

*FCC PART 15, SUBPART B and C
TEST REPORT**for***TRANSMITTER****MODEL: SET 'N TOW**

Prepared for
KUNTZLEMAN ELECTRONICS, INC.
1660 SOUTH HANOVER STREET
POTTSTOWN, PA 19465

Prepared by: _____

MICHAEL CHRISTENSEN

Approved by: _____

KYLE FUJIMOTO

COMPATIBLE ELECTRONICS INC.
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DATE: NOVEMBER 12, 2003

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
PAGES	15	2	2	2	10	16	47

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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: Transmitter
Model: Set 'n Tow
S/N: N/A

Product Description: See Expository Statement

Modifications: The EUT was modified in order to meet the specifications. Please see list located in Appendix B.

Manufacturer: Kuntzleman Electronics, Inc.
1660 South Hanover Street
Pottstown, PA 19465

Test Dates: October 30 and 31, 2003

Test Specifications: EMI requirements
CFR Title 47, Part 15 Subpart B; and Subpart C, Sections 15.205, 15.209 and 15.231

Test Procedure: ANSI C63.4: 2001

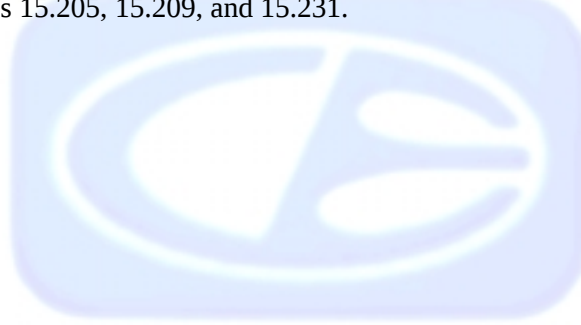
Test Deviations: The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz - 30 MHz	This test was not performed because the EUT operates on DC power only and cannot be plugged into the AC public mains.
2	Radiated RF Emissions, 10 kHz - 4180 MHz	Complies with the Class B limits of CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.231.

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Transmitter Model: Set 'n Tow. 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 **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.231.



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

Kuntzleman Electronics, Inc.

Richard Kuntzleman President

Compatible Electronics, Inc.

Kyle Fujimoto Test Engineer
Michael Christensen Sr. Test Engineer

2.4 Date Test Sample was Received

The test sample was received on October 29, 2003.

2.5 Disposition of the Test Sample

The sample was returned to Kuntzleman Electronics, Inc. on November 3, 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
CFR Title 47, Part 15	FCC Rules – Radio frequency devices (including digital devices)
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

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 Transmitter Model: Set 'n Tow (EUT) was connected to a power supply via its trailer port. The EUT was tested while it was continuously transmitting. The EUT has a non-removable external antenna. During normal operation, the EUT will be programmed not to transmit longer than 5 seconds.

The final radiated 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 inch unshielded cable connecting the EUT to the wires from the power supply. It is hard wired at the EUT end and has a four-pin flat trailer socket at the other end.

Cable 2

This is a 6 foot unshielded cable connecting the power supply to cable 1. It is hard wired at both ends.



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

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
TRANSMITTER (EUT)	KUNTZLEMAN ELECTRONICS, INC.	SET 'N TOW	N/A	RM3KETOW1
POWER SUPPLY	HEWLETT PACKARD	E3612A	KR22000610	N/A

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Radiate Emissions Data Capture Program	Compatible Electronics	2.0	N/A	N/A	N/A
Emissions Program	Compatible Electronics	2.3 (SR19)	N/A	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08784	June 20, 2003	1 Year
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	3701A22279	June 20, 2003	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2430A00424	June 20, 2003	1 Year
Preamplifier	Com Power	PA-103	1582	March 6, 2003	1 Year
Biconical Antenna	Com Power	AB-900	15226	April 21, 2003	1 Year
Log Periodic Antenna	Com Power	AL-100	16202	February 3, 2003	1 Year
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
Turntable	Com Power	TT-100	N/A	N/A	N/A
Computer	Hewlett Packard	4530	US91912319	N/A	N/A
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
Loop Antenna	Com-Power	AL-130	25310	June 4, 2003	1 Year
Horn Antenna	Com-Power	AH-118	10073	January 21, 2002	2 Year
Microwave Preamplifier	Com-Power	PA-122	181917	October 31, 2003	1 Year

