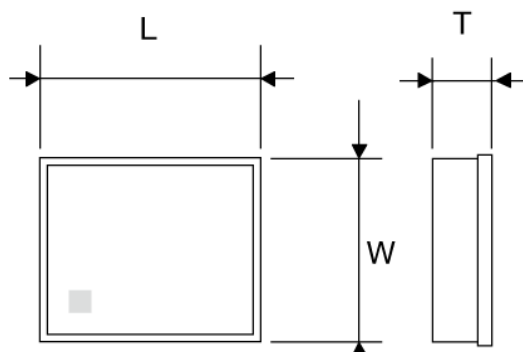


## SAW Dual Filter

G6QE1G960N2EE



## ■ Features

- Item Summary  
GSM1900/1800 , Rx, 604
- Lifecycle Stage  
Mass Production
- Standard packaging quantity (minimum)  
Taping Embossed 5000 , 15000pcs

## ■ Products characteristics table

|                          |                |
|--------------------------|----------------|
| Temperature Range        | -30 to +85°C   |
| GSM                      | 1900 / 1800    |
| Use                      | GSM            |
| Transmitting / Receiving | Rx Dual Filter |
| Insertion Loss           | 2.2/2.2dB      |
| Attenuation              | 31/14dB        |
| RoHS Compliance          | Yes            |
| Halogen Free             | Yes            |
| Soldering Method         | Reflow         |

## ■ External Dimensions

|   |                 |
|---|-----------------|
| L | 1.5mm +0.1:-0.1 |
| W | 1.1mm +0.1:-0.1 |
| T | 0.5mm max       |

2015.06.03

The data is reference only. Electrical characteristics vary depending on environment or measurement condition.  
 TAIYO YUDEN reserves the right to make change to the Date at any time without notice.  
 Before making final selection, please check product specification.



MSL1

\*Pb Free part

|               |                                 |  |               |
|---------------|---------------------------------|--|---------------|
| Customer Name | Standard specification          | TAIYO YUDEN Mobile Technology Co.,Ltd. |               |
| System        | GSM1900/GSM1800 Rx (50/150ohms) | DATE                                   | Jan. 12, 2012 |
| Part Number   | G6QE1G960N2EE                   | Version 2.0bb                          | <b>Final</b>  |

**Table 1. Electrical specifications (Filter1)**

| Passband: 1930 ~ 1990 MHz        |                 |               |           |      |        |            |
|----------------------------------|-----------------|---------------|-----------|------|--------|------------|
| Item                             | Condition (MHz) | Specification |           |      | Unit   | Remarks    |
|                                  |                 | Min.          | Typ.      | Max. |        |            |
| Insertion Loss                   | 1930~1990       | -             | 2.2       | 2.8  | dB(*1) | -30~+85 °C |
|                                  |                 | -             | -         | 2.6  | dB(*1) | 25±2 °C    |
| Ripple                           | 1930~1990       | -             | 0.5       | 1.3  | dB     |            |
| Absolute attenuation             | DC~1510         | 39            | 46        | -    | dB     |            |
|                                  | 1510~1830       | 33            | 40        | -    | dB     |            |
|                                  | 1830~1850       | 33            | 40        | -    | dB     |            |
|                                  | 1850~1890       | 23            | 31        | -    | dB     |            |
|                                  | 1890~1910       | 10            | 16        | -    | dB     | -30~+85 °C |
|                                  |                 | 13            | -         | -    | dB     | 25±2 °C    |
|                                  | 2010~2070       | 5             | 17        | -    | dB     | -30~+85 °C |
|                                  |                 | 6             | -         | -    | dB     | -20~+85 °C |
|                                  |                 | 12            | -         | -    | dB     | 25±2 °C    |
|                                  | 2070~2400       | 19            | 24        | -    | dB     |            |
| 2400~6000                        | 20              | 30            | -         | dB   |        |            |
| VSWR (Input)                     | 1930~1990       | -             | 1.6       | 2.0  | -      |            |
| VSWR (Output)                    | 1930~1990       | -             | 1.8       | 2.1  | -      |            |
| Amplitude Balance<br> S21 / S31  | 1930~1990       | -1.1          | -0.5/+0.5 | +1.1 | dB     |            |
| Phase Balance<br>(ΦS21-ΦS31)+180 | 1930~1990       | -10           | -5/+2     | +10  | deg.   |            |
| Input Impedance                  | Unbalanced      | 50            |           |      | ohm    |            |
| Output Impedance                 | Balanced        | 150//6.8nH    |           |      | ohm    |            |
| Operating Temperature            |                 | -30 ~ +85     |           |      | °C     |            |

(\*1) Specification of insertion loss includes loss that comes from the test board. (0.15dB)



MSL1

\*Pb Free part

|               |                                 |  |               |
|---------------|---------------------------------|--|---------------|
| Customer Name | Standard specification          | TAIYO YUDEN Mobile Technology Co.,Ltd. |               |
| System        | GSM1900/GSM1800 Rx (50/150ohms) | DATE                                   | Jan. 12, 2012 |
| Part Number   | G6QE1G960N2EE                   | Version 2.0bb                          | <b>Final</b>  |

**Table 2. Electrical specifications (Filter2)**

| Passband: 1805 ~ 1880 MHz                      |                    |               |           |      |                    |            |
|--|--------------------|---------------|-----------|------|--------------------|------------|
| Item   | Condition<br>(MHz) | Specification |           |      | Unit               | Remarks    |
|  |                    | Min.          | Typ.      | Max. |                    |            |
| Insertion Loss                                 | 1805~1880          | -             | 2.2       | 2.8  | dB <sup>(*1)</sup> | -30~+85 °C |
|  |                    | -             | -         | 2.5  | dB <sup>(*1)</sup> | 25±2 °C    |
| Ripple   | 1805~1880          | -             | 0.5       | 1.4  | dB                 |            |
| Absolute<br>attenuation                        | DC ~902            | 45            | 59        | -    | dB                 |            |
|  | 902 ~ 940          | 45            | 58        | -    | dB                 |            |
|  | 940 ~1705          | 29            | 33        | -    | dB                 |            |
|  | 1705~1785          | 11            | 14        | -    | dB                 | -30~+85 °C |
|  |                    | 12            | -         | -    | dB                 | 25±2 °C    |
|  | 1920~1980          | 30            | 34        | -    | dB                 |            |
|  | 1980~2030          | 30            | 35        | -    | dB                 |            |
|  | 2030~2400          | 30            | 35        | -    | dB                 |            |
| 2400~6000                                      | 20                 | 30            | -         | dB   |                    |            |
| VSWR (Input)                                   | 1805~1880          | -             | 1.9       | 2.2  | -                  |            |
| VSWR (Output)                                  | 1805~1880          | -             | 1.9       | 2.2  | -                  |            |
| Amplitude Balance<br> S21 / S31                | 1805~1880          | -1.2          | -0.6/+0.6 | +1.2 | dB                 |            |
| Phase Balance<br>( $\Phi$ S21- $\Phi$ S31)+180 | 1805~1880          | -12           | -7/+3     | +12  | deg.               |            |
| Input Impedance                                | Unbalanced         | 50            |           |      | ohm                |            |
| Output Impedance                               | Balanced           | 150//6.8nH    |           |      | ohm                |            |
| Operating Temperature                          |                    | -30 ~ +85     |           |      | °C                 |            |

(\*1) Specification of insertion loss includes loss that comes from the test board. (0.15dB)



