May 24, 2002

Marlene H. Dortch, Secretary
Federal Communications Commission
Office of the Secretary
445 12th Street, SW
Washington, DC 20554

Re: Digital Audio Broadcasting Systems and Their Impact On the Terrestrial Radio Broadcast Service, MM Docket No. 99-325
Further Study of FM IBOC & FM SCA Compatibility

Dear Madam Secretary,

Pursuant to the Public Notice (DA 01-2932), dated December 19, 2001, in the above-referenced matter, National Public Radio (NPR) and the International Association of Audio Information Services (IAAIS) respectfully submit the attached "Further Report on Analog SCA Compatibility with iBiquity's Digital FM-IBOC System."

NPR, IAAIS and the Advanced Television Technology Center jointly crafted the parameters of the study with the active support of iBiquity Digital, which generously funded the effort. iBiquity Digital has separately filed the data from the further tests with the Commission.

Using the study's data, NPR contracted V-Soft Communications to prepare a visual representation of the likely real-world impact on Radio Reading Services of adding iBiquity's FM system to all stations within the top 16 radio markets. NPR and IAAIS express appreciation to iBiquity Digital for the funding and support without which the underlying testing would not have been possible.

NPR and IAAIS stand ready to assist the Commission in considering the technical and policy implications of the study's results in the referenced proceeding.

Respectfully submitted,

/s/

Michael Starling, Esq.
VP for Engineering & Operations
NPR

/s/

David Andrews
Chair, Technology Committee
IAAIS

c: Albert Shuldiner
VP & General Counsel
iBiquity Digital Corporation
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David Wilson
Secretariat, NRSC
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Arlington, Virginia

Further Report on
Analog SCA Compatibility with iBiquity Digital's
FM-IBOC System

Tests Performed at the Advanced Television Technology Center, Alexandria, Virginia
March, 2002

Project Participants and Observers
David Andrews, Chair, Technology Committee, International Association of Audio Information Services, Washington, D.C.
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Executive Summary

During 2001 the National Radio System Committee (NRSC) conducted tests to evaluate the compatibility of iBiquity Digital's FM IBOC system with analog subcarrier (SCA) operations. National Public Radio (NPR), and the International Association of Audio Information Services (IAAIS) represent members who operate SCA analog facilities. The IAAIS represents over 100 radio reading services for the blind and print-disabled. NPR provides programming and representation to over 640 public radio stations, many of which operate SCAs. Reading services in thirteen of the top sixteen radio markets utilize subcarriers of NPR member stations.

During NRSC deliberations, NPR and the IAAIS noted the inconclusiveness of test results concerning analog SCA compatibility with IBOC transmissions. The parties suggested the need for additional data points to achieve greater resolution and a better understanding of the likely interference consequences to analog SCAs of a mass deployment of IBOC transmissions in the FM band. Additional information was sought to analyze the effects of IBOC transmission on subcarriers operating on different frequencies (e.g. 92-kHz vs. 67-kHz) and design variables affecting the relative susceptibility or immunity of different SCA receivers.

iBiquity Digital volunteered to fund further tests to help resolve these concerns and sought to conduct the tests as expeditiously as possible for their consideration by the FCC during the current comment period on terrestrial digital radio. IAAIS provided ten SCA receivers believed to be representative of those currently in use. iBiquity, IAAIS, NPR and Advanced Television Technology Center (ATTC) staff, as well as outside consultants to all parties, collaborated in shaping test criteria and observing the tests that were performed by the ATTC during February and March 2002. Additionally, multipath issues were raised as a significant factor affecting SCA performance and additional work was done to analyze the audible effects of multipath on SCA performance. The ATTC's documented test plan and summarized test results were included in iBiquity Digital's filing before the FCC on this matter dated 13 May 2002.

At the conclusion of testing, NPR contracted with V-Soft Engineering of Cedar Falls, Iowa to model the results in the top sixteen radio markets using Longley/Rice propagation predictions and incorporating predictions from the test data about SCA analog receiver performance. In addition to revealing areas and populations where terrain effects would limit reception, areas and populations were calculated and plotted where coverage would be limited by existing analog adjacent channel interference, as well as the areas and populations calculated to lose coverage due to new IBOC interference (assuming all 1st and 2nd adjacent channel stations were transmitting IBOC signals). The performance characteristics of the SCA receivers were fairly closely grouped, and an average of their performance was used in generating the predictive impact maps. The coverage studies were projected to extend to the 54-dBu contour, based on an assessment that few SCA receivers are in use beyond this contour without the aid of outdoor antennas or cable FM input. This assumption was tested for four markets where actual SCA receiver distribution was available by Zip Code. These maps are included as Appendix A.

A tabular summary of the raw population counts within the projected SCA reception areas, the areas and populations delimited by existing analog interference, and the new areas and populations projected to be interfered with by the addition of FM-IBOC is included as Attachment B. Pie-charts representing these effects on the populations of each of the markets studied are included as Attachment C.

On average, the added IBOC-interference effect, based on population, was projected at 2.6%. This figure varied considerably, from as low as 0.3% in markets with relatively flat terrain and high transmitter power and antenna height to 8.5% in the Los Angeles market on station KPCC. In general, lower power stations suffer greater interference, both from adjacent analog stations, as well as from new potential IBOC interference.

There appeared to be no discernible distinction in the susceptibility of 92-kHz SCA receivers versus 67-kHz receivers. Additionally, second adjacent channel interference contributed the bulk of interference attributable to IBOC operations. Apparently, first adjacent channel IBOC interference was effectively "masked" by the analog interferer, whereas IBOC energy added to second adjacent station's signal contributed a measurable increase in undesired signal competing with the capture of the desired SCA signal.

Stations Studied

NPR sought to map the SCA coverage for radio reading services in the top sixteen radio markets, as reported by Arbitron. These sixteen markets presumably represent a fairly large number of SCA users and balance the need for a manageable number of individual studies against a large enough pool to assure a representative cross-section.[1] The number was chosen to assure the inclusion of several markets characterized by irregular terrain, relatively low transmitter power, varying band congestion, and varying population densities. The study includes:

New York —WNYC-FM[2]
Los Angeles—KCSN-FM, Northridge and KPCC-FM, Pasadena
Chicago—WBEZ-FM
San Francisco—KALW-FM[3]
Dallas—KERA-FM
Philadelphia—WHYY-FM
Houston—KUHF-FM
Washington, D.C.—WETA-FM
Boston—WERS-FM, Boston and WATD-FM, Marshfield[4]
Detroit—WDET-FM
Atlanta—WABE-FM
Miami—WLRN-FM
Seattle—KUOW-FM
Phoenix—KJZZ-FM
Minneapolis—KNOW-FM
San Diego—KPBS-FM

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[1]As a confidence check on predicted versus real-world performance, three additional markets were mapped, Pittsburgh, Pennsylvania (WDUQ-FM), Roanoke, Virginia (WVTF-FM), and Cedar Falls, Iowa (KHKE-FM) due to market familiarity of project participants.

[2]WNYC-FM, in the aftermath of the loss of transmission facilities at the World Trade Center, is currently operating from 4 Times Square. The Empire State Building, for which a construction permit is being sought, was mapped as the operative longer-term site at 6-kw.

[3]KALW-FM was mapped, although it reportedly no longer is the provider for the Rose Resnick Lighthouse for the Blind, which has now moved to an SAP channel. Since San Francisco is notoriously tough on radio reception the exercise was deemed of value for the depiction of complex terrain.

[4]WERS-FM, as well as WATD-FM were mapped as WATD covers the area to the south of Boston and originates the Talking Information Center broadcasts carried by WERS and other stations around Massachusetts. This study was especially instructive due to the high degree of predicted analog interference.

Methodology and Study Parameters

John C. Kean, Technical Consultant to NPR

The Digital Audio Broadcasting system developed by iBiquity Digital Corporation was designed to operate on an in-band on-channel (IBOC) mode along with current analog FM broadcasting until such time as a fully digital system evolves. During this hybrid transition process, which is expected to last for years, the energy of IBOC sidebands on one station can extend into the pass band of a receiver tuned to adjacent channel stations, causing an increase in noise in the affected receiver. Subcarrier transmissions, also known as SCA services, operate at relatively low injection levels relative to main channel programming and have greater sensitivity to interference than main channel services.

Recognizing the greater susceptibility of analog SCA receivers to adjacent station interference and the potential impact on SCA services, several participants in the National Radio System Committee's DAB Subcommittee urged the NRSC to develop SCA compatibility tests procedures for the IBOC system. Laboratory tests were performed in mid-2001 at the Advanced Television Technology Center to collect objective measurements of SCA reception with IBOC added to the host station, as well as first and second adjacent channel undesired stations. At the same time, subjective field tests were performed using the FM facilities of WPOC, Baltimore, and experimental station WD2XAB.

The NRSC's view of the final test data was that the SCA compatibility findings were inconclusive. The subjective tests (which were intended to evaluate host compatibility) included numerous cases where the subcarrier reception had failed or nearly failed, even with analog-only transmission. The subjective test results made conclusions about the potential impact of IBOC meaningless. (NPR and its technical representative suspected that the test receiving sites had high signal multipath, leading to the reception failure.)

The objective measurements at ATTC included audio signal-to-noise ratio (SNR) measurements with analog or hybrid interference on first and second adjacent channels. While these test results indicated interference effects with some SCA receivers, the 10-dB step changes in the second adjacent channel RF test ratios were too large to accurately interpolate audio SNR to a specific value. Accurate radio frequency desired-to-undesired (RF D/U) signal ratios are needed to map potential interference to real FM stations. At the same time, the adjacent channel measurements of some receivers indicated that IBOC interference might occur at D/U ratios of more than 6-dB, which is the FCC's service contour protection ratio. However, measurements were not conducted at higher D/U ratios since such interference susceptibility by SCA receivers was not anticipated when the test plans were developed.

In order to resolve these measurement issues and to provide more useful data on how certain SCA receivers will perform if FM-IBOC is widely implemented, iBiquity, NPR and the IAAIS agreed in November 2001 to develop and perform a new series of objective tests which

were conducted at ATTC in February and March of 2002. The new measurements incorporated finer steps in the second adjacent channel RF measurements and extended D/U ratios for the first adjacent channel measurements. The tests results are summarized in tabular form below and in map form for a sampling of stations.

Final test completion required lab adjustments in the methodology initially agreed upon by the parties. Because all the first and second adjacent channel IBOC measurements referenced an analog-only interfering station, it was essential that the sideband distribution of the analog FM carriers duplicate the transmission envelope of a typical broadcast station with compressed and clipped audio modulation. IAAIS' consultant, who was not able to be on site for the tests, had suggested a method of simulating typical analog main-channel modulation of the host and interfering adjacent-channel signal that was agreed upon by all parties. In the lab, however, the individuals conducting the tests could not achieve a representative transmission envelope with the supplied equipment and the suggested procedures. After considerable effort was expended attempting to employ the agreed upon methodology, a substitute approach was developed following careful examination of the peak-hold and time-averaged spectrum of off-air signals of six Washington D.C.-area FM stations (including one public radio station). A modulation system was then devised that closely resembled the spectral characteristics of the middle of those six stations. This modulation system used USASI noise (a standard noise that simulates program audio), a digital clipper and low pass filter.

The D/U ratios for SCA receiver susceptibility is summarized in the following table for the eight receivers tested. The RF D/U ratio for Hybrid (analog plus IBOC) increases by only 1.2-dB to maintain the reference weighted quasi-peak audio signal-to-noise ratio of 25-dB. This degradation, while measurable in the laboratory, is generally not significant in real world conditions. For second adjacent channel interference, the required RF D/U ratio to maintain reference audio noise must increase by 9.6-dB (from –27.5-dB to –17.9-dB) to maintain the same reference noise when IBOC is added to the analog interferer. This value of degradation may be significant depending on the distance and height relationship of the desired and undesired stations. It is the primary source of degradation shown in the composite interference maps.

D/U Ratios for SCA Receivers (dB)				
	First Adjacent Channel		**Second Adjacent Channel**	
	Analog	**Hybrid**	**Analog**	**Hybrid**
Mean of D/U Thresholds for 25-dB WQP SNR*	16.2	17.4	-27.5	-17.9
Worst Receiver Performance**	24.7	24.9	-35.9	-17.5

*Weighted quasi-peak audio signal to noise ratio (note that some receiver D/U values were determined for 20-dB WQP SNR to provide more reliable measurement data).

**Performance in terms of greatest susceptibility to IBOC (note that these receivers are not necessarily a majority of SCA receivers in use).

Measurements were also taken for host compatibility, that is, a rise in SCA noise due to IBOC on the primary station, using a multipath simulator. The digitally synthesized simulator was capable of producing either mobile or static multipath conditions. Audio recordings were made of the mobile simulations, while objective measurements were made of static measurements.

Finally, maps with Zip Code overlays were generated for San Diego, Phoenix, Minneapolis, and Boston were compared with known SCA receiver locations as a confidence assessment on where receivers were projected to not be operative due to low signal strength or existing SCA adjacent channel interference. By comparing receivers in Zip Codes entirely outside the 54-dBu contours or entirely within anticipated adjacent channel interference zones, the assessment confirmed the validity of projected real-world receiver locations.

It should be noted that the tests conducted by ATTC were not the tests agreed on by IAAIS and NPR consultants. The tests which were conducted differed in the way the interfering signal was created and the parameters used to specify the D/U testing. The changes were made without consulting IAAIS. The results might have differed significantly if the originally proposed protocol was used. However, it is impossible to know specifically how the test numbers would have changed. Further, it should be noted that IAAIS, NPR, and iBiquity were never able to come to agreement over the importance of the use of dynamic multipath in the testing and how to incorporate such testing in the procedures.

Analog Versus IBOC/Hybrid Mapping Project

Doug Vernier
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The Longley/Rice interference maps are designed to show the additional subcarrier interference a given station will receive when the stations on the first adjacent and second adjacent channels begin IBOC operation. With the exception of KALW, all maps were studied assuming a receiving antenna height of 5-meters above ground. (KJZZ was studied using a receiver antenna height of 5-meters and compared with a study using a receiver antenna height of ten meters. We found slightly more interference at the 5-meter height.) In each case the percent increase of subcarrier interference population was calculated above the calculated interference-free potential analog subcarrier population.

Observations:

- The smaller the effective radiated power (ERP) of the desire station, the more interference is received (as a percentage of the Interference Free analog population)
- Stations near large bodies of water will have less interference (interference over water is not counted)
- Class B stations receive more interference on the average than class C stations
- On the average, hilly areas contribute to more interference than flat or rolling areas
- Second adjacent channel interference is of greater consequence than first adjacent channel interference

It should be noted that, with the exception of KHKE, all studies were done with interfering stations filtered to include licenses and construction permits only. The KHKE study included applications because there were a number of second channel adjacent applications on file that, once operational, could increase the interference. This factor could also increase the interference of all of other station studied. However, since in most major markets applications for new stations are rare, the impact of excluding applications should be minimal.

With regard to the KJZZ study, while Phoenix is a mix of flat land surrounded by hills, it is believed the high-power and high antenna height mitigate the level of received interference.

# # #

Attachments

Appendix A

WNYC-FM Subcarrier Interference - Analog vs. IBOC Hybrid

WNYCFM, Ch.230, 93.9 MHz
Contours = 60 & 54 dBu
BPH20011120AAW
Latitude: 40-44-54 N
Longitude: 073-59-10 W
Power: 6.00 kW
EIRP Used: 9.84 kW
AMSL Height: 429.0 m
HAAT: 415 m
Elevation: 13.39 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0010
Dielec Const: 15.0
Refractivity: 312.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 16,841,430
area = 13,612.4 sq. km
Terrain Blockage loss
pop. = 63,980
area = 17.5 sq. km

25 dB WQP SNR
Analog Int. loss
pop. = 1,984,697
area = 4,570.4 sq. km
Hybrid IBOC Int. loss
pop. = 255,676
area = 510.1 sq. km
Int. Free Pop. % = 1.76%

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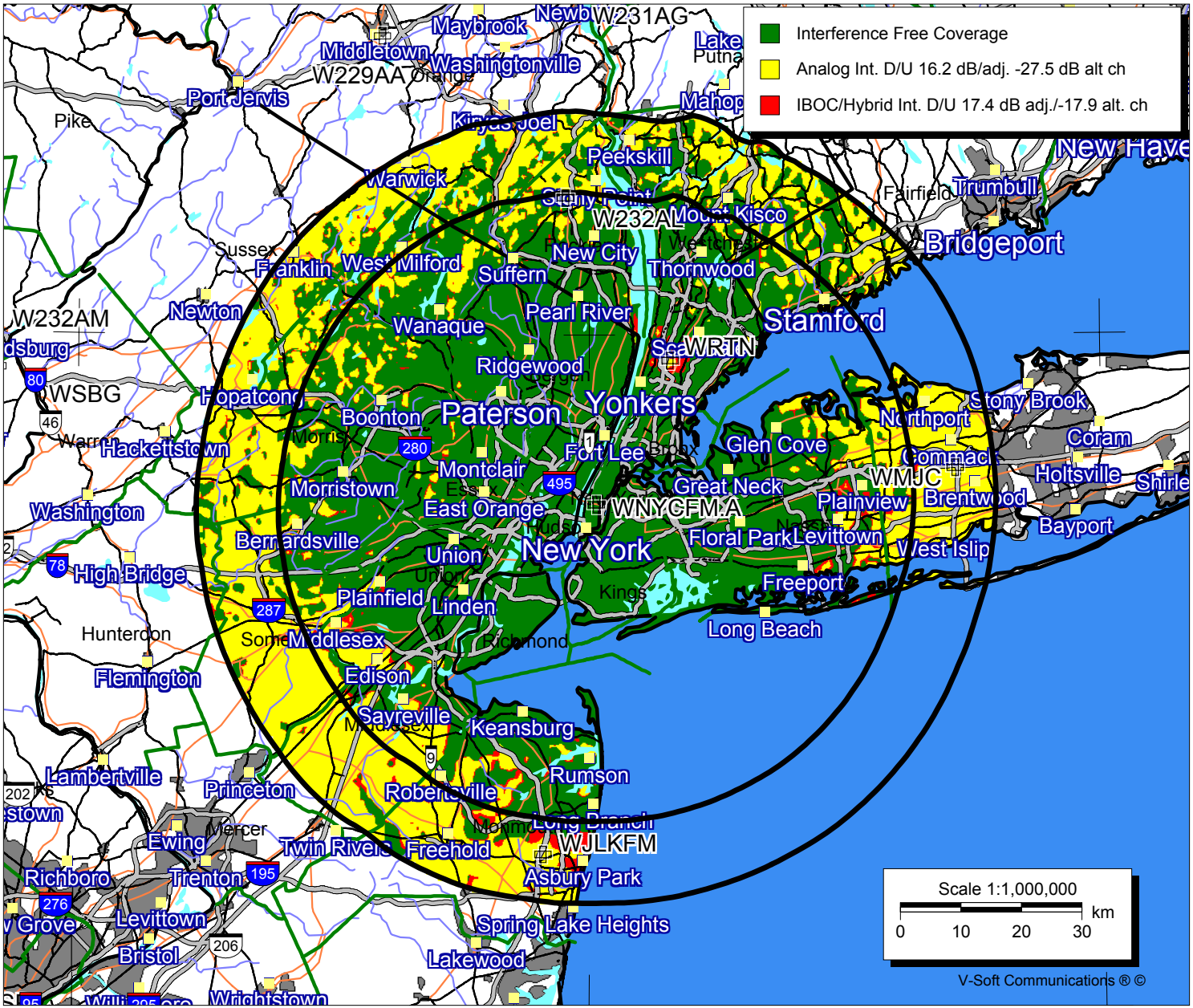
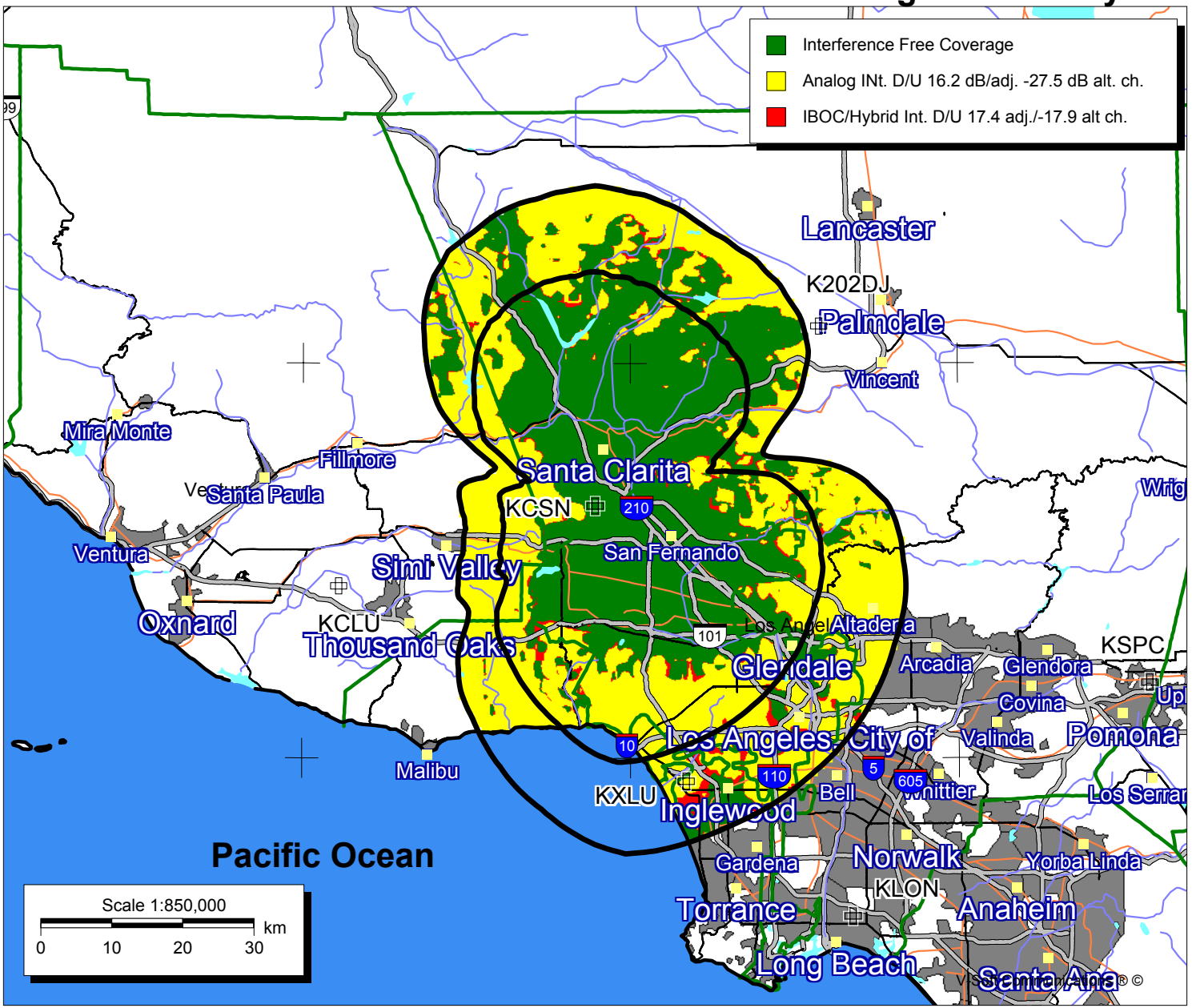