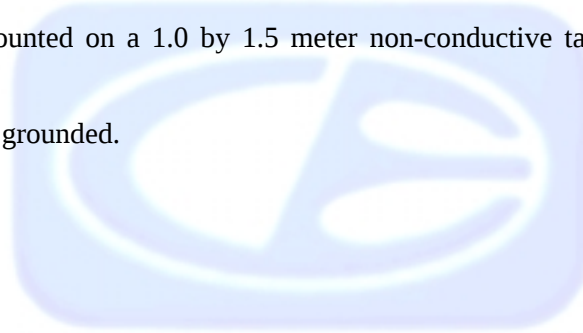
6. TEST SITE DESCRIPTION**6.1 Test Facility Description**

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 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-103 was used for frequencies from 30 MHz to 1 GHz, and the Com-Power Microwave Preamplifier Model: PA-122 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.

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 4.18 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: 2001. 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 loop antenna was also rotated in the horizontal and vertical axis 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 E.

7.2 Bandwidth of the Fundamental

The -20 dB bandwidth was checked to see that it was within 0.25% of the fundamental frequency for the EUT. Photographs of the -20 dB bandwidth are located in Appendix E.



8. CONCLUSIONS

The Transmitter Model: Set 'n Tow meets all of the Class B specification limits defined in CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.231.



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

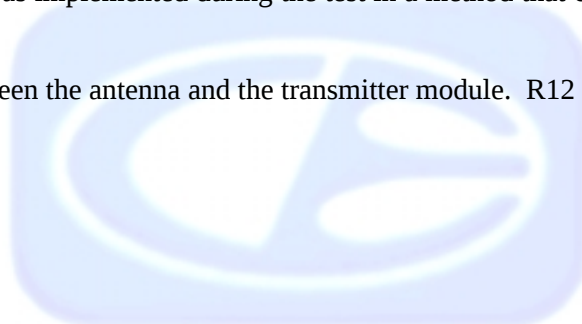
MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.231 or FCC Class B 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.

- 1) Added an attenuation pad between the antenna and the transmitter module. R12 and R13 are 43.2 ohms and R14 is 10 ohms.





APPENDIX C

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

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Transmitter
Model: Set 'n Tow
S/N: N/A

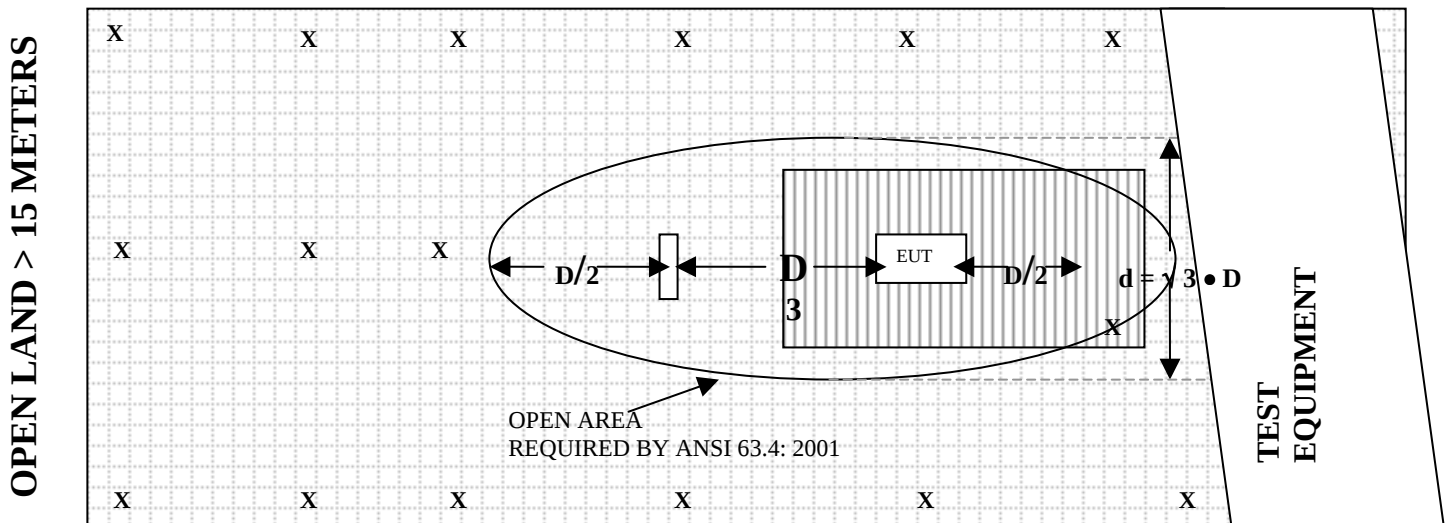
There were no additional models covered under this report.



