Technical Report

Il presente scritto riporta le simulazioni effettuate con i simulatori elettromagnetici di un accoppiatore a 4 vie operante a nel campo della Radiofrequenza nella banda 87÷109 MHz, le foto della realizzazione del componente e le misure effettuate sul componente stesso.

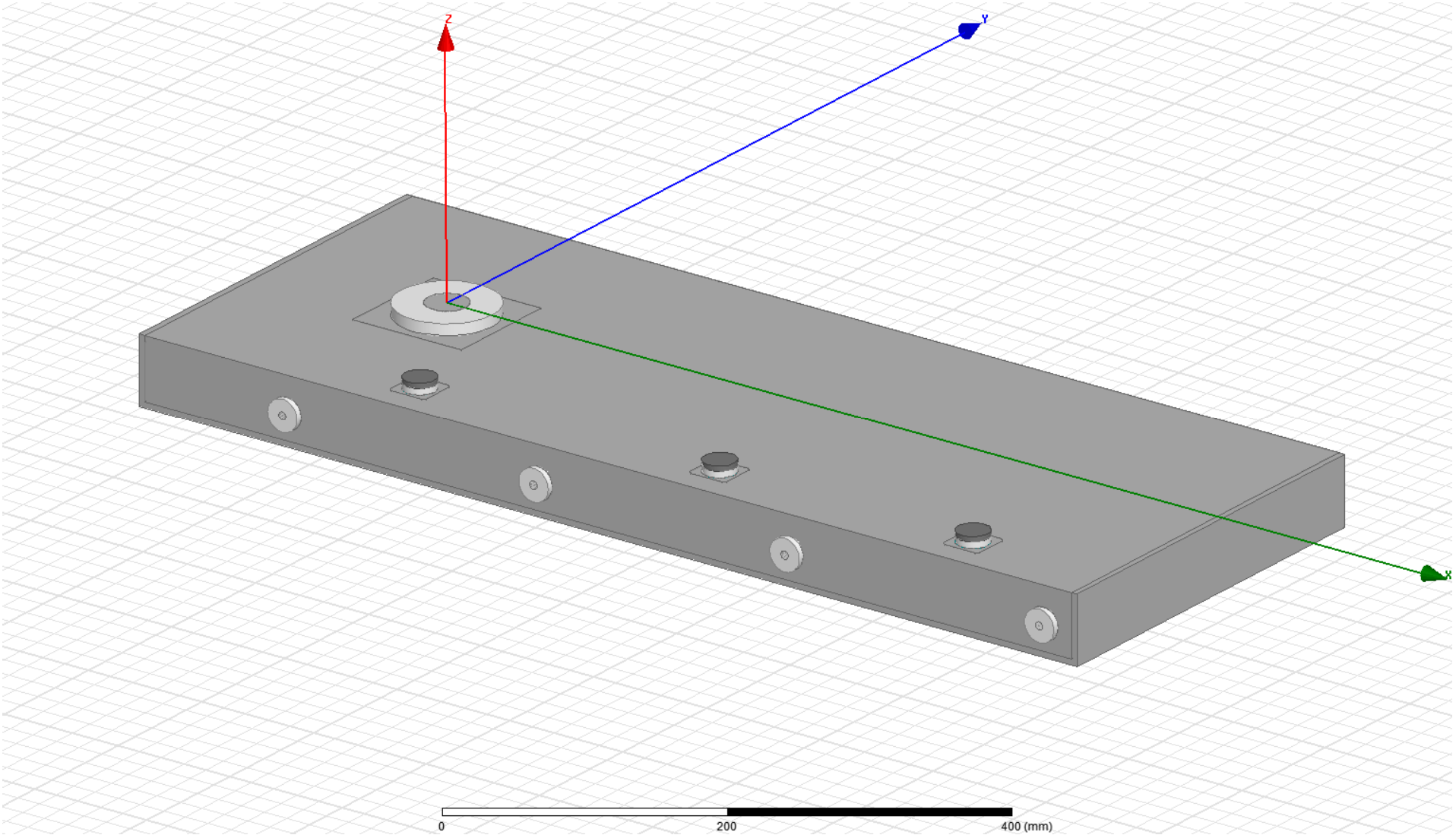
Simulazione EM Accoppiatore 4 Vie

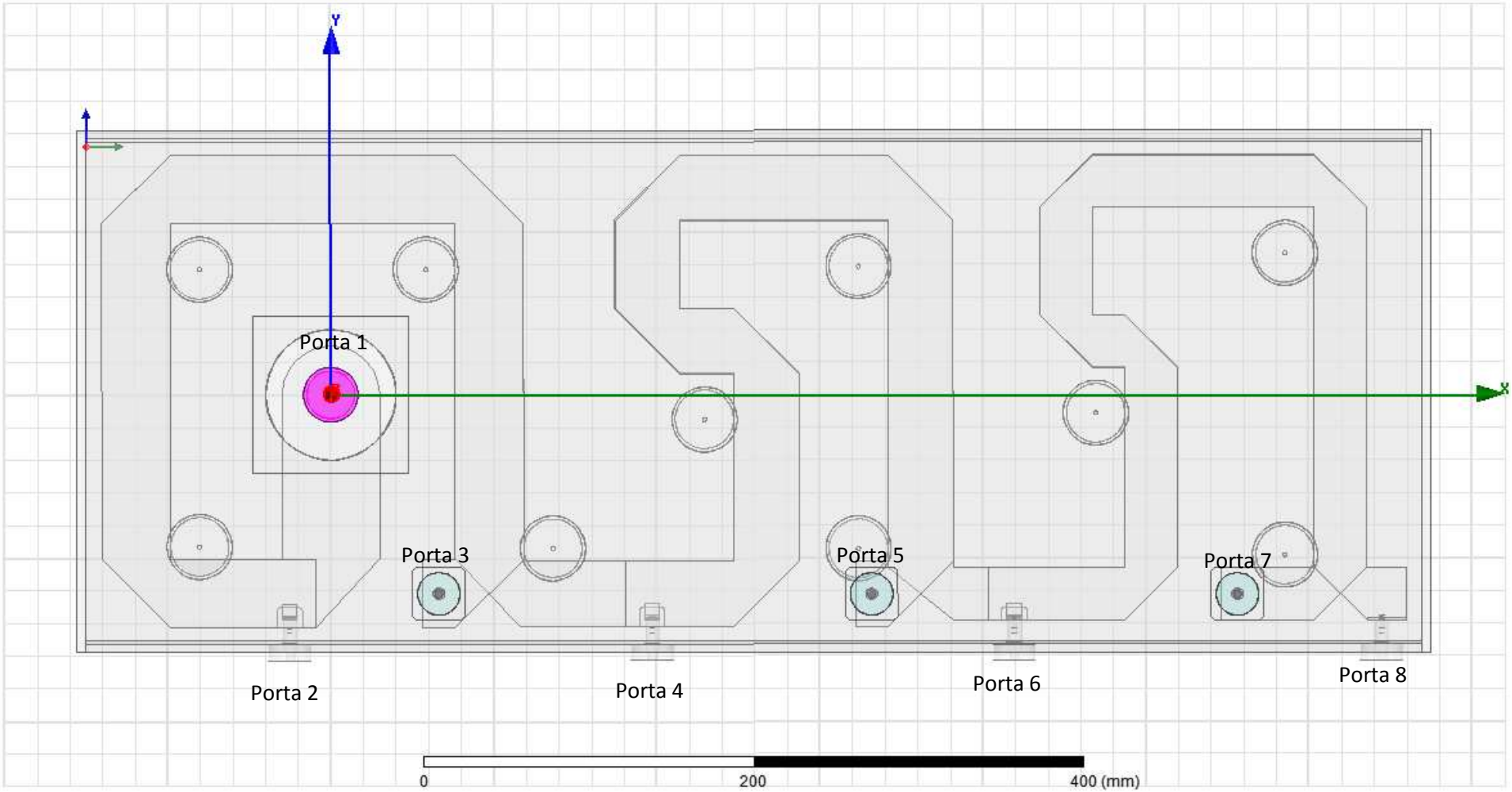
Si vuole progettare e realizzare un combinatore di potenza avente le seguenti caratteristiche tecniche:

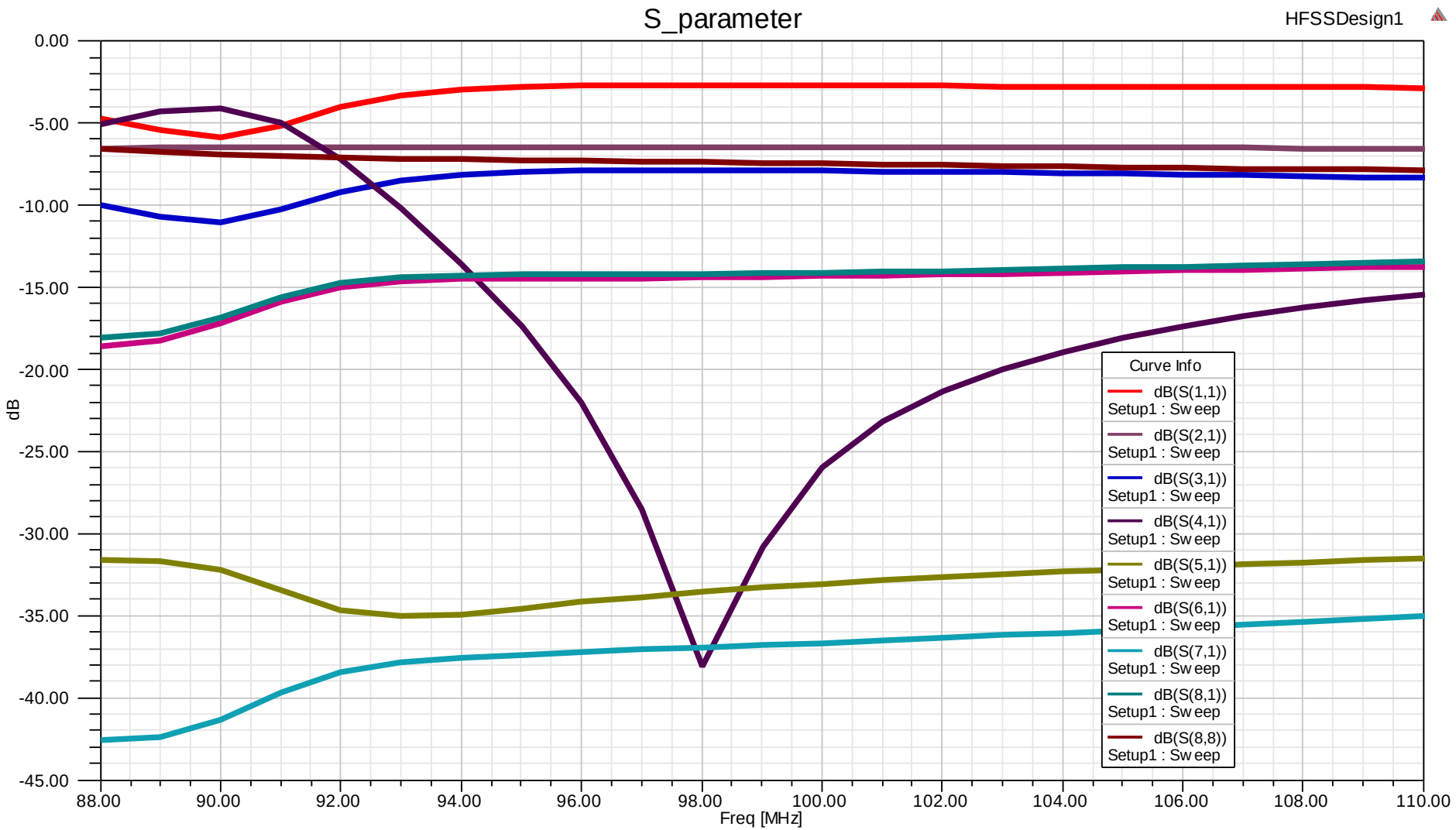
Specifiche

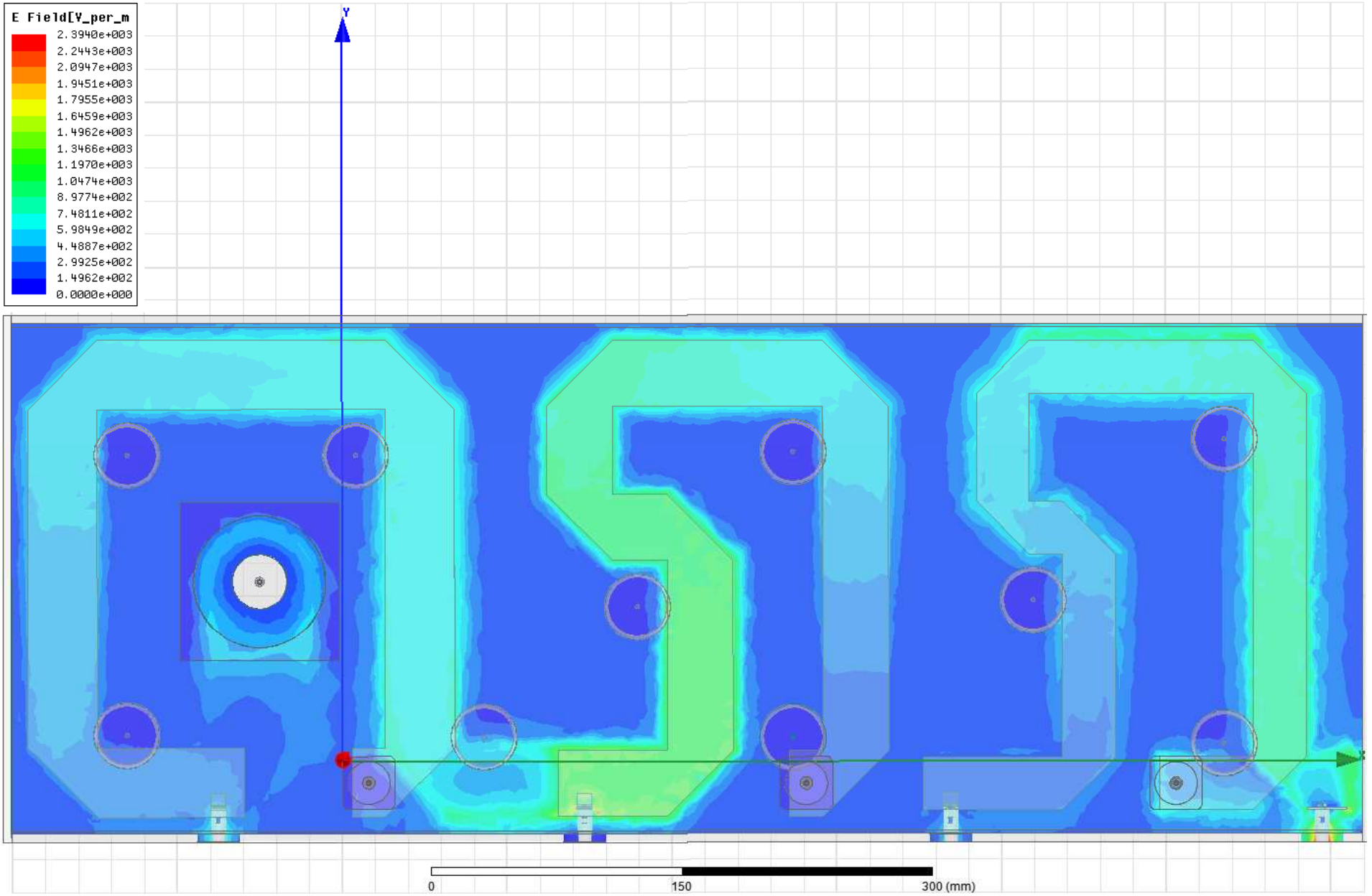
Item	Requisiti	Valori	Note
1	Frequenza Operativa	87÷109 MHz	
2	Adattamento ingressi	≥23 dB	
3	Adattamento di uscita	≥23 dB	
4	Isolamento tra le porte	≥20 dB	
5	Accoppiamento nominale porta 2	3 dB	
6	Accoppiamento nominale porta 3	4.77 dB	
7	Accoppiamento nominale porta 4	6.02 dB	
8	Accoppiamento nominale porta 5	7 dB	
9	Precisione di Accoppiamento	±0.2 dB	
10	Perdita di inserzione	≤0.3 dB	
11	Potenza agli Ingressi (CW)	6 Kw	
12	Potenza i uscita (CW)	24 Kw	
13	Connettori di ingresso	7/8” EIA Maschio	
14	Connettore di uscita	3-1/8” EIA	
15	Connettori dei carichi	7-16 EIA Maschio	
16	Dimensioni Combinatore		Vedi disegno

