Nemko Test Report No.:	**1L0270RUS1**
Applicant:	**GRAYSON WIRELESS** 140 Vista Center Drive Forest, Virginia 24551
Equipment Under Test:	**GWMT 1920**
In Accordance With:	**FCC Part 24, Subpart E** Broadband PCS Base Station Transmitter
Tested By:	Nemko Dallas Inc. 802 N. Kealy Lewisville, Texas 75057-3136
Authorized By:	 Tom Tidwell, RF Group Manager
Date:	7/16/01
Total Number of Pages:	39

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Section 1. Summary of Test Results

Manufacturer: GRAYSON WIRELESS

Model No.: Model GWMT 1920

Serial No.: None

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 24, Subpart E.

☒ 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.
See " Summary of Test Data".

NVLAP LAB CODE: 100351-0

Summary Of Test Data

NAME OF TEST	PARA. NO.	SPEC.	MEAS.	RESULT
RF Power Output	24.232	100W	< 100W	Complies
Occupied Bandwidth (CDMA)	24.238	MASK	N/A	N/A
Occupied Bandwidth (GSM)	24.238	MASK	N/A	N/A
Occupied Bandwidth (NADC)	24.238	MASK	N/A	N/A
Occupied Bandwidth (CW)	24.238	Not Specified	Plot	Complies
Spurious Emissions at Antenna Terminals	24.238(a)	-13 dBm	< -13 dBm	Complies
Field Strength of Spurious Emissions	24.238(a)	-13 dBm E.I.R.P.	< -13 dBm	Complies
Frequency Stability	24.235	Must stay within frequency block	Stays within frequency block	Complies

Footnotes For N/A's:

The device transmits CW carriers only.

Measurement uncertainty is expressed to a confidence level of 95%.

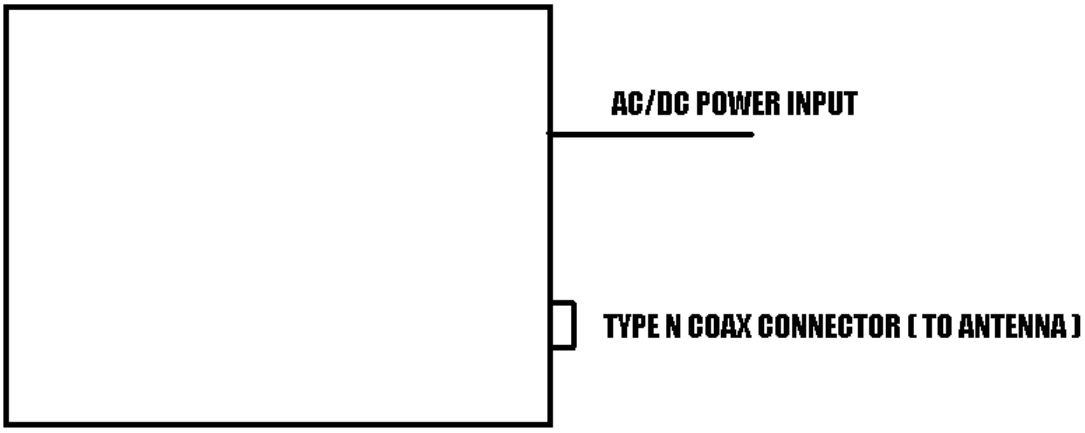
Section 2. General Equipment Specification

Supply Voltage Input:		115 VAC
Frequency Bands:	**TX**	☒ Block A : 1930 – 1945 MHz ☒ Block D : 1945 – 1950 MHz ☒ Block B : 1950 – 1965 MHz ☒ Block E : 1965 – 1970 MHz ☒ Block F : 1970 – 1975 MHz ☒ Block C : 1975 – 1990 MHz
Frequency Bands:	**RX**	☒ Block A : 1850 – 1865 MHz ☒ Block B : 1865 – 1870 MHz ☒ Block C : 1870 – 1885 MHz ☒ Block D : 1885 – 1890 MHz ☒ Block E : 1890 – 1895 MHz ☒ Block F : 1895 – 1910 MHz
Footnote		The transmitter operates in the entire band of 1850-1890 MHz. Manufacture prohibits operation in the unlicensed band of 1910-1930 MHz.
		CW (NON) ☒ **CDMA (1M25G7W)** ☐ **GSM (200KGXW)** ☐ **NADC (40K0DXW)** ☐
Maximum No. of Carriers:		1
Output Impedance:		50 ohms
		Per channel: 20 W Total: 20 W
		Software ☐ **Duplexer** ☐ **Fullband** ☒

System Description

The GWMT 1920 is a self-contained CW transmitter operating in the PCS band.

System Diagram



Section 3. RF Power Output

NAME OF TEST: RF Power Output	PARA. NO.: 2.1046
TESTED BY: Chinda Poy	DATE: 6/21/01

Test Results: Complies.

Measurement Data:

Frequency (MHz)	Supply Voltage	Output Power (dBm)	Rated Power (dBm)	Measured / Rated (dBm)
1880	115 VAC (Nominal)	42.7	43	0.99/1
1960	115 VAC (Nominal)	42.9	43	0.99/1
1880	98 VAC	42.7	43	0.99/1
1960	98VAC	42.9	43	0.99/1
1880	132 VAC	42.7	43	0.99/1
1960	132 VAC	42.9	43	0.99/1
1880	13 VDC	42.6	43	0.99/1
1960	13 VDC	42.9	43	0.99/1
1880	11 VDC	Stopped Operation	43	N/A
1960	11 VDC	Stopped Operation	43	N/A
1880	15 VDC	42.6	43	0.99/1
1960	15 VDC	42.9	43	0.99/1

Equipment Used: 1604-1065-1046-1036

Measurement Uncertainty: +/- 1.7 dB

Temperature: 22 °C

Relative Humidity: 50 %

Section 4. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth (CDMA)	PARA. NO.: 2.1049
TESTED BY:	DATE:

Not Applicable

Test Results: Complies.

Test Data: See attached data.

Equipment used:

Measurement Uncertainty: +/- 1.6 dB

Temperature: °C

Relative Humidity: %

NAME OF TEST: Occupied Bandwidth (GSM)	PARA. NO.: 2.1049
TESTED BY:	DATE:

Test Results: Complies.

Test Data: See attached plots

Equipment Used:

Not Applicable

Measurement Uncertainty: +/- 1.6 dB

Temperature: °C

Relative Humidity: %

NAME OF TEST: Occupied Bandwidth (NADC)	PARA. NO.: 2.1049
TESTED BY:	DATE:

Test Results: Complies.

Test Data: See attached plots.

Equipment used:

Not Applicable

Measurement Uncertainty: +/- 1.6 dB

Temperature: °C

Relative Humidity: %

NAME OF TEST: Occupied Bandwidth (CW)	PARA. NO.: 2.1049
TESTED BY: Chinda Poy	DATE: 6/21/01

Test Results: Complies.

Measurement Data: See attached graph.

