

Nemko Test Report No.:

1L0042RUS1

Applicant:

Samsung Telecommunications America
1130 Arapaho Road
Richardson, Texas 75081

Equipment Under Test:

V4 Outdoor BTS

FCC ID:

NP8SCBS-419M

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, Wireless Group Manager

Date:

February, 2001

Total Number of Pages:

35

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EQUIPMENT: V4 Outdoor BTS

FCC ID: NP8SCBS-419M

REPORT NO.: 1L0042RUS1

Section 1. Summary of Test Results

Manufacturer: Samsung Telecommunications

Model No.: SCBS-319M

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: 100426-0**

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This report applies only to the items tested.

EQUIPMENT: V4 Outdoor BTS

FCC ID: NP8SCBS-419M

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Summary Of Test Data

NAME OF TEST	PARA. NO.	SPEC.	MEAS.	RESULT
RF Power Output	24.232	100W	18.2W	Complies
Occupied Bandwidth (CDMA)	24.238	Graph	Graph	Complies
Occupied Bandwidth (GSM)	24.238	N/A	N/A	N/A
Occupied Bandwidth (NADC)	24.238	N/A	N/A	N/A
Spurious Emissions at Antenna Terminals	24.238(a)	-13 dBm	> -13 dBm	Complies
Field Strength of Spurious Emissions	24.238(a)	-13 dBm E.R.P.	< -39 dBm	Complies
Frequency Stability	24.235	Must remain within the authorized band	Maximum freq. error -117 Hz	Complies

Footnotes:

1. The E.U.T. is CDMA only.

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

EQUIPMENT: **V4 Outdoor BTS**

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REPORT NO.: **1L0042RUS1****Section 2. General Equipment Specification**

Supply Voltage Input:	+27 Vdc		
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		
Type of Modulation and Designator:	CDMA (1M25G7W) ☒	GSM (200KGXW) ☐	NADC (40K0DXW) ☐
Maximum No. of Carriers:	3		
Output Impedance:	50 ohms		
RF Output (Rated):	Per channel: 20 W Total: 60 W		
Band Selection:	Software ☒	Duplexer ☒	Fullband ☐

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Description of Modifications For Class II Permissive Change

Not Applicable

EQUIPMENT: V4 Outdoor BTS

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System Description

The V4 family of Base Station Transmitters consists of the following models:

SCBS-319L - V4 Indoor Base Station Transmitter which holds FCC ID. NP8SCBS-319L

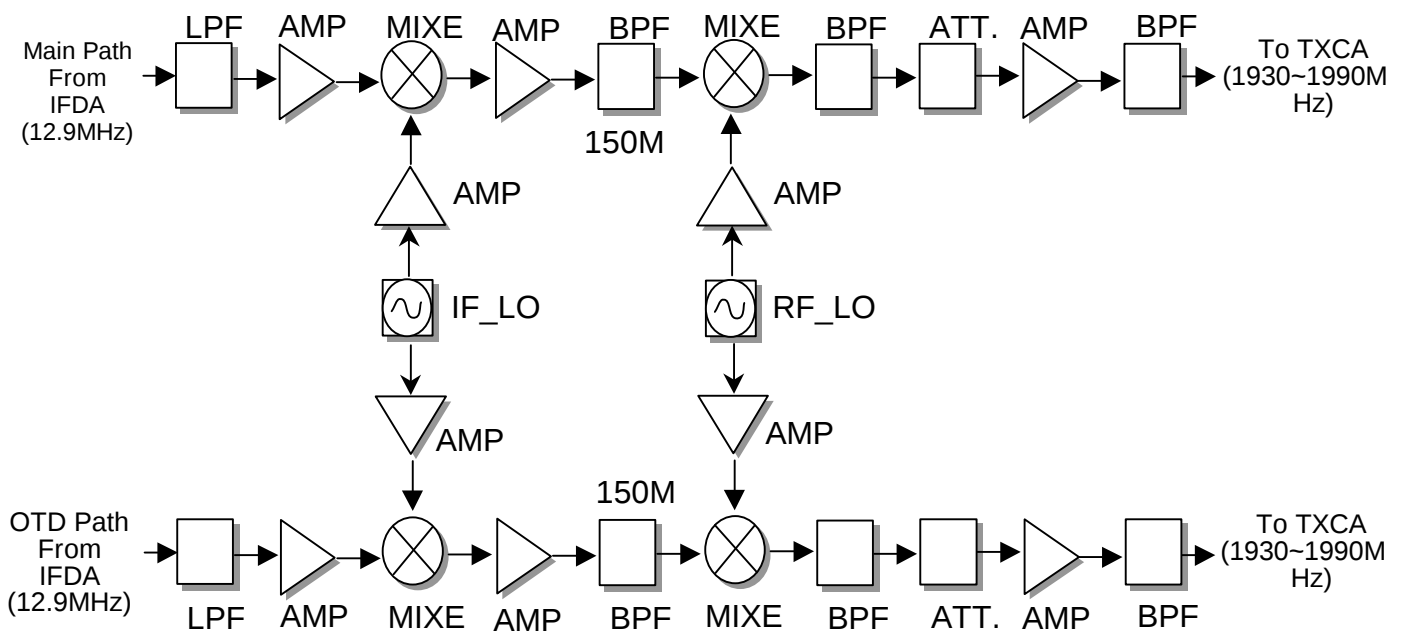
SCBS-319M - V4 Outdoor Base Station Transmitter. The FCC approval is applied for with this report.

These two units use the same modules but simply house them in different enclosures. The outdoor enclosure includes additional environmental control circuitry including cooling fans. Testing was repeated on the Outdoor unit (SCBS-319M) for frequency stability and field strength of spurious emissions. Testing for rf power output and antenna conducted spurious emissions was not repeated but the data for the indoor unit was repeated in this report as representative of both configurations.

The V4 BTS is a PCS band base station transceiver for use in CDMA wireless systems. The modulation used is QPSK and the access protocol is CDMA IS-98. The BTS can transmit up to 3 carriers with a nominal rf power output level of 20W/carrier. The maximum total rf output power is, therefore, 60 W.

The SCBS-419M is housed in an outdoor type enclosure and is connected to an antenna mounted on a permanent outdoor structure.

