LS Research, LLC
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COMPLIANCE TESTING OF:

Scott Pak-Alert™

Prepared For:

Scott Health & Safety
Division of Scott Technologies, Inc.
Attn.: Ms. Ann Carver
4320 Goldmine Road
Monroe, NC 28079

Test Report Number:

306211 TX-V1

Test Dates:

April 20th through May 18th, 2006

All results of this report relate only to the items that were tested. This report is not to be reproduced, except in full, without written approval of LS Research, LLC.

Table of Contents

1. LS Research, LLC In Review

LS Research, LLC - Accreditations and Listing's

As an EMC Testing Laboratory, our Accreditation and Assessments are recognized through the following:

A2LA – American Association for Laboratory Accreditation

Accreditation based on ISO/IEC 17025 : 2005
with Electrical (EMC) Scope of Accreditation
A2LA Certificate Number: 1255.01

Federal Communications Commission (FCC) – USA

Listing of 3 Meter Semi-Anechoic Chamber based on Title 47 CFR – Part 2.948
FCC Registration Number: 90756

Industry Canada

On file, 3 Meter Semi-Anechoic Chamber based on RSS-212 – Issue 1
File Number: IC 3088-A

On file, 3 and 10 Meter OATS based on RSS-212 – Issue 1
File Number: IC 3088

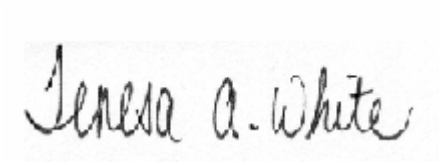
U. S. Conformity Assessment Body (CAB) Validation

Validated by the European Commission as a U. S. Competent Body operating under the U. S. /EU, Mutual Recognition Agreement (MRA) operating under the European Union Electromagnetic Compatibility –Council Directive 2004/108/EC (formerly 89/336/EEC, Article 10.2)
Date of Validation: January 16, 2001

Validated by the European Commission as a U.S. Notified Body operating under the U.S./EU, Mutual Recognition Agreement (MRA) operating under the European Union Telecommunication Equipment – Council Directive 99/5/EC, Annex V.

Date of Validation: November 20, 2002
Notified Body Identification Number: 1243

2. Signature Page



Prepared By: August 30, 2006

Teresa A. White, Document Coordinator Date

Tested By: August 30, 2006

Khairul Aidi Zainal, EMC Engineer Date

Approved By: August 30, 2006

Brian E. Petted, VP of Engineering Date

3. Product and General Information

Manufacturer:	Scott Health & Safety, Division of Scott Technologies, Inc.					
Date(s) of Test:	April 20th – May 18th , 2006					
Test Engineer(s):	√	Aidi Zainal		Abtin Spantman		Ken Boston
Model #:	805796					
Serial #:	Engineering unit					
Voltage:	(2) 9V batteries					
Operation Mode:	Continuous transmit					

4. Introduction

Between April 20th and May 18th , 2006, a series of Conducted and Radiated RF Emission tests were performed on one sample of the Scott Health & Safety, Division of Scott Technologies, Inc. Pak-Alert™, Model Number 805796 here forth referred to as the "*Equipment Under Test*" or "*EUT*". These tests were performed using the procedures outlined in ANSI C63.4-2003 for intentional radiators, and in accordance with the limits set forth in FCC Part 15.247 (Industry Canada RSS-210) for a low power transmitter. These tests were performed Khairul Aidi Zainal, EMC Engineer at LS Research, LLC.

All Radiated and Conducted RF Emission tests were performed upon the EUT to measure the emissions in the frequency bands described in FCC Title 47 CFR, Part 15, including 15.35, 15.205, 15.247 and Industry Canada RSS-210 to determine whether these emissions are below the limits expressed within the standards. These tests were performed in accordance with the procedures described in the American National Standard for methods of measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (ANSI C63.4-2003). Another document used as a reference for the EMI Receiver specification was the Comite International Special Des Perturbations Radioelelectriques (CISPR) Number 16-1, 2003.

All tests were performed at LS Research, LLC in Cedarburg, Wisconsin, unless otherwise noted.

5. Product Description

The Scott Pak-Alert™, Model Number 805796 is a radio transceiver attached to an air tank. The device is used to send out an RF and an audio signal for tracking purposes in cases of emergency. If an emergency arises, the user must press a red button to activate the device. Pressing the yellow button twice will set the device on standby and pressing it two more times will deactivate the device.

The RF signal transmitted is an FSK signal on a single DTS channel, operating at 2425 MHz with digital data as a data source and has a data rate of 250 kbps. Two 9V batteries provide power to the device. The antenna used on the device is a printed circuit board F antenna with a -1.9 dBi perceived gain as measured with a ground plane present.

$$G_T = E - P_T - 104.77$$

$$= 122.8 - 19.9 - 104.8$$

= -1.9 dBi

Where,

P_T = transmitted power in dBm.

G_T = the gain of the transmitter antenna in dBi (dB above an Isotropic radiator).

E = the radiated Electric Field in dBμV/m.

6. Test Requirements

The above mentioned tests were performed in order to determine the compliance of the Scott Health & Safety, Division of Scott Technologies, Inc. Pak-Alert™, Model Number 805796 with limits contained in various provisions of Title 47 CFR, FCC Part 15, including:

15.31	15.247a	15.247d
15.205	15.247b	15.247e
15.207	15.247c	

7. Summary of Test Report

DECLARATION OF CONFORMITY

The Scott Health & Safety, Division of Scott Technologies, Inc. Pak-Alert™, Model Number 805796 was found to **MEET** the requirements as described within the specification of Title 47 CFR FCC, Part 15.247, and Industry Canada RSS-210, Annex 8, section 8.2 for a Digital Spread Spectrum (DTS) Transmitter.

The enclosed test results pertain to the sample(s) of the test item listed, and only for the tests performed on the data sheets. Any subsequent modification or changes to the test items could invalidate the data contained herein, and could therefore invalidate the findings of this report.

Some emissions are seen to be within 4dB of their respective limits. As these levels are within the tolerances of the test equipment and site employed, there is a possibility that this unit, or a similar unit selected out of production may not meet the required limit specification if tested by another agency.

8. Radiated Emissions Test 15.247 (b) and (d)

Test Setup

The test setup was assembled in accordance with Title 47, CFR FCC Part 15 and ANSI C63.4-2003. The EUT was placed on an 80cm high non-conductive pedestal, centered on a flush mounted 2-meter diameter turntable inside a 3 meter Semi-Anechoic, FCC listed Chamber. The EUT was operated in continuous transmit modulated mode, using power as provided by (2) 9V batteries. The unit has the capability to operate on 1 channel.

The applicable limits apply at a 3 meter distance. Measurements above 5 GHz were performed at a 1.0 meter separation distance. The calculations to determine these limits are detailed in the following pages. Please refer to Appendix A for a complete list of test equipment.

Test Procedure

Radiated RF measurements were performed on the EUT in a 3 meter Semi-Anechoic, FCC listed Chamber. The frequency range from 30 MHz to 25000 MHz was scanned and investigated. The radiated RF emission levels were manually noted at the various fixed degree settings of azimuth on the turntable and antenna height. The EUT was placed on a non-conductive pedestal in the 3 meter Semi-Anechoic Chamber, with the antenna mast placed such that the antenna was 3 meters from the EUT. A Biconical Antenna was used to measure emissions from 30 MHz to 300 MHz, and a Log Periodic Antenna was used to measure emissions from 300 MHz to 1000 MHz. A Double-Ridged Waveguide Horn Antenna was used from 1 GHz to 18 GHz. The maximum radiated RF emissions were found by raising and lowering the antenna between 1 and 4 meters in height, using both horizontal and vertical antenna polarities. From 18 GHz to 25 GHz, the EUT was measured at a 0.3 meter separation, using a standard gain Horn Antenna and pre-amplifier.

The battery voltage was checked frequently, and the batteries were replaced as necessary.

The EUT was rotated along three orthogonal axis during the investigations to find the highest emission levels.

Test Equipment Utilized

A list of the test equipment and antennas utilized for the Radiated Emissions test can be found in Appendix A. This list includes calibration information and equipment descriptions. All equipment is calibrated and used according to the operation manuals supplied by the manufacturers. All calibrations of the antennas used were performed at an N.I.S.T. traceable site. In addition, the Connecting Cables were measured for losses using a calibrated Signal Generator and a HP 8546A EMI Receiver. The resulting correction factors and the cable loss factors from these calibrations were entered into the HP 8546A EMI Receiver database. As a result, the data taken from the HP 8546A EMI Receiver accounts for the antenna correction factor as well as cable loss or other corrections, and can therefore be entered into the database as a corrected meter reading. The HP 8546A EMI Receiver was operated with a resolution bandwidth of 120 kHz for measurements below 1 GHz (video bandwidth of 300 kHz), and a bandwidth of 1 MHz for measurements above 1 GHz (video bandwidth of 10kHz). From 5 GHz to 18 GHz, an HP E4407B Spectrum Analyzer and an EMCO Horn Antenna were used. From 18 GHz to 25 GHz, the HP E4407B Spectrum Analyzer with a standard gain horn, and preamp were used.

