

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

**In the Matter of:** )  
 ) **ET Docket No. 02-135**  
**Spectrum Policy Task Force Report** )

To: The Commission

**REPLY COMMENTS  
OF  
WEBLINK WIRELESS, INC.**

WebLink Wireless, Inc.("WebLink"), by its attorneys and pursuant to Federal Communications Commission ("FCC" or "Commission") Public Notice, FCC 02-322 dated November 25, 2002, and modified by DA 02-3400 dated December 11, 2002, hereby submits its Reply Comments in connection with the Spectrum Policy Task Force Report ("Report"). The Report was released by the Commission on November 15, 2002. Comments were filed on January 27, 2003.

In support of its Reply Comments, the following is respectfully shown.

**I. INTRODUCTION**

The Comments in this proceeding reflect the varying interests of the filers; however, generally the commenters, including WebLink, urge caution in changing spectrum policies. In addition, many parties oppose the Spectrum Policy Task Force ("Task Force") proposal of unlicensed operations in underlays or easements in exclusively licensed spectrum. Instead, the prevailing recommendation of the parties is to allocate more spectrum to unlicensed

operations, particularly in the bands above 50 GHz. Further, there appears to be much apprehension about the concept of interference temperature and noise floor measurement. Many commenters raise questions about the ability to get accurate calculations for each frequency, each market and each set of circumstances. Finally, many commenters question the Task Force's confidence in innovative new technologies, such as frequency agile radios and smart receivers, to overcome interference issues caused by underlays or frequency easements. The commenters state that this equipment is not widely available and is unlikely in reality to prevent interference with the level of assurance presented by the Task Force. WebLink agrees with those views.

## **II. DISCUSSION**

### **A. There Should Be No Unlicensed Operations as Underlays or Easements in Exclusively Licensed Spectrum.**

As a general principle, the concept of unlicensed operations in underlays or easements in exclusively licensed spectrum caused consternation to many commenters. CTIA, for example, states that “a grant of ‘retroactive’ flexibility to an incumbent licensee not subject to market incentives for an entirely different service than contemplated in the original allocation and licensing scheme” may produce spectrum inefficiency, interference concerns and inequities that would harm competition and consumers.<sup>1</sup> Cingular Wireless LLC (“Cingular”) also states that service flexibility should be granted at the time of the allocation. Changing the service flexibility after an auction is held changes the nature of the spectrum and degrades the auction process.<sup>2</sup>

---

<sup>1</sup> Comments of CTIA at 5.

<sup>2</sup> Comments of Cingular Wireless LLC at 12.

AT&T Wireless Services, Inc. ("AT&T") states that retrospectively applying spectrum flexibility would provide unfair and unlawful "windfalls and unjust enrichment" at the licensee's expense.<sup>3</sup>

In that regard, at least one unlicensed service proponent states that "unlicensed spectrum has the advantage that there is no cost or regulatory burden to obtain use of spectrum."<sup>4</sup> Unfortunately, in the underlay or easement scenario, the licensee would pay the spectrum cost and bear the regulatory burden -- along with the interference -- while an unlicensed user would have no cost. As a further irony, some proponents of unlicensed operations are requesting "reasonable protection from out-of-band interference, as well as from later-approved licensed services."<sup>5</sup>

Sprint Corporation ("Sprint") also raises the issue of retrospective flexibility, stating that adding additional interference **after** the network is built out, reduces capacity and degrades coverage.<sup>6</sup> WebLink had made a similar point in its Comments by stating that after the spectrum is bought and the network infrastructure is in place is no time to allow unlicensed users to begin to operate in underlays or easements.<sup>7</sup>

Further, another commenter warns, "From the current 800 MHz proceeding before the Commission, we have learned that it is very difficult to resolve interference issues that cover significant portions of spectrum after the fact."<sup>8</sup>

---

<sup>3</sup> Comments of AT&T Wireless Services, Inc. at 6.

<sup>4</sup> Comments of Texas Instruments at 6.

<sup>5</sup> Comments of Microsoft Corporation at 8; See also, Comments of The Wi-Fi Alliance at 5; Comments of UTAM, Inc. at 10

<sup>6</sup> Comments of Sprint Corporation at 13.

<sup>7</sup> Comments of WebLink Wireless, Inc. at 6.

<sup>8</sup> Comments of Industrial Telecommunications Association at 10-11 ("ITA").

Many commenters agree with the Task Force in that the overriding necessity in the proposal for unlicensed users requires that the Commission clearly define existing licensees's spectrum rights, if it is going to consider the Spectrum Task Force recommendations.<sup>9</sup> The overwhelming opinion of exclusive licensees is that their licensee rights include continued exclusivity. Asserting that exclusive licensees indeed have rights which should be protected from interference and from unlicensed users in exclusive spectrum, Sprint states that although the Communications Act makes it clear that licensees do not own the spectrum licenses, "courts have recognized that licensees hold a substantial, legally protected interest in their licenses."<sup>10</sup> Sprint cites the Commission's brief in FCC v. NextWave Personal Communications with respect to those rights: "While [licensees] must obey FCC rules and make the required [auction] payments, the FCC must protect [licensees'] exclusive right to the spectrum and refrain from authorizing others to use that spectrum."<sup>11</sup>

On that basis, the Commission is obviously aware of its responsibility to protect licensee exclusivity against the use of the spectrum against unlicensed users absolutely, without reference to interference temperature and noise floor measurement.