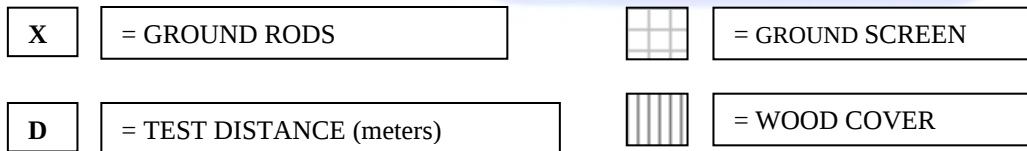
APPENDIX D***DIAGRAMS, CHARTS, AND PHOTOS***

FIGURE 1: PLOT MAP AND LAYOUT OF RADIATED SITE

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS



COM-POWER AB-900**BICONICAL ANTENNA****S/N: 15226****CALIBRATION DATE: APRIL 21, 2003**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	11.20	120	13.80
35	10.40	125	12.50
40	10.20	140	12.50
45	11.00	150	10.90
50	11.30	160	11.50
60	9.60	175	14.90
70	7.40	180	15.50
80	6.10	200	16.90
90	7.70	250	15.50
100	10.50	300	23.80

COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16202

CALIBRATION DATE: FEBRUARY 3, 2003

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	12.70	700	20.60
400	15.40	800	21.80
500	16.50	900	21.00
600	17.20	1000	21.50

COM-POWER PA-103**PREAMPLIFIER**

S/N: 1582

CALIBRATION DATE: MARCH 6, 2003

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	33.6	300	33.3
40	33.6	350	33.3
50	33.6	400	33.1
60	33.6	450	33.0
70	33.5	500	32.9
80	33.5	550	33.0
90	33.5	600	32.8
100	33.6	650	32.6
125	33.6	700	32.7
150	33.4	750	32.4
175	33.5	800	32.4
200	33.4	850	32.7
225	33.3	900	31.9
250	33.2	950	31.8
275	33.3	1000	32.5

COM-POWER PA-122

MICROWAVE PREAMPLIFIER

S/N: 181917

CALIBRATION DATE: OCTOBER 31, 2003

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	33.5	6.0	34.5
1.1	33.6	6.5	34.6
1.2	33.6	7.0	33.1
1.3	33.3	7.5	32.5
1.4	33.1	8.0	33.5
1.5	32.7	8.5	35.1
1.6	32.6	9.0	35.5
1.7	32.5	9.5	36.8
1.8	31.5	10.0	35.7
1.9	31.4	11.0	31.8
2.0	30.0	12.0	29.5
2.5	33.2	13.0	31.2
3.0	32.0	14.0	31.7
3.5	33.0	15.0	31.1
4.0	33.4	16.0	32.9
4.5	34.7	17.0	33.6
5.0	34.2	18.0	31.0
5.5	33.2		

