



## **SAW Components**

### **BAW duplexer**

1900 MHz CDMA (IS-95)

|                       |                        |
|-----------------------|------------------------|
| <b>Series/type:</b>   | <b>B7633</b>           |
| <b>Ordering code:</b> | <b>B39192B7633D810</b> |
| <b>Date:</b>          | <b>August 17, 2006</b> |
| <b>Version:</b>       | <b>2.0</b>             |



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1880.00 / 1960.00 MHz

Data Sheet



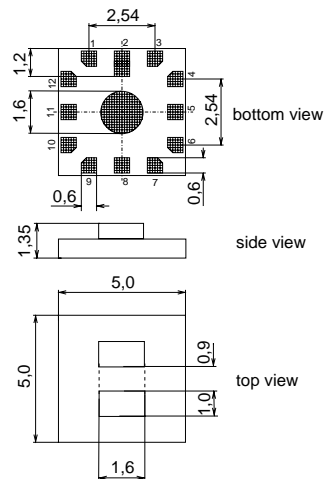
### Application

- Low-loss RF duplexer for mobile telephone IS-95 CDMA systems



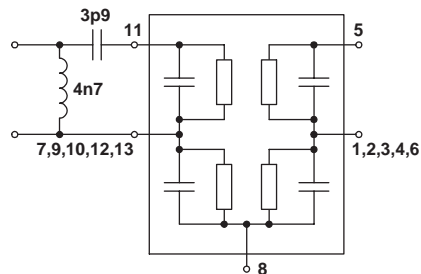
### Features

- Package size 5.0 x 5.0 x 1.35 mm<sup>3</sup>
- Package code QCS12E
- RoHS compatible
- Approximate weight 0.08 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- Ni-UBM
- Matching network required at TX-port



### Pin configuration

- 11 TX input, single ended
- 5 RX output, single ended
- 8 Antenna
  
- 1, 2, 3, 4, 6 Ground
- 7, 9, 10, 12, 13 Ground



Please read *cautions and warnings and important notes* at the end of this document.



Data Sheet



Characteristics

Operating temperature range: T = -30 °C to +85 °C  
 ANT terminating impedance: Z<sub>ANT</sub> = 50 Ω  
 RX terminating impedance: Z<sub>RX</sub> = 50 Ω  
 TX terminating impedance: Z<sub>TX</sub> = 50 Ω

Characteristics TX-ANT

|                                      |                   | min. | typ.<br>@ 25°C | max. |     |
|--------------------------------------|-------------------|------|----------------|------|-----|
| <b>Center frequency</b>              | f <sub>C</sub>    | —    | 1880.0         | —    | MHz |
| <b>Maximum insertion attenuation</b> | α <sub>max</sub>  |      |                |      |     |
| 1850.6 ... 1853.0                    | MHz               | —    | 2.1            | 3.3  | dB  |
| 1853.0 ... 1907.0                    | MHz               | —    | 2.6            | 3.0  | dB  |
| 1907.0 ... 1909.4                    | MHz               | —    | 2.7            | 3.5  | dB  |
| <b>Amplitude ripple (p-p)</b>        | Δα                |      |                |      |     |
| 1850.6 ... 1909.4                    | MHz               | —    | 1.4            | 2.2  | dB  |
| <b>Return loss</b>                   |                   |      |                |      |     |
| TX port                              | 1850.6 ... 1909.4 | 8.0  | 10.0           | —    | dB  |
| ANT port                             | 1850.6 ... 1989.4 | 6.0  | 8.0            | —    | dB  |
| <b>Attenuation</b>                   | α                 |      |                |      |     |
| 0.3 ... 1570.0                       | MHz               | 31   | 33.5           | —    | dB  |
| 1570.0 ... 1580.0                    | MHz               | 30   | 32.5           | —    | dB  |
| 1580.0 ... 1800.0                    | MHz               | 29   | 31.5           | —    | dB  |
| 1930.6 ... 1935.0                    | MHz               | 42   | 51.5           | —    | dB  |
| 1935.0 ... 1989.4                    | MHz               | 38   | 41.5           | —    | dB  |
| 2400.0 ... 2500.0                    | MHz               | 34   | 36.5           | —    | dB  |
| 2500.0 ... 3400.0                    | MHz               | 20   | 28             | —    | dB  |
| 3400.0 ... 4400.0                    | MHz               | 25   | 30             | —    | dB  |
| 4400.0 ... 5550.0                    | MHz               | 5    | 7.5            | —    | dB  |
| 5550.0 ... 5730.0                    | MHz               | 5    | 7.5            | —    | dB  |



