ACME TESTING INC., 2002 VALLEY HWY, P.O. BOX 3, ACME, WASHINGTON 98220-0003 888-226-3837.

REPORT OF MEASUREMENTS
PART 15C (15.249) - INTENTIONAL RADIATOR

DEVICE: 4 CHANNEL 2.4 GHz 15.249 TRANSMITTER

MODEL: VTX2500

MANUFACTURER: TRANGO SYSTEMS

ADDRESS: 9939 VIA PASAR
SAN DIEGO CA 92126

THE DATA CONTAINED IN THIS REPORT WAS COLLECTED
ON 24 & 25 JUNE 1999 AND COMPILED BY:

PAUL G. SLAVENS	DANIEL B. STATON
CHIEF EMC ENGINEER	EMC TECHNICIAN

WORK ORDER: 10674

1. General

1.1 Purpose

The purpose of this report is to show compliance to the FCC regulations for narrow band unlicensed devices operating under section 15.249 of the Code of Federal Regulations title 47.

1.2 Manufacturer

Company Name:	Trango Systems
Contact:	Chris Gustaf
Street Address:	9939 Via Pasar
City/Province:	San Diego CA 92126
Telephone:	619 621-2700
Fax:	619 621-2722
E-mail:	chrisg@zcomm.com

1.3 Test location

Company:	Acme Testing Inc.
Street Address:	2002 Valley Highway
Mailing Address:	PO Box 3
City/State/Zip:	Acme WA 98220-0003
Laboratory:	Test Site 2
Telephone:	888 226-3837
Fax:	360 595-2722
E-mail:	acmetest@acmetesting.com
Web:	www.acmetesting.com

1.4 Test Personnel

Paul G. Slavens, Chief EMC Engineer

2. Test Results Summary

Summary of Test Results

Requirement	CFR Section	Test Result
Conducted Emissions < 48.0 dBuV	15.207	PASS
Radiated Emissions	15.249	PASS

The signed original of this report, supplied to the client, represents the only "official" copy. Retention of any additional copies (electronic or non-electronic media) is at Acme Testing's discretion to meet internal requirements only. The client has made the determination that EUT Condition, Characterization, and Mode of Operation are representative of production units, and meet the requirements of the specifications referenced herein.

Consistent with Industry practice, measurement and test equipment not directly involved in obtaining measurement results but having an impact on measurements (such as cable loss, antenna factors, etc.) are factored into the "Correction Factor" documented in certain test results. Instrumentation employed for testing meets tolerances consistent with known Industry Standards and Regulations.

The measurements contained in this report were made in accordance with the procedure ANSI C63.4 - 1992 and all applicable Public Notices received prior to the date of testing. All emissions from the device were found to be within the limits outlined in this report. Acme Testing assumes responsibility only for the accuracy and completeness of this data as it pertains to the sample tested.

Paul G. Slavens
Chief EMC Engineer

Date of Issuance

3. Description of Equipment and Peripherals

3.1 Equipment Under Test (EUT)

Device:	4 Channel 2.4 GHz 15.249 Transmitter
Model Number:	VTX2500
Serial Number:	None
Power:	AC Adapter 120 VAC – 7 VDC
Grounding:	Local
Antenna Distance:	3 meter

3.2 EUT Peripherals

Device	Manufacturer	Model Number	FCC ID	Serial Number
Laptop Computer	IBM Corporation	2626-2E9	ANOKAJIPENCP	78-DFNF5 96/12
PAL/NTSC Signal Generator	Tektronix	Pathfinder	None	B024509

3.3 Description of Interface Cables

EUT/Laptop Computer

Shielded	Unshielded	Flat	Round	Length	Ferrite
No	Yes	Yes	No	2 m	No

3.4 Mode of Operation During Tests

The EUT was exercised by constantly transmitting a modulated signal at the lowest channel, middle channel and the highest channel.

3.5 Modifications Required for Compliance

1. None.

4. Antenna requirement

4.1 Regulation

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of Part 15C. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

4.2 Result

The EUT uses a reverse threaded SMA connector to meet the requirements if this section.

5. Conducted Emissions Tests

Test Requirement: FCC CFR47, Part 15C, 15.207

Test Procedure: ANSI C63.4:1992

5.1 Test Equipment

⇒ Spectrum Analyzer: Hewlett-Packard 8566B, Serial Number 2747A-05662, Calibrated: 9 September 1998, Calibration due Date: 9 September 1999

⇒ RF Preselector: Hewlett-Packard 85685A, Serial Number 2510A-00106, Calibrated: 9 September 1998, Calibration due Date: 9 September 1999

⇒ Quasi Peak Adapter: Hewlett-Packard 85650A, Serial Number 2521A-00931, Calibrated: 9 September 1998, Calibration due Date: 9 September 1999

⇒ Line Impedance Stabilization Network: Rhode & Schwarz ESH2-Z5, Serial Number ACMERS1, Calibrated: 1 March 1999, Calibration due Date: 1 March 2000

5.2 Purpose

The purpose of this test is to evaluate the level of conducted noise the EUT imposes on the AC mains.