Equipment Used: 1483-1065-1064-1036

Measurement Uncertainty: +/- 1.7 dB

Temperature: 25 °C

Relative Humidity: 38 %

Test Data – Occupied Bandwidth (CW)

Data Plot **OCCUPIED BANDWIDTH (CW)**

Page 1 of 2 — Complete X

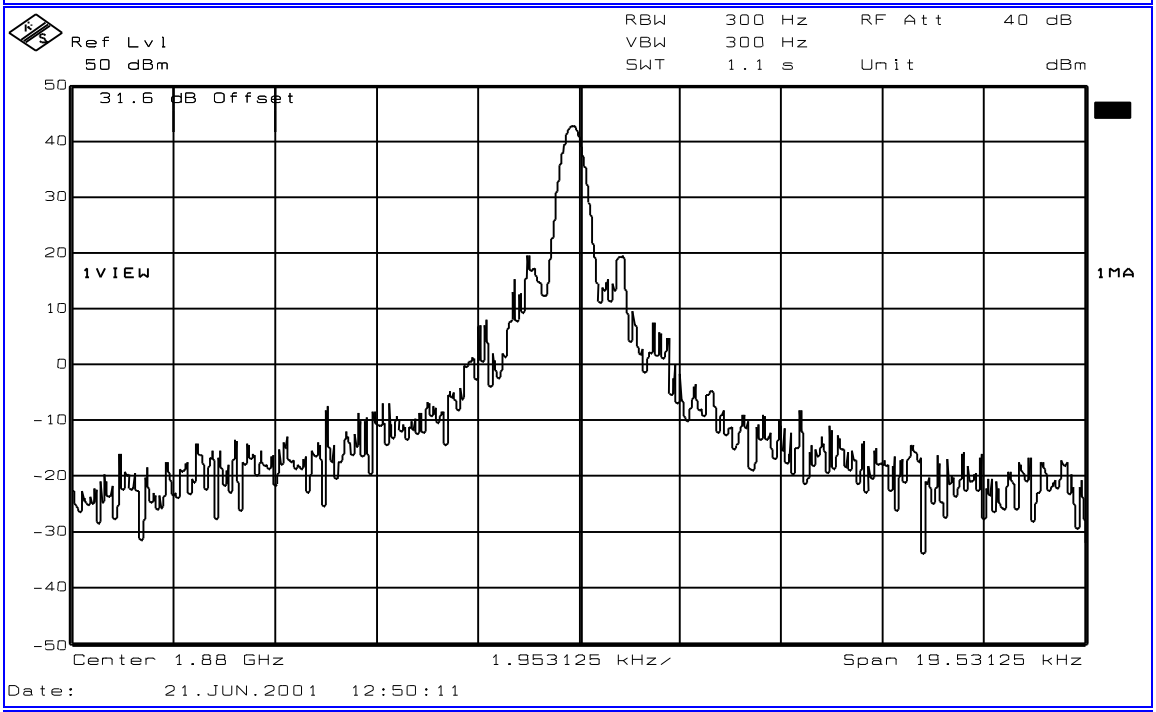
Job No.:	1L0270R	Date: 6/21/01	Preliminary
Specification:	Part 24	Temperature(°C): 25	
Tested By:	Chinda Poy	Relative Humidity(%) 38	
E.U.T.:	GWMT 1920		
Configuration:	TX Full Power		
Sample Number:			
Location:	Lab 1	RBW: Refer to plots	
Detector Type:	Peak	VBW: Refer to plots	

Test Equipment Used

Antenna:		Directional Coupler:	
Pre-Amp:		Cable #1:	1483
Filter:		Cable #2:	
Receiver:	1036	Cable #3:	
Attenuator #1	1065	Cable #4:	
Attenuator #2:	1064	Mixer:	

Additional equipment used:

Measurement Uncertainty: +/-3.6 dB



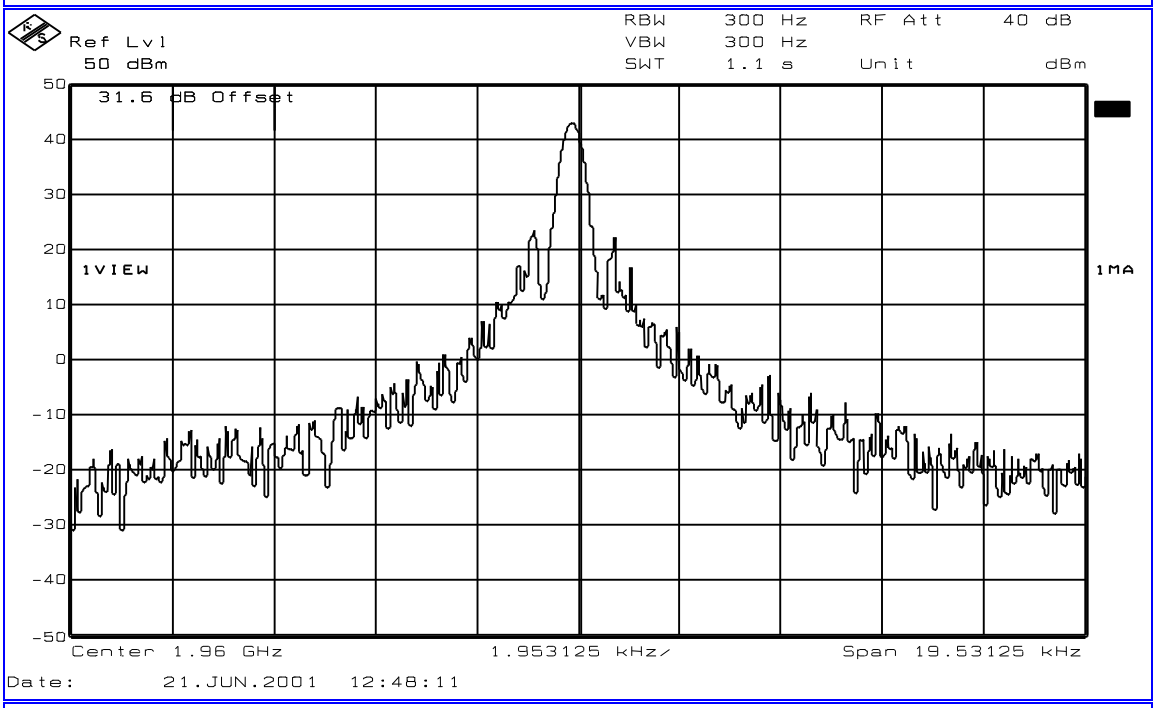
Notes: **UPLINK**

Test Data – Occupied Bandwidth (CW)

Data Plot OCCUPIED BANDWIDTH (CW)

Page 2 of 2

Job No.:	1L0270R	Date:	6/21/01
Specification:	Part 24	Temperature(°C):	25
Tested By:	Chinda Poy	Relative Humidity(%)	38
E.U.T.:	GWMT 1920		
Configuration:	TX Full Power		



Notes: **DOWNLINK**

Section 5. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions @ Antenna Terminals	PARA. NO.: 2.1051
TESTED BY: Chinda Poy	DATE: 6/21/01

Test Results: Complies.

