SAW Components

SAW Duplexer

Cellular / WCDMA Band V

Series/type:	**B7664**
Ordering code:	**B39881B7664P310**
Date:	March 22, 2007
Version:	2.0

Preliminary Data

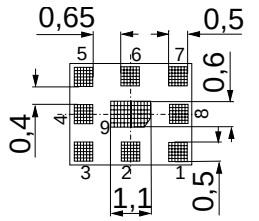
SMD

Application

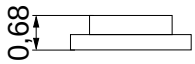
- Low-loss RF duplexer for mobile telephone cellular / WCDMA Band V systems
- Very small size and low height

Features

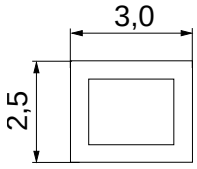
- Package size 3.0 x 2.5 x 0.68 mm³
- Package code QCS9F
- RoHS compatible
- Approx. weight 0.021 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- ESD sensitive device



bottom view



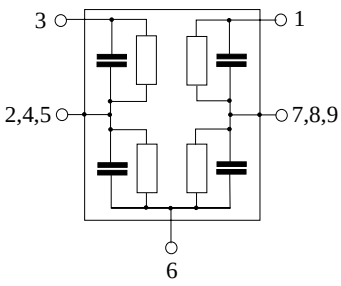
side view



top view

Pin configuration

■	1	RX output
■	3	TX input
■	6	Antenna
■	2,4,5	Ground
■	7,8,9	Ground



Preliminary Data

SMD

Characteristics

Operating temperature range: T = –30 ˚C to +80 ˚C
ANT terminating impedance: Z_{ANT} = 50 Ω
RX terminating impedance: Z_{RX} = 50 Ω
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			—	1.7	2.5[1)]	dB
Amplitude ripple (p-p)		$\Delta\alpha$					
824.0 ... 849.0	MHz			—	0.5	1.4	dB
Return loss							
TX port 824.0 ... 849.0	MHz			10.0	12	—	dB
ANT port 824.0 ... 849.0	MHz			10.0	12	—	dB
Attenuation		α					
0.3 ... 779.0	MHz			20	32	—	dB
779.0 ... 804.0	MHz			24	36	—	dB
869.0 ... 894.0	MHz			45	47	—	dB
894.0 ... 1570.0	MHz			20	33	—	dB
1570.0 ... 1580.0	MHz			35	37	—	dB
1580.0 ... 3000.0	MHz			32	37	—	dB
3000.0 ... 6000.0	MHz			15	35	—	dB

1) Including estimated loss of 0.2 dB of matching element.

Preliminary Data

SMD

Characteristics

Operating temperature range: T = –30 ˚C to +80 ˚C
ANT terminating impedance: Z_{ANT} = 50 Ω
RX terminating impedance: Z_{RX} = 50 Ω
TX terminating impedance: Z_{TX} = 50 Ω

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	—	2.1	3.5[1)]	dB
Amplitude ripple (p-p)				$\Delta\alpha$				
	869.0	...	894.0	MHz	—	0.7	2.2	dB
Return loss								
TX port	869.0	...	894.0	MHz	10.0	13	—	dB
ANT port	869.0	...	894.0	MHz	8.5	13	—	dB
Attenuation				α				
	0.3	...	824.0	MHz	35	43	—	dB
	434.0	...	447.0	MHz	42	50	—	dB
	824.0	...	849.0	MHz	54	58	—	dB
	954.0	...	2485.0	MHz	30	46	—	dB
	2485.0	...	6000.0	MHz	20	24	—	dB

1) Including estimated loss of 0.2 dB of matching element.

