

ENGINEERING EXHIBIT

Application for License

prepared for

Liberman Broadcasting of Houston License LLC

KIOX-FM El Campo, TX

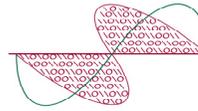
Facility ID 36507

Ch. 245C0 96.9 MHz 100 kW 450 m

Liberman Broadcasting of Houston License LLC (“*Liberman*”) is licensee of KIOX-FM, Ch. 245C1, El Campo, TX (BLH-20050907AAL). *Liberman* has completed construction related to modification of the KIOX-FM facility, as authorized in its construction permit (“CP,” file number BPH-20031209ACC). The CP authorizes a facility increase to Class C0 at 100 kW effective radiated power (“ERP”) and an antenna height above average terrain (“HAAT”) of 450 meters at a new transmitter site.

The transmitting antenna is manufactured by Dielectric, model number DCRM-10B76. The antenna is employed in common with *Liberman’s* station KXGJ(FM) (Ch. 269C1, Bay City, TX). KXJG is also authorized to relocate to the new KIOX-FM site under a separate CP (BPH-20031209ACB). An *Application for License* for KXGJ is being filed contemporaneously with the instant KIOX-FM application. The common KIOX-FM/KXGJ antenna consists of ten circularly polarized sections, spaced at intervals of 0.738 wavelength on KIOX-FM’s frequency (96.9 MHz). **Table 1** supplies a summary of the antenna gain and transmission line loss figures, and shows that the required KIOX-FM transmitter power output is 30.3 kW to achieve 100 kW ERP.

Upon construction of the KIOX-FM and KXGJ 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 new KIOX-FM and KXGJ 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 $43 + 10 \text{ Log}[10](\text{Power, in watts})$ dB below the level of the unmodulated carrier, or 80 dB, whichever is the lesser attenuation.

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.
July 16, 2007

Chesapeake RF Consultants, LLC
11993 Kahns Road
Manassas, VA 20112
703-650-9600

List of Attachments

Table 1	Antenna / Line System Gains and Losses
Appendix 1	Combiner Measured Data
Form 302-FM	Saved Version of Engineering Sections from FCC Form at Time of Upload

This material was entered July 16, 2007 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's name and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.

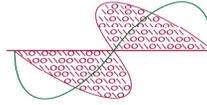


Table 1

Antenna / Line System Gains and Losses

prepared for

Liberman Broadcasting of Houston License LLC

KIOX-FM El Campo, TX

Construction Permit File Number: BPH-20031209ACC

Authorized Effective Radiated Power: 100 kW 20.00 dBk

Antenna System

Dielectric DCRM-10B76 Power Gain: 4.36 6.39 dB

Antenna Input Power: 22.9 kW 13.61 dBk

Line and Other Losses

Transmission Line Loss: 1.05 dB
Dielectric Rigid 4-1/8 inch

Combiner Loss: 0.16 dB
Dielectric

Total Losses: 1.21 dB

Transmitter Power Output: 30.3 kW 14.82 dBk

Appendix 1

Combiner Measured Data

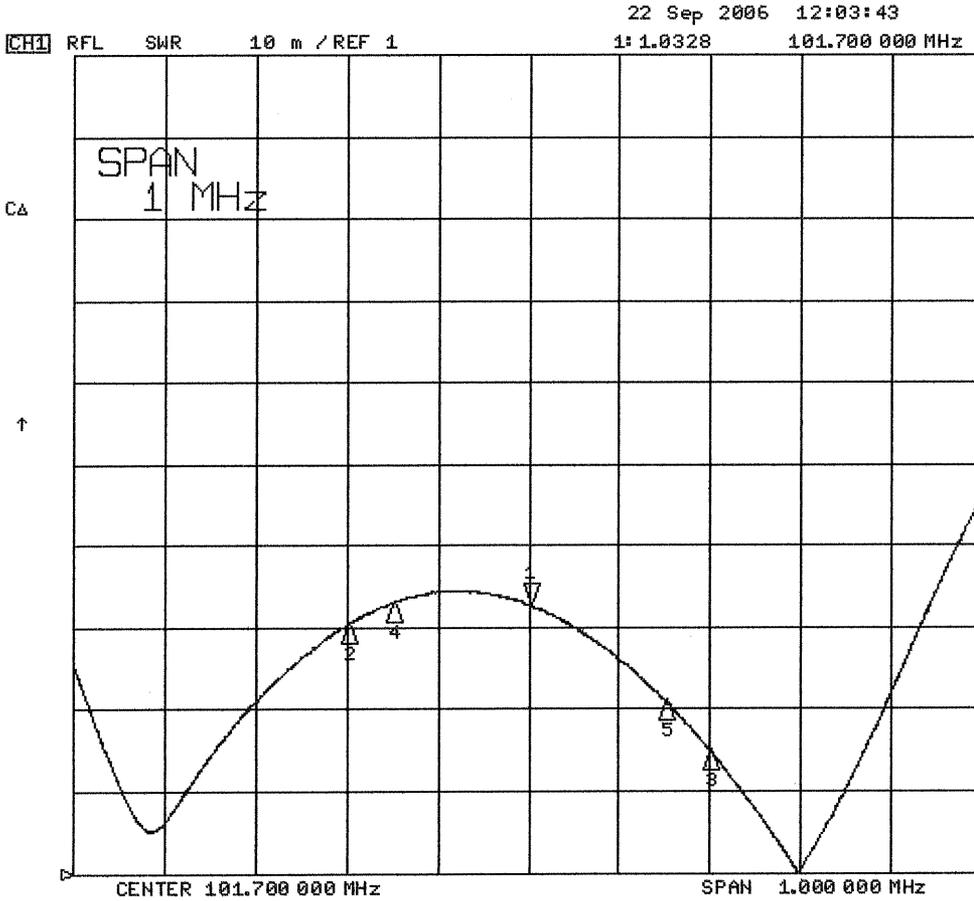
Liberman Broadcasting of Houston License LLC

