



**COMPATIBLE
ELECTRONICS**

FCC ID: OTUTX01A Report No.: B91122D1 Page 1 of 16

*FCC PART 15, SUBPART C
TEST REPORT*

for
SkeetPro
Model: TX01A

Prepared for
AMERICAN TARGET SYSTEMS, INC.
11121 N.W. 54TH AVENUE, SUITE D
GRIMES, IOWA 50111

Prepared by: Kyle Fujimoto

KYLE FUJIMOTO

Approved by: Scott McCutchan
SCOTT McCUTCHAN

COMPATIBLE ELECTRONICS INC.
114 OLINDA DRIVE
BREA, CALIFORNIA 92823
(714) 579-0500

DATE: NOVEMBER 23, 1999

REPORT BODY	APPENDICES				TOTAL
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	
PAGES	16	2	2	11	49

This report shall not be reproduced except in full, without the written approval of Compatible Electronics.



114 OLINDA DRIVE, BREA, CALIFORNIA 92823 PHONE: (714) 579-0500 FAX: (714) 579-1850

TABLE OF CONTENTS

Section / Title	PAGE
GENERAL REPORT SUMMARY	4
SUMMARY OF TEST RESULTS	4
1. PURPOSE	5
2. ADMINISTRATIVE DATA	6
2.1 Location of Testing	6
2.2 Traceability Statement	6
2.3 Cognizant Personnel	6
2.4 Date Test Sample was Received	6
2.5 Disposition of the Test Sample	6
2.6 Abbreviations and Acronyms	6
3. APPLICABLE DOCUMENTS	7
4. Description of Test Configuration	8
4.1 Description of Test Configuration - EMI	8
4.1.1 Cable Construction and Termination	9
5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT	10
5.1 EUT and Accessory List	10
5.2 EMI Test Equipment	11
6. TEST SITE DESCRIPTION	12
6.1 Test Facility Description	12
6.2 EUT Mounting, Bonding and Grounding	12
7. Test Procedures	13
7.1 Conducted Emissions Test	13
7.2 Radiated Emissions (Spurious and Harmonics) Test	14
7.2 Band Edge Plots of the Low and High Channels	15
8. CONCLUSIONS	16



LIST OF APPENDICES

APPENDIX	TITLE
A	Modifications to the EUT
B	Additional Models Covered Under This Report
C	Diagrams, Charts and Photos <ul style="list-style-type: none">• Test Setup Diagrams• Radiated Emissions Photos• Antenna and Effective Gain Factors
D	Data Sheets

LIST OF FIGURES

FIGURE	TITLE
1	Conducted Emissions Test Setup
2	Plot Map And Layout of Test Site



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 in any form unless done so in full with the written permission of Compatible Electronics.

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

Device Tested: SkeetPro
 Model: TX01A
 S/N: N/A

Product Description: See Expository Statement.

Modifications: The EUT was modified during the testing. Please see the list located in Appendix A.

Manufacturer: American Target Systems, Inc.
 11121 N.W. 54th Avenue, Suite D
 Grimes, Iowa 50111

Test Dates: November 19 and 22, 1999

Test Specifications: EMI requirements
 CFR Title 47, Part 15 Subpart C, Sections 15.205, 15.207, and 15.249

Test Procedure: ANSI C63.4: 1992

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

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 450 kHz - 30 MHz	Complies with the limits of CFR Title 47, Part 15, Subpart C, section 15.207
2	Radiated RF Emissions, 10 kHz - 9300 MHz	Complies with the limits of CFR Title 47, Part 15, Subpart C, sections 15.205 and 15.249



1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the SkeetPro Model: TX01A. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 1992. 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 C, sections 15.205, 15.207, and 15.249.



2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests described herein were performed at the test facility of Compatible Electronics, 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

American Target Systems, Inc.

James D. Benn President

Compatible Electronics Inc.

Kyle Fujimoto Test Engineer
Scott McCutchan Lab Manager

2.4 Date Test Sample was Received

The test sample was received on November 18, 1999

2.5 Disposition of the Test Sample

The test sample was returned to American Target Systems, Inc. on November 23, 1999.

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
CFR Title 47, Subpart C.	FCC Rules – Radio frequency devices (including digital devices) – Intentional Radiators
ANSI C63.4 1992	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz.



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 SkeetPro Model: TX01A (EUT) was tested as a stand alone unit. The EUT is powered by a nine volt rechargeable battery. The EUT was tested in three orthogonal axis and was transmitting data on a continuous basis. The antenna is a splatch and is soldered to the PCB.

Note: The EUT has a port that usually connects to an AC Adapter. This port is only to charge the nine volt battery and plugging an AC Adapter into the port causes all circuitry except for the battery charge circuit to shut off. No emissions were found when the EUT was investigated in this mode for radiated emissions.

The final radiated data was taken in both modes above. The final conducted data was taken with the AC Adapter connected to the EUT, charging the nine volt battery. Please see Appendix D 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 power connector at the EUT end and is hard wired into the AC Adapter.

Note: The cable described above was attached to the EUT only during the spurious emission and conducted emission testing. This is because the AC Adapter is only used to charge the nine volt battery and causes the EUT to shut off all circuitry except for the battery charging circuit.



5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
SkeetPro (EUT)	AMERICAN TARGET SYSTEMS, INC.	TX01A	N/A	OTUTX01A
CLASS 2 TRANSFORMER	CUI STACK	DV-1230	N/A	N/A



5.2 EMI Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Spectrum Analyzer	Hewlett Packard	8566B	3638A08768	Dec. 11, 1998	Dec. 11, 1999
Preamplifier	Com Power	PA-102	1017	Jan. 16, 1999	Jan. 16, 2000
Quasi-Peak Adapter	Hewlett Packard	85650A	2430A00424	July 14, 1999	July 14, 2000
Biconical Antenna	Com Power	AB-100	1548	Oct. 14, 1999	Oct. 14, 2000
Log Periodic Antenna	Com Power	AL-100	16039	Oct. 14, 1999	Oct. 14, 2000
Turntable	Com Power	TT-100	N/A	N/A	N/A
Computer	Hewlett Packard	HP98561A	2522A05178	N/A	N/A
Printer	Hewlett Packard	2225A	2925S33268	N/A	N/A
Plotter	Hewlett Packard	7440A	8726K38417	N/A	N/A
Microwave Preamplifier	Hewlett Packard	8449B	3008A008766	Jan. 30, 1999	Jan. 30, 2000
Horn Antenna	Antenna Research	DRG-118/A	1053	Dec. 8, 1995	N/A
Loop Antenna	Com-Power	AL-130	25309	April 13, 1999	April 13, 2000



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. TEST PROCEDURES

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

7.1 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: 1992. 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 HP 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 D.



7.2

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, and the Hewlett Packard Microwave Preamplifier Model: 8449B was used for frequencies above 1 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.

For the peak readings below 1000 MHz that were within 3 dB of the spec limit or higher, the quasi-peak adapter was used.

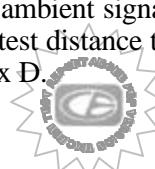
For the peak readings above 1000 MHz that were within 3dB of the spec limit or higher, the readings were averaged manually by narrowing the video filter down to 1 Hz and slowing the sweep time to keep the amplitude reading calibrated.

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

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
9 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 9.3 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. 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.

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 final test data. The final qualification data sheets are located in Appendix D.



7.2

Band Edge Plots of the Low and High Channels

Spectral plots of both the low and high channels were taken of the EUT to show that the emissions at the band edges (902 and 928 MHz) were attenuated by at least 50 dB below the level of the fundamental or to the general radiated emissions limits in FCC Title 47, Subpart C, section 15.209, whichever is the lesser attenuation. Please see Appendix D for the spectral plots and data sheets.

