

ENGINEERING EXHIBIT

Application for Auxiliary Antenna License

prepared for

Liberman Broadcasting of Houston License LLC

KQQK(FM) Beaumont, TX

Facility ID 19087

Ch. 300C 107.9 MHz 100 kW 537 m

Liberman Broadcasting of Houston License LLC ("Liberman") is licensee of KQQK(FM), Ch. 300C, Beaumont, TX (BMLH-20071113AGR). *Liberman* has completed construction related to an auxiliary antenna for KQQK, as authorized in its construction permit ("CP," file number BXPB-20080117AAZ). The CP authorizes an auxiliary antenna side-mounted at the main KQQK site, with 100 kW effective radiated power ("ERP") and an antenna height above average terrain ("HAAT") of 537 meters.

The transmitting antenna is manufactured by Dielectric, model number DCRM-10B77. As with the main antenna, the auxiliary antenna is shared with *Liberman's* station KTJM(FM) (Ch. 253C, Port Arthur, TX). KTJM is also authorized to employ the same side-mounted antenna as an auxiliary antenna under a separate CP (BXPB-20080117AAY). A separate license application for KTJM is being filed contemporaneously with the instant KQQK application. The shared KQQK/KTJM auxiliary antenna consists of ten circularly polarized sections, spaced at intervals of 0.822 wavelength on KQQK's frequency (107.9 MHz). **Table 1** supplies a summary of the antenna gain and transmission line loss figures, and shows that the required KQQK transmitter power output is 27.5 kW to achieve 100 kW ERP.

Upon construction of the KQQK and KTJM auxiliary facilities, the applicant conducted spurious emissions measurements with both stations simultaneously utilizing the shared antenna. A spectrum analyzer was employed to verify system performance with respect to occupied bandwidth, harmonic attenuation, and intermodulation products between the two stations. No intermodulation emissions were detectable. The measurements showed that the KQQK and KTJM auxiliary facilities

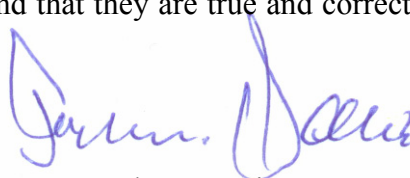
are in compliance with Sections 73.317(b) through 73.317(d) of the FCC's rules, as summarized in the following.

- §73.317(b): Any emission appearing on a frequency removed from the carrier by between 120 kHz and 240 kHz inclusive was found to be attenuated at least 25 dB below the level of the unmodulated carrier.
- §73.317(c): Any emission appearing on a frequency removed from the carrier by more than 240 kHz and up to and including 600 kHz was found to be attenuated at least 35 dB below the level of the unmodulated carrier.
- §73.317(d): Any emission appearing on a frequency removed from the carrier by more than 600 kHz was found to be attenuated at least $43 + 10 \log_{10}(\text{Power, in watts})$ dB below the level of the unmodulated carrier, or 80 dB, whichever is the lesser attenuation.

The existing transmitter combiner system for the main antenna is also employed for auxiliary antenna operations. For shared use, the auxiliary antenna is engaged by switching the combiner's output to feed the auxiliary antenna instead of the main antenna. Manufacturer's measured test data of the transmitter combining system is supplied in the attached **Appendix 1**.

Certification

The undersigned hereby certifies that the foregoing statement and associated attachments were prepared by him or under his direction, and that they are true and correct to the best of his knowledge and belief.



Joseph M. Davis, P.E.
April 3, 2009

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List of Attachments

Table 1	Auxiliary Antenna / Line System Gains and Losses
Appendix 1	Combiner Measured Data

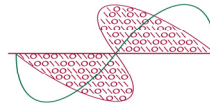


Table 1

Auxiliary Antenna / Line System Gains and Losses

prepared for

Liberman Broadcasting of Houston License LLC

KQQK(FM) Beaumont, TX

Construction Permit File Number: BXPB-20080117AAZ

Authorized Effective Radiated Power:	100 kW	20.00 dBk
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Antenna System

Dielectric DCRM-10B77	Power Gain:	4.8	6.81 dB
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Antenna Input Power:	20.8 kW	13.19 dBk
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Line and Other Losses

Transmission Line	Loss:	0.98 dB
Dielectric Rigid 6 inch		

Combiner	Loss:	0.22 dB
Dielectric		

Total Losses:	1.20 dB
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<u>Transmitter Power Output:</u>	27.5 kW	14.39 dBk
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Appendix 1

Combiner Measured Data

Liberman Broadcasting of Houston License LLC

KQQK(FM) Beaumont, TX

Facility ID 19087

Ch. 300C 107.9 MHz 100 kW 537 m

Dielectric

Date

2/28/06

Item

98.5/107.9 FM COMBINER

Work order number

2817850

Part number

102256

Sales order number

82640

Customer

LIBERMAN

Customer Specs.

Customer part number

Comments:

Frequency

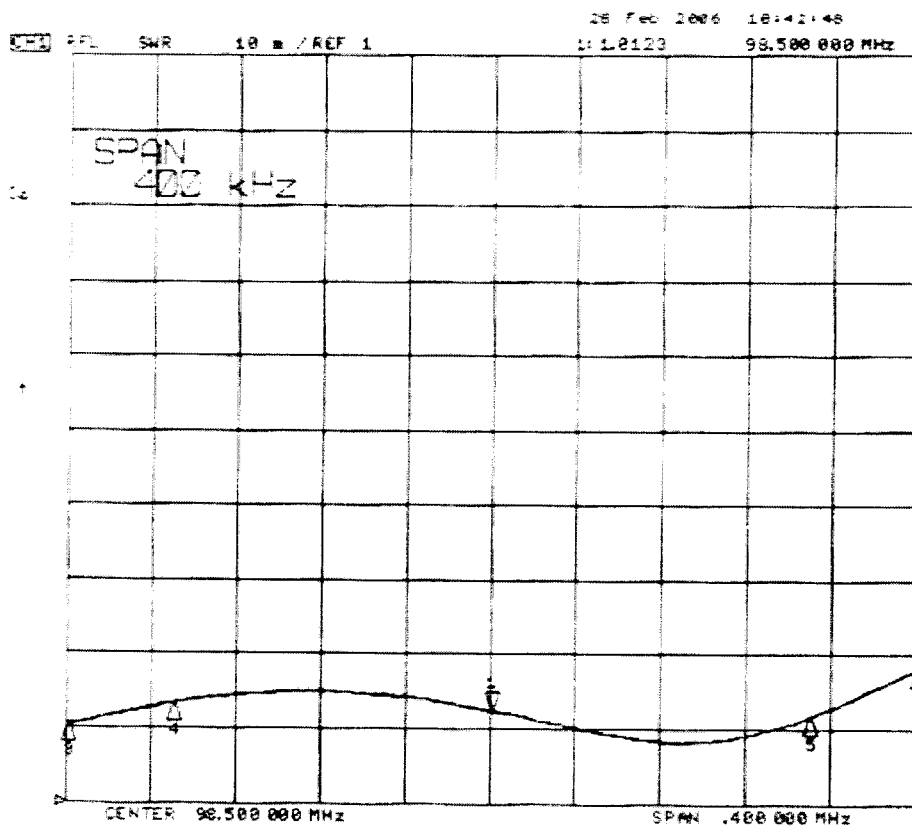
98.5/107.9+-2MHZ

Call Sign

Tested by

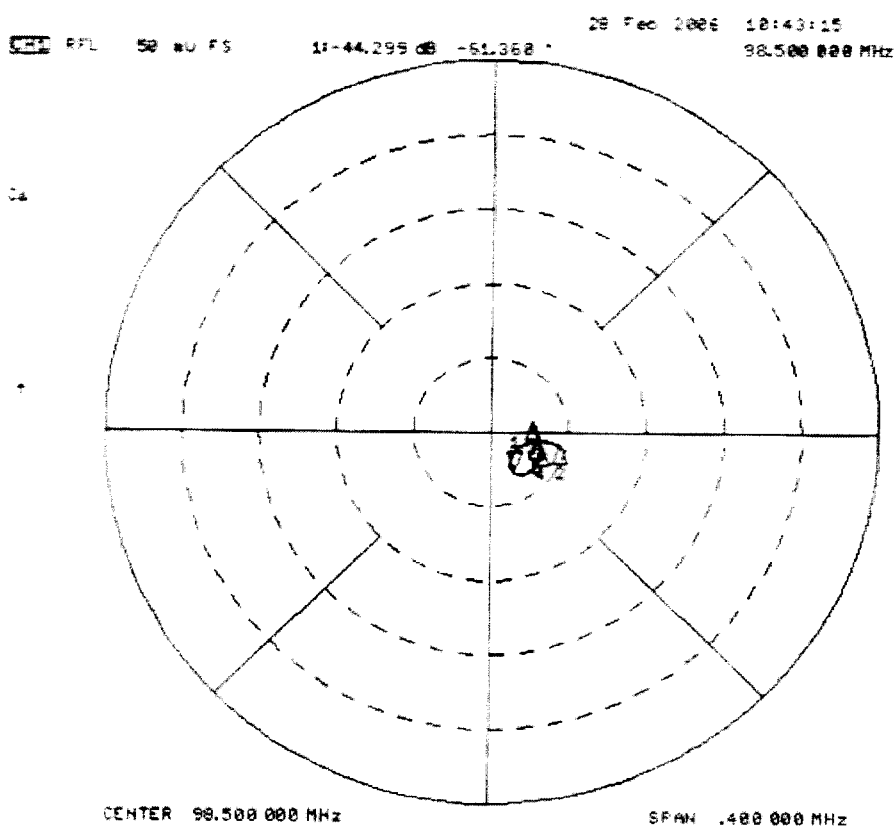
DALLAS MUSZYNSKI

985



VSWR

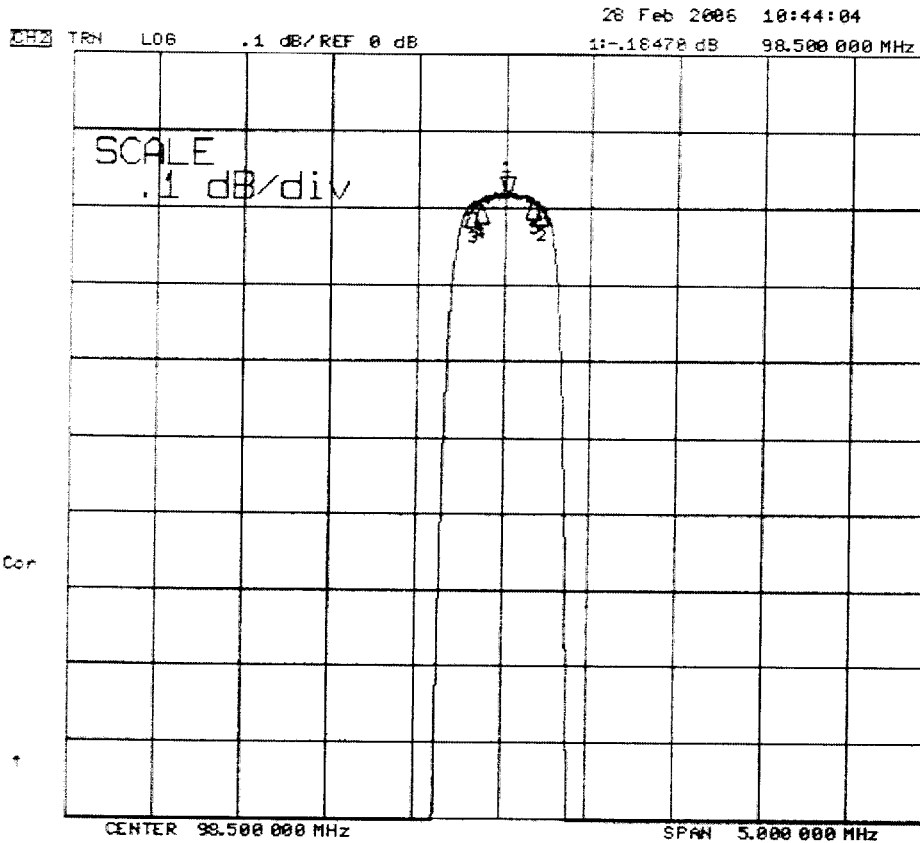
- CH1 Markers
- 2: 1.0181
98.7000 MHz
 - 3: 1.0183
98.3000 MHz
 - 4: 1.0132
98.3500 MHz
 - 5: 1.0116
98.6500 MHz



Return Loss

- CH1 Markers
- 2: -40.919 dB
-11.902 °
98.7000 MHz
 - 3: -45.499 dB
13.664 °
98.3000 MHz
 - 4: -43.503 dB
-19.218 °
98.3500 MHz
 - 5: -44.633 dB
-13.628 °
98.6500 MHz