Data Sheet



Characteristics

Operating temperature range: T = -30 °C to +85 °C  
 ANT terminating impedance: Z<sub>ANT</sub> = 50 Ω  
 RX terminating impedance: Z<sub>RX</sub> = 50 Ω  
 TX terminating impedance: Z<sub>TX</sub> = 50 Ω

Characteristics ANT-RX

|                                      |                   | min. | typ.<br>@ 25°C | max.              |     |
|--------------------------------------|-------------------|------|----------------|-------------------|-----|
| <b>Center frequency</b>              | f <sub>C</sub>    | —    | 1960.0         | —                 | MHz |
| <b>Maximum insertion attenuation</b> | α <sub>max</sub>  |      |                |                   |     |
| 1930.6 ... 1935.0                    | MHz               | —    | 3.6            | 4.5 <sup>1)</sup> | dB  |
| 1935.0 ... 1987.0                    | MHz               | —    | 3.1            | 3.5               | dB  |
| 1987.0 ... 1989.4                    | MHz               | —    | 2.1            | 3.5               | dB  |
| <b>Amplitude ripple (p-p)</b>        | Δα                |      |                |                   |     |
| 1930.6 ... 1989.4                    | MHz               | —    | 1.4            | 2.7               | dB  |
| <b>Return loss</b>                   |                   |      |                |                   |     |
| RX port                              | 1930.6 ... 1989.4 | 4.0  | 5.5            | —                 | dB  |
| ANT port                             | 1850.6 ... 1989.4 | 6.0  | 8.0            | —                 | dB  |
| <b>Attenuation</b>                   | α                 |      |                |                   |     |
| 0.3 ... 1770.0                       | MHz               | 33   | 35.5           | —                 | dB  |
| 1770.0 ... 1850.6                    | MHz               | 39   | 41.5           | —                 | dB  |
| 1850.6 ... 1905.0                    | MHz               | 54   | 57             | —                 | dB  |
| 1905.0 ... 1909.4                    | MHz               | 48   | 58             | —                 | dB  |
| 2010.0 ... 2070.0                    | MHz               | 7    | 20             | —                 | dB  |
| 2070.0 ... 2750.0                    | MHz               | 39   | 41.5           | —                 | dB  |
| 2750.0 ... 3350.0                    | MHz               | 20   | 34             | —                 | dB  |
| 3350.0 ... 3500.0                    | MHz               | 39   | 41.5           | —                 | dB  |
| 3500.0 ... 4500.0                    | MHz               | 30   | 40             | —                 | dB  |
| 4500.0 ... 6000.0                    | MHz               | 20   | 25             | —                 | dB  |

1) 4.0dB for 25°C to 85°C



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| Characteristics TX-RX              |        |     |            | min. | typ.<br>@ 25°C | max. |    |
|------------------------------------|--------|-----|------------|------|----------------|------|----|
| <b>Isolation between RX and TX</b> |        |     |            |      |                |      |    |
|                                    | 0.3    | ... | 1800.0 MHz | 57   | 62             | —    | dB |
|                                    | 1850.6 | ... | 1907.0 MHz | 54   | 58             | —    | dB |
|                                    | 1907.0 | ... | 1909.4 MHz | 50   | 57             | —    | dB |
|                                    | 1930.6 | ... | 1935.0 MHz | 44   | 54             | —    | dB |
|                                    | 1935.0 | ... | 1989.4 MHz | 42   | 44             | —    | dB |
|                                    | 2070.0 | ... | 4200.0 MHz | 53   | 60             | —    | dB |



