

Test & Certification Center (TCC) - Dallas

FCC ID: QMNRM-124
Test Report #: WR 901.005
24 October, 2005

Accredited Laboratory
Certificate Number: 1819-01

Ver 1.0

CFR 47 Part 15 Test Report

Test Report Number: WR 901.005

Terminal device:

FCC ID: QMNRM-124 Model: 2855i Type: RM-124 HW: 2001 SW: VR100_5w21_18.nep
(Detailed information is listed in section 4).

Originator: Michael Sundstrom
Function: TCC - Dallas – EMC
Version/Status: 1.0 / Approved
Location: TCC Directories
Date: 24-Oct-05

Change History:

Version	Date	Status	Handled By	Comments
0.1	19-Oct-05	Draft	Michael Sundstrom	
0.2	20-Oct-05	Proposal	Michael Sundstrom	
0.3	20-Oct-05	Reviewed	Hai To	
1.0	24-Oct-05	Approved	Hai To	

Testing laboratory:

Test & Certification Center (TCC) Dallas
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U.S.A.

Tel. 972-894-5000

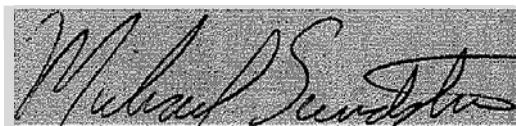
Client:

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USA
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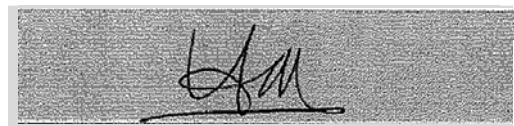
Date and signatures:

24-Oct-05

For the contents:



Michael Sundstrom
Operator Review



Hai To
Technical 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). 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 661N.

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 15.107, 15.109, 15.111 and 15.207.

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
AC Conducted Emissions	FCC Part 15.107	6	Complies
AC Conducted Emissions	FCC Part 15.207	6	Complies
RF Conducted Idle Mode Emissions	FCC Part 15.111	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 15	Code of Federal Regulations (CFR) Title 47, Part 15 – Radio Frequency Devices: Subpart B – Unintentional Radiators and Subpart C – Intentional Radiators
3	CISPR 22 / EN55022	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement.
4	ICES-003	Digital Apparatus, Industry Canada
5	RSS-132	800 MHz Cellular Telephones Employing New Technologies
6	RSS-133	2 GHz Personal Communications Services, Industry Canada
7	RSS-212	Test Facilities and Test Methods for Radio Equipment, Industry Canada (Provisional)
8	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
- dBm - decibels per milliwatt (absolute measurement)
- dB μ V - decibel per microvolt
- dB μ V/m - decibel of microvolt per meter
- 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
- EMC - Electromagnetic Compatibility
- EMI - Electromagnetic Interference
- 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, 15.107/207, 15.111	Amps, CDMA 800/1900	18 Oct 05	Operational	Phone	FCC ID: QMNRM-124 Type: 2855i HW: 2001 SW: VR100_5w21_18.nep IMEI:
FCC Part, 15.107/207, 15.111	Amps, CDMA 800/1900	N/A	N/A	Battery	Type: BL-6C Other: 3.7 V
FCC Part, 15.107/207	Amps, CDMA 800/1900	N/A	N/A	Charger	Type: AC-3U
FCC Part, 15.107/207	Amps, CDMA 800/1900	N/A	N/A	Headset	Type: HS-9



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	03008	LISN	EMCO	3816/2	23Aug06	12 Months
6	N/A	10dB Attenuator	Weinschel	Model 2	N/A	N/A
6	02664/02665	EMI Receiver	Hewlett Packard	8546 / 85460A	09Feb06	12 Months
6,7	02666	Base Station	Rohde & Schwarz	CMU 200	25May06	12 Months
7	02680	EMI Analyzer	Agilent	E7405A	29Dec05	12 Months

6. FCC 15.107 / 207; AC CONDUCTED EMISSIONS

Specification: FCC Part 15.107 and 15.207

6.1 Setup

Testing was performed in accordance with 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.

Photographs are in Appendix A.

