

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

In the Matter of)	
)	
Technological Advisory Council (TAC))	ET Docket No. 13-101
White Paper and Recommendations for)	
Improving Receiver Performance)	

**COMMENTS OF
THE NATIONAL ASSOCIATION OF BROADCASTERS**

I. Introduction

The National Association of Broadcasters (NAB)¹ hereby responds to the Office of Engineering and Technology’s *Public Notice* (Notice)² soliciting comment on the recently released FCC Technological Advisory Council (TAC) White Paper (TAC White Paper or White Paper).³ NAB commends the TAC for its timely completion of a comprehensive white paper that recommends interference limits policy as a way to address receiver performance with limited regulatory intervention. The TAC process that

¹ NAB is a nonprofit trade association that advocates on behalf of local radio and television stations and broadcast networks before Congress, the FCC and other federal agencies, and the courts.

² Public Notice, “Office of Engineering and Technology Invites Comment on Technological Advisory Council (TAC) White Paper and Recommendations for Improving Receiver Performance,” ET Docket No. 13-101 (rel. April 22, 2013).

³ FCC TAC Working Group on Spectrum and Receivers, *Interference Limits Policy -- The use of harm claim thresholds to improve the interference tolerance of wireless systems*, Version 1.0 (rel. Feb. 6, 2013), available at: <http://transition.fcc.gov/bureaus/oet/tac/tacdocs/WhitePaperTACInterferenceLimitsv1.0.pdf>.

led to the development of the White Paper has been deliberate, fair and measured. NAB is pleased to be included in this process and have the opportunity to comment here.

Interference concerns are becoming increasingly more challenging as both new and existing spectrum users desire more access to spectrum for wireless services. It has long been recognized that receiver performance has a role in mitigating interference as well as controlling out-of-band emissions from transmitters. The TAC White Paper offers an innovative proposal – an interference limits policy – to dealing with the receiver-centered aspect of interference mitigation. While useful for many applications, we believe that an interference policy alone may not be enough to improve interference rejection performance in the case of “decoupled” receivers like those employed in the broadcast space. In these comments, NAB provides some analysis of the difficult decoupled receiver problem and explains why an interference limits policy alone may not be sufficient. We also provide input on how the process should move going forward.

II. Broadcast Receivers Are “Decoupled” From Licensees and May Require Further Consideration Outside of an Interference Limits Policy

Broadcast receivers are part of a class of receivers known as “de-coupled” receivers. Broadcast licensees have no control over “the design, sale or operation of receivers used with their system.”⁴ As a result, and as noted in the White Paper, “[t]here is a risk that decoupled receiver manufacturers could sell devices that fail even for signals below the harm claim threshold.”⁵ Therefore, an interference limits policy alone may not be adequate to achieve interference-free reception for broadcast television and other services that rely on decoupled receivers.

⁴ TAC White Paper at 34.

⁵ *Id.*

TAC suggests that for the decoupled receiver case “it may be desirable to augment harm claim thresholds with explicit receiver performance specifications that commit the manufacturer, either voluntarily or by FCC mandate, to acceptable performance levels for individual devices.”⁶ It has long been NAB’s position that voluntary receiver standards are helpful to limit interference problems.⁷ We have been strong supporters of the Advanced Television Systems Committee’s (ATSC) “Recommended Practice” for performance of broadcast DTV receivers. The ATSC program resulted in adoption of a Recommended Practice in 2004,⁸ and over the years, it has kept pace with both developments in receiver technology and the television interference environment.

Reliance on the ATSC Recommended Practice for guiding receiver manufacturers on appropriate receiver performance metrics has worked well in large part because television bands primarily contain television broadcast transmissions. In the near future, more intense spectral occupation of the TV bands by a variety of different types of users may jeopardize this otherwise adequate approach, as new entrants, including wireless broadband and unlicensed devices, occupy adjacent frequencies that were previously unused.

⁶ TAC White Paper at 34.

⁷ See Joint Comments of MSTV and NAB in ET Docket 03-65, at 2 (filed July 21, 2003) (noting that “in an open system such as broadcasting, in which broadcasters have no control over the devices that are used to receive the transmitted signals, there is a need for greater coordination and some form of standardization to ensure that television sets purchased by consumers are able to adequately receive over-the-air broadcast signals.”).

⁸ “ATSC Approves Recommended Practice for DTV Receivers,” June 21 2004, available at <http://www.atsc.org/cms/index.php/communications/press-releases/130-atsc-approves-recommended-practice-for-dtv-receivers>.

This concern is echoed in both the White Paper⁹ and a recent Government Accountability Office (GAO) report on receiver performance, which notes that “repurposing of spectrum, either from a prior use or from no use, often gives rise to concerns over interference, concerns that involve receiver performance because incumbent services have manufactured receivers to operate without interference problems in the current environment.”¹⁰ The GAO Report also notes that “there is no business case” for manufacturers of decoupled receivers to build more robust receivers.¹¹

With these concerns in mind, NAB continues to prefer voluntary standards for receiver performance. But with the expected increase of new users and services in or near the television band – specifically white space devices and wireless broadband – the Commission may need to consider some receiver performance standards that encourage manufacturers to improve rejection of out-of-band emissions.

