CFR 47 Part 2, 22, and 24 Test Report

Test Report Number: 01-RF-0626 Amendment A

Terminal device: FCC ID: GMLNPW-3, Model 8265, HW: 3.1, SW: 3.0
(Detailed information is listed in section 4 of the original test report).

Originator:	Randy Leenerts
Function:	TCC - Dallas - EMC
Version/Status:	1.0 Approved
Location:	TCC Directories
Date:	February 13, 2002

Change History:

Version	*Date*	*Status*	*Handled By*	*Comments*
0.1	February 7, 2002	Draft	Randy Leenerts	In Process
0.2	February 12, 2002	Draft	Elizabeth Parish	Updated
1.0	February 13, 2002	Approved	Alan C. Ewing	Approved

Testing laboratory:
Test & Certification Center (TCC) Dallas
Nokia Mobile Phones, Inc
6021 Connection Drive
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U.S.A.
Tel. 972-894-5000
Fax. 972-894-4988

Client:
Nokia Mobile Phones, Inc.
Model 8265, FCC ID: GMLNPW-3
6021 Connection Drive
Irving, Texas 75039
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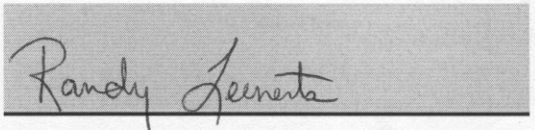
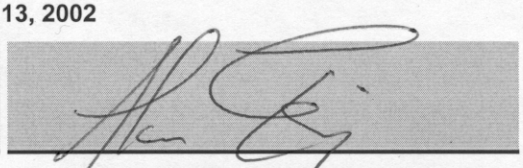
Tel. 972-894-5000
Fax. 972-894-4988

Date and signatures: **February 13, 2002**

For the contents:



Randy Leenerts, EMC Engineer
Technical Review



Alan C. Ewing, General Manager
Manager Review

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1. GENERAL

1.1 Quality System

The quality system in place for TCC-Dallas conforms to ISO/IEC 17025 and has been audited to the standard by A2LA (American Association of Laboratory Accreditation). The appendix of the original report contains the scope of accreditation for A2LA. TCC – Dallas has also been audited using the ISO 9000 Quality System, as part of Nokia Mobile Phones, Inc., by ABS (American Bureau of Shipping) Quality Evaluations Inc.

TCC-Dallas is a recognized laboratory with the Federal Communications Commission in filing applications for Certification under Parts 15 and 18,Registration Number 100060, and Industry Canada, Registration Number IC 661.

1.2 Objective

The objective of this test report amendment is to supplement or amend information provided in the original test report, Test Report No. 01-RF-0026.

The following information are comments/questions from and responses to the Federal Communication Commission.

EMC

1) Internal photograph with antenna clearly notated.

Photographs included in original submission (Internal Photographs, page 5) shows the antenna detail in the upper right quadrant of the picture.

2) Updated occupied BW plots. Those on exhibit are extremely difficult to read. Please scan with higher resolution. Also if possible please use a darker color for the trace.

Refer to Section 11 and Section 12 of this test report amendment.

3) A statement discussing the methods used to account for the burst nature of TDMA signals in your conducted and radiated measurements.

EMI Measurement Receiver is set at a very slow scan rate.

4) Additional radiated spurious data. Use of the substitution method is required.

Refer to Section 15 of this test report amendment.

5) Statement of the emission mode used on page 38. F1D and TDMA are both mentioned on the plot. It is not clear to the FCC that TDMA uses F1D modulation. Please clarify.

The plot shows TDMA modulation. The F1D mask is used on the plot to determine compliance. Refer to Section 11.3 of this test report amendment, page 20.

6) A statement clarifying maximum power. The plot on page 38 shows power reference of 30 dBm was used. The FCC understands the power of this unit is 27 dBm. Please clarify the difference and provide a new plot as appropriate.

Refer to Section 11.3 of this test report amendment, page 20.

7) A statement clarifying 50% deviation of the unit. Page 24 states that 50% deviation is 2.5 KHz while deviation plots on page 21 of 85 show a maximum deviation of 12 KHz. Please clarify.

The language in the report in intended to indicate that though 50% modulation (i.e. 6 kHz) is used where reasonable, 2.5 kHz deviation is typically chosen for practical considerations. Using the 2.5 kHz reference mentioned, it is necessary to input nearly 5V into the audio input of the phone. This is well beyond the normal operating range of the handset (which is in the mV range), and higher voltages would risk doing permanent damage to the audio circuitry. The circuitry is sufficiently saturated at this level to demonstrate worst case modulation.

11. OCCUPIED BANDWIDTH (EMISSIONS MASKS)

Specification: FCC Part 2.1049(c)(1), 24.238(a)(b)

11.1 Setup

Testing was performed with the EUT connected to a 6dB splitter, 6dB attenuator, filter bank and then to the EMI receiver. The base station simulator was connected to the other port of the splitter to establish a call.

For EUTs supporting audio modulation, the audio signal generator was adjusted to the frequency of maximum response and with the output level set for +/-2.5kHz deviation (or 50% modulation). With level constant, the signal level was increased 16dB.

For EUTs supporting digital modulation, the digital modulation mode was operated to its maximum extent.

11.2 Pass/Fail Criteria

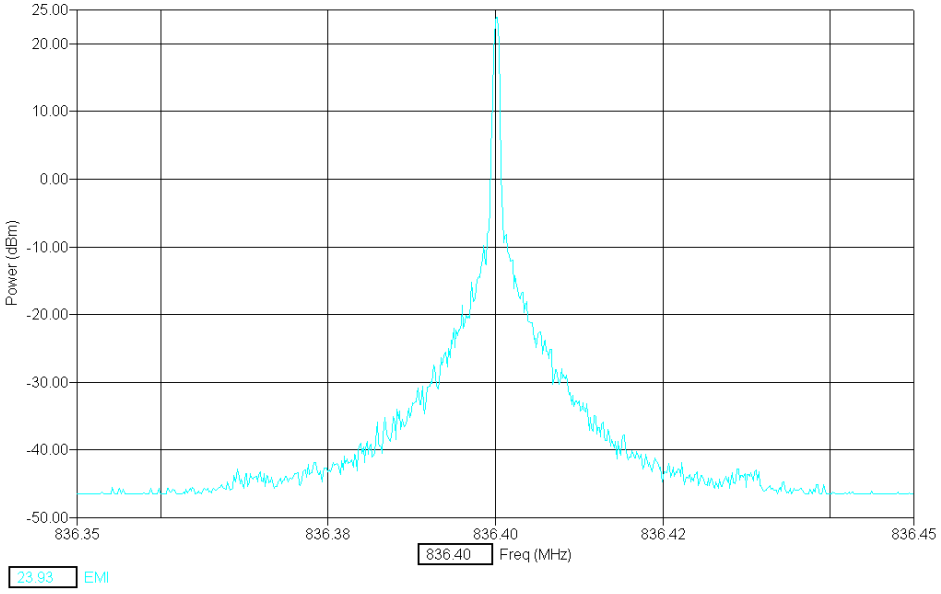
Modulation	Low Limit (kHz)	High Limit (kHz)
Voice	10.8	13.2
Wideband Data	7.2	8.8

11.3 Detailed Test Results

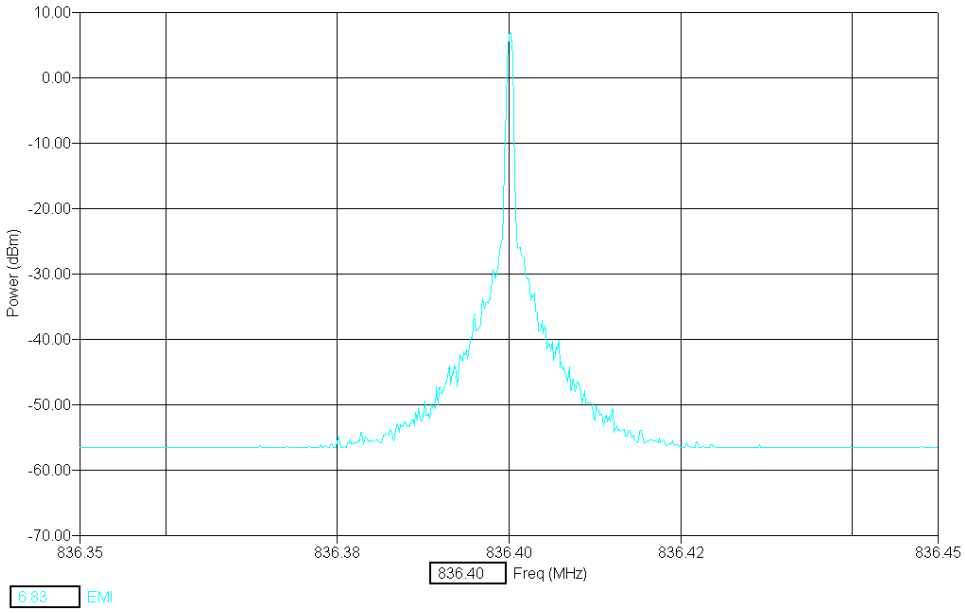
Test Technician / Engineer	Byron Holz/ Mark Severson	
Date of Measurement	December 05, 2001	
Temperature / Humidity	22°C	56%RH
Test Result	FCC ID: GMLNPW-3 complies with FCC Part 2.1049(c)(1), 24.238(a)(b)	

AMPS Low and Max Power Measurements – no modulation; 836.4 MHz

Max Power:



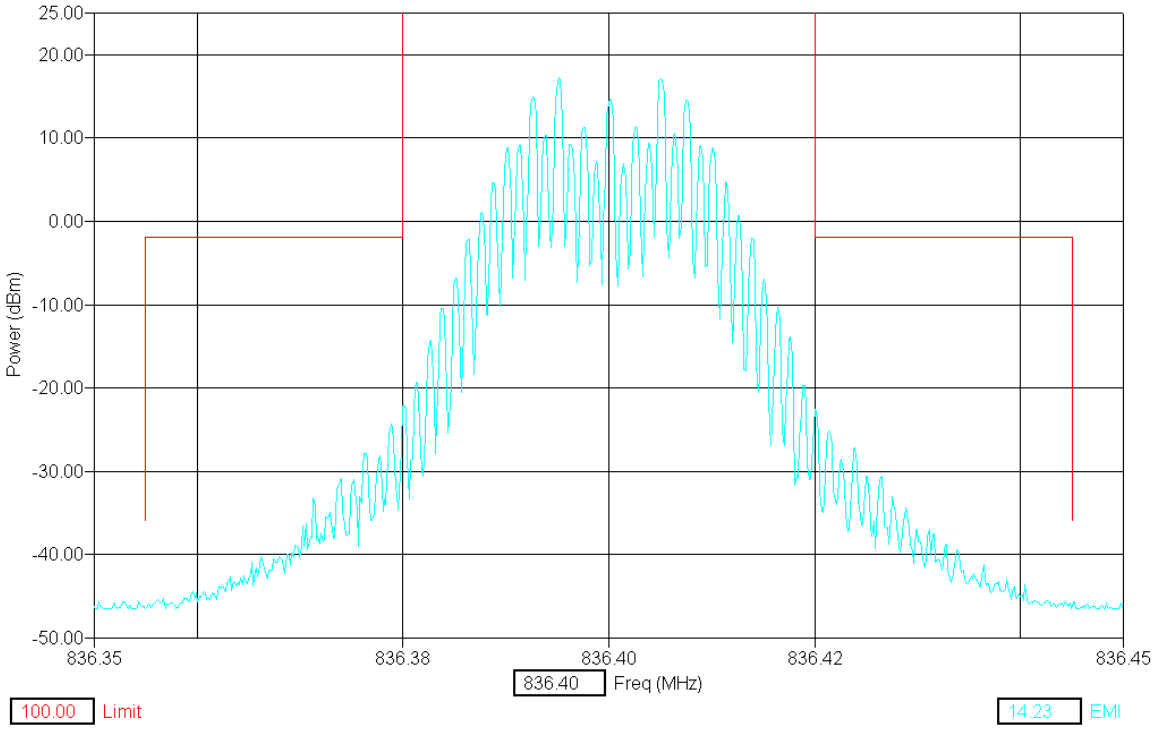
Min Power:



AMPS Min and Max Power – Voice (2500 Hz Sine Wave); F3E/F3D mask

100 kHz Span, 300 Hz RBW/VBW, ref to power level

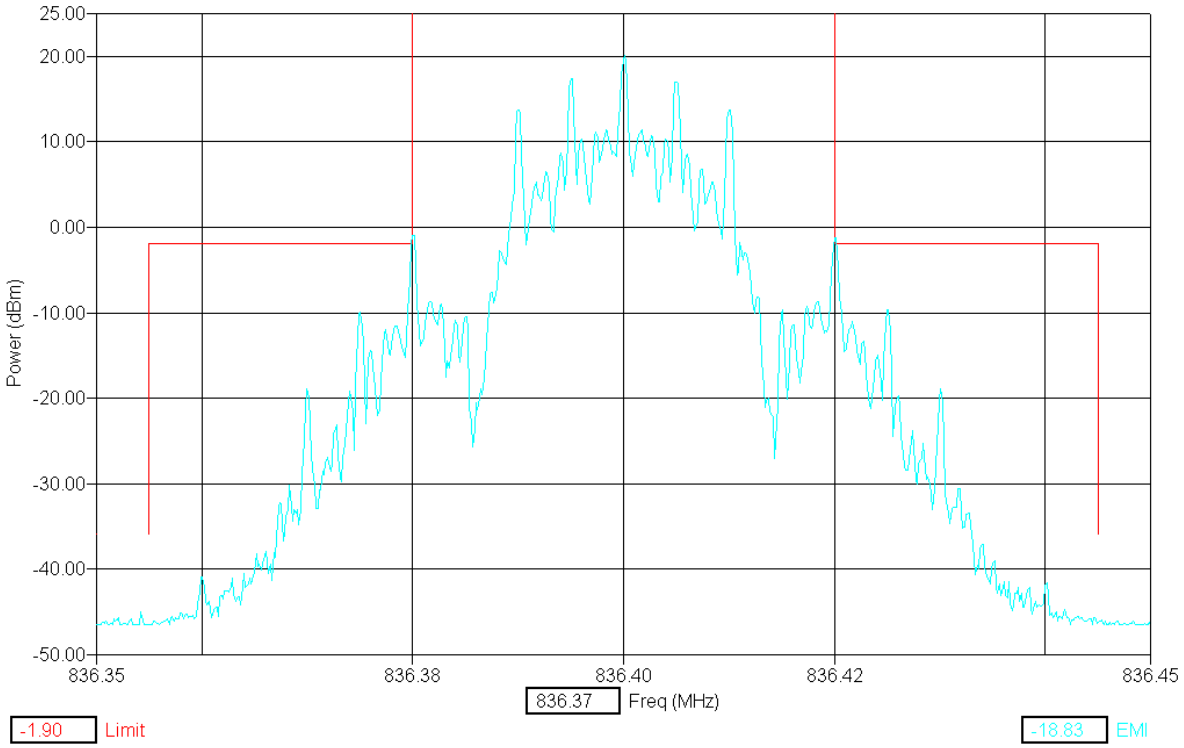
Max Power, Voice Only



AMPS Min and Max Power – Wideband Data; F3E/F3D mask

100 kHz Span, 300 Hz RBW/VBW, ref to power level

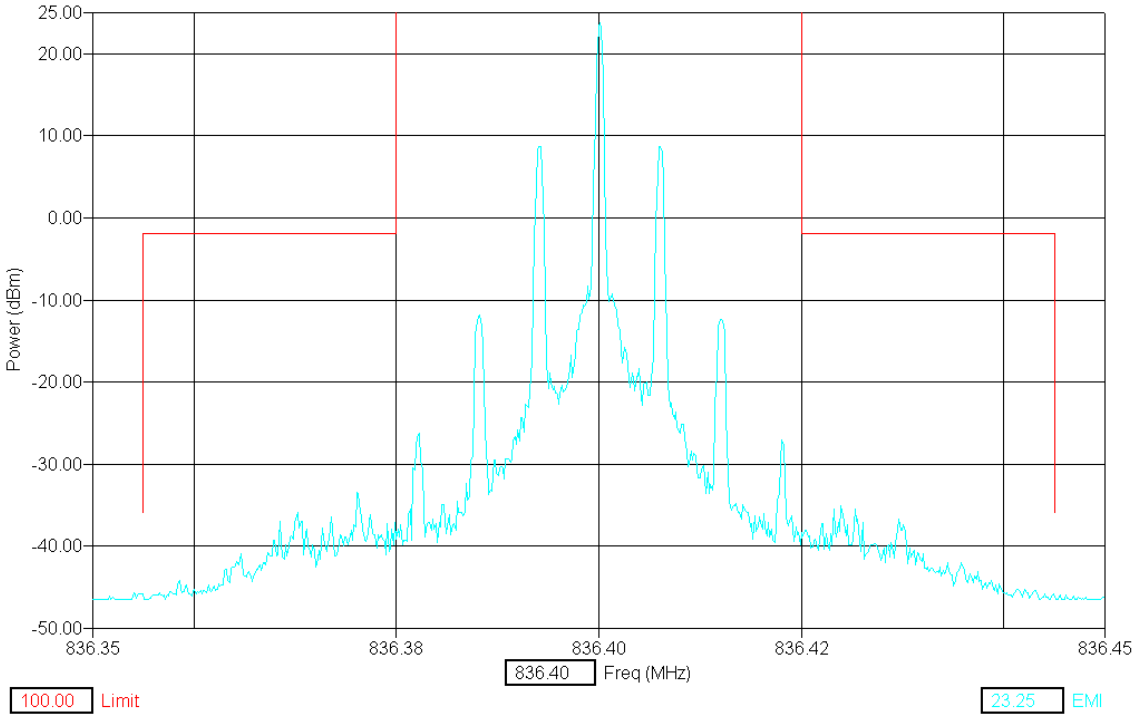
Max Power, WBD



AMPS Min and Max Power – SAT; F3E/F3D mask

100 kHz Span, 300 Hz RBW/VBW, ref to power level

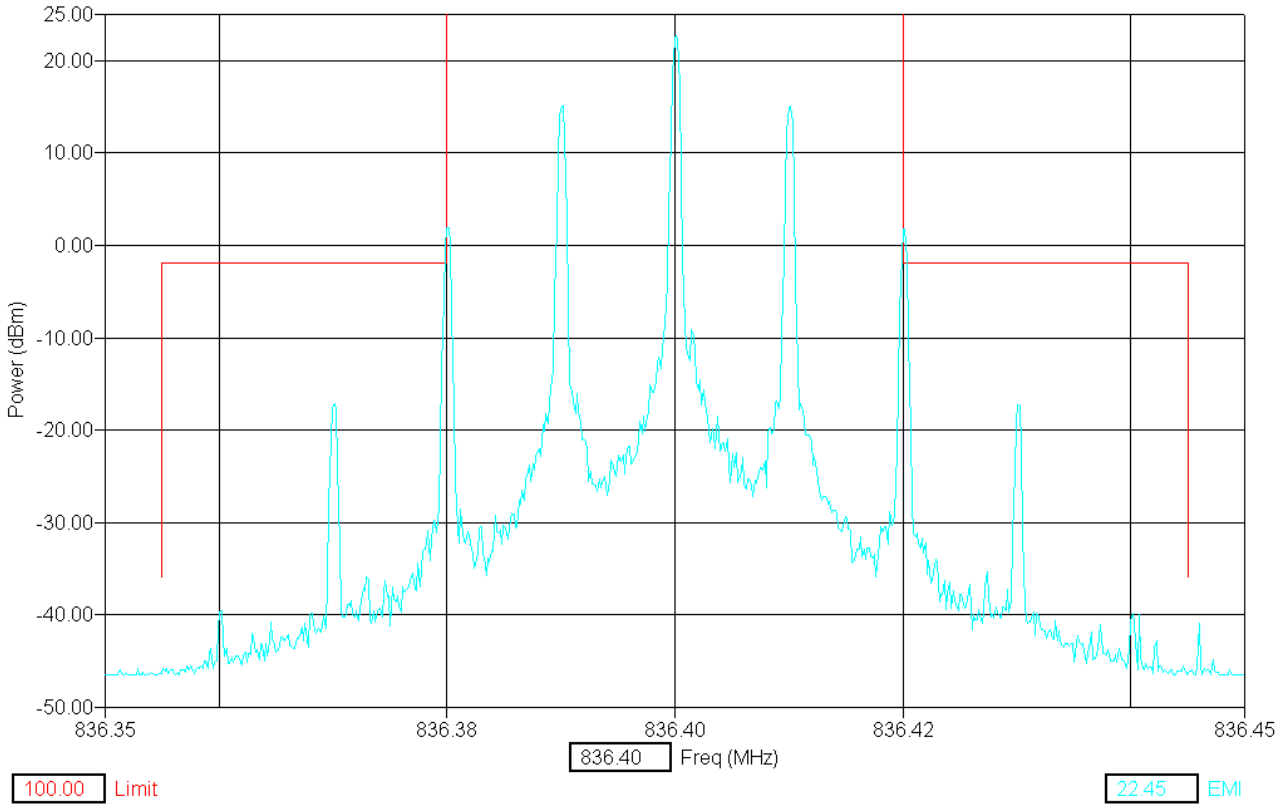
Max Power, SAT Only



AMPS Min and Max Power – ST; F3E/F3D mask

100 kHz Span, 300 Hz RBW/VBW, ref to power level

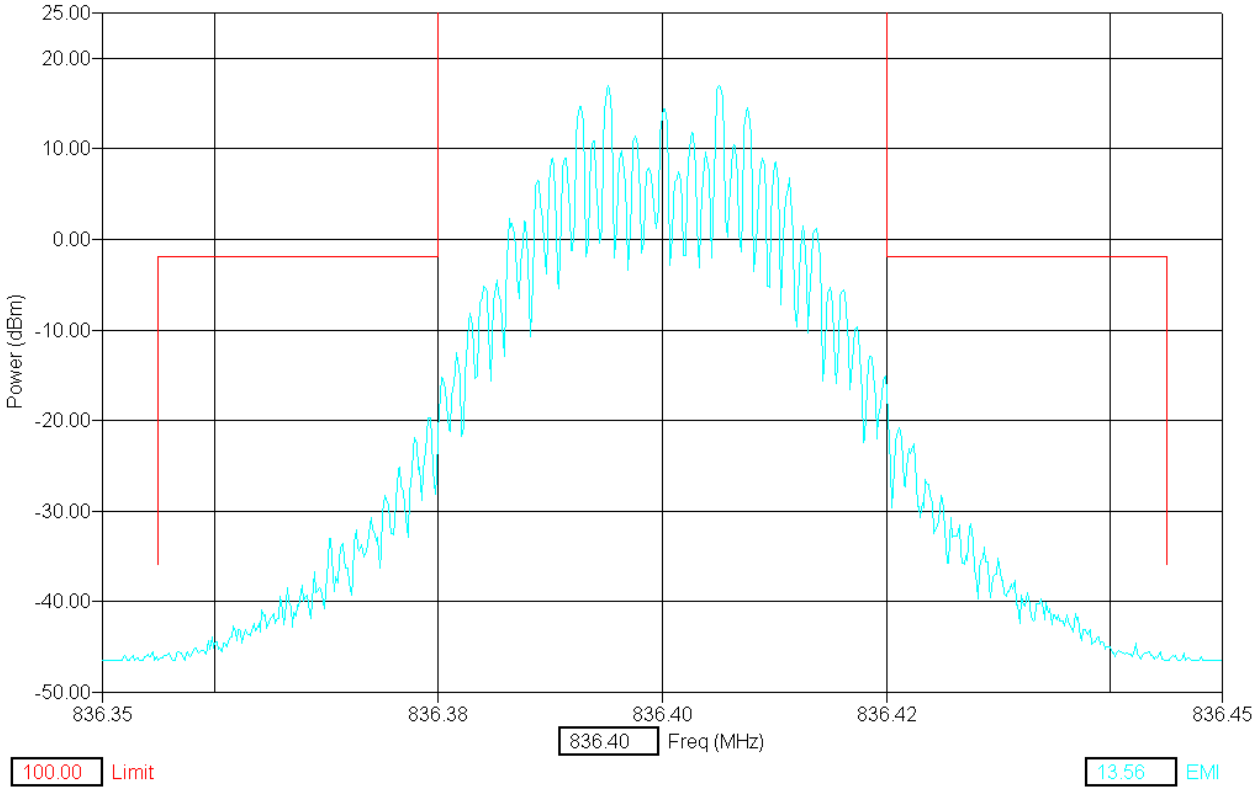
Max Power, ST Only



AMPS Min and Max Power – SAT + Voice; F3E/F3D mask

100 kHz Span, 300 Hz RBW/VBW, ref to power level

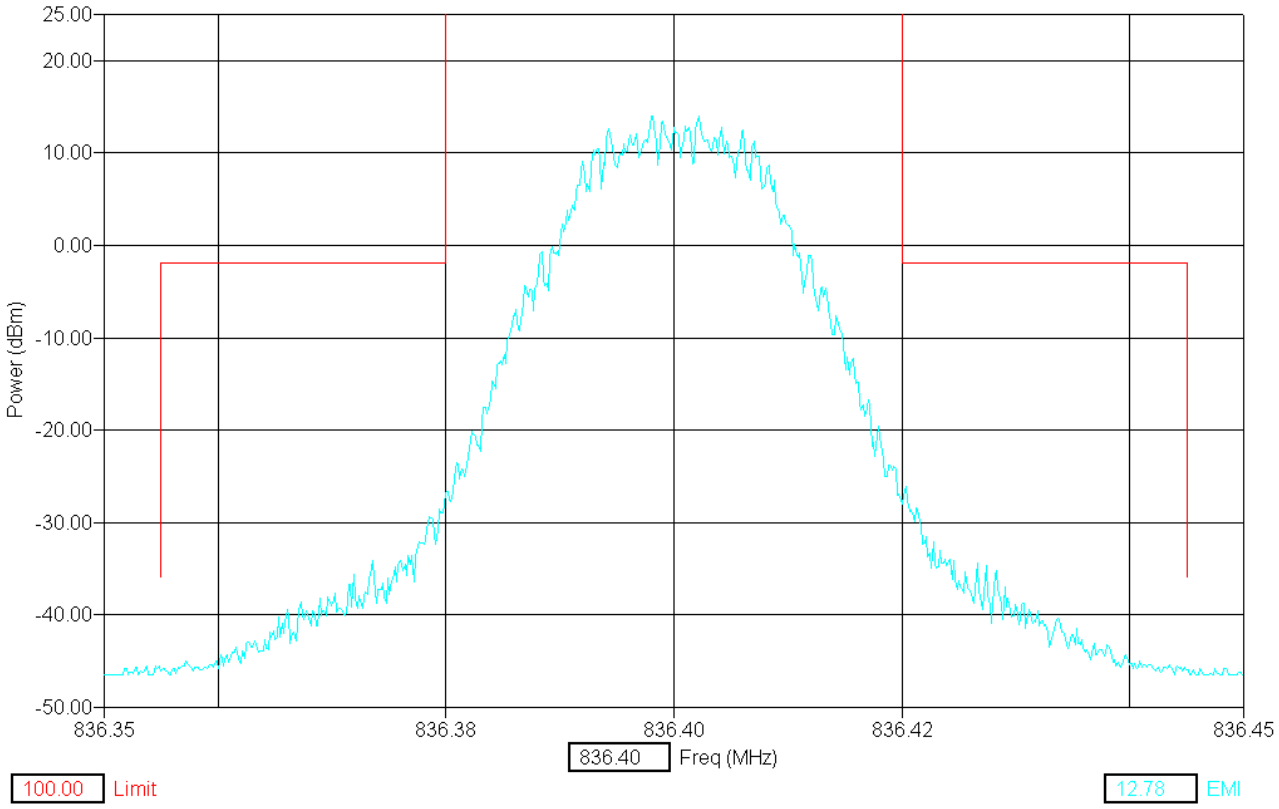
Max Power, SAT+ Voice



AMPS Min and Max Power – SAT + DTMF; F3E/F3D mask

