Engineering Exhibit: Telemundo Las Vegas LLC Application for Experimental STA

Description

Telemundo Las Vegas requests special temporary authority to construct and operate a distributed transmission system to facilitate a real-world demonstration of mobile wireless video service in and around the Las Vegas Convention Center and on the Las Vegas strip during the National Association of Broadcasters Convention (NAB), April 18 through April 23, 2009. As this will be the first on-air demonstration of this technology for broadcasting ATSC Candidate Standard A/153 mobile/handheld compliant data streams STA is requested commencing April 10, 2009 for testing prior to the NAB Convention. This demonstration will be shut down no later than 4 PM, April 23, 2009.

The distributed transmission system will consist of the licensed KBLR-DT facility operating at its authorized effective radiated power of 230 kW from Black Mountain with horizontal polarization, a temporary synchronized transmitter on top of the Stratosphere Tower at 2000 South Las Vegas Boulevard using vertical polarization with an effective radiated power not to exceed 1,000 watts, and a synchronized transmitter inf the Central Hall of the Las Vegas Convention Center transmitting a vertically polarized signal with an effective radiated power not exceeding 20 watts. Both transmitters will be located inside the KBLR-DT service contour.

KBLR programming and the mobile wireless video programming will be transmitted via the AMC-16 satellite to the KBLR Black Mountain transmitter and the transmitter at the Convention Center. The transmitter at the Stratosphere will receive its signal either by terrestrial microwave or satellite. The system will be controlled at the KBLR studio and in the event of problems with the system or interference, KBLR will be able to immediately turn off the distributed transmission system and return to normal single transmitter operation using its existing STL to Black Mountain.

The drawing on page 3 shows the system configuration.

Interference

Both low power transmitters will operate with vertical polarization only. This reduces interference to KBLR fixed ATSC reception while improving mobile and handheld reception.

An interference study using the FCC LPTV pre-transition OET Bulletin 69 methodology showed no interference from the low power transmitter at the Stratosphere Tower to any station other than KBLR-DT. This is a worst case analysis because the methodology is based on all stations being horizontally polarized. A copy of the OET-69 study can be provided on request.

Because KBLR-DT will be part of the distributed transmission system, the only interference to it will be in areas where ATSC receiver equalizers are unable to correct for signals from the multiple transmitters. The timing of the Stratosphere transmitter will be adjusted to minimize this interference. Interference from the low power transmitter inside the Convention Center was not studied as it will be insignificant due to its low effective radiated power and location within 2 km of the Stratosphere transmitter. It will, however, be locked to the other two transmitters in the system to reduce self-interference around the Convention Center. Preliminary analysis indicates minimum interference with the two low power transmitters delayed approximately 30 microseconds from the KBLR-DT full power transmitter.

Interference will be checked at various locations as part of the testing prior to the NAB Convention. Should any unacceptable interference result, the demonstration will be shut down if interference cannot be resolved by reducing transmitter power at the Stratosphere or Convention Center.

Prepared by Doug Lung, March 13, 2009

Antenna System

The transmitter at the Stratosphere will use two Kathrein-Scala CL-1469 log periodic antennas oriented at 164 degrees and 213 degrees true with the combined main beam at 189 degrees true. The antenna array will be tilted down a maximum of 8 degrees at 169 degrees true, resulting in the horizontal plane azimuth pattern attached. A polar plot of the elevation pattern at 189 degrees true is attached. The horizontal plane (azimuth) 3-dB beamwidth (without tilt) is 64 degrees and the vertical plane (elevation) 3-dB beamwidth is 67 degrees. The antenna array will be mounted approximately 909 feet above ground.

The indoor transmitter at the Convention Center will use a Kathrein K-72-20-4 Type Number 767-006 omnidirectional antenna with a vertical plane 3-dB beamwidth of approximately 22 degrees. This antenna will be mounted at least 20 feet above the floor of the Convention Center.

Manufacturer data sheets on both antennas are attached.

RF Exposure

RF exposure from the two low power transmitters in the distributed transmission system was studied using the formulas in OET Bulletin 65.

The study showed that power density from the antenna at the Convention Center will not exceed FCC maximum permissible exposure level (0.419 mw/cm^2) for an uncontrolled environment at any angle, including the main beam, if the antenna is mounted at least 6.1 meters (20 feet) from areas accessible to the public, as is proposed.

