SAW Components

SAW Duplexer

WCDMA / LTE Band XI

Series/type:	B7920
Ordering code:	B39152B7920P810
Date:	January 7, 2011
Version:	2.0

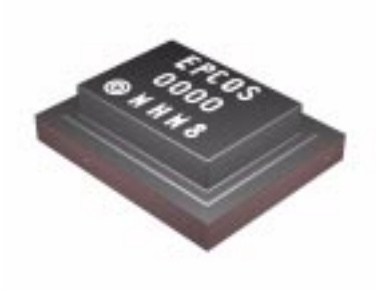
Revision History

Changes compared to previously issued iteration

Issue	Originator	Detailed specification changes	Date
2.0	K.Morozumi	Initial release	January 7, 2011

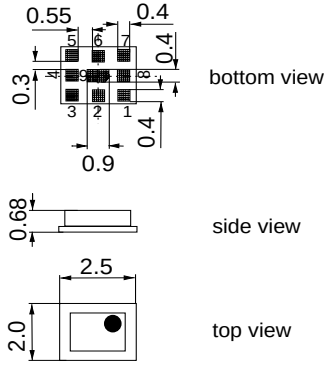
Application

- Low-loss SAW duplexer for mobile telephone WCDMA/LTE Band XI systems
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 20MHz(Lower and Middle band)
- Single ended to balanced transformation in Antenna-Rx path
- Impedence transformation 50ohm to 100ohm in Antenna - Rx path



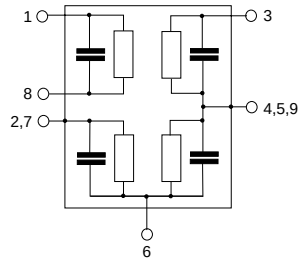
Features

- Package size 2.5 x 2.0mm²
- Package height 0.74 mm max.
- RoHS compatible
- Approx. weight 0.013g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)
- **M**oisuture **S**ensitivity **L**evel (**MSL**) 3



Pin configuration

■	1, 8	RX Output (balanced)
■	3	TX Input
■	6	Antenna
■	2, 4, 5, 7, 9	To be grounded



Characteristics

Temperature range for specification: T = –20 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT}= 50 Ω || 5.6 nH
RX terminating impedance: Z_{RX} = 100Ω
TX terminating impedance: Z_{TX} = 50 Ω

Characterisitcs TX - ANT		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C		1437.9		MHz
Maximum insertion attenuation					
1427.9 ... 1437.9 MHz			1.3	2.0	dB
1437.9 ... 1447.9 MHz			1.5	2.5	dB
Amplitude ripple(p-p)					
1427.9 ... 1437.9 MHz			0.2	1.0	dB
1437.9 ... 1447.9 MHz			0.4	1.0	dB
Input VSWR (TX port)					
1427.9 ... 1447.9 MHz			1.6	2.0	
Output VSWR (ANT port)					
1427.9 ... 1447.9 MHz			1.4	2.0	

Characteristics

Temperature range for specification: T = –20 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT} = 50 Ω || 5.6 nH
RX terminating impedance: Z_{RX} = 100 Ω
TX terminating impedance: Z_{TX} = 50 Ω

Characterisitcs TX - ANT				min.	typ. @ 25 ˚C	max.	
Attenuation			α				
10	...	1350	MHz	30	35		dB
1350	...	1390	MHz	25	29		dB
1390	...	1409	MHz		5		dB
1475.9	...	1495.9	MHz	45	51		dB
1565	...	1585	MHz	40	46		dB
1574	...	1577	MHz	42	47		dB
1597	...	1607	MHz	42	46		dB
1607	...	1680	MHz	25	46		dB
1844.9	...	1879.9	MHz	30	41		dB
1884.5	...	1919.6	MHz	15	40		dB
2010	...	2025	MHz	30	41		dB
2110	...	2170	MHz	30	37		dB
2400	...	2483.5	MHz	30	33		dB
2855.8	...	2905.8	MHz	20	30		dB
4283.7	...	4358.7	MHz	18	24		dB
5150	...	5850	MHz	11	17		dB

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Temperature range for specification: T = –20 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT}= 50 Ω || 5.6 nH
RX terminating impedance: Z_{RX} = 100Ω
TX terminating impedance: Z_{TX} = 50 Ω