System Diagram



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Section 3. RF Power Output

NAME OF TEST: RF Power Output	PARA. NO.: 2.1046
TESTED BY: David Light	DATE: 12/14/00

Test Results: Complies.**Measurement Data:**

Modulation Type	Measured Output Power (dBm)	External Cable Loss (dB)	Corrected Output Power (dBm)	Rated Output Power (dBm)	Measured/Rated Output Power (dB)
CDMA	+41.8	0.8	+42.6	+43.0	-0.4
GSM	N/A	N/A	N/A	N/A	N/A
NADC	N/A	N/A	N/A	N/A	N/A

EQUIPMENT: V4 Outdoor BTS

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Test Data - RF Power Output

Test Plot: RF POWER OUT

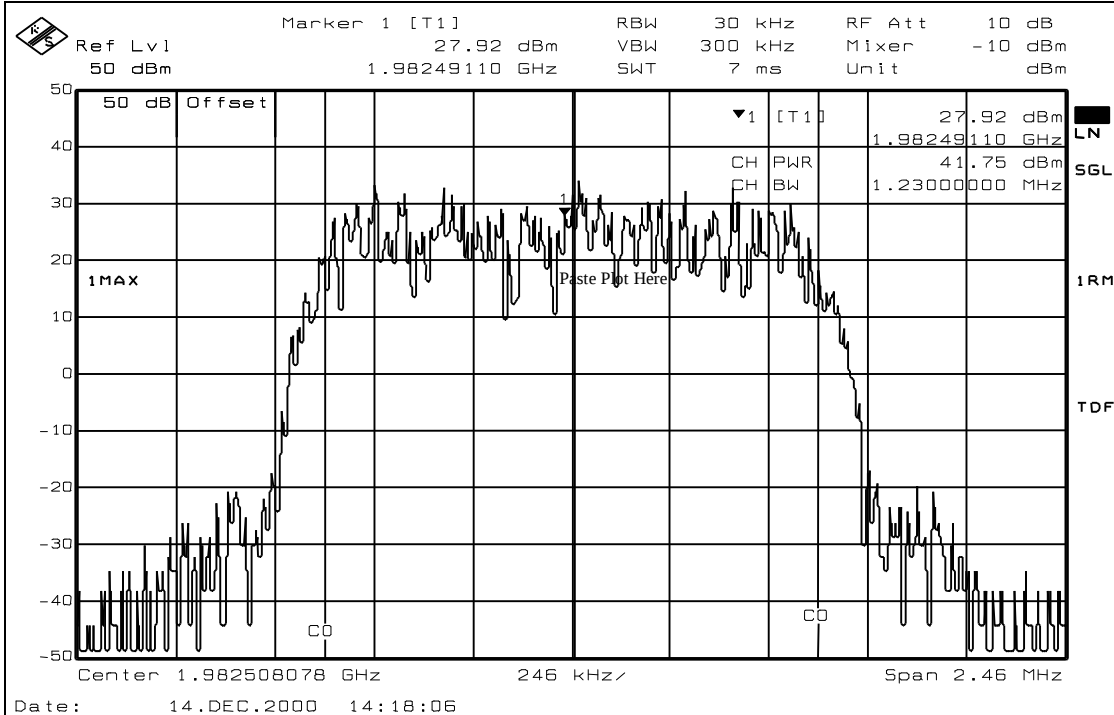
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Job No.: 0L0471R Date: 12/14/00
Specification: PART 24 Temperature(°C): 22
Tested By: David Light Relative Humidity(%) 50
E.U.T.: INDOOR BTS
Configuration: TRANSMIT ONE CDMA CHANNEL - FULL POWER - C BLOCK
Serial Number: NONE
Location: SAMSUNG (IN SITU) RBW: 30 kHz
Detector Type: Rms VBW: 300 kHz

Test Equipment Used

Antenna: #N/A Directional Coupler: #N/A
Pre-Amp: #N/A Cable #1: #N/A
Filter: #N/A Cable #2: #N/A
Receiver: 1036 Cable #3: #N/A
Attenuator #1: 1471 Cable #4: #N/A
Attenuator #2: #N/A Mixer: #N/A

Additional equipment used: 1048 BIRD ATTENUATOR MODEL 1000-WA-FFN-30 (PROPERTY OF SAMSUNG)
Measurement
Uncertainty: #N/A



Notes:

EQUIPMENT: [V4 Outdoor BTS](#)

FCC ID: NP8SCBS-419M

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NAME OF TEST: Occupied Bandwidth (CDMA)	PARA. NO.: 2.1049
TESTED BY: David Light	DATE: 12/14/00

Test Results:

Complies.

Test Data:

See attached plot(s).

EQUIPMENT: V4 Outdoor BTS

FCC ID: NP8SCBS-419M

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Test Data - Occupied Bandwidth (CDMA)

Test Plot: RF POWER OUT

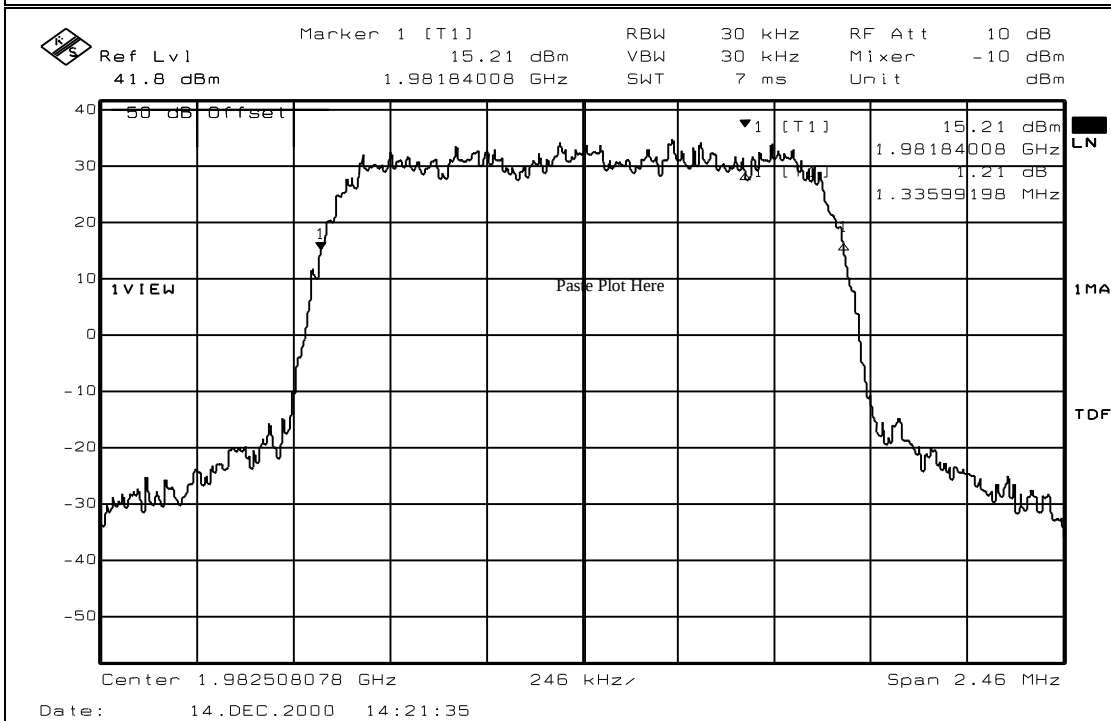
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Job No.:	0L0471R	Date:	12/14/00
Specification:	PART 24	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	50
E.U.T.:	INDOOR BTS		
Configuration:	TRANSMIT ONE CDMA CHANNEL - FULL POWER - C BLOCK		
Serial Number:	NONE		
Location:	SAMSUNG (IN SITU)	RBW:	30 kHz
Detector Type:	Peak	VBW:	30 kHz