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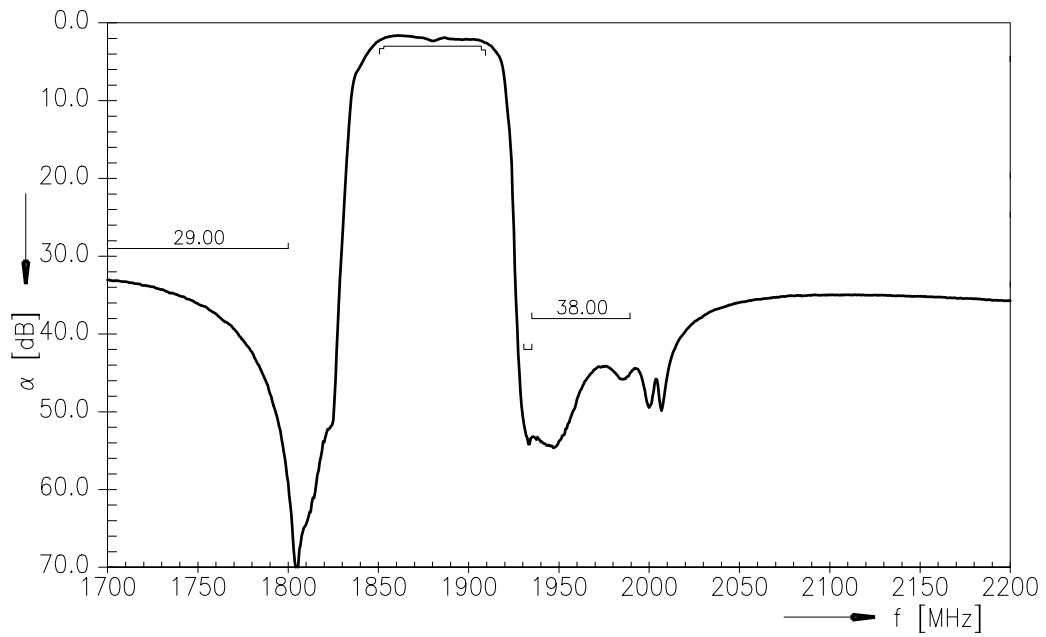
### Maximum ratings

|                            |                  |                   |     |                                |
|----------------------------|------------------|-------------------|-----|--------------------------------|
| Operable temperature range | T                | -30 / +85         | °C  |                                |
| Storage temperature range  | T <sub>stg</sub> | -40 / +85         | °C  |                                |
| DC voltage                 | V <sub>DC</sub>  | 3                 | V   |                                |
| ESD voltage                | V <sub>ESD</sub> | 100 <sup>1)</sup> | V   | source and load impedance 50 Ω |
| Input Power at             |                  |                   |     |                                |
| 1850.6 ... 1909.4 MHz      | P <sub>IN</sub>  | 29                | dBm | CDMA modulated signal          |
| elsewhere                  | P <sub>IN</sub>  | 10                | dBm | CW                             |

