

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	FCC 00-346
Biennial Review 2000 Staff Report)	

**Comments of the Wireless Communications Division
of the Telecommunications Industry Association**

1. Introduction

The Wireless Communications Division (“WCD”) of the Telecommunications Industry Association (“TIA”), at the request of the Federal Communications Commission, hereby submits its Comments to the Biennial Review 2000 Staff Report, pursuant to Section 1.430 of the Commission's rules for comment on the staff report and rule analysis released on September 19, 2000.¹ TIA is the principal industry association representing telecommunications equipment manufacturers and suppliers, including manufacturers of terrestrial mobile radio equipment.²

¹ Public Notice, *Biennial Review 2000 Staff Report Released*, 00-346, September 19, 2000.

² These comments were formulated under the auspices of the WCD Technical and Regulatory Issues Committee (“TRIC”). These comments reflect only the collective views of members of the TIA Wireless Communications Division. Moreover, these comments do not necessarily reflect the views of other divisions, other committees, or other members of TIA. Individual interested members of TIA may have differing views and may file on issues affecting them.

2. Biennial Review 2000 Staff Report Comments

The specific comments of WCD on headings contained in the Biennial Review 2000 Staff Report follow, with separate comments on Parts 2, 15, 22, 24, 90 and 101 identified. In some instances, there may be common areas that apply to more than one part or sub-part.

Part 2, Subpart B – Allocation, Assignment, and Use of Radio Frequencies

Part 2.1055 Measurements required: Frequency stability

In Part 2.1055(a)(2), FRS (Family Radio Service) transmitters are being examined based upon the criteria of –20 degrees to +50 degrees centigrade. Therefore, they should be identified in this paragraph.

SAR Push to Talk

A 50% duty cycle is presently applied to Part 90 devices that are push to talk. This does not seem fair considering in field use. We suggest more properly 15%.

Part 15 – Radio Frequency Devices

Composite Devices (Wireless Organizers)

An organizer which includes Cellular Service (Part 22), PCS Service (Part 24) and Bluetooth (Unlicensed ISM band) and also connects to a personal computer as a peripheral should only be subject to Certification under Parts 22, 24 and 15 for Intentional Radiators and not Part 15(B) as a PC Peripheral. It is suggested that the last paragraph in Part 15 - 2.1033(C) be moved to 2.1033(B).

A composite product which also can be attached to the PSTN should not require separate FCC ID numbers for transmitters and Part 68, (terminal attachment).

Part 15.121 Scanning receivers and frequency converters

In Part 15.121(b), there is a mistake that reads "...that are 38 dB or higher based upon a 12 dB SINAD...". The word "higher" should be "lower". Therefore, the wording should be corrected, otherwise, scanning receiver would be required to block only the very strong signals and pass the signals intended to be blocked.

Part 15.19 Labeling Requirements

Rule Part 15.19 can be amended by adding an additional Declaration of Conformity label after Section (b)(ii). The new Section would be as follows:

Section (b)(iii)

Devices authorized under Declaration of Conformity may use the label below if the use is other than home or office:



Part 22 – Public Mobile Services

Units of Power measurement in Parts 22 and 24

Part 22 specifies power units in ERP (Effective Radiated Power) while Part 24 specifies EIRP (Effective Isotropic Radiated Power). The difference is a calculation which renders one power reading 2.14 dB lower than the other. This is confusing to our customers since it appears that a dual mode phone transmits at different power levels at different frequencies. While manufacturers realize that radio waves propagate differently above and below 1 GHz, having to use two different units of measurements in the same device is confusing to those who don't possess a scientific or engineering background. The WCD recommends that the FCC adopt EIRP as the unit of measure for Parts 22 and 24.

The WCD also recommends that EIRP be used universally in all parts of the FCC Rules to end confusion.