COM-POWER AH-118**HORN ANTENNA****S/N: 10073****CALIBRATION DATE: JANUARY 21, 2002**

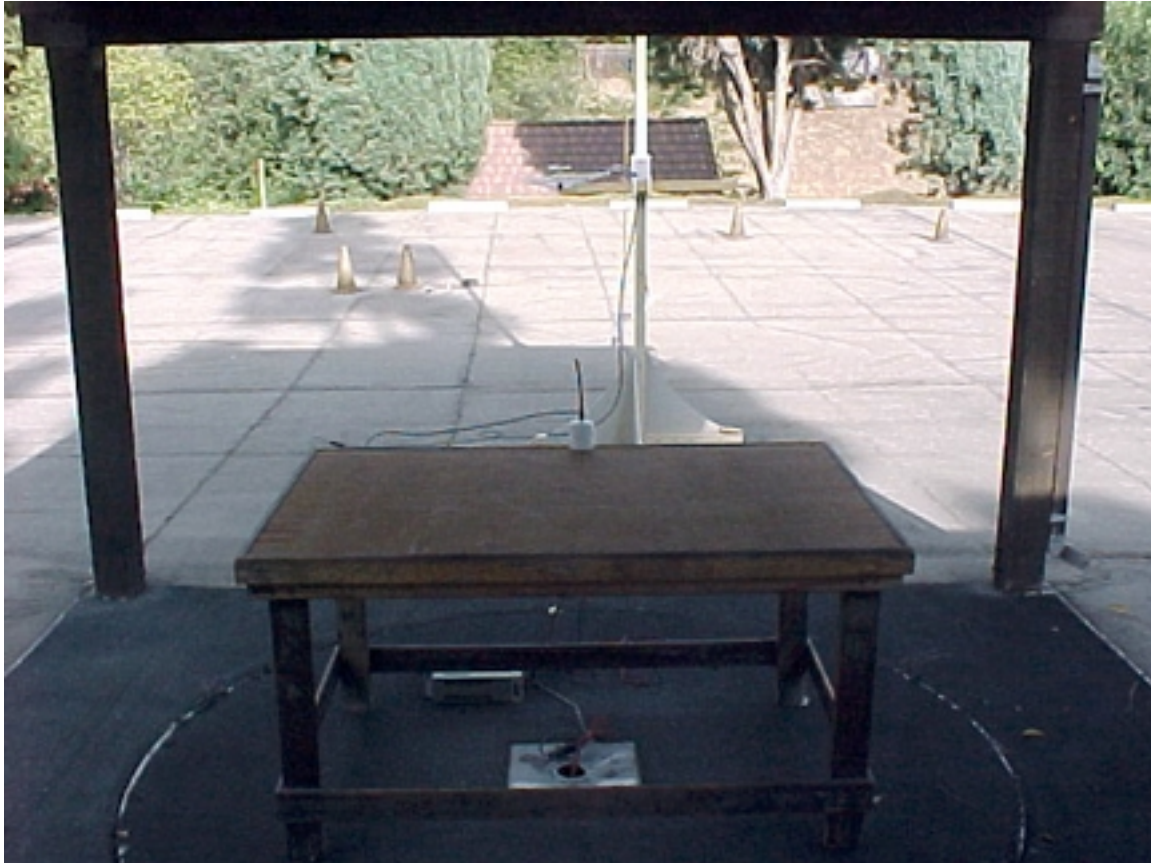
FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	26.6	10.0	41.8
1.5	29.2	10.5	40.4
2.0	32.4	11.0	37.5
2.5	32.3	11.5	42.2
3.0	31.4	12.0	40.4
3.5	31.8	12.5	43.6
4.0	31.1	13.0	44.2
4.5	32.0	13.5	41.8
5.0	33.9	14.0	43.3
5.5	32.0	14.5	47.0
6.0	37.8	15.0	49.4
6.5	36.8	15.5	49.9
7.0	42.4	16.0	49.9
7.5	39.5	16.5	48.2
8.0	41.3	17.0	44.0
8.5	40.3	17.5	44.8
9.0	39.5	18.0	44.7
9.5	41.4		

