SAW Components

SAW Rx 2in1 filter

Cellular + PCS / WCDMA band V + WCDMA band II

Series/type:	**B9320**
Ordering code:	**B39202B9320P810**
Date:	September 25, 2009
Version:	1.1

Revision history: Changes compared to previous iteration issue

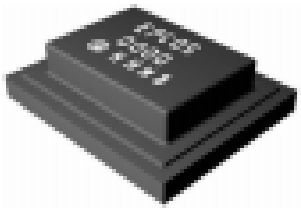
ISSUE	ORIGINATOR	DETAIL SPEC CHANGES	DATE
B9320_v1.0	Ku Cik Ling	Initial release. Mirror version of Filter B9318. Replace amplitude and phase symmetry with	09.08.2009
B9320_v1.1	Ku Cik Ling	CMRR. Revise attenuation of GSM850 (2GHz-3GHz range).	09.25.2009

Preliminary data

SMD

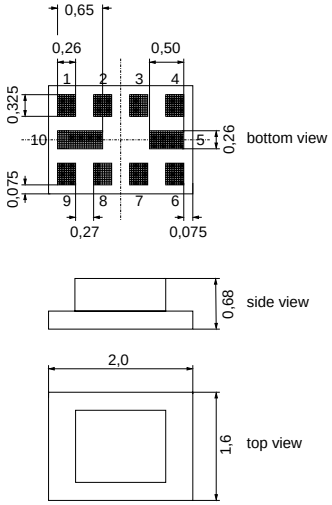
Application

- Low-loss RF filter for mobile telephone CDMA systems, receive path (Rx) of Cellular and PCS
- Also applicable for mobile phone WCDMA systems, receive path of Band V and BAND II
- Bandwidth
  Filter 1 (PCS): 60 MHz
  Filter 2 (Cellular): 25 MHz
- Impedance transformation from:
  Filter 1 (PCS): 50 Ω to 100 Ω
  Filter 2 (Cellular): 50 Ω to 100 Ω
- Unbalanced to balanced operation



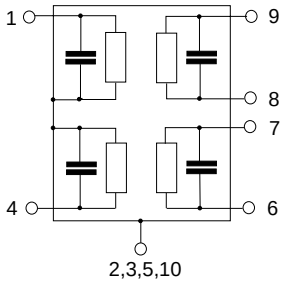
Features

- Package size 2.0 x1.6 x 0.68 mm^3
- Package code QCS10H
- RoHS compatible
- Approximate weight 0.008 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)



Pin configuration

- 1 Input [Filter 1: PCS]
- 4 Input [Filter 2: Cellular]
- 8,9 Output balanced [Filter 1: PCS]
- 6,7 Output balanced [Filter 2: Cellular]
- 2,3,5,10 Case ground



Preliminary data SMD

Characteristics filter 1(PCS)

Temperature range for specification: T = –30 ˚C to +85 ˚C
Terminating source impedance: Z_S = 50 Ω (unbalanced)
Terminating load impedance: Z_L = 100 Ω || 13 nH (balanced)

		min.	typ. @ 25 ˚C	max.		
Center frequency	f_C	—	1960.0	—	MHz	
Maximum insertion attenuation	α_{max}					
1930.6 ... 1989.4 MHz		—	1.8	2.6 [1)]	dB	CTQ
Amplitude ripple (p-p)	$\Delta\alpha$					
1930.6 ... 1989.4 MHz		—	0.8	1.6	dB	
Amplit. ripple over any 5MHz channel						
1930.6 ... 1989.4 MHz		—	0.4	0.9	dB	
Group delay over any 5MHz channel						
1930.6 ... 1989.4 MHz		—	23	30	ns	
Input VSWR						
1930.6 ... 1989.4 MHz		—	1.5	2.1		
Output VSWR						
1930.6 ... 1989.4 MHz		—	1.5	2.1		
Common mode rejection ratio						
1930.6 ... 1989.4 MHz		20	25	—	dB	
Attenuation	α					
DC ... 1600.0 MHz		40	45	—	dB	
1600.0 ... 1850.0 MHz		30	35	—	dB	
1850.0 ... 1910.0 MHz		20	24	—	dB	
2040.0 ... 2200.0 MHz		25	35	—	dB	
2200.0 ... 2800.0 MHz		30	36	—	dB	
2800.0 ... 3400.0 MHz		40	43	—	dB	
3400.0 ... 6000.0 MHz		30	41	—	dB	