KIOX-FM El Campo, TX

Facility ID 36507

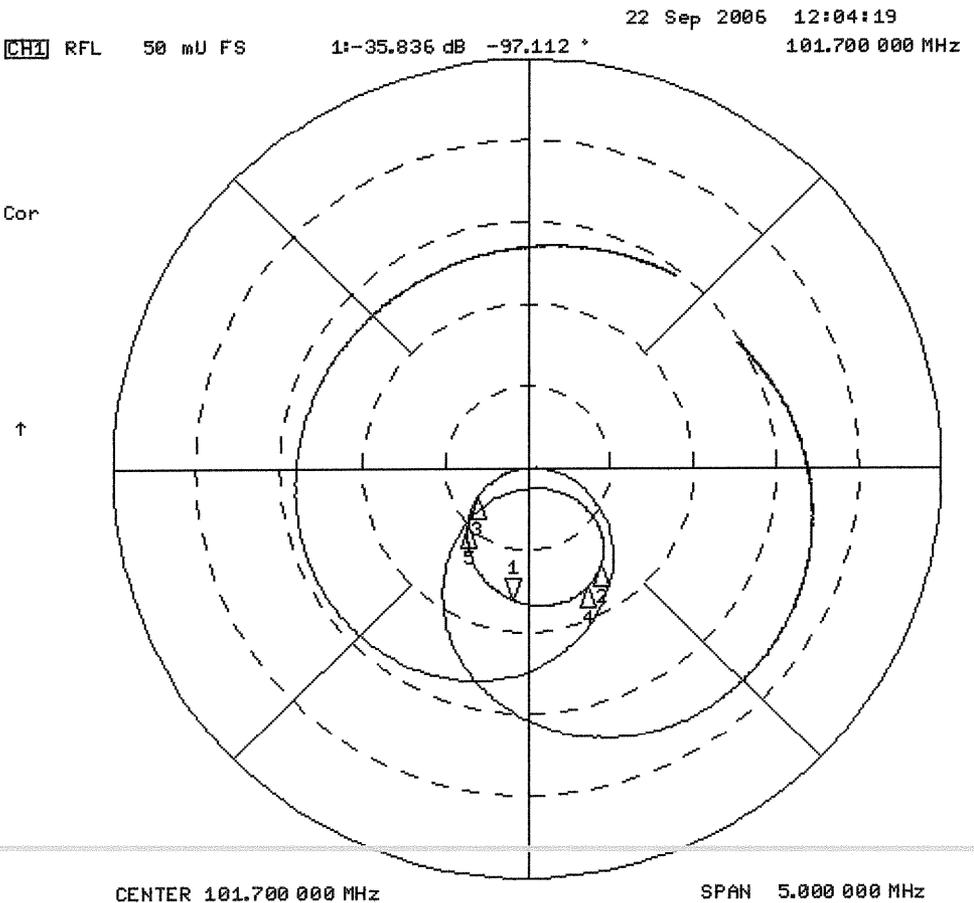
Ch. 245C0 96.9 MHz 100 kW 450 m

101.7



VSWR

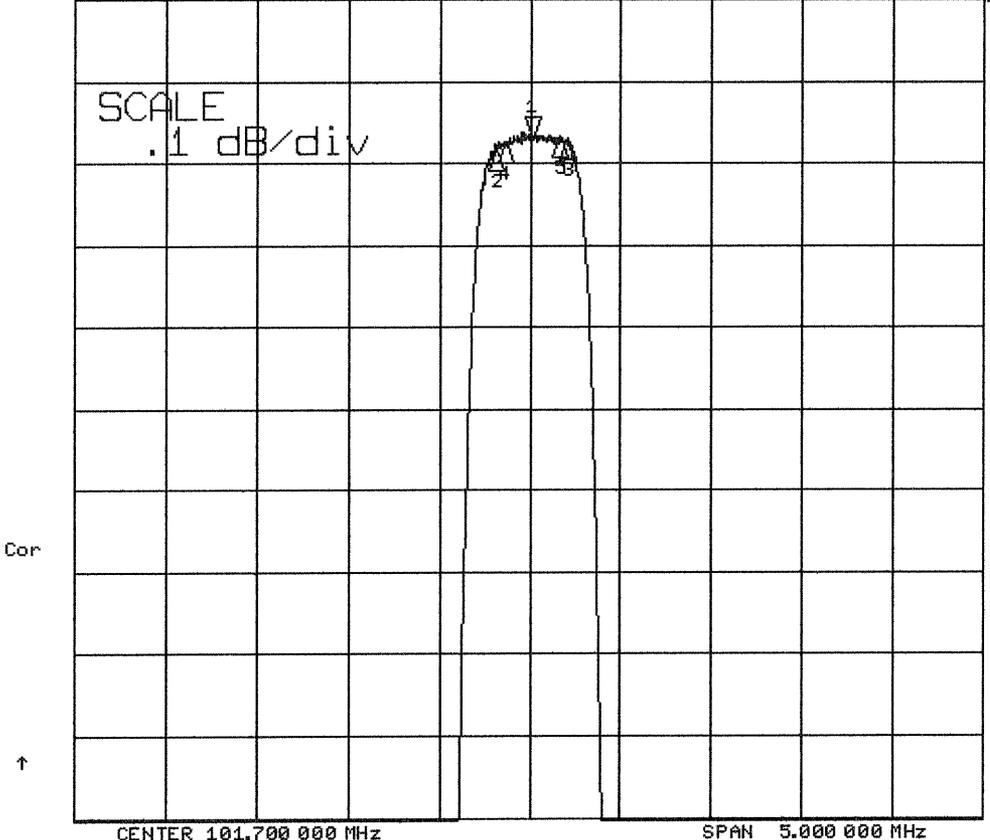
101.7



Return Loss

22 Sep 2006 12:05:14
CH2 TRN LOG .1 dB/REF 0 dB 1:-.16980 dB 101.700 000 MHz

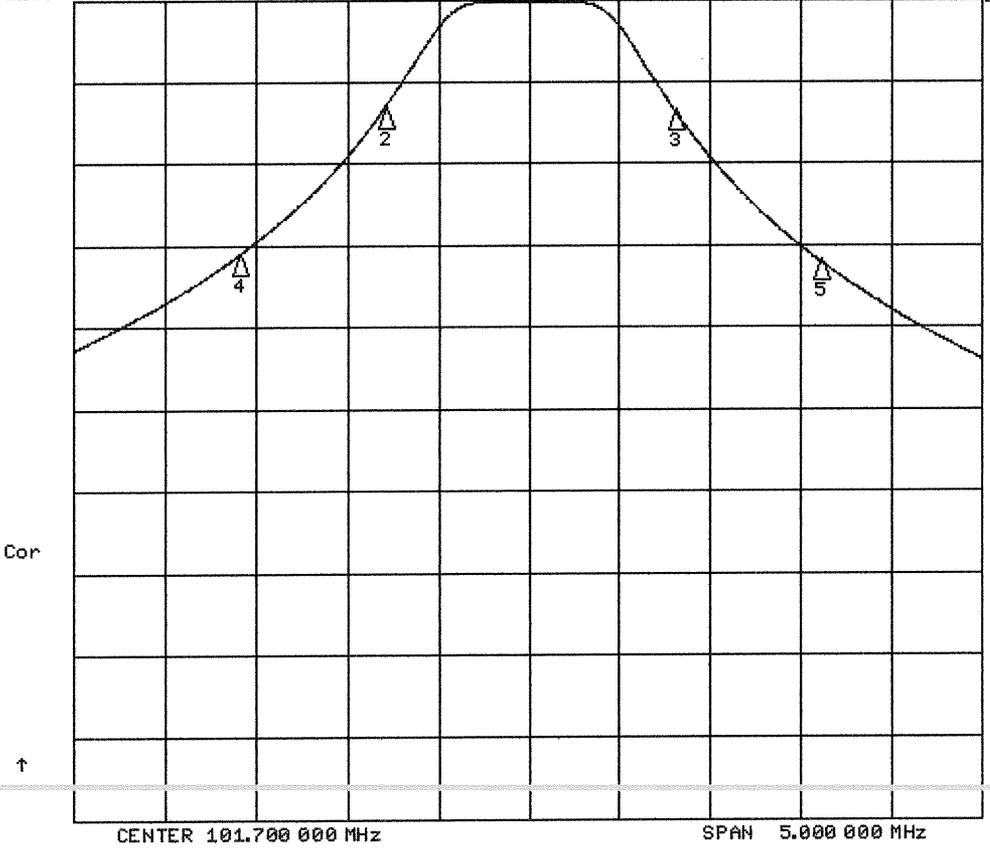
101.7
Insertion Loss



CH2 Markers
2:-.18610 dB
101.500 MHz
3:-.17130 dB
101.900 MHz
4:-.17570 dB
101.550 MHz
5:-.17000 dB
101.850 MHz

