

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the Matter of	)	
	)	
Amendment of Part 101 of the Commission's	)	WT Docket No. 10-153
Rules to Facilitate the Use of Microwave for	)	
Wireless Backhaul and Other Uses and to Provide	)	
Additional Flexibility to Broadcast Auxiliary	)	
Service and Operational Fixed Microwave	)	
Licenses	)	
	)	
Request for Interpretation of Section 101.141(a)(3)	)	WT Docket No. 09-106
of the Commission's Rules Filed by Alcatel-	)	
Lucent, Inc., <i>et al.</i>	)	
	)	
Petition for Declaratory Ruling Filed by Wireless	)	WT Docket No. 07-121
Strategies, Inc.	)	
	)	
Request for Temporary Waiver of Section	)	
101.141(a)(3) of the Commission's Rules Filed by	)	
Fixed Wireless Communications Coalition	)	

To: The Commission

**COMMENTS OF THE SOCIETY OF BROADCAST ENGINEERS,  
INCORPORATED**

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## I. Introduction and Background

1. The Society of Broadcast Engineers, Incorporated (“SBE”)<sup>1</sup> respectfully submits its Comments in response to the Commission’s *Notice of Proposed Rulemaking and Notice of Inquiry* in the above-captioned proceeding.<sup>2</sup> The Notice proposes “to remove regulatory barriers to the use of spectrum for wireless backhaul and other point-to-point and point-to-multipoint communications” by “updating regulatory classifications that may not have kept pace with the evolution of converged digital technologies.”

Specifically, the Commission proposes:

(1) to allow Fixed Service (FS) operations to have access to the bands 6875-7125 MHz and 12700-13200 MHz, currently allocated to the Broadcast Auxiliary Service (BAS) and the Cable TV Relay Service (CARS);

(2) to eliminate the “final link” rule, which currently prohibits broadcasters from using FS stations as the final radiofrequency (RF) link in the chain of distribution of program material to broadcast stations (thus allowing broadcasters to become licensed in FS bands);

(3) to modify the Part 101 rules governing minimum payload capacity, so as to permit temporary operations below the minimum capacity under certain circumstances; and

(4) to relax the standards for antenna performance in these bands.

There are other changes of less direct impact on broadcasters in this proceeding as well.

The Commission asserts that these rule changes will permit an increase in opportunities for users of point-to-point and point-to-multipoint services while at the same time protecting established license holders who are already using these bands.

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<sup>1</sup> SBE is the national association of broadcast engineers and technical communications professionals, with more than 5,000 members worldwide.

<sup>2</sup> *Notice of Proposed Rulemaking and Notice of Inquiry*, WT Docket Nos. 10-153, 09-106 and 07-121, FCC 10-146, 25 FCC Rcd. 11246, 75 Fed. Reg. 52186 (rel. August 5, 2010) (the “*Notice*”).

2. The specific bands at issue in this proceeding, 6875-7125 MHz (commonly referred to as the “7 GHz band”) and 12,700-13,200 MHz (commonly referred to as the “13 GHz band”) are in active daily use for fixed, mobile, temporary fixed and aeronautical mobile applications in virtually all television markets, at all times of the day and night.<sup>3</sup> Because news events are unpredictable in time and geography, and hence the broadcast audience’s need to be alerted to these events through electronic news gathering (ENG) operations is and can be done only through real time frequency coordination, increased sharing with FS is extremely difficult. The FS links cannot, given the extent and nature of incumbent uses, have a substantial degree of reliability in this environment.<sup>4</sup>

3. In summary, SBE’s position in this proceeding is threefold: (1) coordination of BAS and FS operations on a co-channel basis is impractical and incompatible from both the FS and the BAS perspectives, and technical rules changes which contribute to the incompatibility should not be enacted; (2) the Part 101 prior coordination notice (PCN) frequency coordination process is flawed as it pertains to Part 74 BAS facilities, and it is impractical for use in general in the 7 and 13 GHz Bands; and (3) while elimination of the “final link rule” is of some potential value in increasing the efficient deployment of the FS allocations, it is of very limited value to BAS licensees and is not a sufficient *quid pro quo* for the creation of incompatible sharing in the 7 and 13 GHz Bands.