Preliminary Data

SMD

Characteristics

Operating temperature range: T = –30 ˚C to +80 ˚C
ANT terminating impedance: Z_{ANT} = 50 Ω
RX terminating impedance: Z_{RX} = 50 Ω
TX terminating impedance: Z_{TX} = 50 Ω

Characteristics TX-RX		min.	typ. @ 25 ˚C	max.	
Isolation between RX and TX	α				
824.0 ... 849.0 MHz		56	59	—	dB
869.0 ... 894.0 MHz		45	48	—	dB
1648.0 ... 1698.0 MHz		45	60	—	dB

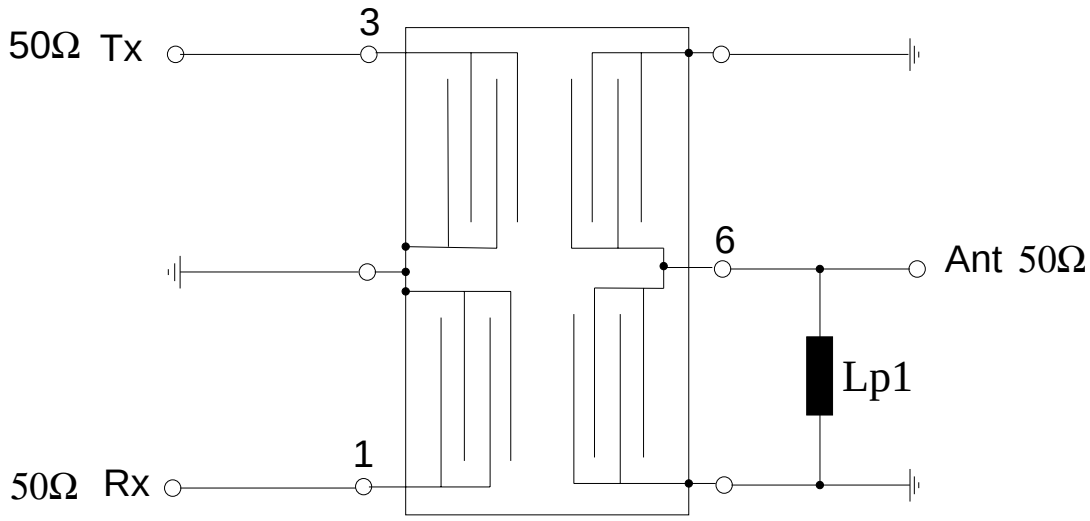
Maximum ratings

Operating temperature range[1)]	T	–30/+80	˚C	
Operable temperature range[2)]	T_{stg}	–40/+85	˚C	
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	100[3)]	V	machine model, 10 pulses source and load impeadance 50Ω
Input Power at				
824.0 ... 849.0 MHz	P_{IN}	31	dBm	continuous wave, 55 ˚C, 10000h
elsewhere	P_{IN}	10	dBm	continuous wave, 55 ˚C, 10000h

1) Defines the temperature range in which the specification values are guaranteed.
2) Defines the temperature range in which the SAW device keeps its typical characteristics, however the specification values are not guaranteed.
3) acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulses.

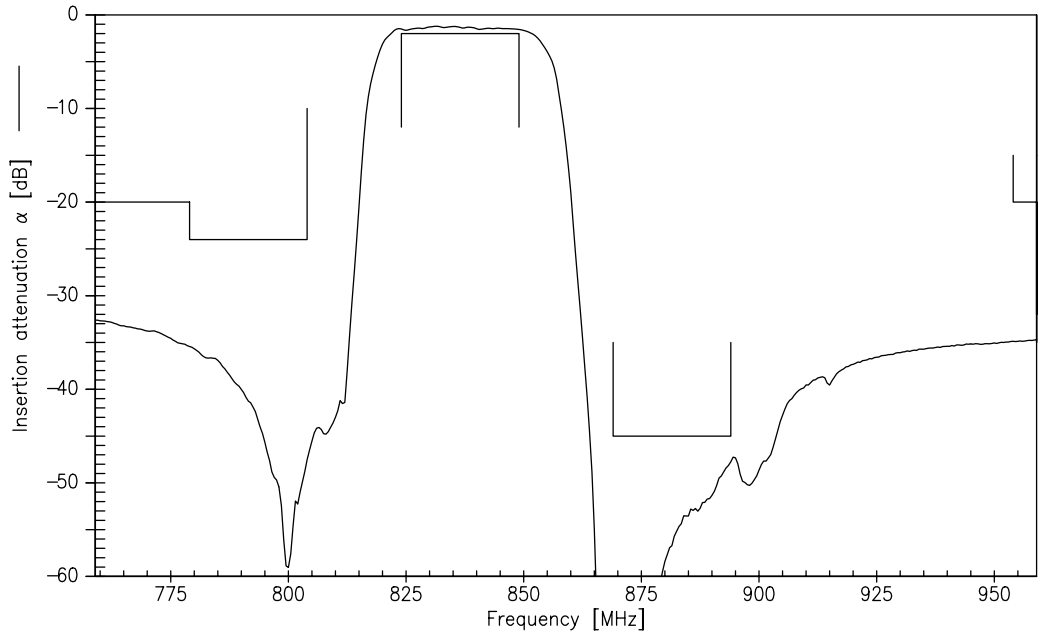
Matching circuit to terminating impedances

