Report Of Intermodulation Product Findings

Hamilton, MT.
Clear Channel
KBAZ 96.3 MHz.
KXGZ 101.5 MHz.

Job # 20238

September 8, 2007

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TABLE OF CONTENTS
Hamilton, MT.

Report of Findings for Intermodulation Product Measurements

Exhibits Accompanying This Report

REPORT OF FINDINGS
KBAZ / KXGZ
96.3 MHz. / 101.5 MHz.

Introduction: This report of findings is based on data collected at the KBAZ and KXGZ Clear Channel Tower broadcast facility located in Hamilton, Montana. The report includes measurements offered as proof that the combined operations of KBAZ (96.3 MHz) and KXGZ (101.5 MHz.) transmitters are in compliance with the FCC Rules and Regulations as required by the Code of Federal Regulations (CFR) Title 47 section 73.317 paragraph (b) through (d). In brief, the collection of measurements presented in this report shows that all possible third order inter-modulation (IM) products generated by the two transmitters using this diplex system are less than the maximum allowable level as required by section 73.317 (b) through (d). Mark Garrison of Electronics Research, Inc. located in Chandler, Indiana performed the measurements summarized herein on September 8, 2007.

The following exhibits are provided:

Exhibit A:
- A-1 Drawing Depicting Antenna.
- A-2 SHPX-8AC3-HW-SP Antenna Specification Sheet.
- A-3 Drawing Depicting Diplexing Scheme.
- A-4 973 Series & 970 Series "TEE" Combiner Diplexer Specification Sheet.
- A-5 Theoretical Vertical Plane Relative Field Antenna Plots

Exhibit B:
- B-1 Equipment Employed In Intermodulation Product Measurement.
- B-2 Broadcasting Scheme of the Diplexer Systems.

Table 1. Carrier Reference Levels.
Table 2. Calculated Third Order Products.
Table 3. Intermodulation Analysis Measurements.

Exhibits Accompanying Report: Exhibit A provides comprehensive information on both antenna and filters used by these radio stations. Exhibit B illustrates the broadcasting scheme of each station, the layout of the equipment used to isolate and measure potential Intermodulation products and forward carrier reference levels. Found within Table 1 are the narrow band carrier frequency measurements that provide relative output signal levels for the IM analysis. Table 2 lists the calculated third order products that can be generated from FM transmitters broadcasting from the diplexer system. The IM Analysis Measurements, in Table 3, provides detailed information obtained from the product frequency investigation.

The Nature of Intermodulation Products (IM): Intermodulation products result from inadequate transmitter-to-transmitter isolation. Intermodulation products are commonly generated from radio stations operating into diplexed facilities and congested antenna broadcast sites. The mechanics associated with the phenomenon have been well documented. When two or more transmitters are coupled to each other, new spectral components are produced by the mixing of the station frequencies in the active circuits of each transmitter. The common term used to describe this phenomenon is third order product denoted by the mathematical expression $[2(F_1)-(F_2)]$, where F_1 signifies the frequency of the transmitter that is generating the Intermodulation product, and F2 signifies the frequency causing the interference.

The Diplexer System: These measurements were taken with two FM stations operating from the combined antenna system. The KBAX and KXGZ combined system is fundamentally comprised of antenna, feed line and diplexer unit. The SHPX-8AC3-HW-SP (antenna), 973 Series and 970 Series “TEE” combiner units are products of Electronics Research, Inc. The transmission line is 134 feet of 3 1/8”MYAT Rigid line. Refer to Exhibit B-1, for an illustration of the Broadcasting Scheme of these stations.

To accomplish the aggregation of two transmitter signals into a common antenna feed and provide transmitter-to-transmitter isolation, a Diplexing scheme consisting of 973 series and 970 Series “TEE” Combiner was installed. Specifically, the Diplexer utilizes, ERI Model 973-3 series bandpass filters for 96.3 MHz. and ERI Model 970-3 Series bandpass filters for 101.5 MHz.. An interconnecting “TEE” is required to complete the diplexer, which is illustrated in the attached Exhibit A-3. The diplexer, fully assembled, exhibited transmitter port-to-port isolation in excess of -64dB. Other performance measurements, such as match, loss, group-delay, etc, revealed that the multiplexer unit was in proper working condition. Refer to Exhibit A-4 for the Combiner Specification Sheet.

The IM Investigation: Directional Couplers were placed at key locations throughout the combiner to monitor and maintain the diplexer’s performance. All couplers furnished with the system are factory calibrated and capable of delivering accurate and repeatable RF measurements. To facilitate the taking of the measurements, the coupler located at the antenna output of the diplexer system was used. Care was taken in the selection of the measurement location to insure that the measurements would be made far removed from transmitters and any filtering used to reduce broadcast emissions. The coupler selected would normally be used for antenna reflection measurements and thus would provide greater than -40 dB directivity and a forward signal sample of -54 dB.

The forward port of the coupler was used for sampling the outgoing carrier levels and IM products. The IM sampled signal was fed by shielded cable into a Band Pass Filter where all extraneous energy was steeply attenuated. Various attenuation pads were used, when needed, on the band pass filter and/or the FIM-71 to ensure an adequate signal level for measurements without overloading the measurement equipment. A Potomac Instruments FIM-71 Field Strength Receiver Serial # 242 was employed to record the level of all signals investigated. To facilitate the selective tuning of the Receiver and Band Pass Filter a Wavetek Model 3000 Serial # 7512028 signal generator was used. An Anritsu Sitemaster S114B with Spectrum Analyzer option Serial # 33089 was used to measure the close in spectral attenuation of each carrier and wide band search for any anomalies that may need further investigation. See attached Exhibit B-1 for an illustration of the measurement equipment.

Prior to recording measurements, all pertinent broadcasting equipment including Transmitters, Diplexer, Feed Line and Antenna were adjusted to optimal performance. In addition, it was confirmed before taking any measurements that all stations of concern were operating at their full licensed power level. From the equipment setup described above, the relative output signal level of each stations forward carrier was made. The resulting signal levels of these measurements are listed in Table 1, column labeled "Adjusted Level". This level will be used as the reference level for possible IM products of each carrier and was necessary to confirm that no significant levels of spurious energy, referenced to each carrier, were present from any transmitter operating from the diplexer system.

Table 1 - Carrier Reference Levels.

