

## Embedded GSM /UMTS antenna ANT-GXE474



*Multiband SMD antenna on 24 mm x 5.5 mm x 4.4 mm only*

The ANT-GXE474 multiband cellular antenna builds on the success of several SMD tri-band antennas, by extending functionality to cover all worldwide cellular bands between 800 MHz and 2200 MHz – GSM, CDMA, DCS, PCS, WCDMA, UMTS, HSPA, GPRS and EDGE.

This IFA antenna is particularly suited for mounting on the edge of a PCB. It measures 24 mm x 5.5 mm x 4.4 mm and is delivered on tape and reel for efficient and accurate assembly.

If tuning is required it can be tuned for the device environment with no need for new tooling. The antenna is robust enough to meet all temperature and mechanical specifications required for automotive environments.

Typical applications include automotive, remote monitoring, M2M, telematics, telemedicine, AVL, utility metering, mobile devices, point-of-sale, navigation, location based services and communication products.

### 1 Mechanical specification

Electrode	Silver
Dimensions in mm (L x W x H)	24.0 x 5.5 x 4.4
Operating Temperature	-35 ~ +85



Unit: mm Tolerance 0.15 mm

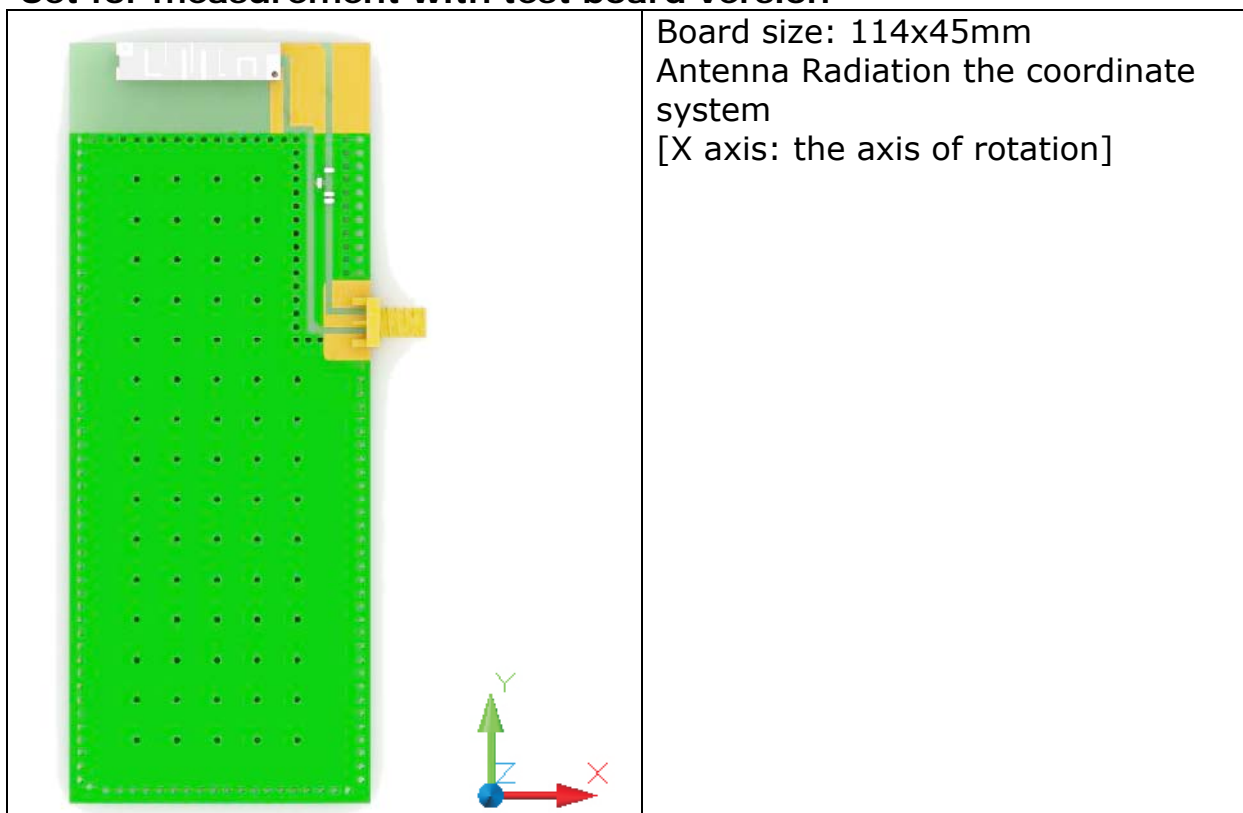
## 2 Electrical Specifications

Item	GSM850/900	GSM 1800	GSM 1900	UMTS 2100
Frequency	824 ~ 960 MHz	1710 ~ 1850 MHz	1850 ~ 1990 MHz	1920 ~ 2170 MHz
VSWR	3.0 : 1 max.	3.0 : 1 max.	3.0 : 1 max.	3.0 : 1 max.
Peak Gain	1.5 dBi	3.5 dBi	3.5 dBi	3.5 dBi
Eff. [%] @ min.	45%	79%	87%	90%
Polarization	Linear			
Radiation Pattern	Omni-directional			
Nominal Impedance	50 Ohm			
Ground plane size	106 mm x 45 mm			
Matching tuning	Tuning by changed ground plane / matching circuit as option			

These values are measured on the matched reference test board.

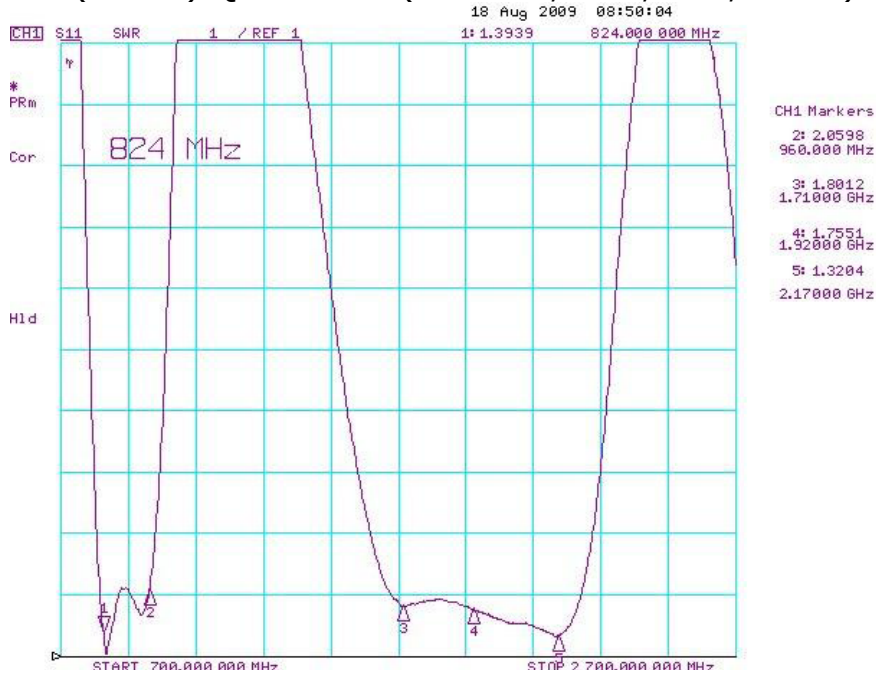
## 3 Measurement

### Set for measurement with test board version



### 3.1 Electrical Characteristic

Antenna matching on the reference test board  
 S11(VSWR) Quad Band (GSM850, DCS, PCS, UMTS)

