Washington Laboratories, Ltd.

FCC & Industry Canada Certification Test Report
For the
Structured Mining Systems, Inc
SmaRT PTO-906

FCC ID: LOBSHH900
IC ID: TBD

WLL JOB# **9953/54**
September 12, 2007

Prepared for:

Structured Mining Systems, Inc
180 Pine Meadow Drive
Wexford, PA 15090

Prepared By:

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Gaithersburg, Maryland 20879

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Prepared by: James Ritter
Compliance Engineer

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EMC Operations Manager

Abstract

This report has been prepared on behalf of Structured Mining Systems, Inc to support the attached Application for Equipment Authorization. The test report and application are submitted for a Digitally Modulated Transmitter under Part 15.247 of the FCC Rules and Regulations and Spectrum Management and Telecommunications Policy RSS-210 of Industry Canada. This Certification Test Report documents the test configuration and test results for a Structured Mining Systems, Inc SmaRT PTO-906.

Testing was performed on an Open Area Test Site (OATS) of Washington Laboratories, Ltd, 7560 Lindbergh Drive, Gaithersburg, MD 20879. Site description and site attenuation data have been placed on file with the FCC's Sampling and Measurements Branch at the FCC laboratory in Columbia, MD. The Industry Canada OATS numbers are 3035A-1 and 3035A-2 for Washington Laboratories, Ltd. Site 1 and Site 2, respectively. Washington Laboratories, Ltd. has been accepted by the FCC and approved by NIST NVLAP (NVLAP Lab Code: 200066-0) as an independent FCC test laboratory.

The Structured Mining Systems, Inc SmaRT PTO-906 complies with the limits for a Digitally Modulated Transmitter device under FCC Part 15.247 and Industry Canada RSS-210.

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1 Introduction

1.1 Compliance Statement

The Structured Mining Systems, Inc SmaRT PTO-906 complies with the limits for a Digitally Modulated Transmitter device under FCC Part 15.247 and Industry Canada RSS-210.

1.2 Test Scope

Tests for radiated and conducted (at antenna terminal) emissions were performed. All measurements were performed in accordance with FCC Public Notice DA 00-705 and the 2003 version of ANSI C63.4. The measurement equipment conforms to ANSI C63.2 Specifications for Electromagnetic Noise and Field Strength Instrumentation.

1.3 Contract Information

Customer:	Structured Mining Systems, Inc 180 Pine Meadow Drive Wexford, PA 15090
Purchase Order Number:	47410
Quotation Number:	63572A

1.4 Test Dates

Testing was performed on the following date(s):	August 30 to September 1, 2007

1.5 Test and Support Personnel

Washington Laboratories, LTD	James Ritter
Client Representative	Christopher J. McKinney

2 Equipment Under Test

2.1 EUT Identification & Description

The Structured Mining Systems, Inc SmaRT PTO-906 functions as a short Range Radio Controller

Table 1. Device Summary

ITEM	DESCRIPTION
Manufacturer:	Structured Mining Systems, Inc.
FCC ID:	LOBSHH900
IC:	TBD
Model:	SmaRT PTO-906
FCC Rule Parts:	Pt.15.247
Industry Canada:	RSS210
Frequency Range:	906-924MHz
Maximum Output Power:	3.7dBm
Modulation:	BPSK
Occupied Bandwidth:	747.7kHz (6dB BW)
Keying:	Manual
Type of Information:	Data
Number of Channels:	10
Power Output Level	Fixed
Antenna Type	Integral (chip antenna)- Antenna Factor corp. ANT-916-SP
Antenna Gain	-1dBi
Interface Cables:	None
Power Source & Voltage:	3 ‘AAA’ batteries (3-4.8VDC)

2.2 Test Configuration

The SmaRT PTO-906 was configured as a battery powered stand alone hand held unit. It has no external power or I/O cables.

2.3 Testing Algorithm

The SmaRT PTO-906 was preprogrammed to transmit on 906, 914, and 924 MHz with continuous transmissions and modulation via front panel push buttons.

Worst case emission levels are provided in the test results data.

2.4 Test Location

All measurements herein were performed at Washington Laboratories, Ltd. test center in Gaithersburg, MD. Site description and site attenuation data have been placed on file with the FCC's Sampling and Measurements Branch at the FCC laboratory in Columbia, MD. The Industry Canada OATS numbers are 3035A-1 and 3035A-2 for Washington Laboratories, Ltd. Site 1 and Site 2, respectively. Washington Laboratories, Ltd. has been accepted by the FCC and approved by NIST NVLAP (NVLAP Lab Code: 200066-0) as an independent FCC test laboratory.

2.5 Measurements

2.5.1 References

ANSI C63.2 Specifications for Electromagnetic Noise and Field Strength Instrumentation

ANSI C63.4 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

2.6 Measurement Uncertainty

All results reported herein relate only to the equipment tested. For the purposes of the measurements performed by Washington Laboratories, the measurement uncertainty is ±2.3 dB. This has been calculated for a *worst-case situation* (radiated emissions measurements performed on an open area test site).

The following measurement uncertainty calculation is provided:

$$\text{Total Uncertainty} = (A^2 + B^2 + C^2)^{1/2}/(n-1)$$

where:

A = Antenna calibration uncertainty, in dB = 2 dB

B = Spectrum Analyzer uncertainty, in dB = 1 dB

C = Site uncertainty, in dB = 4 dB

n = number of factors in uncertainty calculation = 3

Thus, Total Uncertainty = $0.5\ (2^2 + 1^2 + 4^2)^{1/2} = \pm 2.3$ dB.

3 Test Equipment

Table 2 shows a list of the test equipment used for measurements along with the calibration information.

Table 2: Test Equipment List

WLL Asset #	Manufacturer Model/Type	Function	Cal. Due
00007	ARA, LPB-2520	ANTENNA, BICONILOG ANTENNA	6/7/2008
00004	ARA, DRG-118/A	ANTENNA, DRG, 1-18GHZ	2/2/2009
00069	HP, 85650A	ADAPTER, QP	7/6/2008
00073	HP, 8568B	ANALYZER, SPECTRUM	7/6/2008
00071	HP, 85685A	PRESELECTOR, RF	7/6/2008
00618	HP 8563A	ANALYZER, SPECTRUM	2/9/2008
00627	AGILENT 8449B	AMPLIFIER 1-26GHZ	1/7/2008

4 Test Results

4.1 RF Power Output: (FCC Part §2.1046/RSS-210)

To measure the output power the unit was set to the low, high and middle channel. The output from the transmitter was connected to an attenuator and then to the input of the RF Spectrum Analyzer. The analyzer offset was adjusted to compensate for the attenuator and other losses in the system.

Table 3. RF Power Output

Frequency	Level	Limit	Pass/Fail
Low Channel 906MHz	3.7dBm	30 dBm	Pass
Mid Channel 914MHz	3.7dBm	30 dBm	Pass
High Channel 924MHz	3.5dBm	30 dBm	Pass