Carrier Frequency (MHz)	Pad One (dB)	Band pass Filter Loss (dB)	Full Scale Range (dBµ)	Scale Reading (dB)	**Adjusted Level (dBµ)**	Notes
KBAZ 96.3 MHz.	**6**	**-**	**120**	**2.5**	**123.5**	
KXGZ 101.5 MHz.	**6**	**-**	**120**	**14**	**112**	

Predictable third-order products due to system harmonics mixed with all on-site interfering frequencies that could be generated from the diplexer system are calculated and listed in Table 2.

Table 2 - Third order Products.

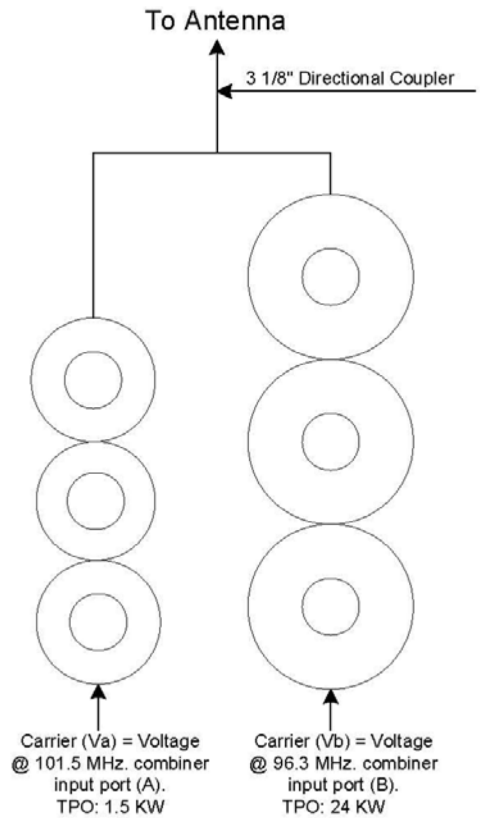
Product Number	Product Frequency (MHz)	Transmitter Frequency (MHz)	Interfering Frequency (MHz)
1	91.1	96.3	101.5
2	106.7	101.5	96.3

Note See Page 10

Using the equipment previously described the IM product measurements were recorded and are listed in Table 3. The signal levels referenced to the carriers are calculated and listed in the column labeled "Level Referenced to Carrier". Refer to Exhibit B-2 for a layout of the measurement equipment.

IM Measurements Taken in Hamilton, MT. Job # 20238											
Product Frequency (MHz)	Transmitter Frequency (MHz)	Interfering Frequency (MHz)	Pad (dB)	Bandpass Filter Loss (dB)	Total Loss	Full Scale Range (dBμ)	Scale Reading (dBμ)	Adjusted Level (dBμ)	Carrier Reference Level (dBμ)	Level Referenced to Carrier (dB)	Notes*
Transmitter Mixes											
	96.3	**Ref.**	**6**		**6**	**120**	**2.5**		**123.5**		
	101.5	**Ref.**	**6**		**6**	**120**	**14**		**112**		
91.1	96.3	101.5	6	11.2	17.2	60	13.5	63.7	123.5	-59.8	Local Carrier 91.1 KMZL
106.7	101.5	96.3	6	12	18	60	9	69	112	-43	Local Carrier 106.7 KBQQ
Notes: See Pages 7, 8, 9, and 10											

Indirect Product Calculations



Product	Transmitter	Mix	Carrier Reference Voltage
91.1 MHz.	96.3 MHz.	101.5 MHz.	.1729 Volts
106.7 MHz.	101.5 MHz.	96.3 MHz.	.275 Volts

Refer to Port to Port Isolation plots on pages 9 and 10

Inter-modulation Product 2 A-B will be at 106.7 MHz

$$\frac{Va^2}{R} = 1.5\text{ KW} \times 10^3$$

$$Va = \sqrt{(50)(1.5)(1000)}$$

$$Va = \sqrt{(5)(1.5)}\ 10^2$$

$$Va = 2.74 \times 10^2\text{ Volts}$$

Va at port b = Va -64dB @ 101.5 MHz.

$$Va = \left(10^{\left(\frac{64}{20}\right)}\right)^{-1}$$

$$Va = 274\text{ Volts}\left(\frac{1}{1584}\right)$$

$$Va\text{ at b} = .1729\text{ Volts}$$

Predicted Product level with zero turn-around loss =Pb

$$Pb = 20\text{ Log}\left(\frac{1095\text{ Volts}}{.1729\text{ Volts}}\right) = -76\text{ dB}$$

Inter-modulation Product 2A-B will be at 91.1 MHz

$$\frac{Vb^2}{R} = 24\text{ KW} \times 10^3$$

$$Vb = \sqrt{(50)(24)(1000)}$$

$$Vb = \sqrt{(5)(24)}\ 10^2$$

$$Vb = 10.95 \times 10^2\text{ Volts}$$

Vb at port a = Vb -72dB @ 96.3 MHz.

$$Vb = \left(10^{\left(\frac{72}{20}\right)}\right)^{-1}$$

$$Vb = 1095\text{ Volts}\left(\frac{1}{3981}\right)$$

$$Vb\text{ at a} = .275\text{ Volts}$$

Predicted Product level with zero turn-around loss =Pa

$$Pa = 20\text{ Log}\left(\frac{274\text{ Volts}}{.275\text{ Volts}}\right) = -60\text{ dB}$$

