

MUNN – REESE
Broadcast Engineering Consultants
P.O. Box 220
COLDWATER, MICHIGAN 49036-0220

TELEPHONE
517-278-7339

INTERNET
www.munn-reese.com

FAX
517-278-6973

October 5, 2018

Re: Completion of Pre-Coordination Notification and Interference Study.

To Whom It May Concern:

Munn-Reese certifies Pre-Coordination Notification (PCN) requirements in CFR 47, §25.203 and §101.103(d) have been met and/or exceeded in regards to the proposed receive only earth station for **Woodward Communications, Inc., June 15, 2018 WHBY**. The study show that no unacceptable interference will occur from existing, proposed, or prior coordinated facilities.

Attached for review is the following:

- Technical details of our client's proposed system.
- A list of the companies and/or individuals located within the FCC's prescribed coordination radius.

Sincerely,



Bruce Bellamy

President

MUNN – REESE

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Project Number: June 15, 2018 WHBY

PCN Postmark Date: June 15, 2018

Coordination Date: July 20, 2018

Days Allowed for Response: 35

Complaints Received: None

Companies or Persons Receiving PCN:

Waterleaf International LLC WQWF483
Velox Network LLC WQWF489

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Location

Appleton, WI

Client Information:

Woodward Communications, Inc.
P.O. Box 1519 (2727 E. Radio Rd.)
Appleton, WI 54912-1519

920-831-5659

Control Point Address:

2800 E. College Avenue
Appleton, WI 54915
Outagamie County

920-281-1570

Site Data:	WHBY Studio
Call Sign:	New Application
Latitude:	44-15-34.2 NL (WGS84)
Longitude:	88-21-59.0 WL (WGS84)
Ground Elevation:	229.3 m / 752.3 ft
Climate Zone:	A
Rain Zone:	2

Link Data

Satellite Type:	Geostationary
Mode:	RO – Receive Only
Modulation:	Digital and Analog
Satellite Arc:	60° W to 143° W West Longitude
Azimuth Range:	142.3° to 243.7°
Antenna Elevation Angles:	31.7° to 16.2 °

Antenna Data:	Receive Only
Manufacturer:	Viking
Model:	P370
Antenna Centerline:	1.8 m / 6.0 ft
Beam Width 3 dB/15 dB	1.45°/2.4°
Gain:	40.9 dBi
Diameter:	3.7 m
Interference Objectives:	Long Term -156.0 dBW/MHz 20% Short Term -146.0 dBW/MHz 0.01%

Frequency Data:	Receive 4.0 GHz
Receive Frequency Range:	3700.0 MHz to 4200.0 MHz
Emissions:	36M0G7W – 36M0F8W

Max Great Circle Distances: 370.3 km / 230.1 mi

Max Rain Scatter Distances: 514.9 km / 319.9 mi

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385 AIRPORT DRIVE – PO Box 220
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Location: APPLETON, WI
Licensee: Woodward Communications, Inc.
Latitude: 44-15-34.2 NL (WGS84)
Longitude: 88-21-59.0 WL (WGS84)
Ground Elevation: 229.3 m / 752.3 ft
Antenna Centerline: 1.8 m / 6.0 ft
Manufacturer: Viking
Model: P370
Mode of Operation: Receive 3.7 GHz to 4.2 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20%
Short Term -146.0 dBW/MHz 0.01%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.20	115.27	-10.00	285.13
5	0.00	119.99	-10.00	285.28
10	0.00	124.71	-10.00	285.28
15	0.00	121.03	-10.00	285.28
20	0.00	117.03	-10.00	285.28
25	0.00	112.96	-10.00	285.28
30	0.00	108.82	-10.00	285.28
35	0.00	104.64	-10.00	285.28
40	0.00	100.43	-10.00	285.28
45	0.00	96.19	-10.00	285.28
50	0.00	91.94	-10.00	285.28
55	0.00	87.68	-10.00	285.28
60	0.00	83.43	-10.00	285.28
65	0.00	79.20	-10.00	285.28
70	0.00	74.98	-10.00	285.28
75	0.00	70.81	-10.00	285.28
80	0.00	66.68	-10.00	285.28
85	0.00	62.61	-10.00	285.28
90	0.00	58.62	-10.00	285.28
95	0.00	54.73	-10.00	285.28
100	0.00	50.97	-10.00	285.28
105	0.00	47.37	-9.89	285.99
110	0.00	43.98	-9.08	291.19
115	0.00	40.85	-8.28	296.46
120	0.00	38.04	-7.51	301.64
125	0.00	35.64	-6.80	306.46
130	0.00	33.73	-6.20	310.60
135	0.00	32.41	-5.77	314.26
140	0.00	31.74	-5.54	315.85
145	0.00	31.77	-5.55	315.78
150	0.20	32.30	-5.73	314.20
155	0.23	33.67	-6.18	306.40
160	0.24	35.41	-6.73	301.85
165	0.27	36.81	-7.15	294.86
170	0.27	37.86	-7.45	293.22
175	0.27	38.50	-7.64	291.09
180	0.29	38.70	-7.69	288.70
185	0.29	38.49	-7.63	289.69

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Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.29	37.84	-7.45	290.15
195	0.27	36.81	-7.15	294.65
200	0.28	35.37	-6.71	296.26
205	0.29	33.58	-6.15	298.75
210	0.29	31.50	-5.46	304.09
215	0.28	29.15	-4.61	311.62
220	0.25	26.57	-3.61	322.36
225	0.24	23.78	-2.41	332.66
230	0.22	20.84	-0.97	347.12
235	0.00	18.25	0.47	360.20
240	0.00	16.53	1.54	368.56
245	0.00	16.19	1.77	370.33
250	0.00	17.31	1.04	364.65
255	0.00	19.64	-0.33	354.09
260	0.00	22.82	-1.96	341.83
265	0.00	26.54	-3.60	329.77
270	0.00	30.60	-5.14	318.67
275	0.00	34.88	-6.57	308.07
280	0.20	39.25	-7.85	299.31
285	0.22	43.79	-9.03	288.96
290	0.22	48.41	-10.00	282.45
295	0.24	53.08	-10.00	279.80
300	0.26	57.80	-10.00	278.13
305	0.27	62.54	-10.00	276.78
310	0.25	67.31	-10.00	279.36
315	0.25	72.09	-10.00	279.58
320	0.23	76.89	-10.00	280.90
325	0.25	81.69	-10.00	278.43
330	0.22	86.49	-10.00	283.08
335	0.00	91.30	-10.00	285.28
340	0.00	96.10	-10.00	285.28
345	0.00	100.90	-10.00	285.28
350	0.00	105.69	-10.00	285.28
355	0.20	110.50	-10.00	284.75