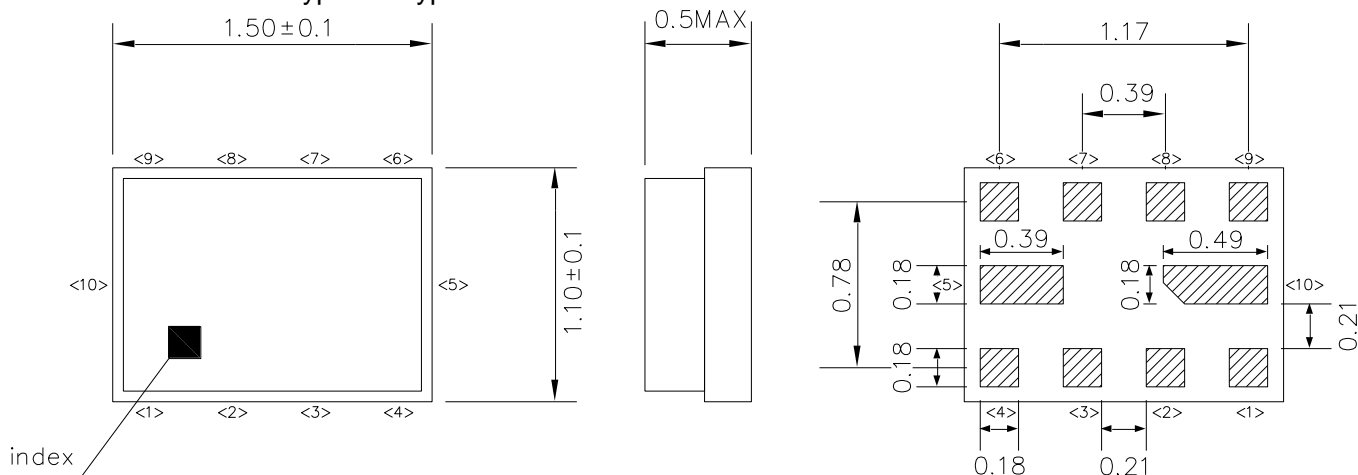
MSL1

\*Pb Free part

|               |                                 |  |               |
|---------------|---------------------------------|--|---------------|
| Customer Name | Standard specification          | TAIYO YUDEN Mobile Technology Co.,Ltd. |               |
| System        | GSM1900/GSM1800 Rx (50/150ohms) | DATE                                   | Jan. 12, 2012 |
| Part Number   | G6QE1G960N2EE                   | Version 2.0bb                          | <b>Final</b>  |

**Dimensions**

Device size: 1.5typ. x 1.1typ. x 0.5max.



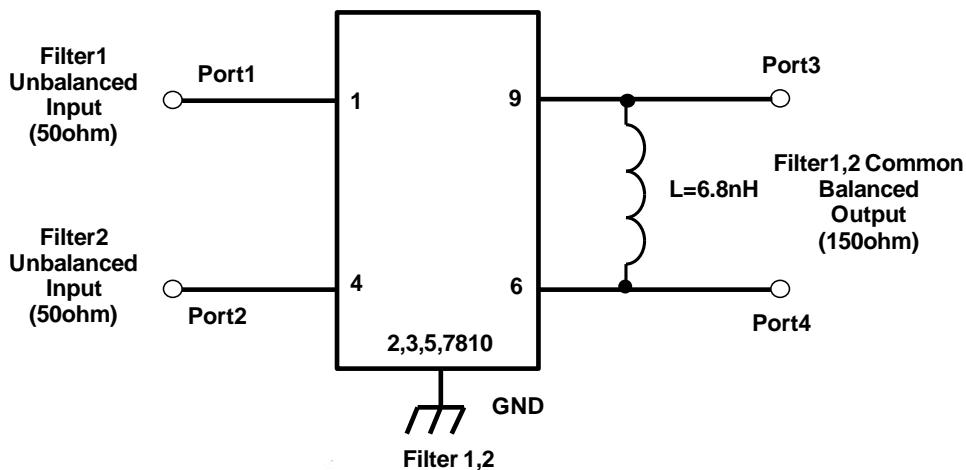
Unit: mm

**Pin Configuration**

| Pin No. | Pin name | Description                         |
|---------|----------|-------------------------------------|
| 1       | IN       | Filter1 input pin                   |
| 2       | GND      | Ground                              |
| 3       | GND      | Ground                              |
| 4       | IN       | Filter2 input pin                   |
| 5       | GND      | Ground                              |
| 6       | OUT      | Filter1/Filter2 balanced output pin |
| 7       | GND      | Ground                              |
| 8       | GND      | Ground                              |
| 9       | OUT      | Filter1/Filter2 balanced output pin |
| 10      | GND      | Ground                              |

| Filter No. | Pass band (MHz) | System     |
|------------|-----------------|------------|
| 1          | 1930 ~ 1990     | GSM1900-Rx |
| 2          | 1805 ~ 1880     | GSM1800-Rx |

**Evaluation Circuit**





MSL1

\*Pb Free part

|               |                                 |  |               |
|---------------|---------------------------------|--|---------------|
| Customer Name | Standard specification          | TAIYO YUDEN Mobile Technology Co.,Ltd. |               |
| System        | GSM1900/GSM1800 Rx (50/150ohms) | DATE                                   | Jan. 12, 2012 |
| Part Number   | G6QE1G960N2EE                   | Version 2.0bb                          | <b>Final</b>  |

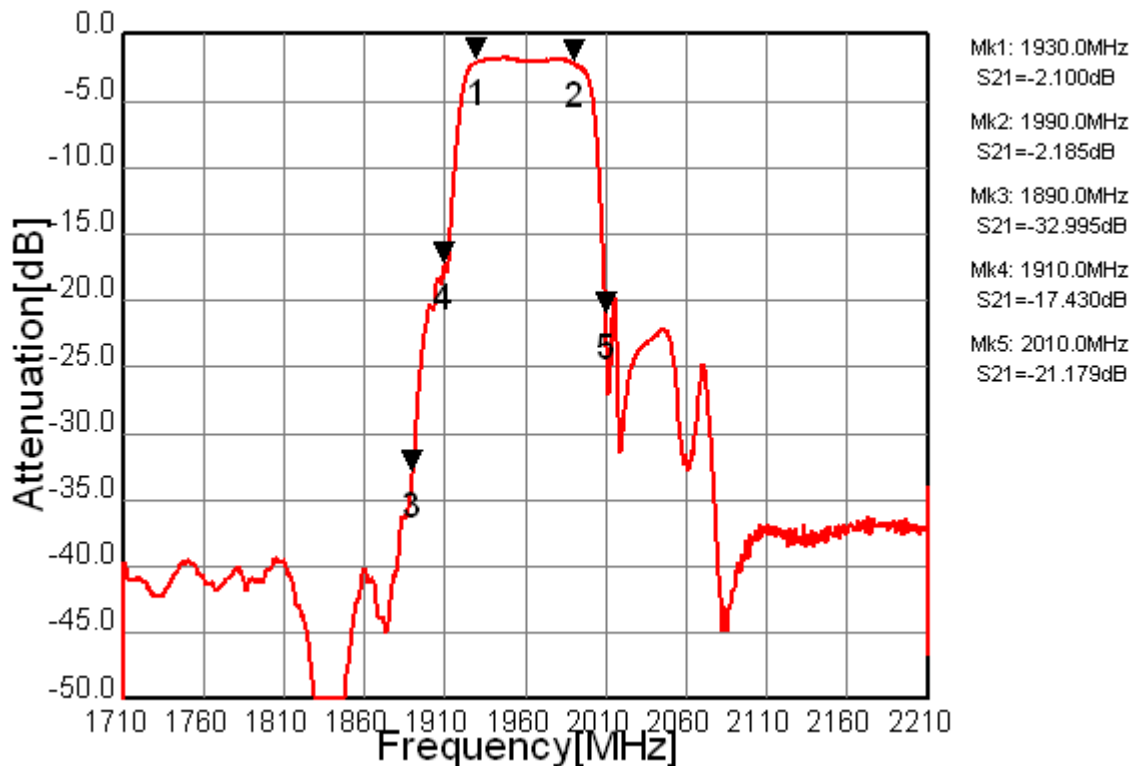


Fig.1 Pass-band Characteristics (Filter1)