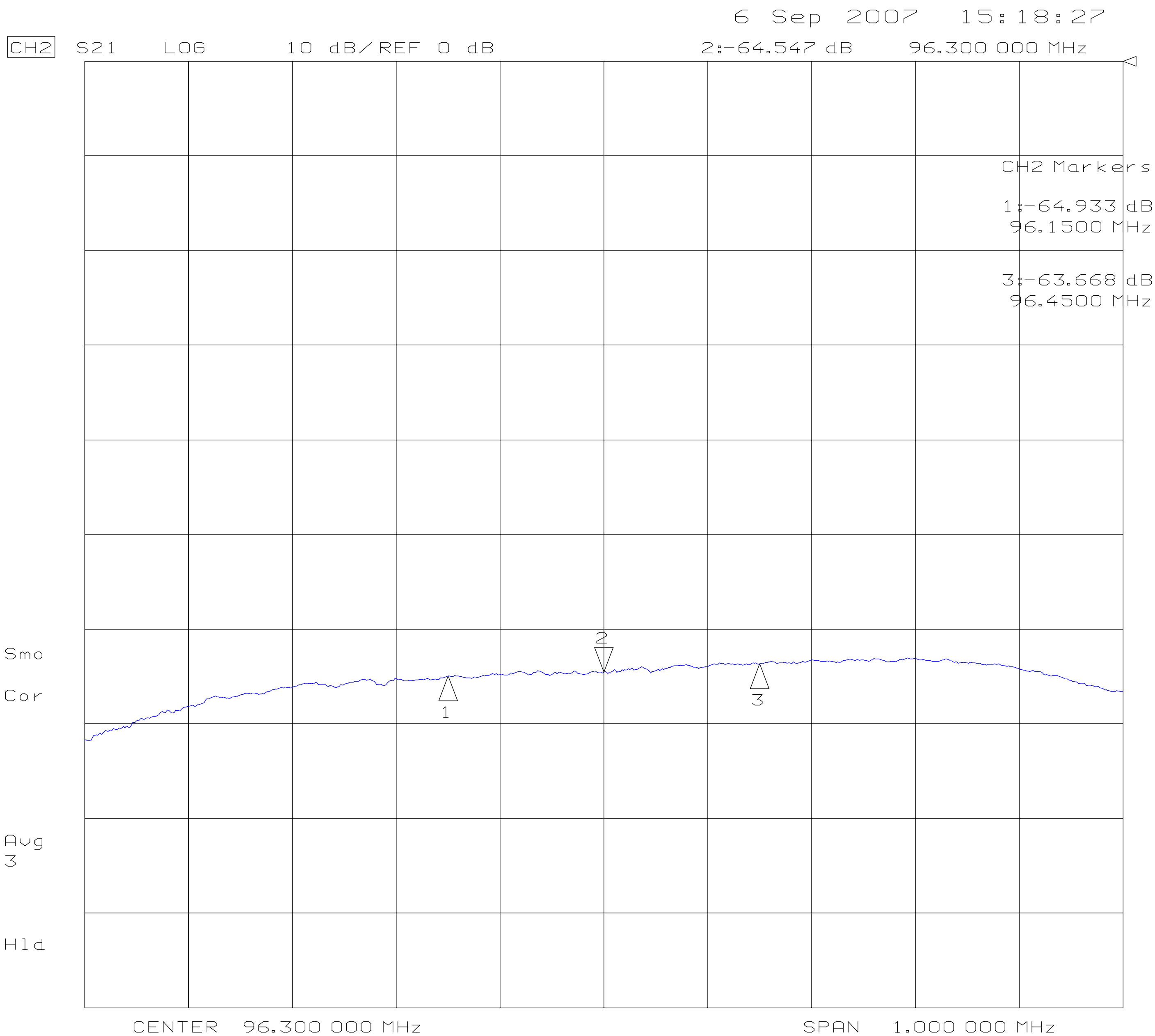
With zero transmitter turnaround loss @ 106.7 MHz. the product, Pb, will be ≤.1729 volts or -76 dB product at the output of the transmitter.

At the output of the combiner the 106.7 MHz. product will be attenuated another 64 dB from the filter skirts to ≤ -140 dB below carrier reference level.

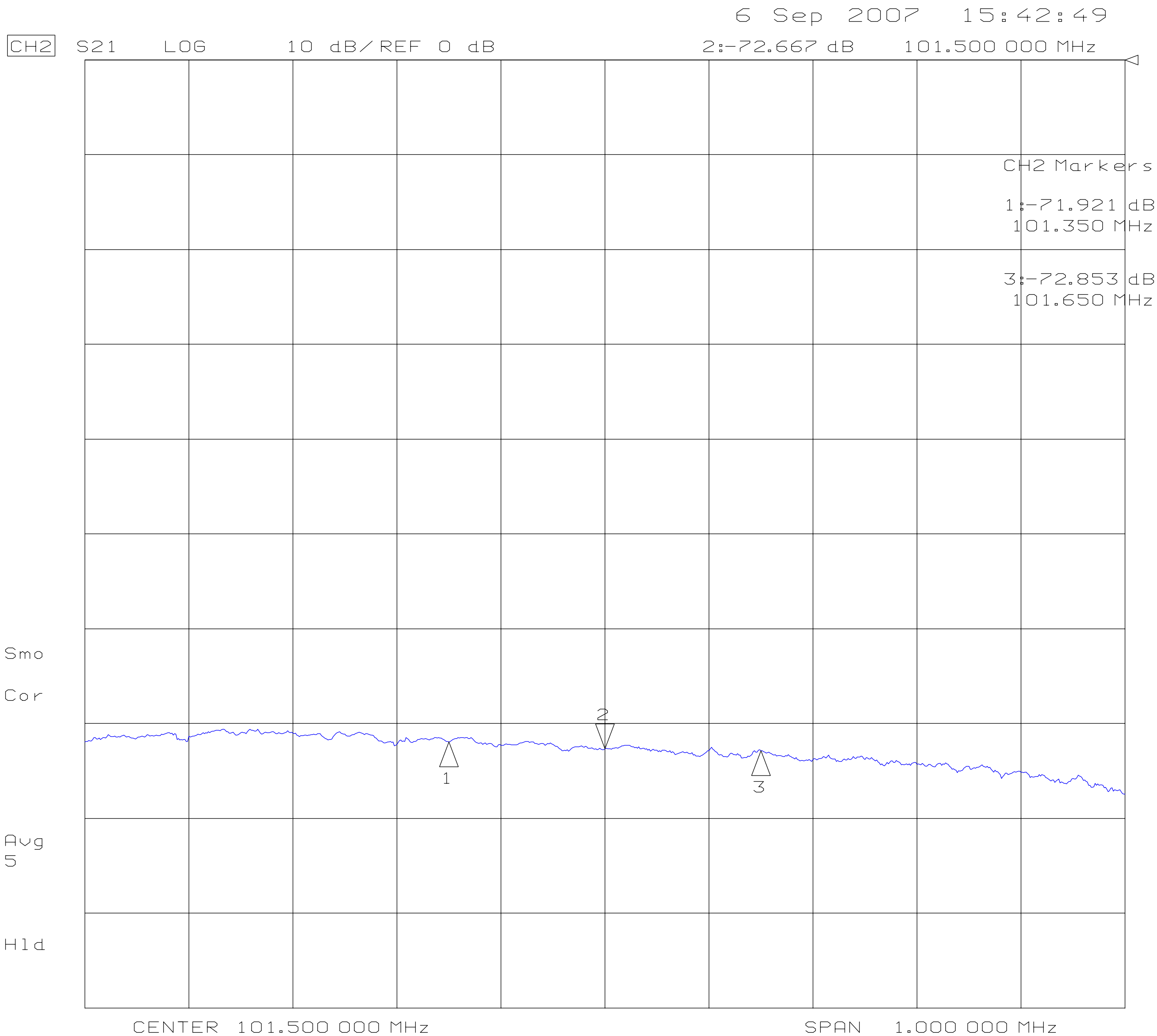
With zero transmitter turnaround loss @ 91.1 MHz. the product, Pa, will be ≤.275 volts or -60 dB product at the output of the transmitter.