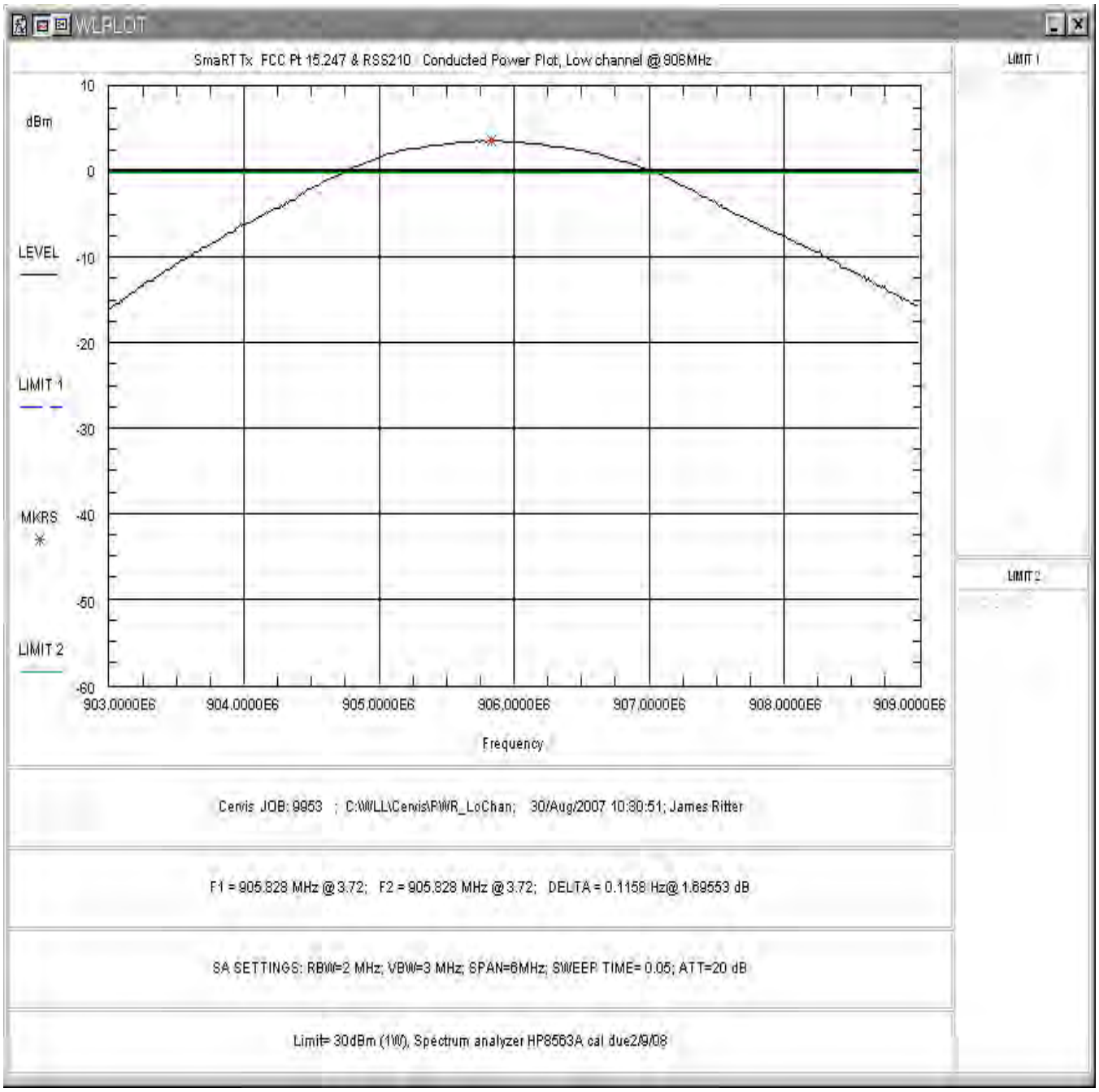

Figure 4-1. RF Peak Power, Low Channel

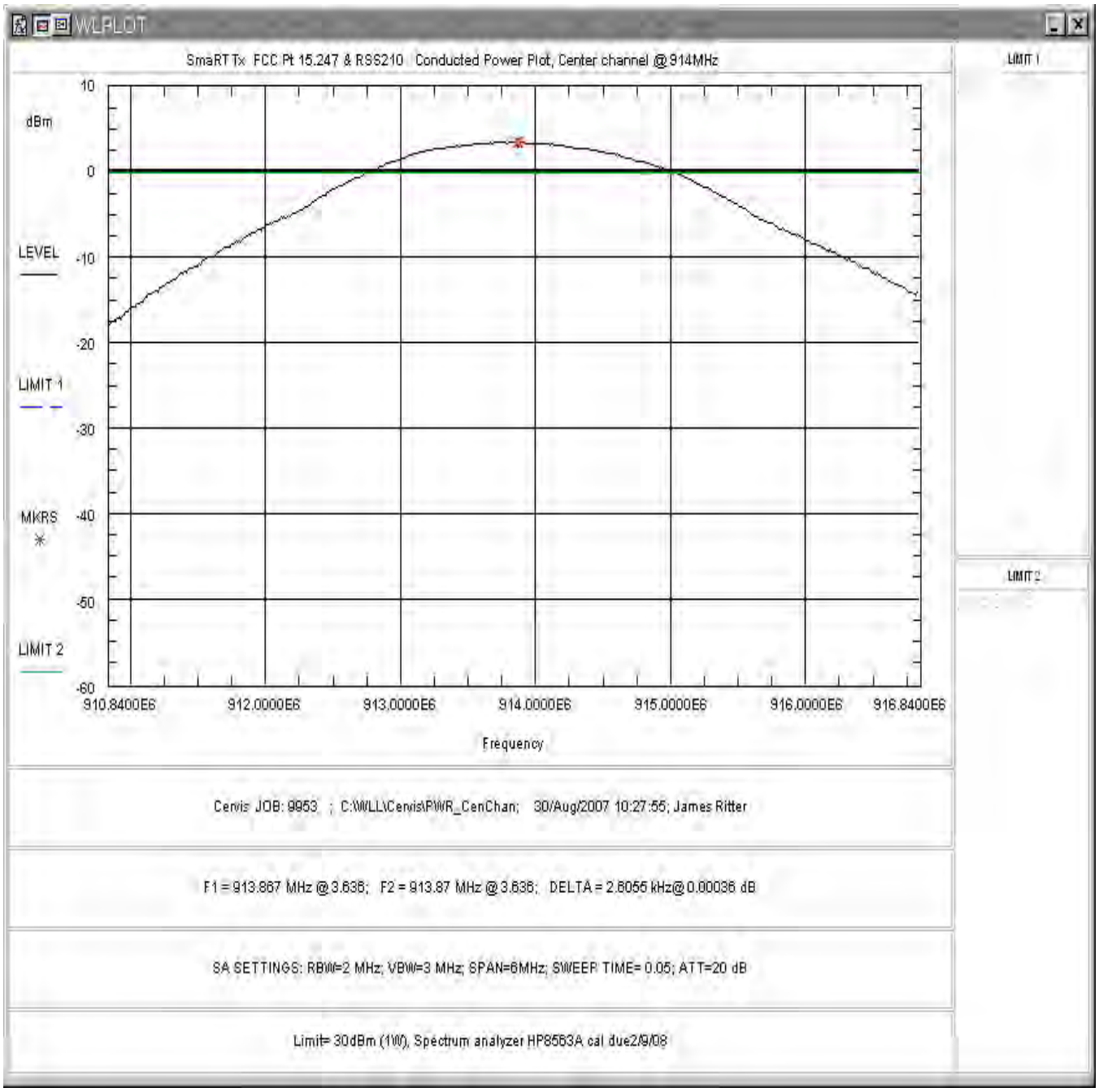

Figure 4-2. RF Peak Power, Mid Channel

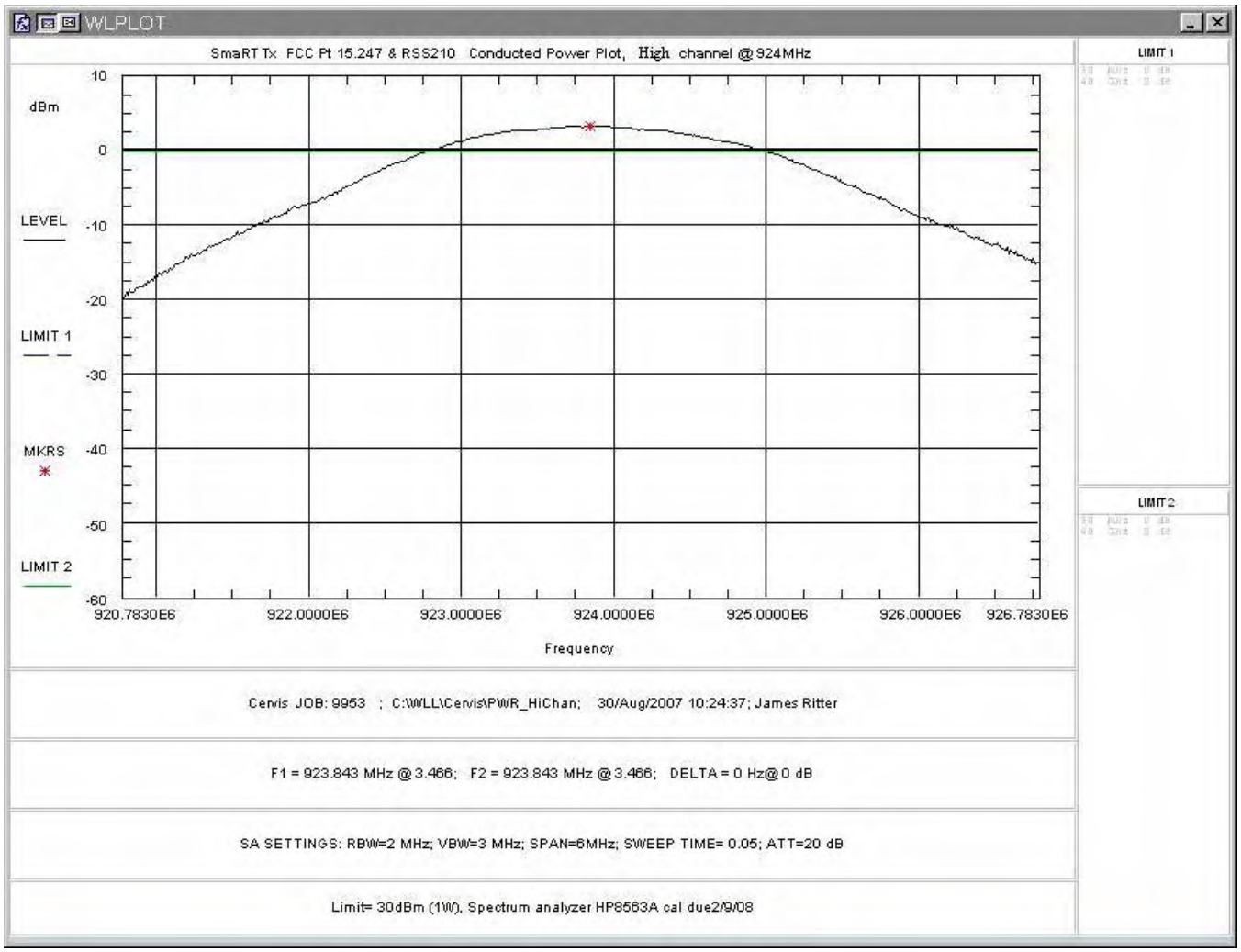

Figure 4-3. RF Peak Power, High Channel

4.2 Power Spectral Density (FCC Part 15.247/RSS-210)

For DSSS devices, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band.

The output from the transmitter was connected to an attenuator and then to the input of the RF Spectrum Analyzer. The analyzer offset was adjusted to compensate for the attenuator and other losses in the system.

Following are plots of the Power Spectral Density emissions for the Low, Middle and High channels.

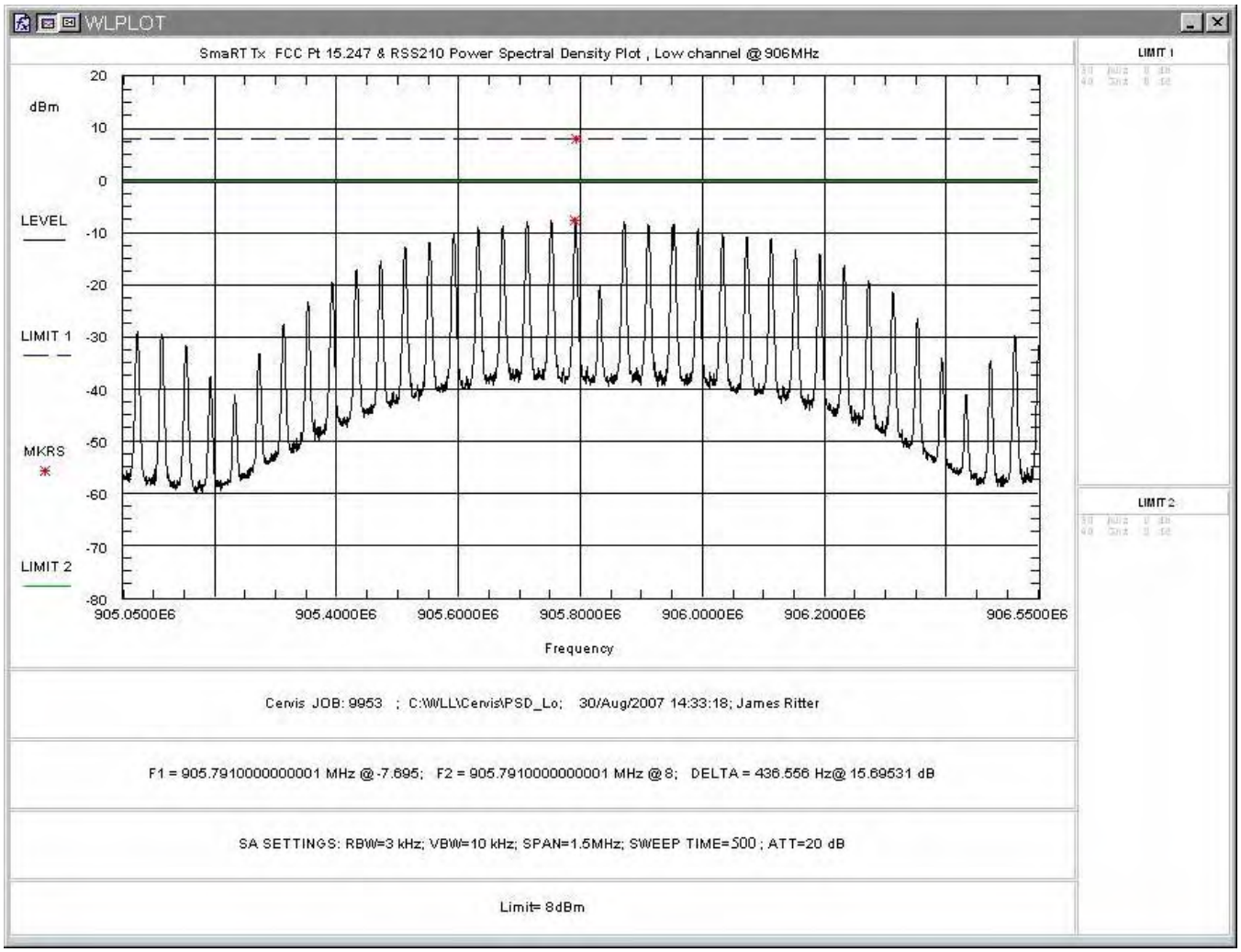

Figure 4-4: Power Spectral Density Plot, Low Channel

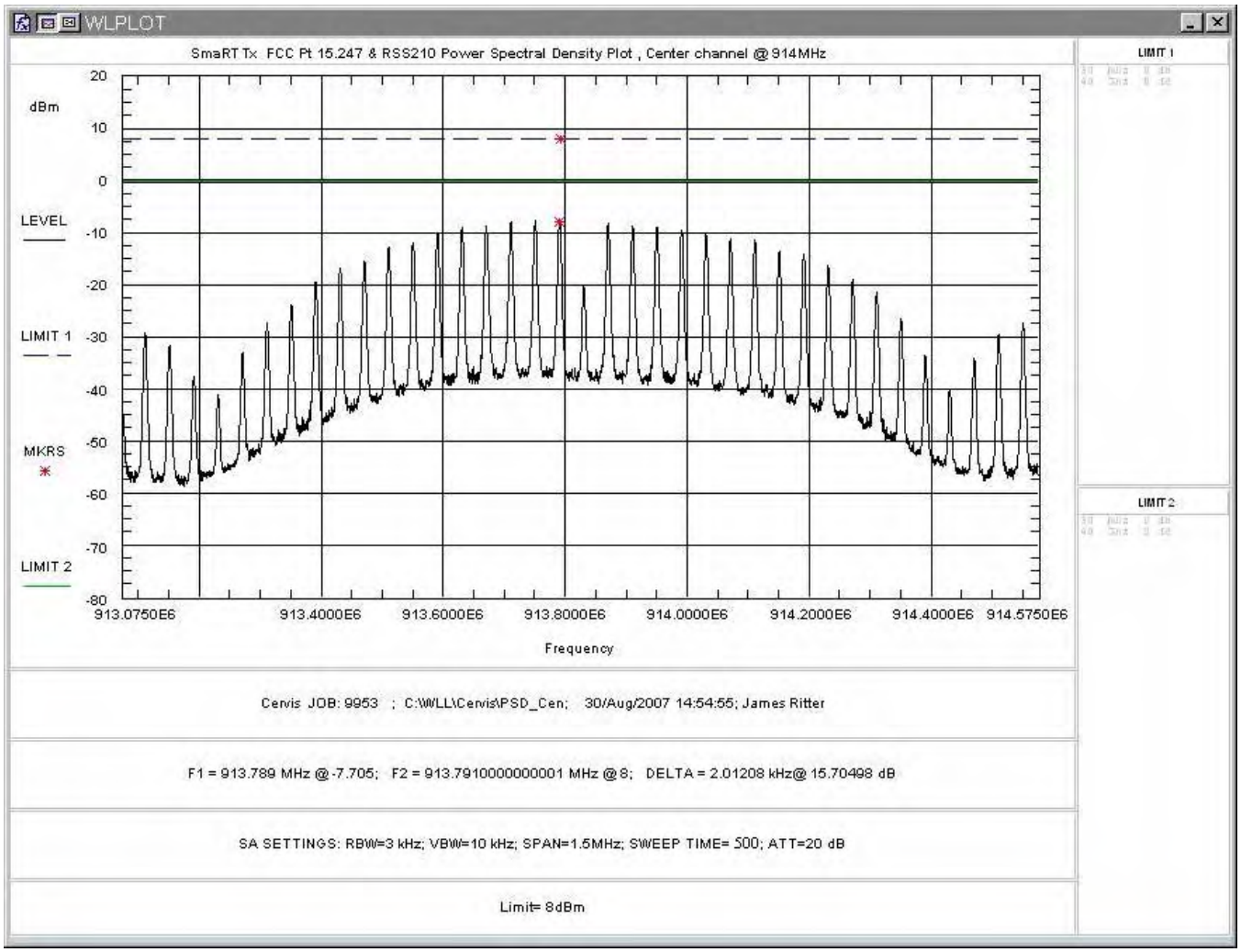

Figure 4-5: Power Spectral Density Plot, Center Channel

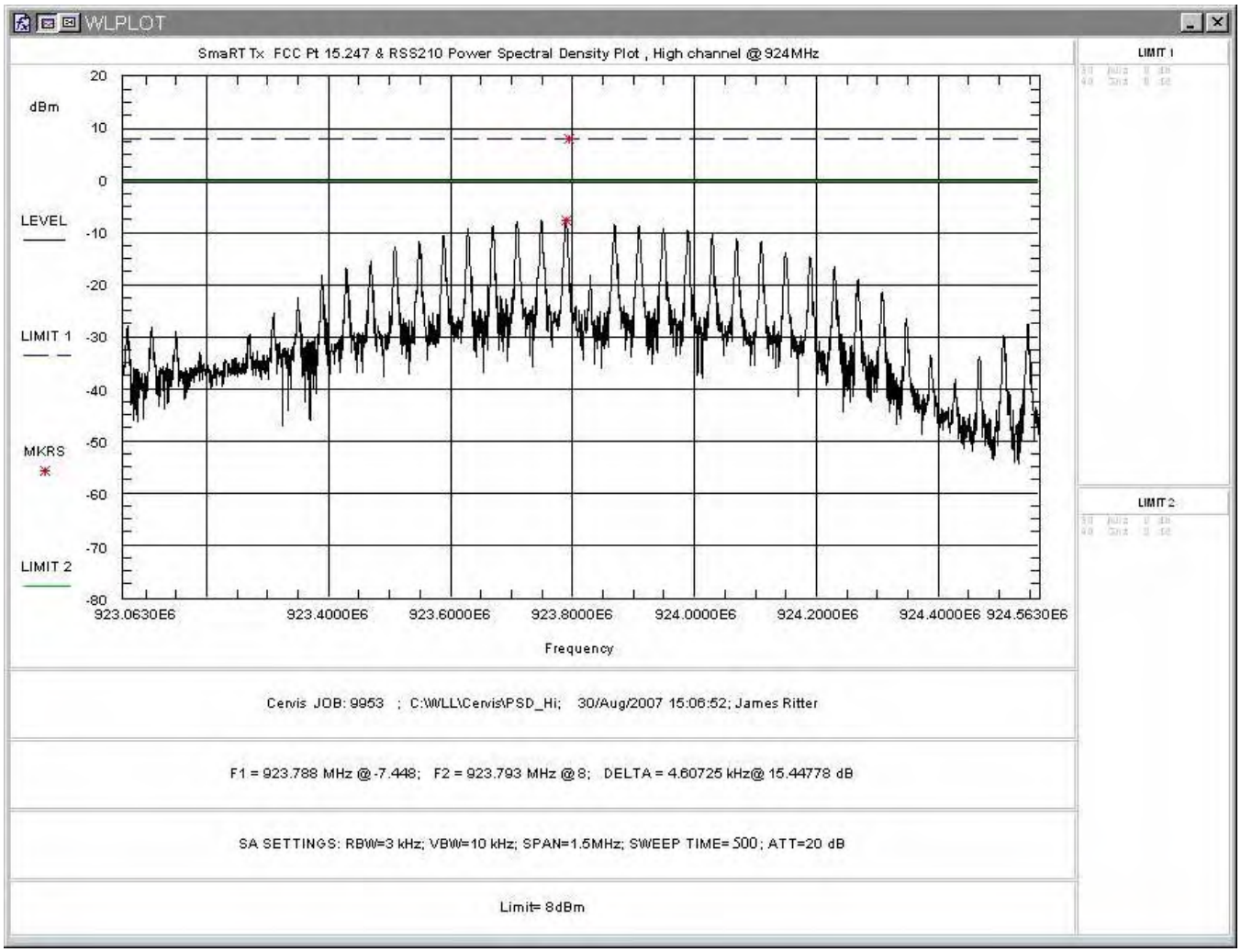

Figure 4-6: Power Spectral Density Plot, High Channel

4.3 Occupied Bandwidth: (FCC Part §2.1049/IC RSS-210)

Occupied bandwidth was performed by coupling the output of the EUT to the input of a spectrum analyzer.

