

Nemko Test Report No.: 3L0478RUS1

Applicant: Hop-On Wireless

Equipment Under Test: Dual Band Tri-Mode CDMA Cellular Phone

FCC ID: QHOHPN1900

In Accordance With: FCC Part 22, Subpart H 800 MHz Cellular Subscriber Units

Tested By: Nemko Dallas Inc.
802 N. Kealy
Lewisville, TX
75057-3136

Authorized By:



Tom Tidwell, Frontline Manager

Date: 12/31/03

Table of Contents

Section 1. Summary of Test Results 3

Section 2. General Equipment Specification 5

Section 3. RF Power Output..... 7

Section 4. Modulation Characteristics 8

Section 5. Occupied Bandwidth 14

Section 6. Spurious Emissions at Antenna Terminals 21

Section 7. Field Strength of Spurious..... 32

Section 8. Frequency Stability..... 37

Section 9. Test Equipment List..... 39

ANNEX A - TEST DETAILS..... 40

ANNEX B - TEST DIAGRAMS..... 50

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone*FCC ID:* QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

Section 1. Summary of Test Results

Manufacturer: Hop-On Wireless

Model No.: HPN1900

Serial No.: 065-190000009

General: All measurements are traceable to national standards.

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 22, Subpart H.



New Submission



Production Unit



Class II Permissive Change



Pre-Production Unit

This test report relates only to the item(s) tested.

The following deviations from, additions to, or exclusions from the test specifications have been made. None
See "Summary of Test Data".

.....

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EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone*FCC ID:* QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

Summary Of Test Data

NAME OF TEST	PARA. NO.	RESULT
RF Power Output	2.1046	Complies
Audio Frequency Response	2.1047	Complies
Audio Low Pass Filter Response	2.1047	Complies
Modulation Limiting	2.1047	Complies
Occupied Bandwidth	2.1049	Complies
Spurious Emissions at Antenna Terminals	2.1051	Complies
Field Strength of Spurious Emissions	2.1053	Complies
Frequency Stability	2.1055	Complies

Footnotes:

.

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone*FCC ID:* QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

Section 2. General Equipment Specification

Frequency Range:	AMPS	824.04-848.97MHz
	CDMA	824.70-848.31MHZ
Tunable Bands:		
Necessary Bandwidth:		40kHz AMPS 1.25 MHz CDMA
Emission Designator:		AMPS: 40K0F8W, CDMA: 1M25F9W
Output Impedance:		50 ohms
RF Power Output (rated):		AMPS: 25dBm CDMA: 24dBm
Duty Cycle:		Continuous
Operator Selection of Frequency:		Network Controlled
Power Output Adjustment Capability:		Network Controlled

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone

FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

Product Description

This is a wireless telephone that operates in the 800 MHz cellular and 1900 MHz PCS bands

System Diagram

Antenna Internal



EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone*FCC ID:* QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

Section 3. RF Power Output

NAME OF TEST: RF Power Output	PARA. NO.: 2.1046
TESTED BY: Dustin Oaks	DATE: 12/08/2003

Test Results: Complies.

Measurement Data:

Frequency (CDMA)	Output Power (dBm)	Rated Power (dBm)
836.52	24.2	24

Frequency (AMPS)	Output Power (dBm)	Rated Power (dBm)
834.63	25.0	25

Equipment Used: 1036, 1627, 1474

Measurement Uncertainty: +/-0.67 dB

Temperature: 21 °C

Relative Humidity: 55 %

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone

FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

Section 4. Modulation Characteristics

NAME OF TEST: Modulation Characteristics	PARA. NO.: 2.1047
Audio Frequency Response	
TESTED BY: Dustin Oaks	DATE: 12/08/2003

Test Results: Complies.

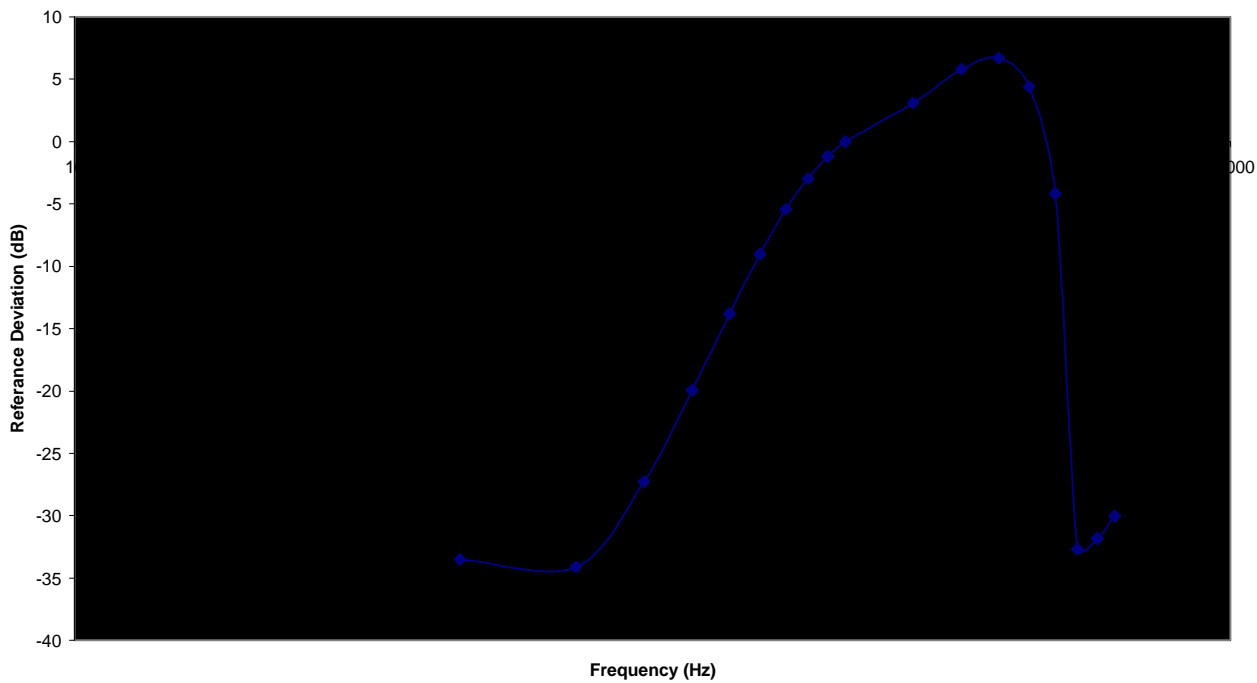
Measurement Data: See attached graph

Equipment Used: 1051, 1627, 1629, 1054, 1973

Measurement Uncertainty: +/- 0.7 dB

Temperature: 21 °C

Relative Humidity: 51 %



Audio Frequency Response

Nemko USA, Dallas Facility

FCC PART 22, SUBPART H
800 MHz CELLULAR SUBSCRIBER UNITS

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone

FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

NAME OF TEST: Modulation Characteristics	PARA. NO.: 2.1047
Audio Low-Pass Filter Response	
TESTED BY: Dustin Oaks	DATE: 12/08/2003

Test Results: Complies.

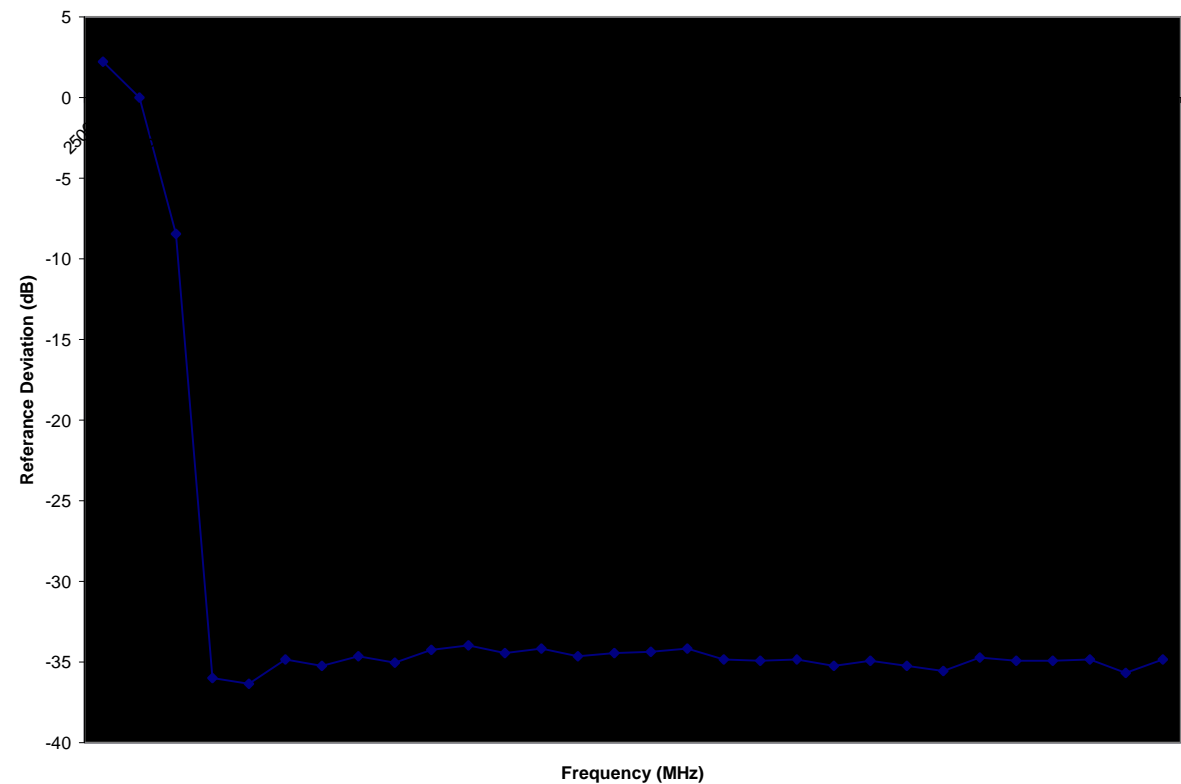
Measurement Data: See attached graph

Equipment Used: 1051, 1627, 1629, 1054, 1973

Measurement Uncertainty: +/- 0.7 dB

Temperature: 21 °C

Relative Humidity: 51 %



Audio Low Pass Filter Response

Nemko USA, Dallas Facility

FCC PART 22, SUBPART H
800 MHz CELLULAR SUBSCRIBER UNITS

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone

FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

NAME OF TEST: Modulation Characteristics Modulation Limiting	PARA. NO.: 2.1047
TESTED BY: Dustin Oaks	DATE: 12/08/2003

Test Results: Complies.

