

## CFR 47 Part 2, 22,24 Test Report

Test Report Number: WR1181.201

**Terminal device:** FCC ID: QMNRM-155, Model: 2365i, HWID: B6.0, SW: PR110\_05w21\_50\_08\_01.nbr

Originator: Hai To  
Function: TCC - Dallas – EMC  
Version/Status: 1.0 Approved  
Location: QATrax Directories  
Date: 7-Sep-06

### Change History:

<b>Version</b>	<b>Date</b>	<b>Status</b>	<b>Handled By</b>	<b>Comments</b>
0.1	7-Sep-06	Draft	Hai To	
0.2	7-Sep-06	Proposal	Hai To	
0.3	7-Sep-06	Reviewed	Cindy Trinh	
1.0	7-Sep-06	Approved	Cindy Trinh	

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For the contents:

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**Test Operator**

**Cindy Trinh**  
**Technical Review**

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Test & Certification Center (TCC) - Dallas

FCC ID: QMNRM-155

Test Report #: WR1181.201

7-Sep-06

Accredited Laboratory  
Certificate Number: 1819-01

Ver 1.0

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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). 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 4735.

### 1.2 Objective

All tests and measurement data shown was performed to determine whether the selected handset was in compliance as specified in FCC: CFR47 Parts 2.947, 2.1033(c), 2.1041, 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, Part 22, and Part 24.

### 1.3 Test Summary

**Test Results:** *The test result relates only to those tested devices mentioned in Section 4 of this test report.*

Test Performed	Reference	Section of Report	Complies / Does not comply / Not Tested
Occupied Bandwidth: Transmitter Conducted Measurements	FCC Part 2.1049	6	Complies
Spurious Emissions at Antenna Terminals	FCC Part 2.1051	7	Complies

## 2. STANDARDS BASIS

*Testing has been carried out in accordance with:*

REF.	Code of the standard	Name of the standard
1	ANSI C63.4	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz.
2	FCC: CFR 47 Part 2	Code of Federal Regulations (CFR) Title 47, Part 2 – Frequency Allocations and Radio Treaty Matters; General Rules and Regulations: Subpart J – Equipment Authorization Procedures
3	FCC: CFR 47 Part 22	Code of Federal Regulations (CFR) Title 47, Part 22 – Public Mobile Services: Subpart H – Cellular Radiotelephone Service
4	FCC: CFR 47 Part 24	Code of Federal Regulations (CFR) Title 47, Part 24 – Personal Communications Services: Subpart E – Broadband PCS
5	RSS-129	800 MHz Dual-Mode CDMA Cellular Telephones
6	RSS-132	800 MHz Cellular Telephones Employing New Technologies
7	RSS-133	2 GHz Personal Communications Services, Industry Canada
8	RSS-212	Test Facilities and Test Methods for Radio Equipment, Industry Canada (Provisional)
9	RSP-100	Radio Equipment Certification Procedure

Note: Unless otherwise stated, (by reference to a version number and a publication date), the latest version of the above documents applies.

### ***Deviations:***

Not Applicable.

### 3. LIST OF ABBREVIATIONS, ACRONYMS AND TERMS

#### 3.1 Abbreviations

- dB - decibel
- dBc - decibels from carrier
- dBm - decibels per milliwatt (absolute measurement)
- GHz - gigahertz or 1000000000 hertz
- kHz - kilohertz or 1000 hertz
- MHz - megahertz or 1000000 hertz

#### 3.2 Acronyms

- AMPS - Advanced Mobile Phone System
- BSS - Base Station Simulator
- CDMA - Code Division Multiple Access
- EDRP - Effective Dipole Radiated Power
- EIRP - Effective Isotropic Radiated Power
- EMC - Electromagnetic Compatibility
- EMI - Electromagnetic Interference
- ERP - Effective Radiated Power
- EUT - Equipment under Test
- GSM - Global System for Mobile communications
- PCS - Personal Communications Services
- RF - Radio Frequency
- TDMA - Time Division Multiple Access

#### 3.3 Terms

Base Station Simulator (BSS) - simulates all the necessary signals that a phone would experience while on a live network. There are many types of base station simulators catering for all current protocols, i.e., GSM, AMPS, TDMA, and CDMA.

Cellular - refers to a frequency in the 800MHz band.

