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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

April 17, 2003

By Hand Delivery

Marlene H. Dortch, Esquire
Secretary
Federal Communications Commission
445 12th Street, S.W., Room TW-B204
Washington, D.C. 20554

Re: Joint Comments
Alaska Broadcasters Association,
Arkansas Broadcasters Association,
Communications Corporation of America
Guenter Marksteiner
Mississippi Association of Broadcasters, and
New Mexico Broadcasters Association
Pappas Telecasting Companies
ET Docket No. 02-380

Dear Ms. Dortch:

Transmitted herewith, on behalf of the above-referenced parties is an original and ten copies of its "Joint Comments" in the instant proceeding.

Should any questions arise concerning this matter, please communicate with this office.

Sincerely,

Lee G. Petro

Enclosures

bcc: Paula Maes, Executive Director, New Mexico Broadcasters Association
Jacklyn Lett, Executive Director, Mississippi Association of Broadcasters
Ms. Pat Willcox, Arkansas Broadcasters Association
Jim McCall, Executive Director, Arkansas Broadcasters Association
Gordon Heiges, Arkansas Broadcasters Association
Darlene Simono, Executive Director, Alaska Broadcasters Association
Dr. Guenter Marksteiner
Harry J. Pappas, Pappas Telecasting Companies
Peter C. Pappas, Pappas Telecasting Companies

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

In the Matter of:	}	
Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band	}	**ET Docket: 02-380**

TO: THE COMMISSION

JOINT COMMENTS

Alaska Broadcasters Association, Arkansas Broadcasters Association, Communications Corporation of America, Guenter Marksteiner, Mississippi Association of Broadcasters, New Mexico Broadcasters Association, and Pappas Telecasting Companies (the "Joint Parties"), by and through their attorneys, hereby submit the following **JOINT COMMENTS** in response to the Notice of Inquiry, released on December 20, 2002, with respect to the proposed operation of unlicensed devices in the Television broadcast spectrum (54-88 MHz, 174-216 MHz and 470-806 MHz).[1]

As discussed in more detail below, the Joint Parties are either television broadcast licensees, or, as state broadcast associations, represent television broadcast licensees, and have grave concerns about the significant risk of harmful interference caused to television stations by the proposed unlicensed operations in the television band. See Appendix A.

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[1] In the Matter of Additional Spectrum for Unlicensed Devices Below ***900 MHz*** and in the 3 ***GHz*** Band, Notice of Inquiry, 17 FCC Rcd 25,632 (2002) (the "NOI"). The NOI was released in the Federal Register on January 21, 2003, and established the deadline for comments as April 7, 2003. 68 Fed. Reg. 2730 (rel. Jan. 21, 2003). On March 31, 2003, the Commission extended the deadline for submitting comments to April 17, 2003. Order Granting Extension of Time, DA 03-1022 (March 31, 2003).

The Joint Parties believe that the scant engineering analysis provided to date in both the *NOI* and comments filed in the recently-concluded ***Spectrum*** *Policy* ***Task*** *Force* ***Report*** fail to demonstrate, with any degree of certainty whatsoever, that the introduction of unlicensed devices in previously-licensed spectrum would not cause interference which might have a potentially devastating impact on broadcast television operations. As such, the Joint Parties do not believe that the Commission should consider opening the television band, which is embroiled in the long-term conversion from analog to digital television service, as the new frontier for unlicensed operations. To the contrary, the FCC must be absolutely certain that the unlicensed operators would not cause interference to analog and digital television operations, thereby threatening the multi-billion dollar, industry-wide investment in digital television by both licensees and viewing consumers.

DISCUSSION

A. The Commission Should Not Consider Underlay During Digital Transition

While the Commission is in the midst of reducing the television allocation table by 18 channels through the conversion to digital television, and has given almost all existing analog television licensee a second channel to transmit a digital signal of its programming during the transition, there are still approximately 347 DTV channels located outside the Channel 2-51 core spectrum that will be required to identify available DTV channels within the DTV core spectrum, and construct new digital facilities prior to the end of the transition period.[2]

---

[2] ***Second Periodic Review of the Commission's Rules and Policies Affecting the Conversion*** *to* ***Digital Television,*** **Notice of Proposed** ***Rulemaking,*** **18** FCC **Rcd 1279 (2003).**