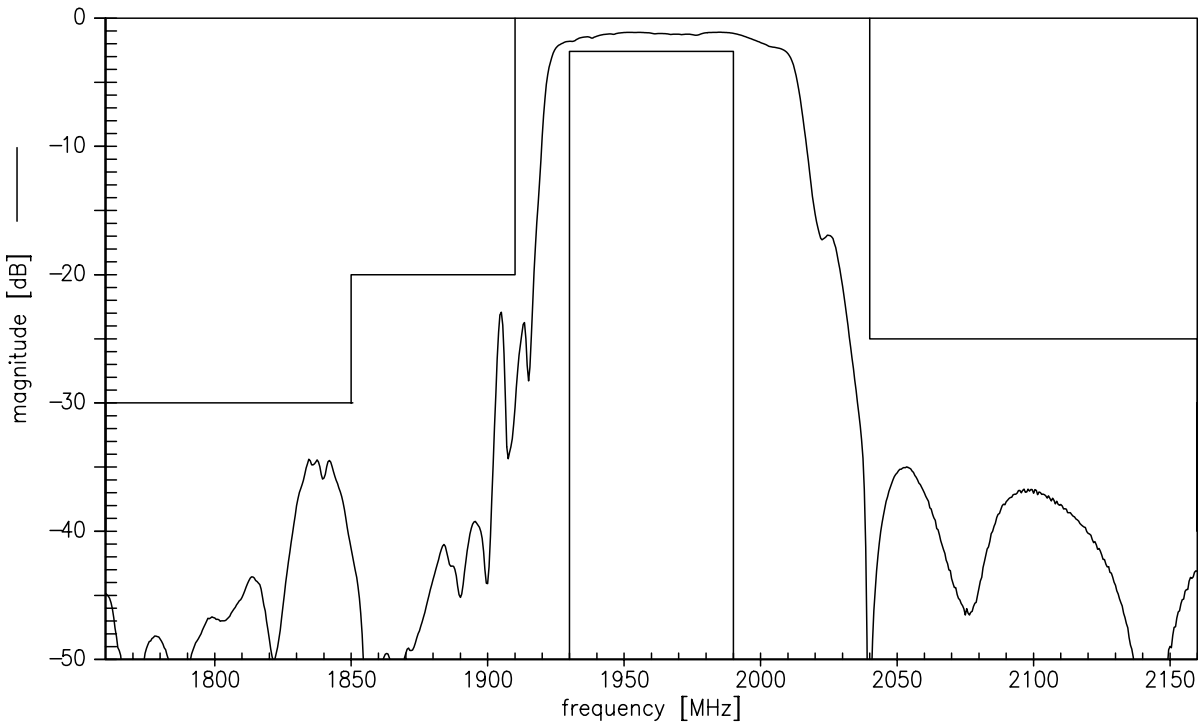
[1)] pcb loss of 0.2dB extracted

Maximum ratings filter 1 (PCS)