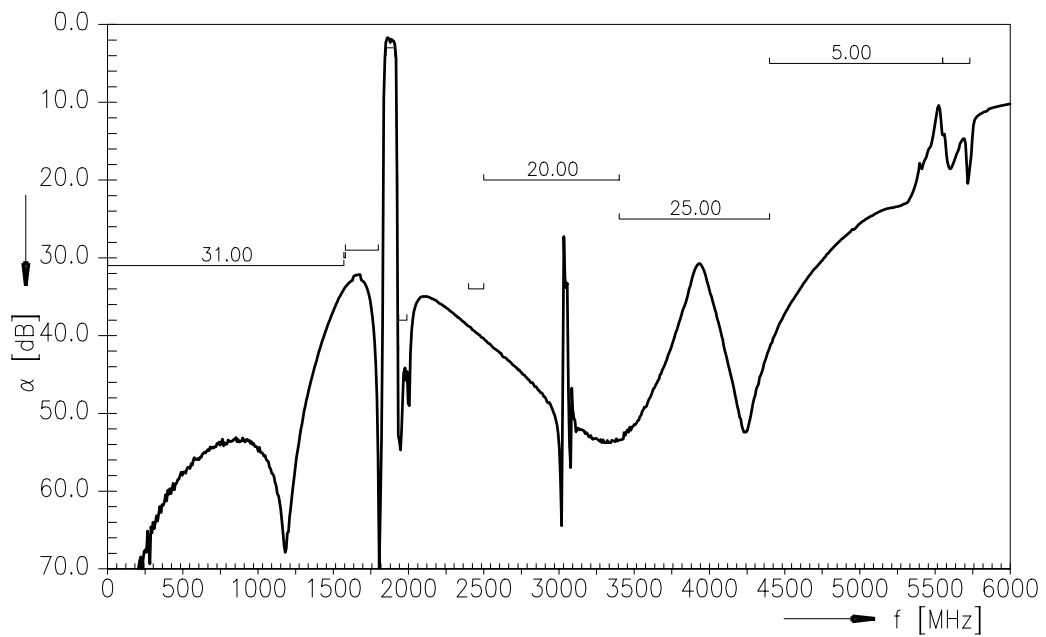
1) acc. to JESD22-A115A (machine model), 1 negative & 1 positive pulse.



Frequency Response TX - ANT

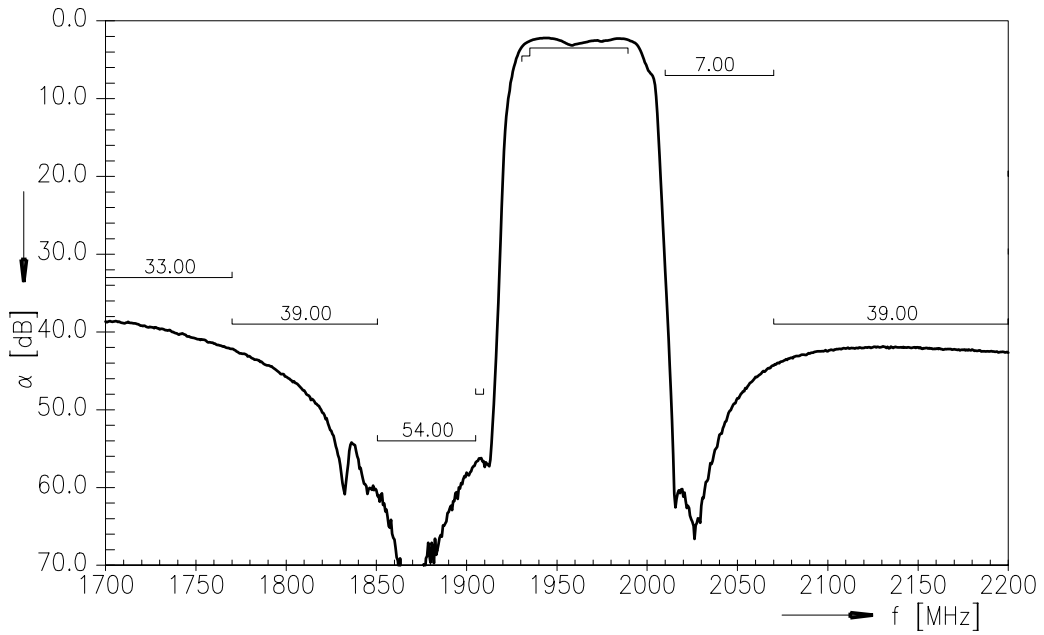


Frequency Response TX - ANT (wideband)