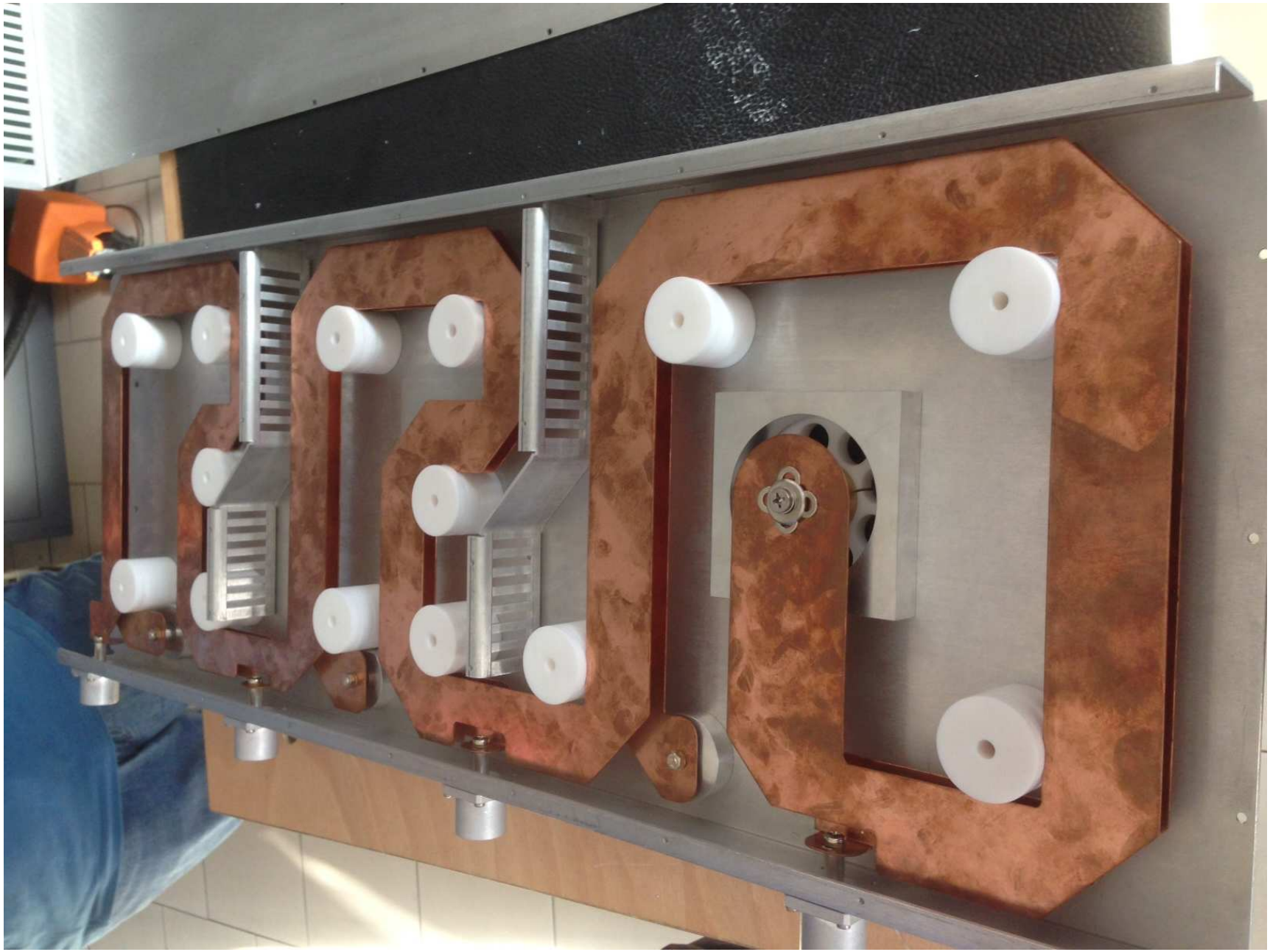
CAD 3D

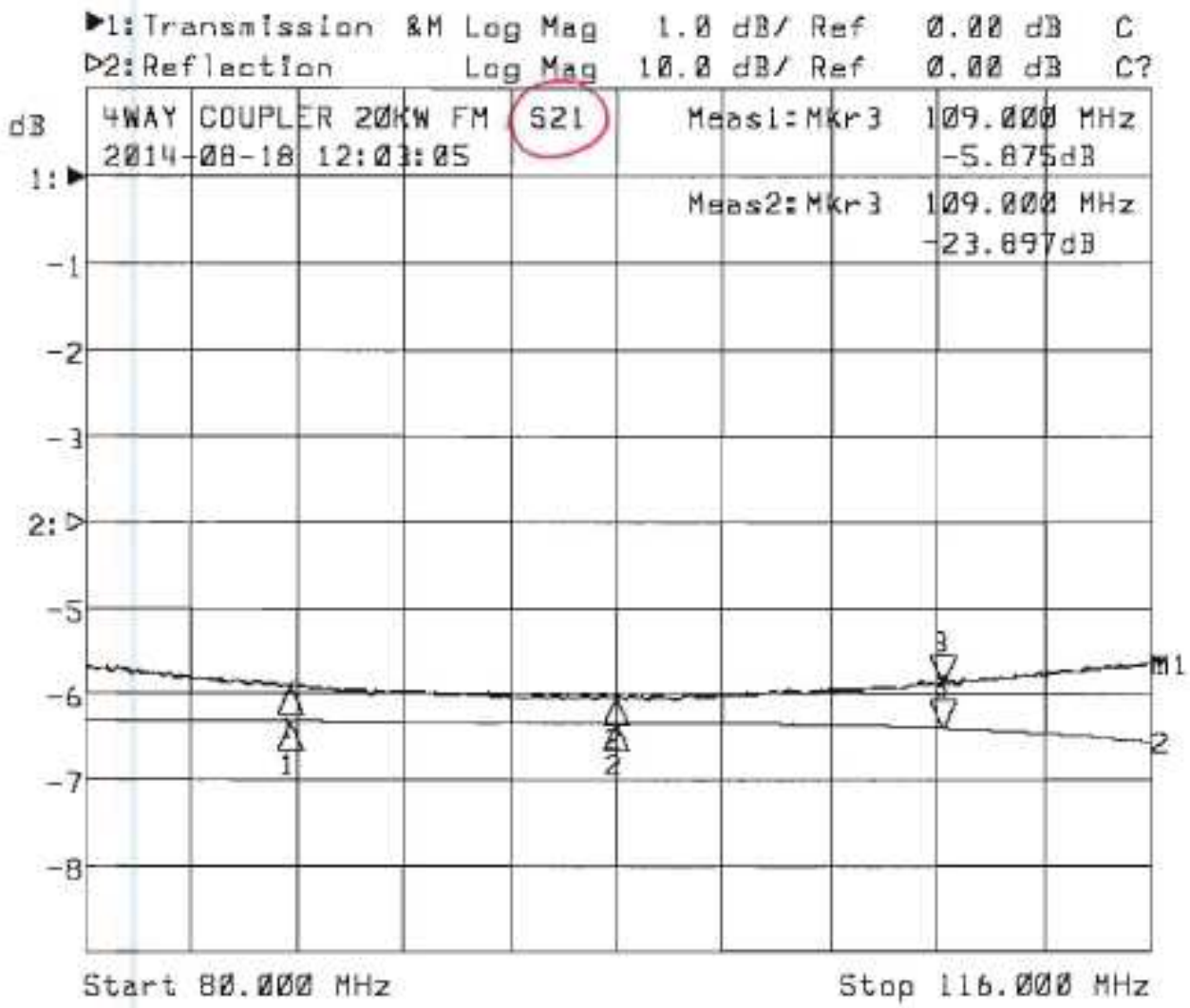



Y
x
Porta 1
Porta 2
Porta 3
Porta 4
Porta 5
Porta 6
Porta 7
Porta 8
0
200
400 (mm)


S_parameter
HFSSDesign1
0.00
-5.00
-10.00
-15.00
-20.00
-25.00
-30.00
-35.00
-40.00
-45.00
dB
88.00
90.00
92.00
94.00
96.00
98.00
100.00
102.00
104.00
106.00
108.00
110.00
Freq [MHz]
Curve Info
dB(S(1,1))
Setup1 : Sweep
dB(S(2,1))
Setup1 : Sweep
dB(S(3,1))
Setup1 : Sweep
