

**TRANSMITTER POWER OUTPUT**

The underlying construction permit authorizes operation of W49BE-D at 1.0 kW (0 dBk) maximum directional effective radiated power (ERP). The following data is used to determine the required transmitter power output to achieve the authorized ERP.

The main transmission line is 50 meters of Andrew (now Commscope) HJ7-50A 1-5/8-inch semi-rigid air-dielectric coaxial cable. This transmission line has a loss of 1.861 dB per 100 meters at the channel center frequency of 683 MHz<sup>†</sup>. For the 50 meter length in use, this results in a net loss of 0.931 dB.

A jumper fabricated of Andrew/Commscope FSJ2-50 3/8-inch semi-rigid foam-dielectric coaxial cable connects the output of the mask filter to the main transmission line. This cable is 2 meters long. FSJ2-50 has a loss of 10.838 dB per 100 meters at 683 MHz<sup>†</sup> for a net loss of 0.217 dB.

The directional transmitting antenna is a Bogner model BU8A which yields 12.2 dBd peak gain in the major lobe. The antenna is the same as the former W49BE analog facility; the height, azimuth, pattern, and all other parameters specific to the transmitting antenna remain unchanged.

The post-filter transmitter power output (TPO) required is calculated as follows:

Authorized ERP (dBk):	0.00
Feedline Loss (dB):	+ 0.931
Jumper Loss (dB):	+ 0.217
<u>Antenna Gain:</u>	<u>- 12.2</u>
<b>Transmitter Power Output (dBk):</b>	<b>-11.052</b>
<b>Transmitter Power Output (kW):</b>	<b>0.0785</b>
<b>Transmitter Power Output (W):</b>	<b>79</b>

The W49BE-D transmitter, an Anywave model ATSC-140W, is certificated for operation at this transmitter output power level.

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<sup>†</sup> Per manufacturer's specifications (see attached datasheets)



## HJ7-50A

**HJ7-50A, HELIAX® Standard Air Dielectric Coaxial Cable, corrugated copper, 1-5/8 in, black PE jacket**

### Construction Materials

Jacket Material	PE
Dielectric Material	PE
Flexibility	Standard
Inner Conductor Material	Copper tube
Jacket Color	Black
Outer Conductor Material	Corrugated copper

### Dimensions

Nominal Size	1-5/8 in
Cable Volume	14.0 ft <sup>3</sup> /kft   1300.6 L/km
Cable Weight	1.55 kg/m   1.04 lb/ft
Diameter Over Jacket	50.292 mm   1.980 in
Inner Conductor OD	18.0340 mm   0.7100 in
Outer Conductor OD	46.482 mm   1.830 in

### Electrical Specifications

Cable Impedance	50 ohm $\pm$ 0.5 ohm
Capacitance	22.1 pF/ft   72.5 pF/m
dc Resistance, Inner Conductor	0.722 ohms/km   0.220 ohms/kft
dc Resistance, Outer Conductor	0.328 ohms/km   0.100 ohms/kft
dc Test Voltage	11000 V
Inductance	1.870 $\mu$ H/m   0.570 $\mu$ H/ft
Insulation Resistance	100000 Mohms•km
Jacket Spark Test Voltage (rms)	10000 V
Operating Frequency Band	1 – 2700 MHz
Peak Power	305.0 kW
Power Attenuation	3.356
Velocity	92%

### Environmental Specifications

Installation Temperature	-40 °C to +60 °C (-40 °F to +140 °F)
Operating Temperature	-55 °C to +85 °C (-67 °F to +185 °F)
Storage Temperature	-70 °C to +85 °C (-94 °F to +185 °F)

### General Specifications

Brand	HELIAX®
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### Mechanical Specifications

Bending Moment	40.7 N-m   30.0 ft lb
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Flat Plate Crush Strength	175.0 lb/in   3.1 kg/mm
Minimum Bend Radius, Multiple Bends	508.00 mm   20.00 in
Number of Bends, minimum	15
Number of Bends, typical	30
Pressurization, maximum	0 N/mm <sup>2</sup>   30 psi
Tensile Strength	340 kg   750 lb

## Note

Performance Note	Values typical, unless otherwise stated
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## Standard Conditions

Attenuation, Ambient Temperature	20 °C   68 °F
Average Power, Ambient Temperature	40 °C   104 °F
Average Power, Inner Conductor Temperature	100 °C   212 °F

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## Attenuation

Frequency (MHz)	Attenuation (dB/100 m)	Attenuation (dB/100 ft)	Average Power (kW)
683	1.861	0.567	5.92

## Attenuation

Frequency (MHz)	Attenuation (dB/100 m)	Attenuation (dB/100 ft)	Average Power (kW)
0.5	0.045	0.014	243.45
1	0.064	0.02	171.92
1.5	0.079	0.024	140.23
2	0.091	0.028	121.34
10	0.204	0.062	53.85
20	0.291	0.089	37.86
30	0.358	0.109	30.77
50	0.465	0.142	23.67
85	0.612	0.187	17.99
88	0.623	0.19	17.67
100	0.666	0.203	16.53
108	0.693	0.211	15.88
150	0.824	0.251	13.37
174	0.891	0.271	12.36
200	0.959	0.292	11.48
204	0.969	0.295	11.36
300	1.19	0.363	9.25
400	1.389	0.423	7.92
450	1.481	0.451	7.43
500	1.569	0.478	7.02
512	1.589	0.484	6.93
600	1.733	0.528	6.35
700	1.887	0.575	5.84
800	2.032	0.619	5.42
824	2.066	0.63	5.33
894	2.162	0.659	5.09
960	2.25	0.686	4.89
1000	2.302	0.702	4.78
1218	2.573	0.784	4.28
1250	2.611	0.796	4.22
1500	2.898	0.883	3.80
1700	3.114	0.949	3.54
1800	3.219	0.981	3.42
2000	3.422	1.043	3.22
2100	3.521	1.073	3.13
2200	3.619	1.103	3.04
2300	3.714	1.132	2.96
2500	3.902	1.189	2.82
2700	4.084	1.245	2.70

