Intertek Testing Services
ETL SEMKO

FCC Part 15.247
Direct Sequence Test Report
for
Symbol Technologies
on the
WLAN PC Card
Model: LA-4131
FCC ID: H9PLA4131M

Test Report #: 2036369E2
Date of Report: May 25, 2001

Job #: J20036369E
Date of Test: April 1 to May 24, 2001

Total No of Pages Contained in this Report: 63 + Data Sheets

NVLAP Laboratory Code: 200201-0

all. for	Suresh Kondapalli, Test Engineer
David Chernomordik	David Chernomordik, Ph.D., EMC Site Manager

Review Date: 5/31/01

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Table of Contents

1.0 Summary of Tests

MODEL: Model: LA-4131
FCC ID: H9PLA4131M

TEST	REFERENCE	RESULTS
Output power	15.247(b)	Passed
6 dB Bandwidth	15.247(a)(2)	Passed
Power Density	15.247(d)	Passed
Out-of-band Antenna Conducted Emission	15.247(c)	Passed
Out-of-band Radiated Emission (except emissions in restricted bands)	15.247(c)	Not Applicable. The EUT passed out-of-band antenna conducted emission
Radiated Emission in Restricted Bands	15.35(b)(c)	Passed
AC Line-conducted Emission	15.207	Passed
Radiated Emission from Digital Part	15.109	Passed, see separate DoC report
Radiated Emission from Receiver L.O.	15.109	Not Applicable. The operating frequency is above 960 MHz
Processing Gain	15.247(e)	Passed, see exhibit "Processing Gain"
RF Exposure Requirement	2.1091	Passed, see exhibit "RF Exposure"
Antenna Requirement	15.203	Passed

Test Engineer: _____ Date: 05/31/01
Suresh Kondapalli

EMC Site Manager: David Chernomordik Date: 5/31/01
David Chernomordik, Ph.D.
EMC Site Manager

2.0 General Description

2.1 Product Description

The Symbol Technologies model LA-4131 is a 2.4 GHz Direct Sequence Spread Spectrum radio in the form of a PC Card that is used for wireless communication form a LAN to remote wireless devices.

This device is used in a mobile configuration of fixed mounted antennas that are typically wall, ceiling, or mast mounted and more than 2 m from personnel. Antennas are mounted in pairs for diversity. The highest gain of each of the five types used was tested.

Overview of WLAN PC Card
Model: LA-4131

Applicant	Symbol Technologies
Trade Name & Model No.	Symbol Technologies, LA-4131
FCC Identifier	H9PLA4131
Use of Product	Wireless LAN communications
Manufacturer & Model of Spread Spectrum Module	Symbol Technologies
Type of Transmission	Direct Sequence Spread Spectrum
Rated RF Output	60 mW
Frequency Range	2412 - 2462
Number of Channel(s)	11
Antenna(s) & Gain,	See below
Antenna Requirement	[ ] The EUT uses a permanently connected antenna. [x] The antenna is affixed to the EUT using a unique connector which allows for replacement of a broken antenna, but DOES NOT use a standard antenna jack or electrical connector. [ ] The EUT requires professional installation (attach supporting documentation if using this option).
Manufacturer name & address	Symbol Technologies 6480 Via Del Oro San Jose, CA 95119-1208

Ant. No	Model	Symbol P/N	Type	Gain, dBi	Cable Loss, dB	Net Gain, dBi
01	Ceiling Panel	50-21900-015	Plane	3.3	1.50	1.8
02	Panel 7.5	ML-2499-PNA1-01	Panel	11.0	3.48	7.5
03	Panel 9	50-21900-047	Patch	13.0	3.53	9.5
04	Pipe Bomb 11"x4'	50-11901-048P	Dipole Array	5.2	1.00	4.2
05	Yagi	ML-2499-YGA1-00	Yagi	13.9	2.50	11.4

2.2 Related Submittal(s) Grants

None.

2.3 Test Methodology

Radiated emissions measurements were performed according to the procedures in ANSI C63.4 (1992). Radiated tests were performed at an antenna to LA-4131 distance of 3 meters, unless stated otherwise in the **"Data Sheet"** of this Application. All other measurements were made in accordance with the procedures in part 2 of CFR 47.

2.4 Test Facility

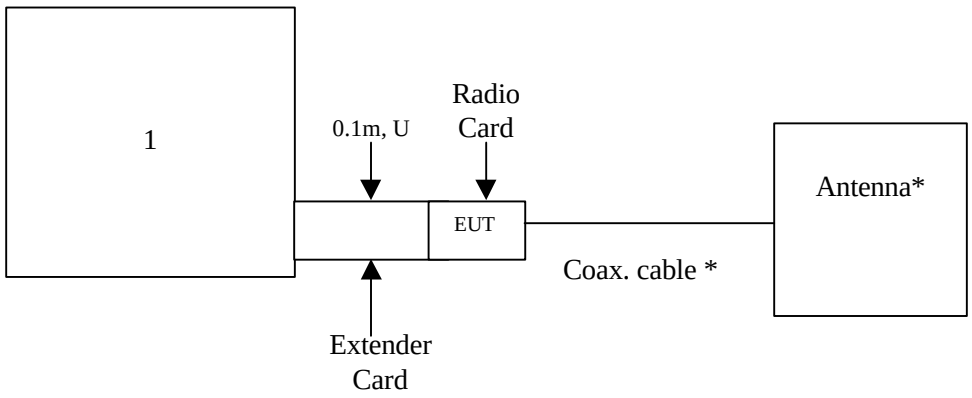
The open area test site and conducted measurement facility used to collect the radiated data is site 2 located in Menlo Park, California. This test facility and site measurement data have been fully placed on file with the FCC.

3.0 System Test Configuration

3.1 Support Equipment and description

Item #	Description	Model No.	Serial No.	FCC ID
1	Compaq Laptop	Armada	3882B400	N/A

3.2 Block Diagram of Test Setup



* For the list of antennas and cables, see sec.2.1.

m: Length in meters
U: Unshielded
S: Shielded

3.3 Justification

For radiated emission measurements the LA-4131 is placed on the wooden turntable. The LA-4131 is attached to peripherals and they are connected and operational (as typical as possible). The LA-4131 is wired to transmit full power. During testing, all cables were manipulated to produce worst case emissions.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. All readings are extrapolated back to the equivalent three-meter reading using inverse scaling with distance.

3.4 Software Exercise Program

The LA-4131 exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

3.5 Mode of Operation during Test

For emissions testing, the units were setup to transmit continuously at the low, middle, and high frequencies.

3.6 Modifications Required for Compliance

No modifications were installed by Intertek Testing Services during compliance testing in order to bring the product into compliance (Please note that this does not include changes made specifically by Symbol Technologies prior to compliance testing).

4.0 Measurement Results

4.1 Conducted Output Power at Antenna Terminals
FCC Rules 15.247(b):

Requirements

For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm).
For antennas with gains greater than 6 dBi, transmitter output level must be decreased by an amount equal to (GAIN - 6) dBm.

Procedure

The antenna port of the LA-4131 was connected to the input of a power meter. Power was read directly and cable loss correction was added to the reading to obtain power at the LA-4131 antenna terminal.

Test Results

Frequency (MHz)	Output in dBm	Output in mWatt
2412	17.8	60
2437	16.0	40
2462	16.3	43

The maximum EIRP (with antenna gain 12.5 dBi) is 30.3 dBm.

4.2 6 dB RF Bandwidth
FCC Rule 15.247(a)(2):

Requirements

The minimum 6 dB bandwidth shall be at least 500 kHz

Procedure

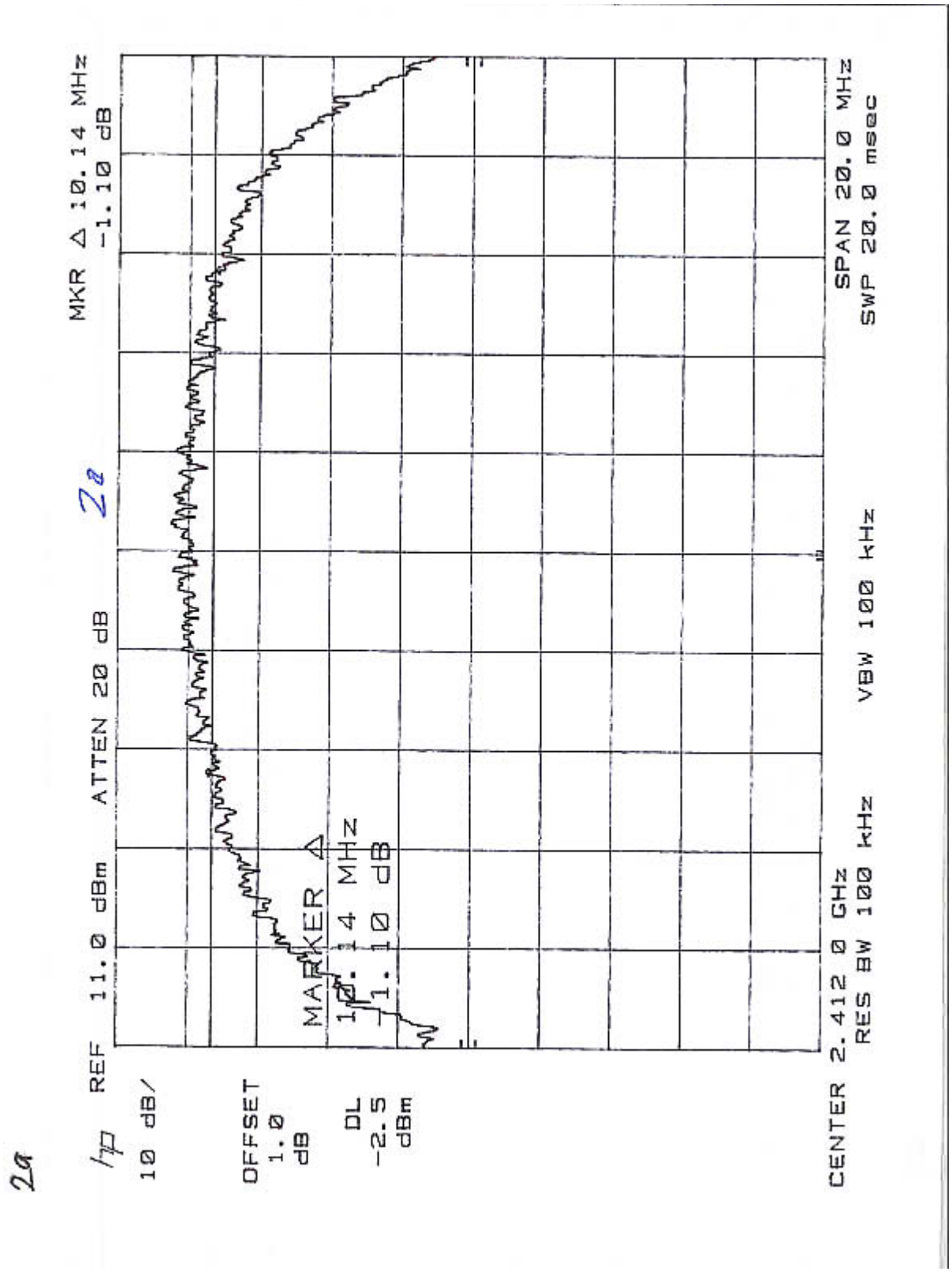
The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 6 dB lower than PEAK level. The 6 dB bandwidth was determined from where the channel output spectrum intersected the display line.

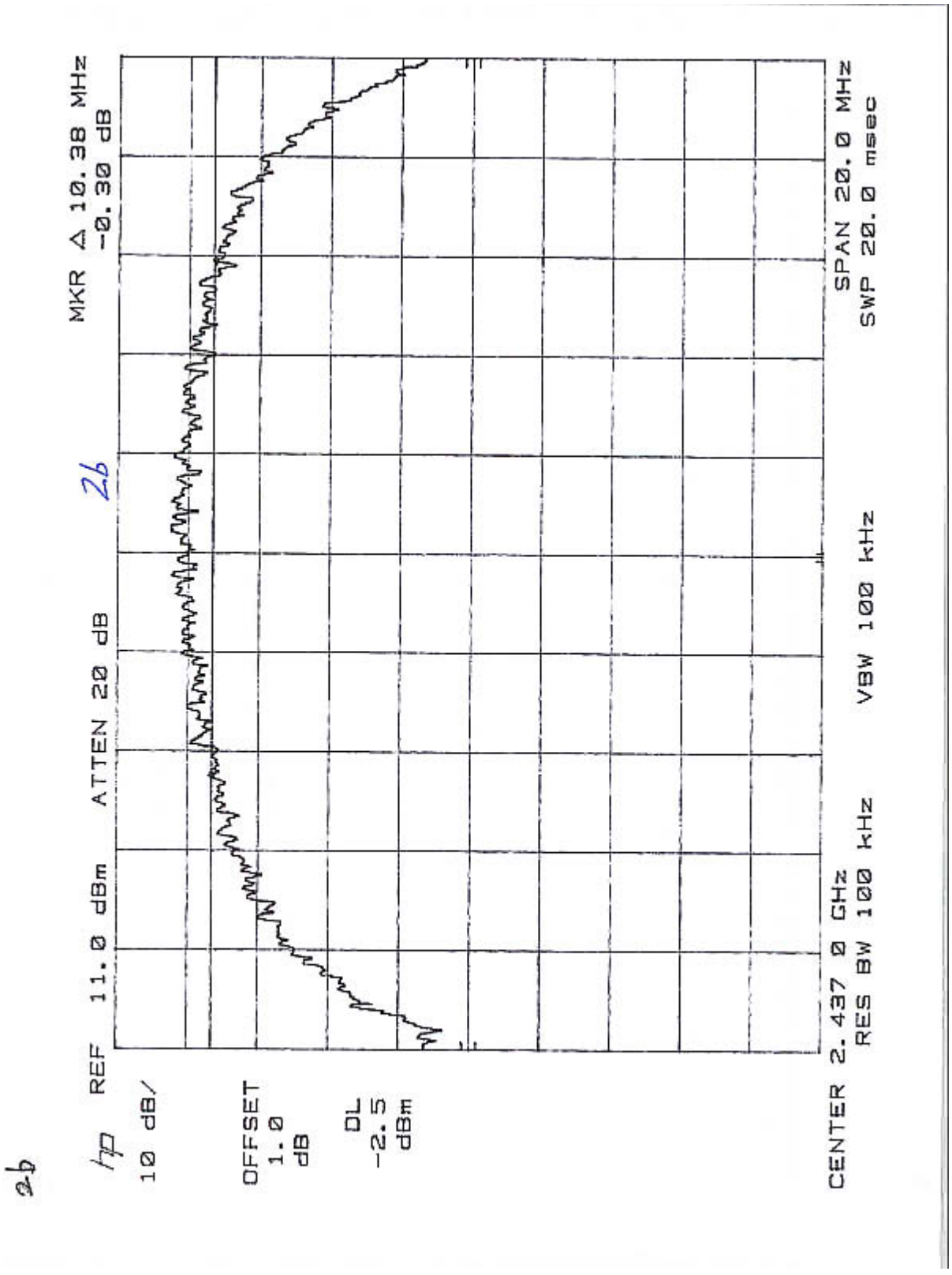
Test Result

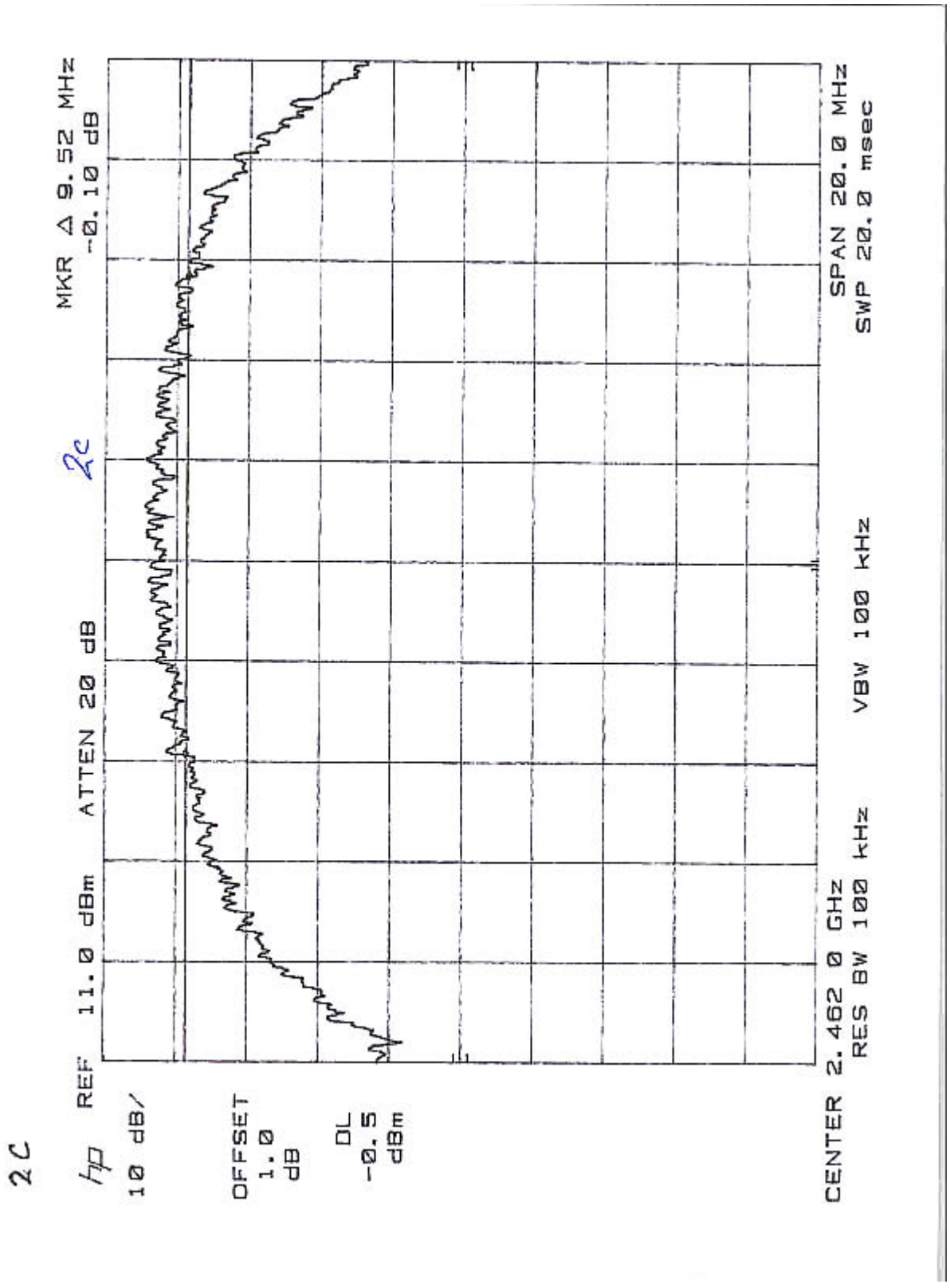
Frequency (MHz)	6 dB Bandwidth
2412	10.14 MHz
2437	10.38 MHz
2462	9.52 MHz

Refer to the following plots for 6 dB bandwidth:

Plot 2a: Low Channel 6 dB RF Bandwidth
Plot 2b: Middle Channel 6 dB RF Bandwidth
Plot 2c: High Channel 6 dB RF Bandwidth


MKR Δ 10.14 MHz
-1.10 dB
2a
REF 11.0 dBm
10 dB/
ATTEN 20 dB
OFFSET
1.0
dB
DL
-2.5
dBm
MARKER Δ
10.14 MHz
-1.10 dB
CENTER 2.412 0 GHz
RES BW 100 kHz
VBW 100 kHz
SPAN 20.0 MHz
SWP 20.0 msec
2a


MKR Δ 10.38 MHz
-0.30 dB
SPAN 20.0 MHz
SWP 20.0 msec
2b
REF 11.0 dBm
ATTEN 20 dB
VBW 100 kHz
10 dB/
OFFSET
1.0
dB
DL
-2.5
dBm
CENTER 2.437 0 GHz
RES BW 100 kHz
2b


2C
hp
REF 11.0 dBm
10 dB/
ATTEN 20 dB
OFFSET
1.0
dB
DL
-0.5
dBm
MKR Δ 9.52 MHz
-0.10 dB
2c
CENTER 2.462 0 GHz
RES BW 100 kHz
VBW 100 kHz
SPAN 20.0 MHz
SWP 20.0 msec

4.3 Power Density
FCC Rule 15.247(d):

Requirements

The peak power spectral density shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Procedure

The spectrum analyzer RES BW was set to 3 kHz. The START and STOP frequencies were set to the band edges of the maximum output passband. If there is no clear maximum amplitude in any given portion of the band, it may be necessary to make measurements at a number of bands defined by several START and STOP frequency pairs. Total SWEEP TIME is calculated as follows:

SWEEP TIME (SEC) = (Fstop, kHz - Fstart, kHz)/3 kHz

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

Test Result

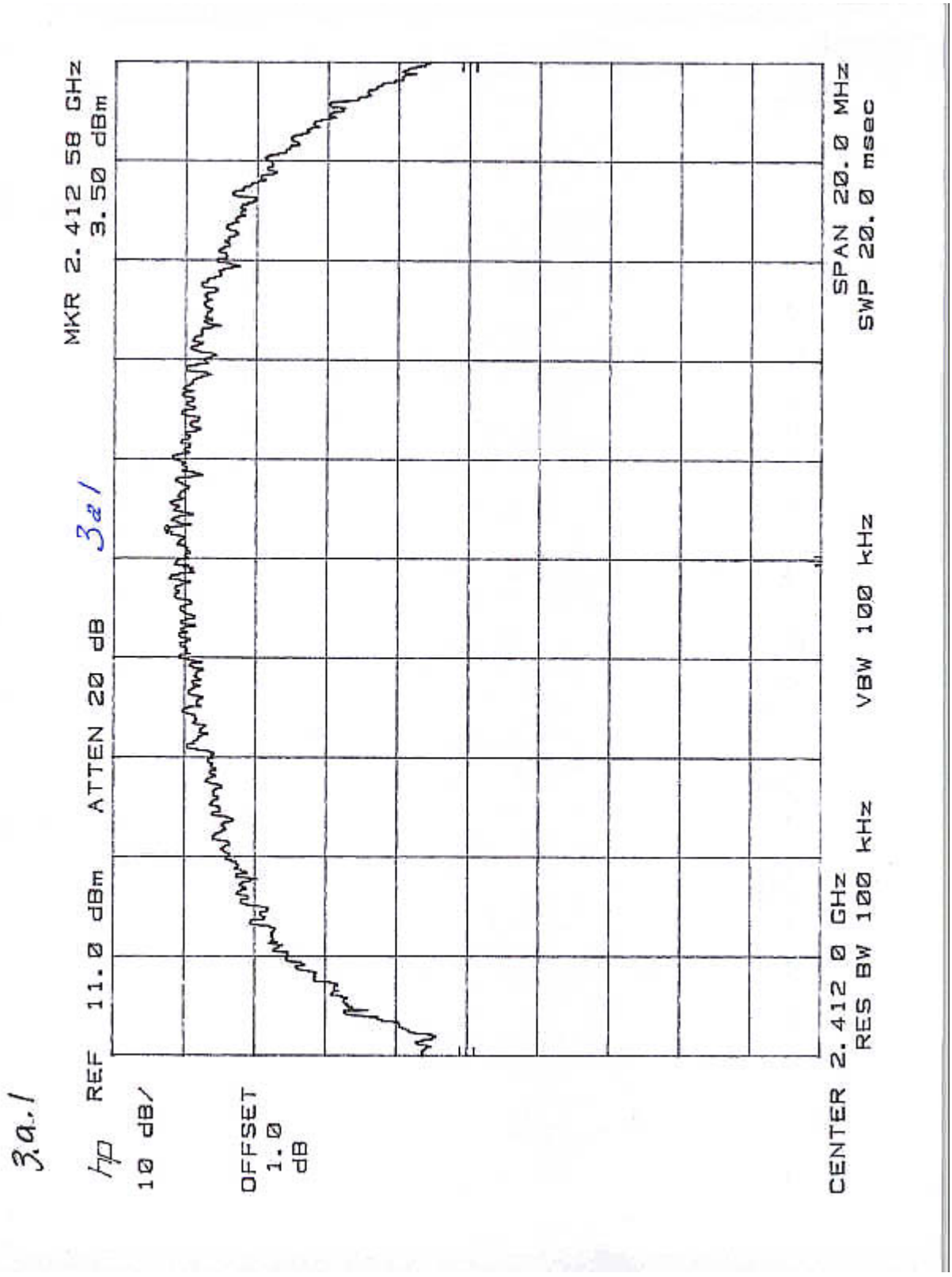
Frequency (MHz)	Power Density (dBm)
2412	-9.6