KCSN Subcarrier Interference - Analog vs. IBOC Hybrid

KCSN, CH 203, 88.5 MHz
Contours = 60 & 54 dBu
BLED20000127AAN
Latitude: 34-19-11 N
Longitude: 118-33-14 W
Power: 0.32 kW
AMSL Height: 943.0 m
HAAT: 501
Elevation: 836.75 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0080
Dielec Const: 15.0
Refractivity: 315.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 4,948,575
area = 4,543.7 sq. km
Terrain Blockage loss
pop. = 21,733
area = 27.2 sq. km

25 dB WQP SNR
Analog Int. loss
pop. = 2,423,291
area = 2,486.5 sq km
Hybrid IBOC Int. loss
pop. = 204,256
area = 124 sq km
Int. Free Pop. % = 8.2%



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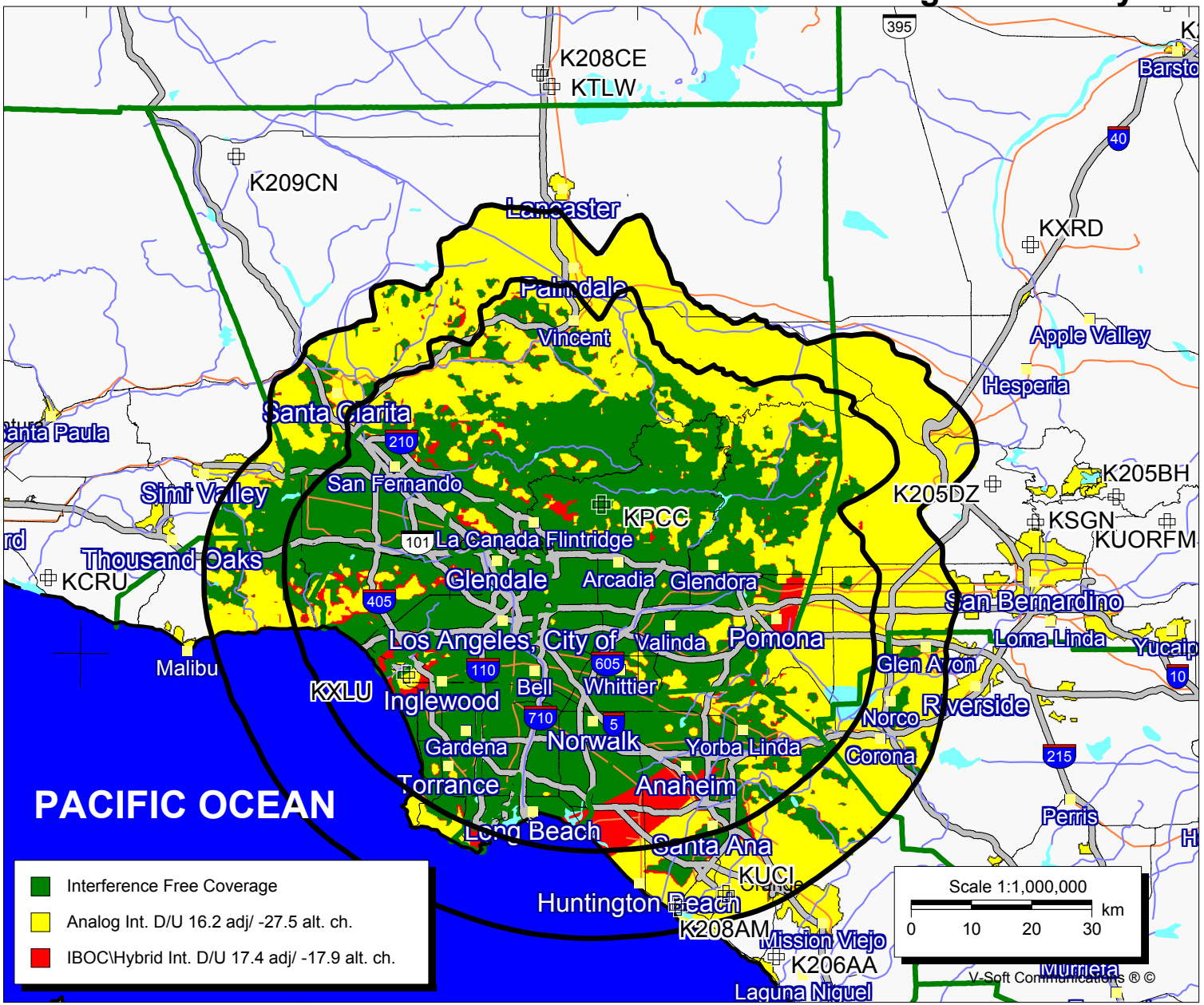
KPCC - Subcarrier Interference - Analog vs IBOC Hybrid

KPCC, CH 207, 89.3 MHz
Contours= 60 & 54 dBu
BLED19880708KB
Latitude: 34-13-35 N
Longitude: 118-03-58 W
Power: 0.60 kW
AMSL Height: 1783.0 m
KAAT = 891 m
Elevation: 1672.18 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0080
Dielec Const: 8.0
Refractivity: 315.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 12,670,407
area = 11,431.3 sq. km
Terrain Blockage loss
pop. = 162,903
area = 533.8 sq. km
25 dB WQP SNR
Analog Int. loss
pop. = 2,441,731
area = 5,846 sq. km
Hybrid IBOC Int. loss
pop. = 858,758
area = 647.5 sq. km
Int Free Pop. %= 8.48 %



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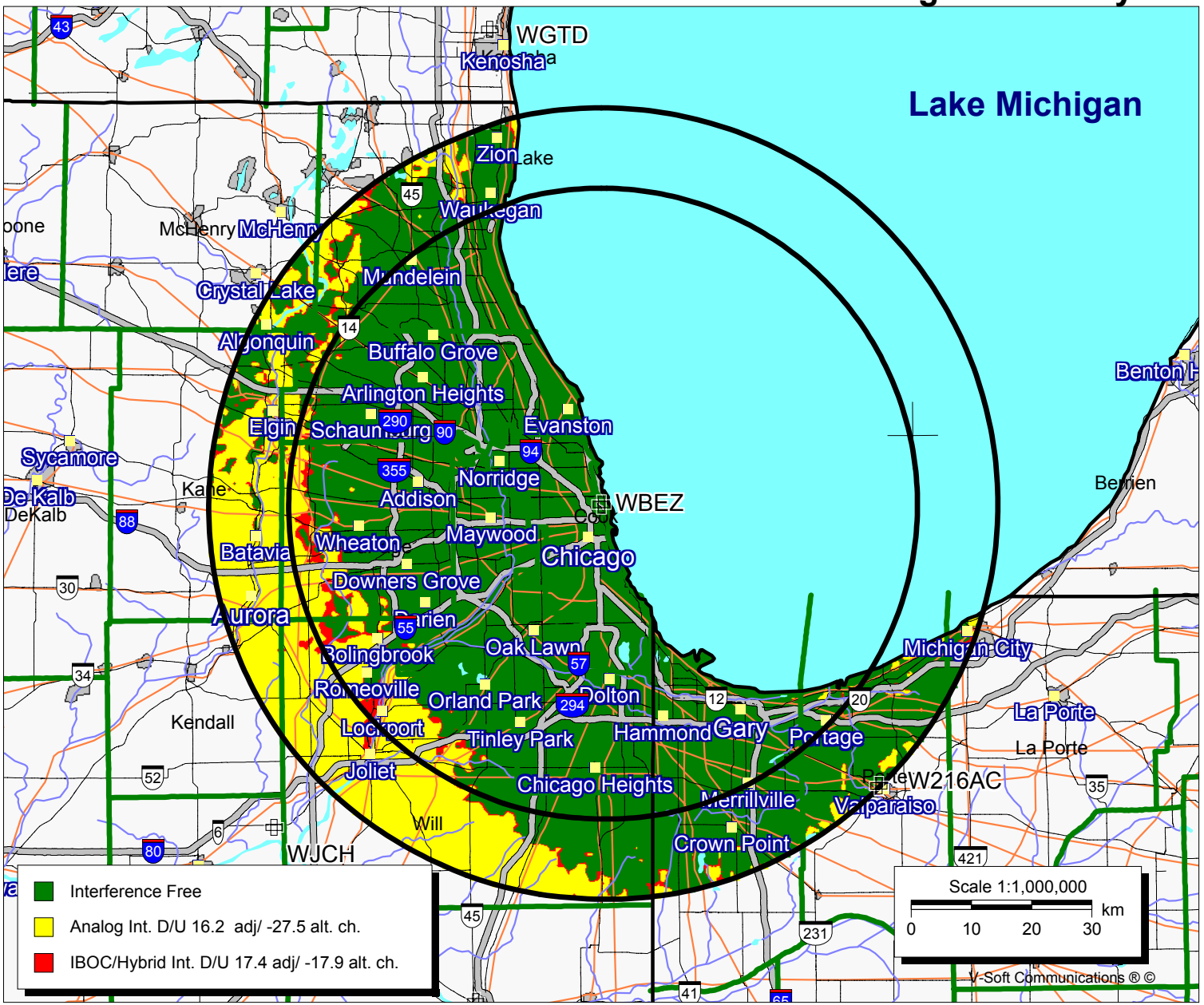
WBEZ - Subcarrier Interference - Analog vs IBOC Hybrid

WBEZ, CH 218, 91.5 MHz
Contours = 54 & 60 dBu
BLED19850628KL
Latitude: 41-53-56 N
Longitude: 087-37-23 W
Power: 8.30 kW
AMSL Height: 539.0 m
HAAT = 360 m
Elevation: 177.21 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.008
Dielec Const: 8.0
Refractivity: 312.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 8,334,373
area = 13,480.6 sq. km
Terrain Blockage loss
pop. = 1,913
area = 0.01 sq. km

25 dB WQP SNR
Analog Int. loss
pop. = 872,746
area = 2,980.9 sq. km
Hybrid IBOC Int. loss
pop. = 127,647
area = 420 sq. km
Int Free Pop. % =1.71%



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KALW Subcarrier Interference - Analog vs IBOC Hybrid

KALW, Ch 219, 91.7 MHz
Contours= 60 & 54 dBu
BLED1644
Latitude: 37-45-17 N
Longitude: 122-26-44 W
Power: 1.90 kW
AMSL Height: 310.0 m
HAAT=280 m
Elevation: 222.97 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0300
Dielec Const: 30.0
Refractivity: 315.0
Receiver Ht AG: 10.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

25 dB WQP SNR
54-dBu Coverage Area:
pop. = 3,791,451
area = 6,727.5 sq. km
Terrain Blockage loss
pop. = 8,987
area = 1.9 sq. km
Analog Int. loss
pop. = 1,489,312
area = 2,907.2 sq. km
Hybrid IBOC Int. loss
pop. = 142,077
area = 260.7 sq. km
Int Free Pop. % =6.17 %

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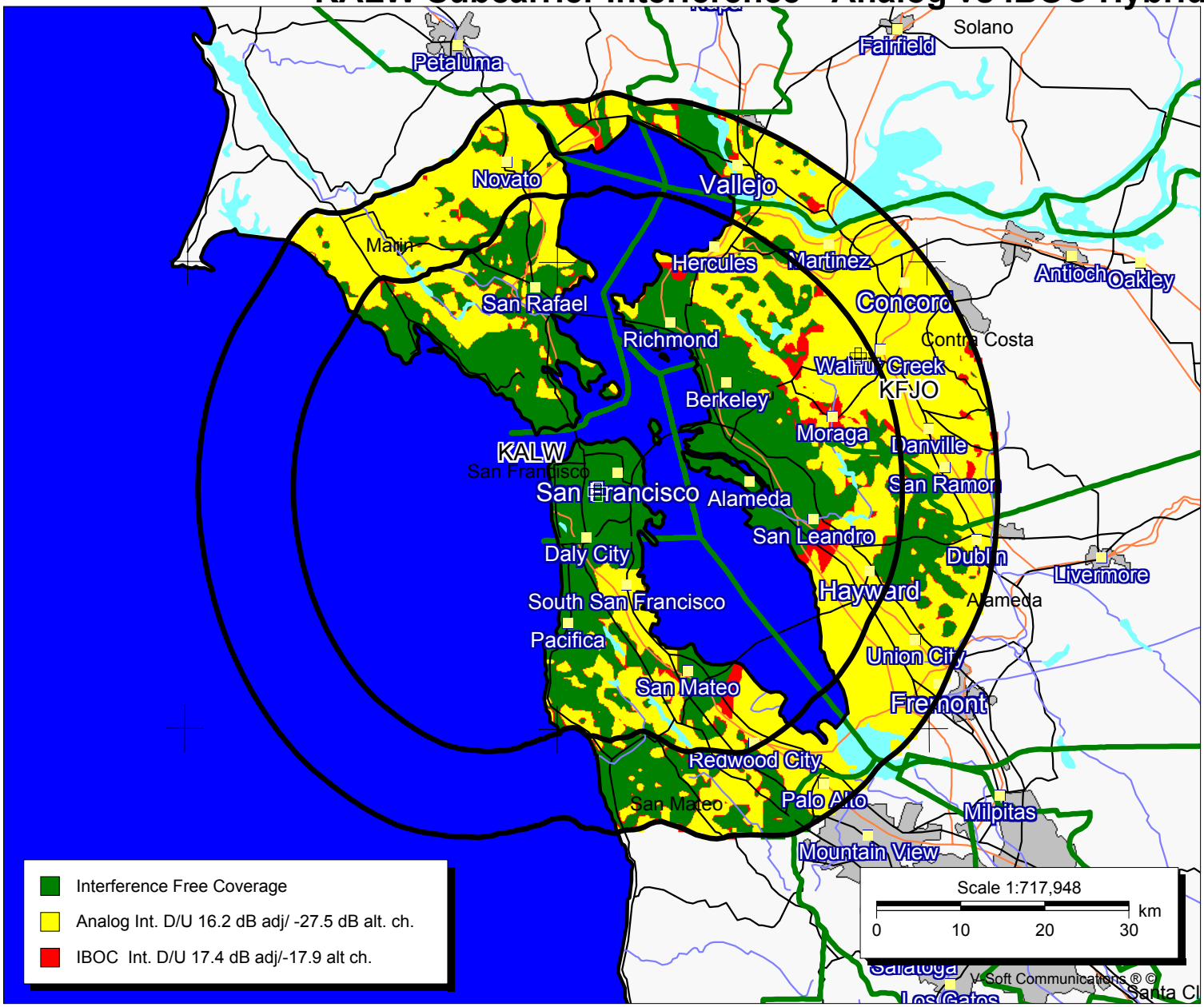
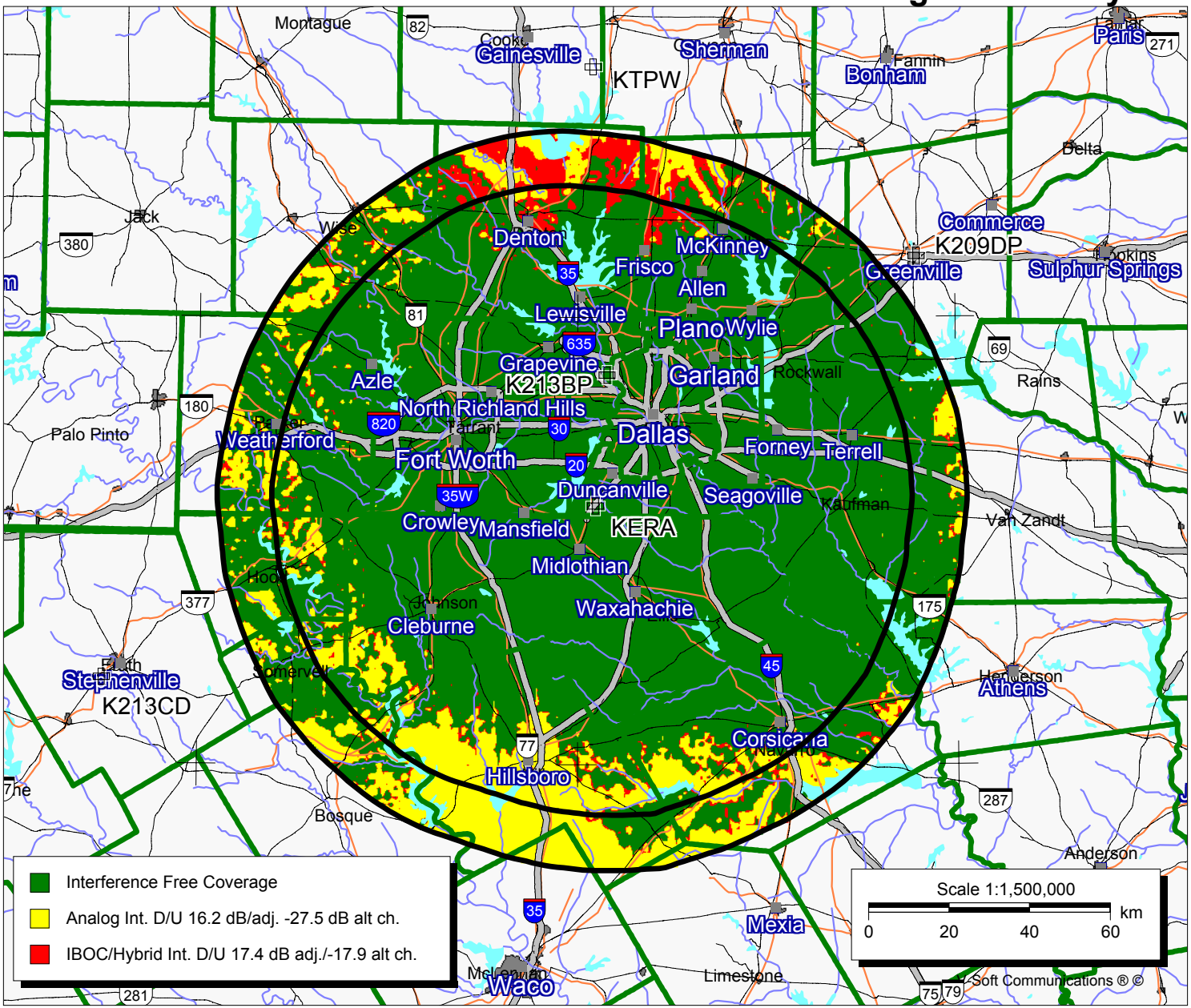


