

Exhibit 5
Technical Information



Section 3 – Path Calculations

Microwave Worksheet - SE01903A-SE02448A.pl4

	Newport Tower (Cascade)	BellevueLabMicrowaveOnl
Elevation (m)	64.18	69.54
Latitude	47 34 41.60 N	47 37 33.70 N
Longitude	122 09 54.30 W	122 09 42.00 W
True azimuth (°)	2.77	182.77
Vertical angle (°)	-0.23	0.19
Antenna model	1ft Directional Flat Panel	1ft Directional Flat Panel
Antenna height (m)	36.88	12.19
Antenna gain (dBi)	23.00	23.00
Antenna 3dB beam width (°)	9	9
TX line type	LMR400	LMR400
TX line length (m)	0.5	0.5
TX line unit loss (dB /100 m)	35.5	35.5
TX line loss (dB)	0.20	0.20
Connector loss (dB)	0.25	0.25
Frequency (MHz)	3500.00	
Polarization	Vertical	
Path length (km)	5.32	
Free space loss (dB)	117.87	
Atmospheric absorption loss (dB)	0.04	
Field margin (dB)	1.00	
Net path loss (dB)	73.41	73.41
Radio model	802.16 Radio	802.16 Radio
TX power (watts)	0.10	0.10
TX power (dBm)	20.00	20.00
EIRP (dBm)	42.55	42.55
RX threshold criteria	BER=10 ⁻⁶	BER=10 ⁻⁶
RX threshold level (dBm)	-86.00	-86.00
Maximum receive signal (dBm)	-35.00	-35.00
RX signal (dBm)	-53.41	-53.41
Thermal fade margin (dB)	32.59	32.59
Climatic factor	1.00	
Terrain roughness (m)	14.46	
C factor	1.07	
Fade occurrence factor (Po)	3.39E-04	
Average annual temperature (°C)	7.22	
Worst month - multipath (%)	99.99998	99.99998
(sec)	0.49	0.49
Annual - multipath (%)	100.00000	100.00000
(sec)	1.32	1.32
(% - sec)	99.99999 - 2.64	

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	Newport Four	BellevueLabMicrowaveOnl
Elevation (m)	56.66	69.54
Latitude	47 34 40.00 N	47 37 33.70 N
Longitude	122 10 00.00 W	122 09 42.00 W
True azimuth (°)	4.01	184.01
Vertical angle (°)	-6.68e-03	-0.03
Antenna model	1ft Directional Flat Panel	1ft Directional Flat Panel
Antenna height (m)	24.00	12.19
Antenna gain (dBi)	23.00	23.00
Antenn 3dB beam width (°)	9	9
TX line type	LMR400	LMR400
TX line length (m)	0.5	0.5
TX line unit loss (dB /100 m)	35.5	35.5
TX line loss (dB)	0.20	0.20
Connector loss (dB)	0.25	0.25
Frequency (MHz)	3500.00	
Polarization	Horizontal	
Path length (km)	5.38	
Free space loss (dB)	117.96	
Atmospheric absorption loss (dB)	0.04	
Field margin (dB)	1.00	
Net path loss (dB)	73.50	73.50
Radio model	802.16 Radio	802.16 Radio
TX power (watts)	0.10	0.10
TX power (dBm)	20.00	20.00
EIRP (dBm)	42.55	42.55
RX threshold criteria	BER=10^-6	BER=10^-6
RX threshold level (dBm)	-86.00	-86.00
Maximum receive signal (dBm)	-35.00	-35.00
RX signal (dBm)	-53.50	-53.50
Thermal fade margin (dB)	32.50	32.50
Climatic factor	1.00	
Terrain roughness (m)	14.13	
C factor	1.10	
Fade occurrence factor (Po)	3.60E-04	
Average annual temperature (°C)	7.22	
Worst month - multipath (%)	99.99998	99.99998
(sec)	0.53	0.53
Annual - multipath (%)	100.00000	100.00000
(sec)	1.44	1.44
(% - sec)	99.99999 - 2.87	

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Microwave Worksheet - SE02595A-SE01903A.pl4