22 Sep 2006 12:06:57
CH2 TRN LOG 10 dB/REF 0 dB 1:-.17010 dB 101.700 000 MHz

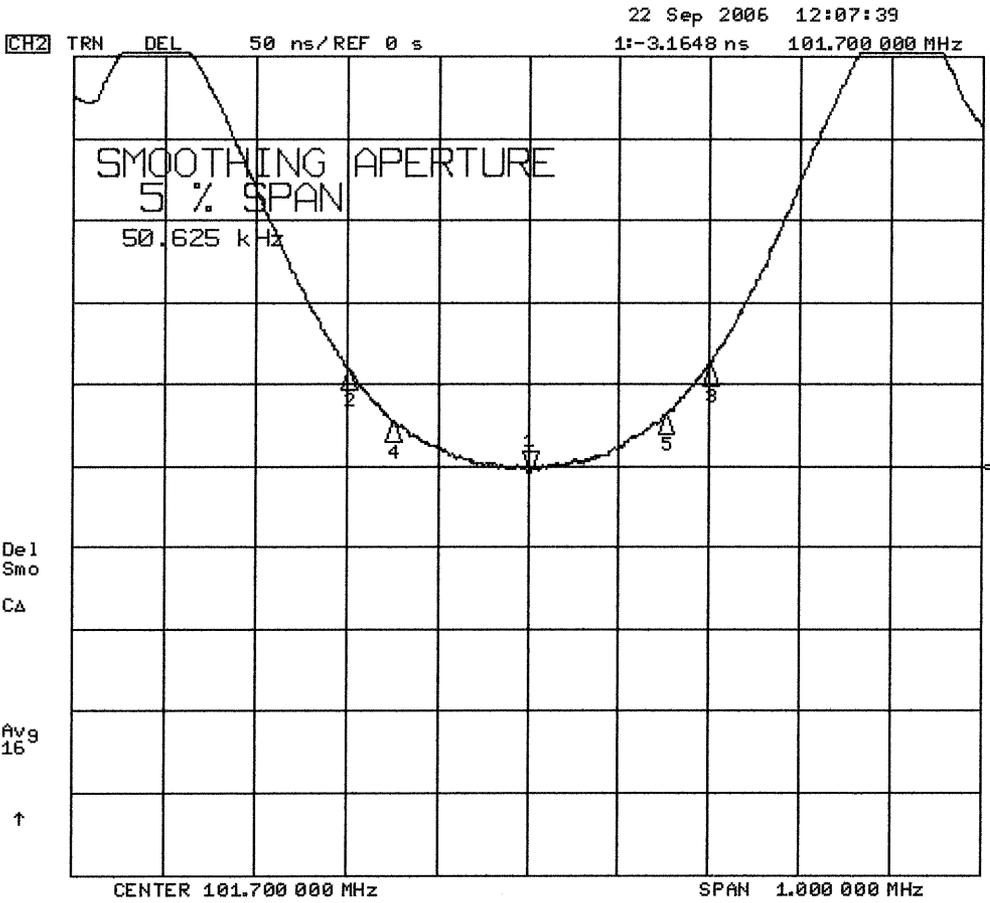
101.7
Response



CH2 Markers
2:-13.267 dB
100.900 MHz
3:-13.550 dB
102.500 MHz
4:-31.233 dB
100.100 MHz
5:-31.940 dB
103.300 MHz