100 kHz Span, 300 Hz RBW/VBW, ref to power level

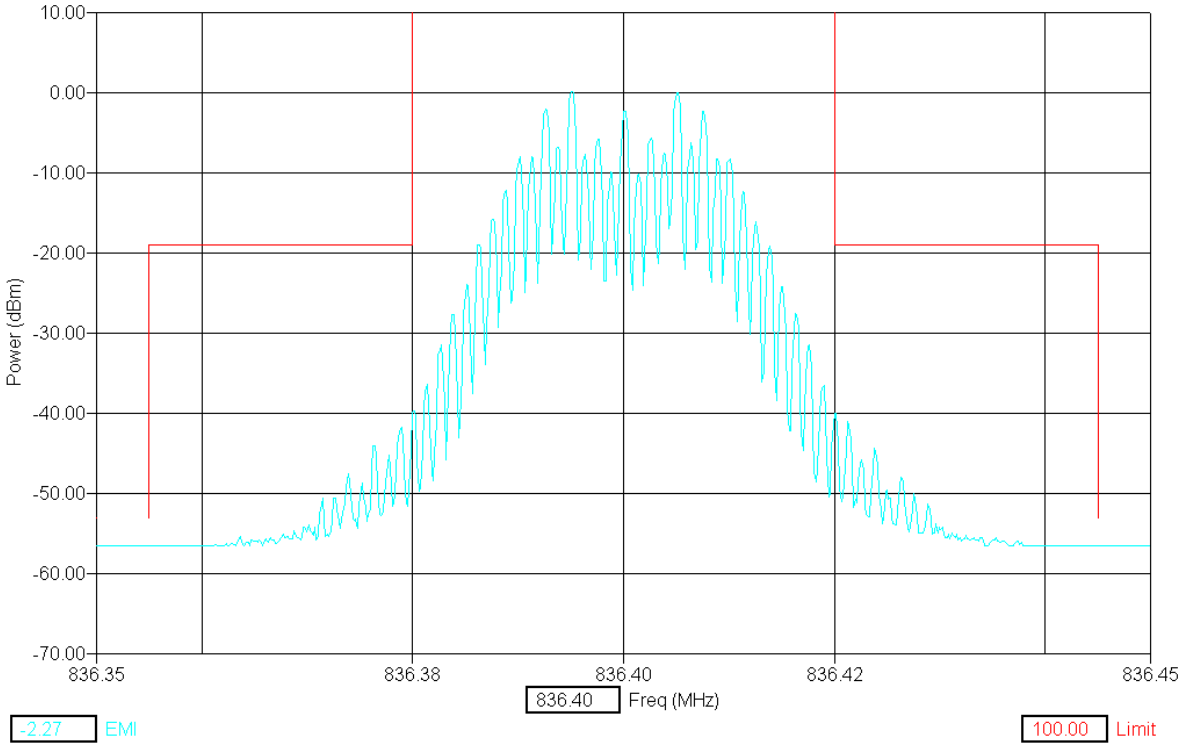
Max Power, SAT+DTMF



AMPS Min and Max Power – Voice (2500 Hz Sine Wave); F3E/F3D mask

100 kHz Span, 300 Hz RBW/VBW, ref to power level

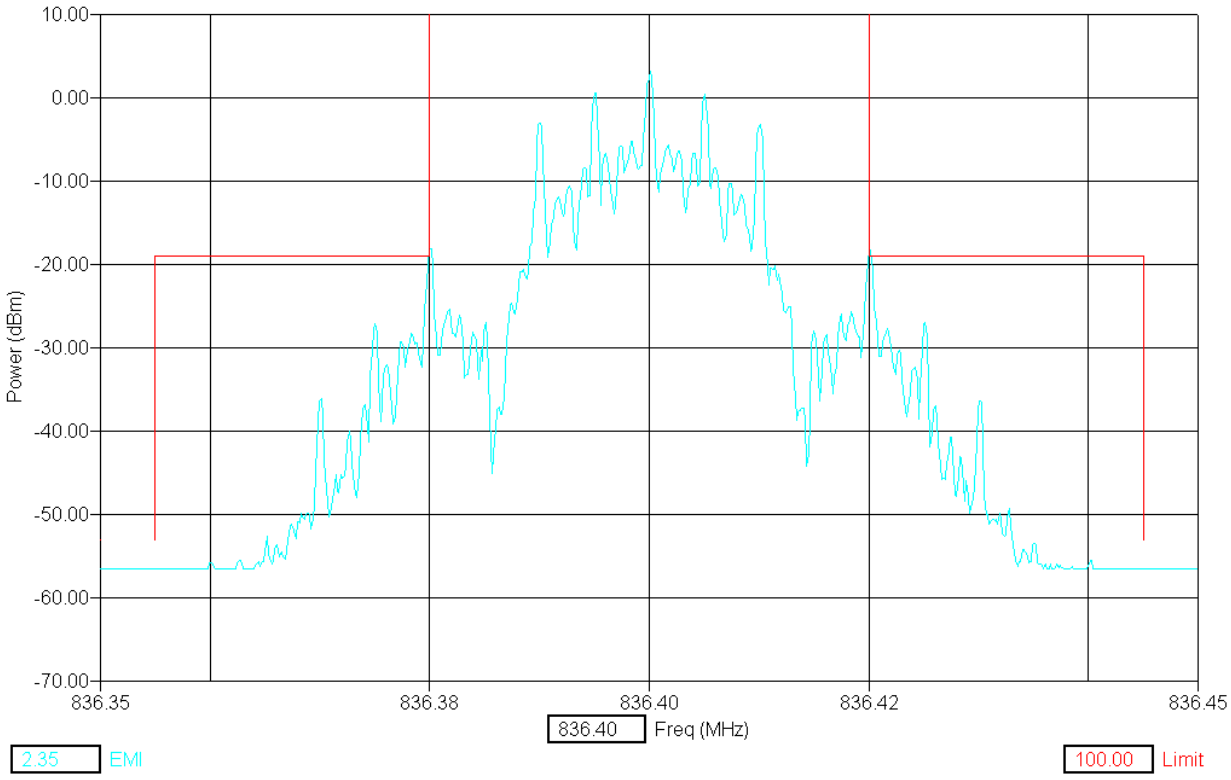
Min Power, Voice Only



AMPS Min and Max Power – Wideband Data; F3E/F3D mask

100 kHz Span, 300 Hz RBW/VBW, ref to power level

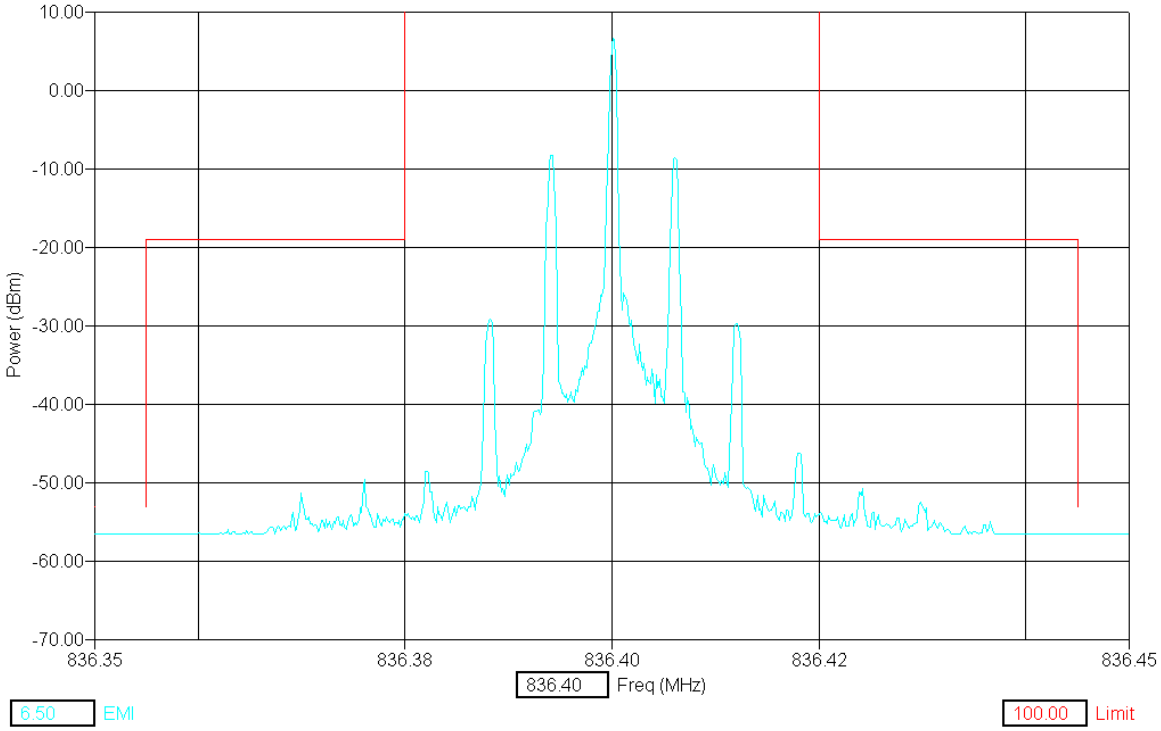
Min Power, WBD



AMPS Min and Max Power – SAT; F3E/F3D mask

100 kHz Span, 300 Hz RBW/VBW, ref to power level

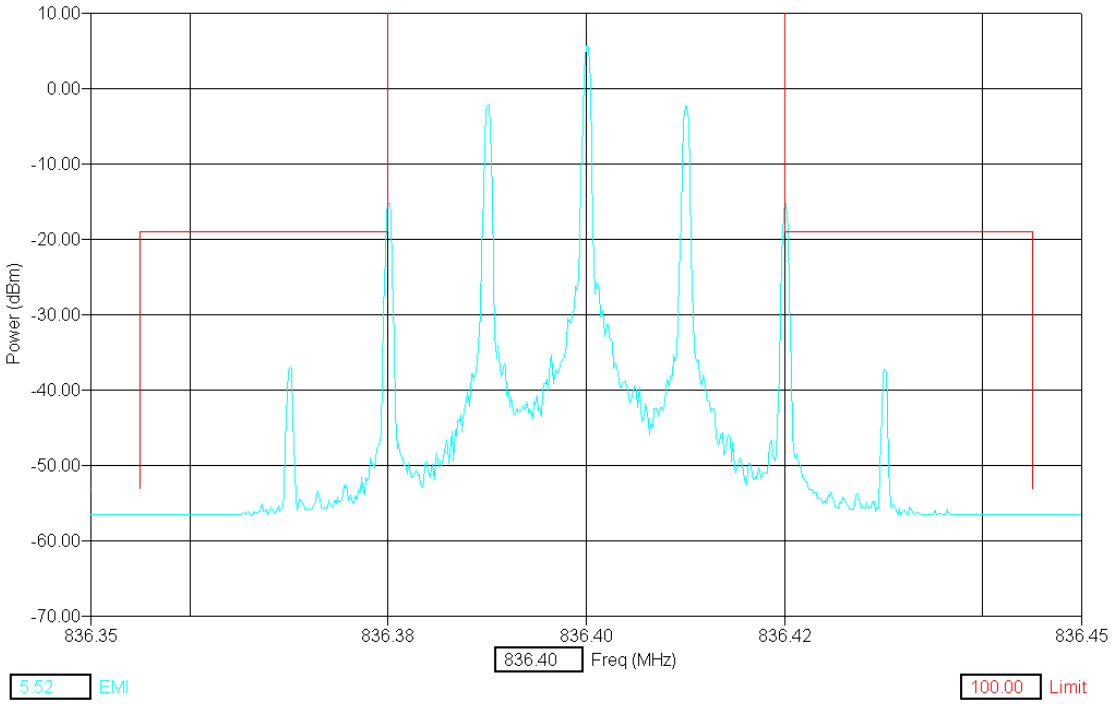
Min Power, SAT Only



AMPS Min and Max Power – ST; F3E/F3D mask

100 kHz Span, 300 Hz RBW/VBW, ref to power level

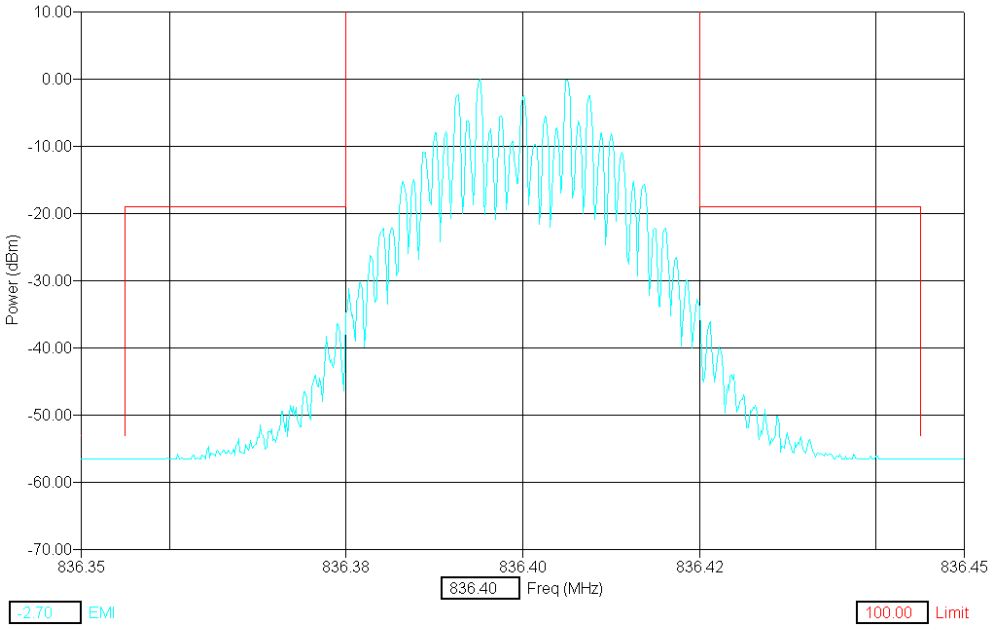
Min Power, ST Only



AMPS Min and Max Power – SAT + Voice; F3E/F3D mask

100 kHz Span, 300 Hz RBW/VBW, ref to power level

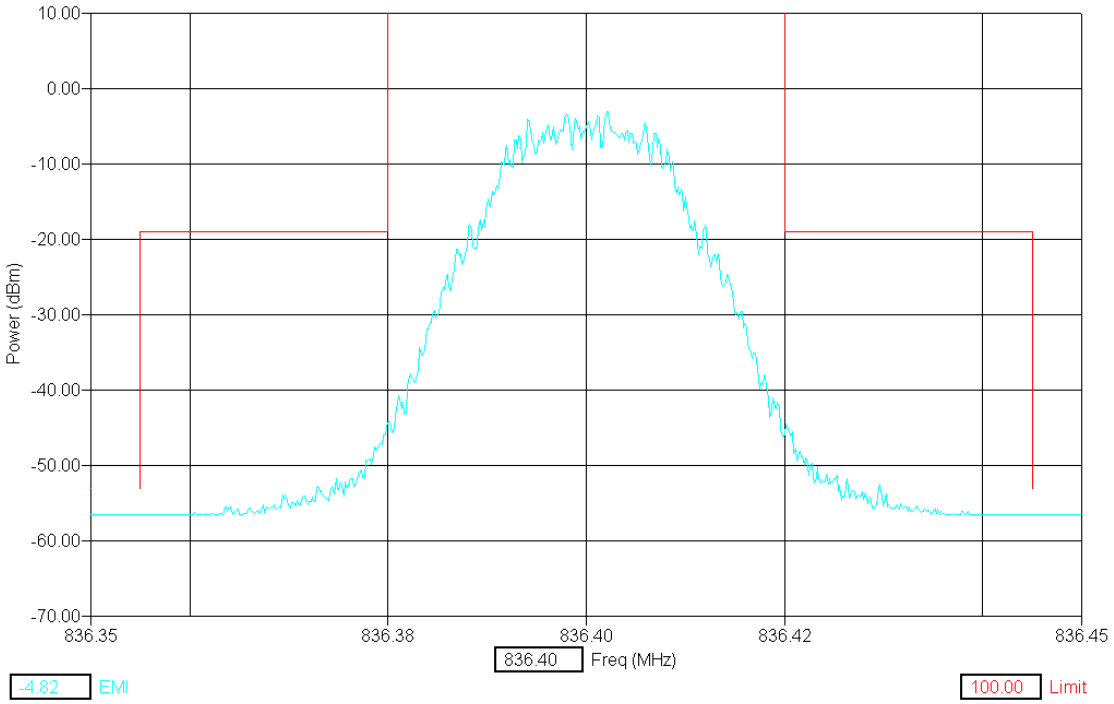