Test Results

The EUT was found to **MEET** the Radiated Emissions requirements of Title 47 CFR, FCC Part 15.247 for a DTS transmitter [Canada RSS-210, Annex 8, section 8.2]. The frequencies with significant RF signal strength were recorded and plotted as shown in the Data Charts and Graphs.

CALCULATION OF RADIATED EMISSIONS LIMITS

The maximum peak output power of an intentional radiator in the 902-928 MHz band, as specified in Title 47 CFR 15.247 (b)(3), is 1 Watt. The harmonic and spurious RF emissions, as measured in any 100 kHz bandwidth, as specified in 15.247 (d), shall be at least 20 dB below the measured power of the desired signal, and must also meet the requirements described in 15.205(c).

The following table depicts the general radiated emission limits above 30 MHz. These limits are obtained from Title 47 CFR, Part 15.209, for radiated emissions measurements. These limits were applied to any signals found in the 15.205 restricted bands.

Frequency (MHz)	3 m Limit μV/m	3 m Limit (dBμV/m)	1 m Limit (dBμV/m)
30-88	100	40.0	-
88-216	150	43.5	-
216-960	200	46.0	-
960-24,000	500	54.0	63.5

Sample conversion from field strength μV/m to dBμV/m:

$dB\mu V/m = 20 \log_{10} (100)$

= 40 dBμV/m (from 30-88 MHz)

For measurements made at 1.0 meter, a 9.5 dB correction has been invoked.

960 MHz to 10,000 MHz

500μV/m or 54.0 dB/μV/m at 3 meters

54.0 + 9.5 = 63.5 dB/μV/m at 1 meter

For measurements made at 0.3 meter, a 20 dB correction has been invoked.

960 MHz to 10,000 MHz

500μV/m or 54.0 dB/μV/m at 3 meters

54.0 + 20 = 74 dB/μV/m at 0.3 meters

Radiated Emissions Data Chart

3 Meter Measurements of Electromagnetic Radiated Emissions
Test Standard: 47CFR, Part 15.205 and 15.247(DTS)
Frequency Range Inspected: 30 MHz to 25000 MHz

Manufacturer:	Scott Health & Safety, Division of Scott Technologies, Inc.								
Date(s) of Test:	April 20th – May 18th , 2006								
Test Engineer(s):	√	Aidi Zainal		Abtin Spantman		Ken Boston			
Model #:	805796								
Serial #:	Engineering Unit								
Voltage:	(2) 9V Batteries								
Operation Mode:	Continuous Transmit								
EUT Power:		Single Phase ___VAC				3 Phase ___VAC			
	√	Battery: (2) 9V				Other:			
EUT Placement:	√	80cm non-conductive table				10cm Spacers			
EUT Test Location:	√	3 Meter Semi-Anechoic FCC Listed Chamber				3/10m OATS			
Measurements:		Pre-Compliance			Preliminary	√	Final		
Detectors Used:	√	Peak	√	Quasi-Peak	√	Average			

Environmental Conditions in the Lab:
Temperature: 20 – 25°C
Relative Humidity: 30 – 60 %

Test Equipment Used:
EMI Measurement Instrument: HP8546A and Agilent E4407B
Log Periodic Antenna: EMCO #93146
Horn Antenna: EMCO #3115
Biconical Antenna: EMCO 93110
Pre-Amp: Advanced Microwave WHA6224
Standard Gain Horn: EMCO 3160-09

The following table depicts the level of significant spurious radiated RF emissions found:

Frequency (MHz)	Antenna/ EUT Polarity	Height (meters)	Azimuth (0° - 360°)	Measured EFI (dBμV/m)	15.205 Limit (dBμV/m)	Margin (dB)
2277	H/H	1.07	271	57.3	63.5	6.2
2350	H/H	1.07	271	55.5	63.5	8.0
2400	H/H	1.07	271	58.6	102.8	44.2
2568	H/H	1.07	271	56.4	102.8	46.4
2573	H/H	1.07	271	58.4	102.8	44.4
2994	H/H	1.07	271	58.2	102.8	44.6
899.0	H/V	1.00	225	32.5	46.0	13.5
764.3	H/V	1.00	0	30.0	46.0	16.0
785.7	V/V	1.00	0	29.8	46.0	16.2

Notes:

1) A Quasi-Peak Detector was used in measurements below 1 GHz, and an Average Detector was used in measurements above 1 GHz. The Peak detector was also use to ensure that the emission levels do not exceed 20 dB beyond the Average limits.

2) *Other spurious emissions were better than 20 dB below the limits.*

The following table depicts the level of significant radiated RF fundamental and harmonic emissions seen on the channel:

Frequency (MHz)	Antenna/ EUT Polarity	Height (meters)	Azimuth (0° - 360°)	Measured ERP (dBμV/m)	15.247 Limit (dBμV/m)	Margin (dB)
2425	H/H	1.07	271	122.8	134.7	11.9
4850	H/H	1.00	292	59.7	63.5	3.8
7275	V/H	1.00	211	47.4	63.5	16.2
9700	V/H	1.00	296	41.0	102.8	61.8
1215	H/V	1.00	38	46.0	63.5	17.5
14550	V/V	1.00	20	40.5	102.8	62.3
16975	H/S	1.00	0	(Note 3) 44.3	102.8	58.5
19400	H/S	1.00	0	(Note 3) 36.9	74.0	37.0
21825	H/V	1.00	0	(Note 3) 37.3	122.8	85.5
24250	V/V	1.00	0	(Note 3) 40.4	122.8	82.4

Notes:

1) A Quasi-Peak Detector was used in measurements below 1 GHz, and a Peak as well as an Average Detector was used in measurements above 1 GHz. Only the results from the Average detector are published in the table above. The peak detector was used to ensure the peak emissions did not exceed 20 dB above the limits.
2) Measurements above 1 GHz were made at 1 meters of separation from the EUT, and at 0.3 m separation for frequencies between 18 – 25 GHz.
3) Measurement at receiver system noise floor.
4) For measurements of the fundamental power, because of spectral bandwidth, the receiver was set to RBW=VBW=3 MHz.
5) The EUT operates on a single channel in the 2.4GHz- 2.4835GHz band range.

Photos Taken During Radiated Emission Testing

View of the EUT setup in vertical orientation

View of the EUT setup in Horizontal orientation

View of the EUT setup in Side orientation

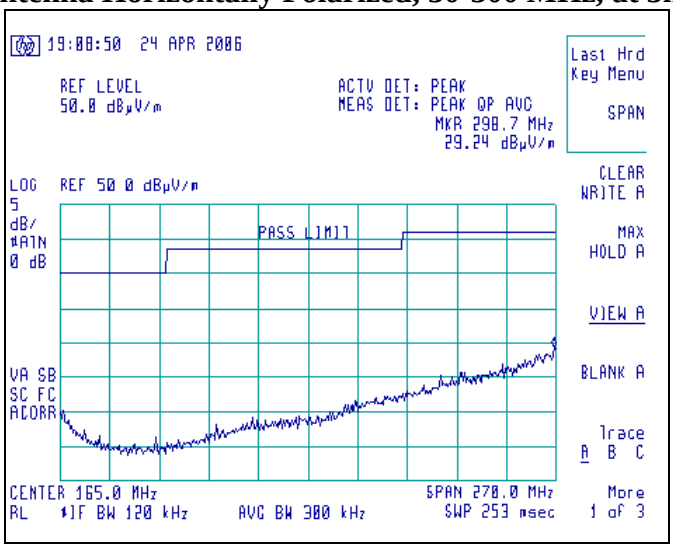
Graphs made during Radiated Emission Testing

Screen Captures of Radiated RF Emissions:

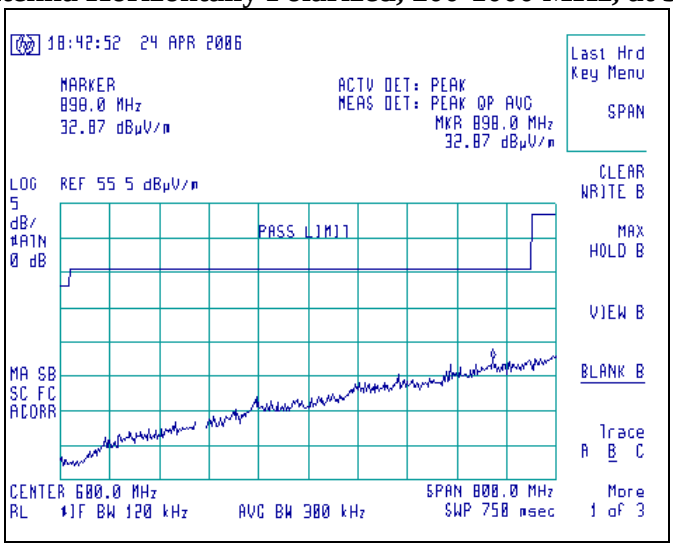
Please note these screen captures represent Peak Emissions. For radiated emission measurements, we utilize a Quasi-Peak detector function when measuring frequencies below 1 GHz, and an Average detector function when measuring frequencies above 1 GHz.

