

5.5 Conducted Spurious Emissions at Antenna Terminals (FCC Part §2.1051)

The EUT must comply with requirements for spurious emissions at the antenna terminal. Per §15.247(c) all spurious emissions in any 100 kHz bandwidth outside the frequency band in which the device is operating shall be attenuated 20 dB below the highest power level in any 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 suitable 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 maximum modulated transmit frequency amplitude). The emissions outside of the allocated frequency band were then scanned from 30 MHz up to the tenth harmonic of the carrier.

Close-up plots of the 902-928MHz band edges are provided in both the hopping and non-hopping modes for all modes of operation to show compliance at both of these points.

Based on the results of the previous tests & band-edge tests plus the fact that both the hailing & data channels have the same power and share the same RF circuitry the full conducted tests will be performed as follows:

Low Channel Testing: 902.5MHz –Long and Short cables, 9.6kbps

Center Channel Testing: 915 MHz - Long and Short cables, 9.6kbps

High Channel Testing: 927.35MHz - Long and Short cables, 9.6kbps

(this is the low, center & highest channels of both modes combined)

The EUT complied with all requirements of FCC Part 15.247 for the conducted spurious measurements performed in sections 5.5.1 and 5.5.2 of this test report.

5.5.1 Conducted Band Edge Plots

5.5.1.1 Hailing Mode-Long Cable

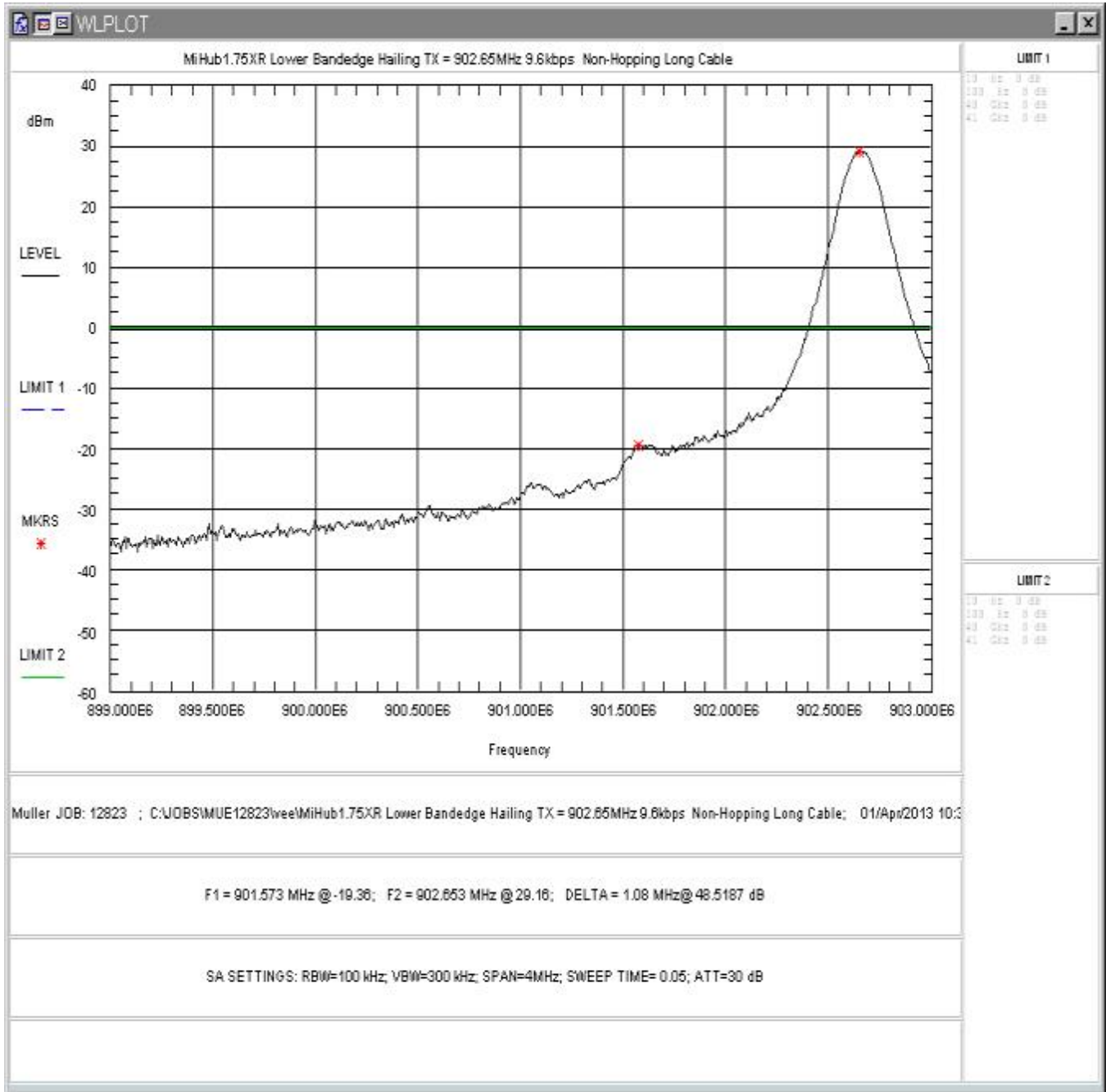


