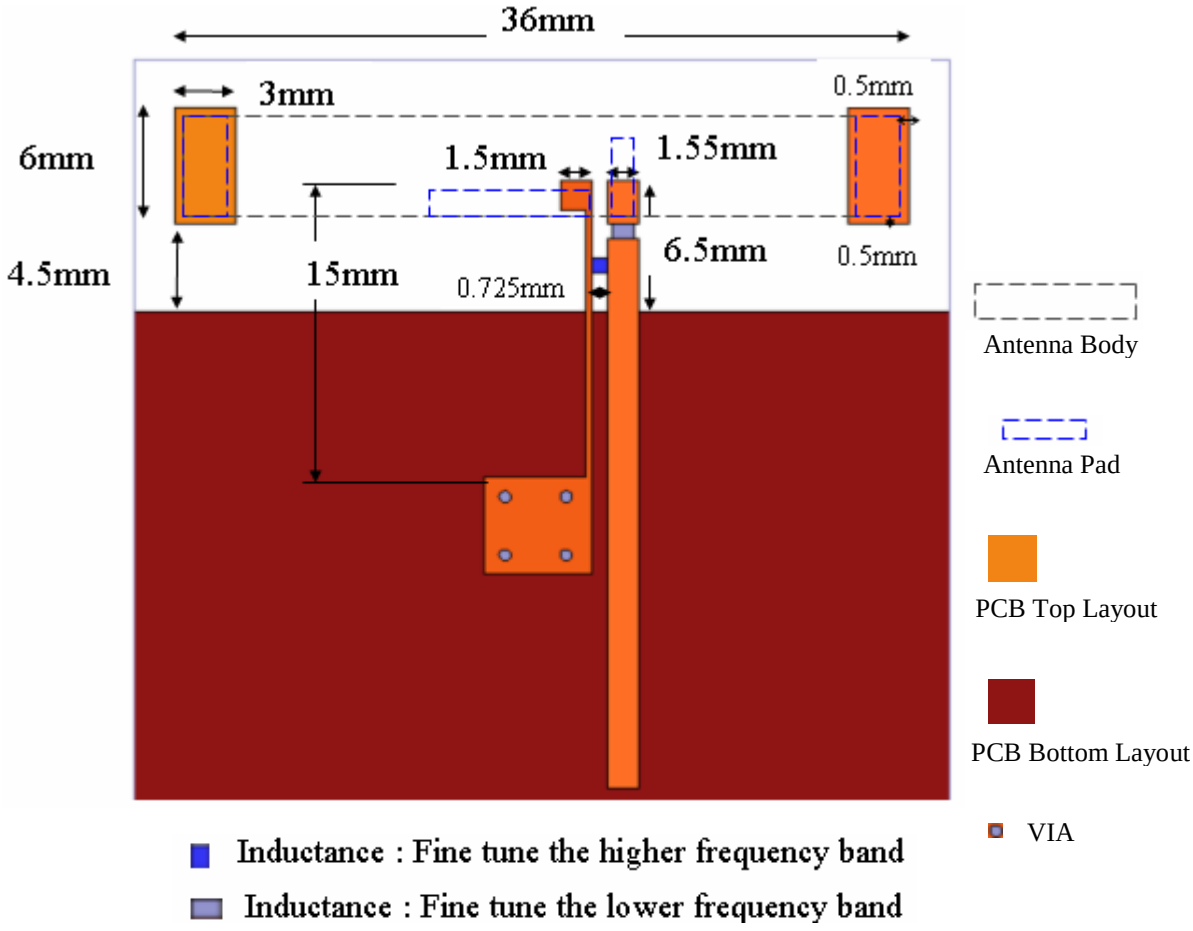


	DETAILS	DIMENSIONS(mm)
L	–	35.0 ± 0.2
W	–	5.0 ± 0.2
F	Feeding pad	1.27 ± 0.2
G	Ground pad	1.5 ± 0.2
S	Solder pad	2.0 ± 0.2
H	–	6.0 ± 0.2