The spectral plots were taken at a distance of 3 meters, using the PA-102 Preamplifier to boost the signal level of any potential emissions outside the band edges.



8. CONCLUSIONS

The SkeetPro Model: TX01A meets all of the specification limits defined in CFR Title 47, Part 15, Subpart C, sections 15.205, 15.207, and 15.249.





APPENDIX A

MODIFICATIONS TO THE EUT



MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.249 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.

Modifications:

- 1) Change R21 from 8.2 ohms to 19.1 ohms
- 2) Change R22 from 8.2 ohms to 19.1 ohms
- 3) Change R23 from 143.0 ohms to 56.2 ohms





APPENDIX B

ADDITIONAL MODELS COVERED UNDER THIS REPORT



ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

SkeetPro
Model: TX01A
S/N: N/A

There were no additional models covered under this report.



APPENDIX C

DIAGRAMS, CHARTS AND PHOTOS



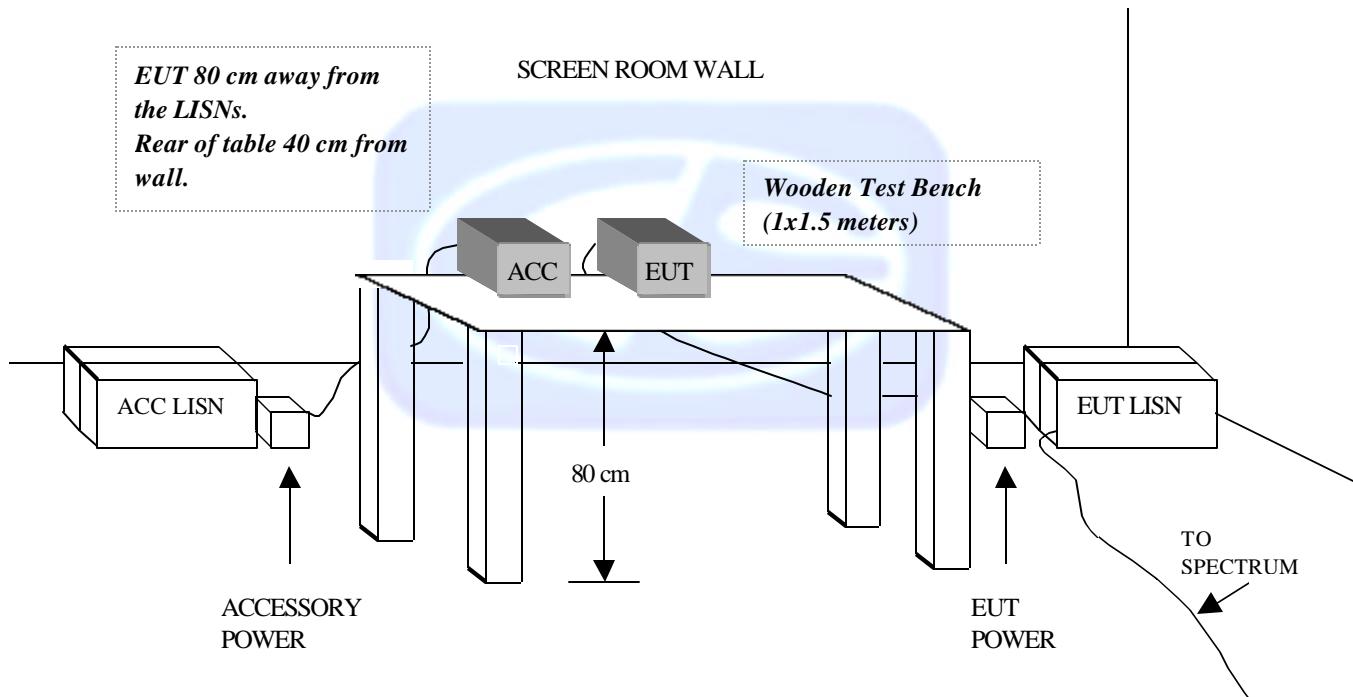
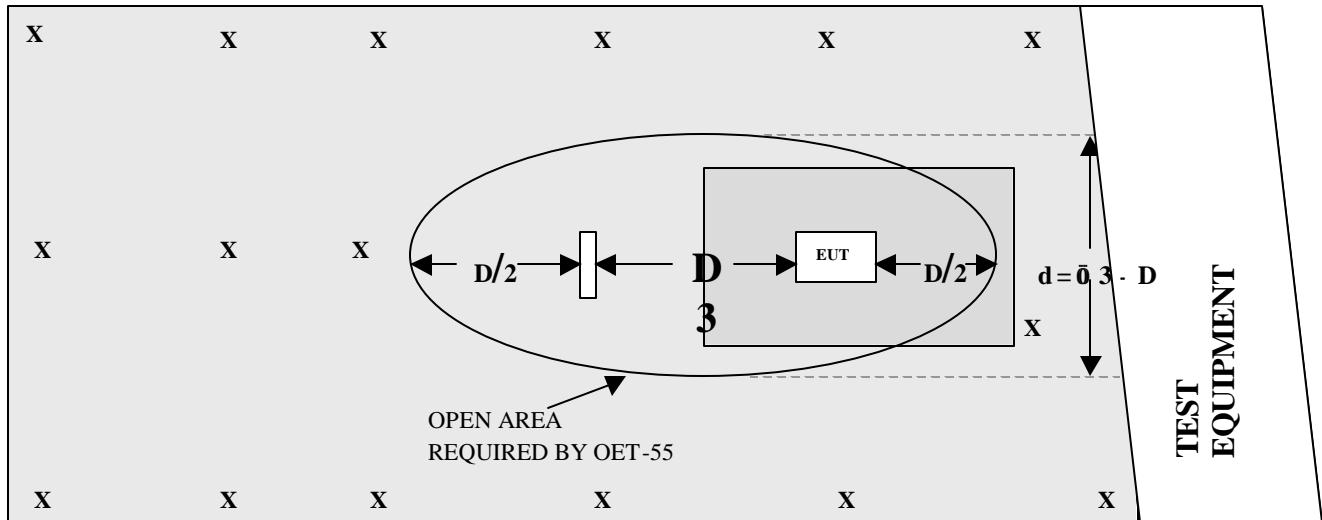
FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE

OPEN LAND > 15 METERS

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

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



**FRONT VIEW**

AMERICAN TARGET SYSTEMS, INC.

SkeetPro

MODEL: TX01A

FCC SUBPART C - RADIATED EMISSIONS – 11-19-99

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



**REAR VIEW**

AMERICAN TARGET SYSTEMS, INC.