At the output of the combiner the 91.1 MHz. product will be attenuated another 72 dB from the filter skirts to ≤ -132 dB below carrier reference level.

96.3 MHz. Input Port to 101.5 MHz. Input Port Isolation



101.5 MHz. Input Port to 96.3 MHz. Input Port Isolation



The Anritus Sitemaster with an option Spectrum Analyzer was used to check the close in spectral attenuation of the carrier to confirm the operation of the transmitter is in compliance with Sections (b) and (c) of the FCC Rules and Regulations.

On page six (6) of this report, the measured data has been presented. When the measurements were made, stations operating at 91.1 MHz and 106.7 MHz were on the air at the antenna farm where the new multiplexed facility for KBAZ (96.3 MHz) and KXGZ (101.5 MHz) is located. For this reason, the level of the station signals at 91.1 MHz and 106.7 MHz were much greater than the level of the inter-modulation products being produced by the new multiplex facility. And, because the actual inter-modulation products were well below the level of the two local broadcast carriers, the actual level of the inter-modulation products could not be measured.

In light of this measurement problem, Tom Silliman, P.E., president of ERI, produced a calculation of the worse case level of inter-modulation products that could occur from the multiplex facility used by KBAZ and KXGZ. The summary of this calculation is included in this report on pages seven (7) and eight (8). Basically, the port to port isolation of the combiner was measured at the factory, and the isolation measurements are included on page nine (9) and page ten (10) of this report. The input port to input port isolation provided by the combiner at 96.3 MHz is 64 dB, and the input port to input port isolation provided by the combiner at 101.5 MHz is 72 dB. Assuming zero turn around loss (meaning that the level of the inter-modulation product produced by the interfering cross coupled carrier from one port of the multiplex filter mixing in the transmitter feeding the other input port of the multiplex filter will be the same voltage level as the interfering signal), the inter-modulation products can't be greater than the coupled voltage level in the combiner (This is a very conservative assumption since it is a well known fact that the turn around loss of transmitters increases with frequency separation, and in this case, the frequency separation is 5.2 MHz). For this reason, the predictable (2A – B) inter-modulation product at 106.7 MHz produced in the output of the 101.5 MHz transmitter can't be greater than 76 dB below the 101.5 MHz carrier, and the predictable (2A – B) inter-modulation product at 91.1 MHZ produced in the output of the 96.3 MHz transmitter can't be greater than 60 dB below the 96.3 MHz carrier. Since these two products are produced in the two transmitters, these inter-modulation products will be attenuated by the multiplex filter since the multiplex filter uses pass band technology. The inter-modulation product at 91.1 MHz will be attenuated by an additional 72 dB, and the level of this inter-modulation product at the output of the combiner will be less than 132 dB below the 96.3 MHz carrier level. The inter-modulation product at 106.7 MHz will be attenuated by an additional 64 dB, and the level of this inter-modulation product at the output of the combiner will be less than 140 dB below the 101.5 MHz carrier level.

In summary, the two predictable inter-modulation products that will be produced by the multiplex facility for KABZ and KXGZ are will below the allowable level of 80 dB below carrier level at the output of the KABZ/KXGZ multiplexer output.

Conclusion: Based upon my observations and measurements taken on September 8, 2007 as summarized in this document, I, Mark Garrison, find the subject system- specifically the transmitter and filter system for the operation of KBAZ and KXGZ into the antenna to be in proper working order. Furthermore, based on the calculated and measured data, it is my opinion that there are no inter-modulation products in excess of 80 dB below carrier levels generated from or within the stations operating on the installed system. Based on this recorded data, I conclude that KBAZ and KXGZ comply with the requirements of Section 73.317 paragraph (b) through (d) of the FCC Rules and Regulations.

Thomas B. Silliman, P.E.
President
Electronics Research, Inc.

Mark Garrison
Field Technician
Electronics Research, Inc.

State of Indiana)

) SS:

County of Warrick)

AFFIDAVIT

I, Mark Garrison, hereby declare that the following statements are true and correct to the best of my knowledge and belief:

1.) I am a Field Technician for Electronics Research, Inc ("ERI ") and have been employed by ERI for 5 years. I am familiar with and have assisted in the design, manufacturing and installation of FM Antennas and FM Multiplexers in my long tenure with ERI.

2.) I have either prepared and/or directly supervised the preparation of all technical information contained in this Report of Findings and to my knowledge to be accurate and true.

3.) ERI has been requested by Clear Channel on behalf of radio Stations KBAZ and KXGZ in Hamilton, Montana. To prepare this Report of Findings.