	Newport Four	Newport Tower (Cascade)
Elevation (m)	56.66	64.18
Latitude	47 34 40.00 N	47 34 41.60 N
Longitude	122 10 00.00 W	122 09 54.30 W
True azimuth (°)	67.47	247.47
Vertical angle (°)	8.99	-8.99
Antenna model	1ft Directional Flat Panel	1ft Directional Flat Panel
Antenna height (m)	24.00	36.88
Antenna gain (dBi)	23.00	23.00
Antenna 3dB beam width (°)	9	9
TX line type	LMR400	LMR400
TX line length (m)	0.5	0.5
TX line unit loss (dB /100 m)	35.5	35.5
TX line loss (dB)	0.20	0.20
Connector loss (dB)	0.25	0.25
Frequency (MHz)	3500.00	
Polarization	Horizontal	
Path length (km)	0.13	
Free space loss (dB)	85.56	
Atmospheric absorption loss (dB)	8.75e-04	
Field margin (dB)	1.00	
Net path loss (dB)	41.06	41.06
Radio model	802.16 Radio	802.16 Radio
TX power (watts)	1.00e-03	1.00e-03
TX power (dBm)	0.00	0.00
EIRP (dBm)	22.55	22.55
RX threshold criteria	BER=10^-6	BER=10^-6
RX threshold level (dBm)	-86.00	-86.00
Maximum receive signal (dBm)	-35.00	-35.00
RX signal (dBm)	-41.06	-41.06
Thermal fade margin (dB)	44.94	44.94
Climatic factor	1.00	
Terrain roughness (m)	6.10	
C factor	3.29	
Fade occurrence factor (Po)	1.48E-08	
Average annual temperature (°C)	7.22	
Worst month - multipath (%)	100.00000	100.00000
(sec)	1.25e-06	1.25e-06
Annual - multipath (%)	100.00000	100.00000
(sec)	3.37e-06	3.37e-06
(% - sec)	100.00000 - 0.00	

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Microwave Worksheet - SE01903A-SE02612A.pl4

	Newport Tower (Cascade)	VoiceStream HQ 3
Elevation (m)	64.18	34.48
Latitude	47 34 41.60 N	47 34 35.37 N
Longitude	122 09 54.30 W	122 10 04.00 W
True azimuth (°)	226.49	46.49
Vertical angle (°)	-4.62	4.62
Antenna model	1ft Directional Flat Panel	1ft Directional Flat Panel
Antenna height (m)	36.88	44.00
Antenna gain (dBi)	23.00	23.00
Antenna 3dB beam width (°)	9	9
TX line type	LMR400	LMR400
TX line length (m)	0.5	0.5
TX line unit loss (dB /100 m)	35.5	35.5
TX line loss (dB)	0.20	0.20
Connector loss (dB)	0.25	0.25
Frequency (MHz)	3500.00	
Polarization	Vertical	
Path length (km)	0.28	
Free space loss (dB)	92.28	
Atmospheric absorption loss (dB)	1.90e-03	
Field margin (dB)	1.00	
Net path loss (dB)	47.78	47.78
Radio model	802.16 Radio	802.16 Radio
TX power (watts)	1.00e-03	1.00e-03
TX power (dBm)	0.00	0.00
EIRP (dBm)	22.55	22.55
RX threshold criteria	BER=10 ⁻⁶	BER=10 ⁻⁶
RX threshold level (dBm)	-86.00	-86.00
Maximum receive signal (dBm)	-35.00	-35.00
RX signal (dBm)	-47.78	-47.78
Thermal fade margin (dB)	38.22	38.22
Climatic factor	1.00	
Terrain roughness (m)	6.10	
C factor	3.29	
Fade occurrence factor (Po)	1.51E-07	
Average annual temperature (°C)	7.22	
Worst month - multipath (%)	100.00000	100.00000
(sec)	5.97e-05	5.97e-05
Annual - multipath (%)	100.00000	100.00000
(sec)	1.61e-04	1.61e-04
(% - sec)	100.00000 - 0.00	

