

Nemko Test Report: 1L0263RUS1

Applicant: ALLEN TELECOM
140 Vista Center Dr.
Forest, Virginia 24551

**Equipment Under Test:
(E.U.T.)** DUAL BAND BRITECELL FAST SYSTEM

In Accordance With: **FCC Part 22, Subpart H**
Cellular Band Repeaters

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

Authorized By:

A handwritten signature in black ink, appearing to read "Tom Tidwell". The signature is fluid and cursive, with the first name "Tom" and last name "Tidwell" clearly distinguishable.

Tom Tidwell, RF Group Manager

Date: 7/16/01

Total Number of Pages: 52

EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Table of Contents

SECTION 1. SUMMARY OF TEST RESULTS.....	3
SECTION 2. GENERAL EQUIPMENT SPECIFICATION	5
SECTION 3. RF POWER OUTPUT	7
SECTION 4. OCCUPIED BANDWIDTH.....	8
TEST DATA --- OCCUPIED BANDWIDTH – VOICE	9
SECTION 5. SPURIOUS EMISSIONS AT ANTENNA TERMINALS	17
SECTION 6. FIELD STRENGTH OF SPURIOUS	32
SECTION 7. FREQUENCY STABILITY	35
SECTION 8. TEST EQUIPMENT LIST	36
ANNEX A - TEST DETAILS	37
ANNEX B - TEST DIAGRAMS.....	46

EQUIPMENT: **DUAL BAND BRITECELL FAST SYSTEM**

FCC ID:

PROJECT NO.:

1L0263RUS1

Section 1. Summary of Test Results

Manufacturer: ALLEN TELECOM

Model No.: DUAL BAND BRITECELL FAST SYSTEM

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 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.

See " Summary of Test Data".

**NVLAP LAB CODE: 100426-0**

Nemko Dallas Inc. authorizes the above named company to reproduce this report provided it is reproduced in its entirety and for use by the company's employees only.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Nemko Dallas Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This report applies only to the items tested.

EQUIPMENT: **DUAL BAND BRITECELL FAST SYSTEM**

FCC ID:

PROJECT NO.:

1L0263RUS1

Summary Of Test Data

	PARA. NO.			
RF Power Output	22.913(a)	500W ERP	< 500W ERP	Complies
Occupied Bandwidth (Voice & SAT)	22.917(c)	Mask	Plot	Complies
Occupies Bandwidth (Wideband Data)	22.917(d)	Mask	Plot	Complies
Occupied Bandwidth (ST)	22.917(d)	Mask	Plot	Complies
Occupied Bandwidth (Digital)	None	None	Plot	Complies
Spurious Emissions at Antenna Terminals	22.917	-13 dBm	< -13dBm	Complies
Field Strength of Spurious Emissions	22.917	-13 dBm E.I.R.P.	< -13dBm	Complies
Frequency Stability	22.355	1.5 ppm	N/A	N/A

Footnotes: E.U.T is an F1 to F1 repeater. Frequency stability was not measured**Measurement uncertainty for each test configuration is expressed to 95% probability.**

.

EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Section 2. General Equipment Specification

Supply Voltage Input:	- 48 VDC				
Frequency Range:	Downlink:	869 – 894 MHz			
Frequency Range:	Uplink:	824 – 849 MHz			
	CDMA (F9W)	GSM (GXW)	NADC (DXW)	CDPD (F9W)	AMPS (F8W, F1D)
	☒	☐	☒	☐	☒
Output Impedance:	50 ohms				
RF Output (Rated):	Downlink:	1 Carrier	19	dBm	
		2 Carriers	14	dBm	
		3 Carriers	12	dBm	
		4 Carriers	11	dBm	
Frequency Translation:	F1-F1	F1-F2	N/A		
	☒	☐	☐		
	Software	Duplexer Change	Fullband Coverage		
	☐	☐	☒		

EQUIPMENT: **DUAL BAND BRITECELL FAST SYSTEM**

FCC ID:

PROJECT NO.:

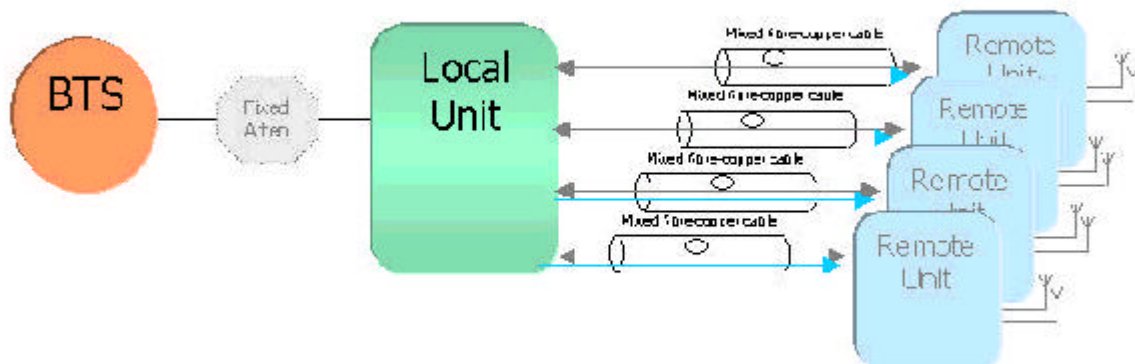
1L0263RUS1

Description of Operation

BRITECELL™ FAST is a plug and play BriteCell kit, offering the most suitable solution for indoor coverage in small areas, thanks to its compactness and absolute easiness to install. The package includes up to four compact RF remote transceivers (TFAF), driven by one local distribution unit (TFLF). It is available in various frequency ranges (from 800MHz up to 2200 MHz), as a single band product. It is aimed to satisfy the requirements of 2nd and 3rd generation mobile networks for simple coverage needs.

The TFLF local unit has been properly designed into a stand-alone mechanical case, including all required ancillary and support functions. The kit includes also four standard TFAF Remote units and a compound fiber-copper cable to connect them to local unit. The installed units can be later kept also in case of system expansion to a fully modular BriteCell configuration, both single band or dual band, with a minimum setting effort. Both TFL and TFA can be optionally hosted into TKA mounting kits, allowing outdoor installation if required.

System Diagram



EQUIPMENT: **DUAL BAND BRITECELL FAST SYSTEM**

FCC ID:

PROJECT NO.:

1L0263RUS1

Section 3. RF Power Output

NAME OF TEST: RF Power Output	PARA. NO.: 2.1046
TESTED BY: Chinda Poy	DATE: 6/28/01

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

	Modulation Type	Per Channel Power Output (dBm)	Composite Power Output (dBm)
Uplink	AMPS	N/A	N/A
Downlink	AMPS	13.4 dBm	16.4 dBm
Uplink	CDMA	N/A	N/A
Downlink	CDMA	14.76 dBm	17.76 dBm
Uplink	NADC	N/A	N/A
Downlink	NADC	19.8 dBm	22.8 dBm

Equipment Used: 1036-1043-1474**Measurement Uncertainty:** +/- 1.7 dB**Temperature:** 24 °C**Relative Humidity:** 30 %

EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Section 4. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth (Digital Mod.)	PARA. NO.: 2.1049
TESTED BY: Chinda Poy	DATE: 6/28/01

Test Results: Complies.

Test Data: See attached plots

Equipment Used: 1036-1474-1043

Measurement Uncertainty: +/- 1.7 dB

EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Test Data --- Occupied Bandwidth – Voice

Data Plot Occupied Bandwidth Analog

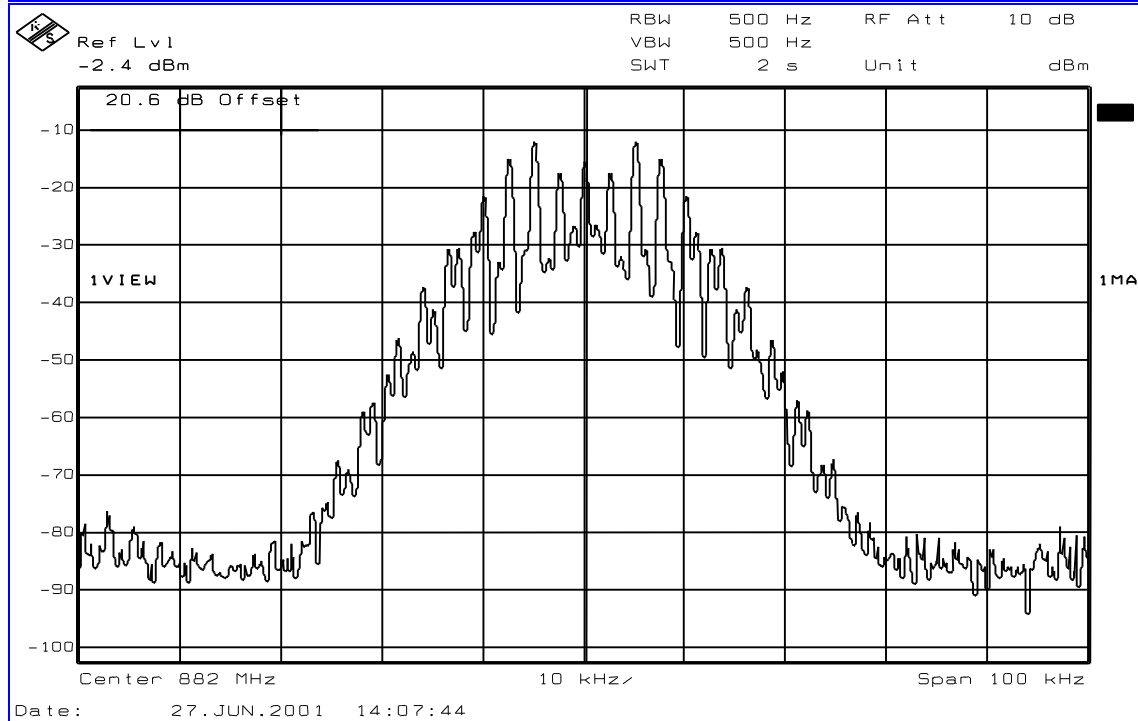
Page 1 of 2

Job No.: 1L0263R Date: 6/27/01 Complete X
Preliminary _____

Specification: 2.1049 Temperature(°C): 24
Tested By: Chinda Poy Relative Humidity(%) 30
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
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: 1043
Filter: _____ Cable #2: _____
Receiver: 1036 Cable #3: _____
Attenuator #1: 1474 Cable #4: _____
Attenuator #2: _____ Mixer: _____
Additional equipment used: _____
Measurement Uncertainty: +/-3.6 dB



Notes: Output Signal Voice and SAT
DOWNLINK

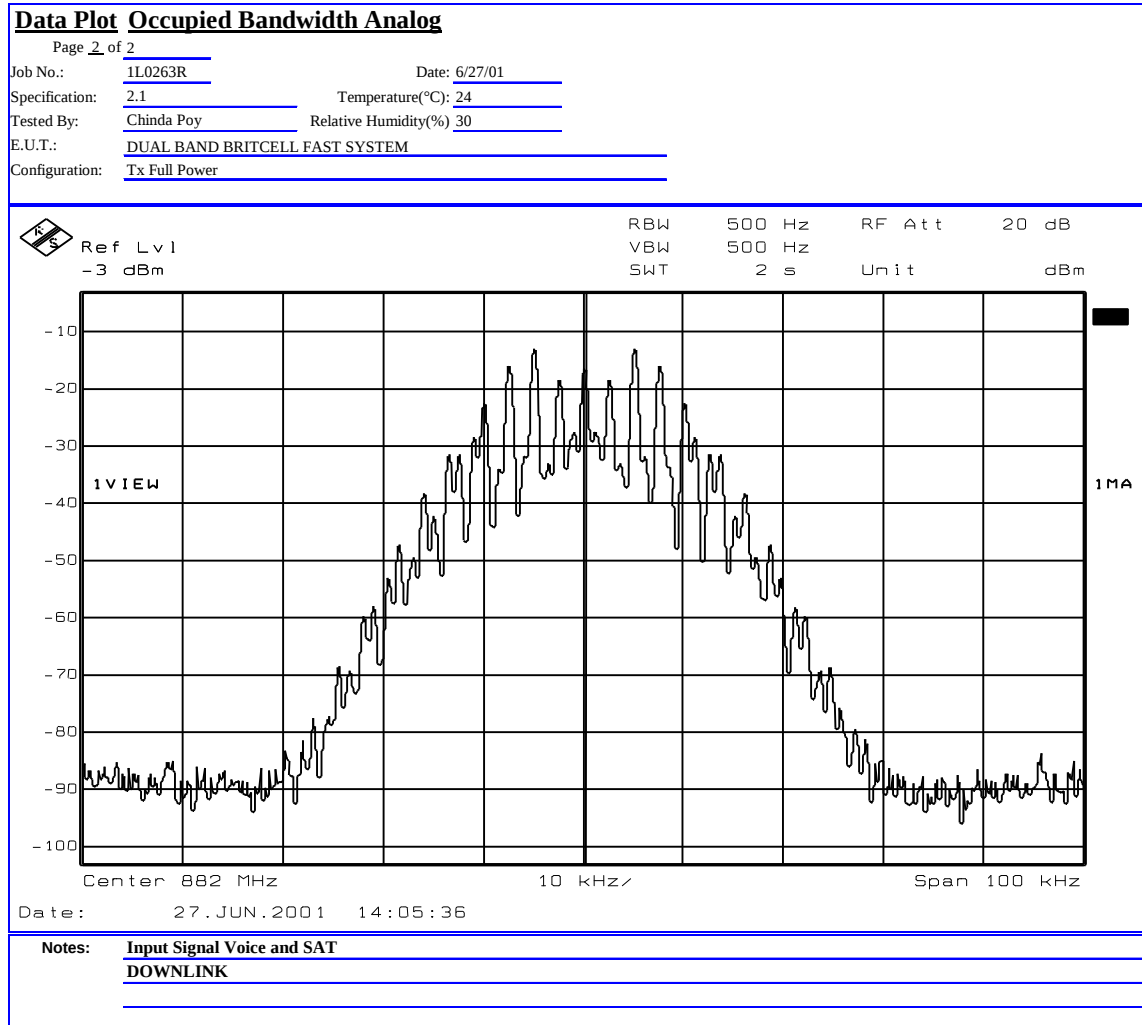
EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Test Data --- Occupied Bandwidth – Voice



EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Test Data --- Occupied Bandwidth – 2FSK

Data Plot Occupied Bandwidth 2FSK

Page 1 of 2

Complete XPreliminary

Job No.: 1L0263R

Date: 6/27/01

Specification: Part 22

Temperature(°C): 24

Tested By: Chinda Poy

Relative Humidity(%) 38

E.U.T.:

Dual Band Britcell Fast System

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: 1043

Filter:

Cable #2:

Receiver: 1036

Cable #3:

Attenuator #1: 1474

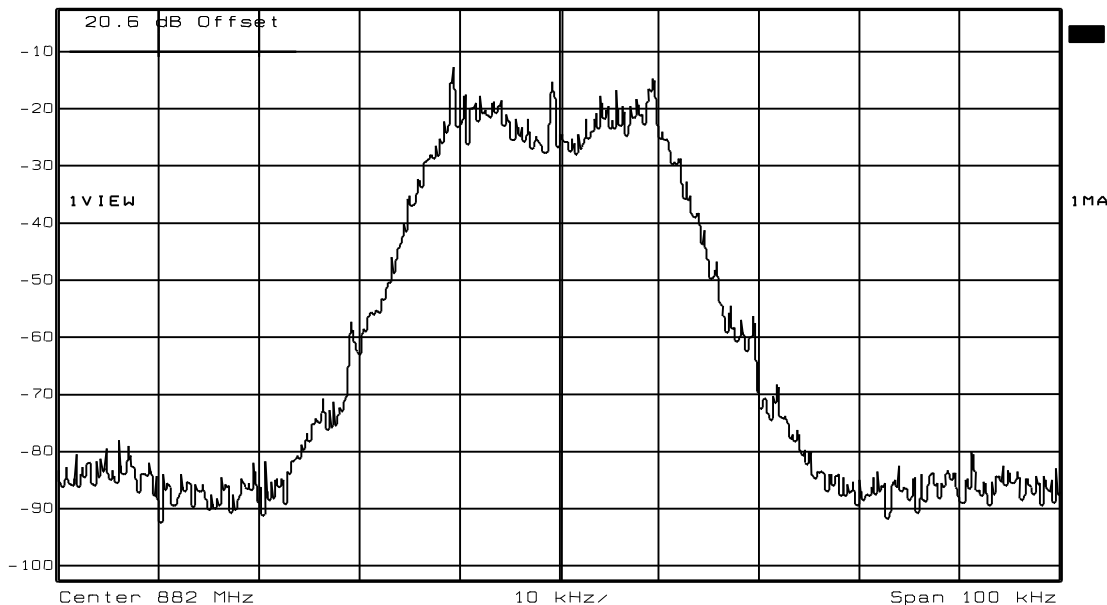
Cable #4:

Attenuator #2:

Mixer:

Additional equipment used:

Measurement Uncertainty: +/-3.6 dB

Ref Lvl
-2.4 dBmRBW 500 Hz RF Att 10 dB
VBW 500 Hz
SWT 2 s Unit dBm

Date: 27.JUN.2001 13:56:13

Notes: Output Signal 2FSK

DOWNLINK

EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

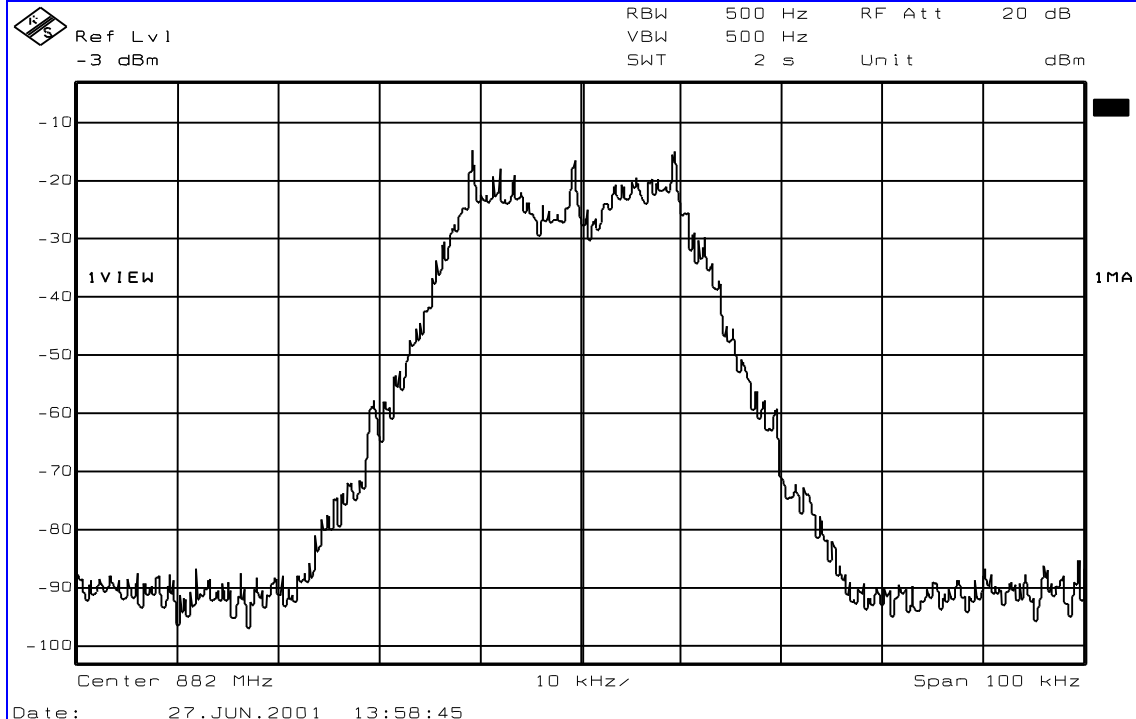
1L0263RUS1

Test Data --- Occupied Bandwidth – 2FSK

Data Plot Occupied Bandwidth 2FSK

Page 2 of 2

Job No.: 1L0263R Date: 6/27/01
Specification: Part 22 Temperature(°C): 24
Tested By: Chinda Poy Relative Humidity(%) 38
E.U.T.: Dual Band Britcell Fast System
Configuration: Tx Full Power



Notes: Input Signal 2FSK
DOWNLINK

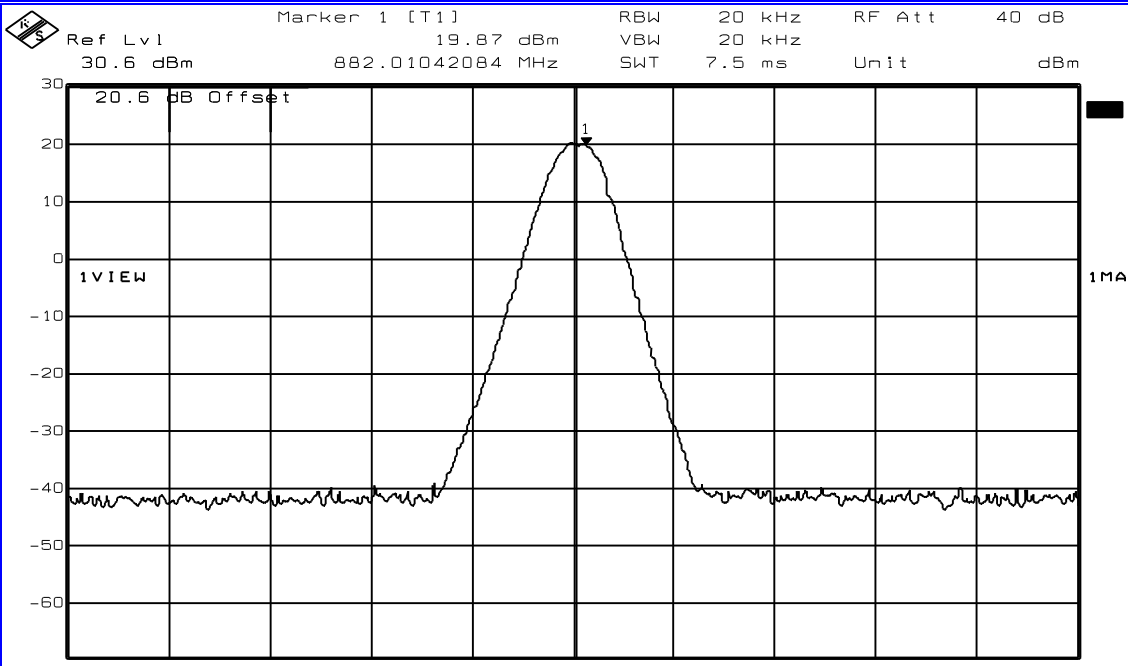
EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Test Data --- Occupied Bandwidth – TDMA

Data Plot Occupied Bandwidth TDMA	
Page 1 of 2	
Job No.: 1L0263R	Date: 6/27/01
Specification: Part 22	Temperature(°C): 24
Tested By: Chinda Poy	Relative Humidity(%) 30
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM	
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: 1043
Filter:	Cable #2:
Receiver: 1036	Cable #3:
Attenuator #1: 1474	Cable #4:
Attenuator #2:	Mixer:
Additional equipment used:	
Measurement Uncertainty: +/-3.6 dB	
	
Date: 27.JUN.2001 14:28:29	
Notes: Output Signal TDMA	
DOWNLINK	

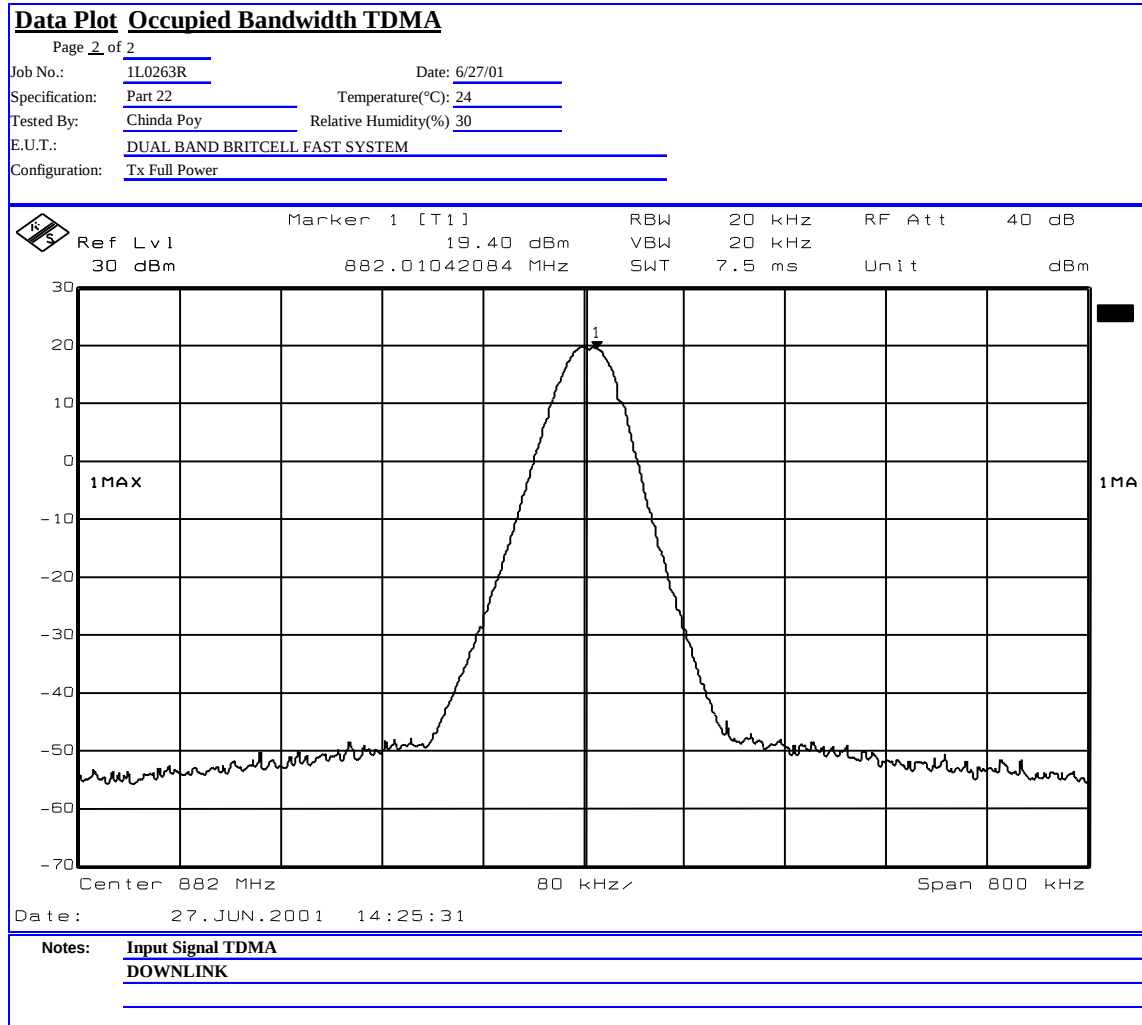
EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Test Data --- Occupied Bandwidth – TDMA