(Element values depend upon PCB layout)

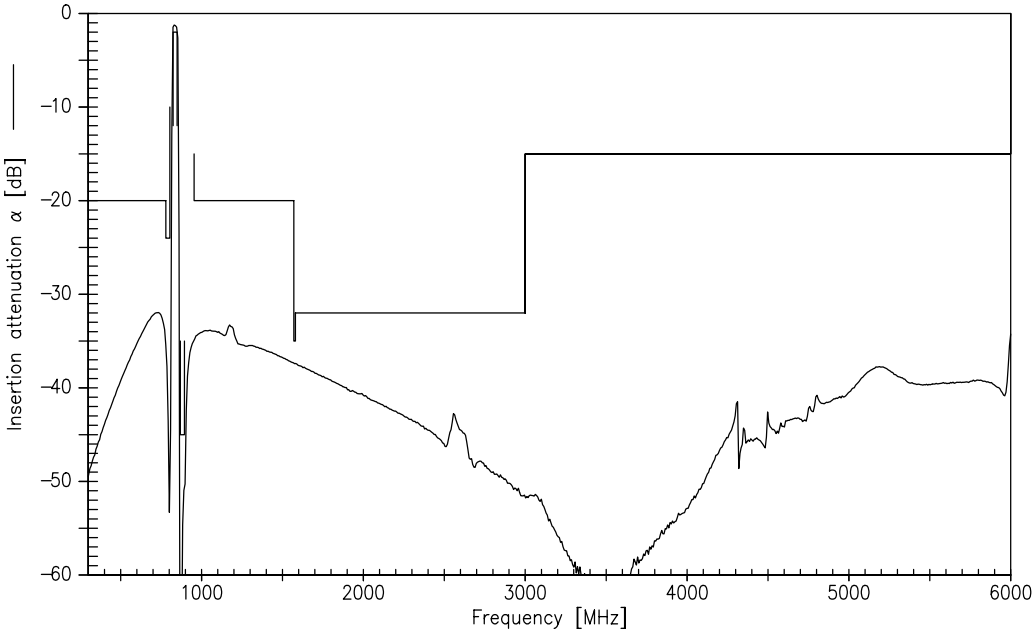


L_{p1} = 8.2 nH

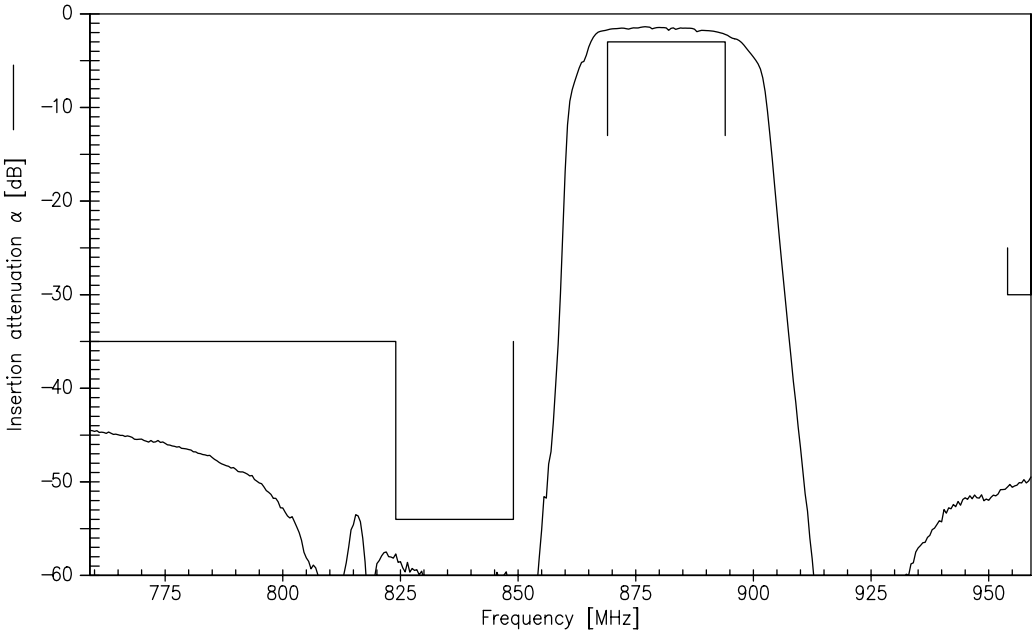