4. SBE suggests that the Commission is overly optimistic about the chances of compatible FS and BAS/CARS sharing in the 7 and 13 GHz bands. Any effort to overlay

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<sup>3</sup> These applications include television pickup, television studio-to-transmitter links, television relay stations, and CARS stations.

<sup>4</sup> It is SBE’s understanding that the FS links are coordinated with reference to co-channel stations at distances of up to 250 miles in some cases.

fixed, point-to-point assignments on an inter-service basis in bands that are already in heavy use daily by incumbent licensees for mobile and temporary fixed operations is exceptionally difficult. The Commission is obligated to insure in the overlay process that there is no substantial disruption of the valuable incumbent services. There are only two ways to accommodate this: One is to accomplish the overlay assignments in a way that is compatible for both the newcomers and the incumbents. The other is to reaccommodate the incumbents in other, replacement spectrum. The Notice suggests that this proceeding is merely a matter of making more efficient use of existing spectrum, but typically in such proceedings, the Commission has tended to gloss over the manifest interference potential from such overlays to incumbent licensees. SBE suggests that is the case here, especially with respect to the interference that will be suffered by FS licensees from ubiquitous, unpredictable mobile and temporary fixed BAS and CARS operation in both the 7 and 13 GHz bands. Neither is the elimination of the “last mile” rule an offsetting opportunity for fixed and mobile BAS and CARS licensees.

5. SBE has “something to say” about this proceeding because it has for many years now conducted a very efficient, local, market-based frequency coordination program involving broadcast auxiliary spectrum. It is aimed not only at BAS and CARS users, but all users of shared spectrum, including LTTS, POFS and Part 90 licensees. The process has been an unqualified success, notwithstanding the fact that it is not specifically mandated by the Commission’s Part 74 and/or 101 rules. The reason that it has worked so well among BAS and CARS users is because the licensees in BAS allocations (allocations which are each and all far too small to accommodate all real-time users of the spectrum, including those mobile and temporary fixed users in a given broadcast market)

are always accommodated. The real-time and near-real-time procedures and coordination mechanisms used by SBE coordinators in their local markets include not only time-division, co-channel sharing coordinated in real time, but other technical procedures such as cross-polarization of antennas, that are not possible using only interference protection criteria and mechanisms used in the context of Part 101 licensing. Neither are the prior coordination notice procedures that are mandatory for Part 101 facilities (that were, in ET Docket 01-75, made applicable to fixed Part 74 facilities as well) helpful in maximizing efficient, mixed fixed and mobile use of the BAS allocations at issue in this proceeding.

6. It is always challenging to attempt to coordinate fixed and mobile uses in the same bands. It is even more challenging when those uses are inter-service licensees. It is this intermixture that creates technical difficulties in implementing the Commission's proposal in this proceeding. But the prohibitive limitation in this case is the ubiquitous and unpredictable mobile, aeronautical mobile and temporary fixed BAS deployments. Such does not permit much access in these bands for new FS point-to-point links.

## **II. Protection of Fixed Service Stations in the 7 and 13 GHz Bands from Mobile and Temporary Fixed BAS Stations is Impractical.**

7. BAS licensees actively and intensively use the 7 and 13 GHz bands in all markets. These bands are certainly used for fixed point-to-point operation, which is functionally similar to fixed, point-to-point FS operation. However, the bands are also used extensively<sup>5</sup> in mobile ENG and temporary fixed operation for video coverage of newsworthy events, including sporting events and breaking news. There are at 7 and 13

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<sup>5</sup> The bands are used in this manner in lieu of or in addition to the severely overcrowded 2025-2110 MHz ("2 GHz") band and the 2450-2500 MHz ("2.5 GHz") band, both of which are used for longer path length BAS operations.

