

Before the
Federal Communications Commission
Washington DC 20554

In the Matter of)
)
Expanding the Economic and Innovation) Docket No. 12-268
Opportunities of Spectrum Through)
Incentive Auctions)

**COMMENTS OF
SENNHEISER ELECTRONIC CORPORATION**

November 4, 2013

Mitchell Lazarus
FLETCHER, HEALD & HILDRETH, P.L.C.
1300 North 17th Street, 11th floor
Arlington VA 22209
(703) 812-0440
Counsel for Sennheiser Electronic Corporation

TABLE OF CONTENTS

A.	SUMMARY	1
B.	ABOUT SENNHEISER	2
C.	WIRELESS MICROPHONES ARE VITAL TO THE ECONOMY AND THE NATION’S PUBLIC LIFE	3
D.	EQUITY AND SIMPLE FAIRNESS REQUIRE COMPENSATION TO WIRELESS MICROPHONE USERS.....	5
E.	THE COMMISSION HAS THE AUTHORITY TO REQUIRE COMPENSATION FOR WIRELESS MICROPHONE USERS.	7
F.	PROVIDING COMPENSATION TO WIRELESS MICROPHONE USERS IS ADMINISTRATIVELY SIMPLE.	8
G.	A COMPENSATION ARRANGEMENT IS IN THE PUBLIC INTEREST.....	10
	CONCLUSION	11

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Sennheiser Electronic Corporation responds to *Media Bureau Seeks Comment on Catalog of Eligible Expenses and Other Issues Related to the Reimbursement of Broadcaster Channel Reassignment Costs*, GN Docket No. 12-268, Public Notice, DA 13-1954 (released Sept. 23, 2013).

A. SUMMARY

The professional-grade wireless microphones used in broadcasting, film production, and live events transmit in vacant TV channels—as do the less costly, but still high-quality, microphones that are popular with churches, schools, community organizations, and amateur musicians. The Commission’s prior reallocation of TV channels 52-69 (698-806 MHz) to other uses, as part of the digital TV transition, made wireless microphones in those channels unlawful to operate. As of June 2010, users had to take those microphones out of service and replace them, regardless of remaining useful life.

Some of that replacement equipment, purchased just a few years ago, operates in the 600 MHz band, channels 36 through 51. Now, if the planned TV band repacking and 600 MHz spectrum auction succeed, some microphone users—the affected range of frequencies is still unknown—will once again have to scrap their equipment and pay the replacement costs. The proposal to allow unlicensed operation in the 600 MHz guard bands will not make up for the

much larger amount of spectrum to be lost. Moreover, the guard bands are likely to be crowded with multiple applications and to have power limits inconsistent with many uses of wireless microphones.

The Commission has recognized, in several other auctions, the inequity of leaving incumbents to bear their own costs of relocating to a different band for the sole benefit of the auction winners. It accordingly has often required auction winners to cover the relocation expenses. It should do the same here, as to 600 MHz wireless microphones.

We outline a mechanism below. Although it is based on the traditional model of auction winners dealing directly with incumbents, that approach will need some modification to account for the differences between wireless microphones and the fixed incumbents of past auctions.

Inflicting on wireless microphone users the trouble and expense of acquiring new equipment, for the second time in just a few years, is simply unfair. The Commission should put that burden where it belongs: on the auction winners that will gain revenues from the cleared spectrum.

B. ABOUT SENNHEISER

Sennheiser Electronic Corporation is a wholly-owned subsidiary of Sennheiser electronic GmbH & Co. KG, headquartered in Germany. The parent company is a global leader in microphone technology, RF-wireless and infrared sound transmission, headphone transducer technology, and active noise cancellation. The U.S. subsidiary, based in Old Lyme, Connecticut, represents Sennheiser products in the United States and distributes a variety of other professional audio lines.

Sennheiser is a leading manufacturer of the wireless microphones used in the United States. Most of its U.S. product line is manufactured in Albuquerque, New Mexico.

C. WIRELESS MICROPHONES ARE VITAL TO THE ECONOMY AND THE NATION’S PUBLIC LIFE

TV band wireless microphones are more than a convenience. They are vital to a major component of the U.S. economy and support a major sector of U.S. exports.

