Nemko Test Report:	2L0436RUS1
Applicant:	Navini Networks 2240 Campbell Creek Blvd. Suite 110 Richardson, TX 75082
Equipment Under Test: (E.U.T.)	2.3 GHz WCS Band BTS
In Accordance With:	FCC CFR 47, PART 27, Subpart C Wireless Communication Services
Tested By:	Nemko Dallas Inc. 802 N. Kealy Lewisville, Texas 75057-3136
Authorized By:	 John Fish, Senior EMC Engineer
Date:	9/26/2003
Total Number of Pages:	86

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Section 1. Summary of Test Results

Manufacturer: Navini Networks

Model No.: 2300-Digital, 2300-RF

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 27, Subpart C.

☒ 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. NONE
See " Summary of Test Data".

This report applies only to the items tested.

Summary Of Test Data

NAME OF TEST	PARA. NO.	SPEC.	RESULT
RF Power Output	2.1046/27.50(a)(1)	2000 W EIRP	Complies
Occupied Bandwidth	2.1049/27.53(a)	27.53 (a) Mask	Complies
Spurious Emissions @ Antenna Terminals	2.1051/27.53(a)	27.53(a)	Complies
Field Strength of Spurious Radiation	2.1053/27.53(a)	27.53(a)	Complies
Frequency Stability	2.1055/27.54	27.53 (a) Mask	Complies

Footnotes:

Section 2. General Equipment Specification

Supply Power:		27 Vdc
Frequency Range:		2305 – 2320 MHz 2345 – 2360 MHz
Type(s) of Modulation:		**F3E (Voice)** ☐ **F1D** ☐ **F2D** ☐ **D7W (QAM)** ☒ **DQPSK (F9W)** ☐
Emission Designator:		500KD7W
Output Impedance:		50 ohms
RF Power Output Rated:	**398 watts eirp (see page 5)**	+30 dBm (1 watt) at antenna terminals for all configurations. +36 dBm (4 watts) at EUT for 10 carrier configuration +37 dBm (5 watts) at EUT for 8 carrier configuration +37 dBm (5 watts) at EUT for 6 carrier configuration
Duty Cycle:		Software controlled 50% to 75% TDD
Operator Selection Of Operating Frequency:		Software controlled
Power Output Adjustment Capability:		Software controlled

Description Of EUT

The EUT is a high capacity, broadband data communication Base Station Transceiver. The EUT can operate in WCS channels AB high, AB low, C, or D by design with appropriate block or channel filters inserted into the EUT. Three capacity configurations are available which consists of 10, 8, or 6 Carriers. A Carrier is a fundamental transmitter signal that is 500 kHz wide in bandwidth. An EUT Channel Bandwidth of 5 MHz consists of 10 Carriers each with a 500 kHz bandwidth. The following table summarizes the three capacity configurations for an EUT:

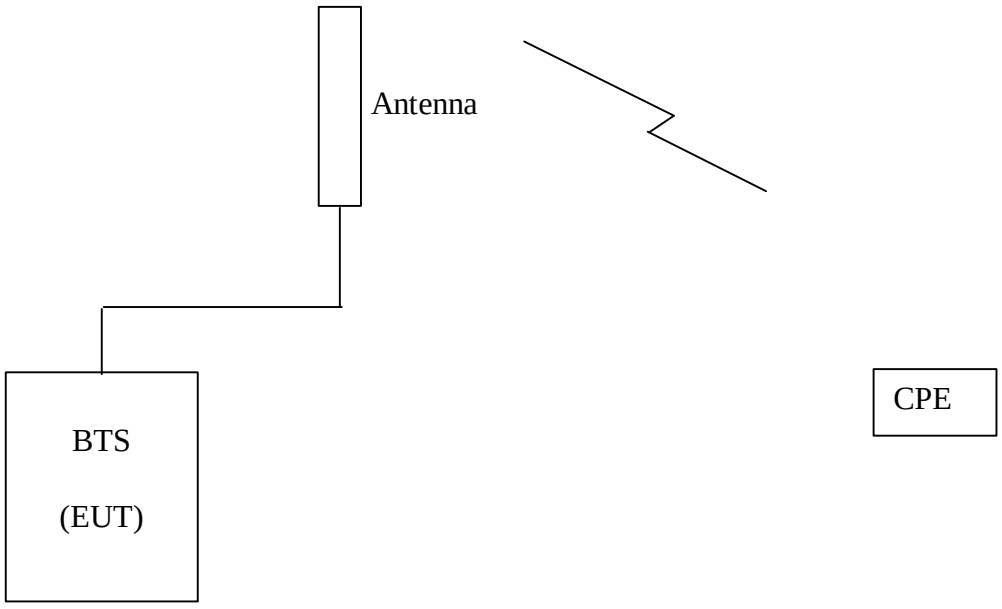
Capacity Configurations	WCS Channels	Number of Carriers	EUT Channel Bandwidth	Max EUT Power Output *	Loss to ANT	Max Power to ANT Terminal**
1	A or B	10	5 MHz	+36 dBm	6 dB	+30 dBm
2	A or B	8	4 MHz	+37 dBm	7 dB	+30 dBm
3	C or D	6	3 MHz	+37 dBm	7 dB	+30 dBm

***** EUT output power will be lowered dB for dB Loss to ANT is lower.
******Power to ANT terminal will be lowered dB for dB Loss to ANT is higher.

EIRP is calculated as follows:

Max. antenna gain = 18dBi
Max BTS rf output = +30 dBm RMS
Peak-to-Average Ratio = 8 dB
Max. rf output power = 30 dBm + 8 dB + 18 dBi = +56 dBm (Peak EIRP)

System Diagram



Section 3. RF Power Output

NAME OF TEST: RF Power Output	PARA. NO.: 2.1046
TESTED BY: Tom Tidwell	DATE: 9/3/2002

Test Results: Complies

Measurement Data:

Power Output	RF Power Output	Max. Antenna Gain	RF Power Output (EIRP)
(dBm)	**(Watts)**	**(dBi)**	**(Watts)**
+30	**1 watt @ Antenna input**	**18**	**398**
+36	**4 watts @ EUT rf output with 10 carriers. 1 watt @ antenna input**	**18**	**398**
+37	**5 watts @ EUT rf output with 8 carriers. 1 watt @ antenna input**	**18**	**398**
+37	**5 watts @ EUT rf output with 6 carriers. 1 watt @ antenna input**	**18**	**398**

Test Equipment Used: Agilent Model E4416A s/n GB41290732
Agilent Model E9327A s/n US40440319
Agilent Model E4419B s/n GB39461846
Agilent Model E9401 s/n MY41495108

Duty Cycle: 50%
Output power was measured with full traffic 10 carrier software load.
The maximum rf output power is + 30 dBm at the antenna input terminals. The maximum rf output power (EIRP)

Measurement Uncertainty: +/- 0.6 dBm

Section 4. Occupied Bandwidth

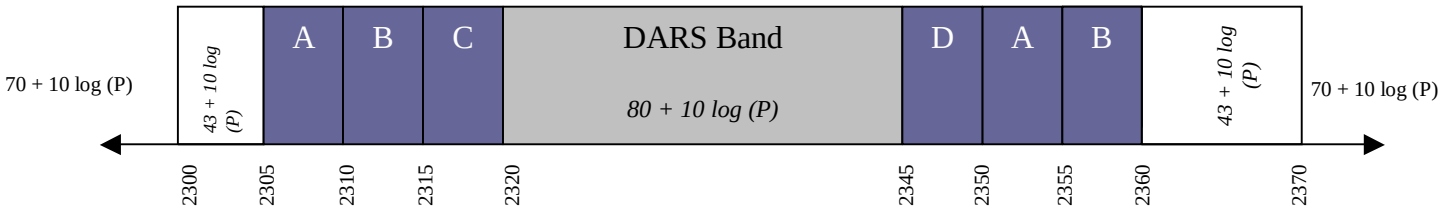
NAME OF TEST: Occupied Bandwidth	PARA. NO.: 2.1049
TESTED BY: Tom Tidwell	DATE: 9/16/2002

Test Results: Complies

Measurement Data: See attached data sheets.

The absolute RMS output power of the EUT is measured with a power meter. The occupied BW spectrum analyzer plots are not intended to represent the absolute channel power "CH PWR" of the EUT but provide measurement for the occupied channel BW of the EUT.

Measurement Uncertainty: +/- 1 x 10^{-7} ppm, +/- 1.7 dB



EQUIPMENT: 2.3 GHz WCS BTS

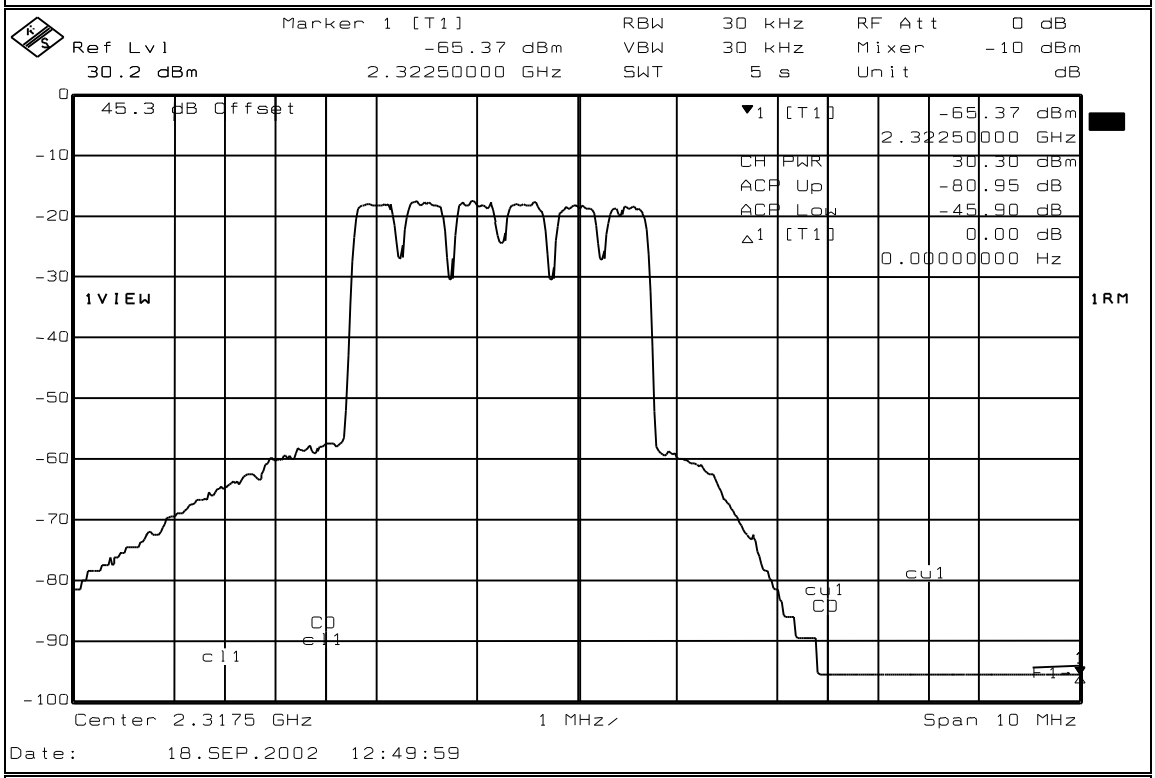
Test Data – Emission Mask

6 Carriers

~~Test Plot:~~ **~~Spurious Emissions at Antenna Terminals~~**

Page ~~1~~ of 5

Job No.: 2L0435R Date: 9/18/2002
Specification: CFR 47, Part 27 Temperature(°C): 24
Tested By: Tom Tidwell Relative Humidity(%) 44
E.U.T.: 2.3 GHz WCS band BTS
Configuration: Transmit full power



Notes: **DARS band edge (2320 MHz)**
Transmit in channel C

EQUIPMENT: 2.3 GHz WCS BTS

6 Carriers

~~Test Plot:~~ **~~Spurious Emissions at Antenna Terminals~~**

Page ~~1~~ of 5

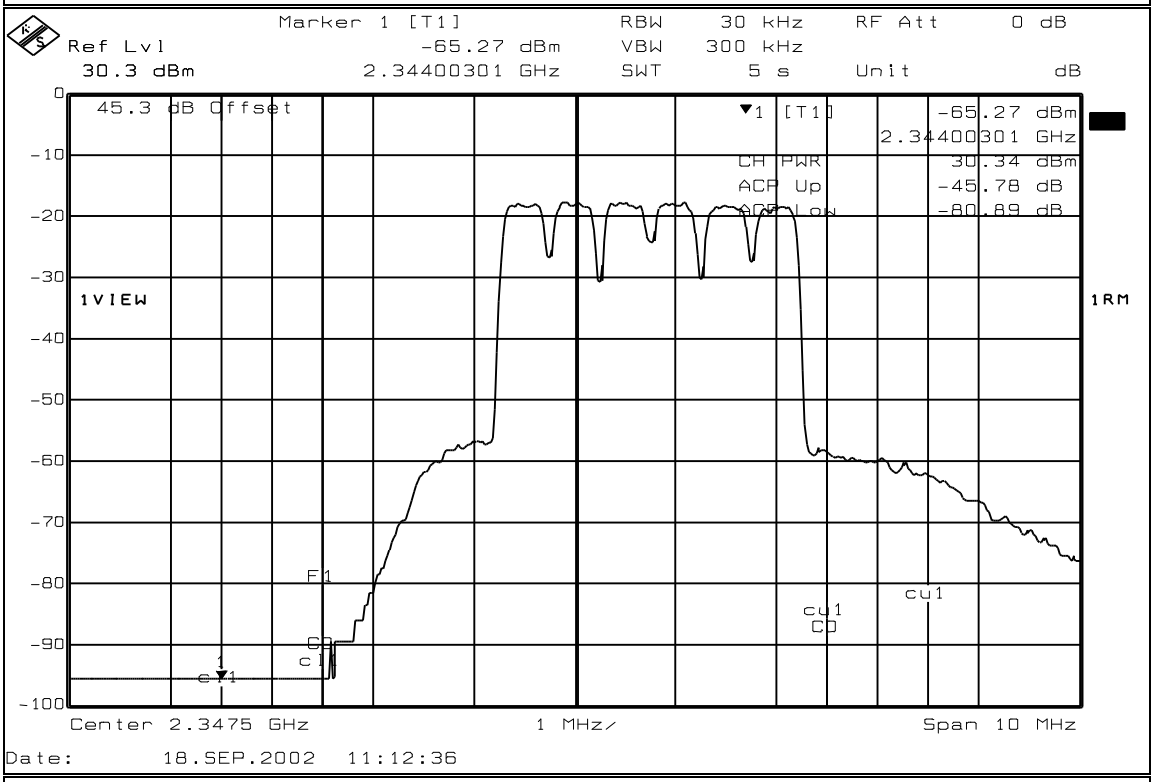
Job No.: 2L0435R Date: 9/18/2002

Specification: Part 27 Temperature(°C): 24

Tested By: Tom Tidwell Relative Humidity(%) 45

E.U.T.: 2.3 GHz WCS band BTS

Configuration: TX full power



Notes: **DARS band edge (2345 MHz)**

Transmit in channel D

EQUIPMENT: 2.3 GHz WCS BTS

~~Data Plot~~ **~~Occupied Bandwidth~~**

Page ~~1~~ of ~~5~~ Complete X

Job No.: 2L0436R Date: 9/16/2002 Preliminary: _____

Specification: Temperature(°C): 25

Tested By: Tom Tidwell Relative Humidity(%) 44

E.U.T.: 2.3 GHz WCS band BTS

Configuration: TX full power

Sample Number: None

RBW: Refer to plots

Detector Type: Rms VBW: Refer to plots

~~Test Equipment Used~~

Antenna: _____ Directional Coupler: Anaren 1C087-20

Pre-Amp: _____ Cable #1: _____

Filter: _____ Cable #2: _____

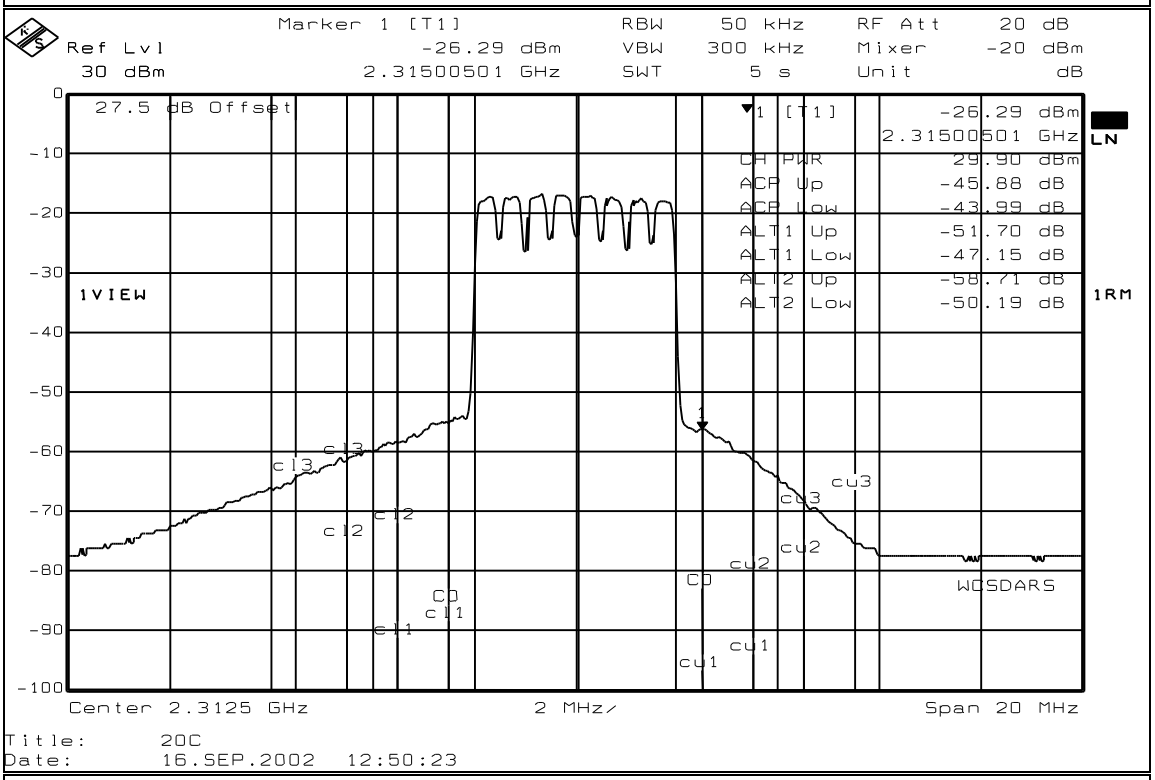
Receiver: 1036 Cable #3: _____

Attenuator #1 _____ Cable #4: _____

Attenuator #2: Mixer: _____

Additional equipment used: _____

Measurement Uncertainty: +/-1.7 dB



Notes: _____

8 Carriers

EQUIPMENT: 2.3 GHz WCS BTS

Test data – Emission Mask

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

Nemko Dallas, Inc.

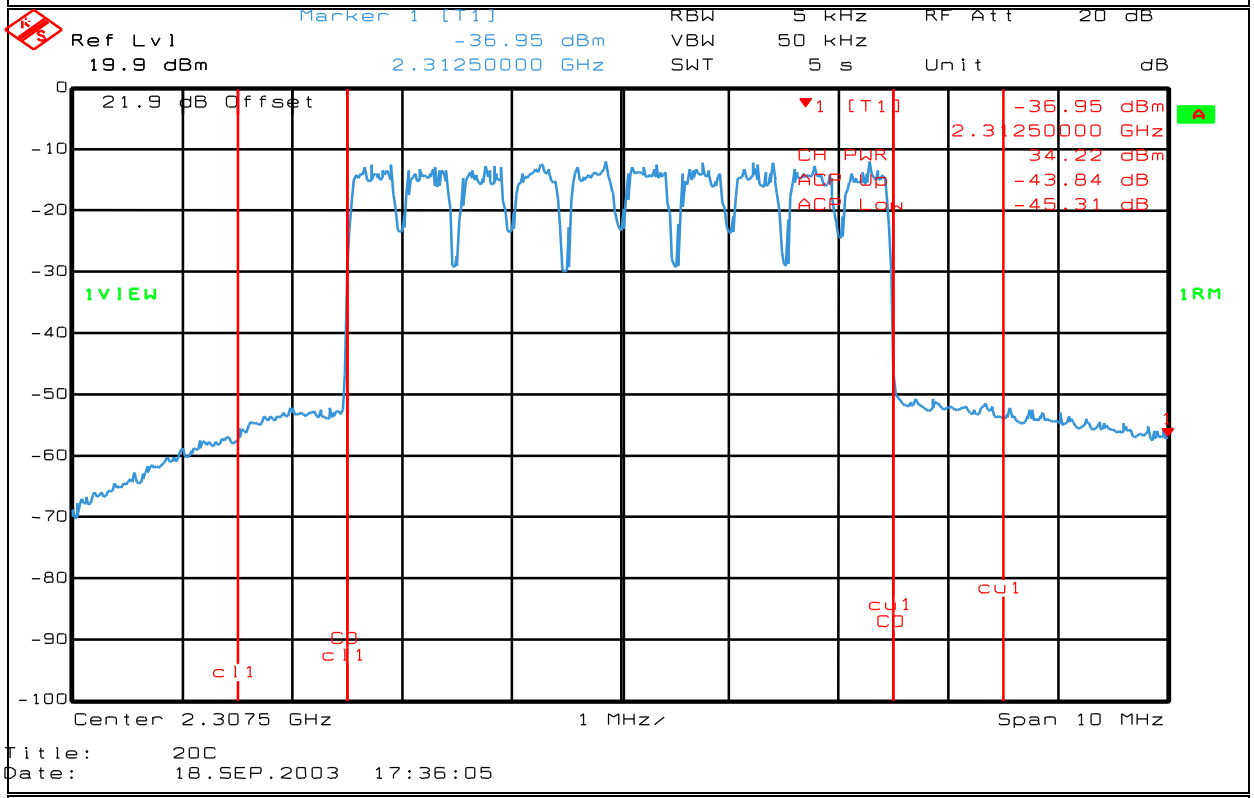
Data Plot — Spurious Emissions at Antenna Terminals

Page 1 of 16 — Complete: x — Preliminary:

Job No.:	2L0436R	Date:	9/18/2003		
Specification:	Part 27	Temperature(°C):	22		
Tested By:	David Light	Relative Humidity(%)	40		
E.U.T.:	2.3 GHz BTS				
Configuration:	Tx 10 Carriers				
Sample Number:	1				
Location:	On site	RBW:	5 kHz	Measurement	
Detector Type:	Rms	VBW:	50 kHz	Distance:	NA m

Test Equipment Used

Antenna:		Directional Coupler:	Model 1C0870-20	Cal'd prior to use
Pre-Amp:		Cable #1:	1484	
Filter:		Cable #2:		
Receiver:	1036	Cable #3:		
Attenuator #1	Model 2044-6dB Cal' prior to use	Cable #4:		
Attenuator #2:	Model 33-20-34 Cal'd prior to use	Mixer:		
Additional equipment used:				
Measurement Uncertainty:	+/-1.7 dB			



Notes: **Ambient 27 Vdc**

Adjacent channel power using higher resolution

EQUIPMENT: 2.3 GHz WCS BTS

Test data – Emission Mask

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

Nemko Dallas, Inc.

Test Plot: **Spurious Emissions at Antenna Terminals**

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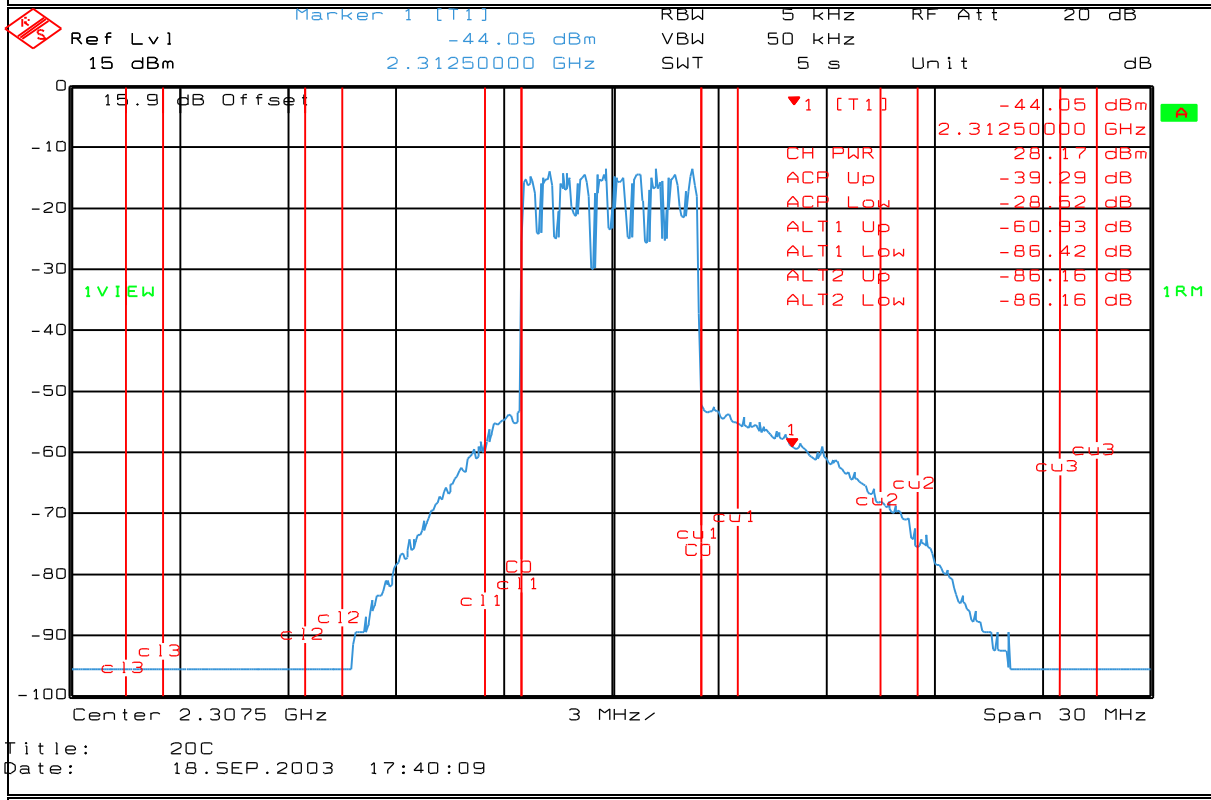
Job No.:	2L0436R	Date:	9/18/2003
Specification:	Part 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	Tx 10 Carriers		



Notes: **Ambient 27 Vdc**
Co-adjacent channel power

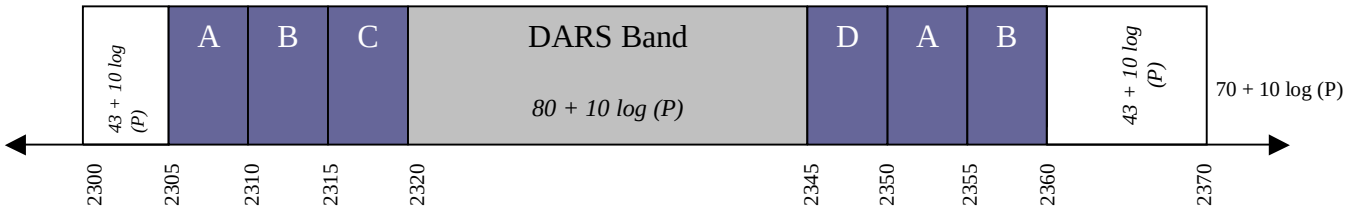
Section 5. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions @ Antenna Terminals	PARA. NO.: 2.1051
TESTED BY: Tom Tidwell	DATE: 9/16/2002

Test Results: Complies

Measurement Data: See attached data sheets.