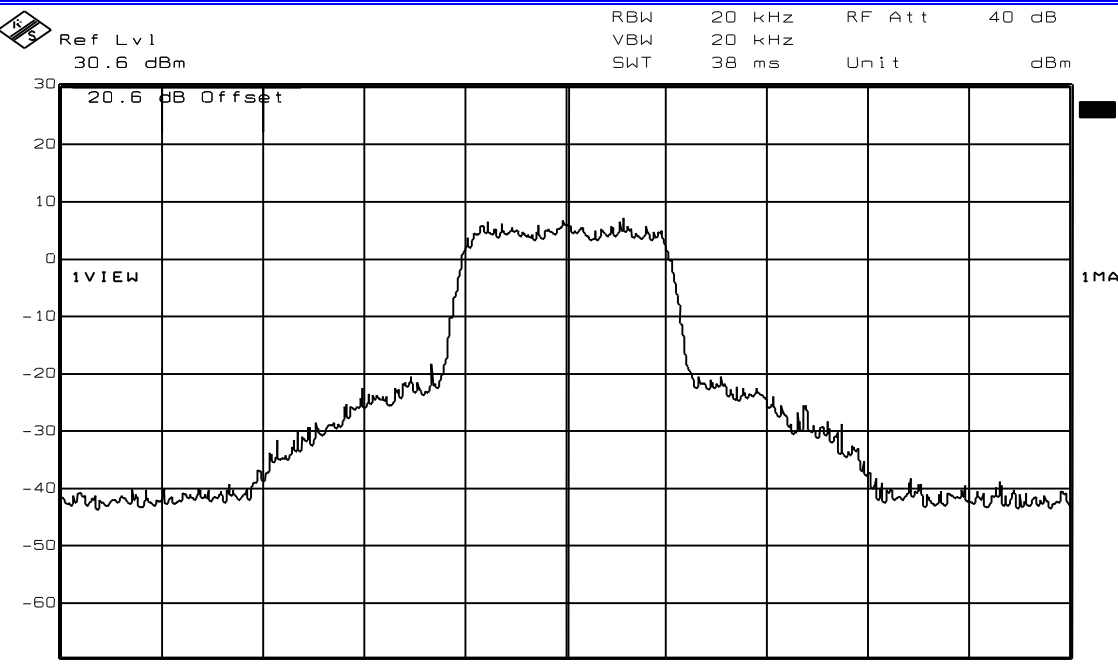
EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Test Data --- Occupied Bandwidth – CDMA

Data Plot Occupied Bandwidth CDMA	
Page 1 of 2	
Job No.: 1L0263R	Date: 6/27/01
Specification: Part 22	Temperature(°C): 24
Tested By: Chinda Poy	Relative Humidity(%) 30
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM	
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: 1043
Filter:	Cable #2:
Receiver: 1036	Cable #3:
Attenuator #1: 1474	Cable #4:
Attenuator #2:	Mixer:
Additional equipment used:	
Measurement Uncertainty: +/-3.6 dB	
	
Date: 27.JUN.2001 15:00:09	
Notes: Output Signal CDMA	
DOWNLINK	

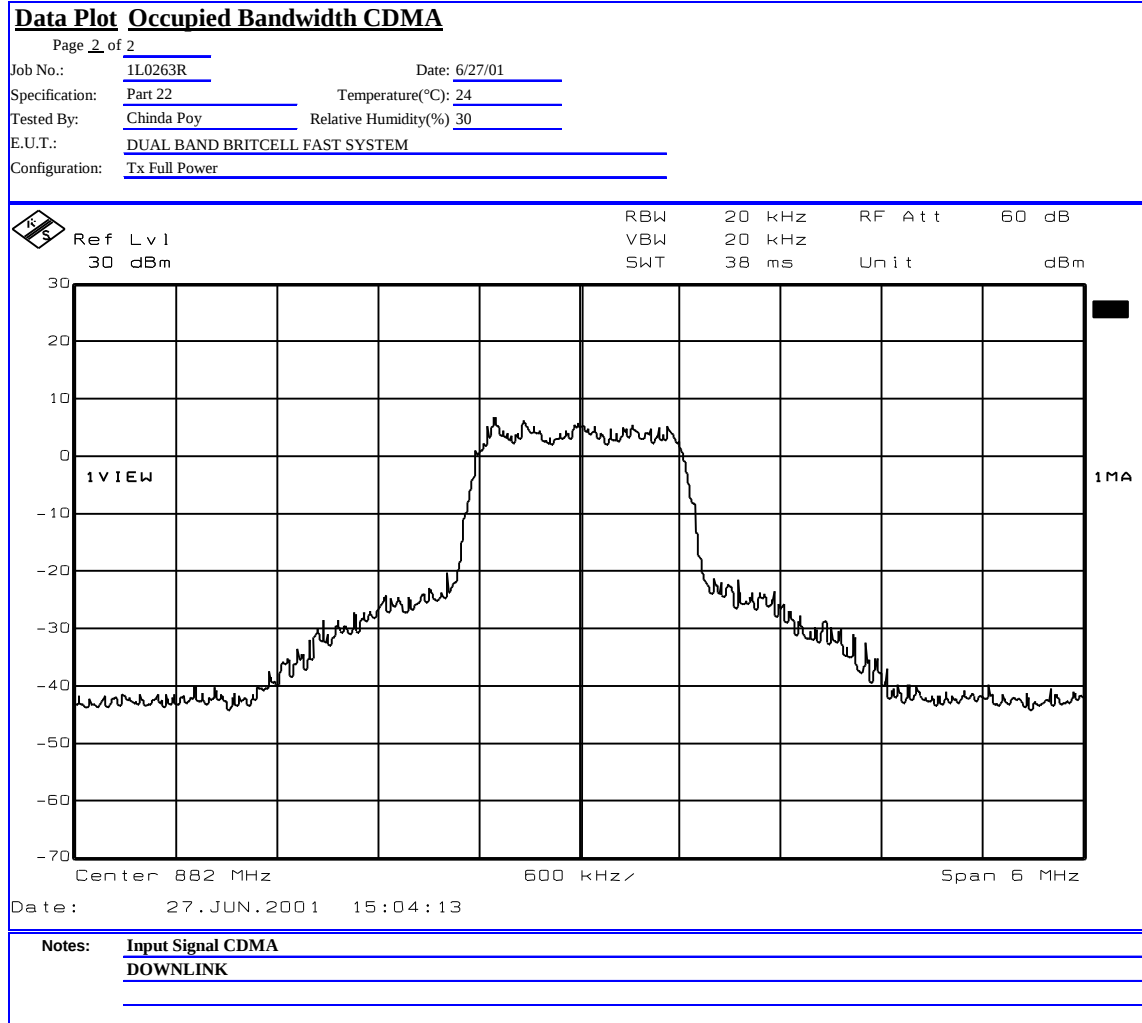
EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Test Data --- Occupied Bandwidth - CDMA



EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Section 5. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions @ Antenna Terminals	PARA. NO.: 2.1051
TESTED BY: Chinda Poy	DATE: 6/28/01

Test Results: Complies.

Test Data: See attached plots

Equipment Used: 1036-1043-1474

Measurement Uncertainty: +/- 1.6 dB

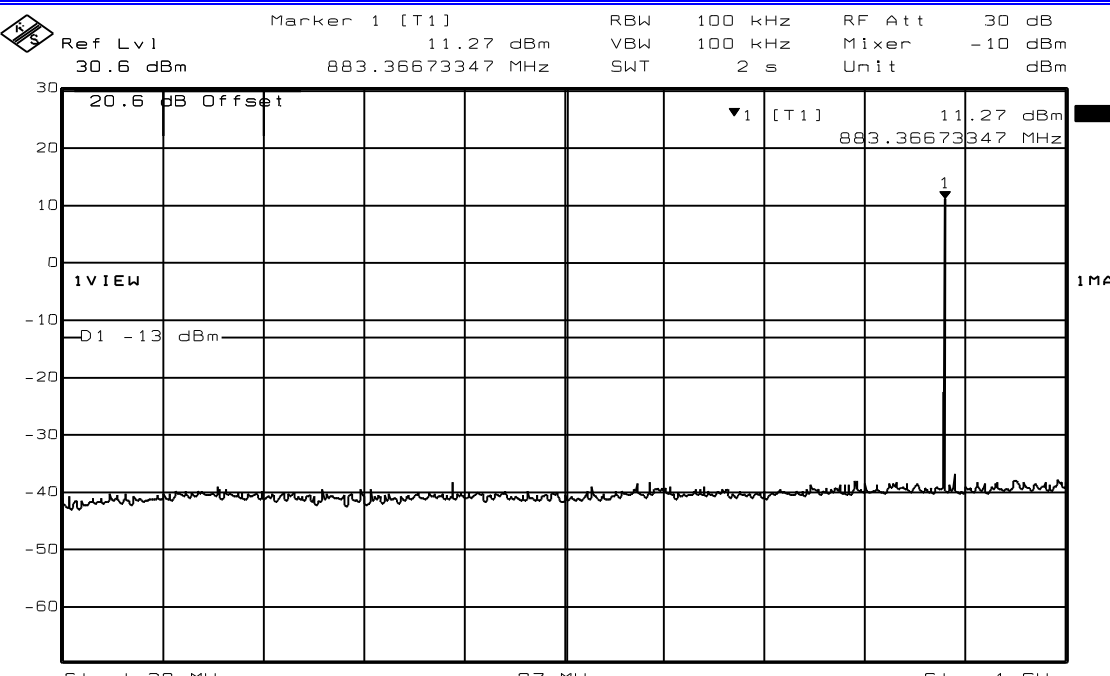
EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Test data --- Spurious Emissions at Antenna Terminals

Data Plot SPURIOUS EMISSIONS AT ANTENNA TERMINALS / ANALOG			
Page 1 of 4		Complete ☒ X	
Job No.:	1L0263R	Date:	6/28/01
Specification:	Part 22	Temperature(°C):	22
Tested By:	Chinda Poy	Relative Humidity(%):	50
E.U.T.:	DUAL BAND BRITCELL FAST SYSTEM		
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:	1043
Filter:		Cable #2:	
Receiver:	1036	Cable #3:	
Attenuator #1:	1474	Cable #4:	
Attenuator #2:		Mixer:	
Additional equipment used:			
Measurement Uncertainty:	+/-3.6 dB		
			
Ref Lvl 30.6 dBm Marker 1 [T1] 11.27 dBm RBW 100 kHz RF Att 30 dB 30.6 dBm 883.36673347 MHz VBW 100 kHz Mixer -10 dBm SWT 2 s Unit dBm			
Start 30 MHz 97 MHz Stop 1 GHz			
Date: 28 JUN 2001 13:54:03			
Notes: 30 MHz - 1 GHz			
MARKER INDICATES CARRIER			

EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

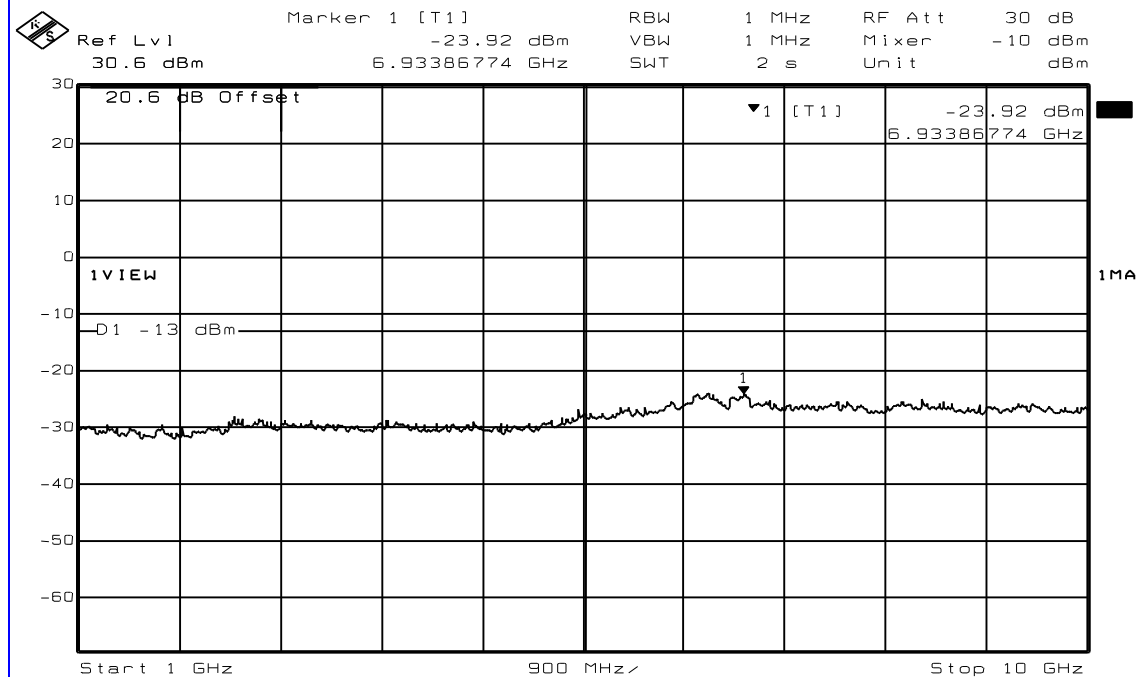
1L0263RUS1

Test data --- Spurious Emissions at Antenna Terminals

Data Plot SPURIOUS EMISSIONS AT ANTENNA TERMINALS / ANALOG

Page 2 of 4

Job No.: 1L0263R Date: 6/28/01
Specification: Part 22 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
Configuration: Tx Full Power



Date: 28.JUN.2001 13:55:18

Notes: 1 GHz - 10 GHz
MARKER INDICATES HIGHEST EMISSION

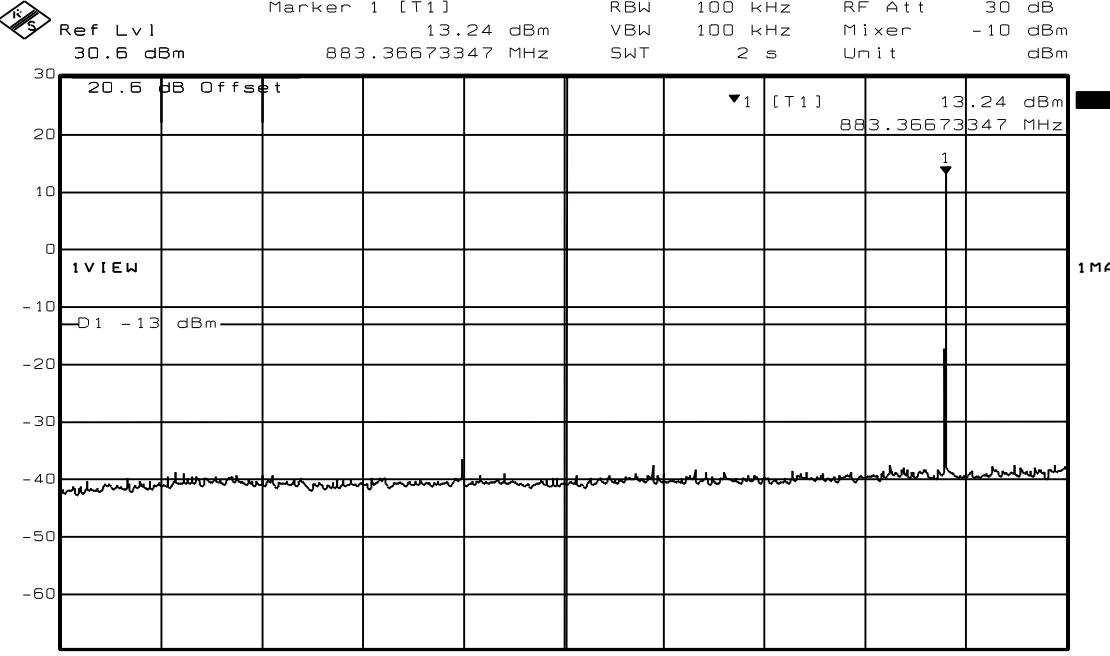
EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Test data --- Spurious Emissions at Antenna Terminals

Data Plot SPURIOUS EMISSIONS AT ANTENNA TERMINALS / TDMA			
Page 1 of 2		Complete ☒ Preliminary ☐	
Job No.:	1L0263R	Date:	6/28/01
Specification:	Part 22	Temperature(°C):	22
Tested By:	Chinda Poy	Relative Humidity(%)	50
E.U.T.:	DUAL BAND BRITCELL FAST SYSTEM		
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:	1043
Filter:		Cable #2:	
Receiver:	1036	Cable #3:	
Attenuator #1:	1474	Cable #4:	
Attenuator #2:		Mixer:	
Additional equipment used:			
Measurement Uncertainty:	+/-3.6 dB		
			
Start 30 MHz 97 MHz/ Stop 1 GHz			
Date: 28.JUN.2001 13:41:52			
Notes: 30 MHz - 1 GHz			
MARKER INDICATES CARRIER			

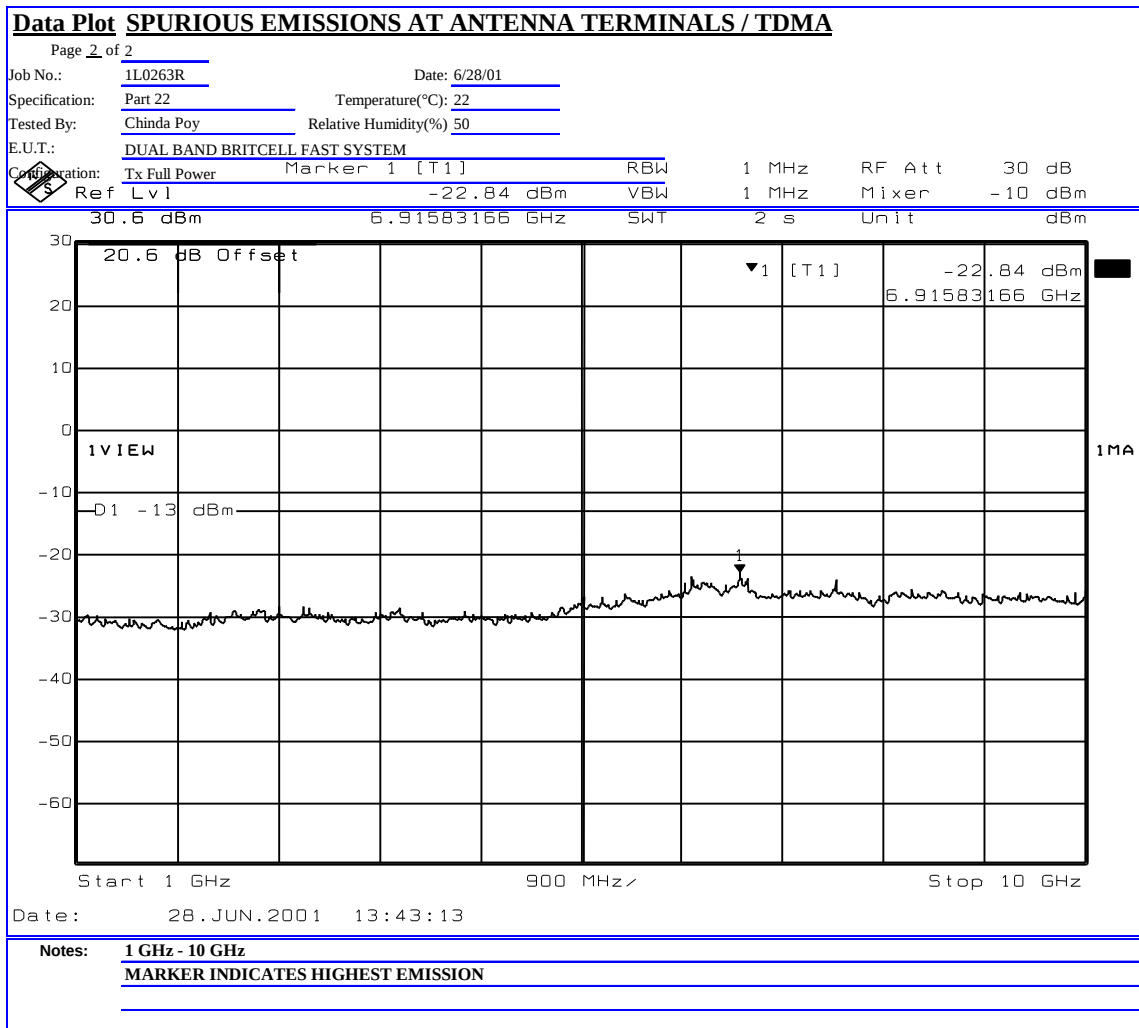
EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Test data --- Spurious Emissions at Antenna Terminals



EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

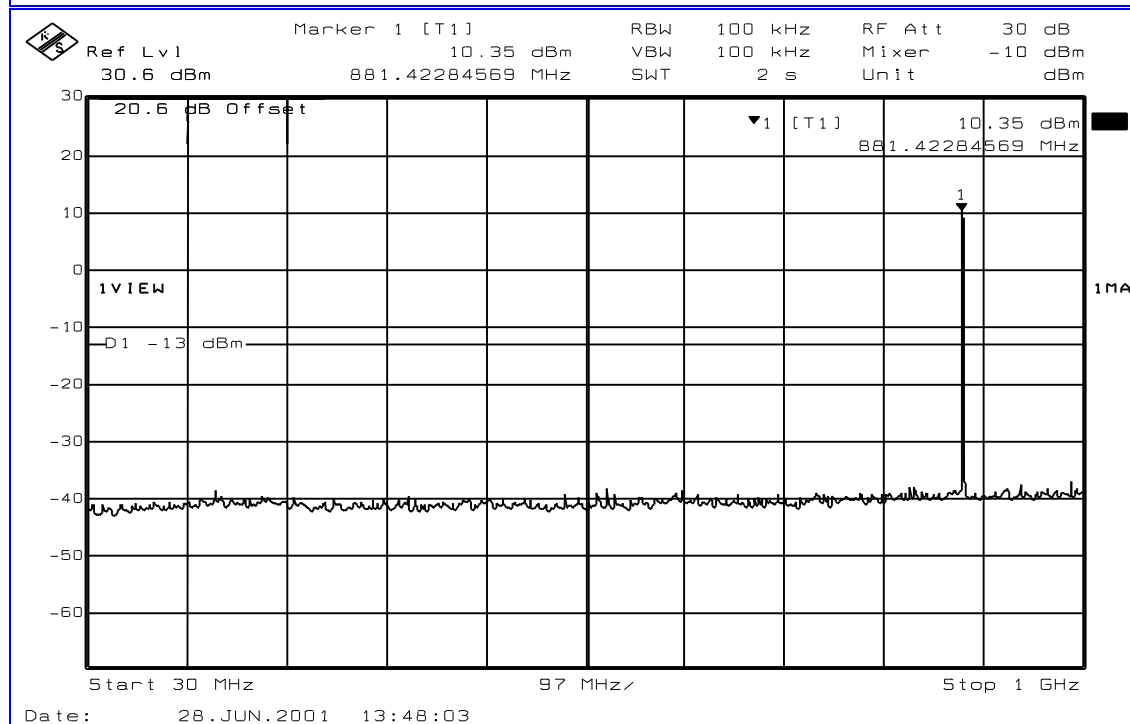
Test data --- Spurious Emissions at Antenna Terminals

Data Plot SPURIOUS EMISSIONS AT ANTENNA TERMINALS / CDMA

Page 1 of 2 Complete X
Job No.: 1L0263R Date: 6/28/01 Preliminary _____
Specification: Part 22 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
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: 1043
Filter: _____ Cable #2: _____
Receiver: 1036 Cable #3: _____
Attenuator #1: 1474 Cable #4: _____
Attenuator #2: _____ Mixer: _____
Additional equipment used: _____
Measurement Uncertainty: +/-3.6 dB