Figure 32: Lower Band-edge, Hailing, Long Cable, 9.6kbps, TX-902.65MHz

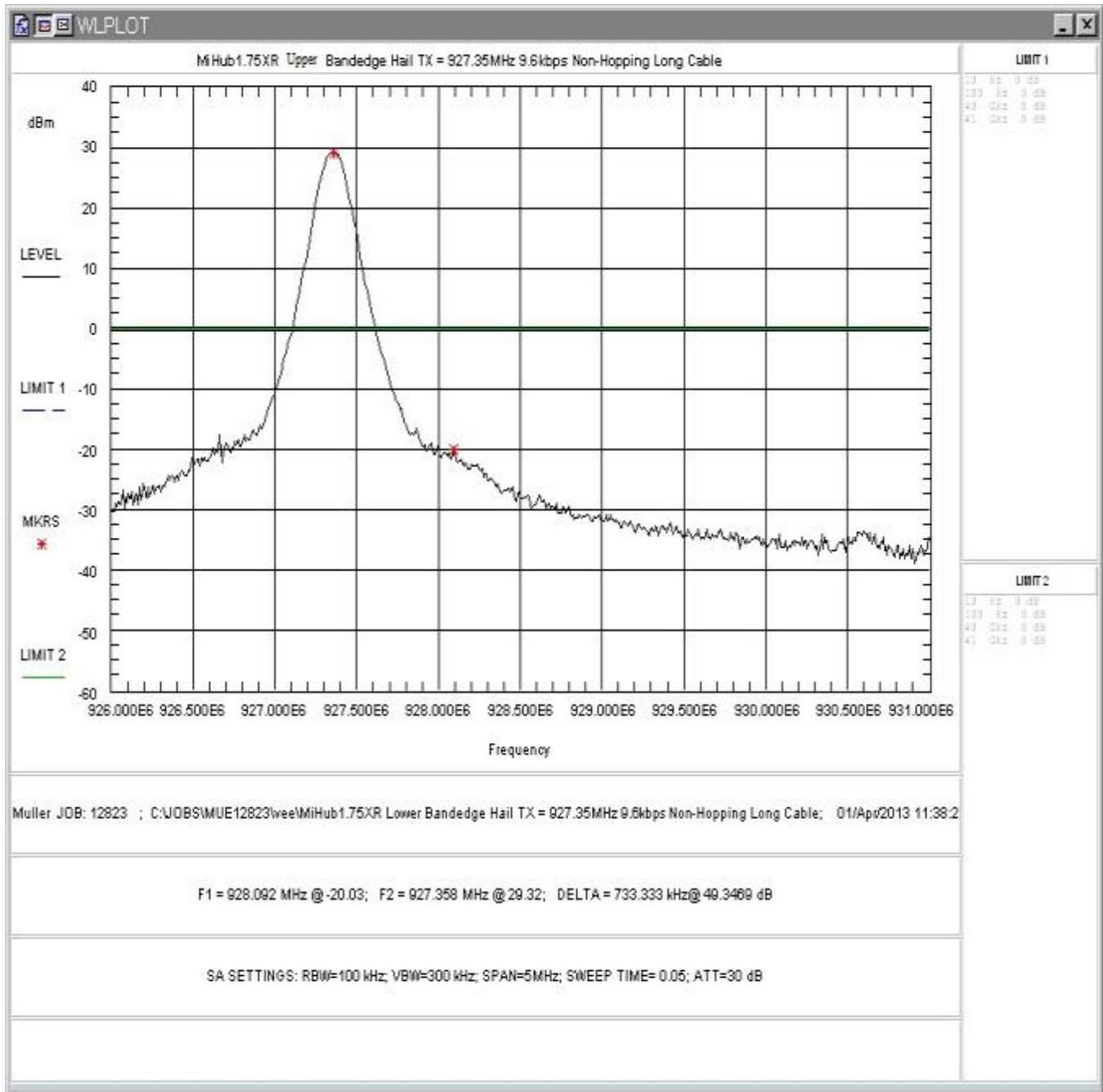


Figure 33: Upper Band-edge, Hailing, Long Cable, 9.6kbps, TX-927.35MHz

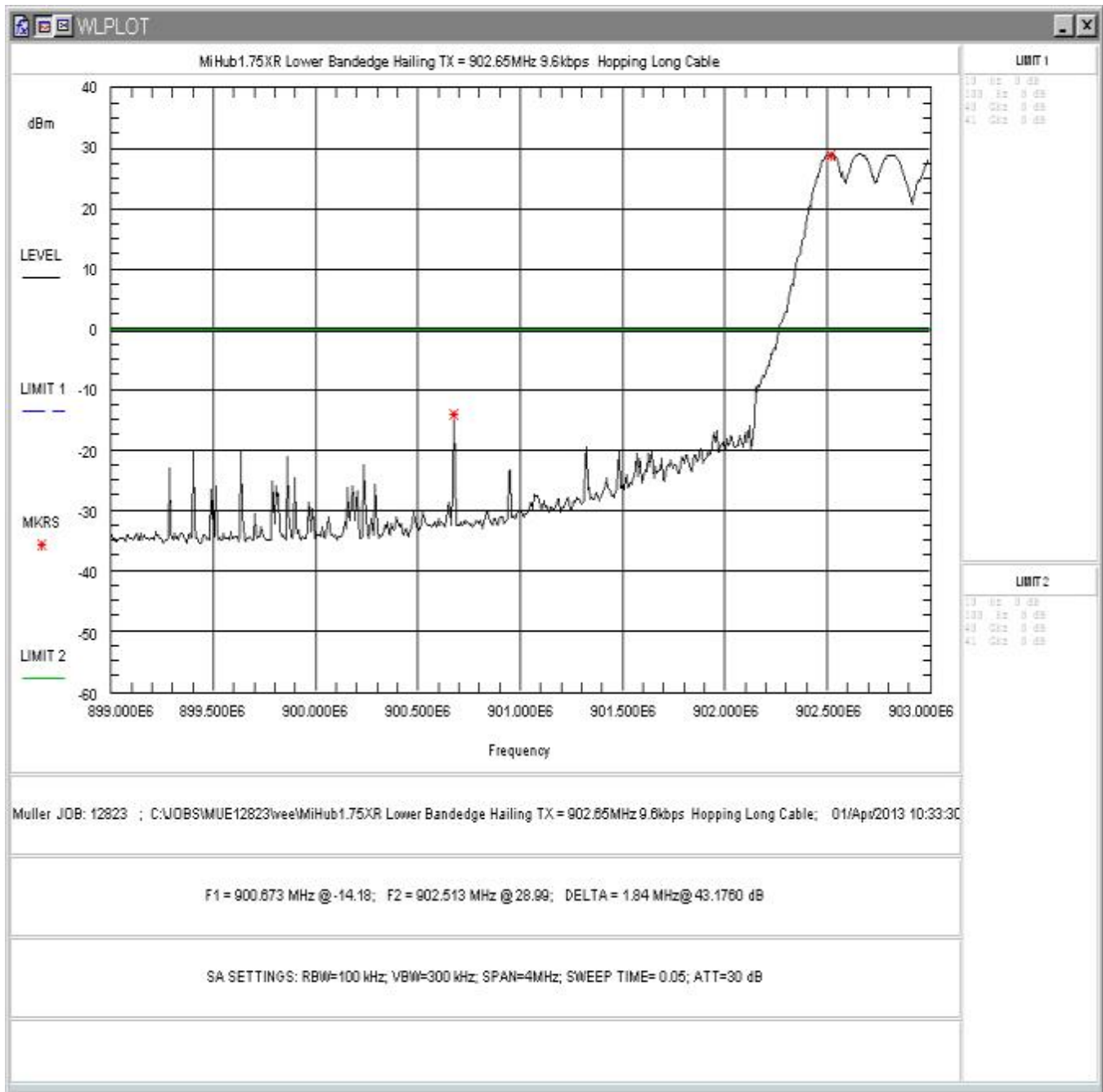


Figure 34: Lower Band-edge, Hailing, Long Cable, 9.6kbps, Hopping

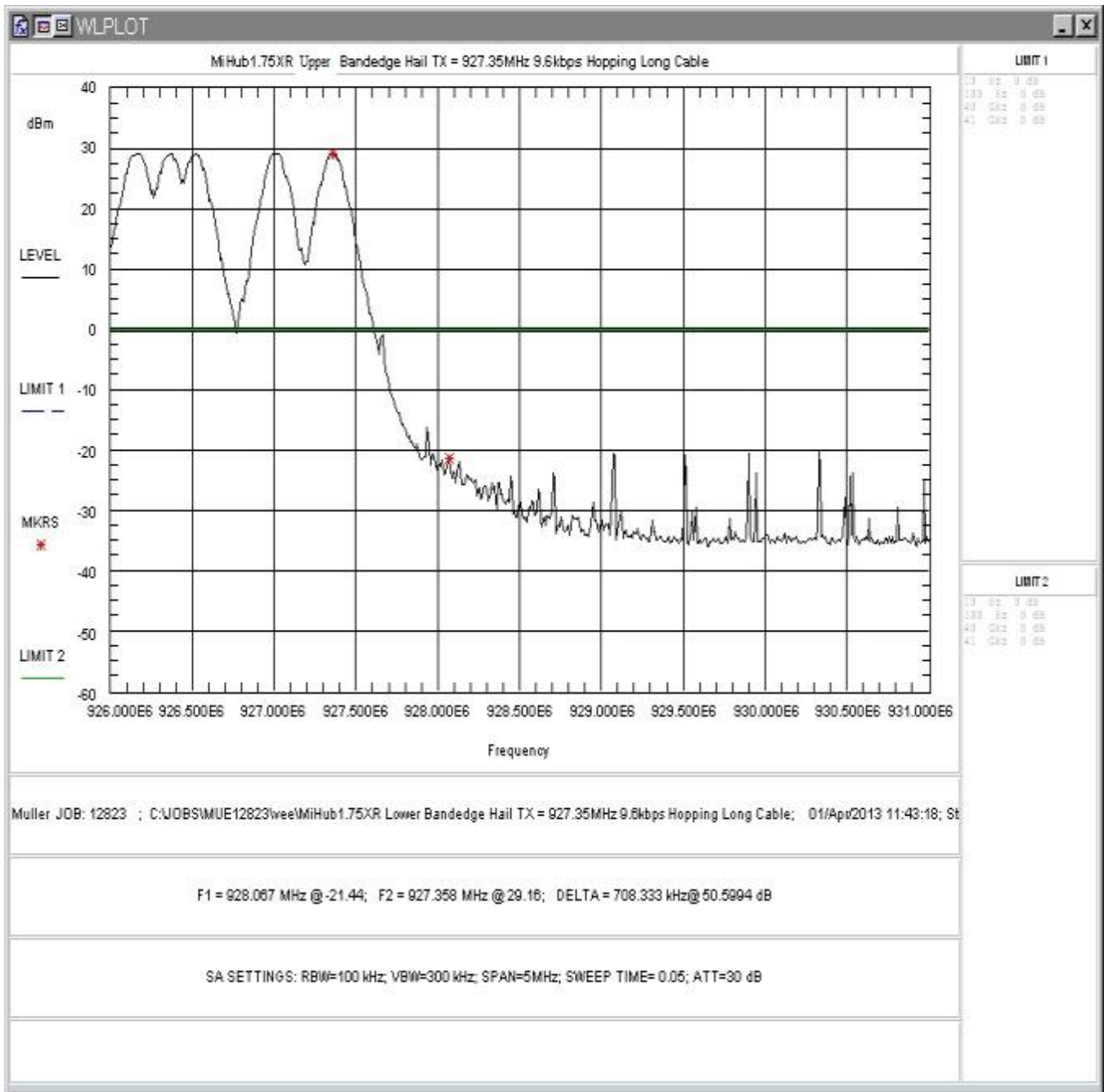


Figure 35: Upper Band-edge, Hailing, Long Cable, 9.6kbps, Hopping

5.5.1.2 Hailing Mode- Short Cable

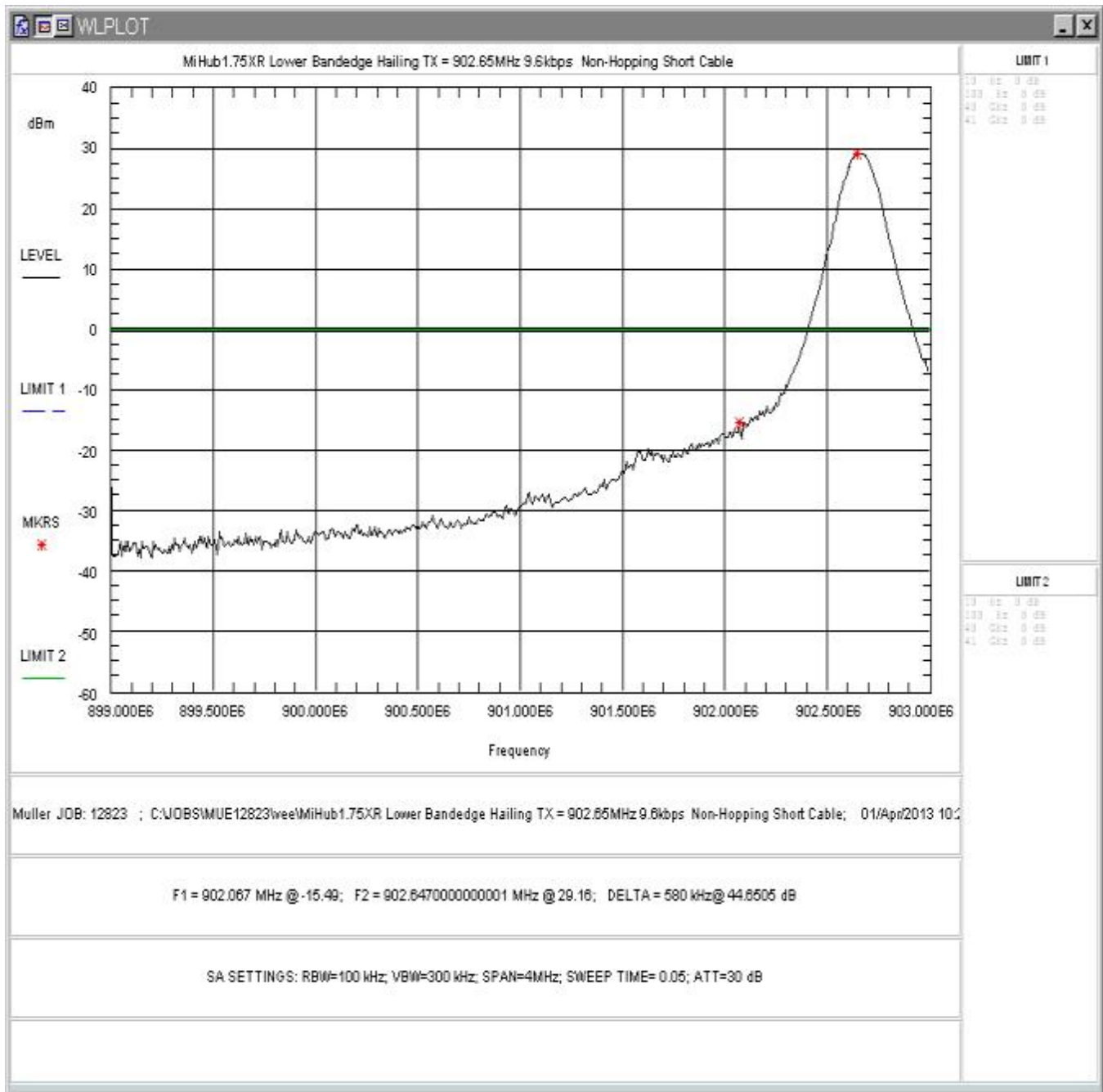


Figure 36: Lower Band-edge, Hailing, Short Cable, 9.6kbps, TX-902.65MHz

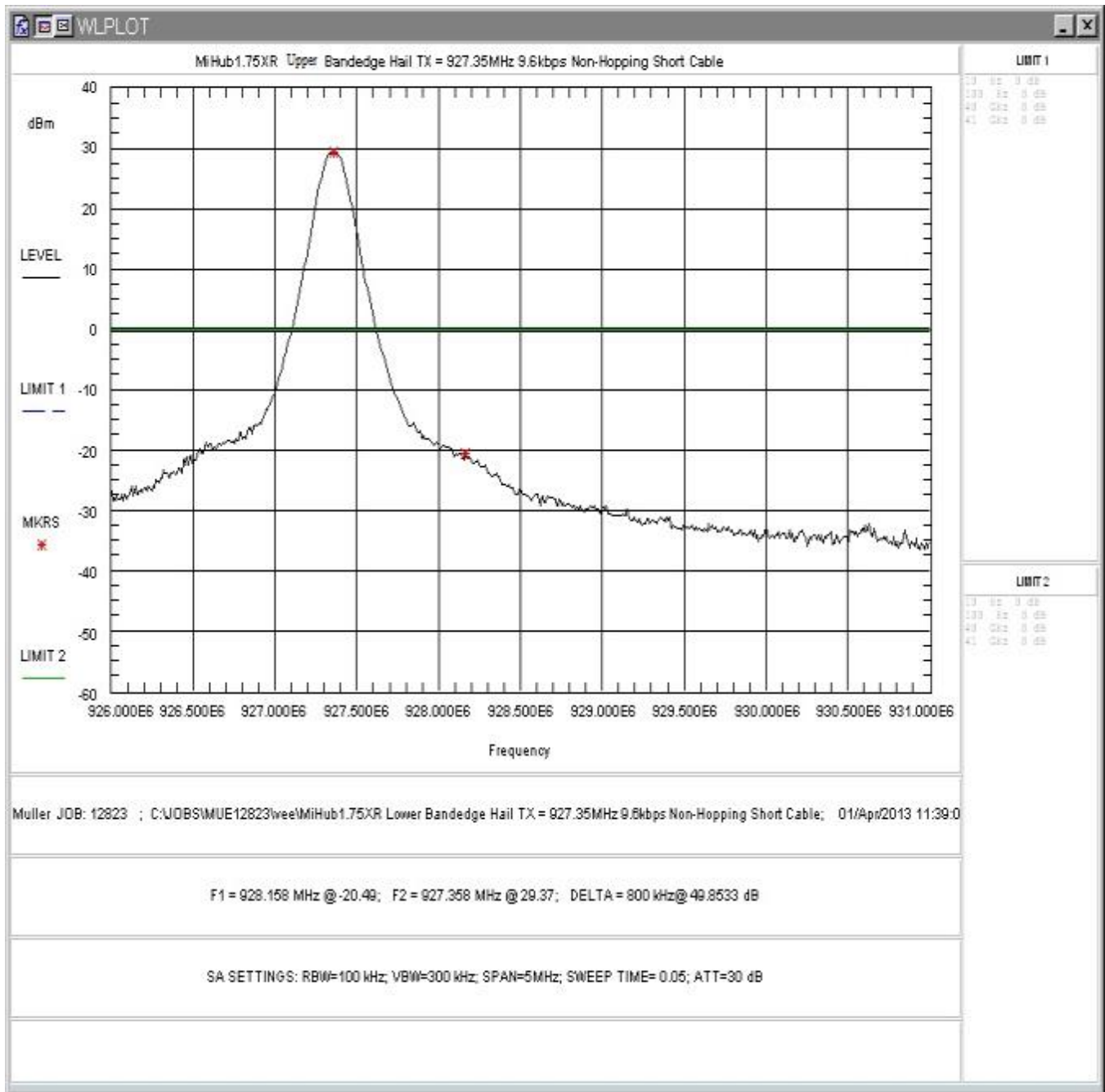


Figure 37: Upper Band-edge, Hailing, Short Cable, 9.6kbps, TX-927.35MHz

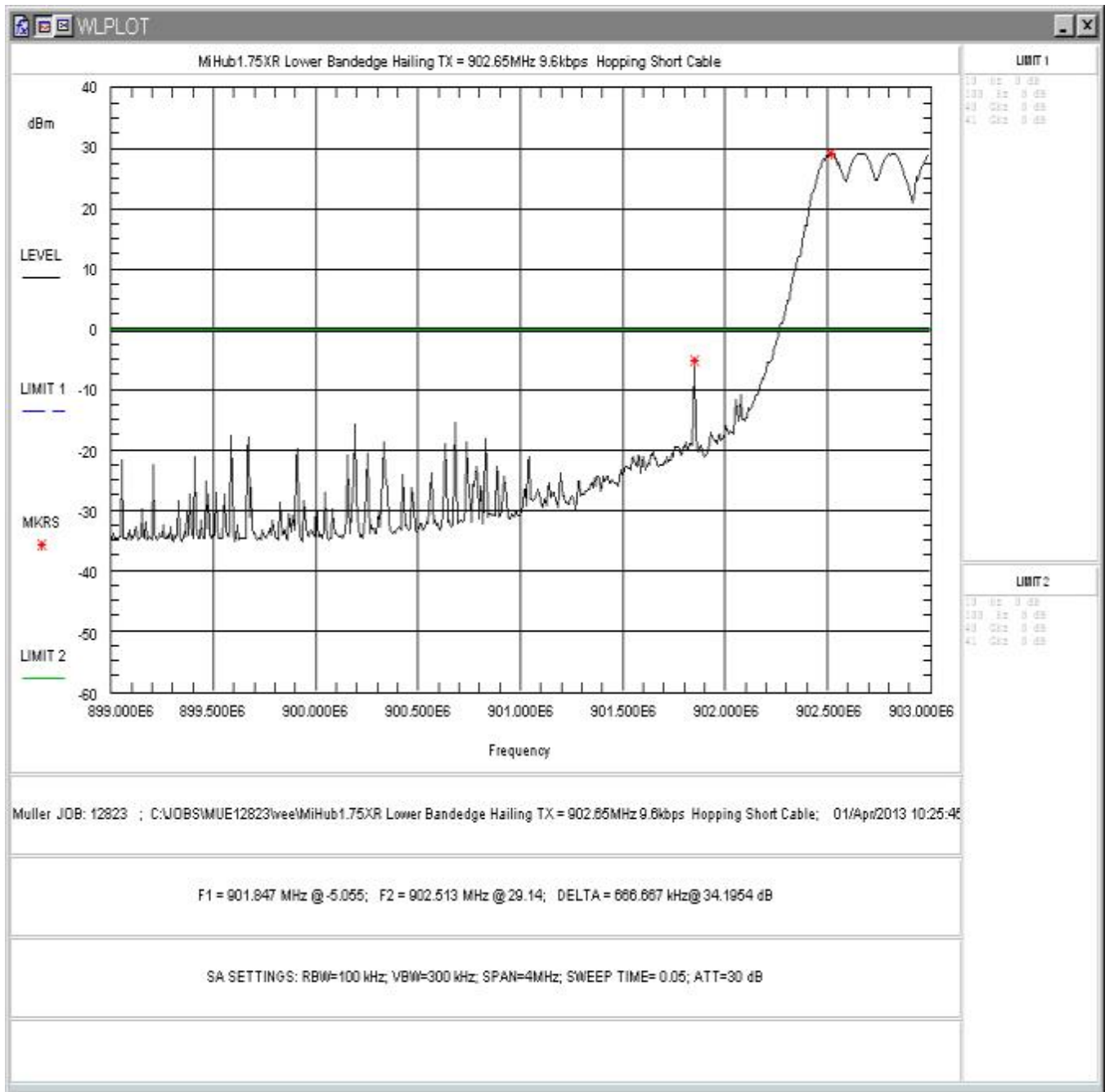


Figure 38: Lower Band-edge, Hailing, Short Cable, 9.6kbps, Hopping