Wireless microphones are ubiquitous in all aspects of the entertainment business, in news reporting, in sports, and in U.S. commercial, civic, and religious life. They are essential to the production of virtually all non-studio broadcast events, and to nearly all studio-produced programs as well. These include team sports from local college broadcasts to the Super Bowl, the World Series, the Final Four, and the Stanley Cup; the Democratic and Republican political conventions; post-election national and local coverage; the Oscar, Emmy, and Grammy Awards shows; events such as the Olympics, NASCAR races, the Kentucky Derby, and major golf and tennis tournaments; and on-the-scene news reporting of all kinds, both local and national. These broadcasts routinely attract millions of viewers.

Motion-picture production, from Hollywood blockbusters with nine-digit budgets down to student work at the local community college, relies heavily on wireless microphones for clear, accurate audio. Live events, from Broadway productions to stadium-sized outdoor concerts, need wireless microphones to reach the back row. Presenters in auditoriums, lecture halls, and houses of worship find them indispensable.

Other major uses of TV spectrum—broadcast television and TV Band Devices (TVBDs), also called “white space devices”—chiefly benefit the *consumption* of content. Wireless microphones, in contrast, participate in the *creation* of content. The U.S. public expects the very highest standards of production quality in all forms of television, radio, film, and live entertainment. Driven by these expectations, U.S. news and entertainment content is globally acknowledged as the best in the world. The widespread popularity of these products has made

entertainment content not only a major domestic industry,¹ but also one of the nation's leading exports. Indeed, "Royalties and Licensing Fees" is the category having by far the highest export-to-import ratio of all U.S. goods and services.² The United States leads the world in both share of GDP and share of employment attributable to the copyright industries.³ Wireless microphones are one of the key production tools that fuel these successes.

The unlicensed products available in the 49 MHz, 902-928 MHz, and 2.4 GHz bands are generally unsuited to professional applications. Many are little more than toys.⁴ The low available power and high interference levels for unlicensed operation in these bands leads to unreliable performance. Users insist on professional-grade TV band microphones because they have no choice. The producers of a Broadway musical, for example, need microphones having both the highest quality sound reproduction and absolutely reliable, drop-out-free performance.

¹ "Core copyright" industries (including TV, film, radio, and recorded music) are responsible for over 5 million private industry jobs (almost 5% of total U.S. employment, with compensation per employee 27% higher than the national average) and add nearly \$1 trillion to the economy, or 6.36% of the national GDP. Stephen E. Siwek, *Copyright Industries in the U.S. Economy: The 2011 Report* at 15 and Appendix A (Economists Incorporated 2011). Available at <http://www.ei.com/downloadables/2011CopyrightSiwek.pdf>

² U.S. Census Bureau, U.S. Bureau of Economic Analysis, *News: U.S. International Trade in Goods and Services, November 2012* at 3-4 (U.S. Dept. of Commerce released Jan. 11, 2013). Available at http://www.census.gov/foreign-trade/Press-Release/current_press_release/ft900.pdf

³ *Copyright + Creativity = Jobs And Economic Growth*, WIPO Studies on the Economic Contribution of the Copyright Industries, World Intellectual Property Organization (WIPO), at 5 (Chart 5) (2012), available at <http://www.ip-watch.org/weblog/wp-content/uploads/2012/02/WIPO-Copyright-Economic-Contribution-Analysis-2012-FINAL-230-2.pdf>

⁴ In contrast, TV band wireless microphones operating as unlicensed devices under waiver are capable of performance at professional levels. See *Amendment of Parts 15, 74 and 90 of the Commission's Rules Regarding Low Power Auxiliary Stations, Including Wireless Microphones*, Report and Order and Further Notice of Proposed Rulemaking, 25 FCC Rcd 643 at ¶¶ 81-90 (2010).

In short, wireless microphones in the UHF TV frequencies are important to the nation and the economy.

D. EQUITY AND SIMPLE FAIRNESS REQUIRE COMPENSATION TO WIRELESS MICROPHONE USERS

The upcoming 600 MHz spectrum auction will require one group, the wireless microphone users, to expend funds for the sole benefit of another group: the carriers that will sell services in the 600 MHz band.

Wireless microphones are not an option for professional users, but are essential. They are also expensive. The advanced technologies that provide accurate audio fidelity, near-zero latency, adequate range and battery life, and near-absolute reliability do not come cheaply.

