

Nemko Test Report: 2L0527RUS1

Applicant: Navini Networks
2240 Campbell Creek Blvd. Suite 110
Richardson, TX 75082

Equipment Under Test: 2.3 GHz CPE
(E.U.T.)

In Accordance With: FCC PART 27, Subpart C
Wireless Communications Systems

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

Authorized By:



David Light, Resource Group Manager

Date: 9/24/03

Total Number of Pages: 183

EQUIPMENT: 2.3 GHz CPE

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EQUIPMENT: 2.3 GHz CPE

Section 1. Summary of Test Results

Manufacturer: Navini Networks

Model No.: CPE 2.3 GHz CPE

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 21, Subpart K.



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".

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This report applies only to the items tested.

Nemko Dallas

FCC PART 27, SUBPART C
MULTIPOINT DISTRIBUTION SERVICE
PROJECT NO.:2L0527RUS1

EQUIPMENT: 2.3 GHz CPE

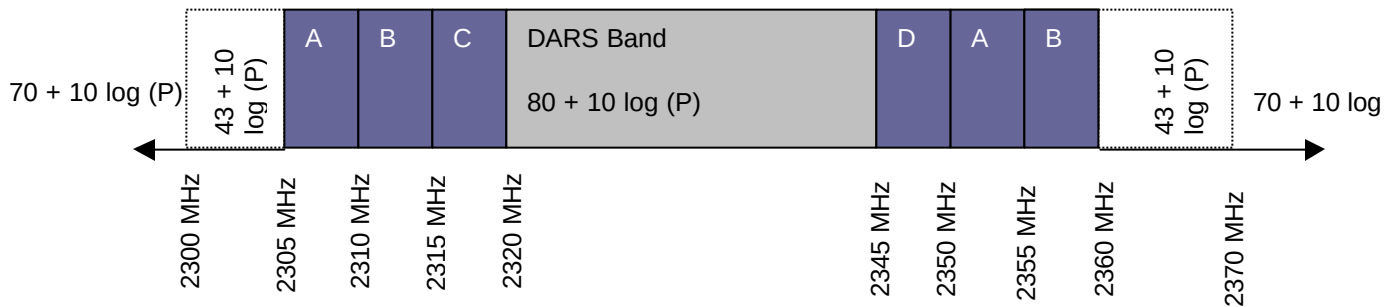
Summary Of Test Data

NAME OF TEST	PARA. NO.	PART 27 PARA. NO.	RESULT
RF Power Output	2.1046	27.50	Complies
Occupied Bandwidth	2.1049	27.53(a)	Complies
Spurious Emissions @ Antenna Terminals	2.1051	27.53(a)	Complies
Field Strength of Spurious Radiation	2.1053	27.53(a)	Complies
Frequency Stability	2.1055	27.54	Complies

EQUIPMENT: 2.3 GHz CPE

Section 2. General Equipment Specification

Supply Power:	120 Vac
Frequency Range:	See Fig. 1 below
Type(s) of Modulation:	DQPSK
Emission Designator:	500KF9W
Output Impedance:	50 ohms
RF Power Output Rated:	See Section 3
Duty Cycle:	Software controlled 25% to 50% TDD
Operator Selection Of Operating Frequency:	Software controlled
Power Output Adjustment Capability:	Software controlled

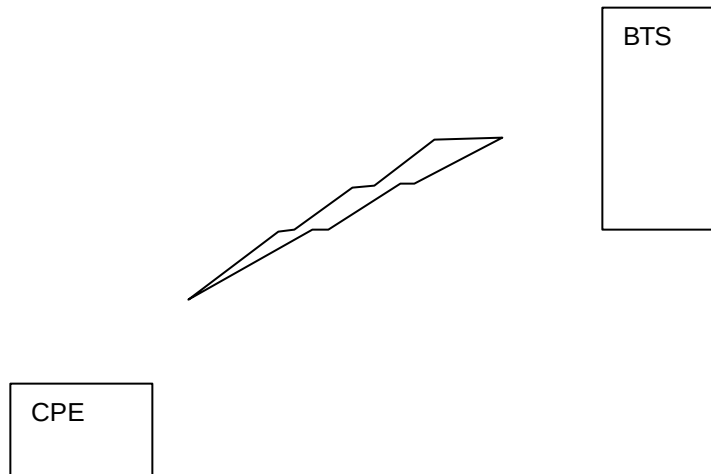


EQUIPMENT: 2.3 GHz CPE

Description Of EUT

The equipment tested is a Customer Premise Equipment (CPE) transceiver that functions as a wireless broadband data modem in a high speed internet system..

System Diagram



EQUIPMENT: 2.3 GHz CPE

Section 3. RF Power Output

NAME OF TEST: RF Power Output	PARA. NO.: 2.1046
TESTED BY: Tom Tidwell	DATE: 11/11/2002

Test Results: Complies

Measurement Data:

Antenna is detachable. The rf power output is measured at the rf output from the transmitter. The measured power is RMS.

Peak to Average ratio: 6 dB

Antenna gain: 5 dBi

Maximum peak eirp: +28.7 dBm + 6 dB + 5 dBi = +39.7 dBm

Band	No. of BTS Carriers	No. of CPE Carriers	Active CPE Carriers	Power (dBm)	ACP Figure
A	10	2	C0_C1	25.4	37
A	10	4	C0_C3	24.3	35
A	10	1	C0	25.2	39
A	10	2	C2_C3	28.5	38
A	10	4	C2_C5	28.4	36
A	10	1	C2	27.8	40
A	10	4	C4_C7	28.3	36
A	10	2	C6_C7	28.6	38
A	10	4	C6_C9	24.4	35
A	10	1	C7	28.4	40
A	10	2	C8_C9	25.6	37
A	10	1	C9	25.6	39
A	8	2	C0_C1	27.2	32
A	8	4	C0_C3	25.5	30
A	8	1	C0	28.4	34
A	8	2	C2_C3	28.1	33
A	8	4	C2_C5	28.3	31
A	8	2	C4_C5	28.7	33
A	8	4	C4_C7	25.5	30
A	8	2	C6_C7	27.5	32
A	8	1	C7	28.0	34
Band	BTS Carriers	No. of CPE Carriers	Active Carriers	Power (dBm)	ACP Figure
B	10	2	C0_C1	25.7	37
B	10	4	C0_C3	24.5	35
B	10	1	C0	25.4	39
B	10	2	C2_C3	28.6	38
B	10	4	C2_C5	28.4	36
B	10	1	C2	28.5	40
B	10	4	C4_C7	28.5	36

Nemko Dallas

FCC PART 27, SUBPART C
MULTIPOINT DISTRIBUTION SERVICE
PROJECT NO.:2L0527RUS1

EQUIPMENT: 2.3 GHz CPE

Band	BTS Carriers	No. of CPE Carriers	Active Carriers	Power (dBm)	ACP Figure
B	10	2	C6_C7	28.4	38
B	10	1	C7	28.1	40
B	10	2	C8_C9	25.5	37
B	10	1	C9	25.4	39
B	10	4	C6_C9	24.4	35
B	8	2	C0_C1	27.7	32
B	8	4	C0_C3	25.4	30
B	8	1	C0	28.2	34
B	8	2	C2_C3	28.6	33
B	8	4	C2_C5	28.3	31
B	8	2	C4_C5	28.3	33
B	8	4	C4_C7	25.4	30
B	8	2	C6_C7	27.4	32
B	8	1	C7	28.3	34

Band	BTS Carriers	No. of CPE Carriers	Active Carriers	Power (dBm)	ACP Figure
C	6	4	C2_C5	22.7	24
C	6	4	C0_C3	25.7	23
C	6	1	C0	28.1	28
C	6	2	C0_C1	26.6	25
C	6	2	C2_C3	27.7	26
C	6	1	C4	28.2	28
C	6	2	C4_C5	25.7	27
C	6	1	C5	27.6	29

Band	BTS Carriers	No. of CPE Carriers	Active Carriers	Power (dBm)	ACP Figure
D	6	4	C0_C3	25.5	23
D	6	1	C0	28.6	28
D	6	2	C0_C1	26.8	25
D	6	2	C2_C3	27.4	26
D	6	1	C4	28.1	28
D	6	2	C4_C5	25.5	27
D	6	4	C5_C2	22.6	24
D	6	1	C5	27.3	29

Test Equipment Used: Agilent Model E4416A s/n GB41290732
Agilent Model E9327A s/n US40440319

Measurement Uncertainty: +/- 0.69 dB

EQUIPMENT: 2.3 GHz CPE

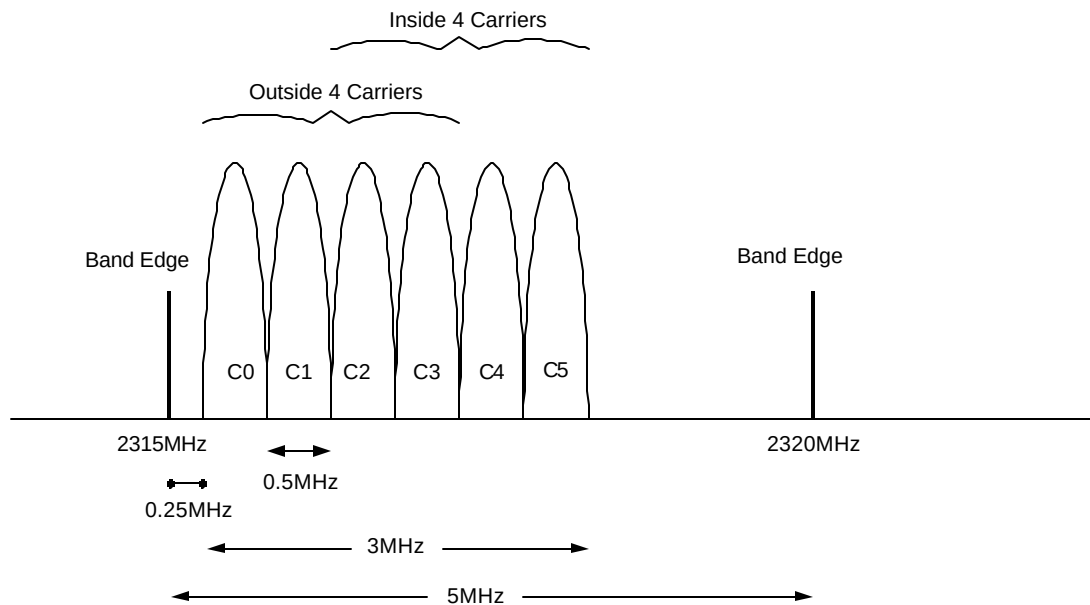


Figure 1. 6-Carrier BTS Signal Operating in WCS C Band

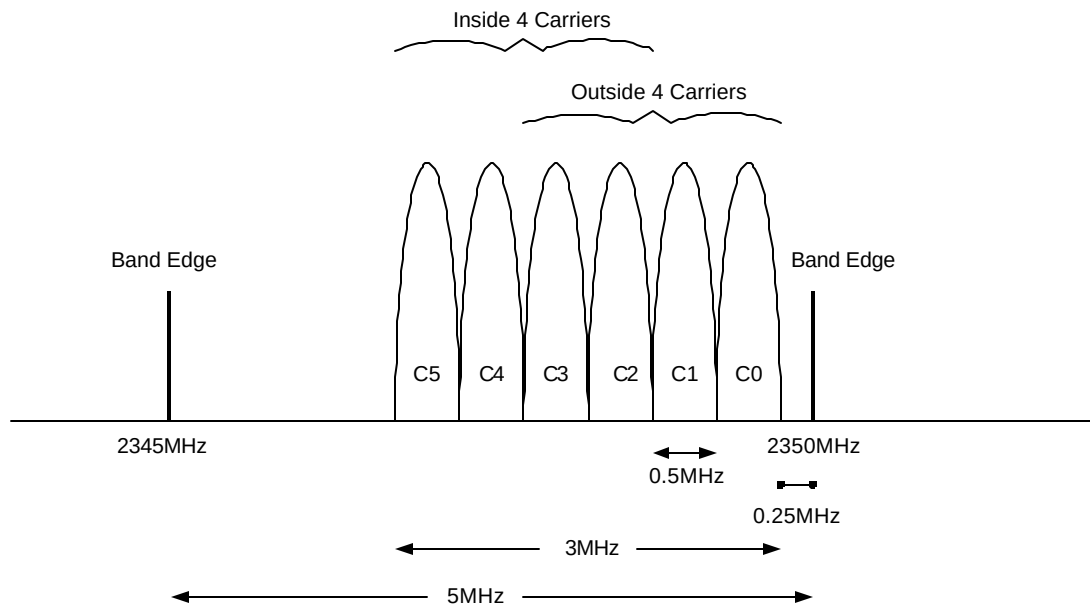


Figure 2. 6-Carrier BTS Signal Operating in WCS D Band

EQUIPMENT: 2.3 GHz CPE

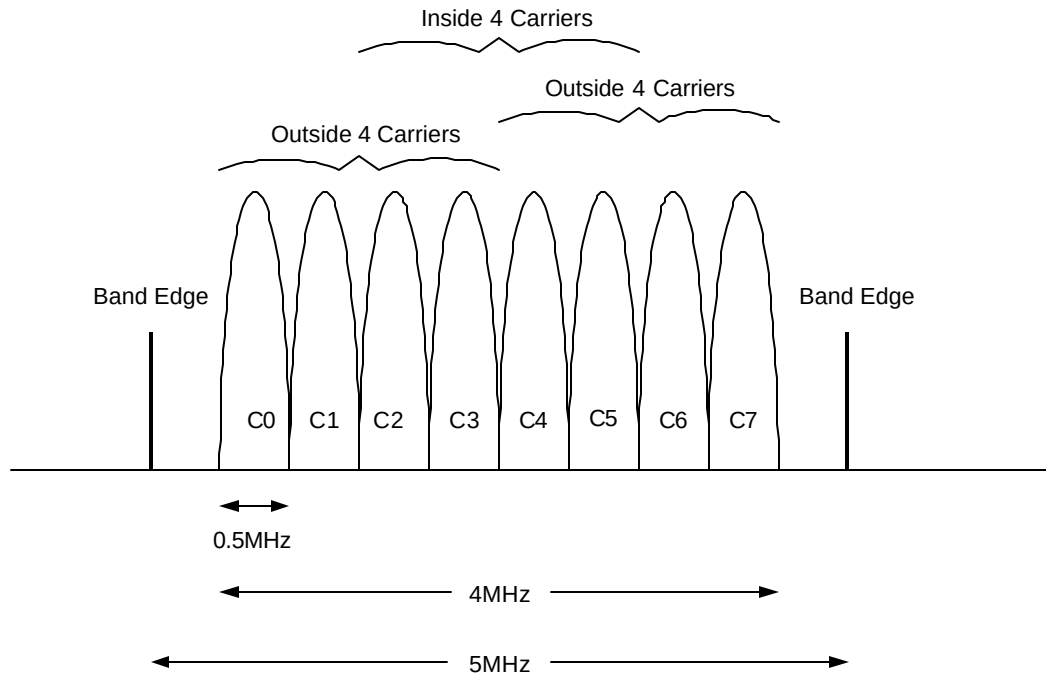


Figure 3. 8-Carrier BTS Signal Operating in WCS A or B Bands

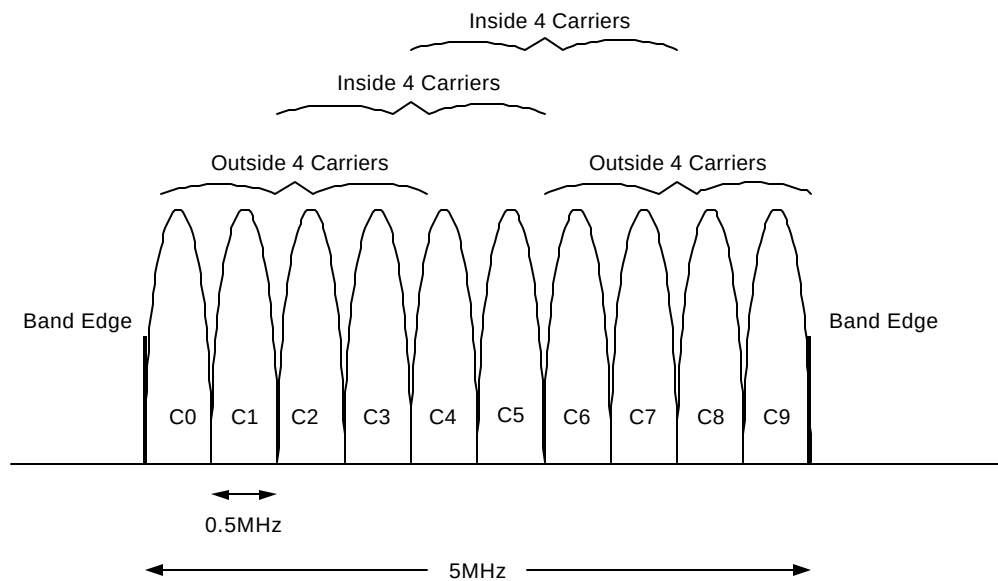


Figure 4. 10-Carrier BTS Signal Operating in WCS A or B Bands

EQUIPMENT: 2.3 GHz CPE

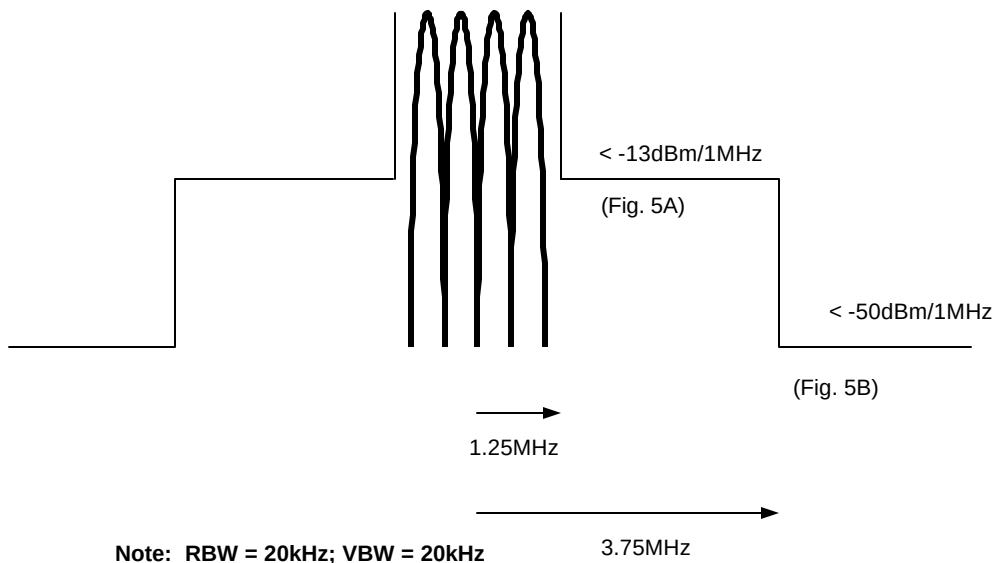


Figure 23. ACPR Mask for Outside 4-Carrier Signal in the WCS C or D Band

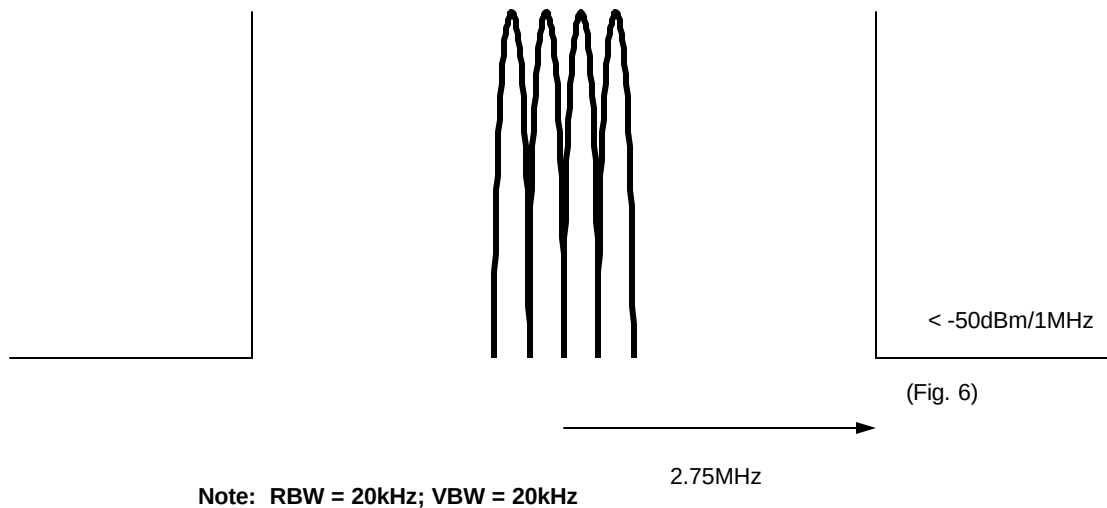


Figure 24. ACPR Mask for Inside 4-Carrier Signal in the WCS C or D Band

EQUIPMENT: 2.3 GHz CPE

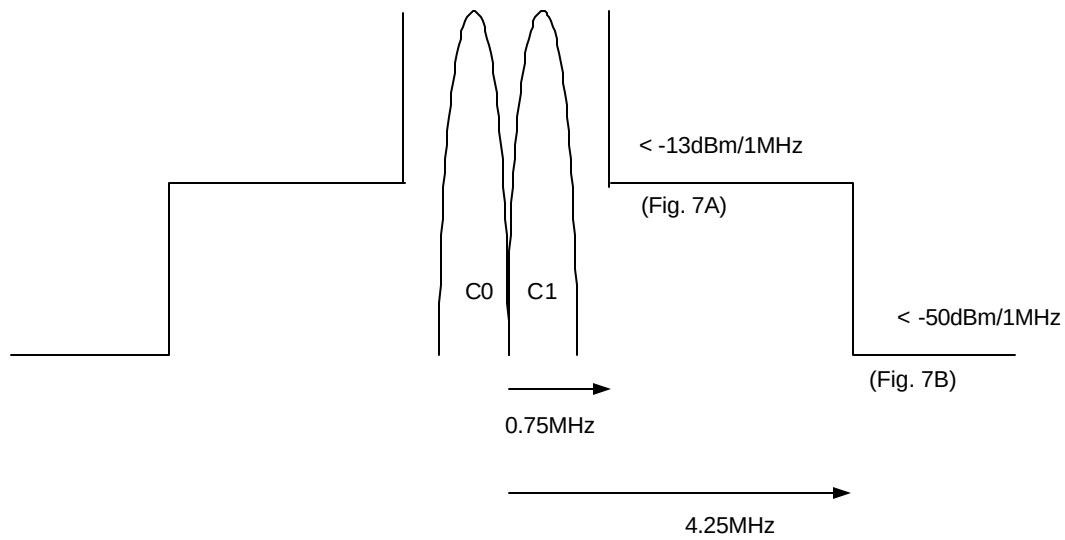


Figure 25. ACPR Mask for Carriers C0 & C1 in WCS C or D Band with 6-Carrier BTS Signal

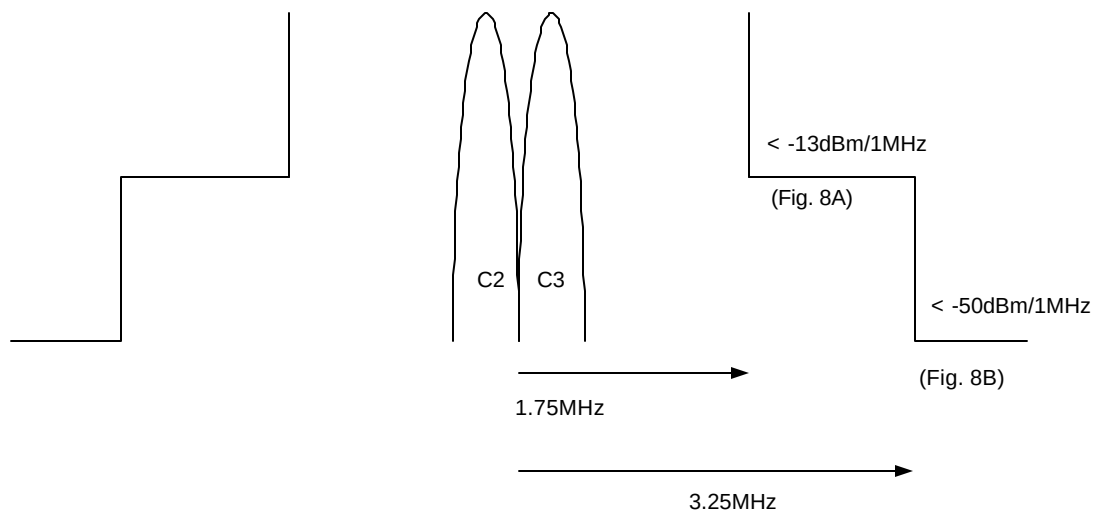


Figure 26. ACPR Mask for Carriers C2 & C3 in WCS C or D Band with 6-Carrier BTS Signal

EQUIPMENT: 2.3 GHz CPE

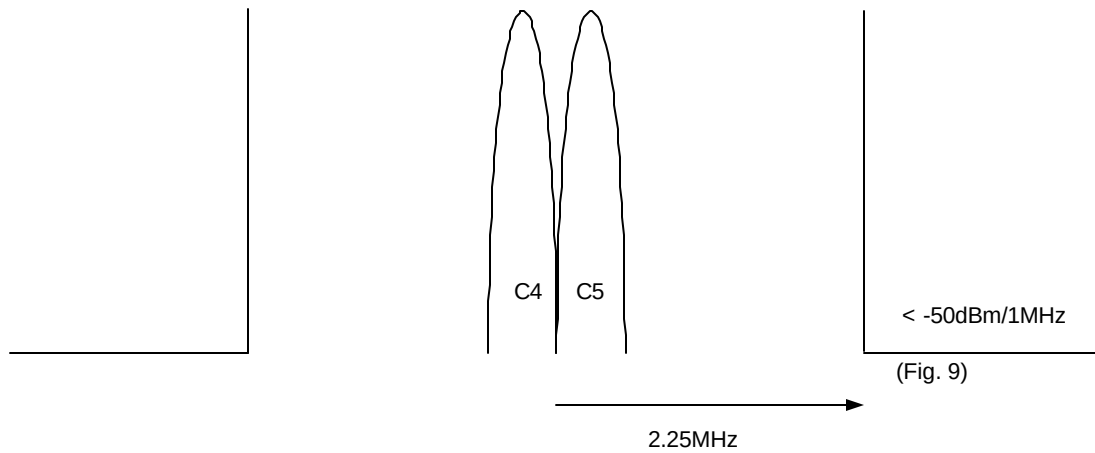


Figure 27. ACPR Mask for Carriers C4 & C5 in WCS C or D Band with 6-Carrier BTS Signal

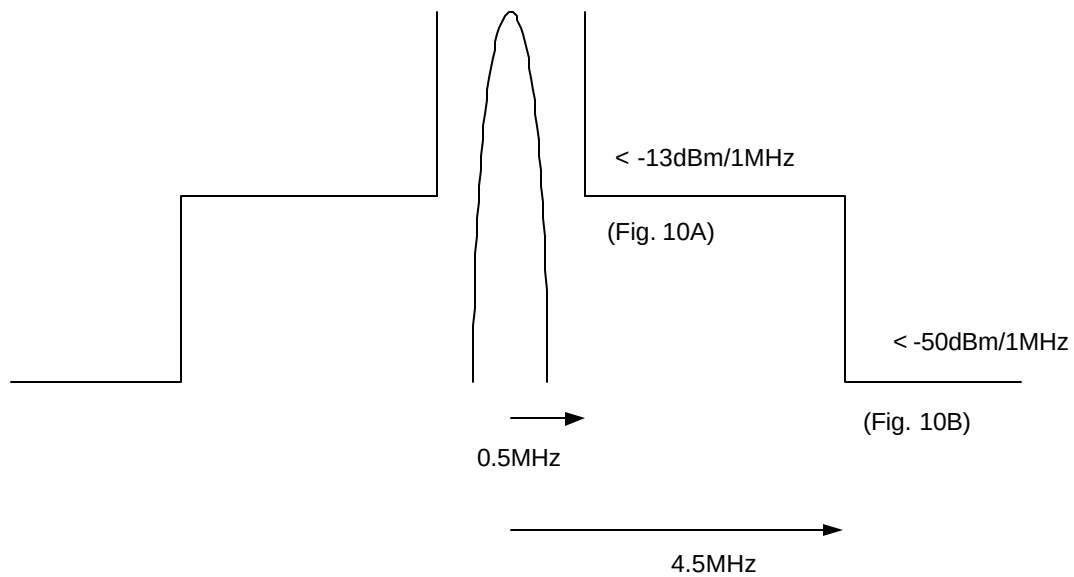


Figure 28. ACPR Mask for Carrier C0, C1, C2, C3, or C4 in WCS C or D Band with 6-Carrier BTS Signal

EQUIPMENT: 2.3 GHz CPE

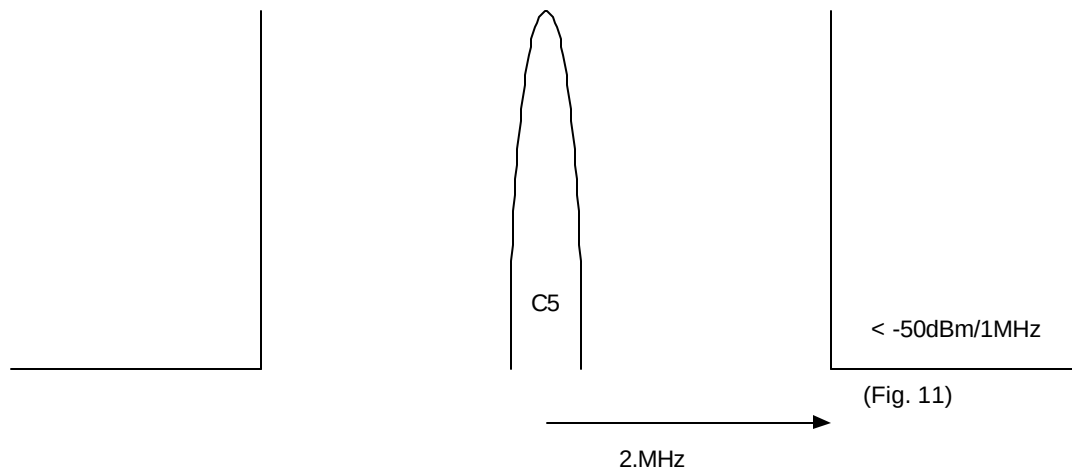


Figure 29. ACPR Mask for Carrier C5 in WCS C or D Band
with 6-Carrier BTS Signal

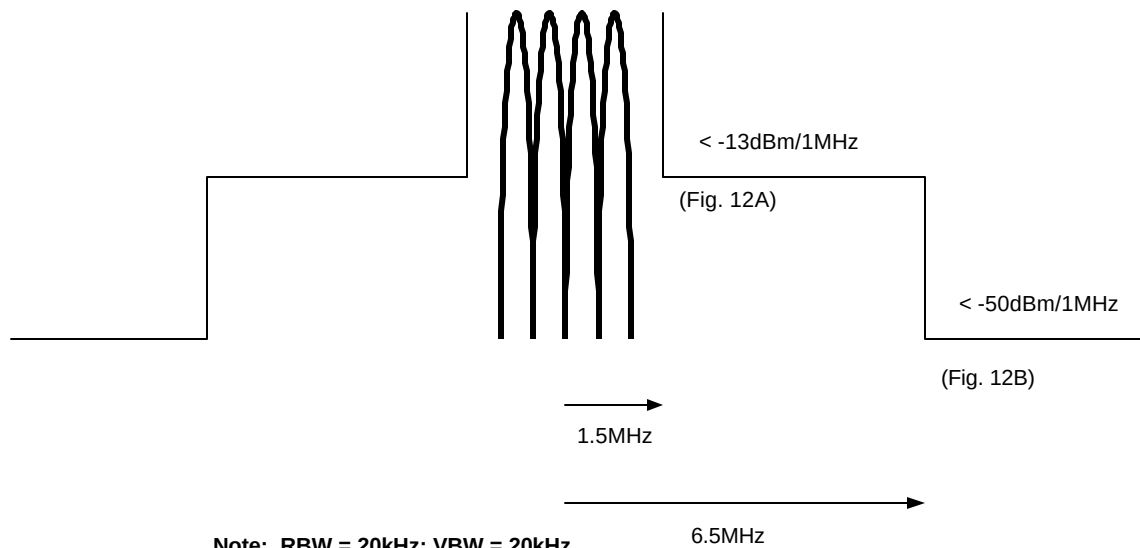


Figure 30. ACPR Mask for Outside 4-Carrier Signal in the WCS A or B Bands
with 8-Carrier BTS Signal

EQUIPMENT: 2.3 GHz CPE

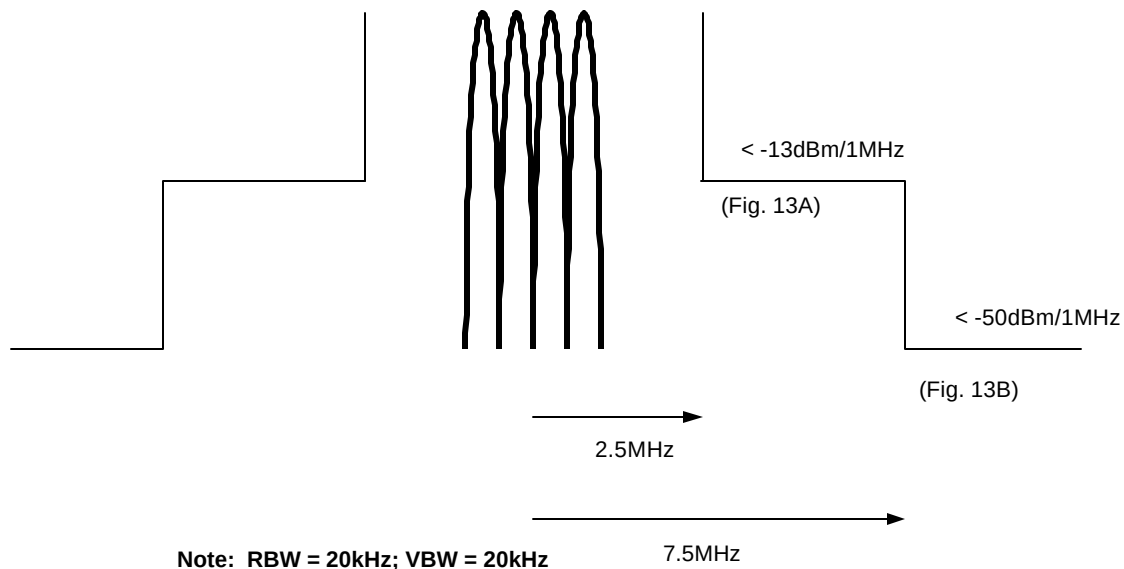


Figure 31. ACPR Mask for Inside 4-Carrier Signal in the WCS A or B Bands with 8-Carrier BTS Signal

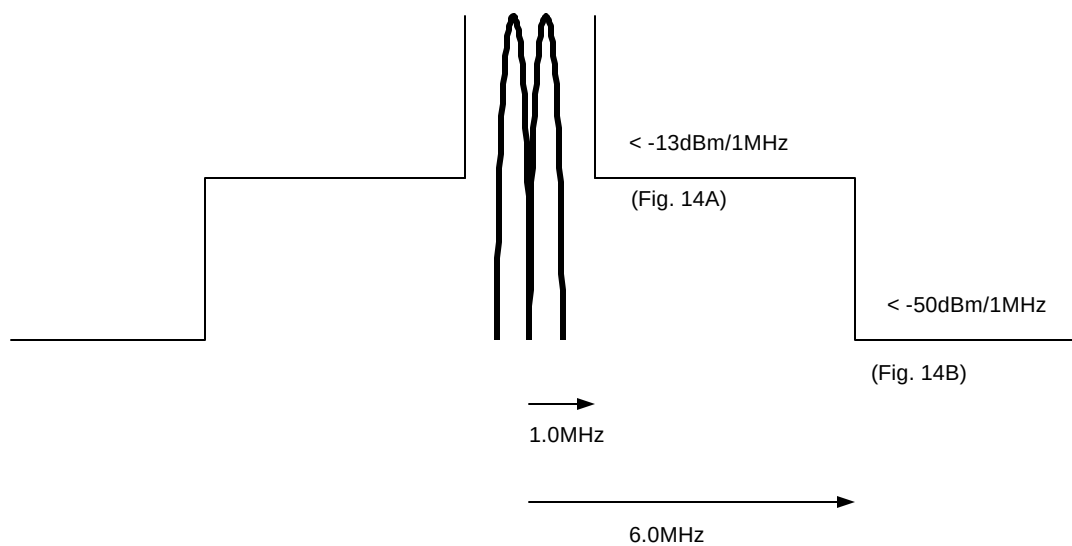
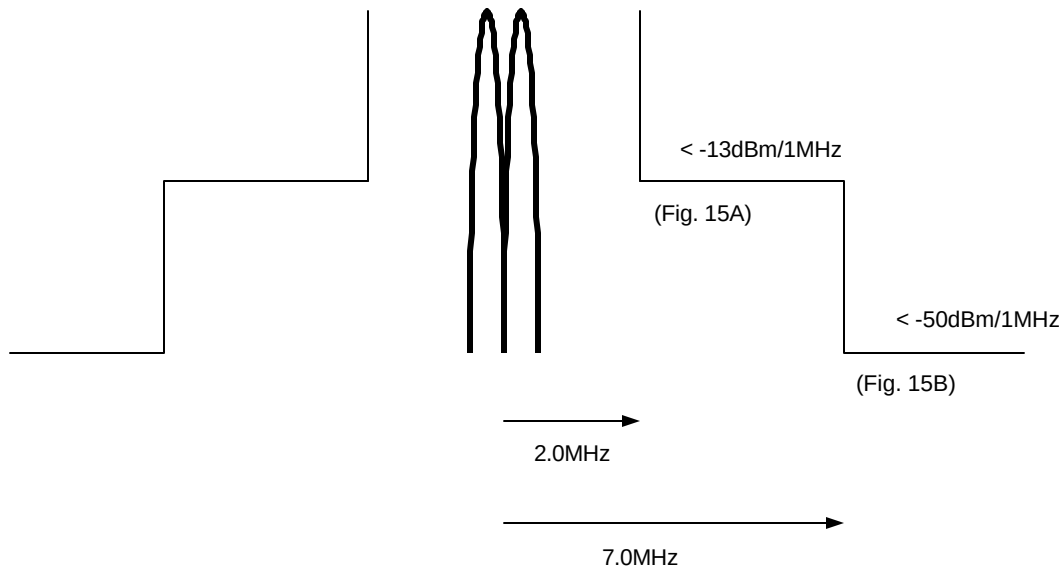


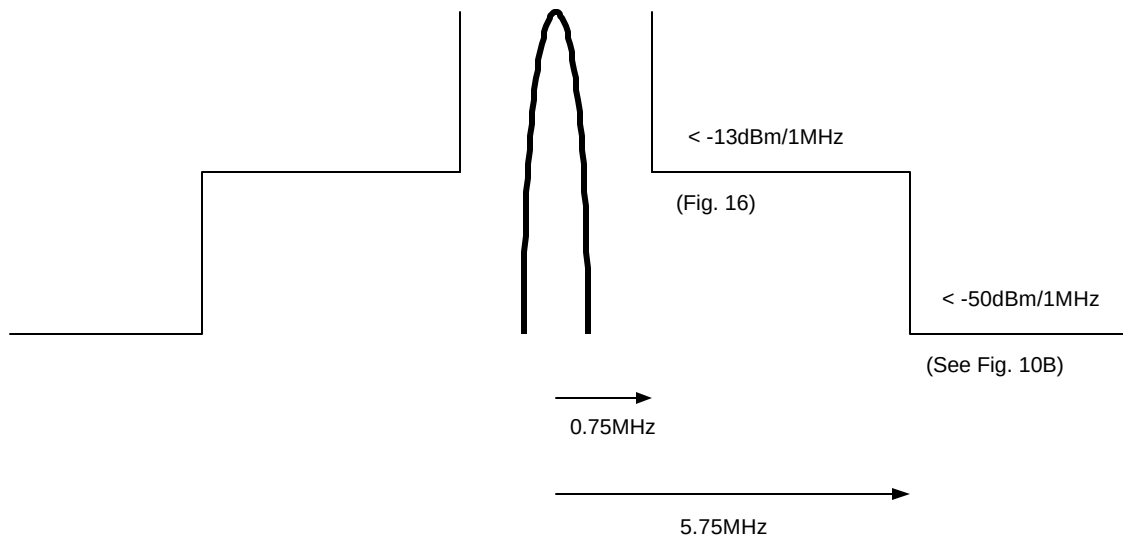
Figure 32. ACPR Mask for Outside 2-Carrier Signal in WCS A or B Bands with 8-Carrier BTS Signal

EQUIPMENT: 2.3 GHz CPE



Note: RBW = 10kHz; VBW = 20kHz

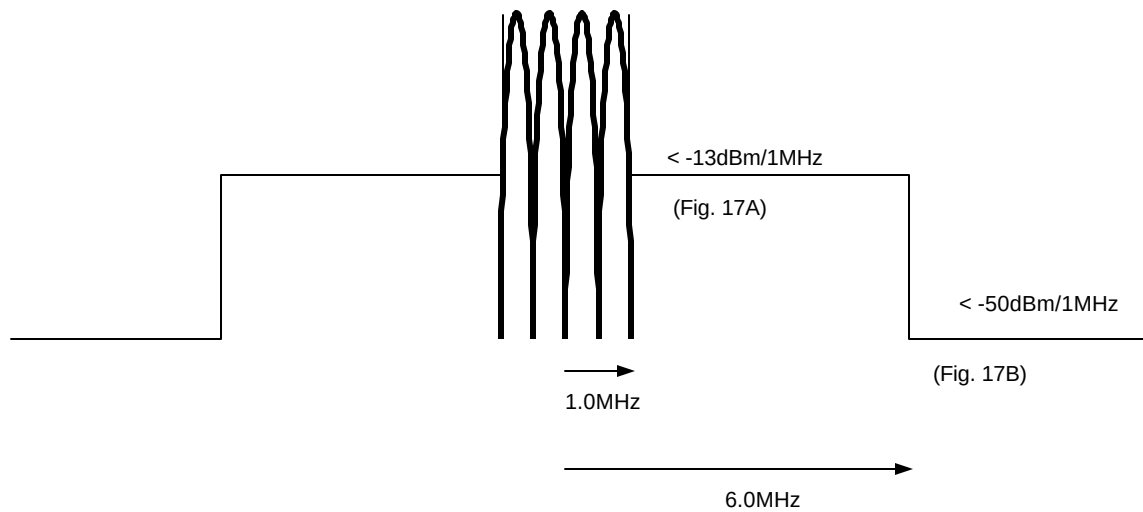
Figure 33. ACPR Mask for Inside 2-Carrier Signal in WCS A or B Bands with 8-Carrier BTS Signal



Note: RBW = 5kHz; VBW = 20kHz

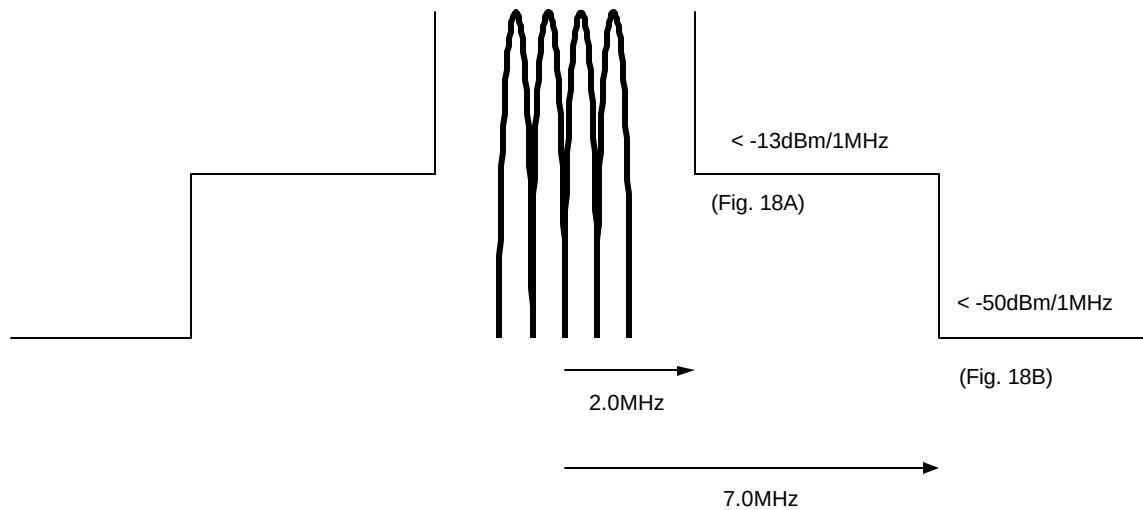
Figure 34. ACPR Mask for Outside 1-Carrier Signal in WCS A or B Bands with 8-Carrier BTS Signal

EQUIPMENT: 2.3 GHz CPE



Note: RBW=20kHz; VBW=20kHz

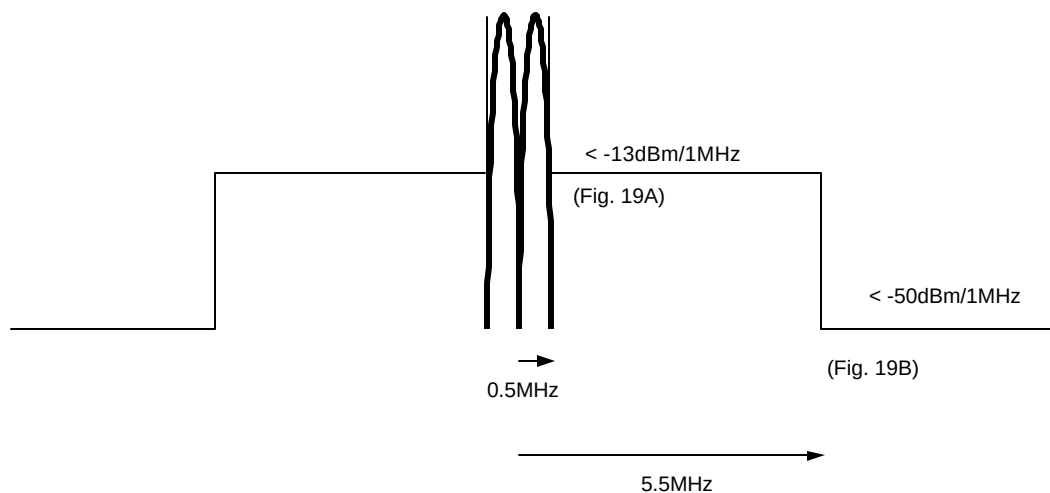
Figure 35. ACPR Mask for Outside 4-Carrier Signal in WCS A or B Bands
With 10-Carrier BTS Signal



Note: RBW=20kHz; VBW=20kHz

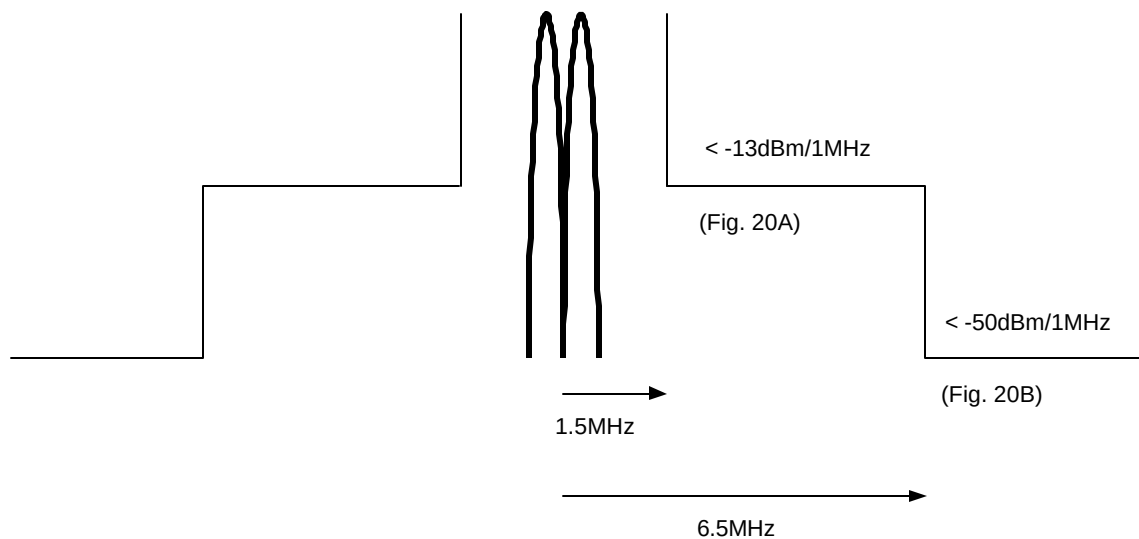
Figure 36. ACPR Mask for Inside 4-Carrier Signal in WCS A or B Bands
With 10-Carrier BTS Signal

EQUIPMENT: 2.3 GHz CPE



Note: RBW=5kHz; VBW=20kHz

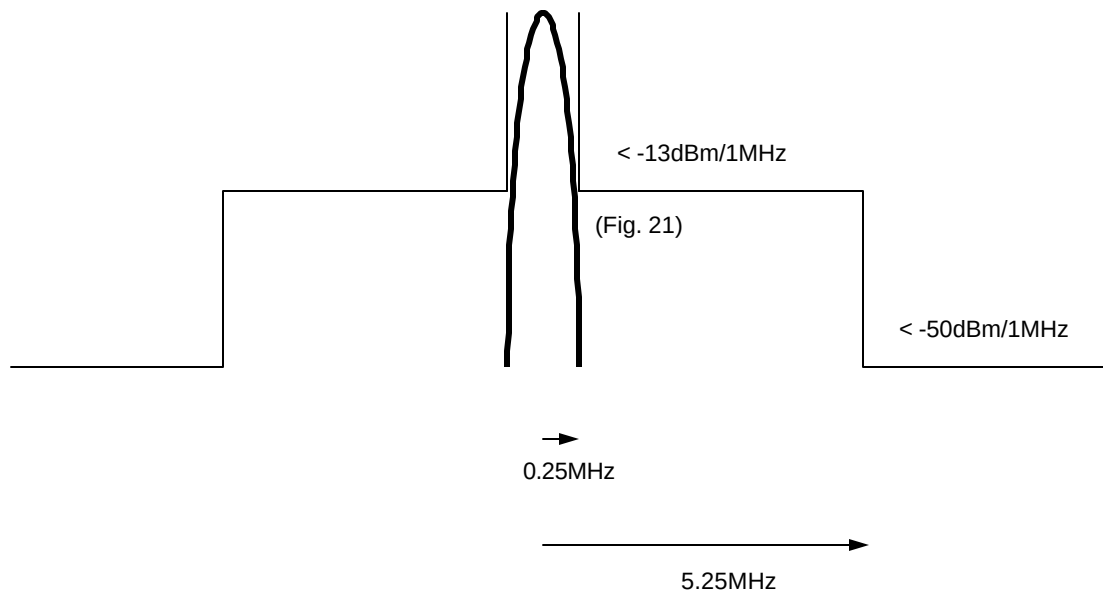
Figure 37. ACPR Mask for Outside 2-Carrier Signal in WCS A or B Bands
With 10-Carrier BTS Signal



Note: RBW=10kHz; VBW=20kHz

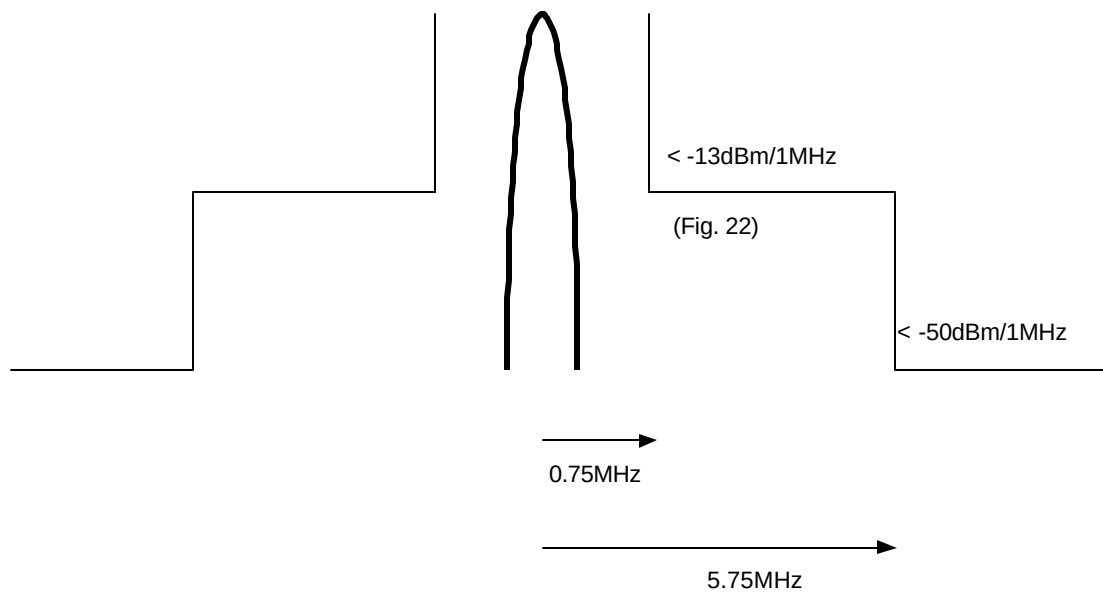
Figure 38. ACPR Mask for Inside 2-Carrier Signal in WCS A or B Bands
with 10-Carrier BTS Signal

EQUIPMENT: 2.3 GHz CPE



Note: RBW = 5kHz; VBW = 20kHz

Figure 39. ACPR Mask for Outside 1-Carrier Signal in WCS A or B Bands with 10-Carrier BTS Signal



Note: RBW = 5kHz; VBW = 20kHz

Figure 40. ACPR Mask for Inside 1-Carrier Signal in WCS A or B Bands with 10-Carrier BTS Signal

EQUIPMENT: 2.3 GHz CPE

Section 4. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 2.1049
TESTED BY: Tom Tidwell	DATE: 11/11/2002

Test Results: Complies

Measurement Data: See attached data sheets.

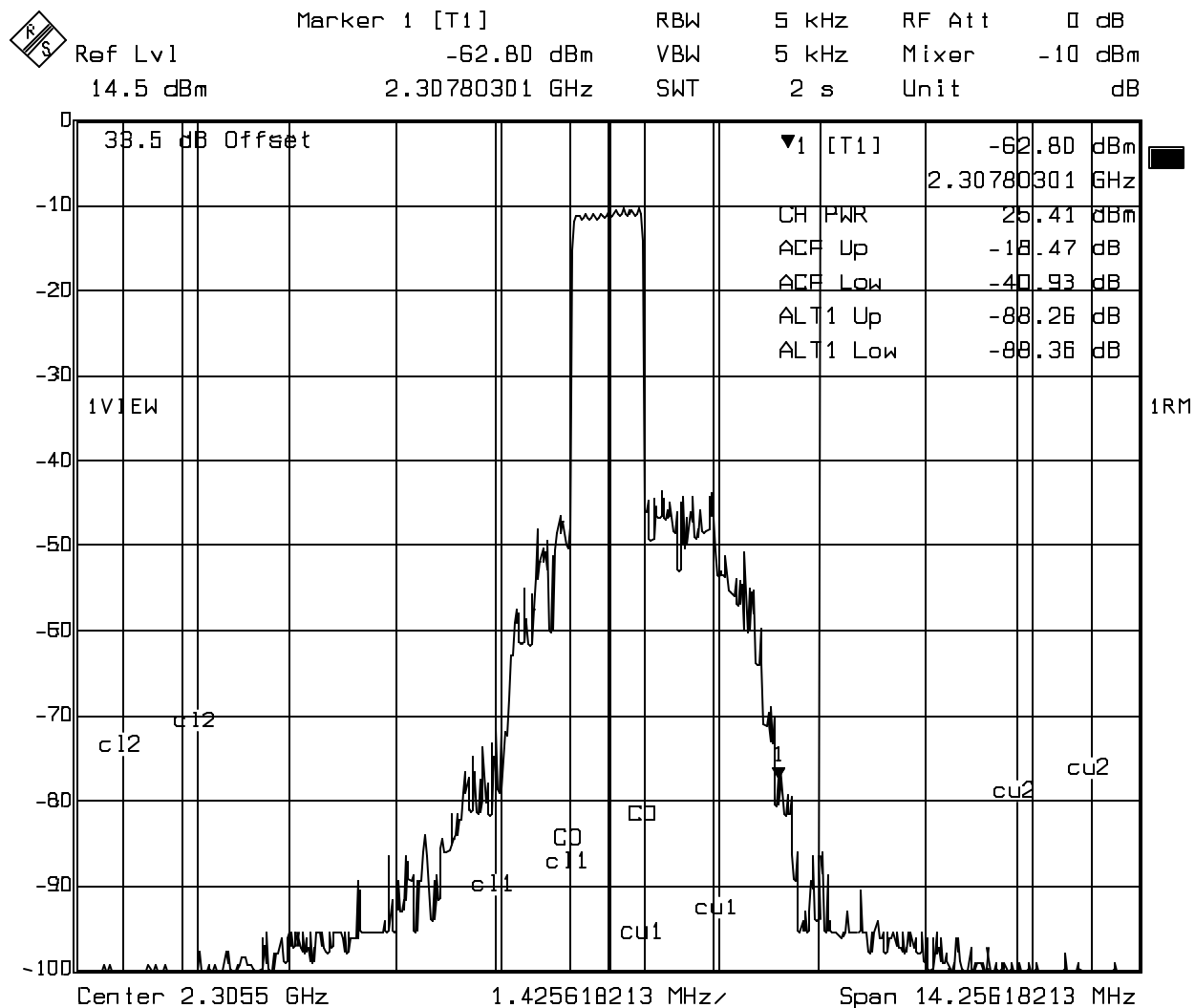
Equipment Used: 1036, 1474, 1484

Measurement Uncertainty: +/- 1.7 dB

Note: A resolution bandwidth of 5 kHz was used since each transmitted carrier has a bandwidth of 500 kHz.

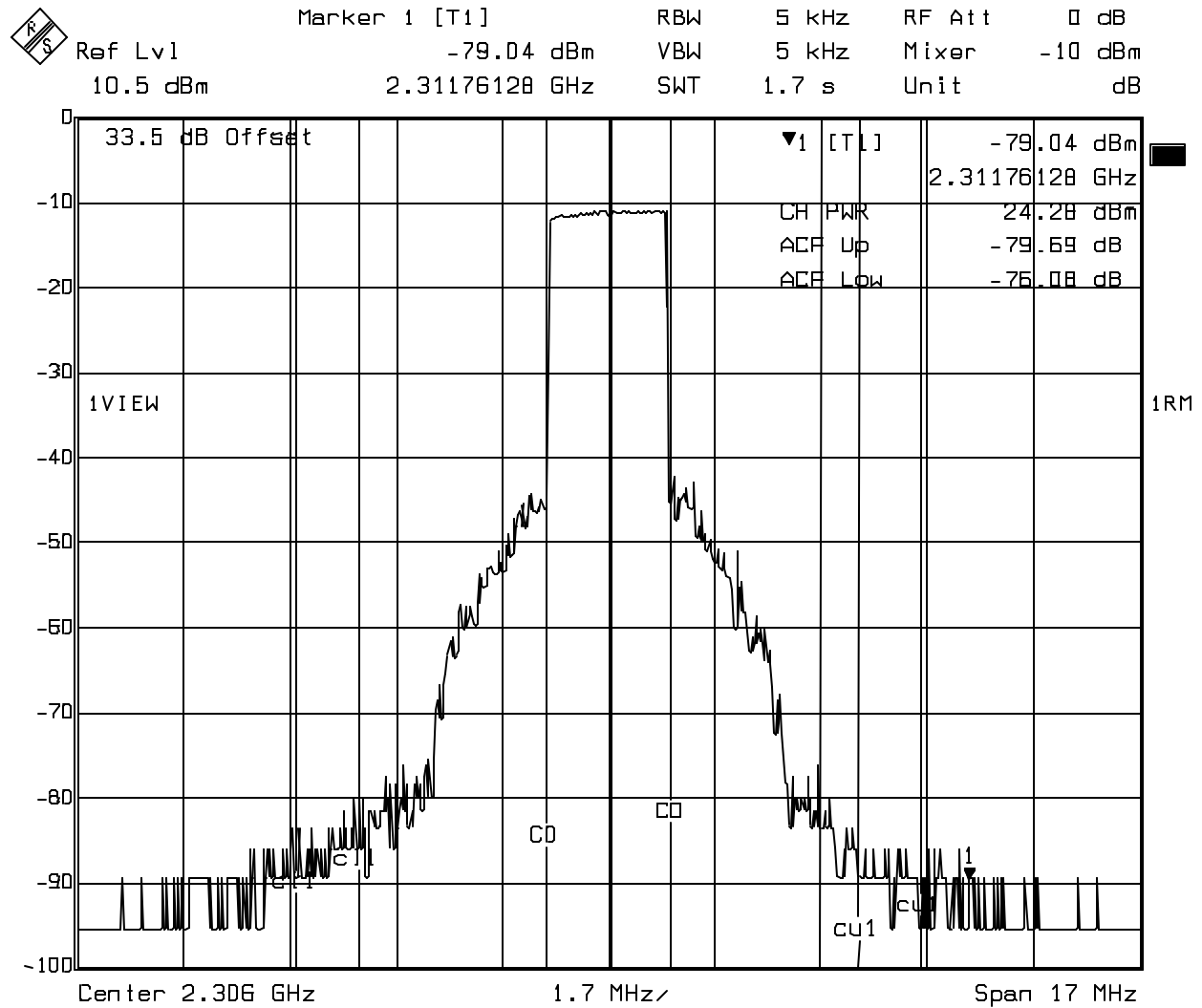
EQUIPMENT: 2.3 GHz CPE

Test data – Block A (2305 – 2310 MHz)



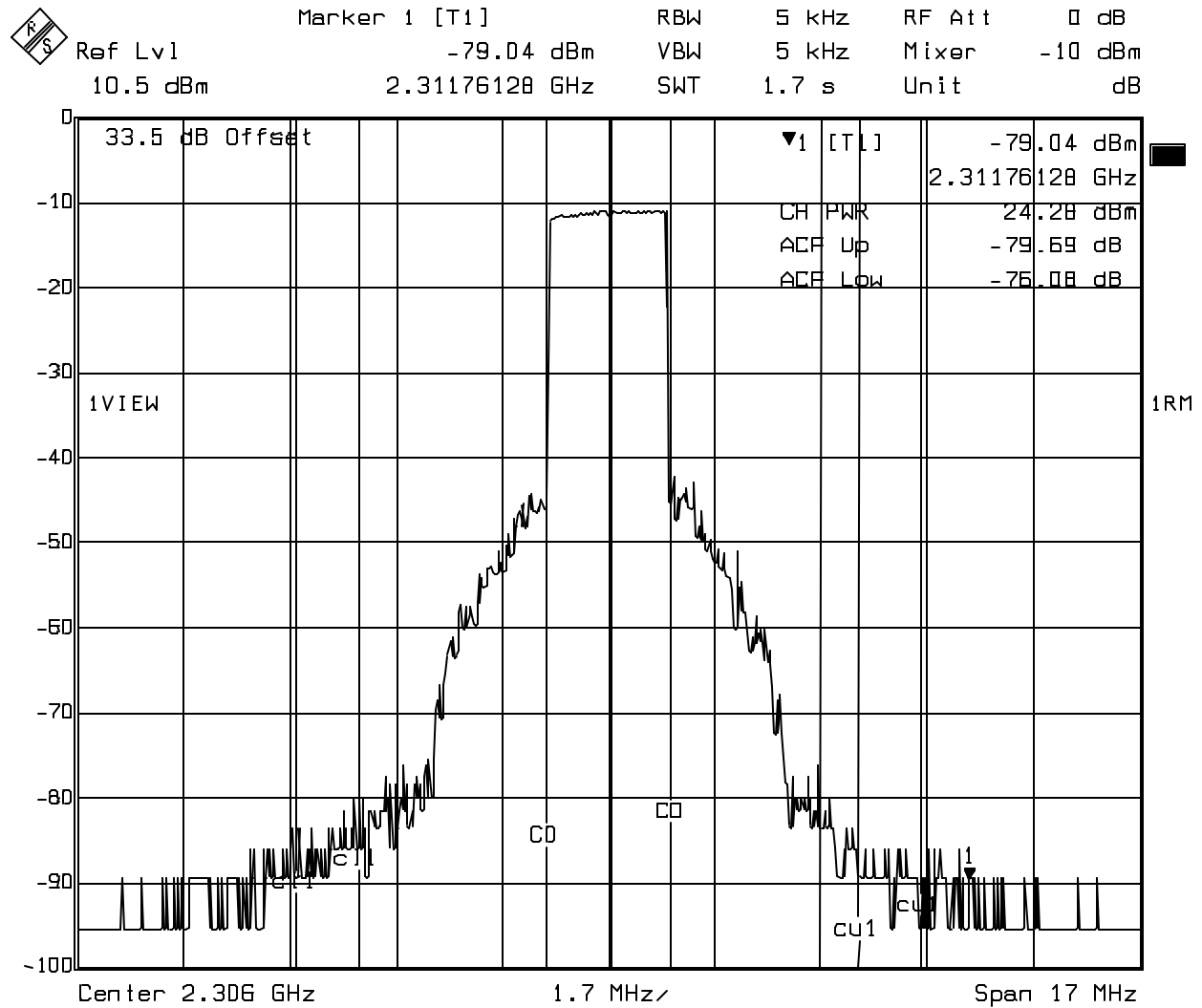
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Date: 11.NOV.2002 13:48:59

EQUIPMENT: 2.3 GHz CPE



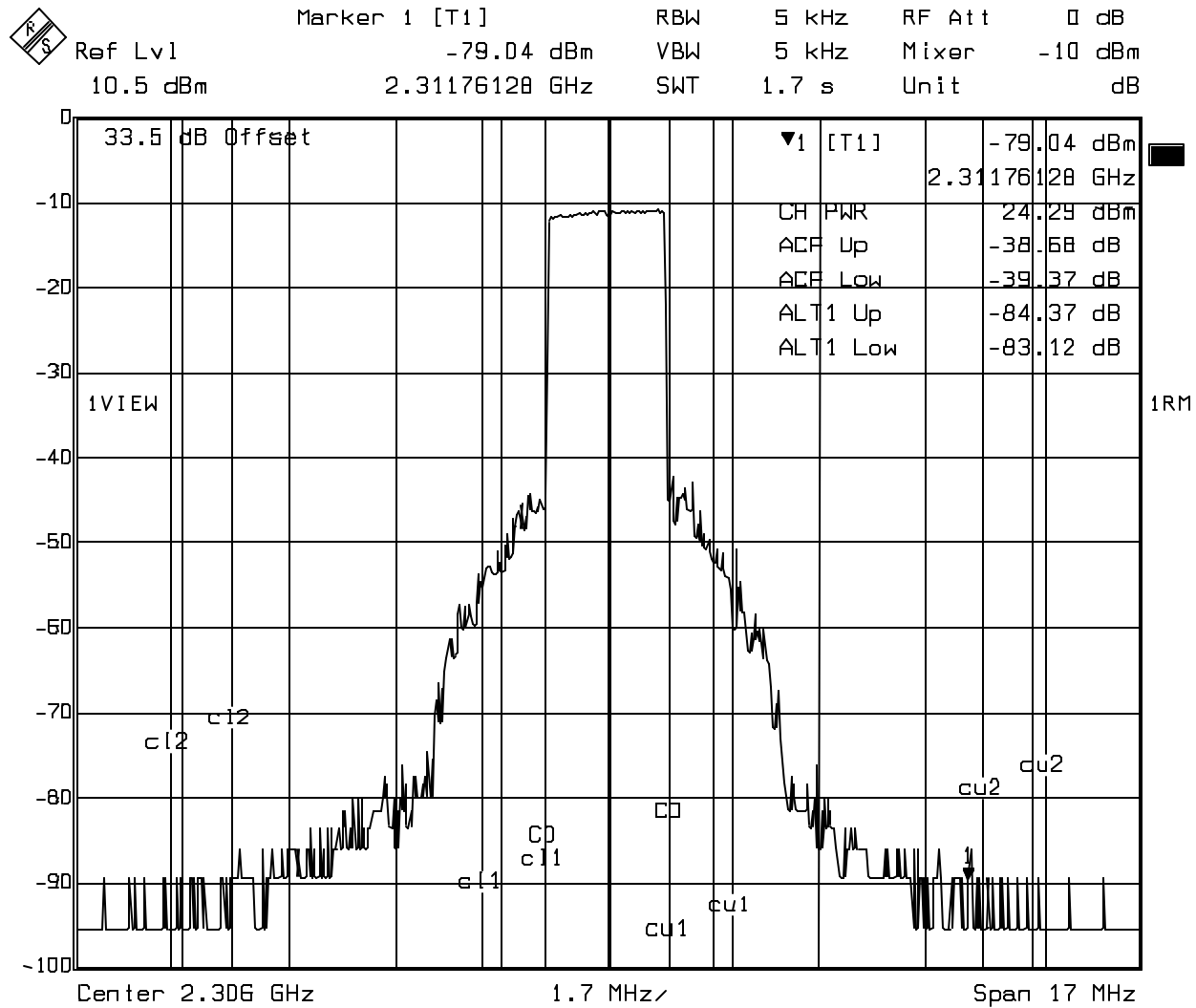
Title: 2DC
Date: 11.NOV.2002 13:22:41

EQUIPMENT: 2.3 GHz CPE



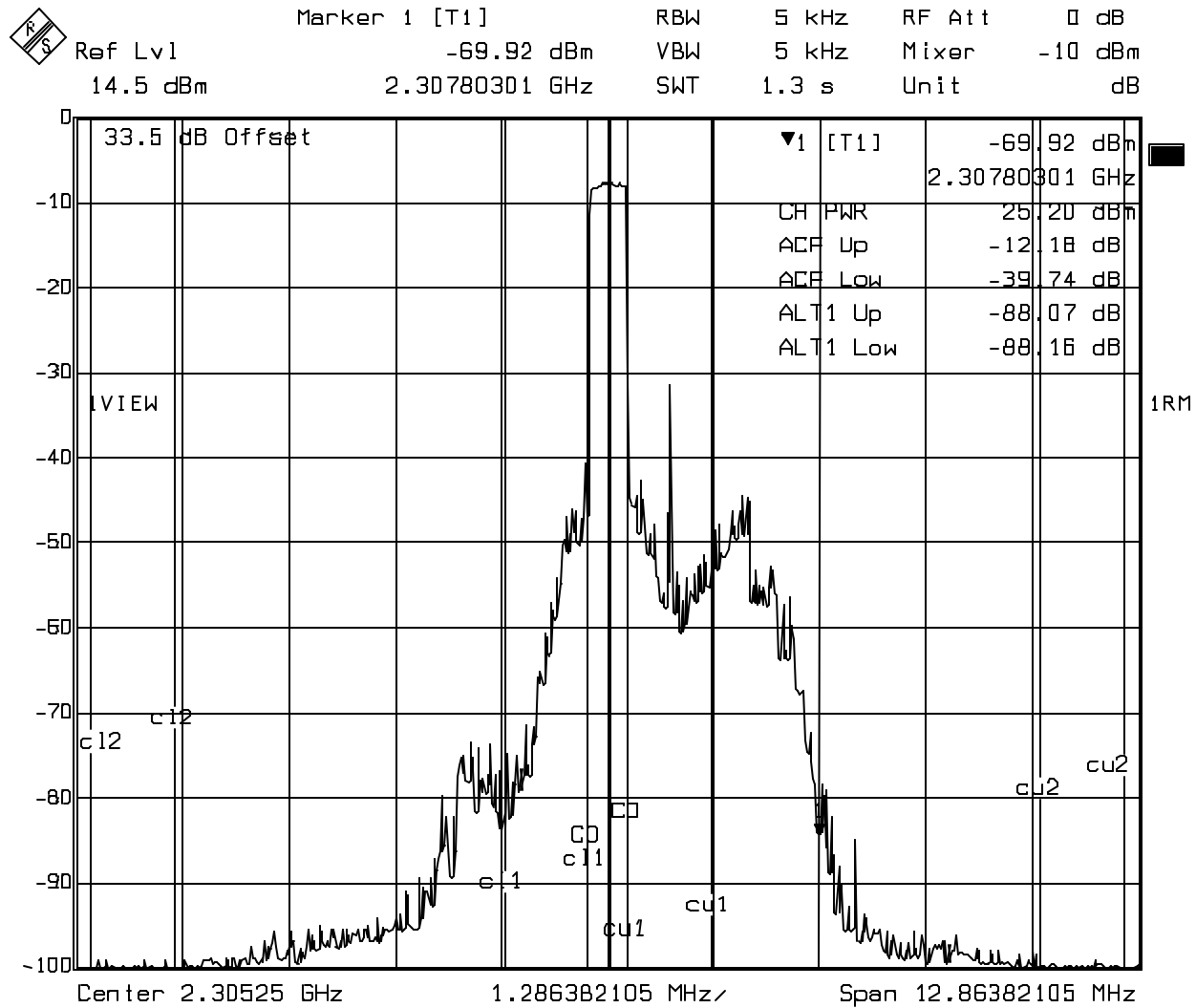
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EQUIPMENT: 2.3 GHz CPE