The signature scans shown here are from worst-case emissions, as measured with the sense antenna horizontally polarized and EUT antenna horizontally and vertically polarized, respectively, for worst case presentations.

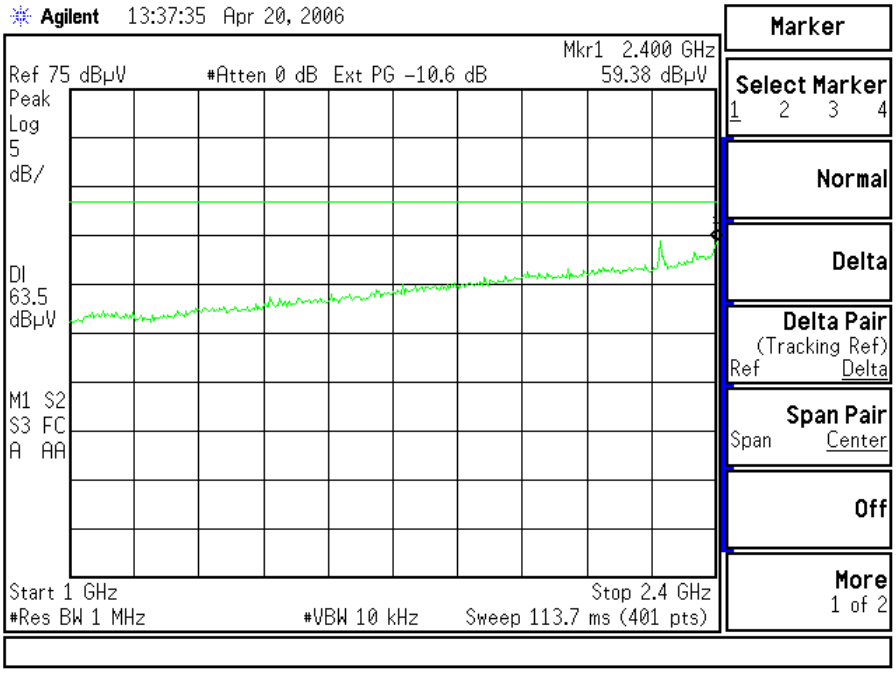
Antenna Horizontally Polarized, 30-300 MHz, at 3m.



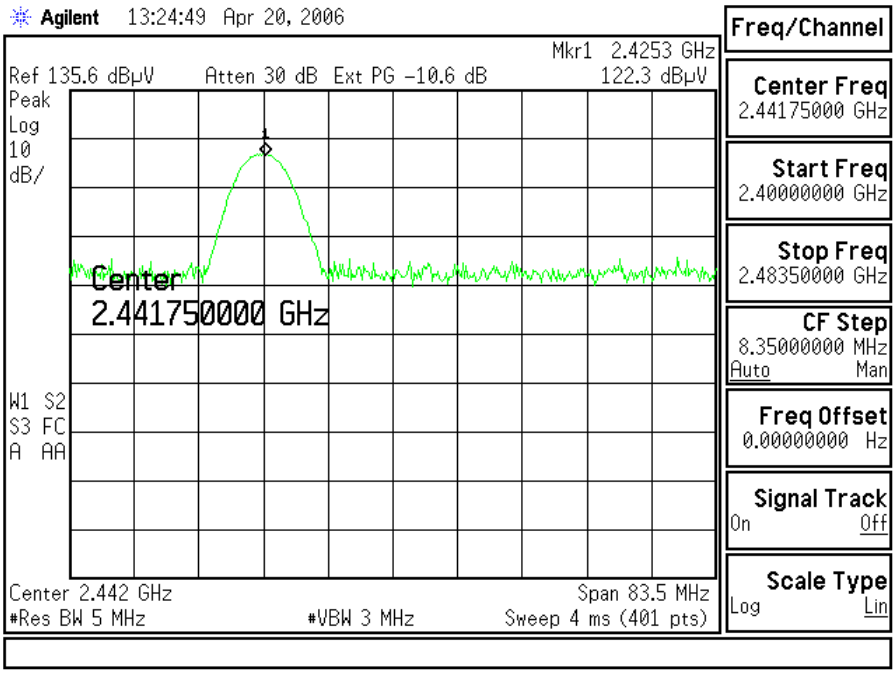
Antenna Horizontally Polarized, 200-1000 MHz, at 3m.



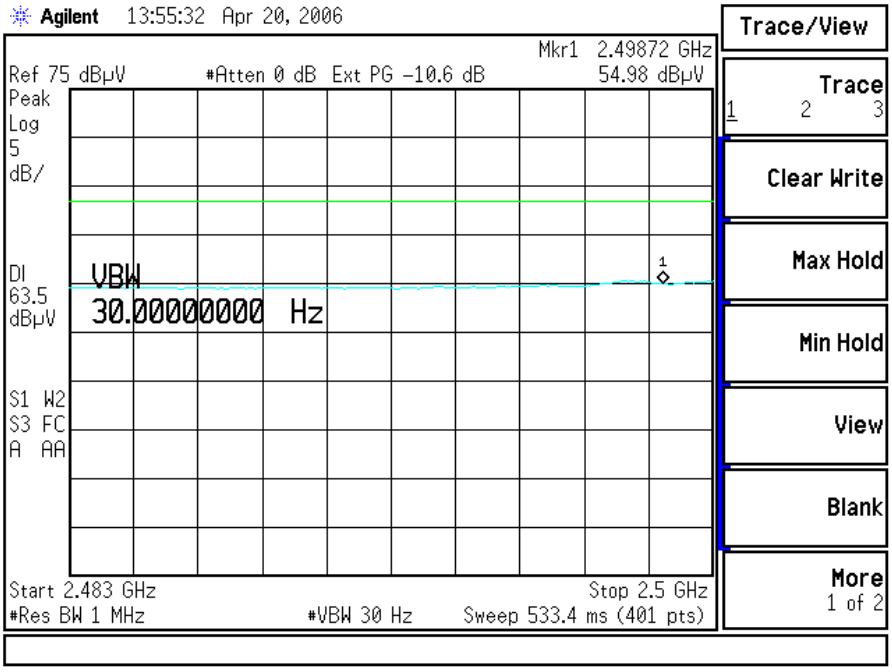
Antenna Horizontally Polarized, 1000-2400 MHz, at 1m.



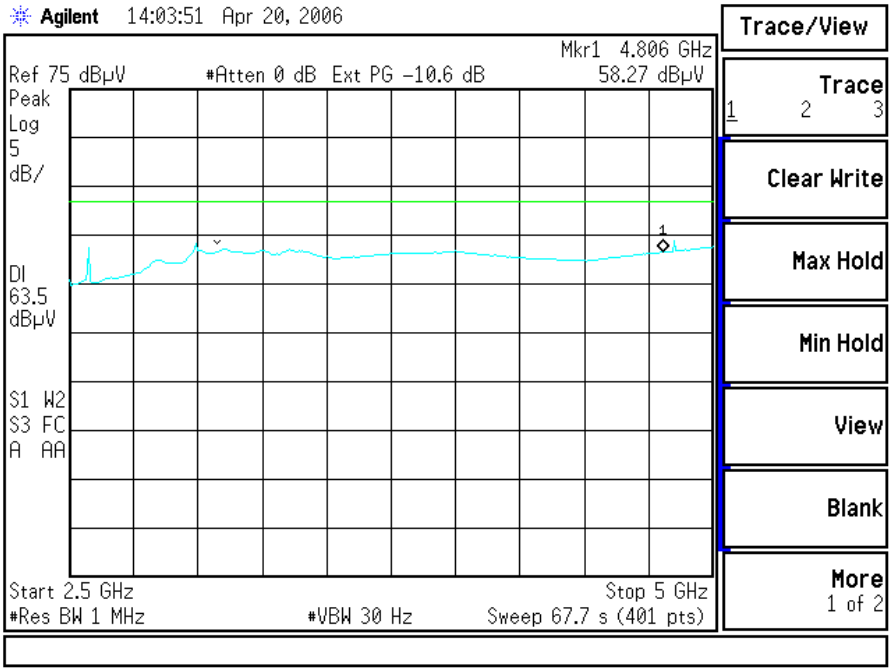
Antenna Horizontally Polarized, 2400-2484 MHz, at 1m.



