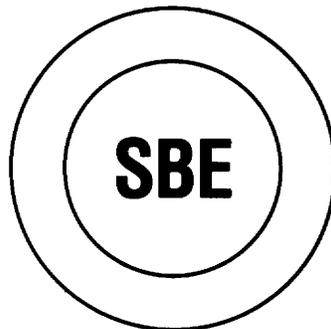


**Comments of the  
Society of Broadcast Engineers, Inc.**

**ET Docket 00-258  
FNPRM  
(3G)**



October 19, 2001

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**SOCIETY OF BROADCAST ENGINEERS, INC.**  
Indianapolis, Indiana

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

In the Matter of	)	
	)	
Allocation of 3G Spectrum below 3 GHz	)	ET Docket No. 00-258
	)	
Mobile Satellite Service	)	ET Docket 95-18
	)	
Policy & Service Rules for 2 GHz MSS	)	IB Docket 99-81
	)	

To: The Commission

**Comments of the Society of Broadcast Engineers, Inc.**

The Society of Broadcast Engineers, Incorporated (SBE), the national association of broadcast engineers and technical communications professionals, with more than 5,000 members world wide, hereby respectfully submits its comments in the above-captioned Memorandum Opinion & Order ("MO&O") and Further Notice of Proposed Rulemaking ("FNPRM") relating to below 3-GHz spectrum for third-generation ("3G") wireless services.

**I. The Commission Should Immediately Implement Phase II for TV BAS**

1. At Paragraph 33 of the FNPRM, the Commission asks if 2 GHz TV broadcast auxiliary service ("BAS") incumbents should be relocated to their allocated 85 MHz of spectrum at 2,025–2,110 MHz in one step; that is, jump immediately to Phase II, as defined by the Second R&O to ET Docket 95-18. The answer is a definite "yes." It makes no sense for broadcasters, at considerable time, effort, and expense, to convert to their 2 GHz BAS operations to Phase I 14.5-MHz wide channels, only to have to quickly repeat that process by implementing Phase II with its 12.1-MHz wide channels. While a two-step approach had a reasonable rationale when it appeared that the additional 17 MHz of MSS spectrum (2,008–2,025 MHz) might not be needed for years, it is now clear that 2,008–2,025 MHz will be needed in the near future for either 3G or for an expanded MSS with a terrestrial component, as proposed in concurrent IB Docket 01-185.

2. A second reason why SBE believes that it now makes sense to jump immediately to Phase II with its 12.1-MHz wide channels is the faster than expected availability of compact, lightweight, reasonable power draw, digital 2 GHz electronic news gathering ("ENG") transmitters and receivers, including the necessary moving picture expert group ("MPEG")

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encoder. Using coded orthogonal frequency division multiplexing ("COFDM") or other modulation methods and MPEG encoding means that a digitally-modulated ENG feed can be made to fit into a 12.1-MHz wide channel, and it may even be possible to operate split-channel, so as to accommodate the largest "LA" type markets.

### **II. Compensation for Broadcasters**

3. Jumping to Phase II will require new transmitters as well as new receivers, because it is not practical to retrofit an FM video analog transmitter to digital. While conventional FM video analog operation with two audio subcarriers could be made to work using 14.5-MHz wide Phase I channels, if transmitters are retrofitted to the new band plan and if new receivers, with intermediate frequency ("IF") bandwidths optimized for the narrower channels are provided, SBE does not believe that comparably performing analog radios would ever be possible for 12.1-MHz wide channels. This is because for 12.1-MHz wide channels only a single audio subcarrier would be possible, as compared to the two, and sometimes three, audio subcarriers routinely used for current day ENG operations on 17-MHz wide channels. The second and third audio subcarriers are a critical part of ENG operations, as these additional audio channels are used for interruptable fold-back ("IFB") communications with talent as well as telemetry from airborne platforms (*e.g.*, "Navtrack" telemetry from helicopters).

4. While converting from analog to digital will increase the up-front conversion cost that MSS and/or 3G will have to pay broadcasters to clear 1,990-2,025 MHz, because now both transmitters and receivers will have to be replaced, this increased hardware cost would be largely offset by savings from MSS not having to reimburse broadcasters for the time and effort needed to make two conversions: first to Phase I, and a second time to Phase II. Also, if MSS/3G want access to additional 2 GHz spectrum now rather than several years from now, it is not unreasonable to require that those industries be willing to accept a higher up-front cost to clear the entire 1,990–2,025 MHz band early.

### **III. New Negotiating Period**

5. Of course, if the Commission is now going to change the rules after the game has started, either the present negotiating period that commenced on September 1, 2000, should be placed "on hold" pending completion of this instant rulemaking, and the completion of the related IB Docket 01-185 rulemaking, or, alternatively, a new mandatory negotiating period needs to be established. Additionally, that new (or resumed) negotiating period should not

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be started until after a Report & Order to MM Docket 01-75 (Revisions and Updating of the Part 74 BAS Rules) has been adopted and published in the Federal Register, allowing digital modulation in all TV BAS microwave bands. It would be patently absurd for the Commission to move forward on a scheme requiring broadcasters to convert their 2 GHz TV BAS operations to digital before the FCC Rules had been changed to allow digital operation in the 2 GHz TV BAS band.