Measurement Uncertainty: +/- 1.7 dB



EQUIPMENT: 2.3 GHz WCS BTS

Test Data – Spurious Emissions at Antenna Terminals

Band C

~~Data Plot~~ **~~Spurious Emissions at Antenna Terminals~~**

Page ~~1~~ of ~~5~~ Complete X

Job No.: 2L0435R Date: 9/18/2002 Preliminary:

Specification: CFR 47, Part 27 Temperature(°C): 24

Tested By: Tom Tidwell Relative Humidity(%) 44

E.U.T.: 2.3 GHz WCS band BTS

Configuration: Transmit full power

Sample Number: 1

Location: RBW: Refer to plots

Detector Type: Rms VBW: Refer to plots

~~Test Equipment Used~~

Antenna: Directional Coupler: Anaron 1C0870-20 20 dB coupler

Pre-Amp: Cable #1:

Filter: Cable #2:

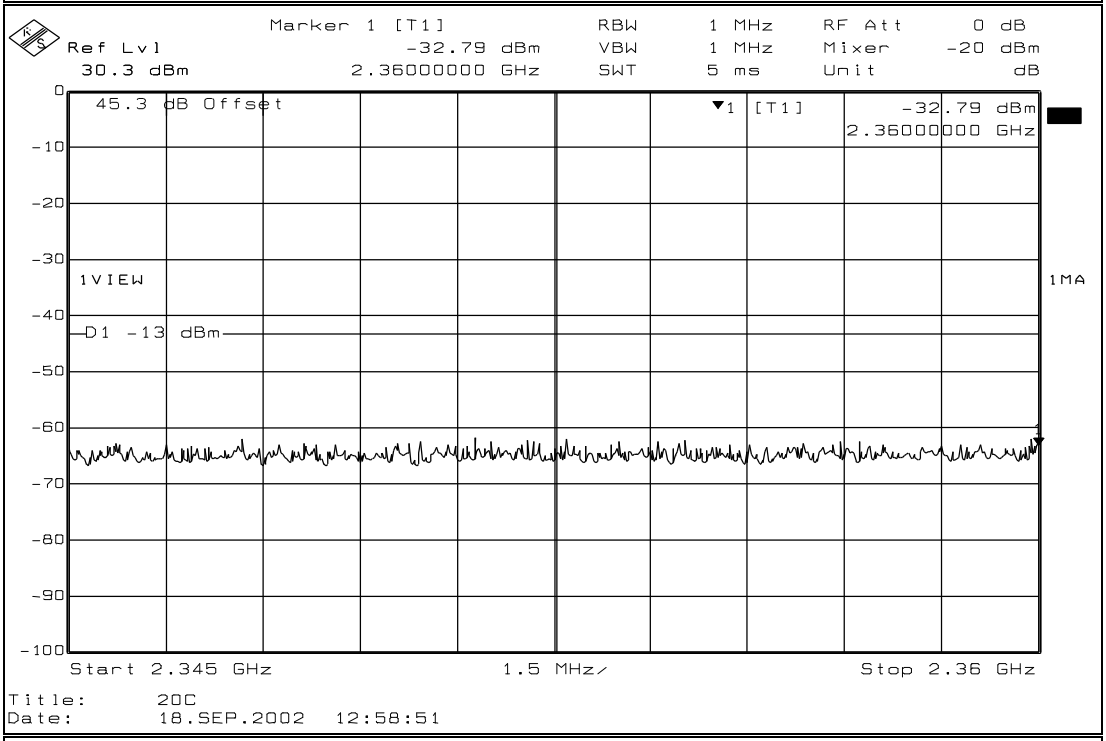
Receiver: 1036 Cable #3:

Attenuator #1 3320-34 Cable #4:

Attenuator #2: Mixer:

Additional equipment used:

Measurement Uncertainty: +/-1.7 dB



Notes: **Transmit in channel C**

2345 - 2360 MHz

Limit = 43 + 10Log(P) or -13 dBm

EQUIPMENT: 2.3 GHz WCS BTS

~~Data Plot~~ **~~Spurious Emissions at Antenna Terminals~~**

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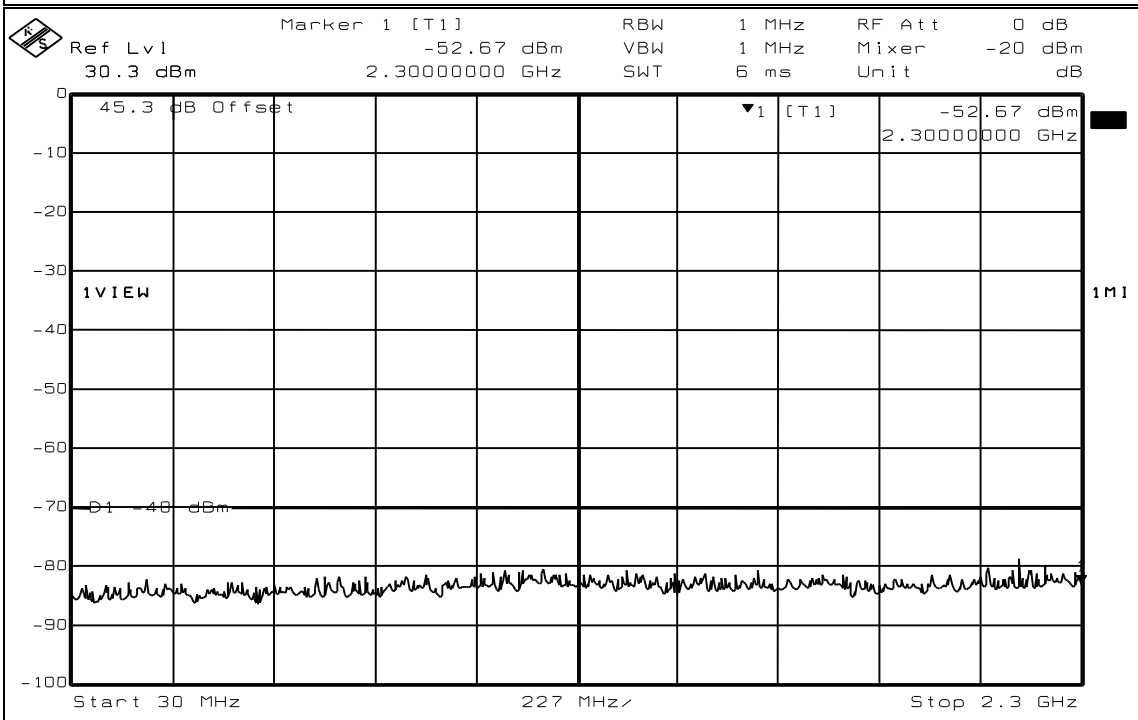
Job No.: 2L0435R Date: 9/18/2002
Specification: CFR 47, Part 27 Temperature(°C): 24
Tested By: Tom Tidwell Relative Humidity(%) 44
E.U.T.: 2.3 GHz WCS band BTS
Configuration: Transmit full power



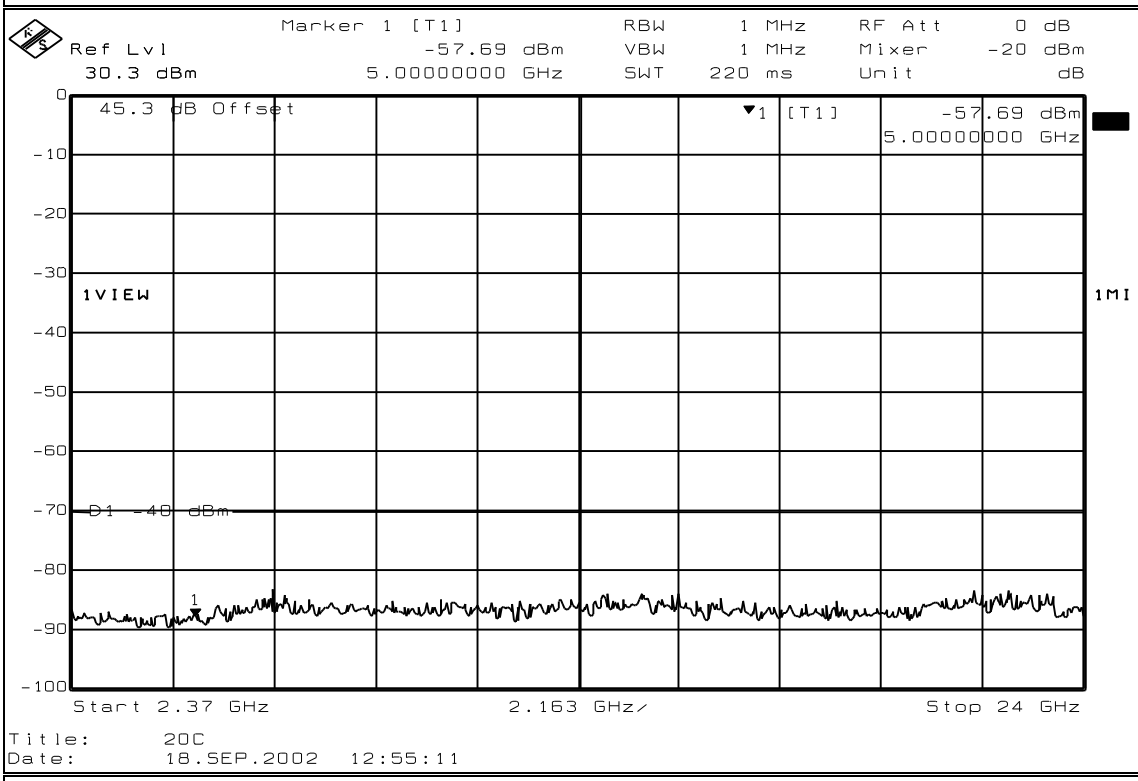
Notes: **Tranmit in channel C**
Limit = 70 + 10Log(P) or -40 dBm

EQUIPMENT: 2.3 GHz WCS BTS

~~Data Plot~~ **~~Spurious Emissions at Antenna Terminals~~**

Page ~~3~~ of 5

Job No.: 2L0435R Date: 9/18/2002
Specification: CFR 47, Part 27 Temperature(°C): 24
Tested By: Tom Tidwell Relative Humidity(%) 44
E.U.T.: 2.3 GHz WCS band BTS
Configuration: Transmit full power



Notes: **Transmit in channel C**
2370 MHz - 24 GHz
Limit = 70 + 10 Log (P) or -40dBm

~~Test Plot:~~ **~~Spurious Emissions at Antenna Terminals~~**

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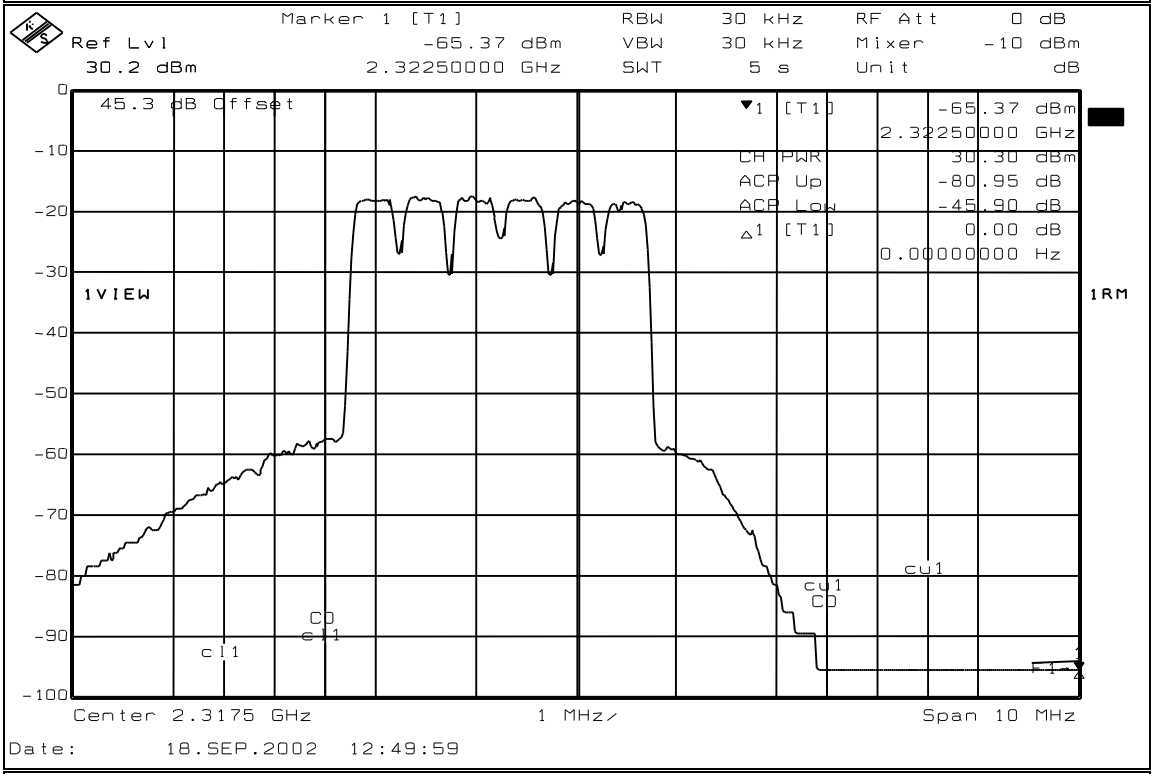
Job No.:	2L0435R	Date:	9/18/2002
Specification:	CFR 47, Part 27	Temperature(°C):	24
Tested By:	Tom Tidwell	Relative Humidity(%)	44
E.U.T.:	2.3 GHz WCS band BTS		
Configuration:	Transmit full power		



Notes: **DARS band edge (2320 MHz)**
Transmit in channel C

~~Test Plot:~~ **~~Spurious Emissions at Antenna Terminals~~**

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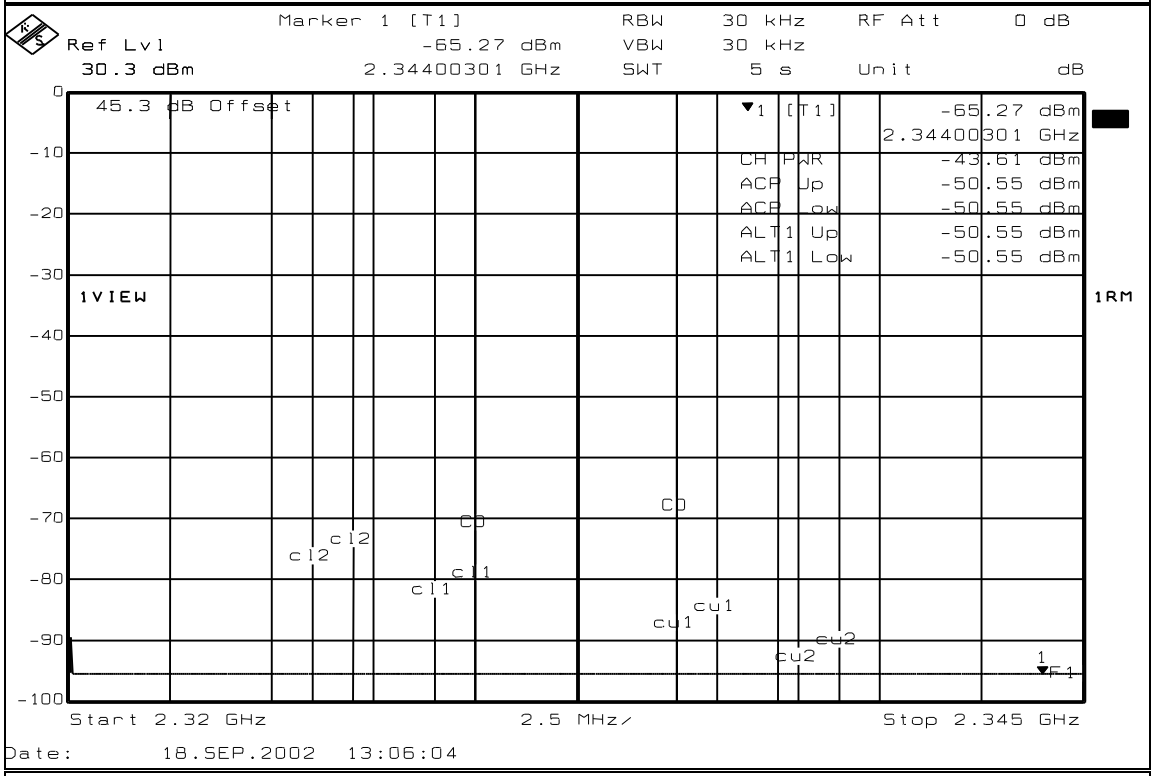
Job No.: 2L0435R Date: 9/18/2002
Specification: CFR 47, Part 27 Temperature(°C): 24
Tested By: Tom Tidwell Relative Humidity(%) 44
E.U.T.: 2.3 GHz WCS band BTS
Configuration: Transmit full power



Notes: **DARS Band**
Transmit in channel C
Limit = 80 dBc or -50 dBm

Test Data – Spurious Emissions at Antenna Terminals

Band D

~~Data Plot~~ **~~Spurious Emissions at Antenna Terminals~~**

~~Page 1 of 5~~ Complete X

Job No.: 2L0435R Date: 9/18/2002 Preliminary:

Specification: Part 27 Temperature(°C): 24

Tested By: Tom Tidwell Relative Humidity(%) 45

E.U.T.: 2.3 GHz WCS band BTS

Configuration: TX full power

Sample Number: 1

Location: RBW: Refer to plots

Detector Type: Rms VBW: Refer to plots

~~Test Equipment Used~~

Antenna: Directional Coupler: Anaron 1C0870-20 20 dB coupler

Pre-Amp: Cable #1:

Filter: Cable #2:

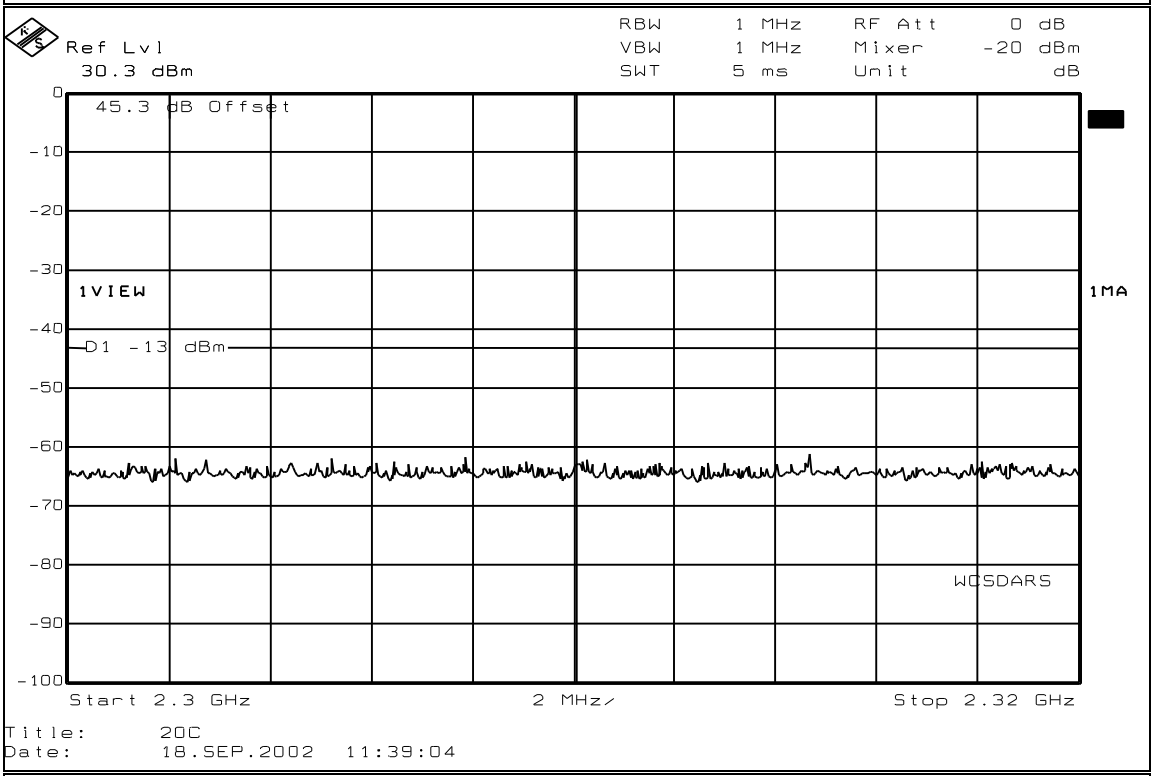
Receiver: 1036 Cable #3:

Attenuator #1 Cable #4:

Attenuator #2: Mixer:

Additional equipment used:

Measurement Uncertainty: +/-1.7 dB



Notes: **Transmit in channel D**

2300 - 2320 MHz

Limit = 43 + 10Log(P) or -13 dBm

EQUIPMENT: 2.3 GHz WCS BTS

~~Data Plot~~ **~~Spurious Emissions at Antenna Terminals~~**

Page ~~2~~ of 5

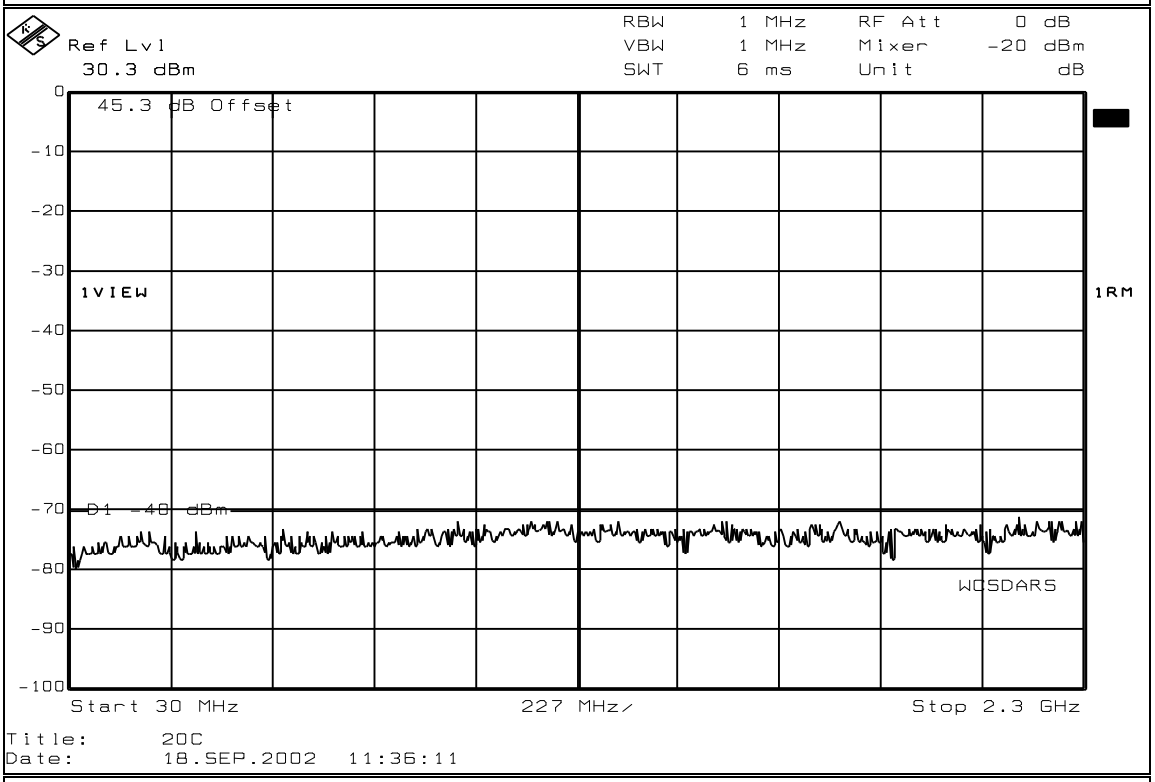
Job No.: 2L0435R Date: 9/18/2002

Specification: Part 27 Temperature(°C): 24

Tested By: Tom Tidwell Relative Humidity(%) 45

E.U.T.: 2.3 GHz WCS band BTS

Configuration: TX full power



Notes: **Tranmit in channel D**

Limit = 70 + 10Log(P) or -40 dBm

EQUIPMENT: 2.3 GHz WCS BTS

~~Data Plot~~ **~~Spurious Emissions at Antenna Terminals~~**

Page ~~3~~ of 5

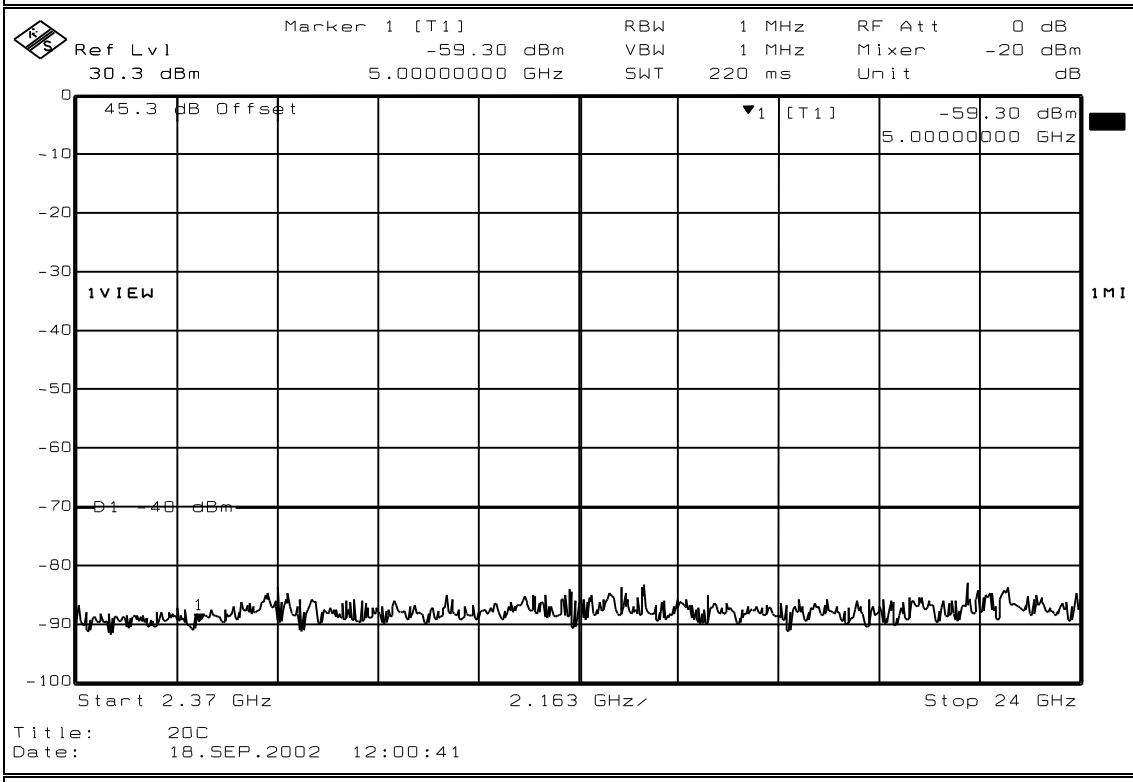
Job No.: 2L0435R Date: 9/18/2002

Specification: Part 27 Temperature(°C): 24

Tested By: Tom Tidwell Relative Humidity(%) 45

E.U.T.: 2.3 GHz WCS band BTS

Configuration: TX full power



Notes: **Transmit in channel D**

2370 MHz - 24 GHz

Limit = 70 + 10 Log (P) or -40dBm

EQUIPMENT: 2.3 GHz WCS BTS

~~Test Plot:~~ **~~Spurious Emissions at Antenna Terminals~~**

Page ~~4~~ of 5

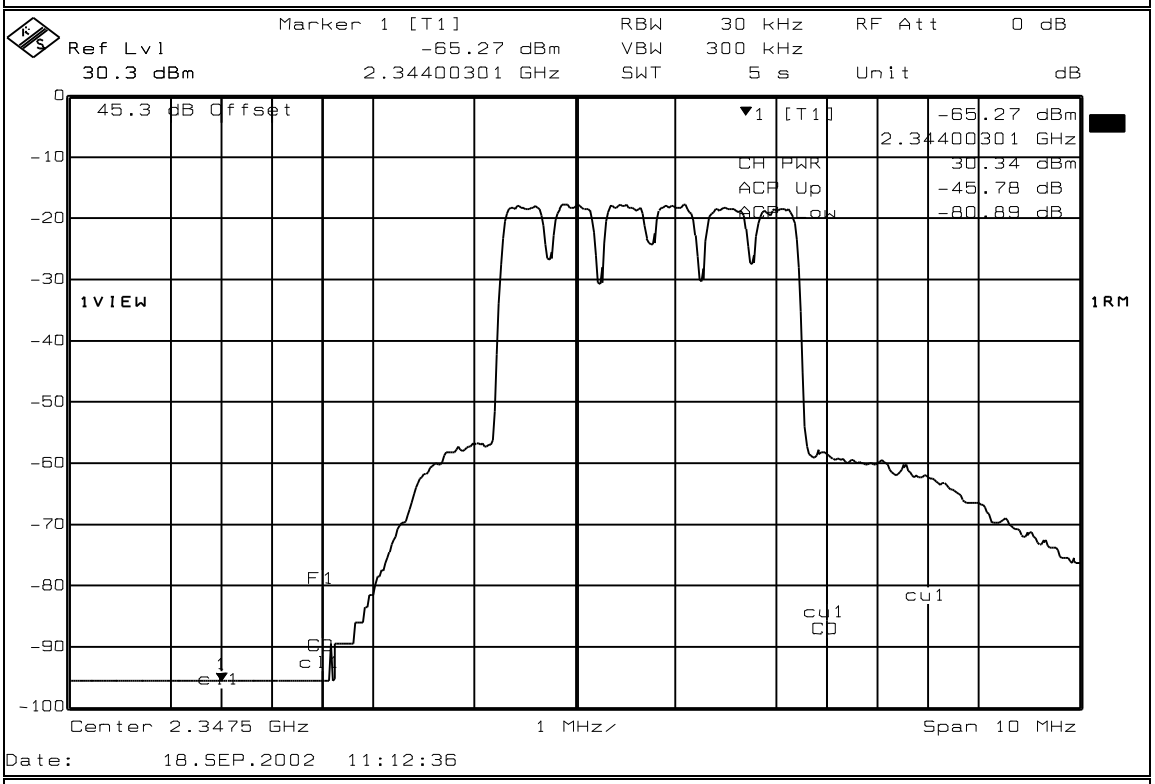
Job No.: 2L0435R Date: 9/18/2002

Specification: Part 27 Temperature(°C): 24

Tested By: Tom Tidwell Relative Humidity(%) 45

E.U.T.: 2.3 GHz WCS band BTS

Configuration: TX full power



Notes: **DARS band edge (2345 MHz)**
Transmit in channel D

EQUIPMENT: 2.3 GHz WCS BTS

~~Test Plot:~~ **~~Spurious Emissions at Antenna Terminals~~**

Page ~~5~~ of 5

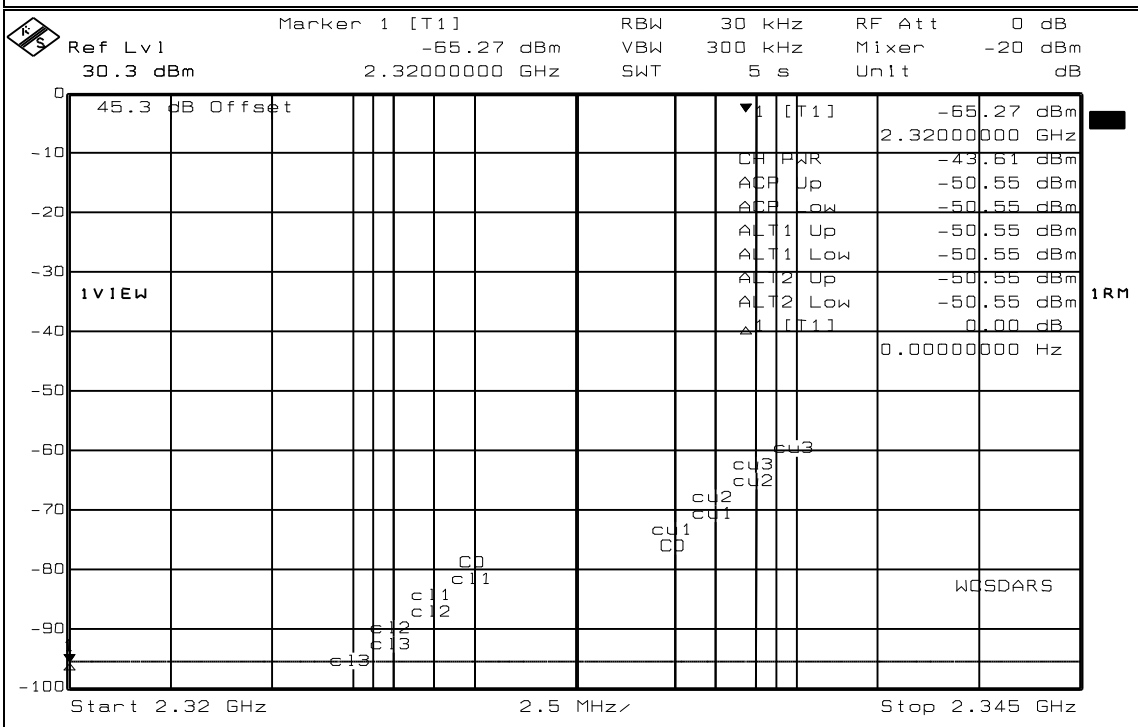
Job No.: 2L0435R Date: 9/18/2002

Specification: Part 27 Temperature(°C): 24

Tested By: Tom Tidwell Relative Humidity(%) 45

E.U.T.: 2.3 GHz WCS band BTS

Configuration: TX full power



Notes: **DARS Band**

Transmit in channel D

Limit = 80 dBc or -50 dBm

EQUIPMENT: 2.3 GHz WCS BTS

~~Data Plot~~ **~~Spurious Emissions at Antenna Terminals~~**

Page ~~1~~ of ~~3~~ Complete X

Job No.: 2L0436R Date: 9/16/2002 Preliminary: ____

Specification: Part 27 Temperature(°C): 24

Tested By: Tom Tidwell Relative Humidity(%) 45

E.U.T.: 2.3 GHz WCS band BTS

Configuration: TX full power

Sample Number: 1

Location: ____ RBW: Refer to plots

Detector Type: Rms VBW: Refer to plots

~~Test Equipment Used~~

Antenna: ____ Directional Coupler: Anaren 10616-10

Pre-Amp: ____ Cable #1: ____

Filter: ____ Cable #2: ____

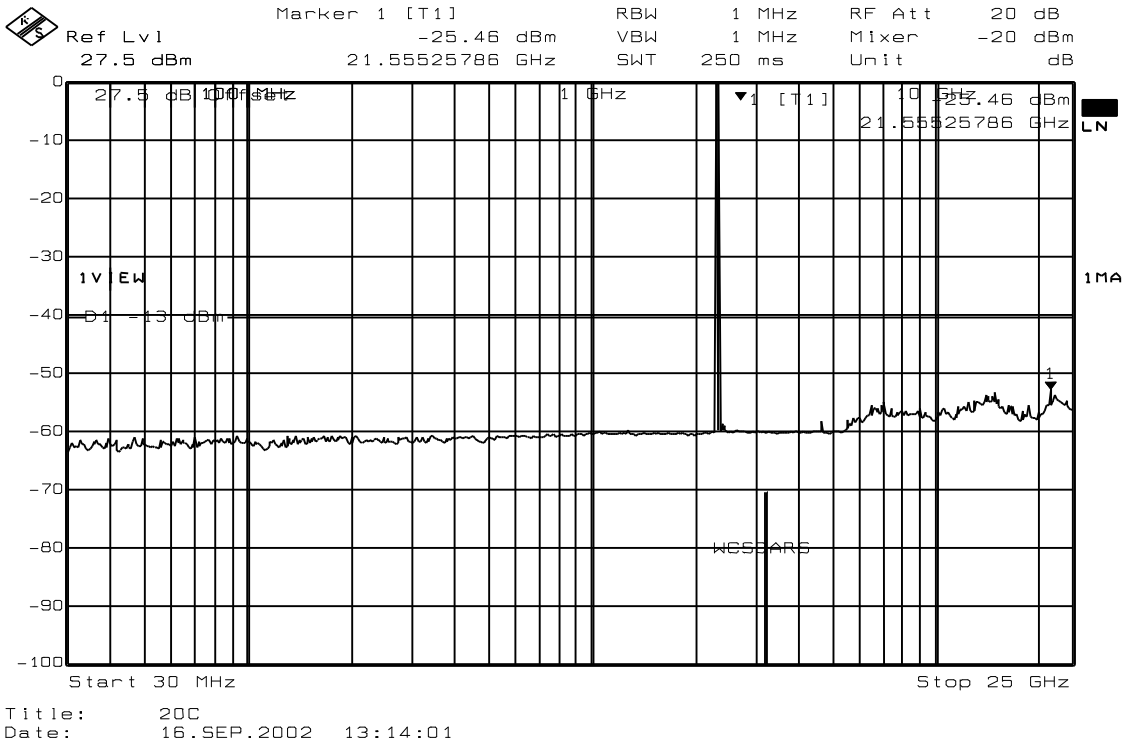
Receiver: 1036 Cable #3: ____

Attenuator #1 ____ Cable #4: ____

Attenuator #2: Mixer: ____

Additional equipment used: ____

Measurement Uncertainty: +/-1.7 dB



Notes: **Center of Channel 2312.5 MHz**

EQUIPMENT: 2.3 GHz WCS BTS

~~Data Plot~~ **~~Spurious Emissions at Antenna Terminals~~**

Page ~~2~~ of 3

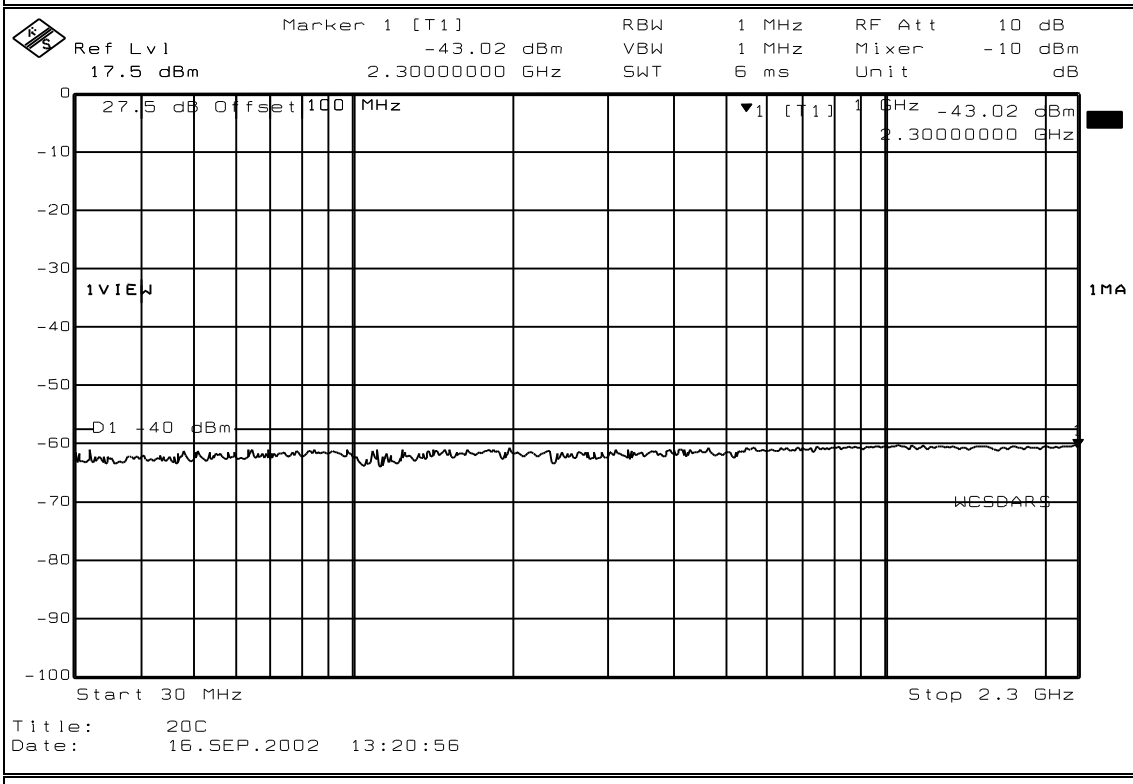
Job No.: 2L0436R Date: 9/16/2002

Specification: Part 27 Temperature(°C): 24

Tested By: Tom Tidwell Relative Humidity(%) 45

E.U.T.: 2.3 GHz WCS band BTS

Configuration: TX full power



Notes:

EQUIPMENT: 2.3 GHz WCS BTS

~~Data Plot~~ **~~Spurious Emissions at Antenna Terminals~~**

Page ~~3~~ of 3

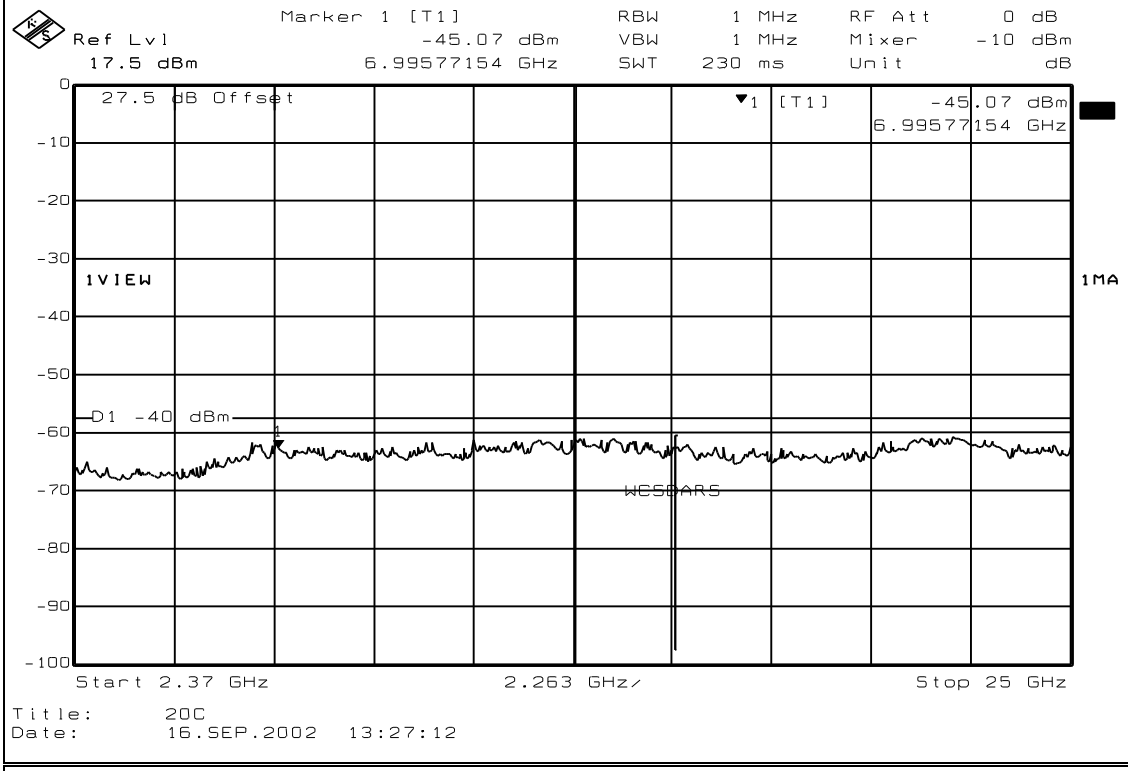
Job No.: 2L0436R Date: 9/16/2002

Specification: Part 27 Temperature(°C): 24

Tested By: Tom Tidwell Relative Humidity(%) 45

E.U.T.: 2.3 GHz WCS band BTS

Configuration: TX full power



Notes:

Section 6. Field Strength of Spurious

NAME OF TEST: Field Strength of Spurious Emissions	PARA. NO.: 2.1053
TESTED BY: Tom Tidwell	DATE:10/7/2002

Test Results: Complies

Measurement Data: See attached table.

Measurement Uncertainty: +/-1.7 dB

EQUIPMENT: 2.3 GHz WCS BTS
Test Data - Radiated Emissions

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

Nemko Dallas, Inc.

EIRP Substitution Method

Page 1 of 1 — Complete X — Preliminary

Job No.: 2L0436R — Date: 10/7/02
Specification: CFR 47, Part 27 — Temperature(°C): 23
Tested By: Tom Tidwell — Relative Humidity(%) 44
E.U.T.: 2.3 GHz BTS, Active antenna mode
Configuration: TX full power
Sample No: 01
Location: AC 3 — RBW: 1 MHz — Measurement
Detector Type: Peak — VBW: 1 MHz — Distance: 3 m

Test Equipment Used

EIRP: +30 dBm + 18 dBi + 8 dB = +56 dBm

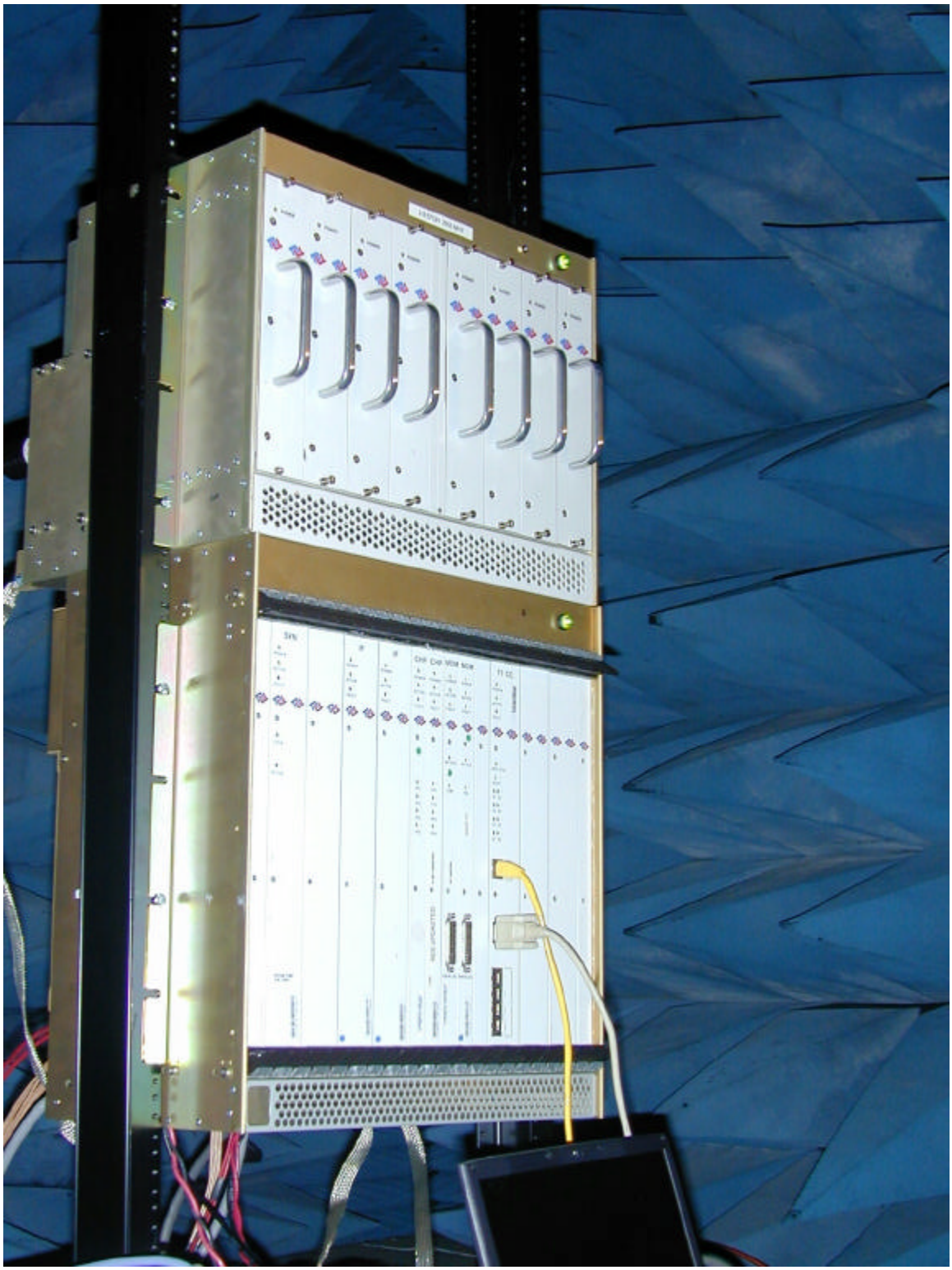
Antenna: 1304 — Directional Coupler:
Pre-Amp: 1016 — Cable #1: 1483
Filter: — Cable #2: 1484
Receiver: 1036 — Cable #3:
Attenuator #1 — Cable #4:
Attenuator #2: — Mixer:
Additional equipment used:
Measurement Uncertainty: +/-1.7 dB

Frequency (MHz)	Meter Reading (dBm)	Correction Factor (dB)	Pre-Amp Gain (dB)	Substitution Antenna Gain (dBd)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Polarity	Comments
1461.8	-70.7	31.5	32.4	7.0	-64.6	-40.0	-24.6	V	
1461.8	-64.8	30.7	32.4	7.0	-59.5	-40.0	-19.5	H	
2172.5	-62.4	34.2	32.8	8.9	-52.1	-40.0	-12.1	V	
2172.5	-59.5	37.0	32.8	8.9	-46.4	-40.0	-6.4	H	
2320	-72.4	34.2	32.8	8.9	-62.1	-50.0	-12.1	V	NF
2320	-72.0	37.0	32.8	8.9	-58.9	-50.0	-8.9	H	NF
2340	-71.0	34.2	32.8	8.9	-60.7	-50.0	-10.7	V	NF
2340	-72.2	37.0	32.8	8.9	-59.1	-50.0	-9.1	H	NF
4696	-84.5	44.0	33.2	10.8	-62.9	-40.0	-22.9	V	NF
4696	-71.7	35.5	33.2	10.8	-58.6	-40.0	-18.6	H	NF
6128.1	-73.8	40.5	31.9	11.7	-53.5	-40.0	-13.5	V	NF
6124.6	-73.5	38.7	31.9	11.7	-55.0	-40.0	-15.0	H	NF
6151.2	-73.9	40.5	31.9	11.7	-53.6	-40.0	-13.6	V	NF
6152.4	-73.5	38.7	31.9	11.7	-55.0	-40.0	-15.0	H	NF
7044	-74.1	40.8	32.1	10.9	-54.5	-40.0	-14.5	V	NF
7044	-75.1	40.3	32.1	10.9	-56.0	-40.0	-16.0	H	NF
9392	-71.9	41.3	34.2	11.7	-53.1	-40.0	-13.1	V	NF
9392	-72.5	42.3	34.2	11.7	-52.7	-40.0	-12.7	H	NF
11740	-70.1	42.8	35.1	12.6	-49.8	-40.0	-9.8	V	NF
11740	-71.7	47.0	35.1	12.6	-47.2	-40.0	-7.2	H	NF
14088	-73.3	47.8	33.6	12.8	-46.3	-40.0	-6.3	V	NF
14088	-74.6	47.5	33.6	12.8	-47.9	-40.0	-7.9	H	NF
16436	-73.1	43.2	33.1	16.3	-46.7	-40.0	-6.7	V	NF
16436	-74.6	45.5	33.1	16.3	-45.9	-40.0	-5.9	H	NF
18784	-65.5	52.7	47.7	12.7	-47.8	-40.0	-7.8	V	NF
18784	-74.1	53.7	47.7	12.7	-55.4	-40.0	-15.4	H	NF
21132	-63.7	52.7	50.2	12.7	-48.5	-40.0	-8.5	V	NF
21132	-73.8	53.7	50.2	12.7	-57.6	-40.0	-17.6	H	NF

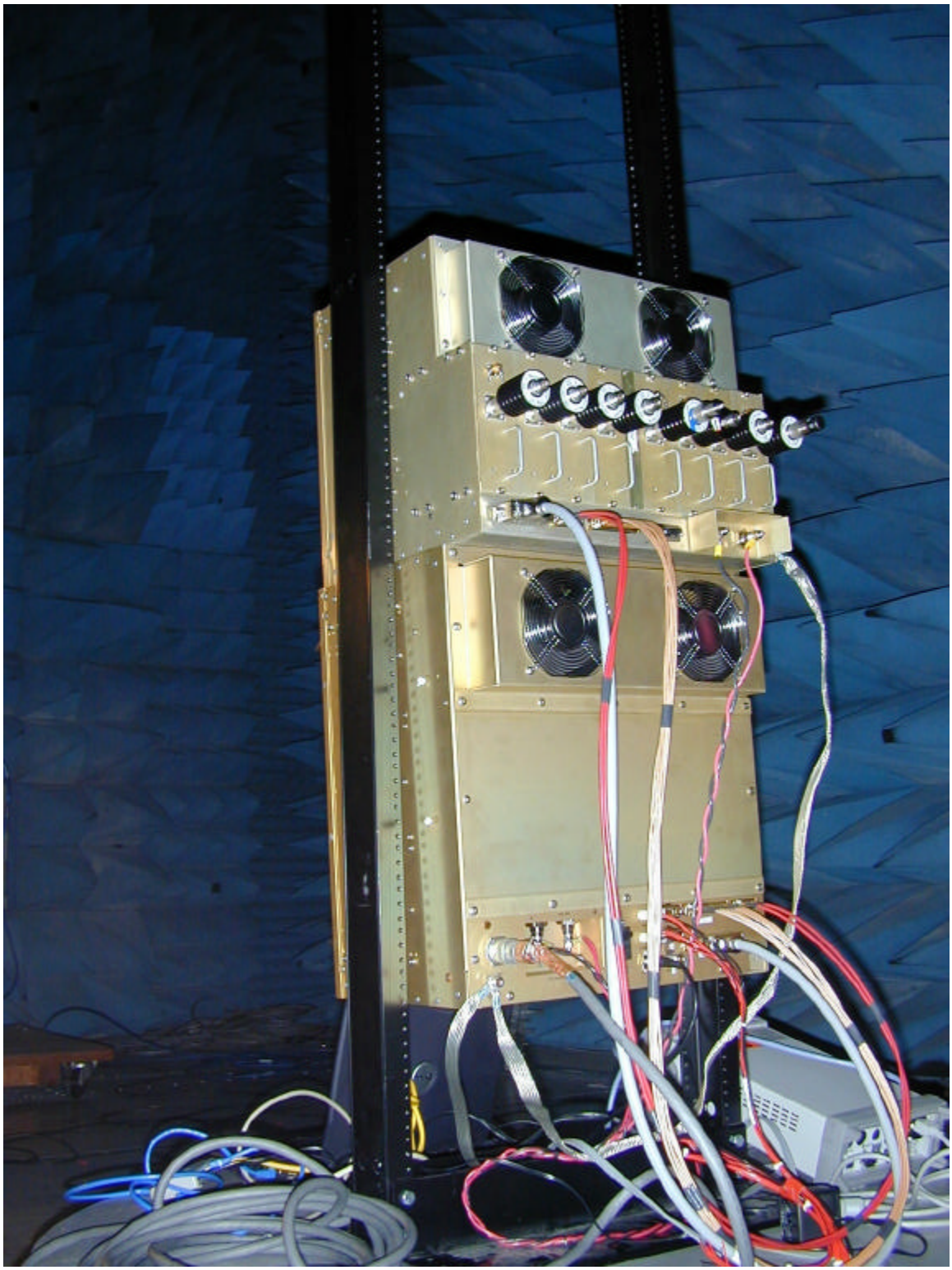
EQUIPMENT: 2.3 GHz WCS BTS

Photos – Field Strength of Spurious Emissions

Front



Rear



Section 7. Frequency Stability

NAME OF TEST: Frequency Stability	PARA. NO.: 2.1055
TESTED BY: Tom Tidwell	DATE:9/16 –9/18/2002

Test Results: Complies

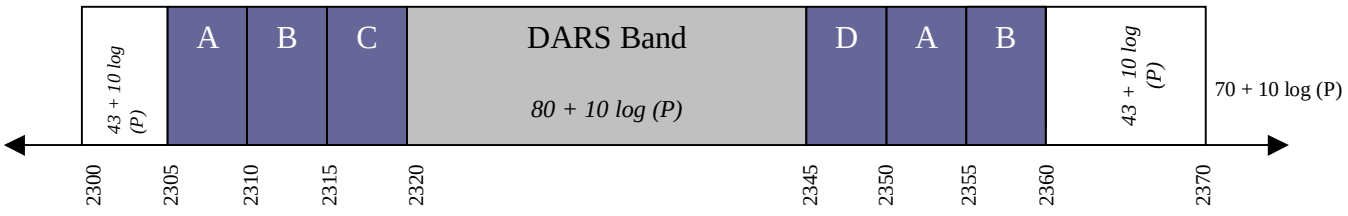
Measurement Data: See attached data sheets.
The following plots show that the transmitted signal stays within the required emission limits when the equipment is subjected to temperature variations.

For 10 Carrier configuration plots, with the spectrum analyzer span >10 MHz, the Adjacent Channel Power(ACP) measurement is not Valid due to internal operation of the spectrum analyzer dealing with swept Resolution BW and the integrated 1 MHz noise BW measurement. The spectrum analyzer plots are provided to show compliance to the noise emissions in the DARS band and the Out-of-Band requirements.

For 10 Carrier configuration, the absolute RMS output power of the EUT is measured with a power meter. The frequency stability spectrum analyzer plots do not intend to represent the absolute channel power "CH PWR" of the EUT but provide measurement for the noise emission compliance of the EUT.

Note –.The device ceased operation when the temperature was below 0 deg. Celsius. The equipment is designed to cease transmission at temperatures below 0 deg. Celsius.

Measurement Uncertainty: 1 x 10^{-7} ppm



EQUIPMENT: 2.3 GHz WCS BTS

NOTE: All tests are performed at full carrier power.

~~Data Plot~~ **~~Frequency Stability~~**

Page ~~1~~ of ~~6~~ Complete X

Job No.: Date: 9/18/2002 Preliminary:

Specification: CFR 47, Part 27 Temperature(°C): See plots

Tested By: Tom Tidwell Relative Humidity(%) Uncontrolled

E.U.T.: WCS Band BTS

Configuration: TX full power

Sample Number: 1

Location: RBW: Refer to plots

Detector Type: Rms VBW: Refer to plots

~~Test Equipment Used~~

Antenna: Directional Coupler: Anaron 1C0870-20 20 dB coupler

Pre-Amp: Cable #1:

Filter: Cable #2:

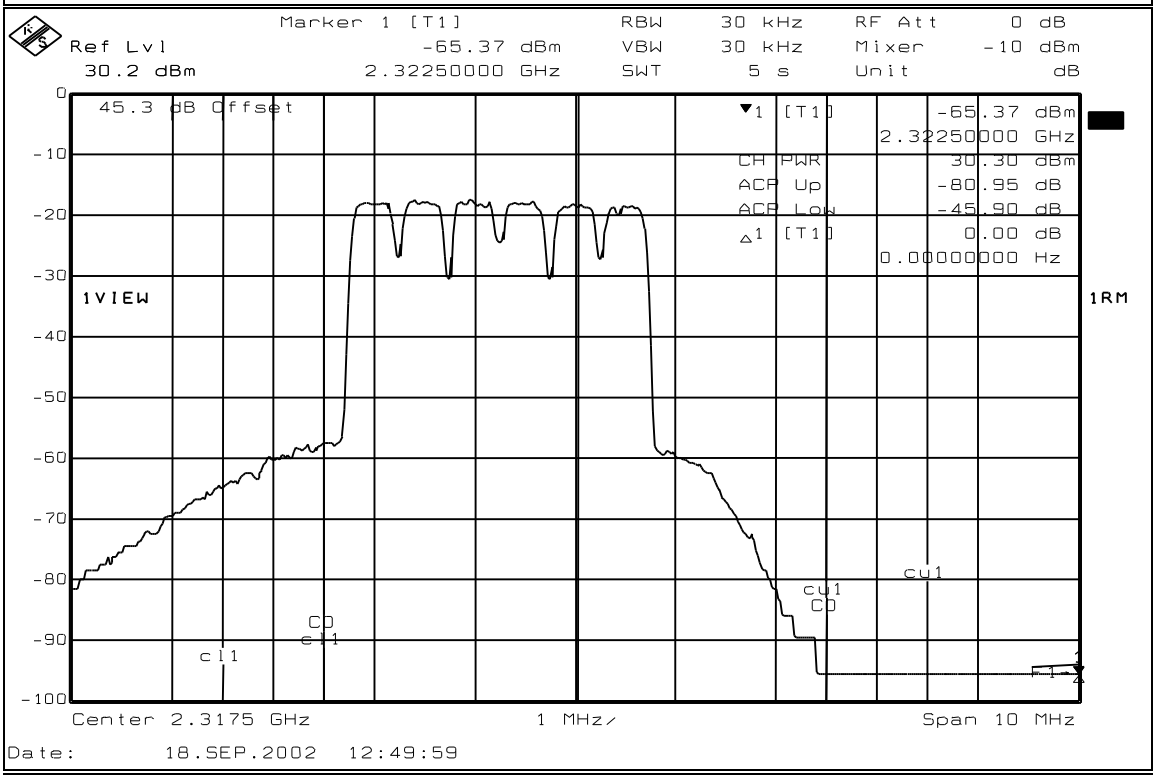
Receiver: 1036 Cable #3:

Attenuator #1 3320-34 Cable #4:

Attenuator #2: Mixer:

Additional equipment used:

Measurement Uncertainty: +/-1.7 dB



Notes: **Transmit in channel C**

20 deg. C

Limit = 80 + 10Log(P) or -50 dBm

EQUIPMENT: 2.3 GHz WCS BTS

~~Data Plot~~ **~~Frequency Stability~~**

Page ~~2~~ of 6

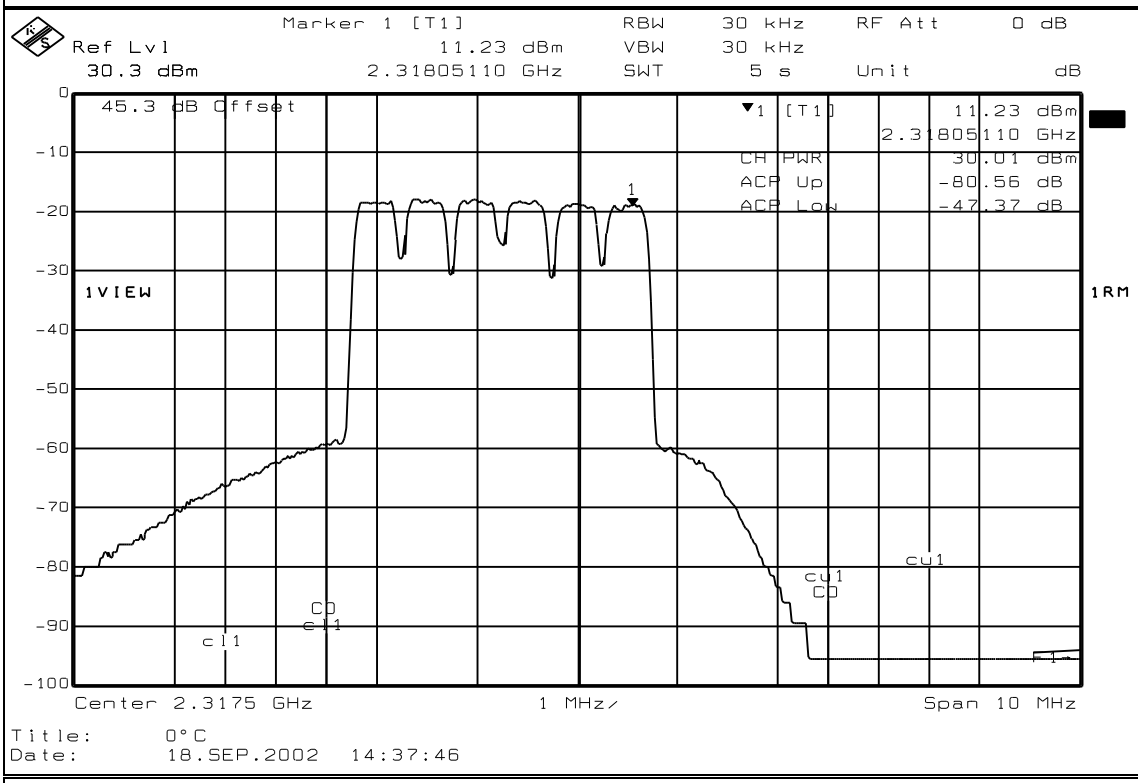
Job No.: Date: 9/18/2002

Specification: CFR 47, Part 27 Temperature(°C): See plots

Tested By: Tom Tidwell Relative Humidity(%) Uncontrolled

E.U.T.: WCS Band BTS

Configuration: TX full power



Notes: **Transmit in channel C**

Limit = 80 + 10Log(P) or -50 dBm

EQUIPMENT: 2.3 GHz WCS BTS

~~Data Plot~~ **~~Frequency Stability~~**

Page ~~3~~ of 6

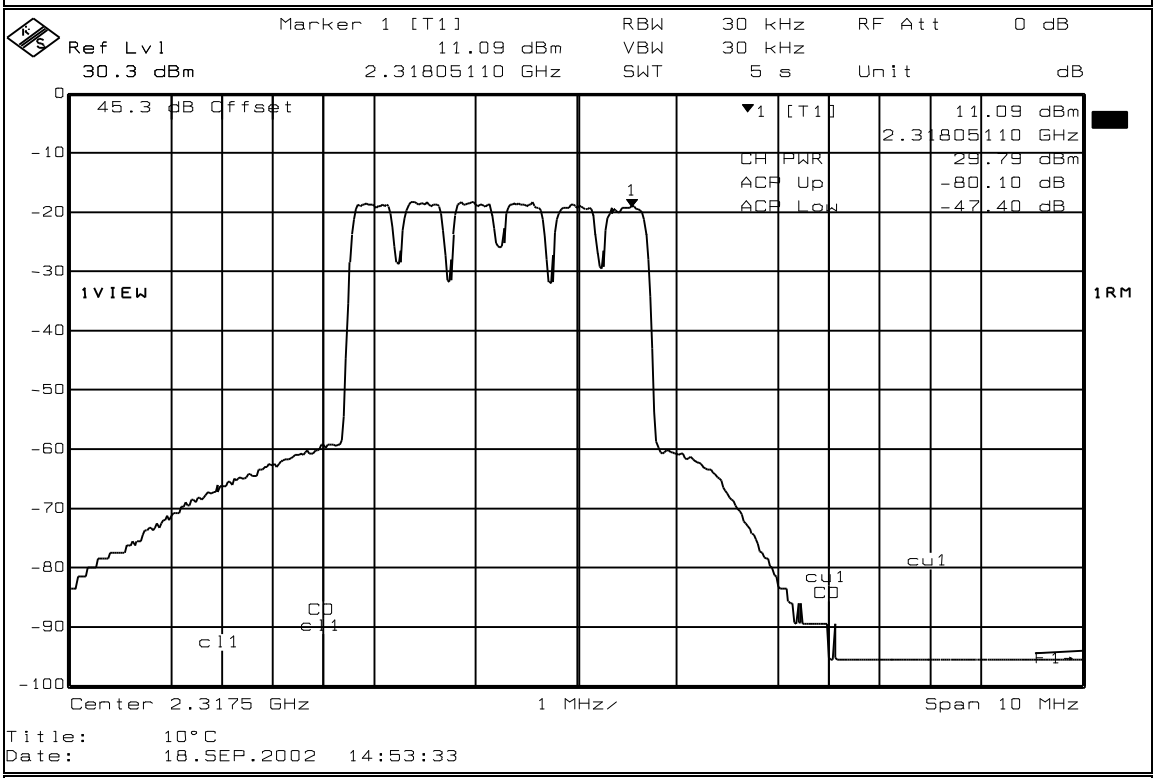
Job No.: Date: 9/18/2002

Specification: CFR 47, Part 27 Temperature(°C): See plots

Tested By: Tom Tidwell Relative Humidity(%) Uncontrolled

E.U.T.: WCS Band BTS

Configuration: TX full power



Notes: **Transmit in channel C**

Limit = 80 + 10Log(P) or -50 dBm

EQUIPMENT: 2.3 GHz WCS BTS

~~Test Plot:~~ **~~Frequency Stability~~**

Page ~~4~~ of 6

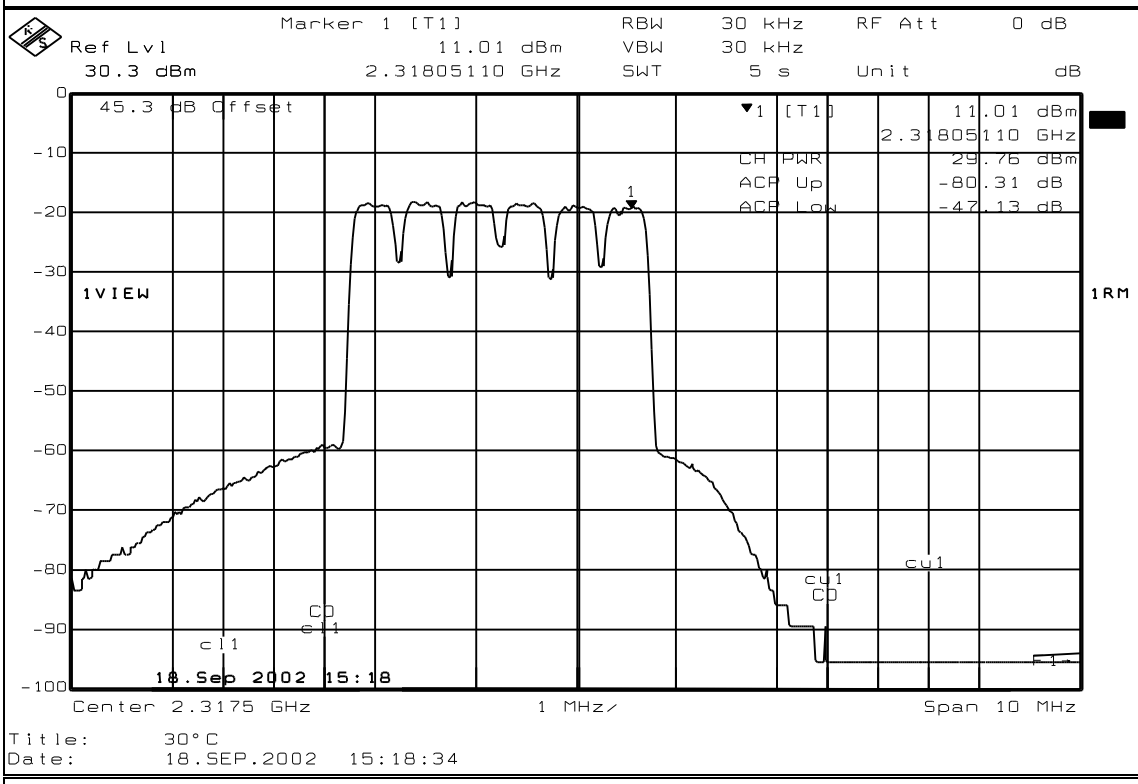
Job No.: Date: 9/18/2002

Specification: CFR 47, Part 27 Temperature(°C): See plots

Tested By: Tom Tidwell Relative Humidity(%) Uncontrolled

E.U.T.: WCS Band BTS

Configuration: TX full power



Notes: **Transmit in channel C**

Limit = 80 + 10Log(P) or -50 dBm

EQUIPMENT: 2.3 GHz WCS BTS

~~Test Plot:~~ **~~Frequency Stability~~**

Page ~~5~~ of 6

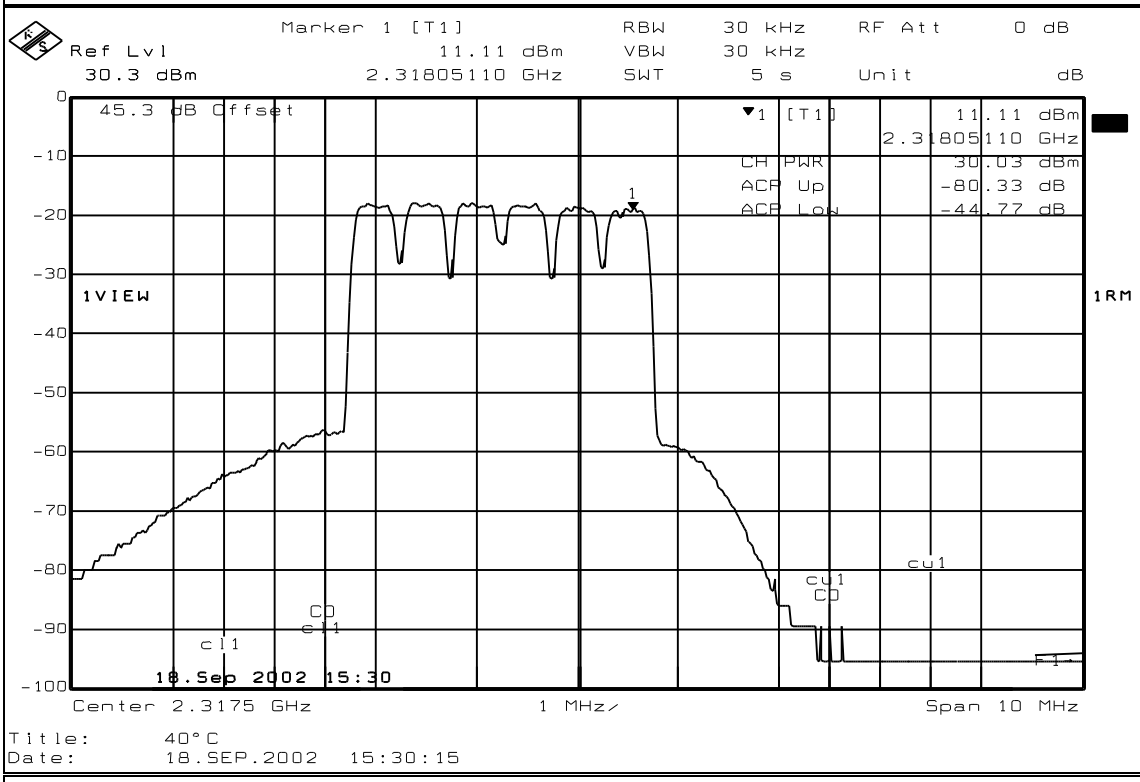
Job No.: Date: 9/18/2002

Specification: CFR 47, Part 27 Temperature(°C): See plots

Tested By: Tom Tidwell Relative Humidity(%) Uncontrolled

E.U.T.: WCS Band BTS

Configuration: TX full power



Notes: **Transmit in channel C**

Limit = 80 + 10Log(P) or -50 dBm

EQUIPMENT: 2.3 GHz WCS BTS

~~Test Plot:~~ **~~Frequency Stability~~**

Page ~~6~~ of 6

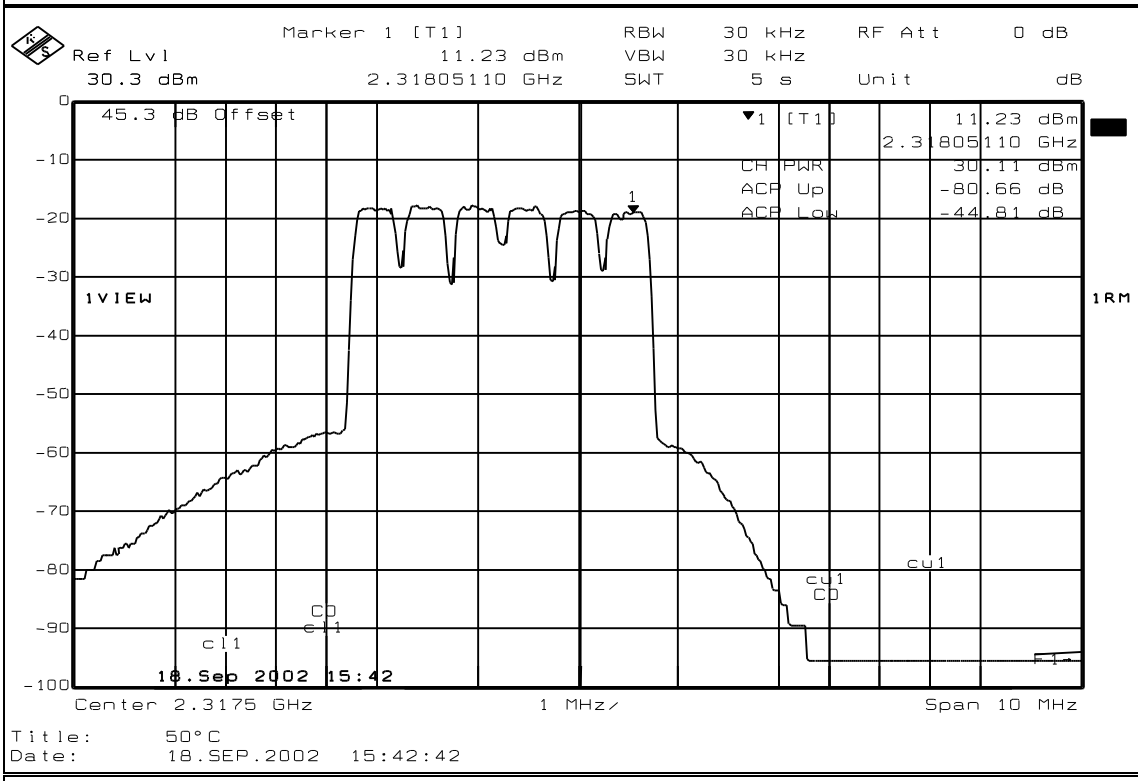
Job No.: Date: 9/18/2002

Specification: CFR 47, Part 27 Temperature(°C): See plots

Tested By: Tom Tidwell Relative Humidity(%) Uncontrolled

E.U.T.: WCS Band BTS

Configuration: TX full power



Notes: **Transmit in channel C**

Limit = 80 + 10Log(P) or -50 dBm

EQUIPMENT: 2.3 GHz WCS BTS

~~Test Plot:~~ **~~Occupied Bandwidth~~**

Page ~~5~~ of 5

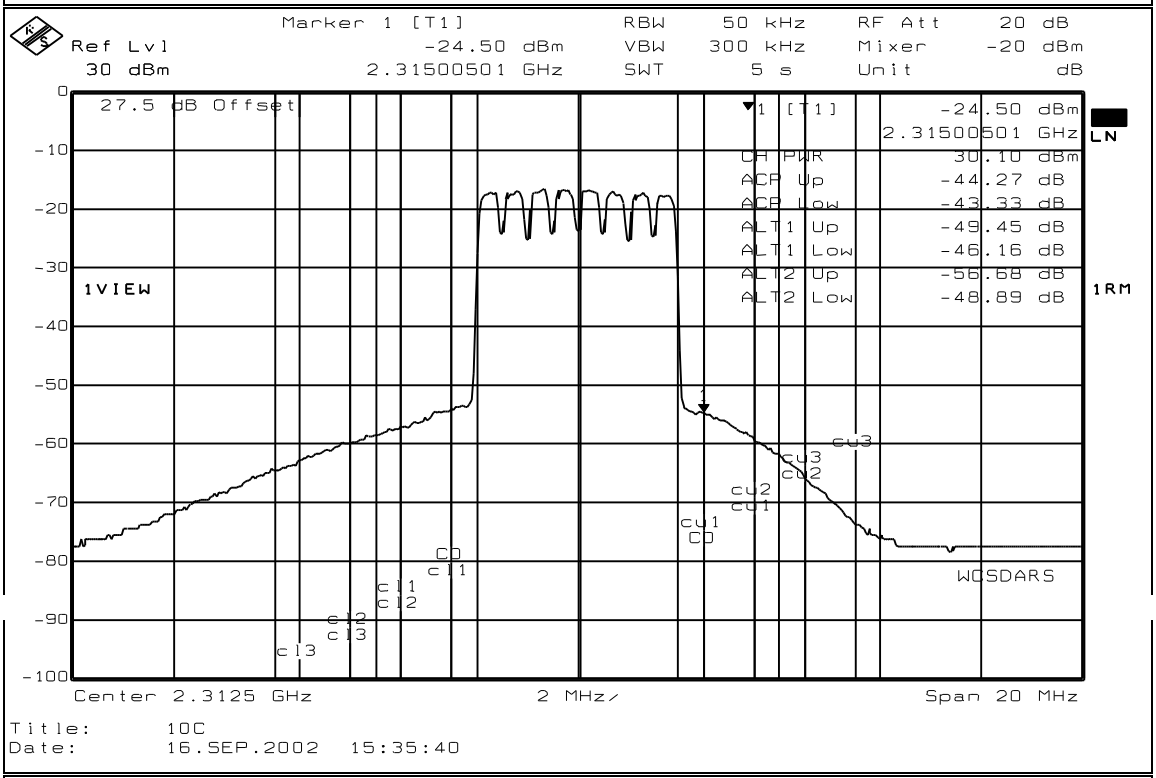
Job No.: 2L0436R Date: 9/16/2002

Specification: Temperature(°C): 25

Tested By: Tom Tidwell Relative Humidity(%) 44

E.U.T.: 2.3 GHz WCS band BTS

Configuration: TX full power



Notes:

EQUIPMENT: 2.3 GHz WCS BTS

~~Data Plot~~ **~~Occupied Bandwidth~~**

Page ~~1~~ of ~~5~~ Complete X

Job No.: 2L0436R Date: 9/16/2002 Preliminary: ____

Specification: Temperature(°C): 25

Tested By: Tom Tidwell Relative Humidity(%) 44

E.U.T.: 2.3 GHz WCS band BTS

Configuration: TX full power

Sample Number: None

RBW: Refer to plots

Detector Type: Rms VBW: Refer to plots

~~Test Equipment Used~~

Antenna: ____ Directional Coupler: Anaren 1C087-20

Pre-Amp: ____ Cable #1: ____

Filter: ____ Cable #2: ____

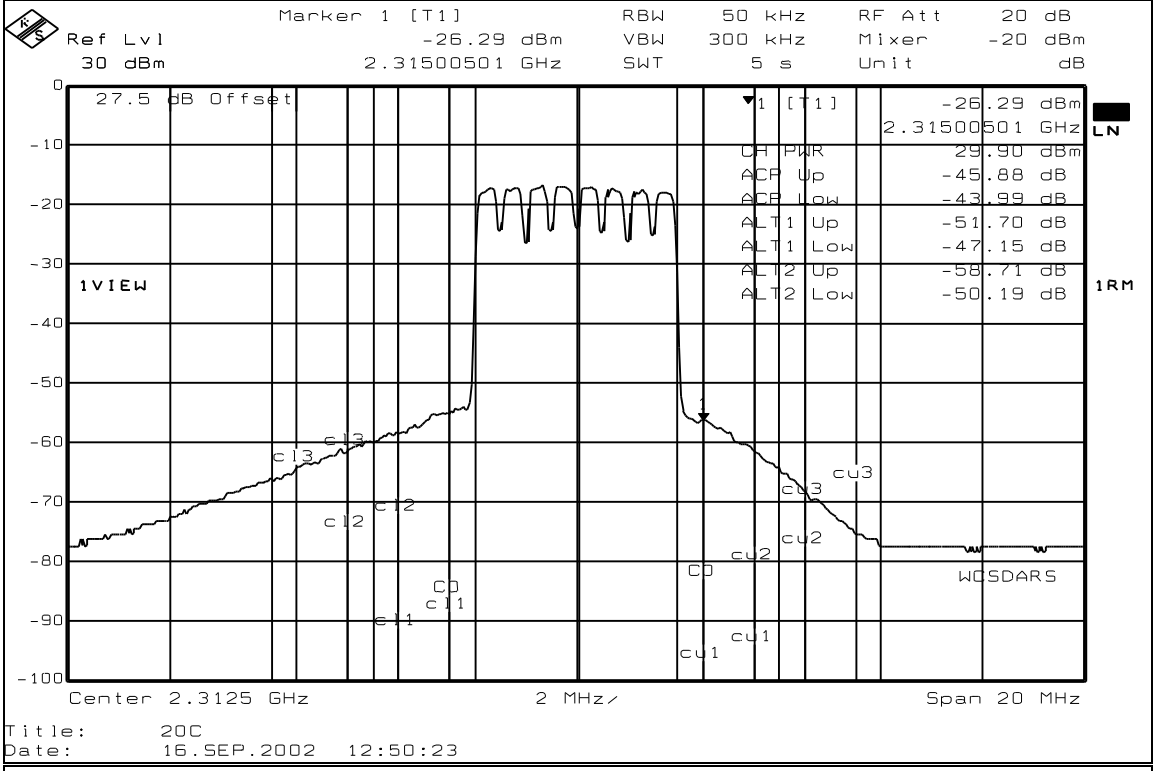
Receiver: 1036 Cable #3: ____

Attenuator #1 ____ Cable #4: ____

Attenuator #2: Mixer: ____

Additional equipment used: ____

Measurement Uncertainty: +/-1.7 dB



Notes: ____

EQUIPMENT: 2.3 GHz WCS BTS

~~Data Plot~~ **~~Occupied Bandwidth~~**

Page ~~2~~ of 5

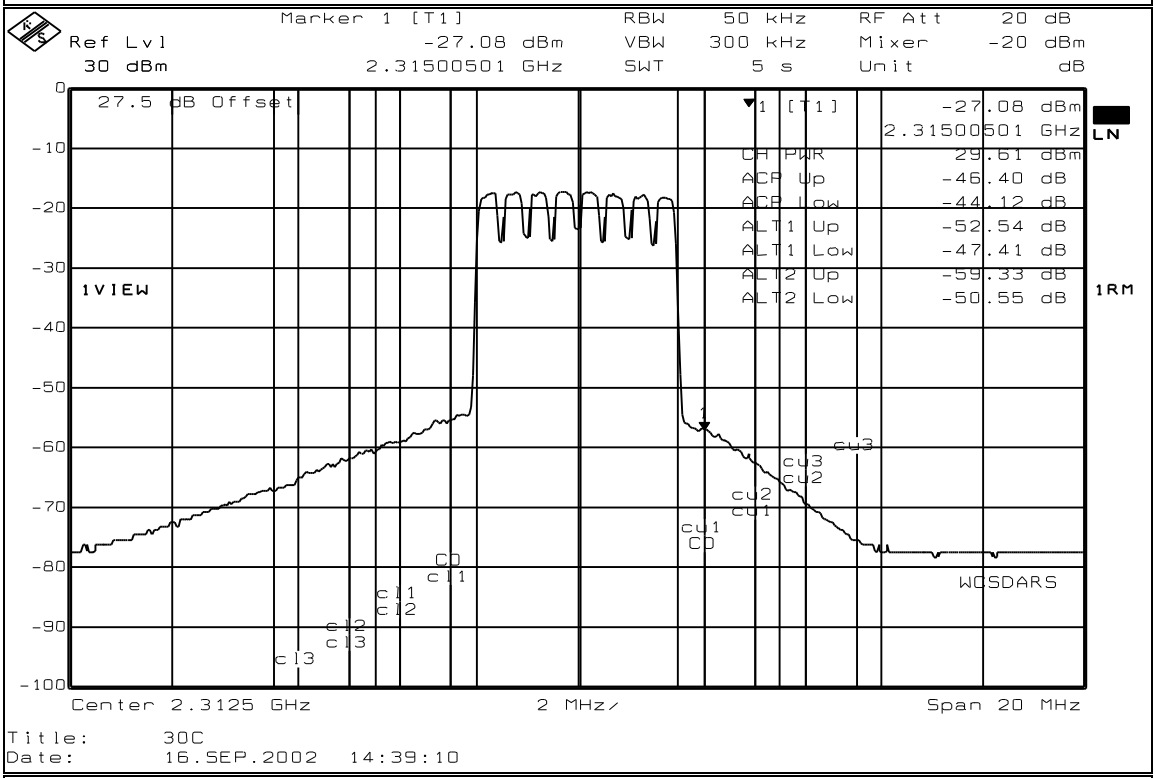
Job No.: 2L0436R Date: 9/16/2002

Specification: Temperature(°C): 25

Tested By: Tom Tidwell Relative Humidity(%) 44

E.U.T.: 2.3 GHz WCS band BTS

Configuration: TX full power



Notes:

EQUIPMENT: 2.3 GHz WCS BTS

~~Data Plot~~ **~~Occupied Bandwidth~~**

Page ~~3~~ of 5

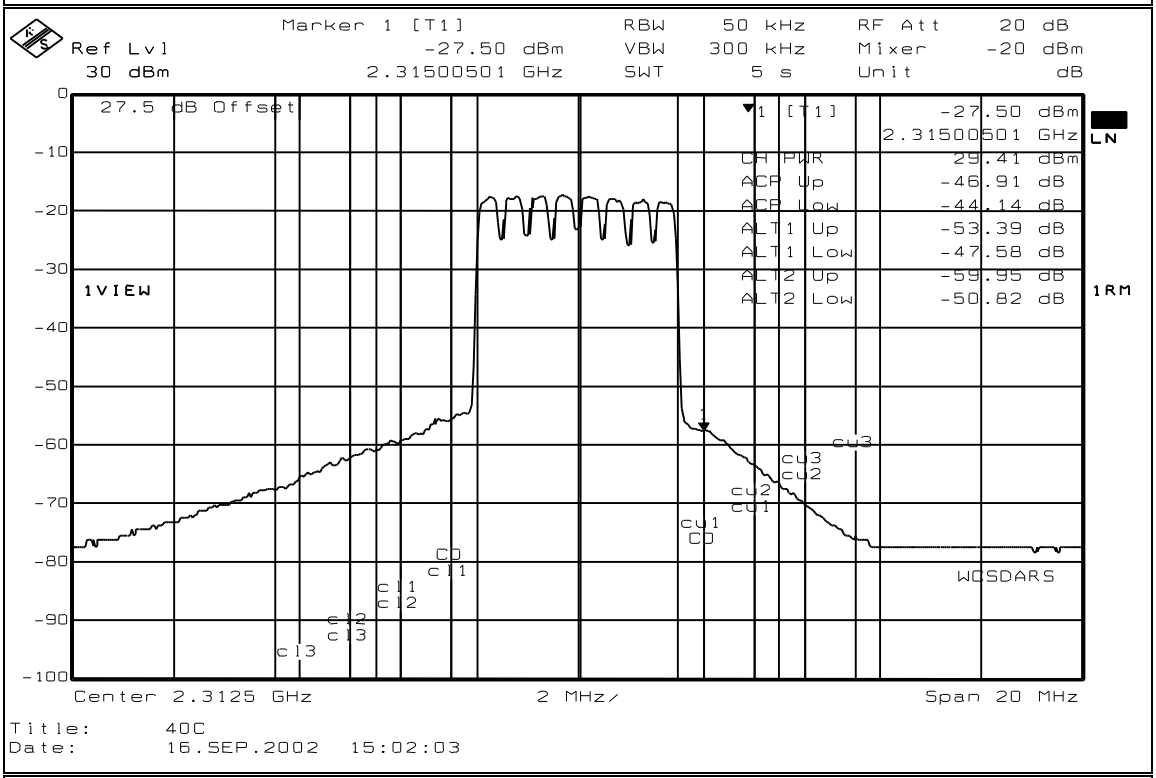
Job No.: 2L0436R Date: 9/16/2002

Specification: Temperature(°C): 25

Tested By: Tom Tidwell Relative Humidity(%) 44

E.U.T.: 2.3 GHz WCS band BTS

Configuration: TX full power



Notes:

EQUIPMENT: 2.3 GHz WCS BTS

~~Test Plot:~~ **~~Occupied Bandwidth~~**

Page ~~4~~ of 5

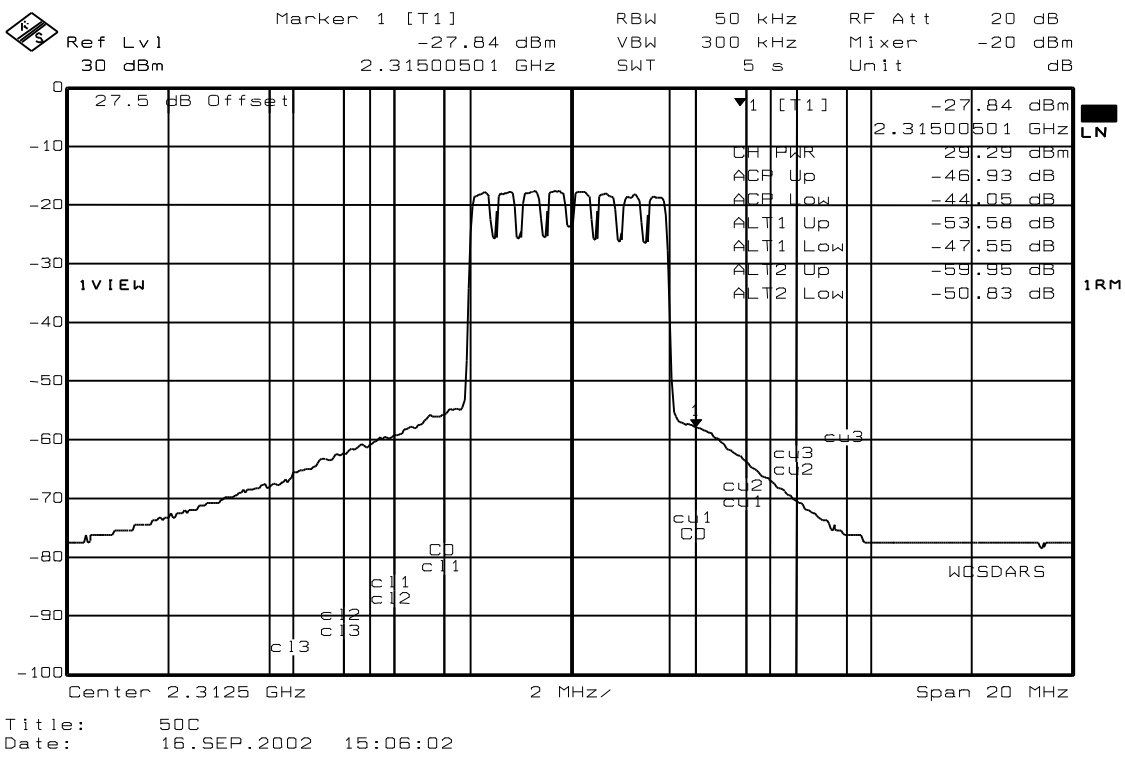
Job No.: 2L0436R Date: 9/16/2002

Specification: Temperature(°C): 25

Tested By: Tom Tidwell Relative Humidity(%) 44

E.U.T.: 2.3 GHz WCS band BTS

Configuration: TX full power



Notes:

EQUIPMENT: 2.3 GHz WCS BTS

NOTE: All tests are performed at full carrier power.