Also, at least 100 television licensees have not yet received their initial digital construction permit, and thus, have not yet begun to construct their digital facilities. Additionally, during the transition, many digital television licensees have received permission to operate in the short-term with reduced power, but can, with simple notification to the Commission, complete construction of their maximum digital television facilities, and begin operating at full power. Finally, even when digital television stations have commenced full-power operations, they have been forced to deal with real-life interference that was not predicted by the assumptions leading to the creation of the DTV Table of Allotments.[3]

The government has calculated that, by the end of the transition to digital operations, the broadcast television industry will have spent close to ***16 Billion*** dollars to construct and commence operations of fully-digital television stations.[4] This figure does not include the future costs of television licensees' legal battles to gain carriage rights for their digital television stations on cable and DBS systems or the enormous burden placed on the public to educate itself about digital television and purchase new television sets that are far more expensive than the analog sets for which the public is accustomed to paying.

At a time when the television industry already is in great turmoil, the addition of a new factor, that of mobile transmitters operating with abandon anywhere in the television band, and anywhere within television licensee service

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[3] Joint Comments of the Association for Maximum Service Television, Inc. and the National Association of Broadcasters, ET Docket 02-135, pg. 6 (Jan. 27, 2003)(citing instances in Virginia, Maryland, Michigan, Wisconsin and New Jersey where fully-spaced DTV allotments have been found to cause interference to each other.).

[4] Completing the Transition *to* Digital Television, Congressional Budget Office (ret. Sept. 1999). See also Many Broadcasters Will ***Not*** Meet May 2002 Digital Television Deadline, United States General Accounting Office, GA 0-02466 (April 2002).

areas, is clearly contrary to the public interest. It would cause too much uncertainty for the public, for the current licensees, and for the capital markets providing the necessary funding for the construction of digital television.

For example, a simple baby monitor could cause substantial interference to its surrounding area depending on the location of the monitor within the home, and with respect to the surrounding houses. That baby monitor would face a substantially different "interference temperature" in New York City, than it would face in Traverse City, Michigan. The ability of a television licensee in either community to locate the interference suffered by neighbors would be nearly impossible given the mobility of the unlicensed device. In essence, broadcasters would be faced with a chronic task of identifying interfering devices throughout their service area.

Even if the technology for such devices had already been developed, the fact is that the Commission has committed television licensees to at least five [in reality, perhaps 10] more years under a transitional phase, in which licensees will be developing their final technical facilities, and will be awaiting the moment when the Commission will require the return of the second channel. The last thing that the television licensees, which have committed to expending millions of dollars to construct digital television facilities, and the public which must expend substantial funds to purchase new televisions sets, need is a new service that could add or at the very least raise the specter of new interference into the television spectrum.

B. The Ambiauous Concept of "Interference TemDerature" Must Be Riaorouslv Studied Before The Commission Considers Any Underlav of Unlicensed Spectrum

The central underpinning of the proposal to permit unlicensed operators into the television band is the accurate measurement of the "interference temperature." According to the Commission, the accurate measurement of this factor will permit unlicensed operators to accurately discern whether the operation of their devices in a particular geographic area will increase the interference temperature above a previously-established limit.

There is, however, one major problem with this plan. To date, no party has developed a workable plan to accurately capture the "interference temperature" at any particular point in time or location, let alone develop a real-time monitoring system permitting unlicensed operators to accurately determine and consistently measure the temperature on a long-term basis. In short, there is no empirical data available to support the adoption of the concept at this time, and its adoption would put the broadcast television industry at too great a risk for debilitating interference.

Many parties in the *Spectrum Task Force* rulemaking raised serious questions about the viability of an underlay system based on the "interference temperature" concept:

- The opportunistic or dynamic secondary use of licensed spectrum...presents numerous problems and at best are merely theoretical concepts at this time. One of the fundamental problems is that received power measurements at a single location do not indicate accurately whether a spectrum hole exists that can be exploited without harmful interference to primary users. To address this "hidden terminal"

problem, a secondary user would need to measure frequency use throughout the exclusion zone centered at the secondary user's location.[5]

- In addition, in coverage-limited areas where systems operate at or near the noise floor (e.g., in-building or tunnel operations), imposition of an interference temperature cap and underlay operations would by definition reduce network coverage and degrade service – thereby causing harmful interference to existing licensees' operations. It is, therefore, extremely doubtful that the Commission could identify an interference temperature cap that fully accounts for protection of existing services as it seeks to promote underlay operations.[6]

- In this regard, it seems puzzling for the Commission to embark on a proceeding to consider unlicensed uses in licensed spectrum at this time, when so much work lies ahead even to pin down the concept of a meaningful interference protection threshold, let alone do the actual tests necessary to validate it..it nevertheless seems premature to pursue [the instant] proceeding before an appropriate conceptual framework is developed.'

