Nemko Test Report:	5L0403RUS2
Applicant:	Nokia, Inc.
Equipment Under Test: (E.U.T.)	6155i
In Accordance With:	**FCC Part 24, Subpart E** Broadband PCS Subscriber Station
Tested By:	Nemko USA Inc. 802 N. Kealy Lewisville, TX 75057-3136
Authorized By:	Tom Tidwell, Frontline Manager
Date:	29 August, 2005

NVLAP LAB CODE: 100426-0

Table of Contents

Section 1. Summary of Test Results

Manufacturer: Nokia, Inc.

Model No.: 6155i

Serial No.: 044/13202978

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".

Summary Of Test Data

NAME OF TEST	PARA. NO.	RESULT
RF Power Output	24.232	Not Tested
Occupied Bandwidth (CDMA)	24.238	Complies
Spurious Emissions at Antenna Terminals	24.238(a)	Complies
Field Strength of Spurious Emissions	24.238(a)	Complies
Frequency Stability	24.235	Complies

Footnotes:

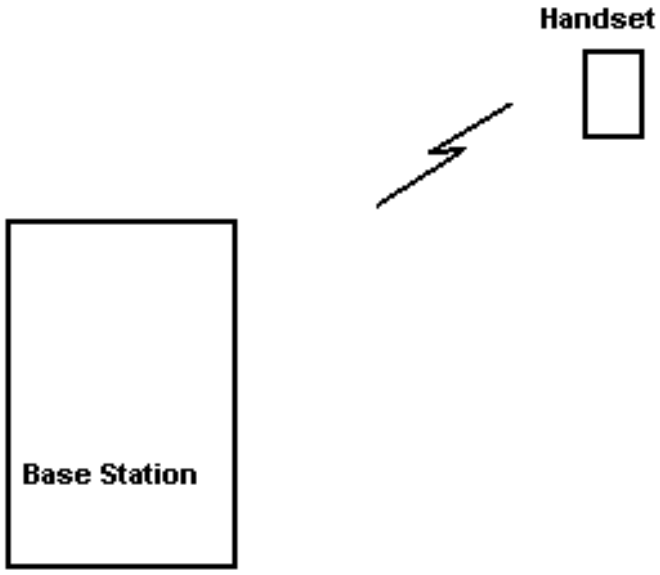
Section 2. General Equipment Specification

Frequency Bands:	☒ 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
Type of Modulation and Designator:	**CDMA (G7W)** ☒ **GSM (GXW)** ☐ **NADC (DXW)** ☐
Necessary Bandwidth:	1.25 MHz
Output Impedance:	50 ohms

Operational Description

The phone is a dual band CDMA phone operating in the 800 MHz cellular band and 1900 PCS band. It also supports analog operation in the 800 MHz Band