Characterisitcs ANT - RX		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C		1485.9		MHz
Maximum insertion attenuation					
1475.9 ... 1485.9 MHz			2.0	2.5	dB
1485.9 ... 1495.9 MHz			1.7	2.5	dB
Amplitude ripple (p-p)					
1475.9 ... 1495.9 MHz			0.4	1.0	dB
Input VSWR (ANT port)					
1475.9 ... 1495.9 MHz			1.5	2.0	
Output VSWR (RX port)					
1475.9 ... 1495.9 MHz			1.4	2.0	
Common Mode Rejection Ratio CMRR					
1475.9 ... 1495.9 MHz		20[1)]	27		dB

[1)] A combination of 10º phase balance and 1dB amplitude balance corresponds to 19.6 dB CMRR.

Characteristics

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Antenna terminating impedance: Z_{ANT}= 50 Ω || 5.6 nH
RX terminating impedance: Z_{RX} = 100Ω
TX terminating impedance: Z_{TX} = 50 Ω

Characterisitcs ANT - RX				min.	typ. @ 25 ˚C	max.	
Attenuation			α				
1	...	1381	MHz	30	64		dB
1381	...	1429	MHz	40	55		dB
1427.9	...	1447.9	MHz	45	55		dB
1453	...	1462	MHz	5	23		dB
1516	...	1560	MHz		3		dB
1560	...	6000	MHz	30	43		dB
IMD Product Level Limits[1)]							
at f1=1437.9 MHz							
f2 = 48 MHz					-130	-106	dBm
f2 = 2*f1 + 48MHz					-122	-106	dBm
f2 = f1 - 48MHz					-111	-106	dBm
f2 = 3*f1 + 48MHz					-130	-106	dBm

1) IMD product level limits for power levels Pf1=21.5dB (antenna port output power) and Pf2=-15dBm (antenna port input power).

Characteristics

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Antenna terminating impedance: Z_{ANT}= 50 Ω || 5.6 nH
RX terminating impedance: Z_{RX} = 100Ω
TX terminating impedance: Z_{TX} = 50 Ω

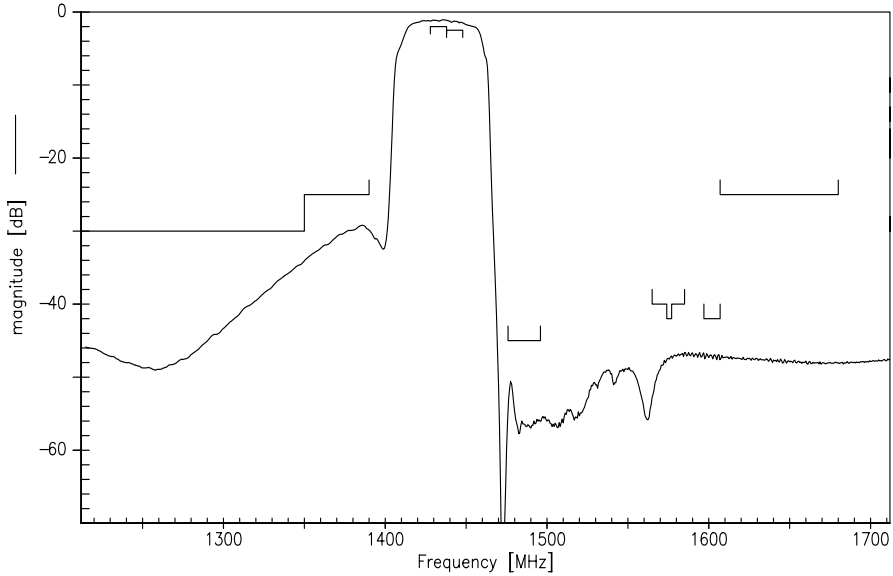
Characterisitcs TX - RX		min.	typ. @ 25 ˚C	max.	
Differential Mode Isolation	α				
1427.9 ... 1447.9 MHz		53	58		dB
1475.9 ... 1495.9 MHz		50	58		dB
1574 ... 1577 MHz		30	75		dB
2855.8 ... 2905.8 MHz		30	63		dB
4283.7 ... 4358.7 MHz		25	57		dB
Common mode Isolation					
1427.9 ... 1447.9 MHz		46	50		dB