98.5



Insertion Loss

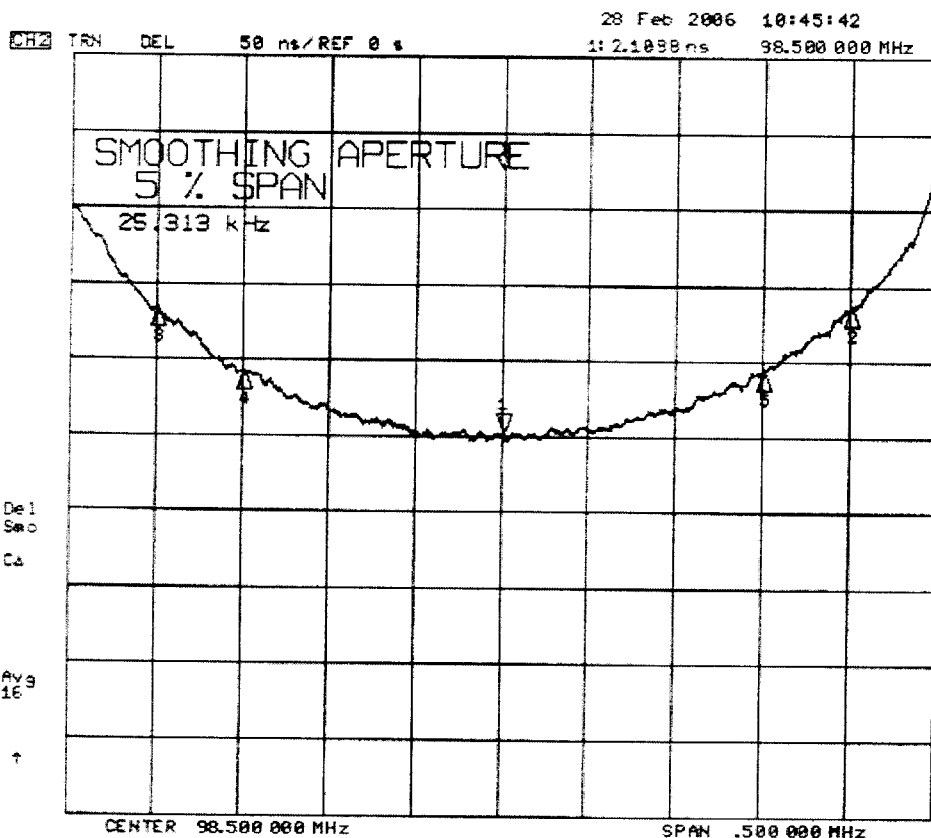
CH2 Markers

2:-19978 dB
98.7000 MHz

3:-20120 dB
98.3000 MHz

4:-19700 dB
98.3500 MHz

5:-18900 dB
98.6500 MHz



group delay

CH2 Markers

2: 85.145 ns
98.7000 MHz

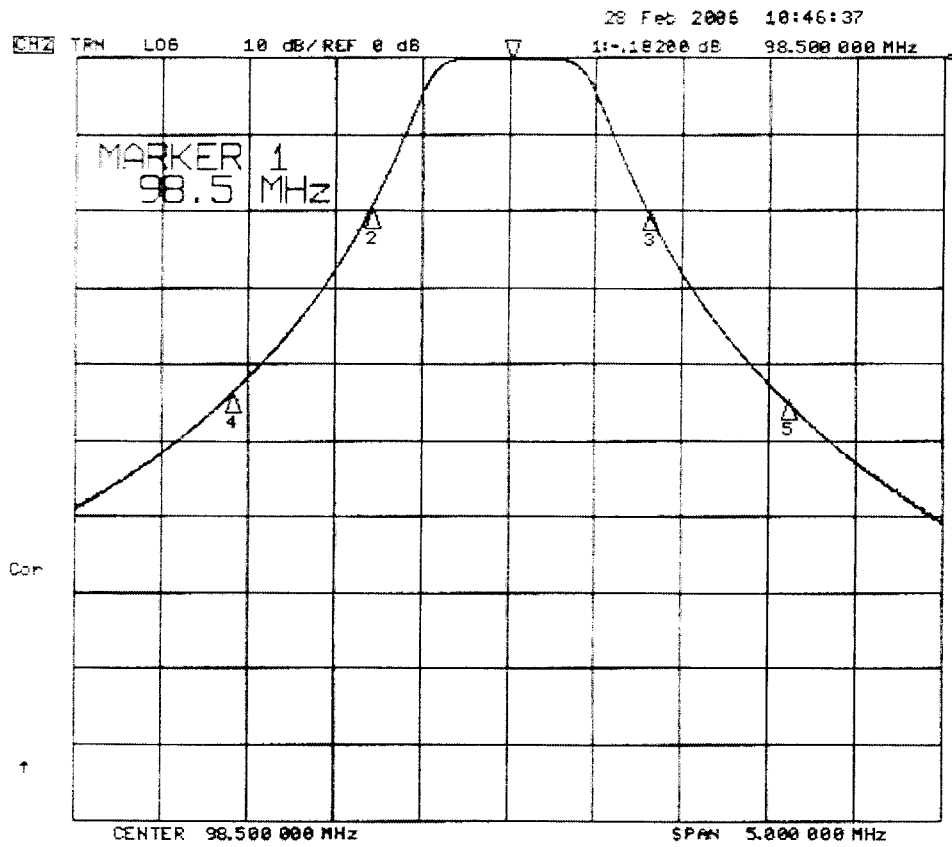
3: 83.488 ns
98.3000 MHz

4: 42.649 ns
98.3500 MHz

5: 43.854 ns
98.6500 MHz

98.5

filter Response



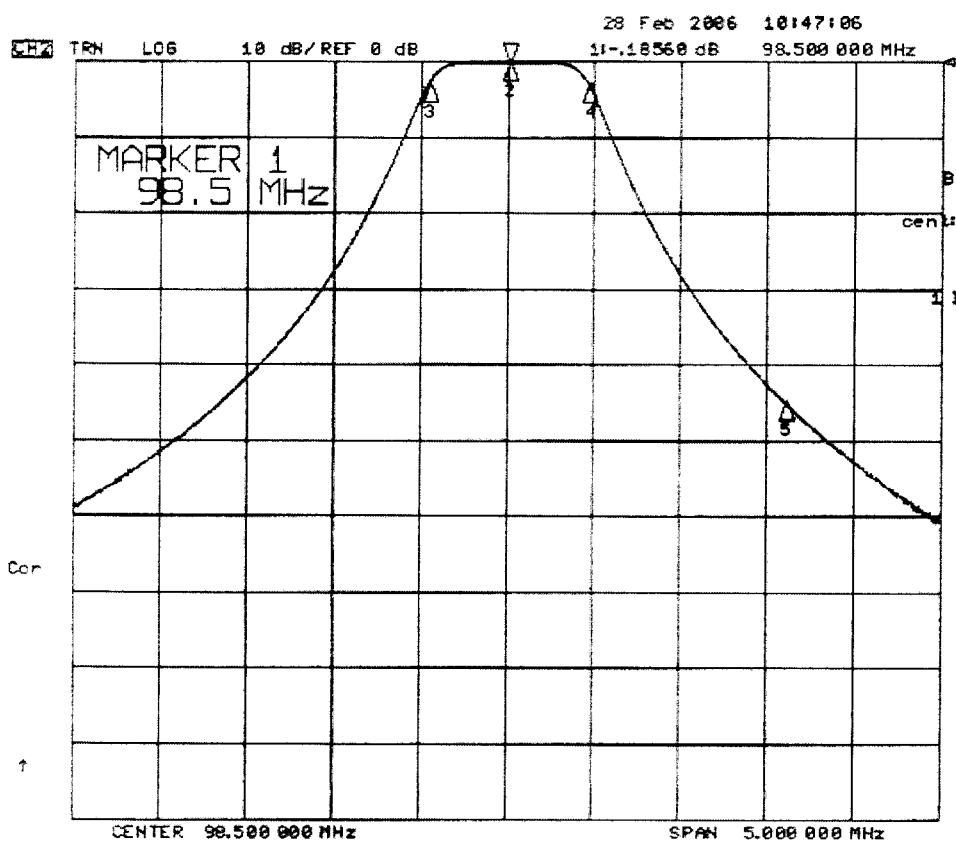
CH2 Markers

2: -19.885 dB
97.7000 MHz

3: -20.287 dB
99.3000 MHz

4: -43.984 dB
96.9000 MHz

5: -44.960 dB
