ORIGINAL

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Application by ViaSat, Inc.	)	SES-LIC-20111027-01267
To Operate Earth Station	)	E110157
In Duluth, Georgia	)	
in the 2085.0 – 2086.5 MHz band	)	

To: Office of the Secretary
Attn: Chief, International Bureau

REPLY OF GEORGIA TELEVISION COMPANY AND MEREDITH CORPORATION TO OPPOSITION OF VIASAT, INC.

Pursuant to Section 25.154(d) of the Commission's rules, Georgia Television Company and Meredith Corporation (together, the "Television Broadcasters") hereby submit this Reply to the Opposition of ViaSat, Inc. ("ViaSat").[1] In their Petition to Deny, the Television Broadcasters demonstrated that ViaSat's proposed earth station (the "Earth Station") would cause harmful interference to the electronic news gathering ("ENG") operations of both WSB-TV and WGCL-TV. Rather than eliminate this interference, ViaSat's Opposition faults the Television Broadcasters for being "categorical[ly]" opposed to receiving interference and then offers several flawed mitigation strategies that offer little real-world protections to the Television Broadcasters' ENG operations.[2] The Television Broadcasters are willing to coordinate for any realistic, noninterfering proposal, but the burden is on ViaSat to present the Television Broadcasters with such a proposal. To date, it has not.

---

1 47 C.F.R. § 25.154(d).

2 ViaSat, Inc., *Opposition*, at 3, 8 (filed Jan. 19, 2012).

I. THE BURDEN IS ON VIASAT TO PRESENT THE TELEVISION BROADCASTERS WITH A WORKABLE, NONINTERFERING PROPOSAL FOR ITS EARTH STATION.

ViaSat spends much of its Opposition criticizing the Television Broadcasters for being unwilling to engage in frequency coordination. ViaSat's claims, however, simply are not true. The Television Broadcasters are willing (and have always been willing) to coordinate any proposal that properly accounts for the day-to-day realities in the ENG 2 GHz band. The burden, however, falls on ViaSat to present the Television Broadcasters with such a proposal that will not interfere with existing operations.[3] The Commission's coordination rules do not require incumbent licensees to accept whatever proposal may be thrown in front of them. Rather, at a minimum, any proposal must protect the Television Broadcasters ENG receive sites.[4] This is particularly true here because, as ViaSat acknowledges, its Earth Station will operate on a secondary, non-interfering basis. To date, however, the proposals that ViaSat has put forth all are likely to cause interference to the Television Broadcaster's ENG facilities.

II. THE EARTH STATION WILL CAUSE HARMFUL INTERFERENCE TO THE TELEVISION BROADCASTERS' ENG RECEIVE SITES.

In their Petition, the Television Broadcasters demonstrated that the Earth Station was likely to cause interference to the Television Broadcasters' ENG operations. To alleviate these interference concerns, ViaSat announced in its Opposition that it would reduce its power by 10 dB. ViaSat's revised engineering analysis, however, falls well short of the requirements in the Commission's rules and is fundamentally flawed.

---

[3] *AstroVision Int'l, Inc.*, 15 FCC Rcd 22299, 22304 (IB 2000) ("AstroVision will need to demonstrate in its Earth station application how it plans to operate in order to protect users in the primary and secondary services, operating on these proposed TT&C uplink frequencies.").

[4] *Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems*, 21 FCC Rcd 4441, 4452 (2006) ("[T]he protection of BAS TVPU ENG RO sites . . . must be demonstrated.").

ViaSat's engineering analysis dramatically understates the potential for interference to the Television Broadcasters' ENG operations. To prove that it will not cause interference, ViaSat analyzes the hypothetical desired and undesired signal strength from just five potential transmit locations in the Atlanta market. ViaSat acknowledges that in several of the cases the undesired signal was above the receiver noise floor, but claims this is acceptable because the desired signal strength from these five locations was sufficiently strong to overcome the undesired interference. ViaSat, however, does not address the millions of other potential transmit locations within the Atlanta market and the desired and undesired ratios from those locations.

ViaSat's interference analysis is woefully lacking and unconvincing. Using desired and undesired signal strength is inappropriate for mobile transmitters. It is impossible to predict in advance the desired signal strength for a mobile ENG truck. An ENG truck can transmit from an infinite number of locations in the heart of or on the fringes of the Atlanta market. At times, the desired signal strength will be strong because the path to the ENG receive site is a few miles and unobstructed. At other times, it will be weak. Trees, buildings, or other obstructions may block the path to the receive site. Breaking news may occur thirty or more miles from the nearest ENG receive site, or it may occur in downtown Atlanta where an ENG truck would be surrounded by tall buildings. In these very common instances, the desired signal strength will be substantially lower than the minimum assumed by ViaSat's rudimentary analysis. In those cases, the ViaSat Earth Station would cause harmful interference and prevent the Television Broadcasters from delivering live breaking news coverage of an important event in the local community.

Because of the inherent mobile nature of ENG facilities, the Commission's interference rules do not rely on desired and undesired interference ratios for ENG facilities. Instead, Section 101.105 of the Commission's rules sets the interference criteria for microwave facilities by

referring to the Telecommunications Industry Association Telecommunications Bulletin TWB 10, "Interference Criteria," which specifies a maximum interference threshold of 1 dB of degradation to an ENG receive site.[5] As the attached Engineering Statement demonstrates, even with its reduced power level, ViaSat's Earth Station substantially exceeds the maximum interference degradation standard required by the Commission's rules.[6]

In practice, when performing local coordination, the broadcast industry and other 2 GHz earth station applicants have settled on an even more stringent interference criteria than that set forth in the Commission's rules. When the Commission ordered the Department of Defense to relocate its tracking, telemetry, and commanding earth stations to the 2 GHz band, the Society of Broadcasting Engineers and the Department of Defense negotiated a mutually beneficial frequency coordination Memorandum of Understanding.[7] The DoD MOU settled on a maximum interference degradation standard of 0.5 dB for ENG receive only sites.[8] The Commission has subsequently acknowledged that 0.5 dB is an appropriate standard for measuring ENG interference.[9] Regardless of whether the Earth Station must satisfy the 1 dB standard in Section 101.105 or the industry standard of 0.5 dB, the attached Engineering Statement demonstrates that the Earth Station fails to properly protect the Television Broadcasters' ENG operations.