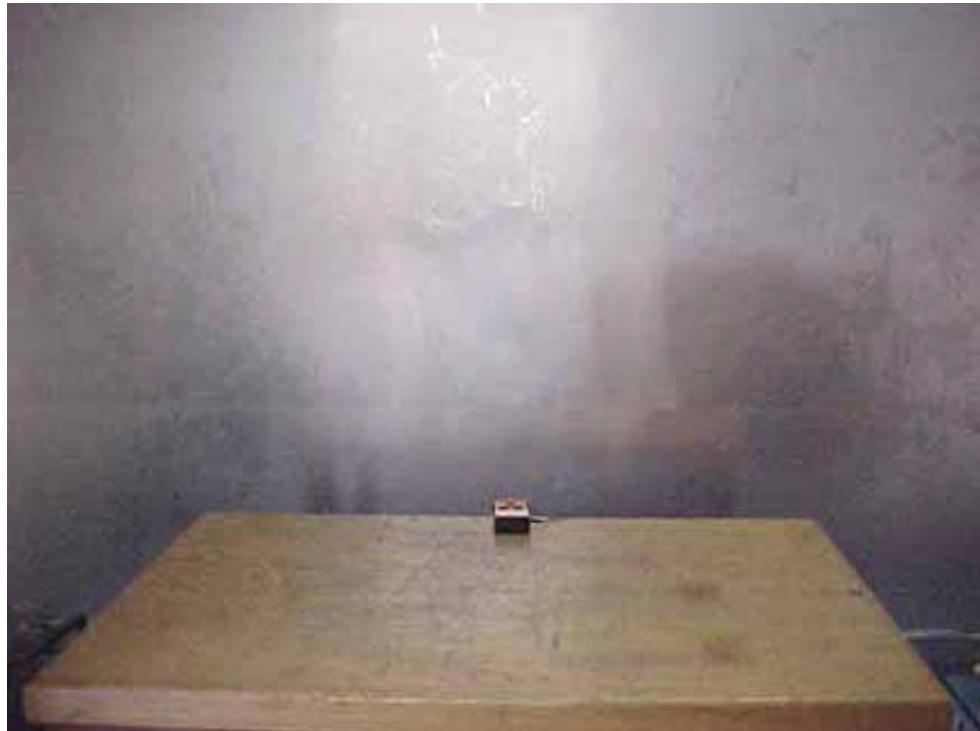
SkeetPro

MODEL: TX01A

FCC SUBPART C - RADIATED EMISSIONS – 11-19-99

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





FRONT VIEW

AMERICAN TARGET SYSTEMS, INC.

SkeetPro

MODEL: TX01A

FCC SUBPART C - CONDUCTED EMISSIONS – 11-22-99

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



**REAR VIEW**

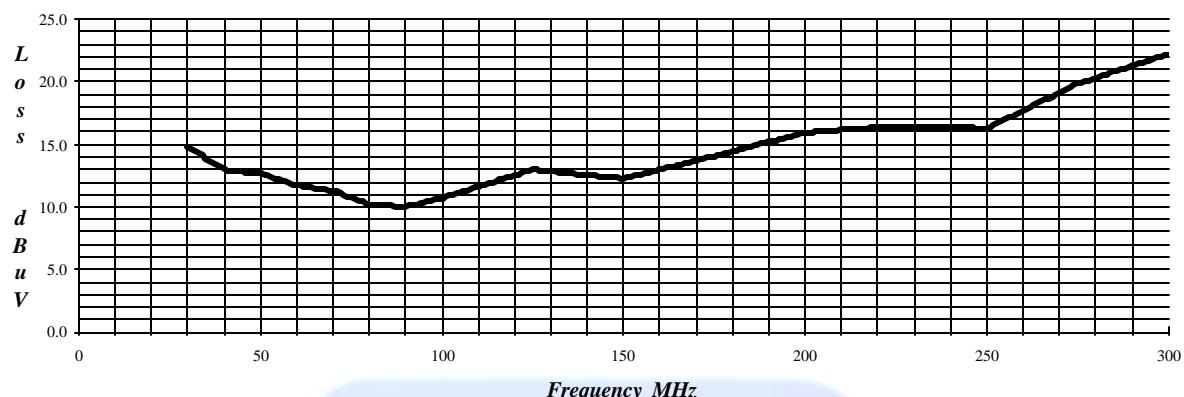
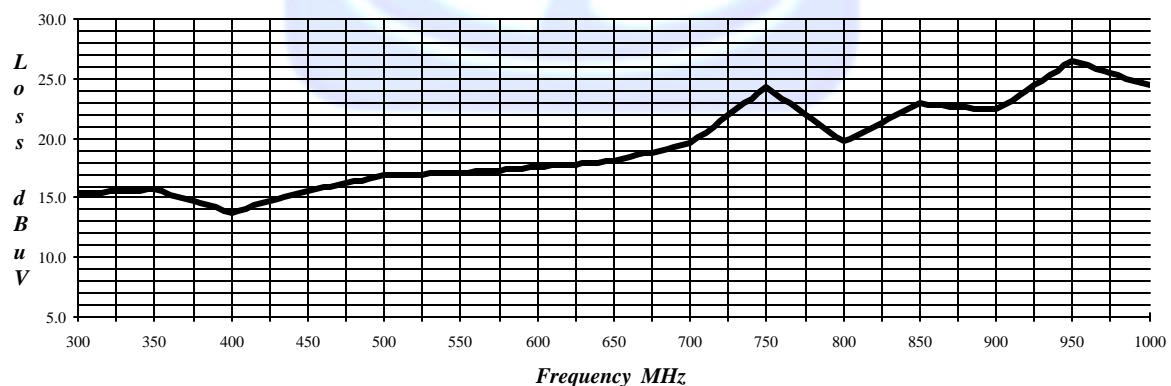
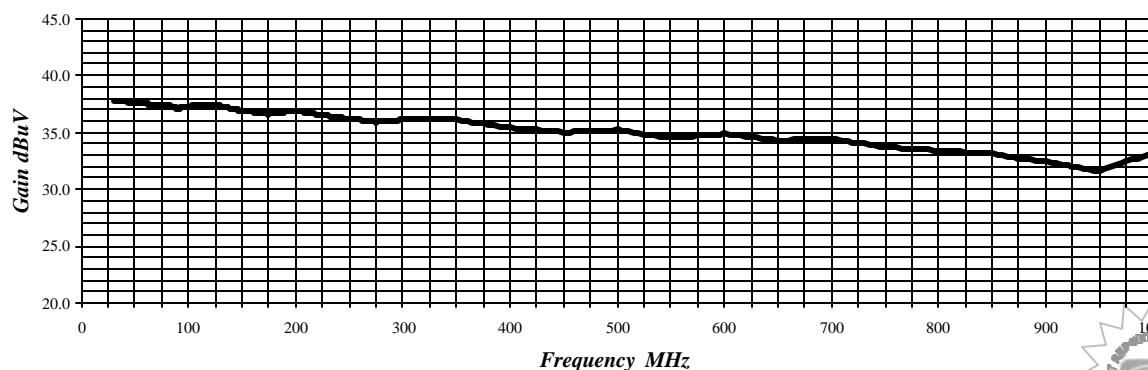
AMERICAN TARGET SYSTEMS, INC.

SkeetPro

MODEL: TX01A

FCC SUBPART C - RADIATED EMISSIONS – 11-22-99

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

LAB "D" BICONICAL ANTENNA AB-100 S/N 01548 Cal: 10-14-99**LAB "D" LOG PERIODIC ANTENNA AL-100 S/N 16039 Cal: 10-14-99****PREAMPLIFIER EFFECTIVE GAIN AT 3 METERS PA-102 S/N: 1017 Lab "D"
Effective 1-16-99**

HEWLETT PACKARD 8449B
MICROWAVE PREAMPLIFIER

S/N: 3008A008766

CALIBRATION DATE: JANUARY 30, 1999

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	36.9	10.5	34.1
1.1	36.3	11.0	33.7
1.2	36.4	11.5	34.0
1.3	36.2	12.0	33.9
1.4	36.3	12.5	34.4
1.5	35.7	13.0	32.9
1.6	35.9	13.5	31.6
1.7	35.7	14.0	31.8
1.8	35.6	14.5	31.9
1.9	35.5	15.0	32.2
2.0	35.4	15.5	32.8
2.5	35.6	16.0	32.4
3.0	35.2	16.5	32.1
3.5	35.2	17.0	32.3
4.0	34.3	17.5	30.3
4.5	34.1	18.0	31.5
5.0	34.3	18.5	31.2
5.5	33.0	19.0	32.2
6.0	34.1	19.5	32.0
6.5	34.5	20.0	32.0
7.0	34.3	20.5	33.2
7.5	33.9	21.0	30.9
8.0	34.5	22.0	32.1
8.5	34.5	23.0	32.8
9.0	34.4	24.0	32.9
9.5	34.3	25.0	32.3
10.0	33.7	26.0	32.6