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Data Plot — Spurious Emissions at Antenna Terminals

Page 1 of 16 — Complete x — Preliminary:

Job No.:	2L0436R	Date:	9/18/2003
Specification:	Part 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	Tx 10 Carriers		
Sample Number:	1		
Location:	On site	RBW:	5 kHz
Detector Type:	Rms	VBW:	50 kHz

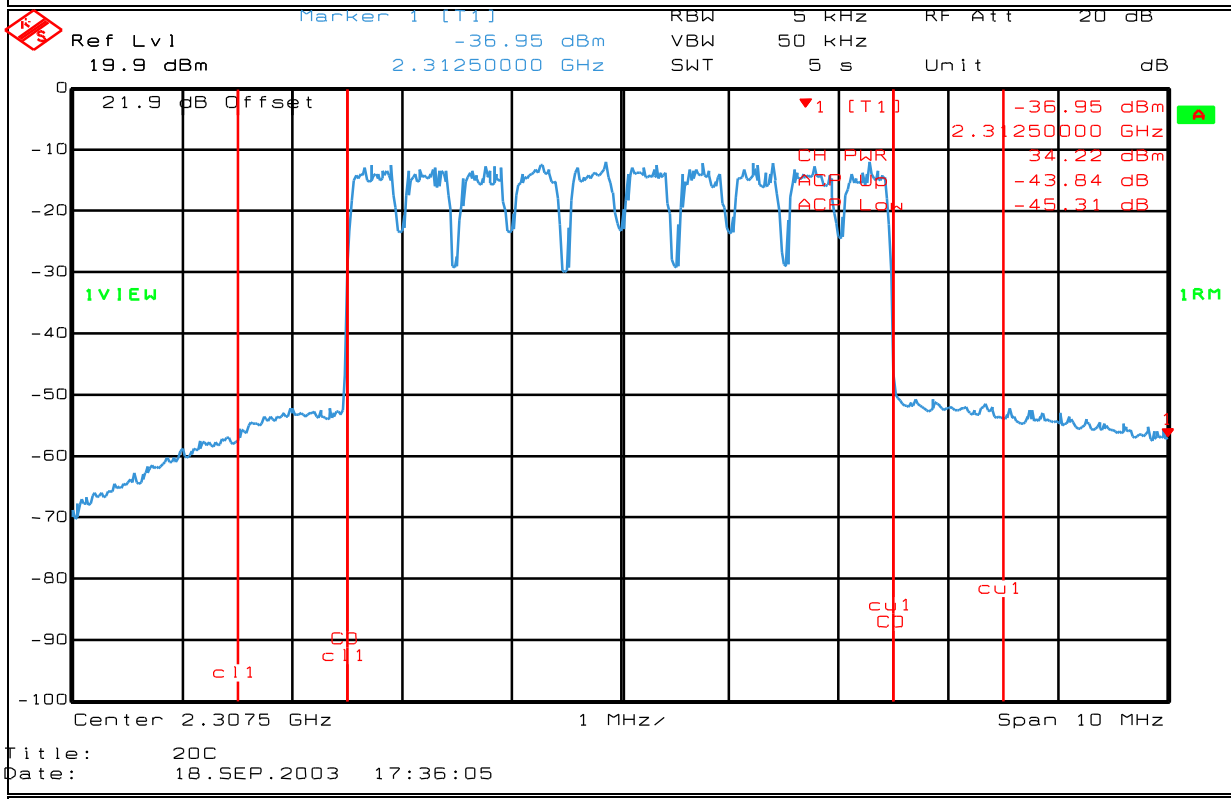
Measurement Distance: NA m

Test Equipment Used

Antenna:		Directional Coupler:	Model 1C0870-20	Cal'd prior to use
Pre-Amp:		Cable #1:	1484	
Filter:		Cable #2:		
Receiver:	1036	Cable #3:		
Attenuator #1	Model 2044-6dB Cal' prior to use	Cable #4:		
Attenuator #2:	Model 33-20-34 Cal'd prior to use	Mixer:		

Additional equipment used:

Measurement Uncertainty: +/-1.7 dB



Notes: **Ambient 27 Vdc**

Adjacent channel power using higher resolution

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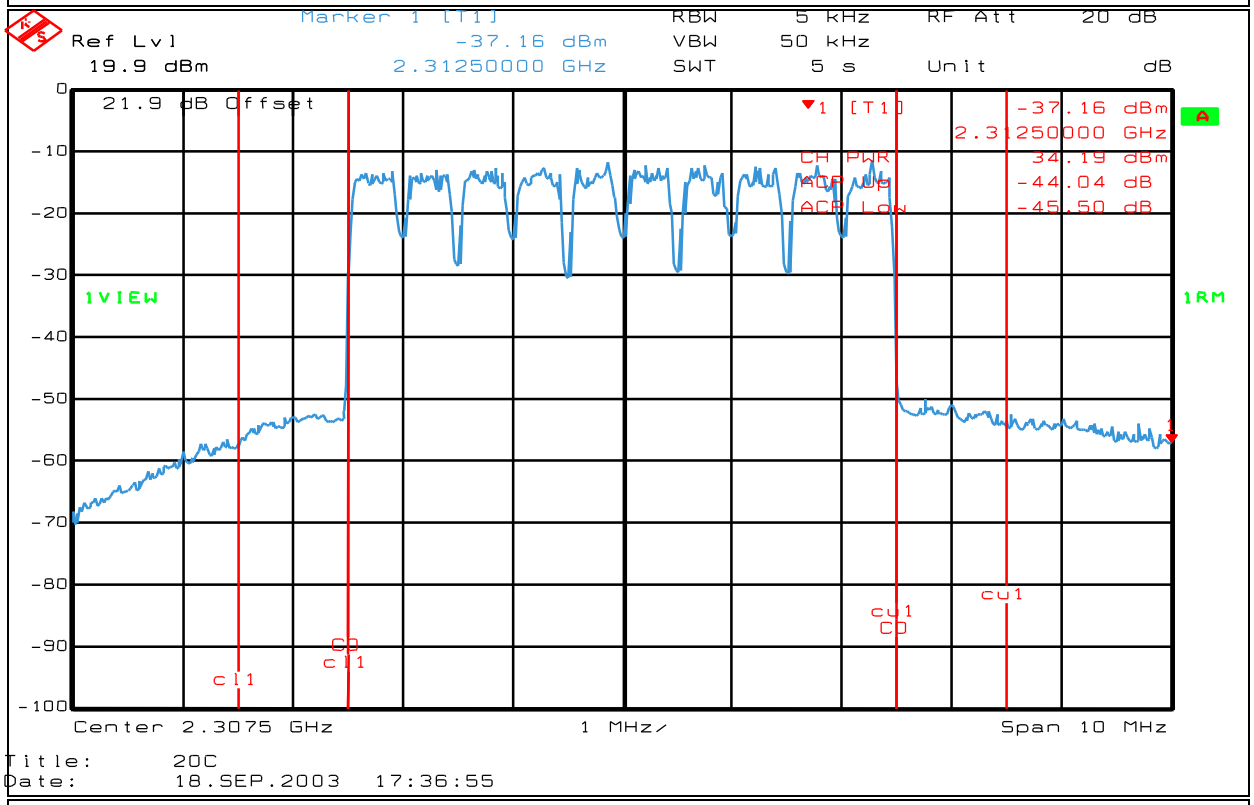
Data Plot — Spurious Emissions at Antenna Terminals

Page 2 of 16

Job No.:	2L0436R	Date:	9/18/2003
Specification:	Part 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	Tx 10 Carriers		



Notes: **Ambient 31.1 Vdc**
Adjacent channel power using higher resolution

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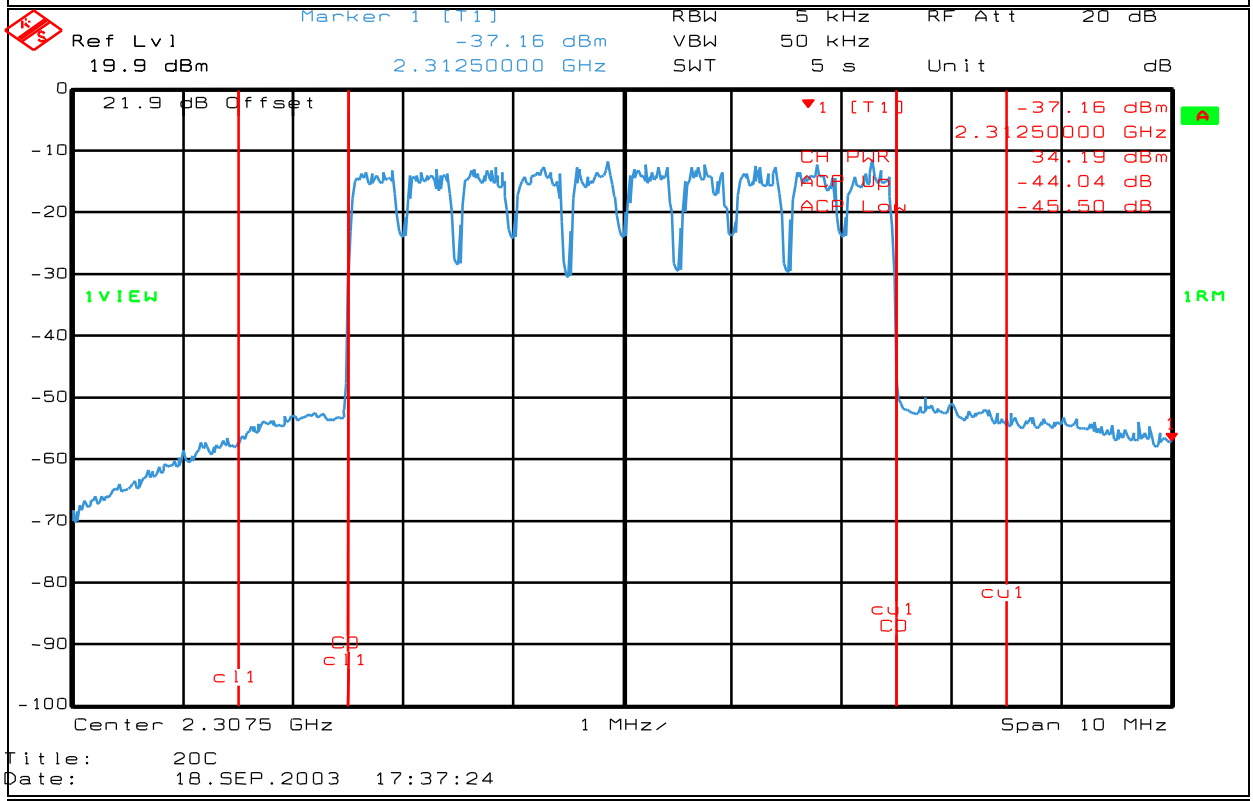
Data Plot — Spurious Emissions at Antenna Terminals

Page 3 of 16

Job No.:	2L0436R	Date:	9/18/2003
Specification:	Part 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	Tx 10 Carriers		



Notes: **Ambient 22.9 Vdc**
Adjacent channel power using higher resolution

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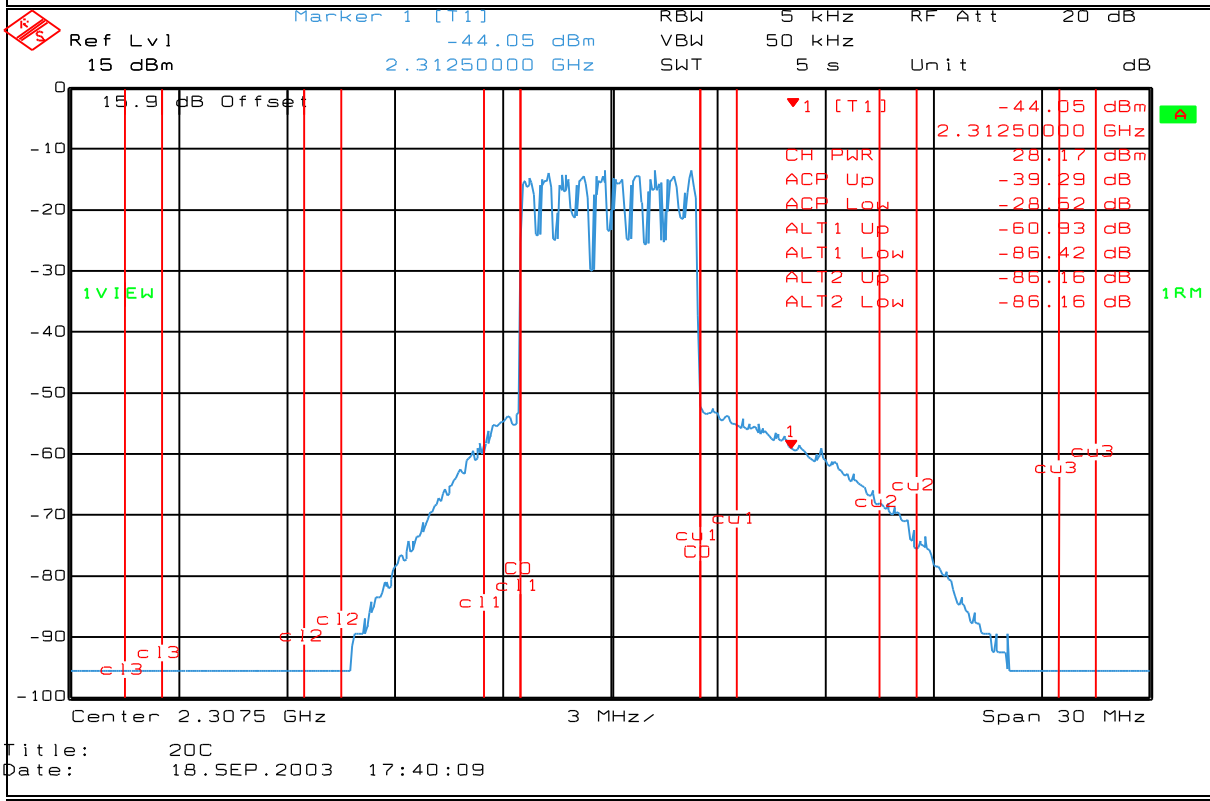
Test Plot: Spurious Emissions at Antenna Terminals

Page 4 of 16

Job No.:	2L0436R	Date:	9/18/2003
Specification:	Part 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	Tx 10 Carriers		



Notes: **Ambient 27 Vdc**
Co-adjacent channel power

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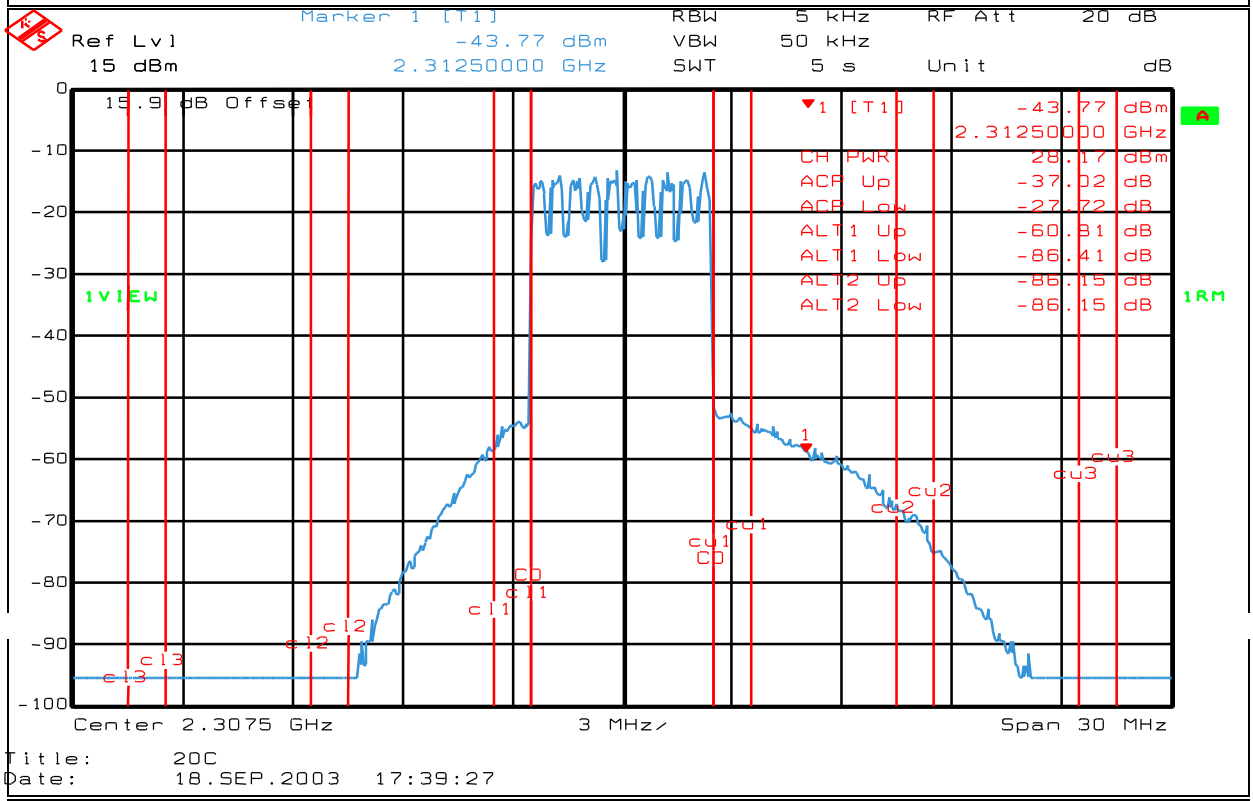
Test Plot: Spurious Emissions at Antenna Terminals

Page 5 of 16

Job No.:	2L0436R	Date:	9/18/2003
Specification:	Part 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	Tx 10 Carriers		



Notes: **Ambient 31.1 Vdc**
Co-adjacent channel power

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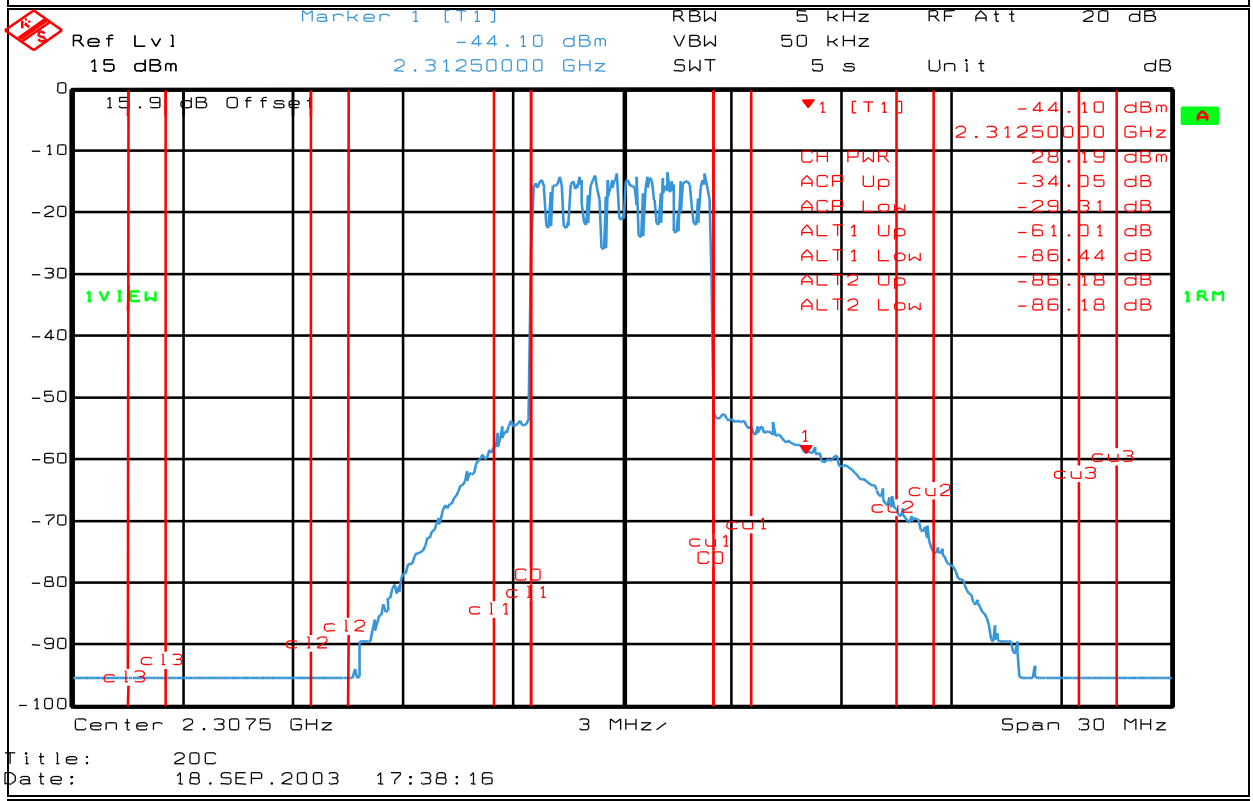
Test Plot: Spurious Emissions at Antenna Terminals

Page 6 of 16

Job No.:	2L0436R	Date:	9/18/2003
Specification:	Part 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	Tx 10 Carriers		



Notes: **Ambient 22.9 Vdc**
Co-adjacent channel power

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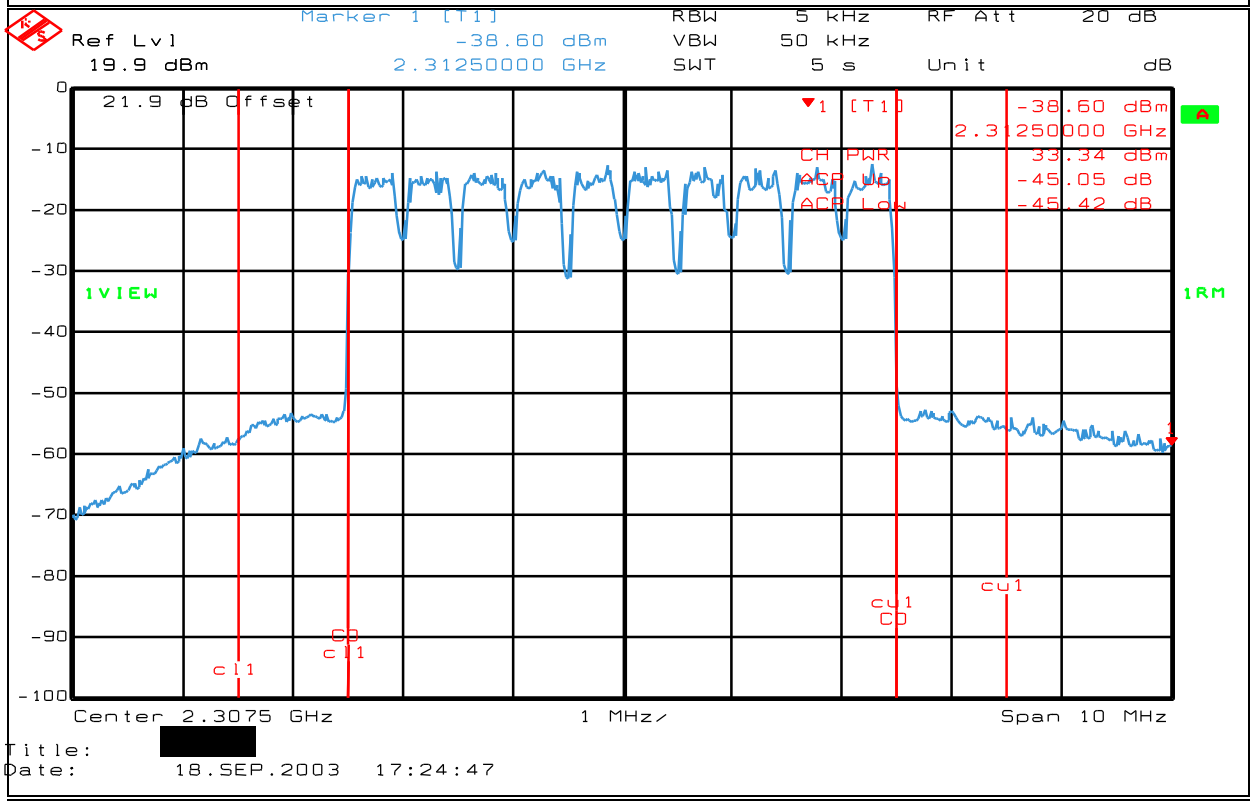
Test Plot: Spurious Emissions at Antenna Terminals

Page 7 of 16

Job No.:	2L0436R	Date:	9/18/2003
Specification:	Part 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	Tx 10 Carriers		



Notes: **+10° C**

Adjacent channel power using higher resolution

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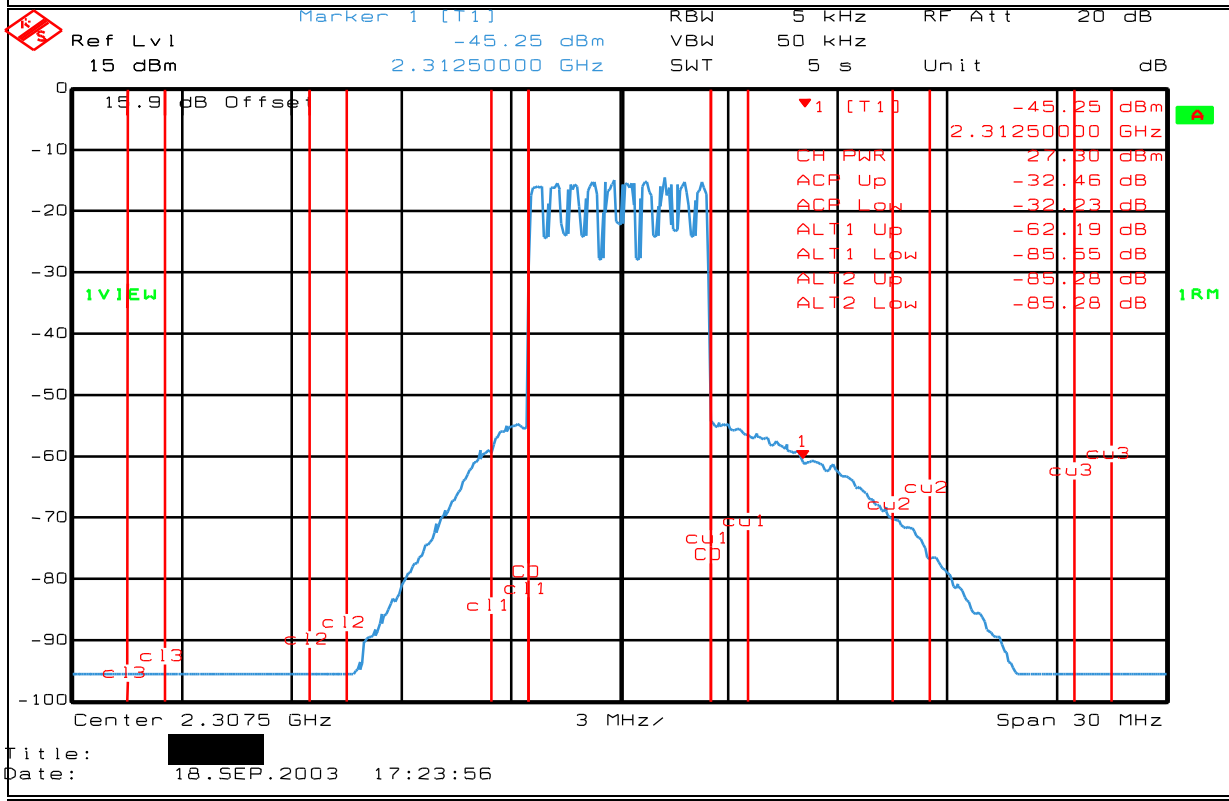
Test Plot: Spurious Emissions at Antenna Terminals

Page 8 of 16

Job No.:	2L0436R	Date:	9/18/2003
Specification:	Part 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	Tx 10 Carriers		



Notes: **+10° C**
Co-adjacent channel power

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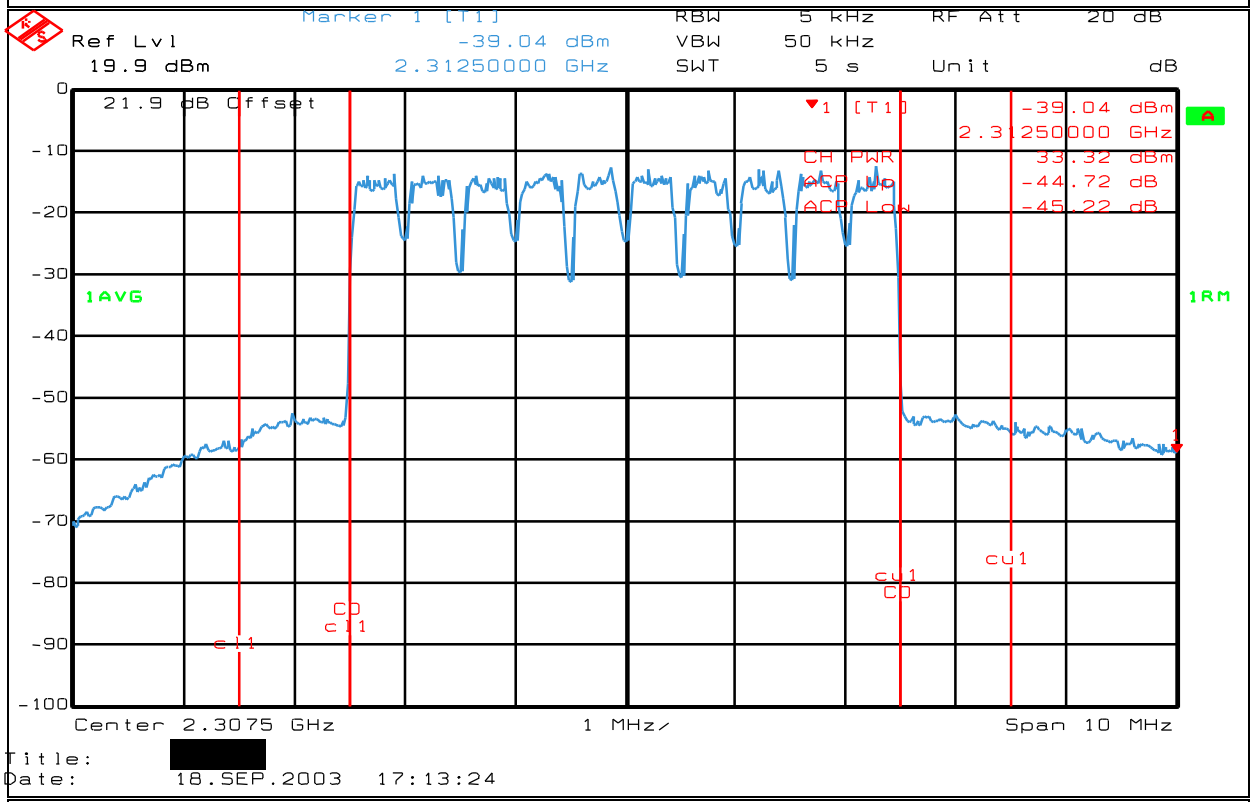
Test Plot: Spurious Emissions at Antenna Terminals