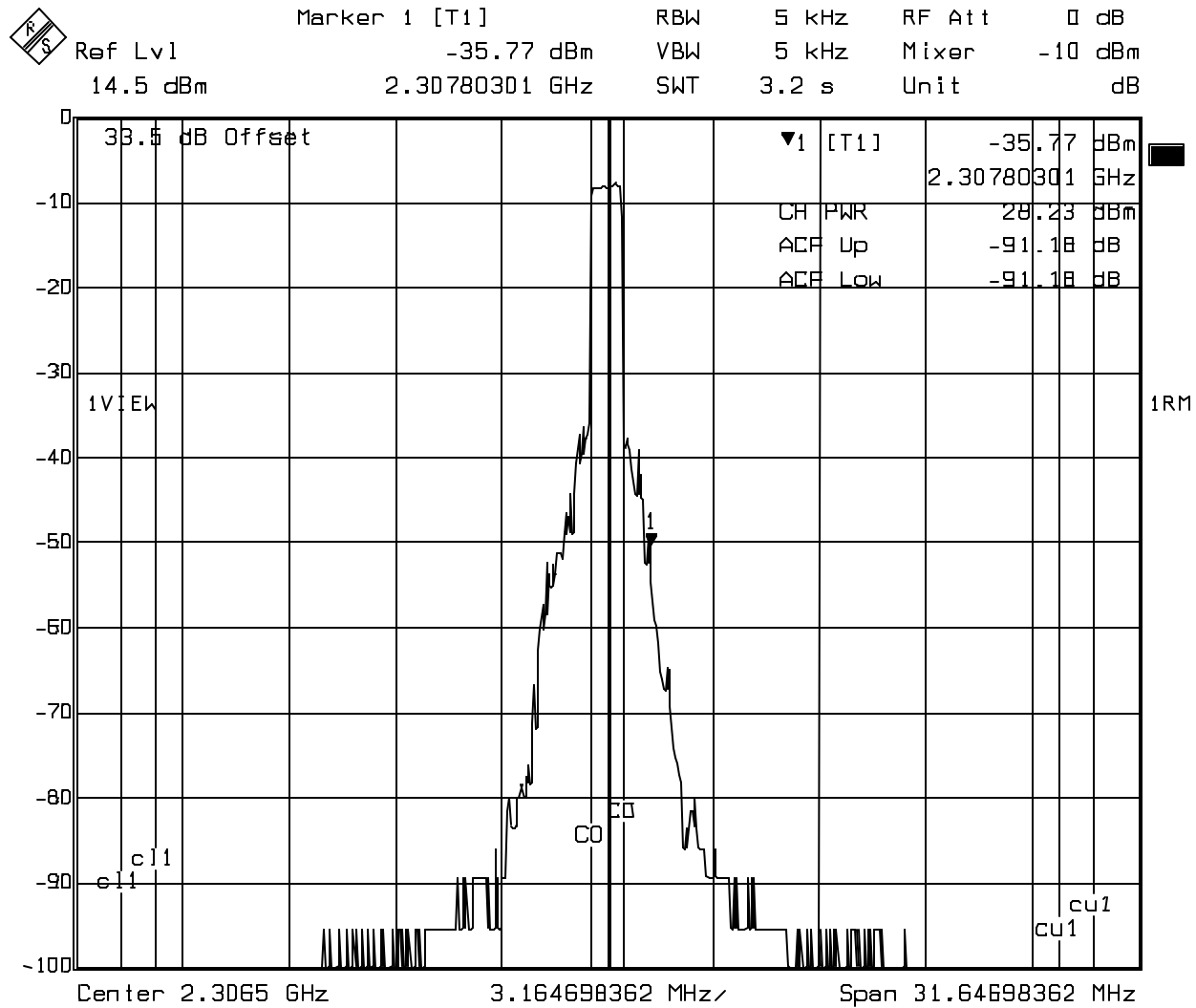
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EQUIPMENT: 2.3 GHz CPE



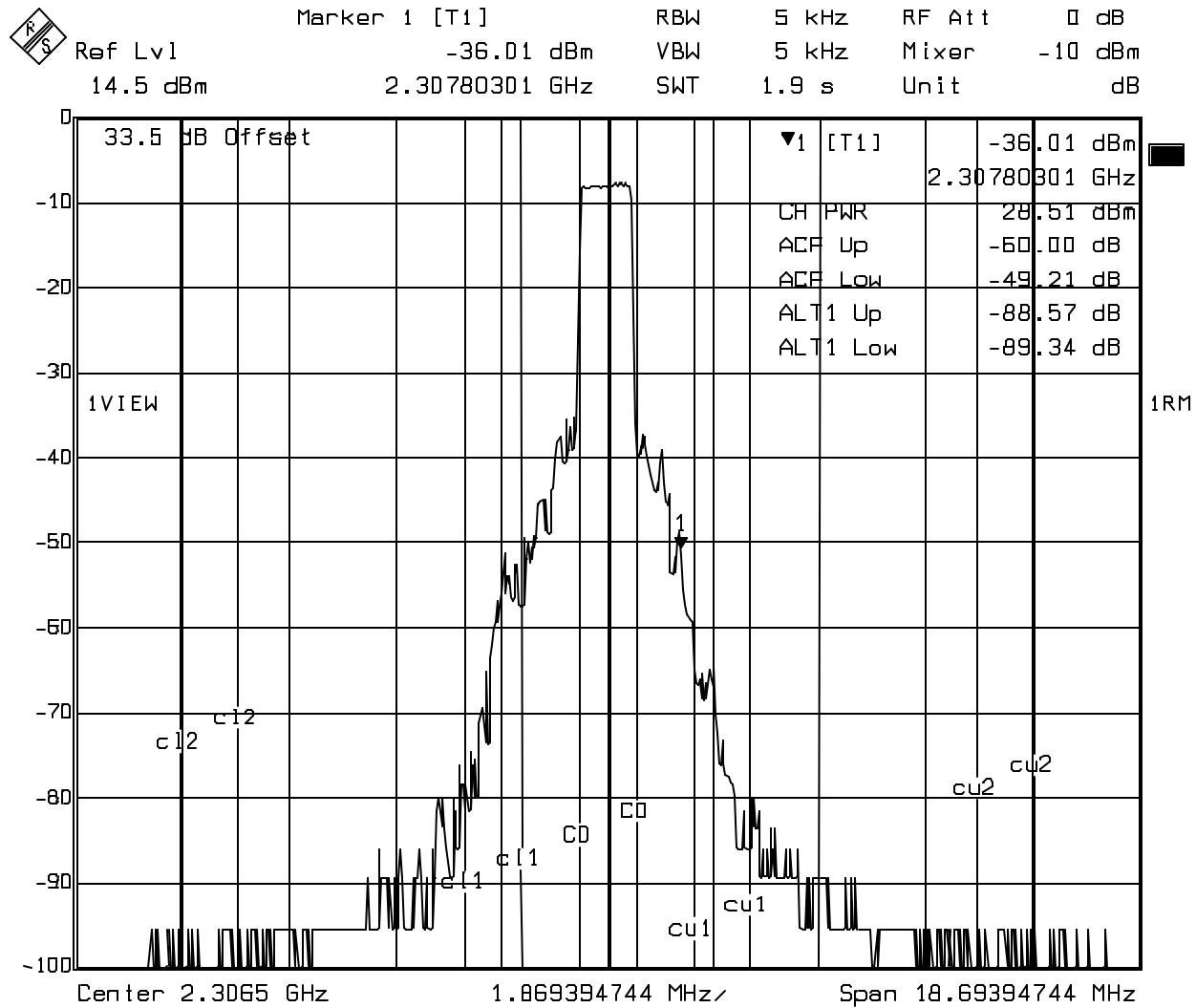
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EQUIPMENT: 2.3 GHz CPE



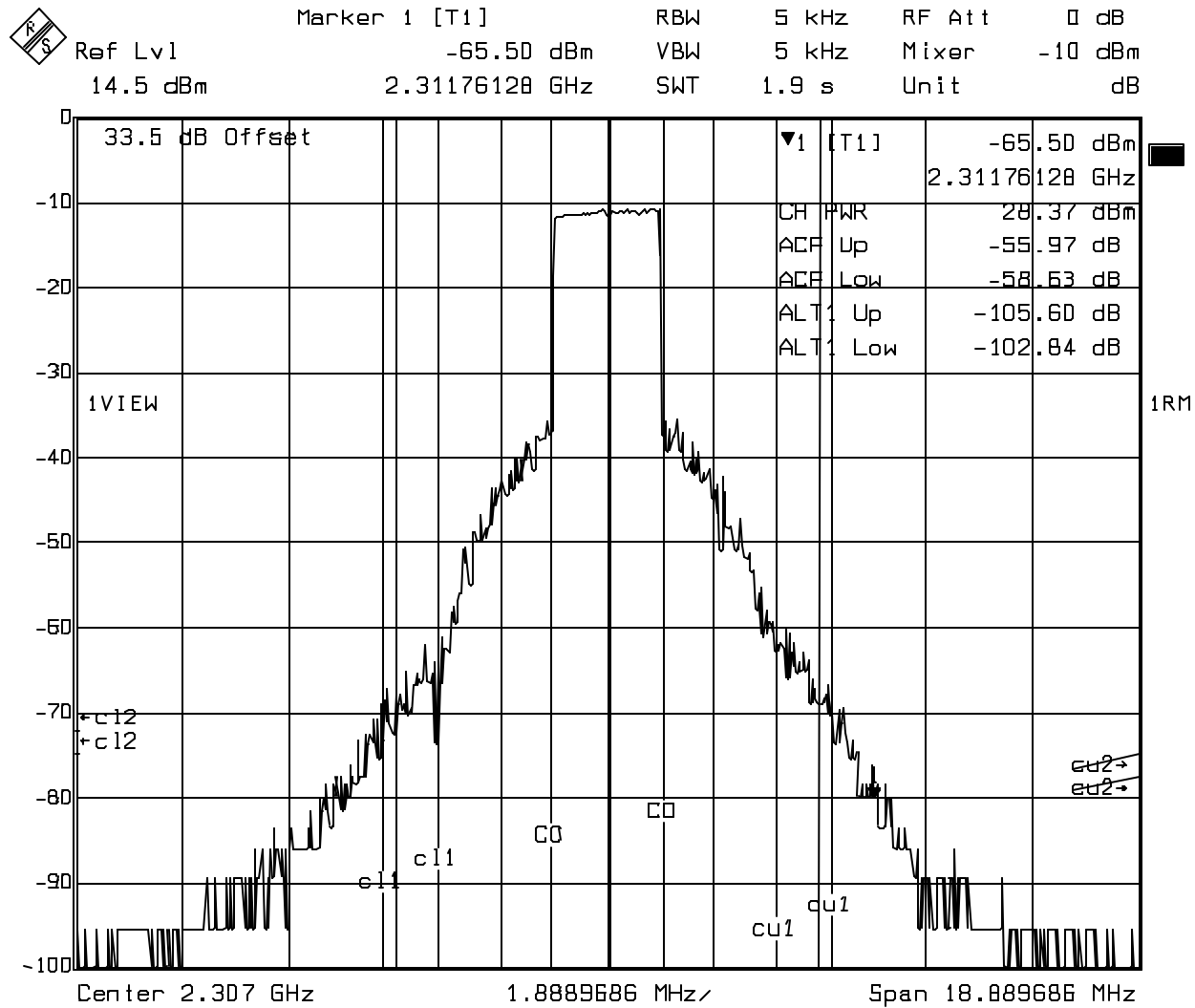
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EQUIPMENT: 2.3 GHz CPE



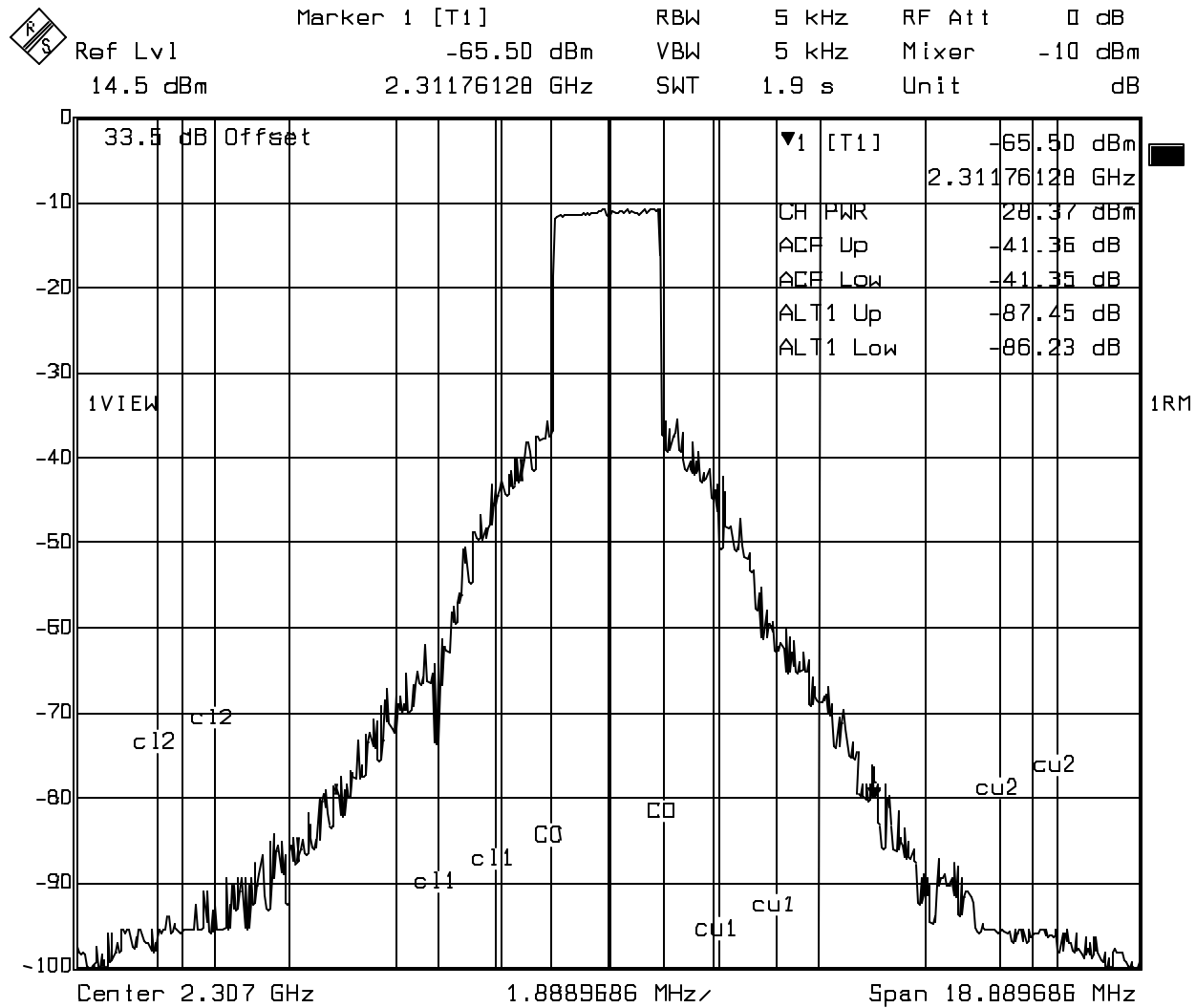
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EQUIPMENT: 2.3 GHz CPE



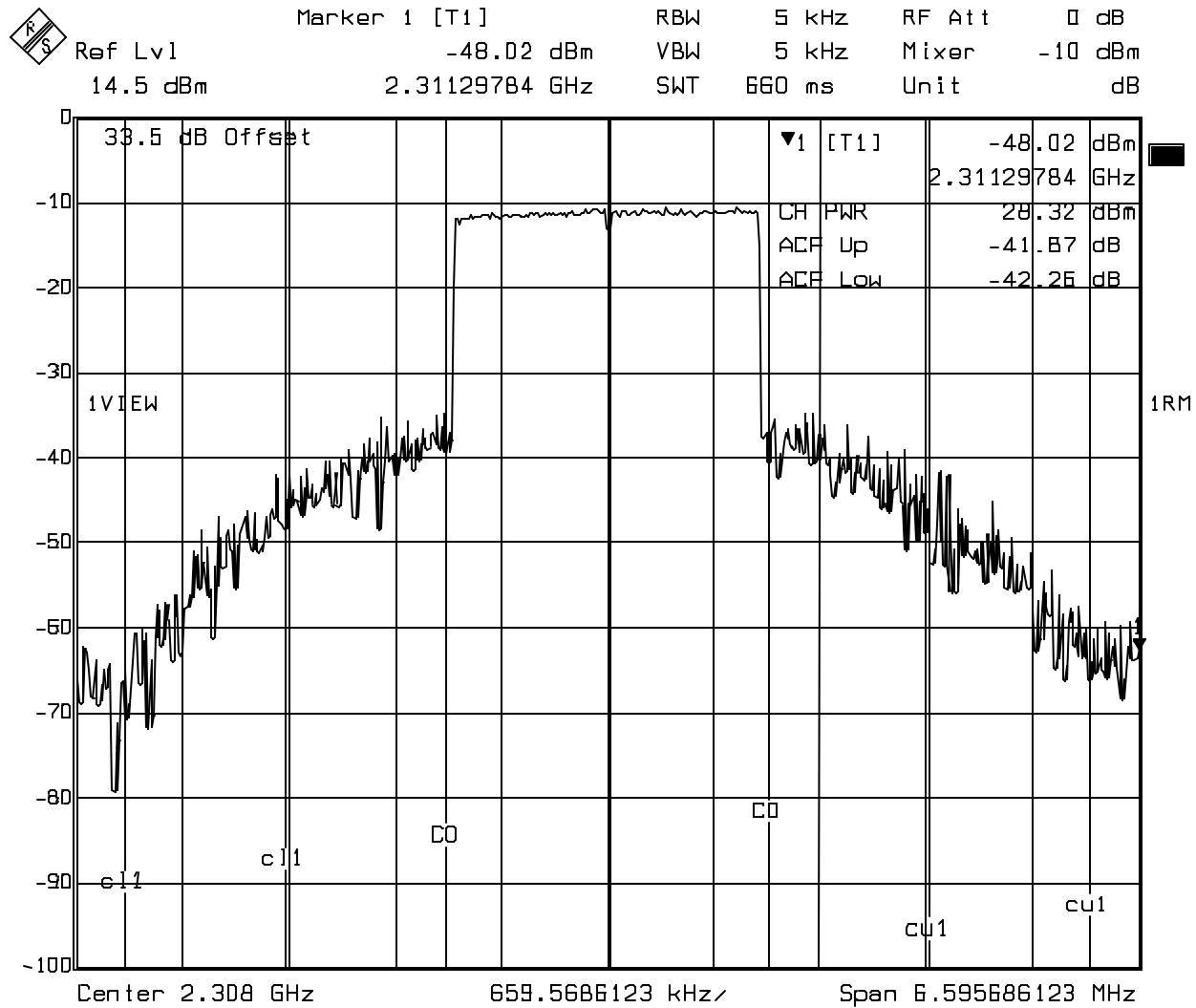
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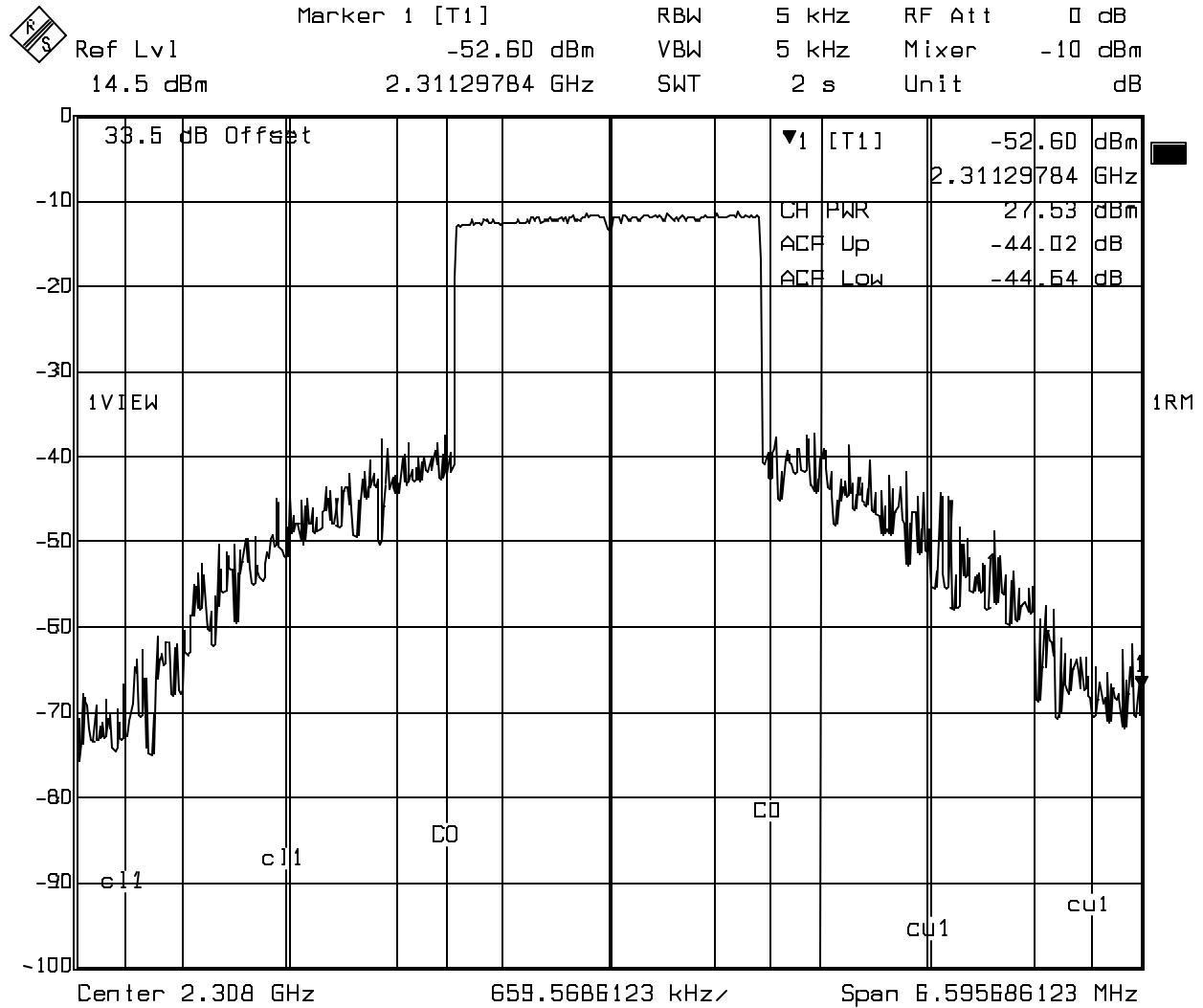
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EQUIPMENT: 2.3 GHz CPE



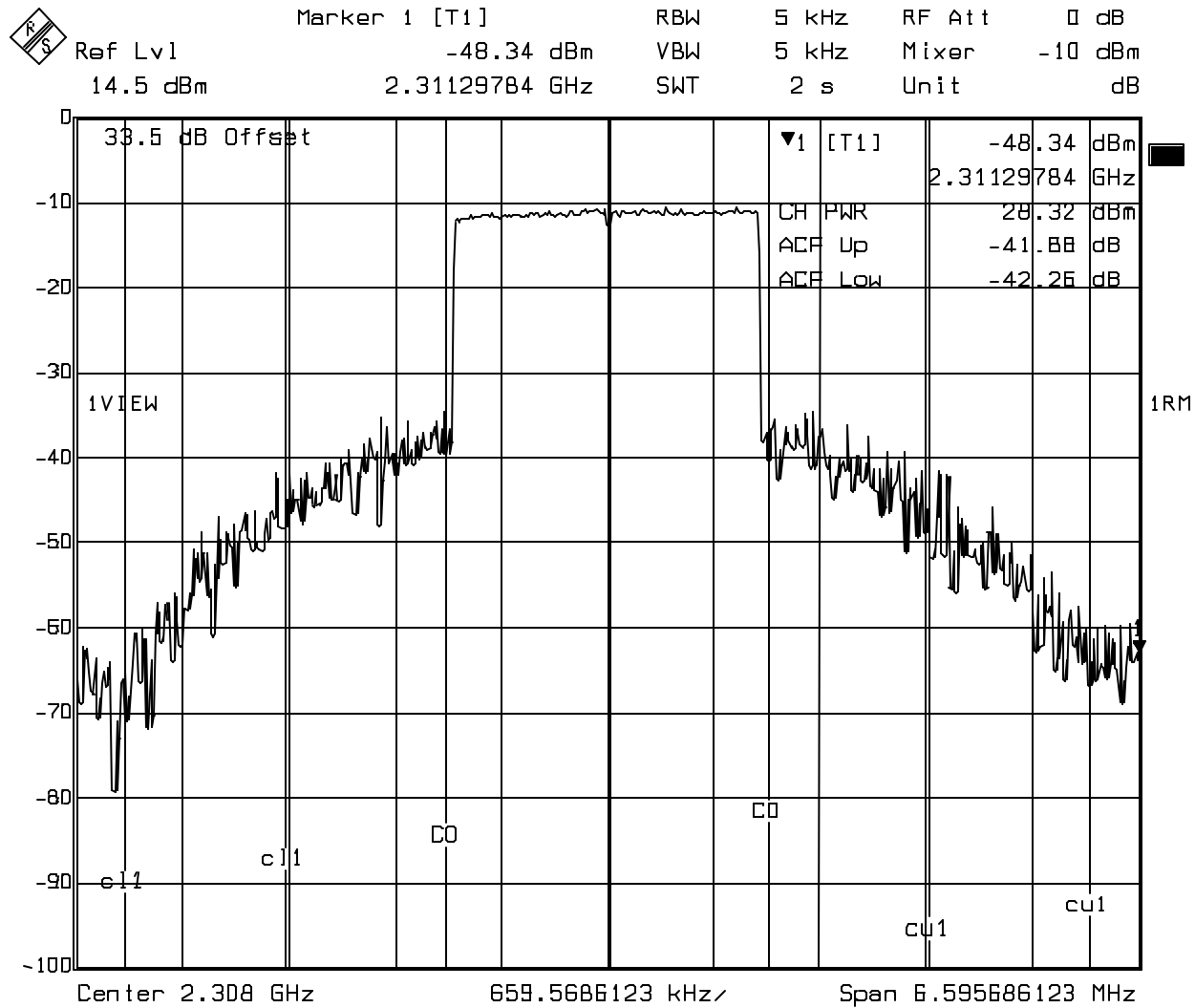
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EQUIPMENT: 2.3 GHz CPE



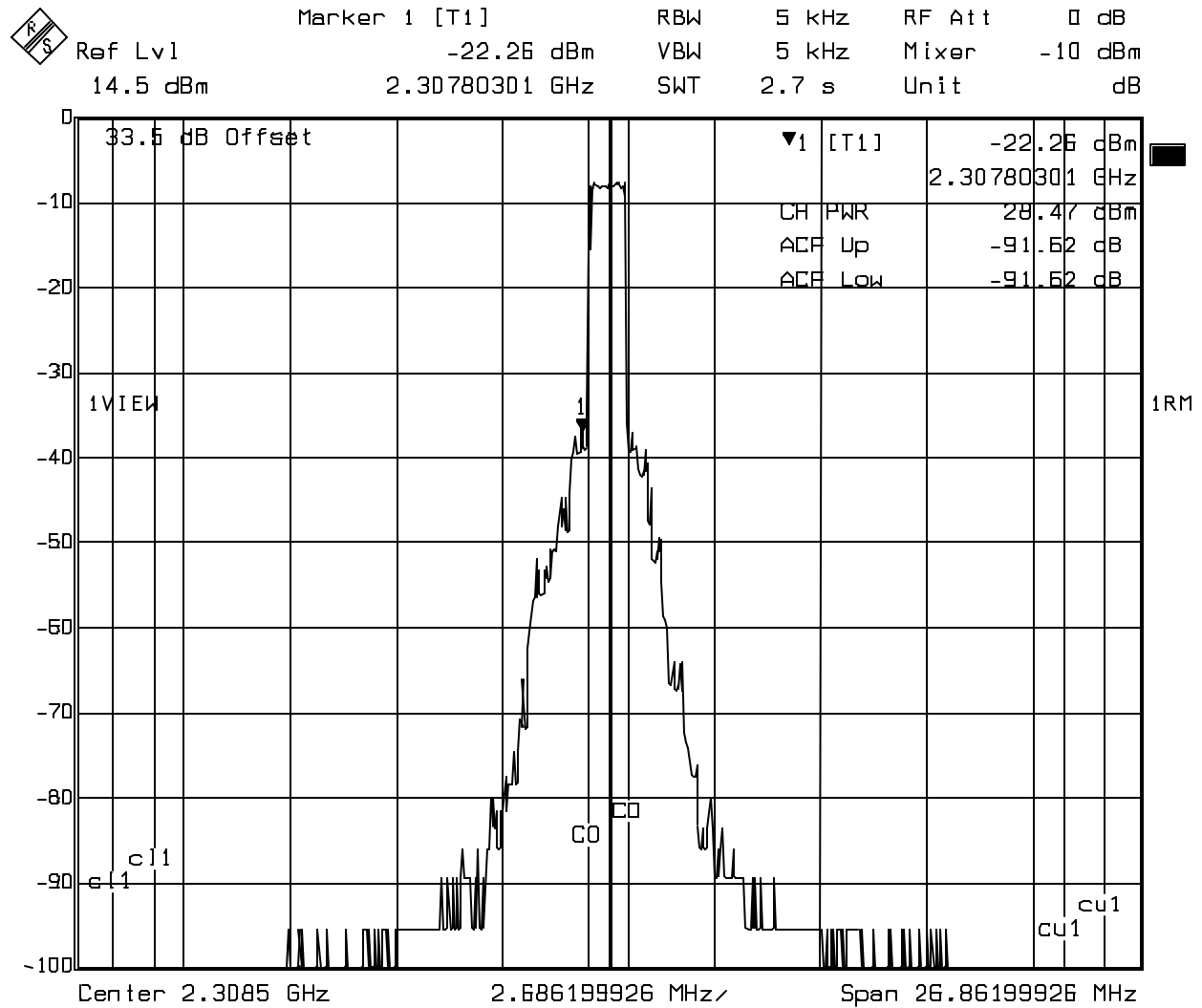
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EQUIPMENT: 2.3 GHz CPE



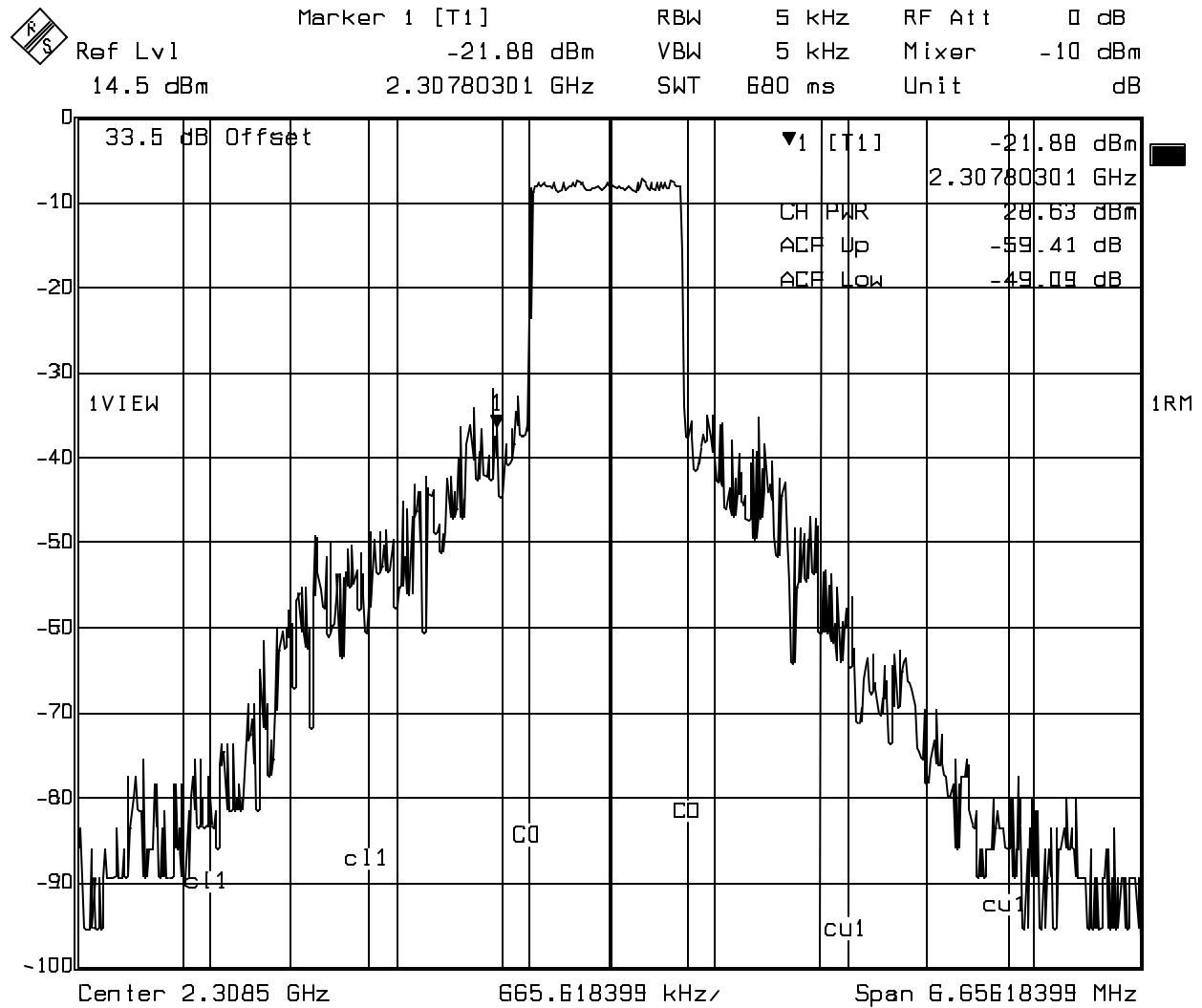
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Date: 11.NOV.2002 13:41:48

EQUIPMENT: 2.3 GHz CPE



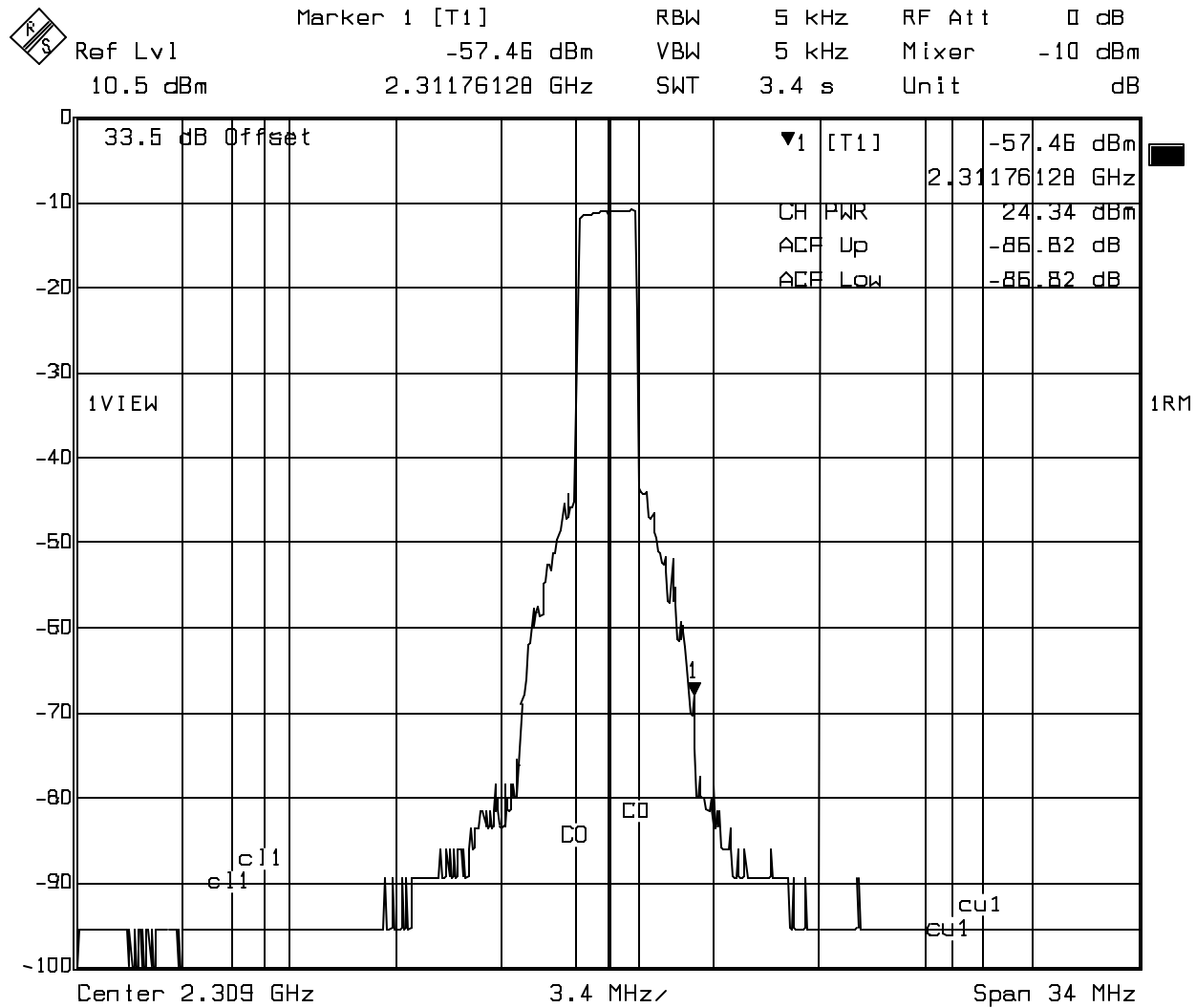
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EQUIPMENT: 2.3 GHz CPE



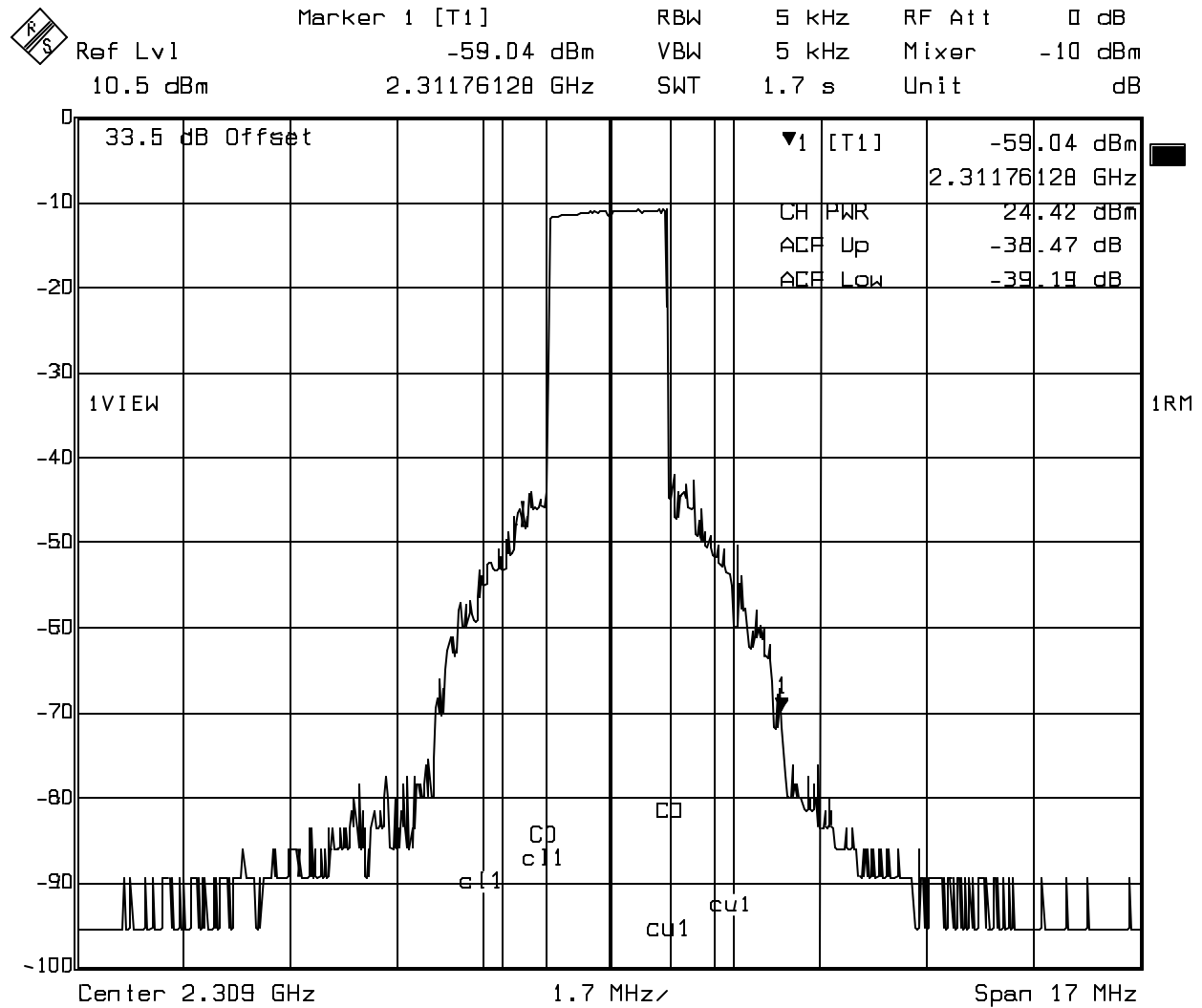
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Date: 11.NOV.2002 14:08:23

EQUIPMENT: 2.3 GHz CPE



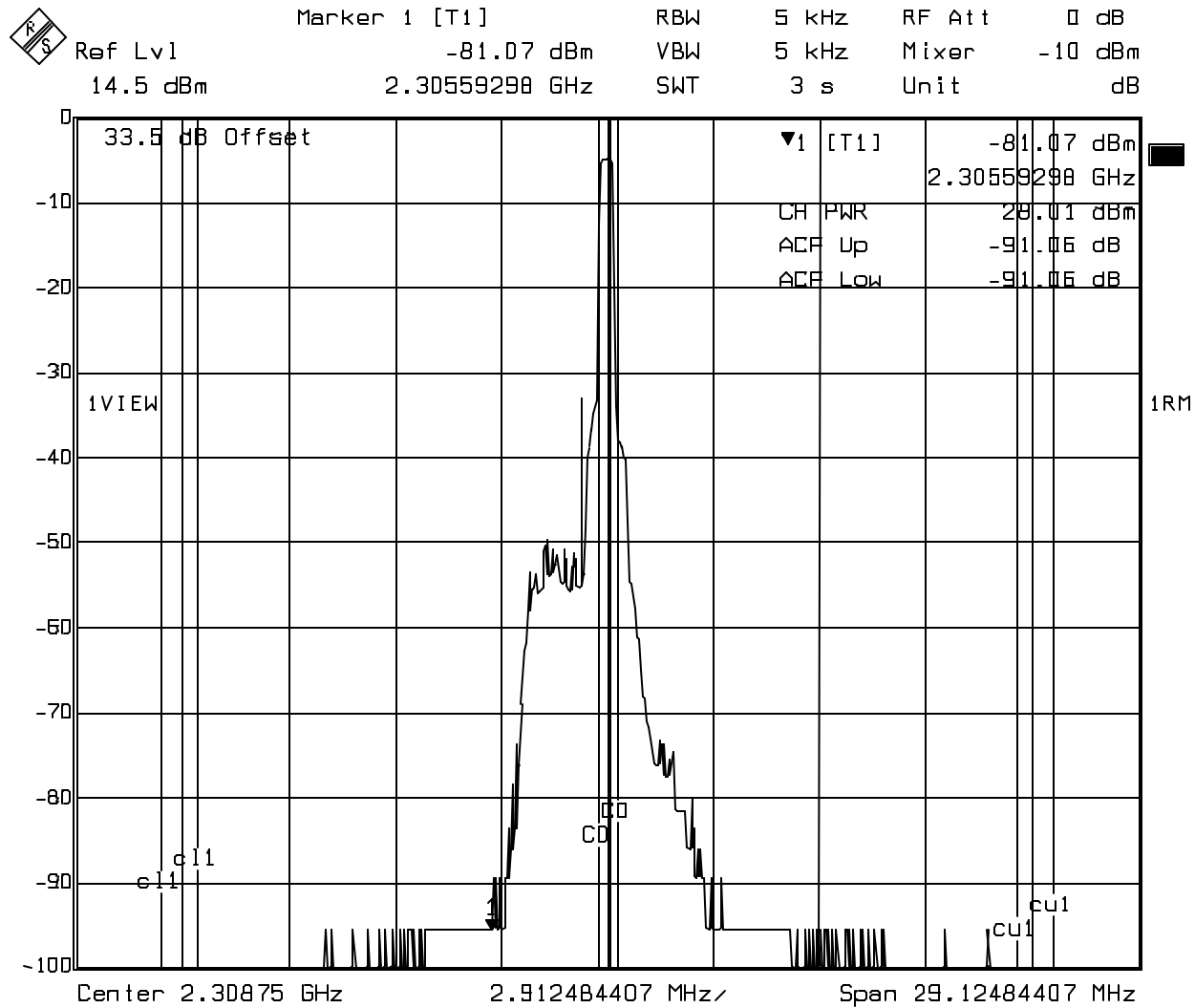
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Date: 11.NOV.2002 13:26:32

EQUIPMENT: 2.3 GHz CPE



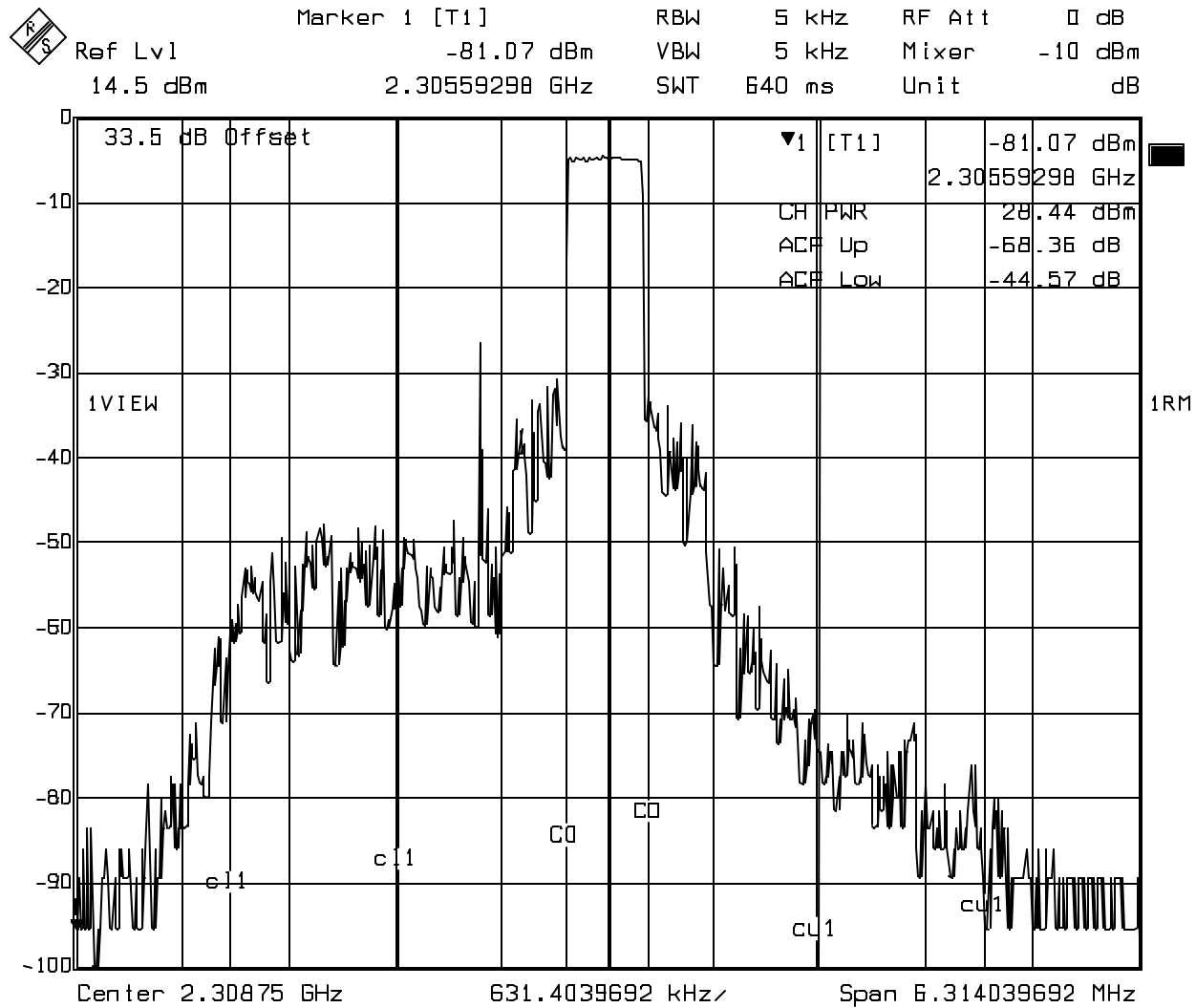
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EQUIPMENT: 2.3 GHz CPE



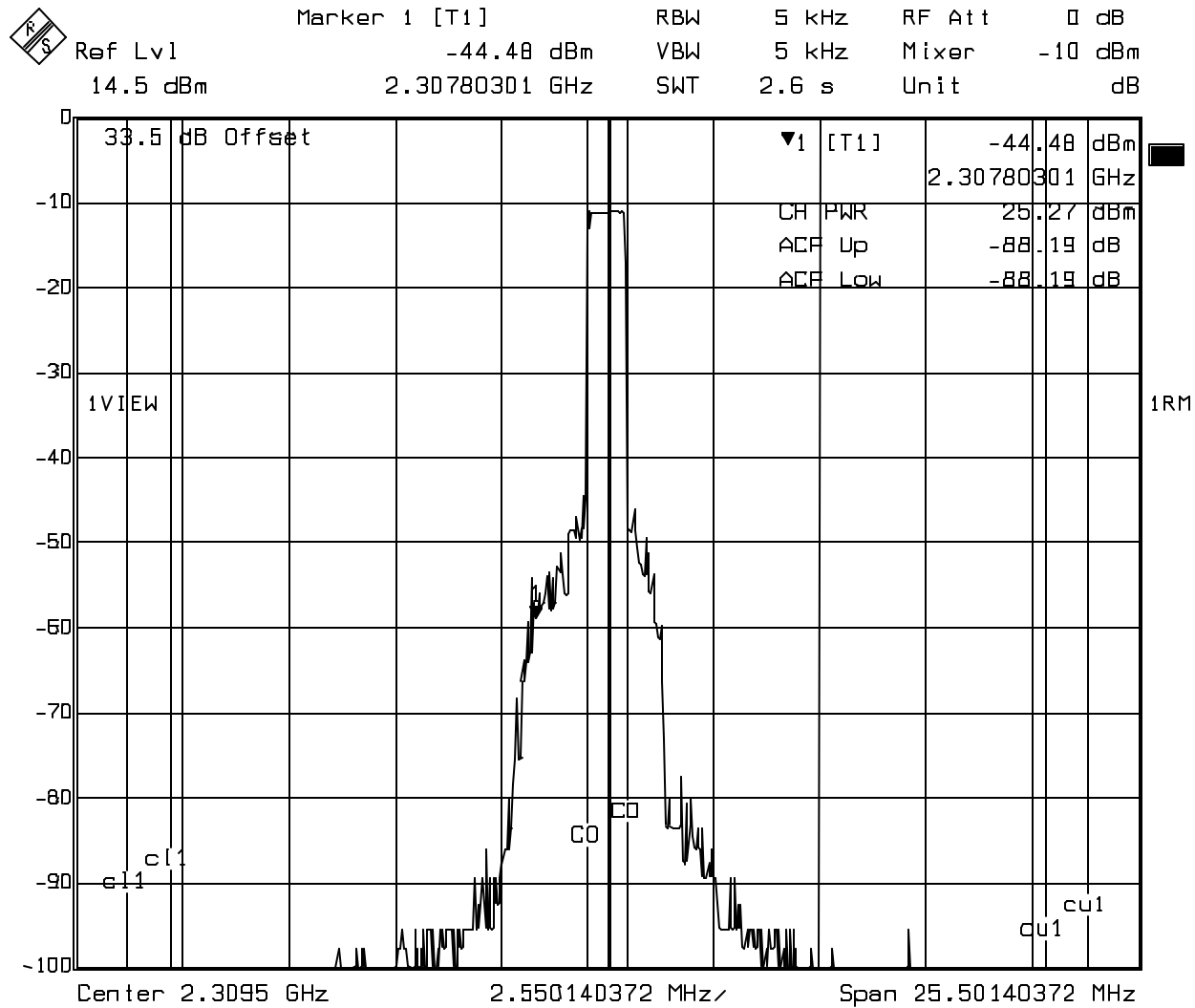
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EQUIPMENT: 2.3 GHz CPE



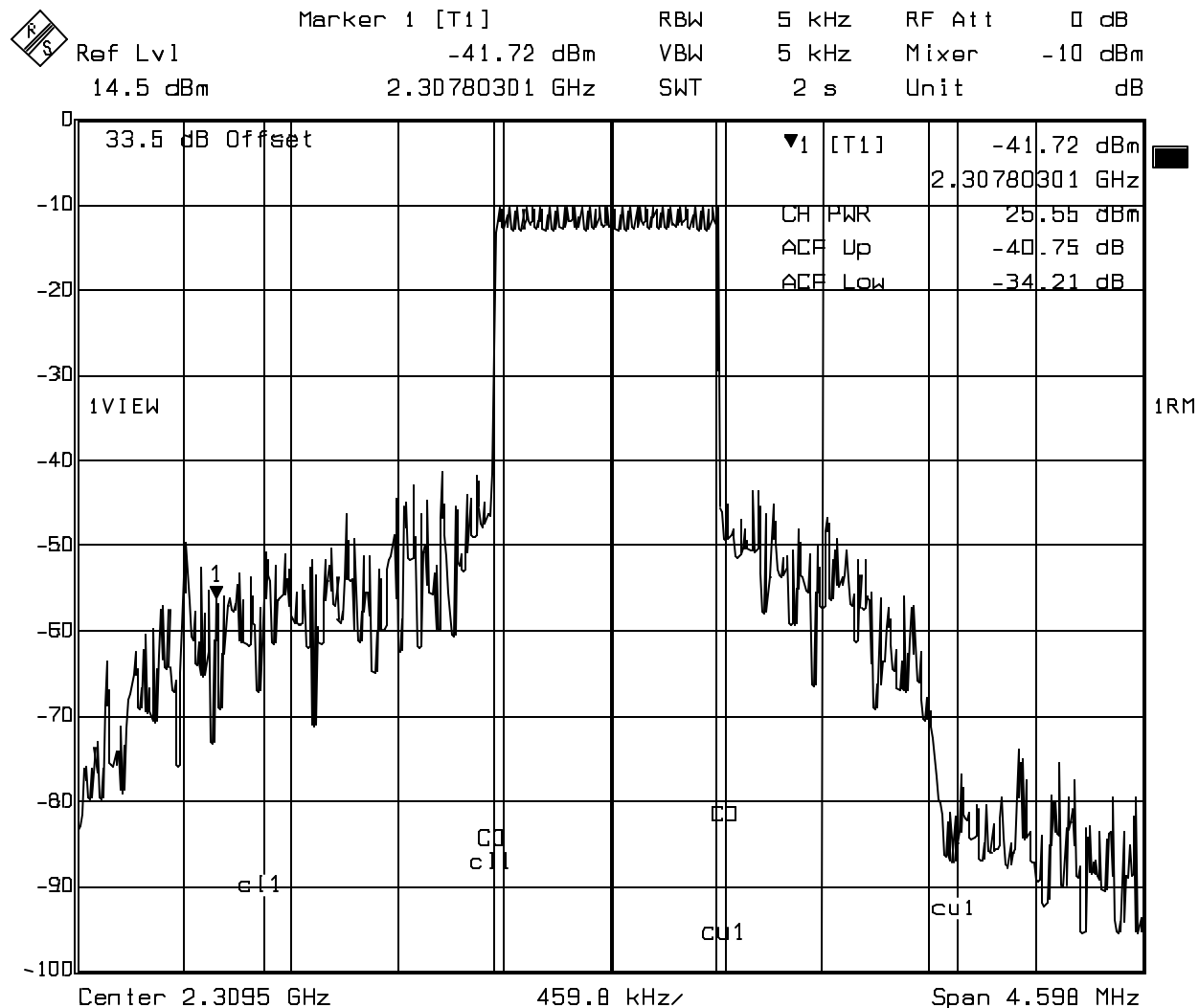
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EQUIPMENT: 2.3 GHz CPE



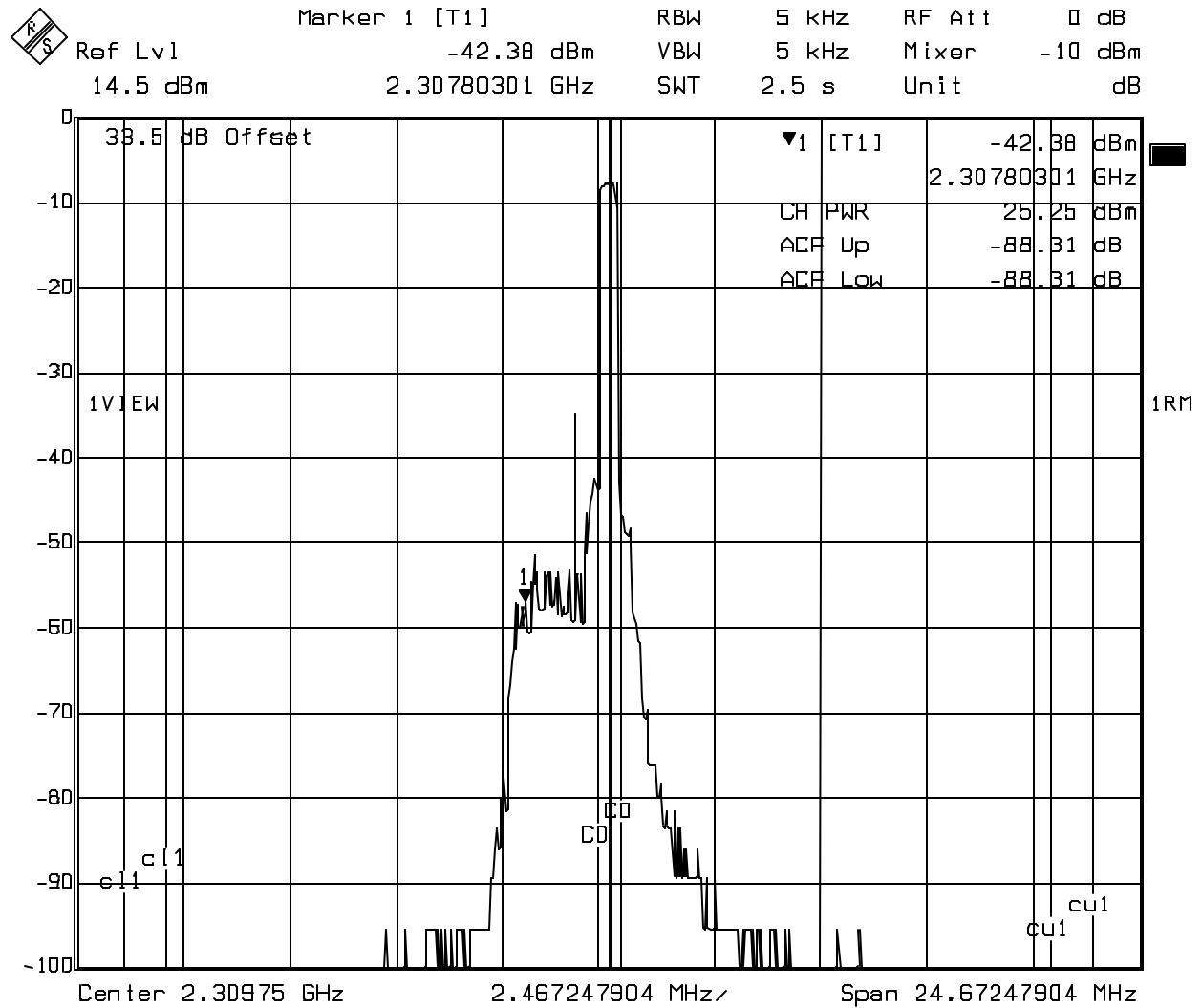
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EQUIPMENT: 2.3 GHz CPE



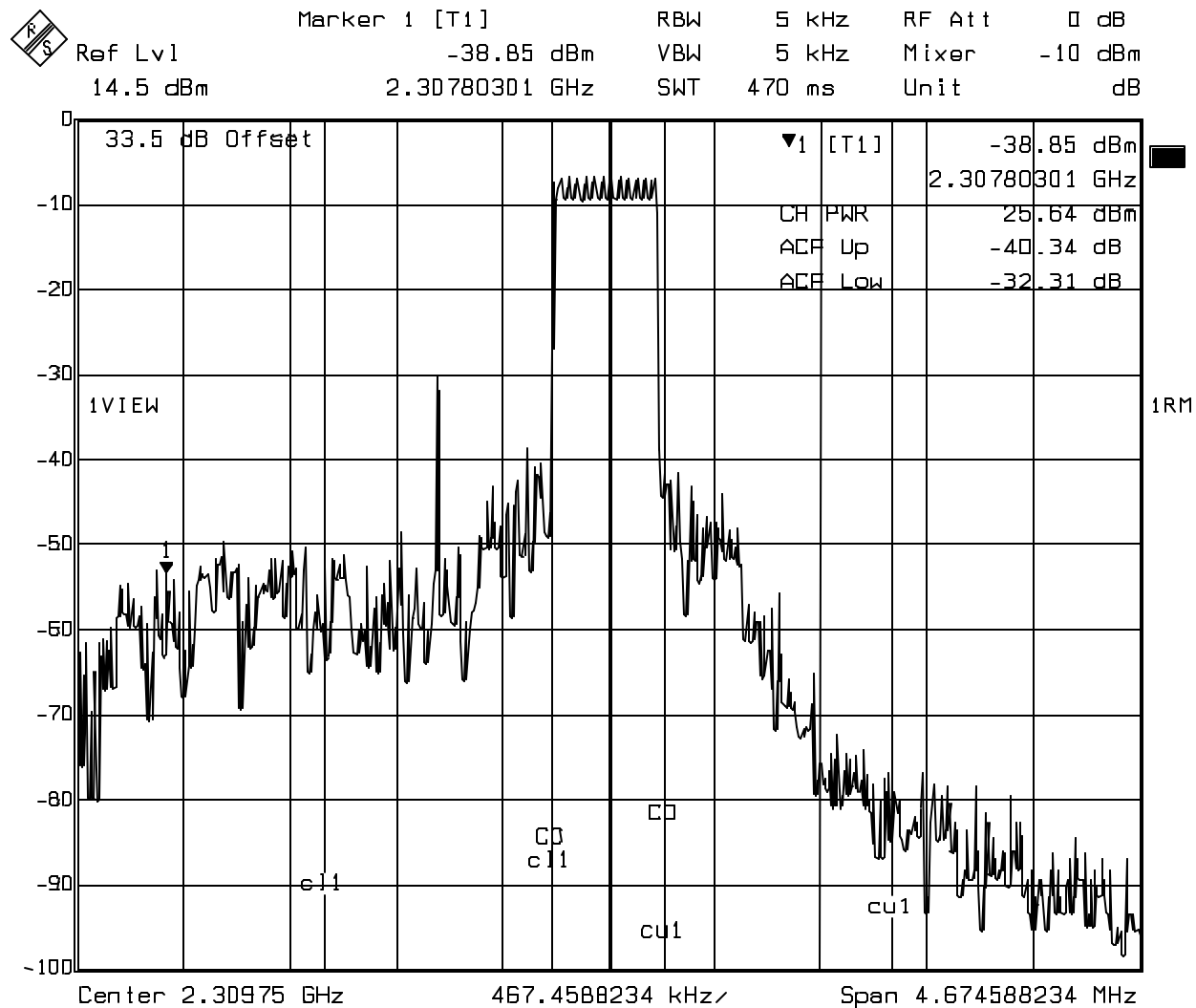
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EQUIPMENT: 2.3 GHz CPE



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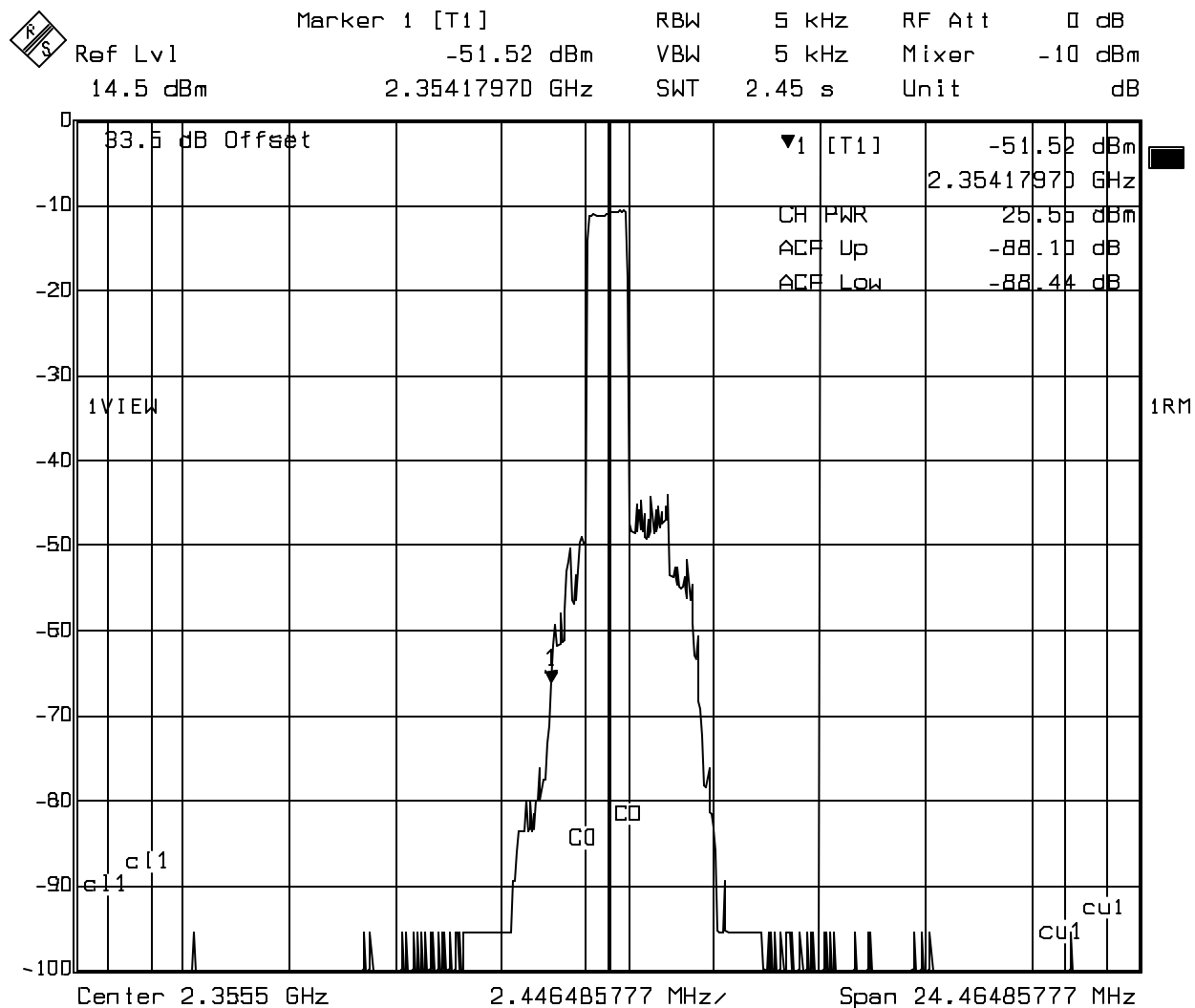
EQUIPMENT: 2.3 GHz CPE



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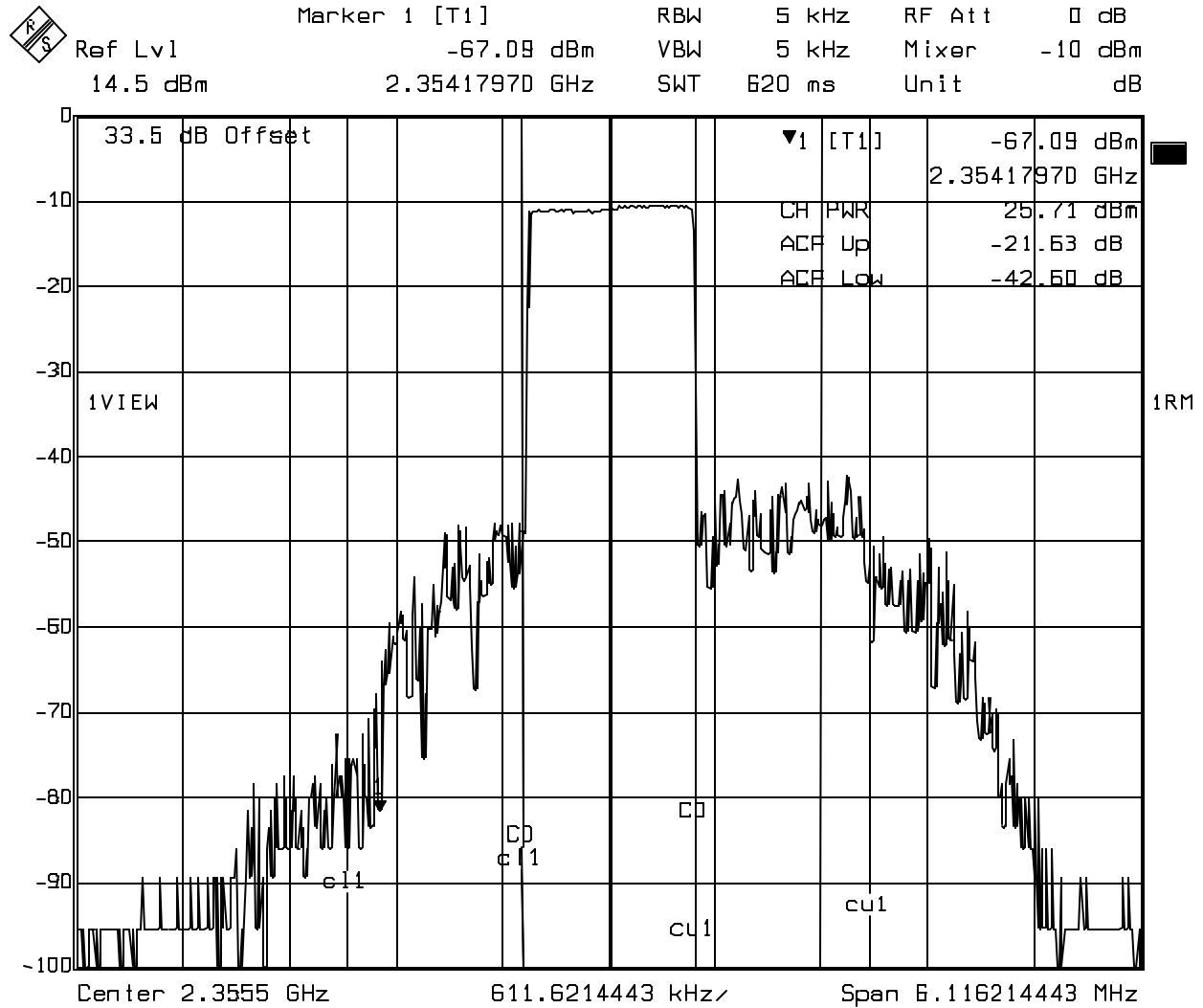
EQUIPMENT: 2.3 GHz CPE

Test Data – Block B (2355 – 2360 MHz)



