



Latest Rulemakings – Licensed Devices

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Office of Engineering and Technology
Laboratory Division**



Overview – Licensed Devices Scopes

- Scope B1
 - Rule Parts 22(cellular), 24, 25, & 27
 - Note: Part 26 no longer exists. It has been moved to Part 90Y
- Scope B2
 - Rule Parts 22(non-cellular), 73, 74, 90, 95, & 97
- Scope B3
 - Rule Parts 80 & 87
- Scope B4
 - Rule Parts 21, 74, & 101

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Scope B1 – Cellular Rulemakings Part 25 CMPCS Satellite Phones

- Second R&O FCC 03-283 (Docket 99-67)
http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-03-283A1.pdf
- Previously, Certification was optional
- Part 25 - Section 25.129 appears in the Federal Register on Feb. 6, 2004 and requires Certification of portable Satellite phones
- New Technical Parameters (Reference October 2002 TCB training)

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Global Mobile Personal Communications by Satellite (CMPCS) - defined as comprehensively referring to all communication services provided directly to end users by *any* satellite system (global or otherwise), regardless of whether the users' terminals are mobile or fixed

Section 25.133 of the Commission's rules requires earth-station licensees to certify that their transmitters have been tested and found within 2 dB of emission limits specified in other sections.^[1] Unlike the certification rules in Part 2, however, Section 25.133 does not require submission of test data and does not require any equipment authorization to be obtained prior to importation, distribution, sale, or offer for sale

^[1] 47 C.F.R. § 25.133; *see also* 47 C.F.R. § 25.132 (prescribing testing requirement for C-band and Ku-band earth-station transmitters).

A new Section 25.129 appears in the Federal Register on Feb. 6, 2004, and reads as follows:

§25.129 Equipment authorization for portable earth-station transceivers

- Except as expressly permitted by §2.803 or §2.1204, prior authorization must be obtained pursuant to the equipment certification procedure in Part 2, Subpart J of this chapter for importation, sale or lease in the United States, or offer, shipment, or distribution for sale or lease in the United States of portable earth-station transceivers subject to regulation under Part 25. This requirement does not apply, however, to devices imported, sold, leased, or offered, shipped, or distributed for sale or lease before November 20, 2004.
- For purposes of this section, an earth-station transceiver is portable if it is a "portable device" as defined in §2.1093(b), *i.e.*, if its radiating structure(s) would be within 20 centimeters of the operator's body when the transceiver is in operation.
- In addition to the information required by §1.1307(b) and §2.1033(c), applicants for certification required by this section shall submit any additional equipment test data necessary to demonstrate compliance with pertinent standards for transmitter performance prescribed in §25.138, §25.202(f), §25.204, §25.209, and §25.216 and shall submit the statements required by §2.1093(c).
- Applicants for certification required by this section must submit evidence that the devices in question are designed for use with a satellite system that may lawfully provide service to users in the United States pursuant to an FCC license or order reserving spectrum.



Scope B2 – Part 90 Narrowbanding Review

- FCC 03-34 Released 2/25/03
 - Promotion of Spectrum Efficient Technologies
 - For applications received after 12/31/04 no new grants will be issued with 25 kHz “wideband” channel spacing
 - Permissive Changes:
 - Class I pc’s may not be used to add a narrowband listing
 - Class II changes may add a narrowband listing before 1/1/05 if no hardware changes are made
 - Class II changes for wideband only equipment may not be made after 12/31/04
 - Class II changes for multimode equipment after 12/31/04 are allowed but the wideband won’t be listed
 - A more detailed policy description was previously presented (Reference February 04 TCB Training).

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FCC 03-34 implements a date when refarming band (150-174, 421-512 MHz) equipment will no longer be authorized. This includes permissive changes and original grants. This is an attempt to push users to the more efficient technology. It is expected that the same process will occur to move users from 12.5 kHz down to 6.25 kHz channels at some point in the future. There have been some reconsideration petitions filed which are related to this.