---

5 47 C.F.R. § 101.105(a)-(c).

6 *See* Exhibit A.

7 *See SBE/DoD Memorandum of Understanding: 2025-2110 MHz Spectrum Sharing* (Apr. 30, 2009) ("DOD MOU").

8 *See id.*

9 *Amendment of Part 101 of the Commission's Rules to Facilitate Use of Microwave for Wireless Backhaul & Other Uses and to Provide Additional Flexibility to Broad. Auxiliary Serv. & Operational Fixed Microwave Licensees.*26, FCC Rcd 11614, ¶25, n. 91 (2011).

III. VIASAT'S PROPOSED MITIGATIION TECHNIQUES WILL NOT PROTECT THE TELEVISION BROADCASTERS FROM INTERFERENCE.

ViaSat offers four potential mitigation techniques to protect the Television Broadcasters from harmful interference, but each technique is inadequate and unlikely to offer the necessary protections to the primary ENG facilities in the 2 GHz band. First, ViaSat has offered to reduce its power by 10 dB, but as noted above, even with the new reduced power, the Earth Station still exceeds the maximum interference degradation standards for ENG receive sites. Second, ViaSat suggests it might be willing to restrict the elevation angles and azimuths for the Earth Station to protect the Television Broadcasters' receive sites. It is extremely unlikely, however, that this proposal would reduce the interference sufficiently to fall below the minimum degradation standards. The attached Engineering Statement already assumes 30 dB of suppression from antenna pointing, yet even with this assumption the Earth Station still fails the interference threshold at the Richland tower receive site by almost 50 dB.[10]

ViaSat's third mitigation technique – limiting use of the Earth Station to noon and midnight – does not realistically account for how and when the Television Broadcasters use their ENG facilities. WSB-TV broadcasts local news at noon and is very likely to be using one or more ENG trucks at that time. Moreover, both WSB-TV and WGCL-TV must cover breaking news when it happens. The Television Broadcasters cannot predict when the next breaking news event will occur, but it is very likely that they will need to use their ENG facilities at the same time ViaSat proposes to operate the Earth Station.

ViaSat's fourth and final mitigation technique – offering to cease operations upon notice from the Television Broadcasters – provides little real world protection. As an initial matter, given the Earth Station's secondary status in the 2 GHz band, ViaSat's proposed mitigation

---

10 *See* Exhibit A.

technique is actually a requirement of operating in the 2 GHz band. Regardless, in the fast paced local news business, ViaSat's concession to immediately cease operations provides little comfort. When covering breaking news, a broadcaster must know that its ENG operations will work. By the time a local reporter discovers that interference has interrupted live coverage and the local engineer is able to uncover the cause, it often is too late. The shot is lost and the newscast must move to the next story. Even assuming ViaSat immediately cooperates with any request to cease operations, under the best of circumstances, it will take several minutes for the local engineers to discover the source of the problem, call ViaSat, and convince ViaSat to cease operations. By then, it may be too late and the interference will have prevented timely reporting of breaking news.

CONCLUSION

ViaSat's Earth Station presents a substantial risk of harmful interference to the Television Broadcasters' ENG facilities. Although ViaSat has suggested that it is willing to mitigate the interference by reducing power or limiting its operations, none of ViaSat's proposals would provide the Television Broadcasters with sufficient protections to ensure continued, reliable use of their primary ENG facilities. ViaSat cannot demonstrate that its Earth Station complies with the Commission's interference rules. The Commission, therefore, must deny the application.

Respectfully submitted,

GEORGIA TELEVISION COMPANY AND MEREDITH CORPORATION

By: _____
Michael Basile
Robert J. Folliard, III

Their Attorneys

DOW LOHNES PLLC
1200 New Hampshire Avenue, NW
Suite 800
Washington, D.C. 20036
(202) 776-2000

January 31, 2012

EXHIBIT A

Engineering Statement

ENGINEERING STATEMENT
IN SUPPORT OF REPLY
GEORGIA TELEVISION COMPANY AND
MEREDITH CORPORATION
ATLANTA, GEORGIA

This Engineering Statement was prepared on behalf of Georgia Television Company and Meredith Corporation, licensees of television broadcast stations WSB-TV and WGCL-TV, respectively, both in Atlanta, Georgia. This statement was prepared in Reply to the Opposition of ViaSat, Inc. to the Petition to Deny filed by Georgia Television Company and Meredith Corporation to the ViaSat, Inc. application operate a satellite earth station in the 2 GHz broadcast auxiliary band.

Background

Georgia Television Company and Meredith Corporation are the licensees of broadcast auxiliary stations KR9903 and KC62919, which are authorized for operation in the broadcast auxiliary band allocated from 2025 to 2100 MHz. These broadcast auxiliary stations are employed for electronic news gathering ('ENG') by mobile vehicles. These stations utilize multiple receive locations throughout the region to ensure reception capability from even the most remote or difficult mobile transmission locations in the market. The receive locations for these stations are summarized as follows in the table below:

Location Name	Latitude (dd-mm-ss)(NAD83)	Longitude (dd-mm-ss)(NAD83)	Antenna Height (m AGL)
Westin Plaza Hotel	33-45-34.0	84-23-18.1	220.4
Richland Tower	33-48-27.0	84-20-27.0	304.8
Fox Tower	34-07-32.0	83-51-32.0	271.3
Blackjack Tower	33-58-19.2	84-30-08.3	76.2
Newnan Tower	33-24-41.0	84-49-47.8	304.8

The ENG operators depend on the sensitivity of the receivers at each of these locations to complete their mobile ENG transmissions, which unlike normal fixed link situations may not have proper path clearances and/or may involve partial obstructions from trees and buildings. The sensitivity of the receiver will depend on the digital mode of operation, which also affects the carrier-to-noise required; and thus, the potential for interference into the receiver. For purposes of this analysis, the digital mode of operation that results in the highest level of interference vulnerability has been assumed, which is the 64QAM mode.