Thus it is clear that the Commission has much work to do before even identifying the appropriate spectrum for instituting its underlay allocation plan.

Just as important is that prospective unlicensed manufacturers and operators do not prefer underlay allocations. Instead, these parties have expressed that they need the predictability of exclusive spectrum, across all geographic areas, to implement vibrant and cost-effective unlicensed services:

- The full potential of unlicensed wireless networks will not be realized through opportunistic use and underlay;[8]

- To further encourage innovation in the area of unlicensed spectrum, the Commission should set aside spectrum bands exclusively for unlicensed applications;[9]

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5 Comments of Motorola, ET Docket 02-135, pg. 26 (Ian. 27, 2003).

6 Comments of AT&T Wireless, ET Docket 02-135, pg. 11 (Ian. 27, 2003).

7 Comments of CTIA, ET Docket 02-135, pgs. 11-12 (Ian. 27, 2003).

8 Comments of Microsoft Corporation, ET Docket 02-135, pg. 7 (Iuly 8, 2002).

9 Comments of Consumer Electronics Association, ET Docket 02-135, pg. 7 (Iuly 8, 2002).

- The proliferation of a broad array of unlicensed products in the marketplace clearly justifies additional spectrum. But for all the benefits attendant to sharing bands, continuing to be limited exclusively to shared bands inevitably forecloses more widespread deployment of some exciting applications, increases the cost of equipment, and increases the regulatory risk for many possible new applications."

Based on these comments, from the very parties that would implement the unlicensed services, it is clear that the Commission's focus on allocating spectrum for unlicensed devices must be on identifying exclusive bands for this use, and not sharing spectrum with previously-allocated services.

Finally, there are several technical issues relating to the use of the television band for an underlay service that must be considered. Attached as Exhibit One is an Engineering Statement of Smith and Fisher discussing several technical issues raised in the NOI with respect to the television band, including:

- the need to maintain the current power limits and field strength limits currently in place for unlicensed devices for all future unlicensed services;
- the need to protect the signal of full-power television stations without regard to the television station's field strength, *i.e.*, the "interference temperature" must be set low enough to fully protect each television station's entire signal;
- the need for the Commission to adopt DTV receiver standards to ensure proper reception of digital television service;
- the difficulties that mobile unlicensed operators will face in accurately measuring the interference temperature in transit, especially in light of shifting signal strength caused by terrain shielding;
- the absolute need for the adoption of specific antenna standards for unlicensed equipment.

Thus, not only does the Commission have many general technical issues to address in developing the "interference temperature" technical standard, it must also pay

[10] **Comments** of **Consumer Electronics Association, ET Docket 02-135, pgs. 4-5 (Jan. *27,* 2003).**

special attention to the specific issues raised by the introduction of this undeveloped, unstudied, and risky theoretical concept into the television band.

CONCLUSION

The Commission has a difficult task. It must consistently evaluate its current allocation plan to foster growth of new and innovative technology, all the while protecting previously-licensed facilities. Admirably, the Commission has taken an important step to determine whether the technological landscape permits the underlay of an additional telecommunication service in spectral bands already allocated to other services.

But the Commission should not move hastily forward without considering the preexisting conditions limiting the allocation of underlay services.[11] With respect to the television band, the Commission is requiring license-holders to expend millions of dollars to convert their operations to digital transmissions, and has already reallocated 108 MHz from the television service as a result. The next five to ten years is vitally important for the television industry, as television facilities grow into their authorized service limits, and the public grows comfortable with digital television service. These factors seriously impact the ability of the Commission to clear television Channels 52-69, which seriously impacts the feasibility of introducing new services in that spectrum.

In light of these considerations, the Joint Parties believe that the introduction of unlicensed operations into the television band has the tremendous risk of causing

[11] Clearly, field testing of these new elements in the television band must be undertaken and demonstrate, without question, the **TOTAL** avoidance of interference under all circumstances.

significant harmful interference and service interruptions to existing television licensees, and should not be considered, if at all, until the DTV transition is complete, and the actual devices have been extensively tested.