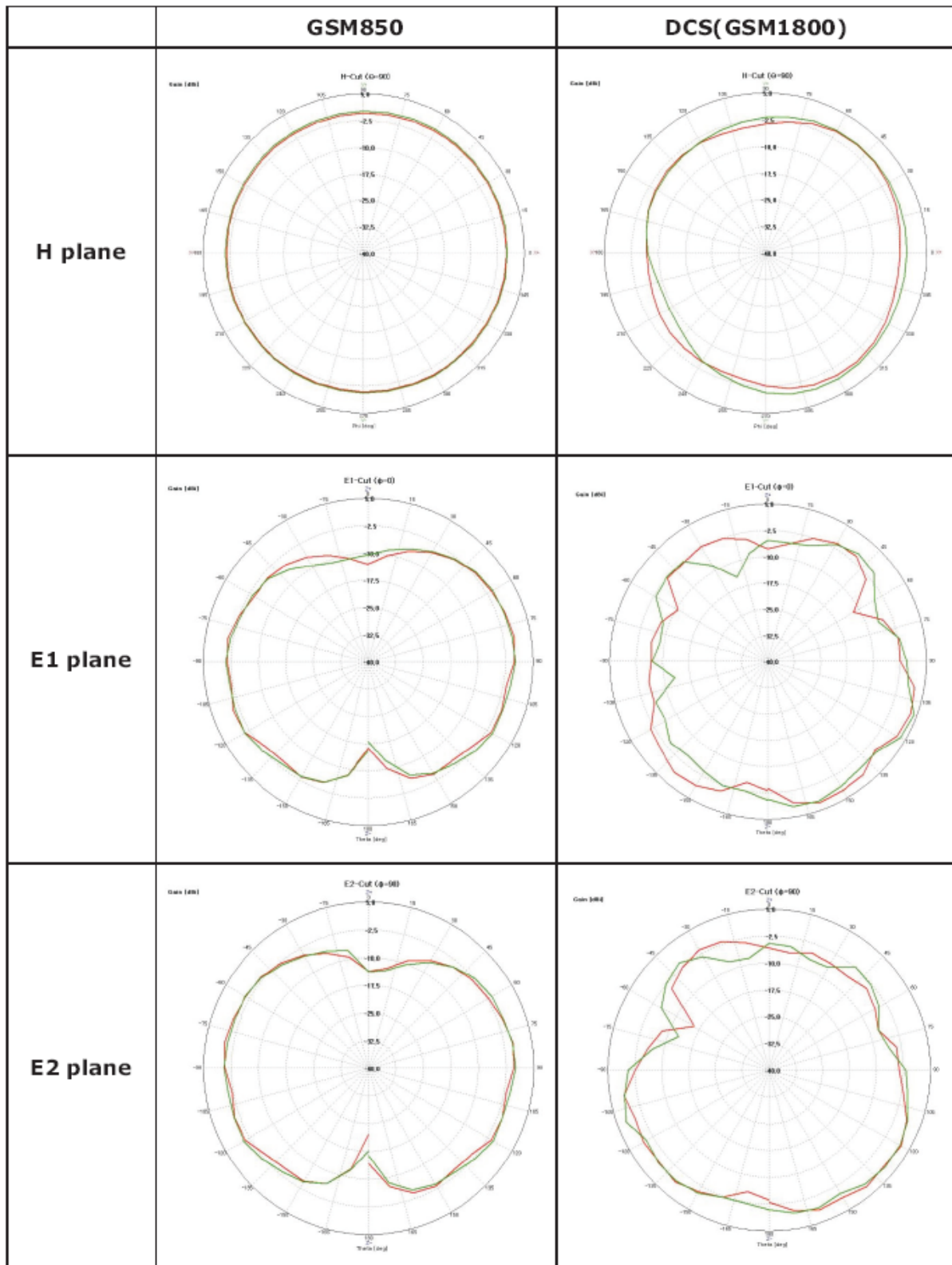


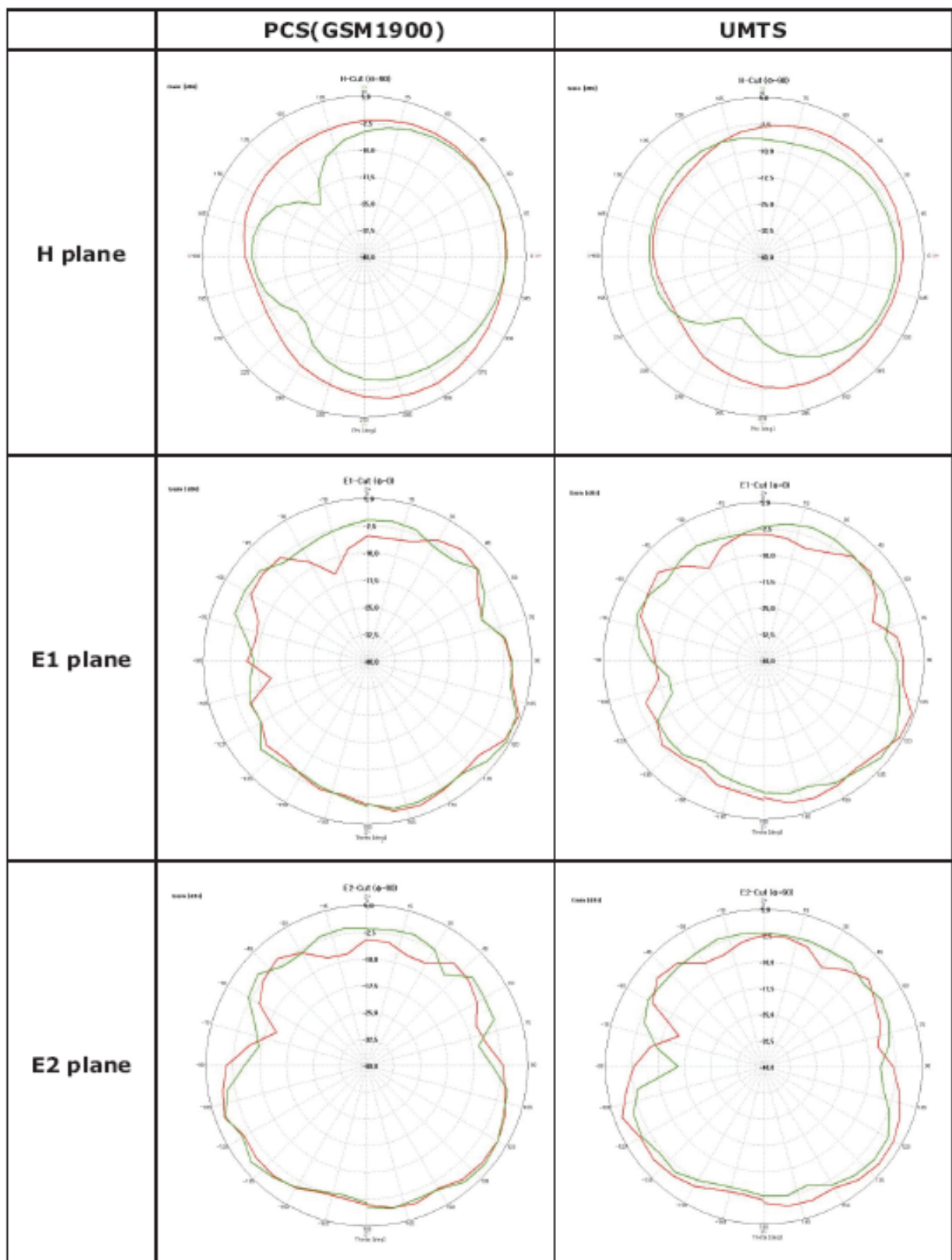
## 4 Radiation Characteristic

Measurement setup, 6 m x 3 m x 3 m Anechoic Chamber, Matching on the standard test board (114 mm x 45 mm) ,Temperature 25 °C / Humidity 50~55%