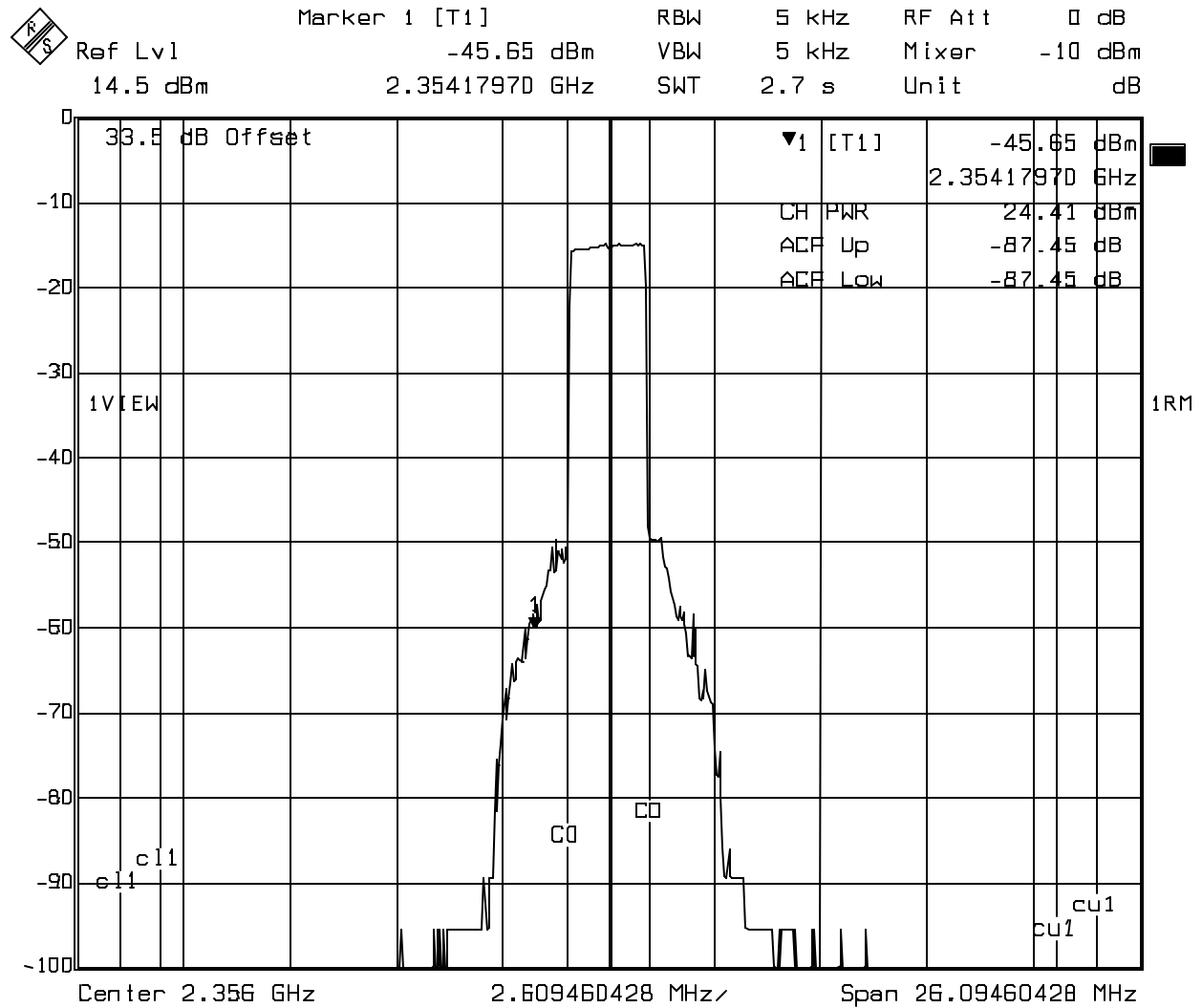
Title: 2DC
Date: 11.NOV.2002 14:43:56

EQUIPMENT: 2.3 GHz CPE



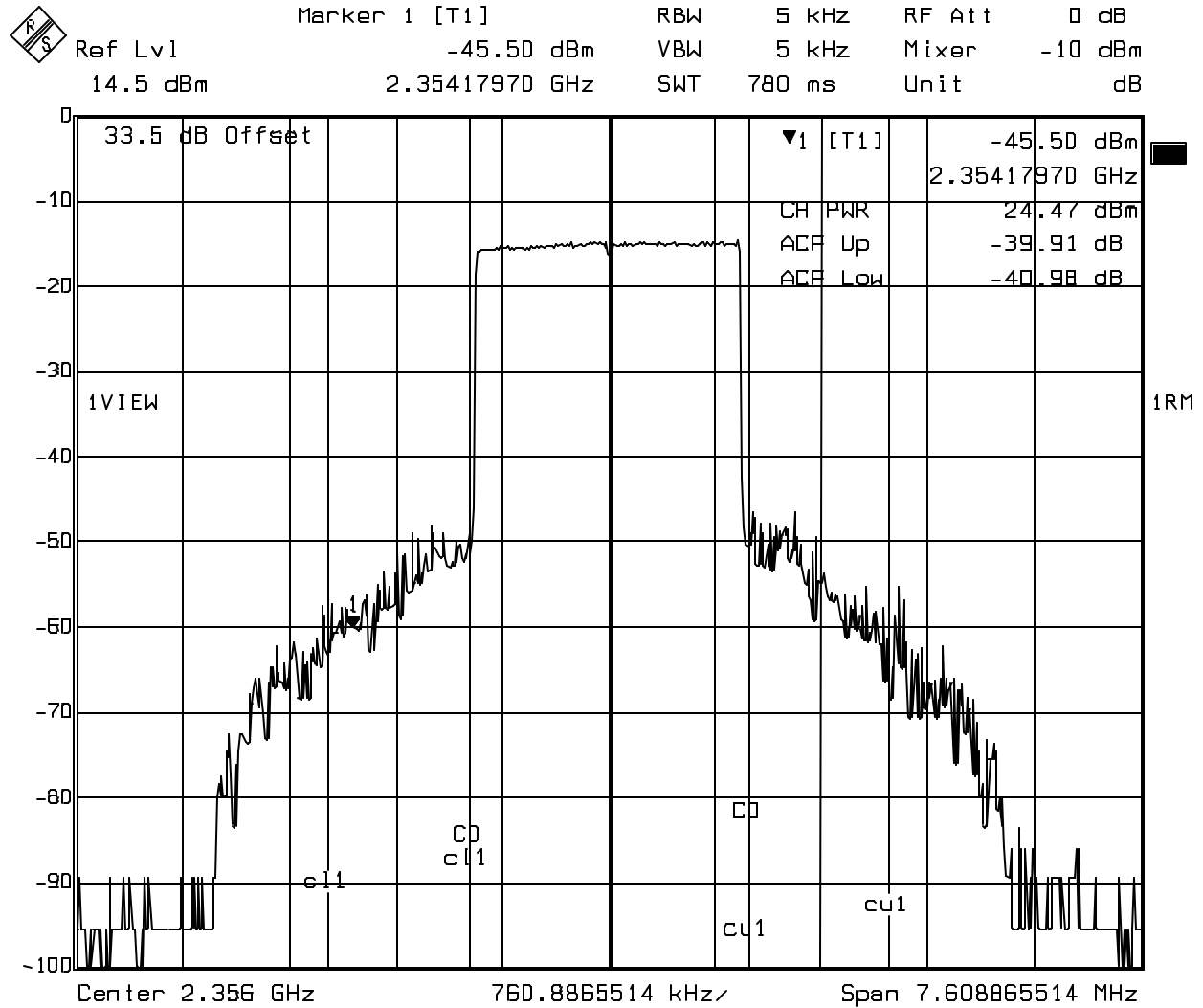
Title: 20C
Date: 11.NOV.2002 14:42:52

EQUIPMENT: 2.3 GHz CPE



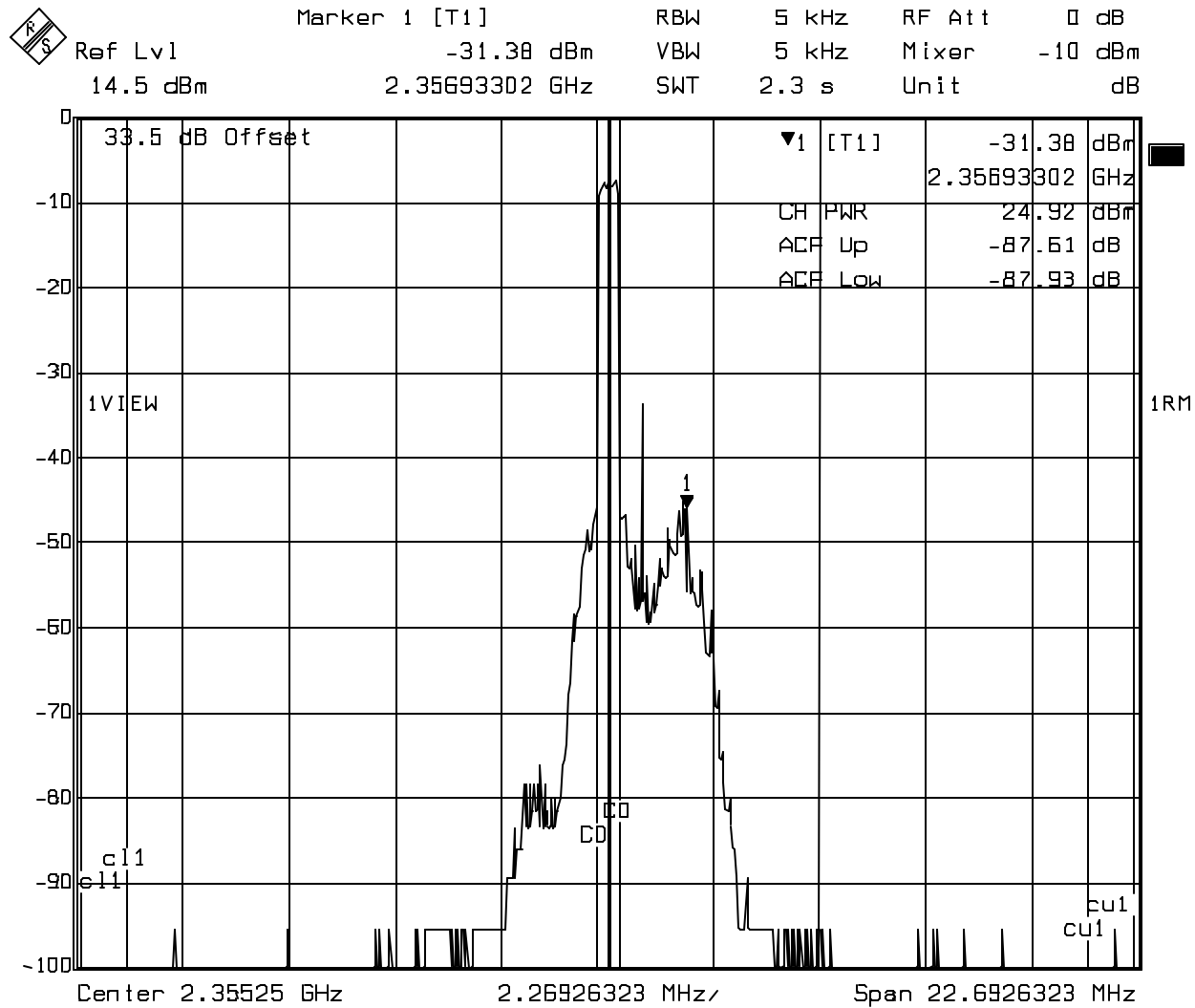
Title: 20C
Date: 11.NOV.2002 14:29:07

EQUIPMENT: 2.3 GHz CPE



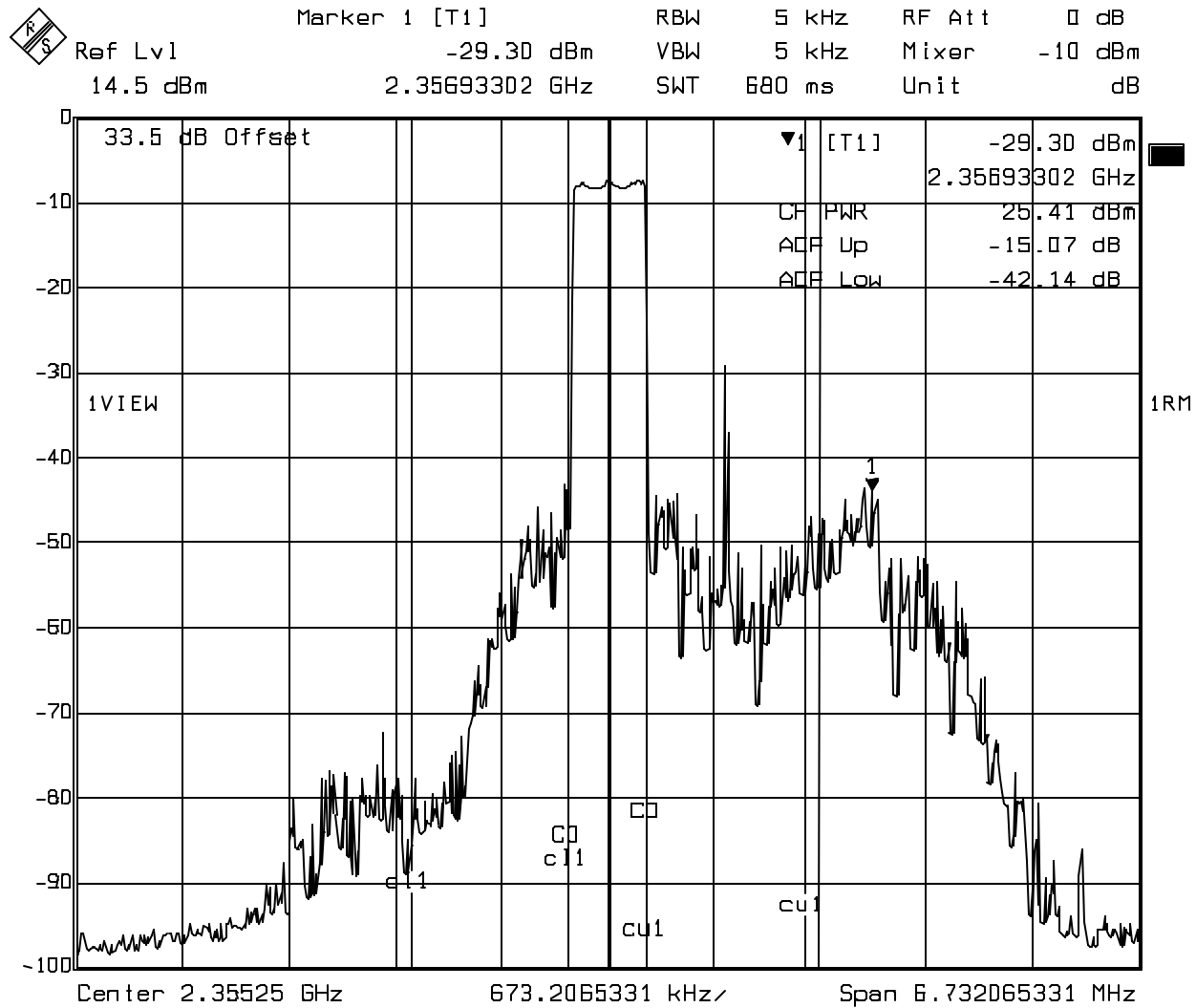
Title: 20C
Date: 11.NOV.2002 14:26:54

EQUIPMENT: 2.3 GHz CPE



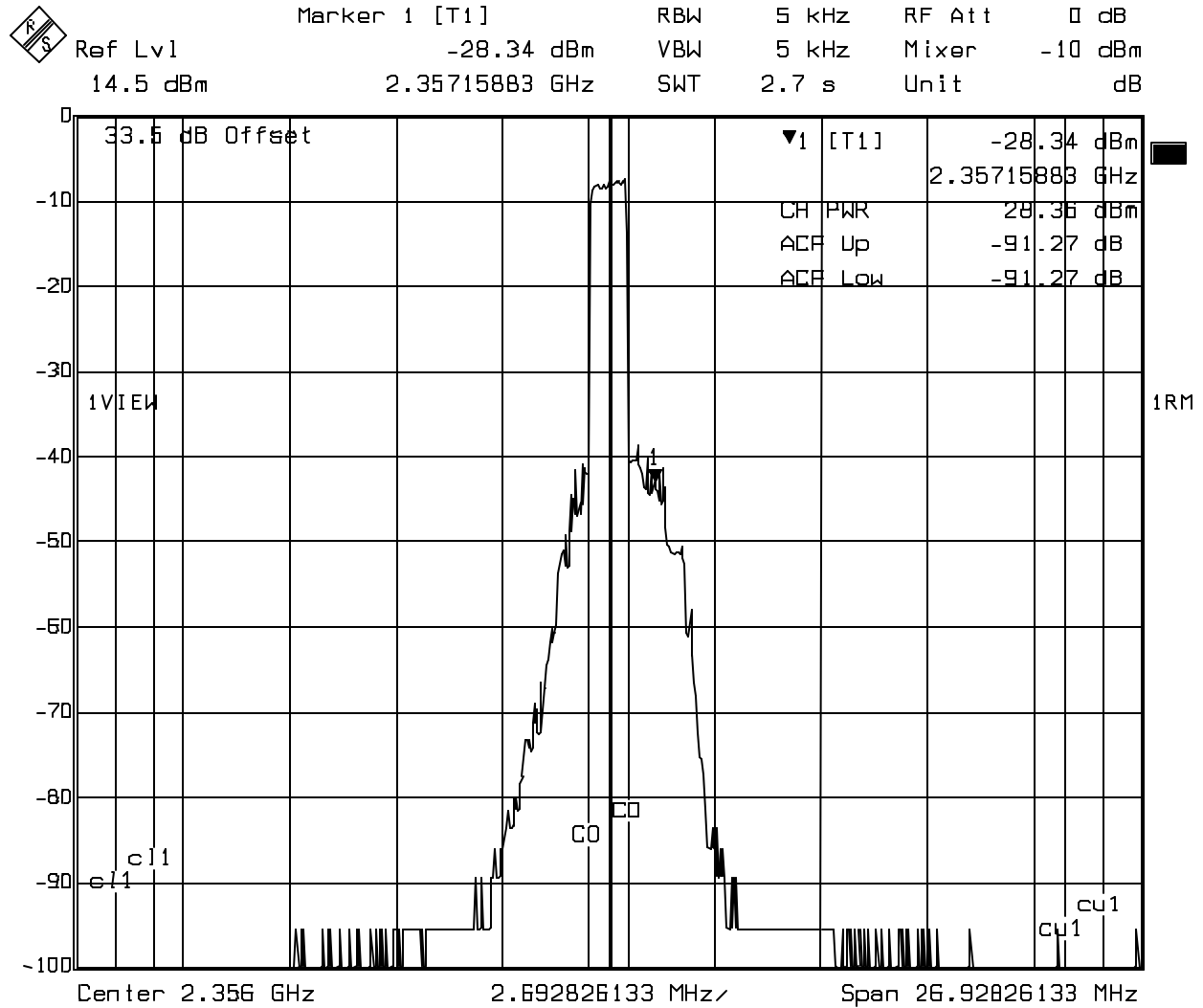
Title: 20C
Date: 11.NOV.2002 14:55:59

EQUIPMENT: 2.3 GHz CPE



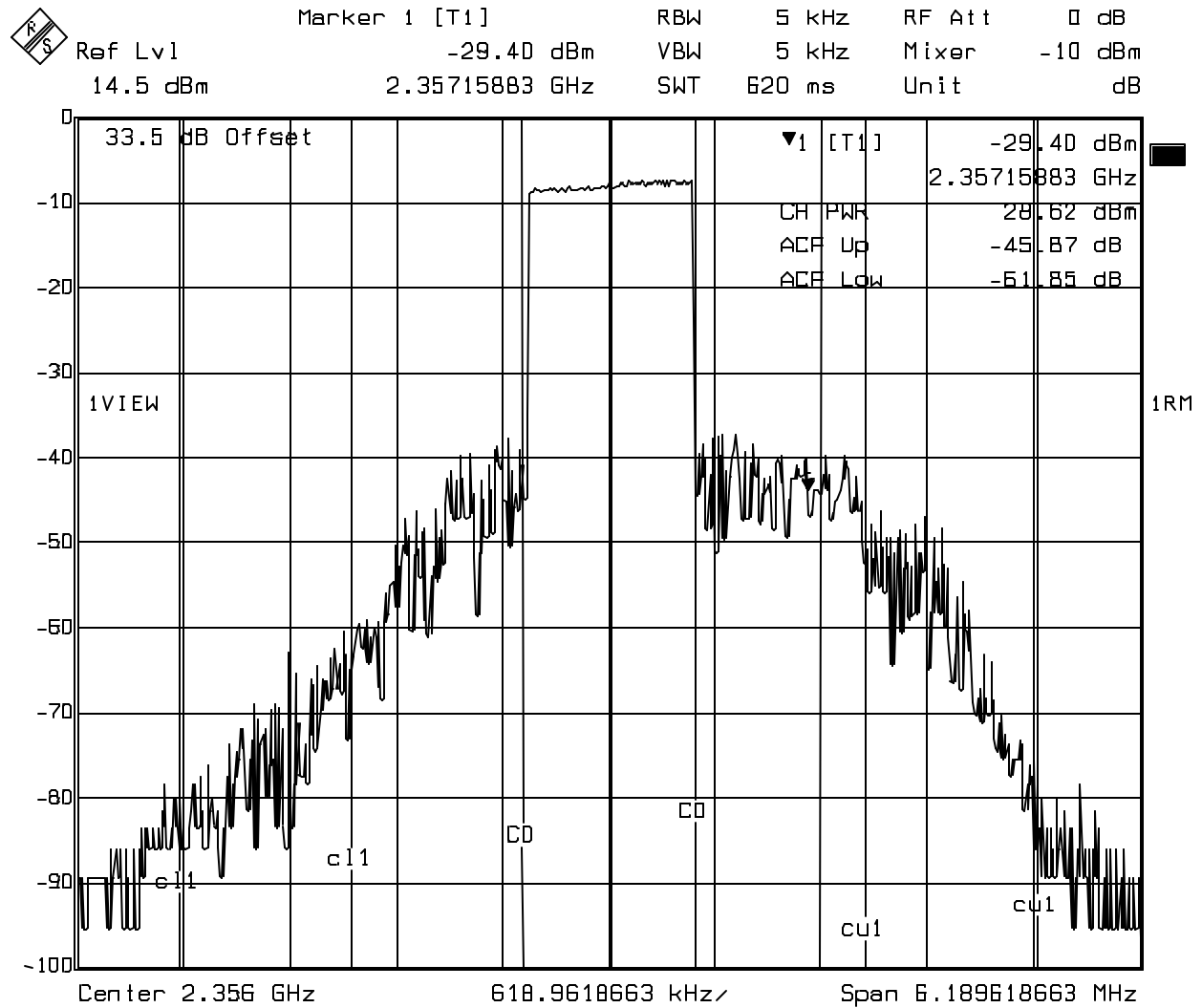
Title: 20C
Date: 11.NOV.2002 14:54:51

EQUIPMENT: 2.3 GHz CPE



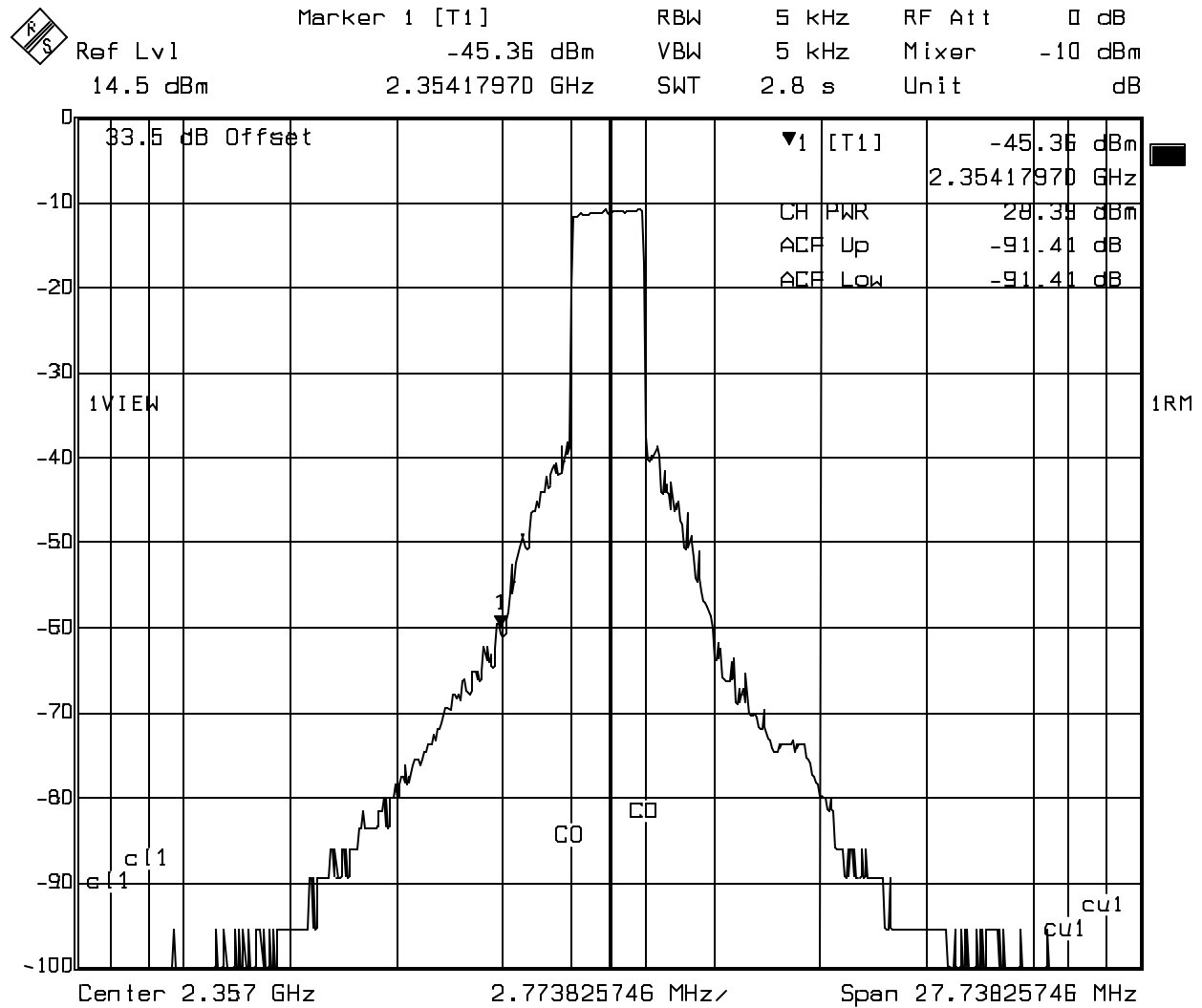
Title: 20C
Date: 11.NOV.2002 14:50:20

EQUIPMENT: 2.3 GHz CPE



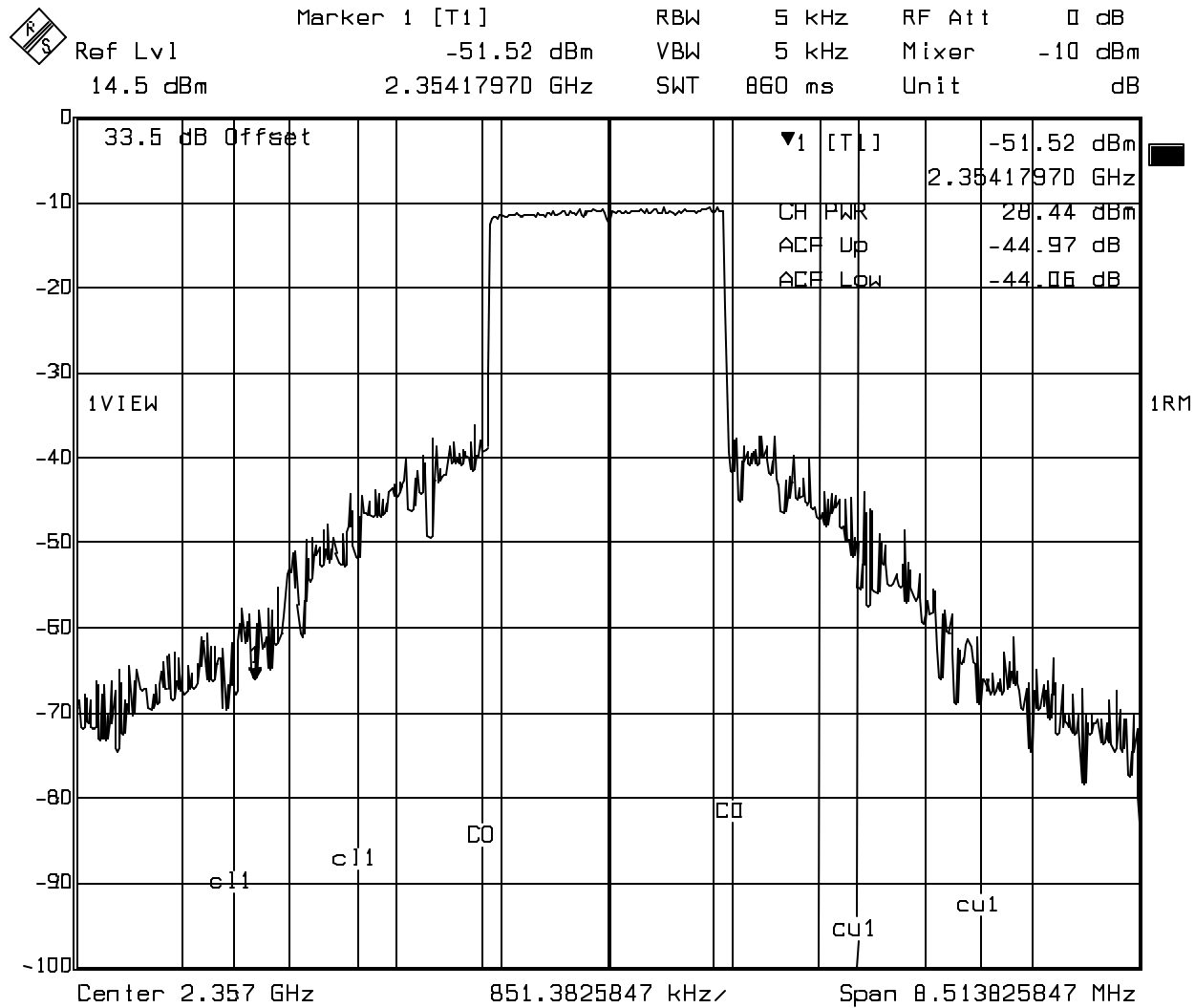
Title: 20C
Date: 11.NOV.2002 14:49:20

EQUIPMENT: 2.3 GHz CPE



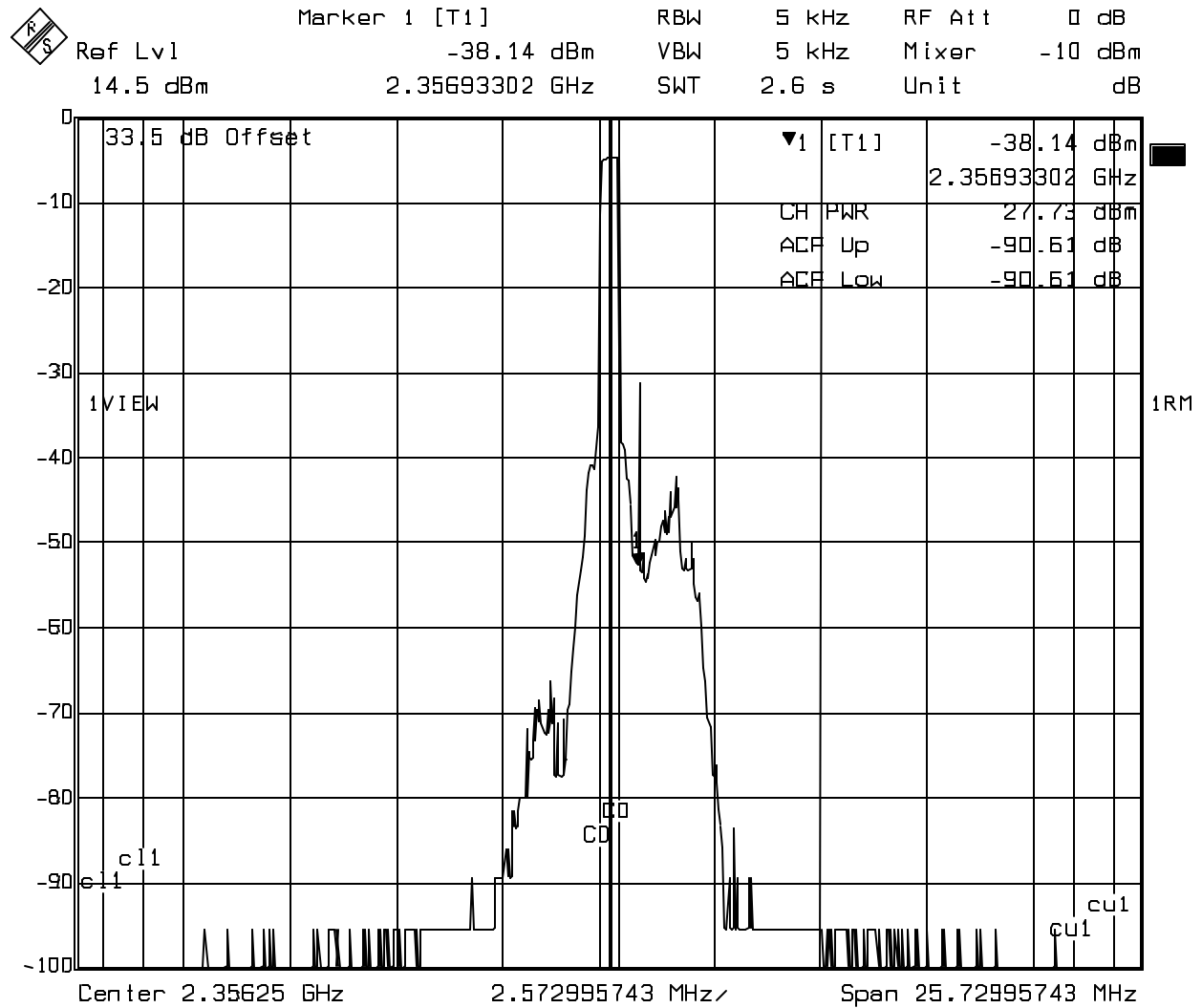
Title: 2DC
Date: 11.NOV.2002 14:34:47

EQUIPMENT: 2.3 GHz CPE



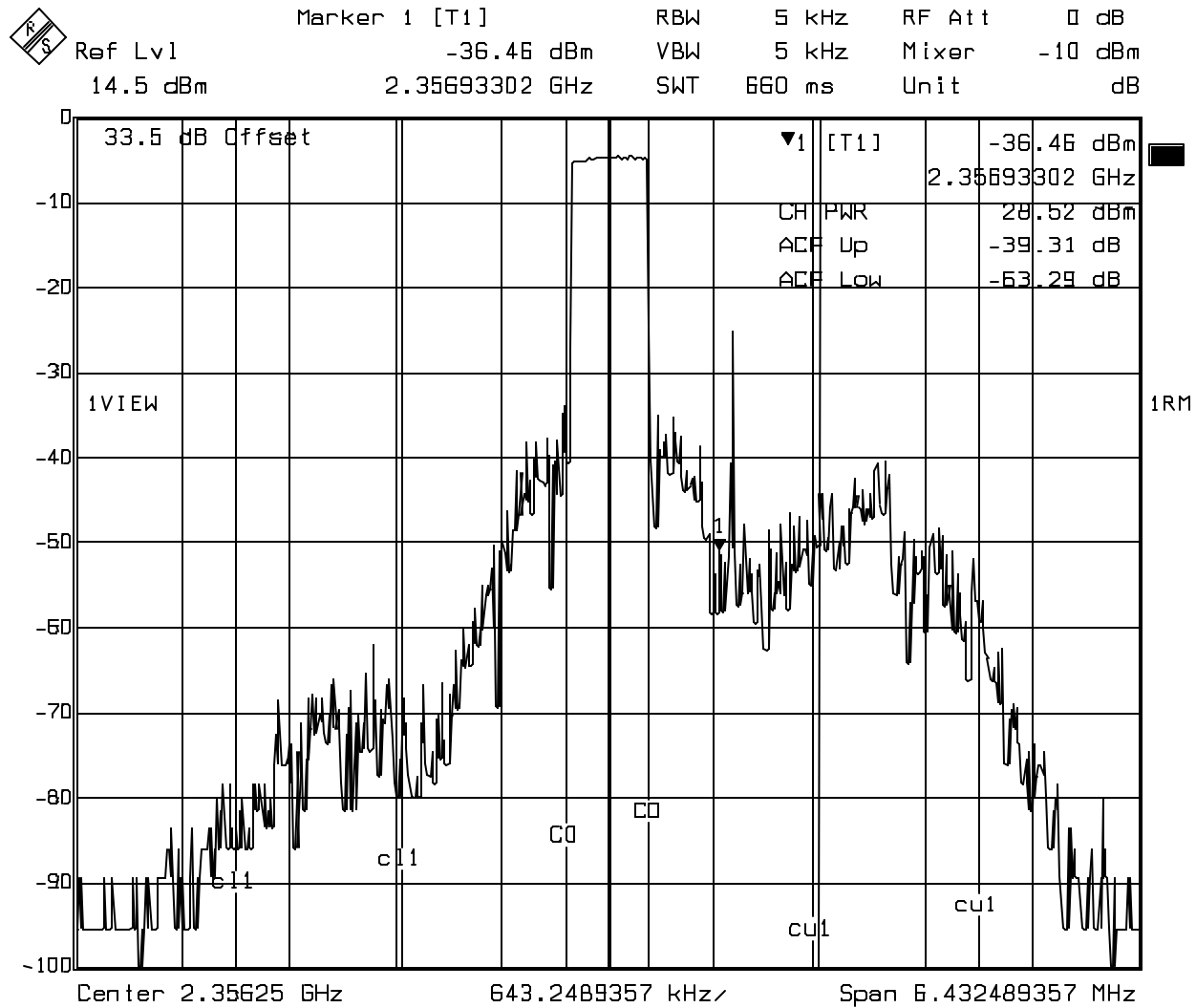
Title: 2DC
Date: 11.NOV.2002 14:33:35

EQUIPMENT: 2.3 GHz CPE



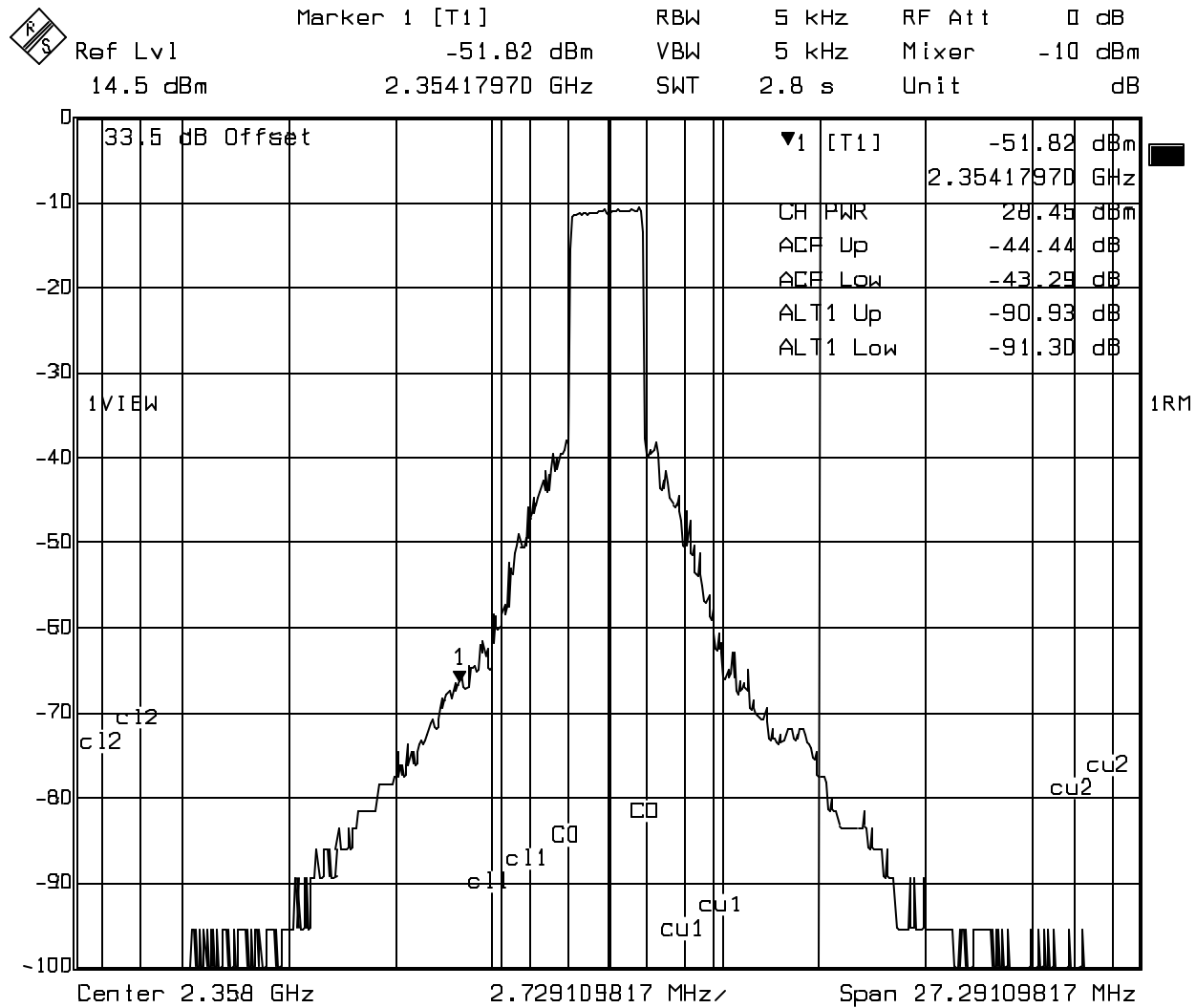
Title: 20C
Date: 11.NOV.2002 15:08:41

EQUIPMENT: 2.3 GHz CPE



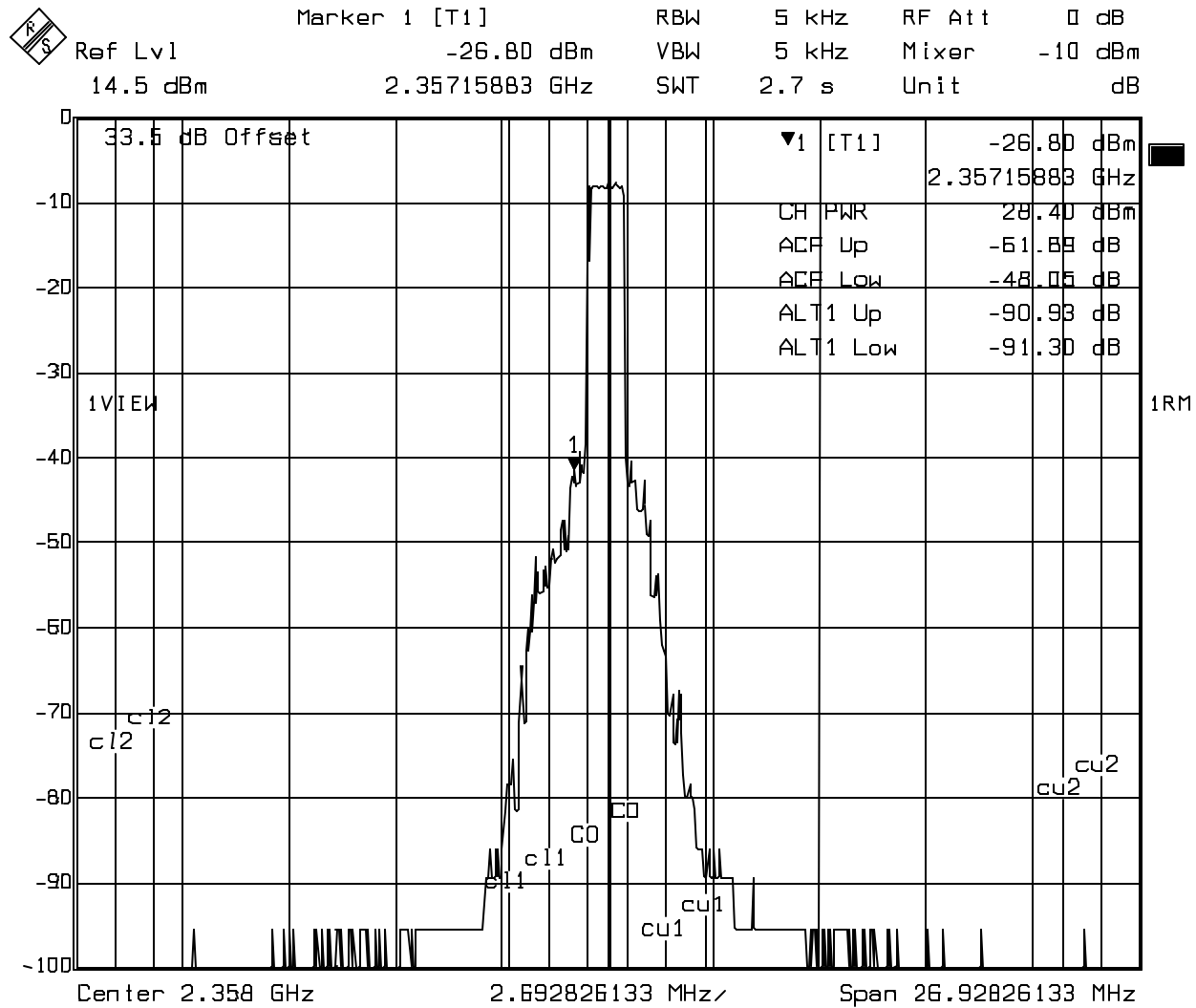
Title: 20C
Date: 11.NOV.2002 15:07:37

EQUIPMENT: 2.3 GHz CPE



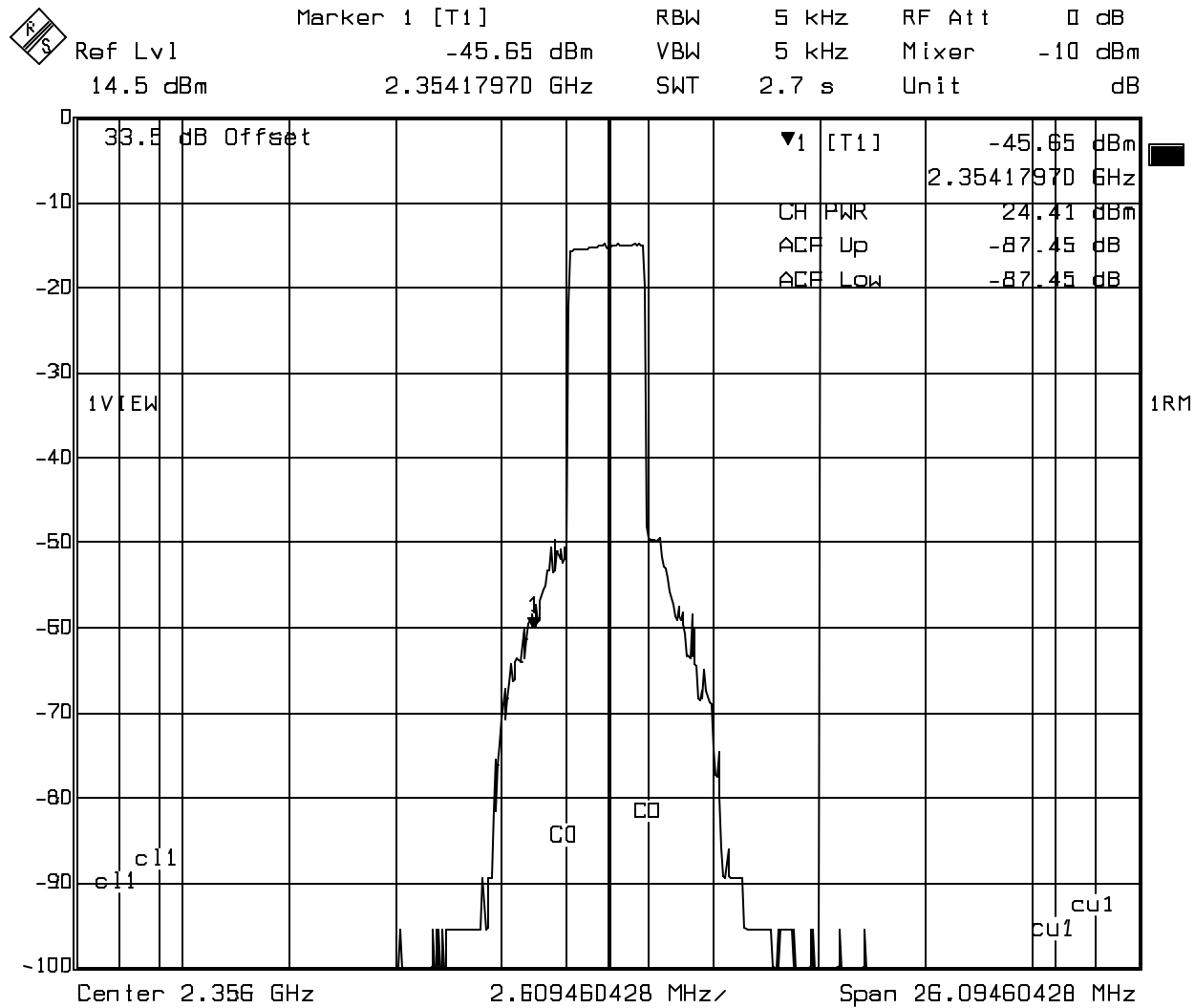
Title: 20C
Date: 11.NOV.2002 14:38:23

EQUIPMENT: 2.3 GHz CPE



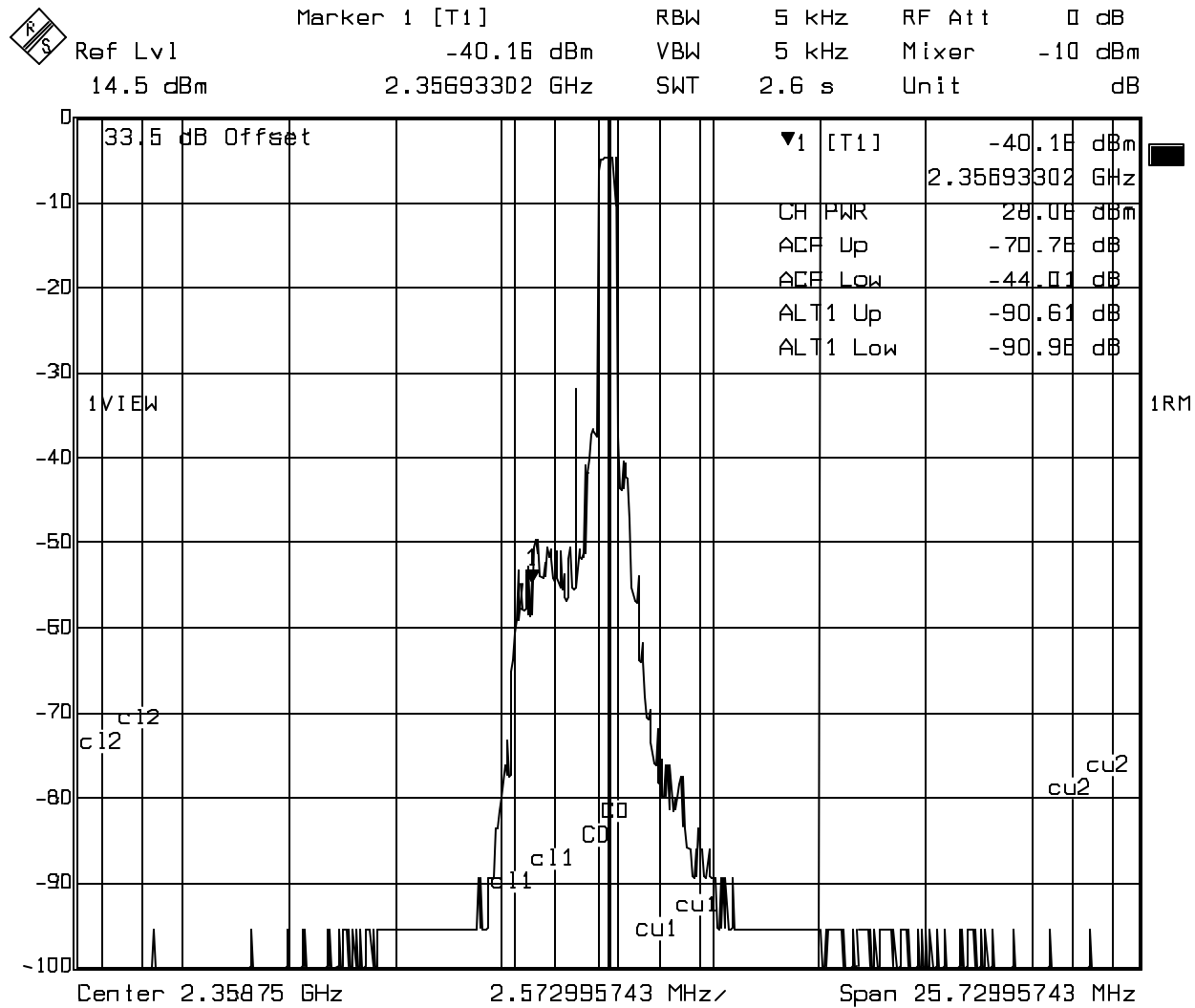
Title: 20C
Date: 11.NOV.2002 14:52:19

EQUIPMENT: 2.3 GHz CPE



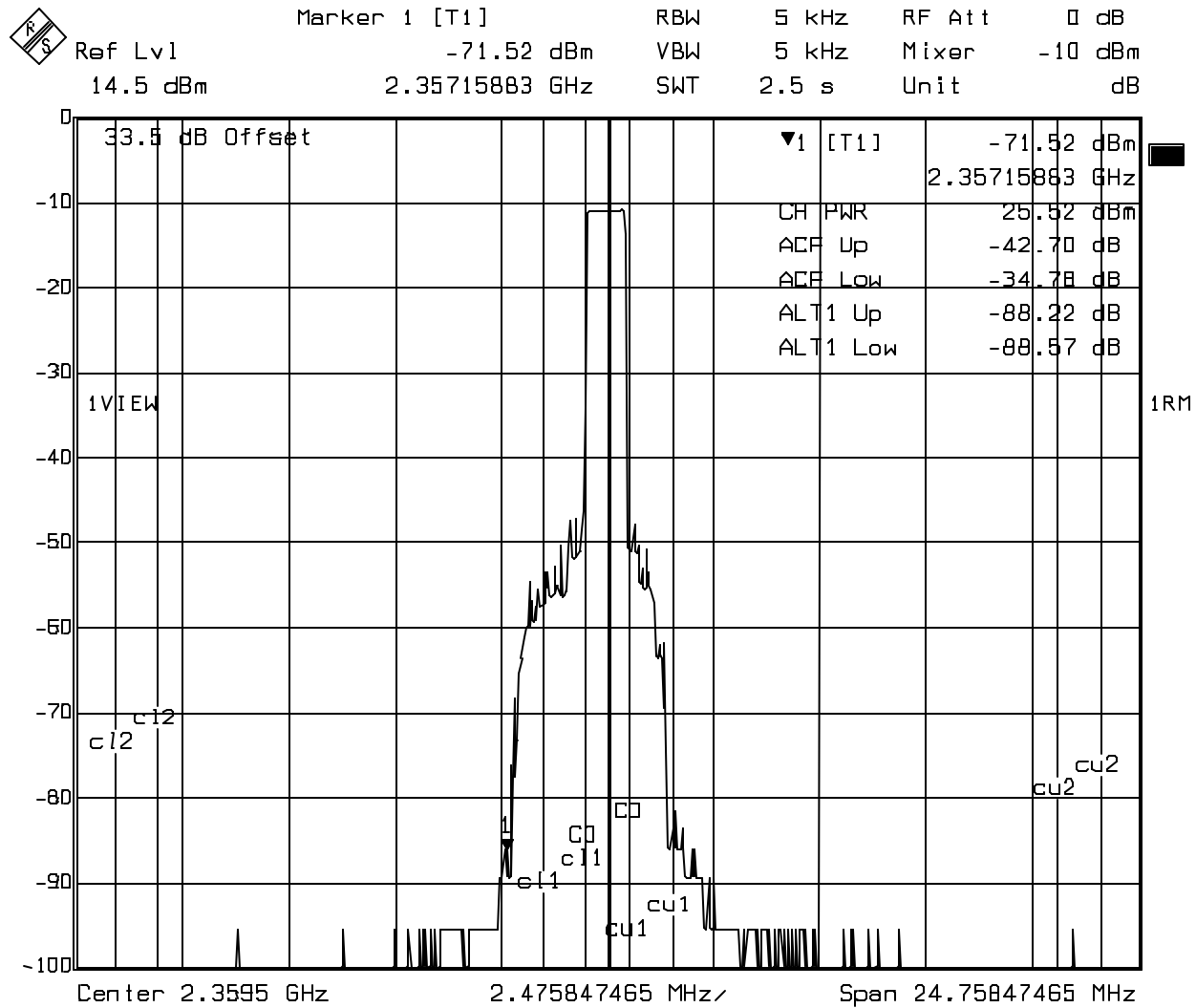
Title: 20C
Date: 11.NOV.2002 14:29:07

EQUIPMENT: 2.3 GHz CPE



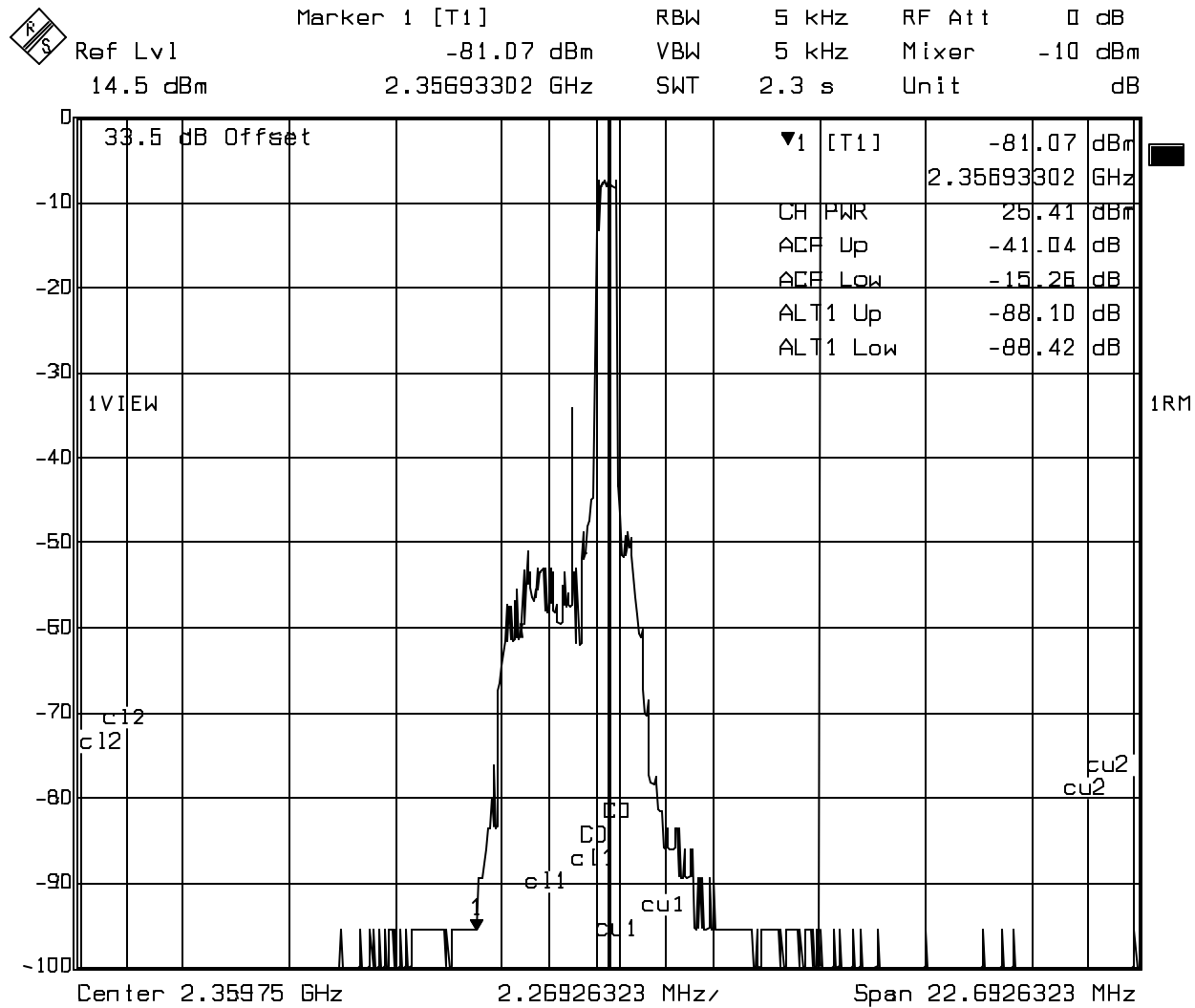
Title: 20C
Date: 11.NOV.2002 15:05:26