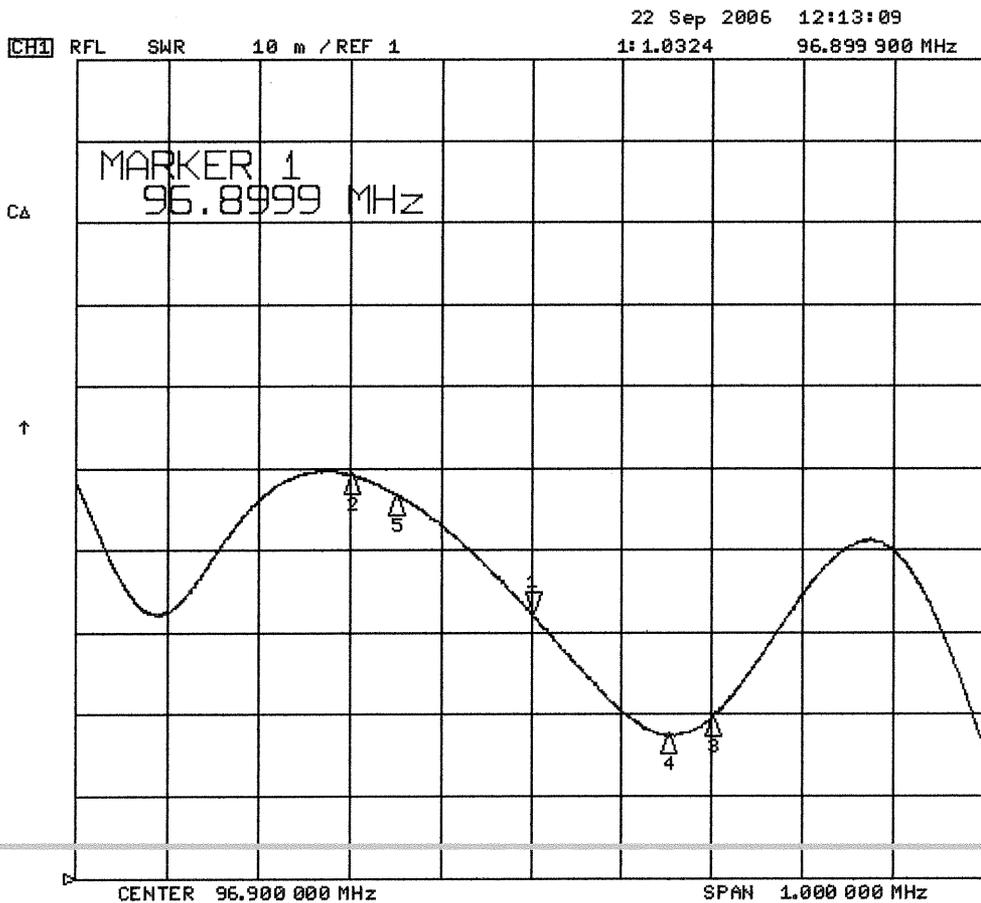
101.7

group delay



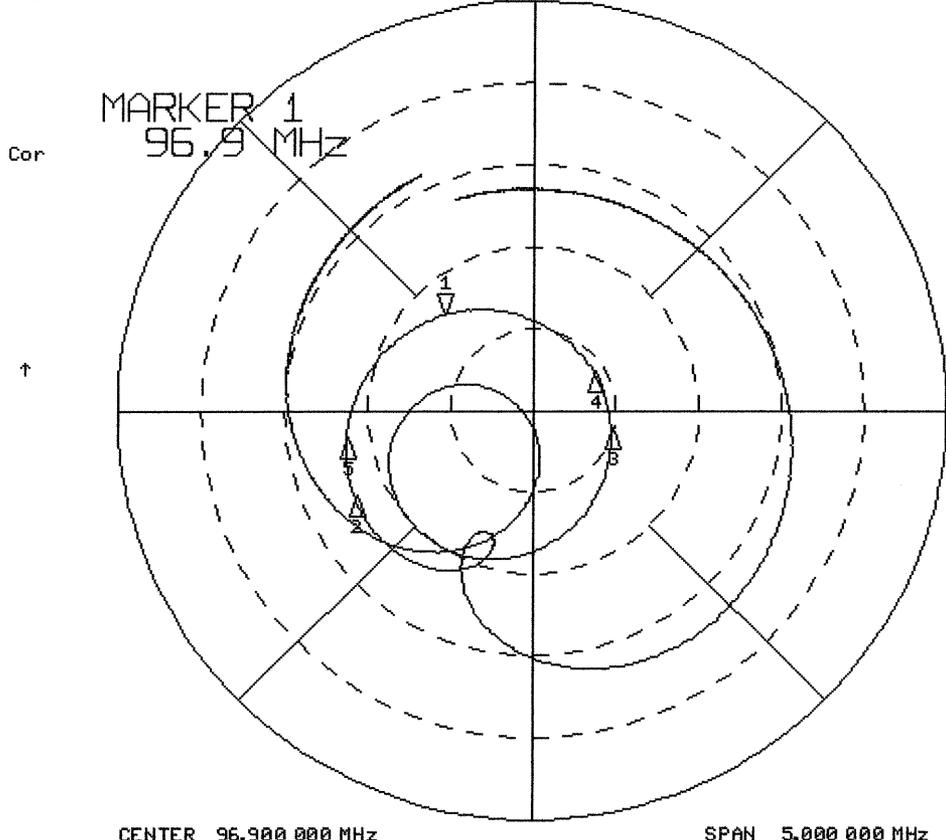
96.9

VSWR



96.9
Return Loss

22 Sep 2006 12:13:37
[CH1] RFL 50 mU FS 1:-35.975 dB 132.79 ° 96.900 000 MHz

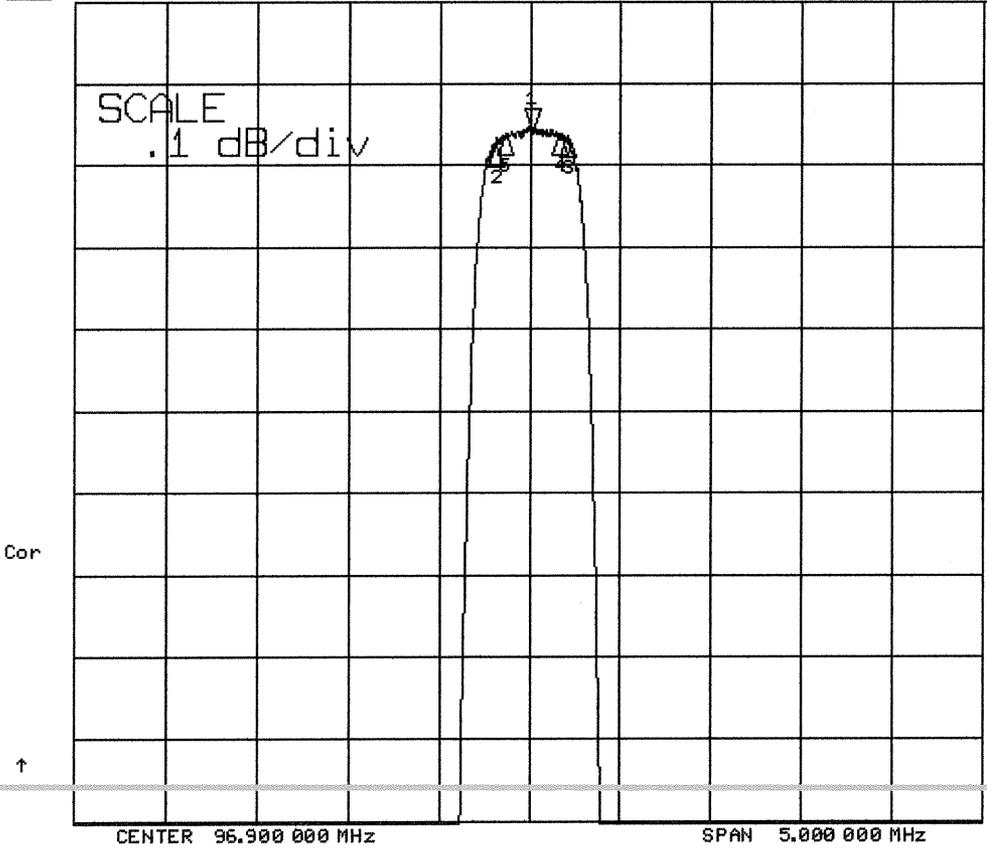


CH1 Markers
2:-32.374 dB
-153.47 °
96.7000 MHz
3:-40.184 dB
-14.919 °
97.1000 MHz
4:-41.276 dB
32.811 °
97.0500 MHz