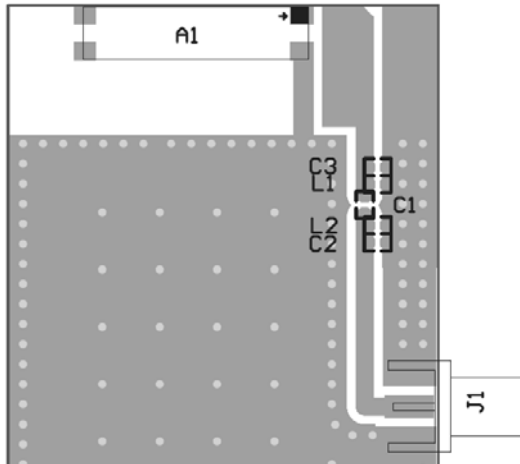
Band	Frequency MHz]	Ave. gain (dBi)	Peak. Gain (dBi)	Eff.(%)
GSM850	824	-3.5	-0.5	45.0
	849	-3.0	0.2	50.5
	869	-3.1	0.2	48.4
	894	-2.7	0.7	53.5
GSM900	880	-2.9	0.6	51.3
	915	-2.7	0.6	53.4
	925	-2.7	0.5	53.9
	960	-3.0	0.7	50.1
DCS	1710	-0.1	5.7	97.7
	1785	-1.0	5.0	78.9
	1805	-0.9	5.3	82.1
	1880	-1.3	4.5	73.5
PCS	1850	-0.8	4.8	84.0
	1910	-0.5	4.5	88.3
	1930	-0.5	4.4	88.1
	1990	-0.6	4.2	87.0
UMTS	1920	-0.4	4.2	91.7
	1980	-0.6	4.0	87.7
	2110	-0.4	4.5	90.4
	2170	-0.1	5.0	97.1

## 5 Gain pattern measurement data







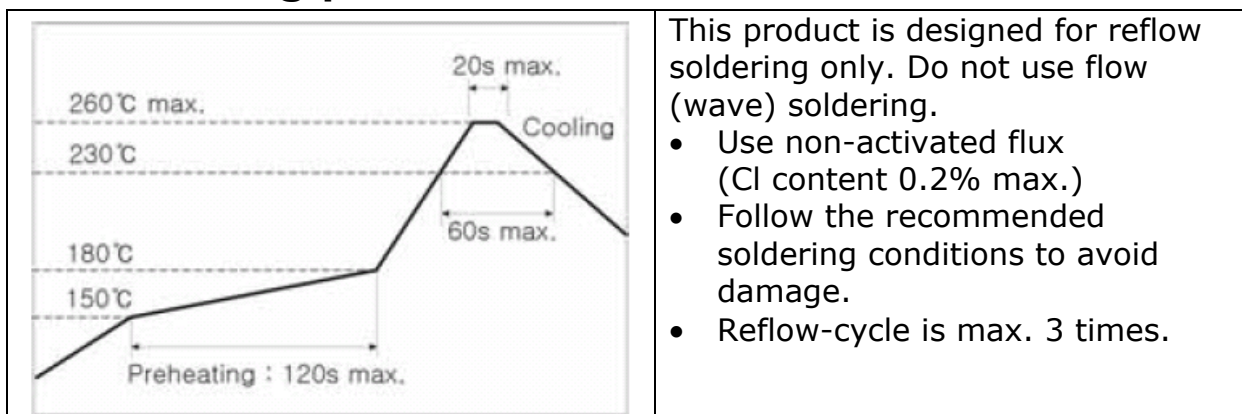


- C1: 3.6 pF (GJM Murata) 402
- C2: 2.7 nH (WE-MK Würth)402
- C3: 0.5 pF (GJM Murata) 402
- L1: 3.9 nH (WE-MK Würth) 402
- L2: 1.8 pF (Tayo) 402

Remark:

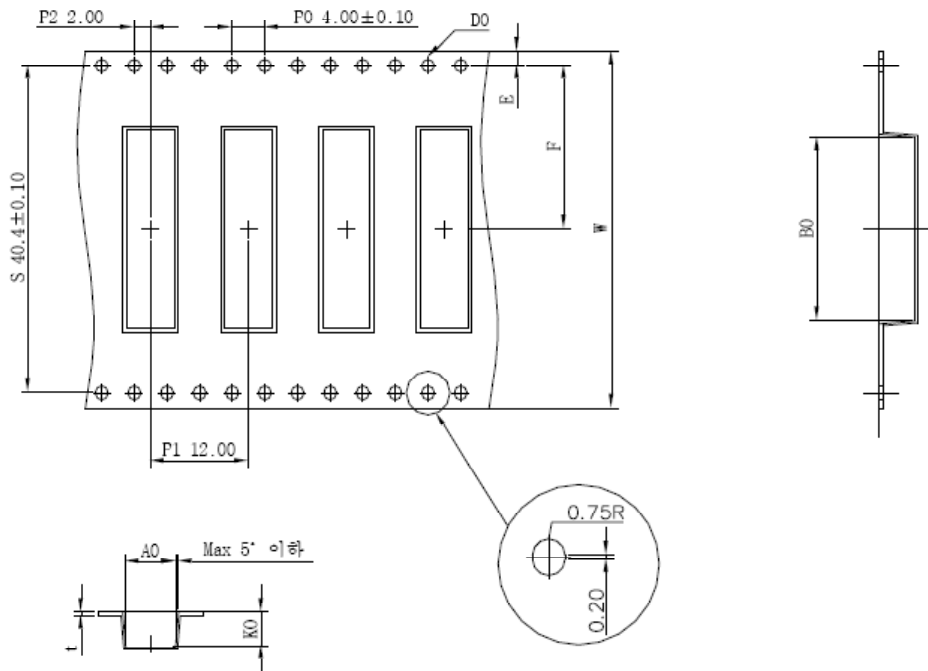
- C1=3.6 pF (Murata GJM) interferes with the critical frequency 960 MHz. With smaller values the frequency can be shifted to higher frequency
- C3=0.5 pF (Murata GJM) optimises the middle of the upper band (GSM1800, 1900, UMTS). The value can be between 0 und 1 pF
- C2 and L2 are parallel and should be as close as possible together
- Take care that you use same manufacturer, same value and same size of components (402) in mass production. It has to be the same than with your tested and measured prototype PCBs
- Take care that your prototypes and your mass production PCB material is 100% the same

## 7 Soldering profile



# 8 Packing

Tape Dimension (unit: mm)



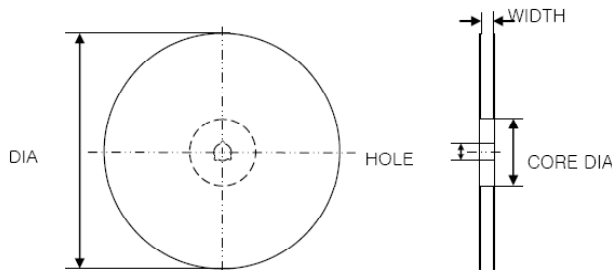
A0	5.80±0.20	E	1.75±0.10
B0	24.30±0.20	F	20.20±0.20
K0	4.60±0.20	W	44.00±0.30
D0	1.55±0.05	t	0.40±0.05

## Surface resistance

- 1) Carrier tape : Max  $10^{11}\Omega$
- 2) Cover tape : Max  $10^{11}\Omega$
- 3) Reel : Max  $10^{11}\Omega$

## Description of Reel

Material: Plastic reel, GPPS (General Purpose Poly Styrene) resin



ITEM	DIA	WIDTH	CORE DIA	HOLE
Size(mm)	330.0 ± 2	45.5 ± 0.5	100.0 ± 1	13.0 ± 0.3

## 9 Development process proposal

- Design review of PCB layout and PCB tracks by Round Solutions (PDF file with pictures of PCB layers, size of PCB (ground plane) and pictures of product or graphics of the product)
- Sample PCB made by customer with same value of components (C1, C2, L1, L2)
- Prototype PCB with same value of components in final plastic enclosure
- Optimisation of PCB tracks and matching circuit by customer, consulting partner of customer or Round Solutions
- Production of a small lot of products and tests
- Mass production