KERA Subcarrier Interference - Analog vs IBOC Hybrid

KERA, CH 211, 90.1 MHz
Contours = 60 & 54 dBu
BLED1280
Latitude: 32-34-43 N
Longitude: 096-57-12 W
Power: 100.00 kW
AMSL Height: 581.0 m
HAAT= 384 m
Elevation: 242.83 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0050
Dielec Const: 15.0
Refractivity: 311.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 5,223,979
area = 26,716 sq. km
Terrain Blockage loss
pop. = 4,084
area = 2.1 sq. km
25 dB WQP SNR
Analog Int. loss
pop. = 1,247,915
area = 4,217.1 sq. km
Hybrid IBOC Int. loss
pop. = 51,895
area = 1,010.2 sq. km
Int Free Pop. % =1.13 %



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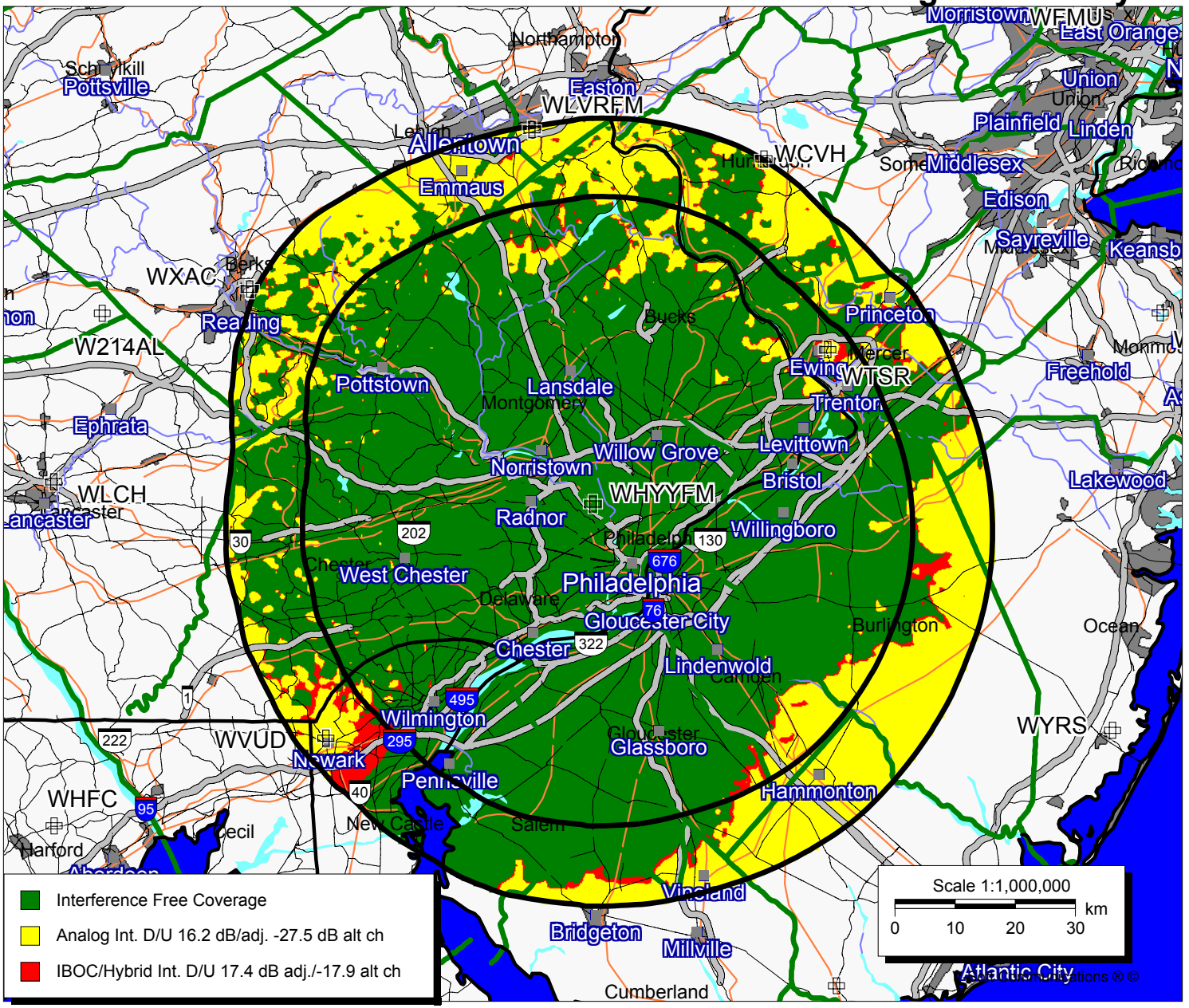
WHYY Subcarrier Interference - Analog vs IBOC Hybrid

WHYYFM, CH 215, 90.9 MHz
Contours = 60 & 54 dBu
BLED19830722AD
Latitude: 40-02-30 N
Longitude: 075-14-24 W
Power: 13.50 kW
AMSL Height: 347.0 m
Elevation: 55.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0050
Dielec Const: 15.0
Refractivity: 311.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 6,224,057
area = 13,137.3sq. km
Terrain Blockage loss
pop. = 61,129
area = 31.4 sq. km

25 dB WQP SNR
Analog Int. loss
pop. = 810,704
area = 3,228.1 sq. km
Hybrid IBOC Int. loss
pop. = 128,410
area = 383 sq. km
Int Free Pop. %= 2.37%



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KUHF Subcarrier Interference - Analog vs IBOC Hybrid

KUHF, CH 204, 89.7 MHz
Contours = 54 & 60 dBu
BLED19990810KA
Latitude: 29-34-27 N
Longitude: 095-29-37 W
Power: 100.00 kW
AMSL Height: 544.0 m
HAAT = 524 m
Elevation: 24.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0050
Dielec Const: 15.0
Refractivity: 315.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 4,771,581
area = 33,244.4 sq. km
Terrain Blockage loss
pop. = 478
area = 0.01 sq. km
25 dB WQP SNR
Analog Int. loss
pop. = 28,926
area = 1,238.4sq. km
Hybrid IBOC Int. loss
pop. = 25,128
area = 439.0 sq. km
Int Free Pop. % = 0.53 %

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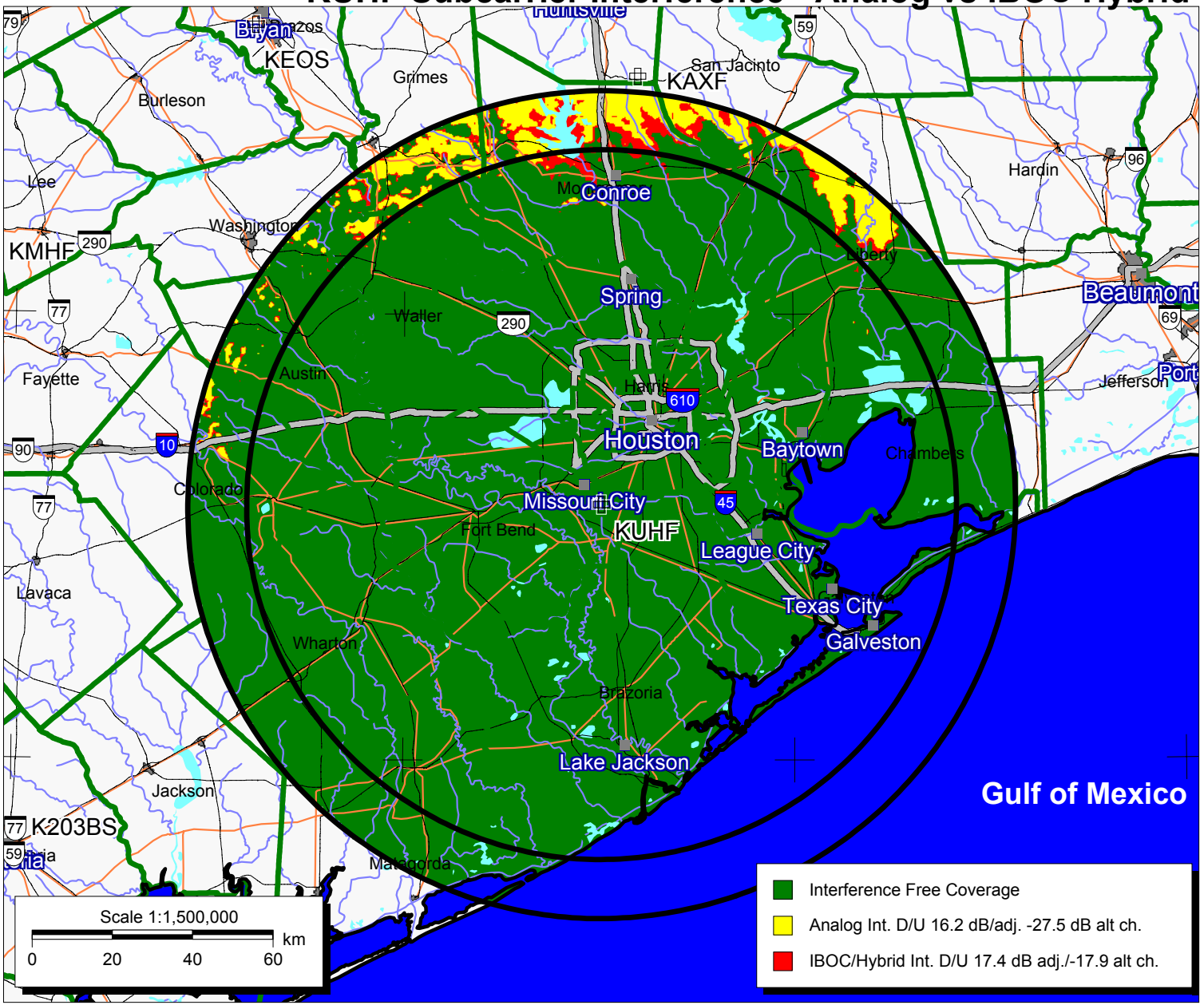
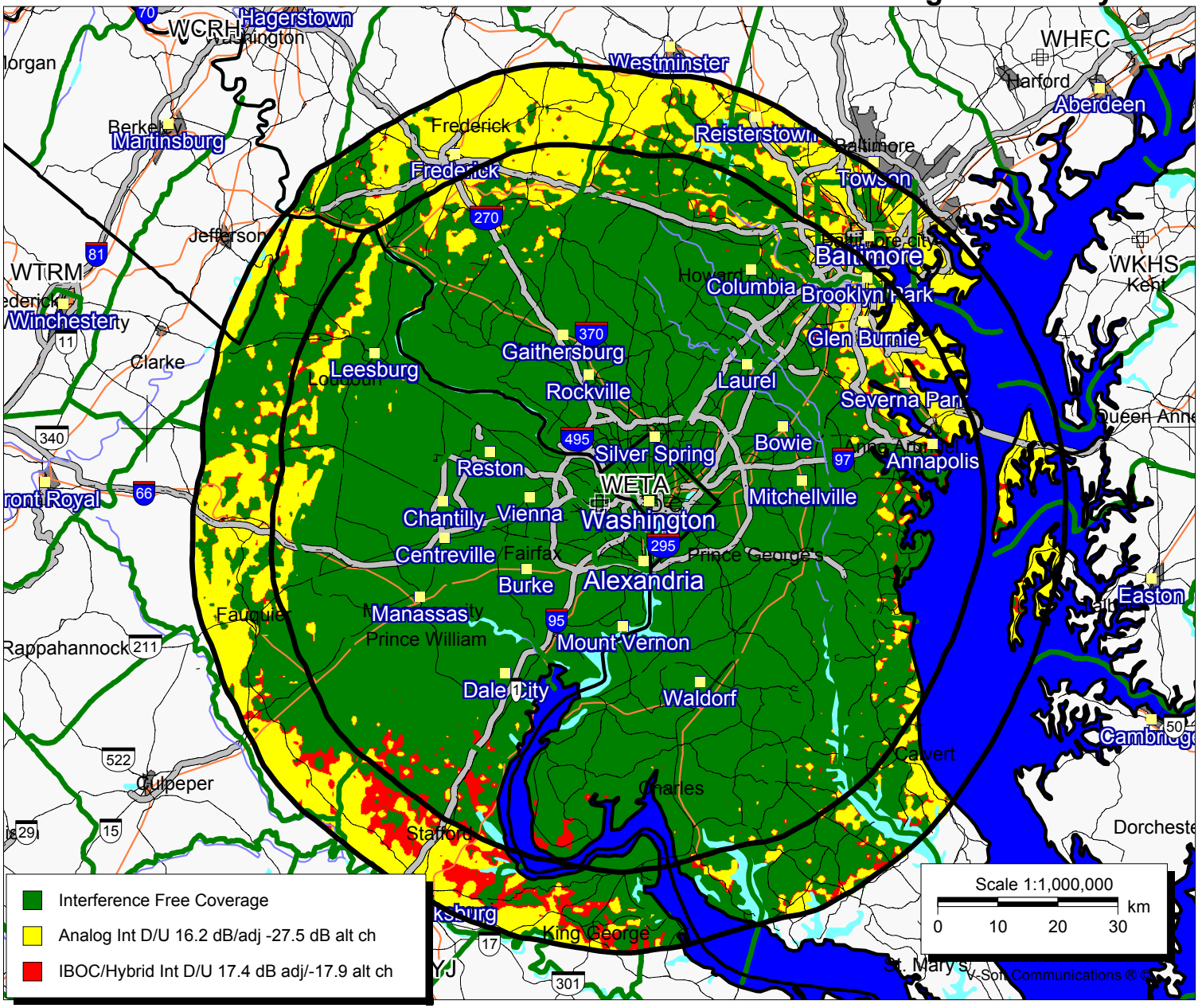


WETA Subcarrier Interference - Analog vs IBOC Hybrid

WETA, CH 215, 90.9 MHz
Contours = 54 and 60 dBu
BMLED19900315KB
Latitude: 38-53-30 N
Longitude: 077-07-55 W
Power: 75.00 kW
AMSL Height: 252.0 m
HAAT = 186 m
Elevation: 121.41 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0040
Dielec Const: 4.0
Refractivity: 311.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 6,481,338
area = 16,684.6 sq. km
Terrain Blockage loss
pop. = 57,732
area = 41.8 sq. km

25 dB WQP SNR
Analog Int. loss
pop. = 1,182,367
area = 4,214.7 sq. km
Hybrid IBOC Int. loss
pop. = 122,621
area = 630.4 sq. km
Int Free Pop. % =2.31%



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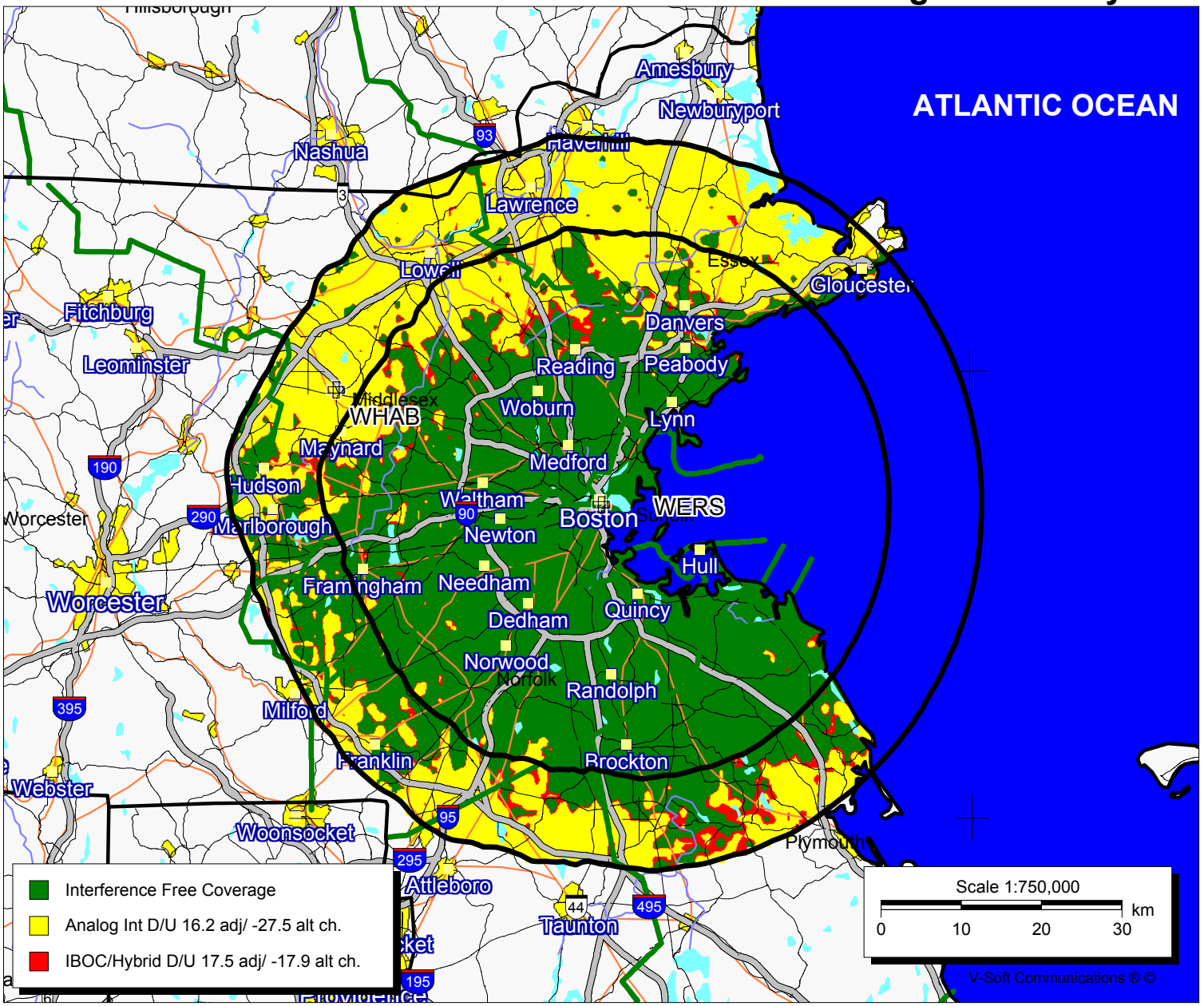
WERS - Subcarrier Interference Analog vs IBOC Hybrid