Maximum ratings

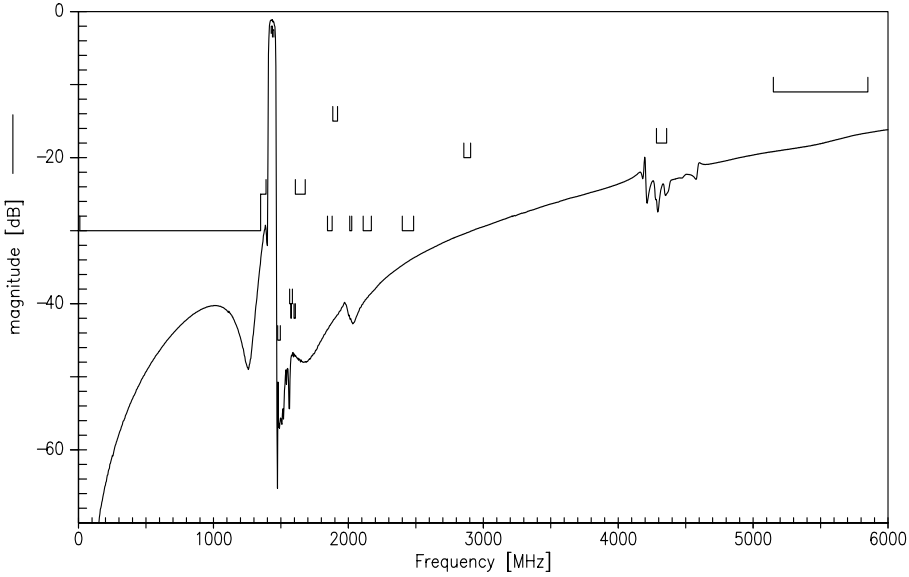
Storage temperature range	T_{stg}	–40/+85	°C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	50[1)]	V	machine model, 10 pulses
Input power at	P_{IN}			source and load impedance 50 Ω
1427.9 - 1447.9 MHz		29	dBm	} continuous wave
elsewhere		10	dBm	} T = 50°C, 5,000 h

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

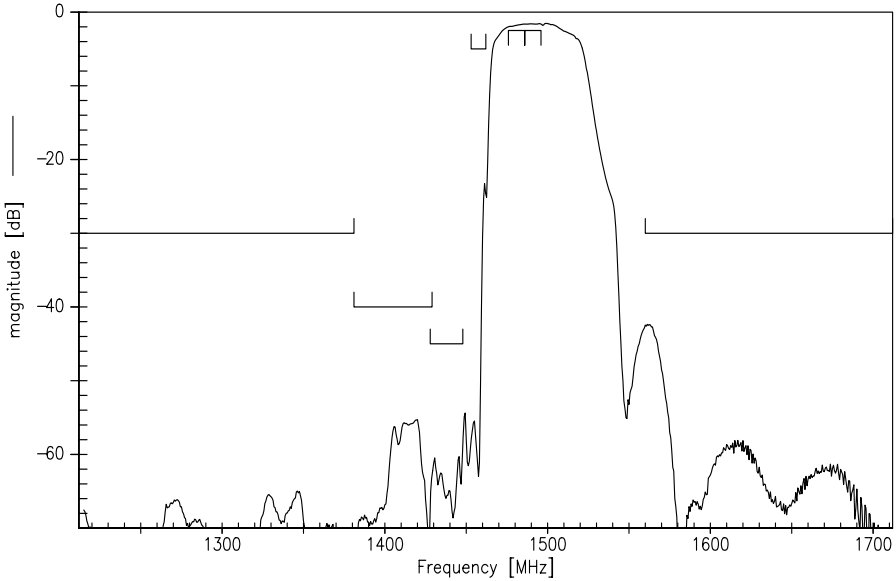
Frequency Response Tx-ANT (passband)



