

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
Washington D.C. 20554**

In the Matter of)	
)	
Competitive Bidding Procedures for Broadcast Incentive Auction 1000, Including Auctions 1001 and 1002)	AU Docket No. 14-252
)	
)	
Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions)	GN Docket No. 12-268
)	

COMMENTS OF SHURE INCORPORATED

Shure Incorporated (“Shure”), by its undersigned counsel, hereby submits comments in response to the Federal Communications Commission’s (“FCC’s” or “Commission’s”) *Public Notice* providing “specific proposals on crucial [*Incentive Auction*] design issues,” including the final television channel assignment process.¹

Shure appreciates that the complexity of the *Incentive Auction* requires the Commission to investigate alternative designs, procedures and processes to motivate broadcaster participation, facilitate a smooth transition of incumbents from the 600 MHz Band, and overcome complications arising from possible variations in repurposed spectrum between markets. In its effort to conduct a fulsome investigation, however, the Commission has identified at least one alternative for repacking broadcast television stations in certain markets that harms the interests of all involved parties. Specifically, Shure urges the Commission to abandon the proposal to “assign[] television stations to the 600 MHz Band as necessary to accommodate market

¹ See Competitive Bidding Procedures for Broadcast Incentive Auction 1000, Including Auctions 1001 and 1002, AU Docket No. 14-252, GN Docket No. 12-268, *Public Notice*, FCC 14-191 (rel. Dec. 17, 2014).

variation” to the extent such assignment involves a television station occupying spectrum contemplated for the duplex gap. Assigning a broadcast television station to the duplex gap offers no meaningful benefit to any party while stripping wireless microphone users and unlicensed interests of desperately needed known spectrum, seriously impairing the unfortunate broadcaster assigned to the band, and introducing a strong, unwanted signal into spectrum intended to be a guard band between the new cellular entrants’ uplink and downlink.

The Commission previously sought comment on a “split band” proposal that involved the operation of broadcast television stations within the duplex gap. This proposal faced overwhelming opposition from broadcast, cellular and unlicensed interests. For example:

- Affiliates of ABC, CBS, Fox and NBC (“Broadcast Affiliates”) stated that the operation of broadcast television stations in the duplex gap would “harm[] both broadcast television service and wireless service” because “existing digital television receivers are not designed to reject unwanted wireless signals on frequencies both above and below television channels [and] [c]onsumers will be frustrated when their hundreds of millions of existing receivers experience impaired reception.”² The Broadcast Affiliates added that new cellular entrants would suffer because “[i]ntermodulation interference from television stations operating in the [duplex gap] ‘island’ will fall in the wireless [uplink and downlink] blocks.”³
- Verizon Wireless explained that it would “not support [the split band] proposal because the duplexer would not be able to provide sufficient attenuation and intermodulation interference would be generated by interactions between 600 MHz uplink transmission

² Comments of ABC Television Affiliates Association, CBS Television Network Affiliates Association, FBC Television Affiliates Association, and NBC Television Affiliates, GN Docket No. 12-268, at 44 (filed Jan. 25, 2013).

³ *Id.* at 45.

and DTV transmissions within the duplex gap. Therefore, leaving broadcast operations in the duplex gap will increase the risk of harmful interference against which current mobile device and base station filter technology cannot protect.”⁴

- The Consumer Electronics Association (“CEA”) opposed the plan, stating that operating broadcast television stations inside the duplex gap “raises interference concerns for both television receivers and mobile devices.”⁵ CEA elaborated that “broadcast stations routinely operate in the megawatt range, and such operations in the Commission’s proposed [] duplex band could cause significant interference to 600 MHz base station mobile reception.”⁶
- AT&T noted unique interference challenges that the plan would cause, observing that “the proposed placement of television stations in the ‘duplex gap’ . . . would create a risk of substantial intermodulation interference in a variety of downlink frequencies, not only in the 600 MHz band itself, but also in other bands such as the PCS band.”⁷
- T-Mobile counselled against adopting the lead band plan, stating that T-Mobile’s “initial analysis suggests that injecting high-power transmitters into a relatively narrow duplex gap would pose significant design and implementation complexity for broadband providers” and that “at present . . . the information available suggests that the risk of harmful interference warrants further scrutiny.”⁸
- The National Association of Broadcasters (“NAB”) expressed that “[i]ntermodulation

⁴ Comments of Verizon and Verizon Wireless, GN Docket No. 12-268, at 19 (filed Jan. 29, 2013).