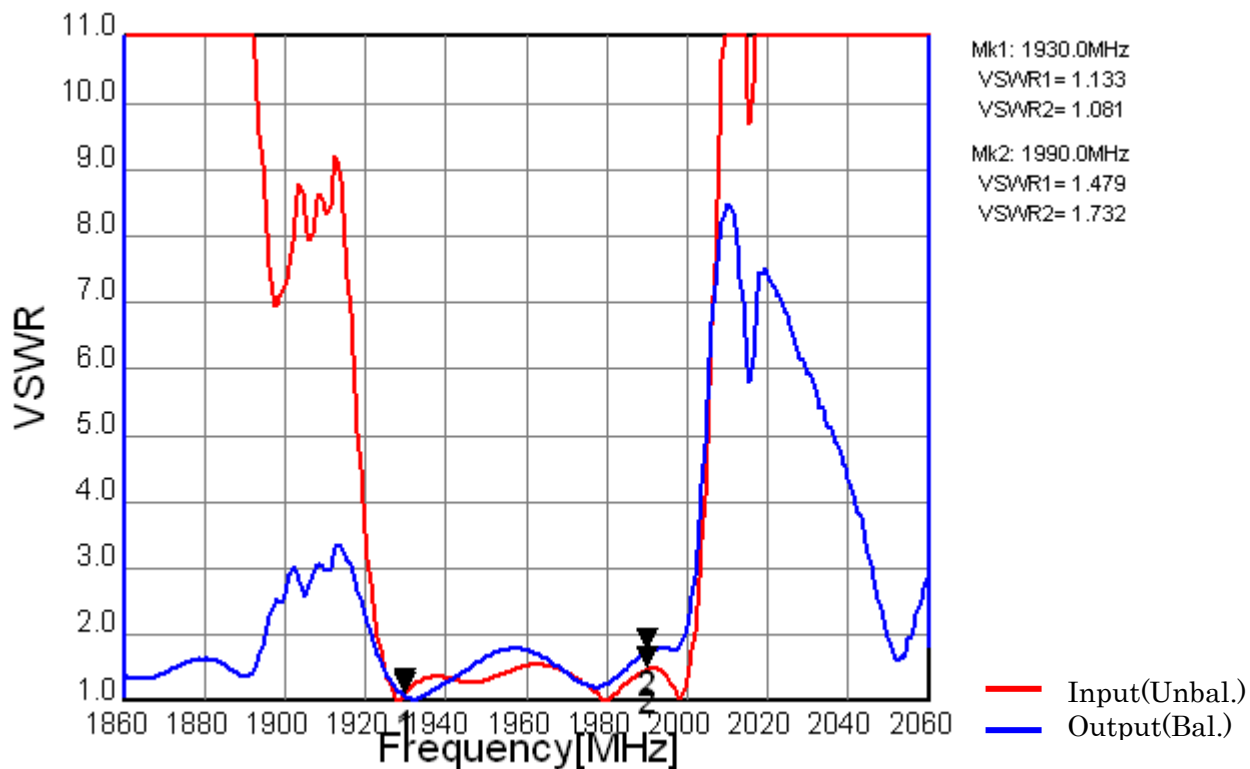


Fig.2 VSWR (Filter1)



MSL1

\*Pb Free part

|               |                                 |  |               |
|---------------|---------------------------------|--|---------------|
| Customer Name | Standard specification          | TAIYO YUDEN Mobile Technology Co.,Ltd. |               |
| System        | GSM1900/GSM1800 Rx (50/150ohms) | DATE                                   | Jan. 12, 2012 |
| Part Number   | G6QE1G960N2EE                   | Version 2.0bb                          | <b>Final</b>  |

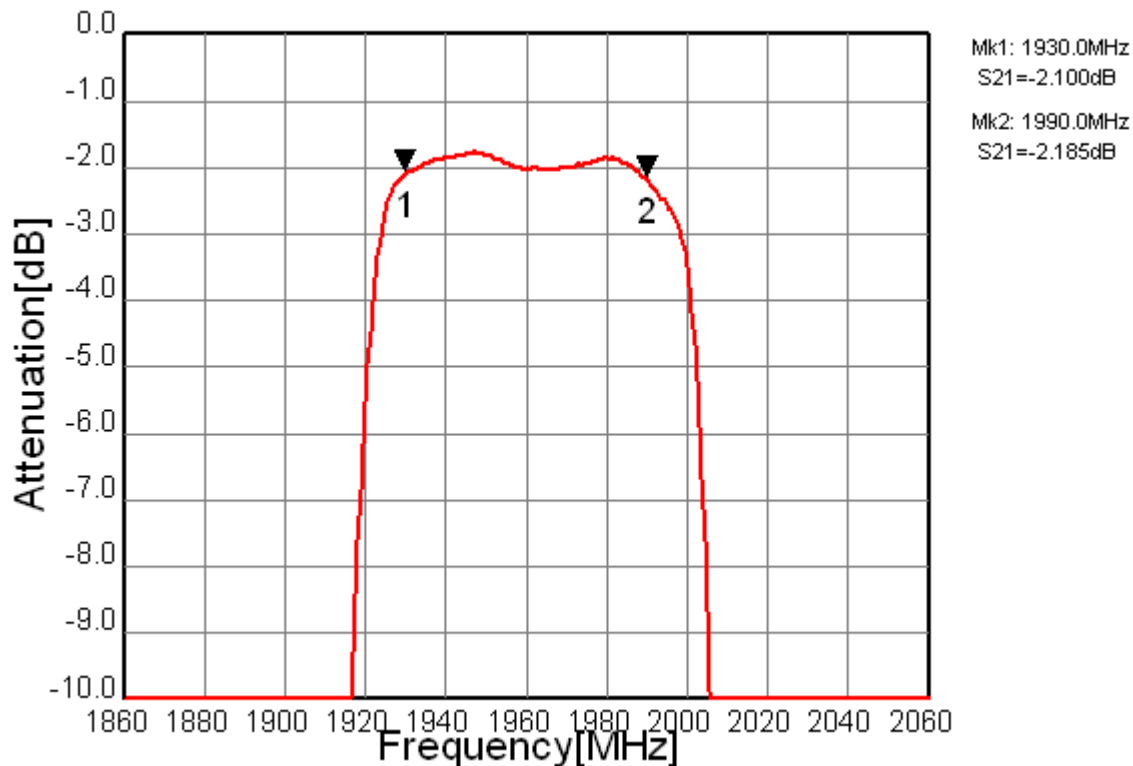


Fig.3 In-band Characteristics (Filter1)