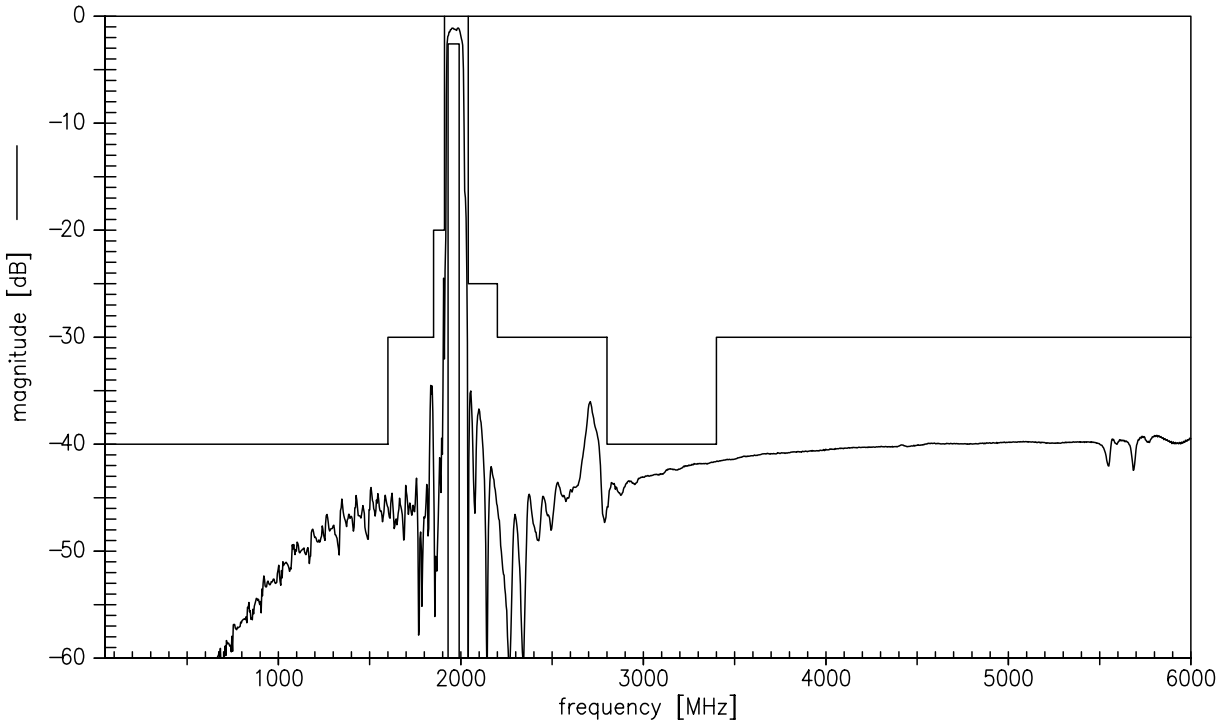
Operable temperature range	T	–30/+85	˚C	
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	50[1)]	V	machine model, 1 pulse
Input power at				
WCDMA band II	P_{IN}	10	dBm	continuous wave @ +55˚C ambient
Tx band				

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

Transfer function filter 1 (PCS)