WERS, CH 205, 88.9 MHz
Contours = 60 & 54 dBu
BLED19900706KB
Latitude: 42-21-08 N
Longitude: 071-03-25 W
Power: 4.00 kW
AMSL Height: 203.0 m
HAAT = 186 m
Elevation: 2.78 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0020
Dielec Const: 2.0
Refractivity: 312.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 3,739,332
area = 6,614.8 sq. km
Terrain Blockage loss
pop. = 6,224
area = 0.9 sq. km

25 dB WQP SNR:
Analog Int. loss
pop. = 777.946
area = 2,690.5 sq. km
Hybrid IBOC Int. loss
pop. = 80,692
area = 347.3 sq. km
Int Free Pop. % =2.72%



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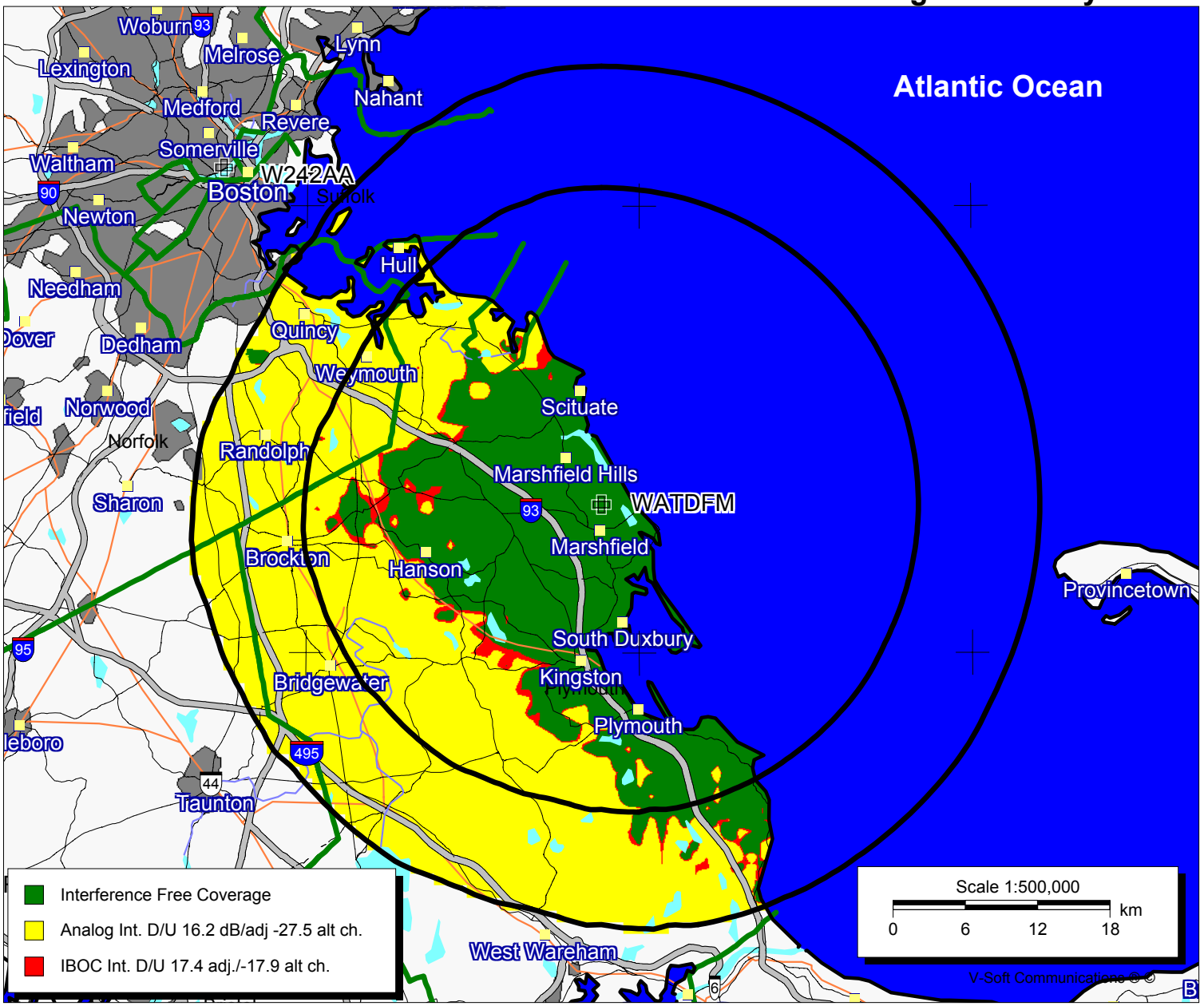
WATDFM - Subcarrier Interference - Analog vs IBOC Hybrid

WATDFM CH 240 95.9 MHz
Contours = 54 & 60 dBu
BLH19990305KC
Latitude: 42-06-39 N
Longitude: 070-42-17 W
Power: 1.60 kW
AMSL Height: 166.0 m
HAAT: 143 m
Elevation: 30.12 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0020
Dielec Const: 2.0
Refractivity: 312.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 680,412
area = 3,861.4 sq. km
Terrain Blockage loss
pop. = 1,130
area = 0.01 sq. km
25 dB WQP SNR
Analog Int. loss
pop. = 505,637
area = 2,577.6 sq. km
Hybrid IBOC Int. loss
pop. = 13,633
area = 347.3 sq. km
Int Free Pop. % = 7.8%



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WDET Subcarrier Interference - Analog vs IBOC Hybrid

WDETFM CH 270 101.9 MHz
Contours = 60 and 54 dBu
BLED19980624KB
Latitude: 42-21-06 N
Longitude: 083-03-48 W
Power: 48.00 kW
AMSL Height: 354.0 m
HAAT= 169 m
Elevation: 190.05 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0080
Dielec Const: 8.0
Refractivity: 312.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 4,535,327
area = 14,070.2 sq. km
Terrain Blockage loss
pop. = 890
area = 2.7 sq. km
Analog Int. loss

25 dB WQP SNR
pop. = 236,500
area = 4,140.5 sq. km
Hybrid IBOC Int. loss
pop. = 71,524
area = 709.1 sq. km
Int Free Pop. %= 1.66%

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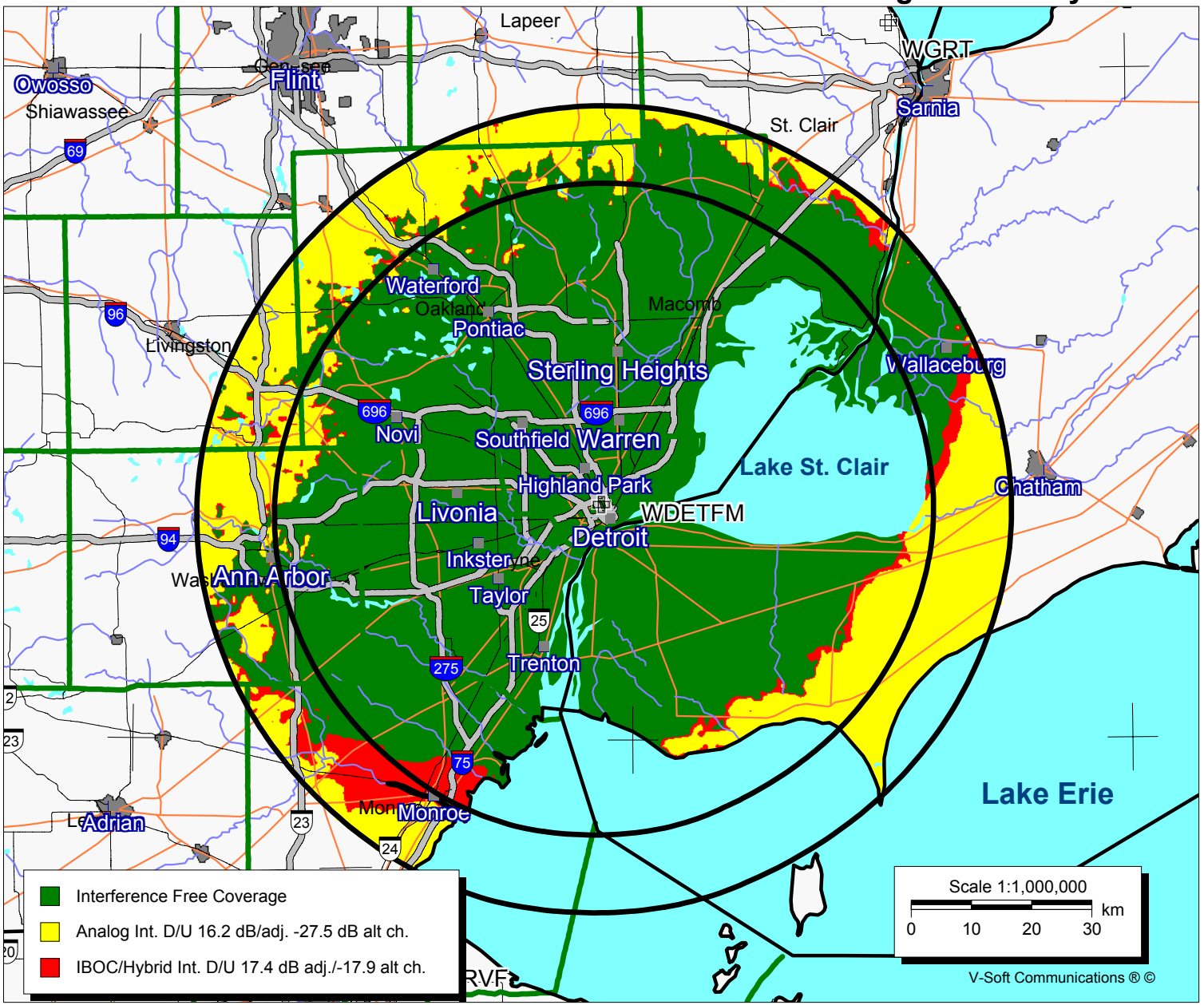
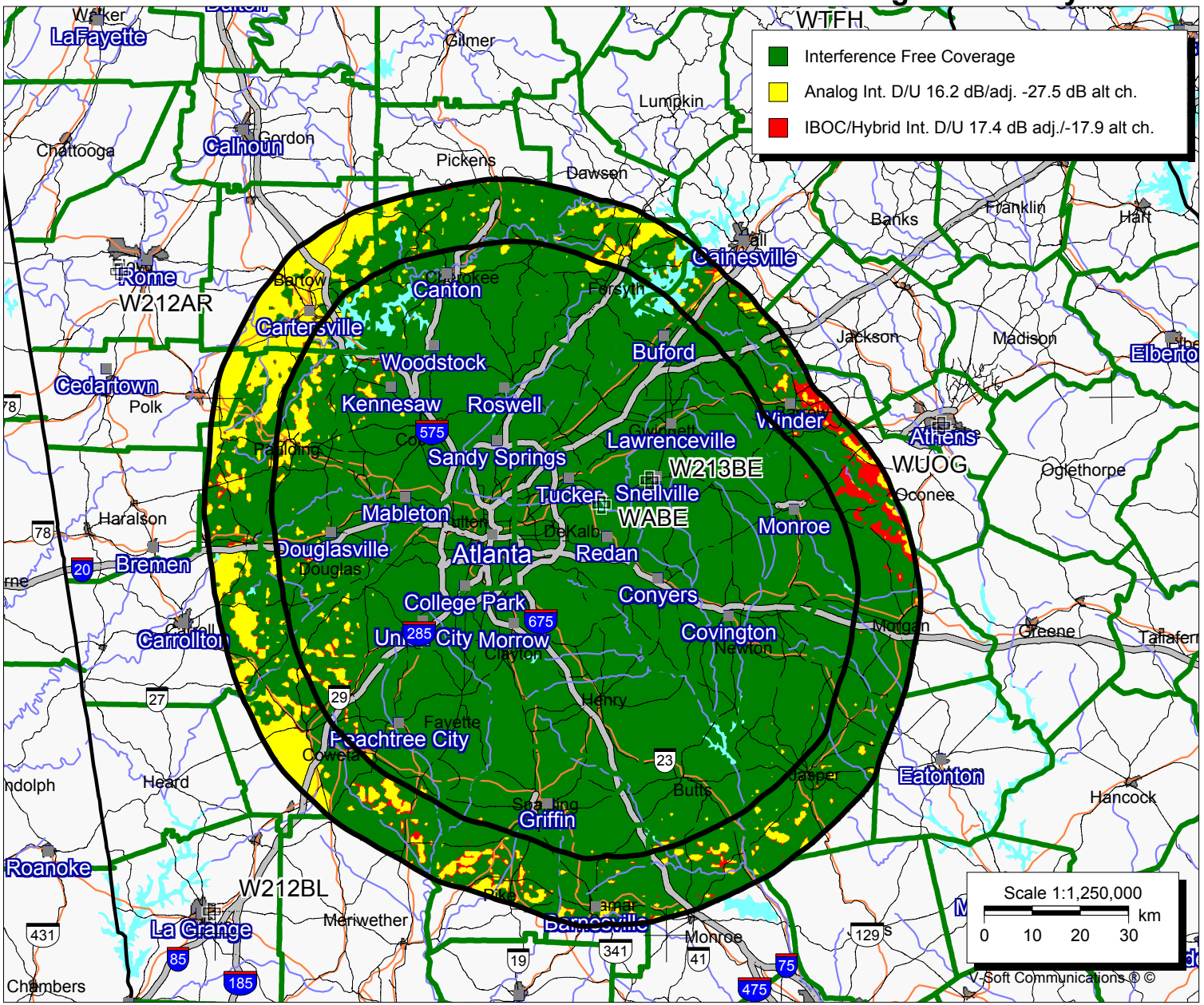


WABE Subcarrier Interference - Analog vs IBOC Hybrid

WABE, CH 211, 90.1 MHz
Contours = 54 and 60 dBu
BLED19830330AD
Latitude: 33-48-18 N
Longitude: 084-08-40 W
Power: 96.00 kW
AMSL Height: 576.0 m
HAAT= 296 m
Elevation: 470.15 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0040
Dielec Const: 4.0
Refractivity: 315.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 4,130,474
area = 17,507.7 sq. km
Terrain Blockage loss
pop. = 22,771
area = 52.5 sq. km

25 dB WQP SNR
Analog Int. loss
pop. = 154,886
area = 1,894.4 sq. km
Hybrid IBOC Int. loss
pop. = 22,340
area = 346.2 sq. km
Int Free Pop. % = 0.56 %



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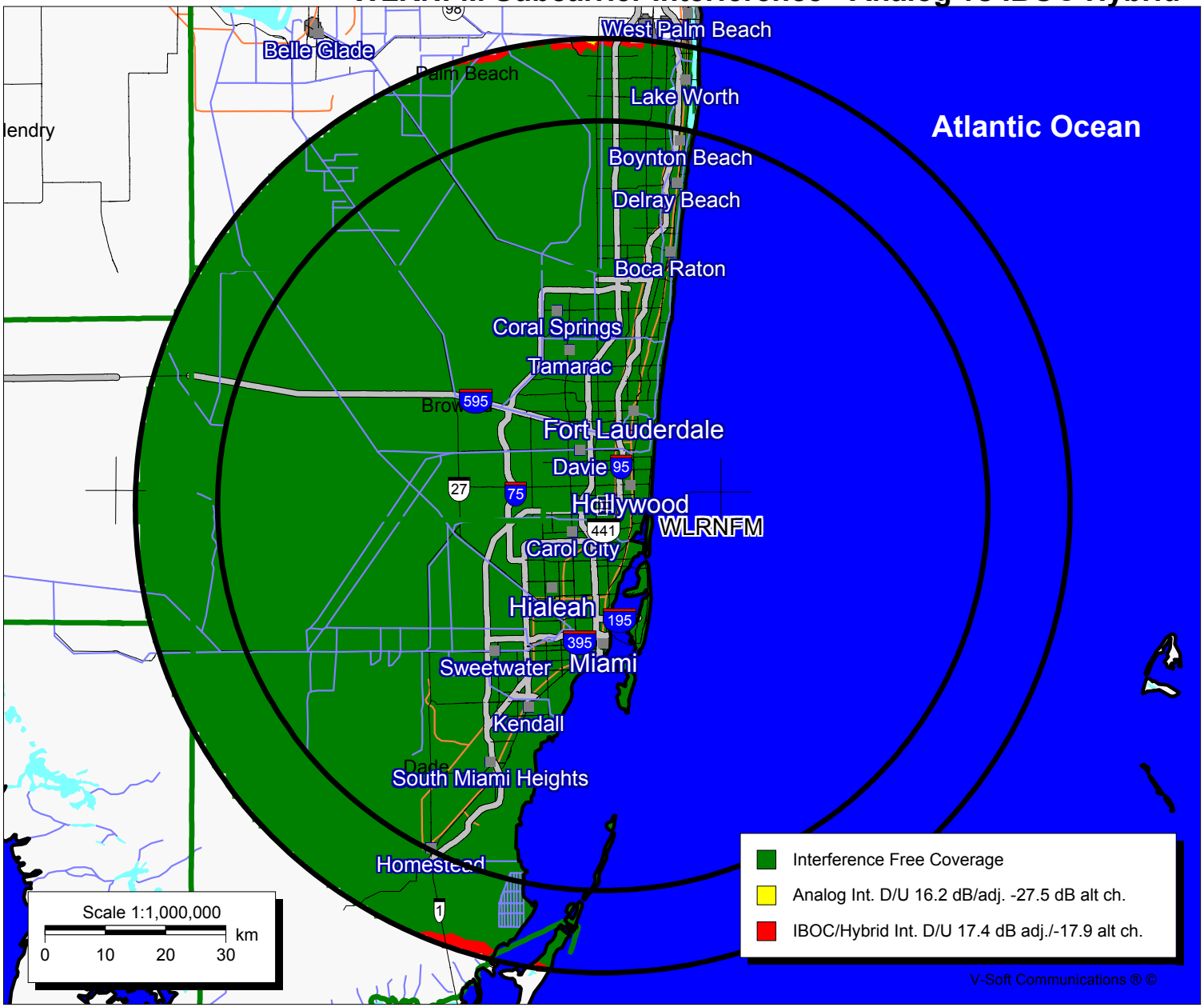
WLRNFM Subcarrier Interference - Analog vs IBOC Hybrid

WLRNFM, CH 217, 91.3 MHz
Contours = 60 & 54 dBu
BLED19850214KP
Latitude: 25-58-48 N
Longitude: 080-11-47 W
Power: 100.00 kW
AMSL Height: 201.0 m
HAAT= 285 m
Elevation: 3.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0080
Dielec Const: 8.0
Refractivity: 330.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 4,590,285
area = 18,776.8 sq. km
Terrain Blockage loss
pop. = 0
area = 0 sq. km

25 dB WQP SNR
Analog Int. loss
pop. = 155
area = 3.3 sq. km
Hybrid IBOC Int. loss
pop. = 19,751
area = 75.5 sq. km
Int Free Pop. % = 0.43 %