dB(S(4,1))
Setup1 : Sweep
dB(S(5,1))
Setup1 : Sweep
dB(S(6,1))
Setup1 : Sweep
dB(S(7,1))
Setup1 : Sweep
dB(S(8,1))
Setup1 : Sweep
dB(S(8,8))
Setup1 : Sweep

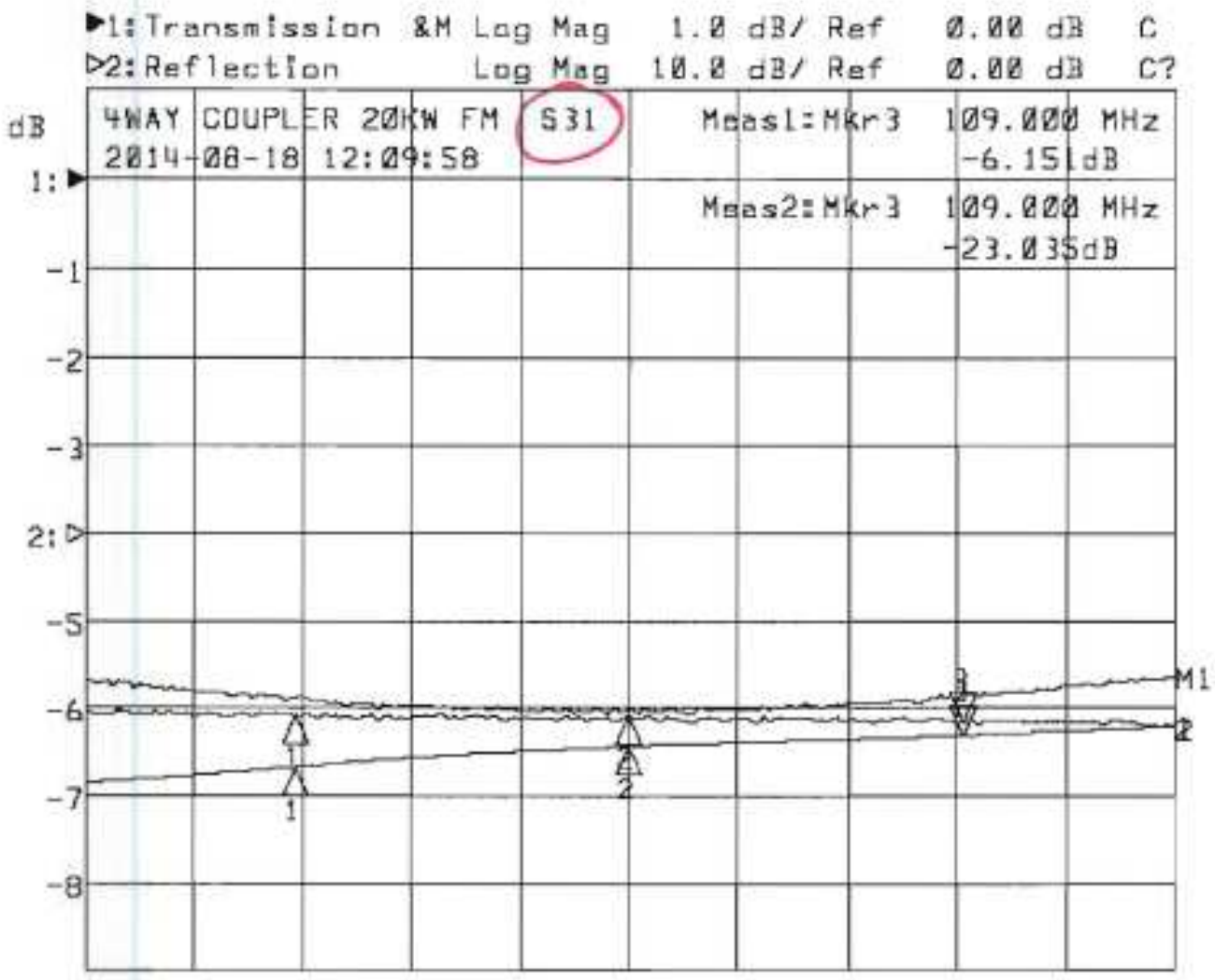

E Field[V_per_m
2.3940e+003
2.2443e+003
2.0947e+003
1.9451e+003
1.7955e+003
1.6459e+003
1.4962e+003
1.3466e+003
1.1970e+003
1.0474e+003
8.9774e+002
7.4811e+002
5.9849e+002
4.4887e+002
2.9925e+002
1.4962e+002
0.0000e+000
Y
0
150
300 (mm)