For Digitally Modulated Systems, FCC Part 15.247 requires the minimum 6 dB bandwidth be at least 500 kHz.

At full modulation, the occupied bandwidth was measured as shown:

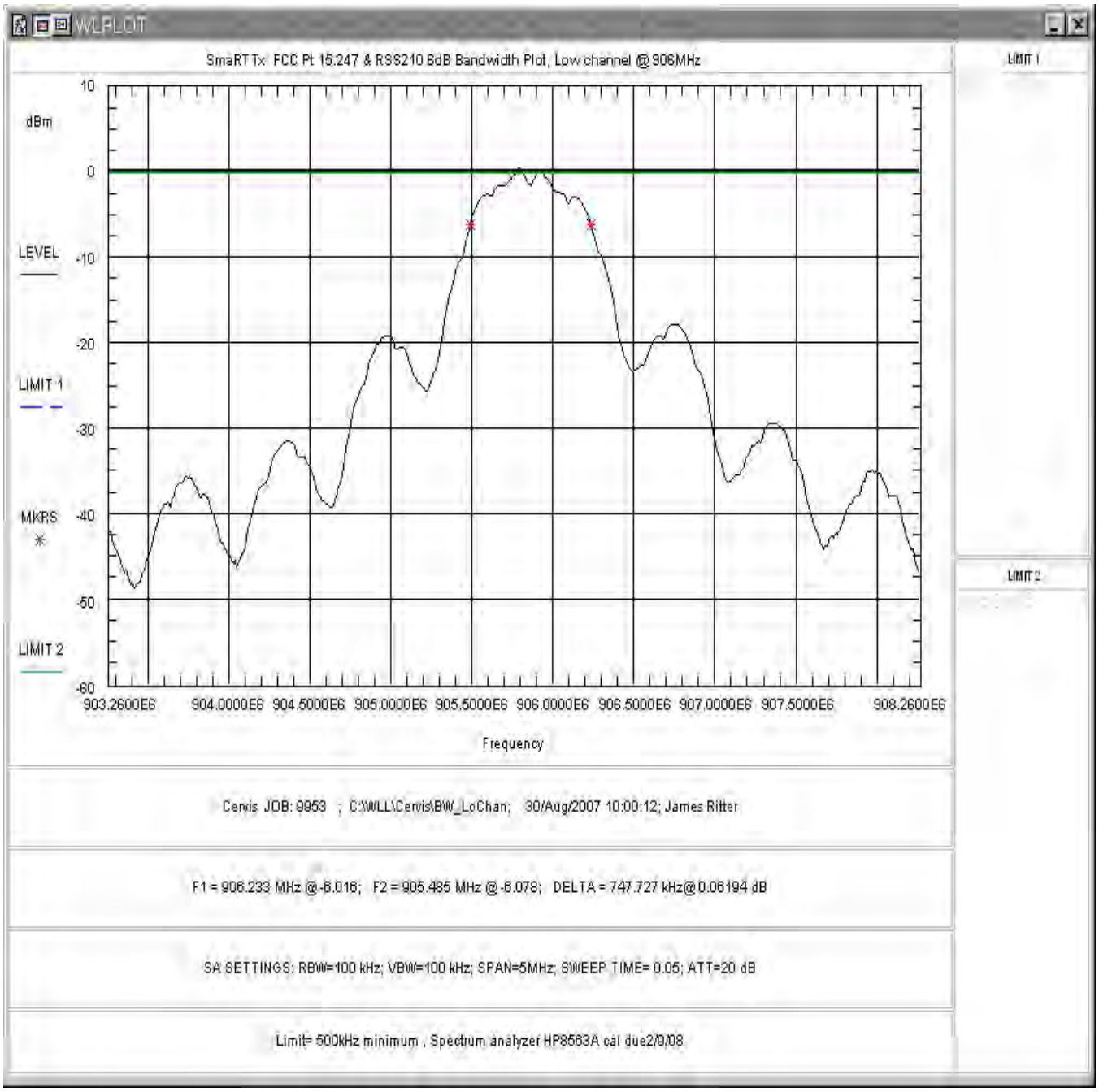

Figure 4-7. 6dB Occupied Bandwidth, Low Channel

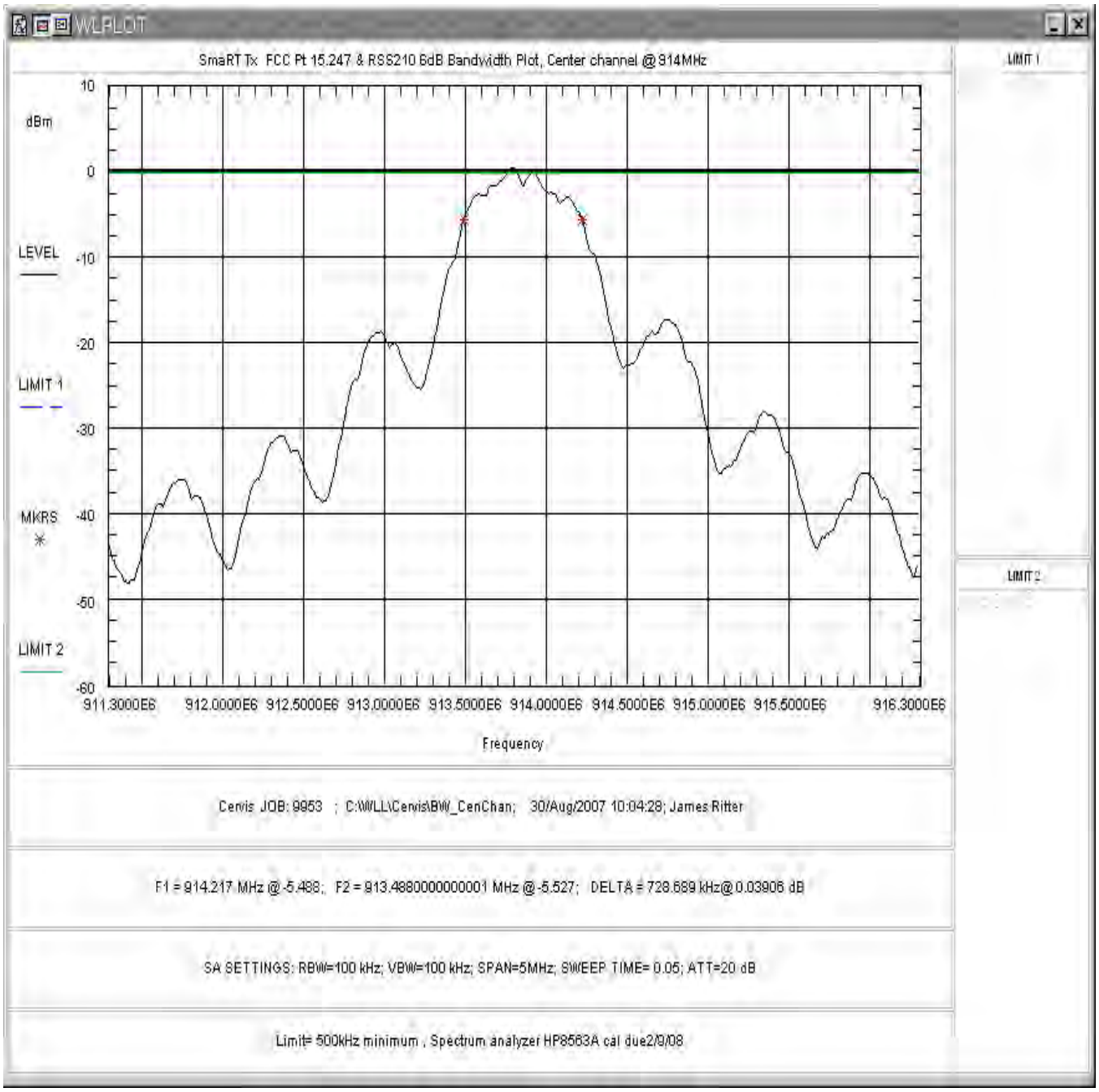

Figure 4-8. 6dB Occupied Bandwidth, Mid Channel

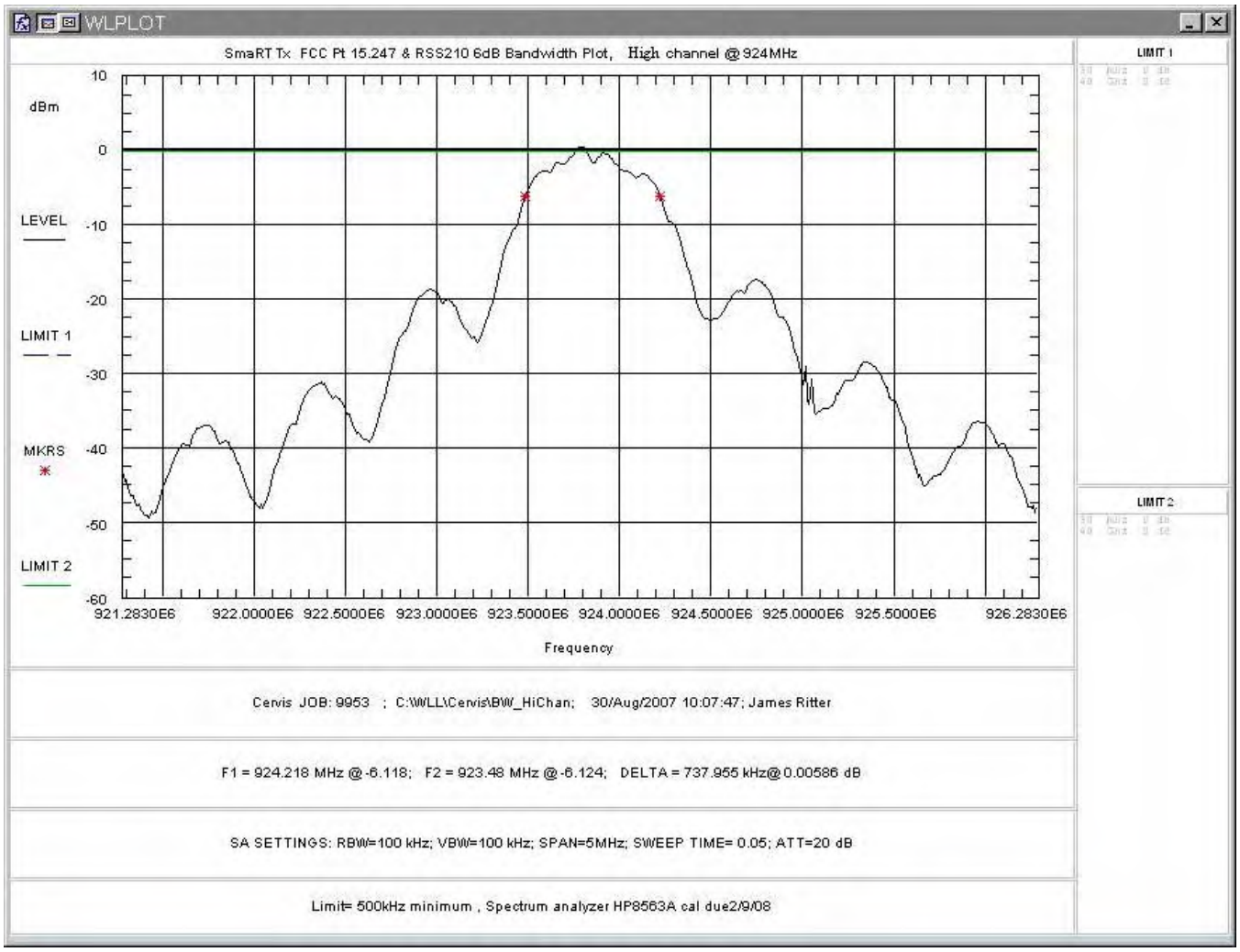

Figure 4-9. 6dB Occupied Bandwidth, High Channel

Table 4 provides a summary of the Occupied Bandwidth Results.

Table 4. Occupied Bandwidth Results

6dB Bandwidth

Frequency	Bandwidth	Limit (Minimum)	Pass/Fail
Low Channel 906MHz	747.7kHz	500kHz	Pass
Mid Channel 914MHz	728.7kHz	500kHz	Pass
High Channel 924MHz	738kHz	500kHz	Pass

4.4 Conducted Spurious Emissions at Antenna Terminals (FCC Pt §2.1051/IC RSS-210)

The EUT must comply with requirements for spurious emissions at antenna terminals. Per §15.247(c) and RSS-210 Section 6.2.2(o)(e1) all spurious emissions in any 100 kHz bandwidth outside the frequency band in which the spread spectrum device is operating shall be attenuated 20 dB below the highest power level in a 100 kHz bandwidth within the band containing the highest level of the desired power.

The EUT antenna was removed and the cable was connected directly into a spectrum analyzer through a 10 dB attenuator. An offset was programmed into the spectrum analyzer to compensate for the loss of the external attenuator. The spectrum analyzer resolution bandwidth was set to 100 kHz and the video bandwidth was set to 300 kHz. The amplitude of the EUT carrier frequency was measured to determine the emissions limit (20 dB below the carrier frequency amplitude). The emissions outside of the allocated frequency band were then scanned from 30 MHz up to the tenth harmonic of the carrier.

The following are plots of the conducted spurious emissions data.