## **B. The Concepts of Interference Temperature and Noise Floor Measurement Require More Analysis**

### **1. Interference Temperature**

At least one commenter, Cingular, states that the creation of underlays and easements to require licensees to share spectrum by use of interference temperature is inconsistent with 47

---

<sup>9</sup> Comments of Motorola, Inc. at 7-8; Comments of BellSouth Corporation at 5 ("BellSouth").

<sup>10</sup> Sprint at 9.

<sup>11</sup> Sprint at 10, citing FCC v. NextWave Personal Communications, Nos. 01-653 and 01-657, Brief for the Federal Communications Commission at 46 n.10 (May 6, 2002).

U.S.C. §301 since it eliminates licensing for many users.<sup>12</sup> Cingular also asserts that there are "fundamental problems with equating interference and noise temperature. The idea is theoretically naive and will be technically unworkable."<sup>13</sup>

Most commenters, however, urge caution regarding the concept of interference temperature. Many are of the same view as Wireless Communications Association International, Inc. ("WCA"), who states that "there would be substantial practical problems in applying the concept."<sup>14</sup>

Equipment manufacturers, such as Lucent Technologies Inc. ("Lucent") and Motorola, Inc. ("Motorola") discuss the difficulties of translating theory into reality. Lucent warns that interference temperature methodology "could come at a high price" with an "adverse impact on incumbent, licensed providers" who "would be compelled to incur added limitations and associated greater costs in the design of their systems and the use of their assigned spectrum." Lucent also advises that because there is a potential for significant degradation from external interference, that Commercial Mobile Radio System ("CMRS") spectrum should be unencumbered and that spectrum sharing is at best problematic.<sup>15</sup> Motorola identifies technical hurdles that would have to be overcome before the concept of interference temperature would yield benefits. Although it supported further analysis and study, Motorola says that this concept presents "a host of complex technical problems that must be solved before it can be implemented" and that the concept "is a long way from being ready for routine deployment."<sup>16</sup>

---

<sup>12</sup> Cingular Wireless LLC at 18.

<sup>13</sup> Cingular at 28.

<sup>14</sup> Comments of Wireless Communications Association International, Inc. at ii.

<sup>15</sup> Comments of Lucent Technologies Inc. at 3-4.

<sup>16</sup> Motorola at 13-14.

Most parties agree that substantial work must be done if the Commission intends to implement any aspects of this concept. In their Joint Comments, the Association for Maximum Service Television, Inc. and the National Association of Broadcasters ("MSTV" and "NAB") state that an initial metric must be established to measure the maximum permissible interference temperature; that there is no currently acceptable mechanism for measuring it; that there is no way for interference thermometers to determine the temperature at all locations covered by the transmission; that a real-time measurement throughout a service area would require an expansive grid of spectrum monitoring stations; that interference thermometers must measure temperature not only in the transmission bands, but also in adjacent bands for out-of-band emissions; that control measures must be adopted to make sure that unlicensed devices transmit below the acceptable limit; and that a solution for remedying interference must be put in place.<sup>17</sup>

The Telecommunications Industry Association ("TIA") asserts that the use of interference temperature to permit spectrum sharing by operators below the recommended temperature "is potentially problematic" because acceptance of an interference temperature above the noise floor subjects the "victim wireless system" to interference, while mitigation of the impact of additional interference requires a reduction in the "victim" system capacity; and the determination of the source of interference is difficult.<sup>18</sup>

Lockheed Martin Corporation ("Lockheed") states that in addition to "substantial uncertainty regarding the protections against harmful interference, undermining of the fundamental nature of exclusive allocation and degradation of the systems," the interference temperature model raises "numerous enforcement concerns." The questions of how the Commission will police harmful

---

<sup>17</sup> Joint Comments of The Association for Maximum Service Television, Inc. and the National Association of Broadcasters at 12-13.

<sup>18</sup> Comments of Telecommunications Industry Association at 8

interference, how the temperature exceeding transmitters will be identified and what type of remedial action could be taken by the Commission remains unclear. And the Task Force "has offered no recommendation on how to address this significant gap between theory and reality."<sup>19</sup>

Further, WCA urges caution with respect to a shift from a transmitter-oriented to a receiver-oriented standard for interference measurement, stating that the Commission "should not assume that the key to resolving harmful interference lies in filtering or other 'quick fix' modifications of receiver equipment."<sup>20</sup> Likewise, Motorola asserts that generic receiver standards "would be inappropriate because receiver performance specifications are so system dependent."<sup>21</sup>

Finally, BellSouth states that interference temperature will keep changing because of the flexible use environment, which raises questions of the design of networks if there is a multitude of different interference temperature levels.<sup>22</sup>

There are so many variables in this concept of interference temperature that any implementation of it would require much study, much testing and much time before it would be put into effect.