5:-32.806 dB
-170.67 °
96.7500 MHz

CENTER 96.900 000 MHz SPAN 5.000 000 MHz

96.9
Insertion Loss

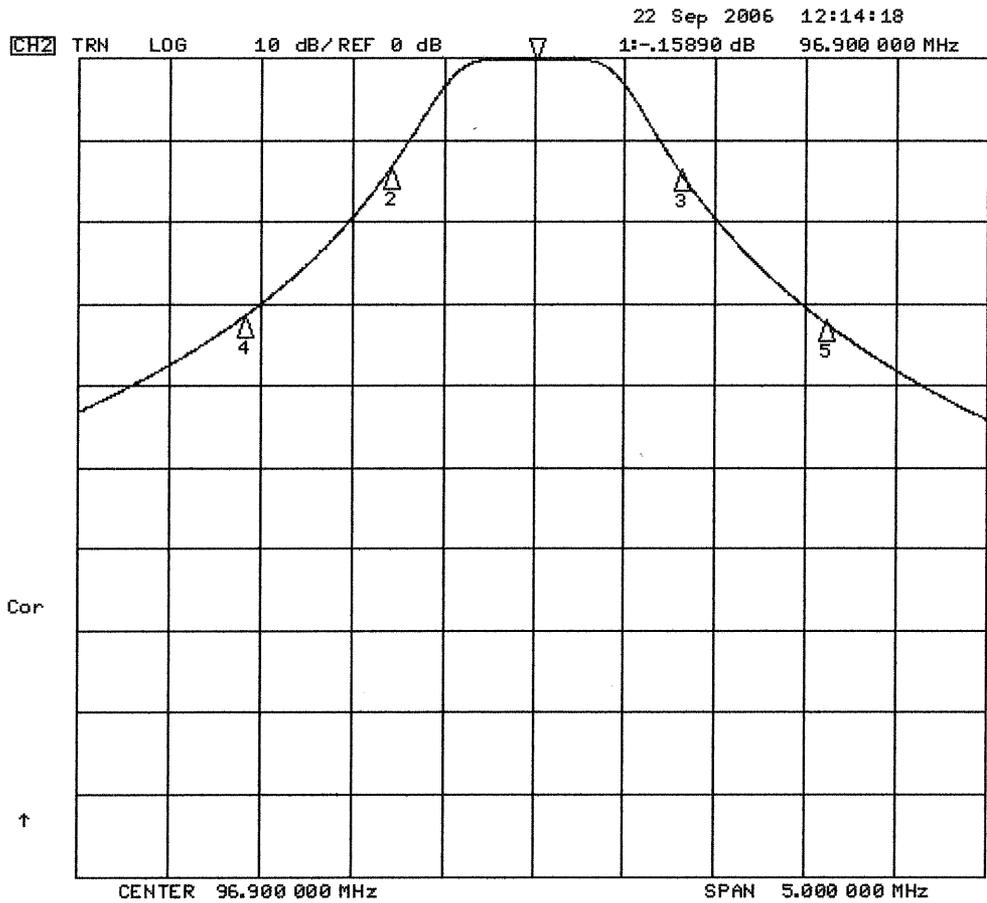
22 Sep 2006 12:14:01
[CH2] TRN LOG .1 dB/REF 0 dB 1:-.15820 dB 96.900 000 MHz



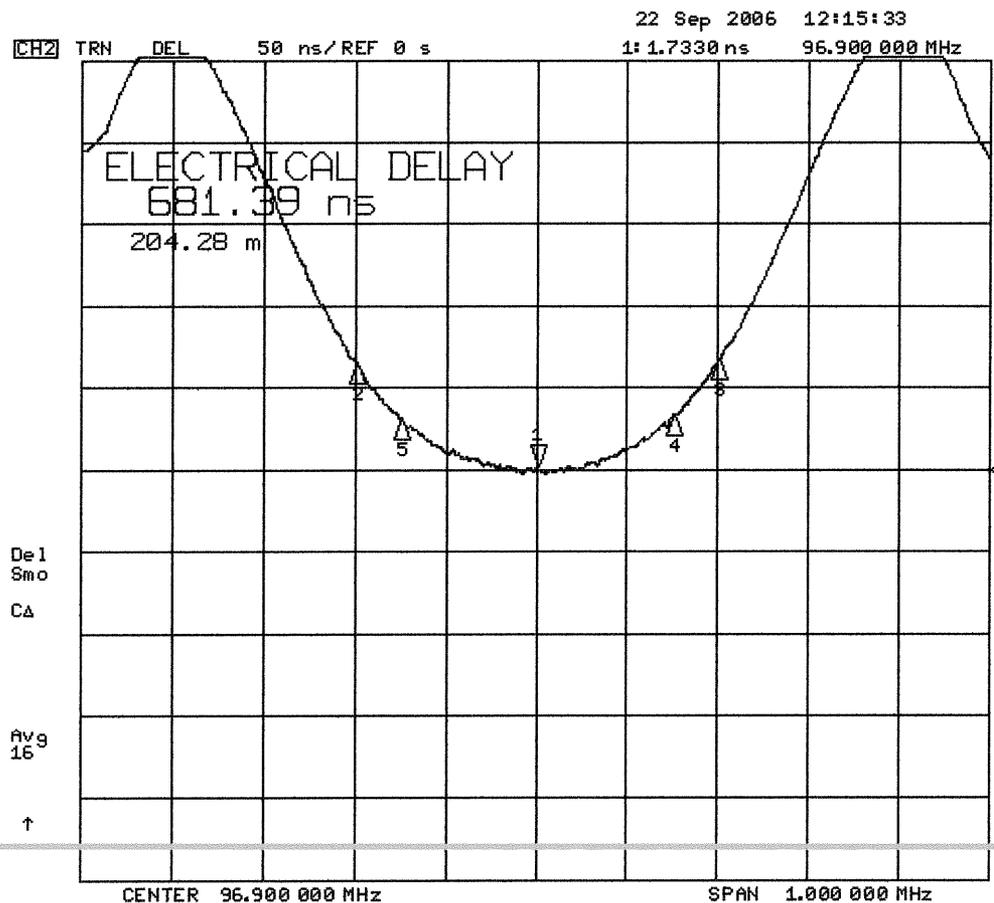
CH2 Markers
2:-.17800 dB
96.7000 MHz
3:-.16720 dB
97.1000 MHz
4:-.16410 dB
97.0500 MHz
5:-.16490 dB
96.7500 MHz

