Consiglio Nazionale delle Ricerche

IEIIT
Istituto di Elettronica
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Technical Report

Measured characteristics of the components of the Bar-SPOrt radiometer @ 32 GHz: part B of {A, B, C, D}

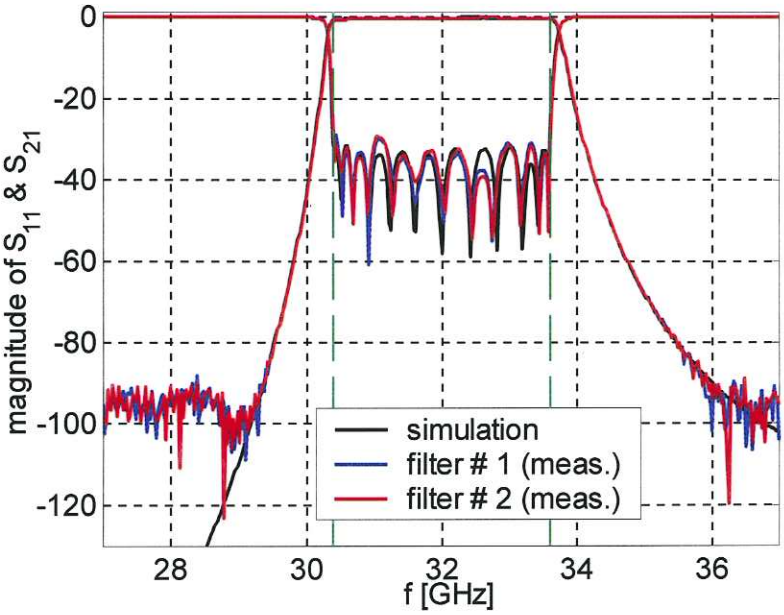
IRA 367/04

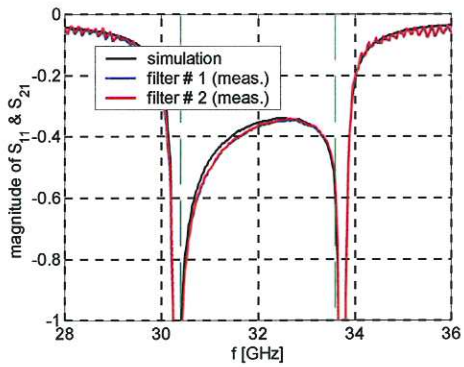
Measurements performed by Oscar Antonio Peverini (IEIIT), Augusto Olivieri (IEIIT), Jader Monari (IRA), Marco Poloni (IRA) at the IEIIT-CNR institute.

This part B contains the measured data of the following components:

- 2 filters IEIIT
- 7 isolators DORADO
- 8 detectors KaD PMP

OUTER FILTERS IEIIT SN1, SN2





All the details about the measurements and the design of the two outer filters are reported in the document EA/030218 contained in the file "FILTERS@32GHZ.doc" released by IEIIT-CNR in 02/18/2003. Hereafter, the main characteristics of the two filters are summarized:

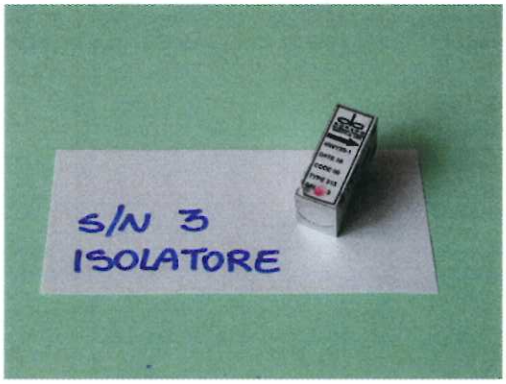
	lower Limit $f_0 - 5\% = 30.4$ GHz	central freq. $f_0 = 32$ GHz	upper limit $f_0 + 5\% = 33.6$ GHz
insertion loss filter # 1	1.124 dB	0.342 dB	0.544 dB
insertion loss filter # 2	1.132 dB	0.352 dB	0.530 dB

The in-band return loss is higher than 30 dB. The filter presents the following rejection:

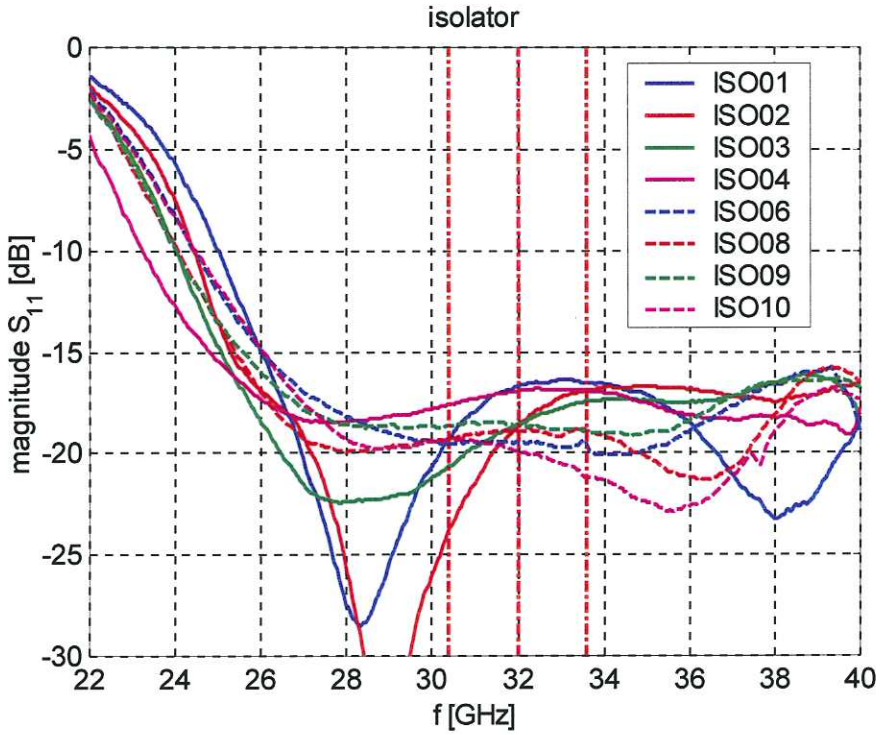
	$f_0 - 6.88\% = 29.8$ GHz	$f_0 + 6.88\% = 34.2$ GHz
rejection filter # 1	61.2 dB	36.3 dB
rejection filter # 2	61.1 dB	36.3 dB

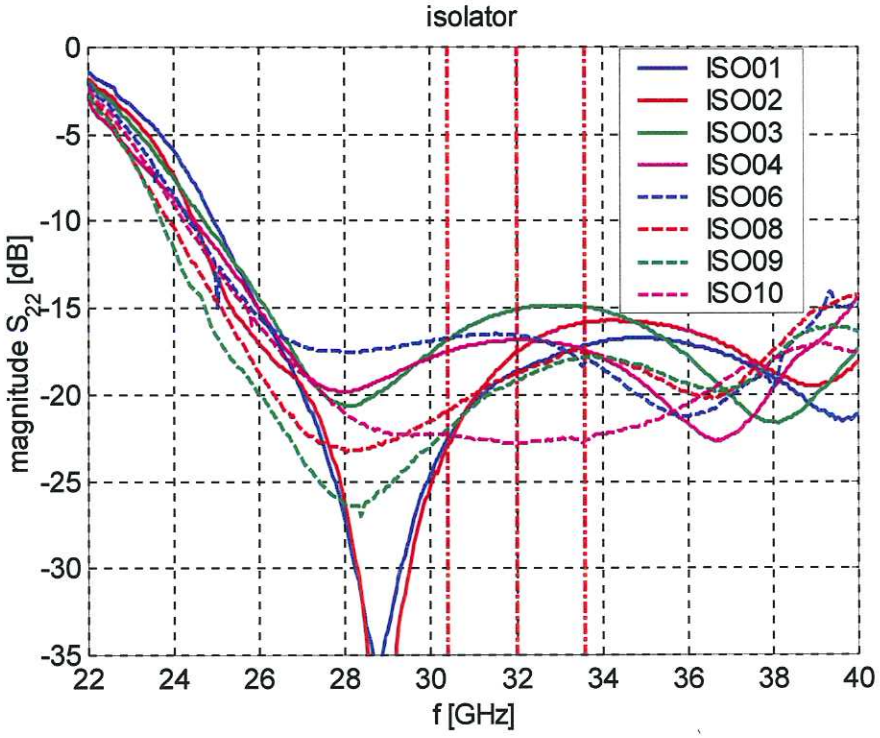
	lower slope	upper slope
operative bandwith @ 30 dB of return loss	0.1 f_0	
transition bandwith @ 40 dB of rejection	0.012 f_0	0.021 f_0
transition bandwith @ 60 dB of rejection	0.018 f_0	0.035 f_0
transition bandwith @ 80 dB of rejection	0.025 f_0	0.060 f_0