Threshold to Interference of ENG Receivers

Based on the TIA/EIA Telecommunications Systems Bulletin, TSB10-F, *Interference Criteria for Microwave Systems*, Annex B, the determination of allowable interference is generally based on the Threshold-to-Interference (T/I) ratio that results is a threshold degradation of 1 dB. In this case the ENG receivers have a given sensitivity

level of -87 dBm* in a 64QAM modulation density mode. Based on data provided by the equipment manufacturer, the required carrier-to-noise ratio in this mode is 21.0 dB. For this case, the T/I ratio would then be calculated to be 27 dB for a 1 dB degradation level.† The threshold signal level for interference into the ENG receivers is thus calculated to be as follows:

$$I = -87\ dBm - 27\ dB = -114\ dBm$$

This means that in order to meet the threshold 1 dB degradation to the ENG receiver, the incoming interfering signal level should not exceed -114 dBm. This is irrespective of what level might be received from the ENG transmitter, other than it must be assumed that the signal received from the ENG transmitter is at the minimum threshold level of -87 dBm.‡

Evaluation of Interference from the Proposed ViaSat, Inc. Transmitter

ViaSat, Inc. proposes operation of its earth station at its facility in Duluth, GA. The parameters of the proposed operation are summarized as follows:

Geographic coordinates (NAD83)	33-57-47.5 N.L. / 84-05-45.5 W.L.
Site Elevation	284.0 m AMSL
Antenna type	7.3 meter dish
Antenna gain	41.5 dBi
Antenna radiation center height	5.9 m AGL / 289.9 m AMSL
Transmitter power input to antenna	1.7 W (+32.3 dBm)

* The term dBm references decibels relative to 1 milliwatt of power.
† See Annex B of TIA/EIA TSB10-F for details on the calculation of the T/I ratio figure.
‡ It is noted that a 0.5 dB degradation protection level would require a T/I ratio of 30 dB and a threshold for interference into the ENG receivers of -117 dBm.

Emission designator	128KG1D
Emission bandwidth	128 kHz

The first step in evaluating the interference from the ViaSat, Inc. earth station is a study of the terrain from the transmitting antenna location to each of the victim ENG receive locations. Terrain profiles from the ViaSat, Inc. earth station location to each of the ENG receive locations were prepared using the high resolution U.S.G.S. 1-second terrain database. These profiles are included herein as Figures 1 through 5.

Inspection of the terrain profiles indicates that there is a line-of-sight path from the ViaSat, Inc. earth station antenna to the Richland receiving antenna of the ENG system. This means that for this location free-space propagation losses should be considered for the evaluation of interference. Diffraction losses due to terrain obstructions would not be considered.

It is noted that the Technical Analysis included with the ViaSat, Inc. Opposition indicates that there is 30 to 50 dB of diffraction loss on all of the radials from the earth station to the receiving antennas.[§] This seems to be based on a 3.7-meter 'obstruction' occurring at a distance of 0.00 km on all of the paths. There is no justification for this obstruction and there appears to be no basis for this. In fact, given that the 'obstruction' occurs at distance of 0.00 km at the same approximate height listed for the receive antenna suggests that the obstruction indication is erroneous.[**]

A topographic map showing the ViaSat, Inc. earth station transmitter site location and the radial directions to each of the ENG receive antennas was prepared by

---

[§] See Exhibit B of Opposition of ViaSat, Inc., with specific reference to the 'Pathloss Calculation' sheet included for each ENG receive location.

[**] It is noted that the geographic coordinates of the Fox tower location shown in the Technical Analysis included with the ViaSat, Inc. Opposition are in error. The latitude for the Fox tower site shown therein is 33-07-32. However, the correct latitude is 34-07-32. While this completely changes the orientation and distance from the earth station site, using the correct coordinate data to the Fox tower site still shows a terrain obstruction from the earth station. See Figure 3 herein.

the undersigned and is shown at Figure 6 herein. The topographic map data confirms the close-in terrain profile results shown in Figures 1 through 5. In addition, the topographic map clearly shows the absence of any terrain elevations that would cause a 3.7-meter terrain obstruction from the earth station to any of the ENG receive antennas.

For the ENG receive site location with a line-of-sight path from the ViaSat, Inc. earth station antenna, a free-space interference analysis was conducted. The results of the analysis for this ENG receive location are summarized as follows:

Interference Evaluation into the Richland Site	
Azimuth from earth station	232.7°True
Distance to ENG receive location	28.5 km
Antenna gain toward ENG receiver[††]	11.5 dBi
Transmitter power at antenna	32.3 dBm
EIRP toward ENG receive antenna	43.8 dBm
Free-space path loss	127.9 dB
Receive antenna gain	20 dBi
Received interfering signal level	-64.1 dBm
Threshold level for interference to ENG	-114.0 dBm
Interference result	Fail threshold by 49.9 dB

As indicated above, the Richland receive site is subject to interference exceeding the permissible level by 49.9 dB. This means that this receive location could be subject to

[††] A transmitting antenna discrimination factor of 30 dB was estimated under the assumption that the earth station would transmit at an elevation at low as 5° above the horizon. The attached Figure 7 is a copy of the earth station antenna pattern submitted with the ViaSat, Inc. earth station application, which is included for reference.

significant levels of interference from the ViaSat, Inc. earth station operation, which could render this receive site unusable.[‡‡]

Conclusion

In conclusion, a careful analysis of the terrain and interference potential from the proposed ViaSat, Inc. earth station facility at Duluth, Georgia indicates that there will be line-of-sight to at least one of the five subject ENG receive locations employed by WSB-TV and WGCL-TV; and that this particular receive location could be subject to significant levels of interference from the earth station operations.

Louis R. du Treil, Jr., P.E.

