

*FCC PART 15, SUBPART B and C
TEST REPORT**for***AIRBORNE DIRECT****MODELS: ABDB-ET-DP101
and ABDB-SE-DP101**

Prepared for

**DPAC TECHNOLOGIES
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	REPORT BODY	APPENDICES					TOTAL
		<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	
PAGES	20	2	2	2	17	56	99

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GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

This report must not be used to claim product endorsement by NVLAP, NIST, or any other agency of the U.S. Government.

Device Tested: Airborne Direct
Models: ABDB-ET-DP101 and ABDB-SE-DP101
S/N: Prototype

Product Description: See Expository Statement.

Modifications: The EUT was not modified during the testing.

Manufacturer: DPAC Technologies
7321 Lincoln Way
Garden Grove, California 92841

Test Dates: December 9 and 11, 2003.

Test Specifications: EMI requirements
Limits: CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.247

Test Procedure: ANSI C63.4: 2001

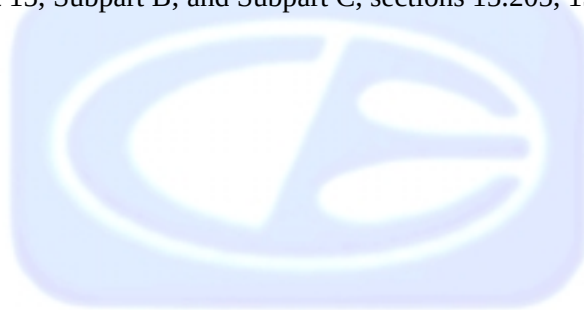
Test Deviations: The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz – 30 MHz	Complies with the Class B limits of CFR Title 47, Part 15 Subpart B; and Subpart C, section 15.207
2	Spurious Radiated RF Emissions, 10 kHz - 25000 MHz	Complies with the Class B limits of CFR Title 47, Part 15, Subpart B; and CFR Title 47, Part 15, Subpart C, section 15.247(c)
3	Fundamental and Emissions produced by the intentional radiator in non-restricted bands, 10 kHz – 40 GHz	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247(c)
4	Emissions produced by the intentional radiator in restricted bands, 10 kHz – 40 GHz	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.205, 15.209(a), and section 15.247 (c)
5	6 dB Bandwidth	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247(a)(2)
6	Peak Power Output	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247(b)(3)
7	RF Conducted Antenna Test	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247(c)
8	Peak Power Spectral Density Conducted from the Intentional Radiator to the Antenna	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247 (d)

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Airborne Direct Model: ABDB-ET-DP101 and ABDB-SE-DP101. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 2001. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the specification limits defined by CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.247.



2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests of the testing described herein were performed at the test facility of Compatible Electronics at 114 Olinda Drive, Brea, California 92823.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

DPAC Technologies

Paul Shklanko Engineer

Compatible Electronics, Inc.

Kyle Fujimoto Test Engineer

James Ross Test Engineer

2.4 Date Test Sample was Received

The test sample was received on December 9, 2003.

2.5 Disposition of the Test Sample

The sample was returned to DPAC Technologies on December 11, 2003.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network

3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this EMI Test Report.

SPEC	TITLE
FCC Title 47, Part 15 Subpart C	FCC Rules - Radio frequency devices (including digital devices) – Intentional Radiators
ANSI C63.4 2001	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz
FCC Title 47, Part 15 Subpart B	FCC Rules - Radio frequency devices (including digital devices) – Unintentional Radiators
EN 55022: 1998	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement
CISPR 22: 1997	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - EMI

Setup and operation of the equipment under test.

Specifics of the EUT and Peripherals Tested

The EUT was connected to the AC Adapter and laptop via its power; serial and ethernet ports, respectively. The laptop was placed 30 feet away from the test site.

Operation of the EUT during the testing

For the intentional radiator portion of the test - The EUT used a program that locked one channel at a time so that the low, middle, and high channels could be tested.

For the unintentional radiator and conducted emission portion of the test - The EUT was sending statistics to the laptop via its serial port. The EUT was pinging the laptop, which caused continuous activity on the ethernet port.

The final radiated as well as the conducted data was taken in the mode above. Please see Appendix E for the data sheets.

4.1.1 Cable Construction and Termination

- Cable 1** This is a 6 foot unshielded cable connecting the EUT to the AC adapter. It has a 1/8 inch power connector at the EUT end and is hard wired into the AC Adapter.
- Cable 2** This is a 6 foot unshielded cable connecting the laptop to the AC adapter. It has a 1/8 inch power connector at the laptop end and is hard wired into the AC Adapter.
- Cable 3** This is a 30 foot unshielded cable connecting the EUT to the laptop. It has a D-9 pin metallic connector at the laptop end and is hard wired into the EUT.
- Cable 4** This is a 30 foot unshielded cable connecting the EUT to the laptop. It has an RJ-45 connector at the laptop end and is hard wired into the EUT.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT**5.1 EUT and Accessory List**

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
AIRBORNE DIRECT (EUT)	DPAC TECHNOLOGIES	ABDB-ET-DP101 and ABDB-SE-DP101	PROTOTYPE	RTTABDB-SEDP
AC ADAPTER FOR LAPTOP	IBM	P/N: 02K6746	N/A	N/A
AC ADAPTER FOR EUT	CUI STACK	DSA-0151A-05	N/A	N/A
LAPTOP	IBM	TYPE: 2653	78-G2003	DoC

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU- FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Radiated Emissions Manual Test – Radiated	Compatible Electronics	N/A	N/A	N/A	N/A
Conducted Emissions Test Program	Compatible Electronics	N/A	N/A	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	2727A04757	Nov. 12, 2002	Nov. 12, 2003
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	2648A15455	Nov. 12, 2002	Nov. 12, 2003
Spectrum Analyzer – Quasi-Peak Adapter	Hewlett Packard	85650A	3303A01688	Nov. 12, 2002	Nov. 12, 2003
Preamplifier	Com Power	PA-102	1017	Jan. 2, 2003	Jan. 2, 2004
Biconical Antenna	Com Power	AB-100	1548	Oct. 8, 2003	Oct. 8, 2004
Log Periodic Antenna	Com Power	AL-100	16089	Oct. 8, 2003	Oct. 8, 2004
Computer	Hewlett Packard	D5251A 888	US74458128	N/A	N/A
Monitor	Hewlett Packard	D5258A	DK74889705	N/A	N/A
Loop Antenna	Com-Power	AL-130	17070	June 19, 2002	June 19, 2004
Horn Antenna	Antenna Research	DRG-118/A	1053	Jan. 13, 2002	Jan. 13, 2004
Microwave Preamplifier	Com-Power	PA-122	25196	Jan. 10, 2003	Jan. 10, 2004
EMI Receiver	Rohde & Schwarz	ESIB40	100172	July 22, 2003	July 22, 2004
Microwave Preamplifier	Com-Power	PA-840	711013	Mar. 6, 2002	Mar. 6, 2004
Horn Antenna	Com-Power	AH826	0071957	Nov. 5, 2003	Nov. 5, 2004

6. TEST SITE DESCRIPTION**6.1 Test Facility Description**

Please refer to section 2.1 and 7.1 of this report for EMI test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was not grounded.

7. CHARACTERISTICS OF THE TRANSMITTER

7.1 Antenna Gain

The 802.11 b antenna has a gain of 1.5 dBi.



8. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

8.1 RF Emissions

8.1.1 Conducted Emissions Test

The spectrum analyzer was used as a measuring meter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak was used only where indicated in the data sheets. A 10 dB attenuation pad was used for the protection of the spectrum analyzer input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the spectrum analyzer. The output of the second LISN was terminated by a 50 ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4: 2001. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the Compatible Electronics conducted emissions software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The final qualification data is located in Appendix E.

Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15 Subpart B for conducted emissions; and the limits of CFR Title 47, Part 15, Subpart C, Section 15.207.

8.1.2 Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer was used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Preamplifier Model: PA-102 was used for frequencies from 30 MHz to 1 GHz, the Com-Power Microwave Preamplifier Model: PA-122 was used for frequencies from 1 GHz to 18 GHz, and the Com Power Microwave Preamplifier Model: PA-840 was used for frequencies from 18 GHz to 25 GHz. The spectrum analyzer was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps.

The quasi-peak adapter was used only for those readings which are marked accordingly on the data sheets.

The frequencies above 1 GHz were averaged manually by narrowing the video filter down to 10 Hz and putting the sweep time on AUTO on the spectrum analyzer to keep the amplitude reading calibrated.

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
10 kHz to 150 kHz	200 Hz	Active Loop Antenna
150 kHz to 30 MHz	9 kHz	Active Loop Antenna
30 MHz to 300 MHz	120 kHz	Biconical Antenna
300 MHz to 1 GHz	120 kHz	Log Periodic Antenna
1 GHz to 25 GHz	1 MHz	Horn Antenna

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 1992. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT by the Radiated Emission Manual Test software. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results.

Radiated Emissions (Spurious and Harmonics) Test (con't)

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance to obtain the final data.



8.2 6 dB Bandwidth

The 6 dB bandwidth was measured using the EMI Receiver. The bandwidth was measured using a direct connection from the RF out on the EUT. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz.

Test Results:

This test complies with the relevant requirements of CFR Title 47, Part 15, Subpart C section 15.247 (a)(2).

8.3 Peak Output Power

The Peak Output Power was taken using the power meter and power sensor. The EUT was directly connected to the power sensor, which was directly connected to the power meter. The Peak Output Power was then taken.

Test Results:

This test complies with the relevant requirements of CFR Title 47, Part 15, Subpart C section 15.247 (b)(3).

8.4 RF Antenna Conducted Test

The RF antenna conducted test was taken using the EMI Receiver. The RF antenna conducted test was measured using a direct connection from the RF out on the EUT into the input of the analyzer. The resolution bandwidth was 100 kHz, and the video bandwidth 300 kHz. The spans were wide enough to include all the harmonics and emissions that were produced by the intentional radiator.

Test Results:

This test complies with the relevant requirements of CFR Title 47, Part 15, Subpart C section 15.247 (c).

8.5 Spectral Density Output

The spectral density output was measured using the EMI Receiver. The spectral density output was measured using a direct connection from the RF out on the EUT into the input of the EMI Receiver. The resolution bandwidth was 3 kHz, and the video bandwidth was 10 kHz. The highest 4.5 MHz of the signal was used as the frequency span with the sweep rate being 1 second for every 3 kHz of span.

Test Results:

This test complies with the relevant requirements of CFR Title 47, Part 15, Subpart C section 15.247 (d).

8.6 RF Band Edges

The RF band edges were taken at the start of the restricted bands (2390 MHz and 2483.5 MHz). The readings taken were also averaged by the EMI Receiver. Data sheets are included in Appendix E, which compares the reading from the EMI Receiver to the spec limit.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (c). The RF power at the restricted bands closest to the band edges at 2390 MHz and 2483.5 MHz meet the limits of section 15.209. Please see the data sheets located in Appendix E.

9. CONCLUSIONS

The Airborne Direct meets all of the specification limits defined in FCC Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.247.



APPENDIX A

LABORATORY RECOGNITIONS

LABORATORY RECOGNITIONS

Compatible Electronics has the following agency accreditations:

National Voluntary Laboratory Accreditation Program - Lab Code: 200528-0

Voluntary Control Council for Interference - Registration Numbers: R-983, C-1026, R-984 and C-1027

Bureau of Standards and Metrology Inspection - Reference Number: SL2-IN-E-1031

Conformity Assessment Body for the EMC Directive Under the US/EU MRA Appointed by NIST

Compatible Electronics is recognized or on file with the following agencies:

Federal Communications Commission

Industry Canada

Radio-Frequency Technologies (Competent Body)

APPENDIX B

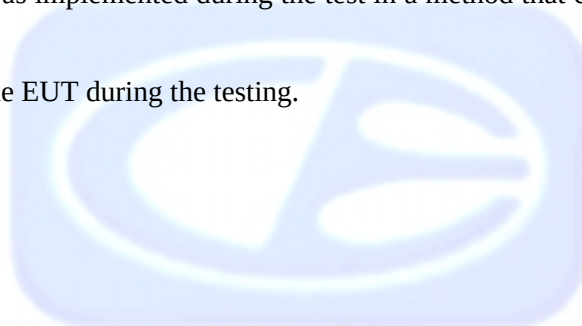
MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC Subpart B and Subpart C specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

No modifications were made to the EUT during the testing.





APPENDIX C

***ADDITIONAL MODELS COVERED
UNDER THIS REPORT***

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Airborne Direct
Models: ABDB-ET-DP101 and ABDB-SE-DP101
S/N: Prototype

There were no additional models covered under this report.



APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

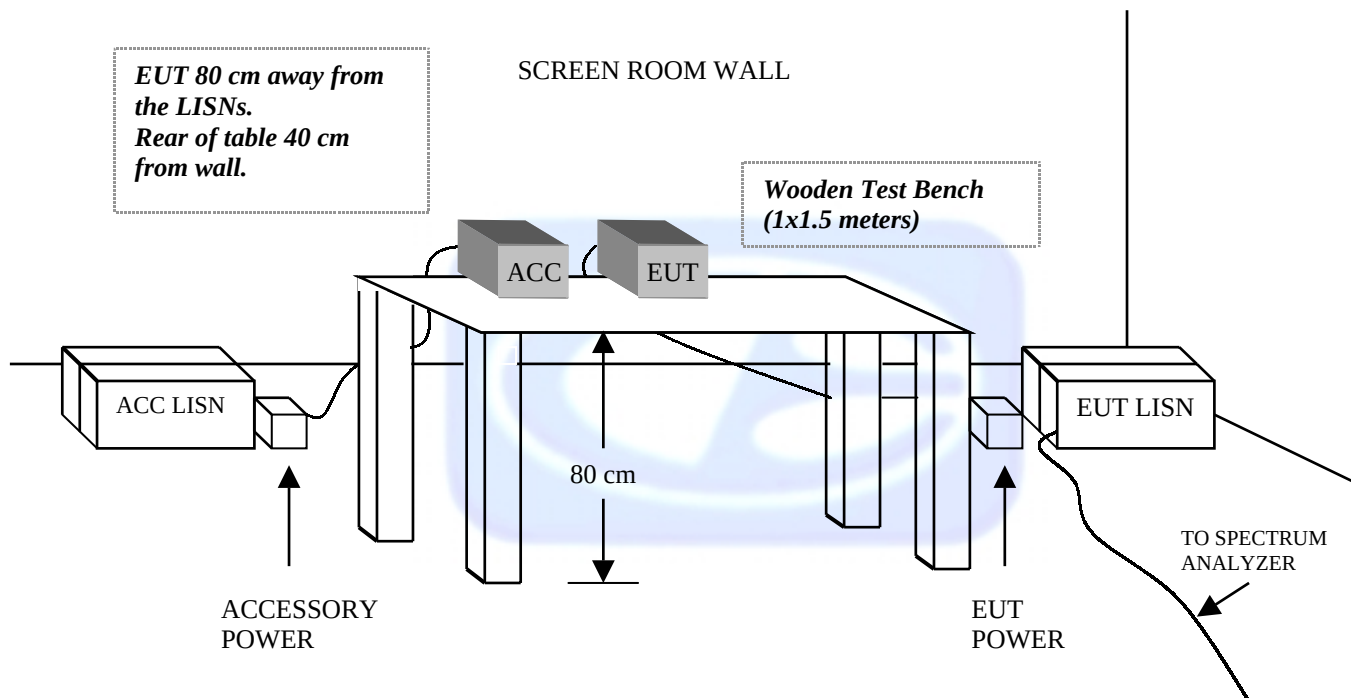
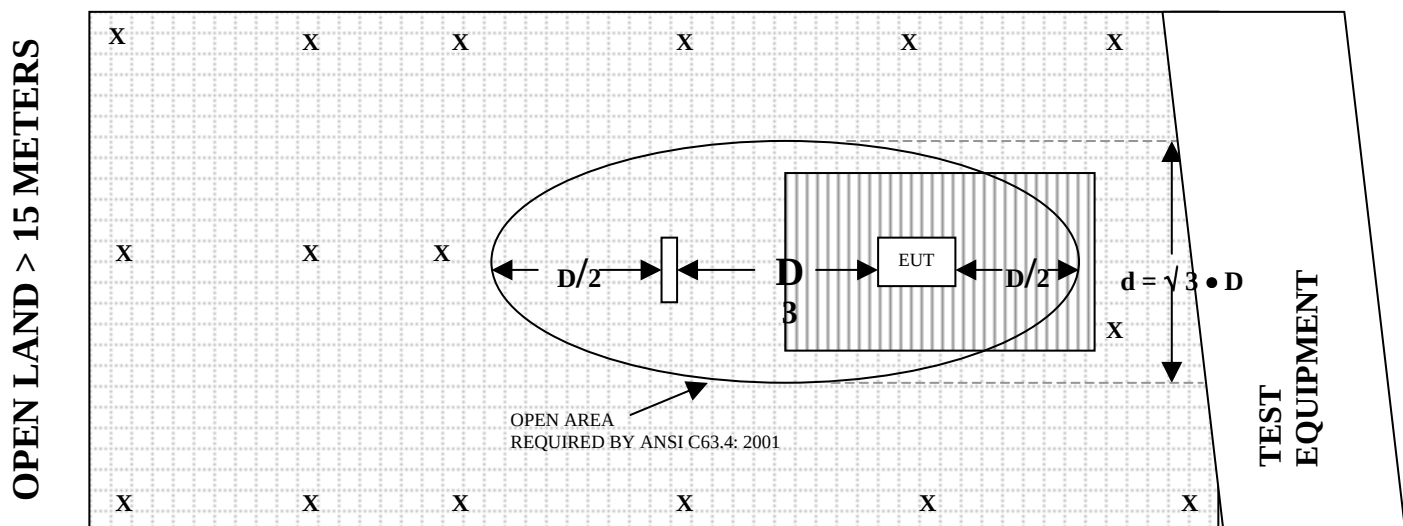


