

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

In the Matter of)	
)	
Additional Spectrum for Unlicensed Devices)	ET Docket No. 02-380
Below 900 MHz and in the 3 GHz Band)	

**REPLY COMMENTS OF THE
CELLULAR TELECOMMUNICATIONS & INTERNET ASSOCIATION**

Michael F. Altschul
Senior Vice President, General Counsel

Diane Cornell
Vice President for Regulatory Policy

Christopher Guttman-McCabe
Director for Regulatory Policy

**CELLULAR TELECOMMUNICATIONS
& INTERNET ASSOCIATION**

1250 Connecticut Ave., N.W.,
Suite 800
Washington, D.C. 20036
(202) 785-0081

Its Attorneys

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SUMMARY

While CTIA supports the goal of encouraging more efficient use of spectrum – and CTIA believes that the broadcast industry is certainly an inefficient user of spectrum – the Commission must not lose sight of its fundamental obligation to protect users of licensed services against interference. Unless the Commission satisfies this basic tenet of spectrum management as a prerequisite to developing a new framework for underlay unlicensed use, any initiative to explore the concept of license underlays would do little more than generate uncertainty and controversy. If the FCC wants spectrum licensees to invest capital to build out their networks, innovate, and become ever more efficient, it needs to ensure licensees are protected against interference.

As a first step, the Commission must clearly and exhaustively define spectrum users' rights in terms of spectrum rights that are excluded, prohibited, or limited. Next, before any consideration of unlicensed underlays in licensed bands, a framework for protecting licensed users must be developed and fully tested. Any proposed interference threshold must be conclusively demonstrated, based on actual tests, to protect licensed operations from interference before being implemented in any band. With regard to unlicensed underlay operations in the broadcast bands, the Commission should first focus resources on clearing the upper 700 MHz band, not add uncertainty to the band. Finally, the Commission must take into consideration the future use of this band by both the CMRS industry and the Public Safety community. The Commission's consideration of unlicensed underlays that could cause interference to future mobile Public Safety and CMRS operations in the 700 MHz band simply does not make sense at this time.

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The Cellular Telecommunications & Internet Association (“CTIA”)^{1/} hereby submits these Reply Comments regarding the above-captioned *Notice of Inquiry*,² which examines the possibility of permitting unlicensed devices to operate in additional frequency bands – the TV broadcast band and the 3650-3700 MHz band. CTIA believes that conducting this inquiry before the Commission has developed an effective framework for protecting existing users from interference is, in essence, putting the cart before the horse. While CTIA supports the goal of encouraging more efficient use of spectrum, the Commission must not lose sight of its fundamental obligation to protect licensed users against interference. Interference protection is necessary to provide licensees with certainty as they continue to build out networks, innovate and become ever more efficient. More importantly, interference protection is necessary for consumers, who purchase services in reliance on that protection.

^{1/} CTIA is the international organization of the wireless communications industry for both wireless carriers and manufacturers. Membership in the association covers all Commercial Mobile Radio Service (“CMRS”) providers and manufacturers, including cellular, broadband PCS, ESMR, as well as providers and manufacturers of wireless data services and products.

² *Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3GHz Band; Notice of Inquiry*, ET Docket 02-380, FCC 02-328 (Dec. 20, 2002) (“NOI”); *Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band; Order Granting Extension of Time*, ET Docket No. 02-380, Public Notice DA 03-1022 (March 31, 2003).

I. THE FCC MUST NOT LOSE SIGHT OF ITS FUNDAMENTAL OBLIGATION TO PROTECT LICENSED USERS AGAINST INTERFERENCE.

While CTIA supports the goal of encouraging more efficient use of spectrum – and CTIA believes that the broadcast industry is certainly an inefficient user of spectrum – the Commission must not lose sight of its fundamental obligation to protect users of licensed services against interference. Unless the Commission satisfies this basic tenet of spectrum management as a prerequisite to developing a framework for unlicensed use, any initiative to explore the concept of license underlays would do little more than generate uncertainty and controversy, leading to the opposite of the intended impact – harm to consumers and inefficient use of spectrum.

If the FCC wants spectrum licensees to invest capital to build out their networks and innovate and become ever more efficient, it needs to ensure licensees are protected against interference. The first step should involve defining licensees' rights. CTIA agrees with the Spectrum Policy Task Force's conclusion that the Commission must clearly and exhaustively define spectrum users' rights in terms of spectrum rights that are excluded, prohibited, or limited.³ This analysis should precede any Commission effort to apply unlicensed underlays to licensed bands.