Prices cluster roughly into three ranges:

- around \$6,000: used for the most demanding professional applications—Hollywood film production, national TV shows (*e.g.*, “Saturday Night Live”), headline live acts, Broadway shows
- around \$3,000: used for most other professional applications: local theater, music performances, local TV, independent film production
- around \$1,000: semi-professional applications such as churches, schools, amateur theater, amateur musicians, community facilities.

A typical Broadway theater or TV production studio will have at least 40 or 50 units on hand; some productions use 100 or more. The total investment by a single user can run well into the hundreds of thousands of dollars. The useful life is at least ten years. Some microphones been in daily operation for twenty years and more.

The digital TV transition caused the loss of the 700 MHz band (698-806 MHz) to wireless microphones, effective June 2010.⁵ Much of the equipment in that band had years of

⁵ *Wireless Microphones are not Permitted to Operate on Certain Frequencies after June 12, 2010; Users are Urged to Check Their Equipment and Take Necessary Steps to Ensure Compliance*, Public Notice, 25 FCC Rcd 7409 (Enforcement Bur. 2010). *See also Operation of*

service remaining, yet users had no choice but to discard and replace their devices nonetheless. Some of the equipment they acquired as replacements uses the 600 MHz band. At the time of the 2010 deadline, there was no hint that the 600 MHz band might likewise be in jeopardy.

Now the Commission plans once again to require wireless microphone users to junk and replace serviceable equipment, this time at 600 MHz. Having had to incur that expense once was bad enough; having to do it twice is intolerable.

As to broadcast stations and multichannel video programming distributors, the Commission understands that displacement due to spectrum repacking will create a financial hardship, and with Congress's help has devised a scheme to compensate those affected.⁶ Wireless microphone users likewise will be displaced, and likewise will suffer financial hardship. We emphasize that this expense arises through no fault of theirs. Indeed, in many cases it results directly from their timely compliance with the Commission's previous order to vacate 700 MHz.

Repeatedly singling out wireless microphone users to bear the cost and disruption of band reallocations is simply unfair. Worse: where the last repacking entailed mostly one-for-one replacements, this one will be more difficult and expensive. The coming shrinkage of TV spectrum overall, and the continuing pressure from TVBDs, means wireless microphones will have to pack more densely into the limited spectrum that remains. In some places, this will be exceedingly difficult: Broadway for example, has about fifty theaters within a few blocks; some,

Low Power Auxiliary Stations in the 698-806 MHz Band, Report and Order and Further Notice of Proposed Rulemaking, 25 FCC Rcd 643 (2010).

⁶ *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Notice of Proposed Rulemaking, 27 FCC Rcd 12357 at ¶¶ 334-54 (2012).

especially those playing musicals, operate dozens of microphones.⁷ The need to put more units onto fewer channels will increase costs substantially.⁸

Given that long-standing Commission precedent offers a mechanism for providing a degree of relief, fundamental principles of equity and justice require the Commission to make that relief available.

E. THE COMMISSION HAS THE AUTHORITY TO REQUIRE COMPENSATION FOR WIRELESS MICROPHONE USERS.

The Commission has routinely required incoming auction winners to pay the costs of relocating incumbents. The practice dates back to some of the earliest auctions: the proceedings in the 1990s that reallocated 2 GHz spectrum from the Fixed Service to the Personal Communications Service, when the Commission required successful bidders to reimburse the Fixed Service incumbents for their costs of moving to other bands.⁹ Rather than seek specific statutory authority to impose the obligation, the Commission instead relied on its preexisting

⁷ For example, the show “Mamma Mia!” uses about sixty microphones and shares spectrum with the show “Wicked” just around the corner, among other nearby users. *U.S. May Sell Airwaves That Help Broadway Sing*, New York Times (March 29, 2013), available at http://www.nytimes.com/2013/03/30/business/fcc-has-yen-for-broadways-wireless-spectrum.html?_r=0

⁸ Technical detail: Multiple transmitters are subject to a form of interference called “intermodulation” in which two or more desired signals combine to produce undesired signals outside the spectra of the desired signals. It is a particular challenge with wireless microphones, because they are constantly moving. The legacy solution has been to space units across a TV band in such a way that the intermodulation products caused by any combination of microphones and other TV band signals—these can number in the thousands—do not fall into the spectrum of another microphone signal. Denser spacing requires manufacturers to defeat intermodulation by making the microphones highly “linear,” which adds to their cost, and also requires aggressive filtering to keep the signals isolated, which increases the cost still more.