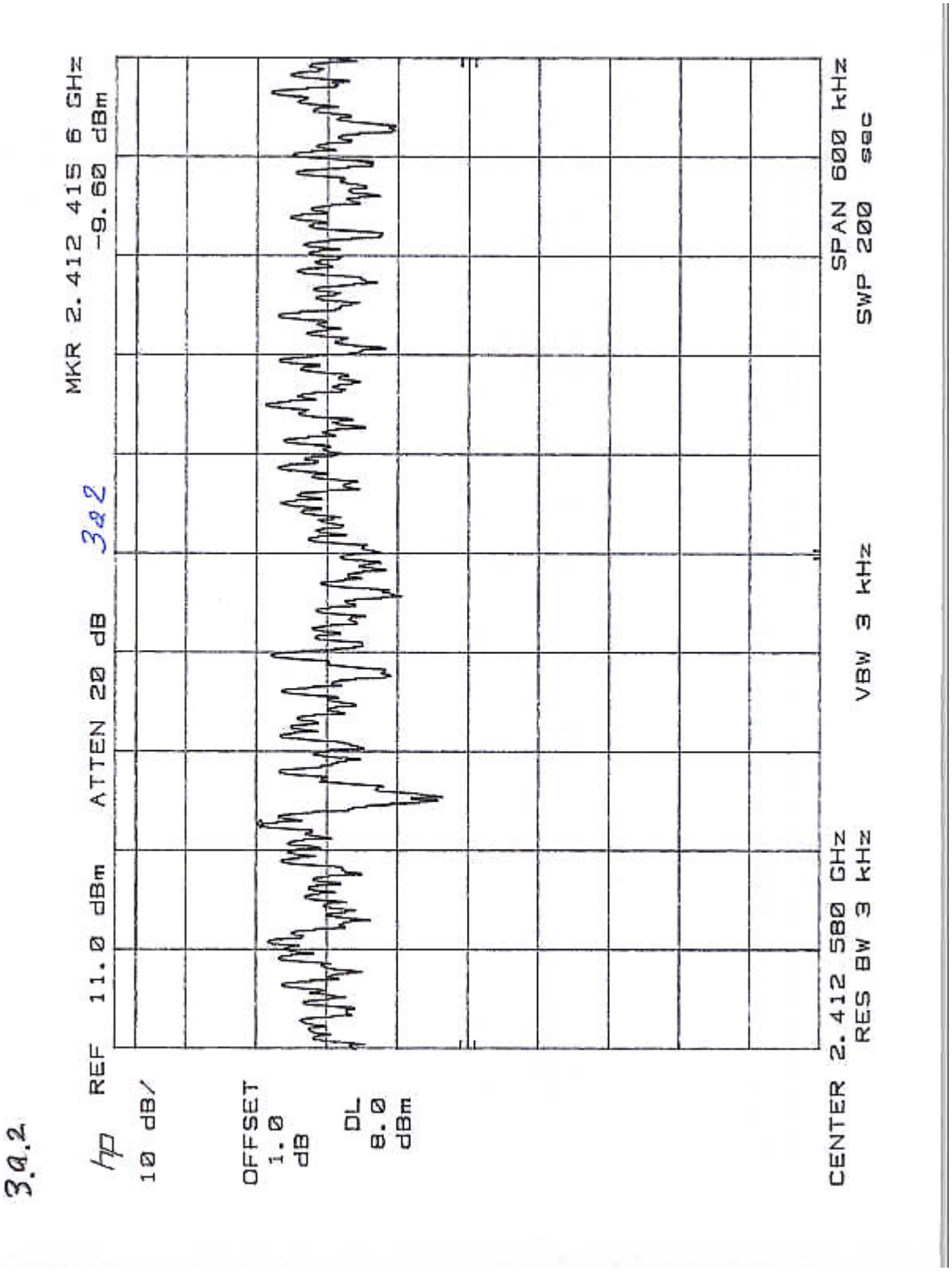
Frequency Span = 600 kHz

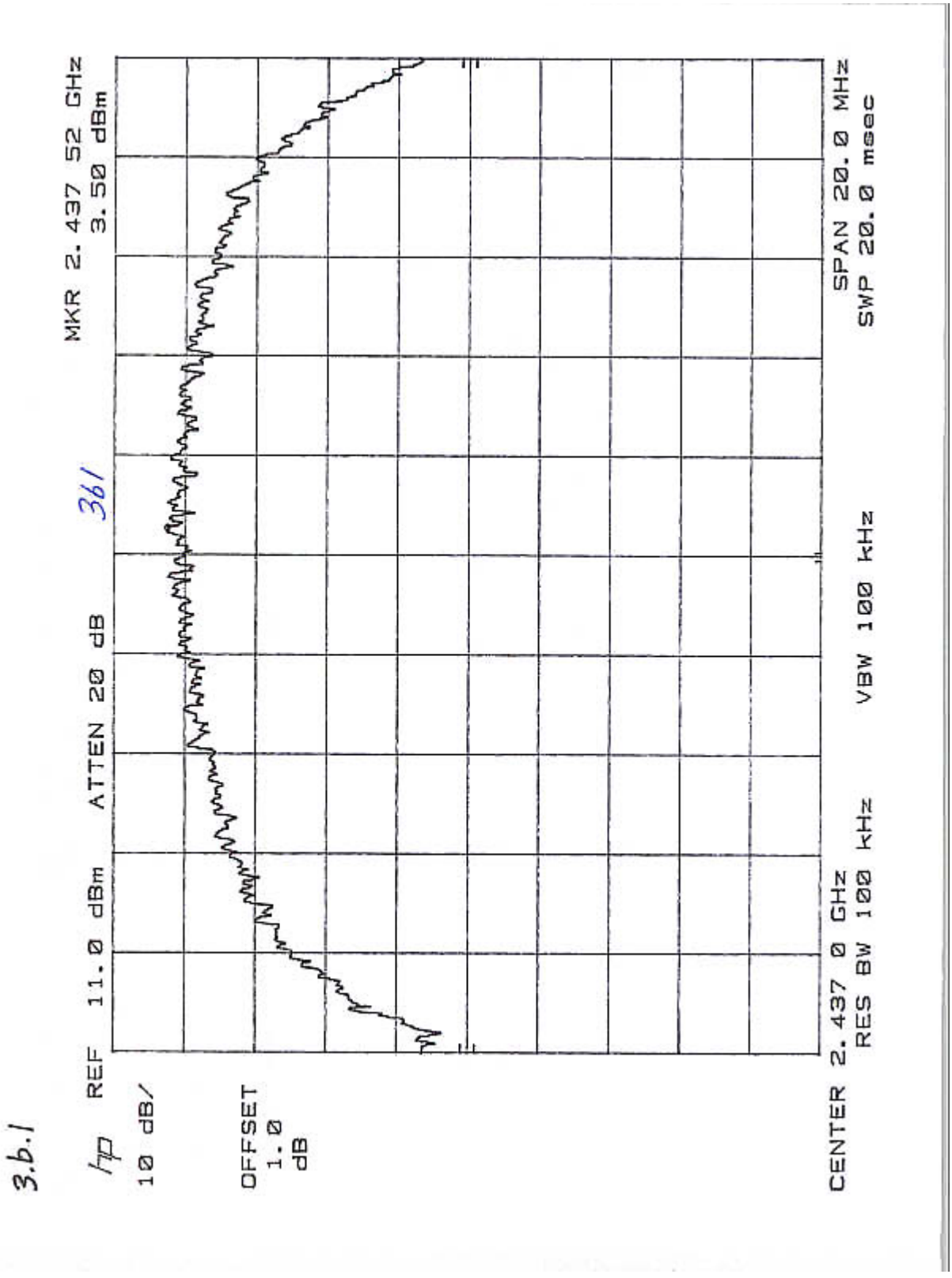
Sweep Time = Frequency Span/3 kHz
= 200 Seconds

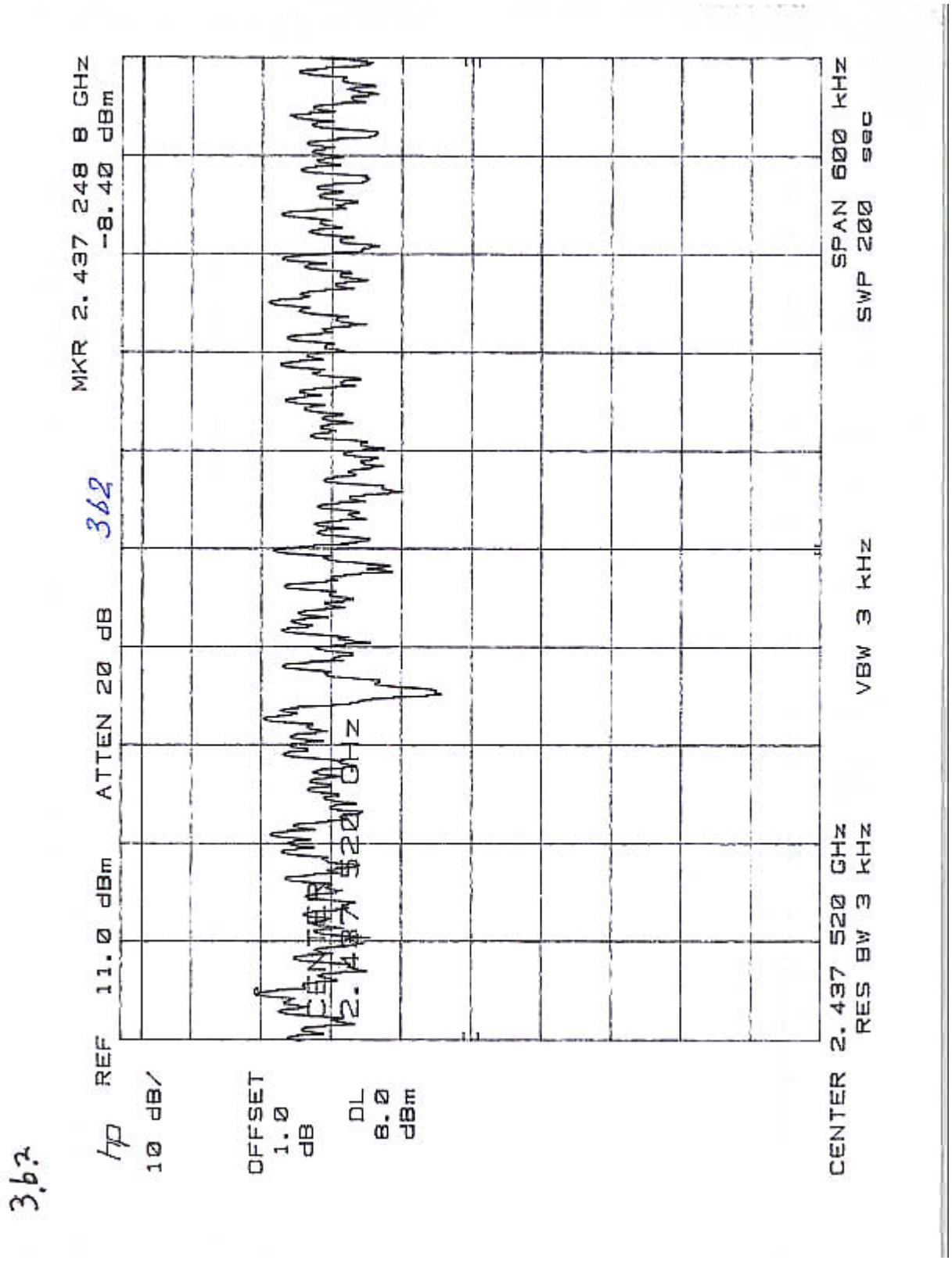
Refer to the following plots for power density data:

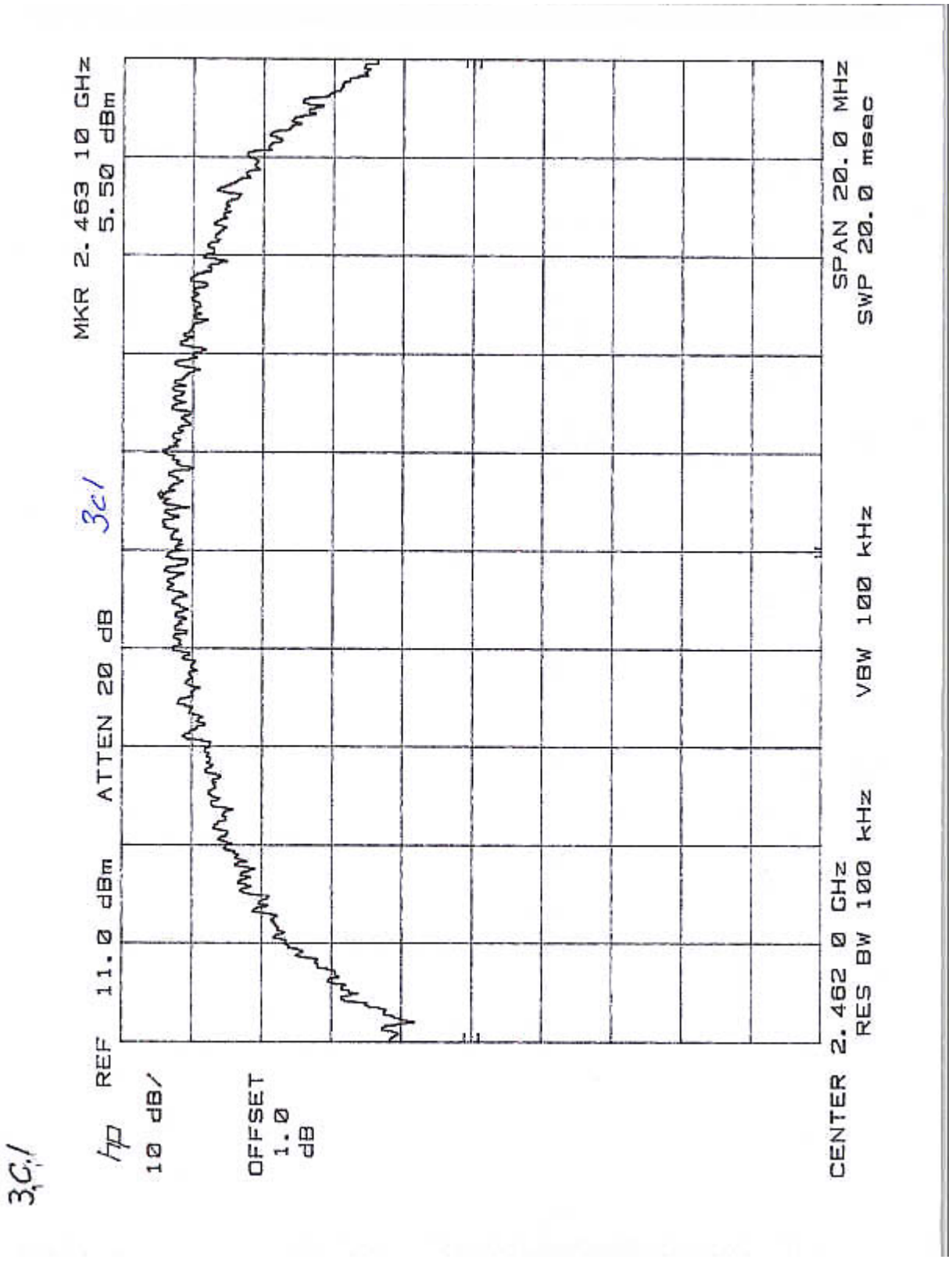
Plot 3a1 – 3a2: Low Channel Power Density
Plot 3b1 – 3b2: Middle Channel Power Density
Plot 3c1 – 3c2: High Channel Power Density

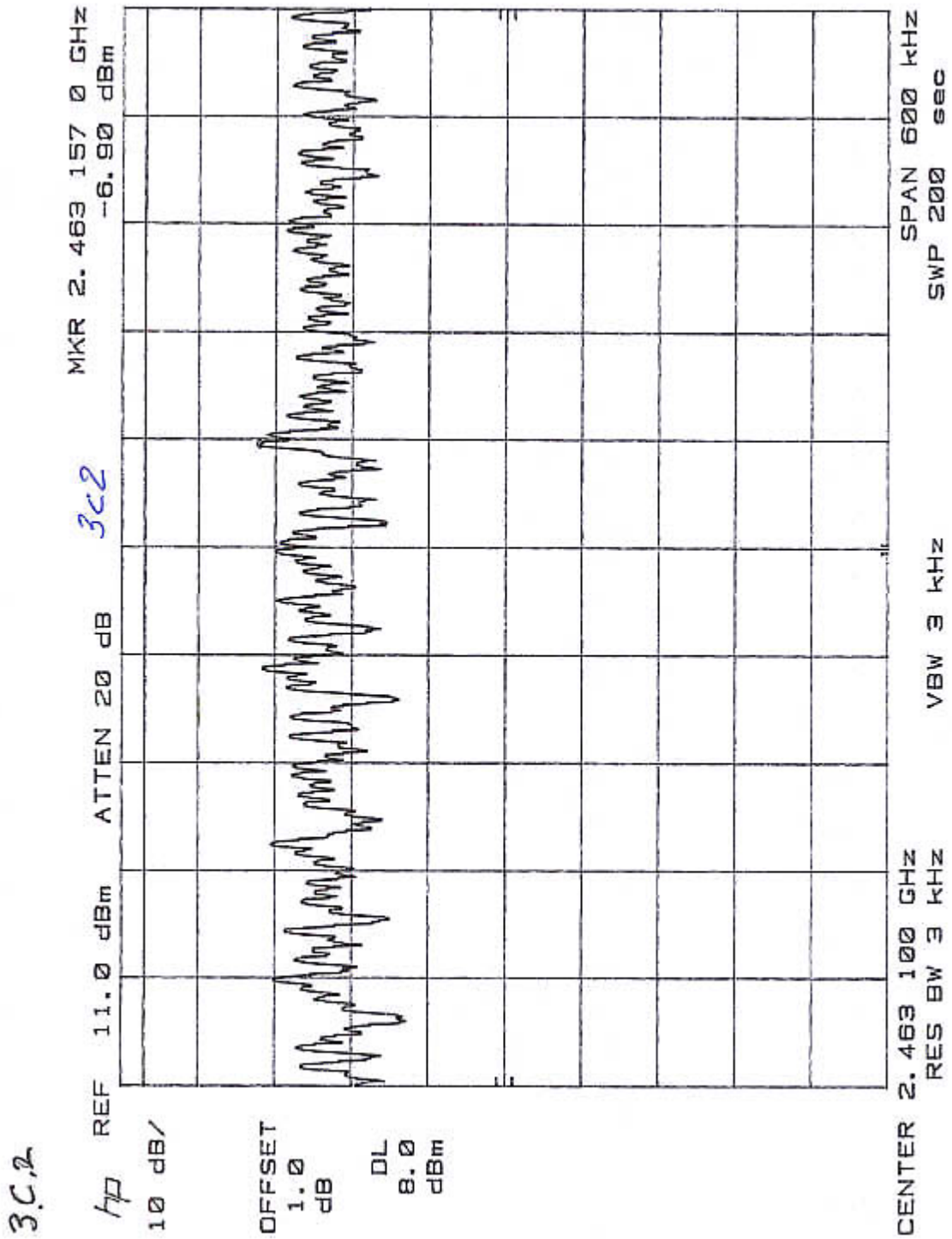

MKR 2.412 58 GHz
3.50 dBm
3a/
SPAN 20.0 MHz
SWP 20.0 msec
REF 11.0 dBm
ATTEN 20 dB
VBW 100 kHz
10 dB/
OFFSET
1.0
dB
CENTER 2.412 0 GHz
RES BW 100 kHz
3a.1


3.4.2
hp
REF 11.0 dBm
10 dB/
ATTEN 20 dB
3&2
OFFSET
1.0
dB
DL
8.0
dBm
MKR 2.412 415 6 GHz
-9.60 dBm
CENTER 2.412 580 GHz
RES BW 3 kHz
VBW 3 kHz
SPAN 600 kHz
SWP 200 sec


MKR 2.437 52 GHz
3.50 dBm
SPAN 20.0 MHz
SWP 20.0 msec
361
REF 11.0 dBm
ATTEN 20 dB
VBW 100 kHz
10 dB/
OFFSET
1.0
dB
CENTER 2.437 0 GHz
RES BW 100 kHz
3.b.1


MKR 2.437 248 8 GHz
-8.40 dBm
362
SPAN 600 kHz
SWP 200 sec
hp REF 11.0 dBm ATTEN 20 dB
10 dB/
OFFSET
1.0
dB
DL
8.0
dBm
CENTER 2.437 520 GHz
RES BW 3 kHz
VBW 3 kHz
3.b.2.


MKR 2.463 10 GHz
5.50 dBm
3c1
SPAN 20.0 MHz
SWP 20.0 msec
REF 11.0 dBm
ATTEN 20 dB
VBW 100 kHz
hp
10 dB/
OFFSET
1.0
dB
CENTER 2.462 0 GHz
RES BW 100 kHz
3C.1


3.C.2
hp
REF 11.0 dBm
10 dB/
ATTEN 20 dB
OFFSET
1.0
dB
DL
8.0
dBm
3c2
MKR 2.463 157 0 GHz
-6.90 dBm
CENTER 2.463 100 GHz
RES BW 3 kHz
VBW 3 kHz
SPAN 600 kHz
SWP 200 sec

4.4 Out-of-Band Conducted Emissions
FCC Rule 15.247(c):

Requirements

In any 100 kHz bandwidth outside the EUT passband, the RF power shall be at least 20 dB below that of the maximum in-band 100 kHz emission.