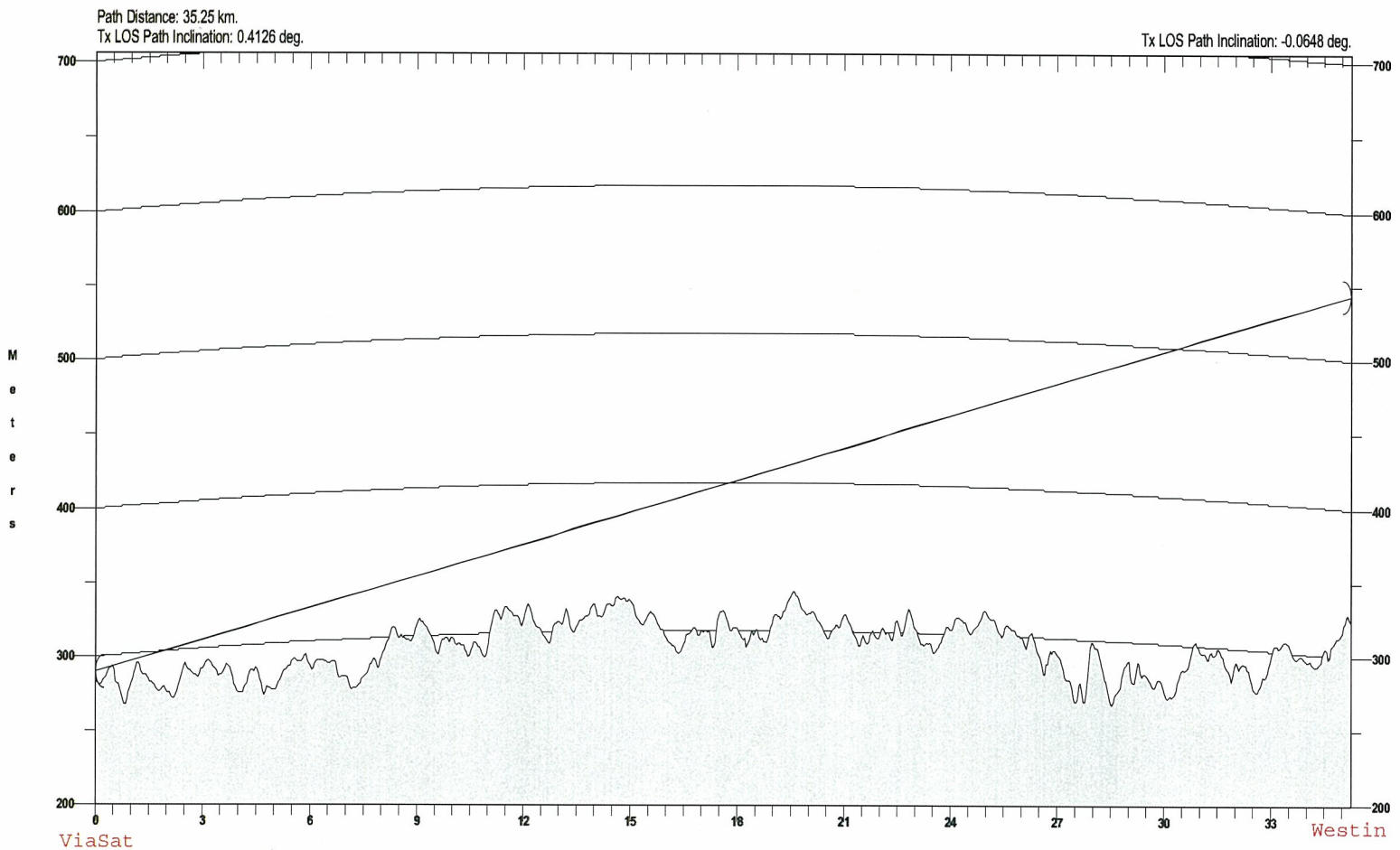
du Treil, Lundin & Rackley, Inc.
201 Fletcher Ave.
Sarasota, Florida 34237-6019

Phone: 941-329-6004

January 30, 2012

[‡‡] The Technical Analysis included with the ViaSat, Inc. opposition concedes that even its calculations show cases where the undesired signal from its earth station would be above the calculated noise floor. This alone is sufficient to determine that the earth station emissions would fail the T/I ratio for the interference degradation criteria of 1 dB and cause objectionable interference.

Figure 1



	33°57' 47.50" N
	084°05' 45.50" W
Elevation	284.0 m.
Ant. AGL - Tx/Rx/Div	5.9/0.0/0.0 m.
Frequency - Tx	0.00000 MHz
Azimuth	230.211 deg T