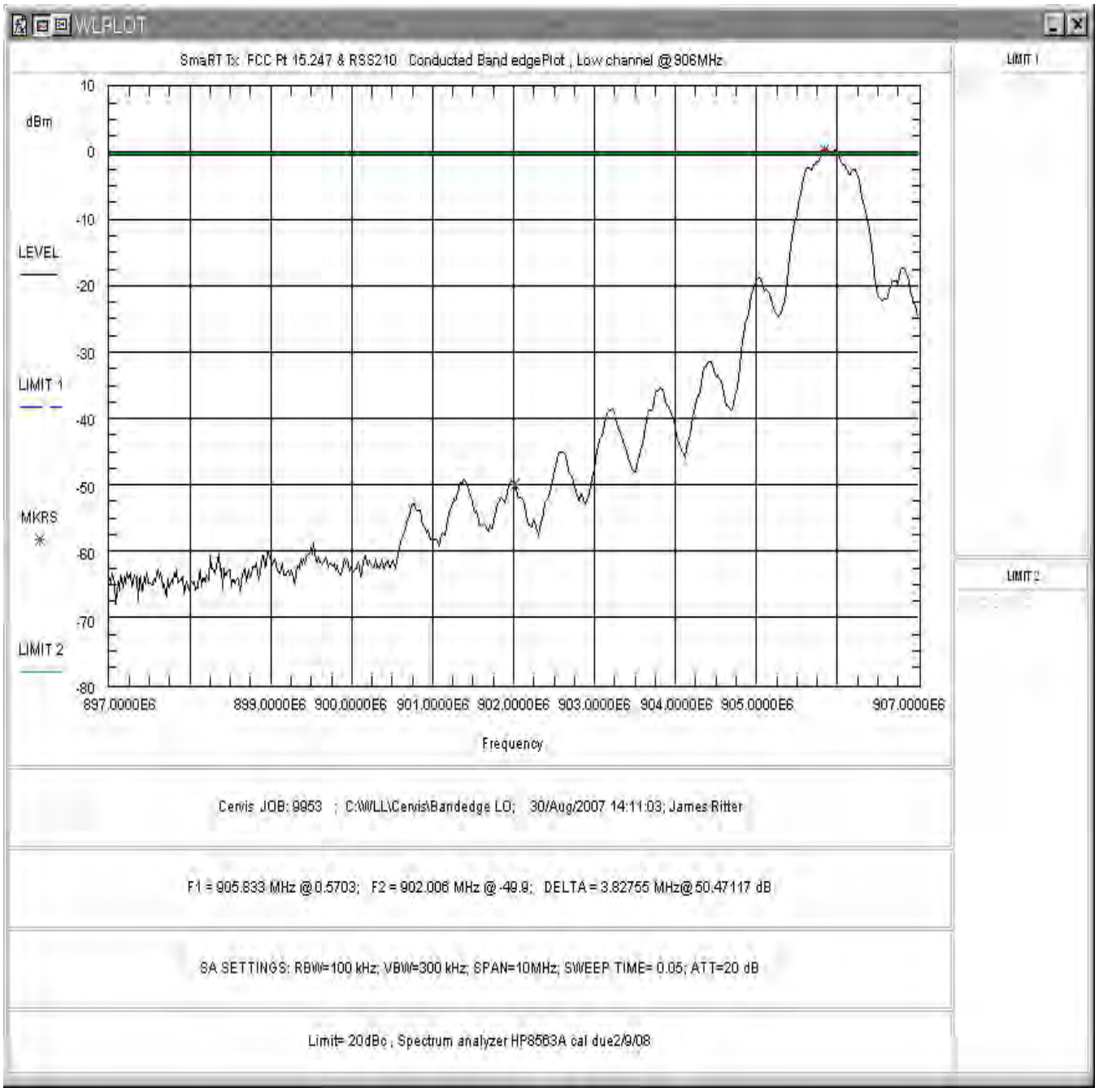

Figure 4-10. Conducted Spurious Emissions, Low Channel Band Edge

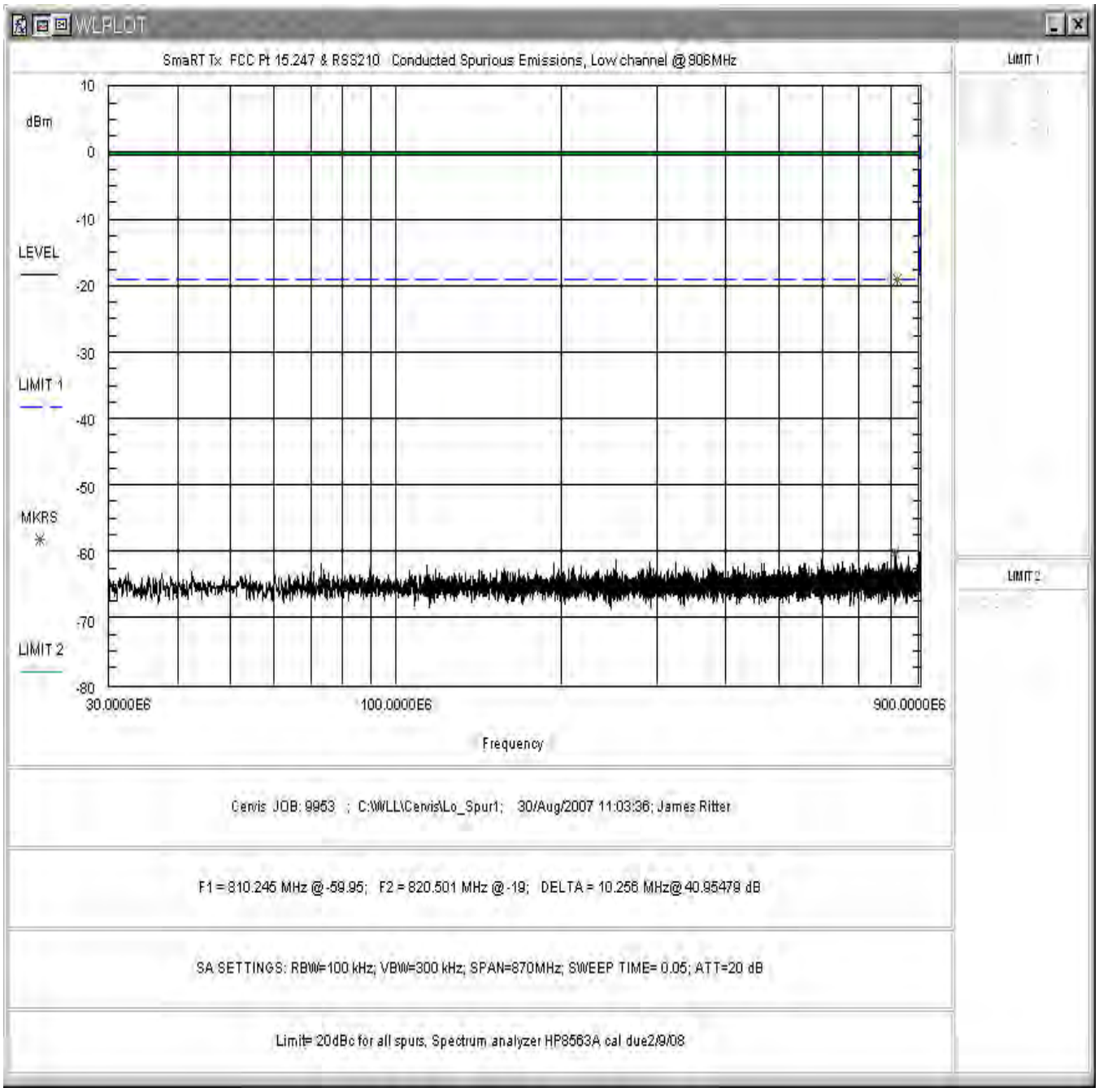

Figure 4-11. Conducted Spurious Emissions, Low Channel 30 – 900MHz

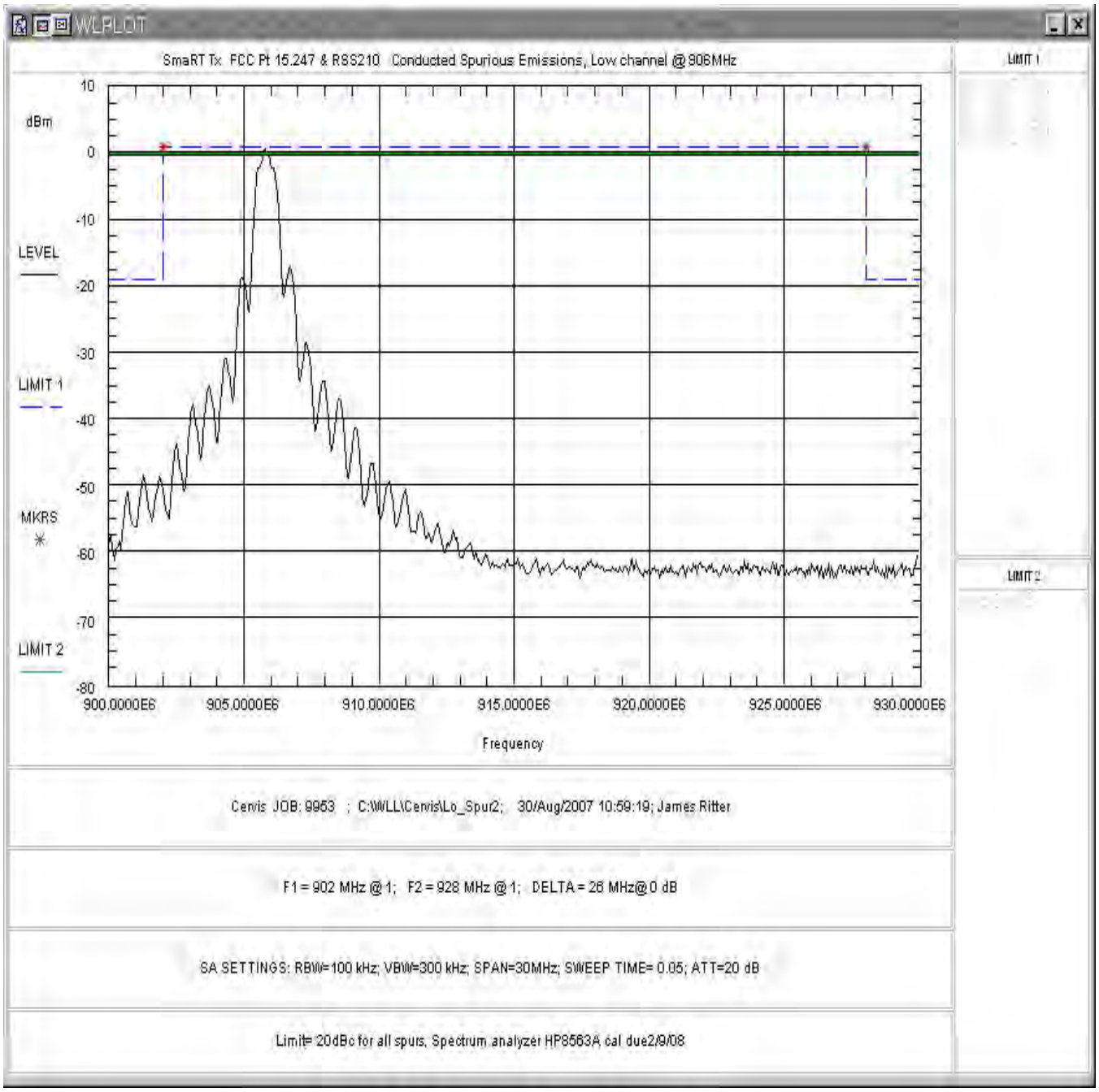

Figure 4-12. Conducted Spurious Emissions, Low Channel 900 – 930MHz

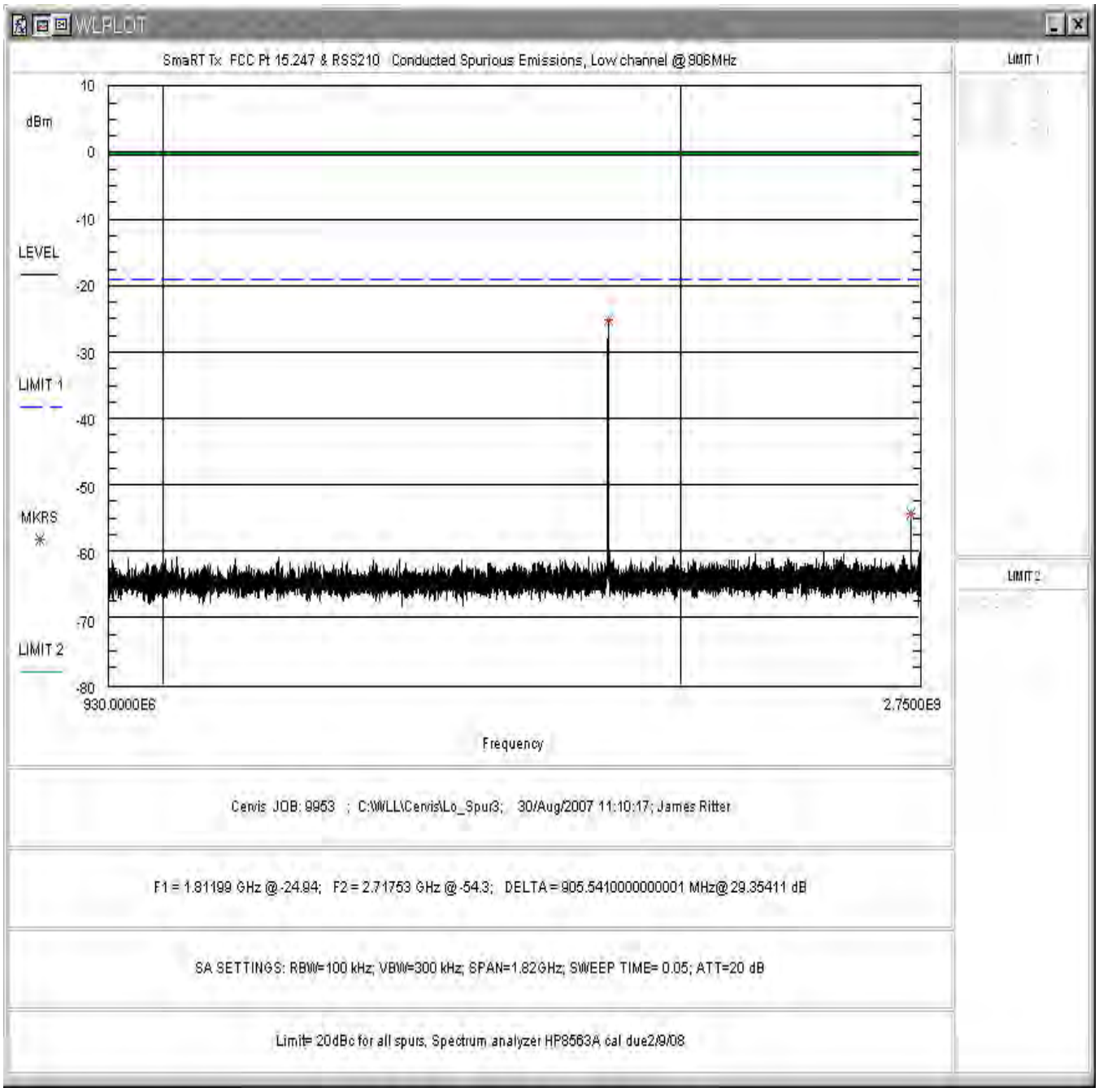

Figure 4-13. Conducted Spurious Emissions, Low Channel 930MHz – 2.75GHz

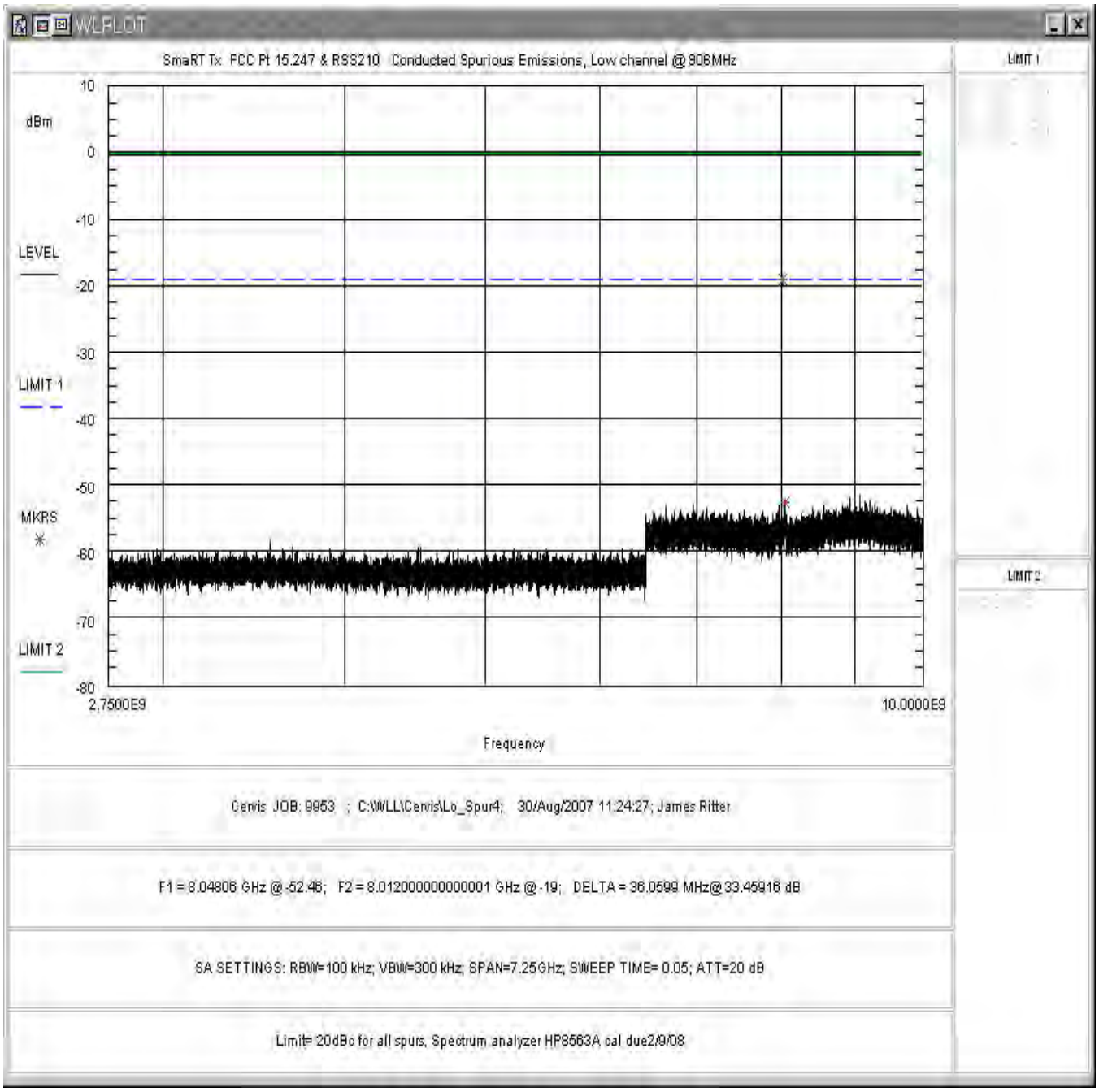

Figure 4-14. Conducted Spurious Emissions, Low Channel 2.75 - 10GHz

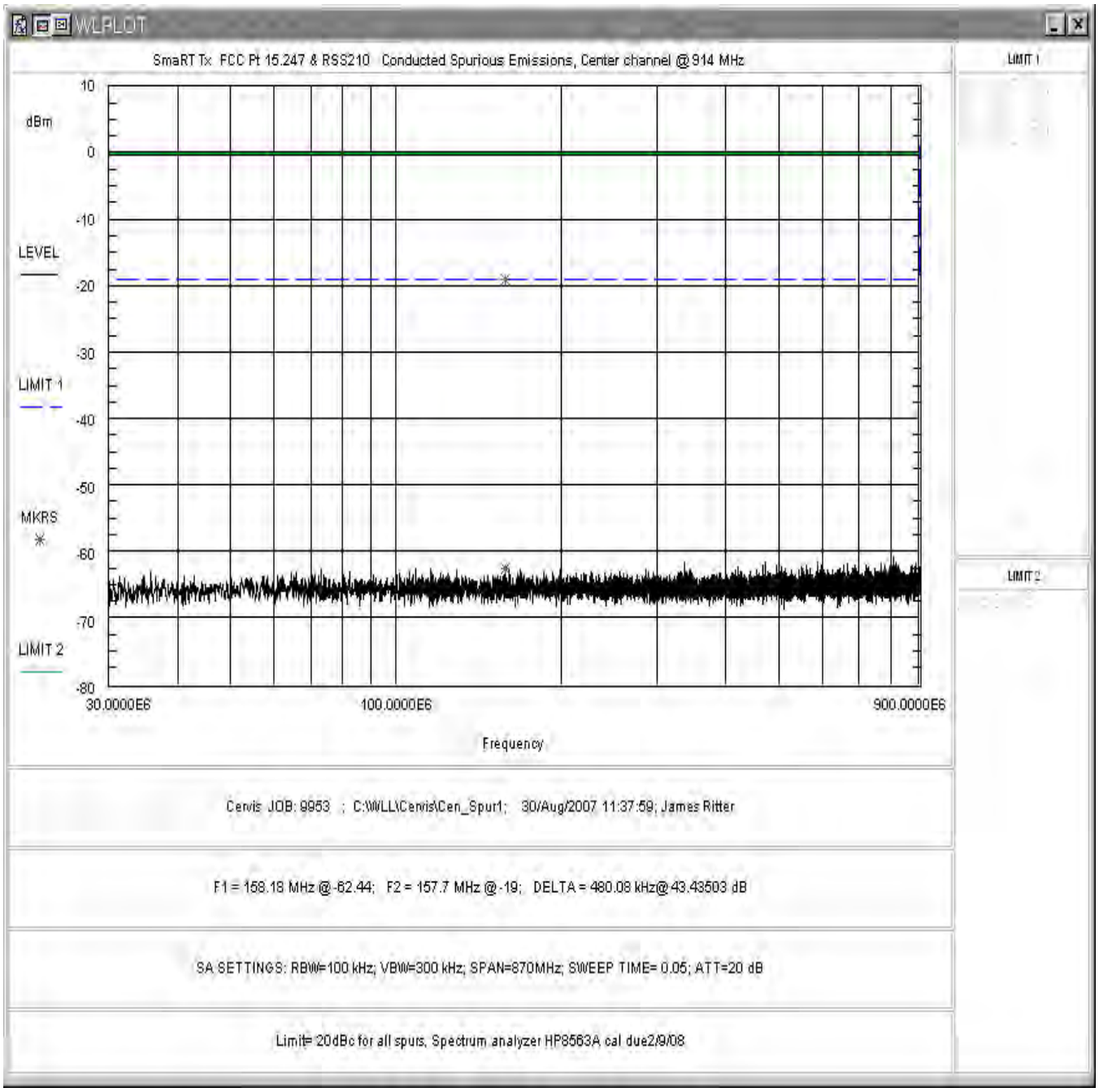

Figure 4-15. Conducted Spurious Emissions, Center Channel 30-900MHz

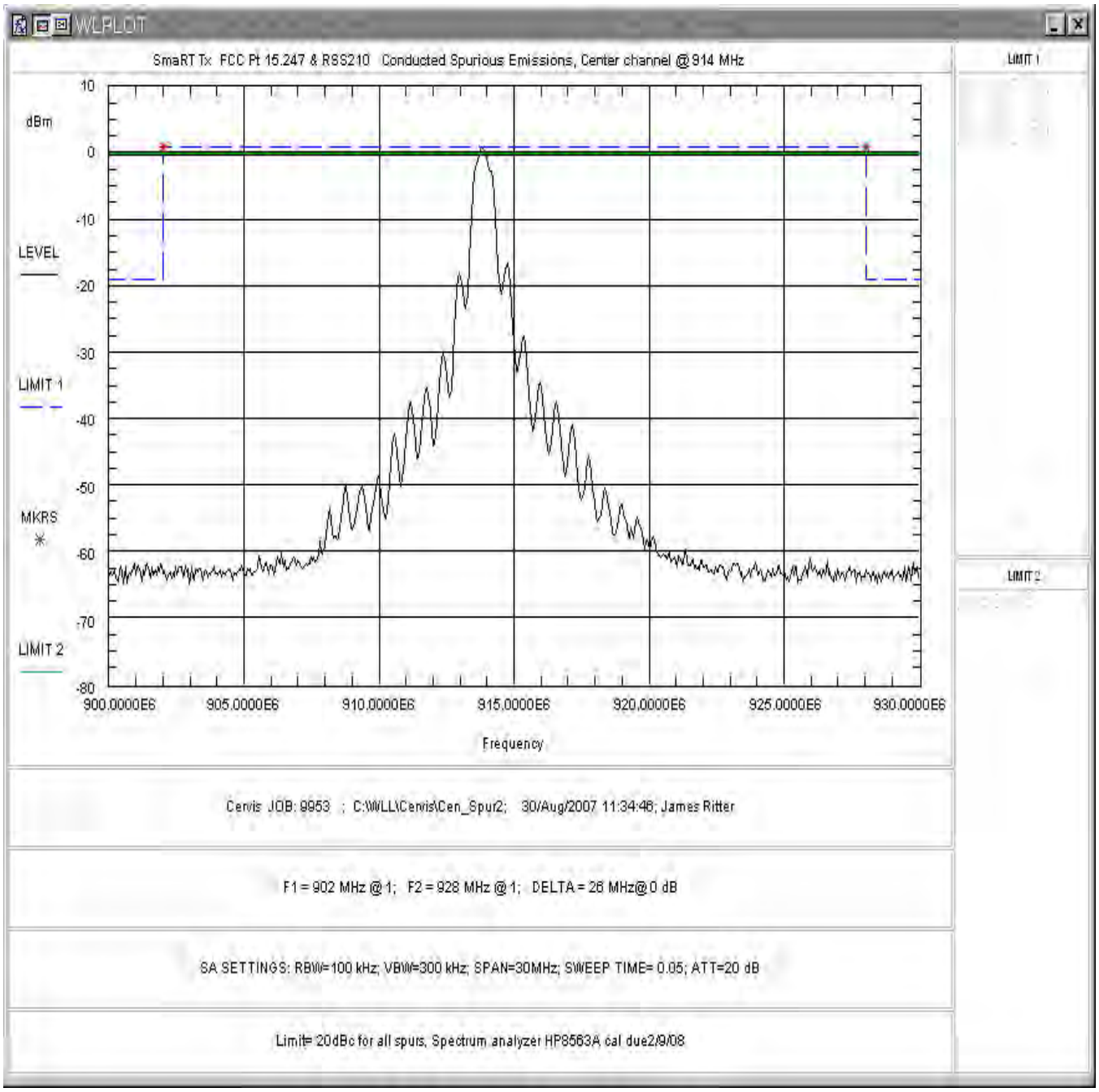

Figure 4-16. Conducted Spurious Emissions, Center Channel 900 – 930MHz

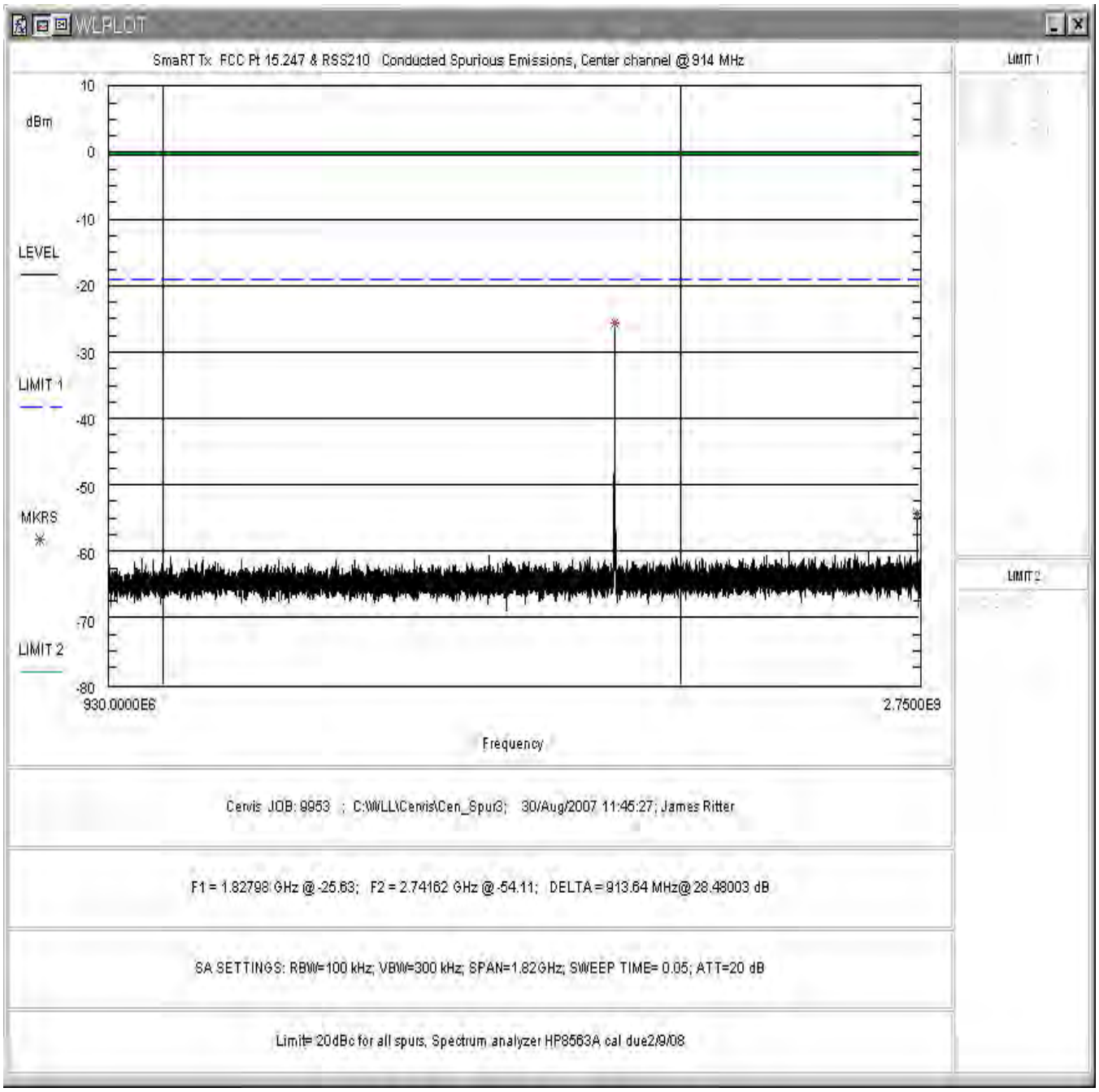

Figure 4-17. Conducted Spurious Emissions, Center Channel 930MHz – 2.75GHz

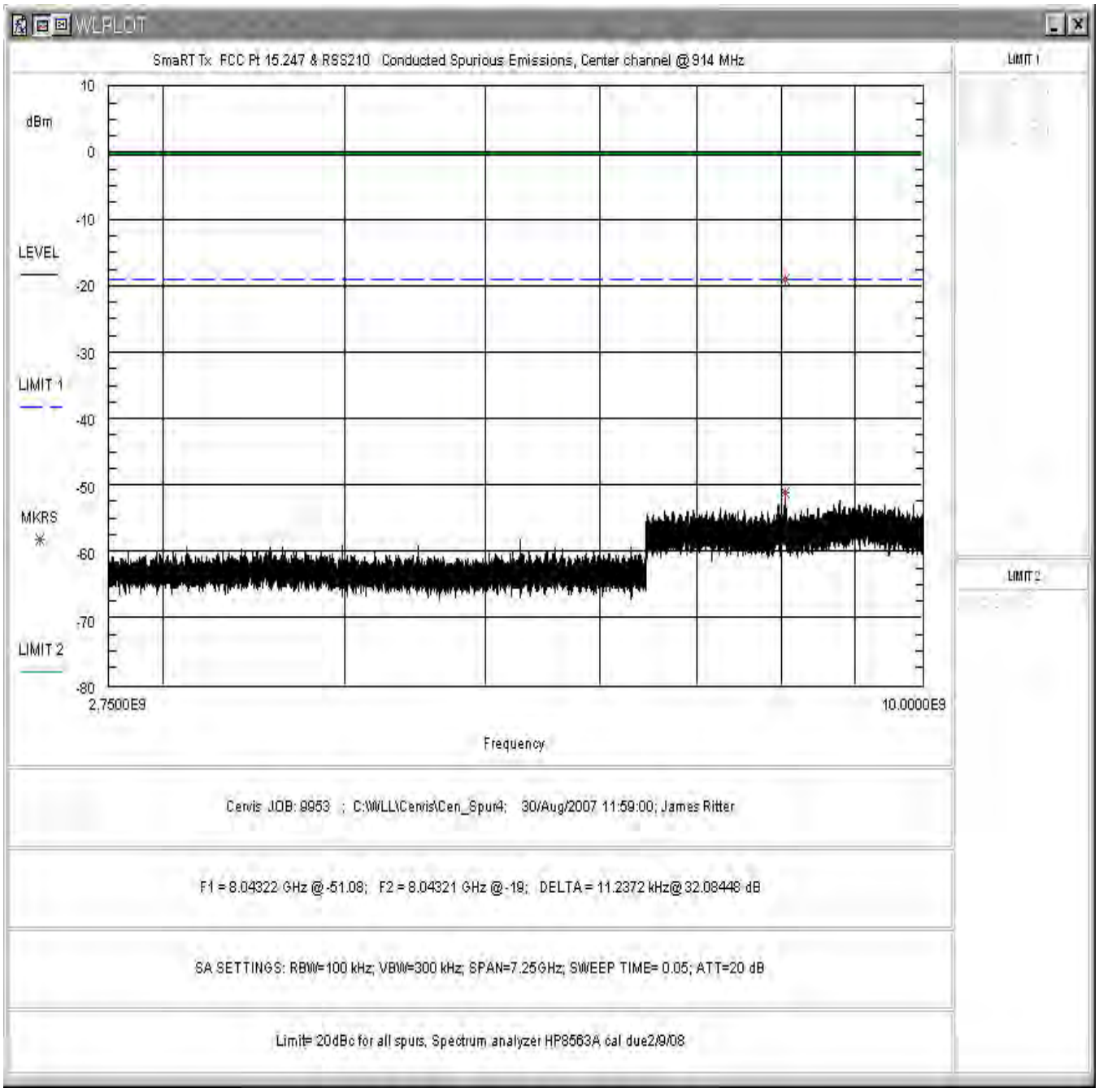

Figure 4-18. Conducted Spurious Emissions, Mid Channel 2.75 - 10GHz

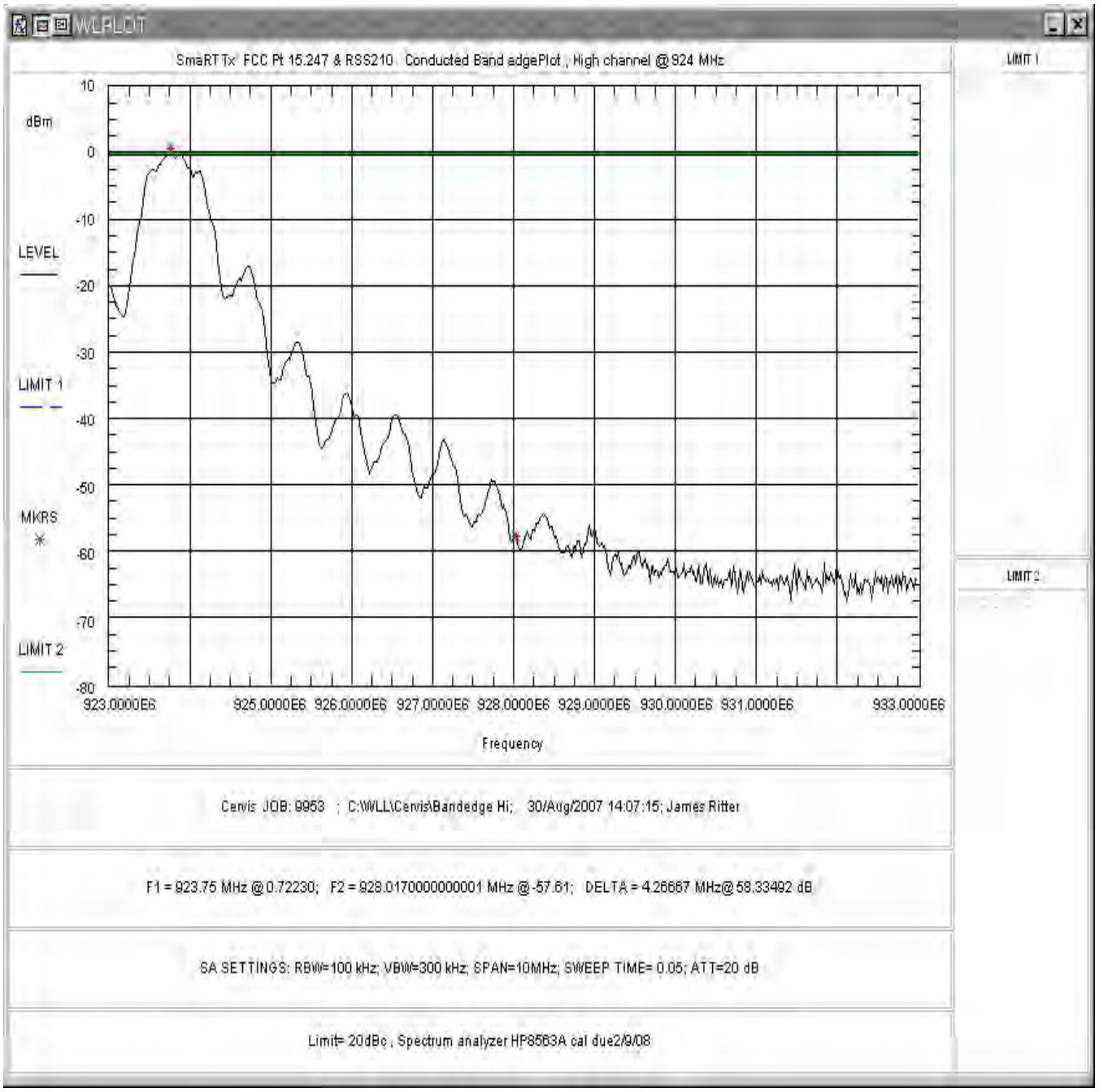

Figure 4-19. Conducted Spurious Emissions, High Channel Band Edge

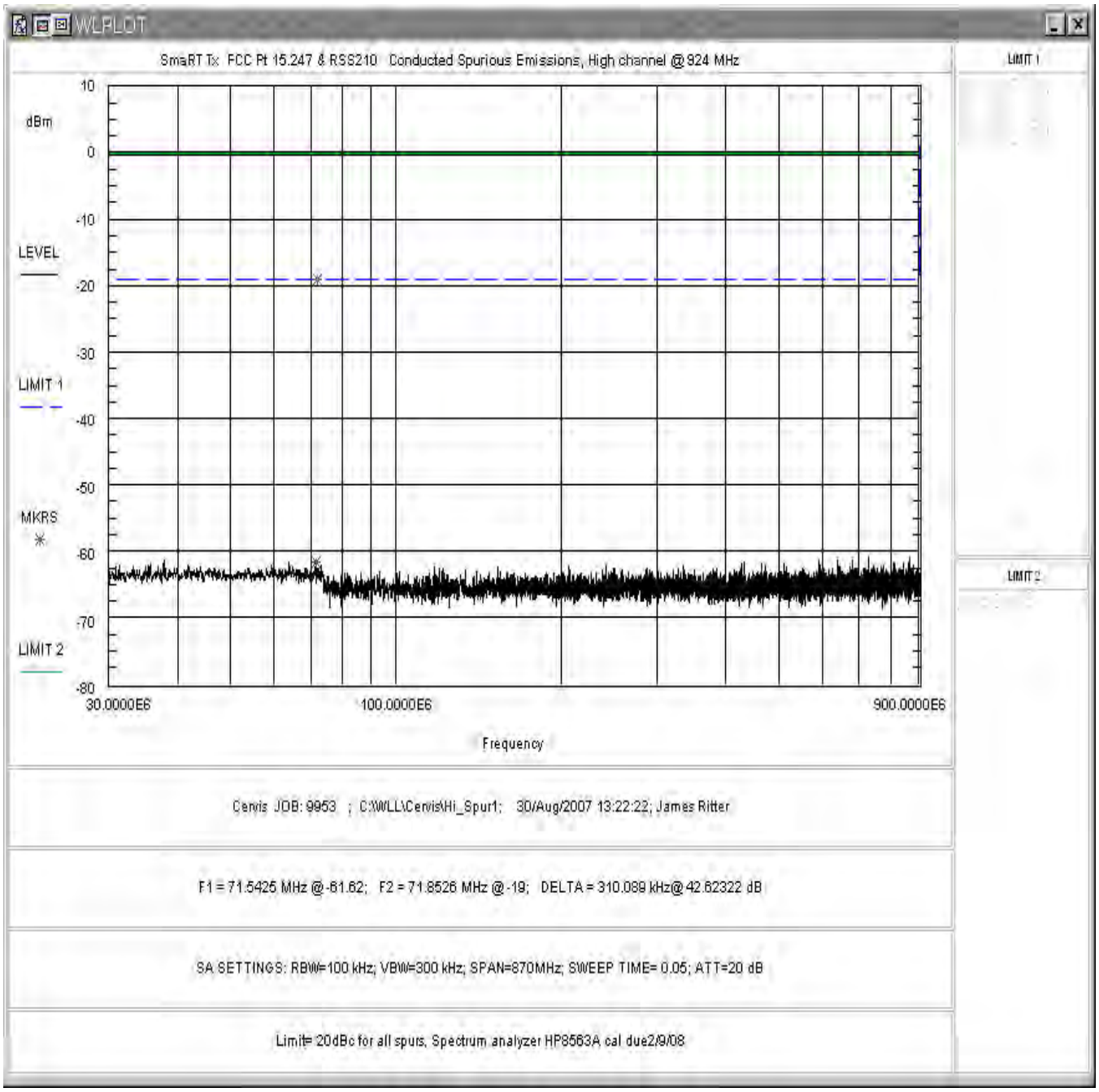

Figure 4-20. Conducted Spurious Emissions, High Channel 30MHz – 900MHz

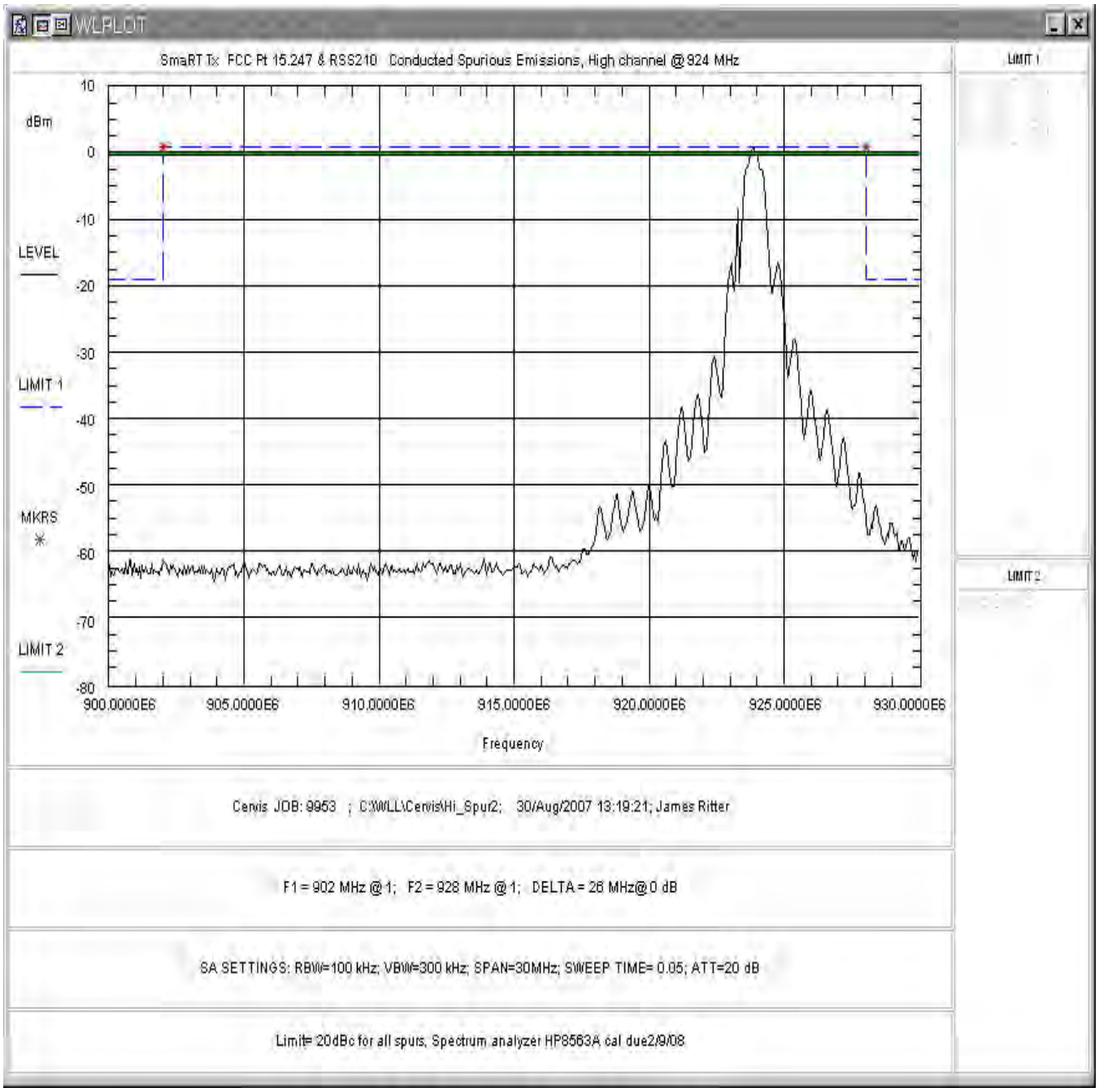

Figure 4-21. Conducted Spurious Emissions, High Channel 900 – 930MHz

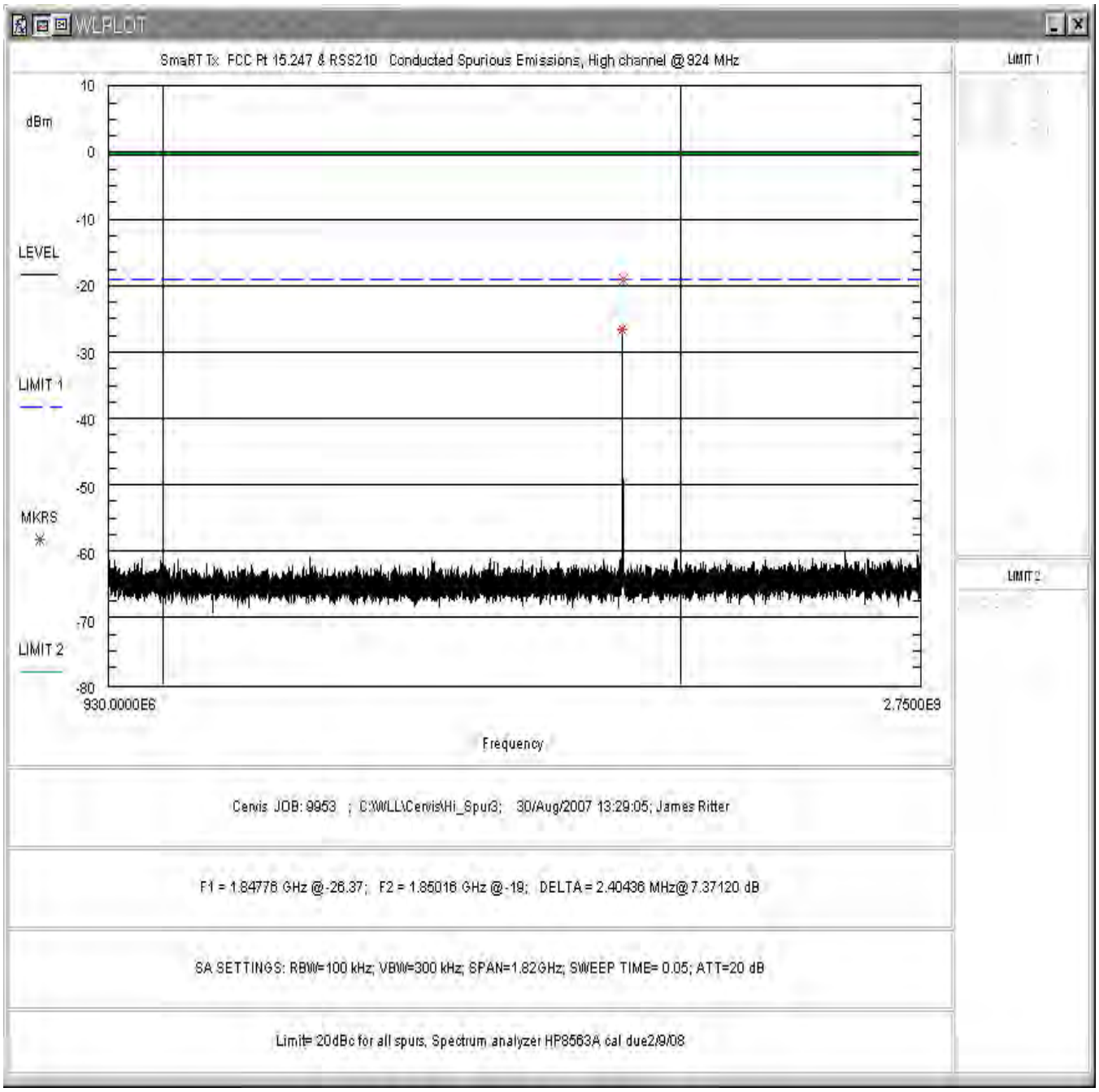

Figure 4-22. Conducted Spurious Emissions, High Channel 930MHz-2.75GHz

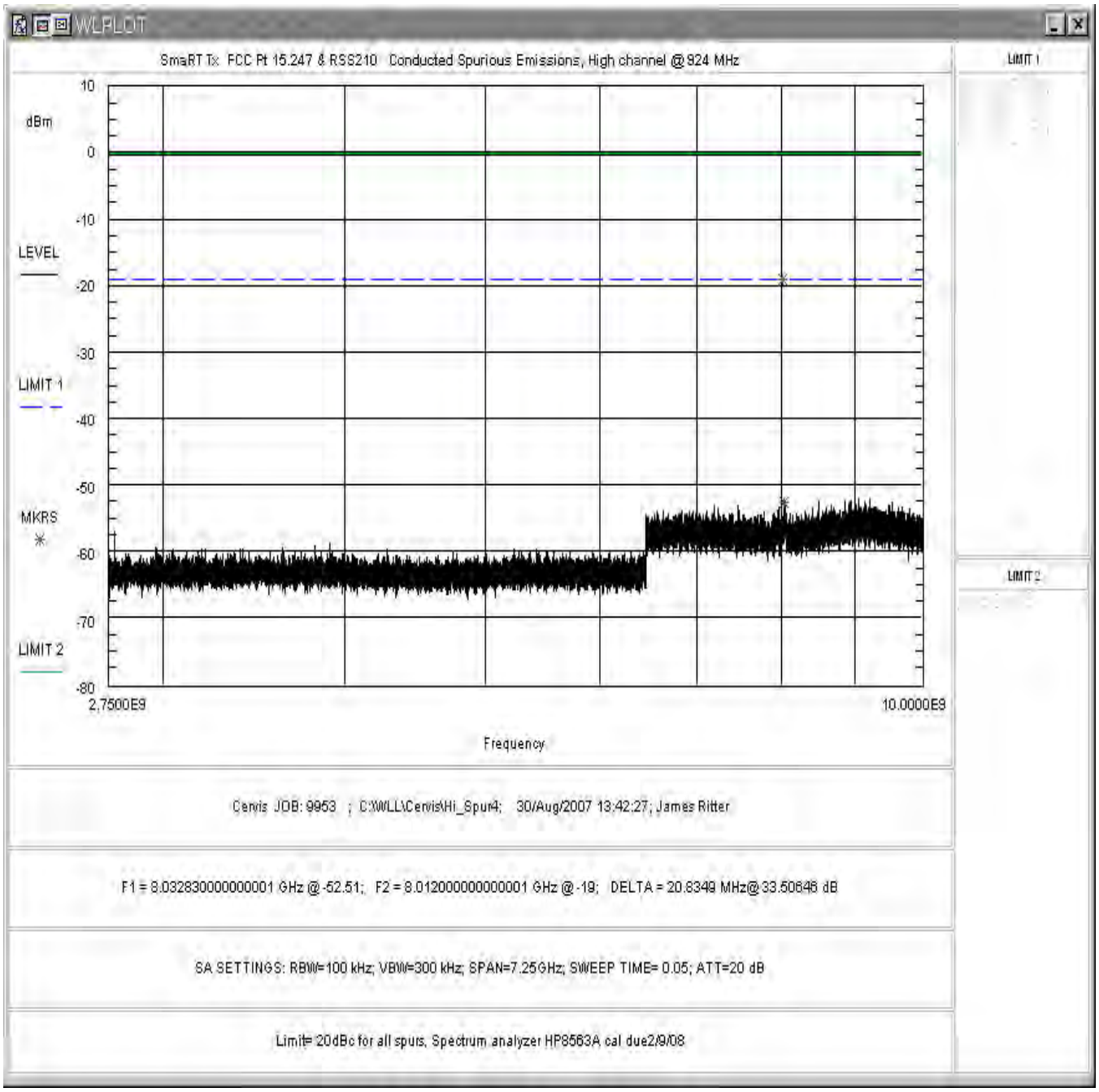

Figure 4-23. Conducted Spurious Emissions, High Channel 2.75-10GHz

