

**TECHNICAL STATEMENT
CONCERNING PROPOSED MEDIAFLO
OPERATIONS**

TEMPORARY STATION IN MINNEAPOLIS MARKET (MNTOW1)

Summary of MediaFLO facilities for this market:

- Minneapolis, MN, MNTOW1, 44-56-34, 093-06-02, Rc=223 m AMSL, 22.5 kW-ND

**TECHNICAL STATEMENT
CONCERNING PROPOSED MEDIAFLO
OPERATIONS**

This Technical Statement provides information concerning the proposed MediaFLO system. The proposed MediaFLO system operates on channel 55.

Interference calculations have been made using the procedures outlined in the FCC's OET-69 Bulletin with adjustments made for Part-27 stations pursuant to the *Qualcomm Order* (see attached Appendix). A 1 kilometer grid, 0.2 kilometer terrain increment and the 2000 Census were employed. In accordance with FCC policy, Canada and Mexico TV and DTV stations are not considered to cause interference to US TV and DTV stations (i.e., Canada & Mexico stations are not used for interference masking).

The contours of the proposed MediaFLO transmitters covered by this application overlap with the contours of certain TV/DTV station(s). For each such station, the results of the interference calculations using OET-69 are listed on the attached pages. The percentage of predicted interference from MediaFLO to each station is based on the population of the station's Grade B contour for analog stations and the population receiving DTV terrain-limited, interference free service for DTV stations. Moreover, all MediaFLO transmitters within the exclusion distances of any grid cell from Table 7 of OET-69 are included in the analysis.

The technical information for the MediaFLO stations is included in the attached pages, including the site coordinates (in NAD datum), antenna radiation center above mean sea level, effective radiated power (ERP) in the horizontal polarization in kilowatts, and the antenna pattern (non directional, ND, or directional, DA).

If there are questions concerning this Technical Statement, please communicate with the office of the undersigned.



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KWWL-DT, Channel 55, Waterloo, IA

With respect to the KWWL-DT license operation on channel 55 (BLCDT-20020422AAG, 194 kW-ND, 527 m), the following is a summary of the interference calculations before and after consideration of the proposed MediaFLO stations.

<u>Description</u>	<u>Population</u>
Within KWWL-DT noise limited contour	816,049
Not affected by terrain losses	791,233
Interference from NTSC stations	16,937
Additional interference from DTV stations	716
Total NTSC and DTV interference	17,653
Resulting KWWL-DT service	773,580
Additional interference from Part-27 station	2,437 (0.32%)
Resulting KWWL-DT service	771,143

The interference from the proposed Part-27 MediaFLO stations has been combined using a RSS method. The following are the MediaFLO stations considered in the KWWL-DT interference calculation.

Chicago, IL, CHIC01, 41-52-44, 87-38-10, Rc=644.8 m, 25 kW-DA (See Figure 6)
Chicago, IL, CHIC1B, 41-52-44, 87-38-10, Rc=644.8 m AMSL, 4.4 kW-DA (See Figure 7)
Chicago, IL, CHIC02, 42-03-54, 88-04-49, Rc=322.1 m AMSL, 25 kW-ND
Chicago, IL, CHIC03, 42-01-12, 88-22-53, Rc=412.4 m AMSL, 12.5 kW-ND
Chicago, IL, CHIC04, 41-35-17, 87-51-50, Rc=365.5 m AMSL, 25 kW-ND
Chicago, IL, CHIC05, 41-20-56, 87-24-02, Rc=491.5 m AMSL, 12.5 kW-ND
Chicago, IL, CHIC08, 41-36-22, 88-27-10, Rc=374.9 m AMSL, 25 kW-ND
Chicago, IL, CHI10B, 41-53-56, 87-37-23, Rc=563 m AMSL, 13 kW-DA (See Figure 8)
Chicago, IL, CHI10C, 41-53-56, 87-37-23, Rc=563 m AMSL, 2.08 kW-DA (See Figure 9)
Chicago, IL, CHIC23, 41-56-03, 88-04-22, Rc=432.4 m AMSL, 25 kW-ND
Minneapolis, MN, MINN02, 45-23-00, 93-42-30, Rc=708 m AMSL, 25 kW-DA (FCC Antenna ID 46014 rotate 140 degrees)
Minneapolis, MN, MINN03, 44-58-34, 93-16-20, Rc=530 m AMSL, 25 kW-ND
Minneapolis, MN, MINN04, 45-08-28, 93-06-01, Rc=418 m AMSL, 25 kW-ND
Minneapolis, MN, MINN05, 44-41-21, 93-04-21, Rc=487 m AMSL, 25 kW-ND
St. Louis, MO, STL-03, 38-46-45, 90-43-43, Rc=318 m AMSL, 25 kW-DA (FCC Antenna ID 46014 rotate 30 degrees)
St. Louis, MO, STL-04, 38-51-36, 90-18-38, Rc=298 m AMSL, 25 kW-ND

