



SAW Components

SAW duplexer

Cellular / WCDMA Band V

Series/type:	B7640
Ordering code:	B39881B7640P710
Date:	February 23, 2007
Version:	2.0



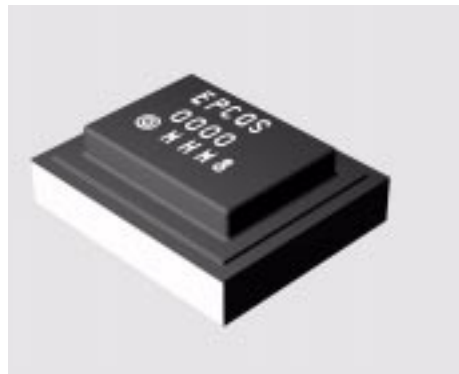
SAW Components	B7640
SAW duplexer	836.50 / 881.50 MHz

Data Sheet



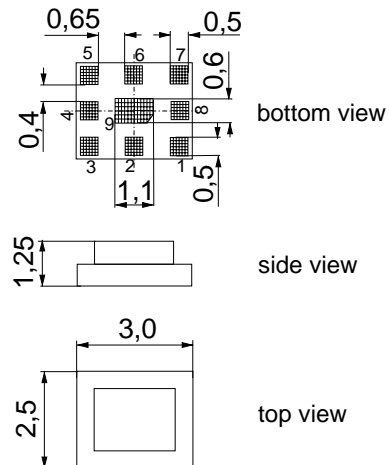
Application

- Low-loss RF duplexer for mobile telephone WCDMA Band V systems



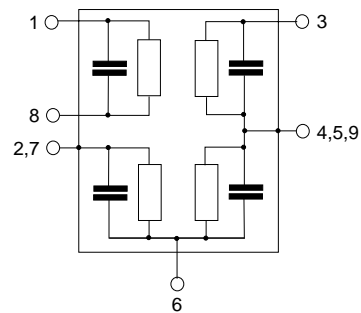
Features

- Package size 3.0 x 2.5 x 1.25 mm³
- Package code QCS9L
- RoHS compatible
- Approximate weight 0.035 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- Fully matched by integrated matching network
- Balanced Rx port, single ended Tx port
- Impedance transformation 50 Ω to 100 Ω in Rx path



Pin configuration

- 3 TX input, single ended
- 1,8 RX output, balanced
- 6 Antenna
- 2,4,5,7,9 Ground





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Characteristics

Temperature range for specification: T = -15 °C to +80 °C
 ANT terminating impedance: Z_{ANT} = 50 Ω
 RX terminating impedance: Z_{RX} = 100 Ω (balanced)
 TX terminating impedance: Z_{TX} = 50 Ω

Characteristics TX-ANT	min.	typ. @ 25°C	max.	
Center frequency f _C	—	836.5	—	MHz
Maximum insertion attenuation α _{max} 824.0 ... 849.0 MHz	—	1.6	2.3 ¹⁾	dB
Amplitude ripple (p-p) Δα 824.0 ... 849.0 MHz	—	0.4	1.1	dB
Amplitude ripple in 5 MHz channel (p-p) Δα 824.0 ... 849.0 MHz	—	0.5	0.8	dB
Group delay variation in 5 MHz channel Δα 824.0 ... 849.0 MHz	—	10	20	ns
VSWR				
TX port 824.0 ... 849.0 MHz	—	1.7	2.0	
ANT port 824.0 ... 849.0 MHz	—	1.5	1.8	
Attenuation α				
0.3 ... 779.0 MHz	30	40	—	dB
779.0 ... 804.0 MHz	30	40	—	dB
869.0 ... 894.0 MHz	45	49	—	dB
1550.0 ... 1600.0 MHz	35	40	—	dB
1648.0 ... 1698.0 MHz	30	38	—	dB
1984.0 ... 2170.0 MHz	27	36	—	dB
2400.0 ... 2547.0 MHz	18	21	—	dB
2547.0 ... 3406.0 MHz	13	20	—	dB
3406.0 ... 6000.0 MHz	—	5	—	dB

¹⁾ 2.5 dB in ranges -25...-15 °C and +80...+85 °C



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Characteristics

Temperature range for specification: $T = -15\text{ °C to }+80\text{ °C}$
 ANT terminating impedance: $Z_{ANT} = 50\ \Omega$
 RX terminating impedance: $Z_{RX} = 100\ \Omega$ (balanced)
 TX terminating impedance: $Z_{TX} = 50\ \Omega$