FIGURE 2: PLOT MAP AND LAYOUT OF 3 METER RADIATED SITE

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

X	= GROUND RODS		= GROUND SCREEN
D	= TEST DISTANCE (meters)		= WOOD COVER



FRONT VIEW

DPAC TECHNOLOGIES
AIRBORNE DIRECT
MODELS: ABDB-ET-DP101 and ABDB-SE-DP101
FCC SUBPART C - RADIATED EMISSIONS – 12-09-03

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

DPAC TECHNOLOGIES
AIRBORNE DIRECT
MODELS: ABDB-ET-DP101 and ABDB-SE-DP101
FCC SUBPART C - RADIATED EMISSIONS – 12-09-03

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



FRONT VIEW

DPAC TECHNOLOGIES
AIRBORNE DIRECT
MODELS: ABDB-ET-DP101 and ABDB-SE-DP101
FCC SUBPART B - RADIATED EMISSIONS – 12-11-03

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

DPAC TECHNOLOGIES
AIRBORNE DIRECT
MODELS: ABDB-ET-DP101 and ABDB-SE-DP101
FCC SUBPART B - RADIATED EMISSIONS – 12-11-03

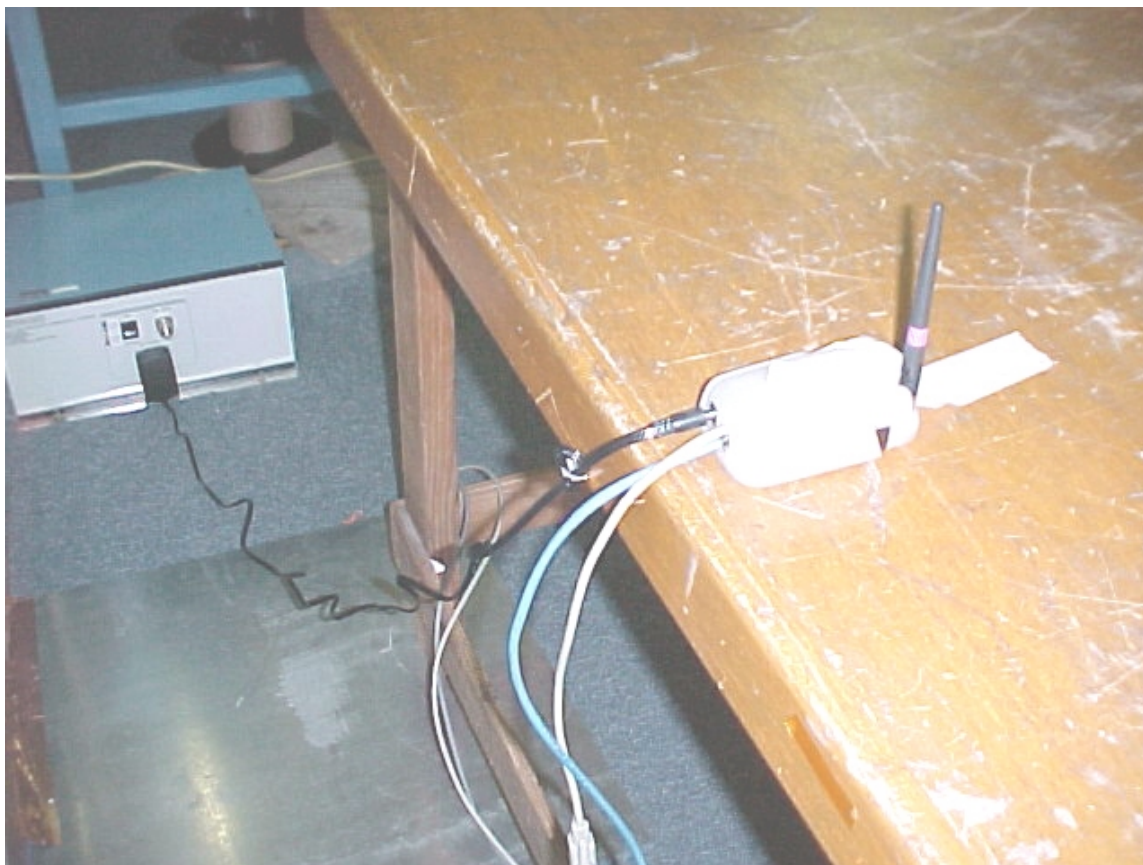
**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



FRONT VIEW

DPAC TECHNOLOGIES
AIRBORNE DIRECT
MODEL: ABDB-ET-DP101 and ABDB-SE-DP101
FCC SUBPART B - CONDUCTED EMISSIONS – 12-11-03

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

DPAC TECHNOLOGIES
AIRBORNE DIRECT
MODEL: ABDB-ET-DP101 and ABDB-SE-DP101
FCC SUBPART B - CONDUCTED EMISSIONS – 12-11-03

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

COM-POWER AB-100

BICONICAL ANTENNA

S/N: 1548

CALIBRATION DATE: OCTOBER 8, 2003

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	13.10	120	9.90
35	12.90	125	11.40
40	14.60	140	12.00
45	12.80	150	13.00
50	12.90	160	13.90
60	9.30	175	14.20
70	8.20	180	14.30
80	8.00	200	14.90
90	8.10	250	16.60
100	8.80	300	19.70

COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16089

CALIBRATION DATE: OCTOBER 8, 2003

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	12.8	700	20.0
400	14.4	800	21.2
500	16.0	900	20.8
600	17.7	1000	21.7

COM-POWER PA-102**PREAMPLIFIER****S/N: 1017****CALIBRATION DATE: JANUARY 2, 2003**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	38.4	300	38.3
40	38.4	350	38.3
50	38.3	400	38.3
60	38.4	450	37.9
70	38.4	500	38.1
80	38.4	550	38.2
90	38.4	600	38.1
100	38.3	650	37.9
125	38.4	700	37.9
150	38.4	750	37.7
175	38.2	800	37.4
200	38.4	850	37.6
225	38.2	900	37.4
250	38.3	950	36.7
275	38.5	1000	37.0

COM-POWER PA-122**MICROWAVE PREAMPLIFIER**

S/N: 25195

CALIBRATION DATE: AUGUST 19, 2003

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	30.8	6.0	33.3
1.1	30.9	6.5	32.7
1.2	30.9	7.0	31.8
1.3	30.4	7.5	31.6
1.4	30.7	8.0	30.3
1.5	31.0	8.5	29.0
1.6	31.2	9.0	29.0
1.7	30.3	9.5	29.5
1.8	28.9	10.0	30.9
1.9	31.2	11.0	30.2
2.0	30.9	12.0	28.7
2.5	30.4	13.0	30.3
3.0	31.7	14.0	28.7
3.5	32.6	15.0	29.5
4.0	32.6	16.0	31.1
4.5	32.2	17.0	30.1
5.0	31.1	18.0	28.6
5.5	30.6		

ANTENNA RESEARCH DRG-118/A**HORN ANTENNA**

S/N: 1053

CALIBRATION DATE: JANUARY 13, 2002

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	25.5	9.5	39.1
1.5	26.6	10.0	39.7
2.0	29.4	10.5	40.9
2.5	30.4	11.0	40.7
3.0	31.2	11.5	42.4
3.5	32.3	12.0	42.6
4.0	32.9	12.5	42.4
4.5	33.0	13.0	41.5
5.0	34.8	13.5	41.0
5.5	35.2	14.0	40.5
6.0	36.4	14.5	43.6
6.5	36.6	15.0	43.7
7.0	38.8	15.5	43.3
7.5	38.8	16.0	42.8
8.0	38.0	16.5	43.0
8.5	38.1	17.0	42.7
9.0	39.9	17.5	44.0
		18.0	41.8

COM-POWER AL-130**LOOP ANTENNA****S/N: 17070****CALIBRATION DATE: JUNE 19, 2002**

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-40.4	11.1
0.01	-40.3	11.2
0.02	-41.2	10.3
0.05	-41.6	9.9
0.07	-41.4	10.1
0.1	-41.7	9.8
0.2	-44.0	7.5
0.3	-41.6	9.9
0.5	-41.3	10.2
0.7	-41.4	10.1
1	-40.9	10.6
2	-40.6	10.9
3	-40.5	11.0
4	-40.8	10.7
5	-40.2	11.3
10	-40.7	10.8
15	-41.4	10.1
20	-41.6	9.9
25	-41.7	9.8
30	-42.9	8.6

COM-POWER AH826**HORN ANTENNA****S/N: 0071957****CALIBRATION DATE: NOVEMBER 05, 2003**

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	33.3	22.5	32.9
18.5	32.9	23.0	33.0
19.0	32.7	23.5	33.6
19.5	32.6	24.0	33.6
20.0	32.7	24.5	33.5
20.5	33.0	25.0	33.5
21.0	33.0	25.5	33.7
21.5	33.2	26.0	34.1
22.0	32.9	26.5	34.5

COM-POWER PA-840

MICROWAVE PREAMPLIFIER

S/N: 711013

CALIBRATION DATE: MARCH 06, 2002

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	26.4	30.0	27.6
19.0	25.4	31.0	27.3
20.0	24.5	32.0	26.9
21.0	23.9	33.0	26.7
22.0	24.0	34.0	27.0
23.0	24.4	35.0	25.9
24.0	25.2	36.0	25.5
25.0	26.1	37.0	26.2
26.0	26.6	38.0	25.6
27.0	27.2	39.0	23.4
28.0	27.4	40.0	24.3
29.0	27.5		

APPENDIX E

DATA SHEETS



RADIATED EMISSIONS

DATA SHEETS for the TRANSMITTER PORTION

FCC 15.247

DPAC Technologies
 Airborne Direct
 Model: ABDB-SE-DP101 and ABDB-ET-DP101
 S/N: Prototype

Date: 12/09/03
 Lab: B
 Tested By: Kyle Fujimoto

Channel 1 - 802.11 b Mode
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	50.31	V	74	-23.69	Peak	2	270	
4824	46.69	V	54	-7.31	Avg	2	270	
7236	50.43	V	74	-23.57	Peak	2	90	
7236	43.03	V	54	-10.97	Avg	2	90	
9648	53.94	V	--	--	Peak	2	270	
9648	49.75	V	--	--	Avg	2	270	
12060	54.48	V	74	-19.52	Peak	2	180	
12060	39.84	V	54	-14.16	Avg	2	180	
14472		V	74	-74	Peak			No Emission
14472		V	54	-54	Avg			Found
16884		V	--	--	Peak			No Emission
16884		V	--	--	Avg			Found
19296	46.44	V	74	-27.56	Peak	2	0	
19296	35.23	V	54	-18.77	Avg	2	0	
21708		V	--	--	Peak			No Emission
21708		V	--	--	Avg			Found
24120		V	--	--	Peak			No Emission
24120		V	--	--	Avg			Found

FCC 15.247

DPAC Technologies
 Airborne Direct
 Model: ABDB-SE-DP101 and ABDB-ET-DP101
 S/N: Prototype

Date: 12/09/03
 Lab: B
 Tested By: Kyle Fujimoto

**Channel 1 - 802.11 b Mode
 Transmit Mode**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	48.46	H	74	-25.54	Peak	2	270	
4824	43.87	H	54	-10.13	Avg	2	270	
7236	47.88	H	74	-26.12	Peak	2	315	
7236	38.38	H	54	-15.62	Avg	2	315	
9648	50.48	H	--	--	Peak	2	315	
9648	39.72	H	--	--	Avg	2	315	
12060	53.87	H	74	-20.13	Peak	2	270	
12060	40.08	H	54	-13.92	Avg	2	270	
14472		H	74	-74	Peak			No Emission
14472		H	54	-54	Avg			Found
16884		H	--	--	Peak			No Emission
16884		H	--	--	Avg			Found
19296		H	74	-74	Peak			No Emission
19296		H	54	-54	Avg			Found
21708		H	74	-74	Peak			No Emission
21708		H	54	-54	Avg			Found
24120		H	--	--	Peak			No Emission
24120		H	--	--	Avg			Found

FCC 15.247

DPAC Technologies
 Airborne Direct
 Model: ABDB-SE-DP101 and ABDB-ET-DP101
 S/N: Prototype

Date: 12/09/03
 Lab: B
 Tested By: Kyle Fujimoto

Channel 6 - 802.11 b Mode
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	49.9	V	74	-24.1	Peak	2	270	
4874	46.22	V	54	-7.78	Avg	2	270	
7311	53.32	V	74	-20.68	Peak	2	270	
7311	46.09	V	54	-7.91	Avg	2	270	
9748	50.77	V	--	--	Peak	2	270	
9748	42.04	V	--	--	Avg	2	270	
12185	52.23	V	74	-21.77	Peak	2	225	
12185	38.65	V	54	-15.35	Avg	2	225	
14622		V	--	--	Peak			No Emission
14622		V	--	--	Avg			Found
17059		V	--	--	Peak			No Emission
17059		V	--	--	Avg			Found
19496	46.34	V	74	-27.66	Peak	2	0	
19496	36.61	V	54	-17.39	Avg	2	0	
21933		V	--	--	Peak			No Emission
21933		V	--	--	Avg			Found
22001		V	74	-74	Peak			No Emission
22001		V	54	-54	Avg			Found
24370		V	--	--	Peak			No Emission
24370		V	--	--	Avg			Found

FCC 15.247

DPAC Technologies
 Airborne Direct
 Model: ABDB-SE-DP101 and ABDB-ET-DP101
 S/N: Prototype

Date: 12/09/03
 Lab: B
 Tested By: Kyle Fujimoto

**Channel 6 - 802.11 b Mode
 Transmit Mode**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	48.34	H	74	-25.66	Peak	2	180	
4874	44.29	H	54	-9.71	Avg	2	180	
7311	49.98	H	74	-24.02	Peak	2	225	
7311	41.05	H	54	-12.95	Avg	2	225	
9748	50.12	H	--	--	Peak	2	225	
9748	40.03	H	--	--	Avg	2	225	
12185	52.78	H	74	-21.22	Peak	2	315	
12185	38.8	H	54	-15.2	Avg	2	315	
14622		H	--	--	Peak			No Emission
14622		H	--	--	Avg			Found
17059		H	--	--	Peak			No Emission
17059		H	--	--	Avg			Found
19496		H	74	-74	Peak			No Emission
19496		H	54	-54	Avg			Found
21933		H	--	--	Peak			No Emission
21933		H	--	--	Avg			Found
22001		H	74	-74	Peak			No Emission
22001		H	54	-54	Avg			Found
24370		H	--	--	Peak			No Emission
24370		H	--	--	Avg			Found

FCC 15.247

DPAC Technologies
 Airborne Direct
 Model: ABDB-SE-DP101 and ABDB-ET-DP101
 S/N: Prototype

Date: 12/09/03
 Lab: B
 Tested By: Kyle Fujimoto

Channel 11 - 802.11 b Mode
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	51.9	V	74	-22.1	Peak	1.5	270	
4924	49.5	V	54	-4.5	Avg	1.5	270	
7386	50.41	V	74	-23.59	Peak	2	270	
7386	42.51	V	54	-11.49	Avg	2	270	
9848	51.35	V	--	--	Peak	2	270	
9848	45.66	V	--	--	Avg	2	270	
12310	50.89	V	74	-23.11	Peak	2	270	
12310	36.5	V	54	-17.5	Avg	2	270	
14772		V	--	--	Peak			No Emission
14772		V	--	--	Avg			Found
17234		V	--	--	Peak			No Emission
17234		V	--	--	Avg			Found
19696	47.11	V	74	-26.89	Peak	2	270	
19696	37.22	V	54	-16.78	Avg	2	270	
22158		V	74	-74	Peak			No Emission
22158		V	54	-54	Avg			Found
24620		V	--	--	Peak			No Emission
24620		V	--	--	Avg			Found

FCC 15.247

DPAC Technologies

Airborne Direct

Model: ABDB-SE-DP101 and ABDB-ET-DP101

S/N: Prototype

Date: 12/09/03

Lab: B

Tested By: Kyle Fujimoto

Channel 11 - 802.11 b Mode

Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	49.21	H	74	-24.79	Peak	2	225	
4924	45.48	H	54	-8.52	Avg	2	225	
7386	46.13	H	74	-27.87	Peak	2	225	
7386	34.32	H	54	-19.68	Avg	2	225	
9848	48.95	H	--	--	Peak	2	225	
9848	40.04	H	--	--	Avg	2	225	
12310	51.06	H	74	-22.94	Peak	2	180	
12310	36.53	H	54	-17.47	Avg	2	180	
14772		H	--	--	Peak			No Emission
14772		H	--	--	Avg			Found
17234		H	--	--	Peak			No Emission
17234		H	--	--	Avg			Found
19696		H	74	-74	Peak			No Emission
19696		H	54	-54	Avg			Found
22158		H	74	-74	Peak			No Emission
22158		H	54	-54	Avg			Found
24620		H	--	--	Peak			No Emission
24620		H	--	--	Avg			Found



RADIATED EMISSIONS

DATA SHEETS for the RECEIVER PORTION

FCC 15.247

DPAC Technologies
 Airborne Direct
 Model: ABDB-SE-DP101 and ABDB-ET-DP101
 S/N: Prototype

Date: 12/09/03
 Lab: B
 Tested By: Kyle Fujimoto

Channel 1 - 802.11 b Mode
Receive Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	50.59	V	74	-23.41	Peak	2	270	
4824	47.62	V	54	-6.38	Avg	2	270	
7236	45.35	V	74	-28.65	Peak	2	0	
7236	29.91	V	54	-24.09	Avg	2	0	
9648	49.59	V	74	-24.41	Peak	2	270	
9648	42.67	V	54	-11.33	Avg	2	270	
12060	53.77	V	74	-20.23	Peak	2	180	
12060	39.74	V	54	-14.26	Avg	2	180	
14472		V	74	-74	Peak			No Emission
14472		V	54	-54	Avg			Found
16884		V	74	-74	Peak			No Emission
16884		V	54	-54	Avg			Found
19296	46.4	V	74	-27.6	Peak	2	0	
19296	35.11	V	54	-18.89	Avg	2	0	
21708		V	74	-74	Peak			No Emission
21708		V	54	-54	Avg			Found
24120		V	74	-74	Peak			No Emission
24120		V	54	-54	Avg			Found

FCC 15.247

DPAC Technologies
 Airborne Direct
 Model: ABDB-SE-DP101 and ABDB-ET-DP101
 S/N: Prototype

Date: 12/09/03
 Lab: B
 Tested By: Kyle Fujimoto

Channel 1 - 802.11 b Mode
Receive Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	49.6	H	74	-24.4	Peak	2	180	
4824	45.94	H	54	-8.06	Avg	2	180	
7236	43.64	H	74	-30.36	Peak	2	180	
7236	30.42	H	54	-23.58	Avg	2	180	
9648	50.48	H	74	-23.52	Peak	2	225	
9648	39.72	H	54	-14.28	Avg	2	225	
12060	51.91	H	74	-22.09	Peak	2	225	
12060	40.31	H	54	-13.69	Avg	2	225	
14472	53.06	H	74	-20.94	Peak	2	315	
14472	40.48	H	54	-13.52	Avg	2	315	
16884	45.82	H	74	-28.18	Peak	2	225	
16884	31.84	H	54	-22.16	Avg	2	225	
19296		H	74	-74	Peak			No Emission
19296		H	54	-54	Avg			Found
21708		H	74	-74	Peak			No Emission
21708		H	54	-54	Avg			Found
24120		H	74	-74	Peak			No Emission
24120		H	54	-54	Avg			Found

FCC 15.247

DPAC Technologies
 Airborne Direct
 Model: ABDB-SE-DP101 and ABDB-ET-DP101
 S/N: Prototype