Minneapolis, MN, MNTOW1, 44-56-34, 93-06-02, Rc=223 m AMSL, 22.5 kW-ND

Chicago, IL, CHI001, 41-35-51, 87-33-26, Rc=192.1 m AMSL, 36 uW-ND
Chicago, IL, CHI002, 41-33-54, 87-38-12, Rc=200.3 m AMSL, 36 uW-ND

KWWL-DT, Channel 55, Waterloo, IA

Chicago, IL, CHI003, 41-30-16, 87-53-32, Rc=228.9 m AMSL, 36 uW-ND
Chicago, IL, CHI004, 41-36-54, 87-51-11, Rc=223.3 m AMSL, 36 uW-ND
Chicago, IL, CHI005, 41-49-53, 88-06-15, Rc=239 m AMSL, 36 uW-ND
Chicago, IL, CHI006, 41-45-50, 88-12-24, Rc=223.3 m AMSL, 36 uW-ND
Chicago, IL, CHI007, 41-55-18, 88-16-41, Rc=246.7 m AMSL, 36 uW-ND
Chicago, IL, CHI008, 41-56-55, 88-06-49, Rc=249.7 m AMSL, 36 uW-ND
Chicago, IL, CHI009, 42-00-39, 87-42-48, Rc=191.2 m AMSL, 36 uW-ND
Chicago, IL, CHI010, 42-02-47, 87-40-46, Rc=193.7 m AMSL, 36 uW-ND
Chicago, IL, CHI011, 43-08-21, 88-01-28, Rc=233.4 m AMSL, 36 uW-ND
Chicago, IL, CHI012, 41-55-52, 87-47-15, Rc=206.3 m AMSL, 36 uW-ND
Chicago, IL, CHI013, 41-53-27, 87-37-27, Rc=189.1 m AMSL, 36 uW-ND
Chicago, IL, CHI014, 41-42-13, 88-07-32, Rc=213 m AMSL, 36 uW-ND
Chicago, IL, CHI015, 42-03-01, 88-02-27, Rc=237.9 m AMSL, 36 uW-ND
Chicago, IL, CHI016, 41-46-33, 88-12-21, Rc=222.7 m AMSL, 36 uW-ND
Chicago, IL, CHI017, 41-30-22, 87-43-11, Rc=219.7 m AMSL, 36 uW-ND
Chicago, IL, CHI018, 42-09-00, 87-48-00, Rc=205.7 m AMSL, 36 uW-ND
Chicago, IL, CHI019, 42-03-20, 87-50-19, Rc=209 m AMSL, 36 uW-ND
Chicago, IL, CHI020, 41-54-39, 87-38-55, Rc=190.2 m AMSL, 36 uW-ND
Chicago, IL, CHI021, 41-50-53, 87-54-05, Rc=210.5 m AMSL, 36 uW-ND
Chicago, IL, CHI022, 42-13-34, 88-18-26, Rc=285.3 m AMSL, 36 uW-ND
Chicago, IL, CHI023, 41-50-03, 88-01-13, Rc=238.6 m AMSL, 36 uW-ND
Chicago, IL, CHI024, 42-23-02, 87-57-23, Rc=235.6 m AMSL, 36 uW-ND
Chicago, IL, CHI025, 41-50-21, 88-20-25, Rc=220 m AMSL, 36 uW-ND
Chicago, IL, CHI026, 41-34-46, 88-09-55, Rc=194.6 m AMSL, 36 uW-ND
Chicago, IL, CHI027, 42-14-23, 87-56-40, Rc=214.8 m AMSL, 36 uW-ND
Chicago, IL, CHI028, 41-28-16, 87-20-27, Rc=217.8 m AMSL, 36 uW-ND
Chicago, IL, CHI029, 42-02-22, 88-02-56, Rc=236.1 m AMSL, 36 uW-ND
Chicago, IL, CHI030, 41-36-05, 87-50-39, Rc=219.6 m AMSL, 36 uW-ND

WFXS(TV), Channel 55, Wittenberg, WI

With respect to the WFXS(TV) license operation on channel 55 (BLCT-20000124AAY, 5000 kW-DA, 327 m), the following is a summary of the interference calculations before and after consideration of the proposed MediaFLO stations.