5.3 Test Procedures

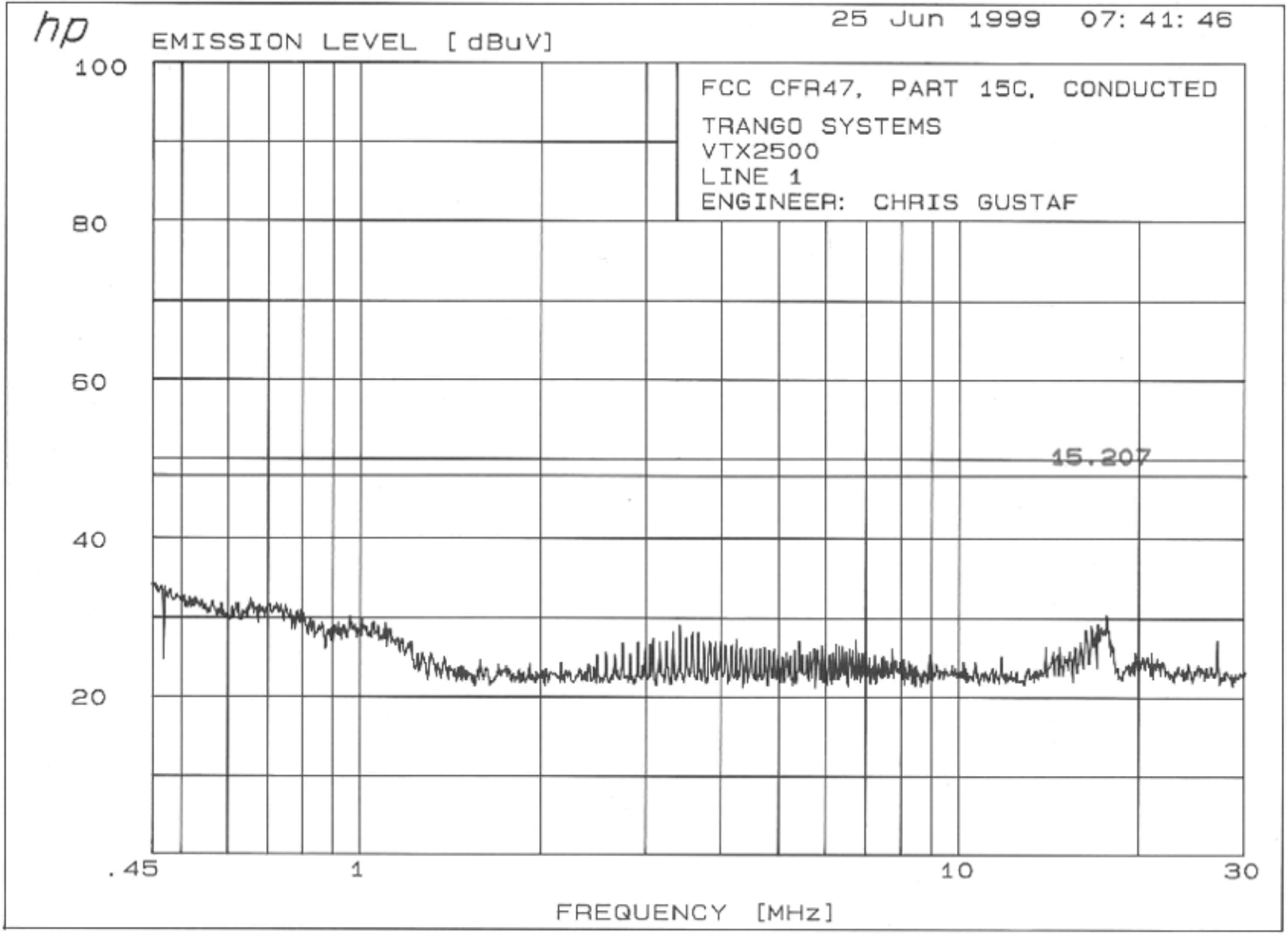
For tabletop equipment, the EUT is placed on a 1 meter by 1.5 meters wide and 0.8 meter high nonconductive table that is placed above the groundplane. Floor standing equipment is placed directly on the groundplane. Any supplemental grounding mechanisms are connected, if appropriate. The EUT is connected to its associated peripherals, with any excess I/O cabling bundled to approximately 1 meter. The EUT is connected to a dedicated LISN and all peripherals are connected to a second separate LISN circuit. The LISNs are bonded to the groundplane.

Conducted Emissions Test Characteristics	
Frequency range	0.45 MHz - 30.0 MHz
Test instrumentation resolution bandwidth	9 kHz
Lines Tested	Line 1/Line 2