E-FIELD ANTENNA FACTOR CALIBRATION

$$E(\text{dB V/m}) = V_o(\text{dB V}) + AFE(\text{dB/m})$$

Model number : DRG-118/A

Frequency GHz	AFE dB/m	Gain dBi
1	22.3	8.0
2	26.7	9.5
3	29.7	10.1
4	29.5	12.8
5	32.3	12.0
6	32.4	13.4
7	36.1	11.0
8	37.4	10.9
9	36.8	12.5
10	39.5	10.7
11	39.6	11.5
12	39.8	12.0
13	39.7	12.8
14	41.8	11.3
15	41.9	11.9
16	38.1	16.3
17	41.0	13.9
18	46.5	8.9

Serial number : 1053
Job number : 96-092
Remarks : 3 meter calibration
Standards : LPD-118/A, TE-1000

Temperature : 72° F
Humidity : 56 %
Traceability : A01887
Date : December 08, 1995

Calibrated By

Com-Power Corporation

(949) 587-9800

Antenna Calibration

Antenna Type:	Loop Antenna	
Model:	AL-130	
Serial Number:	25309	
Calibration Date:	4/13/99	
Frequency MHz	Magnetic dB/m	Electric dB/m
0.01	-40.6	10.9
0.02	-41.5	10.0
0.03	-39.9	11.6
0.04	-40.2	11.3
0.05	-41.5	10.0
0.06	-41.1	10.4
0.07	-41.3	10.2
0.08	-41.6	9.9
0.09	-41.7	9.8
0.1	-41.7	9.8
0.2	-44.0	7.5
0.3	-41.6	9.9
0.4	-41.6	9.9
0.5	-41.7	9.8
0.6	-41.5	10.0
0.7	-41.4	10.1
0.8	-41.5	10.0
0.9	-41.6	9.9
1	-41.2	10.3
2	-40.5	11.0
3	-40.8	10.7
4	-41.0	10.5
5	-40.5	11.0
6	-40.5	11.0
7	-40.7	10.8
8	-40.8	10.7
9	-40.1	11.4
10	-40.4	11.1
12	-41.0	10.5
14	-42.1	9.4
15	-42.3	9.2
16	-42.7	8.8
18	-41.0	10.5
20	-41.1	10.4
25	-43.4	8.1
30	-45.3	6.2

Trans. Antenna Height
Receiving Antenna Height

2 meter
2 meter

APPENDIX D

DATA SHEETS



RADIATED EMISSIONS

DATA SHEETS



Page: 1 of 1

Test location: Compatible Electronics
Customer : AMERICAN TARGET SYSTEMS, INC. Date : 11/22/1999
Manufacturer : AMERICAN TARGET SYSTEMS, INC. Time : 14.57
EUT name : SKEETPRO Model: TX01A
Specification: Fcc_B Test distance: 3.0 mtrs Lab: D
Distance correction factor(20*log(test/spec)) : 0.00
Test Mode :
TEMPERATURE 65 DEGREES F., RELATIVE HUMIDITY 75%
TESTED BY: Kyle Fujimoto
KYLE FUJIMOTO

NO SPURIOUS EMISSIONS FOUND FOR THE TRANSMITTER
FROM 10 kHz TO 9300 MHz IN EITHER POLARIZATION

NOTE: THE ABOVE STATEMENT IS TRUE FOR BOTH WHEN
THE TRANSMITTER IS IN NORMAL OPERATION AND ALSO
WHEN THE AC ADAPTER IS PLUGGED IN TO CHARGE THE
9 VOLT BATTERY INSIDE THE EUT.

WHEN THE AC ADAPTER IS PLUGGED IN, ALL TRANSMITTING
FUNCTIONS OF THE EUT CEASE TO OPERATE.

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	AMERICAN TARGET SYSTEMS, INC.	DATE	11/19/99
EUT	SkeetPro	DUTY CYCLE	N/A
MODEL	TX01A	PEAK TO AVG	N/A
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	Kyle Fujimoto	LAB	D

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP) (V or H)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
903.3000	63.2	63.1	A	H	1.0	90	X	LOW	22.7	5.0	0.0	90.8	-3.2	94.0
903.3000	53.8	53.7	A	H	1.0	180	Y	LOW	22.7	5.0	0.0	81.4	-12.6	94.0
903.3000	65.2	65.1	A	H	1.5	90	Z	LOW	22.7	5.0	0.0	92.8	-1.2	94.0
903.3000	59.7	59.6	A	V	2.5	90	X	LOW	22.7	5.0	0.0	87.3	-6.7	94.0
903.3000	63.7	63.6	A	V	1.0	0	Y	LOW	22.7	5.0	0.0	91.3	-2.7	94.0
903.3000	59.4	59.3	A	V	1.5	0	Z	LOW	22.7	5.0	0.0	87.0	-7.0	94.0
912.4000	62.7	62.6	A	H	1.0	90	X	MID	23.4	4.9	0.0	90.9	-3.1	94.0
912.4000	53.6	53.5	A	H	2.0	180	Y	MID	23.4	4.9	0.0	81.8	-12.2	94.0
912.4000	62.5	62.4	A	H	1.5	270	Z	MID	23.4	4.9	0.0	90.7	-3.3	94.0
912.4000	55.3	55.2	A	V	1.0	90	X	MID	23.4	4.9	0.0	83.5	-10.5	94.0
912.4000	62.7	62.6	A	V	1.0	0	Y	MID	23.4	4.9	0.0	90.9	-3.1	94.0
912.4000	57.5	57.4	A	V	1.5	180	Z	MID	23.4	4.9	0.0	85.7	-8.3	94.0
921.3000	60.0	59.9	A	H	1.5	180	X	HI	24.2	4.8	0.0	88.9	-5.1	94.0
921.3000	50.3	50.2	A	H	2.0	0	Y	HI	24.2	4.8	0.0	79.2	-14.8	94.0
921.3000	60.2	60.1	A	H	1.5	270	Z	HI	24.2	4.8	0.0	89.1	-4.9	94.0
921.3000	56.2	56.1	A	V	1.0	270	X	HI	24.2	4.8	0.0	85.1	-8.9	94.0
921.3000	61.1	61.0	A	V	1.0	0	Y	HI	24.2	4.8	0.0	90.0	-4.0	94.0
921.3000	57.8	57.7	A	V	1.0	270	Z	HI	24.2	4.8	0.0	86.7	-7.3	94.0

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING



COMPATIBLE
ELECTRONICS

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	AMERICAN TARGET SYSTEMS, INC.	DATE	11/19/99
EUT	SkeetPro	DUTY CYCLE	N/A
MODEL	TX01A	PEAK TO AVG	N/A
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	Kyle Fujimoto	LAB	D