Date: 12/09/03
 Lab: B
 Tested By: Kyle Fujimoto

Channel 6 - 802.11 b Mode
Receive Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	48.95	V	74	-25.05	Peak	2	270	
4874	45.99	V	54	-8.01	Avg	2	270	
7311	44.62	V	74	-29.38	Peak	2	270	
7311	31.3	V	54	-22.7	Avg	2	270	
9748	51.73	V	74	-22.27	Peak	2	270	
9748	43.94	V	54	-10.06	Avg	2	270	
12185	51.67	V	74	-22.33	Peak	2	180	
12185	38.69	V	54	-15.31	Avg	2	180	
14622		V	74	-74	Peak			No Emission
14622		V	54	-54	Avg			Found
17059		V	74	-74	Peak			No Emission
17059		V	54	-54	Avg			Found
19496	46.49	V	74	-27.51	Peak	2	0	
19496	35.4	V	54	-18.6	Avg	2	0	
21933		V	74	-74	Peak			No Emission
21933		V	54	-54	Avg			Found
22001		V	74	-74	Peak			No Emission
22001		V	54	-54	Avg			Found
24370		V	74	-74	Peak			No Emission
24370		V	54	-54	Avg			Found

FCC 15.247

DPAC Technologies
 Airborne Direct
 Model: ABDB-SE-DP101 and ABDB-ET-DP101
 S/N: Prototype

Date: 12/09/03
 Lab: B
 Tested By: Kyle Fujimoto

Channel 6 - 802.11 g Mode
Receive Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	48.54	H	74	-25.46	Peak	2	180	
4874	44.36	H	54	-9.64	Avg	2	180	
7311	42.6	H	74	-31.4	Peak	2	225	
7311	31.61	H	54	-22.39	Avg	2	225	
9748	48.62	H	74	-25.38	Peak	2	225	
9748	38.96	H	54	-15.04	Avg	2	225	
12185		H	74	-74	Peak			No Emission
12185		H	54	-54	Avg			Found
14622		H	74	-74	Peak			No Emission
14622		H	54	-54	Avg			Found
17059		H	74	-74	Peak			No Emission
17059		H	54	-54	Avg			Found
19496		H	74	-74	Peak			No Emission
19496		H	54	-54	Avg			Found
21933		H	74	-74	Peak			No Emission
21933		H	54	-54	Avg			Found
22001		H	74	-74	Peak			No Emission
22001		H	54	-54	Avg			Found
24370		H	74	-74	Peak			No Emission
24370		H	54	-54	Avg			Found

FCC 15.247

DPAC Technologies
 Airborne Direct
 Model: ABDB-SE-DP101 and ABDB-ET-DP101
 S/N: Prototype

Date: 12/09/03
 Lab: B
 Tested By: Kyle Fujimoto

Channel 11 - 802.11 b Mode
Receive Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	51.9	V	74	-22.1	Peak	1.5	270	
4924	49.5	V	54	-4.5	Avg	1.5	270	
7386	42.44	V	74	-31.56	Peak	2	270	
7386	29.77	V	54	-24.23	Avg	2	270	
9848	51.75	V	74	-22.25	Peak	2	270	
9848	45.98	V	54	-8.02	Avg	2	270	
12310	51.77	V	74	-22.23	Peak	2	180	
12310	36.61	V	54	-17.39	Avg	2	180	
14772		V	74	-74	Peak			No Emission
14772		V	54	-54	Avg			Found
17234		V	74	-74	Peak			No Emission
17234		V	54	-54	Avg			Found
19696	45.14	V	74	-28.86	Peak	2	270	
19696	36.35	V	54	-17.65	Avg	2	270	
22158		V	74	-74	Peak			No Emission
22158		V	54	-54	Avg			Found
24620		V	74	-74	Peak			No Emission
24620		V	54	-54	Avg			Found

FCC 15.247

DPAC Technologies
 Airborne Direct
 Model: ABDB-SE-DP101 and ABDB-ET-DP101
 S/N: Prototype

Date: 12/09/03
 Lab: B
 Tested By: Kyle Fujimoto

Channel 11 - 802.11 b Mode
Receive Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	49.97	H	74	-24.03	Peak	2	270	
4924	45.58	H	54	-8.42	Avg	2	270	
7386	42.25	H	74	-31.75	Peak	2	270	
7386	29.42	H	54	-24.58	Avg	2	270	
9848	48.95	H	74	-25.05	Peak	2	270	
9848	40.04	H	54	-13.96	Avg	2	270	
12310	49.04	H	74	-24.96	Peak	2	270	
12310	36.49	H	54	-17.51	Avg	2	270	
14772		H	74	-74	Peak			No Emission
14772		H	54	-54	Avg			Found
17234		H	74	-74	Peak			No Emission
17234		H	54	-54	Avg			Found
19696		H	74	-74	Peak			No Emission
19696		H	54	-54	Avg			Found
22158		H	74	-74	Peak			No Emission
22158		H	54	-54	Avg			Found
24620		H	74	-74	Peak			No Emission
24620		H	54	-54	Avg			Found

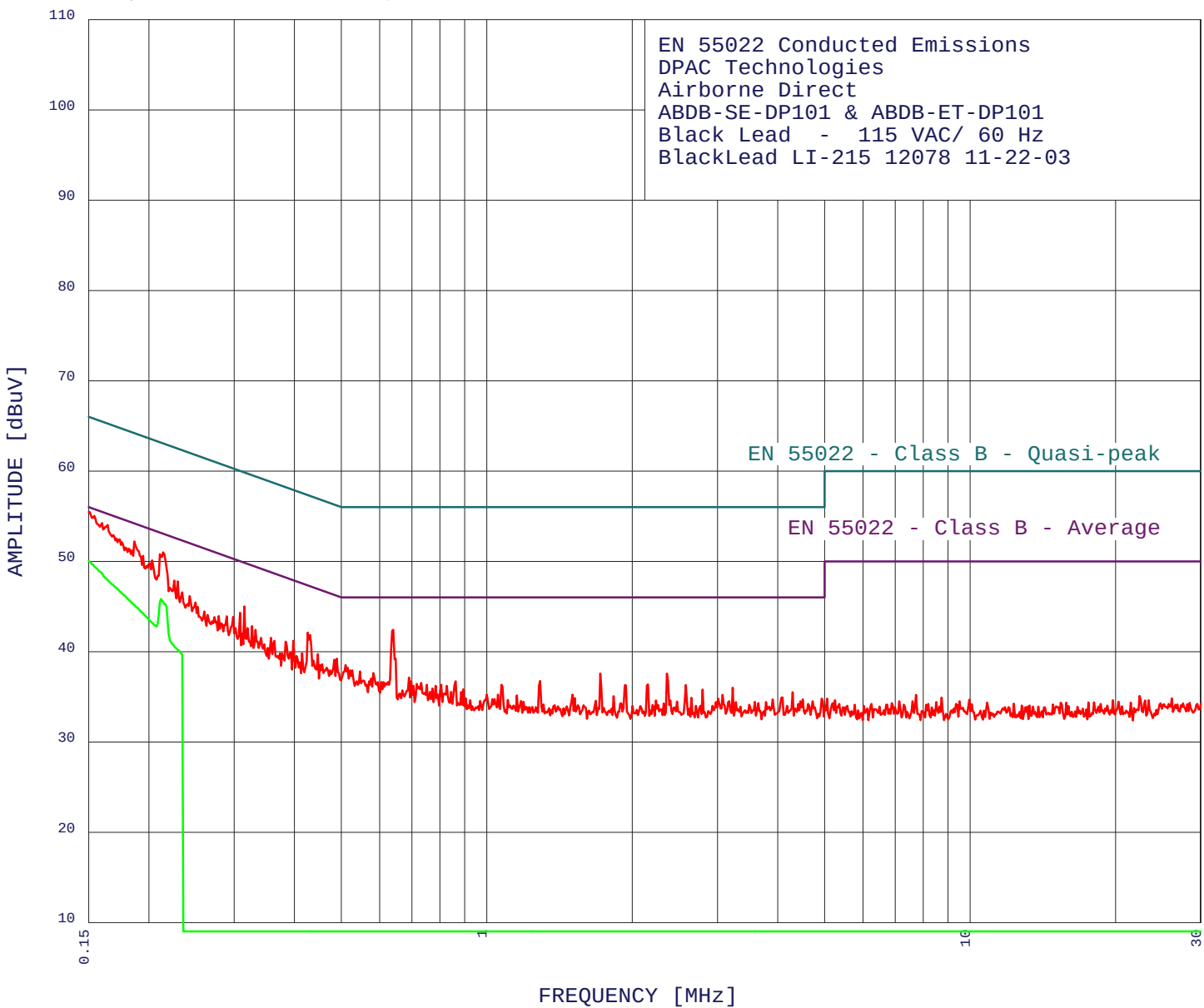
CONDUCTED EMISSIONS

DATA SHEETS



12/11/2003 13:16:32

EMISSION LEVEL [dBuV] PEAK
Graph for Peak & Average



Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

EN 55022 Conducted Emissions

DPAC Technologies

Airborne Direct

ABDB-SE-DP101 & ABDB-ET-DP101

Black Lead - 115 VAC/ 60 Hz

BlackLead LI-215 12078 11-22-03

TEST ENGINEER : James Ross

14 highest peaks above -50.00 dB of EN 55022 - Class B - Average limit line

Peak criteria : 3.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.150	55.43	56.00	-0.57*
2	0.641	42.42	46.00	-3.58
3	0.315	45.01	49.84	-4.83
4	0.426	42.11	47.33	-5.22
5	0.398	41.21	47.90	-6.69
6	2.358	37.58	46.00	-8.42
7	1.717	37.55	46.00	-8.45
8	1.290	36.74	46.00	-9.26
9	2.156	36.37	46.00	-9.63
10	2.582	36.28	46.00	-9.72
11	1.939	36.26	46.00	-9.74
12	3.226	36.00	46.00	-10.00
13	2.796	35.79	46.00	-10.21
14	4.294	35.51	46.00	-10.49

EN 55022 Conducted Emissions

DPAC Technologies

Airborne Direct

ABDB-SE-DP101 & ABDB-ET-DP101

Black Lead - 115 VAC/ 60 Hz

BlackLead LI-215 12078 11-22-03

TEST ENGINEER : James Ross

2 highest peaks above -50.00 dB of EN 55022 - Class B - Average limit line

Peak criteria : 3.00 dB, Curve : Average

Peak# Freq(MHz) Amp(dBuV) Limit(dB) Delta(dB)

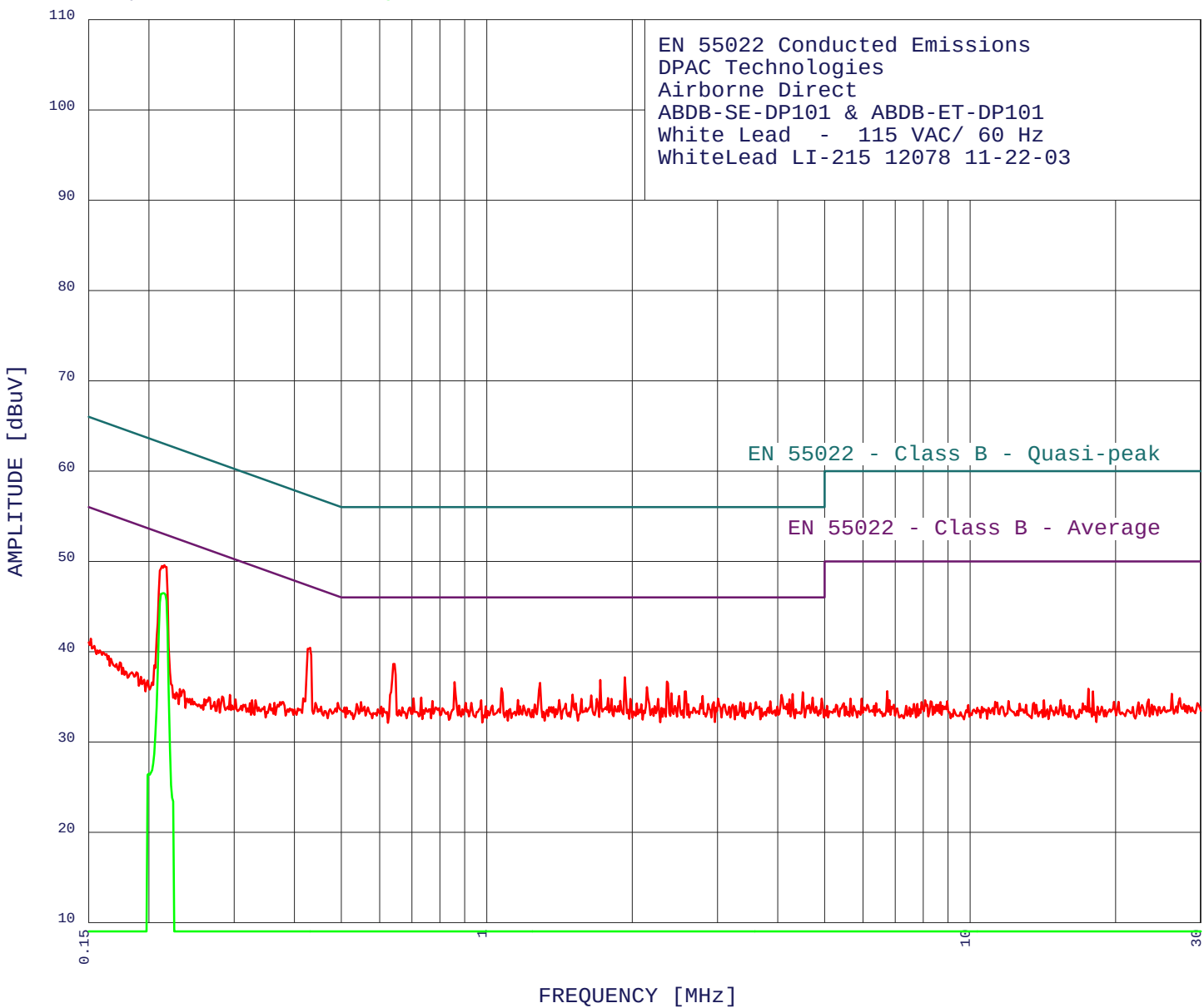
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2 0.212 45.83 53.14 -7.31



12/11/2003 13:31:32

EMISSION LEVEL [dBuV] PEAK
Graph for Peak & Average



Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

EN 55022 Conducted Emissions

DPAC Technologies

Airborne Direct

ABDB-SE-DP101 & ABDB-ET-DP101

White Lead - 115 VAC/ 60 Hz

WhiteLead LI-215 12078 11-22-03

TEST ENGINEER : James Ross

14 highest peaks above -50.00 dB of EN 55022 - Class B - Average limit line

Peak criteria : 3.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.215	49.58	53.00	-3.42*
2	0.431	40.41	47.24	-6.83
3	0.644	38.62	46.00	-7.38
4	1.929	37.16	46.00	-8.84
5	1.717	36.85	46.00	-9.15
6	2.358	36.68	46.00	-9.32
7	0.858	36.62	46.00	-9.38
8	1.290	36.54	46.00	-9.46
9	2.145	36.07	46.00	-9.93
10	1.072	35.93	46.00	-10.07
11	17.573	35.88	50.00	-14.12
12	6.736	35.61	50.00	-14.39
13	26.144	35.31	50.00	-14.69
14	0.150	41.03	56.00	-14.97

EN 55022 Conducted Emissions

DPAC Technologies

Airborne Direct

ABDB-SE-DP101 & ABDB-ET-DP101

White Lead - 115 VAC/ 60 Hz

WhiteLead LI-215 12078 11-22-03

TEST ENGINEER : James Ross

1 highest peaks above -50.00 dB of EN 55022 - Class B - Average limit line

Peak criteria : 3.00 dB, Curve : Average

Peak# Freq(MHz) Amp(dBuV) Limit(dB) Delta(dB)

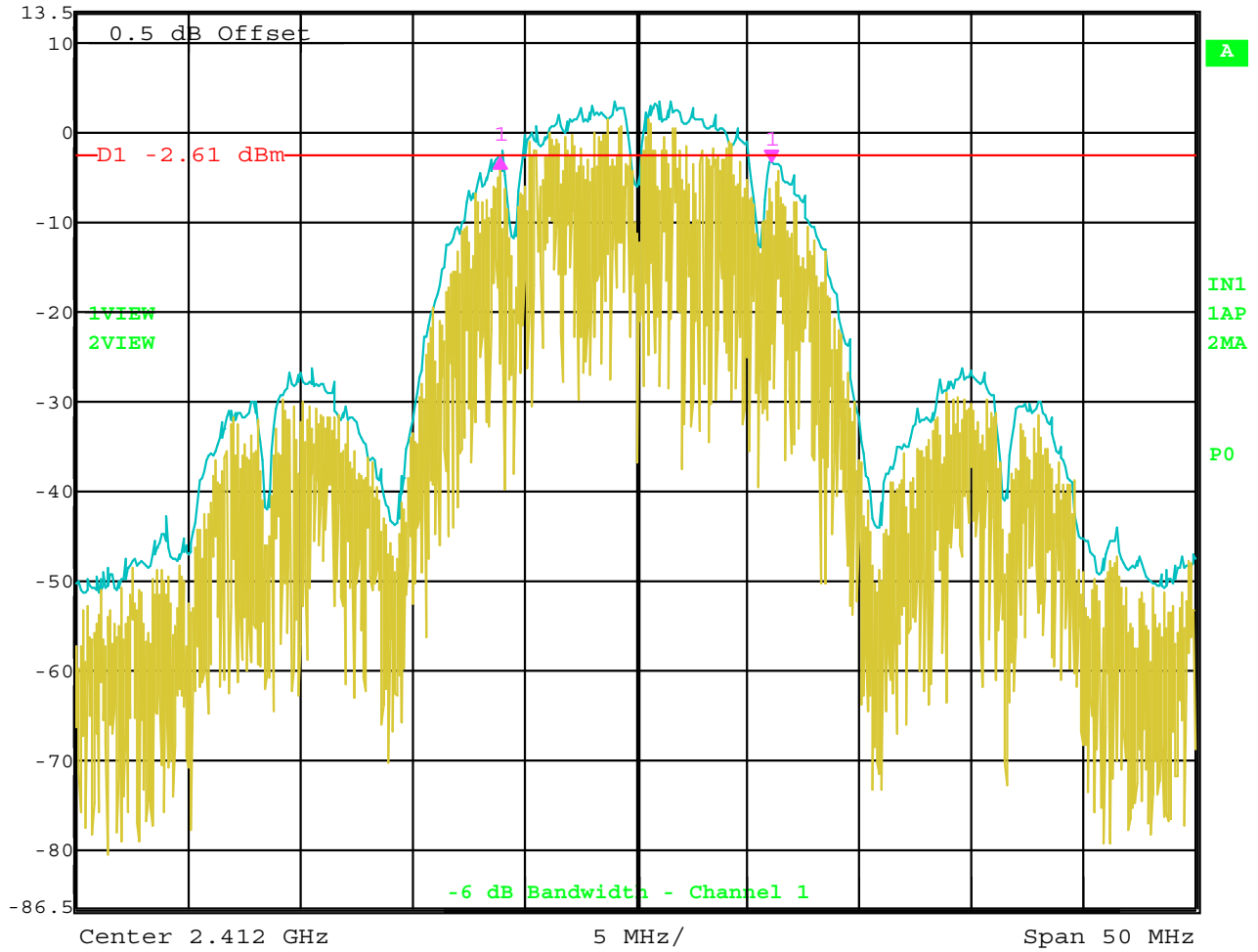
1	0.214	46.48	53.05	-6.57
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-6 dB BANDWIDTH

