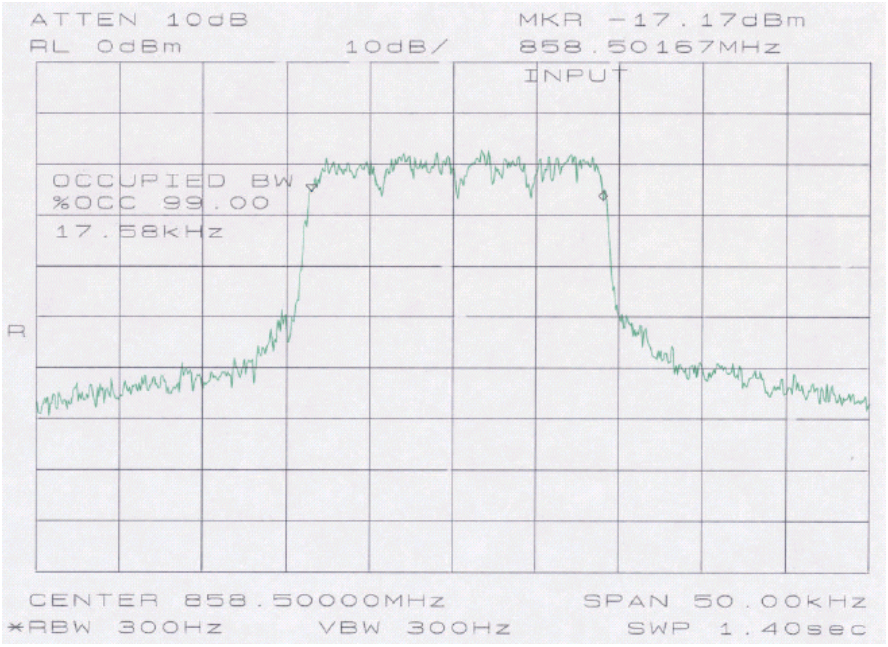
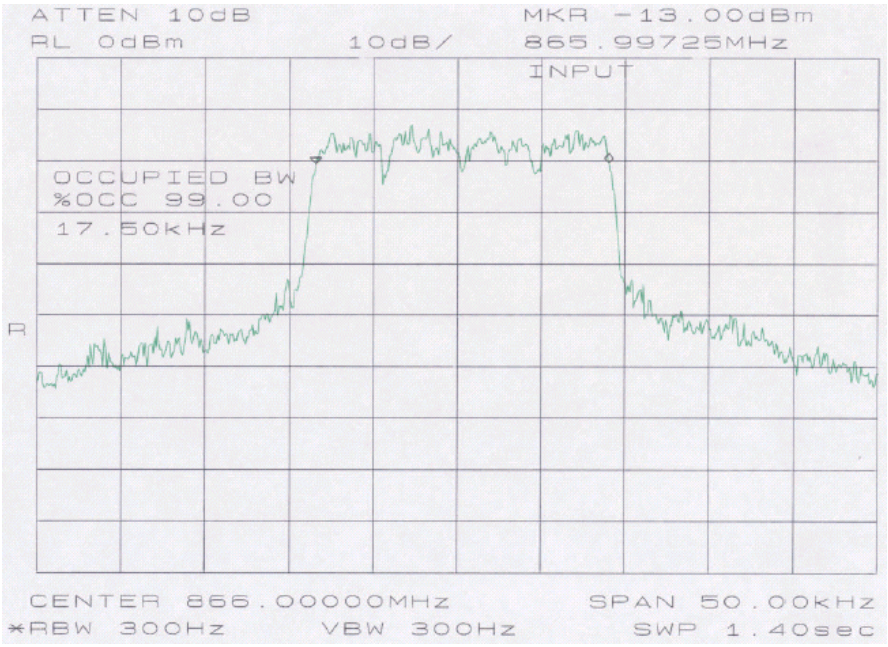
V. Electromagnetic Compatibility Occupied Bandwidth Requirements