5.4 Test Results

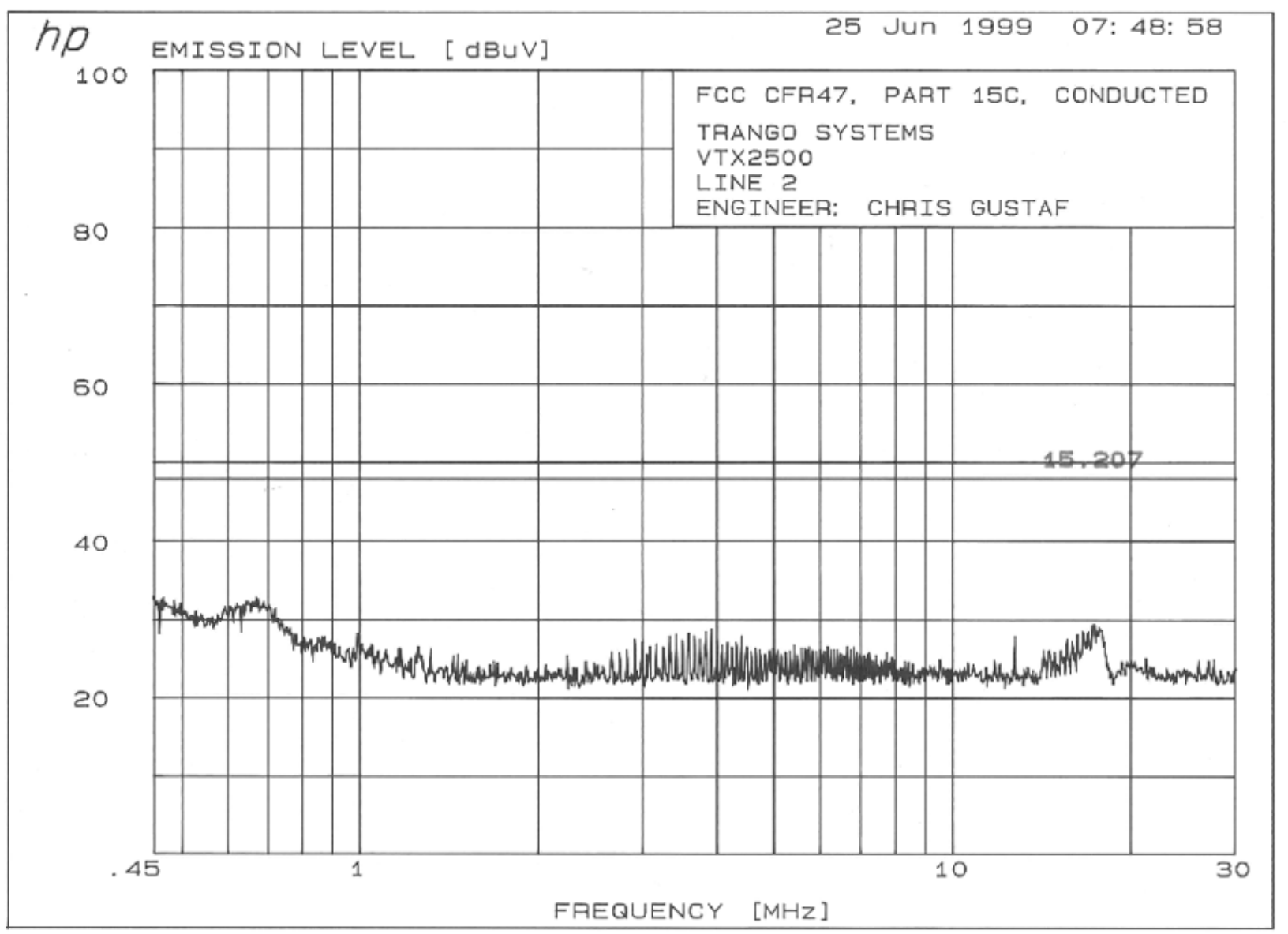
LINE 1

PEAK #	FREQ. (MHz)	AMPL (dBuV)
1	0.4713	33.9
2	3.087	27.5
3	3.329	28.3
4	3.414	29.1
5	3.59	28.2
6	17.68	30.3


hp
25 Jun 1999 07:41:46
EMISSION LEVEL [dBuV]
FCC CFR47, PART 15C, CONDUCTED
TRANGO SYSTEMS
VTX2500
LINE 1
ENGINEER: CHRIS GUSTAF
15.207
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]

LINE 2

PEAK #	FREQ. (MHz)	AMPL (dBuV)
1	3.414	28.2
2	3.575	28.3
3	3.84	28.5
4	3.921	28.9
5	4.41	28.0
6	17.24	29.4


hp
25 Jun 1999 07:48:58
EMISSION LEVEL [dBuV]
100
80
60
40
20
FCC CFR47, PART 15C, CONDUCTED
TRANGO SYSTEMS
VTX2500
LINE 2
ENGINEER: CHRIS GUSTAF
15.207
.45
1
10
30
FREQUENCY [MHz]

6. Low and High Channel Bandwidth Plots

Test Requirement: FCC CFR47, Part 15C, 15.249

Test Procedure: ANSI C63.4:1992

6.1 Purpose

The purpose of these plots is to show compliance of the radiated emissions at the highest and lowest channel of the transmitter.

6.2 Test Equipment

⇒ Spectrum Analyzer: Hewlett-Packard 8566B, Serial Number 2747A-05662, Calibrated: 9 September 1998, Calibration due Date: 9 September 1999

⇒ RF Preselector: Hewlett-Packard 85685A, Serial Number 2510A-00106, Calibrated: 9 September 1998, Calibration due Date: 9 September 1999

⇒ Quasi Peak Adapter: Hewlett-Packard 85650A, Serial Number 2521A-00931, Calibrated: 9 September 1998, Calibration due Date: 9 September 1999

⇒ Broadband Biconical Antenna (20 MHz to 200 MHz): EMCO 3110, Serial Number 1115, Calibrated: 27 June 1998, Calibration due Date: 27 June 1999

⇒ Broadband Log Periodic Antenna (200 MHz to 1000 MHz): EMCO 3146, Serial Number 2853, Calibrated: 27 June 1998, Calibration due Date: 27 June 1999