Test Equipment Used	
Antenna:	#N/A
Pre-Amp:	#N/A
Filter:	#N/A
Receiver:	1036
Attenuator #1:	1471
Attenuator #2:	#N/A
Directional Coupler:	#N/A
Cable #1:	#N/A
Cable #2:	#N/A
Cable #3:	#N/A
Cable #4:	#N/A
Mixer:	#N/A

Additional equipment used: 1048 BIRD ATTENUATOR MODEL 1000-WA-FFN-30 (PROPERTY OF SAMSUNG)

Measurement Uncertainty: #N/A



Notes:

EQUIPMENT: **V4 Outdoor BTS**

FCC ID: NP8SCBS-419M

REPORT NO.: **1L0042RUS1**

NAME OF TEST: Occupied Bandwidth (GSM)

PARA. NO.: 2.1049

TESTED BY:

DATE:

Test Results:

Complies.

Test Data:

See attached spreadsheets

Equipment Used:

Measurement Uncertainty: +/- 1.6 dB

Temperature: °C

Relative Humidity: %

Not Applicable

EQUIPMENT: **V4 Outdoor BTS**

FCC ID: NP8SCBS-419M

REPORT NO.: **1L0042RUS1**

NAME OF TEST: Occupied Bandwidth (NADC)

PARA. NO.: 2.1049

TESTED BY:

DATE:

Test Results:

Complies.

Test Data:

See attached report

Equipment Used:

Measurement Uncertainty: +/- 1.6 dB

Temperature: °C

Relative Humidity: %

Not Applicable

EQUIPMENT: [V4 Outdoor BTS](#)

FCC ID: NP8SCBS-419M

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Section 5. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions @ Antenna Terminals	PARA. NO.: 2.1051
TESTED BY: David Light	DATE: 12/14/00

Test Results: Complies.

Test Data:

See attached plots

EQUIPMENT: V4 Outdoor BTS

FCC ID: NP8SCBS-419M

REPORT NO.: 1L0042RUS1

Test Data - Spurious Emissions at Antenna Terminals

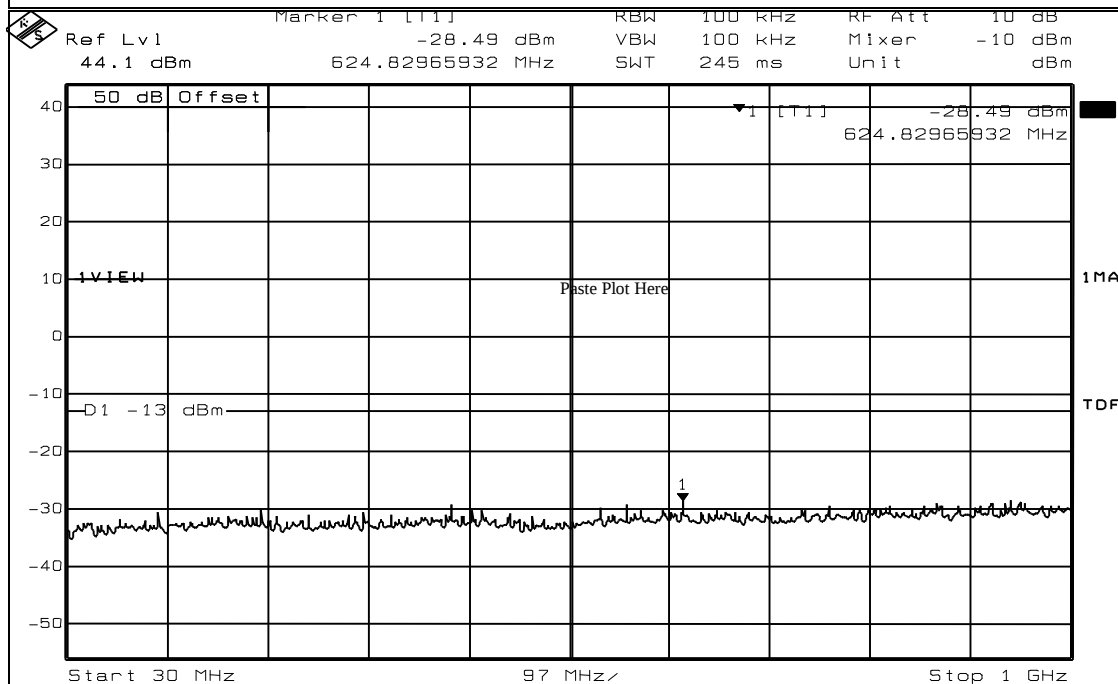
Test Plot: ANTENNA PORT SPURIOUS

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Job No.: 0L0471R Date: 12/14/00
Specification: PART 24 Temperature(°C): 22
Tested By: David Light Relative Humidity(%) 50
E.U.T.: INDOOR BTS
Configuration: TRANSMIT ONE CDMA CHANNEL - FULL POWER - C BLOCK
Serial Number: NONE
Location: SAMSUNG (IN SITU) RBW: 100 kHz < 1 GHz, 1 MHz > 1 GHz
Detector Type: Peak VBW: 100 kHz < 1 GHz, 1 MHz > 1 GHz