Test Result

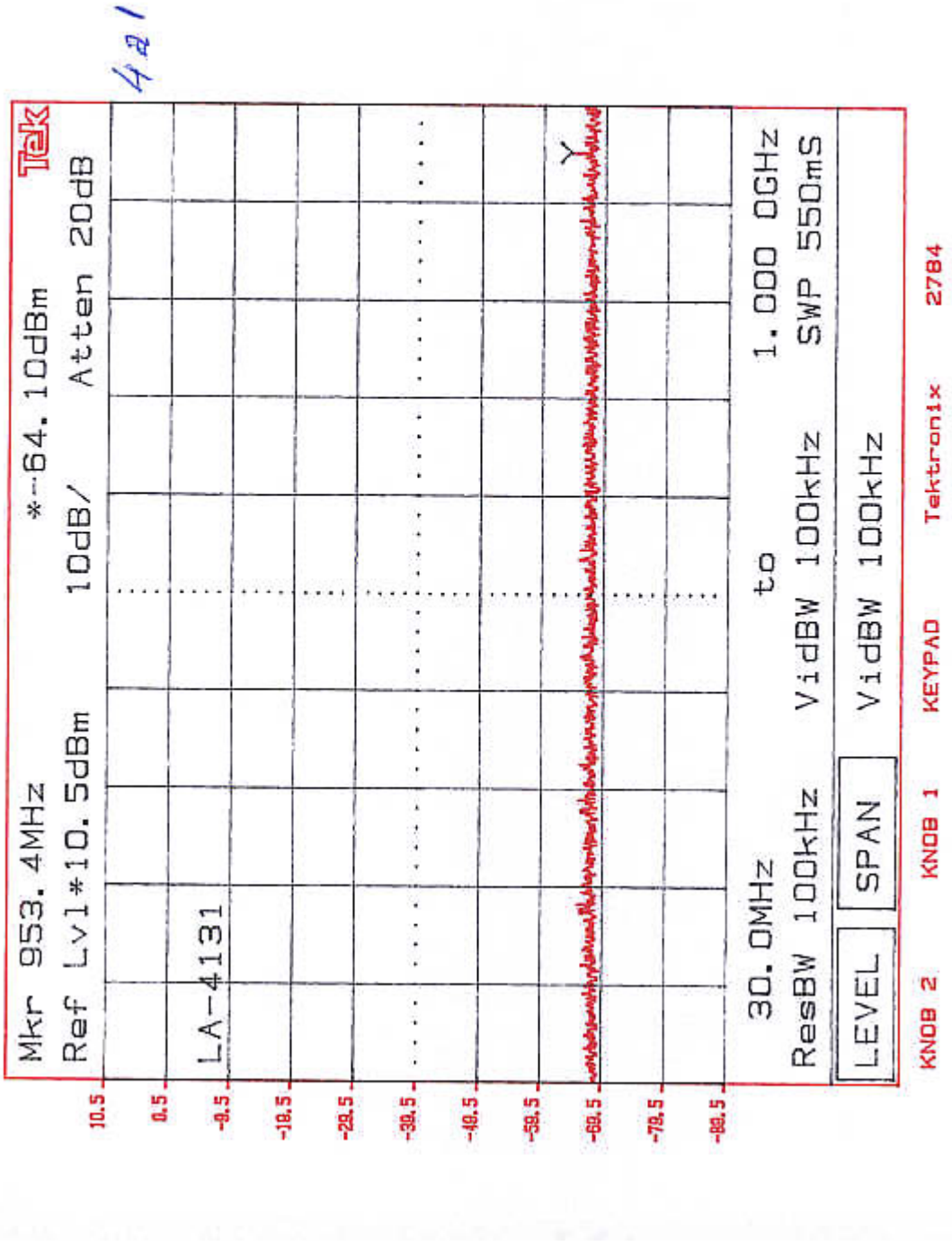
Refer to the following plots for out of band conducted emissions data:

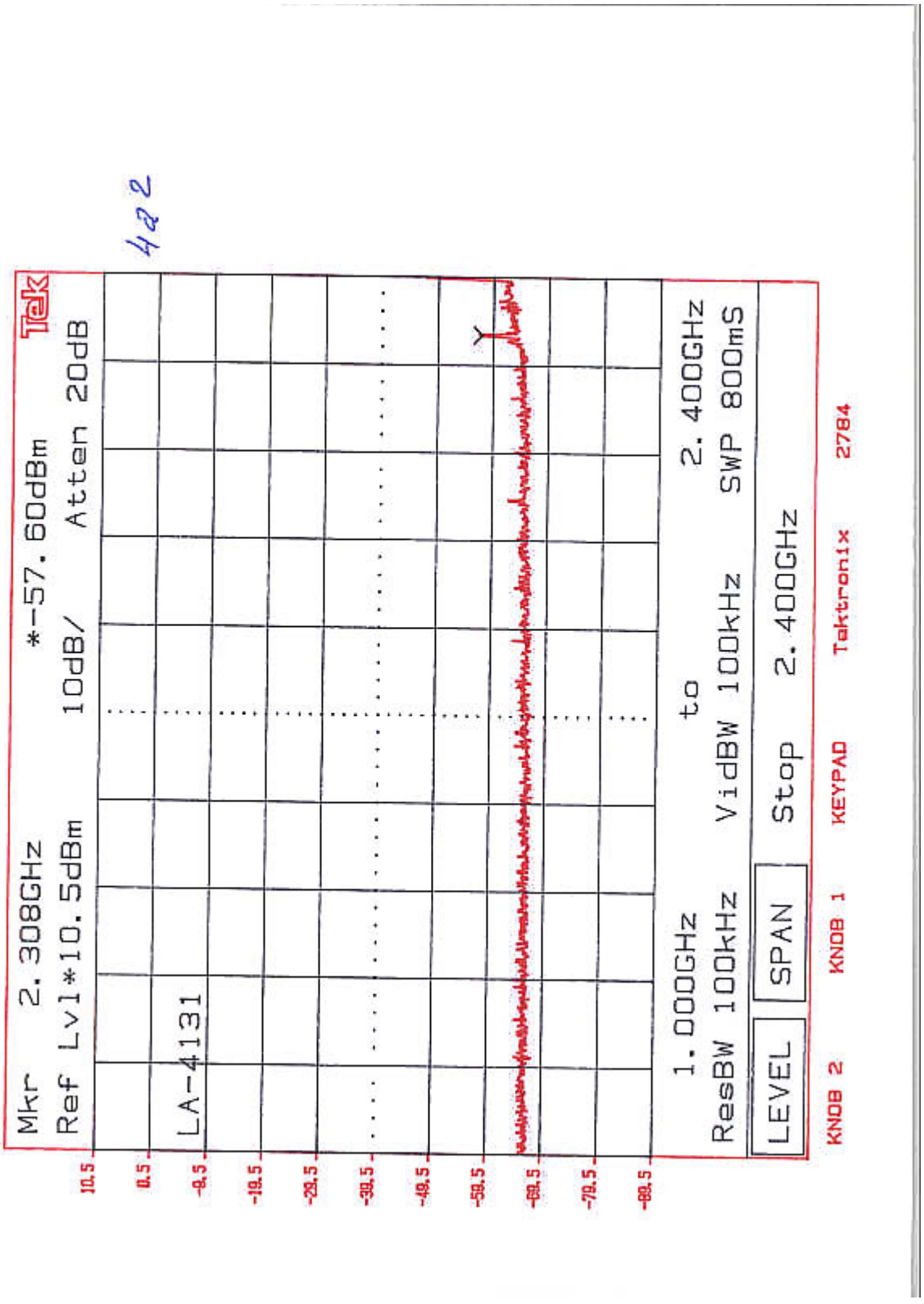
Plot 4a1 - 4a5: Low Channel Emissions
Plot 4b1 - 4b5: Middle Channel Emissions
Plot 4c1 - 4c5: High Channel Emissions

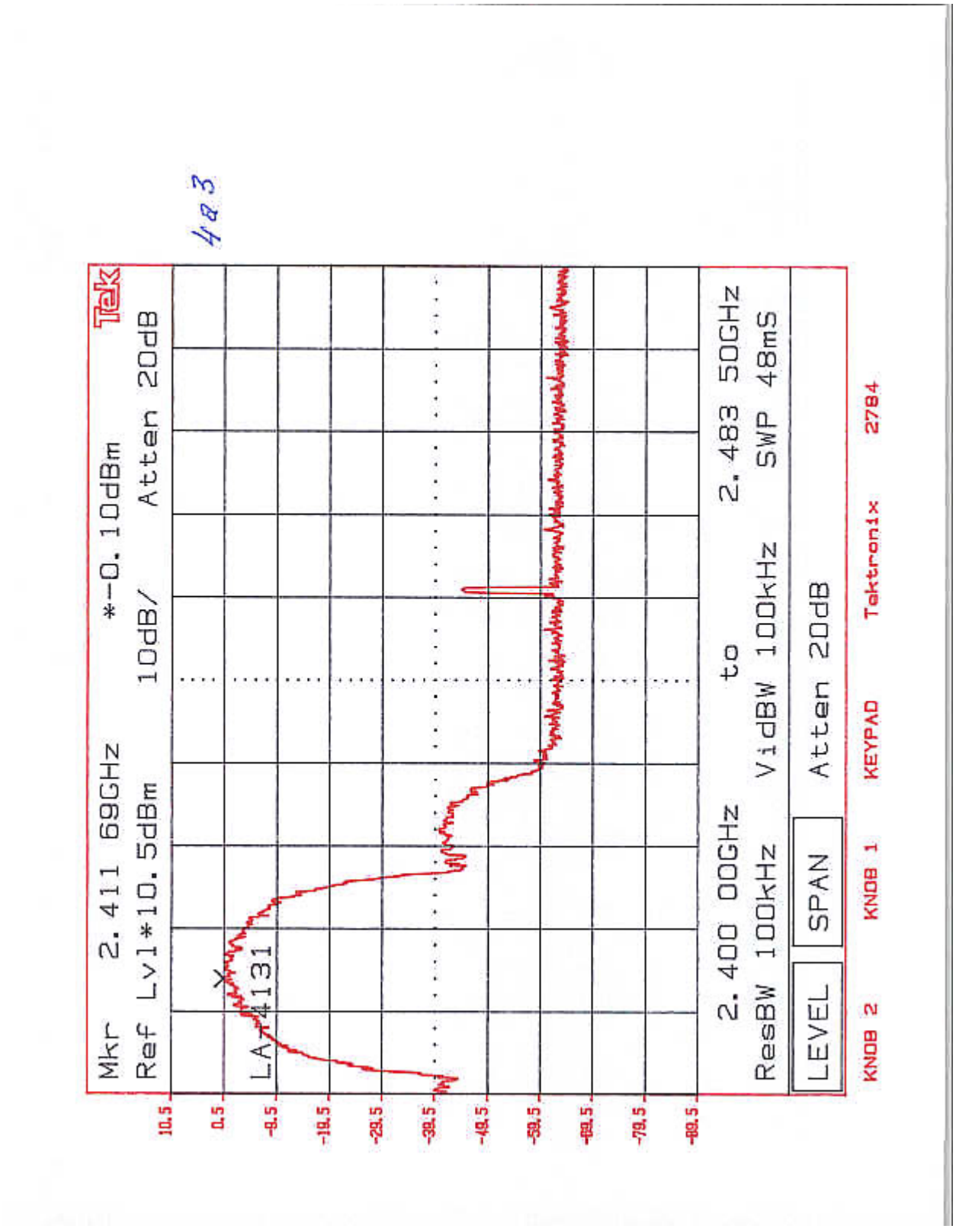
4.5 Out-of-Band Radiated Emissions
FCC Rule 15.247(c):

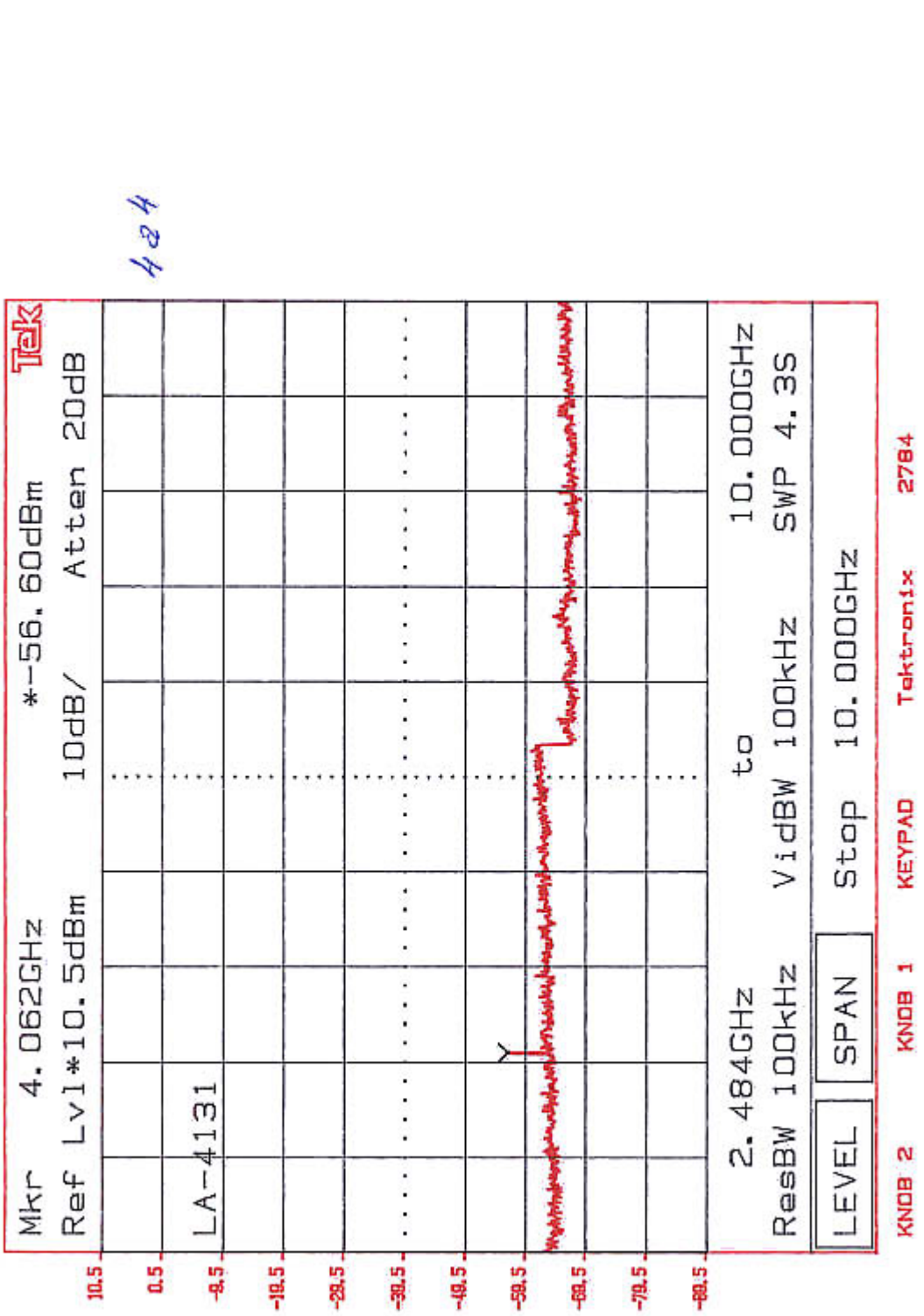
For out-of-band emissions that are close to or less than the 20 dB attenuation requirement described in the section 4.4, radiated measurements were performed at a 3 m separation distance to determine whether these emissions complied with the 20 dB attenuation.

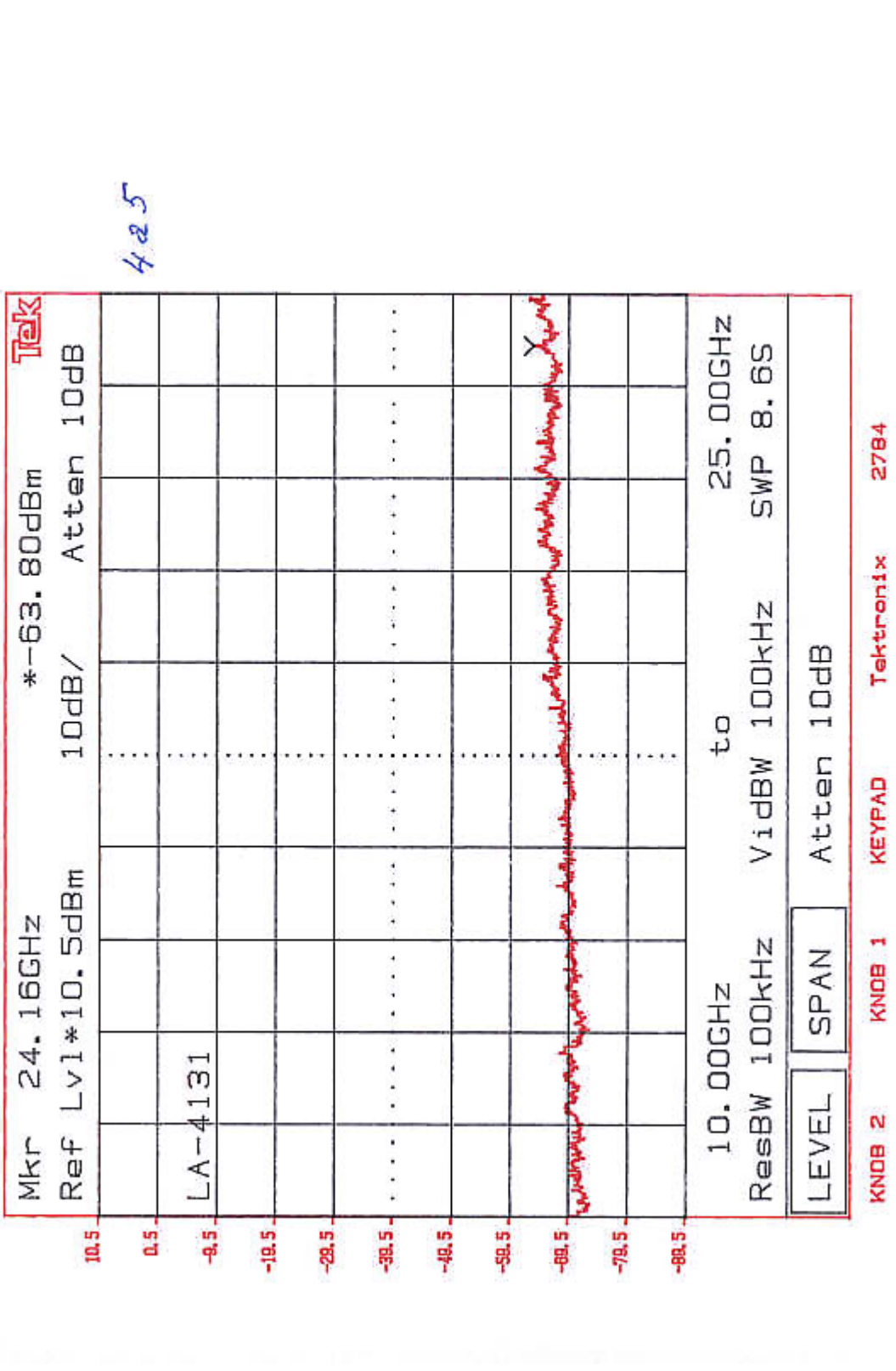
Not required, all conducted emissions more than 20 dB below fundamental.

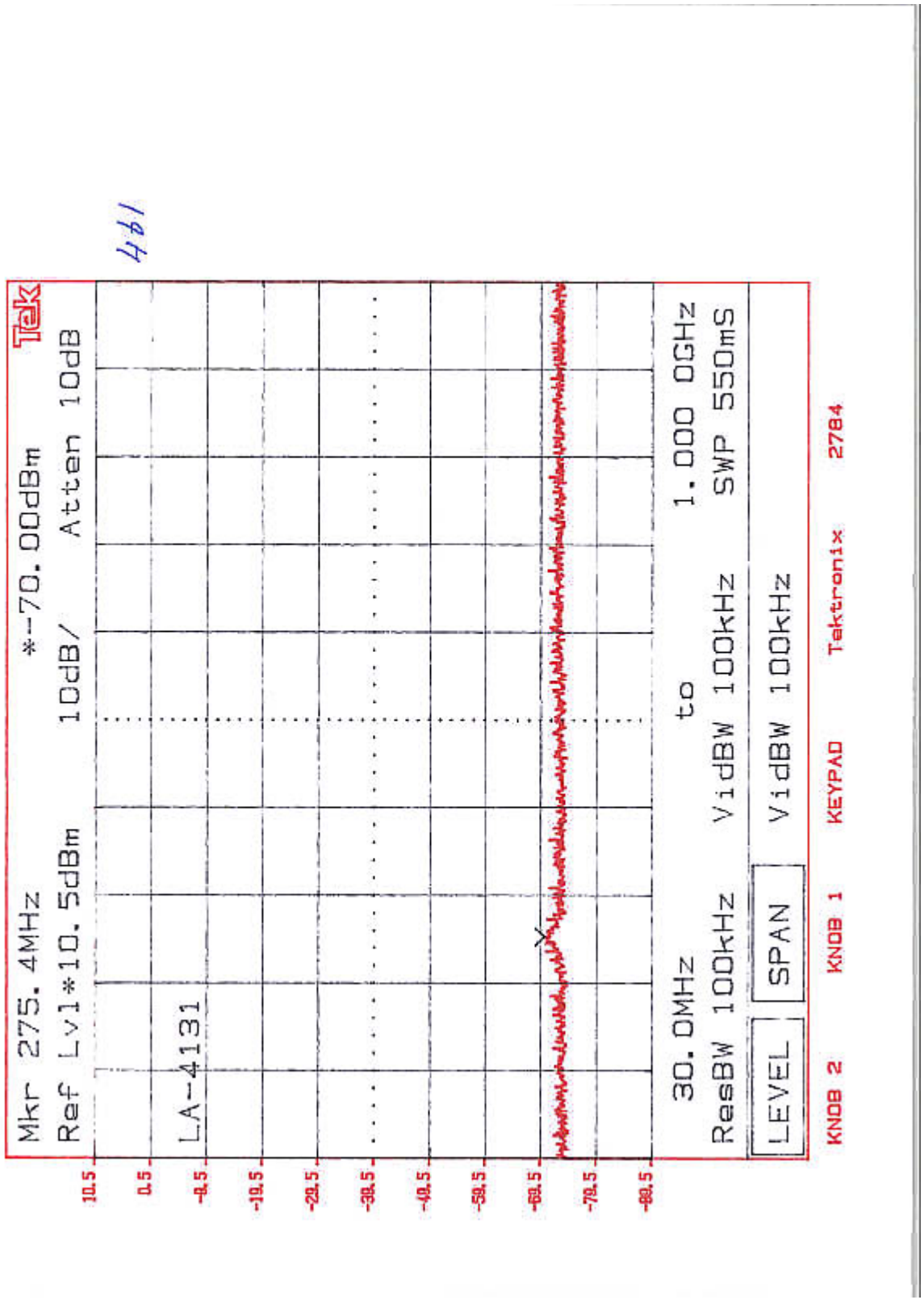

Mkr 953.4MHz
*-64.10dBm
Ref Lvl*10.5dBm
10dB/
Atten 20dB
LA-4131
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5
30.0MHz
to
1.000 0GHz
ResBW 100kHz
VidBW 100kHz
SWP 550mS
LEVEL
SPAN
VidBW 100kHz
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784

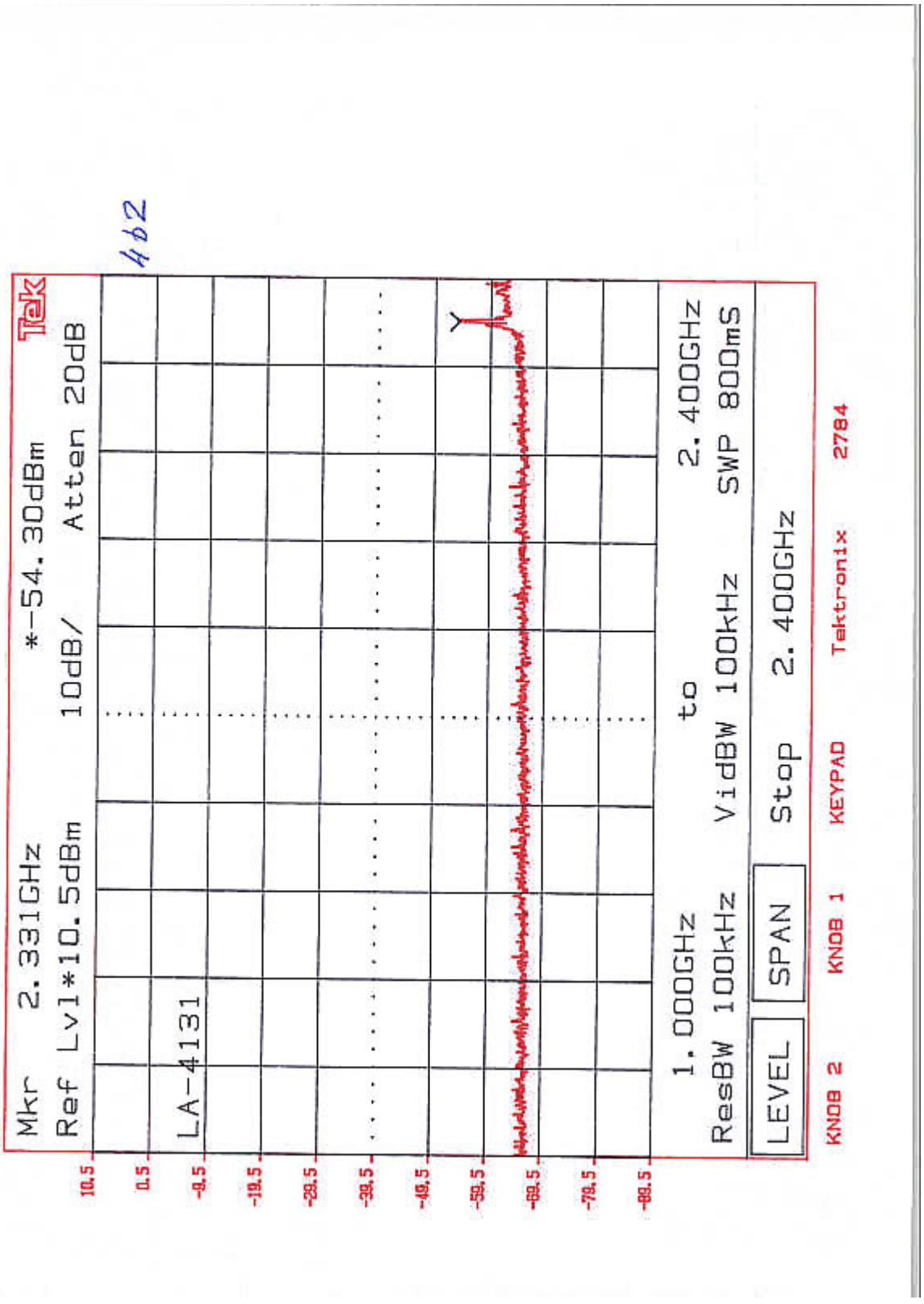

422
Tek
Mkr 2.308GHz
Ref Lvl*10.5dBm
*-57.60dBm
10dB/
Atten 20dB
LA-4131
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5
1.000GHz
ResBW 100kHz
to
2.400GHz
VidBW 100kHz
SWP 800mS
LEVEL
SPAN
Stop 2.400GHz
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784

