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Emissions
Test Report

EUT Name: Adherent Device of GEN 1 AVIVO Mobile Patient Management System

Model No.: PiiX

CFR 47 Part 15.247 2008 and RSS 210: 2007

Prepared for:

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Report/Issue Date: 6 April 2009
Report Number: 30950536.001

Statement of Compliance

Manufacturer:	Corventis, Inc. 1410 Energy Park Drive, Suite #1 St. Paul, MN 55108 (651)-925-3758
Requester / Applicant:	Ashish Bhargava
Name of Equipment:	Adherent Device of GEN 1 AVIVO Mobile Patient Management System
Model No.	PiiX
Type of Equipment:	Intentional Radiator
Application of Regulations:	CFR 47 Part 15.247 2008 and RSS 210: 2007
Test Dates:	24 March 2009 to November 6 2009

Guidance Documents:

Emissions: AN C63.4: 2003

Test Methods:

Emissions: AN C63.4: 2003

The electromagnetic compatibility test and documented data described in this report has been performed and recorded by TUV Rheinland, in accordance with the standards and procedures listed herein. As the responsible authorized agent of the EMC laboratory, I hereby declare that the equipment described above has been shown to be compliant with the EMC requirements of the stated regulations and standards based on these results. If any special accessories and/or modifications were required for compliance, they are listed in the Executive Summary of this report.

This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. This report contains data that are not covered by NVLAP accreditation. This report shall not be reproduced except in full, without the written authorization of TUV Rheinland of North America.

Jeremy Luong	November 6 2009	Sarbjit Shelopal	November 6 2009
Test Engineer	Date	NVLAP Signatory	Date

Industry Canada

NVLAP CODE 500011-0 **US5251** **2932D-1**

1 Executive Summary

1.1 Scope

This report is intended to document the status of conformance with the requirements of the CFR 47 Part 15.247 2008 and RSS 210: 2007 based on the results of testing performed on 24 March 2009 through November 6 2009 on the Adherent Device of GEN 1 AVIVO Mobile Patient Management System Model PiiX manufactured by Corventis, Inc.. This report only applies to the specific samples tested under the stated test conditions. It is the responsibility of the manufacturer to assure that additional production units of this model are manufactured with identical or EMI equivalent electrical and mechanical components. This report is further intended to document changes and modifications to the EUT throughout its life cycle. All documentation will be included as a supplement.

1.2 Purpose

Testing was performed to evaluate the EMC performance of the EUT in accordance with the applicable requirements, procedures, and criteria defined in the application of regulations and application of standards listed in this report.

1.3 Summary of Test Results

Table 1: Summary of Test Results

Test	Test Method ANSI C63.4	Test Parameters (from Standard)	Result
Spurious Emission in Received Mode	CFR47 15.109, RSS-GEN Sect.7.2.3	Class B	**Complied**
Spurious Emission in Transmitted Mode	CFR47 15.209, RSS-GEN Sect.7.2.3	Class B	**Complied**
Restricted Bands of Operation	CFR47 15.205, RSS 210 Sect.2.6	Class B	**Complied**
AC Power Conducted Emission	CFR47 15.207, RSS-GEN Sect.7.2.2	Class B	**NA**
Occupied Bandwidth	CFR47 15.247 (a2), RSS GEN Sect.4.4.1	None	**NA**
Hopping Frequency Separation	CFR47 15.247 (a1), RSS 210 Sect.A.8.1.2	1MHz	**Complied**
Number of Hopping Channel	CFR47 15.247 (a1), RSS 210 Sect.A.8.1.4	Min. of 15 ch.	**Complied**
Average Time of Occupancy	CFR47 15.247 (a1), RSS 210 Sect.A.8.1.4	0.4s	**Complied**
Maximum Transmitted Power	CFR47 15.247 (b3), RSS 210 Sect. A.8.4	30dBm or 1W	**Complied**
Peak Power Spectral Density	CFR47 15.247 (e), RSS 210 Sect. A.8.2	8dBm/ 3kHz.	**Complied**
Bandedge/Out of Band Measurement	CFR47 15.247 (d), RSS 210 Sect. A.8.5	20dBr	**Complied**

1.4 Special Accessories

No special accessories were necessary in order to achieve compliance.

1.5 Equipment Modifications

None.

2 Laboratory Information

2.1 Accreditations & Endorsements

2.1.1 US Federal Communications Commission

TUV Rheinland of North America at 1279 Quarry Ln, Pleasanton, CA 94566 is accredited by the commission for performing testing services for the general public on a fee basis. These laboratory test facilities have been fully described in reports submitted to and accepted by the FCC (Site Reg. # US5251). The laboratory scope of accreditation includes: Title 47 CFR Parts 15, 18, and 90. The accreditation is updated every 3 years.

2.1.2 NIST / NVLAP

TUV Rheinland of North America is accredited by the National Voluntary Laboratory Accreditation Program, which is administered under the auspices of the National Institute of Standards and Technology. The laboratory has been assessed and accredited in accordance with ISO Guide 17025:1999 and ISO 9002 (Lab code 500011-0) scope of laboratory accreditation includes emission and immunity testing. The accreditation is updated annually.

2.1.3 Canada – Industry Canada

Industry Canada

TUV Rheinland of North America at the 1279 Quarry Ln, Pleasanton, CA 94566 address is accredited by Industry Canada for performing testing services for the general public on a fee basis. This laboratory test facilities have been fully described in reports submitted to and accepted by Industry Canada (File Number 2932D-1). This reference number is the indication to the Industry Canada Certification Officers that the site meets the requirements of RSS 212, Issue 1 (Provisional). The accreditation is updated every 3 years.

2.1.4 Japan – VCCI

The Voluntary Control Council for Interference by Information Technology Equipment (VCCI) is a group that consists of Information Technology Equipment (ITE) manufacturers and EMC test laboratories. The purpose of the Council is to take voluntary control measures against electromagnetic interference from Information Technology Equipment, and thereby contribute to the development of a socially beneficial and responsible state of affairs in the realm of Information Technology Equipment in Japan. TUV Rheinland of North America at 1279 Quarry Ln, Pleasanton, CA 94566 has been assessed and approved in accordance with the Regulations for Voluntary Control Measures. (Registration No. R-2366, C-2585, C-2586).

2.1.5 Acceptance by Mutual Recognition Arrangement

The United States has an established agreement with specific countries under the Asia Pacific Laboratory Accreditation Corporation (APLAC) Mutual Recognition Arrangement. Under this agreement, all TUV Rheinland at 1279 Quarry Ln, Pleasanton, CA 94566 test results and test reports within the scope of the laboratory NIST / NVLAP accreditation will be accepted by each member country.

2.2 Test Facilities

All of the test facilities are located at 1279 Quarry Lane, Pleasanton, California 94566, USA. The 2305 Mission College, Santa Clara, 95054, USA location is considered a Pleasanton annex.

2.2.1 Emission Test Facility

The Semi-Anachoic chamber and AC Line Conducted measurement facility used to collect the radiated and conducted data has been constructed in accordance with ANSI C63.7:1992. The site has been measured in accordance with and verified to comply with the theoretical normalized site attenuation requirements of ANSI C63.4:2003, at a test distance of 3 and 10 meters. This site has been described in reports dated May 12, 1997, submitted to the FCC, and accepted by letter dated June 25, 1997 (31040/SIT 1300F2). The site is listed with the FCC and accredited by NVLAP (code 500011-0). The 10-meter semi-anechoic chamber used to collect the radiated data has been verified to comply with the theoretical normalized site attenuation requirements of ANSI C63.4:2003, at a test distance of 3 meter and 10 meters. A report detailing this site can be obtained from TUV Rheinland of North America.

2.2.2 Immunity Test Facility

ESD, EFT, Surge, PQF: These tests are performed in an environmentally controlled room with a 3.7 m x 4.8 m x 3.175 mm thick aluminum floor connected to PE ground.

For ESD testing, tabletop equipment is placed on an insulated mat with a surface resistivity of 10^9 Ohms/square on a 1.6 m x 0.8 m x 0.8 m high non-conductive table with a 3.175 mm aluminum top (Horizontal Coupling Plane). The HCP is connected to the main ground plane via a low impedance ground strap through two 470-kΩ resistors. The Vertical Coupling Plane consists of an aluminum plate 50 cm x 50 cm x 3.175 mm thick. The VCP is connected to the main ground plane via a low impedance ground strap through two 470-kΩ resistors.

For EFT, Surge, PQF, the HCP and VCP are removed.

RF Field Immunity testing is performed in a 7.3m x 4.3m x 4.1m anechoic chamber.

RF Conducted and Magnetic Field Immunity testing is performed on a 4.8m x 3.7m x 3.175mm thick aluminum ground plane.

All test areas allow a minimum distance of 1 meter from the EUT to walls or conducting objects.

2.3 Measurement Uncertainty

Two types of measurement uncertainty are expressed in this report, per *ISO Guide To The Expression Of Uncertainty In Measurement*, 1st addition, 1995.

The Combined Standard Uncertainty is the standard uncertainty of the result of a measurement when that result is obtained from the values of a number of other quantities; it is equal to the positive square root of the sum of the variances or co-variances of these other quantities, weighted according to how the measurement result varies with changes in these quantities. The term *standard uncertainty* is the result of a measurement expressed as a standard deviation.

The Expanded Uncertainty defines an interval about the result of a measurement that may be expected to encompass a large fraction of the distribution of values that could reasonably be attributed to the measurand. The fraction may be viewed as the coverage probability or level of confidence of the interval.

Table 2: Summary of Uncertainties

Test	System	Combined Standard Uncertainty
Conducted Emissions	LISN, spectrum analyzer, coaxial cables, and pads	± 1.2 dB
Radiated Emissions	antenna, spectrum analyzer, pre-amplifier, coaxial cables, and pads	± 1.6 dB
Radiated Immunity	antenna, amplifier, cables, signal generator field probe, and spectrum analyzer	± 2.7 dB
Conducted Immunity	coupling/decoupling device, amplifier, cables, signal generator, and spectrum analyzer	± 1.5 dB
Voltage Dips, Drops, and Interruptions	AC power source and interruptions generator	± 4.3 dB
Electrical Fast Transient Immunity	AC power output source and fast transient generator	± 5.8 dB
Lightning Surge Immunity	AC power output source and lightning surge generator	± 8.0 dB
Electrostatic Discharge Immunity	air and contact discharge generators	± 4.1 dB
Power Frequency Magnetic Field Immunity	AC voltage source	± 0.58 dB
Damped Oscillatory Wave Immunity	AC power output source and oscillatory wave generator	± 8.7 dB
Harmonic Current and Voltage Flicker	AC power source and detection devices	± 11.6 dB

The expanded uncertainty at a level of 95% confidence is obtained by multiplying the combined standard uncertainty by a coverage factor of 2. Compliance criteria are not based on measurement uncertainty.

2.4 Calibration Traceability

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). The measurement method complies with ANSI/NCSL Z540-1-1994 and ISO Standard 17025:2005.

3 Product Information

3.1 Product Description

The PiiX is intended to continuously record, store, and periodically transmit physiological data. The system is indicated for those patients who require monitoring for the detection of non-lethal cardiac arrhythmias. It also monitors, derives and displays:

- ECG
- Heart Rate (including HR variability)
- Activity
- Posture
- Body Temperature
- Respiration Rate (including RR variability)
- Body fluid status

3.2 Equipment Configuration

A description of the equipment configuration is given in Table 13 and Table 14. The EUT was tested as called for in the test standard and was configured and operated in a manner consistent with its intended use. The EUT was connected to rated power and allowed to reach intended operating conditions. The placement of the EUT system components was guided by the test standard and selected to represent typical installation conditions.

In the case of an EUT that can operate in more than one configuration, preliminary testing was performed to determine the configuration that produced maximum radiation.

The final configuration was selected to produce the worst case radiation for emissions testing and to place the EUT in the most susceptible state for immunity testing.

3.3 Operating Mode

A description of the operation mode is given in Table 13 and Table 14. In the case of an EUT that can operate in more than one state, preliminary testing was performed to determine the operating mode that produced maximum radiation.

The final operating mode was selected to produce the worst case radiation for emissions testing and to place the EUT in the most susceptible state for immunity testing.

3.4 Unique Antenna Connector

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 this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, 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 CFR47 Parts 15.211, 15.213, 15.217, 15.219, or 15.221.

3.4.1 Results

The PiiX has an on-board antenna. It is permanently attached.

4 Emissions

Testing was performed in accordance with CFR 47 Part 15.247: 2007 and RSS 210 Annex 8: 2007. These test methods are listed under the laboratory's NVLAP Scope of Accreditation. This test measures the levels emanating from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices. Procedures described in section 8 of the standard were used.

4.1 Output Power Requirements

The maximum peak output power requirement is the maximum radiated power delivering to the transmitting antenna under specified conditions of measurements in the presence of modulation.

Per CFR47 Part 15.31(e) the PiiX is battery powered. Output power shall verify with the new battery or new sample.

The maximum output power and harmonics shall not exceed CFR47 Part 15.247 (b3):2008 and RSS 210 A.8.4

The maximum transmitted power is +30dBm or 1Watt.

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

Table 3: RF Power – Test Results

Test Conditions: Radiated Measurement, Normal Temperature, Normal Voltage							
Antenna Type: Integrated				**Output Power Rated:** +3.98 dBm			
Signal State: Modulated				**Data Type:** DH5			
Ambient Temp.: 23 °C				**Relative Humidity:**38 %			
Test Results							
Operating Channel	**Polarity**	**Table/ Height**	**FIM [dBuV/m]**	**FIM [dBm/m]**	**EIRP [dBm]**	**Limit [dBm]**	**Margin [dB]**
2402MHz	H	330/1.6	98.67	-8.33	3.47	+30.00	-26.53
2402MHz	V	270/1.1	93.45	-13.55	-1.75	+30.00	-31.75
2441MHz	H	300/1.6	98.67	-8.33	3.47	+30.00	-26.53
2441MHz	V	265/1.0	95.28	-11.72	0.08	+30.00	-29.92
2480MHz	H	323/1.6	98.46	-8.54	3.26	+30.00	-26.74
2480MHz	V	281/1.1	96.62	-10.38	1.42	+30.00	-28.58

Note: (*) All three orthogonal axis were prescanned. Y-Axis had the highest level.

(**) EIRP calculated using P=((FIM*d)^2)/(30G)

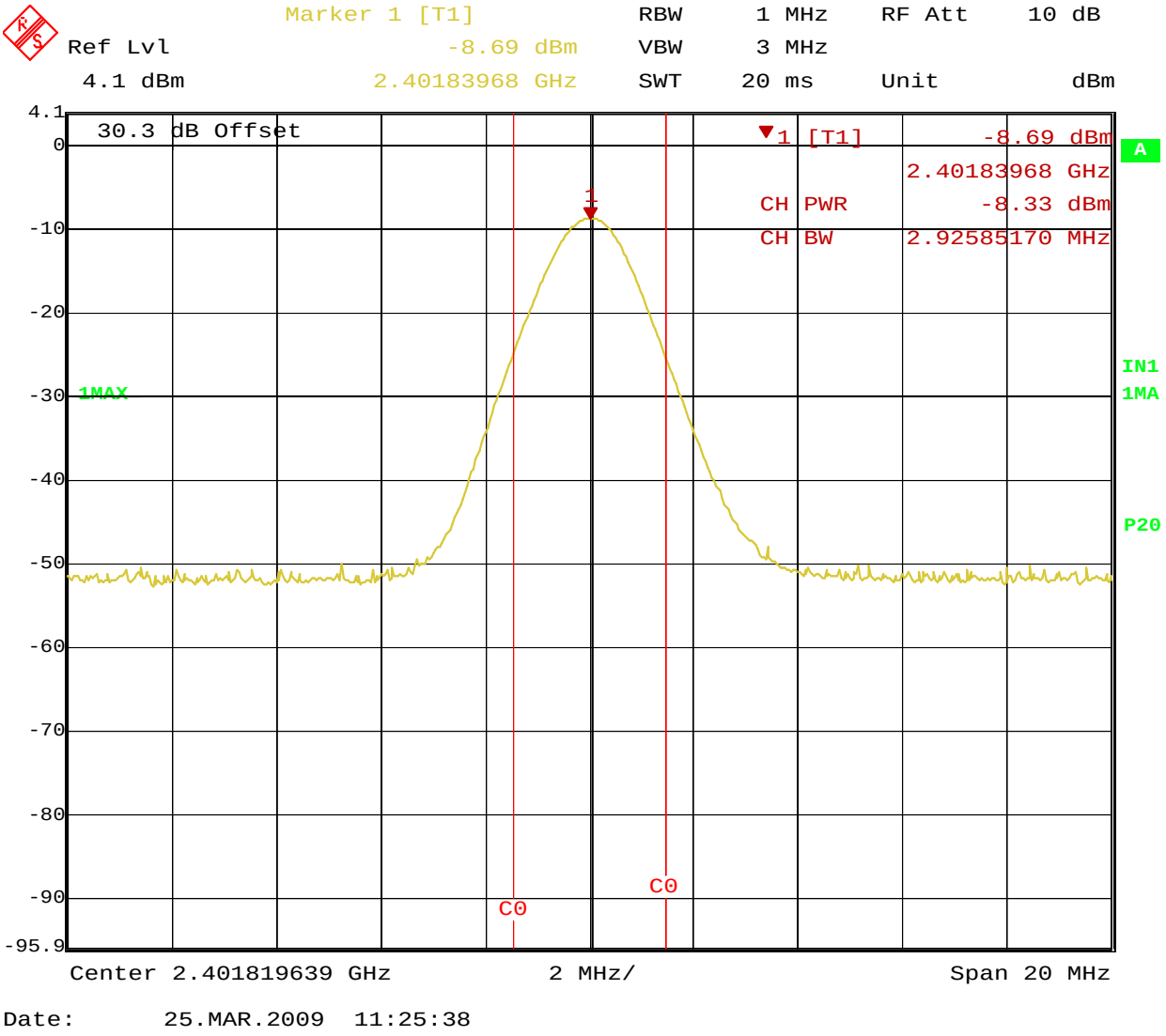

Figure 1: Maximum Transmitted Power at 3 Meter – Lowest Channel 2402MHz (Horizontal)

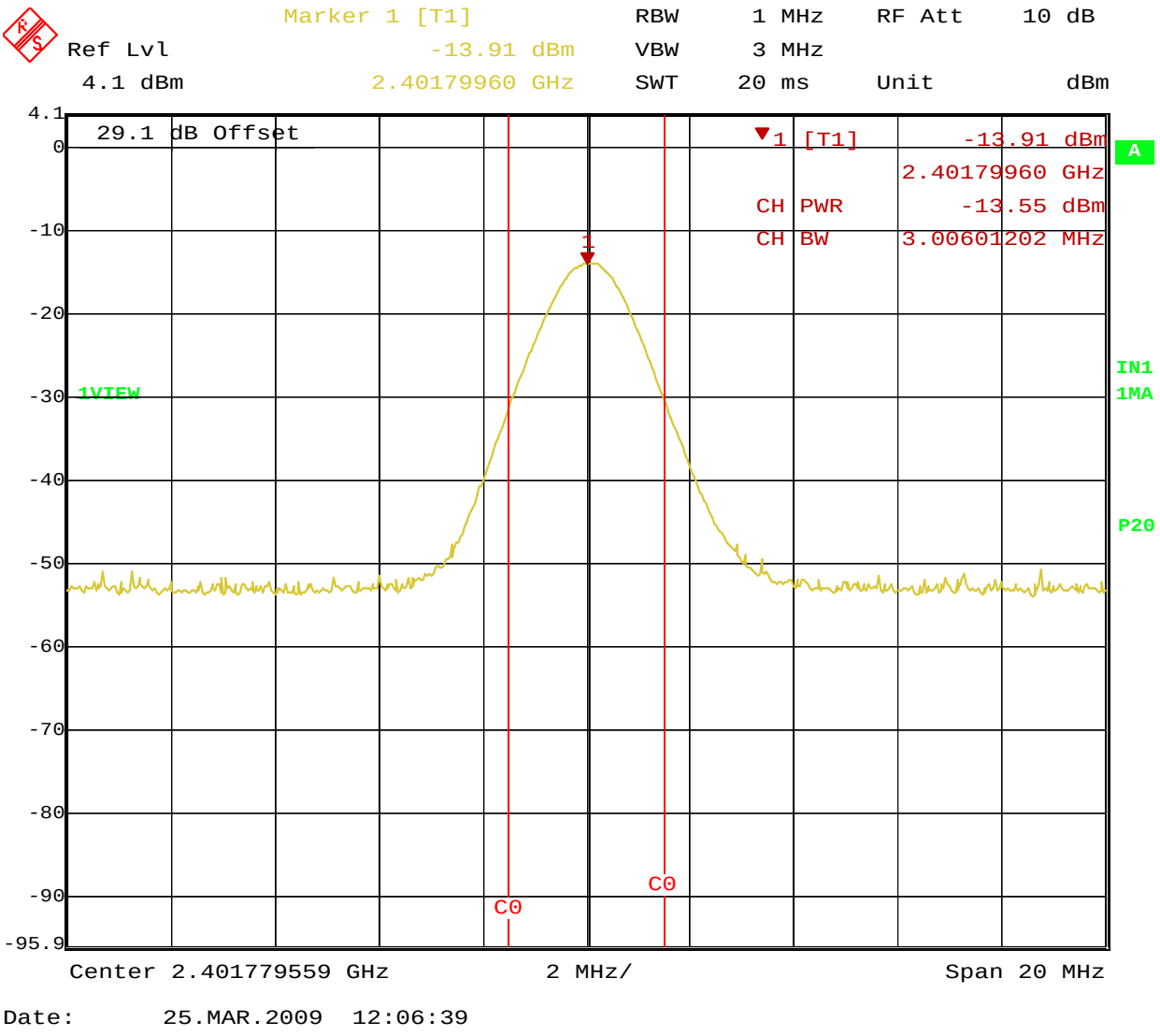

Figure 2: Maximum Transmitted Power at 3 Meter – Lowest Channel 2402 MHz (Vertical)

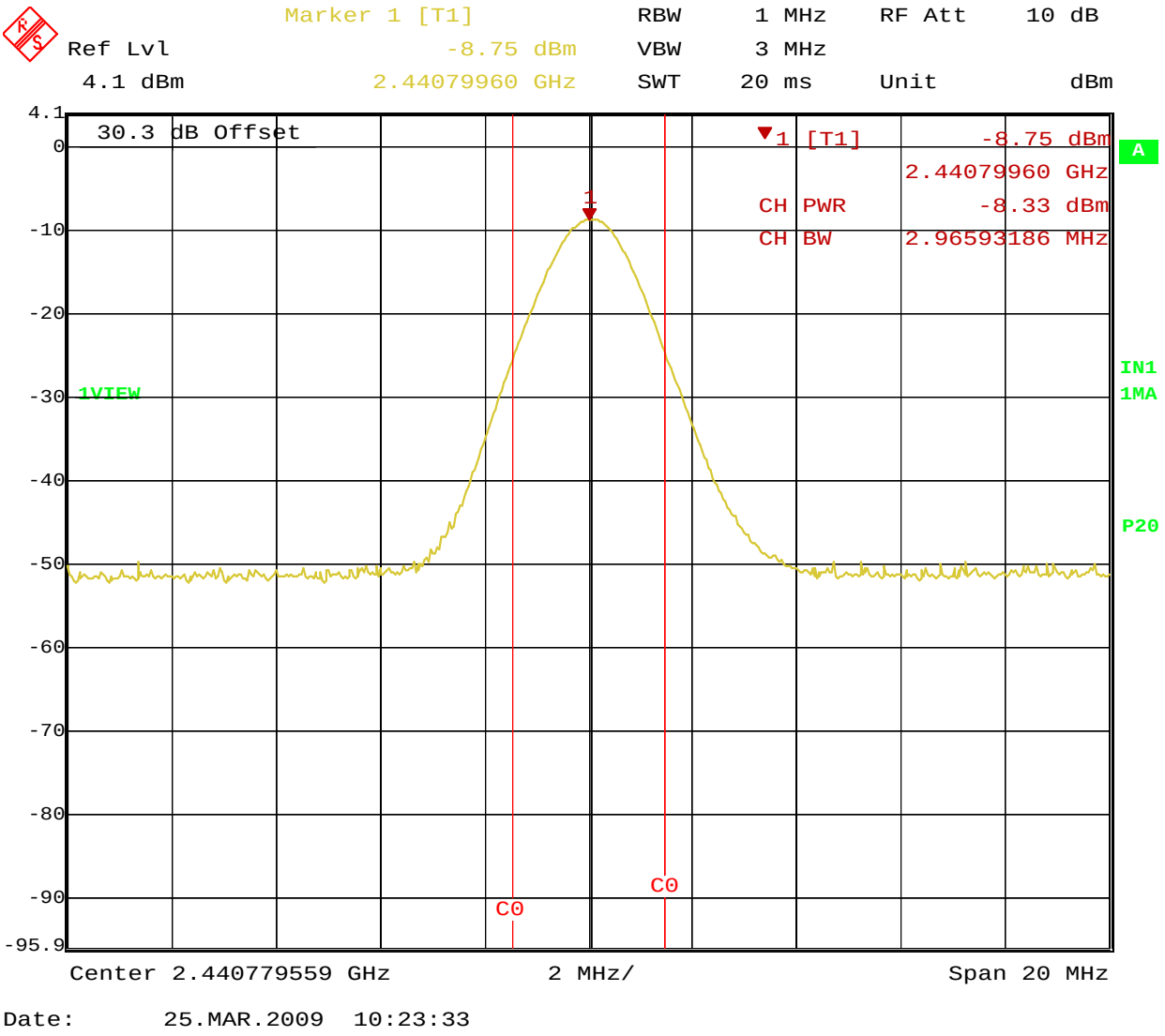

Figure 3: Maximum Transmitted Power at 3 Meter –Middle Channel 2441 MHz (Horizontal)