At a maximum effective radiated power of 1,000 watts, the antenna at the Stratosphere is not predicted to produce power density exceeding the maximum permissible exposure level for an uncontrolled environment at any location 6.1 meters (20 feet) below the antenna on the Stratosphere. The antenna will not be mounted in an area accessible to the public. Due to the complex structure on top of the Stratosphere, a site survey will be performed to determine the distance and angle to the areas closest to the antenna accessible to the public. In the event the predicted power density exceeds 5 percent of the allowable exposure level for an uncontrolled environment, measurements will be taken in these areas to verify that the power density does not exceed maximum permissible exposure.

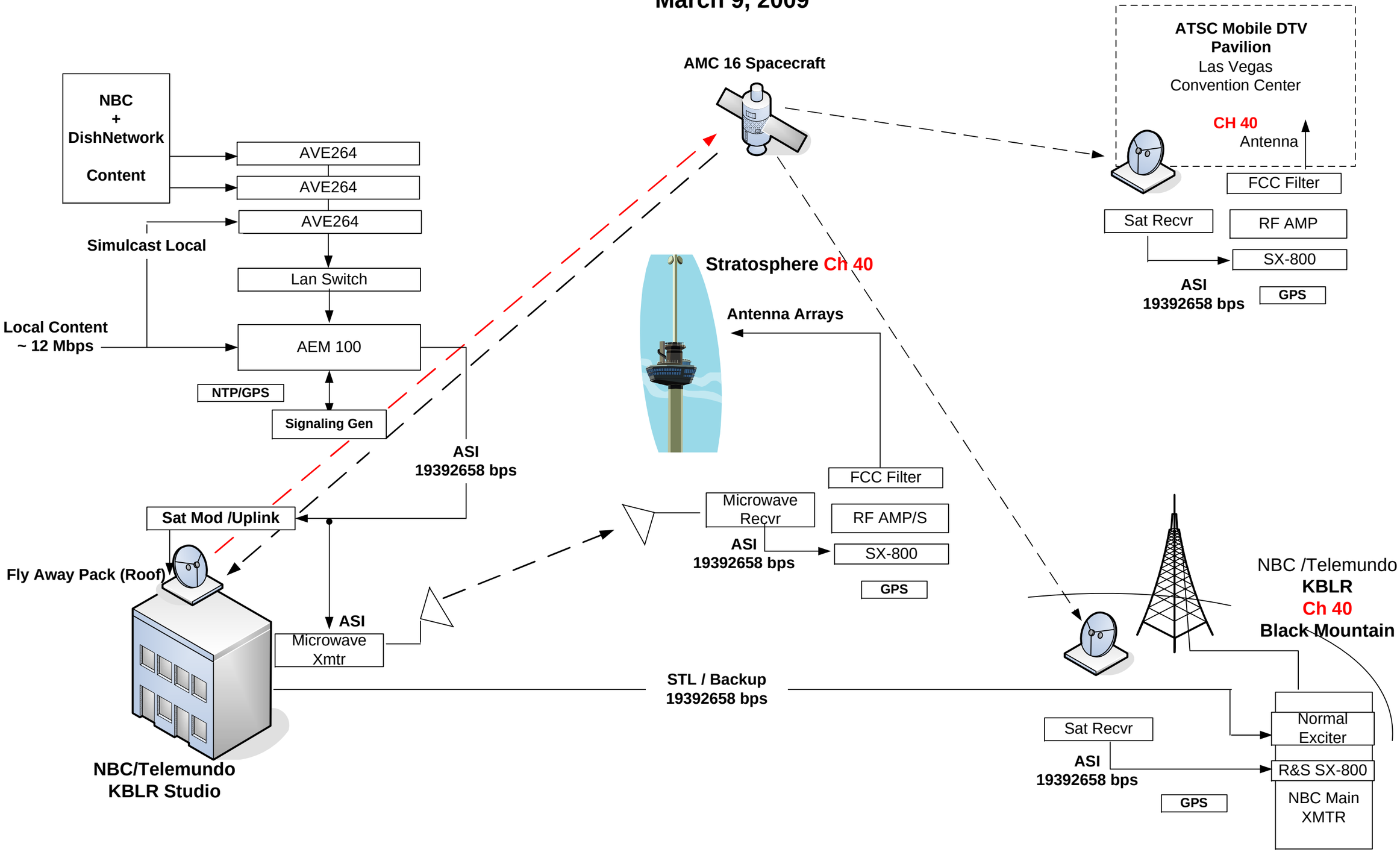
A copy of the Excel interactive spreadsheet used to analyze RF exposure from these antennas can be provided on request.