III. The Use of Multi-Stakeholder Groups is an Effective Tool, But the FCC’s Role in Such Groups Going Forward Needs Further Examination

NAB supports using multi-stakeholder groups to further examine and evaluate appropriate harm claim thresholds under an established interference limit policy

⁹ TAC White Paper at 34 (“[W]hen the block across the boundary from decoupled receivers or an unlicensed service is now quiet but foreseen to increase its energy levels, at least self-certification is necessary. If there is a concern that manufacturers will not design their products to adequate performance levels, the FCC may need to impose receiver mandates.”).

¹⁰ GAO, “Spectrum Management: Further Consideration of Options to Improve Receiver Performance Needed,” at 26 (rel. Feb. 2013) (GAO Report), *available at* <http://gao.gov/products/GAO-13-265>.

¹¹ GAO Report at 25.

framework. Specifically, a good starting point may be a pilot program targeted to a specific band of frequencies and spectrum user community.

Multi-stakeholder organizations have been used in many industries and endeavors for consensus-driven decision-making. In the development of the digital television service eco-system, ATSC essentially fulfilled the role of a multi-stakeholder group in creating its Recommended Practice on Receiver Performance. A similar version of that Recommended Practice could be created to document more robust performance requirements for receivers, taking future interference sources into account (such as widespread wireless broadband service and proliferation of unlicensed devices in the TV bands). The representative participants in this process would need to be expanded beyond the conventional television industry and should include the new entrants operating in or adjacent to the TV bands.

The principal issue with a multi-stakeholder group for developing harm claim thresholds under an interference limits policy framework is whether spectrum competitors will work cooperatively in a consensus-driven manner to establish the desired thresholds. NAB notes that representatives of different wireless services may not have the same vision or goals and are driven by different business imperatives. The proper role of the FCC in such a multi-stakeholder group would also need to be defined. Whether the appropriate role for the FCC is one of mere monitoring, interested oversight or active participation is an open question. As a practical matter, the appropriate role may be determined as the process goes forward, and the need for any active FCC participation, or lack of such need, may become obvious as discussions progress.

IV. A One-Size-Fits-All Approach to Interference Limits Policy is Overly Simplistic

NAB believes that the use of a single, one-size-fits-all, interference limits policy approach to cover all wireless services, without regard to their type or mode of operation, is overly simplistic and unlikely to achieve the desired outcome. There are a number of technical reasons why different services may require different protections or harm claim thresholds. In fact, even within a single service, there may be different requirements. As NAB has pointed out in the context of adjacent television and broadband services, there are differences in protection needed even between uplinks and downlinks and between FDD and TDD systems that must be considered.¹² The proposed regulatory regime using harm claim thresholds is a new untested concept that requires full evaluation, further technical study and considerable refinement before it can be considered for adoption. In particular, the one-size-fits-all approach needs additional careful study.

NAB also suggests that the current Part 15 out-of-band limits for unlicensed devices be a specific area of further study. Earlier TAC work pointed out that the current 200 uV/m limit for emissions in the 216-960 MHz band contained in Sections 15.109 (unintentional radiators) and 15.209 (intentional radiators) of the rules may be problematic for digital television service. The 200 uV/m is equivalent to a level of 46 dBu or a level 5 dBu higher than a DTV signal level at a television station's contour. These current Part 15 levels may also prove problematic to new wireless operations in the band, such as LTE. The Part 15 out-of-band levels have not changed in more than thirty

¹² See Comments of NAB in GN Docket No. 12-268, at 10-11 (filed June 14, 2013); see also Reply Comments of NAB in GN Docket No. 12-268, at 3-8 (filed June 28, 2013).

years, and with the introduction of digital modulation for Part 15 the out-of-band emissions are much more likely to result in broadband emissions that cause interference to licensed services.¹³ NAB therefore believes that any interference limits concept begin with, or at least take into account, a study of the current Part 15 levels to determine if adjustments should be made.

V. A Central Repository for Receiver Standards and Specifications Can Work, But Practical Issues Need to be Addressed

NAB supports the FCC implementation of a web-accessible repository of existing receiver standards, and a voluntary repository of receiver specifications for existing receivers. As noted in the Public Notice and recounted in the GAO Report, the TAC “found that industry and government receiver standards and recommended practices may exist but are often unknown to manufacturers and users operating in adjacent bands.”¹⁴ Thus, a central source for such documents would likely help receiver designers and government regulators alike. However, as often is the case in moving from theory into practice, resources would be required, from both government and industry, to implement and maintain such a database and accessible repository.

VI. Conclusion

The TAC White Paper is a significant first step toward mitigating harmful interference at the receiver level. The primary recommendation of the White Paper, a

¹³ With analog systems out-of band emissions at the Part 15 limits tended to be narrow “spurs” or frequency spikes at discrete frequencies and were only problematic if these spikes landed on a particular frequency that was being used by another service. With digital and wideband emissions, out-of-band emissions tend to be broadband signals that go across wide frequency bands.

¹⁴ GAO Report at 35.

novel interference limits policy approach, strikes an appropriate balance between explicit receiver standards in all cases and a laissez faire approach. As these comments explain, however, an interference limits policy may not be adequate in all cases, particularly with decoupled receivers. NAB looks forward to working with the TAC and the Commission as this important process moves forward.

Respectfully submitted,

A handwritten signature in black ink that reads "Scott Goodwin". The signature is written in a cursive, flowing style.

Lynn Claudy
NAB Technology

Victor Tawil
Bruce Franca
NAB Strategic Planning

Jane E. Mago
Jerianne Timmerman
Scott Goodwin

NATIONAL ASSOCIATION OF
BROADCASTERS
1771 N St., NW
Washington, DC 20036
(202) 429-5430

July 22, 2013