PCS - refers to a frequency in the 1900MHz band.

## 4. EQUIPMENT-UNDER-TEST (EUT)

*The results in this report relate only to the items listed below:*

### 4.1 Description of Tested Device(s):

Test Performed	Mode of Operation	Date of Receipt	Condition of Sample	Item	Identifying Information
FCC Part 2.1049 FCC Part 2.1051	CDMA 800/1900	5-Sep-06	Working	Phone	FCC ID: QMNRM-155 Model: 2365i HW: B6.0 SW: PR110_05w21_50_08_01.nbr MEID: 268435456000017627
FCC Part 2.1049 FCC Part 2.1051	CDMA 800/1900	5-Sep-06	Working	Battery	Type: BL-5B

### 4.2 Photograph of Tested Device(s):

Refer to attached EXHIBITS

## 5. TEST EQUIPMENT LIST

The listing below indicates the test equipment utilized for the test (s). Calibration interval on all items listed can be obtained from the Engineering Services Group within NMP, Product Creation - Dallas. Where relevant, measuring equipment is subjected to in-service checks between testing. TCC - Dallas shall notify clients promptly, in writing, of identification of defective measuring equipment that casts doubt on the validity of results given in this report.

Section of Report	NMP#	Test Equipment	Mfr. #	Model #	Calibration Due Date	Calibration Interval
6,7	N/A	6dB Attenuator	Weinshcel	Model 2	Na	N/A
6,7	03461	Base Station	R&S	CMU200	30-Nov-06	12 months
6,7	02679	EMI Receiver	HP	E7405A	1-Nov-06	12 Months



## 6. OCCUPIED BANDWIDTH (TRANSMITTER CONDUCTED MEASUREMENTS)

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

### 6.1 Setup

Testing was performed with the EUT connected to a 6dB attenuator, 6dB splitter, 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.

### 6.2 Pass/Fail Criteria

#### Occupied Bandwidth, Out of Band

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

#### Occupied Bandwidth, In Band

No pass/fail, these plots are used to determine the emission designators.

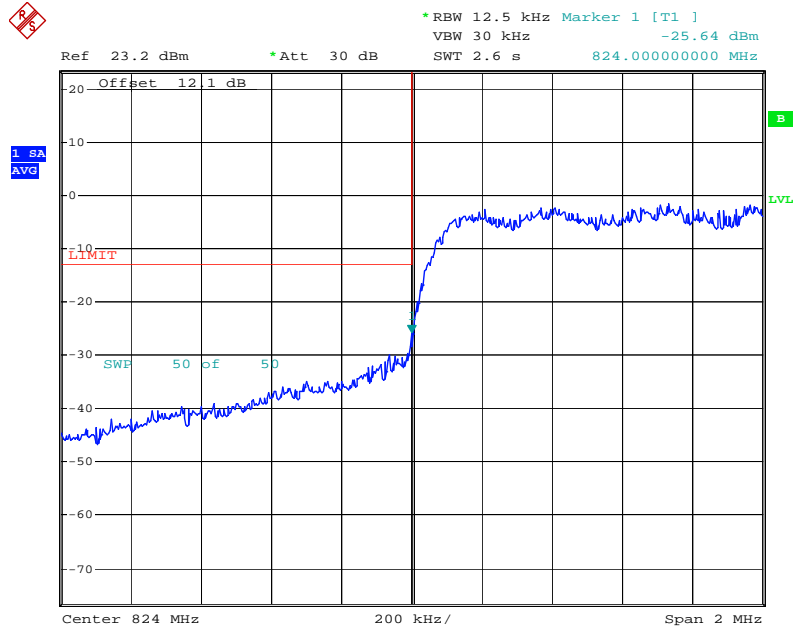
### 6.3 Detailed Test Results

Test Technician / Engineer	Hai To
Date of Measurement	6-7-Sep-06
Temperature	23 °C
Humidity	46 %RH
Test Result	Complies with FCC Part 2.1049(c)(1), 24.238(a)(b)