Test Equipment Used

Antenna: #N/A Directional Coupler: #N/A
Pre-Amp: #N/A Cable #1: #N/A
Filter: #N/A Cable #2: #N/A
Receiver: 1036 Cable #3: #N/A
Attenuator #1: 1471 Cable #4: #N/A
Attenuator #2: #N/A Mixer: #N/A
Additional equipment used: 1048 BIRD ATTENUATOR MODEL 1000-WA-FFN-30 (PROPERTY OF SAMSUNG)
Measurement Uncertainty: #N/A



Date: 14.DEC.2000 13:17:10

Notes:

EQUIPMENT: V4 Outdoor BTS

FCC ID: NP8SCBS-419M

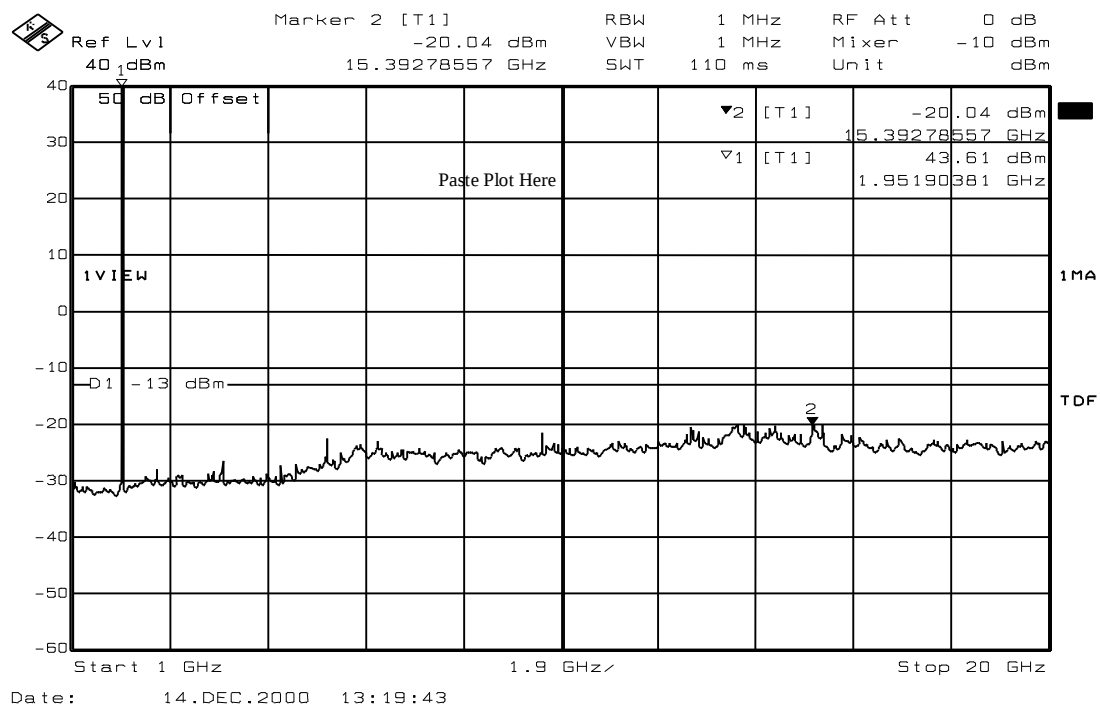
REPORT NO.: 1L0042RUS1

Test Data - Spurious Emissions at Antenna Terminals

Test Plot: ANTENNA PORT SPURIOUS

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Job No.: 0L0471R Date: 12/14/00
Specification: PART 24 Temperature(°C): 22
Tested By: David Light Relative Humidity(%) 50
E.U.T.: INDOOR BTS
Configuration: TRANSMIT ONE CDMA CHANNEL - FULL POWER - C BLOCK



Notes: MARKER ONE INDICATES CARRIER
MARKER TWO INDICATES HIGHEST SPURIOUS EMISSION

EQUIPMENT: V4 Outdoor BTS

FCC ID: NP8SCBS-419M

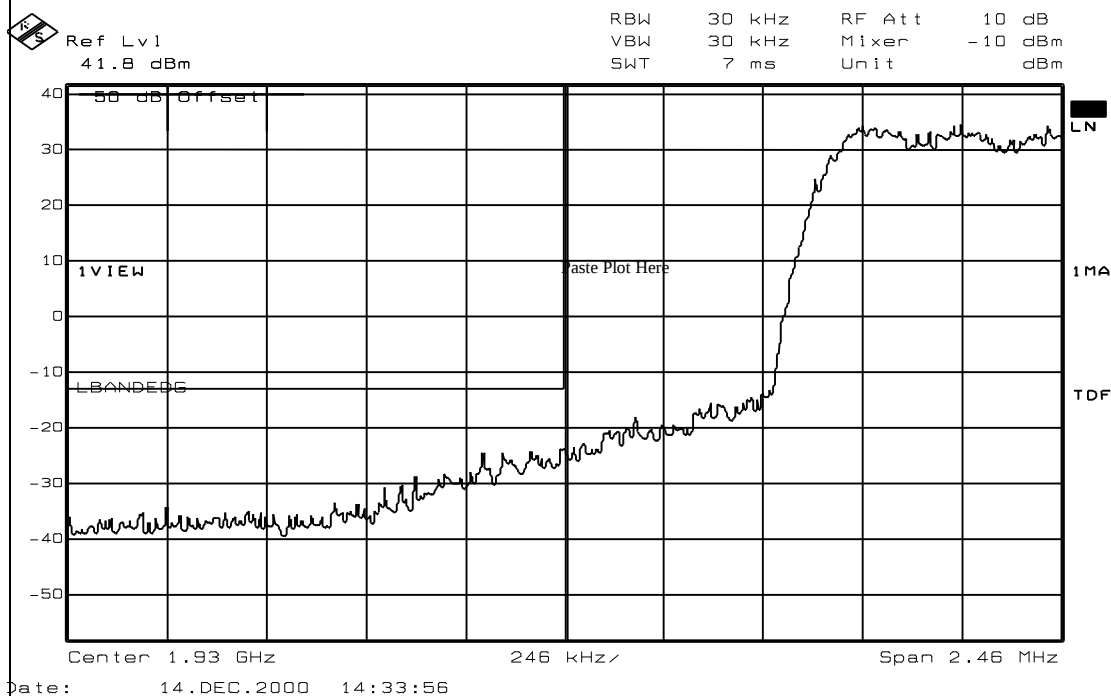
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Test Data - Spurious Emissions at Antenna Terminals