4.5 Radiated Spurious Emissions: (FCC Part §2.1053/RSS-210)

The EUT must comply with the requirements for radiated spurious emissions that fall within the restricted bands. These emissions must meet the limits specified in FCC Part 15.209 and §15.35(b) for peak measurements. These requirements are also specified in RSS-210.

4.5.1 Test Procedure

The EUT was placed on motorized turntable for radiated testing on a 3-meter open field test site. The emissions from the EUT were measured continuously at every azimuth by rotating the turntable. Receiving antennas were mounted on an antenna mast to determine the height of maximum emissions. The height of the antenna was varied between 1 and 4 meters. The peripherals were placed on the table in accordance with ANSI C63.4-2003. Cables were varied in position to produce maximum emissions.

The EUT was tested in the three orthogonal orientations. Both the horizontal and vertical field components were measured.

The emissions were measured using the following resolution bandwidths:

Frequency Range	Resolution Bandwidth	Video Bandwidth
30MHz-1000 MHz	120kHz	>100 kHz
>1000 MHz	1 MHz	<30 Hz (Avg.) 1MHz (Peak)

The following is a sample calculation used in the data tables for calculating the final field strength of spurious emissions and comparing these levels to the specified limits.

Sample Calculation:

Spectrum Analyzer Voltage (SA Level):	VdBµV
Antenna Factor (Ant Corr):	AFdB/m
Cable Loss Correction (Cable Corr):	CCdB
Amplifier Gain:	GdB
Electric Field (Corr Level):	EdBµV/m = VdBµV + AFdB/m + CCdB - GdB
To convert to linear units:	EµV/m = antilog (EdBµV/m/20)

