



January 10, 2006

Marlene H. Dortch, Secretary
Federal Communications Commission
Office of the Secretary
445 12th Street, SW
Washington, DC 20554

Re: ET Docket 00-258 and IB Docket 02-364

Dear Ms. Dortch:

Pursuant to Section 1.1206(b)(2) of the Commission's Rules, Motorola submits this letter to be included in the record for the above captioned proceedings. Specifically, Motorola responds to comments made by the Association of Home Appliance Manufacturers ("AHAM") in an ex parte letter filed December 23, 2005.¹ In its letter, AHAM demonstrates a lack of understanding of Motorola's previous filings, continues to rely on unsupported arguments regarding microwave ovens, and focuses on certain diverting and irrelevant details regarding coexistence of ISM devices and BRS systems in the 2496-2500 MHz band. AHAM fails to address the problem of interference from microwave ovens to BRS systems or the larger picture – that the current rules allow unlimited power for ISM devices, creating an uncertain and unacceptable operating environment for a primary licensed service such as BRS.

Motorola proposes that reasonable power limits be placed on ISM equipment operating in the 2496-2500 MHz band in order to allow other co-frequency devices to plan their systems around a certain level of interference. Absent such action by the Commission, the band could be filled with higher and higher power ISM devices, with no upper limit to the level of interference caused to the licensed BRS devices. Establishing a reasonable limit on emissions from certain ISM devices in this band, including microwave ovens—which the only data available demonstrates the ovens will meet *if* they also comport with the currently applicable out-of band limits—is simply effectively managing the spectrum resource.²

¹ Letter from David B. Calabrese, Vice President, Government Relations, Association of Home Appliance Manufacturers, to Marlene Dortch, Secretary, Federal Communications Commission, Docket Nos. 02-364, 00-258 (Dec. 23, 2005).

² See, e.g., Letter from Steve B. Sharkey, Director, Spectrum and Standards Strategy, Motorola, to Marlene Dortch, Secretary, Federal Communications Commission, Docket Nos. 00-258, 02-364 (Dec. 15, 2005) (*Motorola Dec 15, 2005 Ex Parte*), Attachment, page 4; and National Telecommunications and Information Administration, Radio Spectrum Measurements of Individual Microwave Ovens, Report No. 94-303-1 (Mar. 1994) (*NTIA Report*). The NTIA report shows that if the microwave ovens measured met the required Part 18 limits above 2500 MHz, then they also met those same limits starting at 2496 MHz, except for one oven. AHAM mistakenly assumed that Motorola based this conclusion on information in the WCA ex parte letter dated September 9, 2005. This is not the case; the conclusion was derived directly from the NTIA Report, see, e.g., pages 73, 75 and 77. Further, regarding the applicability of the NTIA Report, it should be noted that no other measured data has been provided in the record to suggest that the NTIA data, albeit 11 years old, is no longer representative of microwave oven emissions.

As Motorola described in its previous ex parte presentations, of particular concern to BRS receivers are widely deployed consumer devices, such as microwave ovens, or devices intended for outdoor deployment.³ Motorola recommends the application of limits to these types of devices in the 2496-2500 MHz band, i.e., extension of the Part 18 limits which apply above 2500 MHz to this additional 4 MHz. Such action will allow BRS licensees to design their systems taking into account a limited amount of interference rather than having them spend billions of dollars to deploy a system and asking them to hope that ISM device manufacturers don't deploy devices that will create significantly more interference by taking advantage of rules permitting unlimited power. AHAM fails to consider that the current level of interference could change significantly absent imposition of reasonable limits.

AHAM's contention that any in-band limitation on ISM devices is "fundamentally inconsistent" with international regulations is flawed. To the contrary, as Motorola described previously, the ITU Radio Regulations do not prohibit the establishment of in-band limits on ISM devices. Instead, through Resolution 63, they encourage the ITU community and administrations to define in-band, as well as out-of-band limits, in all ISM bands.⁴ Motorola is not proposing a change in the allocation hierarchy that requires systems in the 2400-2500 MHz band to accept interference from ISM devices. We are merely proposing that the Commission recognize the changing usage of the 2496-2500 MHz band and place reasonable limits on consumer and outdoor ISM devices, thus providing newly re-located BRS systems greater certainty regarding the level of interference that would be experienced. Such certainty helps drive investment and system deployment and will allow BRS licensees to maximize use of the spectrum resource.

AHAM is incorrect in repeating its assertion that Motorola as well as Sprint based its analysis on inaccurate Part 18 limits. The Part 18 power levels used in Motorola's analysis come directly from the Table in Section 18.305(b) of the Commission's rules. In that Table, in the row for any type of equipment, and for any ISM operating frequency, and for RF Power generated by the equipment of greater than 500 W, there is a sliding scale for the emission limit as a function of the operating power. Further, there is a footnote 1 against the entry for this row in the "Distance" column stating that the field strength shall not exceed 10 μ V/m at 1600 m. It is this upper limit that Motorola, as well as Sprint, used in its analysis for simplicity's sake instead of the sliding scale. The source of this limit is clearly cited in Motorola's Ex Parte presentation.