Plot #17: Downlink Middle Channel (858.5 MHz) 99% Occupied Bandwidth



Plot #18: Downlink Highest Channel (866 MHz) 99% Occupied Bandwidth

Test Engineer: Kerwinn Corpuz

Test Date: 04/18/03

VI. Electromagnetic Compatibility Spurious Emissions at Antenna Terminal Requirements

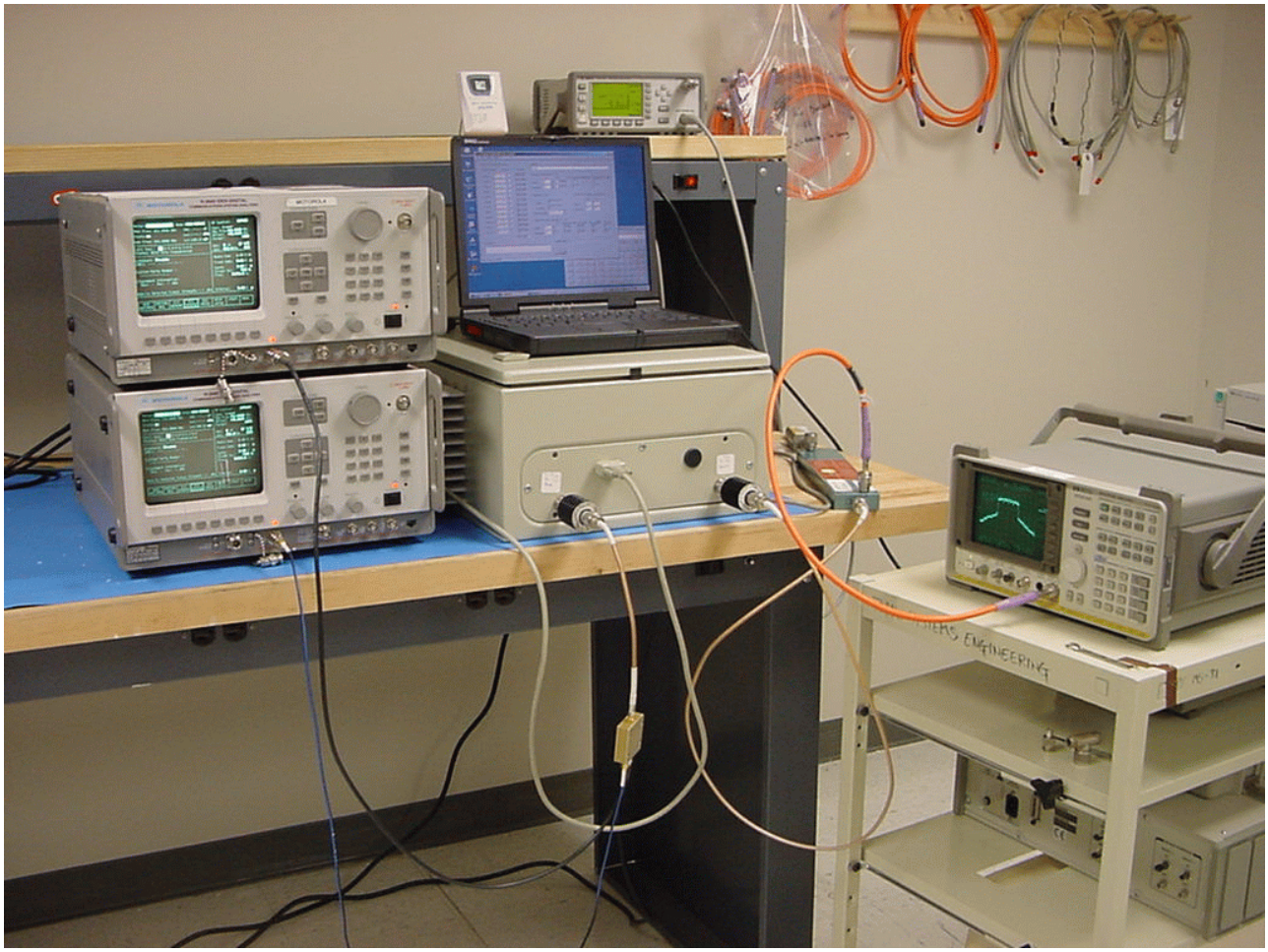
VI. Electromagnetic Compatibility Spurious Emissions at Antenna Terminal Requirements

A. Spurious Emissions at Antenna Terminals

Technical Specifications: §2.1051 and §90.210

Test equipment: Test equipment for Spurious Emissions at Antenna Terminals is listed in Section X of this report.

Photograph:



Photograph 3. Spurious Emissions at Antenna Terminals Test Setup Photo

VI. Electromagnetic Compatibility Spurious Emissions at Antenna Terminal Requirements

Measurement Procedures: As required by 47 CFR 2.1051, *spurious emissions at antenna terminal measurements* were made at the RF output terminals using a 25-watt 30 dB attenuator and a Spectrum Analyzer.

Set a 50.7 dB Reference Level Offset, RBW = 300 kHz and VBW = 1 MHz to Spectrum Analyzer. RBW was set to 300 kHz to improve the Spectrum Analyzer noise floor. The EUT was set to transmit two tones in the lowest of the operating frequency range. The iDEN signal generators was adjusted enough to produce maximum output power as specified in the owner's manual. The Spectrum Analyzer was set to sweep 15 MHz to the 10th harmonic of the fundamental. The Display Line was set to -13 dBm as the limit line. Plotted the Spurious Emissions graph. This process was repeatedly done at the highest channels and each end of operating frequency range for Uplink and Downlink.

Measured Output Power of EUT: 3.55 Watts (PEP; Peak Envelope Power)