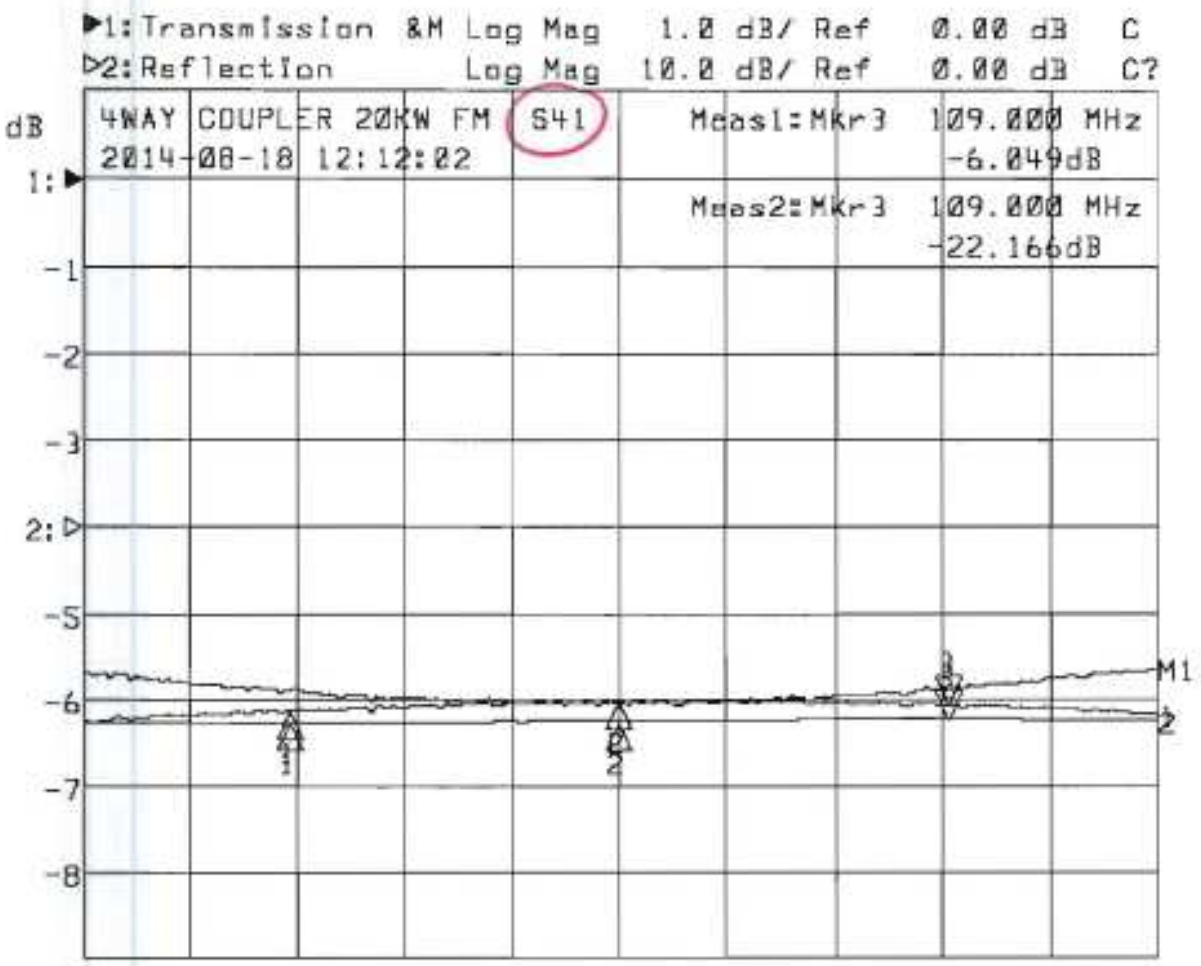
1: Mkr (MHz)		dB
1:	87.0000	-5.910
2:	98.0000	-6.019
3›	109.0000	-5.875

2: Mkr (MHz)		dB
1:	87.0000	-23.188
2:	98.0000	-23.318
3›	109.0000	-23.897



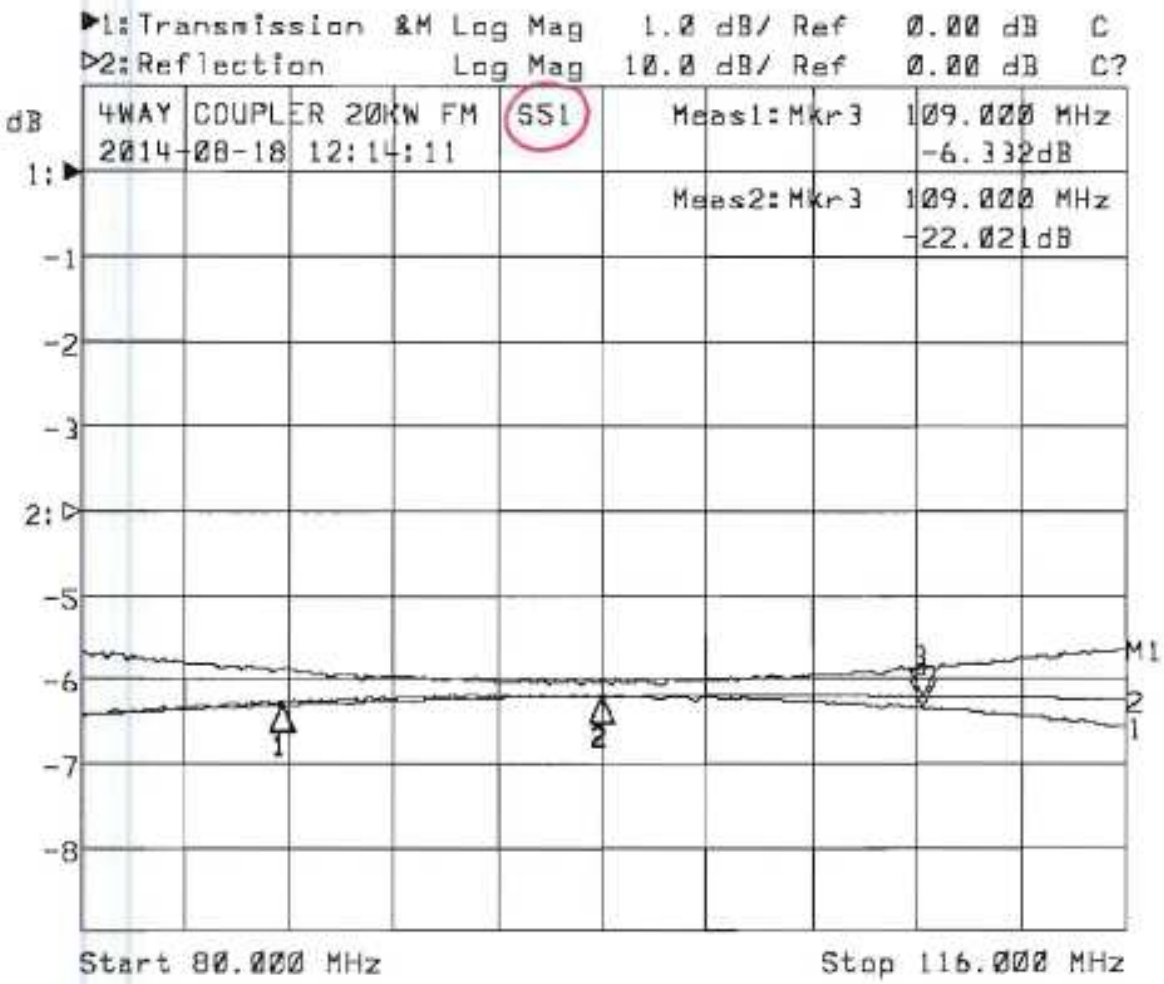
1: Mkr (MHz)		dB
1:	87.0000	-6.081
2:	98.0000	-6.074
3›	109.0000	-6.151