Test Data: Refer to plots

Equipment Used: 1036-1065-1064-1483

Measurement Uncertainty: +/- 1.6 dB

Temperature: 25 °C

Relative Humidity: 38 %

Test Data – Spurious Emissions at Antenna Terminals

Data Plot **SPURIOUS EMISSIONS AT ANTENNA TERMINAL**

Page 1 of 4

Complete X
Preliminary

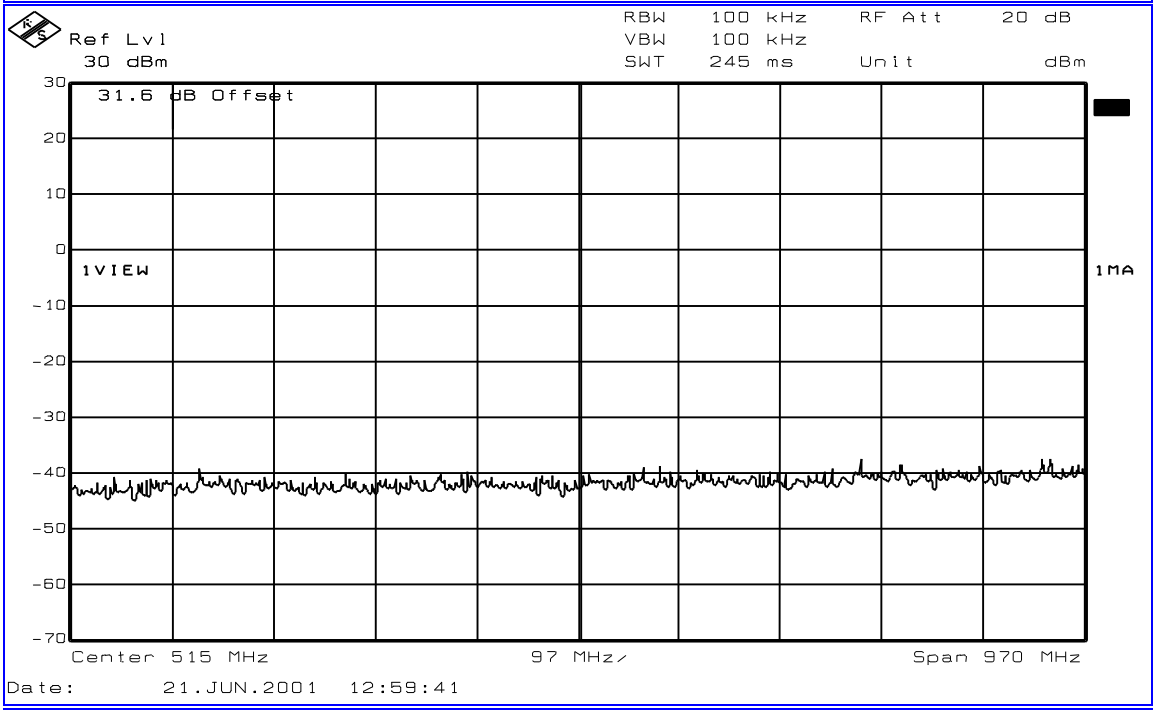
Job No.:	1L0270R	Date: 6/21/01	
Specification:	Part 24	Temperature(°C): 25	
Tested By:	Chinda Poy	Relative Humidity(%) 38	
E.U.T.:	GWMT 1920		
Configuration:	TX Full Power		
Sample Number:			
Location:	Lab 1	RBW: Refer to plots	
Detector Type:	Peak	VBW: Refer to plots	

Test Equipment Used

Antenna:		Directional Coupler:	
Pre-Amp:		Cable #1:	1483
Filter:		Cable #2:	
Receiver:	1036	Cable #3:	
Attenuator #1	1065	Cable #4:	
Attenuator #2:	1064	Mixer:	

Additional equipment used:

Measurement Uncertainty: +/-3.6 dB



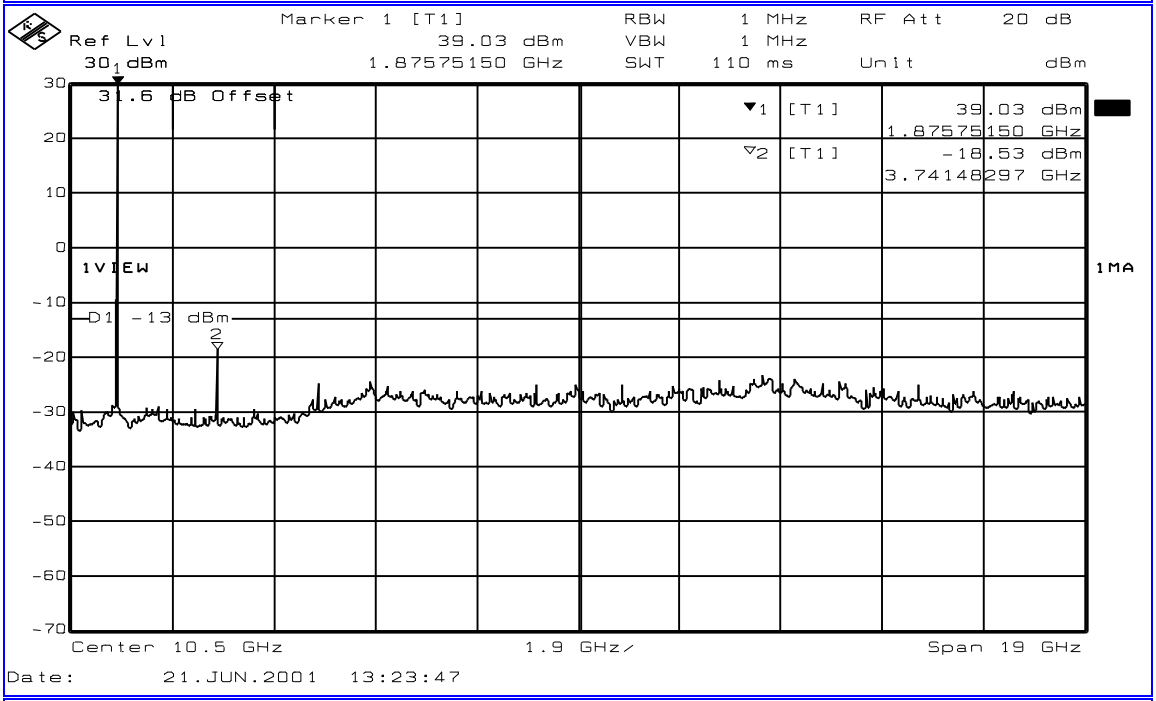
Notes: **UPLINK**
No Emissions Indicated

Test Data – Spurious Emissions at Antenna Terminals

Data Plot **SPURIOUS EMISSIONS AT ANTENNA TERMINAL**

Page 2 of 4

Job No.:	1L0270R	Date:	6/21/01
Specification:	Part 24	Temperature(°C):	25
Tested By:	Chinda Poy	Relative Humidity(%)	38
E.U.T.:	GWMT 1920		
Configuration:	TX Full Power		



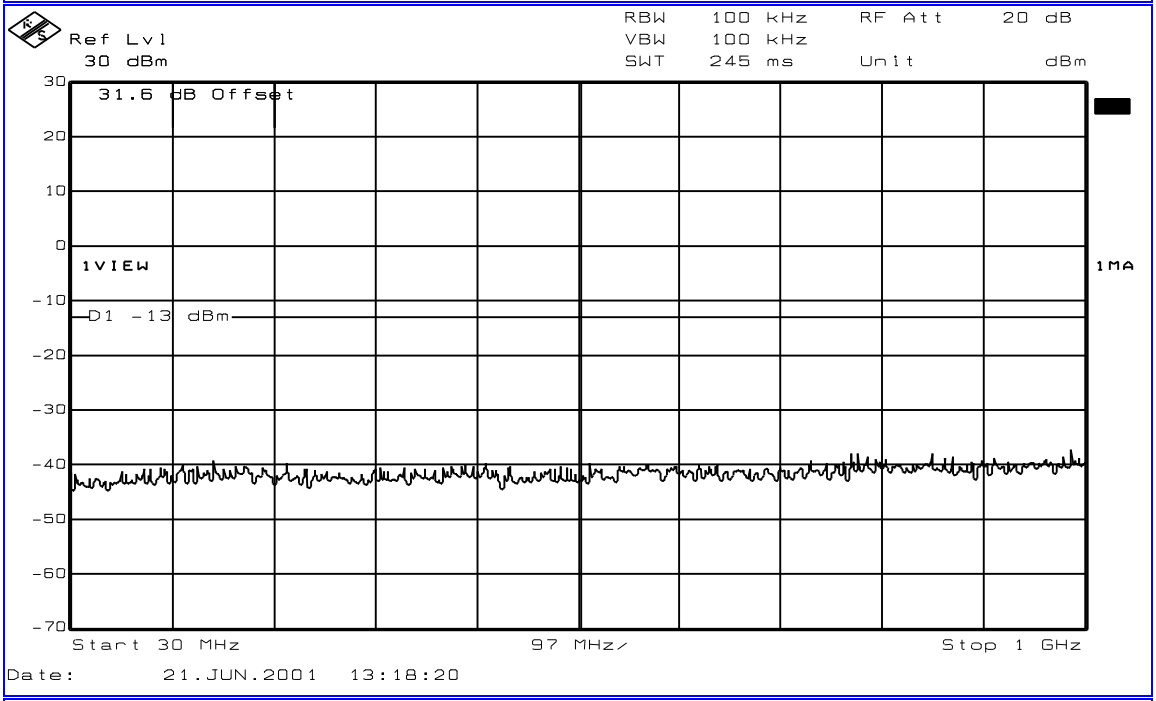
Notes:
UPLINK
Marker 1 indicates carrier
Marker 2 indicates highest emission