EQUIPMENT: 2.3 GHz CPE



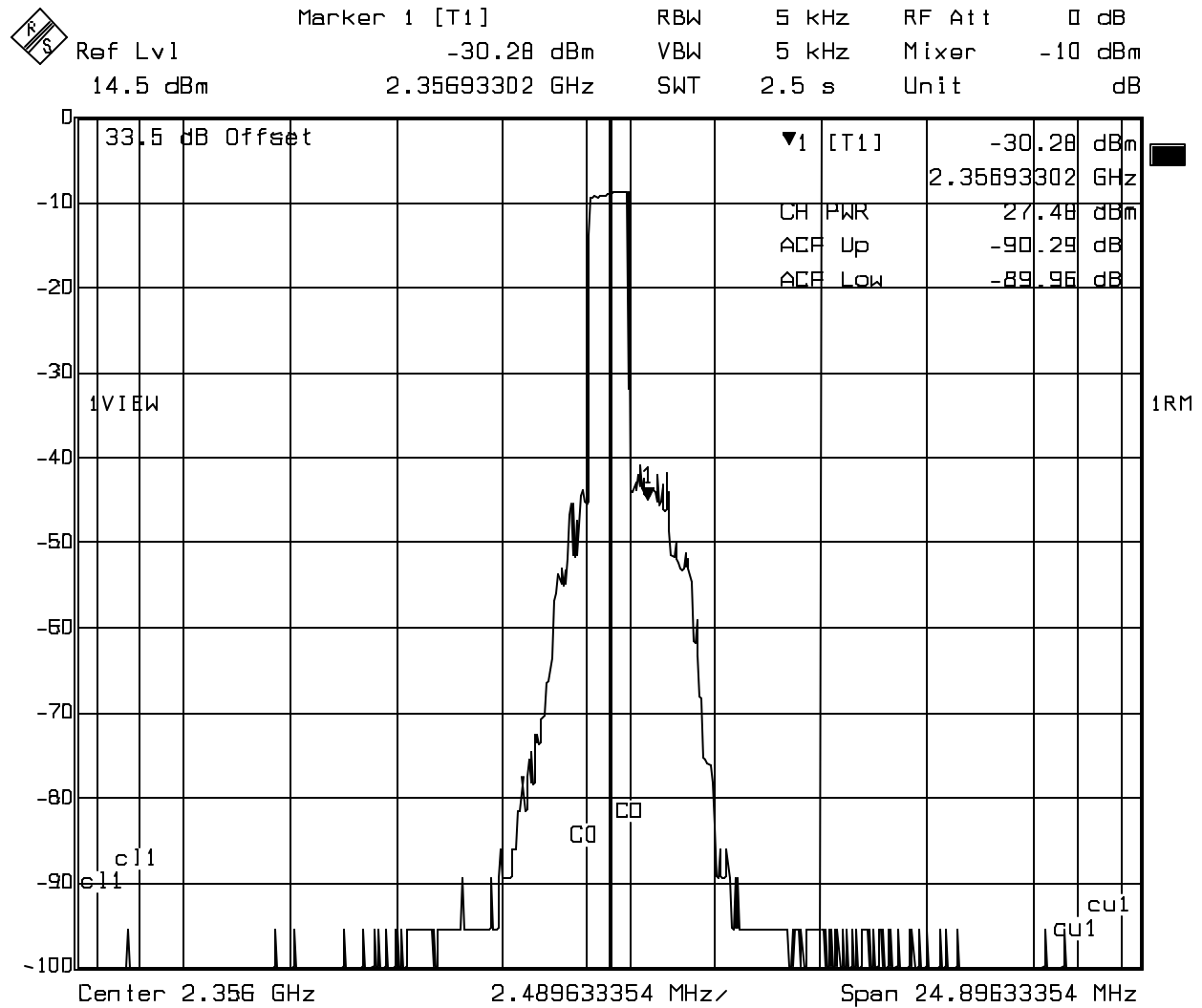
Title: 20C
Date: 11.NOV.2002 14:47:22

EQUIPMENT: 2.3 GHz CPE



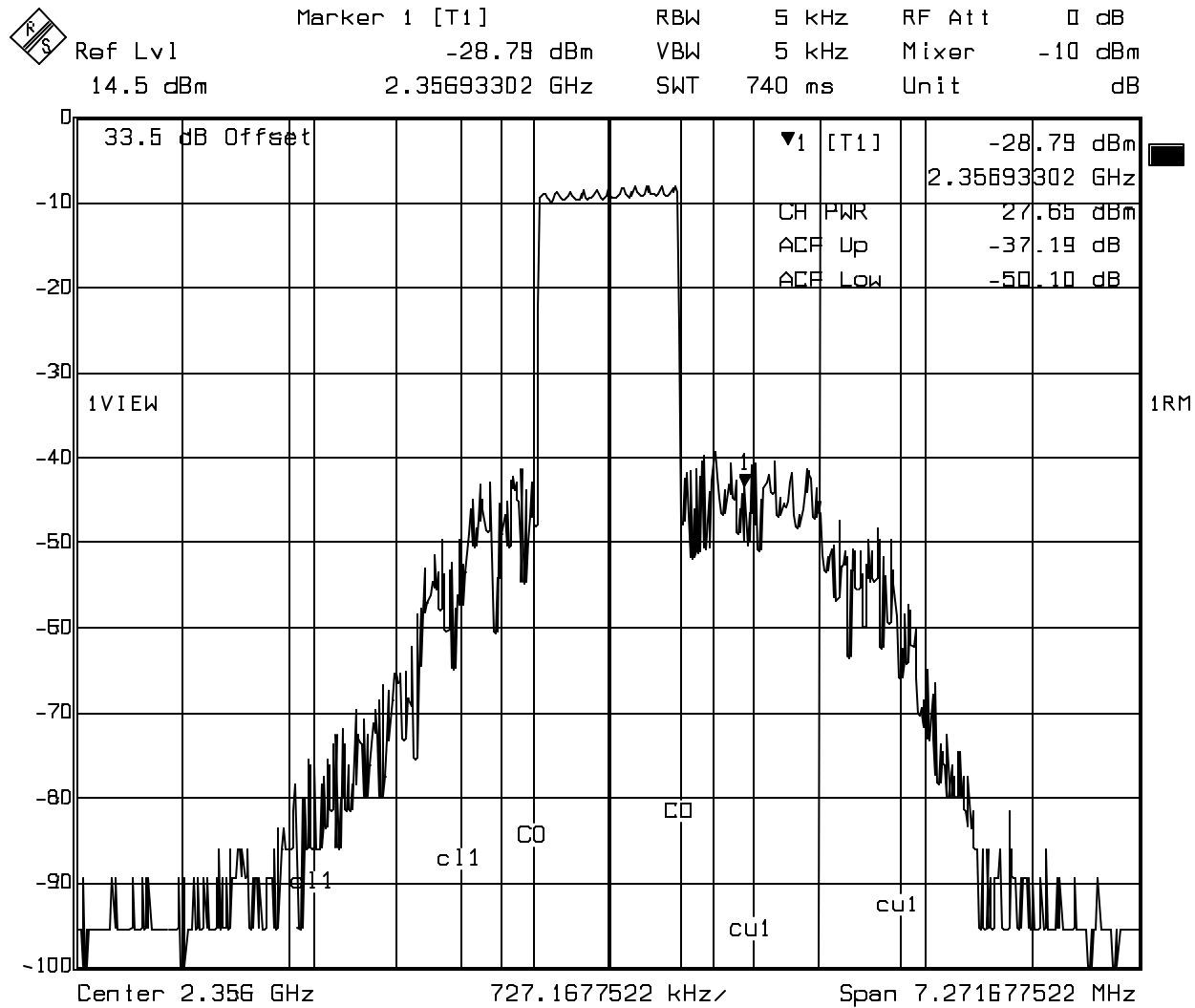
Title: 20C
Date: 11.NOV.2002 14:58:32

EQUIPMENT: 2.3 GHz CPE



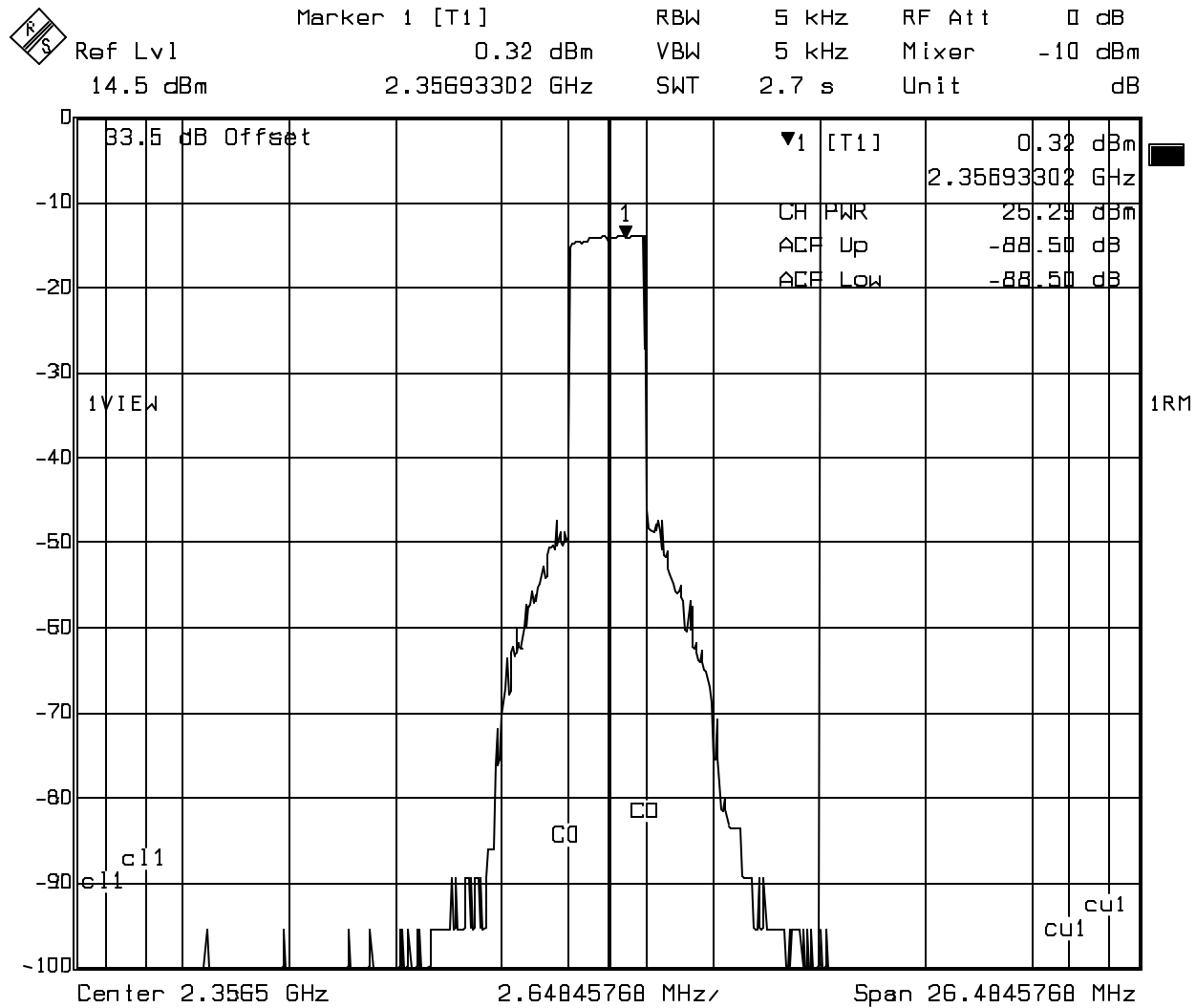
Title: 20C
Date: 11.NOV.2002 15:28:15

EQUIPMENT: 2.3 GHz CPE



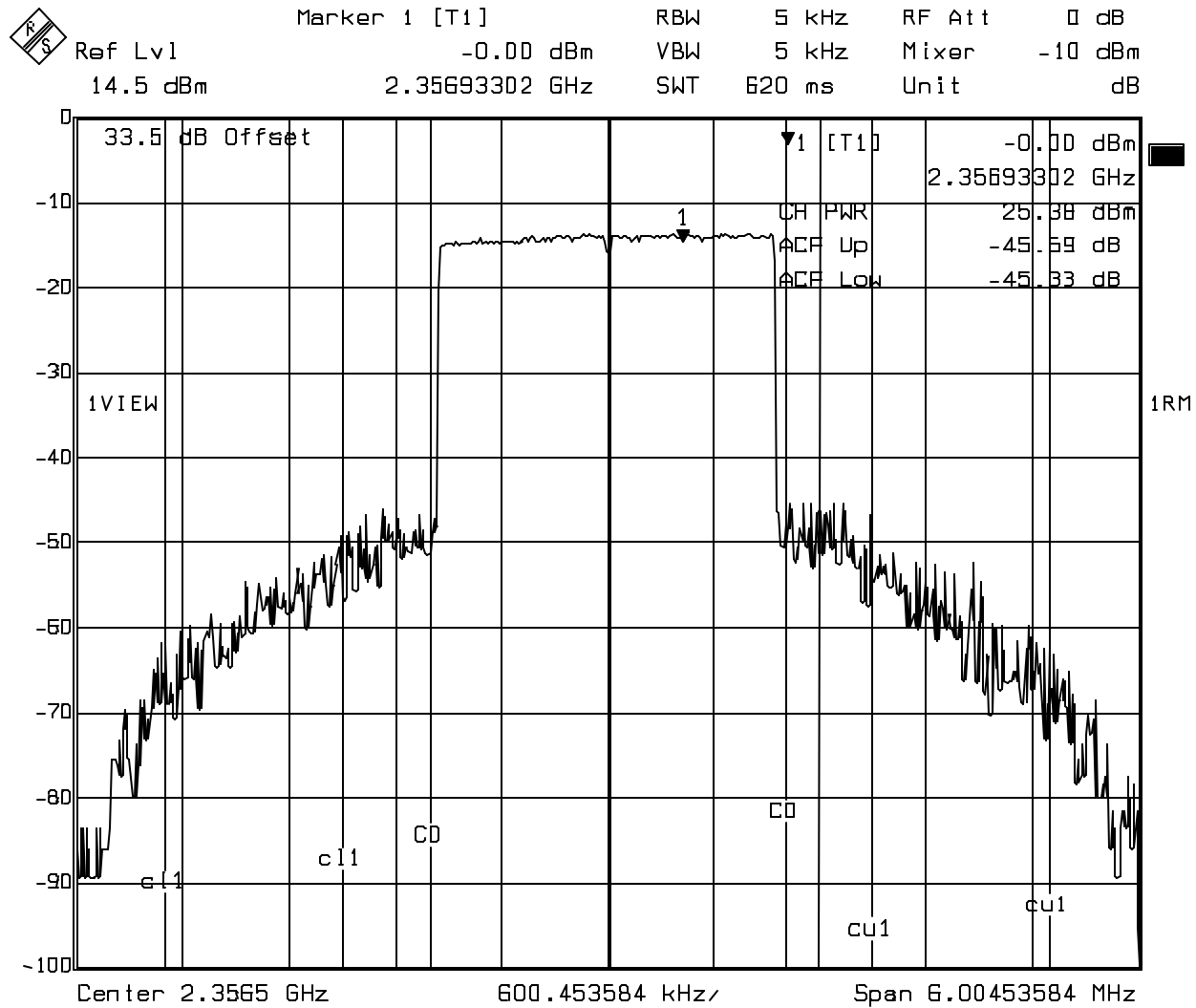
Title: 20C
Date: 11.NOV.2002 15:27:04

EQUIPMENT: 2.3 GHz CPE



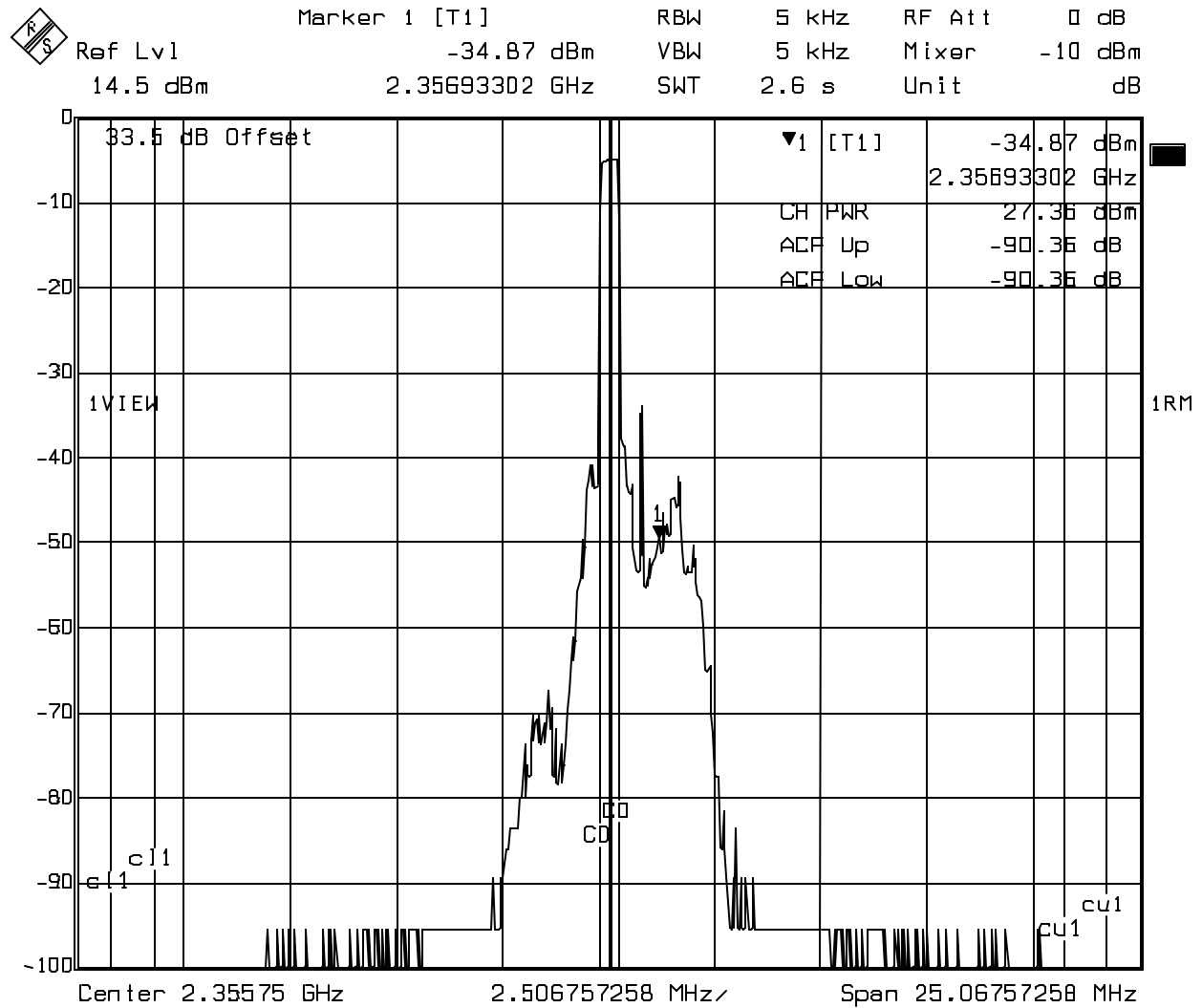
Title: 20C
Date: 11.NOV.2002 15:18:16

EQUIPMENT: 2.3 GHz CPE



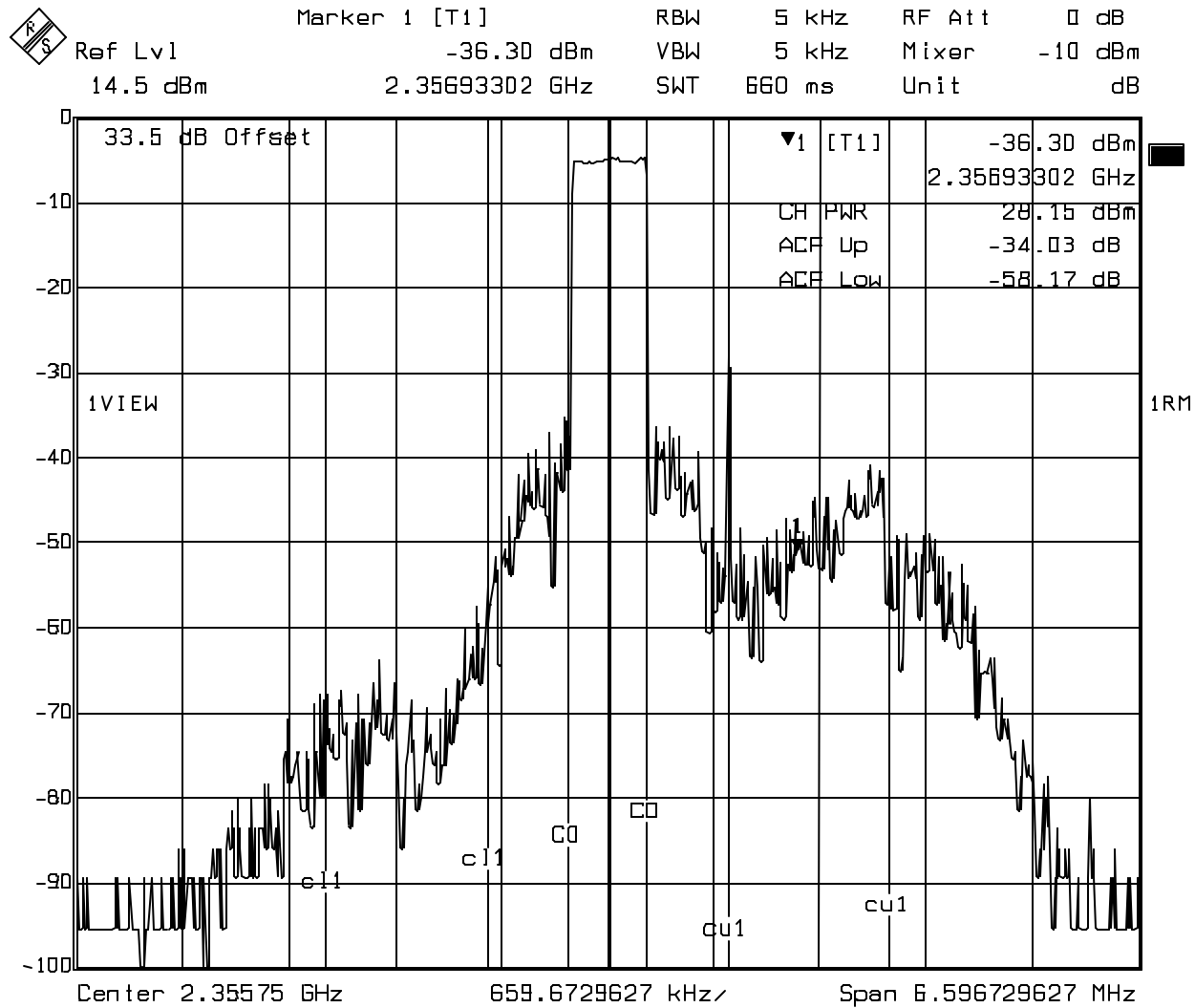
Title: 20C
Date: 11.NOV.2002 15:16:29

EQUIPMENT: 2.3 GHz CPE



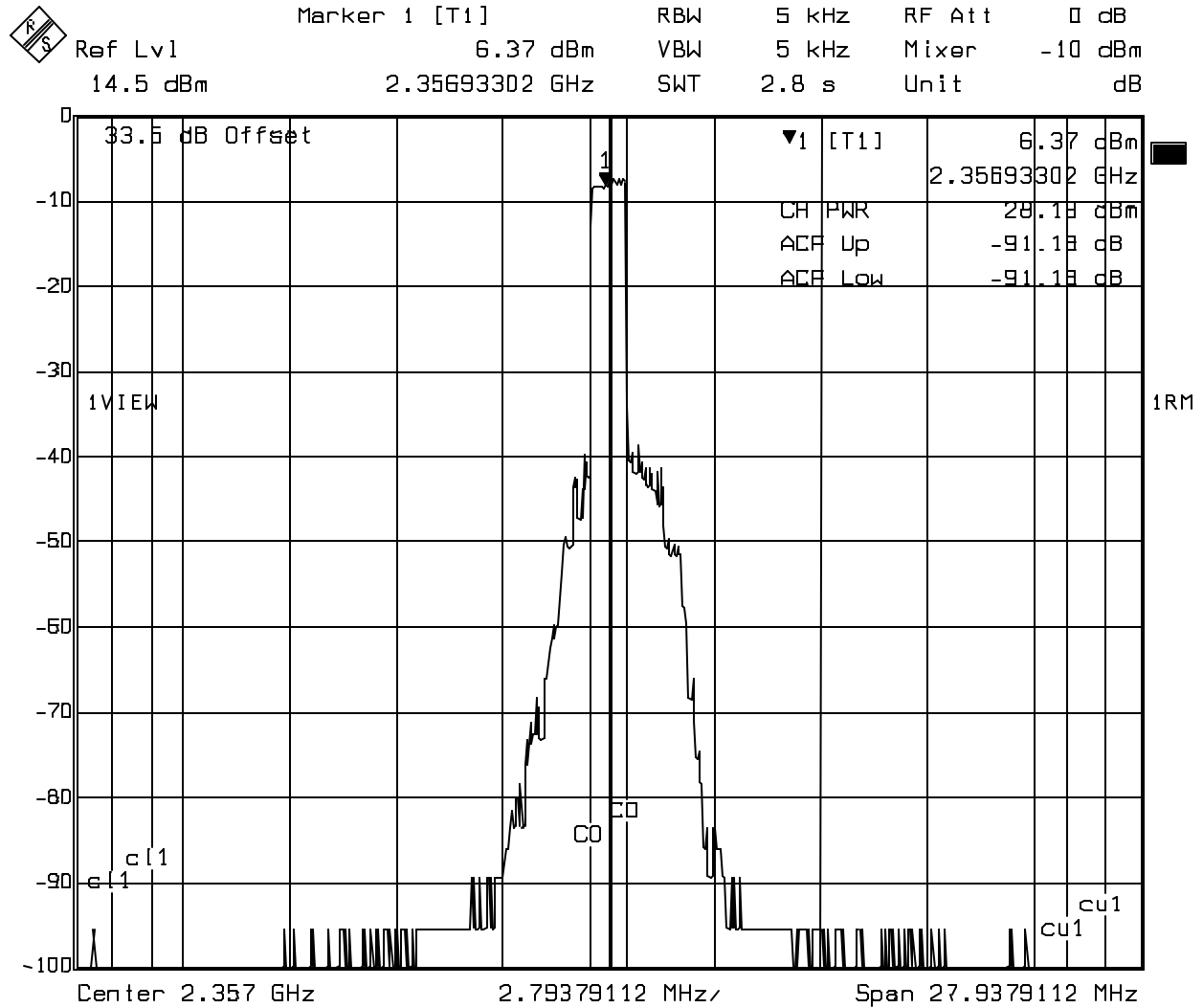
Title: 20C
Date: 11.NOV.2002 15:52:44

EQUIPMENT: 2.3 GHz CPE



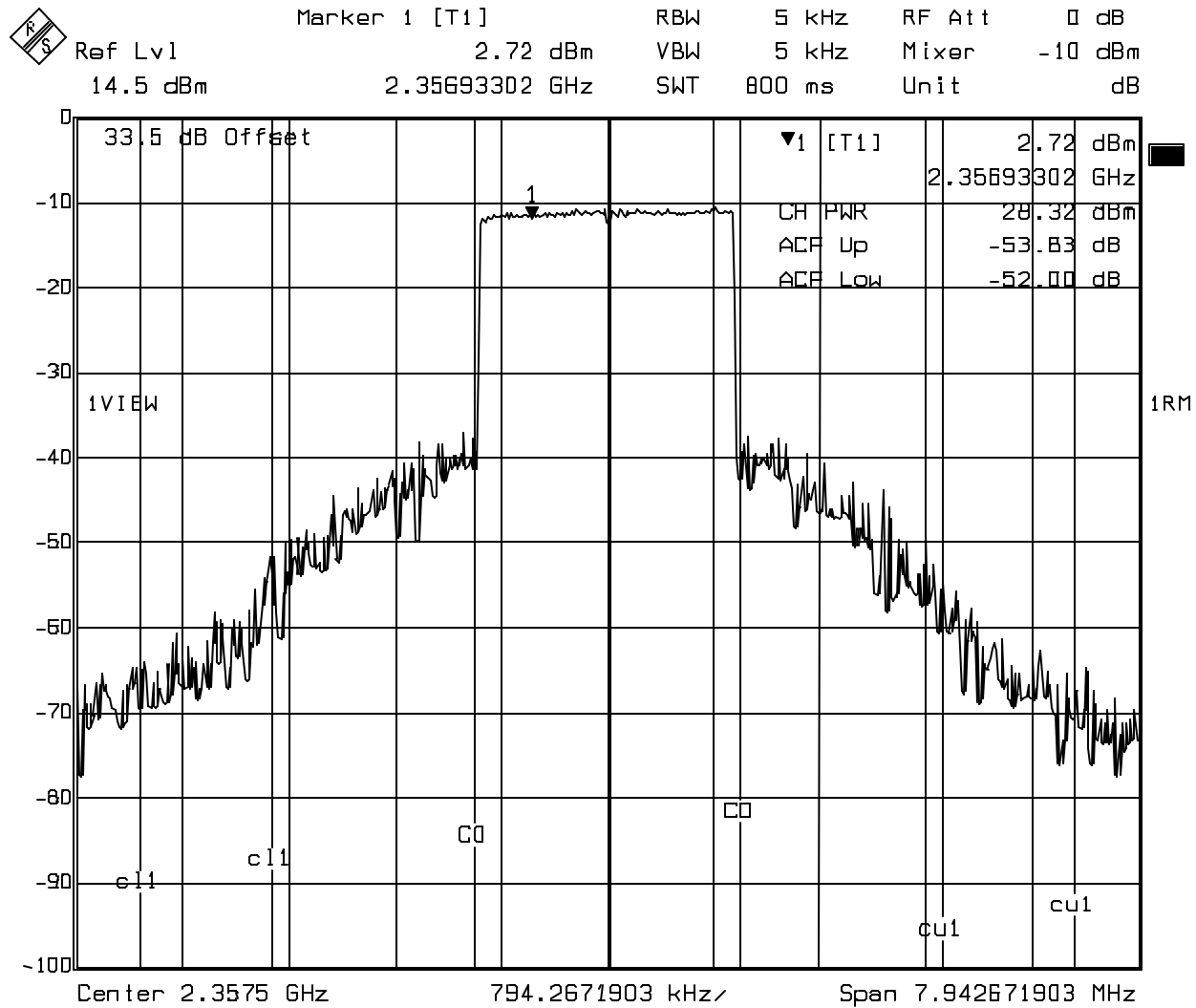
Title: 20C
Date: 11.NOV.2002 15:50:59

EQUIPMENT: 2.3 GHz CPE



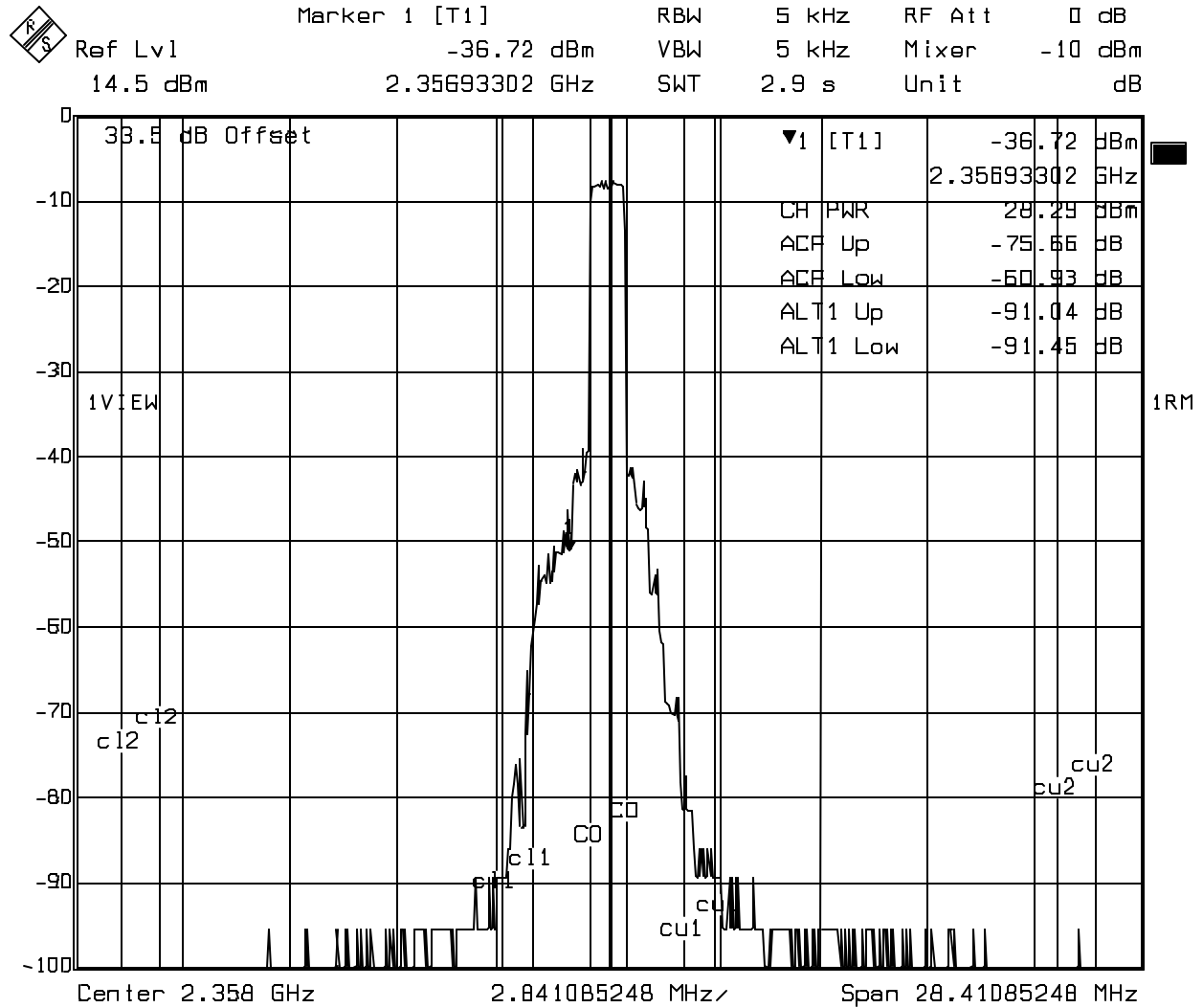
Title: 20C
Date: 11.NOV.2002 15:44:42

EQUIPMENT: 2.3 GHz CPE



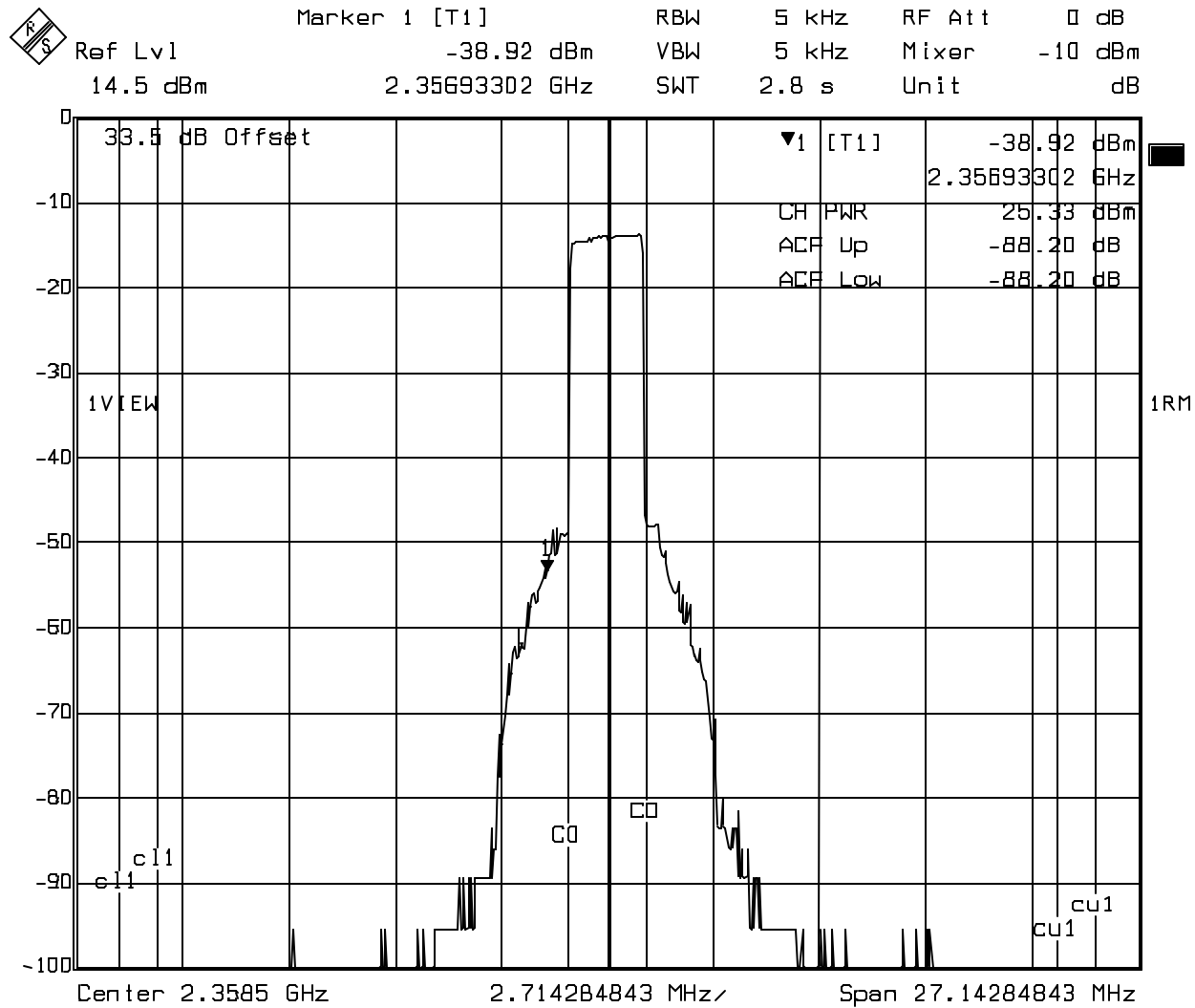
Title: 20C
Date: 11.NOV.2002 15:23:57

EQUIPMENT: 2.3 GHz CPE



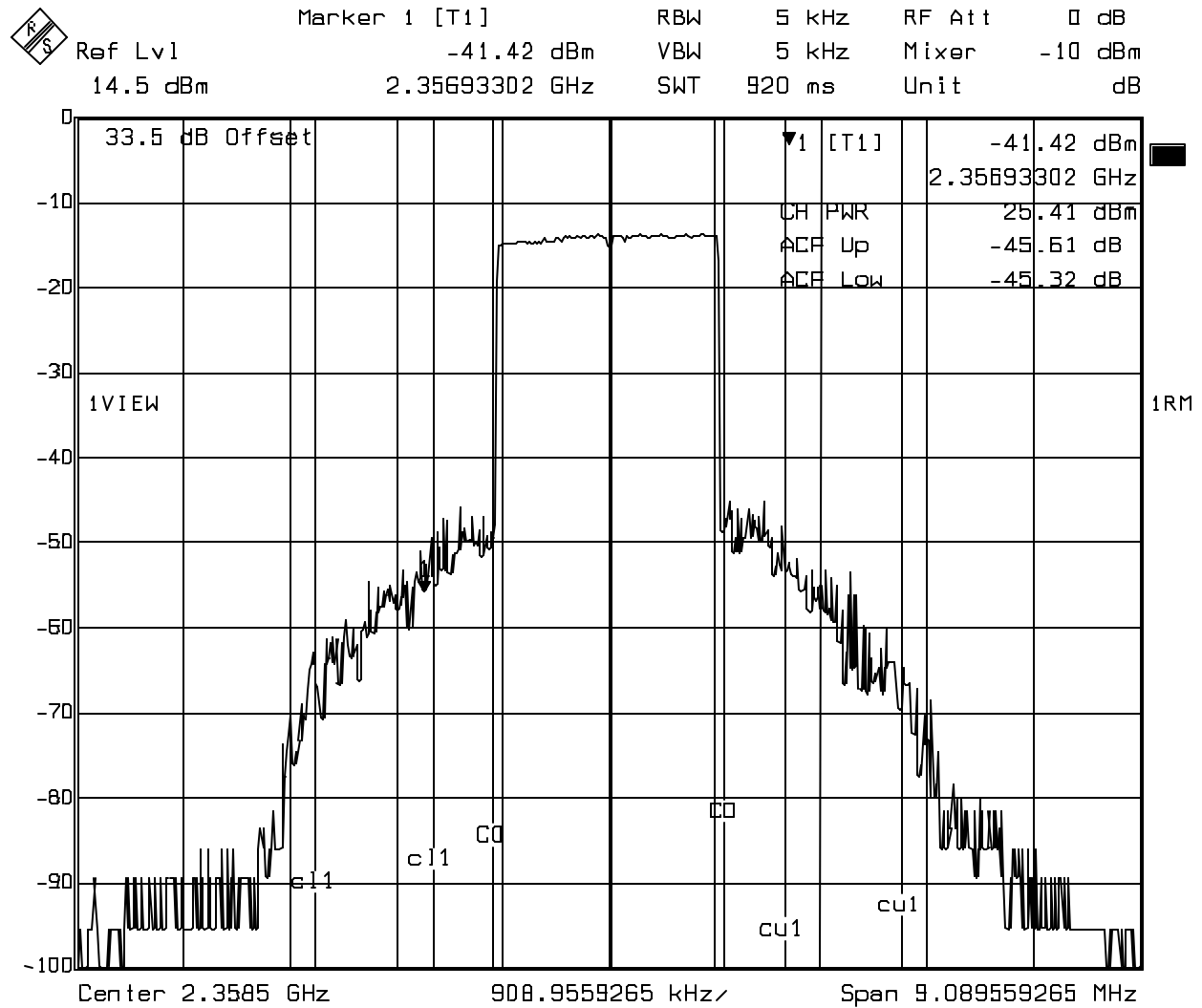
Title: 20C
Date: 11.NOV.2002 15:41:43

EQUIPMENT: 2.3 GHz CPE



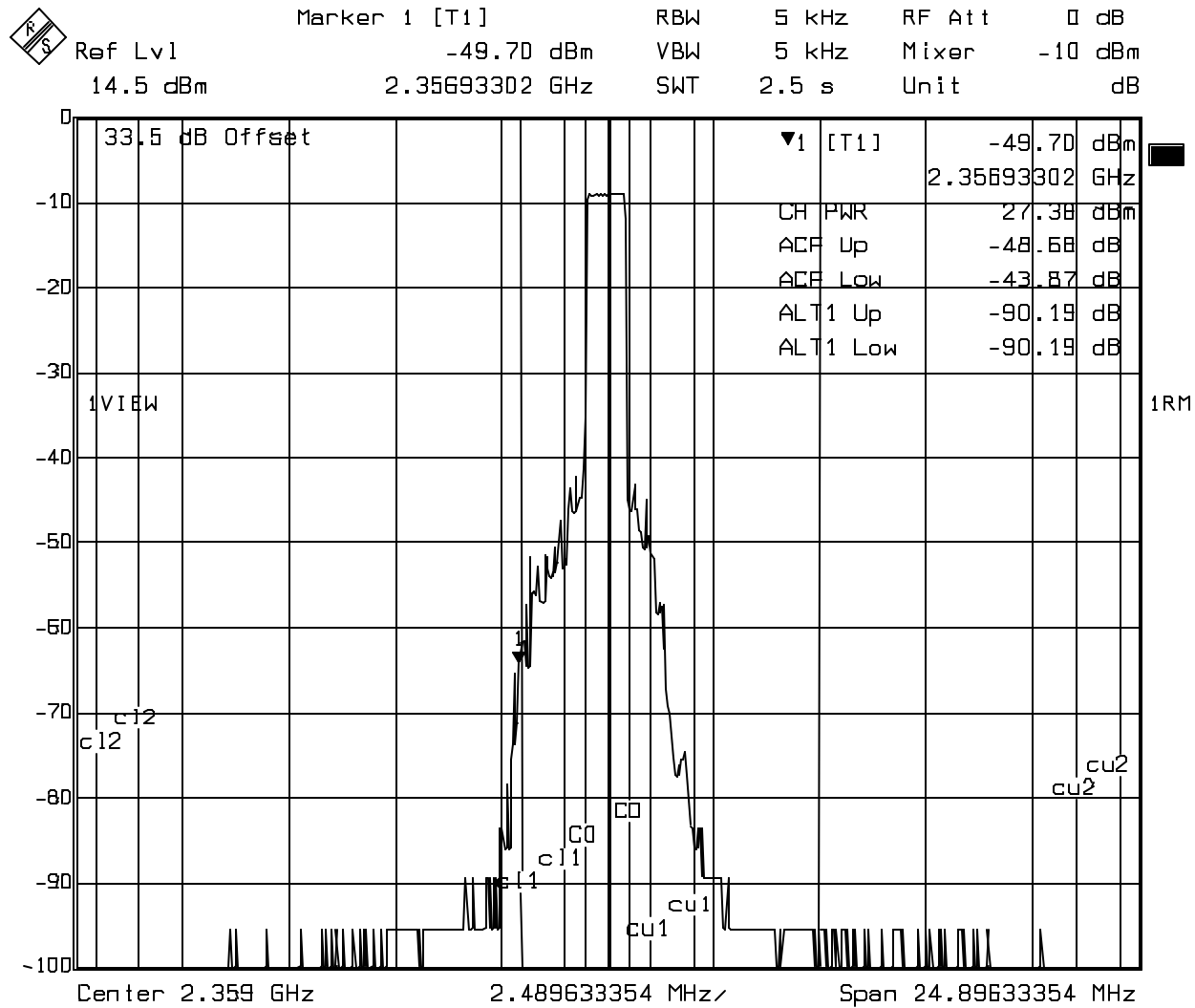
Title: 20C
Date: 11.NOV.2002 15:21:59

EQUIPMENT: 2.3 GHz CPE



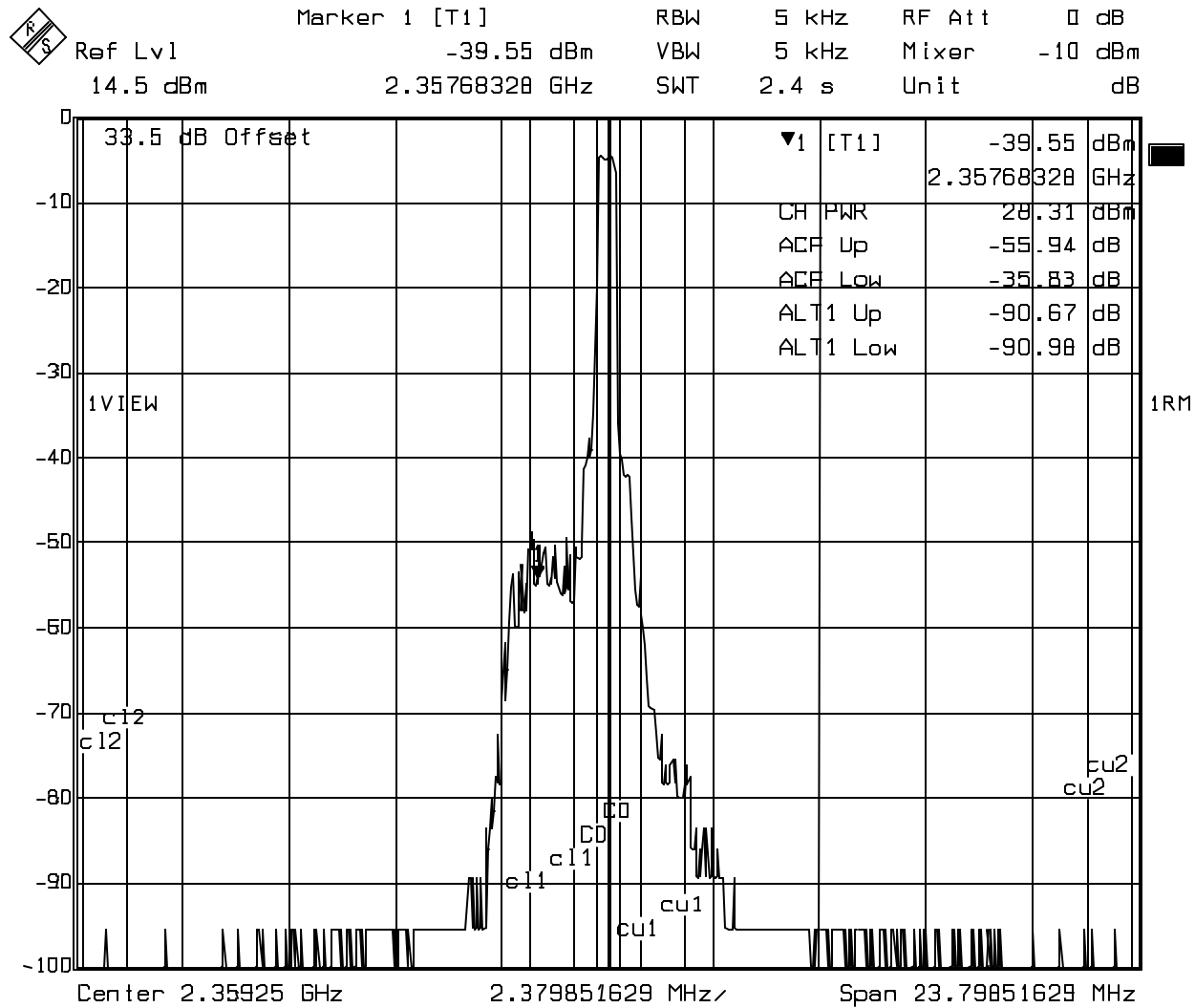
Title: 20C
Date: 11.NOV.2002 15:20:49

EQUIPMENT: 2.3 GHz CPE



Title: 20C
Date: 11.NOV.2002 15:40:02

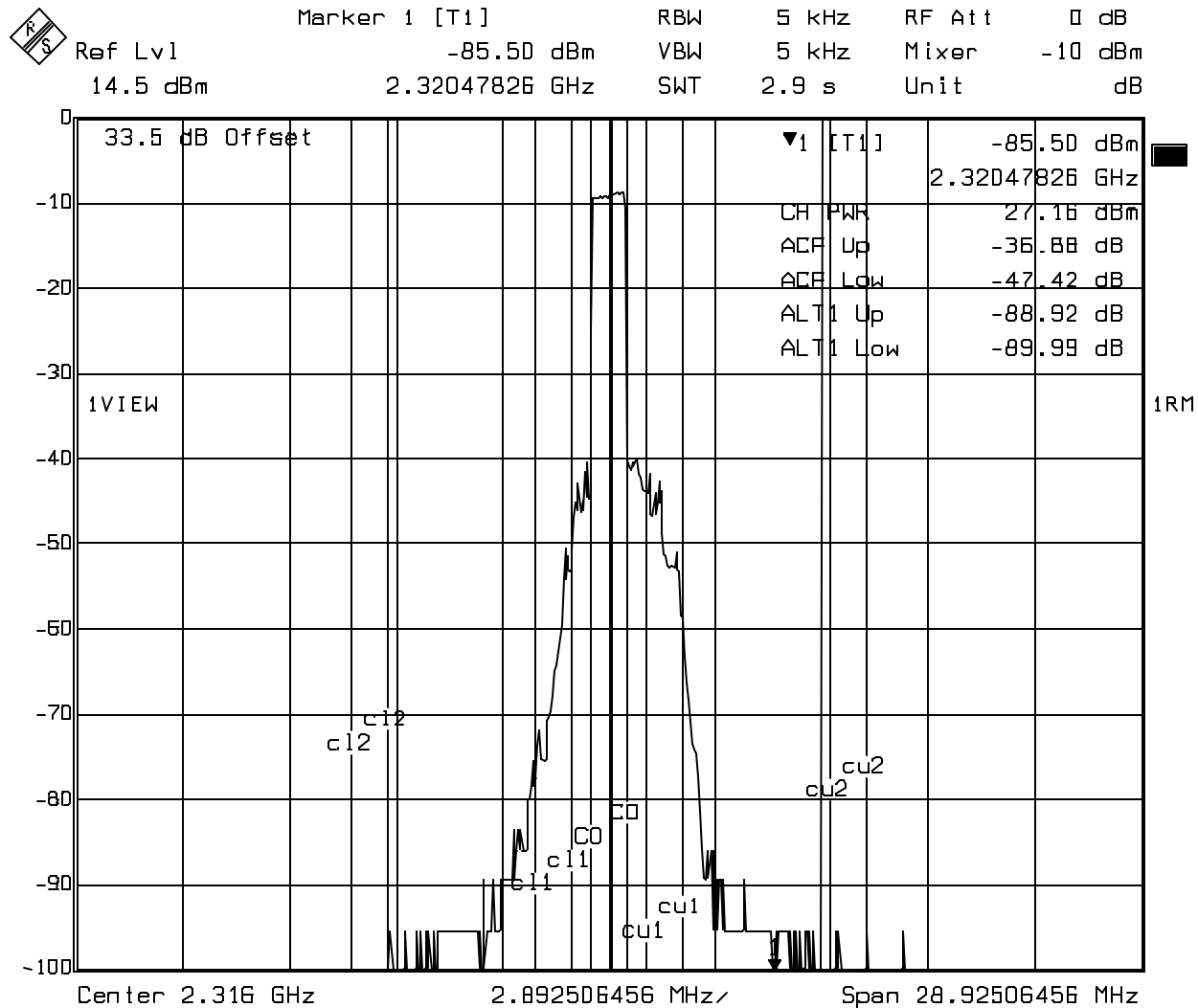
EQUIPMENT: 2.3 GHz CPE



Title: 20C
Date: 11.NOV.2002 15:54:51

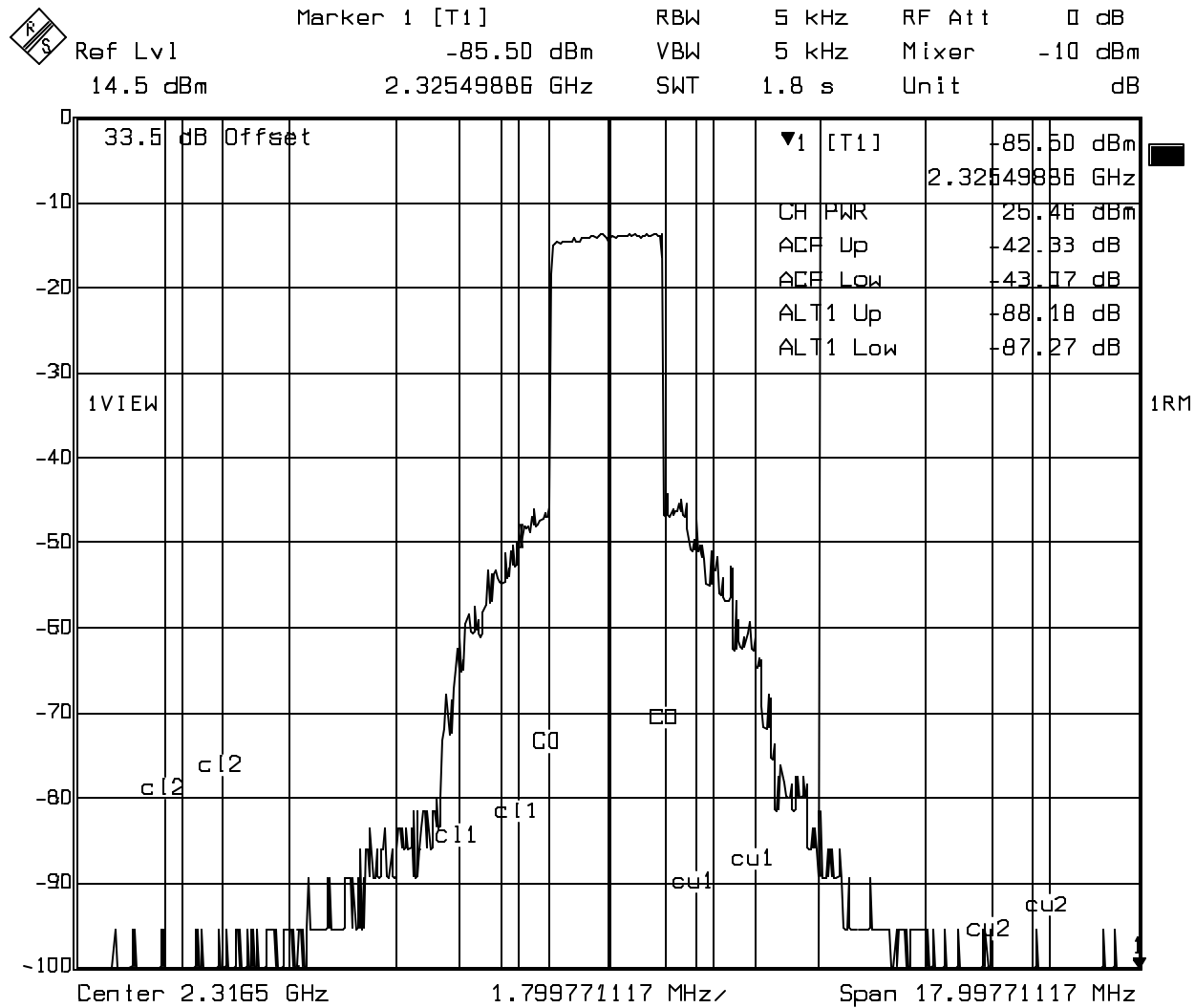
EQUIPMENT: 2.3 GHz CPE

Measurement Data – Block C (2315 – 2320 MHz)