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments	
1806.6000	58.3	A	H	1.0	0	X	LOW	24.5	3.5	35.6	50.7	-3.3	54.0		
1806.6000	59.5	58.5	A	H	2.0	180	Y	LOW	24.5	3.5	35.6	50.9	-3.1	54.0	
1806.6000	56.3	A	H	1.0	0	Z	LOW	24.5	3.5	35.6	48.7	-5.3	54.0		
1806.6000	56.7	A	V	1.0	90	X	LOW	24.5	3.5	35.6	49.1	-4.9	54.0		
1806.6000	55.9	A	V	1.0	90	Y	LOW	24.5	3.5	35.6	48.3	-5.7	54.0		
1806.6000	57.6	A	V	1.0	90	Z	LOW	24.5	3.5	35.6	50.0	-4.0	54.0		
1824.8000	56.3	A	H	1.5	0	X	MID	24.5	3.5	35.6	48.7	-5.3	54.0		
1824.8000	60.7	60.2	A	H	1.5	180	Y	MID	24.5	3.5	35.6	52.6	-1.4	54.0	
1824.8000	52.9	A	H	1.5	0	Z	MID	24.5	3.5	35.6	45.3	-8.7	54.0		
1824.8000	56.8	A	V	1.1	270	X	MID	24.5	3.5	35.6	49.2	-4.8	54.0		
1824.8000	58.1	A	V	2.0	270	Y	MID	24.5	3.5	35.6	50.5	-3.5	54.0		
1824.8000	57.9	A	V	1.5	90	Z	MID	24.5	3.5	35.6	50.3	-3.7	54.0		
1842.6000	53.6	A	H	2.0	180	X	HI	24.5	3.5	35.6	46.1	-7.9	54.0		
1842.6000	57.1	A	H	3.0	270	Y	HI	24.5	3.5	35.6	49.5	-4.5	54.0		
1842.6000	54.5	A	H	1.0	0	Z	HI	24.5	3.5	35.6	46.9	-7.1	54.0		
1842.6000	56.6	A	V	1.5	90	X	HI	24.5	3.5	35.6	49.0	-5.0	54.0		
1842.6000	57.4	A	V	1.5	90	Y	HI	24.5	3.5	35.6	49.8	-4.2	54.0		
1842.6000	59.2	58.4	A	V	1.0	0	Z	HI	24.5	3.5	35.6	50.8	-3.2	54.0	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)



COMPATIBLE
ELECTRONICS

COMPANY	AMERICAN TARGET SYSTEMS, INC.	DATE	11/19/99
EUT	SkeetPro	DUTY CYCLE	N/A
MODEL	TX01A	PEAK TO AVG	N/A
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	Kyle Fujimoto	LAB	D

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments	
2709.9000	47.0	A	H	1.5	0	X	LOW	28.2	4.5	35.6	44.1	-9.9	54.0		
2709.9000	50.0	A	H	1.5	90	Y	LOW	28.2	4.5	35.6	47.1	-6.9	54.0		
2709.9000	53.0	A	H	3.0	270	Z	LOW	28.2	4.5	35.6	50.1	-3.9	54.0		
2709.9000	49.2	A	V	1.0	270	X	LOW	28.2	4.5	35.6	46.3	-7.7	54.0		
2709.9000	52.2	A	V	3.0	180	Y	LOW	28.2	4.5	35.6	49.3	-4.7	54.0		
2709.9000	50.9	A	V	1.0	90	Z	LOW	28.2	4.5	35.6	48.0	-6.0	54.0		
2737.2000	48.3	A	H	2.0	90	X	MID	28.2	4.5	35.6	45.4	-8.6	54.0		
2737.2000	53.4	A	H	1.0	270	Y	MID	28.2	4.5	35.6	50.5	-3.5	54.0		
2737.2000	53.3	A	H	1.0	0	Z	MID	28.2	4.5	35.6	50.4	-3.6	54.0		
2737.2000	50.0	A	V	2.0	270	X	MID	28.2	4.5	35.6	47.1	-6.9	54.0		
2737.2000	51.2	A	V	1.0	90	Y	MID	28.2	4.5	35.6	48.3	-5.7	54.0		
2737.2000	50.3	A	V	1.0	0	Z	MID	28.2	4.5	35.6	47.4	-6.6	54.0		
2763.9000	49.7	A	H	2.0	90	X	HI	29.7	4.6	35.2	48.8	-5.2	54.0		
2763.9000	50.1	A	H	3.0	0	Y	HI	29.7	4.6	35.2	49.2	-4.8	54.0		
2763.9000	51.9	A	H	2.5	90	Z	HI	29.7	4.6	35.2	51.0	-3.0	54.0		
2763.9000	47.7	A	V	1.0	180	X	HI	29.7	4.6	35.2	46.8	-7.2	54.0		
2763.9000	53.3	51.7	A	V	1.5	180	Y	HI	29.7	4.6	35.2	50.8	-3.2	54.0	
2763.9000	51.6	A	V	2.0	90	Z	HI	29.7	4.6	35.2	50.7	-3.3	54.0		

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	AMERICAN TARGET SYSTEMS, INC.	DATE	11/19/99
EUT	SkeetPro	DUTY CYCLE	N/A
MODEL	TX01A	PEAK TO AVG	N/A
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	Kyle Fujimoto	LAB	D

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments	
3613.2000	43.1	A	H	1.5	0	X	LOW	29.6	5.0	35.2	42.5	-11.5	54.0		
3613.2000	48.8	A	H	1.5	90	Y	LOW	29.6	5.0	35.2	48.2	-5.8	54.0		
3613.2000	47.8	A	H	1.5	0	Z	LOW	29.6	5.0	35.2	47.2	-6.8	54.0		
3613.2000	47.1	A	V	1.0	270	X	LOW	29.6	5.0	35.2	46.5	-7.5	54.0		
3613.2000	45.2	A	V	2.5	180	Y	LOW	29.6	5.0	35.2	44.6	-9.4	54.0		
3613.2000	45.6	A	V	1.0	0	Z	LOW	29.6	5.0	35.2	45.0	-9.0	54.0		
3649.6000	43.6	A	H	1.5	0	X	MID	29.6	5.0	35.2	43.0	-11.0	54.0		
3649.6000	48.5	A	H	2.0	90	Y	MID	29.6	5.0	35.2	47.9	-6.1	54.0		
3649.6000	49.1	A	H	1.5	0	Z	MID	29.6	5.0	35.2	48.5	-5.5	54.0		
3649.6000	48.9	46.0	A	V	1.0	0	X	MID	29.6	5.0	35.2	45.4	-8.6	54.0	
3649.6000	47.2	A	V	2.5	180	Y	MID	29.6	5.0	35.2	46.6	-7.4	54.0		
3649.6000	47.6	A	V	1.5	90	Z	MID	29.6	5.0	35.2	47.0	-7.0	54.0		
3685.2000	45.7	A	H	2.0	90	X	HI	29.6	5.0	35.2	45.1	-8.9	54.0		
3685.2000	49.6	A	H	2.0	90	Y	HI	29.6	5.0	35.2	49.0	-5.0	54.0		
3685.2000	50.0	A	H	3.0	0	Z	HI	29.6	5.0	35.2	49.4	-4.6	54.0		
3685.2000	49.3	A	V	2.5	90	X	HI	29.6	5.0	35.2	48.7	-5.3	54.0		
3685.2000	48.0	A	V	2.0	0	Y	HI	29.6	5.0	35.2	47.4	-6.6	54.0		
3685.2000	49.4	A	V	1.0	0	Z	HI	29.6	5.0	35.2	48.8	-5.2	54.0		

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	AMERICAN TARGET SYSTEMS, INC.	DATE	11/19/99
EUT	SkeetPro	DUTY CYCLE	N/A
MODEL	TX01A	PEAK TO AVG	N/A
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	Kyle Fujimoto	LAB	D