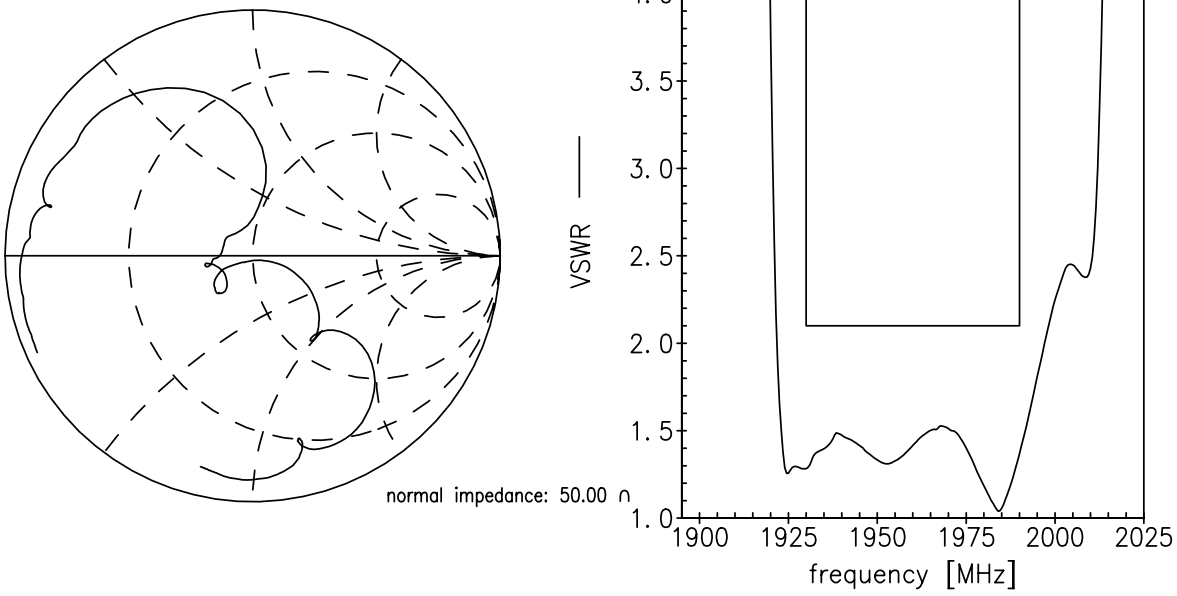


Transfer function filter 1 (PCS) - wideband

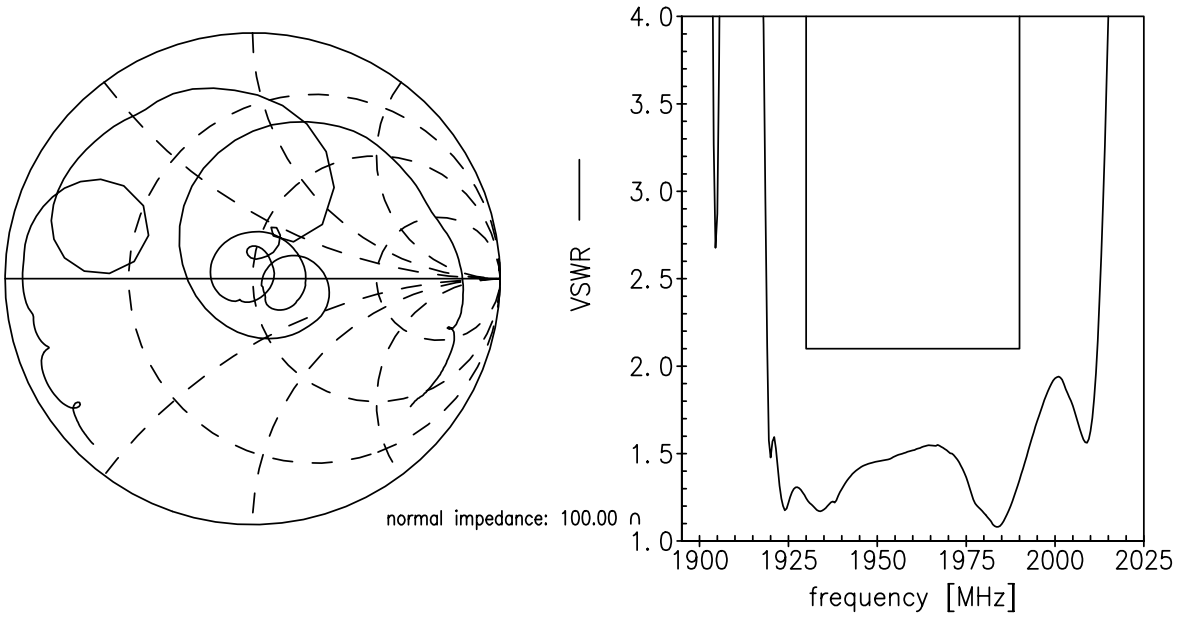


Smith charts filter 1 (PCS)

S_{11} function



S_{22} function



Preliminary data

SMD

Characteristics filter 2 (Cellular)

Temperature range for specification: T = –30 ˚C to +85 ˚C
Terminating source impedance: Z_S = 50 Ω (unbalanced)
Terminating load impedance: Z_L = 100 Ω (balanced)

		min.	typ. @ 25 ˚C	max.		
Center frequency	f_C	—	881.5	—	MHz	
Maximum insertion attenuation	α_{max}					
869.0 ... 894.0 MHz		—	1.7	2.4[1)]	dB	CTQ
Amplitude ripple (p-p)	Δα					
869.0 ... 894.0 MHz		—	0.5	1.2	dB	
Amplit. ripple over any 5MHz channel	Δα					
869.0 ... 894.0 MHz		—	0.4	0.7	dB	
Group delay over any 5MHz channel						
869.0 ... 894.0 MHz		—	15	40	ns	
Input VSWR						
869.0 ... 894.0 MHz		—	1.6	2.0		
Output VSWR						
869.0 ... 894.0 MHz		—	1.7	2.0		
Common mode rejection ratio						
869.0 ... 894.0 MHz		21	26	—	dB	
Attenuation	α					
0.0 ... 820.0 MHz		47	55	—	dB	
820.0 ... 835.0 MHz		45	48	—	dB	
835.0 ... 849.0 MHz		47	52	—	dB	
914.0 ... 950.0 MHz		24	30	—	dB	
950.0 ... 2000.0 MHz		45	52	—	dB	
2000.0 ... 3000.0 MHz		32	40	—	dB	
3000.0 ... 6000.0 MHz		40	45	—	dB	