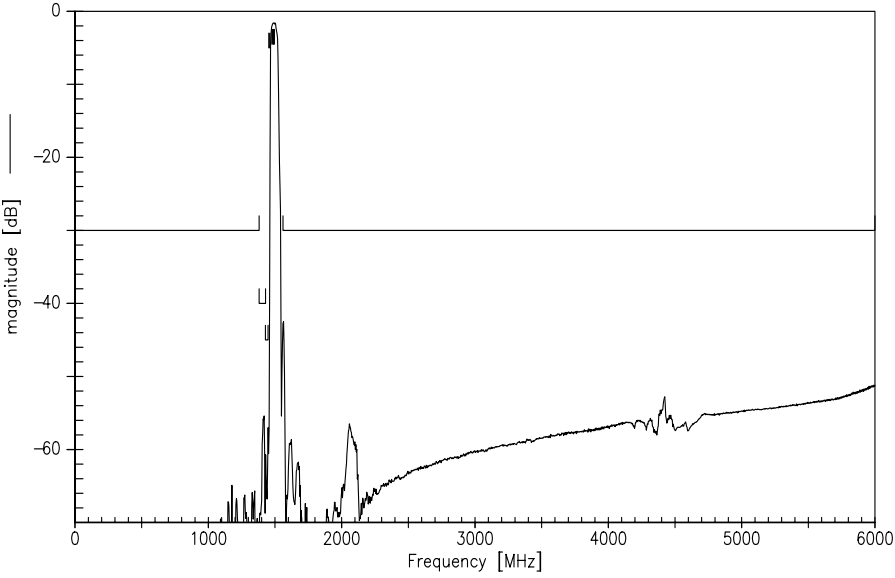
Frequency Response Tx-ANT (wideband)



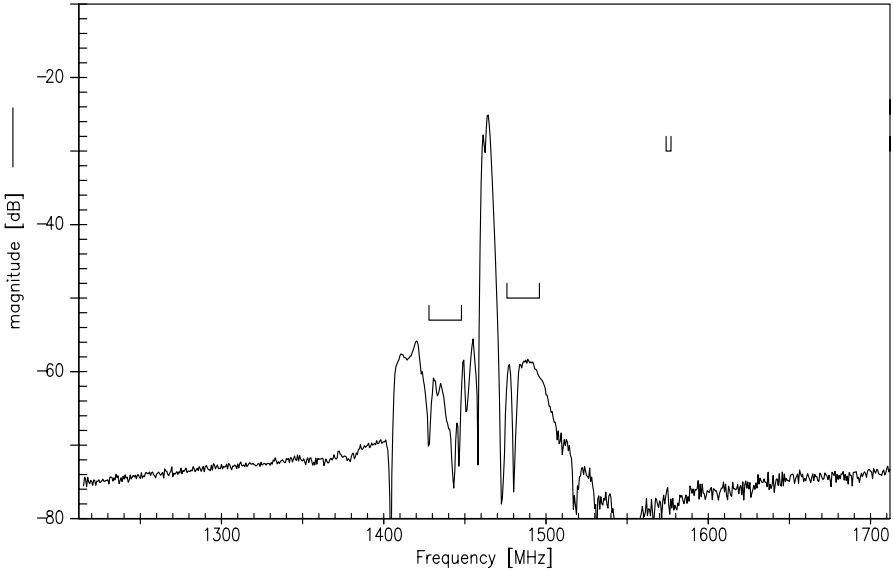
Frequency Response ANT-Rx (passband)



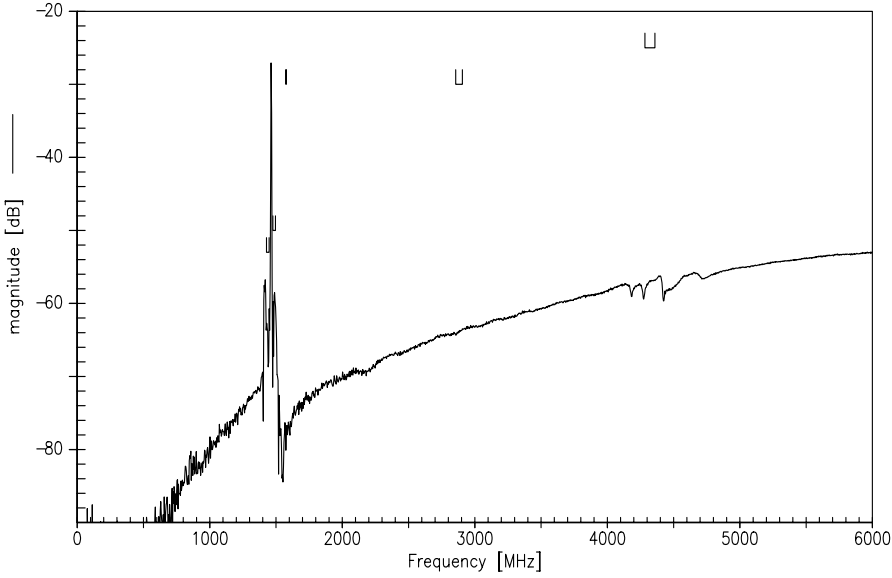
Frequency Response ANT-Rx (wideband)