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP) (V or H)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
4516.5000	46.7	A	H	1.0	90	X	LOW	30.9	5.6	34.1	49.1	-4.9	54.0	
4516.5000	50.8	48.0	A	H	1.5	90	Y	LOW	30.9	5.6	34.1	50.4	-3.6	54.0
4516.5000	51.5	49.6	A	H	2.0	90	Z	LOW	30.9	5.6	34.1	52.0	-2.0	54.0
4516.5000	46.9		A	V	1.0	0	X	LOW	30.9	5.6	34.1	49.3	-4.7	54.0
4516.5000	44.5		A	V	2.0	0	Y	LOW	30.9	5.6	34.1	46.9	-7.1	54.0
4516.5000	44.8		A	V	1.0	90	Z	LOW	30.9	5.6	34.1	47.2	-6.8	54.0
4562.0000	47.6		A	H	3.0	0	X	MID	30.9	5.6	34.1	50.0	-4.0	54.0
4562.0000	49.8	47.5	A	H	1.5	90	Y	MID	30.9	5.6	34.1	49.9	-4.2	54.0
4562.0000	53.0	51.0	A	H	1.5	90	Z	MID	30.9	5.6	34.1	53.4	-0.6	54.0
4562.0000	47.4		A	V	1.0	0	X	MID	30.9	5.6	34.1	49.8	-4.2	54.0
4562.0000	46.2		A	V	1.5	180	Y	MID	30.9	5.6	34.1	48.6	-5.4	54.0
4562.0000	46.3		A	V	1.5	90	Z	MID	30.9	5.6	34.1	48.7	-5.3	54.0
4606.5000	46.7		A	H	2.0	90	X	HI	30.9	5.6	34.1	49.1	-4.9	54.0
4606.5000	48.6		A	H	2.0	90	Y	HI	30.9	5.6	34.1	51.0	-3.0	54.0
4606.5000	49.2	46.3	A	H	1.5	0	Z	HI	30.9	5.6	34.1	48.7	-5.3	54.0
4606.5000	48.3		A	V	2.0	90	X	HI	30.9	5.6	34.1	50.7	-3.3	54.0
4606.5000	47.4		A	V	1.0	180	Y	HI	30.9	5.6	34.1	49.8	-4.2	54.0
4606.5000	49.3	46.2	A	V	1.5	90	Z	HI	30.9	5.6	34.1	48.6	-5.4	54.0

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	AMERICAN TARGET SYSTEMS, INC.	DATE	11/19/99
EUT	SkeetPro	DUTY CYCLE	N/A
MODEL	TX01A	PEAK TO AVG	N/A
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	Kyle Fujimoto	LAB	D

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments	
5419.8000	37.6	A	H	1.0	0	X	LOW	32.4	6.0	33.0	43.0	-11.0	54.0		
5419.8000	40.1	A	H	1.0	180	Y	LOW	32.4	6.0	33.0	45.5	-8.5	54.0		
5419.8000	46.7	42.0	A	H	2.0	90	Z	LOW	32.4	6.0	33.0	47.4	-6.6	54.0	
5419.8000	38.7	A	V	1.5	90	X	LOW	32.4	6.0	33.0	44.1	-9.9	54.0		
5419.8000	37.8	A	V	1.0	0	Y	LOW	32.4	6.0	33.0	43.2	-10.8	54.0		
5419.8000	42.3	A	V	1.0	90	Z	LOW	32.4	6.0	33.0	47.7	-6.3	54.0		
5474.4000	42.9	A	H	1.5	0	X	MID	32.4	6.0	33.0	48.3	-5.7	54.0		
5474.4000	40.5	A	H	2.0	90	Y	MID	32.4	6.0	33.0	45.9	-8.1	54.0		
5474.4000	46.8	42.4	A	H	2.5	0	Z	MID	32.4	6.0	33.0	47.8	-6.2	54.0	
5474.4000	44.8	A	V	2.0	0	X	MID	32.4	6.0	33.0	50.2	-3.8	54.0		
5474.4000	43.1	A	V	1.0	180	Y	MID	32.4	6.0	33.0	48.5	-5.5	54.0		
5474.4000	44.0	A	V	1.0	90	Z	MID	32.4	6.0	33.0	49.4	-4.6	54.0		
5527.8000	41.6	A	H	1.5	90	X	HI	32.4	6.0	33.0	47.0	-7.0	54.0		
5527.8000	41.7	A	H	1.5	0	Y	HI	32.4	6.0	33.0	47.1	-6.9	54.0		
5527.8000	42.5	34.0	A	H	1.0	90	Z	HI	32.4	6.0	33.0	39.4	-14.6	54.0	
5527.8000	45.6	A	V	1.0	90	X	HI	32.4	6.0	33.0	51.0	-3.0	54.0		
5527.8000	44.3	A	V	1.0	90	Y	HI	32.4	6.0	33.0	49.7	-4.3	54.0		
5527.8000	43.7	A	H	1.0	90	Z	HI	32.4	6.0	33.0	49.1	-4.9	54.0		

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	AMERICAN TARGET SYSTEMS, INC.	DATE	11/19/99
EUT	SkeetPro	DUTY CYCLE	N/A
MODEL	TX01A	PEAK TO AVG	N/A
S/N	N/A	TEST DIST.	3 METERS
TEST ENGINEER	Kyle Fujimoto	LAB	D

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi- Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments	
6323.1000	40.7	A	H	1.0	270	X	LOW	34.3	6.9	34.5	47.4	-6.6	54.0		
6323.1000	43.8	A	H	1.0	0	Y	LOW	34.3	6.9	34.5	50.5	-3.5	54.0		
6323.1000	44.7	33.6	A	H	1.0	90	Z	LOW	34.3	6.9	34.5	40.3	-13.7	54.0	
6323.1000	45.2	32.8	A	V	1.5	90	X	LOW	34.3	6.9	34.5	39.5	-14.5	54.0	
6323.1000	40.5	A	V	1.0	270	Y	LOW	34.3	6.9	34.5	47.2	-6.8	54.0		
6323.1000	45.7	38.0	A	V	2.0	270	Z	LOW	34.3	6.9	34.5	44.7	-9.3	54.0	
6386.8000	39.7	A	H	2.0	90	X	MID	34.3	6.9	34.5	46.4	-7.6	54.0		
6386.8000	39.6	A	H	1.0	90	X	MID	34.3	6.9	34.5	46.3	-7.7	54.0		
6386.8000	40.4	A	H	2.5	90	X	MID	34.3	6.9	34.5	47.1	-6.9	54.0		
6386.8000	41.0	A	V	2.0	0	X	MID	34.3	6.9	34.5	47.7	-6.3	54.0		
6386.8000	43.3	A	V	1.5	0	Y	MID	34.3	6.9	34.5	50.0	-4.0	54.0		
6386.8000	39.4	A	V	2.0	0	Z	MID	34.3	6.9	34.5	46.1	-7.9	54.0		
6449.1000	40.1	A	H	1.0	180	X	HI	34.3	6.9	34.5	46.8	-7.2	54.0		
6449.1000	42.8	A	H	1.0	90	Y	HI	34.3	6.9	34.5	49.5	-4.5	54.0		
6449.1000	43.4	A	H	1.0	0	Z	HI	34.3	6.9	34.5	50.1	-3.9	54.0		
6449.1000	40.3	A	V	1.5	90	X	HI	34.3	6.9	34.5	47.0	-7.0	54.0		
6449.1000	39.5	A	V	1.0	0	Y	HI	34.3	6.9	34.5	46.2	-7.8	54.0		
6449.1000	40.0	A	V	1.0	90	Z	HI	34.3	6.9	34.5	46.7	-7.3	54.0		