Characteristics ANT-RX	min.	typ. @ 25°C	max.	
Center frequency f_C	—	881.5	—	MHz
Maximum insertion attenuation α_{max} 869.0 ... 894.0 MHz	—	2.0	2.7 ¹⁾	dB
Amplitude ripple (p-p) $\Delta\alpha$ 869.0 ... 894.0 MHz	—	0.7	1.4	dB
Amplitude ripple in 5 MHz channel (p-p) $\Delta\alpha$ 869.0 ... 894.0 MHz	—	0.5	0.7	dB
Group delay variation in 5 MHz channel $\Delta\alpha$ 869.0 ... 894.0 MHz	—	25	35	ns
IMD Product Level Limits				
at $f_{TX} = 836.5\text{ MHz}$ $f_{RX} = 881.5\text{ MHz}$				
Blocker 1 45.0 MHz	—	-114	-110	dBm
Blocker 2 791.5 MHz	—	-115	-110	dBm
Blocker 3 1718.0 MHz	—	-125	-110	dBm
VSWR				
RX port 869.0 ... 894.0 MHz	—	1.6	1.9	
ANT port 869.0 ... 894.0 MHz	—	1.4	1.8	
Output phase balance $(\phi(S_{31}) - \phi(S_{21}) + 180^\circ)$ 869.0 ... 894.0 MHz	-10	-6 / 6	10	degree
Output amplitude balance (S_{31}/S_{21}) 869.0 ... 894.0 MHz	-1.5	-1.1 / 0.5	1.5	dB
Attenuation α				
0.3 ... 779.0 MHz	40	56	—	dB
779.0 ... 824.0 MHz	40	55	—	dB
824.0 ... 849.0 MHz	47	53	—	dB
849.0 ... 854.0 MHz	25	30	—	dB
914.0 ... 1693.0 MHz	23	35	—	dB
1693.0 ... 1788.0 MHz	45	58	—	dB
1788.0 ... 2400.0 MHz	40	56	—	dB
2400.0 ... 2500.0 MHz	40	48	—	dB

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



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Characteristics ANT-RX	min.	typ. @ 25°C	max.	
2500.0 ... 2682.0 MHz	40	47	—	dB
2682.0 ... 5000.0 MHz	30	40	—	dB
5150.0 ... 5825.0 MHz	30	46	—	dB
5825.0 ... 6000.0 MHz	30	44	—	dB

1) 5.0 dB in ranges -25...-15 °C and +80...+85 °C

Characteristics TX-RX	min.	typ. @ 25°C	max.	
Isolation between RX and TX α				
824.0 ... 849.0 MHz	50	57	—	dB
869.0 ... 894.0 MHz	45	52	—	dB



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Maximum ratings

Operable temperature range	T	-30 / +85	°C	
Storage temperature range	T _{stg}	-40 / +85	°C	
DC voltage	V _{DC}	5	V	
ESD voltage	V _{ESD}	100 ¹⁾	V	machine model, 10 pulses
Input Power at 824.0 ... 849.0 MHz	P _{IN}	30	dBm	continuous wave, 55 °C, 10000 h
elsewhere	P _{IN}	10	dBm	

1) acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulses.