**Note1: AMPS measurements were performed with 300Hz RBW/VBW.**

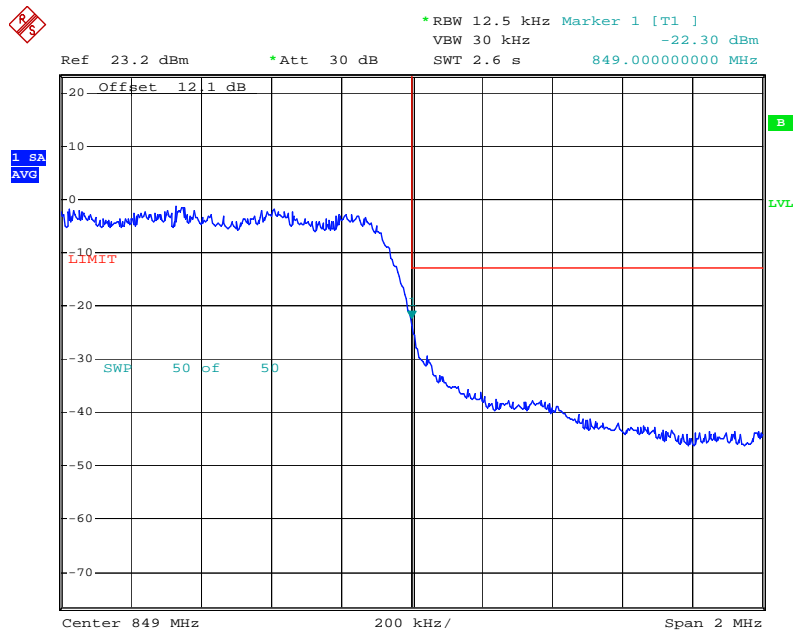
## Occupied Bandwidth, Out of Band

### CDMA 800 - Channel 1013 (824.70 MHz)



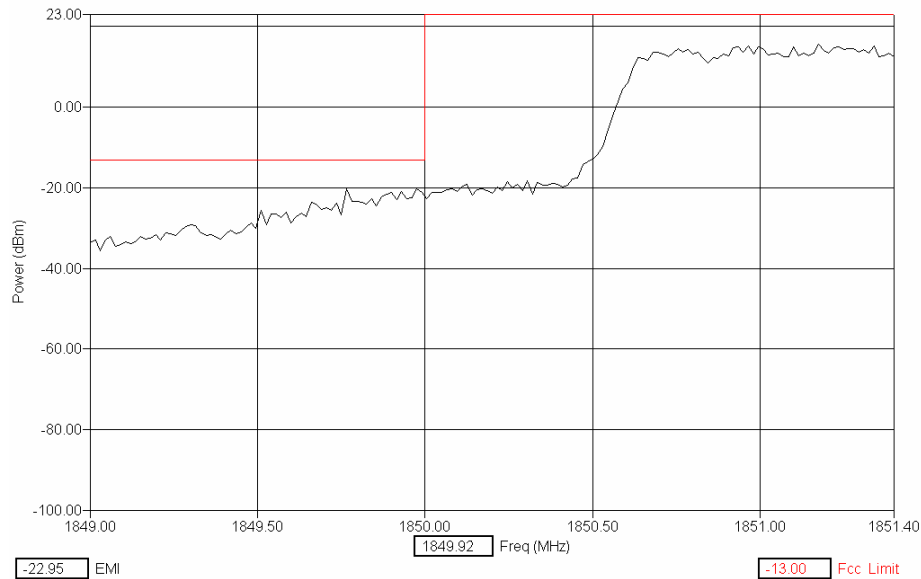
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### CDMA 800 – Channel 777 (848.31 MHz)