100.100 MHz



Bandwidth/EC Plot

CH2 Markers

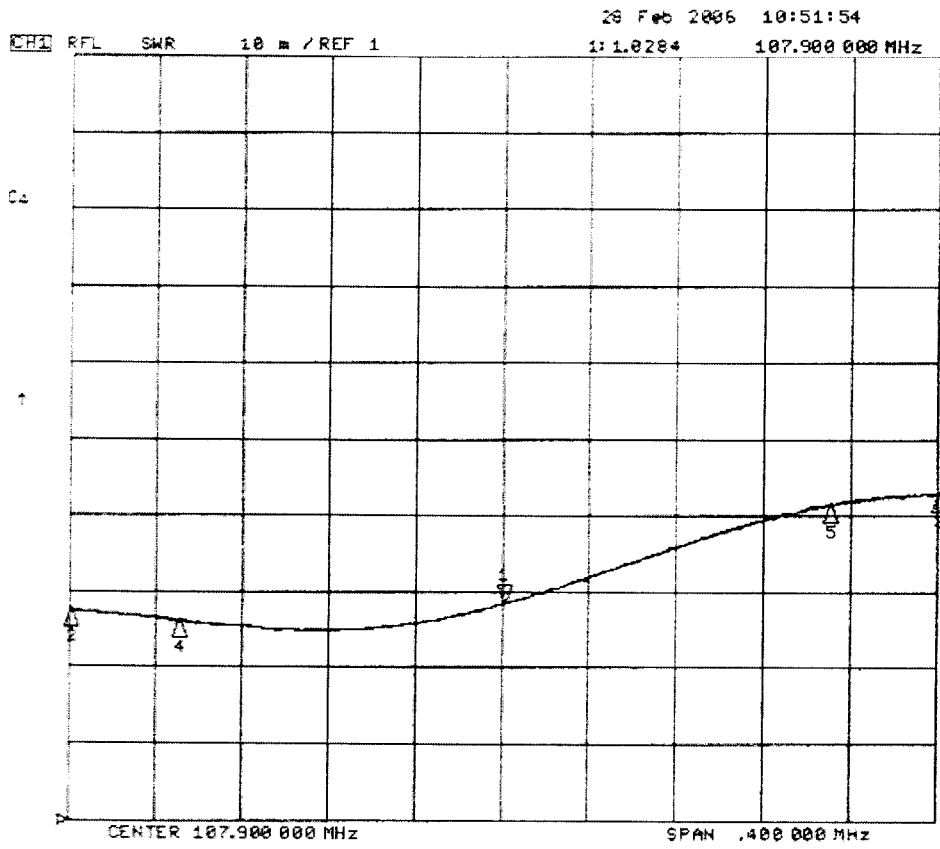
Band: .918056 MHz

cent: 98.500356 MHz

Q: 107.29

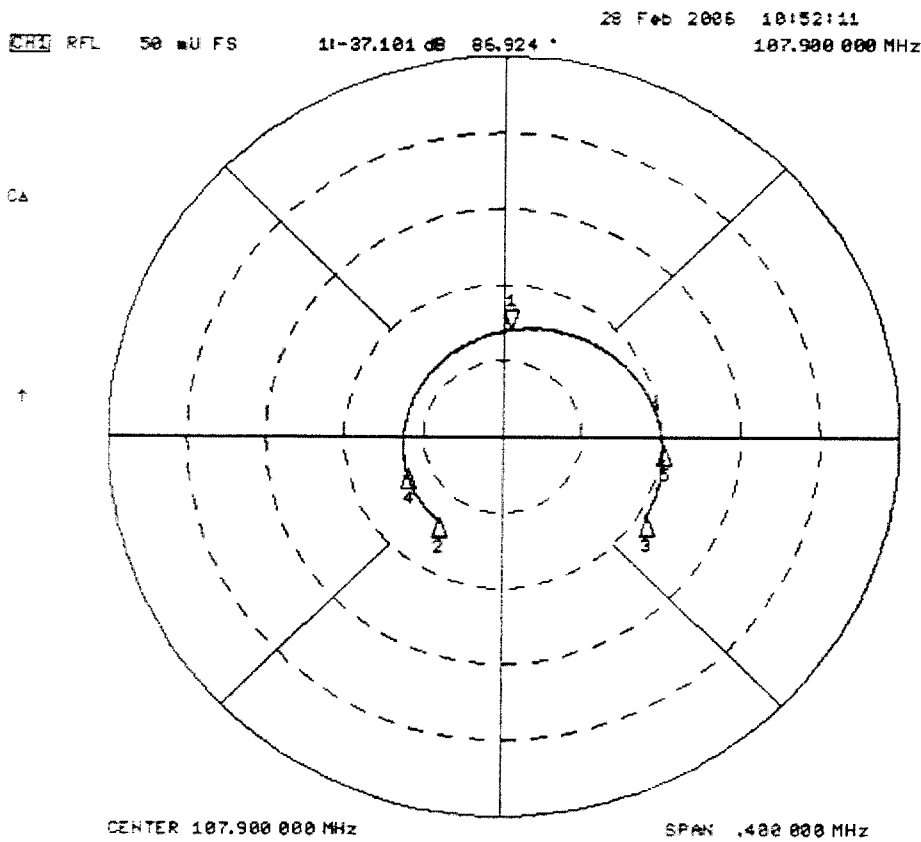
1 loss: -18.560 dB

107.9



VSWR

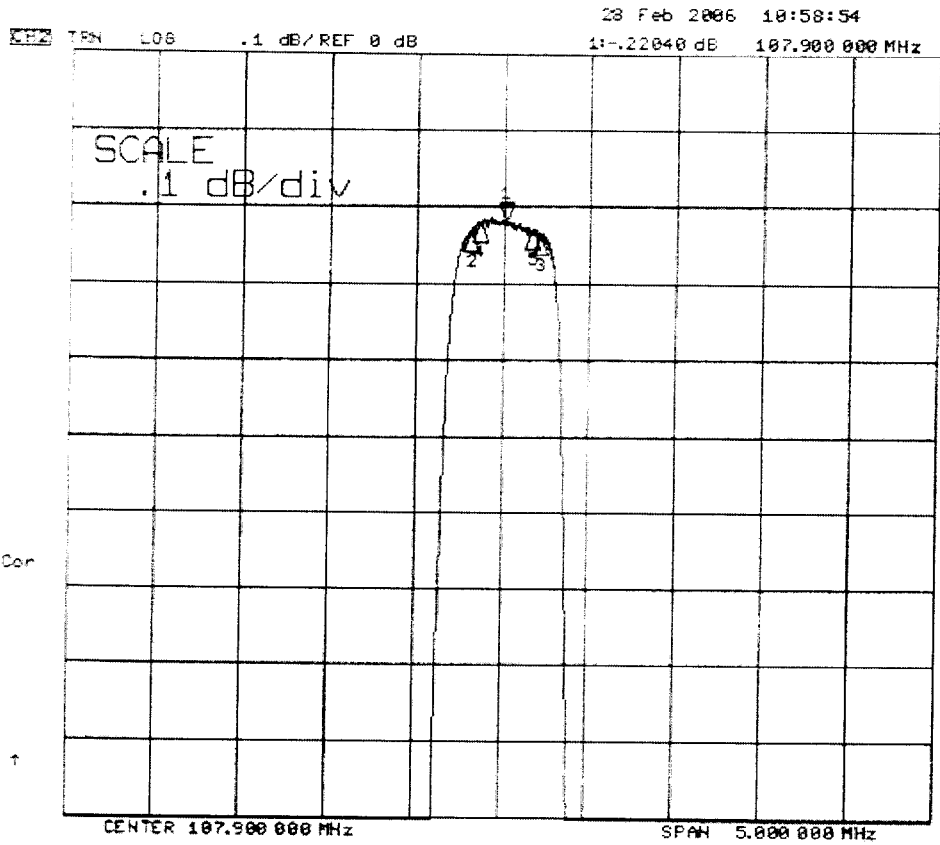
CH1 Markers
2: 1.0275
107.700 MHz
3: 1.0428
108.100 MHz
4: 1.0262
107.750 MHz
5: 1.0414
108.050 MHz



Return Loss

CH1 Markers
2: -37.315 dB
-126.89 °
107.700 MHz
3: -33.585 dB
-30.394 °
108.100 MHz
4: -37.763 dB
-159.69 °
107.750 MHz
5: -33.817 dB
-4.8141 °
108.050 MHz