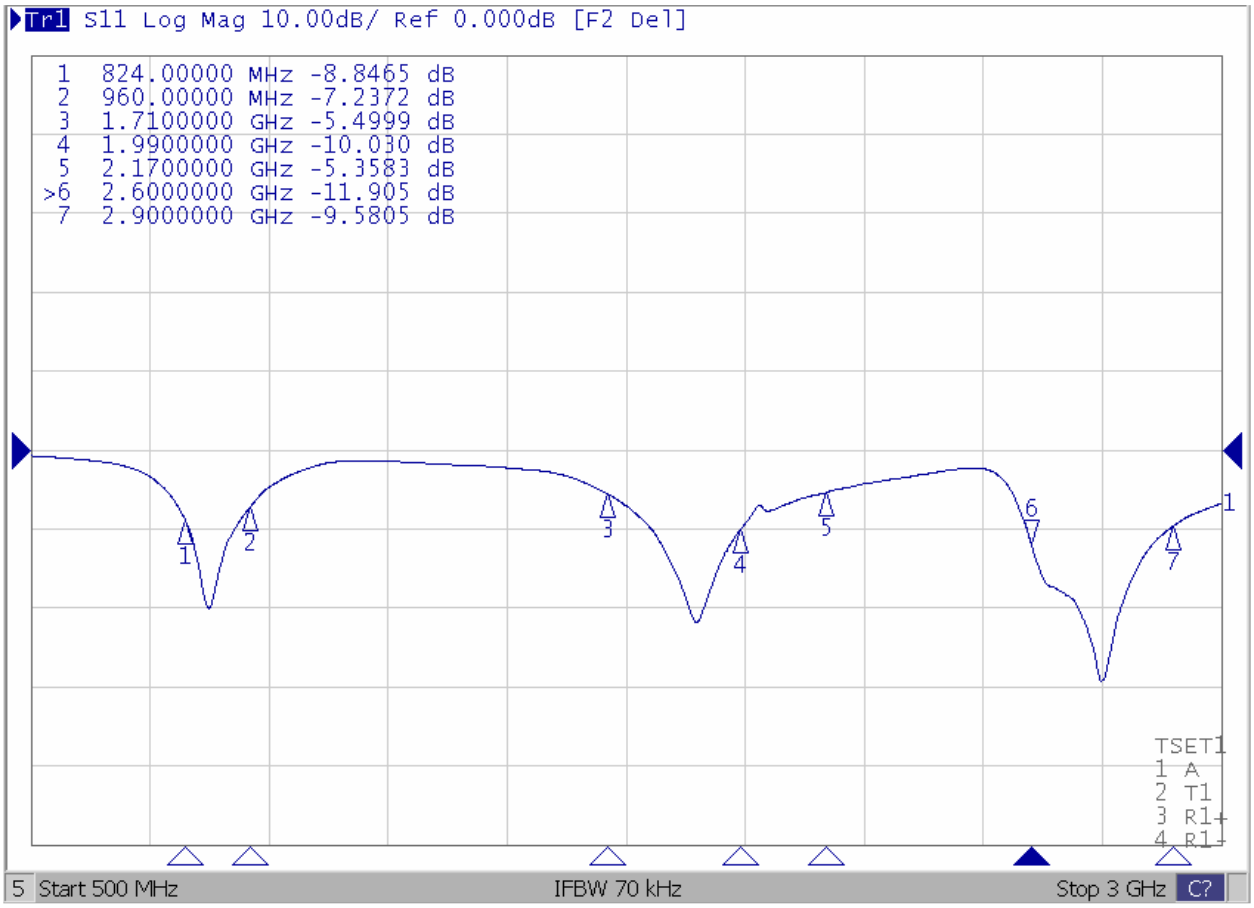
2. Evaluation Board Dimension and Outlook