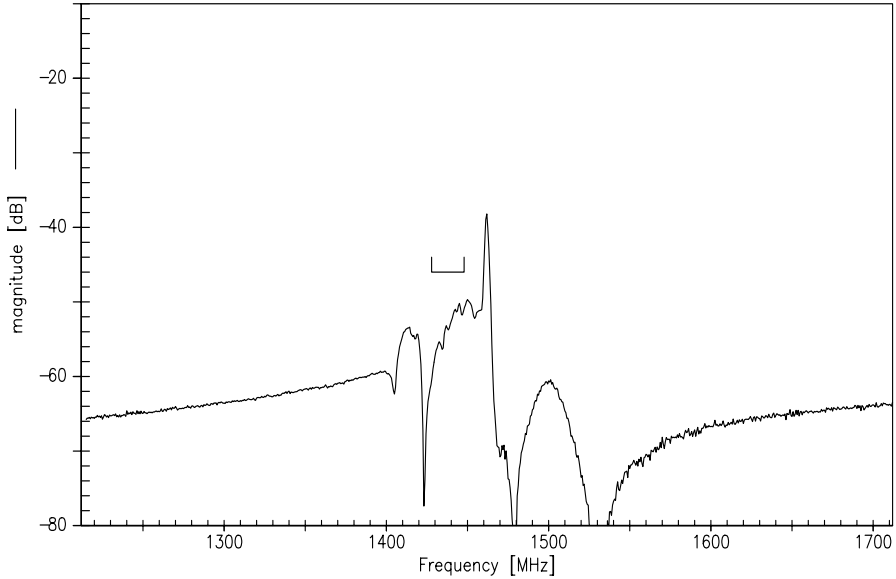
Frequency Response Tx-Rx (passband) / Differential



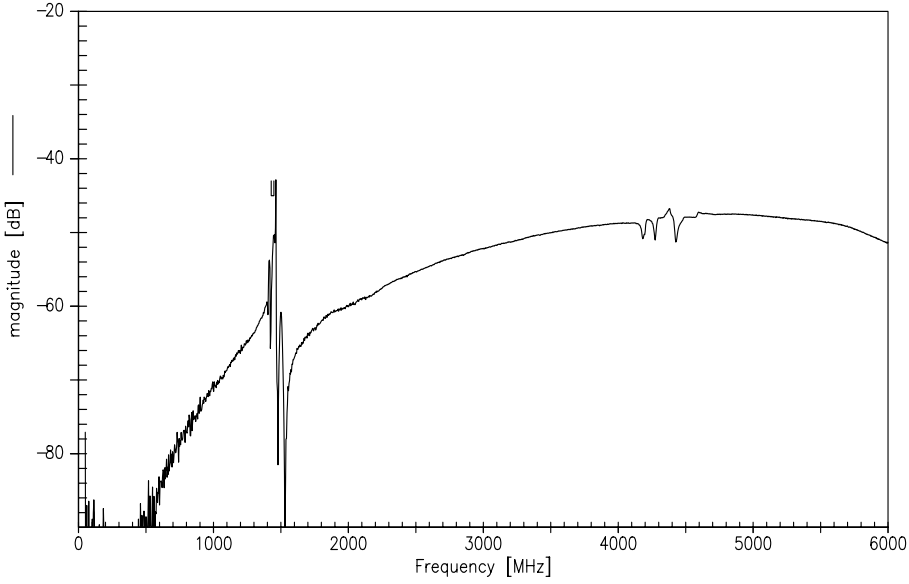
Frequency Response Tx-Rx (wideband) / Differential



Frequency Response Tx-Rx (passband) / Common-mode



Frequency Response Tx-Rx (wideband) / common-mode



References

Type	B7920
Ordering code	B39152B7920P810
Marking and package	C61157-Z3-C47
Packaging	F61074-V8153-Z000
Date codes	L_1126
S-parameters	B7920_NB.s4p, B7920_WB.s4p 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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