GHz both mobile TV pickup operations and fixed, temporary relay stations in use for events and electronic news gathering (ENG) operations. BAS fixed facilities and receive sites for temporary fixed facilities can be located in the Commission's database, but temporary receive sites are not. Only recently has the Commission (at SBE's request) reconfigured its ULS database to allow the registration by BAS licensees of fixed receive sites for TV pickup stations. While these fixed receive sites can now be registered in the database, not all broadcast licensees have yet completed such registration. That process is ongoing. Therefore, any assumptions that the Commission has made about the relative occupancy of the 7 and 13 GHz bands in reliance on that ULS database are based on incomplete and hence inaccurate data. Furthermore, temporary fixed receive sites near news events or any large-scale televised event for relay to fixed receive sites are not going to be found anywhere except in the SBE market coordinator's database, which is updated in real time, often multiple times in a given 24-hour period. From the Commission's perspective, the efficiencies created by the SBE's local market, real-time and near-real-time coordination processes are invisible, and it is understandable that the Commission, in formulating its assumptions about the feasibility of sharing between FS and BAS mobile operations, would not have considered the sharing difficulties in this context which are actually created by the Notice proposal.

8. Principal among the numerous obstacles to the addition of interference-free Part 101 FS facilities in the 7 and 13 GHz bands is that, because mobile BAS operates at unpredictable locations (because all ENG and even many planned events require news coverage at unpredictable locations and times) co-channel FS stations will receive interference from these mobile facilities and there will be no good way to address it in

real time. BAS users have carefully arranged “home channel” type plans which can be implemented to avoid interference to fixed BAS facilities from temporary fixed ENG operations. But this is not easily done with inter-service fixed and mobile sharing. The Notice, at paragraph 15, asks whether the Commission should make identification in the database of receive-only sites associated with TV pickup stations mandatory in the 7 GHz band. While it is necessary to have an accurate list of all receive sites, those used on a temporary basis in connection with itinerant TV pickup operation cannot be expected to be registered in the database, but on the other hand must be protected from interference as well, in order to allow ENG, and event news coverage and sporting event coverage. The time periods of such special events covered by temporary fixed TV Pickup facilities vary. ENG operations are typically short, but can last for several days, such as natural disaster recovery. Planned events, which necessitate TV pickup operations such as political conventions, baseball playoff series, etc. involve potentially many days or weeks.

### **III. Coordination of BAS and FS Operations on a Co-Channel Basis is Impractical, and Technical Rules Should not Contribute to the Incompatibility.**

9. Furthermore, the coordination process for BAS and CARS fixed operations and FS operations is complicated and uniquely difficult. There are several reasons for this. One is that the Commission’s database does not distinguish between the typical BAS fixed receive sites which use receive antennas with 360-degree steerable coverage, so as to be able to receive mobile or temporary fixed transmitter signals, and those which use fixed directional antennas. So, any BAS receive site would have to be protected on a licensed basis in a 360-degree arc for many miles from each receive site. The Commission proposes at paragraph 20 of the Notice to implement a minimum path length

of 17 kilometers at 7 GHz, so it is apparent that the interference protection contour for a BAS TV pickup receive site would have to be relatively large, thus precluding much FS operation in most television markets.

10. The preclusion effect for new TV Pickup operations in allowing FS operations in the 7 and 13 GHz bands is substantial. In fact, proposed Section 74.602(a)(j) in the Appendix to the Notice indicates that, while existing TV pickup operation will be protected from new FS operation, future TV pickup operation will be on a *co-equal basis* with FS and will have to protect FS operation from interference. Because there is no way to guarantee interference protection to a FS station from a BAS TV pickup facility as a practical matter, future TV pickup operation is effectively precluded by the proposed rules. Likewise, as discussed above, there is no good way for FS stations to prevent interference to BAS temporary receive sites. This is not something that even SBE market coordinators can address; the vastly different applications make co-channel operation of FS links and BAS TV pickup operations constitute a fundamental incompatibility. And, the Part 101 coordination procedure is virtually useless in this context, as is more fully discussed below.