Page 9 of 2L0436R

Job No.:	2L0436R	Date:	9/18/2003
Specification:	Part 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	Tx 10 Carriers		



Notes: 0^{O} C

Adjacent channel power using higher resolution

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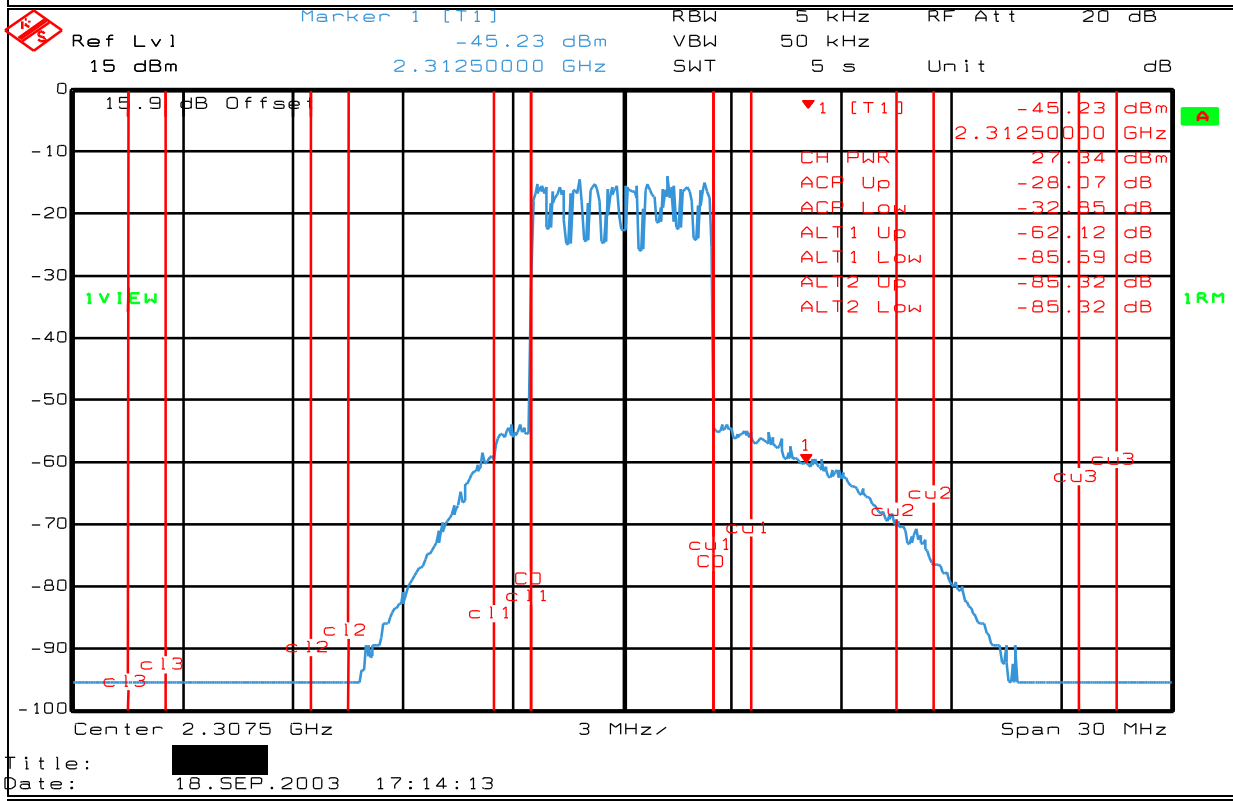
Data Plot — Spurious Emissions at Antenna Terminals

Page 10 of 2L0436R

Job No.:	2L0436R	Date:	9/18/2003
Specification:	Part 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	Tx 10 Carriers		



Notes: 0^{o} C
Co-adjacent channel power

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Lewisville, TX 75057
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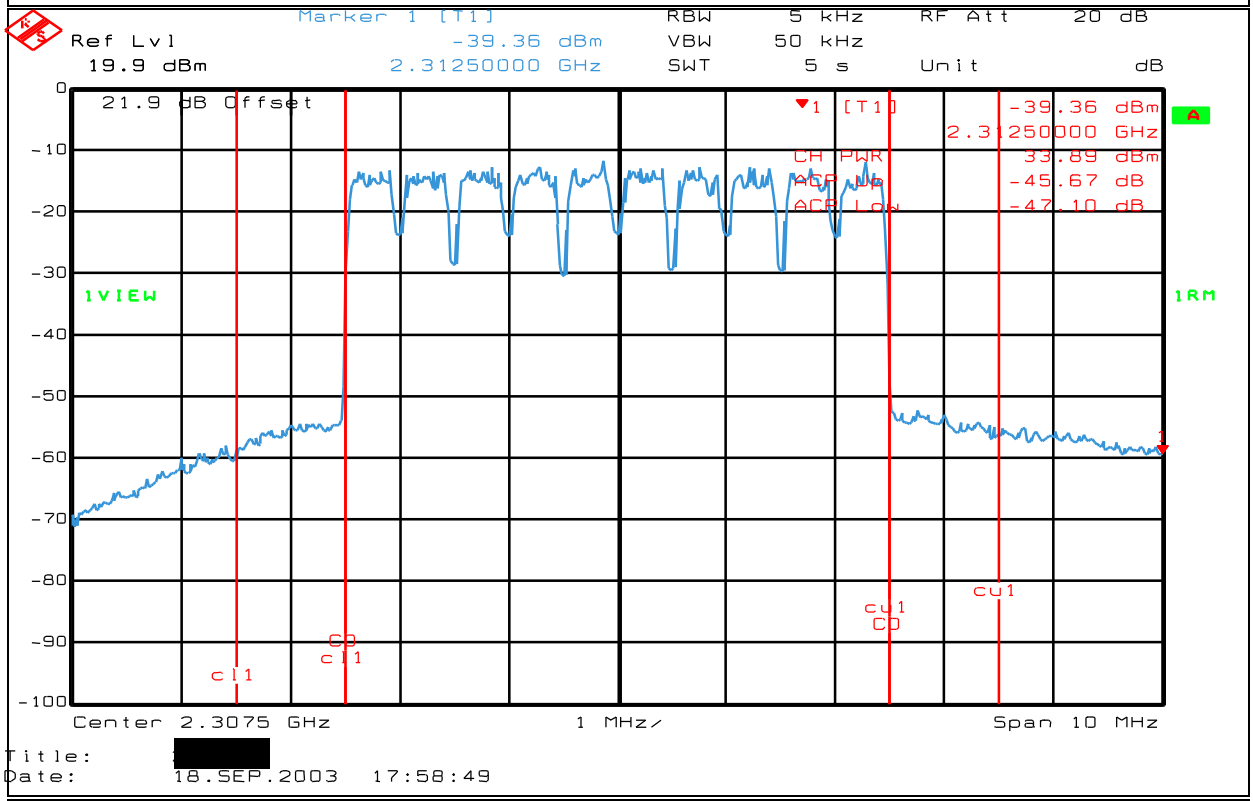
Test Plot: Spurious Emissions at Antenna Terminals

Page 11 of 2L0436R

Job No.:	2L0436R	Date:	9/18/2003
Specification:	Part 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	Tx 10 Carriers		



Notes: +30° C

Adjacent channel power using higher resolution

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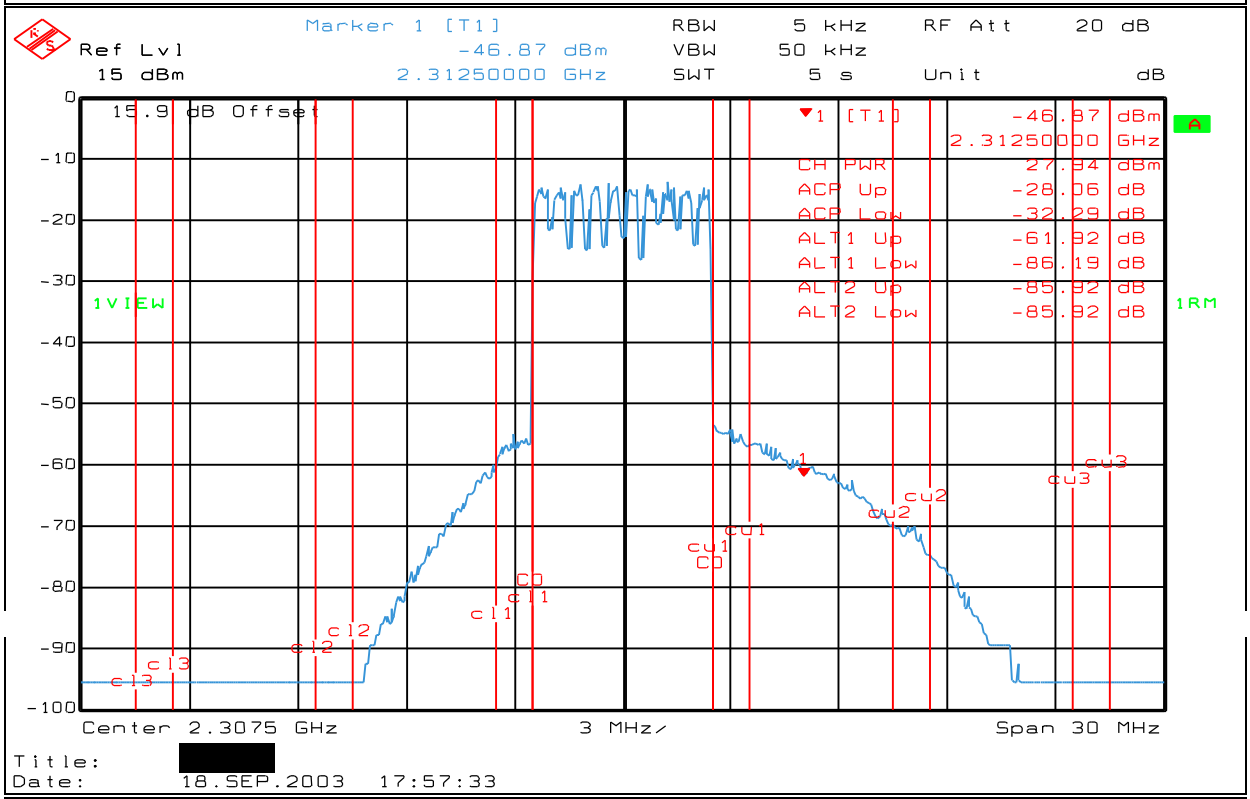
Test Plot: Spurious Emissions at Antenna Terminals

Page 12 of 2L0436R

Job No.:	2L0436R	Date:	9/18/2003
Specification:	Part 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	Tx 10 Carriers		



Notes: +30° C
Co-adjacent channel power

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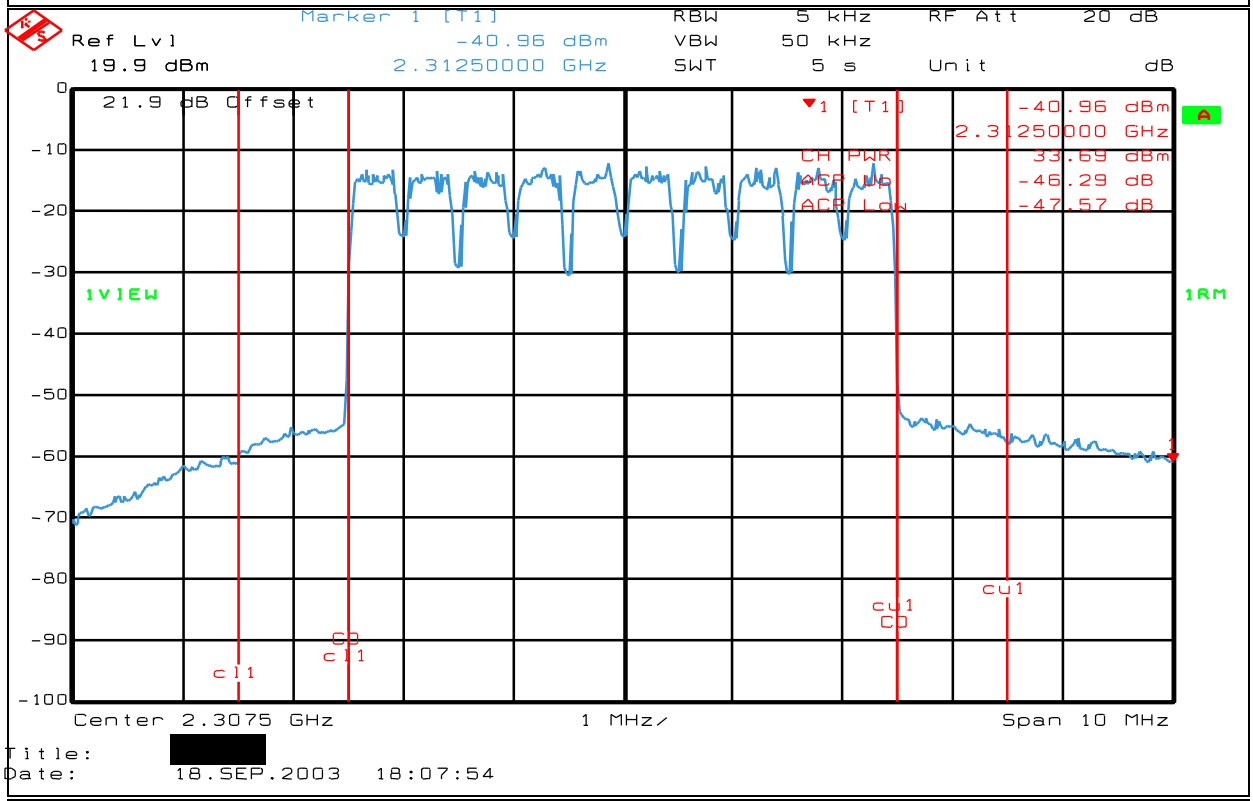
Test Plot: Spurious Emissions at Antenna Terminals

Page 13 of 2L0436R

Job No.:	2L0436R	Date:	9/18/2003
Specification:	Part 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	Tx 10 Carriers		



Notes: +40° C
Adjacent channel power using higher resolution

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Test Plot: Spurious Emissions at Antenna Terminals

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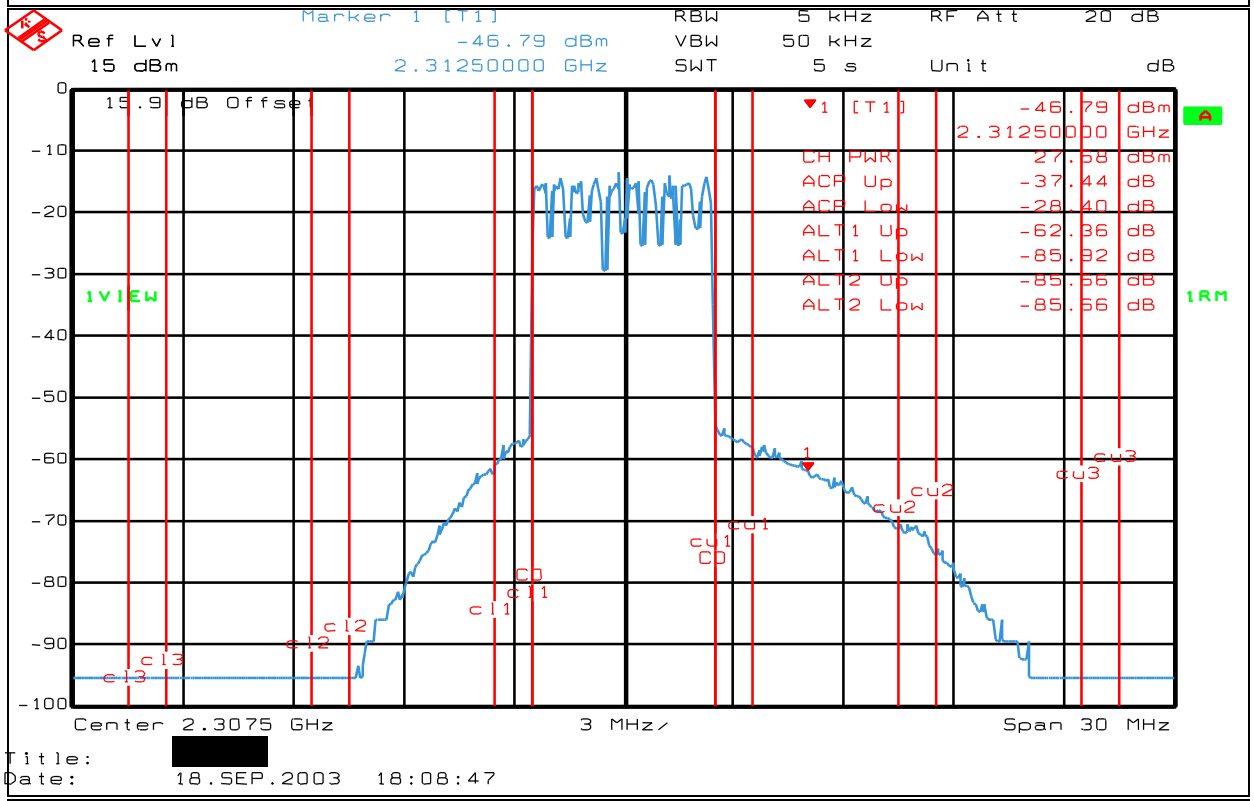
Job No.:	2L0436R	Date:	9/18/2003
Specification:	Part 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	Tx 10 Carriers		



Notes: **+40° C**
Co-adjacent channel power

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Test Plot: Spurious Emissions at Antenna Terminals

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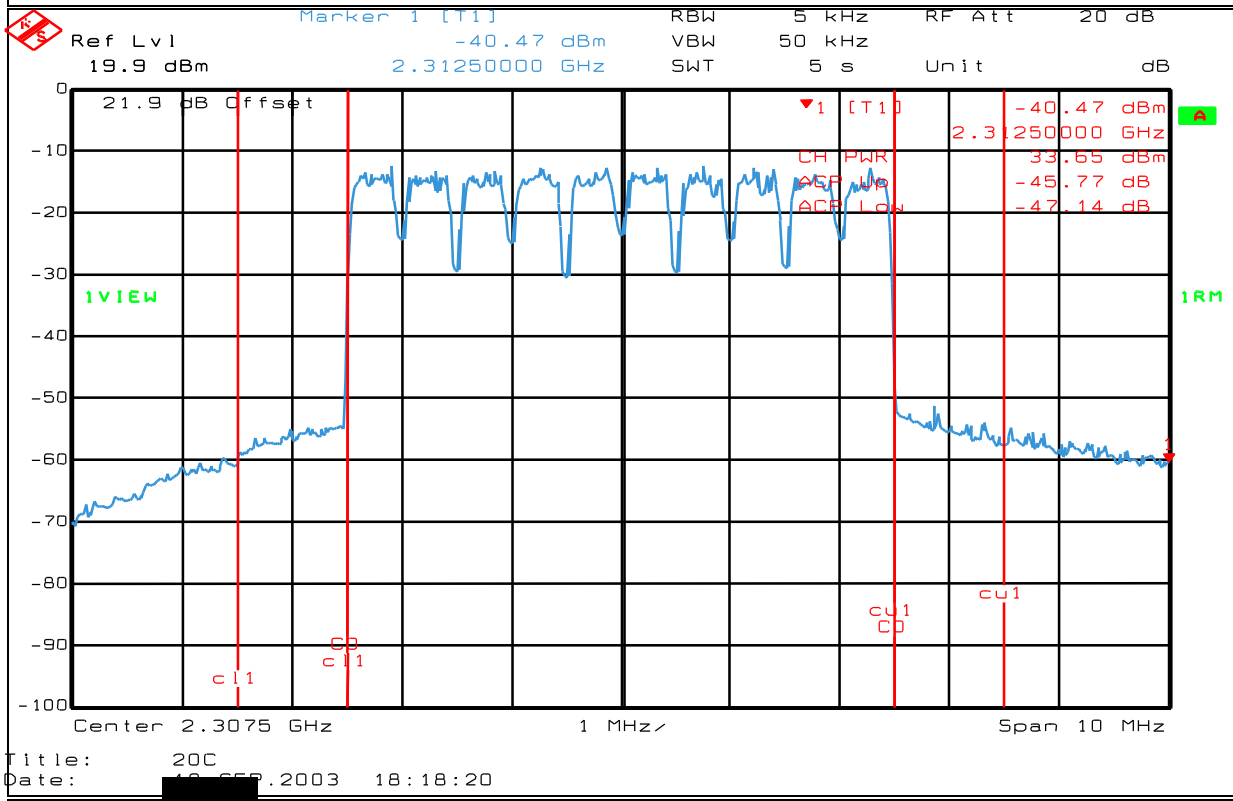
Job No.:	2L0436R	Date:	9/18/2003
Specification:	Part 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	Tx 10 Carriers		



Notes: +50° C
Adjacent channel power using higher resolution

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Data Plot — Spurious Emissions at Antenna Terminals

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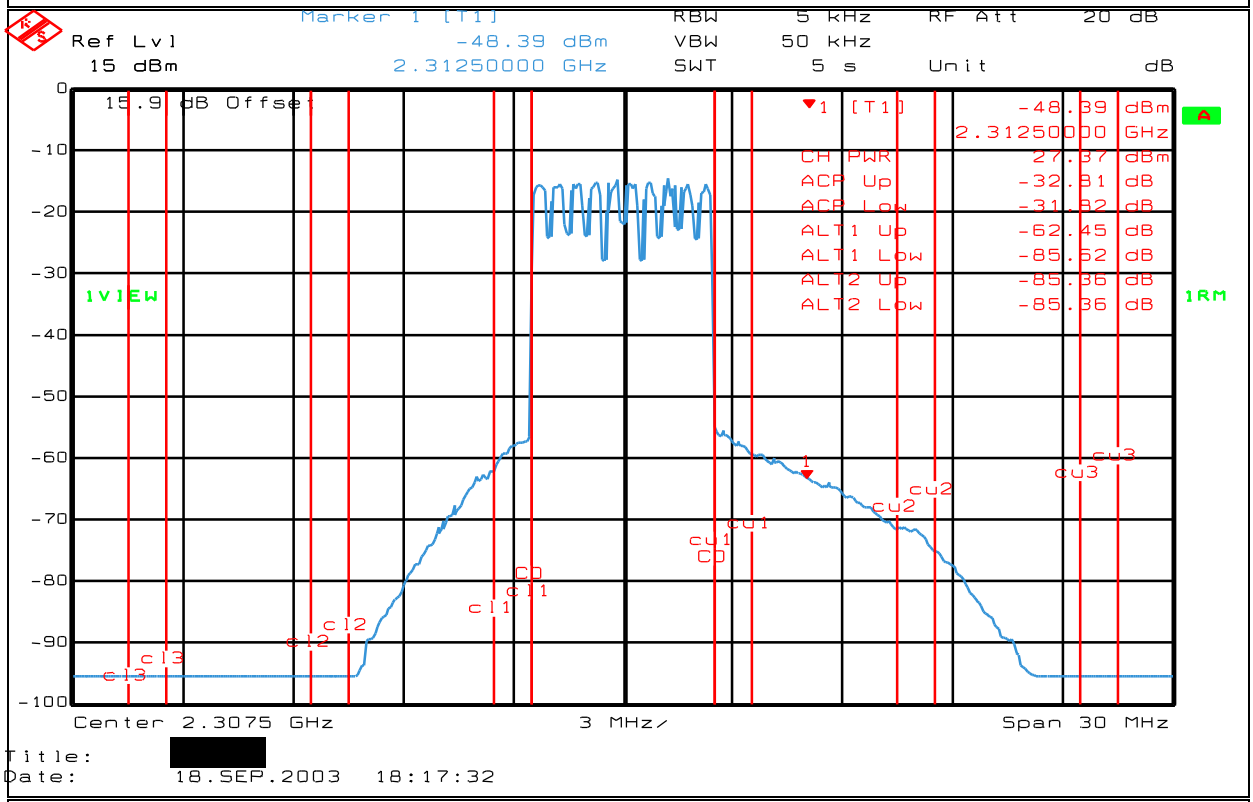
Job No.:	2L0436R	Date:	9/18/2003
Specification:	Part 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	Tx 10 Carriers		



Notes: **+50° C**
Co-adjacent channel power

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Data Plot — Spurious Emissions at Antenna Terminals

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Complete X
Preliminary:

Job No.:	2l0436	Date:	9/18/2003
Specification:	PART 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz bts		
Configuration:	10 CARRIERS		
Sample Number:	1		
Location:	ON SITE	RBW:	5 kHz
Detector Type:	Rms	VBW:	50 kHz

Measurement Distance: NA m

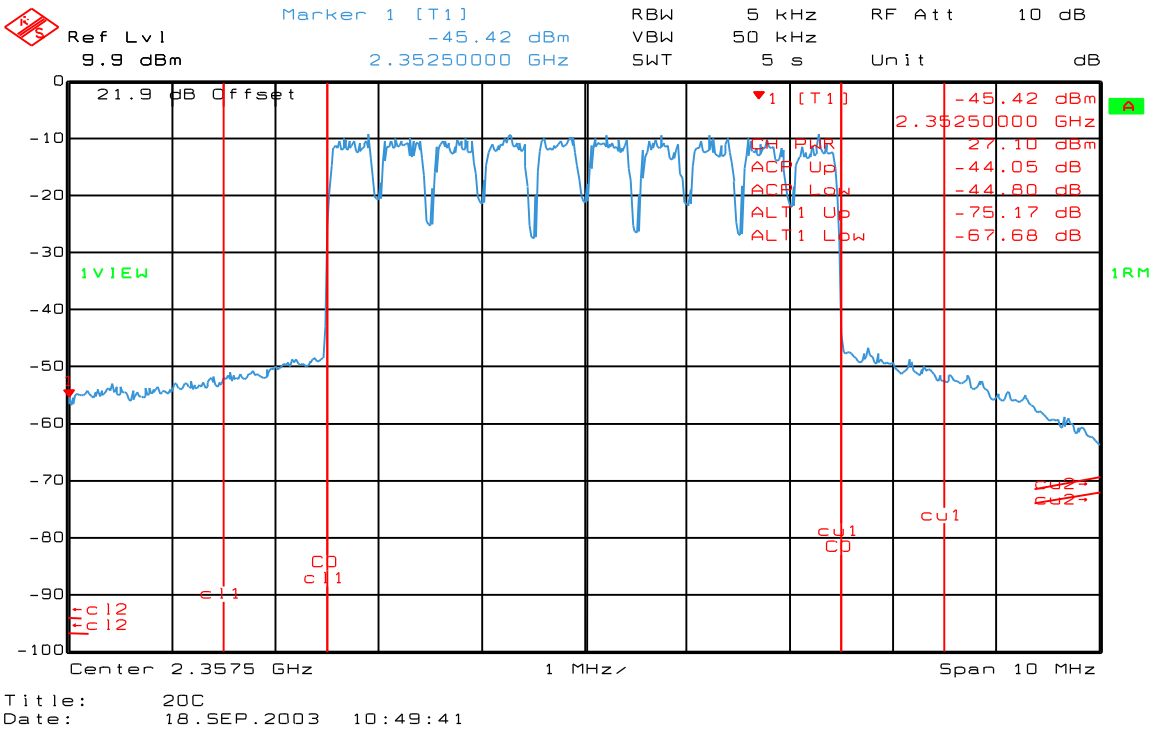
Test Equipment Used

Antenna:		Directional Coupler:	Model 1C0870-20
Pre-Amp:		Cable #1:	1484
Filter:		Cable #2:	
Receiver:	1036	Cable #3:	
Attenuator #1	Model 2044-6dB Cal' prior to use	Cable #4:	
Attenuator #2:	Model 33-20-34 Cal'd prior to use	Mixer:	

Cal'd prior to use

Additional equipment used:

Measurement Uncertainty: +/-1.7 dB



Notes: **Ambient 27 Vdc**
Adjacent channel power using higher resolution

EQUIPMENT: 2.3 GHz WCS BTS

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Data Plot — Spurious Emissions at Antenna Terminals

Page 1 of 16

Complete X
Preliminary:

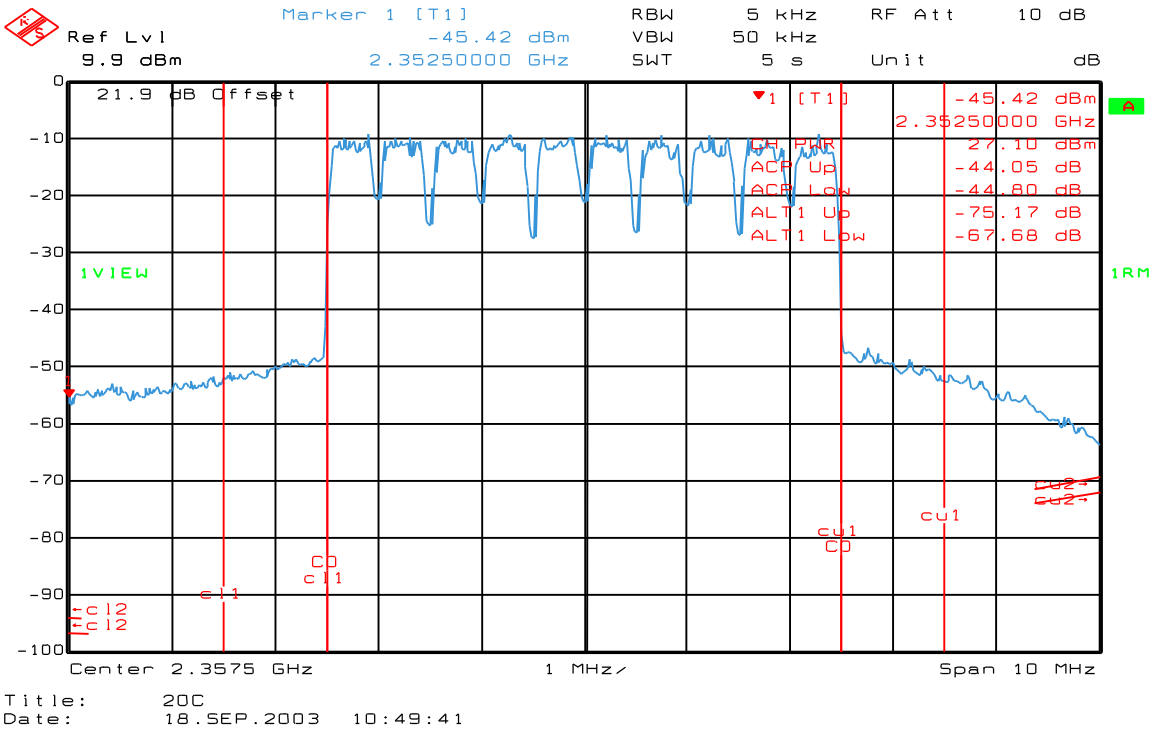
Job No.:	2l0436	Date:	9/18/2003
Specification:	PART 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz bts		
Configuration:	10 CARRIERS		
Sample Number:	1		
Location:	ON SITE	RBW:	5 kHz
Detector Type:	Rms	VBW:	50 kHz