Notes: 30 MHz - 1 GHz
MARKER INDICATES CARRIER

EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

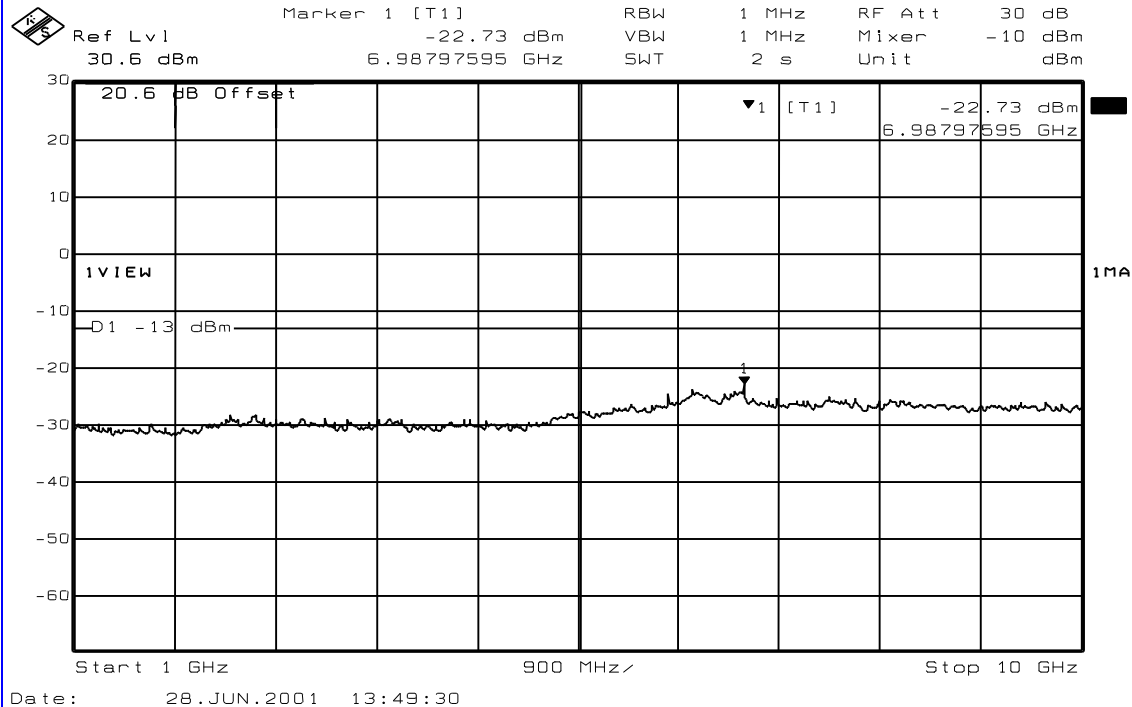
1L0263RUS1

Test data --- Spurious Emissions at Antenna Terminals

Data Plot SPURIOUS EMISSIONS AT ANTENNA TERMINALS / CDMA

Page 2 of 2

Job No.: 1L0263R Date: 6/28/01
Specification: Part 22 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
Configuration: Tx Full Power



Notes: 1 GHz - 10 GHz
MARKER INDICATES HIGHEST EMISSION

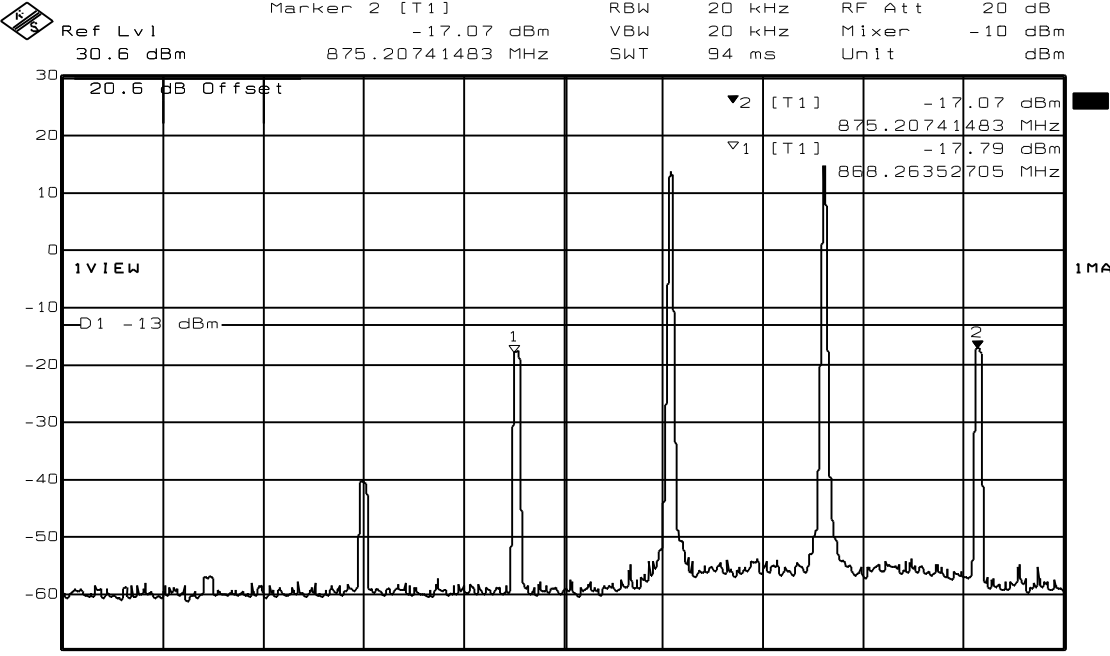
EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Test data --- Spurious Emissions at Antenna Terminals

Data Plot Intermodulation Characteristics Analog			
Page 1 of 2		Complete <u>X</u>	
Job No.:	1L0263R	Date:	6/28/01
Specification:	Part 22	Temperature(°C):	22
Tested By:	Chinda Poy	Relative Humidity(%):	50
E.U.T.:	DUAL BAND BRITCELL FAST SYSTEM		
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:	1043
Filter:		Cable #2:	
Receiver:	1036	Cable #3:	
Attenuator #1:	1474	Cable #4:	
Attenuator #2:		Mixer:	
Additional equipment used:			
Measurement Uncertainty:	+/-3.6 dB		
			
Date: 28.JUN.2001 9:11:55			
Notes: ANALOG INTERMOD LOWER BANDEGE (DOWNLINK)			
Marker 1 indicates highest emission outerband			
Marker 2 indicates highest emission inband			

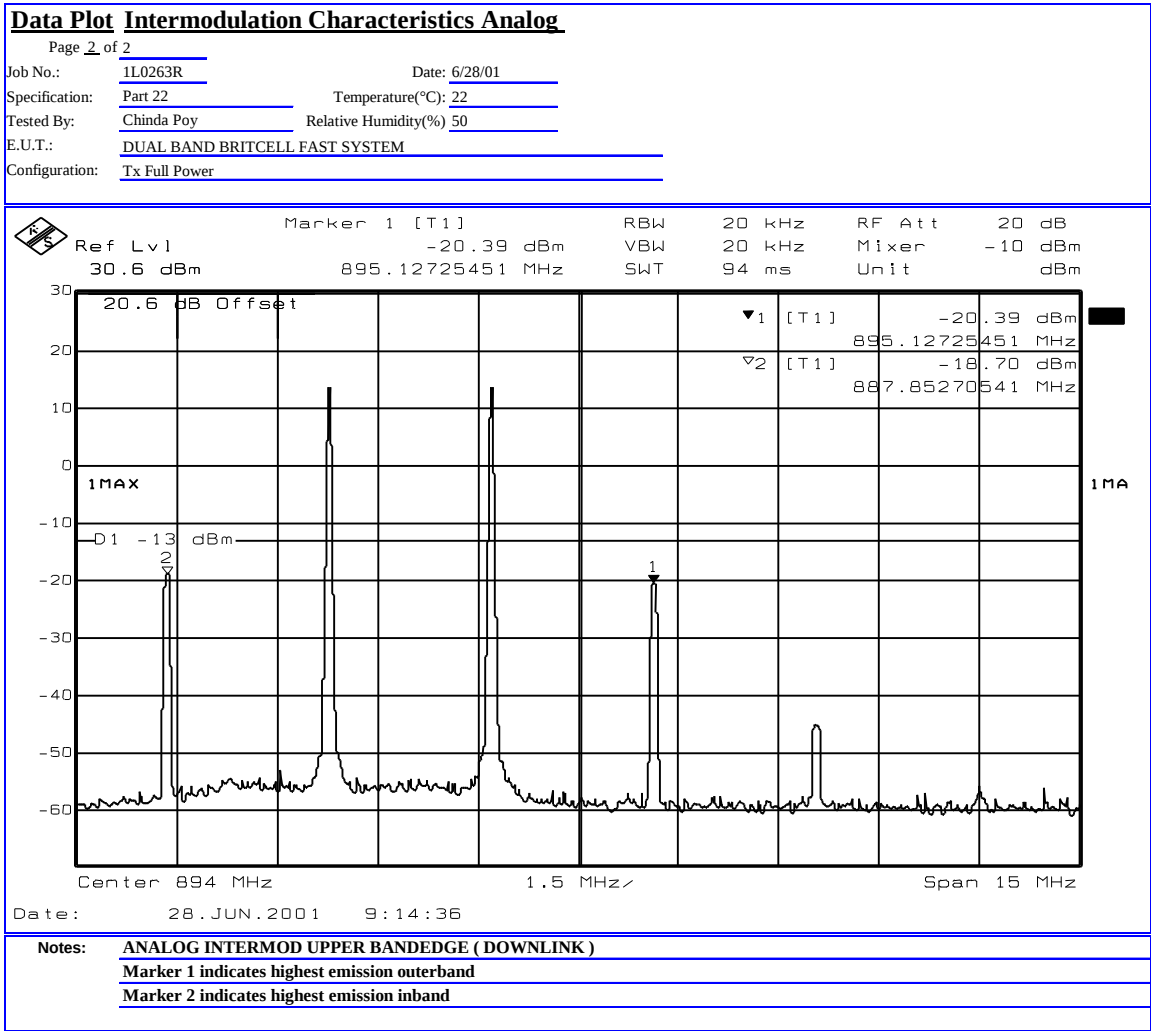
EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Test data --- Spurious Emissions at Antenna Terminals



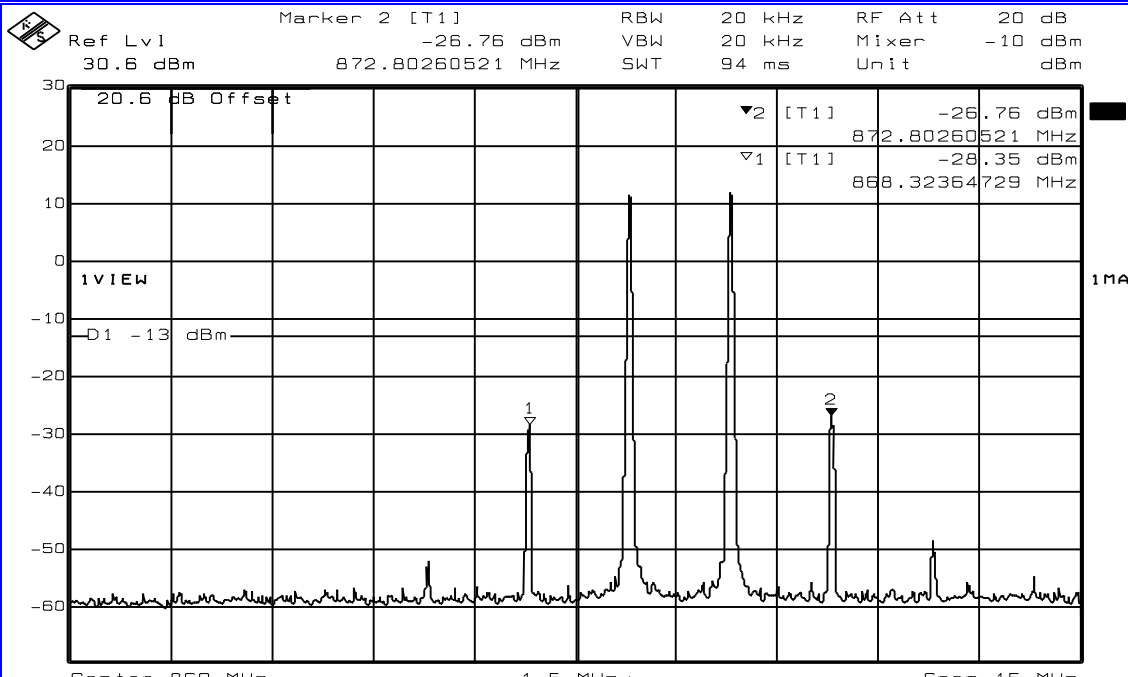
EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Test data --- Spurious Emissions at Antenna Terminals

Data Plot Intermodulation Characteristics TDMA			
Page 1 of 2		Complete <u>X</u>	
Job No.:	1L0263R	Date:	6/28/01
Specification:	Part 22	Temperature(°C):	22
Tested By:	Chinda Poy	Relative Humidity(%):	50
E.U.T.:	DUAL BAND BRITCELL FAST SYATEM		
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:	1043
Filter:		Cable #2:	
Receiver:	1036	Cable #3:	
Attenuator #1:	1474	Cable #4:	
Attenuator #2:		Mixer:	
Additional equipment used:			
Measurement Uncertainty:	+/-3.6 dB		
			
Date: 28.JUN.2001 8:43:08			
Notes: TDMA INTERMOD LOWER BANDEDGE (DOWNLINK)			
Marker 1 indicates highest emission outband			
Marker 2 indicates highest emission inband			

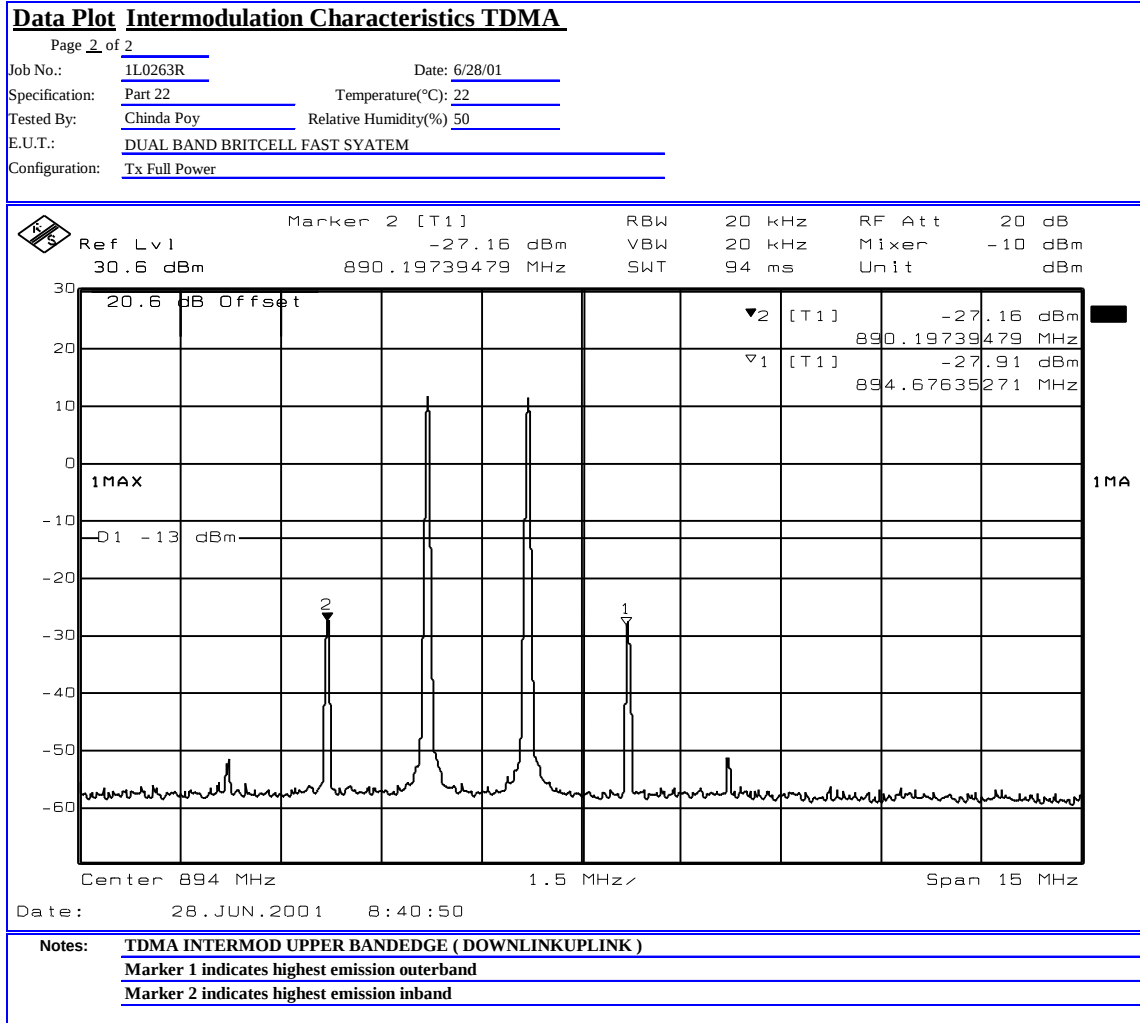
EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Test data --- Spurious Emissions at Antenna Terminals



EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Test data --- Spurious Emissions at Antenna Terminals

Data Plot Intermodulation Characteristics CDMA

Page 1 of 2

Complete XPreliminary

Job No.: 1L0263R

Date: 6/27/01

Specification: Part 22

Temperature(°C): 24

Tested By: Chinda Poy

Relative Humidity(%) 30

E.U.T.: DUAL BAND BRITCELL FAST SYSTEM

Configuration: Tx Full Power

Sample Number:

Location: Lab 1

RBW: Refer to plots

Detector Type: Peak

VBW: Refer to plots

Test Equipment UsedAntenna: Directional Coupler: Pre-Amp:

Cable #1: 1043

Filter: Cable #2:

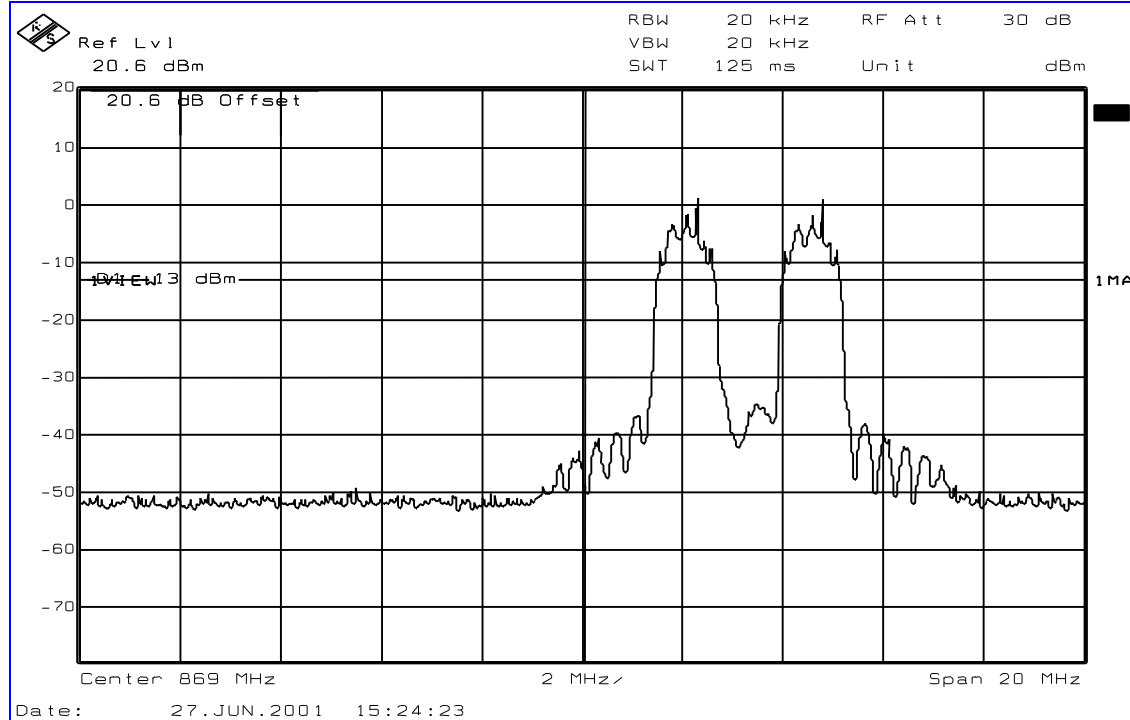
Receiver: 1036

Cable #3:

Attenuator #1: 1474

Cable #4: Attenuator #2: Mixer: Additional equipment used:

Measurement Uncertainty: +/-3.6 dB



Date: 27 JUN 2001 15:24:23

Notes: CDMA INTERMOD LOWER BANDEDGE (DOWNLINK)

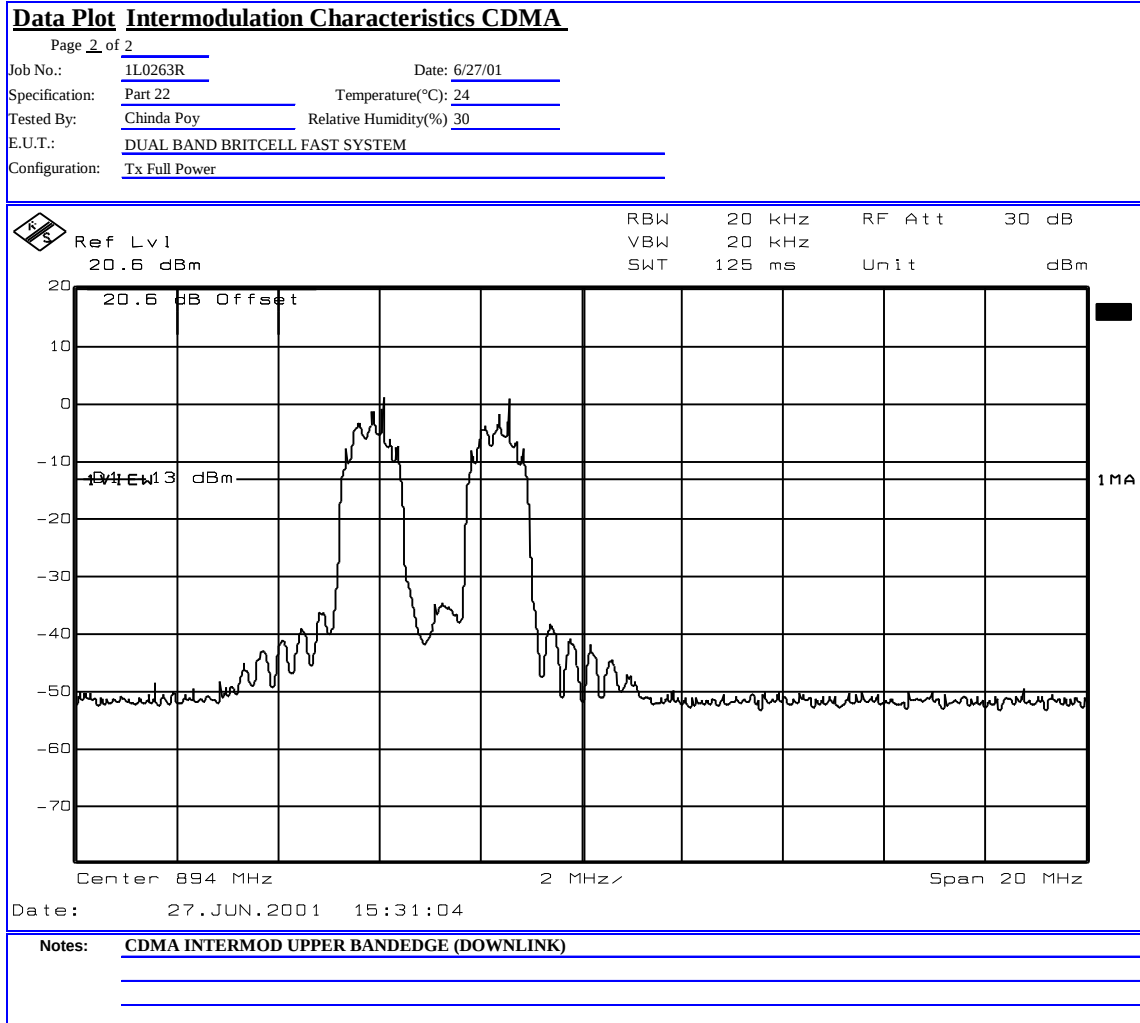
EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Test data --- Spurious Emissions at Antenna Terminals



EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Test data --- Spurious Emissions at Antenna Terminals

Data Plot CDMA BANDEDGE

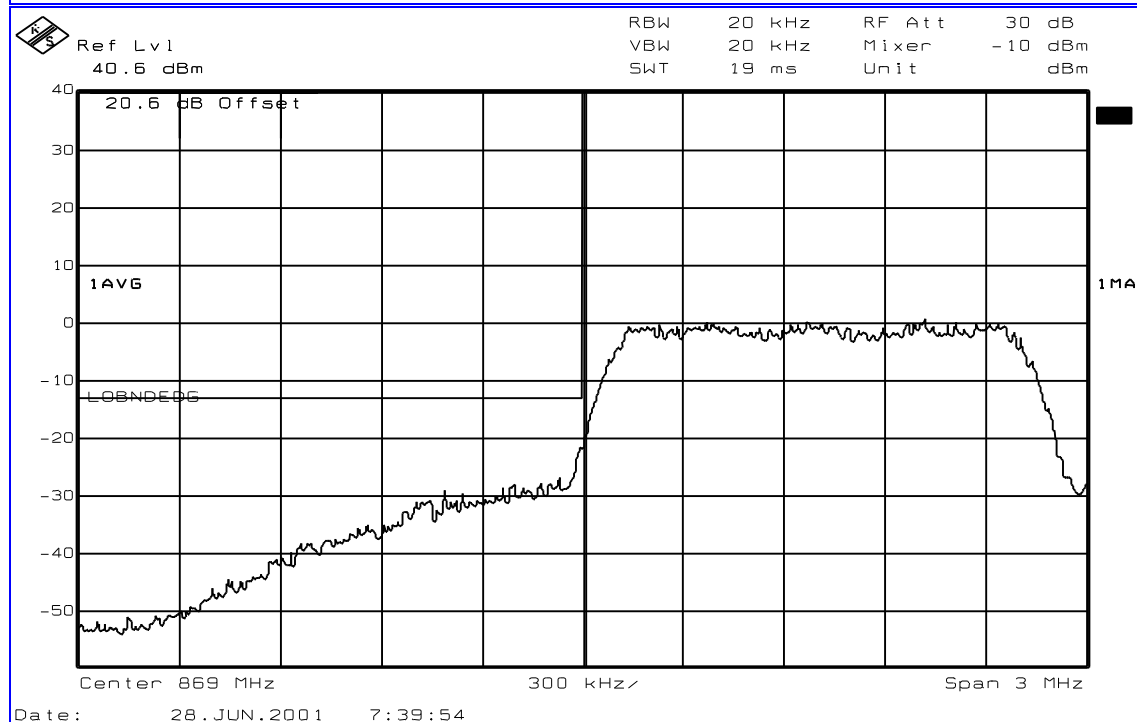
Page 1 of 2

Job No.: 1L0263R Date: 6/28/01 Complete X
Preliminary

Specification: Part 22 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
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: 1043
Filter: Cable #2:
Receiver: 1036 Cable #3:
Attenuator #1: 1474 Cable #4:
Attenuator #2: Mixer:
Additional equipment used:
Measurement Uncertainty: +/-3.6 dB



EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID:

PROJECT NO.:

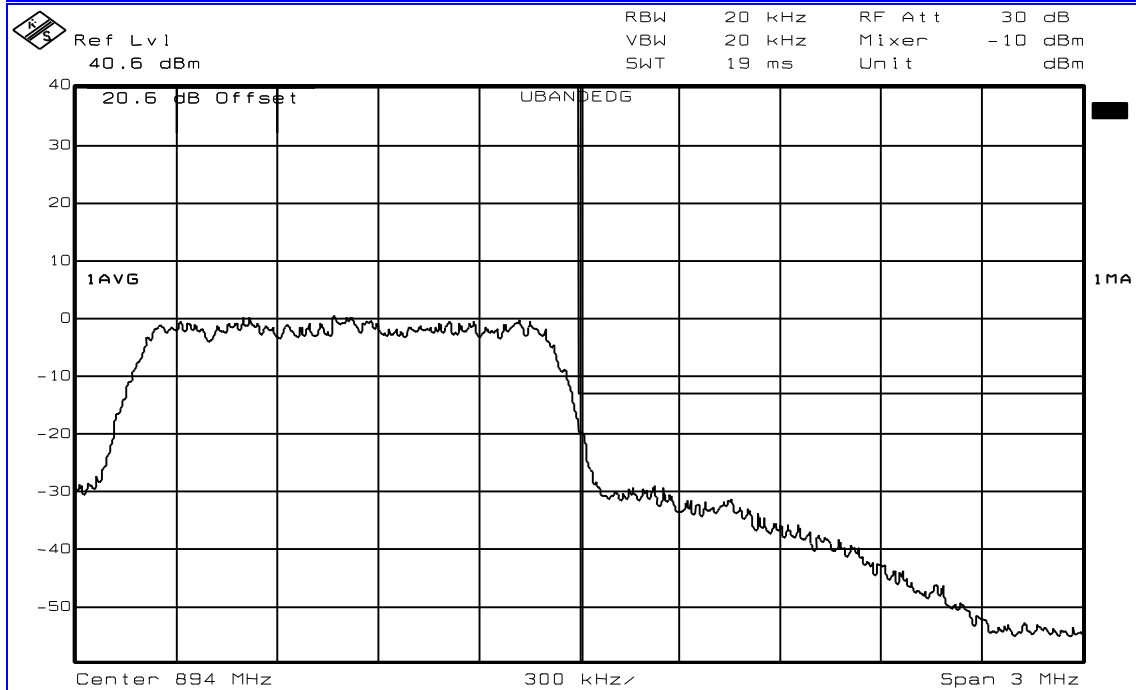
1L0263RUS1

Test data --- Spurious Emissions at Antenna Terminals

Data Plot CDMA BANDEDGE

Page 2 of 2

Job No.: 1L0263R Date: 6/28/01
Specification: Part 22 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
Configuration: Tx Full Power



Date: 28.JUN.2001 7:43:06

Notes: Upper Bandedge CDMA
DOWNLINK

EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Section 6. Field Strength of Spurious

NAME OF TEST: Field Strength of Spurious	PARA. NO.: 2.1053
TESTED BY: Chinda Poy	DATE: 6/28/01

Test Results: Complies.

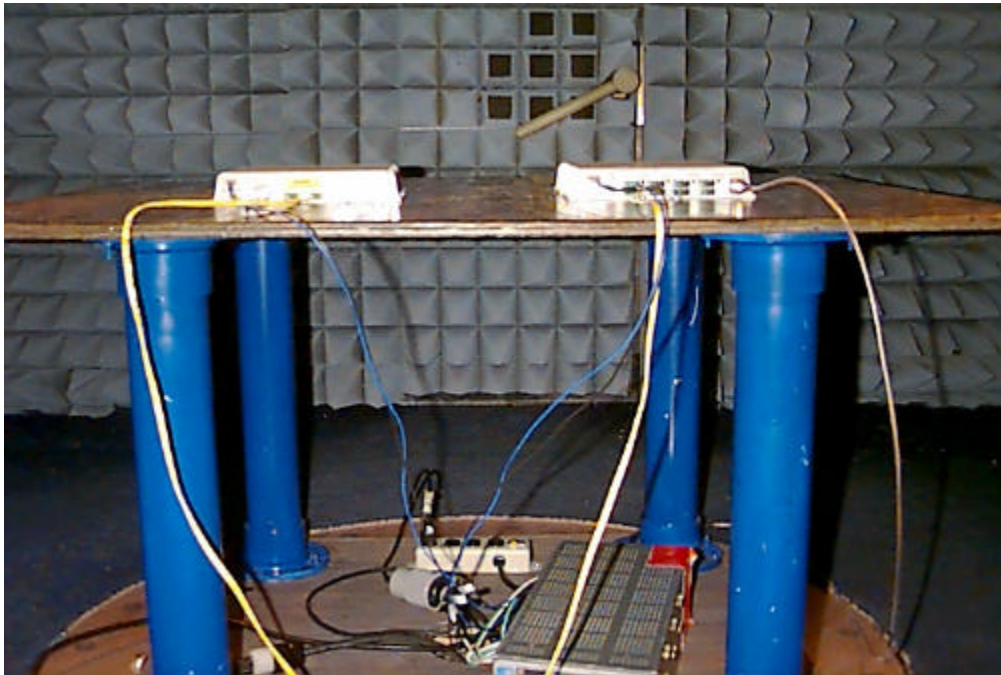
Test Data: See attached table.

Equipment Used: 1464-1046-1484-1485

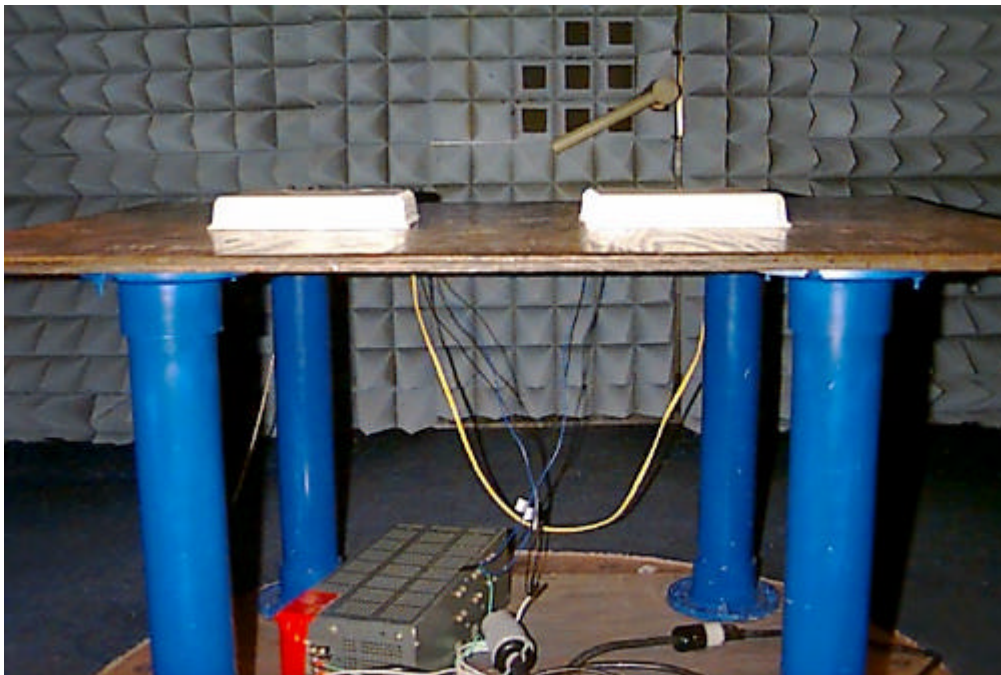
Measurement Uncertainty: +/- 3.6 dB

Photos – Field Strength of Spurious Emissions

Front



Rear



EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Section 7. Frequency Stability

NAME OF TEST: Frequency Stability

Part 22.100

TESTED BY:

DATE:

Test Results

Compliance

Test Data:

See attached table.

Standard Test Frequency:

MHz

Standard Test Voltage:

Equipment Used:

Measurement Uncertainty: $\pm 1 \times 10^{-7}$ ppm

Temperature: °C

Relative Humidity: %

EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

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
1474	20db Attenuator DC 18 Ghz	MCL Inc. BW-S20W2	NONE	CBU	N/A
1043	Flexible cable 1m	Astrolab Inc. 32027-2-29094K-1M	0	01/29/01	01/29/02
1046	Flex cable 1m	Astrolab Inc. 32022-2-29094K-1M	N/A	01/29/01	01/29/02
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

Nemko Dallas

**FCC PART 22, SUBPART H
CELLULAR BAND REPEATERS**

EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

ANNEX A - TEST DETAILS

EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

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

Minimum Standard: Para. No. 22.913(a). The maximum effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 watts.

Method Of Measurement:Detachable Antenna:

The peak power at antenna terminals is measured using an in-line peak power meter. Power output is measured with the maximum rated input level.

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: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

NAME OF TEST: Occupied Bandwidth (Voice & SAT)**PARA. NO.: 2.1049**

Minimum Standard: 22.917(c) The mean power of any emission removed from the carrier frequency by a displacement frequency (f_d in kHz) must be attenuated below the mean power of the unmodulated carrier (P) as follows:

- (i) On any frequency removed from the carrier frequency by more than 12 kHz but not more than 20 kHz:

at least $117 \log (f_d/12)$

- (ii) On any frequency removed from the carrier frequency by more than 20 kHz, up to the first multiple of the carrier frequency:

at least $100 \log (f_d/11)$ dB or $43 + 10 \log (P)$ dB, whichever is the lesser attenuation.

Method Of Measurement:

Spectrum Analyzer Settings:

RBW: 300 Hz

VBW: $\geq$ RBW

Span: 100 kHz

Sweep: Auto

Input Signal Characteristics (F3E/F3D):

RF level: Maximum recommended by manufacturer

AF1 frequency: 6 kHz

AF1 level: sufficient to produce 2 kHz deviation

AF2 frequency: 2.5 kHz

AF2 level: sufficient to produce 12 kHz deviation.

EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

NAME OF TEST: Occupied Bandwidth (WB Data)**PARA. NO.: 2.1049**

Minimum Standard: 22.917(c) The mean power of any emission removed from the carrier frequency by a displacement frequency (f_d in kHz) must be attenuated below the mean power of the unmodulated carrier (P) as follows:

(1) On any frequency removed from the carrier frequency by more than 20 kHz but not more than 45 kHz:

at least 26 dB

(2) On any frequency removed from the carrier frequency by more than 45 kHz but not more than 90 kHz:

at least 45 dB

(3) On any frequency removed from the carrier frequency by more than 90 kHz, up to the first multiple of the carrier frequency:

at least 60 dB or $43 + 10 \log (P)$ dB, whichever is the lesser attenuation.

Method Of Measurement:

Spectrum Analyzer Settings:

RBW: 300 Hz

VBW: $\geq$ RBW

Span: 200 kHz

Sweep: Auto

Input Signal Characteristics:

RF level: Maximum recommended by manufacturer

AF1 frequency: 10 kHz, random bit sequence

AF1 level: sufficient to produce 8 kHz deviation

EQUIPMENT: **DUAL BAND BRITECELL FAST SYSTEM**

FCC ID:

PROJECT NO.:

1L0263RUS1

NAME OF TEST: Occupied Bandwidth (ST)**PARA. NO.: 2.1049**

Minimum Standard: 22.917(c) The mean power of any emission removed from the carrier frequency by a displacement frequency (f_d in kHz) must be attenuated below the mean power of the unmodulated carrier (P) as follows:

(1) On any frequency removed from the carrier frequency by more than 20 kHz but not more than 45 kHz:

at least 26 dB

(2) On any frequency removed from the carrier frequency by more than 45 kHz but not more than 90 kHz:

at least 45 dB

(3) On any frequency removed from the carrier frequency by more than 90 kHz, up to the first multiple of the carrier frequency:

at least 60 dB or $43 + 10 \log (P)$ dB, whichever is the lesser attenuation.

Method Of Measurement:Spectrum Analyzer Settings:

RBW: 300 Hz

VBW: $\geq$ RBW

Span: 200 kHz

Sweep: Auto

Input Signal Characteristics:

RF level: Maximum recommended by manufacturer

AF1 frequency: 10 kHz tone

AF1 level: sufficient to produce 8 kHz deviation

Nemko Dallas

**FCC PART 22, SUBPART H
CELLULAR BAND REPEATERS**

EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

NAME OF TEST: Occupied Bandwidth (Digital Modulation) PARA. NO.: 2.1049

Minimum Standard: Not defined by FCC. Input vs. Output.

Method Of Measurement:

Spectrum Analyzer Settings:

RBW: CDMA (30 kHz), GSM (30 kHz), NADC (1 kHz) and CDPD (1 kHz)

VBW: $\geq$ RBW

Span: As required

Sweep: Auto

Input Signal Characteristics:

RF level: Maximum recommended by manufacturer

EQUIPMENT: **DUAL BAND BRITECELL FAST SYSTEM**

FCC ID:

PROJECT NO.:

1L0263RUS1

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

Minimum Standard:

Para. No. 22.917(e). The mean power of emissions must be attenuated below the mean power of the unmodulated carrier on any frequency twice or more than twice the fundamental emission by at least $43 + 10 \log P$. This is equivalent to -13 dBm absolute power.

Method Of Measurement:Spectrum Analyzer Settings:

RBW: 30 kHz (AMPS). As required for digital modulations.

VBW: $\geq$ RBW

Start Frequency: 0 MHz

Stop Frequency: 10 GHz

Sweep: Auto

EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

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

Para. No. 22.917(e). The mean power of emissions must be attenuated below the mean power of the unmodulated carrier on any frequency twice or more than twice the fundamental emission by at least $43 + 10 \log P$. This is equivalent to -13 dBm absolute power.

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)

$R = 3\text{m}$ (Measurement Distance)

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

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

For emissions > 1 GHz:

$G = 1$ (Isotropic Gain)

$P = 1 \times 10^{-5}$ Watts (Maximum spurious output power)

$R = 3\text{m}$ (Measurement Distance)

$$E = 84.4 - 20 \log \sqrt{1.64} = 82.3 \text{ dBmV / m@3m}$$

The spectrum is searched to 10 GHz.

EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

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.

Table C-1

Freq. Range (MHz)	Base, fixed	Mobile > 3 W	Mobile ≤ 3 W
821 to 896	1.5	2.5	2.5

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. The frequency counter and signal generator are phase locked with the same 10 MHz reference frequency by connecting the 10 MHz ref. out of the counter to the 10 MHz ref, in of the signal generator. 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.

Nemko Dallas

**FCC PART 22, SUBPART H
CELLULAR BAND REPEATERS**

EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

ANNEX B - TEST DIAGRAMS

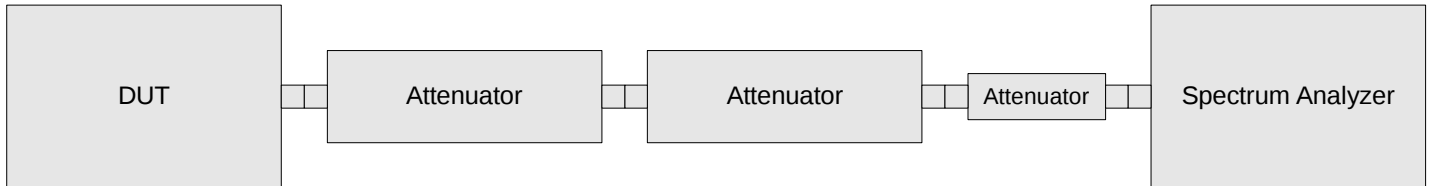
EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

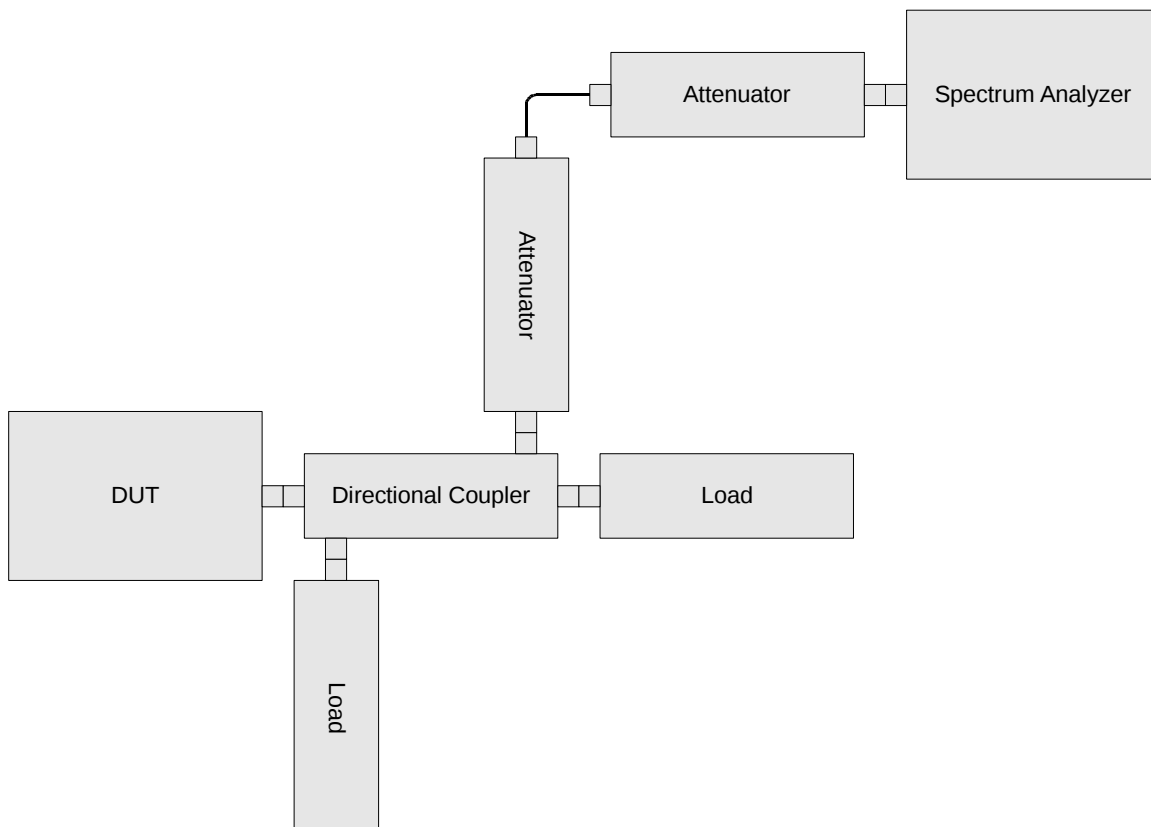
PROJECT NO.:

1L0263RUS1

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



Para. No. 2.1049 - Occupied Bandwidth



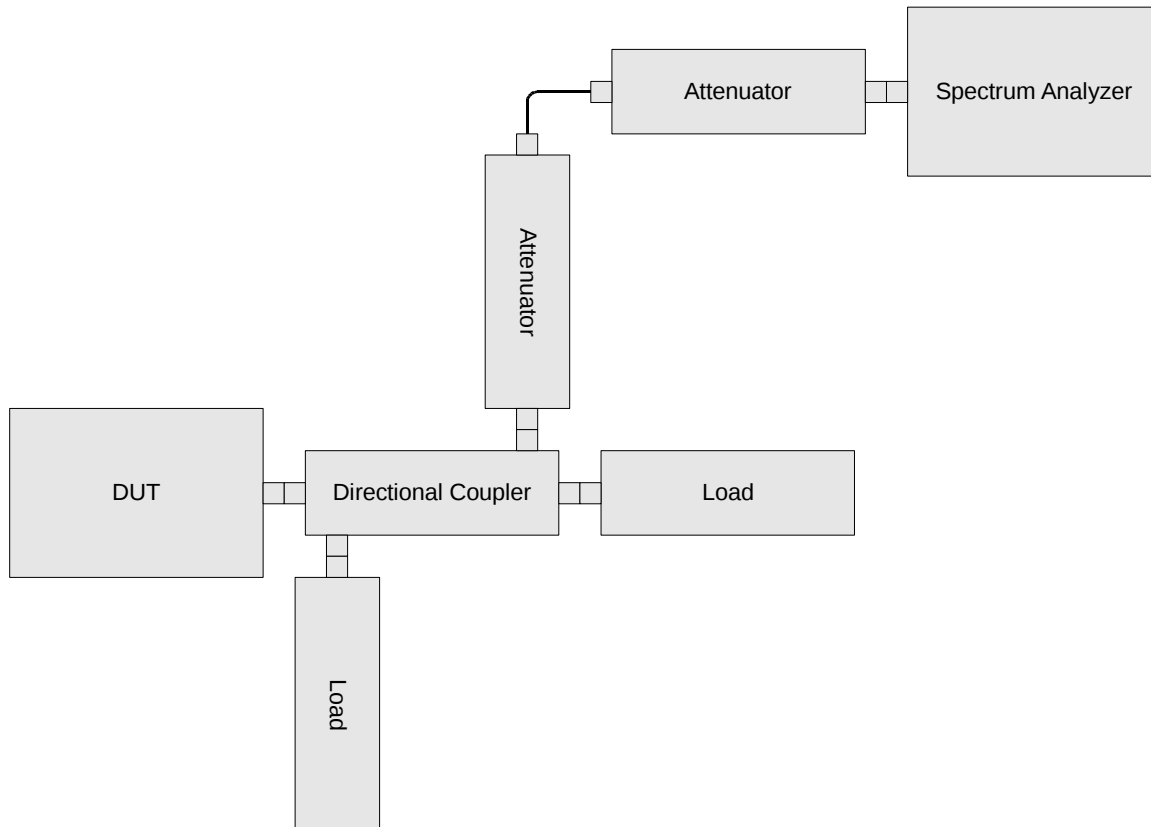
EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Para. No. 2.1051 Spurious Emissions at Antenna Terminals