<u>Description</u>	<u>Population</u>
Within WFXS(TV) noise limited contour	385,787
Not affected by terrain losses	382,189
Interference from NTSC stations	910
Additional interference from DTV stations	0
Total NTSC and DTV interference	910
Resulting WFXS(TV) service	381,279
 Additional interference from Part-27 station	 476 (0.12%)
Resulting WFXS(TV) service	380,822

The interference from the proposed Part-27 MediaFLO stations has been combined using a RSS method. The following are the MediaFLO stations considered in the WFXS(TV) interference calculation.

Chicago, IL, CHIC01, 41-52-44, 87-38-10, Rc=644.8 m, 25 kW-DA (See Figure 6)
Chicago, IL, CHIC1B, 41-52-44, 87-38-10, Rc=644.8 m AMSL, 4.4 kW-DA (See Figure 7)
Chicago, IL, CHIC02, 42-03-54, 88-04-49, Rc=322.1 m AMSL, 25 kW-ND
Chicago, IL, CHIC03, 42-01-12, 88-22-53, Rc=412.4 m AMSL, 12.5 kW-ND
Chicago, IL, CHIC04, 41-35-17, 87-51-50, Rc=365.5 m AMSL, 25 kW-ND
Chicago, IL, CHIC08, 41-36-22, 88-27-10, Rc=374.9 m AMSL, 25 kW-ND
Chicago, IL, CHI10B, 41-53-56, 87-37-23, Rc=563 m AMSL, 13 kW-DA (See Figure 8)
Chicago, IL, CHI10C, 41-53-56, 87-37-23, Rc=563 m AMSL, 2.08 kW-DA, (See Figure 9)
Chicago, IL, CHIC23, 41-56-03, 88-04-22, Rc=432.4 m AMSL, 25 kW-ND
Minneapolis, MN, MINN02, 45-23-00, 93-42-30, Rc=708 m AMSL, 25 kW-DA (FCC Antenna ID 46014 rotate 140 degrees)
Minneapolis, MN, MINN03, 44-58-34, 93-16-20, Rc=530 m AMSL, 25 kW-ND
Minneapolis, MN, MINN04, 45-08-28, 93-06-01, Rc=418 m AMSL, 25 kW-ND
Minneapolis, MN, MINN05, 44-41-21, 93-04-21, Rc=487 m AMSL, 25 kW-ND
Grand Rapids, MI, GRAP01, 42-57-13, 85-41-55, Rc=361 m AMSL, 25 kW-ND
Grand Rapids, MI, GRAP02, 42-57-35, 85-53-45, Rc=388 m AMSL, 25 kW-ND
Grand Rapids, MI, GRAP03, 43-13-33, 86-10-50, Rc=272 m AMSL, 25 kW-ND

Minneapolis, MN, MNTOW1, 44-56-34, 93-06-02, Rc=223 m AMSL, 22.5 kW-ND

Chicago, IL, CHI001, 41-35-51, 87-33-26, Rc=192.1 m AMSL, 36 uW-ND
Chicago, IL, CHI002, 41-33-54, 87-38-12, Rc=200.3 m AMSL, 36 uW-ND
Chicago, IL, CHI003, 41-30-16, 87-53-32, Rc=228.9 m AMSL, 36 uW-ND