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KUOW Subcarrier Interference - Analog vs IBOC Hybrid

KUOW CH 235, 94.9 MHz
Contours = 54 & 60 dBu
BLH19850715KJ
Latitude: 47-36-58 N
Longitude: 122-18-28 W
Power: 100.00 kW
AMSL Height: 262.0 m
HAAT= 224 m
Elevation: 121.27 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0020
Dielec Const: 2.0
Refractivity: 315.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 3,524,585
area = 19,906 sq. km
Terrain Blockage loss
pop. = 24,439
area = 174 sq. km
25 dB WQP SNR
Analog Interference loss
pop. = 137,853
area = 4,440 sq. km
Hybrid IBOC Interference loss
pop. = 27,796
area = 321 sq. km
Int Free Pop Percent = .83%

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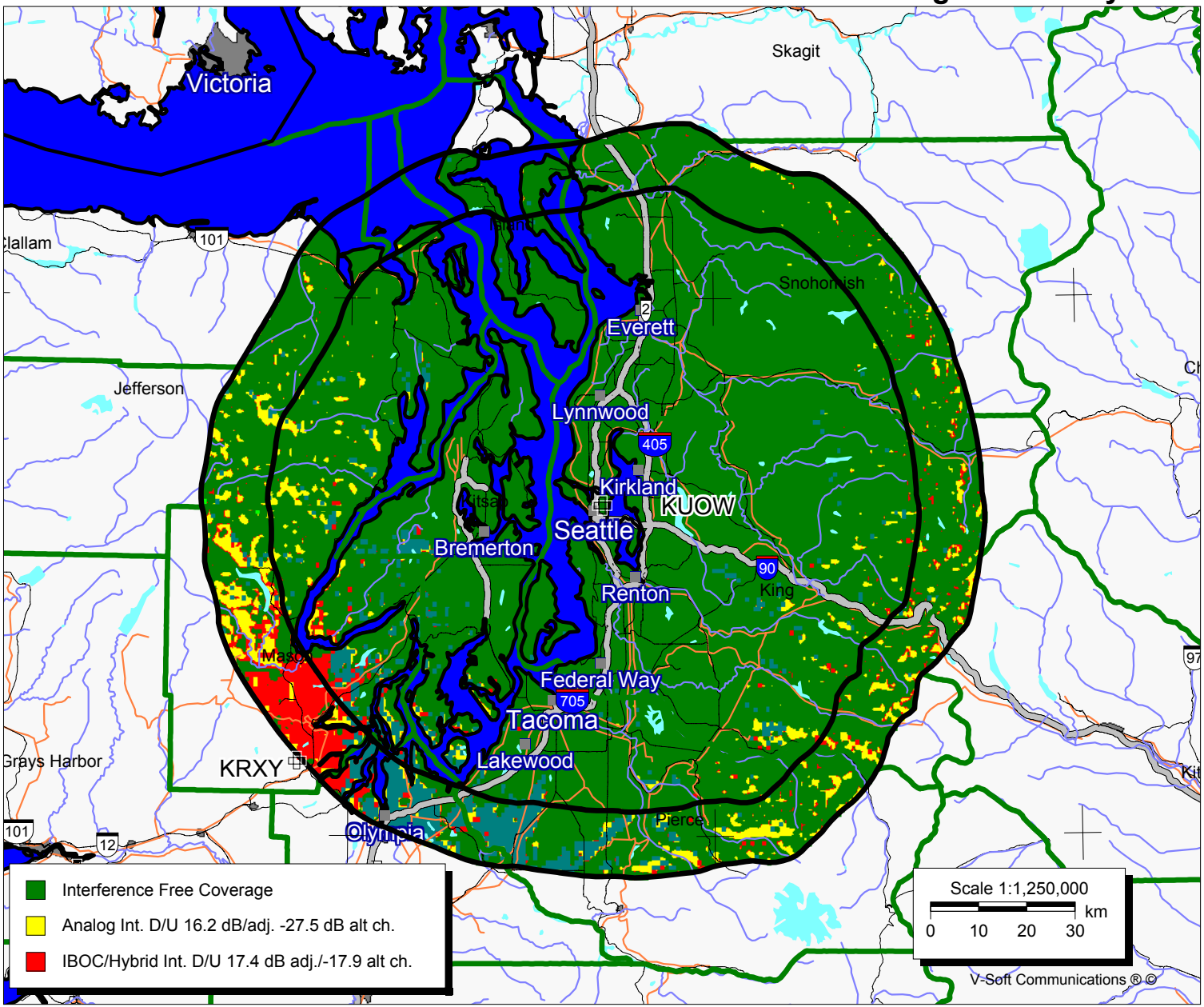
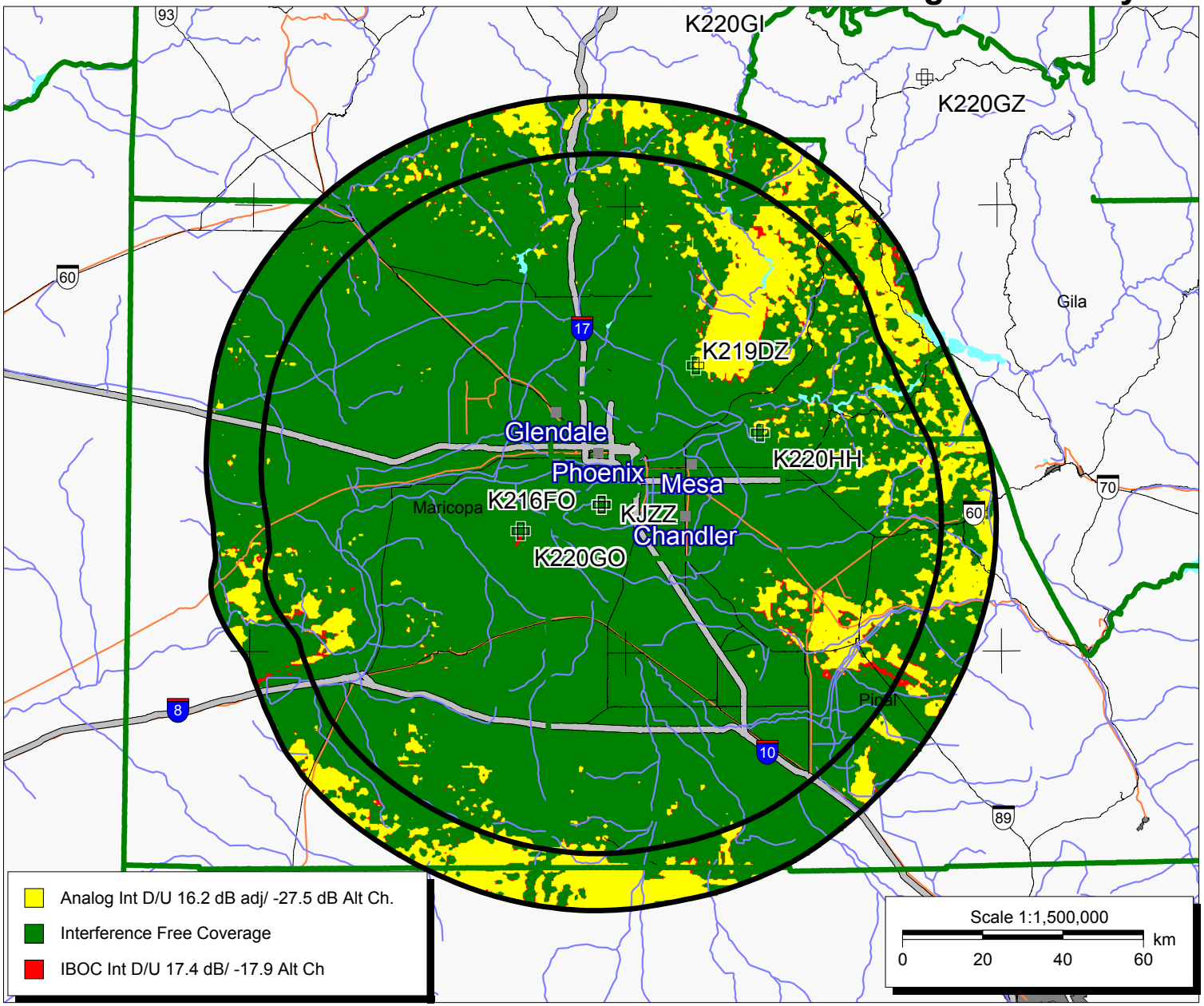


KJZZ Subcarrier-Interference - Analog vs IBOC Hybrid

KJZZ, CH 218, 91.5 MHz
Contours= 60 & 54 dBu
BLED19890728KA
Latitude: 33-19-58 N
Longitude: 112-03-53 W
Power: 100.00 kW
AMSL Height: 856.0 m
HAAT= 490 M
Elevation: 728.61 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.008
Dielec Const: 8.0
Refractivity: 300.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 3,233,062
area = 31,305.9 sq. km
Terrain Blockage loss
pop. = 1,721
area = 1.308.2 sq. km
Analog Int. loss
25 dB WQP SNR
pop. = 24,551
area = 6,742.9 sq. km
Hybrid IBOC Int. loss
pop. = 8,597
area = 258 sq. km
Int Free Pop. %= 0.26%



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KNOWFM CH 216 91.1 MHz
Contours= 60 and 54 dBu
BMLED19940420KA
Latitude: 45-03-44 N
Longitude: 093-08-21 W
Power: 100.00 kW
AMSL Height: 677.0 m
HAAT= 400 m
Elevation: 304.54 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0150
Dielec Const: 15.0
Refractivity: 310.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 3,199,550
area = 27,327.2 sq. km
Terrain Blockage loss
pop. = 9.865
area = 65.1 sq. km

25 dB WQP SNR
Analog Int. loss
pop. = 81,919
area = 4,408.9 sq. km
Hybrid IBOC Int. loss
pop. = 18,546
area = 829.5 sq. km
Int Free Pop. %= 0.59 %

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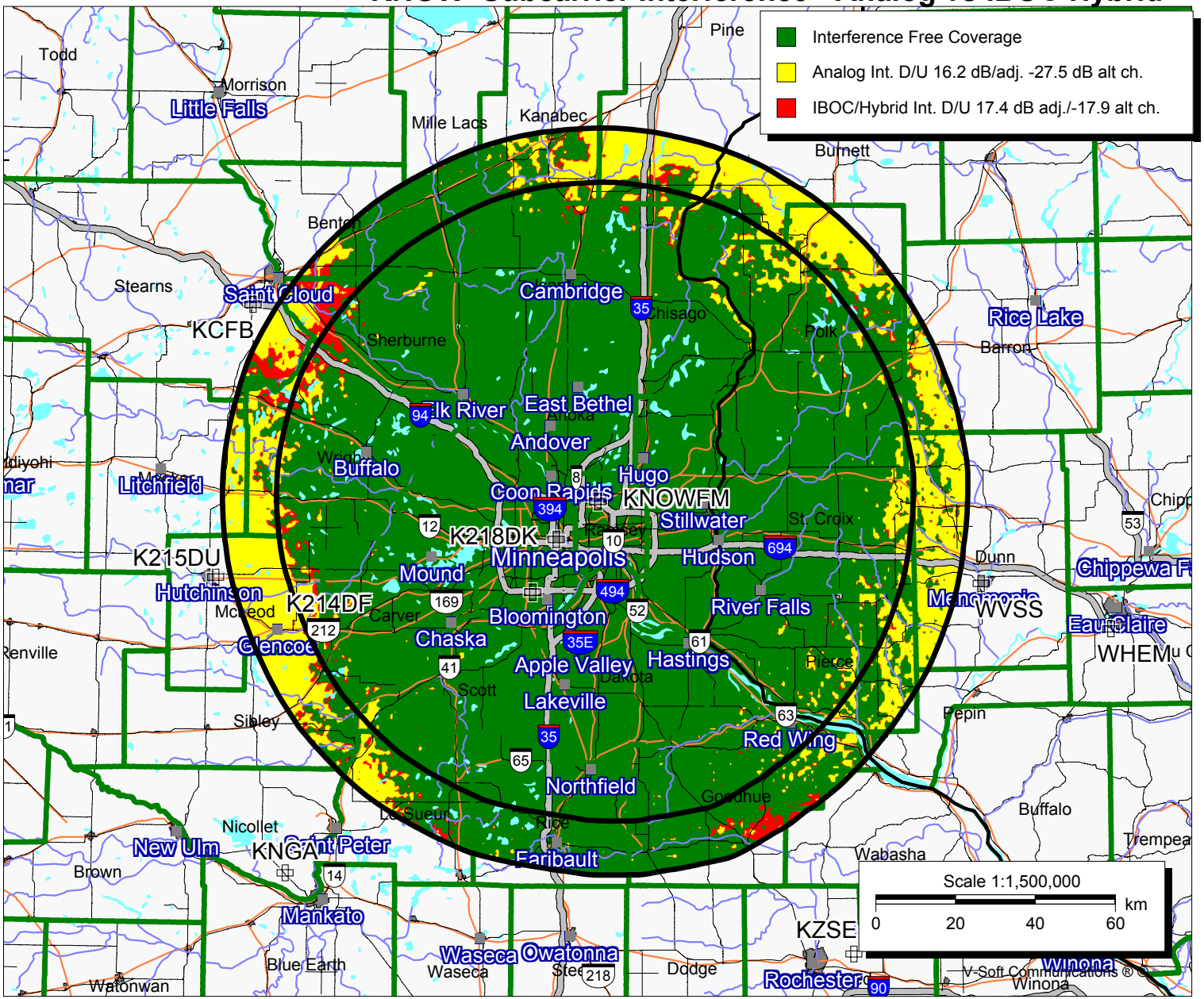
KNOW Subcarrier Interference - Analog vs IBOC Hybrid



KPBS Subcarrier Interference - Analog vs IBOC Hybrid

KPBSFM CH 208 89.5 MHz
Copntours = 60 and 54 dBu
BPED19970211IA -CP
Latitude: 32-50-24 N
Longitude: 117-15-06 W
Power: 26.00 kW
AMSL Height: 276.0 m
HAAT = 206 m
Elevation: 186.89 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0150
Dielec Const: 15.0
Refractivity: 315.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 2,798,794
area = 14,282.9 sq. km
Terrain Blockage loss
pop. = 17,634
area = 42.0 sq. km

25 dB WQP SNR
Analog Int. loss
pop. = 54,857
area = 3,748.5 sq. km
Hybrid IBOC Int. loss
pop. = 16,661
area = 707.7 sq. km
Int Free Pop. % = 0.61%

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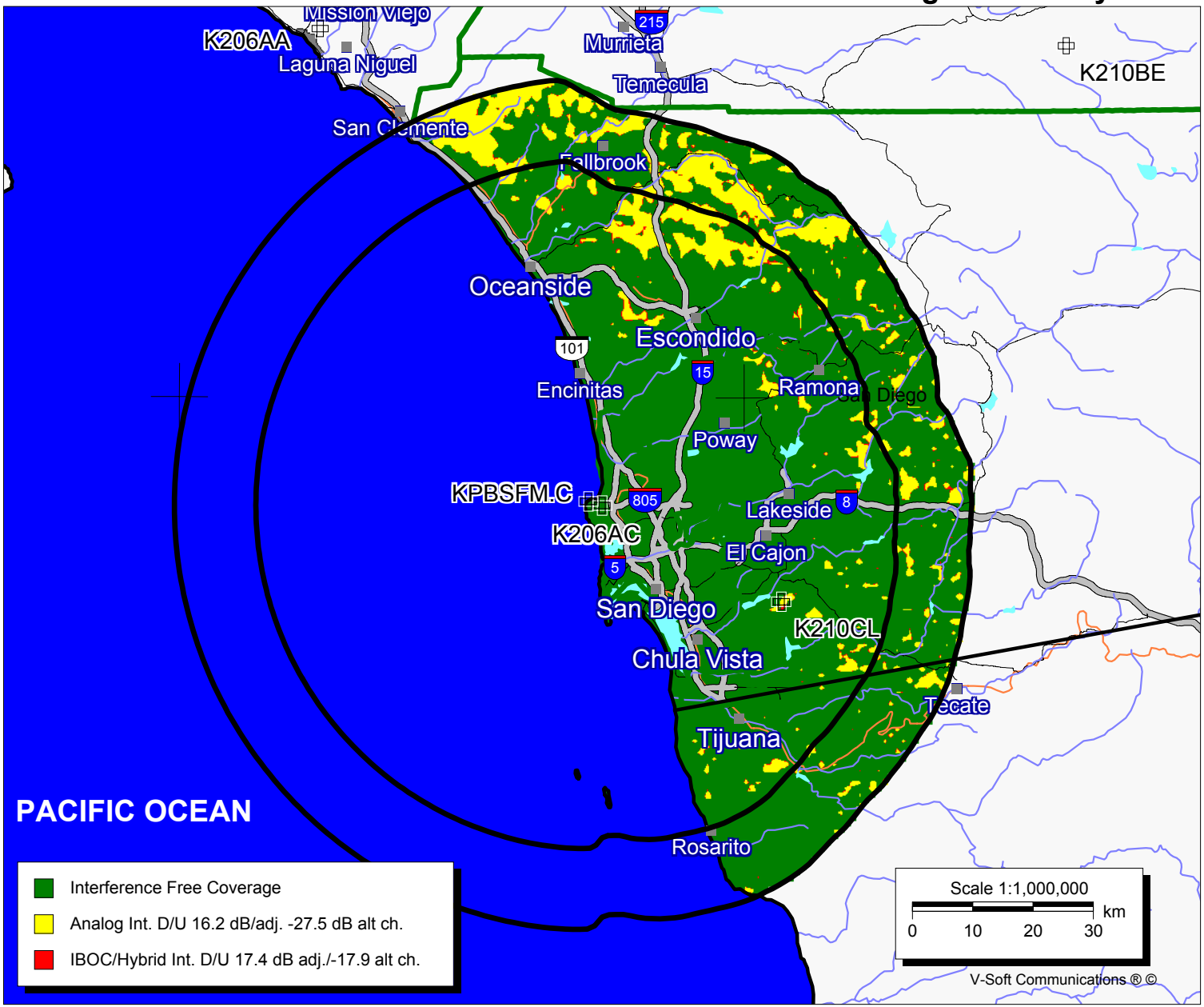

WDUQ Subcarrier Interference - Analog vs IBOC Hybrid

WDUQ, CH 213, 90.5 MHz
Contours = 54 & 60 dBu
BLED19960924KC
Latitude: 40-25-52 N
Longitude: 080-00-26 W
Power: 25.00 kW
AMSL Height: 455.0 m
HAAT= 146 m
Elevation: 313.84 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0020
Dielec Const: 2.0
Refractivity: 310.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 2,394,578
area = 10,534.3 sq. km
Terrain Blockage loss
pop. = 76,069
area = 29.8 sq. km

25 dB WQP SNR
Analog Int. loss
pop. = 317,584
area = 3.259 sq. km
Hybrid IBOC Int. loss
pop. = 42,189
area = 287.7 sq. km
Int Free Pop. %= 2.03%