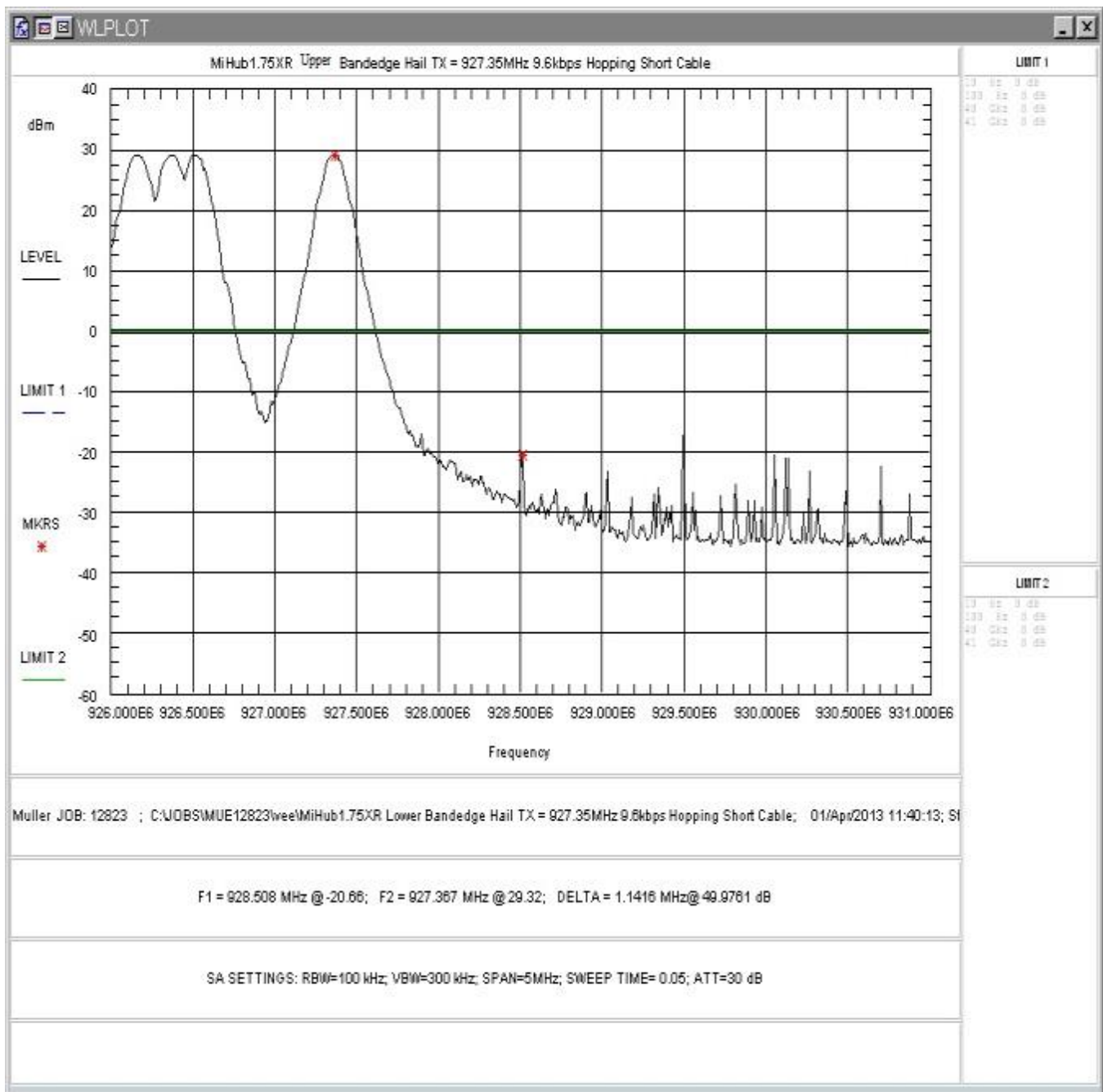


Figure 39: Upper Band-edge, Hailing, Short Cable, 9.6kbps, Hopping

5.5.1.3 Data Mode-9.6kbps-Long Cable

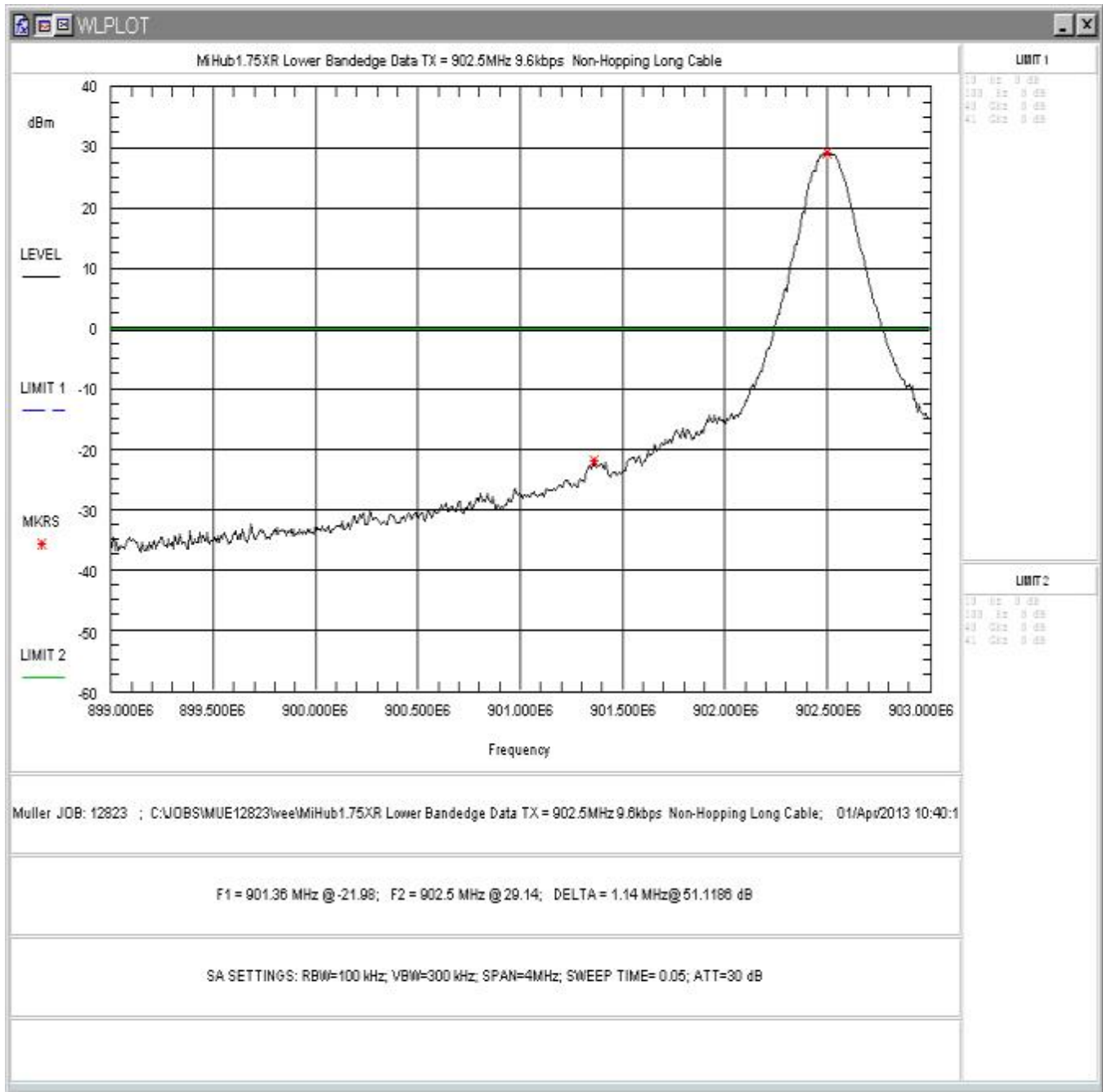


Figure 40: Lower Band-edge, Data, Long Cable, 9.6kbps, TX-902.5MHz

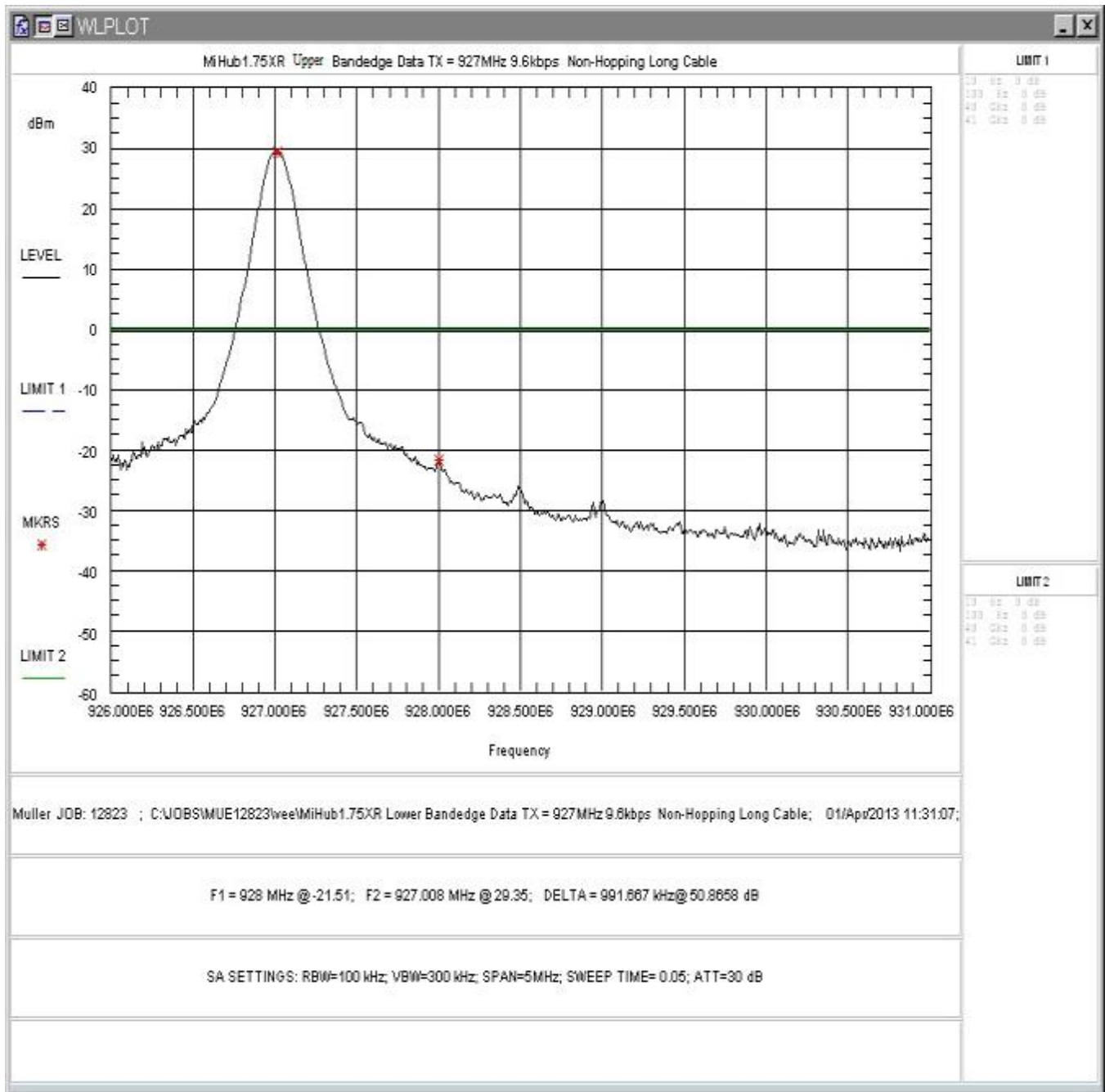


Figure 41: Upper Band-edge, Data, Long Cable, 9.6kbps, TX-927MHz

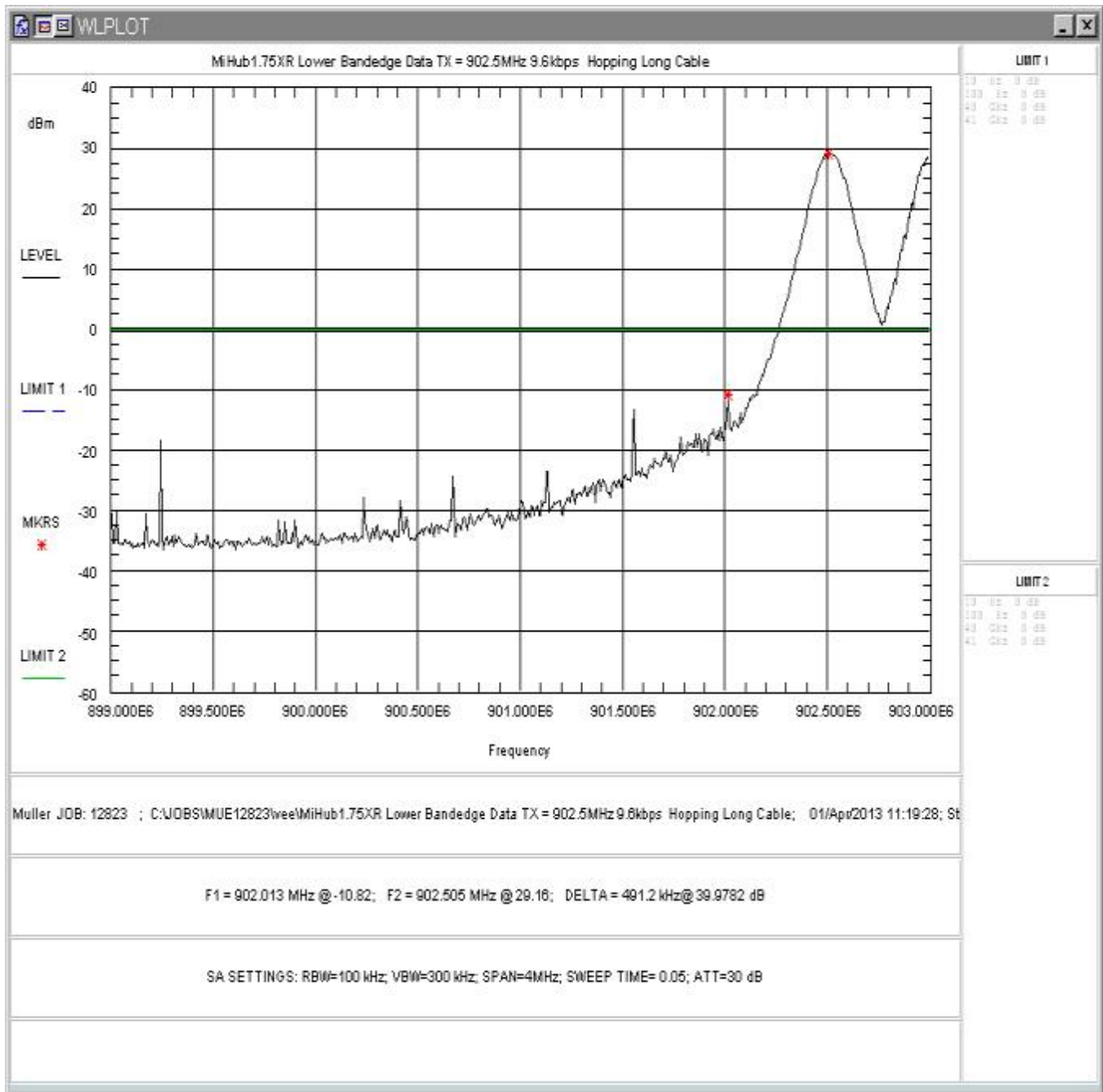


Figure 42: Lower Band-edge, Data, Long Cable, 9.6kbps, Hopping

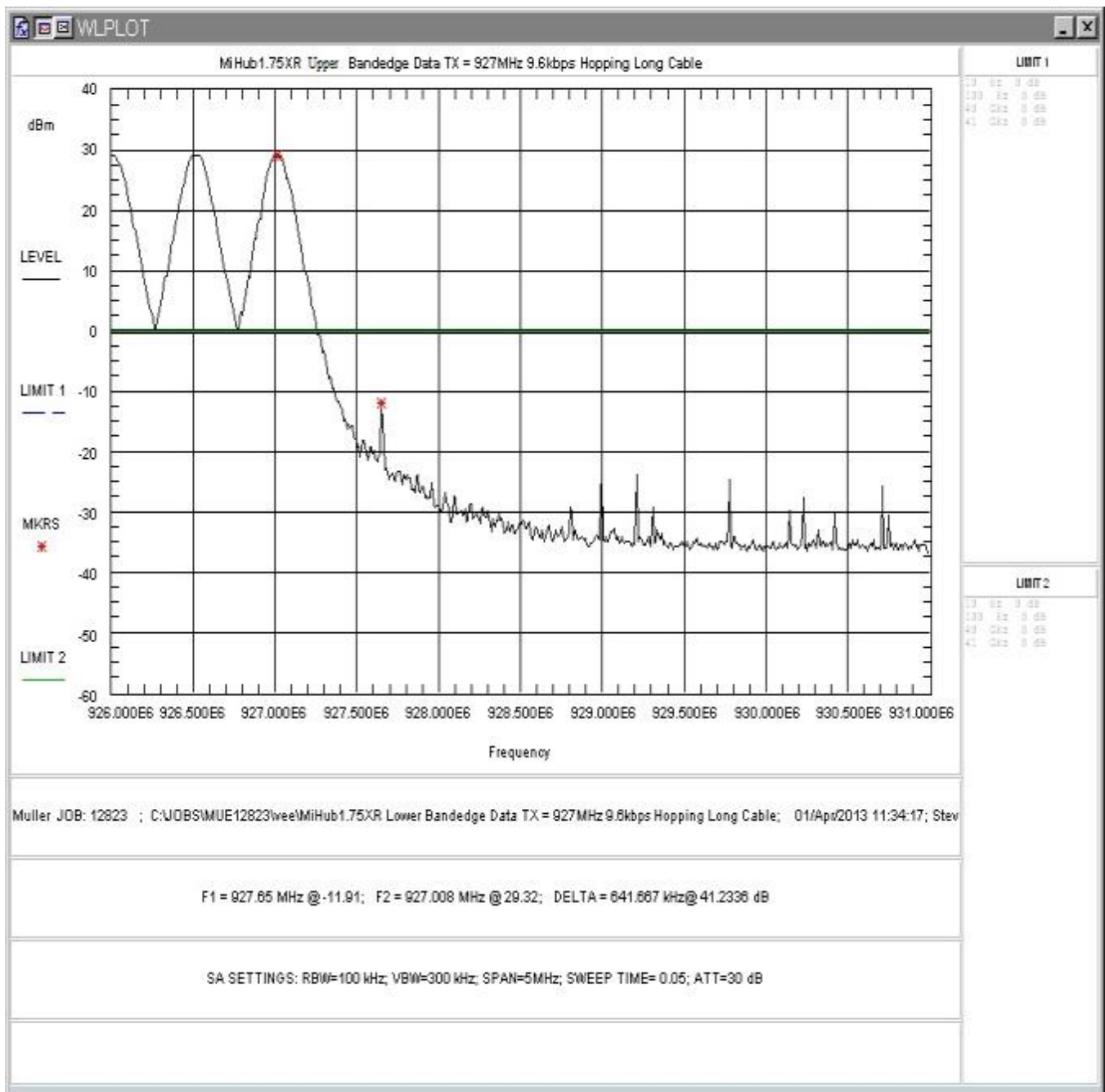


Figure 43: Upper Band-edge, Data, Long Cable, 9.6kbps, Hopping

Data Mode-9.6kbps-Short Cable

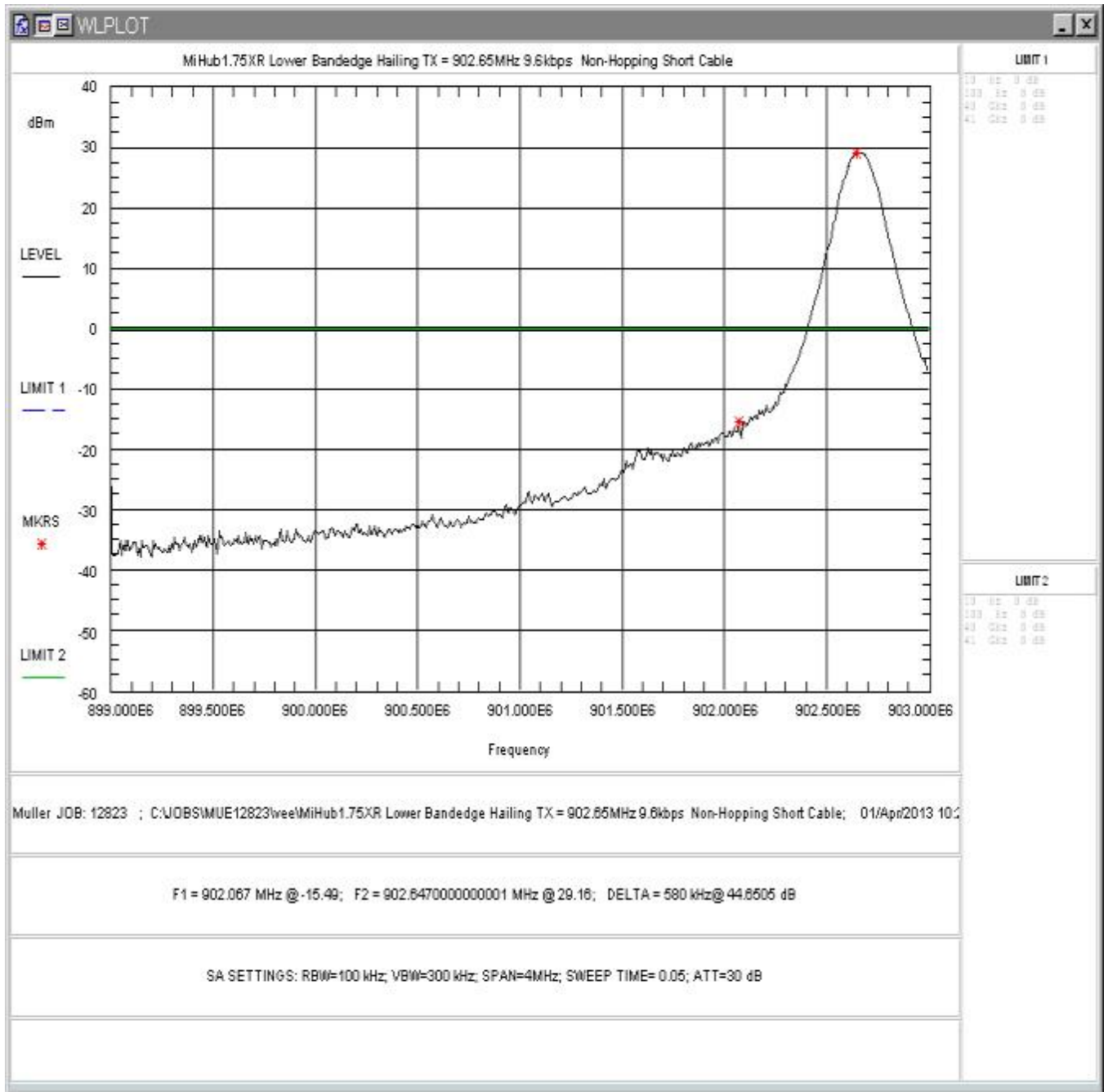


Figure 44: Lower Band-edge, Data, Short Cable, 9.6kbps, TX-902.5MHz

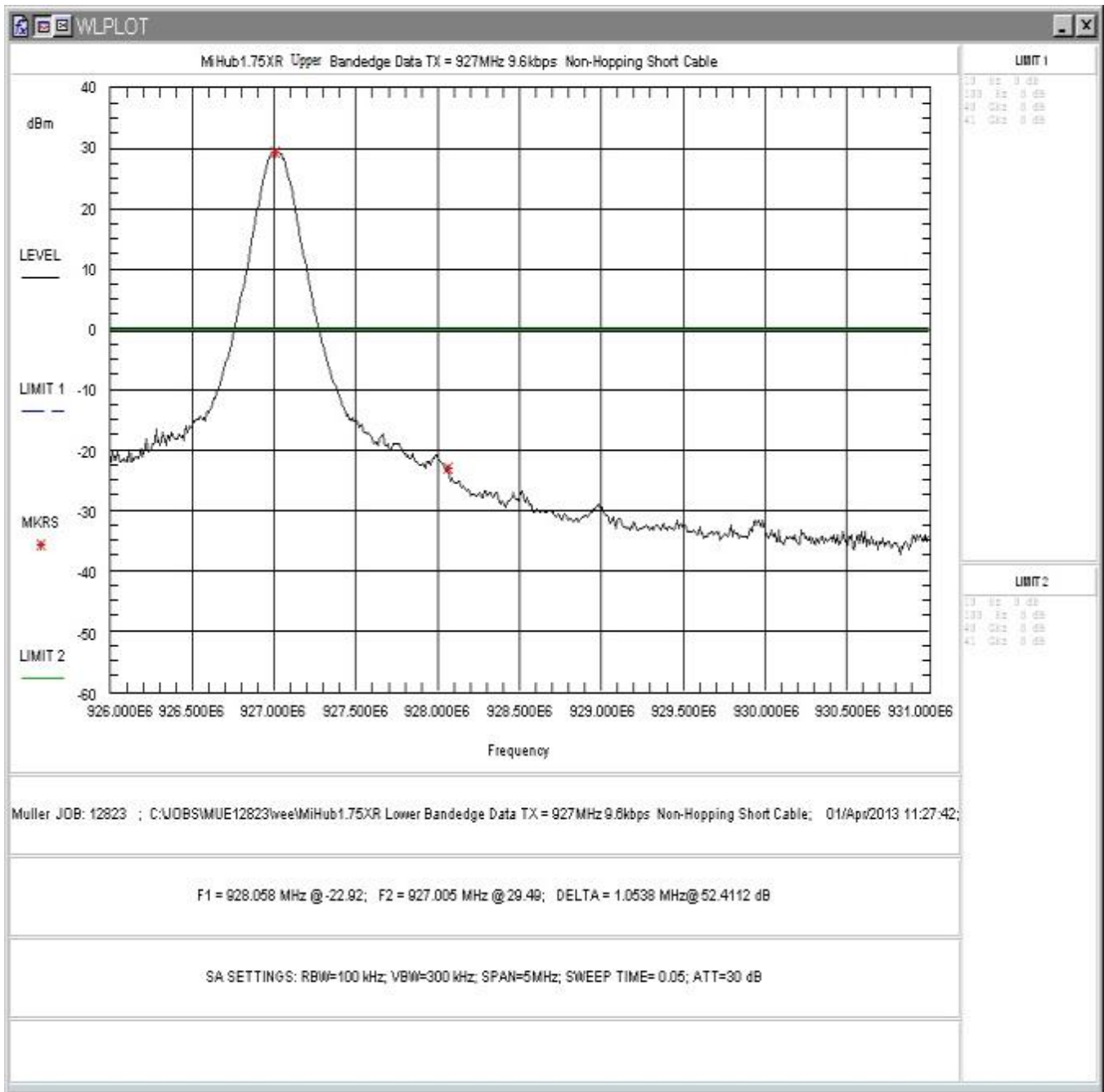