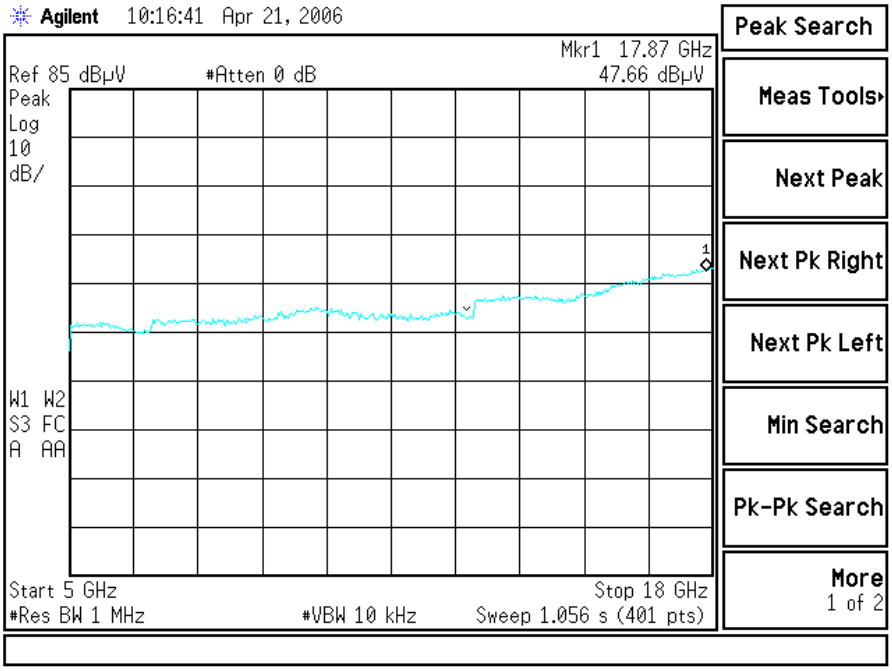
Antenna Horizontally Polarized, 2483.0-2500 MHz, at 1m.



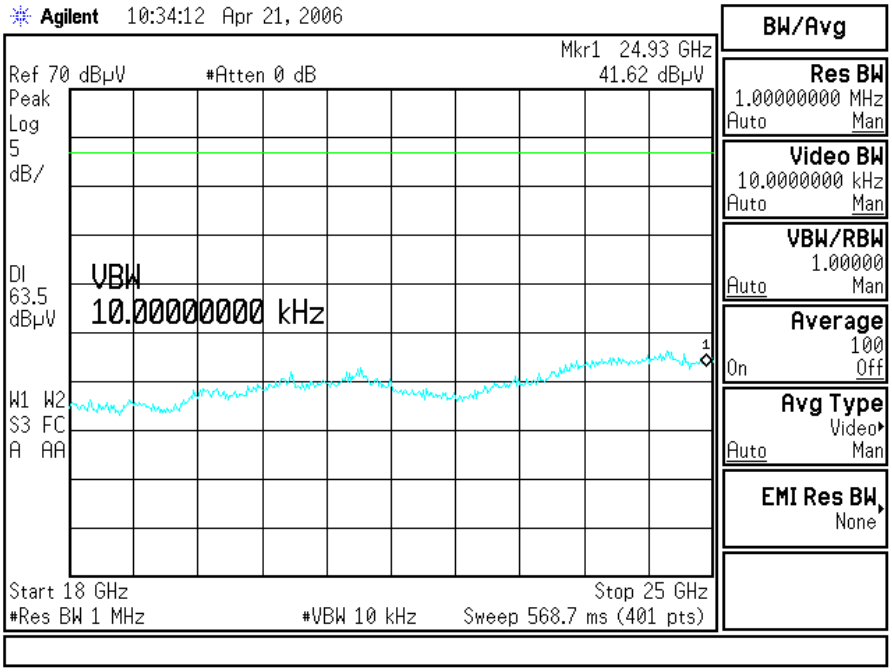
Antenna Horizontally Polarized, 2500-5000 MHz, at 1m.



Antenna Horizontally Polarized, 5000-18000 MHz, at 1m.



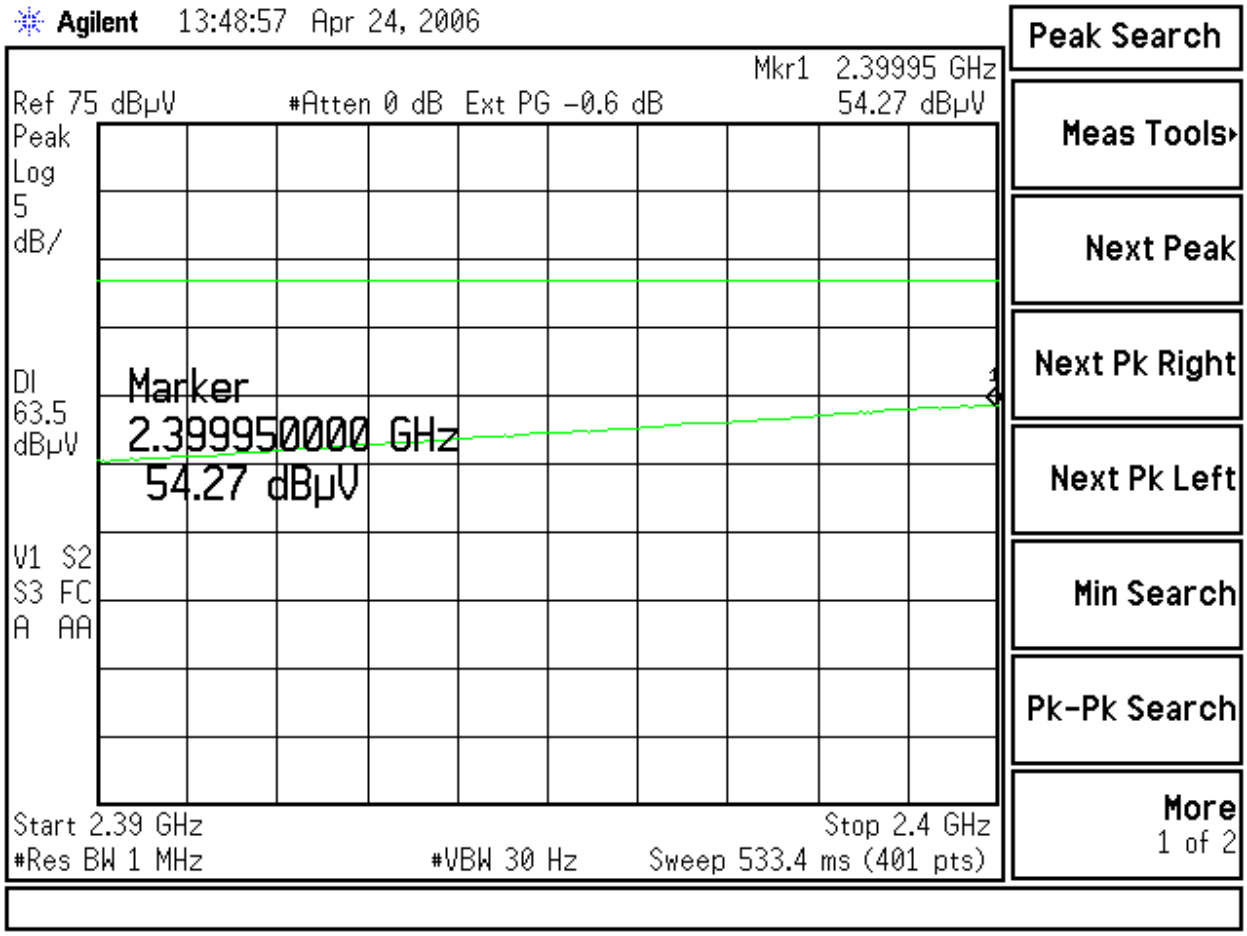
Antenna Horizontally Polarized, 18000-25000 MHz, at 30cm