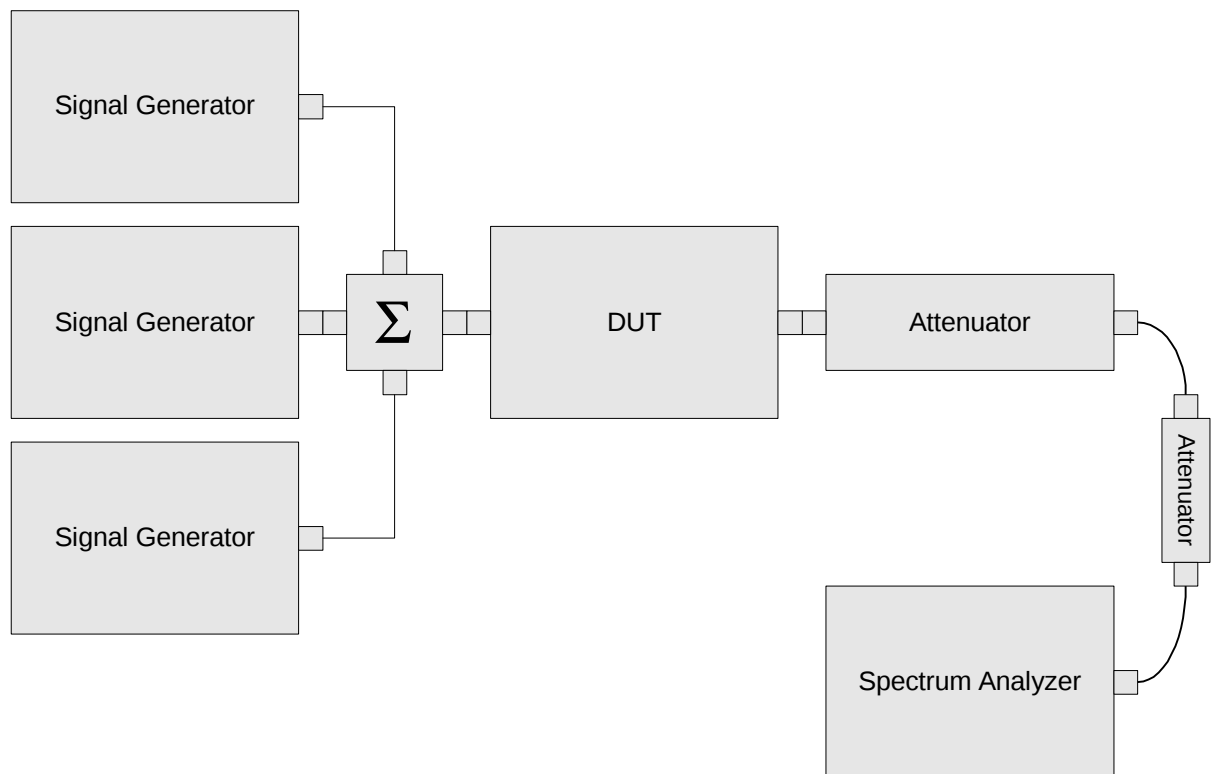


EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1



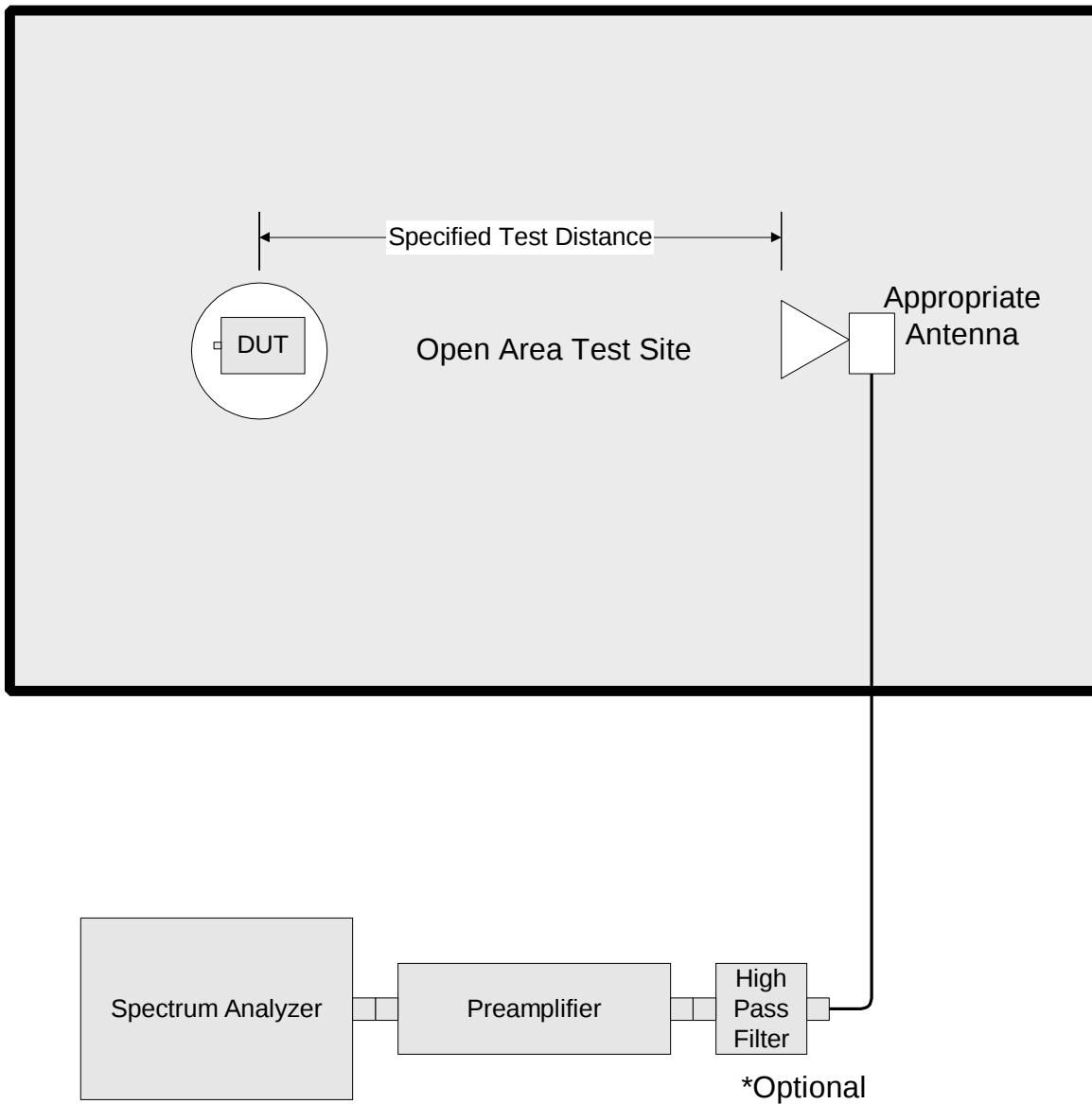
EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID:

PROJECT NO.:

1L0263RUS1

Para. No. 2.1053 - Field Strength of Spurious Radiation

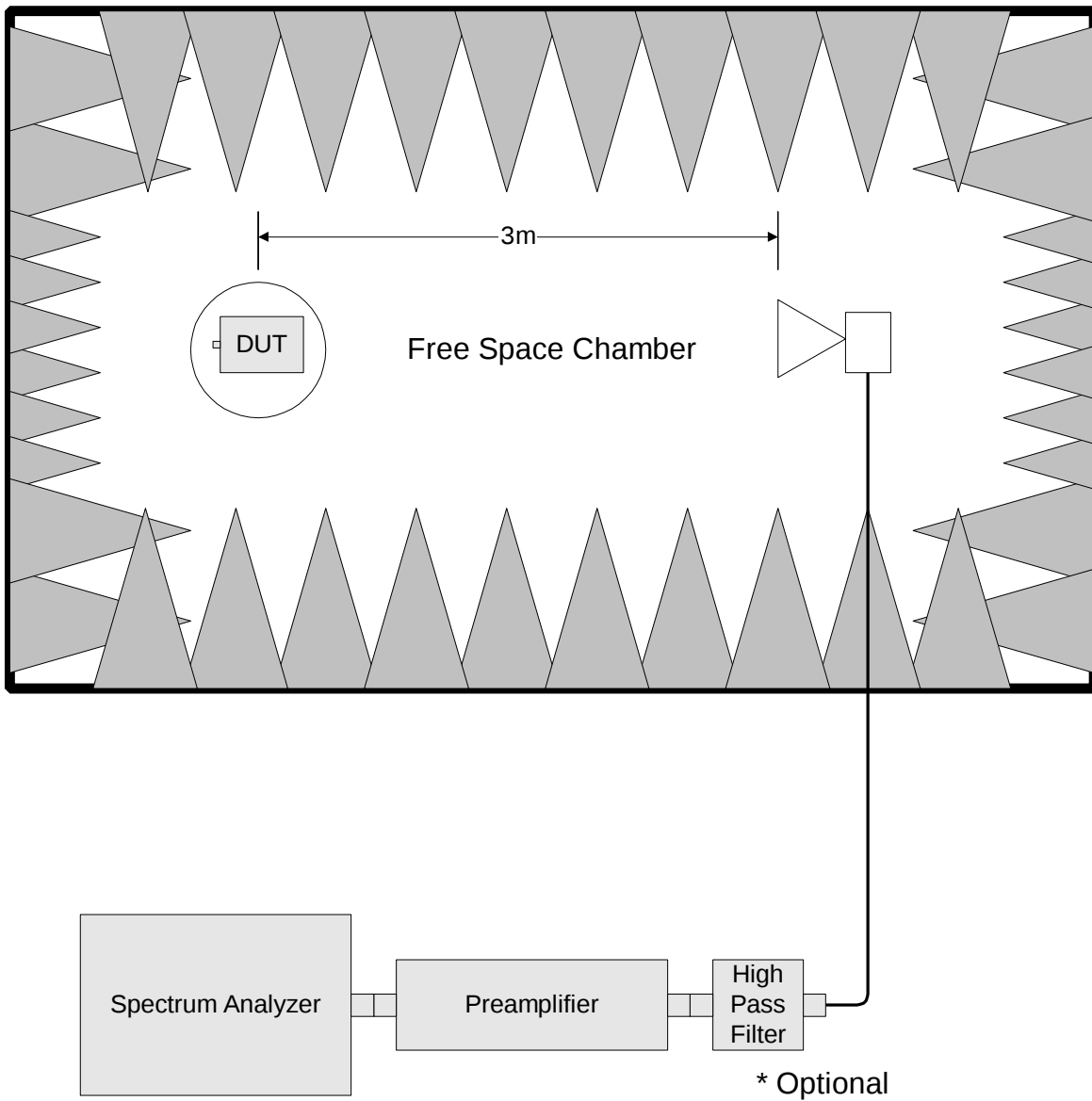


EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

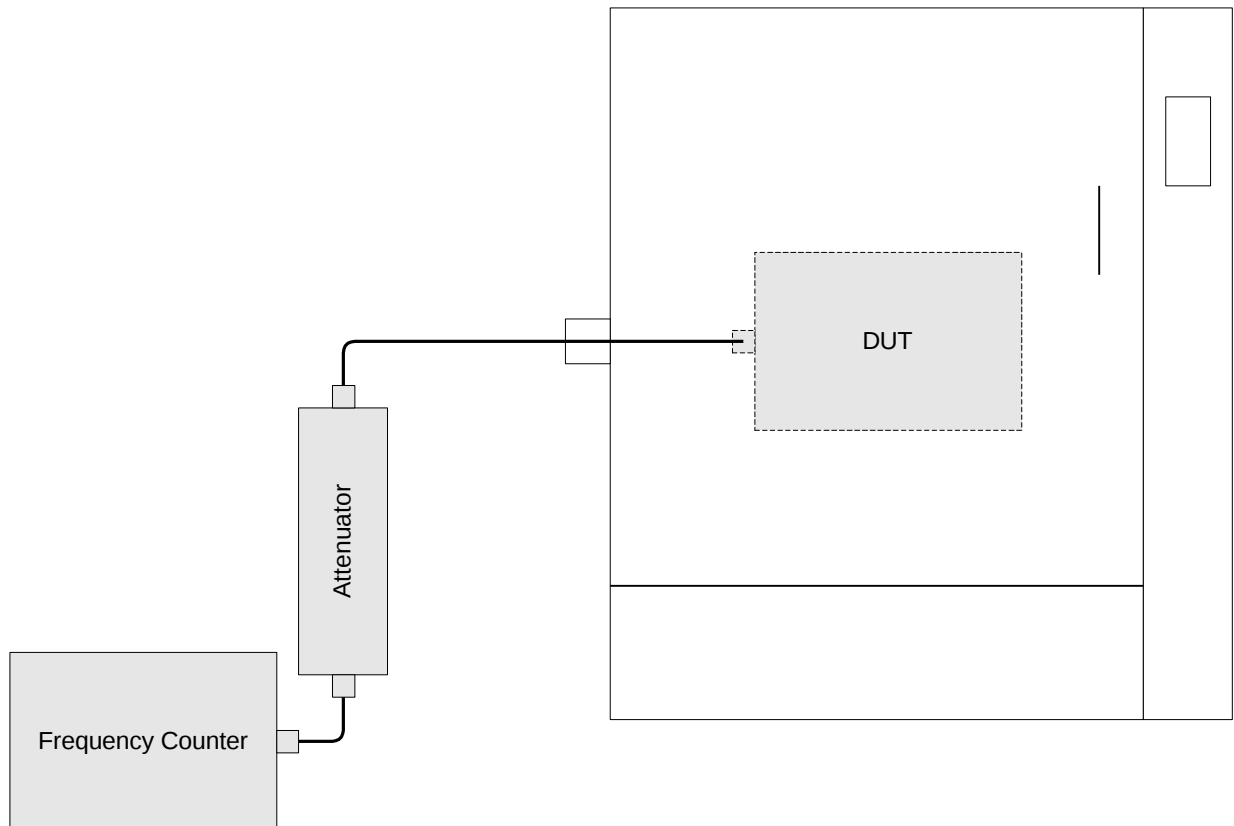
FCC ID:

PROJECT NO.:

1L0263RUS1



Para. No. 2.1055 - Frequency Stability



Nemko Test Report No.:

1L0263RUS2

Applicant:

ALLEN TELECOM
140 Vista Center Drive
Forest, Virginia 24551

Equipment Under Test:

DUAL BAND BRITECELL FAST SYSTEM

In Accordance With:

FCC Part 24, Subpart E
Broadband PCS Repeaters

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:

50

Table of Contents

Section 1. Summary of Test Results	3
Section 2. General Equipment Specification	5
Section 3. RF Power Output.....	9
Section 4. Occupied Bandwidth	10
Section 5. Spurious Emissions at Antenna Terminals.....	19
Section 6. Field Strength of Spurious.....	36
Section 7. Frequency Stability	39
Section 8. Test Equipment List.....	40
ANNEX A - TEST DETAILS	41
ANNEX B - TEST DIAGRAMS.....	47

Section 1. Summary of Test Results

Manufacturer: ALLEN TELECOM

Model No.: DUAL BAND BRITCELL FAST SYSTEM

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

NEMKO Dallas Inc. authorizes the above named company to reproduce this report provided it is reproduced in its entirety and for use by the company's employees only.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. NEMKO Dallas Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This report applies only to the items tested.

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	Input/Output	Plot	Complies
Occupied Bandwidth (GSM)	24.238	Input/Output	Plot	Complies
Occupied Bandwidth (NADC)	24.238	Input/Output	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		N/A	N/A

Footnotes:

(1) Modulation characteristics were not tested since the E.U.T. processes but does not produce a modulated waveform.

Measurement uncertainty for each test configuration is expressed to 95% probability.

Section 2. General Equipment Specification

Supply Voltage Input:		-48 VDC		
Frequency Bands:	Downlink:	☒	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:	Uplink:	☒	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
		CDMA (G7W)	GSM (GXW)	NADC (DXW)
		☒	☒	☒
System Gain:		0 dB		
Output Impedance:		50 ohms		
		1 Carrier	14.5	dBm
		2 Carrier	10.0	dBm
		3 Carrier	5.0	dBm
		4 Carrier	3.5	dBm
		F1-F1	F1-F2	N/A
		☒	☐	☐
		Software	Duplexer	Fullband
		☐	☐	☒

Nemko Dallas

FCC PART 24, SUBPART E

BROADBAND PCS REPEATERS

EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID: PROJECT NO.: 1L0263RUS2

Description of Modifications For Class II Permissive Change

Not Applicable

Nemko Dallas

FCC PART 24, SUBPART E

BROADBAND PCS REPEATERS

EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID: PROJECT NO.: 1L0263RUS2

Modifications Made During Testing

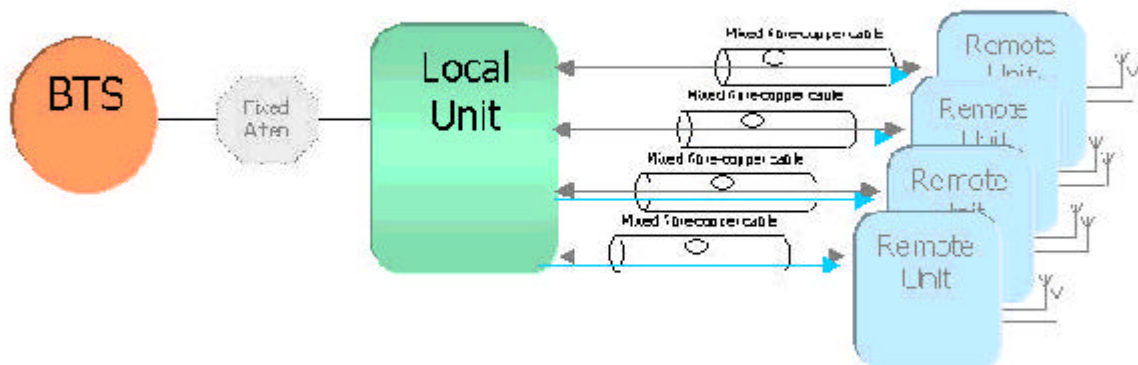
Not Applicable

Description of Operation

BRITCELL™ FAST is a plug and play BriteCell kit, offering the most suitable solution for indoor coverage in small areas, thanks to its compactness and absolute easiness to install. The package includes up to four compact RF remote transceivers (TFAF), driven by one local distribution unit (TFLF). It is available in various frequency ranges (from 800MHz up to 2200 MHz), as a single band product. It is aimed to satisfy the requirements of 2nd and 3rd generation mobile networks for simple coverage needs.

The TFLF local unit has been properly designed into a stand-alone mechanical case, including all required ancillary and support functions. The kit includes also four standard TFAF Remote units and a compound fiber-copper cable to connect them to local unit. The installed units can be later kept also in case of system expansion to a fully modular BriteCell configuration, both single band or dual band, with a minimum setting effort. Both TFL and TFA can be optionally hosted into TKA mounting kits, allowing outdoor installation if required.

System Diagram



Section 3. RF Power Output

NAME OF TEST: RF Power Output	PARA. NO.: 2.1046
TESTED BY: Chinda Poy	DATE: 6/28/01

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

	Modulation Type	Per Channel Output Power (dBm)	Composite Output Power (dBm)
Uplink	CDMA	N/A	N/A
Downlink	CDMA	14.8 dBm	17.8 dBm
Uplink	GSM	N/A	N/A
Downlink	GSM	18.6 dBm	21.6 dBm
Uplink	NADC	N/A	N/A
Downlink	NADC	17.8 dBm	20.8 dBm

Equipment Used: 1036-1043-1474**Measurement Uncertainty:** +/- 1.7 dB**Temperature:** 24 °C**Relative Humidity:** 35 %

Section 4. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth (CDMA)	PARA. NO.: 2.1049
TESTED BY: Chinda Poy	DATE: 6/28/01

Test Results: Complies.

Test Data: See attached plot(s).

Equipment Used: 1036-1043-1474

Measurement Uncertainty: +/- 1.7 dB

Test Data – Occupied Bandwidth -- CDMA

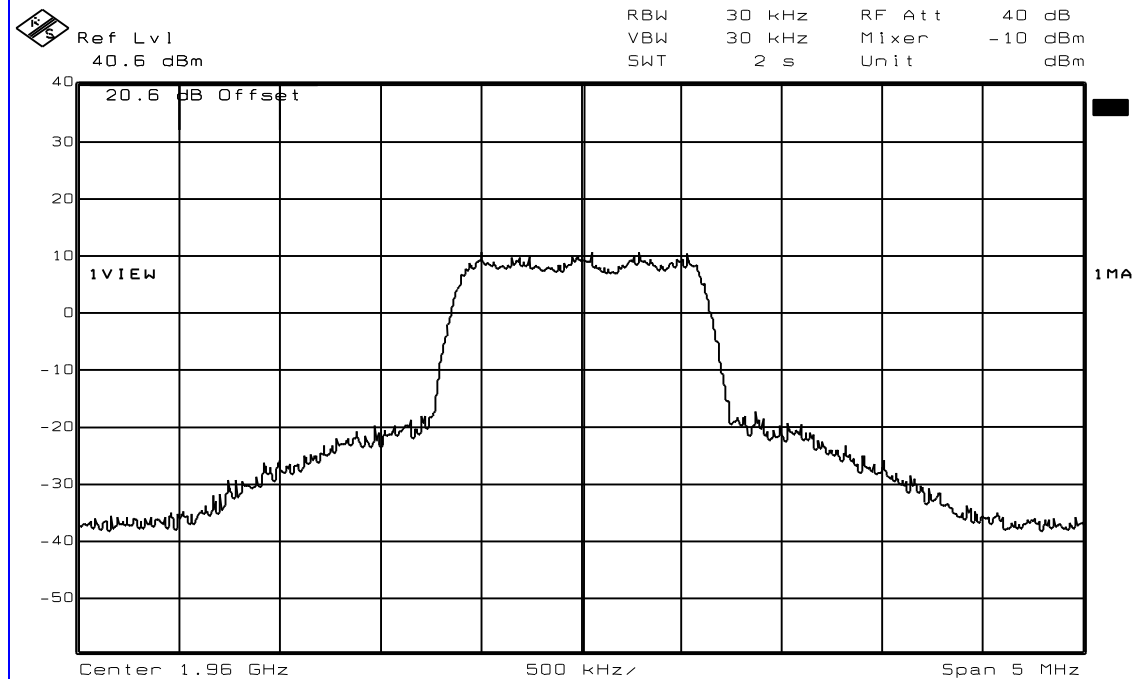
Data Plot Occupied Bandwidth CDMA

Page 1 of 2 Complete X
Preliminary _____

Job No.: 1L0263R Date: 6/28/01
Specification: Part 24 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
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: 1043
Filter: _____ Cable #2: _____
Receiver: 1036 Cable #3: _____
Attenuator #1: 1474 Cable #4: _____
Attenuator #2: _____ Mixer: _____
Additional equipment used: _____
Measurement Uncertainty: +/-3.6 dB



Date: 28.JUN.2001 10:39:48

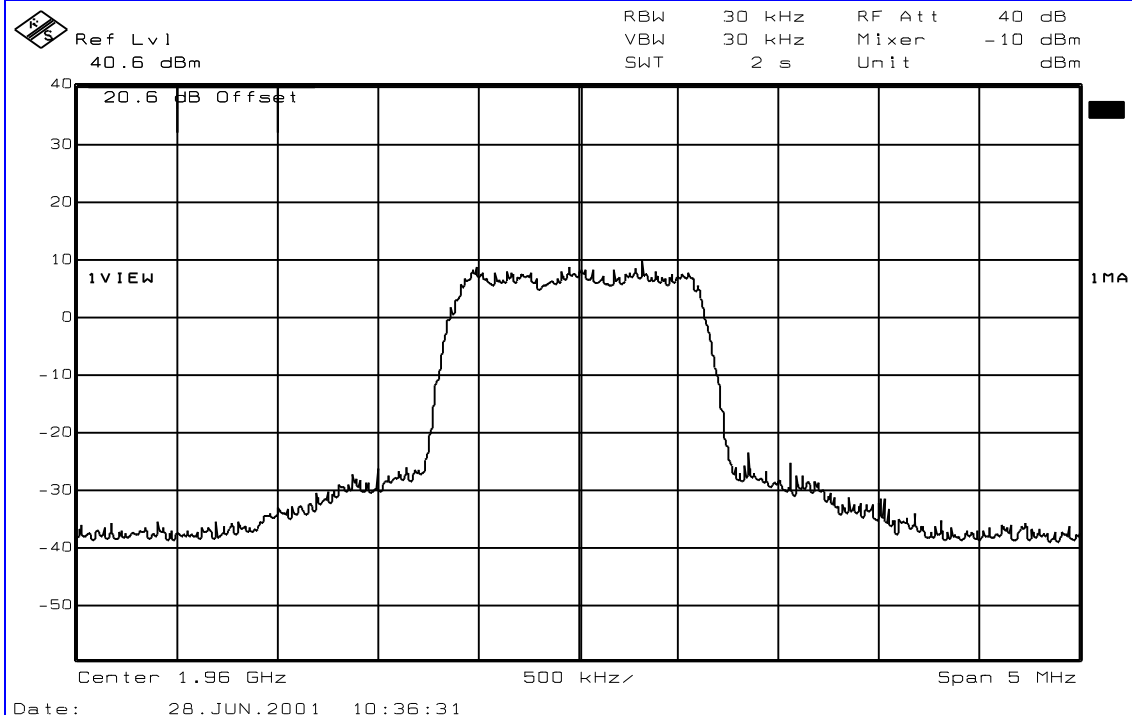
Notes: OUTPUT SIGNAL CDMA
DOWNLINK

Test Data – Occupied Bandwidth -- CDMA

Data Plot Occupied Bandwidth CDMA

Page 2 of 2

Job No.: 1L0263R Date: 6/28/01
Specification: Part 24 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
Configuration: Tx Full Power



Notes: INPUT SIGNAL CDMA
DOWNLINK

Nemko Dallas

FCC PART 24, SUBPART E

BROADBAND PCS REPEATERS

EQUIPMENT: DUAL BAND BRITCECELL FAST SYSTEM

FCC ID: PROJECT NO.: 1L0263RUS2

NAME OF TEST: Occupied Bandwidth (GSM)	PARA. NO.: 2.1049
TESTED BY: Chinda Poy	DATE: 6/28/01

Test Results: Complies.

Test Data: See attached plot(s).