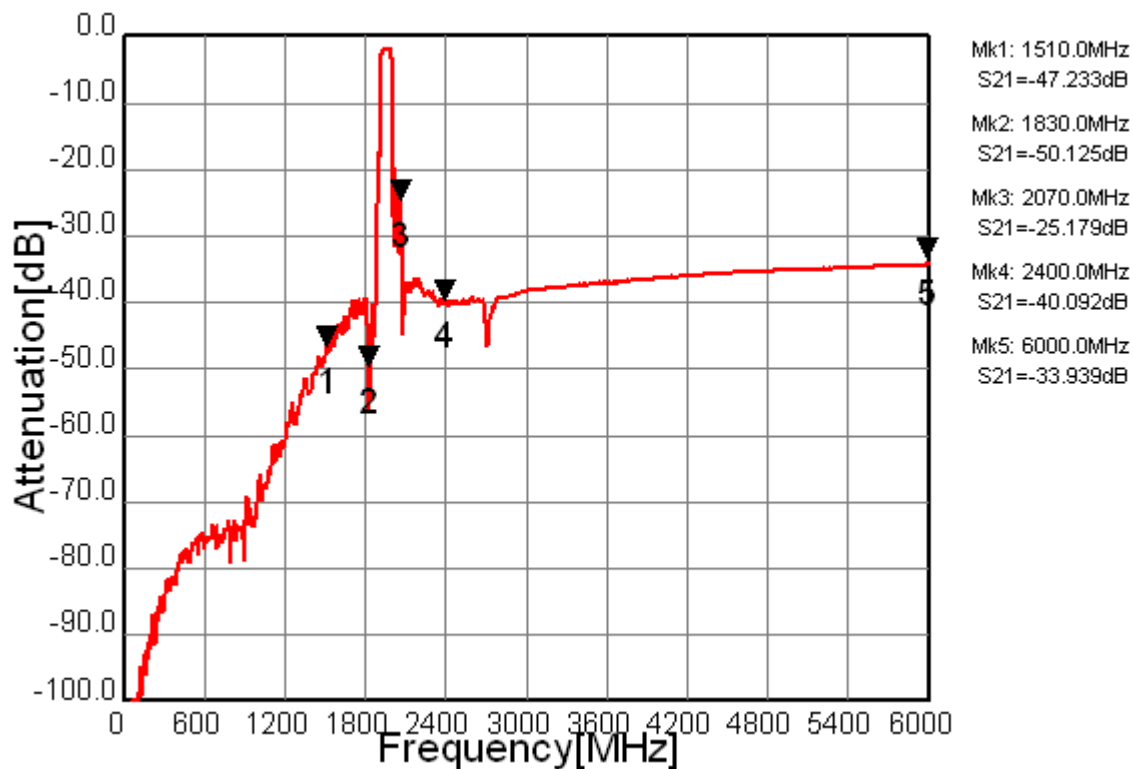


Fig. 4 Wide-band Characteristics (Filter1)



MSL1

\*Pb Free part

|               |                                 |  |               |
|---------------|---------------------------------|--|---------------|
| Customer Name | Standard specification          | TAIYO YUDEN Mobile Technology Co.,Ltd. |               |
| System        | GSM1900/GSM1800 Rx (50/150ohms) | DATE                                   | Jan. 12, 2012 |
| Part Number   | G6QE1G960N2EE                   | Version 2.0bb                          | <b>Final</b>  |

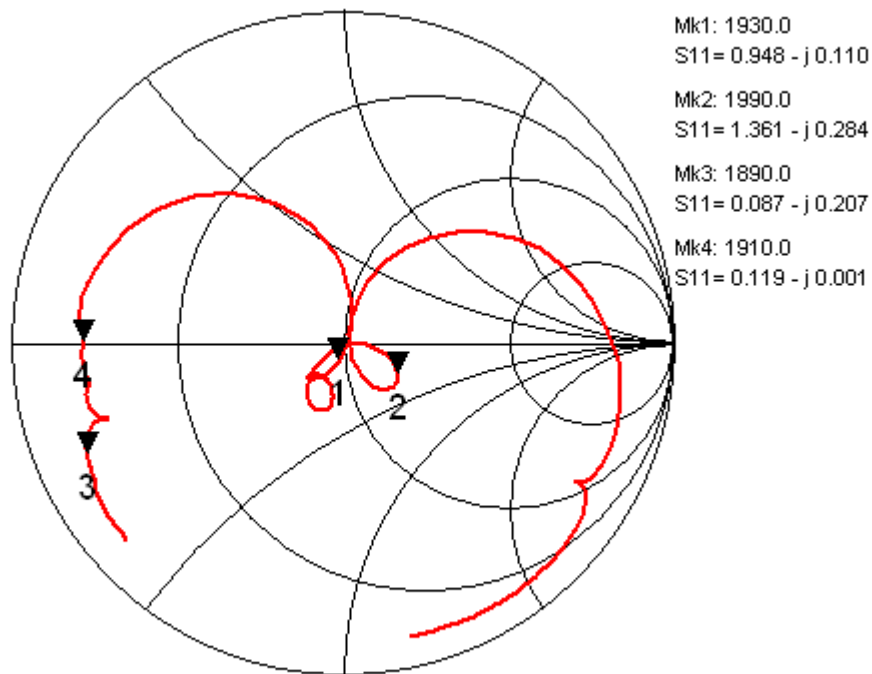


Fig. 5 Input Impedance (Unbalanced) (Filter1)

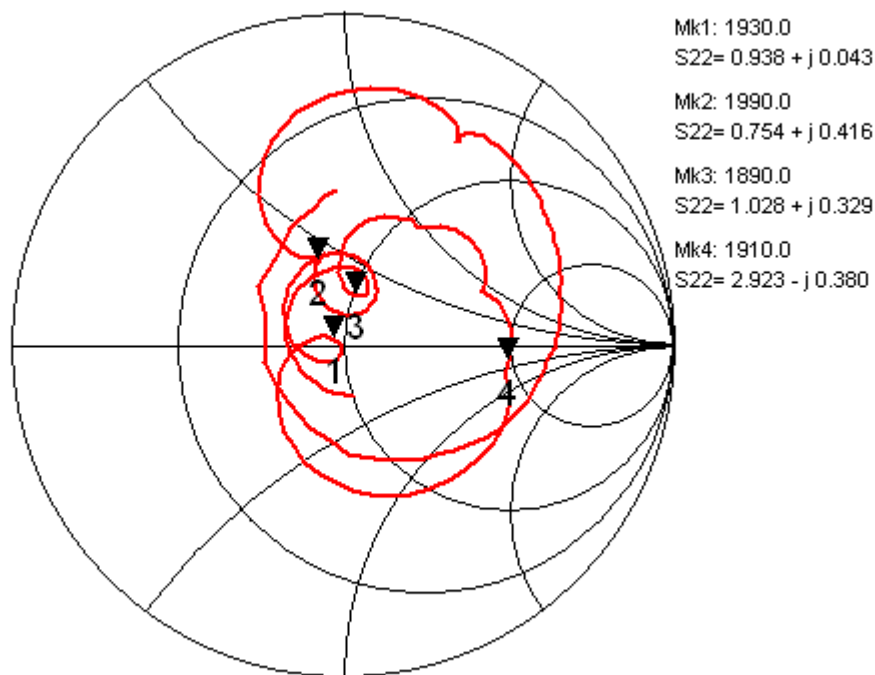


Fig. 6 Output Impedance (Balanced) (Filter1)



MSL1

\*Pb Free part

|               |                                 |  |               |
|---------------|---------------------------------|--|---------------|
| Customer Name | Standard specification          | TAIYO YUDEN Mobile Technology Co.,Ltd. |               |
| System        | GSM1900/GSM1800 Rx (50/150ohms) | DATE                                   | Jan. 12, 2012 |
| Part Number   | G6QE1G960N2EE                   | Version 2.0bb                          | <b>Final</b>  |