Figure 45: Upper Band-edge, Data, Short Cable, 9.6kbps, TX-927MHz

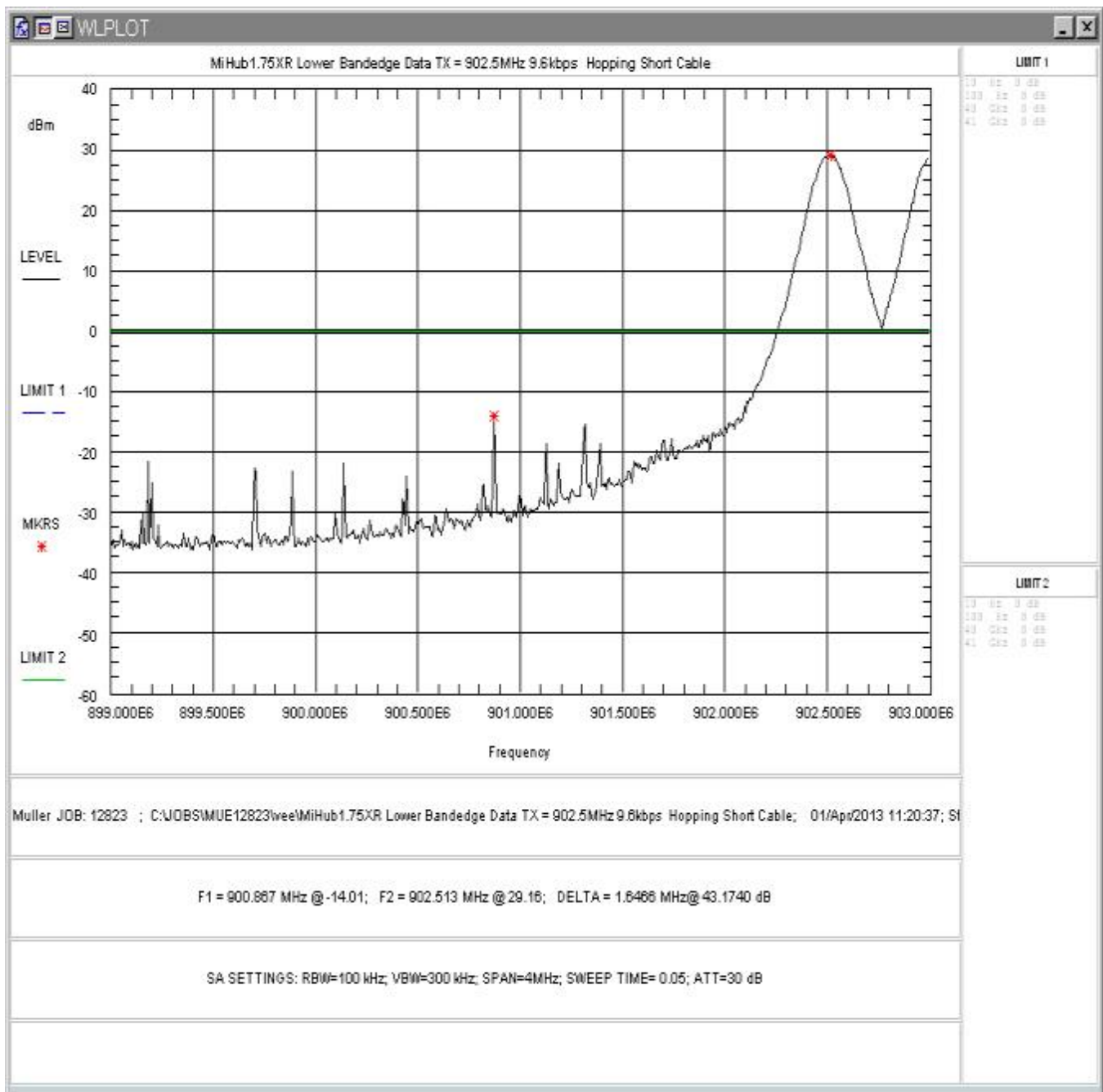


Figure 46: Lower Band-edge, Data, Short Cable, 9.6kbps, Hopping

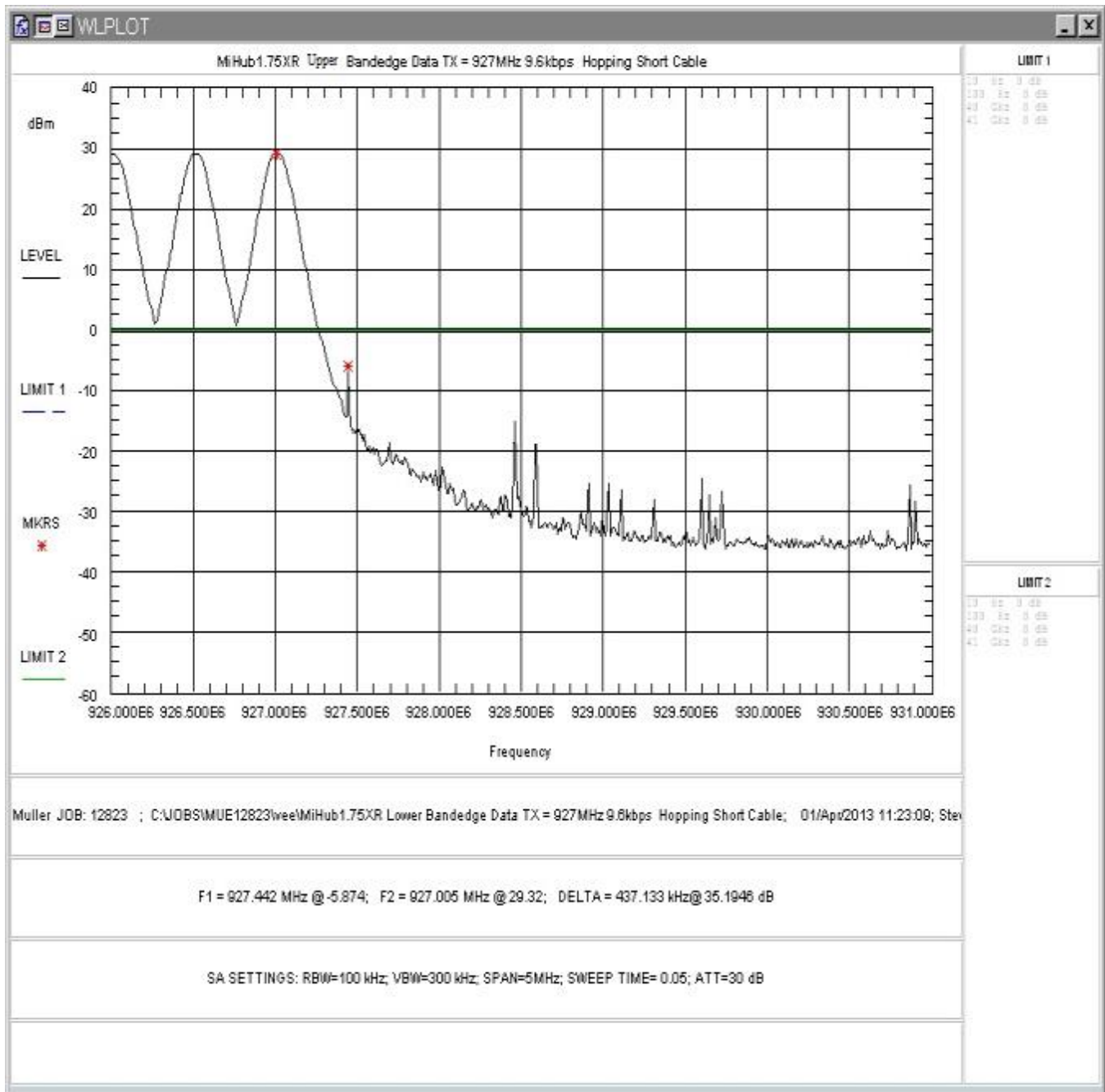


Figure 47: Upper Band-edge, Data, Short Cable, 9.6kbps, Hopping

Data Mode-28.8kbps-Long Cable

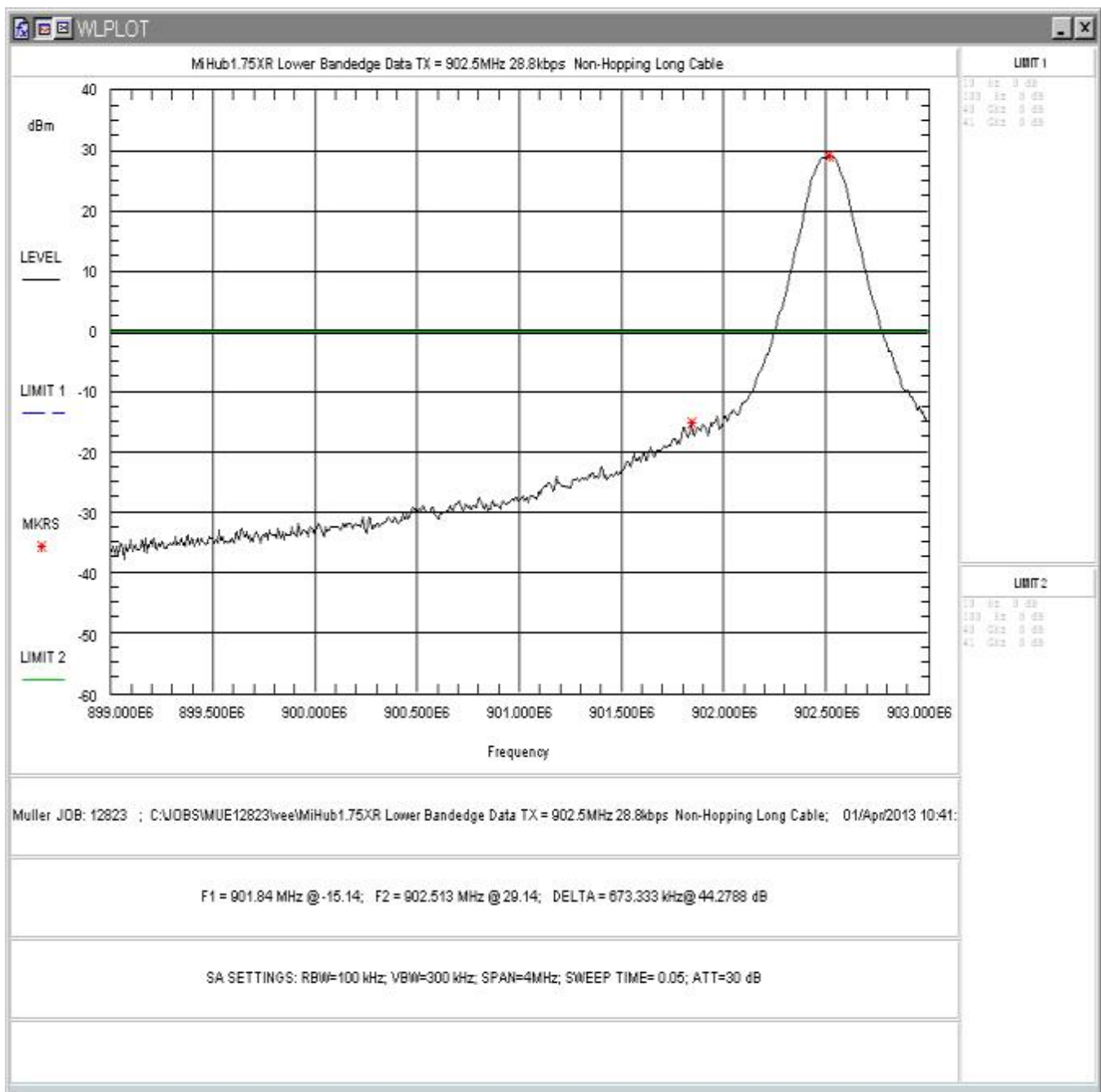


Figure 48: Lower Band-edge, Data, Long Cable, 28.8kbps, TX-902.5MHz

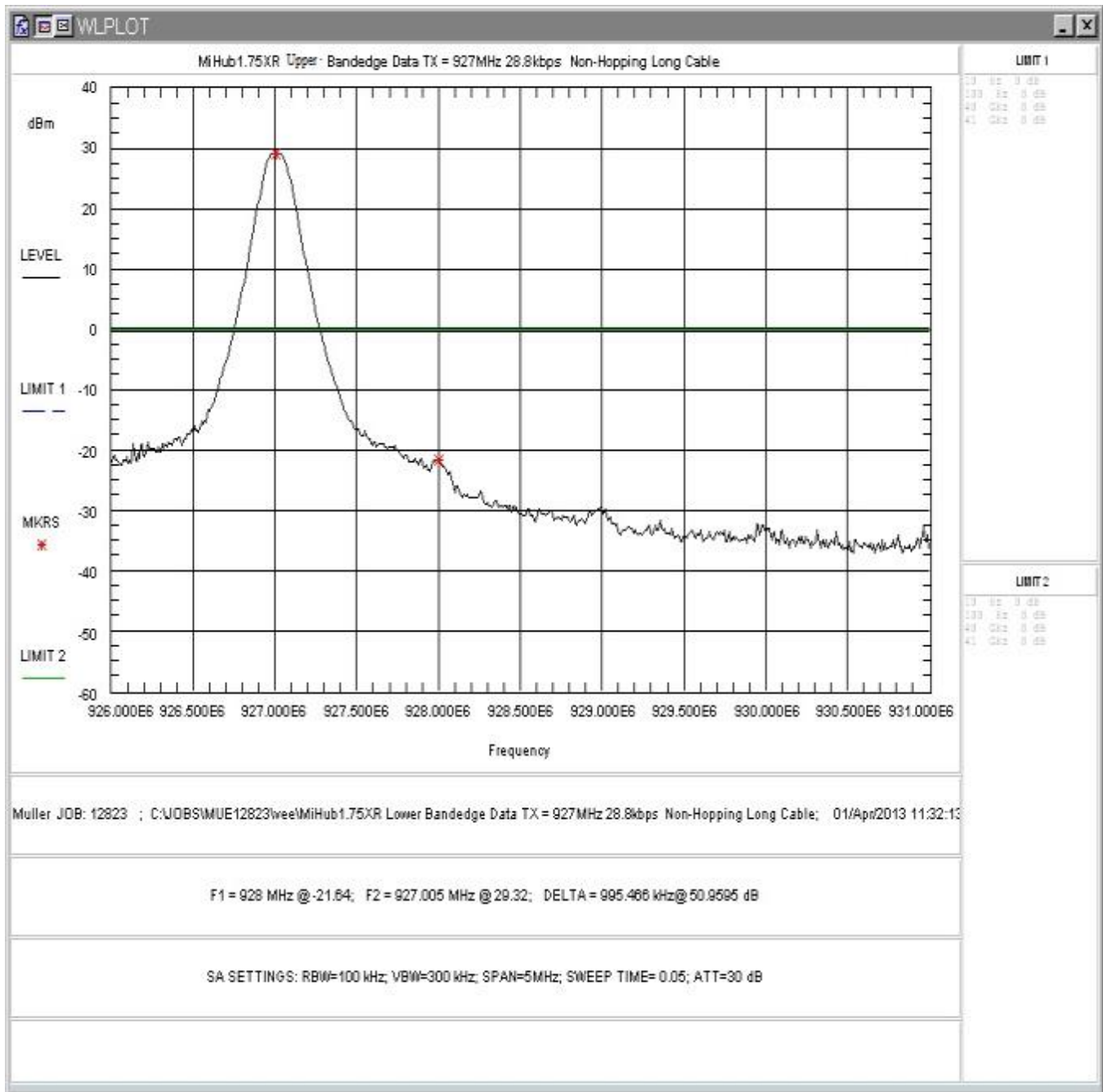


Figure 49: Upper Band-edge, Data, Long Cable, 28.8kbps, TX-927MHz

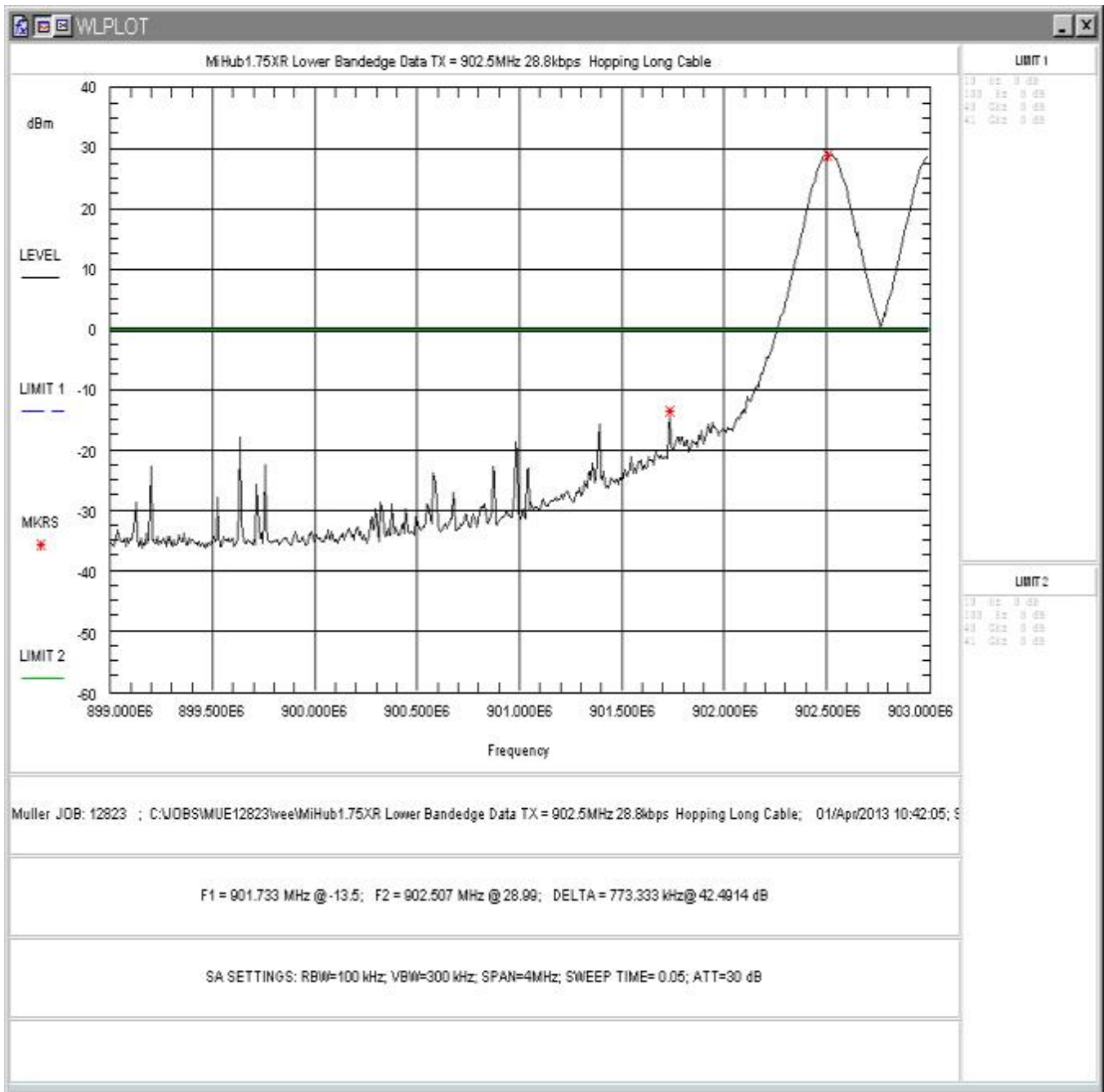


Figure 50: Lower Band-edge, Data, Long Cable, 28.8kbps, Hopping

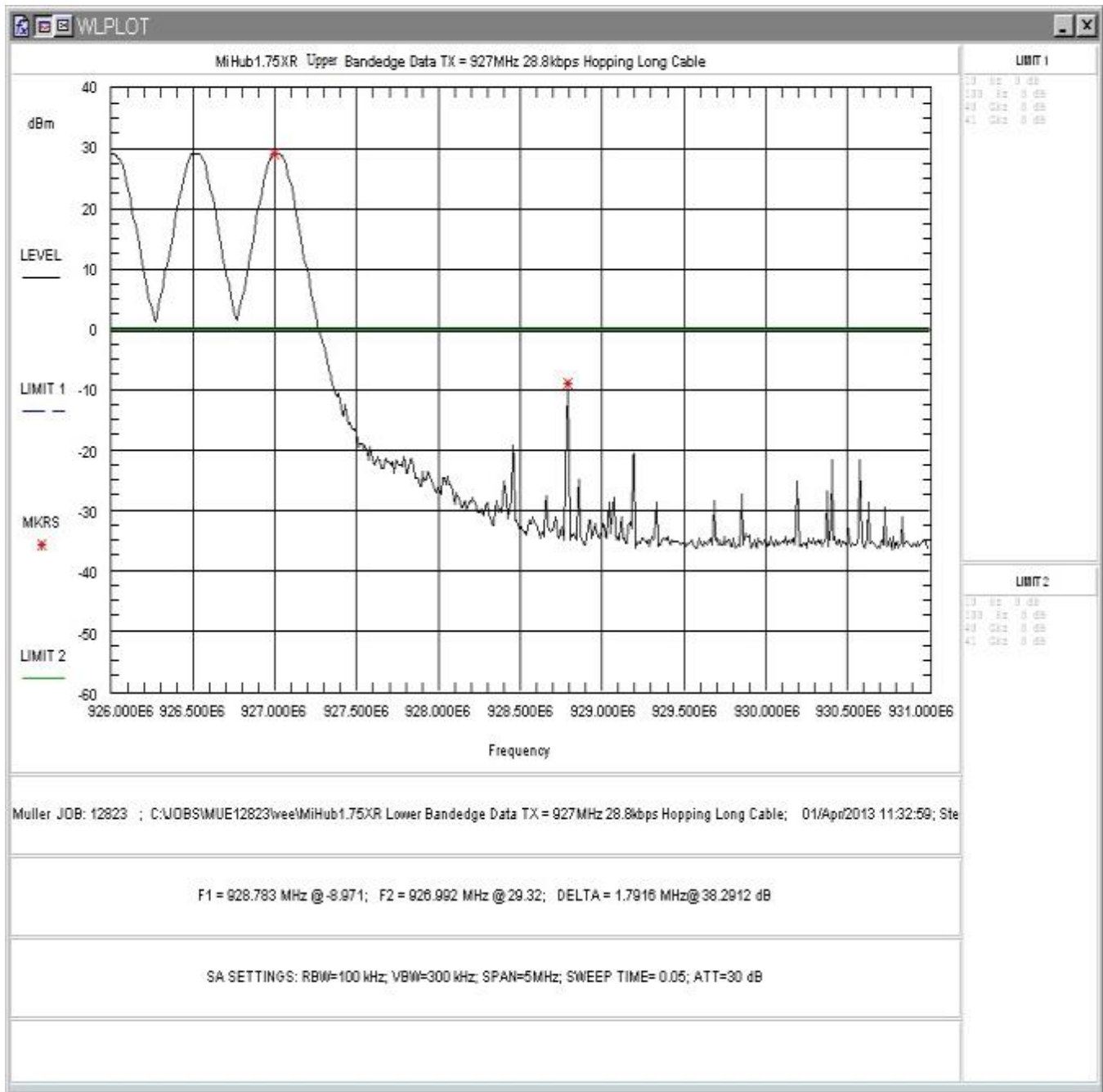


Figure 51: Upper Band-edge, Data, Long Cable, 28.8kbps, Hopping

Data Mode-28.8kbps-Short Cable