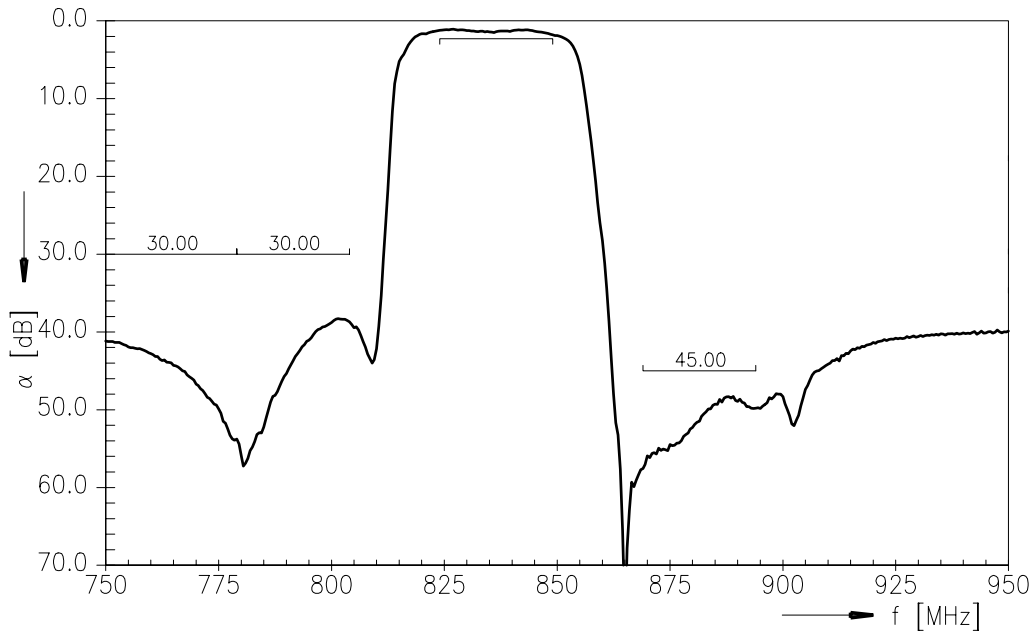


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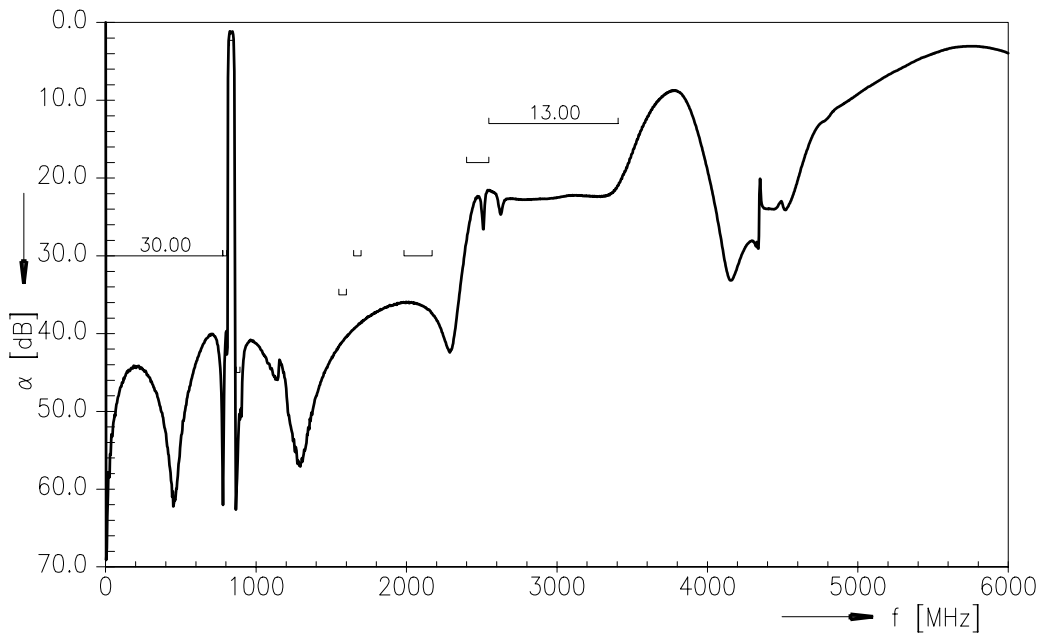
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Frequency Response TX-ANT



Frequency Response TX-ANT (wideband)