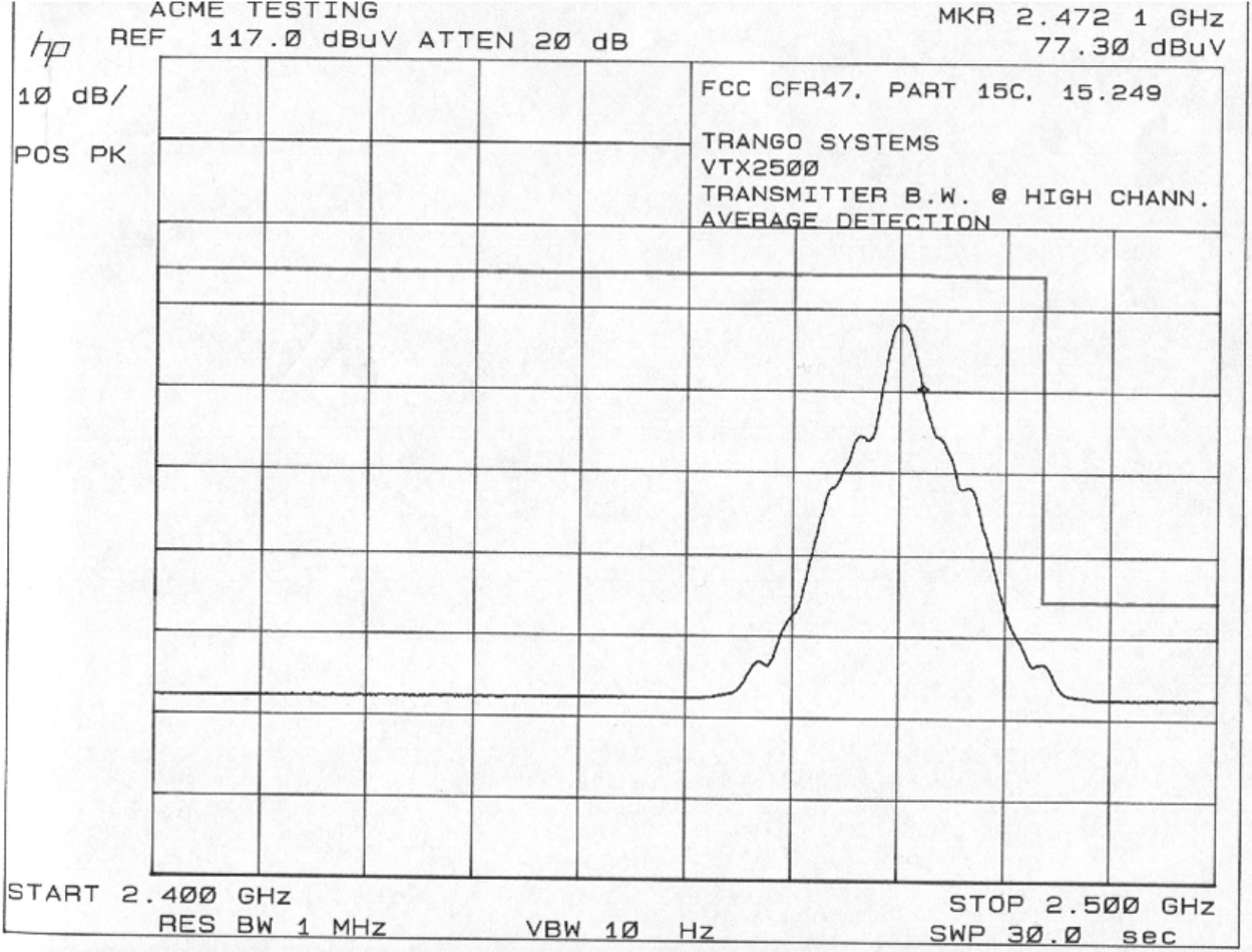
⇒ EUT Turntable Position Controller: EMCO 1061-3M 9003-1441, No Calibration Required

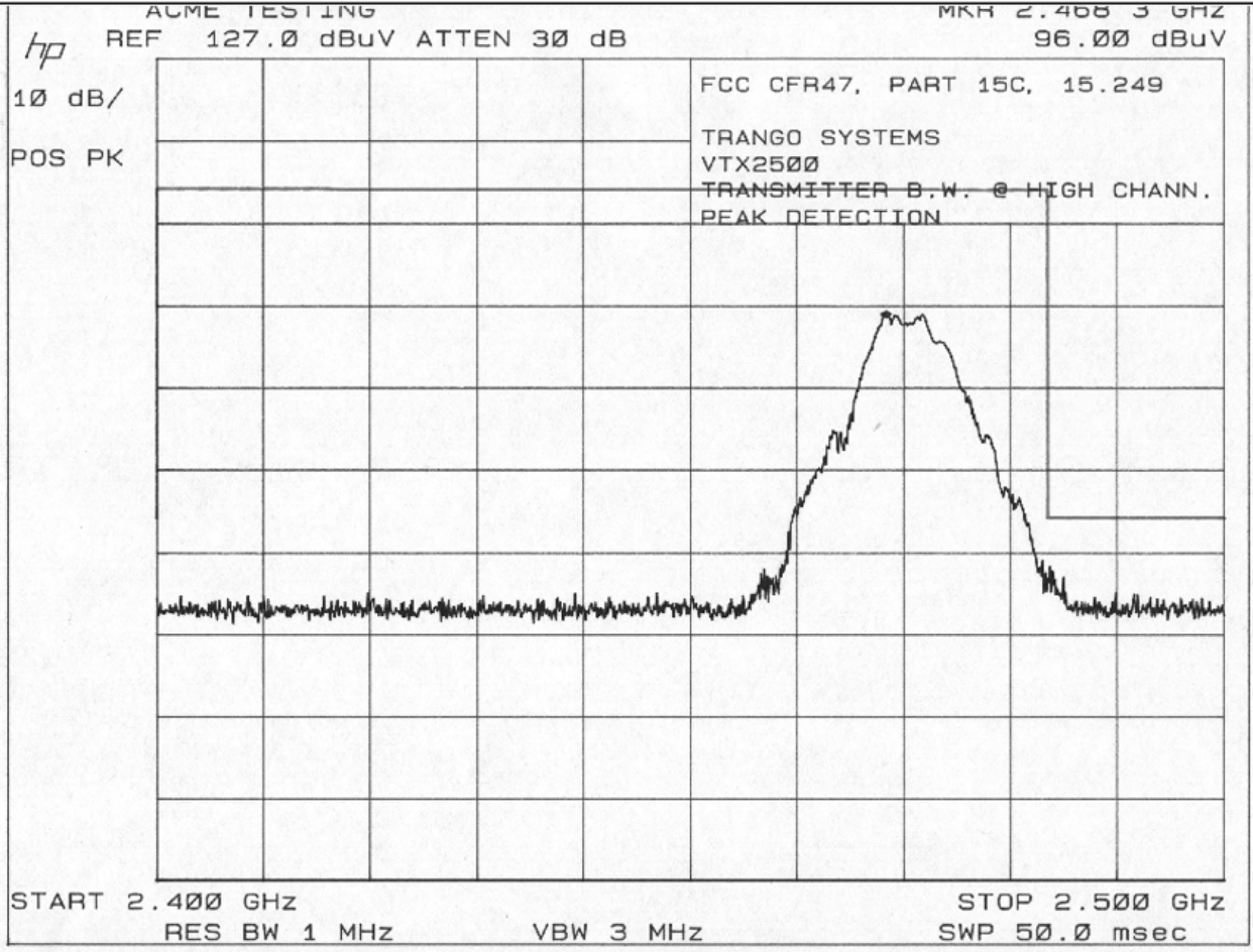
⇒ Antenna Mast: EMCO 1051 9002-1457, No Calibration Required