Frequency Response TX-ANT



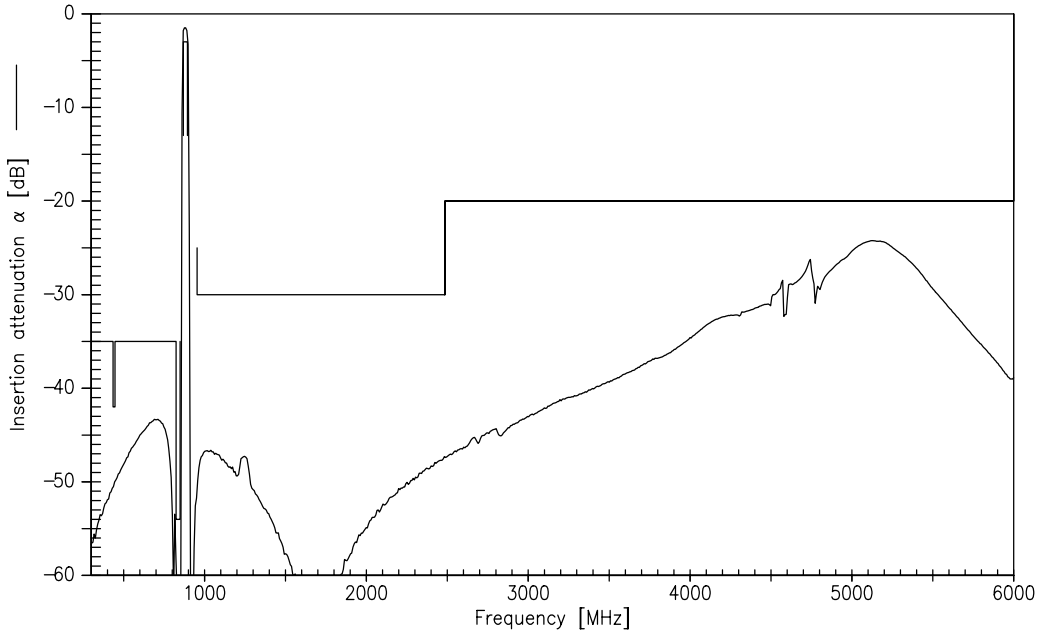
Frequency Response TX-ANT (wideband)