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



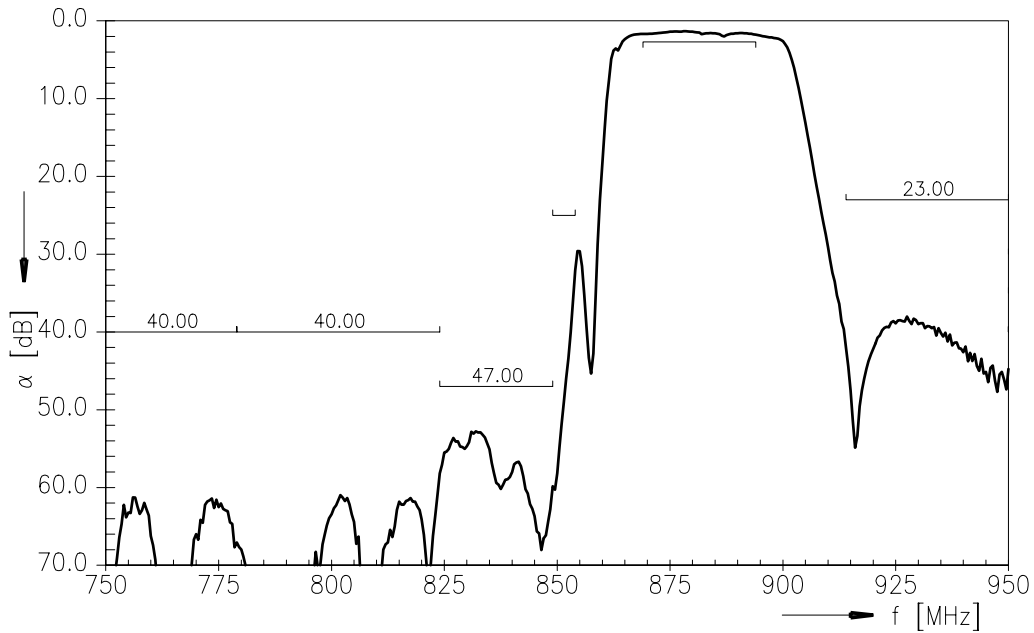
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SAW duplexer 836.50 / 881.50 MHz

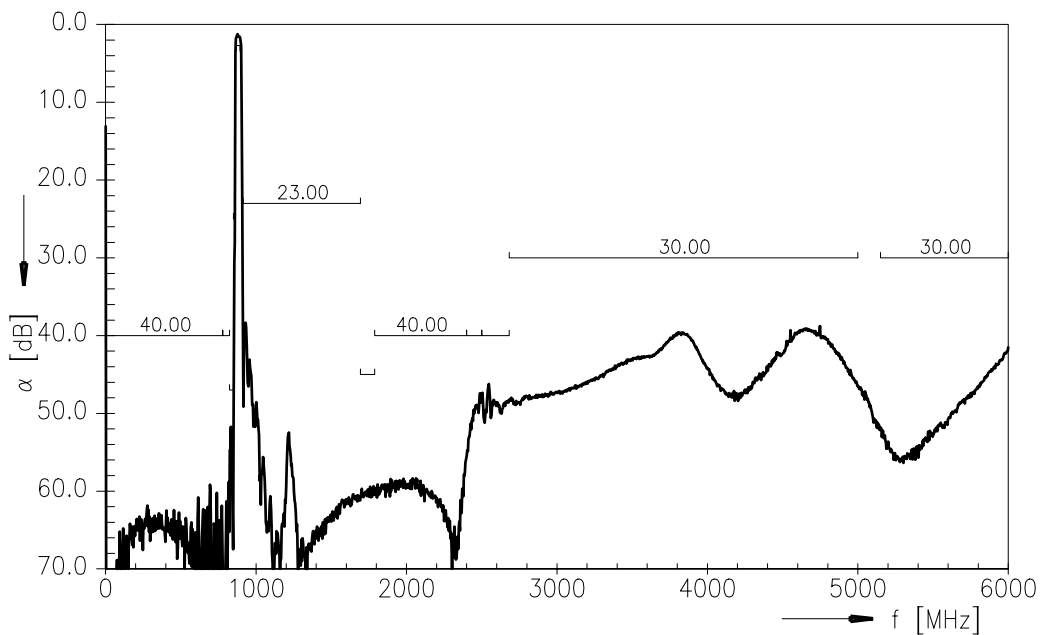
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Frequency Response RX-ANT



Frequency Response RX-ANT (wideband)