■ Illustration of Evaluation Board

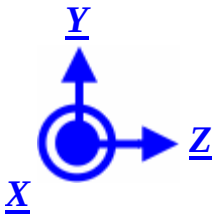




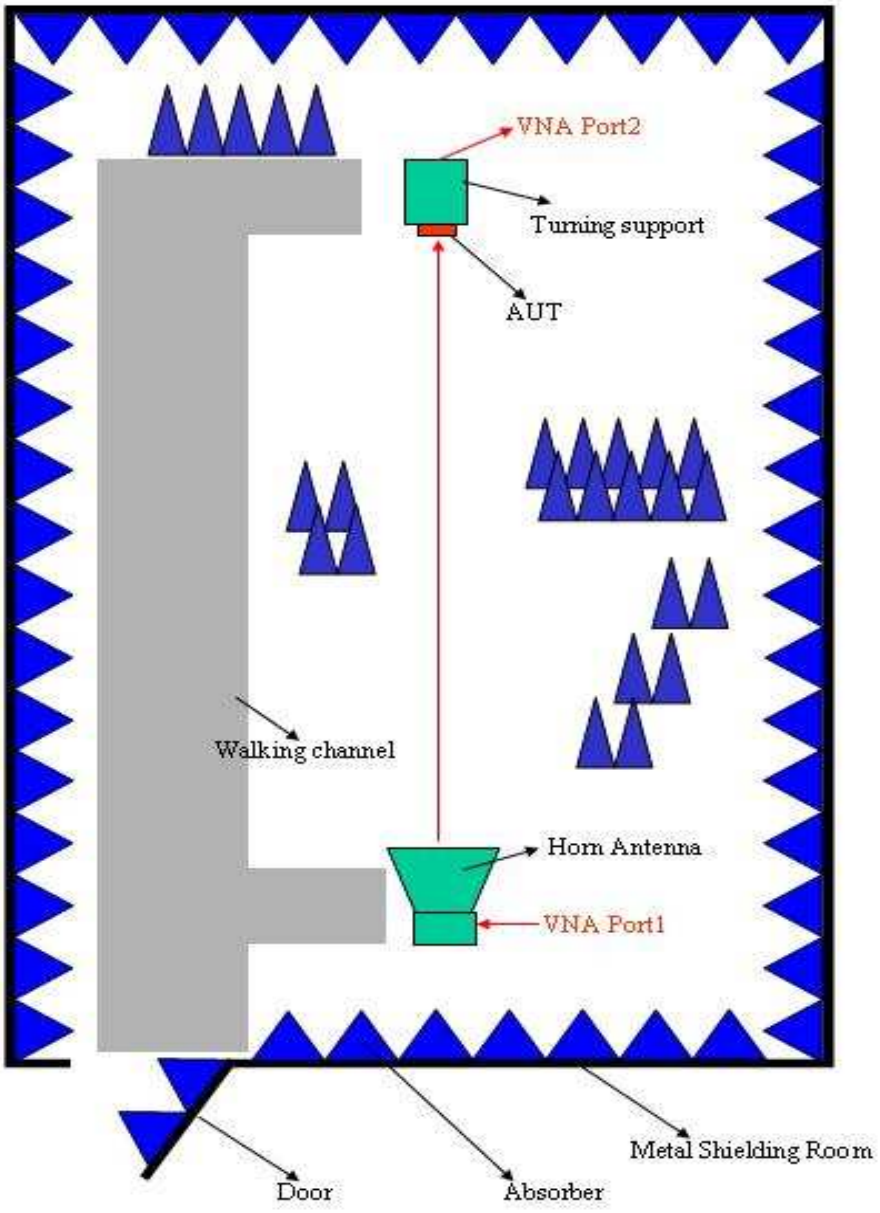
3. Measured S-parameter



4.The Definition of X-Y-Z Plane

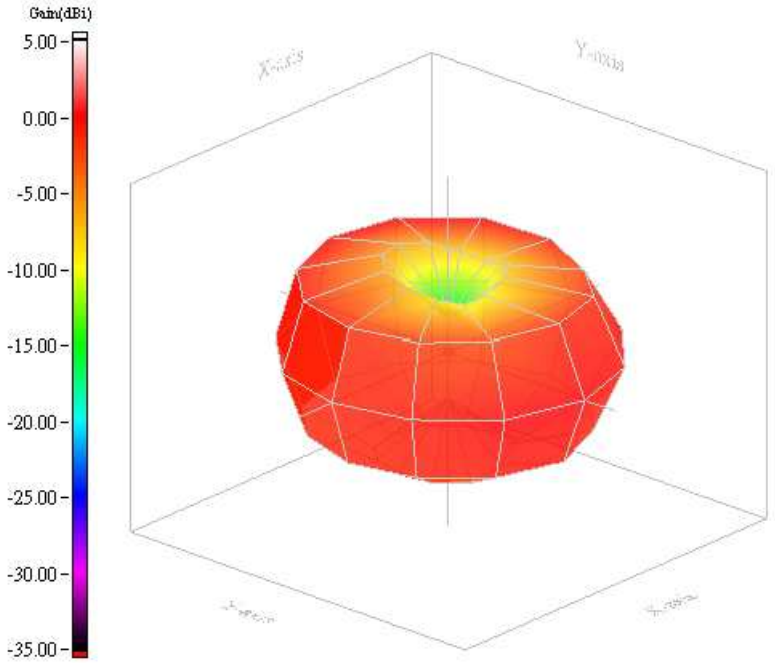


5. The Environment of Antenna Radiation Pattern
Anechoic Chamber Dimension=10(m) x 6(m) x 6(m)



6. Radiation Pattern

Model name	Test mode
350506 bulk antenna	WWAN
Test frequency / Polarization	**Test date**
880.00 MHz / Vector sum	2011/8/22