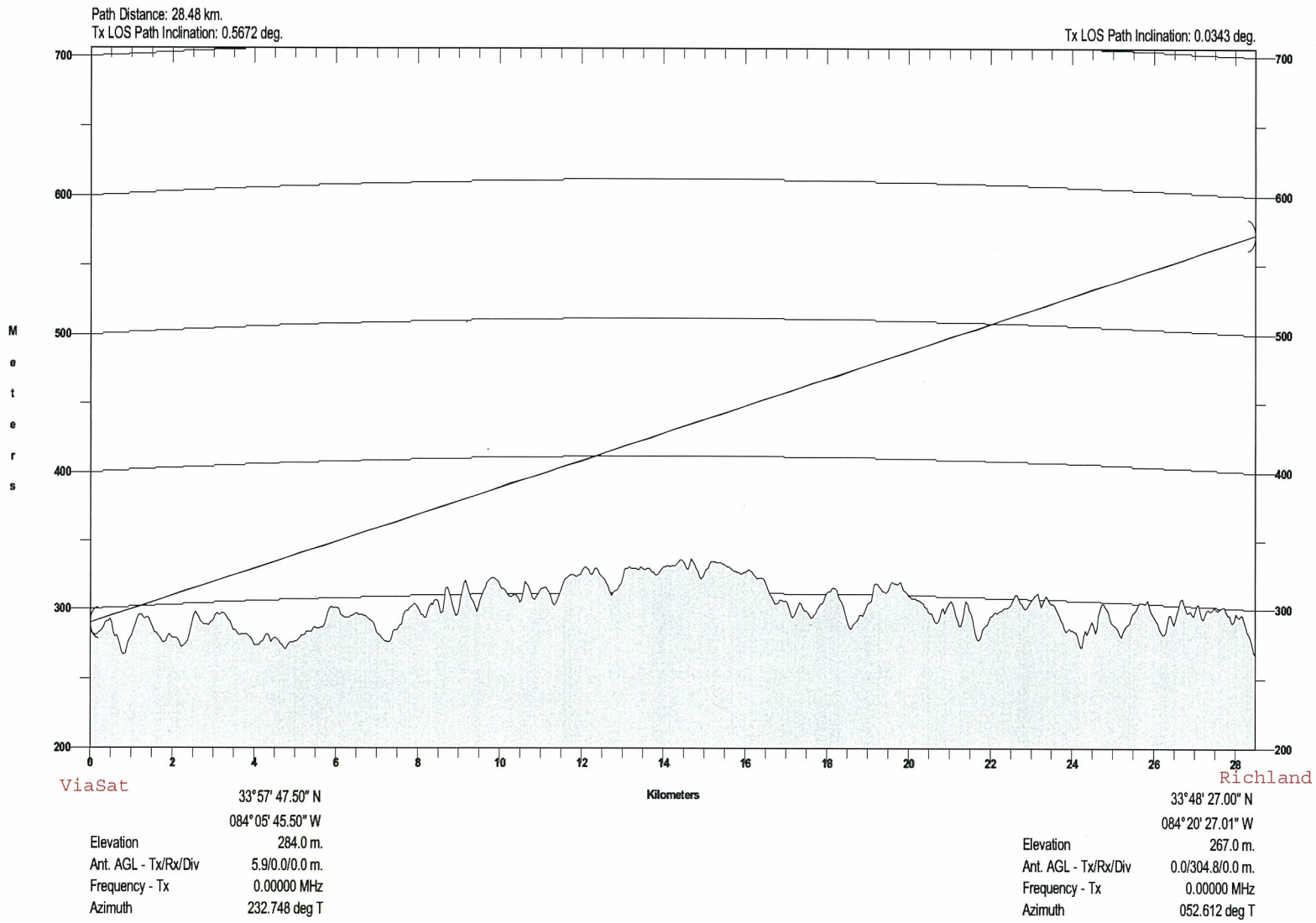
	33°45' 34.00" N
	084°23' 18.10" W
Elevation	323.9 m.
Ant. AGL - Tx/Rx/Div	0.0/220.4/0.0 m.
Frequency - Tx	0.00000 MHz
Azimuth	050.048 deg T

KEY: Profile

K = 4/3 K = 4/3, F = 0.6*F1

TERRAIN PROFILE FROM VIASAT EARTH STATION TO WESTIN PLAZA HOTEL SITE.

Figure 2

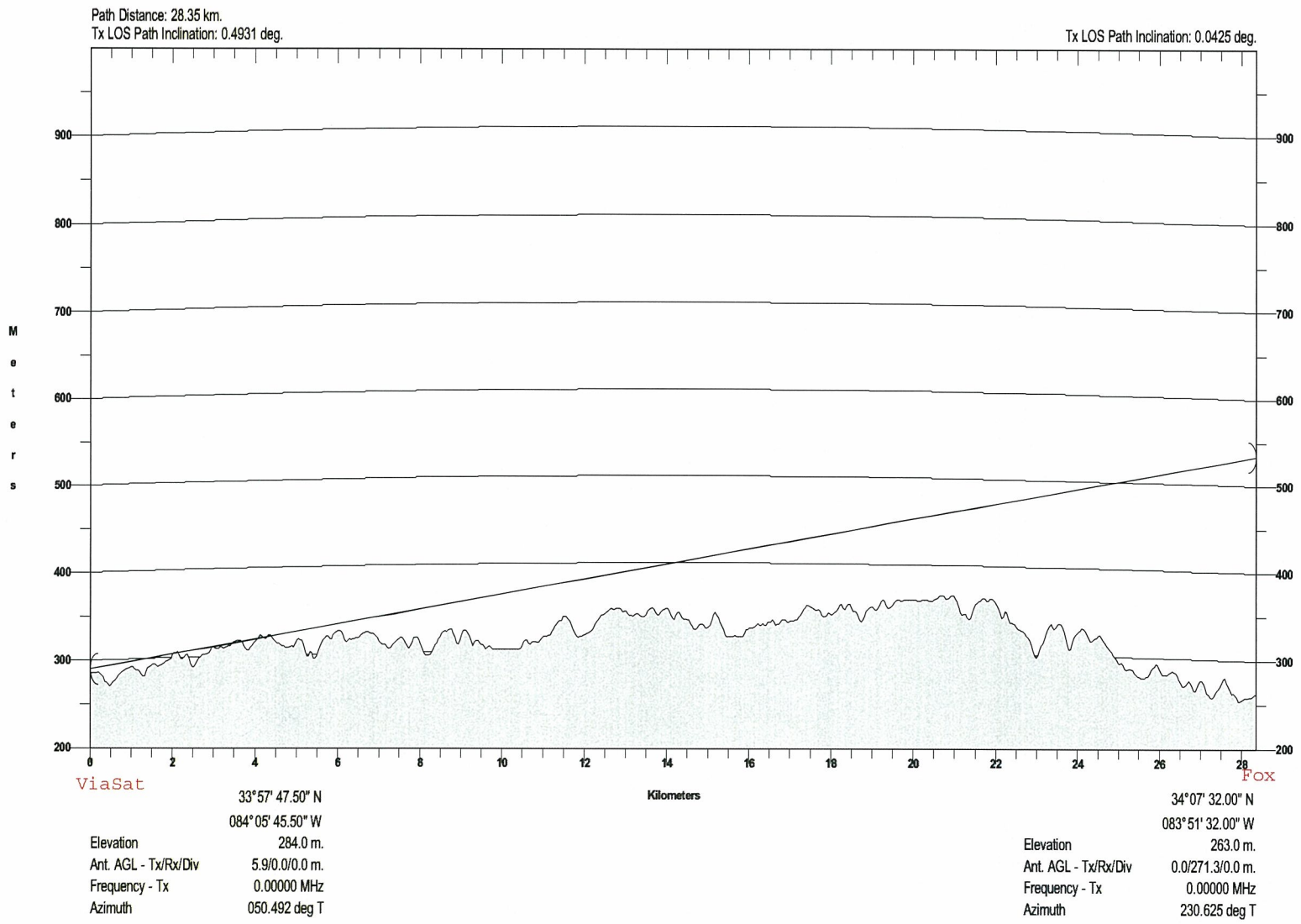


KEY: Profile

K = 4/3 K = 4/3, F = 0.6*F1

TERRAIN PROFILE FROM THE VIASAT EARTH STATION TO THE RICHLAND TOWER SITE.