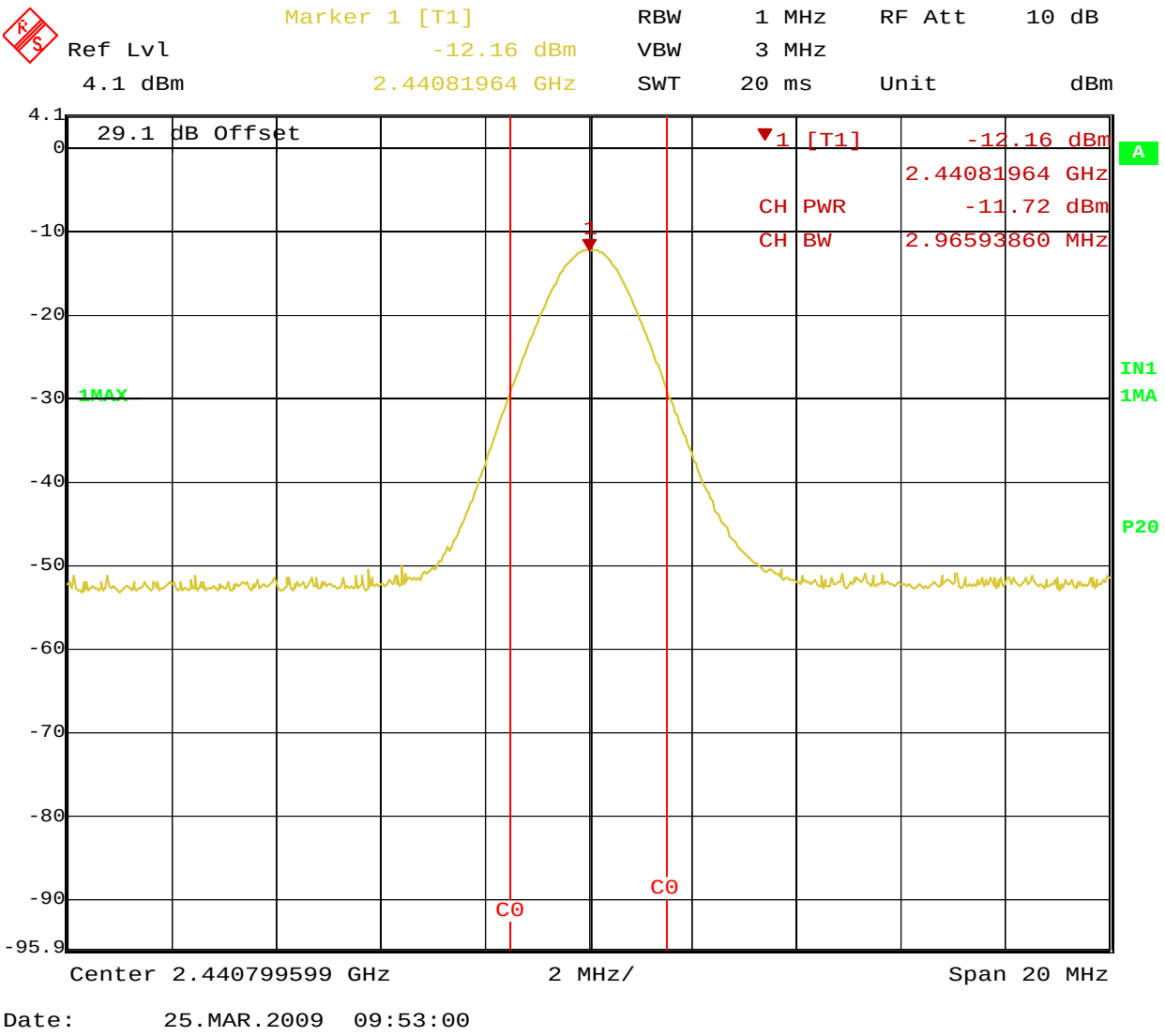

Figure 4: Maximum Transmitted Power at 3 Meter – Middle Channel 2441 MHz (Vertical)

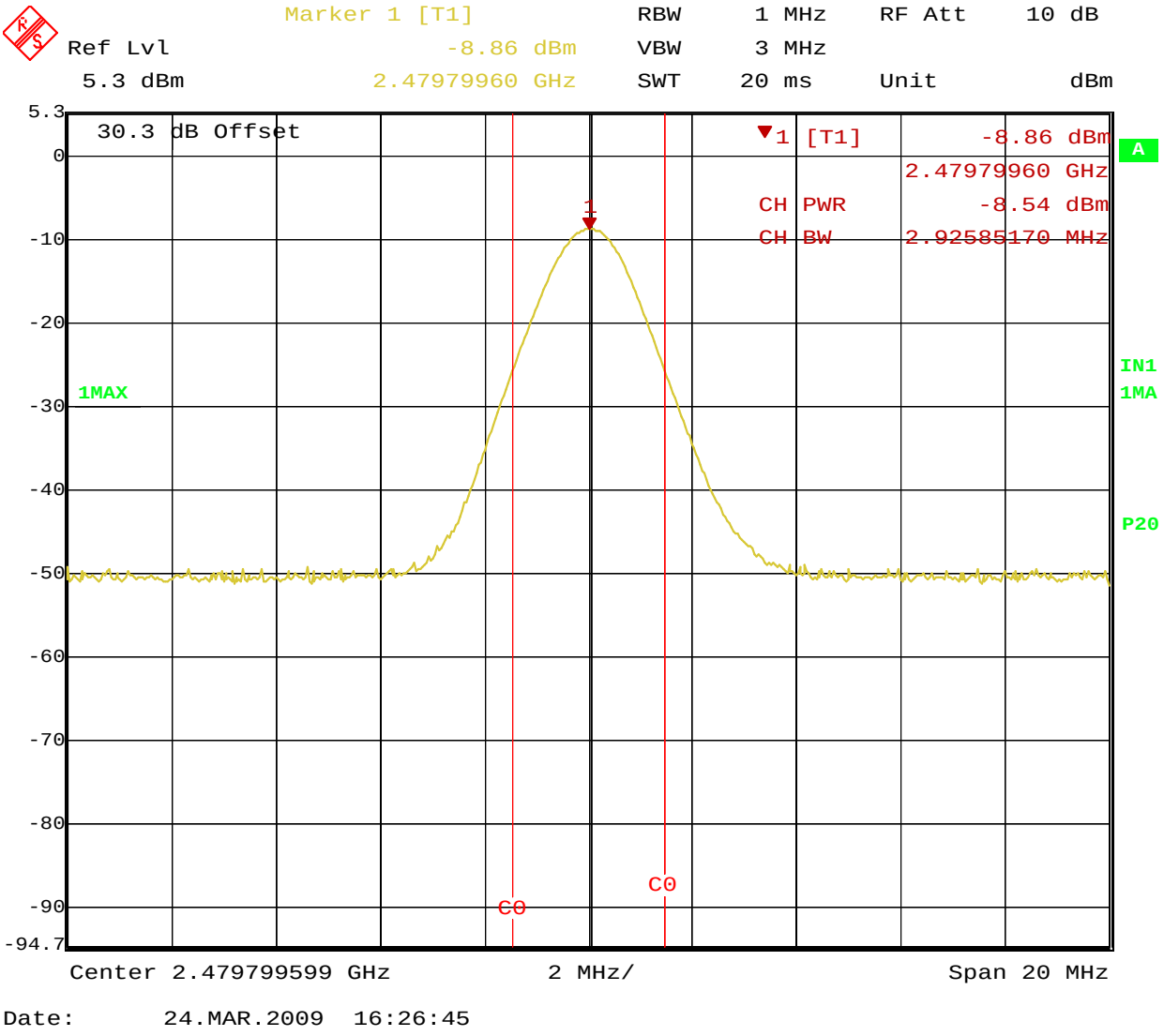

Figure 5: Maximum Transmitted Power at 3 Meter – Highest Channel 2480 MHz (Horizontal)

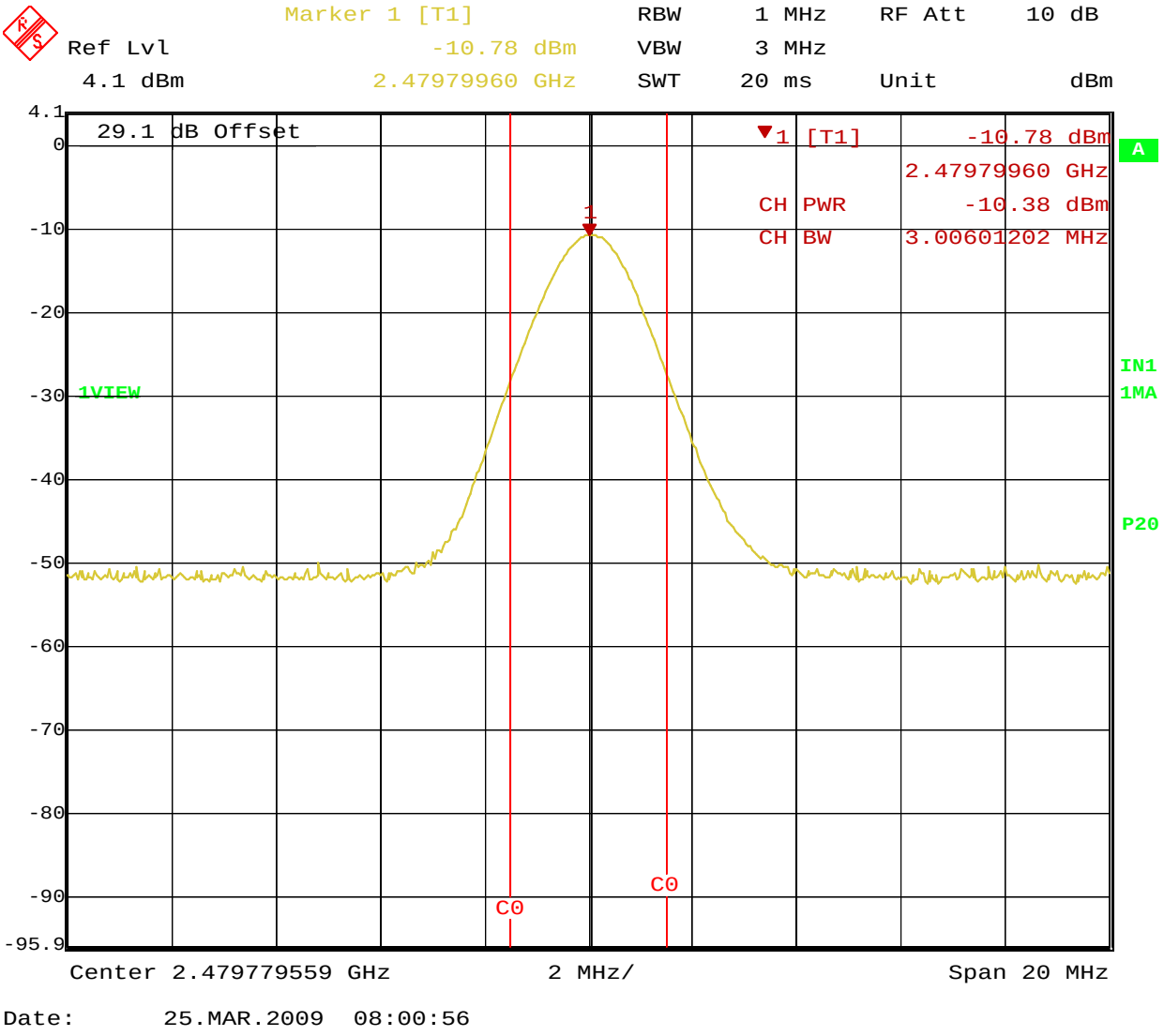

Figure 6: Maximum Transmitted Power at 3 Meter – Highest Channel 2480 MHz (Vertical)

4.2 Occupied Bandwidth

The occupied bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency.

The 99% bandwidth is the bandwidth in which 99% of the transmitted power occupied.

The 20dB bandwidth is defined the bandwidth of 20dBr from highest transmitted level of the fundamental frequency.

These measurements were used for information only.

Table 4: Occupied Bandwidth – Test Results

Test Conditions: Radiated Measurement, Normal Temperature and Voltage only			
Antenna Type: Integrated		**Output Power Rated:** +3.98 dBm	
Signal State: Modulated		**Data Type:** DH5	
Ambient Temp.: 23 °C		**Relative Humidity:**38 %	
Bandwidth Test Results			
Operating Channel	**Polarity**	**99% Bandwidth (MHz)**	**20dB Bandwidth (kHz)**
2402 MHz	H	176.35270541	393.29659319
2402 MHz	V	168.33667335	393.28657315
2441 MHz	H	168.33667335	393.28657315
2441 MHz	V	196.39278557	393.28657315
2480 MHz	H	164.32865731	393.29659319
2480 MHz	V	176.32270541	393.29659319

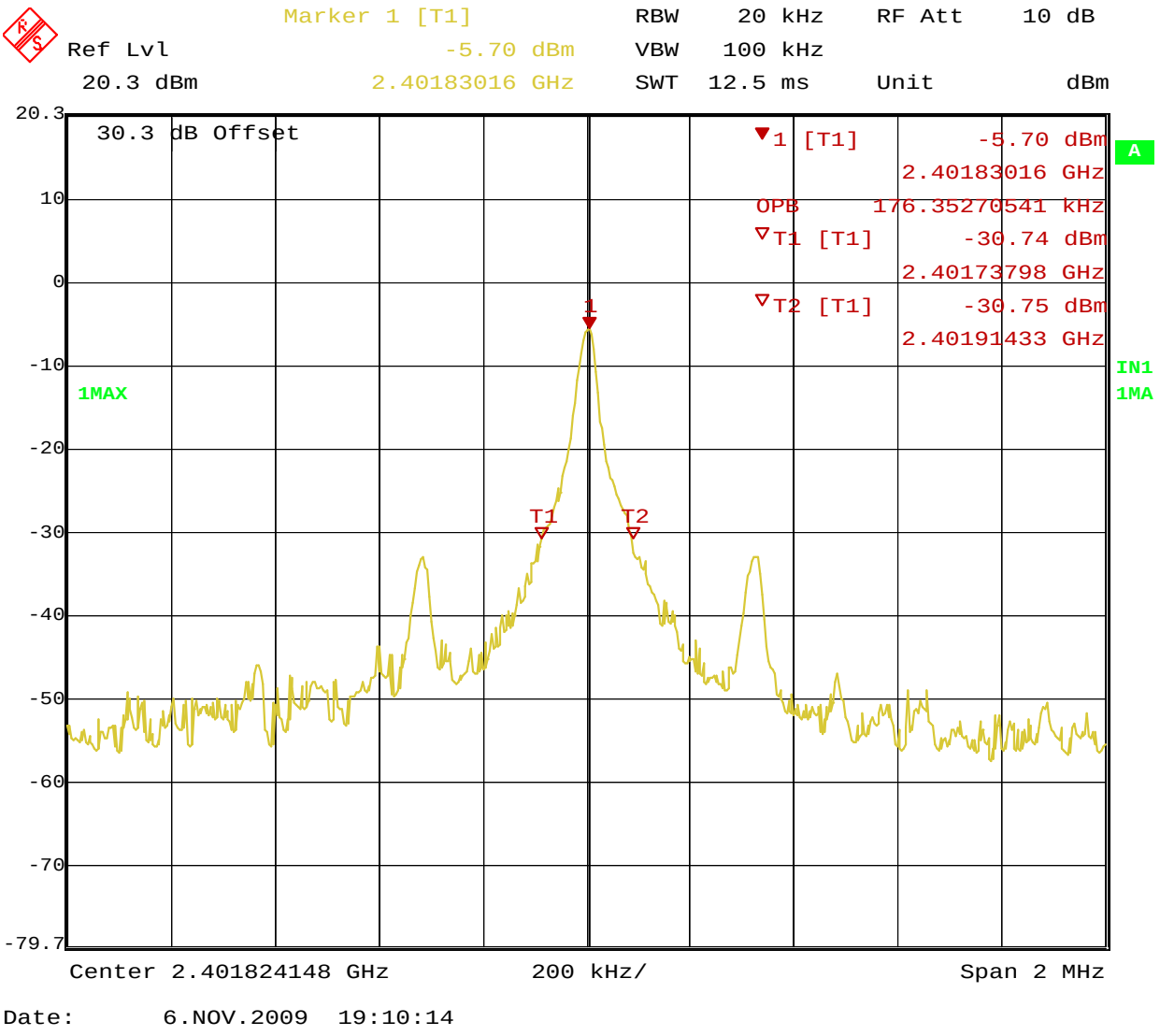

Figure 7: 99% Bandwidth – Operating Channel 2402 MHz (Horizontal)

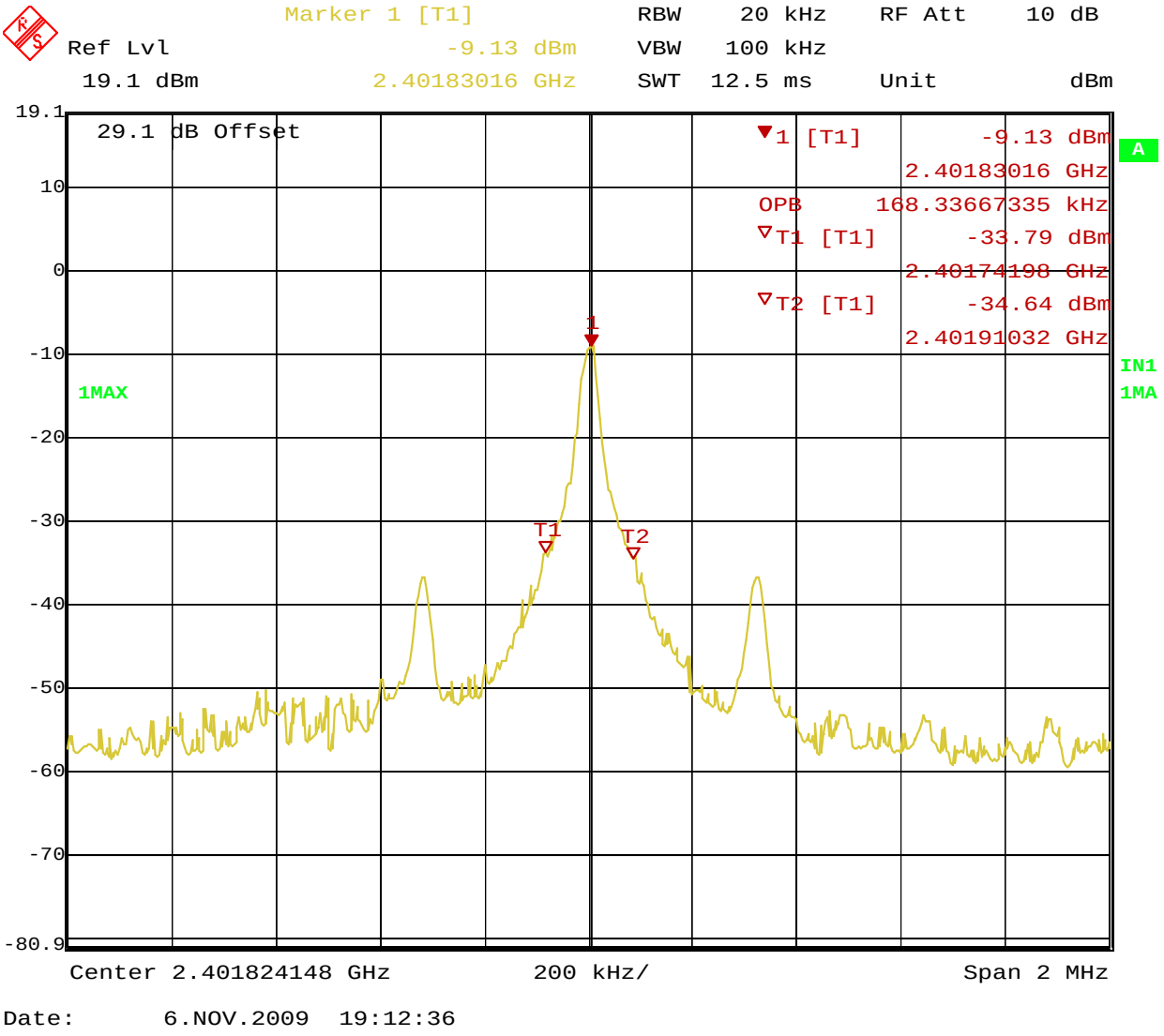

Figure 8: 99% Bandwidth – Operating Channel 2402 MHz (Vertical)

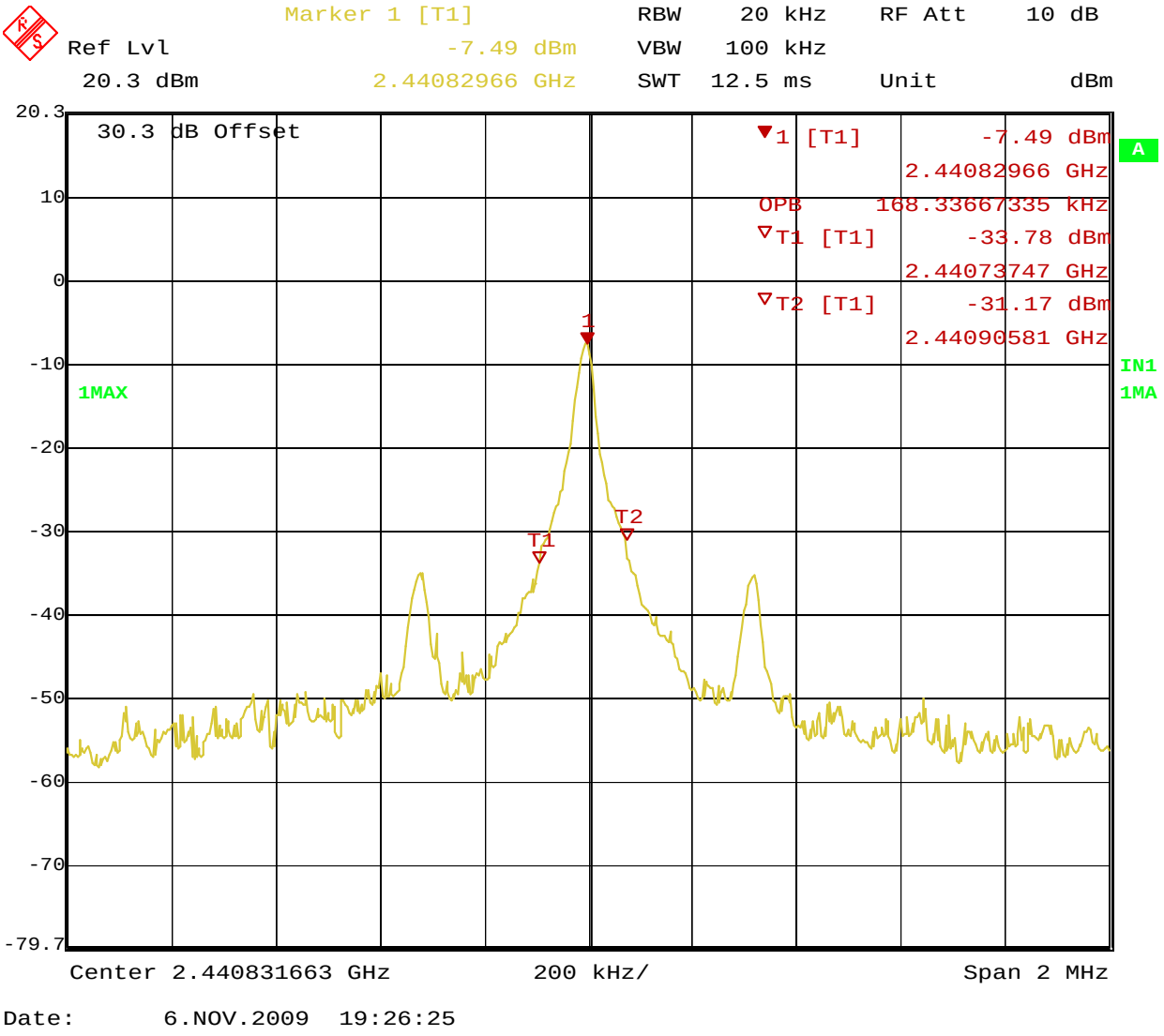

Figure 9: 99% Bandwidth – Operating Channel 2441 MHz (Horizontal)

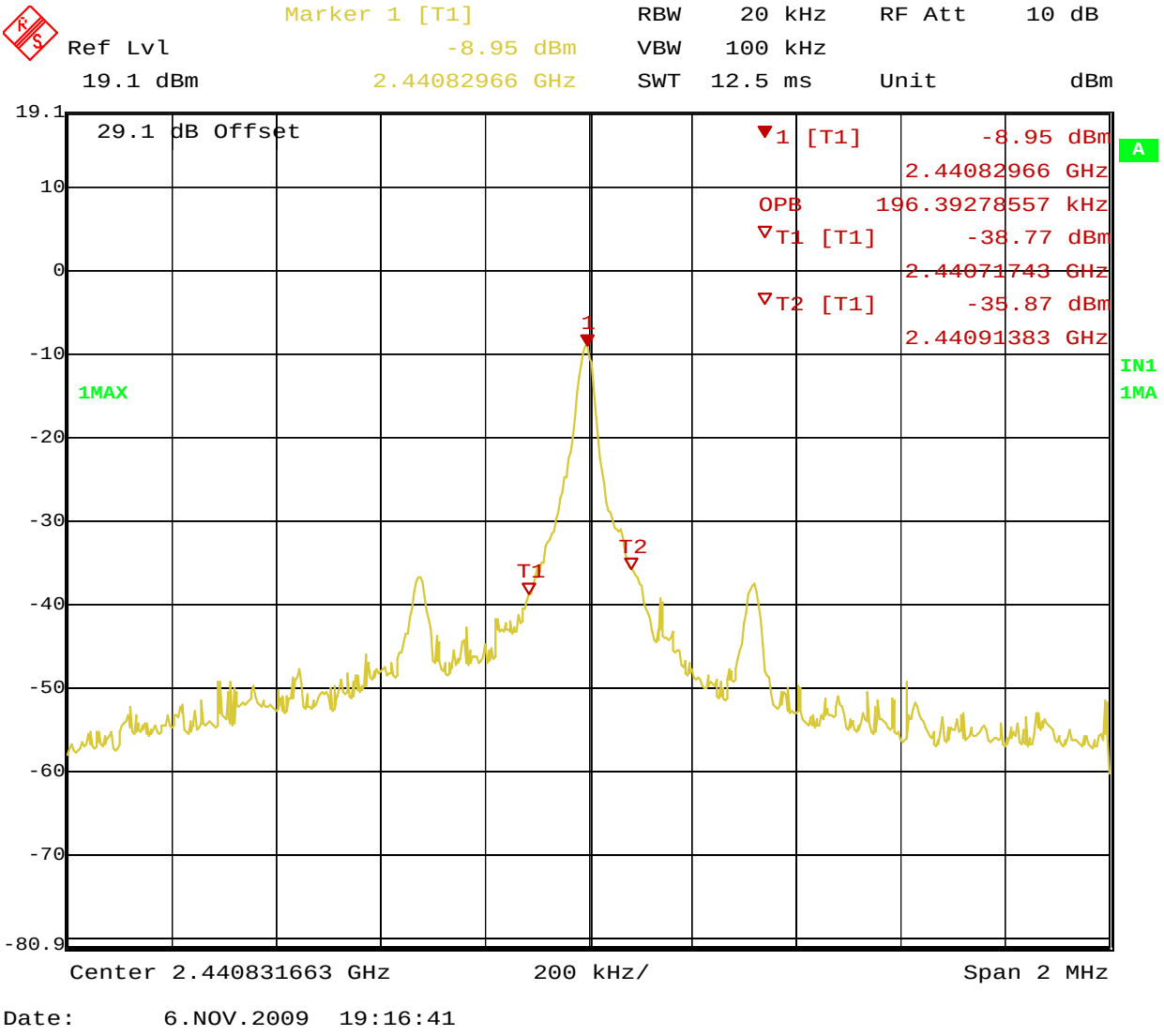

Figure 10: 99% Bandwidth – Operating Channel 2441 MHz (Vertical)