107.9



Insertion Loss

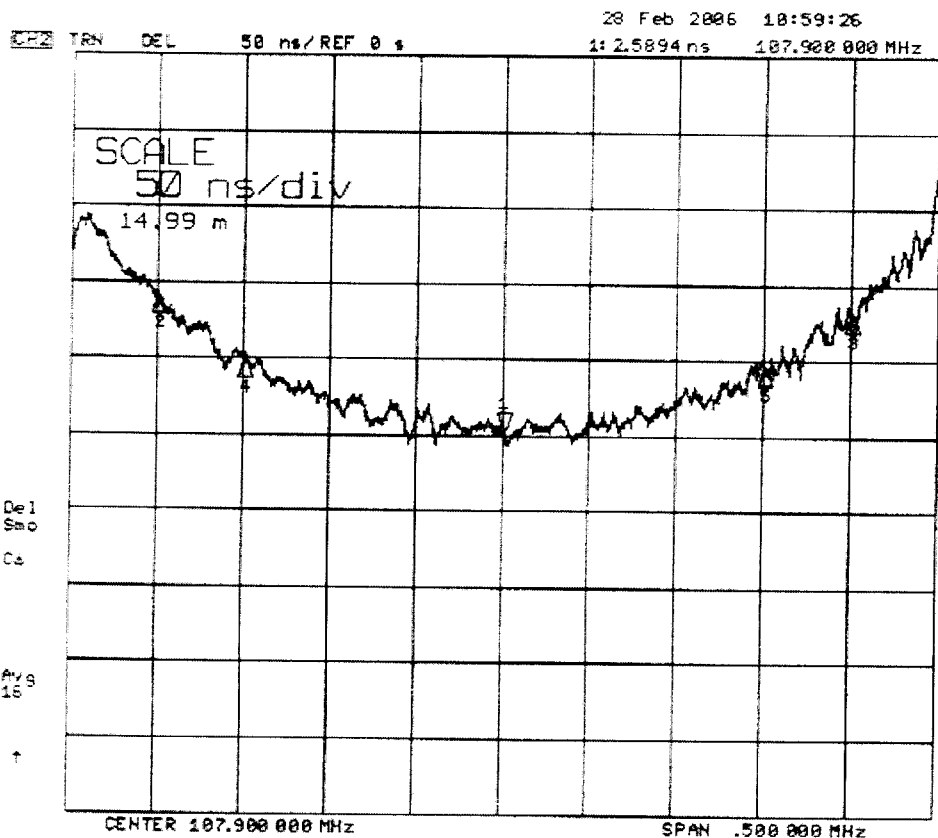
CH2 Markers

2: -.23470 dB
107.700 MHz

3: -.23930 dB
108.100 MHz

4: -.22350 dB
107.750 MHz

5: -.23100 dB
108.050 MHz



group delay

CH2 Markers

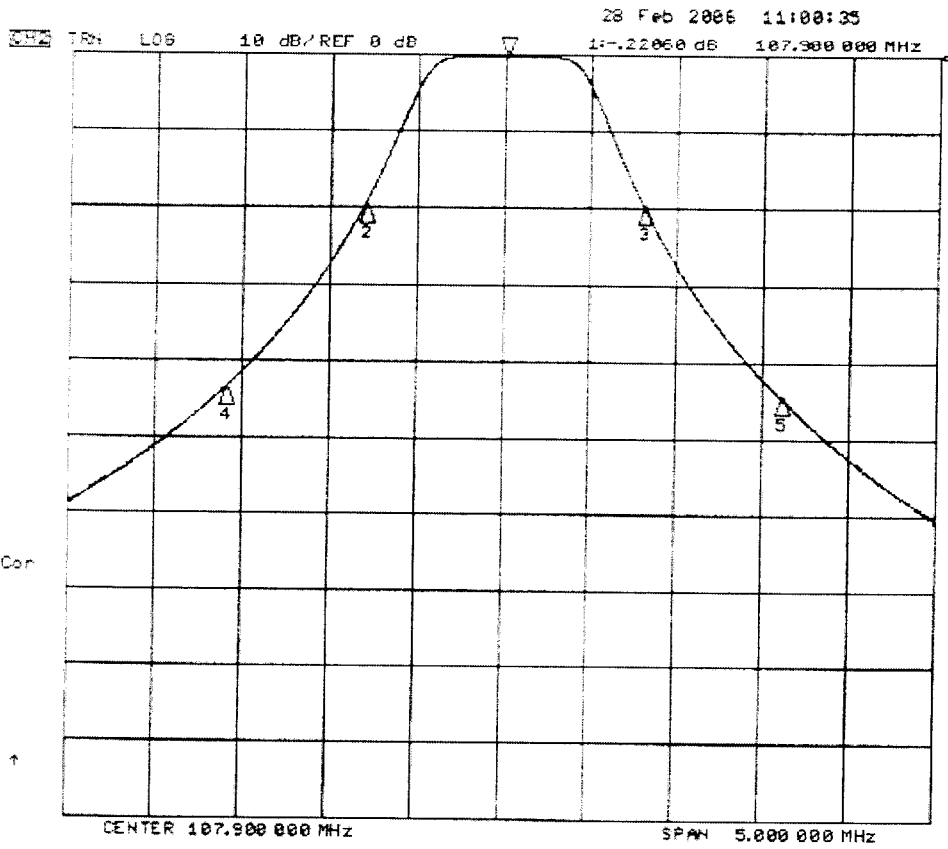
2: 91.365 ns
107.700 MHz

3: 81.378 ns
108.100 MHz

4: 49.567 ns
107.750 MHz

5: 45.069 ns
108.050 MHz

107-9



filter Response

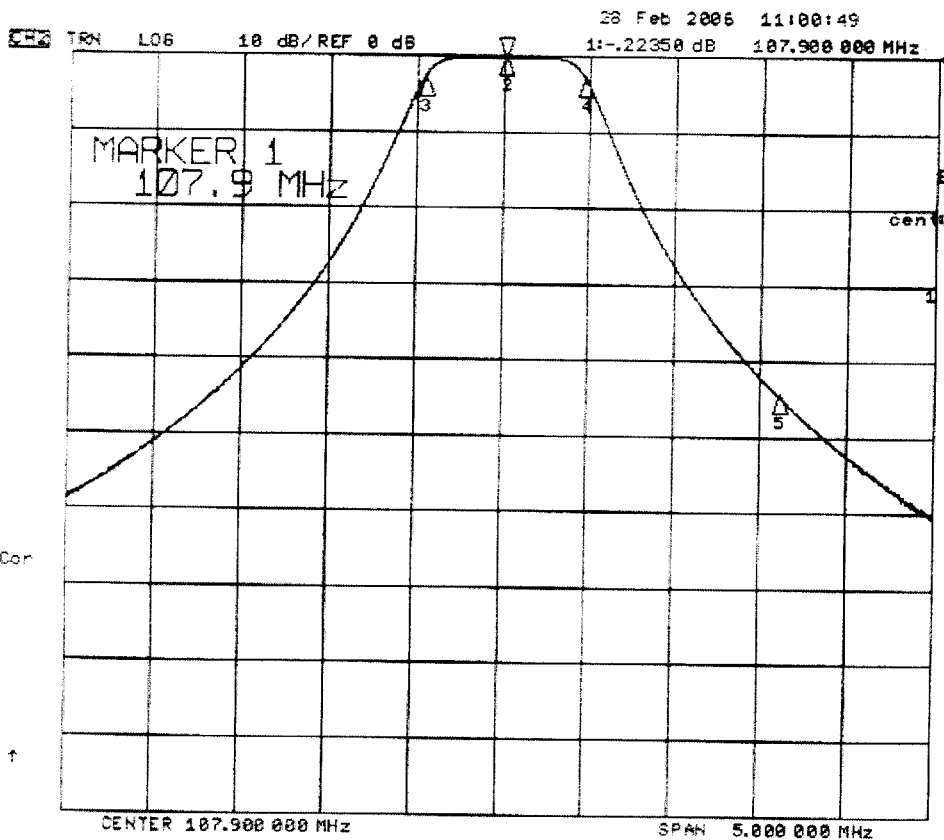
CH2 Markers

2: -19.668 dB
107.100 MHz

3: -19.698 dB
108.700 MHz

4: -43.558 dB
106.300 MHz

5: -44.464 dB
109.500 MHz



Bandwidth/Fc
Plot

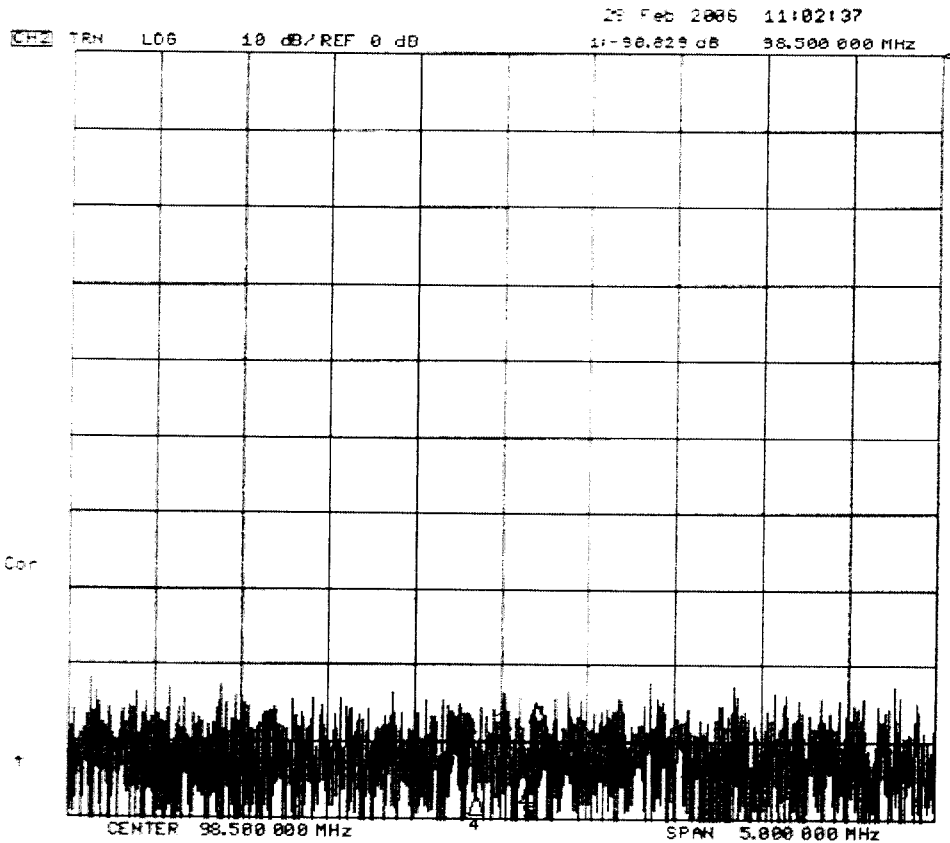