Equipment Used: 1036-1043-1474

Measurement Uncertainty: +/- 1.7 dB

Test Data – Occupied Bandwidth – GSM

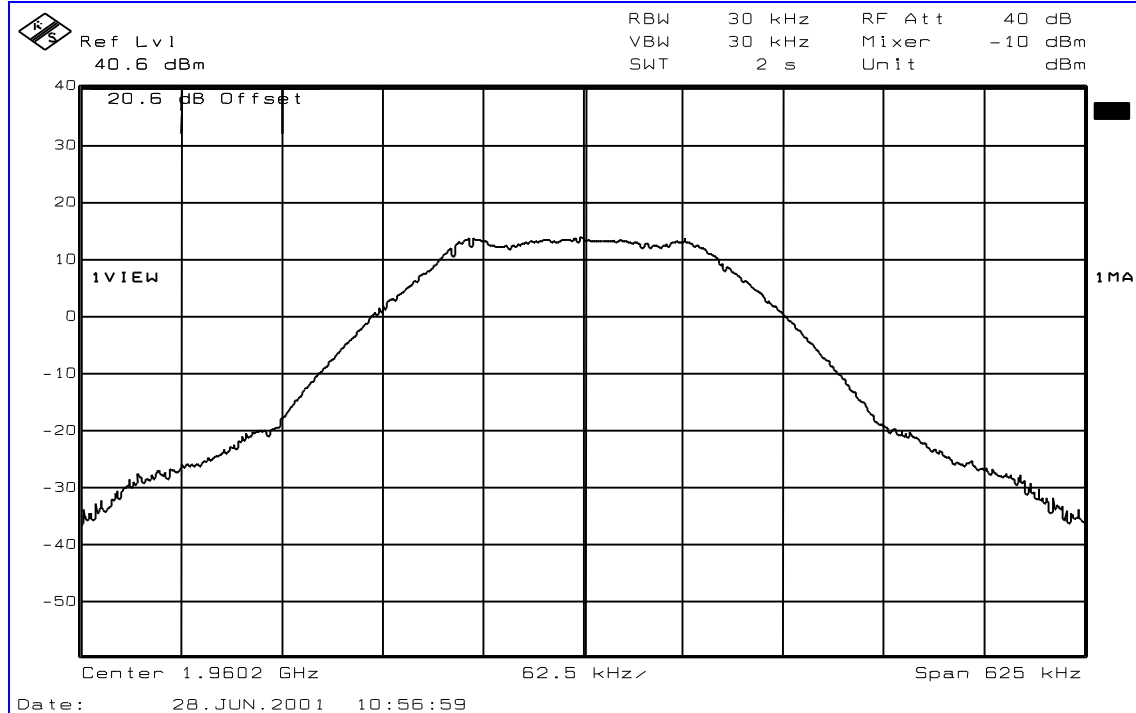
Data Plot Occupied Bandwidth GSM

Page 1 of 2 Complete X
Preliminary

Job No.: 1L0263R Date: 6/28/01
Specification: Part 24 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
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: 1043
Filter: Cable #2:
Receiver: 1036 Cable #3:
Attenuator #1: 1474 Cable #4:
Attenuator #2: Mixer:
Additional equipment used:
Measurement Uncertainty: +/-3.6 dB



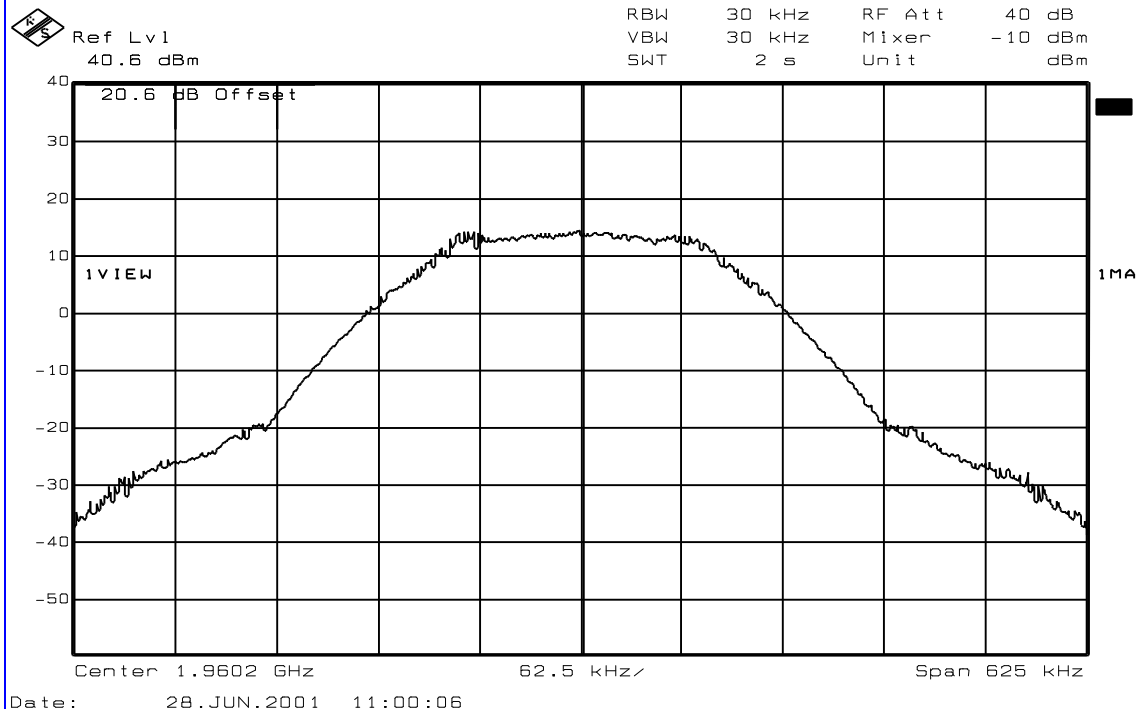
Notes: OUTPUT SIGNAL GSM
DOWNLINK

Test Data – Occupied Bandwidth – GSM

Data Plot Occupied Bandwidth GSM

Page 2 of 2

Job No.: 1L0263R Date: 6/28/01
Specification: Part 24 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
Configuration: Tx Full Power



Notes: INPUT SIGNAL GSM
DOWNLINK

Nemko Dallas

FCC PART 24, SUBPART E

BROADBAND PCS REPEATERS

EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

FCC ID: PROJECT NO.: 1L0263RUS2

NAME OF TEST: Occupied Bandwidth (NADC)	PARA. NO.: 2.1049
TESTED BY: Chinda Poy	DATE: 6/28/01

Test Results: Complies.

Test Data: See attached plot(s).

Equipment Used: 1036-1043-1474

Measurement Uncertainty: +/- 1.7 dB

EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID: PROJECT NO.: 1L0263RUS2

Test Data – Occupied Bandwidth – NADC

Data Plot Occupied Bandwidth TDMA

Page 1 of 2

Complete X

Job No.: 1L0263R Date: 6/28/01

Date: 6/28/01

Specification: Part 24 Temperature(°C): 22

Temperature(°C): 22

Tested By: Chinda Poy Relative Humidity(%) 50

Relative Humidity(%) 50

E.U.T.:	Cell Extender
---------	---------------

Configuration: Tx Full Power

Sample Number: _____

Location: Lab 1

Detector Type: Peak

RBW: Refer to plots

VBW: Refer to plots

Test Equipment Used

Antenna: _____

Directional Coupler:

Pre-Amp: _____

Cable #1:	1043
-----------	------

Filter:

Cable #2:

Receiver: 1036

Cable #3: _____

Attenuator #1	1474
---------------	------

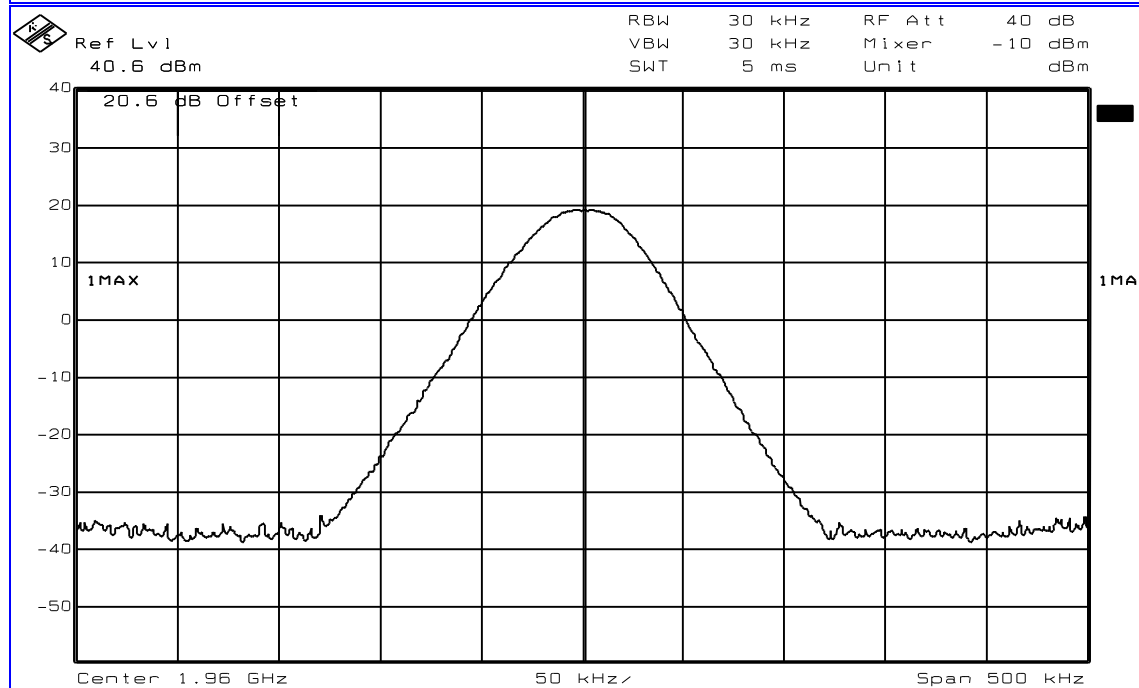
Cable #4:

Attenuator #2:

Mixer:

Additional equipment used:

Measurement Uncertainty: ± 3.6 dB



Date: 28.JUN.2001 10:23:12

Notes: OUTPUT SIGNAL TDMA

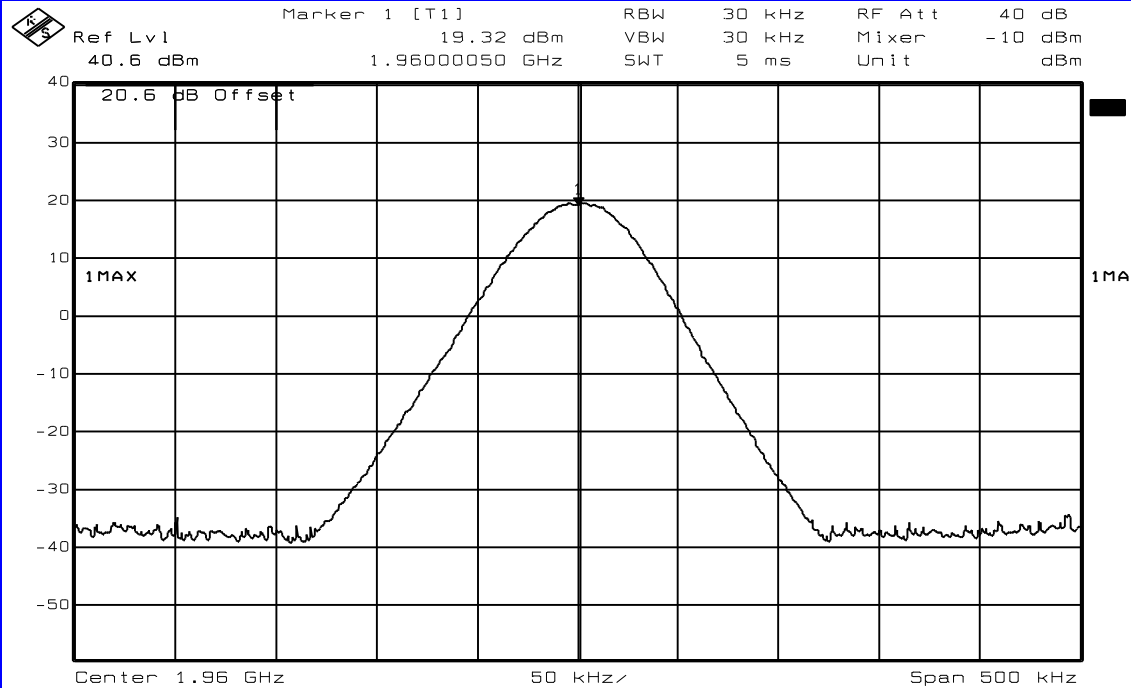
DOWNLINK

Test Data – Occupied Bandwidth – NADC

Data Plot Occupied Bandwidth TDMA

Page 2 of 2

Job No.: 1L0263R Date: 6/28/01
Specification: Part 24 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: Cell Extender
Configuration: Tx Full Power



Date: 28.JUN.2001 10:18:08

Notes: INPUT SIGNAL TDMA
DOWNLINK

Section 5. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions @ Antenna Terminals	PARA. NO.: 2.1051
TESTED BY: Chinda Poy	DATE: 6/2/8/01

Test Results: Complies.

Test Data: See attached plot(s).

Equipment Used: 1036-1043-1474

Measurement Uncertainty: +/- 1.7 dB

Test Data – Spurious Emission at Antenna Terminals

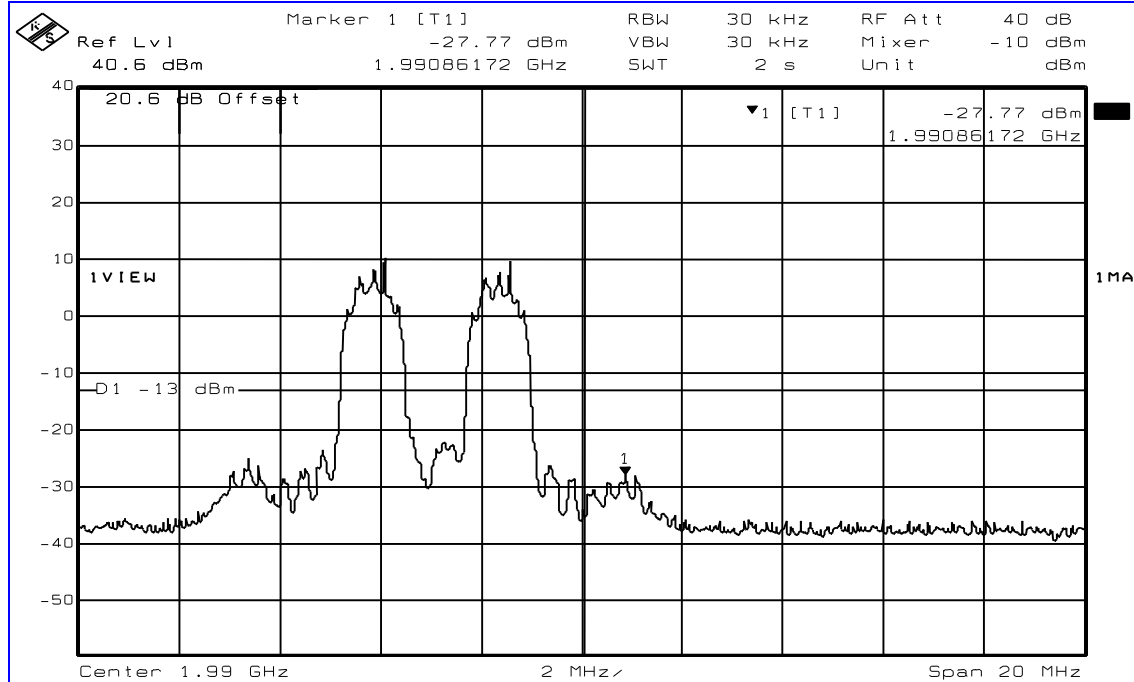
Data Plot INTERMODULATION CHARACTERISTICS CDMA

Page 1 of 2

Job No.: 1L0263R Date: 6/28/01 Complete X
Specification: Part 24 Temperature(°C): 22 Preliminary _____
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
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: 1043
Filter: _____ Cable #2: _____
Receiver: 1036 Cable #3: _____
Attenuator #1: 1474 Cable #4: _____
Attenuator #2: _____ Mixer: _____
Additional equipment used: _____
Measurement Uncertainty: +/-3.6 dB



Date: 28.JUN.2001 12:31:40

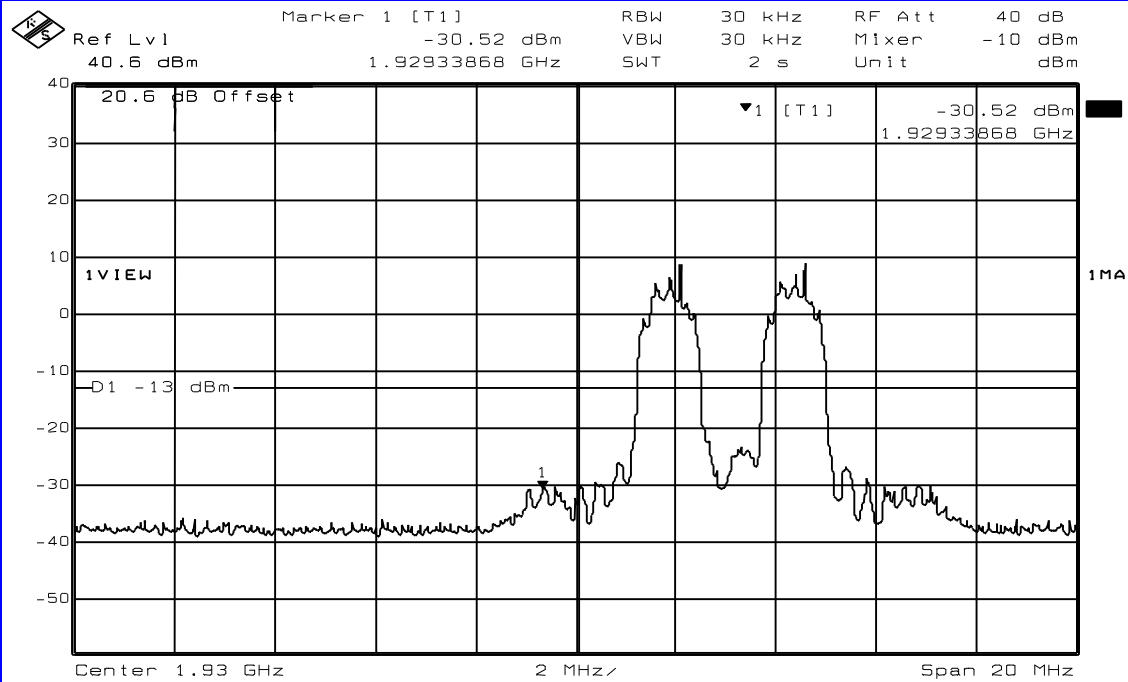
Notes: CDMA UPPER BAND (OUT OF BAND)
DOWNLINK

Test Data – Spurious Emission at Antenna Terminals

Data Plot INTERMODULATION CHARACTERISTICS CDMA

Page 2 of 2

Job No.: 1L0263R Date: 6/28/01
Specification: Part 24 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
Configuration: Tx Full Power



Date: 28 JUN 2001 12:29:06

Notes: CDMA LOWER BAND (OUT OF BAND)
DOWNLINK
MARKER 1 INDICATES HIGHEST EMISSION OUT OF BAND

Test Data – Spurious Emission at Antenna Terminals

Data Plot **SPURIOUS EMISSION AT ANTENNA TERMINALS / CDMA**

Page 1 of 2

Complete X

Job No.: 1L0263R

Date: 6/28/01

Preliminary

Specification: Part 24

Temperature(°C): 22

Tested By: Chinda Poy

Relative Humidity(%) 50

E.U.T.: DUAL BAND BRITCELL FAST SYSTEM

Configuration: Tx Full Power

Sample Number:

Location: Lab 1

RBW: Refer to plots

Detector Type: Peak

VBW: Refer to plots

Test Equipment UsedAntenna: Directional Coupler: Pre-Amp:

Cable #1: 1043

Filter: Cable #2:

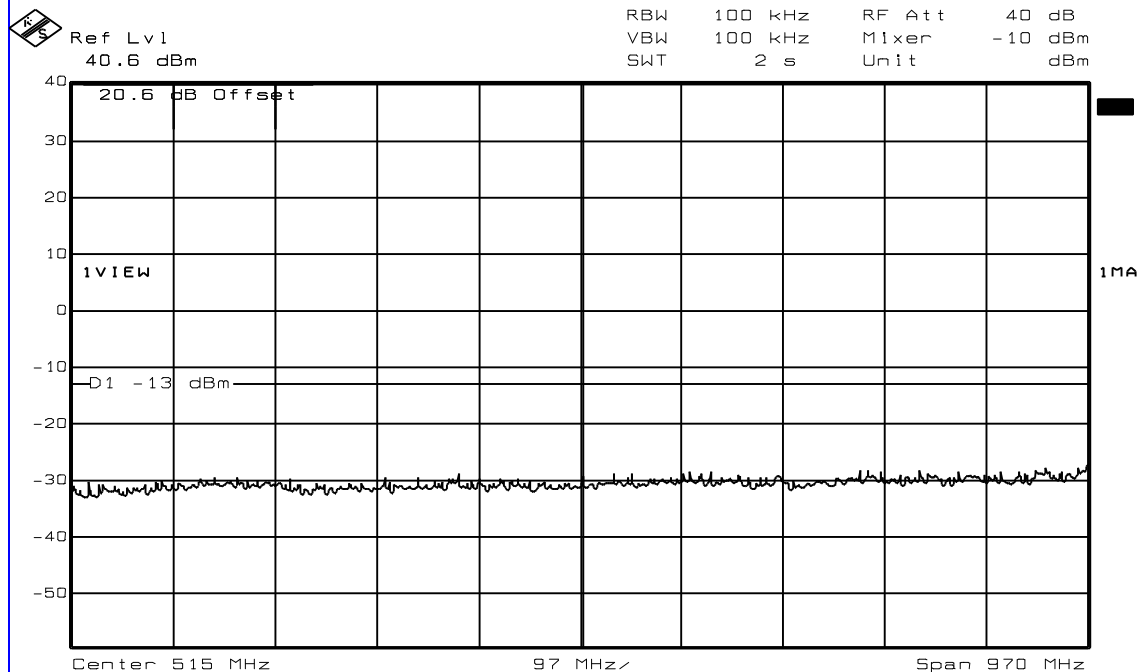
Receiver: 1036

Cable #3:

Attenuator #1: 1474

Cable #4: Attenuator #2: Mixer: Additional equipment used:

Measurement Uncertainty: +/-3.6 dB



Date: 28.JUN.2001 13:09:16

Notes: 30 MHz - 1 GHz

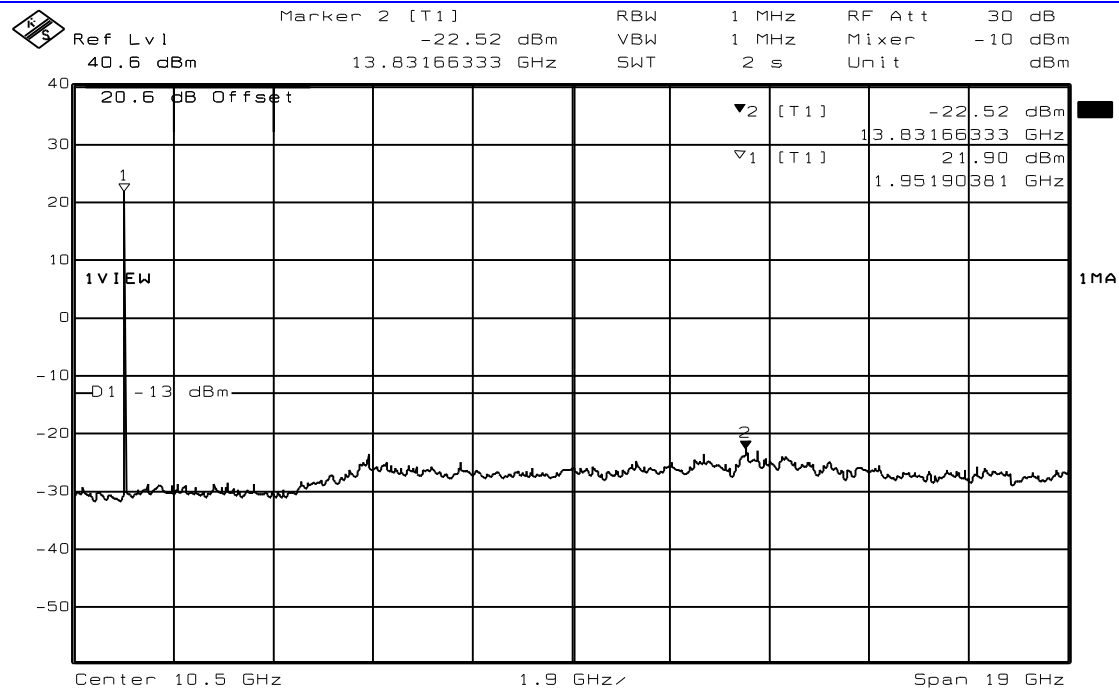
NO EMISSIONS INDICATED

Test Data – Spurious Emission at Antenna Terminals

Data Plot SPURIOUS EMISSION AT ANTENNA TERMINALS / CDMA

Page 2 of 2

Job No.: 1L0263R Date: 6/28/01
Specification: Part 24 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
Configuration: Tx Full Power



Date: 28.JUN.2001 13:24:43

Notes: 1 GHz - 20 GHz

MARKER 1 INDICATES CARRIER

MARKER 2 INDICATES HIGHEST EMISSION

Test Data – Spurious Emission at Antenna Terminals

Data Plot **BANDEDGE CDMA**

Page 1 of 2

Complete XPreliminary

Job No.: 1L0263R Date: 6/28/01

Specification: Part 24 Temperature(°C): 22

Tested By: Chinda Poy Relative Humidity(%) 50

E.U.T.: DUAL BAND BRITCELL FAST SYSTEM

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: 1043

Filter: Cable #2:

Receiver: 1036

Cable #3:

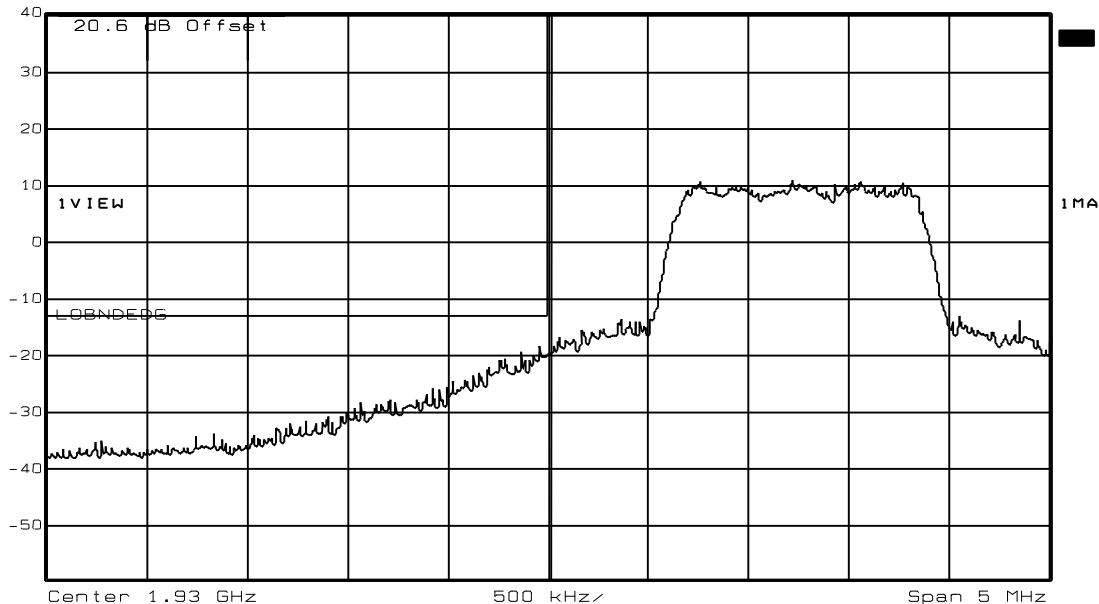
Attenuator #1: 1474

Cable #4: Attenuator #2: Mixer: Additional equipment used:

Measurement Uncertainty: +/-3.6 dB

Ref Lvl
40.6 dBm

RBW	30 kHz	RF Att	40 dB
VBW	30 kHz	Mixer	-10 dBm
SWT	2 s	Unit	dBm



Date: 28.JUN.2001 12:57:52

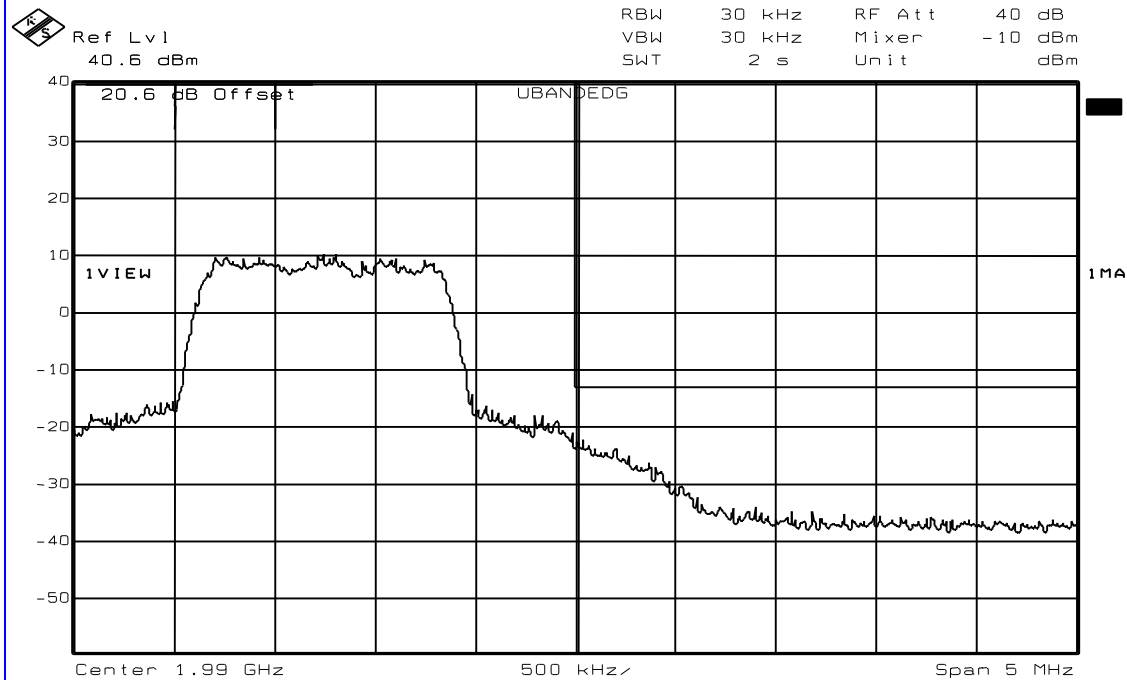
Notes: **CDMA LOWER BANDEDGE**
DOWNLINK

Test Data – Spurious Emission at Antenna Terminals

Data Plot BANDEDGE CDMA

Page 2 of 2

Job No.: 1L0263R Date: 6/28/01
Specification: Part 24 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
Configuration: Tx Full Power



Date: 28.JUN.2001 12:56:05

Notes: CDMA UPPER BANDEDGE
DOWNLINK

Test Data – Spurious Emission at Antenna Terminals

Data Plot INTERMODULATION CHARACTERISTICS GSM

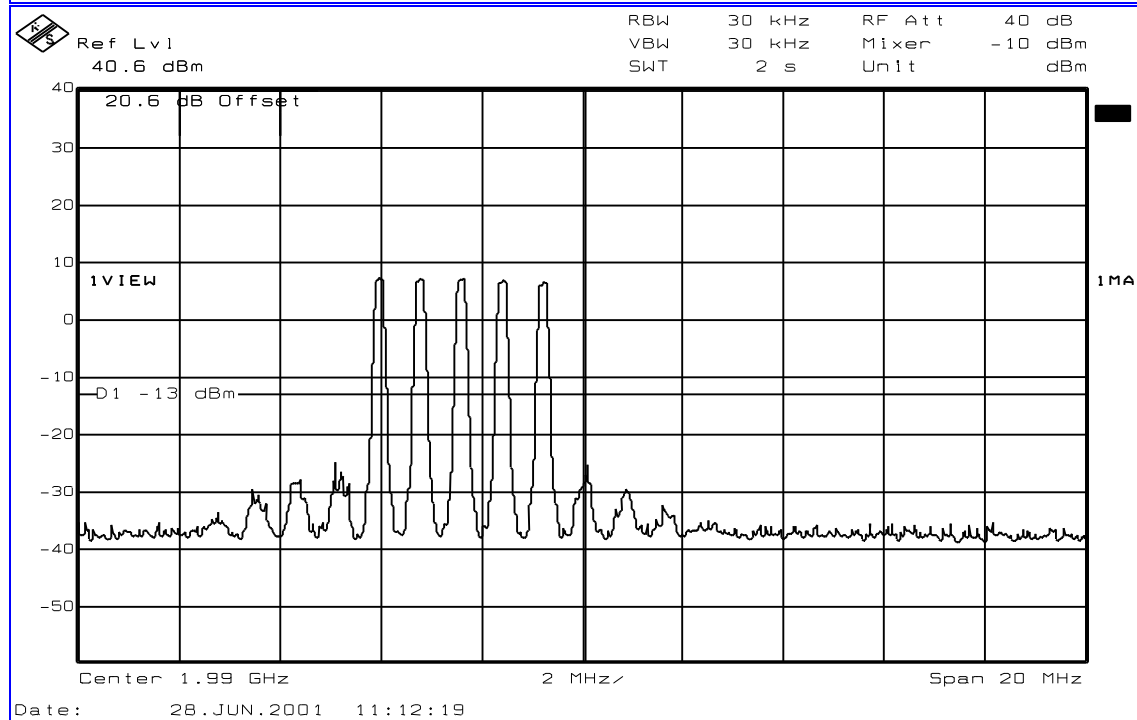
Page 1 of 2

Complete XPreliminary

Job No.: 1L0263R Date: 6/28/01
Specification: Part 24 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
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: 1043
Filter: Cable #2:
Receiver: 1036 Cable #3:
Attenuator #1: 1474 Cable #4:
Attenuator #2: Mixer:
Additional equipment used:
Measurement Uncertainty: +/-3.6 dB



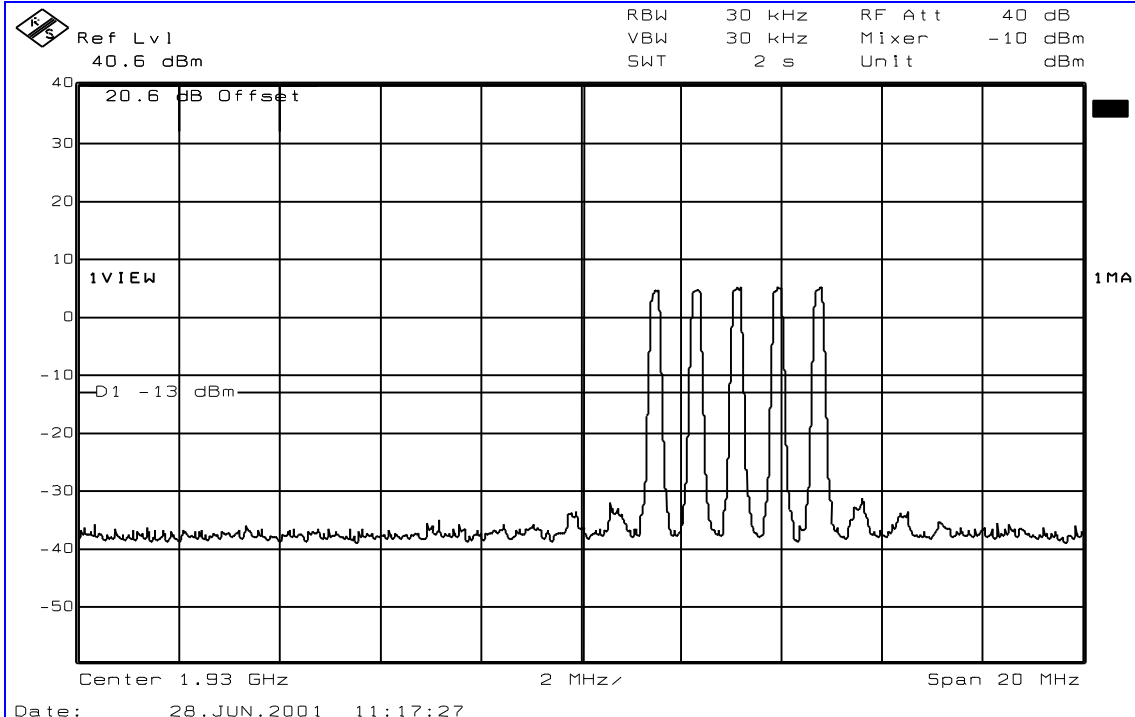
Notes: GSM UPPER BAND (OUT OF BAND)
DOWNLINK

Test Data – Spurious Emission at Antenna Terminals

Data Plot INTERMODULATION CHARACTERISTICS GSM

Page 2 of 2

Job No.: 1L0263R Date: 6/28/01
Specification: Part 24 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
Configuration: Tx Full Power



Notes: GSM LOWER BAND (OUT OF BAND)
DOWNLINK

Test Data – Spurious Emission at Antenna Terminals

Data Plot **SPURIOUS EMISSION AT ANTENNA TERMINALS / GSM**

Page 1 of 2

Complete X

Job No.: 1L0263R

Date: 6/28/01

Preliminary

Specification: Part 24

Temperature(°C): 22

Tested By: Chinda Poy

Relative Humidity(%) 50

E.U.T.: DUAL BAND BRITCELL FAST SYSTEM

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: 1043

Filter: Cable #2:

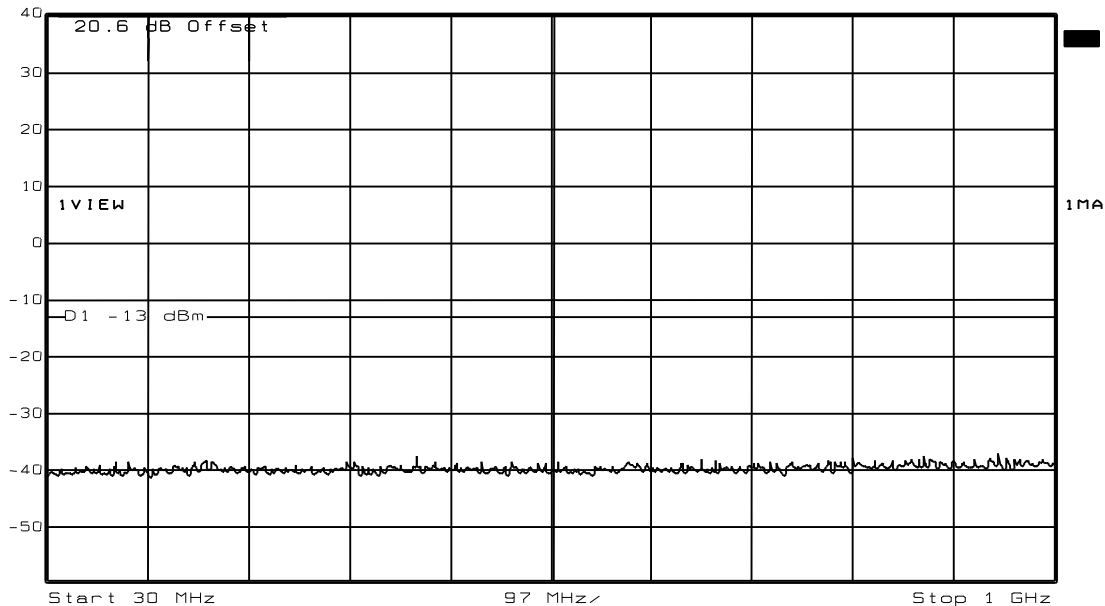
Receiver: 1036

Cable #3:

Attenuator #1: 1474

Cable #4: Attenuator #2: Mixer: Additional equipment used:

Measurement Uncertainty: +/-3.6 dB

Ref Lvl
40.6 dBmRBW 100 kHz RF Att 30 dB
VBW 100 kHz Mixer -10 dBm
SWT 2 s Unit dBm

Date: 28 JUN 2001 13:18:57

Notes: 30 MHz - 1 GHz

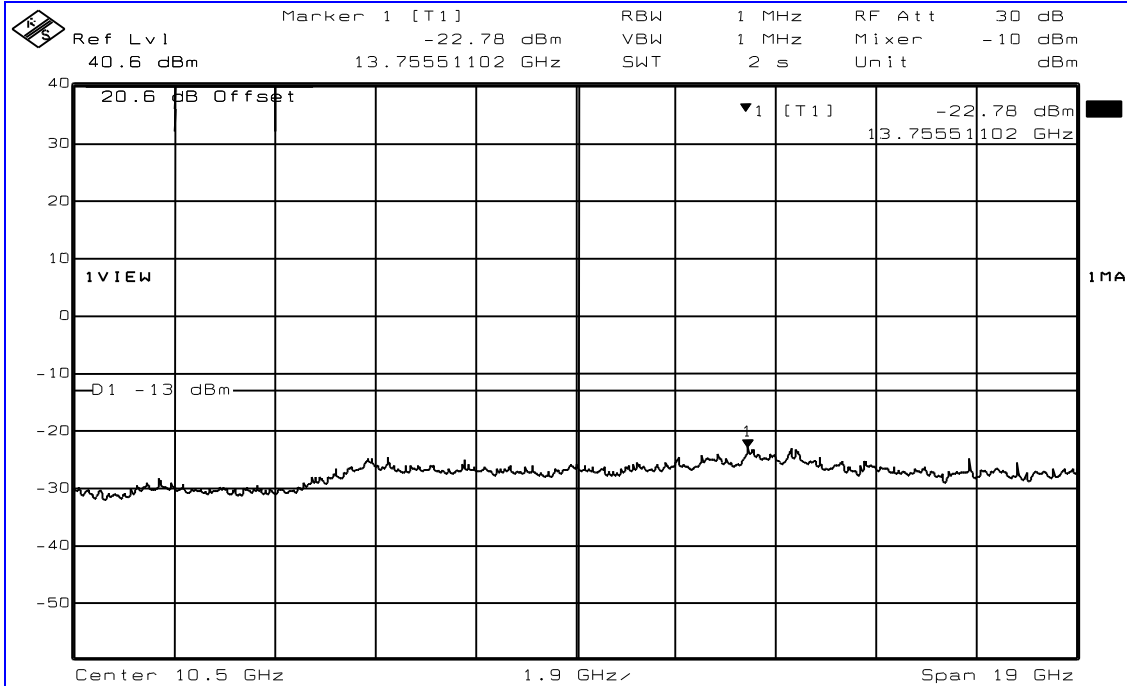
NO EMISSIONS INDICATED

Test Data – Spurious Emission at Antenna Terminals

Data Plot SPURIOUS EMISSION AT ANTENNA TERMINALS / GSM

Page 2 of 2

Job No.: 1L0263R Date: 6/28/01
Specification: Part 24 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
Configuration: Tx Full Power



Date: 28.JUN.2001 13:16:23

Notes: 1 GHz - 20 GHz

MARKER 1 INDICATES HIGHEST EMISSION

Test Data – Spurious Emission at Antenna Terminals

Data Plot **BANDEDGE GSM**

Page 1 of 2

Complete XPreliminary

Job No.: 1L0263R Date: 6/28/01

Specification: Part 24 Temperature(°C): 22

Tested By: Chinda Poy Relative Humidity(%) 50

E.U.T.: DUAL BAND BRITCELL FAST SYSTEM

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: 1043

Filter: Cable #2:

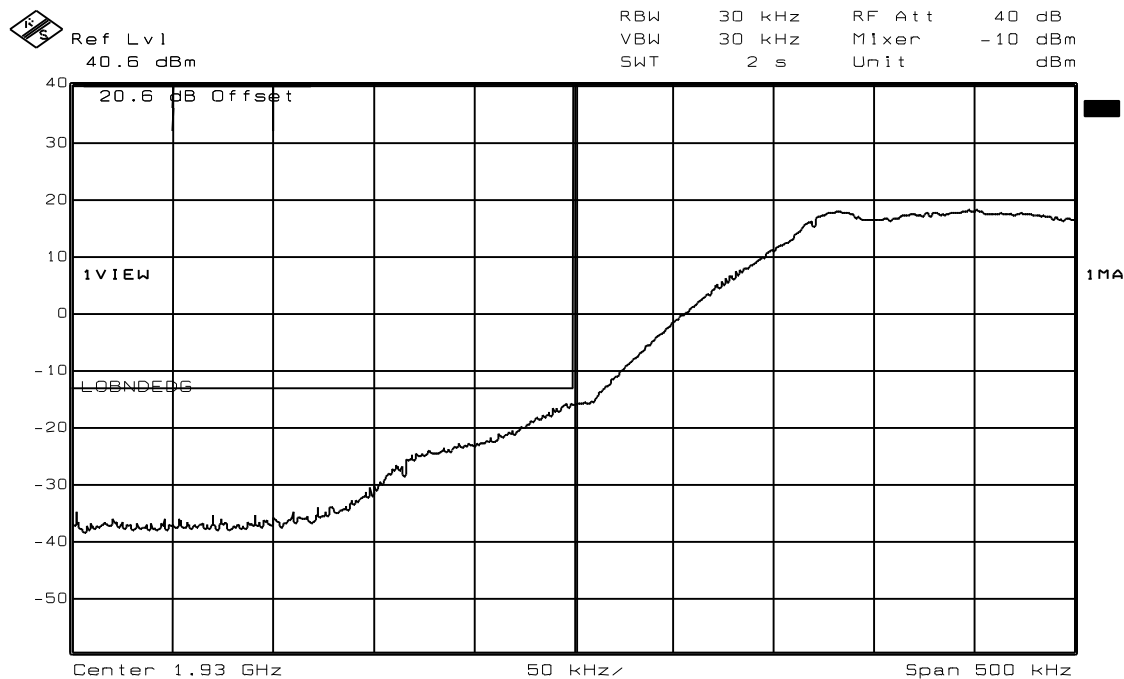
Receiver: 1036

Cable #3:

Attenuator #1: 1474

Cable #4: Attenuator #2: Mixer: Additional equipment used:

Measurement Uncertainty: +/-3.6 dB

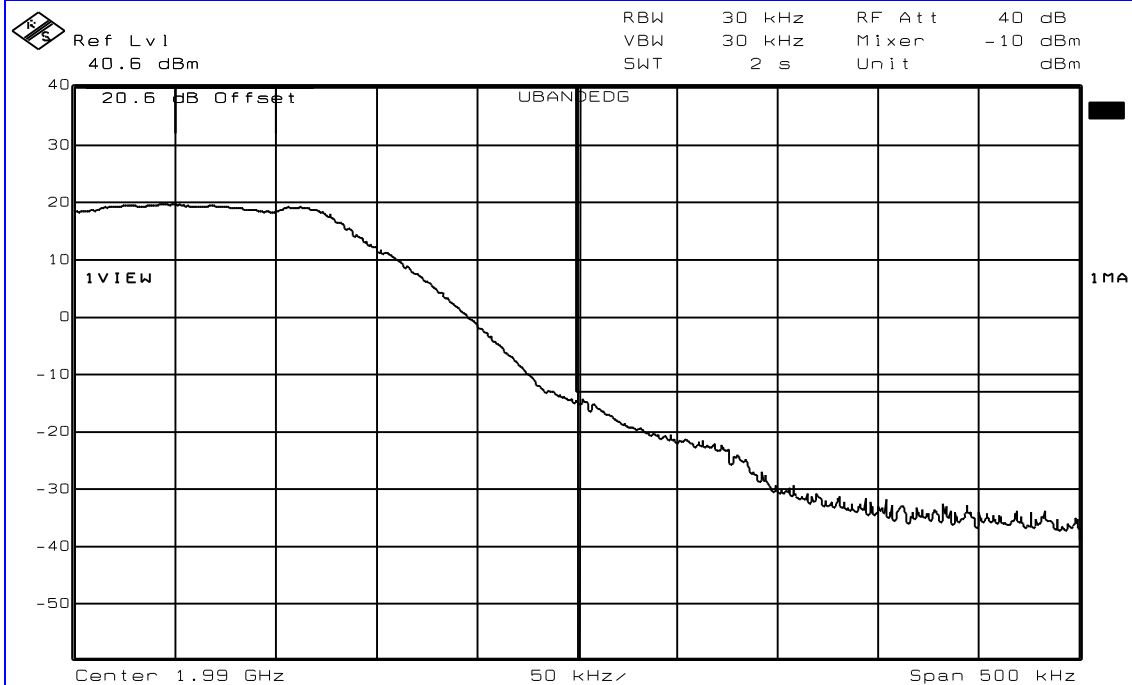
Notes: **GSM LOWER BANDEDGE**
DOWNLINK

Test Data – Spurious Emission at Antenna Terminals

Data Plot BANDEDGE GSM

Page 2 of 2

Job No.: 1L0263R Date: 6/28/01
Specification: Part 24 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
Configuration: Tx Full Power



Date: 28.JUN.2001 12:52:05

Notes: GSM UPPER BANDEDGE
DOWNLINK

Test Data – Spurious Emission at Antenna Terminals

Data Plot INTERMODULATION CHARACTERISTICS TDMA

Page 1 of 2

Complete XPreliminary

Job No.: 1L0263R Date: 6/28/01

Specification: Part 24 Temperature(°C): 22

Tested By: Chinda Poy Relative Humidity(%) 50

E.U.T.: DUAL BAND BRITCELL FAST SYSTEM

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: 1043

Filter: Cable #2:

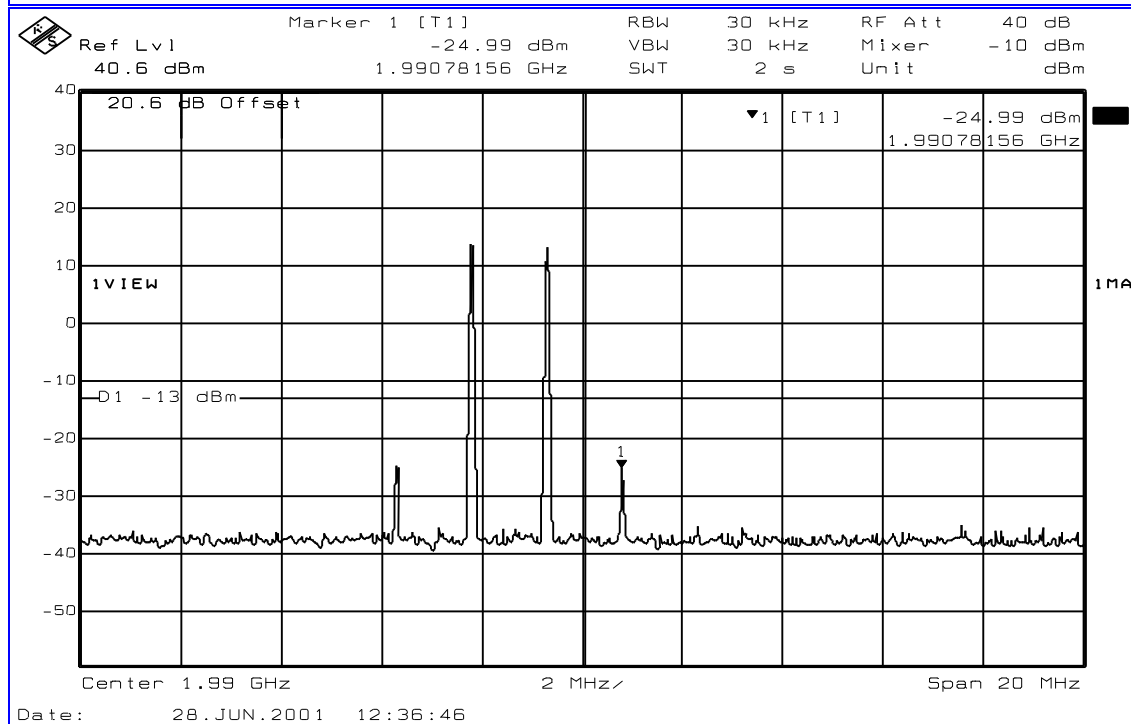
Receiver: 1036

Cable #3:

Attenuator #1: 1474

Cable #4: Attenuator #2: Mixer: Additional equipment used:

Measurement Uncertainty: +/-3.6 dB



Notes: TDMA UPPER BAND (OUT OF BAND)