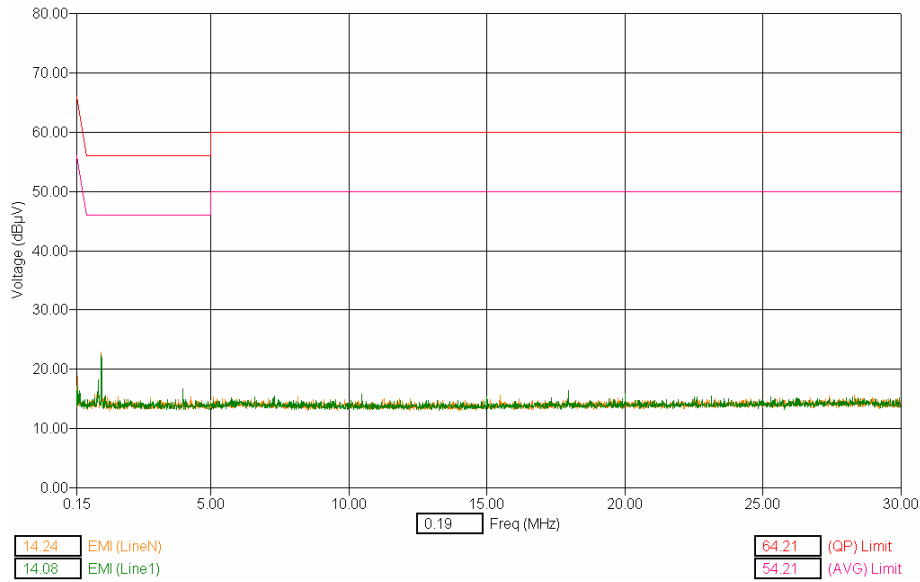
6.2 Pass/Fail Criteria

Frequency Range	AC Conducted Emission Limits (CISPR 22)	
	Quasi-peak (dBμV)	Average (dBμV)
0.15MHz - 0.5MHz	66 - 56	56 - 46
0.5MHz - 5MHz -	56	46
5MHz - 30MHz	60	50

6.3 Detailed Test Results

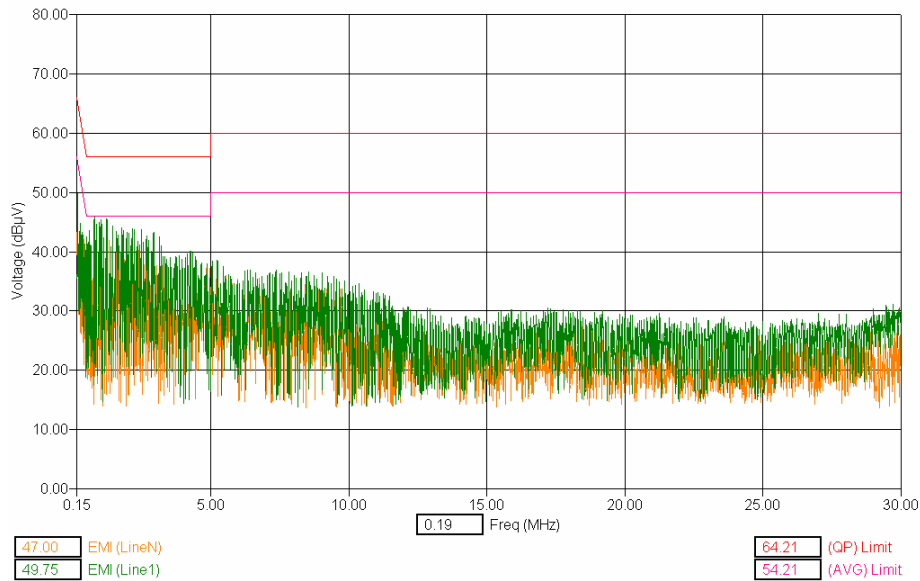
Test Technician / Engineer	Michael Sundstrom
Date of Measurement	19 Oct 05
Temperature	24°C
Humidity	45 %RH
Test Result	Complies with FCC Part 15.107
Test Result	Complies with FCC Part 15.207