Test Data – Spurious Emissions at Antenna Terminals

Data Plot **SPURIOUS EMISSIONS AT ANTENNA TERMINAL**

Page 3 of 4

Job No.:	1L0270R	Date:	6/21/01
Specification:	Part 24	Temperature(°C):	25
Tested By:	Chinda Poy	Relative Humidity(%)	38
E.U.T.:	GWMT 1920		
Configuration:	TX Full Power		



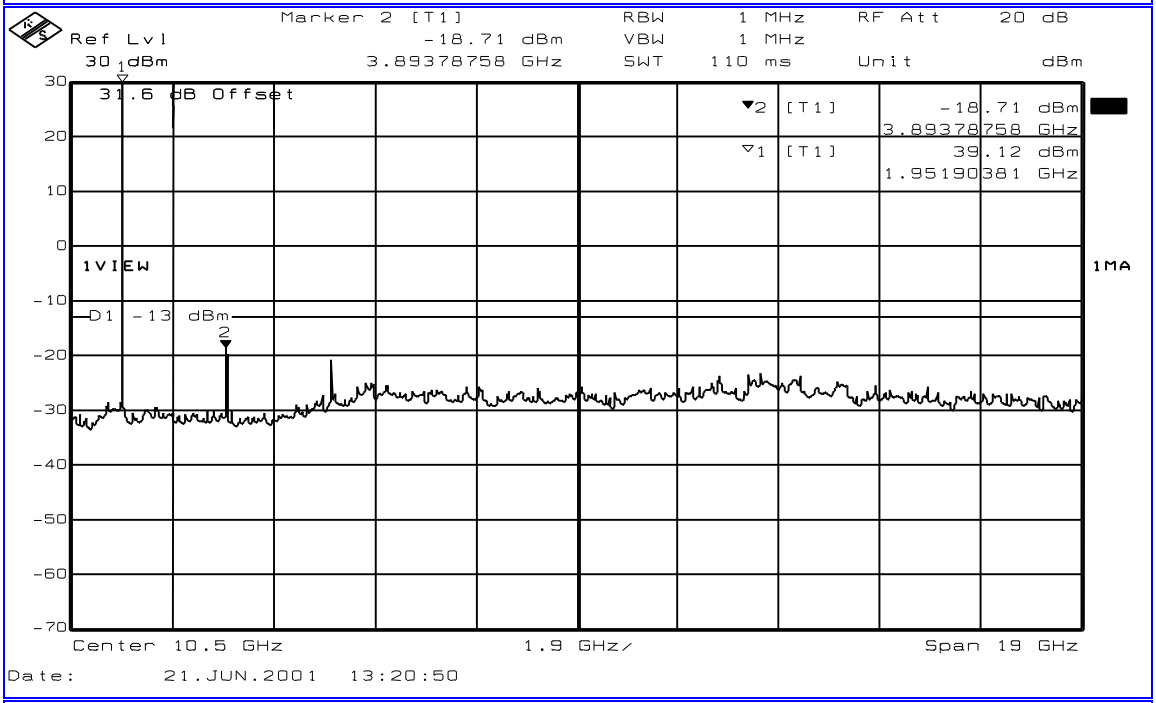
Notes: **DOWNLINK**
No Emissions Indicated

Test Data – Spurious Emissions at Antenna Terminals

Test Plot: **SPURIOUS EMISSIONS AT ANTENNA TERMINAL**

Page 4 of 4

Job No.:	1L0270R	Date:	6/21/01
Specification:	Part 24	Temperature(°C):	25
Tested By:	Chinda Poy	Relative Humidity(%)	38
E.U.T.:	GWMT 1920		
Configuration:	TX Full Power		



Notes:
DOWNLINK
Marker 1 indicates carrier
Marker 2 indicates highest emission

Test Data – Spurious Emissions at Antenna Terminals

Data Plot BANDEDGE (CW)

Page 1 of 4 — Complete X — Preliminary

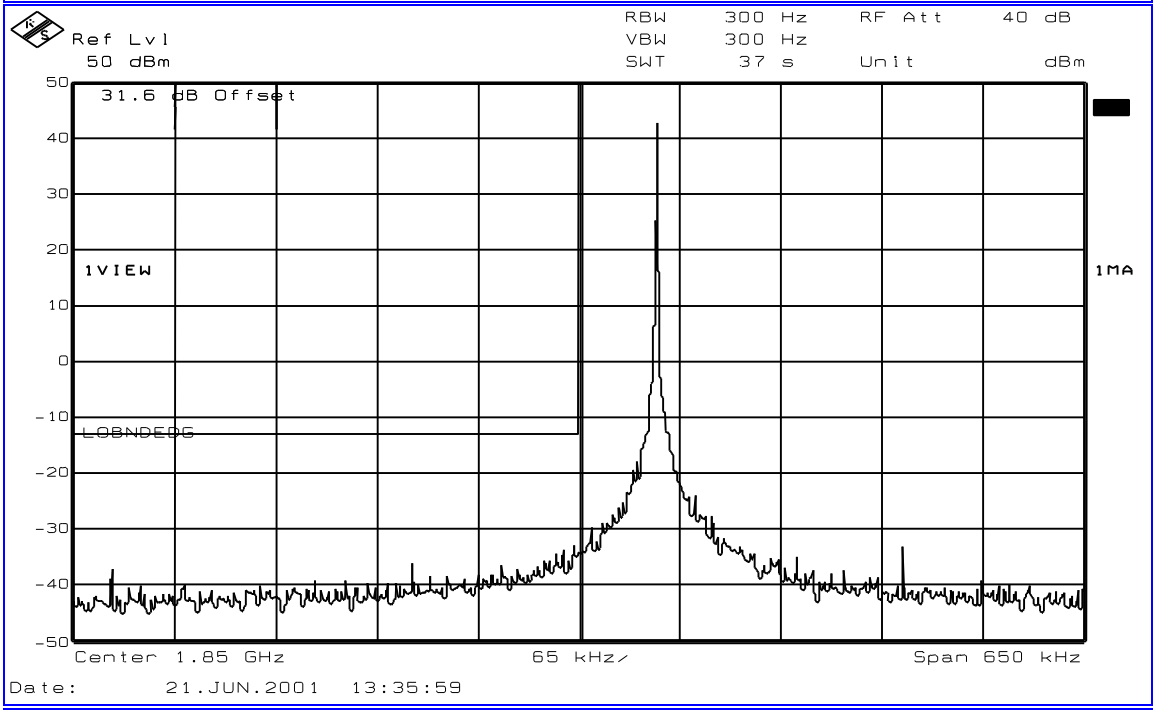
Job No.:	1L0270R	Date: 6/21/01	
Specification:	Part 24	Temperature(°C): 25	
Tested By:	Chinda Poy	Relative Humidity(%) 38	
E.U.T.:	GWMT 1920		
Configuration:	TX Full Power		
Sample Number:			
Location:	Lab 1	RBW: Refer to plots	
Detector Type:	Peak	VBW: Refer to plots	

Test Equipment Used

Antenna:		Directional Coupler:	
Pre-Amp:		Cable #1:	1483
Filter:		Cable #2:	
Receiver:	1036	Cable #3:	
Attenuator #1	1065	Cable #4:	
Attenuator #2:	1064	Mixer:	

Additional equipment used:

Measurement Uncertainty: +/-3.6 dB



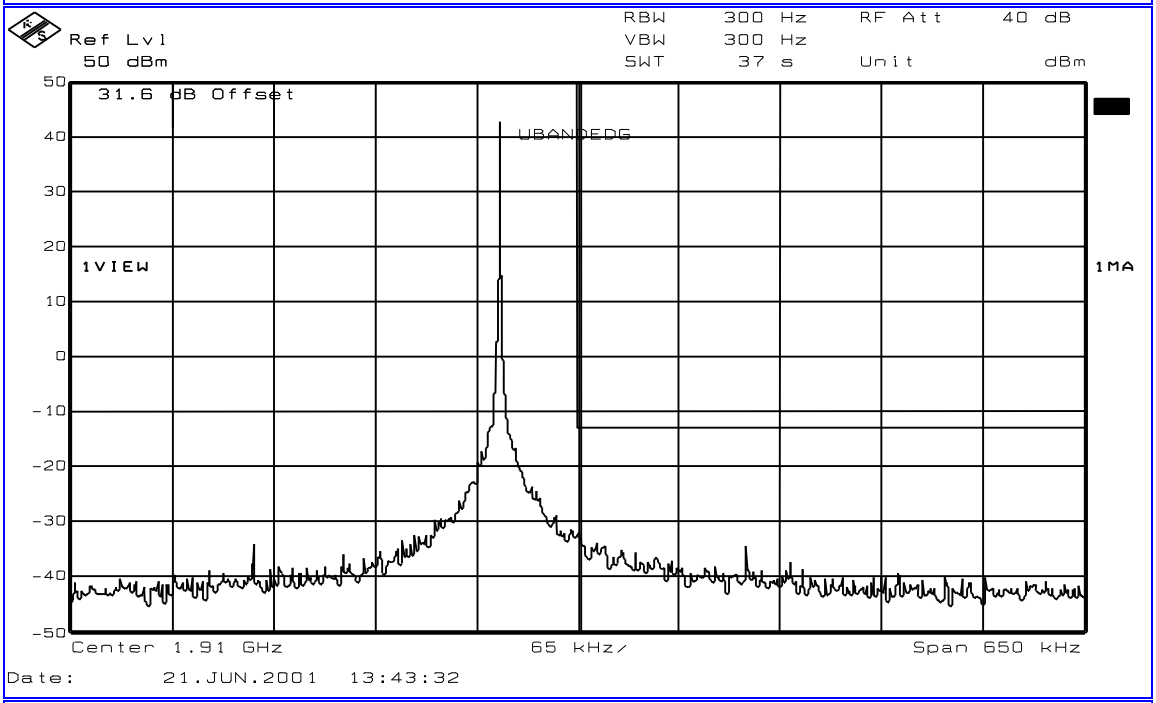
Notes: **UPLINK**
Lower Bandege
Channel 1 (1850.05 MHz)

Test Data – Spurious Emissions at Antenna Terminals

Data Plot BANDEDGE (CW)

Page 2 of 4

Job No.:	1L0270R	Date:	6/21/01
Specification:	Part 24	Temperature(°C):	25
Tested By:	Chinda Poy	Relative Humidity(%)	38
E.U.T.:	GWMT 1920		
Configuration:	TX Full Power		



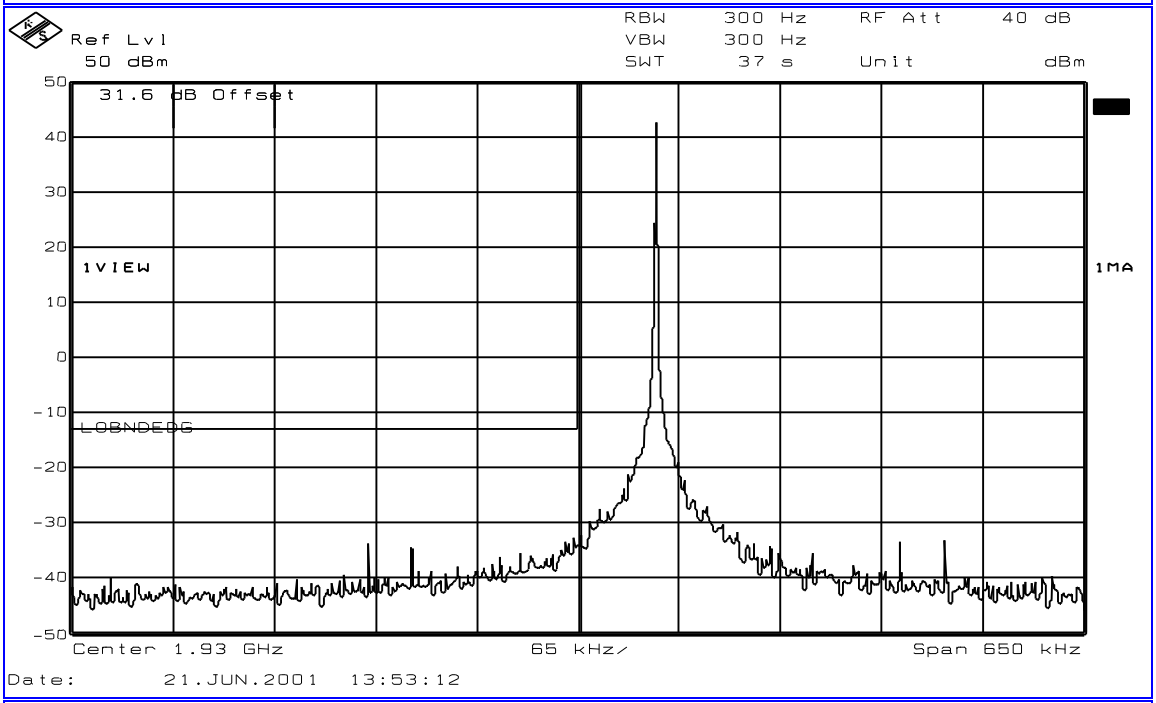
Notes:
UPLINK
Upper Bandedge
Channel 1199 (1909.95 MHz)

Test Data – Spurious Emissions at Antenna Terminals

Data Plot BANDEDGE (CW)

Page 3 of 4

Job No.:	1L0270R	Date:	6/21/01
Specification:	Part 24	Temperature(°C):	25
Tested By:	Chinda Poy	Relative Humidity(%)	38
E.U.T.:	GWMT 1920		
Configuration:	TX Full Power		



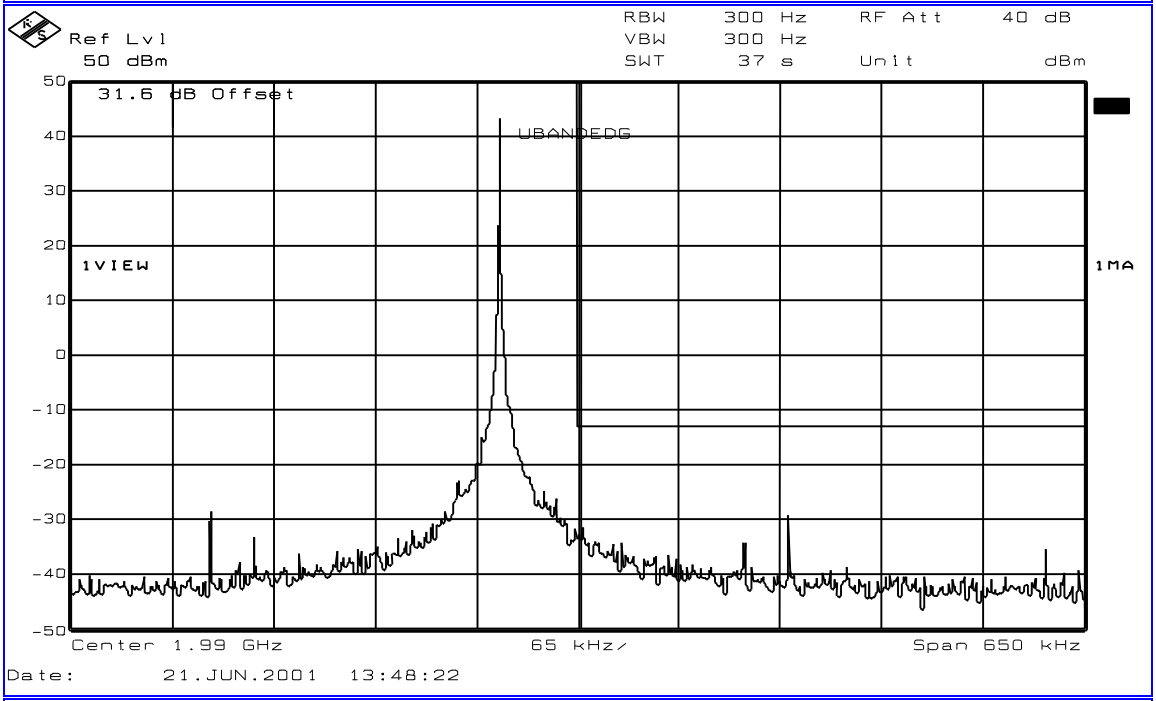
Notes: **DOWNLINK**
Lower Bandedge
Channel 1 (1930.05 MHz)