Mark Garrison; Field Technician

Mark Garrison

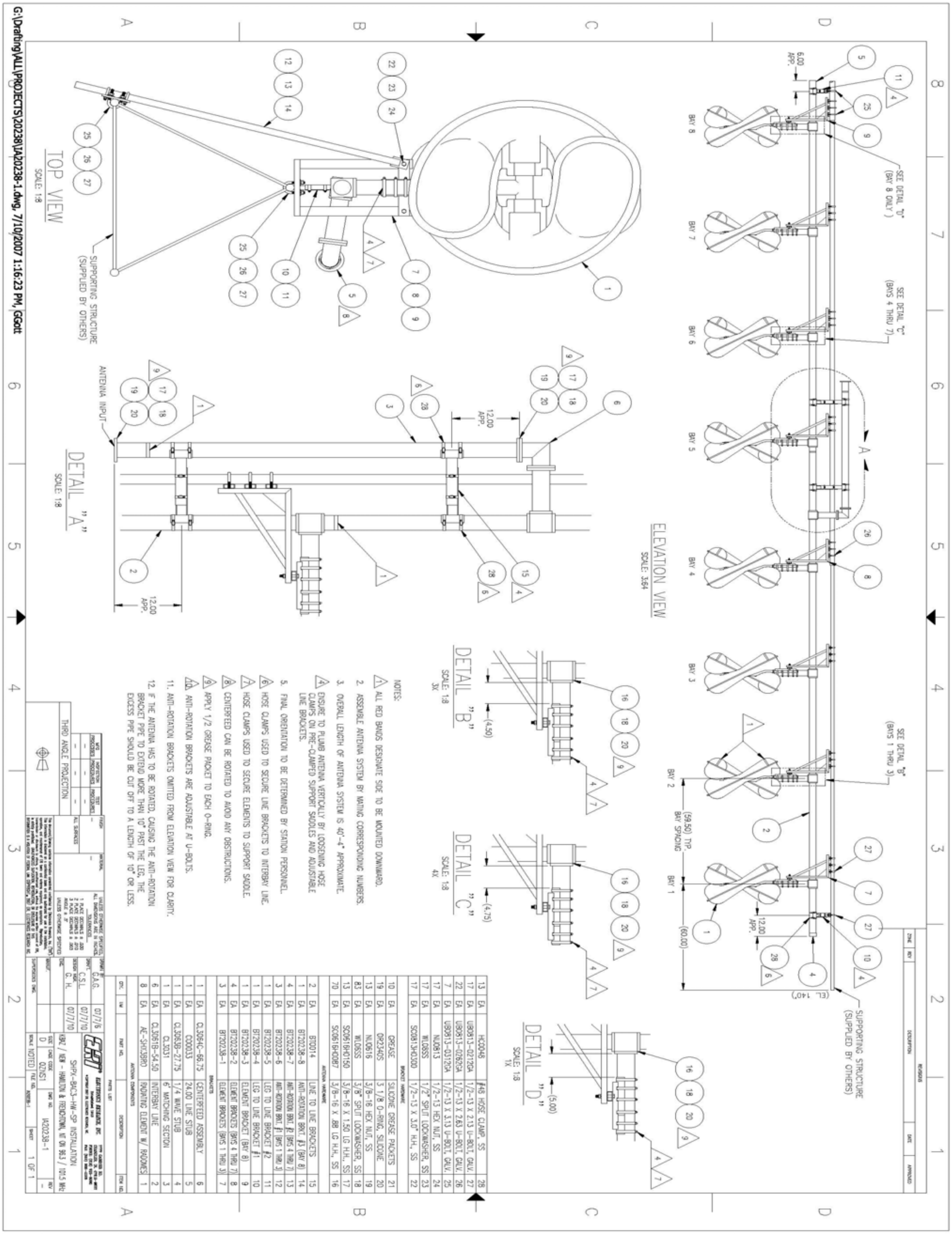
Subscribed and sworn to before me on this 11th, day of September.

Jacquelyn Kinney; Notary Public
My commission expires July 5, 2015

JACQUELYN S. KINNEY
Notary Public, State of Indiana
Vanderburgh County
My Commission Expires
July 05, 2015

Jacquelyn S. Kinney

EXHIBIT A-1



ELEVATION VIEW
SCALE: 3:64
TOP VIEW
SCALE: 1:8
DETAIL "A"
SCALE: 1:8
DETAIL "B"
DETAIL "C"
DETAIL "D"
NOTES:
SUPPORTING STRUCTURE (SUPPLIED BY OTHERS)
ANTENNA INPUT
THIRD ANGLE PROJECTION
G:\Drafting\ALL\PROJECTS\2023B\A20238-1.dwg, 7/10/2007 1:16:23 PM, GGott

A-2 ERI Antenna Specification Sheet

Clear Channel
Hamilton, Montana

General Specifications

Antenna Type . . . . ….... .High Power FM-Broadcast, Suitable For Diplexing
Model Number SHPX-8AC3-HW-SP
Number of Bay .... Eight
Polarization... Right Hand Circular

Electrical Specifications

Antenna Input Power Capability . . . . …. 28 KW Max (1)
Operating Frequency Band..96.3 ~ 101.5 Megahertz.
VSWR. . . . . … <1.01:1 @ Operating Frequencies(2)
Azimuthally Pattern Circularity .... Better Then +/- 2dB from RMS (Free Space)
Power Split .... 50/50 (Horizontal & Vertical)
Frequency Specific Information:

Frequency	Station ERP	Beam Tilt	First Null Fill	Second Null Fill	Power Gain	Line Loss (3)	Filter Loss (4)	Computed TPO
96.3	**53 KW**	**-2°**	**6%**	**1%**	**2.452**	**-.1273 db**	**-.1696 db**	**23.1 KW**
101.5	**3.6KW**	**-2°**	**7 %**	**1%**	**2.564**	**-.13db**	**-.238db**	**1.5 KW**

Mechanical Specifications

Antenna Feed System.. Fed With One 3 1/8” Line
Input Connector ………………………………………………… . 3 1/8”-50 Ohm EIA Flanged
Element Deicing.. Radomes
Interbay Spacing.. 59.50” Center to Center
Array Length .... 35’
Construction Material (Antenna) .... All Noncorrosive
Construction Material (Mounting) .... Stainless Steel

1) Power Capability Has Been Rated Assuming an Operating Transmission VSWR of 1.5:1
2) VSWR Specification Achieved After On Site Tuning For User Specific Frequencies.
3) Line Loss Assumes a Feed Run of 134.7 Feet, 3 1/8"MYAT Rigid.
4) Losses Taken From Actual Combiner.