2: Mkr (MHz)		dB
1:	87.0000	-26.635
2:	98.0000	-24.293
3›	109.0000	-23.035

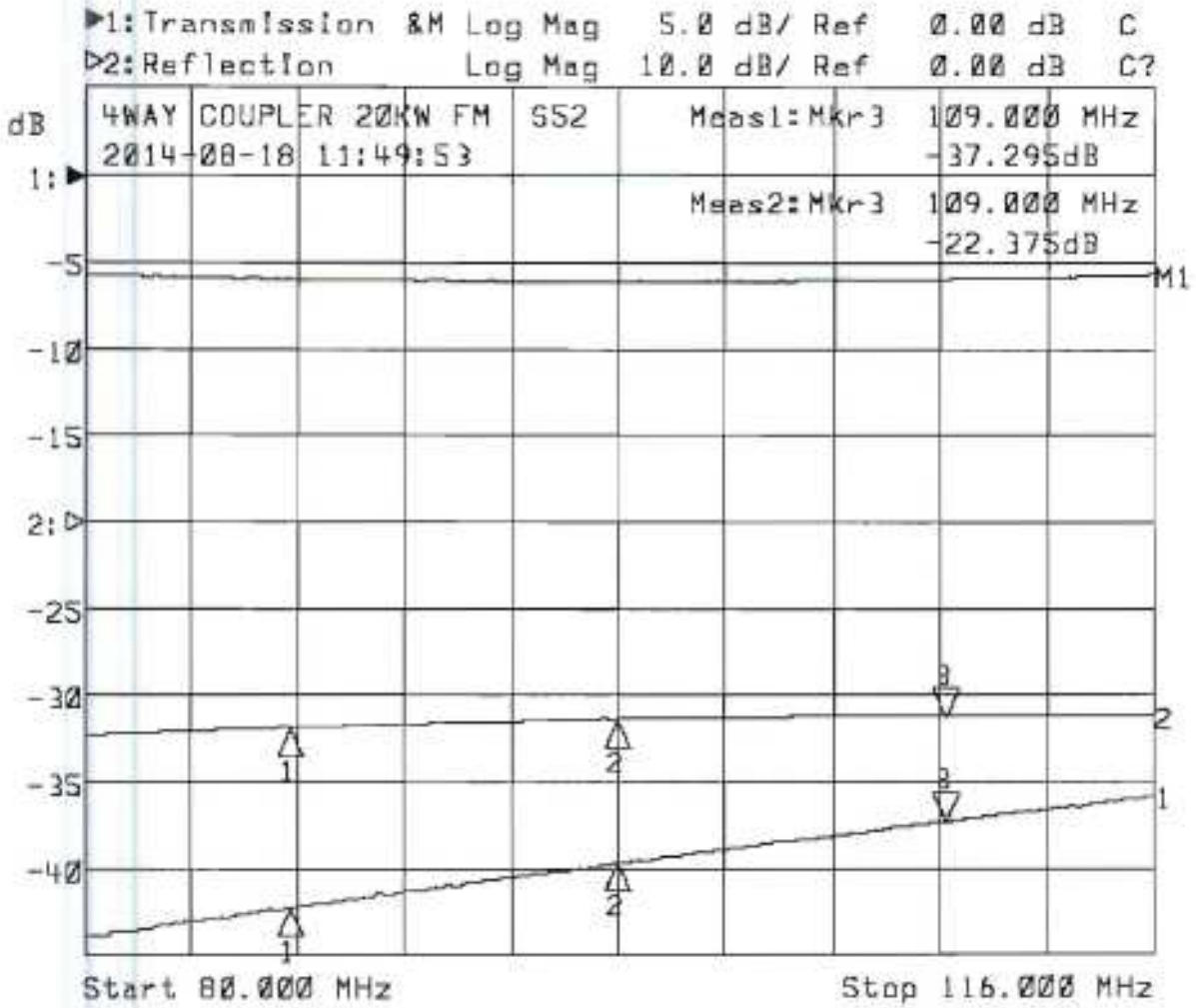


1: Mkr (MHz)		dB
1:	87.0000	-6.123
2:	98.0000	-6.006
3›	109.0000	-6.049

2: Mkr (MHz)		dB
1:	87.0000	-22.555
2:	98.0000	-22.384
3›	109.0000	-22.166

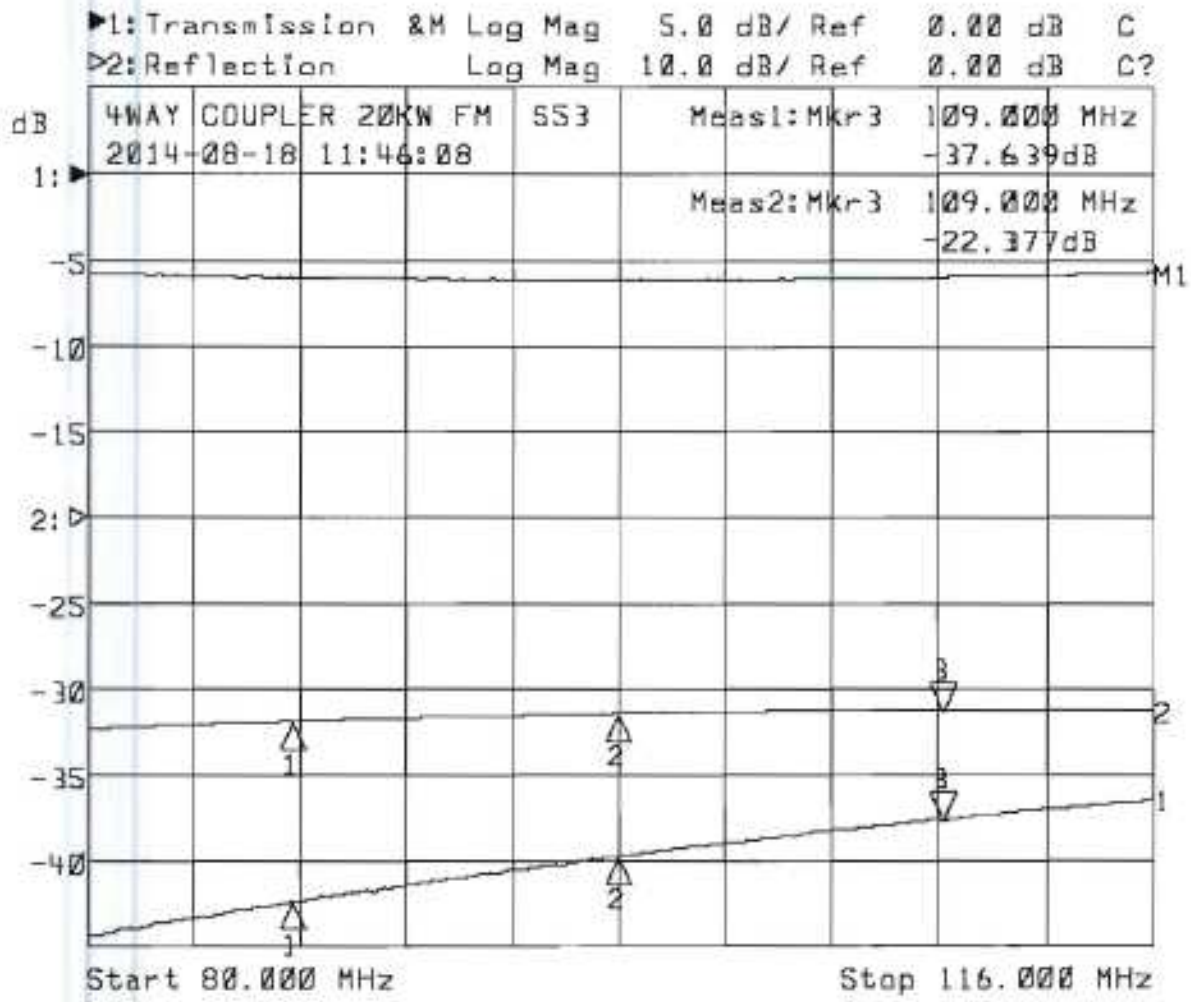


1: Mkr (MHz)		dB	2: Mkr (MHz)		dB
1:		87.0000	-6.268	1:	87.0000	-23.040
2:		98.0000	-6.183	2:	98.0000	-22.014
3›		109.0000	-6.332	3›	109.0000	-22.021