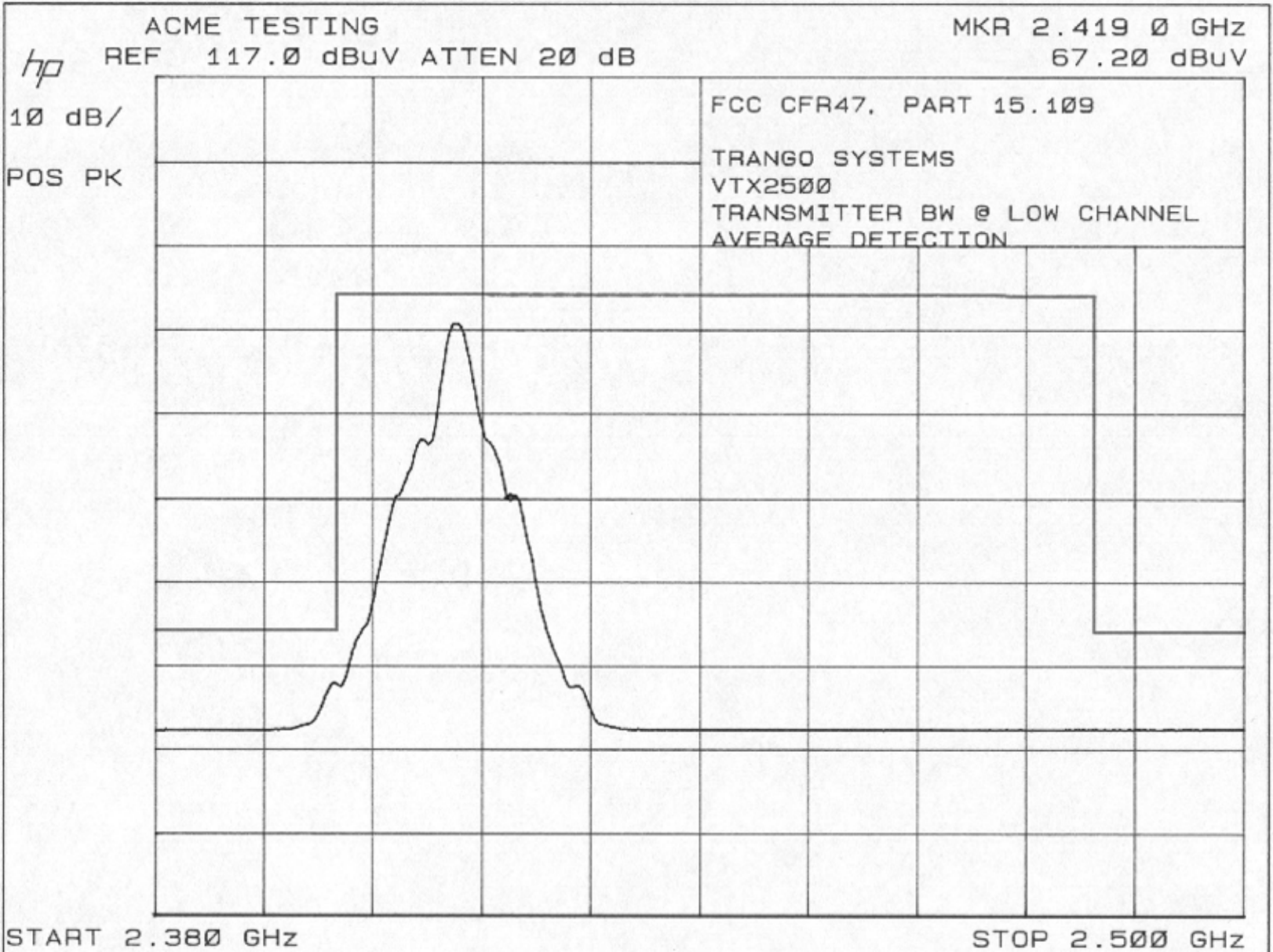
⇒ 2 GHz to 10 GHz Low Noise Preamplifier: Milliwave 593-2898, Serial Number 2494, Calibrated: 31 December 1998, Calibration due Date: 31 December 1999