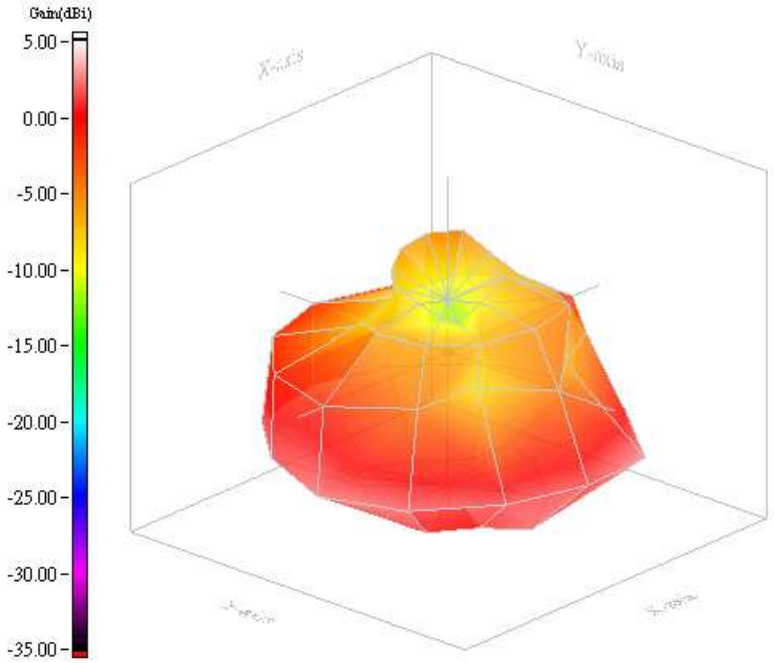
Max gain= 0.67dBi, at (60, 240)
MEG (mean effective gain)= -3.46dBi
Directivity(dB)= 2.34
Efficiency= -1.67dB, 68.09%

Model name: 350506 bulk antenna

Test mode: WWAN

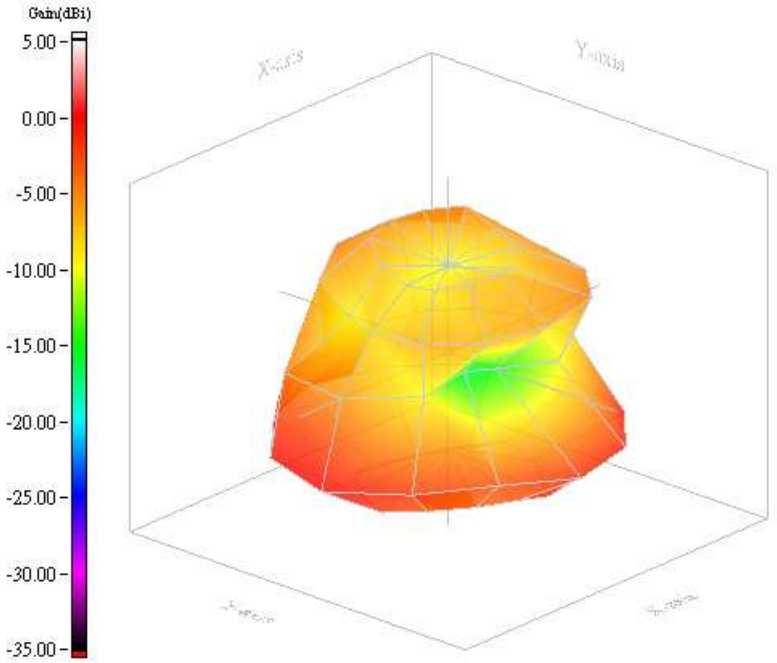
Test frequency / Polarization: 1880.00 MHz / Vector