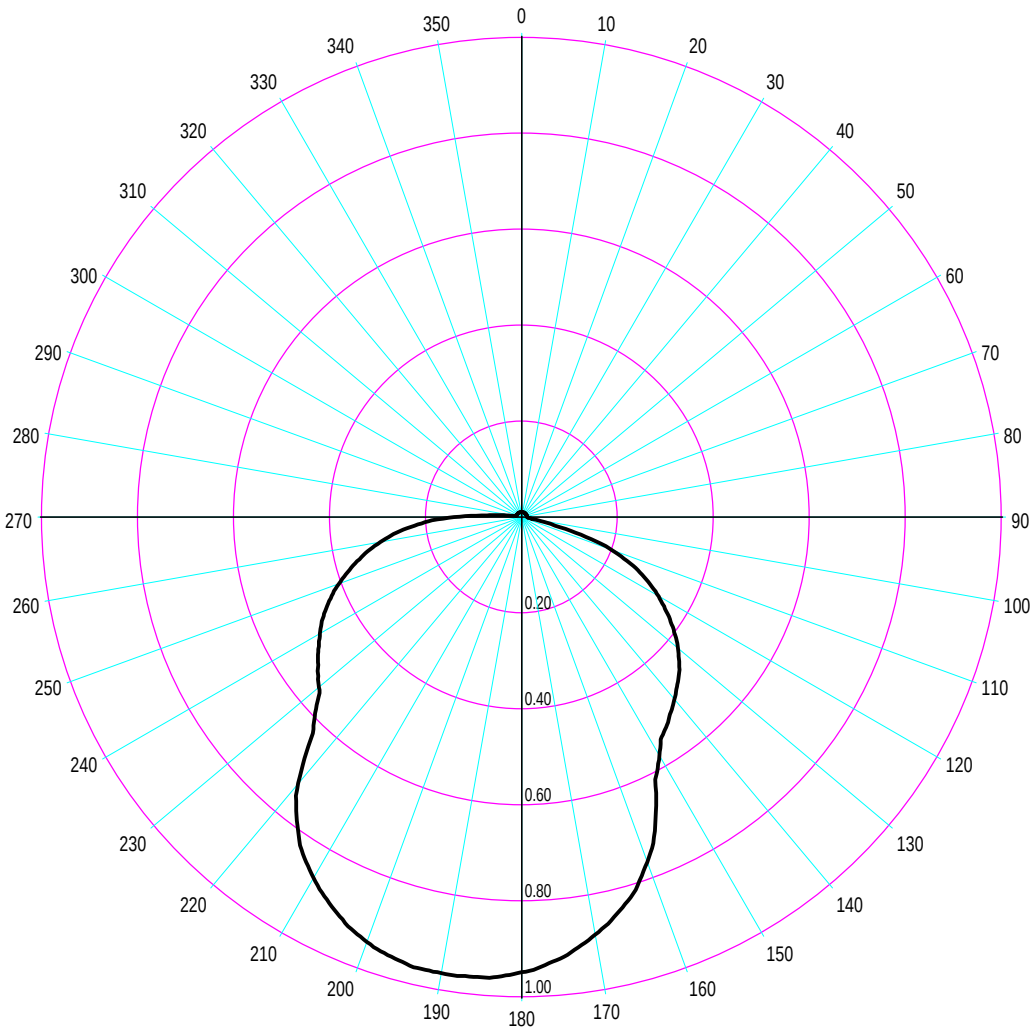
Telemundo Las Vegas certifies it will turn off these transmitters as required to protect workers from excessive RF exposure.