Table 5: Radiated Emission Test Data, Low Frequency Data (<1GHz)

Frequency (MHz)	Polarity H/V	Az Deg	Ant. Hght (m)	SA Level (QP) (dBµV)	Ant. Corr. (dB/m)	Cable Corr. (dB)	Corr. Level (dBµV/m)	Corr. Level (µV/m)	Limit (µV/m)	Margin dB
32.275	V	270.0	1.0	7.3	18.2	0.7	26.2	20.4	100.0	-13.8
47.855	V	90.0	1.0	4.1	15.2	1.0	20.3	10.4	100.0	-19.7
56.000	V	50.0	1.0	7.4	12.1	1.0	20.5	10.6	100.0	-19.5
110.840	V	120.0	1.0	3.7	11.2	1.7	16.6	6.7	150.0	-27.0
417.459	V	90.0	1.6	3.9	15.9	3.8	23.6	15.2	200.0	-22.4
1000.000	V	0.0	2.5	-2.5	22.6	6.8	26.9	22.1	500.0	-27.1
32.275	H	180.0	4.0	3.3	18.2	0.7	22.2	12.8	100.0	-17.8
47.855	H	190.0	4.0	4.2	15.2	1.0	20.4	10.5	100.0	-19.6
64.000	H	190.0	3.5	4.3	9.4	1.3	15.0	5.6	100.0	-25.0
110.840	H	180.0	3.6	1.2	11.2	1.7	14.1	5.0	150.0	-29.5
417.459	H	180.0	2.6	2.2	15.9	3.8	21.9	12.5	200.0	-24.1
1000.000	H	0.0	1.4	0.9	22.6	6.8	30.3	32.7	500.0	-23.7

Table 6: Radiated Emission Test Data, High Frequency Data (>1GHz)

(Restricted Bands)

Low Channel

Frequency (MHz)	Pol H/V	Az Deg	Ant. Height (m)	SA Level (dBµV)	Ant. Corr. (dB/m)	Cable Corr. (dB)	Amp Gain (dB)	Corr. Level (dBµV/m)	Corr. Level (µV/m)	Limit (µV/m)	Margin (dB)	Notes
Unit Flat												
PEAK												
905.760	V	90.0	2.0	52.7	22.2	9.7	0.0	84.6	17007.4	5000.0		Fund
2717.280	V	0.0	1.0	42.5	29.7	1.5	34.1	39.6	95.2	5000.0	-34.4	amb
3623.040	V	0.0	1.0	41.1	30.5	2.5	34.2	39.9	99.2	5000.0	-34.0	amb
4528.800	V	0.0	1.0	41.2	32.1	3.3	34.3	42.4	131.5	5000.0	-31.6	amb
5434.560	V	0.0	1.0	41.0	33.8	3.8	34.1	44.5	168.0	5000.0	-29.5	amb
8151.840	V	0.0	1.0	43.3	37.4	6.1	34.9	51.9	393.7	5000.0	-22.1	amb