System Diagram

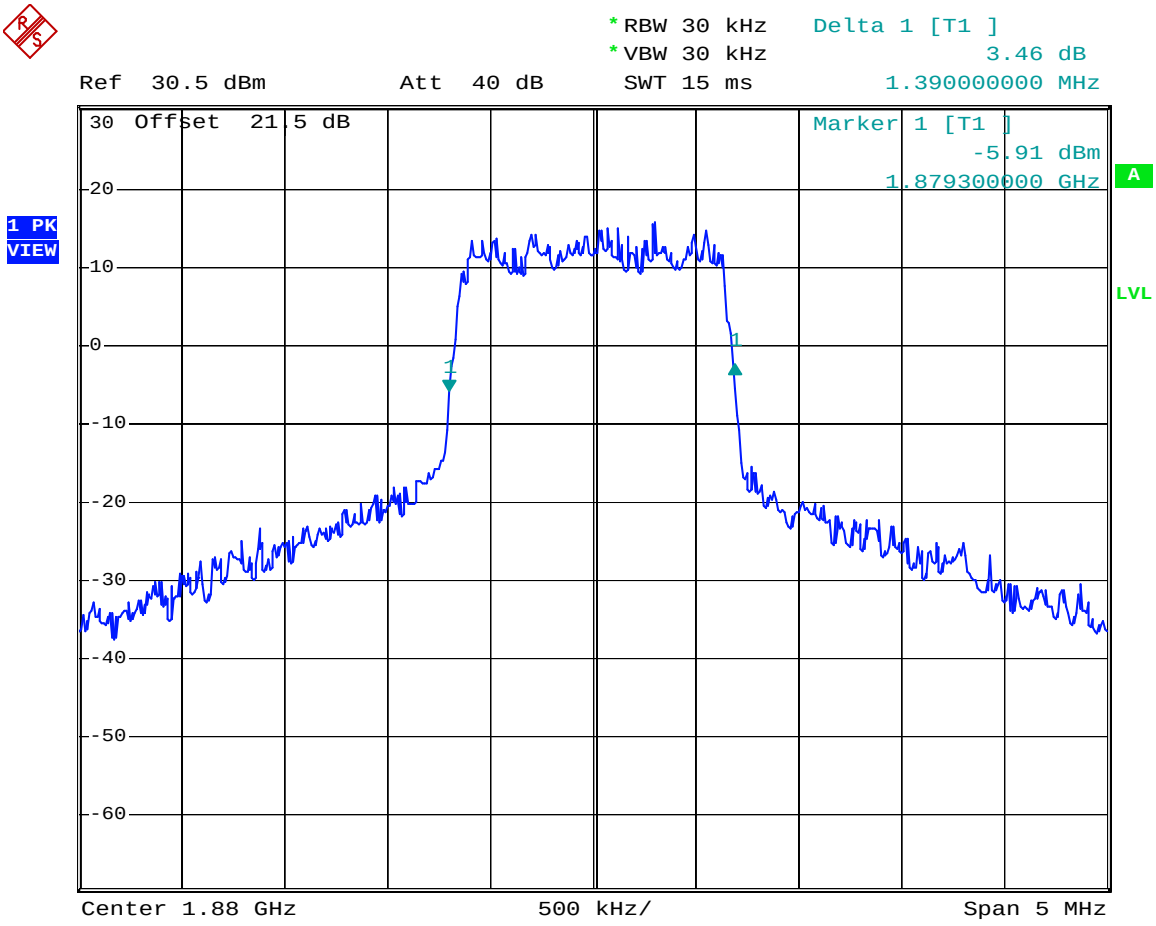


Section 3. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth (CDMA)	PARA. NO.: 2.1047
TESTED BY: David Light	DATE: 8/2/2005

Test Results: Complies.

Test Data: See attached plots.