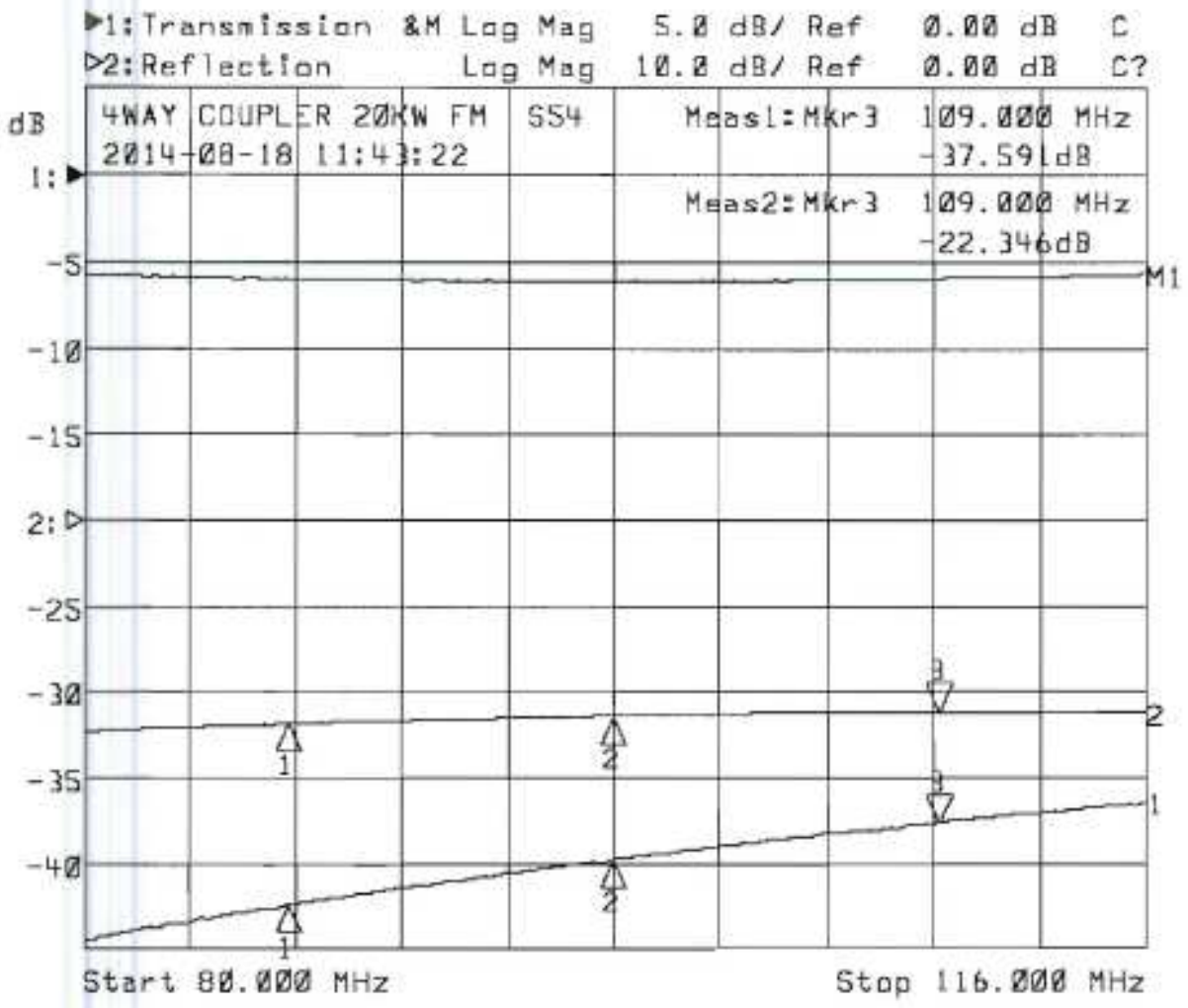
1: Mkr (MHz)		dB
1:	87.0000	-42.246
2:	98.0000	-39.662
3›	109.0000	-37.295

2: Mkr (MHz)		dB
1:	87.0000	-23.653
2:	98.0000	-22.717
3›	109.0000	-22.375



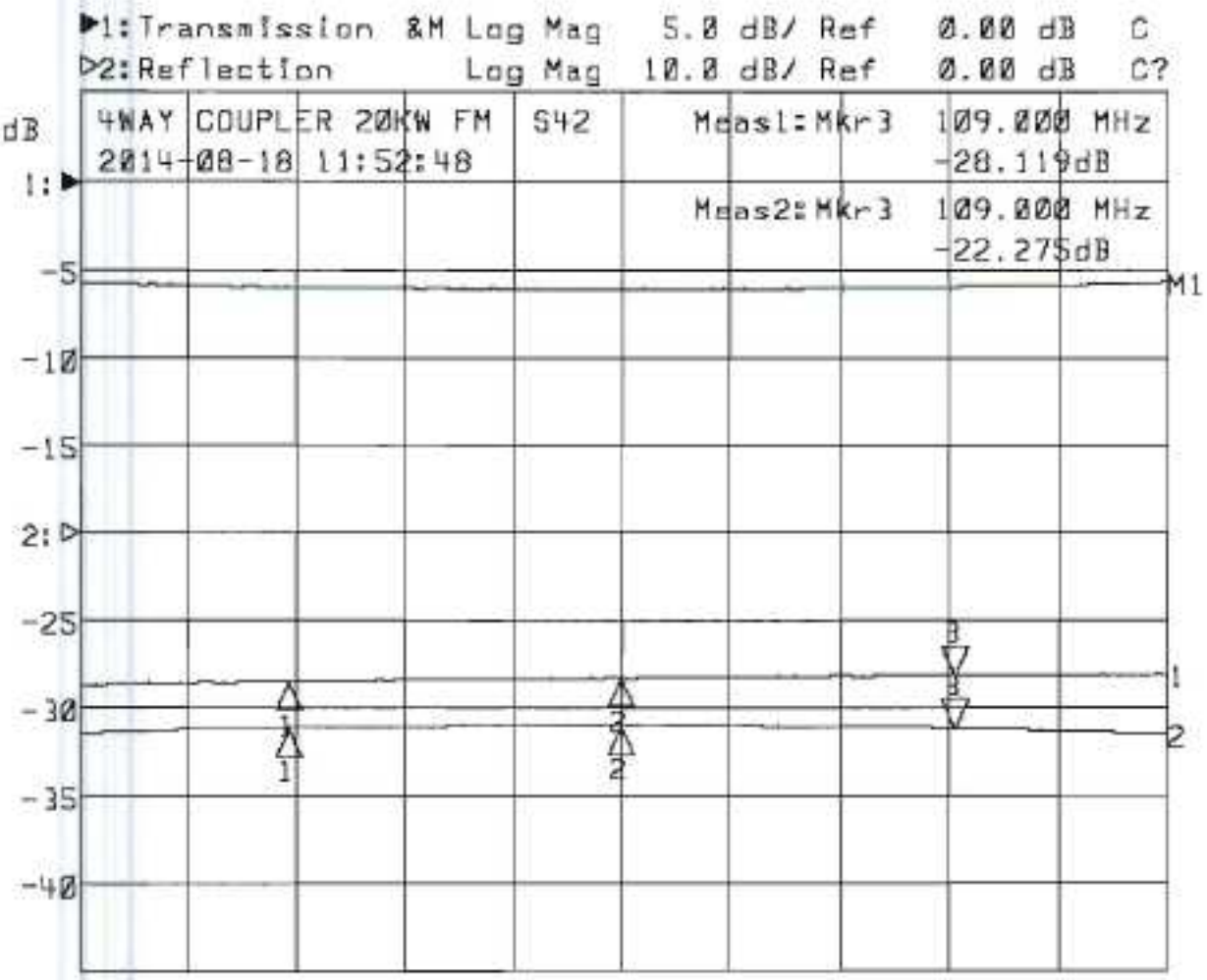
1: Mkr (MHz)		dB
1:	87.0000	-42.371
2:	98.0000	-39.688
3›	109.0000	-37.639