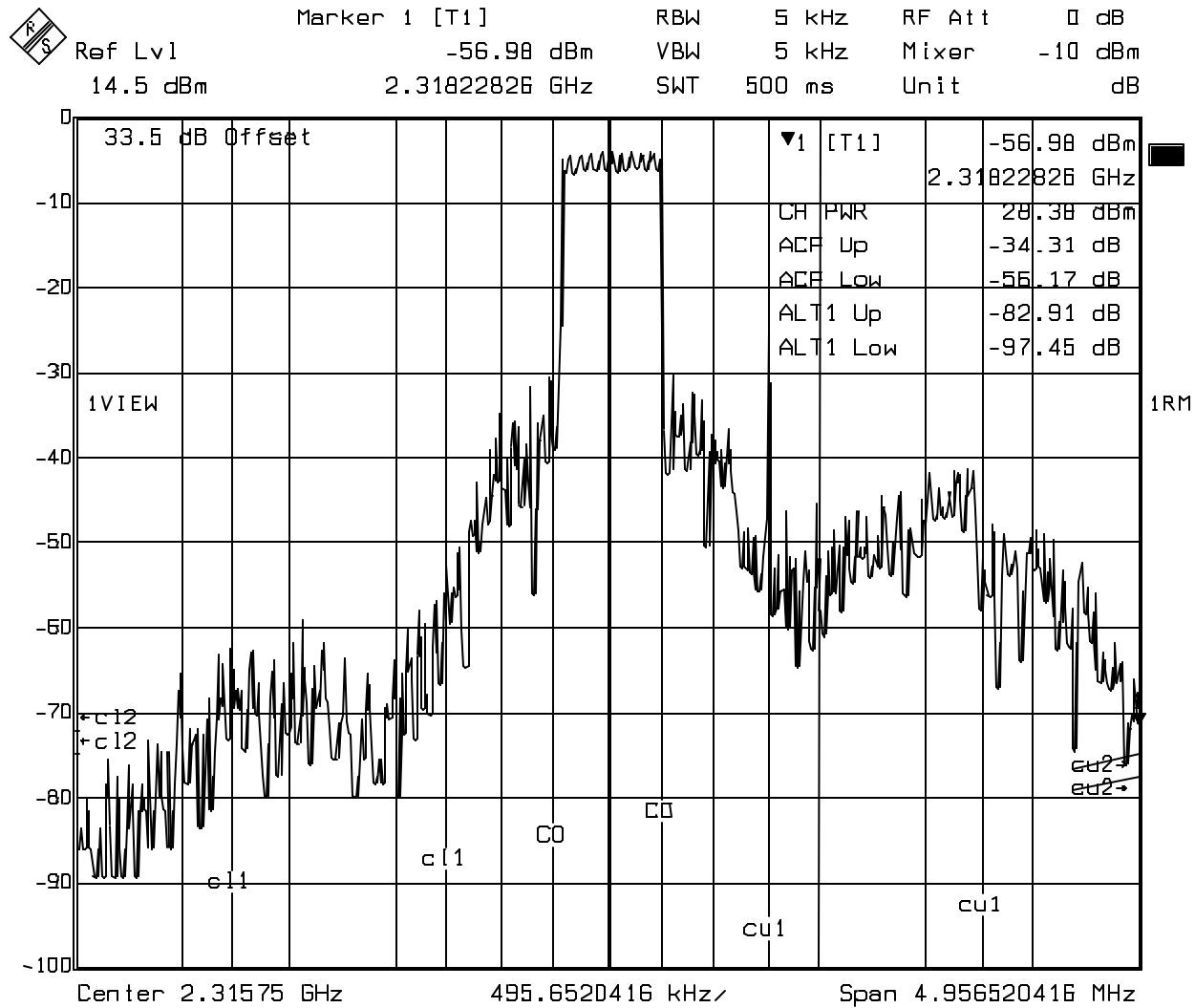
Title: 2DC
Date: 11.NOV.2002 16:18:32

EQUIPMENT: 2.3 GHz CPE



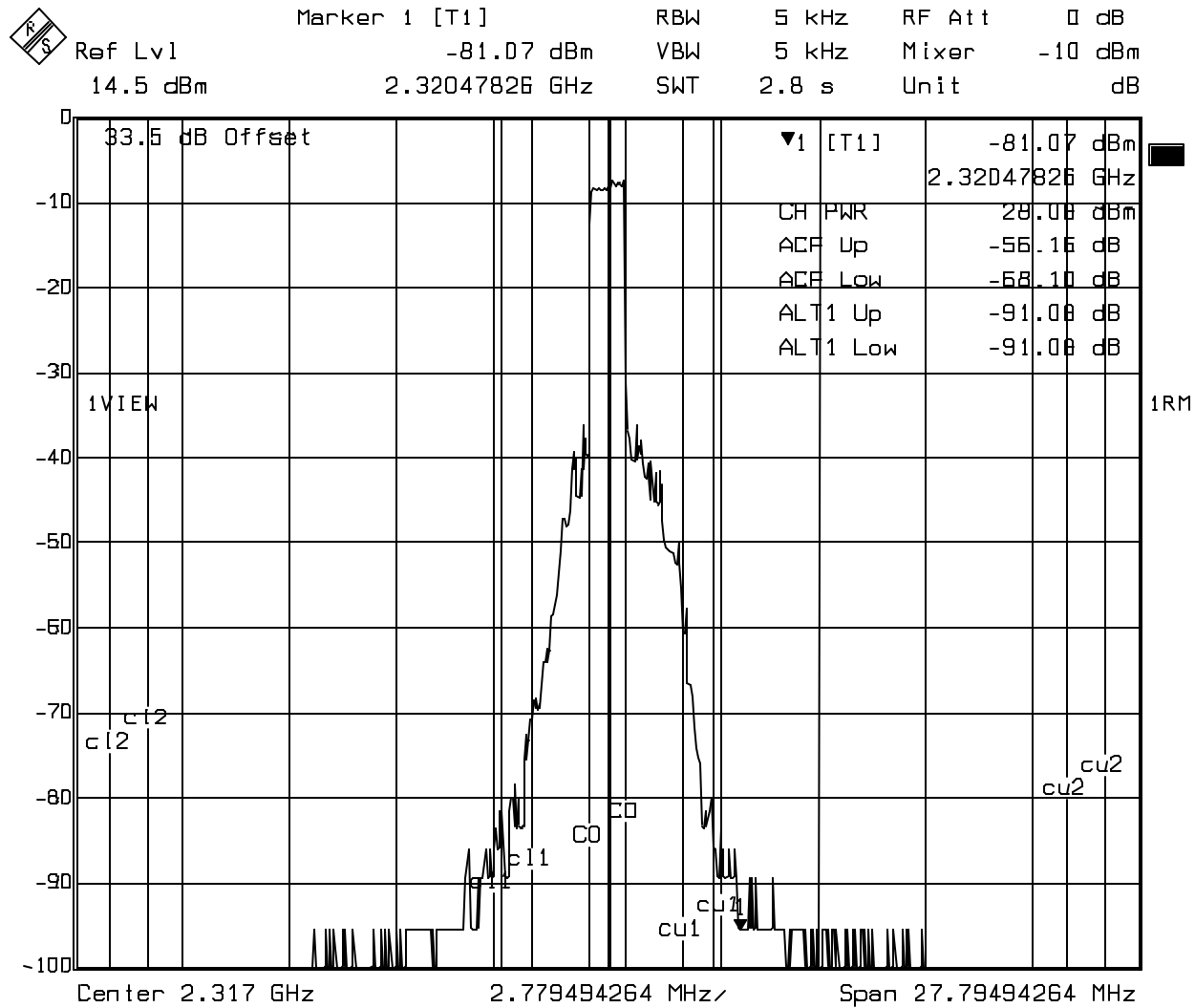
Title: 20C
Date: 11.NOV.2002 16:24:50

EQUIPMENT: 2.3 GHz CPE



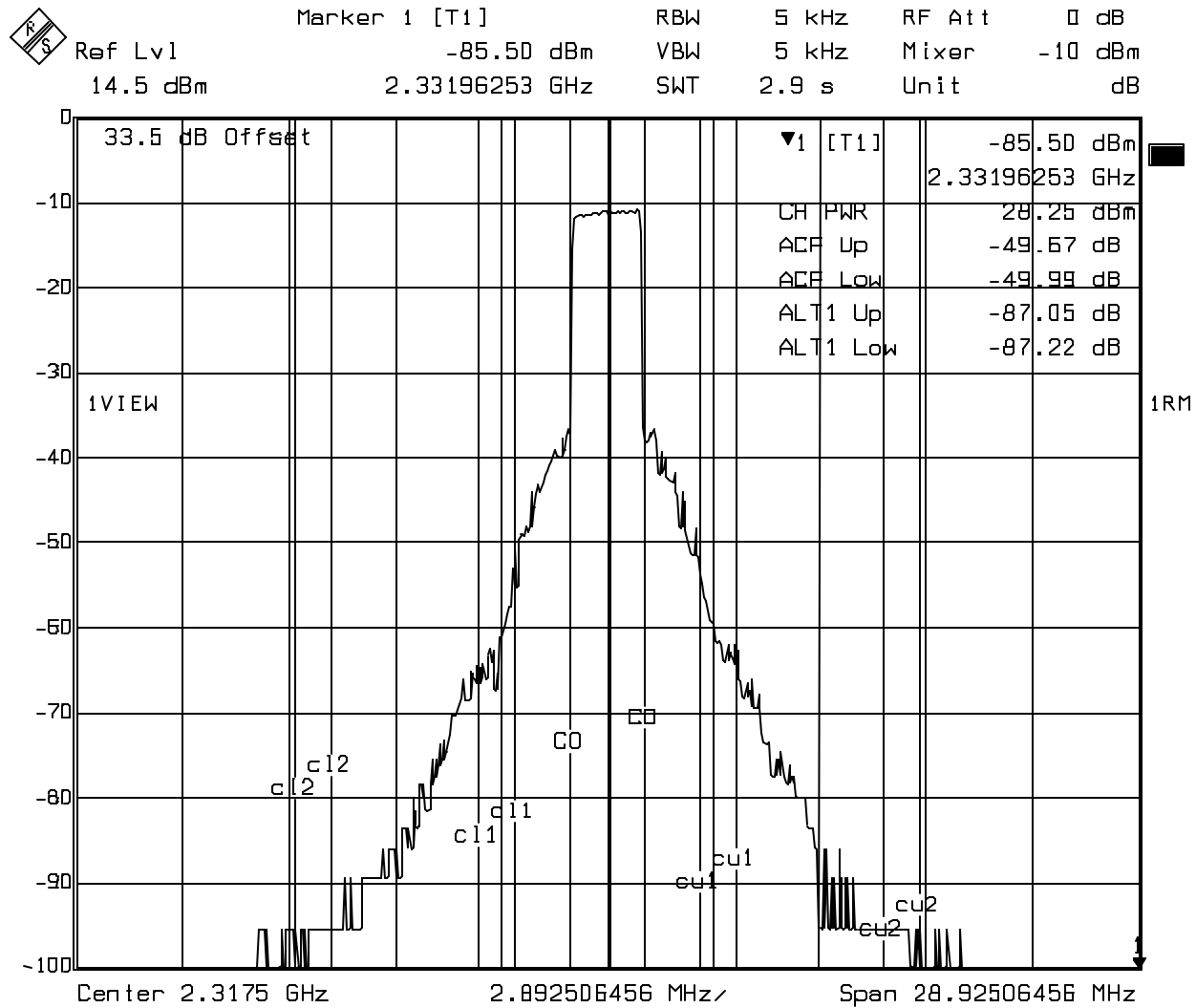
Title: 20C
Date: 11.NOV.2002 16:04:54

EQUIPMENT: 2.3 GHz CPE



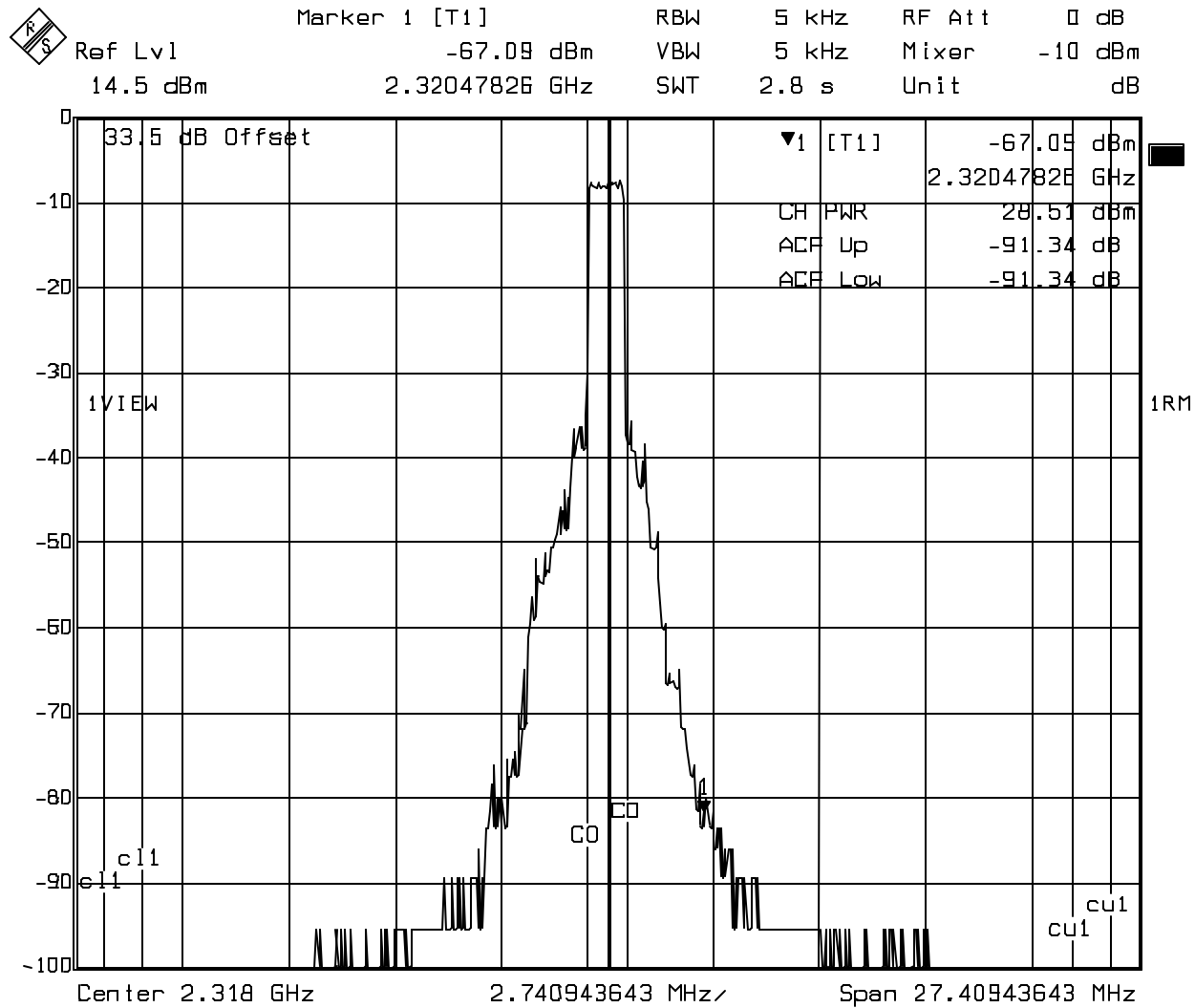
Title: 20C
Date: 11.NOV.2002 16:11:06

EQUIPMENT: 2.3 GHz CPE



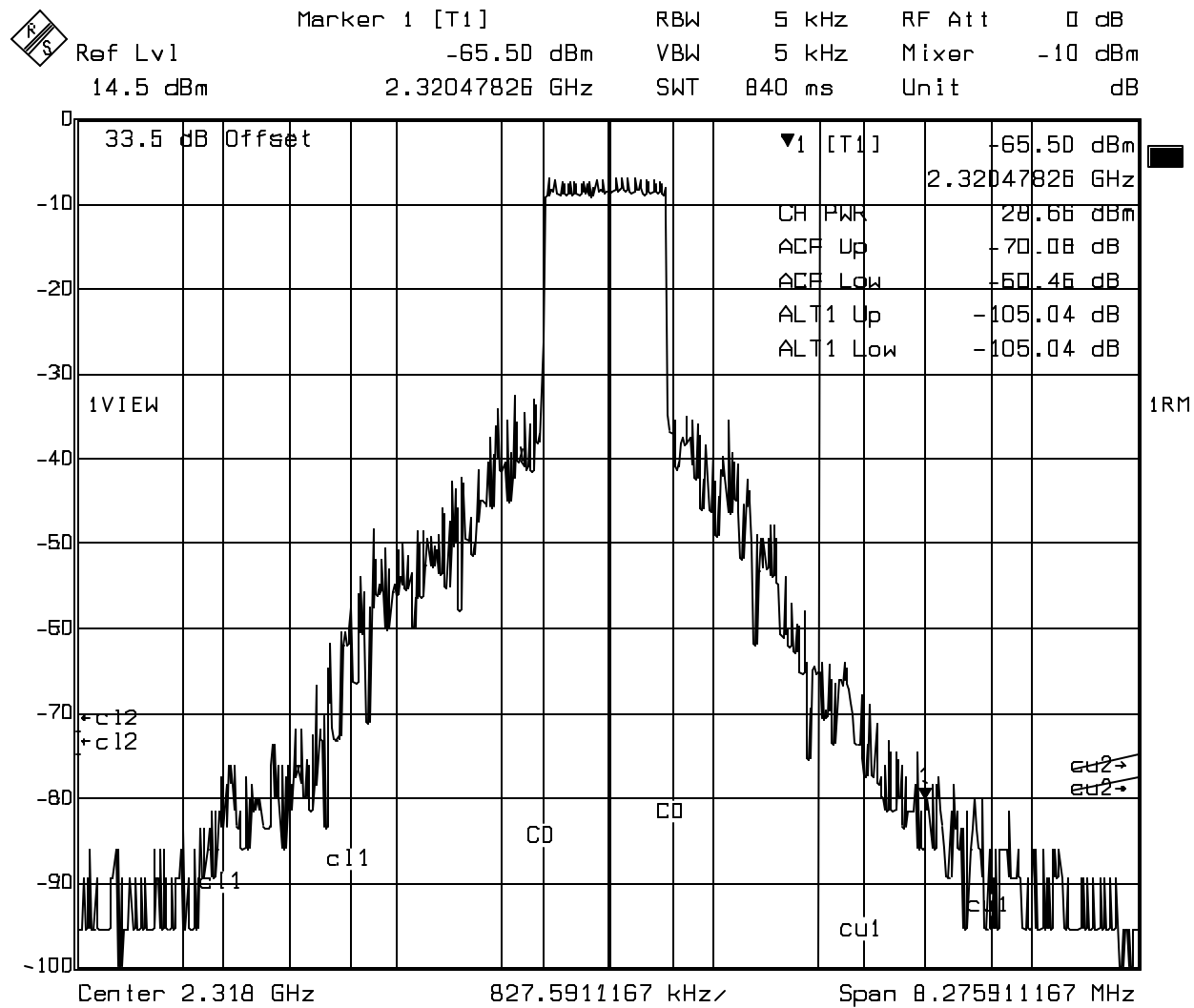
Title: 20C
Date: 11.NOV.2002 16:20:29

EQUIPMENT: 2.3 GHz CPE



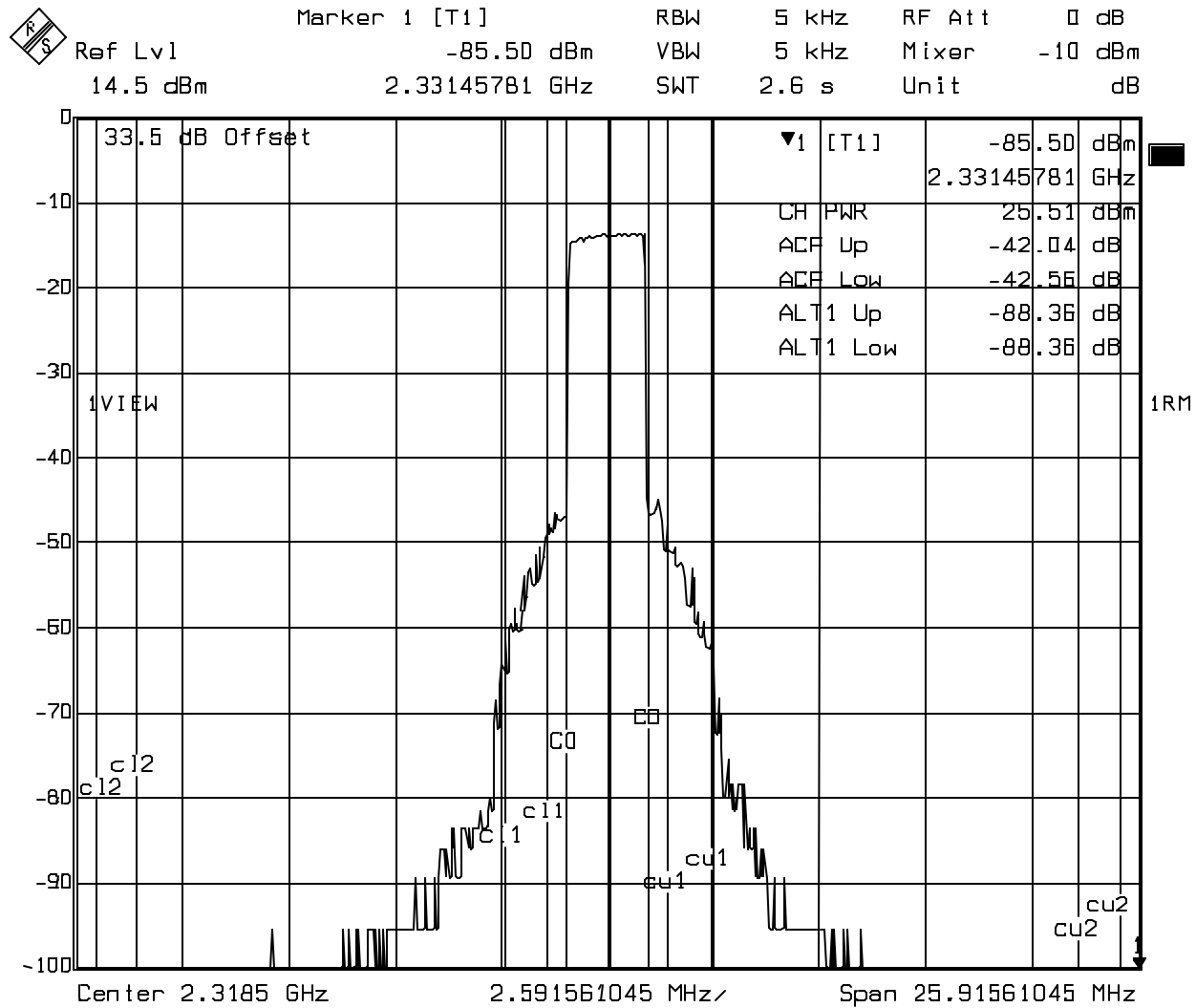
Title: 20C
Date: 11.NOV.2002 16:13:53

EQUIPMENT: 2.3 GHz CPE



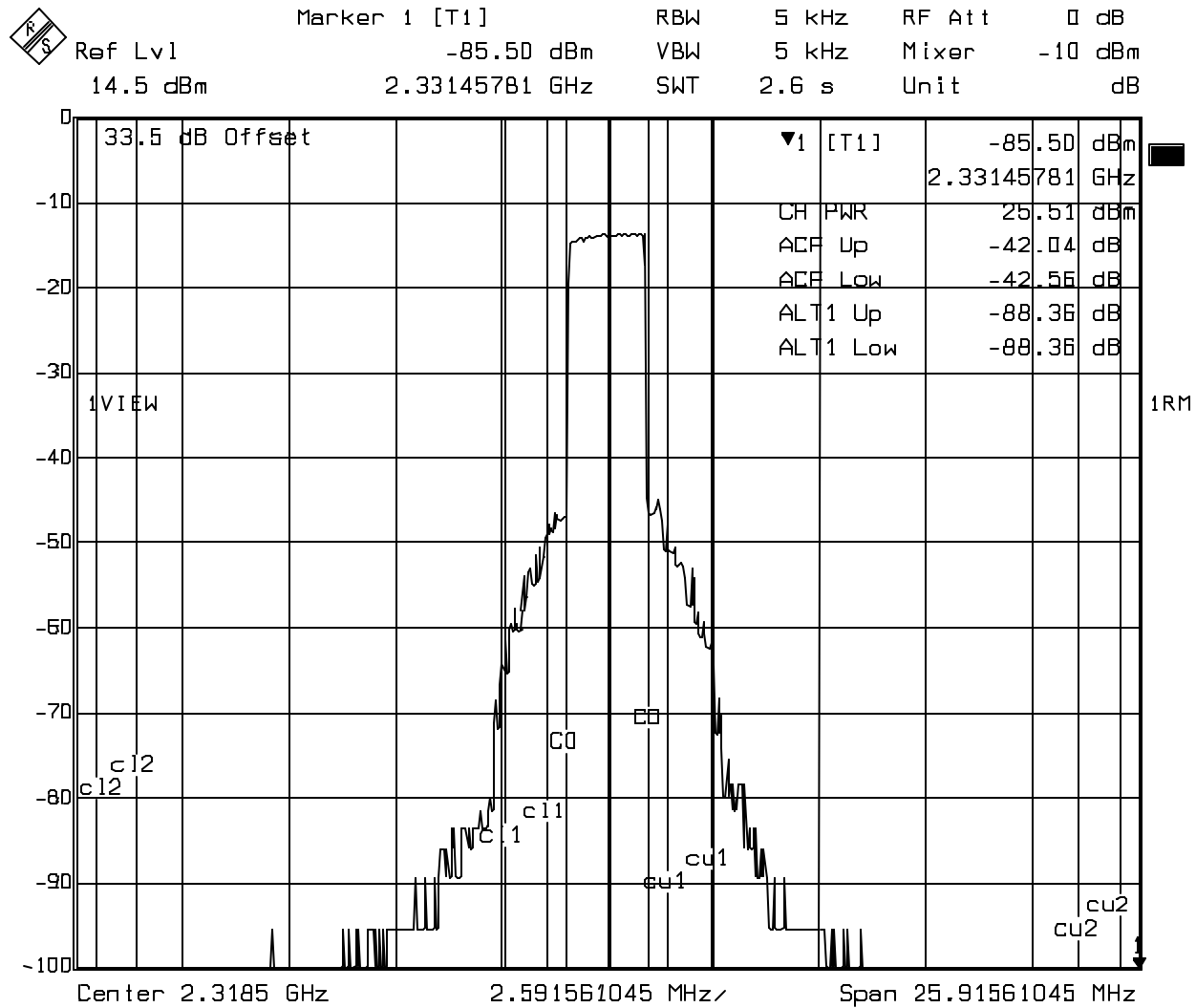
Title: 20C
Date: 11.NOV.2002 16:12:57

EQUIPMENT: 2.3 GHz CPE



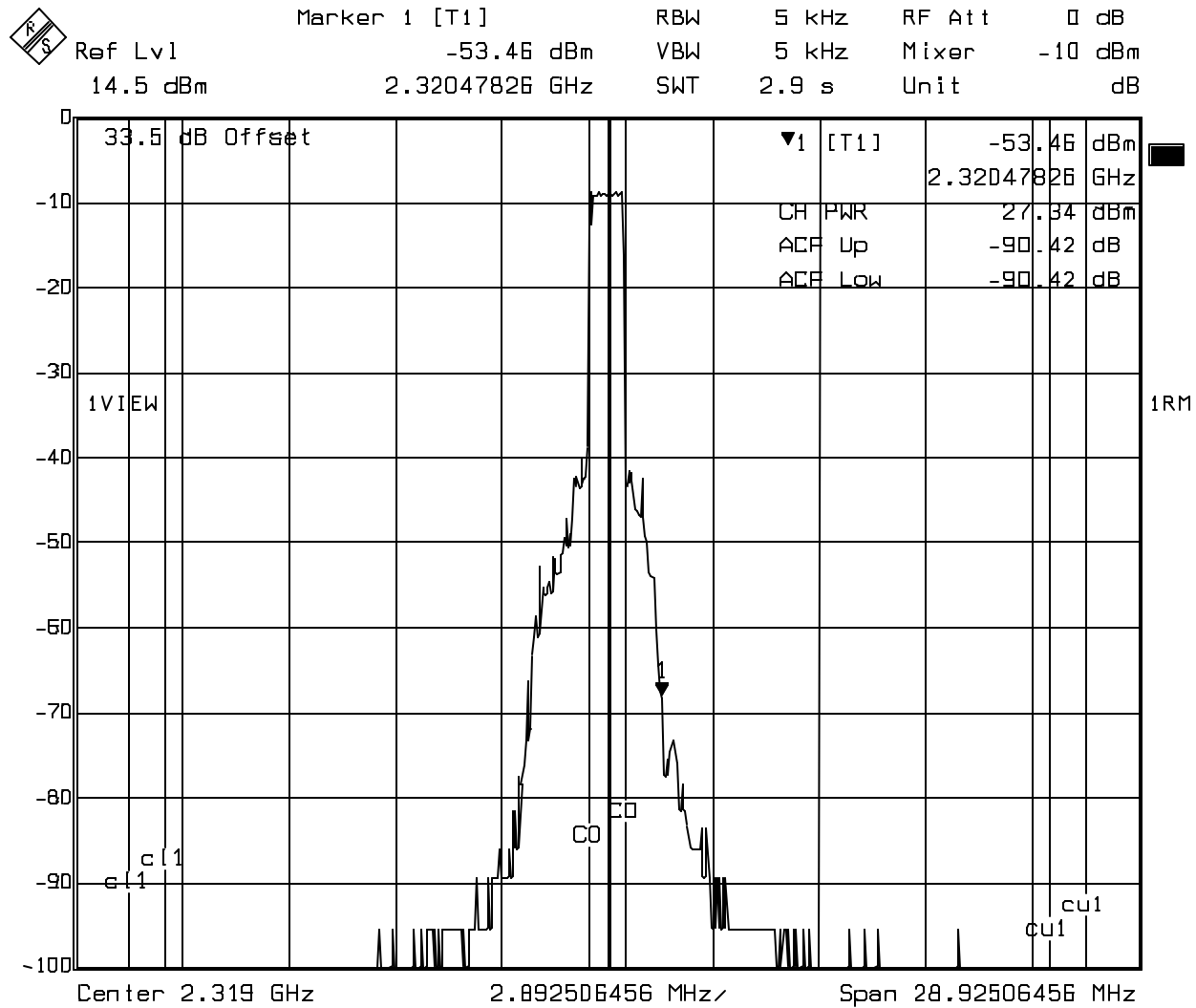
Title: 20C
Date: 11.NOV.2002 16:22:21

EQUIPMENT: 2.3 GHz CPE



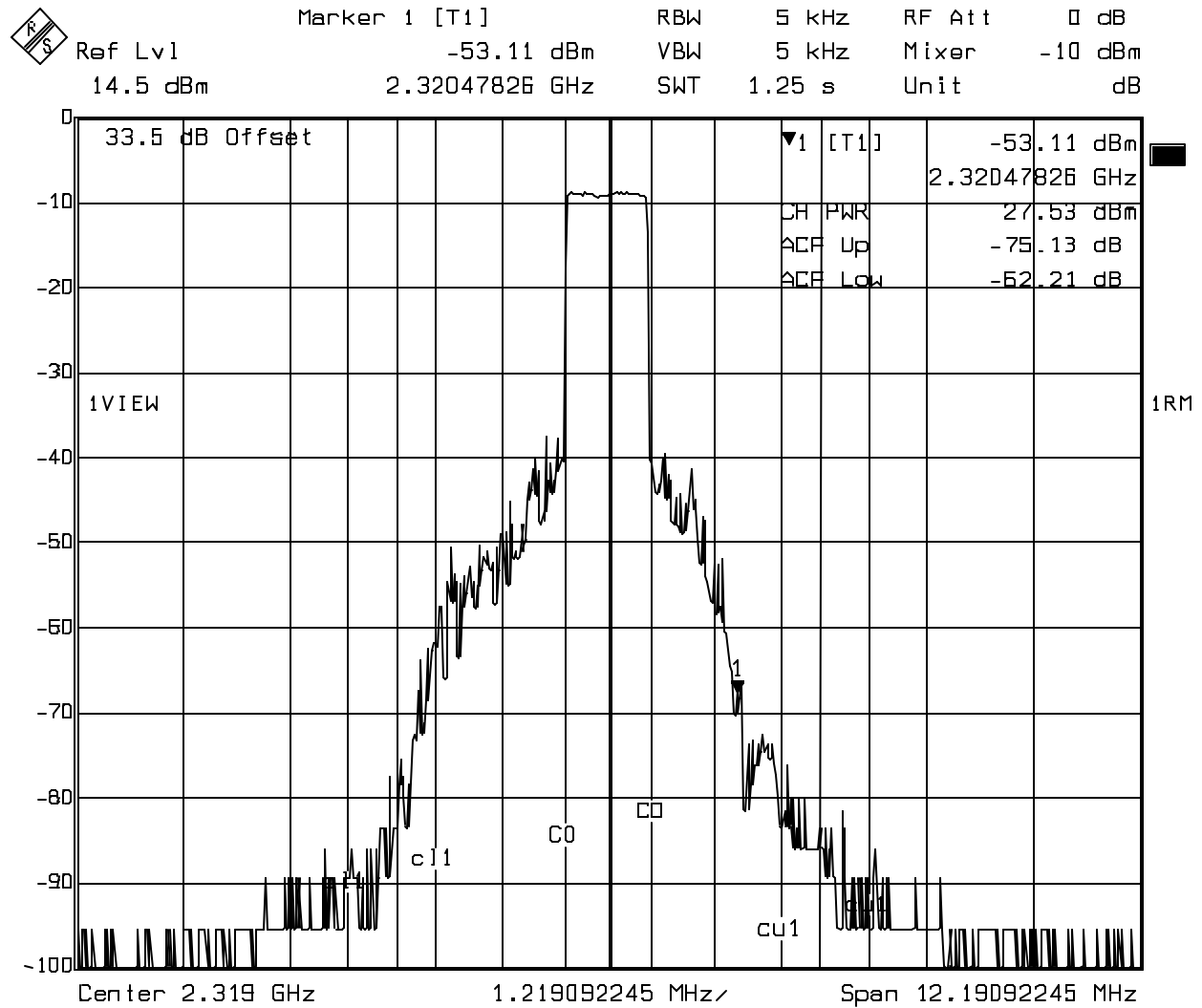
Title: 20C
Date: 11.NOV.2002 16:22:21

EQUIPMENT: 2.3 GHz CPE



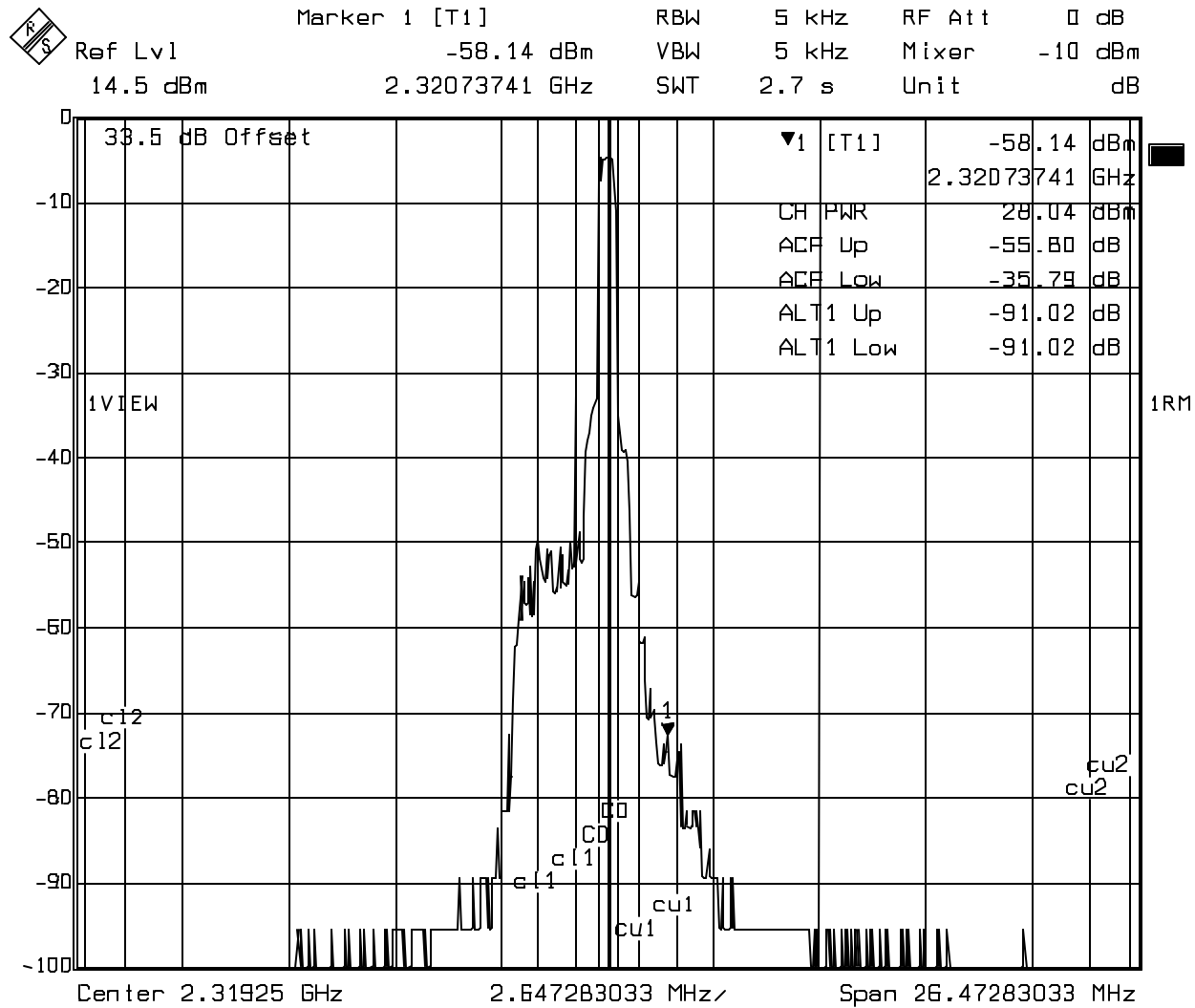
Title: 20C
Date: 11.NOV.2002 16:16:41

EQUIPMENT: 2.3 GHz CPE



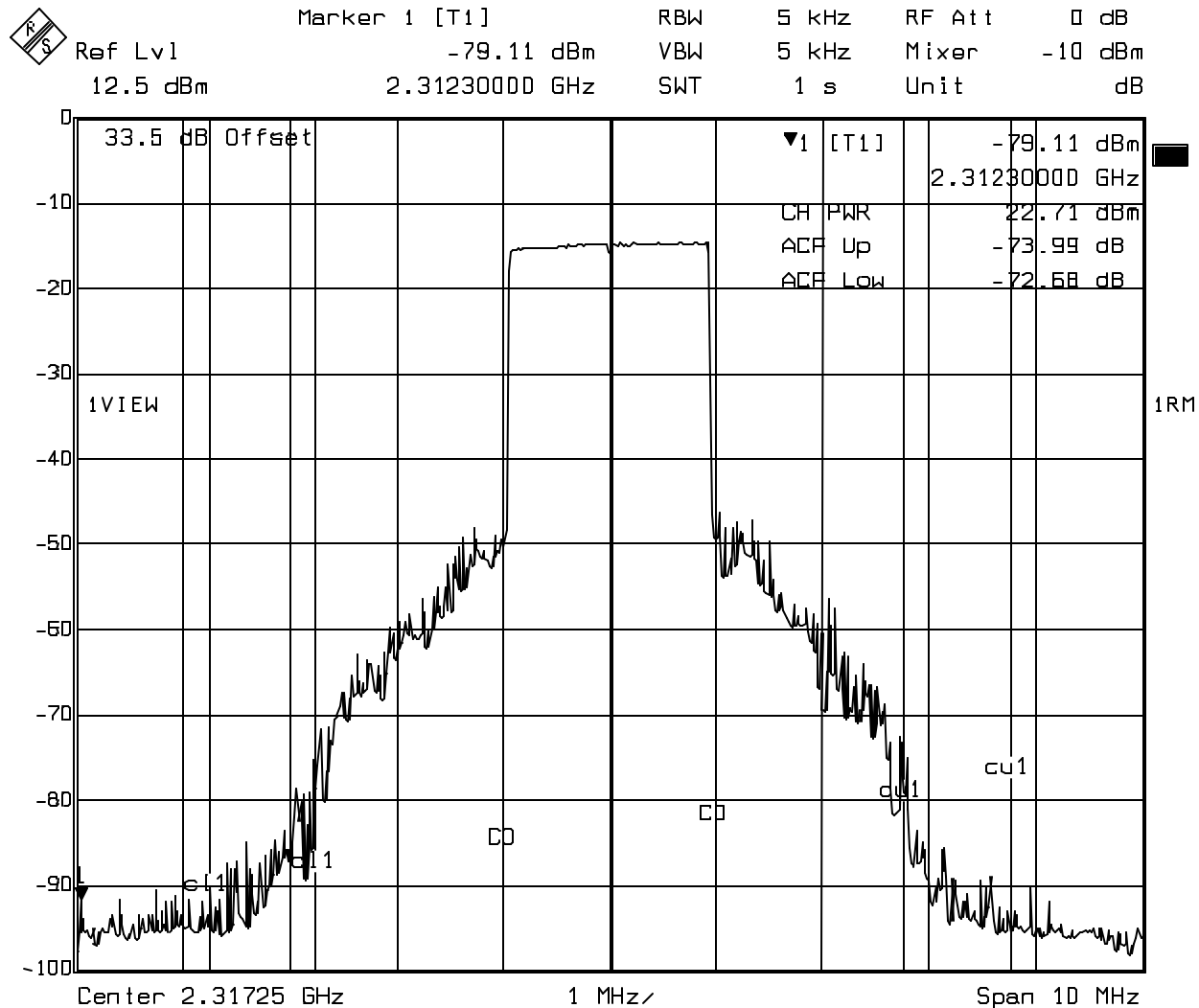
Title: 20C
Date: 11.NOV.2002 16:15:20

EQUIPMENT: 2.3 GHz CPE



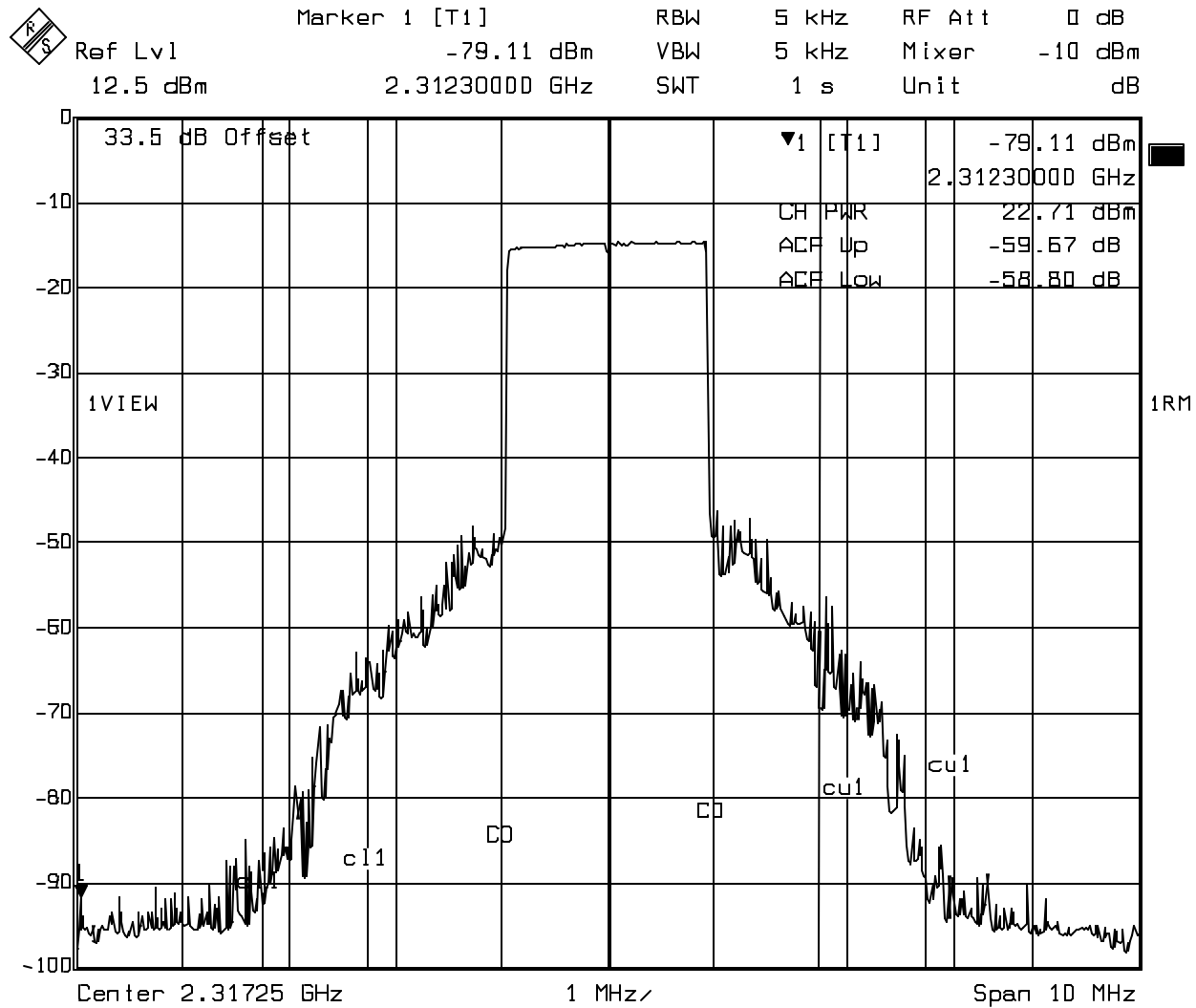
Title: 20C
Date: 11.NOV.2002 16:01:38

EQUIPMENT: 2.3 GHz CPE



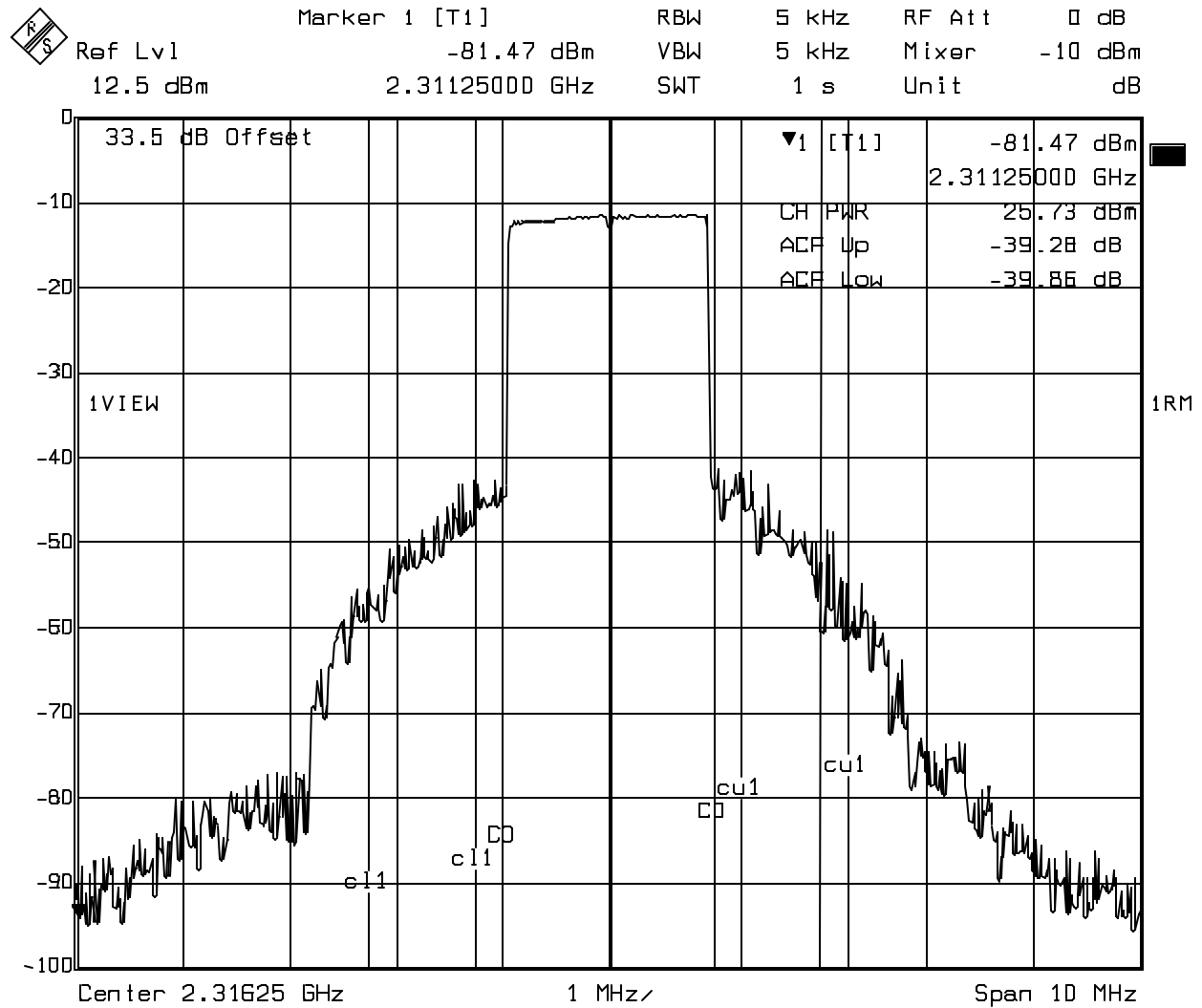
Title: 2DC
Date: 11.NOV.2002 11:44:45

EQUIPMENT: 2.3 GHz CPE



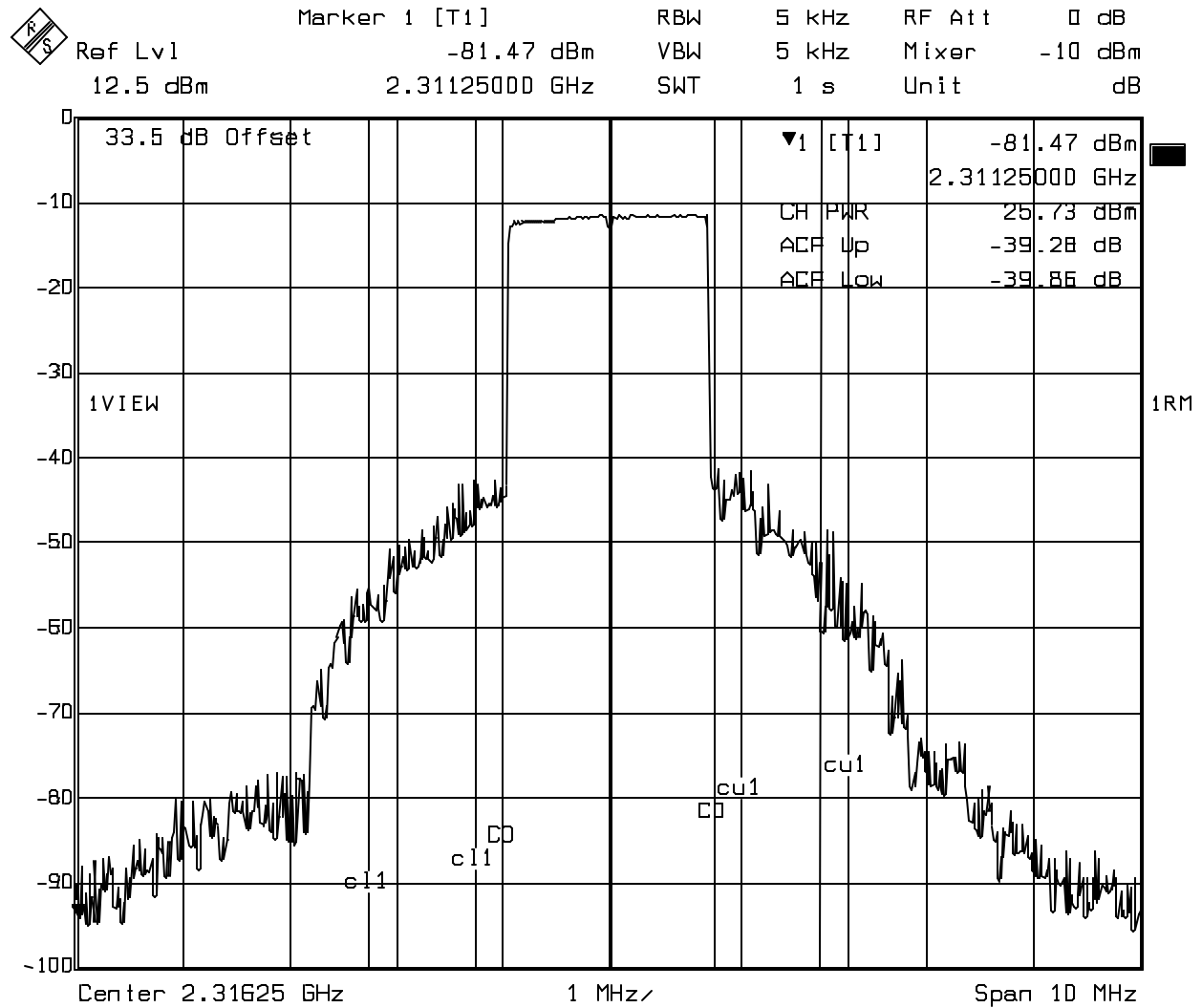
Title: 20C
Date: 11.NOV.2002 11:46:33

EQUIPMENT: 2.3 GHz CPE



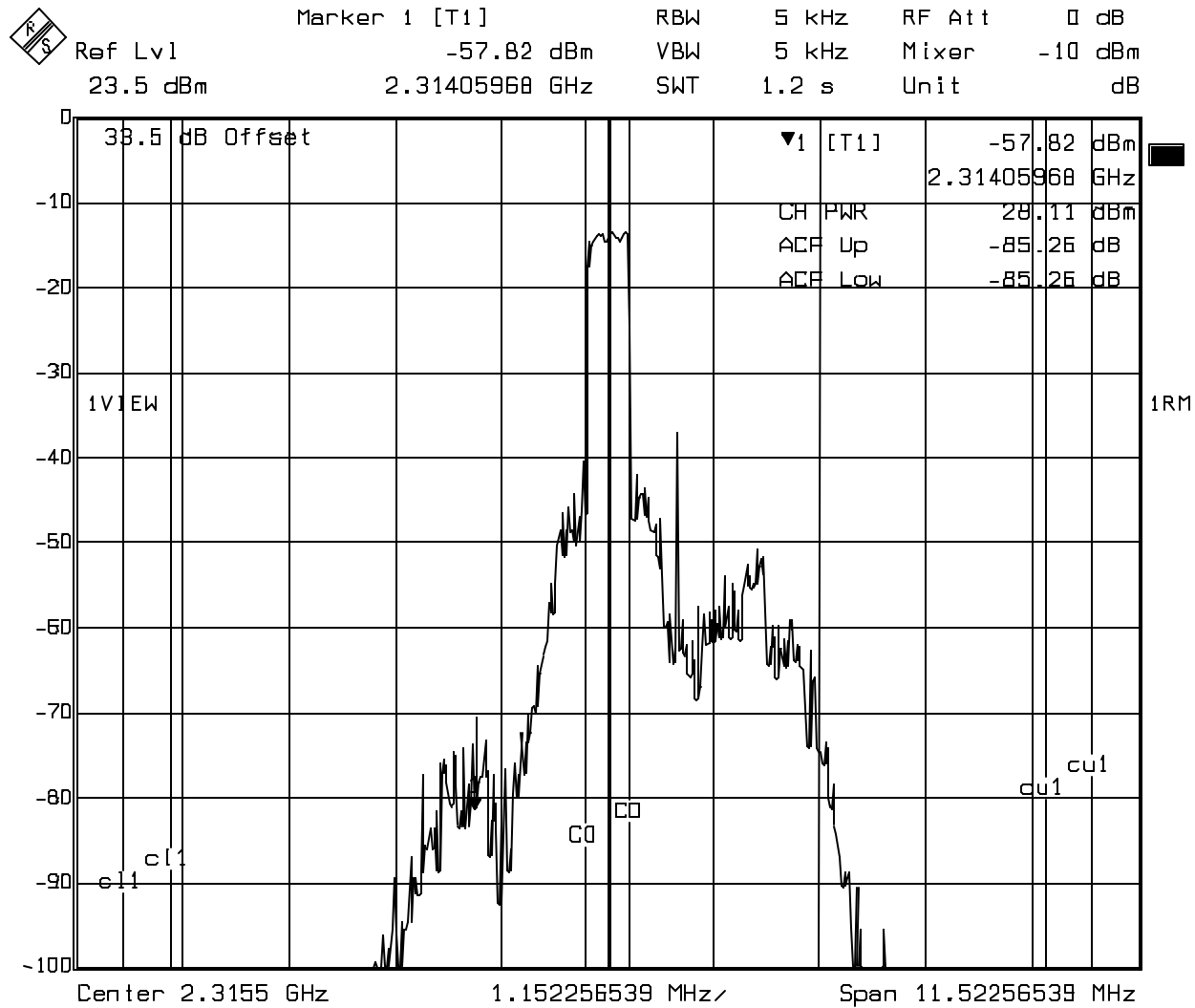
Title: 20C
Date: 11.NOV.2002 11:32:04

EQUIPMENT: 2.3 GHz CPE



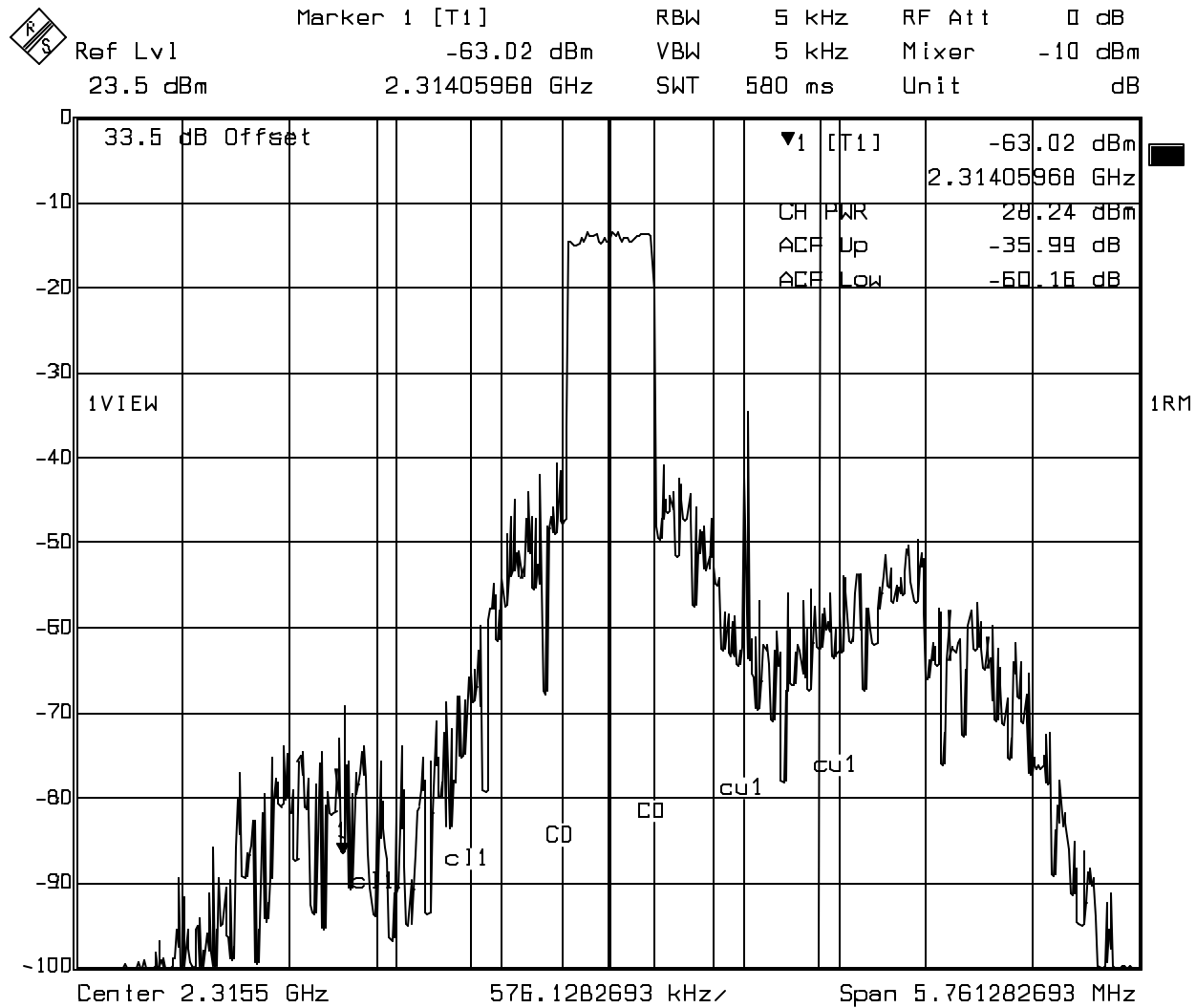
Title: 20C
Date: 11.NOV.2002 11:32:04

EQUIPMENT: 2.3 GHz CPE



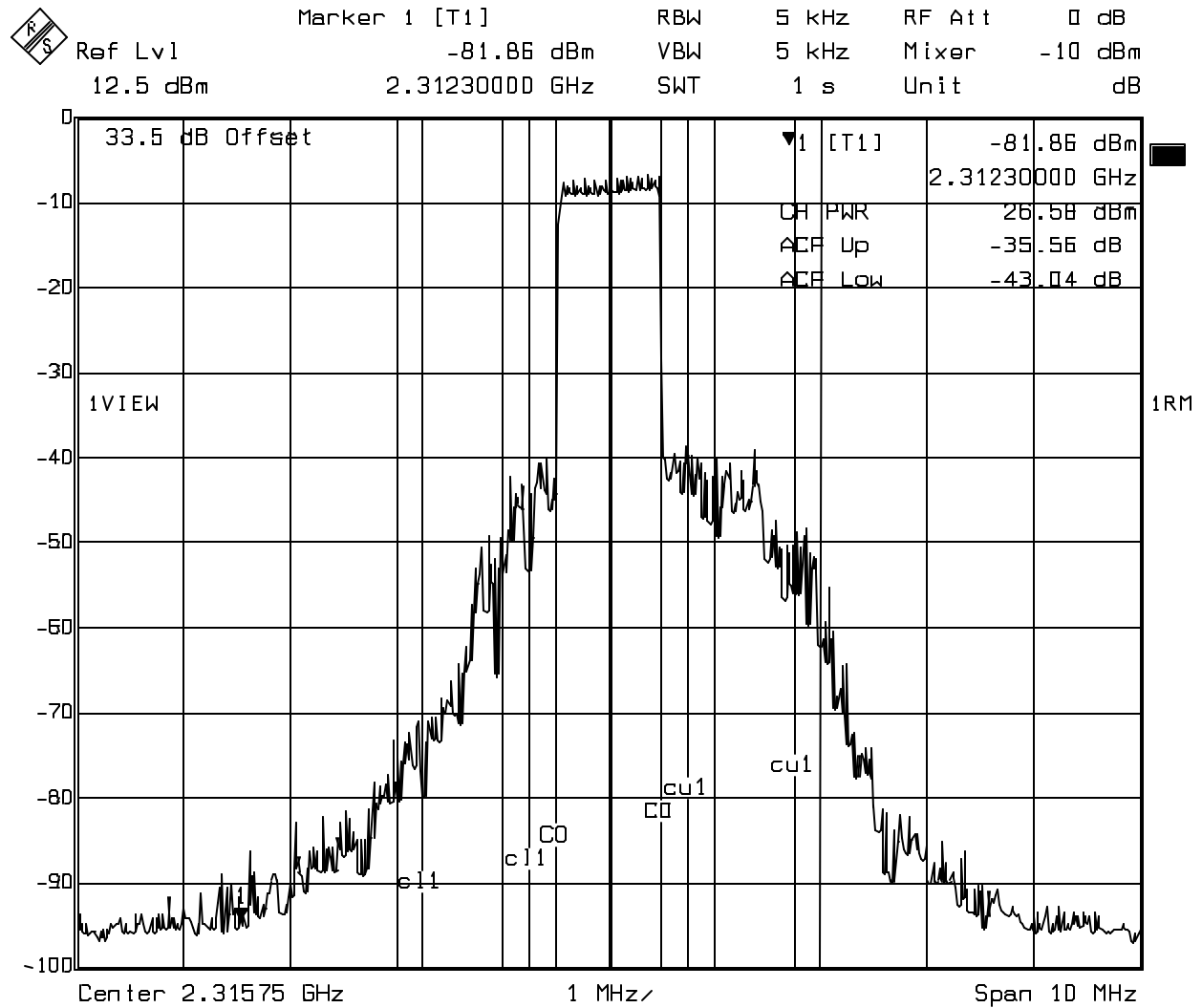
Title: 20C
Date: 11.NOV.2002 12:08:08

EQUIPMENT: 2.3 GHz CPE



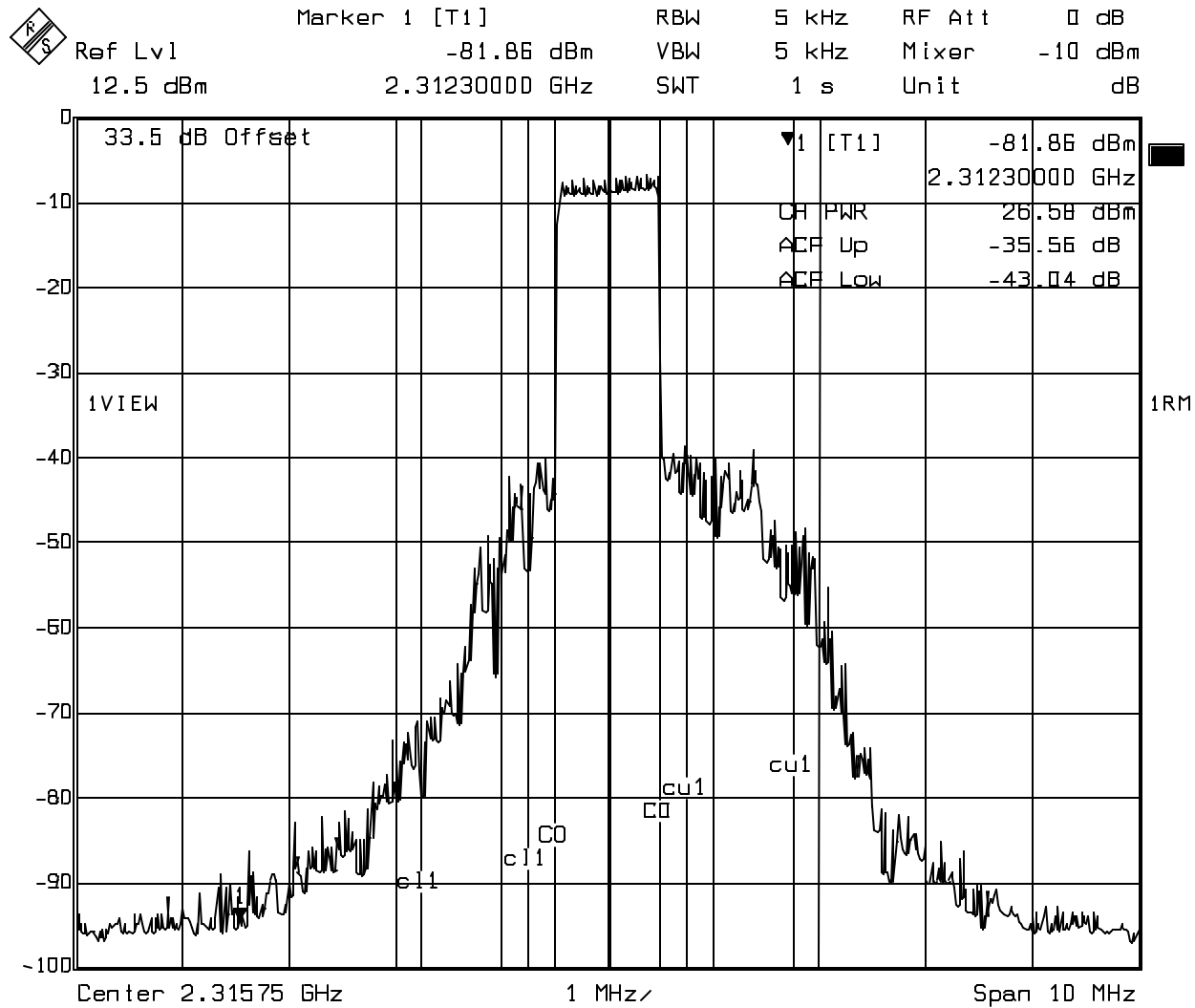
Title: 2DC
Date: 11.NOV.2002 12:06:07

EQUIPMENT: 2.3 GHz CPE



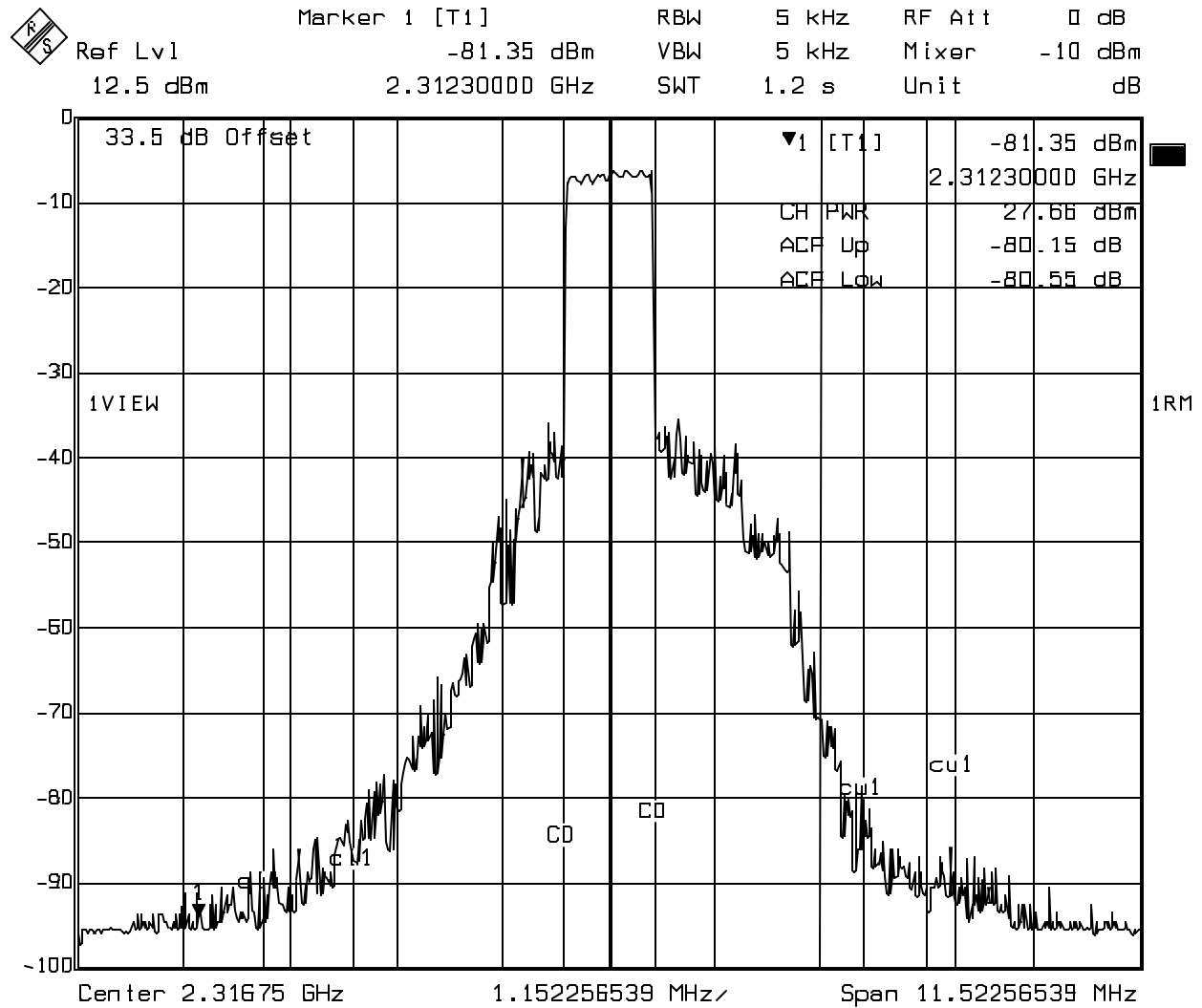
Title: 2DC
Date: 11.NOV.2002 11:50:35

EQUIPMENT: 2.3 GHz CPE



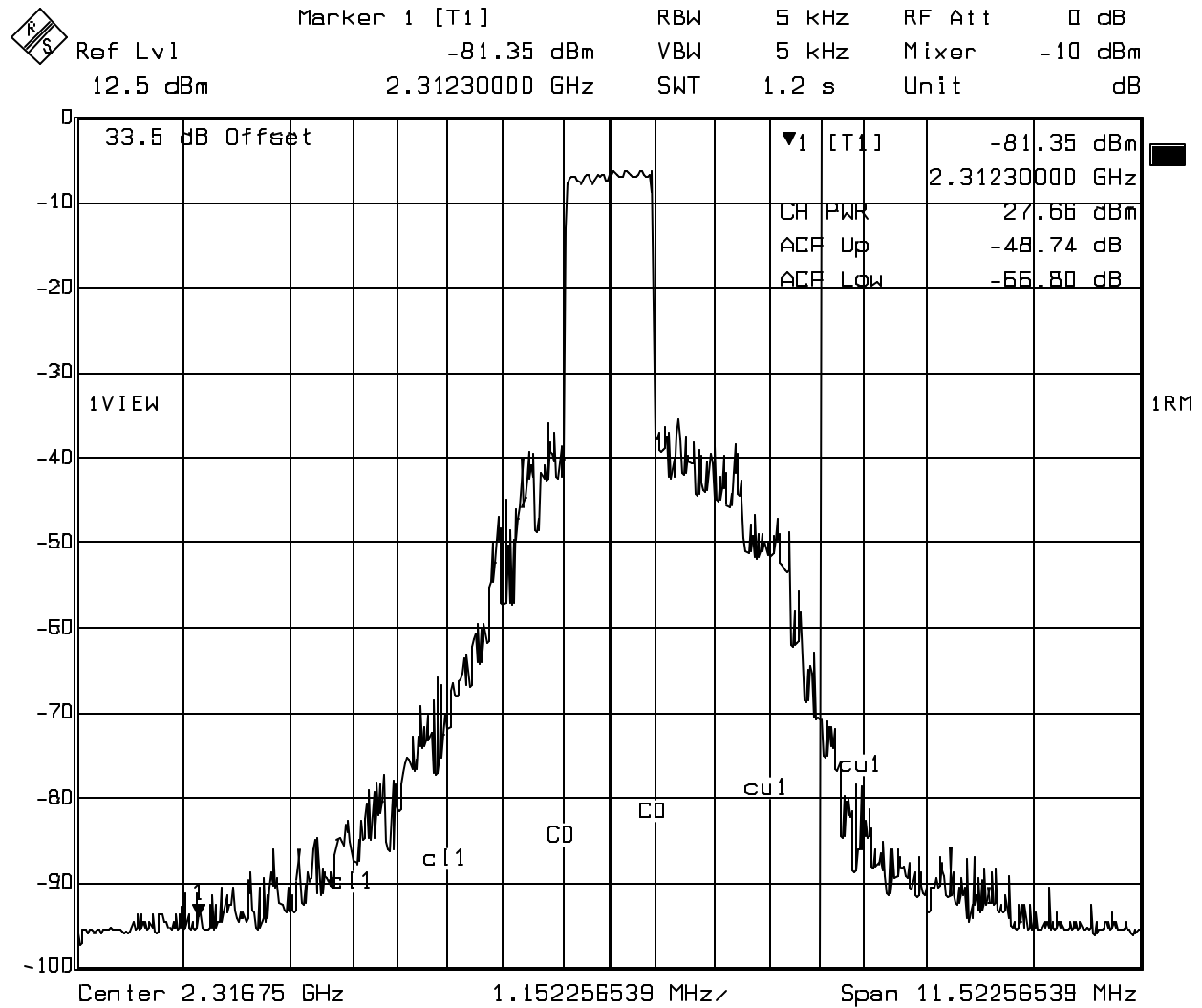
Title: 20C
Date: 11.NOV.2002 11:50:35

EQUIPMENT: 2.3 GHz CPE



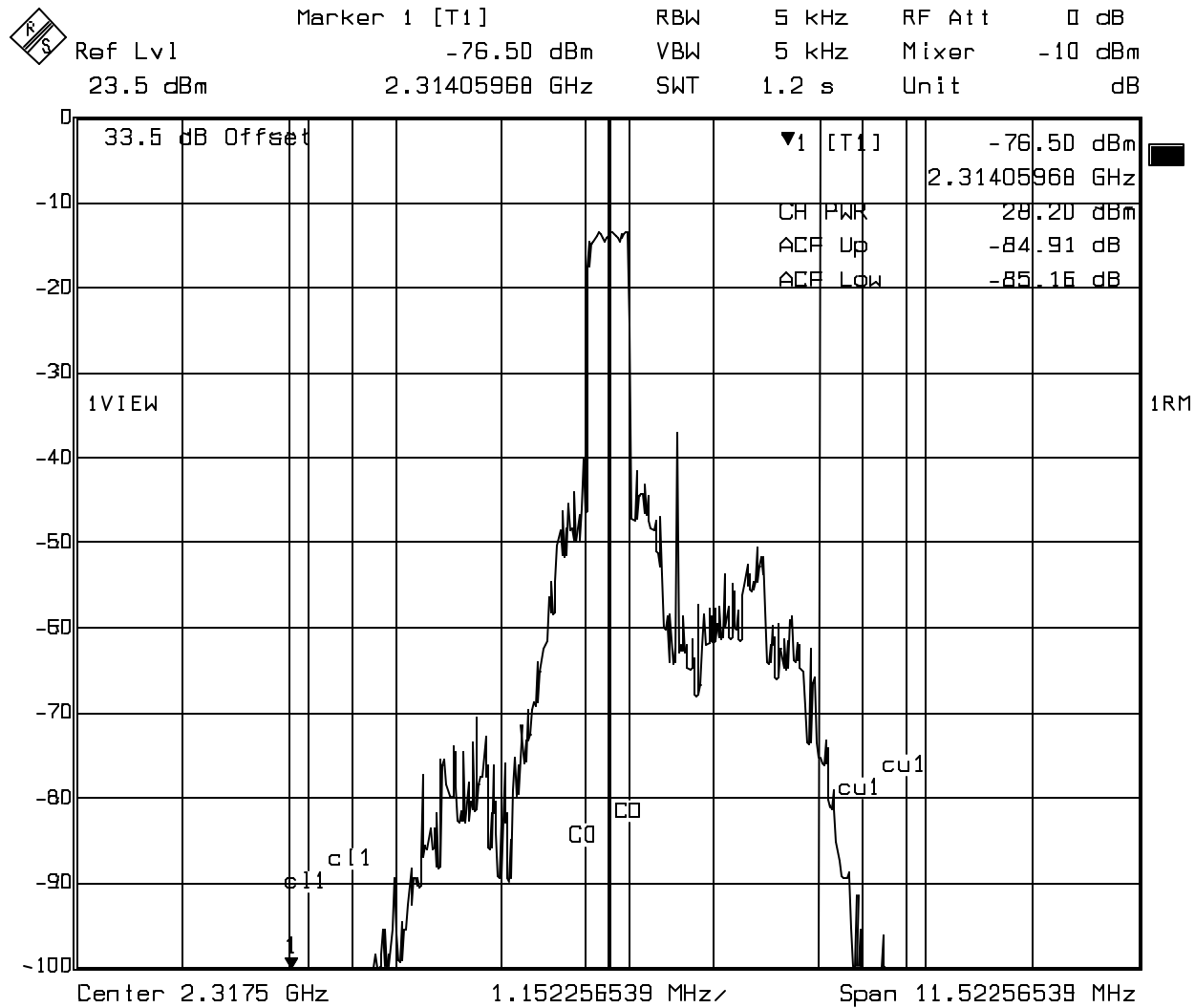
Title: 20C
Date: 11.NOV.2002 11:55:29

EQUIPMENT: 2.3 GHz CPE



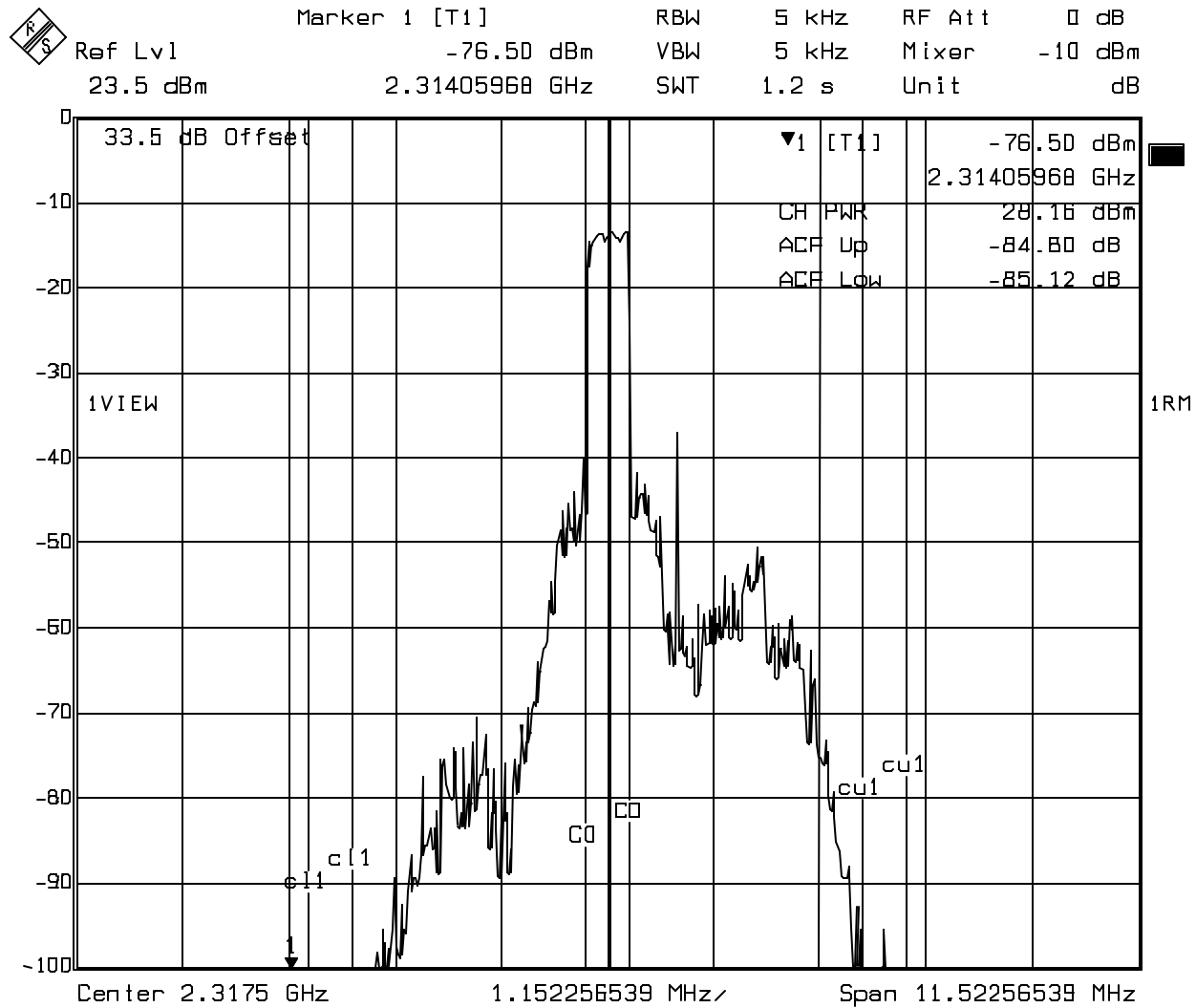
Title: 20C
Date: 11.NOV.2002 11:56:50

EQUIPMENT: 2.3 GHz CPE



Title: 20C
Date: 11.NOV.2002 12:14:08

EQUIPMENT: 2.3 GHz CPE

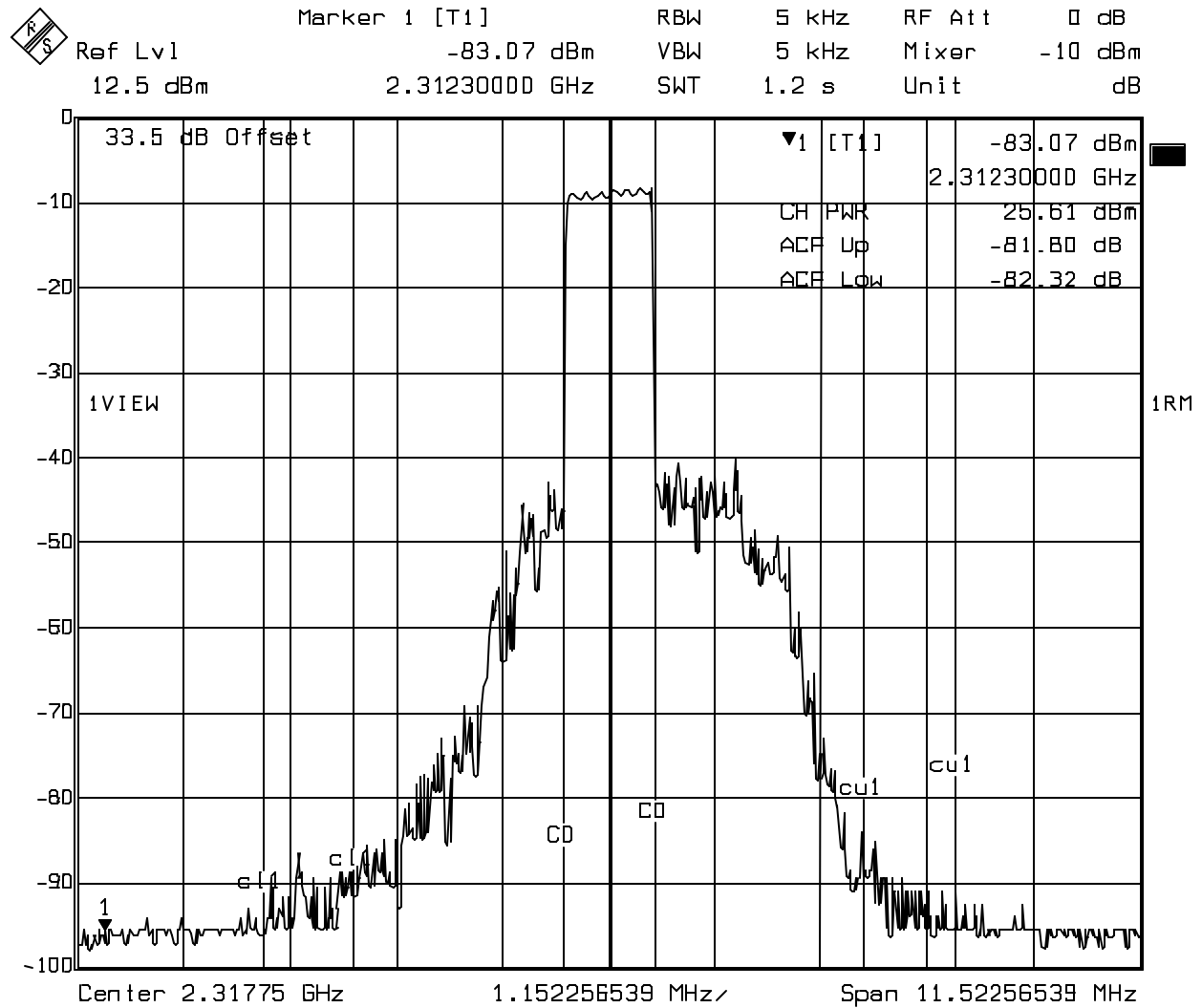


Title: 20C
Date: 11.NOV.2002 12:15:43

	Ref Lvl	Marker 1 [T1]	RBW	5 kHz	RF Att	0 dB
	23.5 dBm	-74.79 dBm	VBW	5 kHz	Mixer	-10 dBm
	2.31230000 GHz	SWT	1.2 s	Unit	dB	

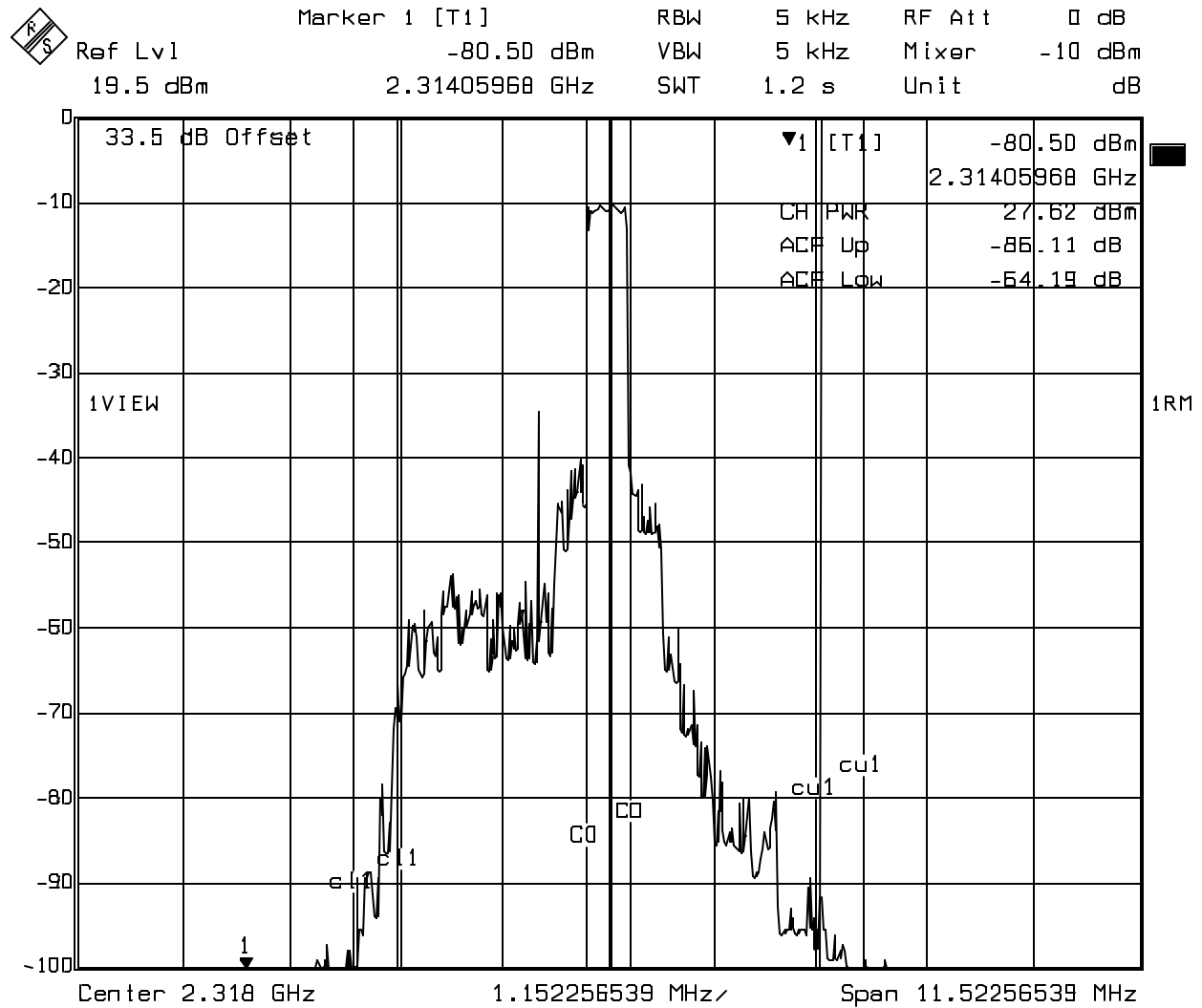


EQUIPMENT: 2.3 GHz CPE



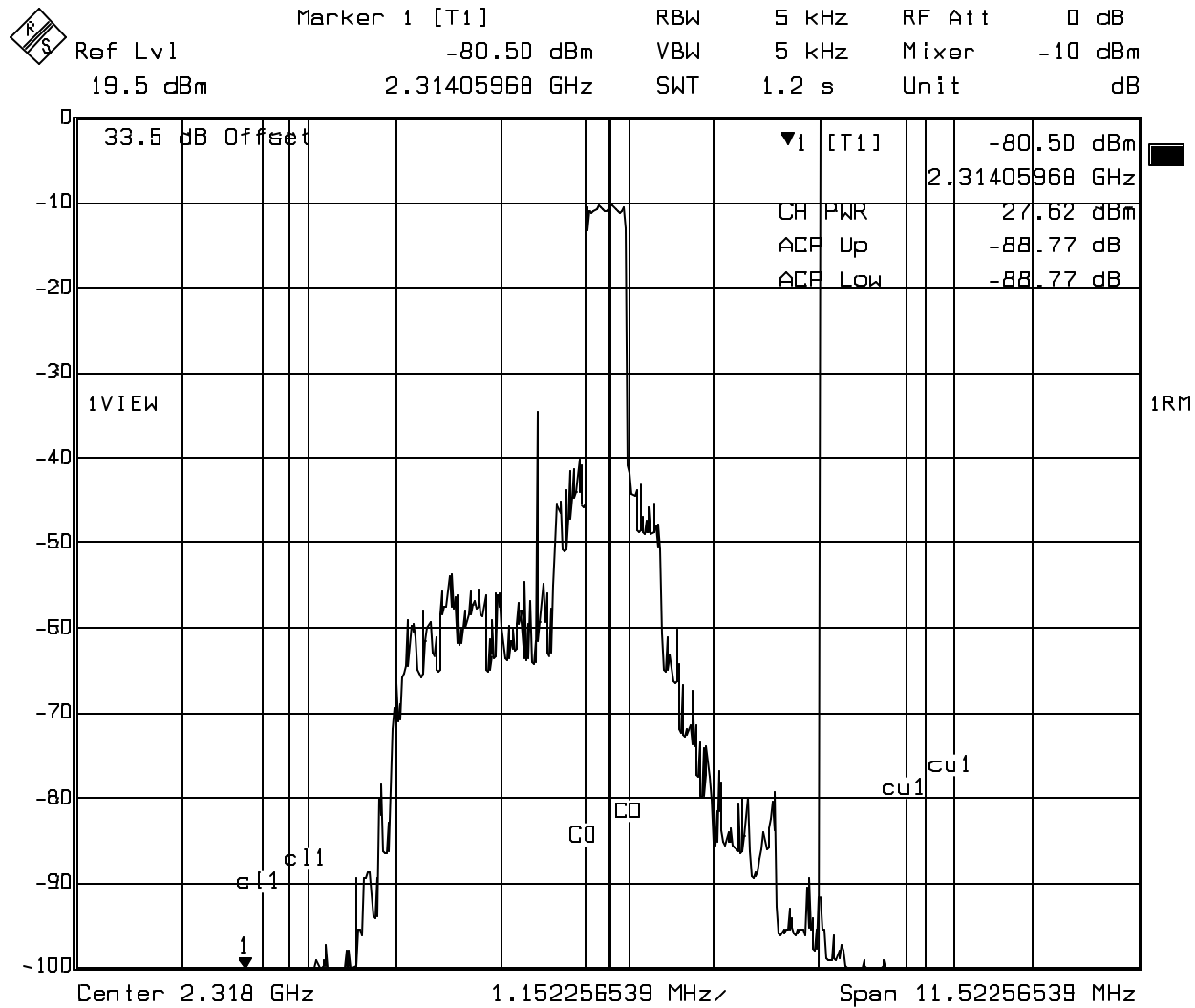
Title: 20C
Date: 11.NOV.2002 11:59:26

EQUIPMENT: 2.3 GHz CPE



Title: 20C
Date: 11.NOV.2002 12:20:49

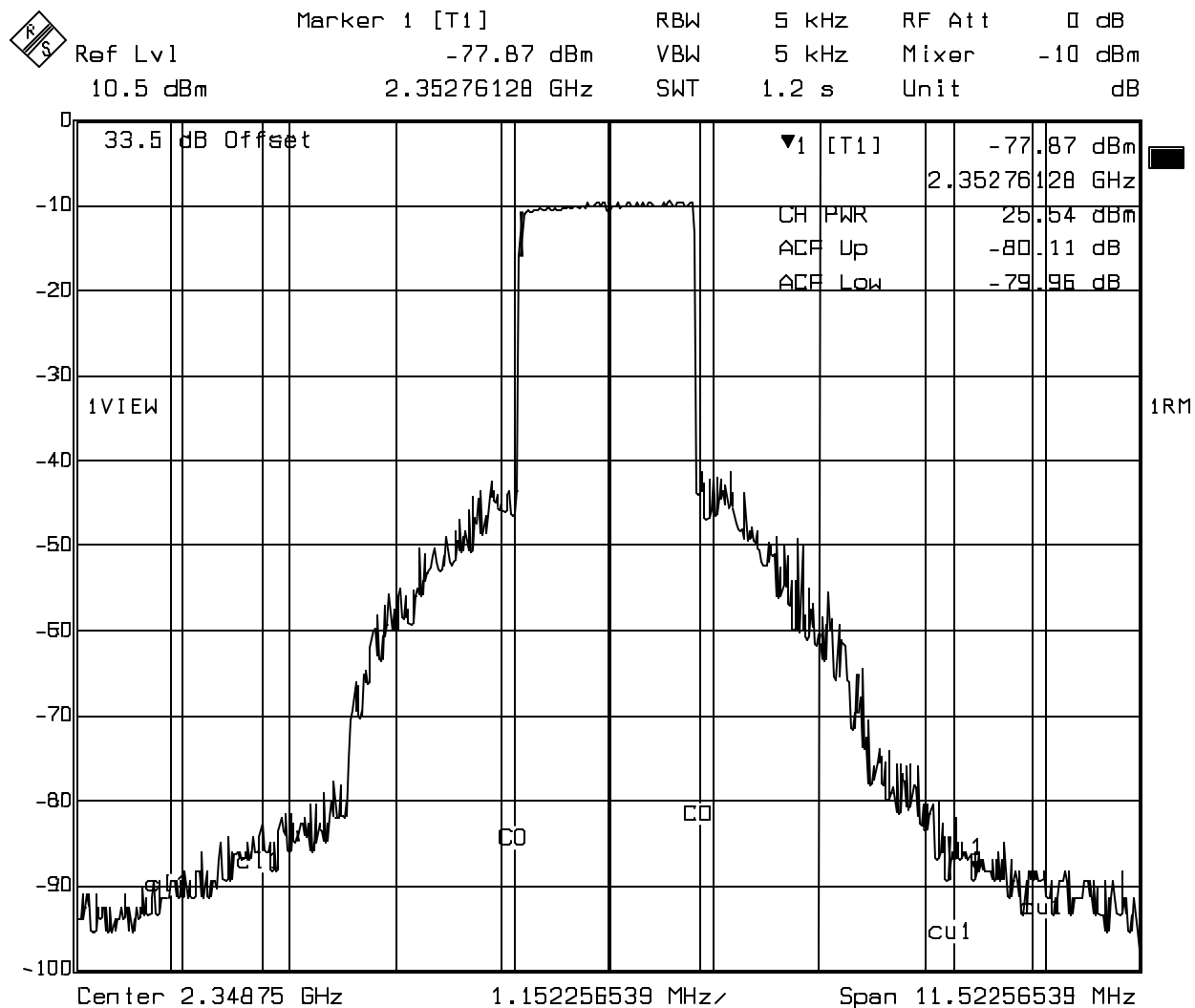
EQUIPMENT: 2.3 GHz CPE



Title: 20C
Date: 11.NOV.2002 12:21:41

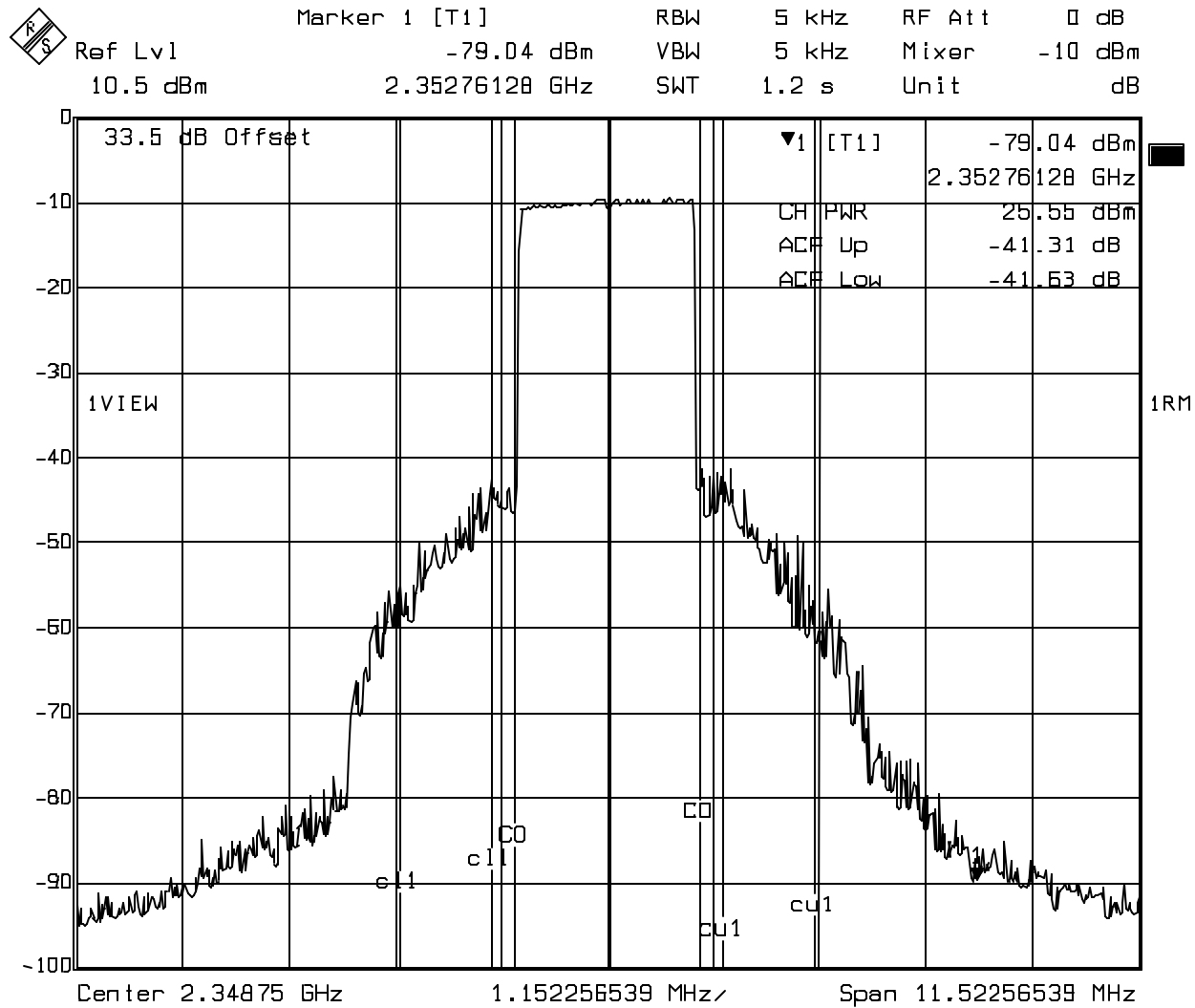
EQUIPMENT: 2.3 GHz CPE

Measurement Data – Block D (2345 – 2350 MHz)