DATA SHEETS



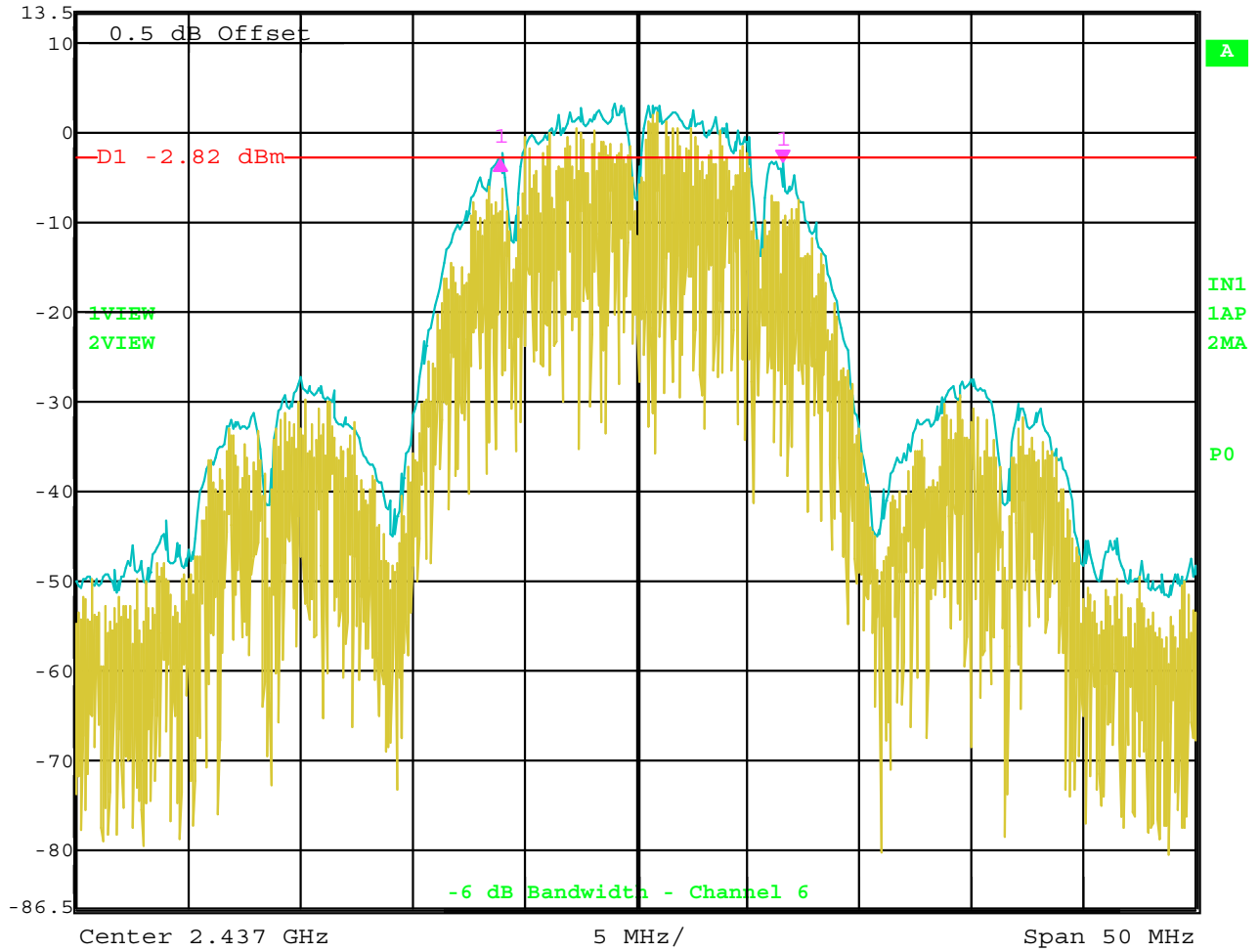
Delta 1 [T2]	RBW	100 kHz	RF Att	40 dB
Ref Lvl	0.57 dB	VBW	300 kHz	
13.5 dBm	-12.12424850 MHz	SWT	12.5 ms	Unit dBm



Date: 9.DEC.2003 14:11:10



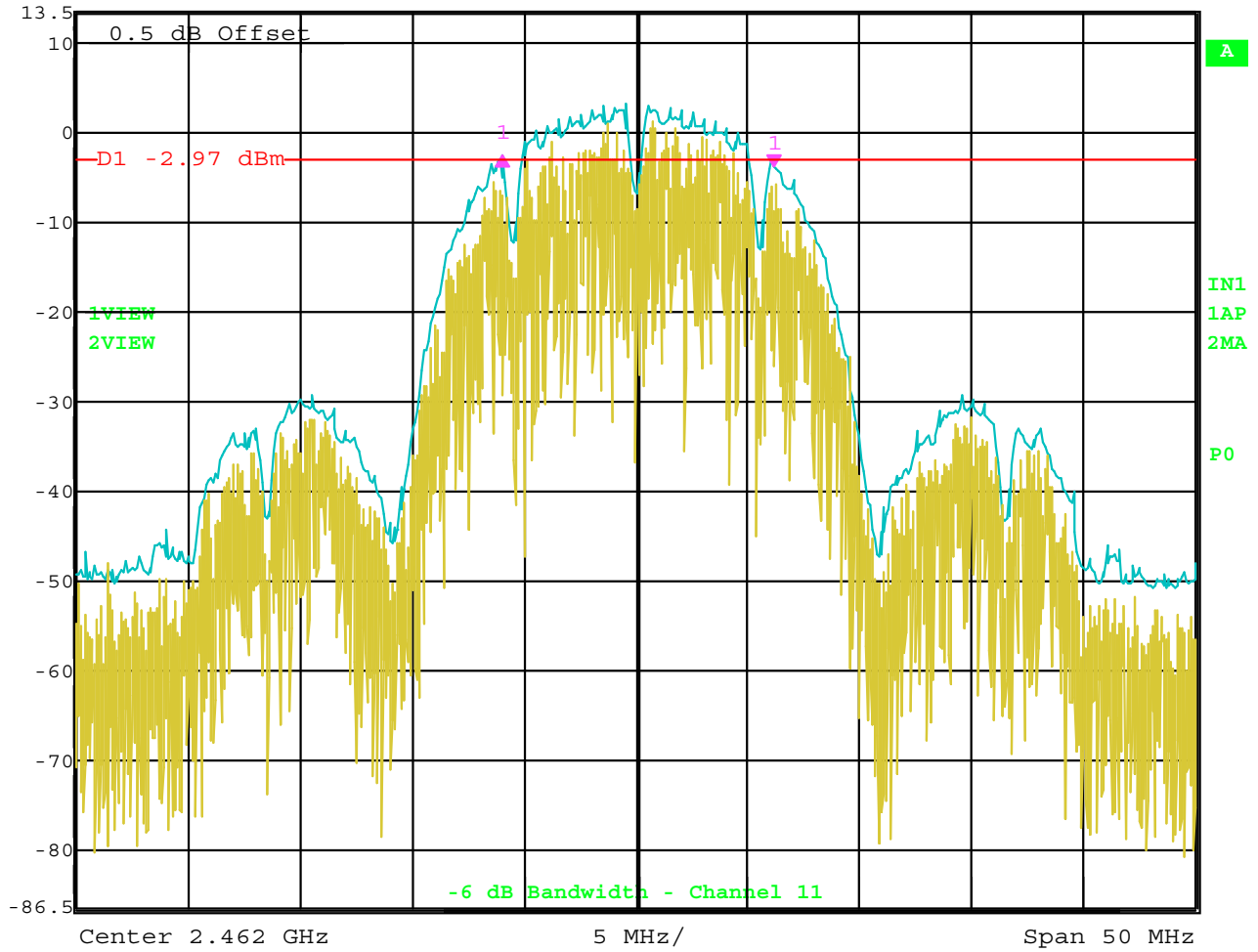
Delta 1 [T2] RBW 100 kHz RF Att 40 dB
Ref Lvl 0.41 dB VBW 300 kHz
13.5 dBm -12.62525050 MHz SWT 12.5 ms Unit dBm



Date: 9.DEC.2003 14:09:17



Delta 1 [T2] RBW 100 kHz RF Att 40 dB
Ref Lvl 1.13 dB VBW 300 kHz
13.5 dBm -12.12424850 MHz SWT 12.5 ms Unit dBm



Date: 9.DEC.2003 14:12:53

PEAK POWER OUTPUT

DATA SHEETS

PEAK OUTPUT POWER

DPAC Technologies

Airborne Direct

MODEL: ABDB-SE-DP101 & ABDB-ET-DP101

CHANNEL	RATE	PEAK POWER OUTPUT (dBm)
1 (2412 MHz)	1 Mbps	15.13
1 (2412 MHz)	5.5 Mbps	15.13
1 (2412 MHz)	11 Mbps	15.14
6 (2437 MHz)	1 Mbps	14.81
6 (2437 MHz)	5.5 Mbps	14.81
6 (2437 MHz)	11 Mbps	14.81
11 (2462 MHz)	1 Mbps	14.44
11 (2462 MHz)	5.5 Mbps	14.45
11 (2462 MHz)	11 Mbps	14.45

PEAK POWER SPECTRAL DENSITY
DATA SHEETS



Marker 1 [T2]