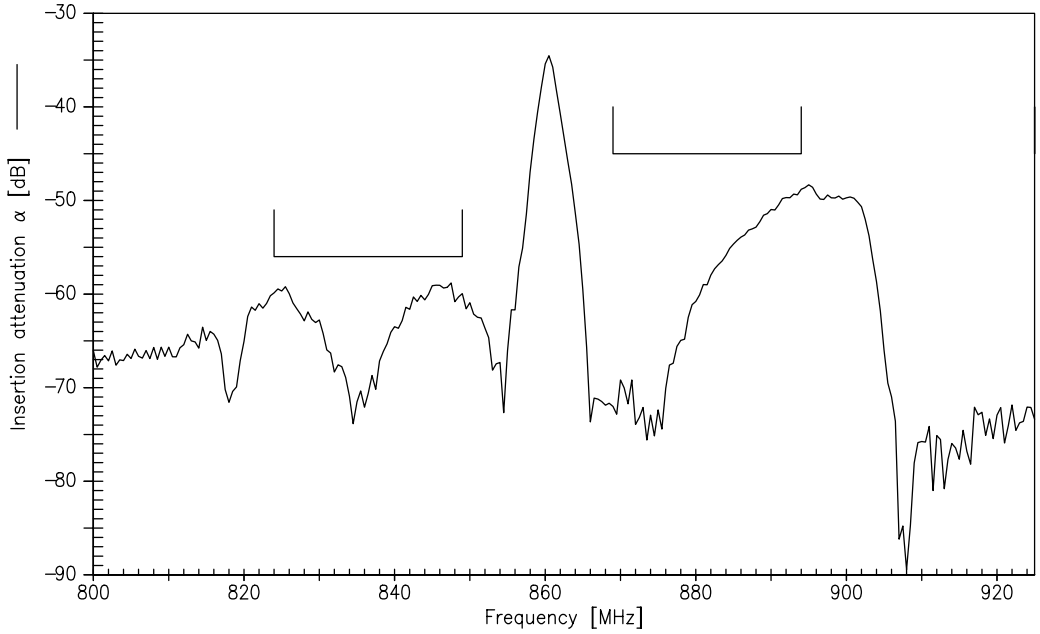
Frequency Response RX-ANT



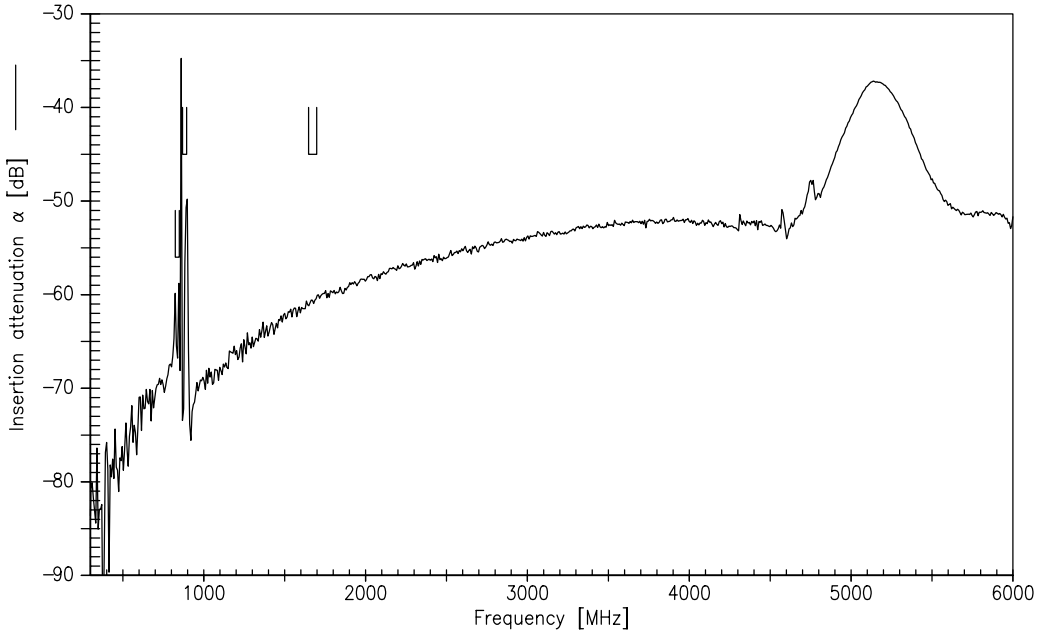
Frequency Response RX-ANT (wideband)



Frequency Response TX-RX



Frequency Response TX-RX (wideband)