EXHIBIT A-3

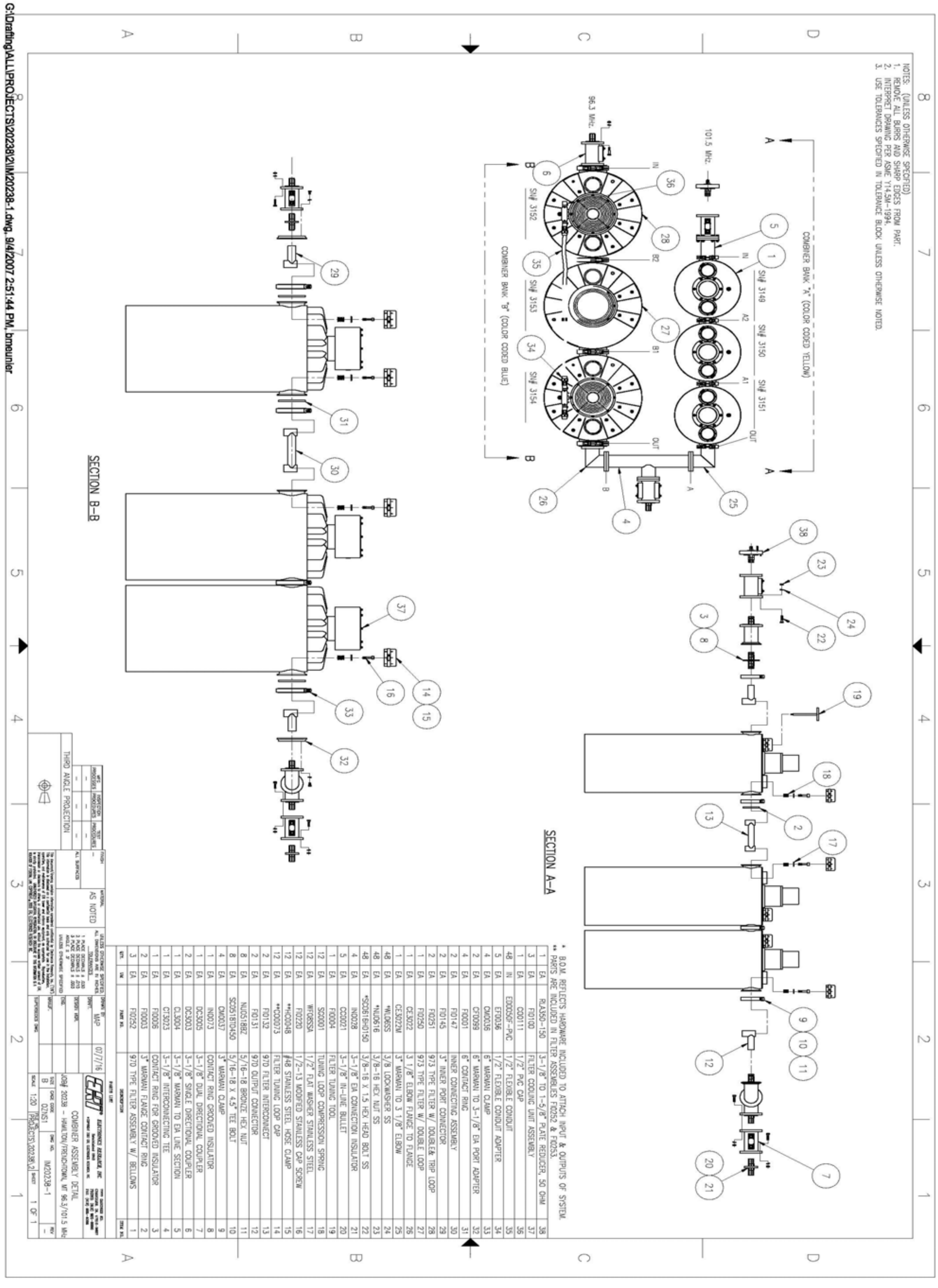

NOTES: (UNLESS OTHERWISE SPECIFIED)
1. REMOVE ALL BURRS AND SHARP EDGES FROM PART.
2. INTERPRET DRAWING PER ASME Y14.5M-1994.
3. USE TOLERANCES SPECIFIED IN TOLERANCE BLOCK UNLESS OTHERWISE NOTED.
COMBINER BANK "A" (COLOR CODED YELLOW)
SN# 3149
SN# 3150
SN# 3151
101.5 MHz.
96.3 MHz.
SN# 3152
SN# 3153
SN# 3154
COMBINER BANK "B" (COLOR CODED BLUE)
SECTION A-A
SECTION B-B
* B.O.M. REFLECTS HARDWARE INCLUDED TO ATTACH INPUT & OUTPUTS OF SYSTEM.
** PARTS ARE INCLUDED IN FILTER ASSEMBLIES FI0252 & FI0253.
1 EA RLA350-150 3-1/8" TO 1-5/8" PLATE REDUCER, 50 OHM 38
3 EA FI0100 FILTER COOLING UNIT ASSEMBLY 37
1 EA CO0111 1/2" PVC CAP 36
48 IN ED0050F-PVC 1/2" FLEXIBLE CONDUIT 35
5 EA EF0036 1/2" FLEXIBLE CONDUIT ADAPTER 34
4 EA CM0036 6" MARMAN CLAMP 33
2 EA CF0099 6" MARMAN TO 3-1/8" EIA PORT ADAPTER 32
4 EA FI0001 6" CONTACT RING 31
2 EA FI0147 INNER CONNECTING ASSEMBLY 30
2 EA FI0145 3" INNER PORT CONNECTOR 29
2 EA FI0251 973 TYPE FILTER W/ DOUBLE& TRIP LOOP 28
1 EA FI0250 973 TYPE FILTER W/ DOUBLE LOOP 27
1 EA CE3022 3 1/8" ELBOW FLANGE TO FLANGE 26
1 EA CE3022M 3" MARMAN TO 3 1/8" ELBOW 25
48 EA *WL06SS 3/8 LOCKWASHER SS 24
48 EA *NU0616 3/8-16 HEX NUT SS 23
48 EA *SC0616H0150 3/8-16 X 1.5 HEX HEAD BOLT SS 22
4 EA IN0028 3-1/8" EIA CONNECTION INSULATOR 21
5 EA CC0021 3-1/8" IN-LINE BULLET 20
1 EA FI0004 FILTER TUNING TOOL 19
12 EA SC0001 TUNING LOOP COMPRESSION SPRING 18
12 EA WF08SSA 1/2" FLAT WASHER STAINLESS STEEL 17
12 EA FI0220 1/2-13 MODIFIED STAINLESS CAP SCREW 16
12 EA **HC0048 #48 STAINLESS STEEL HOSE CLAMP 15
12 EA **CO0073 FILTER TUNING LOOP CAP 14
2 EA FI0132 970 FILTER INTERCONNECT 13
2 EA FI0131 970 OUTPUT CONNECTOR 12
8 EA NU0518BZ 5/16-18 BRONZE HEX NUT 11
8 EA SC0518T0450 5/16-18 X 4.5" TEE BOLT 10
4 EA CM0037 3" MARMAN CLAMP 9
1 EA IN0073 CONTACT RING GROOVED INSULATOR 8
1 EA DC3005 3-1/8" DUAL DIRECTIONAL COUPLER 7
2 EA DC3003 3-1/8" SINGLE DIRECTIONAL COUPLER 6
1 EA CL3004 3-1/8" MARMAN TO EIA LINE SECTION 5
1 EA CT3023 3-1/8" INTERCONNECTING TEE 4
1 EA FI0006 CONTACT RING FOR GROOVED INSULATOR 3
2 EA FI0003 3" MARMAN FLANGE CONTACT RING 2
3 EA FI0252 970 TYPE FILTER ASSEMBLY W/ BELLOWS 1
QTY. UM PART NO. DESCRIPTION ITEM NO.
PARTS LIST
THIRD ANGLE PROJECTION
AS NOTED
MAP 07/7/16
ELECTRONICS RESEARCH, INC.
COMBINER ASSEMBLY DETAIL
JOB# 20238 - HAMILTON/FRENCHTOWN, MT 96.3/101.5 MHz
B 0ZNS1 IM20238-1
SCALE 1:20 SHEET 1 OF 1
G:\Drafting\ALL\PROJECTS\20238\2\IM20238-1.dwg, 9/4/2007 2:51:44 PM, bmeunier