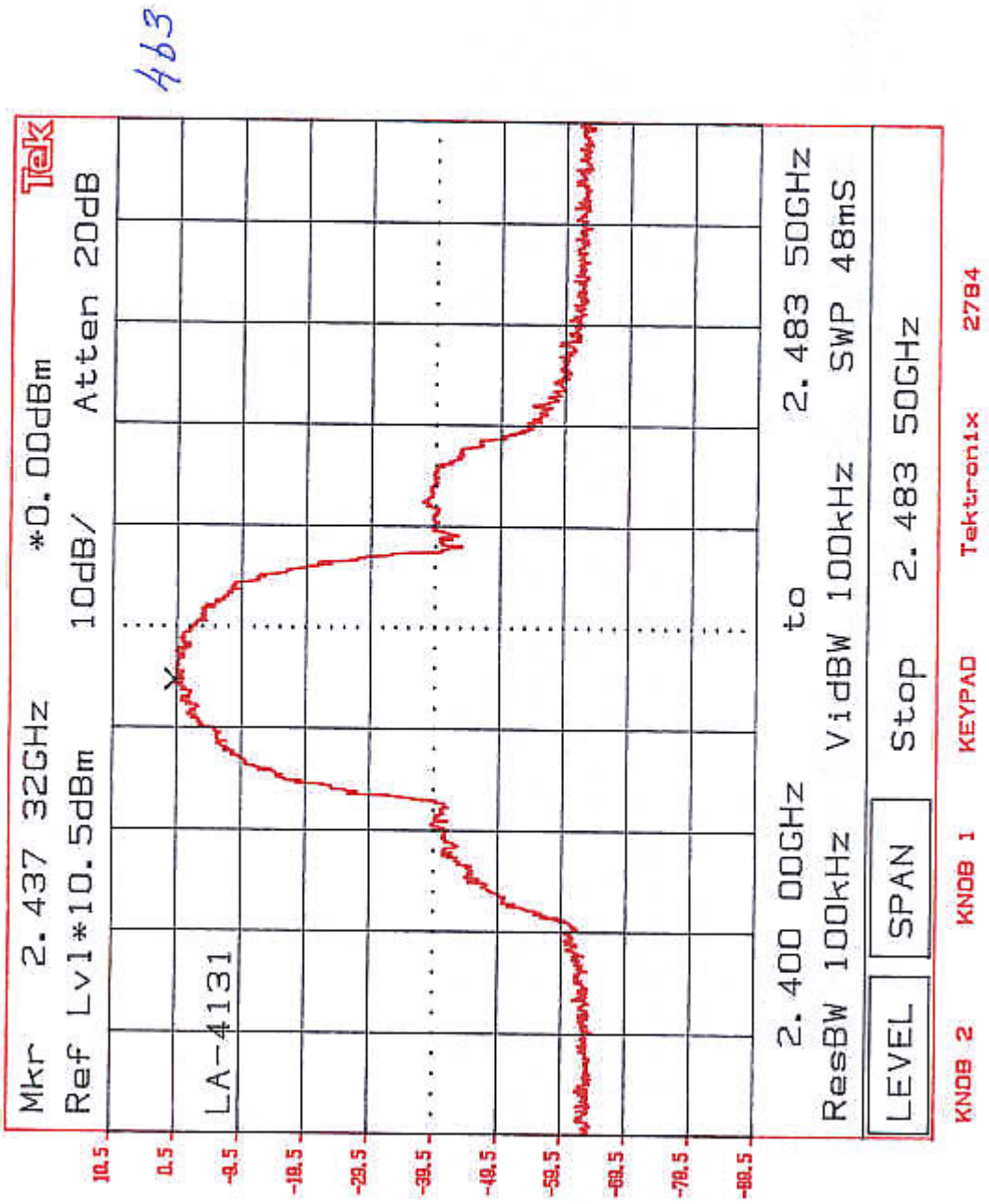

4 of 3
Tek
Mkr 2.411 69GHz
Ref Lvl*10.5dBm
*-0.10dBm
10dB/
Atten 20dB
LA-4131
X
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5
2.400 00GHz
ResBW 100kHz
to
2.483 50GHz
VidBW 100kHz
SWP 48mS
LEVEL
SPAN
Atten 20dB
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784

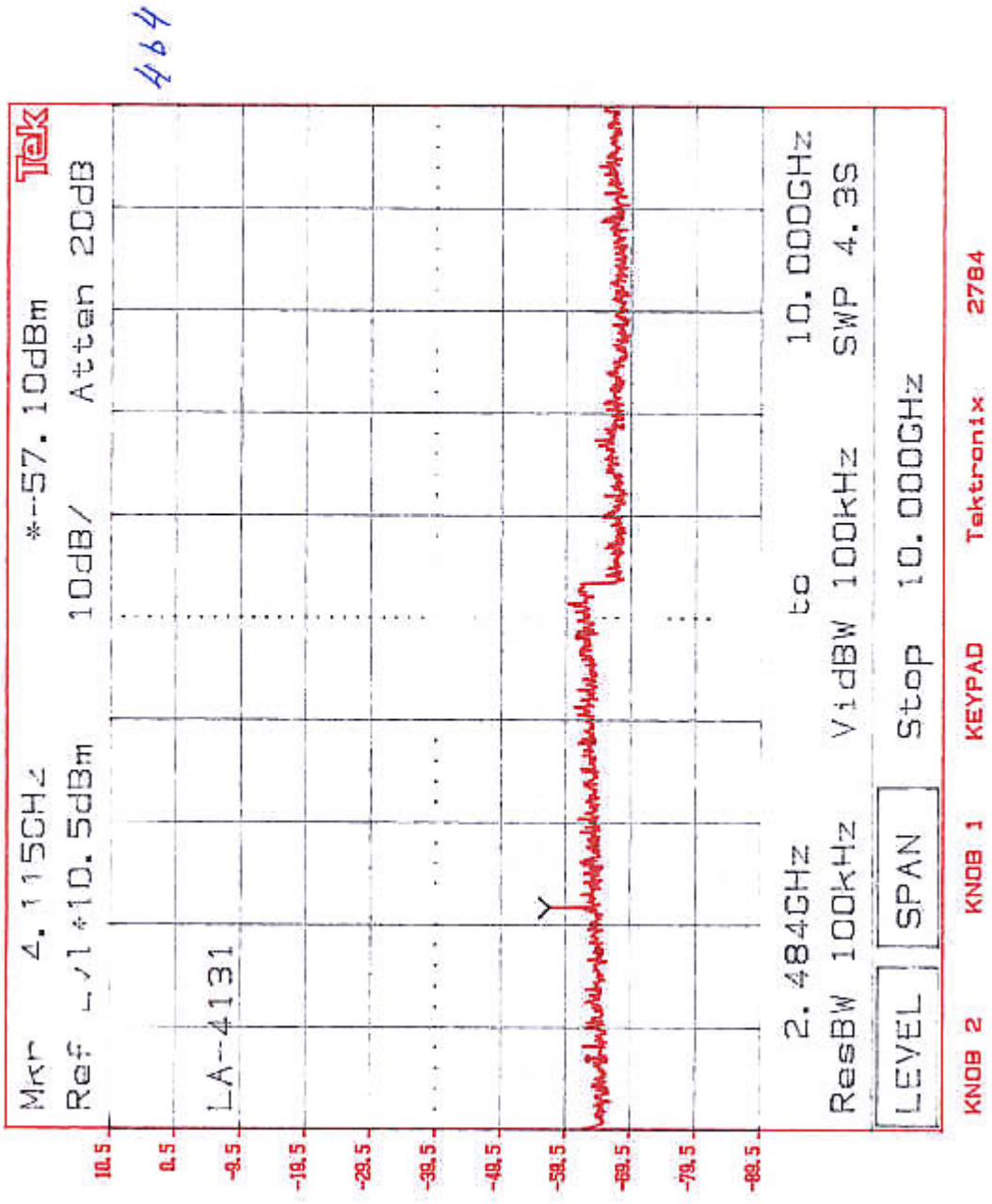

4 of 4
Tek
Mkr 4.062GHz
*-56.60dBm
Ref Lvl*10.5dBm
10dB/
Atten 20dB
LA-4131
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5
2.484GHz
to
10.000GHz
ResBW 100kHz
VidBW 100kHz
SWP 4.3S
LEVEL
SPAN
Stop 10.000GHz
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784

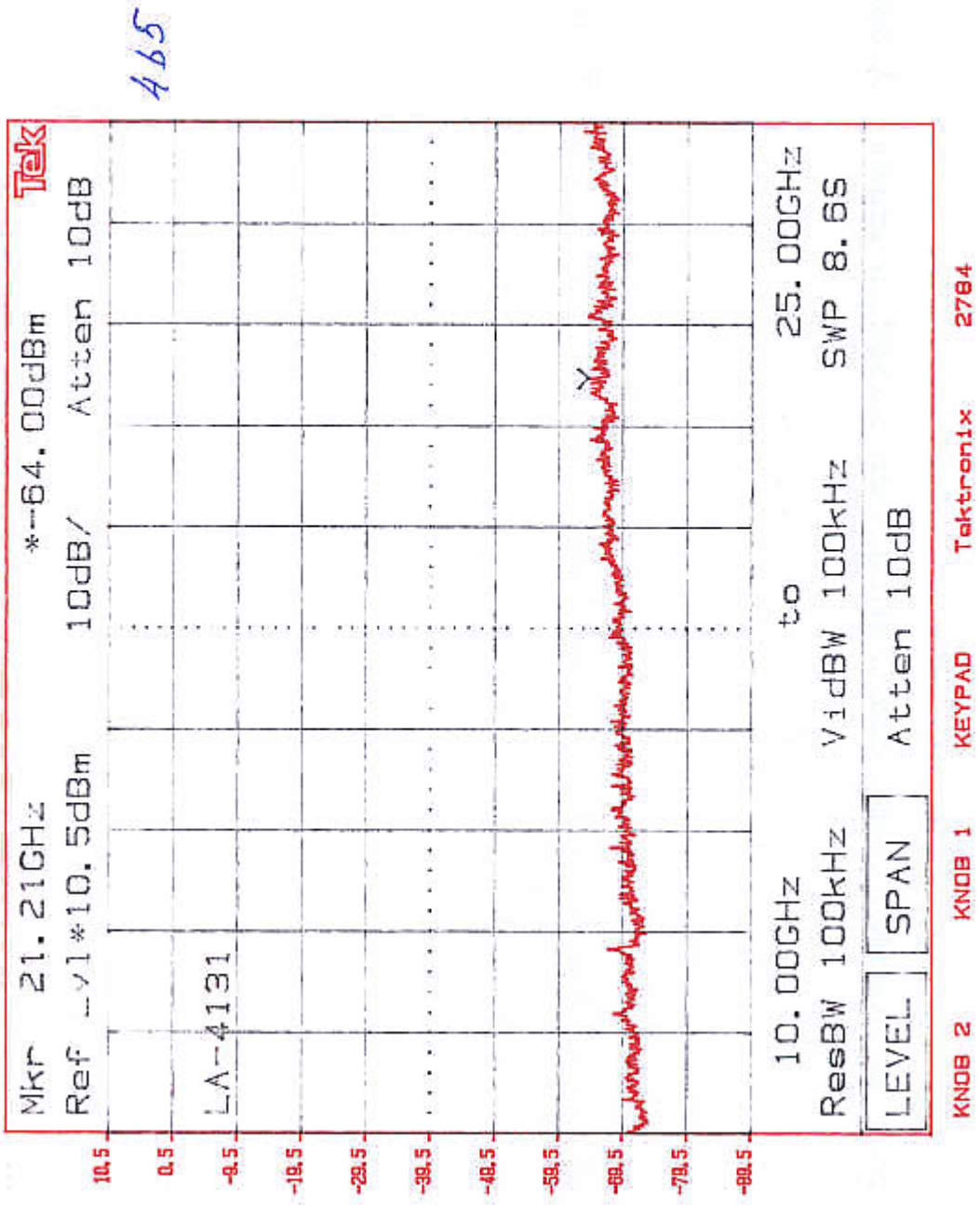

4 & 5
Tek
Mkr 24.16GHz
*-63.80dBm
Ref Lvl*10.5dBm
10dB/
Atten 10dB
LA-4131
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5
10.00GHz
to
25.00GHz
ResBW 100kHz
VidBW 100kHz
SWP 8.6S
LEVEL
SPAN
Atten 10dB
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784

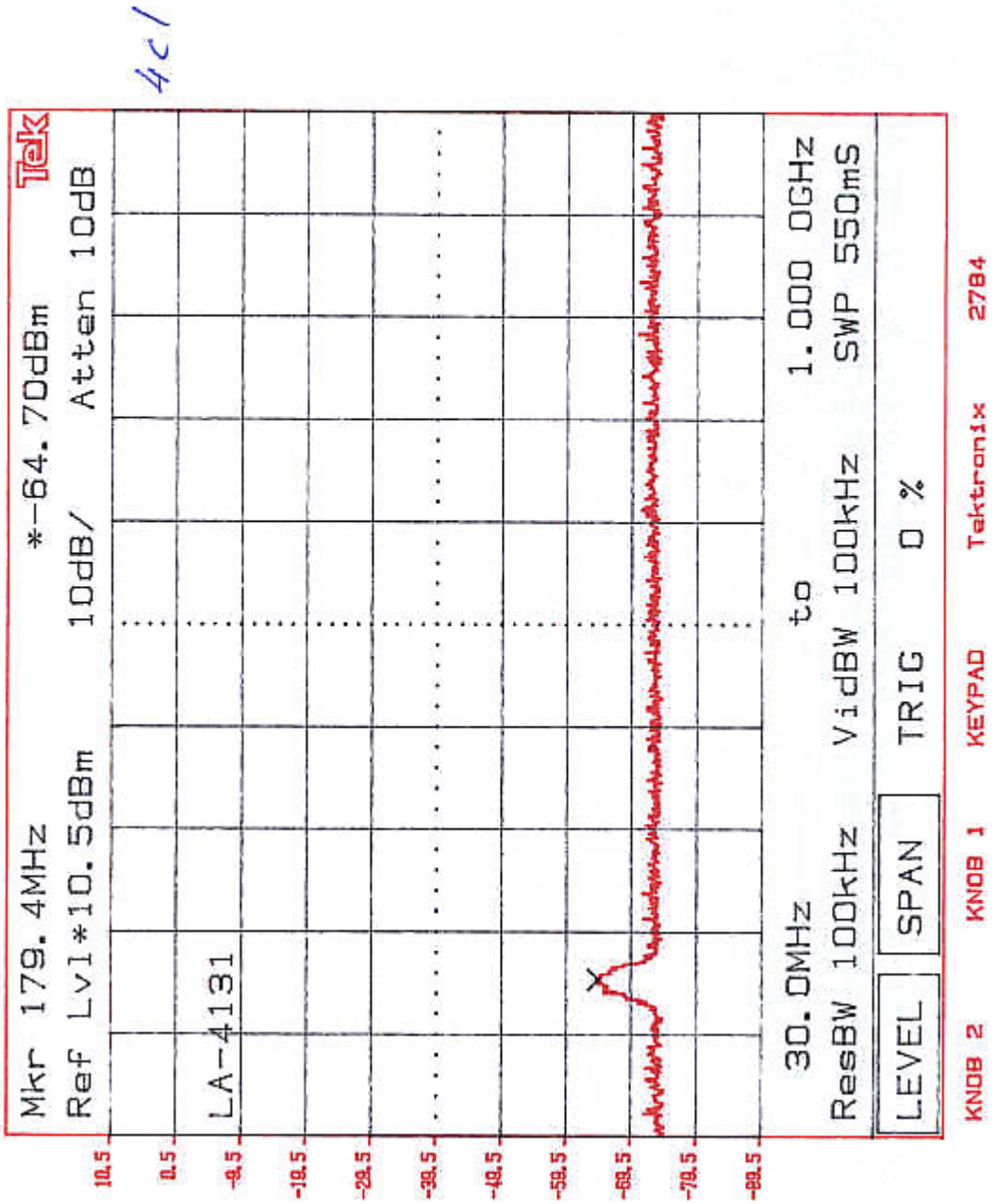

Mkr 275.4MHz
*-70.00dBm
Ref Lvl*10.5dBm
10dB/
Atten 10dB
LA-4131
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5
30.0MHz
to
1.000 0GHz
ResBW 100kHz
VidBW 100kHz
SWP 550mS
VidBW 100kHz
LEVEL
SPAN
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784

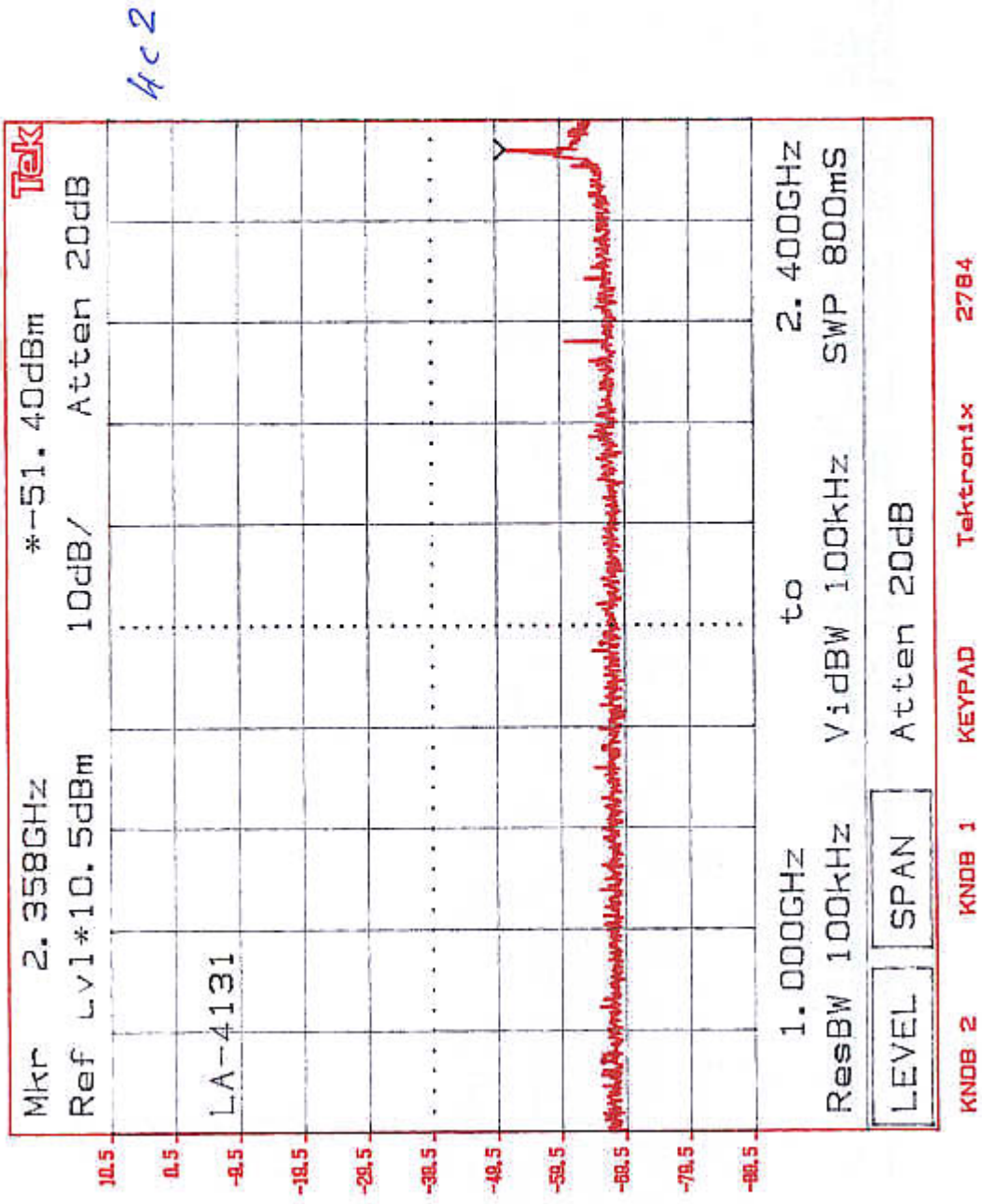

4b2
Tek
Mkr 2.331GHz
Ref Lvl*10.5dBm
*-54.30dBm
10dB/
Atten 20dB
LA-4131
1.000GHz
to
2.400GHz
ResBW 100kHz
VidBW 100kHz
SWP 800mS
LEVEL
SPAN
Stop 2.400GHz
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5

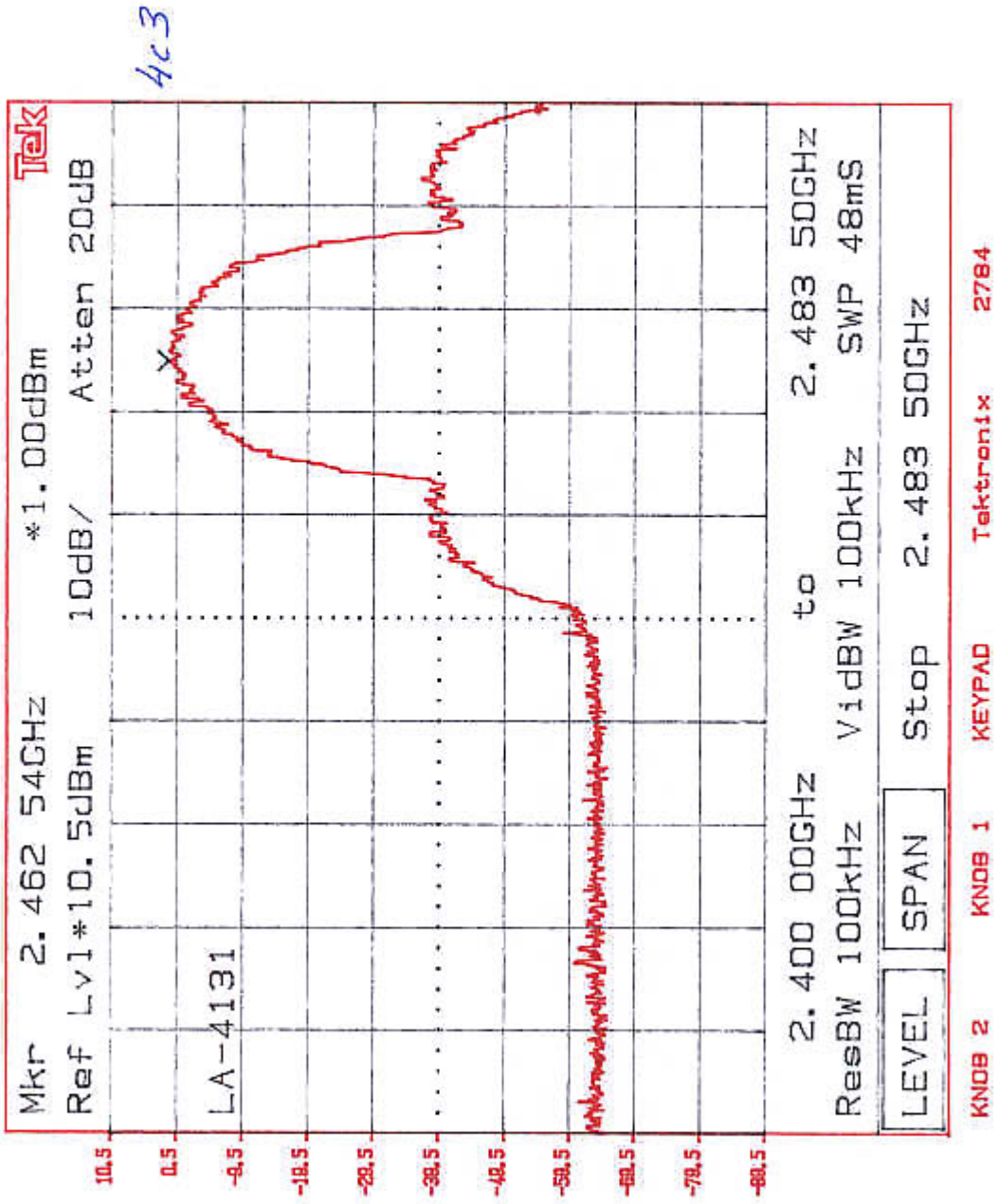

4b3
Tek
Mkr 2.437 32GHz
Ref Lvl*10.5dBm
*0.00dBm
10dB/
Atten 20dB
LA-4131
2.400 00GHz
ResBW 100kHz
to
2.483 50GHz
VidBW 100kHz
SWP 48mS
LEVEL
SPAN
Stop 2.483 50GHz
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5