RBW 3 kHz RF Att 40 dB

Ref Lvl -11.19 dBm

VBW 10 kHz

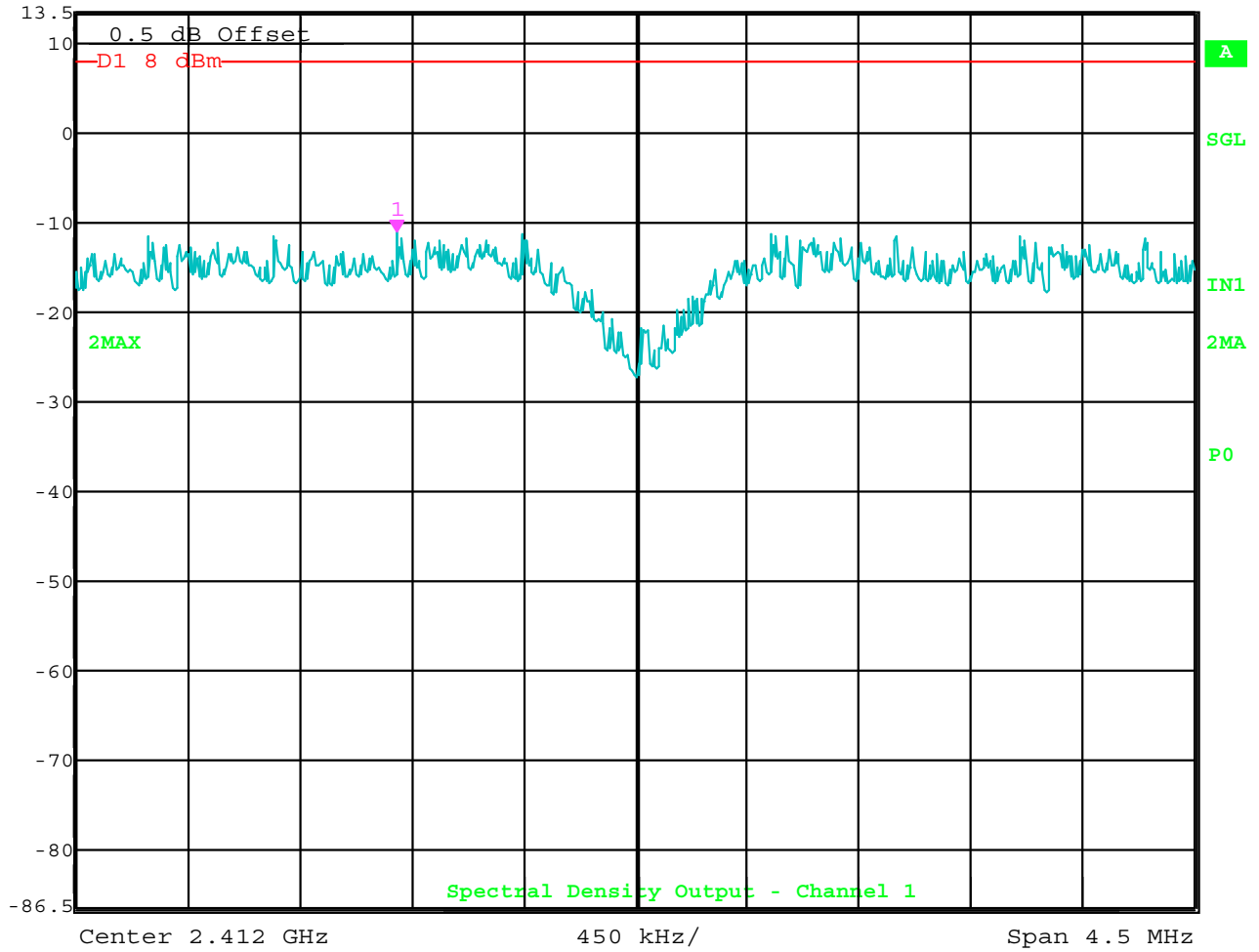
13.5 dBm

2.41103958 GHz

SWT 1500 s

Unit

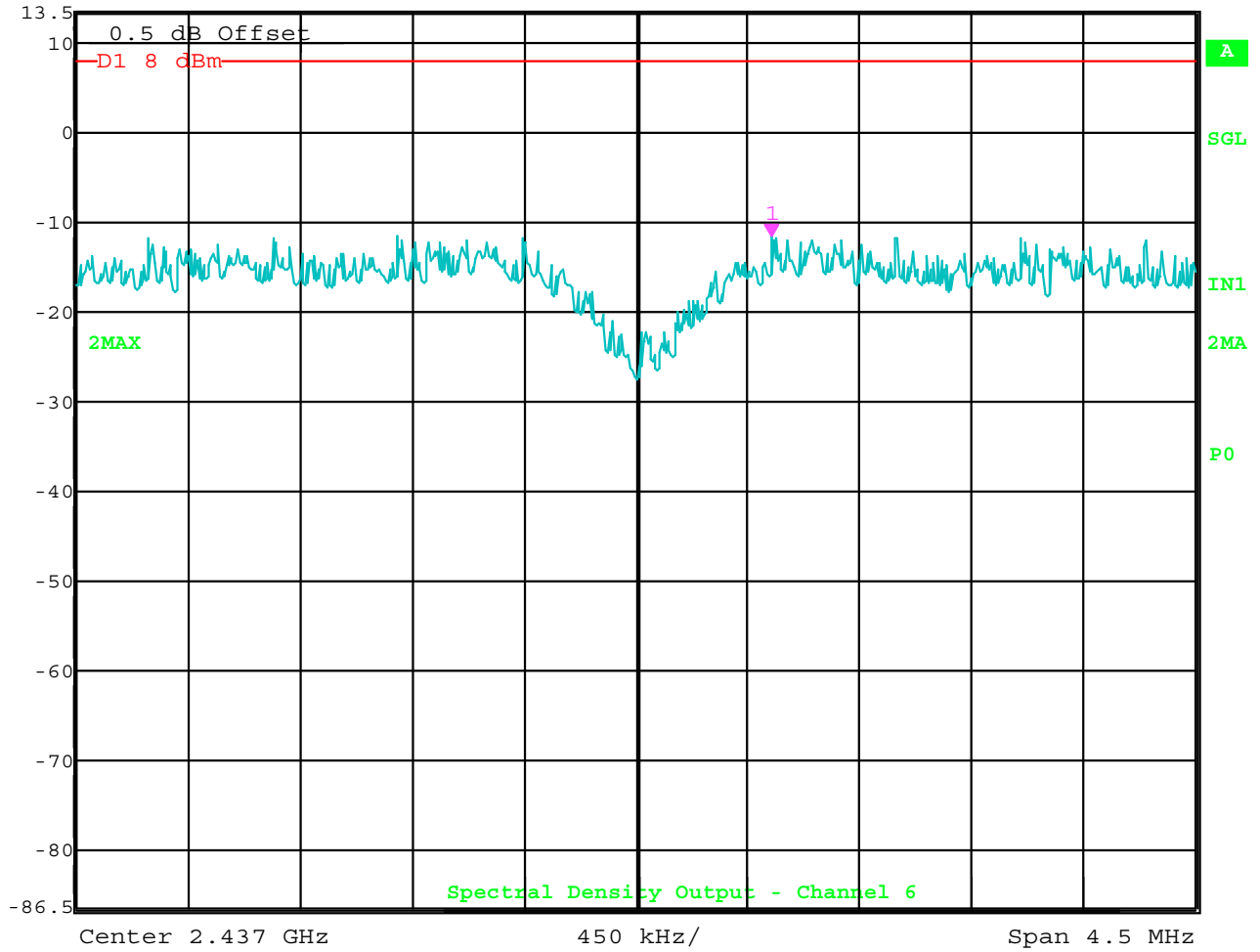
dBm



Date: 9.DEC.2003 15:16:22



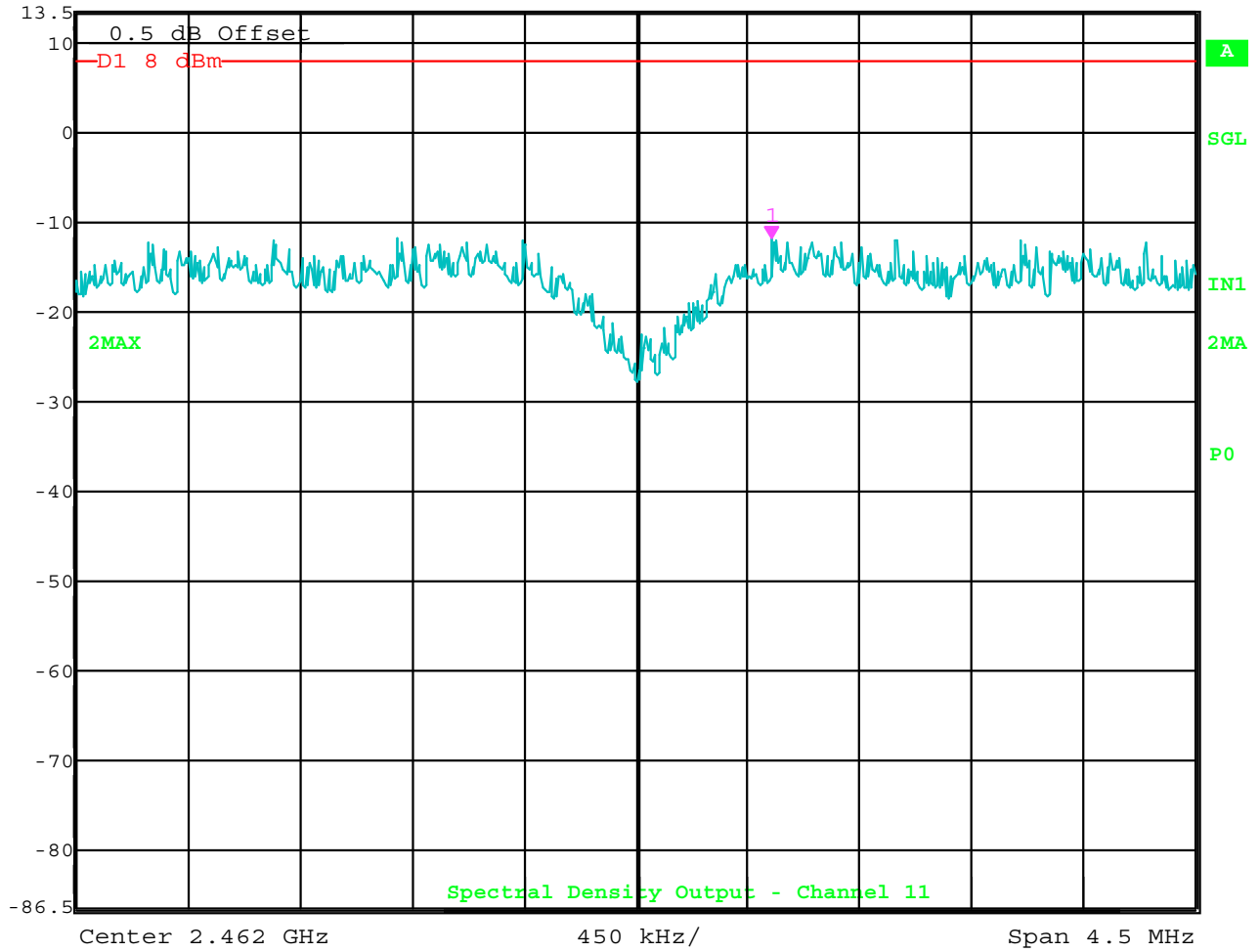
Marker 1 [T2] RBW 3 kHz RF Att 40 dB
Ref Lvl -11.51 dBm VBW 10 kHz
13.5 dBm 2.43754559 GHz SWT 1500 s Unit dBm



Date: 9.DEC.2003 15:43:02



Ref Lvl	Marker 1 [T2]	RBW	3 kHz	RF Att	40 dB
13.5 dBm	-11.85 dBm	VBW	10 kHz		
	2.46254559 GHz	SWT	1500 s	Unit	dBm



Date: 9.DEC.2003 16:09:19



RADIATED EMISSIONS

DATA SHEETS for the DIGITAL PORTION

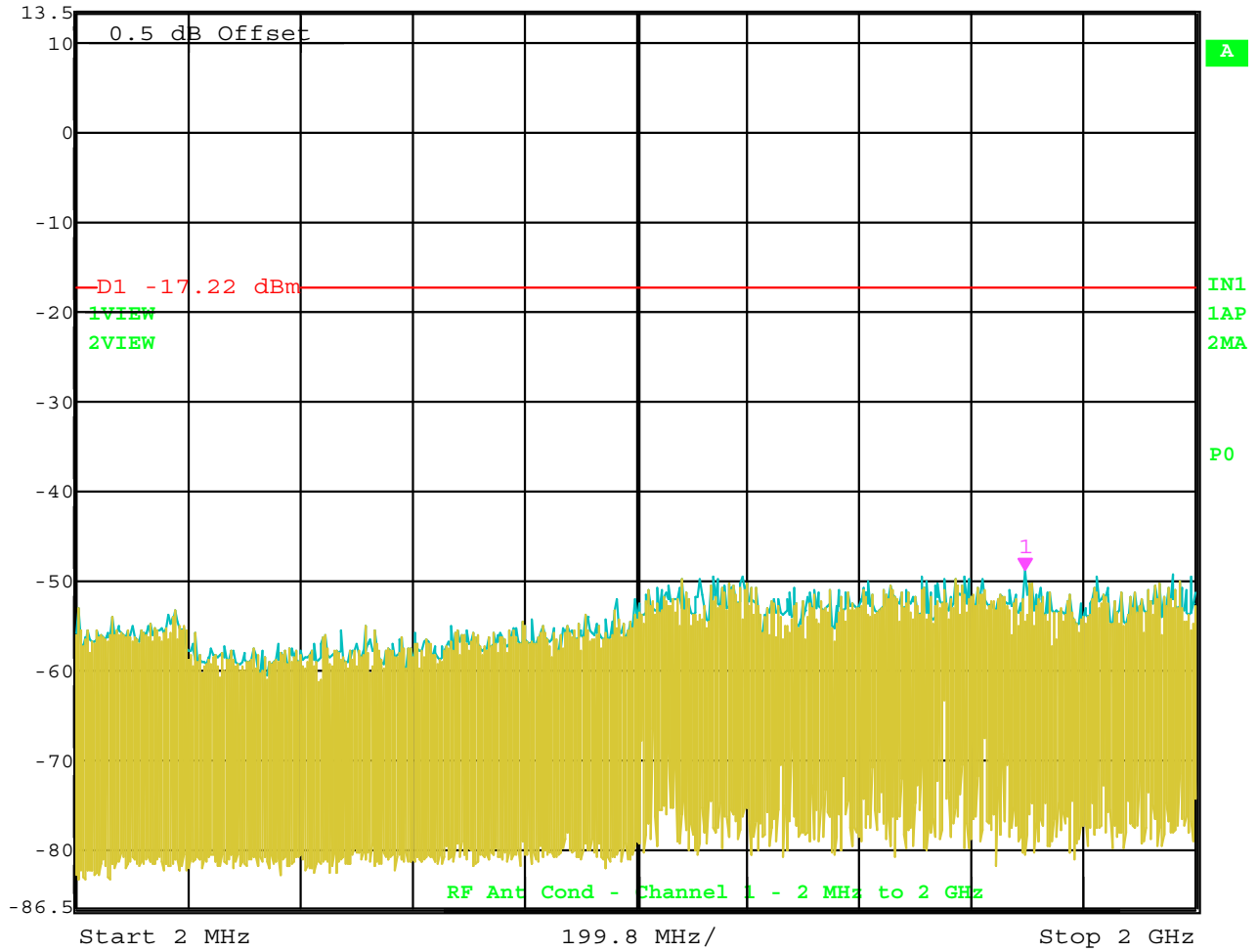
Test Location : Compatible Electronics	Page : 1/1
Customer : Paul Shklanko	Date : 12/11/2003
Manufacturer : DPAC Technologies	Time : 8:50:17
Eut name : Airborne Direct	Lab : D
Model : ABDB-SE-DP101 and ABDB-ET-DP101	Test Distance : 3.0 Meters
Serial # : Prototype	
Specification : FCC Class B	
Distance correction factor (20 * log(test/spec)) : 0.00	
Test Mode : Qualification Scan (Operating both Serial and Ethernet ports) 10 kHz to 1000 MHz (Vertical and Horizontal Polarities) Oscillator Frequencies: 4.8 MHz, 44 MHz, and 4.8 GHz Test Engineer: James Ross	

Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	Limit = L dBuV/m	Delta R-L dB
V	80.086	65.90	1.70	8.00	38.40	37.20	40.00	-2.80
V	80.088Qp	64.79	1.70	8.00	38.40	36.09	40.00	-3.91
V	120.107	55.90	1.98	9.93	38.38	29.43	43.50	-14.07
V	220.065	44.90	2.66	15.63	38.24	24.95	46.00	-21.05
V	128.948	50.70	2.03	11.56	38.40	25.90	43.50	-17.60
V	264.065	47.20	3.06	17.53	38.41	29.37	46.00	-16.63
H	80.079	51.80	1.70	8.00	38.40	23.10	40.00	-16.90
H	120.078	49.90	1.98	9.92	38.38	23.42	43.50	-20.08
H	128.954	45.40	2.03	11.56	38.40	20.60	43.50	-22.90
H	220.114	42.80	2.66	15.63	38.24	22.86	46.00	-23.14
H	264.051	47.40	3.06	17.53	38.41	29.57	46.00	-16.43
V	308.057	48.30	3.35	12.95	38.30	26.30	46.00	-19.70
V	344.122	46.30	3.57	13.56	38.30	25.13	46.00	-20.87
V	352.105	46.70	3.61	13.69	38.30	25.70	46.00	-20.30
V	396.104	45.80	3.79	14.35	38.30	25.63	46.00	-20.37
V	406.482	45.50	3.83	14.52	38.25	25.60	46.00	-20.40
V	432.052	46.60	3.93	14.95	38.04	27.45	46.00	-18.55
V	440.067	44.50	3.96	15.08	37.98	25.57	46.00	-20.43
V	442.467	41.90	3.97	15.12	37.96	23.04	46.00	-22.96
V	480.047	44.80	4.25	15.71	38.02	26.73	46.00	-19.27
V	484.077	43.00	4.28	15.77	38.04	25.01	46.00	-20.99
V	616.107	44.20	4.70	18.10	38.03	28.96	46.00	-17.04
H	308.063	47.40	3.35	12.95	38.30	25.40	46.00	-20.60
H	324.063	47.30	3.45	13.23	38.30	25.68	46.00	-20.32
H	352.081	48.60	3.61	13.69	38.30	27.60	46.00	-18.40
H	396.065	45.70	3.79	14.35	38.30	25.53	46.00	-20.47
H	432.096	53.20	3.93	14.95	38.04	34.05	46.00	-11.95
H	440.062	46.90	3.96	15.08	37.98	27.97	46.00	-18.03
H	480.075	47.80	4.25	15.71	38.02	29.73	46.00	-16.27
H	484.098	46.70	4.28	15.77	38.04	28.71	46.00	-17.29
H	528.154	44.30	4.40	16.51	38.16	27.05	46.00	-18.95
H	572.064	42.80	4.49	17.26	38.15	26.39	46.00	-19.61
H	660.100	45.50	4.94	19.12	37.90	31.67	46.00	-14.33

RF ANTENNA CONDUCTED
DATA SHEETS



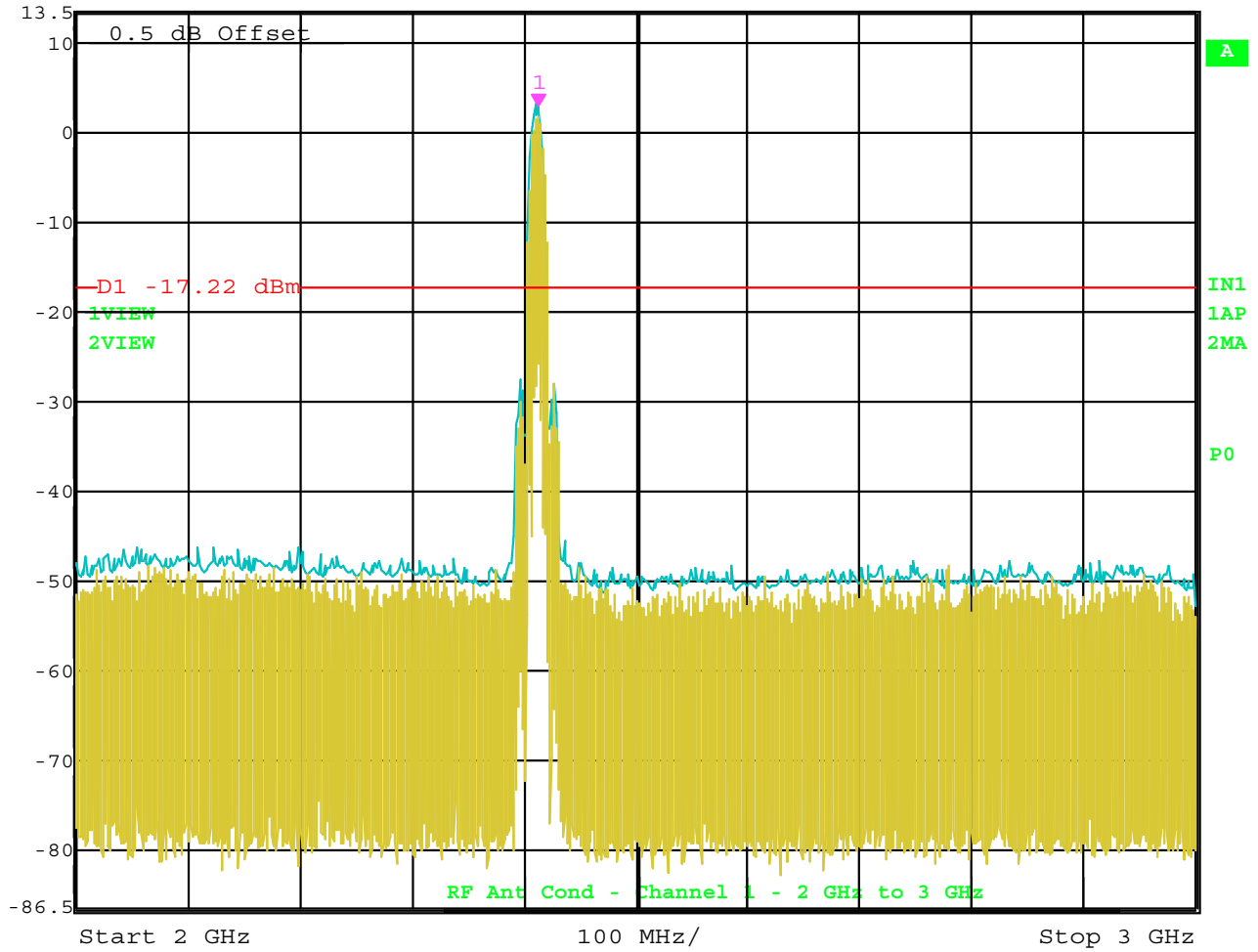
Ref Lvl	Marker 1 [T2]	RBW	100 kHz	RF Att	40 dB
13.5 dBm	-48.81 dBm	VBW	300 kHz		
	1.69569539 GHz	SWT	700 ms	Unit	dBm



Date: 9.DEC.2003 14:29:06



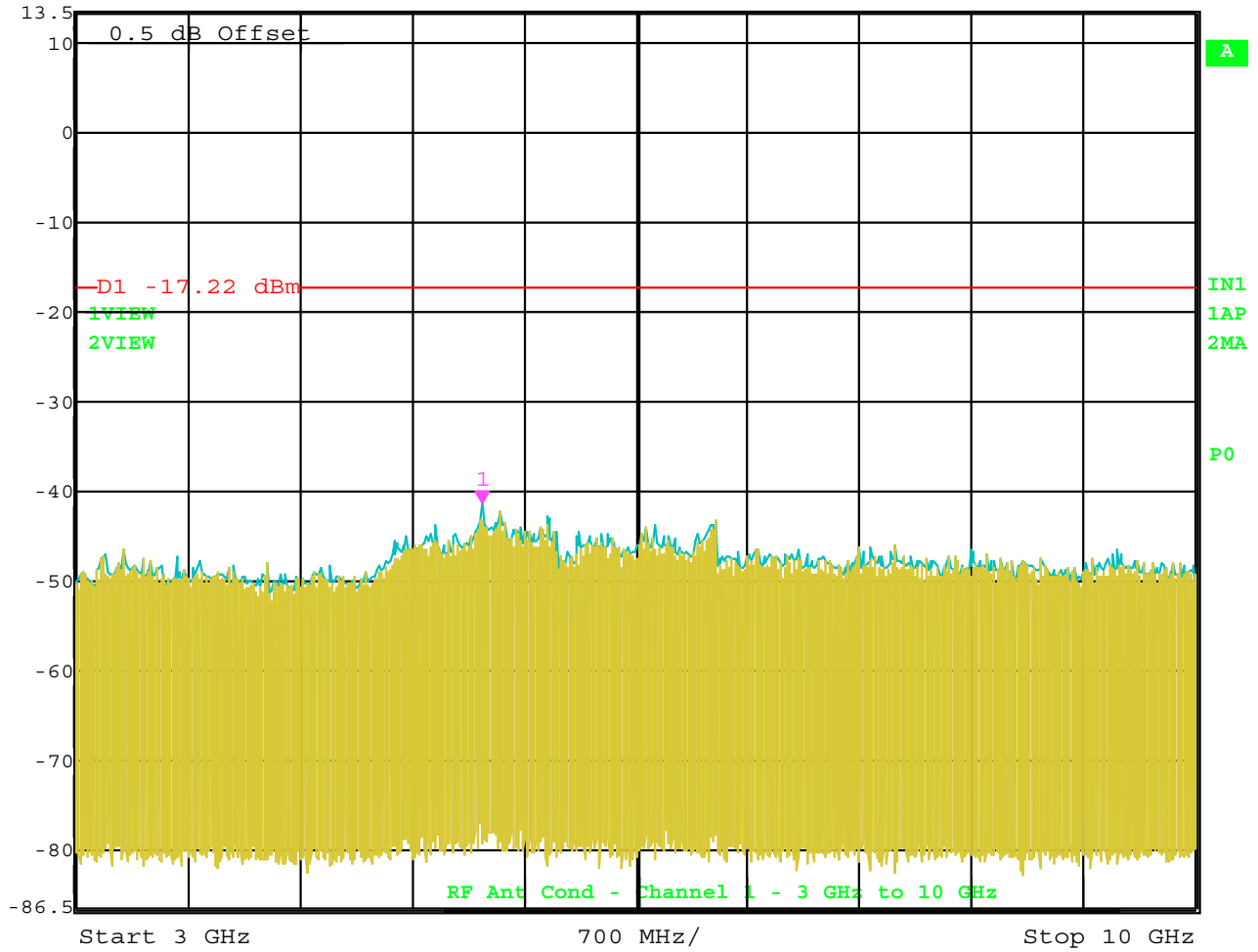
Marker 1 [T2] RBW 100 kHz RF Att 40 dB
Ref Lvl 2.78 dBm VBW 300 kHz
13.5 dBm 2.41200000 GHz SWT 250 ms Unit dBm