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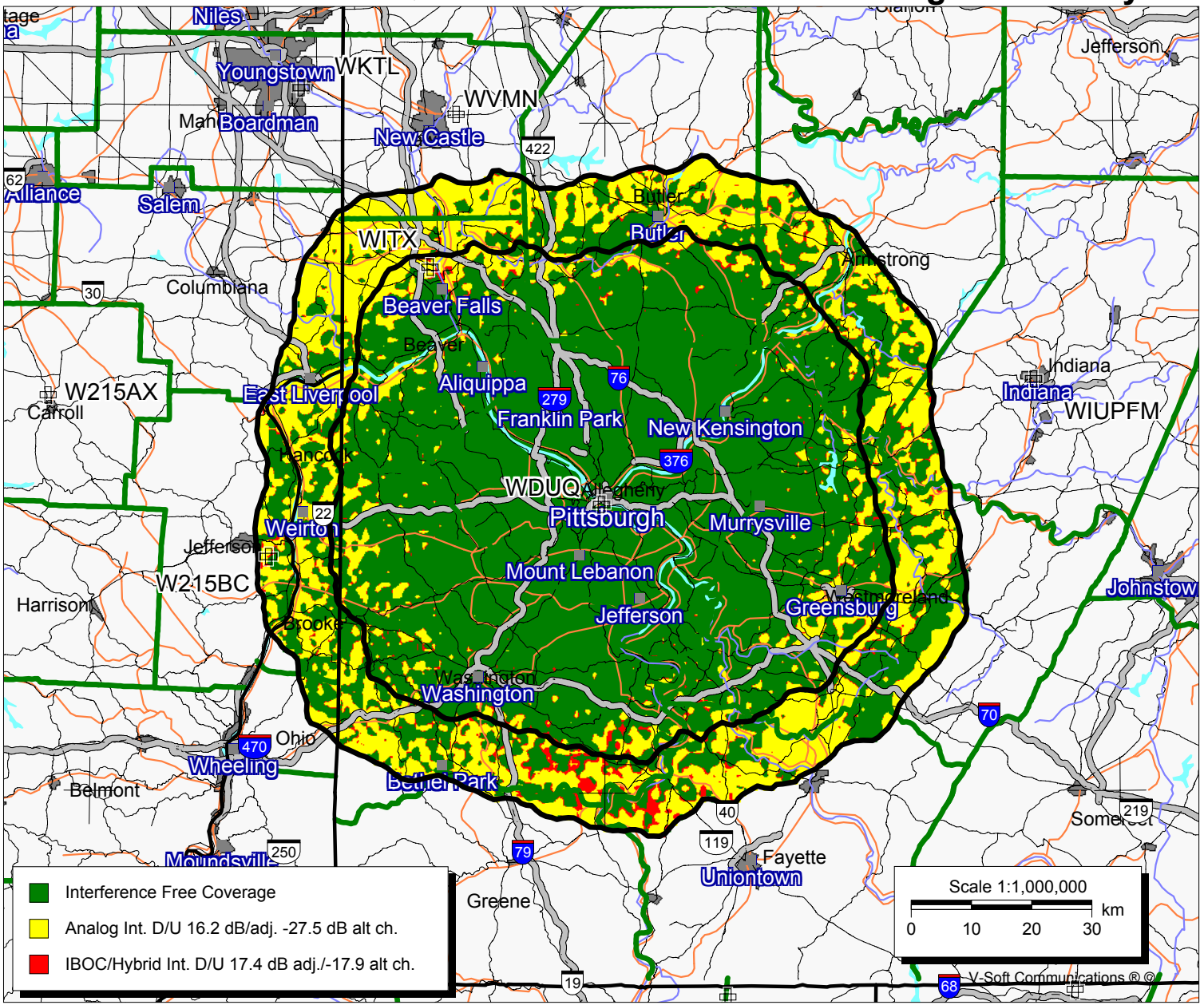

WVTF Subcarrier Interference - Analog vs IBOC Hybrid

WVTF, CH206, 89.1 MHz
Contours = 60 & 54 dBu
BLED19931124KC
Latitude: 37-11-56 N
Longitude: 080-09-02 W
Power: 100.00 kW
AMSL Height: 1187.0 m
HAAT = 600 m
Elevation: 1068.38 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0020
Dielec Const: 2.0
Refractivity: 312.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 1,296,791
area = 35,970.4 sq. km
Terrain Blockage loss
pop. = 103,878
area = 600.9 sq. km

25 dB WQP SNR
Analog Int. loss
pop. = 233,396
area = 8,485.2 sq. km
Hybrid IBOC Int. loss
pop. = 15,300
area = 401.5 sq. km
Int Free Pop. % = 1.44%

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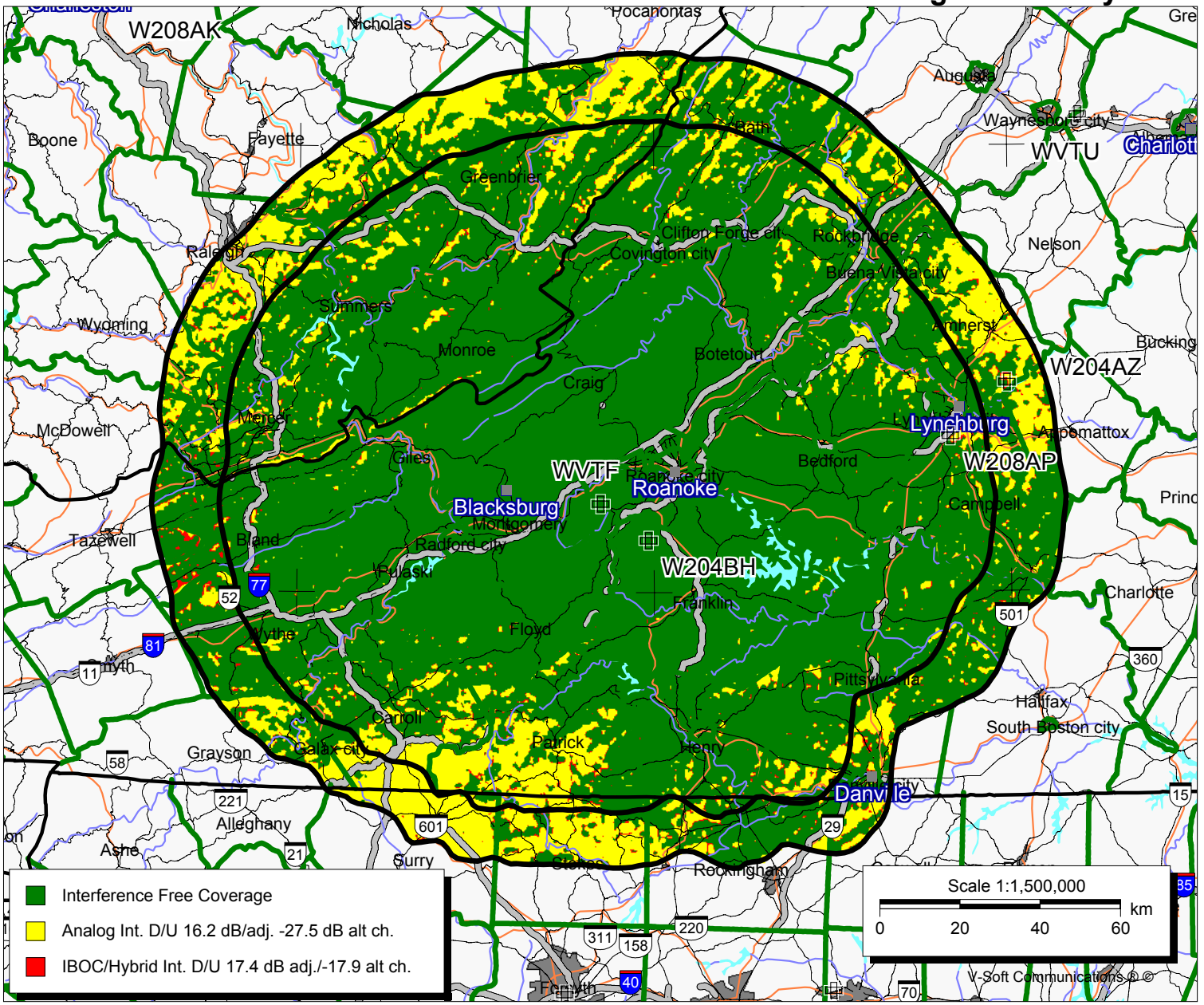
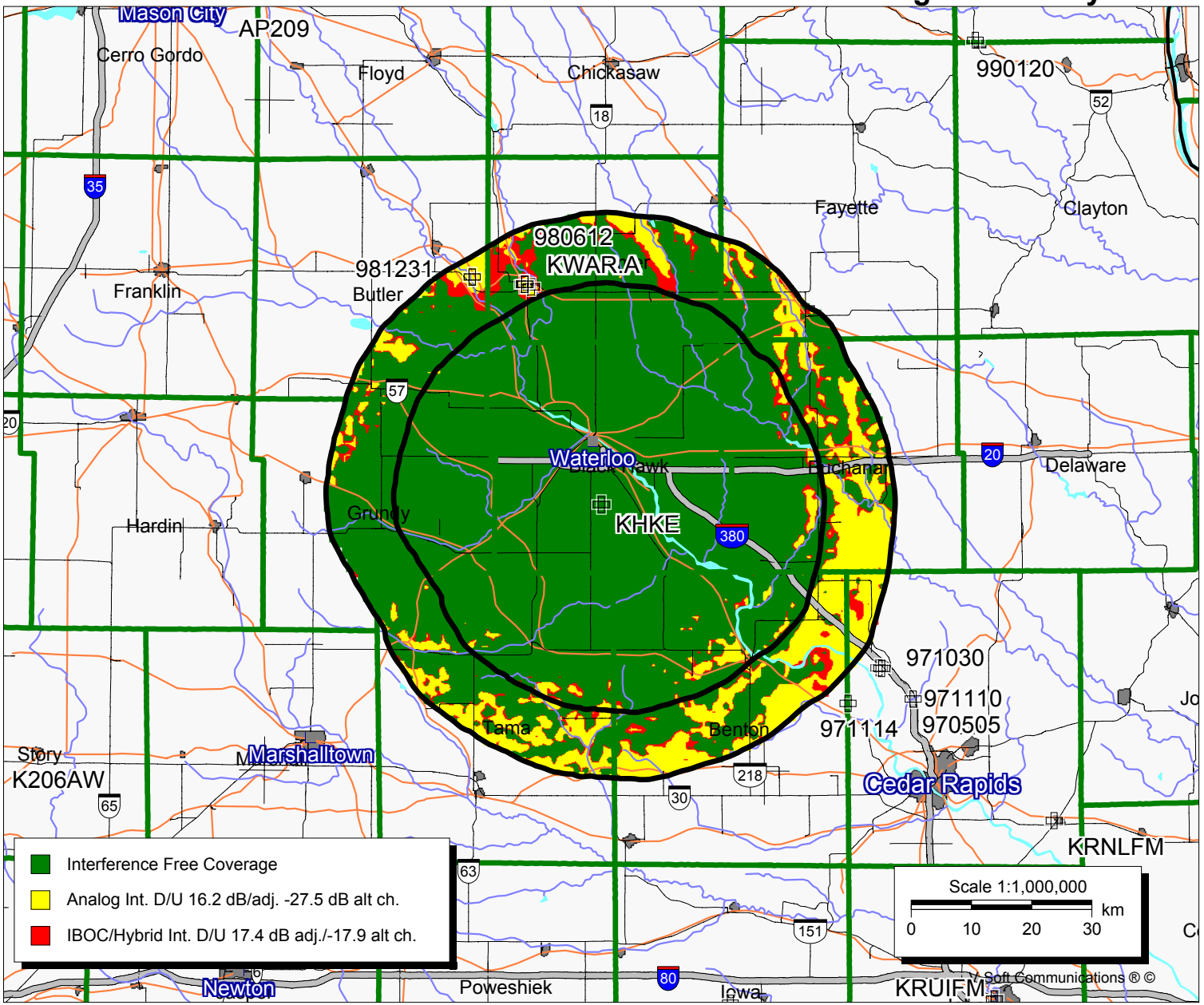


KHKE Subcarrier Interference - Analog vs IBOC Hybrid

KHKE CH 208, 89.5 MHz
Contours = 60 & 54 dBu
BLED19971014KH
Latitude: 42-23-55 N
Longitude: 092-19-34 W
Power: 10.00 kW
AMSL Height: 402.0 m
HAAT = 127 m
Elevation: 285.02 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0080
Dielec Const: 15.0
Refractivity: 311.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 209,270
area = 6,813.0 sq. km
Terrain Blockage loss
pop. = 10
area = 0.01 sq. km
25 dB WQP SNR:
Analog Interference loss
pop. = 18,340
area = 983.7 sq. km
Hybrid IBOC Int. loss
pop. = 13,232
area = 397.5 sq. km
Int. Free pop % = 6.93%



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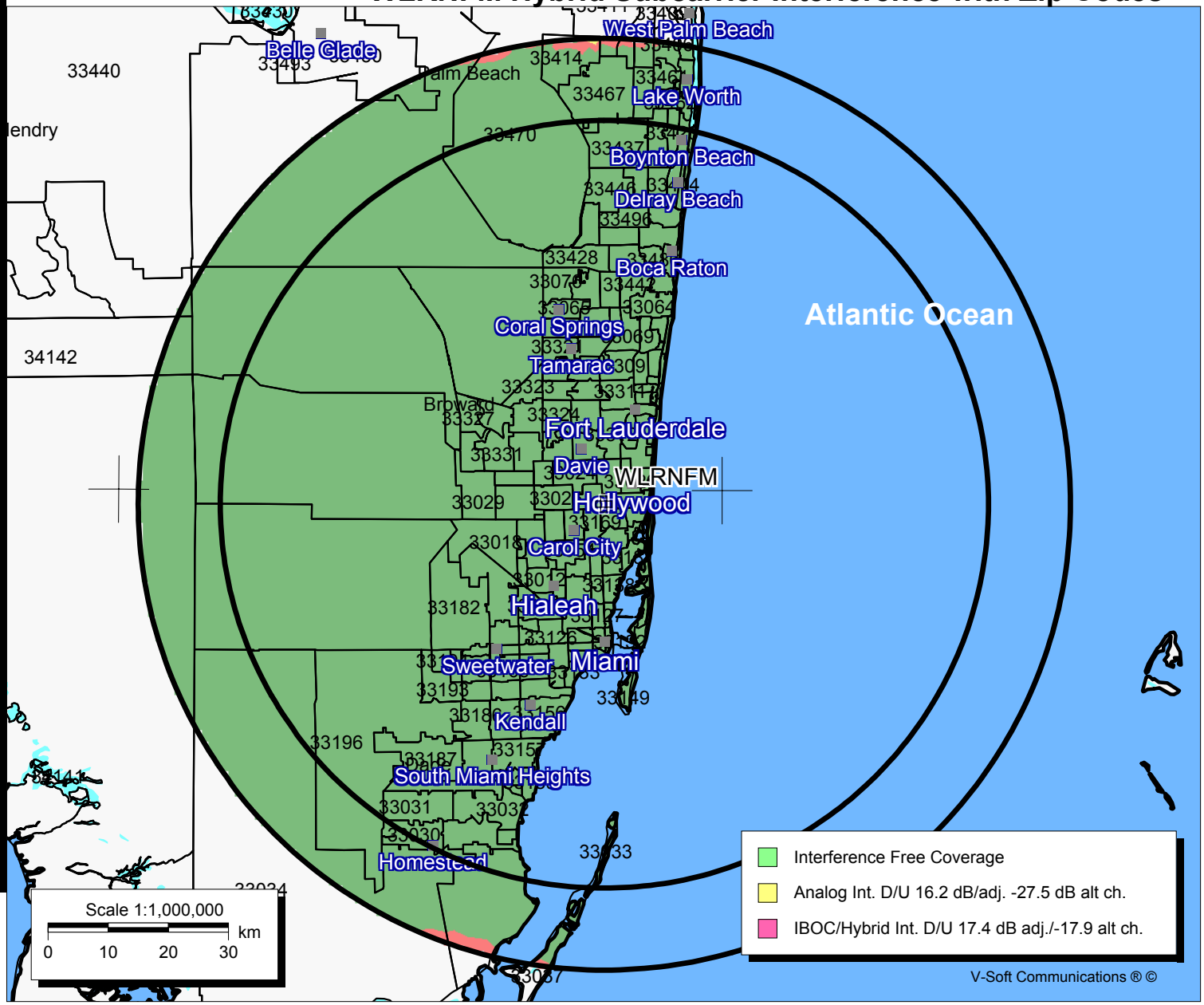
WLRNFM Hybrid Subcarrier Interference with Zip Codes

WLRNFM, CH 217, 91.3 MHz
Contours= 60 & 54 dBu
BLED19850214KP
Latitude: 25-58-48 N
Longitude: 080-11-47 W
Power: 100.00 kW
AMSL Height: 201.0 m
HAAT= 285 m
Elevation: 3.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0080
Dielec Const: 8.0
Refractivity: 330.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 4,590,285
area = 18,776.8 sq. km
Terrain Blockage loss
pop. = 0
area = 0 sq. km

25 dB WQP SNR:
Analog Int. loss
pop. = 155
area = 3.3 sq. km
Hybrid IBOC Int. loss
pop. = 19,751
area = 75.5 sq. km
Int Free Pop. % = 0.43 %



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KJZZ Hybrid Subcarrier Interference with Zip Codes

KJZZ, CH 218, 91.5 MHz
Contours = 60 & 54 dBu
BLED19890728KA
Latitude: 33-19-58 N
Longitude: 112-03-53 W
Power: 100.00 kW
AMSL Height: 856.0 m
HAAT= 490 M
Elevation: 728.61 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.008
Dielec Const: 8.0
Refractivity: 300.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 3,233,062
area = 31,305.9 sq. km
Terrain Blockage loss
pop. = 1,721
area = 1.308.2 sq. km
Analog Int. loss

25 dB WQP SNR
pop. = 24,551
area = 6,742.9 sq. km
Hybrid IBOC Int. loss
pop. = 8,597
area = 258 sq. km
Int Free Pop. %= 0.26%