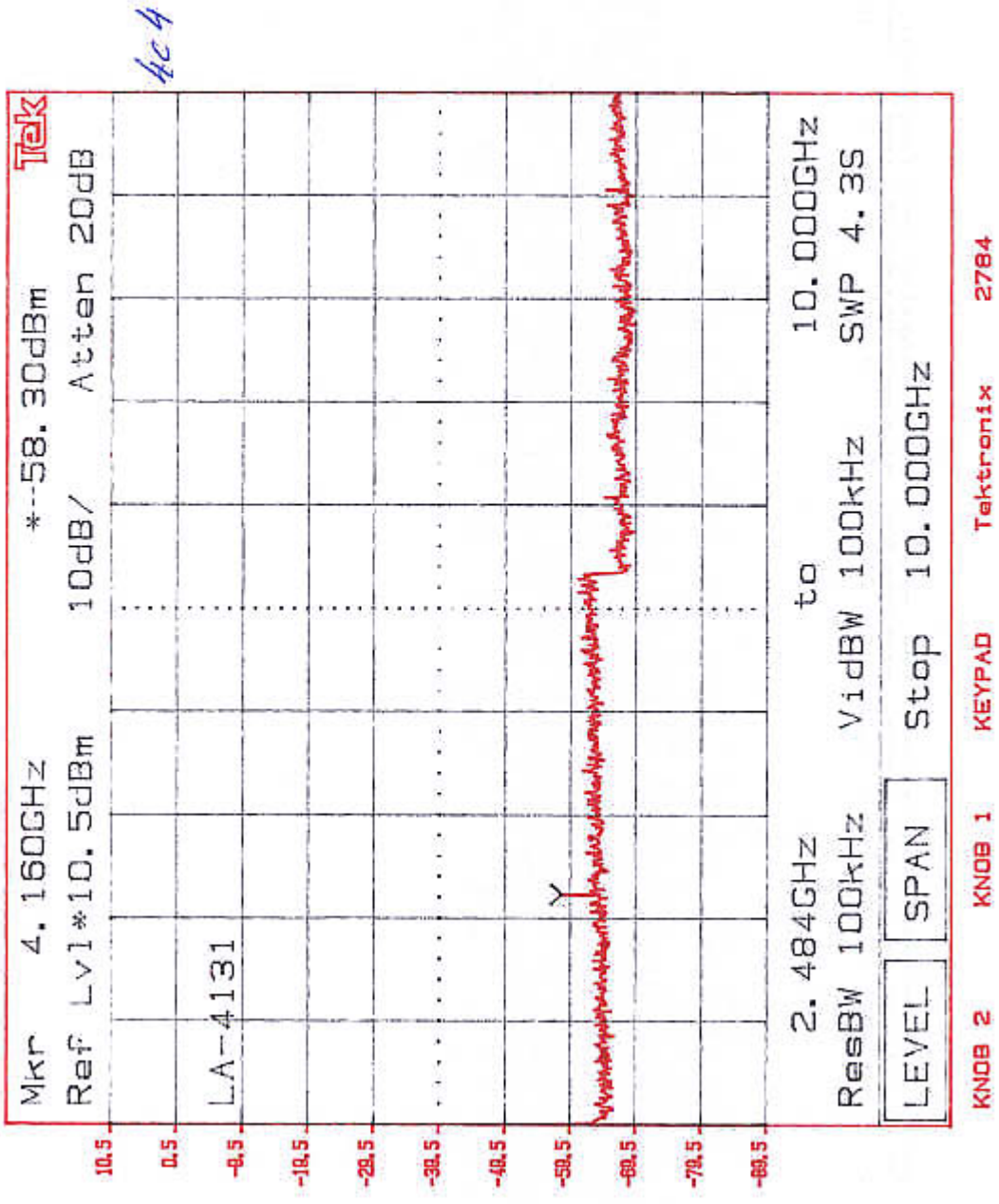

Mkr 4.115GHz
*-57.10dBm
Ref -1.1 *10.5dBm
10dB/
Atten 20dB
LA-4131
Tek
2.484GHz
ResBW 100kHz
to
10.000GHz
VidBW 100kHz
SWP 4.3S
LEVEL
SPAN
Stop 10.000GHz
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5

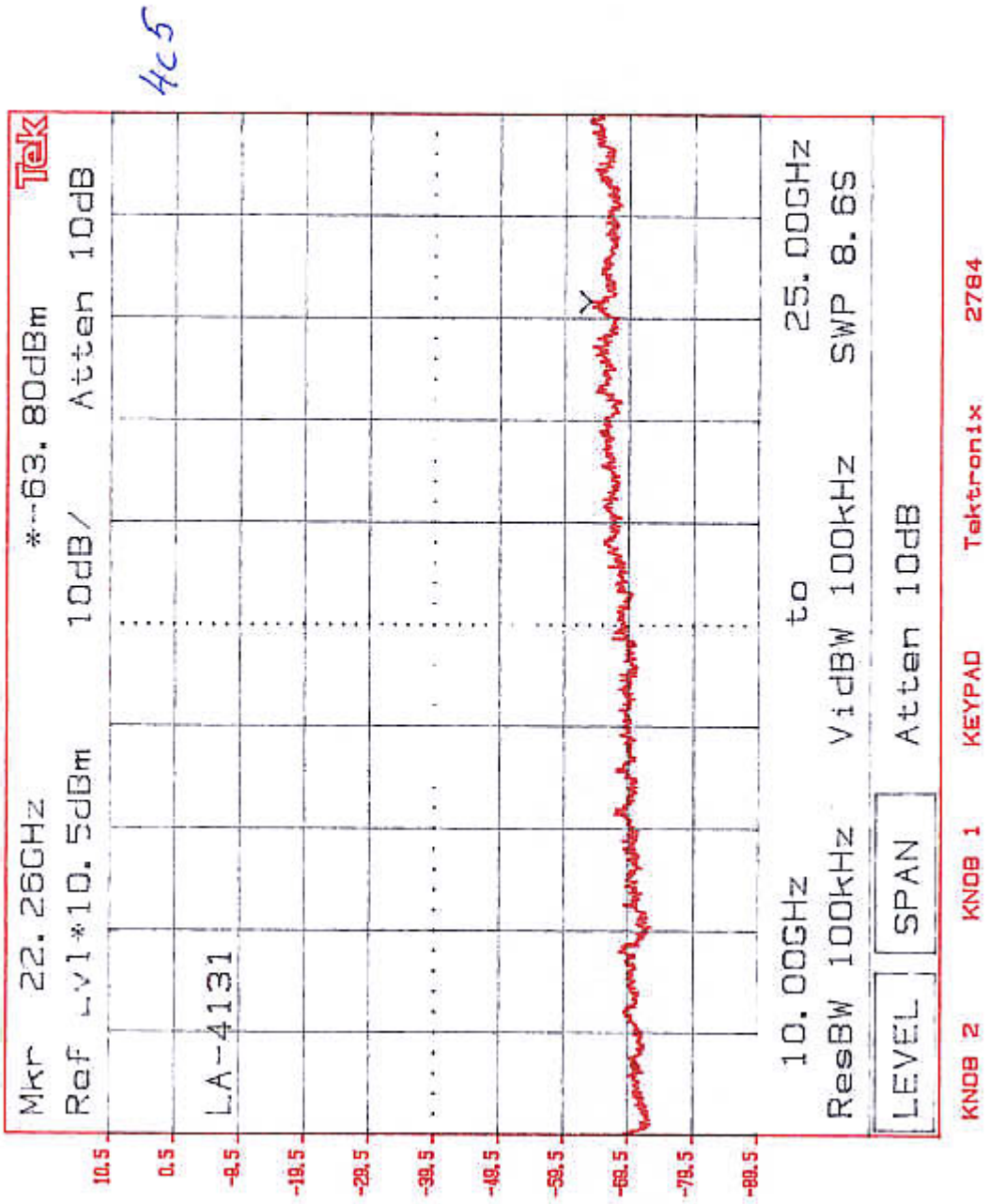

465
Tek
Mkr 21.21GHz
Ref -vl*10.5dBm
*-64.00dBm
10dB/ Atten 10dB
LA-4131
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5
10.00GHz
ResBW 100kHz
to
25.00GHz
VidBW 100kHz
SWP 8.6S
LEVEL
SPAN
Atten 10dB
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784


4c1
Tek
Mkr 179.4MHz
*-64.70dBm
Ref Lvl*10.5dBm
10dB/
Atten 10dB
LA-4131
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5
30.0MHz
to
1.000 0GHz
ResBW 100kHz
VidBW 100kHz
SWP 550mS
LEVEL
SPAN
TRIG
0 %
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784


4c2
Tek
Mkr 2.358GHz
Ref Lvl*10.5dBm
*-51.40dBm
10dB/
Atten 20dB
LA-4131
1.000GHz
to
2.400GHz
ResBW 100kHz
VidBW 100kHz
SWP 800mS
LEVEL
SPAN
Atten 20dB
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5


4c3
Tek
Mkr 2.462 54GHz
Ref Lvl*10.5dBm
*1.00dBm
10dB/
Atten 20dB
LA-4131
2.400 00GHz
ResBW 100kHz
to
2.483 50GHz
VidBW 100kHz
SWP 48mS
LEVEL
SPAN
Stop 2.483 50GHz
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5


4c 4
Tek
Mkr 4.160GHz
Ref Lvl*10.5dBm
*-58.30dBm
10dB/
Atten 20dB
LA-4131
2.484GHz
ResBW 100kHz
to
10.000GHz
VidBW 100kHz
SWP 4.3S
LEVEL
SPAN
Stop 10.000GHz
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5


4c5
Tek
Mkr 22.26GHz
*--63.80dBm
Ref Lvl*10.5dBm
10dB/
Atten 10dB
LA-4131
10.0GHz
to
25.0GHz
ResBW 100kHz
VidBW 100kHz
SWP 8.6S
LEVEL
SPAN
Atten 10dB
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5

4.6 Transmitter Radiated Emissions in Restricted Bands
FCC Rules: 15.247 (c), 15.205, 15.209, 15.35

Radiated emission measurements were performed from 30 MHz to 25000 MHz.

For radiated emission tests, the analyzer setting was as followings:

	RES BW	VID BW	
Frequency <1 GHz	100 kHz	100 kHz	
Frequency ≥1 GHz	1 MHz	1 MHz	(Peak measurements)
	1 MHz	10 Hz	(Average measurements)
	or 1 MHz	≥ 1 MHz with sampling	(Average measurements)

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels).

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

The field strength at the band-edge frequencies was calculated as $E_F = E_o - \Delta$.

Where:

E_F = Field Strength at bandedge frequency, dBuV/m
E_O = Field Strength at fundamental frequency , dBuV/m
Δ = Delta between output power at fundamental frequency and at band-edge frequency.

Refer to following data sheets and plots 6.1 – 6.7 for details.

Fundamental Frequency, MHz	Average FS at fundamental frequency, dBuV/m *	Minimum Delta, dB	Calculated Average FS in restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz, dBuV/m **	Average FS Limit in restricted bands, dBuV/m	Plot number
2412	109.1	65.0	44.1	54.0	6.1
2437	109.3	59.3	50.0	54.0	6.4
2462	111.1	57.8	53.3	54.0	6.5

* The highest measured level (radio with antenna Yagi) is taken into account.
** Worst case calculated
FS – Field Strength

Radiated Emissions Test Data

Company:	Symbol	**Model #:**	LA4131	**Standard**	**FCC § 15.247 (R.B.)**
EUT:	Antenna Yagi	**S/N #:**	Sample # 1	**Limits**	11
Project #:	J20036369	**Test Date:**	April 1, 2000	**Test Distance_**	3 meters
Test Mode:	Tx @ 2412 MHz	**Engineer:**	Xi-Ming Y.	**Duty Relaxation**	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	2	21	8	10	8	13	12	0	0	0
Model:	EMCO 3143	3160-9	EMCO 3115	AFT18855	CDI_P1000	ACO/400	NPS366	None	None	None

Frequency	Reading	Detector	Ant	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(µV/m)	dB(µV/m)	dB
2412.0	86.8	Peak	8	0	V	29.1	0.0	3.0	0.0	118.9	-	-
2412.0	77.0	Ave.	8	0	V	29.1	0.0	3.0	0.0	109.1	-	-
4824.1	46.6	Peak	8	8	V	34.0	28.1	4.3	0.0	56.8	74.0	-17.2
4824.1	33.7	Ave.	8	8	V	34.0	28.1	4.3	0.0	43.9	54.0	-10.1
7235.0	35.7	Peak	8	8	V	37.0	28.0	5.5	0.0	50.2	74.0	-23.8
7235.0	26.0	Ave.	8	8	V	37.0	28.0	5.5	0.0	40.5	54.0	-13.5
9647.9	32.9	Peak	8	8	V	38.5	27.3	6.7	0.0	50.8	74.0	-23.2
9647.9	23.0	Ave.	8	8	V	38.5	27.3	6.7	0.0	40.9	54.0	-13.1
12060	40.2	Peak	8	10	V	41.6	39.1	7.6	0.0	50.3	74.0	-23.7
12060	30.5	Ave.	8	10	V	41.6	39.1	7.6	0.0	40.6	54.0	-13.4
14472	37.9	Peak	8	10	V	40.7	37.8	8.2	0.0	49.0	74.0	-25.0
14472	28.0	Ave.	8	10	V	40.7	37.8	8.2	0.0	39.1	54.0	-14.9
16884	38.0	Peak	8	10	V	40.8	39.4	9.0	0.0	48.4	74.0	-25.6
16884	28.0	Ave.	8	10	V	40.8	39.4	9.0	0.0	38.4	54.0	-15.6
19296	32.9	Peak	21	13	V	40.2	23.3	7.0	-9.5	47.3	74.0	-26.7
19296	23.0	Ave.	21	13	V	40.2	23.3	7.0	-9.5	37.4	54.0	-16.6
21708	38.6	Peak	21	13	V	40.3	23.3	7.2	-9.5	53.3	74.0	-20.7
21708	29.0	Ave.	21	13	V	40.3	23.3	7.2	-9.5	43.7	54.0	-10.3
24120	39.7	Peak	21	13	V	40.4	24.2	7.7	-9.5	54.1	74.0	-19.9
24120	30.0	Ave.	21	13	V	40.4	24.2	7.7	-9.5	44.4	54.0	-9.6

Notes:	
	a) D.C.F.:Distance Correction Factor
	b) Insert. Loss (dB) = Cable A + Cable B + Cable C .
	c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss. - Transducer Loss - Duty Relaxation (transmitter only).
	d) Negative signs (-) in Margin column signify levels below the limits.
	e) All other emissions not reported are below the equipment noise floor which is at least 10 B below the limits.
	f) All emissions above 18 GHz were measured at 1 m distance.

Radiated Emissions Test Data

Company:	Symbol	**Model #:**	LA4131	**Standard**	**FCC § 15.247 (R.B.)**
EUT:	Antenna Yagi	**S/N #:**	Sample # 1	**Limits**	11
Project #:	J20036369	**Test Date:**	April 1, 2000	**Test Distance_**	3 meters
Test Mode:	Tx @ 2437 MHz	**Engineer:**	Xi-Ming Y.	**Duty Relaxation**	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	2	21	8	10	8	13	12	0	0	0
Model:	EMCO 3143	3160-9	EMCO 3115	AFT18855	CDI_P1000	ACO/400	NPS366	None	None	None

Frequency	Reading	Detector	Ant	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(µV/m)	dB(µV/m)	dB
2437.0	87.1	Peak	8	0	V	29.1	0.0	3.0	0.0	119.2	-	-
2437.0	77.2	Ave.	8	0	V	29.1	0.0	3.0	0.0	109.3	-	-
4874.0	46.0	Peak	8	8	V	34.0	28.1	4.3	0.0	56.2	74.0	-17.8
4874.0	33.2	Ave.	8	8	V	34.0	28.1	4.3	0.0	43.4	54.0	-10.6
7311.0	35.8	Peak	8	8	V	37.0	28.0	5.5	0.0	50.3	74.0	-23.7
7311.0	26.2	Ave.	8	8	V	37.0	28.0	5.5	0.0	40.7	54.0	-13.3
9748.0	32.5	Peak	8	8	V	38.5	27.3	6.7	0.0	50.4	74.0	-23.6
9748.0	23.0	Ave.	8	8	V	38.5	27.3	6.7	0.0	40.9	54.0	-13.1
12185	40.2	Peak	8	10	V	41.6	39.1	7.6	0.0	50.3	74.0	-23.7
12185	30.5	Ave.	8	10	V	41.6	39.1	7.6	0.0	40.6	54.0	-13.4
14622	37.9	Peak	8	10	V	41.3	37.4	8.4	0.0	50.2	74.0	-23.8
14622	28.0	Ave.	8	10	V	41.3	37.4	8.4	0.0	40.3	54.0	-13.7
17059	38.0	Peak	8	10	V	42.0	38.8	9.2	0.0	50.4	74.0	-23.6
17059	28.0	Ave.	8	10	V	42.0	38.8	9.2	0.0	40.4	54.0	-13.6
19496	32.9	Peak	21	13	V	40.2	23.3	7.0	-9.5	47.3	74.0	-26.7
19496	23.0	Ave.	21	13	V	40.2	23.3	7.0	-9.5	37.4	54.0	-16.6
21933	38.6	Peak	21	13	V	40.3	23.3	7.2	-9.5	53.3	74.0	-20.7
21933	29.0	Ave.	21	13	V	40.3	23.3	7.2	-9.5	43.7	54.0	-10.3
24370	39.7	Peak	21	13	V	40.4	24.2	7.7	-9.5	54.1	74.0	-19.9
24370	30.0	Ave.	21	13	V	40.4	24.2	7.7	-9.5	44.4	54.0	-9.6

Notes:	
	a) D.C.F.:Distance Correction Factor
	b) Insert. Loss (dB) = Cable A + Cable B + Cable C .
	c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss. - Transducer Loss - Duty Relaxation (transmitter only).
	d) Negative signs (-) in Margin column signify levels below the limits.
	e) All other emissions not reported are below the equipment noise floor which is at least 10 B below the limits.
	f) All emissions above 18 GHz were measured at 1 m distance.

Radiated Emissions Test Data

Company:	Symbol	**Model #:**	LA4131	**Standard_**	**FCC § 15.247 (R.B.)**
EUT:	Antenna Yagi	**S/N #:**	Sample # 1	**Limits_**	11
Project #:	J20036369	**Test Date:**	April 1, 2000	**Test Distance_**	3 meters
Test Mode:	Tx @ 2462 MHz	**Engineer:**	Xi-Ming Y.	**Duty Relaxation**	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	2	21	8	10	8	13	12	0	0	0
Model:	EMCO 3143	3160-9	EMCO 3115	AFT18855	CDI_P1000	ACO/400	NPS366	None	None	None

Frequency	Reading	Detector	Ant.	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(µV/m)	dB(µV/m)	dB
2462.0	88.0	Peak	8	0	V	29.1	0.0	3.0	0.0	120.1	-	-
2462.0	79.0	Ave.	8	0	V	29.1	0.0	3.0	0.0	111.1	-	-
4924.0	44.9	Peak	8	8	V	34.0	28.1	4.3	0.0	55.1	74.0	-18.9
4924.0	32.2	Ave.	8	8	V	34.0	28.1	4.3	0.0	42.4	54.0	-11.6
7386.0	39.8	Peak	8	8	V	37.0	28.0	5.5	0.0	54.3	74.0	-19.7
7386.0	30.0	Ave.	8	8	V	37.0	28.0	5.5	0.0	44.5	54.0	-9.5
9848.0	32.0	Peak	8	8	V	38.5	27.6	6.7	0.0	49.6	74.0	-24.4
9848.0	22.6	Ave.	8	8	V	38.5	27.6	6.7	0.0	40.2	54.0	-13.8
12310	40.8	Peak	8	10	V	41.6	39.1	7.6	0.0	50.9	74.0	-23.1
12310	30.6	Ave.	8	10	V	41.6	39.1	7.6	0.0	40.7	54.0	-13.3
14772	37.9	Peak	8	10	V	41.3	37.4	8.4	0.0	50.2	74.0	-23.8
14772	28.0	Ave.	8	10	V	41.3	37.4	8.4	0.0	40.3	54.0	-13.7
17234	37.9	Peak	8	10	V	42.0	38.8	9.2	0.0	50.3	74.0	-23.7
17234	27.8	Ave.	8	10	V	42.0	38.8	9.2	0.0	40.2	54.0	-13.8
19696	32.9	Peak	21	13	V	40.2	23.3	7.0	-9.5	47.3	74.0	-26.7
19696	23.0	Ave.	21	13	V	40.2	23.3	7.0	-9.5	37.4	54.0	-16.6
22158	38.6	Peak	21	13	V	40.3	23.3	7.2	-9.5	53.3	74.0	-20.7
22158	29.0	Ave.	21	13	V	40.3	23.3	7.2	-9.5	43.7	54.0	-10.3
24620	39.7	Peak	21	13	V	40.4	24.2	7.7	-9.5	54.1	74.0	-19.9
2462.0	30.0	Ave.	21	13	V	40.4	24.2	7.7	-9.5	44.4	54.0	-9.6

Notes:	
	a) D.C.F.:Distance Correction Factor
	b) Insert. Loss (dB) = Cable A + Cable B + Cable C.
	c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss. - Transducer Loss - Duty Relaxation (transmitter only).
	d) Negative signs (-) in Margin column signify levels below the limits.
	e) All other emissions not reported are below the equipment noise floor which is at least 10 dB below the limits
	f) All emissions above 18 GHz were measured at 1 m distance.

Radiated Emissions Test Data

Company:	Symbol	**Model #:**	LA4131	**Standard_**	**FCC § 15.247 (R.B.)**
EUT:	Antenna Pipe Bomb 11" X 4"	**S/N #:**	Sample # 1	**Limits_**	11
Project #:	J20036369	**Test Date:**	April 1, 2000	**Test Distance_**	3 meters
Test Mode:	Tx @ 2412 MHz	**Engineer:**	Xi-Ming Y.	**Duty Relaxation**	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	2	21	8	10	8	13	12	0	0	0
Model:	EMCO 3143	3160-9	EMCO 3115	AFT18855	CDI_P1000	ACO/400	NPS366	None	None	None

Frequency	Reading	Detector	Ant.	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(µV/m)	dB(µV/m)	dB
2412.0	84.0	Peak	8	0	V	29.1	0.0	3.0	0.0	116.1	-	-
2412.0	73.0	Ave.	8	0	V	29.1	0.0	3.0	0.0	105.1	-	-
4824.1	50.0	Peak	8	8	V	34.0	28.1	4.3	0.0	60.2	74.0	-13.8
4824.1	36.5	Ave.	8	8	V	34.0	28.1	4.3	0.0	46.7	54.0	-7.3
7235.0	34.0	Peak	8	8	V	37.0	28.0	5.5	0.0	48.5	74.0	-25.5
7235.0	23.5	Ave.	8	8	V	37.0	28.0	5.5	0.0	38.0	54.0	-16.0
9647.9	32.0	Peak	8	8	V	38.5	27.3	6.7	0.0	49.9	74.0	-24.1
9647.9	22.0	Ave.	8	8	V	38.5	27.3	6.7	0.0	39.9	54.0	-14.1
12060	40.2	Peak	8	10	V	41.6	39.1	7.6	0.0	50.3	74.0	-23.7
12060	30.5	Ave.	8	10	V	41.6	39.1	7.6	0.0	40.6	54.0	-13.4
14472	37.9	Peak	8	10	V	41.3	37.4	8.4	0.0	50.2	74.0	-23.8
14472	28.0	Ave.	8	10	V	41.3	37.4	8.4	0.0	40.3	54.0	-13.7
16884	38.0	Peak	8	10	V	40.8	39.4	9.0	0.0	48.4	74.0	-25.6
16884	28.0	Ave.	8	10	V	40.8	39.4	9.0	0.0	38.4	54.0	-15.6
19296	32.9	Peak	21	13	V	40.2	23.3	7.0	-9.5	47.3	74.0	-26.7
19296	23.0	Ave.	21	13	V	40.2	23.3	7.0	-9.5	37.4	54.0	-16.6
21708	38.6	Peak	21	13	V	40.3	23.3	7.2	-9.5	53.3	74.0	-20.7
21708	29.0	Ave.	21	13	V	40.3	23.3	7.2	-9.5	43.7	54.0	-10.3
24120	39.7	Peak	21	13	V	40.4	24.2	7.7	-9.5	54.1	74.0	-19.9
24120	30.0	Ave.	21	13	V	40.4	24.2	7.7	-9.5	44.4	54.0	-9.6

Notes:	
	a) D.C.F.:Distance Correction Factor
	b) Insert. Loss (dB) = Cable A + Cable B + Cable C.
	c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss. - Transducer Loss - Duty Relaxation (transmitter only).
	d) Negative signs (-) in Margin column signify levels below the limits.
	e) All other emissions not reported are below the equipment noise floor which is at least 10 dB below the limits.
	f) All emissions above 18 GHz were measured at 1 m distance.