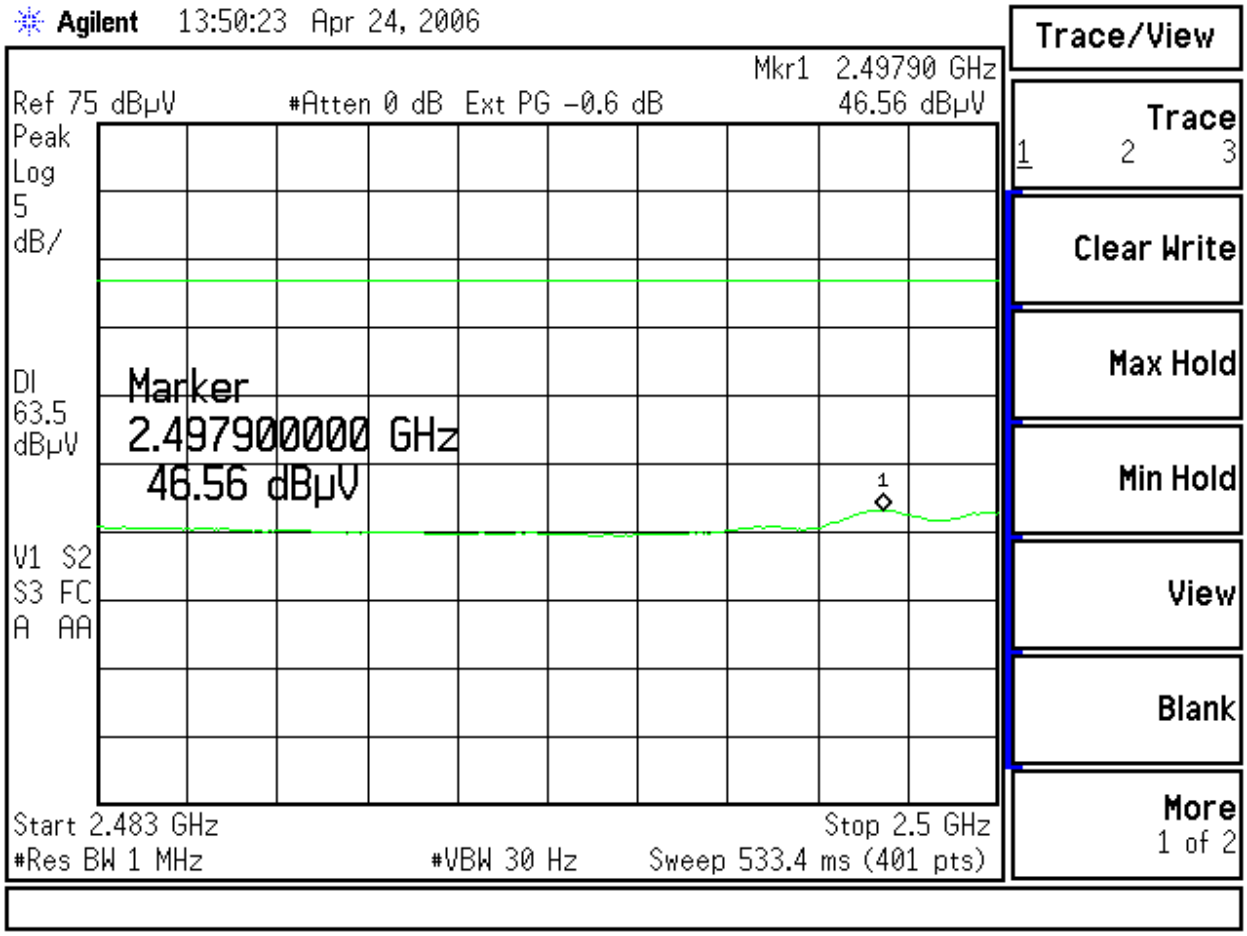
9. Band-Edge Measurements 15.247 (d)

FCC 15.209(b) and 15.247(d) require a measurement of spurious emission levels to be at least 20 dB lower than the fundamental emission level, in particular at the band-edges where the intentional radiator operates. The following screen captures demonstrate compliance of the intentional radiator at the 2400-2483.5 MHz band-edges. The EUT was operated in continuous transmit mode with continuous modulation, with internally generated data as the modulating source.

Screen Capture demonstrating compliance at the Lower Band-Edge
The limit in this case is -20dBc with respect to the fundamental level. Measured at 1m separation distance.



Screen Capture demonstrating compliance at the Higher Band-Edge
Since this range is in the restricted band, the limit is 63.5 dBµV. . Measured at 1m separation distance.



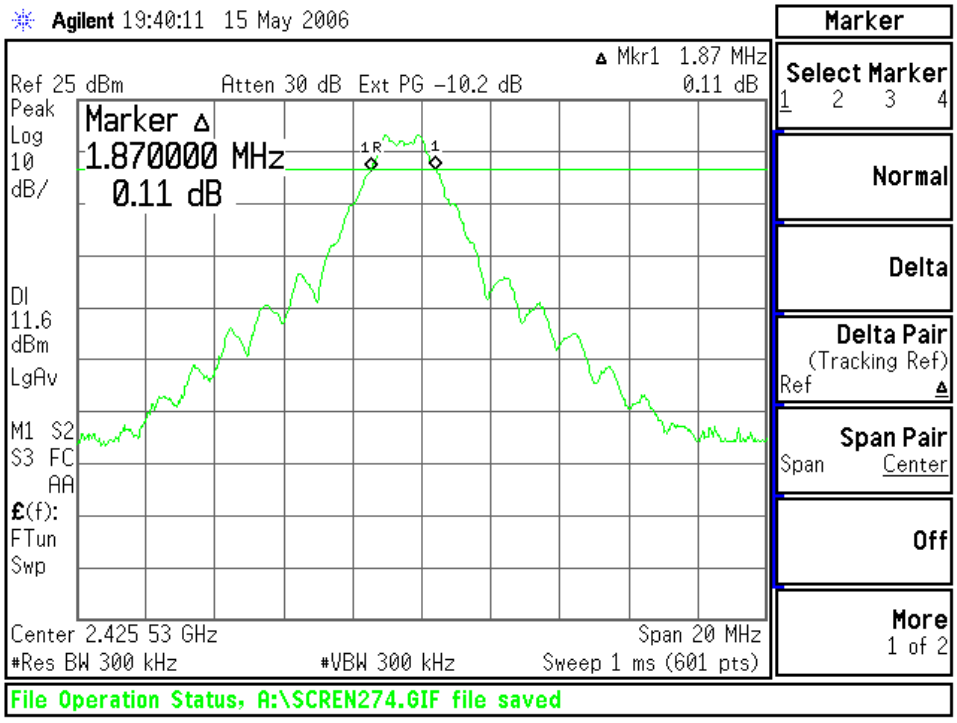
10. Occupied Bandwidth 15.247 (a)

The 20 dB bandwidth requirement found in FCC Part 15.247(a)(2) requires a minimum -6dBc occupied bandwidth of 500 kHz. For this portion of the tests, a direct measurement of the transmitted signal was performed at the antenna port of the EUT, via a cable connection to the HP E4407B spectrum analyzer. An attenuator was placed in series with the cable to protect the spectrum analyzer. The loss from the cable and the attenuator were added on the analyzer as gain offset settings, there by allowing direct readings of the measurements made without the need for any further corrections. A Hewlett Packard model E4407B spectrum analyzer was used with the resolution bandwidth set to 300 kHz for this portion of the tests. The EUT was configured to run in a continuous transmit mode, while being supplied with typical data as a modulation source. The spectrum analyzer was used in peak-hold mode while measurements were made, as presented in the chart below.

Center Frequency (MHz)	Measured 6 dB BW (kHz)	Minimum Limit (kHz)
2425	1870	500

Plots of Occupied Bandwidth

Occupied Bandwidth of operating channel at 2425MHz



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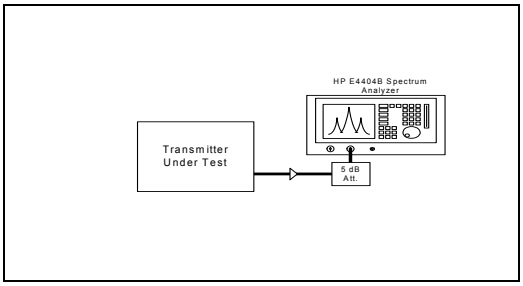
11. Power Output 15.247(b)