Test date: 2011/8/22



Max gain= 2.91dBi, at (120, 210)
MEG (mean effective gain)= -2.29dBi
Directivity(dB)= 4.57
Efficiency= -1.66dB, 68.21 %

Model name	Test mode
350506 bulk antenna	WWAN
Test frequency / Polarization	**Test date**
2140.00 MHz / Vector	2011/8/22



Max gain= 1.28dBi, at (120, 210)
MEG (mean effective gain)= -4.86dBi
Directivity(dB)= 5.26
Efficiency= -3.98dB, 40.03%

7. Reliability Test

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 ^{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 0.5 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	Satisfy the original electrical specification after soldering.
		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	-25 °C (30 minutes) to +85 °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 85 °C;	No visible damage 2 hours recovery Central Freq. Change ± 6%

8. Ordering Information

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

CAN43	**13**	**4**	**49**	**00**	**918**	**1B**
F	C	M	S	T	A	P

F, Family Code
CAN 43 = Yageo Part No. for Antenna

C, Packing Type Code
13 = Bulk (1000pcs)

M, Materials Code
04 = High-Permittivity Microwave Material

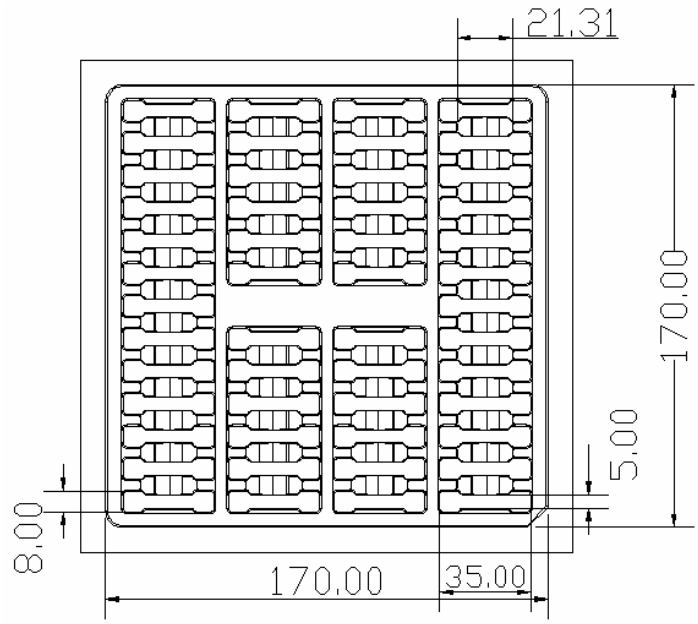
S, Size Code
49 = 35*5 mm (thickness = 6mm)

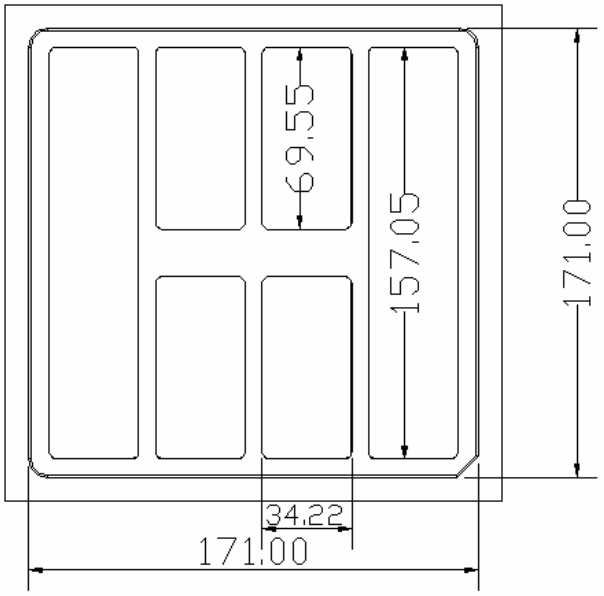
T, Antenna type
00 = normal type

A, Working Frequency
918 = GSM900 (880~960 MHz) & DCS1800 (1710~1880 MHz)

P, Packing quantity
1B = 1Kpcs or less than 1Kpcs

9. Packing Tray :





10. Tape Revision Control:

Revision	Date	Content	Remark
V1	Feb, 2012	New issued	
V2	Feb, 2012	Modification of the soldering footprint	