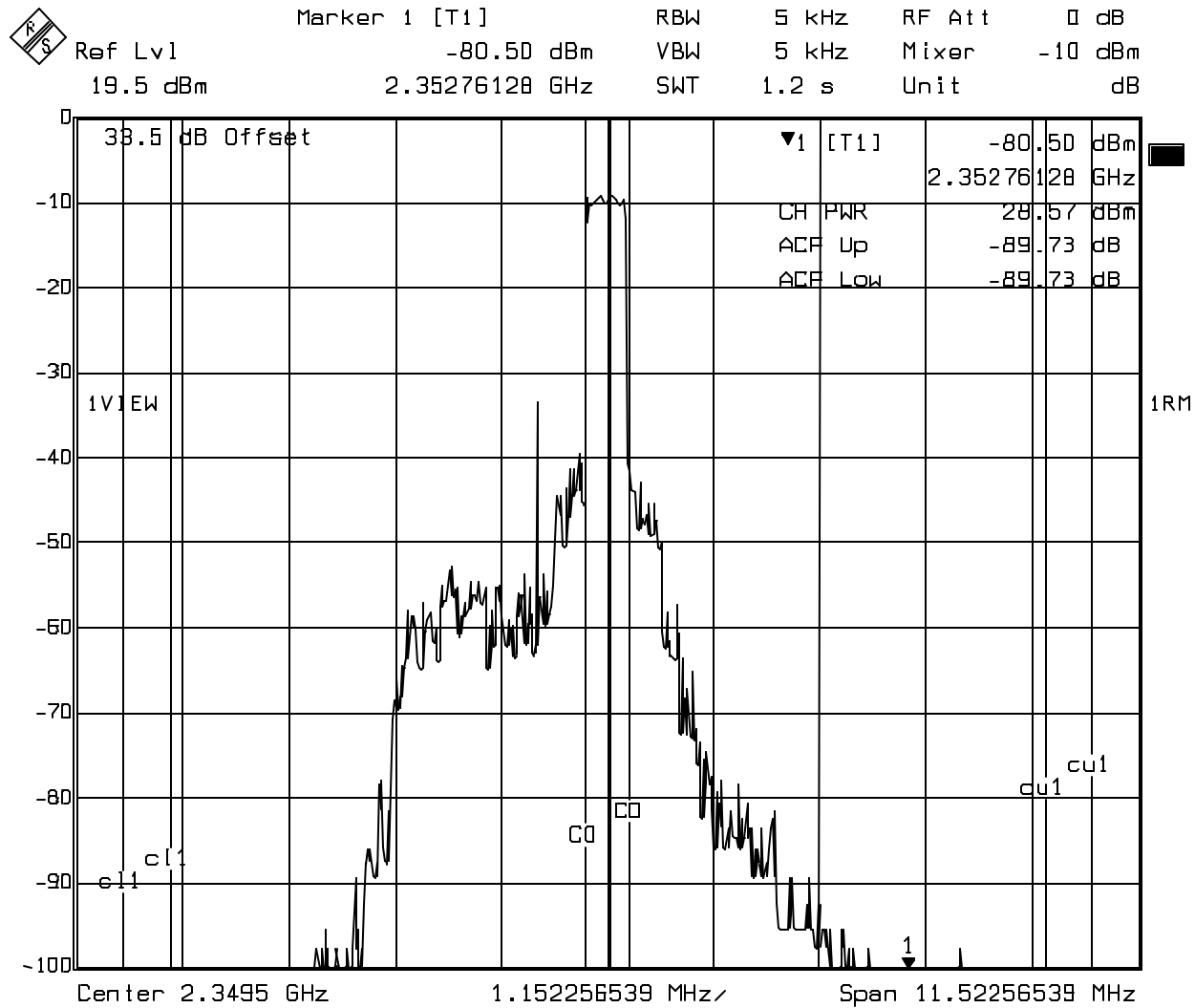
Title: 20C
Date: 11.NOV.2002 13:07:55

EQUIPMENT: 2.3 GHz CPE



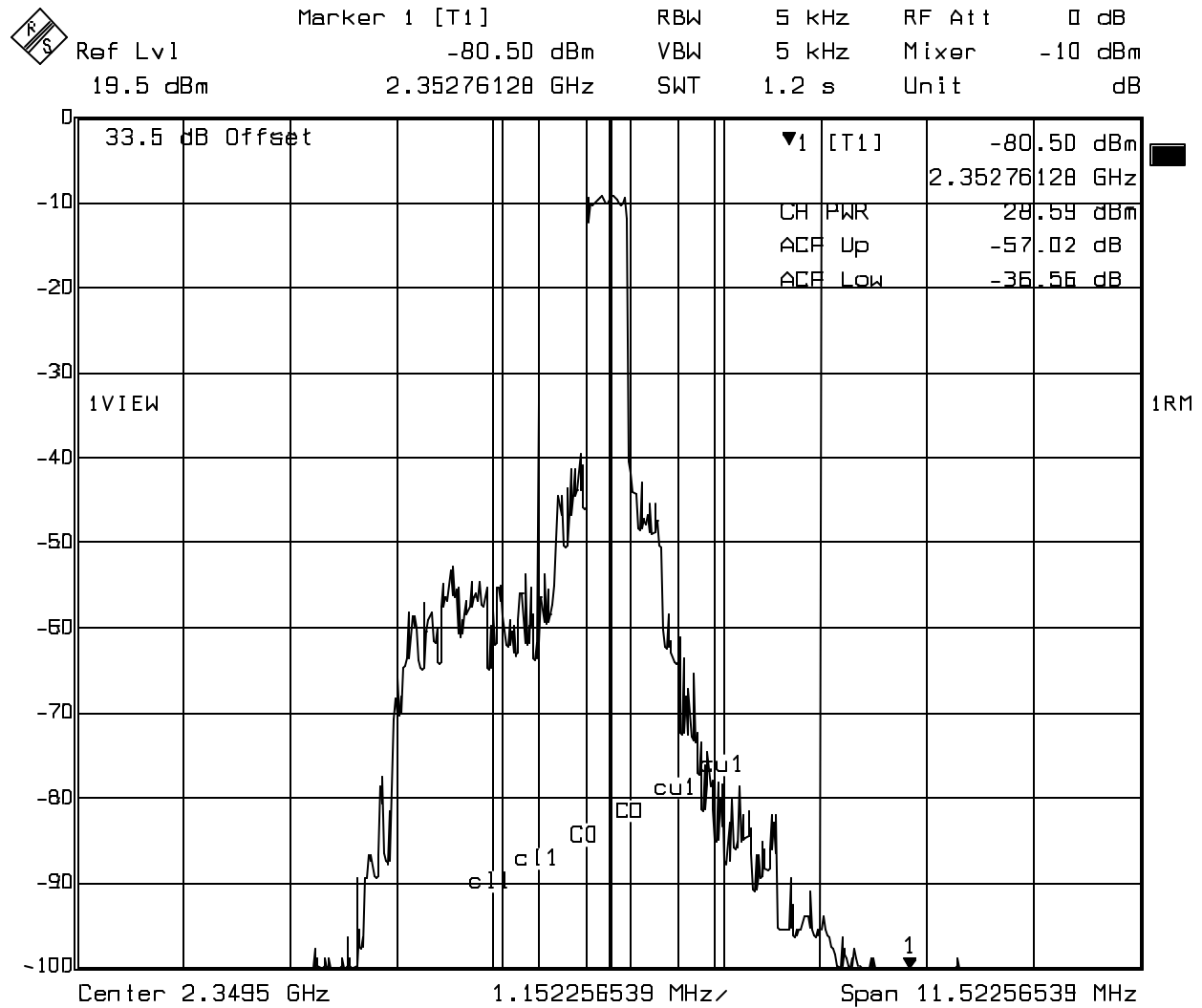
Title: 20C
Date: 11.NOV.2002 13:06:28

EQUIPMENT: 2.3 GHz CPE



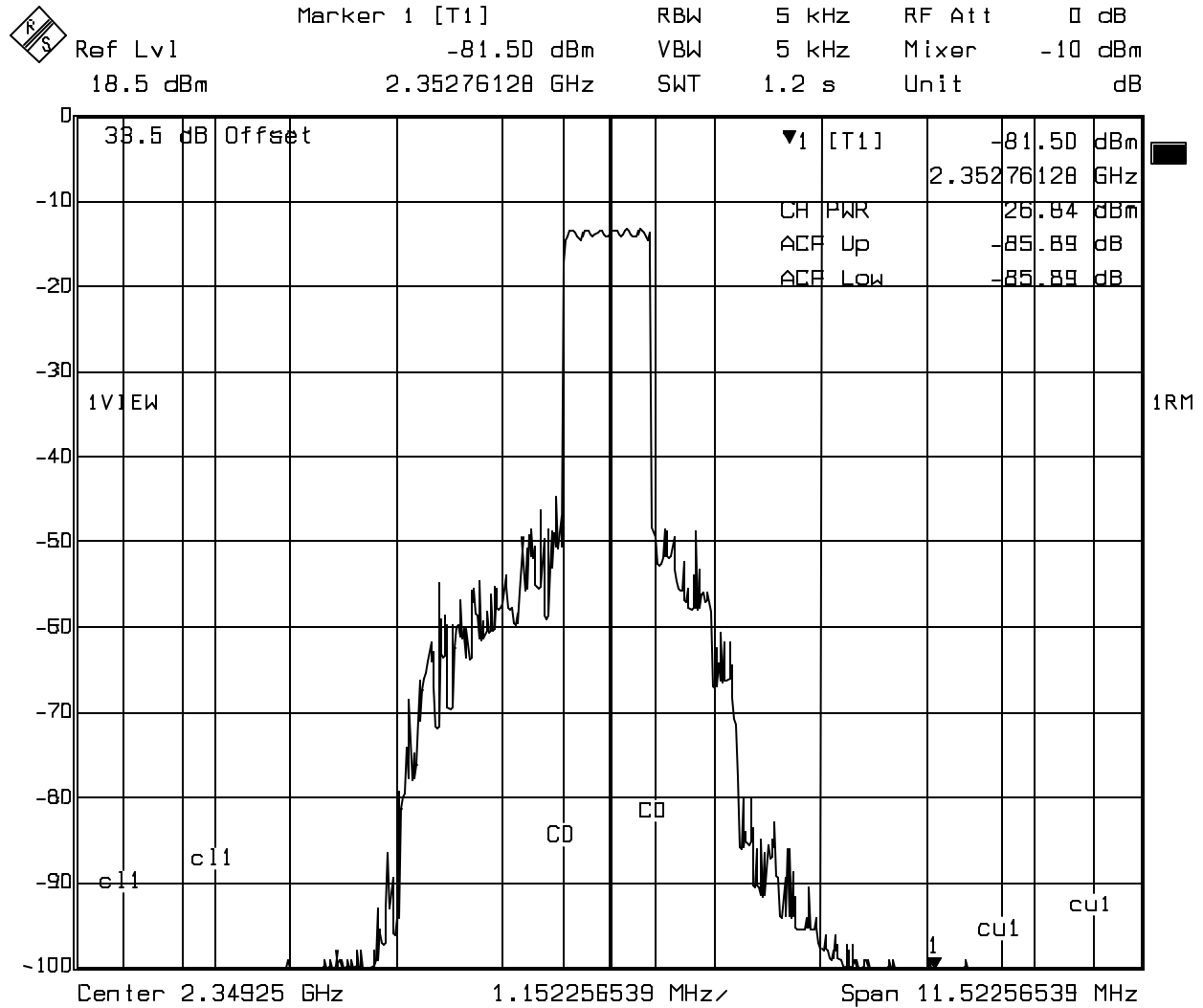
Title: 20C
Date: 11.NOV.2002 12:42:26

EQUIPMENT: 2.3 GHz CPE



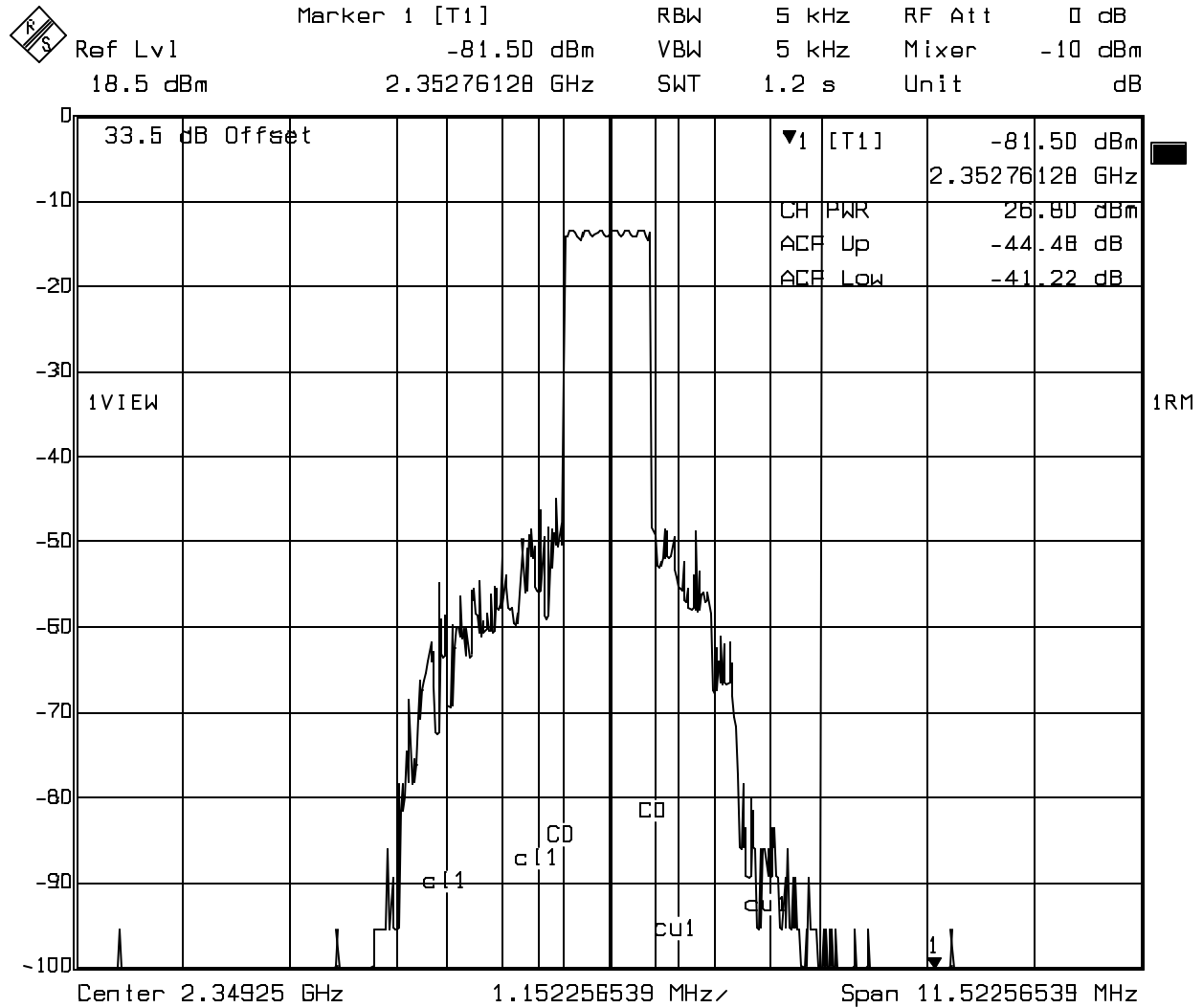
Title: 20C
Date: 11.NOV.2002 12:40:54

EQUIPMENT: 2.3 GHz CPE



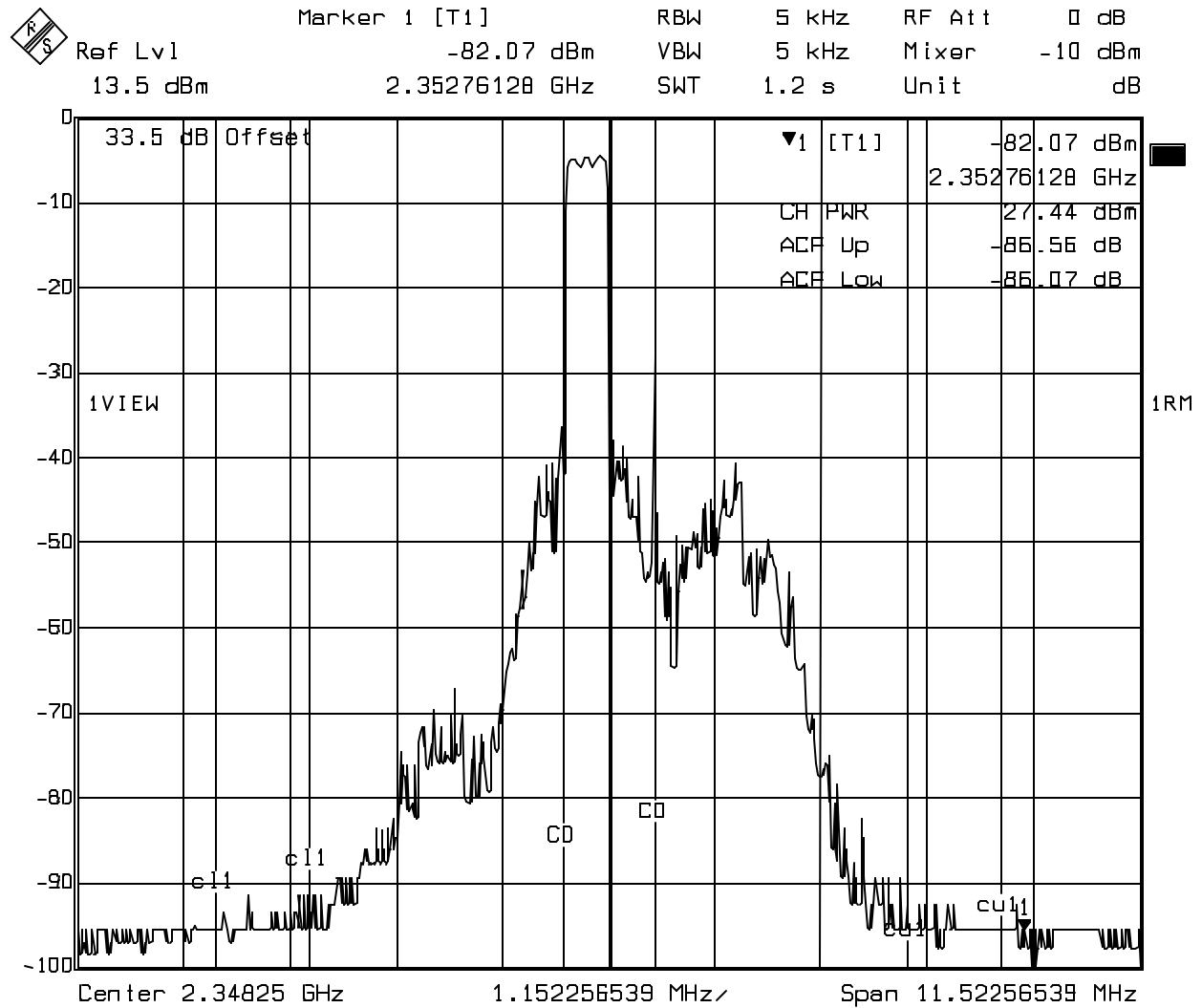
Title: 20C
Date: 11.NOV.2002 12:59:42

EQUIPMENT: 2.3 GHz CPE



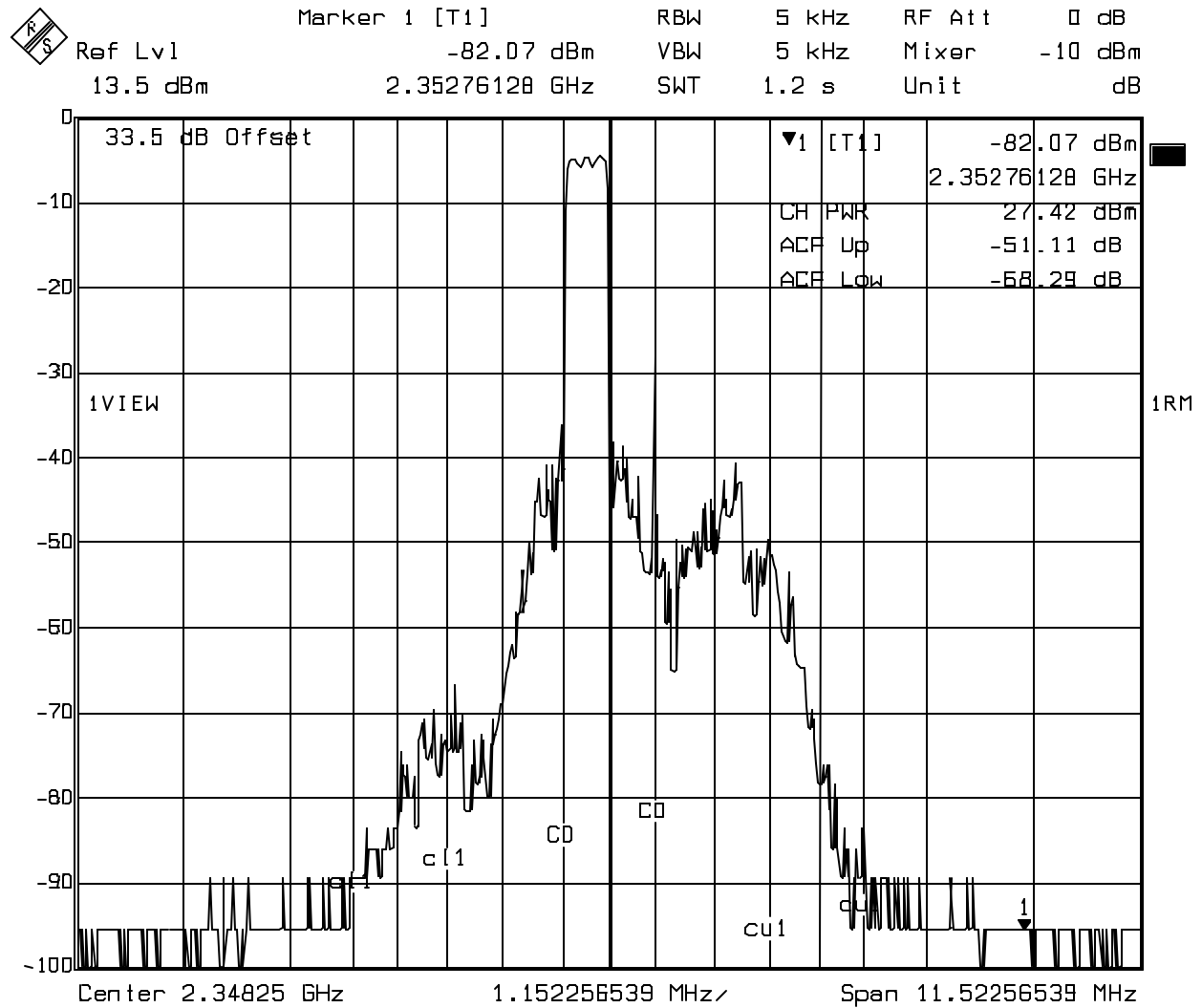
Title: 20C
Date: 11.NOV.2002 12:57:51

EQUIPMENT: 2.3 GHz CPE



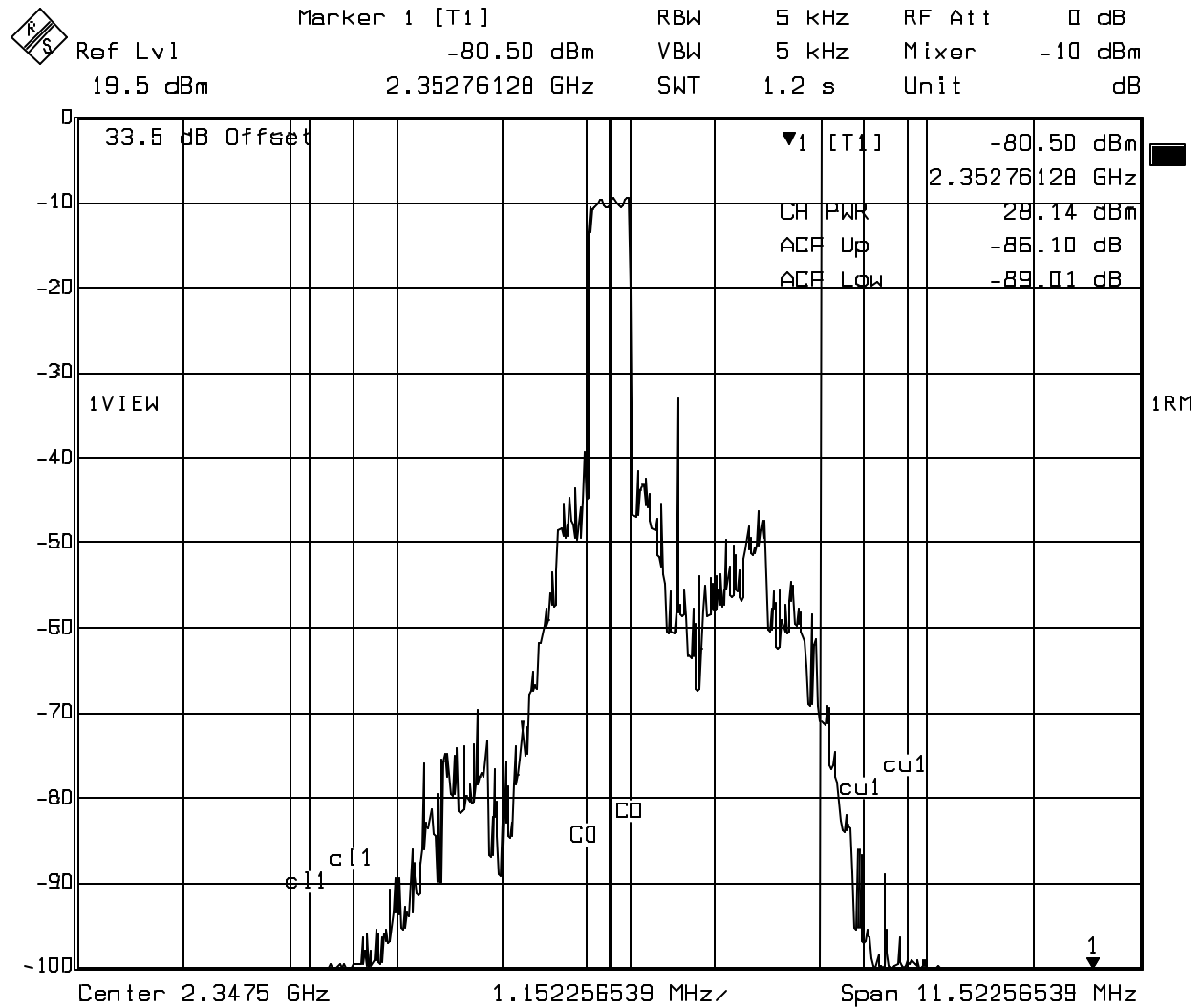
Title: 20C
Date: 11.NOV.2002 12:52:03

EQUIPMENT: 2.3 GHz CPE



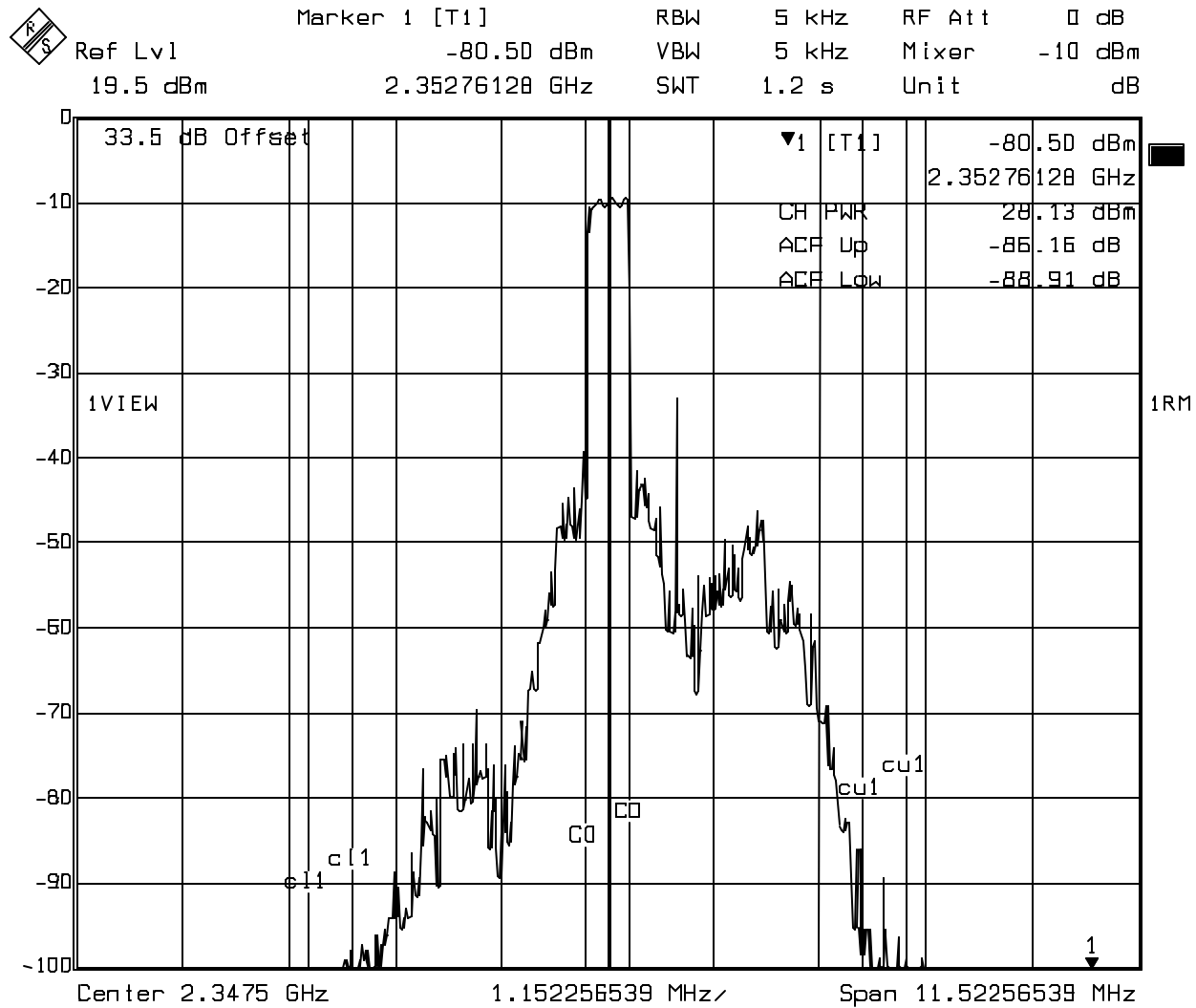
Title: 20C
Date: 11.NOV.2002 12:50:01

EQUIPMENT: 2.3 GHz CPE



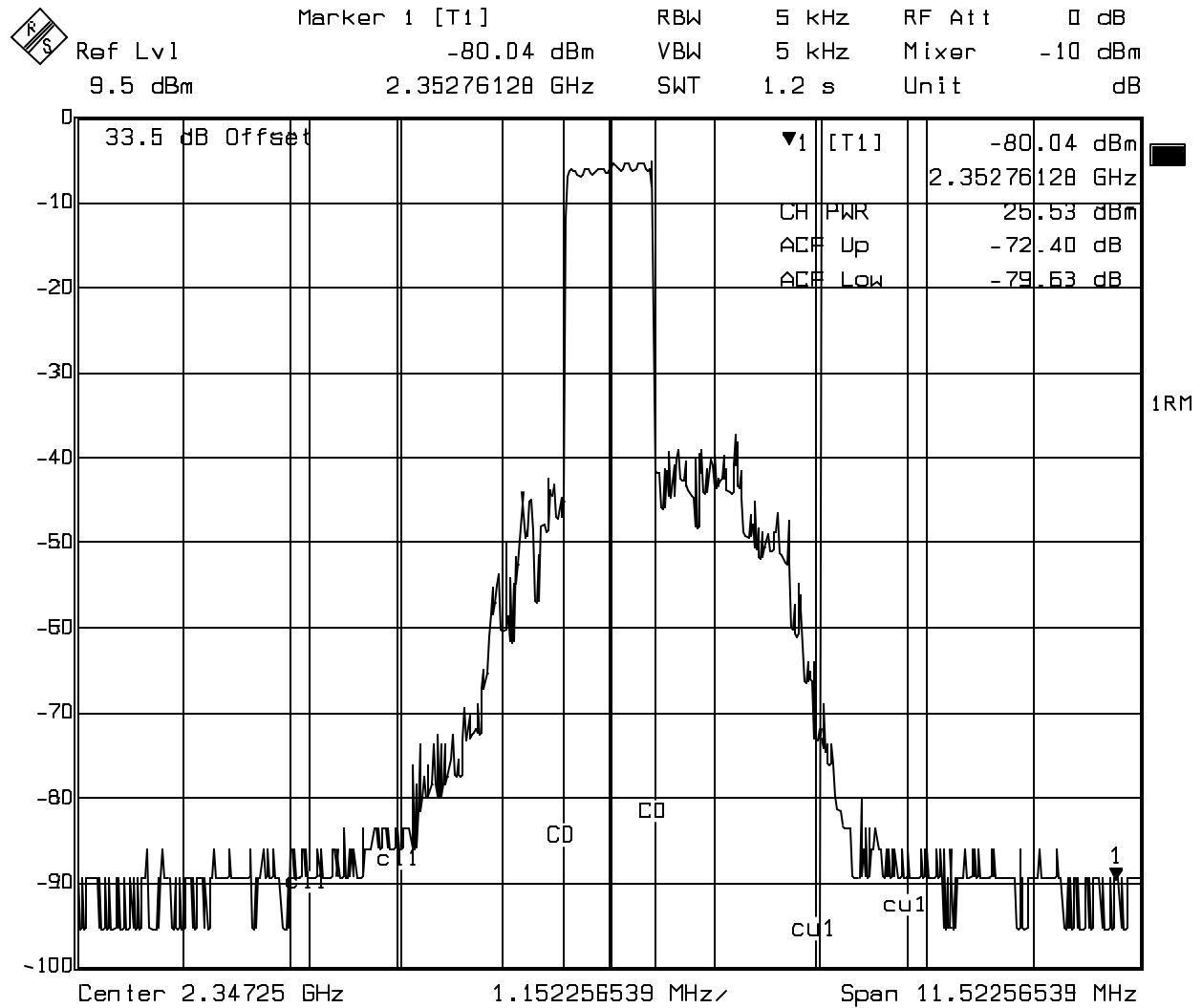
Title: 20C
Date: 11.NOV.2002 12:35:37

EQUIPMENT: 2.3 GHz CPE



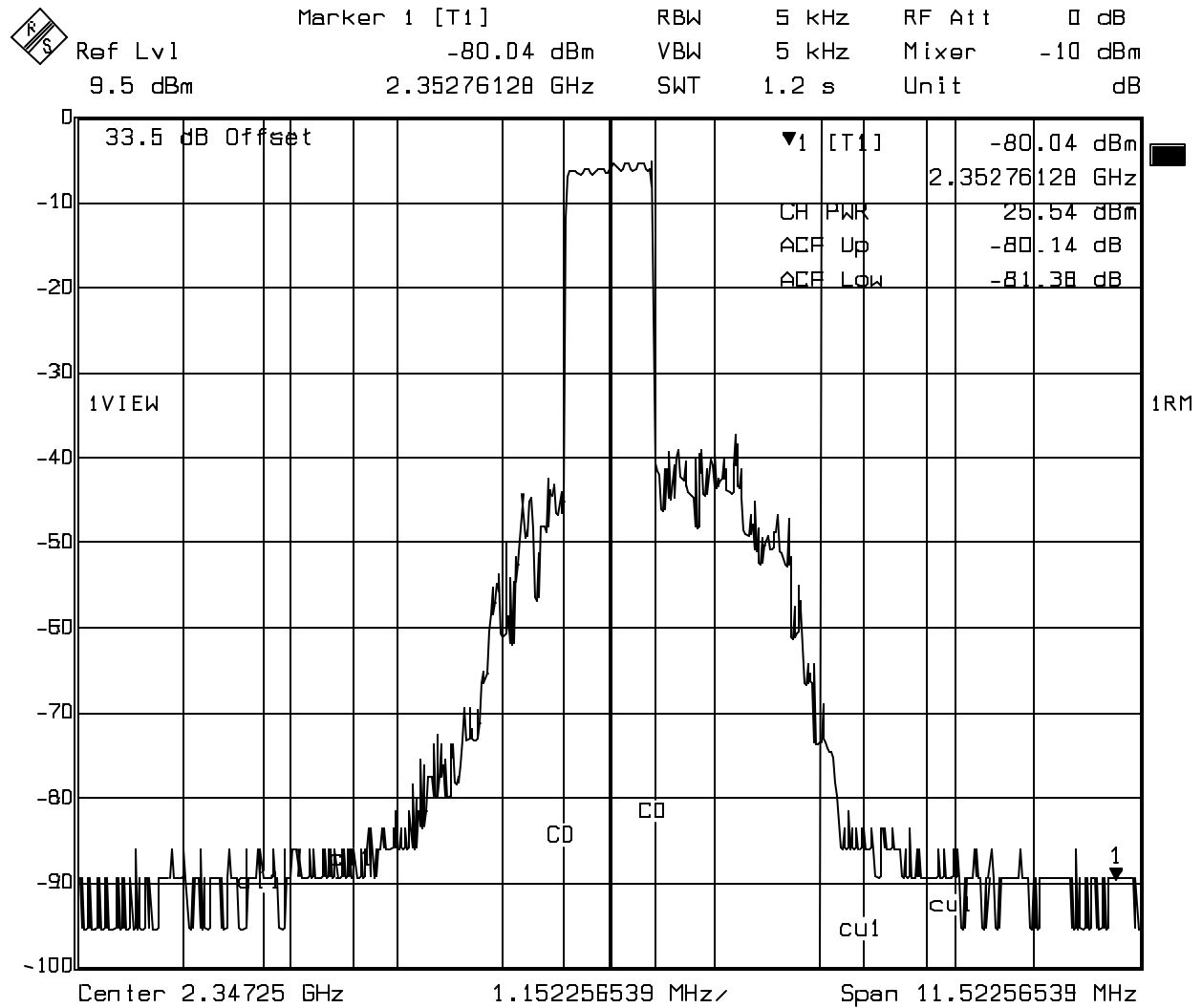
Title: 20C
Date: 11.NOV.2002 12:33:19

EQUIPMENT: 2.3 GHz CPE



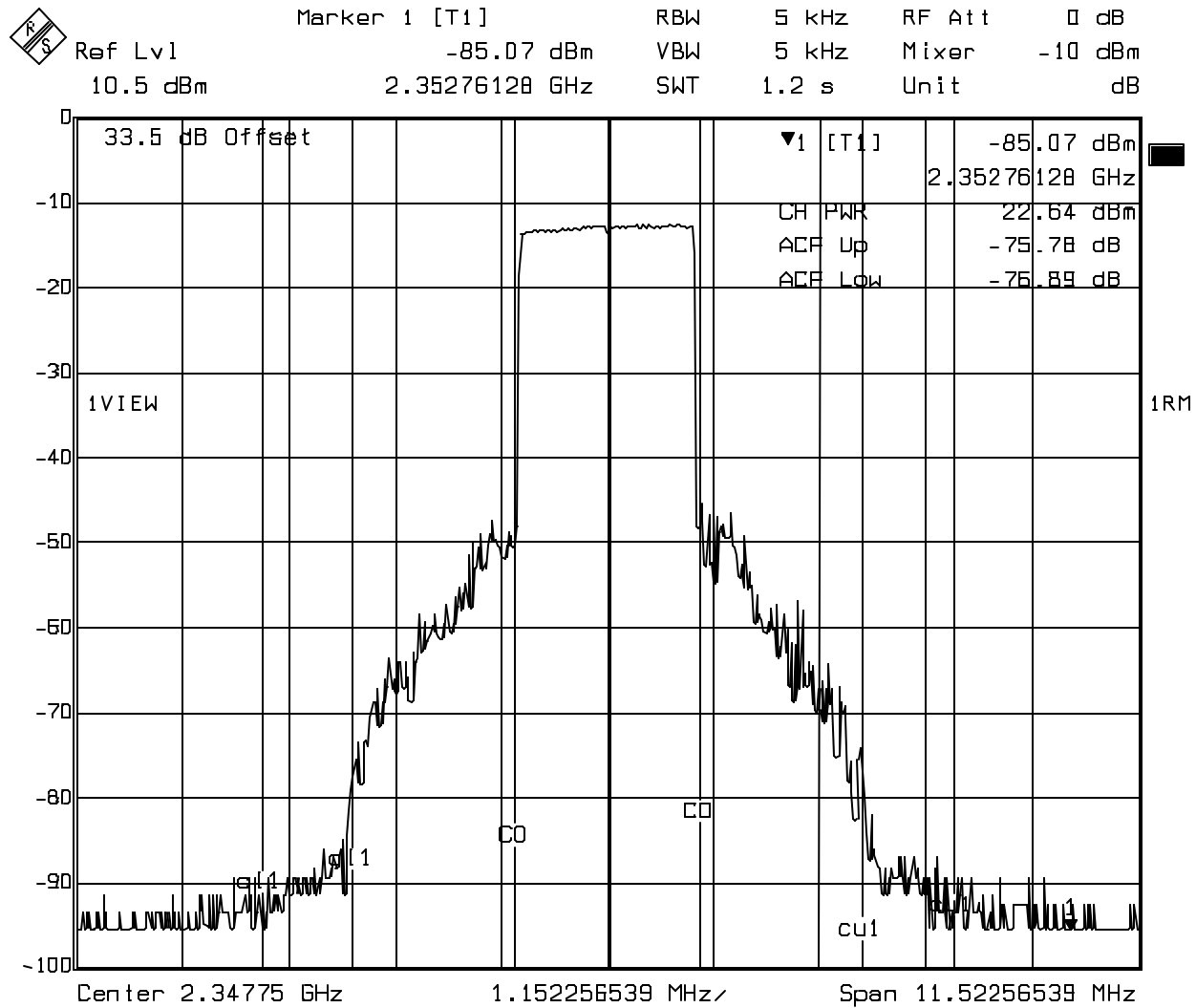
Title: 20C
Date: 11.NOV.2002 12:45:43

EQUIPMENT: 2.3 GHz CPE



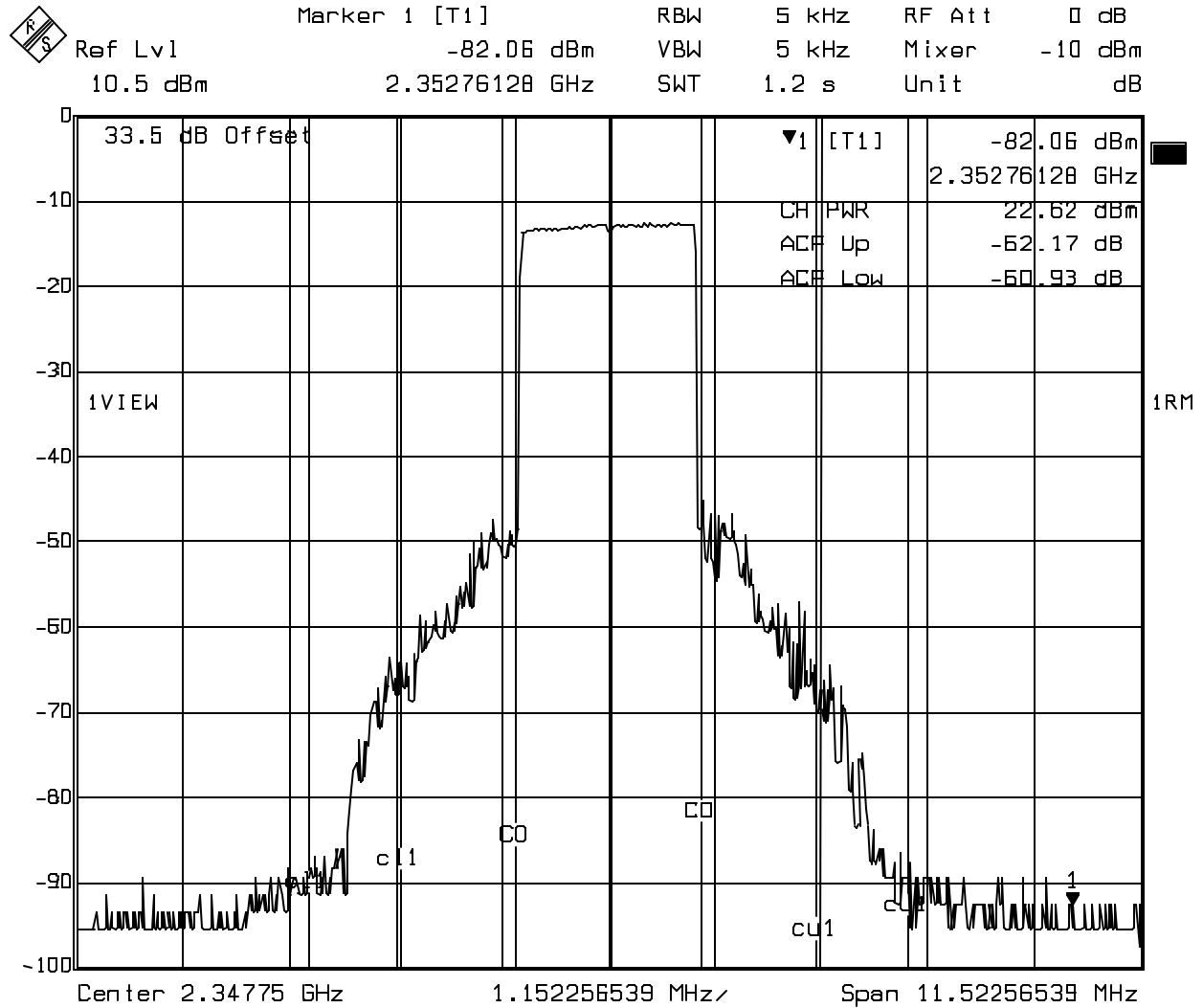
Title: 20C
Date: 11.NOV.2002 12:47:13

EQUIPMENT: 2.3 GHz CPE



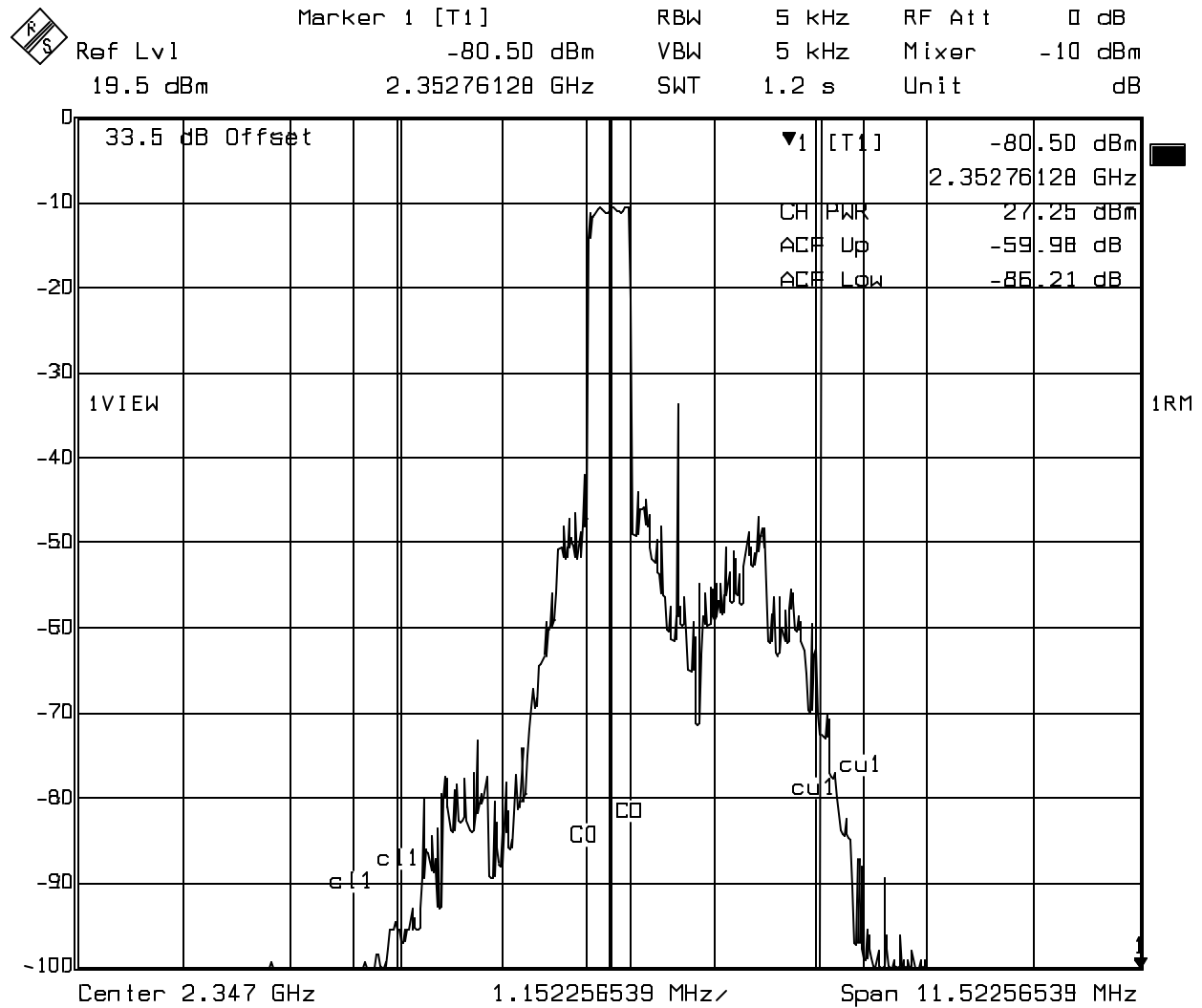
Title: 2DC
Date: 11.NOV.2002 13:03:18

EQUIPMENT: 2.3 GHz CPE



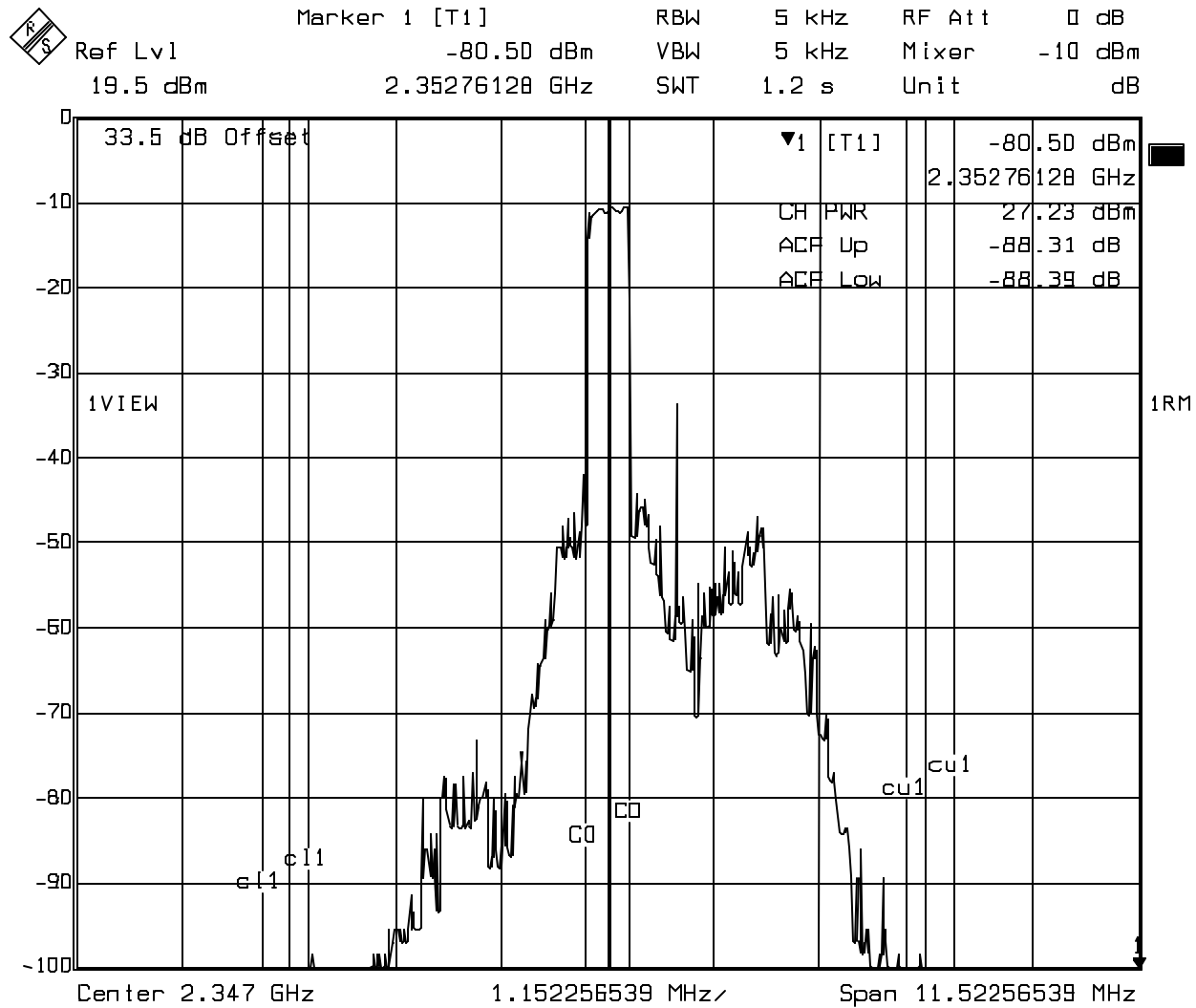
Title: 2DC
Date: 11.NOV.2002 13:04:46

EQUIPMENT: 2.3 GHz CPE



Title: 20C
Date: 11.NOV.2002 12:28:49

EQUIPMENT: 2.3 GHz CPE



Title: 20C
Date: 11.NOV.2002 12:30:28

EQUIPMENT: 2.3 GHz CPE

Section 5. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions @ Antenna Terminals	PARA. NO.: 2.1051
TESTED BY: Tom Tidwell	DATE: 11/11/2002

Test Results: Complies

Measurement Data: See attached data sheets.

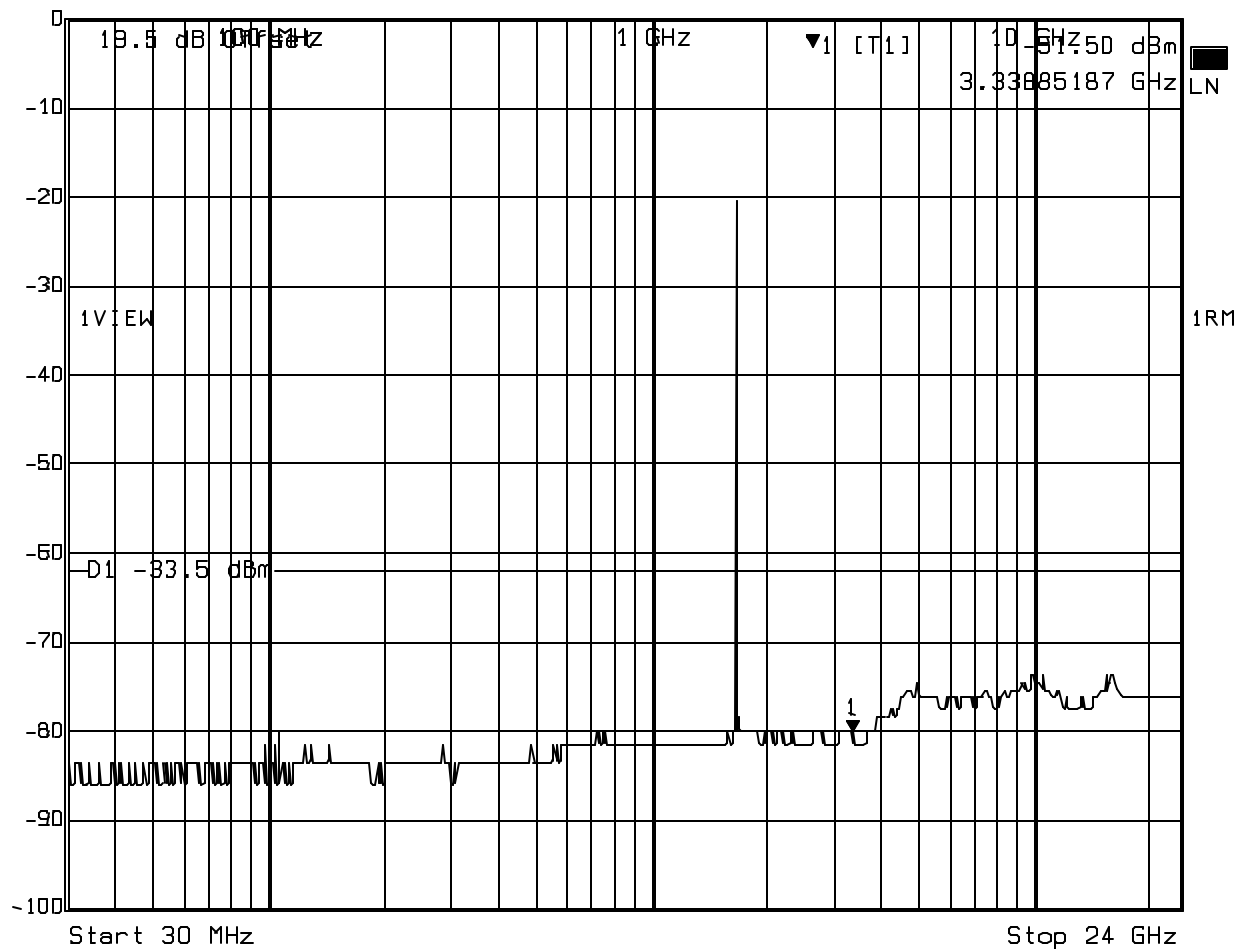
Measurement Uncertainty: +/- 1.7 dB

Test Data – Spurious Emissions at Antenna Terminals

EQUIPMENT: 2.3 GHz CPE

Test Data - +22 dBm

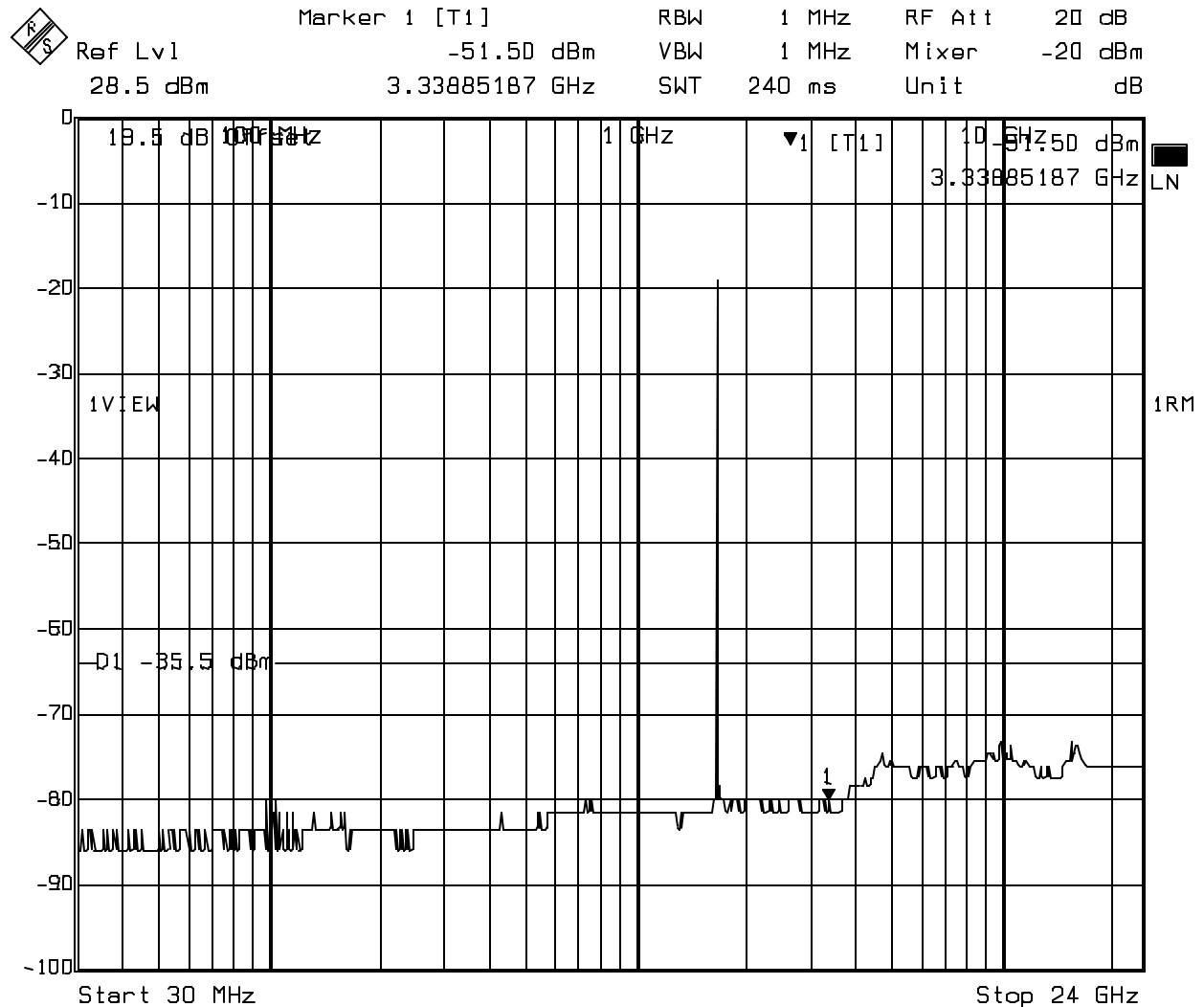
	Marker 1 [T1]	RBW	1 MHz	RF Att	20 dB	
	Ref Lvl	-51.50 dBm	VBW	1 MHz	Mixer	-20 dBm
	28.5 dBm	3.33885187 GHz	SWT	240 ms	Unit	dB



Title: 20C
Date: 11.NOV.2002 16:53:22

EQUIPMENT: 2.3 GHz CPE

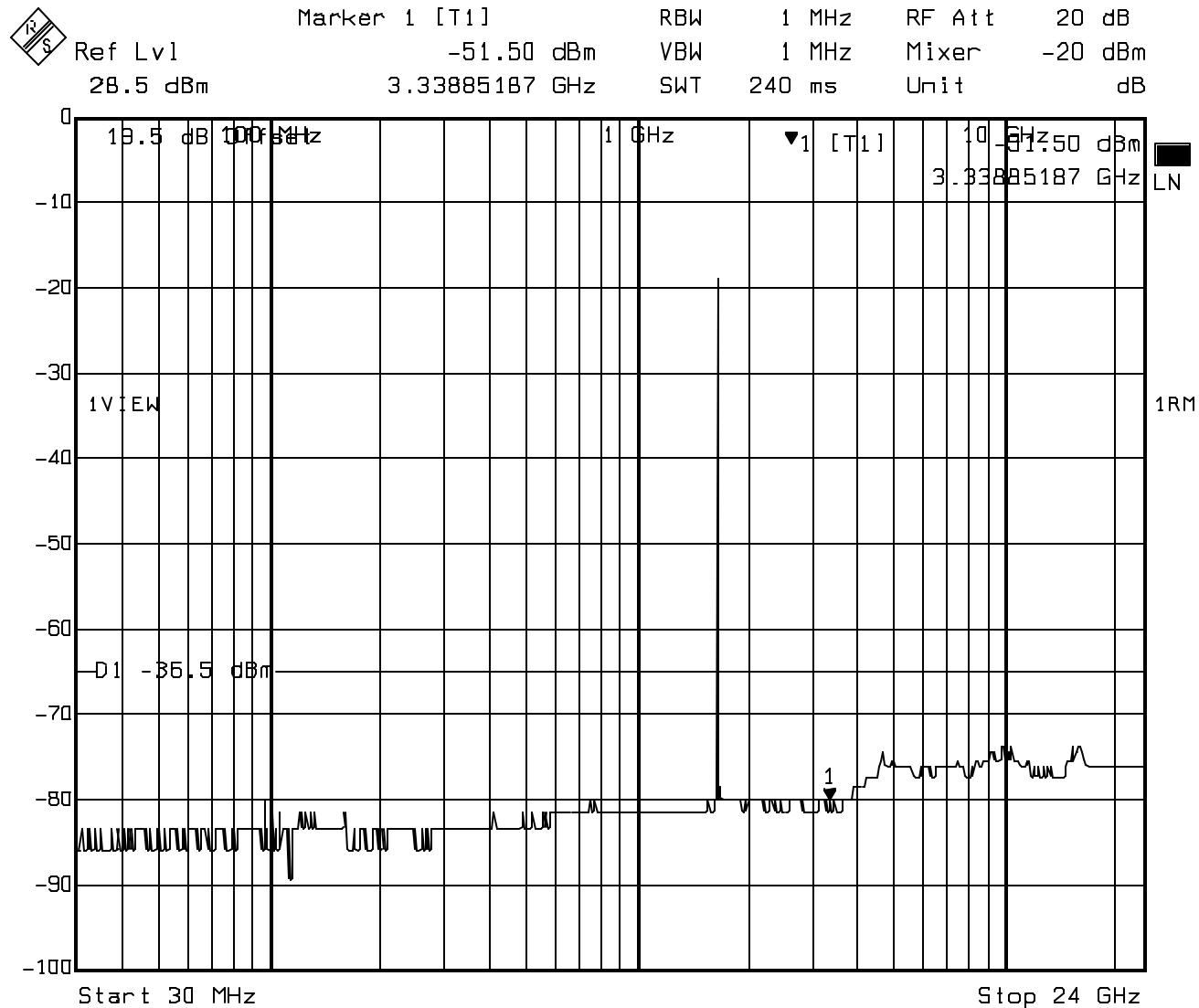
Test Data - +24 dBm



Title: 20C
Date: 11.NOV.2002 16:52:39

EQUIPMENT: 2.3 GHz CPE

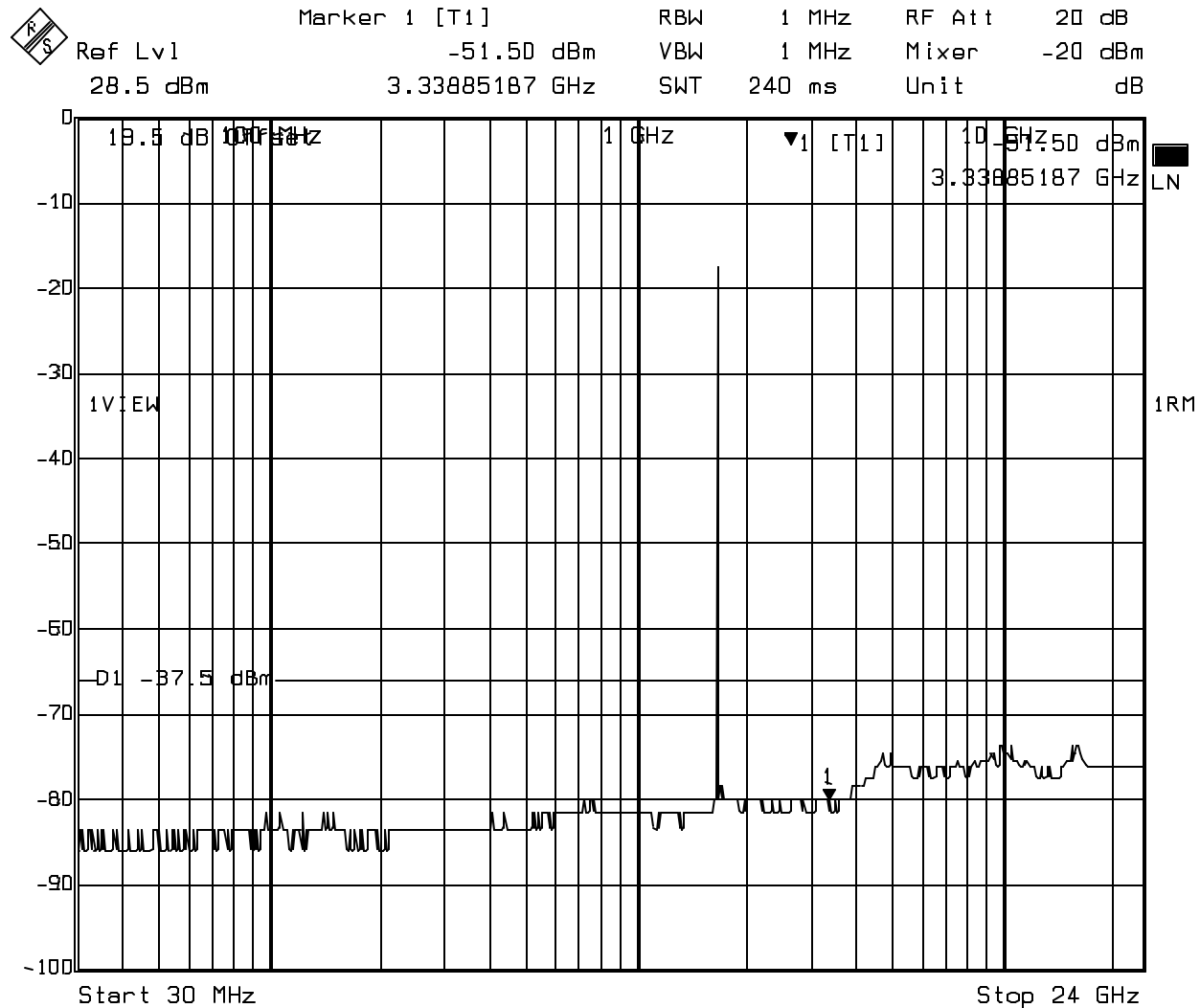
Test Data - +25 dBm



Title: 20C
Date: 11.NOV.2002 15:51:25

EQUIPMENT: 2.3 GHz CPE

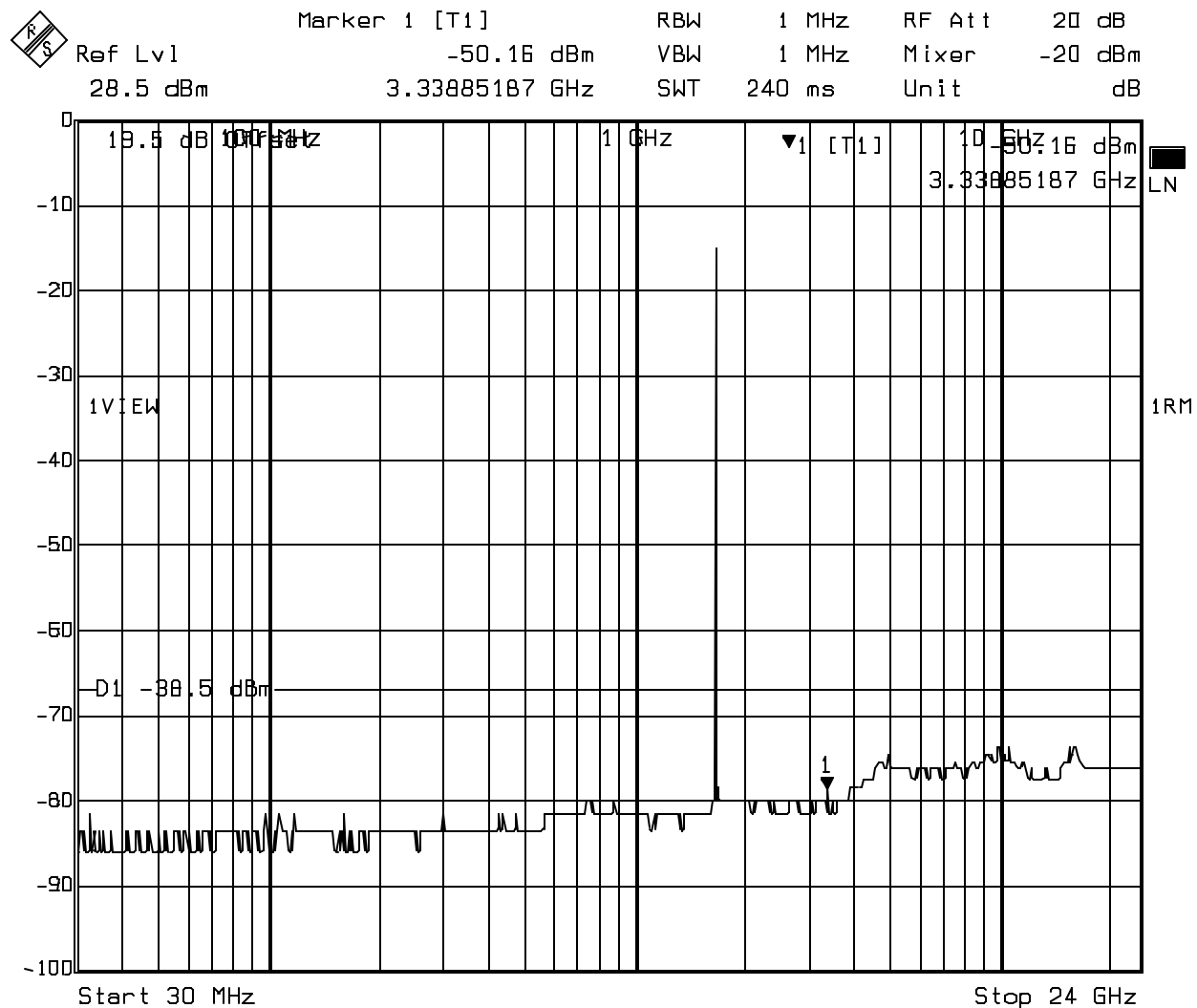
Test Data - +26 dBm



Title: 20C
Date: 11.NOV.2002 16:50:37

EQUIPMENT: 2.3 GHz CPE

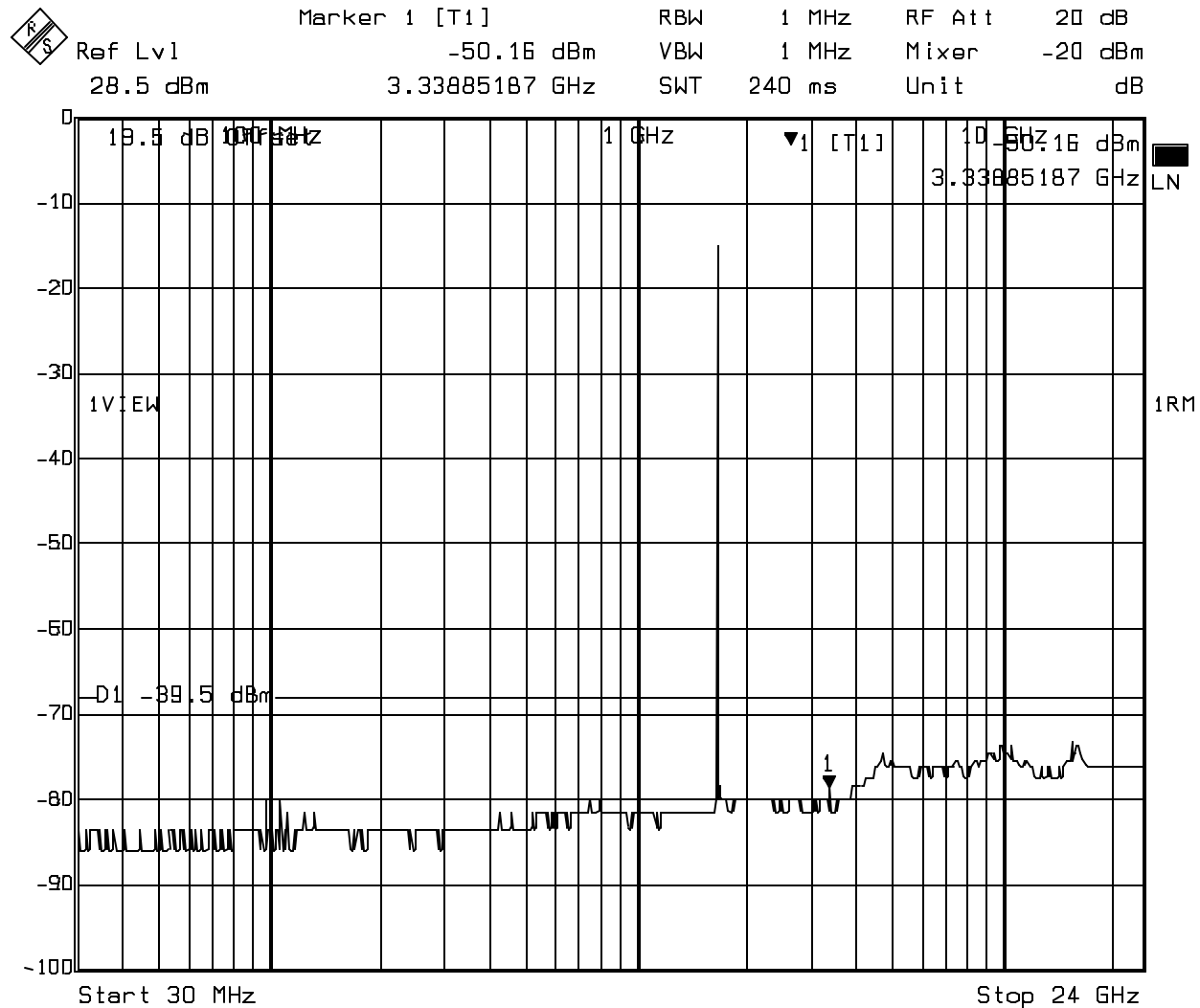
Test Data - +27 dBm



Title: 20C
Date: 11.NOV.2002 16:48:39

EQUIPMENT: 2.3 GHz CPE

Test Data - +28 dBm



Title: 20C
Date: 11.NOV.2002 16:49:31

EQUIPMENT: 2.3 GHz CPE

Section 6. Field Strength of Spurious

NAME OF TEST: Field Strength of Spurious Emissions	PARA. NO.: 2.1053
TESTED BY: David Light	DATE:9/4/2002

Test Results: Complies

Measurement Data: See attached table.