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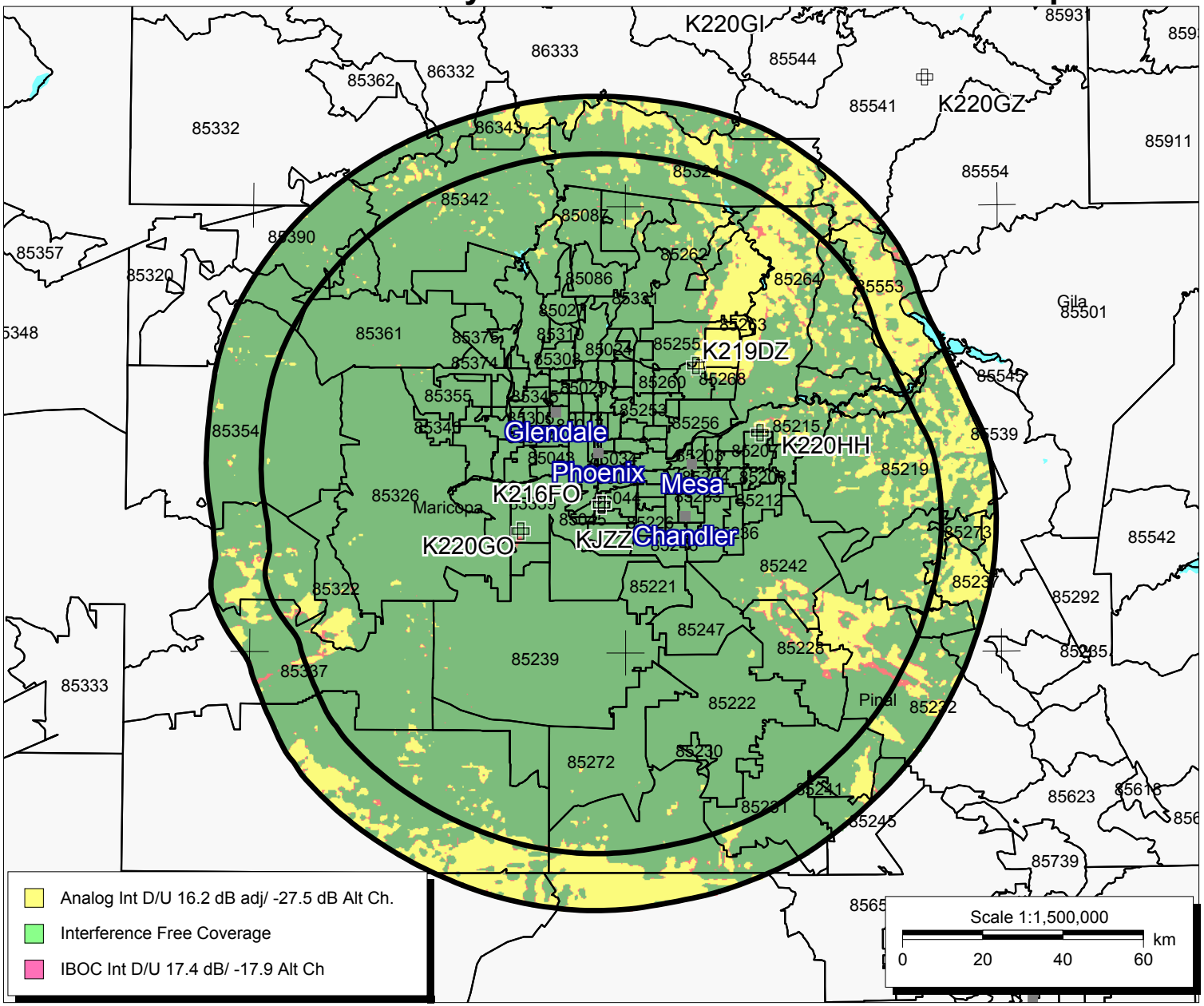
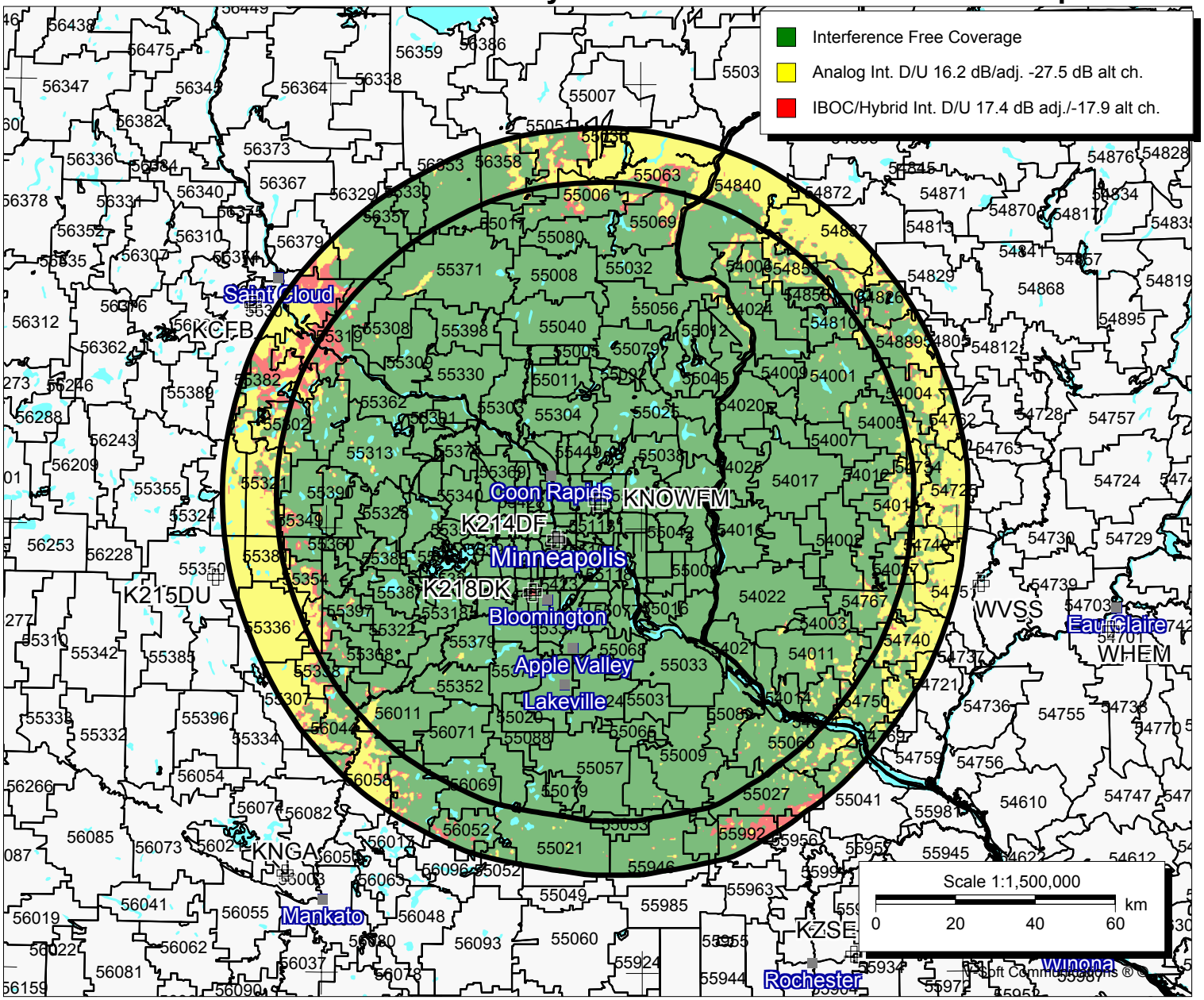


Hybrid Subcarrier Interference with Zip Codes

KNOWFM CH 216 91.1 MHz
Contours = 60 & 54 dBu
BMLED19940420KA
Latitude: 45-03-44 N
Longitude: 093-08-21 W
Power: 100.00 kW
AMSL Height: 677.0 m
HAAT= 400 m
Elevation: 304.54 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0150
Dielec Const: 15.0
Refractivity: 310.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 3,199,550
area = 27,327.2 sq. km
Terrain Blockage loss
pop. = 9.865
area = 65.1 sq. km

25 dB WQP SNR
Analog Int. loss
pop. = 81,919
area = 4,408.9 sq. km
Hybrid IBOC Int. loss
pop. = 18,546
area = 829.5 sq. km
Int Free Pop. %= 0.59 %



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KPBS Hybrid Subcarrier Interference with Zip Codes

KPBSFM CH 208 89.5 MHz
Contours = 60 and 54 dBu
BPED19970211IA -CP
Latitude: 32-50-24 N
Longitude: 117-15-06 W
Power: 26.00 kW
AMSL Height: 276.0 m
HAAT = 206 m
Elevation: 186.89 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: Longley/Rice
Climate: Cont temperate
Conductivity: 0.0150
Dielec Const: 15.0
Refractivity: 315.0
Receiver Ht AG: 5.0 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast

54-dBu Coverage Area:
pop. = 2,798,794
area = 14,282.9 sq. km
Terrain Blockage loss
pop. = 17,634
area = 42.0 sq. km

25 dB WQP SNR
Analog Int. loss
pop. = 54,857
area = 3,748.5 sq. km
Hybrid IBOC Int. loss
pop. = 16,661
area = 707.7 sq. km
Int Free Pop. % = 0.61%

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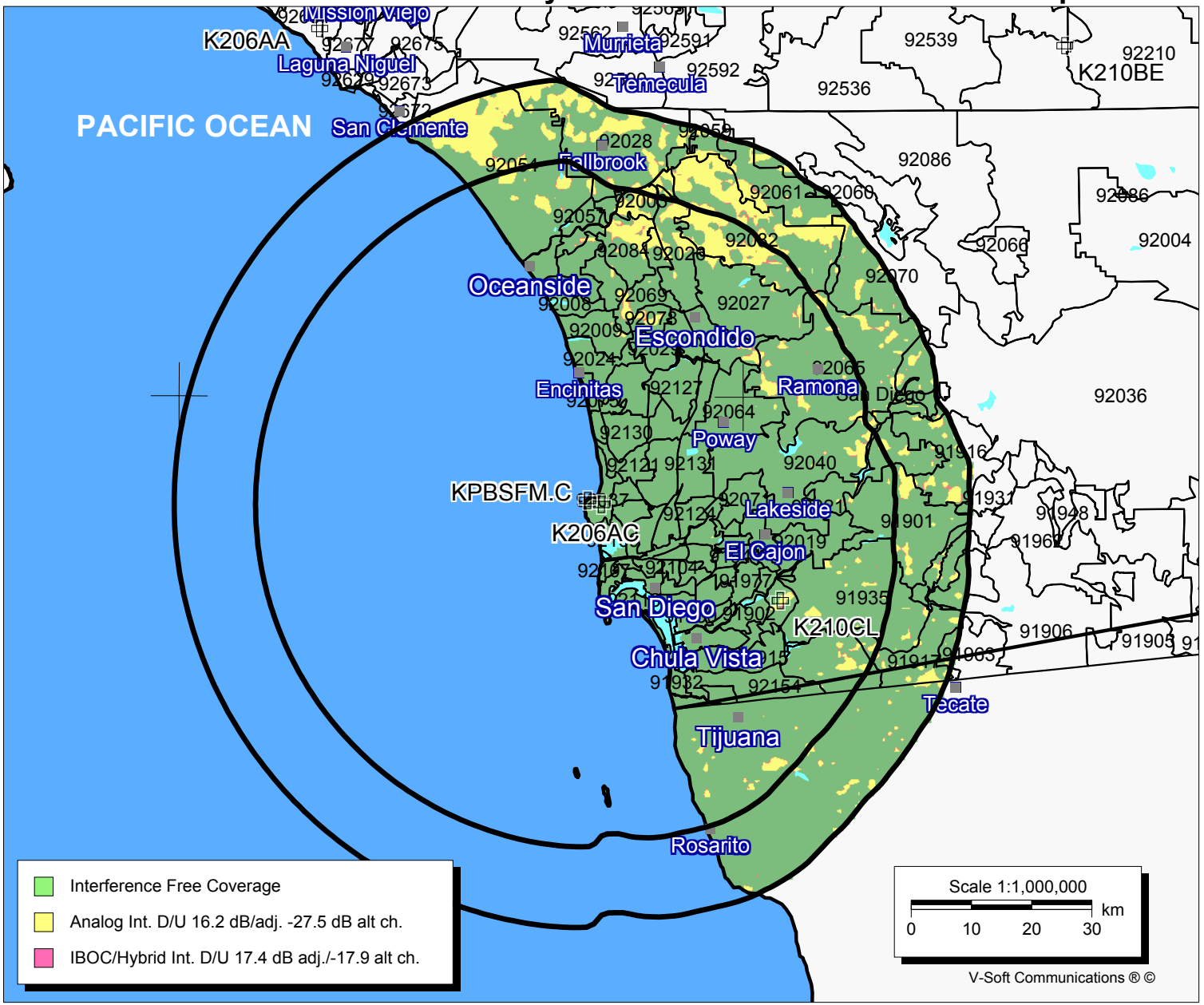


Appendix B

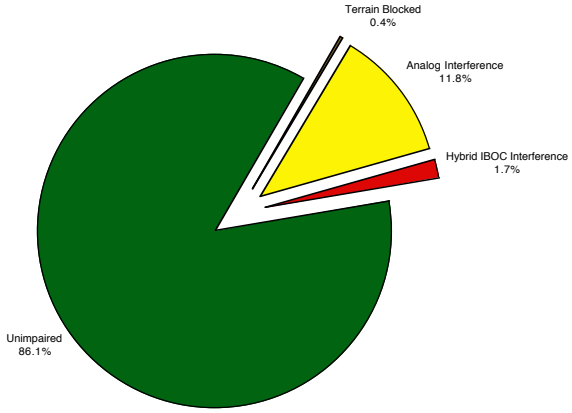
Appendix B
SCA Data Tabulation

Arbitron Market Rank	Market Name	Station	Area Within Predicted 54-dBu Contour (sq. km)	Area Within Predicted 54-dBu Contour with Signal Blocked by Terrain (sq. km)	Area Within Predicted 54-dBu Contour with Signal Blocked by Terrain (%)	Area Within Predicted 54-dBu Contour with Signal Impaired by Analog Interference (sq. km)	Area Within Predicted 54-dBu Contour with Signal Impaired by Analog Interference (%)	Area Within Usable Analog Signal Coverage Area with Signal Impaired by Hybrid IBOC Interference (sq. km)	Area Within Usable Analog Signal Coverage Area with Signal Impaired by Hybrid IBOC Interference (%)	Population Within Predicted 54-dBu Contour	Population Within Predicted 54-dBu Contour with Signal Blocked by Terrain	Population Within Predicted 54-dBu Contour with Signal Blocked by Terrain (%)	Population Within Predicted 54-dBu Contour with Signal Impaired by Analog Interference	Population Within Predicted 54-dBu Contour with Signal Impaired by Analog Interference (%)	Population Within Usable Analog Signal Coverage Area with Signal Impaired by Hybrid IBOC Interference	Population Within Usable Analog Signal Coverage with Signal Impaired by Hybrid IBOC Interference (%)
1	New York (ESB CP)	WNYC	13,612.4	17.5	0.1%	4,570.4	33.6%	510.1	5.6%	16,841,430	63,980	0.4%	1,984,697	11.8%	255,676	1.7%
2	Los Angeles	KCSN	4,543.7	27.2	0.6%	2,486.5	54.7%	124.0	6.0%	4,948,575	21,733	0.4%	2,423,291	49.0%	204,256	8.1%
2	Los Angeles	KPCC	11,431.3	533.8	4.7%	5,846.0	51.1%	647.5	11.6%	12,670,407	162,903	1.3%	2,441,731	19.3%	858,758	8.4%
3	Chicago	WBEZ	13,480.6	0.0	0.0%	2,980.9	22.1%	420.0	4.0%	8,334,373	1,913	0.0%	872,746	10.5%	127,647	1.7%
4	San Francisco	KALW	6,727.5	1.9	0.0%	2,907.2	43.2%	260.7	6.8%	3,791,451	8,987	0.2%	1,489,312	39.3%	142,077	6.2%
5	Dallas/Ft. Worth	KERA	26,716.0	2.1	0.0%	4,217.1	15.8%	1,010.2	4.5%	5,223,979	4,084	0.1%	1,247,915	23.9%	51,895	1.3%
6	Philadelphia	WHYY	13,137.3	31.4	0.2%	3,228.1	24.6%	383.0	3.9%	6,224,057	61,129	1.0%	810,704	13.0%	128,410	2.4%
7	Houston/Galveston	KUHF	33,244.4	0.0	0.0%	1,238.4	3.7%	439.0	1.4%	4,771,581	478	0.0%	28,926	0.6%	25,128	0.5%
8	Washington	WETA	16,684.6	41.8	0.3%	4,214.7	25.3%	630.4	5.1%	6,481,338	57,732	0.9%	1,182,367	18.2%	122,621	2.3%
9	Boston	WERS	6,614.8	0.9	0.0%	2,690.5	40.7%	347.3	8.8%	3,739,332	6,224	0.2%	777,946	20.8%	80,692	2.7%
9	Boston	WATD	3,861.4	0.0	0.0%	2,577.6	66.8%	347.3	27.1%	680,412	1,130	0.2%	505,637	74.3%	13,633	7.8%
10	Detroit	WDET	14,070.2	2.7	0.0%	4,140.5	29.4%	709.1	7.1%	4,535,327	890	0.0%	236,500	5.2%	71,524	1.7%
11	Atlanta	WABE	17,507.7	52.5	0.3%	1,894.4	10.8%	346.2	2.2%	4,130,474	22,771	0.6%	154,886	3.7%	22,340	0.6%
12	Miami	WLRN	18,776.8	0.0	0.0%	3.3	0.0%	75.5	0.4%	4,590,285	0	0.0%	155	0.0%	19,751	0.4%
13	Seattle/Tacoma	KUOW	19,906.0	174.0	0.9%	4,440.0	22.3%	321.0	2.1%	3,524,585	24,439	0.7%	137,853	3.9%	27,796	0.8%
14	Phoenix	KJZZ	31,305.9	1,308.2	4.2%	6,742.9	21.5%	258.0	1.1%	3,233,062	1,721	0.1%	24,551	0.8%	8,597	0.3%
15	Minneapolis/St. Paul	KNOW	27,327.2	65.1	0.2%	4,408.9	16.1%	829.5	3.6%	3,199,550	9,865	0.3%	81,919	2.6%	18,546	0.6%
16	San Diego (CP)	KPBS	14,282.9	42.0	0.3%	3,748.5	26.2%	707.7	6.7%	2,798,794	17,634	0.6%	54,857	2.0%	16,661	0.6%
23	Pittsburgh	WDUQ	10,534.3	29.8	0.3%	3,259.0	30.9%	287.7	4.0%	2,394,578	76,069	3.2%	317,584	13.3%	42,189	2.0%
105	Roanoke	WVTF	35,970.4	600.9	1.7%	8,485.2	23.6%	401.5	1.5%	1,296,791	103,878	8.0%	233,396	18.0%	15,300	1.4%
233	Cedar Falls	KHKE	6,813.0	0.0	0.0%	983.7	14.4%	397.5	6.8%	209,270	10	0.0%	18,340	8.8%	13,232	6.9%
	totals and averages:		346,548.4	2,931.8	0.8%	75,063.8	21.7%	9,453.2	3.5%	103,619,651	647,570	0.6%	15,025,313	14.5%	2,266,729	2.6%

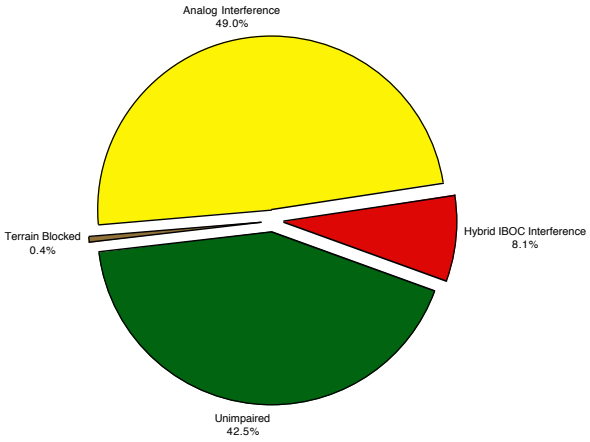
Appendix C

Predicted SCA Coverage within Station's 54-dBu Contour (by Population)

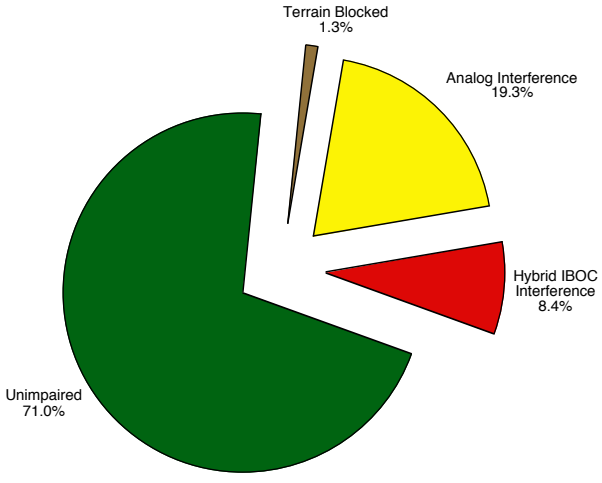
WNYC-FM—New York Market (#1)
(based on Empire State Building Construction Permit)



KCSN—Los Angeles Market (#2)