Spur limit = Po - (43 + 10logPo); Po = 3.55 watts or 35.5 dBm

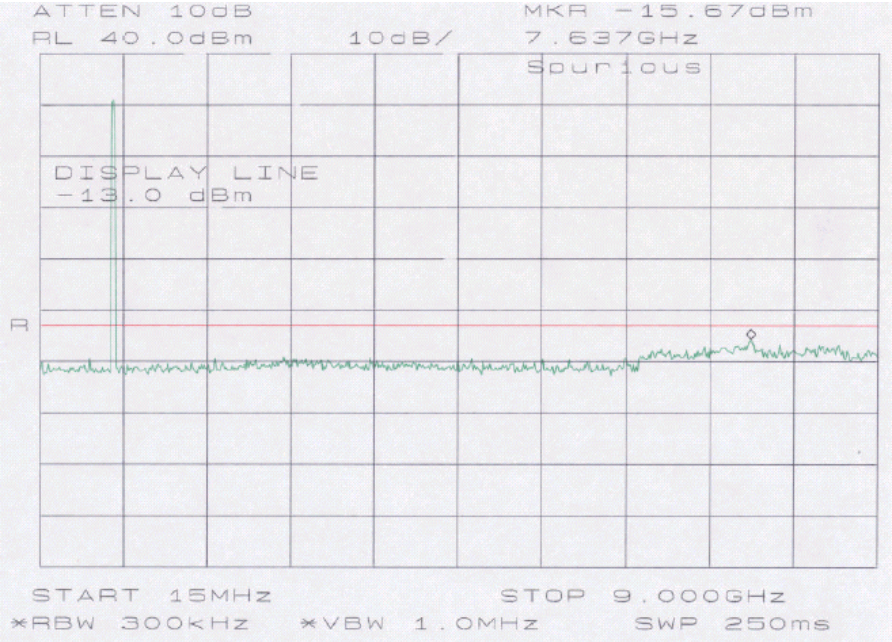
35.5dBm - (43 + 10log 3.55) = 35.5 dBm - (48.5 dB) = -13 dBm

Results: Equipment complies with Section 2.1051 and 90.210. The following pages show measurements of Spurious Emission plots which is recorded below:

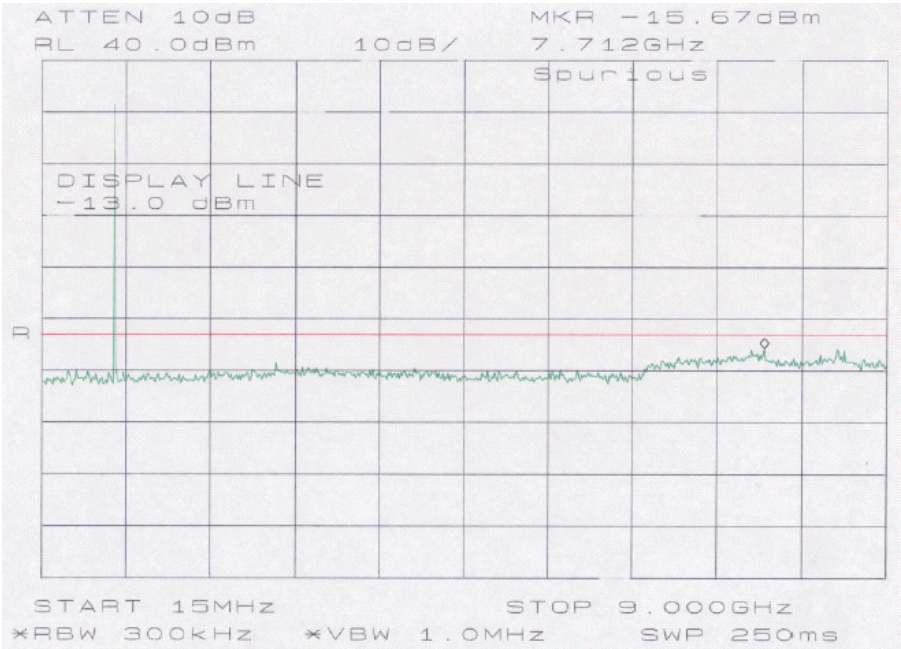
UPLINK	
Plot #	**Comment**
19	Two tones at Lowest Channels (806 and 807 MHz) Spurious Emissions
20	Two tones at Highest Channels (820 and 821 MHz) Spurious Emissions
21	Single tone at each end of Operating Frequency Range (806 and 821 MHz) Spurious Emissions
DOWNLINK	
Plot #	**Comment**
22	Two tones at Lowest Channels (851 and 852 MHz) Spurious Emissions
23	Two tones at Highest Channels (865 and 866 MHz) Spurious Emissions
24	Single tone at each end of Operating Frequency Range (851 and 866 MHz) Spurious Emissions

The following plots are included to illustrate compliance with the required rule parts.