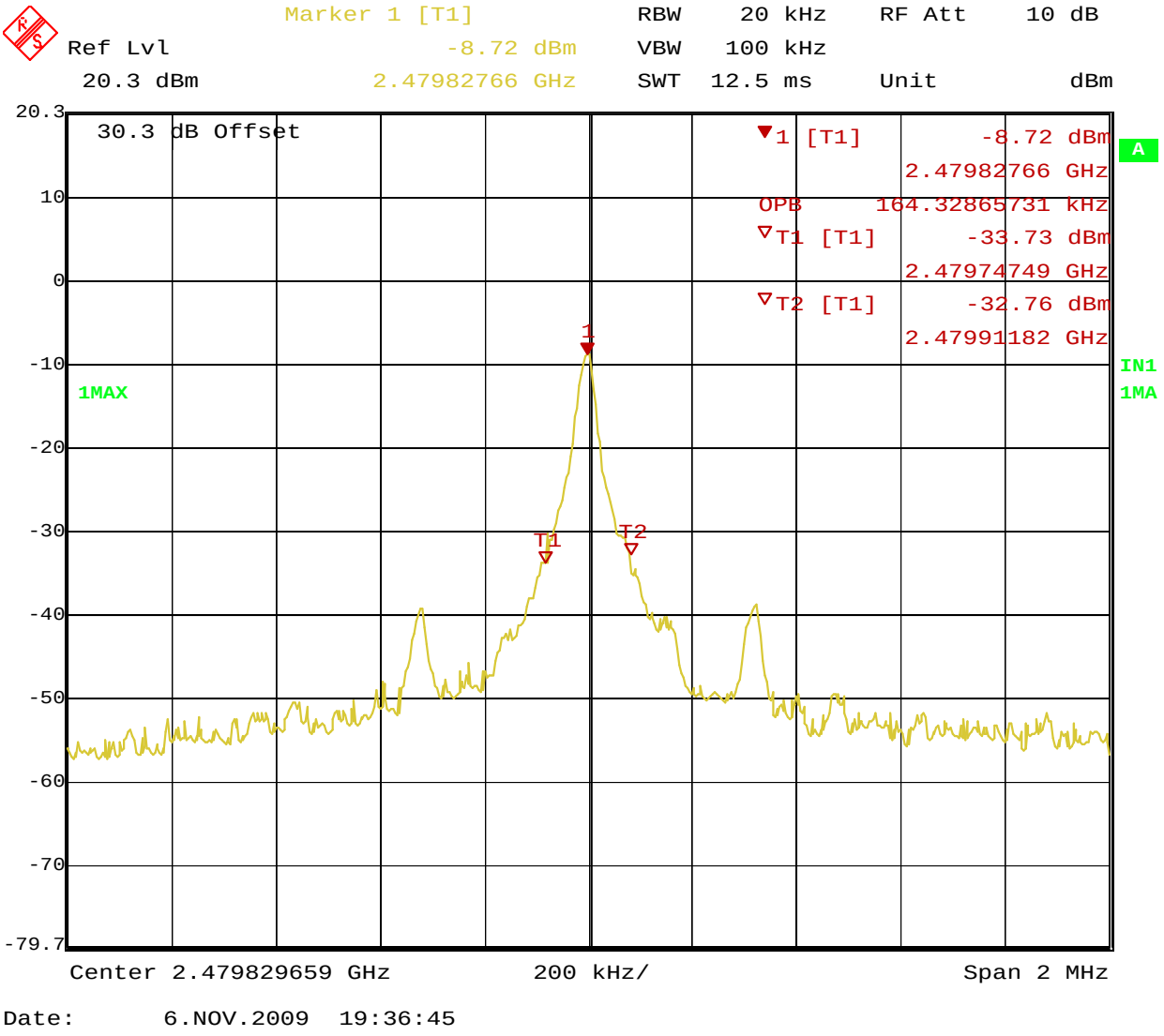

Figure 11: 99% Bandwidth – Operating Channel 2480 MHz (Horizontal)

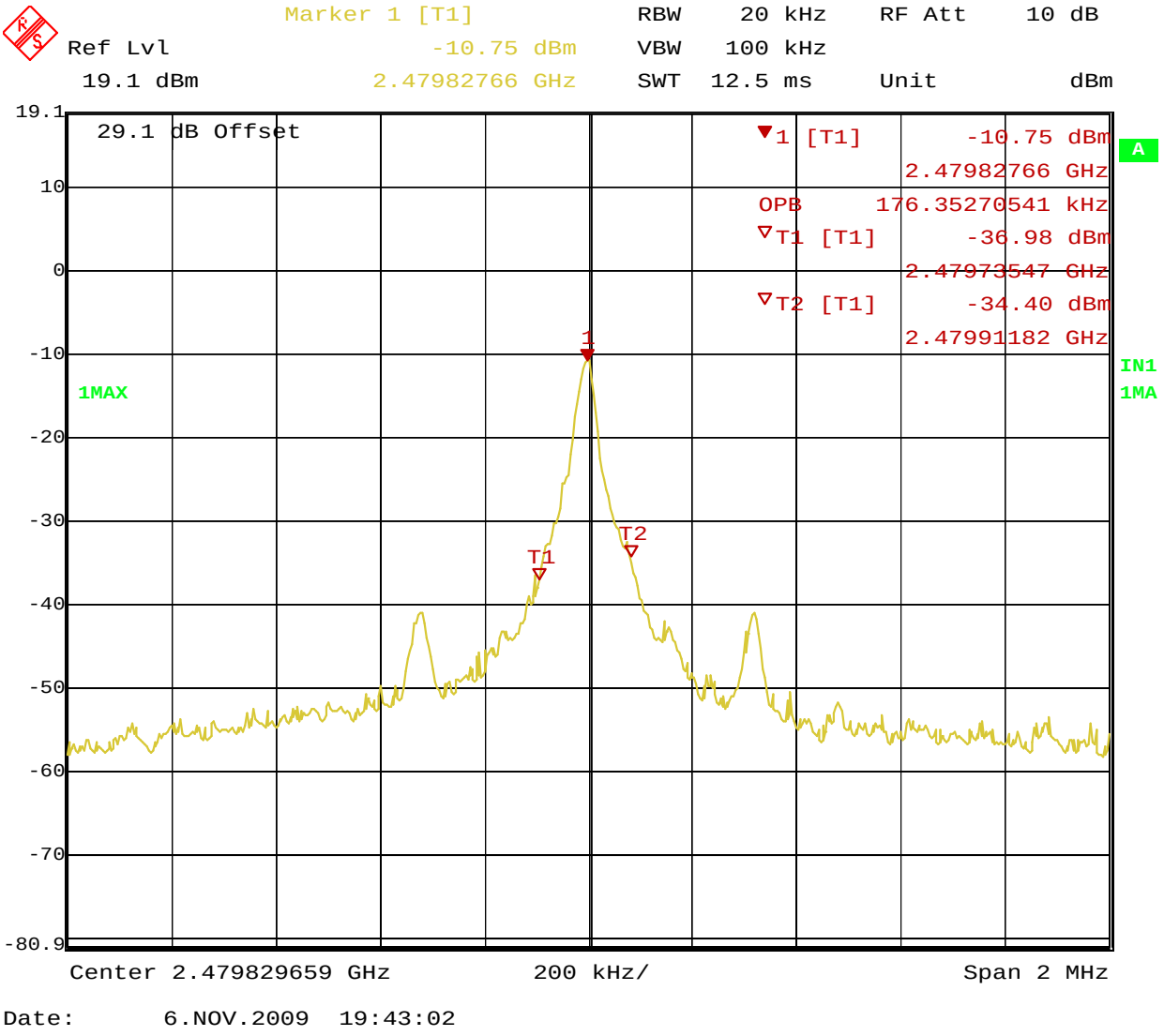

Figure 12: 99% Bandwidth – Operating Channel 2480 MHz (Vertical)

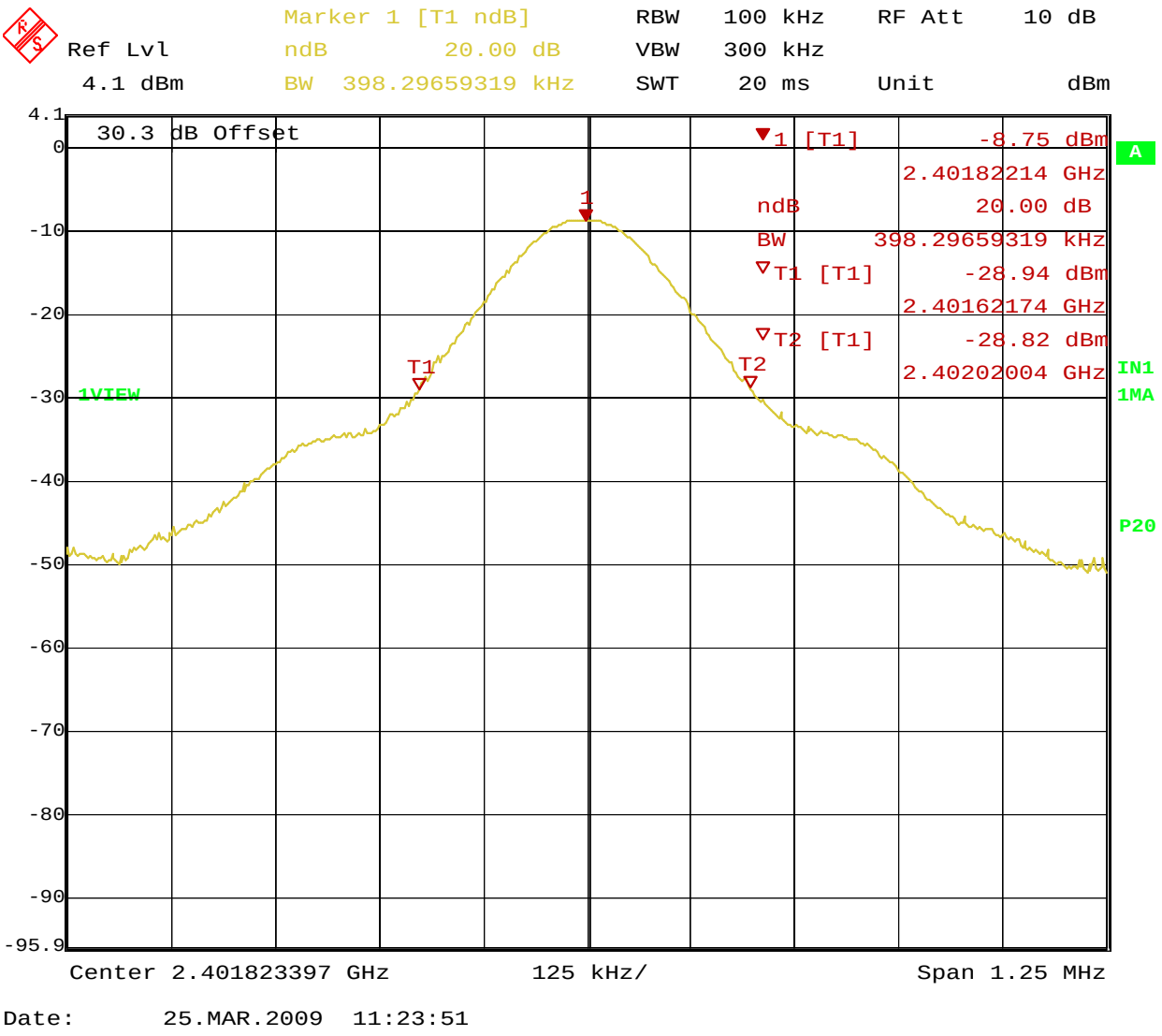

Figure 13: 20dB Bandwidth – Operating Channel 2402 MHz (Horizontal)

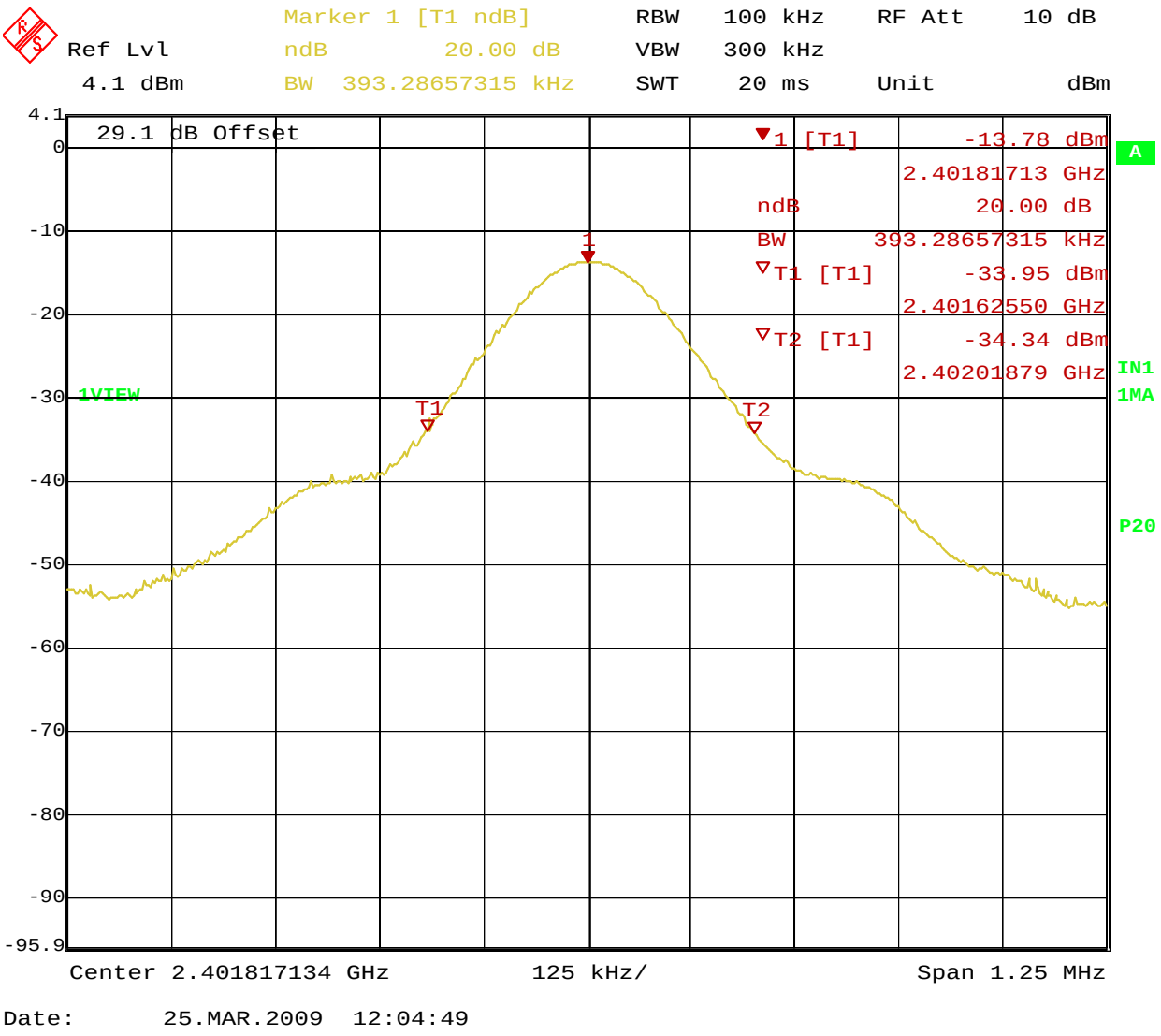

Figure 14: 20dB Bandwidth – Operating Channel 2402 MHz (Vertical)

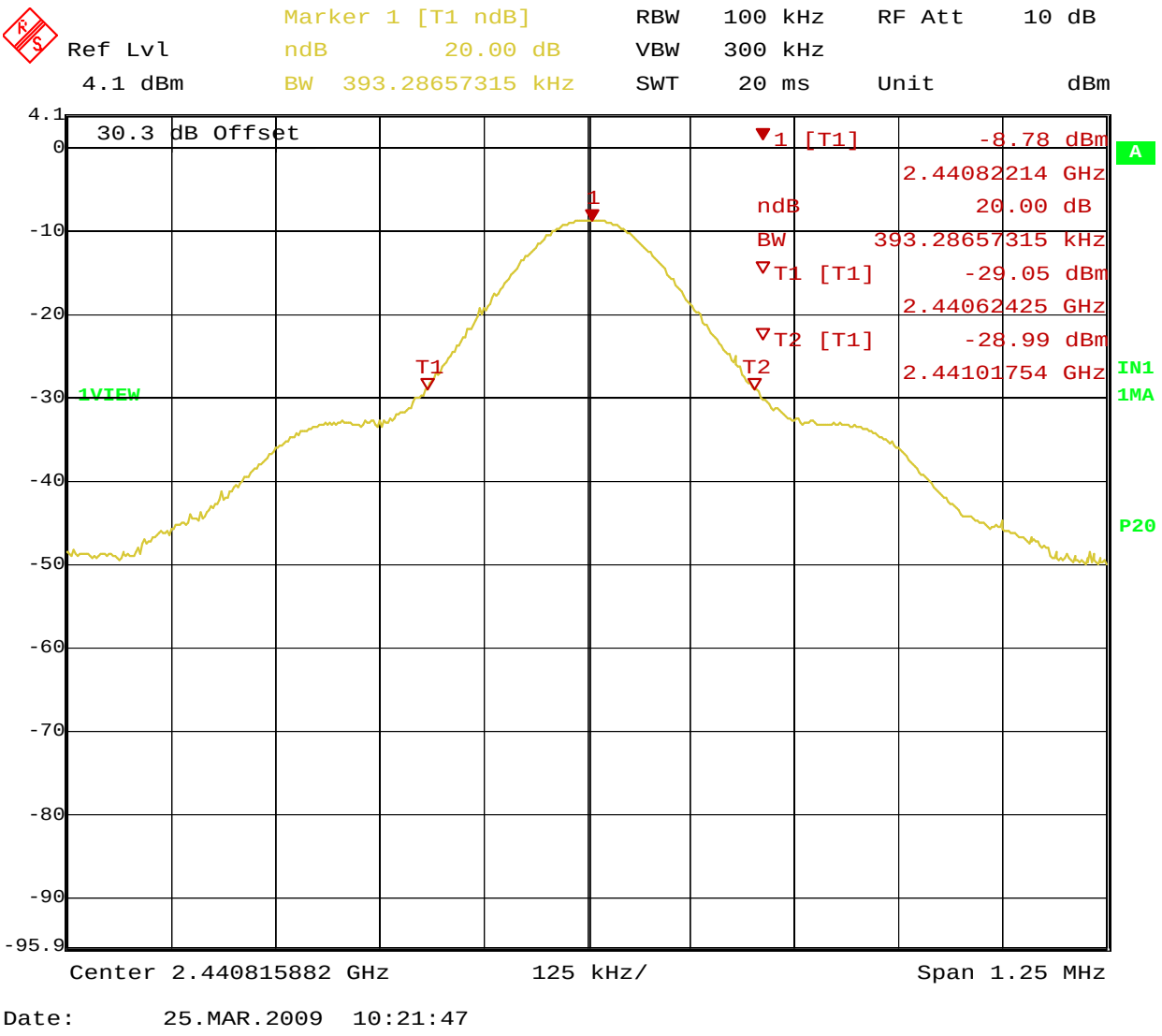

Figure 15: 20dB Bandwidth – Operating Channel 2441 MHz (Horizontal)

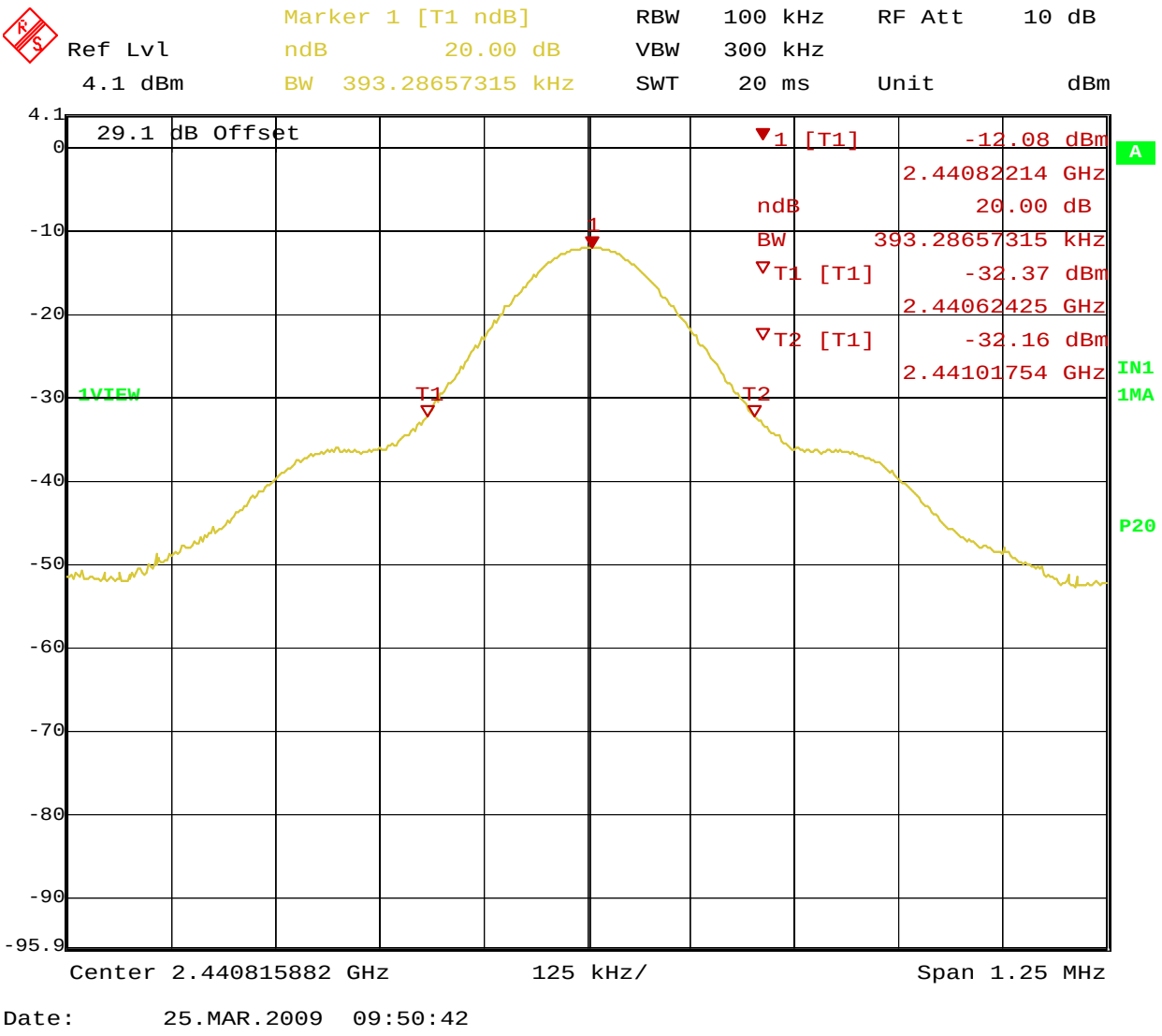

Figure 16: 20dB Bandwidth – Operating Channel 2441 MHz (Vertical)