⁵ Comments of Consumer Electronics Association, GN Docket No. 12-268, at 25 (filed Jan. 25, 2013).

⁶ *Id.*

⁷ Comments of AT&T Inc., GN Docket No. 12-268, at 3-4 (filed Jan. 25, 2013) (parenthetical omitted).

⁸ Comments of T-Mobile USA, Inc., GN Docket No. 12-268, at 8 (filed Jan. 25, 2013).

interference is a major concern under the split band plan.”⁹ In addition to interfering with television, NAB observed that the split bands would “likely cause interference with wireless downlink and uplink reception.”¹⁰

Given that the extensive record in the instant proceeding reflects staunch opposition to the introduction of a duplex gap broadcast television station, and the *Public Notice* fails to address or even acknowledge the significant technical concerns and objections raised to such a band plan, no basis exists for adopting such a scheme.

Even if the technical record supported the operation of a duplex gap television station -- *which it does not* -- such a proposal still threatens the 600 MHz Band transition. Concurrently with the 700 MHz Band transition the Commission encouraged wireless microphone users to purchase equipment capable of tuning 600 MHz Band spectrum by creating reserve channels that bracket Channel 37.¹¹ As a result of this decision, many recently purchased professional audio wireless microphones tune to frequencies in the 600 MHz Band. These microphones are in many instances state-of-the-art and spectrally efficient, with users that anticipated a decade or more of operation in the 600 MHz Band without disruption.¹² Operation in the duplex gap presents the only viable option for giving these users an opportunity to continue operating recently purchased 600 MHz Band equipment that has not been amortized. Moreover, the four (4) megahertz of spectrum proposed in the duplex gap for exclusive microphone use would give high priority itinerant microphone users (*e.g.*, emergency news gathering), that may not always have adequate opportunity to register their microphones with one of the White Space database administrators, a

⁹ Comments of National Association of Broadcasters, GN Docket No. 12-268, at 36 (filed Jan. 25, 2013).

¹⁰ *Id.* at 37.

¹¹ Current FCC White Space rules create reserve channels for wireless microphones centered around Channel 37 at 608-614 MHz. *See* 47 C.F.R. § 15.712(f)(2).

¹² *See* Comments of Shure Incorporated, ET Docket No. 14-165, GN Docket No. 12-268, at 38 (filed Feb. 4, 2015).

known set of always available frequencies on a nationwide basis.¹³ The six (6) megahertz of spectrum proposed for unlicensed use in the duplex gap would also provide White Space devices and unlicensed wireless microphones with desperately needed known, nationwide spectrum.¹⁴

Nationwide availability of uniform duplex gap frequencies facilitates not only continued professional operation of fielded equipment, particularly important for touring productions and large rental companies, but also the proper return on investment criteria for manufacturers to develop new products that tune precisely to the duplex gap spectrum. Deviations from the nationwide plan in specific markets would have adverse effects on both ongoing operations and new equipment availability. Uncertainty regarding future availability of remaining post-auction TV Band spectrum places heightened importance on the duplex gap for operators and for manufacturers. The risk of inconsistencies in the nationwide duplex gap band plan has the potential to complicate the clearing of operations in newly auctioned spectrum and the availability of compliant new equipment.

Given the vociferous opposition to the introduction of a broadcast television station in the duplex gap already seeded throughout the instant record, the harm such a scheme would inflict on wireless microphones and unlicensed interests, and the potential complications that would arise affecting the 600 MHz Band transition, Shure urges the Commission to abandon the proposal.

¹³ Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the TV Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37, and Amendment of Part 74 of the Commission's Rules for Low Power Auxiliary Stations in the Repurposed 600 MHz Band and 600 MHz Duplex Gap, Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, *Notice of Proposed Rulemaking*, 29 FCC Rcd 12248, ¶ 92 (Sept. 30, 2014).

¹⁴ *Id.*

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