Date: 9.DEC.2003 14:28:04



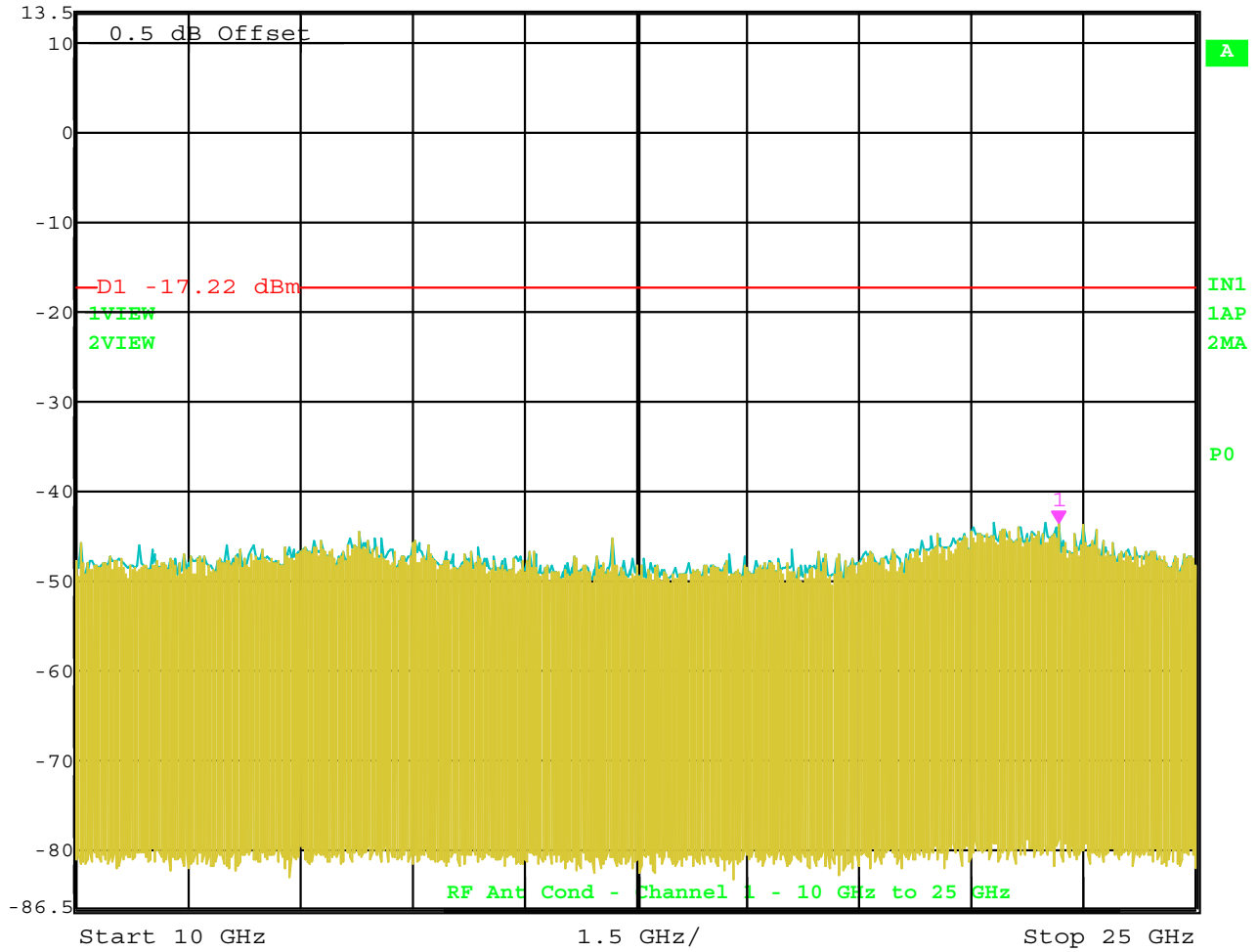
Ref Lvl	Marker 1 [T2]	RBW	100 kHz	RF Att	40 dB
13.5 dBm	-41.40 dBm	VBW	300 kHz		
	5.53907816 GHz	SWT	1.75 s	Unit	dBm



Date: 9.DEC.2003 14:30:04



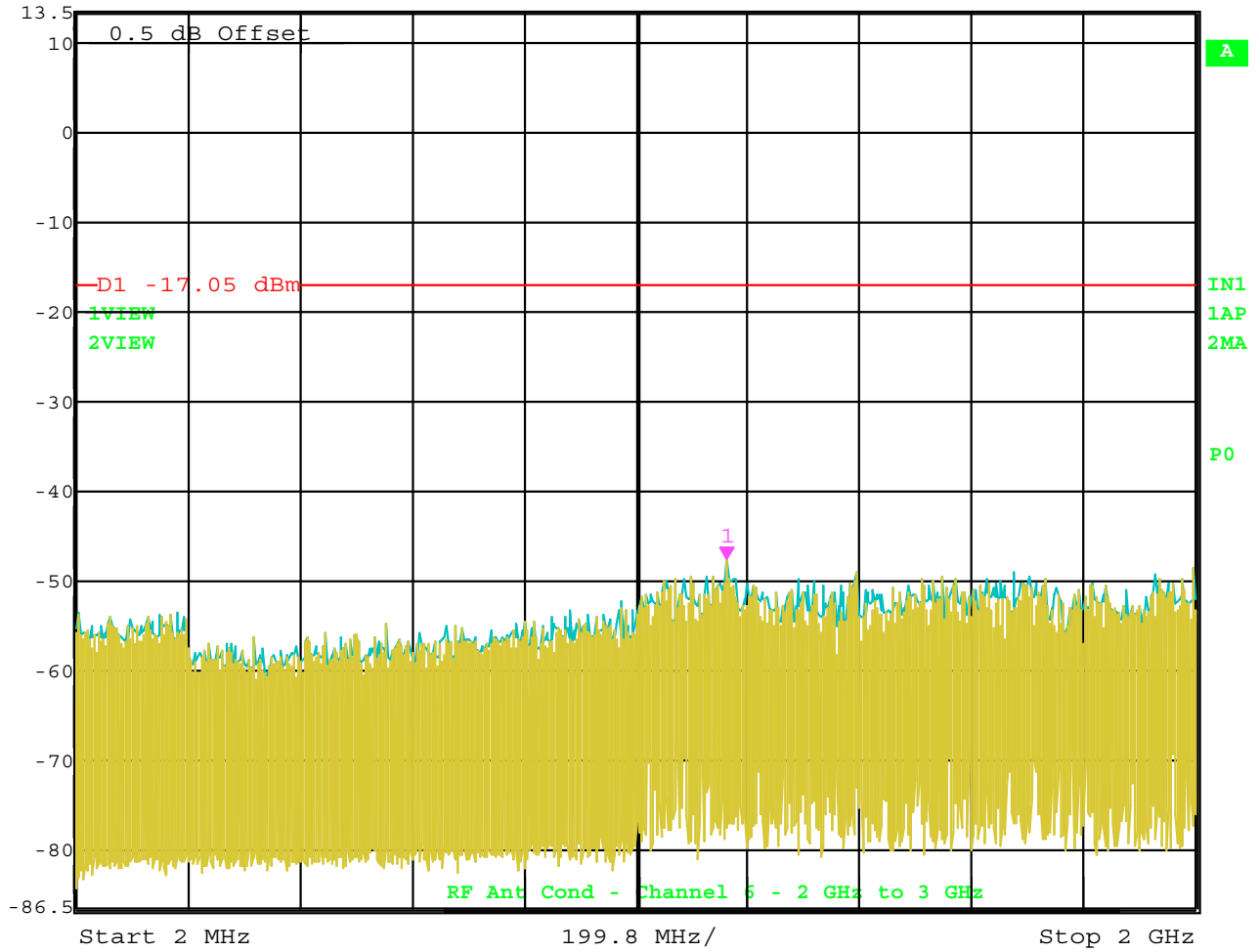
Marker 1 [T2] RBW 100 kHz RF Att 40 dB
Ref Lvl -43.55 dBm VBW 300 kHz
13.5 dBm 23.16633267 GHz SWT 3.8 s Unit dBm



Date: 9.DEC.2003 14:30:55



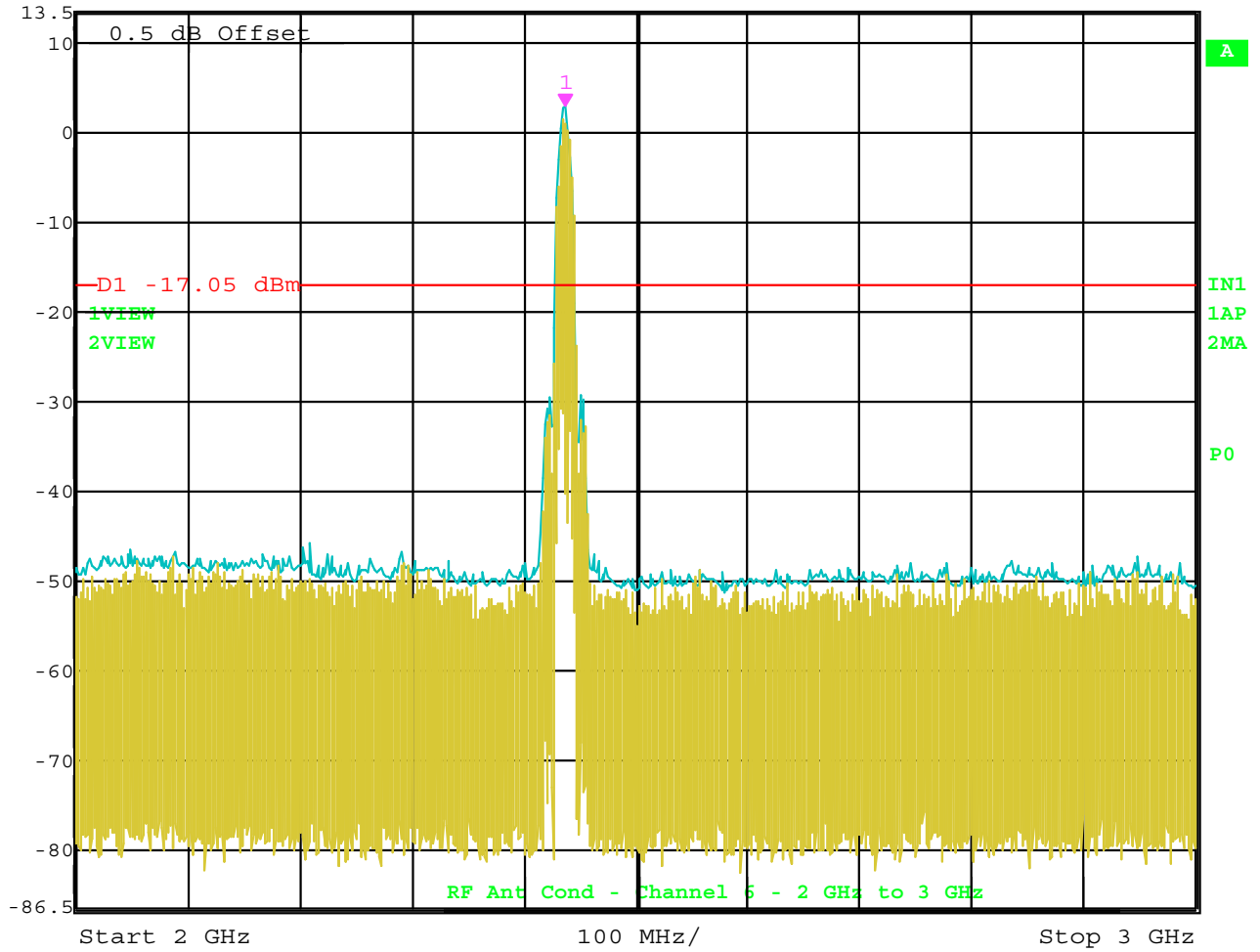
Marker 1 [T2] RBW 100 kHz RF Att 40 dB
Ref Lvl -47.60 dBm VBW 300 kHz
13.5 dBm 1.16316232 GHz SWT 700 ms Unit dBm



Date: 9.DEC.2003 14:39:40



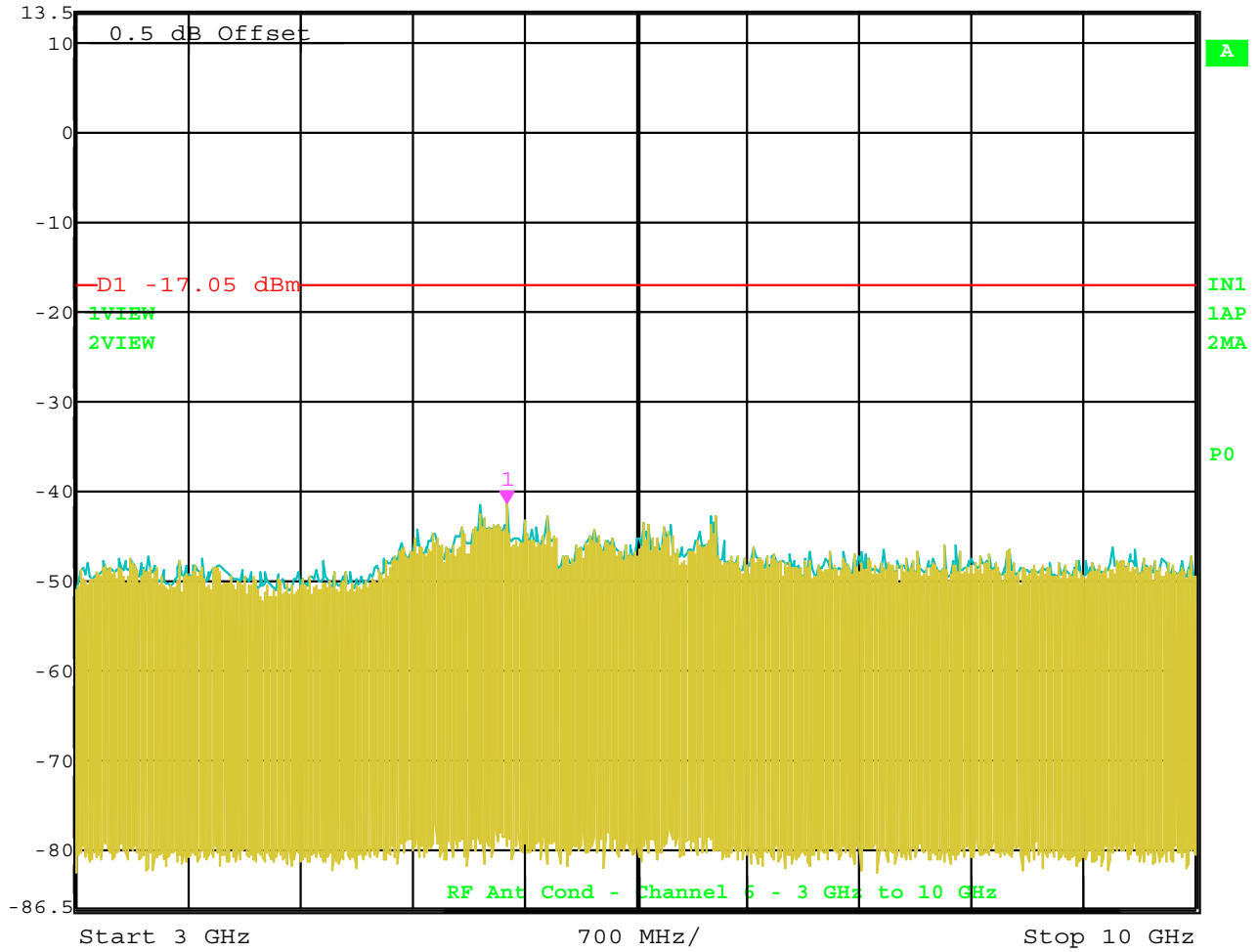
Marker 1 [T2] RBW 100 kHz RF Att 40 dB
Ref Lvl 2.95 dBm VBW 300 kHz
13.5 dBm 2.43700000 GHz SWT 250 ms Unit dBm



Date: 9.DEC.2003 14:32:44



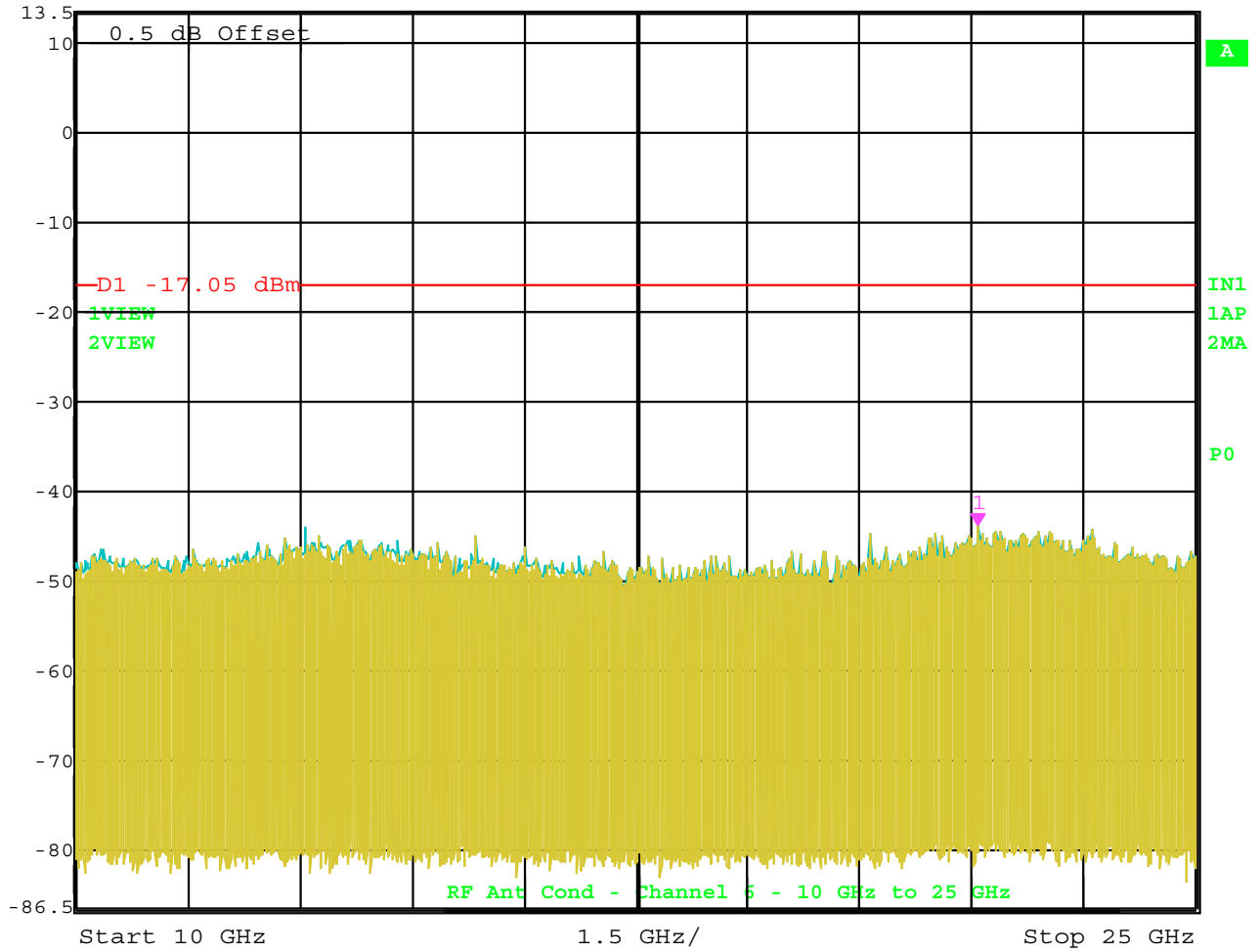
Ref Lvl	Marker 1 [T2]	RBW	100 kHz	RF Att	40 dB
13.5 dBm	-41.31 dBm	VBW	300 kHz		
	5.69338677 GHz	SWT	1.75 s	Unit	dBm