Section 4. Spurious Emissions at Antenna Terminals

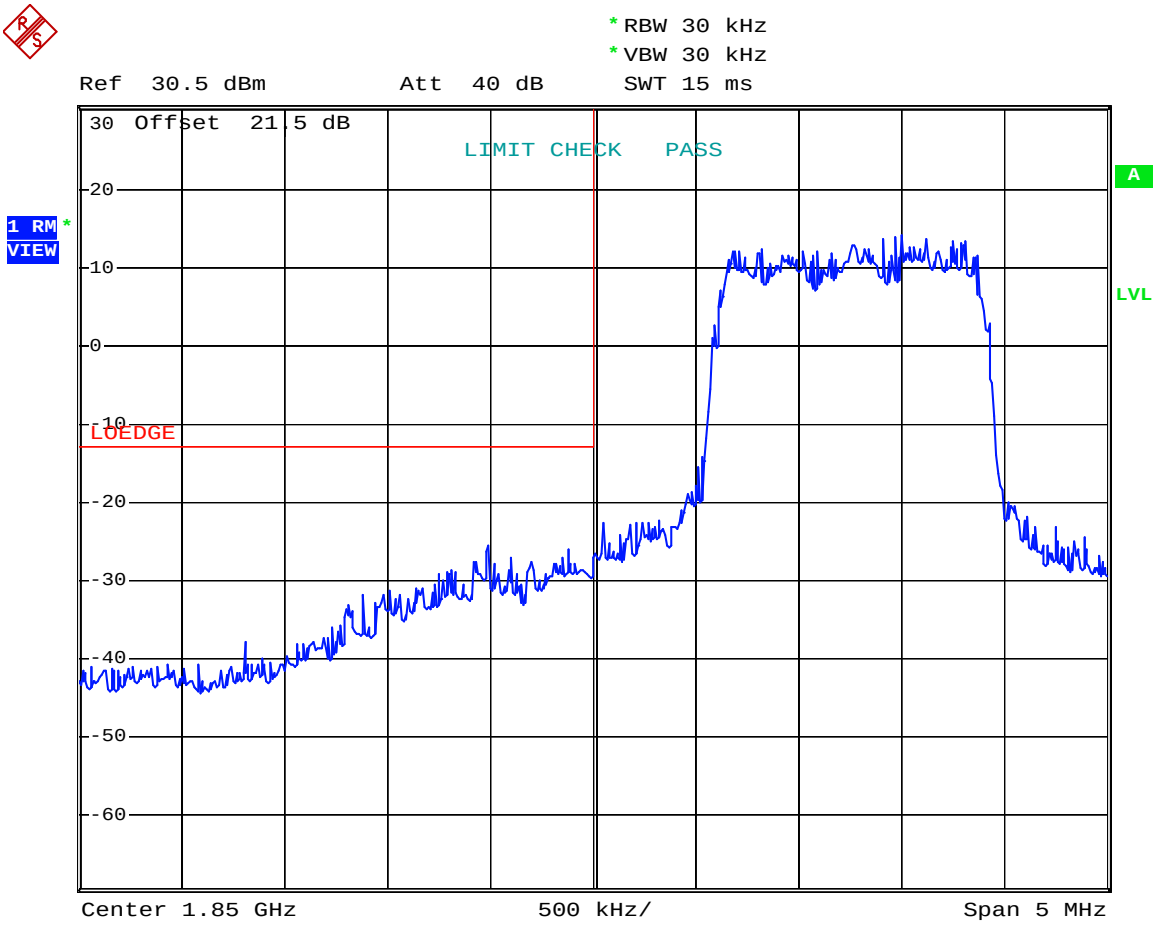
NAME OF TEST: Spurious Emissions @ Antenna Terminals	PARA. NO.: 2.1051
TESTED BY: David Light	DATE: 8/2/2005

Test Results: Complies.

Test Data:

Test Data – Spurious Emissions

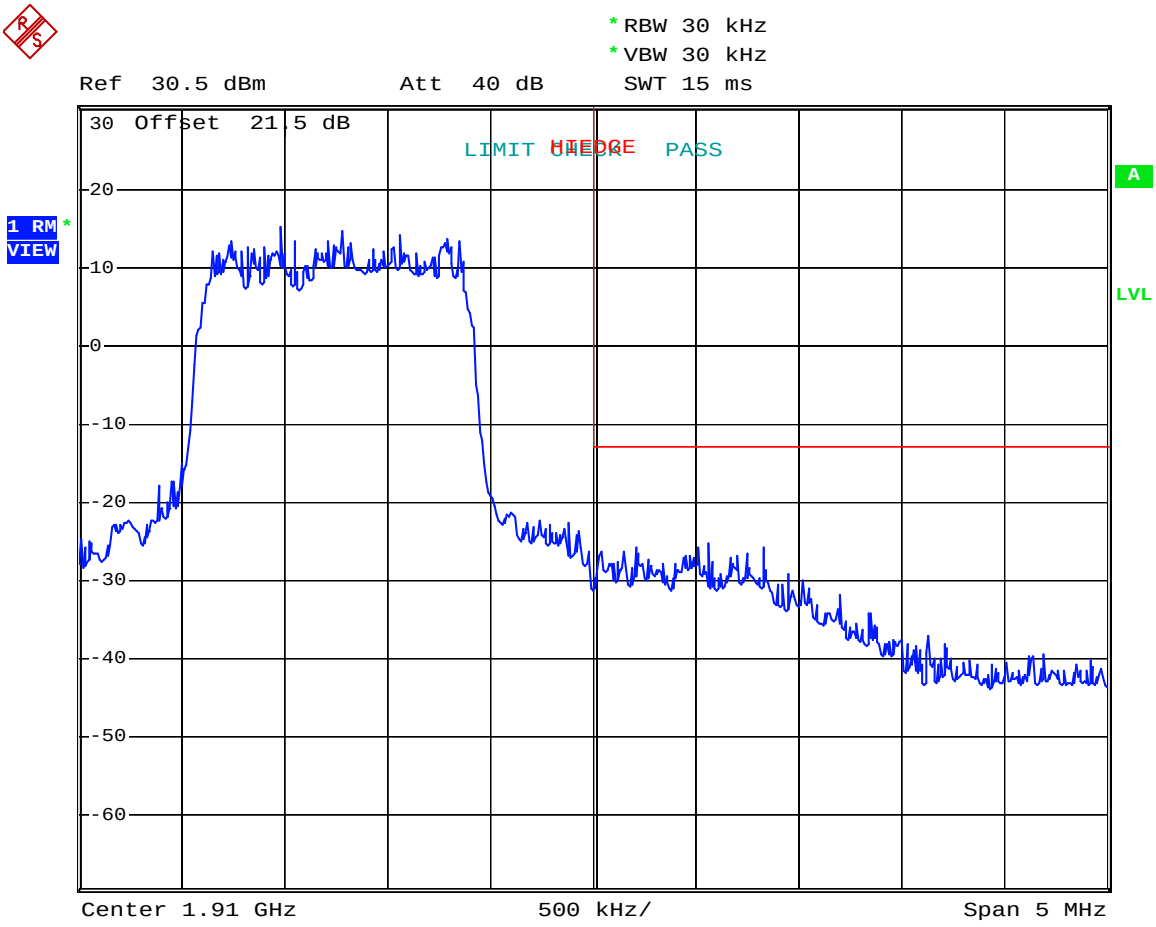
Lower Bandedge – Channel 25



Date: 2.AUG.2005 15:38:04

Test Data – Spurious Emissions

Upper Bandedge – Channel 1175



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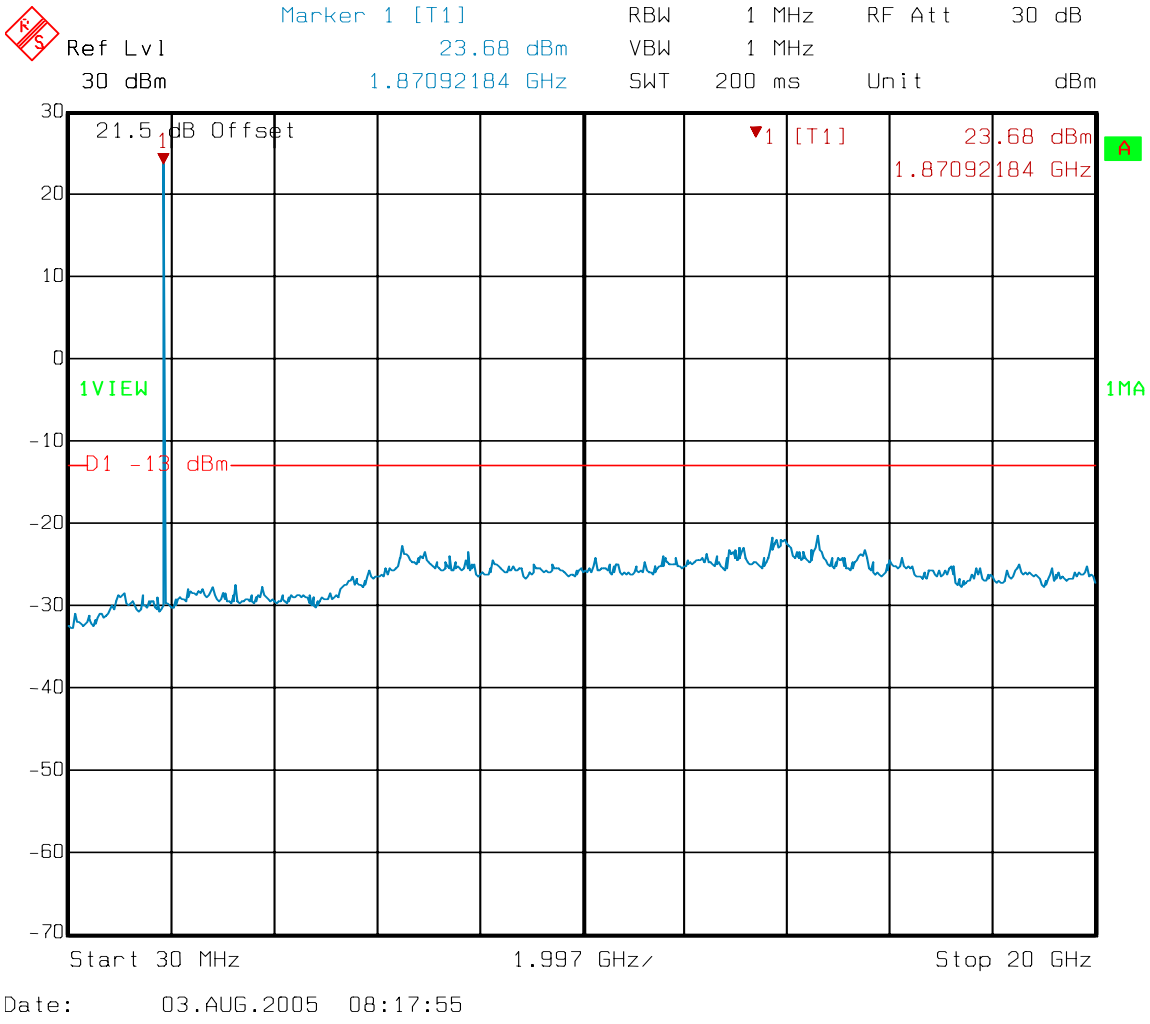
Test Data – Spurious Emissions