## **2. Noise Floor Measurement**

Many commenters conclude that noise floor measurement is the key to finding interference temperature, but that this measurement will be difficult to ascertain. Noise floor data does not exist today.<sup>23</sup> Cingular reports that the FCC Technological Advisory Council ("TAC") recognized that the FCC cannot engage in effective spectrum management until it has a "more complete understanding of radio noise environment" with "detailed analysis of available noise

---

<sup>19</sup> Comments of Lockheed Martin Corporation at 7-9. See also, Comments of Arraycom, Inc. at 12.

<sup>20</sup> WCA at 10.

<sup>21</sup> Motorola at v. See also, Sprint at 11-12.

<sup>22</sup> BellSouth at 10.

<sup>23</sup> Sprint at 15.

floor literature, the creation of detailed noise floor models and performance and verifications of simulations." <sup>24</sup>

Agilent Technologies, Inc. ("Agilent") agrees that a detailed study would be required, stating that "the study should include statistical measures of observed signals, burst length, time of occurrence, and frequency of occurrence."<sup>25</sup>

Many commenters raise questions with regard to such measurement. TIA attempted to sum it up by stating, "it is questionable whether a single (average) measure could practically be used over a finite area to accurately describe the noise environment."<sup>26</sup>

### **C. Innovative New Technologies Do Not Yet Exist.**

Many parties assert that innovative technologies promoted by the Task Force do not yet exist for practical application. As CTIA states, "'smart' technologies are still currently in the developmental stages, and at the present time have not been proven either technically or economically viable." Further, until those systems have been developed, commercialized and the interference avoidance techniques measured in the real world, software-defined radio should not be viewed as a cure-all. <sup>27</sup>

According to TIA, "the Commission must recognize that many of the technologies cited (e.g., opportunistic devices, software defined radios that are completely agile in terms of operating frequencies, bandwidths, and modulation formats and ultra wide band radios)" are not ready for commercial availability and are not likely to be available for some time. Further,

---

<sup>24</sup> Cingular at 32-33.

<sup>25</sup> Comments of Agilent Technologies, Inc. at 6.

<sup>26</sup> TIA at 8.

<sup>27</sup> CTIA at 12.

"allocations based on anticipated advances in technology are dangerous and should await the demonstrable existence of such technology at reasonable costs for widespread deployment."<sup>28</sup>

ArrayComm, Inc. ("ArrayComm") states that the Report envisions a future software defined radio ("SDR") that is agile as to protocol, modulation, center frequency and operating bandwidth. "Such a technology would require major technology advances to be feasible at consumer price points and form factors." ArrayComm adds, that even if it were available as the Task Force envisioned, it may not be suitable for all applications.<sup>29</sup> Likewise, QUALCOMM Incorporated ("QUALCOMM") is not impressed with SDR: "SDR is merely one method of implementing dynamic capabilities into a radio," but it stated that it is a complex, expensive and power dependent method. "It is unlikely that SDRs... will be implemented in commercial equipment." According to QUALCOM, it will be necessary to develop entirely new protocols and etiquettes to permit the types of frequency sharing envisioned by the Task Force.<sup>30</sup>

Additionally, some commenters worry that even if the smart-antenna equipment becomes available, it may not work. Agilent asserts, "The interference thermometer concept may prove to be incompatible with some smart-antenna technologies because the radiation pattern cannot be predicted at all points in space in a multipath environment."<sup>31</sup>

It is thus clear from these discussions that although there are future possibilities for new technologies that will prevent interference, they are not available now or even in the near future. The Commission should not assume that future technology will eliminate harmful interference in making its spectrum policies.

---

<sup>28</sup> TIA at 3.

<sup>29</sup> Comments of ArrayComm, Inc. at 11

<sup>30</sup> Comments of QUALCOMM Incorporated at 3-4.

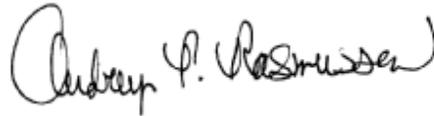
In sum, WebLink agrees with the majority of the commenters that the Spectrum Task Force Report offers new ideas for spectrum management, which will require much study prior to implementation and should not be applied to current exclusive licenses.

**CONCLUSION**

WHEREFORE, the foregoing having been duly considered, WebLink Wireless, Inc. respectfully requests that the Commission consider these reply comments.

Respectfully submitted,

**WEBLINK WIRELESS, INC.**



---

David L. Hill  
Audrey P. Rasmussen  
**ITS ATTORNEYS**

HALL, ESTILL, HARDWICK, GABLE, GOLDEN & NELSON, P.C.  
1120 20th Street, N.W.  
Suite 700, North Building  
Washington, D.C. 20036-3406  
Telephone (202) 973-1200  
Facsimile (202) 973-1212

Dated: February 28, 2003

---

<sup>31</sup> Aligent at 4.