Antenna Polarization Requirements In Parts 22 and 24

Part 22 specifies that cellular base station antennas should be vertically polarized. The WCD recommends that Part 22 as well as Part 24 allow either vertical or horizontal polarization for consistency.

Part 24 – Personal Communications Services

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Part 90 – Private Land Mobile Radio Services

Part 90.210 Emission masks

An emission mask is often used to limit all unwanted emissions. The mask serves to provide a power spectral density limit and thus it is necessary to perform emission assessments using a specified reference bandwidth. Further, the International Telecommunications Union (ITU) Radio Regulations (RR) defines unwanted emissions as being comprised of out-of-band emissions (due to modulation) and spurious emissions (not due to modulation). Emissions within the necessary bandwidth are not unwanted emission so there is no need to attenuate emissions within the authorized bandwidth.

1) Regarding spurious emissions, in 1998 the ITU specified that for all transmitters installed after 1 January 2003, and all transmitters after 1 January 2012, must use a spurious emission reference bandwidth as follows:

Spurious emission frequency	Reference bandwidth (RR Appendix S3)
between 9 kHz and 150 kHz	1 kHz
between 150 kHz and 30 MHz	10 kHz
between 30 MHz and 1 GHz	100 kHz
Above 1 GHz	1 MHz

It is noted that these requirements are more stringent than current US regulations below 1 GHz in 47 CFR Section 90.210(m). Further, in ITU Recommendation SM.329-7 and later, for practical considerations, the ITU considers spurious emissions to be those which are removed from the center frequency of the emission by more than 250% of the necessary bandwidth.

2) For many masks (e.g. 90.210(a), (b), (c), (g), et. al.) no reference bandwidth is specified making it possible to use any arbitrary mask to meet this requirement, albeit the general practice has been to measure out-of-band emissions using a reference bandwidth of 300 Hz. For some masks (e.g. - d, e) a lesser value of 100 Hz is specified. It is proposed that a generalized out-of-band emission reference bandwidth statement be incorporated based on these considerations, and suggested wording conveying the intent is:

In the frequency range removed from the center of an emission by 50% to 250% of the maximum authorized bandwidth unwanted emissions shall be measured using a reference bandwidth of 300 Hz unless otherwise specified.

3) Additionally, no bandwidth is specified for establishing the reference level from which attenuation is to be measured. For this case setting the bandwidth equal to or not less than the occupied bandwidth ensures that the reference level will be within 1 % of the correct value. This has been incorporated into some masks (e.g.-d, e)

Part 90.207 Types of emissions

Multiplexing techniques are increasingly being used to accomplish higher spectrum efficiency. To distinguish the nature of multiplexing the ITU has added 2 optional symbols at the end that are frequently used in other countries. These are listed in RR Appendix S1 Sub-Section IIB, and the second optional character codifies the nature of multiplexing associated with the emission (multiplexing (e.g. – T = Time-division multiplex and C = Code-division multiplexing). It is proposed that consistent with the ITU option, use the second optional letter coded symbol and a dash for the first optional symbol. For example, 18K0F1E-T could identify a digitally coded TDM voice signal using frequency modulation with an 18 kHz necessary bandwidth.

Part 101 – Fixed Microwave Services

23 GHz Channel plan

Channel plans for the 23 GHz band will make the band more efficient, and thus more attractive for short-haul fixed microwave service users. WCD has proposed a basic plan, based upon the current industry standard 50 MHz channels. Given the availability of more spectrally efficient digital fixed microwave service radios, narrow and wideband channels are also proposed to provide flexibility and to increase the number of potential users. Specifically, the WCD plan consists of twenty-four pairs of 50 MHz channels, each subdivided into wideband channels (*i.e.*, one 40 MHz channel, one 30 MHz channel, two 20 MHz channels and five 10 MHz channels) and into narrowband channels (*i.e.*, ten 5 MHz channels and twenty 2.5 MHz channels). The center 10 MHz channel in each 50 MHz block would have the same frequency as the associated 50 MHz channel, which would permit upgrades in channel capacity without a frequency change. No overlap would be created between the existing 50 MHz channels and the new channels, allowing for an orderly transition to the new plan without causing interference to existing systems. The proposed plan would enhance flexibility and spectrum efficiency by avoiding the need to use 50 MHz channels for all needs above 20 MHz. We also recommend reserving several portions of the 23 GHz band for narrowband channels, which could be used for wideband traffic only if all other wideband channels are blocked.