9057.600	V	0.0	1.0	45.0	38.1	4.8	35.0	52.8	438.7	5000.0	-21.1	amb
AVG												
2717.280	V	0.0	1.0	31.5	29.7	1.5	34.1	28.6	26.8	500.0	-25.4	amb
3623.040	V	0.0	1.0	31.6	30.5	2.5	34.2	30.4	33.1	500.0	-23.6	amb
4528.800	V	0.0	1.0	30.7	32.1	3.3	34.3	31.9	39.1	500.0	-22.1	amb
5434.560	V	0.0	1.0	30.5	33.8	3.8	34.1	34.0	50.2	500.0	-20.0	amb
8151.840	V	0.0	1.0	32.7	37.4	6.1	34.9	41.2	115.4	500.0	-12.7	amb
9057.600	V	0.0	1.0	33.7	38.1	4.8	35.0	41.5	119.0	500.0	-12.5	amb
Peak												
905.760	H	90.0	2.0	61.2	22.2	9.7	0.0	93.1	45252.0	5000.0		Fund
2717.280	H	180.0	1.0	45.5	29.7	1.5	34.1	42.6	134.5	5000.0	-31.4	
3623.040	H	0.0	1.0	41.5	30.5	2.5	34.2	40.3	103.6	5000.0	-33.7	amb
4528.800	H	0.0	1.0	41.8	32.1	3.3	34.3	43.0	141.4	5000.0	-31.0	amb
5434.560	H	0.0	1.0	40.7	33.8	3.8	34.1	44.2	161.7	5000.0	-29.8	amb
8151.840	H	0.0	1.0	43.2	37.4	6.1	34.9	51.7	386.5	5000.0	-22.2	amb
9057.600	H	0.0	1.0	45.2	38.1	4.8	35.0	53.0	447.4	5000.0	-21.0	amb
AVG												
2717.280	H	0.0	1.0	33.4	29.7	1.5	34.1	30.5	33.4	500.0	-23.5	
3623.040	H	0.0	1.0	31.0	30.5	2.5	34.2	29.8	30.9	500.0	-24.2	amb
4528.800	H	0.0	1.0	30.8	32.1	3.3	34.3	32.0	39.7	500.0	-22.0	amb
5434.560	H	0.0	1.0	30.5	33.8	3.8	34.1	34.0	50.2	500.0	-20.0	amb
8151.840	H	0.0	1.0	33.6	37.4	6.1	34.9	42.2	128.4	500.0	-11.8	amb
9057.600	H	0.0	1.0	33.5	38.1	4.8	35.0	41.3	116.7	500.0	-12.6	amb
Unit On Side												
Peak												
905.760	V	270.0	2.3	54.0	22.2	9.7	0.0	85.9	19753.2	5000.0		Fund
2717.280	V	165.0	1.0	46.5	29.7	1.5	34.1	43.6	150.9	5000.0	-30.4	
3623.040	V	0.0	1.0	42.8	30.5	2.5	34.2	41.6	120.7	5000.0	-32.3	amb