WFXS(TV), Channel 55, Wittenberg, WI

Chicago, IL, CHI004, 41-36-54, 87-51-11, Rc=223.3 m AMSL, 36 uW-ND
Chicago, IL, CHI005, 41-49-53, 88-06-15, Rc=239 m AMSL, 36 uW-ND
Chicago, IL, CHI006, 41-45-50, 88-12-24, Rc=223.3 m AMSL, 36 uW-ND
Chicago, IL, CHI007, 41-55-18, 88-16-41, Rc=246.7 m AMSL, 36 uW-ND
Chicago, IL, CHI008, 41-56-55, 88-06-49, Rc=249.7 m AMSL, 36 uW-ND
Chicago, IL, CHI009, 42-00-39, 87-42-48, Rc=191.2 m AMSL, 36 uW-ND
Chicago, IL, CHI010, 42-02-47, 87-40-46, Rc=193.7 m AMSL, 36 uW-ND
Chicago, IL, CHI011, 43-08-21, 88-01-28, Rc=233.4 m AMSL, 36 uW-ND
Chicago, IL, CHI012, 41-55-52, 87-47-15, Rc=206.3 m AMSL, 36 uW-ND
Chicago, IL, CHI013, 41-53-27, 87-37-27, Rc=189.1 m AMSL, 36 uW-ND
Chicago, IL, CHI014, 41-42-13, 88-07-32, Rc=213 m AMSL, 36 uW-ND
Chicago, IL, CHI015, 42-03-01, 88-02-27, Rc=237.9 m AMSL, 36 uW-ND
Chicago, IL, CHI016, 41-46-33, 88-12-21, Rc=222.7 m AMSL, 36 uW-ND
Chicago, IL, CHI017, 41-30-22, 87-43-11, Rc=219.7 m AMSL, 36 uW-ND
Chicago, IL, CHI018, 42-09-00, 87-48-00, Rc=205.7 m AMSL, 36 uW-ND
Chicago, IL, CHI019, 42-03-20, 87-50-19, Rc=209 m AMSL, 36 uW-ND
Chicago, IL, CHI020, 41-54-39, 87-38-55, Rc=190.2 m AMSL, 36 uW-ND
Chicago, IL, CHI021, 41-50-53, 87-54-05, Rc=210.5 m AMSL, 36 uW-ND
Chicago, IL, CHI022, 42-13-34, 88-18-26, Rc=285.3 m AMSL, 36 uW-ND
Chicago, IL, CHI023, 41-50-03, 88-01-13, Rc=238.6 m AMSL, 36 uW-ND
Chicago, IL, CHI024, 42-23-02, 87-57-23, Rc=235.6 m AMSL, 36 uW-ND
Chicago, IL, CHI025, 41-50-21, 88-20-25, Rc=220 m AMSL, 36 uW-ND
Chicago, IL, CHI026, 41-34-46, 88-09-55, Rc=194.6 m AMSL, 36 uW-ND
Chicago, IL, CHI027, 42-14-23, 87-56-40, Rc=214.8 m AMSL, 36 uW-ND
Chicago, IL, CHI029, 42-02-22, 88-02-56, Rc=236.1 m AMSL, 36 uW-ND
Chicago, IL, CHI030, 41-36-05, 87-50-39, Rc=219.6 m AMSL, 36 uW-ND

Figure 6

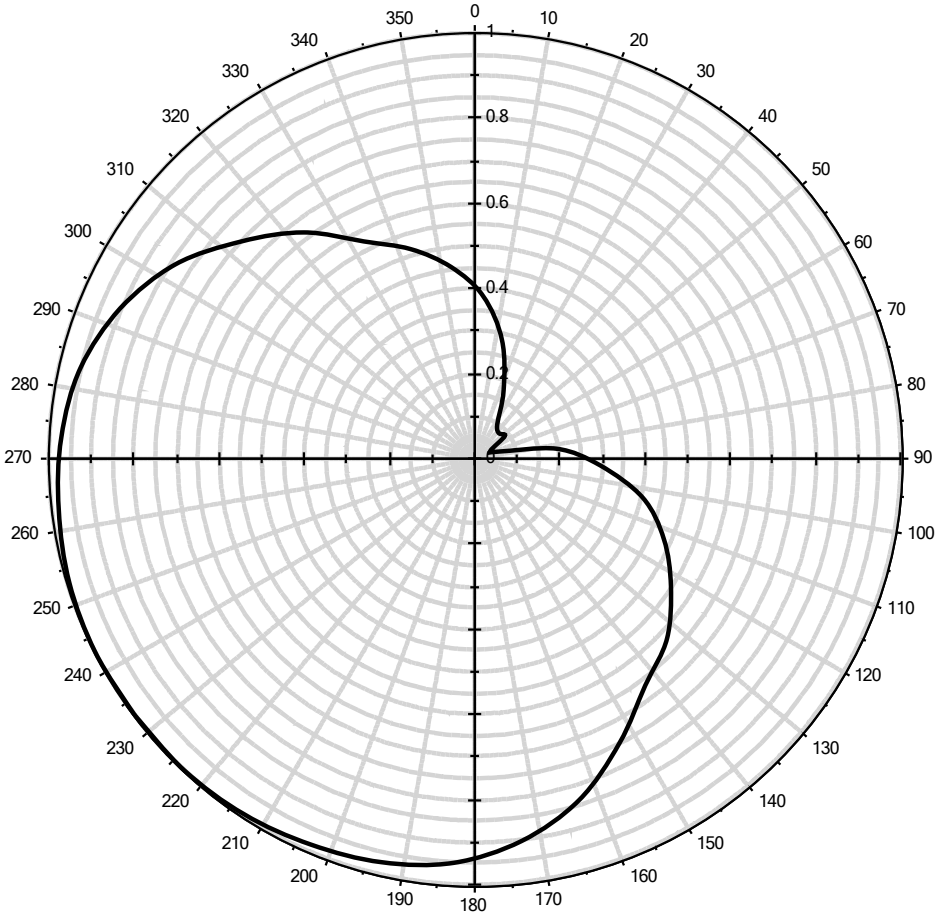
DA Inquiry

du Treil, Lundin, & Rackley, Inc., Sarasota, Florida



CHIC01
Chicago, IL

Antenna Pattern: **Antenna ID:** 550004



Note: display reflects rotation of 233.00°

Antenna Details:

0°	1.000	60°	0.904	120°	0.454	180°	0.089	240°	0.483	300°	0.904
10°	1.000	70°	0.838	130°	0.383	190°	0.042	250°	0.549	310°	0.950
20°	0.995	80°	0.749	140°	0.286	200°	0.057	260°	0.618	320°	0.972
30°	0.984	90°	0.666	150°	0.174	210°	0.194	270°	0.666	330°	0.984
40°	0.972	100°	0.573	160°	0.097	220°	0.295	280°	0.749	340°	0.995
50°	0.950	110°	0.515	170°	0.083	230°	0.405	290°	0.838	350°	1.000

Antenna Make:

Standard Pattern:

Antenna Model:

Last Change Date:

Figure 7

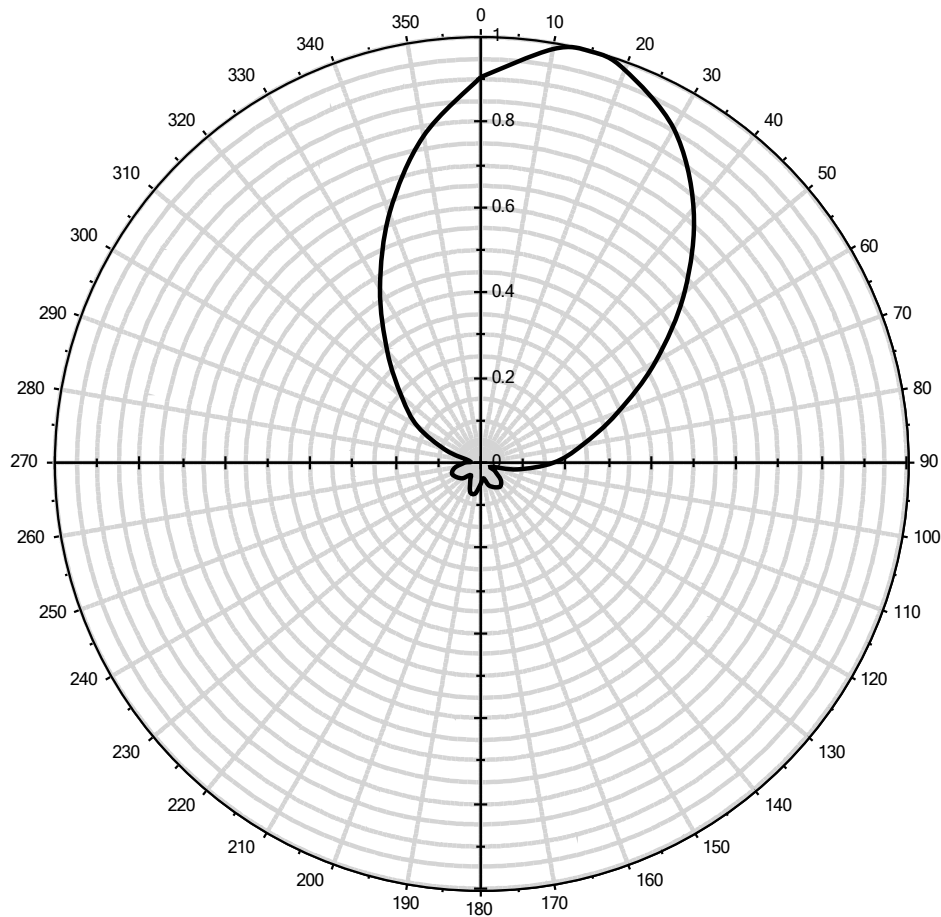
DA Inquiry

du Treil, Lundin, & Rackley, Inc., Sarasota, Florida



Antenna Pattern: **Antenna ID:** 550005

CHIC1B
Chicago, IL



Note: display reflects rotation of 0.00°

Antenna Details:

0°	0.906	60°	0.473	120°	0.038	180°	0.049	240°	0.066	300°	0.171	15°	1.000
10°	0.987	70°	0.341	130°	0.061	190°	0.073	250°	0.072	310°	0.242		
20°	0.984	80°	0.242	140°	0.072	200°	0.073	260°	0.061	320°	0.341		
30°	0.906	90°	0.171	150°	0.066	210°	0.049	270°	0.038	330°	0.473		
40°	0.778	100°	0.087	160°	0.056	220°	0.037	280°	0.027	340°	0.625		
50°	0.625	110°	0.027	170°	0.037	230°	0.056	290°	0.087	350°	0.778		

Antenna Make:

Standard Pattern:

Antenna Model:

Last Change Date:

Figure 8

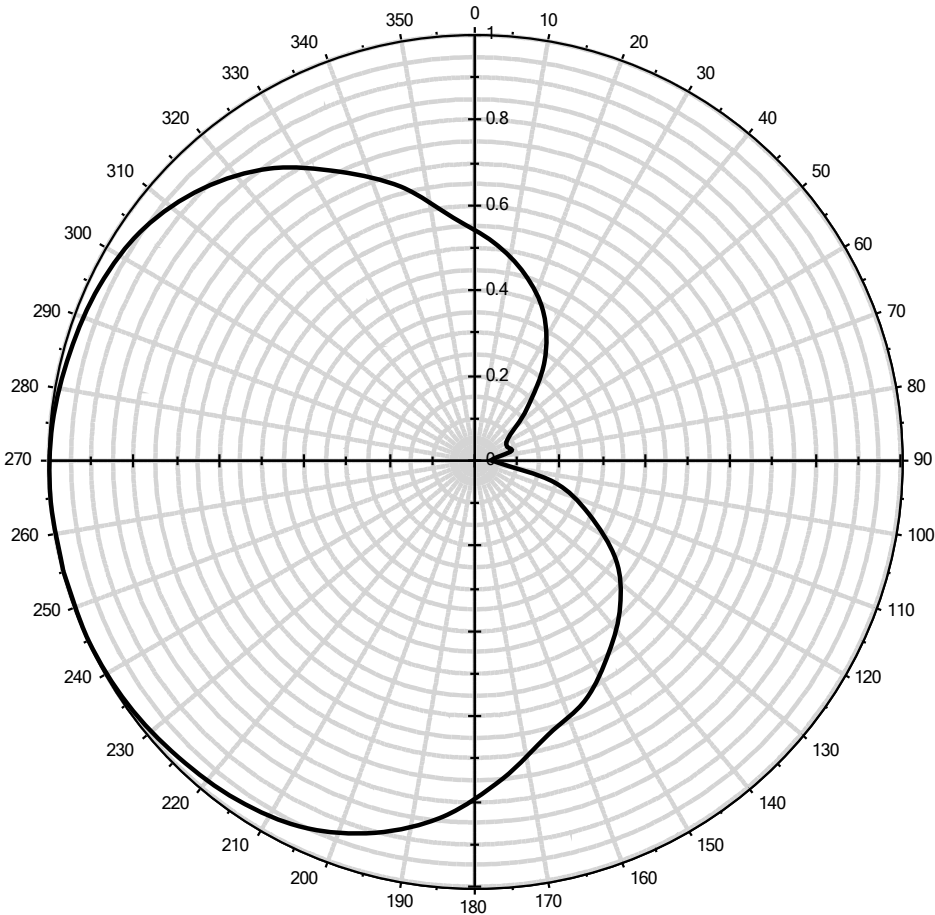
DA Inquiry

du Treil, Lundin, & Rackley, Inc., Sarasota, Florida



CHI10B
Chicago, IL

Antenna Pattern: Antenna ID: 550004



Note: display reflects rotation of 255.00°

Antenna Details:

0°	1.000	60°	0.904	120°	0.454	180°	0.089	240°	0.483	300°	0.904
10°	1.000	70°	0.838	130°	0.383	190°	0.042	250°	0.549	310°	0.950
20°	0.995	80°	0.749	140°	0.286	200°	0.057	260°	0.618	320°	0.972
30°	0.984	90°	0.666	150°	0.174	210°	0.194	270°	0.666	330°	0.984
40°	0.972	100°	0.573	160°	0.097	220°	0.295	280°	0.749	340°	0.995
50°	0.950	110°	0.515	170°	0.083	230°	0.405	290°	0.838	350°	1.000

Antenna Make:

Standard Pattern:

Antenna Model:

Last Change Date:

Figure 9

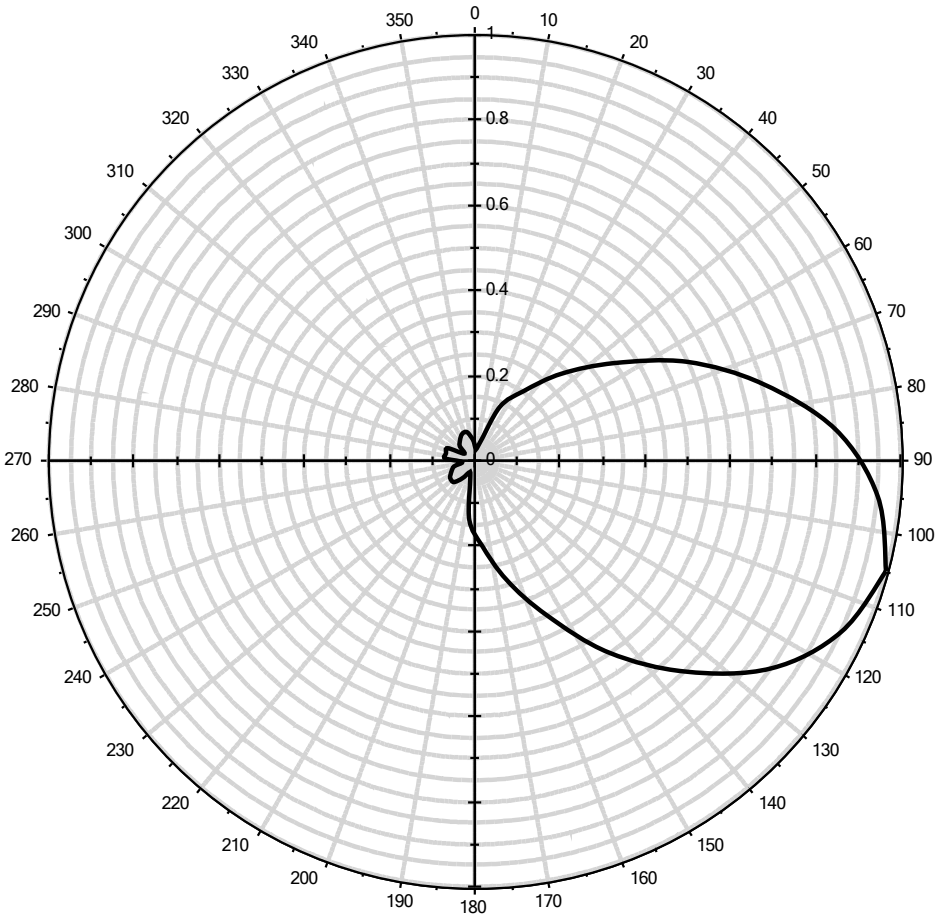
DA Inquiry

du Treil, Lundin, & Rackley, Inc., Sarasota, Florida



CHI10C
Chicago, IL

Antenna Pattern: Antenna ID: 550011



Note: display reflects rotation of 105.00°

Antenna Details:

0°	1.000	60°	0.290	120°	0.070	180°	0.070	240°	0.070	300°	0.290
10°	0.950	70°	0.200	130°	0.070	190°	0.070	250°	0.050	310°	0.400
20°	0.850	80°	0.140	140°	0.060	200°	0.030	260°	0.030	320°	0.550
30°	0.700	90°	0.040	150°	0.050	210°	0.050	270°	0.040	330°	0.700
40°	0.550	100°	0.030	160°	0.030	220°	0.060	280°	0.140	340°	0.850
50°	0.400	110°	0.050	170°	0.070	230°	0.070	290°	0.200	350°	0.950

Antenna Make:

Standard Pattern:

Antenna Model:

Last Change Date:

Implementation of OET-69 Methodology Under QUALCOMM Order

On October 13, 2006, the Federal Communications Commission released its *Order In the Matter of QUALCOMM Incorporated Petition for Declaratory Ruling in WT Docket No. 05-7 ("QUALCOMM Order")*. The *QUALCOMM Order* established that the methodology outlined in the FCC Office of Engineering and Technology Bulletin No. 69 (OET-69), with certain modifications, is an acceptable methodology for making alternative showings for QUALCOMM's MediaFLO system. The *QUALCOMM Order* also granted a waiver of Section 27.60 of the FCC Rules to QUALCOMM, which permits a *de minimis* exception to the interference protection requirements.

OET-69 describes a methodology for evaluating service from and interference to broadcast television stations. It is divided into three parts: a methodology for evaluation of service, a methodology for evaluation of interference and a description of the FCC Longley-Rice computer program. Under the *QUALCOMM Order* there are no changes to the first part of OET-69, and there are the following changes to the second and third parts of OET-69.