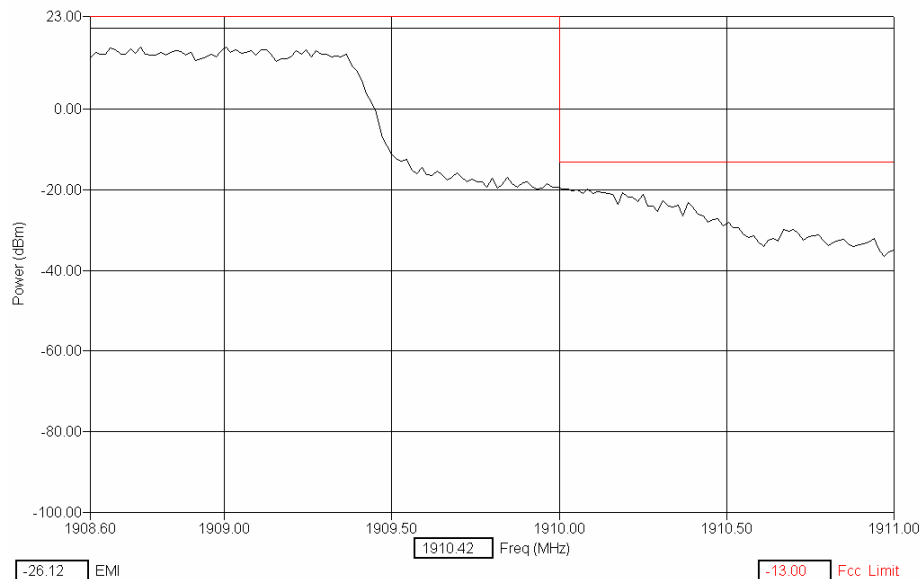


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## CDMA 1900 – Channel 25 (1851.25 MHz)



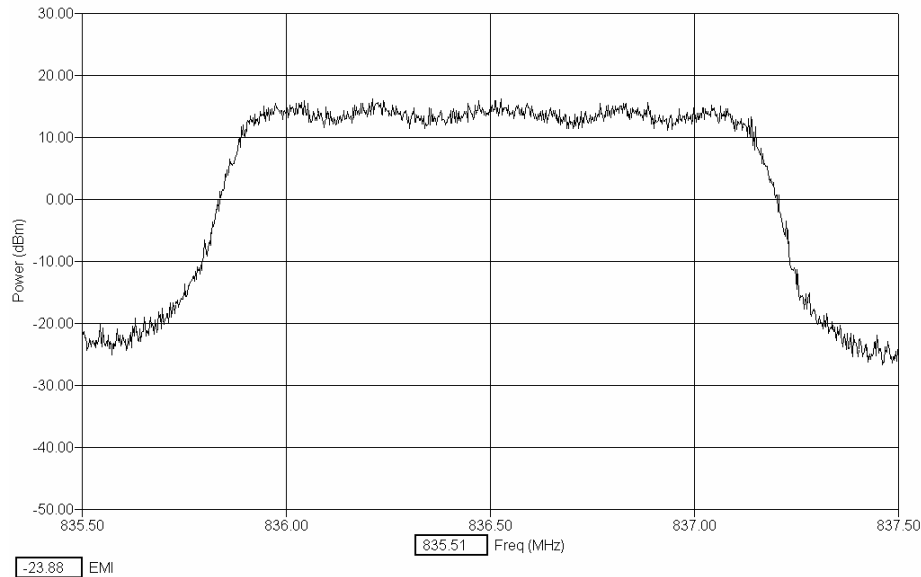
## CDMA 1900 – Channel 1175 (1908.75 MHz)