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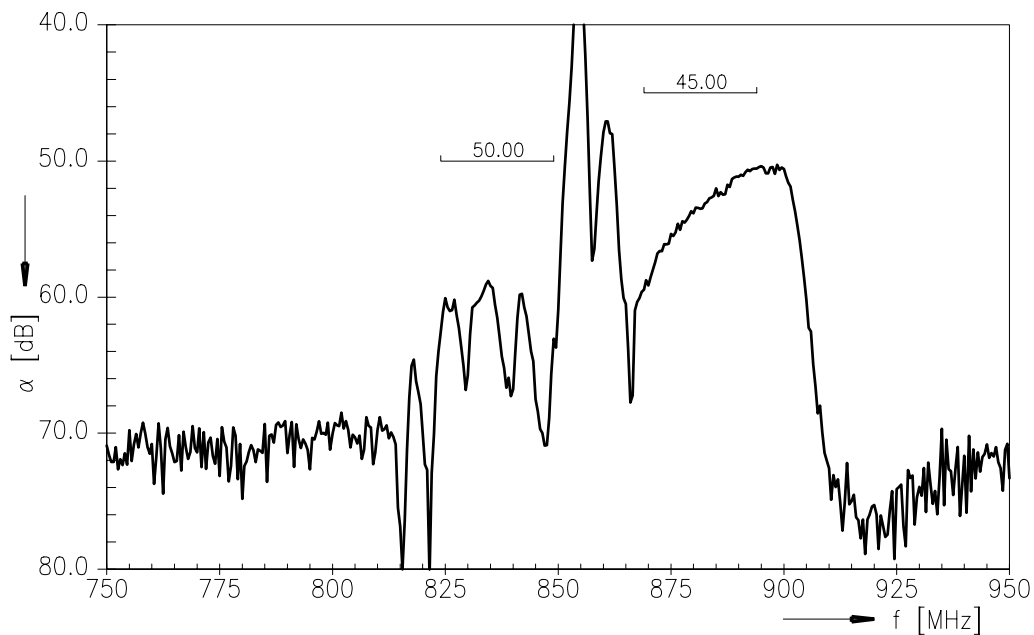
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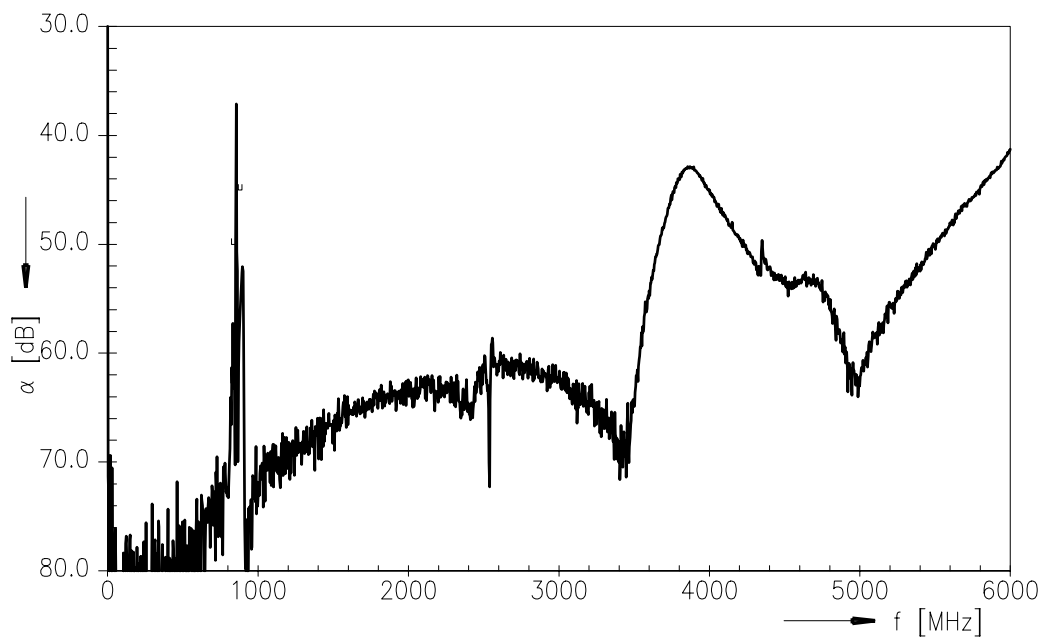
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Frequency Response TX-RX



Frequency Response TX-RX (wideband)