CENTER 96.900 000 MHz SPAN 5.000 000 MHz

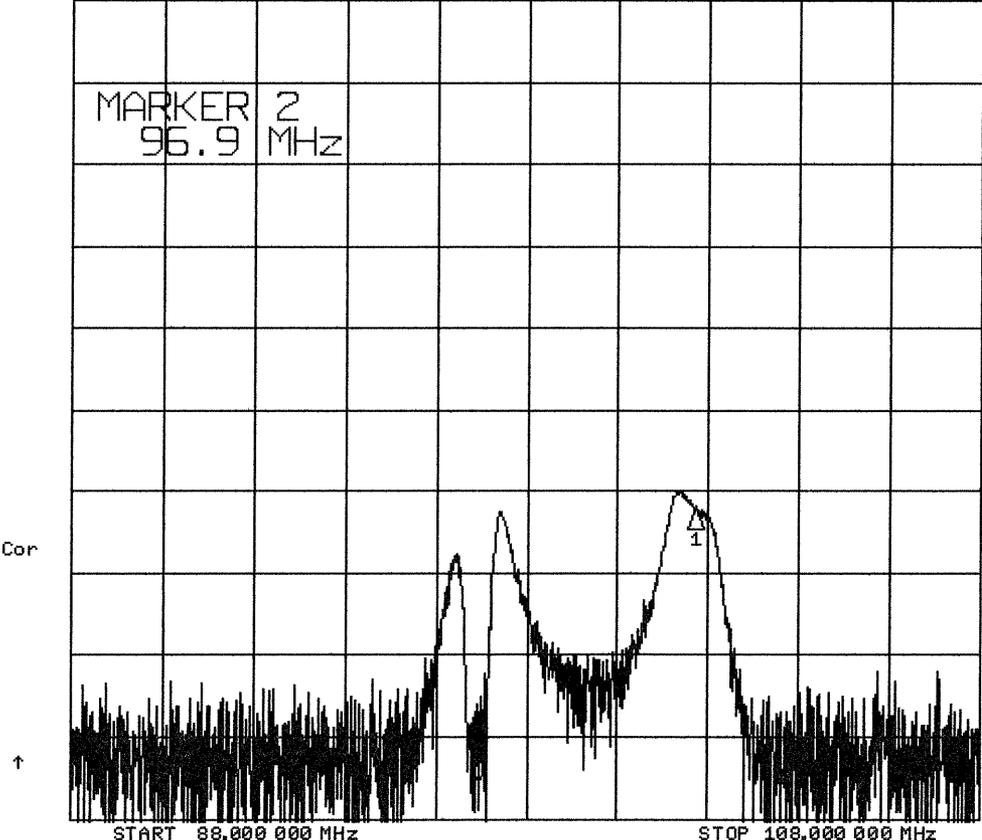
96.9
Response



96.9
group delay

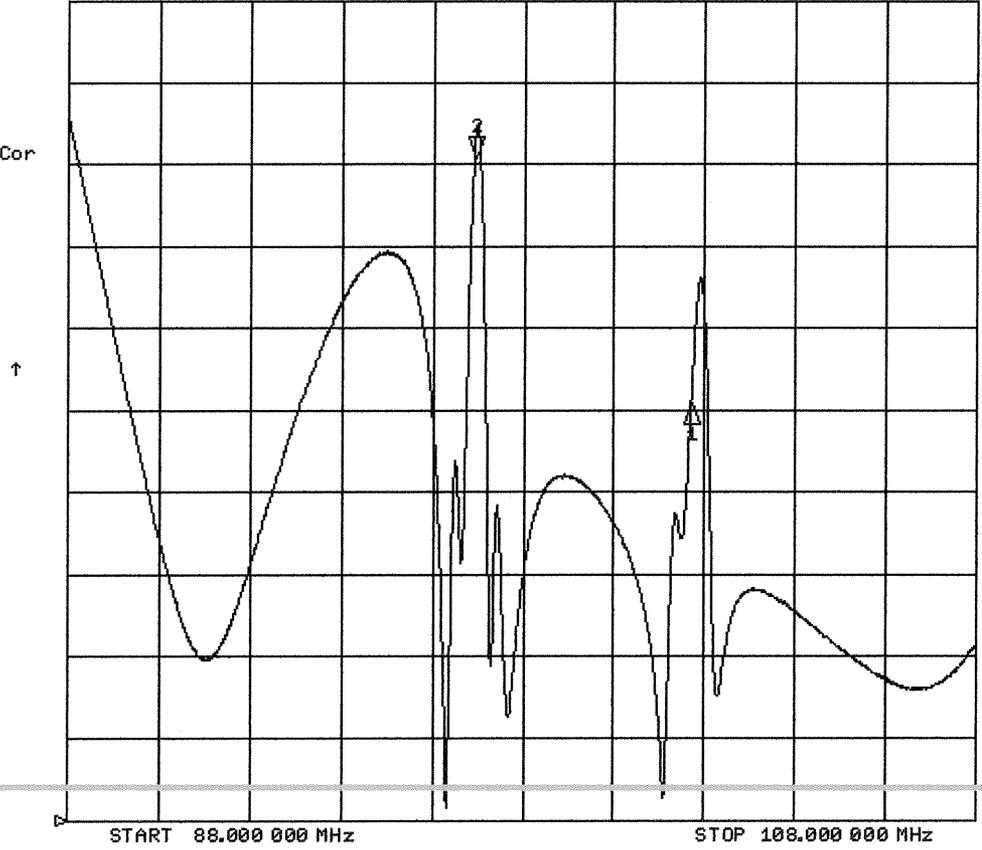


22 Sep 2006 12:18:27
CH2 TRN LOG 10 dB/REF 0 dB 2:-95.635 dB 96.900 000 MHz



Isolation
101.7 to 96.9 d
96.9 to 101.7
CH2 Markers
1:-62.162 dB
101.700 MHz

22 Sep 2006 12:20:09
CH1 RFL SWR 10 m / REF 1 2: 1.0808 96.900 000 MHz



96.9
VSWR bypass
mode Broad band
CH1 Markers
1: 1.0505
101.700 MHz

22 Sep 2006 12:21:08

CH1 RFL SWR 10 m / REF 1

2: 1.0698

96.900 000 MHz

10#7
VSWR bypass
mode broad band

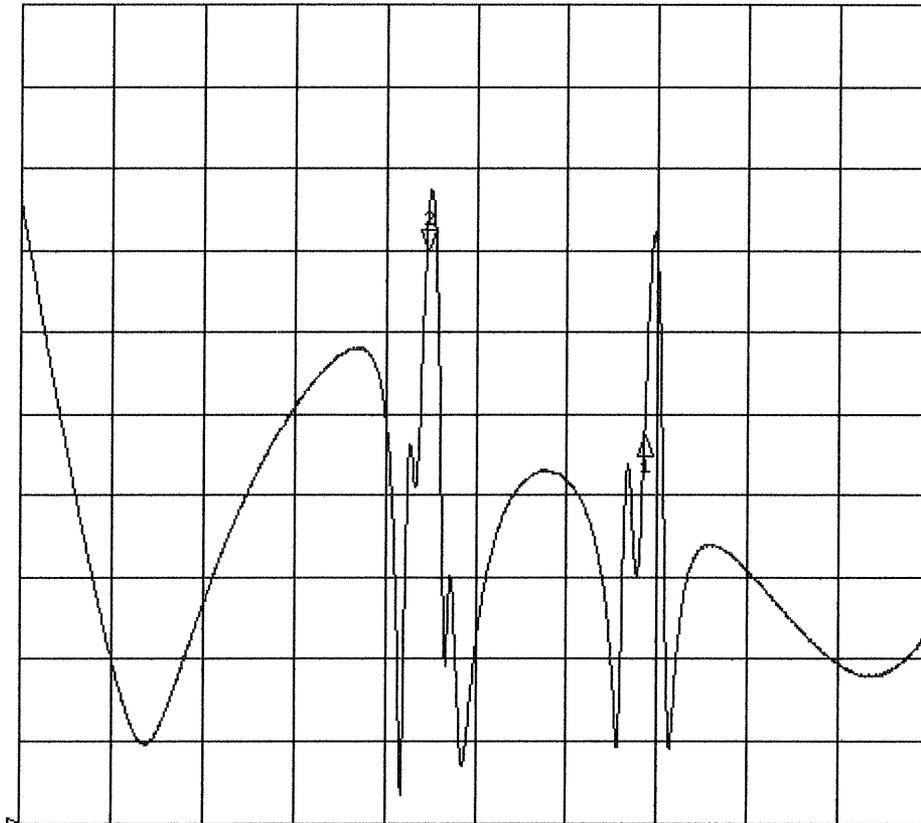
CH1 Markers

1: 1.0470

101.700 MHz

Cor

↑



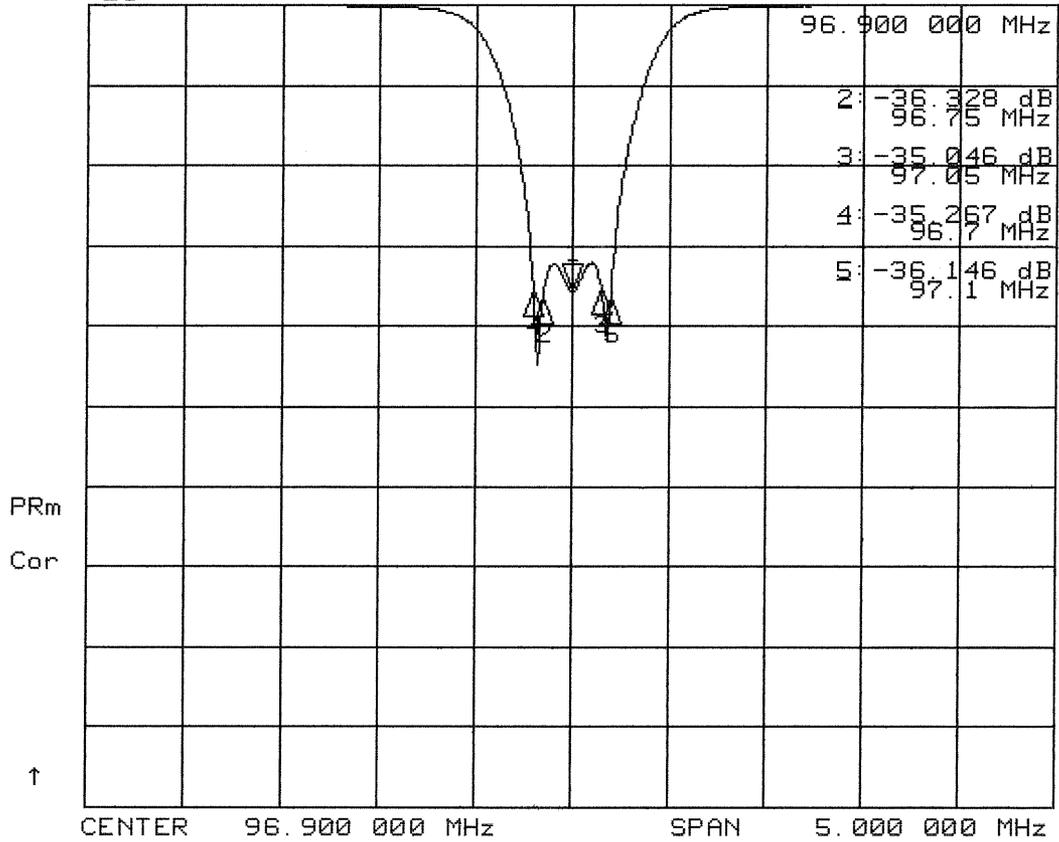
START 88.000 000 MHz

STOP 108.000 000 MHz

96.9 CIF DATA

21 Sep 2006 11:24:21

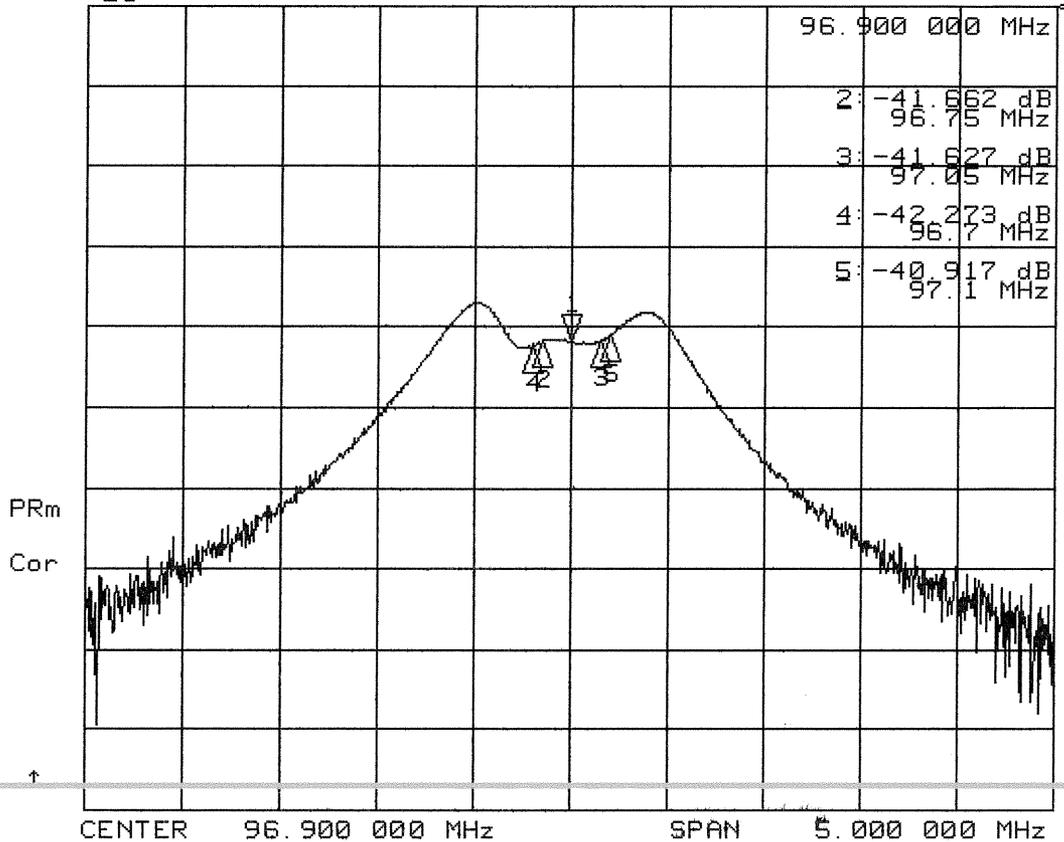
CH2 S₂₁ log MAG 10 dB/ REF 0 dB 1: -35.583 dB