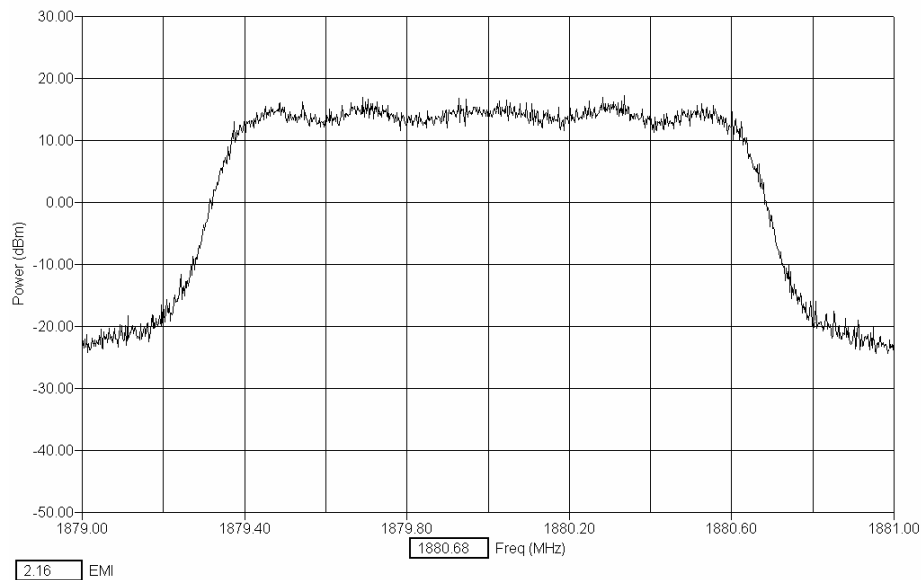
## Occupied Bandwidth, In Band

## CDMA 800 - Channel 384

### 30KHz RBW/VBW



## CDMA 1900 - Channel 600



## 7. SPURIOUS EMISSIONS AT ANTENNA TERMINALS

**Specification: FCC Part 2.1051**

### 7.1 Setup

Testing was performed with the EUT connected to a 6dB attenuator, 6dB splitter, 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. Filters were introduced to reduce or eliminate spurious emission, which could be generated internally in the EMI receiver.

### 7.2 Pass/Fail Criteria

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

\* Frequency to be investigated up to the 10<sup>th</sup> harmonic of the highest clock or frequency used.

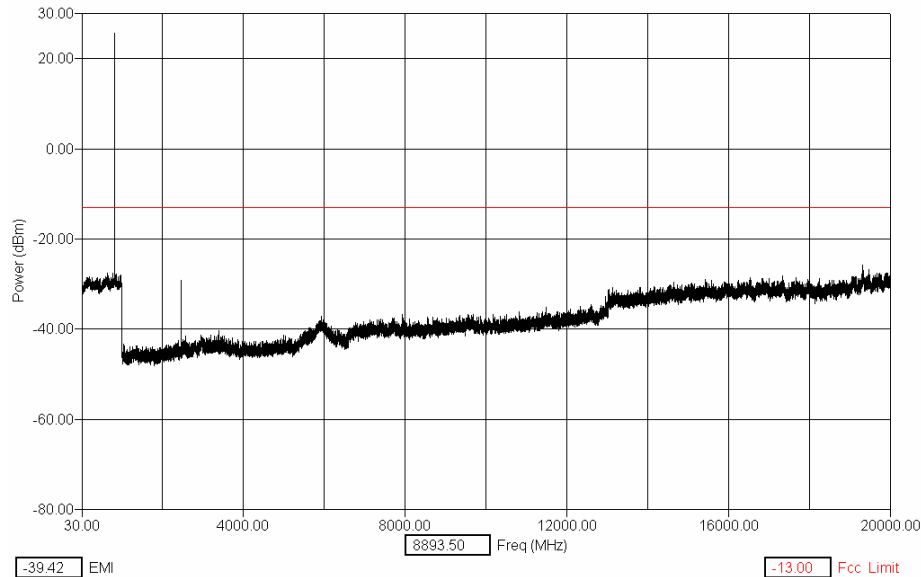
### 7.3 Detailed Test Results

Test Technician / Engineer	Hai To
Date of Measurement	5-Sept-06
Temperature	21 °C
Humidity	45 %RH
Test Result	Complies with FCC Part 2.1051

**Note 1: EMI (dBm) = trace (dBuV) + cable loss (dB) + filter loss (dB).**

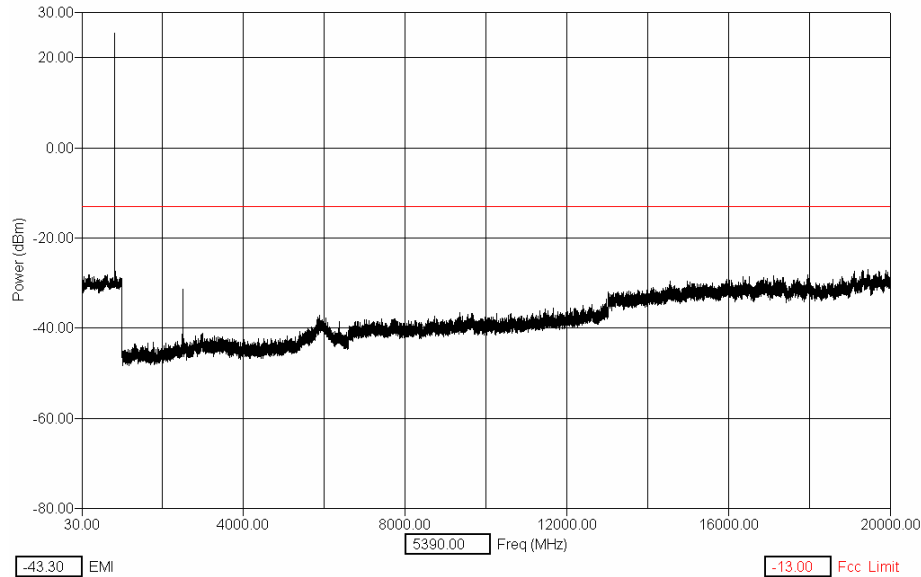
**Note 2: measurements were performed with 1MHz RBW/VBW.**