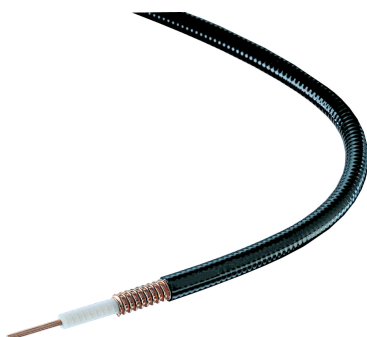
\* Values typical, guaranteed within 5%

## Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

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## FSJ2-50

**FSJ2-50, HELIAX® Superflexible Foam Coaxial Cable, corrugated copper, 3/8 in, black PE jacket**

### Construction Materials

Jacket Material	PE
Outer Conductor Material	Corrugated copper
Dielectric Material	Foam PE
Flexibility	Superflexible
Inner Conductor Material	Copper-clad aluminum wire
Jacket Color	Black

### Dimensions

Nominal Size	3/8 in
Cable Weight	0.08 lb/ft   0.12 kg/m
Diameter Over Dielectric	7.112 mm   0.280 in
Diameter Over Jacket	10.541 mm   0.415 in
Inner Conductor OD	2.7940 mm   0.1100 in
Outer Conductor OD	9.652 mm   0.380 in

### Electrical Specifications

Cable Impedance	50 ohm $\pm$ 1 ohm
Capacitance	24.3 pF/ft   79.7 pF/m
dc Resistance, Inner Conductor	1.290 ohms/kft   4.232 ohms/km
dc Resistance, Outer Conductor	1.520 ohms/kft   4.987 ohms/km
dc Test Voltage	2300 V
Inductance	0.200 $\mu$ H/m   0.061 $\mu$ H/ft
Insulation Resistance	100000 Mohms•km
Jacket Spark Test Voltage (rms)	4000 V
Operating Frequency Band	1 – 13400 MHz
Peak Power	13.2 kW
Velocity	83%

### Environmental Specifications

Installation Temperature	-40 °C to +60 °C (-40 °F to +140 °F)
Operating Temperature	-55 °C to +85 °C (-67 °F to +185 °F)
Storage Temperature	-70 °C to +85 °C (-94 °F to +185 °F)

### General Specifications

FSJ2-50

Brand HELIAX®

## Mechanical Specifications

Bending Moment	2.3 N-m   1.7 ft lb
Flat Plate Crush Strength	100.0 lb/in   1.8 kg/mm
Minimum Bend Radius, Multiple Bends	25.40 mm   1.00 in
Minimum Bend Radius, Single Bend	25.40 mm   1.00 in
Number of Bends, minimum	20
Number of Bends, typical	50
Tensile Strength	95 kg   210 lb

## Note

Performance Note Values typical, unless otherwise stated

## Standard Conditions

Attenuation, Ambient Temperature	20 °C   68 °F
Average Power, Ambient Temperature	40 °C   104 °F
Average Power, Inner Conductor Temperature	100 °C   212 °F

FSJ2-50

## Attenuation

Frequency (MHz)	Attenuation (dB/100 m)	Attenuation (dB/100 ft)	Average Power (kW)
683	10.838	3.303	0.78

## Attenuation

Frequency (MHz)	Attenuation (dB/100 m)	Attenuation (dB/100 ft)	Average Power (kW)
0.5	0.27	0.082	13.20
1	0.383	0.117	13.20
1.5	0.469	0.143	13.20
2	0.542	0.165	13.20
10	1.219	0.372	6.97
20	1.732	0.528	4.91
30	2.128	0.649	3.99
50	2.762	0.842	3.08
85	3.626	1.105	2.34
88	3.691	1.125	2.30
100	3.943	1.202	2.16
108	4.103	1.25	2.07
150	4.864	1.482	1.75
174	5.254	1.601	1.62
200	5.65	1.722	1.50
204	5.709	1.74	1.49
300	6.99	2.13	1.22
400	8.139	2.481	1.04
450	8.665	2.641	0.98
500	9.166	2.794	0.93
512	9.283	2.829	0.92
600	10.107	3.081	0.84
700	10.983	3.347	0.77
800	11.807	3.599	0.72
824	11.998	3.657	0.71
894	12.542	3.823	0.68
960	13.04	3.974	0.65
1000	13.334	4.064	0.64
1218	14.861	4.529	0.57
1250	15.075	4.595	0.56
1500	16.68	5.084	0.51
1700	17.887	5.452	0.48
1800	18.47	5.629	0.46
2000	19.599	5.974	0.43
2100	20.147	6.141	0.42
2200	20.685	6.305	0.41
2300	21.214	6.466	0.40
2500	22.247	6.78	0.38
2700	23.249	7.086	0.37
3000	24.701	7.529	0.34
3400	26.558	8.094	0.32
3700	27.899	8.503	0.30
4000	29.201	8.9	0.29
5000	33.316	10.154	0.26
6000	37.158	11.325	0.23
8000	44.264	13.491	0.19
8800	46.943	14.308	0.18
10000	50.826	15.491	0.17
12000	57.001	17.373	0.15



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\* Values typical, guaranteed within 5%

## Regulatory Compliance/Certifications

### Agency

RoHS 2011/65/EU

China RoHS SJ/T 11364-2006

ISO 9001:2008

### Classification

Compliant

Below Maximum Concentration Value (MCV)

Designed, manufactured and/or distributed under this quality management system