Channel 600



Section 5. Field Strength of Spurious

NAME OF TEST: Field Strength of Spurious	PARA. NO.: 2.1053
TESTED BY: David Light	DATE: 8/9/2005

Test Results: Complies.

Test Data: See attached table.

Test Data - Radiated Emissions

EIRP

Page 1 of 1 — Complete X

Job No.: 5L0403 — Date: 8/9/05 — Preliminary

Specification: PT24 — Temperature(°C): 22

Tested By: David Light — Relative Humidity(%): 45

E.U.T.: Dual band/Tri mode CDMA HANDSET

Configuration: TX

Sample No: 1

Location: AC 3 — RBW: 1 MHz — Measurement

Detector Type: Peak — VBW: 1 MHz — Distance: 3 m

Test Equipment

Antenna:	1304	Directional Coupler:	
Pre-Amp:	1016	Cable #1:	1484
Filter:	1482	Cable #2:	1485
Receiver:	1464	Cable #3:	
Attenuator #1		Cable #4:	
Attenuator #2:		Mixer:	

Additional equipment used:

Measurement Uncertainty: +/-1.7 dB

Frequency (MHz)	Meter Reading (dBm)	Correction Factor (dB)		Pre-Amp Gain (dB)	Substitution Antenna Gain (dBd)	Limit (dBm)	EIRP (dBm)	EIRP (mW)	Polarity	Comments
										Tx 1880 MHz
										Upright position
										(Worst
3760	-75.0	34.3		0	10.2		-30.5	0.0009	H	Noise floor
5640	-52.0	36.0		31.9	11.3		-36.6	0.0002	H	
3760	-75.0	40.4		0	10.2		-24.4	0.0036	V	Noise floor
5640	-63.0	38.5		31.9	11.3		-45.1	0.0000	V	

Notes: **Searched spectrum from 30 MHZ to 9**

All emissions and noise floor readings within 20 dB of the spec limit of -13 dBm are reported

Photographs of Test Setup

Section 6. Frequency Stability

NAME OF TEST: Frequency Stability	PARA. NO.: 24.235
TESTED BY: David Light	DATE: 8/3/2005

Test Results: Complies.