Max Power, SAT+ Voice



AMPS Min and Max Power – SAT + DTMF; F3E/F3D mask

100 kHz Span, 300 Hz RBW/VBW, ref to power level

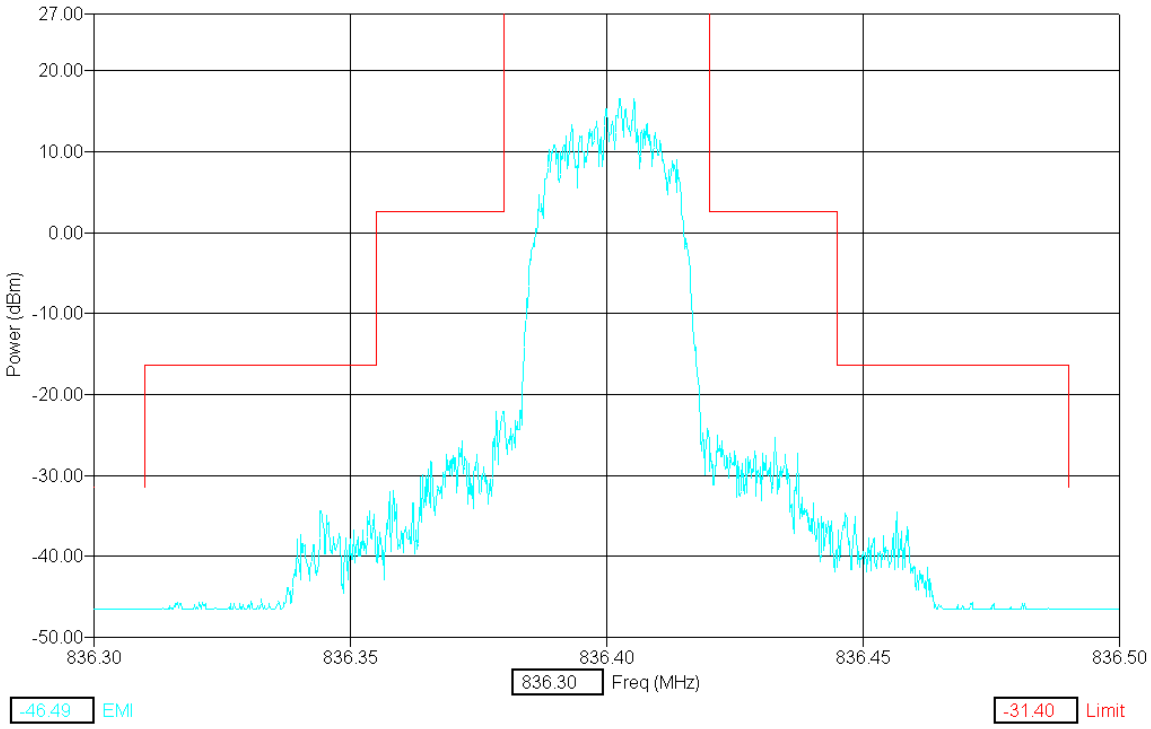
Min Power, SAT+DTMF



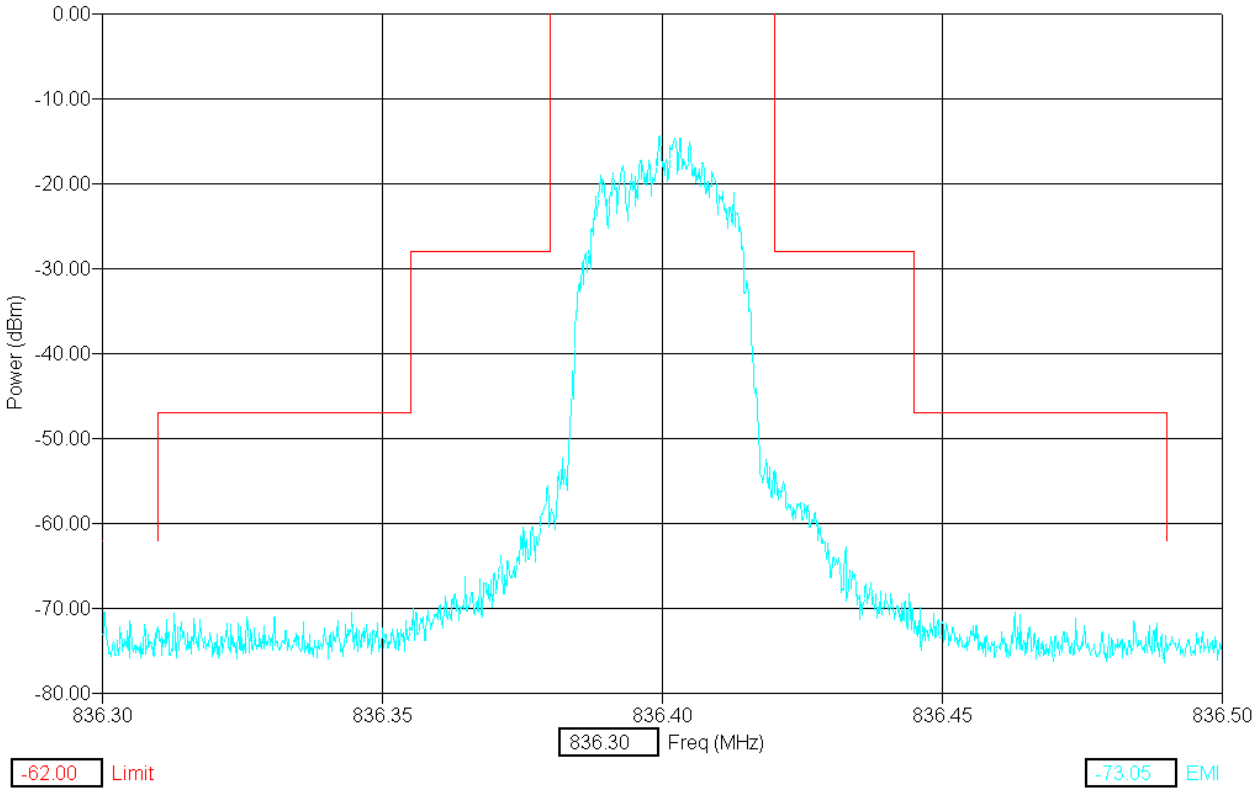
TDMA Min and Max Power – Modulation is TDMA, Mask is FID

200 kHz Span, 300 Hz RBW/VBW, ref to power level

Max Power, TDMA Random Data



Min Power, TDMA Random Data



11.4 Measurement Uncertainty

The measurement uncertainty for this test is +/- 3.7dB for 100kHz - 1000MHz and +/- 5.3dB for 1 - 20GHz.

12. OCCUPIED BANDWIDTH (TRANSMITTER CONDUCTED MEASUREMENTS)

Specification: FCC Part 2.1049(c)(1), 24.238(a)(b)

12.1 Setup

Testing was performed with the EUT connected to a 6dB splitter, 6dB attenuator, filter bank and then to the EMI receiver. The base station simulator was connected to the other port of the splitter to establish a call.