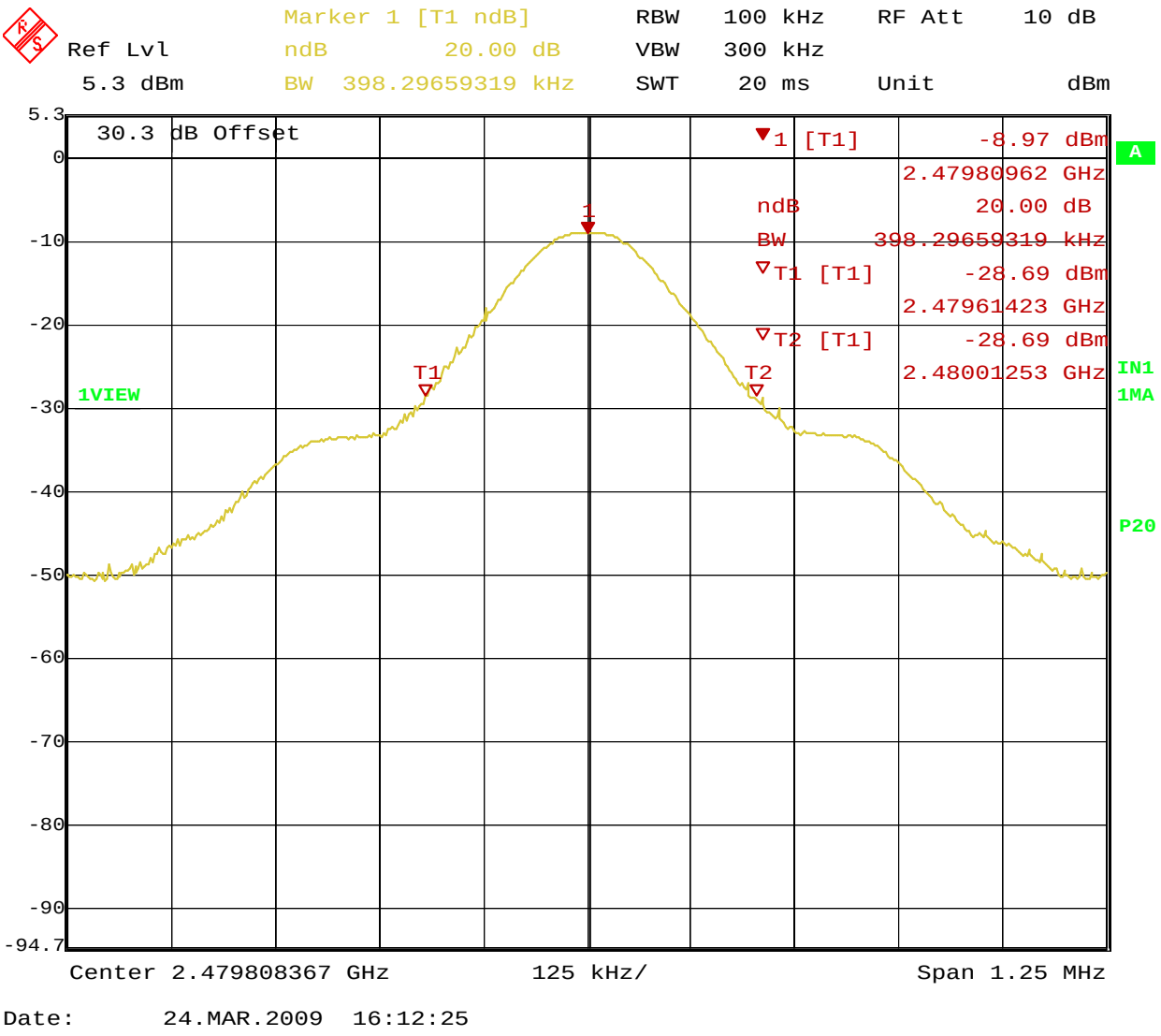

Figure 17: 20dB Bandwidth – Operating Channel 2480 MHz (Horizontal)

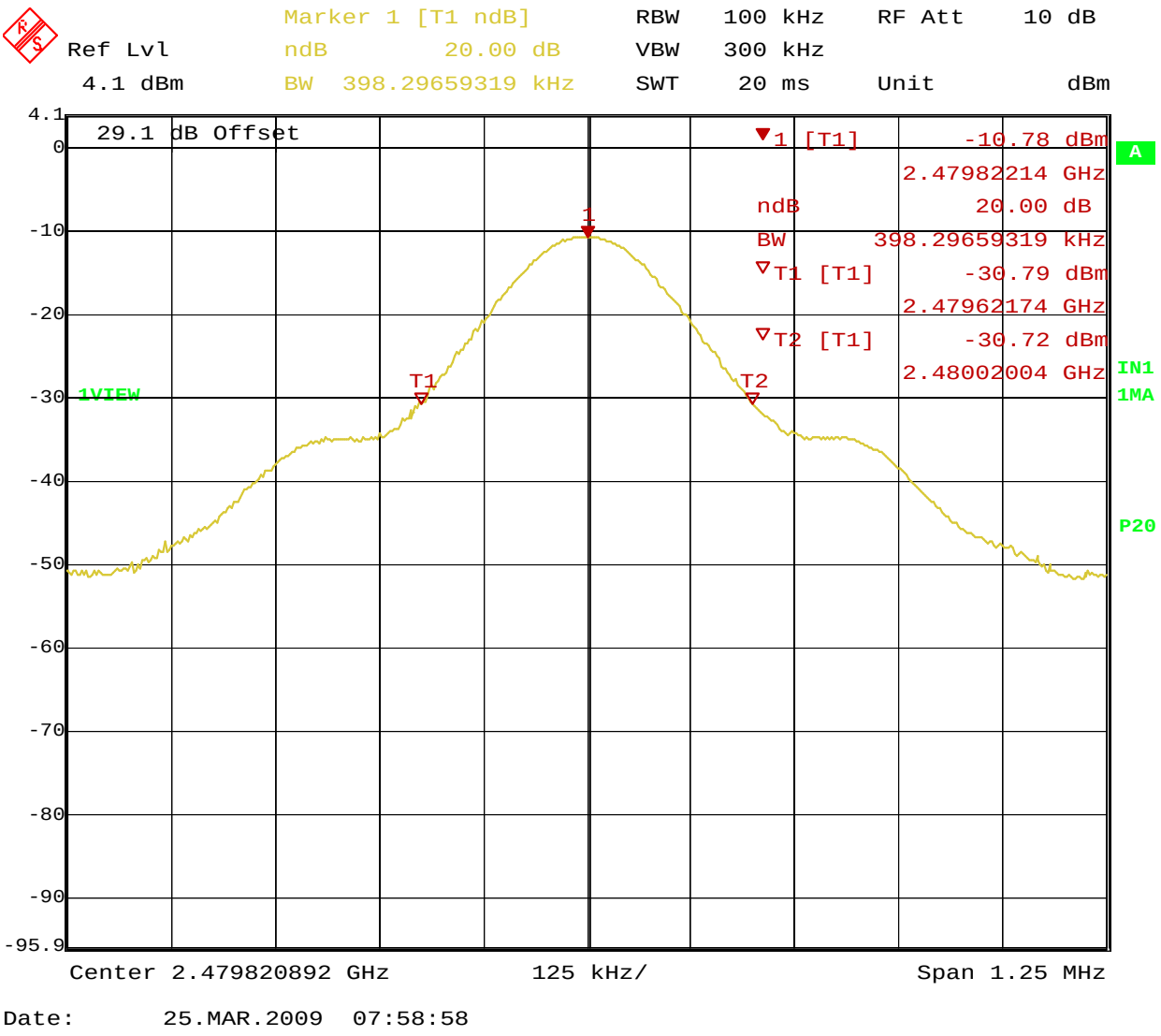

Figure 18: 20dB Bandwidth – Operating Channel 2480 MHz (Vertical)

4.3 Band-edge Requirements

The setup was identical to RF output power measurement. Intentional radiators operating under the alternative provisions to the general emission limits, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If the frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

Any frequency outside the band of 2400MHz to 2483.5MHz, the power output level must be below 20db from the in-band transmitting signal; CFR 47 Part 15.215, 15.247(d) and RSS 210 A8.5

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

Table 5: Band-Edge/ Outband Emission – Test Results

Test Conditions: Radiated Measurement, Normal Temperature and Voltage only				
Antenna Type: Integrated			**Output Power Rated:** +3.98 dBm	
Signal State: Modulated			**Data Type:** DH5	
Ambient Temp.: 23 °C			**Relative Humidity:**38 %	
Band-Edge Results				
Operating Channel	**Polarity**	**20dBr Frequency (MHz)**	**Low Bandedge Level (dBm)**	**High Bandedge Level (dBm)**
2402 MHz	H	2401.62425	-28.83	
2402 MHz	V	2401.62425	-37.46	
2480 MHz	H	2480.03006		-27.79
2480 MHz	V	2480.02300		-38.70

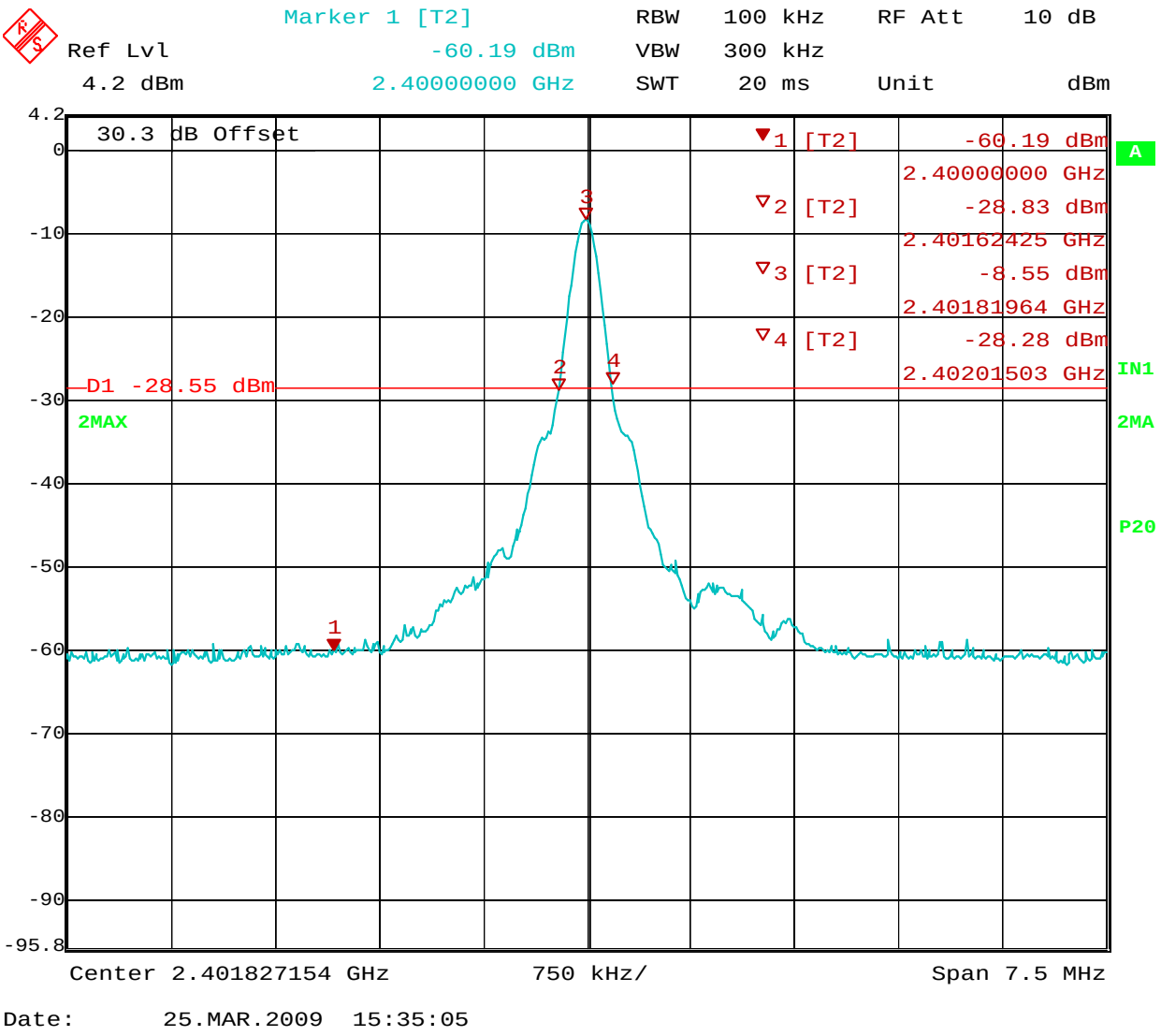

Figure 19: Band-edge Requirement for Operating Channel 2402 MHz (Horizontal)

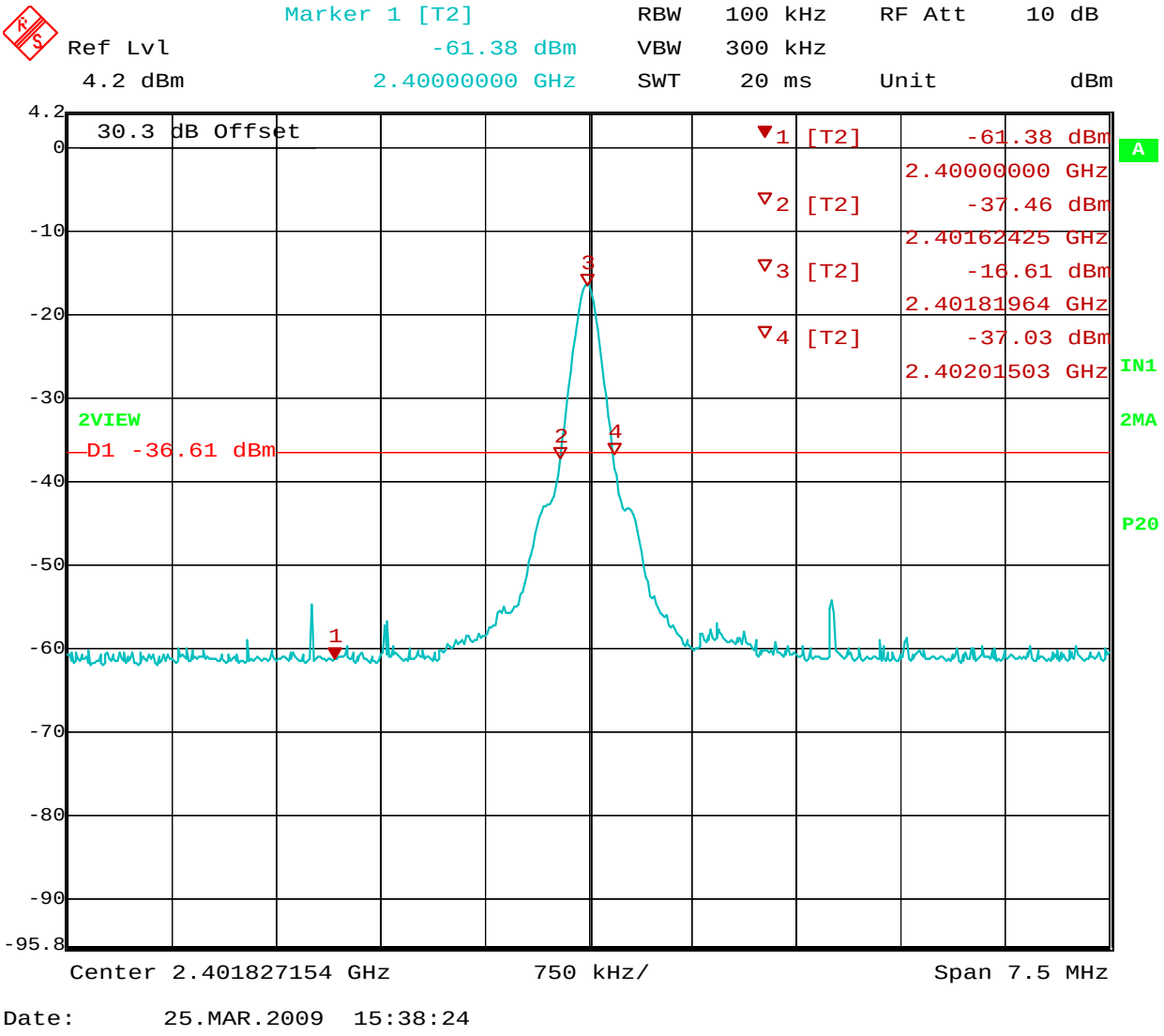

Figure 20: Band-edge Requirement for Operating Channel 2402MHz (Vertical)

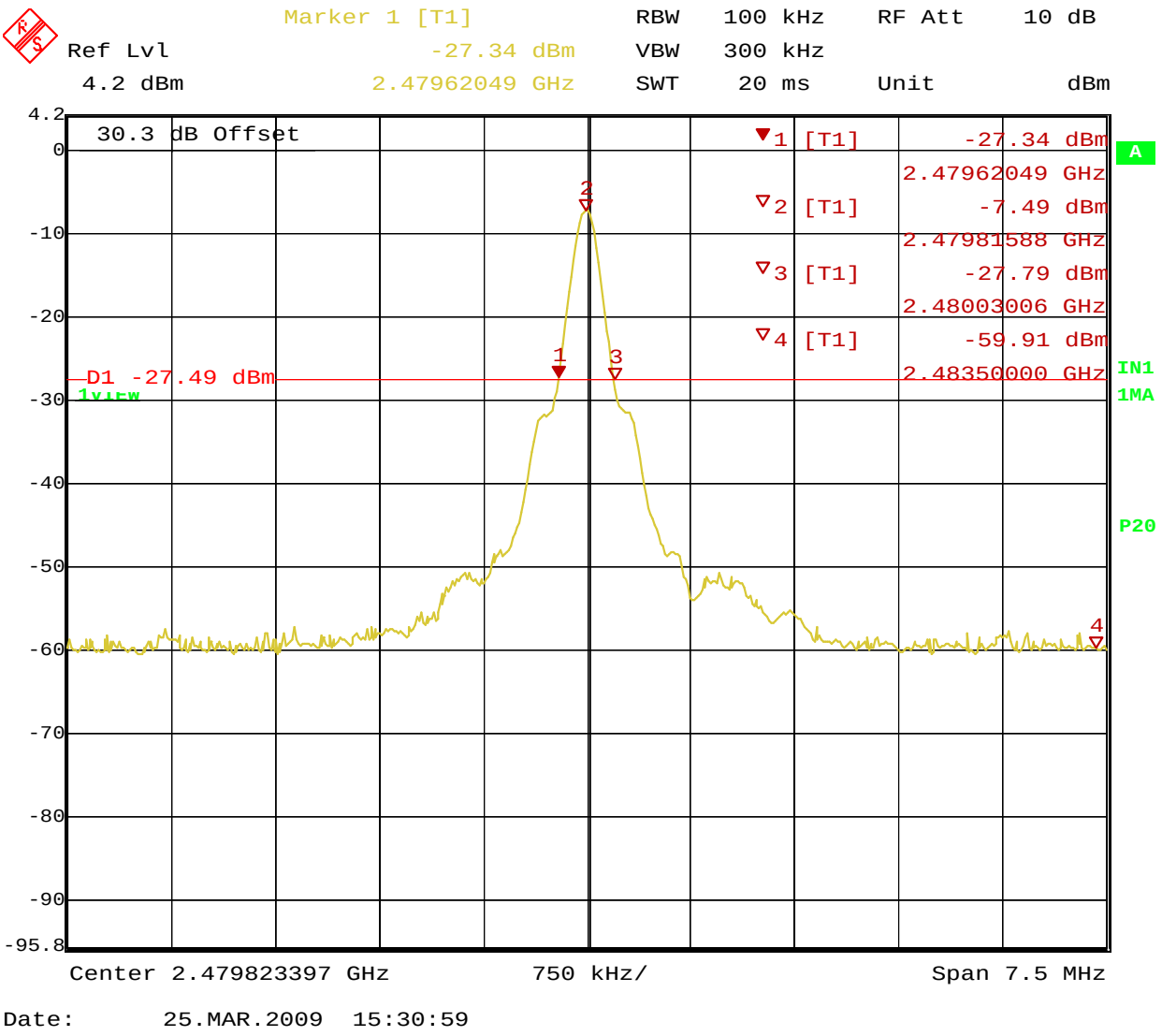

Figure 21: Band-edge Requirement for Operating Channel 2480MHz (Horizontal)

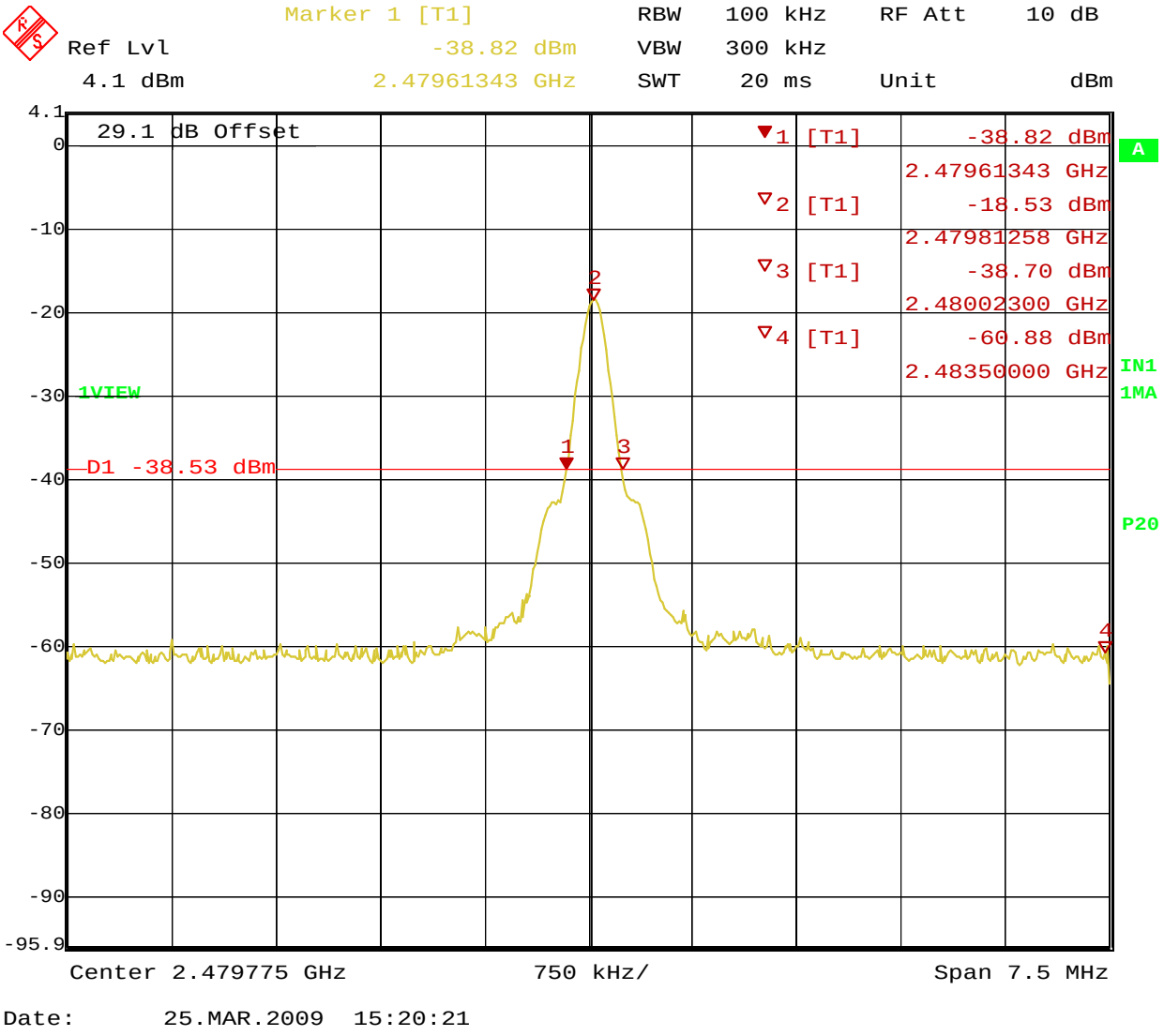

Figure 22: Band-edge Requirement for Operating Channel 2480MHz (Vertical)

4.4 Peak Power Spectral Density

According to the CFR47 Part 15.247 (e) and RSS 210 (A8.2), the spectral power density output of the antenna port shall be less than 8dBm in any 3kHz band during any time interval of continuous transmission.