## CDMA 800 - Channel 1013, 824.70 MHz



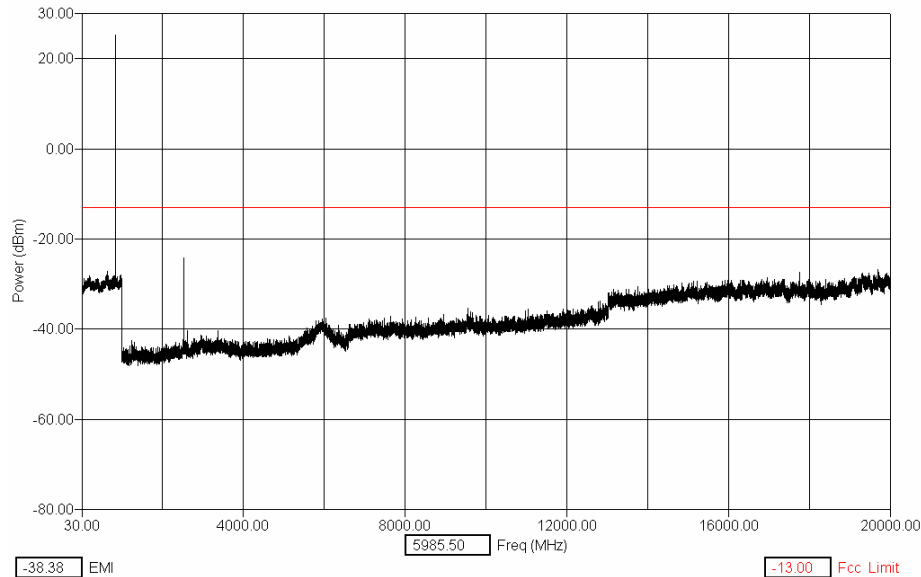
Freq (Max) (MHz)	(PEAK) Trace (dBm)	Cable (dB)	Filter (dB)	(PEAK) EMI (dBm)	Limit (dBm)
1649.6	-63.1	0.4	14.67	-48.1	-13.0
2474.1	-45.9	0.6	15.46	-29.9	-13.0
3299.1	-62.0	0.8	15.98	-45.2	-13.0
4124.2	-63.0	0.9	16.09	-46.0	-13.0
4948.6	-65.6	1.1	17.03	-47.5	-13.0
5772.9	-63.9	1.2	19.98	-42.8	-13.0
6596.6	-64.8	1.2	18.06	-45.5	-13.0
7421.9	-60.1	1.3	17.98	-40.8	-13.0
8246.1	-63.4	1.4	18.97	-43.0	-13.0

## CDMA 800 - Channel 384, 836.52 MHz



Freq (Max) [MHz]	(PEAK) Trace [dBm]	Cable [dB]	Filter [dB]	(PEAK) EMI [dBm]	Limit [dBm]
1673.1	-62.9	0.4	14.60	-48.0	-13.0
2509.7	-49.5	0.6	15.65	-33.3	-13.0
3346.0	-62.5	0.8	16.10	-45.6	-13.0
4180.8	-65.1	0.9	16.12	-48.1	-13.0
5019.0	-65.6	1.1	17.16	-47.4	-13.0
5855.1	-66.7	1.2	21.33	-44.2	-13.0
6690.8	-66.6	1.3	17.75	-47.6	-13.0
7529.5	-62.6	1.3	18.06	-43.2	-13.0
8366.5	-64.0	1.4	19.00	-43.6	-13.0