6.3.1 Ambient Scan:



6.3.2 FCC Part 15.107:

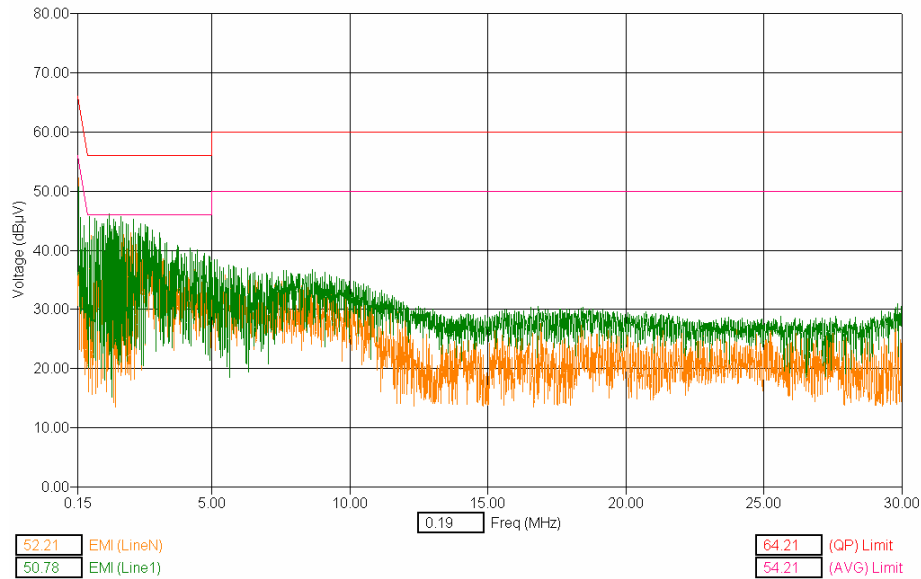
Analog, Channel 384, RM-124with AC-3U and HS-9:



Finals:

Freq [Max] [MHz]	[AVG] Trace [dBµV]	[QP] Trace [dBµV]	Transducer [dB]	Cable [dB]	Line	[AVG] EMI [dBµV]	[QP] EMI [dBµV]	[AVG] Limit [dBµV]	[QP] Limit [dBµV]
0.196	30.76	41.91	0.13	0.05	N	30.94	42.09	53.82	63.82
0.198	30.03	41.96	0.13	0.07	L1	30.23	42.16	54.21	64.21
0.590	26.42	35.75	0.18	0.11	N	26.71	36.04	46.00	56.00
0.778	23.37	36.09	0.19	0.11	L1	23.67	36.39	46.00	56.00
1.231	17.79	35.57	0.21	0.00	L1	18.00	35.78	46.00	56.00
1.335	4.41	16.31	0.21	0.00	N	4.62	16.52	46.00	56.00

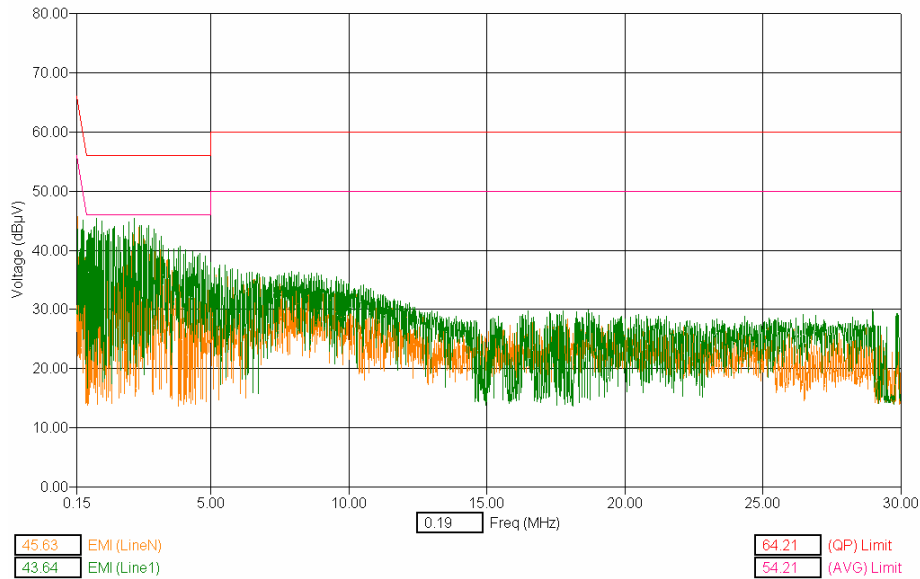
CDMA 800, Channel 384, RM-124with AC-3U and HS-9:



Finals:

Freq (Max) [MHz]	[AVG] Trace [dBμV]	[QP] Trace [dBμV]	Transducer [dB]	Cable [dB]	Line	[AVG] EMI [dBμV]	[QP] EMI [dBμV]	[AVG] Limit [dBμV]	[QP] Limit [dBμV]
0.192	37.26	44.77	0.13	0.07	N	37.46	44.97	54.21	64.21
0.194	37.59	47.23	0.13	0.07	L1	37.79	47.43	54.21	64.21
0.255	31.04	41.85	0.14	0.07	L1	31.25	42.06	51.50	61.50
0.389	32.88	41.11	0.16	0.11	N	33.15	41.38	48.19	58.19
0.646	32.31	36.16	0.18	0.12	N	32.61	36.46	46.00	56.00
1.274	27.69	29.31	0.21	0.00	L1	27.90	29.52	46.00	56.00

CDMA 1900, Channel 600, RM-124with AC-3U and HS-9:

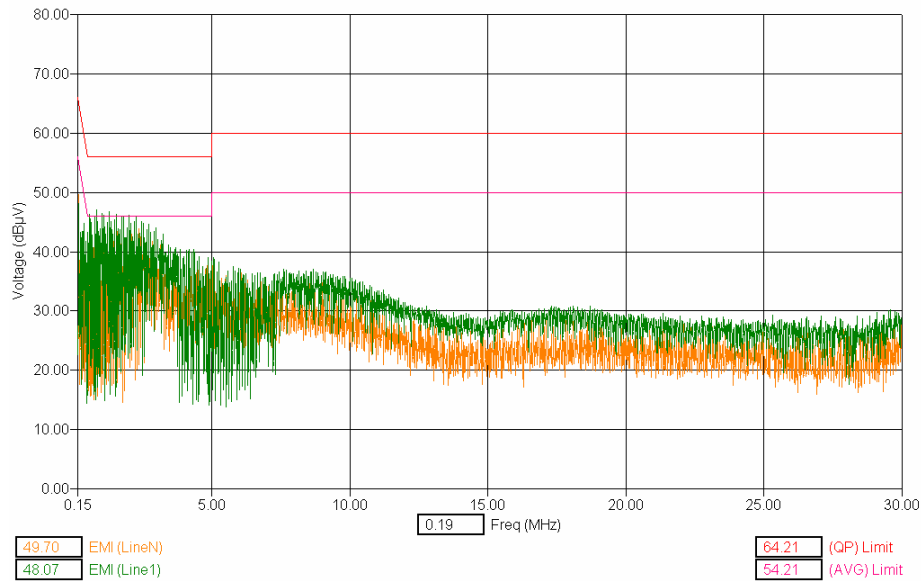


Finals:

Freq (Max) [MHz]	[AVG] Trace [dBµV]	[QP] Trace [dBµV]	Transducer [dB]	Cable [dB]	Line	[AVG] EMI [dBµV]	[QP] EMI [dBµV]	[AVG] Limit [dBµV]	[QP] Limit [dBµV]
0.189	20.80	33.80	0.13	0.07	N	21.00	34.00	54.21	64.21
0.389	29.02	39.75	0.16	0.11	L1	29.29	40.02	48.00	58.00
0.842	35.19	45.19	0.19	0.15	L1	35.53	45.53	46.00	56.00
1.049	30.48	38.33	0.20	0.00	N	30.68	38.53	46.00	56.00
2.235	20.90	38.07	0.23	0.00	L1	21.13	38.30	46.00	56.00
2.387	4.63	25.57	0.24	0.00	N	4.87	25.81	46.00	56.00