Permit common carrier and POFS users to share the entire 23 GHz band

The WCD proposes making the entire band available to common carrier and POFS users, instead of the current system of reserving half of the band for each. It should be noted that giving common carrier and POFS users access to the entire band is consistent with the consolidation of the rules into a single Part 101.

Frequency tolerance

Current rules specify the frequency tolerance for the 23 GHz band at 0.03%. When this standard was adopted most 23 GHz band radios used analog modulation techniques and were coordinated for the full 50 MHz channel bandwidth, but today most licensed radios are digital and occupy 75% or more of the channel bandwidth. For these digital radios, the 0.03% frequency tolerance specification would allow excessive frequency drift into adjacent channels if the band is divided into 50, 40, 30, 20, 10, 5, and 2.5 MHz channels, and that this would cause spectrum inefficiency. The WCD recommends applying to the 23 GHz band the same 0.001% frequency tolerance standard that is used for the 18 GHz band (which is divided into narrowband channels comparable to those proposed for the 23 GHz band).

Spectrum efficiency

The current lack of a spectrum efficiency requirement for the 23 GHz band impedes efficient utilization. Current rules require a 1bps/Hz spectrum efficiency rate for all frequency bands below 19.7 GHz and for DEMS. This standard also is appropriate for the 23 GHz band (and for all bands below 25.25 GHz), because it would ensure that all proposed bandwidths are fully utilized.

Low power systems

The 23 GHz frequencies set aside for low power, limited coverage systems, such as perimeter surveillance applications and remote video monitoring, are severely congested. Accordingly, the WCD has proposed designating an additional 200 MHz in the band for such operations, adjacent to the current low power band in the 21.8-22.0 GHz and 23.0-23.2 GHz band segments. Part 101 requirements for these low power, limited coverage systems are not congruent with their operations and should be revised as follows:

Maximum Power Definition -- Change the maximum power from 55 dBm ERP to 55 dBm EIRP, because the maximum power for fixed microwave service systems is expressed as EIRP, and ERP is appropriate for mobile, not fixed, services.

Frequency Tolerance -- Apply the proposed 0.001% frequency tolerance standard to all systems, including low power, limited systems, rather than the current 0.05% standard for such systems.

Special Showings -- Delete as no longer necessary the requirement that an applicant make a showing of need in order to be authorized to operate with a 50 MHz bandwidth or to have more than five hops in tandem.

Interference Criteria -- Use a uniform frequency coordination procedure for all services in the 23 GHz band, and thus delete the specific additional interference criteria for low power, limited coverage systems, as typical radios already meet these requirements.

Antenna standards for the 23 GHz and 10 GHz bands

Many fixed microwave users need or prefer to employ small antennas because most potential antenna sites, such as rooftops, monopoles, and electrical transmission towers, cannot support large microwave dishes, due to either space limitations or aesthetic objections of homeowner associations or zoning boards. Current rules, however, do not permit antennas smaller than 0.61 meters (2 feet) in diameter in the 23 GHz band, or 1.22 meters (4 feet) in diameter in the 10 GHz band. The existing antenna size restrictions deter fixed microwave service use of these bands. It

is recommended that the rules be modified to permit 0.46-meter (18-inch) or 0.30 meter (1-foot) high performance antennas in the 23 GHz band, and 0.61-meter (2-foot) or 1.22-meter (4-foot) antennas in the 10 GHz band. This will accommodate the need for short (1-2 mile) microcell interconnect and LMDS infrastructure link point-to-point microwave paths.