Figure 3

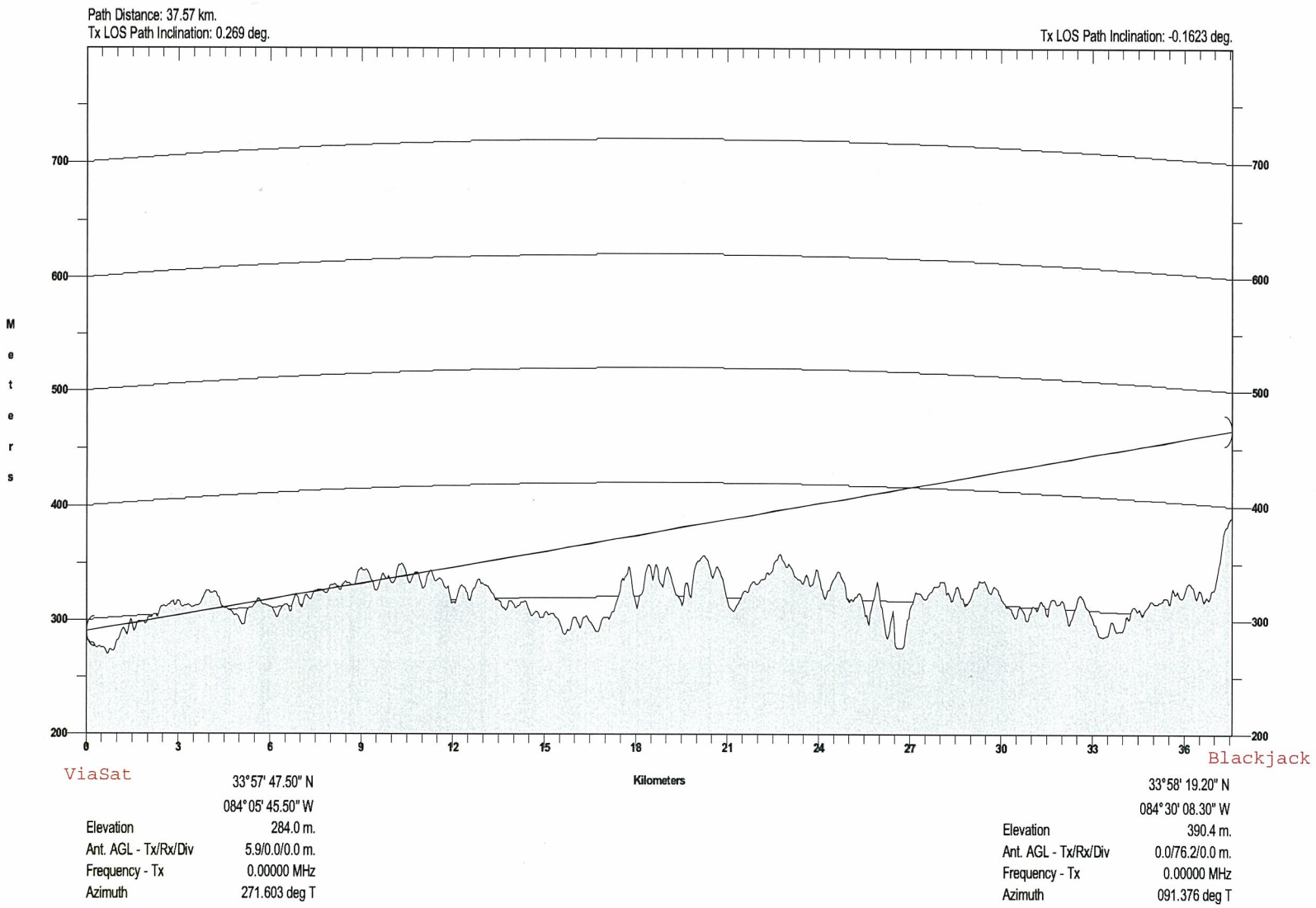


KEY: Profile

K = 4/3 K = 4/3, F = 0.6*F1

TERRAIN PROFILE FROM THE VIASAT EARTH STATION LOCATION TO THE FOX TOWER SITE.