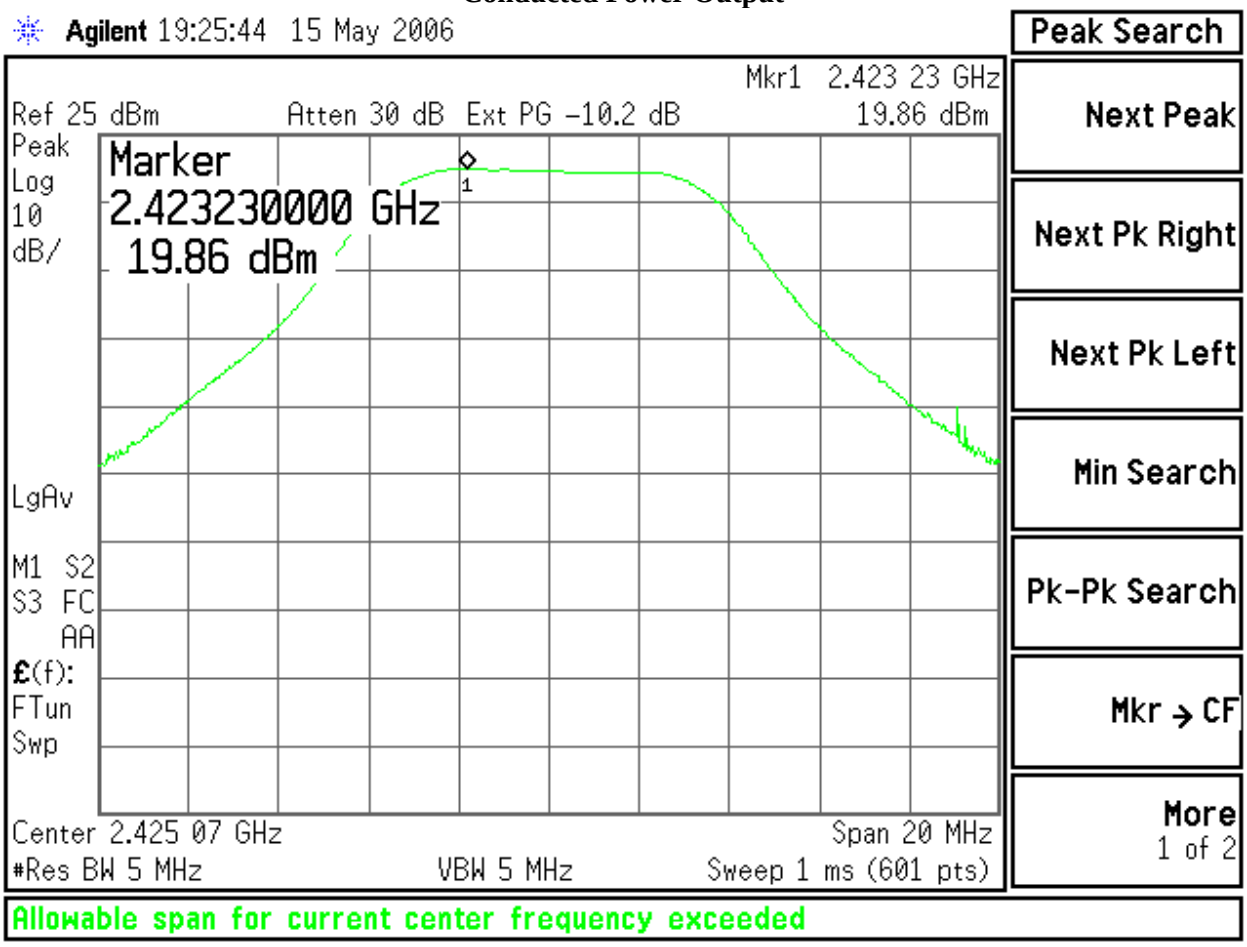
The conducted RF output power of the EUT was measured at the antenna port using a short RF cable along with an attenuator as protection for the spectrum analyzer. The loss from the cable and the attenuator were added on the analyzer as gain offset settings, there by allowing direct readings of the measurements made without the need for any further corrections. The unit was configured to run in a continuous transmit mode, while being supplied with typical data as a modulation source. The spectrum analyzer was used with resolution and video bandwidths set to 1 MHz, and a span of 5 MHz, with measurements from a peak detector presented in the chart below.

CENTER FREQ (MHz)	LIMIT (dBm)	MEASURED POWER (dBm)	MARGIN (dB)
2425.0	30 dBm	19.9	10.1



Rated RF power output (in watts): 0.098

Conducted Power Output



12. Spurious Emissions 15.247(d)

FCC Part 15.247(d) requires a measurement of conducted harmonic and spurious RF emission levels, as reference to the carrier level when measured in a 100 kHz bandwidth. For this test, the spurious and harmonic RF emissions from the EUT were measured at the EUT antenna port using a short RF cable along with an attenuator as protection for the spectrum analyzer. The loss from the cable and the attenuator were added on the analyzer as gain offset settings, there by allowing direct readings of the measurements made without the need for any further corrections. A Hewlett Packard model E4407B spectrum analyzer was used with the resolution bandwidth set to 100 kHz for this portion of the tests. The unit was configured to run in a continuous transmit mode, while being supplied with typical data as a modulation source. The spectrum analyzer was used with measurements from a peak detector presented in the chart below. Screen captures were acquired and any noticeable spurious and harmonic signals were identified and measured.

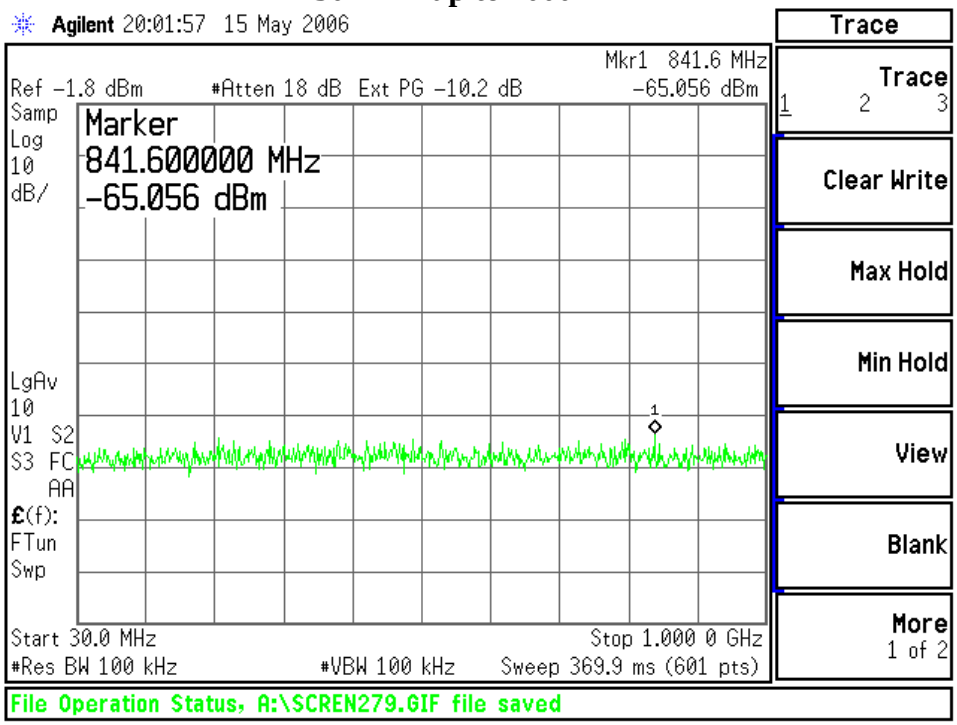
No significant emissions could be noted within -50 dBc of the fundamental level for this product.

Fundamental	+14.3 (dBm)
2nd Harmonic	- 43.1(dBm)
3rd Harmonic	- 57.5 (dBm)
4th Harmonic	- 62.6 (dBm)
5th Harmonic	- 61.7 (dBm)
6th Harmonic	Note (1)
7th Harmonic	Note (1)
8th Harmonic	Note (1)
9th Harmonic	Note (1)
10th Harmonic	Note (1)

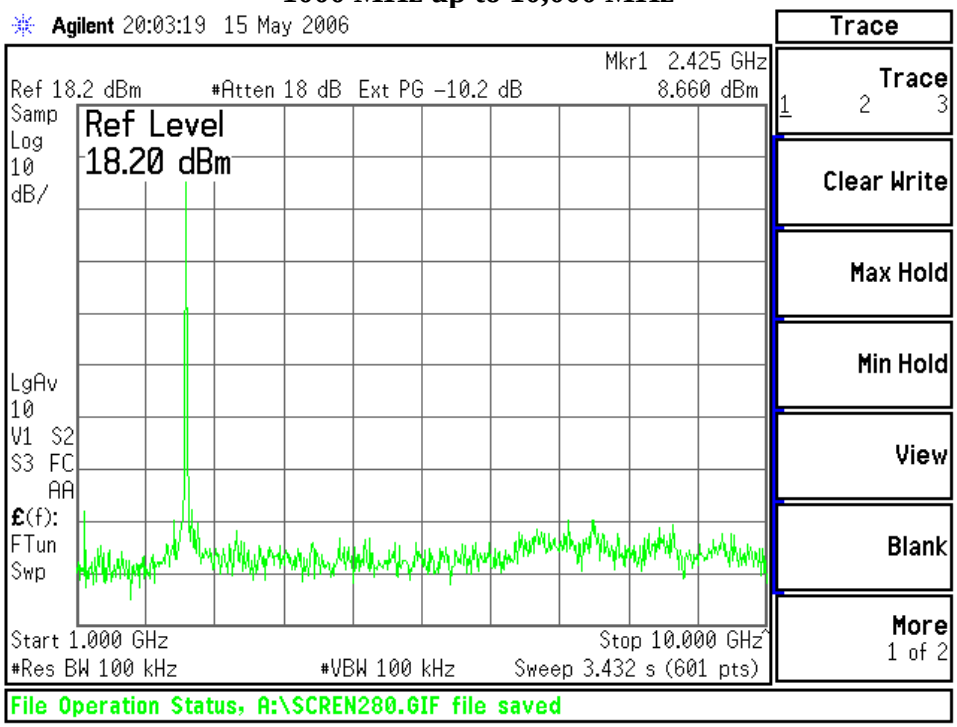
Notes:
(1) Measurement at system noise floor.