Test Data – Spurious Emissions at Antenna Terminals

Test Plot: BANDEDGE (CW)

Page 4 of 4

Job No.:	1L0270R	Date:	6/21/01
Specification:	Part 24	Temperature(°C):	25
Tested By:	Chinda Poy	Relative Humidity(%)	38
E.U.T.:	GWMT 1920		
Configuration:	TX Full Power		



Notes: **DOWNLINK**
Upper Bandedge
Channel 1199 (1989.95 MHz)

Section 6. Field Strength of Spurious

NAME OF TEST: Field Strength of Spurious Emissions	PARA. NO.: 2.1051
TESTED BY: Chinda Poy	DATE: 6/21/01

Test Results: Complies.

Test Data: See attached table.

Equipment Used: 1464-1484-1485-1043-1016-993

Measurement Uncertainty: +/- 1.7 dB

Temperature: 25 °C

Relative Humidity: 38 %

Test Data - Radiated Emissions

Field Strength of Spurious Emissions

Page 1 of

Complete X
Preliminary

Job No.: 1L0270R
Specification: Part 24
Tested By: Chinda Poy
E.U.T.: GWMT 1920
Configuration: TX Full Power
Sample No:
Location: AC 3
Detector Type: Peak

Date: 6/21/01
Temperature(°C): 25
Relative Humidity(%) 38

RBW: 1 MHz
VBW: 1 MHz

Measurement Distance: 3 m

Test Equipment Used

Antenna: 993
Pre-Amp: 1016
Filter:
Receiver: 1464
Attenuator #1
Attenuator #2:
Additional equipment used:
Measurement Uncertainty: +/-3.6 dB

Directional Coupler:
Cable #1: 1484
Cable #2: 1485
Cable #3: 1043
Cable #4:
Mixer:

Frequency (MHz)	Meter Reading (dBm)	Correction Factor (dB)		Pre-Amp Gain (dB)	Substitution Antenna Gain (dBd)		ERP (dBm)	ERP (mW)	Polarity	Comments
3920	-45.0	40.4		33.3	8.0		-29.9	0.00	V	
5880	-54.7	38.5		33.3	9.1		-40.4	0.00	V	
7840	-54.5	40.4		33.3	9.4		-37.9	0.000161	V	Noise Floor
9800	-54.2	40.4		36	10.5		-39.2	0.000119	V	Noise Floor
11760	-55.0	-49.3		35.5	11.0		-128.8	0.000000	V	Noise Floor
13720	-53.3	47.6		33.3	10.4		-28.6	0.001384	V	Noise Floor
15680	-53.5	43.2		33.2	13.6		-29.9	0.00	V	Noise Floor
17640	-53.5	51.0		33.5	8.7		-27.3	0.00	V	Noise Floor
19600	-52.8	53.1		32.2	6.4		-25.6	0.002767	V	Noise Floor
3920	-48.2	34.3		33.3	8.0		-39.1	0.000122	H	
5880	-56.0	36.0		33.3	9.1		-44.2	0.000038	H	Noise Floor
7840	-55.0	39.8		33.3	9.4		-39.1	0.00	H	Noise Floor
9800	-55.5	42.6		36	10.5		-38.4	0.000145	H	Noise Floor
11760	-54.2	46.0		35.5	11.0		-32.7	0.000542	H	Noise Floor
13720	-53.3	50.8		33.3	10.4		-25.4	0.002917	H	Noise Floor
15680	-53.2	44.0		33.2	13.6		-28.8	0.001315	H	Noise Floor
17640	-52.3	53.6		33.5	8.7		-23.5	0.004467	H	Noise Floor
19600	-52.5	54.6		32.2	6.4		-23.7	0.004305	H	Noise Floor

Notes: **DOWNLINK SCANNED TO THE 10TH HARMONIC**

Test Data - Radiated Emissions

Nemko Dallas, Inc.

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

Field Strength of Spurious Emissions

Page 1 of 2 — Complete X — Preliminary

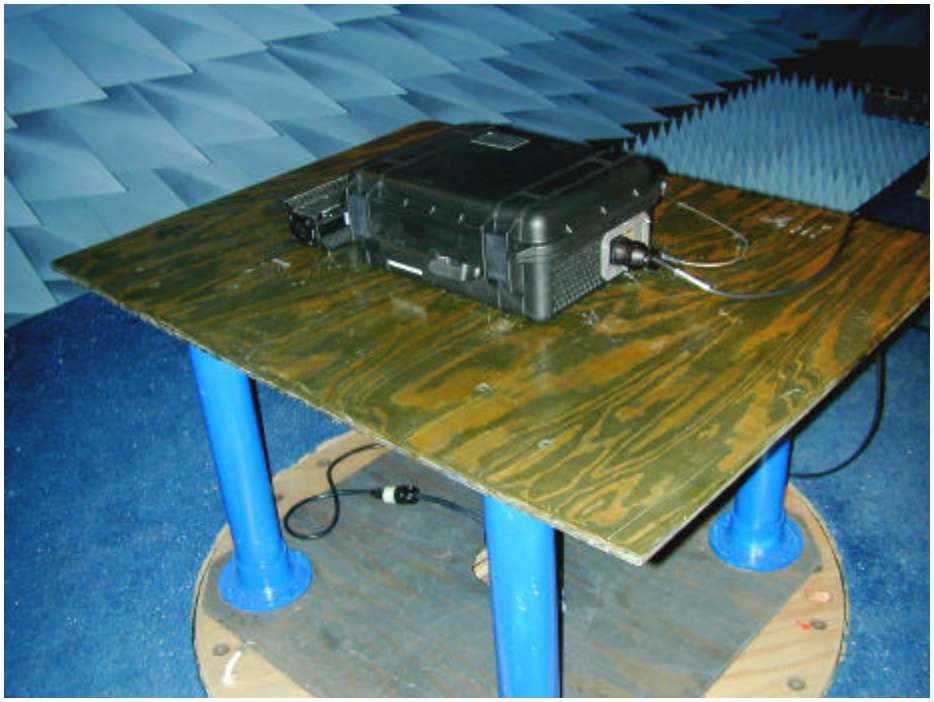
Job No.: 1L0270R — Date: 6/21/01
Specification: Part 24 — Temperature(°C): 25
Tested By: Chinda Poy — Relative Humidity(%) 38
E.U.T.: GWMT 1920
Configuration: TX Full Power
Sample No:

Frequency (MHz)	Meter Reading (dBm)	Correction Factor (dB)		Pre-Amp Gain (dB)	Substitution Antenna Gain (dBd)		ERP (dBm)	ERP (mW)	Polarity	Comments
3760	-53.7	34.3		33.3	8.0		-44.6	0.00	H	
5640	-55.7	36.0		33.3	9.1		-43.9	0.00	H	Noise Floor
75200	-54.8	54.6		33.3	6.4		-27.1	0.001968	H	Noise Floor
9400	-55.2	41.4		36	10.1		-39.7	0.000106	H	Noise Floor
11280	-54.8	44.4		35.5	11.1		-34.8	0.000330	H	Noise Floor
13160	-54.2	47.5		33.3	11.2		-28.9	0.001300	H	Noise Floor
15040	-52.3	47.1		33.2	11.4		-27.1	0.00	H	Noise Floor
16920	-52.5	46.1		33.5	13.0		-26.8	0.00	H	Noise Floor
18800	-52.8	54.6		32.2	6.4		-24.0	0.004018	H	Noise Floor
3760	-50.0	40.4		33.3	8.0		-34.9	0.000322	V	
5640	-56.2	38.5		33.3	9.1		-41.9	0.000064	V	Noise Floor
75200	-54.0	53.1		33.3	6.4		-27.9	0.00	V	Noise Floor
9400	-55.3	39.3		36	10.1		-42.0	0.000063	V	Noise Floor
11280	-55.5	42.0		35.5	11.1		-38.0	0.000160	V	Noise Floor
13160	-55.2	44.8		33.3	11.2		-32.5	0.000564	V	Noise Floor
15040	-53.7	46.5		33.2	11.4		-29.0	0.001262	V	Noise Floor
16920	-53.3	44.3		33.5	13.0		-29.5	0.001127	V	Noise Floor
18800	-53.2	53.1		32.2	6.4		-25.9	0.002559	V	Noise Floor

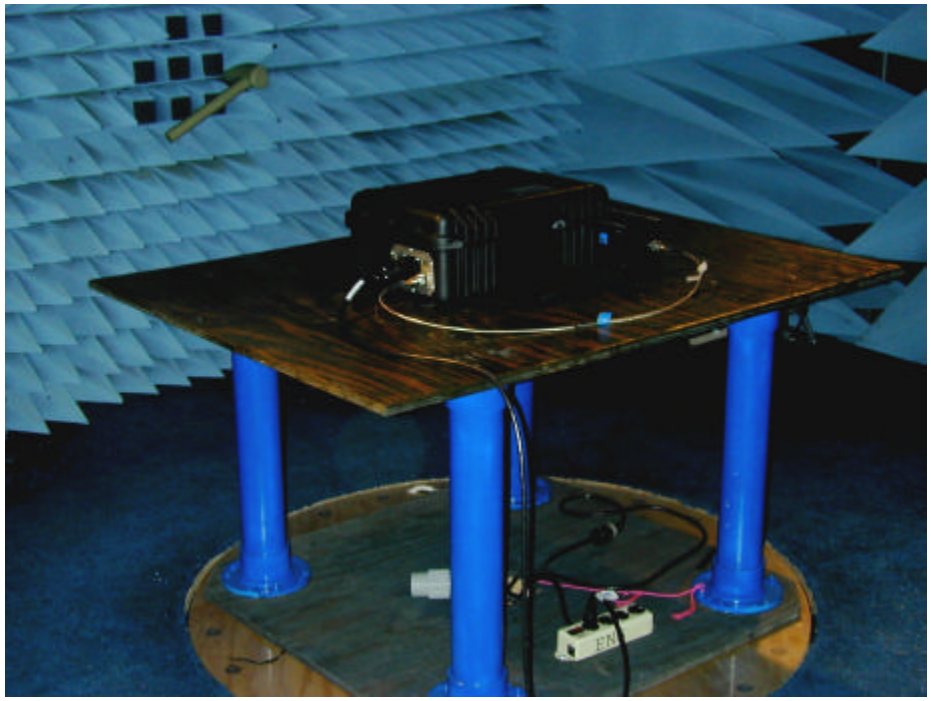
Notes: **UPLINK SCANNED TO THE 10TH HARMONIC**

Photographs of Test Setup

FRONT VIEW



REAR VIEW



Section 7. Frequency Stability

NAME OF TEST: Frequency Stability	PARA. NO.: 2.1055
TESTED BY: Chinda Poy	DATE: 6/22/01

Test Results: Complies

Measurement Data: Standard Test Frequency: ___1880___ MHz
Standard Test Voltage: ____115_____ Vac

Test Data – Frequency Stability

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

Frequency Stability

Client: Grayson Wireless W.O.# 1L0270R

EUT: Model GWMT 1920 S/N: None

Date: 6/22/01 Tech: C.POY

Test Equipment used:

Temperature	Voltage	Frequency Error (Hz)
20 °C	115 VAC	-50
20 °C	98 VAC	-50
20 °C	132 VAC	-50
20 °C	13 VDC	-50
20 °C	11 VDC	Ceased operation
20 °C	15 VDC	-50
10 °C		-153
0 °C		-315
-10 °C		-319
-30 °C		-404
30 °C		-720
40 °C		-1201
50 °C		-1618

Section 8. Test Equipment List

ASSET	Description	Manufacturer Model Number	Serial Number	Cal. Date	Cal. Due
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ FSEK30	830844/006	06/14/99	06/14/01
1464	Spectrum analyzer	Hewlett Packard 8563E	3551A04428	01/02/01	01/02/02
1064	ATTENUATOR	NARDA 776B-20	NONE	CBU	N/A
1065	ATTENUATOR	NARDA 776B-10	NONE	CBU	N/A
1604	ATTENUATOR	NARDA 776B-20	NONE	CBU	N/A
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	05/30/01	05/30/02
1483	Cable 4m	Storm PR90-010-144	N/A	06/04/01	06/04/02
1484	Cable 2.0-18.0 Ghz	Storm PR90-010-072	N/A	05/25/00	05/25/01
1485	Cable 2.0-18.0 Ghz	Storm PR90-010-216	N/A	06/01/01	06/01/02
1043	Flexable cable 1m	Astrolab Inc. 32027-2-29094K-1M	0	01/29/01	01/29/02
993	Horn antenna	A.H. Systems SAS-200/571	XXX	07/16/99	07/16/01

ANNEX A - TEST DETAILS

NAME OF TEST: RF Power Output	**PARA. NO.: 2.1046**

Minimum Standard: Para. No.24.232. Base stations are limited to 1640 watts peak E.I.R.P. with an antenna height up to 300 meters HAAT. In no case may the peak output power of a base station transmitter exceed 100 watts.

Method Of Measurement: CDMA Per ANSI/J-STD-014
TDMA Per ANSI/J-STD-010

Detachable Antenna:
The peak power at antenna terminals is measured using an in -line peak power meter or a spectrum analyzer.

Integral Antenna:
If the antenna is not detachable f rom the circuit then the Peak Power Output is derived from the peak radiated field strength of the fundamental emission by using the plane wave relation $GP/4\ \pi R^2 = E^2/120\pi$ and proceeding as follows:

$$P = \frac{E^2 R^2}{30G} = \frac{E^2 3^2}{30G}$$

where,

P = the equivalent isotropic radiated power in watts
E = the maximum measured field strength in V/m
R = the measurement range (3 meters)
G = the numeric gain of the transmit antenna in relation to an isotropic radiator

NAME OF TEST: Occupied Bandwidth	**PARA. NO.: 2.1049**

Minimum Standard: Para. No. 24.238(b). 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.

Method Of Measurement:

CDMA Per ANSI/J-STD-014

Spectrum analyzer settings:
RBW: 30 kHz
VBW: ≥ RBW
Span: 5 MHz
Sweep: Auto

GSM Per ANSI/J-STD-010

RBW: 3 kHz
VBW: ≥ RBW
Span: 2 MHz
Sweep: Auto

NADC Per IS-136

RBW: 1 kHz
VBW: ≥ RBW
Span: 1 MHz
Sweep: Auto

NAME OF TEST: Spurious Emission at Antenna Terminals PARA. NO.: 2.1051

Minimum Standard: Para. No.24.238(a). On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power by at least 43 + 10 log (P) dB.