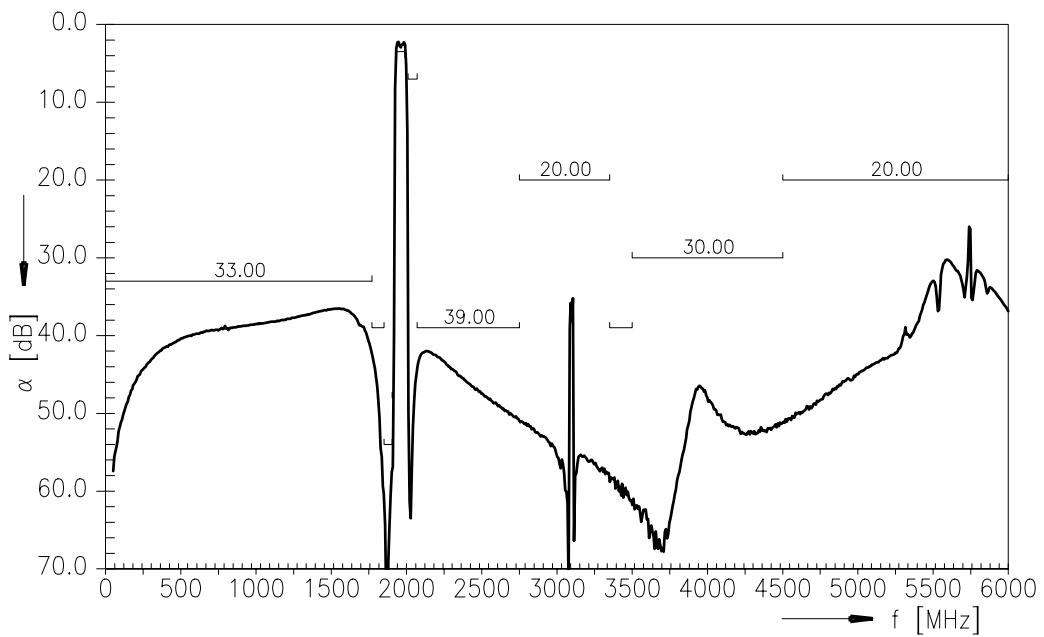




Frequency Response ANT - RX



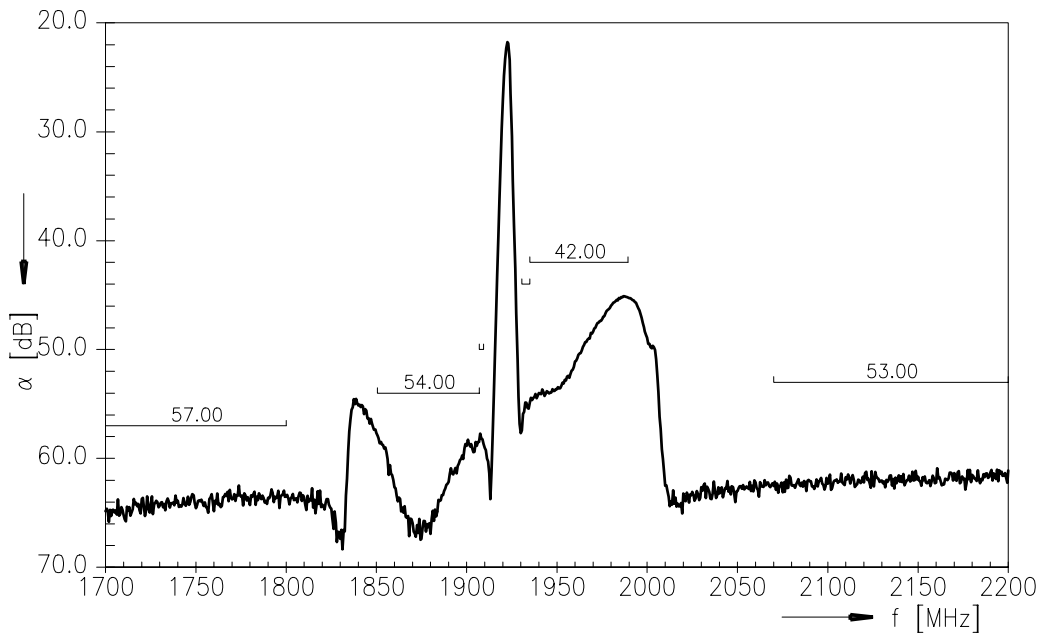
Frequency Response ANT - RX (wideband)