EXHIBIT A-4

A-4 ERI Combiner Specification Sheet

Clear Channel
Hamilton, Montana

General Specifications:

Diplexer Type .... "TEE" Combiner 973 Series and 970 Series
Number of Combining Units ....Two
Injected Port to Injected Port Isolation... < - 64 dB
Output Connector ....3 1/8" "50 Ohm EIA (Flanged)
Output Power (Designed) .... 25 KW (1)

Heat Removal for 101.5 ....Natural Convection
Heat Removal for 96.3 MHz .... Forced Air
Physical Arrangement...All Components floor standing

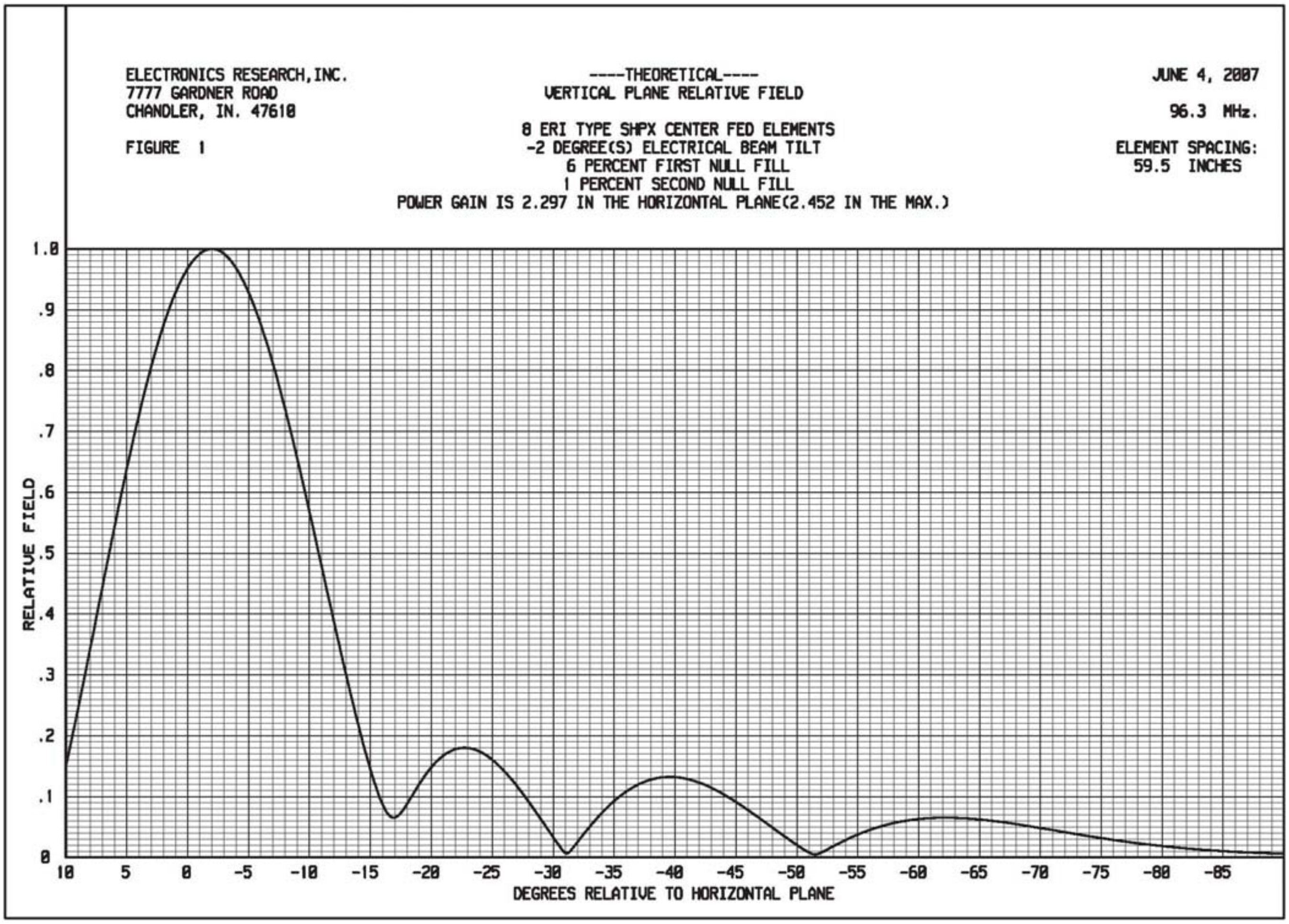
Injected Port Specifications:

Frequency Assignment .... 96.3 & 101.5 MHz.
Power Rating, 96.3 MHz. 973 Series Combiner Injected Port (Designed)..................................24KW
Power Rating, 101.5 MHz. 970 Series Combiner Injected Port (Designed)............................... 1.5 KW
Input Connector .... 3-1/8" 50 Ohm EIA (Flanged)
VSWR...< 1.04:1 @ +/-150 KHz.(2
Group Delay... Less than 25ns Overall Variation, Carrier @ +/- 150 KHz.
Insertion Loss (Measured):

96.3 MHz. ………….. - 0.1696 dB
101.5 MHz................. - 0.2379 dB

1) Power Rating Listed is as Designed Only. Actual Power Capabilities May Vary.
2) When Terminated in 50 Ohm Resistive Load.