COM-POWER AL-130**LOOP ANTENNA**

S/N: 25310

CALIBRATION DATE: JUNE 4, 2003

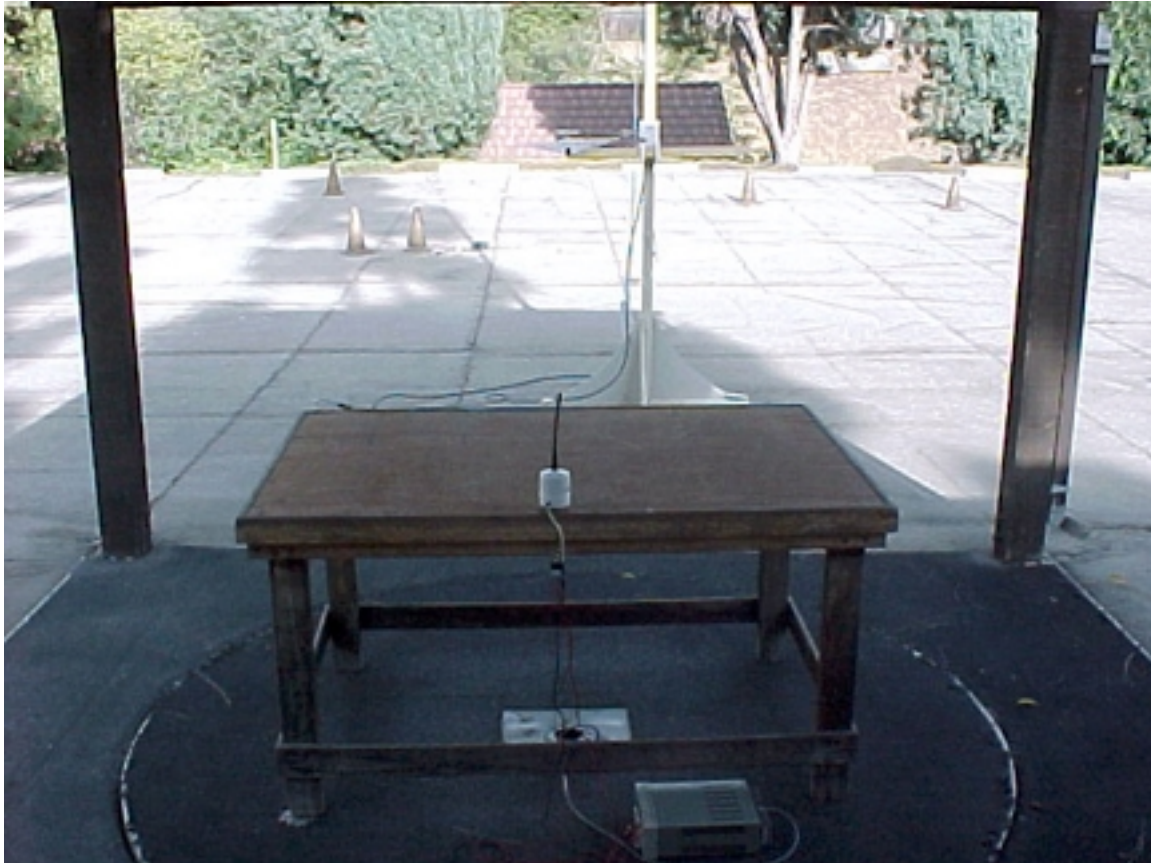
FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-41.2	10.3
0.01	-41.3	10.2
0.02	-42.3	9.2
0.05	-42.5	9.0
0.07	-42.3	9.2
0.1	-42.5	9.0
0.2	-44.6	6.9
0.3	-42.1	9.4
0.5	-42.4	9.1
0.7	-42.1	9.4
1	-41.5	10.0
2	-41.0	10.5
3	-41.3	10.2
4	-41.3	10.2
5	-40.9	10.6
10	-41.6	9.9
15	-42.1	9.4
20	-42.2	9.3
25	-42.7	8.8
30	-44.3	7.2