Attachments:

1) System configuration
2) Stratosphere antenna horizontal plane azimuth pattern (polar plot) with mechanical tilt
3) Stratosphere antenna vertical plane elevation pattern (polar plot) at an azimuth of 189 degrees including mechanical tilt
4) Kathrein-Scala CL-1469 Data sheet
5) Kathrein K-72-20-4 Type Number 767-006 data sheet

Draft r4 NAB 2009 NBC/Telemundo + DishNetwork/ R&S/ Triveni Demo March 9, 2009



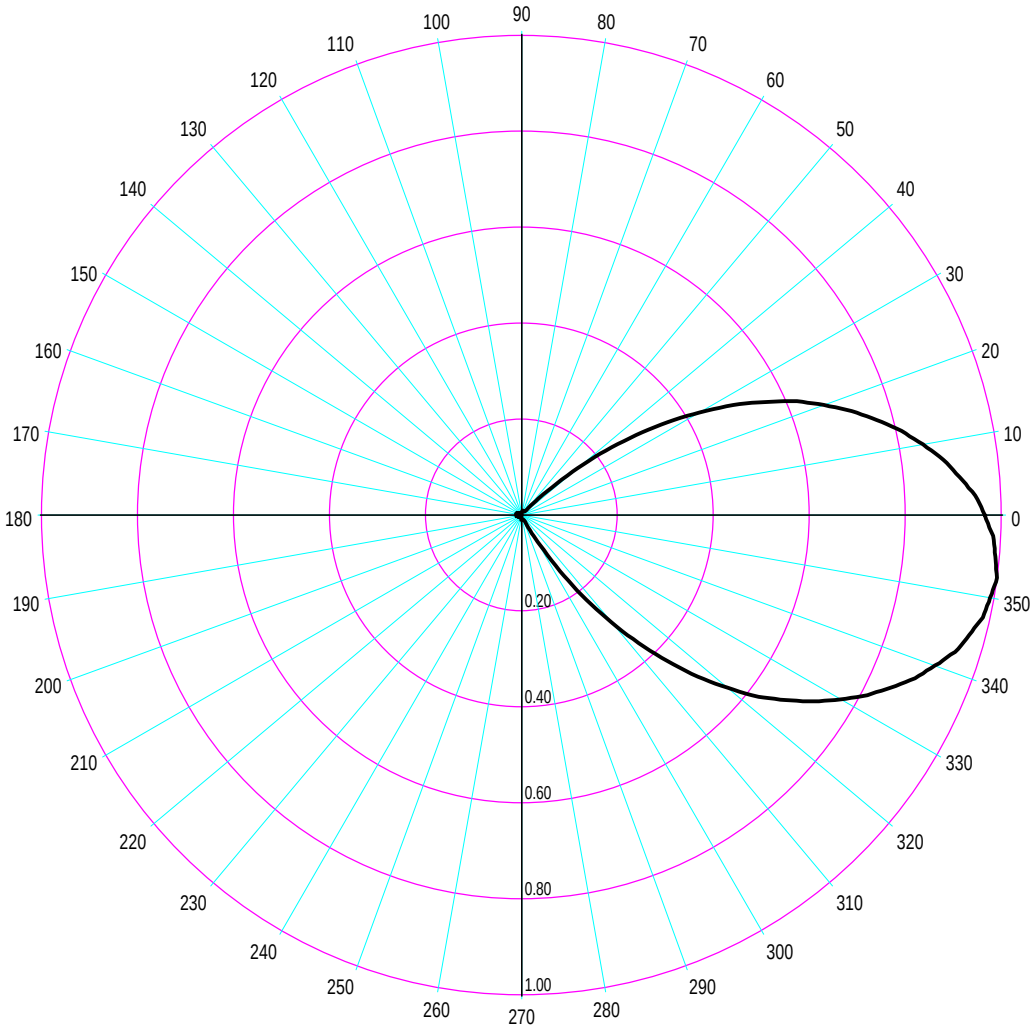


Azim	Rel.FS	ERP [kW]	dBk
0.0	0.011	0.000	-39.172
5.0	0.011	0.000	-39.172
10.0	0.011	0.000	-39.172
15.0	0.011	0.000	-39.172
20.0	0.011	0.000	-39.172
25.0	0.011	0.000	-39.172
30.0	0.011	0.000	-39.172
35.0	0.011	0.000	-39.172
40.0	0.011	0.000	-39.172
45.0	0.011	0.000	-39.172
50.0	0.011	0.000	-39.172
55.0	0.011	0.000	-39.172
60.0	0.011	0.000	-39.172
65.0	0.011	0.000	-39.172
70.0	0.011	0.000	-39.172
75.0	0.011	0.000	-39.172
80.0	0.011	0.000	-39.172
85.0	0.011	0.000	-39.172