Respectfully Submitted

ALASKA BROADCASTERS ASSOCIATION,
ARKANSAS BROADCASTERS ASSOCIATION,
COMMUNICATIONS CORPORATION OF AMERICA,
GUENTER MARKSTEINER,
MISSISSIPPI ASSOCIATION OF BROADCASTERS,
NEW MEXICO BROADCASTERS ASSOCIATION, AND
PAPPAS TELECASTING COMPANIES

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April **17,** 2003

APPENDIX A

Parties to Pleading

Alaska Broadcasters Association, Arkansas Broadcasters Association, Mississippi Association of Broadcasters, and New Mexico Broadcasters Association are nonprofit organizations whose members comprise substantial numbers of the radio and television broadcasters in their respective states. The State Associations represent broadcasters with respect to issues confronting the broadcasting industry and strive to promote the best interest of the broadcasting industry generally.

Communications Corporation of America, through its wholly-owned subsidiaries, own and/or operate the following stations:

- KVEO(TV), Brownsville, Texas;
- KPEJ(TV), Odessa, Texas;
- KWKT(TV), Waco, Texas;
- KMSS-TV, Shreveport, Louisiana;
- KYLE(TV), Bryan, Texas;
- WGMB(TV), Baton Rouge, Louisiana;
- WBRL-CA, Baton Rouge, Louisiana;
- KTSM-TV, El Paso, Texas;
- WEVV(TV), Evansville, Indiana; and
- KADN(TV), Lafayette, Louisiana.

Dr. Guenter Marksteiner is the licensee of the following stations:

- WHDT-DT, Stuart, Florida
- WYDT-CA, Naples, Florida
- WHDT-LP, Miami/Ft. Lauderdale, Florida
- WXDT-LP, Naples, Florida
- WZDT-LP, Naples, Florida
- WHDN-LP, Boston, Massachusetts

Pappas Telecasting Companies, through its subsidiaries and affiliates, own and/or operate the following stations:

- WSWS-TV, Opelika, Alabama;
- KPWB-TV, Ames, Iowa;
- KMPH-TV, Visalia, California;
- KFRE-TV, Sanger, California;
- WTWB-TV, Lexington, NC;
- KAZH(TV), Baytown, Texas;
- KTVG-TV, Grand Island, NE;
- KHGI-TV, Kearney, Nebraska;
- KSNB-TV, Superior, NE;
- KWNB-TV, Hayes Center, NE;
- KAZA-TV, Avalon, California;
- WMMF-TV, Fond du Lac, Wisconsin;
- KPTM-TV, Omaha, Nebraska;
- KXVO-TV, Omaha, Nebraska;
- KREN-TV, Reno, Nevada;
- KTNC-TV, Concord, California;
- KFWU-TV, Fort Bragg, California;
- KPTH-TV, Sioux City, Iowa; and
- KSWT-TV, Yuma, Arizona.

EXHIBIT ONE

Enaineerina Statement of Smith and Fisher

ENGINEERING STATEMENT

In its Notice of Inquiry in ET Docket No. 02-380, the Commission raised a number of specific technical questions with respect to the operation of unlicensed devices in the television bands. Because the joint parties strongly object to the overall concept, it would seem unnecessary to discuss the details of how this portion of the spectrum should be shared, but certain questions deserve comment:

- What power and/or field strength limits are necessary for unlicensed transmitters within the TV bands to prevent interference to TV reception? Could unlicensed devices operate in TV bands with a power greater than the 1 watt maximum permitted for Part 15 devices in the ISM bands or power greater than the general Part 15 limit?

If unlicensed transmitters am ever permitted *in* the television bands, as proposed, we see no reason why the power and/or field strength limits should be relaxed, since *such* existing operations perform satisfactorily within those parameters. Further, since the Commission anticipates other non-interference techniques to be employed so as to minimize the chance of interference, there would appear to be no reason for these devices to be more-strictly limited in this regard.

- What separation distances or D/U ratios should be established between unlicensed devices and the service of analog, digital, Class A and low power TV and TV translator stations? What assumptions should be used to determine these protection criteria? Should TV stations be protected only within their grade B or noise limited service contours, or should unlicensed devices be required to protect TV reception from interference regardless of the received TV signal strength? Is protection necessary only for co-channel and adjacent channel stations? What special requirements, if any, are necessary to protect TV reception in areas where a station's signal is weak? Would minimum performance standards for receivers facilitate the sharing of TV spectrum with unlicensed devises?