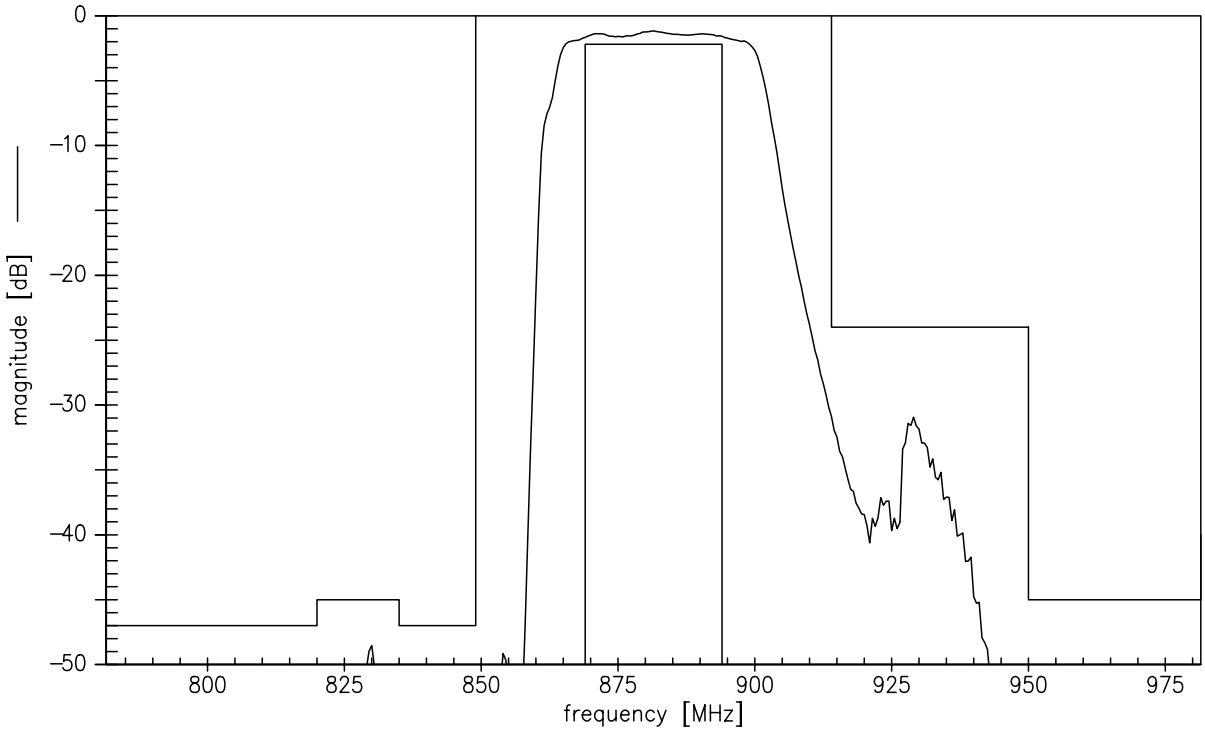
[1)] pcb loss of 0.1dB extracted

Maximum ratings filter 2 (Cellular)