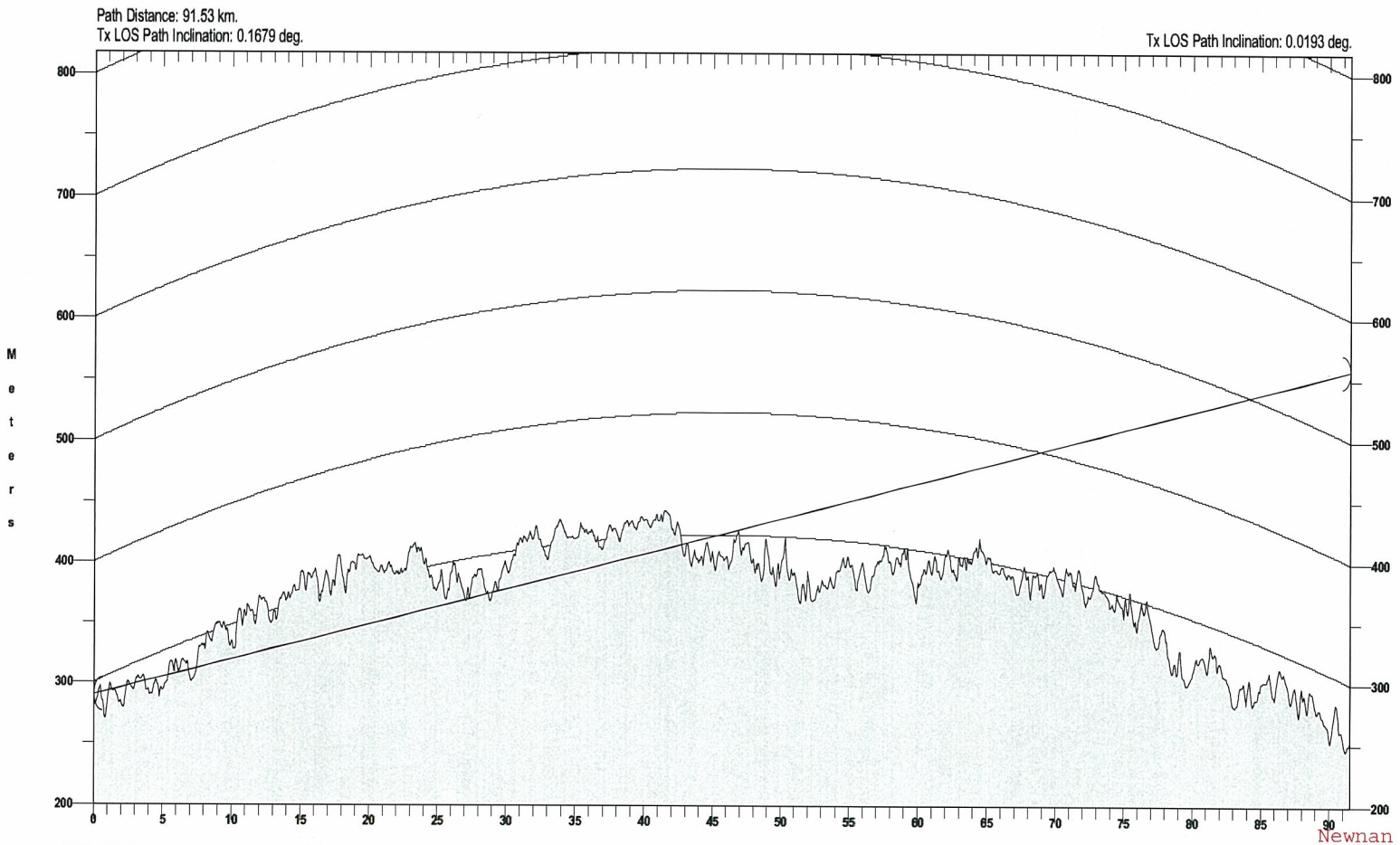
Figure 4



KEY: Profile

K = 4/3 K = 4/3, F = 0.6*F1

TERRAIN PROFILE FROM THE VIASAT EARTH STATION LOCATION TO THE BLACKJACK TOWER SITE.



ViaSat

33°57' 47.50" N
084° 05' 45.50" W

Elevation	284.0 m.
Ant. AGL - Tx/Rx/Div	5.9/0.0/0.0 m.
Frequency - Tx	0.00000 MHz
Azimuth	228.239 deg T

Newnan

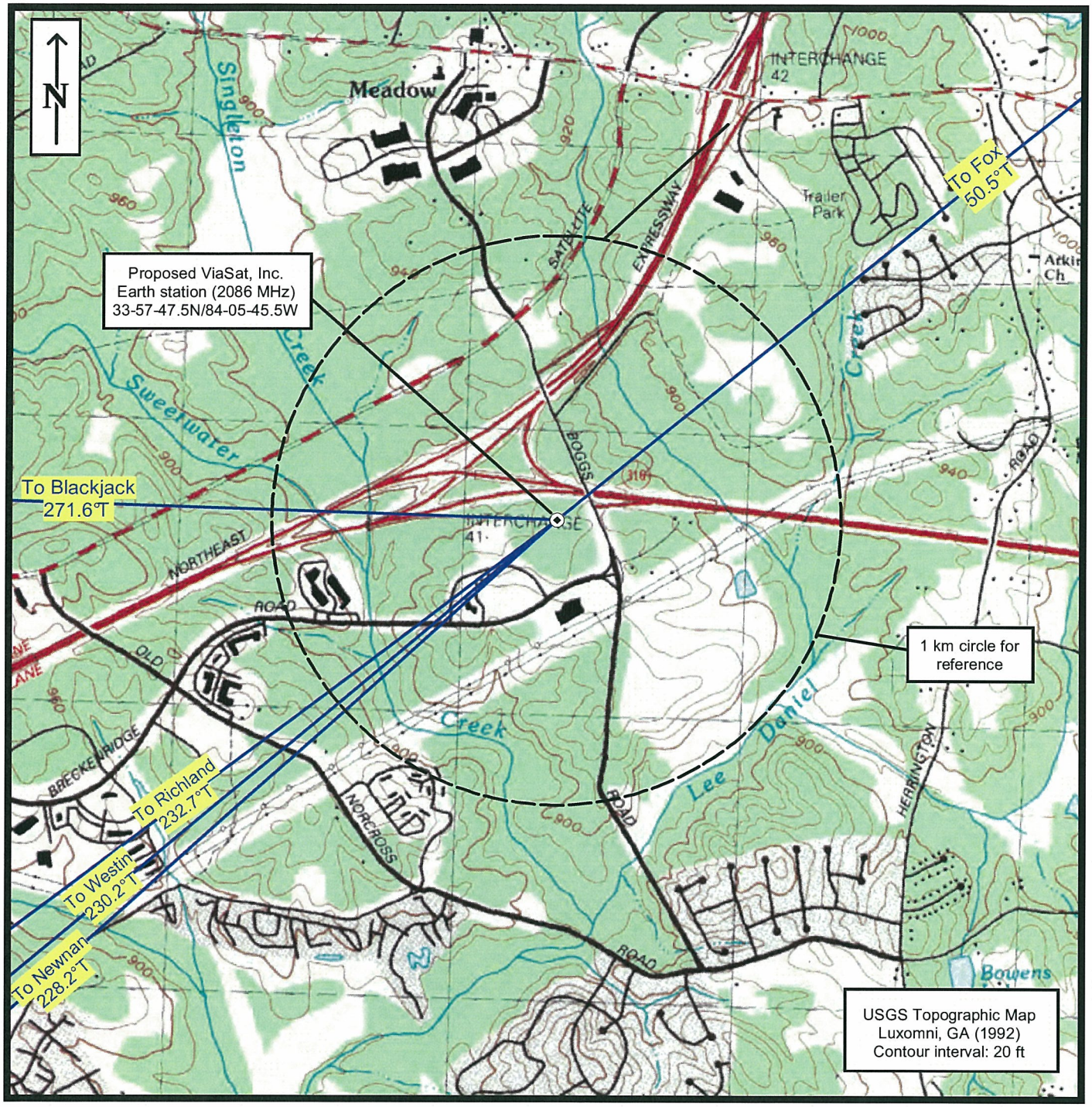
33°24' 41.00" N
084° 49' 47.80" W

Elevation	253.2 m.
Ant. AGL - Tx/Rx/Div	0.0/304.8/0.0 m.
Frequency - Tx	0.00000 MHz
Azimuth	047.832 deg T

KEY: Profile

K = 4/3 K = 4/3, F = 0.6*F1

TERRAIN PROFILE FROM THE VIASAT EARTH STATION LOCATION TO THE NEWNAN TOWER SITE.