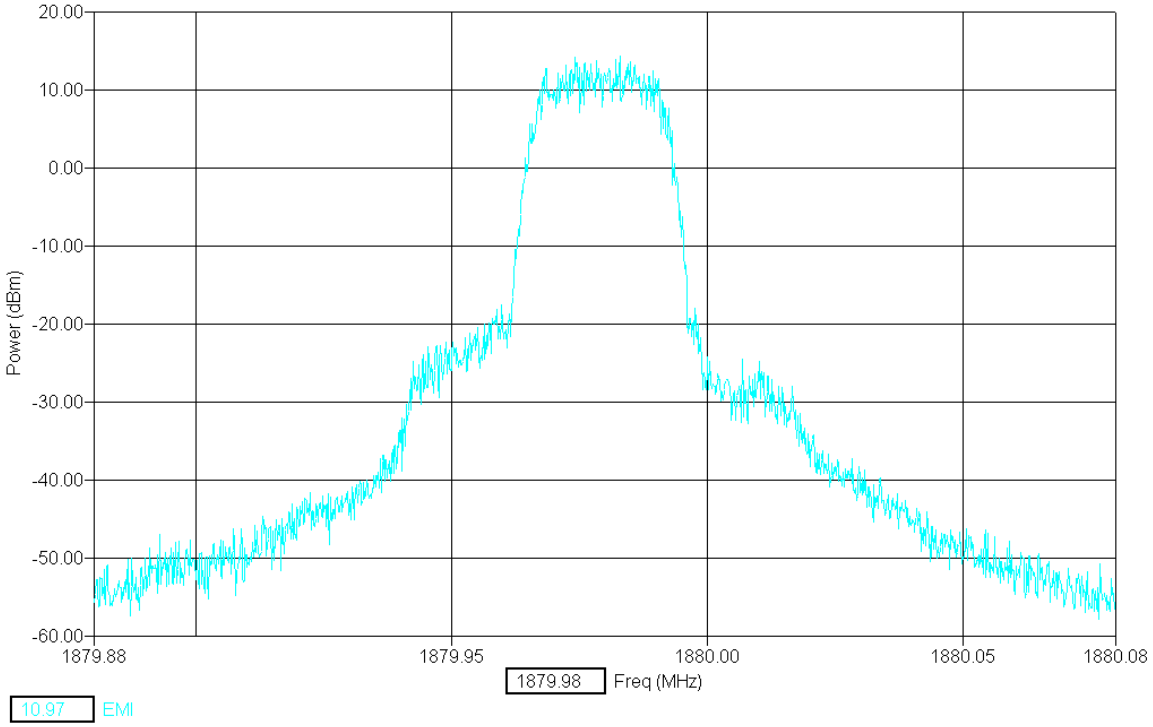
12.2 Pass/Fail Criteria

Band	Frequency Range (MHz)	FCC Limits (dBm)
Cellular 800 Low Channel	< 824	-13
Cellular 800 High Channel	> 849	-13
PCS 1900 Low Channel	< 1850	-13
PCS 1900 High Channel	> 1910	-13

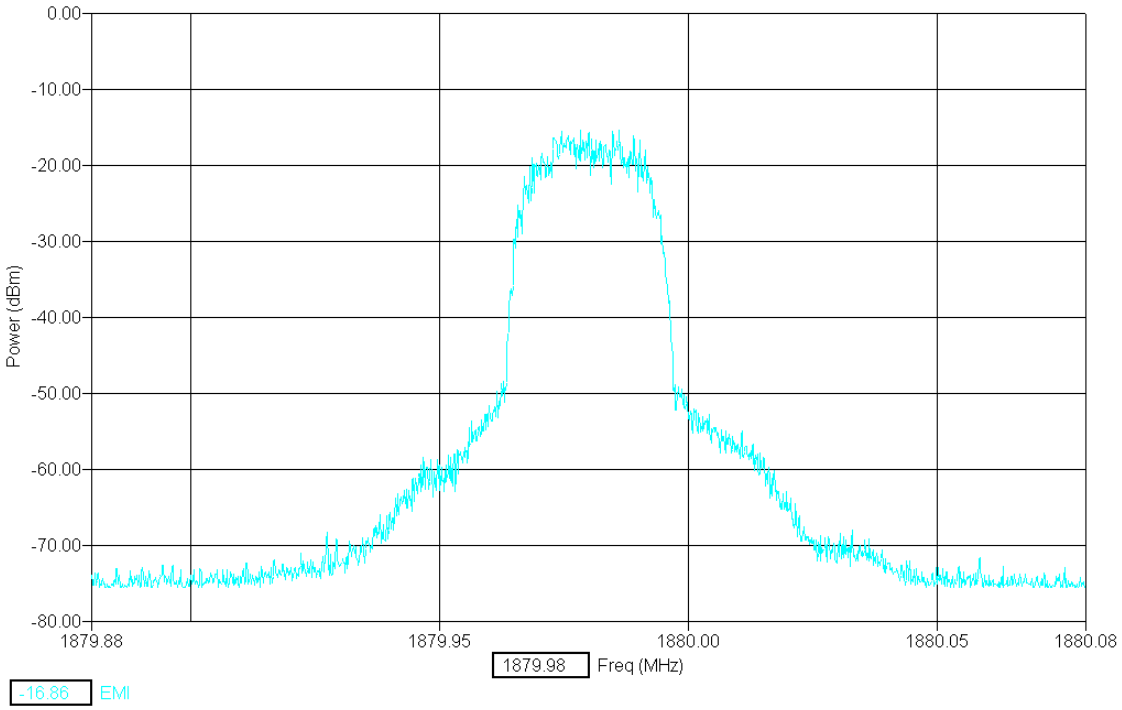
12.3 Detailed Test Results

Test Technician / Engineer	Mark Severson	
Date of Measurement	November 28, 2001	
Temperature / Humidity	23°C	29%RH
Test Result	FCC ID: GMLNPW-3 complies with FCC Part 2.1049(c)(1), 24.238(a)(b)	

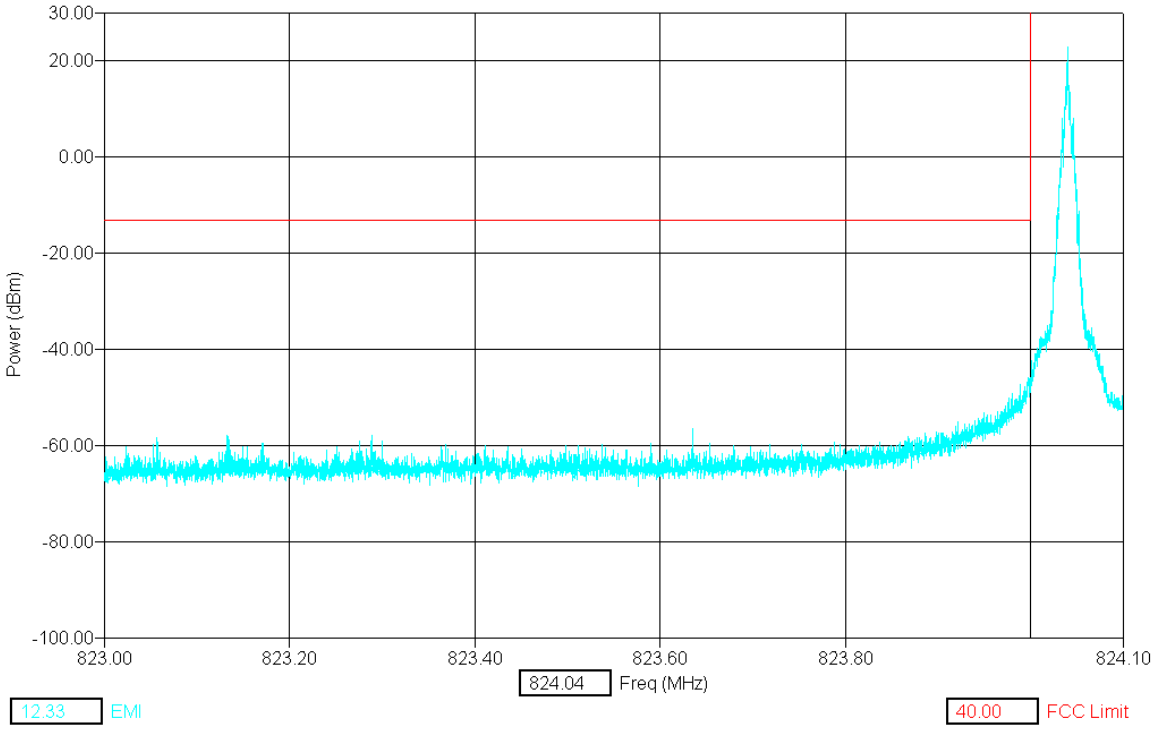
PCS Band, Call mode, Max Power. Channel 999



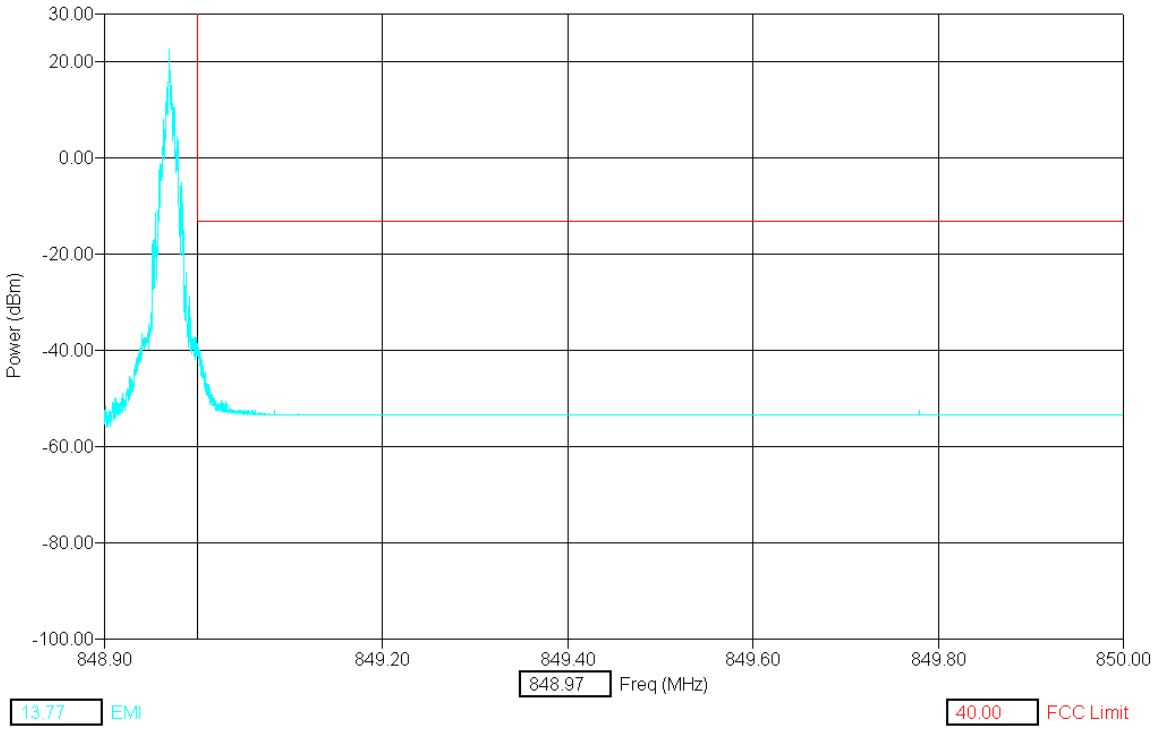
PCS Band, Call mode, Min Power. Channel 999



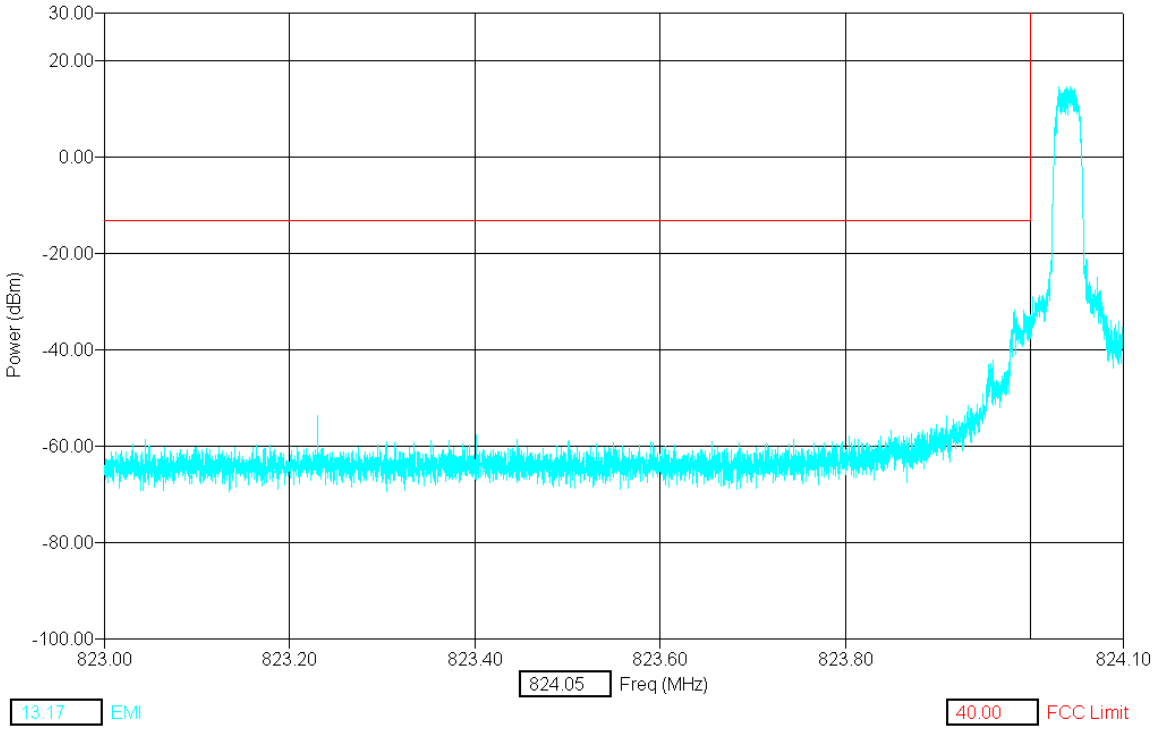
AMPS (Cellular Band), Call Mode, Max Power, Channel 991