VI. Electromagnetic Compatibility Spurious Emissions at Antenna Terminal Requirements

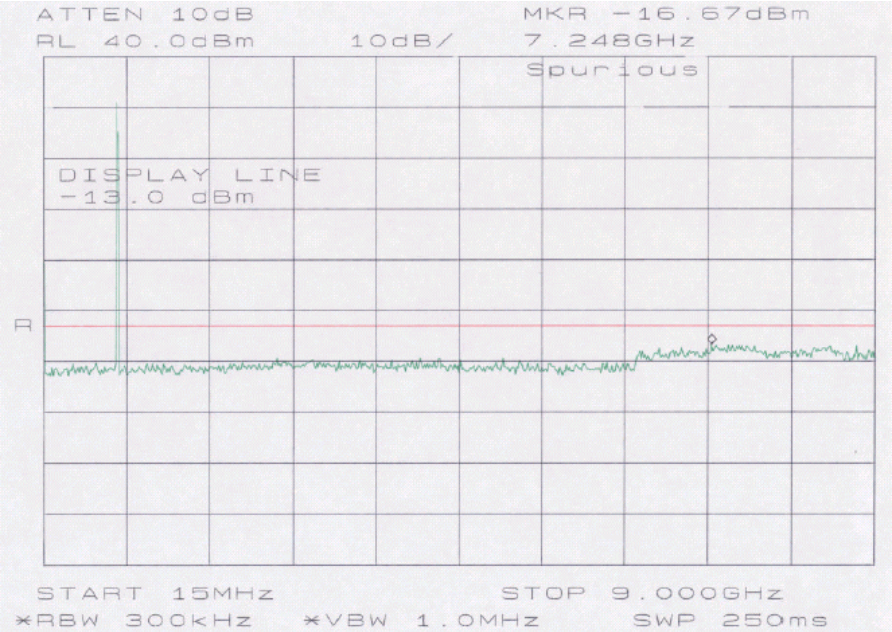


Plot #19: Two Tones at Lowest Channels (806 and 807 MHz) Spurious Emissions

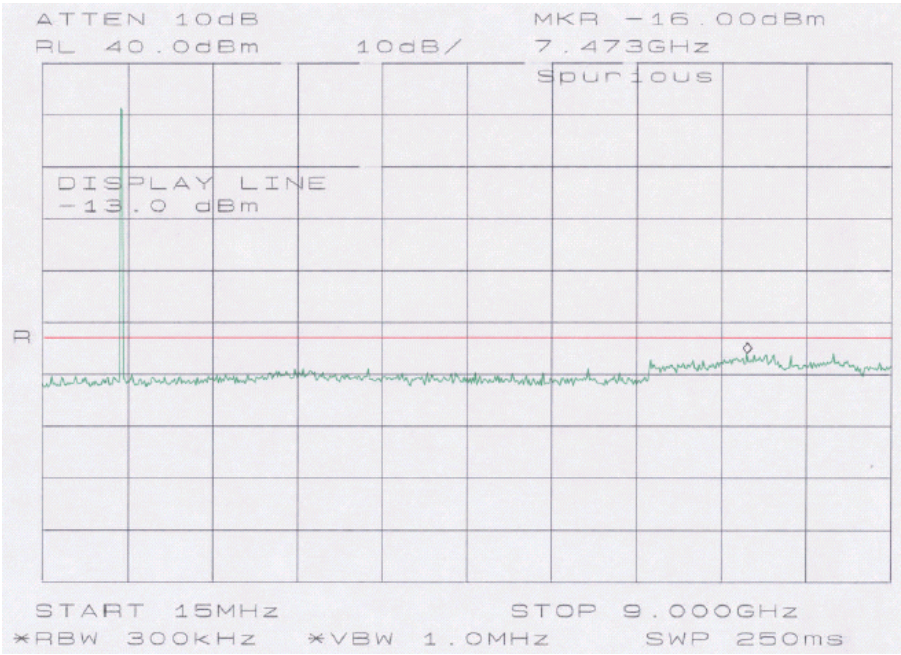


Plot #20: Two Tones at Highest Channel (820 and 821 MHz) Spurious Emissions

VI. Electromagnetic Compatibility Spurious Emissions at Antenna Terminal Requirements

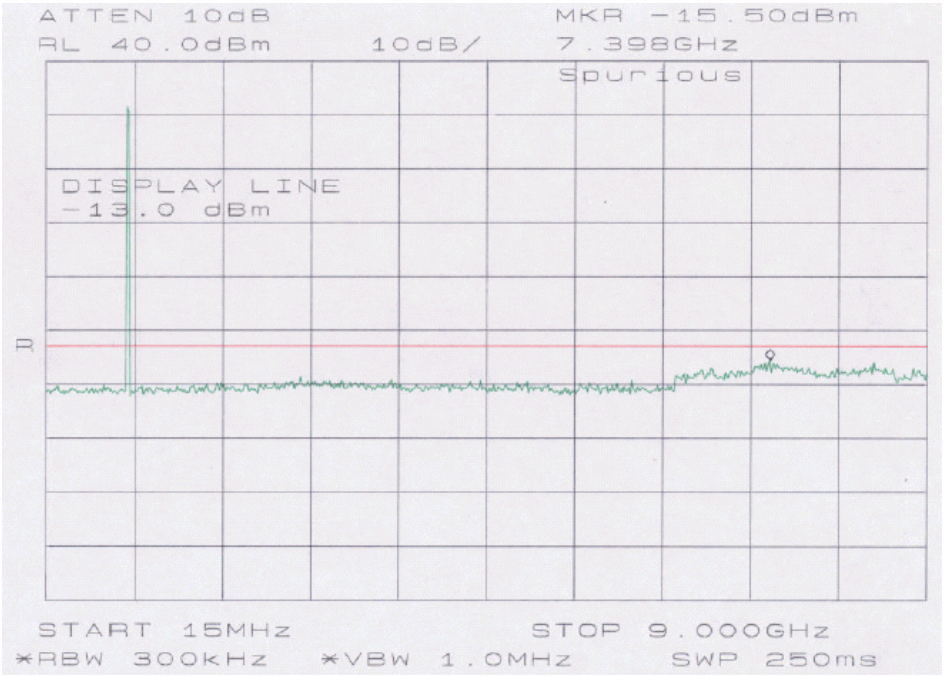


Plot #21: Single Tone at Each End of Operating Frequency Range (806 and 821 MHz) Spurious Emissions