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

Table 6: Peak Power Spectral Density – Test Results

Test Conditions: Radiated Measurement, Normal Temperature and Voltage only					
Antenna Type: Integrated			**Output Power Rated:** +3.98 dBm		
Signal State: Modulated			**Data Type:** DH5		
Ambient Temp.: 23 °C			**Relative Humidity:**38 %		
Peak Power Spectral Density Test Results					
Operating Channel	**Polarity**	**PPSD @ 3m [dBm]**	**PPSD @ EUT [dBm]**	**Limit [dBm]**	**Margin [dB]**
2402MHz	H	-8.91	2.89	8.0	-5.11
2402MHz	V	-13.89	-2.09	8.0	-10.09
2441MHz	H	-9.01	2.79	8.0	-5.21
2441MHz	V	-12.43	-0.63	8.0	-8.63
2480MHz	H	-9.30	2.5	8.0	-5.5
2480MHz	V	-11.31	0.49	8.0	-7.51

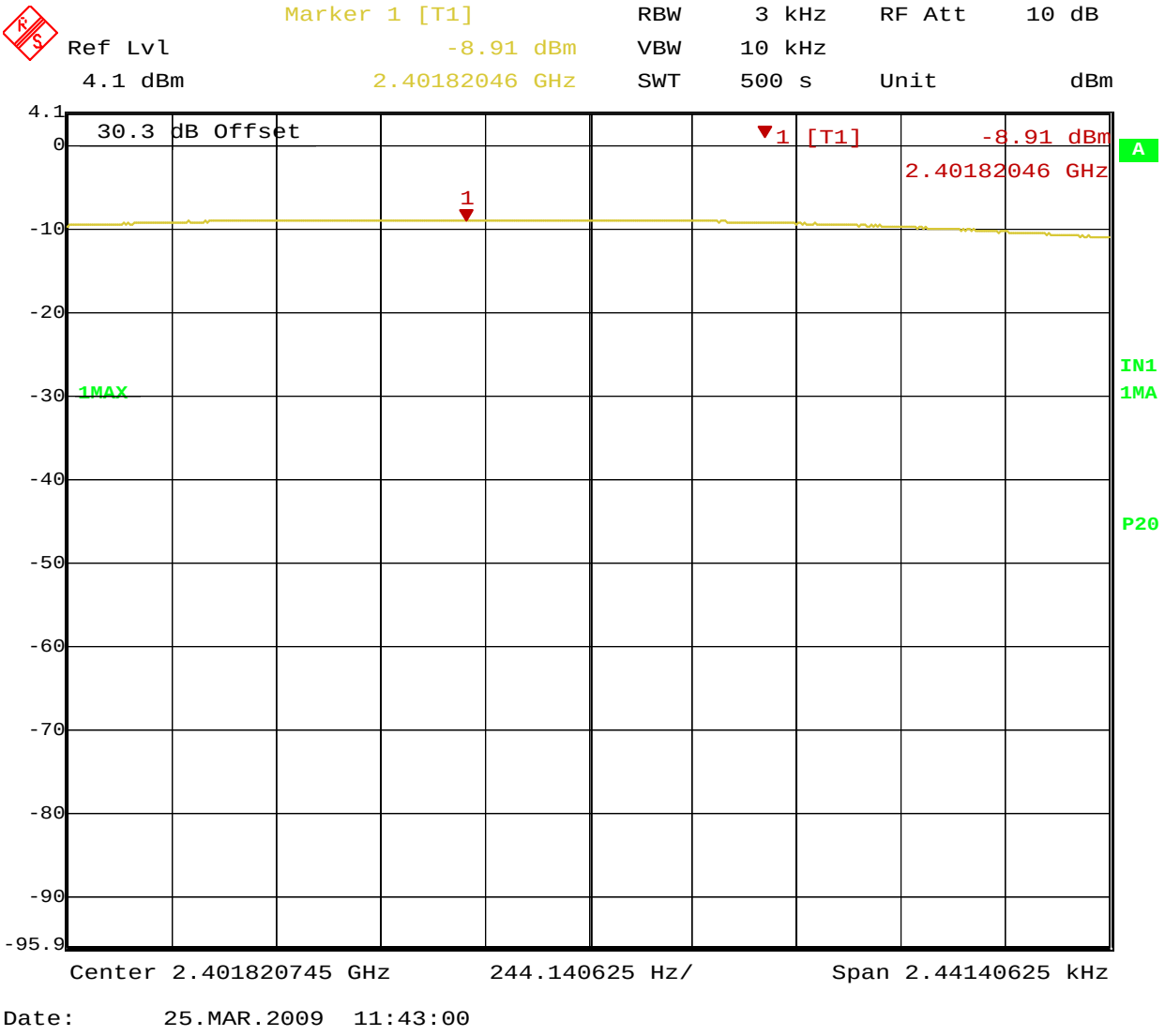

Figure 23: Peak Power Spectral Density for Operating Channel 2402MHz (Horizontal)

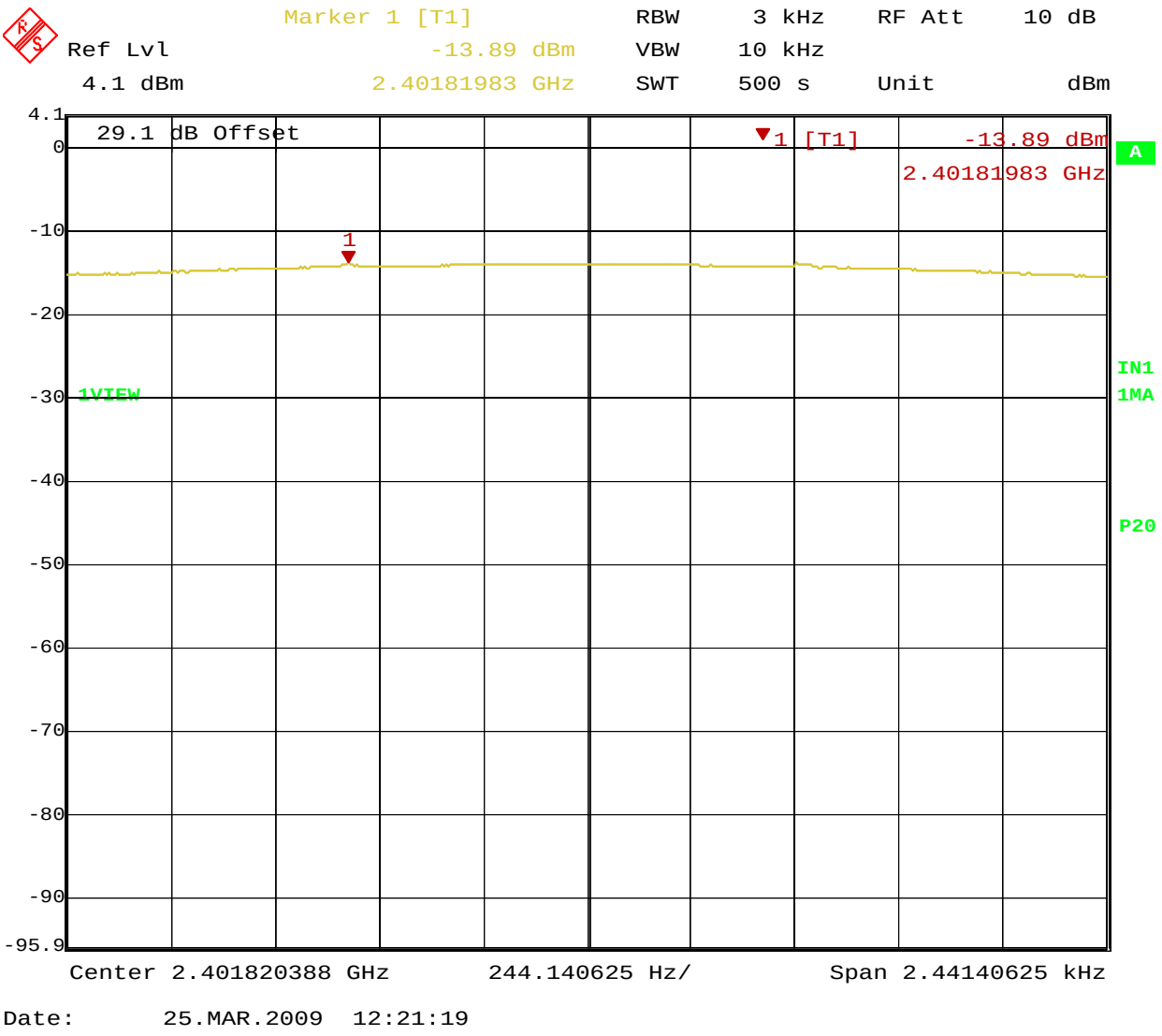

Figure 24: Peak Power Spectral Density for Operating Channel 2402MHz (Vertical)

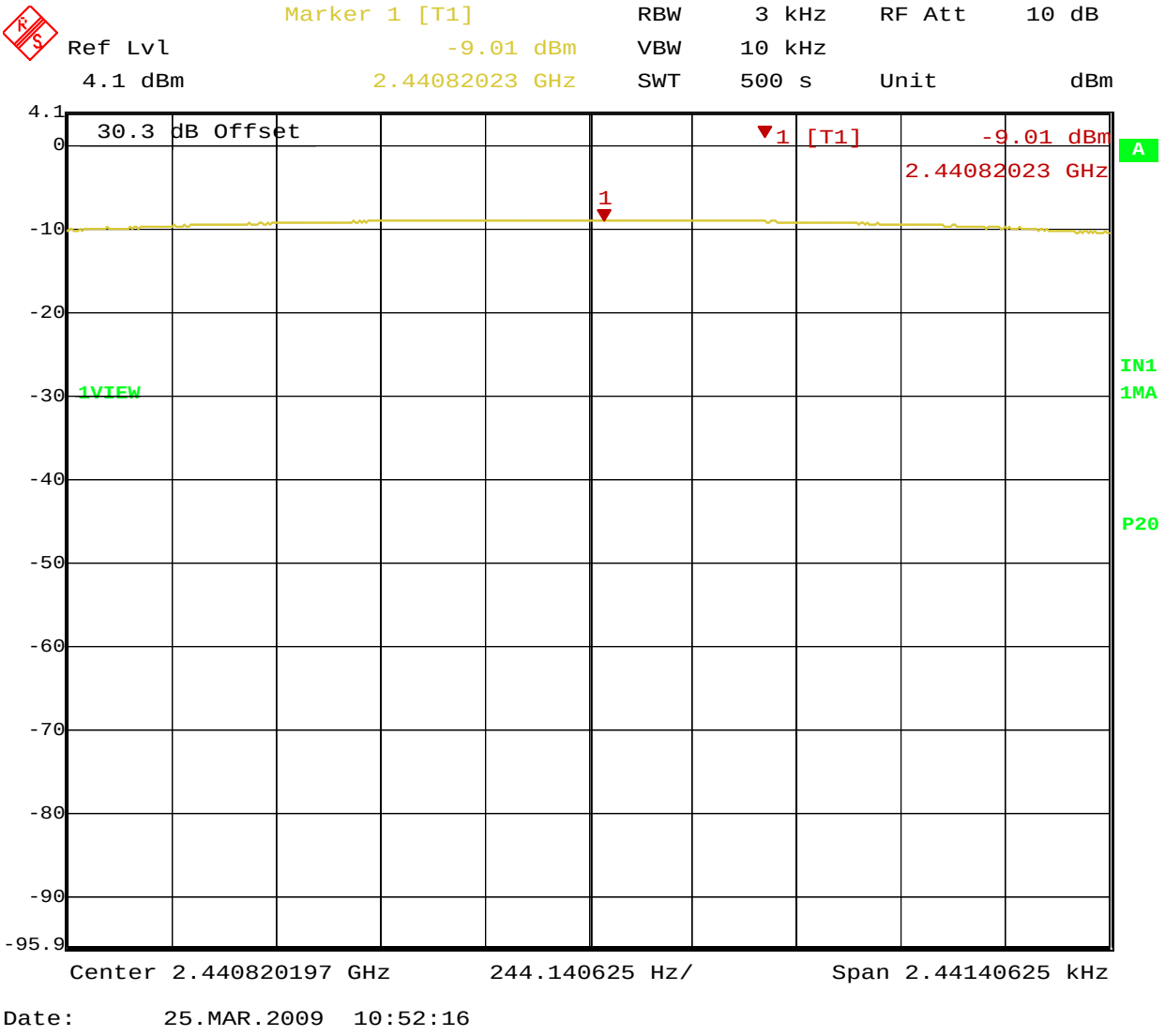

Figure 25: Peak Power Spectral Density for Operating Channel 2441MHz (Horizontal)

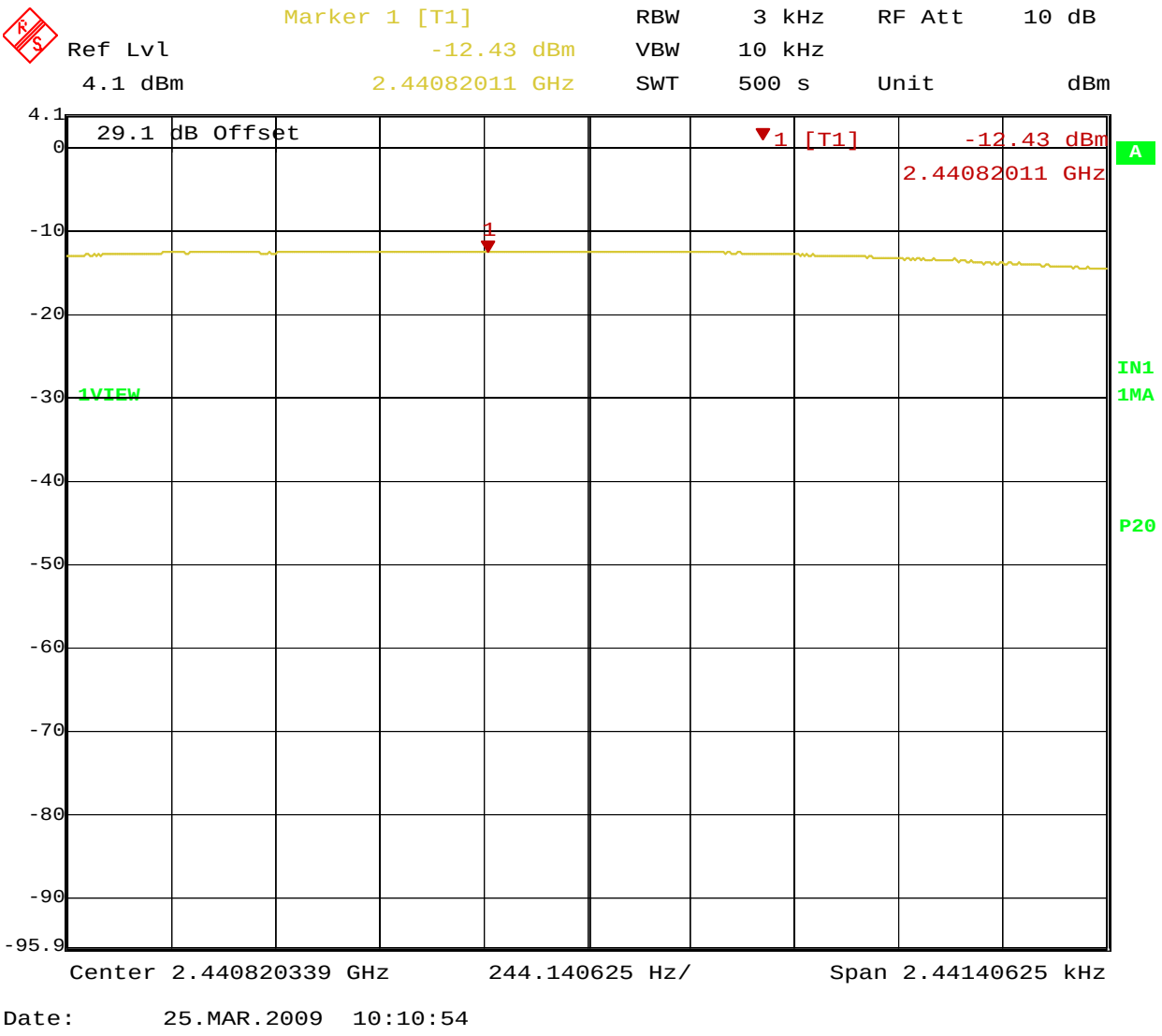

Figure 26: Peak Power Spectral Density for Operating Channel 2441MHz (Vertical)

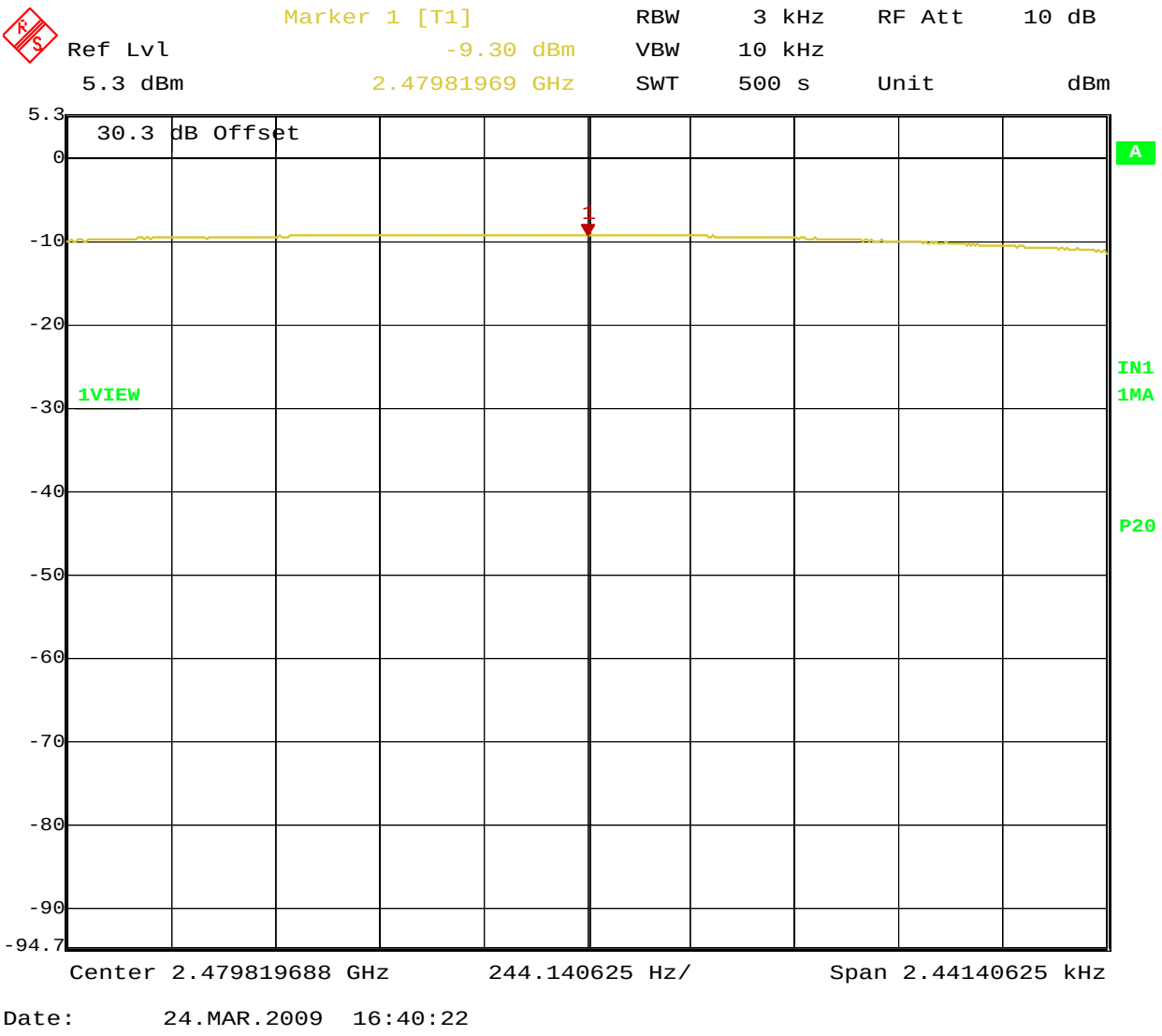

Figure 27: Peak Power Spectral Density for Operating Channel 2480MHz (Horizontal)

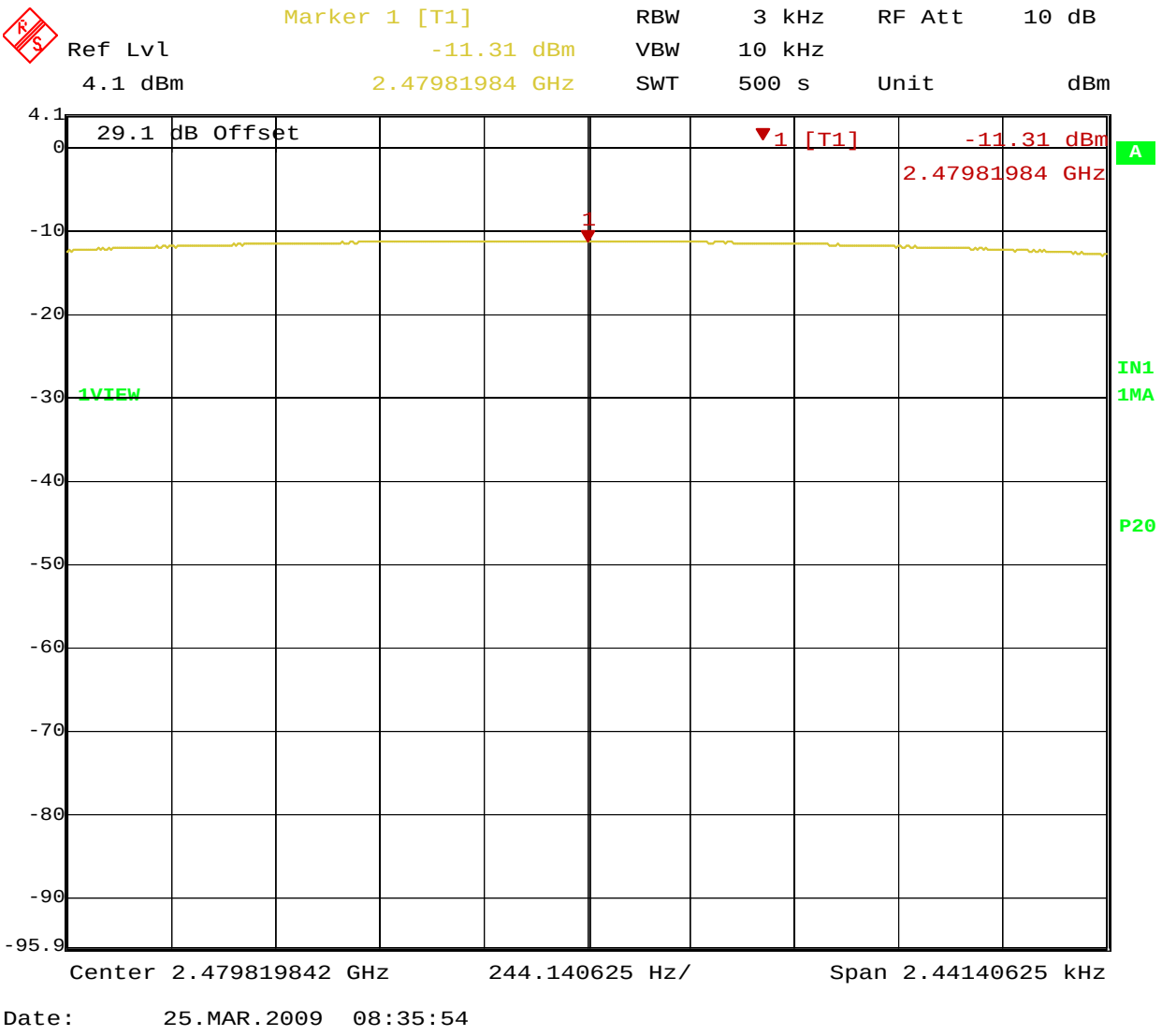

Figure 28: Peak Power Spectral Density for Operating Channel 2480MHz (Vertical)

4.5 Hopping Frequency Requirements

The Frequency Hopping Requirements are applicable to the equipment using Frequency Hopping Spread Spectrum (FHSS) modulation
Per CFR47 15.247 (a1), RSS 210 Sect.A.8.1.2, frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

Table 7: Frequency Hopping Requirements

Test Conditions: Radiated Measurement, Normal Conditions				
Antenna Type: Integrated			**Output Power Rated:** +3.98 dBm	
Signal State: Modulated			**Data Type:** DH5	
Ambient Temp.: 23 °C			**Relative Humidity:**38 %	
Average Occupancy Time				
Pulse Width (ms)	**# of Pulses in 3.16s**	**Ave. Time (ms)**	**Limit (s)**	**Result**
0.178156	10	17.816	< 0.4	Pass
Minimum Channel Separation				
Operating Channel (MHz)	**Hopping Separation (kHz)**	**Two-Third of Separation (kHz)**	**Two-Third of 20dB Bandwidth Limit (kHz)**	**Result**
2441	1003.00600	668.67	> 262.19	Pass
Minimum Number of Channels				
Range #1 (2400MHz -2430MHz)	**Range #2 (2430MHz – 2460MHz)**	**Range #3 (2460MHz – 2483.5MHz)**	**Min. Channel Limit**	**Result**
29	30	20	15	Pass

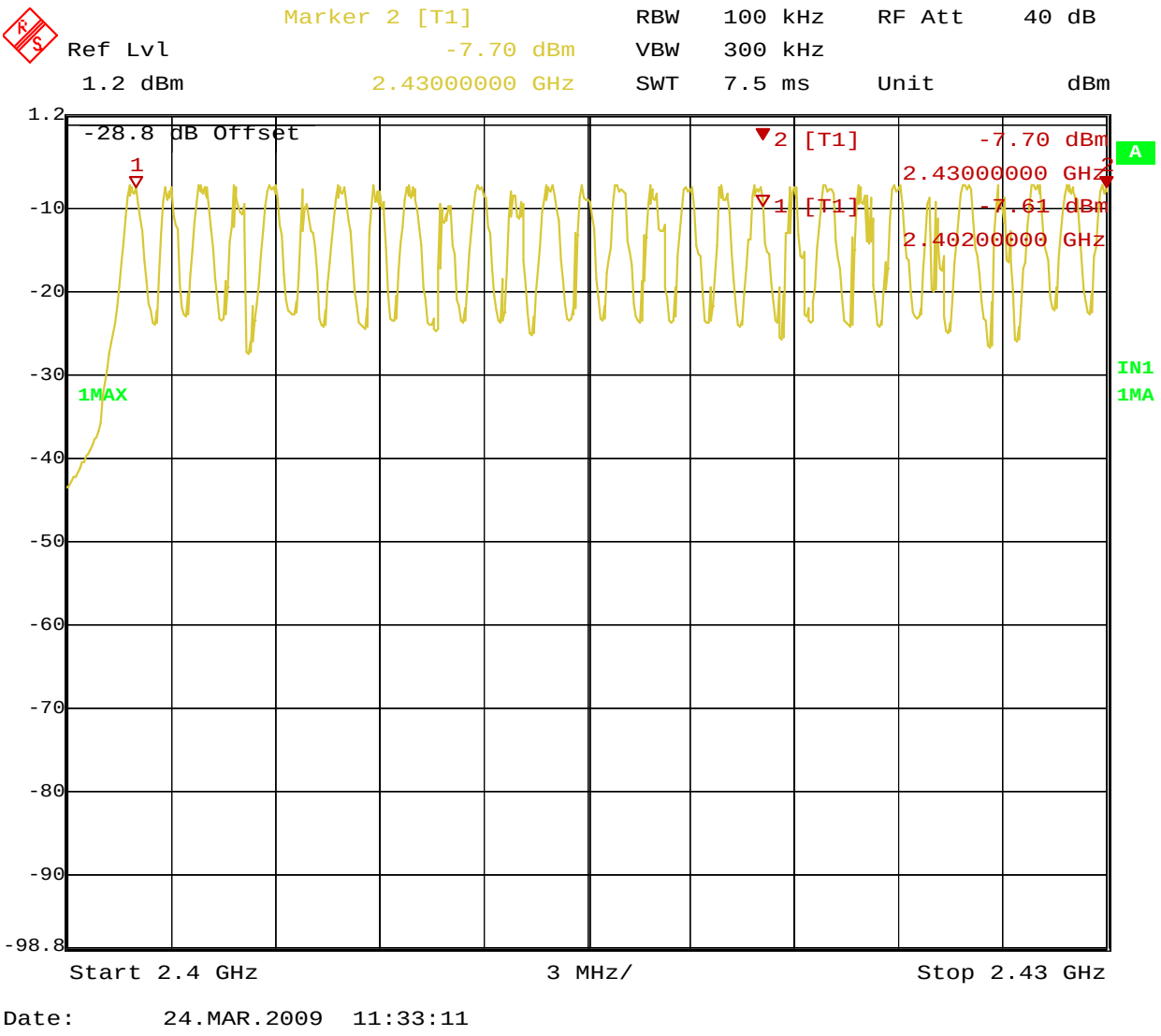

Figure 29: Number of Operating Channel from 2400MHz to 2430MHz (29 Channels)