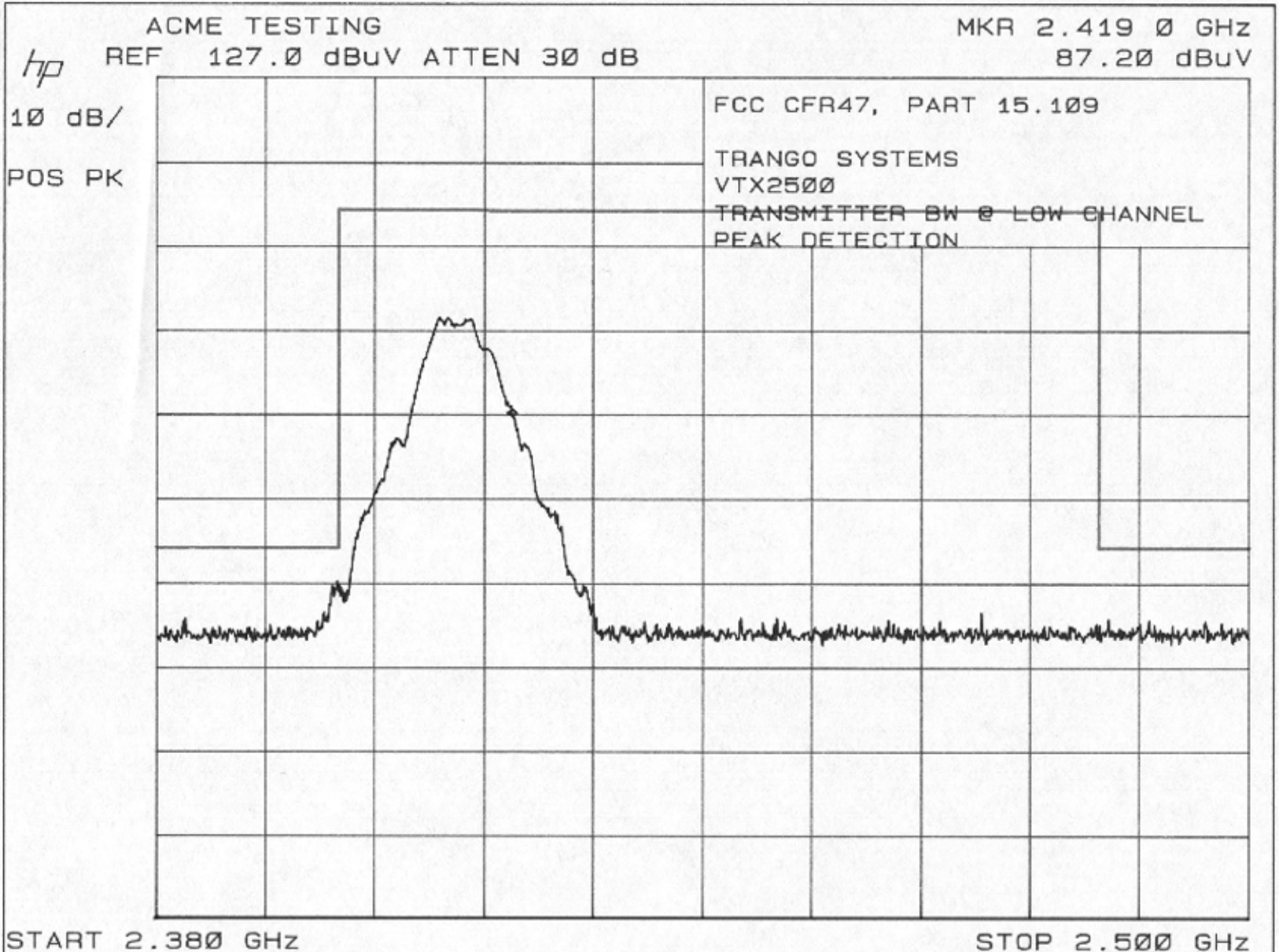
⇒ Double Ridge Guide Horn Antenna: EMCO 3115, Serial Number 5534, Calibrated: 28 December 1998, Calibration due Date: 28 December 1999

⇒ 10 GHz to 22 GHz Low Noise Preamplifier: Miteq AFS4, Serial Number 484280, Calibrated: 22 January 1999, Calibration due Date: 22 January 2000


ACME TESTING
REF 117.0 dBuV ATTEN 20 dB
MKR 2.472 1 GHz
77.30 dBuV
10 dB/
POS PK
FCC CFR47, PART 15C, 15.249
TRANGO SYSTEMS
VTX2500
TRANSMITTER B.W. @ HIGH CHANN.
AVERAGE DETECTION
START 2.400 GHz
RES BW 1 MHz
VBW 10 Hz
STOP 2.500 GHz
SWP 30.0 sec


ACME TESTING
MKR 2.468 3 GHz
REF 127.0 dBuV ATTEN 30 dB
96.00 dBuV
10 dB/
POS PK
FCC CFR47, PART 15C, 15.249
TRANGO SYSTEMS
VTX2500
TRANSMITTER B.W. @ HIGH CHANN.
PEAK DETECTION
START 2.400 GHz
STOP 2.500 GHz
RES BW 1 MHz
VBW 3 MHz
SWP 50.0 msec


ACME TESTING
REF 117.0 dBuV ATTEN 20 dB
MKR 2.419 0 GHz
67.20 dBuV
10 dB/
POS PK
FCC CFR47, PART 15.109
TRANGO SYSTEMS
VTX2500
TRANSMITTER BW @ LOW CHANNEL
AVERAGE DETECTION
START 2.380 GHz
STOP 2.500 GHz


ACME TESTING
MKR 2.419 Ø GHz
REF 127.Ø dBuV ATTEN 3Ø dB
87.2Ø dBuV
1Ø dB/
POS PK
FCC CFR47, PART 15.1Ø9
TRANGO SYSTEMS
VTX25ØØ
TRANSMITTER BW @ LOW CHANNEL
PEAK DETECTION
START 2.38Ø GHz
STOP 2.5ØØ GHz

7. Radiated Emissions

Test Requirement: FCC CFR47, Part 15C, 15.249

Test Procedure: ANSI C63.4:1992

7.1 Test Equipment

⇒ Spectrum Analyzer: Hewlett-Packard 8566B, Serial Number 2747A-05662, Calibrated: 9 September 1998, Calibration due Date: 9 September 1999

⇒ RF Preselector: Hewlett-Packard 85685A, Serial Number 2510A-00106, Calibrated: 9 September 1998, Calibration due Date: 9 September 1999

⇒ Quasi Peak Adapter: Hewlett-Packard 85650A, Serial Number 2521A-00931, Calibrated: 9 September 1998, Calibration due Date: 9 September 1999

⇒ Broadband Biconical Antenna (20 MHz to 200 MHz): EMCO 3110, Serial Number 1115, Calibrated: 27 June 1998, Calibration due Date: 27 June 1999

⇒ Broadband Log Periodic Antenna (200 MHz to 1000 MHz): EMCO 3146, Serial Number 2853, Calibrated: 27 June 1998, Calibration due Date: 27 June 1999