11. At paragraph 20 of the Notice, among other technical rules suggested, the Commission proposes in effect to reduce the size of FS antennas used in the 7 GHz band henceforth. The effect of antenna size reduction in this context is that those antennas will utilize a wider beamwidth in any given azimuth. This will in turn result in a greater likelihood of interference to both ENG operations and studio-to-transmitter (STL) receive sites. For this reason, SBE suggests that the proposed antenna size reduction be reconsidered and abandoned.



12. The Notice asks, in view of the Commission's recent actions allowing 30 megahertz bandwidth channels in the upper 6 GHz band, whether multiple channel bandwidths should be permitted in the 7 and 13 GHz bands. The Commission notes that BAS now uses the traditional 25 MHz channel bandwidths, while CARS uses a combination of 25, 12.5 and 6 MHz channels. Typically now, BAS licensees use COFDM emissions in these bands, and a 12.5 MHz bandwidth is reasonable. Because of the admixture of fixed and temporary fixed operations in this band, however, it is complicated to coordinate multiple bandwidth systems at the same time. It might be helpful to split the existing 25 kHz channels into two, 12.5 kHz channels and to allow stacking of those as necessary.

13. Neither is it feasible to attempt to reduce the incompatibility between BAS operations at 7 and 13 GHz and FS operations in those same bands by segregating channels used for mobile operations from those that are used for fixed operations, creating in essence mobile and fixed subbands. This would result in a substantial reduction in the availability of both bands for TV pickup operation going forward. In many markets, and especially in the largest markets, the 7 GHz band is completely filled with mobile and coordinated fixed operations all of the time. Nor is active use of either band limited to large broadcast and cable markets. The small markets actually use the 7 and 13 GHz bands more intensively than do some larger markets. One reason for this is because satellite news gathering (SNG) is not used as often in smaller television markets as it is in larger markets, and therefore there are fewer alternatives to BAS mobile microwave facilities.

14. Finally on this subject, Section 101.141(a)(3) imposes minimum payload capacities (in terms of megabits per second) for various channel sizes in certain Part 101 bands. The Commission proposes to apply those minimum payload capacity rules to the 7 and 13 GHz bands. This reflects a lack of understanding of the nature of BAS use of these two bands. A large number of broadcast stations use 7 and 13 GHz as intercity relay backhauls from distant ENG sites. These links have no content and no modulation on them until a live news shot is tuned in and transmitting. At times, there will be no loading on these links at all. They would be prohibited by the proposed rule change, and yet they are necessary and fundamental to broadcast stations' ENG operations in many areas.

#### **IV. The Part 101 PCN Coordination Process is Flawed as it Pertains to Part 74 BAS Facilities and it is Impractical for the 7 and 13 GHz Bands.**

15. As discussed above, the Commission in 2002 in the Part 74 Rewrite Docket<sup>6</sup> applied the Part 101 frequency coordination procedure set forth in Section 101.103 of the Commission's rules to BAS fixed facilities.<sup>7</sup> It does not apply to mobile facilities and it does not apply at all to the 2 GHz BAS band. SBE opposed the adaptation of this process at the time for a number of reasons, not the least of which was that it was a far inferior method of coordinating for license assignment purposes in bands in which there are both

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<sup>6</sup> See, *Revisions to Broadcast Auxiliary Rules in Part 74 and Conforming Technical Rules for Broadcast Auxiliary Service, Cable Television Relay Service and Fixed Services in Parts 74, 78, and 101 of the Commission's Rules*, Report and Order, FCC 02-298, 17 FCC Rcd. 22979, released November 13, 2002.