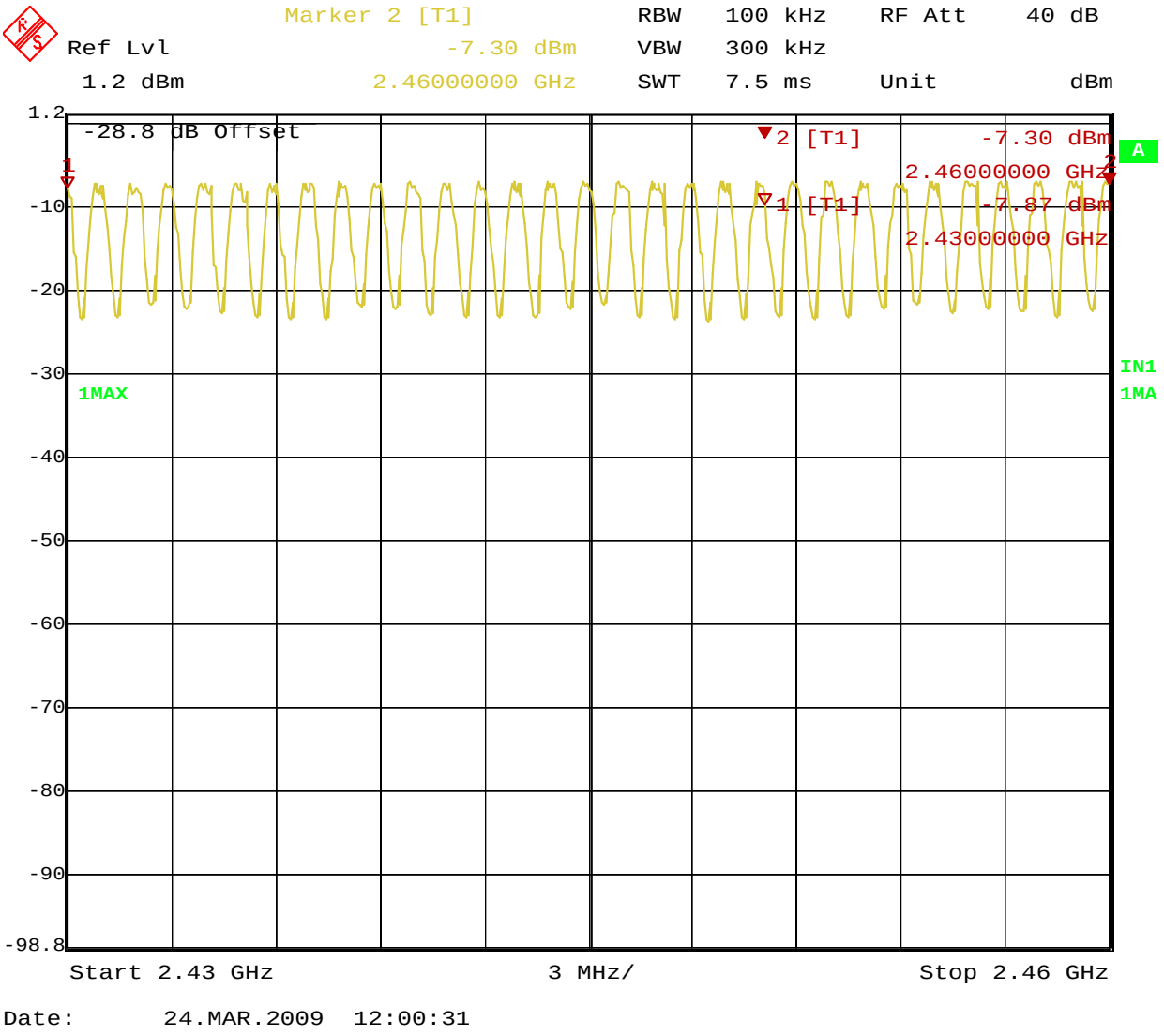

Figure 30: Number of Operating Channel from 2430MHz to 2460MHz (30 Channels)

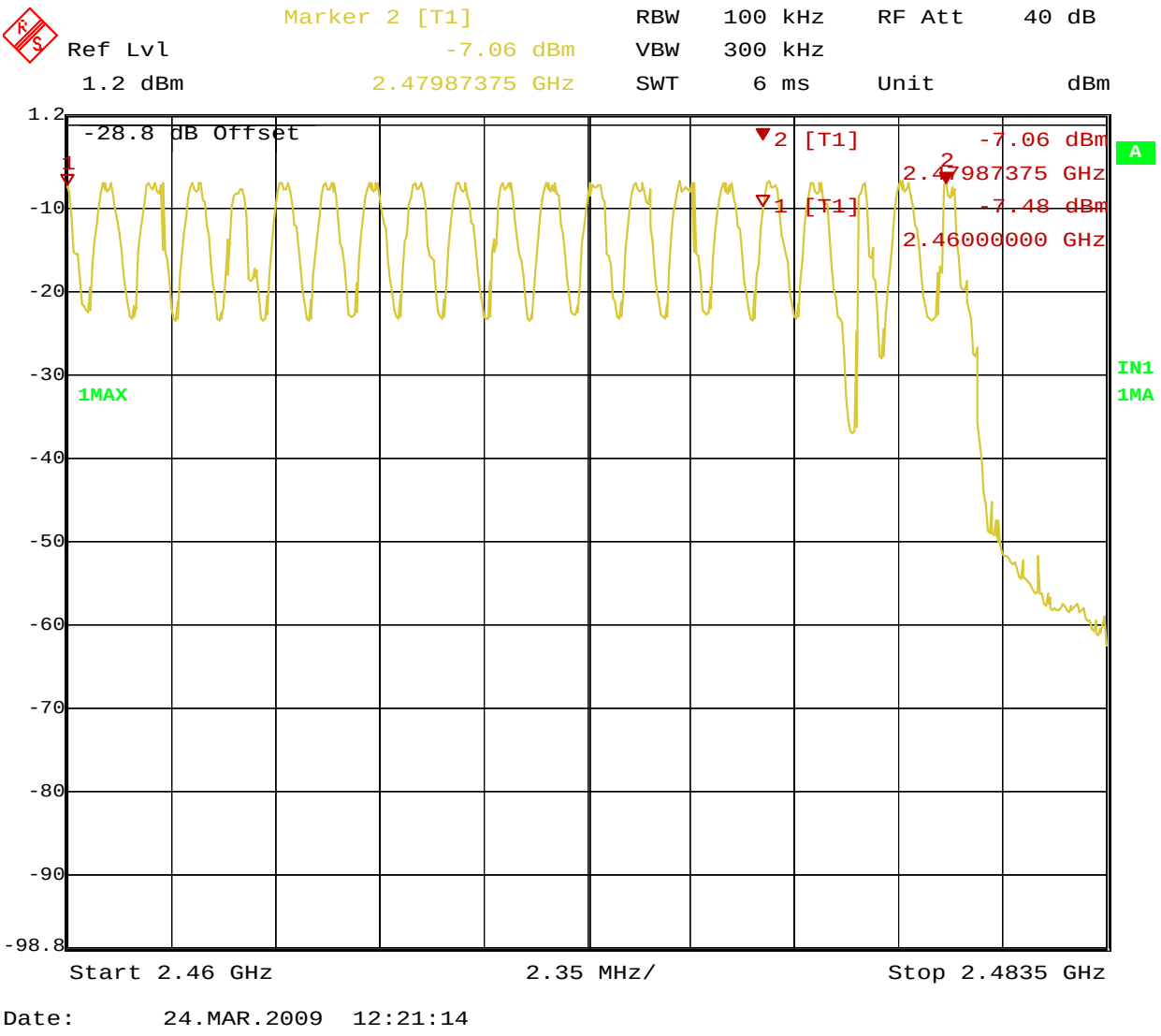

Figure 31: Number of Operating Channel from 2460MHz to 2483.5MHz (20 Channels)

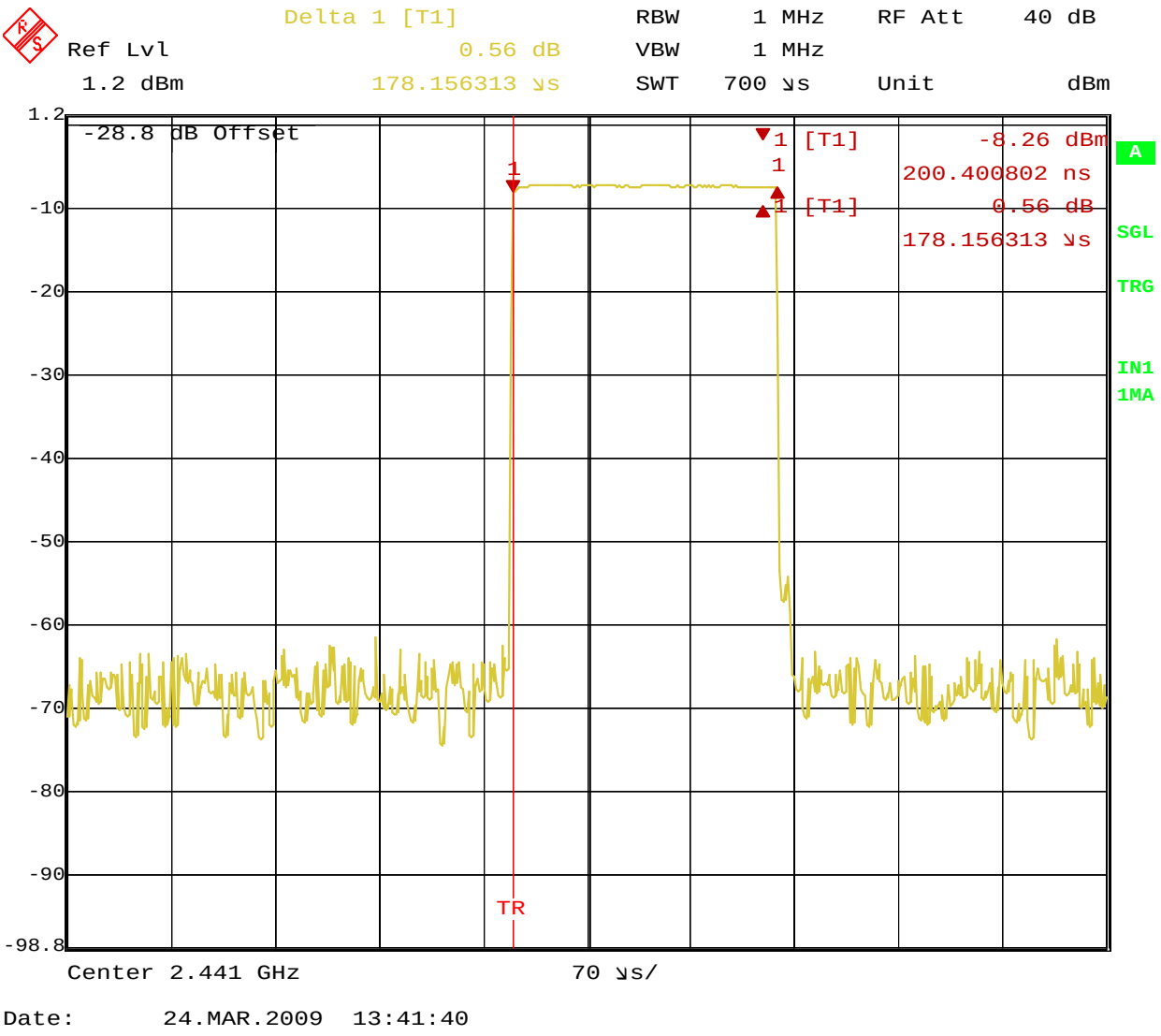

Figure 32: Pulse Width – Channel 2441MHz

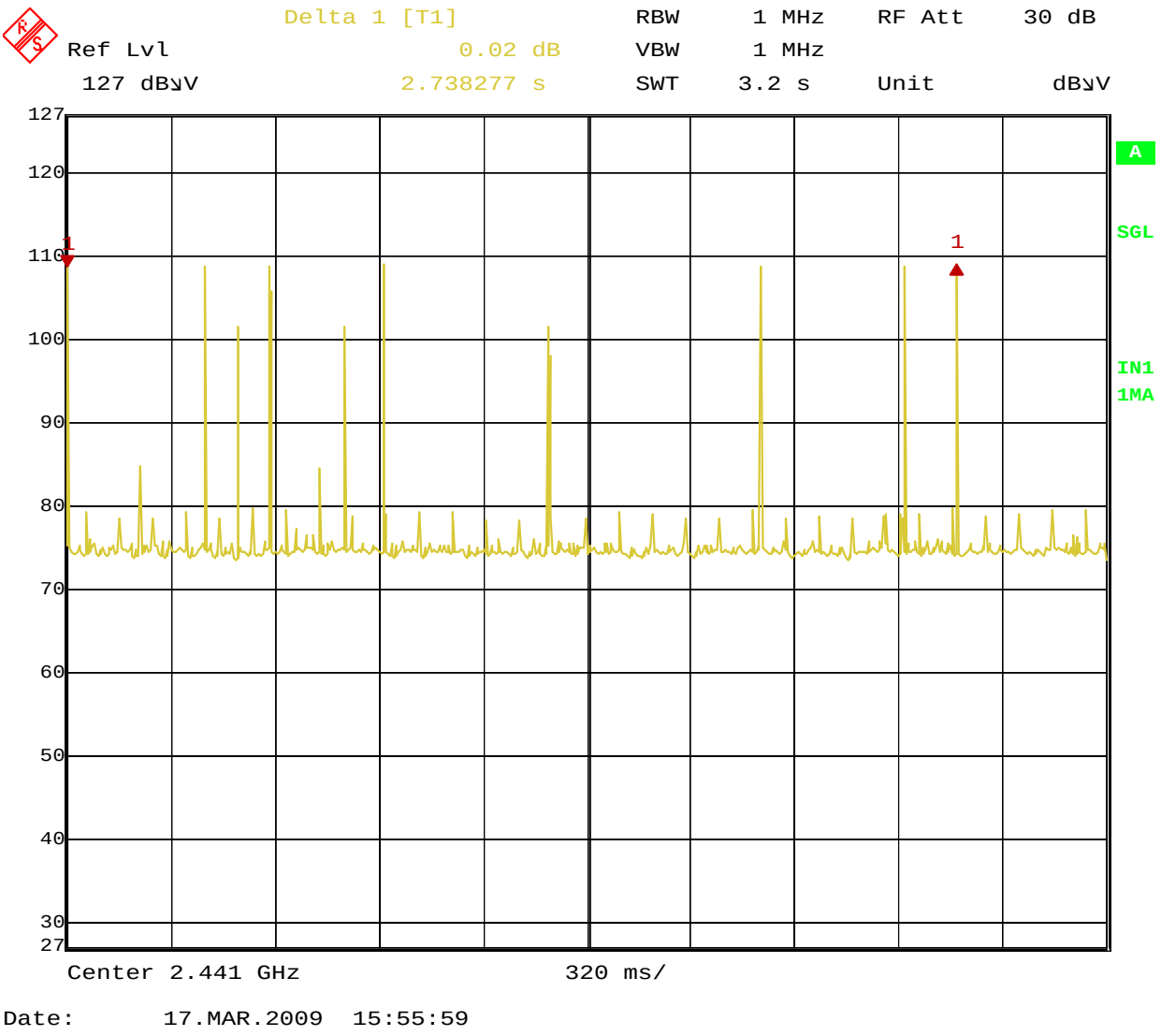

Figure 33: Average Dwell Time for Channel 2441MHz – 10 Pulses

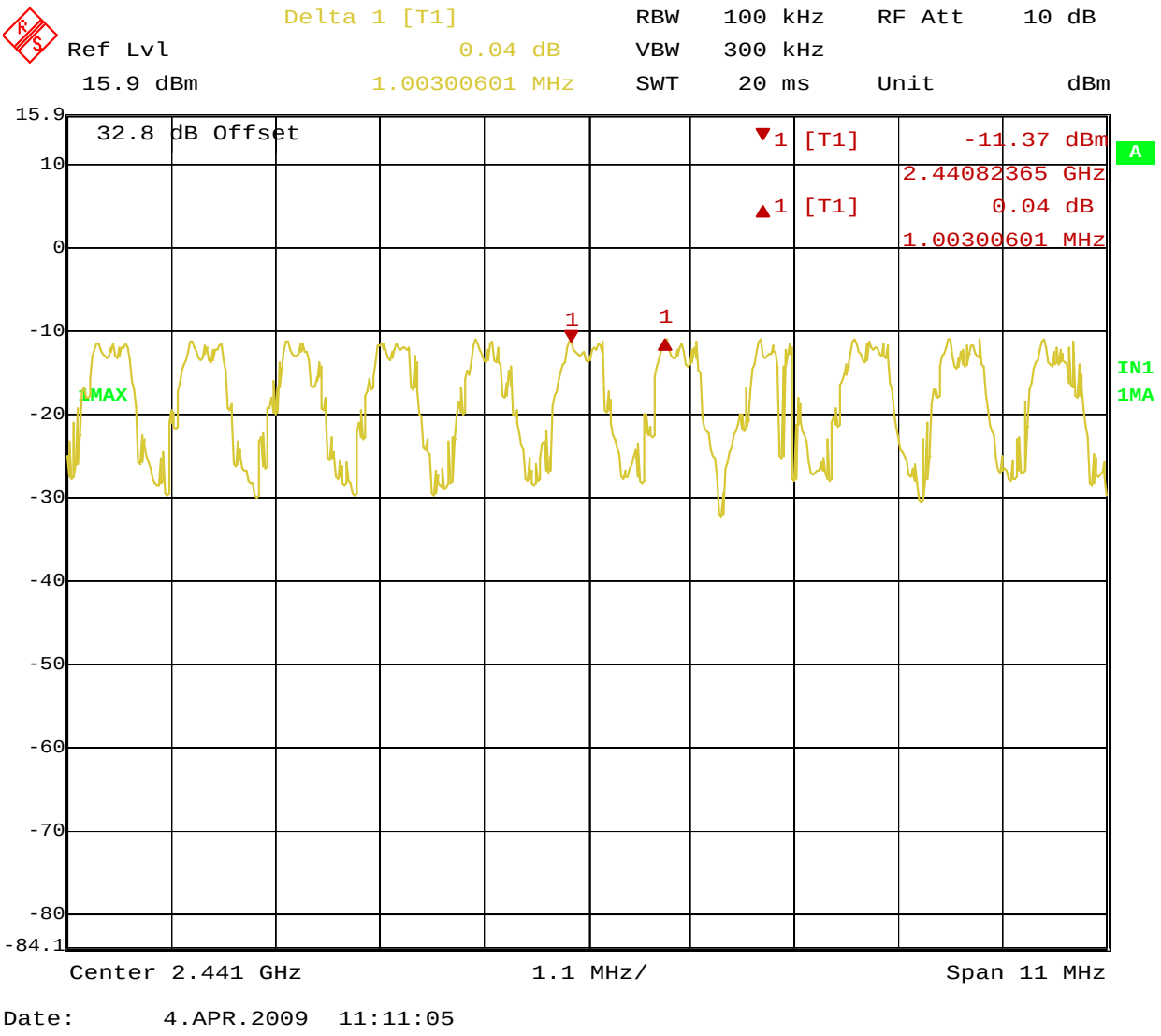

Figure 34: Channel Separation at Operating Frequency 2441MHz

4.6 Transmitter Spurious Emissions

Transmitter spurious emissions are emissions outside the frequency range of the equipment when the equipment is in transmit mode.

4.6.1 Test Methodology

4.6.1.1 Preliminary Test

A test program that controls instrumentation and data logging was used to automate the preliminary RF emission test procedure. The frequency range of interest was divided into sub-ranges to yield a frequency resolution of approximately 120 kHz and provide a reading at each frequency for no more than 12° of turntable rotation. For each frequency sub-range the turntable was rotated 360° while peak emission data was recorded and plotted over the frequency range of interest in horizontal and vertical antenna polarization's.

Preliminary emission profile testing was performed inside the anechoic chamber. The EUT was placed on a 1.0m x 1.5m non-conductive table 80cm above the floor. The EUT was positioned as shown in the setup photographs. The receiving antenna was placed at a distance of 3m at a fixed height of 1m. Measurement equipment was located outside of the chamber. A video camera was placed inside the chamber to view the EUT.

To determine the worst axis, the pre-scans performed on X-Axis, Y-Axis, and Z-Axis.

4.6.1.2 Final Test

For each frequency measured, the peak emission was maximized by manipulating the receiving antenna from 1 to 4 meters above the ground plane and placing it at the position that produced the maximum signal strength reading. The turntable was then rotated through 360° while observing the peak signal and placing the EUT at the position that produced maximum radiation. The six highest emissions relative to the limit were measured unless such emissions were more than 20 dB below the limit. If less than six emissions are within 20 dB of the limit, than the noise level of the receiver is measured at frequencies where emissions are expected. Multiples of all oscillator and microprocessor frequencies were also checked.

Final testing was performed on an NSA compliant test site. The EUT was placed on a 1.0m x 1.5m non-conductive table 80cm above the ground plane. The placement of EUT and cables were the same as for preliminary testing and is shown in the setup photographs.

The final scans performed on the worst axis for three operating channels; 2412MHz, 2437MHz, and 2462MHz.

4.6.1.3 Deviations

None.

4.6.2 Transmitter Spurious Emission Limit

The spurious emissions of the transmitter shall not exceed the values in CFR47 Part 15.205, 15.209: 2008 and RSS 210 A1.1.2 2007.

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490.....	2400/F(kHz)	300
0.490-1.705.....	24000/F(kHz)	30
1.705-30.0.....	30	30
30-88.....	100 **	3
88-216.....	150 **	3
216-960.....	200 **	3
Above 960.....	500	3

All harmonics which are outside of the restricted band shall be 20dB below the in-band emission.

4.6.3 Test Results

The final data are measured under the worst case operating modes, configurations, and/or cable positions. It also reflects the results including any modifications and/or special accessories listed in Sections 1.4 and 1.5.

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

SOP 1 Radiated Emissions

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EUT Name	Adherent Device of GEN 1 AVIVO Mobile Patient Management System	**Date**	March 25, 2009
EUT Model	PiiX	**Temp / Hum in**	22°C / 38%rh
EUT Serial	002234004399	**Temp / Hum out**	N/A
EUT Config.	Integrated Antenna on Y-Axis	**Line AC / Freq**	Battery Powered
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	120kHz / 300kHz
Dist/Ant Used	3m / JB3	**Performed by**	Jeremy Luong

Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (cm)	Table Pos (deg)	FIM (Pk) Pk (dBuV/m)	FIM QP (dBuV/m)	Total CF dBuV	E-Field QP (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)	Type
Transmitted Data at 2402MHz										
298.864	H	126	176	32.84	32.03	-8.67	23.36	46.02	-22.66	Spurious
398.82	H	106	232	24.31	20.25	-7.01	13.24	46.02	-32.78	Spurious
599.059	H	225	350	33.42	31.31	-3.93	27.38	46.02	-18.64	Spurious
260.242	V	122	351	40.08	38.02	-10.38	27.64	46.02	-18.38	Spurious
390.241	V	156	48	36.62	34.12	-7.22	26.9	46.02	-19.12	Spurious
663.941	V	112	110	32.77	30.41	-2.21	28.2	46.02	-17.82	Spurious
Transmitted Data at 2441MHz										
298.842	H	127	171	33.33	31.70	-8.67	23.03	46.02	-22.99	Spurious
611.006	H	188	7	31.45	29.96	-3.62	26.34	46.02	-19.68	Spurious
199.631	V	119	302	38.03	36.52	-10.63	25.89	43.52	-17.63	Spurious
260.512	V	195	70	39.76	35.03	-10.34	24.69	46.02	-21.33	Spurious
390.675	V	131	93	33.78	28.85	-7.20	21.65	46.02	-24.37	Spurious
663.616	V	106	101	28.90	25.17	-2.22	22.95	46.02	-23.07	Spurious
Transmitted Data at 2480MHz										
311.856	H	131	167	33.17	30.70	-8.44	22.26	46.02	-23.76	Spurious
199.034	V	115	347	40.14	37.21	-10.79	26.42	43.52	-17.10	Spurious
260.394	V	130	46	40.13	35.53	-10.36	25.17	46.02	-20.85	Spurious
390.645	V	123	116	35.36	30.47	-7.20	23.27	46.02	-22.75	Spurious

Spec Margin = E-Field QP - Limit, E-Field QP = FIM QP+ Total CF ± Uncertainty
Total CF= Amp Gain + Cable Loss + ANT Factor

Combined Standard Uncertainty $u_c(y)$ = ± 1.6dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: Y-Axis was the worst plane.