AHAM continues to raise the unfounded specter of harm to US consumers by claiming that in-band limits on ISM emissions will force manufactures to maintain multiple product lines. The ISM manufacturer can choose whether to have an US-only product line, or whether to use a single line that meets all international requirements. In fact, AHAM informed the Commission in a separate proceeding that many of its manufacturers already had separate product lines, one for US equipment and one for foreign markets.⁵ In that proceeding AHAM argues that, because microwaves are manufactured

³ See, e.g., Motorola Dec. 15, 2005 Ex Parte.

⁴ See ITU Radio Regulations, Edition 2004, Resolution 63, which resolves "that, to ensure that radiocommunication services are adequately protected, studies are required on the limits *to be imposed* on the radiation from ISM equipment within the frequency bands designated in the Radio Regulations for this use and outside of those bands." (Emphasis added). The Commission has also considered imposing in-band limits on ISM equipment in the past. While limits were ultimately not adopted, the reasoning was not based on limits as being inconsistent with international regulations. See *Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Mobile Satellite Service in the 1610-1626.5/2483.5-2500 MHz Frequency Bands*, CC Docket 92-166, Report and Order, 9 FCC Rcd 5936 (1994) at paragraphs 142-144. See also, *1998 Biennial Regulatory Review – Amendment of Part 18 of the Commission's Rules to Update Regulations for RF Lighting*, Notice of Proposed Rulemaking, ET Docket 98-42, FCC 98-53 (rel. April 9, 1988) in which the Commission sought comment as to whether in-band limits should be applied in the 2400-2500 MHz band to facilitate sharing with co-frequency MSS.

⁵ Comments of AHAM, ET Docket 98-80 (Jan. 31, 2000).

differently for different countries and that changing the manufacturing process for microwaves destined for the US market will take a significant amount of time, the Commission should not try to conform US requirements with international requirements too quickly. Apparently AHAM's arguments regarding global manufacturing are fluid and change as a matter of convenience.

AHAM also claims that the existence of embedded microwave ovens that were not designed to meet in-band limits, which will already cause interference to BRS, negates the need for any limits on future ovens. Apparently AHAM believes that the presence of existing microwaves means that the Commission should give up on trying to establish a coherent framework that will maximize the efficient and long-term use of this spectrum for communications services while continuing to support a broad array of ISM equipment. Limiting future ISM devices will provide long-term improvement in the RF environment and will prevent the deployment of even higher powered devices in the band in the future, giving greater certainty to BRS systems as the current embedded base of ISM products is replaced and BRS deployment grows.

Finally, AHAM seems to find that the intermittent use of microwave ovens is sufficient justification for the Commission to not take action. However, AHAM fails to take into consideration the need for commercial communications services to be highly reliable without random disruptions. While AHAM cites to a 1% use of microwave ovens, it is likely that the percentage of time that microwave use corresponds with BRS use would be much higher since both uses would be at times when people are present, awake and active. The likelihood that interference from microwave ovens would occur is actually much higher than AHAM would lead the Commission to believe by providing this irrelevant statistic. AHAM also fails to acknowledge that the current rules allow unlimited power and do not limit the duty cycle of ISM devices. Accordingly there is nothing to prevent deployment of ISM devices that are active 100% of the time and that operate at even higher power. This is not merely an academic concern. The Commission relatively recently concluded a proceeding considering rule changes to accommodate RF lighting devices, which are also considered ISM devices, designed to operate in the 2400-2500 MHz band. These RF lighting devices had the potential to be widely deployed both indoor and outdoor and to operate with a 100% duty cycle. Although the lighting proponents in this proceeding ultimately informed the Commission that they would no longer pursue RF lighting in this band, it is certainly a real possibility that similar innovations for ISM operations in this band could occur and that no rule changes would be necessary for wide spread deployment of high power systems with duty cycle of up to 100%.⁶

The record in this proceeding contains ample evidence that microwave ovens create an interference concern for BRS and that this concern is exasperated by rules for ISM devices that allow unlimited power. The Commission should adopt reasonable limits on consumer and outdoor ISM devices in the 2496-2500 MHz band based on the Part 18 limits that apply immediately above 2500 MHz. Such action will create an environment that fosters development and deployment of communications services while still allowing deployment of ISM devices.

⁶ See 1998 Biennial Regulatory Review – Amendment of Part 18 of the Commission's Rules to Update Regulations for RF Lighting, Notice of Proposed Rulemaking, ET Docket 98-42, FCC 98-53 (rel. April 9, 1988), and Orders in the same docket (FCC 03-123 rel. May 30, 2003 and FCC 04-263 rel. November 9, 2004).

Pursuant to the Commission's Rules, one copy of this notice is being filed electronically with the Commission. If you require any additional information please contact the undersigned at (202) 371-6953.

Sincerely,

/s/ Steve B. Sharkey

Steve B. Sharkey
Director, Spectrum and Standards Strategy

Cc: Fred Campbell
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