Plots of Conducted Spurious and Fundamental Levels

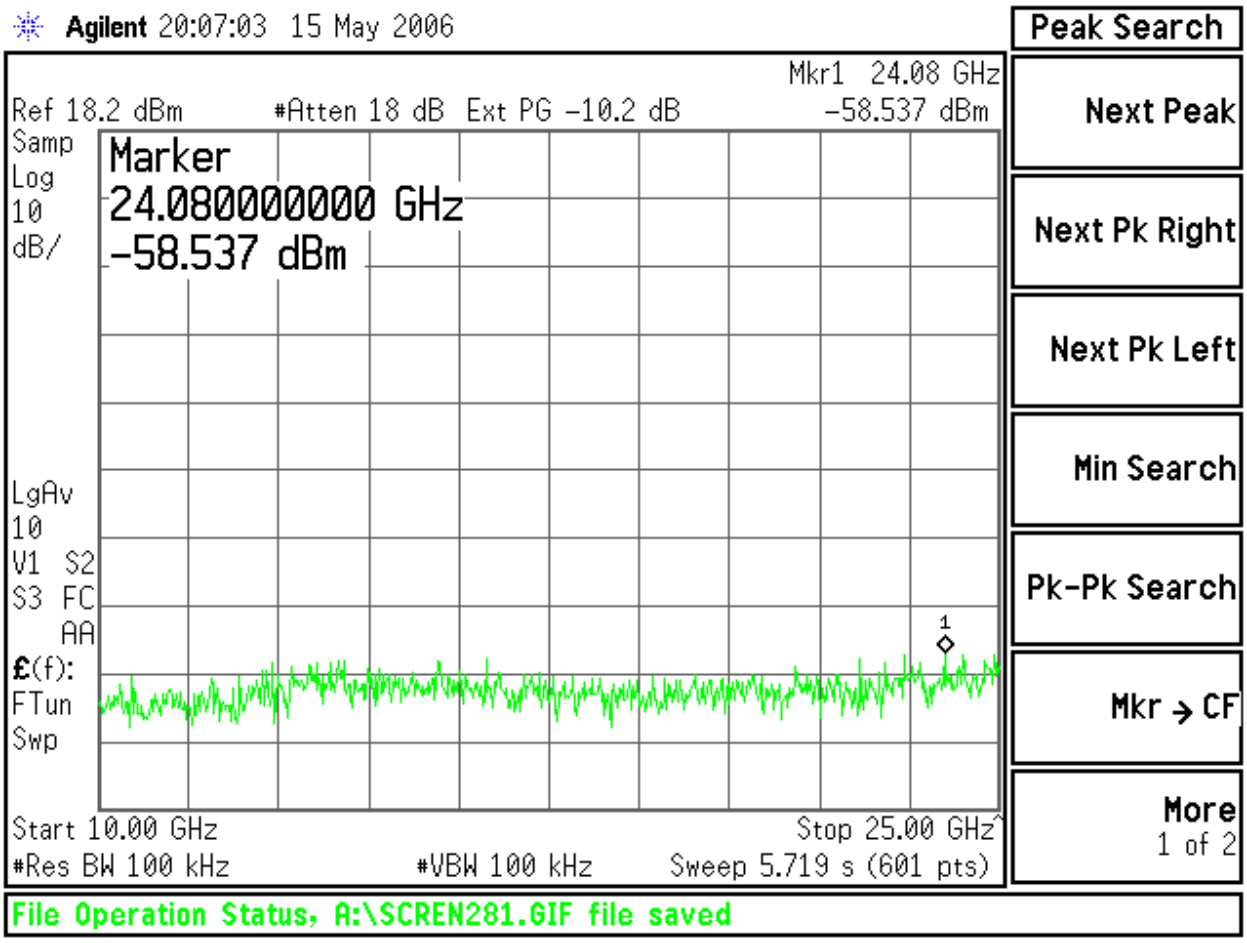
30 MHz up to 1000 MHz



1000 MHz up to 10,000 MHz



10000 MHz up to 25000 MHz

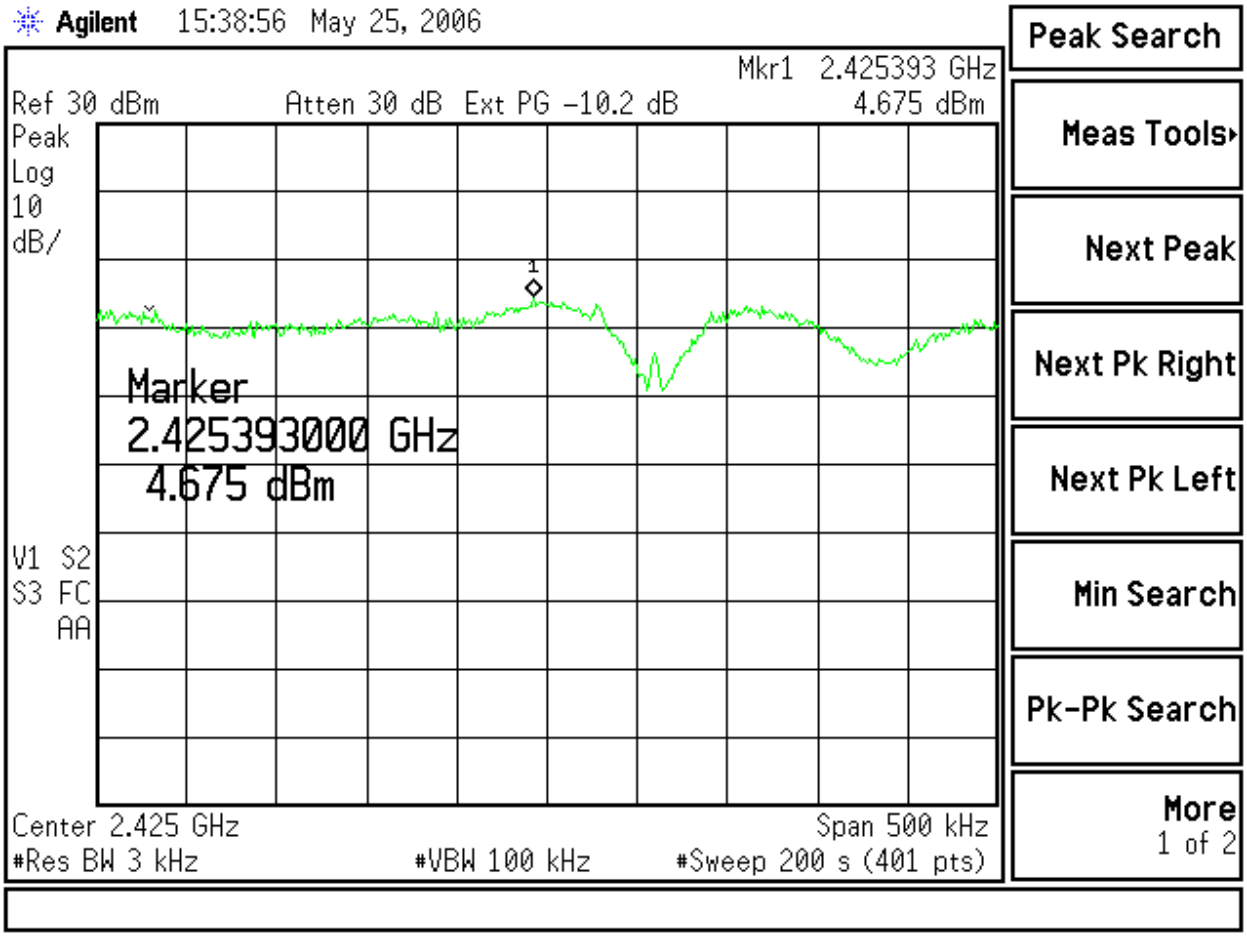


13. Spectral Density 15.247(e)

In accordance with FCC Part 15.247(e), the peak power spectral density should not exceed +8 dBm in any 3 kHz band. This measurement was performed along with the conducted power output readings performed as described in previous sections. The peak output frequency for the representative frequency was scanned, and a power density measurement was performed with a spectrum analyzer IF bandwidth of 3 kHz with a 500 KHz span and a sweep time of 200 seconds. The highest density was found to be no greater than 4.7 dBm, which is under the allowable limit by 3.3dB.

Center Frequency (MHz)	Measured Channel Power (dBm)	Measurement (dBm/3kHz)	Limit (dBm)	Margin (dB)
2425	19.86	+4.7	+8.0	3.3

Spectral Power Density



14. MPE Calculations 15.31 (i)

MPE Calculations are based on the gain of the PCB trace antenna, as measured during these tests, be -1.9 dBi based on actual radiated fundamental emissions.

Source based time averaging is used in the MPE assessment, as supported by the evidence in the EUT operation descriptions and test results as described in the appendices of this report.

Exposure category	low threshold	high threshold
general population	$(60/f_{GHz})$ mW, $d < 2.5$ cm $(120/f_{GHz})$ mW, $d \geq 2.5$ cm	$(900/f_{GHz})$ mW, $d < 20$ cm
occupational	$(375/f_{GHz})$ mW, $d < 2.5$ cm $(900/f_{GHz})$ mW, $d \geq 2.5$ cm	$(2250/f_{GHz})$ mW, $d < 20$ cm

Packet Repetition time:	173.00	(mS)
Transmit packet on time:	0.87	(mS)
Assessment window:	100.00	(mS)
Maximum peak output power at antenna input terminal:	19.9	(dBm)
Antenna gain(typical):	-1.90	(dBi)
Antenna gain(typical):	0.65	(numeric)
Maximum peak output power at antenna output:	18.00	(dBm)
Maximum peak output power at antenna output:	63.10	(mW)
Use-based time-averaged power, conducted:	**0.55**	(mW)
Maximum peak radiated output:	113.30	(dBuV/m @ 3m)
Maximum peak radiated output:	18.10	(dBm)
Maximum peak radiated output:	64.57	(mW)
Use-based time-averaged power, radiated:	**0.56**	(mW)
Low threshold for d<2.5 cm at 2.425 GHz:	**24.74**	(mW)
Low threshold for d>2.5 cm at 2.425 GHz:	**49.48**	(mW)

In both cases, computed and measured, the output power is below the low threshold for all separation distances greater than and less than 2.5 cm.