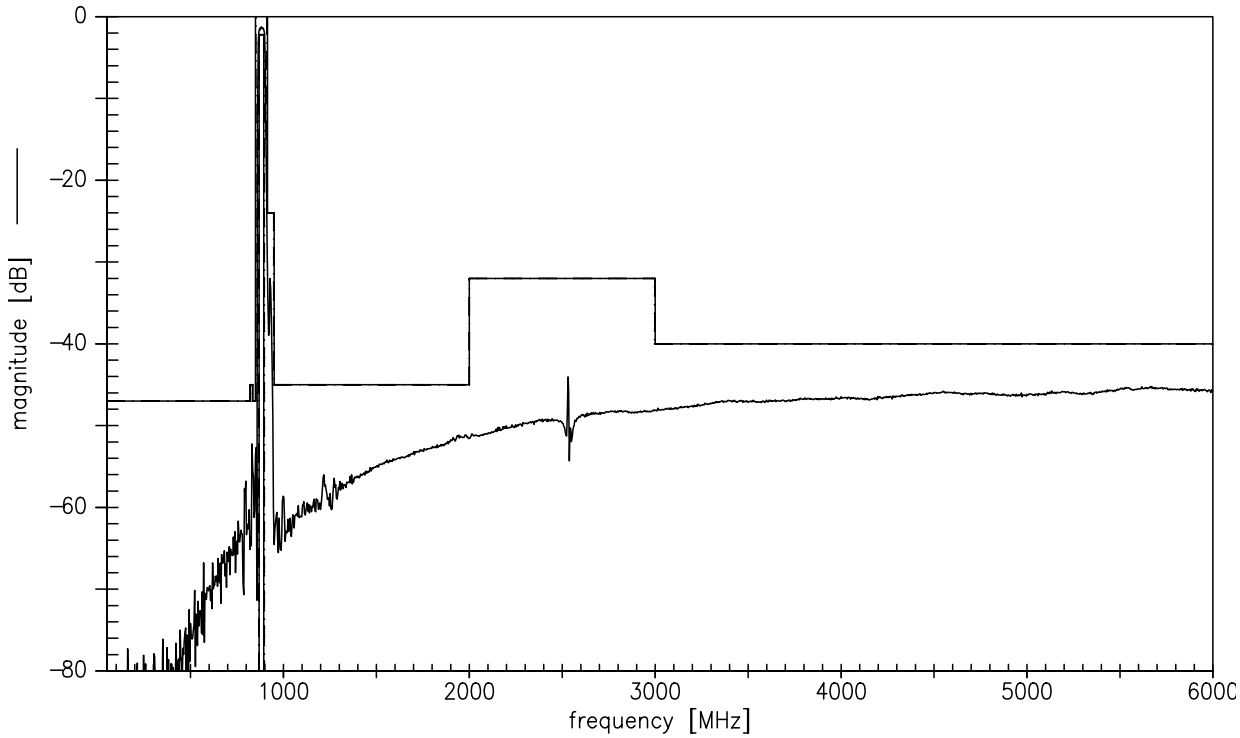
Operable temperature range	T	–30/+85	˚C	
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	100[1)]	V	machine model, 1 pulse
Input power at				
WCDMA band V	P_{IN}	10	dBm	continuous wave @ +55˚C ambient
Tx band				

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

Transfer function filter 2 (Cellular)