6.3.3 FCC Part 15.207

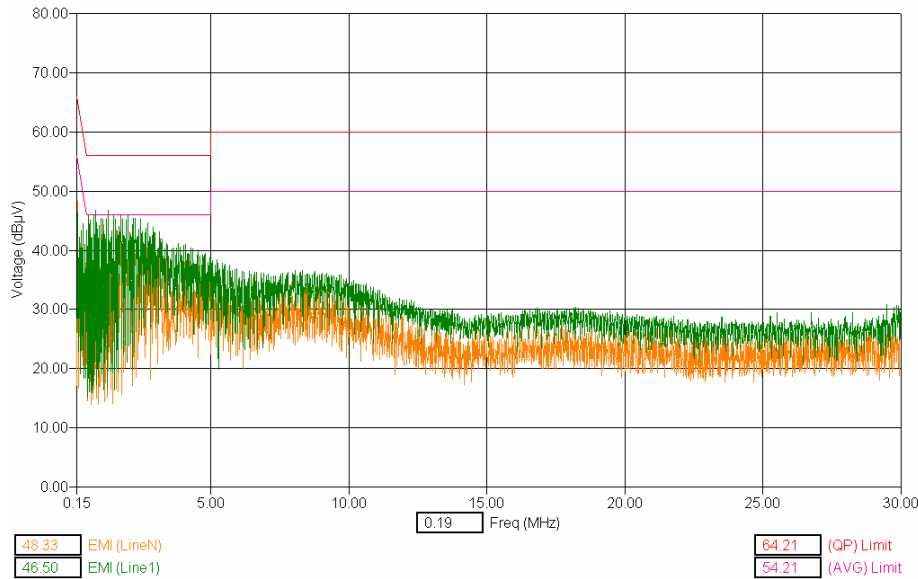
Analog, Channel 384, RM-124with AC-3U and HS-9:



Finals:

Freq [Max] [MHz]	[AVG] Trace [dBμV]	[QP] Trace [dBμV]	Transducer [dB]	Cable [dB]	Line	[AVG] EMI [dBμV]	[QP] EMI [dBμV]	[AVG] Limit [dBμV]	[QP] Limit [dBμV]
0.196	36.08	44.93	0.13	0.07	L1	36.28	45.13	54.21	64.21
0.197	35.08	46.85	0.13	0.07	N	35.28	47.05	54.21	64.21
0.840	36.20	46.07	0.19	0.12	L1	36.51	46.38	46.00	56.00
1.047	28.48	40.32	0.20	0.00	N	28.68	40.52	46.00	56.00
1.294	33.31	45.96	0.21	0.00	L1	33.52	46.17	46.00	56.00
2.355	25.87	40.62	0.24	0.00	N	26.11	40.86	46.00	56.00

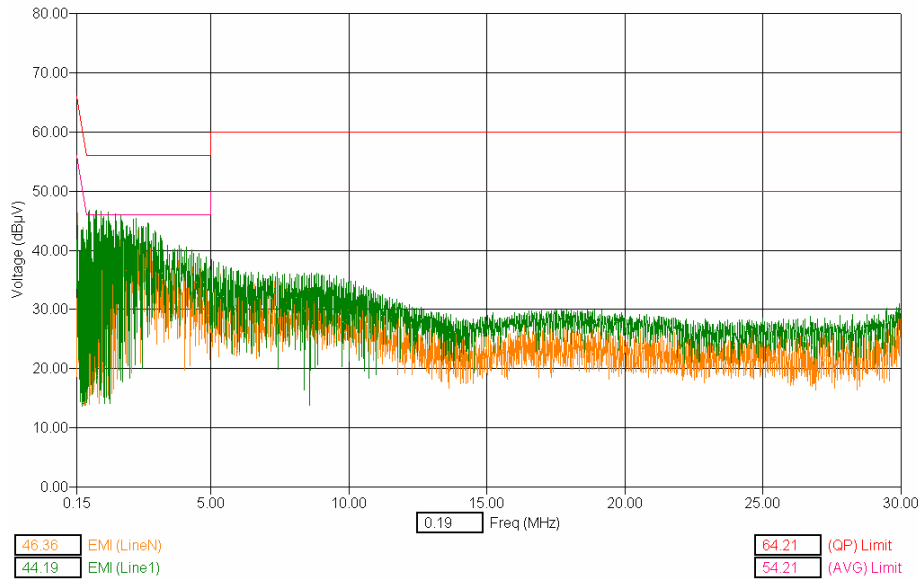
CDMA 800, Channel 384, RM-124with AC-3U and HS-9:



Finals:

Freq (Max) [MHz]	[AVG] Trace [dBµV]	[QP] Trace [dBµV]	Transducer [dB]	Cable [dB]	Line	[AVG] EMI [dBµV]	[QP] EMI [dBµV]	[AVG] Limit [dBµV]	[QP] Limit [dBµV]
0.194	34.34	45.97	0.13	0.07	N	34.54	46.17	54.21	64.21
0.194	36.46	44.14	0.13	0.07	L1	36.66	44.34	54.21	64.21
0.586	32.01	40.42	0.18	0.11	N	32.30	40.71	46.00	56.00
0.837	35.41	45.41	0.19	0.12	L1	35.72	45.72	46.00	56.00
1.107	29.49	40.70	0.20	0.00	N	29.69	40.90	46.00	56.00
1.286	32.93	45.29	0.21	0.00	L1	33.14	45.50	46.00	56.00

CDMA 1900, Channel 600, RM-124with AC-3U and HS-9:



Finals:

Freq (Max) [MHz]	[AVG] Trace [dBµV]	[QP] Trace [dBµV]	Transducer [dB]	Cable [dB]	Line	[AVG] EMI [dBµV]	[QP] EMI [dBµV]	[AVG] Limit [dBµV]	[QP] Limit [dBµV]
0.196	33.80	44.98	0.13	0.07	N	34.00	45.18	54.21	64.21
0.395	31.29	40.25	0.16	0.11	N	31.56	40.52	48.00	58.00
0.583	36.74	45.58	0.18	0.11	L1	37.03	45.87	46.00	56.00
0.843	34.53	45.40	0.19	0.15	L1	34.87	45.74	46.00	56.00
0.920	27.95	40.67	0.20	0.14	N	28.29	41.01	46.00	56.00
1.038	33.85	45.43	0.20	0.00	L1	34.05	45.63	46.00	56.00

7. FCC 15.111; RF CONDUCTED IDLE MODE EMISSIONS

Specification: FCC Part 15.111

7.1 Setup

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

Photographs are in Appendix A.

7.2 Pass/Fail Criteria

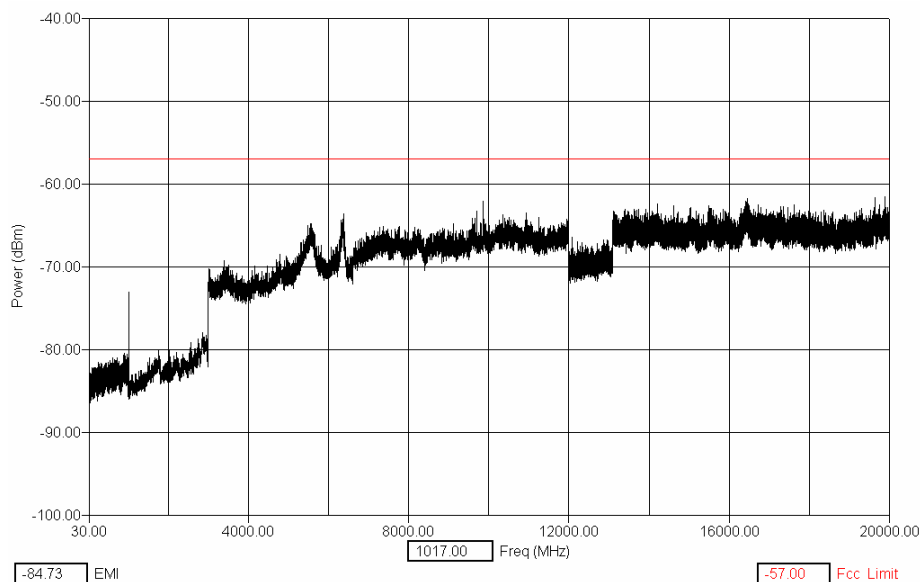
Band	Frequency Range (MHz)	FCC Limits (dBm)
Cellular	30 - 5000 *	-57.0

*Frequency to be investigated up to the 5th harmonic of the highest frequency generated if over 1000MHz.