Measurement Uncertainty: +/-1.7 dB

EQUIPMENT: 2.3 GHz CPE

Test Data - Radiated Emissions



Nemko Dallas, Inc.

Dallas Headquarters:

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

EIRP Substitution

Page 1 of 1

Job No.: 2L0527R Date: 11/12/02
Specification: CFR 47, Part 27 Temperature(°C) 22
Tested By: David Light Relative Humidity(%) 40
E.U.T.: 2.3 GHz CPE
Configuration: TX at +28 dBm RMS
Sample No: S01
Location: AC 3 RBW: 1 MHz
Detector Type: Rms VBW: 10 MHz

Complete X
Preliminary

RF Power: 33 dBm (2 w)
(Max. rms eirp level) 28 dBm+5 dB
Measurement
Distance: 3 m

Test Equipment Used

Antenna:	<u>1304</u>	Directional Coupler:	<u> </u>
Pre-Amp:	<u>1016</u>	Cable #1:	<u>1484</u>
Filter:	<u>1482</u>	Cable #2:	<u>1485</u>
Receiver:	<u>1036</u>	Cable #3:	<u> </u>
Attenuator #1	<u> </u>	Cable #4:	<u> </u>
Attenuator #2:	<u> </u>	Mixer:	<u> </u>
Additional equipment used: <u> </u>			
Measurement Uncertainty:		<u>+/- 1.7 dB</u>	

$$\begin{aligned}\text{Limit} &= 70 + 10 \log (P) \\ &= 70 + 10 \log (2) \\ &= 73 \text{ dBc}\end{aligned}$$
[illegible]

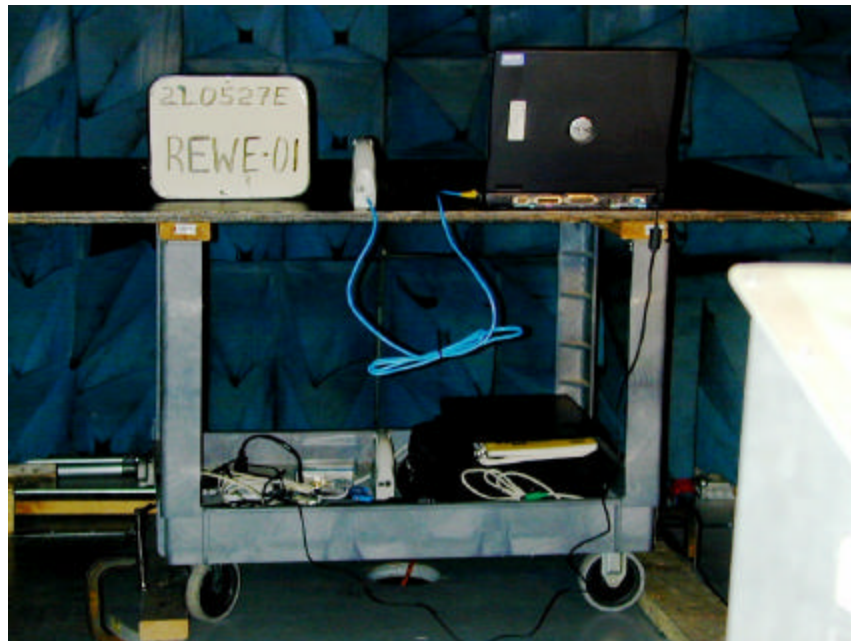
Nemko Dallas

FCC PART 27, SUBPART C
MULTIPOINT DISTRIBUTION SERVICE
PROJECT NO.:2L0527RUS1

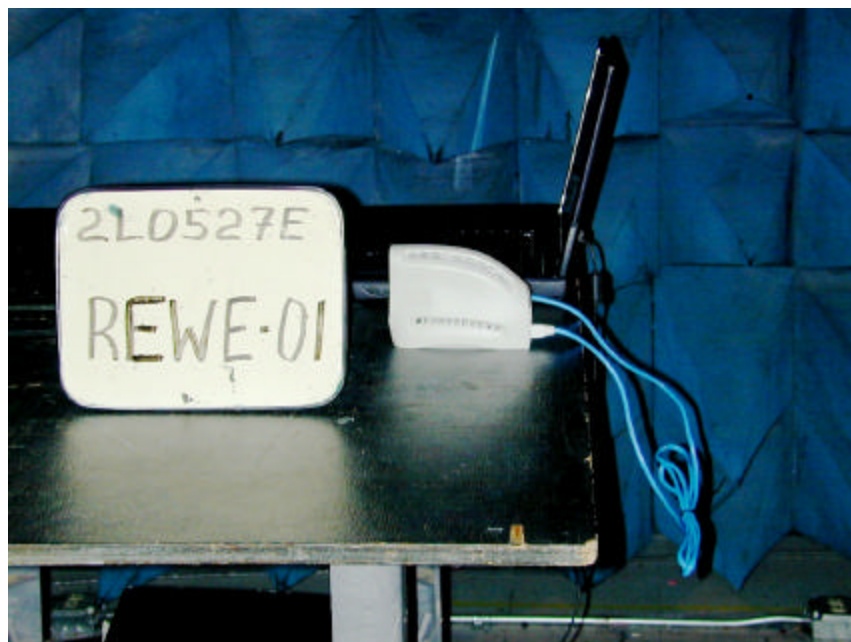
EQUIPMENT: 2.3 GHz CPE

Photos – Field Strength of Spurious Emissions

Rear



Side



EQUIPMENT: 2.3 GHz CPE

Section 7. Frequency Stability

NAME OF TEST: Frequency Stability	PARA. NO.: 2.1055
TESTED BY: Eldon Berry	DATE:11/22/2002

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 and voltage variations.

Note –.The device ceased operation at 21.5 Vdc and would not operate at –15% supply voltage. Data was taken at cutoff voltage.

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

EQUIPMENT: 2.3 GHz CPE

Test Data – Frequency Stability – Block A



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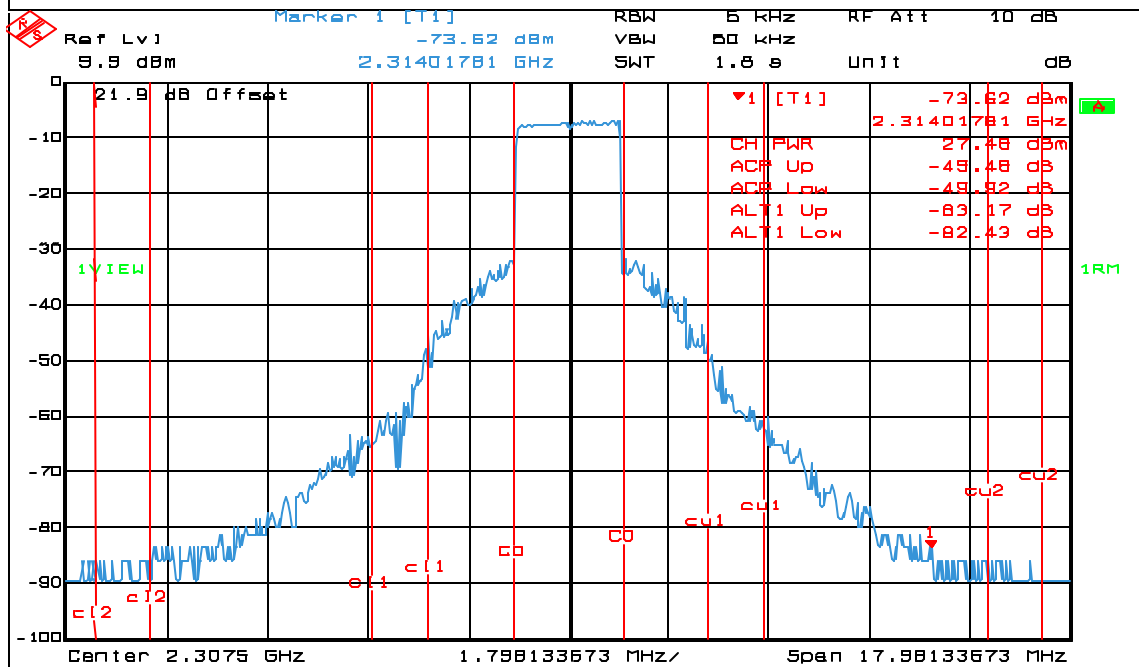
Data Plot

Page 1 of 11
Job No.: 2L0527 Date: 11/22/02
Specification: Part 27 Temperature(°C): See data
Tested By: Eldon Berry Relative Humidity(%): Uncontrolled
E.U.T.: 2.3 GHz CPE
Configuration: Block A
Sample Number: 1
Detector Type: Rms
RBW: Refer to plots
VBW: Refer to plots

Complete X
Preliminary

Test Equipment Used

Antenna: Directional Coupler:
Pre-Amp: Cable #1: 1483
Filter: Cable #2:
Receiver: 1036 Cable #3:
Attenuator #1: 1474 Cable #4:
Attenuator #2: Mixer:
Additional equipment used:
Measurement Uncertainty: +/-3.6 dB



Title: 20C
Date: 19.NOV.2002 11:04:31

Notes: 20/degree

EQUIPMENT: 2.3 GHz CPE



Dallas Headquarters:

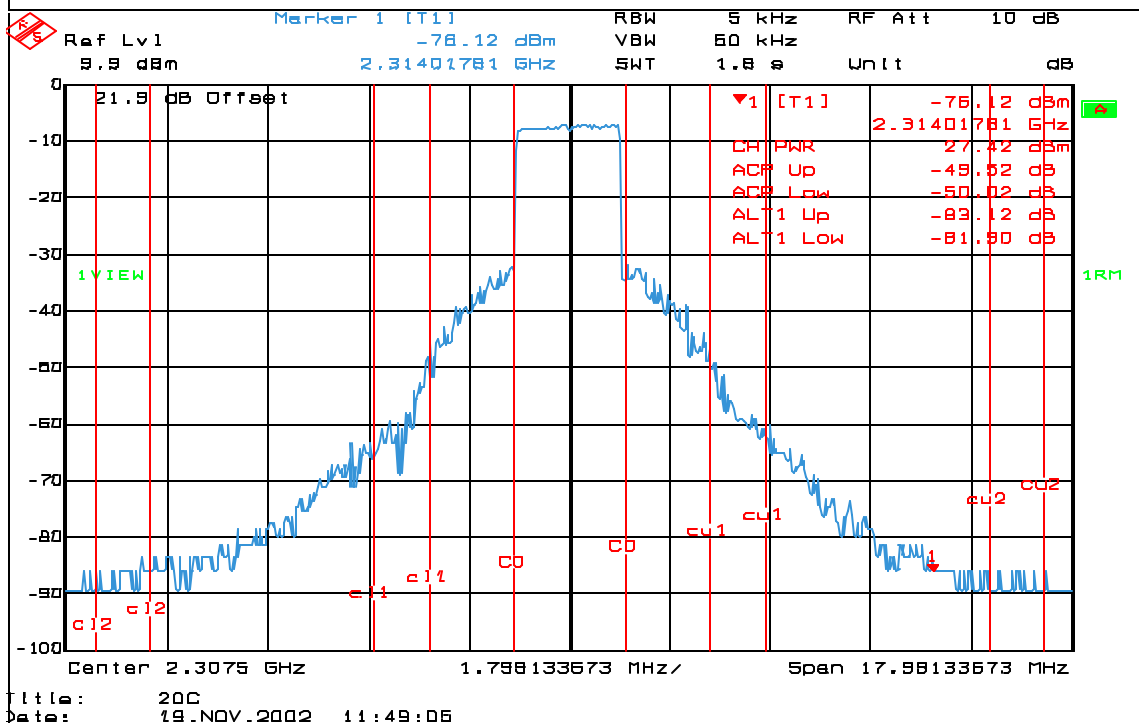
802 N. Kealy
Lewisville, TX 75057
Tel: (972) 436-9600
Fax: (972) 436-2667

Nemko Dallas, Inc.

Data Plot

Page 2 of 11

Job No.: 2L0527 Date: 11/22/02
Specification: Part 27 Temperature(°C): See data
Tested By: Eldon Berry Relative Humidity(%) Uncontrolled
E.U.T.: 2.3 GHz CPE
Configuration: Block A



Notes: 50 Deg

EQUIPMENT: 2.3 GHz CPE



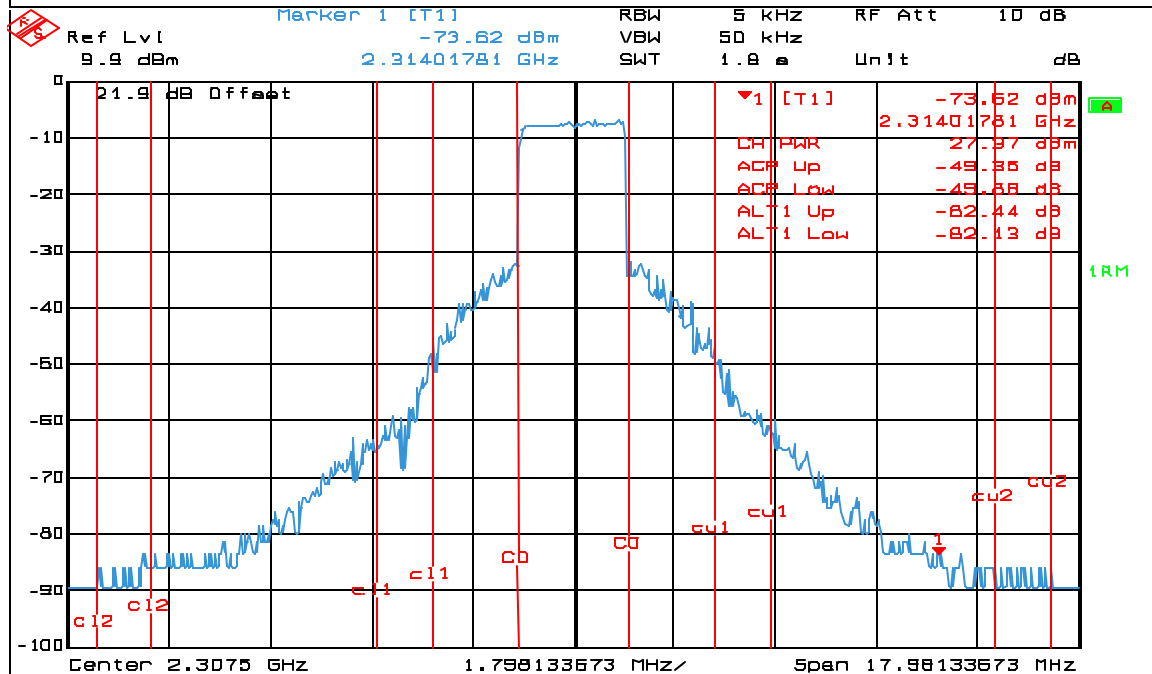
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Fax: (972) 436-2667

Data Plot

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Job No.: 2L0527 Date: 11/22/02
Specification: Part 27 Temperature(°C): See data
Tested By: Eldon Berry Relative Humidity(%) Uncontrolled
E.U.T.: 2.3 GHz CPE
Configuration: Block A



Title: 20C
Date: 19.NOV.2002 12:36:57

Notes: 40 Deg

EQUIPMENT: 2.3 GHz CPE



Dallas Headquarters:

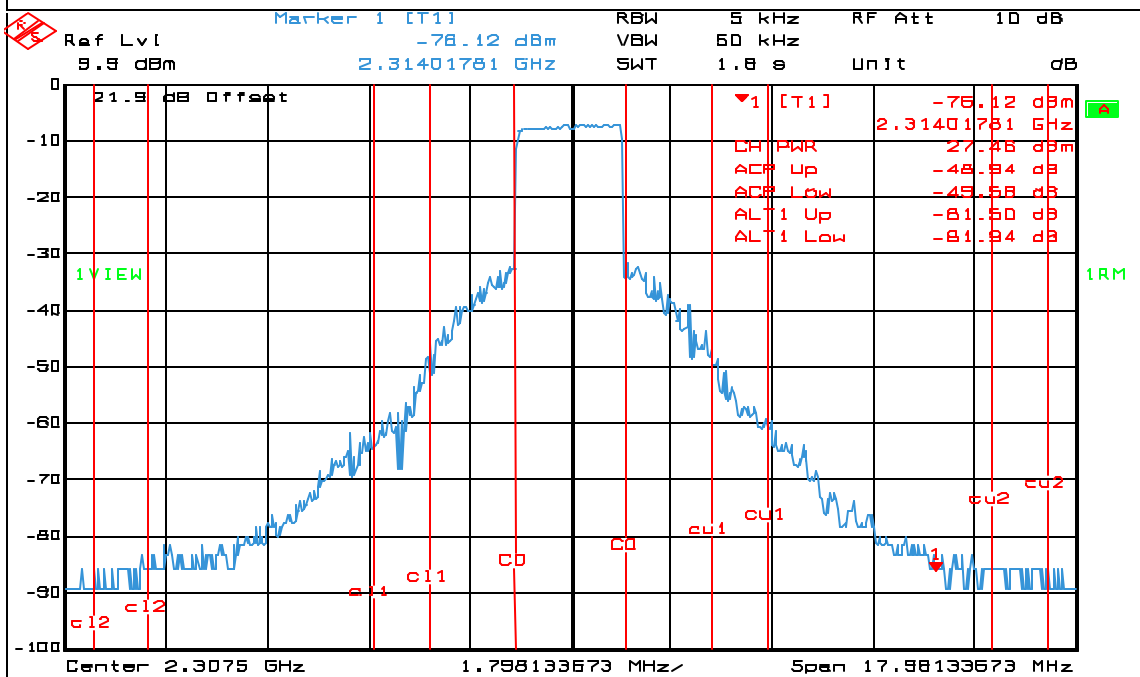
802 N. Kealy
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Tel: (972) 436-9600
Fax: (972) 436-2667

Nemko Dallas, Inc.

Test Plot:

Page 4 of 11

Job No.:	<u>2L0527</u>	Date:	<u>11/22/02</u>
Specification:	<u>Part 27</u>	Temperature(°C):	<u>See data</u>
Tested By:	<u>Eldon Berry</u>	Relative Humidity(%)	<u>Uncontrolled</u>
E.U.T.:	<u>2.3 GHz CPE</u>		
Configuration:	<u>Block A</u>		



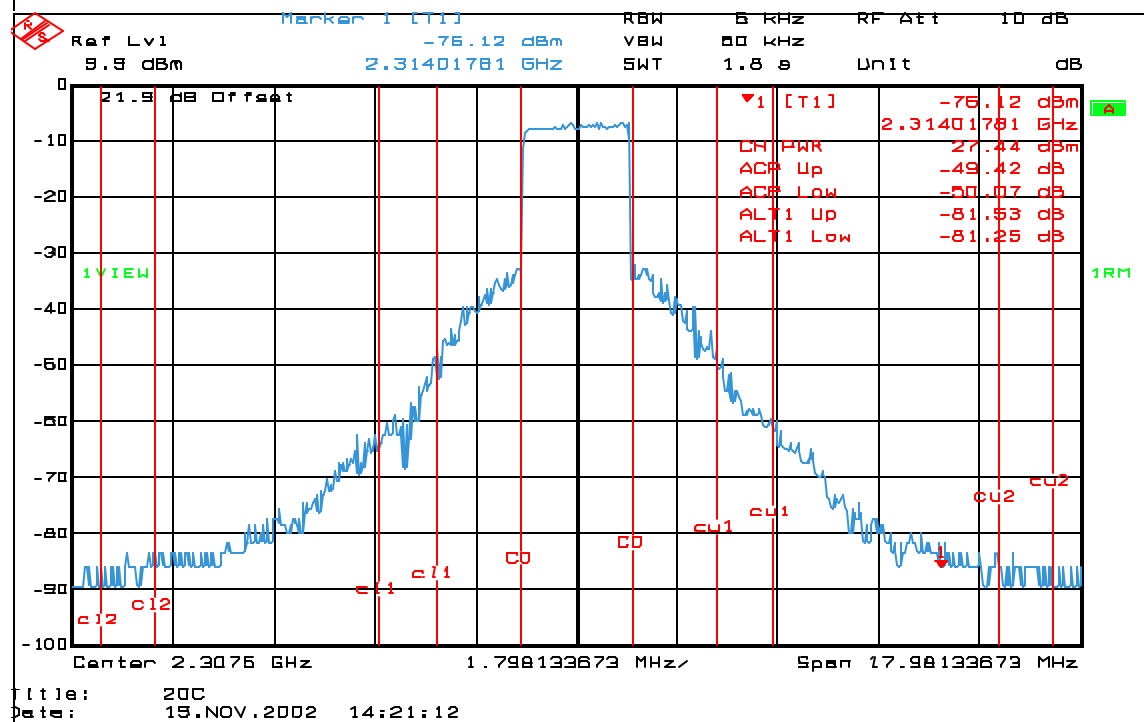
```
Title:      20C
Date:      19.NOV.2002  13:24:03
```

Notes: 30 Deg

EQUIPMENT: 2.3 GHz CPE

Test Plot:

Page 5 of 11
Job No.: 2L0527 Date: 11/22/02
Specification: Part 27 Temperature(°C): See data
Tested By: Eldon Berry Relative Humidity(%) Uncontrolled
E.U.T.: 2.3 GHz CPE
Configuration: Block A

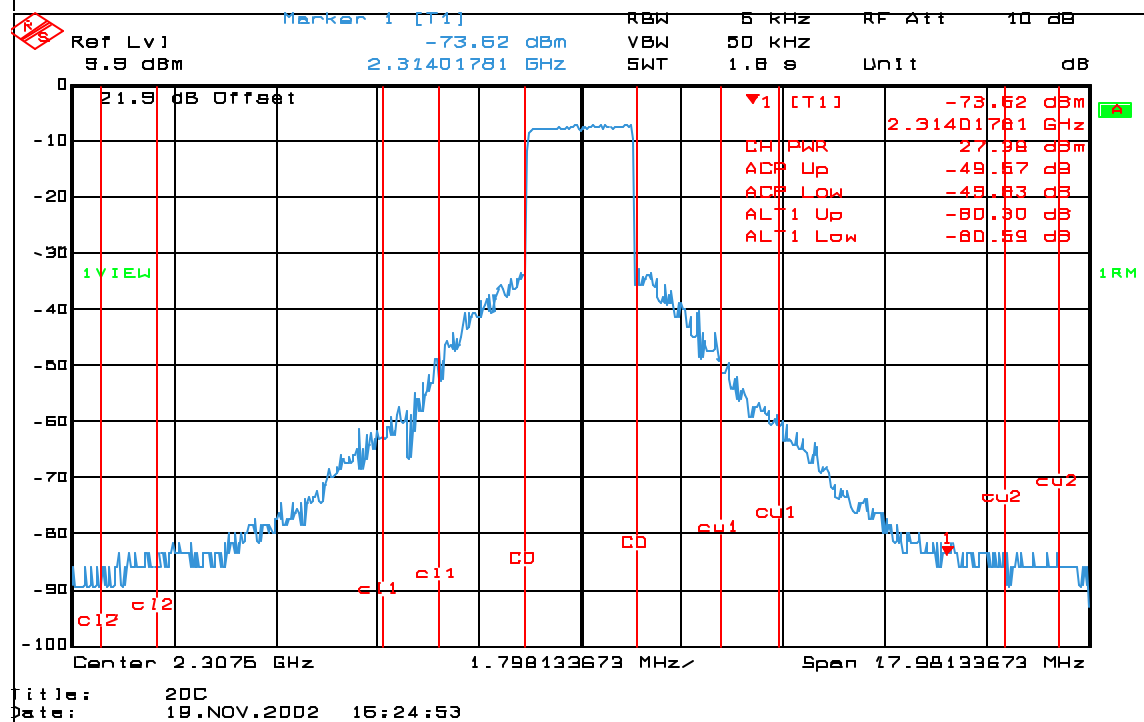


Notes: 10 Deg

EQUIPMENT: 2.3 GHz CPE

Test Plot:

Page 6 of 11
Job No.: 2L0527 Date: 11/22/02
Specification: Part 27 Temperature(°C): See data
Tested By: Eldon Berry Relative Humidity(%) Uncontrolled
E.U.T.: 2.3 GHz CPE
Configuration: Block A

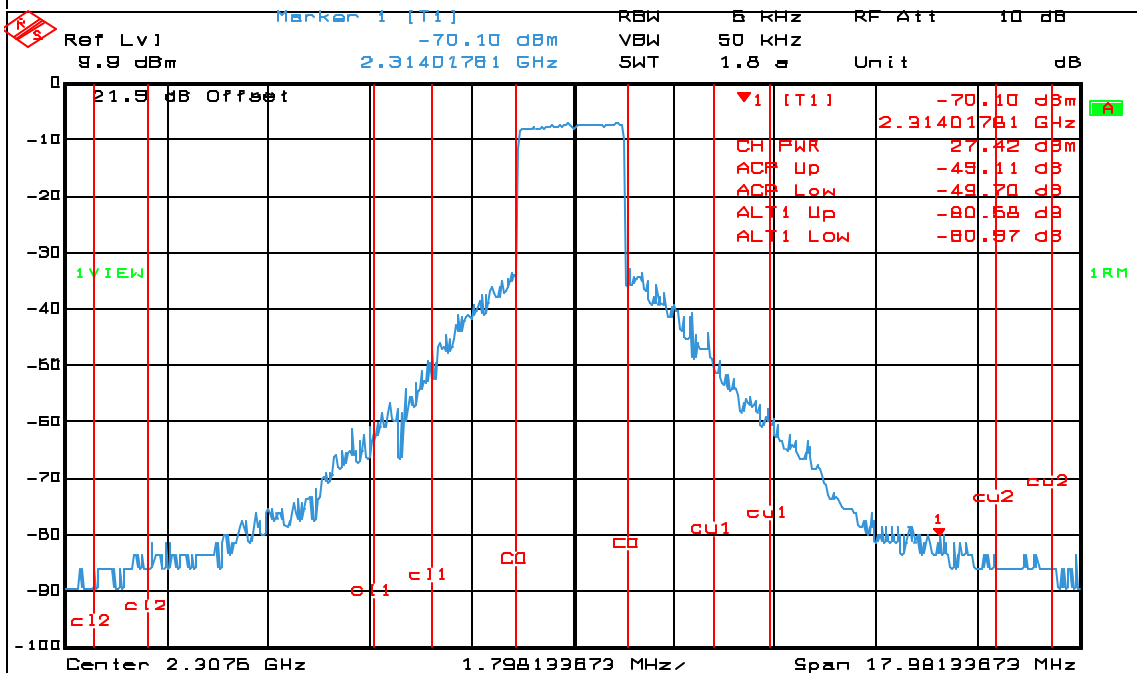


Notes: 0 Dec

EQUIPMENT: 2.3 GHz CPE

Test Plot:

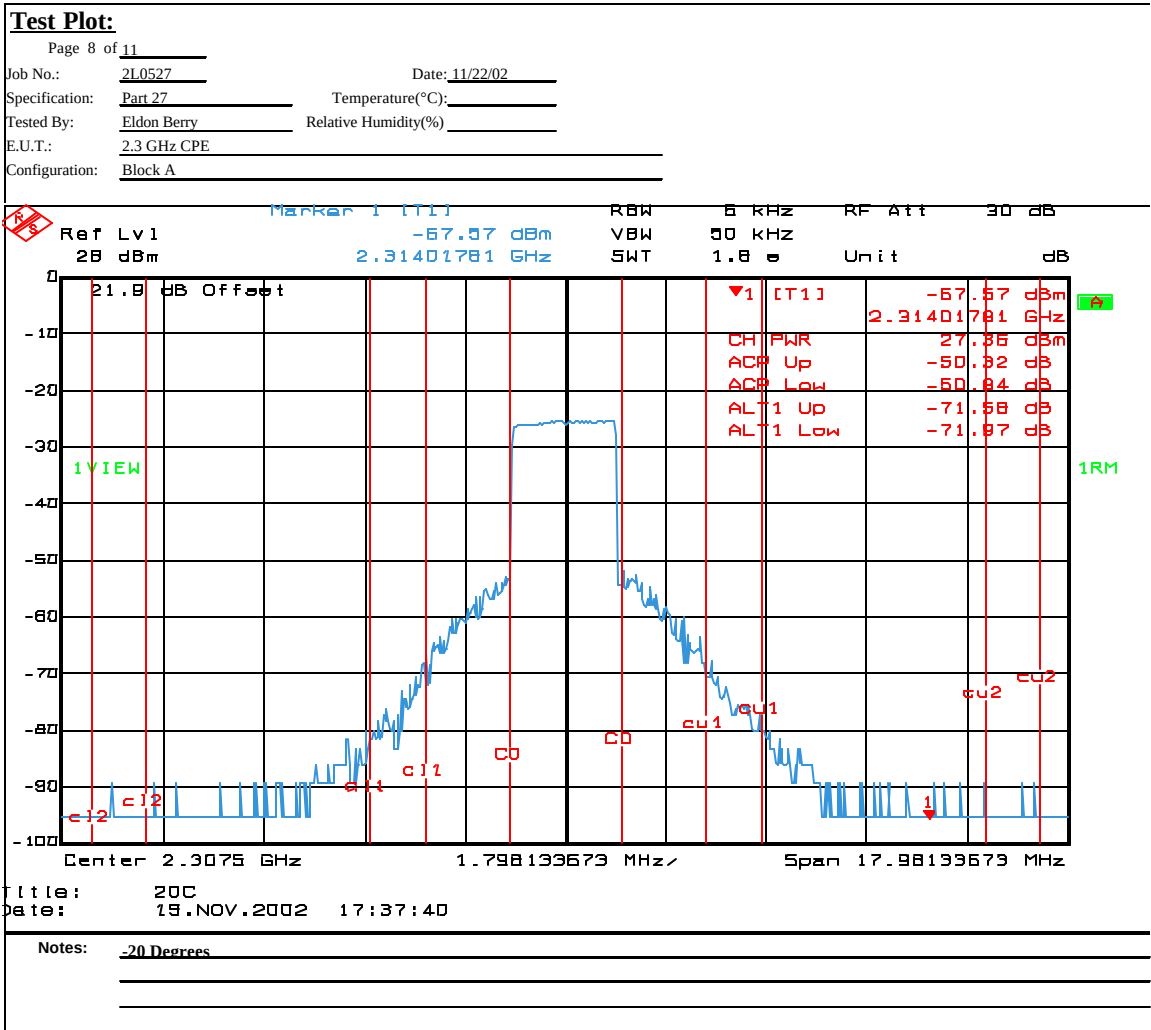
Page 7 of 11
Job No.: 2L0527 Date: 11/22/02
Specification: Part 27 Temperature(°C):
Tested By: Eldon Berry Relative Humidity(%)
E.U.T.: 2.3 GHz CPE
Configuration: Block A



Title: 20C
Date: 18.NOV.2002 16:58:08

Notes: -10 Deg

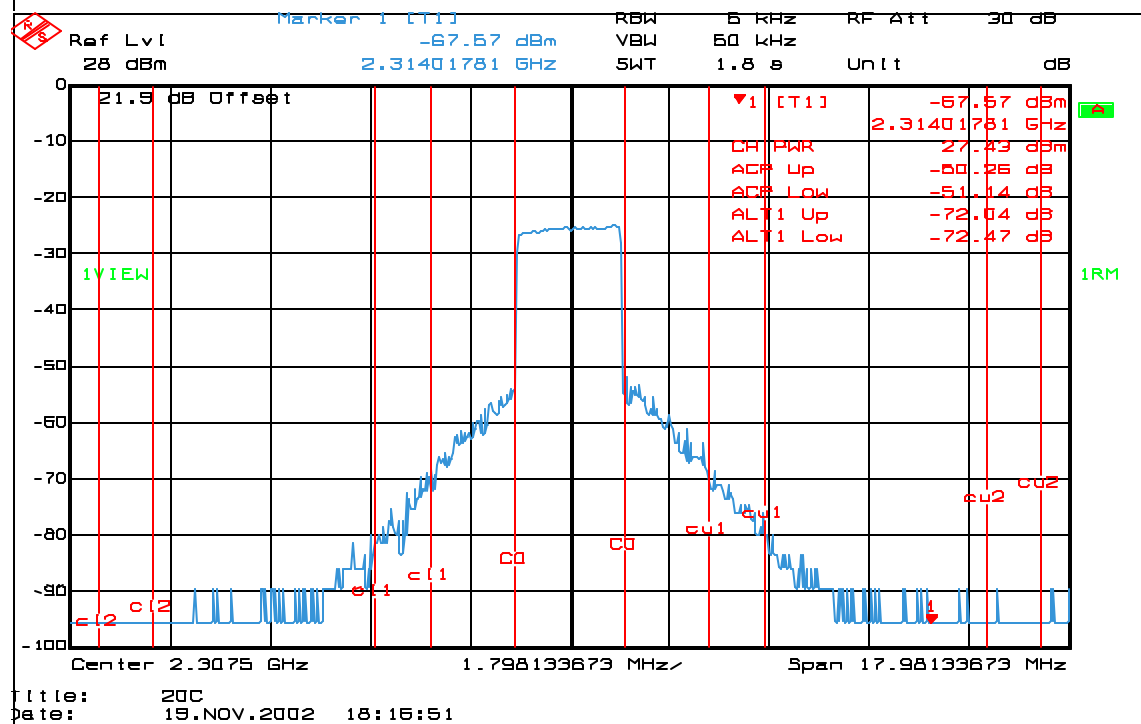
EQUIPMENT: 2.3 GHz CPE



EQUIPMENT: 2.3 GHz CPE

Test Plot:

Page 9 of 11
Job No.: 2L0527 Date: 11/22/02
Specification: Part 27 Temperature(°C):
Tested By: Eldon Berry Relative Humidity(%)
E.U.T.: 2.3 GHz CPE
Configuration: Block A

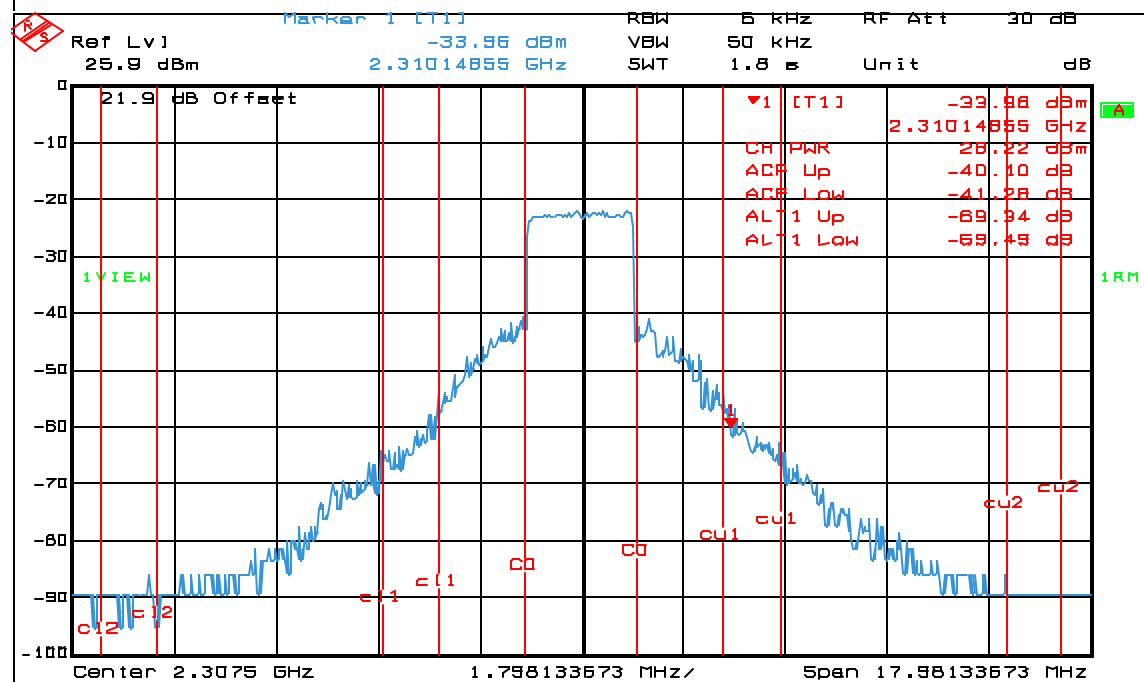


Notes: -30 Degrees

EQUIPMENT: 2.3 GHz CPE

Test Plot:

Page 10 of 11
Job No.: 2L0527 Date: 11/22/02
Specification: Part 27 Temperature(°C):
Tested By: Eldon Berry Relative Humidity(%)
E.U.T.: 2.3 GHz CPE
Configuration: Block A



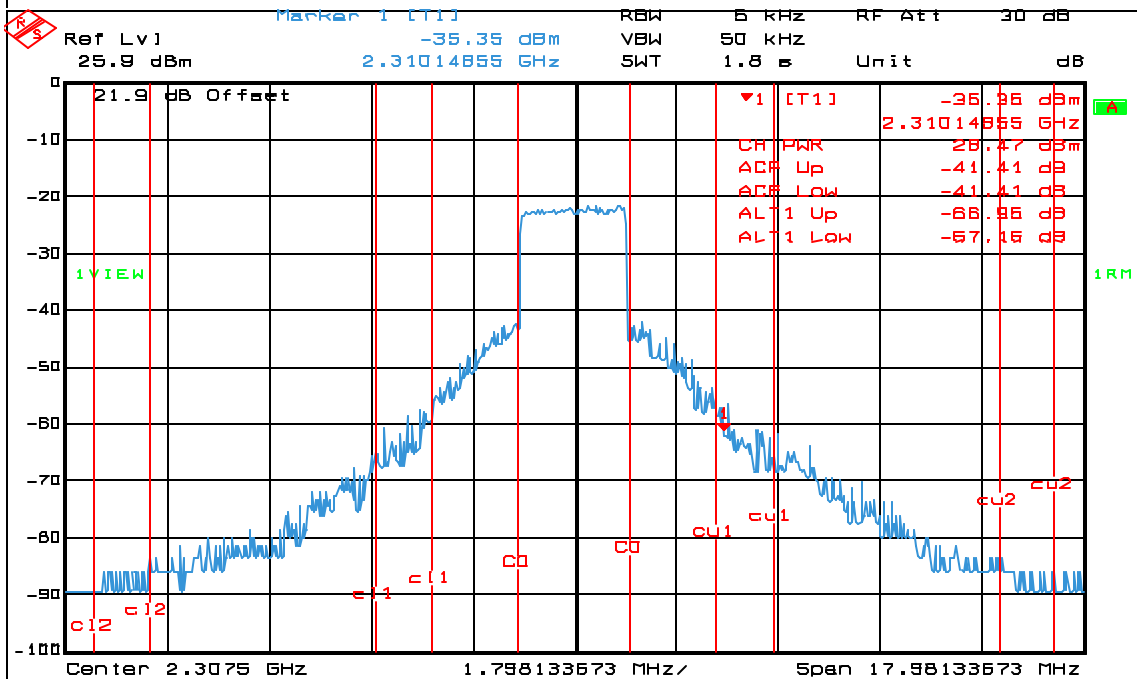
Title: 20C
Date: 22.NOV.2002 17:08:06

Notes: 20 degrees, 5 Vdc

EQUIPMENT: 2.3 GHz CPE

Test Plot:

Page 11 of 11
Job No.: 2L0527 Date: 11/22/02
Specification: Part 27 Temperature(°C):
Tested By: Eldon Berry Relative Humidity(%)
E.U.T.: 2.3 GHz CPE
Configuration: Block A



Title: 20C
Date: 22.NOV.2002 17:11:33

Notes: 20 degrees, +6.9 Vdc

Test Data – Frequency Stability (Block B)

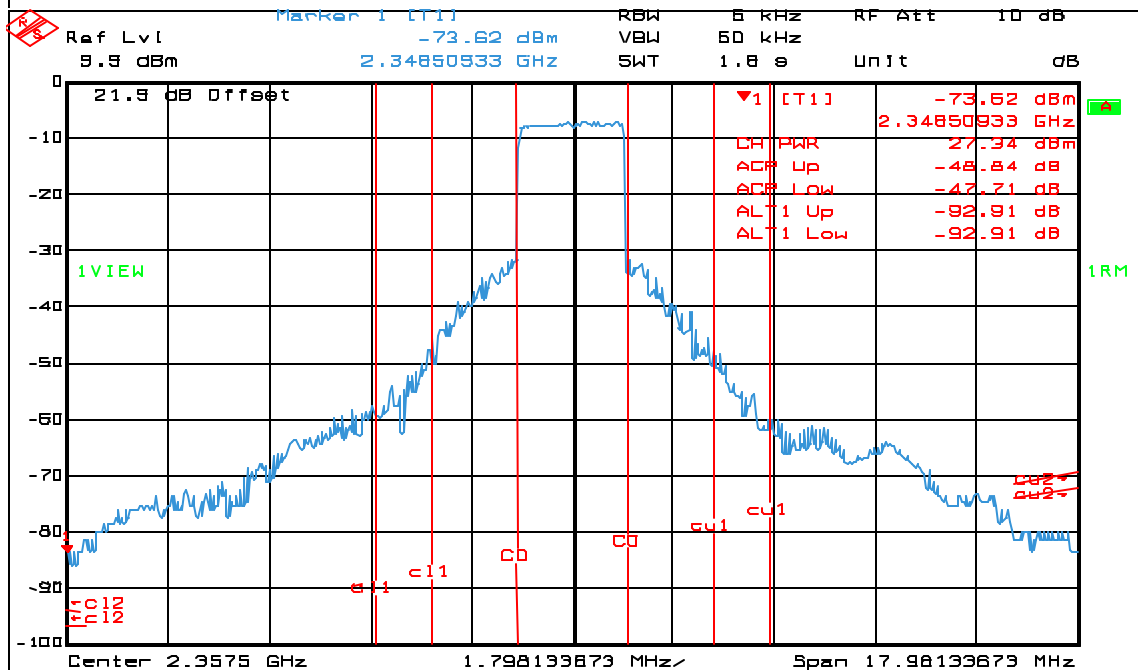
Page 1 of 11		Complete <u>X</u>	
Job No.: 2L0527	Date: 11/19/02	Preliminary _____	
Specification: Part 27	Temperature(°C): <u>See data</u>		
Tested By: <u>Eldon Berry</u>	Relative Humidity(%): <u>Uncontrolled</u>		
E.U.T.: _____			
Configuration: _____			
Sample Number: <u>1</u>			
Location: _____	RBW: <u>Refer to plots</u>		
Detector Type: <u>Rms</u>	VBW: <u>Refer to plots</u>		
Test Equipment Used			
Antenna: _____	Directional Coupler: _____		
Pre-Amp: _____	Cable #1: <u>1484</u>		
Filter: _____	Cable #2: _____		
Receiver: <u>1036</u>	Cable #3: _____		
Attenuator #1: <u>1474</u>	Cable #4: _____		
Attenuator #2: _____	Mixer: _____		
Additional equipment used: _____			
Measurement Uncertainty: <u>+/-3.6 dB</u>			
Title: 2DC Date: 19.NOV.2002 11:07:26			
Notes: <u>20 Deg</u>			

EQUIPMENT: 2.3 GHz CPE

Data Plot

Page 2 of 11

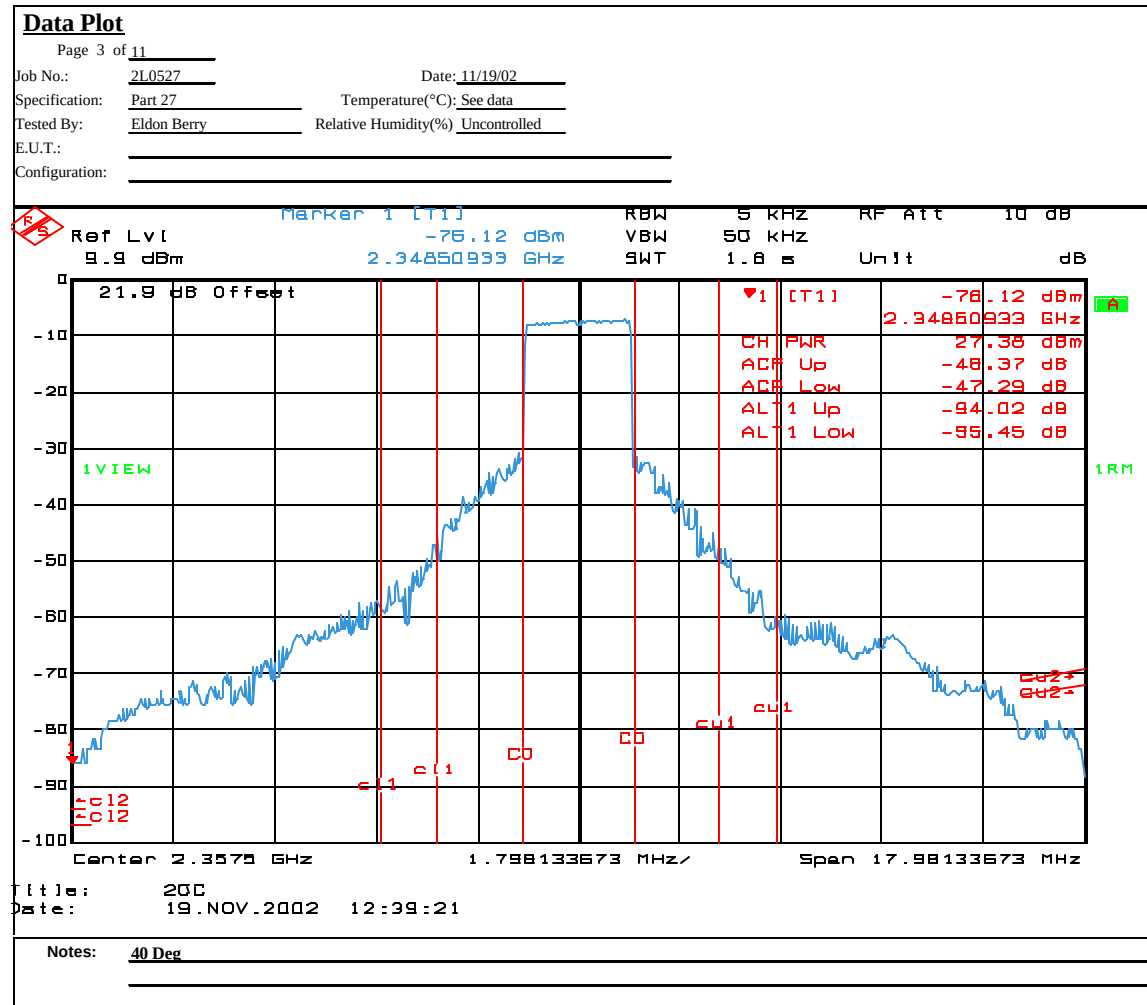
Job No.: 2L0527 Date: 11/19/02
Specification: Part 27 Temperature(°C): See data
Tested By: Eldon Berry Relative Humidity(%) Uncontrolled
E.U.T.:
Configuration:



Title: 20C
Date: 19.NOV.2002 11:52:40

Notes: 50 Deg

EQUIPMENT: 2.3 GHz CPE



Test Plot:

Page 4 of 11

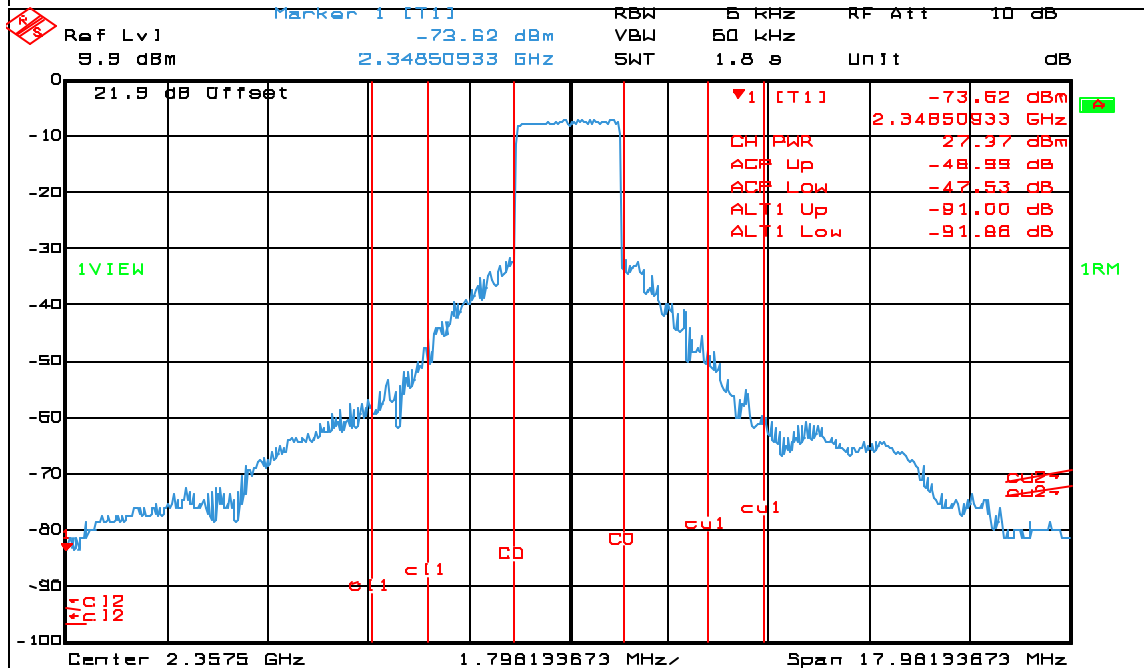
Job No.: 2L0527 Date: 11/19/02

Specification: Part 27 Temperature(°C): See data

Tested By: Eldon Berry Relative Humidity(%) Uncontrolled

E.U.T.: _____

Configuration: _____



```
Title:      ZDC
Date:      19.NOV.2002   13:21:24
```

Notes: 30 Deg

Test Plot:

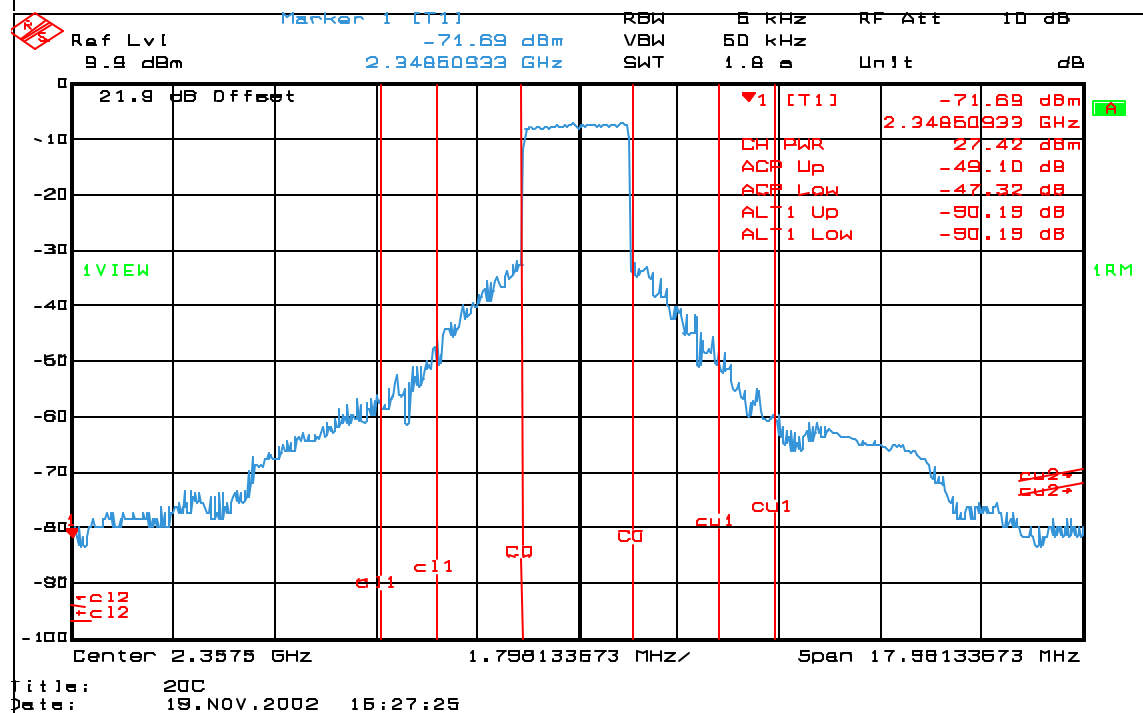
Configuration:

Notes: 10 Deg

EQUIPMENT: 2.3 GHz CPE

Test Plot:

Page 6 of 11
Job No.: 2L0527 Date: 11/19/02
Specification: Part 27 Temperature(°C): See data
Tested By: Eldon Berry Relative Humidity(%) Uncontrolled
E.U.T.:
Configuration:



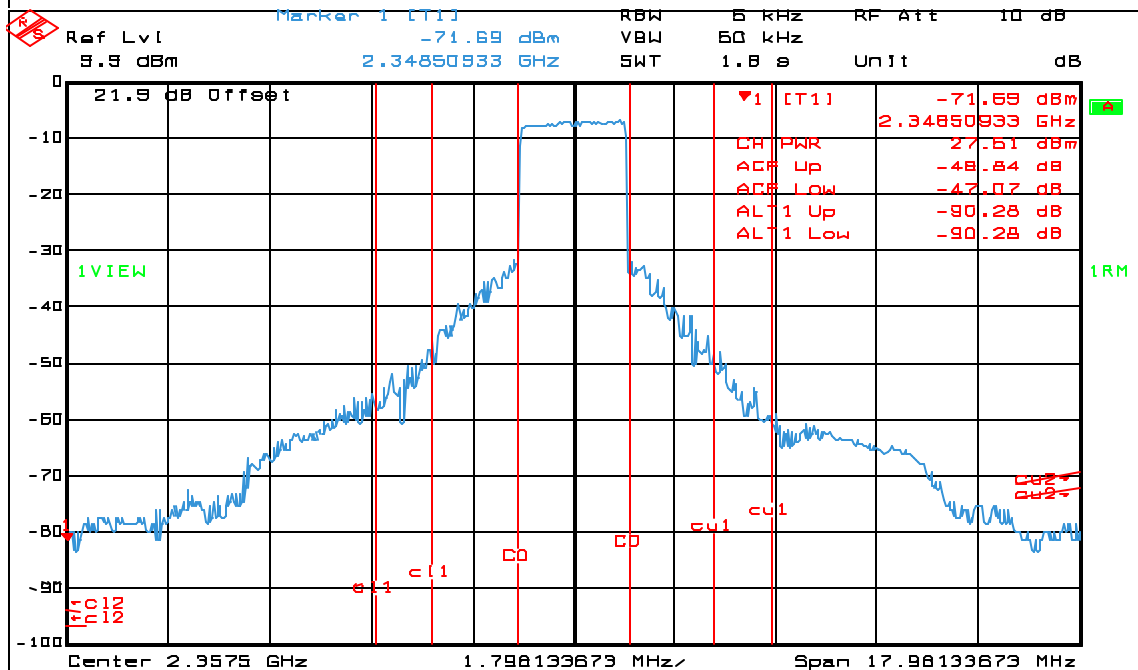
Notes: 0 Dec

EQUIPMENT: 2.3 GHz CPE

Test Plot:

Page 6 of 11

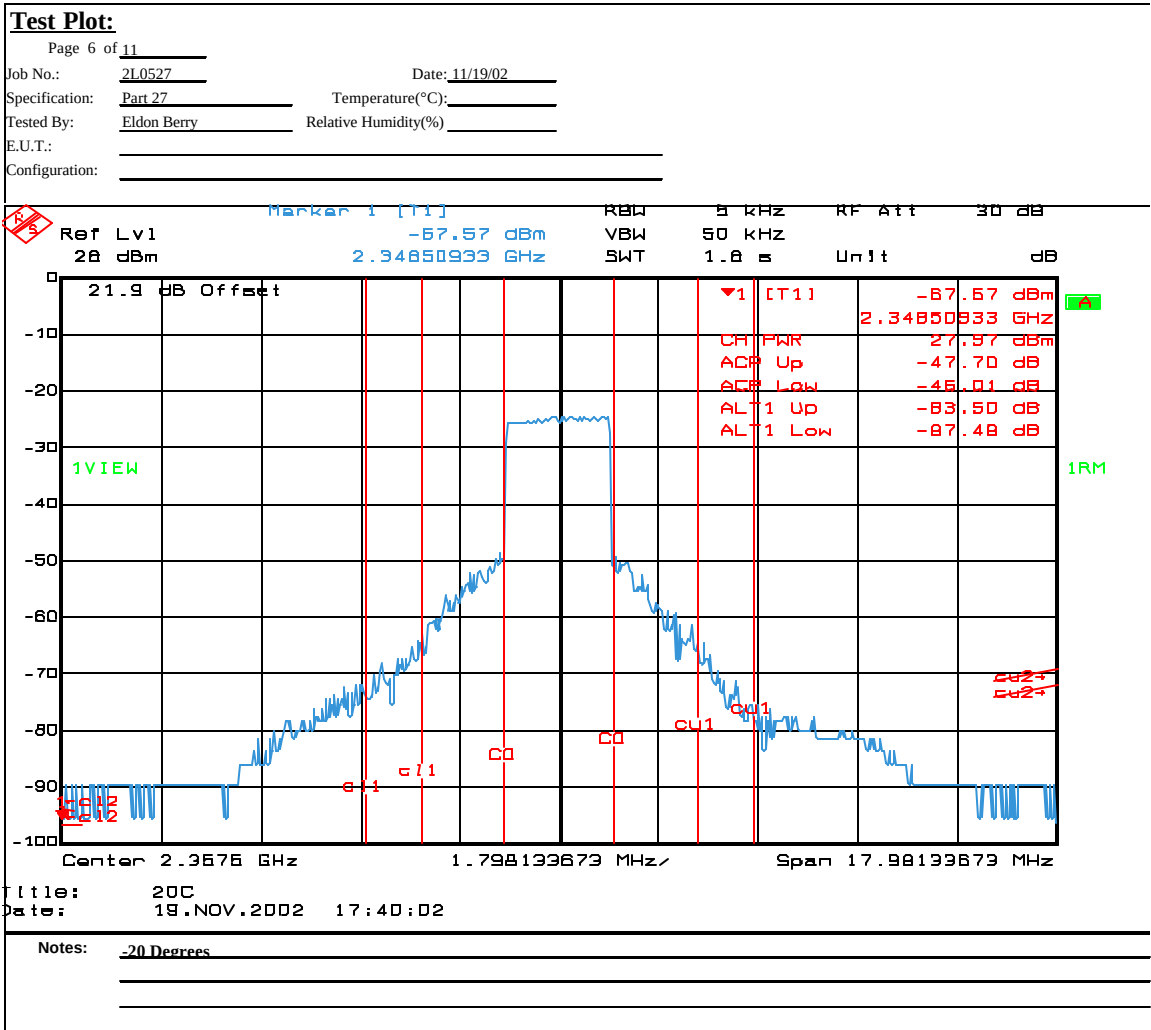
Job No.: 2L0527 Date: 11/19/02
Specification: Part 27 Temperature(°C):
Tested By: Eldon Berry Relative Humidity(%)
E.U.T.:
Configuration:



Title: 20C
Date: 19.NOV.2002 16:55:46

Notes: -10 Deg

EQUIPMENT: 2.3 GHz CPE

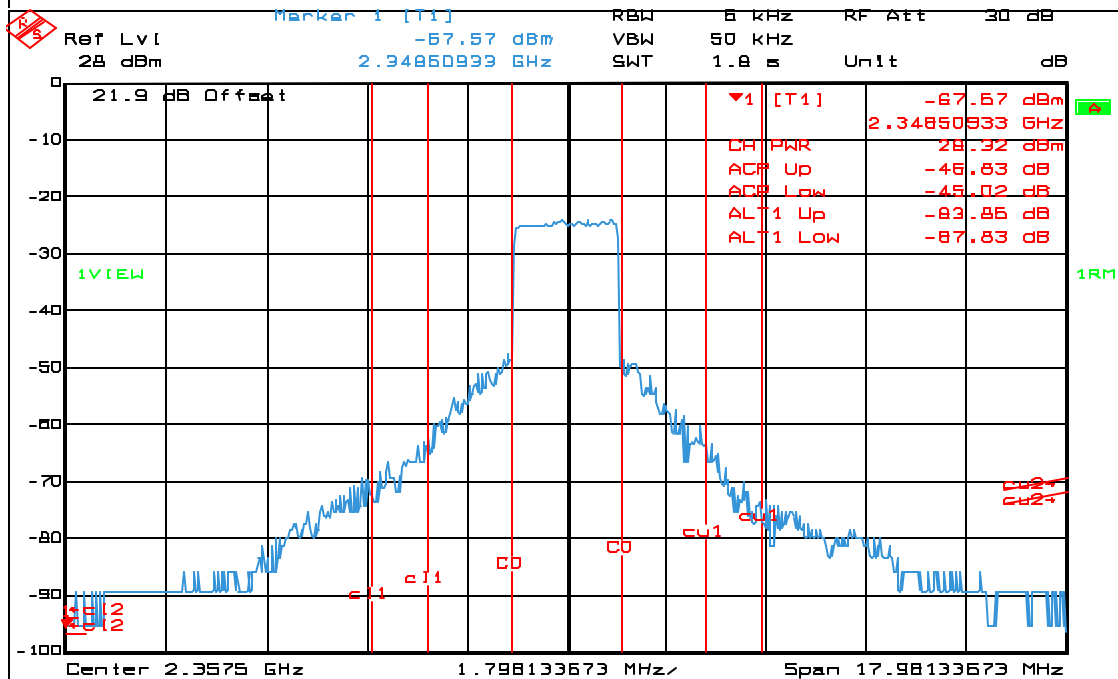


EQUIPMENT: 2.3 GHz CPE

Test Plot:

Page 6 of 11

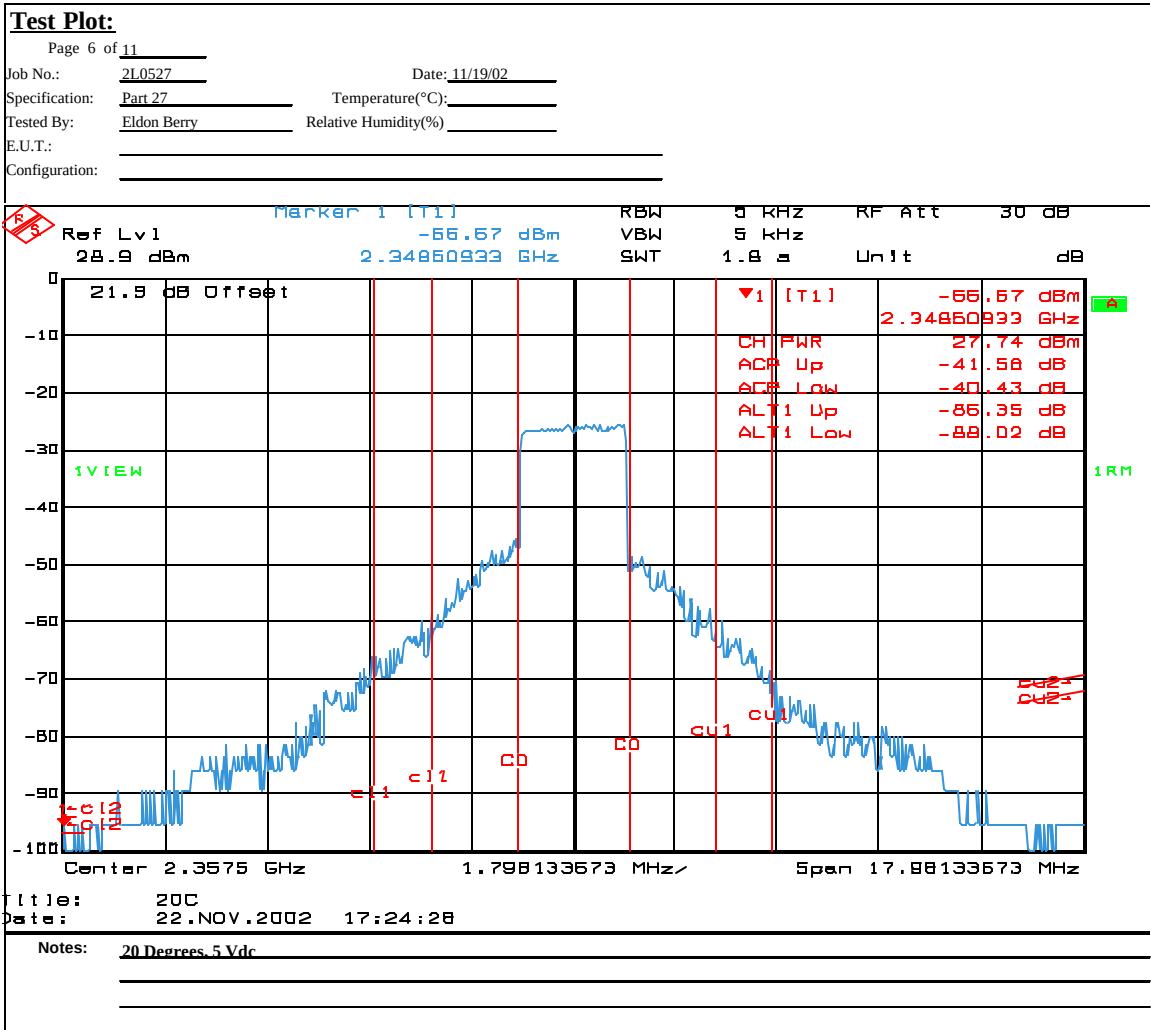
Job No.: 2L0527 Date: 11/19/02
Specification: Part 27 Temperature(°C):
Tested By: Eldon Berry Relative Humidity(%)
E.U.T.:
Configuration:



Title: 20C
Date: 19.NOV.2002 18:14:50

Notes: -30 Degrees

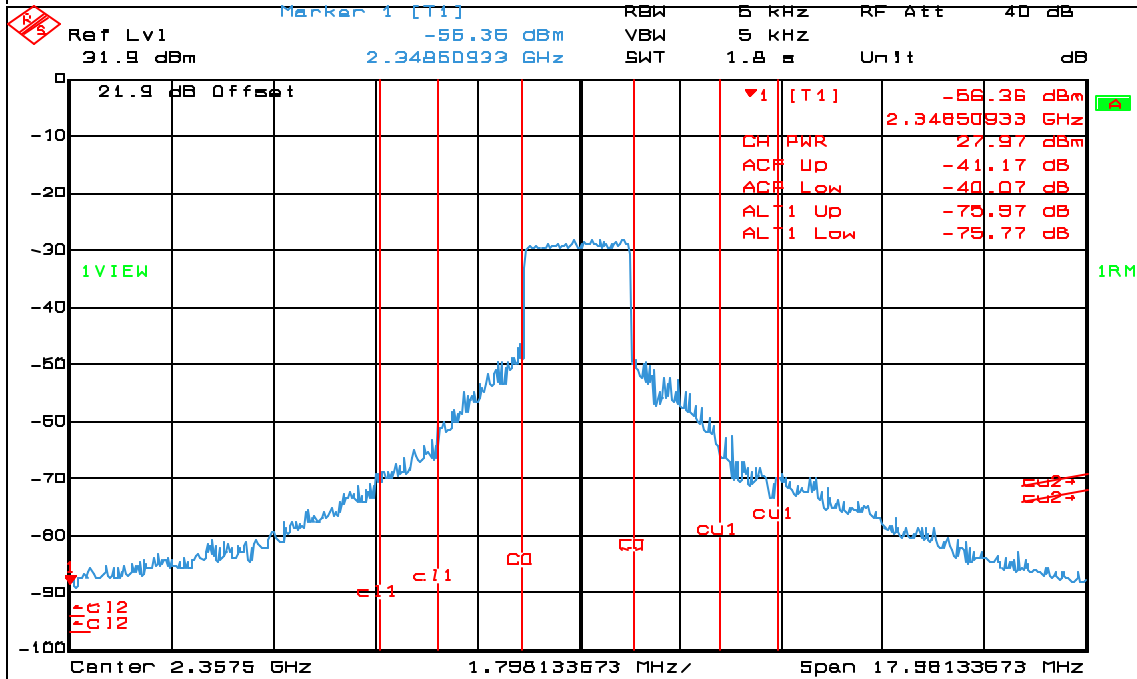
EQUIPMENT: 2.3 GHz CPE



EQUIPMENT: 2.3 GHz CPE

Test Plot:

Page 6 of 11
Job No.: 2L0527 Date: 11/19/02
Specification: Part 27 Temperature(°C):
Tested By: Eldon Berry Relative Humidity(%)
E.U.T.:
Configuration:



Title: 20C
Date: 22.NOV.2002 17:18:51

Notes: 20 Degrees, 6.9 Vdc

EQUIPMENT: 2.3 GHz CPE

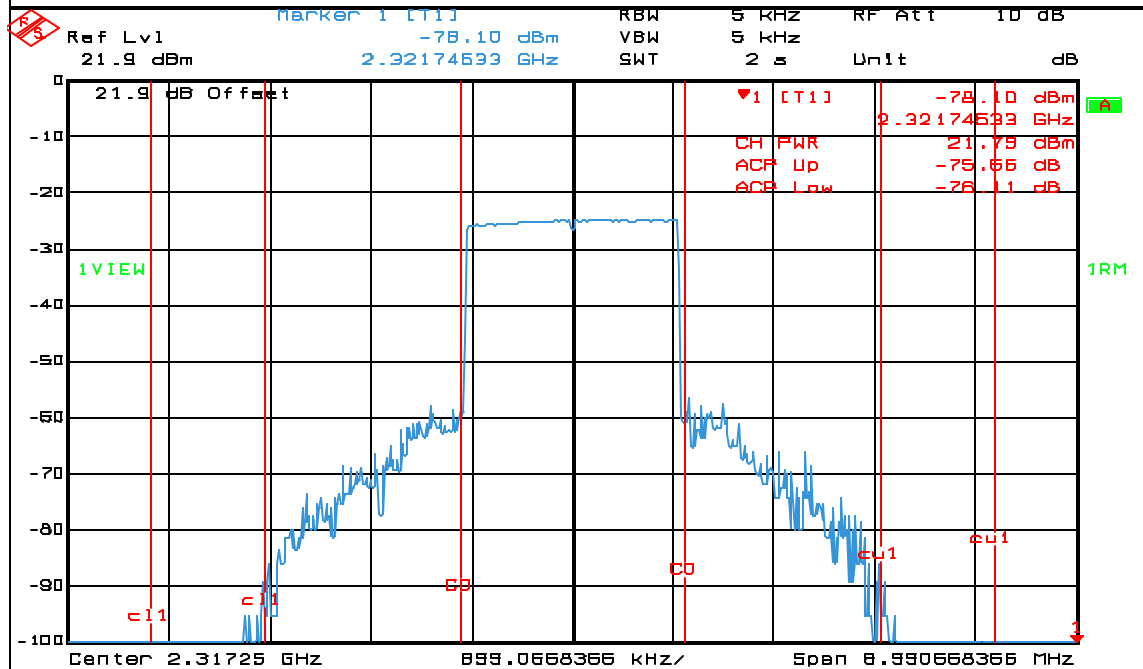
Test Data – Frequency Stability

Data Plot

Page 1 of 11
Job No.: 2L0527 Date: 1/19/02 Complete X
Specification: Part 27 Temperature(°C): See data Preliminary _____
Tested By: Eldon Berry Relative Humidity(%) Uncontrolled
E.U.T.: 2.3 GHz CPE
Configuration: Block C
Sample Number: 1
Location: _____ RBW: Refer to plots
Detector Type: Rms VBW: Refer to plots

Test Equipment Used

Antenna: _____ Directional Coupler: _____
Pre-Amp: _____ Cable #1: 1484
Filter: _____ Cable #2: _____
Receiver: 1036 Cable #3: _____
Attenuator #1: 1474 Cable #4: _____
Attenuator #2: _____ Mixer: _____
Additional equipment used: _____
Measurement Uncertainty: +/-3.6 dB