Scope B2 – Part 90 Narrowbanding New Issues

- Policy is currently under review for manufacturer and public safety concerns
- Petitions for reconsideration have been submitted requesting an extension of the January 1, 2005 cutoff deadline
- NPRM expected imminently – watch the FCC web site for news



Scope B2 Part 90 – Public Safety 800 MHz

- FCC 04-168 (Docket 02-55) – Improving Public Safety Communications in the 800 MHz Band

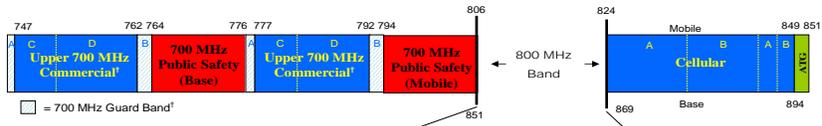
http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-168A1.pdf

- Nextel Re-banding to 1.9 GHz
- Nextel is still negotiating with the FCC over issues raised by this R&O
- ISDN Grants can still be issued



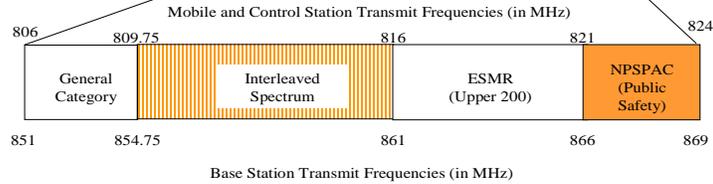
Scope B2 Part 90 - Public Safety 800 MHz

Current 800 MHz Band Plan



□ = 700 MHz Guard Band¹

¹700 MHz Commercial and 700 MHz Guard Band do not have specified Base and Mobile channels



General Category - 7.5 MHz

150 Channels
Licensed by EA Blocks of 25 channels (SMR)
Some Incumbent Operators Remain

ESMR/Upper 200 - 10 MHz

200 Channels
Licensed by EA
Non EA incumbents are currently undergoing mandatory relocation

NPSPAC - 6 MHz

225 Channels @ 12.5 kHz spacing
5 Channels @ 25 kHz spacing
5 Mutual Aid Channels

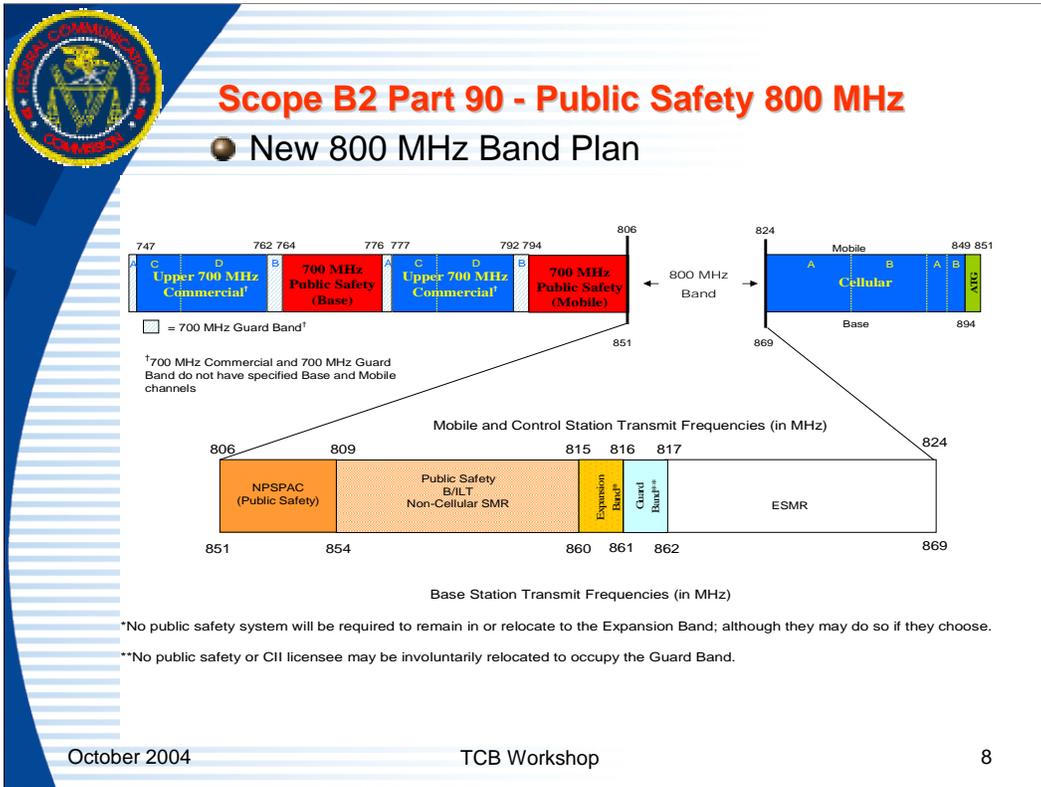
Interleaved Spectrum - 12.5 MHz

250 Channels
80 SMR Channels
(Licensed by EA, Some Incumbent Operators Remain)
70 Public Safety Channels
50 Business Channels
50 Industrial Land Transportation Channels

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Our plan for reconfiguration of the 800 MHz band is designed to spectrally segregate public safety systems from ESMR and cellular telephone systems. In reaching this spectrum management decision, we are guided by the principle that we can minimize unacceptable interference in the 800 MHz band by placing similar system architectures in like spectrum and isolating dissimilar architectures from one another.