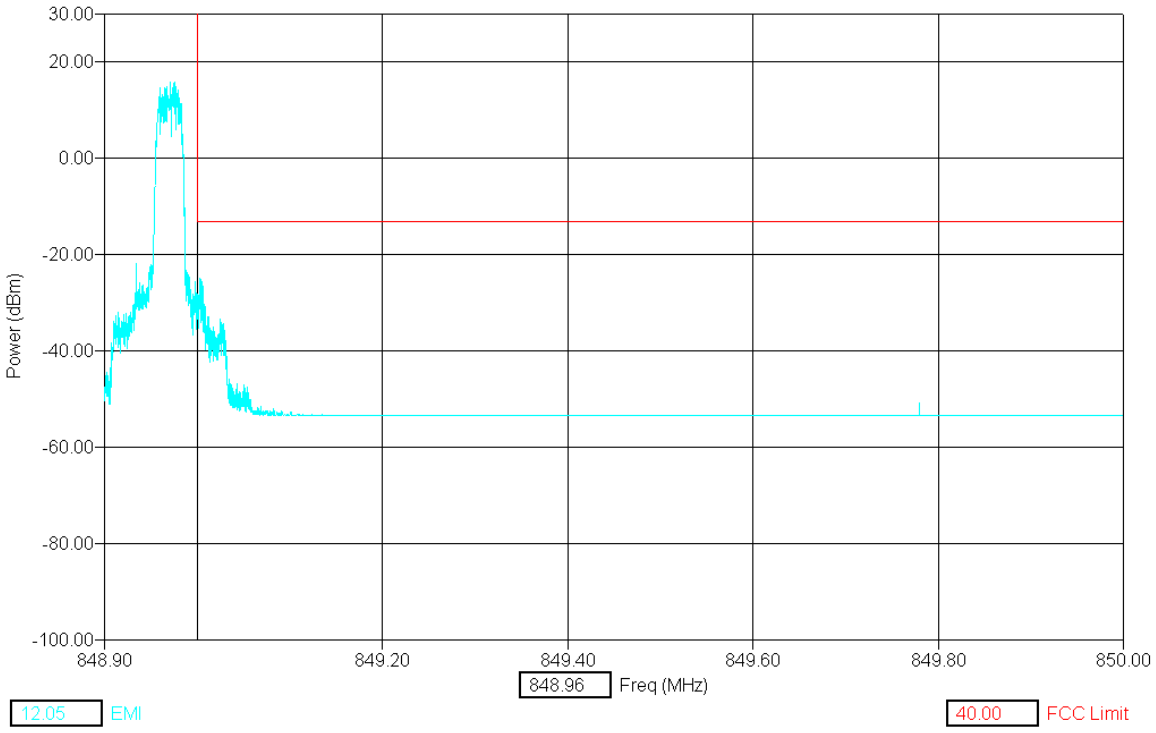
AMPS (Cellular Band), Call Mode, Max Power, Channel 799



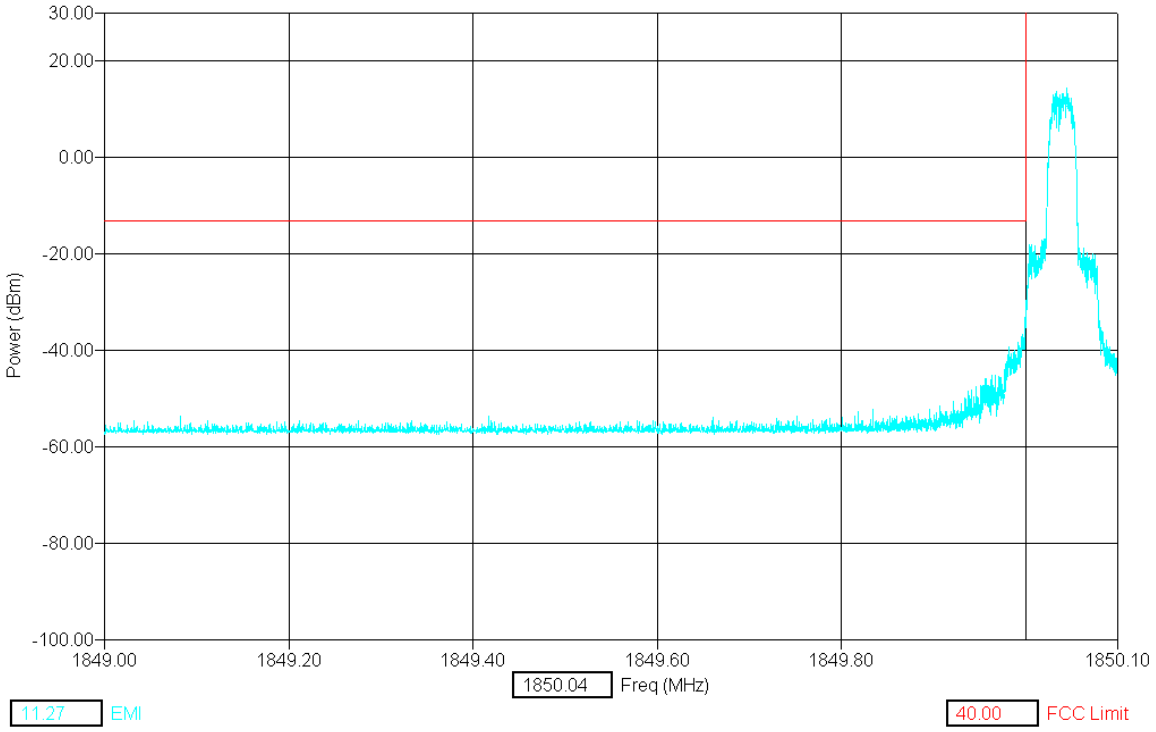
TDMA (Cellular Band), Call Mode, Max Power, Channel 991



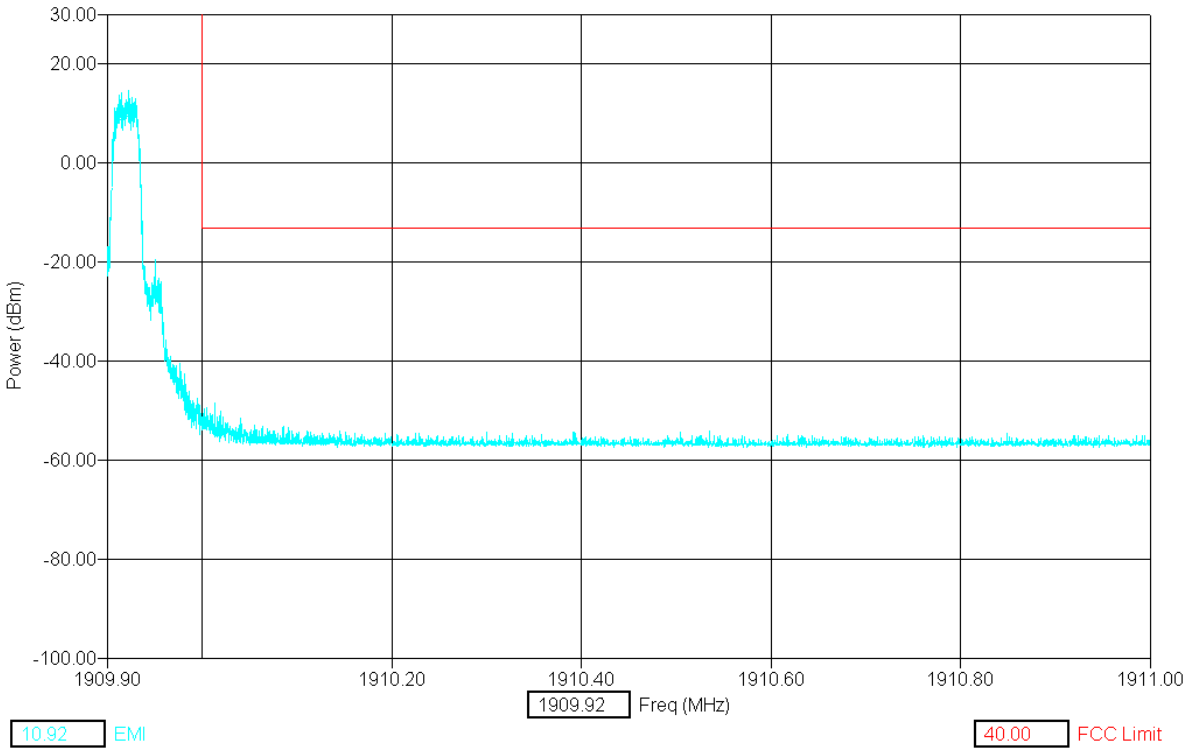
TDMA (Cellular Band), Call Mode, Max Power, Channel 799



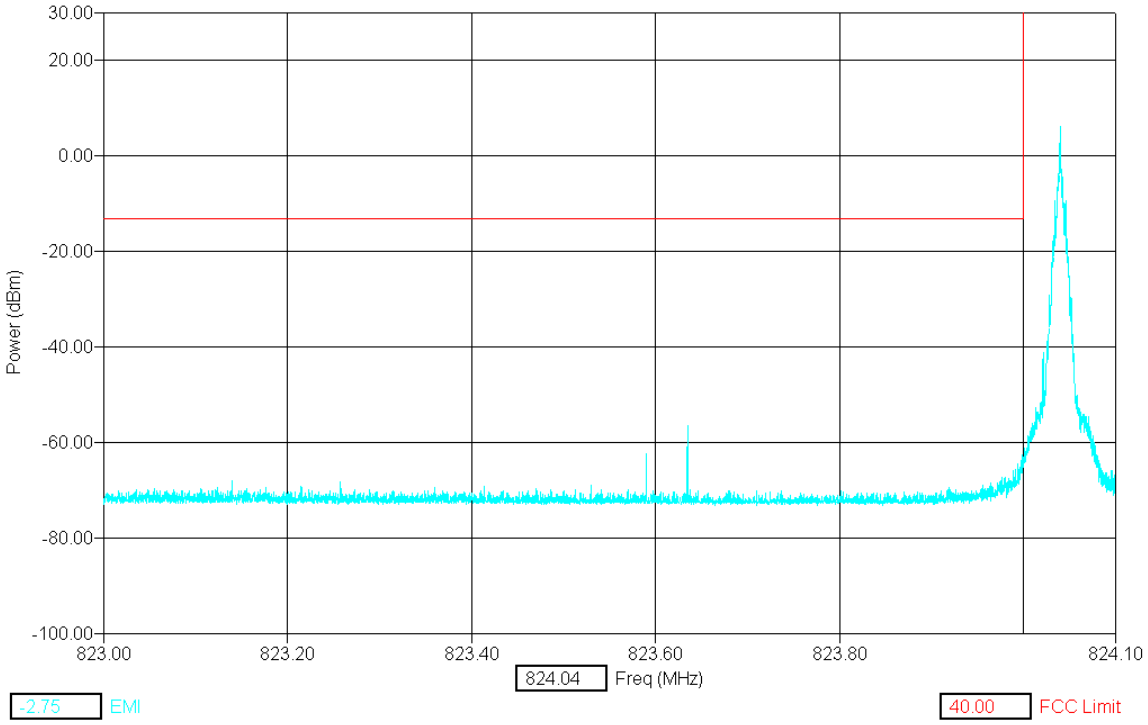
TDMA (PCS Band), Call Mode, Max Power, Channel 2