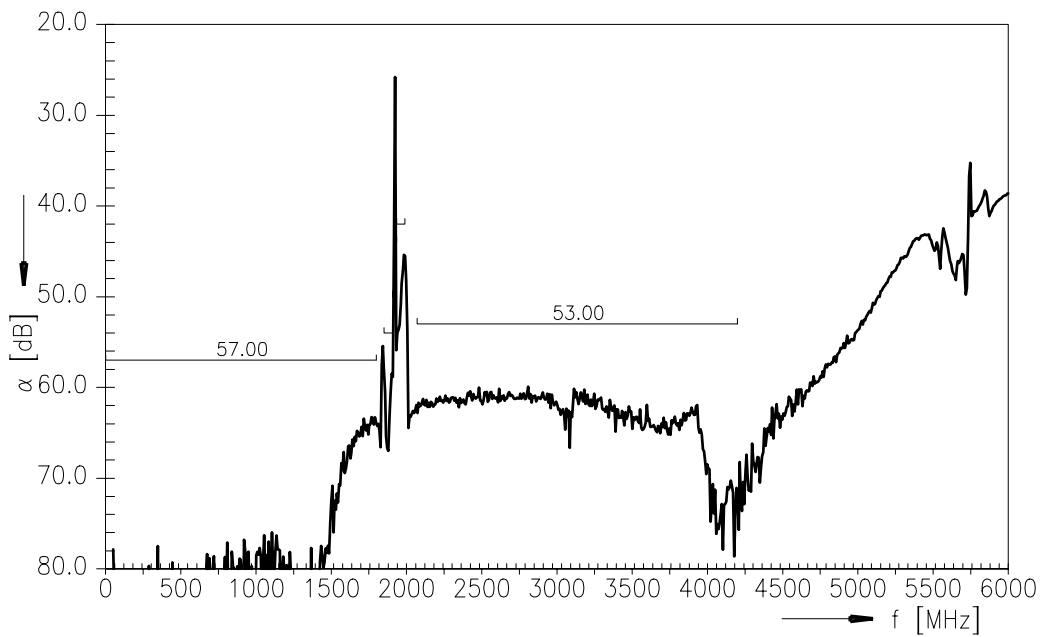




Frequency Response TX - RX



Frequency Response TX - RX (wideband)