Measurement Distance: NA m

Test Equipment Used

Antenna:		Directional Coupler:	Model 1C0870-20	Cal'd prior to use
Pre-Amp:		Cable #1:	1484	
Filter:		Cable #2:		
Receiver:	1036	Cable #3:		
Attenuator #1	Model 2044-6dB Cal' prior to use	Cable #4:		
Attenuator #2:	Model 33-20-34 Cal'd prior to use	Mixer:		

Additional equipment used:
Measurement Uncertainty: +/-1.7 dB



Notes: **Ambient 27 Vdc**
Adjacent channel power using higher resolution

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Data Plot — Spurious Emissions at Antenna Terminals

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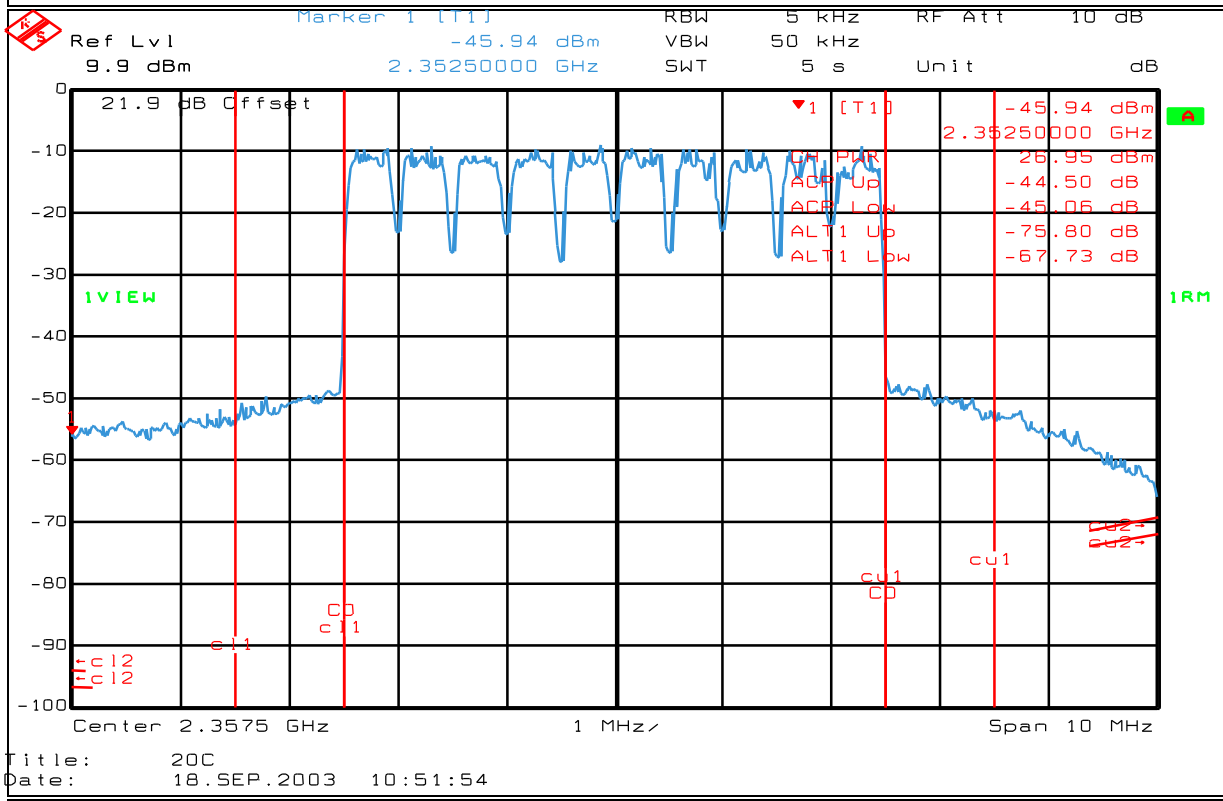
Job No.:	2l0436	Date:	9/18/2003
Specification:	PART 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz bts		
Configuration:	10 CARRIERS		



Notes: **Ambient 31.1 Vdc**
Adjacent channel power using higher resolution

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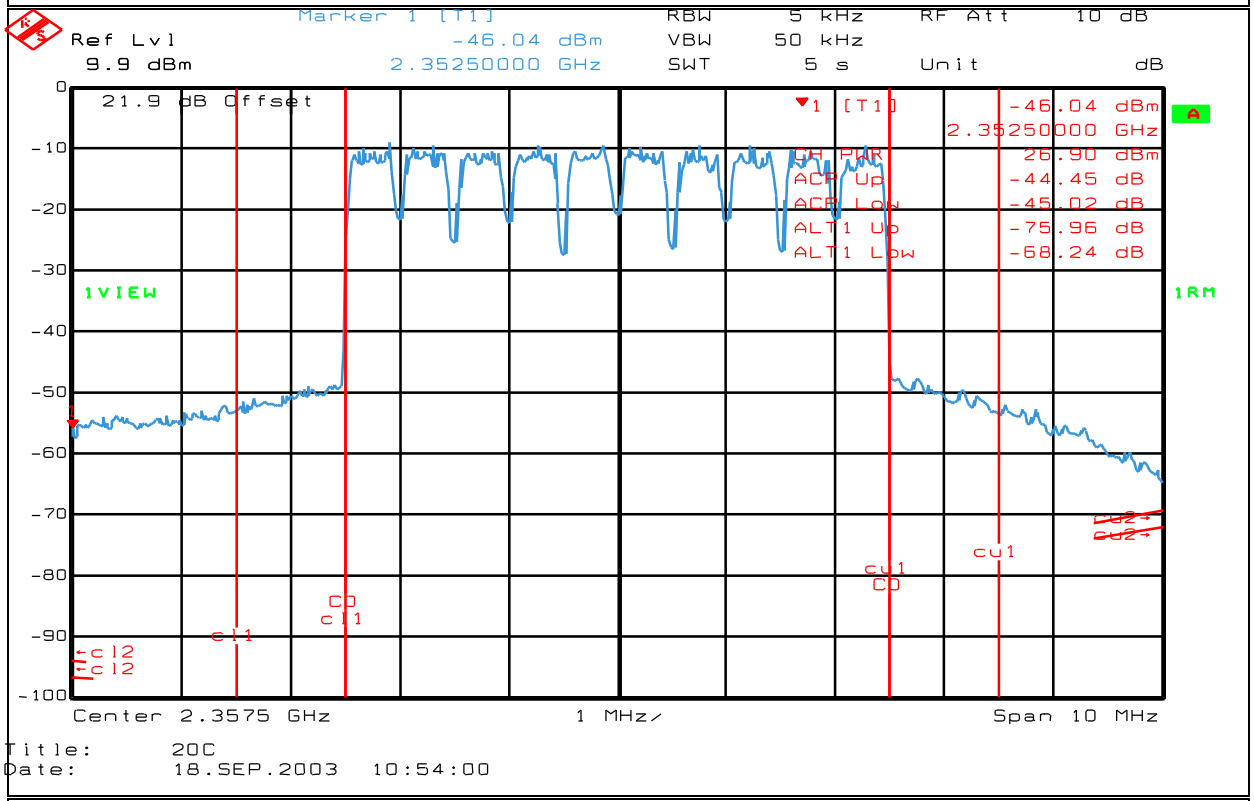
Data Plot — Spurious Emissions at Antenna Terminals

Page 3 of 16

Job No.:	2l0436	Date:	9/18/2003
Specification:	PART 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz bts		
Configuration:	10 CARRIERS		



Notes: **Ambient 22.9 Vdc**
Adjacent channel power using higher resolution

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Test Plot: Spurious Emissions at Antenna Terminals

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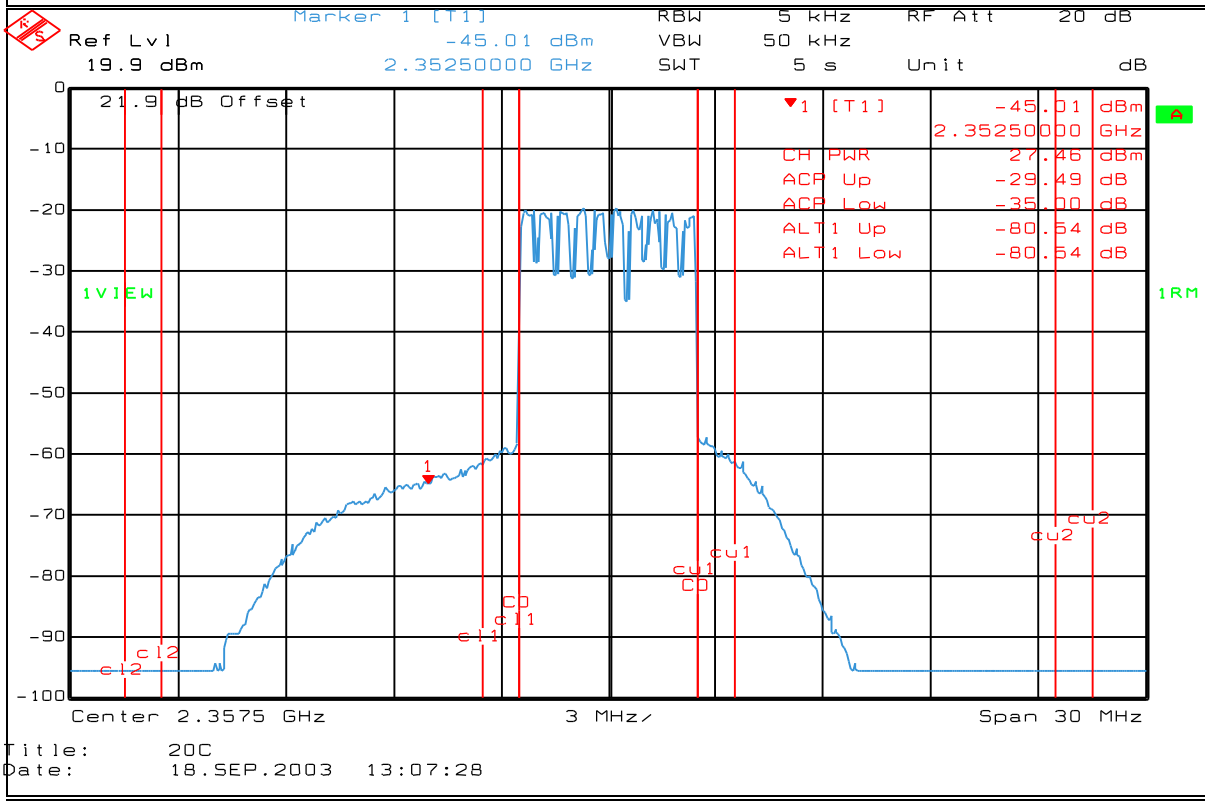
Job No.:	2l0436	Date:	9/18/2003
Specification:	PART 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz bts		
Configuration:	10 CARRIERS		



Notes: **Ambient 27 Vdc**
Co-adjacent channel power

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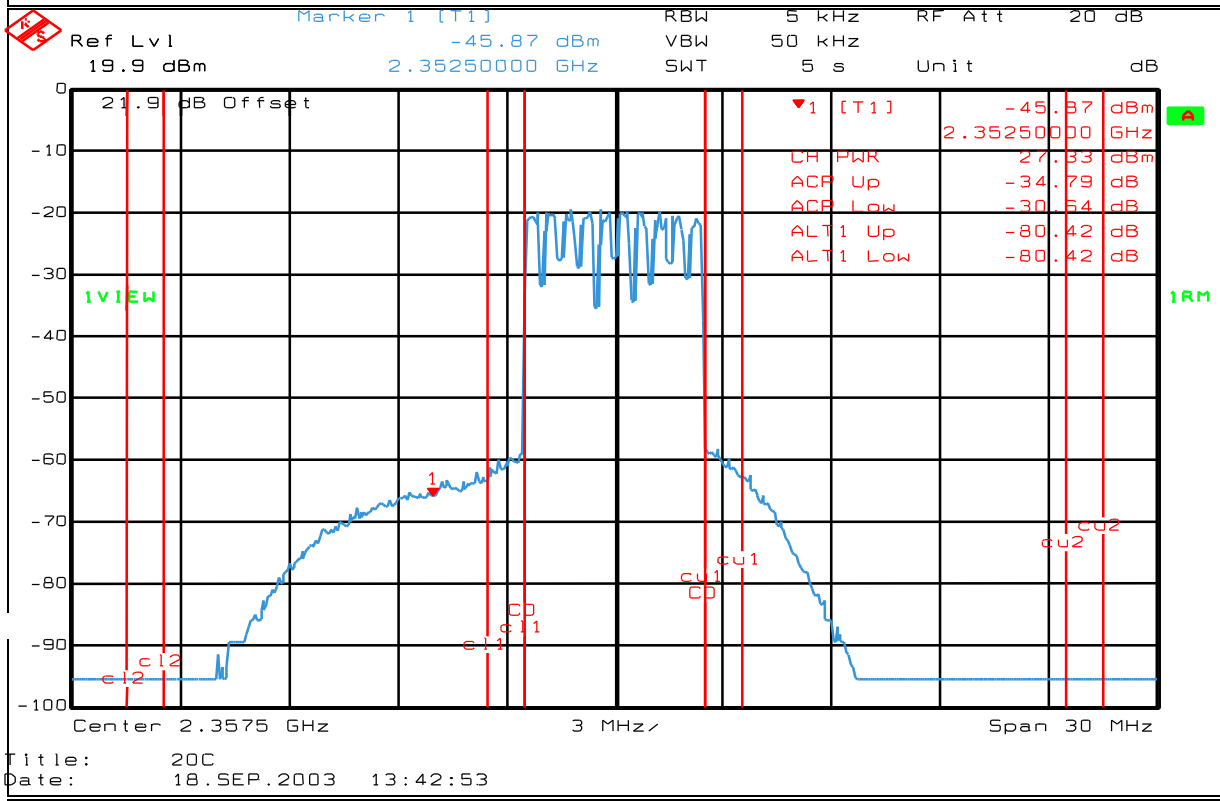
Test Plot: Spurious Emissions at Antenna Terminals

Page 5 of 16

Job No.:	2l0436	Date:	9/18/2003
Specification:	PART 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz bts		
Configuration:	10 CARRIERS		



Notes: **Ambient 31.1 Vdc**
Co-adjacent channel power

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Test Plot: Spurious Emissions at Antenna Terminals

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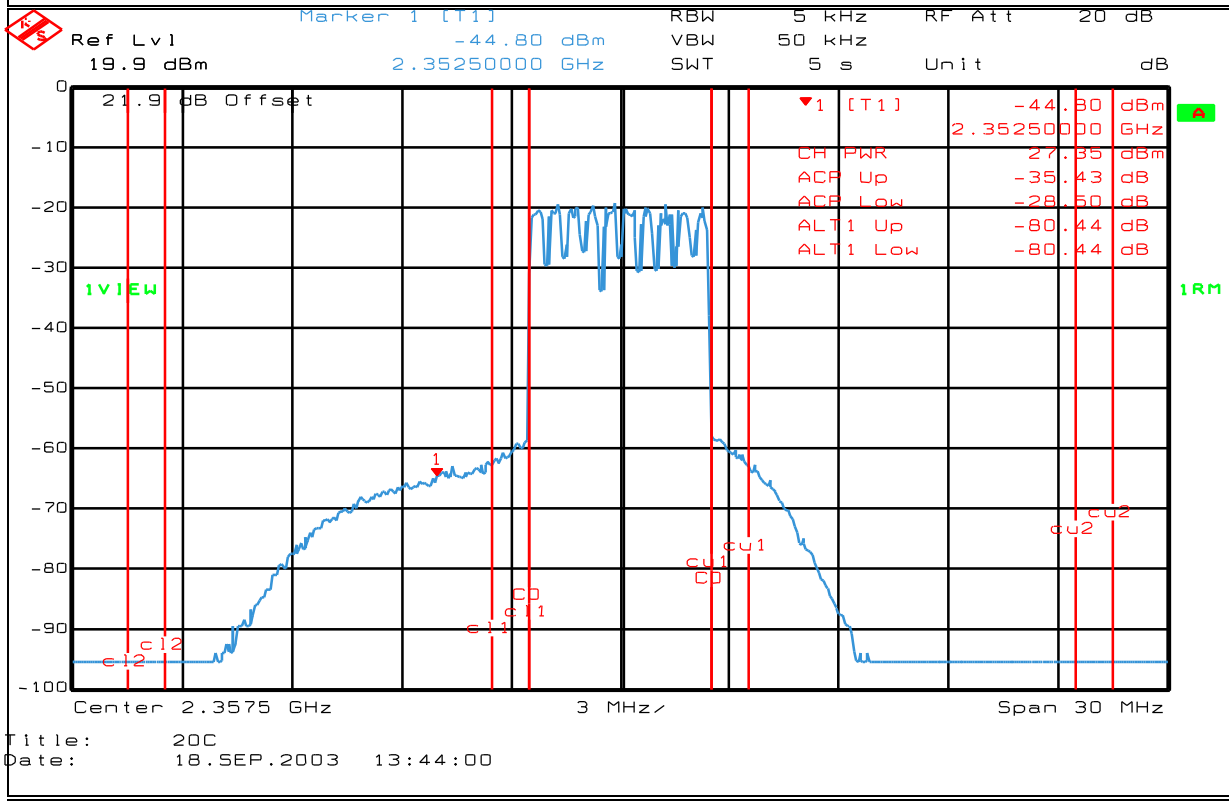
Job No.:	2l0436	Date:	9/18/2003
Specification:	PART 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz bts		
Configuration:	10 CARRIERS		



Notes: **Ambient 22.9 Vdc**
Co-adjacent channel power

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Test Plot: Spurious Emissions at Antenna Terminals

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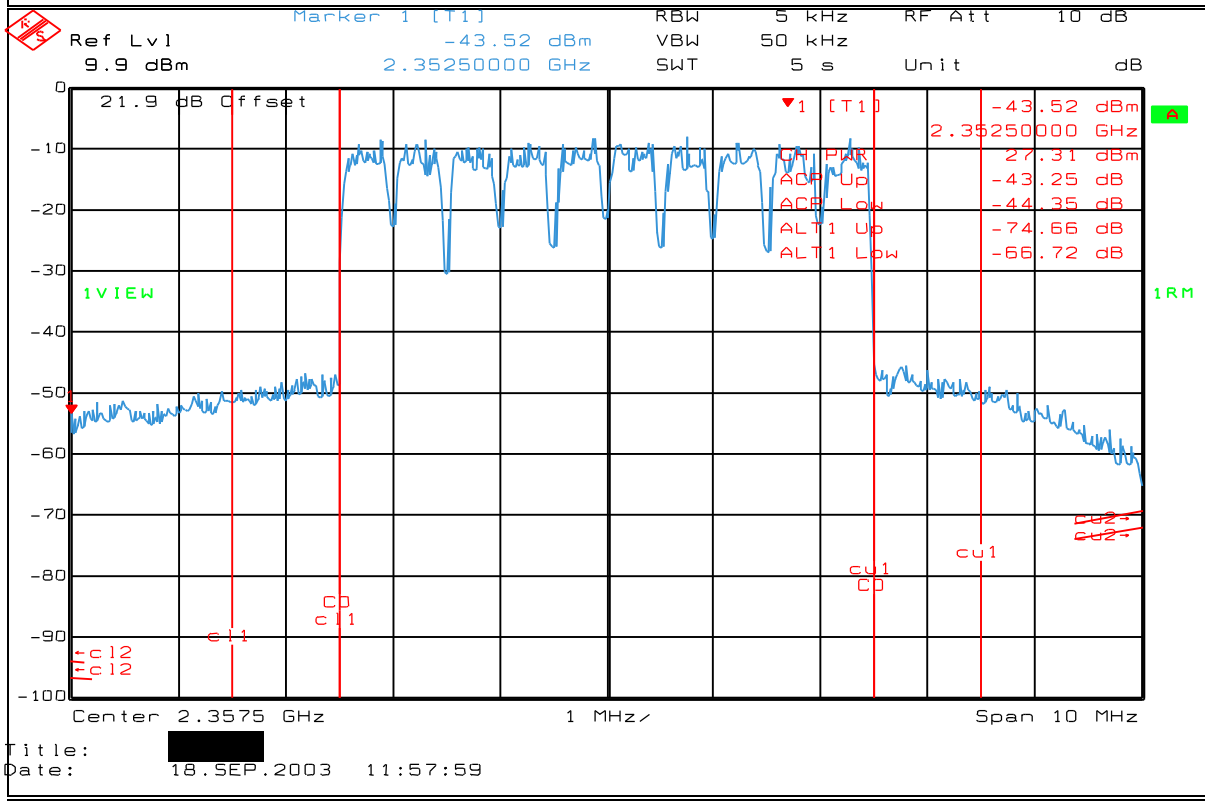
Job No.:	2l0436	Date:	9/18/2003
Specification:	PART 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz bts		
Configuration:	10 CARRIERS		



Notes: **+10° C**

Adjacent channel power using higher resolution

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Test Plot: Spurious Emissions at Antenna Terminals

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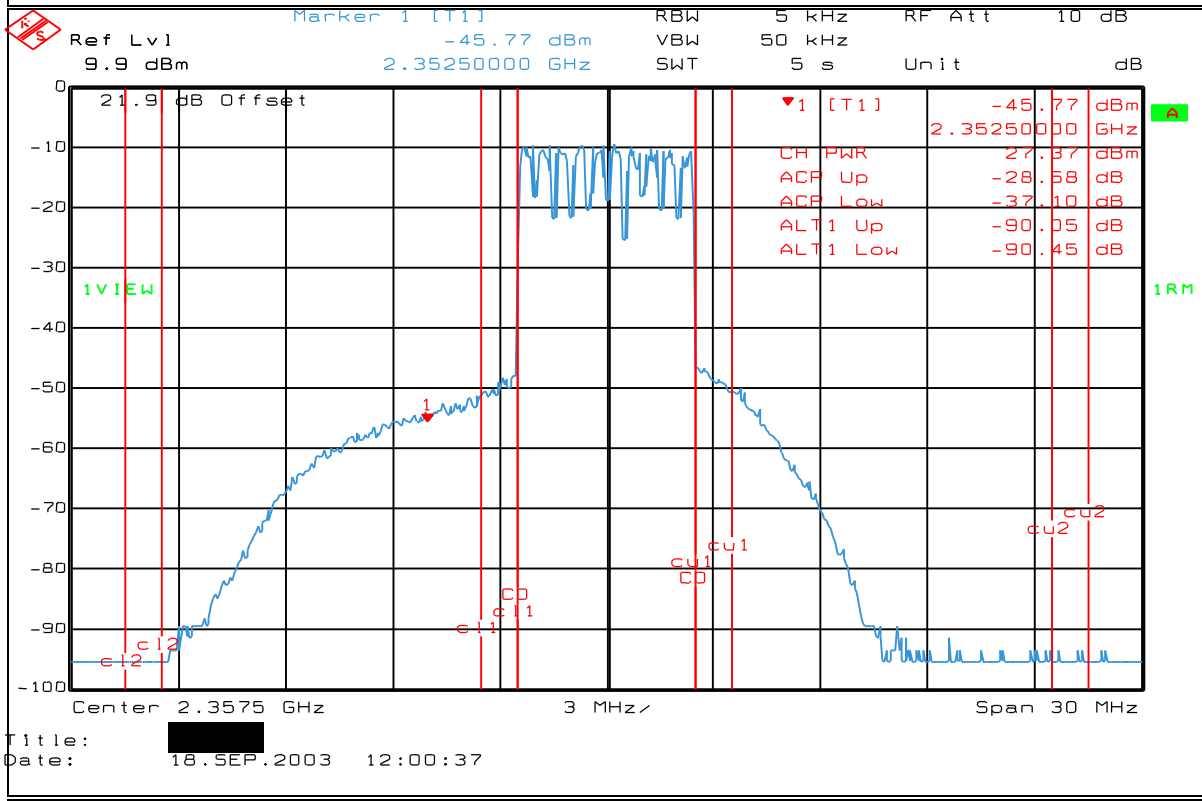
Job No.:	2l0436	Date:	9/18/2003
Specification:	PART 27	Temperature(°C):	22
Tested By:	David Light	Relative Humidity(%)	40
E.U.T.:	2.3 GHz bts		
Configuration:	10 CARRIERS		



Notes: **+10° C**

Co-adjacent channel power

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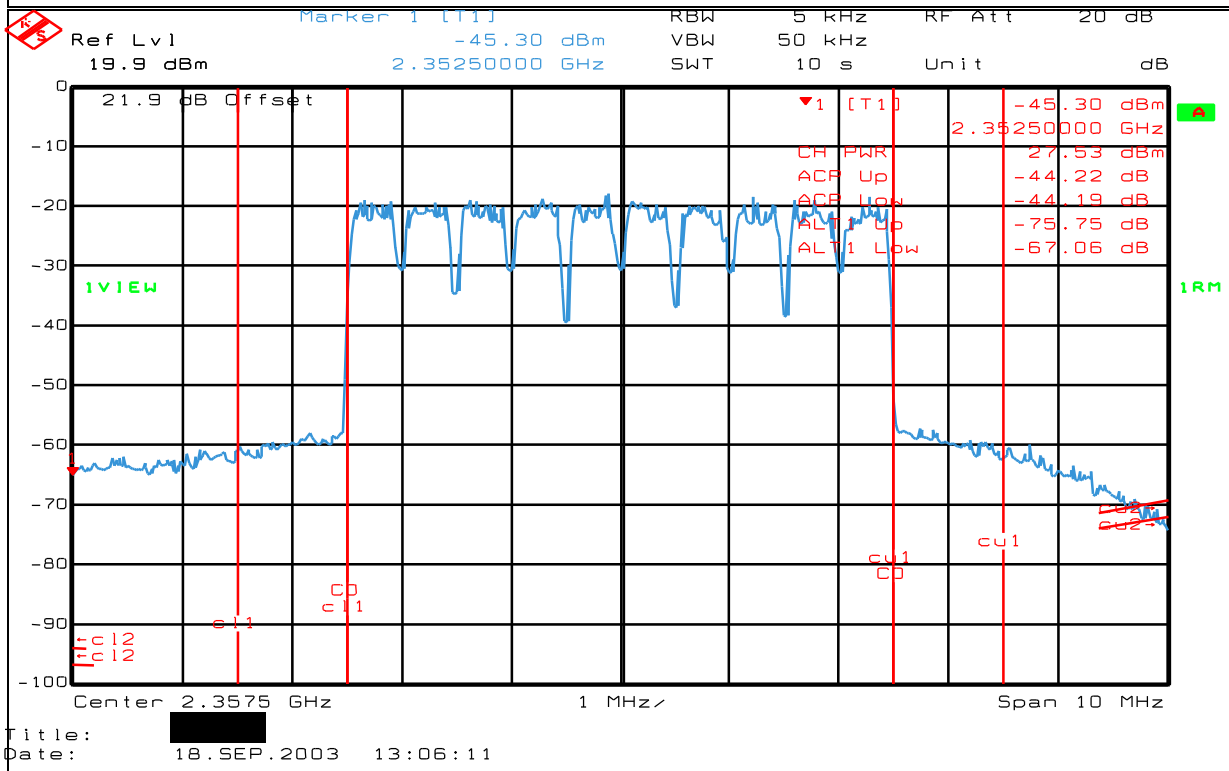
Data Plot — Spurious Emissions at Antenna Terminals

Page 9 of 16

Job No.:	2L0436	Date:	9/18/2003
Specification:	PART 27	Temperature(°C):	22
Tested By:	D. LIGHT	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	10 CARRIERS		



Notes: 0^{O} C

Adjacent channel power using higher resolution

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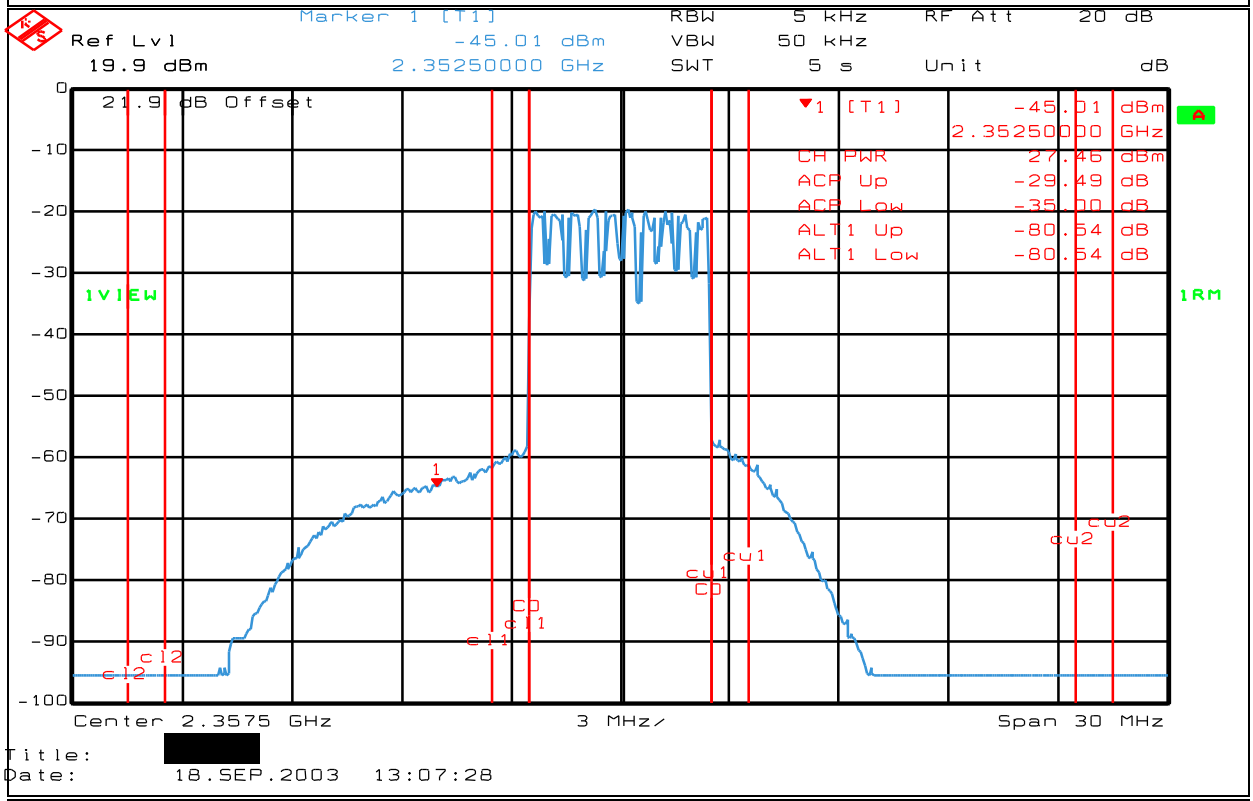
Page 10 of 16