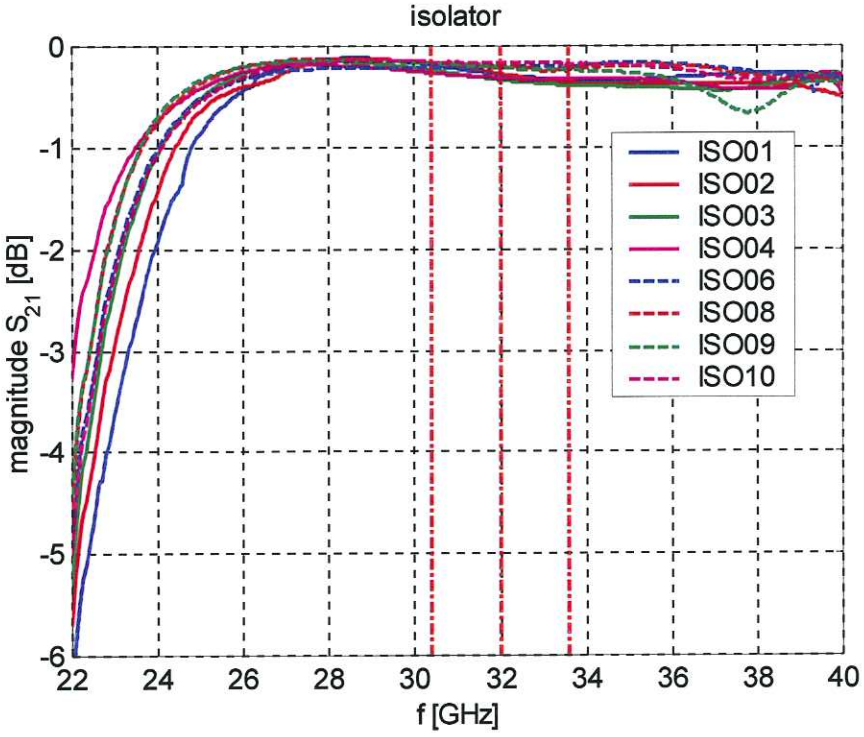
ISOLATORS DORADO SN1, SN2, SN3, SN4, SN6, SN8, SN9, SN10

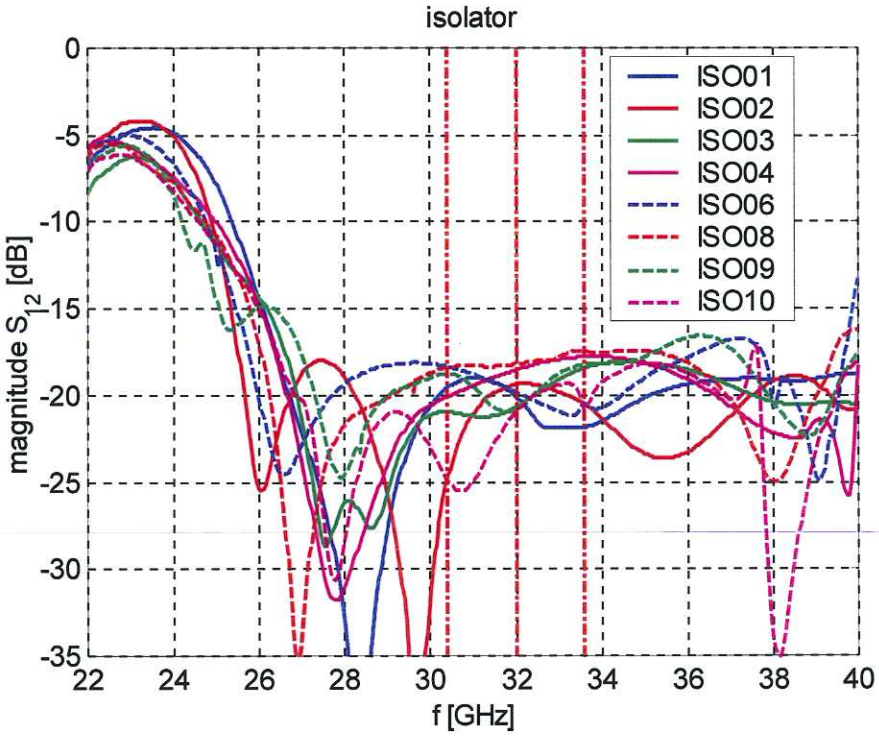


the same picture applies for all the isolators




isolator
magnitude S_{22} [dB]
f [GHz]
ISO01
ISO02
ISO03
ISO04
ISO06
ISO08
ISO09
ISO10


isolator
magnitude S_{21} [dB]
f [GHz]
ISO01
ISO02
ISO03
ISO04
ISO06
ISO08
ISO09
ISO10



component	mean value of return loss @ port 1	mean value of return loss @ port 2	mean value of insertion loss @ port 1	mean value of insertion loss @ port 2
ISO SN 01	17.057 dB	18.937 dB	0.266 dB	20.291 dB
ISO SN 02	19.037 dB	17.949 dB	0.261 dB	20.246 dB
ISO SN 03	18.679 dB	15.336 dB	0.321 dB	20.219 dB
ISO SN 04	17.061 dB	17.053 dB	0.304 dB	18.627 dB
ISO SN 06	19.522 dB	16.855 dB	0.206 dB	19.740 dB
ISO SN 08	18.993 dB	18.827 dB	0.195 dB	18.071 dB
ISO SN 09	18.652 dB	19.313 dB	0.205 dB	19.568 dB
ISO SN 10	19.946 dB	22.602 dB	0.155 dB	21.516 dB

the isolators selected to be mounted in the radiometer are indicated in red

BALANCED DETECTORS KaD PMP SN 377- 384,

the same picture applies for all the detectors

all the detectors were loaded with a 12KΩ resistance

component	mean value of return loss @ port 1
D377	19.635 dB
D378	19.747 dB
D379	16.701 dB
D380	21.491 dB
D381	20.213 dB
D382	20.250 dB
D383	19.293 dB
D384	19.553 dB