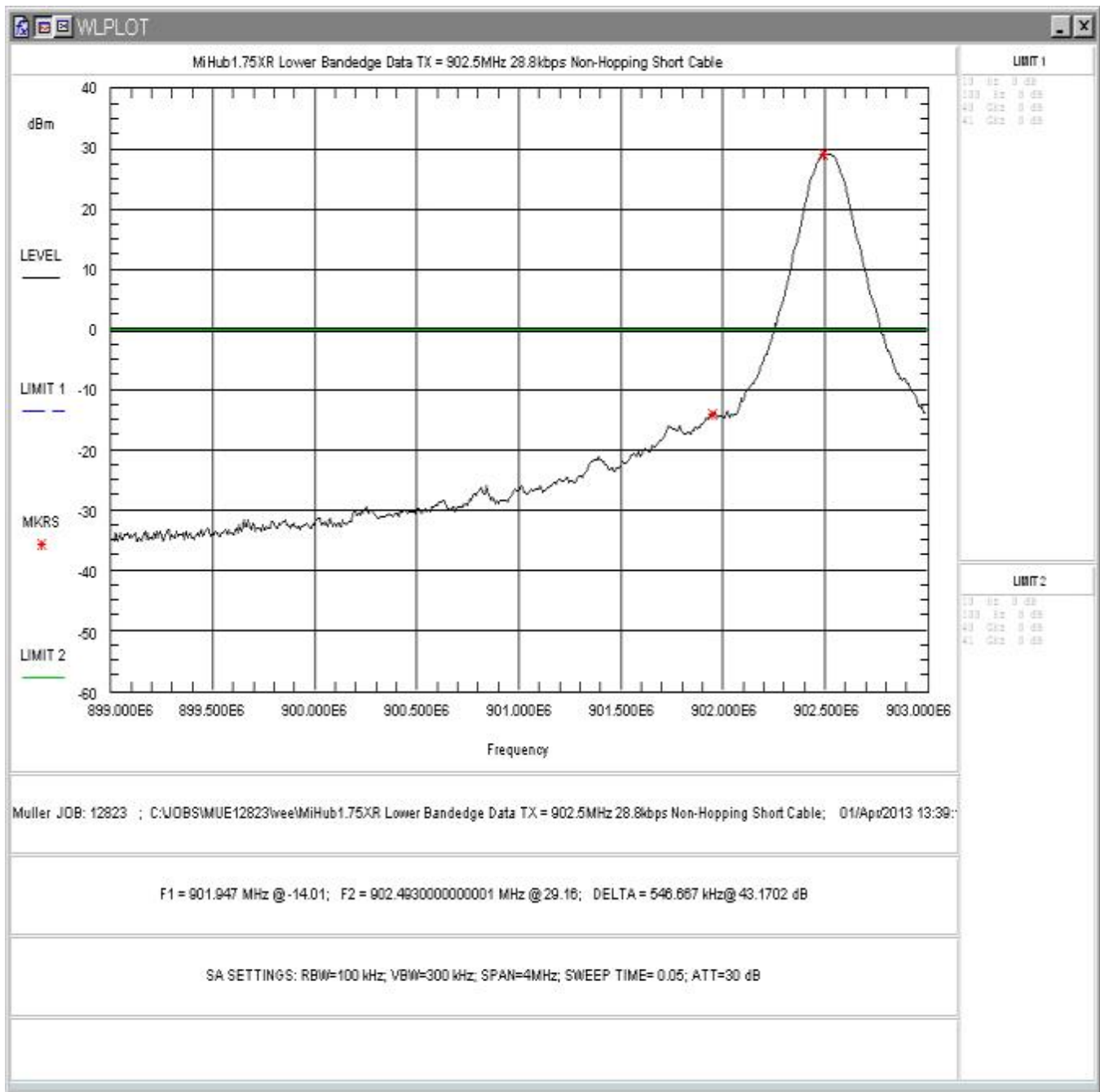


Figure 52: Lower Band-edge, Data, Short Cable, 28.8kbps, TX-902.5MHz

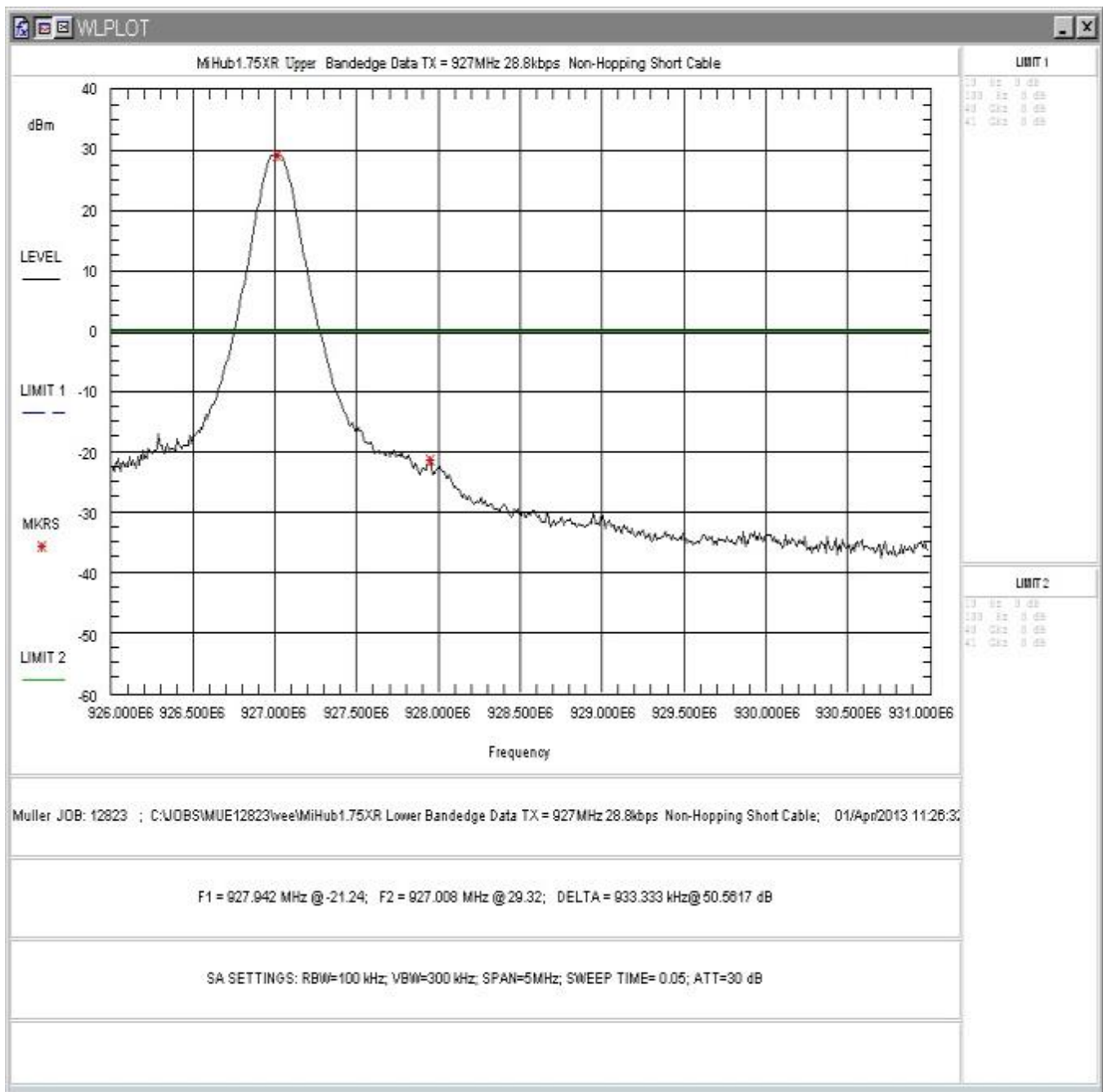


Figure 53: Upper Band-edge, Data, Short Cable, 28.8kbps, TX-927MHz

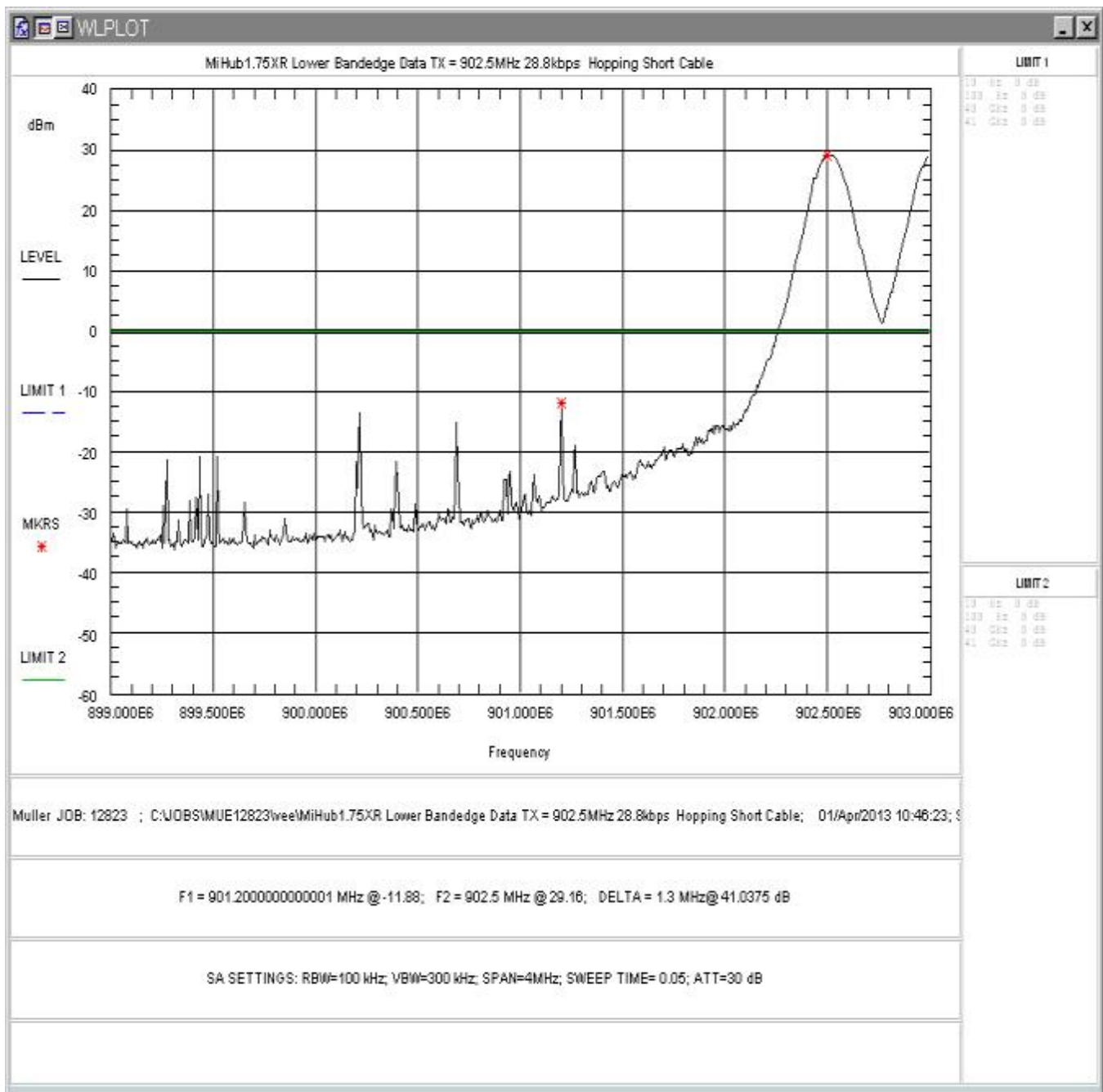


Figure 54: Lower Band-edge, Data, Short Cable, 28.8kbps, Hopping

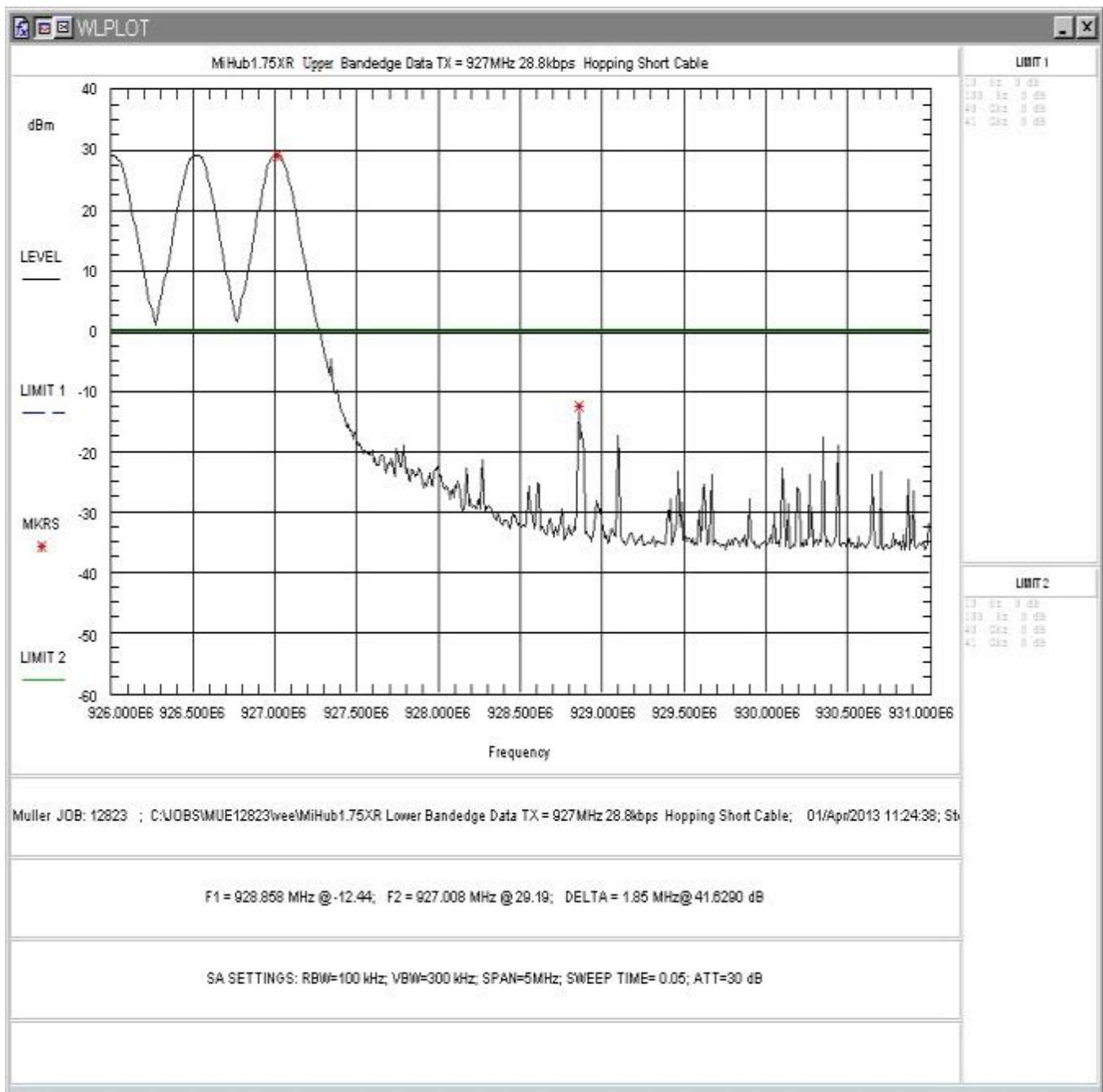


Figure 55: Upper Band-edge, Data, Short Cable, 28.8kbps, Hopping

5.5.2 Full-Band Conducted Spurious Emissions

5.5.2.1 Low Channel 902.5MHz- Long Cable

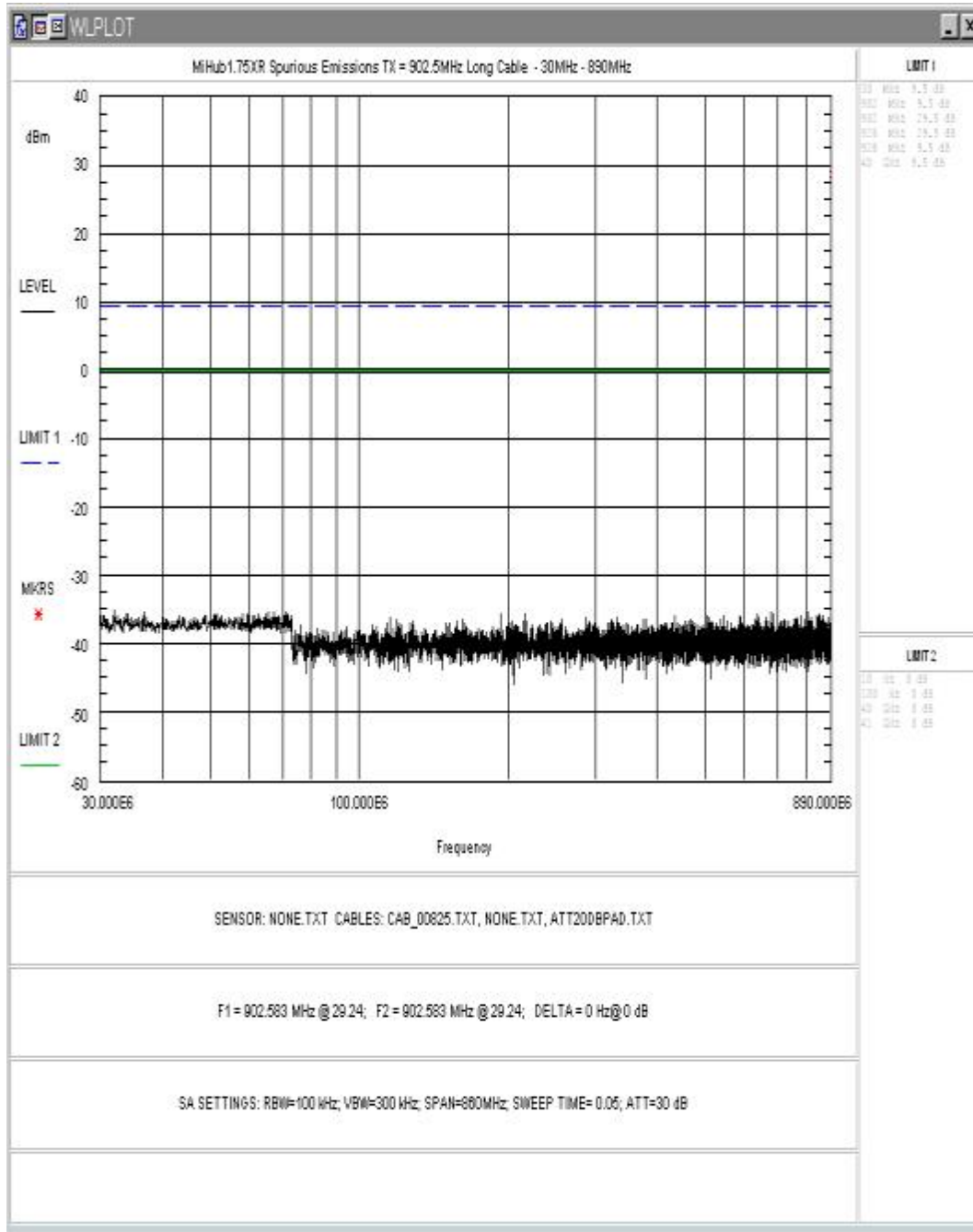


Figure 56. MIHUBXR-R Spurious Emissions TX = 902.5MHz Long Cable - 30MHz - 890MHz

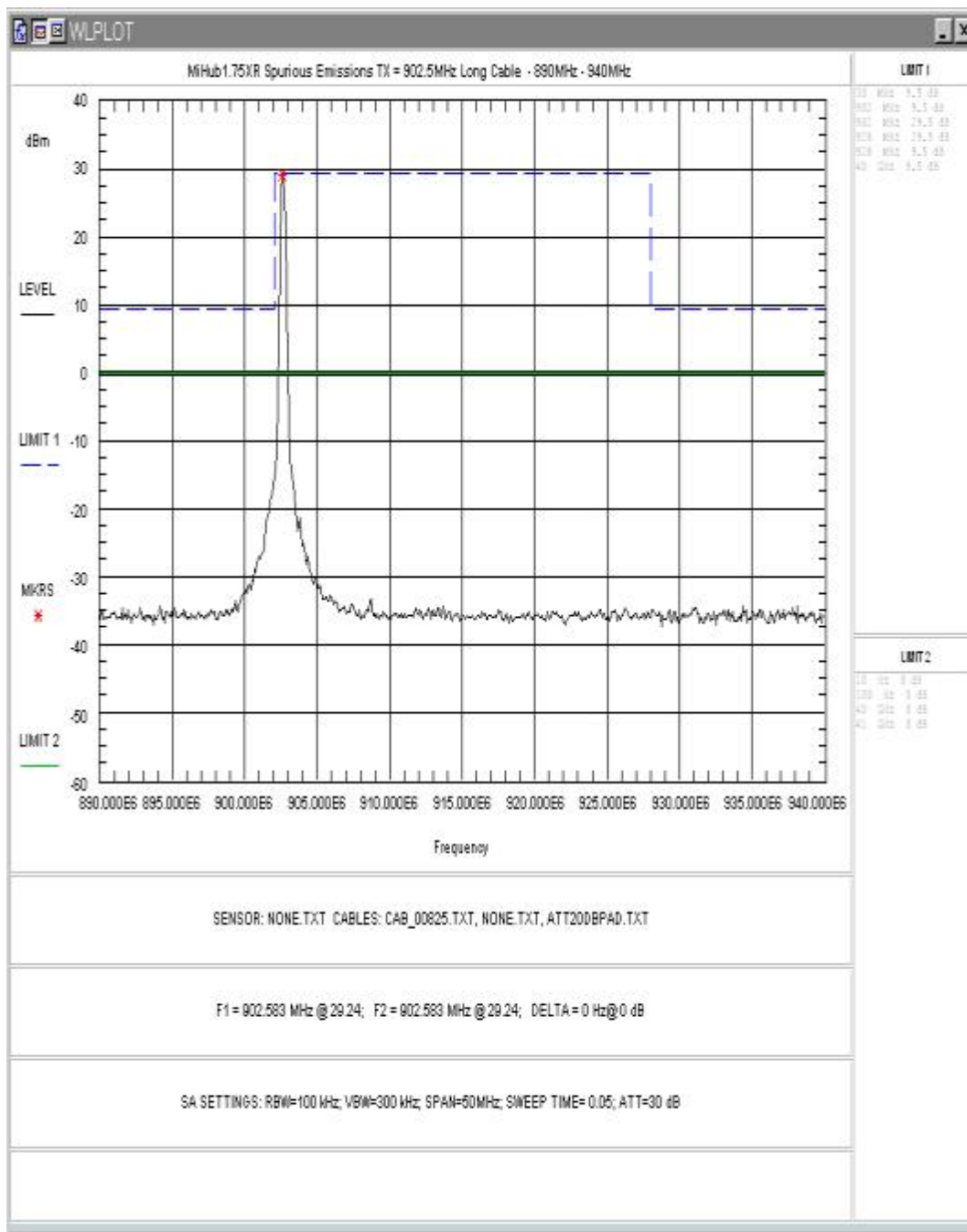


Figure 57. MIHUBXR-R Spurious Emissions TX = 902.5MHz Long Cable - 890MHz - 940MHz