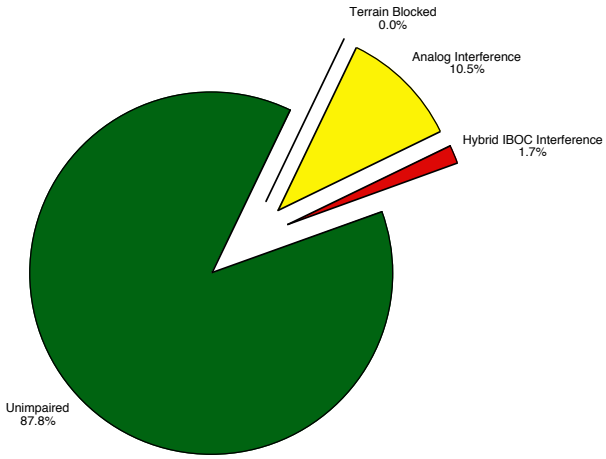
KPCC—Los Angeles Market (#2)



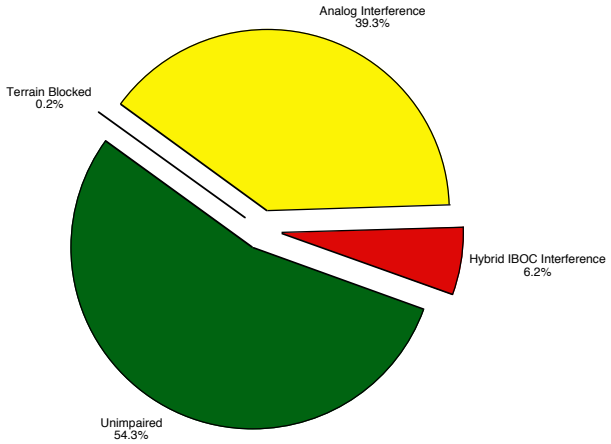
(per Vernier 2002.03 & 2002.05)

Predicted SCA Coverage within Station's 54-dBu Contour (by Population)

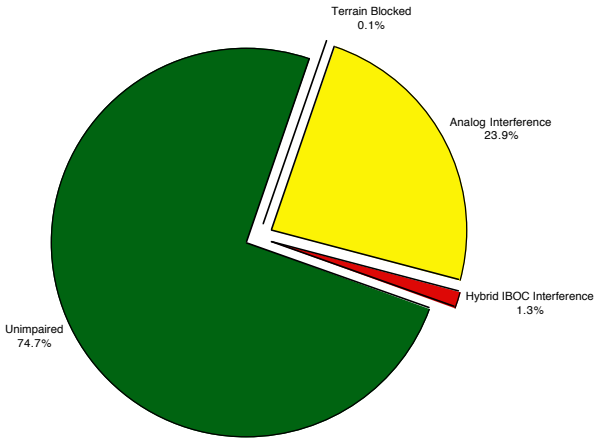
WBEZ—Chicago Market (#3)



KALW—San Francisco Market (#4)



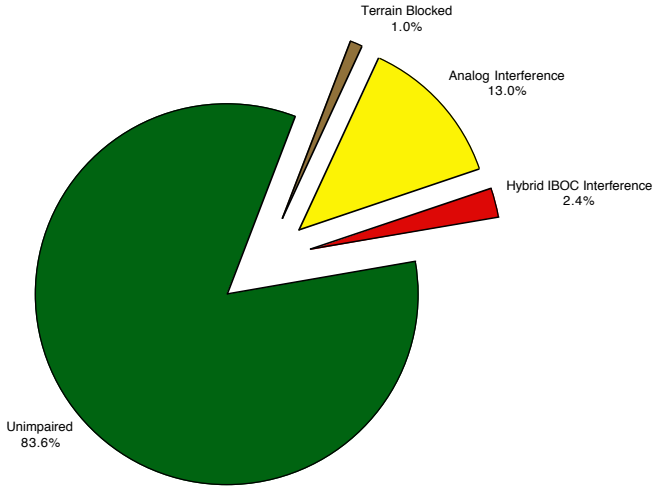
KERA—Dallas/Fort Worth Market (#5)



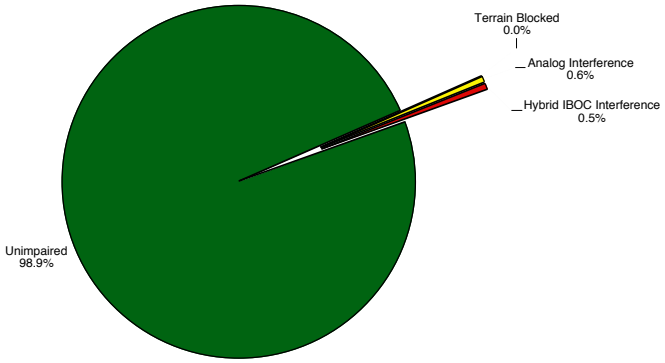
(per Vernier 2002.03 & 2002.05)

Predicted SCA Coverage within Station's 54-dBu Contour (by Population)

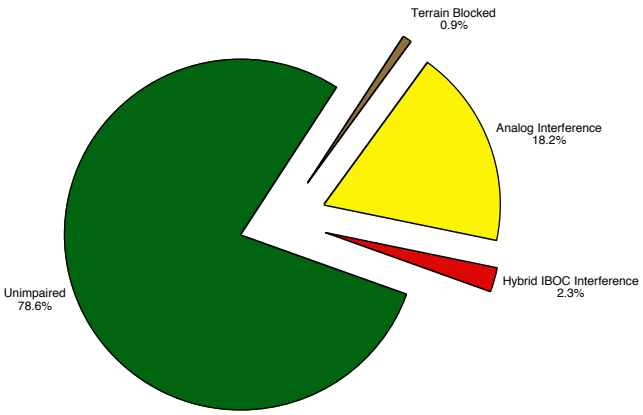
WHYY—Philadelphia Market (#6)



KUHF—Houston Market (#7)



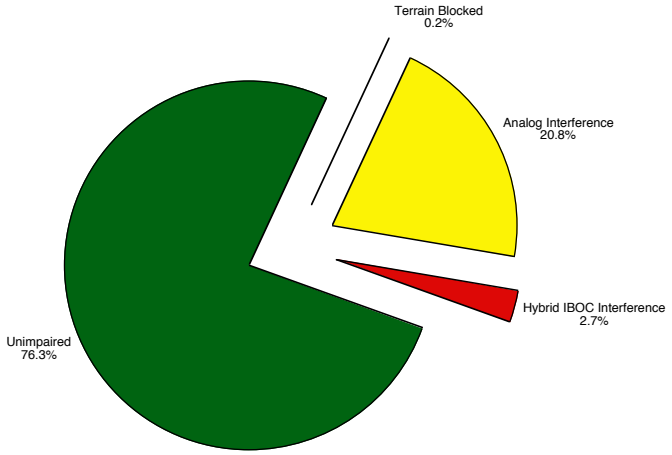
WETA—Washington Market (#8)



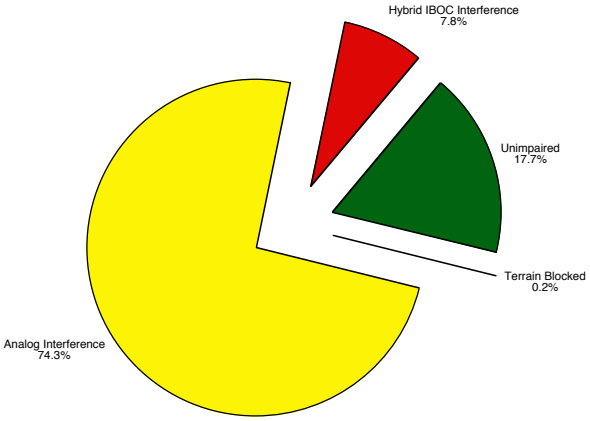
(per Vernier 2002.03 & 2002.05)

Predicted SCA Coverage within Station's 54-dBu Contour (by Population)

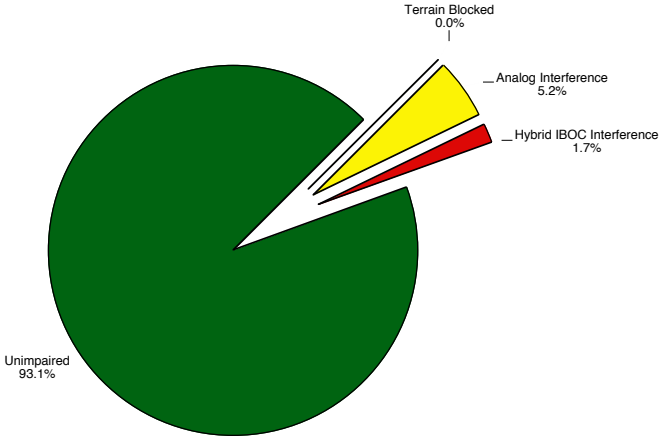
WERS—Boston Market (#9)



WATD—Boston Market (#9)



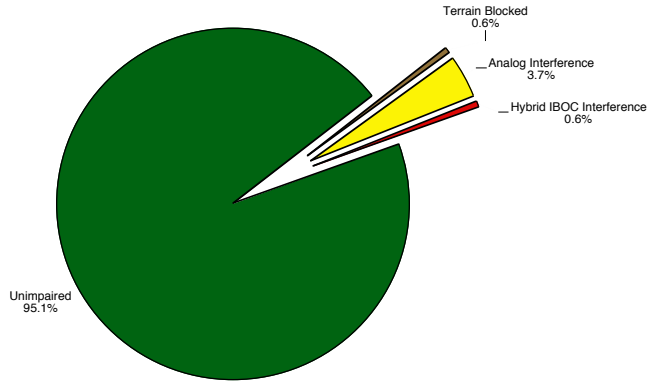
WDET—Detroit Market (#10)



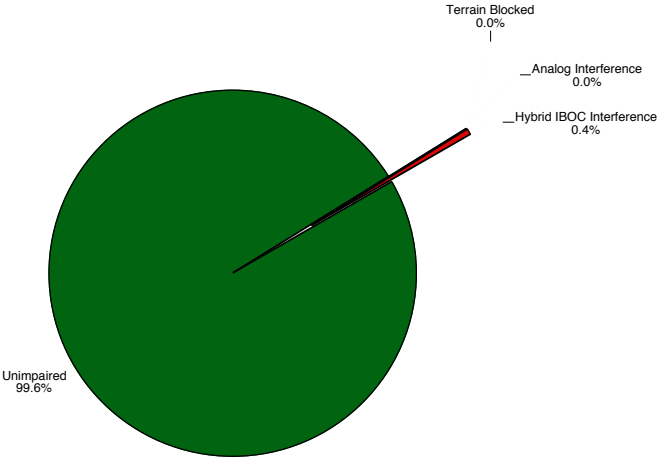
(per Vernier 2002.03 & 2002.05)

Predicted SCA Coverage within Station's 54-dBu Contour (by Population)

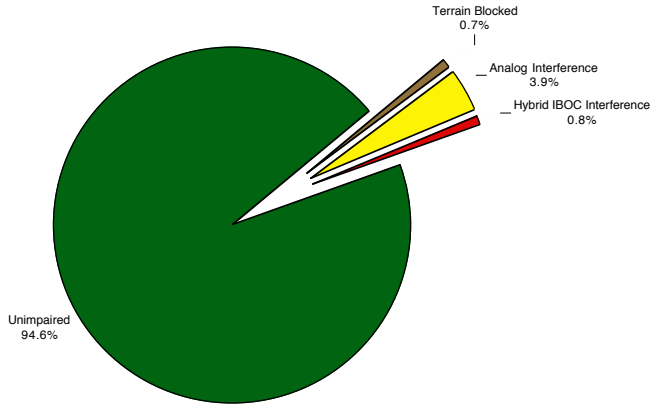
WABE—Atlanta Market (#11)



WLRN—Miami Market (#12)



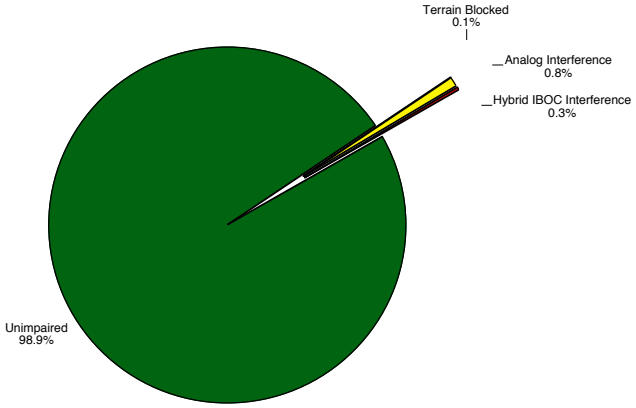
KUOW—Seattle Market (#13)



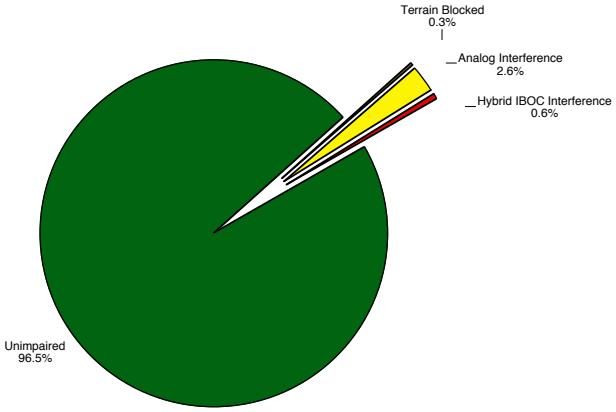
(per Vernier 2002.03 & 2002.05)

Predicted SCA Coverage within Station's 54-dBu Contour (by Population)

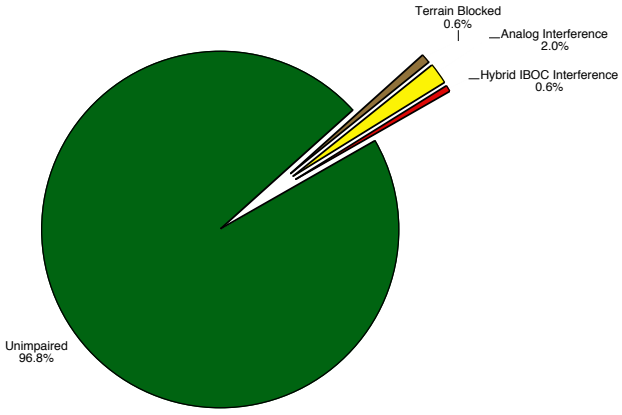
KJZZ—Phoenix Market (#14)



KNOW—Minneapolis/St. Paul Market (#15)



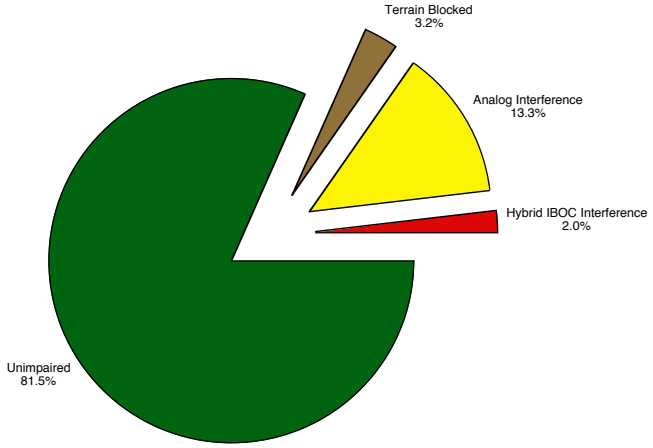
KPBS—San Diego Market (#16)



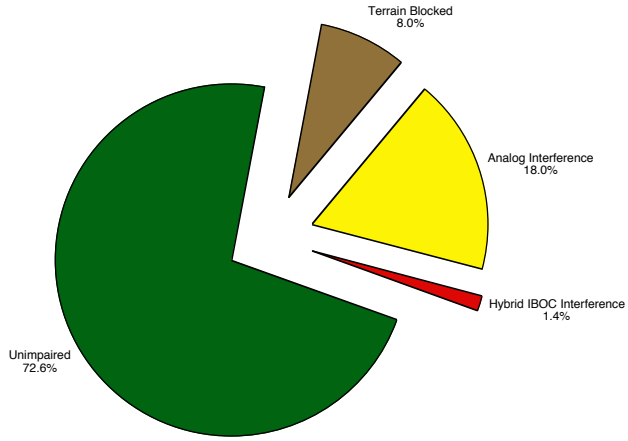
(per Vernier 2002.03 & 2002.05)

Predicted SCA Coverage within Station's 54-dBu Contour (by Population)

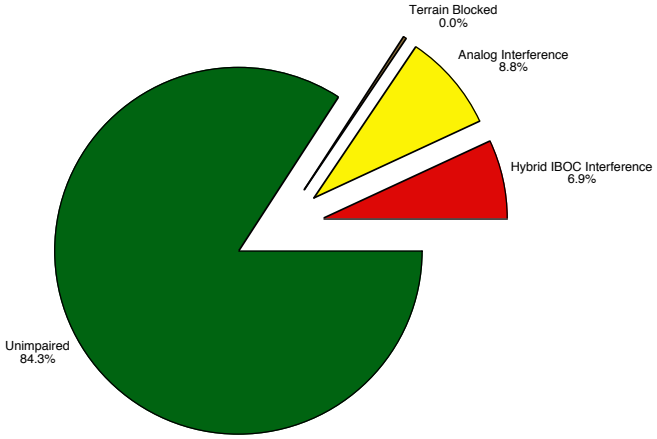
WDUQ—Pittsburgh Market (#23)



WVTF—Roanoke Market (#105)

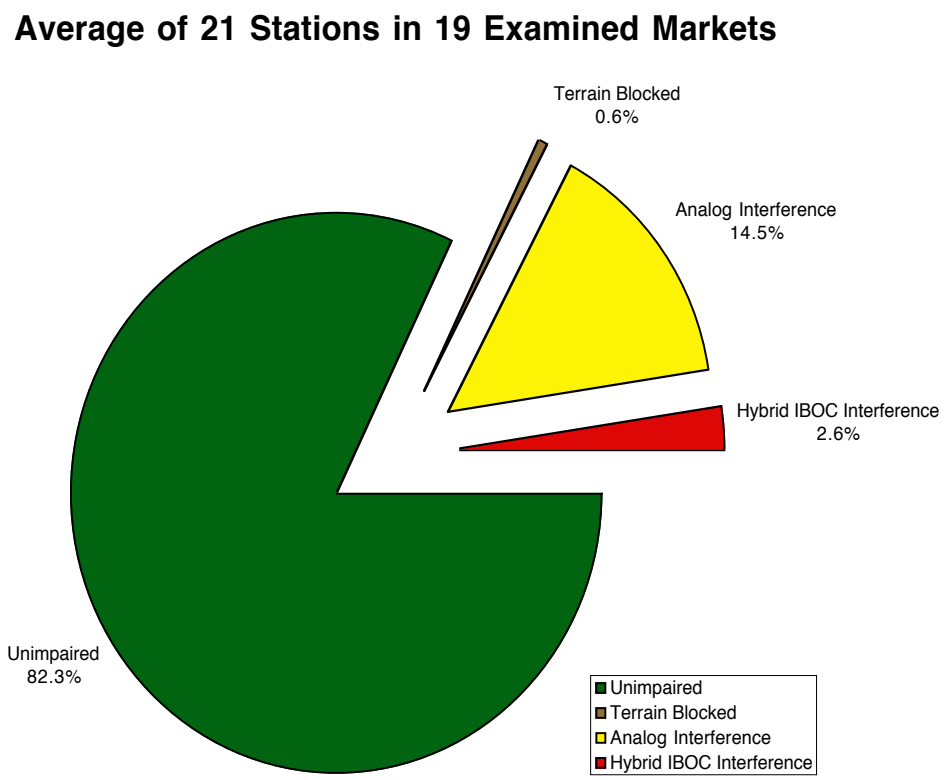


KHKE—Cedar Falls Market (#233)



(per Vernier 2002.03 & 2002.05)

Predicted SCA Coverage within Station's 54-dBu Contour (by Population)



(per Vernier 2002.03 & 2002.05)