FRONT VIEW

KUNTZLEMAN ELECTRONICS, INC.
TRANSMITTER
MODEL: SET 'N TOW
FCC SUBPART B AND C - RADIATED EMISSIONS – 10-31-03

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



REAR VIEW

KUNTZLEMAN ELECTRONICS, INC.
TRANSMITTER
MODEL: SET 'N TOW
FCC SUBPART B AND C - RADIATED EMISSIONS – 10-31-03

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

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS
DATA SHEETS

Test Location : Compatible Electronics
Customer : KUNTZLEMAN ELECTRONICS, INC.
Manufacturer : KUNTZLEMAN ELECTRONICS, INC.
Eut name : Transmitter
Model : Set 'N Tow
Serial # :
Specification : FCC Class B
Distance correction factor ($20 * \log(\text{test}/\text{spec})$) : 0.00
Test Mode : Spurious Emissions - Frequency range 10 kHz- 4.18 GHz

Page : 1/1
Date : 10/31/2003
Time : 13:48:09
Lab : A
Test Distance : 3.0

Tested by: Michael Christensen

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
1V	52.171	53.50	1.22	10.90	33.60	32.03	40.00	-7.97
2V	56.196	54.10	1.26	10.21	33.60	31.97	40.00	-8.03
3V	60.199	51.50	1.30	9.55	33.60	28.76	40.00	-11.24
4V	48.163	53.60	1.18	11.19	33.60	32.38	40.00	-7.62
5V	44.163	53.40	1.14	10.87	33.60	31.82	40.00	-8.18
6V	410.068	48.60	3.54	15.52	33.08	34.59	46.00	-11.41
7V	426.103	46.50	3.61	15.71	33.05	32.77	46.00	-13.23
8H	410.105	42.00	3.54	15.52	33.08	27.99	46.00	-18.01

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	KUNTZLEMAN ELECTRONICS, INC.	DATE	10/31/03
EUT	TRANSMITTER	DUTY CYCLE	56.1 %
MODEL	Set 'N Tow	PEAK TO AVG	-5.02074277 dB
S/N	N/A	TEST DIST.	3 Meters
TEST ENGINEER	MICHAEL CHRISTENSEN	LAB	A

[illegible]

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

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RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	KUNTZLEMAN ELECTRONICS, INC.	DATE	10/31/03
EUT	TRANSMITTER	DUTY CYCLE	56.1 %
MODEL	Set 'N Tow	PEAK TO AVG	-5.02074277 dB
S/N	N/A	TEST DIST.	3 Meters
TEST ENGINEER	MICHAEL CHRISTENSEN	LAB	A

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)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
836.0000	54.1	A	H	1.0	180	Y		21.5	4.9	32.6	0.0	0.0	47.9	-12.4	60.3	
836.0000	57.5	A	V	1.5	180	Y		21.5	4.9	32.6	0.0	0.0	51.3	-9.0	60.3	

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

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	KUNTZLEMAN ELECTRONICS, INC.	DATE	10/31/03
EUT	TRANSMITTER	DUTY CYCLE	56.1 %
MODEL	Set 'N Tow	PEAK TO AVG	-5.02074277 dB
S/N	N/A	TEST DIST.	3 Meters
TEST ENGINEER	MICHAEL CHRISTENSEN	LAB	A

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)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
1254.0000	52.4	A	H	1.0	0	Y		27.9	3.0	33.4	0.0	0.0	49.9	-10.4	60.3	
1254.0000	59.1	A	V	1.5	180	Y		27.9	3.0	33.4	0.0	0.0	56.6	-3.7	60.3	

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

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	KUNTZLEMAN ELECTRONICS, INC.	DATE	10/31/03
EUT	TRANSMITTER	DUTY CYCLE	56.1 %
MODEL	Set 'N Tow	PEAK TO AVG	-5.02074277 dB
S/N	N/A	TEST DIST.	3 Meters
TEST ENGINEER	MICHAEL CHRISTENSEN	LAB	A

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)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
1672.0000	46.9	A	H	3.0	180	Y		30.3	5.4	32.5	0.0	0.0	50.0	-4.0	54.0	
1672.0000	49.3	44.3 A	V	1.0	180	Y		30.3	5.4	32.5	0.0	0.0	47.4	-6.6	54.0	