In its comments on the Task Force Report,⁴ CTIA supported the Task Force's conclusion that the exclusive use model should be applied to most spectrum, particularly to bands (such as those below 5 GHz) where incumbent licensee use of the spectrum is considerable and a high demand for a relatively small amount of available spectrum exists.⁵ The exclusive use model,

³ See *Spectrum Policy Task Force Report*, ET Docket No. 02-13 ("SPTF Report") at 17 (rel. Nov. 7, 2002).

⁴ See *Comments of the Cellular Telecommunications & Internet Association*, Spectrum Policy Task Force Report, ET Docket No. 02-13 ("*CTIA Task Force Report Comments*") at 14 (filed Jan. 27, 2003).

⁵ See SPTF Report at 38.

with its “property-like” rights of exclusivity, flexibility and transferability, creates a strong incentive to put spectrum to its highest valued use and can provide a clear framework for market-based assignments and negotiation of access rights among competing users.⁶ However, the recognized benefits of an exclusive use model will not occur if the rights and responsibilities of licensed users, including the essential right to operate free of harmful interference, are not clearly defined and effectively enforced. They particularly will not occur if the Commission is considering the authorization of unaffiliated, unlicensed underlays in “exclusive use” bands.

II. IT IS PREMATURE FOR THE COMMISSION TO EVALUATE WHETHER UNLICENSED USE SHOULD BE EXPANDED IN THE BROADCAST BAND

A. The Commission Should First Establish A Framework And Methodology That Ensures Unlicensed Uses Will Not Interfere With Licensed Users

The tremendous effort that the Spectrum Policy Task Force has expended in developing the Task Force Report – a significant first step in the spectrum policy reform process – must be applauded. A great deal of creative thinking went into development of the Report. Many complicated and far-reaching concepts were introduced. However, challenging work remains to be done to develop the framework to pursue some of the novel concepts introduced in the Report.

In its Comments on the Task Force Report, CTIA emphasized that it would not be appropriate to consider any unlicensed uses in licensed bands unless a framework is in place that ensures existing users are protected from interference. CTIA agreed with the Task Force that in order to ensure incumbent users can be protected against interference, it is essential to establish a more quantitative approach to interference management that accurately reflects real-time spectrum use and provides incumbent licensees with greater certainty regarding the right to be

⁶ *See id.*

protected from interference. While CTIA supported the general concept of establishing of a clearly defined “threshold” to set maximum permissible levels of interference, it noted that the precise meaning of the Report’s “interference temperature” concept was unclear, and required significant additional work.⁷ CTIA emphasized that it cannot support the concept without understanding how the theory would be rendered into practice.⁸ Any proposed interference threshold must be conclusively demonstrated, based on actual tests, to protect licensed operations from interference before being implemented in any band.

None of these steps have been even initiated, much less fully explored, at this early stage. CTIA submits that until this essential preliminary conceptual and testing work has been completed, it does not make sense for the Commission to explore an underlay approach in any specific band. The Commission’s consideration of unlicensed underlays in this proceeding also is premature in that the technologies the FCC is relying on are still on the drawing board and have not yet been tested in a real world environment. Accordingly, the Commission should suspend consideration until such time as a framework for protecting users against interference has been developed, a testing methodology has been validated, and real world testing can be completed.

B. The Commission Should Recognize That Underlays Will Contribute To Noise Floor And Impact Service, Both Now And In The Future

Unlicensed operations in licensed bands will contribute to the noise floor. These underlays will “degrad[e] the service quality of licensed services and inhibit[] technological

⁷ *CTIA Task Force Comments* at 11.

⁸ *Id.* at iii.

advances that increase operating efficiency.”⁹ At a minimum, the Commission should complete a comprehensive study of the noise floor before setting a policy for unlicensed uses in licensed spectrum. Such a comprehensive study of the noise floor has been urged by the Commission’s Technological Advisory Council and the Task Force, which recommended that the Commission “adopt a standard methodology for measuring the noise floor.”¹⁰ The Task Force Report further advised that any noise floor study “should include actual spectrum measurements of the RF noise/interference floor.”¹¹