Radiated Emissions Test Data

Company:	Symbol	**Model #:**	LA4131	**Standard**	**FCC § 15.247 (R.B.)**
EUT:	Antenna Pipe Bomb 11" X 4"	**S/N #:**	Sample # 1	**Limits**	11
Project #:	J20036369	**Test Date:**	April 1, 2000	**Test Distance**	3 meters
Test Mode:	Tx @ 2437 MHz	**Engineer:**	Xi-Ming Y.	**Duty Relaxation**	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	2	21	8	10	8	13	12	0	0	0
Model:	EMCO 3143	3160-9	EMCO 3115	AFT18855	CDI_P1000	ACO/400	NPS366	None	None	None

Frequency	Reading	Detector	Ant	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(µV/m)	dB(µV/m)	dB
2437.0	83.5	Peak	8	0	V	29.1	0.0	3.0	0.0	115.6	-	-
2437.0	72.5	Ave.	8	0	V	29.1	0.0	3.0	0.0	104.6	-	-
4874.0	48.9	Peak	8	8	V	34.0	28.1	4.3	0.0	59.1	74.0	-14.9
4874.0	36.0	Ave.	8	8	V	34.0	28.1	4.3	0.0	46.2	54.0	-7.8
7311.0	36.0	Peak	8	8	V	37.0	28.0	5.5	0.0	50.5	74.0	-23.5
7311.0	26.2	Ave.	8	8	V	37.0	28.0	5.5	0.0	40.7	54.0	-13.3
9748.0	32.2	Peak	8	8	V	38.5	27.3	6.7	0.0	50.1	74.0	-23.9
9748.0	23.1	Ave.	8	8	V	38.5	27.3	6.7	0.0	41.0	54.0	-13.0
12185	40.2	Peak	8	10	V	41.6	39.1	7.6	0.0	50.3	74.0	-23.7
12185	30.5	Ave.	8	10	V	41.6	39.1	7.6	0.0	40.6	54.0	-13.4
14622	37.9	Peak	8	10	V	41.3	37.4	8.4	0.0	50.2	74.0	-23.8
14622	28.0	Ave.	8	10	V	41.3	37.4	8.4	0.0	40.3	54.0	-13.7
17059	38.0	Peak	8	10	V	42.0	38.8	9.2	0.0	50.4	74.0	-23.6
17059	28.0	Ave.	8	10	V	42.0	38.8	9.2	0.0	40.4	54.0	-13.6
19496	32.9	Peak	21	13	V	40.2	23.3	7.0	-9.5	47.3	74.0	-26.7
19496	23.0	Ave.	21	13	V	40.2	23.3	7.0	-9.5	37.4	54.0	-16.6
21933	38.6	Peak	21	13	V	40.3	23.3	7.2	-9.5	53.3	74.0	-20.7
21933	29.0	Ave.	21	13	V	40.3	23.3	7.2	-9.5	43.7	54.0	-10.3
24370	39.7	Peak	21	13	V	40.4	24.2	7.7	-9.5	54.1	74.0	-19.9
24370	30.0	Ave.	21	13	V	40.4	24.2	7.7	-9.5	44.4	54.0	-9.6

Notes:	
	a) D.C.F.:Distance Correction Factor
	b) Insert. Loss (dB) = Cable A + Cable B + Cable C .
	c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss. - Transducer Loss - Duty Relaxation (transmitter only).
	d) Negative signs (-) in Margin column signify levels below the limits.
	e) All other emissions not reported are below the equipment noise floor which is at least 10 dB below the limits.
	f) All emissions above 18 GHz were measured at 1 m distance.

Radiated Emissions Test Data

Company:	Symbol	**Model #:**	LA4131	**Standard**	**FCC § 15.247 (R.B.)**
EUT:	Antenna Pipe Bomb 11" X 4"	**S/N #:**	Sample # 1	**Limits_**	11
Project #:	J20036369	**Test Date:**	April 1, 2000	**Test Distance**	3 meters
Test Mode:	Tx @ 2462 MHz	**Engineer:**	Xi-Ming Y.	**Duty Relaxation**	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	2	21	8	10	8	13	12	0	0	0
Model:	EMCO 3143	3160-9	EMCO 3115	AFT18855	CDI_P1000	ACO/400	NPS366	None	None	None

Frequency	Reading	Detector	Ant.	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(µV/m)	dB(µV/m)	dB
2462.0	84.5	Peak	8	0	V	29.1	0.0	3.0	0.0	116.6	-	-
2462.0	73.5	Ave.	8	0	V	29.1	0.0	3.0	0.0	105.6	-	-
4924.0	43.4	Peak	8	8	V	34.0	28.1	4.3	0.0	53.6	74.0	-20.4
4924.0	32.0	Ave.	8	8	V	34.0	28.1	4.3	0.0	42.2	54.0	-11.8
7386.0	36.0	Peak	8	8	V	37.0	28.0	5.5	0.0	50.5	74.0	-23.5
7386.0	26.0	Ave.	8	8	V	37.0	28.0	5.5	0.0	40.5	54.0	-13.5
9848.0	32.5	Peak	8	8	V	38.5	27.6	6.7	0.0	50.1	74.0	-23.9
9848.0	22.6	Ave.	8	8	V	38.5	27.6	6.7	0.0	40.2	54.0	-13.8
12310	41.0	Peak	8	10	V	41.6	39.1	7.6	0.0	51.1	74.0	-22.9
12310	30.6	Ave.	8	10	V	41.6	39.1	7.6	0.0	40.7	54.0	-13.3
14772	37.9	Peak	8	10	V	41.3	37.4	8.4	0.0	50.2	74.0	-23.8
14772	28.4	Ave.	8	10	V	41.3	37.4	8.4	0.0	40.7	54.0	-13.3
17234	37.9	Peak	8	10	V	42.0	38.8	9.2	0.0	50.3	74.0	-23.7
17234	27.8	Ave.	8	10	V	42.0	38.8	9.2	0.0	40.2	54.0	-13.8
19696	32.9	Peak	21	13	H	40.3	23.3	7.0	-9.5	47.4	74.0	-26.6
19696	23.0	Ave.	21	13	H	40.3	23.3	7.0	-9.5	37.5	54.0	-16.5
22158	38.6	Peak	21	13	V	40.3	23.3	7.2	-9.5	53.3	74.0	-20.7
22158	29.0	Ave.	21	13	V	40.3	23.3	7.2	-9.5	43.7	54.0	-10.3
24620	39.7	Peak	21	13	H	40.4	24.2	7.7	-9.5	54.1	74.0	-19.9
2462.0	30.0	Ave.	21	13	H	40.4	24.2	7.7	-9.5	44.4	54.0	-9.6

Notes:	
	a) D.C.F.:Distance Correction Factor
	b) Insert. Loss (dB) = Cable A + Cable B + Cable C .
	c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss. - Transducer Loss - Duty Relaxation (transmitter only).
	d) Negative signs (-) in Margin column signify levels below the limits.
	e) All other emissions not reported are below the equipment noise floor which is at least 10 dB below the limits.
	f) All emissions above 18 GHz were measured at 1 m distance.

Radiated Emissions Test Data

Company:	Symbol	**Model #:**	LA4131	**Standard**	**FCC § 15.247 (R.B.)**
EUT:	Antenna Ceiling Panel	**S/N #:**	Sample # 1	**Limits**	11
Project #:	J20036369	**Test Date:**	April 1, 2000	**Test Distance**	3 meters
Test Mode:	Tx @ 2412 MHz	**Engineer:**	Xi-Ming Y.	**Duty Relaxation**	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	2	21	8	10	8	13	12	0	0	0
Model:	EMCO 3143	3160-9	EMCO 3115	AFT18855	CDI_P1000	ACO/400	NPS366	None	None	None

Frequency	Reading	Detector	Ant.	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(µV/m)	dB(µV/m)	dB
2412.0	79.9	Peak	8	0	H	29.1	0.0	3.0	0.0	112.0	-	-
2412.0	70.2	Ave.	8	0	H	29.1	0.0	3.0	0.0	102.3	-	-
4824.1	41.0	Peak	8	8	V	34.0	28.1	4.3	0.0	51.2	74.0	-22.8
4824.1	31.0	Ave.	8	8	V	34.0	28.1	4.3	0.0	41.2	54.0	-12.8
7235.0	35.0	Peak	8	8	V	37.0	28.0	5.5	0.0	49.5	74.0	-24.5
7235.0	25.3	Ave.	8	8	V	37.0	28.0	5.5	0.0	39.8	54.0	-14.2
9647.9	32.5	Peak	8	8	V	38.5	27.3	6.7	0.0	50.4	74.0	-23.6
9647.9	23.1	Ave.	8	8	V	38.5	27.3	6.7	0.0	41.0	54.0	-13.0
12060	40.2	Peak	8	10	V	41.6	39.1	7.6	0.0	50.3	74.0	-23.7
12060	30.5	Ave.	8	10	V	41.6	39.1	7.6	0.0	40.6	54.0	-13.4
14472	37.9	Peak	8	10	V	41.3	37.4	8.4	0.0	50.2	74.0	-23.8
14472	28.0	Ave.	8	10	V	41.3	37.4	8.4	0.0	40.3	54.0	-13.7
16884	38.0	Peak	8	10	V	40.8	39.4	9.0	0.0	48.4	74.0	-25.6
16884	28.0	Ave.	8	10	V	40.8	39.4	9.0	0.0	38.4	54.0	-15.6
19296	32.9	Peak	21	13	V	40.2	23.3	7.0	-9.5	47.3	74.0	-26.7
19296	23.0	Ave.	21	13	V	40.2	23.3	7.0	-9.5	37.4	54.0	-16.6
21708	38.6	Peak	21	13	V	40.3	23.3	7.2	-9.5	53.3	74.0	-20.7
21708	29.0	Ave.	21	13	V	40.3	23.3	7.2	-9.5	43.7	54.0	-10.3
24120	39.7	Peak	21	13	V	40.4	24.2	7.7	-9.5	54.1	74.0	-19.9
24120	30.0	Ave.	21	13	V	40.4	24.2	7.7	-9.5	44.4	54.0	-9.6

Notes:	
	a) D.C.F.:Distance Correction Factor
	b) Insert. Loss (dB) = Cable A + Cable B + Cable C .
	c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss. - Transducer Loss - Duty Relaxation (transmitter only).
	d) Negative signs (-) in Margin column signify levels below the limits.
	e) All other emissions not reported are below the equipment noise floor which is at least 10 dB below the limits.
	f) All emissions above 18 GHz were measured at 1 m distance.

Radiated Emissions Test Data

Company:	Symbol	**Model #:**	LA4131	**Standard**	**FCC § 15.247 (R.B.)**
EUT:	Antenna Ceiling Panel	**S/N #:**	Sample # 1	**Limits**	11
Project #:	J20036369	**Test Date:**	April 1, 2000	**Test Distance**	3 meters
Test Mode:	Tx @ 2437 MHz	**Engineer:**	Xi-Ming Y.	**Duty Relaxation**	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	2	21	8	10	8	13	12	0	0	0
Model:	EMCO 3143	3160-9	EMCO 3115	AFT18855	CDI_P1000	ACO/400	NPS366	None	None	None

Frequency	Reading	Detector	Ant	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(µV/m)	dB(µV/m)	dB
2437.0	79.9	Peak	8	0	H	29.1	0.0	3.0	0.0	112.0	-	-
2437.0	70.3	Ave.	8	0	H	29.1	0.0	3.0	0.0	102.4	-	-
4874.0	45.0	Peak	8	8	H	33.9	28.1	4.3	0.0	55.1	74.0	-18.9
4874.0	35.0	Ave.	8	8	H	33.9	28.1	4.3	0.0	45.1	54.0	-8.9
7311.0	35.5	Peak	8	8	V	37.0	28.0	5.5	0.0	50.0	74.0	-24.0
7311.0	25.6	Ave.	8	8	V	37.0	28.0	5.5	0.0	40.1	54.0	-13.9
9748.0	32.5	Peak	8	8	V	38.5	27.3	6.7	0.0	50.4	74.0	-23.6
9748.0	23.0	Ave.	8	8	V	38.5	27.3	6.7	0.0	40.9	54.0	-13.1
12185	40.2	Peak	8	10	V	41.6	39.1	7.6	0.0	50.3	74.0	-23.7
12185	30.5	Ave.	8	10	V	41.6	39.1	7.6	0.0	40.6	54.0	-13.4
14622	37.9	Peak	8	10	V	41.3	37.4	8.4	0.0	50.2	74.0	-23.8
14622	28.0	Ave.	8	10	V	41.3	37.4	8.4	0.0	40.3	54.0	-13.7
17059	38.0	Peak	8	10	V	42.0	38.8	9.2	0.0	50.4	74.0	-23.6
17059	28.0	Ave.	8	10	V	42.0	38.8	9.2	0.0	40.4	54.0	-13.6
19496	32.9	Peak	21	13	V	40.3	23.3	7.0	-9.5	47.4	74.0	-26.6
19496	23.0	Ave.	21	13	V	40.3	23.3	7.0	-9.5	37.5	54.0	-16.5
21933	38.6	Peak	21	13	V	40.3	23.3	7.2	-9.5	53.3	74.0	-20.7
21933	29.0	Ave.	21	13	V	40.3	23.3	7.2	-9.5	43.7	54.0	-10.3
24370	39.7	Peak	21	13	V	40.4	24.2	7.7	-9.5	54.1	74.0	-19.9
24370	30.0	Ave.	21	13	V	40.4	24.2	7.7	-9.5	44.4	54.0	-9.6

Notes:	
	a) D.C.F.:Distance Correction Factor
	b) Insert. Loss (dB) = Cable A + Cable B + Cable C .
	c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss. - Transducer Loss - Duty Relaxation (transmitter only).
	d) Negative signs (-) in Margin column signify levels below the limits.
	e) All other emissions not reported are below the equipment noise floor which is at least 10 dB below the limits.
	f) All emissions above 18 GHz were measured at 1 m distance.

Radiated Emissions Test Data

Company:	Symbol	**Model #:**	LA4131	**Standard**	**FCC § 15.247 (R.B.)**
EUT:	Antenna Ceiling Panel	**S/N #:**	Sample # 1	**Limits**	11
Project #:	J20036369	**Test Date:**	April 1, 2000	**Test Distance**	3 meters
Test Mode:	Tx @ 2462 MHz	**Engineer:**	Xi-Ming Y.	**Duty Relaxation**	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	2	21	8	10	8	13	12	0	0	0
Model:	EMCO 3143	3160-9	EMCO 3115	AFT18855	CDI_P1000	ACO/400	NPS366	None	None	None

Frequency	Reading	Detector	Ant	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(µV/m)	dB(µV/m)	dB
2462.0	81.1	Peak	8	0	H	29.1	0.0	3.0	0.0	113.2	-	-
2462.0	72.0	Ave.	8	0	H	29.1	0.0	3.0	0.0	104.1	-	-
4924.0	42.5	Peak	8	8	H	33.9	28.1	4.3	0.0	52.6	74.0	-21.4
4924.0	31.0	Ave.	8	8	H	33.9	28.1	4.3	0.0	41.1	54.0	-12.9
7386.0	37.5	Peak	8	8	V	37.0	28.0	5.5	0.0	52.0	74.0	-22.0
7386.0	28.0	Ave.	8	8	V	37.0	28.0	5.5	0.0	42.5	54.0	-11.5
9848.0	32.0	Peak	8	8	V	38.5	27.6	6.7	0.0	49.6	74.0	-24.4
9848.0	22.6	Ave.	8	8	V	38.5	27.6	6.7	0.0	40.2	54.0	-13.8
12310	40.8	Peak	8	10	V	41.6	39.1	7.6	0.0	50.9	74.0	-23.1
12310	30.6	Ave.	8	10	V	41.6	39.1	7.6	0.0	40.7	54.0	-13.3
14772	37.9	Peak	8	10	V	41.3	37.4	8.4	0.0	50.2	74.0	-23.8
14772	28.0	Ave.	8	10	V	41.3	37.4	8.4	0.0	40.3	54.0	-13.7
17234	37.9	Peak	8	10	V	42.0	38.8	9.2	0.0	50.3	74.0	-23.7
17234	27.8	Ave.	8	10	V	42.0	38.8	9.2	0.0	40.2	54.0	-13.8
19696	32.9	Peak	21	13	V	40.3	23.3	7.0	-9.5	47.4	74.0	-26.6
19696	23.0	Ave.	21	13	V	40.3	23.3	7.0	-9.5	37.5	54.0	-16.5
22158	38.6	Peak	21	13	H	40.3	23.3	7.2	-9.5	53.3	74.0	-20.7
22158	29.0	Ave.	21	13	H	40.3	23.3	7.2	-9.5	43.7	54.0	-10.3
24620	39.7	Peak	21	13	V	40.4	24.2	7.7	-9.5	54.1	74.0	-19.9
2462.0	30.0	Ave.	21	13	V	40.4	24.2	7.7	-9.5	44.4	54.0	-9.6

Notes:	
	a) D.C.F.:Distance Correction Factor
	b) Insert. Loss (dB) = Cable A + Cable B + Cable C .
	c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss. - Transducer Loss - Duty Relaxation (transmitter only).
	d) Negative signs (-) in Margin column signify levels below the limits.
	e) All other emissions not reported are below the equipment noise floor which is at least 10 dB below the limits.
	f) All emissions above 18 GHz were measured at 1 m distance.

Radiated Emissions Test Data

Company:	Symbol	**Model #:**	LA4131	**Standard**	**FCC § 15.247 (R.B.)**
EUT:	Antenna Panel 7.5	**S/N #:**	Sample # 1	**Limits**	11
Project #:	J20036369	**Test Date:**	April 1, 2000	**Test Distance**	3 meters
Test Mode:	Tx @ 2412 MHz	**Engineer:**	Xi-Ming Y.	**Duty Relaxation**	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	2	21	8	10	8	13	12	0	0	0
Model:	EMCO 3143	3160-9	EMCO 3115	AFT18855	CDI_P1000	ACO/400	NPS366	None	None	None

Frequency	Reading	Detector	Ant	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(µV/m)	dB(µV/m)	dB
2412.0	82.5	Peak	8	0	H	29.1	0.0	3.0	0.0	114.6	-	-
2412.0	72.3	Ave.	8	0	H	29.1	0.0	3.0	0.0	104.4	-	-
4824.1	44.5	Peak	8	8	V	34.0	28.1	4.3	0.0	54.7	74.0	-19.3
4824.1	33.5	Ave.	8	8	V	34.0	28.1	4.3	0.0	43.7	54.0	-10.3
7235.0	34.9	Peak	8	8	V	37.0	28.0	5.5	0.0	49.4	74.0	-24.6
7235.0	23.2	Ave.	8	8	V	37.0	28.0	5.5	0.0	37.7	54.0	-16.3
9647.9	33.0	Peak	8	8	V	38.5	27.3	6.7	0.0	50.9	74.0	-23.1
9647.9	23.5	Ave.	8	8	V	38.5	27.3	6.7	0.0	41.4	54.0	-12.6
12060	40.2	Peak	8	10	V	41.6	39.1	7.6	0.0	50.3	74.0	-23.7
12060	30.5	Ave.	8	10	V	41.6	39.1	7.6	0.0	40.6	54.0	-13.4
14472	37.9	Peak	8	10	V	41.3	37.4	8.4	0.0	50.2	74.0	-23.8
14472	28.0	Ave.	8	10	V	41.3	37.4	8.4	0.0	40.3	54.0	-13.7
16884	38.0	Peak	8	10	V	40.8	39.4	9.0	0.0	48.4	74.0	-25.6
16884	28.0	Ave.	8	10	V	40.8	39.4	9.0	0.0	38.4	54.0	-15.6
19296	32.9	Peak	21	13	V	40.2	23.3	7.0	-9.5	47.3	74.0	-26.7
19296	23.0	Ave.	21	13	V	40.2	23.3	7.0	-9.5	37.4	54.0	-16.6
21708	38.6	Peak	21	13	V	40.3	23.3	7.2	-9.5	53.3	74.0	-20.7
21708	29.0	Ave.	21	13	V	40.3	23.3	7.2	-9.5	43.7	54.0	-10.3
24120	39.7	Peak	21	13	V	40.4	24.2	7.7	-9.5	54.1	74.0	-19.9
24120	30.0	Ave.	21	13	V	40.4	24.2	7.7	-9.5	44.4	54.0	-9.6

Notes:	
	a) D.C.F.:Distance Correction Factor
	b) Insert. Loss (dB) = Cable A + Cable B + Cable C .
	c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss. - Transducer Loss - Duty Relaxation (transmitter only).
	d) Negative signs (-) in Margin column signify levels below the limits.
	e) All other emissions not reported are below the equipment noise floor which is at least 10 dB below the limits.
	f) All emissions above 18 GHz were measured at 1 m distance.

Radiated Emissions Test Data

Company:	Symbol	**Model #:**	LA4131	**Standard**	**FCC § 15.247 (R.B.)**
EUT:	Antenna Panel 7.5	**S/N #:**	Sample # 1	**Limits**	11
Project #:	J20036369	**Test Date:**	April 1, 2000	**Test Distance**	3 meters
Test Mode:	Tx @ 2437 MHz	**Engineer:**	Xi-Ming Y.	**Duty Relaxation**	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	2	21	8	10	8	13	12	0	0	0
Model:	EMCO 3143	3160-9	EMCO 3115	AFT18855	CDI_P1000	ACO/400	NPS366	None	None	None

Frequency	Reading	Detector	Ant.	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(µV/m)	dB(µV/m)	dB
2437.0	83.0	Peak	8	0	H	29.1	0.0	3.0	0.0	115.1	-	-
2437.0	73.0	Ave.	8	0	H	29.1	0.0	3.0	0.0	105.1	-	-
4874.0	49.0	Peak	8	8	H	33.9	28.1	4.3	0.0	59.1	74.0	-14.9
4874.0	36.0	Ave.	8	8	H	33.9	28.1	4.3	0.0	46.1	54.0	-7.9
7311.0	37.0	Peak	8	8	V	37.0	28.0	5.5	0.0	51.5	74.0	-22.5
7311.0	26.9	Ave.	8	8	V	37.0	28.0	5.5	0.0	41.4	54.0	-12.6
9748.0	32.4	Peak	8	8	V	38.5	27.3	6.7	0.0	50.3	74.0	-23.7
9748.0	22.8	Ave.	8	8	V	38.5	27.3	6.7	0.0	40.7	54.0	-13.3
12185	40.2	Peak	8	10	V	41.6	39.1	7.6	0.0	50.3	74.0	-23.7
12185	30.5	Ave.	8	10	V	41.6	39.1	7.6	0.0	40.6	54.0	-13.4
14622	37.9	Peak	8	10	V	41.3	37.4	8.4	0.0	50.2	74.0	-23.8
14622	28.0	Ave.	8	10	V	41.3	37.4	8.4	0.0	40.3	54.0	-13.7
17059	38.0	Peak	8	10	V	42.0	38.8	9.2	0.0	50.4	74.0	-23.6
17059	28.0	Ave.	8	10	V	42.0	38.8	9.2	0.0	40.4	54.0	-13.6
19496	32.9	Peak	21	13	V	40.3	23.3	7.0	-9.5	47.4	74.0	-26.6
19496	23.1	Ave.	21	13	V	40.3	23.3	7.0	-9.5	37.6	54.0	-16.4
21933	38.6	Peak	21	13	V	40.3	23.3	7.2	-9.5	53.3	74.0	-20.7
21933	29.3	Ave.	21	13	V	40.3	23.3	7.2	-9.5	44.0	54.0	-10.0
24370	39.7	Peak	21	13	V	40.4	24.2	7.7	-9.5	54.1	74.0	-19.9
24370	30.0	Ave.	21	13	V	40.4	24.2	7.7	-9.5	44.4	54.0	-9.6

Notes:	
	a) D.C.F.:Distance Correction Factor
	b) Insert. Loss (dB) = Cable A + Cable B + Cable C .
	c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss. - Transducer Loss - Duty Relaxation (transmitter only).
	d) Negative signs (-) in Margin column signify levels below the limits.
	e) All other emissions not reported are below the equipment noise floor which is at least 10 dB below the limits.
	f) All emissions above 18 GHz were measured at 1 m distance.