*Isolation To
reject IBOC*

21 Sep 2006 11:25:32

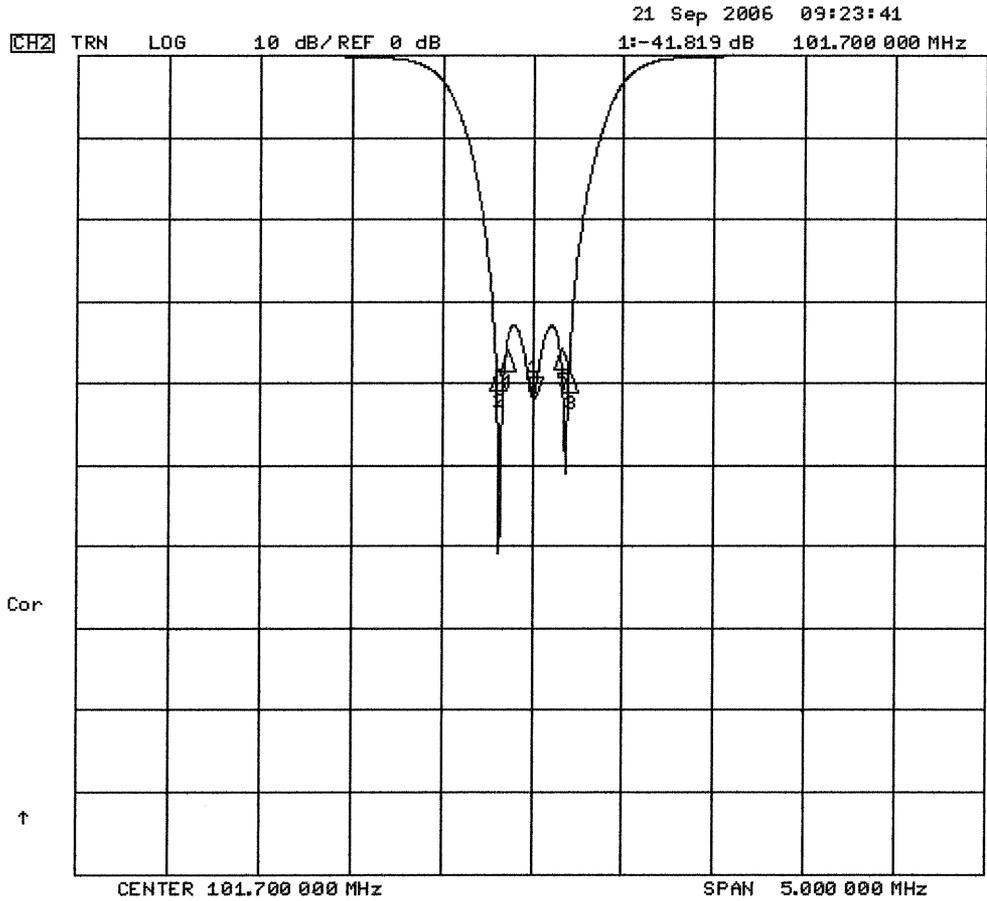
CH2 S₂₁ log MAG 10 dB/ REF 0 dB 1: -41.799 dB



*Isolation To
Broad band input*

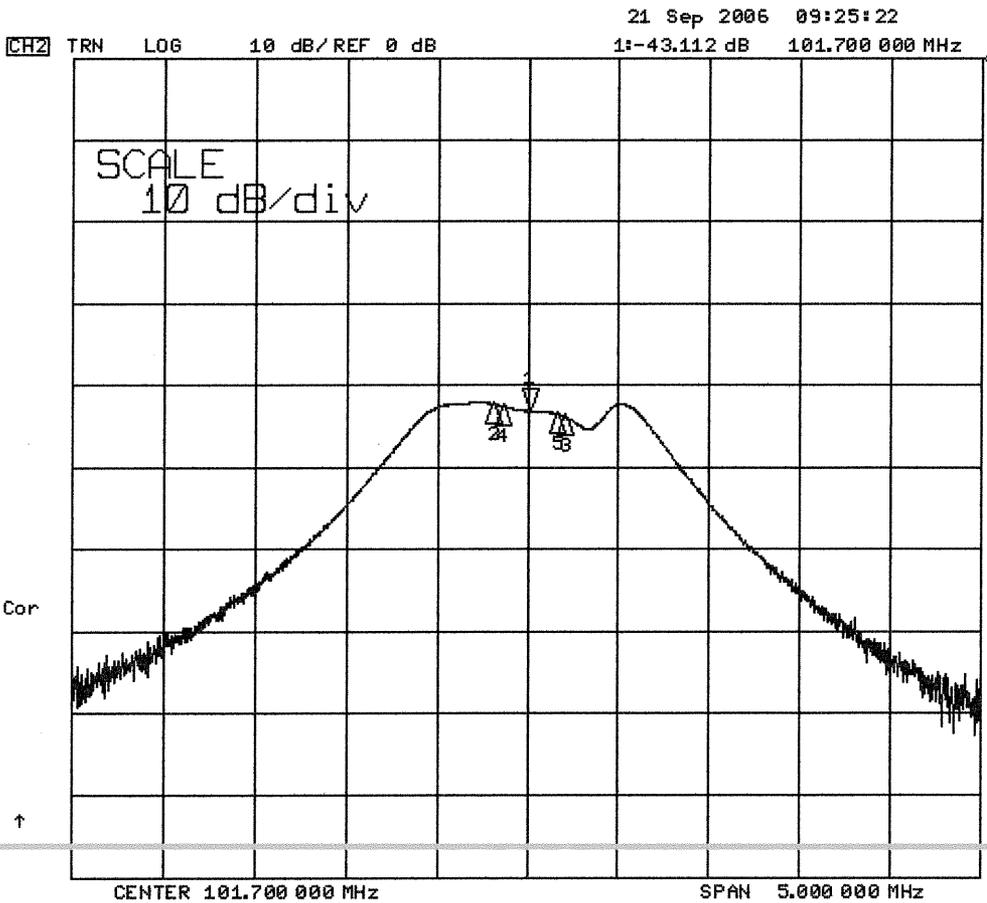
101.7 MHz

CIF Data



Isolation to Reject/IBac

- CH2 Markers
- 2:-38.596 dB
101.500 MHz
 - 3:-38.805 dB
101.900 MHz
 - 4:-36.135 dB
101.550 MHz
 - 5:-35.918 dB
101.850 MHz



Isolation to Broad band input

- CH2 Markers
- 2:-42.231 dB
101.500 MHz
 - 3:-43.806 dB
101.900 MHz
 - 4:-42.511 dB
101.550 MHz
 - 5:-43.453 dB
101.850 MHz

SECTION III - PREPARER'S CERTIFICATION

I certify that I have prepared Section III (Engineering data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name JOSEPH M. DAVIS, P.E.		Relationship to Applicant (e.g., Consulting Engineer) CONSULTING ENGINEER	
Signature		Date 07/16/2007	
Mailing Address CHESAPEAKE RF CONSULTANTS LLC 11993 KAHNS ROAD			
City MANASSAS	State or Country (if foreign address) VA		Zip Code 20112 -
Telephone Number (include area code) 7036509600		E-Mail Address (if available) JOSEPH.DAVIS@RF-CONSULTANTS.COM	

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).