In exchange for the spectrum rights Nextel is surrendering, coupled with the obligations it is incurring to accomplish 800 MHz band reconfiguration, we will modify certain Nextel licenses to provide Nextel with nationwide authority to operate in ten megahertz of spectrum at 1910-1915 MHz/1990-1995 MHz.^[1] We require Nextel to reimburse UTAM Inc. (UTAM) for the cost of clearing the 1910-1915 MHz band, and to clear the 1990-2025 MHz band of BAS incumbents within thirty months of the effective date of this *Report and Order*.^[2]



Scope B3 – Maritime Services

Universal Shipborne Automatic Identification System (AIS)

- Equipment Class – Automatic Identification Systems (AIS)
- TCBs Can Issue Grants for AIS devices
- US Coast Guard AIS background material:
<http://www.navcen.uscg.gov/enav/ais/default.htm>
- DA 02-1363 AIS Frequency Usage
http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-02-1362A1.pdf
- DA 02-1499 AIS Applicable International Standards (Footnote 2) – STANDARDS MUST BE PURCHASED to Certify AIS devices
http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-02-1499A1.pdf

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Certification of AIS equipment in the United States In June 2002, the FCC released a Notice entitled "[Applications For Equipment Authorization Of Universal Shipborne Automatic Identification Systems To be Coordinated with U.S. Coast Guard To Ensure Homeland Security](#)". Pending completion of FCC rulemaking, the FCC Laboratory will coordinate review of applications for certification of AIS equipment with the United States Coast Guard to ensure that the equipment meets all applicable international standards and requirements. Essentially, AIS manufacturers must meet the requirements of the FCC's regulations for equipment authorization, [47 CFR 2 Subpart J](#) (beginning 2.901), and the Coast Guard's [Navigational and Vessel Inspection Circular \(NVIC\) 8-01](#), Approval of Navigation Equipment for Ships. NVIC 8-01 describes the certification process for AIS and other navigation equipment described under the newly adopted SOLAS V. The Federal Communications Commission has requested comments on how its rules should be amended to accommodate AIS certification, in a further Notice of Proposed Rulemaking under Docket PR 92-257. Until these FCC rules are finally adopted, the procedures described in the FCC Notice and the NVIC should apply.



Scope B3 – Maritime Services AIS (Con't)

- DSC – Channel 70 14K2G2B (typical BW)
- AIS 1 – Channel 87 GXW w/ 12.5 and 25 kHz channel spacing
- AIS 2 – Channel 88B w/ 12.5 and 25 kHz channel spacing
- Remote Frequency Assignment by US Coast Guard
- TDMA (multiplexing)/Gaussian Minimum Shift Keying modulation (GMSK) – GXW

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[2] The International standards and requirements identified are: IMO Resolutions A.694(17) and MSC.74(69), Annex 3; ITU-R 1371-1; IEC standards IEC 60945, IEC 61162 and IEC 61993-2.

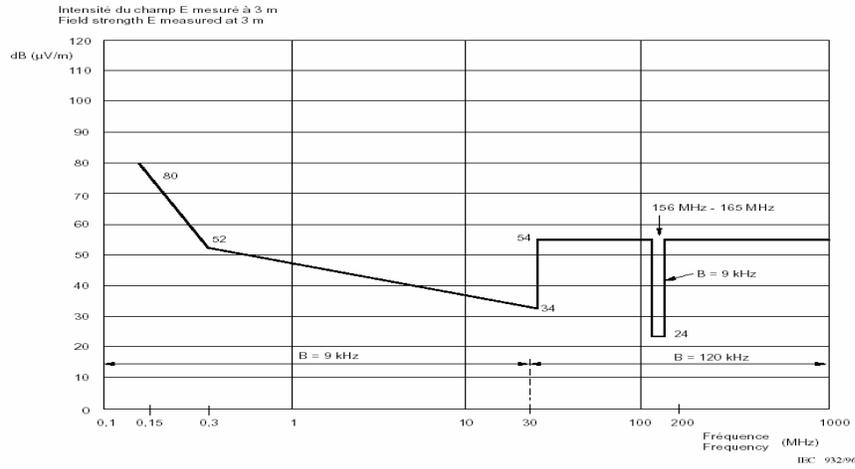
OBW must be derived from the mask spectral plots (typically -26 dB BW) since this information is not typically provided by AIS applicants

Questions concerning AIS standards may be directed to Tim Maguire of the Wireless Telecommunications Bureau at tim.maguire@fcc.gov and concerning equipment authorization to Andrew Leimer at andrew.leimer@fcc.gov.