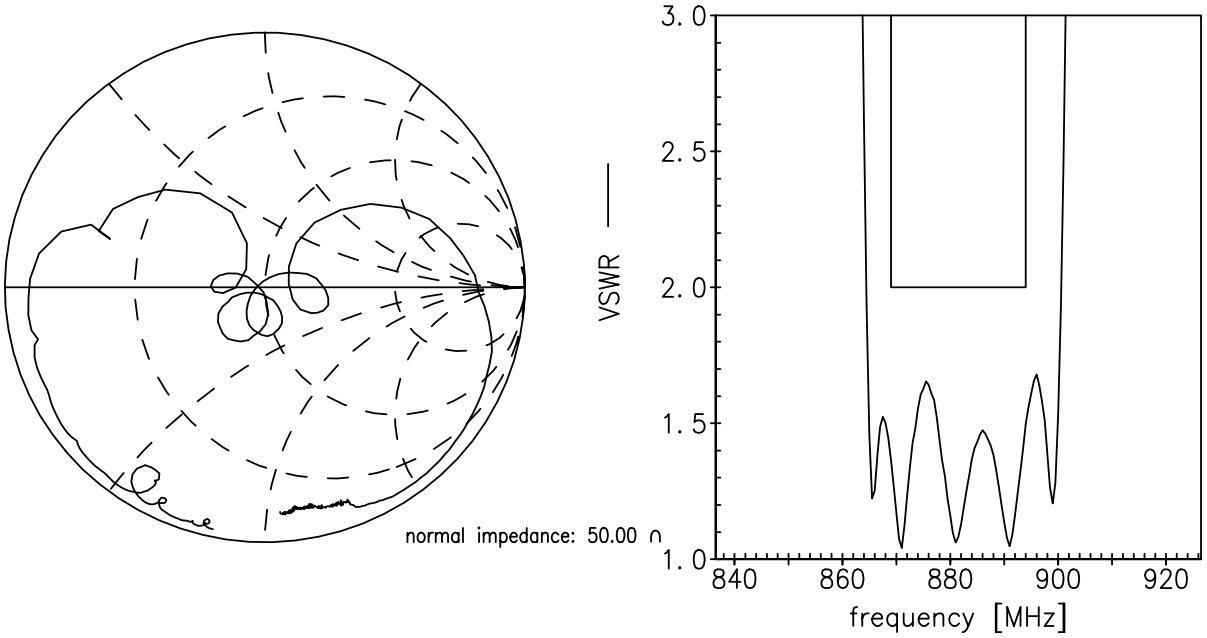


Transfer function filter 2 (Cellular) - wideband

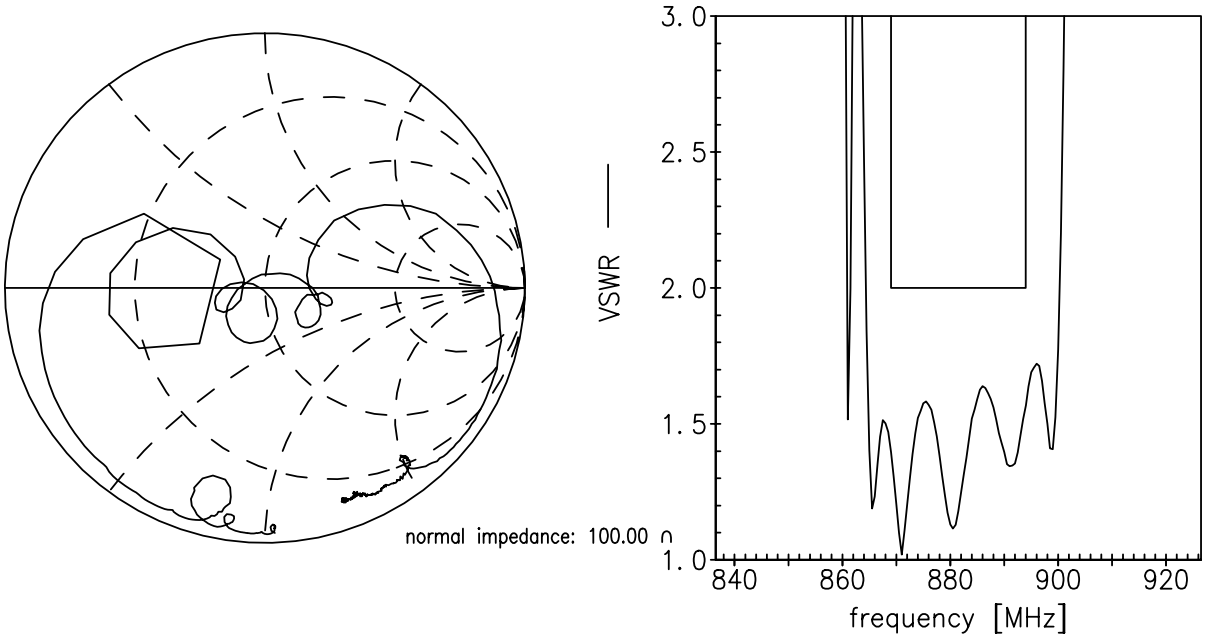


Smith charts filter 2 (Cellular)

S_{11} function



S_{22} function



References

Type	B9320
Ordering code	B39202B9320P810
Marking and package	C61157-A7-A141
Packaging	F61074-V8152-Z000
Date codes	L_1126
S-parameters	Cellular: B9320_LB_NB.s3p, B9320_LB_WB.s3p PCS: B9320_UB_NB.s3p, B9320_UB_WB.s3p See file header for port/pin assignment table.
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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