Date: 9.DEC.2003 14:40:42



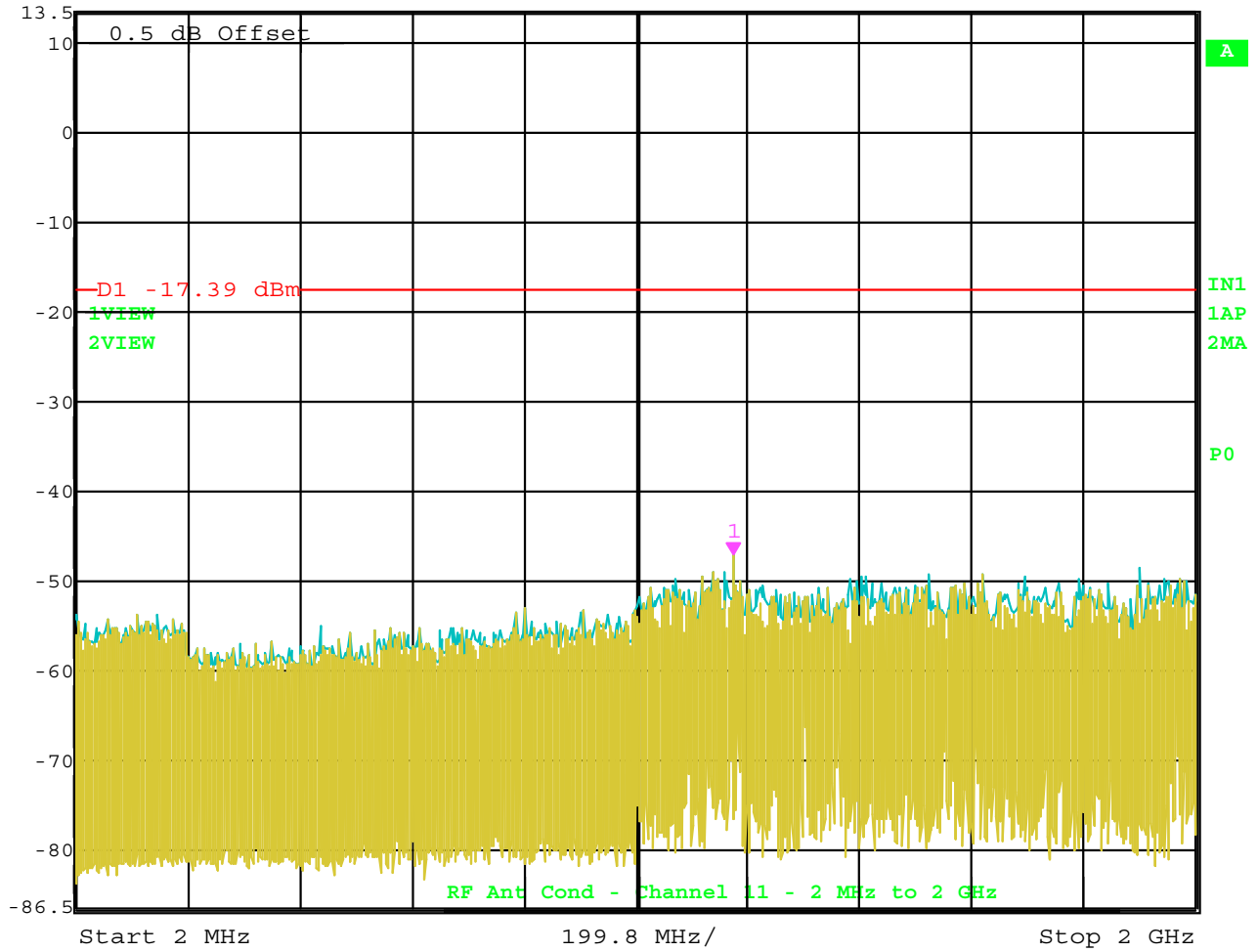
Marker 1 [T2] RBW 100 kHz RF Att 40 dB
Ref Lvl -43.85 dBm VBW 300 kHz
13.5 dBm 22.08416834 GHz SWT 3.8 s Unit dBm



Date: 9.DEC.2003 14:41:47



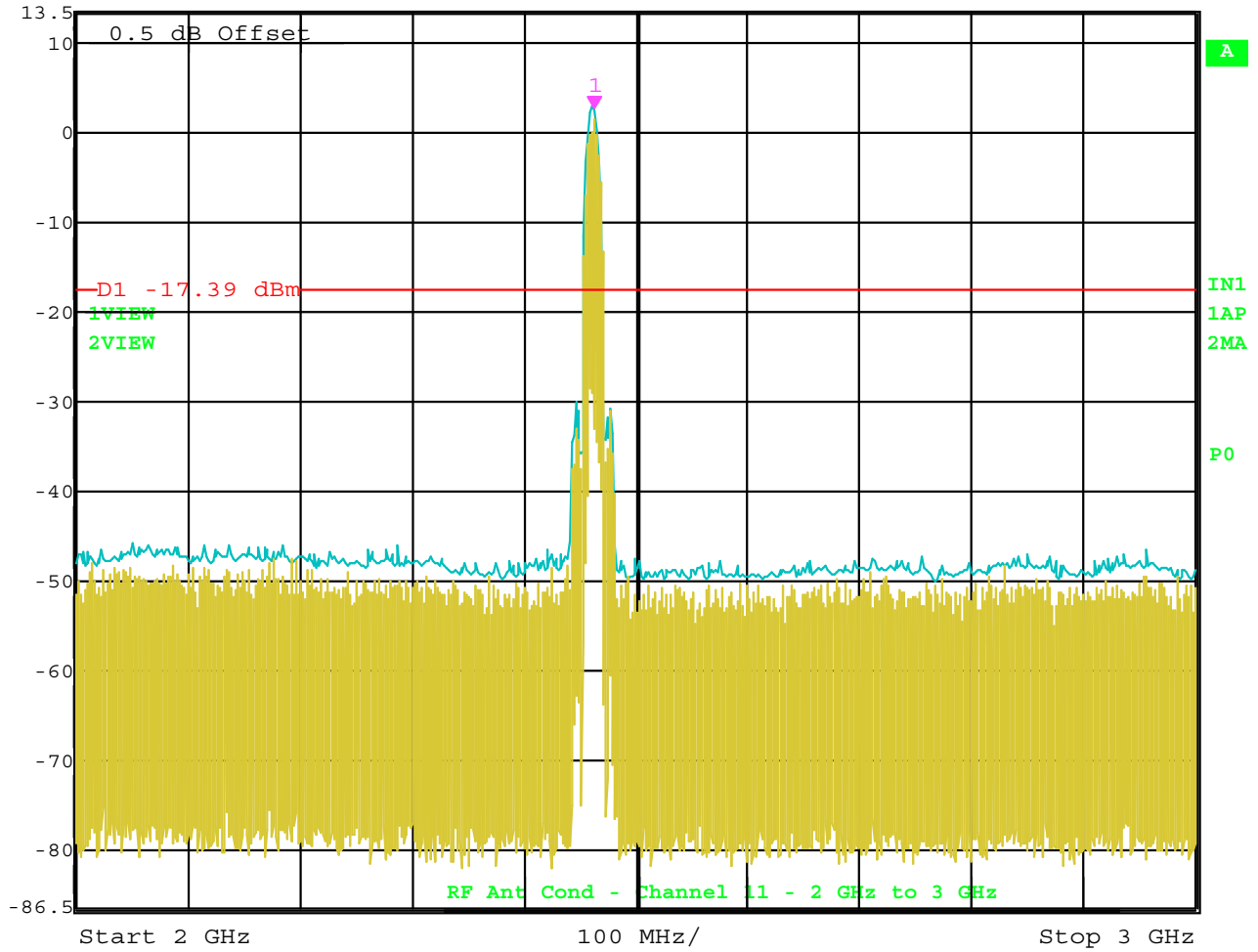
Ref Lvl	Marker 1 [T2]	RBW	100 kHz	RF Att	40 dB
13.5 dBm	-47.14 dBm	VBW	300 kHz		
	1.17517435 GHz	SWT	700 ms	Unit	dBm



Date: 9.DEC.2003 14:46:47



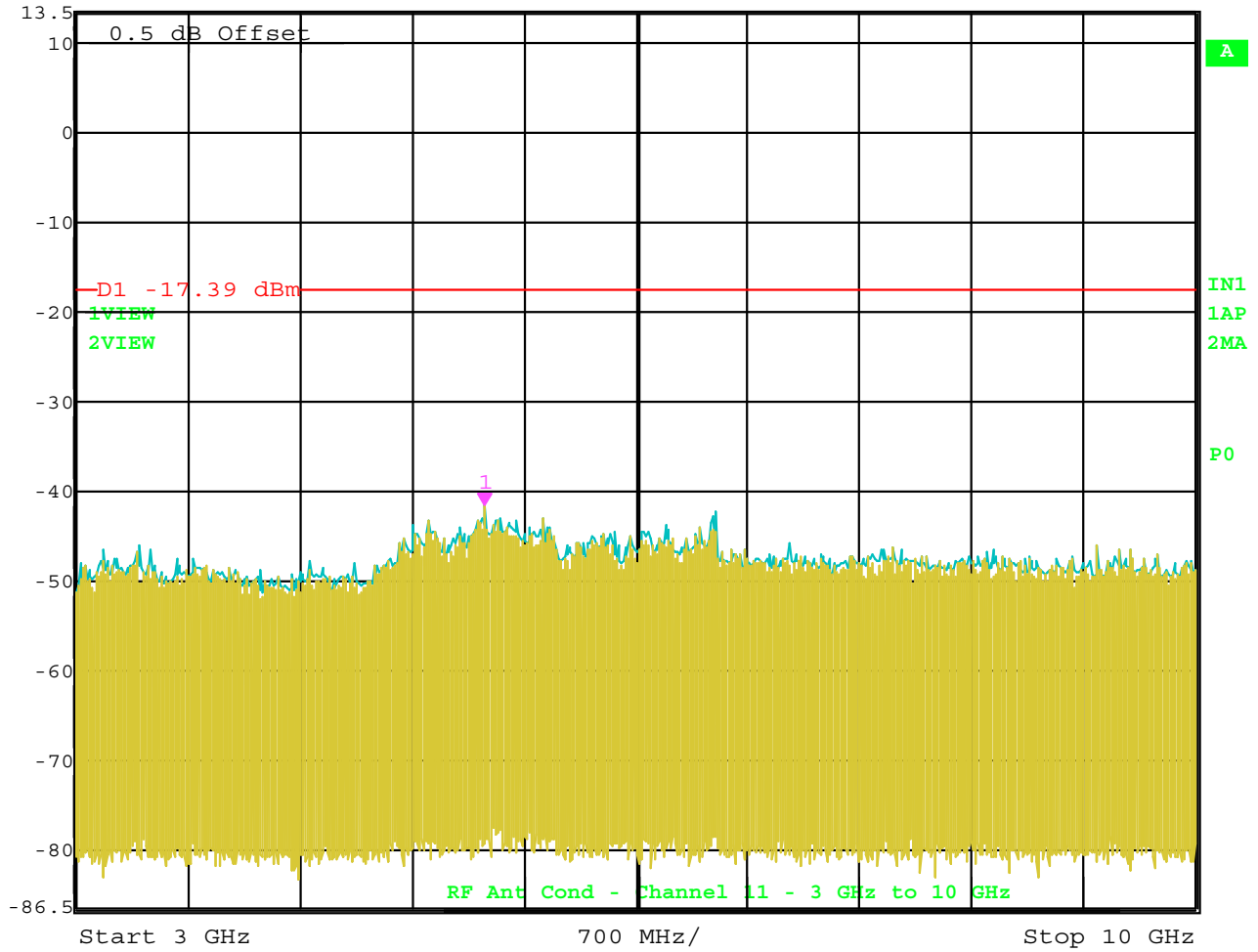
Marker 1 [T2] RBW 100 kHz RF Att 40 dB
Ref Lvl 2.61 dBm VBW 300 kHz
13.5 dBm 2.46200000 GHz SWT 250 ms Unit dBm



Date: 9.DEC.2003 14:46:02



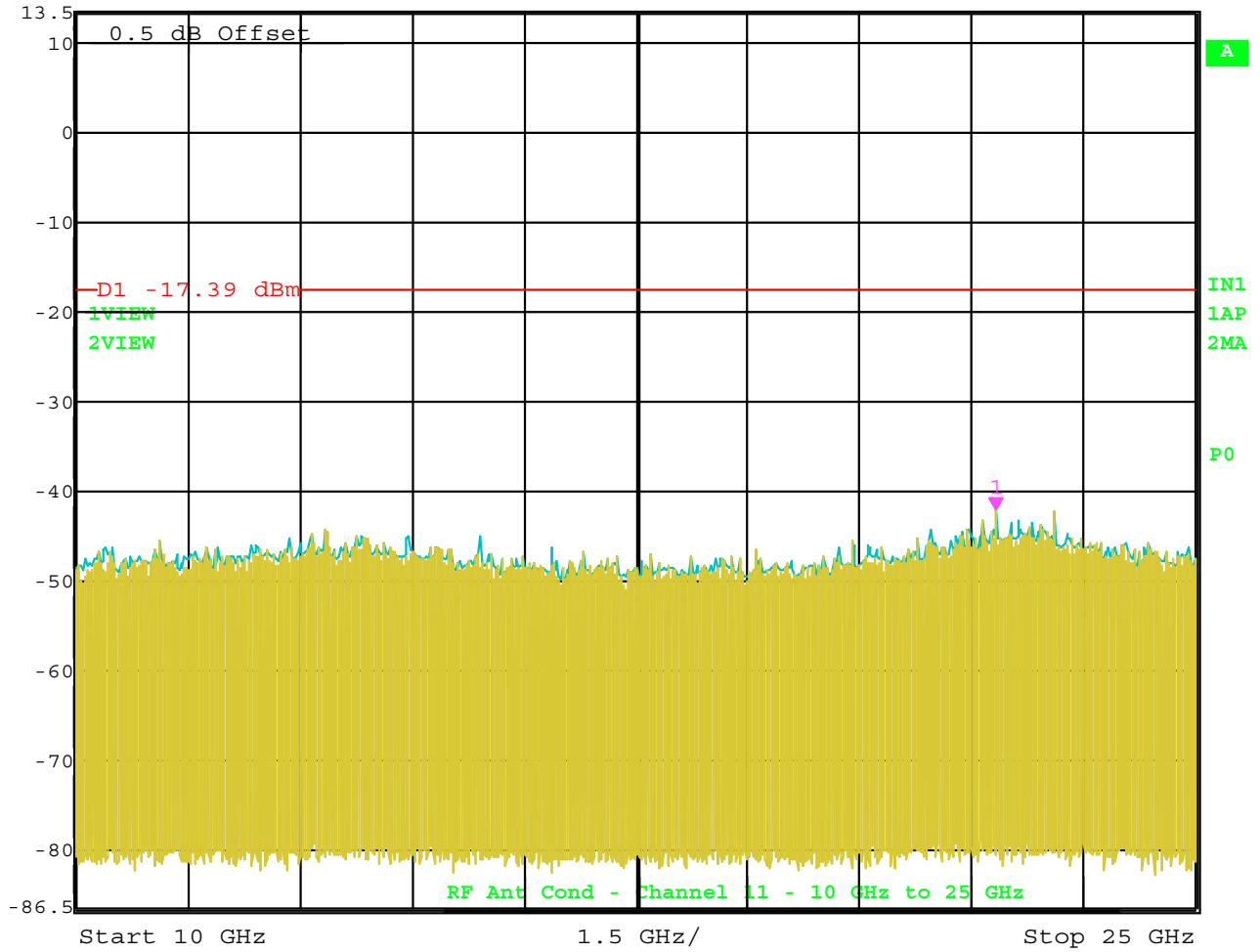
Ref Lvl	Marker 1 [T2]	RBW	100 kHz	RF Att	40 dB
13.5 dBm	-41.54 dBm	VBW	300 kHz		
	5.55310621 GHz	SWT	1.75 s	Unit	dBm



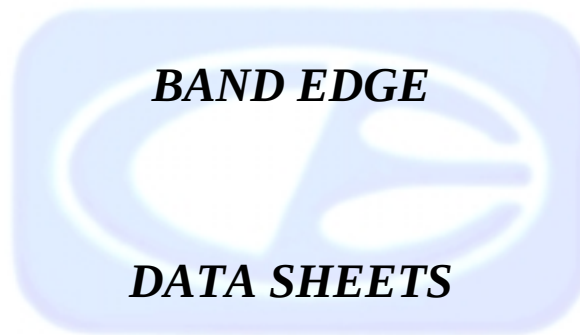
Date: 9.DEC.2003 14:47:49



Marker 1 [T2] RBW 100 kHz RF Att 40 dB
Ref Lvl -42.05 dBm VBW 300 kHz
13.5 dBm 22.32464930 GHz SWT 3.8 s Unit dBm



Date: 9.DEC.2003 14:48:45



FCC 15.247

DPAC Technologies

Airborne Direct

Model: ABDB-SE-DP101 and ABDB-ET-DP101

S/N: Prototype

Date: 12/09/03

Lab: B

Tested By: Kyle Fujimoto

Channels 1, 6 and 11 - 802.11 b Mode
Fundamental and Band Edges

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2412	108.03	V	"--"	"--"	Peak	2	135	Fundamental of Channel 1
2412	103.66	V	"--"	"--"	Avg	2	135	at 3 Meters
2390	53.38	V	74	-20.62	Peak	2	135	No Marker Delta Method
2390	46.17	V	54	-7.83	Avg	2	135	Required for this Frequency
2374.78	53.25	V	74	-20.75	Peak	2	135	No Marker Delta Method
2374.78	45.86	V	54	-8.14	Avg	2	135	Required for this Frequency
2437	106.34	V	74	32.34	Peak	2	135	Fundamental of Channel 6
2437	101.82	V	54	47.82	Avg	2	135	at 3 Meters
2462	106.79	V	"--"	"--"	Peak	2	135	Fundamental of Channel 11
2462	102.49	V	"--"	"--"	Avg	2	135	at 3 Meters
2483.5	52	V	74	-22	Peak	2	135	No Marker Delta Method
2483.5	43.99	V	54	-10.01	Avg	2	135	Required for this Frequency
2500	50.66	V	74	-23.34	Peak	2	135	No Marker Delta Method
2500	41.46	V	54	-12.54	Avg	2	135	Required for this Frequency