DOWNLINK

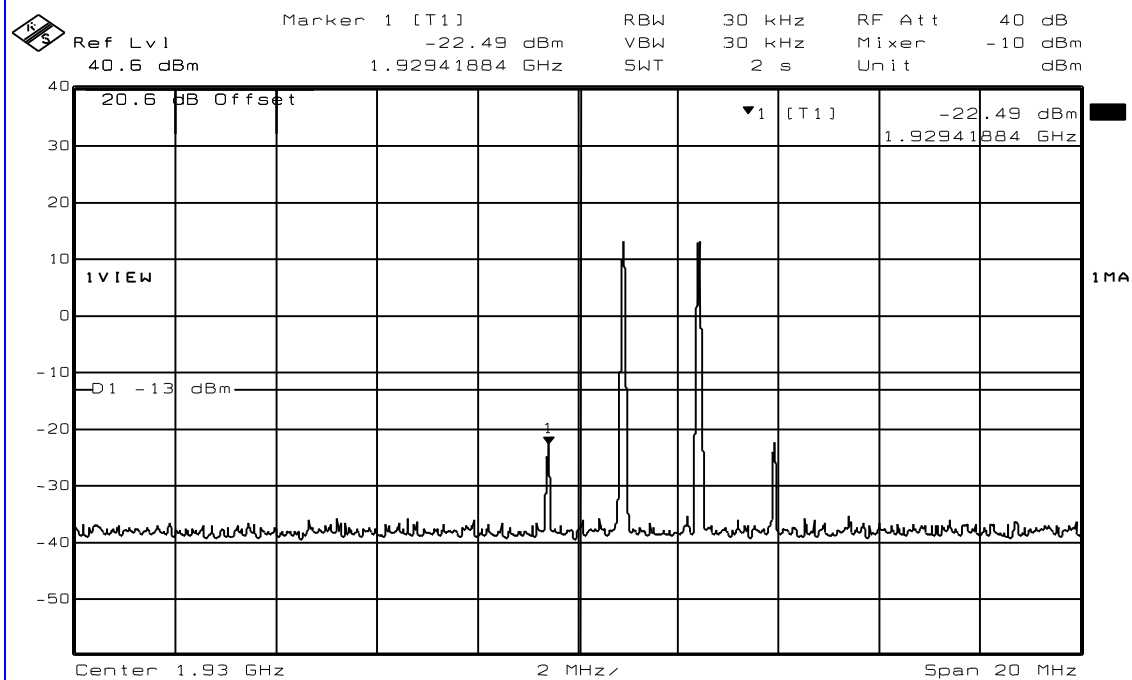
MARKER 1 INDICATES HIGHEST EMISSION OUT OF BAND

Test Data – Spurious Emission at Antenna Terminals

Data Plot INTERMODULATION CHARACTERISTICS TDMA

Page 2 of 2

Job No.: 1L0263R Date: 6/28/01
Specification: Part 24 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
Configuration: Tx Full Power



Notes: TDMA LOWER BAND (OUT OF BAND)
DOWNLINK
MARKER 1 INDICATES HIGHEST EMISSION OUT OF BAND

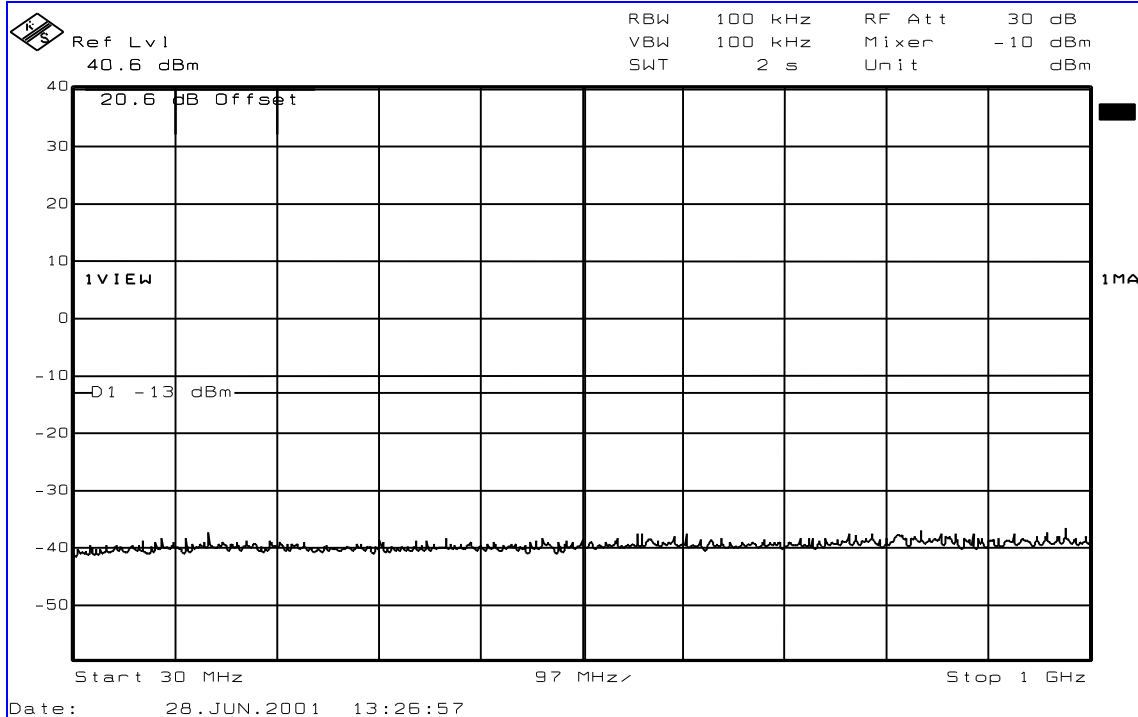
Test Data – Spurious Emission at Antenna Terminals

Data Plot **SPURIOUS EMISSION AT ANTENNA TERMINALS / TDMA**

Page 1 of 2 Complete X
Job No.: 1L0263R Date: 6/28/01 Preliminary _____
Specification: Part 24 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
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: 1043
Filter: _____ Cable #2: _____
Receiver: 1036 Cable #3: _____
Attenuator #1: 1474 Cable #4: _____
Attenuator #2: _____ Mixer: _____
Additional equipment used: _____
Measurement Uncertainty: +/-3.6 dB



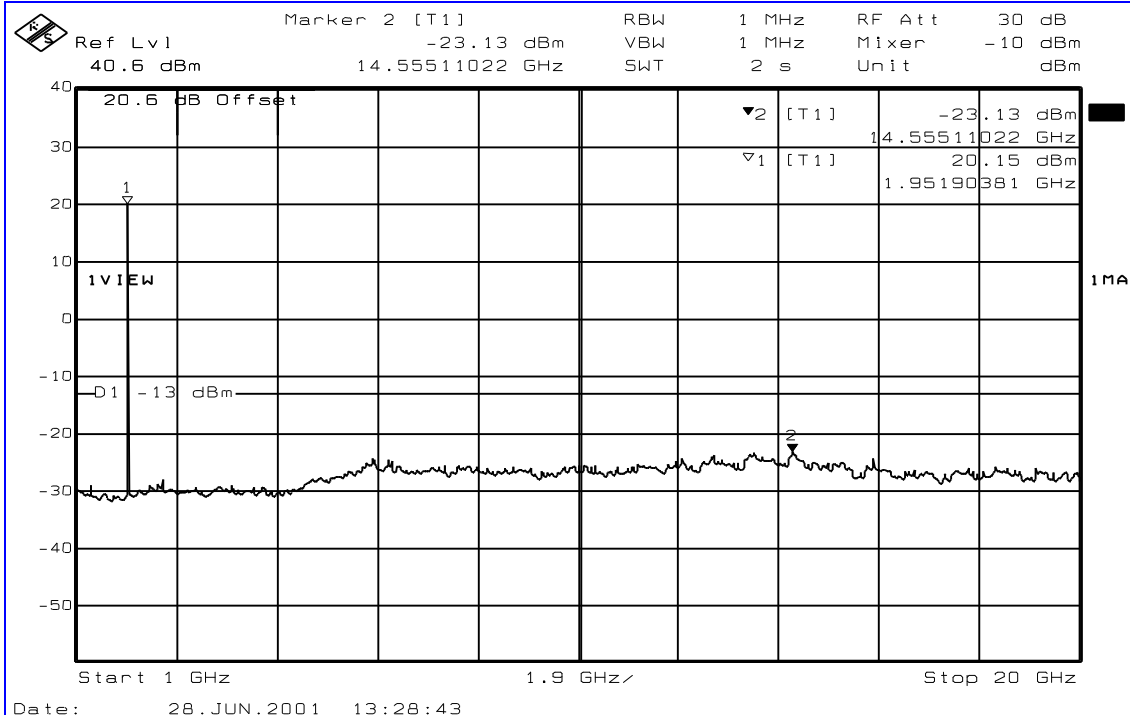
Notes: **30 MHz - 1 GHz**
NO EMISSIONS INDICATED

Test Data – Spurious Emission at Antenna Terminals

Data Plot SPURIOUS EMISSION AT ANTENNA TERMINALS / TDMA

Page 2 of 2

Job No.: 1L0263R Date: 6/28/01
Specification: Part 24 Temperature(°C): 22
Tested By: Chinda Poy Relative Humidity(%) 50
E.U.T.: DUAL BAND BRITCELL FAST SYSTEM
Configuration: Tx Full Power



Notes: 1 GHz - 20 GHz

MARKER 1 INDICATES CARRIER

MARKER 2 INDICATES HIGHEST EMISSION

Section 6. Field Strength of Spurious

NAME OF TEST: Field Strength of Spurious Emissions	PARA. NO.: 2.1051
TESTED BY: Chinda Poy	DATE: 6/28/01

Test Results: Complies.

Test Data: See attached table.

Equipment Used: 1464-1016-1484-1485-1046

Measurement Uncertainty: +/- 1.7 dB

Test Data - Radiated Emissions - Downlink



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 1 of 1

Job No.: 1L0263R

Date: 6/29/01

Complete X

Preliminary

Specification: PART 24

Temperature(°C): 24

Tested By: Chinda Poy

Relative Humidity(%) 48

E.U.T.: DUAL BAND BRITCELL FAST SYSTEM

Configuration: TX FULL POWER

Sample Number:

Location:	AC 2
-----------	------

RBW: 1 MHz

Detector Type:	Peak
----------------	------

VBW: 1 MHz

Measurement
Distance 3 m

Test Equipment Used

Antenna: 993Directional Coupler: #N/A

Pre-Amp:	1016
----------	------

Cable #1:	1046
-----------	------

Filter: #N/A

Cable #2: 1484

Receiver: 1036

Cable #3: 1485

Attenuator #1	#N/A
---------------	------

Cable #4: #N/A

Attenuator #2: #N/AMixer: #N/A

Additional

equipment used:

Measurement

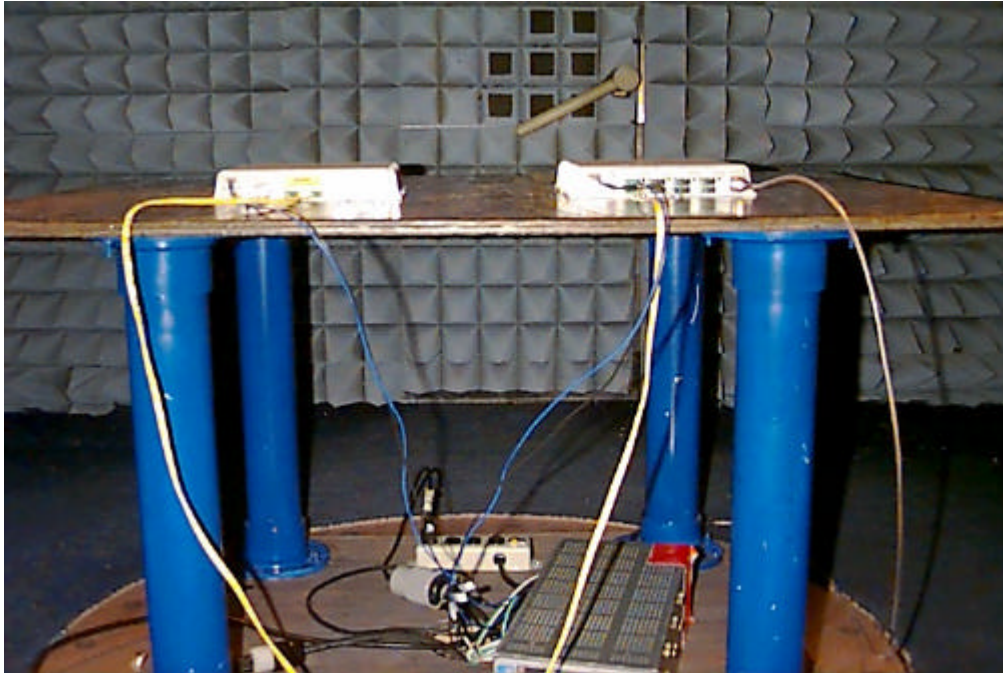
Uncertainty: +/- .7 dB

[illegible]

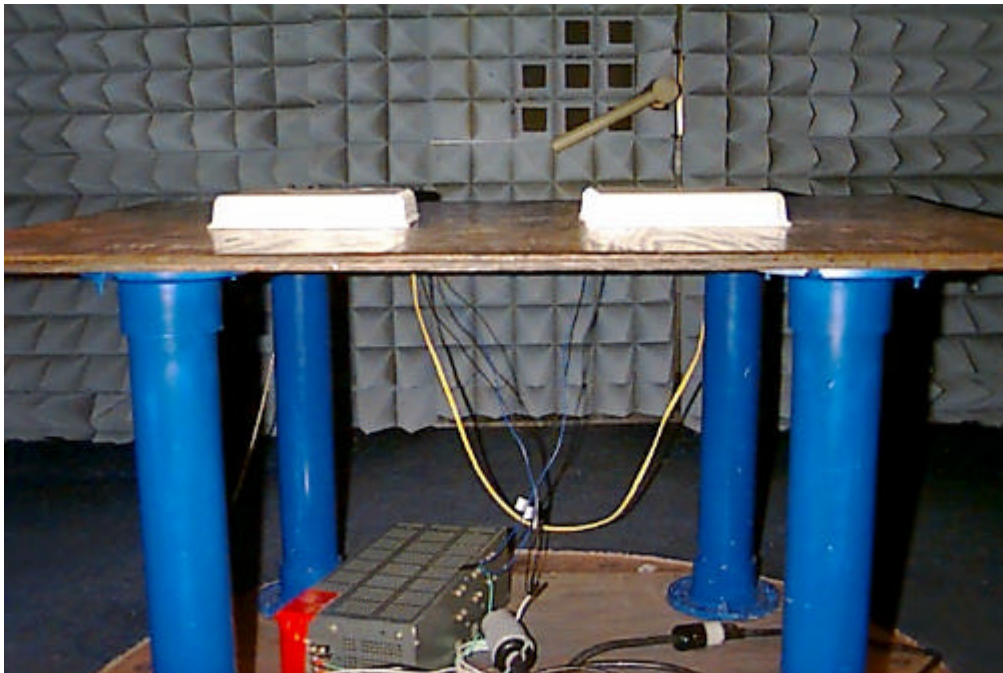
Notes: 1960 MHz / SACNNED TO THE 10TH HARMONIC

Photographs of Test Setup

FRONT VIEW



REAR VIEW



Section 7. Frequency Stability

NAME OF TEST: Frequency Stability	PARA. NO.: 2.1055
TESTED BY:	DATE:

Test Results:

Complies

Measurement Data:

See attached table.

Not Applicable

Standard Test Frequency:

MHz

Standard Test Voltage:

Equipment Used:

Measurement Uncertainty: +/- 1.6 dB

Lab Temperature: °C

Relative Humidity: %

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
1474	20db Attenuator DC 18 Ghz	MCL Inc. BW-S20W2	NONE	CBU	N/A
1043	Flexible cable 1m	Astrolab Inc. 32027-2-29094K-1M	0	01/29/01	01/29/02
1045	CABLE 2m	Astrolab Inc. 32027-2-29094-72TC	N/A	06/01/01	06/01/02
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

Nemko Dallas

FCC PART 24, SUBPART E

BROADBAND PCS REPEATERS

EQUIPMENT: DUAL BAND BRITECELL FAST SYSTEM

FCC ID: PROJECT NO.: 1L0263RUS2

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:Detachable Antenna:

The peak power at antenna terminals is measured using an in-line peak power meter. Power output is measured with the maximum rated input level.

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

NAME OF TEST: Occupied Bandwidth**PARA. NO.: 2.1047**

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

Spectrum analyzer settings:

RBW: 30 kHz

VBW: $\geq$ RBW

Span: 5 MHz

Sweep: Auto

Mask: Set markers to -26 dB from peak of CW.

GSM

RBW: 3 kHz

VBW: $\geq$ RBW

Span: 2 MHz

Sweep: Auto

Mask: Set markers to -26 dB from peak of CW.

NADC

RBW: 1 kHz

VBW: $\geq$ RBW

Span: 1 MHz

Sweep: Auto

Mask: Set markers to -26 dB from peak of CW.

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

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

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

RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 3 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.

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)

$R = 3\text{m}$ (Measurement Distance)

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

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

For emissions > 1 GHz:

$G = 1$ (Isotropic Gain)

$P = 1 \times 10^{-5}$ Watts (Maximum spurious output power)

$R = 3\text{m}$ (Measurement Distance)

$$E = 84.4 - 20 \log \sqrt{1.64} = 82.3 \text{ dBmV / m@3m}$$

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: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. The frequency counter and signal generator are phase locked with the same 10 MHz reference frequency by connecting the 10 MHz ref. out of the counter to the 10 MHz ref, in of the signal generator. 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.

Nemko Dallas

FCC PART 24, SUBPART E

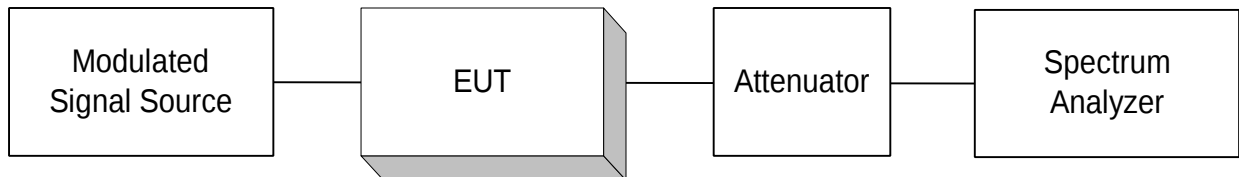
BROADBAND PCS REPEATERS

EQUIPMENT: DUAL BAND BRITCELL FAST SYSTEM

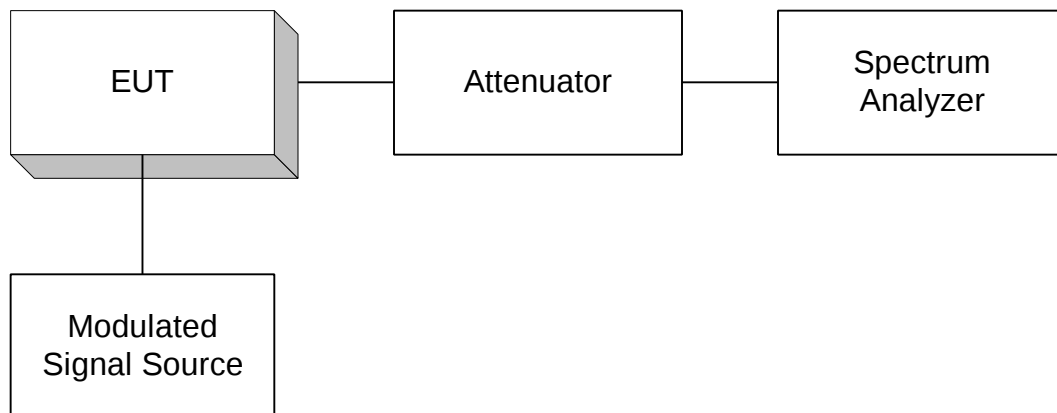
FCC ID: PROJECT NO.: 1L0263RUS2

ANNEX B - TEST DIAGRAMS

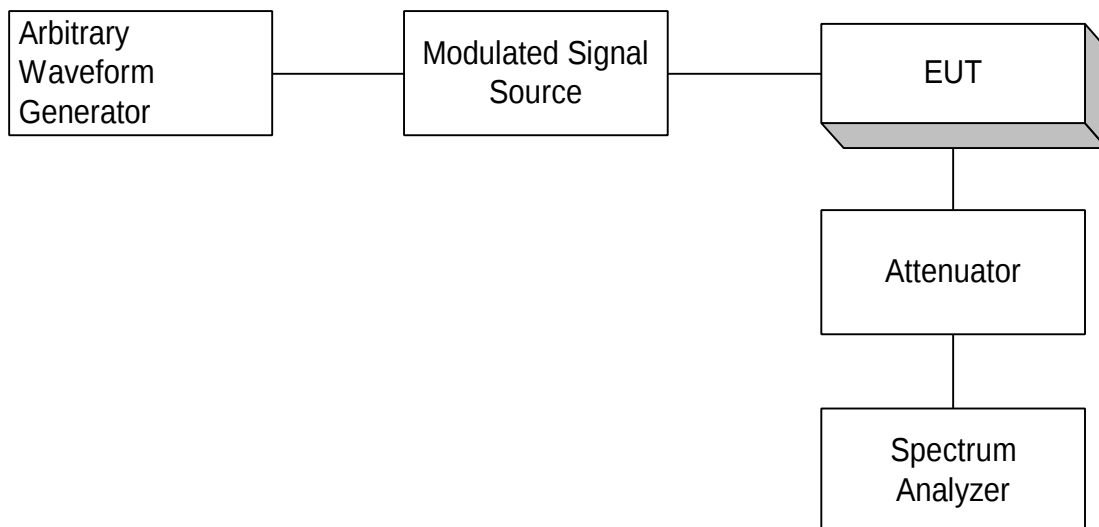
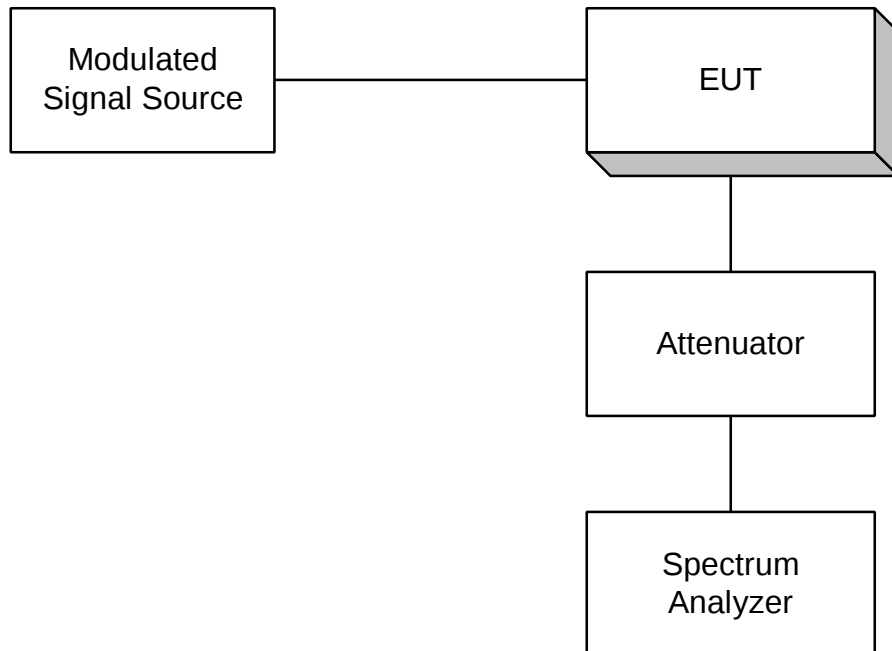
Para. No. 2.985 - R.F. Power Output



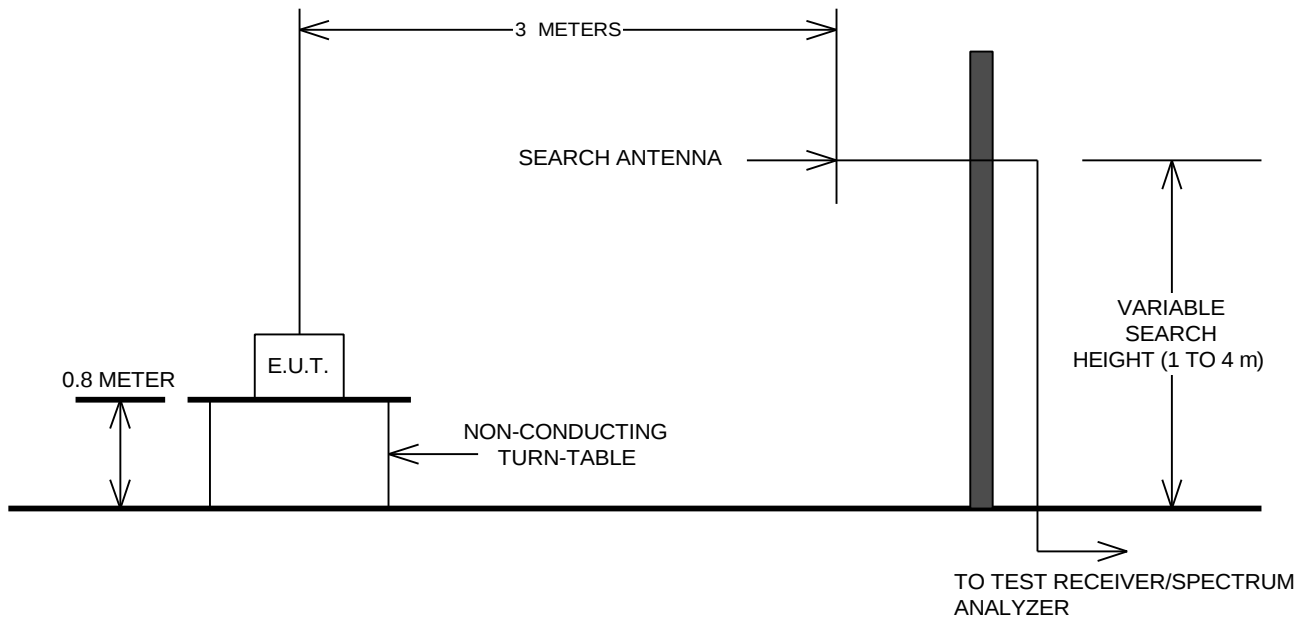
Para. No. 2.989 - Occupied Bandwidth



Para. No. 2.991 Spurious Emissions at Antenna Terminals



Para. No. 2.993 - Field Strength of Spurious Radiation



Para. No. 2.995 - Frequency Stability