Scope B3 – Maritime Services AIS (Con't)

Radiated Emissions Limits – IEC 945



B = bande passante du récepteur de mesure
B = measuring receiver bandwidth

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Scope B3 – Maritime Services AIS (Con't)

TDMA Receiver Characteristics – IEC 61993-2

Table 6 – Required receiver characteristics

Receiver parameters	25 kHz channels	12,5 kHz channels
Sensitivity	20 % PER for -107 dBm	20 % PER for -98 dBm
Co-channel rejection	-10 - 0 dB	-18 - 0 dB
Adjacent channel selectivity	70 dB	50 dB
Spurious response rejection	70 dB	N/A
Intermodulation response rejection and Blocking	20 % PER	N/A

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Problems with Receiver Standards – US Coast Guard can issue an approval letter for the following non-compliant standards with a rationale for recommending certification. Grant can be issued under these conditions.

15.3.4 - Co-channel rejection - 25 kHz operation

15.3.5 - Co-channel rejection – 12.5 kHz operation

15.3.6 - Adjacent channel selectivity - 25 kHz operation

15.3.7 - Adjacent channel selectivity – 12.5 kHz operation

15.3.9 - Intermodulation response rejection and blocking



Scope B3 – Maritime Services AIS (Con't)

- US Coast Guard Approval Letter Required
- Applicable FCC Rules
 - 80.209 Frequency Tolerance 10ppm
 - 80.211(f) Emissions Mask (category: other)
 - Note that IEC mask is much tighter
 - 80.215(a)(1) Power 25 Watts for ship stations
 - 80.215(g)(3) Automatic 1 Watt power reduction requirement for specific frequencies
- Application must contain data for ALL international standards

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Note: application must include data for all international standards even though some of the standards are not applicable for FCC Certification and will not be reviewed. This is a legal requirement.



Scope B3 – Maritime Services AIS (Con't)

Standard AIS Grant Example

Equipment Class : Automatic Identification Systems
Notes: Shipboun Automatic Identification System (AIS)

<u>Grant Notes</u>	<u>FCC Rule Parts</u>	<u>Frequency Range (MHZ)</u>	<u>Output Watts</u>	<u>Frequency Tolerance</u>	<u>Emission Designator</u>
	80	156 - 163	12.5	150 Hz	15K0GXW
	80	156 - 163	12.5	150 Hz	11K5GXW
	80	156.525	12.5	150 Hz	14K2G2B

The device operates on AIS 1 - Channel 87 (161.975 MHz) and AIS 2 - Channel 88B (162.025 MHz) with remote frequency assignment capability. This device also has DSC capability.



Scope B3 – Maritime Services AIS Issues

- NPRM – FCC 04-171 (Docket 04-257)
- Defines Automated Maritime Telecommunications System (AMTS)
- Defines the scope of ATMS – private land use permitted
- Emergency and distress – ship stations have priority
- Will not effect equipment authorization of AIS devices if adopted



Scope B3 – Maritime Services AIS Issues (con't)

- Order on Reconsideration – FCC 04-109 (Docket 92-257)
- Requests extension of the July 1, 2004 Coast Guard carriage requirement
- Extension to 60 days after date published in the Federal Register
- Will not effect equipment authorization of AIS devices



Scope B3 – Maritime Services New Rules

- Second R&O, Sixth R&O, and Second FNPRM (FCC 04-3)
 - redesignate Channels 75 and 76 for communications related to port operations, and establish requirements for equipment to operate on the channels with reduced carrier power;
 - authorize domestic use of INMARSAT-E emergency position indicating radiobeacons (EPIRBs) and establish standards for such devices
 - establish a new emission mask in Part 80 to accommodate a wide range of data services



Scope B3 – Maritime Services New Rules (Con't)

- **§ 80.207 Classes of emission**
 - updated chart of Part 80 emissions designators
- **§ 80.213 Modulation requirements**
 - 156-162 and 216-220 MHz bands freq. deviation cannot exceed +/- 5 kHz
- **§ 80.215 Transmitter power**
 - non portable ship station in the 156-162 MHz band must be between 8 and 25 Watts
- **§ 80.275 AIS US Coast Guard**
 - approval requirements defined
- **§ 80.373 Private communications frequencies**
 - updated frequency use table for 156–162 MHz Band

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§ 80.215 Transmitter power.