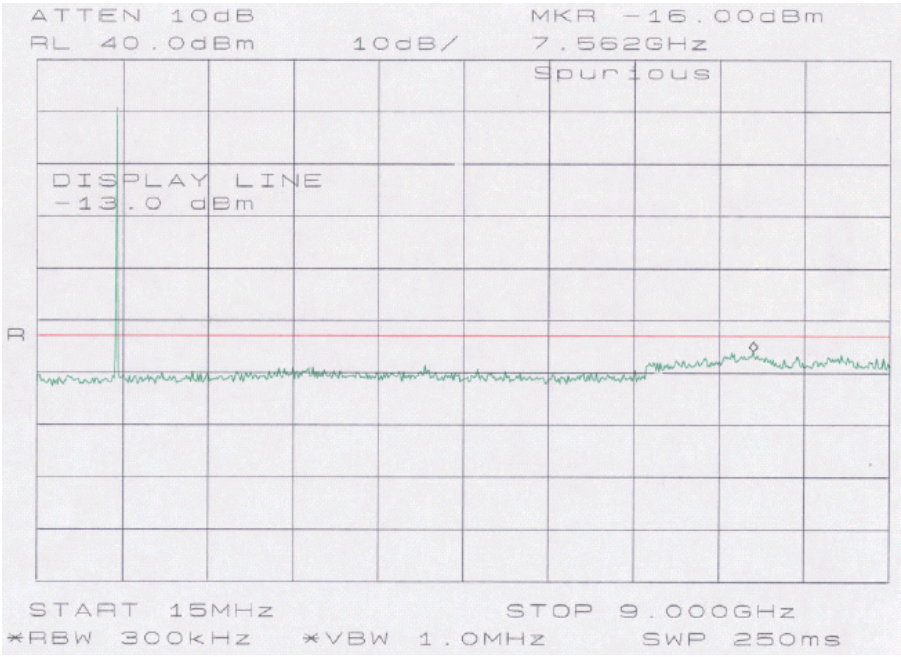


Plot #22: Two Tones at Lowest Channels (851 and 852 MHz) Spurious Emissions

VI. Electromagnetic Compatibility Spurious Emissions at Antenna Terminal Requirements



Plot #23: Two Tones at Highest Channels (865 and 866 MHz) Spurious Emissions



Plot #24: Single Tone at Each End of Operating Frequency Range (851 and 866 MHz) Spurious Emissions

Test Engineer: Kerwinn Corpuz

Test Date: 04/21/03

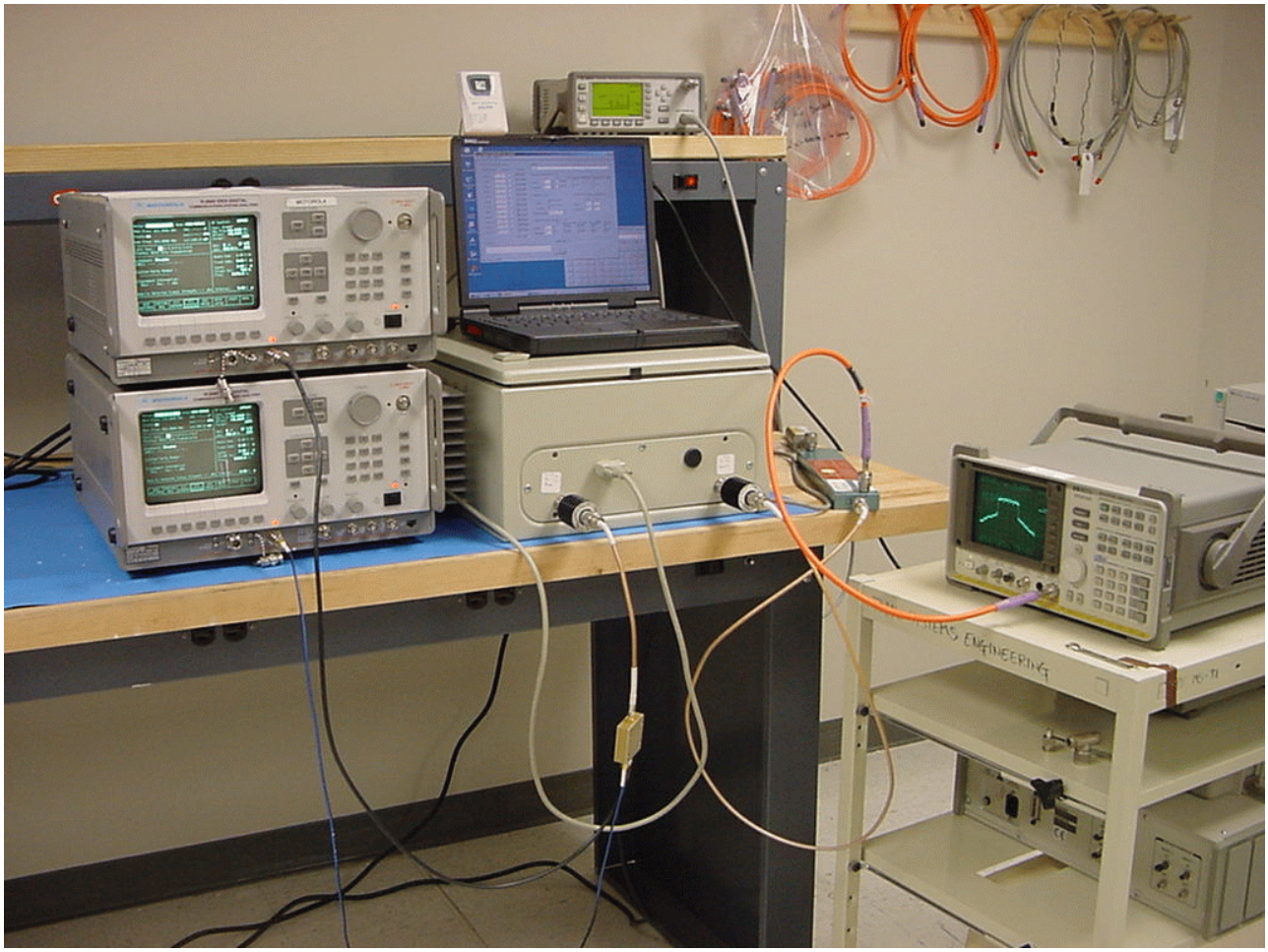
VI. Electromagnetic Compatibility Spurious Emissions at Antenna Terminal Requirements