WCD recommends that the Commission take the following actions:

Change the minimum antenna gain from 38 dBi to 33.5 dBi.

Change the maximum beamwidth from 2.2 to 3.3 degrees.

Retain the same front-to-back ratios as the current Category A and Category B radiation standards, tighten the Category B front-to-back ratio, and reduce the sidelobe suppression requirements.

To permit 0.61 meter (2-foot) antennas in the 10 GHz band, which would accommodate paths longer than 2.3 miles, it is proposed that the Commission take the following actions:

Change the minimum antenna gain from 38 dBi to 33.5 dBi.

Change the maximum beamwidth from 3.4 to 3.5 degrees so that there would be a uniform beamwidth for all 10 GHz Band systems.

Change the radiation standards for Category A and Category B to the same standards that applied for the 10.55-10.68 GHz band before June 1, 1997 tighten the front-to-back ratio for Category B channels, and reduce the sidelobe suppression requirements.

LMDS technical rules

Part 101 emission mask requirements may not be appropriate for new generations of Point to Multipoint LMDS block transmitters. Some LMDS transmitters are being manufactured for spectrum blocks rather than for discrete frequencies as point-to-point microwave systems are. Some LMDS transmitters are filtered as wide as the spectrum block. The current spectrum mask requirements may not be appropriate, as the intent was to prevent out of band emissions within discrete bandwidths within the band. LMDS block transmitters may be unnecessarily constrained by the current rules, when the intent of the rule is primarily to prevent energy being emitted outside the licensed bandwidth.

Allow equipment self-verification in LMDS & DEMS bands.

Section 101.139 indicates that point-to-multipoint transmitters in the 39 GHz, LMDS and DEMS services must be of a type that has been certified by the Commission, but most other fixed point-to-point microwave transmitters are subject to the less burdensome verification procedure. LMDS and DEMS transmitters are comparable to other fixed point-to-point microwave transmitters, we therefore propose that they also be subject to verification rather than certification.

Conditional authorization

The 23 GHz band is allocated to both government and non-government users, so licensing on these frequencies must be coordinated with NTIA. The current coordination process takes too long, discouraging licensees from using the 23 GHz band. In order to make this band more attractive, particularly for license applicants who have been denied access to the 18GHz bands which have been redesignated to FSS, a process must be initiated similar to that used for coordination among non-government users. Specifically, a commercial frequency coordinator would send a prior coordination notice (PCN) to IRAC. The federal government agencies, through IRAC, would have thirty days to examine the application and notify the commercial coordinator of potential interference problems. If no response is made, coordination would be deemed to have been completed, and an application could be submitted to the Commission and operation could commence. If interference problems were identified, but were resolved between the commercial and government frequency coordinators during the thirty-day period, then the operator could submit a license application to the Commission and begin operation. If the identified interference problems remain after the thirty-day period, then conditional licensing would not be permitted and an operator would have to select alternative frequencies, or it would have to request resolution of the problem through the formal licensing process. It is recognized that this proposed plan can be adopted only if the Commission and NTIA reach an agreement consistent with the proposals. The Commission is urged to negotiate such an agreement with some degree of urgency.

3. Conclusion

The above comments are being submitted by the Telecommunications Industry Association's Wireless Communications Division for your consideration.

Respectfully submitted,

Wireless Communications Division,
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CERTIFICATE OF SERVICE

I, Bill Belt, Director, Technical & Regulatory Affairs for the Telecommunications Industry Association (TIA), hereby certify that three (3) copies of the foregoing “Comments of the Wireless Communications Division of the Telecommunications Industry Association” in the matter of *Biennial Review 2000 Staff Report* (FCC 00-346) and one (1) electronic copy on diskette was sent this 10th day of October, 2000 via hand delivery and/or first class mail to the following:

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