* * * * *

(g) The carrier power of ship station radiotelephone transmitters, except portable transmitters, operating in the 156-162 MHz band must be at least 8 but not more than 25 watts. Transmitters that use 12 volt lead acid storage batteries as a primary power source must be measured with a primary voltage between 12.2 and 13.7 volts DC. Additionally, unless otherwise indicated, equipment in radiotelephone ship stations operating in the 156-162 MHz band must meet the following requirements:

- (1) All transmitters and remote control units must be capable of reducing the carrier power to one watt or less;
- (2) Except as indicated in (4) of this paragraph, all transmitters manufactured after January 21, 1987, or in use after January 21, 1997, must automatically reduce the carrier power to one watt or less when the transmitter is tuned to 156.375 MHz or 156.650 MHz, and must be provided with a manual override switch which when held by an operator will permit full carrier power operation on 156.375 MHz and 156.650 MHz;
- (3) Except as indicated in (4) of this paragraph, all ship station transmitters installed after [one year after the effective date of these rules] must be capable of tuning to 156.775 MHz and 156.825 MHz and must automatically reduce the carrier power to one watt or less, with no manual override capability, when the transmitter is tuned to either 156.775 MHz or 156.825 MHz;
- (4) Hand-held portable transmitters are not required to comply with the automatic reduction of carrier power in (g)(2) of this section; and
- (5) Transmitters dedicated for use on public correspondence duplex channels as additional equipment to a VHF ship station in the Great Lakes which meet all pertinent rules in this part are not required to reduce their carrier power to one watt.



Scope B3 – Maritime Services Emergency Position Indicating Radio Beacon (EPIRBs)

- Inmarsat E-EPIRB (1.4 GHz) to discontinue operation after December 1, 2004
 - After 8 years of service only 100 L-Band Epirbs fitted to GMDSS ships and less than 1300 L-Band EPIRBs fitted worldwide
 - Inmarsat L-Band maintenance contracts expire
 - Other Inmarsat service not affected

- EPIRB training – review check list or training sheet on how to process EPIRB applications by next TCB training session

- All EPIRBs require US Coast Guard approval letter

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Inmarsat Press Release Extracts:

7th September, 2004. Inmarsat, the Total Communications Network TM via satellite, today announced the December 2006 withdrawal of its Inmarsat EPIRB service and committed to new generation safety service on its I-4 satellites. In almost eight years since its global introduction, the service has less than 1300 users worldwide of which less than 100 are within the merchant marine fleet for which it was designed.

Because of the significantly high costs of continuing to maintain a system that has not been widely adopted as a core element of the GMDSS, Inmarsat has involved its independent oversight body, the International Mobile Satellite Organisation (IMSO) and has advised the Maritime Safety Committee of the International Maritime Organisation (IMO) that the L-Band EPIRB system will be withdrawn from 1 December 2006.



Scope B3 – Aviation Services Part 87 New Rules

- R&O and FNPRM - FCC 03-238 (Docket 01-289) – in effect as of 9/13/04
http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-03-238A1.pdf
- Requires FAA Coordination Prior to FCC Filing
- Removes waiver requirement for equipment with 8.33 KHz channel spacing
- Allows for dual spacing transceivers (i.e 25/8.33 KHz)
 - 8.33 KHz operation not allowed in US
- FNPRM concerning HF Data link Emission J2D
 - Currently requires Waiver - TCB cannot issue Certification
 - 16 QAM Modulation



Scope B4 – Rulemakings

- Part 101 FCC 04-135 (Docket 03-66)
 - § 101.147 is amended by deleting the reference to the 2150-2160 MHz frequency band in paragraph (a), and by deleting and reserving paragraphs (e) and (g).
- Part 101 FCC 03-248 (Docket 02-146)
 - Allocations and Service Rules for the 71-76 GHz, 81-86 GHz and 92-95 GHz Bands
 - This is not considered to be a new technology but an extension of mature technology into new frequency bands. TCBs can Certify these devices.

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There are not significant changes to the equipment authorization process in Scope B4 but the licensing process has had a lot of changes and still has pending changes so there may be equipment authorization changes to follow.



Questions and Answers

Thanks!

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