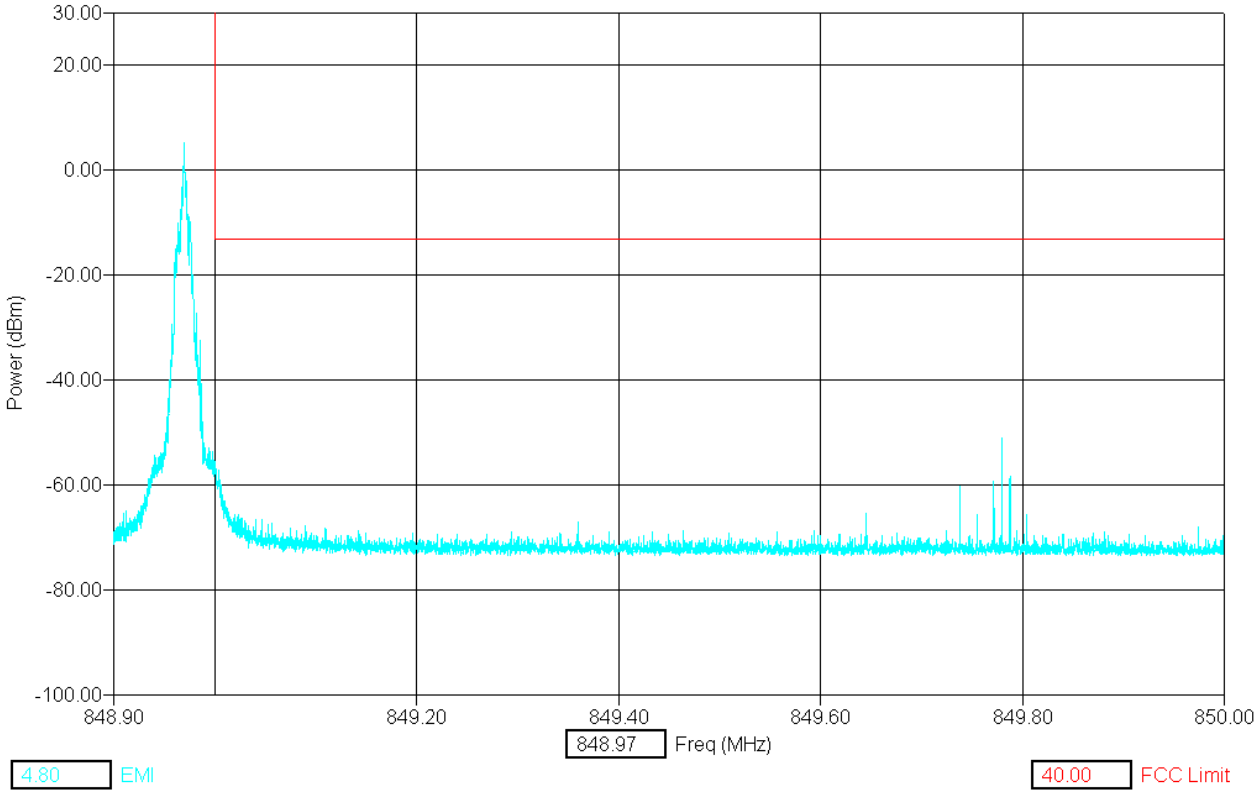
TDMA (PCS Band), Call Mode, Max Power, Channel 1998



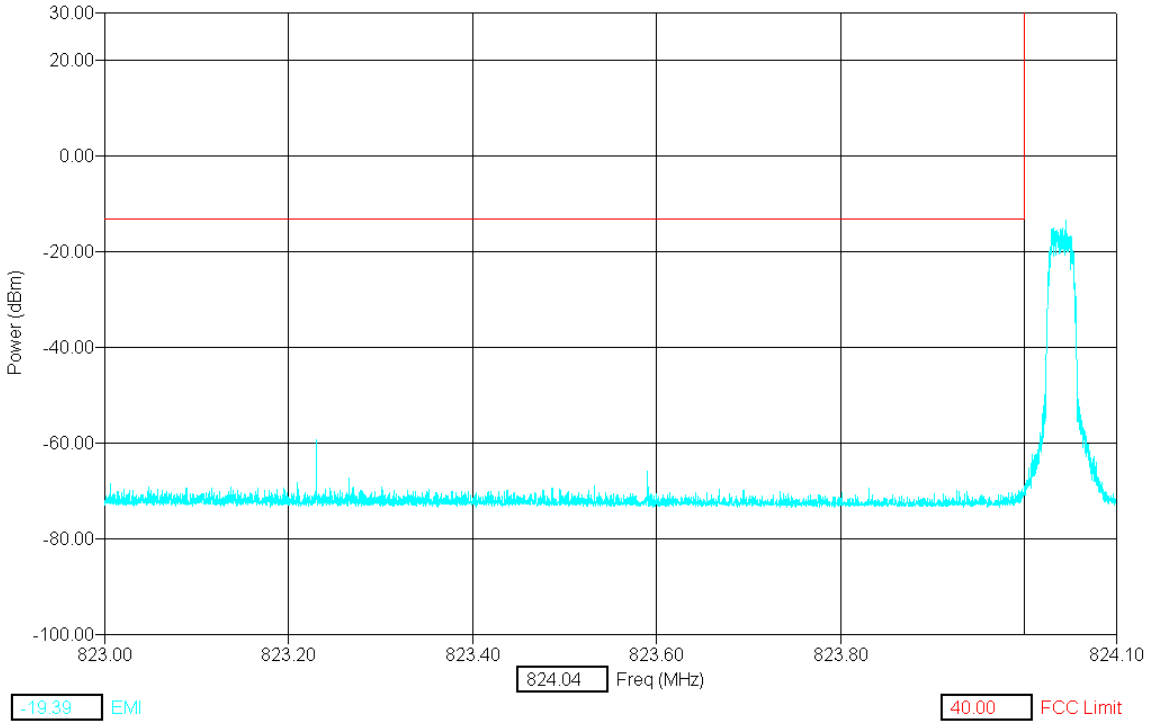
AMPS (Cellular Band), Min Power Call Mode, Channel 991



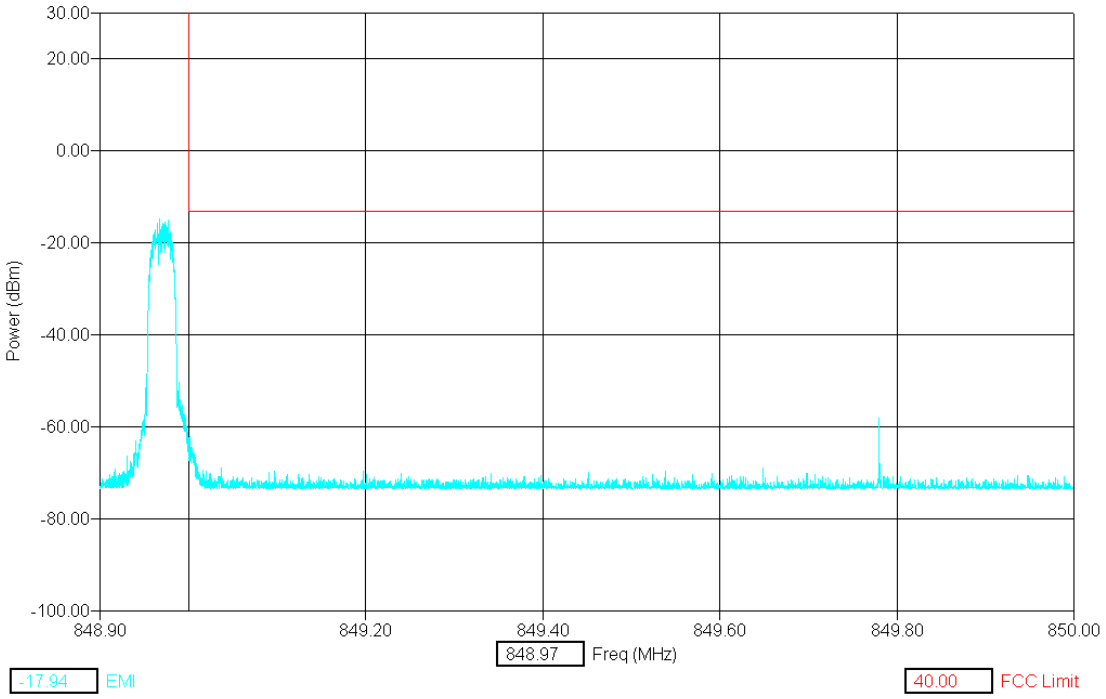
AMPS (Cellular Band), Min Power, Call Mode, Channel 799



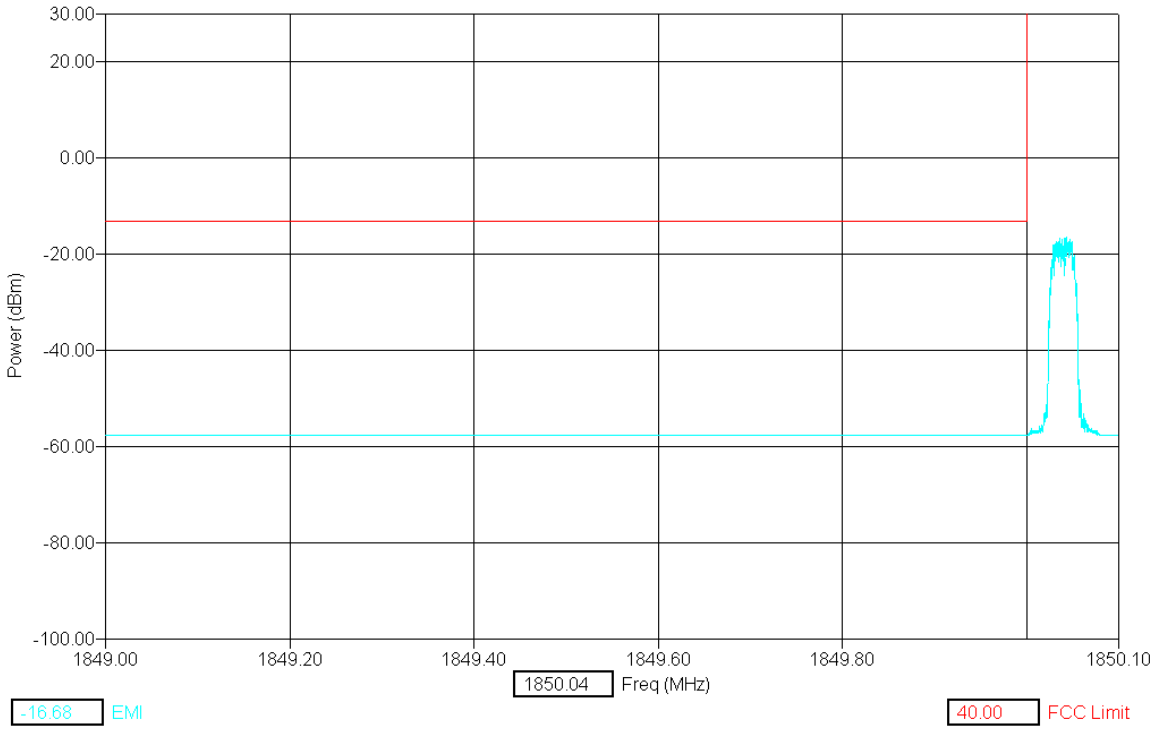
TDMA (Cellular Band), Min Power, Call Mode, Channel 991



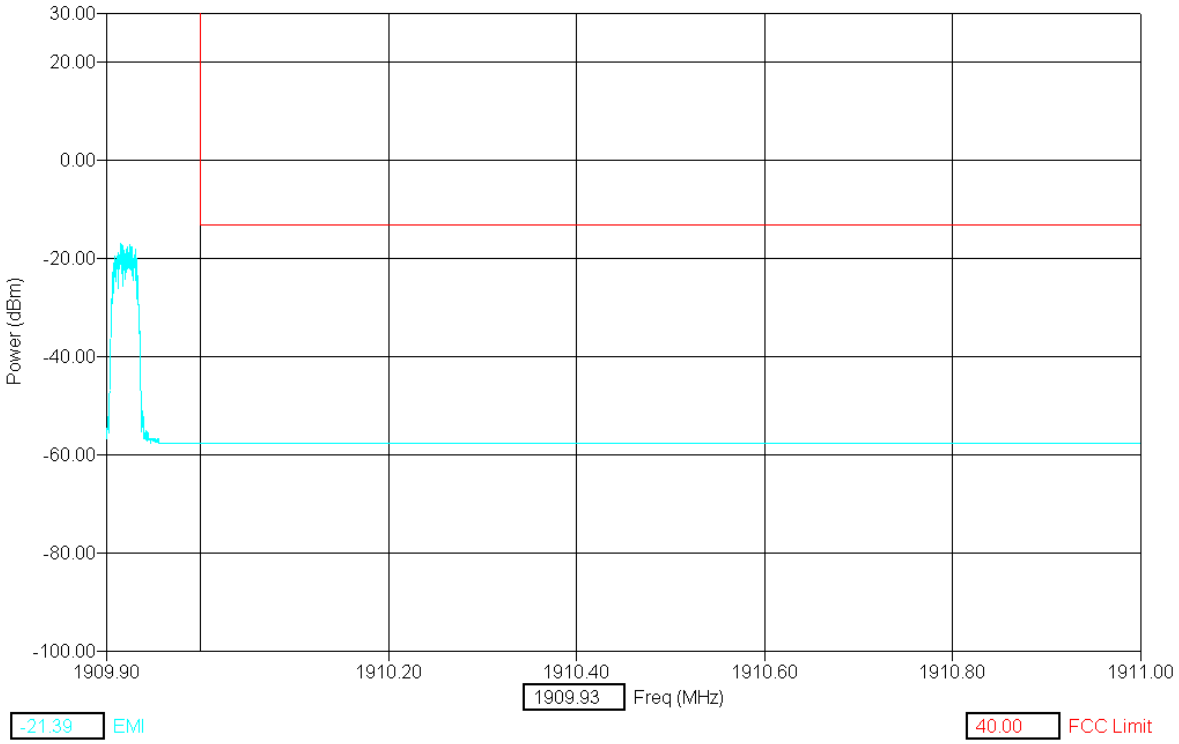
TDMA (Cellular Band), Min Power, Call Mode, Channel 799



TDMA (PCS Band), Min Power, Call Mode, Channel 2



TDMA (PCS Band), Min Power, Call Mode, Channel 1998



12.4 Measurement Uncertainty

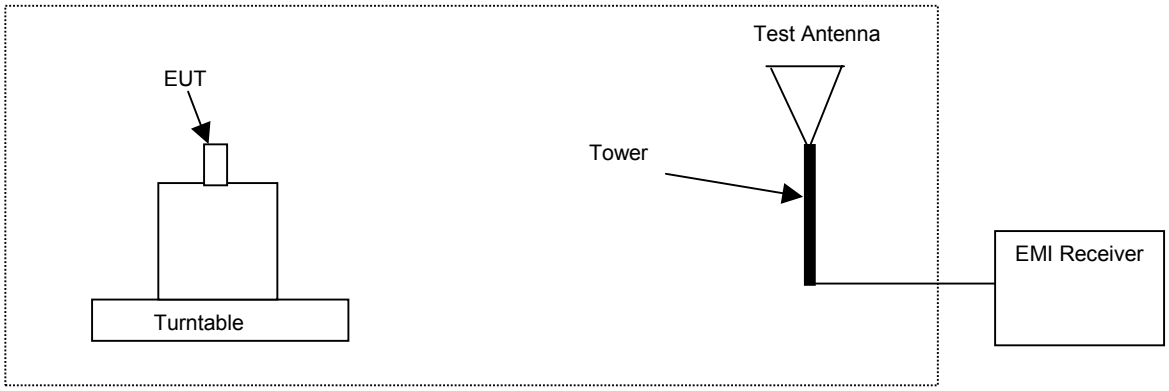
The measurement uncertainty for this test is +/- 3.7dB for 100kHz - 1000MHz and +/- 5.3dB for 1 - 20GHz.