B. Intermodulation Products

Technical Specifications: §90.210 - EUT is a multi-channel and it is required to do Intermodulation Products Test

Test equipment: Test equipment for Intermodulation Products at Antenna Terminals is listed in Section X of this report.

Photograph:



Photograph 4. Intermodulation Products at Antenna Terminals Test Setup Photo

VI. Electromagnetic Compatibility Spurious Emissions at Antenna Terminal Requirements

Measurement Procedures: As required for multi channel device, *Intermodulation Products measurements* were made at the RF output terminals using a 25-watt 30 dB attenuator and a Spectrum Analyzer.

Set a 50.7 dB Reference Level Offset, RBW = 10 kHz and VBW = 30 kHz to Spectrum Analyzer. RBW and VBW was set per TIA/EIA 603. The EUT was set to transmit two tones in the lowest of the operating frequency range. The iDEN signal generators was adjusted enough to produce maximum output power as specified in the owner's manual. The Spectrum Analyzer was set to sweep enough to see the intermodulation products created by the two tones. The Display Line was set to -13 dBm as the limit line. Plotted the Intermodulation Products graph. This process was repeatedly done at the highest channels and each end of operating frequency range for Uplink and Downlink.

Measured Output Power of EUT: 3.55 Watts (PEP; Peak Envelope Power)

Spur limit = Po - (43 + 10logPo); Po = 3.55 watts or 35.5 dBm

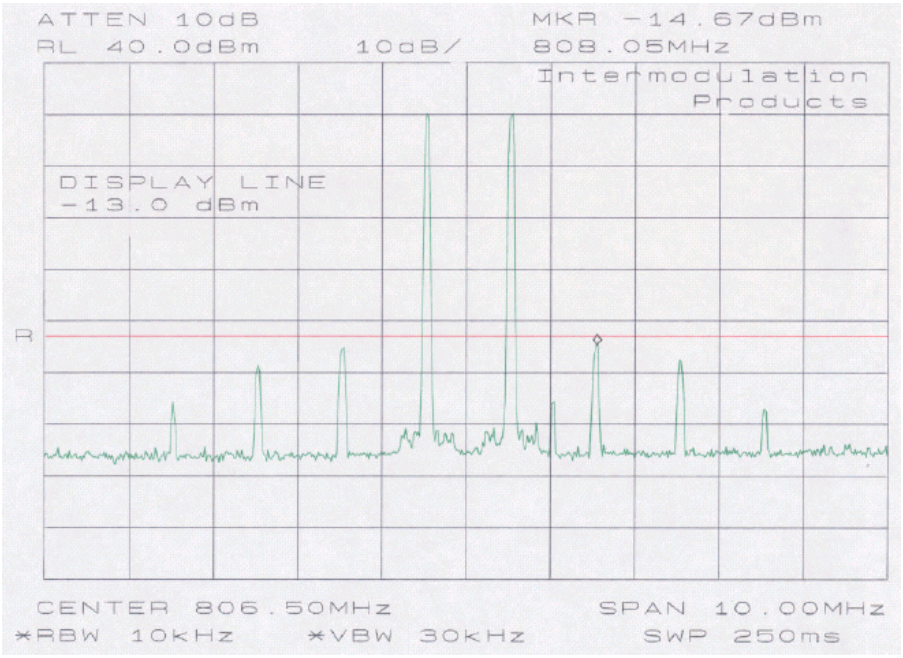
35.5dBm - (43 + 10log 3.55) = 35.5 dBm - (48.5 dB) = -13 dBm

Results: Equipment complies with Intermodulation Products. The following pages show measurements of emissions plots which is recorded below:

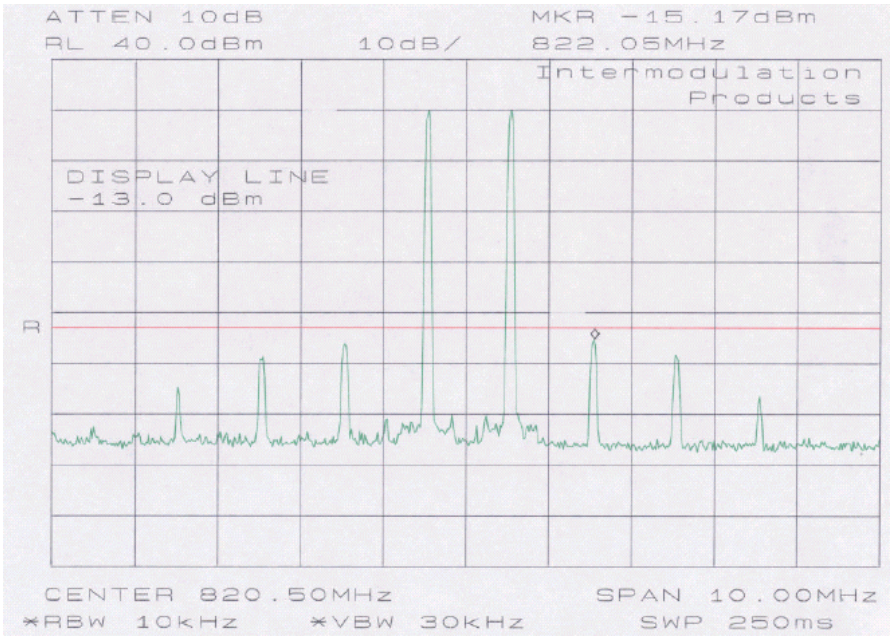
UPLINK	
Plot #	**Comment**
25	Two tones at Lowest Channels (806 and 807 MHz) Intermodulation Products
26	Two tones at Highest Channels (820 and 821 MHz) Intermodulation Products
27	Single tone at each end of Operating Frequency Range (806 and 821 MHz) Intermodulation Products
DOWNLINK	
Plot #	**Comment**
28	Two tones at Lowest Channels (851 and 852 MHz) Intermodulation Products
29	Two tones at Highest Channels (865 and 866 MHz) Intermodulation Products
30	Single tone at each end of Operating Frequency Range (851 and 866 MHz) Intermodulation Products

The following plots are included to illustrate compliance with the required rule parts.

VI. Electromagnetic Compatibility Spurious Emissions at Antenna Terminal Requirements

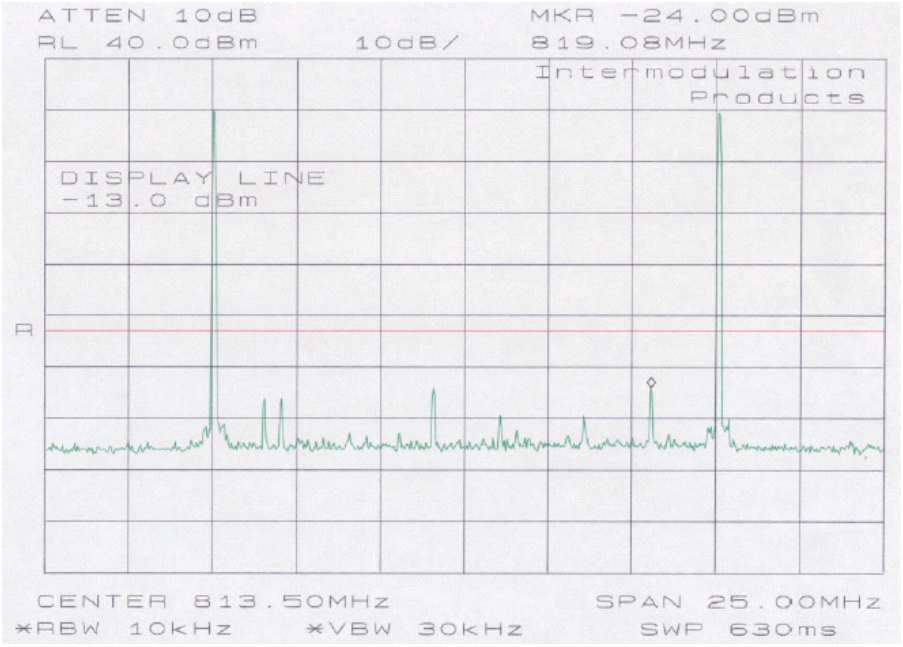


Plot #25: Two Tones at Lowest Channels (806 and 807 MHz) Intermodulation Products

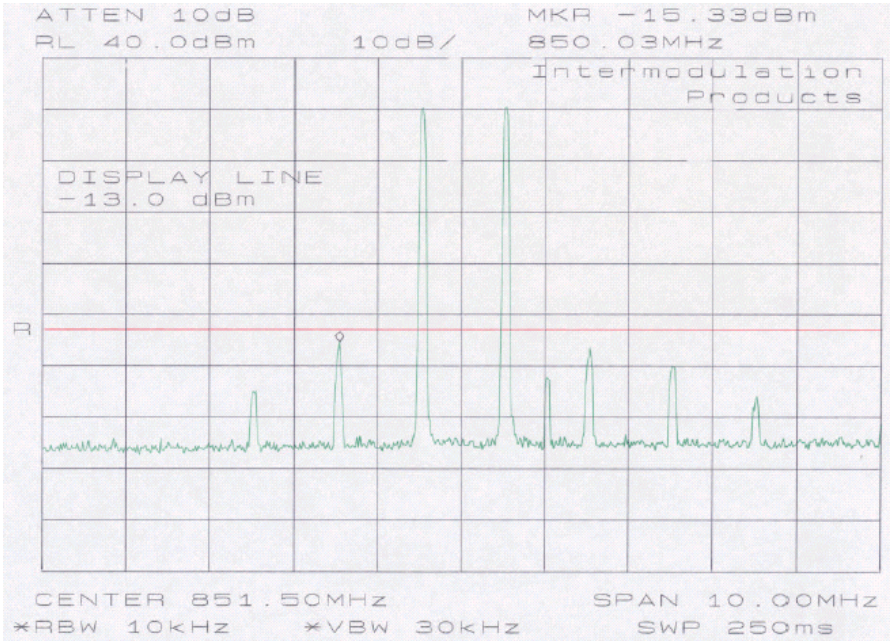


Plot #26: Two Tones at Highest Channels (820 and 821 MHz) Intermodulation Products