Moreover, with regard to the future impact of any unlicensed underlays in licensed bands, the Commission should recognize that interference tolerances are not static. As Cingular argued in its Comments, “[l]icensees should be given incentives to take advantage of these tolerance changes and to use their spectrum more efficiently.”¹² License underlays may undermine these incentives. As Cingular stated, “[r]equiring incumbents to share spectrum with new unlicensed uses, however, has the opposite effect. The Commission should ensure that sharing does not penalize the most innovative and efficient users of radio spectrum. To accomplish this, the Commission must pay careful attention to the actual noise floors and operating conditions in existing and to-be-deployed radio systems.”¹³

Instead, in this proceeding, the Commission is putting the cart before the horse. It is initiating an investigation of unlicensed underlays that could cause interference into licensed

⁹ See *Comments of Cingular Wireless, LLC, Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3GHz Band*; Notice of Inquiry, ET Docket 02-380, FCC 02-328 (“*Cingular Comments*”) at 5 (filed April 17, 2003).

¹⁰ See *Cingular Comments* at 5 (citing SPTF Report at 28).

¹¹ *Id.*

¹² See *Cingular Comments* at 6.

¹³ *Id.* at 6.

operations before it defines either licensee's rights with regard to interference protection, before it completes a comprehensive study of the noise floor, and before it establishes a framework and a testing methodology for protecting users against interference.

III. THE FCC SHOULD FOCUS RESOURCES ON CLEARING THE UPPER 700 MHZ BAND, NOT ADDING UNCERTAINTY TO THE BAND

CTIA submits that this is the wrong time to consider the possibility of permitting unlicensed devices to operate in the broadcast bands. As the Commission is aware, Congress has mandated a transition to digital television in the broadcast bands. At some point in the future, broadcast operations will be confined to channels 2-51, while channels 52-69 will be reallocated to other uses, including Public Safety and CMRS communications. The Commission should continue to focus significant resources on this transition. However, as Commissioner Martin elaborated in his separate statement to the Notice of Inquiry in this proceeding, "opening this inquiry into the TV broadcast bands at this time may create additional uncertainty and potentially delay the digital transition."¹⁴ CTIA believes this inquiry will create additional uncertainty that could indeed further delay the digital transition.

To date, the speed of the DTV transition has been frustratingly slow. Any more uncertainty will only add to the delay, deferring use of a significant block of spectrum in the 700 MHz band by Public Safety operations until some distant point in the future, resulting in significant harm to the public interest. Moreover, the Commission is impeding delivery of the 700 MHz band to Public Safety in order to benefit a technology that is not yet commercially available.

¹⁴ See *Separate Statement of Commissioner Kevin J. Martin, Approving in Part and Dissenting in Part*, NOI at 17.

IV. THE COMMISSION MUST TAKE FUTURE USES OF THIS BAND INTO CONSIDERATION

In addition to delaying the digital television transition, the action considered by the Commission in this proceeding also could harm future uses of the band. The Commission instead should follow the physician's motto in this proceeding, "first, do no harm." A portion of the broadcast spectrum has been allocated for CMRS and Public Safety use.¹⁵ The harm that could occur to these operations as a result of the action considered by the Commission in this proceeding would have a direct adverse impact on consumers.

As Motorola stated in its Comments, "opportunistic use by unlicensed devices may be feasible, but not in spectrum where mobile systems operate. Because the locations of mobile handsets are unpredictable, unlicensed use of licensed mobile spectrum presents unique difficulties that prevent adequate safeguards to protect licensed operations from interference. Therefore, the Commission should not allow any increased unlicensed use of broadcast spectrum where mobile operation exist or will be deployed, i.e., in the 470-512 MHz or 698-806 MHz bands."¹⁶

The uncertainty and harm that will occur as the Commission considers unlicensed operations in the licensed bands, including the broadcast band, will continue for both licensed and unlicensed operators, if additional unlicensed underlay operations were to be authorized without ensuring adequate interference protection. For licensed operators, it will be hard to

¹⁵ CTIA and others have advocated in multiple proceedings that the 700 MHz band should be reallocated for Homeland Security and Public Safety uses. If this reallocation were to occur, the danger of introducing unlicensed operations into the band now would be magnified by the difficulty of predicting a future user environment. In light of the current 800 MHz proceeding, the Commission should be wary of creating any additional uncertainty, particularly regarding potential interference, into future Public Safety bands.