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Newport Tower Cascade-VoiceStream HQ 3.pl4

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Microwave Worksheet - SE02595A-SE02613E.pl4

	Newport Four	Sterling 2
Elevation (m)	56.66	24.00
Latitude	47 34 40.00 N	47 34 37.00 N
Longitude	122 10 00.00 W	122 10 09.00 W
True azimuth (°)	243.78	63.77
Vertical angle (°)	-9.39	9.39
Antenna model	1ft Directional Flat Panel	1ft Directional Flat Panel
Antenna height (m)	24.00	22.00
Antenna gain (dBi)	23.00	23.00
Antenna 3dB beamwidth (°)	9	9
TX line type	LMR400	LMR400
TX line length (m)	0.5	0.5
TX line unit loss (dB /100 m)	35.5	35.5
TX line loss (dB)	0.20	0.20
Connector loss (dB)	0.25	0.25
Frequency (MHz)	3500.00	
Polarization	Vertical	
Path length (km)	0.21	
Free space loss (dB)	94.17	
Atmospheric absorption loss (dB)	1.74e-03	
Field margin (dB)	1.00	
Net path loss (dB)	49.67	49.67
Radio model	802.16 Radio	802.16 Radio
TX power (watts)	1.00e-03	1.00e-03
TX power (dBm)	0.00	0.00
EIRP (dBm)	22.55	22.55
RX threshold criteria	BER=10^-6	BER=10^-6
RX threshold level (dBm)	-86.00	-86.00
Maximum receive signal (dBm)	-35.00	-35.00
RX signal (dBm)	-49.67	-49.67
Thermal fade margin (dB)	36.33	36.33
Climatic factor	1.00	
Terrain roughness (m)	6.10	
C factor	3.29	
Fade occurrence factor (Po)	1.06E-07	
Average annual temperature (°C)	7.22	
Worst month - multipath (%)	100.00000	100.00000
(sec)	6.45e-05	6.45e-05
Annual - multipath (%)	100.00000	100.00000
(sec)	1.74e-04	1.74e-04
(% - sec)	100.00000 - 0.00	

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Microwave Worksheet - SE02613E- SE02612A.pl4

	Sterling 2	VoiceStream HQ 3
Elevation (m)	24.00	34.48
Latitude	47 34 37.00 N	47 34 35.37 N
Longitude	122 10 09.00 W	122 10 04.00 W
True azimuth (°)	115.72	295.72
Antenna model	1ft Directional Flat Panel	1ft Directional Flat Panel
Antenna height (m)	22.00	44.00
Antenna gain (dBi)	23.00	23.00
Antenna 3dB beam width (°)	9	9
TX line type	LMR400	LMR400
TX line length (m)	0.5	0.5
TX line unit loss (dB /100 m)	35.5	35.5
TX line loss (dB)	0.20	0.20
Connector loss (dB)	0.25	0.25
Frequency (MHz)	3500.00	
Polarization	Vertical	
Path length (km)	0.12	
Free space loss (dB)	84.64	
Atmospheric absorption loss (dB)	7.87e-04	
Field margin (dB)	1.00	
Net path loss (dB)	40.14	40.14
Radio model	802.16 Radio	802.16 Radio
TX power (watts)	1.00e-03	1.00e-03
TX power (dBm)	0.00	0.00
EIRP (dBm)	22.55	22.55
RX threshold criteria	BER=10 ⁻⁶	BER=10 ⁻⁶
RX threshold level (dBm)	-86.00	-86.00
Maximum receive signal (dBm)	-35.00	-35.00
RX signal (dBm)	-40.14	-40.14
Thermal fade margin (dB)	45.86	45.86
Climatic factor	1.00	
Terrain roughness (m)	6.10	
C factor	3.29	
Fade occurrence factor (Po)	1.08E-08	
Average annual temperature (°C)	7.22	
Worst month - multipath (%)	100.00000	100.00000
(sec)	7.35e-07	7.35e-07
Annual - multipath (%)	100.00000	100.00000
(sec)	1.98e-06	1.98e-06
(% - sec)	100.00000 - 0.00	

