

Directional Antenna Power Change

Background

The KLTP Construction Permit calls for operation at 3 kilowatts ERP. However, because two radials of the pattern of the directional antenna exceed the corresponding radials on the requested pattern, Educational Media Foundation (EMF) respectfully requests a slight reduction in power, as described herein.

Discussion

The Application for Construction Permit (see File # BMPED-20080228ACH) requested a directional antenna with a maximum ERP of 3 kilowatts. Unfortunately, when the results of the proof-of-performance arrived shortly before the construction permit expired, EMF learned that the pattern of the antenna exceeded the authorized pattern on two radials.

In the CP, the maximum power of 3 kilowatts was oriented at 45° true; the proof showed that the two adjacent radials (40° and 50°) exceeded the FCC pattern envelope. Therefore, EMF hereby respectfully requests a reduction in ERP from 3 kilowatts to 2.915 kilowatts in order to ensure that the resulting signal is fully contained within the originally authorized pattern.

The remaining test is to determine if the antenna meets the requirements of 47 C.F.R. 73.316(c)(2)(ix)(A) by producing a coverage pattern that is at least 85% of that proposed. To do so, we take the square root of the sum of the squares of at least 36 evenly spaced radials. The result demonstrates that the antenna provides 92.44% RMS of the corrected FCC values. (See next page for details)

Conclusion

The proposed power adjustment does not increase the FCC envelope in any direction. With this change, the antenna proof of performance shows that the antenna is capable of meeting the pattern at 92.44% RMS without exceeding it on any radial. Therefore, EMF respectfully requests grant of program test authority and license for KLTP (See File # BLED20080324AJA).

Comparison of FCC and Proposed Values

KLTP San Angelo, TX

Radial	Original FCC Efficiency	3 kW Field (kW)	Mfg. Proof Efficiency	3 kW Mfg. Field (kW)	3 kW Mfg. Result	2.915 kW Mfg. Field (kW)	2.915 kW Mfg. Result	FCC Efficiency Squared	Mfg. Efficiency Squared	
0	0.502	0.756	0.430	0.555	OK	0.539	OK	0.25200	0.18490	
10	0.631	1.194	0.580	1.009	OK	0.981	OK	0.39816	0.33640	
20	0.795	1.896	0.720	1.555	OK	1.511	OK	0.63203	0.51840	
30	0.915	2.512	0.900	2.430	OK	2.361	OK	0.83723	0.81000	
40	0.976	2.858	0.990	2.940	FAIL	2.857	OK	0.95258	0.98010	
50	0.976	2.858	0.990	2.940	FAIL	2.857	OK	0.95258	0.98010	
60	0.915	2.512	0.900	2.430	OK	2.361	OK	0.83723	0.81000	
70	0.795	1.896	0.730	1.599	OK	1.553	OK	0.63203	0.53290	
80	0.631	1.194	0.590	1.044	OK	1.015	OK	0.39816	0.34810	
90	0.502	0.756	0.430	0.555	OK	0.539	OK	0.25200	0.18490	
100	0.398	0.475	0.280	0.235	OK	0.229	OK	0.15840	0.07840	
110	0.316	0.300	0.200	0.120	OK	0.117	OK	0.09986	0.04000	
120	0.251	0.189	0.200	0.120	OK	0.117	OK	0.06300	0.04000	
130	0.200	0.120	0.190	0.108	OK	0.105	OK	0.04000	0.03610	
140	0.180	0.097	0.170	0.087	OK	0.084	OK	0.03240	0.02890	
150	0.184	0.102	0.160	0.077	OK	0.075	OK	0.03386	0.02560	
160	0.178	0.095	0.120	0.043	OK	0.042	OK	0.03168	0.01440	
170	0.178	0.095	0.090	0.024	OK	0.024	OK	0.03168	0.00810	
180	0.178	0.095	0.080	0.019	OK	0.019	OK	0.03168	0.00640	
190	0.178	0.095	0.080	0.019	OK	0.019	OK	0.03168	0.00640	
200	0.178	0.095	0.110	0.036	OK	0.035	OK	0.03168	0.01210	
210	0.180	0.097	0.120	0.043	OK	0.042	OK	0.03240	0.01440	
220	0.188	0.106	0.130	0.051	OK	0.049	OK	0.03534	0.01690	
230	0.188	0.106	0.130	0.051	OK	0.049	OK	0.03534	0.01690	
240	0.180	0.097	0.130	0.051	OK	0.049	OK	0.03240	0.01690	
250	0.178	0.095	0.130	0.051	OK	0.049	OK	0.03168	0.01690	
260	0.178	0.095	0.140	0.059	OK	0.057	OK	0.03168	0.01960	
270	0.178	0.095	0.150	0.068	OK	0.066	OK	0.03168	0.02250	
280	0.178	0.095	0.160	0.077	OK	0.075	OK	0.03168	0.02560	
290	0.183	0.100	0.160	0.077	OK	0.075	OK	0.03349	0.02560	
300	0.184	0.102	0.150	0.068	OK	0.066	OK	0.03386	0.02250	
310	0.180	0.097	0.150	0.068	OK	0.066	OK	0.03240	0.02250	
320	0.200	0.120	0.150	0.068	OK	0.066	OK	0.04000	0.02250	
330	0.251	0.189	0.180	0.097	OK	0.094	OK	0.06300	0.03240	
340	0.316	0.300	0.210	0.132	OK	0.129	OK	0.09986	0.04410	
350	0.398	0.475	0.260	0.203	OK	0.197	OK	0.15840	0.06760	
								2.73005	2.52371	RMS Ratio 92.44%