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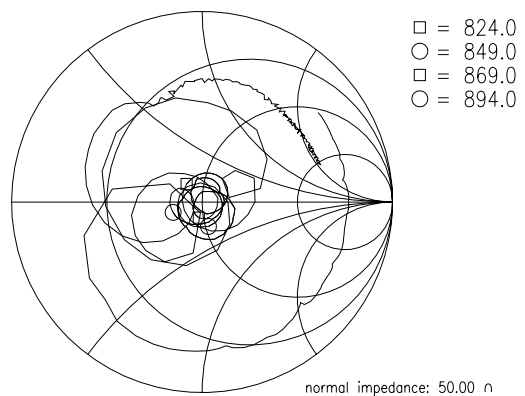
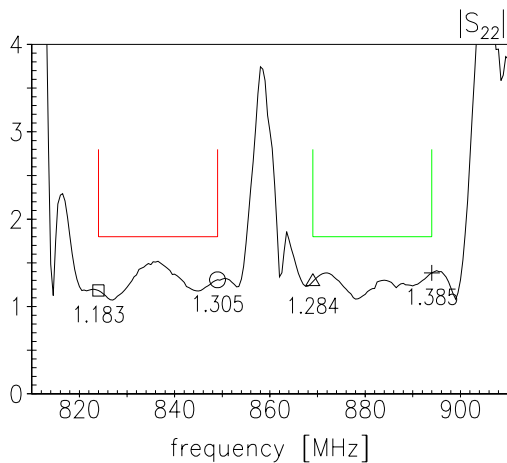
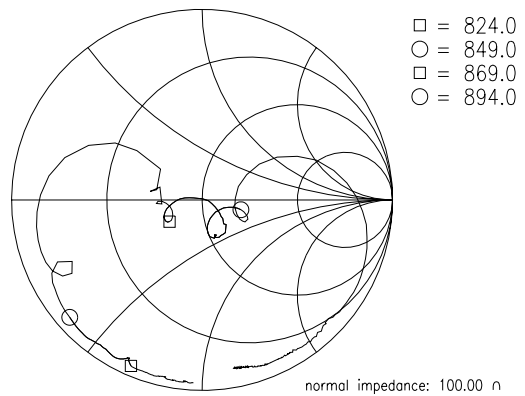
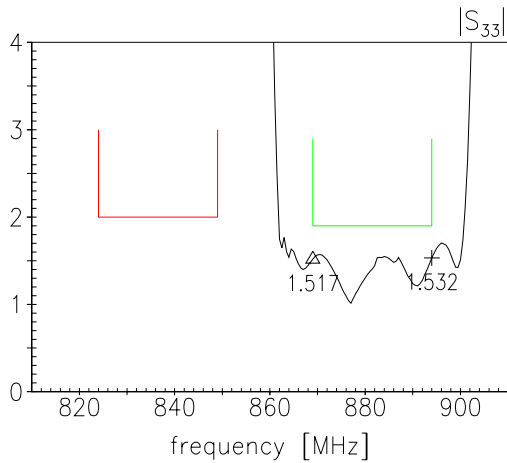
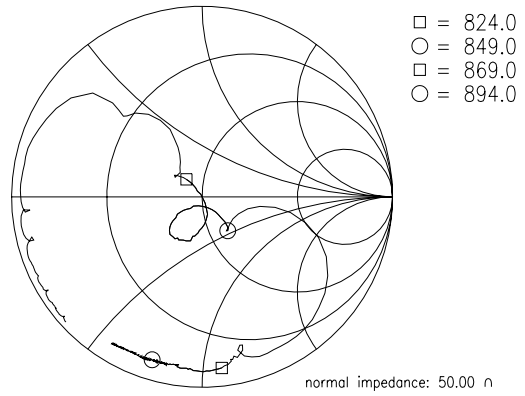
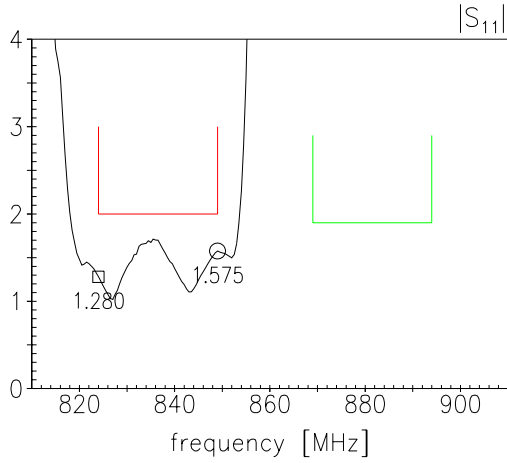
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Return Loss: **S₁₁ TX-port**

S₂₂ ANT-port

S₃₃ RX-port



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Type	B7640
Ordering code	B39881B7640P710
Marking and Package	C61157-A3-A19
Packaging	F61074-V8211-Z000
Date Codes	L_1126
S-Parameters	B7640_NB.s3p B7640_WB.s3p
Soldering profile	S_6001
RoHS compatible	defined as compatible with the following documents: "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."

For further information please contact your local EPCOS sales office or visit our webpage at www.epcos.com.

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