2: Mkr (MHz)		dB
1:	87.0000	-23.650
2:	98.0000	-22.710
3›	109.0000	-22.377

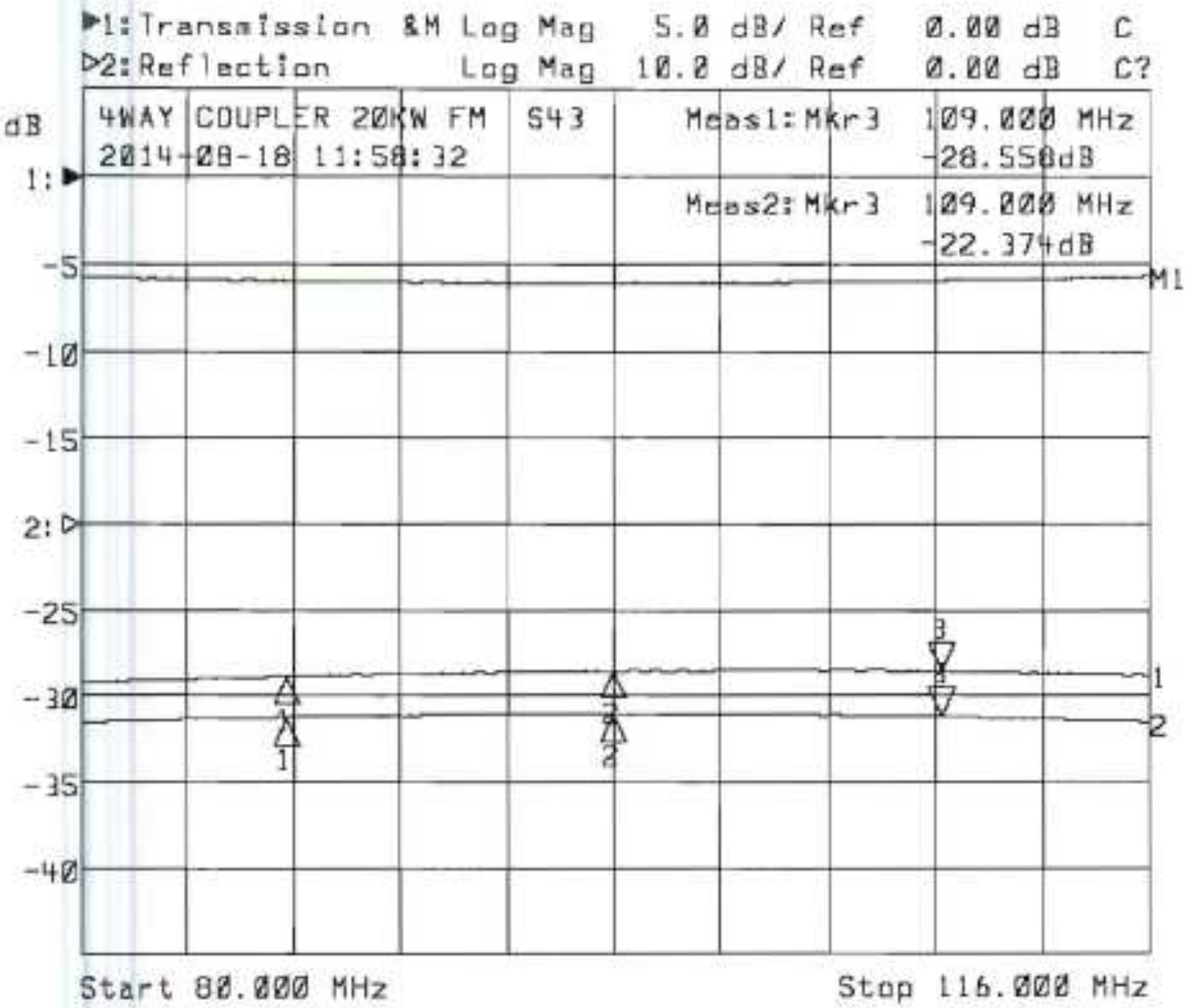


1: Mkr (MHz)		dB
1:	87.0000	-42.352
2:	98.0000	-39.694
3›	109.0000	-37.591

2: Mkr (MHz)		dB
1:	87.0000	-23.610
2:	98.0000	-22.686
3›	109.0000	-22.346

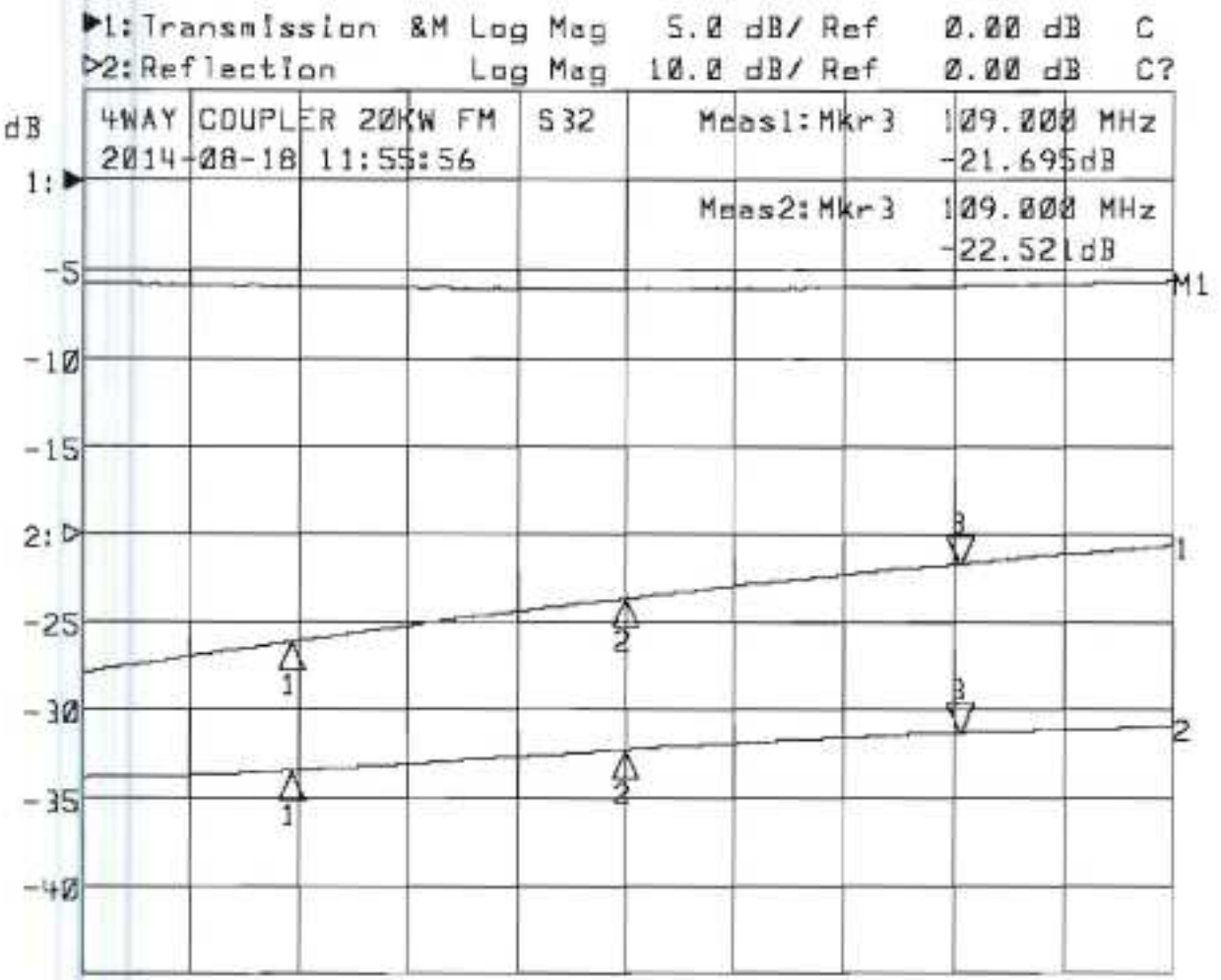


1:Mkr (MHz)		dB	2:Mkr (MHz)		dB
1:	87.0000	-28.474	1:	87.0000	-22.219
2:	98.0000	-28.228	2:	98.0000	-21.877
3›	109.0000	-28.119	3›	109.0000	-22.275



1: Mkr (MHz)		dB
1:	87.0000	-28.862
2:	98.0000	-28.534
3›	109.0000	-28.558

2: Mkr (MHz)		dB
1:	87.0000	-22.452
2:	98.0000	-22.089
3›	109.0000	-22.374



1: Mkr (MHz)	dB	2: Mkr (MHz)	dB
1: 87.0000	-26.127	1: 87.0000	-26.875
2: 98.0000	-23.657	2: 98.0000	-24.439
3› 109.0000	-21.695	3› 109.0000	-22.521