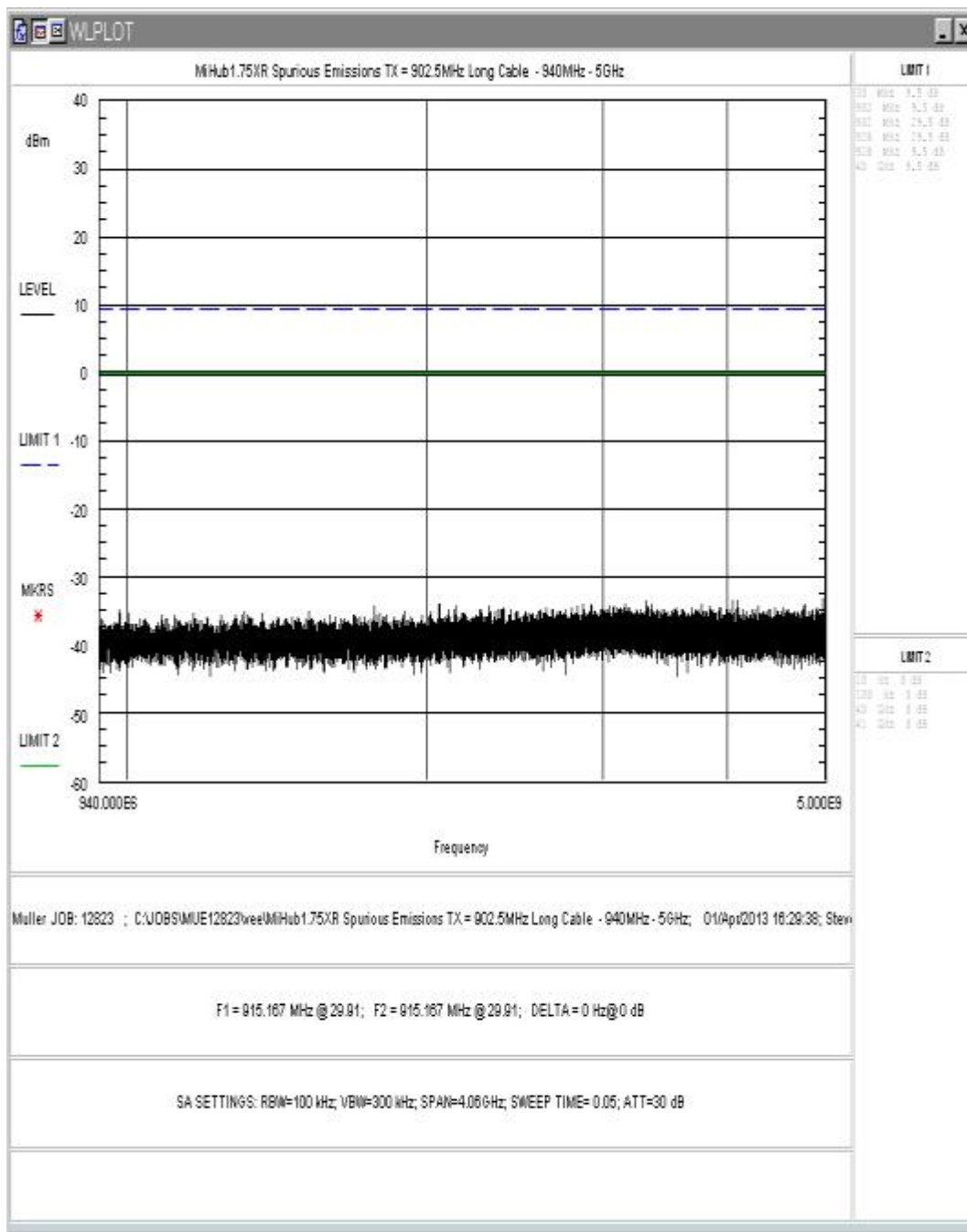


Figure 58. MIHUBXR-R Spurious Emissions TX = 902.5MHz Long Cable - 940MHz - 5GHz

5.5.2.2 Low Channel 902.5MHz- Short Cable

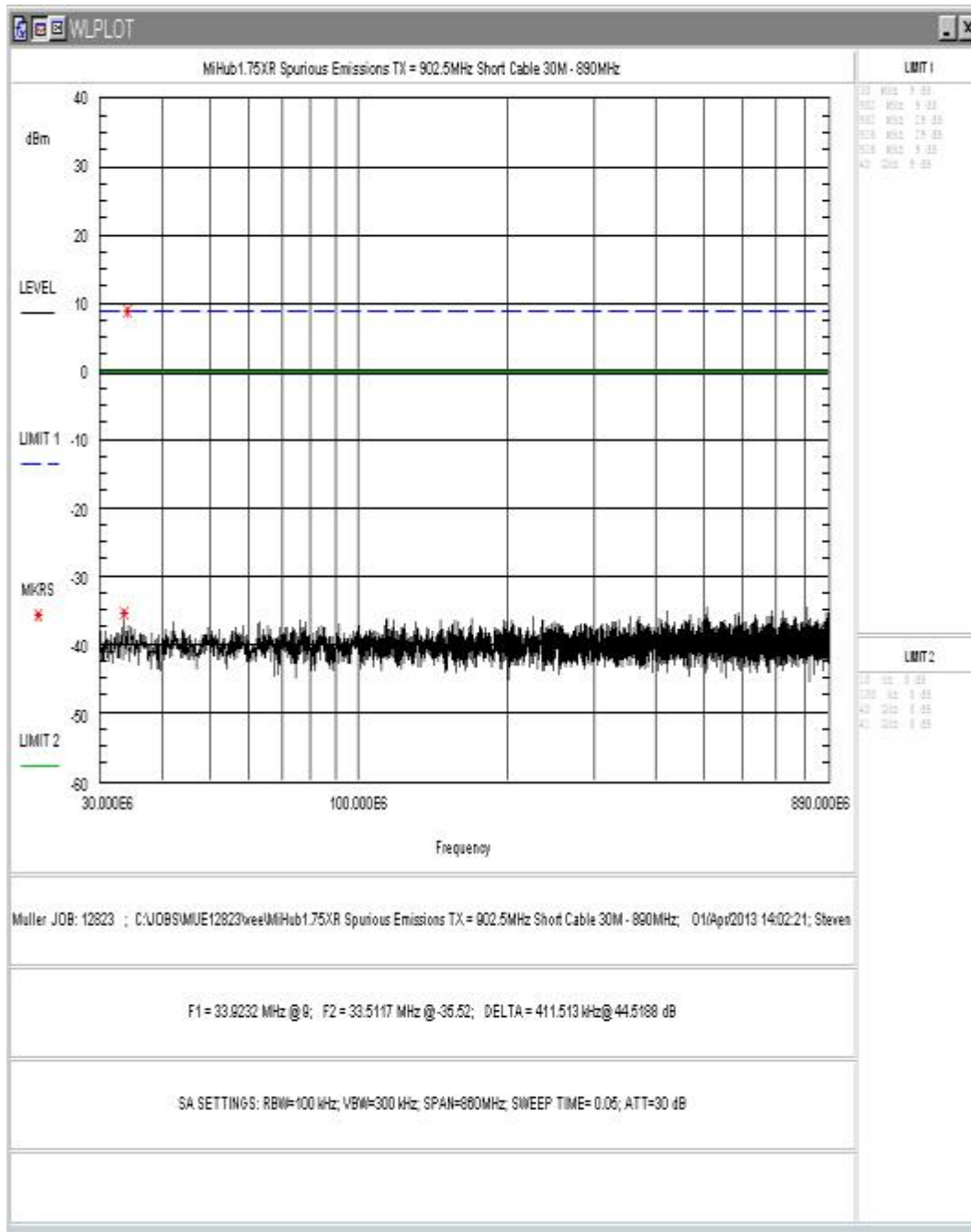


Figure 60. MIHUBXR-R Spurious Emissions TX = 902.5MHz Short Cable 30M - 890MHz

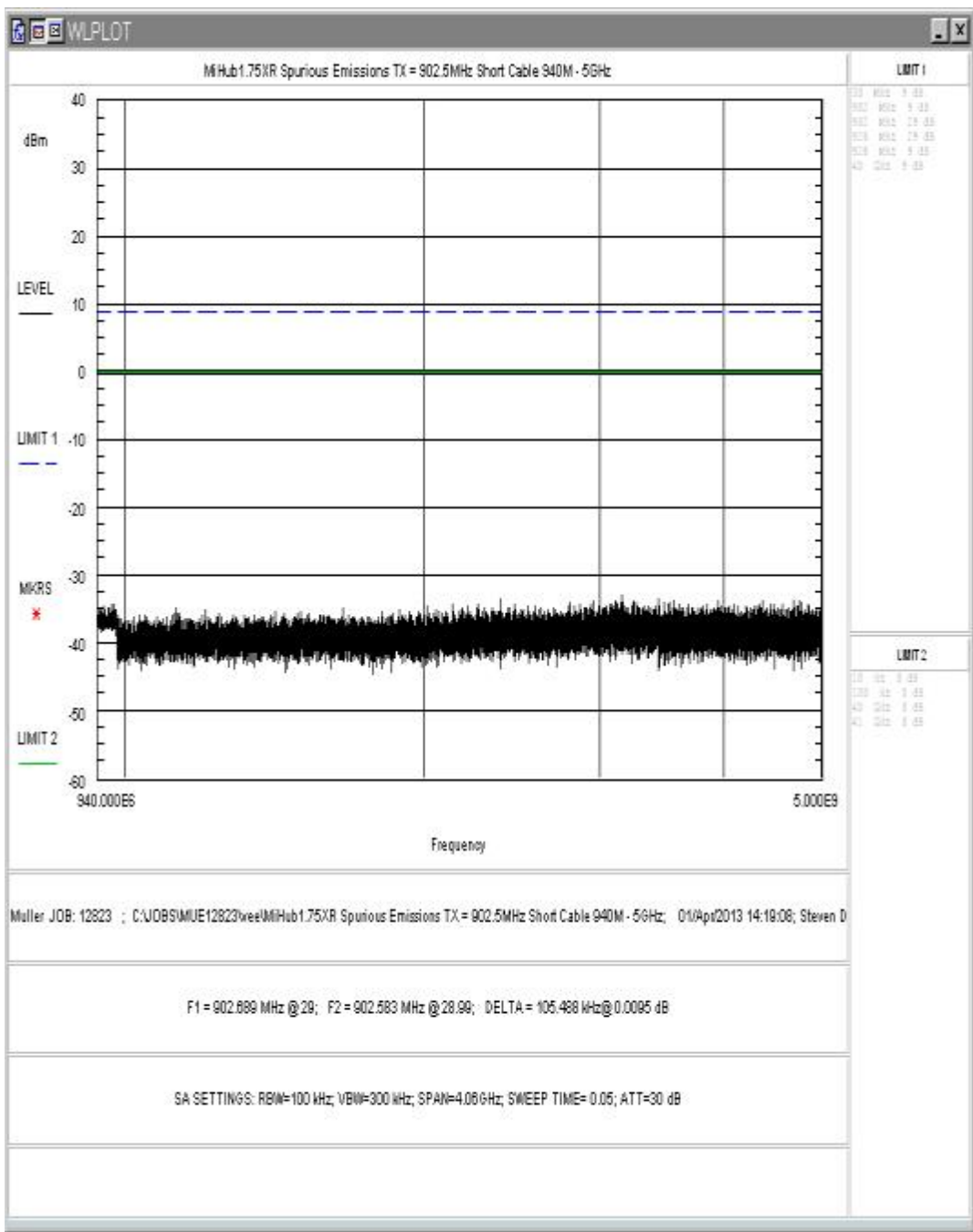


Figure 62. MIHUBXR-R Spurious Emissions TX = 902.5MHz Short Cable 940M - 5GHz

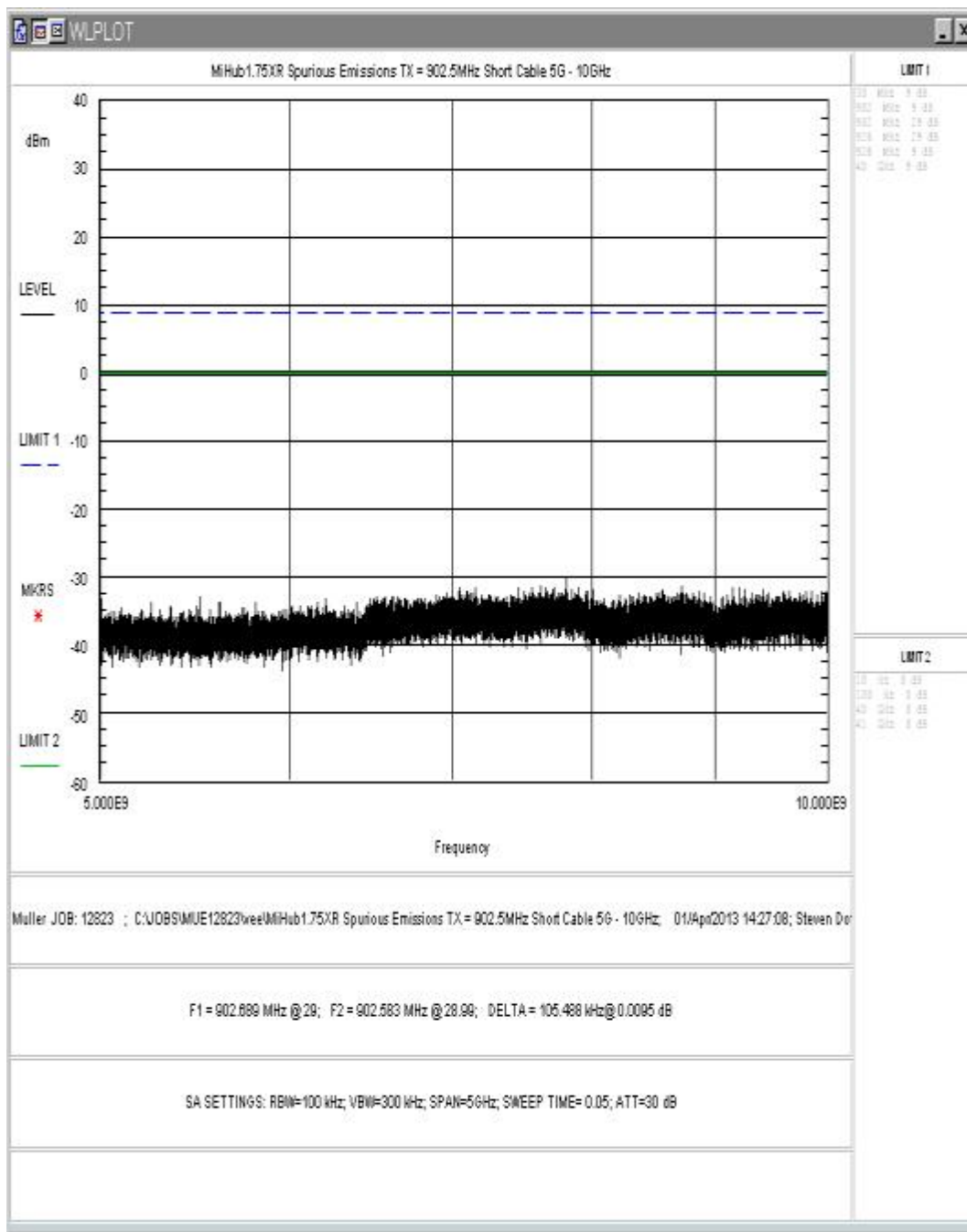


Figure 63. MIHUBXR-R Spurious Emissions TX = 902.5MHz Short Cable 5G - 10GHz

5.5.2.3 Center Channel 915MHz- Long Cable

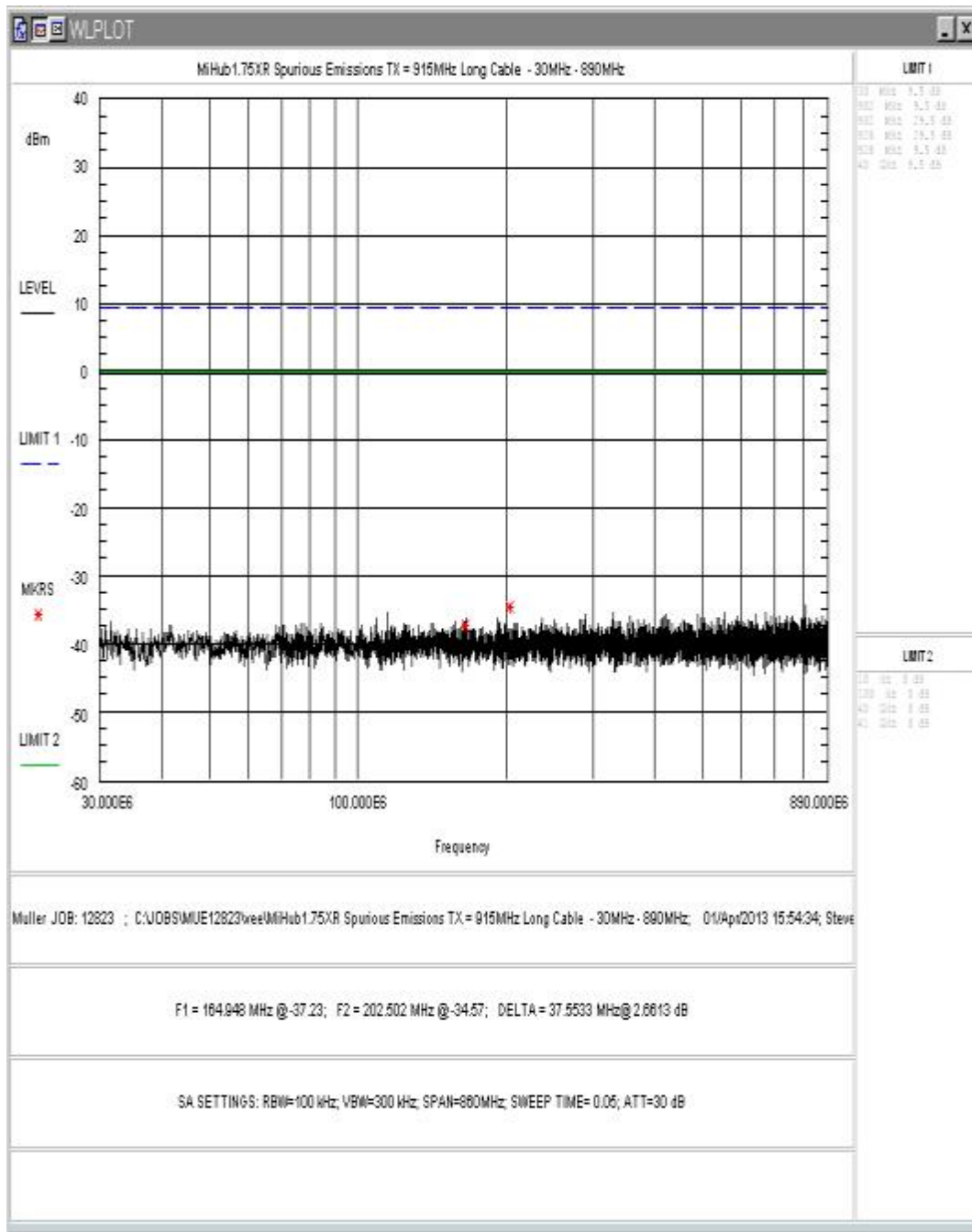


Figure 64. MIHUBXR-R Spurious Emissions TX = 915MHz Long Cable - 30MHz - 890MHz

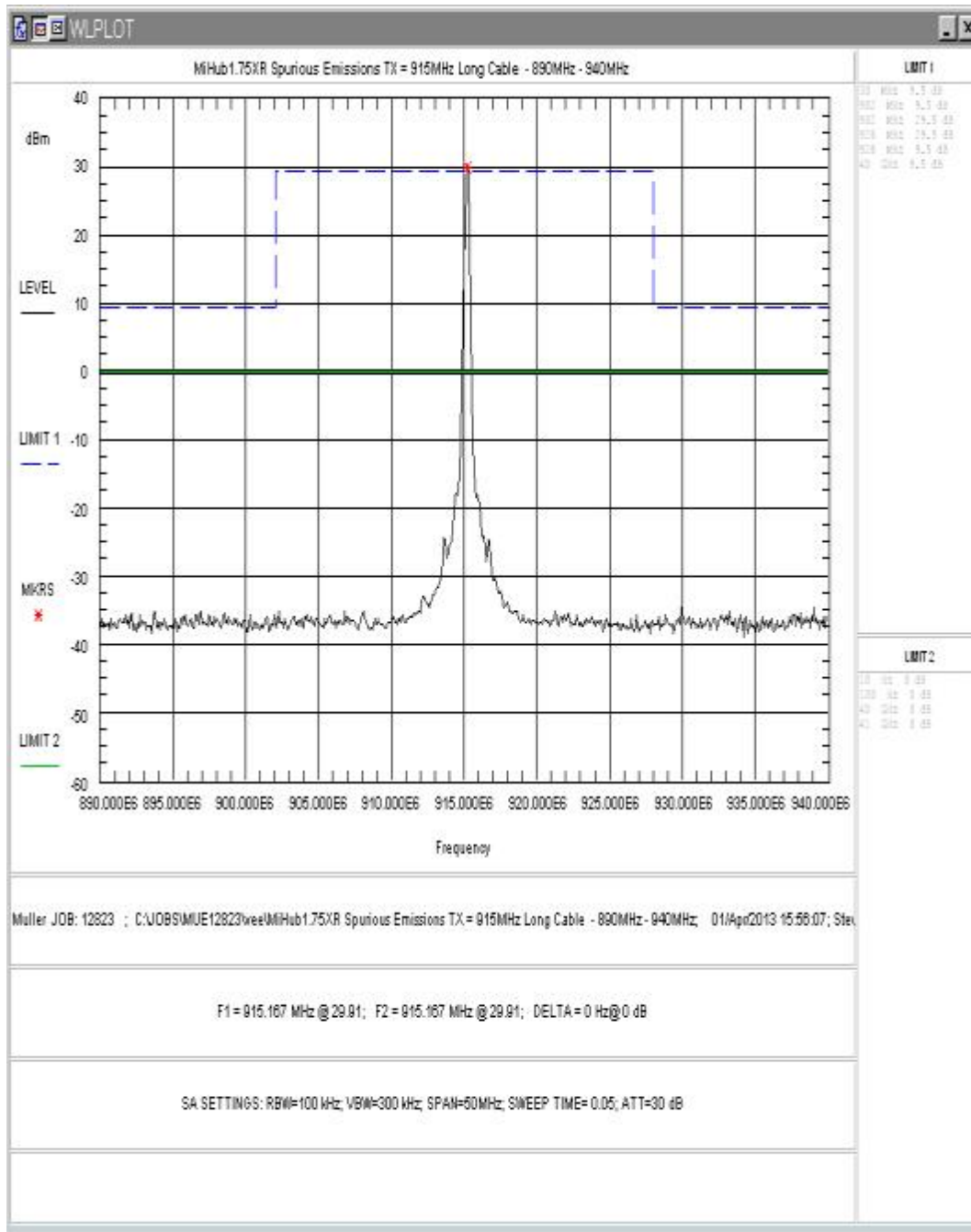


Figure 65. MIHUBXR-R Spurious Emissions TX = 915MHz Long Cable - 890MHz - 940MHz