EXHIBIT A-5


ELECTRONICS RESEARCH, INC.
7777 GARDNER ROAD
CHANDLER, IN. 47610
FIGURE 1
----THEORETICAL----
VERTICAL PLANE RELATIVE FIELD
8 ERI TYPE SHPX CENTER FED ELEMENTS
-2 DEGREE(S) ELECTRICAL BEAM TILT
6 PERCENT FIRST NULL FILL
1 PERCENT SECOND NULL FILL
POWER GAIN IS 2.297 IN THE HORIZONTAL PLANE(2.452 IN THE MAX.)
JUNE 4, 2007
96.3 MHz.
ELEMENT SPACING:
59.5 INCHES
RELATIVE FIELD
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50 -55 -60 -65 -70 -75 -80 -85
DEGREES RELATIVE TO HORIZONTAL PLANE

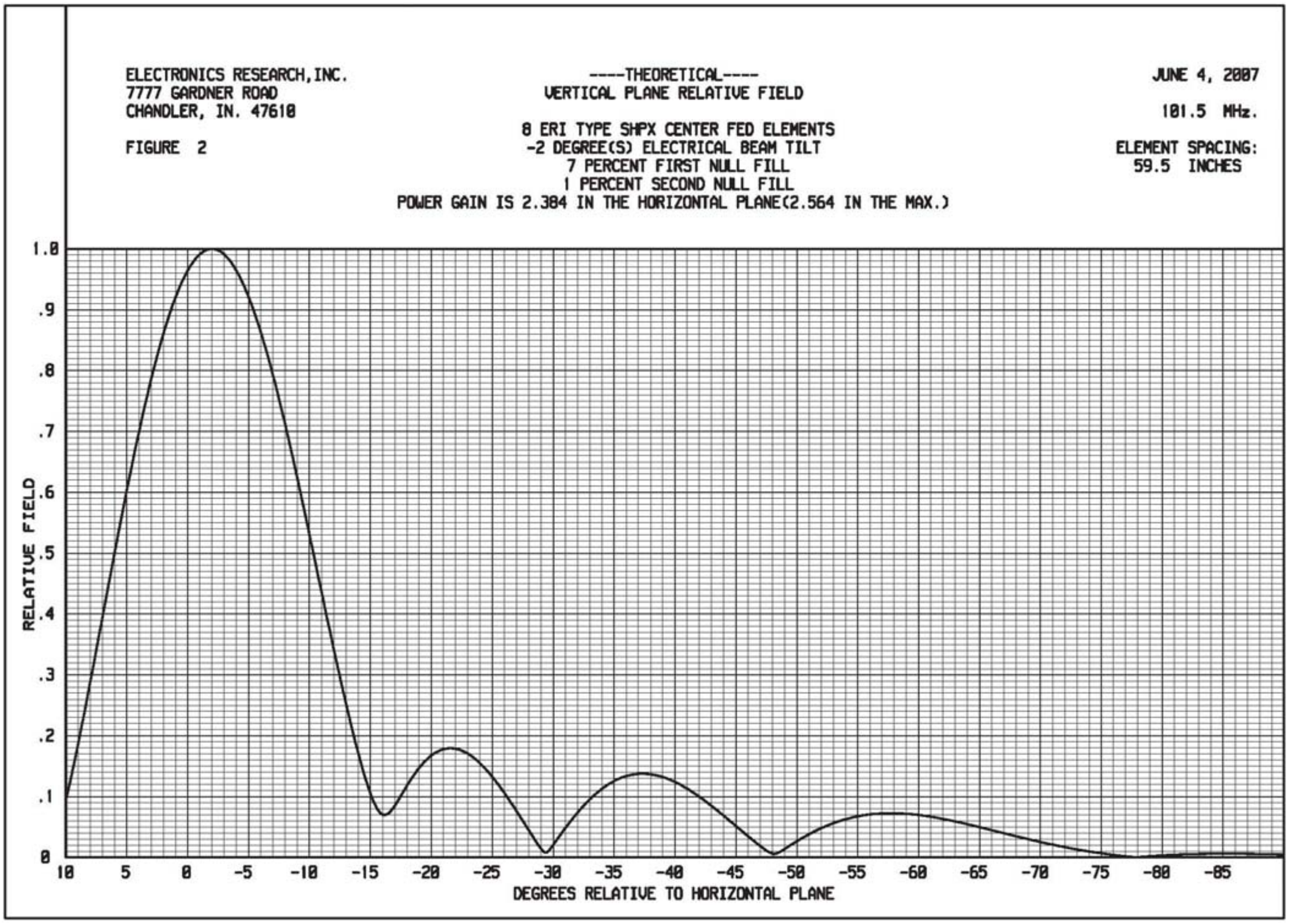

ELECTRONICS RESEARCH, INC.
7777 GARDNER ROAD
CHANDLER, IN. 47610
FIGURE 2
----THEORETICAL----
VERTICAL PLANE RELATIVE FIELD
8 ERI TYPE SHPX CENTER FED ELEMENTS
-2 DEGREE(S) ELECTRICAL BEAM TILT
7 PERCENT FIRST NULL FILL
1 PERCENT SECOND NULL FILL
POWER GAIN IS 2.384 IN THE HORIZONTAL PLANE(2.564 IN THE MAX.)
JUNE 4, 2007
101.5 MHz.
ELEMENT SPACING:
59.5 INCHES
RELATIVE FIELD
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50 -55 -60 -65 -70 -75 -80 -85
DEGREES RELATIVE TO HORIZONTAL PLANE

EXHIBIT B

Broadcasting Scheme and Equipment Employed in Intermodulation Measurements