Measurement Data: See attached graph

Equipment Used: 1051, 1627, 1629, 1054, 1973

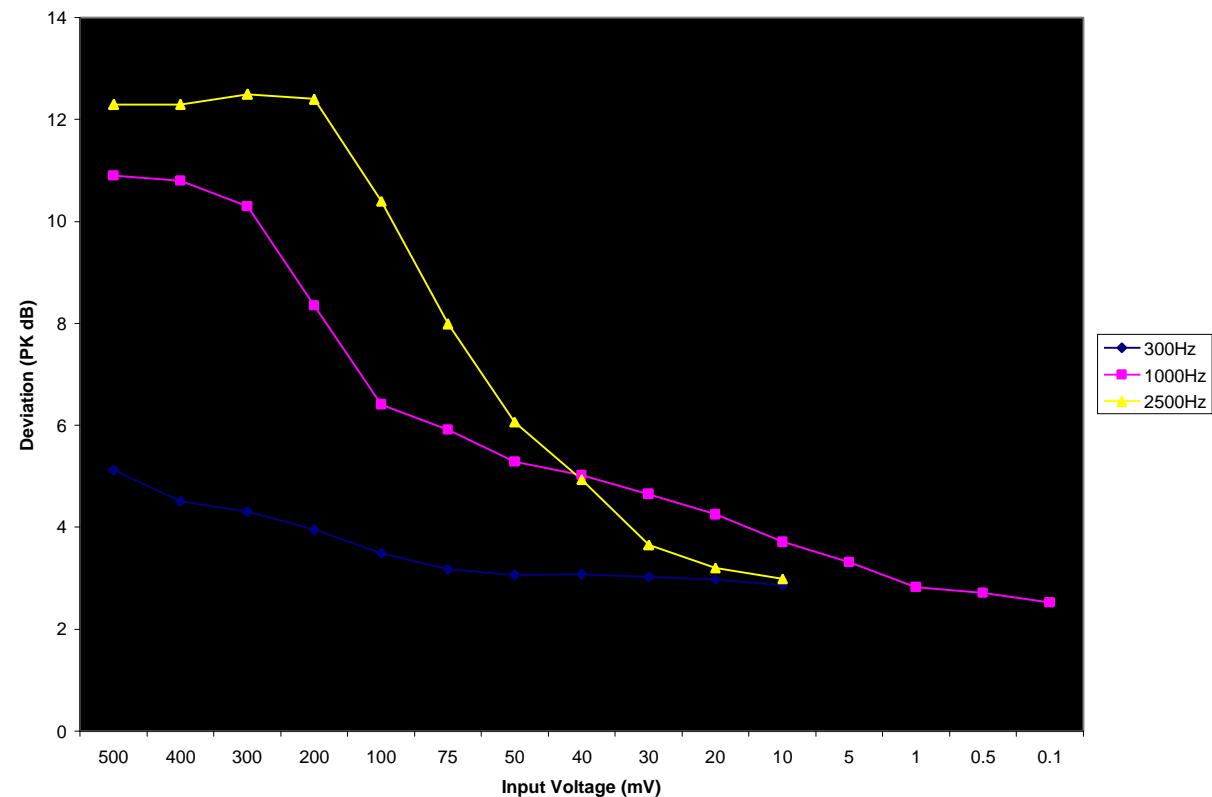
Measurement Uncertainty: 1×10^{-7} ppm

Temperature: 21 °C

Relative Humidity: 51 %

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone
FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS



Modulation Limiting

SAT Deviation:	Tone (kHz)	Deviation	
	6.0	1.51	kHz
	5.97	1.51	kHz
	6.03	1.51	kHz
WB Data Deviation:		6.24	kHz
ST Deviation:		5.71	kHz

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone

FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

Section 5. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 2.1047
TESTED BY: Dustin Oaks	DATE: 12/08/2003

Test Results: Complies.

Measurement Data: See attached graph.

Equipment Used: 1036, 1627, 1474

Measurement Uncertainty: +/- 1.7 dB

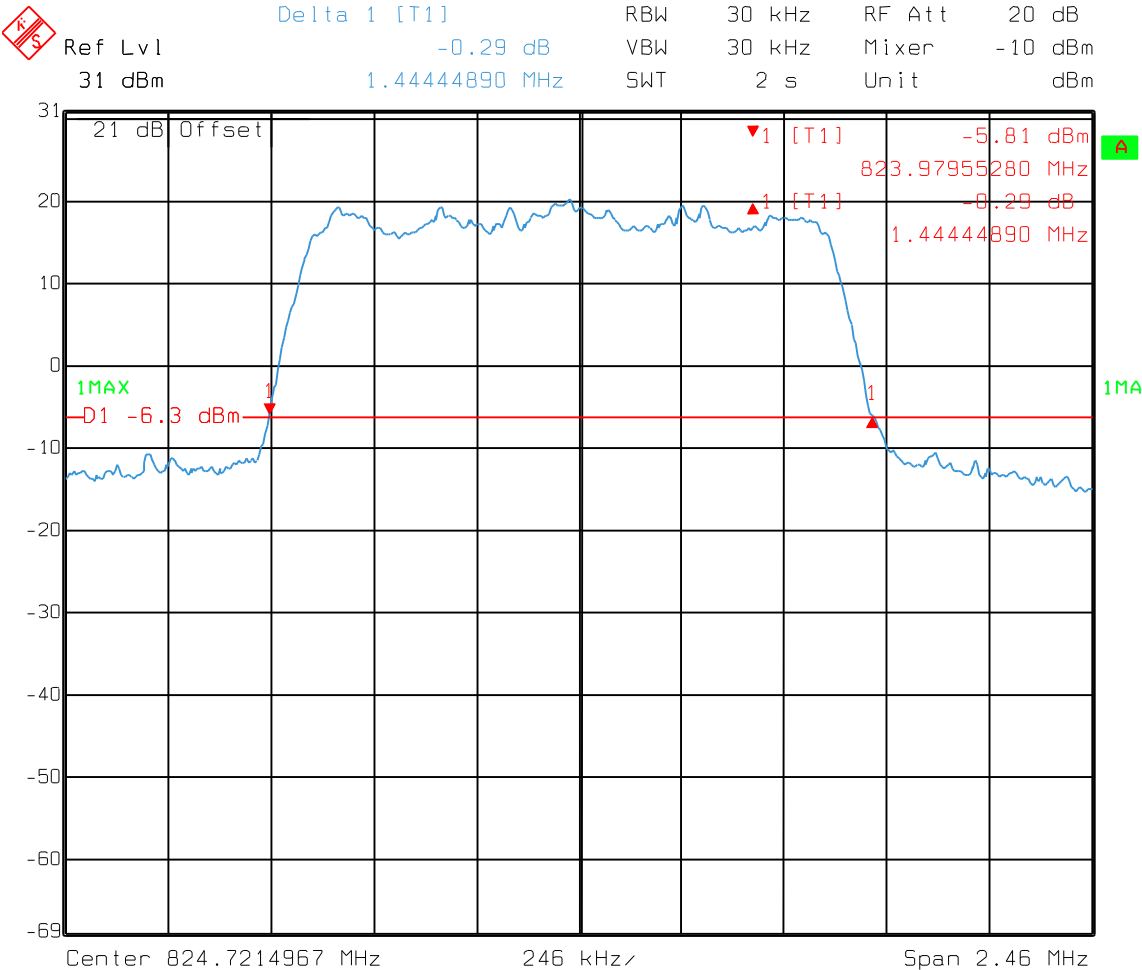
Temperature: 21 °C

Relative Humidity: 51 %

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone
FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

CDMA: 824.7MHz

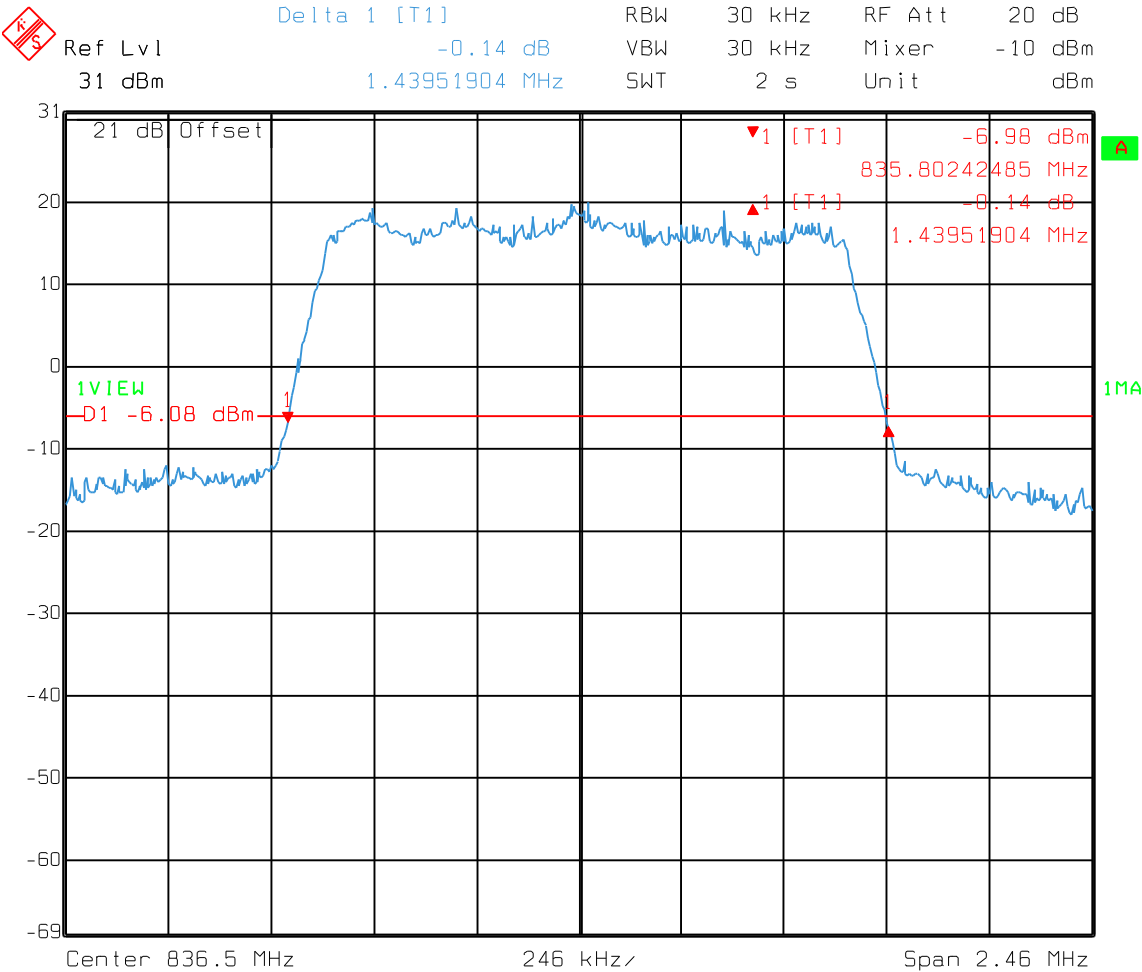


Date: 04.DEC.2003 14:43:15

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone
FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

CDMA: 836.5



Date: 04.DEC.2003 15:48:19

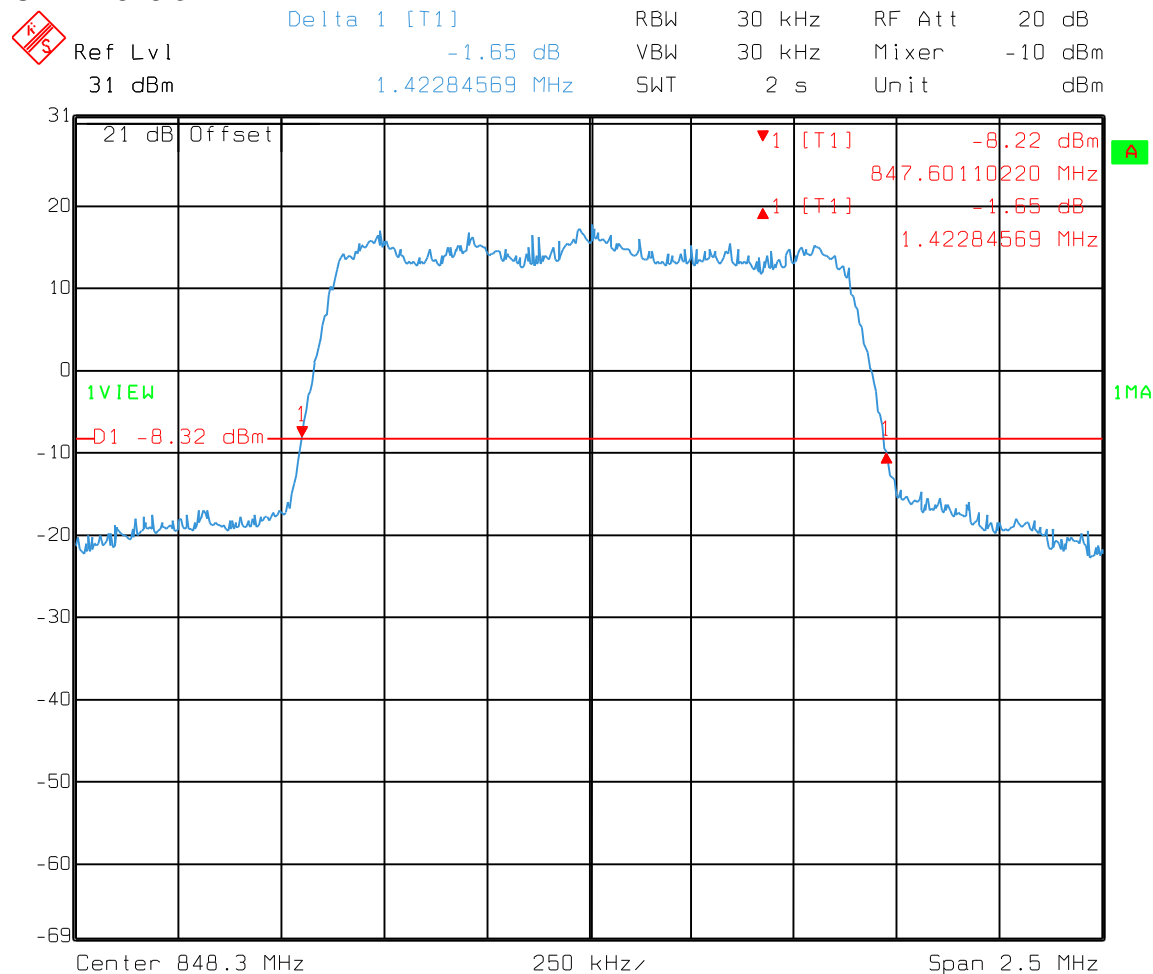
EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone

FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

CDMA: 848.31

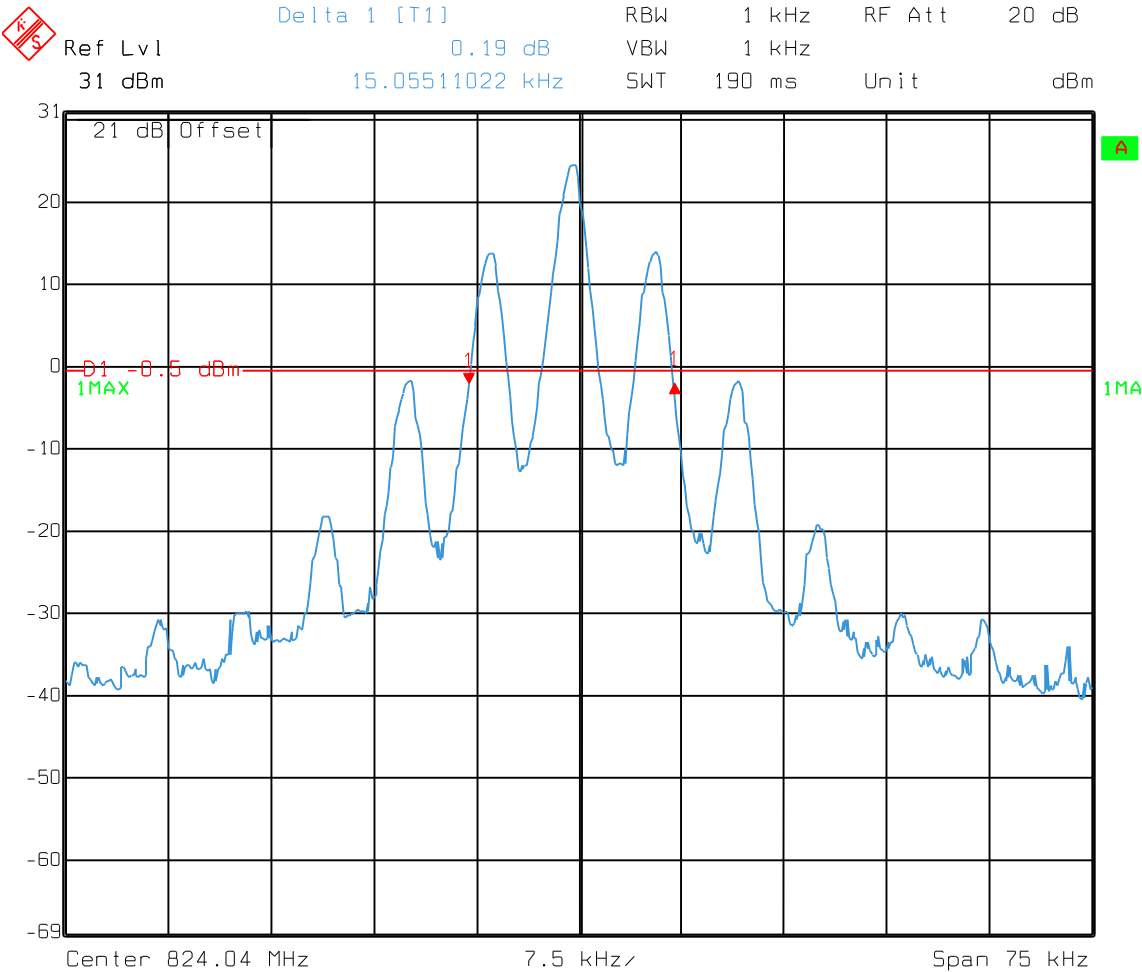


Date: 04.DEC.2003 15:44:14

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone
FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

AMPS: 824.04MHz

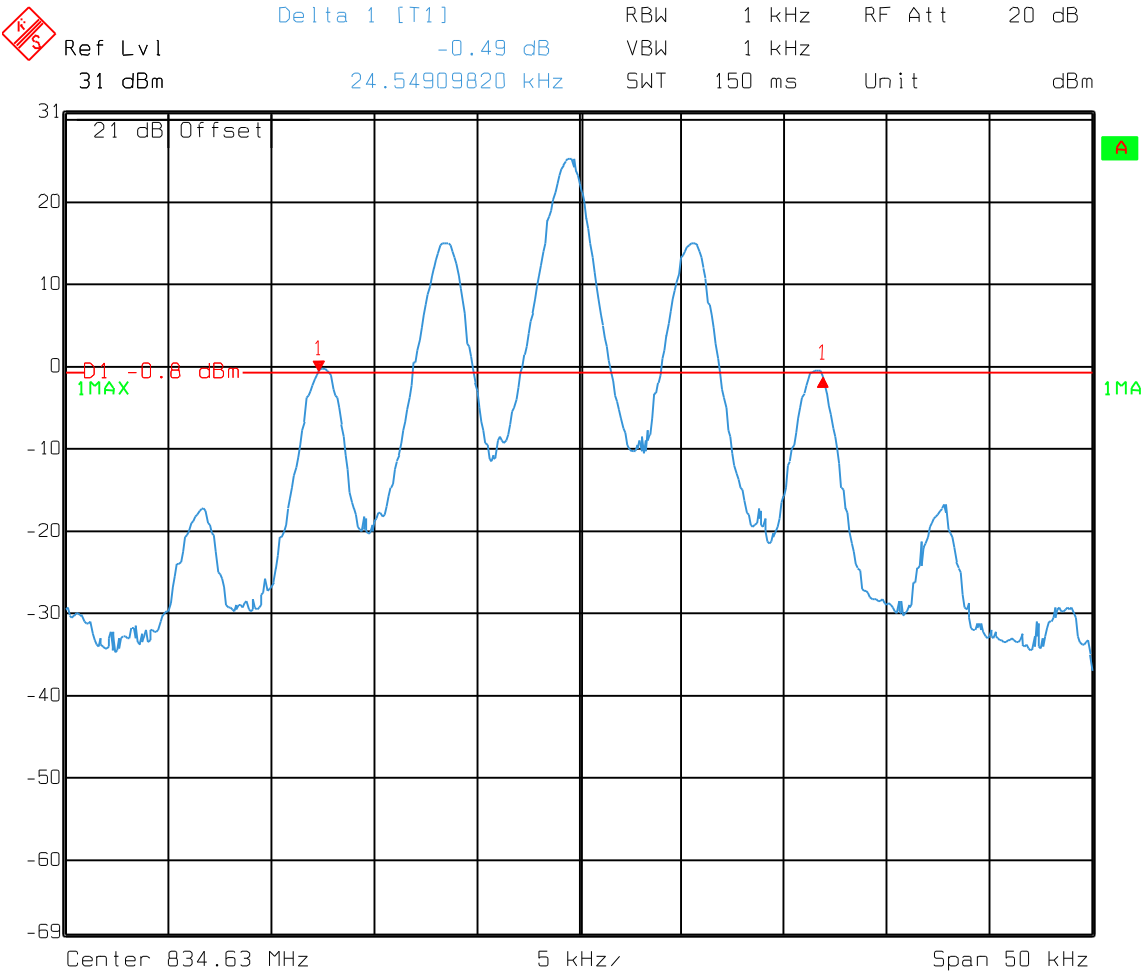


Date: 08.DEC.2003 10:50:15

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone
FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

AMPS: 834.63MHz

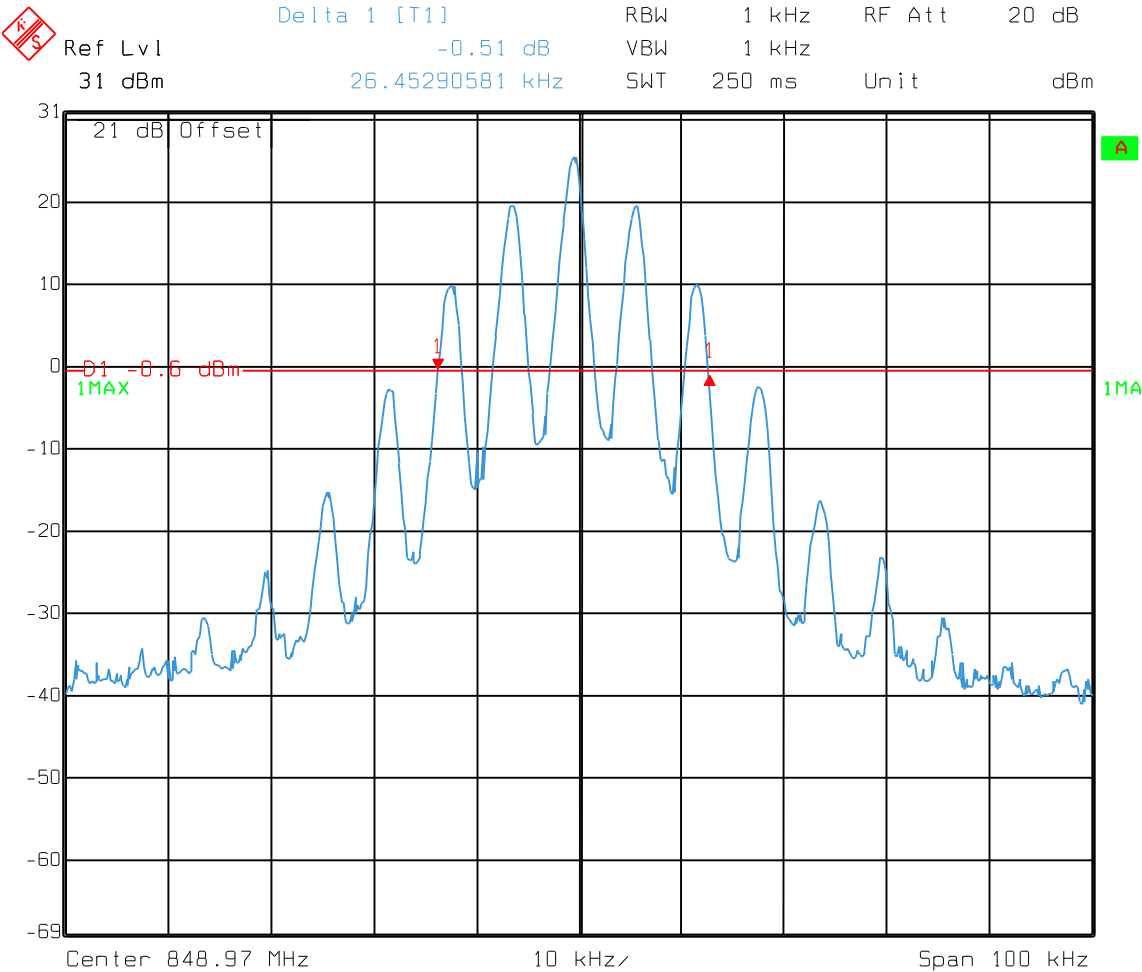


Date: 08.DEC.2003 10:44:49

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone
FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

AMPS: 848.97MHz



Date: 08.DEC.2003 10:33:37

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone

FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

Section 6. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions At Antenna Terminals	PARA. NO.: 2.1051
TESTED BY: Dustin Oaks	DATE: 12/08/2003

Test Results: Complies.

Measurement Data: See attached graph.