FCC 15.247

DPAC Technologies
 Airborne Direct
 Model: ABDB-SE-DP101 and ABDB-ET-DP101
 S/N: Prototype

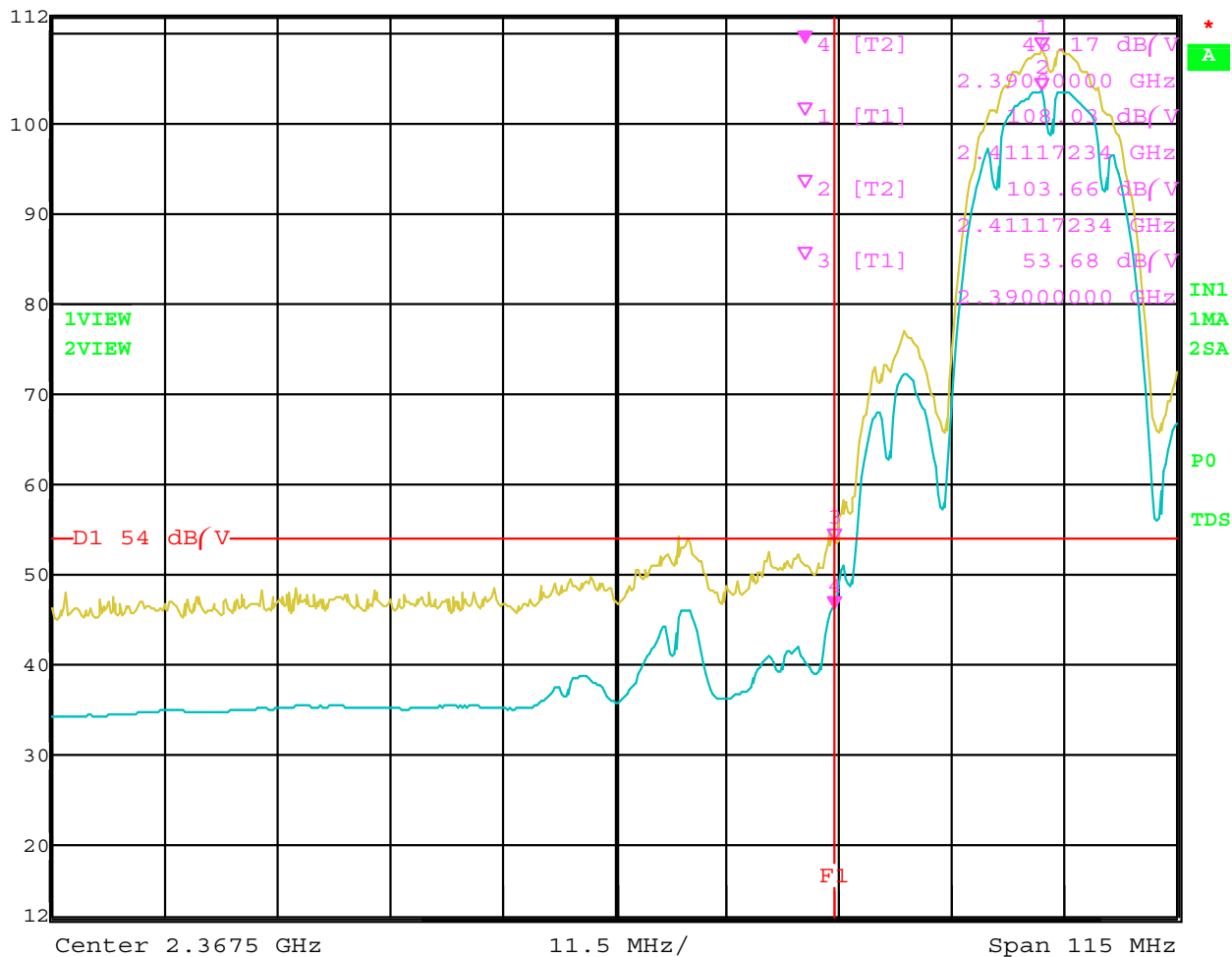
Date: 12/09/03
 Lab: B
 Tested By: Kyle Fujimoto

**Channels 1, 6 and 11 - 802.11 b Mode
 Fundamental and Band Edges**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2412	98.84	H	"--"	"--"	Peak	2.5	180	Fundamental of Channel 1
2412	94.5	H	"--"	"--"	Avg	2.5	180	at 3 Meters
2390	46.96	H	74	-27.04	Peak	2.5	180	No Marker Delta Method
2390	35.49	H	54	-18.51	Avg	2.5	180	Required for this Frequency
2374.56	46.7	H	74	-27.3	Peak	2.5	180	No Marker Delta Method
2374.56	35.42	H	54	-18.58	Avg	2.5	180	Required for this Frequency
2437	99.03	H	74	25.03	Peak	2.5	180	Fundamental of Channel 6
2437	94.39	H	54	40.39	Avg	2.5	180	at 3 Meters
2462	97.67	H	"--"	"--"	Peak	2.5	180	Fundamental of Channel 11
2462	93.3	H	"--"	"--"	Avg	2.5	180	at 3 Meters
2483.5	46.05	H	74	-27.95	Peak	2.5	180	No Marker Delta Method
2483.5	35.25	H	54	-18.75	Avg	2.5	180	Required for this Frequency
2500	44.75	H	74	-29.25	Peak	2.5	180	No Marker Delta Method
2500	33.58	H	54	-20.42	Avg	2.5	180	Required for this Frequency



Ref Lvl 112 dB/V
Marker 4 [T2] 46.17 dB/V
2.39000000 GHz
RBW 1 MHz
VBW 10 Hz
SWT 29 s
RF Att 20 dB
Unit dB/V

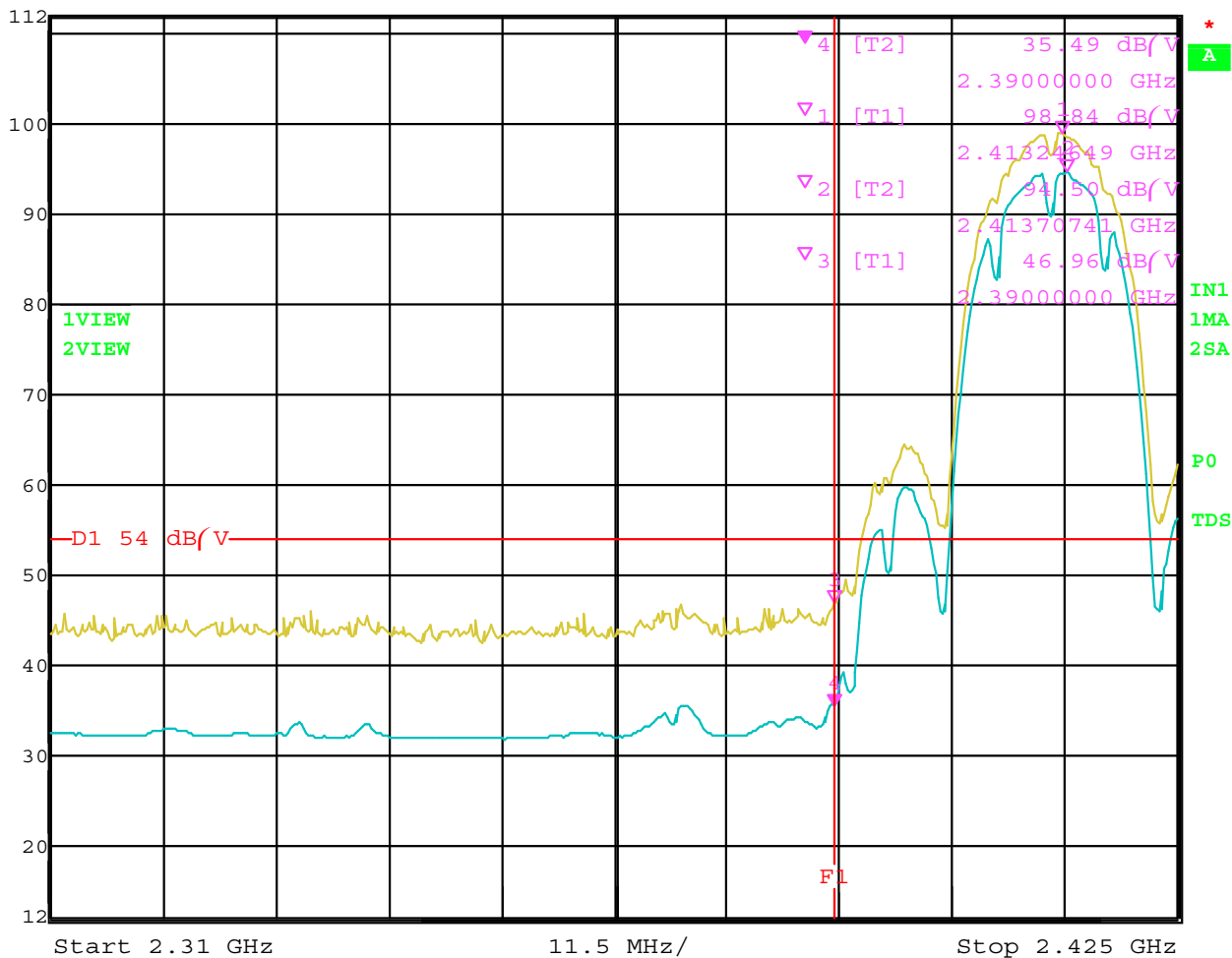


Date: 9.DEC.2003 10:56:09

Radiated Band Edge – Channel 1 – Vertical Polarization – at 3 Meters



Ref Lvl 112 dB/V
Marker 4 [T2] 35.49 dB/V
2.39000000 GHz
RBW 1 MHz
VBW 10 Hz
SWT 29 s
RF Att 20 dB
Unit dB/V

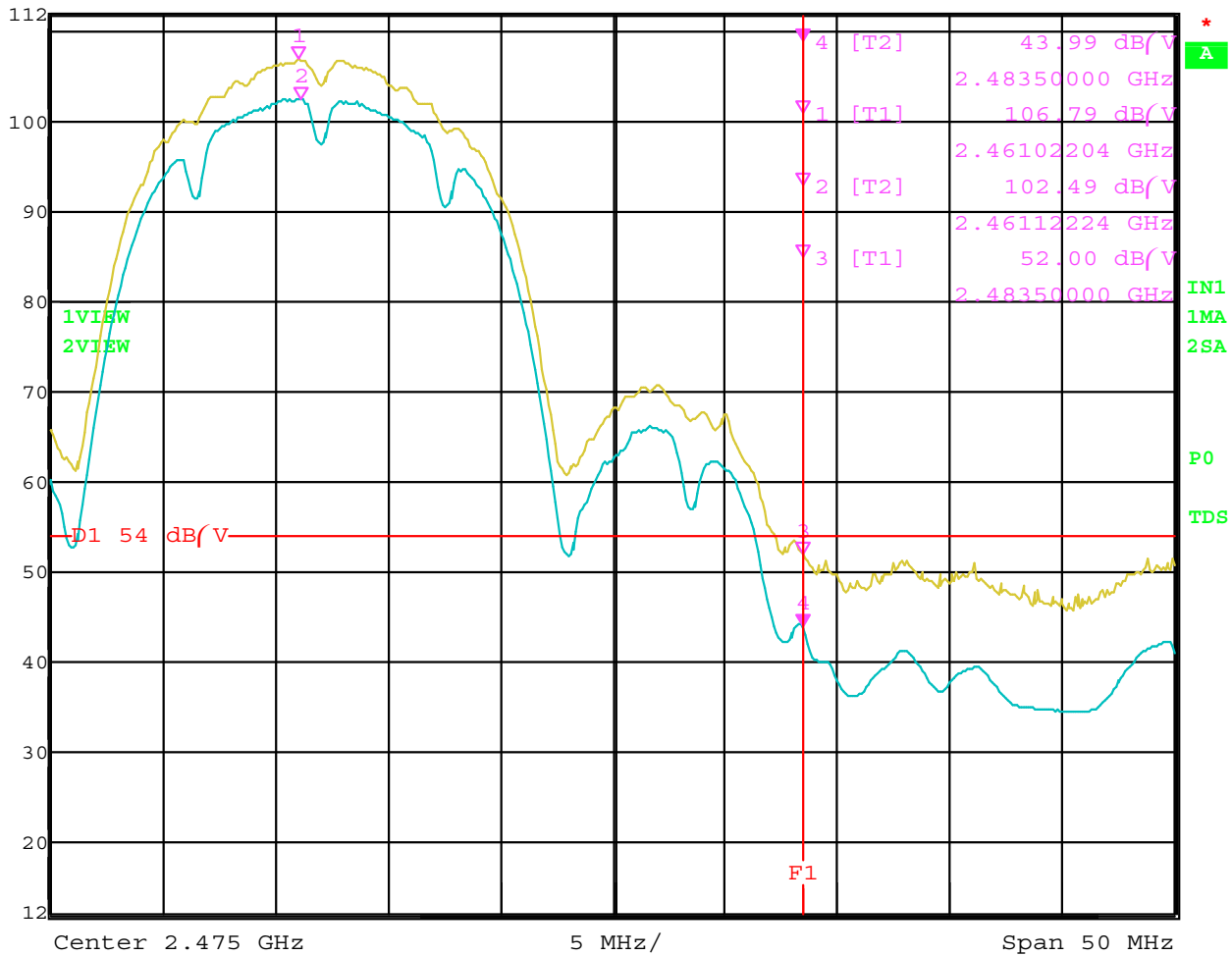


Date: 9.DEC.2003 11:28:22

Radiated Band Edge – Channel 1 – Horizontal Polarization – at 3 Meters



Ref Lvl 112 dB/V
Marker 4 [T2] 43.99 dB/V
2.48350000 GHz
RBW 1 MHz RF Att 20 dB
VBW 10 Hz
SWT 12.5 s Unit dB/V

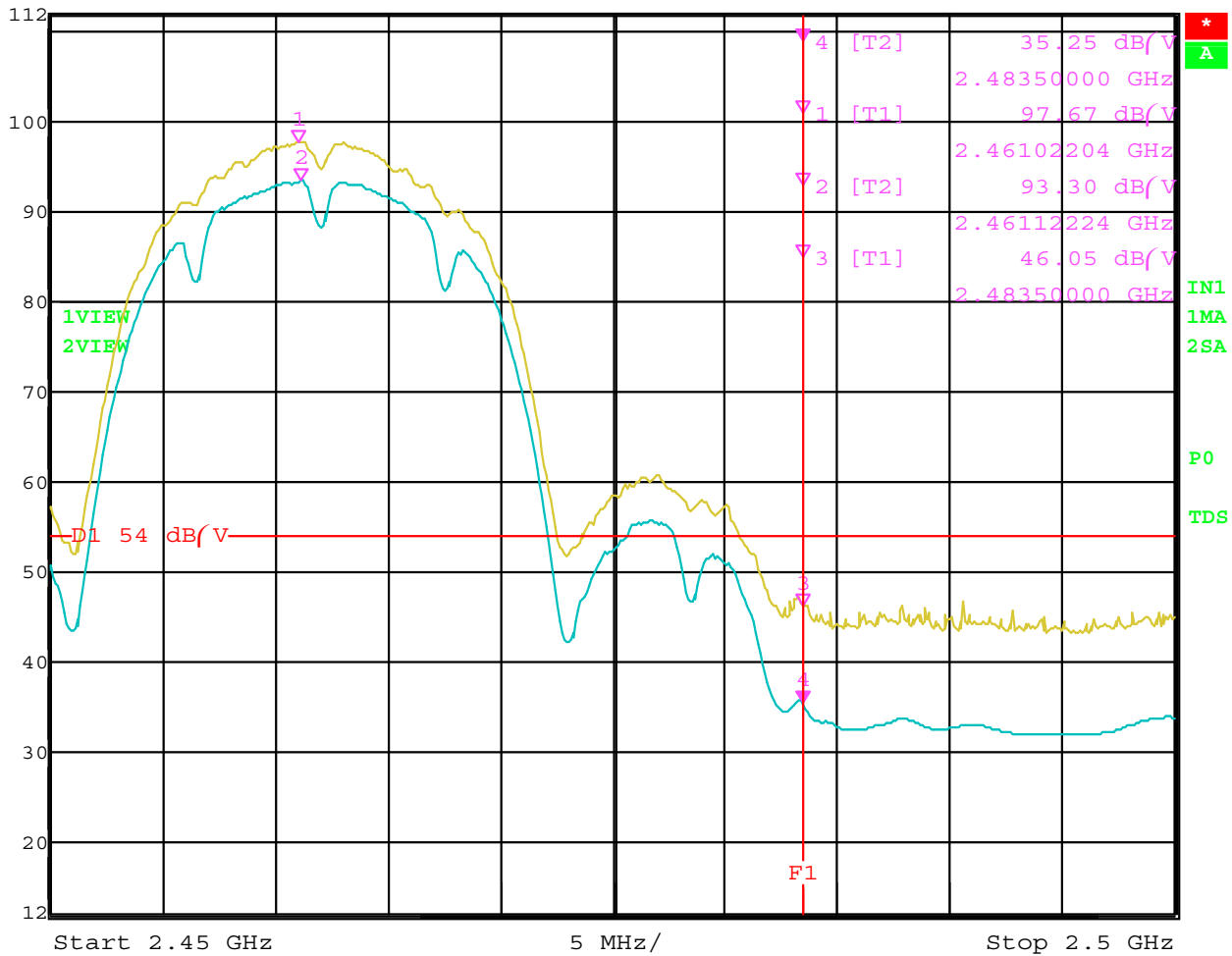


Date: 9.DEC.2003 11:04:21

Radiated Band Edge – Channel 11 – Vertical Polarization – at 3 Meters



Ref Lvl 112 dB/V
Marker 4 [T2] 35.25 dB/V
2.48350000 GHz
RBW 1 MHz
RF Att 20 dB
VBW 10 Hz
SWT 12.5 s
Unit dB/V



Date: 9.DEC.2003 11:20:12

Radiated Band Edge – Channel 11 – Horizontal Polarization – at 3 Meters