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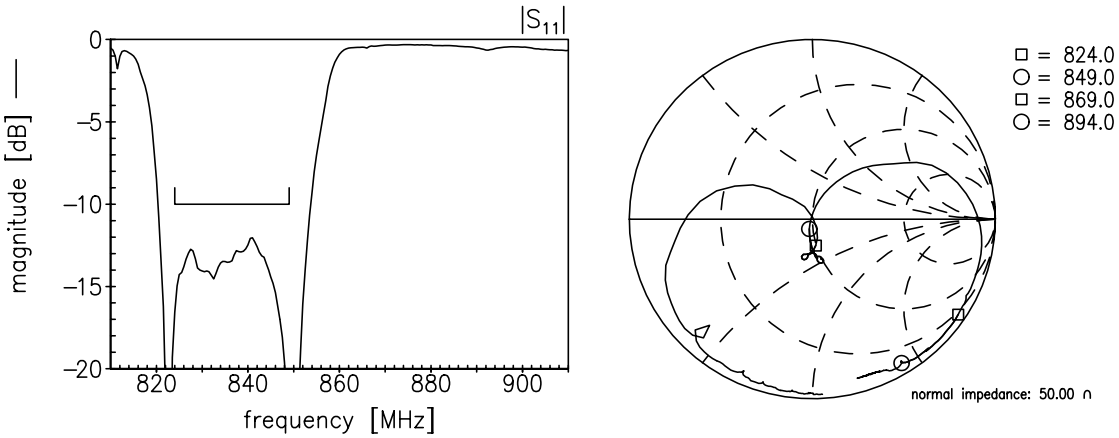
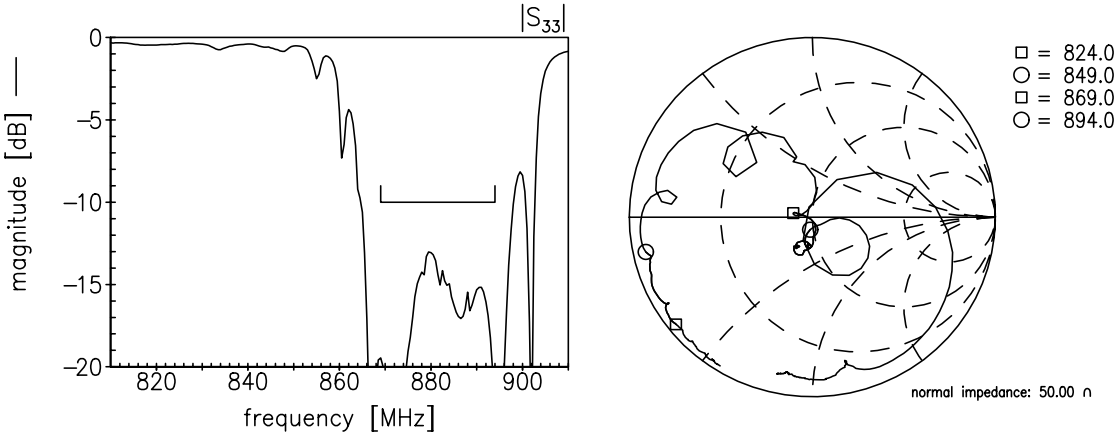
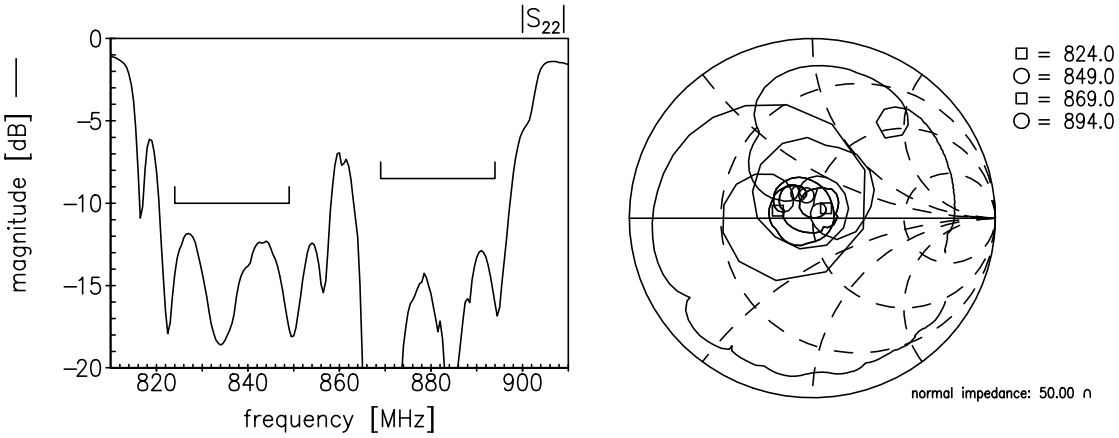
Return Loss: **S_{11} TX-port** **S_{22} ANT-port** **S_{33} RX-port**







References

Type	B7664
Ordering code	B39881B7664P310
Marking and package	C61157-A3-A16
Packaging	F61074-V8156-Z000
Date codes	L_1126
S-parameters	B7664_NB.s3p B7664_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."

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