<sup>7</sup> This is commonly referred to as the "PCN" or "prior coordination notice" procedure because it is premised on a paid coordinator's sending notices to all potentially affected licensees in the market where a proposed fixed link will be added, thus to alert the incumbent licensees to the presence of a newcomer which might cause interference, and to give them a chance to alert the Commission to such potential problems in the licensing context.

mobile/temporary fixed operations and fixed operations. The SBE's local market coordination procedure was far superior, based as it is on the knowledge of a local database administrator and the active, cooperative involvement of local users of shared bands. The SBE coordination procedure works exceptionally well in real-time coordination situations because of these factors. By contrast, eight years of the PCN process has clearly revealed the limitations of this process, most especially for BAS bands in which there are mixed fixed and mobile/temporary fixed operations. The prior coordination process for Part 101 fixed facilities is useless in these contexts in terms of preventing or addressing interference. SBE suggests that the PCN process is inapplicable to the proposed admission of FS facilities in the 7 and 13 GHz band due to the presence of mobile/temporary fixed operations in that band. Real-time, local market coordination is the only workable method of coordination in these bands, given the mixed uses made by incumbent licensees.

16. The Notice proposes to utilize the "existing frequency coordination procedures" for new FS, BAS and CARS stations in the 7 and 13 GHz bands. It asks commenters who believe that relying on existing frequency coordination processes would not adequately address all necessary requirements should propose modifications to that process or alternative processes. It characterizes the 7 GHz band as one where "frequency coordination is not as formalized." The fact is that frequency coordination in the 7 GHz band is far *more* formalized and sophisticated in its processes in local markets. It is, however, not formalized in the Commission's rules. SBE suggests that local market coordination works far more effectively and far more efficiently, and permits a much more intensive use of shared mobile and fixed use bands than does the PCN process. In

fact, SBE would go further than that and suggest that the PCN process adds no value, but does add substantial cost to the licensing process of fixed or temporary fixed facilities in BAS shared allocations. Should the Commission proceed with the proposal to allow FS facilities in the 7 and 13 GHz band despite the technical challenges identified in these comments, it should require all FS licensees to contact the BAS local market coordinator in advance of filing an application for a new FS station for a recommendation of a channel least likely to result in interference, and to adhere to that recommendation in any application they file.

17. The PCN coordination process in bands that include mobile or temporary fixed operation creates the illusion of coordination and interference avoidance, but little else. The process is that the database is consulted by a commercial frequency coordinator, but the coordinator has no first-hand knowledge of local market conditions. There may be “paper loading” of the database; there are many, many expired licenses in the database that the coordinators feel obligated to protect; and there are receive sites not actually in the database. These are unknown factors to the PCN coordinator, which simply uses the inherently inaccurate and incomplete ULS database. By contrast, the local market coordinator has intimate knowledge of the actual facilities in use in a local market, and a dynamic database based on that knowledge. The local market coordinator has advance knowledge of itinerant network operations active and to be active in the market and makes recommendations based on licensee-to-licensee contact to (a) maximize use of the scarce BAS spectrum, and (b) minimize interference despite several levels of station overlays.

18. The PCN process itself does not accomplish what the Commission expected of it with respect to BAS bands. As a practical matter, what the process was designed to do was to have a fixed microwave path engineered by the coordinator based on the coordinator's consultation of a database of other fixed, point-to-point facilities. Once that was engineered, targeted notices would be sent to those licensees who *might actually be affected* by the microwave path or facility being proposed. What happened instead is that coordinators did not engineer the path, or if they did, they recognized that they could not insure against interference because of the use of the ULS database as a premise for the coordination, and so they send PCN notices on a "shotgun" basis to licensees in a given market. At that point, the recipient of the notice, for example, a BAS STL licensee or a mobile licensee, has to determine for itself whether or not a given facility will or might affect that incumbent's facility in the market. So, in effect, the PCN notice does no more than obligate a broadcast engineer for example to conduct its own engineering analysis of every proposal for a new facility in that market. This places on the potential victim of interference from a newcomer facility the obligation to avoid interference, and it gives the newcomer a completely false sense of security, for which that newcomer has incurred a very substantial cost, because the PCN process is not inexpensive.<sup>8</sup>

