Common Problems With Licensed Devices

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Common Problems With Licensed Devices

- Provide justification for multiple Rule listings
- Specify the technical requirement (Rule Parts) in the Test Report
  - Using only Part 2 listings is not clear
    Example: Part 90.217(b) Power Exemption

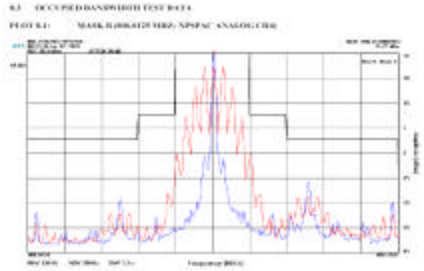
Common Problems With Licensed Devices

- Emissions Mask should be clear
  - Superimpose mask on BW plot
  - Specify the mask in the Test Report
    Example: Mask 90.210(d) or 90.210 Mask B
- Include Procedure for Measuring Power
  - Include BW settings if analyzer measurement
- Switchable power settings requires power and spurious emissions measured at both the high and low setting

Common Problems With Licensed Devices

- Occupied BW – provide sufficient information
  - Plots should indicate Occupied BW with markers
  - BW calculations (ie: Carson's Rule) should be included in the Test Report
  - Measured BW should match Emissions Designator
- Substitution Method must be used for radiated measurements
- Clearly describe all modulations in the Operational Description
  - Include all data rates
- Measure power, occupied BW, and spurious emissions at 3 frequencies if required

Common Problems With Licensed Devices



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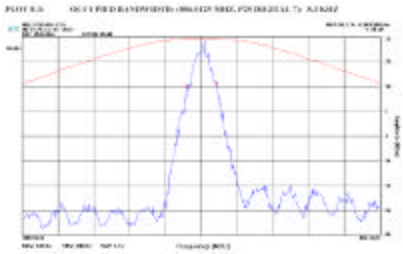

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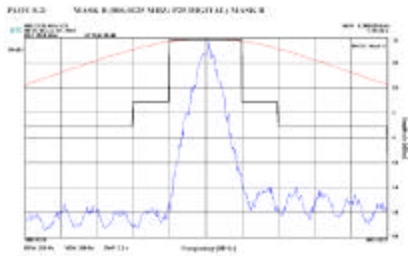

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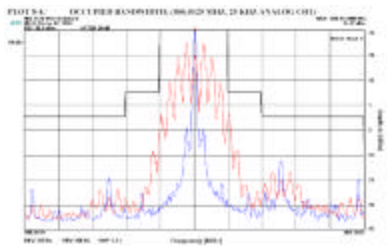

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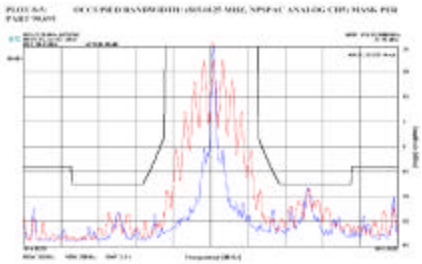

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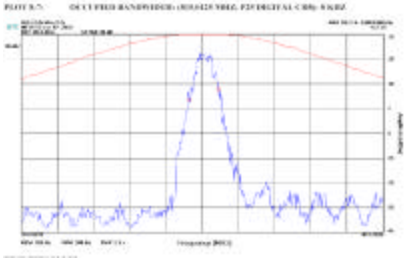

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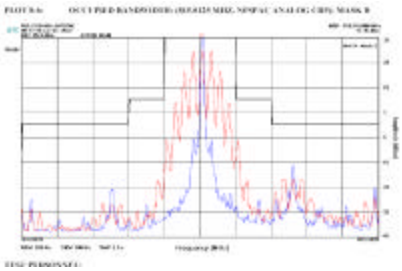

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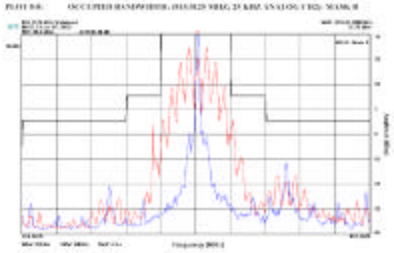