Test Plot: LOWER BANDEDGE

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Job No.:	0L0471R	Date:	12/14/00
Specification:	PART 24	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	50
E.U.T.:	INDOOR BTS		
Configuration:	TRANSMIT ONE CDMA CHANNEL - FULL POWER - CHANNEL 25		
Serial Number:	NONE		
Location:	SAMSUNG (IN SITU)	RBW:	30 kHz
Detector Type:	Peak	VBW:	30 kHz
Test Equipment Used			
Antenna:	#N/A	Directional Coupler:	#N/A
Pre-Amp:	#N/A	Cable #1:	#N/A
Filter:	#N/A	Cable #2:	#N/A
Receiver:	1036	Cable #3:	#N/A
Attenuator #1:	1471	Cable #4:	#N/A
Attenuator #2:	#N/A	Mixer:	#N/A
Additional equipment used:	1048 BIRD ATTENUATOR MODEL 1000-WA-FFN-30 (PROPERTY OF SAMSUNG)		
Measurement Uncertainty:	#N/A		



Notes:

EQUIPMENT: V4 Outdoor BTS

FCC ID: NP8SCBS-419M

REPORT NO.: 1L0042RUS1

Test Data - Spurious Emissions at Antenna Terminals

Test Plot: UPPER BANDEDGE

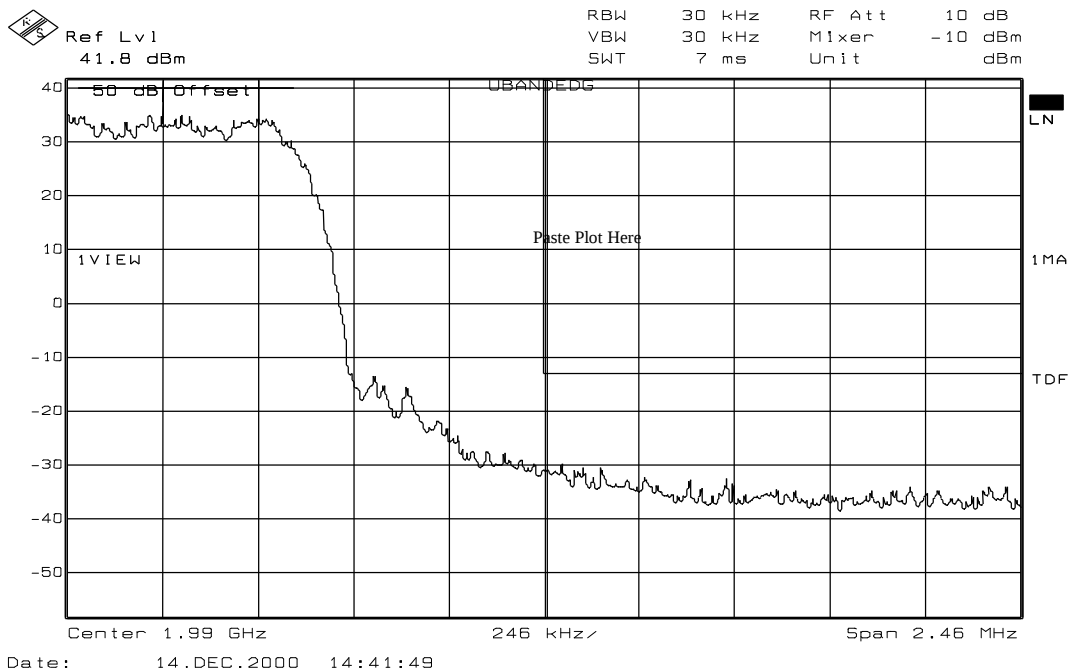
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Job No.:	0L0471R	Date:	12/14/00
Specification:	PART 24	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	50
E.U.T.:	INDOOR BTS		
Configuration:	TRANSMIT ONE CDMA CHANNEL - FULL POWER - CHANNEL 1175		
Serial Number:	NONE		
Location:	SAMSUNG (IN SITU)	RBW:	30 kHz
Detector Type:	Peak	VBW:	30 kHz

Test Equipment Used	
Antenna:	#N/A
Pre-Amp:	#N/A
Filter:	#N/A
Receiver:	1036
Attenuator #1:	1471
Attenuator #2:	#N/A
Directional Coupler:	#N/A
Cable #1:	#N/A
Cable #2:	#N/A
Cable #3:	#N/A
Cable #4:	#N/A
Mixer:	#N/A

Additional equipment used: 1048 BIRD ATTENUATOR MODEL 1000-WA-FFN-30 (PROPERTY OF SAMSUNG)

Measurement Uncertainty: #N/A



Notes:

EQUIPMENT: V4 Outdoor BTS

FCC ID: NP8SCBS-419M

REPORT NO.: 1L0042RUS1

Test Data - Spurious Emissions at Antenna Terminals

Test Plot: INTERMODULATION CHARACTERISTICS

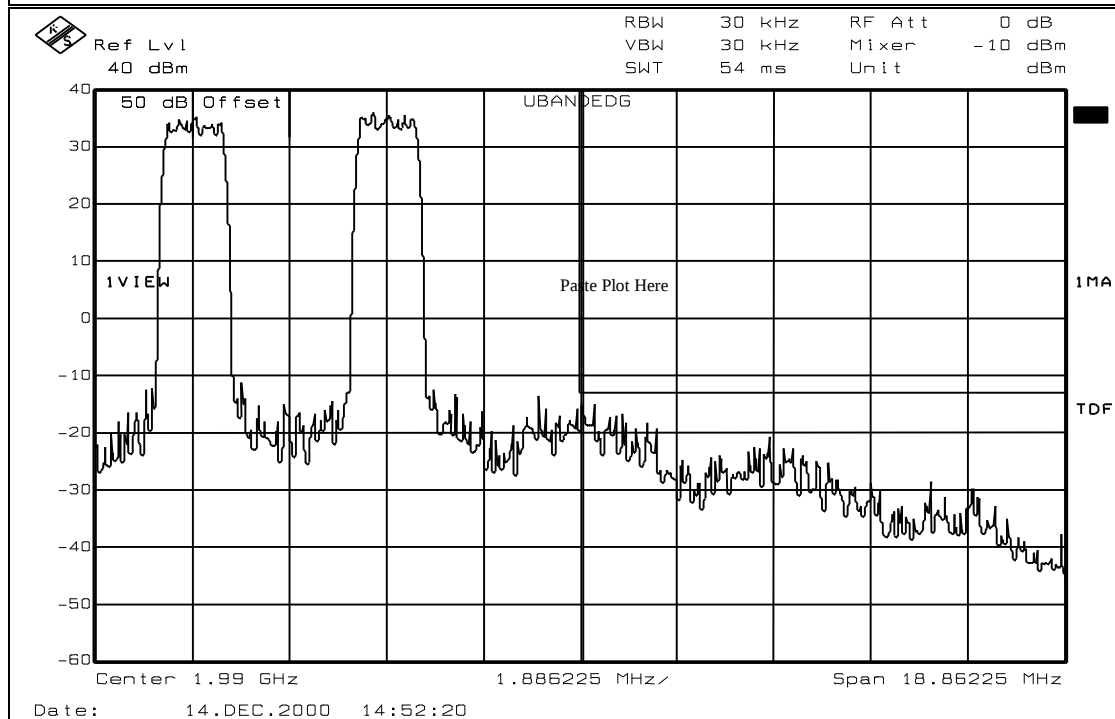
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Job No.: 0L0471R Date: 12/14/00
Specification: PART 24 Temperature(°C): 22
Tested By: David Light Relative Humidity(%) 50
E.U.T.: INDOOR BTS
Configuration: TRANSMIT TWO CDMA CHANNELS - FULL POWER - C BLOCK
Serial Number: NONE
Location: SAMSUNG (IN SITU) RBW: 30 kHz
Detector Type: Peak VBW: 30 kHz

Test Equipment Used

Antenna: #N/A Directional Coupler: #N/A
Pre-Amp: #N/A Cable #1: #N/A
Filter: #N/A Cable #2: #N/A
Receiver: 1036 Cable #3: #N/A
Attenuator #1: 1471 Cable #4: #N/A
Attenuator #2: #N/A Mixer: #N/A

Additional equipment used: 1048 BIRD ATTENUATOR MODEL 1000-WA-FFN-30 (PROPERTY OF SAMSUNG)
Measurement
Uncertainty: #N/A



Notes:

EQUIPMENT: [V4 Outdoor BTS](#)

FCC ID: NP8SCBS-419M

REPORT NO.: [1L0042RUS1](#)

Section 6. Field Strength of Spurious

NAME OF TEST: Field Strength of Spurious Emissions	PARA. NO.: 2.1051
TESTED BY: David Light	DATE: 02/22/01

Test Results: Complies.

Test Data: See attached table.

EQUIPMENT: V4 Outdoor BTS

FCC ID: NP8SCBS-419M

REPORT NO.: 1L0042RUS1

Test Data – Field Strength of Spurious Emissions



Nemko Dallas, Inc.

Dallas Headquarters:

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

Field Strength of Spurious Emissions										
Page <u>1</u> of <u>1</u>						Complete <u>X</u>				
Job No.:	1L0042R		Date:		2/22/01		Preliminary _____			
Specification:	PART 24		Temperature(°C):		<u>22</u>					
Tested By:	<u>David Light</u>		Relative Humidity(%)		<u>50</u>					
E.U.T.:	<u>OUTDOOR BASE STATION</u>									
Configuration:	<u>TX CHANNEL 600 - FULL POWER</u>									
Sample No:	_____									
Location:	<u>AC 1</u>		RBW:		<u>1 MHz</u>		Measurement			
Detector Type:	<u>Peak</u>		VBW:		<u>1 MHz</u>		Distance: <u>3 m</u>			
Test Equipment Used										
Antenna:	<u>993</u>		Directional Coupler:		_____					
Pre-Amp:	_____		Cable #1:		<u>1484</u>					
Filter:	_____		Cable #2:		<u>1485</u>					
Receiver:	<u>1036</u>		Cable #3:		_____					
Attenuator #1	_____		Cable #4:		_____					
Attenuator #2:	_____		Mixer:		_____					
Additional equipment used: _____										
Measurement Uncertainty: <u>+/-3.6 dB</u>										
Frequency (MHz)	Meter Reading (dBm)	Correction Factor (dB)		Pre-Amp Gain (dB)	Substitution Antenna Gain (dBd)		ERP (dBm)	ERP (mW)	Polarity	Comments
1960	-30.5	32.7		33.3	6.4		-24.8	0.003342	H	CARRIER
3920	-66.0	34.3		33.4	8.0		-57.1	0.000002	H	NOISE FLOOR
5880	-65.0	36.0		32	9.1		-51.9	0.000006	H	NF
7840	-64.0	39.8		33.4	9.4		-48.2	0.000015	H	NF
9800	-64.0	42.6		36.1	10.5		-47.0	0.000020	H	NF
11760	-64.0	46.0		36.6	11.0		-43.6	0.000044	H	NF
13720	-62.0	50.8		34.2	10.4		-35.0	0.000320	H	NF
1960	-31.7	29.9		33.3	6.4		-28.8	0.001318	V	CARRIER
3920	-66.0	40.4		33.4	8.0		-51.0	0.000008	V	NF
5880	-65.0	38.5		32	9.1		-49.4	0.000011	V	NF
7840	-64.0	40.4		33.4	9.4		-47.5	0.000018	V	NF
9800	-64.0	40.4		36.1	10.5		-49.2	0.000012	V	NF
11760	-64.0	42.5		36.6	11.0		-47.1	0.000020	V	NF
13720	-62.0	47.6		34.2	10.4		-38.2	0.000153	V	NF
Notes: SEARCHED SPECTRUM TO 10th HARMONIC OF CARRIER ONLY NOISE FLOOR READINGS WERE FOUND										

EQUIPMENT: [V4 Outdoor BTS](#)