CH2 Markers

3: -22350 dB

cent: 107.904345 MHz

Q: 116.57

1 loss: -22350 dB



Isolation
98.5 to 107.9

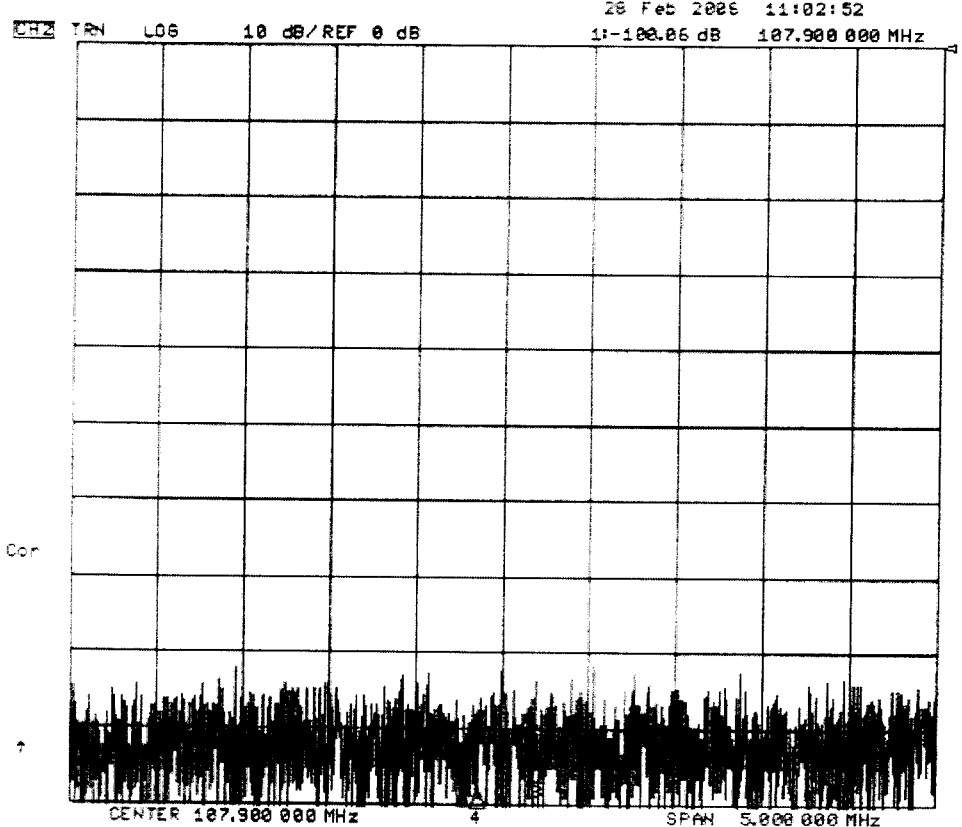
CH2 Markers

2:-98.871 dB
98.7000 MHz

3:-98.517 dB
98.3000 MHz

4:-97.384 dB
98.3500 MHz

5:-95.673 dB
98.6500 MHz



Isolation
107.9 to 98.5

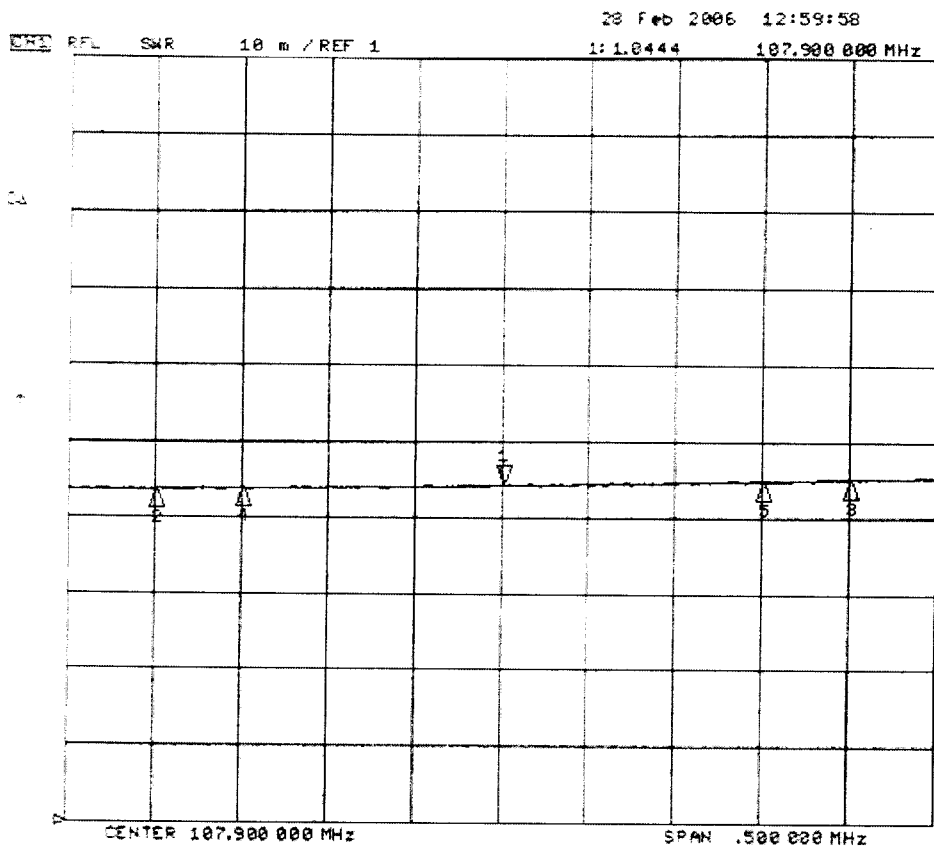
CH2 Markers

2:-98.824 dB
107.700 MHz

3:-94.669 dB
108.100 MHz

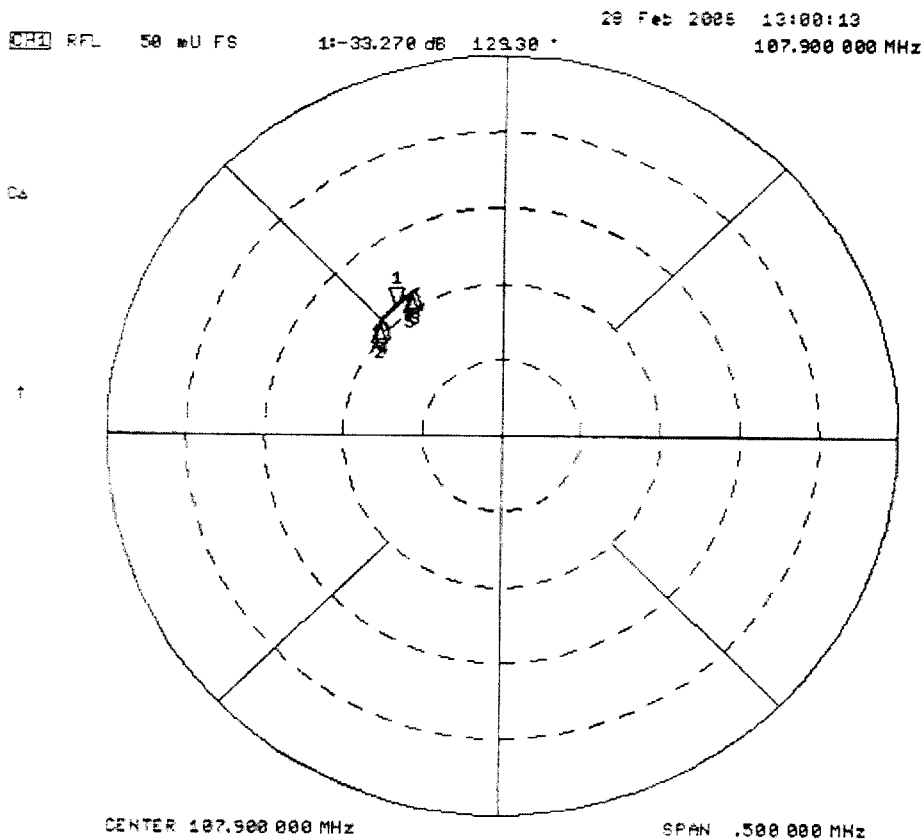
4:-98.185 dB
107.750 MHz

5:-87.545 dB
108.050 MHz



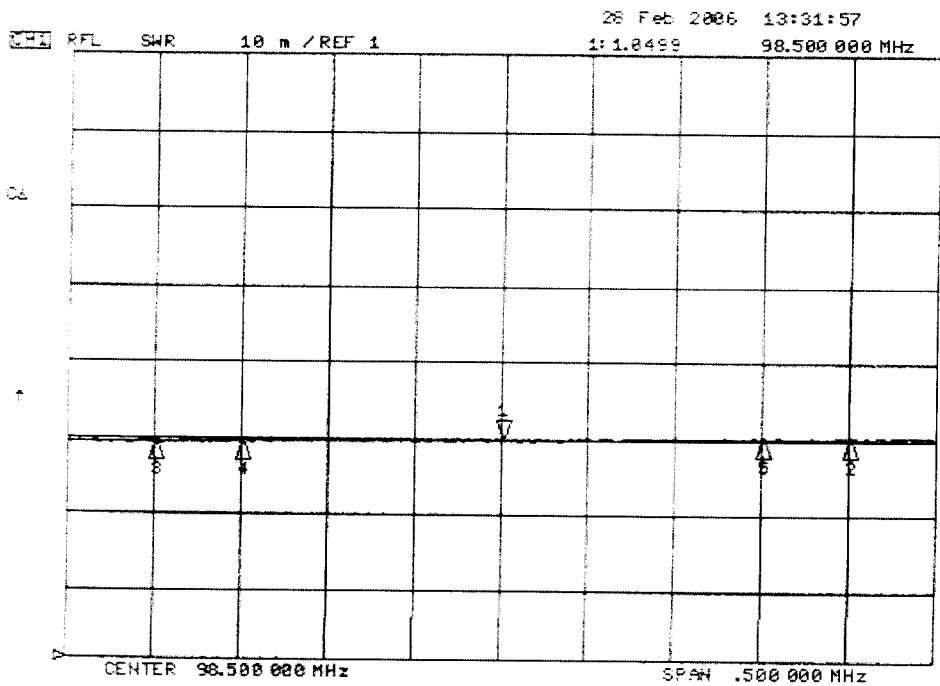
VSWR
 107.9 Bypass mode

CH1 Markers
 1: 1.0436
 107.700 MHz
 2: 1.0450
 108.100 MHz