⇒ EUT Turntable Position Controller: EMCO 1061-3M 9003-1441, No Calibration Required

⇒ Antenna Mast: EMCO 1051 9002-1457, No Calibration Required

⇒ 2 GHz to 10 GHz Low Noise Preamplifier: Milliwave 593-2898, Serial Number 2494, Calibrated: 31 December 1998, Calibration due Date: 31 December 1999

⇒ Double Ridge Guide Horn Antenna: EMCO 3115, Serial Number 5534, Calibrated: 28 December 1998, Calibration due Date: 28 December 1999

⇒ Standard Gain Horn Antenna (18-24 GHz): EMCO 3160-09, Serial Number 9701-1071, No Calibration Required

⇒ 10 GHz to 22 GHz Low Noise Preamplifier: Miteq AFS4, Serial Number 484280, Calibrated: 22 January 1999, Calibration due Date: 22 January 2000

7.2 Regulation

(a) The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
902 - 928 MHz	50	500
2400 - 2483.5 MHz	50	500
5725 - 5875 MHz	50	500
24.0 - 24.25 GHz	250	2500

(b) Field strength limits are specified at a distance of 3 meters.

(c) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

(d) As shown in Section 15.35(b), for frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

(e) Parties considering the manufacture, importation, marketing or operation of equipment under this section should also note the requirement in Section 15.37(d).

7.3 Test Procedures

For tabletop equipment, the EUT is placed on a 1 meter by 1.5 meters wide and 0.8 meter high nonconductive table that sits on a flush mounted metal turntable. Floor standing equipment is placed directly on the flush mounted metal turntable. The EUT is connected to its associated peripherals with any excess I/O cabling bundled to approximately 1 meter.

Preview tests are performed to determine the “worst case” mode of operation. With the EUT operating in “worst case” mode, emissions from the unit are maximized by adjusting the polarization and height of the receive antenna and rotating the EUT on the turntable. Manipulating the system cables also maximizes EUT emissions.

Radiated Emissions Test Characteristics	
Frequency range	30 MHz – 22,000 MHz
Test distance	3 m
Test instrumentation resolution bandwidth	120 kHz (30 MHz - 1000 MHz) 1 MHz (1000 MHz – 22,000 MHz)
Receive antenna scan height	1 m - 4 m
Receive antenna polarization	Vertical/Horizontal

7.4 Test Results

VTX2500 FUNDAMENTAL EMISSIONS
WITH CASE AND WITH OMNI DIRECTIONAL ANTENNA
PEAK PRODUCT EMISSIONS

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	comments
1	2412.02	114.0	94.8	-19.2	PK	V	162	15	2.7	CH 1
2	2414.52	114.0	97.5	-16.5	PK	H	241	14	2.7	CH 1
3	2449.93	114.0	94.0	-20.0	PK	H	158	61	2.8	CH 3
4	2451.10	114.0	83.1	-30.9	PK	V	153	64	2.8	CH 3
5	2468.00	114.0	94.0	-20.0	PK	V	180	346	2.8	CH 4
6	2469.00	114.0	96.1	-17.9	PK	H	119	102	2.8	CH 4

AVERAGE PRODUCT EMISSIONS

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	comments
1	2412.99	94.0	86.6	-7.4	AVG	H	241	14	2.7	CH 1
2	2413.00	94.0	83.9	-10.1	AVG	V	162	15	2.7	CH 1
3	2449.93	94.0	84.0	-10.0	AVG	V	149	62	2.8	CH 3
4	2451.10	94.0	83.1	-8.9	AVG	H	158	61	2.8	CH 3
5	2469.77	94.0	82.9	-11.1	AVG	V	180	346	2.8	CH 4
6	2470.01	94.0	84.5	-9.5	AVG	H	119	102	2.8	CH 4

VTX2500 SPURIOUS EMISSIONS WITH CASE AND WITH OMNI DIRECTIONAL ANTENNA

PEAK PRODUCT EMISSIONS

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	comments
1	4823.77	74.0	54.8	-19.2	PK	V	182	339	8.4	CH 1
2	4900.00	74.0	54.2	-19.8	PK	V	165	78	8.7	CH 3
3	4938.10	74.0	52.5	-21.5	PK	V	118	341	8.9	CH 4

AVERAGE PRODUCT EMISSIONS

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	comments
1	4823.76	54.0	41.7	-12.3	AVG	V	182	339	8.4	CH 1
2	4900.03	54.0	41.3	-12.7	AVG	V	165	78	8.7	CH 3
3	4938.08	54.0	39.9	-14.1	AVG	V	118	341	8.9	CH 4

VTX2500 FUNDAMENTAL EMISSIONS
WITH CASE AND WITH PATCH ANTENNA
PEAK PRODUCT EMISSIONS

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	comments
1	2411.02	114.0	101.0	-13.0	PK	H	107	360	2.7	CH 1
2	2414.36	114.0	100.0	-14.0	PK	V	115	358	2.7	CH 1
3	2449.94	114.0	99.6	-14.4	PK	V	112	355	2.8	CH 3
4	2451.78	114.0	99.4	-14.6	PK	H	104	8	2.8	CH 3
5	2467.97	114.0	97.7	-16.3	PK	H	104	360	2.8	CH 4
6	2481.00	114.0	74.9	-39.1	PK	V	113	356	2.9	CH 4

AVERAGE PRODUCT EMISSIONS

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	comments
1	2412.75	94.0	89.3	-4.7	AVG	V	115	358	2.7	CH 1
2	2412.77	94.0	90.7	-3.3	AVG	H	107	360	2.7	CH 1
3	2450.71	94.0	88.7	-5.3	AVG	H	104	8	2.8	CH 3
4	2450.81	94.0	89.1	-4.9	AVG	V	112	355	2.8	CH 3
5	2469.72	94.0	86.9	-7.1	AVG	H	104	360	2.8	CH 4
6	2469.97	94.0	88.6	-5.4	AVG	V	113	356	2.8	CH 4

