



TCB Workshop

Part 15 rulemaking updates

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1



Overview

- Part 15 Rulemaking updates
 - Modification of Parts 2 and 15 of the Commission's Rules for unlicensed devices and equipment approval.
 - Smart Antenna Systems
 - aka Advanced antenna technologies
 - Third R&O Review of Part 15 and other Parts of the Commission's Rules
 - 433 MHz RF ID systems
 - R&O UNII with DFS devices
- Miscellaneous part 15 issues
 - Part 15 Implant transmitters

2



RO&O Modification of Parts 2 and 15

- New Rules in ET Docket No.03-201
 - http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-165A1.doc
 - Effective date October 7, 2004
- 1) Smart Antenna Systems, i.e. Advanced antenna technologies
 - Sectorized antennas. Switched beam devices.
 - Beam-forming phased array systems.
 - MIMO systems. Short for Multiple Input Multiple Output. Communication systems with multiple antennas at the transmitter or receiver side.
 - Space time coding. Transmitted signals from different antennas at different times.
- Not designated as point-to-point (P2P) or point-to-multipoint (P2MP)
 - Allows point to point power in any direction
 - Allows communications with mobile units

3



Smart Antenna Systems

- TCB's cannot approve systems such as MIMO and Space time coding.
 - Need new testing and filing guidance.
- TCB's can only approve Phased array systems and Sectorized systems ONLY with prior guidance from FCC.
 - TCB must contact and provide FCC with operational description. Include description of compliance with the rules.
 - Guidance on testing and filing requirements will be provided.

4



Smart Antenna Systems

- Applies ONLY to Section 15.247 devices in the 2.4 GHz band. i.e. Does not apply to 5 GHz devices!
- Must comply with all requirements in Section 15.247(c)2i-iv.
 - Different information to each receiver
 - Aggregate power to antenna/array for a Single Beam must not exceed appropriate limit for single system.
 - Array gain needs to be calculated
 - Aggregate power to antenna/array for simultaneous beams must not exceed single-beam limit by >8 dB
 - Overlapping beams cannot exceed appropriate limit for a single system.

5



Smart Antenna Systems

- Beams
 - Beamwidth not specified.
 - Multiple beams allowed.
 - Each beam cannot exceed limits for single P2P system.
 - Each beam must send different information to different receivers.
 - Broadcasting not allowed. i.e. Communicating the same information intended for multiple receivers at the same time. *Broadcast of incidental control messages (e.g., ARP) to multiple receivers simultaneously is permitted.*
 - Aggregate power on all beams ≤ 8 dB above limit.
 - 6 beams at full power can be formed
 - Overlapping beams cannot exceed P2P limit.

6



Smart Antenna Systems

- **Examples** (must satisfy all requirements, e.g., no broadcasting)
 - Multi-beam system with up to 6 sectors—same or different channels
 - P2P limit for each beam. (Less if beams overlap and can transmit simultaneously)
 - Multi-beam system with more than 6 sectors—same or different channels
 - P2P limit for each beam. (Less if beams overlap and can transmit simultaneously)
 - In addition, aggregate power is limited to P2P limit + 8 dB
- A system with a single antenna or a single transmit beam falls under the old rules

7



RO&O Modification of Parts 2 and 15 (continued)

- **2) Replacement of Part 15 antennas**
 - Second Party (i.e. end user or second manufacturer) can replace equal or lower gain antennas of the same type that was authorized
 - No testing or filing is required.
 - Antenna must be the same type
 - Similar in-band and out-of-band patterns
 - List of antenna types must be in filing
 - Compliance tested with highest gain of each type.
 - Test at maximum output power.
 - Section 15.15 still applies.
- **Integral antenna requirement in Section 15.407(d) removed.**
 - Devices in 5.2 GHz band still restricted to indoor use

8



RO&O Modification of Parts 2 and 15 (continued)

- 3) Marketing of Part 15 amplifiers
 - Certain amplifiers can now be sold separately if authorized with specific system(s).
 - Applies only to amplifiers in 900 MHz, 2.4 GHz and 5.8 GHz devices in Section 15.247 and 5.8 GHz in Section 15.407.
 - Designed to connect only to authorized system.
 - FCC identifier of authorized system is listed on outside packaging.

9



RO&O Modification of Parts 2 and 15 (continued)

- 4) New Digital Modulation Transmission Systems test procedures for devices in Section 15.247
 - Power Output
 - Power Spectral Density
 - Website.....

10



RO&O Modification of Parts 2 and 15 (continued)

- 5) Modify the channel spacing requirements for
hoppers in the 2.4 GHz band to allow wider
bandwidth hoppers.
 - 25 kHz or Two-thirds of 20 dB BW
 - Power limited to 125 mW
- 6) Partitioned modular approval requirements
 - Will be addressed in future commission action

11



RO&O Modification of Parts 2 and 15 (continued)

- 7) Make other changes to update or correct
Parts 2 and 15 of our rules.
 - Delete STA provisions under 15.7
 - Need is met via Part 5 experimental license
 - Mandatory Electronic filing of applications or
Grantee code.
 - Reassess test labs every two years by
Accrediting Body.
 - Re-accredit and Reassess TCB's every two
years.

12



Third R&O Review of Part 15 and other Parts of the Commission's Rules

- New rules ET Docket No. 01-278
 - http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-98A1.doc
- Effective date June 23, 2004
- RF ID systems in 433.5-434.5 MHz band.
 - Restricted RF ID systems that identify contents of commercial shipping containers
 - Increased maximum field strength
 - 11,000 uV/m Average, 55,000 uV/m Peak
 - Increased transmission duration
 - From 5 seconds to 60 seconds

13



Third R&O Review of Part 15 and other Parts of the Commission's Rules (continued)

- Associated powered tags may be approved with system (one FCC identifier, one fee, two separate measurement data) or separately authorized.
- One way and two way communications allowed.
- May not operate within 40 km of DoD Radar sites
- User manual must inform user of operational restrictions
- Grantee must furnish Experimental Licensing Branch, OET with location of installations.

14



R&O UNII devices

- New Rules in ET Docket No. 03-122,
 - Effective date, February 19, 2004
 - http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-03-287A1.doc
- New technology
 - TCB cannot approve any device operating under the new rules.
- Test procedures will be updated in the near future
- Transition dates; equipment operating in 5.25-5.35 GHz
 - Will be addressed once test procedure is finalized.

15



Part 15 implant transmitters

- Must be filed with the FCC. Contact FCC for guidance.
- For radiated EMC only at 900 MHz use:
 - ANSI C63.4 tabletop test in open air, OR Part-95-like in-liquid phantom setup.
 - Maximum 2 cm from phantom wall at closest points.
 - Phantom. i.e. Human torso simulator (phantom). § 95.639(2)(i) cites a 30 cm inside-diameter (circular) by 76 cm height liquid-filled (6.35 cm thick Plexiglas).

16



Questions and Answers

Thanks!