Azim	Rel.FS	ERP [kW]	dBk
90.0	0.011	0.000	-39.172
95.0	0.015	0.000	-36.478
100.0	0.032	0.001	-29.897
105.0	0.095	0.009	-20.445
110.0	0.200	0.040	-13.979
115.0	0.272	0.074	-11.308
120.0	0.330	0.109	-9.629
125.0	0.379	0.144	-8.427
130.0	0.425	0.181	-7.432
135.0	0.463	0.214	-6.688
140.0	0.495	0.245	-6.108
145.0	0.528	0.279	-5.547
150.0	0.574	0.330	-4.821
155.0	0.663	0.440	-3.569
160.0	0.765	0.585	-2.326
165.0	0.834	0.696	-1.576
170.0	0.883	0.780	-1.080
175.0	0.923	0.852	-0.696

Azim	Rel.FS	ERP [kW]	dBk
180.0	0.948	0.899	-0.463
185.0	0.962	0.926	-0.336
190.0	0.964	0.929	-0.318
195.0	0.959	0.920	-0.363
200.0	0.942	0.887	-0.519
205.0	0.910	0.828	-0.819
210.0	0.867	0.752	-1.239
215.0	0.810	0.656	-1.830
220.0	0.724	0.524	-2.805
225.0	0.613	0.376	-4.250
230.0	0.551	0.304	-5.177
235.0	0.518	0.268	-5.713
240.0	0.485	0.235	-6.285
245.0	0.449	0.202	-6.955
250.0	0.405	0.164	-7.851
255.0	0.355	0.126	-8.995
260.0	0.299	0.089	-10.486
265.0	0.232	0.054	-12.690

Azim	Rel.FS	ERP [kW]	dBk
270.0	0.141	0.020	-17.015
275.0	0.052	0.003	-25.680
280.0	0.019	0.000	-34.425
285.0	0.012	0.000	-38.416
290.0	0.011	0.000	-39.172
295.0	0.011	0.000	-39.172
300.0	0.011	0.000	-39.172
305.0	0.011	0.000	-39.172
310.0	0.011	0.000	-39.172
315.0	0.011	0.000	-39.172
320.0	0.011	0.000	-39.172
325.0	0.011	0.000	-39.172
330.0	0.011	0.000	-39.172
335.0	0.011	0.000	-39.172
340.0	0.011	0.000	-39.172
345.0	0.011	0.000	-39.172
350.0	0.011	0.000	-39.172
355.0	0.011	0.000	-39.172



Azim	Rel.FS	ERP [W]	dBk
0.0	0.965	58.756	-12.309
5.0	0.916	52.941	-12.762
10.0	0.849	45.479	-13.422
15.0	0.766	37.022	-14.315
20.0	0.671	28.408	-15.466
25.0	0.558	19.646	-17.067
30.0	0.429	11.612	-19.351
35.0	0.291	5.343	-22.722
40.0	0.153	1.477	-28.306
45.0	0.049	0.151	-38.196
50.0	0.012	0.009	-50.416
55.0	0.010	0.006	-52.000
60.0	0.010	0.006	-52.000
65.0	0.010	0.006	-52.000
70.0	0.010	0.006	-52.000
75.0	0.010	0.006	-52.000
80.0	0.010	0.006	-52.000
85.0	0.001	0.000	-72.000

Azim	Rel.FS	ERP [W]	dBk
90.0	0.001	0.000	-72.000
95.0	0.001	0.000	-72.000
100.0	0.001	0.000	-72.000
105.0	0.001	0.000	-72.000
110.0	0.001	0.000	-72.000
115.0	0.001	0.000	-72.000
120.0	0.001	0.000	-72.000
125.0	0.002	0.000	-65.979
130.0	0.003	0.001	-62.458
135.0	0.005	0.002	-58.021
140.0	0.007	0.003	-55.098
145.0	0.008	0.004	-53.938
150.0	0.009	0.005	-52.915
155.0	0.010	0.006	-52.000
160.0	0.011	0.008	-51.172
165.0	0.012	0.009	-50.416
170.0	0.012	0.009	-50.416
175.0	0.012	0.009	-50.416