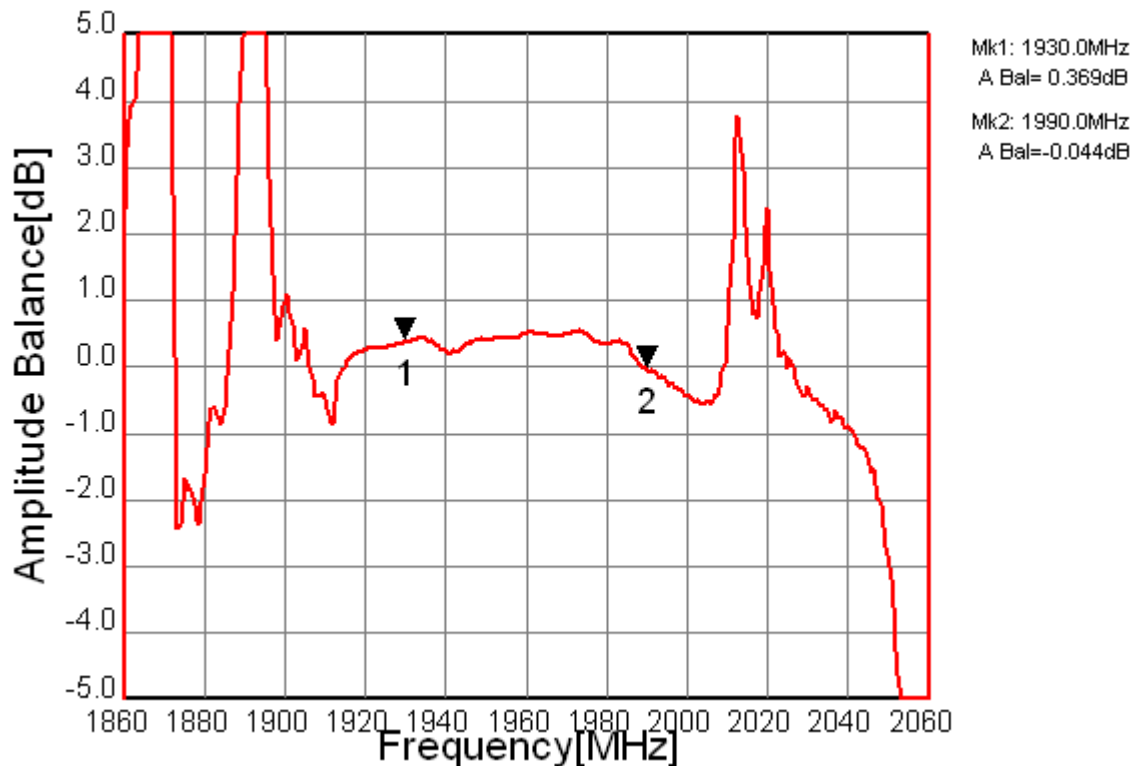


Fig. 7 Amplitude Balanced (Filter1)

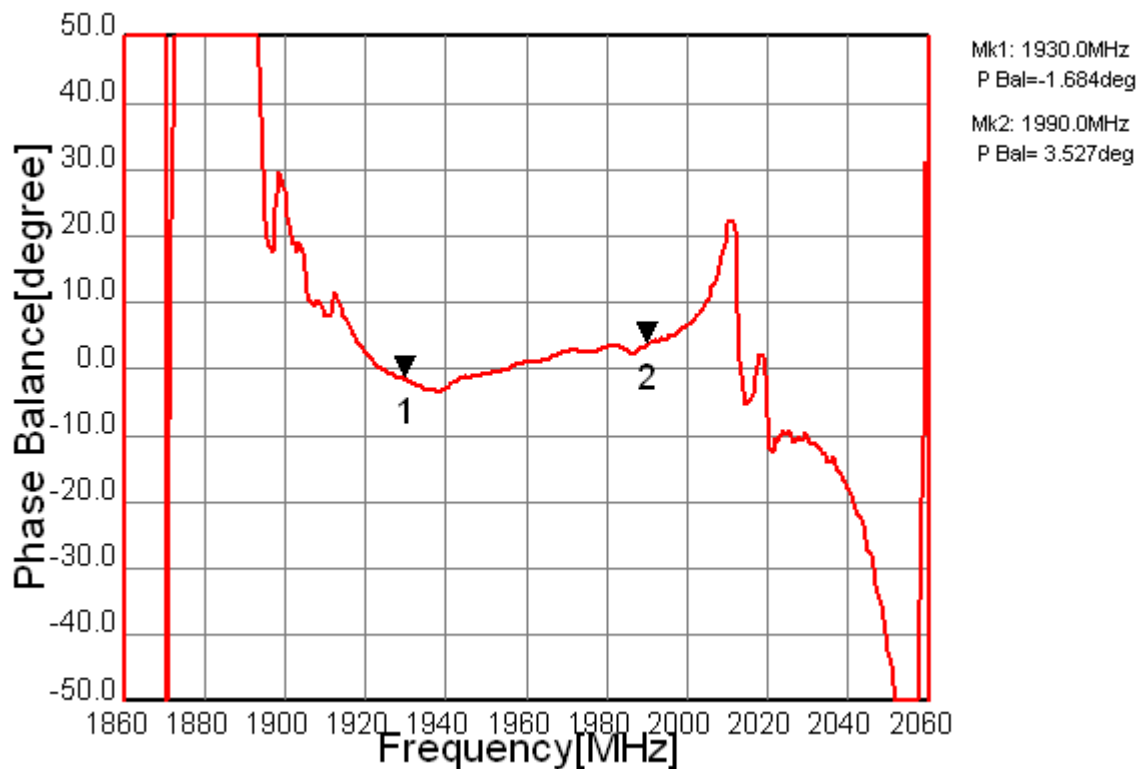


Fig.8 Phase Balanced (Filter1)





MSL1

\*Pb Free part

|               |                                 |  |               |
|---------------|---------------------------------|--|---------------|
| Customer Name | Standard specification          | TAIYO YUDEN Mobile Technology Co.,Ltd. |               |
| System        | GSM1900/GSM1800 Rx (50/150ohms) | DATE                                   | Jan. 12, 2012 |
| Part Number   | G6QE1G960N2EE                   | Version 2.0bb                          | <b>Final</b>  |