Equipment Used: 1036, 1627, 1474

Measurement Uncertainty: +/- 1.7 dB

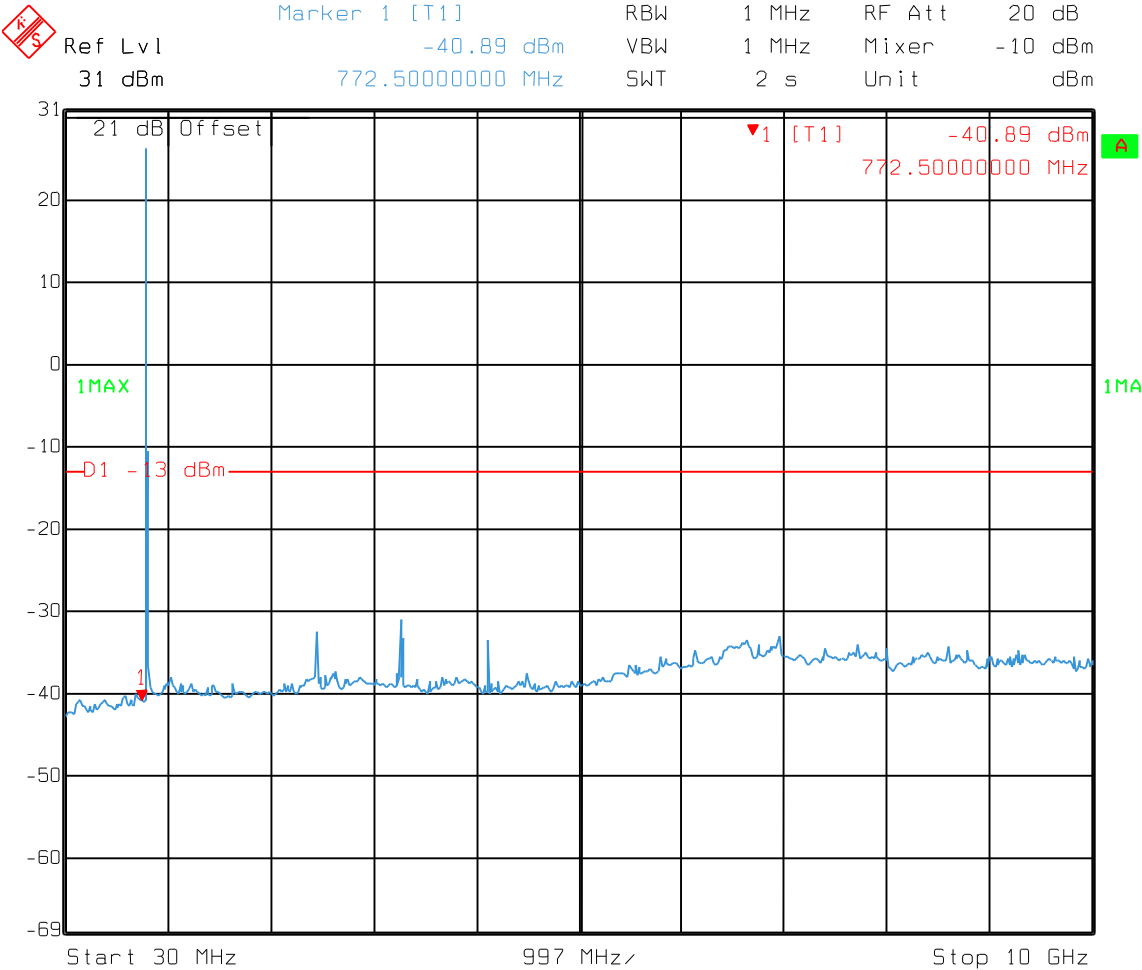
Temperature: 21 °C

Relative Humidity: 51 %

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone
FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

CDMA: 824.7

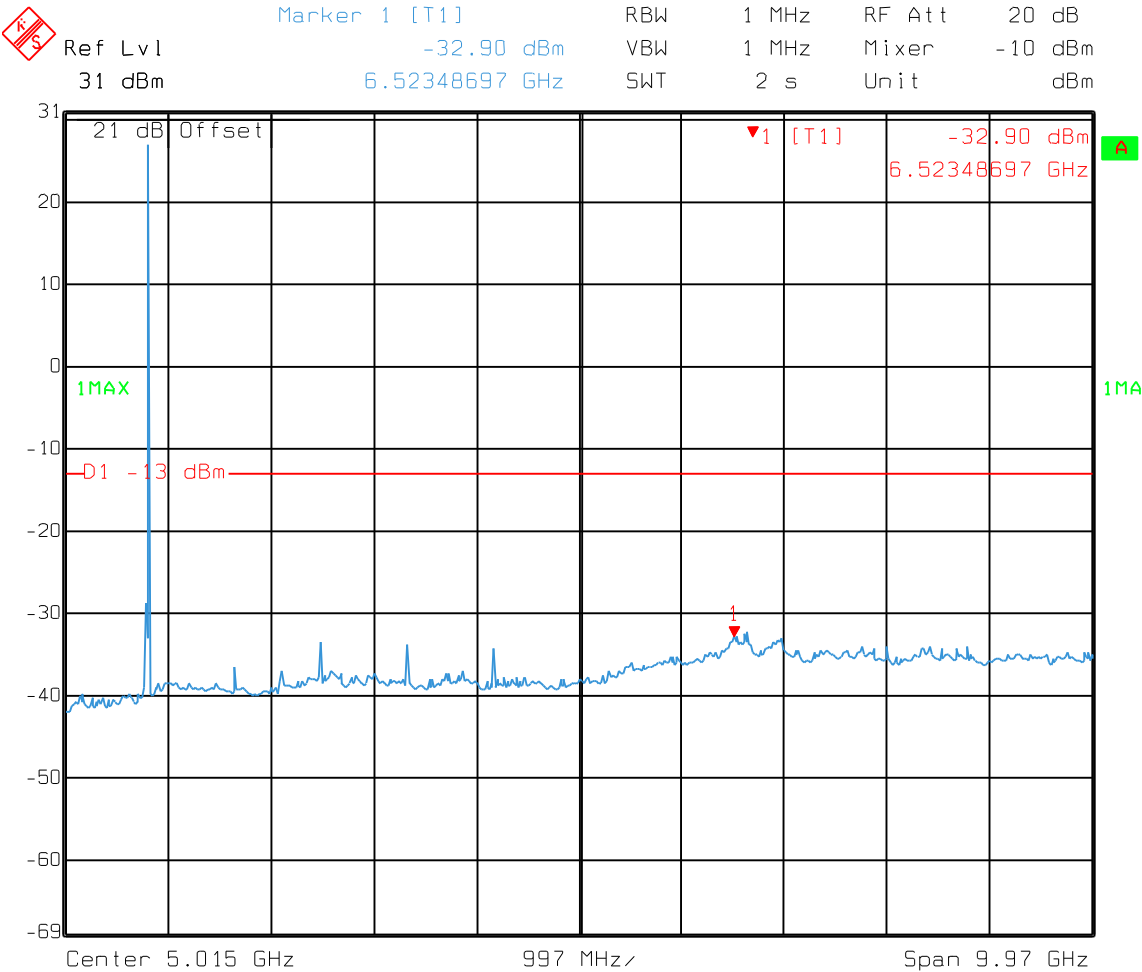


Date: 04.DEC.2003 15:12:51

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone
FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

CDMA: 836.5

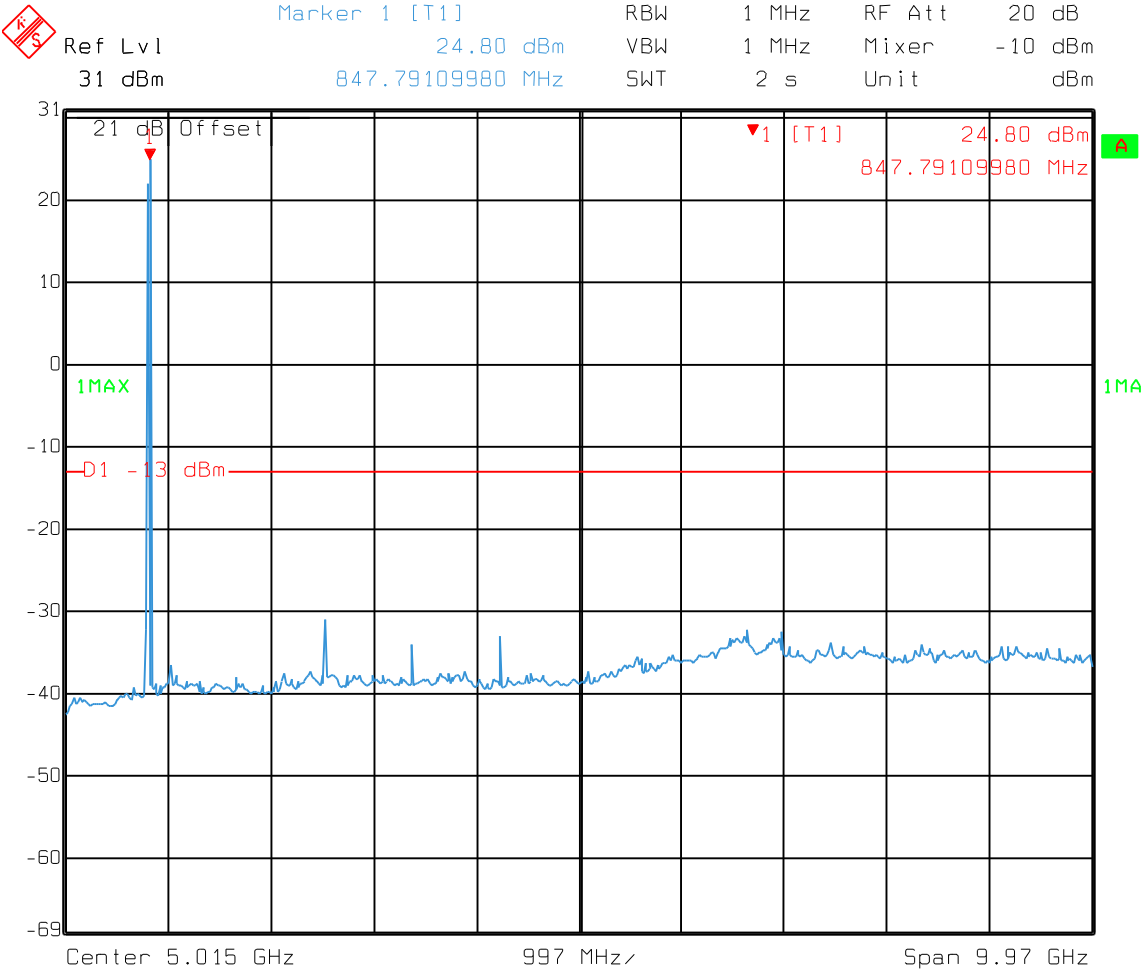


Date: 04.DEC.2003 15:51:11

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone
FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

CDMA: 848.3

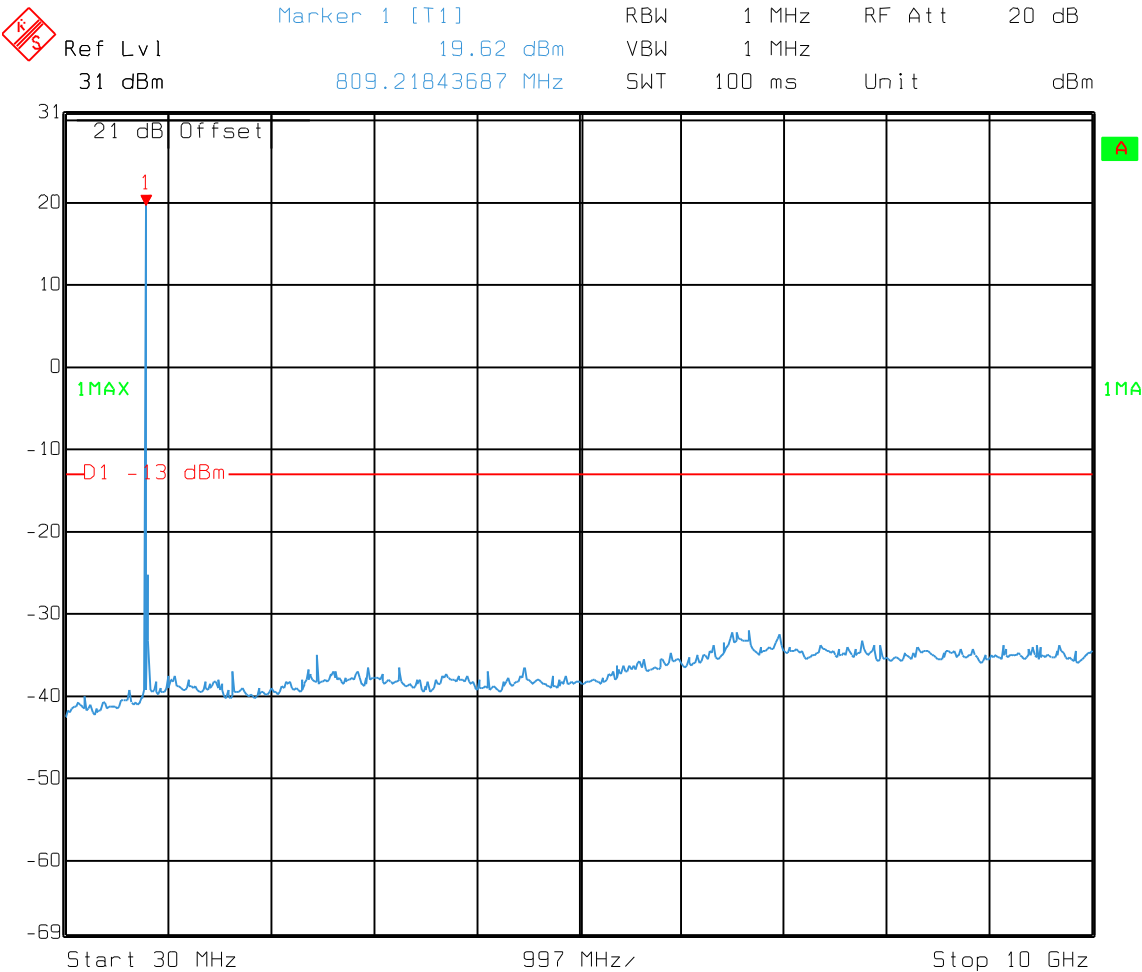


Date: 04.DEC.2003 15:40:59

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone
FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

AMPS: 824.04MHz

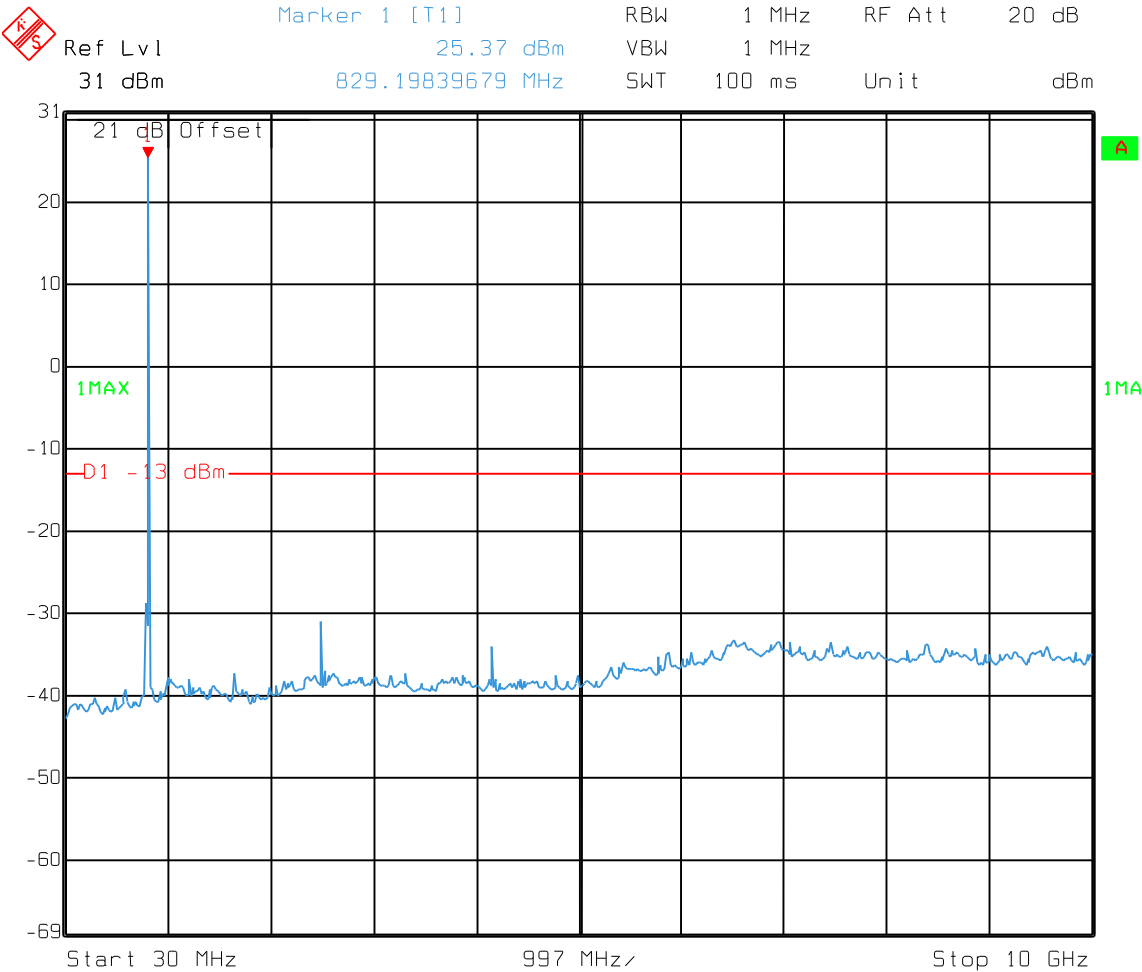


Date: 08.DEC.2003 10:24:24

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone
FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS
1

AMPS: 834.63MHz

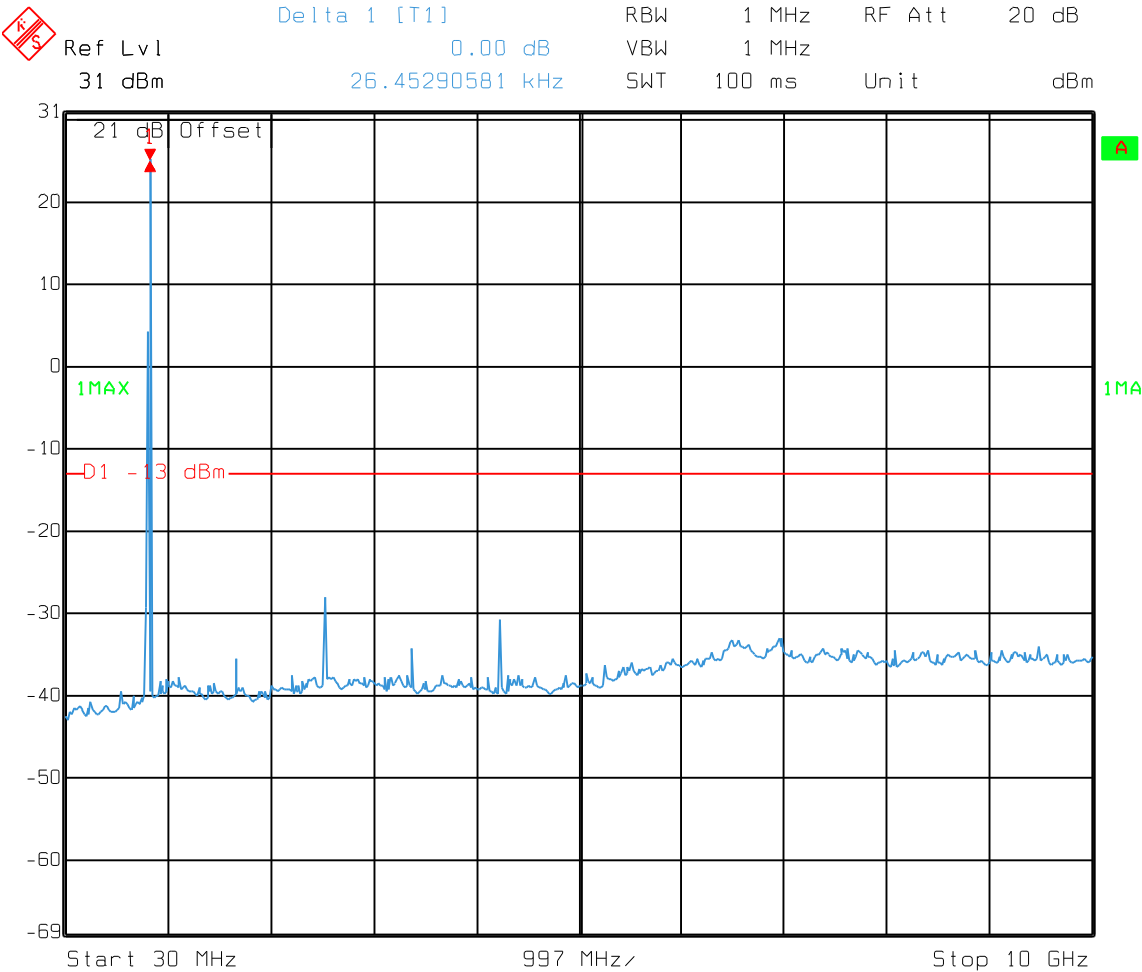


Date: 08.DEC.2003 10:46:41

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone
FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS
1

AMPS: 848.97MHz

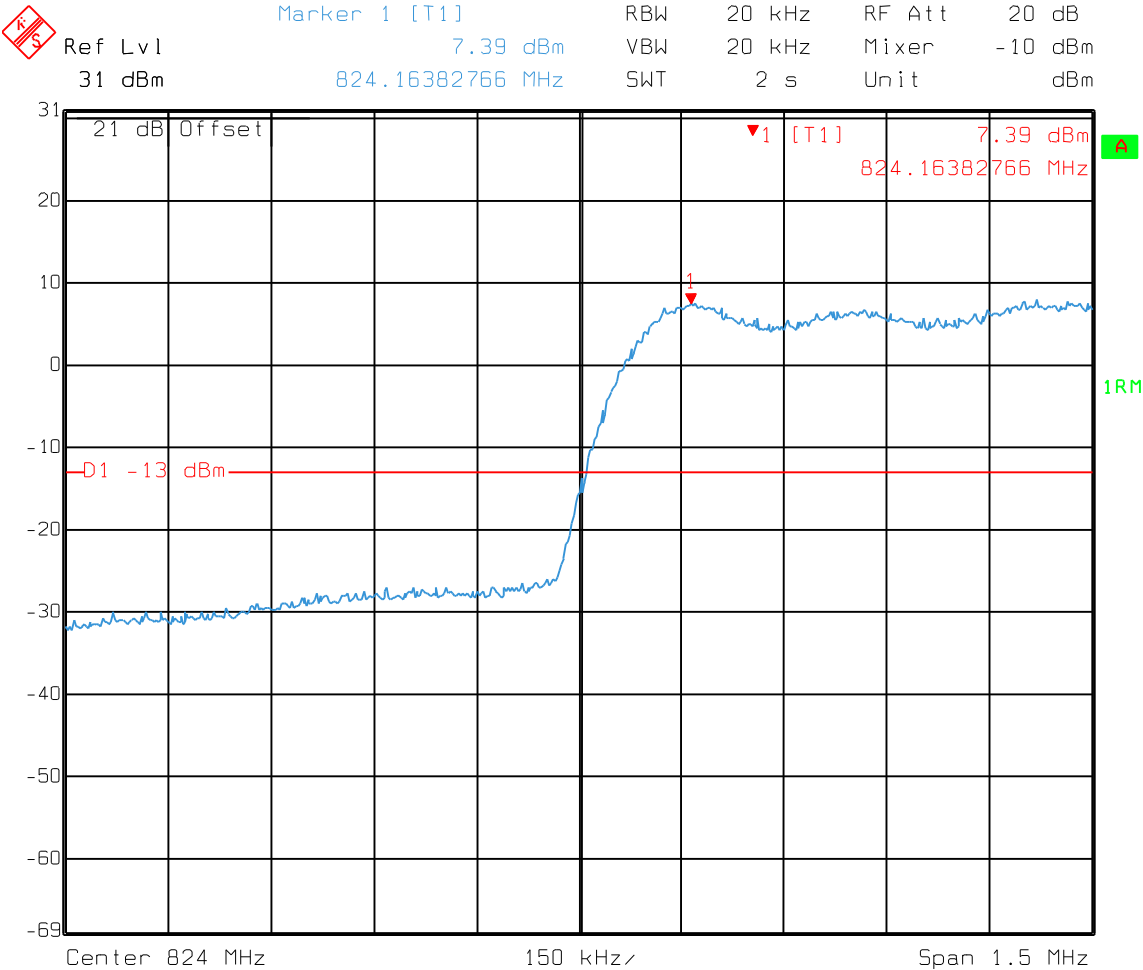


Date: 08.DEC.2003 10:38:05

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone
FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

CDMA Band Edge
CDMA: 824.7

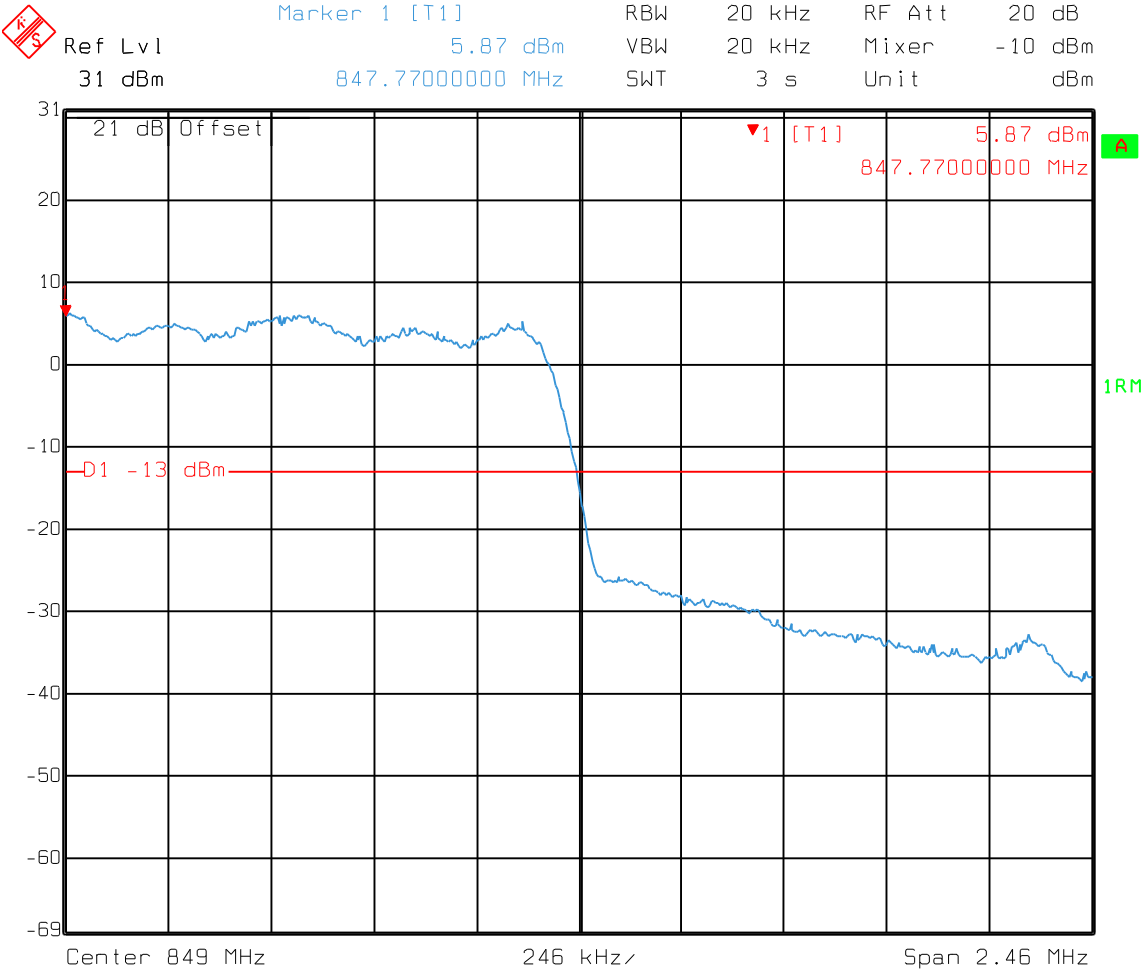


Date: 04.DEC.2003 15:07:07

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone
FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

CDMA: 848.31

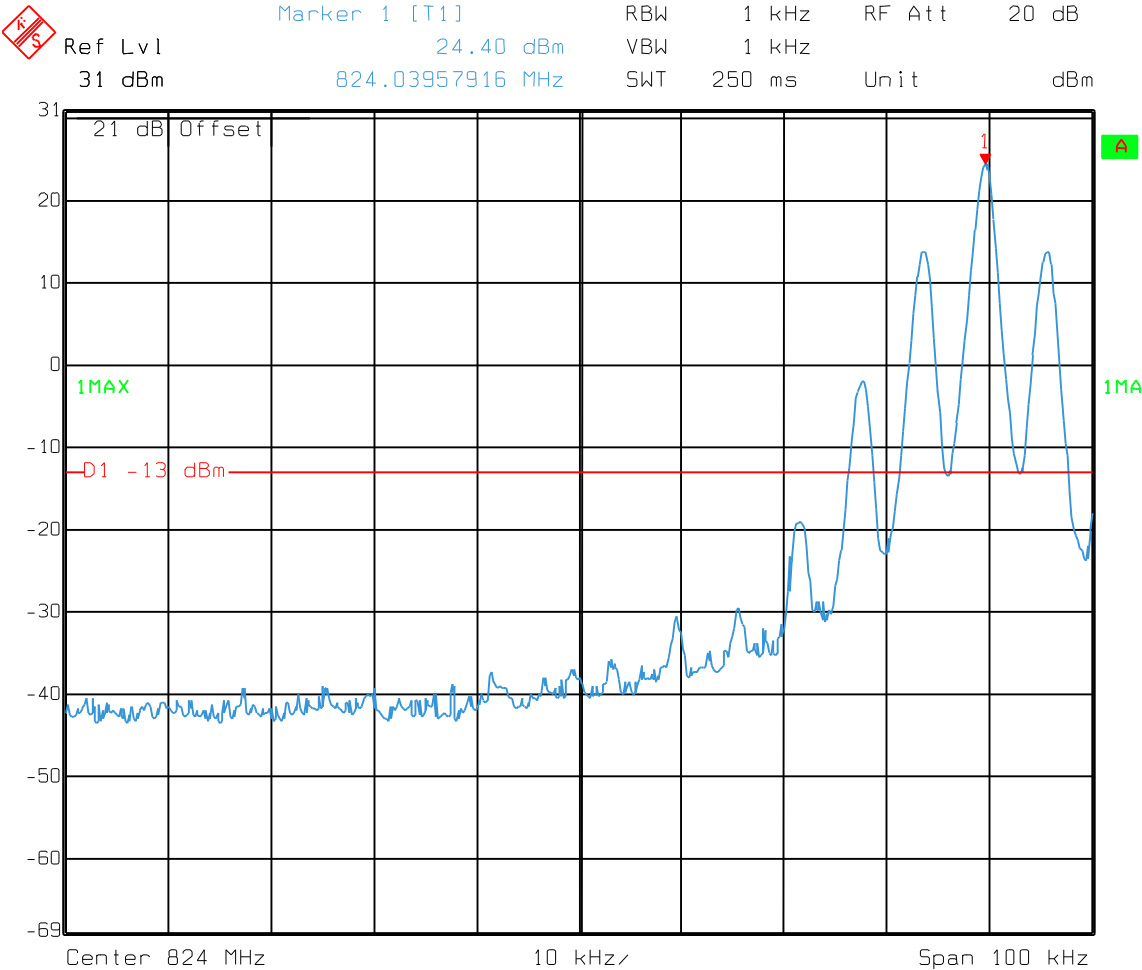


Date: 04.DEC.2003 15:34:57

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone
FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS
1

AMPS band Edge
AMPS: 824.04MHz

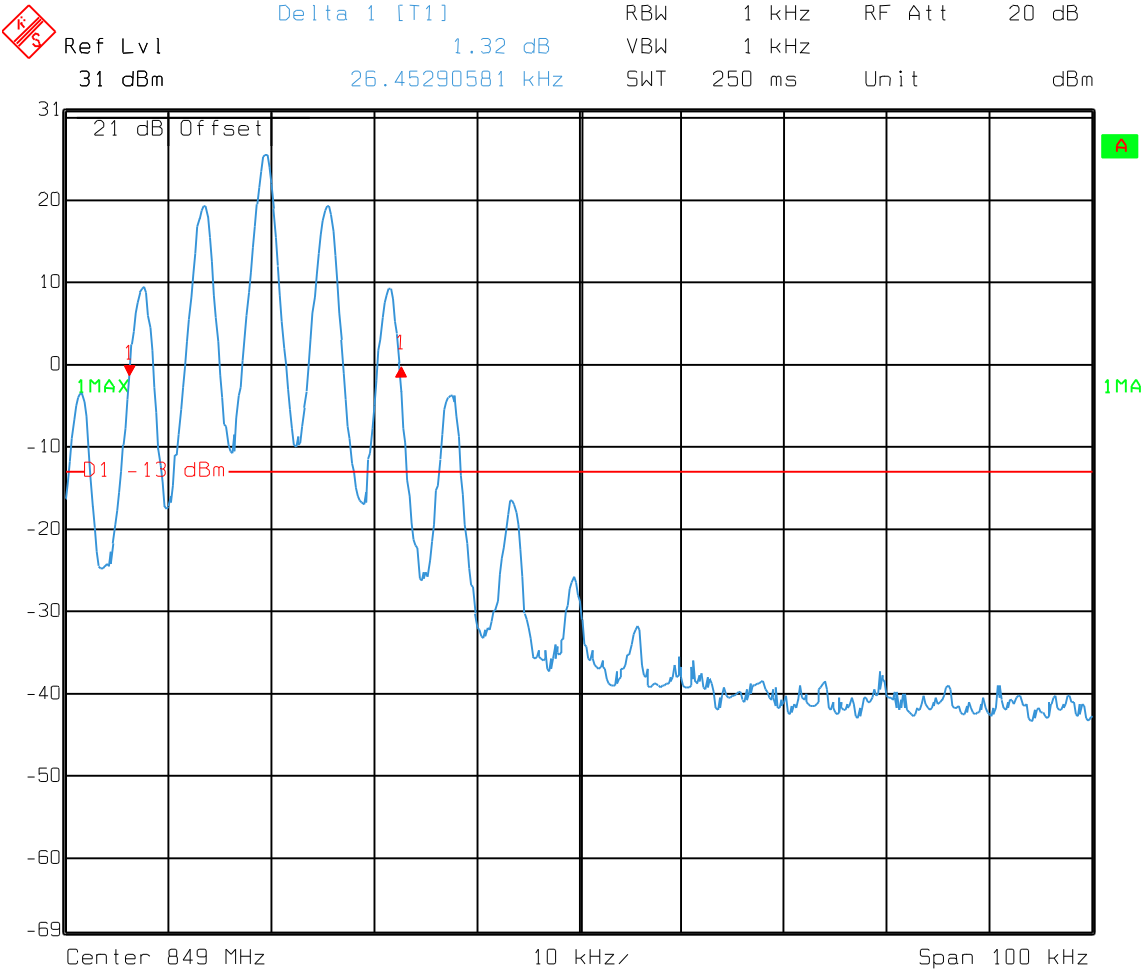


Date: 08.DEC.2003 10:51:25

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone
FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

AMP: 848.97MHz



Date: 08.DEC.2003 10:35:18

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone

FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

Section 7. Field Strength of Spurious

NAME OF TEST: Field Strength of Spurious	PARA. NO.: 2.1053
TESTED BY: Dustin Oaks	DATE: 12/05/2003

Test Results: Complies.

Measurement Data: See attached table.

Equipment Used: 1464, 791, 1016, 1484, 1485, 1304, 1480

Measurement Uncertainty: +/- 1.7 dB

Temperature: 21 °C

Relative Humidity: 51 %

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone

FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

Test Data - Radiated Emissions

EIRP Substitution Method

Page 1 of 1

Job No.: 3L0478

Specification: 22 & 24

Tested By: Dustin Oaks

E.U.T.: DUAL BAND/TRI-MODE PHONE

Configuration: TX

Sample No: 1

Location: AC 3

Detector Type: Peak

Date: 12/4/03

Temperature(°C): 20

Relative Humidity(%) 40

Complete _____

Preliminary X

Measurement Distance: 3 m

RBW: 1 MHz

VBW: 1 MHz

Test Equipment Used

Antenna: 1304

Pre-Amp: _____

Filter: 1482

Receiver: 1464

Attenuator #1: _____

Attenuator #2: _____

Additional equipment used: _____

Measurement Uncertainty: +/- 1.7 dB

Directional Coupler: _____

Cable #1: 1484

Cable #2: 1485

Cable #3: _____

Cable #4: _____

Mixer: _____

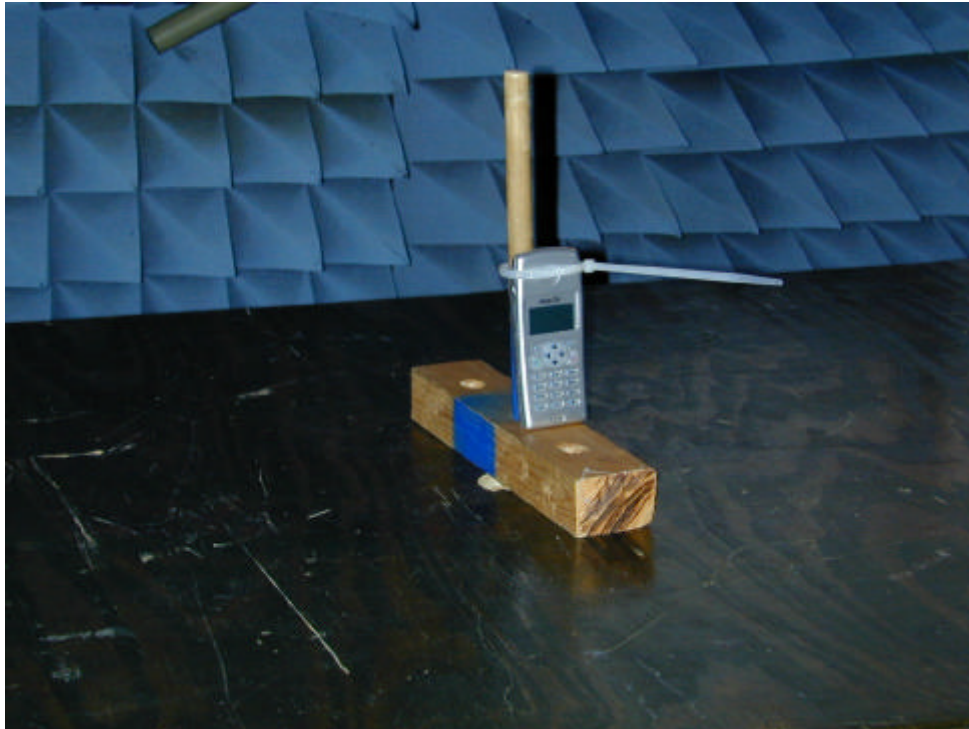
Frequency (MHz)	Meter Reading (dBm)	Correction Factor (dB)		Pre-Amp Gain (dB)	Substitution Antenna Gain (dBi)		EIRP (dBm)	EIRP (mW)	Polarity	Comments
2474	-67.9	37.0			8.9		-22.0	0.01	h	On 824.7, EUT Vert
1649.5	-68.9	33.0			9.4		-26.5	0.002239	h	On 824.7, EUT Vert
1649.5	-66.6	33.0			9.4		-24.2	0.003776	h	On 824.7, EUT Flat
2474	-70.0	34.2			8.9		-26.9	0.002040	v	On 824.7, EUT Flat
1862	-57.8	31.0			9.4		-17.4	0.018281	v	On 1851, EUT Vert
1840	-64.5	31.0			9.4		-24.1	0.00	v	On 1851, EUT Vert
1862	-59.7	33.0			9.4		-17.3	0.02	h	On 1851, EUT Vert
1840	-64.8	33.0			9.4		-22.4	0.005768	h	On 1851, EUT Vert
3703	-66.3	35.5			10.7		-20.1	0.009795	h	On 1851, EUT Vert
1862	-65.6	33.0			9.4		-23.2	0.004753	h	On 1851, EUT Flat
1839	-61.1	33.0			9.4		-18.7	0.013490	h	On 1851, EUT Flat
1862	-57.7	31.0			9.4		-17.3	0.02	v	On 1851, EUT Flat
1839	-65.1	31.0			9.4		-24.7	0.003381	v	On 1851, EUT Flat
1862	-60.6	33.0			9.4		-18.2	0.015276	h	On 1851, EUT Edge
1839	-58.4	33.0			9.4		-16.0	0.025293	h	On 1851, EUT Edge
1862	-61.6	31.0			9.4		-21.2	0.007638	v	On 1851, EUT Edge
1839	-60.9	31.0			9.4		-20.5	0.008933	v	On 1851, EUT Edge
1918	-70.7	31.0			9.4		-30.3	0.000931	v	On 1908, EUT Vert
1918	-70.1	33.0			9.4		-27.7	0.001698	h	On 1908, EUT Vert
1918	-69.2	33.0			9.4		-26.8	0.002084	h	On 1908, EUT Flat

Notes: +/- 4 dB in Cell Band

+/- 10 dB in PCS band

Performed in 3 orthogonal plans. 3 channels in AMPs. CDMA and PCS. 30MHz - 20GHz tested.

Photographs of Test Setup



EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone

FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1



EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone

FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1



EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone*FCC ID:* QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

Section 8. Frequency Stability

NAME OF TEST: Frequency Stability	PARA. NO.: 2.1055
TESTED BY: Dustin Oaks	DATE: 12/09/2003

Test Results: Complies.

Measurement Data: See attached table.

Equipment Used: 1036, 1474, 0283, 1629

Measurement Uncertainty: 1×10^{-7} ppm

Temperature: 21 °C

Relative Humidity: 51 %

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone

FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

AMPS

Nominal Frequency (Hz):		834,630,433
Temp (C)	Frequency (Hz)	Deviation (Hz)
50	834,630,295.10	-137.90
40	834,630,248.13	-184.87
30	834,630,285.40	-147.60
20	834,630,385.60	-47.40
10	834,630,199.95	-233.05
0	834,629,983.90	-449.10
-10	834,630,066.11	-366.89
-20	834,630,181.97	-251.03
-30	834,630,217.42	-215.58
MAX Deviation:		-449.10 Hz

CDMA

Nominal Frequency (Hz):		836,521,607
Temp (C)	Frequency (Hz)	Deviation (Hz)
50	836,521,491.97	-115.03
40	836,521,422.70	-184.30
30	836,521,508.03	-98.97
20	836,521,598.63	-8.37
10	836,521,432.68	-174.32
0	836,521,207.43	-399.57
-10	836,521,301.77	-305.23
-20	836,521,386.11	-220.89
-30	836,521,384.70	-222.30
MAX Deviation:		-399.57 Hz

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone

FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

Section 9. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
	Wireless Communications tes Set	Agilent E5515C	GB42230629	08/19/02	08/19/04
1627	CABLE, 5 ft	MEGAPHASE 10312 1GVT4	N/A	CBU	NA
1629	CABLE, 6 ft	MEGAPHASE 10311 1GVT4	N/A	CBU	NA
1054	DUAL DIRECTIONAL COUPLER	NARDA 3020A	34366	Cal Not Req	N/A
1973	CABLE, 1m	KTL 0	N/A	CBU	NA
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ FSEK30	830844/006	12/18/01	12/19/03
1627	CABLE, 5 ft	MEGAPHASE 10312 1GVT4	N/A	07/29/03	07/28/04
1474	20db Attenuator DC 18 Ghz	MCL Inc. BW-S20W2	NONE	CBU	N/A
1464	Spectrum analyzer	Hewlett Packard 8563E	3551A04428	02/11/03	02/11/05
791	PREAMP, 25dB	ICC LNA25	398	10/27/03	10/27/04
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	08/28/03	08/28/04
1484	Cable 2.0-18.0 Ghz	Storm PR90-010-072	N/A	07/24/03	07/23/04
1485	Cable 2.0-18.0 Ghz	Storm PR90-010-216	N/A	07/24/03	07/23/04
1304	HORN ANTENNA	ELECTRO METRICS RGA-60	6151	09/22/03	09/22/05
1480	Bilog Antenna	Schaffner-Chase CBL6111C	2572	CalNotReq	N/A
283	Environmental Chamber with controller # 1189006	ENVIROTRONICS SH27 & 2030-22844	129010083	04/22/03	04/21/04

ANNEX A - TEST DETAILS

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone*FCC ID:* QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

NAME OF TEST: RF Power Output

PARA. NO.: 1.1046

Minimum Standard:

§22.913 Effective radiated power limits. - The effective radiated power (ERP) of transmitters in the Cellular Radiotelephone Service must not exceed the limits in this section.

(a) Maximum ERP. The effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

Method Of Measurement:

Detachable Antenna:

The power at antenna terminals is measured using power meter.

Integral Antenna:

Test Method: TIA/EIA-603-1992, Section 2.2.12

The antenna substitution method was used to determine the equivalent radiated power at spurious frequencies. The spurious emissions were measured at a distance of 3 meters. The EUT was then replaced with a reference substitution antenna with a known gain referenced to a dipole. This antenna was fed with a signal at the spurious frequency. The level of the signal was adjusted to repeat the previously measured level. The resulting erp is the signal level fed to the reference antenna corrected for gain referenced to a dipole.

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone*FCC ID:* QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

NAME OF TEST: Audio Frequency Response

PARA. NO.: 2.1047

Minimum Standard: No specific limit expressed in the FCC Rules.

From 300 to 3000 Hz the audio frequency response should not vary more than +1 to -3 dB from a true 6dB octave pre-emphasis characteristic as referred to 1000 Hz level (with the exception of a permissible 6dB per octave roll-off from 2500 to 3000 Hz).

Method Of Measurement:

Operate the transmitter with the compressor disabled, and monitor the output with a frequency deviation meter or standard test receiver without standard 750-microsecond de-emphasis, with expander disabled, and without C-message weighted filter (see 6.6.2). Apply a sine wave audio input to the transmitter external audio input port, vary the modulating frequency from 300 to 3000 Hz and observe the input levels necessary to maintain a constant ± 2.9 kHz system deviation.

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone*FCC ID:* QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

NAME OF TEST: Audio Low Pass Filter Response

PARA. NO.: 2.1047

Minimum Standard: No specific limit expressed in the FCC Rules.

For mobile stations, signals should be attenuated as a function of frequency as follows:

- i. In the frequency ranges 3.0 to 5.9 Hz and 6.1 to 15 kHz, 40 log (f/3) dB.
- ii. In the frequency range 5.9 to 6.1 kHz, 35 dB
- iii. In the frequency range above 15 kHz, 28 dB.

Method Of Measurement:

Adjust the audio input frequency to 1000 Hz and adjust the input level to 20 dB greater than that required to produce ± 8 kHz deviation. Note the output level on the frequency deviation meter or standard test receiver. Using the output level as reference (0dB), vary the modulating frequency from 3000 Hz to 30,000 Hz and observe the change in output while maintaining a constant audio input level.

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone*FCC ID:* QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

NAME OF TEST: Modulation Limiting

PARA. NO.: 2.1047

Minimum Standard: No specific requirement expressed in the FCC Rules.

The levels of the modulating signals should be set to the values specified below and should be maintained within $\pm 10\%$ of these values.

Voice: ± 12 kHzSAT: ± 2 kHzWideband Data: ± 8 kHzST: ± 8 kHz

Method Of Measurement:

Voice: A 1 kHz audio tone is injected at levels between -45 and +20 dBVrms. The peak deviation is noted. This is repeated with a 300 Hz tone and a 3 kHz tone. A plot showing the family of curves is presented.

SAT: A SAT tone is generated by the mobile station and the peak deviation is measured.

Wideband Data: Wideband data is generated by the mobile station and the peak deviation is measured.

ST: ST data is generated by the mobile station and the peak deviation is measured.

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone*FCC ID:* QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

NAME OF TEST: Occupied Bandwidth (Voice & SAT)

PARA. NO.: 2.1049

Minimum Standard:

22.917 Emission limitations for cellular equipment. - The rules in this section govern the spectral characteristics of emissions in the Cellular Radiotelephone Service.

(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone*FCC ID:* QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

NAME OF TEST: Occupied Bandwidth (WBD & SAT)**PARA. NO.:** 2.1049**Minimum Standard:**

22.917 Emission limitations for cellular equipment. - The rules in this section govern the spectral characteristics of emissions in the Cellular Radiotelephone Service.

(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone*FCC ID:* QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

NAME OF TEST: Spurious Emission at Antenna Terminals

PARA. NO.: 2.1051

Minimum Standard:

22.917 Emission limitations for cellular equipment. - The rules in this section govern the spectral characteristics of emissions in the Cellular Radiotelephone Service.

(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone*FCC ID:* QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

NAME OF TEST: Field Strength of Spurious Radiation**PARA. NO.:** 2.1053**Minimum Standard:**

22.917 Emission limitations for cellular equipment. - The rules in this section govern the spectral characteristics of emissions in the Cellular Radiotelephone Service.

(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

Test Method:

TIA/EIA-603-1992, Section 2.2.12

The antenna substitution method was used to determine the equivalent radiated power at spurious frequencies. The spurious emissions were measured at a distance of 3 meters. The EUT was then replaced with a reference substitution antenna with a known gain referenced to a dipole. This antenna was fed with a signal at the spurious frequency. The level of the signal was adjusted to repeat the previously measured level. The resulting erp is the signal level fed to the reference antenna corrected for gain referenced to a dipole.

The spectrum is searched to 10 GHz.

EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone

FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

1

NAME OF TEST: Frequency Stability

PARA. NO.: 2.1055

Minimum Standard: Para. No. 22.355. The transmitter carrier frequency shall remain within the tolerances given in Table C-1.

Freq. Range (MHz)	Mobile > 3 W	Mobile \leq 3 W
821 to 896	2.5	2.5

Table C-1

Method Of Measurement:**Frequency Stability With Voltage Variation:**

The E.U.T. is placed in an environmental chamber and allowed to stabilize at +20 degrees Celsius for at least 15 minutes. With the voltage input to the E.U.T. set to 85% S.T.V., the frequency is measured in 30 second intervals for a period of 5 minutes. This procedure is repeated at 100% S.T.V. and 115% S.T.V.

Frequency Stability With Temperature Variation:

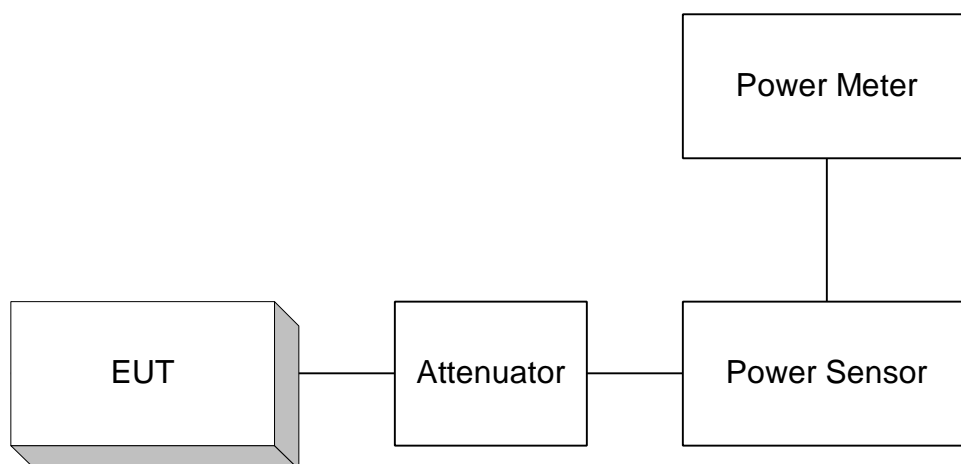
The input voltage to the E.U.T. is set to S.T.V. and the temperature of the environmental chamber is varied in 10 degree steps from -30 degrees C to +50 degrees C. The E.U.T. is allowed to stabilize at each temperature and the frequency is measured in 30 second intervals for a period of 5 minutes.

Devices that operate within a network and use dynamic power and frequency adjustment, the device is placed in call mode using a test set during this testing.

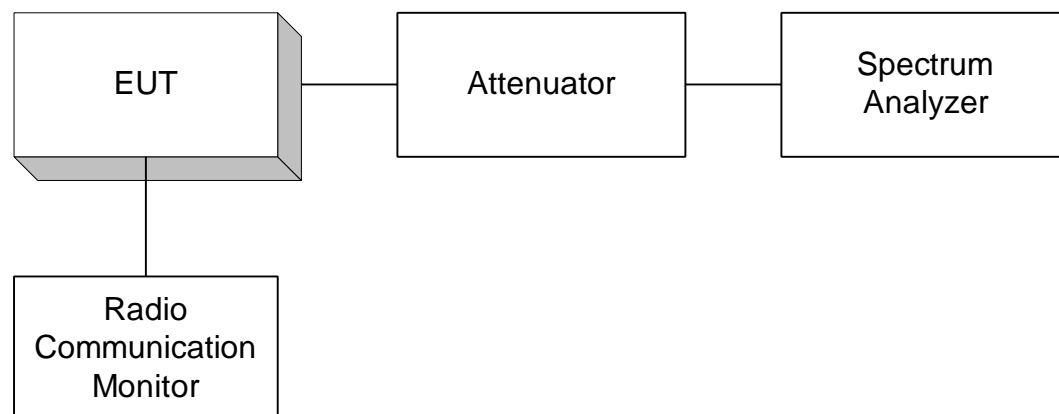
For devices that use complex digital modulation and cannot produce an unmodulated rf signal, the device is placed into call mode with a test set and the frequency error and rho parameters are recorded at each temperature and voltage variation.

ANNEX B - TEST DIAGRAMS

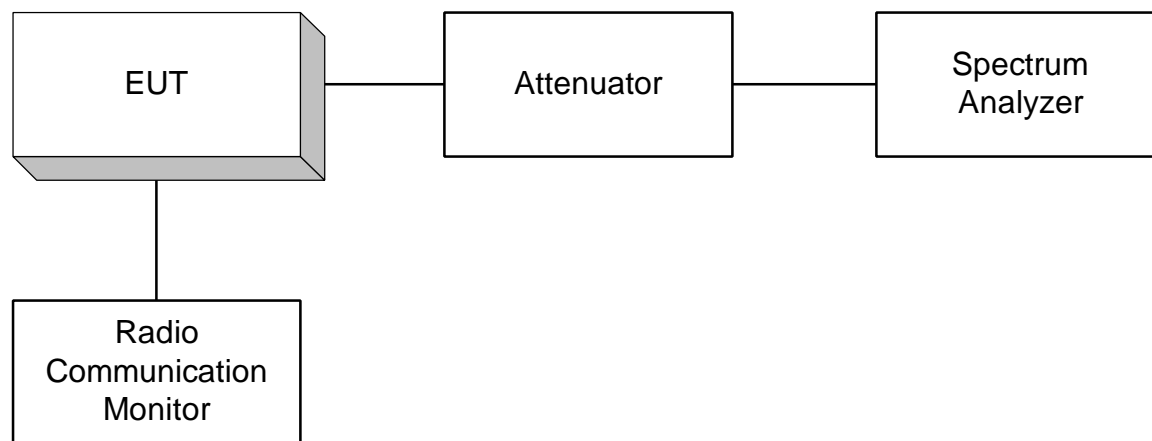
Para. No. 2.1046 - R.F. Power Output



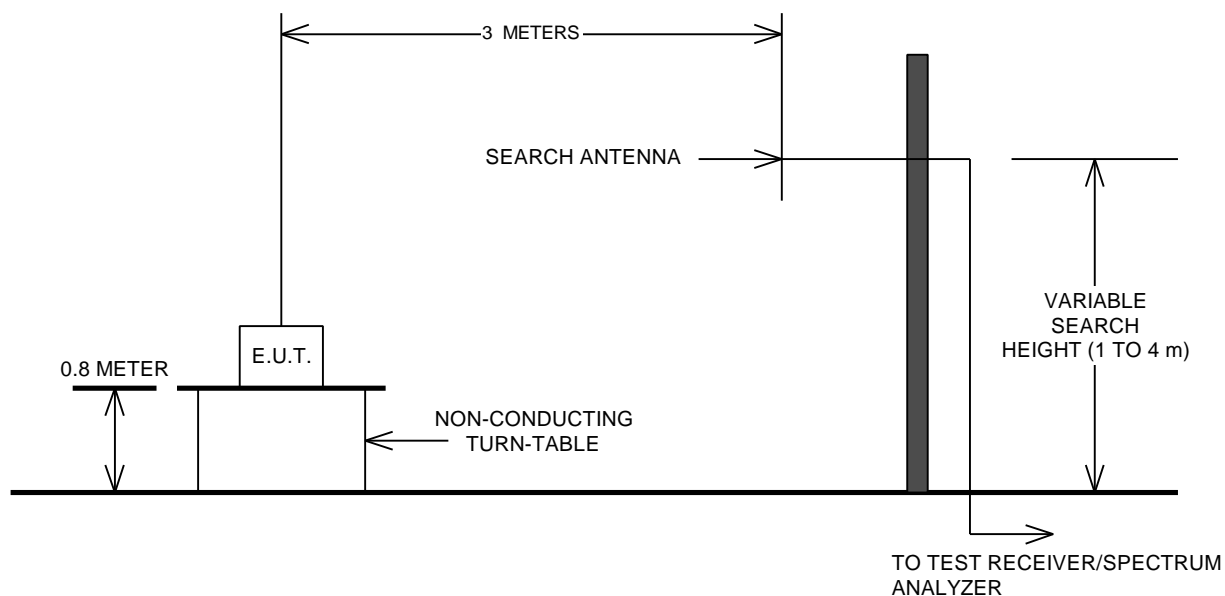
Para. No. 2.1049 - Occupied Bandwidth



Para. No. 2.1051 Spurious Emissions at Antenna Terminals



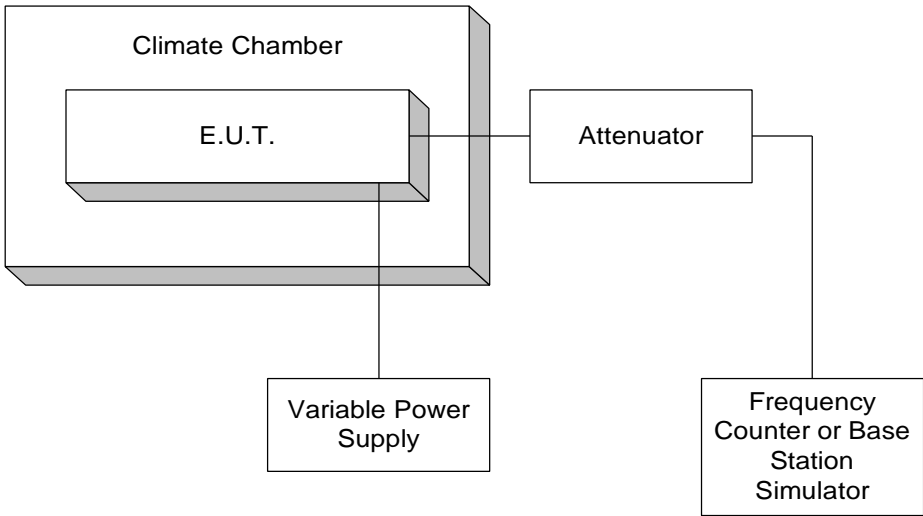
Para. No. 2.1053 - Field Strength of Spurious Radiation



EQUIPMENT: Dual Band Tri-Mode CDMA Cellular Phone
FCC ID: QHOHPN1900

TEST REPORT NO.: 3L0478RUS

Para. No. 2.1055 - Frequency Stability



Para. No. 2.1045 – Audio Frequency Response, Audio Low Pass Filter Response
And Modulation Limiting