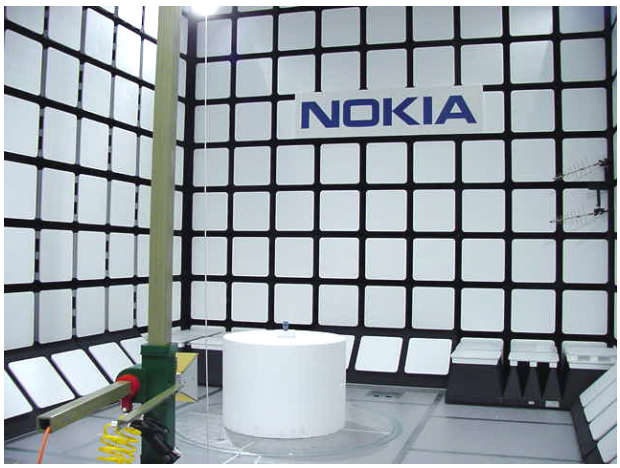
15. FIELD STRENGTH OF SPURIOUS RADIATION

Specification: FCC Part 2.1053

15.1 Setup

Test equipment set-up.





15.2 Pass/Fail Criteria

Band	Frequency Range (MHz)	FCC Limit (dBm)
Cellular / PCS	30 – 20000*	-13

* Frequency to be investigated up to the 10th harmonic of the highest clock or frequency used.

15.3 Detailed Test Results

Test Technician / Engineer	Michael Sundstrom	
Date of Measurement	November 28, 2001, Feb. 11, 2002	
Temperature / Humidity	23°C, 24°C	29%RH, 23%RH
Test Result	FCC ID: GMLNPW-3 complies with FCC part 2.1053	

Substitution method according to ANSI/TIA/EIA 603-1 was used for final measurements.

Amps Channel 991:

Tuned Freq (MHz)	Freq (Max) (MHz)	(PK) EMI (dBm)	FCC Limit (dBm)	Pol.
824.04	1648.3	-35.5	-13.0	H
824.04	1648.3	-33.4	-13.0	V
824.04	2472.3	-38.0	-13.0	H
824.04	2472.5	-34.6	-13.0	V
824.04	3296.1	-35.6	-13.0	H
824.04	3296.0	-35.1	-13.0	V
824.04	4120.3	-34.1	-13.0	H
824.04	4120.2	-33.6	-13.0	V
824.04	4944.1	-27.8	-13.0	H
824.04	4944.2	-28.3	-13.0	V
824.04	5768.3	-28.3	-13.0	H
824.04	5768.1	-27.3	-13.0	V
824.04	6592.4	-39.5	-13.0	H
824.04	6592.5	-40.2	-13.0	V
824.04	7415.9	-41.8	-13.0	H
824.04	7416.5	-42.0	-13.0	V
824.04	8240.9	-40.0	-13.0	H
824.04	8240.3	-39.9	-13.0	V

Amps Channel 384:

Tuned Freq (MHz)	Freq (Max) (MHz)	(PK) EMI (dBm)	FCC Limit (dBm)	Pol.
836.52	1673.3	-39.6	-13.0	H
836.52	1673.3	-36.4	-13.0	V
836.52	2509.5	-34.7	-13.0	H
836.52	2509.6	-35.0	-13.0	V
836.52	3345.9	-34.8	-13.0	H
836.52	3346.0	-35.8	-13.0	V
836.52	4182.6	-32.9	-13.0	H
836.52	4182.5	-33.4	-13.0	V
836.52	5019.2	-25.2	-13.0	H
836.52	5019.1	-30.0	-13.0	V
836.52	5855.7	-26.5	-13.0	H
836.52	5855.7	-26.4	-13.0	V
836.52	6692.2	-38.2	-13.0	H
836.52	6691.3	-39.9	-13.0	V
836.52	7528.5	-41.8	-13.0	H
836.52	7527.9	-39.6	-13.0	V
836.52	8365.3	-41.1	-13.0	H
836.52	8365.1	-40.5	-13.0	V

Amps Channel 799:

Tuned Freq (MHz)	Freq (Max) (MHz)	(PK) EMI (dBm)	FCC Limit (dBm)	Pol.
848.97	1698.4	-35.8	-13.0	H
848.97	1698.3	-35.0	-13.0	V
848.97	2547.3	-37.7	-13.0	H
848.97	2547.4	-35.4	-13.0	V
848.97	3395.9	-34.1	-13.0	H
848.97	3396.0	-35.2	-13.0	V
848.97	4244.8	-32.3	-13.0	H
848.97	4244.8	-32.6	-13.0	V
848.97	5093.8	-25.4	-13.0	H
848.97	5093.8	-27.9	-13.0	V
848.97	5942.8	-26.7	-13.0	H
848.97	5942.6	-25.6	-13.0	V
848.97	6792.3	-38.6	-13.0	H
848.97	6791.7	-38.5	-13.0	V
848.97	7641.2	-40.0	-13.0	H
848.97	7640.6	-41.3	-13.0	V
848.97	8489.9	-38.5	-13.0	H
848.97	8489.2	-39.6	-13.0	V

TDMA Cellular Channel 991:

Tuned Freq (MHz)	Freq (Max) (MHz)	(PK) EMI (dBm)	FCC Limit (dBm)	Pol.
824.04	1648.3	-36.8	-13.0	H
824.04	1648.3	-34.7	-13.0	V
824.04	2472.6	-37.4	-13.0	H
824.04	2472.6	-36.5	-13.0	V
824.04	3296.2	-35.3	-13.0	H
824.04	3296.2	-35.1	-13.0	V
824.04	4120.2	-33.2	-13.0	H
824.04	4120.3	-31.8	-13.0	V
824.04	4944.2	-26.3	-13.0	H
824.04	4944.4	-29.2	-13.0	V
824.04	5768.4	-26.7	-13.0	H
824.04	5768.4	-26.6	-13.0	V
824.04	6593.1	-45.1	-13.0	H
824.04	6592.1	-44.1	-13.0	V
824.04	7415.4	-42.8	-13.0	H
824.04	7417.1	-42.4	-13.0	V
824.04	8239.5	-40.3	-13.0	H
824.04	8239.9	-38.8	-13.0	V

TDMA Cellular Channel 384:

Tuned Freq (MHz)	Freq (Max) (MHz)	(PK) EMI (dBm)	FCC Limit (dBm)	Pol.
836.52	1673.3	-36.7	-13.0	H
836.52	1673.3	-35.2	-13.0	V
836.52	2509.8	-33.6	-13.0	H
836.52	2509.9	-34.8	-13.0	V
836.52	3346.1	-34.8	-13.0	H
836.52	3346.0	-34.9	-13.0	V
836.52	4182.5	-32.7	-13.0	H
836.52	4182.6	-33.1	-13.0	V
836.52	5019.2	-23.8	-13.0	H
836.52	5019.1	-27.7	-13.0	V
836.52	5855.7	-26.8	-13.0	H
836.52	5855.5	-26.9	-13.0	V
836.52	6692.2	-41.0	-13.0	H
836.52	6692.1	-37.0	-13.0	V
836.52	7527.8	-42.0	-13.0	H
836.52	7529.5	-42.7	-13.0	V
836.52	8366.1	-39.9	-13.0	H
836.52	8365.7	-39.7	-13.0	V

TDMA Cellular Channel 799:

Tuned Freq (MHz)	Freq (Max) (MHz)	(PK) EMI (dBm)	FCC Limit (dBm)	Pol.
848.97	1698.3	-37.9	-13.0	H
848.97	1698.3	-37.6	-13.0	V
848.97	2546.8	-37.6	-13.0	H
848.97	2546.9	-35.3	-13.0	V
848.97	3359.9	-34.4	-13.0	H
848.97	3359.9	-35.0	-13.0	V
848.97	4245.0	-32.1	-13.0	H
848.97	4244.9	-33.7	-13.0	V
848.97	5093.9	-25.6	-13.0	H
848.97	5093.8	-27.9	-13.0	V
848.97	5942.8	-26.5	-13.0	H
848.97	5942.8	-26.4	-13.0	V
848.97	6791.8	-41.3	-13.0	H
848.97	6791.5	-43.3	-13.0	V
848.97	7641.1	-40.8	-13.0	H
848.97	7641.5	-39.2	-13.0	V
848.97	8489.7	-40.3	-13.0	H
848.97	8490.2	-38.8	-13.0	V

TDMA PCS Channel 02:

Tuned Freq (MHz)	Freq (Max) (MHz)	(PK) EMI (dBm)	FCC Limit (dBm)	Pol.
1850.04	3700.1	-34.4	-13.0	H
1850.04	3699.9	-31.9	-13.0	V
1850.04	5550.0	-26.6	-13.0	H
1850.04	5550.1	-27.5	-13.0	V
1850.04	7400.1	-35.3	-13.0	H
1850.04	7400.2	-38.0	-13.0	V
1850.04	9250.0	-29.5	-13.0	H
1850.04	9250.0	-28.3	-13.0	V
1850.04	11100.0	-31.5	-13.0	H
1850.04	11100.8	-36.3	-13.0	V
1850.04	12950.3	-33.2	-13.0	H
1850.04	12951.0	-33.6	-13.0	V
1850.04	14801.0	-30.2	-13.0	H
1850.04	14800.9	-31.0	-13.0	V
1850.04	16649.6	-31.5	-13.0	H
1850.04	16650.3	-30.1	-13.0	V

TDMA PCS Channel 1001:

Tuned Freq (MHz)	Freq (Max) (MHz)	(PK) EMI (dBm)	FCC Limit (dBm)	Pol.
1880.01	3760.4	-34.0	-13.0	H
1880.01	3760.4	-34.0	-13.0	V
1880.01	5640.0	-33.2	-13.0	H
1880.01	5640.0	-33.7	-13.0	V
1880.01	7520.2	-31.7	-13.0	H
1880.01	7520.1	-29.4	-13.0	V
1880.01	9400.0	-27.2	-13.0	H
1880.01	9400.7	-31.1	-13.0	V
1880.01	11280.1	-34.4	-13.0	H
1880.01	11280.1	-36.0	-13.0	V
1880.01	13159.9	-35.2	-13.0	H
1880.01	13161.4	-32.9	-13.0	V
1880.01	15041.1	-30.6	-13.0	H
1880.01	15041.5	-31.6	-13.0	V
1880.01	16921.0	-28.4	-13.0	H
1880.01	16920.5	-28.7	-13.0	V

TDMA PCS Channel 1998:

Tuned Freq (MHz)	Freq (Max) (MHz)	(PK) EMI (dBm)	FCC Limit (dBm)	Pol.
1909.92	3819.9	-29.4	-13.0	H
1909.92	3819.8	-29.9	-13.0	V
1909.92	5729.6	-29.2	-13.0	H
1909.92	5729.8	-30.6	-13.0	V
1909.92	7639.6	-18.4	-13.0	H
1909.92	7639.8	-22.8	-13.0	V
1909.92	9549.6	-26.6	-13.0	H
1909.92	9549.0	-28.7	-13.0	V
1909.92	11460.5	-35.6	-13.0	H
1909.92	11458.6	-36.0	-13.0	V
1909.92	13369.0	-31.3	-13.0	H
1909.92	13369.5	-31.2	-13.0	V
1909.92	15279.3	-32.9	-13.0	H
1909.92	15280.1	-32.3	-13.0	V
1909.92	17189.4	-28.9	-13.0	H
1909.92	17189.2	-27.4	-13.0	V

15.4 Measurement Uncertainty

The measurement uncertainty for this test is +/- 5.2dB for 30-300MHz, +/- 5.2dB for 300-1000MHz, +/- 5.6dB for 1-6GHz, and +/-6.8dB for 6 to 18GHz.