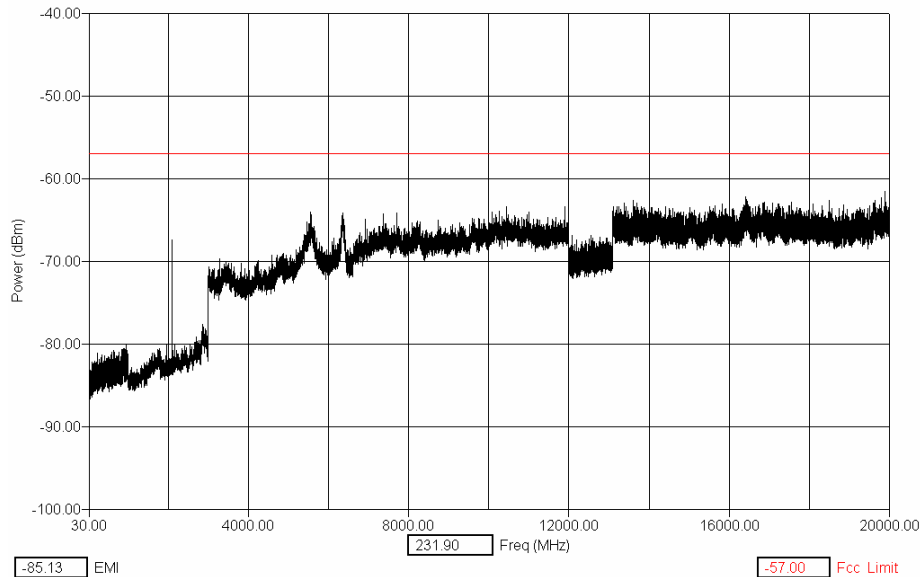
7.3 Detailed Test Results

Test Technician / Engineer	Michael Sundstrom
Date of Measurement	20 Oct 05
Temperature	22-24 °C
Humidity	45-55 %RH
Test Result	Complies with FCC Part 15.111

CDMA 800, Channel 384



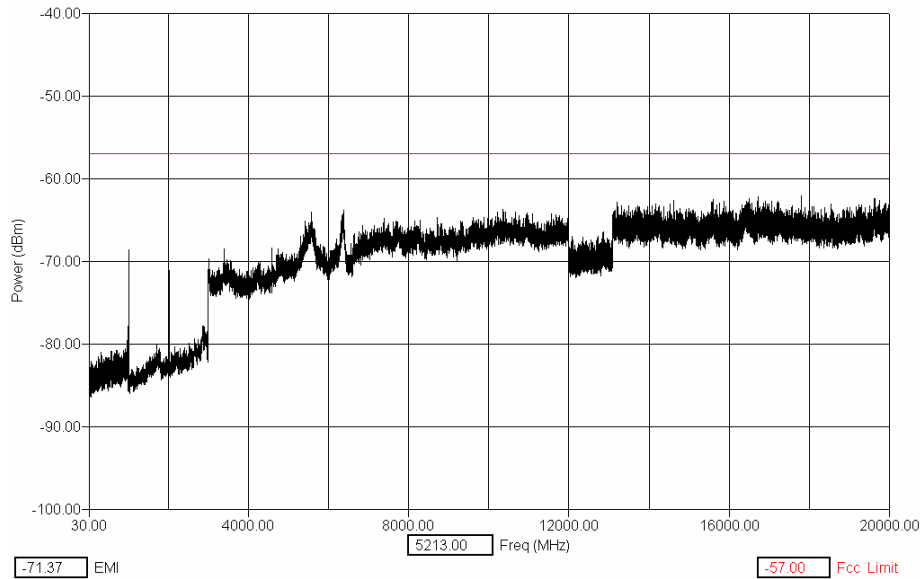
CDMA 1900, Channel 600:



Final:

Freq (Max) (MHz)	[AVG] EMI (dBm)	Limit (dBm)	Cable (dB)
2088.15	-67.59	-57.00	0.46

Analog, Channel 384:



Final:

Freq (Max) (MHz)	[AVG] EMI (dBm)	Limit (dBm)	Cable (dB)
1012.41	-99.42	-57.00	0.25
2017.02	-85.69	-57.00	0.44

8. APPENDIX A

8.1 EUT Photograph:



8.2 AC conducted, Set Up Photograph:



8.3 FCC 15.111 Set Up:

