



MOTOROLA

Cellular Infrastructure Group

FCC ID: IHET6ZD1

TEST REPORT AND DATA

Test Report Contents

APPLICANT: MOTOROLA

TRANSCEIVER TYPE: IHET6ZD1

1. Summary Of Radiated Emissions
2. Radiated Emission Data
3. Summary of Transmit Power
4. Transmit Power Data, low, mid., high Channel
5. Summary of conducted Emissions
6. Conducted Emissions plots
7. Summary of TX frequency drift vs Temperature
8. Summary of TX frequency drift vs. Power Supply
9. Occupied Bandwidth Plots
10. CDMA Waveform Quality Plots

Summary of Radiated Spurious RF Measurements

APPLICANT: MOTOROLA

TRANSCEIVER TYPE: IHET6ZD1

**WORST CASE RADIATED SPUR LEVEL
MEASURED IN TRANSMIT AND RECEIVE MODE
FOR SC1900 @1900 Mhz CDMA FIXED WIRELESS TERMINAL**

Table 1:

SPUR FREQUENCY (Mhz)	DISTANCE MEASURED (meters)	SPUR LEVEL MEASURED (dBuV/meter)	FCC MAX LIMIT (dBuV/meter)
1722	3	48.9	54
3445	3	39.5	54
3796	3	44.2	54
5160	3	44.8	54
5639	3	45.8	54
9399	3	47.8	54

FCC Max. Limit Per 47 CFR Part 15, Subpart B

Unit was tested at an off site FCC approved range at 3 meters distance from 30 Mhz to 10 times the highest Oscillator frequency (20 Ghz)



KTL Dallas, Inc.

Dallas Headquarters:
802 N. Kealy
Lewisville, TX 75057
Tel: (972) 436-9600
Fax: (972) 436-2667

Microwave Radiated Emissions Data

Complete ☒ Preliminary ☐ Page 1 of 2

Client: MOTOROLA Test #: MW-2 W.O.#: 9L0070E

EUT: ST1001B S/N: 634GZF57CX Photo ID: 9L0070E MW-2

Technician: Ron Gaytan Specification: CFR 47 Part 15.209 Lab: D OATS Date: 4-22-99

Equipment Used: G2624, EM2200, CF35, CF30, 494

Configuration: TX MODE

Bandwidth: 1MHz Video Bandwidth: 1MHz Antenna Distance: 3 m Detector:

Climatic Conditions: EUT Power: ☒ 115 V.A.C. ☒ 60 Hz ☒ Peak
Temperature: 26 C ☐ 200 V.A.C. ☐ 50 Hz ☐ Average
Relative Humidity: 50 % ☐ 230 V.A.C.
Atmospheric Pressure: 1002 mbar ☐ Other ☐ 1 Phase ☐ 3 Phase

Freq. (GHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	RF Gain (dB)	Conver. Factor	Corrected Reading (dBuV/m)	Spec. Limit (dBuV/m)	Pol.	Comments:
1.8798	79.1	27.9	1.4	31	0	77.4	54	H	Fundamental
1.7227	51	27.5	1.4	31	0	48.9	54	H	Local Osc.
3.445	38.8	30.4	1.9	31.6	0	39.5	54	H	Noise Floor
3.796	38.8	34	1.9	30.5	0	44.2	54	H	Noise Floor
5.639	38.8	34.8	2.4	30.2	0	45.8	54	H	Noise Floor
7.519	40	37	2.9	30.8	0	49.1	54	H	Noise Floor
9.399	40	37.8	3.1	33.1	0	47.8	54	H	Noise Floor
11.278	26	39.7	3.5	33.2	0	36	54	H	N.F. KTL# 677 AVG
13.153	26	40.5	3.8	33.2	0	37.1	54	H	N.F. KTL# 677 AVG
15.038	26	41.4	4.2	31.9	0	39.7	54	H	N.F. KTL# 677 AVG
15.903	26	40.8	4.3	32	0	39.1	54	H	N.F. KTL# 677 AVG
1.8798	89	27.9	1.4	31	0	87.3	54	V	Fundamental
1.7227	51	27.5	1.4	31	0	48.9	54	V	Local Osc.
3.445	38.8	30.4	1.9	31.6	0	39.5	54	V	Noise Floor
3.796	38.8	34	1.9	30.5	0	44.2	54	V	Noise Floor
5.639	38.8	34.8	2.4	30.2	0	45.8	54	V	Noise Floor
7.519	40	37	2.9	30.8	0	49.1	54	V	Noise Floor
9.399	40	37.8	3.1	33.1	0	47.8	54	V	Noise Floor
11.278	26	39.7	3.5	33.2	0	36	54	V	N.F. KTL# 677 AVG



Dallas Headquarters:
802 N. Kealy
Lewisville, TX 75057
Tel: (972) 436-9600
Fax: (972) 436-2667

Complete ☒ Preliminary ☐ Page 2 of 2

Client: Motorola Test #: MW-2 W.O.#: 9L0070E

EUT: ST1001B SN: 634GZF57CX Photo ID: 9L0070e MW-2

Technician: Ron Gaytan Specification: CFR 47 Part 15.209 Lab: D OATS Date: 4/22/99

[illegible]



802 N. Kealy
Lewisville, TX 75057
Tel: (972) 436-9600
Fax: (972) 436-2667

Complete X Preliminary

Page 1 of 1

Client: MOTOROLA

Test #: MW-1

W.O.#: 9L0070E

EUT: ST1001B

S/N: 634GZF57CX

Photo ID: 9L0070E MW-1

Technician: Ron Gaytan

Specification: CFR 47 Part 15.109

Lab: D OATS

Date: 4-22-99

Equipment Used: G2624, EM2200, CF35, CF30, 494

Configuration: **FX MODE**

Bandwidth: 1MHz Video Bandwidth: 1MHz Antenna Distance: 3 m Detector:

Climatic Conditions:

EUT Power: X 115 V.A.C.

X 60 Hz

Peak

Temperature: 24 C

208 Y.A.C.

50 Hz

— **Average**

Relative Humidity: 48 %

230 V.A.C.

Atmospheric Pressure: 1002 mbar

— Other

1 Phase

3 Phase

[illegible]

DATA COMMON FORMS SITE TEST DATA SHEETS MICROFICHE

REV 030597

Summary of Maximum Transmitter Power

APPLICANT: MOTOROLA

TRANSCEIVER TYPE: IHET6ZD1

Table 1:

Channel	Frequency Ghz	RF Output Power dBm
25	1.8476	23.8
600	1.8764	23.3
1175	1.9051	23.7

21: 12: 49 APR 26, 1999

REF 26.8 dBm

AT 30 dB

MKR 1.849972 GHz

-29.35 dBm

SMPL

LOG

10

dB/

CORR

EXTAT

14.3

AVG

5

VA SB

SC FS

MS CH 25

START 1.847650 GHz

STOP 1.854850 GHz

#RES BW 30 KHz

#VBW 3 KHz

SWP 240 msec

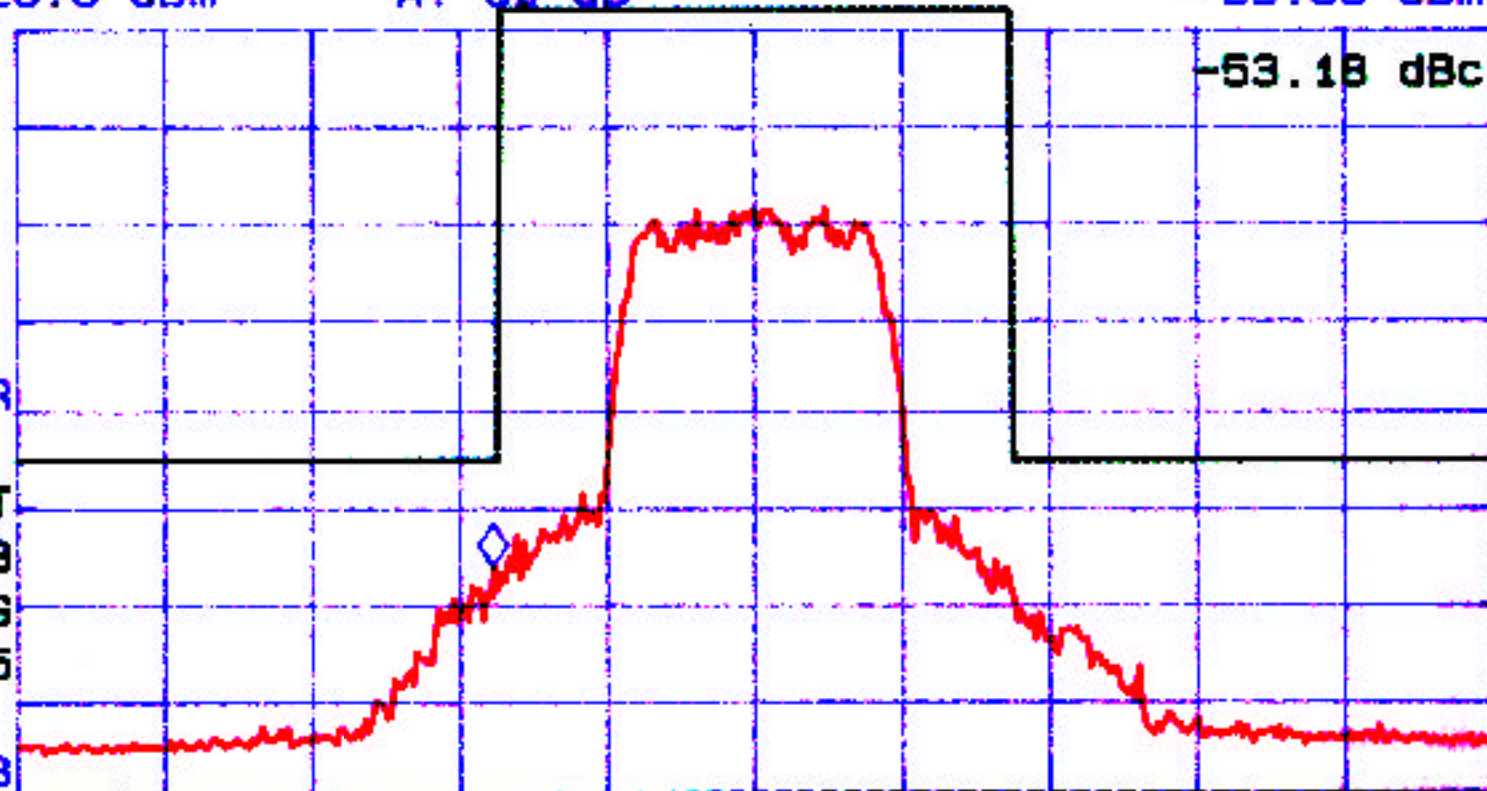
SPUR CLOSE ($\Delta f_c \leq 25$ MHz) [FAST]

PASS

a) (dBc/30kHz) Fc $\Delta 1m - 11.2$ dB P

Chan Power

23.8 dBm



20:59:58 APR 26, 1999

MKR 1.878722 GHz
-29.99 dBm

REF 26.3 dBm

AT 30 dB

SMPL

-53.51 dBc

LOG

10

dB/

CORR

EXTAT

14.3

AVG

5

VA SB

SC FS MS CH 600

START 1.876400 GHz

STOP 1.883600 GHz

#RES BW 30 kHz

#VBW 3 kHz

SWP 240 msec

SPUR CLOSE ($\Delta f_c \leq 25$ MHz) [FAST]

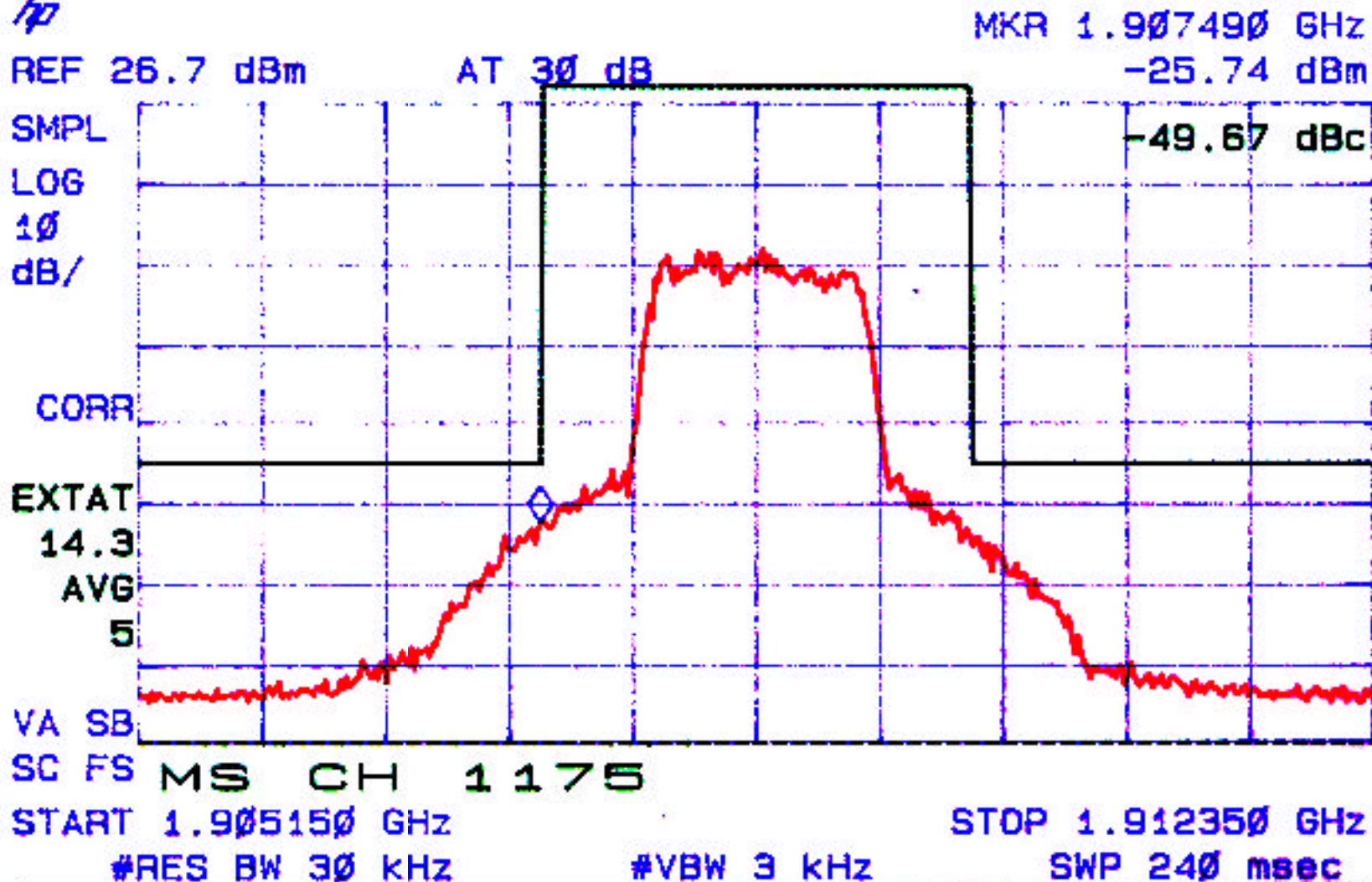
PASS

a) (dBc/30kHz) Fc Δ Lim - 11.3 dB P

Chan Power

23.3 dBm

21:20:44 APR 26, 1999



SPUR CLOSE ($\Delta f_c \leq 25$ MHz) [FAST]

PASS

a) (dBc/30kHz) Fc Lim -7.5 dB P

Chan Power

23.7 dBm

Summary of Transmitter Conducted Spurious

APPLICANT: MOTOROLA

TRANSCEIVER TYPE: IHET6ZD1

Table 1:

SPUR FREQUENCY (Ghz)	SPUR LEVEL MEASURED (dBc)	FCC LIMIT (dBc)
3.7025	-51	36
3.7600	-50	36
3.8175	-49	36

Note:

1. Spurious emissions were measured at the harmonics of the Transmitter at low, mid, and high channels. All other conducted emissions were at least 20 dB below the FCC limits.

2. FCC limit

$43 + 10 \log (p)$ in dB where $P=0.20$ Watt; Limit = 36 dBc

22:56:25 APR 28, 1999

REF 11.0 dBm

AT 30 dB

MKR Δ 0 Hz

-.01 dB

SMPL

LOG

10

dB/

MARKER Δ

0 Hz

-.01 dB

AVG

100

WA SB

SC FC

CORR

CENTER 1.8513 GHz

RES BW 1.0 MHz

VBW 300 kHz

SPAN 100.0 MHz

SWP 20.0 msec

22:59:18 APR 28, 1999

MKR Δ 1.8512 GHz
-51.09 dB

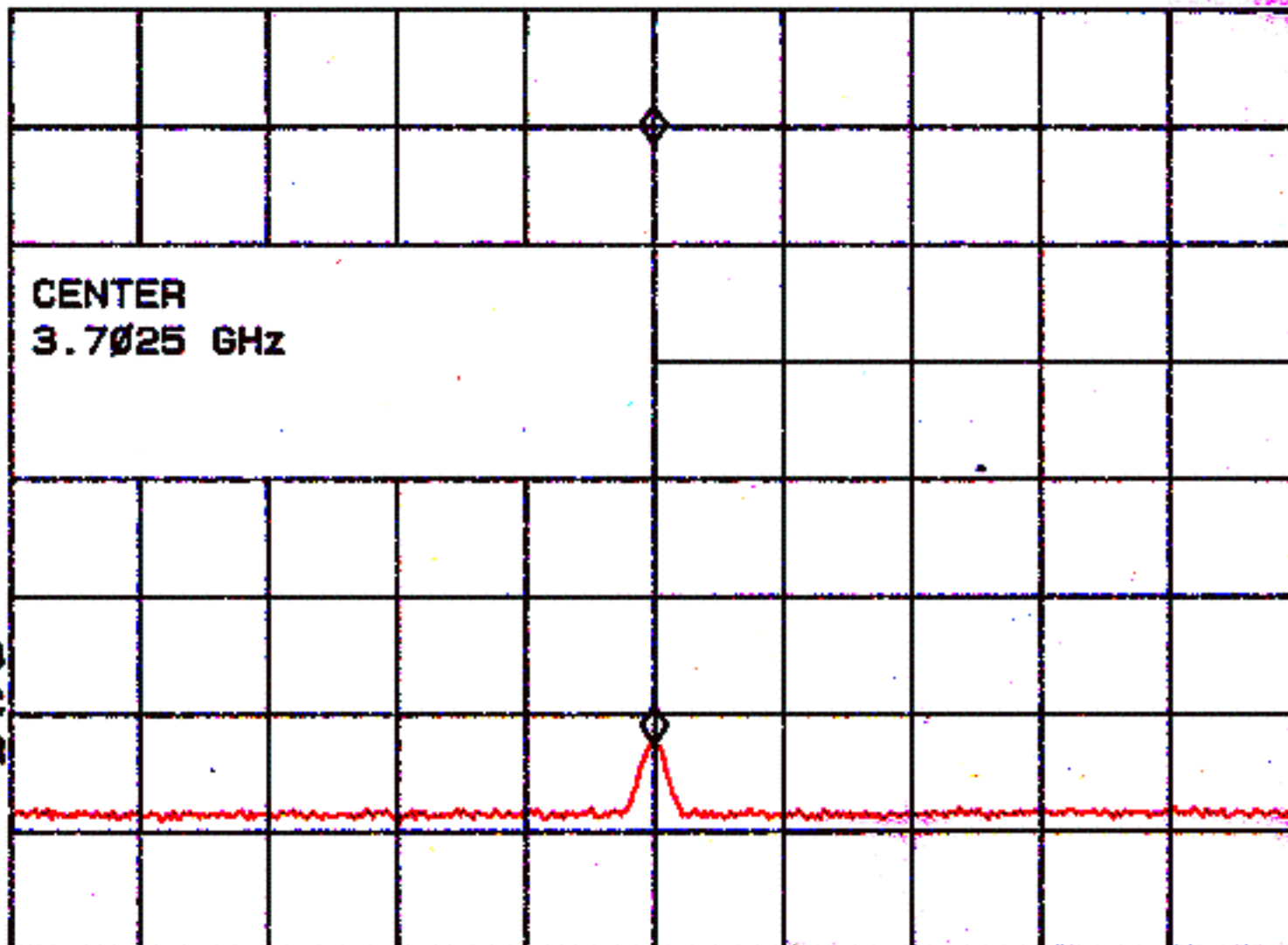
REF 11.0 dBm AT 30 dB

SMPL
LOG
10
dB/

CENTER
3.7025 GHz

AVG
100

WA SB
SC FC
CORR



CENTER 3.7025 GHz

RES BW 1.0 MHz

VBW 300 kHz

SPAN 100.0 MHz

SWP 20.0 msec

23:02:02 APR 28, 1999

MKR Δ 3.7025 GHz
-57.17 dB

REF 11.0 dBm AT 30 dB

SMPL
LOG
10
dB/

CENTER
5.5538 GHz

AVG
100

WA SB
SC FC
CORR

CENTER 5.5538 GHz

RES BW 1.0 MHz

VBW 300 kHz

SPAN 100.0 MHz

SWP 20.0 msec

23:04:48 APR 28, 1999

MKR Δ 5.5537 GHz

REF 11.0 dBm

AT 30 dB

-50.83 dB

SMPL

LOG

10

dB/

CENTER
7.4050 GHz

AVG

100

WA SB

SC FC

CORR

CENTER 7.4050 GHz

RES BW 1.0 MHz

VBW 300 kHz

SPAN 100.0 MHz

SWP 20.0 msec

23: 08: 08 APR 28, 1999

REF 11.0 dBm

AT 30 dB

MKR Δ 0 Hz

.02 dB

SMPL

LOG

10

dB/

MARKER Δ

0 Hz

.02 dB

AVG

100

WA SB

SC FC

CORR

CENTER 1.8800 GHz

RES BW 1.0 MHz

VBW 300 kHz

SPAN 100.0 MHz

SWP 20.0 msec



23: 12: 31 APR 28, 1999

MKR Δ 1.8800 GHz

REF 11.0 dBm

AT 30 dB

-50.37 dB

SMPL

LOG

10

dB/

AVG

100

WA SB

SC FC

CORR

SFQ 140

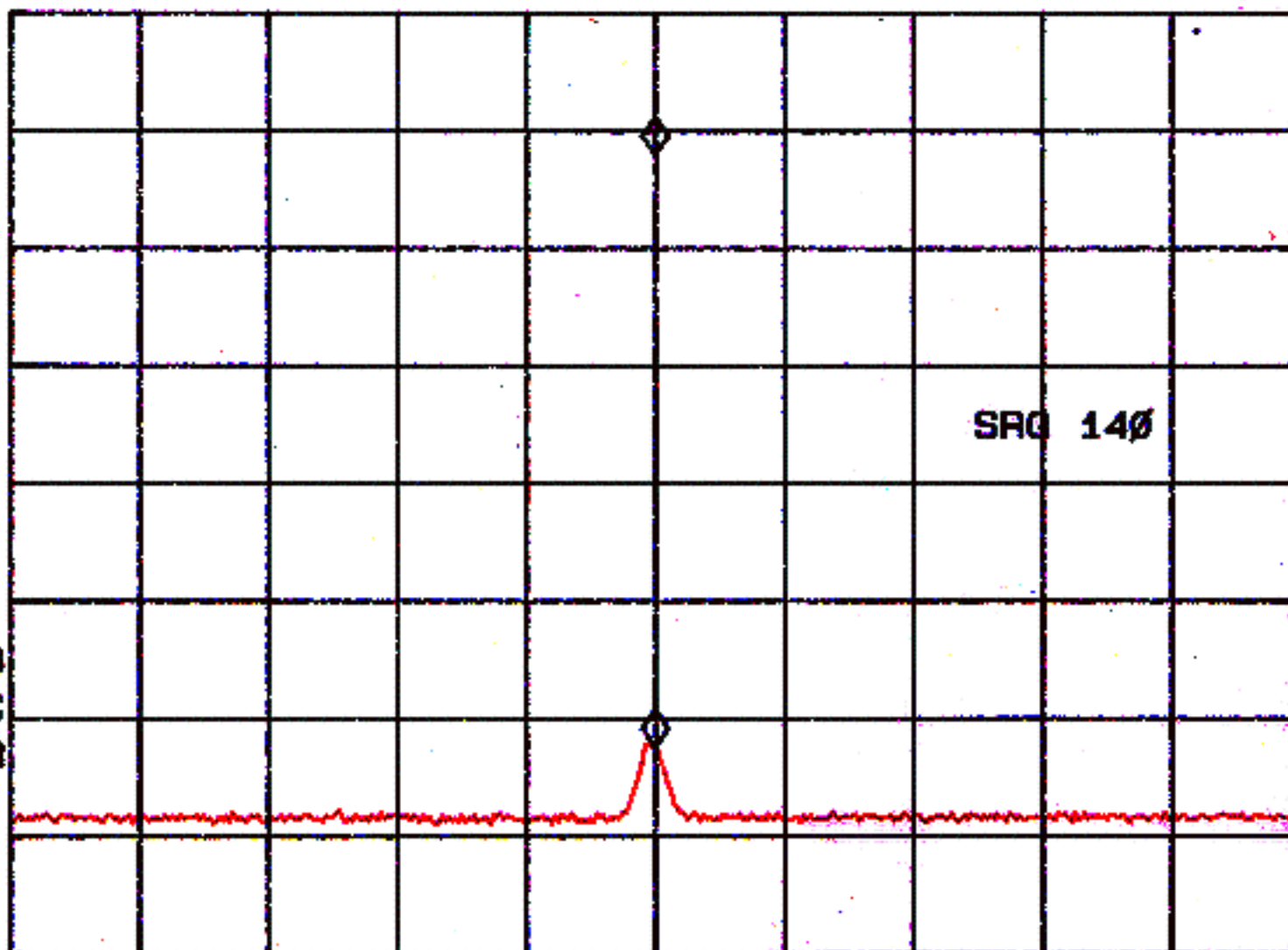
CENTER 3.7600 GHz

RES BW 1.0 MHz

VBW 300 kHz

SPAN 100.0 MHz

SWP 20.0 msec



23: 15: 33 APR 28, 1999

MKR Δ 3.7600 GHz

REF 11.0 dBm

AT 30 dB

-56.22 dB

SMPL

LOG

10

dB/

CENTER
5.6400 GHz

AVG

100

WA SB

SC FC

CORR

CENTER 5.6400 GHz

RES BW 1.0 MHz

VBW 300 kHz

SPAN 100.0 MHz

SWP 20.0 msec

23: 18: 34 APR 28, 1999

MKR Δ 5.6400 GHz

REF 11.0 dBm

AT 30 dB

-50.40 dB

SMPL

LOG

10

dB/

CENTER

7.5200 GHz

AVG

100

WA SB

SC FC

CORR

CENTER 7.5200 GHz

RES BW 1.0 MHz

VBW 300 kHz

SPAN 100.0 MHz

SWP 20.0 msec

23: 22: 51 APR 28, 1999

~~17~~

REF 11.0 dBm

AT 30 dB

MKR Δ 0 Hz

.00 dB

SMPL

LOG

10

dB/

MARKER Δ

0 Hz

.00 dB

AVG

100

WA SB

SC FC

CORR



CENTER 1.9088 GHz

RES BW 1.0 MHz

VBW 300 kHz

SPAN 100.0 MHz

SWP 20.0 msec

23: 25: 42 APR 28, 1999

MKR Δ 1.9087 GHz

REF 11.0 dBm

AT 30 dB

-49.01 dB

SMPL

LOG

10

dB/

CENTER
3.8175 GHz

AVG

100

WA SB

SC FC

CORR

CENTER 3.8175 GHz

RES BW 1.0 MHz

VBW 300 kHz

SPAN 100.0 MHz

SWP 20.0 msec

23: 28: 28 APR 28, 1999

MKR Δ 3.8175 GHz

REF 11.0 dBm

AT 30 dB

-54.44 dB

SMPL

LOG

10

dB/

CENTER
5.7263 GHz

AVG

100

WA SB

SC FC

CORR

CENTER 5.7263 GHz

RES BW 1.0 MHz

VBW 300 kHz

SPAN 100.0 MHz

SNP 20.0 msec

23: 31: 15 APR 28, 1999

MKR Δ 5.7262 GHz

REF 11.0 dBm

AT 30 dB

-49.17 dB

SMPL

LOG

10

dB/

CENTER
7.6350 GHz

AVG

100

WA SB

SC FC

CORR

CENTER 7.6350 GHz

RES BW 1.0 MHz

VBW 300 kHz

SPAN 100.0 MHz

SWP 20.0 msec

Summary of Transmit Frequency

Drift Vs. Temperature

APPLICANT: MOTOROLA

TRANSCEIVER TYPE: IHET6ZD1

Table 1:

Ambient Temperature Degrees C	Lowest Channel Frequency Error Hz Drift from Nominal Channel Center	Highest Channel Frequency Error Hz Drift from Nominal Channel Center
-30	-35	37
-20	-31	22
-10	-20	34
0	-32	25
10	-49	37
20	-33	25
30	-45	29
40	-34	31
50	-32	36

Summary of Transmit Frequency

Drift Vs. Line Voltage

APPLICANT: MOTOROLA

TRANSCEIVER TYPE: IHET6ZD1

Table 1:

Power Supply Line Voltage	Lowest Channel Frequency Error Hz Drift from Nominal Channel Center	Highest Channel Frequency Error Hz Drift from Nominal Channel Center
102Vac	-31	39
120Vac	-29	28
138Vac	-33	37

21: 12: 49 APR 26, 1999

REF 26.8 dBm

AT 30 dB

MKR 1.849972 GHz

-29.35 dBm

SMPL

LOG

10

dB/

CORR

EXTAT

14.3

AVG

5

VA SB

SC FS

MS CH 25

START 1.847650 GHz

STOP 1.854850 GHz

#RES BW 30 KHz

#VBW 3 KHz

SWP 240 msec

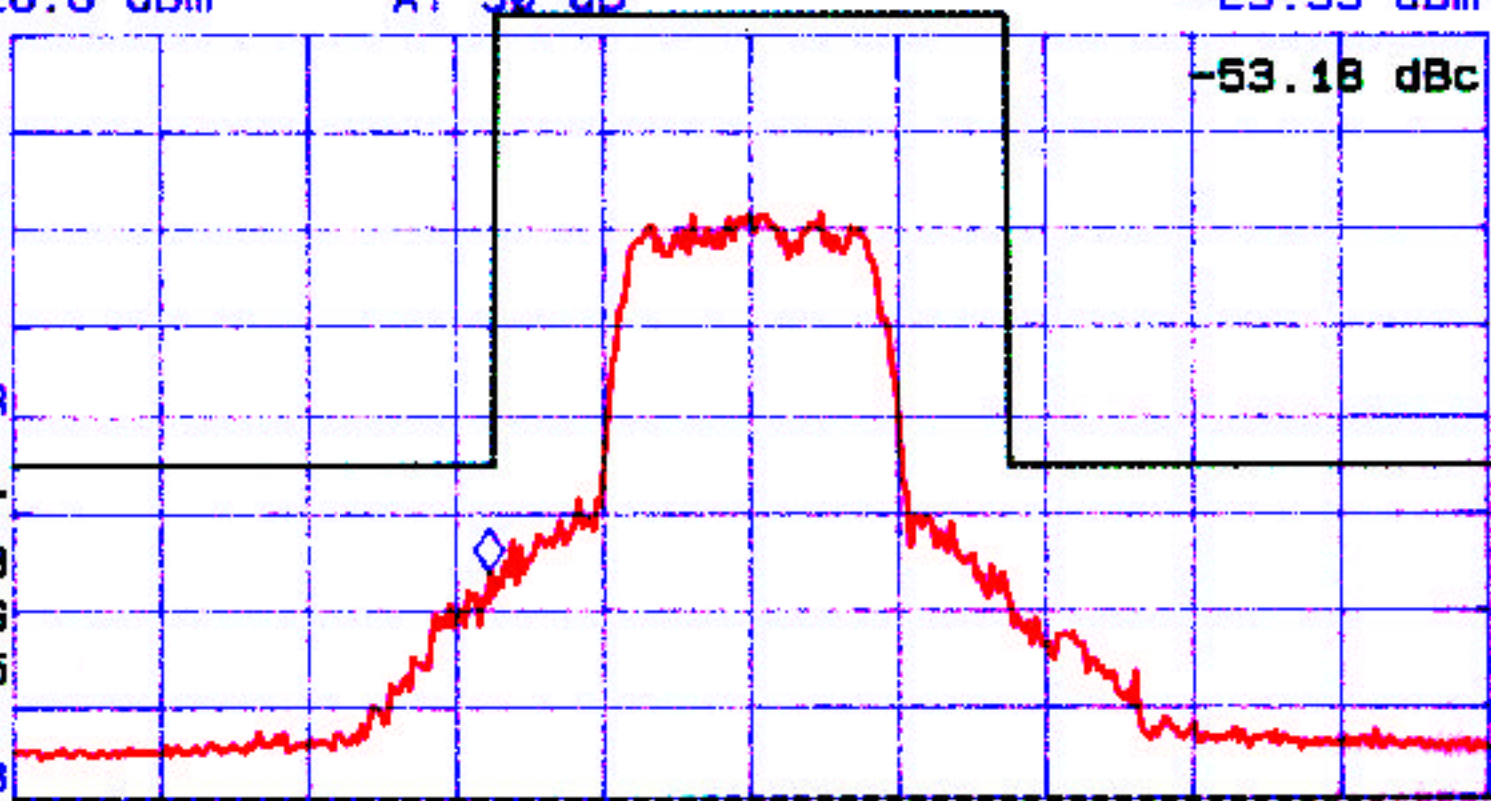
SPUR CLOSE ($\Delta f_c \leq 25$ MHz) [FAST]

PASS

a) (dBc/30kHz) Fc $\Delta 1m - 11.2$ dB P

Chan Power

23.8 dBm



20:59:58 APR 26, 1999

MKR 1.878722 GHz
-29.99 dBm

REF 26.3 dBm

AT 30 dB

SMPL

LOG

10

dB/

CORR

EXTAT

14.3

AVG

5

VA SB

SC FS MS CH 600

START 1.876400 GHz

STOP 1.883600 GHz

#RES BW 30 kHz

#VBW 3 kHz

SWP 240 msec

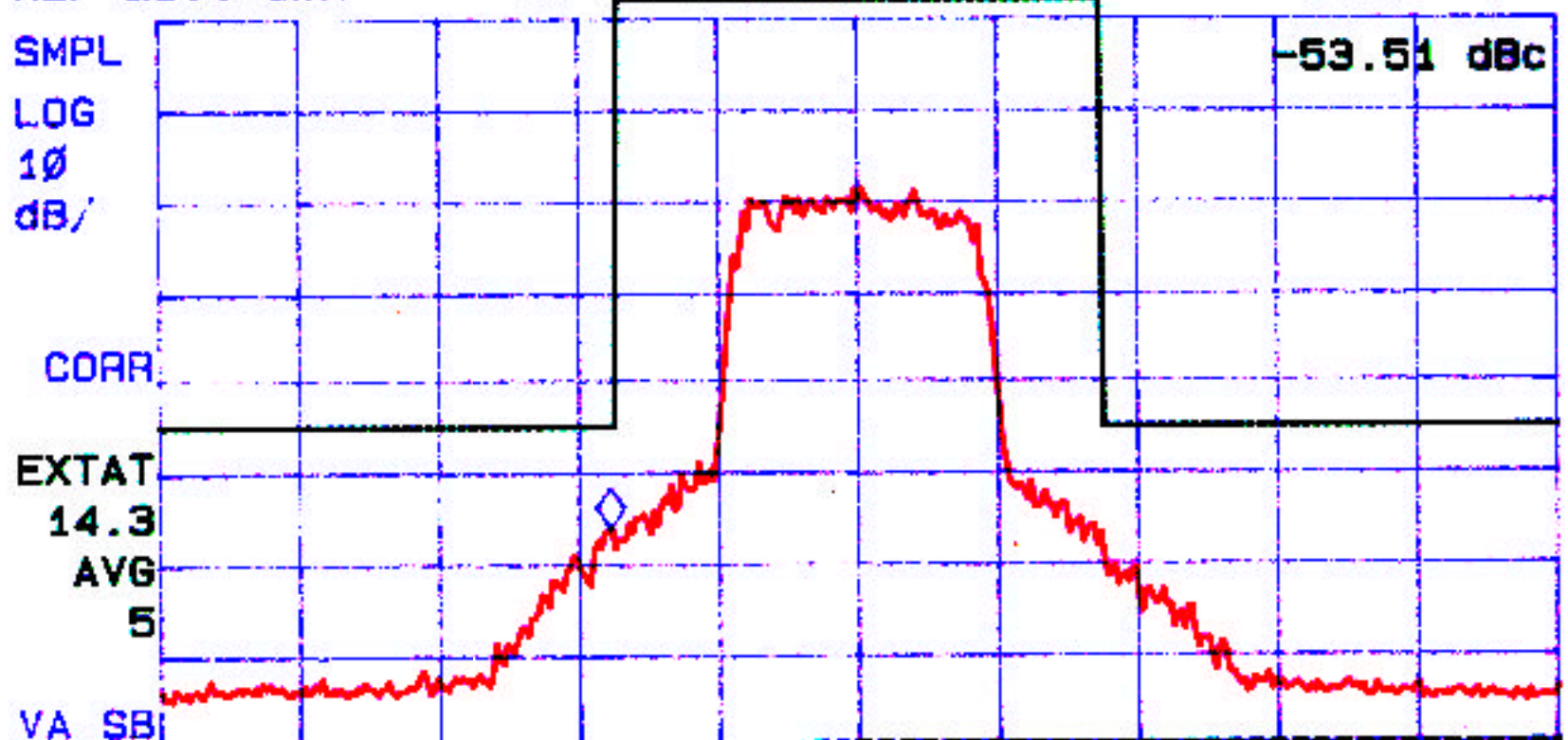
SPUR CLOSE ($\Delta f_c \leq 25$ MHz) [FAST]

PASS

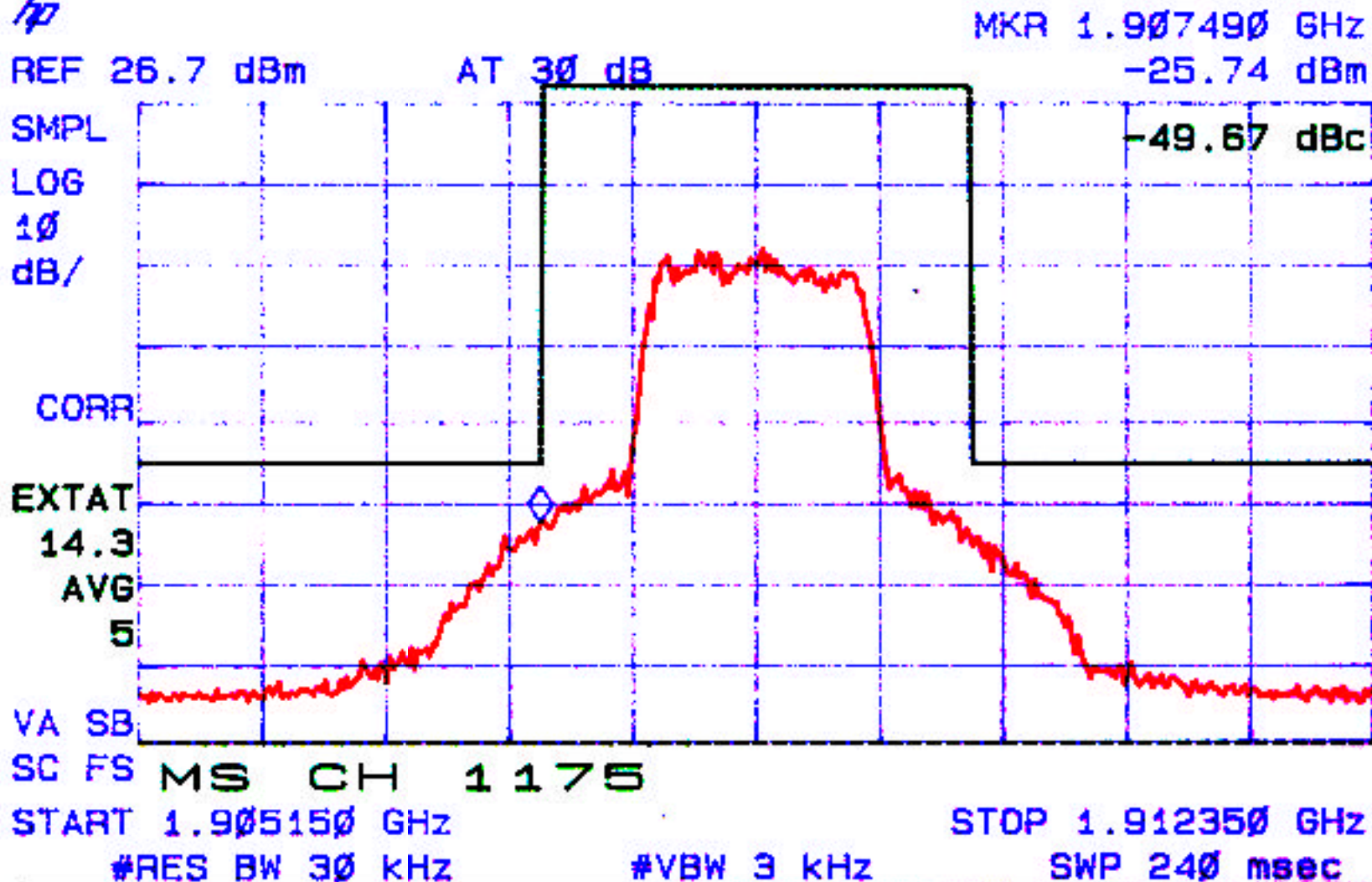
a) (dBc/30kHz) Fc Δ Lim - 11.3 dB P

Chan Power

23.3 dBm



21:20:44 APR 26, 1999



SPUR CLOSE ($\Delta f_c \leq 25$ MHz) [FAST]

PASS

a) (dBc/30kHz) Fc Lim -7.5 dB P

Chan Power

23.7 dBm

HP 8924C CDMA Mobile Station Test Set: 04/28/99 02:56:00 pm
 CDMA Channel Assignment 25 T

CDMA CELLULAR MOBILE TRANSMITTER TEST

Traffic Rho		Phs Error	deg
0.987		5.0	
Freq Error	Hz	Chan Power	dBm
-7.4		1.37	

Meas Cntl
 Single/Cont

Traffic
 Data Mode
 Svc Opt 3

Sctr A Pwr
 -76.0
 dBm/BW

To Screen

● CDMA
 CALL CNTL
 SMS
 AUTHEN

Data Rate
 Full

RF Power
 -76.00
 dBm/BW

○ Analog
 RX TEST

Power Meas
 Calibrate

Confis
 TESTS

HP 8924C CDMA Mobile Station Test Set: 04/28/99 02:54:00 pm
CDMA Channel Assignment 600 T

CDMA CELLULAR MOBILE TRANSMITTER TEST

Traffic Rho		Phs Error	deg
0.987		5.0	
Freq Error	Hz	Chan Power	dBm
-0.7		1.28	

Meas Cntl
Single/Cont

Traffic
Data Mode
Svc Opt 2

Scrr A Pwr
-76.0
dBm/BW

To Screen

● CDMA
CALL CNTRL
SMS
AUTHN

Data Rate
Full

RF Power
-76.00
dBm/BW

○ Analog
RX TEST

Power Meas
Calibrate

Config
TESTS

HP 8924C CDMA Mobile Station Test Set: 04/29/99 02:22:00 PM
CDMA Channel Assignment 1175 T

CDMA CELLULAR MOBILE TRANSMITTER TEST

Traffic Rho		Rhs Error	dec
0.986		5.4	
Freq Error	Hz	Chan Power	dBm
-5.8		0.49	

Meas Cntl Single/Cont		Traffic Data Mode Sub Opt 2	Sctr A Pwr -75.0 dBm/BW	To Screen ● CDMA CALL CNTL SHS AUTHEN
		Data Rate Full	RF Power -75.00 dBm/BW	○ Analog RX TEST
		Power Meas Calibrate		Config TESTS