To the best of our knowledge, no studies have ever been conducted that would be fully suitable for the establishment of D/U ratios between unlicensed devices and the

several types of television facilities employing this band, although some sense of such a ratio *may* be obtained by reference to. say, studies of noncommercial FM station interference to television Channel 6. Thus, such sharing a u l d take place only after thorough laboratory and field tests. The idea *of* using minimum separation distances to control interference to television services would seem a bad one, particularly since a study of the D/U ratios would still be necessary, in order to decide what the spacings should be.

If spacings are *empkyed,* but if television facilities are to be fully protected, those spacings would have to be quite conservative, to account for coverage variations caused by terrain. Even the use *of* the spacing requirements between full-service television stations would not necessarily be adequate, because those minimum spacings are not designed to eliminate interference, but simply to control it. The Commission can logically permit a certain amount *of* interference between operations in the same service for the overall benefit *of* that service, but to permit interference between different services requires an entirely different public interest determination.

Television stations should be protected from interference regardless of the level *of* the television field strength and without regard to the location of the Grade B or any other contour. as is presently the *case.* Further, Class A, LPTV, and TV translators should be similarly protected from interference wherever they are received. Particularly in rural areas, viewers *emp loy* extraordinary means to receive off-air television service and they should not be deprived *of* it.

Until the necessary studies are conducted, it is not possible to know if the required protection involves only the co-channel and the first-adjacent-channel *cases.* Although it is unlikely that the UHF television taboos would be relevant, these unlicensed

devices may have characteristics that necessitate protection involving some other frequency combinations.

Finally, with respect to minimum performance standards for receivers, we believe that such an approach would not be beneficial because of the long time it would take for the newly-regulated receivers to represent a major share of those receivers in the hands of the public. If receiver standards am the basis for the proposed sharing of the television ban, either there will be a long delay in implementing the sharing, or of them will be significant interference to television reception.

- What technical requirements are necessary to protect other operations in the TV bands, induding the PLMRS and CMRS in the areas where they operate on TV channels and low power auxiliary stations such as wireless microphones and wireless assist video devices? Could technical requirements be developed that would allow unlicensed devices to co-exist with new licensed service on former TV channels 52-68? Should unlicensed transmitters be required to protect unliinsed medical telemetry transmiltem operating on TV channels 7-46 from interference?

The use of wireless microphones on the television bands presents a particularly difficult challenge to those who would implament this sharing scheme, because one cannot predict where or when they will be used. As noted above, wireless microphones must operate in an interference-free environment. Fortunately, wireless microphones do not cause interference to television broadcasting because wireless microphones am subject to destructive interference if operated on a television channel which is received in their area, making the relationship self-pding. However, with band-sharing with unlicensed devices, wireless microphones could be subject to massive interference, and this would be no small problem. Popular programs such as the outdoor concerts in Washington on Memorial Day and Independence Day can be produced as they are only through the use of wireless microphones.

- What requirements, if any, am necessary to prevent interference to *coaxial* cable or other multi-channel video service providers using the TV

bands or to prevent interference to TVs, VCRs and set-top boxes caused by direct pickup of signals from unlicensed devices?

These questions are emblematic of the problems associated with the proposed sharing of the television bands. Lay persons *operate* television receivers, VCRs, *etc.* everyday, and the operators of unlicensed devises would seem incapable of knowing about them, particularly since they transmit no RF signal that a "smart" device might be able to sense. The people using *such* equipment cannot be assumed to have the technical expertise to recognize what might be causing interference so that they could take appropriate action.

- Should any antenna requirements be imposed? Can technologies such as "smart *antennas'*, which automatically change their directivity as necessary, *assist* unlicensed devices in sharing the TV bands? Should unlicensed devices be required to use an integrated transmitting antenna and be prevented from using external amplifiers and antennas?

It is absolutely necessary to impose antenna restrictions where a device is limited by a certain field strength *a?* a certain distance. Otherwise a device could be *shown* to be in compliance with the field strength limitation and then be made to be *out of* compliance by using an external amplifier or a higher gain antenna. This fact is independent of the frequency band being used, but would be particularly important in the television bands. where there is so much for harmful interference.

NEIL M. SMITH

April 17,2003