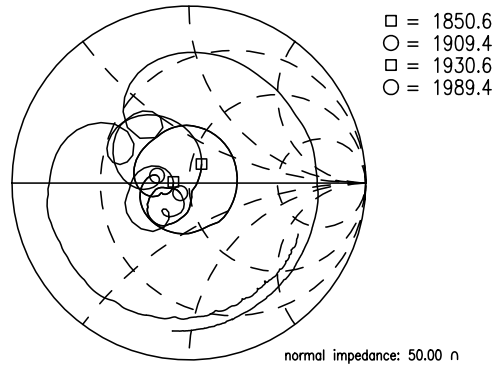
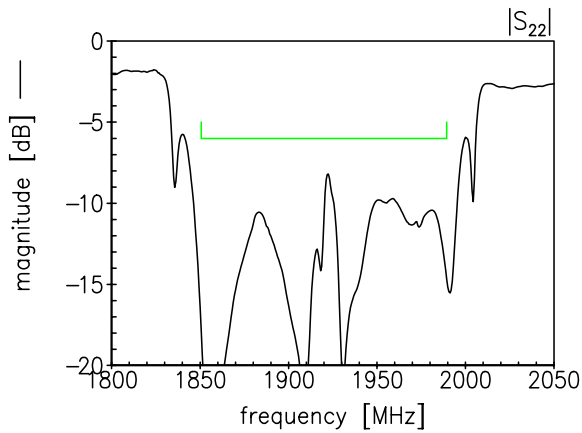
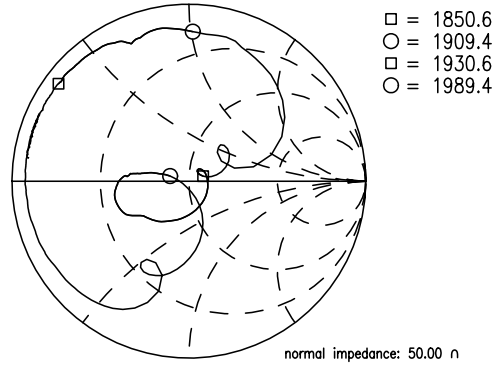
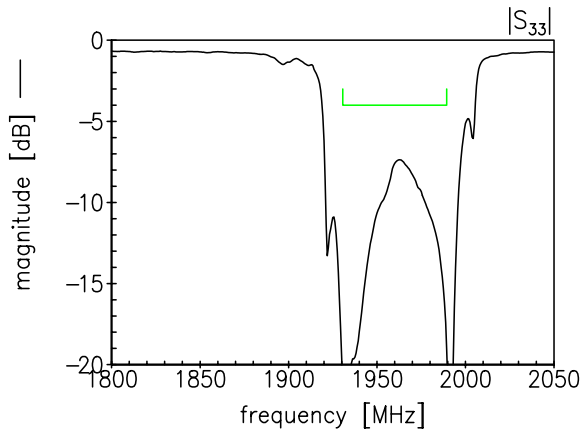
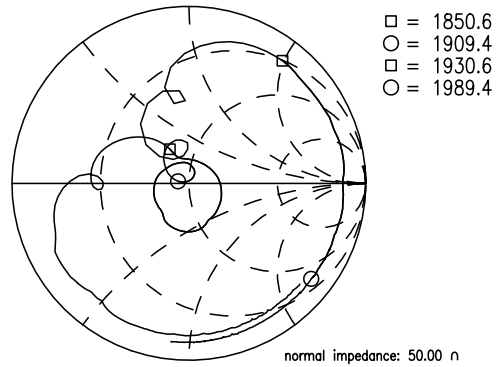
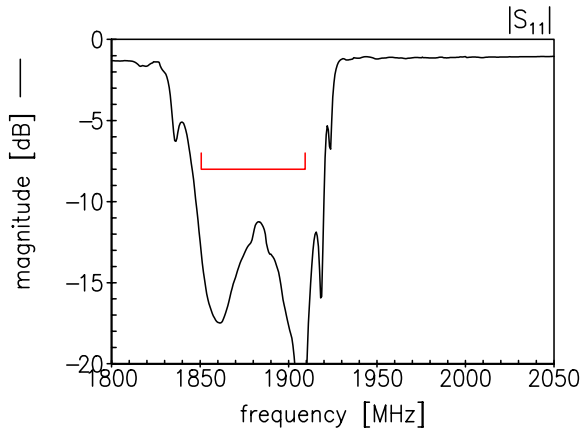




Return Loss:  $S_{11}$  TX-port

$S_{22}$  ANT-port

$S_{33}$  RX-port





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|                     |  |
|---------------------|--|
| Type                | B7633  |
| Ordering code       | B39192-B7633-D810  |
| Marking and Package | C61157-A3-A5   |
| Packaging           | F61074-V8159-Z000  |
| Date Codes          | L_1126   |
| S-Parameters        | B7633_NB.s3p<br>B7633_WB.s3p   |
| Soldering profile   | S_6001   |
| RoHS compatible     | defined as compatible with the following documents:<br>"DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. 2005/618/EC from April 18th, 2005, amending Directive 2002/95/EC of the European Parliament and of the Council for the purposes of establishing the maximum concentration values for certain hazardous substances in electrical and electronic equipment." |

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