Azim	Rel.FS	ERP [W]	dBk
180.0	0.012	0.009	-50.416
185.0	0.011	0.008	-51.172
190.0	0.010	0.006	-52.000
195.0	0.009	0.005	-52.915
200.0	0.008	0.004	-53.938
205.0	0.007	0.003	-55.098
210.0	0.005	0.002	-58.021
215.0	0.003	0.001	-62.458
220.0	0.002	0.000	-65.979
225.0	0.001	0.000	-72.000
230.0	0.001	0.000	-72.000
235.0	0.001	0.000	-72.000
240.0	0.001	0.000	-72.000
245.0	0.001	0.000	-72.000
250.0	0.001	0.000	-72.000
255.0	0.001	0.000	-72.000
260.0	0.001	0.000	-72.000
265.0	0.010	0.006	-52.000

Azim	Rel.FS	ERP [W]	dBk
270.0	0.010	0.006	-52.000
275.0	0.010	0.006	-52.000
280.0	0.010	0.006	-52.000
285.0	0.010	0.006	-52.000
290.0	0.010	0.006	-52.000
295.0	0.012	0.009	-50.416
300.0	0.050	0.158	-38.021
305.0	0.154	1.496	-28.250
310.0	0.291	5.343	-22.722
315.0	0.429	11.612	-19.351
320.0	0.559	19.716	-17.052
325.0	0.671	28.408	-15.466
330.0	0.767	37.119	-14.304
335.0	0.849	45.479	-13.422
340.0	0.916	52.941	-12.762
345.0	0.965	58.756	-12.309
350.0	0.991	61.965	-12.079
355.0	0.991	61.965	-12.079

KATHREIN
SCALA DIVISION

CL-1469B

UHF-TV LOG-PERIODIC ANTENNA

8 dBd gain

470–862 MHz (Channels 14–69*)

The Kathrein Scala Division CL-1469B is a ruggedly built, linearly polarized log-periodic antenna designed for professional UHF-TV transmit and receive applications.

Like all Kathrein Scala Division antennas, the CL-1469B is made of the finest materials using state of the art electrical and mechanical designs resulting in superior performance and long service life. The rugged fiberglass radome protects the antenna from icing and assures stable pattern and gain performance under adverse environmental conditions.

The CL-1469B may be used stand alone or in arrays for higher gain, increased side-lobe suppression, or custom azimuth patterns.

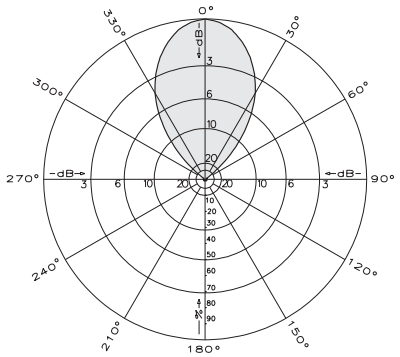
*The CL-1469B covers all 6, 7, and 8 MHz UHF-TV channels worldwide (bands IV/V).

(Shown horizontally polarized)

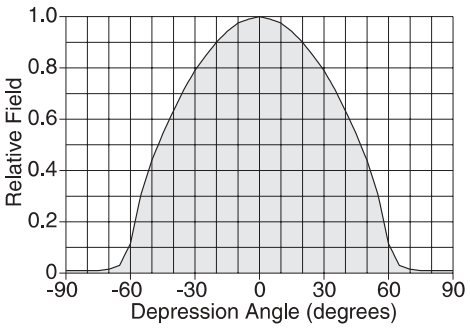
Specifications:

Frequency range	470–862 MHz (broadband)*
Gain	8 dBd
Power gain	6.31
Impedance	50 or 75 ohms
VSWR	< 1.5:1
Polarization	Horizontal or vertical
Front-to-back ratio	>35 dB
Maximum input power	100 watts, type "N" 75 ohm connector 250 watts, type "N" 50 ohm connector
Azimuth pattern	52 degrees (half-power)
Elevation pattern	72 degrees (half-power)
Connector	N female (50 or 75 ohms)
Weight	22 lb (10 kg)
Dimensions	29 x 17 x 12 inches (737 x 432 x 305 mm)
Equivalent flat plate area	2.78 ft^2 (.258 m^2)
Wind survival rating*	100 mph (160 kph)
Shipping dimensions	31 x 20 x 14.5 inches (787 x 508 x 368 mm)
Shipping weight	28.0 lb (12.7 kg)
Mounting	Mounting kits available for masts of 2.375 to 4.5 inch (60 to 114 mm) OD.
See reverse for order information.	