19. Aside from the inefficiency and lack of utility of the PCN coordination process, and its inferiority to SBE's local market coordination processes in all respects in bands where there are both fixed and mobile or temporary fixed facilities, it does not have the capacity to protect fixed facilities from interference from mobile or temporary

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<sup>8</sup> The cost of the PCN process is a substantial disincentive to many licensees to modify licenses, thus further contributing to the inaccuracy of the ULS databases, and the process snowballs.

fixed facilities, so in the context of the 7 and 13 GHz bands, it is not a workable solution. SBE therefore suggests that any FS and BAS/CARS sharing plan in those bands cannot be premised on the Section 101.103 PCN coordination procedure.

**V. Eliminating the Final Link Rule, While of Some Value, is not a Sufficient *Quid Pro Quo* For Compromising BAS Use of the 7 and 13 GHz Bands.**

20. The Notice encourages broadcasters to comment on the proposal to eliminate the Section 101.603(a)(7) rule that prohibits broadcasters from using a Part 101-licensed stations as the last RF link in the chain of distribution of program material for broadcast stations. The deletion of this rule would permit broadcasters to utilize Part 101 FS bands (where possible) for all fixed BAS purposes. SBE does not oppose this proposal; indeed, SBE agrees that it makes no sense to distinguish between one digital microwave link and another based exclusively on content. However, for the reasons stated above, the practical utility of the proposed rule change is minimal. The FS Part 101 bands are themselves admittedly crowded and it is not a simple matter of engineering a new path for a BAS link. As noted above, many BAS fixed links, given their purposes, would not necessarily comply with minimum payload capacities or the minimum path length requirements at all times because the purposes of the links are different for broadcasters than for other OFS licensees.

**VI. Conclusions.**

21. Broadcasters and cablecasters use the 7 and 13 GHz bands for very specific purposes that are not consistent with adding numerous additional FS links on a co-channel basis. The Commission's proposal, which is based on inaccurate and incomplete

data, does not take into account a use which is from a regulatory perspective somewhat “invisible” but which is absolutely critical for broadcast electronic news gathering, broadcast of newsworthy events and sportscasting. The impact of the Commission’s proposal on mobile operations and temporary fixed links (portable microwave) in covering video production events, news and sporting events is extensive, and for the future, completely preclusive in any urban, suburban or even small-town markets. Only in the most rural areas, well outside any television markets, and well-away from any news events, is there any capacity to add fixed links to these bands. Even then, interference to the fixed links from temporary fixed BAS and CARS facilities is impossible to predict in advance.

22. If the Commission decides to proceed with this proposal notwithstanding these overwhelming challenges, SBE urges the Commission to avoid relying on the PCN coordination process that it ill-advisedly foist on the Part 74 BAS licensees eight years ago. It is a process that is far inferior to SBE’s local market coordination procedure and it simply does not work in bands in which mobile and fixed operations exist on a co-channel basis in the same market. Furthermore, the Commission should not allow the use of smaller (i.e. larger beamwidth) antennas in the 7 and 13 GHz band, as that will clearly contribute to a higher interference potential to fixed BAS receive sites.

23. Finally, nothing in this proceeding should preclude or inhibit the licensing of new TV Pickup stations in the 7 or 13 GHz band. The concept of making new FS and BAS facilities co-equal in priority in these bands is tantamount to a preclusion of all new and likely all incumbent TV pickup operation, because a mobile or temporary fixed facility simply will not be able to protect a FS facility. The rule is therefore ill-advised.

Therefore, for the reasons discussed herein, SBE respectfully requests that the Commission determine whether or not the technical challenges presented by this proceeding are sufficiently challenging as to make the proposal unworkable. SBE also asks that, whether in this proceeding or in a near future proceeding, the Commission should remove the PCN coordination procedure as a requirement for BAS licensing of both fixed and mobile facilities, and instead substitute therefor the more efficient and applicable, albeit less formal, local market coordination procedure for BAS and CARS facilities.

Respectfully submitted,

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