Radiated Emissions Test Data

Company:	Symbol	**Model #:**	LA4131	**Standard**	**FCC § 15.247 (R.B.)**
EUT:	Antenna Panel 7.5	**S/N #:**	Sample # 1	**Limits**	11
Project #:	J20036369	**Test Date:**	April 1, 2000	**Test Distance**	3 meters
Test Mode:	Tx @ 2462 MHz	**Engineer:**	Xi-Ming Y.	**Duty Relaxation**	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	2	21	8	10	8	13	12	0	0	0
Model:	EMCO 3143	3160-9	EMCO 3115	AFT18855	CDI_P1000	ACO/400	NPS366	None	None	None

Frequency	Reading	Detector	Ant	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(µV/m)	dB(µV/m)	dB
2462.0	84.3	Peak	8	0	H	29.1	0.0	3.0	0.0	116.4	-	-
2462.0	74.5	Ave.	8	0	H	29.1	0.0	3.0	0.0	106.6	-	-
4924.0	48.0	Peak	8	8	H	33.9	28.1	4.3	0.0	58.1	74.0	-15.9
4924.0	36.0	Ave.	8	8	H	33.9	28.1	4.3	0.0	46.1	54.0	-7.9
7386.0	36.0	Peak	8	8	V	37.0	28.0	5.5	0.0	50.5	74.0	-23.5
7386.0	26.0	Ave.	8	8	V	37.0	28.0	5.5	0.0	40.5	54.0	-13.5
9848.0	32.5	Peak	8	8	V	38.5	27.6	6.7	0.0	50.1	74.0	-23.9
9848.0	22.6	Ave.	8	8	V	38.5	27.6	6.7	0.0	40.2	54.0	-13.8
12310	41.0	Peak	8	10	V	41.6	39.1	7.6	0.0	51.1	74.0	-22.9
12310	30.6	Ave.	8	10	V	41.6	39.1	7.6	0.0	40.7	54.0	-13.3
14772	37.9	Peak	8	10	V	41.3	37.4	8.4	0.0	50.2	74.0	-23.8
14772	28.4	Ave.	8	10	V	41.3	37.4	8.4	0.0	40.7	54.0	-13.3
17234	37.9	Peak	8	10	V	42.0	38.8	9.2	0.0	50.3	74.0	-23.7
17234	27.8	Ave.	8	10	V	42.0	38.8	9.2	0.0	40.2	54.0	-13.8
19696	32.9	Peak	21	13	H	40.3	23.3	7.0	-9.5	47.4	74.0	-26.6
19696	23.0	Ave.	21	13	H	40.3	23.3	7.0	-9.5	37.5	54.0	-16.5
22158	38.6	Peak	21	13	V	40.3	23.3	7.2	-9.5	53.3	74.0	-20.7
22158	29.0	Ave.	21	13	V	40.3	23.3	7.2	-9.5	43.7	54.0	-10.3
24620	39.7	Peak	21	13	H	40.4	24.2	7.7	-9.5	54.1	74.0	-19.9
2462.0	30.0	Ave.	21	13	H	40.4	24.2	7.7	-9.5	44.4	54.0	-9.6

Notes:	
	a) D.C.F.:Distance Correction Factor
	b) Insert. Loss (dB) = Cable A + Cable B + Cable C .
	c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss. - Transducer Loss - Duty Relaxation (transmitter only).
	d) Negative signs (-) in Margin column signify levels below the limits.
	e) All other emissions not reported are below the equipment noise floor which is at least 10 dB below the limits.
	f) All emissions above 18 GHz were measured at 1 m distance.

Radiated Emissions Test Data

Company:	Symbol	**Model #:**	LA4131	**Standard**	**FCC § 15.247 (R.B.)**
EUT:	Antenna Panel 9	**S/N #:**	Sample # 1	**Limits**	11
Project #:	J20036369	**Test Date:**	April 1, 2000	**Test Distance**	3 meters
Test Mode:	Tx @ 2412 MHz	**Engineer:**	Xi-Ming Y.	**Duty Relaxation**	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	2	21	8	10	8	13	12	0	0	0
Model:	EMCO 3143	3160-9	EMCO 3115	AFT18855	CDI_P1000	ACO/400	NPS366	None	None	None

Frequency	Reading	Detector	Ant.	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(µV/m)	dB(µV/m)	dB
2412.0	83.7	Peak	8	0	H	29.1	0.0	3.0	0.0	115.8	-	-
2412.0	74.0	Ave.	8	0	H	29.1	0.0	3.0	0.0	106.1	-	-
4824.1	45.0	Peak	8	8	H	33.9	28.1	4.3	0.0	55.1	74.0	-18.9
4824.1	33.5	Ave.	8	8	H	33.9	28.1	4.3	0.0	43.6	54.0	-10.4
7235.0	36.0	Peak	8	8	H	36.8	28.0	5.5	0.0	50.3	74.0	-23.7
7235.0	25.0	Ave.	8	8	H	36.8	28.0	5.5	0.0	39.3	54.0	-14.7
9647.9	33.0	Peak	8	8	V	38.5	27.3	6.7	0.0	50.9	74.0	-23.1
9647.9	23.5	Ave.	8	8	V	38.5	27.3	6.7	0.0	41.4	54.0	-12.6
12060	40.2	Peak	8	10	V	41.6	39.1	7.6	0.0	50.3	74.0	-23.7
12060	30.5	Ave.	8	10	V	41.6	39.1	7.6	0.0	40.6	54.0	-13.4
14472	37.9	Peak	8	10	V	41.3	37.4	8.4	0.0	50.2	74.0	-23.8
14472	28.0	Ave.	8	10	V	41.3	37.4	8.4	0.0	40.3	54.0	-13.7
16884	38.0	Peak	8	10	V	40.8	39.4	9.0	0.0	48.4	74.0	-25.6
16884	28.0	Ave.	8	10	V	40.8	39.4	9.0	0.0	38.4	54.0	-15.6
19296	32.9	Peak	21	13	V	40.2	23.3	7.0	-9.5	47.3	74.0	-26.7
19296	23.0	Ave.	21	13	V	40.2	23.3	7.0	-9.5	37.4	54.0	-16.6
21708	38.6	Peak	21	13	V	40.3	23.3	7.2	-9.5	53.3	74.0	-20.7
21708	29.0	Ave.	21	13	V	40.3	23.3	7.2	-9.5	43.7	54.0	-10.3
24120	39.7	Peak	21	13	V	40.4	24.2	7.7	-9.5	54.1	74.0	-19.9
24120	30.0	Ave.	21	13	V	40.4	24.2	7.7	-9.5	44.4	54.0	-9.6

Notes:	
	a) D.C.F.:Distance Correction Factor
	b) Insert. Loss (dB) = Cable A + Cable B + Cable C .
	c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss. - Transducer Loss - Duty Relaxation (transmitter only).
	d) Negative signs (-) in Margin column signify levels below the limits.
	e) All other emissions not reported are below the equipment noise floor which is at least 10 dB below the limits.
	f) All emissions above 18 GHz were measured at 1 m distance.

Radiated Emissions Test Data

Company:	Symbol	**Model #:**	LA4131	**Standard**	**FCC § 15.247 (R.B.)**
EUT:	Antenna Panel 9	**S/N #:**	Sample # 1	**Limits**	11
Project #:	J20036369	**Test Date:**	April 1, 2000	**Test Distance**	3 meters
Test Mode:	Tx @ 2437 MHz	**Engineer:**	Xi-Ming Y.	**Duty Relaxation**	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	2	21	8	10	8	13	12	0	0	0
Model:	EMCO 3143	3160-9	EMCO 3115	AFT18855	CDI_P1000	ACO/400	NPS366	None	None	None

Frequency	Reading	Detector	Ant	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(µV/m)	dB(µV/m)	dB
2437.0	84.3	Peak	8	0	H	29.1	0.0	3.0	0.0	116.4	-	-
2437.0	74.4	Ave.	8	0	H	29.1	0.0	3.0	0.0	106.5	-	-
4874.0	46.8	Peak	8	8	H	33.9	28.1	4.3	0.0	56.9	74.0	-17.1
4874.0	34.5	Ave.	8	8	H	33.9	28.1	4.3	0.0	44.6	54.0	-9.4
7311.0	40.0	Peak	8	8	V	37.0	28.0	5.5	0.0	54.5	74.0	-19.5
7311.0	30.2	Ave.	8	8	V	37.0	28.0	5.5	0.0	44.7	54.0	-9.3
9748.0	36.0	Peak	8	8	V	38.5	27.3	6.7	0.0	53.9	74.0	-20.1
9748.0	25.0	Ave.	8	8	V	38.5	27.3	6.7	0.0	42.9	54.0	-11.1
12185	40.2	Peak	8	10	V	41.6	39.1	7.6	0.0	50.3	74.0	-23.7
12185	30.5	Ave.	8	10	V	41.6	39.1	7.6	0.0	40.6	54.0	-13.4
14622	37.9	Peak	8	10	V	41.3	37.4	8.4	0.0	50.2	74.0	-23.8
14622	28.0	Ave.	8	10	V	41.3	37.4	8.4	0.0	40.3	54.0	-13.7
17059	38.0	Peak	8	10	V	42.0	38.8	9.2	0.0	50.4	74.0	-23.6
17059	28.0	Ave.	8	10	V	42.0	38.8	9.2	0.0	40.4	54.0	-13.6
19496	32.9	Peak	21	13	V	40.3	23.3	7.0	-9.5	47.4	74.0	-26.6
19496	23.1	Ave.	21	13	V	40.3	23.3	7.0	-9.5	37.6	54.0	-16.4
21933	38.6	Peak	21	13	V	40.3	23.3	7.2	-9.5	53.3	74.0	-20.7
21933	29.3	Ave.	21	13	V	40.3	23.3	7.2	-9.5	44.0	54.0	-10.0
24370	39.7	Peak	21	13	V	40.4	24.2	7.7	-9.5	54.1	74.0	-19.9
24370	30.0	Ave.	21	13	V	40.4	24.2	7.7	-9.5	44.4	54.0	-9.6

Notes:	
	a) D.C.F.:Distance Correction Factor
	b) Insert. Loss (dB) = Cable A + Cable B + Cable C .
	c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss. - Transducer Loss - Duty Relaxation (transmitter only).
	d) Negative signs (-) in Margin column signify levels below the limits.
	e) All other emissions not reported are below the equipment noise floor which is at least 10 dB below the limits.
	f) All emissions above 18 GHz were measured at 1 m distance.

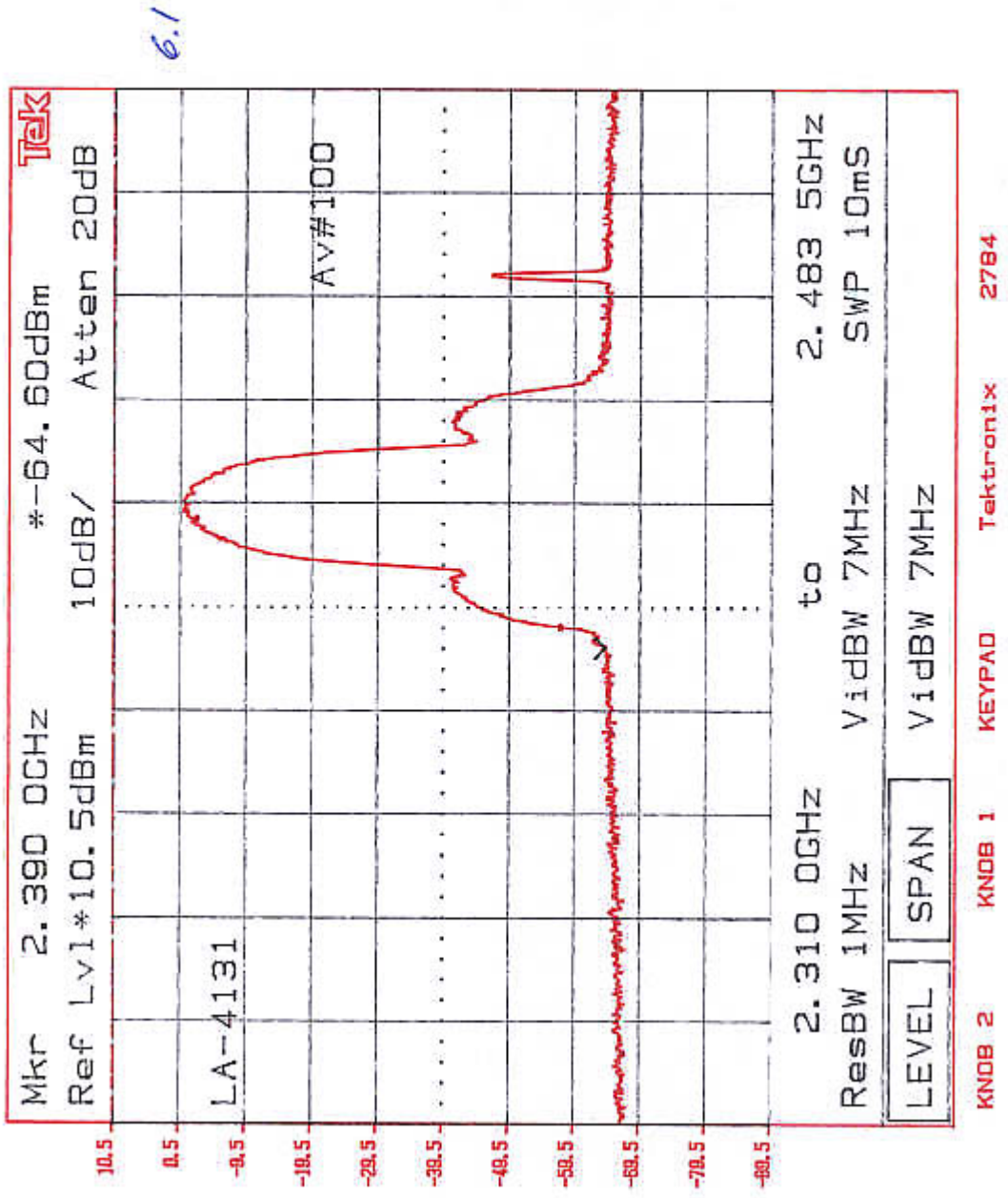
Radiated Emissions Test Data

Company:	Symbol	**Model #:**	LA4131	**Standard**	**FCC § 15.247 (R.B.)**
EUT:	Antenna Panel 9	**S/N #:**	Sample # 1	**Limits**	11
Project #:	J20036369	**Test Date:**	April 1, 2000	**Test Distance**	3 meters
Test Mode:	Tx @ 2462 MHz	**Engineer:**	Xi-Ming Y.	**Duty Relaxation**	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	2	21	8	10	8	13	12	0	0	0
Model:	EMCO 3143	3160-9	EMCO 3115	AFT18855	CDI_P1000	ACO/400	NPS366	None	None	None

Frequency	Reading	Detector	Ant	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(µV/m)	dB(µV/m)	dB
2462.0	83.4	Peak	8	0	H	29.1	0.0	3.0	0.0	115.5	-	-
2462.0	75.5	Ave.	8	0	H	29.1	0.0	3.0	0.0	107.6	-	-
4924.0	46.5	Peak	8	8	H	33.9	28.1	4.3	0.0	56.6	74.0	-17.4
4924.0	35.0	Ave.	8	8	H	33.9	28.1	4.3	0.0	45.1	54.0	-8.9
7386.0	41.9	Peak	8	8	H	36.8	28.0	5.5	0.0	56.2	74.0	-17.8
7386.0	32.2	Ave.	8	8	H	36.8	28.0	5.5	0.0	46.5	54.0	-7.5
9848.0	31.0	Peak	8	8	H	38.5	27.6	6.7	0.0	48.6	74.0	-25.4
9848.0	25.9	Ave.	8	8	H	38.5	27.6	6.7	0.0	43.5	54.0	-10.5
12310	41.0	Peak	8	10	V	41.6	39.1	7.6	0.0	51.1	74.0	-22.9
12310	30.6	Ave.	8	10	V	41.6	39.1	7.6	0.0	40.7	54.0	-13.3
14772	37.9	Peak	8	10	V	41.3	37.4	8.4	0.0	50.2	74.0	-23.8
14772	28.4	Ave.	8	10	V	41.3	37.4	8.4	0.0	40.7	54.0	-13.3
17234	37.9	Peak	8	10	V	42.0	38.8	9.2	0.0	50.3	74.0	-23.7
17234	27.8	Ave.	8	10	V	42.0	38.8	9.2	0.0	40.2	54.0	-13.8
19696	32.9	Peak	21	13	H	40.3	23.3	7.0	-9.5	47.4	74.0	-26.6
19696	23.0	Ave.	21	13	H	40.3	23.3	7.0	-9.5	37.5	54.0	-16.5
22158	38.6	Peak	21	13	V	40.3	23.3	7.2	-9.5	53.3	74.0	-20.7
22158	29.0	Ave.	21	13	V	40.3	23.3	7.2	-9.5	43.7	54.0	-10.3
24620	39.7	Peak	21	13	H	40.4	24.2	7.7	-9.5	54.1	74.0	-19.9
2462.0	30.0	Ave.	21	13	H	40.4	24.2	7.7	-9.5	44.4	54.0	-9.6