Job No.:	2L0436	Date:	9/18/2003
Specification:	PART 27	Temperature(°C):	22
Tested By:	D. LIGHT	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	10 CARRIERS		



Notes: 0° C
Co-adjacent channel power

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Test Plot: Spurious Emissions at Antenna Terminals

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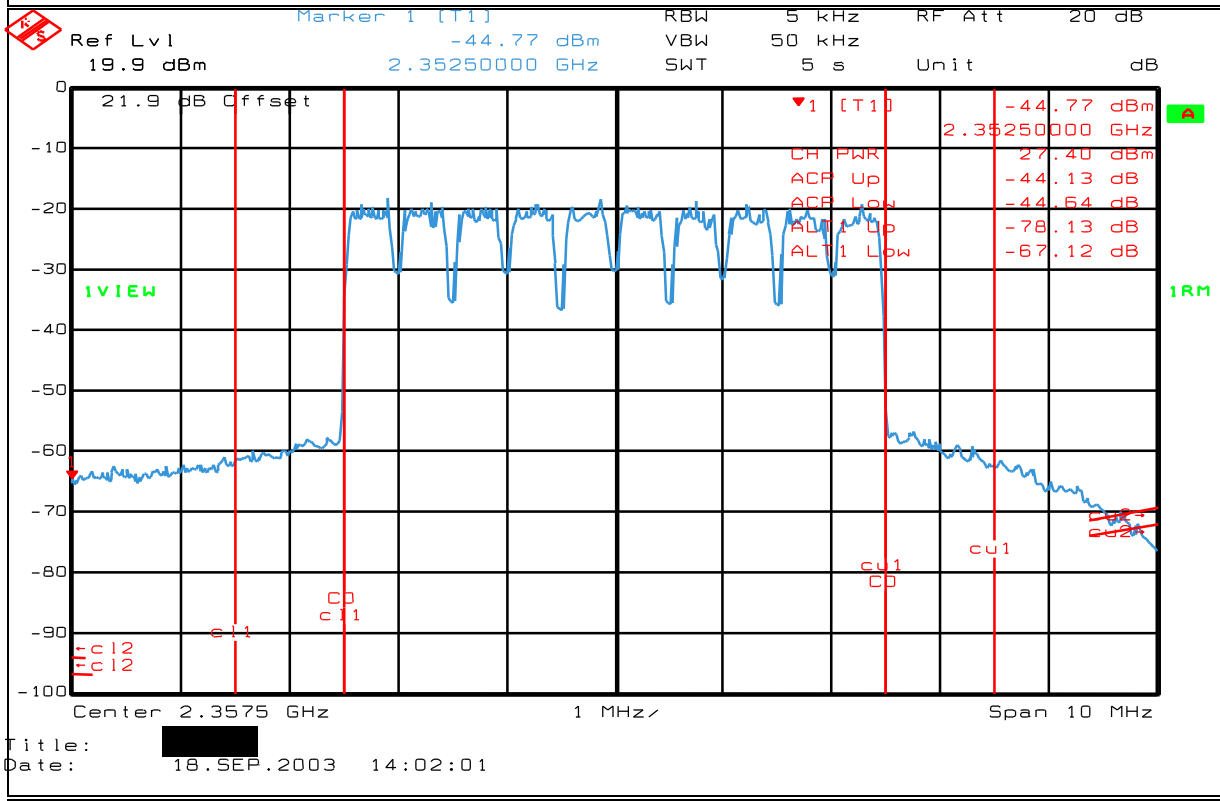
Job No.:	2L0436	Date:	9/18/2003
Specification:	PART 27	Temperature(°C):	22
Tested By:	D. LIGHT	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	10 CARRIERS		



Notes: +30° C
Adjacent channel power using higher resolution

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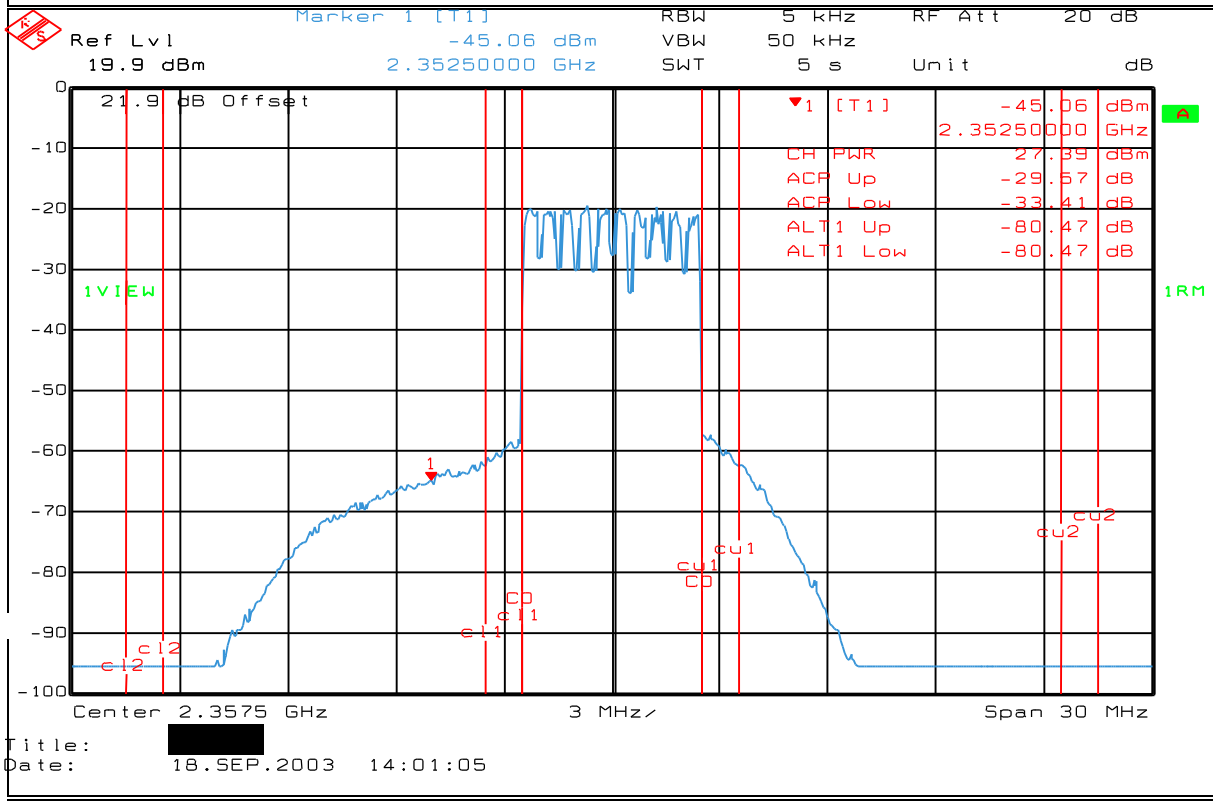
Job No.:	2L0436	Date:	9/18/2003
Specification:	PART 27	Temperature(°C):	22
Tested By:	D. LIGHT	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	10 CARRIERS		



Notes: +30° C
Co-adjacent channel power

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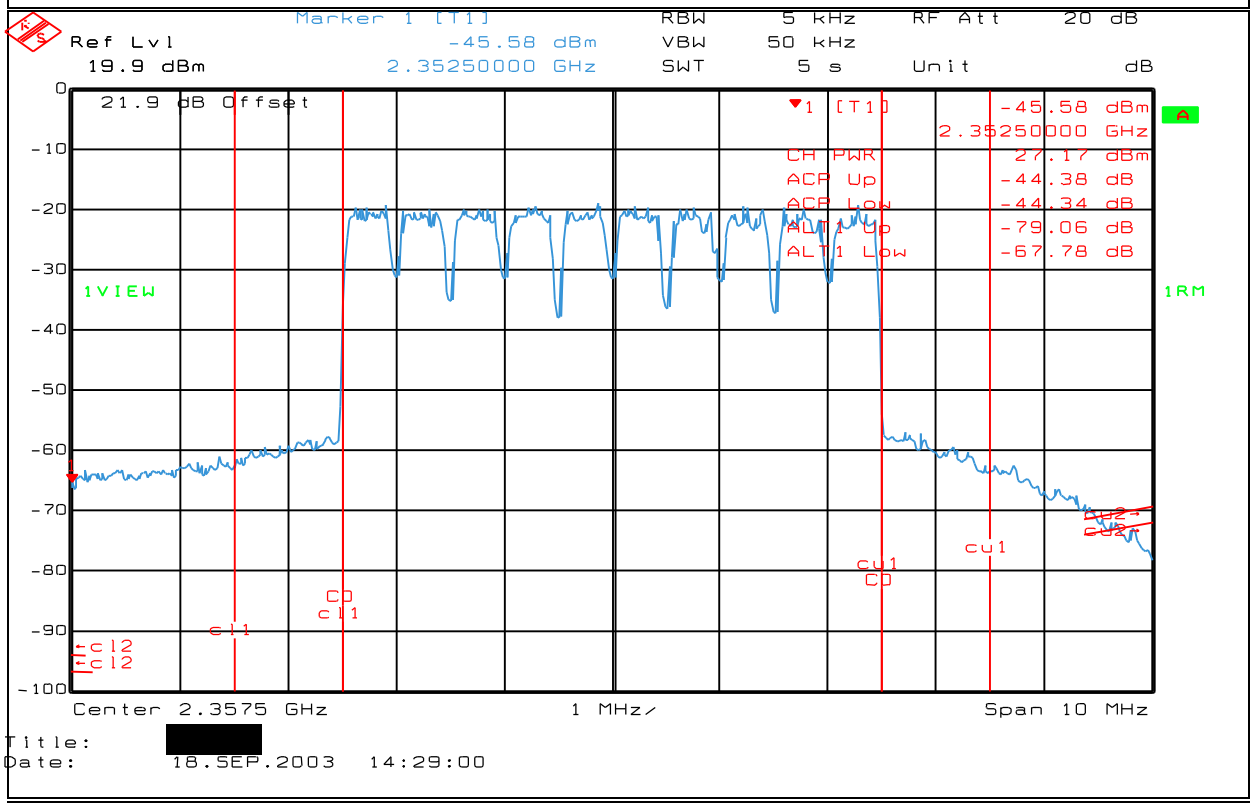
Job No.:	2L0436	Date:	9/18/2003
Specification:	PART 27	Temperature(°C):	22
Tested By:	D. LIGHT	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	10 CARRIERS		



Notes: **+40° C**

Adjacent channel power using higher resolution

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Test Plot: Spurious Emissions at Antenna Terminals

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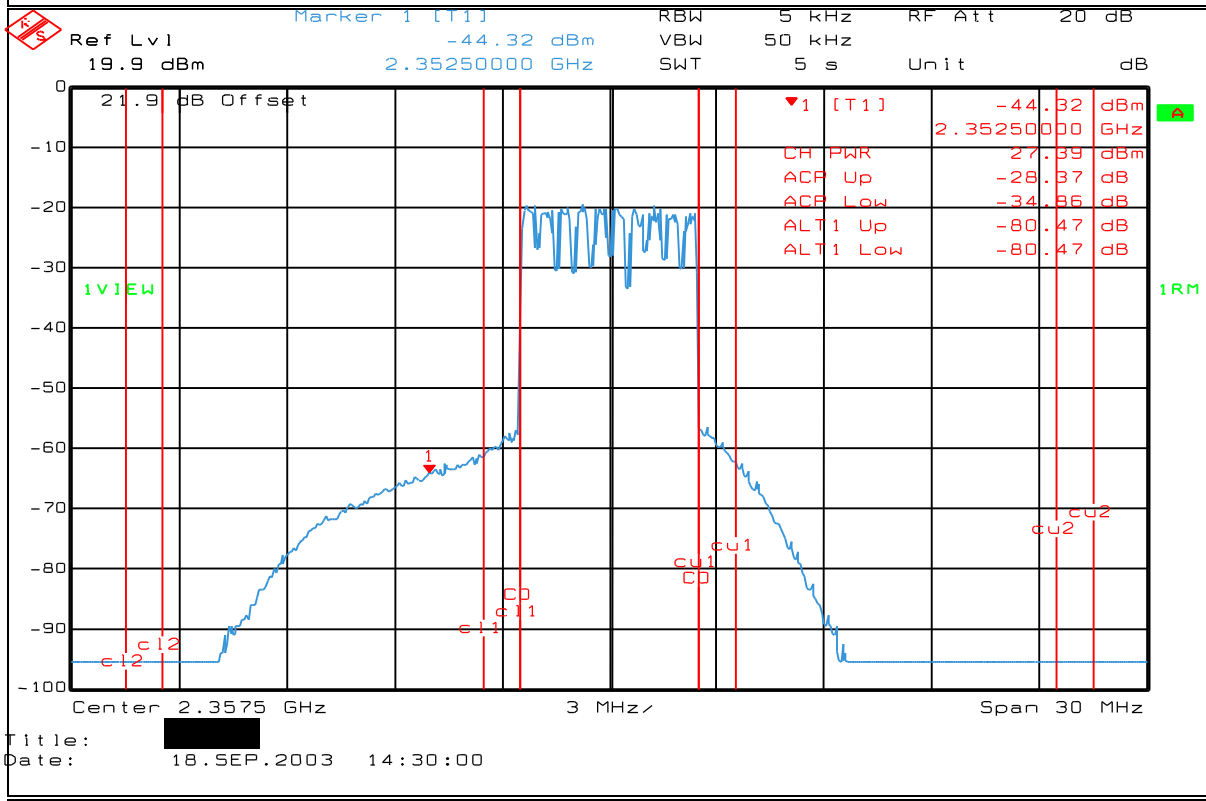
Job No.:	2L0436	Date:	9/18/2003
Specification:	PART 27	Temperature(°C):	22
Tested By:	D. LIGHT	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	10 CARRIERS		



Notes: +40° C
Co-adjacent channel power

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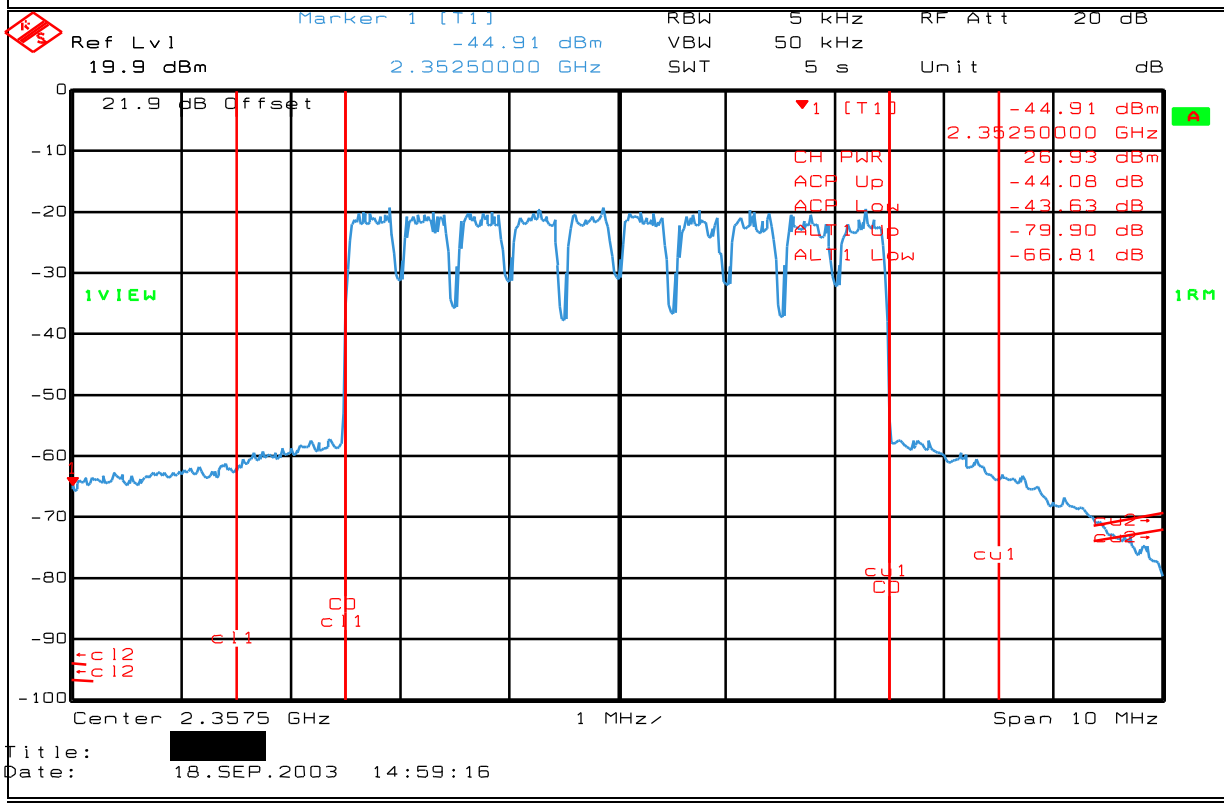
Page 15 of 16

Job No.:	2L0436	Date:	9/18/2003
Specification:	PART 27	Temperature(°C):	22
Tested By:	D. LIGHT	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	10 CARRIERS		



Notes: +50° C
Adjacent channel power using higher resolution

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Data Plot — Spurious Emissions at Antenna Terminals

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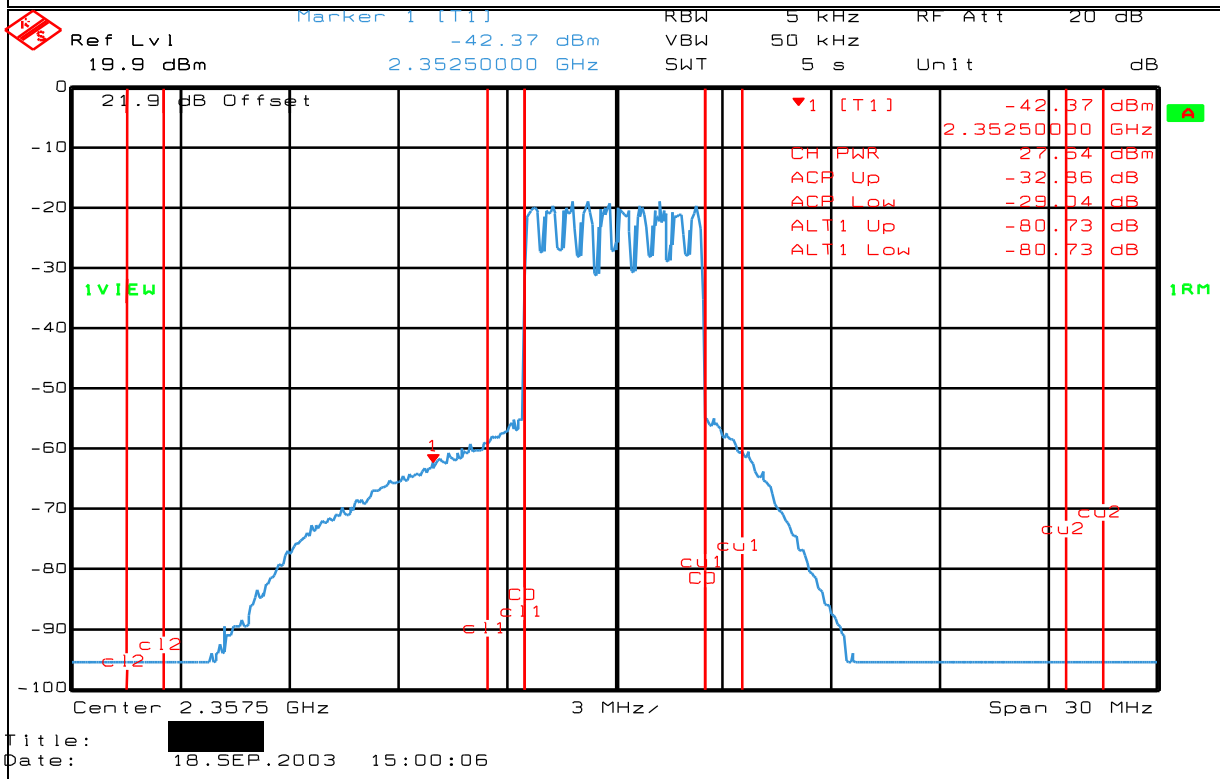
Job No.:	2L0436	Date:	9/18/2003
Specification:	PT 27	Temperature(°C):	22
Tested By:	D. LIGHT	Relative Humidity(%)	40
E.U.T.:	2.3 GHz BTS		
Configuration:	10 CARRIERS		



Notes: +50° C
Co-adjacent channel power

Section 8. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ FSEK30	830844/006	12/18/01	12/19/03
1042	CABLE, 4M	STORM PR90-010-144	N/A	06/14/02	06/14/03
1304	HORN ANTENNA	ELECTRO METRICS RGA-60	6151	07/30/01	07/31/03
1283	Spectrum analyzer display	Hewlett Packard 85662A	1811A00223	10/17/01	10/17/02
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	07/15/02	07/15/03
1484	Cable 2.0-18.0 Ghz	Storm PR90-010-072	N/A	07/15/02	07/15/03
1485	Cable 2.0-18.0 Ghz	Storm PR90-010-216	N/A	07/15/02	07/15/03
	Power meter	Agilent E4416A	GB41290732	10/05/01	10/05/02
	Power sensor	Agilent E9327A	US40440319	08/16/02	08/16/03
	Directional coupler	Anaren 1C087-20	136	CBU	N/A
	Power meter	Agilent E4419B	GB39401846	12/11/02	12/11/03
	Power sensor	Agilent E9401	MY41495108	12/11/02	12/11/03

Section 9. Test Details

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

Method Of Measurement:

Antenna Conducted:
The maximum RMS power is measured with a power meter. In some cases the spectrum analyzer is amplitude offset for the channel power to match the power meter absolute power measurement.

E.I.R.P.:
If the antenna is not detachable from the circuit then the EIRP is measured using the substitution antenna method of measurement as described in EIA/TIA 603B. The field strength of the fundamental emission is measured using a RBW setting on the spectrum analyzer greater than the 20 dB bandwidth of the transmitted waveform. The EUT is then replaced with an antenna with known gain relative to either a dipole or an isotropic radiator. A signal generator is used to feed the substitution antenna until the previously measured field strength level is obtained. The level of signal needed to drive the substitution antenna to obtain the previously measured field strength is the erp or eirp after correction for substitution antenna gain.

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

Method Of Measurement:

A portion of the transmitted signal is coupled to a Spectrum Analyzer with a resolution bandwidth of at least 1% of the bandwidth of the fundamental transmit signal. The emissions energy is integrated over 1 MHz of spectrum.

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

Antenna Conducted:

Adjacent Band Emissions
A portion of the transmitted signal is coupled to a Spectrum Analyzer with a resolution bandwidth of at least 1% of the bandwidth of the fundamental transmit signal. The emissions energy is integrated over 1 MHz of spectrum.

Out of Band Emissions
A portion of the transmitted signal is coupled to a Spectrum Analyzer with a resolution bandwidth of 1 MHz.

The limits in CFR 47, Part 27.53(a) are given as attenuation below carrier power. The measurement is thus a relative measurement. Both the rf output power and the spurious emission levels are measured as RMS levels.

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

If the antenna is detachable from the transmitter, it is removed and replaced with a 50 ohm load. Emissions are measured up to the 10th harmonic of the highest transmit frequency that the transmitter is capable of producing.

If the antenna is not detachable from the transmitter, emissions are measured radiated only.

E.I.R.P.:

If the antenna is detachable from the circuit then the antenna is replaced with a 50 ohm load for this test.. The ERP is measured using the substitution antenna method of measurement as described in EIA/TIA 603B. The field strength of the emission is measured using a RBW setting on the spectrum analyzer greater than the 20 dB bandwidth of the transmitted waveform. The EUT is then replaced with an antenna with known gain relative to either a dipole or an isotropic radiator. A signal generator is used to feed the substitution antenna until the previously measured field strength level is obtained. The level of signal needed to drive the substitution antenna to obtain the previously measured field strength is the erp or eirp after correction for substitution antenna gain.

NAME OF TEST: Frequency Stability	**2.1055**

Method Of Measurement:

Frequency Stability With Voltage Variation:

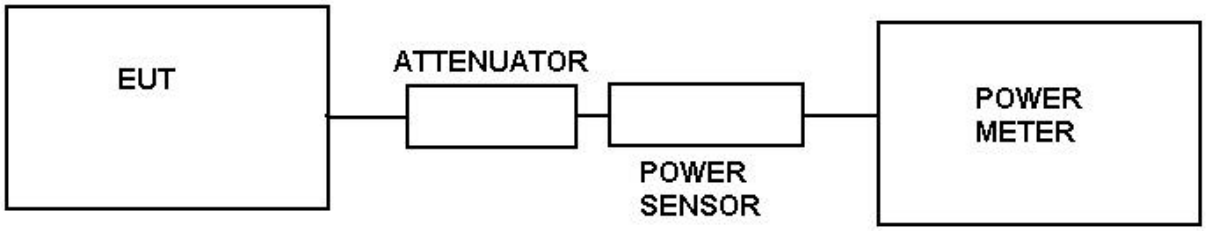
The E.U.T. is placed in an environmental chamber and allowed to stabilize at +20 degrees Celsius for at least 15 minutes. With the voltage input to the E.U.T. set to 85% S.T.V., the spectrum is measured to prove compliance with the specified limits. This procedure is repeated at 100% S.T.V. and 115% S.T.V.

Frequency Stability With Temperature Variation:

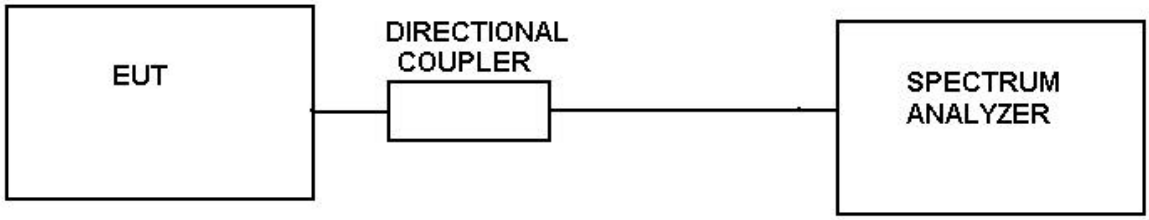
The input voltage to the E.U.T. is set to S.T.V. and the temperature of the environmental chamber is varied in 10 degree steps from -30 degrees C to +50 degrees C. The E.U.T. is allowed to stabilize at each temperature and the spectrum is measured as described above.

Section 10. Test Diagrams

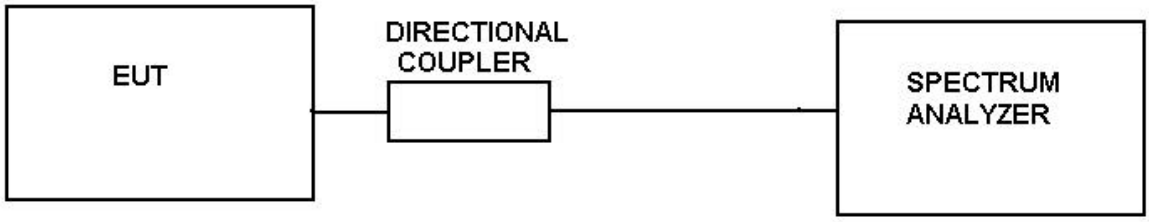
Para. No. 2.1046 - R.F. Power Output



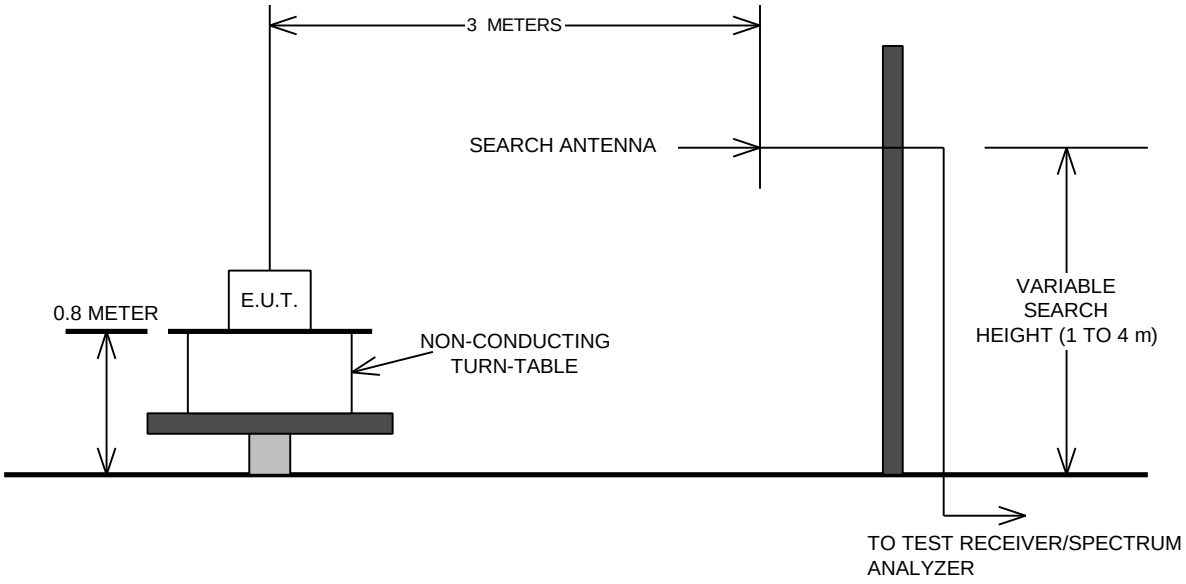
Para. No. 2.1049 - Occupied Bandwidth



Para. No. 2.1051 - Spurious Emissions at Antenna Terminals



Para. No. 2.1053 - Field Strength of Radiation



Para. No. 2.1055 - Frequency Stability