¹⁶ See *Comments of Motorola, Inc.*, Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3GHz Band; Notice of Inquiry, ET Docket 02-380, FCC 02-328 (*Motorola Comments*) at 2, 5 (filed April 17, 2003).

figure out if the underlay unlicensed operation is causing interference, or whether it is from some other source. As Cingular detailed in its comments, “it would be difficult or impossible to assess whether underlay operations are causing interference in any particular situation. Licensees would have to police the interference issue and pinpoint the source(s) of interference. . . . The interference emanating from multiple unlicensed devices may present itself as degraded service quality (also resulting in diminished capacity and coverage), and would be difficult to prove, yet may still have adverse consequences for the licensee.”¹⁷ Moreover, it appears that interference cannot be avoided by diligence on behalf of the unlicensed operator. As Motorola stated in its comments, “an unlicensed device would not be able to determine in advance whether a transmission would interfere with licensed operations. Therefore, due to the dynamic nature of mobile operations, there is no readily apparent technological solution that would enable unlicensed secondary use without causing harmful interference to licensed services.”¹⁸ At a time when carriers are focusing significant resources on service quality, this result is untenable.

With no clear way for licensed operators to determine who is causing interference, and no clear way for unlicensed operators to determine if they are going to cause interference, it seems incongruous that the Commission should proceed. As APCO emphasized, this is especially true in that a portion of the band in question that has been reserved for Public Safety.¹⁹ As the Commission is aware from the current 800 MHz proceeding, and as APCO stated in its Comments, “public safety personnel depend upon reliable, ubiquitous, and interference-free

¹⁷ *Cingular Comments* at 9.

¹⁸ *Motorola Comments* at 5.

¹⁹ *See Comments of APCO*, Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3GHz Band; Notice of Inquiry, ET Docket 02-380, FCC 02-328 (“*APCO Comments*”) at 1 (filed April 17, 2003).

radio communications to protect safety of life health and property. Thus, they cannot tolerate even the slightest potential for interference.”²⁰

The Commission’s consideration of the grant of authorization of unlicensed underlays that could cause interference to future Public Safety and CMRS operations in the 700 MHz band does not make sense at this time. First, if at some point in the future unlicensed operations are causing interference to operations in the broadcast band (particularly to operations that were not occurring when the underlays were authorized – i.e., Public Safety or CMRS communications) it will be extraordinarily difficult to pull back those unlicensed operations once they are commercially available and utilized by consumers. Second, and more surprising, is that the Commission runs the risk of creating a sequel to the 800 MHz proceeding in which is it currently embroiled, with another Public Safety/commercial operations interference scenario that could take years to unravel.

CTIA submits that the better approach would be for the Commission to focus resources on allocating additional spectrum for unlicensed uses in the 5 GHz band, as the Commission has recently proposed.²¹ Ericsson notes that “it is better to allocate the lower frequency bands for wide area licensed applications and higher bands for unlicensed applications.”²² Cingular agrees that “any additional allocation to unlicensed devices would be in the spectrum above 5 GHz.”²³

²⁰ *Id.* at 2.

²¹ *Revisions to Parts 2 and 15 of the Commission Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices*, Notice of Proposed Rulemaking, ET Docket No. 03-112 (rel. May 15, 2003).

²² *See Comments of Ericsson Inc.*, Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3GHz Band; Notice of Inquiry, ET Docket 02-380, FCC 02-328 (“*Ericsson Comments*”) at 3 (filed April 17, 2003).

²³ *See Cingular Comments* at 10.

As Ericsson stated in its Comments, “the Commission must take into consideration the particular capabilities, applications, spectrum use properties, and the spectrum requirements of devices when making its allocation decisions. . . . An important element of effectively achieving the benefits of roaming, reduced complexity of equipment, affordability of devices, and economies of scale is the controlled deployment of unlicensed devices.”²⁴ Concentrating future unlicensed allocations in 5 GHz and above may alleviate some of the concerns raised in this proceeding.

²⁴ See *Ericsson Comments* at 2,3.

V. CONCLUSION

In this proceeding, the Commission has placed the cart before the horse. If the FCC wants spectrum licensees to invest capital to build out their networks, innovate, and become ever more efficient, it needs to ensure licensees are protected against interference. Before pursuing the type of unlicensed use considered in this Notice of Inquiry, the Commission should first clearly and exhaustively define spectrum users' rights. Before considering authorization of any underlays, the concept of the "interference threshold" must be much more fully explored, and ultimately conclusively demonstrated, using actual tests.

Respectfully submitted,

/s/ Diane J. Cornell

CELLULAR TELECOMMUNICATIONS
& INTERNET ASSOCIATION

1250 Connecticut Ave., N.W., Suite 800
Washington, D.C. 20036
(202) 785-0081

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