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

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	KUNTZLEMAN ELECTRONICS, INC.	DATE	10/31/03
EUT	TRANSMITTER	DUTY CYCLE	56.1 %
MODEL	Set 'N Tow	PEAK TO AVG	-5.02074277 dB
S/N	N/A	TEST DIST.	3 Meters
TEST ENGINEER	MICHAEL CHRISTENSEN	LAB	A

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)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
2090.0000	57.5	52.5 A	H	3.0	180	Y		32.4	4.2	30.6	0.0	0.0	58.5	-1.8	60.3	
2090.0000	51.9	46.9 A	V	3.5	180	Y		32.4	4.2	30.6	0.0	0.0	52.9	-7.4	60.3	

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

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	KUNTZLEMAN ELECTRONICS, INC.	DATE	10/31/03
EUT	TRANSMITTER	DUTY CYCLE	56.1 %
MODEL	Set 'N Tow	PEAK TO AVG	-5.02074277 dB
S/N	N/A	TEST DIST.	3 Meters
TEST ENGINEER	MICHAEL CHRISTENSEN	LAB	A

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)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
2508.0000	45.7	A	H	1.0	180	Y		32.3	4.7	33.2	0.0	0.0	49.5	-10.8	60.3	
2508.0000	43.5	A	V	1.0	180	Y		32.3	4.7	33.2	0.0	0.0	47.3	-13.0	60.3	

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

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	KUNTZLEMAN ELECTRONICS, INC.	DATE	10/31/03
EUT	TRANSMITTER	DUTY CYCLE	56.1 %
MODEL	Set 'N Tow	PEAK TO AVG	-5.02074277 dB
S/N	N/A	TEST DIST.	3 Meters
TEST ENGINEER	MICHAEL CHRISTENSEN	LAB	A

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)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
2926.0000	44.2	A	H	1.0	180	Y		31.5	5.5	32.2	0.0	0.0	49.0	-11.3	60.3	
2926.0000	41.9	A	V	1.0	180	Y		31.5	5.5	32.2	0.0	0.0	46.7	-13.6	60.3	

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

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	KUNTZLEMAN ELECTRONICS, INC.	DATE	10/31/03
EUT	TRANSMITTER	DUTY CYCLE	56.1 %
MODEL	Set 'N Tow	PEAK TO AVG	-5.02074277 dB
S/N	N/A	TEST DIST.	3 Meters
TEST ENGINEER	MICHAEL CHRISTENSEN	LAB	A

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)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
3344.0000	44.9	A	H	1.0	180	Y		31.7	6.2	32.7	0.0	0.0	50.1	-10.2	60.3	
3344.0000	42.8	A	V	1.0	270	Y		31.7	6.2	32.7	0.0	0.0	48.0	-12.3	60.3	

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

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	KUNTZLEMAN ELECTRONICS, INC.	DATE	10/31/03
EUT	TRANSMITTER	DUTY CYCLE	56.1 %
MODEL	Set 'N Tow	PEAK TO AVG	-5.02074277 dB
S/N	N/A	TEST DIST.	3 Meters
TEST ENGINEER	MICHAEL CHRISTENSEN	LAB	A

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)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
3762.0000	52.5	47.5 A	H	1.5	180	Y		31.4	6.9	33.2	0.0	0.0	52.6	-1.4	54.0	
3762.0000	53.4	48.4 A	V	1.0	180	Y		31.4	6.9	33.2	0.0	0.0	53.5	-0.5	54.0	

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

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	KUNTZLEMAN ELECTRONICS, INC.	DATE	10/31/03
EUT	TRANSMITTER	DUTY CYCLE	56.1 %
MODEL	Set 'N Tow	PEAK TO AVG	-5.02074277 dB
S/N	N/A	TEST DIST.	3 Meters
TEST ENGINEER	MICHAEL CHRISTENSEN	LAB	A

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)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
4180.0000	48.5	43.5 A	H	1.0	180	Y		31.4	6.3	33.9	0.0	0.0	47.4	-6.6	54.0	
4180.0000	50.7	45.7 A	V	1.0	180	Y		31.4	6.3	33.9	0.0	0.0	49.6	-4.4	54.0	

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

-20 dB BANDWIDTH

PHOTOGRAPHS