Title: 20C
Date: 19.NOV.2002 11:12:52

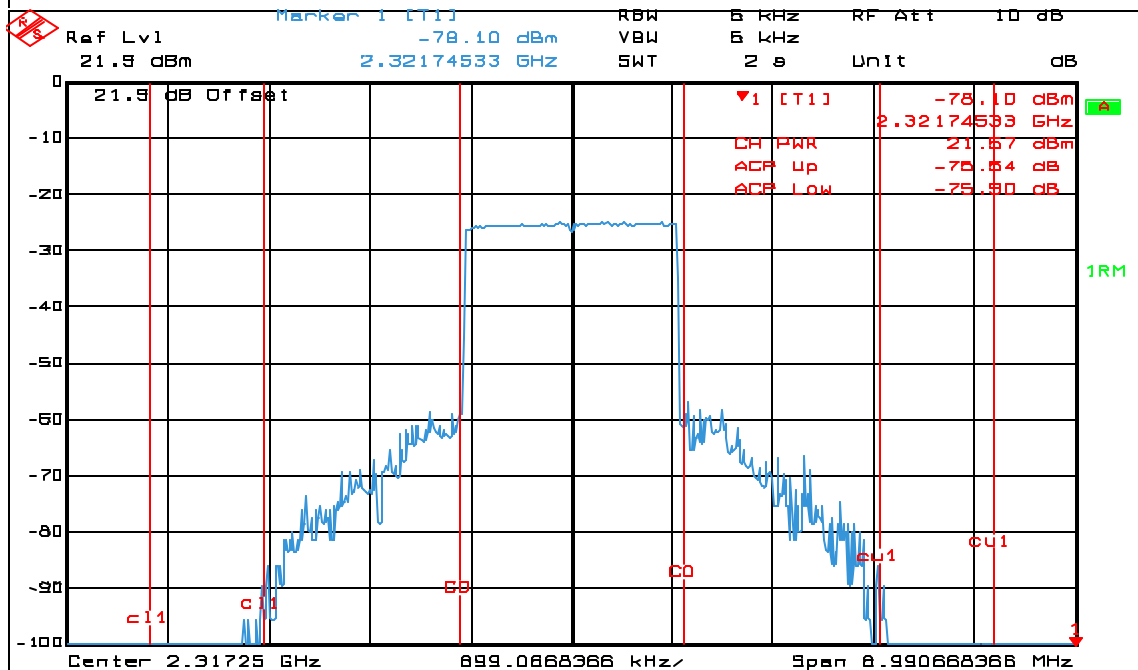
Notes: 20 Deg

EQUIPMENT: 2.3 GHz CPE

Data Plot

Page 2 of 11

Job No.: 2L0527 Date: 1/19/02
Specification: Part 27 Temperature(°C): See data
Tested By: Eldon Berry Relative Humidity(%) Uncontrolled
E.U.T.: 2.3 GHz CPE
Configuration: Block C



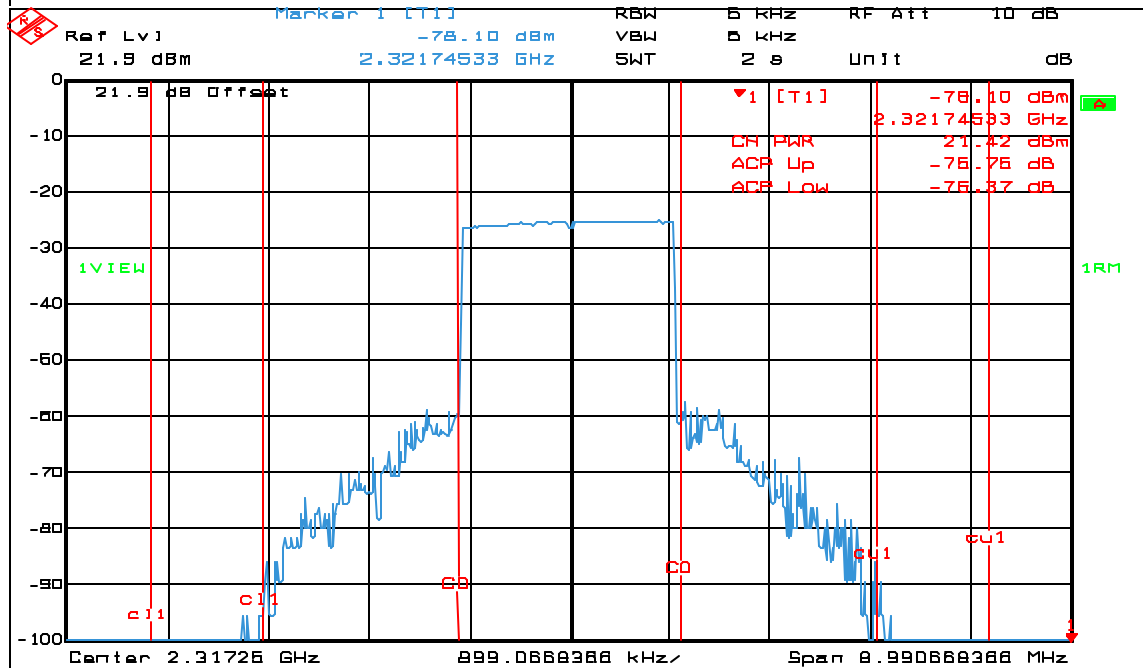
Title: 20C
Date: 15.NOV.2002 11:56:41

Notes: 50 Deg

Data Plot

Page 3 of 11

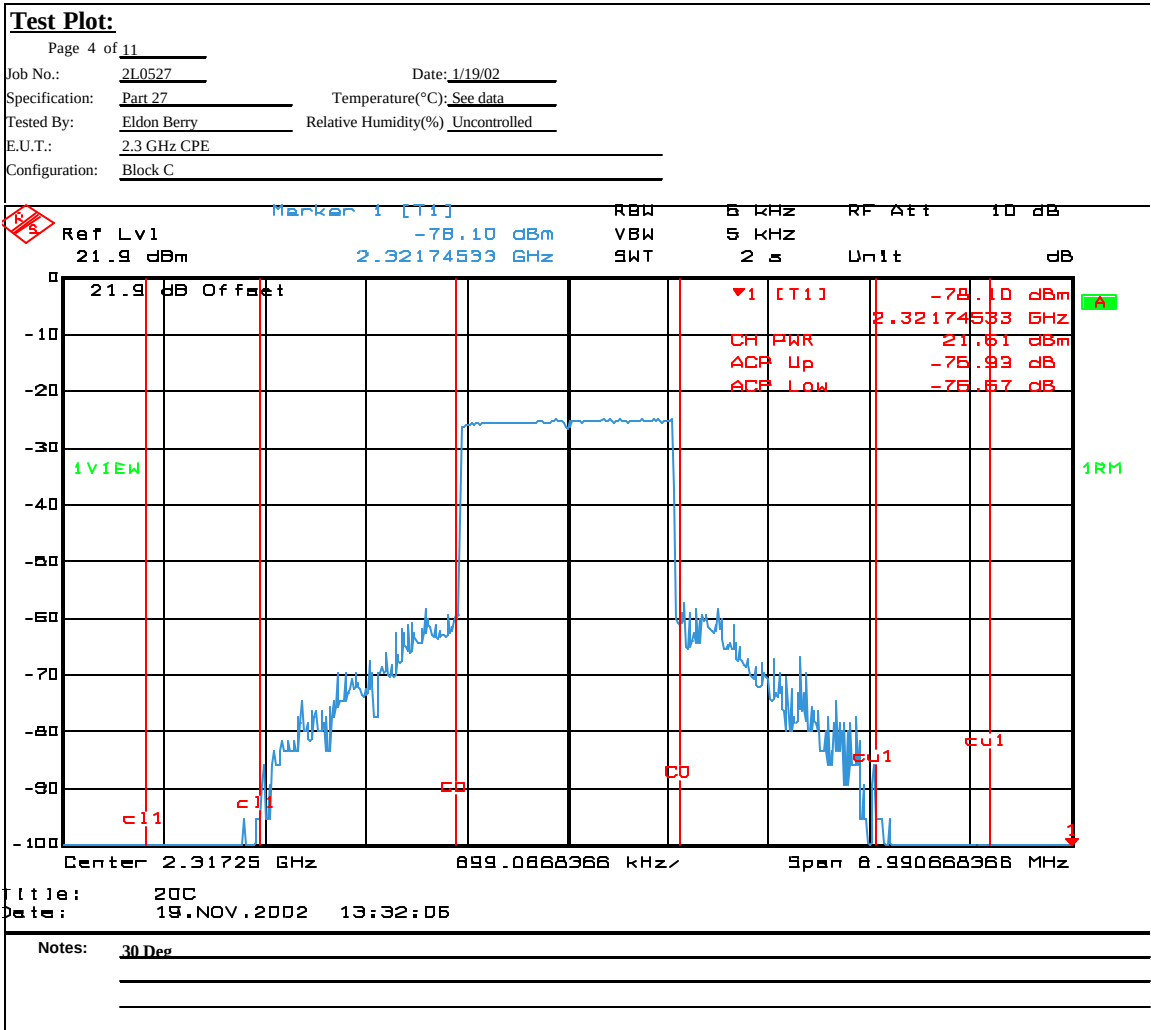
Job No.:	<u>2L0527</u>	Date:	<u>1/19/02</u>
Specification:	<u>Part 27</u>	Temperature(°C):	<u>See data</u>
Tested By:	<u>Eldon Berry</u>	Relative Humidity(%)	<u>Uncontrolled</u>
E.U.T.:	<u>2.3 GHz CPE</u>		
Configuration:	<u>Block C</u>		



```
Title:      ZDC
Date:      19.NOV.2002   12:34:35
```

Notes: 40 Deg

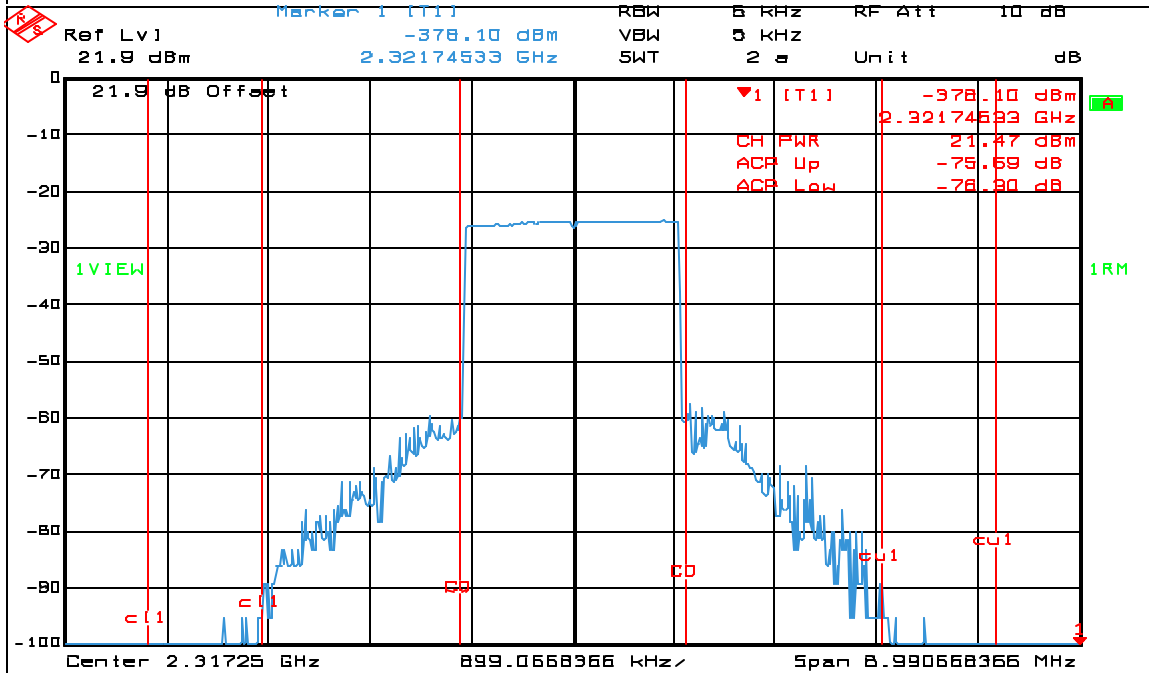
EQUIPMENT: 2.3 GHz CPE



EQUIPMENT: 2.3 GHz CPE

Test Plot:

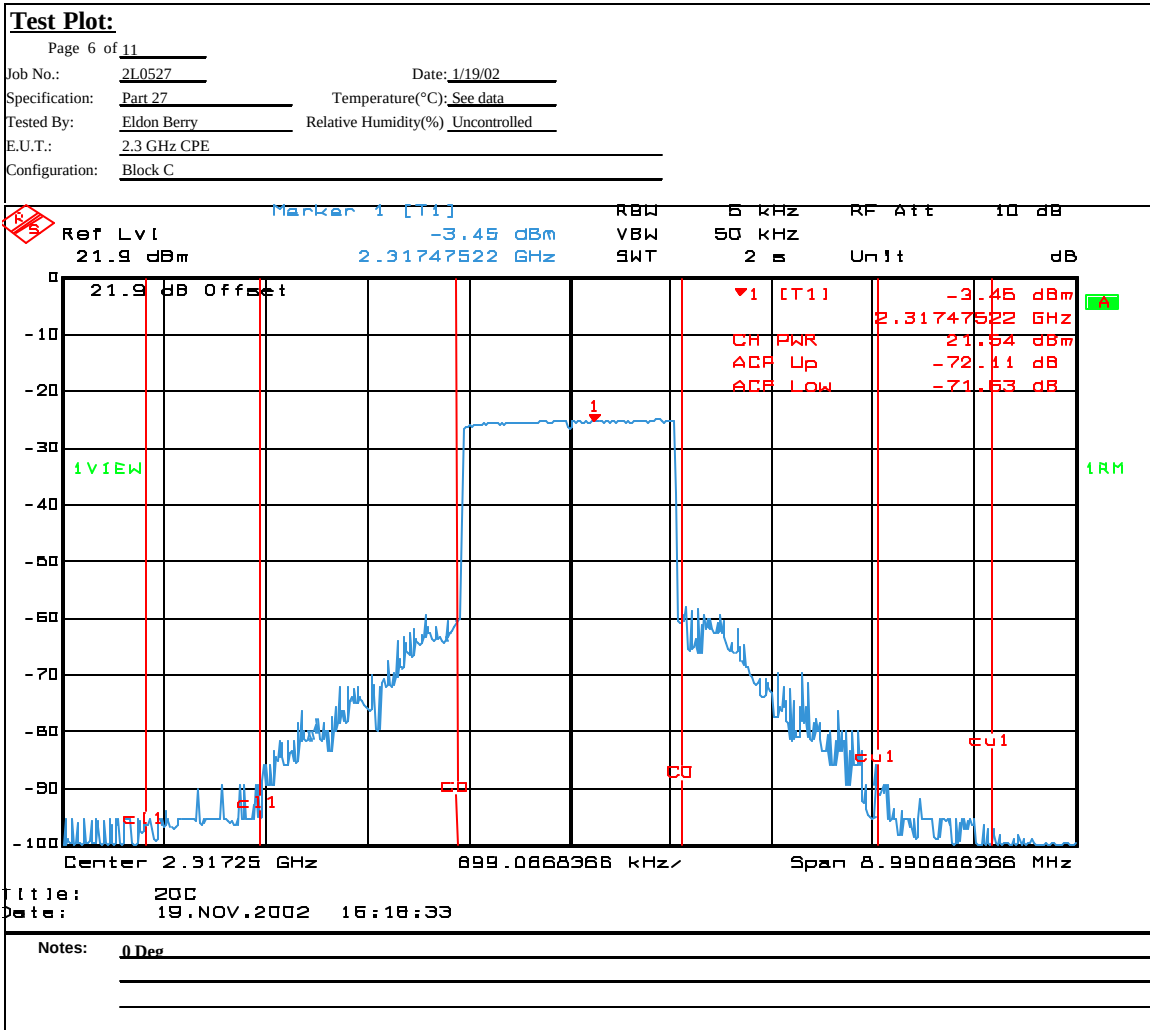
Page 5 of 11
Job No.: 2L0527 Date: 1/19/02
Specification: Part 27 Temperature(°C): See data
Tested By: Eldon Berry Relative Humidity(%) Uncontrolled
E.U.T.: 2.3 GHz CPE
Configuration: Block C



Title: 20C
Date: 19.NOV.2002 14:16:14

Notes: 10 Deg

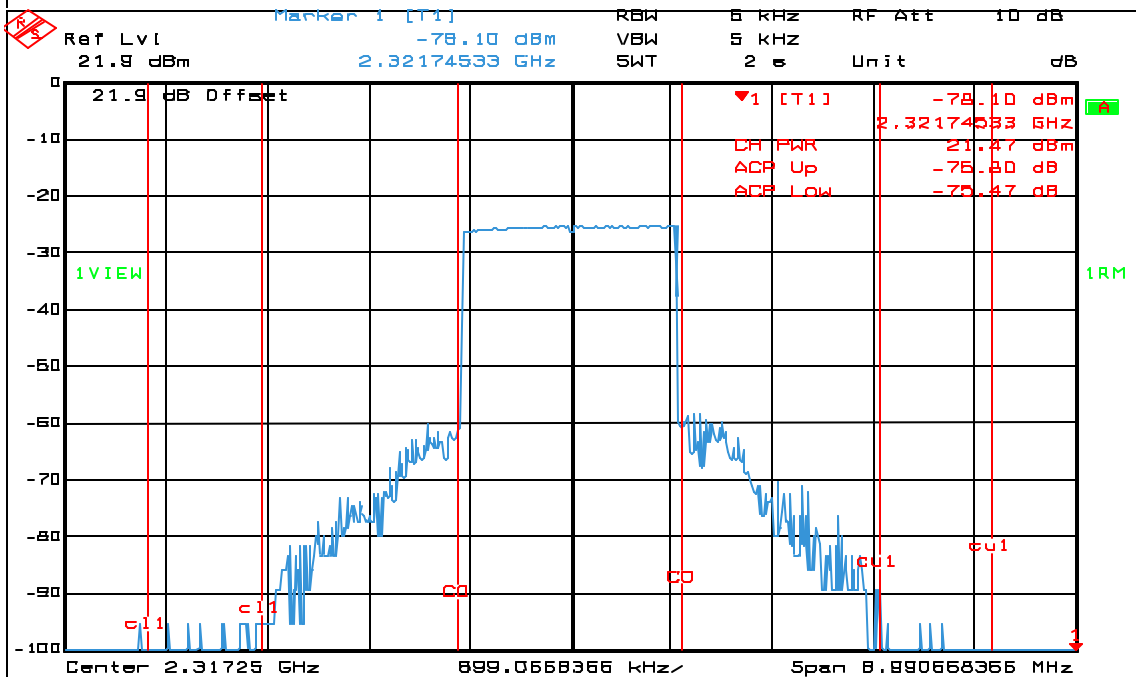
EQUIPMENT: 2.3 GHz CPE



EQUIPMENT: 2.3 GHz CPE

Test Plot:

Page 6 of 11
Job No.: 2L0527 Date: 1/19/02
Specification: Part 27 Temperature(°C):
Tested By: Eldon Berry Relative Humidity(%)
E.U.T.: 2.3 GHz CPE
Configuration: Block C



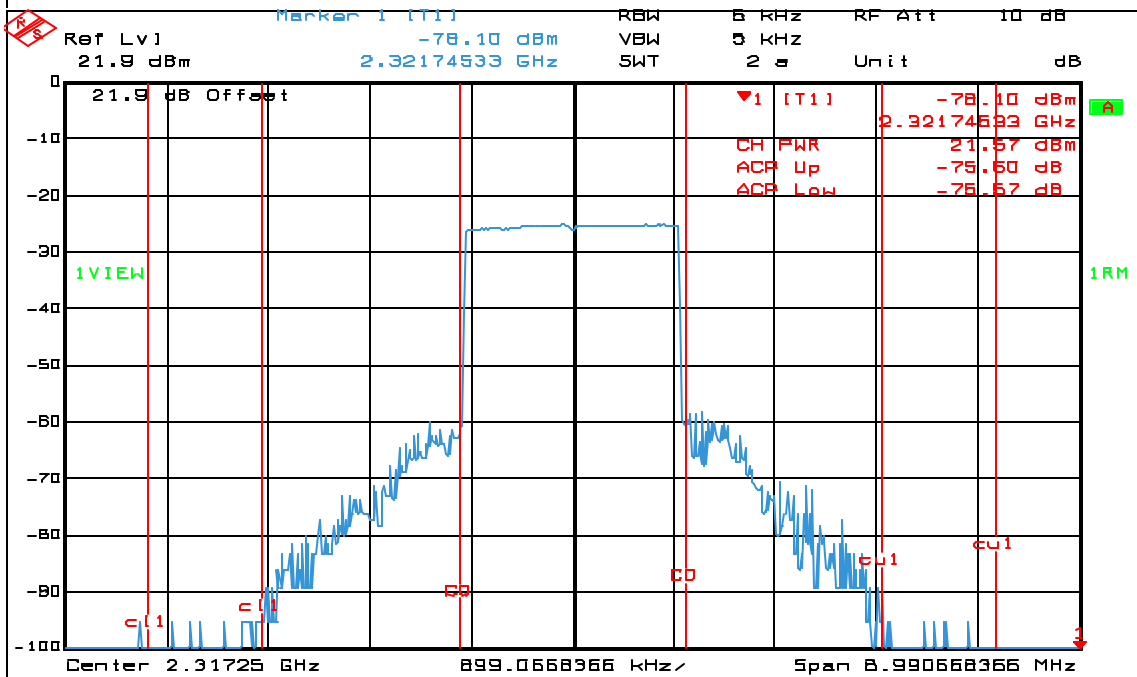
Title: 20C
Date: 19.NOV.2002 17:00:31

Notes: -10 Deg

EQUIPMENT: 2.3 GHz CPE

Test Plot:

Page 6 of 11
Job No.: 2L0527 Date: 1/19/02
Specification: Part 27 Temperature(°C):
Tested By: Eldon Berry Relative Humidity(%)
E.U.T.: 2.3 GHz CPE
Configuration: Block C



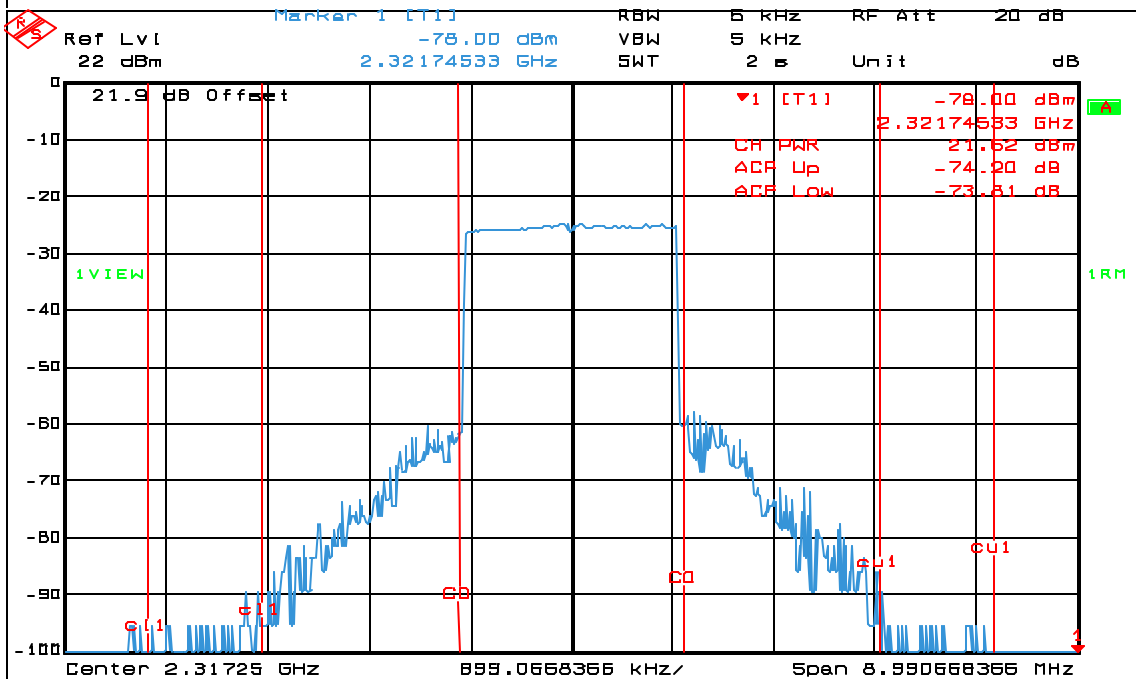
Title: 20C
Date: 19.NOV.2002 17:35:12

Notes: -20 Degrees

EQUIPMENT: 2.3 GHz CPE

Test Plot:

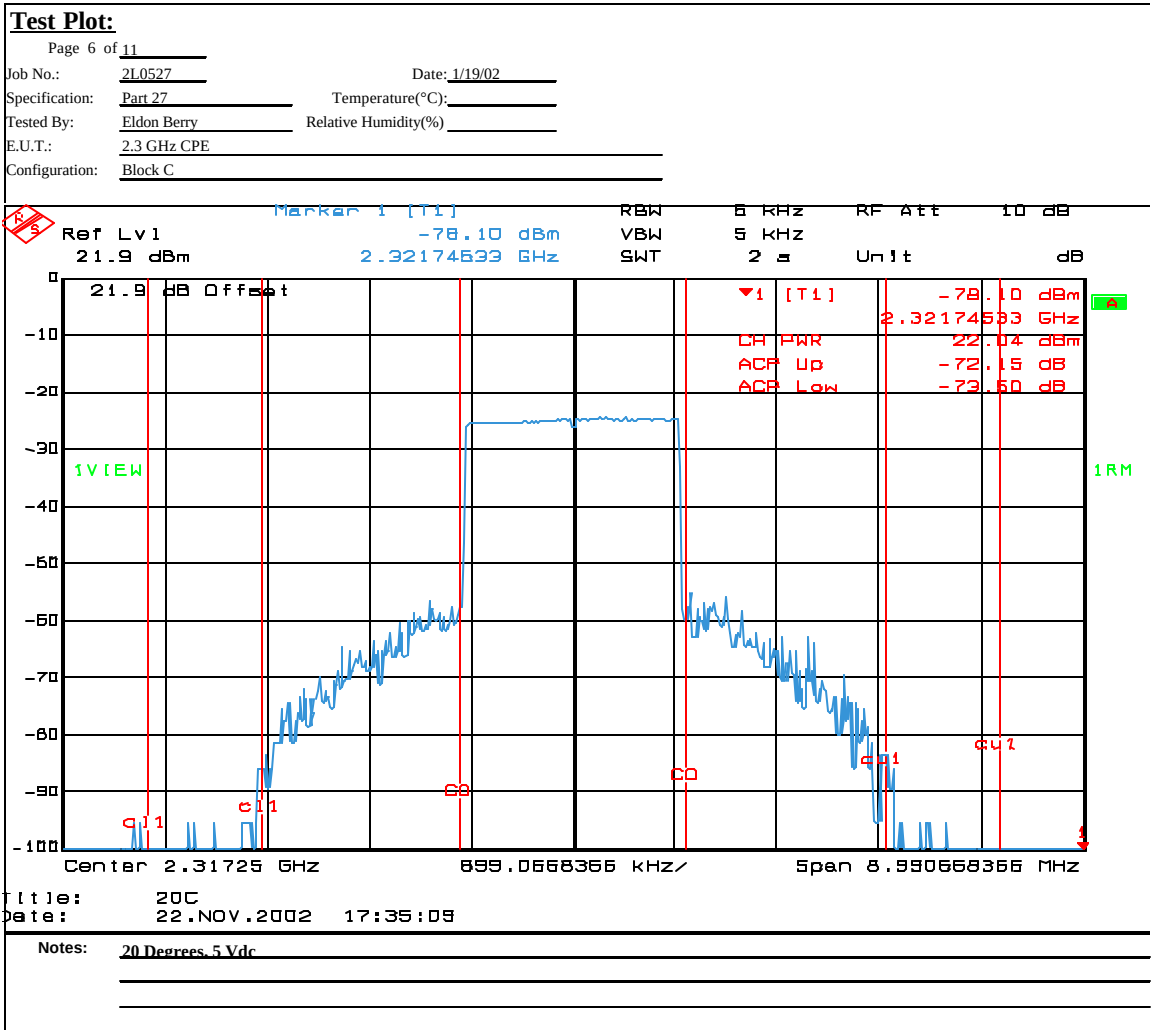
Page 6 of 11
Job No.: 2L0527 Date: 1/19/02
Specification: Part 27 Temperature(°C):
Tested By: Eldon Berry Relative Humidity(%)
E.U.T.: 2.3 GHz CPE
Configuration: Block C



Title: 200
Date: 19.NOV.2002 18:19:31

Notes: -30 Degrees

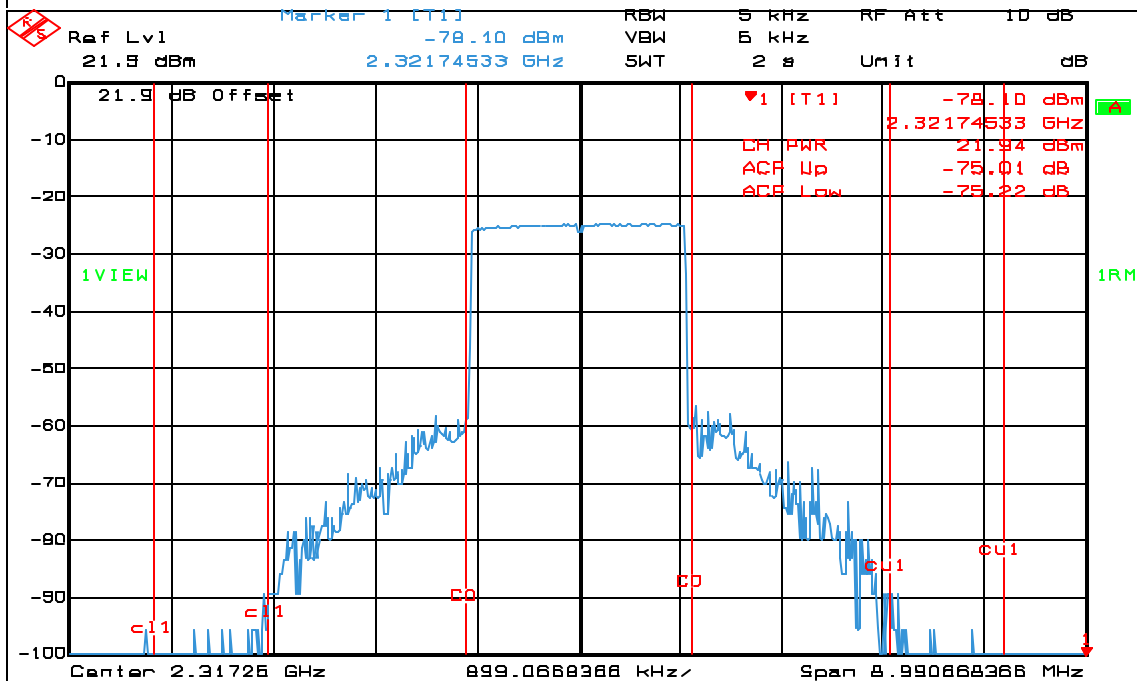
EQUIPMENT: 2.3 GHz CPE



EQUIPMENT: 2.3 GHz CPE

Test Plot:

Page 6 of 11
Job No.: 2L0527 Date: 1/19/02
Specification: Part 27 Temperature(°C):
Tested By: Eldon Berry Relative Humidity(%)
E.U.T.: 2.3 GHz CPE
Configuration: Block C

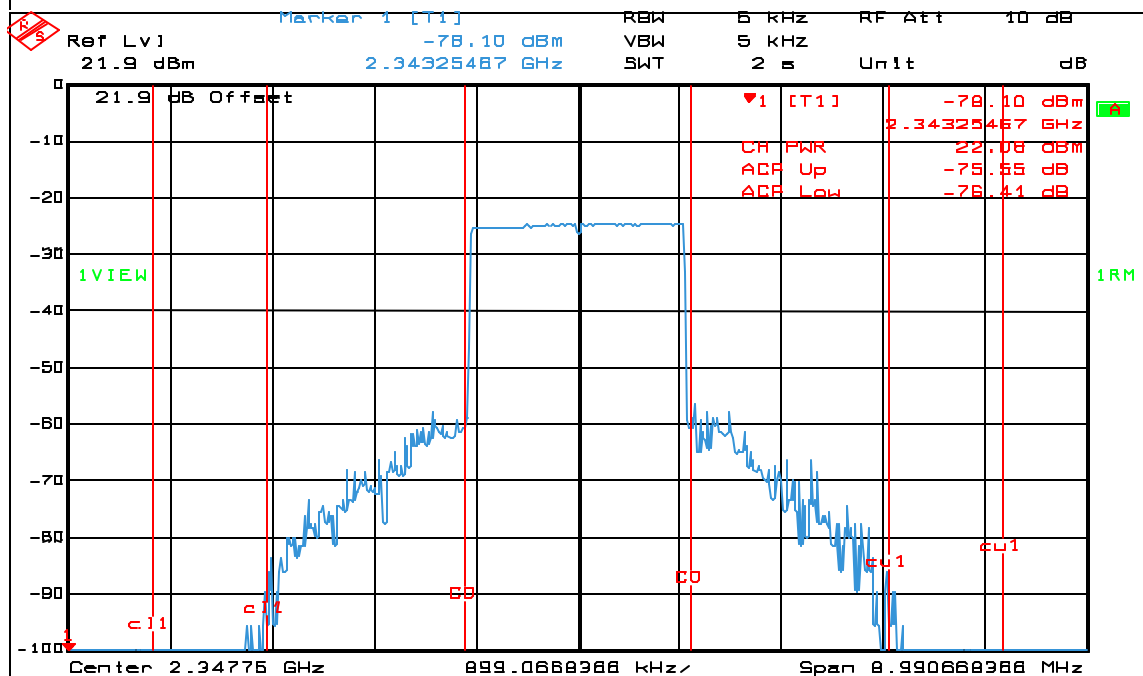


Title: 20C
Date: 22.NOV.2002 17:33:19

Notes: 20 Degrees, 6.9 Vdc

EQUIPMENT: 2.3 GHz CPE

Test Data – Frequency Stability – Block D

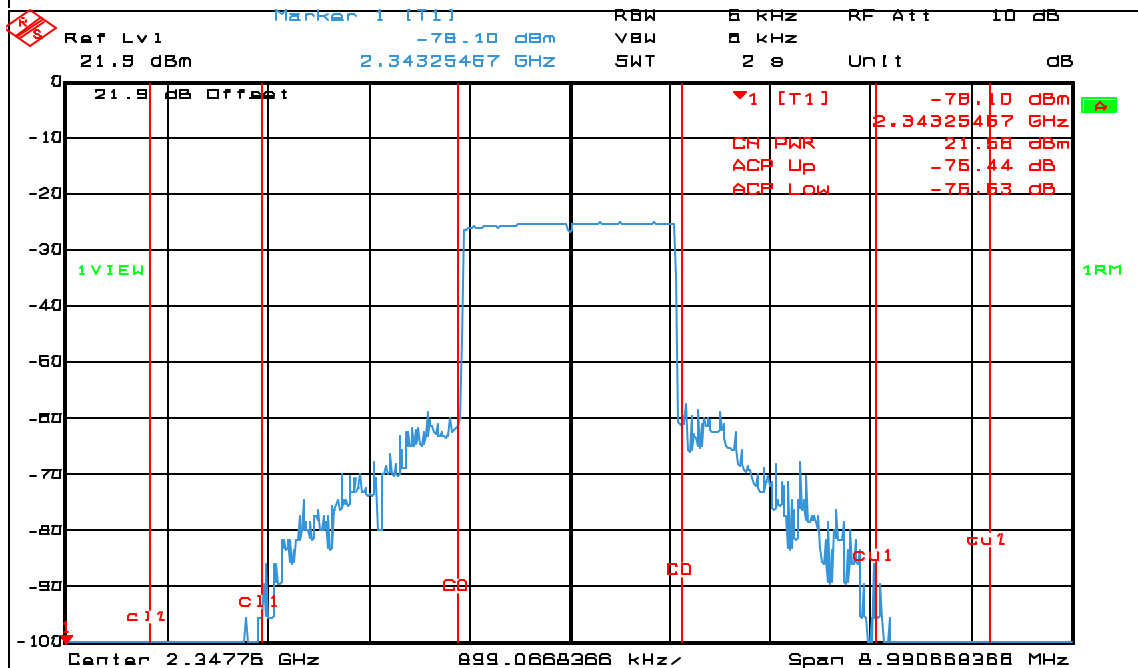
Data Plot	
Page 1 of 11	Complete <u>X</u> Preliminary _____
Job No.: 2L0527	Date: 11/19/02
Specification: Part 27	Temperature(°C): <u>See data</u>
Tested By: <u>Eldon Berry</u>	Relative Humidity(%) <u>Not Controlled</u>
E.U.T.: <u>2.3 GHz CPE</u>	
Configuration: <u>Block D</u>	
Sample Number: <u>1</u>	
Location: _____	RBW: <u>Refer to plots</u>
Detector Type: <u>Rms</u>	VBW: <u>Refer to plots</u>
Test Equipment Used	
Antenna: _____	Directional Coupler: _____
Pre-Amp: _____	Cable #1: <u>1484</u>
Filter: _____	Cable #2: _____
Receiver: <u>1036</u>	Cable #3: _____
Attenuator #1: <u>1474</u>	Cable #4: _____
Attenuator #2: _____	Mixer: _____
Additional equipment used: _____	
Measurement Uncertainty: <u>+/-3.6 dB</u>	
 Marker 1 [T1] Ref Lvl 21.9 dBm -78.10 dBm 2.34325487 GHz RBW 5 kHz VBW 5 kHz SWT 2 s Unit dB 21.9 dB Offset 1 VIEW 1 RM CH FWR -78.10 dBm ACF Up -75.55 dB ACF Low -76.41 dB Center 2.34775 GHz 899.0668966 kHz Span 8.990668966 MHz	
Title: 20C Date: 19.NOV.2002 11:15:42	
Notes: <u>20 Deg</u>	

EQUIPMENT: 2.3 GHz CPE

Data Plot

Page 2 of 11

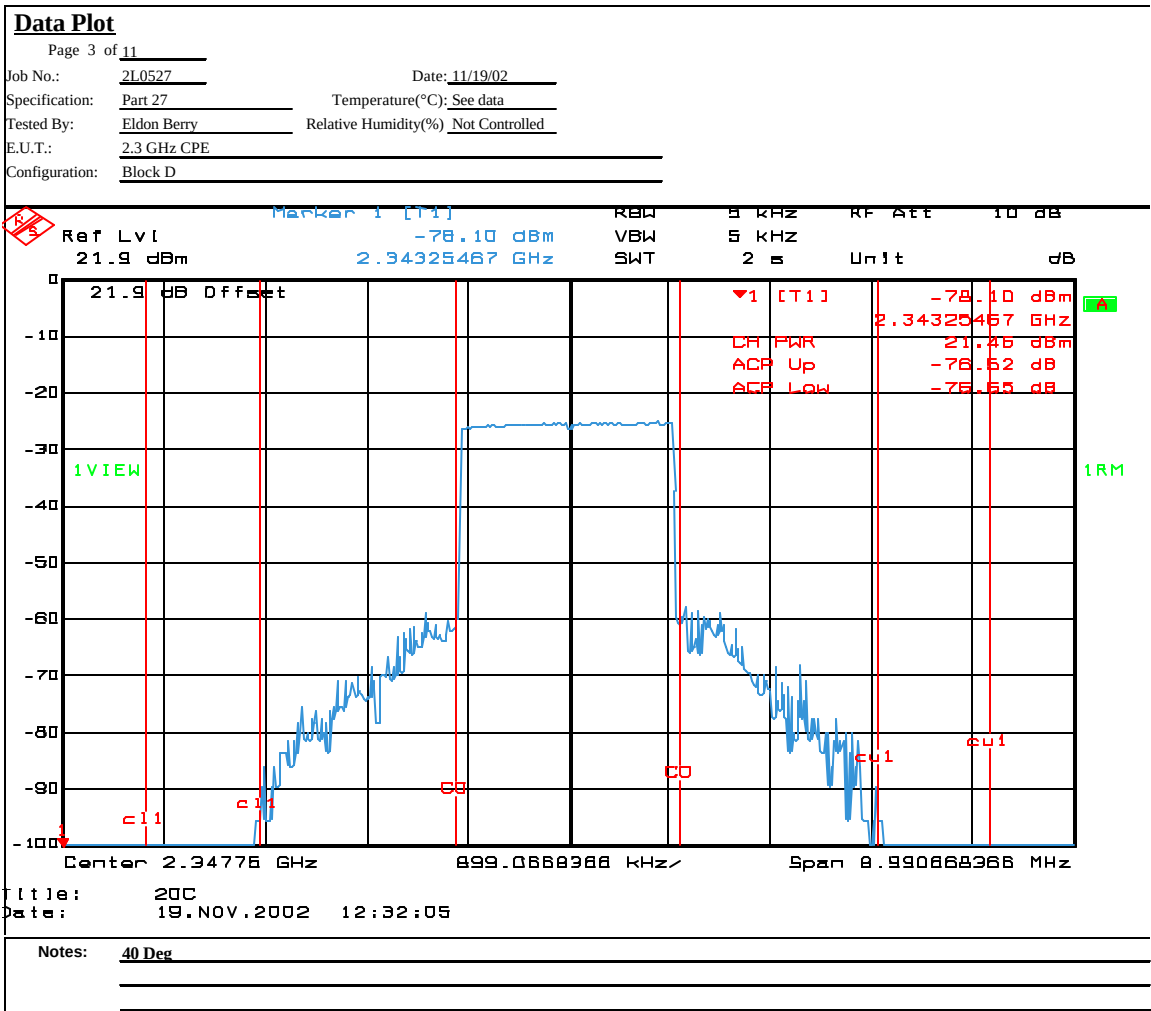
Job No.: 2L0527 Date: 11/19/02
Specification: Part 27 Temperature(°C): See data
Tested By: Eldon Berry Relative Humidity(%) Not Controlled
E.U.T.: 2.3 GHz CPE
Configuration: Block D



Title: 20C
Date: 19.NOV.2002 11:59:06

Notes: 50 Deg

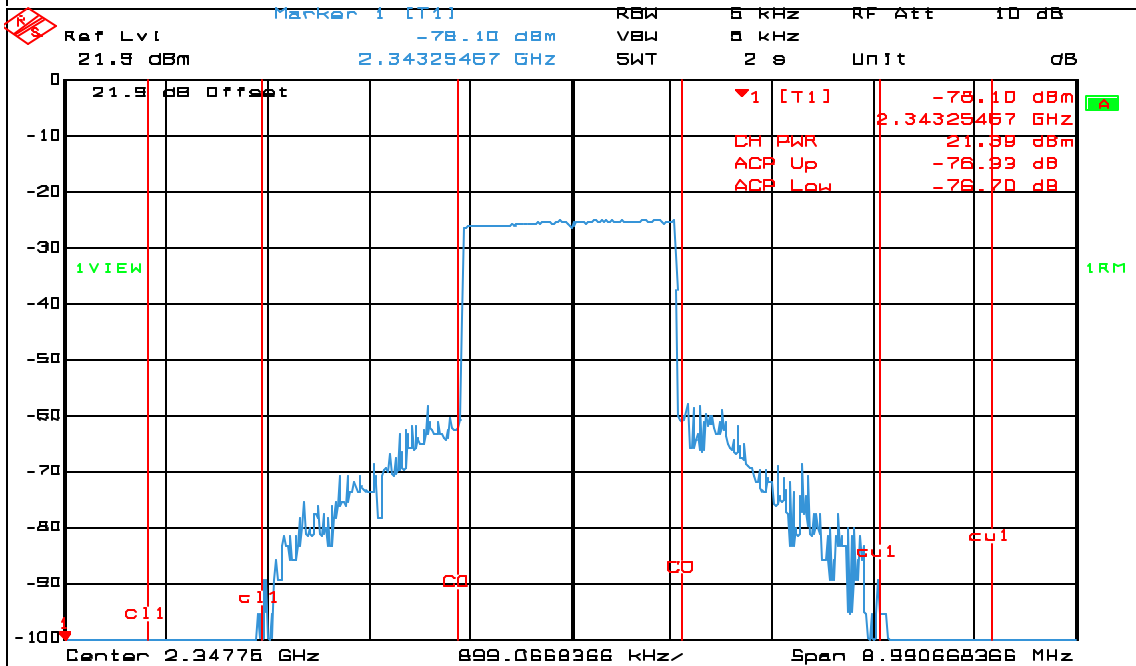
EQUIPMENT: 2.3 GHz CPE



EQUIPMENT: 2.3 GHz CPE

Test Plot:

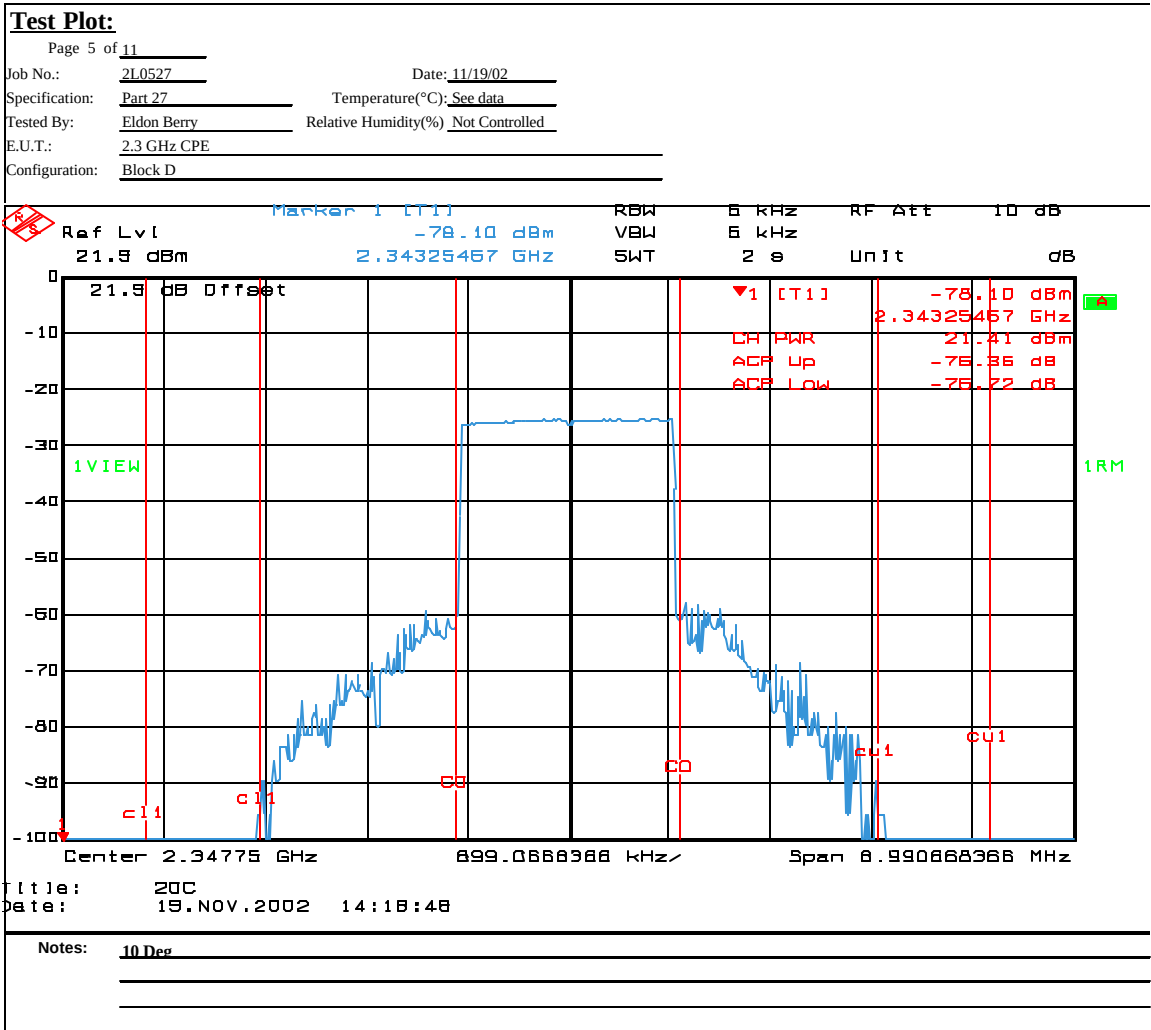
Page 4 of 11
Job No.: 2L0527 Date: 11/19/02
Specification: Part 27 Temperature(°C): See data
Tested By: Eldon Berry Relative Humidity(%) Not Controlled
E.U.T.: 2.3 GHz CPE
Configuration: Block D



Title: 20C
Date: 19.NOV.2002 13:29:41

Notes: 30 Deg

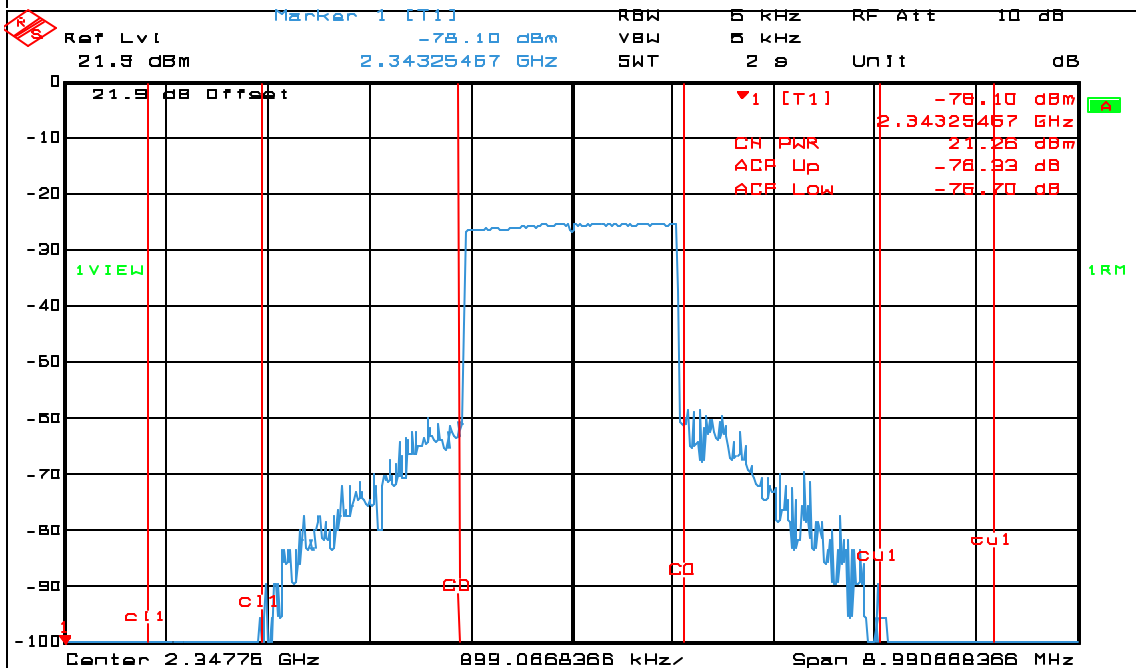
EQUIPMENT: 2.3 GHz CPE



EQUIPMENT: 2.3 GHz CPE

Test Plot:

Page 6 of 11
Job No.: 2L0527 Date: 11/19/02
Specification: Part 27 Temperature(°C): See data
Tested By: Eldon Berry Relative Humidity(%) Not Controlled
E.U.T.: 2.3 GHz CPE
Configuration: Block D



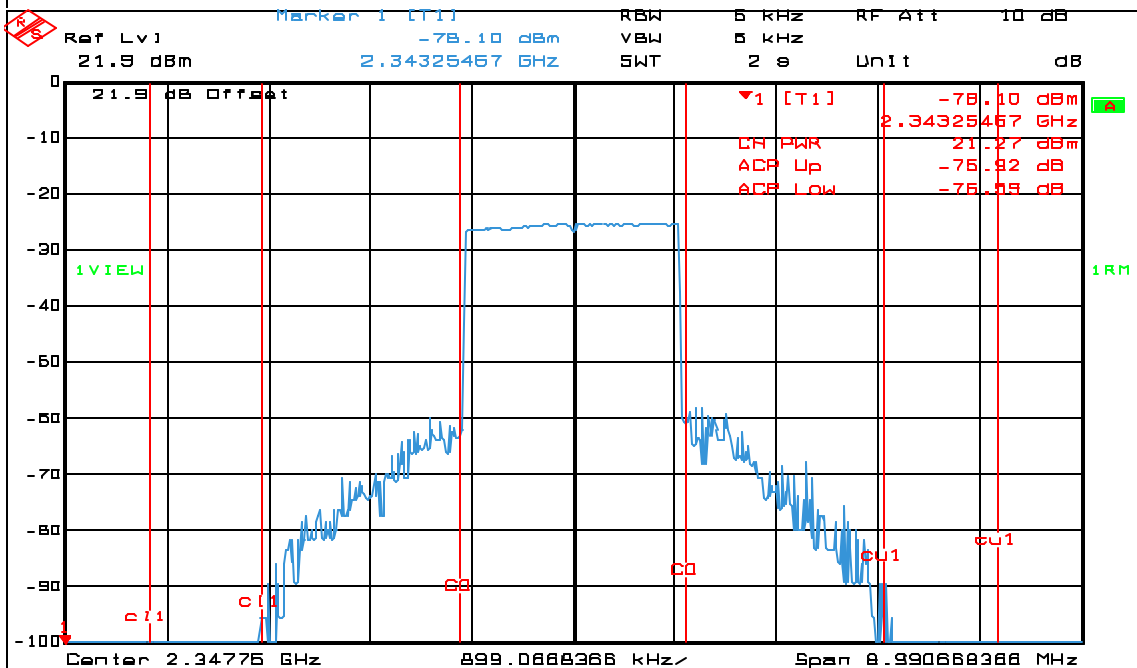
Title: 20C
Date: 19.NOV.2002 16:20:32

Notes: 0 Dec

EQUIPMENT: 2.3 GHz CPE

Test Plot:

Page 6 of 11
Job No.: 2L0527 Date: 11/19/02
Specification: Part 27 Temperature(°C):
Tested By: Eldon Berry Relative Humidity(%)
E.U.T.: 2.3 GHz CPE
Configuration: Block D



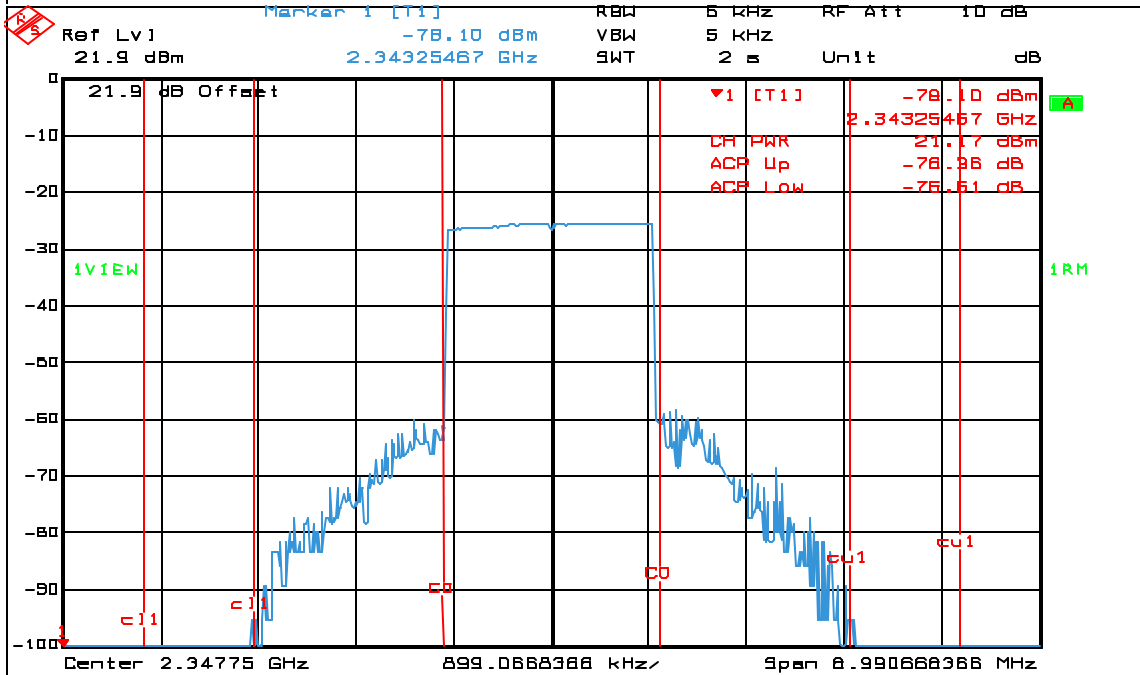
Title: 2DC
Date: 19.NOV.2002 17:02:55

Notes: -10 Deg

EQUIPMENT: 2.3 GHz CPE

Test Plot:

Page 6 of 11
Job No.: 2L0527 Date: 11/19/02
Specification: Part 27 Temperature(°C):
Tested By: Eldon Berry Relative Humidity(%)
E.U.T.: 2.3 GHz CPE
Configuration: Block D



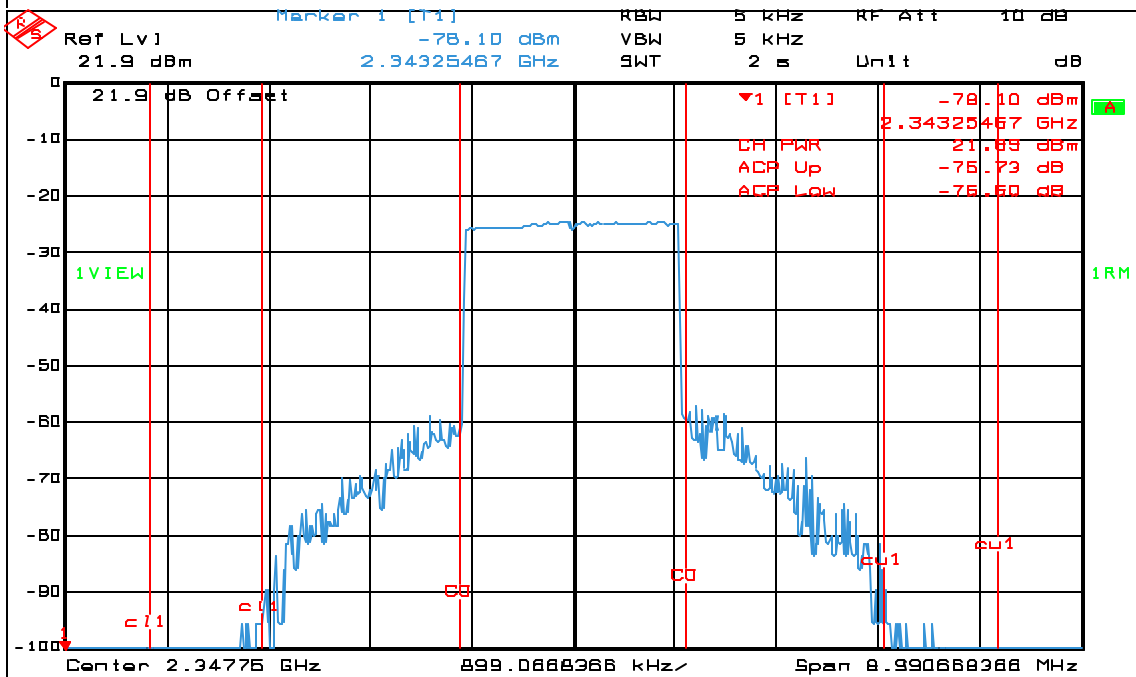
Title: 20C
Date: 19.NOV.2002 17:32:52

Notes: -20 Degrees

EQUIPMENT: 2.3 GHz CPE

Test Plot:

Page 6 of 11
Job No.: 2L0527 Date: 11/19/02
Specification: Part 27 Temperature(°C):
Tested By: Eldon Berry Relative Humidity(%)
E.U.T.: 2.3 GHz CPE
Configuration: Block D



Title: 20C
Date: 19.NOV.2002 18:21:16

Notes: -30 Degrees

Test Plot:

Page 6 of 11

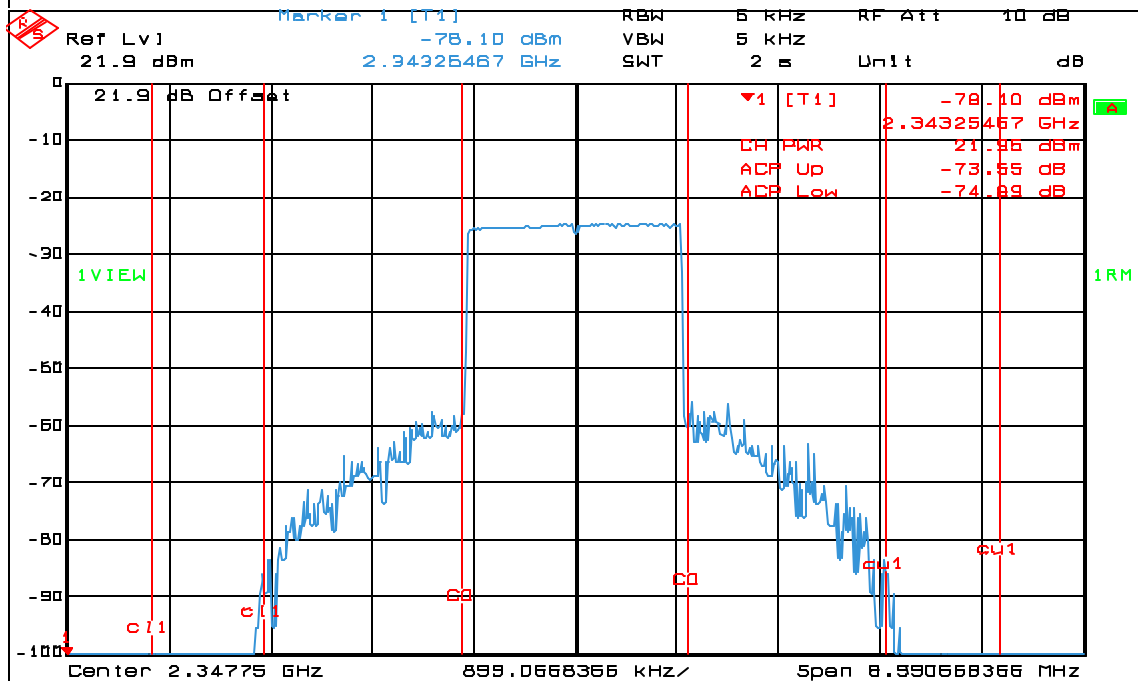
Job No.: 2L0527 Date: 11/19/02

Specification: Part 27 Temperature(°C): _____

Tested By: Eldon Berry Relative Humidity(%) _____

E.U.T.: 2.3 GHz CPE

Configuration: Block D



```

Title:      20C
Date:       22.NOV.2002   17:40:09

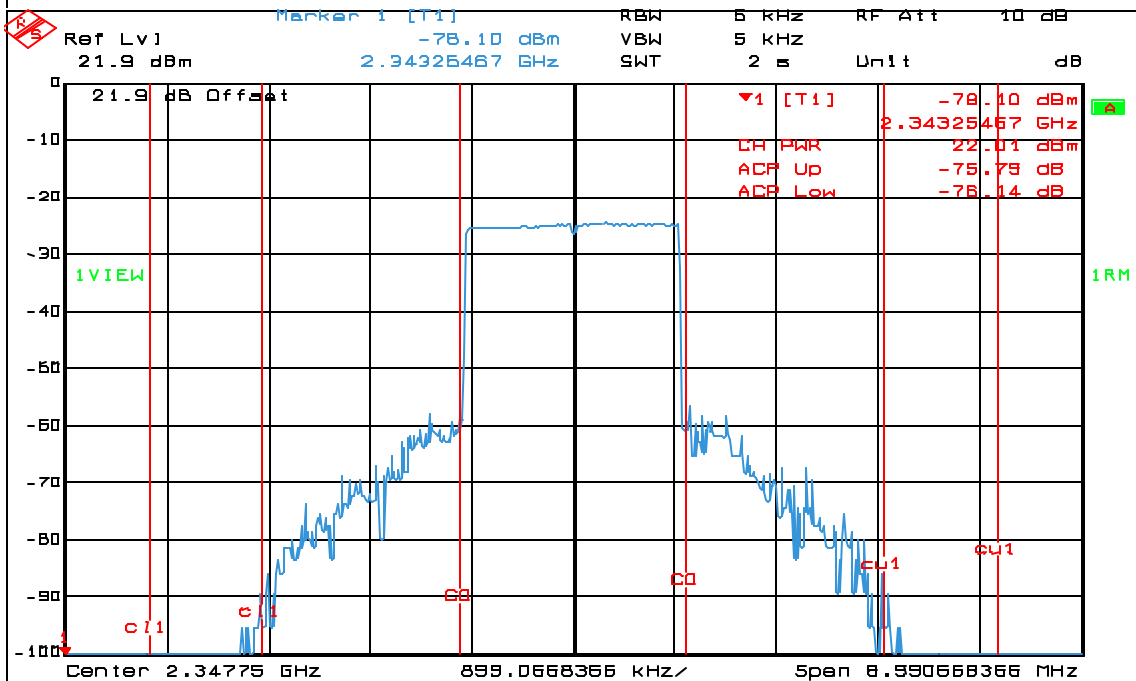
```

Notes: 20 Degrees. 5 Vdc

EQUIPMENT: 2.3 GHz CPE

Test Plot:

Page 6 of 11
Job No.: 2L0527 Date: 11/19/02
Specification: Part 27 Temperature(°C):
Tested By: Eldon Berry Relative Humidity(%)
E.U.T.: 2.3 GHz CPE
Configuration: Block D



Title: 20C
Date: 22.NOV.2002 17:43:24

Notes: 20 Degrees, 6.9 Vdc

EQUIPMENT: 2.3 GHz CPE

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
1474	20db Attenuator DC 18 Ghz	MCL Inc. BW-S20W2	NONE	CBU	N/A
1484	Cable 2.0-18.0 Ghz	Storm PR90-010-072	N/A	07/15/02	07/15/03
1304	HORN ANTENNA	ELECTRO METRICS RGA-60	6151	07/30/01	07/31/03
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	07/15/02	07/15/03
1482	Band Pass Filter	K & L 11SH10-4000/T12000-0/0	2	Cal B4 Use	N/A
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
283	Environmental Chamber with controller # 1189006	ENVIROTRONICS SH27 & 2030-22844	129010083	01/10/02	01/10/03

Nemko Dallas

FCC PART 27, SUBPART C
MULTIPOINT DISTRIBUTION SERVICE
PROJECT NO.:2L0527RUS1

EQUIPMENT: 2.3 GHz CPE

Section 9. Test Details

Nemko Dallas

FCC PART 27, SUBPART C
MULTIPOINT DISTRIBUTION SERVICE
PROJECT NO.:2L0527RUS1

EQUIPMENT: 2.3 GHz CPE

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

Method Of Measurement:

Antenna Conducted:

The rms power at antenna terminals is measured using a Power Meter. Power output is measured with the maximum rated rf output level.

E.I.R.P.:

Peak EIRP is calculated based on the following:

RMS rf Output Power at antenna terminals: +28 dBm (nominal)

Peak to Average Ratio of rf waveform: 6 dB

Antenna gain (nominal): 5 dBi

Peak EIRP is:

+28 dBm + 6 dB + 5 dBi = +39 dBm (8 watts)

EQUIPMENT: 2.3 GHz CPE

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

Method Of Measurement:

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 fundamental bandwidth of the transmitted carrier. A carrier is has a bandwidth of 500 kHz, thus the minimum resolution bandwidth used is 5 kHz.

Out-of-Band Emissions:

A portion of the transmitted signal is coupled to a Spectrum Analyzer with a resolution bandwidth of at least 1 MHz.

The limits are expressed as attenuation below carrier level thus the relative ACP function of the spectrum analyzer is used to show compliance.

The appropriate emission limit is applied to the output waveform to verify compliance.

EQUIPMENT: 2.3 GHz CPE

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

Method Of Measurement:

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 fundamental bandwidth of the transmitted carrier. A carrier is has a bandwidth of 500 kHz, thus the minimum resolution bandwidth used is 5 kHz.

Out-of-Band Emissions:

A portion of the transmitted signal is coupled to a Spectrum Analyzer with a resolution bandwidth of at least 1 MHz.

The limits are expressed as attenuation below carrier level thus the relative ACP function of the spectrum analyzer is used to show compliance.

The appropriate emission limit is applied to the output waveform to verify compliance.

EQUIPMENT: 2.3 GHz CPE

NAME OF TEST: Field Strength of Spurious Radiation	PARA. NO.: 2.1053
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The antenna is detachable from the transmitter, thus 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.

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 EIRP 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 eirp.

EQUIPMENT: 2.3 GHz CPE

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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. The spectrum is plotted to determine if the fundamental frequency remains within the specified limits in the authorized band. The procedure is repeated at 85 STV, 100% S.T.V. and 115% S.T.V. with the temperature at 20 degrees Celsius.

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 plotted at each temperature.

EQUIPMENT:

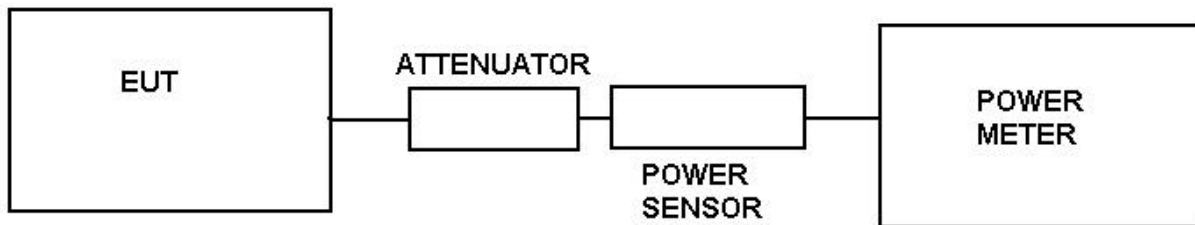
FCC ID:

Section 10. Test Diagrams

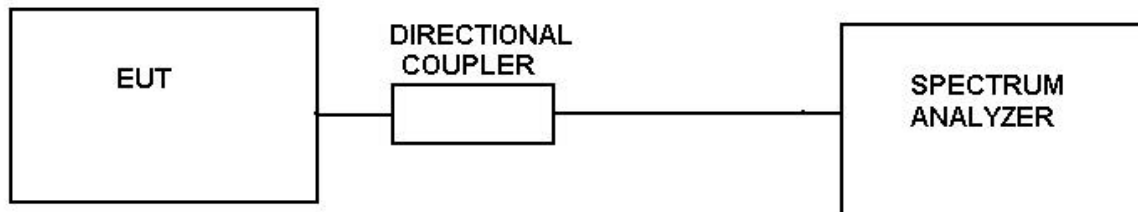
EQUIPMENT:

FCC ID:

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



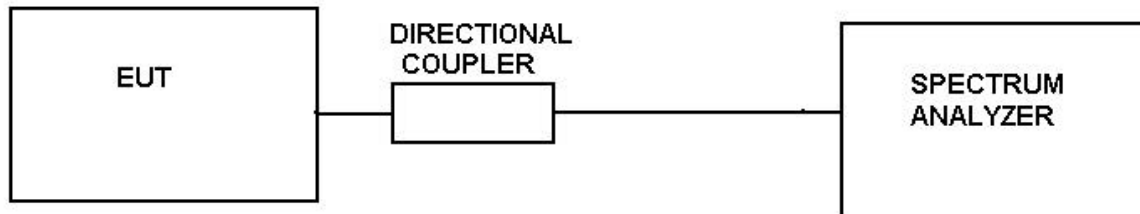
Para. No. 2.1049 - Occupied Bandwidth



EQUIPMENT:

FCC ID:

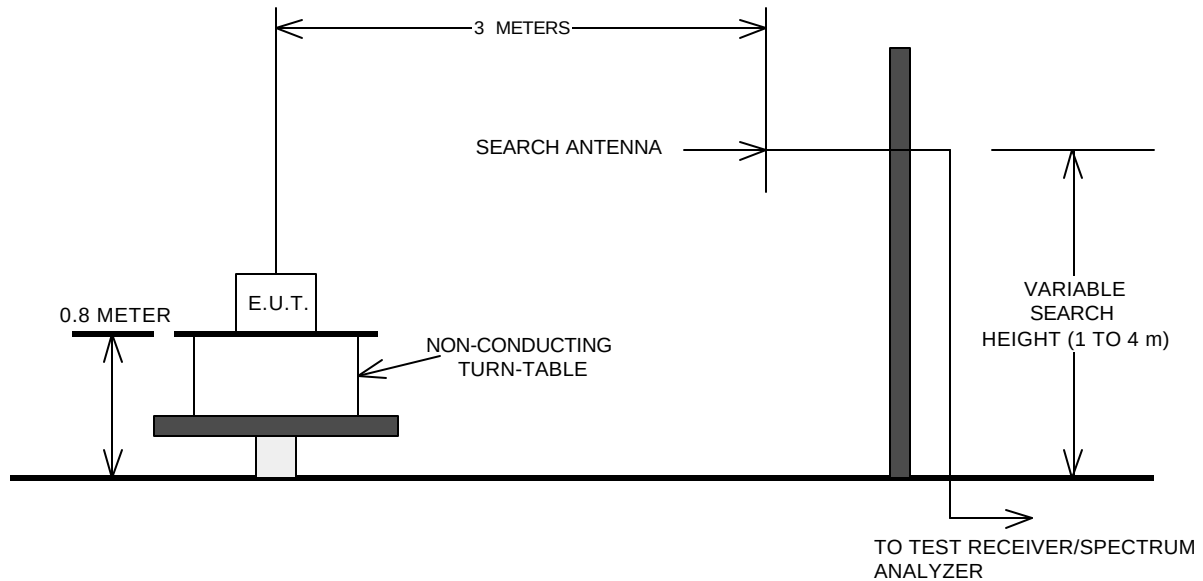
Para. No. 2.1051 - Spurious Emissions at Antenna Terminals



EQUIPMENT:

FCC ID:

Para. No. 2.1053 - Field Strength of Radiation



Para. No. 2.1055 - Frequency Stability