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EUT Name	Adherent Device of GEN 1 AVIVO Mobile Patient Management System	**Date**	March 25, 2009
EUT Model	PiiX	**Temp / Hum in**	22°C / 35%rh
EUT Serial	002234004398	**Temp / Hum out**	N/A
EUT Config.	Integrated Antenna on Y-Axis	**Line AC / Freq**	Battery Powered
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1MHz / 3MHz
Dist/Ant Used	3m / EMCO3115	**Performed by**	Jeremy Luong

Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM (Pk) Pk (dBuV/m)	FIM Ave (dBuV/m)	Total CF dBuV	E-Field Ave (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)	Type
Transmitted Data at 2402MHz										
4804	H	1.5	28	80.63	79.50	-27.05	52.46	78.00	-25.55	Harmonic
7206	H	1.25	10	77.13	75.40	-22.94	52.47	78.00	-25.54	Harmonic
9608	H	1.2	68	67.86	65.21	-20.34	44.87	78.00	-33.13	Harmonic
4804	V	1.2	18	80.66	79.20	-27.05	52.16	78.00	-25.85	Harmonic
7206	V	1.1	90	70.94	69.67	-22.99	46.68	78.00	-31.32	Harmonic
9608	V	1.1	350	69.73	68.32	-20.42	47.90	78.00	-30.10	Harmonic
19,215.93	V	1.0	45	43.39	39.78			78.00		Harmonic
Transmitted Data at 2441MHz										
4882	H	1.5	12	79.72	78.21	-26.50	51.71	78.00	-26.29	Harmonic
7323	H	1.2	12	79.85	78.43	-22.41	56.02	78.00	-21.98	Harmonic
9764	H	1.3	72	71.80	70.42	-20.10	50.32	78.00	-27.68	Harmonic
4882	V	1.6	8	79.55	78.65	-26.50	52.15	78.00	-25.85	Harmonic
7323	V	1.4	10	79.20	77.78	-22.45	55.34	78.00	-22.67	Harmonic
9764	V	1.5	35	71.25	70.61	-20.14	50.47	78.00	-27.53	Harmonic
19,527.80	V	1.0	280	43.55	40.31			78.00		Harmonic
Transmitted Data at 2480MHz										
4960	H	1.6	14	79.13	78.10	-26.09	52.01	78.00	-25.99	Harmonic
7440	H	1.2	15	82.21	80.81	-22.44	58.37	78.00	-19.63	Harmonic
9920	H	1.2	53	72.86	71.23	-20.29	50.94	78.00	-27.06	Harmonic
4960	V	1.1	15	81.16	80.27	-26.09	54.18	78.00	-23.82	Harmonic
7440	V	1.1	18	75.88	74.66	-22.45	52.21	78.00	-25.79	Harmonic
9920	V	1.1	354	72.49	71.72	-20.30	51.42	78.00	-26.58	Harmonic
19,839.80	V	1.0	245	43.14	40.31			78.00		Harmonic

Spec Margin = E-Field QP - Limit, E-Field QP = FIM QP+ Total CF ± Uncertainty
Total CF= Amp Gain + Cable Loss + ANT Factor

Combined Standard Uncertainty $u_c(y)$ = ± 1.6dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: Y-Axis was the worst plane. No spurious emission was observed.

There are harmonic emissions, and their limit is 78dBuV/m; 20dBr from the fundamental peak.

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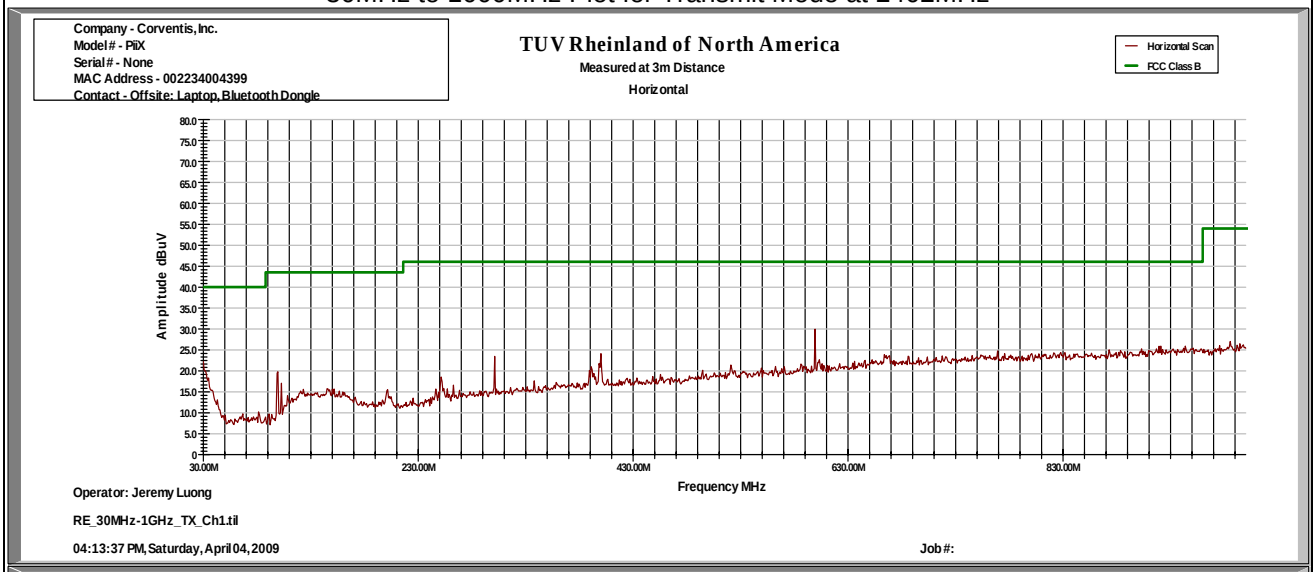
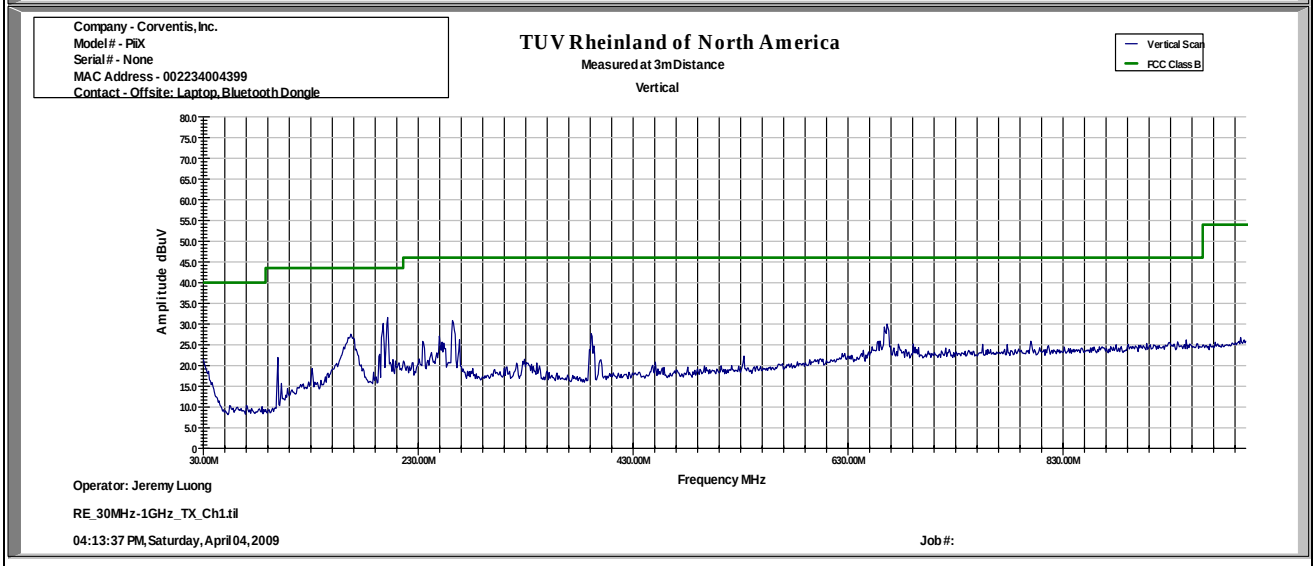
EUT Name	Adherent Device of GEN 1 AVIVO Mobile Patient Management System	**Date**	April 4, 2009
EUT Model	PiiX	**Temp / Hum in**	22°C / 37%rh
EUT Serial	002234004398	**Temp / Hum out**	N/A
EUT Config.	Integrated Antenna on Y-Axis	**Line AC**	Battery Powered
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	120kHz / 300kHz
Dist/Ant Used	3m / JB3	**Performed by**	Jeremy Luong

30MHz to 1000MHz Plot for Transmit Mode at 2402MHz





Notes: None.

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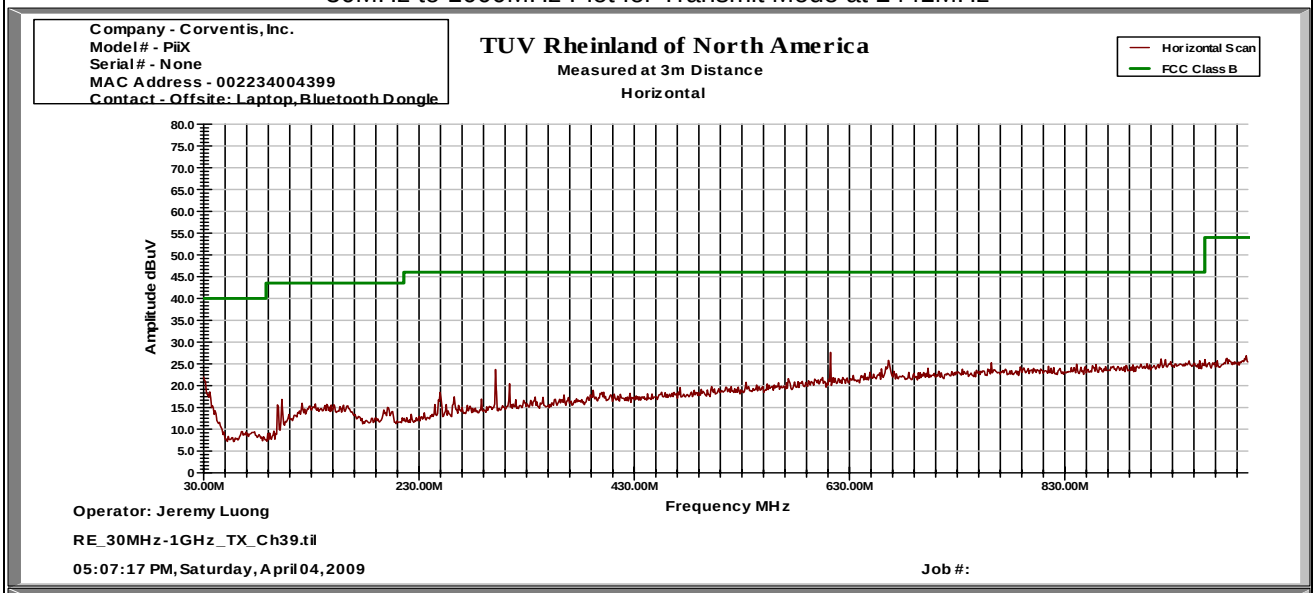
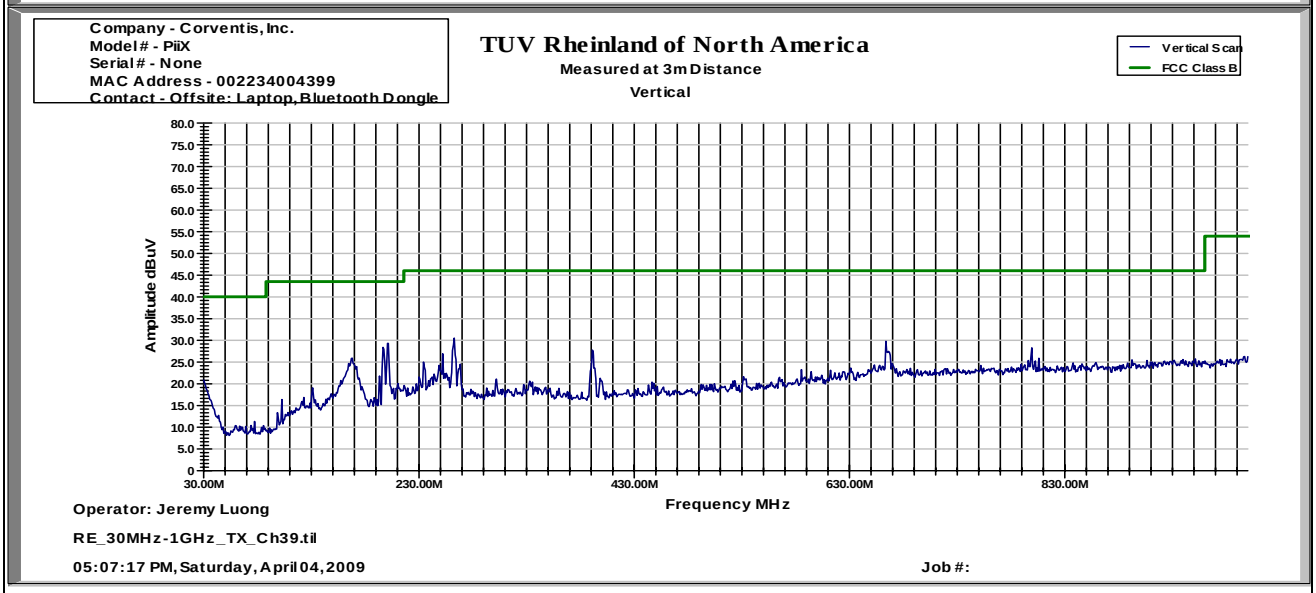
EUT Name	Adherent Device of GEN 1 AVIVO Mobile Patient Management System	**Date**	April 4, 2009
EUT Model	PiiX	**Temp / Hum in**	22°C / 37%rh
EUT Serial	002234004399	**Temp / Hum out**	N/A
EUT Config.	Integrated Antenna on Y-Axis	**Line AC**	Battery Powered
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	120kHz / 300kHz
Dist/Ant Used	3m / JB3	**Performed by**	Jeremy Luong

30MHz to 1000MHz Plot for Transmit Mode at 2441MHz





Notes: None.

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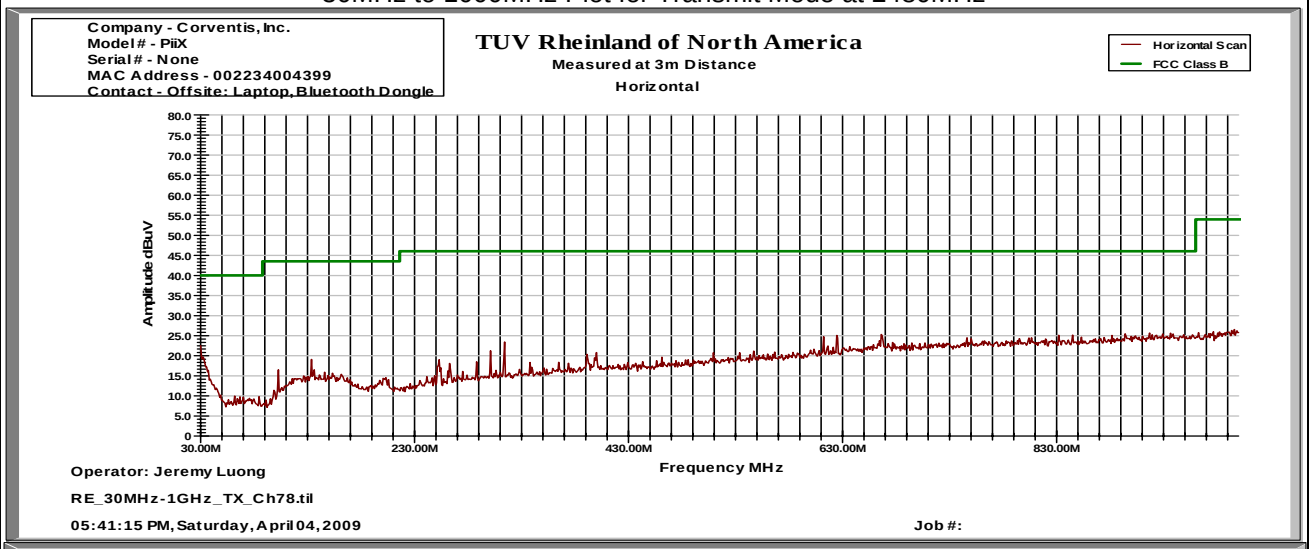
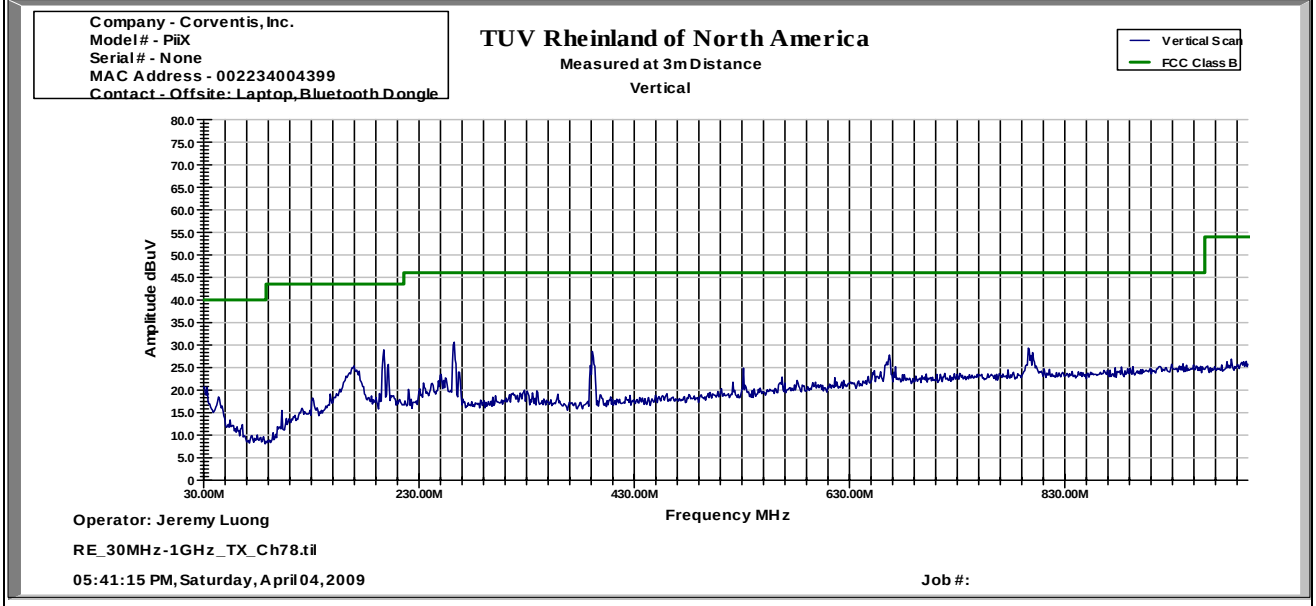
EUT Name	Adherent Device of GEN 1 AVIVO Mobile Patient Management System	**Date**	April 4, 2009
EUT Model	PiiX	**Temp / Hum in**	22°C / 37%rh
EUT Serial	002234004399	**Temp / Hum out**	N/A
EUT Config.	On-board Ant. (Meander) on Y-Axis	**Line AC**	Battery Powered
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	120kHz / 300kHz
Dist/Ant Used	3m / JB3	**Performed by**	Jeremy Luong

30MHz to 1000MHz Plot for Transmit Mode at 2480MHz





Notes: None.

SOP 1 Radiated Emissions

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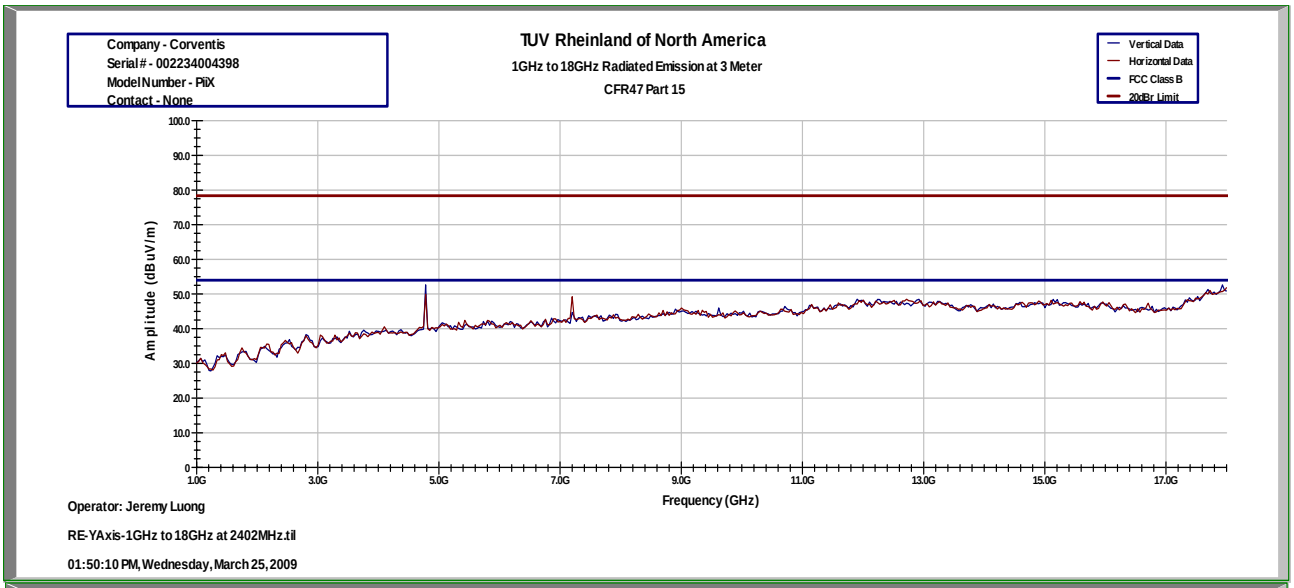
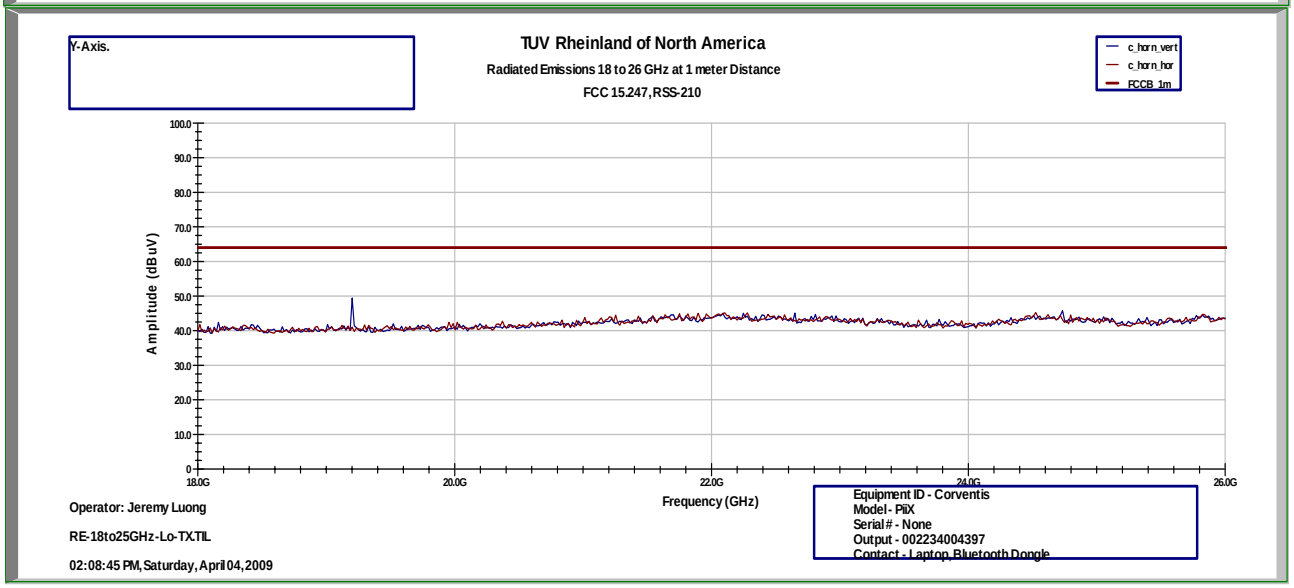
EUT Name	Adherent Device of GEN 1 AVIVO Mobile Patient Management System	**Date**	March 25, 2009
EUT Model	PiiX	**Temp / Hum in**	22°C / 38%rh
EUT Serial	002234004398	**Temp / Hum out**	N/A
EUT Config.	Integrated Antenna on Y-Axis	**Line AC**	Battery Powered
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1MHz / 3MHz
Dist/Ant Used	3m / EMCO3115	**Performed by**	Jeremy Luong

1GHz to 25GHz Plots for Transmit Mode at 2402MHz





Notes: None.