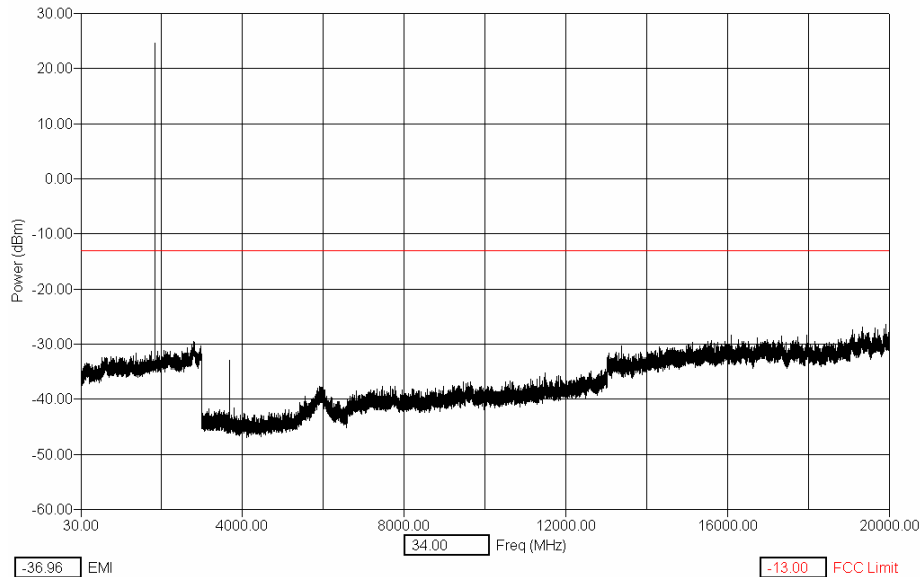
## CDMA 800 - Channel 777, 848.31 MHz



Freq (Max) (MHz)	(PEAK) Trace (dBm)	Cable (dB)	Filter (dB)	(PEAK) EMI (dBm)	Limit (dBm)
1695.8	-65.4	0.4	14.59	-50.4	-13.0
2544.0	-42.5	0.6	15.53	-26.3	-13.0
3393.3	-58.7	0.8	16.05	-41.9	-13.0
4240.9	-65.5	0.9	16.35	-48.2	-13.0
5090.5	-66.0	1.1	17.26	-47.7	-13.0
5940.0	-66.0	1.2	22.09	-42.7	-13.0
6784.9	-63.0	1.3	17.96	-43.8	-13.0
7635.1	-60.6	1.3	17.98	-41.2	-13.0
8483.8	-64.3	1.4	18.53	-44.4	-13.0