Section III - Engineering			
TECHNICAL SPECIFICATIONS			
Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.			
TECH BOX			
1.	Channel: 245		
2.	a. Effective Radiated Power:	100 kW(H)	100 kW(V)
	b. Maximum Effective Radiated Power: (Beam-Tilt Antenna ONLY) <input checked="" type="checkbox"/> Not Applicable	kW(H)	kW(V)
3.	Transmitter Power Output: 30.3 kW		
4.	Antenna Data		
	Manufacturer DIE	Model DCRM-10B76	Number of Sections 10
			Spacing Between Sections (wavelength) 0.738

NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.

CERTIFICATION

All applicants must complete this section.

5.	Main Studio Location. The main studio location complies with 47 C.F.R. Section 73.1125.	<input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 6]
6.	Transmitter Power Output. The operating transmitter power output produces the authorized effective radiated power.	<input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 7]

APPLICATIONS FILED TO COVER A CONSTRUCTION PERMIT.

Only applicants filing this application to cover a construction permit must complete the following section.

NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.

7.	Constructed Facility . The facility was constructed as authorized in the underlying construction permit or complies with 47 C.F.R. Section 73.1690.	<input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 8]
8.	Special Operating Conditions. The facility was constructed in compliance with all special operating conditions, terms, and obligations described in the construction permit.	<input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 9]

<p>An exhibit may be required. Review the underlying construction permit.</p>	<p>[Exhibit 10]</p>
<p>APPLICATIONS FILED PURSUANT TO 47 C.F.R. SECTIONS 73.1675(c) or 73.1690(c). Only applicants filing this application pursuant to 47 C.F.R. Sections 73.1675(c) or 73.1690(c) must complete the following section.</p>	
<p>9. Changing transmitter power output. Is this application being filed to authorize a change in transmitter power output caused by the replacement of omnidirectional antenna with another omnidirectional antenna or an alteration of the transmission line system? See 47 C.F.R. Sections 73.1690(c)(1) and (c)(10).</p>	<p><input type="radio"/> Yes <input type="radio"/> No</p>
<p>10. Increasing effective radiated power. Is this application being filed to authorize an increase in ERP for a station operating in the nonreserved band (Channels 221-300)? See 47 C.F.R. Sections 73.1690(c)(4), (c)(5) and (c)(7). If "Yes" to the above, the applicant certifies the following:</p>	<p><input type="radio"/> Yes <input type="radio"/> No</p>
<p>a. Spacing Requirements. The increase in ERP was authorized pursuant to MM Docket 88-375 (Class A stations) OR the facility complies with the spacing requirements of 47 C.F.R. Section 73.207.</p>	<p><input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 11]</p>
<p>b. International Coordination. The transmitter site is greater than 320 km from the Canadian or Mexican borders OR coordination for the station's international class is complete.</p>	<p><input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 12]</p>
<p>c. Interference. The requirements of 47 C.F.R. Section 73.1030 regarding notification to radio astronomy installations, radio receiving installations and FCC monitoring stations have either been satisfied OR are not applicable.</p>	<p><input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 13]</p>
<p>Exhibit required. If the proposed facility must be notified to the entities set forth in 47 C.F.R. Section 73.1030, the applicant must provide a copy of the written approval for the ERP increase from the affected entity.</p>	<p>[Exhibit 14]</p>
<p>d. Multiple Ownership Showing. The increase in ERP will not require the consideration of a multiple ownership showing pursuant to 47 C.F.R. Section 73.3555.</p>	<p><input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 15]</p>
<p>e. Environmental Protection Act. The proposed facility is excluded from environmental processing under 47 C.F.R. Section 1.1306 (i.e., the facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine compliance through the use of the RF worksheets in Appendix A, an Exhibit is required.</p>	<p><input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 16]</p>
<p>By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.</p>	
<p>11. Increasing vertically polarized effective radiated power. Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(4) to authorize an increase in the vertically polarized ERP for a station operating in the reserved band (Channels 200-220)?</p>	<p><input type="radio"/> Yes <input type="radio"/> No</p>
<p>If "Yes" to the above, the applicant certifies the following:</p>	
<p>a. TV Channel 6 Protection Requirements. The facility complies with the spacing requirements of 47 C.F.R. Section 73.525(a)(1).</p>	<p><input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 17]</p>
<p>b. Environmental Protection Act. The proposed facility is excluded from environmental processing under 47 C.F.R. Section 1.1306 (i.e., the facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine compliance through the use of the RF worksheets in Appendix A, an Exhibit is required.</p>	<p><input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 18]</p>
<p>By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.</p>	
<p>12. Decreasing effective radiated power (non-reserved channel). Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(8) to authorize a decrease in the ERP for a station operating in the nonreserved band (Channels 221-300)?</p>	<p><input type="radio"/> Yes <input type="radio"/> No</p>
<p>If "Yes" to the above, the applicant certifies the following:</p>	
<p>a. Community Coverage . The proposed facility complies with the community coverage requirements of 47 C.F.R. Section 73.315 where the distance to the 3.16 mV/m contour is predicted using the standard prediction method in 47 C.F.R. Section 73.313.</p>	<p><input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 19]</p>
<p>b. Auxiliary Facilities. The authorized or pending auxiliary facilities for this station comply with 47 C.F.R. Section 73.1675(a).</p>	<p><input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 20]</p>

		[EXHIBIT 20]
	c. Multiple Ownership Showing. The decrease in ERP is not requested or required to establish compliance with 47 C.F.R. Section 73.3555.	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 21]
13.	Decreasing effective radiated power (reserved channel). Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(8) to authorize a decrease in the ERP for a station operating in the reserved band (Channels 200-220)? If "Yes" to the above, the applicant certifies the following:	<input type="radio"/> Yes <input type="radio"/> No
	a. Community Coverage . The proposed facility complies with the community coverage requirements of 47 C.F.R. Section 73.1690(c)(8)(i) where the distance to the 1 mV/m contour is predicted using the standard prediction method in 47 C.F.R. Section 73.313.	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 22]
	b. Auxiliary Facilities. The authorized or pending auxiliary facilities for this station comply with 47 C.F.R. Section 73.1675(a).	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 23]
14.	Replacing a directional antenna. Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(2) to replace a directional antenna with another directional antenna? If "Yes" to the above, the applicant certifies the following:	<input type="radio"/> Yes <input type="radio"/> No
	a. Measurement of Directional Antenna. The composite measured pattern and measurement procedures comply with 47 C.F.R. Section 73.1690(c)(2). Exhibit required.	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 24] [Exhibit 25]
	b. Installation of Directional Antenna. The installation of the directional antenna complies with 47 C.F.R. Section 73.1690(c)(2). Exhibit required.	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 26] [Exhibit 27]
15.	Deleting contour protection status. Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(6) to delete contour protection status (47 C.F.R. Section 73.215) for a station operating in the nonreserved band (Channels 221-300)? If "Yes" to the above, the applicant certifies that the facility complies with the spacing requirements of 47 C.F.R. Section 73.207.	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 28]
16.	Use a formerly licensed main facility as an auxiliary facility. Is this application being filed pursuant to 47 C.F.R. Section 73.1675(c)(1) to request authorization to use a formerly licensed main facility as an auxiliary facility and/or change the ERP of the proposed auxiliary facility? If "Yes" to the above, the applicant certifies the following:	<input type="radio"/> Yes <input type="radio"/> No
	a. Auxiliary antenna service area. The proposed auxiliary facility complies with 47 C.F.R. Section 73.1675(a).	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 29]
	b. Environmental Protection Act. The proposed facility is excluded from environmental processing under 47 C.F.R. Section 1.1 306 (i.e., the facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine compliance through the use of the RF worksheets in Appendix A, an Exhibit is required.	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 30]
	By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.	
17.	Change the license status. Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(9) to change the license status from commercial to noncommercial or from noncommercial to commercial?	<input type="radio"/> Yes <input type="radio"/> No
	If "Yes" to the above, submit an exhibit providing full particulars. For applications changing license status from commercial to noncommercial, include Section II of FCC Form 340 as an exhibit to this application.	[Exhibit 31]
PREPARERS CERIFICATION ON PAGE 3 MUST BE COMPLETED AND SIGNED.		