Measurement Data: **Refer to attached data**

Test Data – Frequency Stability

Frequency Stability

Page 1 of 1

Job No.: 5L0403 Date: 8/3/2005
Specification: PT22 Temperature(°C): 22
Tested By: David Light Relative Humidity(%) 45
E.U.T.: 6155i
Configuration: Tx - Linked to base station - CDMA mode
Sample Number: 1

Test Equipment Used

Antenna: Directional Coupler:
Pre-Amp: Cable #1:
Thermometer 619 Cable #2:
Receiver: HP8924C
Attenuator #1 1082
Chamber 283

Measurement Uncertainty: $1x10^{-17}$ppm **Standard Test Frequency 1880.000000 MHz**

Temp (°C)	Measured Frequency (MHz)	Rho	Test Voltage	Freqeuncy Error (Hz)	Limit (+/-Hz)	Error (ppm)	Comment
20	1879.999982	0.986	3.7	-19	1880.0	0.0	
20	1879.999983	0.991	4.3	-17	1880.0	0.0	
20	1879.999988	0.993	2.9	-12	1880.0	0.0	
50	1879.999982	0.990	3.7	-18	1880.0	0.0	
40	1879.999985	0.991	3.7	-15	1880.0	0.0	
30	1880.000012	0.996	3.7	12	1880.0	0.0	
10	1879.999994	0.990	3.7	-6	1880.0	0.0	
0	1879.999983	0.989	3.7	-17	1880.0	0.0	
-10	1879.999988	0.993	3.7	-12	1880.0	0.0	
-20	1880.000006	0.992	3.7	6	1880.0	0.0	
-30					1880.0		

Notes: The handset ceased operation at -20 degrees C.

Section 7. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
1304	HORN ANTENNA	ELECTRO METRICS RGA-60	6151	09/22/03	09/22/05
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	11/12/04	11/12/05
1482	Band Pass Filter	K & L 11SH10-4000/T12000-0/0	2	Cal B4 Use	N/A
1464	Spectrum analyzer	Hewlett Packard 8563E	3551A04428	01/14/05	01/15/07
1484	Cable 2.0-18.0 Ghz	Storm PR90-010-072	N/A	08/26/04	08/26/05
1485	Cable 2.0-18.0 Ghz	Storm PR90-010-216	N/A	08/02/04	08/02/05
1082	CABLE 2m	Astrolab 32027-2-29094-72TC	N/A	CBU	N/A
1472	20db Attenuator DC 18 Ghz	Omni Spectra 20600-20db	NONE	CBU	N/A
Nokia	Cell Site Simulator	HP 8924C	US38283285	07/18/05	07/18/07
283	Environmental Chamber with controller # 1189006	ENVIROTRONICS SH27 & 2030-22844	129010083	09/16/04	09/16/05
619	THERMOMETER	FLUKE 51	4520028	09/16/04	09/16/05
1482	Band Pass Filter	K & L 11SH10-4000/T12000-0/0	2	Cal B4 Use	N/A
Nokia	PCS Extender for 8924C	HP 83236C	3711J04715	07/18/05	07/18/07

ANNEX A - TEST METHODOLOGIES

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-008

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

GSM Per ANSI/J-STD-007

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-008

RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 20 kHz (< 1MHz from Band Edge)
VBW: ≥ RBW
Sweep: Auto
Video Avg: 6 Sweeps

GSM Per ANSI/J-STD-007

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 upper 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.

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 eirp is the signal level fed to the reference antenna corrected for gain referenced to n isotropic radiator.

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-008
TDMA Per ANSI/J-STD-007
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

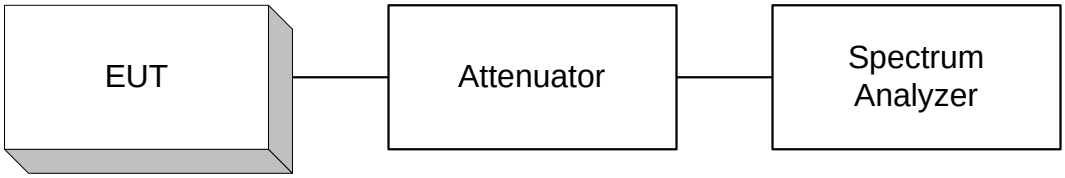
The input voltage to the E.U.T. is set to S.T.V. and the temperature of the environmental chamber is varied in 10 degree steps from -30 degrees C to +50 degrees C. The E.U.T. is allowed to stabilize at each temperature and the frequency is measured in 30 second intervals for a period of 5 minutes.