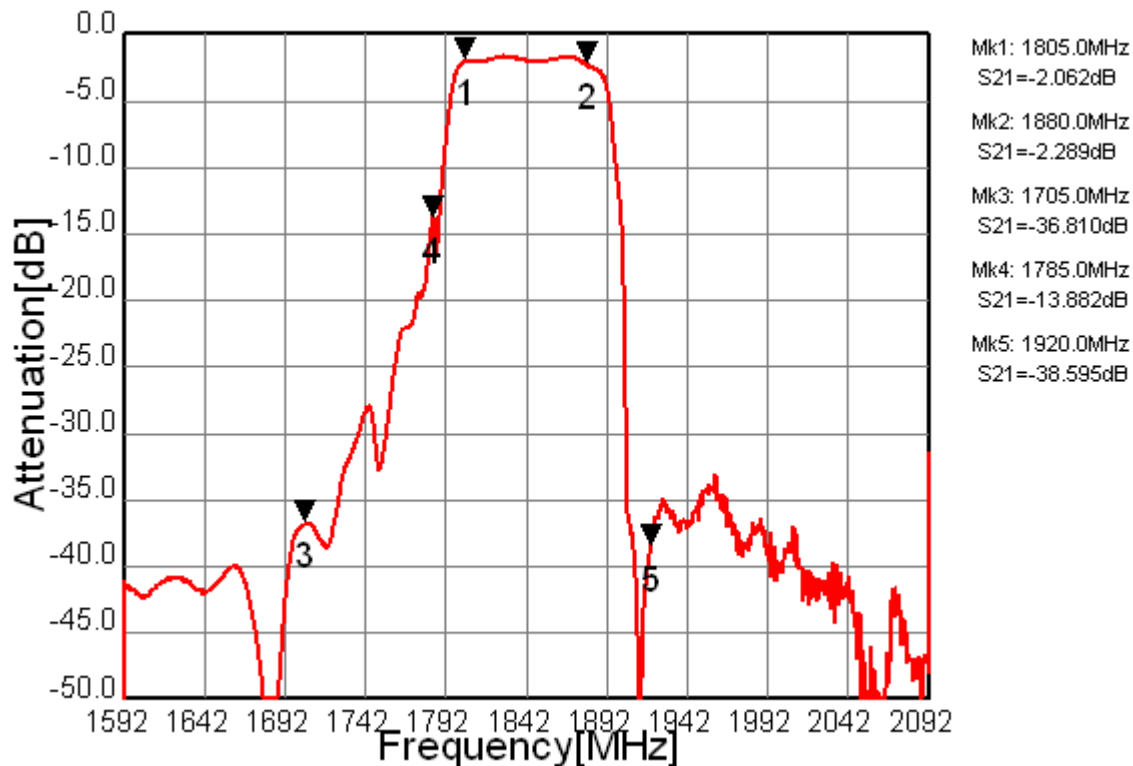


Fig.9 Pass-band Characteristics (Filter2)

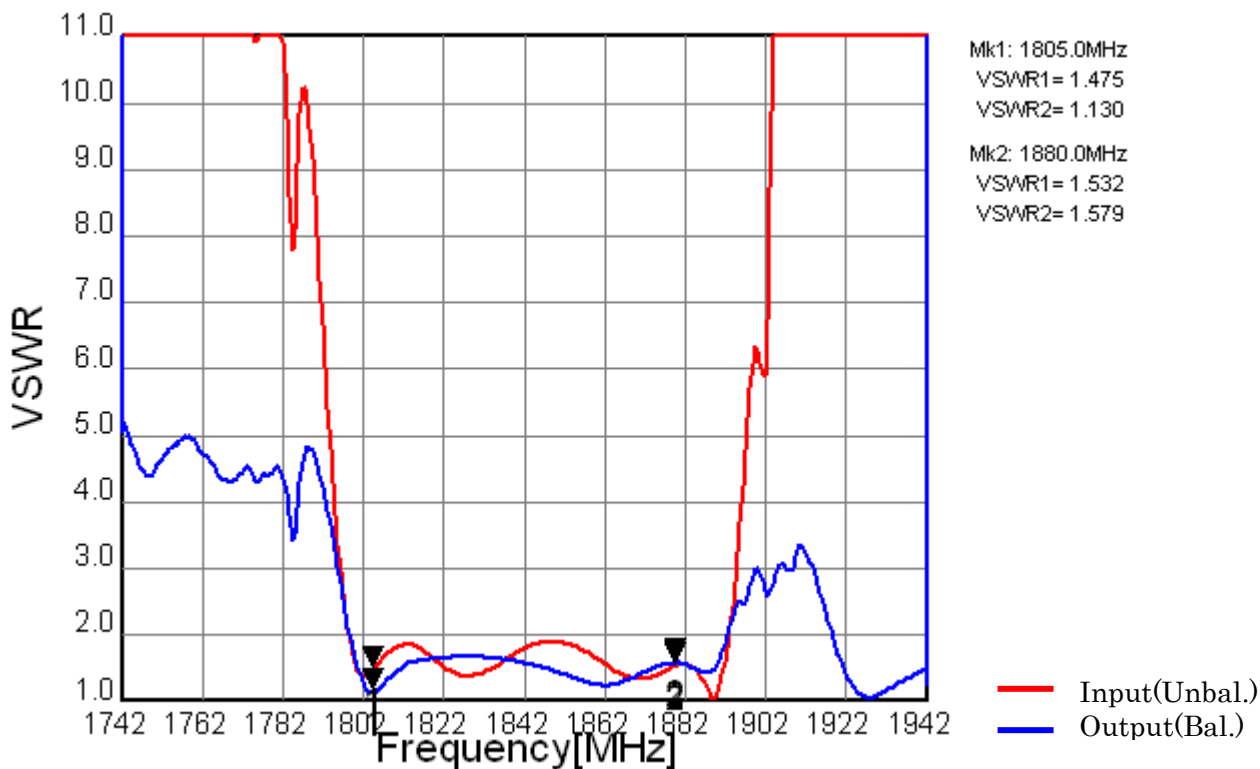


Fig.10 VSWR (Filter2)



MSL1

\*Pb Free part

|               |                                 |  |               |
|---------------|---------------------------------|--|---------------|
| Customer Name | Standard specification          | TAIYO YUDEN Mobile Technology Co.,Ltd. |               |
| System        | GSM1900/GSM1800 Rx (50/150ohms) | DATE                                   | Jan. 12, 2012 |
| Part Number   | G6QE1G960N2EE                   | Version 2.0bb                          | <b>Final</b>  |

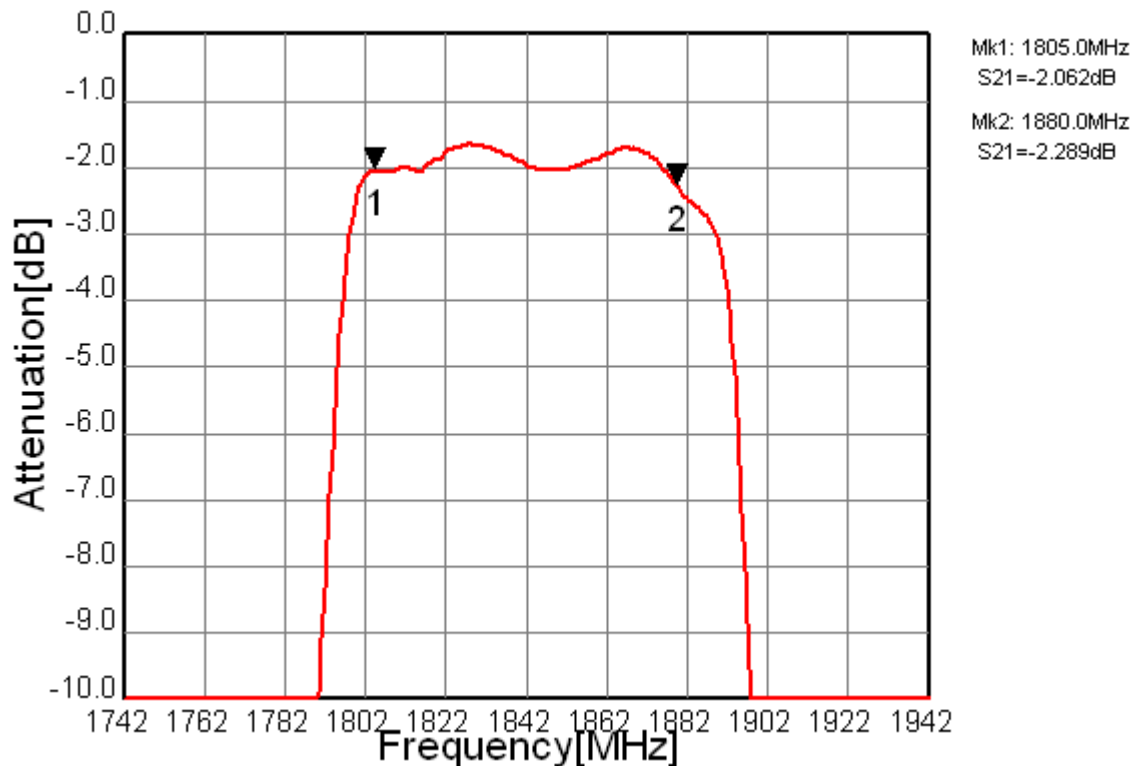


Fig.11 In-band Characteristics (Filter2)

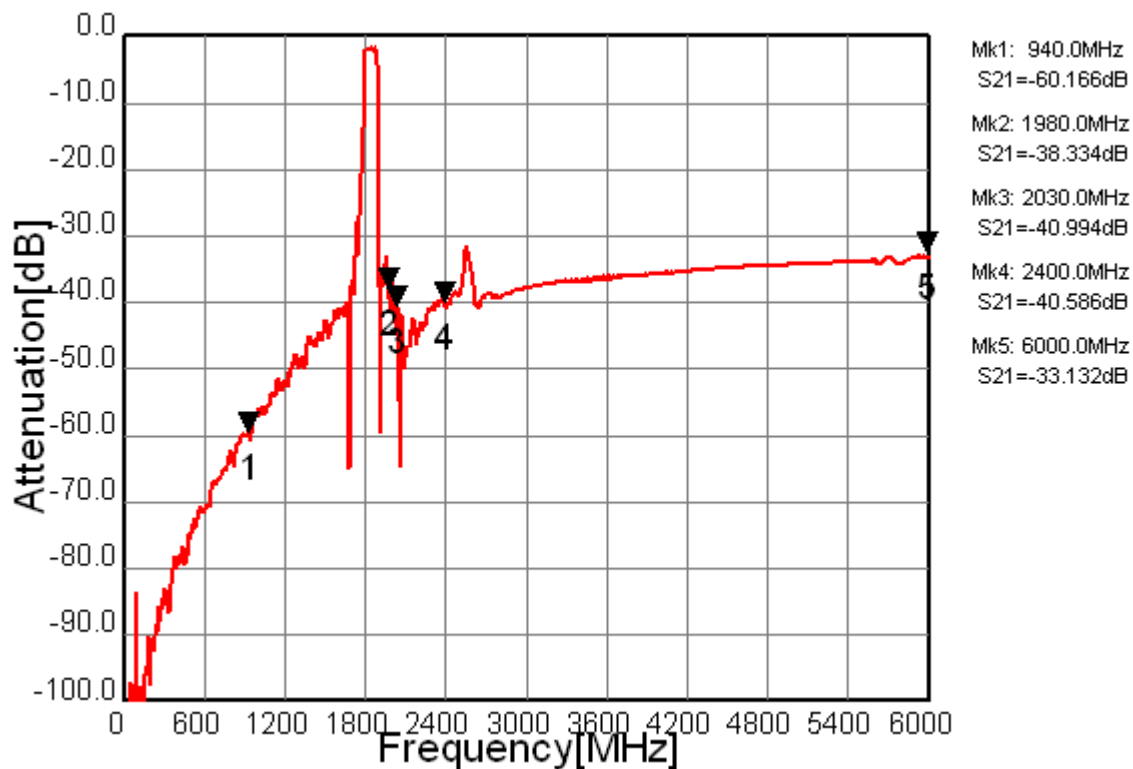


Fig.12 Wide-band Characteristics (Filter2)



MSL1

\*Pb Free part

|               |                                 |  |               |
|---------------|---------------------------------|--|---------------|
| Customer Name | Standard specification          | TAIYO YUDEN Mobile Technology Co.,Ltd. |               |
| System        | GSM1900/GSM1800 Rx (50/150ohms) | DATE                                   | Jan. 12, 2012 |
| Part Number   | G6QE1G960N2EE                   | Version 2.0bb                          | <b>Final</b>  |

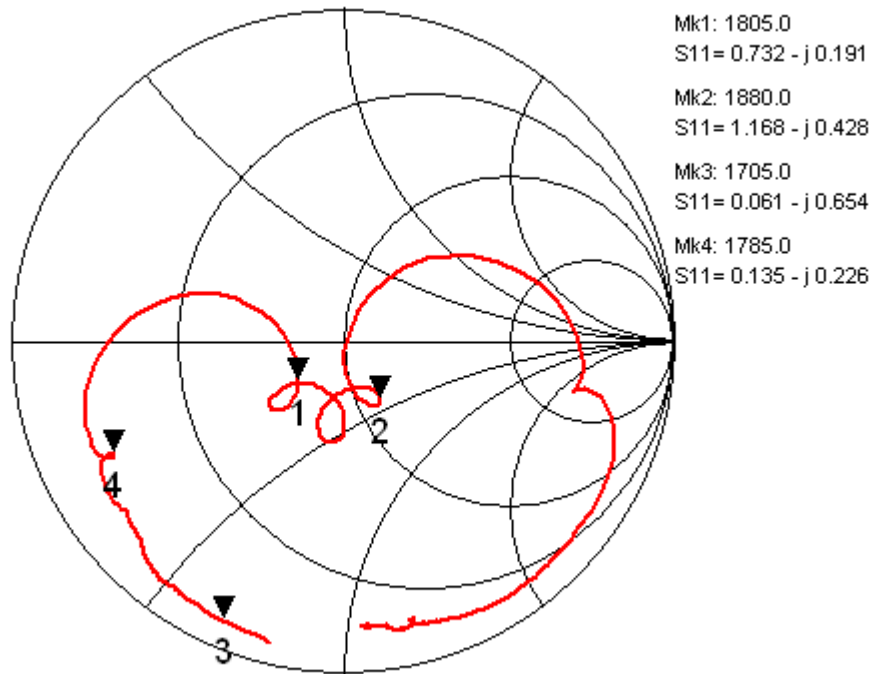


Fig.13 Input Impedance (Unbalanced) (Filter2)

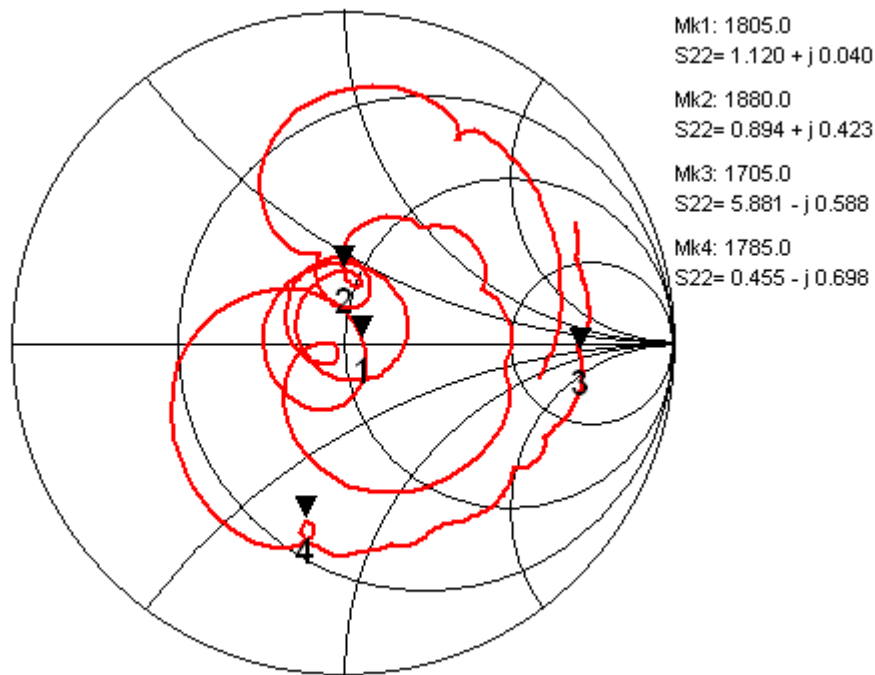


Fig.14 Output Impedance (Balanced) (Filter2)