VTX 2500 SPURIOUS EMISSIONS WITH CASE AND WITH PATCH ANTENNA

PEAK PRODUCT EMISSIONS

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	comments
1	4828.71	74.0	59.6	-14.4	PK	V	116	358	8.5	CH 1
2	4905.04	74.0	59.4	-14.6	PK	V	113	358	8.7	CH 3
3	4942.76	74.0	59.2	-14.8	PK	V	113	355	8.9	CH 4

AVERAGE PRODUCT EMISSIONS

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	comments
1	4828.42	54.0	45.8	-8.2	AVG	V	116	358	8.4	CH 1
2	4899.77	54.0	45.9	-8.1	AVG	V	113	358	8.7	CH 3
3	4937.66	54.0	46.5	-7.5	AVG	V	113	355	8.9	CH 4

VTX2500 FUNDAMENTAL EMISSIONS
WITHOUT CASE AND WITH OMNI DIRECTIONAL ANTENNA
PEAK PRODUCT EMISSIONS

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	comments
1	2411.94	114.0	95.8	-18.2	PK	H	127	177	2.7	CH 1
2	2414.42	114.0	96.5	-17.5	PK	V	189	173	2.7	CH 1
3	2449.93	114.0	94.0	-20.0	PK	H	158	61	2.8	CH 3
4	2451.10	114.0	83.1	-30.9	PK	V	142	162	2.8	CH 3
5	2468.99	114.0	96.6	-17.4	PK	H	138	292	2.8	CH 4
6	2471.40	114.0	95.9	-18.1	PK	V	154	193	2.8	CH 4

AVERAGE PRODUCT EMISSIONS

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	comments
1	2412.73	94.0	85.6	-8.4	AVG	V	189	173	2.7	CH 1
2	2412.78	94.0	85.1	-8.9	AVG	H	127	177	2.7	CH 1
3	2449.93	94.0	85.0	-9.0	AVG	V	132	181	2.8	CH 3
4	2451.10	94.0	83.9	-10.1	AVG	H	158	61	2.8	CH 3
5	2469.92	94.0	84.7	-9.3	AVG	V	154	193	2.8	CH 4
6	2469.97	94.0	85.1	-8.9	AVG	H	138	292	2.8	CH 4

VTX2500 SPURIOUS EMISSIONS WITHOUT CASE
AND WITH OMNI DIRECTIONAL ANTENNA

PEAK PRODUCT EMISSIONS

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	comments
1	4828.57	74.0	58.0	-16.0	PK	V	188	173	8.4	CH 1
2	4904.66	74.0	57.4	-16.6	PK	V	211	169	8.7	CH 3
3	4943.18	74.0	59.7	-14.3	PK	V	115	356	8.9	CH 4

AVERAGE PRODUCT EMISSIONS

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	comments
1	4828.46	54.0	44.1	-9.9	AVG	V	188	173	8.4	CH 1
2	4904.51	54.0	43.9	-10.1	AVG	V	211	169	8.7	CH 3
3	4937.86	54.0	46.2	-7.8	AVG	V	115	356	8.9	CH 4

VTX2500 FUNDAMENTAL EMISSIONS
WITHOUT CASE AND WITH PATCH ANTENNA
PEAK PRODUCT EMISSIONS

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	comments
1	2414.04	114.0	100.0	-14.0	PK	V	117	349	2.7	CH 1
2	2414.40	114.0	99.1	-14.9	PK	H	152	360	2.7	CH 1
3	2449.93	114.0	97.2	-16.8	PK	H	108	6	2.8	CH 3
4	2449.96	114.0	99.7	-14.3	PK	V	115	353	2.8	CH 3
5	2468.05	114.0	96.4	-17.6	PK	H	107	360	2.8	CH 4
6	2471.34	114.0	99.7	-14.3	PK	V	114	355	2.8	CH 4

AVERAGE PRODUCT EMISSIONS

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	comments
1	2412.74	94.0	89.4	-4.6	AVG	V	117	349	2.7	CH 1
2	2413.11	94.0	88.5	-5.5	AVG	H	152	360	2.7	CH 1
3	2450.73	94.0	89.2	-4.8	AVG	V	115	353	2.8	CH 3
4	2450.75	94.0	86.6	-7.4	AVG	H	108	6	2.8	CH 3
5	2469.86	94.0	85.5	-8.5	AVG	H	107	360	2.8	CH 4
6	2469.99	94.0	89.0	-5.0	AVG	V	114	355	2.8	CH 4

VTX2500 SPURIOUS EMISSIONS
WITHOUT CASE AND WITH PATCH ANTENNA
PEAK PRODUCT EMISSIONS

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	comments
1	4828.91	74.0	60.8	-13.2	PK	V	117	348	8.5	CH 1
2	4900.10	74.0	59.7	-14.3	PK	V	114	343	8.7	CH 3
3	4943.18	74.0	59.7	-14.3	PK	V	115	356	8.9	CH 4

AVERAGE PRODUCT EMISSIONS

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	comments
1	4828.54	54.0	46.8	-7.2	AVG	V	117	348	8.4	CH 1
2	4899.93	54.0	45.7	-8.3	AVG	V	114	343	8.7	CH 3
3	4937.86	54.0	46.2	-7.8	AVG	V	115	356	8.9	CH4

8. Miscellaneous Comments and Notes

1. The EUT was tested to 22 GHz. The engineering staff at the OET branch has indicated that a lack of any detectable emissions from 5 to 22 GHz is positive indication of no emissions from 22 to 24 GHz.

2. All modes of modulation were tested for worst-case emissions the "FCC composite" signal produced by the signal generator produces the highest average and peak signal.

3. The unit under test was tested both with the case on and the with the case off as the manufacturer plans to sell the unit as a certified OEM.