Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Part 101 of the Commission's Rules to Modify Antenna Requirements for the 10.7 – 11.7 GHz Band	))))	WT Docket No. 07-54 RM-11043

Comments of Comsearch

Comsearch, a division of Andrew Corporation specializing in spectrum management of terrestrial microwave, satellite, and mobile telecommunications systems, hereby respectfully submits the following comments in the above captioned docket.

We agree that allowing Fixed Service operators to use smaller antennas would enhance the efficient use of the 11 GHz band and that smaller antennas may be allowed in such a way as to protect other users from interference. While we support these goals of the NPRM, we believe that the proposed rules should be modified to fit better within the existing requirements of Part 101.

We specifically endorse the goal for licensees to realistically deploy 2-ft.to 4-ft.antennas in the near term. Accordingly: (1) the Part 101 rule changes suggested herein are intended to embrace that goal; and (2) we recognize that other parties may suggest different Part 101 rule changes that seek to achieve the same goal.

Several parties to this proceeding have been in consultation toward presenting a consolidated industry approach in the Reply Comment and Ex Parte rounds.

Antenna Standards

The NPRM proposes antenna requirements for Standard A and Standard B in §101.115(b)(2) that smaller antennas could meet, while adding a new §101.103(j) that describes limitations on the rights of a small antenna user in the frequency coordination process. At the same time we note the existing language in §101.115(c):

> "The Commission shall require the replacement of any antenna or periscope antenna system of a permanent fixed station operating at 932.5 MHz or higher that does not meet performance Standard A specified in paragraph (b) of this section, at the expense of the licensee operating such antenna, upon a showing that said antenna causes or is likely to cause interference to (or receive interference from) any other authorized or applied for station whereas a higher performance antenna is not likely to involve such interference."

Under the NPRM proposals, the licensee of a "Standard A" small antenna could be compelled to accept interference into or fix interference from that antenna, whereas under the existing requirements of §101.115(c) that define the conventional understanding of microwave antenna performance levels, these are essentially

Standard B obligations. Confusingly, the finished rules would have antenna obligations or limitations both in §101.115(c) and §101.103(j).

We believe that a simpler and less confusing implementation of small antennas would be to modify the Standard B pattern for 11 GHz so that small antennas would qualify, and make no other changes:

Category	Maximum beam-width to 3 dB pts	Minimum antenna Gain (dBi)	Minimum radiation suppression to angle in degrees from centerline of main beam in decibels						
			5° to 10°	10° to 15°	15° to 20°	20° to 30°	30° to 100°	100° to 140°	140° to 180°
A	2.2	38	25	29	33	36	42	55	55
B	3.5	33.5	17	24	28	32	35	40	45

Table 1: Comsearch Proposed 11 GHz Antenna Standards

With the existing §101.115(c) language in place, the coordination obligations expressed in the proposed §101.103(j) are understood and do not need to be added to the rules. Frequency coordinators would naturally take the antenna performance level into account in the coordination process as they currently do. The existing §101.115(c) language would compel the user of a small antenna to either (1) accept interference into that antenna or fix the interference via an upgrade to Standard A, or (2) fix interference from that antenna via an upgrade or by reducing the station's EIRP. The only aspect that is slightly unclear under the existing §101.115(c) is whether reducing EIRP is an acceptable strategy to mitigate caused interference

versus changing the antenna. Because small antenna users may not be able to install larger antennas in some cases, clarification of this point by the Commission would be helpful. Nevertheless, we believe that frequency coordinators would implement the requirements as we have stated. While a small antenna would now always be Standard B, the user would have the same rights and responsibilities as under the rules proposed in the NPRM.

However, if the Commission chooses to add §101.103(j) as proposed in the NPRM, the language needs to be changed to eliminate reference to antenna size 1.22 meters (4 feet) as the threshold below which the user would have to fix or accept interference. Several manufacturers are now supplying antennas smaller than 1.22 m (but larger than 0.61 m) in diameter that meet the present Standard A, so the obligations need to be based on pattern performance (e.g. breakpoints) rather than antenna size.