6. Clarification is needed on how the costs of making broadcasters whole will be shared between MSS and 3G, or whatever service(s) receive new spectrum allocations in the 2,008–2,025 MHz band. For example, if 3G receives 5 MHz of that 17-MHz block, and some other service ("SoS") receives 12 MHz, would that mean that MSS would be responsible for 18/35ths, 3G for 5/35ths, and SoS for 12/35s?

### **IV. Clarification on Collective Bargaining by Broadcasters**

7. At Paragraph 45 of the July 3, 2000, Second Report & Order and Second Memorandum Opinion & Order to ET Docket 95-18, the Commission stated:

BAS licensees and MSS licensees may also choose whether to negotiate individually or collectively for relocation.

SBE believes that any reasonable definition of “negotiate” has to include monetary issues. SBE therefore requests confirmation this collective “negotiating” which the Commission has authorized includes discussions of monetary issues. If the Commission does confirm that collective negotiating includes monetary discussions, SBE then requests the Commission to address the possible antitrust issue that might be raised by MSS entities.

### **V. Adjacent Channel and Brute Force Overload Issues**

8. At Paragraph 4 of the FNPRM, the Commission indicates that the 2,110–2,150 MHz band is one of the candidates for re-allocation. This is immediately above 2 GHz TV BAS Channel A7 (presently 2,093–2,110 MHz). Regardless of the re-farmed Channel A7 bandwidth, this would create a new adjacent-channel user to 2 GHz TV BAS. However, without detailed technical parameters for the proposed new user(s) of 2,110–2,150 MHz, SBE is unable to comment with any degree of detail regarding adjacent-channel issues and brute force overload ("BFO") issues. Lacking more detailed information, SBE suggests that the requirement should be that adjacent-channel emissions be 3 dB below the effective noise floor of a typical 2 GHz TV BAS receiver: this would be approximately -90 dBm for both analog and digital radios. With regard to BFO, the requirement for any fixed terrestrial base

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stations should be a receive carrier level ("RCL") of no greater than -30 dBm at the first active device of any 2 GHz band TV BAS receiver, including steerable dishes at ENG receive only ("ENGro") sites. Such sites are extensively used by broadcasters in the major metropolitan areas as a means of increasing the likelihood of being able to establish an ENG path regardless of where breaking news events occur.

9. Similar concerns apply to the 2,020–2,025 MHz band, which Paragraph 27 of the FNPRM proposes for re-allocation. Again, this would create adjacent-channel operation to the lower edge of the re-farmed 2,025–2,110 MHz TV BAS band.

10. Paragraph 42 of the FNPRM talks about relocating Multichannel Distribution Service ("MDS") incumbents from their present 2,150–2,160 MHz into 2,020–2,025 MHz. This would create a new adjacent-channel threat to re-farmed ENG Channel A1, and also a worsened BFO interference threat, because downstream MDS transmitters often share mountain top sites with BAS.

11. The threat of BFO interference is not idle speculation on SBE's part. The building of Personal Communication Services ("PCS") cell sites in the 1,850–1,990 PCS band and especially in the 1,975–1,990 MHz C Block, which is immediately adjacent to existing TV BAS Channel A1 (presently at 1,990–2,008 MHz), have caused serious BFO problems to ENG receive only sites; indeed, one company, Phillips Microtechnology, Inc. ("PMI") of Ft. Lauderdale, Florida, has developed an entire line of retrofits needed for even current technology Microwave Radio Corporation ("MRC") "Millennium" ENG radios to deal with the PCS BFO problem. These fixes include state of the art band pass, high pass, and PCS band reject filters, and improved intermediate frequency ("IF") modules using surface acoustic wave ("SAW") filters to get IF rejections of 60 dB or better. Nevertheless, the PMI web page, <http://www.tvtower.com>, documents numerous serious interference problems caused by PCS base stations being built virtually without regard to adjacent band ENG receive only sites. The Commission must not allow this mistake to be repeated: a means of requiring any newcomer, high-power, fixed terrestrial base stations to protect existing 2 and 2.5 GHz TV BAS receive sites must be implemented.

**VI. Summary**

12. The Commission should jump immediately to Phase II, with its 12.1-MHz wide channels for TV BAS operations in a reduced 85 MHz of spectrum at 2,025–2,110 MHz. MSS/3G/SoS must be both required and able to pay all reasonable and prudent costs for converting TV BAS operations from analog to digital, but will only have to bear the conversion costs once, not twice. Any service that ends up operating terrestrially with high power base stations between 1,990–2,025 MHz or 2,110–2,150 MHz should be obligated to protect 2 GHz TV BAS receivers from both BFO and adjacent-channel interference.

Respectfully submitted,

Society of Broadcast Engineers, Inc.

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