Appendix A
Test Equipment List

Asset #	Manufacturer	Model #	Serial #	Description	Date	Due
AA960008	EMCO	3816/2NM	9701-1057	Line Impedance Stabilization Network	9/27/05	9/27/06
AA960031	HP	119474A	3107A01708	Transient Limiter	Note 1	Note 1
AA960077	EMCO	93110B	9702-2918	Biconical Antenna	9/27/05	9/27/06
AA960078	EMCO	93146	9701-4855	Log-Periodic Antenna	9/27/05	9/27/06
AA960081	EMCO	3115	6907	Double Ridge Horn Antenna	12/07/05	12/07/06
CC00221C	Agilent	E4407B	US39160256	Spectrum Analyzer	12/29/05	12/29/06
EE960004	EMCO	2090	9607-1164	Device Controller	N/A	N/A
EE960013	HP	8546A	3617A00320	Receiver RF Section	9/29/05	9/29/06
EE960014	HP	85460A	3448A00296	Receiver Pre-Selector	9/29/05	9/29/06
EE960073	Agilent	E4446A	US45300564	Spectrum Analyzer	2/01/06	2/01/07
N/A	LSC	Cable	0011	3 Meter ½" Armored Cable	Note 1	Note 1
N/A	LSC	Cable	0050	10 Meter RG 214 Cable	Note 1	Note 1
N/A	Pasternack	Attenuator	N/A	10 dB Attenuator	Note 1	Note 1

Note 1 - Equipment calibrated within a traceable system.

Uncertainty Statement

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level, using a coverage factor of k=2.

Table of Expanded Uncertainty Values, (K=2) for Specified Measurements

Measurement Type	Particular Configuration	Uncertainty Values
Radiated Emissions	3 – Meter chamber, Biconical Antenna	4.24 dB
Radiated Emissions	3-Meter Chamber, Log Periodic Antenna	4.8 dB
Radiated Emissions	10-Meter OATS, Biconical Antenna	4.18 dB
Radiated Emissions	10-Meter OATS, Log Periodic Antenna	3.92 dB
Conducted Emissions	Shielded Room/EMCO LISN	1.60 dB
Radiated Immunity	3 Volts/Meter in 3-Meter Chamber	1.128 Volts/Meter
Conducted Immunity	3 Volts level	1.0 V

Appendix B

Source Based Time Averaging and Operational Declarations

Scott Health and Safety, the manufacturer of the EUT is requesting a mathematical adjustment of the measured RF power, at the frequency of operation, based on source based time averaging characteristics of the EUT.

The request is for a reduction in the measured RF power, based on 0.8 % transmitter duty factor out of any 100 ms window of measurement. The supporting evidence is presented below as the declared theory of operation from the manufacturer, along with two measurements of the transmit packet envelope and repetition cycles as captured on an oscilloscope.

Theory of Operation

The transceiver operates on a single channel at 2425.0 MHz with a nominal conducted output power of +20 dBm and is stabilized by means of an internal voltage regulator.

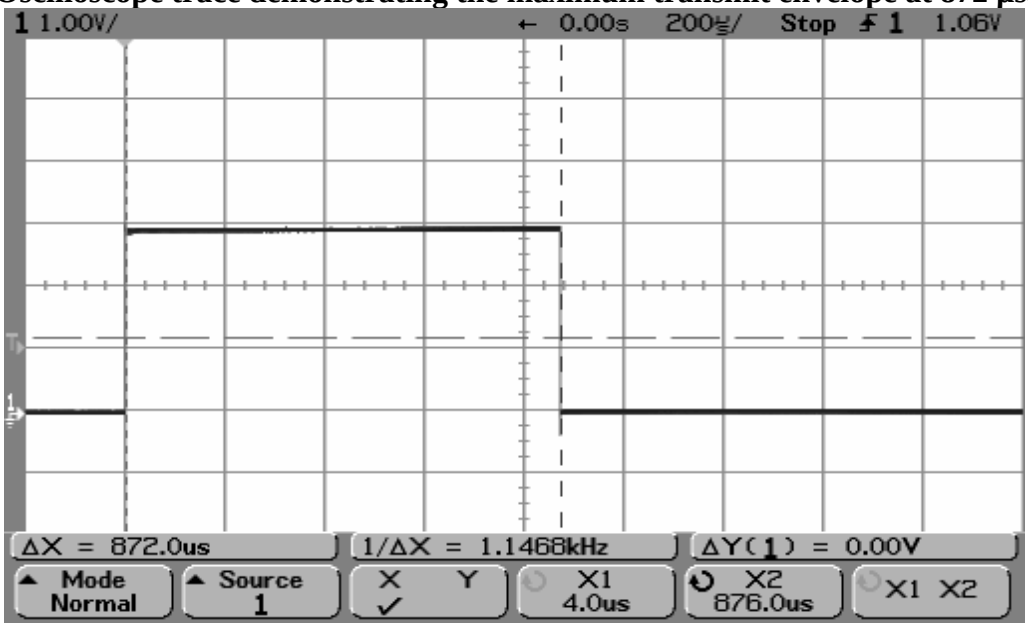
The device operates in a packet mode only. No continuous RF carrier is possible. Each packet is 872 µS long and is repeated at a rate of 4 times per second. The average time between packets is ¼ second but they will dither in time. The shortest repetition between two adjacent packets is 173 mS. Digital data is sent using O-QPSK modulation at a bit rate of 2 MCPS with a payload bit rate of 250 MBPS.

Output frequency is controlled to within 20 ppm by a 16.00 MHz crystal on the radio transceiver chip. The RF oscillator is entirely contained within the radio chip. No external inductor is used.

The antenna is a printed circuit board Planar Inverted F (PIFA) with a nominal gain of -2 dBi and a peak gain of -1.9 dBi along a single axis.

The minimum separation distance of the EUT from the user will be greater than 2.5 cm, in all cases, based on the dimensions of the enclosure, as well as the typical usage where the EUT will be used and worn outside of protective fire-fighting clothing and gear.

Oscilloscope trace demonstrating the maximum transmit envelope at 872 µs.



Oscilloscope trace demonstrating the minimum separation in adjacent packets at 173 ms.

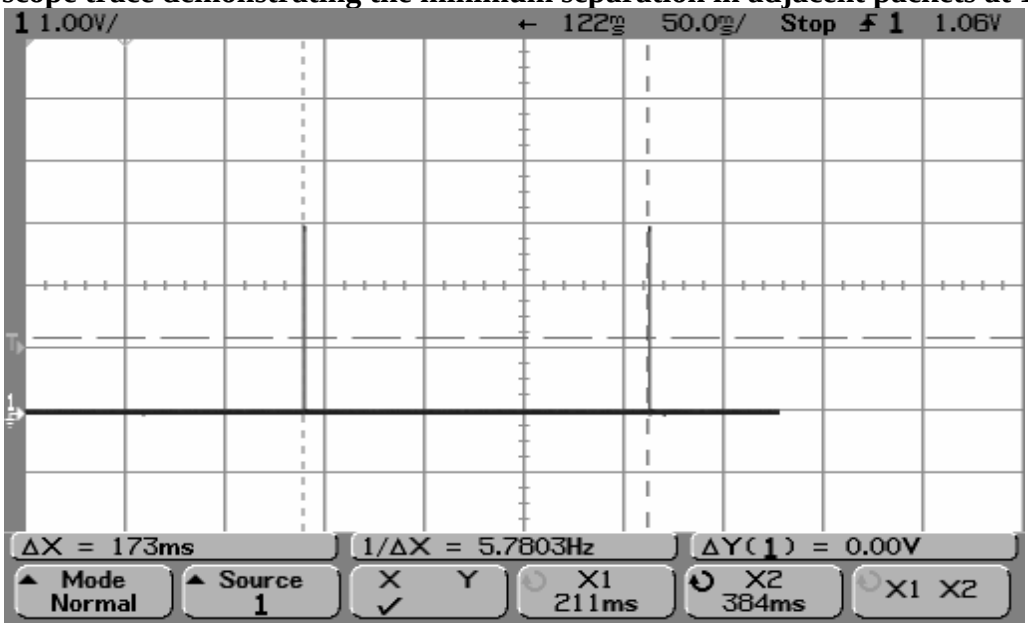


Photo of the EUT with the enclosure, demonstrating the minimum separation of 2.5 cm from the human body.