Digitally Modulated Signals

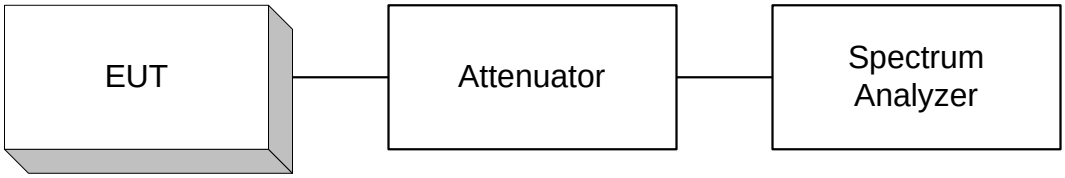
Equipment that produces a digitally modulated carrier is tested using a vector modulation analyzer. Frequency accuracy and rho are measured over the specified environmental extremes.

ANNEX B - TEST DIAGRAMS

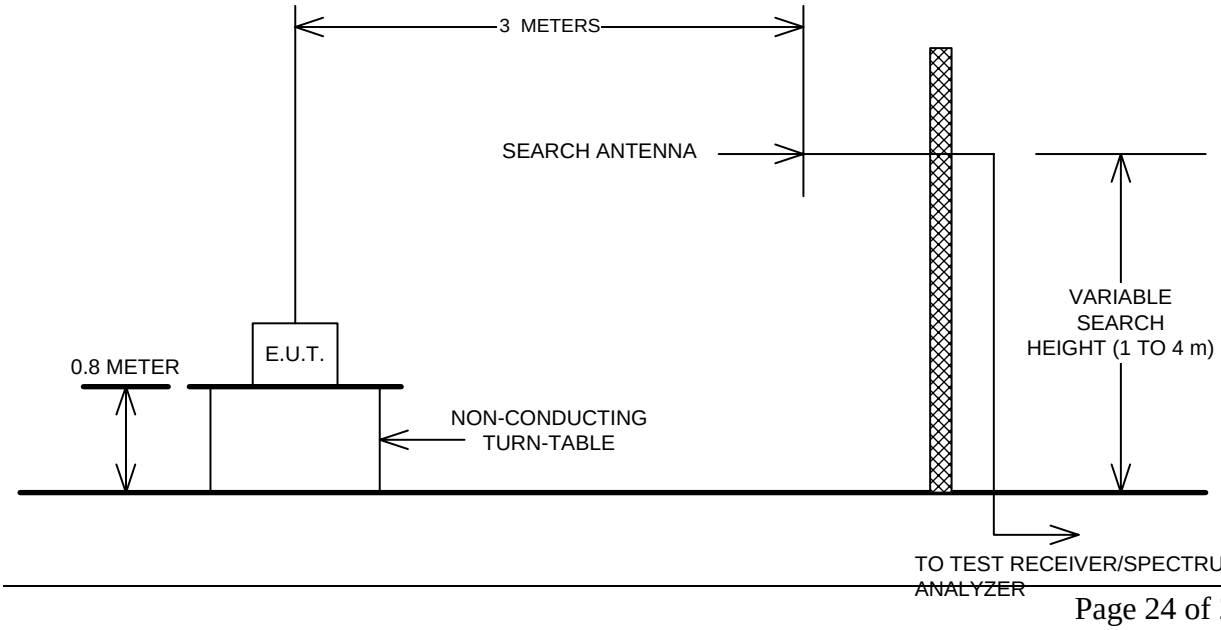
Para. No. 2.989 - Occupied Bandwidth



Para. No. 2.991 Spurious Emissions at Antenna Terminals



Para. No. 2.993 - Field Strength of Spurious Radiation



Para. No. 2.995 - Frequency Stability