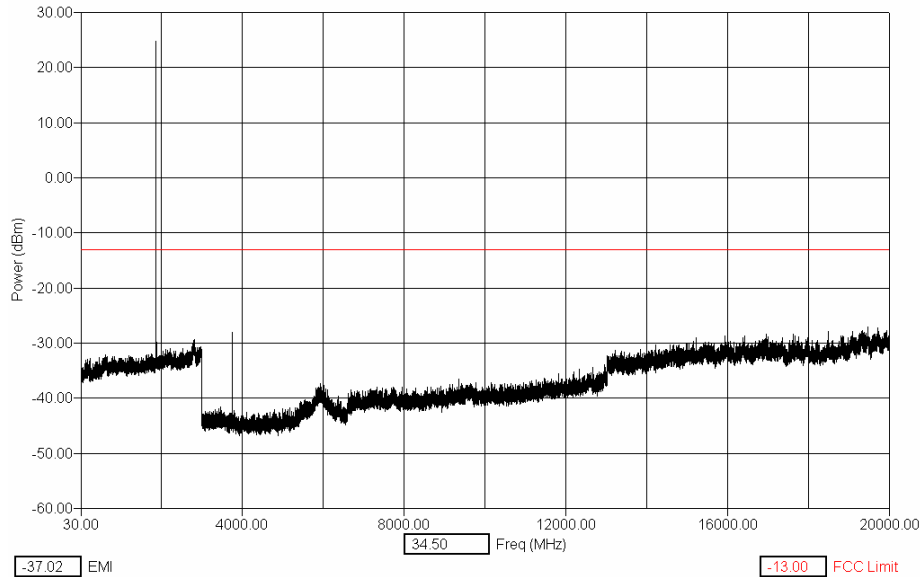


## CDMA 1900 - Channel 25, 1851.25 MHz



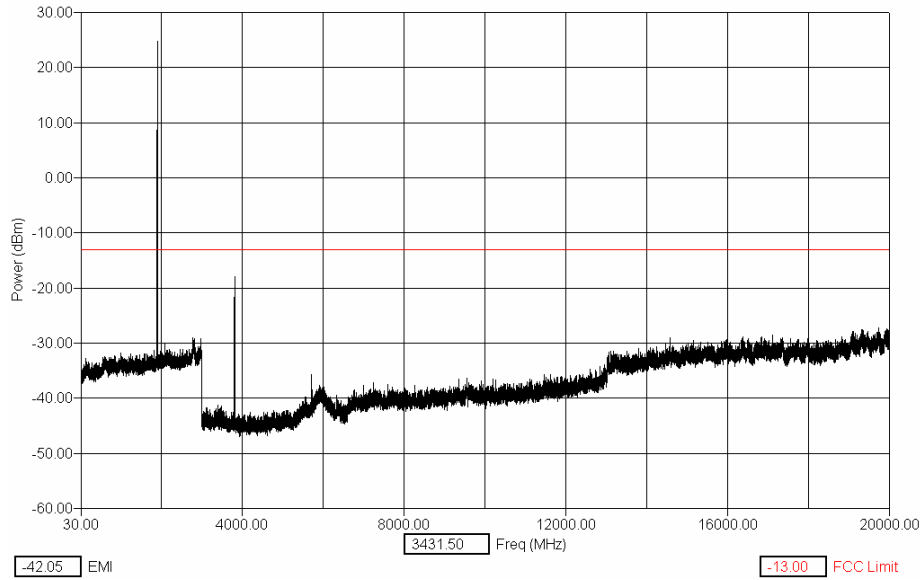
Freq (Max) [MHz]	(PEAK) Trace [dBm]	Cable [dB]	Filter [dB]	(PEAK) EMI [dBm]	Limit [dBm]
3701.9	-51.0	0.85	16.2	-34.0	-13.0
5552.8	-63.5	1.13	18.4	-43.9	-13.0
7405.5	-62.1	1.32	18.4	-42.4	-13.0
9255.6	-62.3	1.48	19.5	-41.3	-13.0
11107.3	-62.1	1.60	20.2	-40.3	-13.0
12959.4	-62.8	1.71	22.6	-38.5	-13.0
14809.9	-60.0	1.80	22.8	-35.4	-13.0
16661.4	-60.5	1.88	23.8	-34.8	-13.0
18511.8	-60.9	1.95	24.9	-34.1	-13.0

## CDMA 1900 - Channel 600, 1880.00 MHz



Freq (Max) (MHz)	(PEAK) Trace (dBm)	Cable (dB)	Filter (dB)	(PEAK) EMI (dBm)	Limit (dBm)
3761.0	-46.9	0.86	16.8	-29.3	-13.0
5640.0	-62.2	1.14	18.5	-42.5	-13.0
7520.3	-61.2	1.34	18.1	-41.8	-13.0
9401.5	-60.5	1.49	18.9	-40.0	-13.0
11281.3	-63.4	1.61	20.2	-41.6	-13.0
13160.2	-62.1	1.72	21.8	-38.7	-13.0
15040.2	-60.4	1.81	23.7	-34.9	-13.0
16921.6	-60.0	1.89	25.0	-33.1	-13.0
18799.8	-60.2	1.96	25.1	-33.1	-13.0

## CDMA 1900 - Channel 1175, 1908.75 MHz



Freq (Max) [MHz]	(PEAK) Trace [dBm]	Cable [dB]	Filter [dB]	(PEAK) EMI [dBm]	Limit [dBm]
3817.5	-35.2	0.87	16.7	-17.7	-13.0
5726.5	-59.1	1.15	19.4	-38.6	-13.0
7635.3	-61.9	1.35	18.0	-42.5	-13.0
9544.1	-63.7	1.50	20.3	-41.9	-13.0
11454.4	-64.4	1.62	20.5	-42.3	-13.0
13359.6	-59.9	1.73	22.0	-36.1	-13.0
15271.2	-59.6	1.82	23.3	-34.5	-13.0
17180.6	-60.8	1.90	24.3	-34.7	-13.0
19088.0	-59.5	1.97	26.3	-31.2	-13.0