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- Specify the maximum permissible antenna gain in the application for mobiles
- Part 87 FAA Coordination Letter must be included in the application as a Letter Exhibit
  - Coordination letter must be from FAA Spectrum Engineering Division
  - European 8.33 kHz channel spacing requires a Waiver from WTB

Common Problems With Licensed Devices – Class II Permissive Changes

- Provide a list of modifications
- Justify Class II permissive changes and provide data as necessary to justify changes
- Class II Remeasurement Tolerance for fundamental frequencies
  - Conducted Power: +/- 0.5 dB
  - Radiated Power (ERP/EIRP): +/- 3 dB for test site and antenna variations as specified in TIA-603-A Annex B.1.1 (Class II measurement tolerance not intended for host-to-host variation in multi-host filings)
- Power on Class II Grant remains the same as power listed on the Original Grant

Licensed Modules

- Licensed modules can be installed in other devices provided the following criteria are met:
  - The device is designed for mobile or fixed operation (Portable is not permitted – Reference TCB Exclusion List (17 July 2002) II(g)).
  - The maximum antenna gain to allow compliance with RF exposure requirements is listed on the Grant.

Licensed Modules

- The licensed module must have a FCC ID label on the module itself. The FCC ID label must be visible through a window or it must be visible when an access panel, door or cover is easily removed. If not, a second label must be placed on the outside of the device that contains the following text:

  Contains FCC ID: xxxyyyzzz

Combined GMRS/FRS Radio Services

- Equipment Class:
  - FRF/FRT/FRE/FRB
  - Composite application not required
- Power Requirements:
  - Dual powers: up to 5 W ERP on GMRS channels
  - FRS ONLY channels, 500 mW ERP.
  - ERP must be measured for both modes and listed on the Grant.
  - Verify how the power is controlled for FRS output power levels on FRS channels. User control of the power is not permitted. The power control must be done automatically internal to the device. Check the tune-up procedure for power adjustment procedures.

Combined GMRS/FRS Radio Services

- Bandwidth Requirements:
  - Dual bandwidths: authorized BW up to 20 kHz on GMRS channels w/ default of 12.5 kHz.
  - FRS ONLY channels: authorized BW up to12.5 kHz.
- Antenna Requirements:
  - An integral antenna is required.

Combined GMRS/FRS Radio Services

- Consumer Information:
  - There must be an informational insert inside the box (product package) that clearly informs the consumer (buyer/owner) when the radio is transmitting on GMRS frequencies, that operation on GMRS frequencies requires an FCC license and such operation is subject to additional rules specified in 47 C.F.R. Part 95. As an alternative, this information can be supplied in the User's Manual. The User's Manual must have a chart with all frequencies and the applicable radio service.

Combined GMRS/FRS Radio Services

- **Typical Grant Conditions:**
  - **Power is ERP. This device is authorized to operate in the following radio services: FRS (Part 95B) or GMRS (Part 95A). There must be an informational insert inside the box (product package) or the User's Manual must include information that clearly informs the consumer (buyer/owner) when the radio is transmitting on GMRS frequencies, that operation on GMRS frequencies requires an FCC license and such operation is subject to additional rules specified in 47 C.F.R. Part 95. (*Add RF exposure requirements as necessary including duty factor*.)**

Combined GMRS/FRS Radio Services

- **RF Safety Requirements:**
  - **GMRS/FRS devices are categorically excluded. SAR needed if conducted power > 1.5 Watts OR ERP > 1.52 W (EIRP > 2.5 W).**
  - **Device must meet the *General Population/Uncontrolled Exposure* limits.**
  - **Verify that the Push-to-Talk (PTT) duty-factor is not to exceed 50% (Typical PTT power amplifiers are not capable of sustaining > 50% duty-factor).**
  - **Appropriate Grant conditions are required for RF exposure including the duty factor.**