<u>Proposal to Limit EIRP with Small Antennas</u>

We are also concerned that while the usage of small antennas contemplated so far by FiberTower and other licensees involves traditional 11 GHz transmitter power levels of approximately a quarter watt or less, the proposed rules would allow high power transmitters to be connected to small antennas to increase link range. We believe there should be an EIRP limitation to compel usage of larger antennas before high transmitter power for longer links. Assuming that our above proposal

to leave the Standard A pattern requirements unchanged is accepted, we propose that the following language be added to §101.115(b):

> For the band 10,700-11,700 MHz, a station using an antenna that meets neither the maximum beamwidth to 3 dB points requirement nor the minimum antenna gain requirement of Standard A shall not be licensed for EIRP greater than 30 dBW (60 dBm).

Such an EIRP limitation should address to some degree interference concerns of other users including those of the Fixed Satellite Service.

Aggregate Interference

Aggregate interference occurs when multiple transmitters produce signals at a victim receiver of approximately the same level so that while the individual interferences meet the established objectives, their sum does not. On the other hand if one interference is stronger than all others, aggregation does not have an impact as the sum is approximately the same as the stronger signal. In an environment of various FS path directions and highly directional antennas, multiple interference signals of approximately the same power level are not likely to occur and thus aggregation of interference is seldom a problem. While it is true that the small antennas being proposed do have slightly worse patterns than the present standards, it must be recognized that they are still highly directional. Furthermore, the proposed Standard B pattern is more stringent than the present Standard B pattern for discrimination angles from 100° to 180°. Overall, we do not believe that aggregation of interference would be a significant problem if small antennas are approved. Limiting EIRP levels for stations with small antennas as we have proposed would provide further assurance.

Pointing Error

Interference calculations for frequency coordination assume that FS antennas are perfectly aligned along the calculated azimuth between the link endpoints. It is in the interest of the FS user to accurately align the antennas to maximize path performance, and standard alignment procedures are highly accurate even for the proposed small antennas. Nevertheless to the extent the antennas are inadvertently misaligned, error may be introduced into the interference calculations. If a certain loss of gain or signal power is necessary before an FS user would notice antenna misalignment, the corresponding error angle would be greater for a smaller antenna. However, the magnitude of the maximum error in terms of antenna gain would be about the same because of the way the shape of the main beam changes with antenna size. We are not concerned that small antennas would increase the risk of interference as a result of antenna pointing error because (1) FS users are able to properly align the antennas with existing procedures, (2) FS users want to properly align the antennas for path performance reasons, (3) the magnitude of the maximum error introduced into the interference calculations would be about the same with smaller antennas versus antennas meeting present standards, and (4) any actual interference could be fixed by re-aligning the offending antenna.

Conclusion

For the good reasons articulated by FiberTower in its rulemaking petition and reiterated in the NPRM, we support approval of antennas as small as 0.61 meter diameter for the 11 GHz band. In these comments we have argued that an implementation of small antennas based on the present Standard A / Standard B rules in §101.115(c) may be simpler and less confusing than adding language to the coordination rules in §101.103. In our proposal a small antenna would be Standard B but the user's rights and obligations would not be any different than under the NPRM proposals. We wish to emphasize that while we are making our proposal with the intent of writing the most effective rules possible, the highest priority is realistic deployment of antennas as small as 0.61 meter in the near term, subject to the need to mitigate interference caused to others. Based on this priority, although we find our proposal strongly preferable, we would rather see the NPRM approach enacted as opposed to any further delay in licensing small antennas. Accordingly as we are aware that other parties may support the rules proposed in the NPRM or may make other proposals, we look forward to reaching a consolidated industry approach in the Reply Comment and ex parte rounds.

Respectfully Submitted,

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