 4: 1.0439
 107.750 MHz
 5: 1.0447
 108.050 MHz



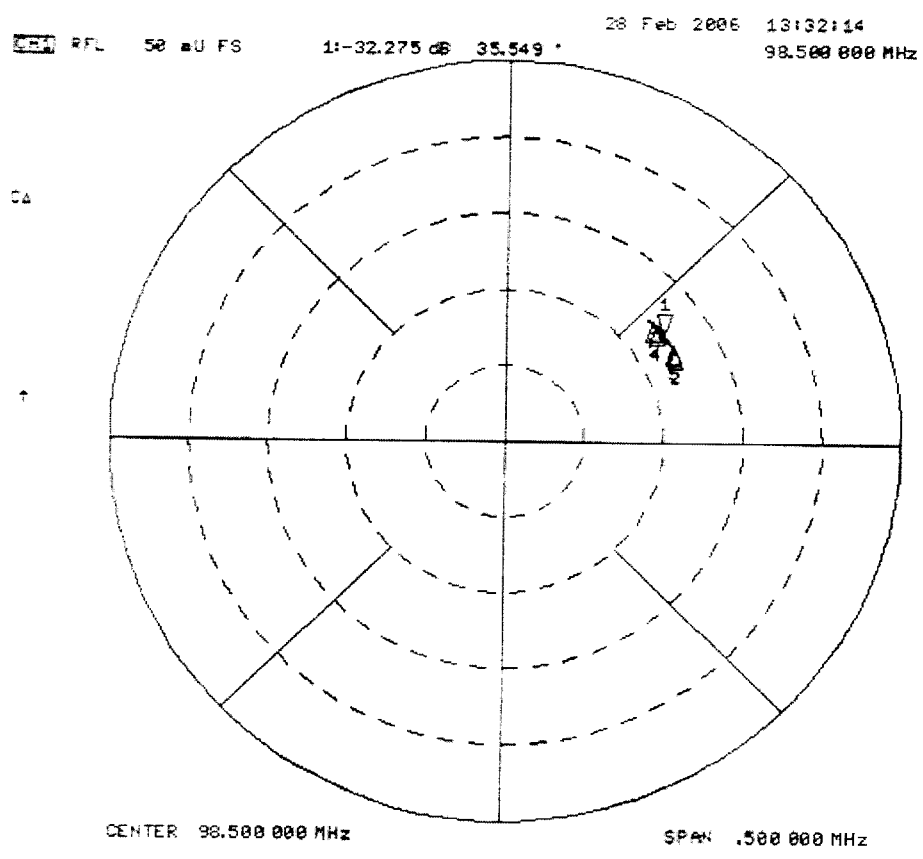
Return Loss

CH1 Markers
 1: -33.405 dB
 137.46 °
 107.700 MHz
 3: -33.100 dB
 121.00 °
 108.100 MHz
 4: -33.360 dB
 135.61 °
 107.750 MHz
 5: -33.175 dB
 122.87 °
 108.050 MHz



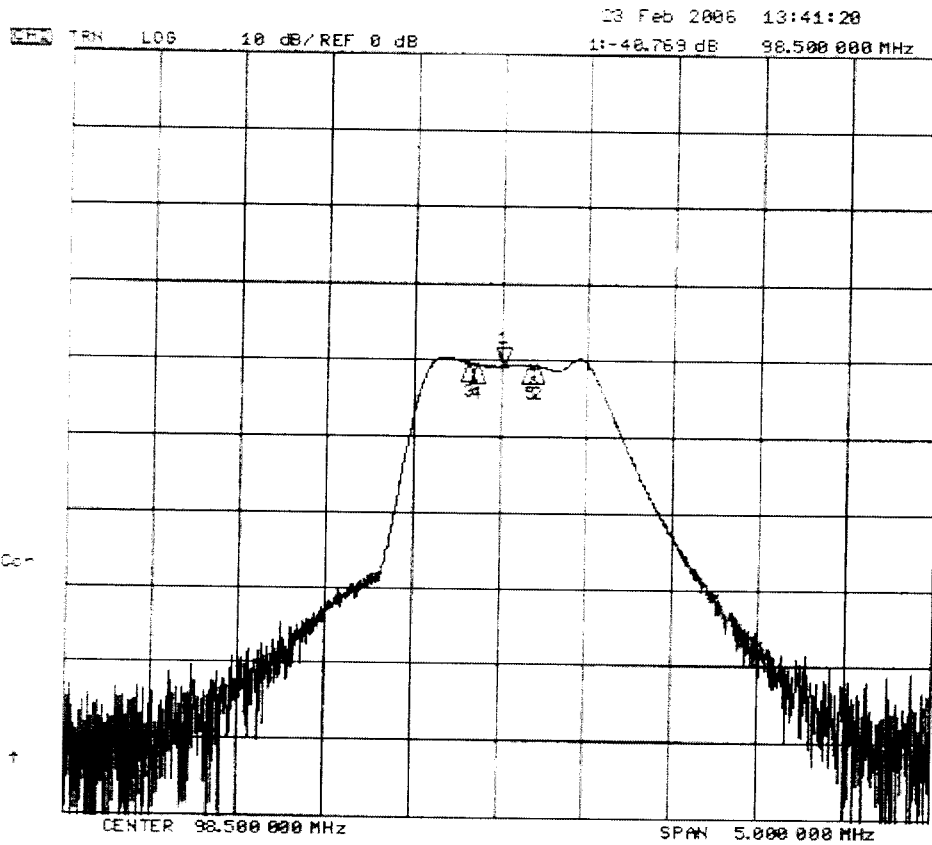
98.5
 VSWR BYPASS mode

- CH1 Markers
- 2: 1.0501
98.7000 MHz
 - 3: 1.0495
98.3000 MHz
 - 4: 1.0494
98.3500 MHz
 - 5: 1.0502
98.6500 MHz



- CH1 Markers
- 2: -32.237 dB
38.020 °
98.7000 MHz
 - 3: -32.354 dB
40.666 °
98.3000 MHz
 - 4: -32.332 dB
39.335 °
98.3500 MHz
 - 5: -32.249 dB
31.741 °
98.6500 MHz