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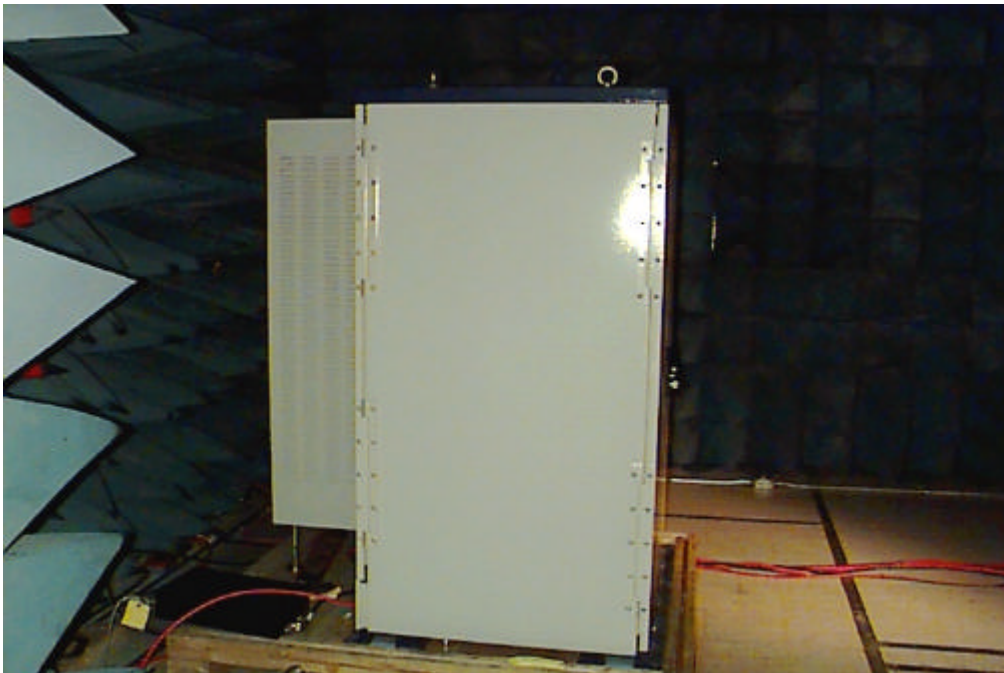
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Photographs of Test Setup

FRONT VIEW



REAR VIEW



EQUIPMENT: [V4 Outdoor BTS](#)*FCC ID:* NP8SCBS-419MREPORT NO.: [1L0042RUS1](#)

Section 7. Frequency Stability

NAME OF TEST: Frequency Stability	PARA. NO.: 2.1055
TESTED BY: David Light	DATE: 02/21/01

Test Results: Complies**Measurement Data:** Standard Test Frequency: 1960 MHz
 Standard Test Voltage: 27 Vdc

EQUIPMENT: V4 Outdoor BTS

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Test data - Frequency Stability



Nemko Dallas, Inc.

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

Frequency Stability

Client: SAMSUNGW.O.# 1L0042REUT: OUTDOOR PCS BASE STATIONS/N: NONEDate: 21 FEB 2001Tech: D. LIGHT

Test equipment: 1036-1469-1045

ETL equipment: 17-1108-1020-1225

Temperature	Voltage	Rho	Frequency Error
20 °C	27 Vdc-Nominal	0.9916	0
20 °C	31 Vdc	0.9914	-10 Hz
20 °C	23 Vdc	0.9914	-20 Hz
10 °C	27 Vdc	0.9894	-80 Hz
0 °C	27 Vdc	0.9904	-70 Hz
-10 °C	27 Vdc	0.9903	-40 Hz
-20 °C	27 Vdc	0.9906	-50 Hz
30 °C	27 Vdc	0.9900	-80 Hz
40 °C	27 Vdc	0.9904	-80 Hz
50 °C	27 Vdc	0.9907	-117 Hz

Nemko test equipment:1036-1469-1045

ETL test equipment:
017 - Environmental Chamber - CNR
1020 - Controller - Cal'd 10/13/00
1108 - Thermometer - Cal'd 11/10/00
1225 - Chart recorder - Cal'd 2/2/01

EQUIPMENT: [V4 Outdoor BTS](#)

FCC ID: NP8SCBS-419M

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Nemko ID	Description	Manufacturer	Serial Number	Calibration
		Model Number		Date
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ FSEK30	830844/006	06/14/99 2 Yr. Cycle
1471	10 dB Attenuator	MCL Inc. BW-S10W2 10db- 2WDC	NONE	CBU
1048	50 OHM LOAD	NARDA 27470	254	02/15/00
993	Horn antenna	A.H. Systems SAS-200/571	XXX	07/16/99 2 Yr. Cycle
1016	AMPLIFIER	HEWLETT PACKARD 8449A	2749A00159	05/24/00
1283	Spectrum analyzer display	Hewlett Packard 85662A	1811A00223	10/05/00
1483	Cable 4m	Storm PR90-010-144	N/A	05/23/00
	Temperature Chamber Controller	ETL	1020	10/13/00
	Chart Recorder	ETL	1225	8/30/00
	30 dB Power Attenuator	Bird 1000-WA-FFN-30	Property of Samsung	CBU

EQUIPMENT: [V4 Outdoor BTS](#)

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ANNEX A - TEST DETAILS

EQUIPMENT: V4 Outdoor BTS

FCC ID: NP8SCBS-419M

REPORT NO.: 1L0042RUS1

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 from 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

EQUIPMENT: [V4 Outdoor BTS](#)

FCC ID: NP8SCBS-419M

REPORT NO.: [1L0042RUS1](#)

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: $\geq$ RBW

Span: 5 MHz

Sweep: Auto

GSM Per ANSI/J-STD-010

RBW: 3 kHz

VBW: $\geq$ RBW

Span: 2 MHz

Sweep: Auto

NADC Per IS-136

RBW: 1 kHz

VBW: $\geq$ RBW

Span: 1 MHz

Sweep: Auto

EQUIPMENT: [V4 Outdoor BTS](#)

FCC ID: NP8SCBS-419M

REPORT NO.: [1L0042RUS1](#)

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

EQUIPMENT: V4 Outdoor BTS

FCC ID: NP8SCBS-419M

REPORT NO.: 1L0042RUS1

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 erp is the signal level fed to the reference antenna corrected for gain referenced to a dipole.