Frequency (MHz)	Pol H/V	Az Deg	Ant. Height (m)	SA Level (dBµV)	Ant. Corr. (dB/m)	Cable Corr. (dB)	Amp Gain (dB)	Corr. Level (dBµV/m)	Corr. Level (µV/m)	Limit (µV/m)	Margin (dB)	Notes
AVG												
2717.280	V	165.0	1.0	38.5	29.7	1.5	34.1	35.6	60.1	500.0	-18.4	
3623.040	V	0.0	1.0	31.0	30.5	2.5	34.2	29.8	30.9	500.0	-24.2	amb
Peak												
905.760	H	180.0	1.5	62.0	22.2	9.7	0.0	93.9	49617.9	5000.0		Fund
2717.280	H	190.0	1.0	48.3	29.7	1.5	34.1	45.4	186.3	5000.0	-28.6	
3623.040	H	0.0	1.0	42.5	30.5	2.5	34.2	41.3	116.2	5000.0	-32.7	amb
AVG												
2717.280	H	0.0	1.0	42.0	29.7	1.5	34.1	39.1	89.9	500.0	-14.9	
3623.040	H	0.0	1.0	31.2	30.5	2.5	34.2	30.0	31.6	500.0	-24.0	amb
Unit Upright												
Peak												
905.760	V	180.0	1.9	57.8	22.2	9.7	0.0	89.7	30453.6	5000.0		Fund
2717.280	V	180.0	1.0	45.2	29.7	1.5	34.1	42.3	129.9	5000.0	-31.7	
3623.040	V	0.0	1.0	41.9	30.5	2.5	34.2	40.7	108.4	5000.0	-33.3	amb
AVG												
2717.280	V	180.0	1.0	35.2	29.7	1.5	34.1	32.3	41.1	500.0	-21.7	
3623.040	V	0.0	1.0	30.9	30.5	2.5	34.2	29.7	30.6	500.0	-24.3	amb
Peak												
905.760	H	200.0	1.0	53.6	22.2	9.7	0.0	85.5	18864.2	5000.0		Fund
2717.280	H	190.0	1.0	44.8	29.7	1.5	34.1	41.9	124.5	5000.0	-32.1	
3623.040	H	0.0	1.0	41.0	30.5	2.5	34.2	39.8	97.8	5000.0	-34.2	amb
AVG												
2717.280	H	190.0	1.0	35.2	29.7	1.5	34.1	32.2	40.9	500.0	-21.7	
3623.040	H	0.0	1.0	30.9	30.5	2.5	34.2	29.7	30.6	500.0	-24.3	amb

Mid Channel

Frequency (MHz)	Pol H/V	Az Deg	Ant. Height (m)	SA Level (dBµV)	Ant. Corr. (dB/m)	Cable Corr. (dB)	Amp Gain (dB)	Corr. Level (dBµV/m)	Corr. Level (µV/m)	Limit (µV/m)	Margin (dB)	Notes
Unit Flat												
PEAK												
913.800	H	190.0	1.7	59.0	22.3	9.7	0.0	91.0	35479.4	5000.0		Fund
2741.400	H	180.0	1.0	45.5	29.7	1.5	34.2	42.6	134.8	5000.0	-31.4	
3655.200	H	0.0	1.0	41.8	30.5	2.5	34.2	40.7	108.4	5000.0	-33.3	amb
4569.000	H	0.0	1.0	41.2	32.2	3.4	34.3	42.5	133.0	5000.0	-31.5	amb
7310.400	H	0.0	1.0	43.7	36.9	4.5	34.7	50.3	328.0	5000.0	-23.7	amb
8224.200	H	0.0	1.0	43.3	37.5	5.9	34.9	51.8	390.9	5000.0	-22.1	amb
9138.000	H	0.0	1.0	44.0	38.1	4.8	35.1	51.9	393.7	5000.0	-22.1	amb
AVG												
2741.400	H	180.0	1.0	40.3	29.7	1.5	34.2	37.4	74.3	500.0	-16.6	
3655.200	H	0.0	1.0	31.2	30.5	2.5	34.2	30.0	31.8	500.0	-23.9	amb
4569.000	H	0.0	1.0	30.5	32.2	3.4	34.3	31.8	38.9	500.0	-22.2	amb
7310.400	H	0.0	1.0	33.2	36.9	4.5	34.7	39.8	97.9	500.0	-14.2	amb
8224.200	H	0.0	1.0	33.2	37.5	5.9	34.9	41.7	121.4	500.0	-12.3	amb
9138.000	H	0.0	1.0	33.7	38.1	4.8	35.1	41.6	119.8	500.0	-12.4	amb
Peak												
913.800	V	165.0	1.8	52.9	22.3	9.7	0.0	84.9	17578.3	5000.0		Fund
2741.400	V	290.0	1.0	47.3	29.7	1.5	34.2	44.4	166.4	5000.0	-29.6	
3655.200	V	0.0	1.0	41.7	30.5	2.5	34.2	40.6	106.8	5000.0	-33.4	amb
4569.000	V	0.0	1.0	41.4	32.2	3.4	34.3	42.7	136.6	5000.0	-31.3	amb
7310.400	V	0.0	1.0	44.0	36.9	4.5	34.7	50.6	340.7	5000.0	-23.3	amb
8224.200	V	0.0	1.0	43.1	37.5	5.9	34.9	51.6	380.7	5000.0	-22.4	amb
9138.000	V	0.0	1.0	43.2	38.1	4.8	35.1	51.1	359.0	5000.0	-22.9	amb
AVG												
2741.400	V	290.0	1.0	34.2	29.7	1.5	34.2	31.3	36.7	500.0	-22.7	
3655.200	V	0.0	1.0	31.7	30.5	2.5	34.2	30.6	33.8	500.0	-23.4	amb
4569.000	V	0.0	1.0	31.3	32.2	3.4	34.3	32.6	42.7	500.0	-21.4	amb
7310.400	V	0.0	1.0	34.0	36.9	4.5	34.7	40.6	107.7	500.0	-13.3	amb
8224.200	V	0.0	1.0	33.6	37.5	5.9	34.9	42.1	127.5	500.0	-11.9	amb
9138.000	V	0.0	1.0	34.1	38.1	4.8	35.1	42.0	125.9	500.0	-12.0	amb
Unit on Side												
Peak												
913.800	V	165.0	2.6	51.7	22.3	9.7	0.0	83.7	15310.0	5000.0		Fund
2741.400	V	190.0	1.0	43.1	29.7	1.5	34.2	40.2	102.2	5000.0	-33.8	
3655.200	V	0.0	1.0	41.7	30.5	2.5	34.2	40.6	106.8	5000.0	-33.4	amb
AVG												
2741.400	V	190.0	1.0	33.8	29.7	1.5	34.2	30.9	35.0	500.0	-23.1	
3655.200	V	0.0	1.0	31.7	30.5	2.5	34.2	30.6	33.8	500.0	-23.4	amb

Frequency (MHz)	Pol H/V	Az Deg	Ant. Height (m)	SA Level (dBµV)	Ant. Corr. (dB/m)	Cable Corr. (dB)	Amp Gain (dB)	Corr. Level (dBµV/m)	Corr. Level (µV/m)	Limit (µV/m)	Margin (dB)	Notes
Peak												
913.800	H	180.0	1.5	61.9	22.3	9.7	0.0	93.9	49542.3	5000.0		Fund
2741.400	H	180.0	1.0	47.5	29.7	1.5	34.2	44.6	169.7	5000.0	-29.4	
3655.200	H	0.0	1.0	43.5	30.5	2.5	34.2	42.4	131.4	5000.0	-31.6	amb
AVG												
2741.400	H	180.0	1.0	40.3	29.7	1.5	34.2	37.4	74.3	500.0	-16.6	
3655.200	H	0.0	1.0	31.5	30.5	2.5	34.2	30.4	33.0	500.0	-23.6	amb
Unit Upright												
Peak												
913.800	H	180.0	1.5	47.8	22.3	9.7	0.0	79.8	9771.8	5000.0		Fund
2741.400	H	180.0	1.0	52.7	29.7	1.5	34.2	49.8	307.7	5000.0	-24.2	
3655.200	H	0.0	1.0	41.7	30.5	2.5	34.2	40.5	106.5	5000.0	-33.4	amb
AVG												
2741.400	H	180.0	1.0	41.5	29.7	1.5	34.2	38.6	85.0	500.0	-15.4	
3655.200	H	0.0	1.0	31.5	30.5	2.5	34.2	30.4	33.0	500.0	-23.6	amb
Peak												
913.800	V	90.0	2.1	59.4	22.3	9.7	0.0	91.4	37151.5	5000.0		Fund
2741.400	V	170.0	1.0	45.5	29.7	1.5	34.2	42.6	134.8	5000.0	-31.4	
3655.200	V	0.0	1.0	44.2	30.5	2.5	34.2	43.0	142.0	5000.0	-30.9	amb
AVG												
2741.400	V	170.0	1.0	34.8	29.7	1.5	34.2	31.9	39.3	500.0	-22.1	
3655.200	V	0.0	1.0	31.7	30.5	2.5	34.2	30.6	33.8	500.0	-23.4	amb

High Channel

Frequency (MHz)	Pol H/V	Az Deg	Ant. Height (m)	SA Level (dBµV)	Ant. Corr. (dB/m)	Cable Corr. (dB)	Amp Gain (dB)	Corr. Level (dBµV/m)	Corr. Level (µV/m)	Limit (µV/m)	Margin (dB)	Notes
Unit Flat												
PEAK												
923.850	V	270.0	1.6	50.5	22.3	9.8	0.0	82.6	13500.4	5000.0		Fund
2771.550	V	0.0	1.0	45.8	29.8	1.5	34.2	42.9	140.4	5000.0	-31.0	
3695.400	V	0.0	1.0	43.2	30.5	2.6	34.2	42.1	127.8	5000.0	-31.8	amb
4619.250	V	0.0	1.0	44.2	32.4	3.4	34.3	45.6	191.3	5000.0	-28.3	amb
7390.800	V	0.0	1.0	42.3	36.9	4.7	34.8	49.2	288.9	5000.0	-24.8	amb
8314.650	V	0.0	1.0	44.5	37.5	5.8	34.9	52.9	443.5	5000.0	-21.0	amb
AVG												
2771.550	V	170.0	1.0	33.9	29.8	1.5	34.2	31.0	35.6	500.0	-23.0	
3695.400	V	0.0	1.0	31.5	30.5	2.6	34.2	30.5	33.4	500.0	-23.5	amb
4619.250	V	0.0	1.0	30.3	32.4	3.4	34.3	31.8	38.9	500.0	-22.2	amb
7390.800	V	0.0	1.0	33.0	36.9	4.7	34.8	39.9	98.7	500.0	-14.1	amb
8314.650	V	0.0	1.0	33.5	37.5	5.8	34.9	41.9	125.0	500.0	-12.0	amb
923.850	H	180.0	1.5	60.4	22.3	9.8	0.0	92.5	42203.2	5000.0		Fund
2771.550	H	0.0	1.0	46.5	29.8	1.5	34.2	43.6	151.7	5000.0	-30.4	
3695.400	H	0.0	1.0	42.6	30.5	2.6	34.2	41.6	119.7	5000.0	-32.4	amb
4619.250	H	0.0	1.0	44.0	32.4	3.4	34.3	45.5	187.6	5000.0	-28.5	amb
7390.800	H	0.0	1.0	42.0	36.9	4.7	34.8	48.9	278.1	5000.0	-25.1	amb
8314.650	H	0.0	1.0	45.1	37.5	5.8	34.9	53.5	475.2	5000.0	-20.4	amb
AVG												
2771.550	H	170.0	1.0	34.0	29.8	1.5	34.2	31.1	36.0	500.0	-22.9	
3695.400	H	0.0	1.0	32.1	30.5	2.6	34.2	31.1	35.7	500.0	-22.9	amb
4619.250	H	0.0	1.0	31.0	32.4	3.4	34.3	32.5	42.0	500.0	-21.5	amb
7390.800	H	0.0	1.0	32.8	36.9	4.7	34.8	39.7	96.4	500.0	-14.3	amb
8314.650	H	0.0	1.0	35.1	37.5	5.8	34.9	43.5	150.3	500.0	-10.4	amb
Unit on Side												
Peak												
923.850	H	190.0	1.6	61.5	22.3	9.8	0.0	93.6	47901.1	5000.0		Fund
2771.550	H	180.0	1.0	45.3	29.8	1.5	34.2	42.4	132.6	5000.0	-31.5	
3695.400	H	0.0	1.0	44.5	30.5	2.6	34.2	43.5	149.0	5000.0	-30.5	amb
AVG												
2771.550	H	180.0	1.0	36.2	29.8	1.5	34.2	33.3	46.1	500.0	-20.7	
3695.400	H	0.0	1.0	31.5	30.5	2.6	34.2	30.5	33.4	500.0	-23.5	amb
Peak												
923.850	V	270.0	1.6	51.7	22.3	9.8	0.0	83.8	15500.5	5000.0		Fund
2771.550	V	90.0	1.0	44.9	29.8	1.5	34.2	42.0	126.6	5000.0	-31.9	
3695.400	V	0.0	1.0	42.8	30.5	2.6	34.2	41.8	122.9	5000.0	-32.2	amb

AVG												
2771.550	V	90.0	1.0	32.1	29.8	1.5	34.2	29.2	28.9	500.0	-24.8	
3695.400	V	0.0	1.0	31.3	30.5	2.6	34.2	30.3	32.7	500.0	-23.7	amb
Unit Upright												
Peak												
923.850	V	180.0	1.8	58.2	22.3	9.8	0.0	90.3	32760.1	5000.0		Fund
2771.550	V	180.0	1.0	43.8	29.8	1.5	34.2	40.9	110.5	5000.0	-33.1	
3695.400	V	0.0	1.0	42.7	30.5	2.6	34.2	41.6	120.7	5000.0	-32.3	amb
AVG												
2771.550	V	180.0	1.0	33.9	29.8	1.5	34.2	31.0	35.6	500.0	-23.0	
3695.400	V	0.0	1.0	31.7	30.5	2.6	34.2	30.6	34.0	500.0	-23.3	amb
Peak												
923.850	H	200.0	2.0	52.5	22.3	9.8	0.0	84.6	16996.0	5000.0		Fund
2771.550	H	190.0	1.0	44.0	29.8	1.5	34.2	41.1	113.7	5000.0	-32.9	
3695.400	H	0.0	1.0	42.9	30.5	2.6	34.2	41.9	123.9	5000.0	-32.1	amb
AVG												
2771.550	H	180.0	1.0	33.7	29.8	1.5	34.2	30.8	34.7	500.0	-23.2	
3695.400	H	0.0	1.0	32.0	30.5	2.6	34.2	31.0	35.3	500.0	-23.0	amb

4.6 AC Powerline Conducted Emissions: (FCC Part §15.207/RSS-210 Section 9)

As this device is battery powered No AC power line tests are required.