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Microwave Worksheet - SE02595A-SE02612A.pl4

	Newport Four	VoiceStream HQ 3
Elevation (m)	56.66	34.48
Latitude	47 34 40.00 N	47 34 35.37 N
Longitude	122 10 00.00 W	122 10 04.00 W
True azimuth (°)	210.31	30.31
Antenna model	1ft Directional Flat Panel	1ft Directional Flat Panel
Antenna height (m)	24.00	44.00
Antenna gain (dBi)	23.00	23.00
Antenna 3dB beam width (°)	9	9
TX line type	LMR400	LMR400
TX line length (m)	0.5	0.5
TX line unit loss (dB /100 m)	35.5	35.5
TX line loss (dB)	0.20	0.20
Connector loss (dB)	0.25	0.25
Frequency (MHz)	3500.00	
Polarization	Horizontal	
Path length (km)	0.17	
Free space loss (dB)	87.73	
Atmospheric absorption loss (dB)	1.12e-03	
Field margin (dB)	1.00	
Net path loss (dB)	43.23	43.23
Radio model	802.16 Radio	802.16 Radio
TX power (watts)	1.00e-03	1.00e-03
TX power (dBm)	0.00	0.00
EIRP (dBm)	22.55	22.55
RX threshold criteria	BER=10 ⁻⁶	BER=10 ⁻⁶
RX threshold level (dBm)	-86.00	-86.00
Maximum receive signal (dBm)	-35.00	-35.00
RX signal (dBm)	-43.23	-43.23
Thermal fade margin (dB)	42.77	42.77
Climatic factor	1.00	
Terrain roughness (m)	6.10	
C factor	3.29	
Fade occurrence factor (Po)	3.14E-08	
Average annual temperature (°C)	7.22	
Worst month - multipath (%)	100.00000	100.00000
(sec)	4.36e-06	4.36e-06
Annual - multipath (%)	100.00000	100.00000
(sec)	1.18e-05	1.18e-05
(% - sec)	100.00000 - 0.00	

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Microwave Worksheet - SE02595A-SE08002A.pl4

	Newport Four	Newport One (Metro)
Elevation (m)	56.66	48.81
Latitude	47 34 40.00 N	47 34 44.08 N
Longitude	122 10 00.00 W	122 09 54.00 W
True azimuth (°)	44.86	224.86
Vertical angle (°)	-4.52	4.52
Antenna model	1ft Directional Flat Panel	1ft Directional Flat Panel
Antenna height (m)	24.00	17.80
Antenna gain (dBi)	23.00	23.00
Antenna 3dB beam width (°)	9	9
TX line type	LMR400	LMR400
TX line length (m)	0.5	0.5
TX line unit loss (dB /100 m)	35.5	35.5
TX line loss (dB)	0.20	0.20
Connector loss (dB)	0.25	0.25
Frequency (MHz)	3500.00	
Polarization	Vertical	
Path length (km)	0.18	
Free space loss (dB)	88.35	
Atmospheric absorption loss (dB)	1.21e-03	
Field margin (dB)	1.00	
Net path loss (dB)	43.85	43.85
Radio model	802.16 Radio	802.16 Radio
TX power (watts)	1.00e-03	1.00e-03
TX power (dBm)	0.00	0.00
EIRP (dBm)	22.55	22.55
RX threshold criteria	BER=10 ⁻⁶	BER=10 ⁻⁶
RX threshold level (dBm)	-86.00	-86.00
Maximum receive signal (dBm)	-35.00	-35.00
RX signal (dBm)	-43.85	-43.85
Thermal fade margin (dB)	42.15	42.15
Climatic factor	1.00	
Terrain roughness (m)	6.10	
C factor	3.29	
Fade occurrence factor (Po)	3.88E-08	
Average annual temperature (°C)	7.22	
Worst month - multipath (%)	100.00000	100.00000
(sec)	6.21e-06	6.21e-06
Annual - multipath (%)	100.00000	100.00000
(sec)	1.68e-05	1.68e-05
(% - sec)	100.00000 - 0.00	

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