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

Note: No Harmonics nor Emissions found after the
7th harmonic

CONDUCTED EMISSIONS

DATA SHEETS





**COMPATIBLE
ELECTRONICS**

AMERICAN TARGET SYSTEMS

SKEETPRO

MODEL: TX01A

FCC C - BLACK LEAD

TEST ENGINEER : *Kyle Fujimoto*
KYLE FUJIMOTO

page 1/1

11/22/1999

12:07:27

20 highest peaks above -50.00 dB of CLASS B limit line

Peak criteria : 0.10 dB, Curve : Peak

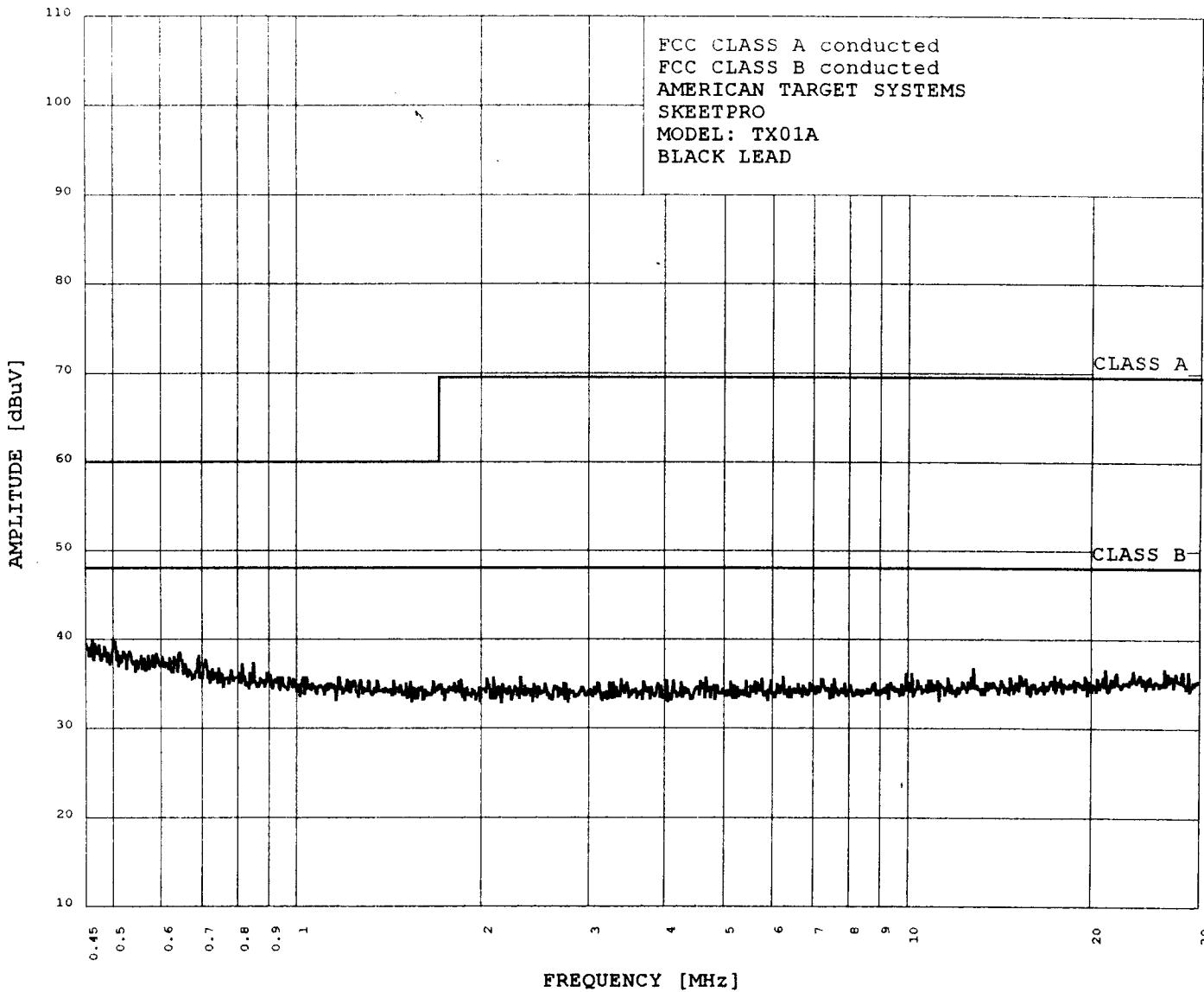
Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.500	39.80	48.00	-8.20
2	0.462	39.70	48.00	-8.30
3	0.504	39.60	48.00	-8.40
4	0.466	39.40	48.00	-8.60
5	0.474	39.20	48.00	-8.80
6	0.484	39.10	48.00	-8.90
7	0.470	38.80	48.00	-9.20
8	0.509	38.50	48.00	-9.50
9	0.519	38.50	48.00	-9.50
10	0.532	38.50	48.00	-9.50
11	0.492	38.40	48.00	-9.60
12	0.643	38.40	48.00	-9.60
13	0.589	38.30	48.00	-9.70
14	0.480	38.20	48.00	-9.80
15	0.513	38.10	48.00	-9.90
16	0.581	38.10	48.00	-9.90
17	0.556	38.00	48.00	-10.00
18	0.572	38.00	48.00	-10.00
19	0.691	38.00	48.00	-10.00
20	0.602	37.90	48.00	-10.10



COMPATIBLE
ELECTRONICS

EMISSION LEVEL [dBuV] PEAK
Graph for Peak

11/22/1999 12:07:27



**COMPATIBLE
ELECTRONICS**

AMERICAN TARGET SYSTEMS

SKEETPRO

MODEL: TX01A

FCC C - WHITE LEAD

TEST ENGINEER : *Kyle Fujimoto*
KYLE FUJIMOTO

11/22/1999

12:16:41

20 highest peaks above -50.00 dB of CLASS B limit line

Peak criteria : 0.10 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	29.275	37.46	48.00	-10.54
2	28.187	37.27	48.00	-10.73
3	27.028	36.98	48.00	-11.02
4	21.180	36.78	48.00	-11.22
5	14.766	36.74	48.00	-11.26
6	25.259	36.70	48.00	-11.30
7	22.003	36.67	48.00	-11.33
8	0.643	36.57	48.00	-11.43
9	23.726	36.52	48.00	-11.48
10	27.704	36.38	48.00	-11.62
11	17.175	36.31	48.00	-11.69
12	18.442	36.31	48.00	-11.69
13	2.446	36.23	48.00	-11.77
14	12.587	36.18	48.00	-11.82
15	21.815	36.17	48.00	-11.83
16	21.439	36.07	48.00	-11.93
17	21.627	36.07	48.00	-11.93
18	20.748	35.99	48.00	-12.01
19	15.388	35.98	48.00	-12.02
20	16.328	35.95	48.00	-12.05

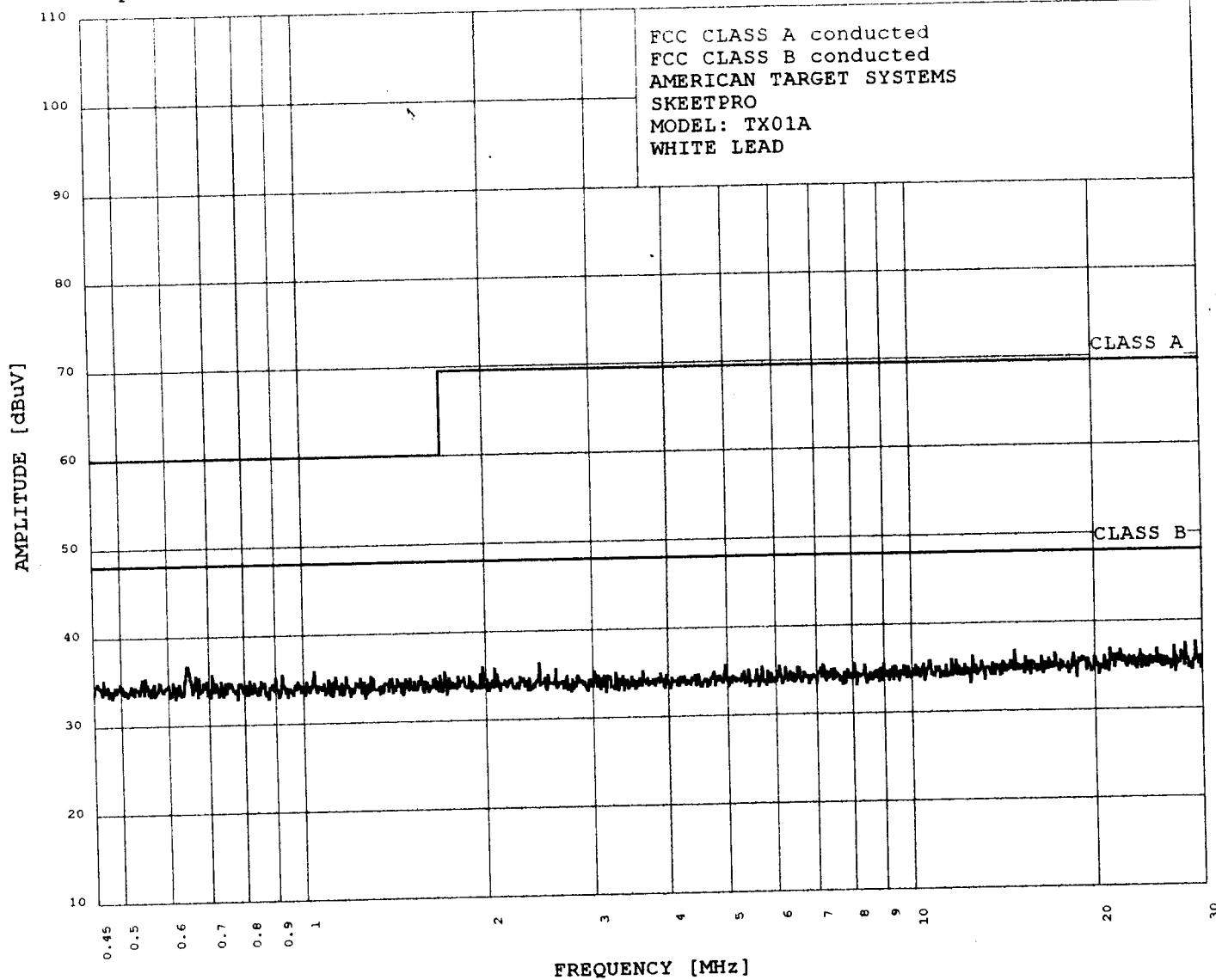


COMPATIBLE
ELECTRONICS

EMISSION LEVEL [dBuV] PEAK
Graph for Peak

11/22/1999 12:16:41

FCC CLASS A conducted
FCC CLASS B conducted
AMERICAN TARGET SYSTEMS
SKEETPRO
MODEL: TX01A
WHITE LEAD



BAND EDGES

DATA SHEETS



BAND EDGE OF LOW CHANNEL

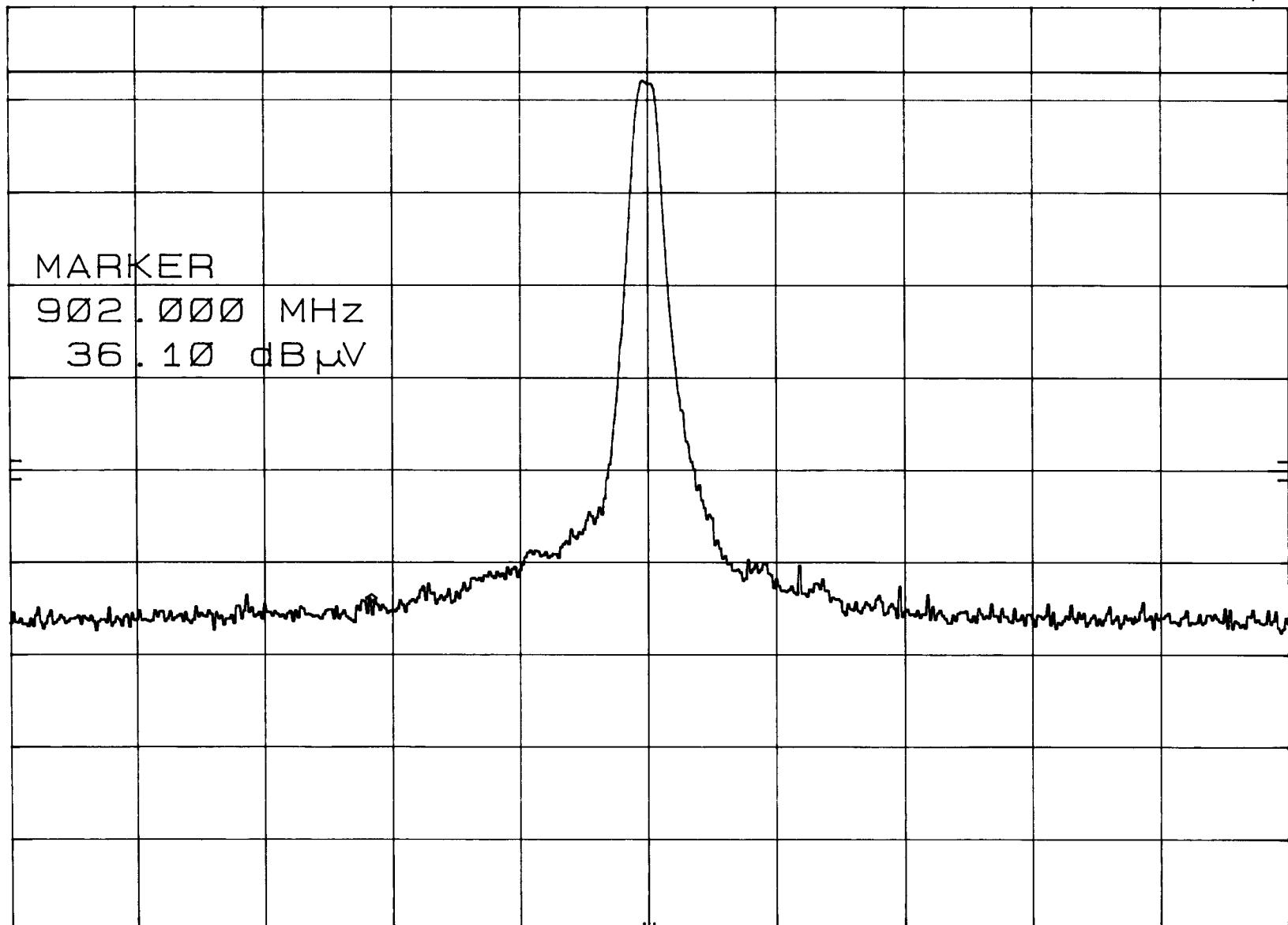
REF 100.0 dB μ V ATTN 10 dB

MKR 902.000 MHz

36.10 dB μ V

hp

10 dB/



START 900.07 MHz

RES BW 1 MHz

VBW 1 MHz

STOP 906.89 MHz

SWP 20.0 msec

BAND EDGE OF HIGH CHANNEL

REF 100.0 dB μ V ATTEN 10 dB

MKR 921.44 MHz

89.90 dB μ V

hp

10 dB/

DL
90.5
dB μ V

CORR'D

START 918.9 MHz

RES BW 1 MHz

VBW 1 MHz

STOP 930.0 MHz

SWP 20.0 msec