EQUIPMENT: V4 Outdoor BTS

FCC ID: NP8SCBS-419M

REPORT NO.: 1L0042RUS1

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

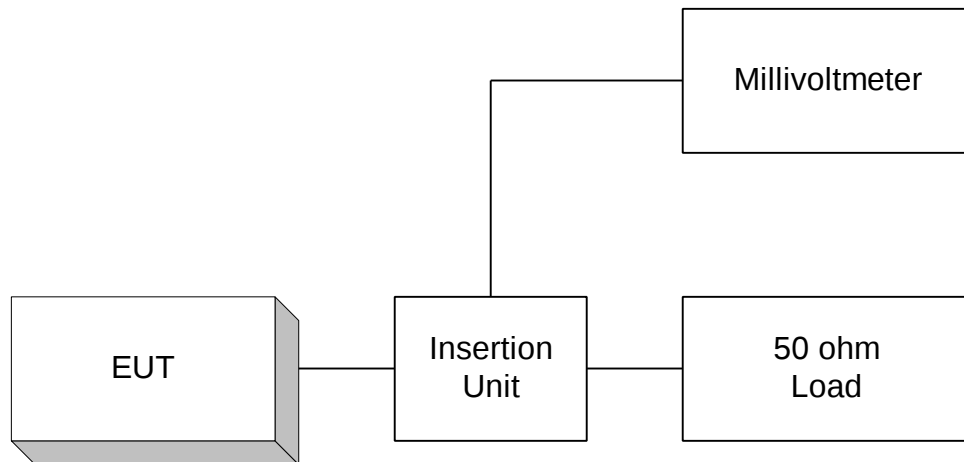
The E.U.T. is placed in an environmental chamber and allowed to stabilize at +20 degrees Celsius for at least 15 minutes. With the voltage input to the E.U.T. set to 85% S.T.V., the frequency is measured in 30 second intervals for a period of 5 minutes. This procedure is repeated at 100% S.T.V. and 115%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

Frequency Stability With Temperature Variation

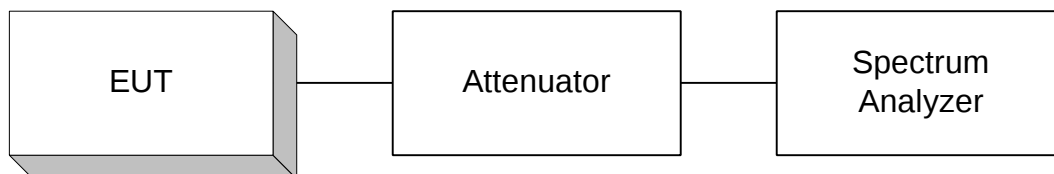
The input voltage to the E.U.T. is set to S.T.V. and the temperature of the environmental chamber is varied in 10 degree steps from -30 degrees C to +50 degrees C. The E.U.T. is allowed to stabilize at each temperature and the frequency is measured in 30 second intervals for a period of 5 minutes.

ANNEX B - TEST DIAGRAMS

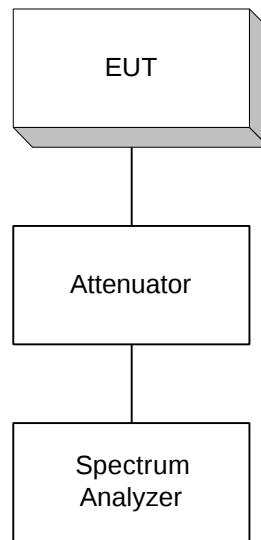
Para. No. 2.985 - R.F. Power Output



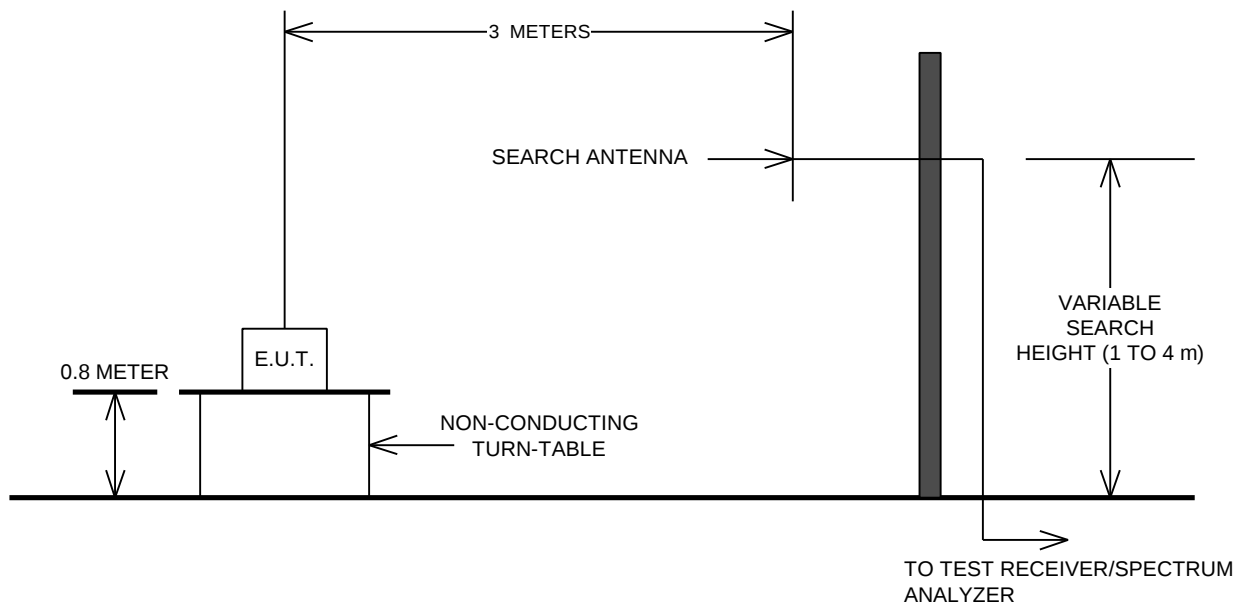
Para. No. 2.989 - Occupied Bandwidth



Para. No. 2.991 Spurious Emissions at Antenna Terminals



Para. No. 2.993 - Field Strength of Spurious Radiation



Para. No. 2.995 - Frequency Stability