TOPOGRAPHIC MAP OF THE PROPOSED VIASAT, INC. EARTH STATION TRANSMITTER LOCATION AND THE RADIAL DIRECTIONS TO THE PROTECTED ENG RECEIVERS

---

duTreil, Lundin & Rackley, Inc. Sarasota, Florida

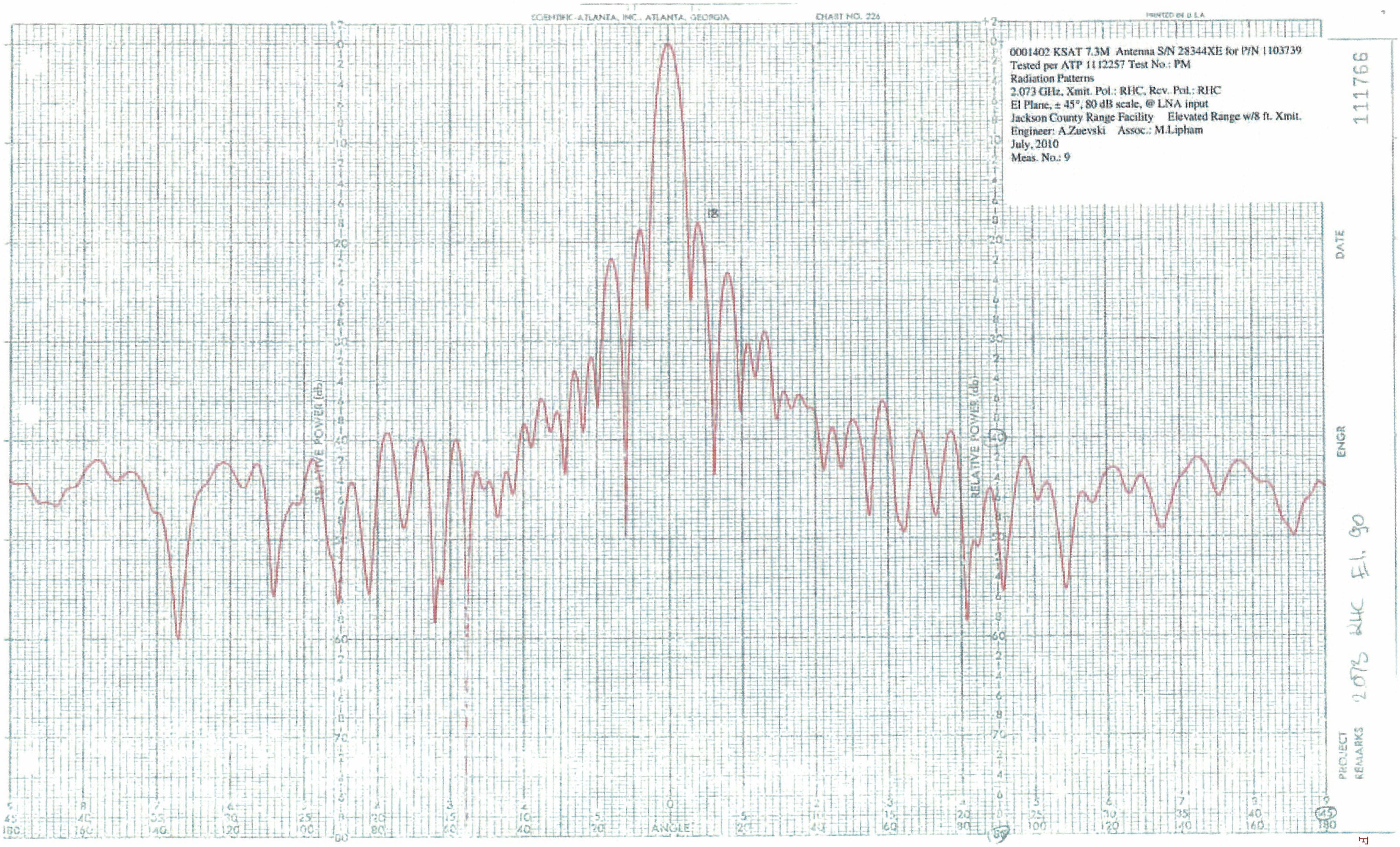

SCIENTIFIC-ATLANTA, INC., ATLANTA, GEORGIA
CHART NO. 226
PRINTED IN U.S.A.
0001402 KSAT 7.3M Antenna S/N 28344XE for P/N 1103739
Tested per ATP 1112257 Test No.: PM
Radiation Patterns
2.073 GHz, Xmit. Pol.: RHC, Rcv. Pol.: RHC
El Plane, ± 45°, 80 dB scale, @ LNA input
Jackson County Range Facility Elevated Range w/8 ft. Xmit.
Engineer: A.Zuevski Assoc.: M.Lipham
July, 2010
Meas. No.: 9
111766
DATE
ENGR
PROJECT
REMARKS
2073 RHC El. 90
RELATIVE POWER (db)
ANGLE

Figure 7

CERTIFICATE OF SERVICE

I, Rayya Khalaf, hereby certify that on this 31st day of January 2012, I caused a copy of the foregoing Reply to Opposition to Petition to Deny to be served on the following by first class mail:

John P. Janka
Elizabeth R. Park
Jarrett Taubman
Latham & Watkins, LLP
555 11th Street, NW
Suite 1000
Washington, DC 20004

Rayya Khalaf