⁹ *Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies*, Third Report and Order and Memorandum Opinion and Order, 8 FCC Rcd 6589 (1993); 47 C.F.R. §§ 101.69-81.

powers under Title III of the Communications Act.¹⁰ Most recently, the Commission adopted a similar mechanism for the H-block auction,¹¹ again under its general Title III powers.¹²

In those prior cases, the incumbent facilities were at fixed locations listed in the Commission's database. That made it easy for the incumbents and the incoming licensees to find one another. Here, given the mobile character of wireless microphones, a central clearinghouse will be helpful. We propose a mechanism below.

We acknowledge that the Notice of Proposed Rulemaking may not have adequately presaged this category of compensation. To avoid challenges based on the Administrative Procedure Act,¹³ we urge the Commission to issue a public notice or supplemental NPRM setting out the proposal.

F. PROVIDING COMPENSATION TO WIRELESS MICROPHONE USERS IS ADMINISTRATIVELY SIMPLE.

A scheme for compensating wireless microphone users must not impose a significant administrative burden on the Commission. Any such plan must limit compensation to those who expend funds to replace 600 MHz equipment made unusable by the reallocation; and the compensation must not exceed the funds actually spent on replacement microphones.

The proposal below uses two defined terms.

¹⁰ See *id.*, 8 FCC Rcd at 6612, ¶ 58, *citing* 47 U.S.C. §§ 154(i), 157(a), 303(c), 303(g), 303(r).

¹¹ *Advanced Wireless Services H Block*, Report and Order, 28 FCC Rcd 9483 at ¶¶ 157-73 (2013).

¹² *Id.* at ¶ 267, *citing* 47 U.S.C. §§ 151, 152, 154(i), 201, 301, 302(a), 303, 307, 308, 309, 310, 316, 319, 324, 332, 333, 1403, 1404, 1451. Auction winners in the Upper H-block (1910-1915 MHz) will reimburse the incumbent Sprint Nextel, which occupies the band as a result of a 2004 spectrum swap. Those in the Lower H-block (1915-1920 MHz) will reimburse the frequency coordinator UTAM, Inc. for its expenses in clearing that band ten years ago.

¹³ 5 U.S.S. § 553(b) (requiring general notice of proposed rule making).

- The “700 MHz Cutoff Date” is the date BY which wireless microphones were required to vacate the 700 MHz band: June 12, 2010.
- The “Base Compensation Amount” is the lowest realistic 2012 “street price” for a given line of 600 MHz wireless microphones.

As a starting point for discussion, we outline the following plan:

1. The Commission establishes a per-microphone compensation amount for 600 MHz wireless microphones to be displaced by the upcoming spectrum auction. We suggest this formula:

$$\text{Base Compensation Amount} \times \left[1 - \frac{\text{(no. of months between 700 MHz Cutoff Date and 600 MHz spectrum auction)}}{120 \text{ (no. of months in 10-yr. estimated useful life)}} \right]$$

The formula effectively charges the user for a period of time between the 700 MHz band’s becoming unusable and the 600 MHz auction; the later the auction, the lower the compensation.

2. The wireless microphone manufacturers form a consortium to provide a single point of contact for implementing compensation. Consortium operating costs are paid by the participating manufacturers.
3. On a website, the consortium publishes a list of wireless microphones, by make and model number, that are eligible for compensation. The list is limited to microphones that (a) use frequencies to be displaced by the 600 MHz auction, and (b) were available for sale during the two-year period ending on June 12, 2010 (the 700 MHz cut-off). The list shows the compensation amount for each microphone, calculated as above. It also identifies microphones whose power exceeds 50 milliwatts.
4. After purchasing a replacement microphone, the user sends to the consortium the proof of purchase and the microphone being replaced. If the microphone’s power exceeds 50 milliwatts, the user must also enclose proof of Part 74 licensing eligibility.
5. The consortium sends the user a check for the rebate amount, not to exceed the purchase price of the new microphone, and destroys the returned microphone.

6. At stated intervals, perhaps every month or every quarter, the consortium forwards to the winning auction bidders a list of the microphones received and rebated. The winning auction bidders reimburse the consortium for the rebates.

It will likely be impractical to associate each displaced wireless microphone user with a particular auctioned license area and frequency block. We suggest that the winning auction bidders form their own consortium, which can collectively reimburse the microphone manufacturers' consortium. The winning bidders' consortium could assess its members *pro rata* by size of frequency block and population covered.

G. A COMPENSATION ARRANGEMENT IS IN THE PUBLIC INTEREST.

It is rare for any product, though lawful when sold, to become unlawful later on, in the hands of its users. Wireless microphones may be the only product ever sold in the U.S. to which this happened twice, just a few years apart. Users who bought their 600 MHz microphones with every expectation of extracting value over many years will have to toss them out prematurely and once again put up substantial cash to buy new ones.

The need to replace 700 MHz microphones, as part of the digital TV transition, led some commentators to speak of a “windfall” to the manufacturers.¹⁴ To the contrary, that period was a customer relations disaster. As the Commission acknowledged, manufacturers took the initiative

¹⁴ “Harold,” *We File Wireless Microphone Complaint: Shure Says Breaking Law Should Be OK If You Sound Good*, Tales from the Sausage Factory (July 16, 2008), available at <http://tales-of-the-sausage-factory.wetmachine.com/we-file-wireless-microphone-complaint-shure-says-breaking-law-should-be-ok-if-you-sound-good/> In a Commission filing on the same date, Harold Feld for the Media Access Project and Public Interest Spectrum Coalition accused wireless microphone manufacturers of widespread Commission violations and deceptive advertising practices. See Informal Complaint and Petition for Rulemaking of the Media Access Project in WT Docket No. 07-195 *et al.* (filed July 16, 2008). The manufacturers contested the accusations, which have not resulted in Commission enforcement action.

in alerting customers that the 700 MHz band would become unavailable.¹⁵ With the approach of the June 2010 deadline, manufacturers went about the unpleasant work of notifying users that they must discard and repurchase still-serviceable equipment. The users, understandably, turned their anger against the manufacturers. Rather than profit from the transition, the manufacturers did their best to soften the blow, and to appease furious customers, by offering rebates and extremely generous trade-in allowances during the months leading up the deadline. This time, we expect the negative reaction to be far worse.

The coming need for wireless microphones to incur these costs all over again in vacating the 600 MHz band amounts to a compelled subsidy to the incoming auction winners, who are the sole beneficiaries. The Commission has recognized and prevented such subsidies in previous auctions. It should do so here as well.

CONCLUSION

The Commission should exercise its authority to require compensation for wireless microphone users who recently bought, and will soon have to discard, wireless microphones in the 600 MHz band.

Respectfully submitted,



Mitchell Lazarus
FLETCHER, HEALD & HILDRETH, P.L.C.
1300 North 17th Street, 11th floor
Arlington VA 22209
(703) 812-0440
Counsel for Sennheiser Electronic Corporation

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¹⁵ *Operation of Low Power Auxiliary Stations in the 698-806 MHz Band*, Notice of Proposed Rulemaking and Order, 23 FCC Rcd 13106 at ¶ 11 (2008).

COURTESY SERVICE LIST

Tom Wheeler, Chairman
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Commissioner Mignon Clyburn
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Commissioner Jessica Rosenworcel
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Commissioner Ajit V. Pai
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Commission Michael O’Rielly
445 12th Street, SW
Washington, DC 205

Gary Epstein, Senior Advisor and Chair,
Incentive Auction Task Force
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Edward Smith, Special Counsel
Enforcement Bureau and Incentive
Auction Task Force
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Julius Knapp, Chief
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Alan Stillwell, Deputy Chief
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Jamison Prime
Spectrum Policy Branch Chief
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Robert Weller,
Technical Analysis Branch Chief
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Mark Colombo
Electrical Engineer
Office of Engineering and Technology
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

William Lake, Chief
Media Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Rebecca Hanson
Senior Advisor/Special Counsel
Media Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Barbara Kreisman, Chief
Video Division
Media Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Alison Neplokh, Chief Engineer
Media Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Ruth Milkman, Chief
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

John Leibovitz, Deputy Chief
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Margaret Wiener, Chief
Auctions & Spectrum Access Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Gary Michaels, Deputy Chief
Auctions & Spectrum Access Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Craig Bomberger, Associate Chief
Auctions & Spectrum Access Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

William Huber, Associate Chief
Auctions & Spectrum Access Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Erik Salovaara, Assistant Chief
Auctions & Spectrum Access Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Kelly Quinn, Assistant Chief
Auctions & Spectrum Access Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554