* Mechanical design is based on environmental conditions as stipulated in EIA-222-F (June 1996) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.



Azimuth pattern (E-plane)



Elevation pattern (H-plane)

10276-C

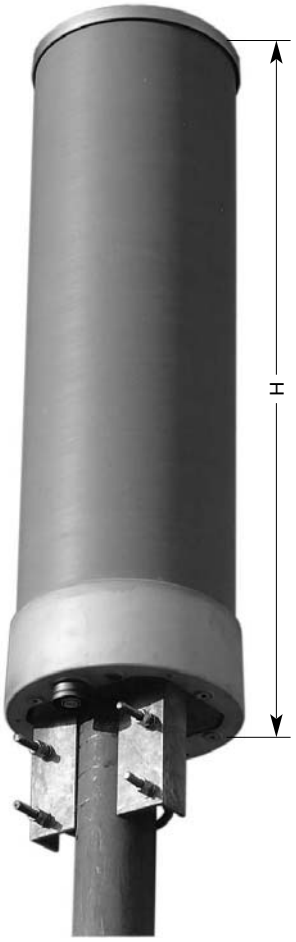
Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-6575
Email: broadcast@kathrein.com Internet: www.kathrein-scala.com

K 72 20 4. .
Omnidirectional Antenna
470 – 860 MHz

KATHREIN
Antennen · Electronic

- Broadband omnidirectional antenna.

Type No. / Order No.	**767 006**	**770 881**
Number of bays	1	2
Input	7-16 female	7/8″ EIA
Frequency range	470 – 860 MHz	
VSWR	< 1.1	
Gain	5 dB at mid-band	8 dB at mid-band
Vertical 3 dB beam width	22°	11°
Impedance	50	
Polarization	Horizontal	
Max. power	1 kW (at 40 °C ambient temperature)	2 kW
Weight	20 kg	40 kg
Wind load (at 160 km/h)	340 N	625 N
Max. wind velocity	225 km/h	
Height H	1.15 m	2.3 m

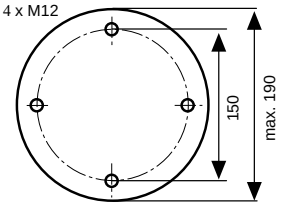


Material: Omnidirectional antenna in protective fiberglass radome with a diameter of 300 mm. Flange: Aluminum.

Attachment: To tubular masts with a diameter of 100 – 160 mm by using the attachment accessories 768 853 (see photo) or on a flange (see draft).

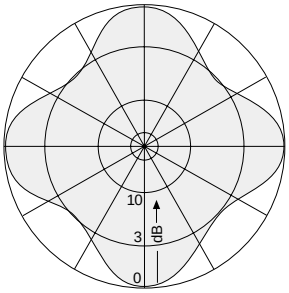
Grounding: Via mounting parts.

Upper side

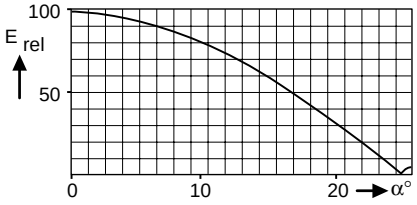


Base flange

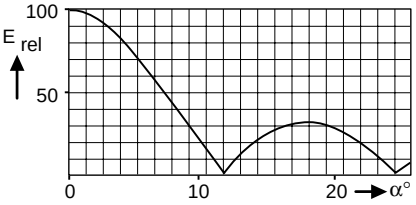
Radiation Patterns (at mid-band)



Horizontal Radiation Pattern



Vertical Radiation Pattern
1 bay (767 006)



Vertical Radiation Pattern
2 bays (770 881)