Notes:	
	a) D.C.F.:Distance Correction Factor
	b) Insert. Loss (dB) = Cable A + Cable B + Cable C .
	c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss. - Transducer Loss - Duty Relaxation (transmitter only).
	d) Negative signs (-) in Margin column signify levels below the limits.
	e) All other emissions not reported are below the equipment noise floor which is at least 10 dB below the limits.
	f) All emissions above 18 GHz were measured at 1 m distance.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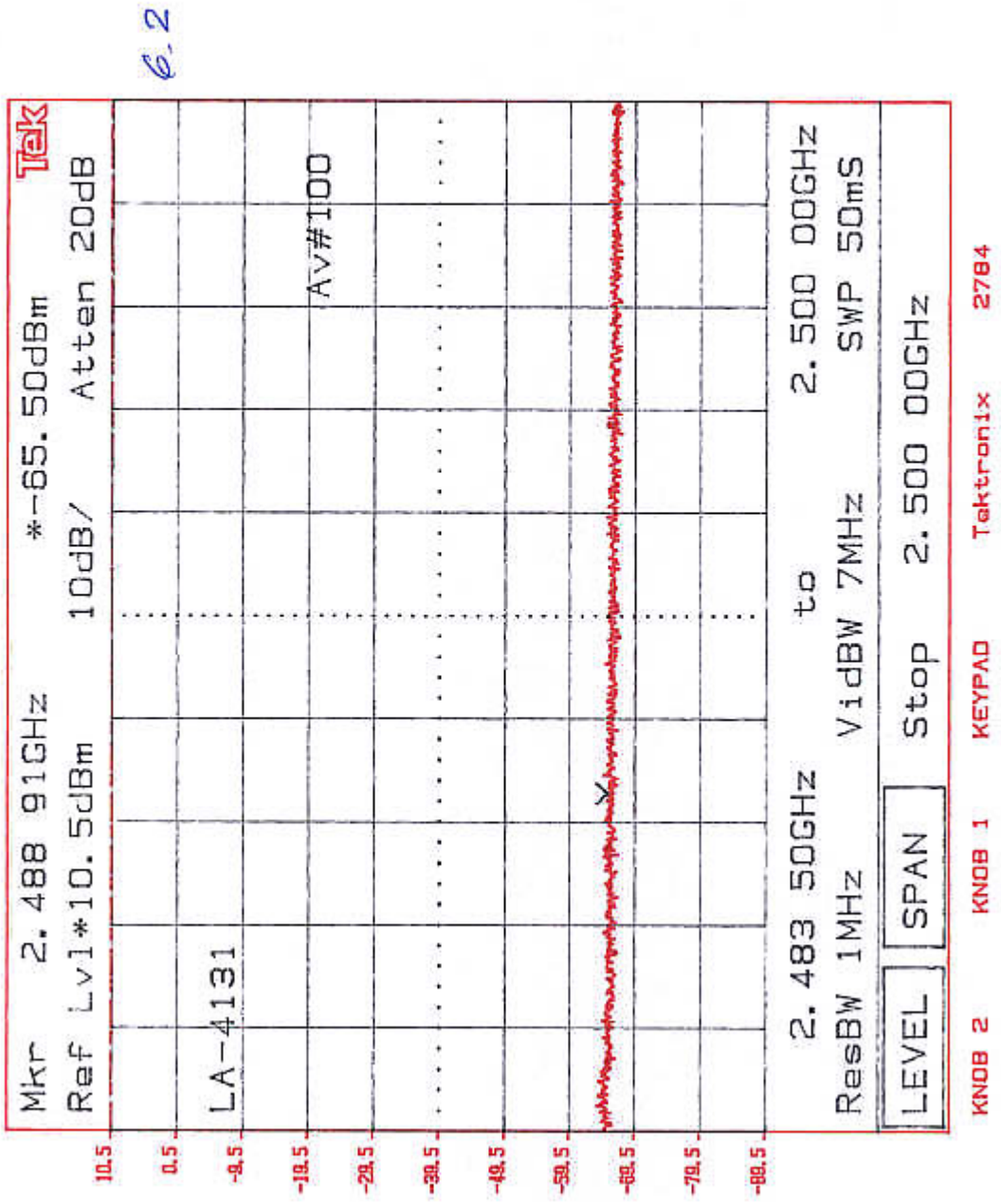
Tek
Mkr 2.390 0GHz
Ref Lvl*10.5dBm
*-64.60dBm
10dB/ Atten 20dB
LA-4131
AV#100
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5
2.310 0GHz to 2.483 5GHz
ResBW 1MHz VidBW 7MHz SWP 10mS
LEVEL SPAN VidBW 7MHz
KNOB 2 KNOB 1 KEYPAD Tektronix 2784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Tek
Mkr 2.488 91GHz
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*-65.50dBm
10dB/ Atten 20dB
LA-4131
Av#100
2.483 50GHz
ResBW 1MHz
to
2.500 00GHz
VidBW 7MHz
SWP 50mS
LEVEL
SPAN
Stop 2.500 00GHz
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784
10.5
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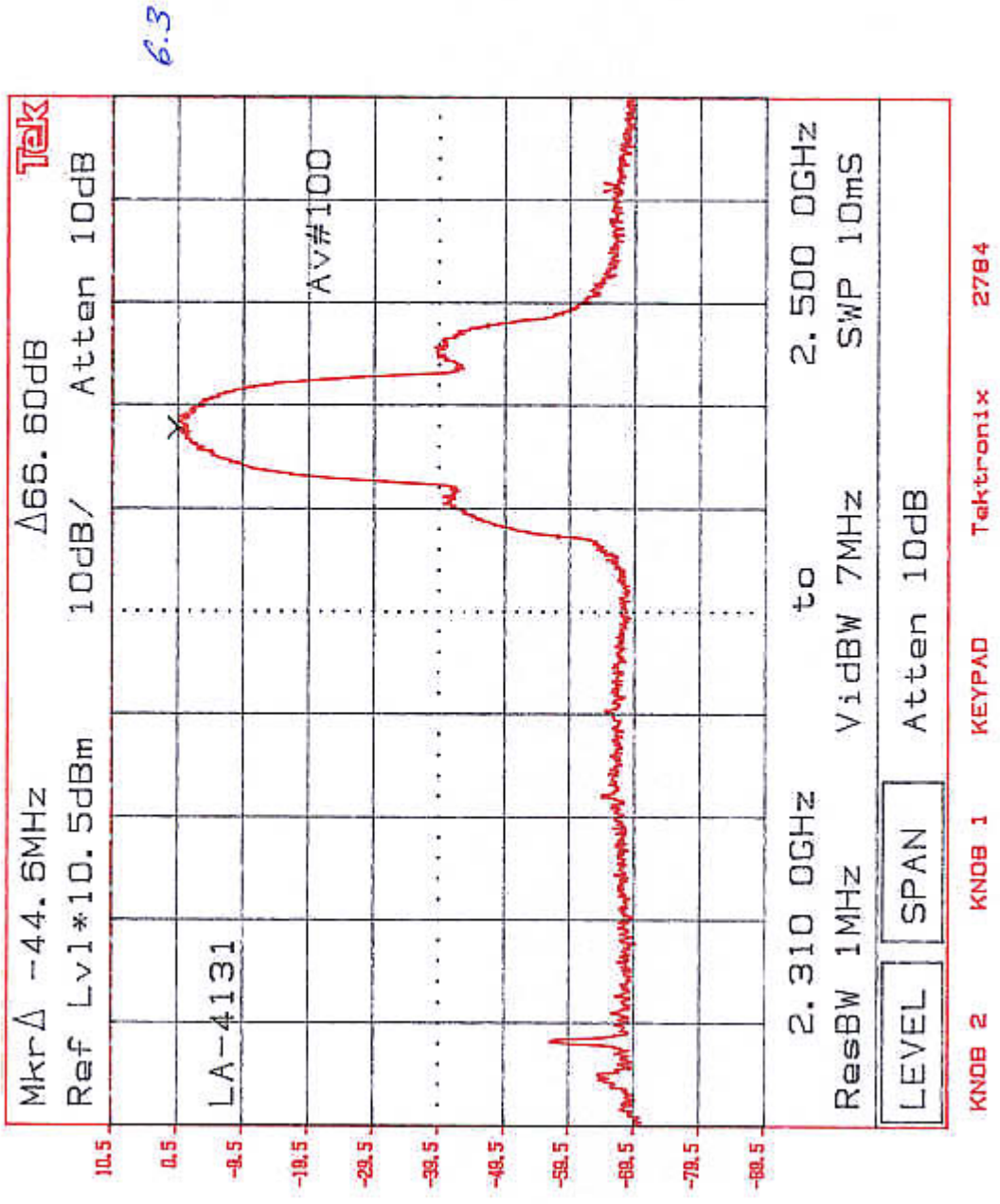
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Tek
Mkr Δ -44.6MHz
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to
2.500 0GHz
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VidBW 7MHz
SWP 10mS
LEVEL
SPAN
Atten 10dB
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784
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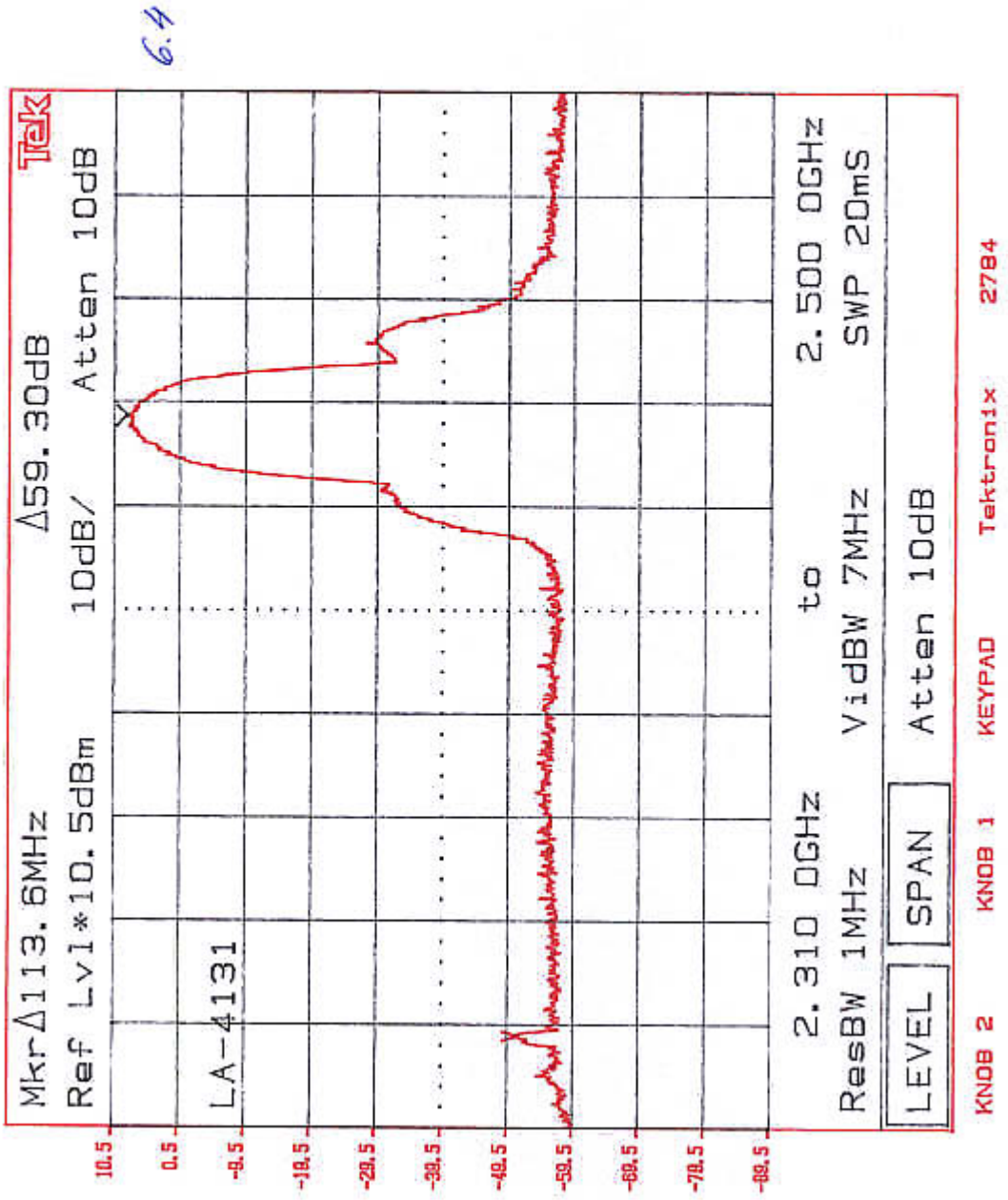
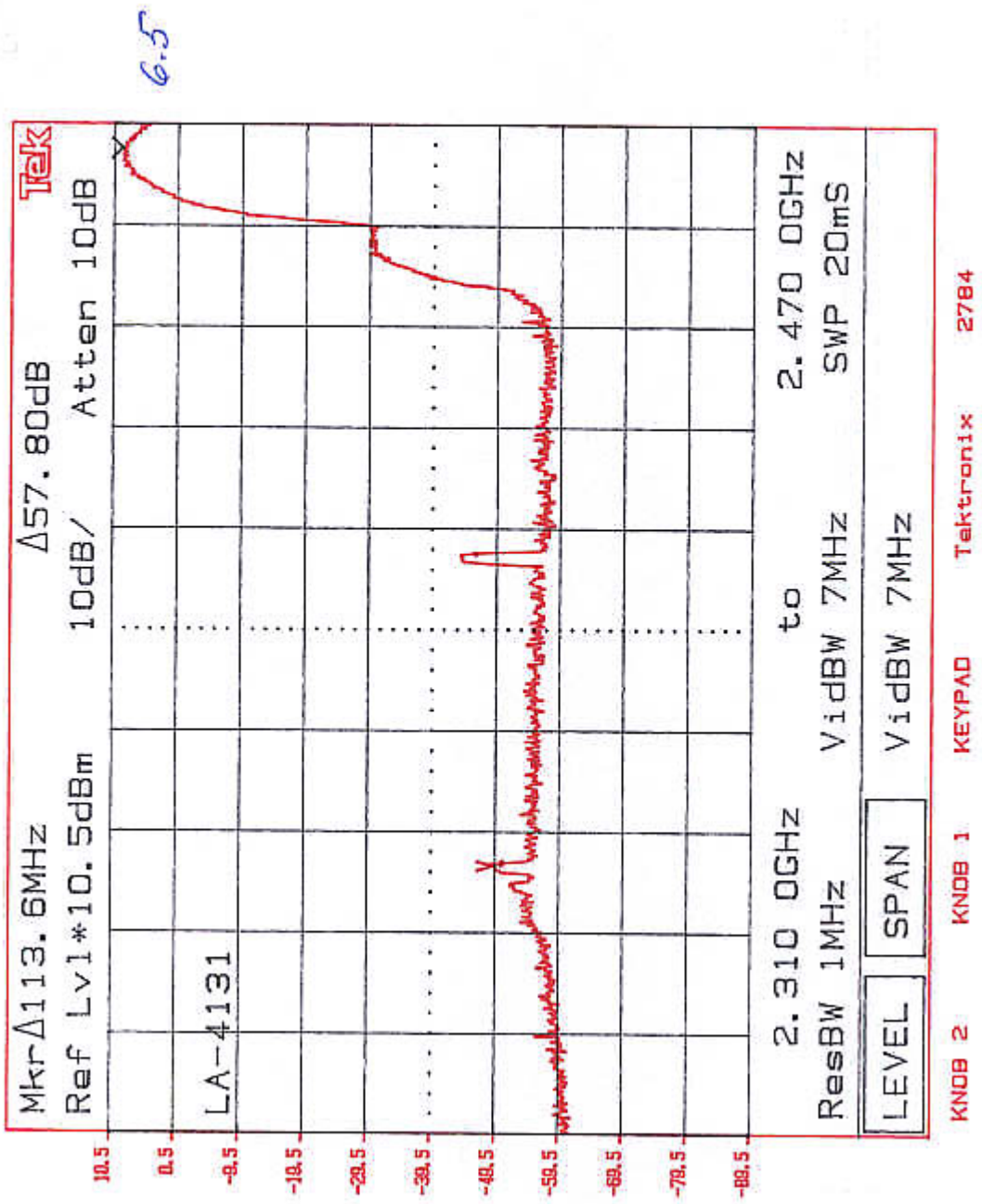
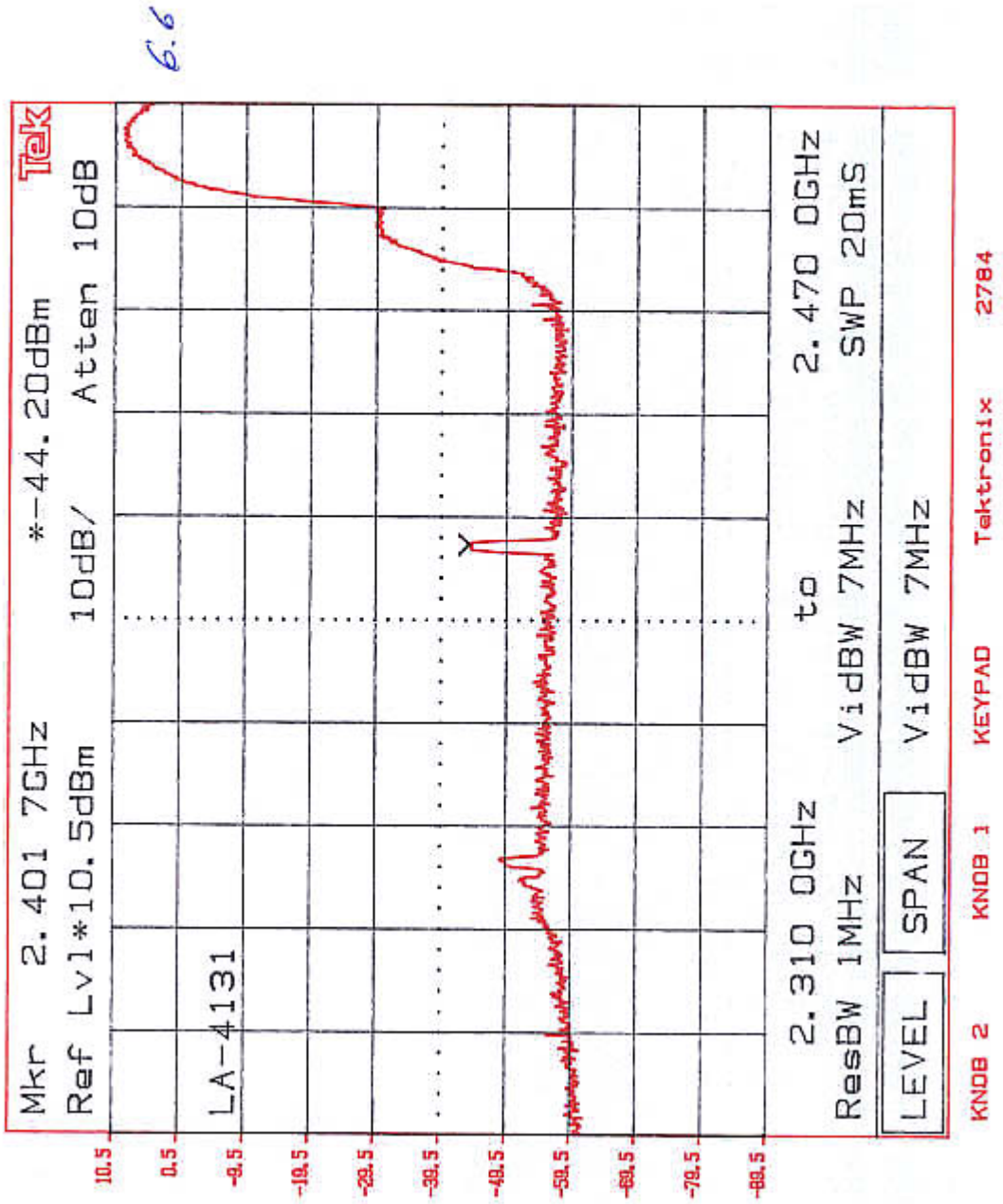
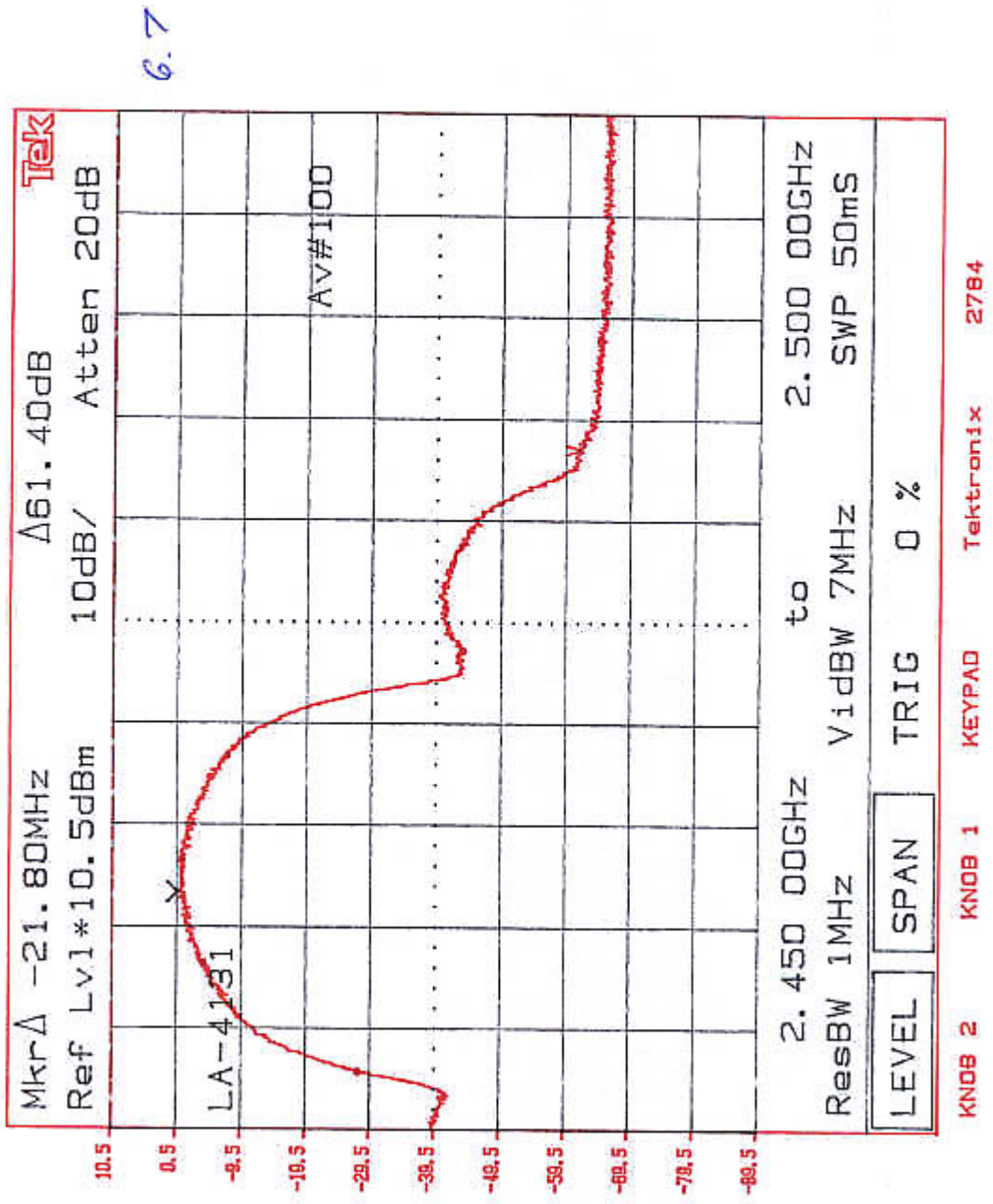
-89.5


6.4
Tek
Mkr-Δ113.6MHz
Ref Lvl*10.5dBm
Δ59.30dB
10dB/
Atten 10dB
LA-4131
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5
2.310 0GHz
ResBW 1MHz
to
2.500 0GHz
VidBW 7MHz
SWP 20mS
LEVEL
SPAN
Atten 10dB
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784


6.5
Tek
Mkr-Δ113.6MHz
Ref Lvl*10.5dBm
Δ57.80dB
10dB/
Atten 10dB
LA-4131
2.310 0GHz
ResBW 1MHz
to
2.470 0GHz
VidBW 7MHz
SWP 20mS
VidBW 7MHz
LEVEL
SPAN
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5


6.6
Tek
Mkr 2.401 7GHz
Ref Lvl*10.5dBm
*-44.20dBm
10dB/ Atten 10dB
LA-4131
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5
2.310 0GHz
to
2.470 0GHz
ResBW 1MHz
VidBW 7MHz
SWP 20mS
LEVEL
SPAN
VidBW 7MHz
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784

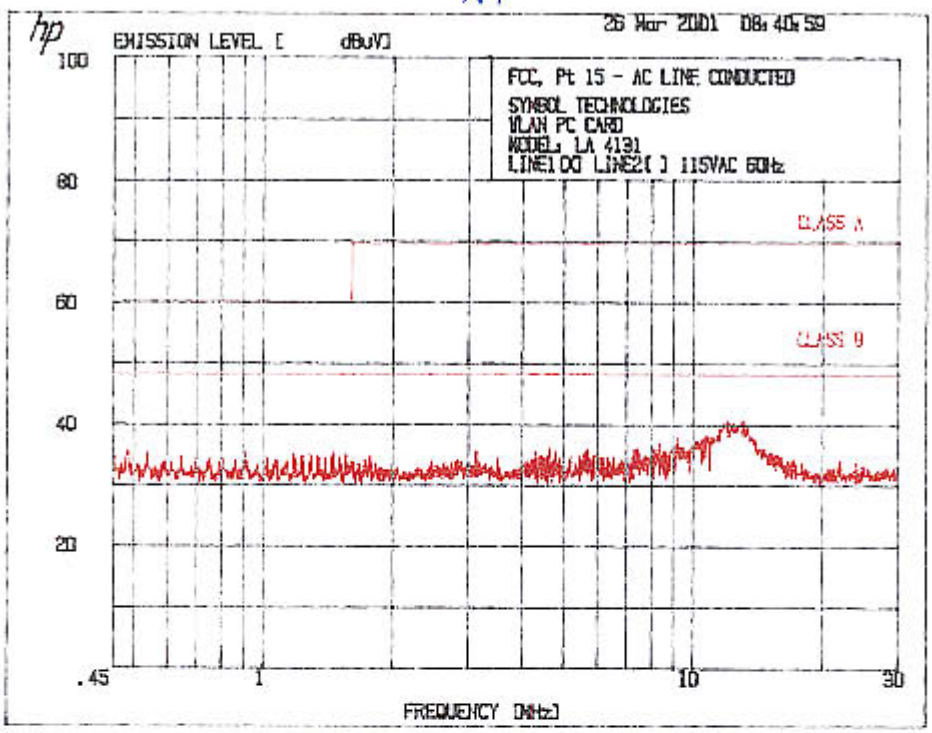

6.7
Tek
MkrΔ -21.80MHz
Ref Lvl*10.5dBm
Δ61.40dB
10dB/ Atten 20dB
AV#100
LA-4131
2.450 00GHz
ResBW 1MHz
to
2.500 00GHz
VidBW 7MHz
SWP 50mS
LEVEL
SPAN
TRIG
0 %
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784
10.5
0.5
-9.5
-19.5
-29.5
-39.5
-49.5
-59.5
-69.5
-79.5
-89.5

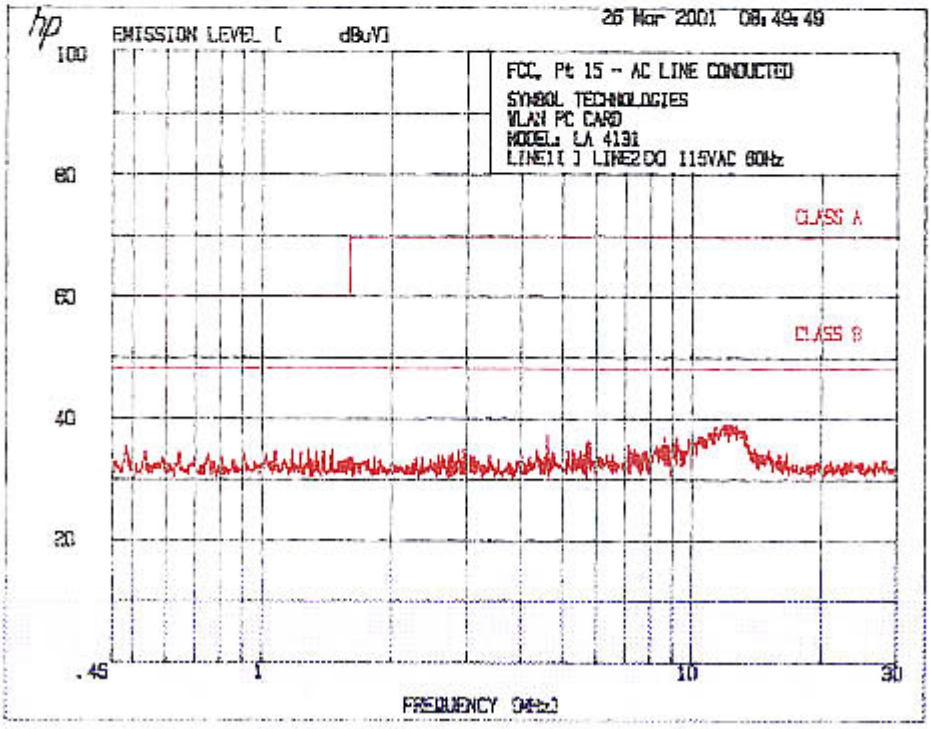
4.7 AC Line Conducted Emission
FCC Rule 15.207:

AC line conducted emission test was performed according the ANSI C63.4 standard. The EUT was connected to AC Line through the LISNs.

For the test result, see attached plot 7.1.

7.1


hp
EMISSION LEVEL [dBuV]
26 Mar 2001 08:40:59
FCC, Pt 15 - AC LINE CONDUCTED
SYMBOL TECHNOLOGIES
WLAN PC CARD
MODEL: LA 4131
LINE1 DO LINE2 [ ] 115VAC 60Hz
CLASS A
CLASS B
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]


hp
EMISSION LEVEL [dBuV]
26 Mar 2001 08:49:49
FCC, Pt 15 - AC LINE CONDUCTED
SYMBOL TECHNOLOGIES
WLAN PC CARD
MODEL: LA 4131
LINE1 [ ] LINE2 DO 115VAC 60Hz
CLASS A
CLASS B
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]

4.8 Radiated Emissions from Digital Section of Transceiver (Transmitter)
FCC Ref: 15.109

See separate DoC report.

4.9 Radiated Emissions from Receiver Section of Transceiver (L.O. Radiation)
FCC Ref: 15.109, 15.111

Not required - EUT operation above 960 MHz only.

5.0 List of test Equipment

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. INTERVAL	CAL. DUE
Spectrum Analyzer w/85650 QP Adapter	Hewlett Packard	8566B	2416A00317 2043A00251	12	4/6/02
Spectrum Analyzer w/85650 QP Adapter	Hewlett Packard	8568B	1912A0053 2521A01021	12	2/23/02
Spectrum Analyzer	Tektronix	2784	B3020108	12	8/4/01
Double-ridged Horn Antenna	EMCO	3115	9107-3712	12	3/17/02
Horn Antenna	EMCO	3160-09	-	#	#
Pre-Amplifier	CDI	P950	ITS009	12	10/6/01
Pre-Amplifier	CDI	P1000	N/A	12	10/06/01
Pre-Amplifier	Avantek	AFT-18855	8723H705	12	10/5/01
Pre-amplifier	CTT	ACO/400	47526	12	10/5/01
Power Meter	Hewlett Packard	8900D	3607U00673	12	7/31/01

No calibration required

6.0 Document History

Revision/ Job Number	Writer Initials	Date	Change
1.0 / J20036369E	SS	May 25, 2001	Original document