SOP 1 Radiated Emissions

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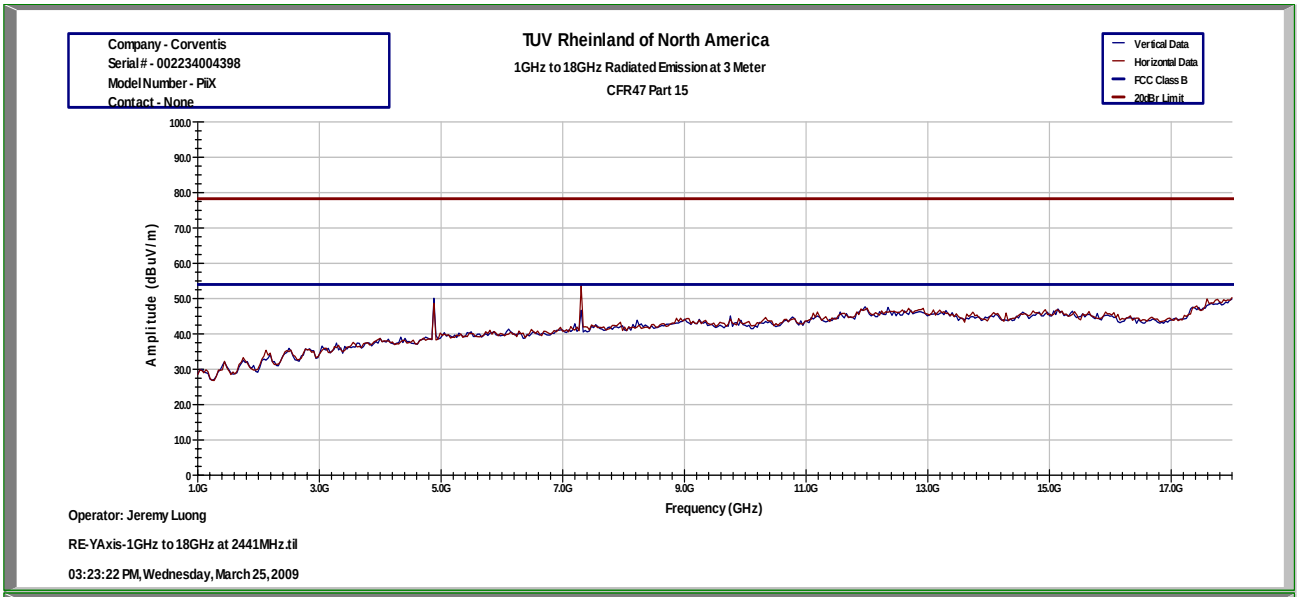
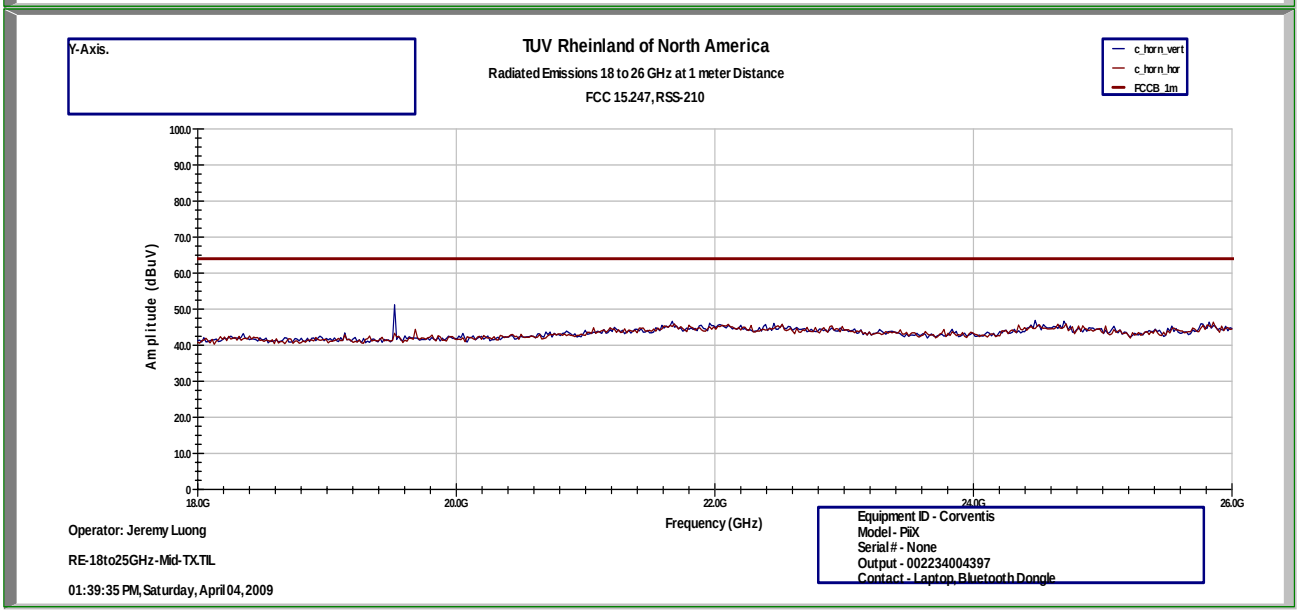
EUT Name	Adherent Device of GEN 1 AVIVO Mobile Patient Management System	**Date**	March 25, 2009
EUT Model	PiiX	**Temp / Hum in**	23°C / 38%rh
EUT Serial	002234004398	**Temp / Hum out**	N/A
EUT Config.	Integrated Antenna on Y-Axis	**Line AC**	Battery Powered
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1MHz / 3MHz
Dist/Ant Used	3m / EMCO3115	**Performed by**	Jeremy Luong

1GHz to 25GHz Plots for Transmit Mode at 2441MHz





Notes: None.

SOP 1 Radiated Emissions

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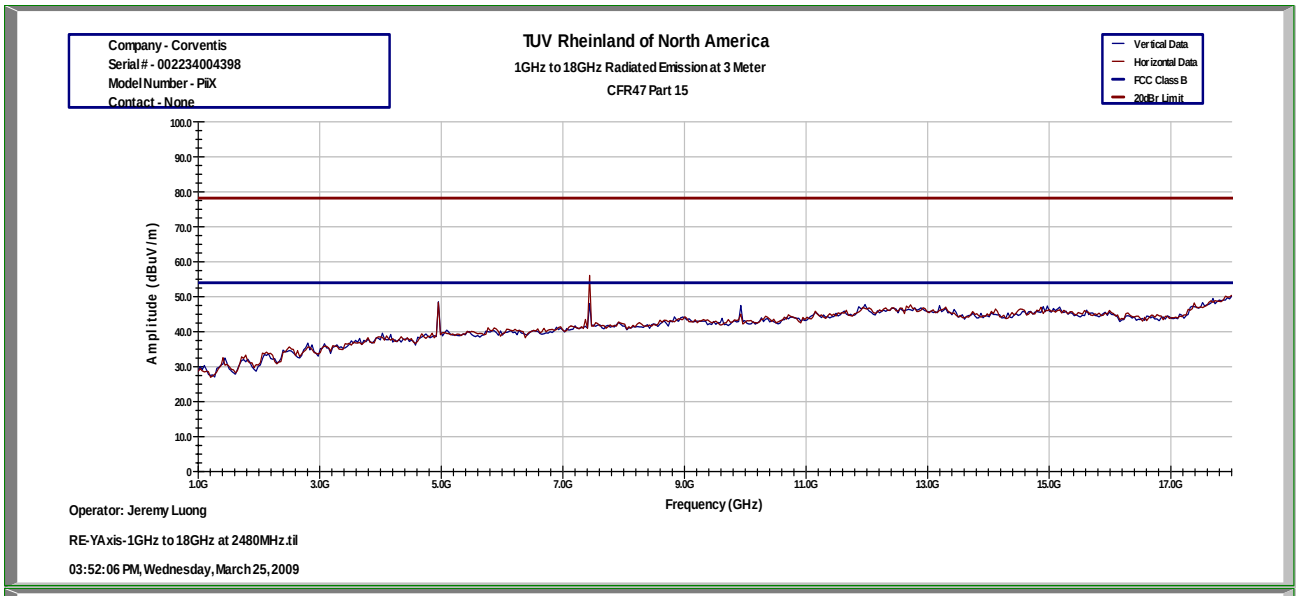
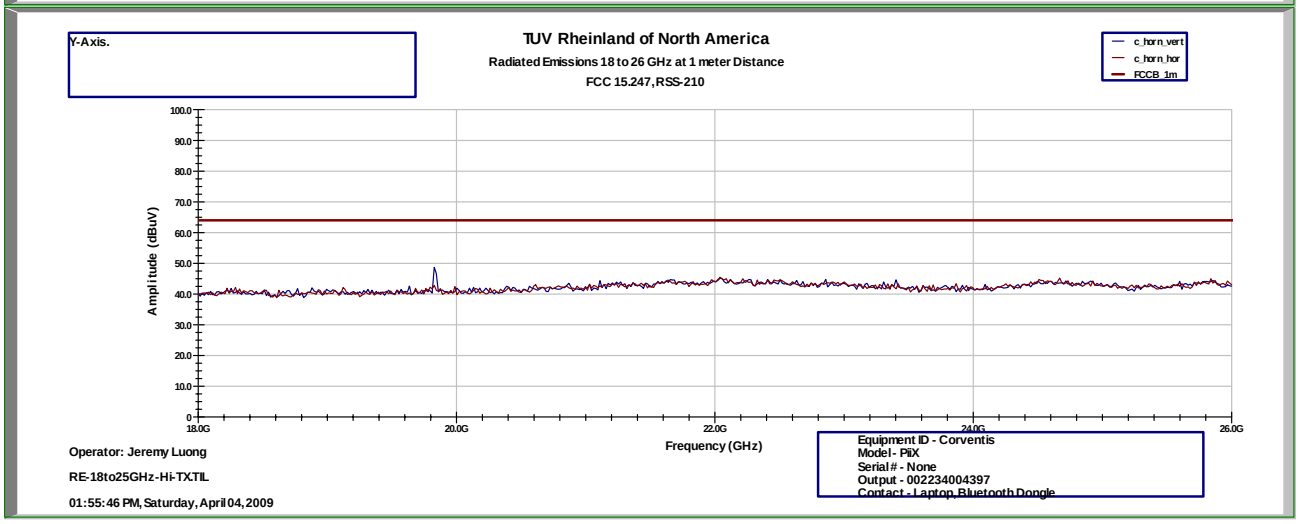
EUT Name	Adherent Device of GEN 1 AVIVO Mobile Patient Management System	**Date**	March 25, 2009
EUT Model	PiiX	**Temp / Hum in**	24°C / 38%rh
EUT Serial	002234004398	**Temp / Hum out**	N/A
EUT Config.	Integrated Antenna on Y-Axis	**Line AC**	Battery Powered
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	1MHz / 3MHz
Dist/Ant Used	3m / EMCO3115	**Performed by**	Jeremy Luong

1GHz to 25GHz Plots for Transmit Mode at 2480MHz





Notes: None.

4.6.4 Sample Calculation

The field strength is calculated by subtracting the Amplifier Gain and adding the Cable Loss and Antenna Correction Factor to the measured reading. The basic equation is as follows:

Field Strength (dBμV/m) = FIM - AMP + CBL + ACF

Where: FIM = Field Intensity Meter (dBμV)
AMP = Amplifier Gain (dB)
CBL = Cable Loss (dB)
ACF = Antenna Correction Factor (dB/m)

$$\mu V/m = 10^{\frac{dB\mu V/m}{20}}$$

4.7 Receiver Spurious Emissions

Receiver spurious emissions are emissions at any frequency when the equipment is in receive mode.

The spurious emissions of the receiver shall not exceed the values in CFR47 Part 15.109 and RSS 210 Sect 2.7.

4.7.1 Test Methodology

4.7.1.1 Preliminary Test

A test program that controls instrumentation and data logging was used to automate the preliminary RF emission test procedure. The frequency range of interest was divided into sub-ranges to yield a frequency resolution of approximately 120 kHz and provide a reading at each frequency for no more than 12° of turntable rotation. For each frequency sub-range the turntable was rotated 360° while peak emission data was recorded and plotted over the frequency range of interest in horizontal and vertical antenna polarization's.

Preliminary emission profile testing was performed inside the anechoic chamber. The EUT was placed on a 1.0m x 1.5m non-conductive table 80cm above the floor. The EUT was positioned as shown in the setup photographs. The receiving antenna was placed at a distance of 3m at a fixed height of 1m. Measurement equipment was located outside of the chamber. A video camera was placed inside the chamber to view the EUT.

To determine the worst axis, the pre-scans performed on X-Axis, Y-Axis, and Z-Axis.

4.7.1.2 Final Test

For each frequency measured, the peak emission was maximized by manipulating the receiving antenna from 1 to 4 meters above the ground plane and placing it at the position that produced the maximum signal strength reading. The turntable was then rotated through 360° while observing the peak signal and placing the EUT at the position that produced maximum radiation. The six highest emissions relative to the limit were measured unless such emissions were more than 20 dB below the limit. If less than six emissions are within 20 dB of the limit, than the noise level of the receiver is measured at frequencies where emissions are expected. Multiples of all oscillator and microprocessor frequencies were also checked.

Final testing was performed on an NSA compliant test site. The EUT was placed on a 1.0m x 1.5m non-conductive table 80cm above the ground plane. The placement of EUT and cables were the same as for preliminary testing and is shown in the setup photographs.

The final scans performed on the worst axis for the receiving channel; 2441MHz.

4.7.1.3 Deviations

None.

4.7.2 Receiver Spurious Emission Limit

The spurious emissions of the receiver shall not exceed the values in CFR47 Part 15.205, 15.209: 2008 and RSS 210 A1.1.2 2007.

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490.....	2400/F(kHz)	300
0.490-1.705.....	24000/F(kHz)	30
1.705-30.0.....	30	30
30-88.....	100 **	3
88-216.....	150 **	3
216-960.....	200 **	3
Above 960.....	500	3

4.7.3 Test Results

The final data are measured under the worst case operating modes, configurations, and/or cable positions. It also reflects the results including any modifications and/or special accessories listed in Sections 1.4 and 1.5.

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

4.7.3.1 Final Data

The data recorded in this section contains the final results under the worst-case conditions and without any modifications or special accessories implemented as the manufacturer intends.

SOP 1 Radiated Emissions

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EUT Name	Adherent Device of GEN 1 AVIVO Mobile Patient Management System	**Date**	April 4, 2009
EUT Model	PiiX	**Temp / Hum in**	22°C / 37%rh
EUT Serial	002234004399	**Temp / Hum out**	N/A
EUT Config.	Integrated Antenna on Y-Axis	**Line AC / Freq**	Battery Powered
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	120kHz / 300kHz
Dist/Ant Used	3m / JB3	**Performed by**	Jeremy Luong

Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (cm)	Table Pos (deg)	FIM (Pk) Pk (dBuV/m)	FIM QP (dBuV/m)	Total CF dBuV	E-Field QP (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)	Type
Receive Mode Data at 2441MHz										
198.003	V	233	168	29.08	22.73	-11.05	11.68	43.52	-31.84	Spurious
260.441	V	135	301	40.94	36.75	-10.35	26.40	46.02	-19.62	Spurious
390.974	V	142	287	32.70	28.50	-7.19	21.31	46.02	-24.71	Spurious

Spec Margin = E-Field QP - Limit, E-Field QP = FIM QP+ Total CF ± Uncertainty
Total CF= Amp Gain + Cable Loss + ANT Factor

Combined Standard Uncertainty $u_c(y)$ = ± 1.6dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: Y-Axis was the worst plane.

No emission was observed above 1GHz.

SOP 1 Radiated Emissions

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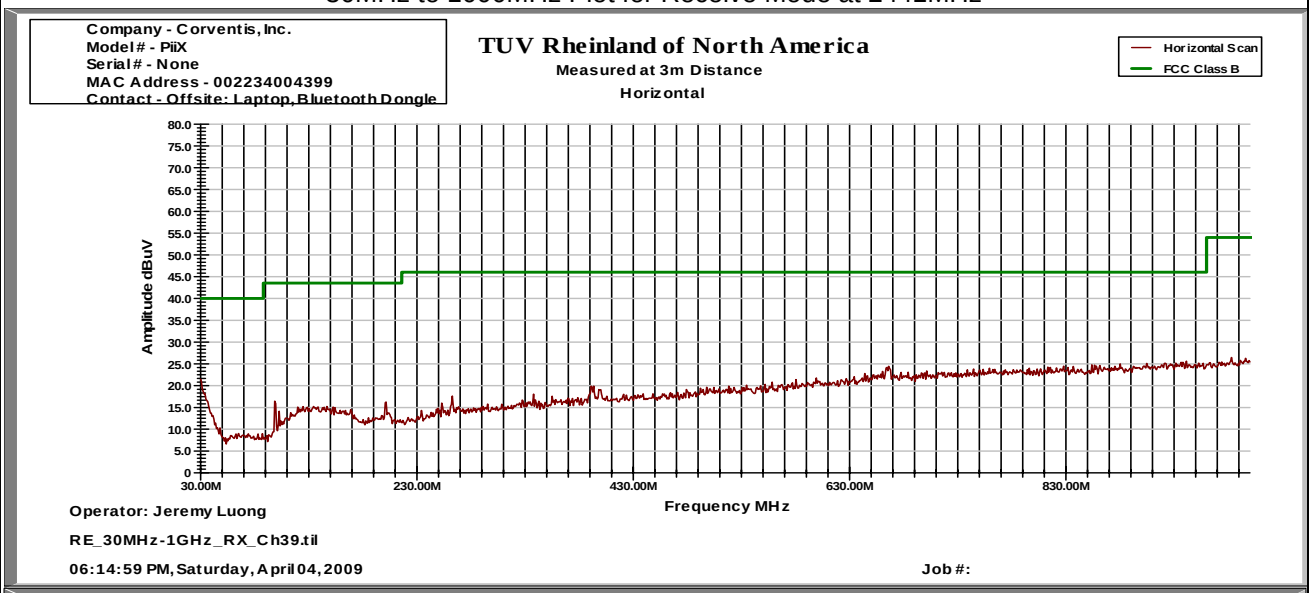
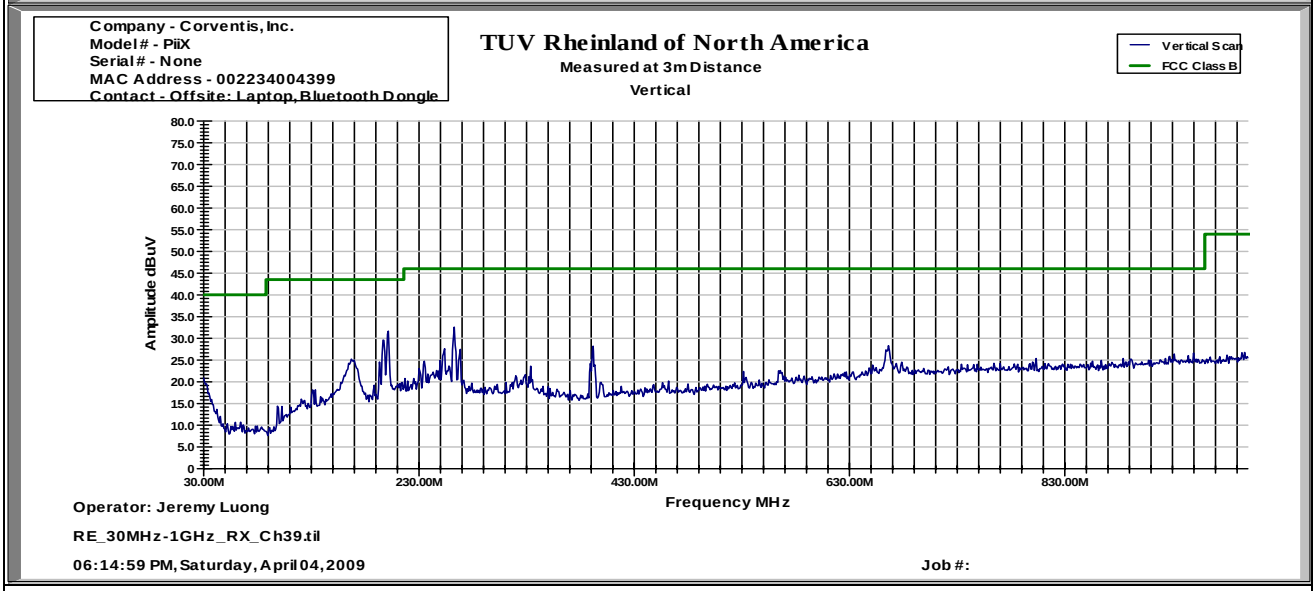
EUT Name	Adherent Device of GEN 1 AVIVO Mobile Patient Management System	**Date**	March 30, 2009
EUT Model	PiiX	**Temp / Hum in**	22°C / 39%rh
EUT Serial	002234004399	**Temp / Hum out**	N/A
EUT Config.	Integrated Antenna on Y-Axis	**Line AC**	Battery Powered
Standard	CFR47 Part 15 Subpart C	**RBW / VBW**	120kHz / 300kHz
Dist/Ant Used	3m / JB3 & EMCO3115	**Performed by**	Jeremy Luong

30MHz to 1000MHz Plot for Receive Mode at 2441MHz





Notes: No emission was observed above 1GHz.

4.8 AC Conducted Emissions

Testing was performed in accordance with ANSI C63.4:2003, RSS-210. These test methods are listed under the laboratory's NVLAP Scope of Accreditation.

This test measures the levels emanating from the EUT' AC input port, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices.

The AC conducted emissions of equipment under test shall not exceed the values in CFR47 Part 15.107

4.8.1 Test Methodology

A test program that controls instrumentation and data logging was used to automate the AC Power Line Conducted emission test procedure. The frequency range of interest was divided into sub-ranges such as to yield a frequency resolution of 9 kHz. Each phase and neutral of the AC power line were measured with respect to ground. Measurements were performed using a set of 50μH / 50Ω LISNs.

Testing is either performed in Lab 2. The setup photographs clearly identify which site was used. The vertical ground plane used in the semi-anechoic chamber is a 2m x 2m solid aluminum frame and panel, and it is bonded to the horizontal ground plane.

In the case of tabletop equipment, the EUT is placed on a 1.0m x 1.5m non-conductive table 80cm above the ground plane and 40cm from a vertical ground reference plane. The rear of the EUT was positioned flush with the backside of the table and directly over the LISNs. The power and I/O cables were routed over the edge of the table and bundled approximately 40cm from the ground plane. Support equipment was powered from a separate LISN.

4.8.1.1 Deviations

There were no deviations from this test methodology.

4.8.2 Test Results

PiiX is battery powered unit; therefore, EUT was compliant to the requirements of the test standard(s).

5 Test Equipment Use List

5.1 Equipment List

Equipment	Manufacturer	Model #	Serial/Inst #	Last Cal dd/mm/yy	Next Cal dd/mm/yy
Antenna Bilog	Sunol Science	JB3	A102606	02/05/08	02/05/10
TuneD Dipole Antenna	A.H Systems, Inc.	TDS-200/535-1	154	01/09/09	01/09/10
TuneD Dipole Antenna	A.H Systems, Inc.	TDS-200/535-2	154	01/09/09	01/09/10
TuneD Dipole Antenna	A.H Systems, Inc.	TDS-200/535-3	154	01/09/09	01/09/10
TuneD Dipole Antenna	A.H Systems, Inc.	TDS-200/535-4	154	01/09/09	01/09/10
Antenna Horn (1-18GHz)	EMCO	3115	9602-4676	07/03/08	07/03/09
Antenna Horn (1-18GHz)	EMCO	3115	9710-5301	07/03/08	07/03/09
Antenna Horn (18-26GHz)	CMT	RA42-K-F-4B-C	020131-004	08/14/08	08/14/09
Antenna Horn (18-26GHz)	CMT	RA42-K-F-4B-C	961178-001	08/14/08	08/14/09
EMI Receiver	Hewlett Packard	8546A	3325A00166	01/21/09	01/21/10
Preselector	Hewlett Packard	85460A	3330A00162	01/21/09	01/21/10
Amplifier	Hewlett Packard	8447D	2944A07486	1/23/09	1/23/10
Spectrum Analyzer	Rhode&Schwarz	ESIB	DE31284	06/10/08	06/10/09
Amplifier	Rhode&Schwarz	TS-PR18	100019	08/14/08	08/14/09
Amplifier	Rhode&Schwarz	TS-PR26	100011	08/14/08	08/14/09
Signal Generator	Hewlett Packard	83620B	3844A01375	01/21/09	01/21/10
Spectrum Analyzer	Hewlett Packard	8568	2415A00443	01/26/09	01/26/10
S/A Display	Hewlett Packard	8568	2403A07118	01/26/09	01/26/10
Quasi-Peak Adapter	Hewlett Packard	85650A	2811A01178	01/26/09	01/26/10
LISN	Solar Electronics	Type 9348-50-R-24-BNC	00015149	01/21/09	01/21/10
Thermo Chamber	Associated Environmental	SK-3102	5999	01/22/09	01/22/10
Notch Filter	Micro-Tronics	BRM50702	037	01/24/09	01/24/10
High Pass Filter (3.5GHz)	Hewlett Packard	84300-80038	82004	01/24/09	01/24/10
High Pass Filter (8.5GHz)	Hewlett Packard	84300-80039	002	01/24/09	01/24/10
Power Supplier	Kikosui	PCR8000W	CM000912	01/21/09	01/21/10
Digital Multimeter	Fluke	77	55960854	01/22/09	01/22/10
Thermometer	Fluke	52II	96480034	09/08/08	09/08/09

* Calibration of equipment past due for re-calibration will be performed expeditiously. If any equipment is found to be out of tolerance at that time, affected customers will be notified accordingly.

6 EMC Test Plan

6.1 Introduction

This section provides a description of the Equipment Under Test (EUT), configurations, operating conditions, and performance acceptance criteria. It is an overview of information provided by the manufacturer so that the test laboratory may perform the requested testing.

6.2 Customer

Table 8: Customer Information

Company Name	Corventis, Inc.
Address	1410 Energy Park Drive, Suite #1
City, State, Zip	St. Paul, MN 55108
Country	USA
Phone	651-925-3774
Fax	651-389-3251

Table 9: Technical Contact Information

Name	Ashish Bhargava
E-mail	ashish.bhargava@corventis.com
Phone	651-925-3758
Fax	651-389-3251

6.3 Equipment Under Test (EUT)

Table 10: EUT Specifications

PiiX Dimensions	5”x 2”x 1”
PiiX	Operating Voltage: 2.5 VDC Max Current: 100 mA Max Power Consumption: 0.25W V_{min}: 2.1Vdc
Clock/ Oscillating Frequencies	32kHz, 8MHz, and 13Mhz.
Environment	Indoor
Operating Temperature Range:	10 to 45 degrees C
Multiple Feeds:	☐ Yes and how many ☒ No
Operating Frequencies:	2.402GHz to 2.480MHz (Bluetooth)
Rated Power Output for PiiX	+2.5mW at 2.4GHz
Modulation Type	☐ AM ☐ FM ☐ Phase ☒ Other describe: Adaptive Frequency Hopping
Type of Equipment	☐ Table Top ☐ Rack mount ☐ Floor standing cabinet ☒ Other *describe: Patient’s body*

Table 11: Interface Specifications

Interface Type	Cabled with what type of cable?	Is the cable shielded?	Maximum potential length of the cable?	Metallic (M), Coax (C), Fiber (F), or Not Applicable?
None.	N/A	☐ Yes ☐ No ☒ Na	☐ English:_____ ☐ Metric:_____ ☒ Na	☐ M ☐ C ☐ F ☒ Na

Table 12: Supported Equipment

Equipment	Manufacturer	Model	Serial	Used for
Test jig	Corventis, Inc.	None	None	Circuit board assisted in activating the Bluetooth communication.

Table 13: Description of Sample used for Testing

Device	Serial Number	Used for
PiiX	002340043DD	Prescan for the worst orthogonal axis
PiiX	002234004398	RF characteristics RE (1-18GHz)
PiiX	002234004399	Voltage Variation RF characteristics RE (30MHz to 25GHz)

Table 14: Description of Test Configuration used for Radiated Emission

Device	Gain	Mode	X-Axis Description	Y-Axis Description	Z-Axis Description
PiiX	0dBi	Transmit & Receive	Piix placed on tabletop with LCD display facing up	PiiX positioned horizontally with LCD display facing sideway.	Piix positioned vertically with LCD display read upward.

6.4 Test Specifications

Testing requirements

Table 15: EUT Designation

Emissions and Immunity	
Standard	Requirement
CFR 47 Part 15.247	All
RSS 210	All