98 5



ISolation to
Backst

CH2 Markers

2: -40.642 dB

98.7000 MHz

3: -40.385 dB

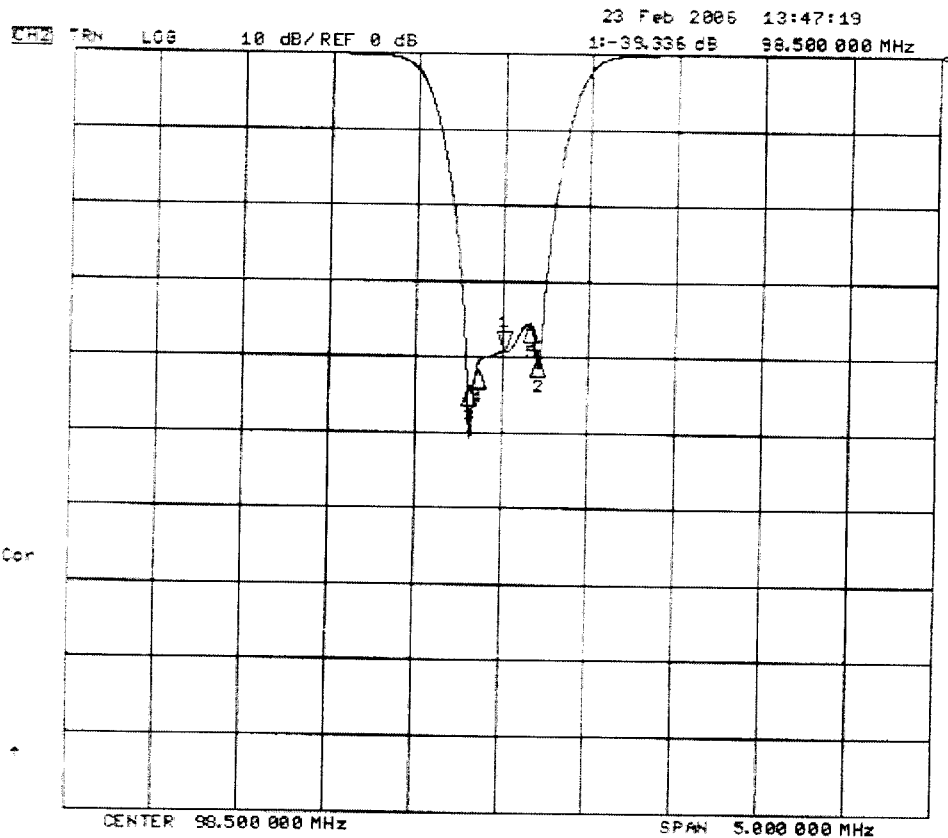
98.3000 MHz

4: -40.599 dB

98.3500 MHz

5: -40.583 dB

98.6500 MHz



ISolation to
Resect

CH2 Markers

2: -40.243 dB

98.7000 MHz

3: -44.225 dB

98.3000 MHz

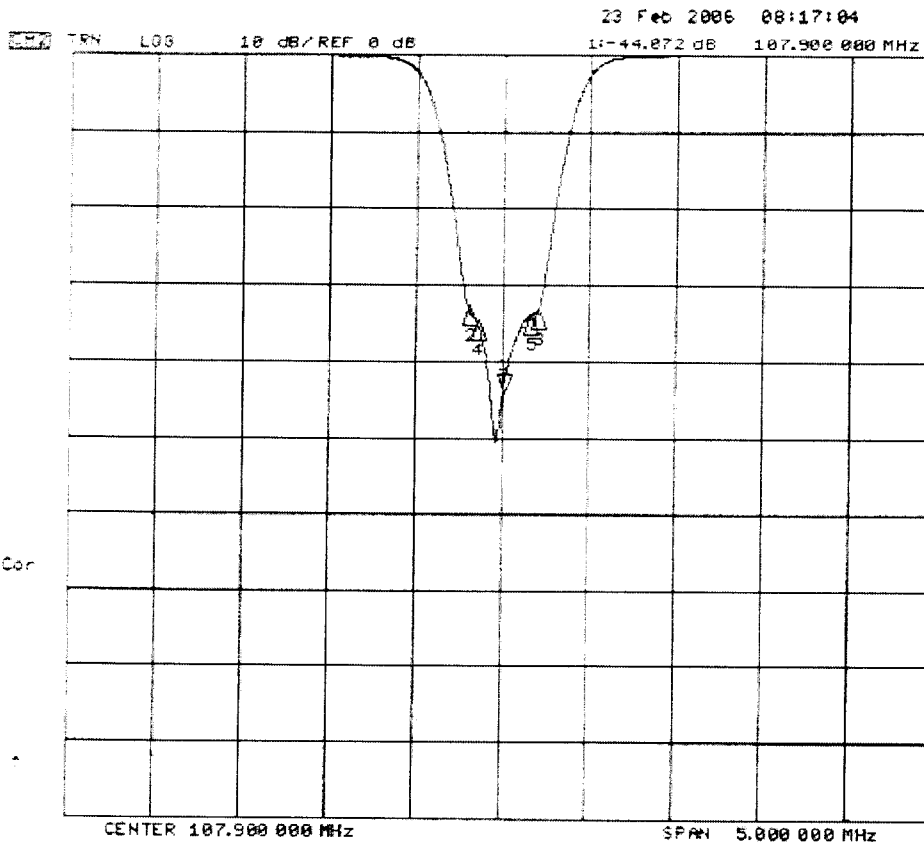
4: -41.851 dB

98.3500 MHz

5: -35.718 dB

98.6500 MHz

107.9



Isolation
to Reject

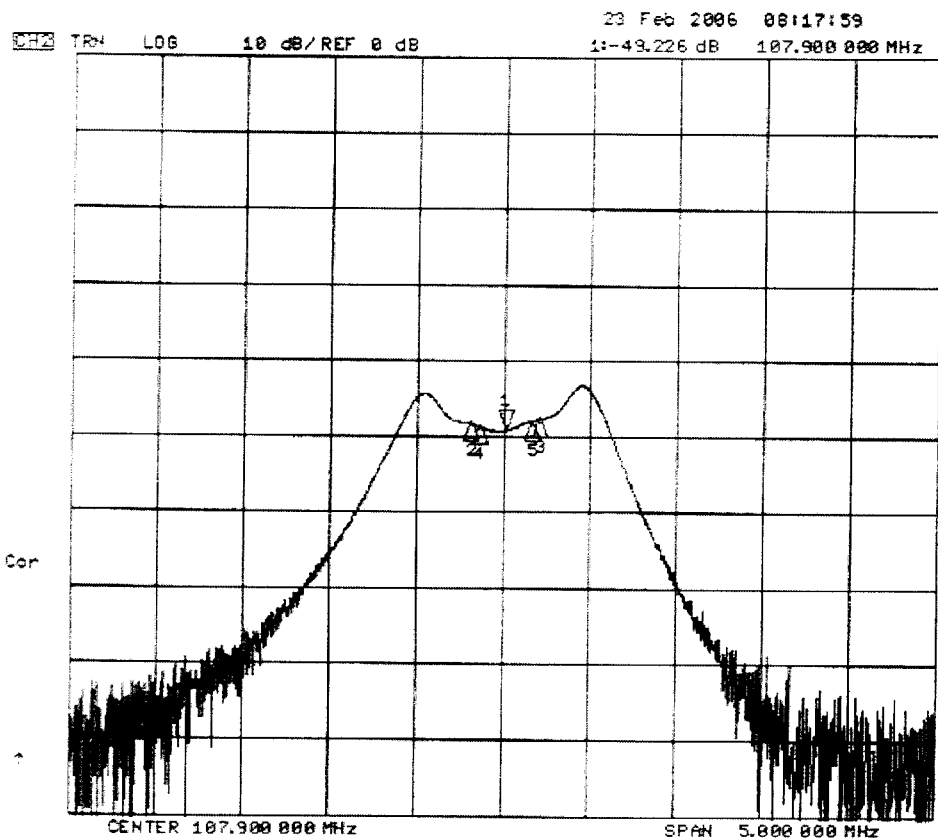
CH2 Markers

2:-32.988 dB
107.700 MHz

3:-33.343 dB
108.100 MHz

4:-34.772 dB
107.750 MHz

5:-33.988 dB
108.050 MHz



Isolation to
Best

CH2 Markers

2:-48.271 dB
107.700 MHz

3:-47.773 dB
108.100 MHz

4:-48.696 dB
107.750 MHz

5:-48.869 dB
108.050 MHz