MSL1

\*Pb Free part

|               |                                 |  |               |
|---------------|---------------------------------|--|---------------|
| Customer Name | Standard specification          | TAIYO YUDEN Mobile Technology Co.,Ltd. |               |
| System        | GSM1900/GSM1800 Rx (50/150ohms) | DATE                                   | Jan. 12, 2012 |
| Part Number   | G6QE1G960N2EE                   | Version 2.0bb                          | <b>Final</b>  |

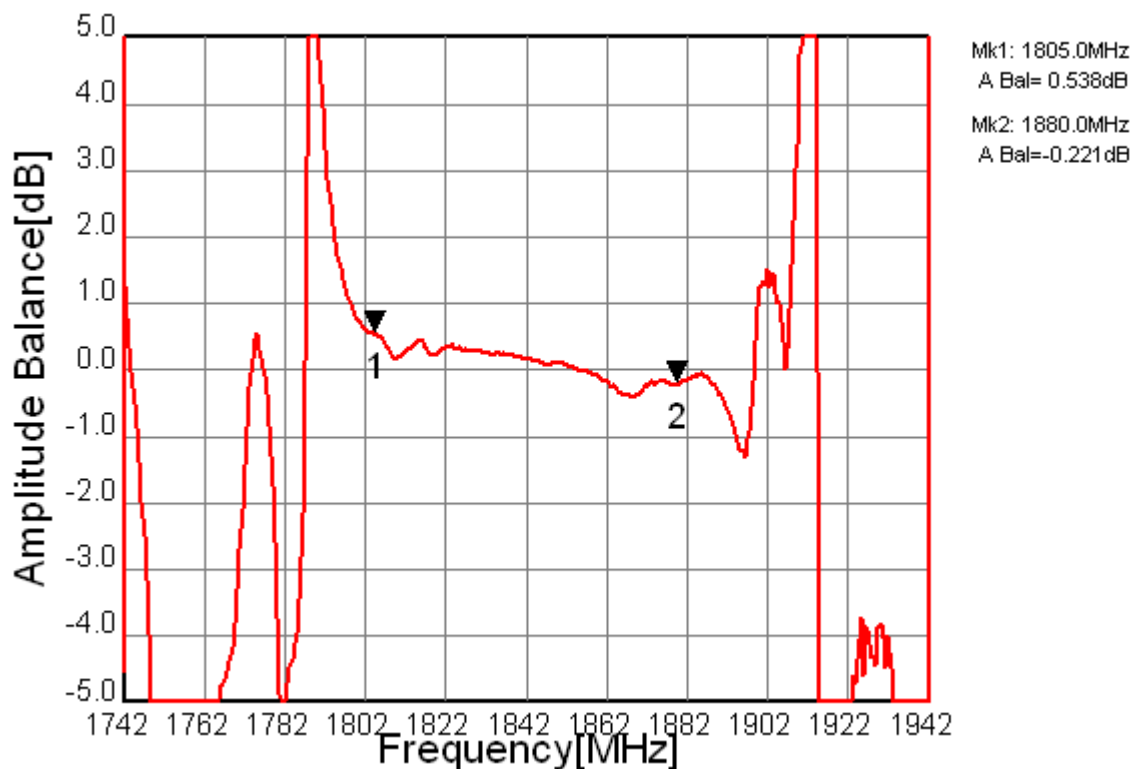


Fig.15 Amplitude Balanced (Filter2)

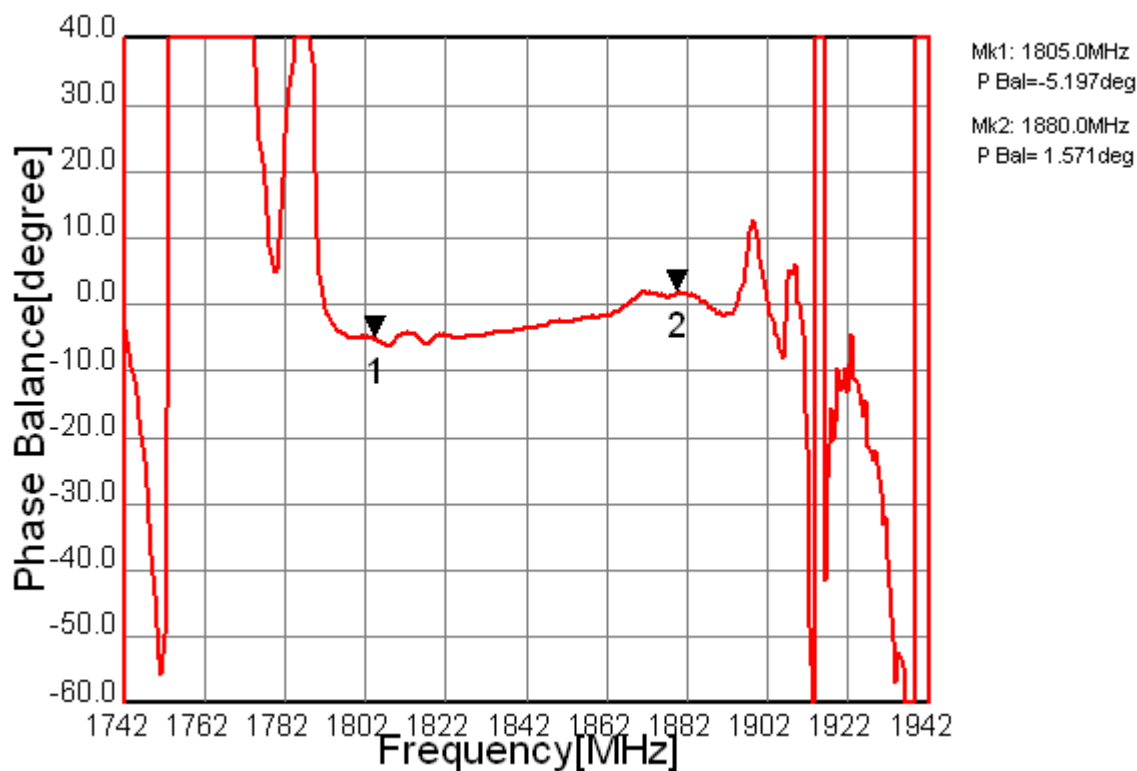


Fig.16 Phase Balanced (Filter2)



MSL1

\*Pb Free part

|               |                                 |  |               |
|---------------|---------------------------------|--|---------------|
| Customer Name | Standard specification          | TAIYO YUDEN Mobile Technology Co.,Ltd. |               |
| System        | GSM1900/GSM1800 Rx (50/150ohms) | DATE                                   | Jan. 12, 2012 |
| Part Number   | G6QE1G960N2EE                   | Version 2.0bb                          | <b>Final</b>  |

## Ordering Code

| Ordering Code    | Packing     | Reel size            | Status |
|------------------|-------------|----------------------|--------|
| G6QE1G960N2EE-J  | Tape & Reel | 5,000 pcs.           | MP     |
| G6QE1G960N2EE-JA | Tape & Reel | less than 5,000 pcs. | MP     |
| G6QE1G960N2EE-Q  | Bulk        | few pcs.             | MP     |

\*Minimum order quantity (MOQ) is assigned for each inquiry, Please contact to Sales Representatives..

\*MP : Mass Production

## Notice

All of the contents specified herein are subject to change without notice due to technical improvements, etc.

Please contact TAIYO YUDEN Co., Ltd. for further details of product specifications.

Please conduct validation and verification of products in actual condition of mounting and operating environment before commercial shipment of the equipment.