VI. Electromagnetic Compatibility Spurious Emissions at Antenna Terminal Requirements

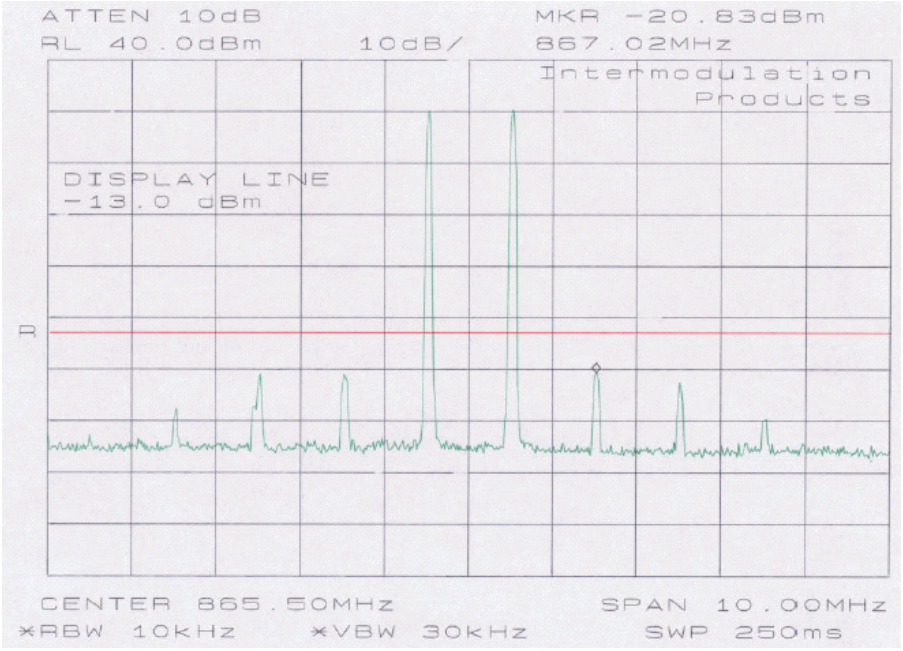


Plot #27: Single Tone at Each End of Operating Frequency Range (806 and 821 MHz) Intermodulation Products

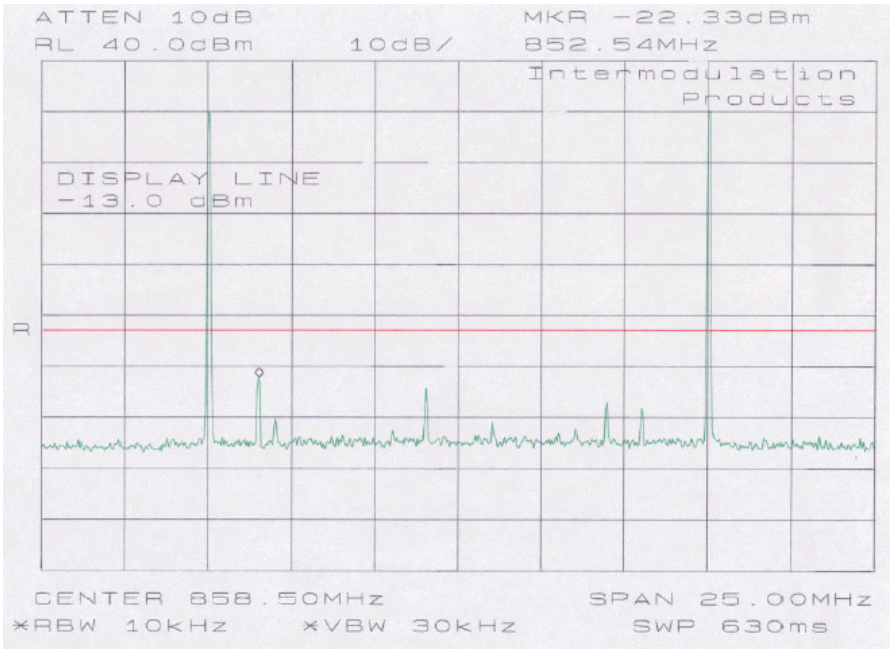


Plot #28: Two Tones at Lowest Channels (851 and 852 MHz) Intermodulation Products

VI. Electromagnetic Compatibility Spurious Emissions at Antenna Terminal Requirements



Plot #29: Two Tones at Highest Channel (865 and 866 MHz) Intermodulation Products



Plot #30: Single Tone at Each End of Operating Frequency Range (851 and 866 MHz) Intermodulation Products

Test Engineer: Kerwinn Corpuz

Test Date: 04/21/03