Evaluation of Service

Pursuant to the OET-69 methodology, the population is computed within the predicted analog Grade B or DTV noise-limited service contour of the subject station taking into consideration the dipole adjustment factor applicable to UHF stations. The population within the analog Grade B service contour is employed as the baseline population for the determination of compliance with the *de minimis* criteria for analog stations. For digital stations the terrain-limited service is computed according to the OET-69 method considering the dipole-adjustment factor. All other existing sources of broadcast interference are calculated. The resulting terrain-limited interference-free service population is employed as the baseline for digital stations for the determination of compliance with the *de minimis* criteria.

Evaluation of Interference

The *QUALCOMM Order* requires modifications to the OET-69 methodology of evaluating interference so as to permit evaluation of interference from MediaFLO stations. These modifications provide a method for evaluating interference to full-service analog and digital television stations operating on Channels 54, 55, and 56 during the remainder of the DTV transition period. At the end of the DTV transition period, these analog and digital television stations will vacate these channels and there will be no more need for evaluation of interference to them.

The changes to the OET-69 methodology of evaluating interference under the *QUALCOMM Order* are as follows:

1. For MediaFLO stations, the desired-to-undesired (D/U) ratios for co-channel and adjacent-channel protection of broadcast stations are modified to reflect the D/U ratios contained in Section 27.60.
2. For MediaFLO stations the D/U ratio for determining co-channel interference to DTV service is +23 dB at all locations and is not adjusted based on the signal-to-noise (S/N) ratio of the DTV signal.
3. In accordance with Section 27.60, no consideration is given to taboo-channel interference to analog television stations from Part-27 (MediaFLO) stations.
4. Where multiple MediaFLO transmitting stations are to be deployed, a Root-Sum-Square (RSS) summation of undesired fields from individual MediaFLO transmitting stations will be used to establish the interfering signal in each grid evaluated.

A discussion of the changes to the OET-69 methodology follows.

The first change is the incorporation of the D/U ratios of Section 27.60 for evaluation of interference from MediaFLO transmitting stations. A summary of the D/U ratios employed in the OET-69 methodology as modified by the *QUALCOMM Order* is contained in the following table.

D/U Ratio Comparison (dB)			
Relationship	Undesired Signal Type		
	Analog TV	Digital TV	MediaFLO
Co-channel into desired DTV	+2	+15	+23
Co-channel into desired analog TV	+28 (offset) +45 (non-offset)	+34	+40
Lower adjacent channel into desired DTV	-48	-28	-23
Lower adjacent channel into desired analog TV	-3	-14	0
Upper adjacent channel into desired DTV	-49	-26	-23
Upper adjacent channel into desired analog TV	-13	-17	0

The second change relates to the adjustable D/U ratio for determining co-channel interference to DTV service found in Section 73.623 of the Commission's Rules. For co-channel analog TV into DTV the D/U ratio varies from +2 dB at locations where the DTV service S/N ratio is 25 dB or greater to as great as +21 dB where the DTV service S/N ratio is 16 dB. For co-channel DTV into DTV the D/U ratio varies from +15 dB where the DTV service S/N ratio is 28 dB or greater to as great as +23 dB where the DTV service S/N ratio is 16 dB. Under the *QUALCOMM Order* a flat +23 dB D/U ratio is employed. This matches the D/U ratio contained in Section 27.60 and is the "worst-case" D/U ratio for co-channel interference to DTV service presently in OET-69.

Thirdly, since Section 27.60 does not prescribe consideration of taboo-channel interference to analog TV service, under the *QUALCOMM Order* taboo-channel interference from MediaFLO transmitters to analog TV service is not considered in the modified OET-69 methodology.

Fourthly, QUALCOMM may require more than one MediaFLO transmitter in certain markets. To evaluate the combined interference impact from multiple transmitters, the *QUALCOMM Order* specifies the RSS method of summing predicted fields from multiple transmitters. All MediaFLO stations that are subject to *QUALCOMM Order* filings that are within the “culling” distances specified in Table 7 of OET-69 with respect to the grid cells of subject station are included in the RSS interference analysis. The interfering fields from each MediaFLO transmitter, in dB μ V/m, in each OET-69 grid are calculated after consideration of the appropriate receive antenna discrimination and converted to their corresponding linear values in μ V/m, squared, then summed, and the square root of the sum taken to get the combined field in μ V/m. This combined field is then converted back into logarithmic form in dB μ V/m and tested to determine whether it meets the required D/U ratio.