Method Of Measurement:

Spectrum analyzer settings:

CDMA Per ANSI/J-STD-014

RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 30 kHz (< 1MHz from Band Edge)
VBW: ≥ RBW
Sweep: Auto
Video Avg: 6 Sweeps

GSM Per ANSI/J-STD-010

RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 3 kHz (< 1 MHz from Band Edge)
VBW: ≥ RBW
Sweep: Auto
Video Avg: Disabled

NADC Per IS-136

RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 1 kHz (< 1 MHz from Band Edge)
VBW: ≥ RBW
Sweep: Auto
Video Avg: Disabled

To demonstrate compliance at band edges the frequency of the input signal is set to the lowest and highest assigned channel and the center frequency of the spectrum analyzer is set to the up per and lower edges of the appropriate frequency block.

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

Minimum Standard: Para. No.24.238(a). On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power by at least 43 + 10 log (P) dB.

Calculation Of Field Strength Limit

An example of attenuation requirement of 43 + 10 Log P is equivalent to -13 dBm (5×10^{-5} Watts) at the antenna terminal. We determine the field strength limit by using the plane wave relation.

$GP/4\pi R^2 = E^2/120\pi$

For emissions ≤ 1 GHz:

G = 1.64 (Dipole Gain)
P = 10^{-5} Watts (Maximum spurious output power)
R = 3m (Measurement Distance)

$$E = \frac{\sqrt{30GP}}{R}$$

$$\mathrm{E} = \frac{\sqrt{30 \times 1.64 \times 5 \times 10^{-5}}}{3} = 0.016533 \text{ V / m} = 84.4 \text{ dB}\mu\text{V / m}$$

For emissions > 1 GHz:

G = 1 (Isotropic Gain)
P = 1×10^{-5} Watts (Maximum spurious output power)
R = 3m (Measurement Distance)

$$E = 84.4 - 20Log\sqrt{1.64} = 82.3dB\mu V / m@3m$$

NAME OF TEST: Frequency Stability	**PARA. NO.: 2.1055**

Minimum Standard: Para. No. 24.235. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Method Of Measurement: CDMA Per ANSI/J-STD-014
TDMA Per ANSI/J-STD-010
NADC Per IS-136

Frequency Stability With Voltage Variation

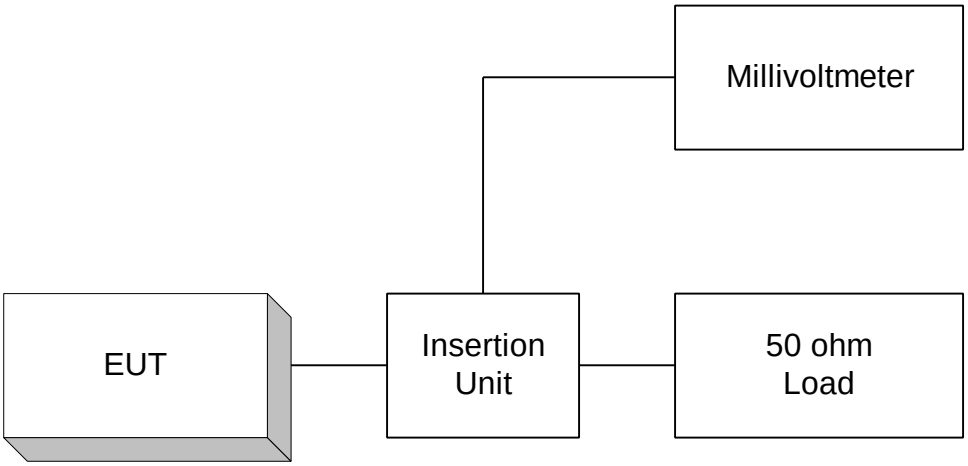
The E.U.T. is placed in an environmental chamber and allowed to stabilize at +20 degrees Celsius for at least 15 minutes. With the voltage input to the E.U.T. set to 85% S.T.V., the frequency is measured in 30 second intervals for a period of 5 minutes. This procedure is repeated at 100% S.T.V. and 115%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

Frequency Stability With Temperature Variation

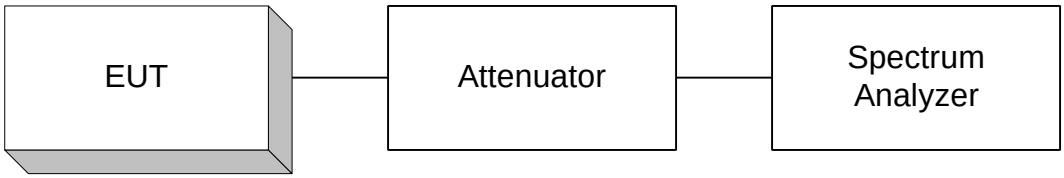
The input voltage to the E.U.T. is set to S.T.V. and the temperature of the environmental chamber is varied in 10 degree steps from -30 degrees C to +50 degrees C. The E.U.T. is allowed to stabilize at each temperature and the frequency is measured in 30 second intervals for a period of 5 minutes.

ANNEX B - TEST DIAGRAMS

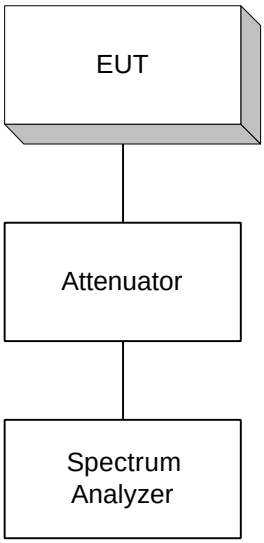
Para. No. 2.985 - R.F. Power Output



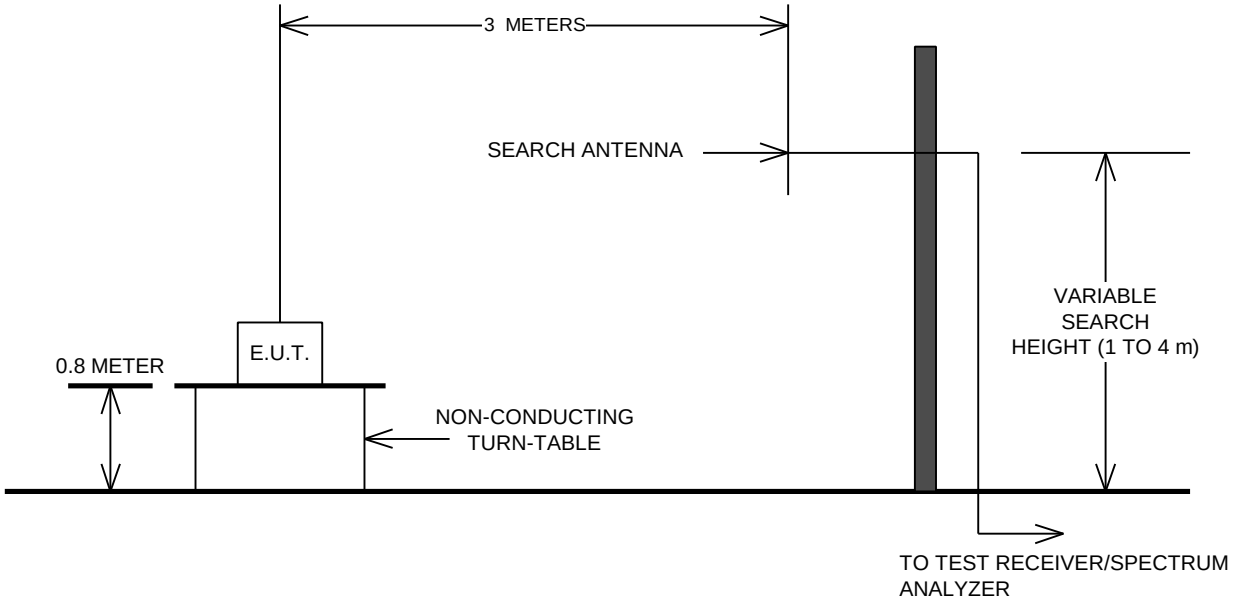
Para. No. 2.989 - Occupied Bandwidth



Para. No. 2.991 Spurious Emissions at Antenna Terminals



Para. No. 2.993 - Field Strength of Spurious Radiation



Para. No. 2.995 - Frequency Stability