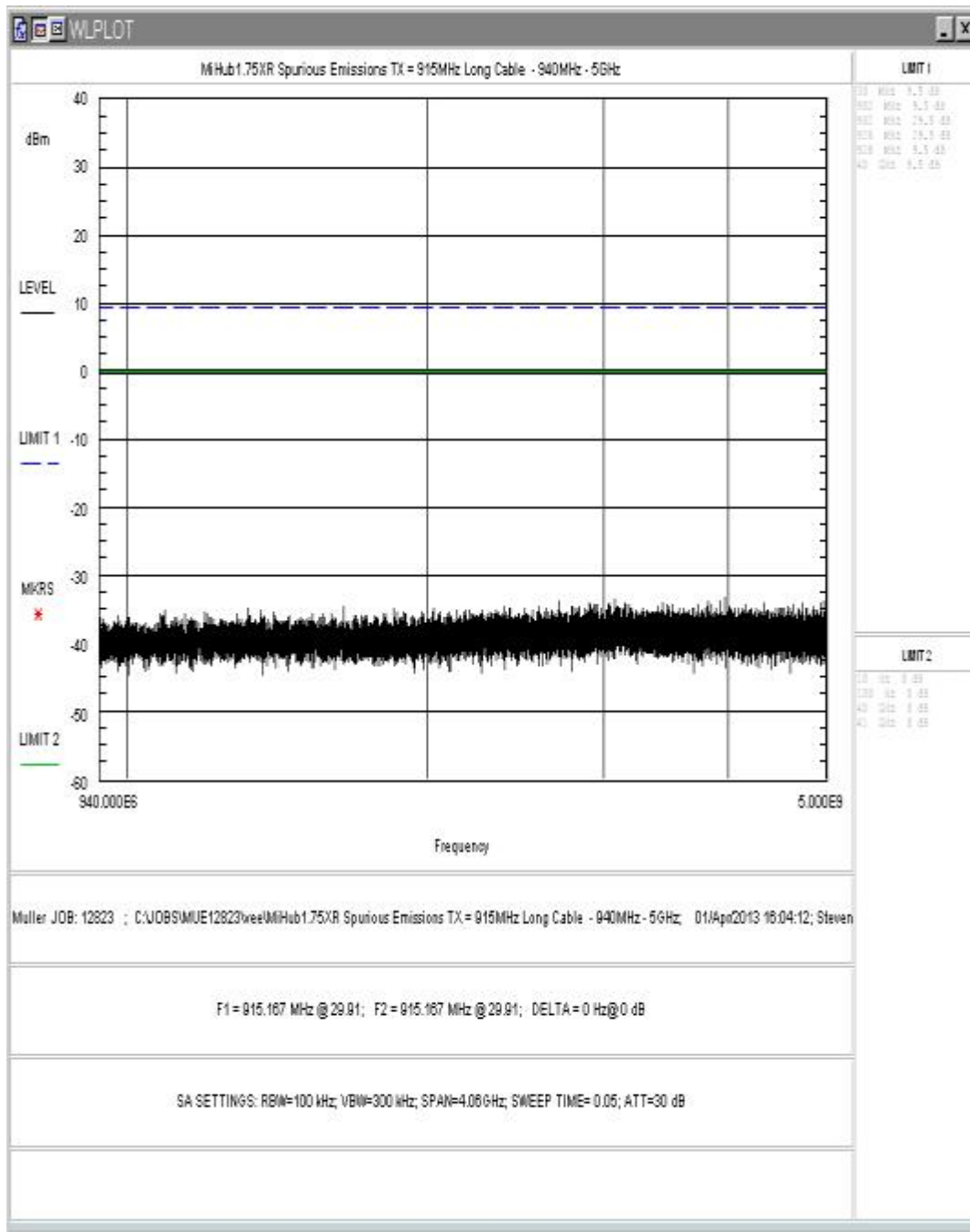


Figure 66. MIHUBXR-R Spurious Emissions TX = 915MHz Long Cable - 940MHz - 5GHz

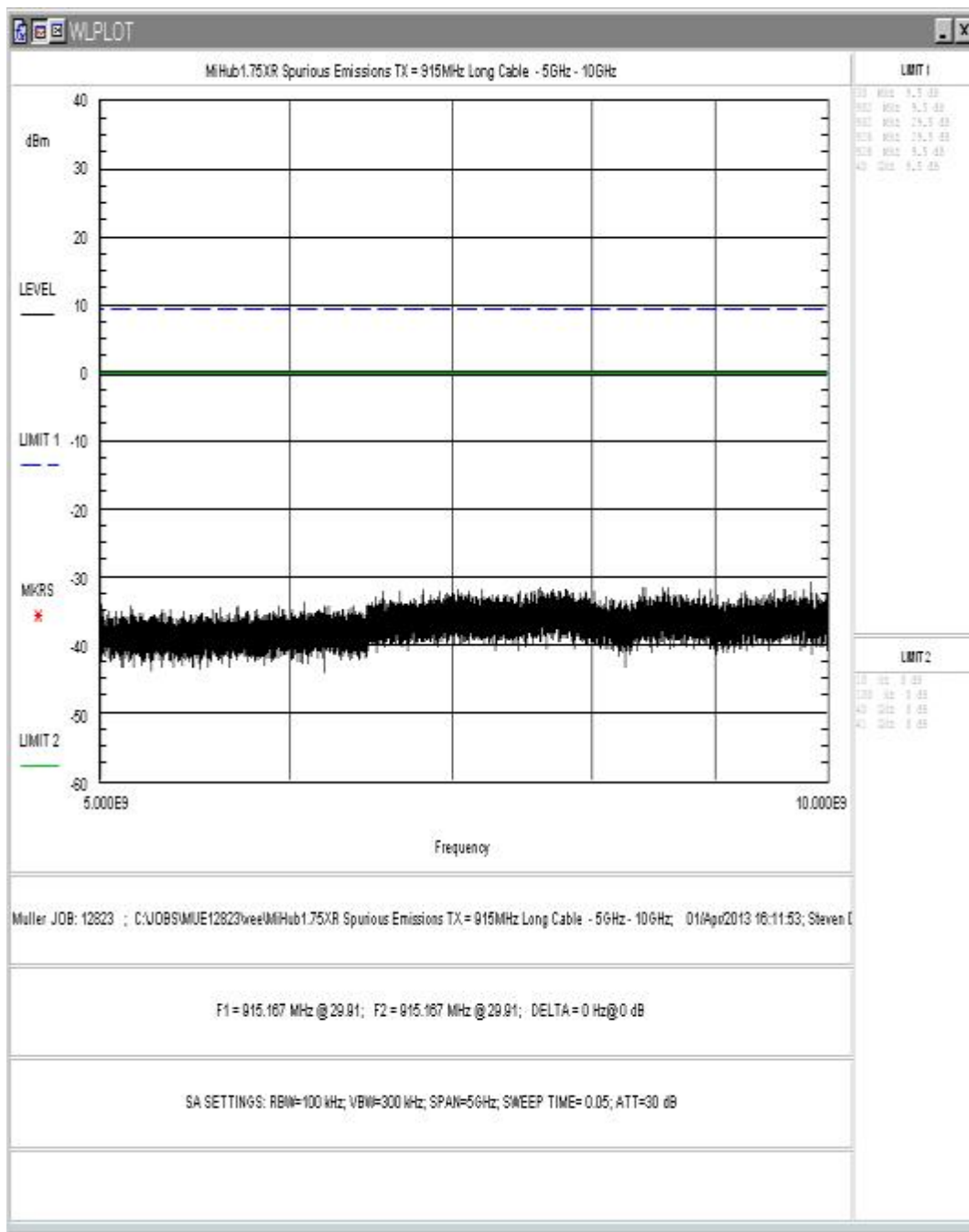


Figure 67. MIHUBXR-R Spurious Emissions TX = 915MHz Long Cable - 5GHz - 10GHz

5.5.2.4 Center Channel 915MHz- Short Cable

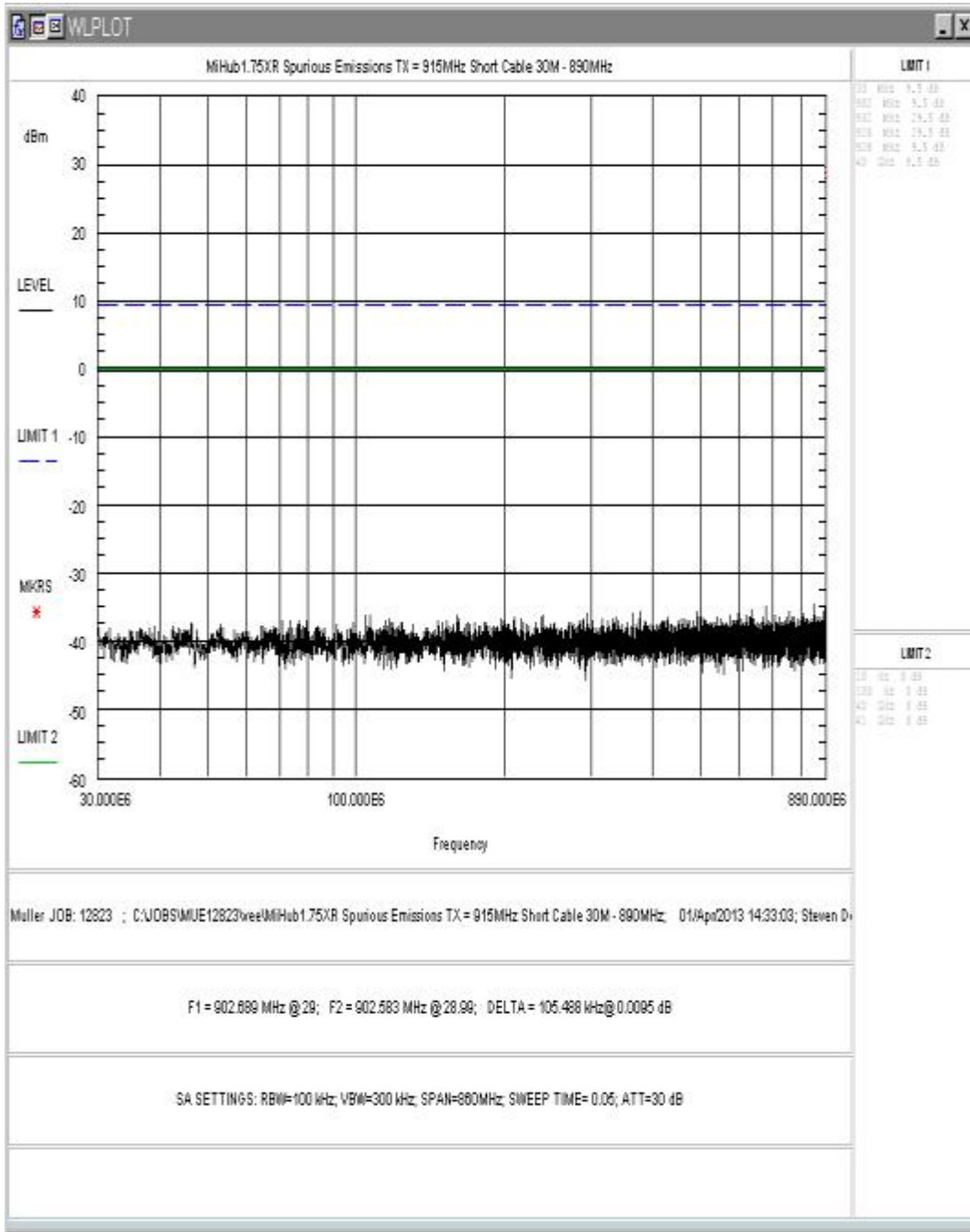


Figure 68. MIHUBXR-R Spurious Emissions TX = 915MHz Short Cable 30M - 890MHz

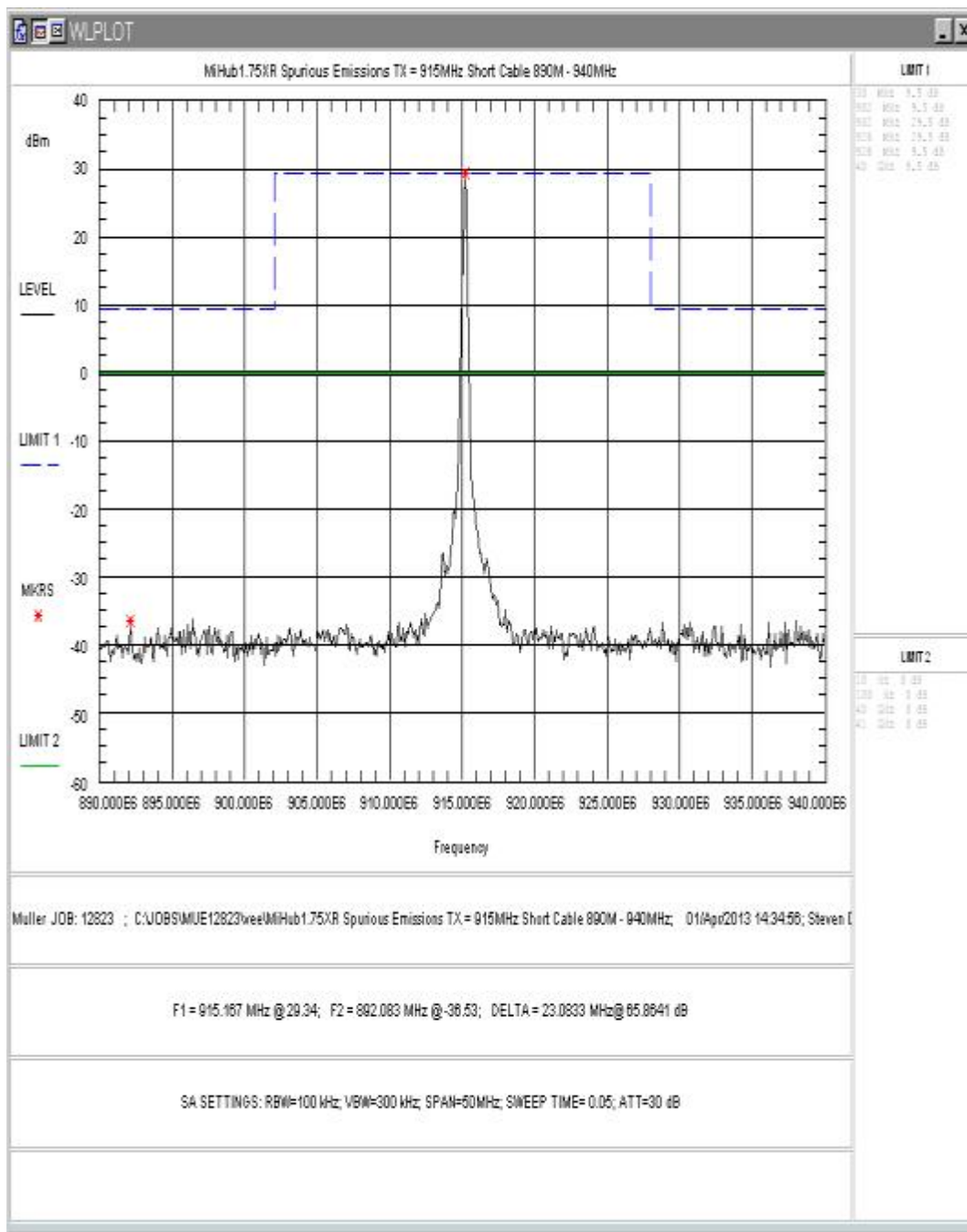


Figure 69. MIHUBXR-R Spurious Emissions TX = 915MHz Short Cable 890M - 940MHz

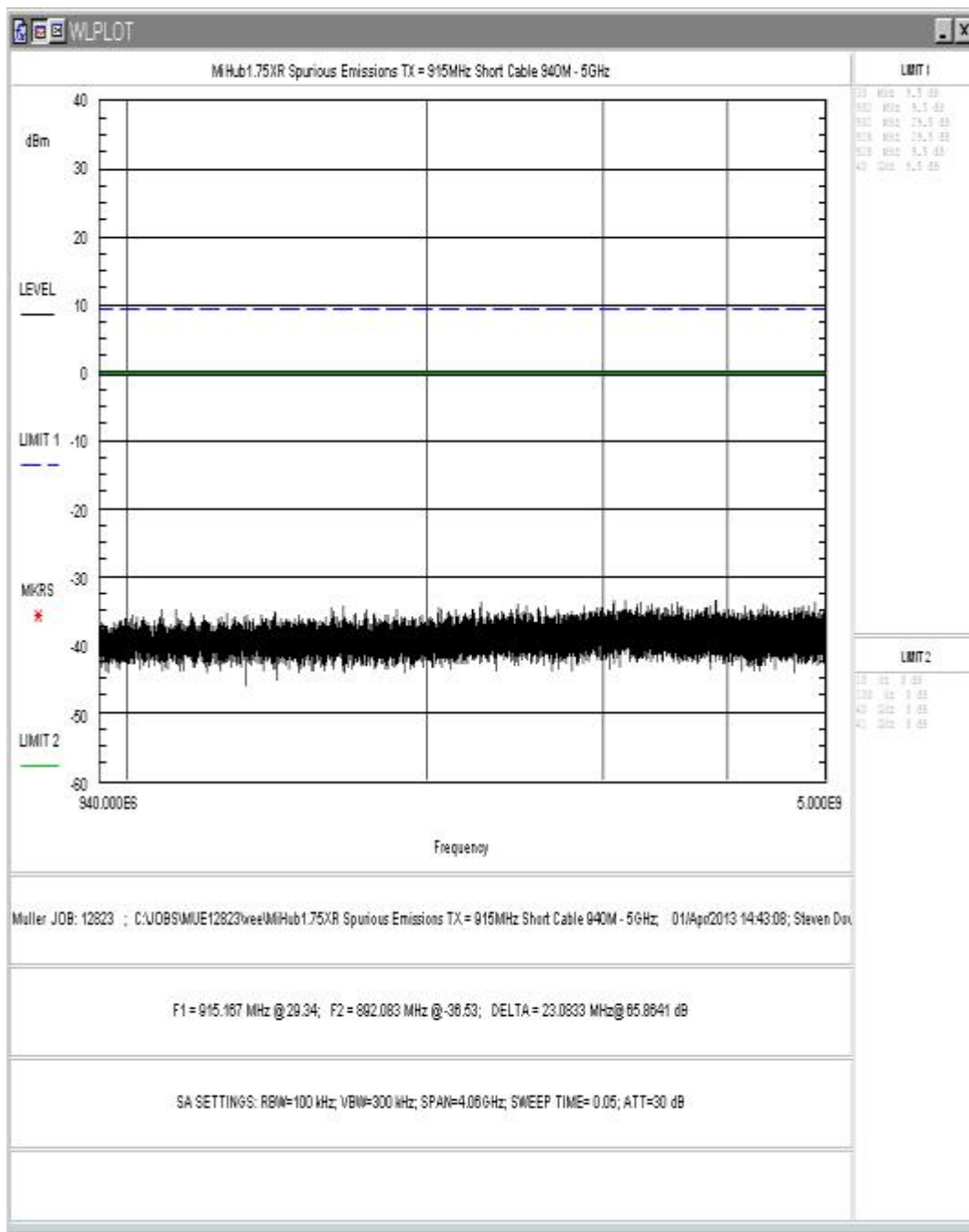


Figure 70. MIHUBXR-R Spurious Emissions TX = 915MHz Short Cable 940M - 5GHz

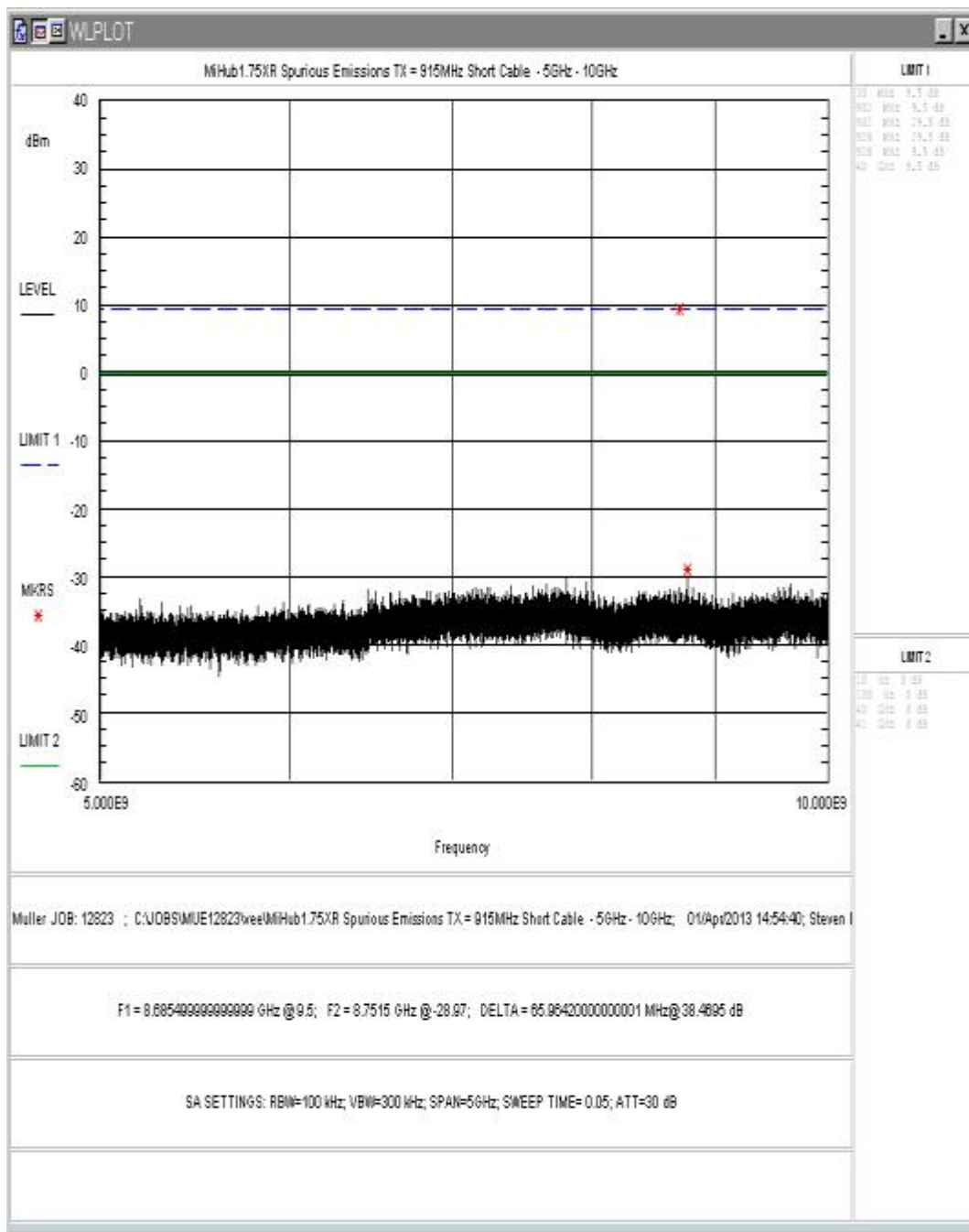


Figure 71. MIHUBXR-R Spurious Emissions TX = 915MHz Short Cable - 5GHz - 10GHz

5.5.2.5 High Channel 927.35MHz- Long Cable

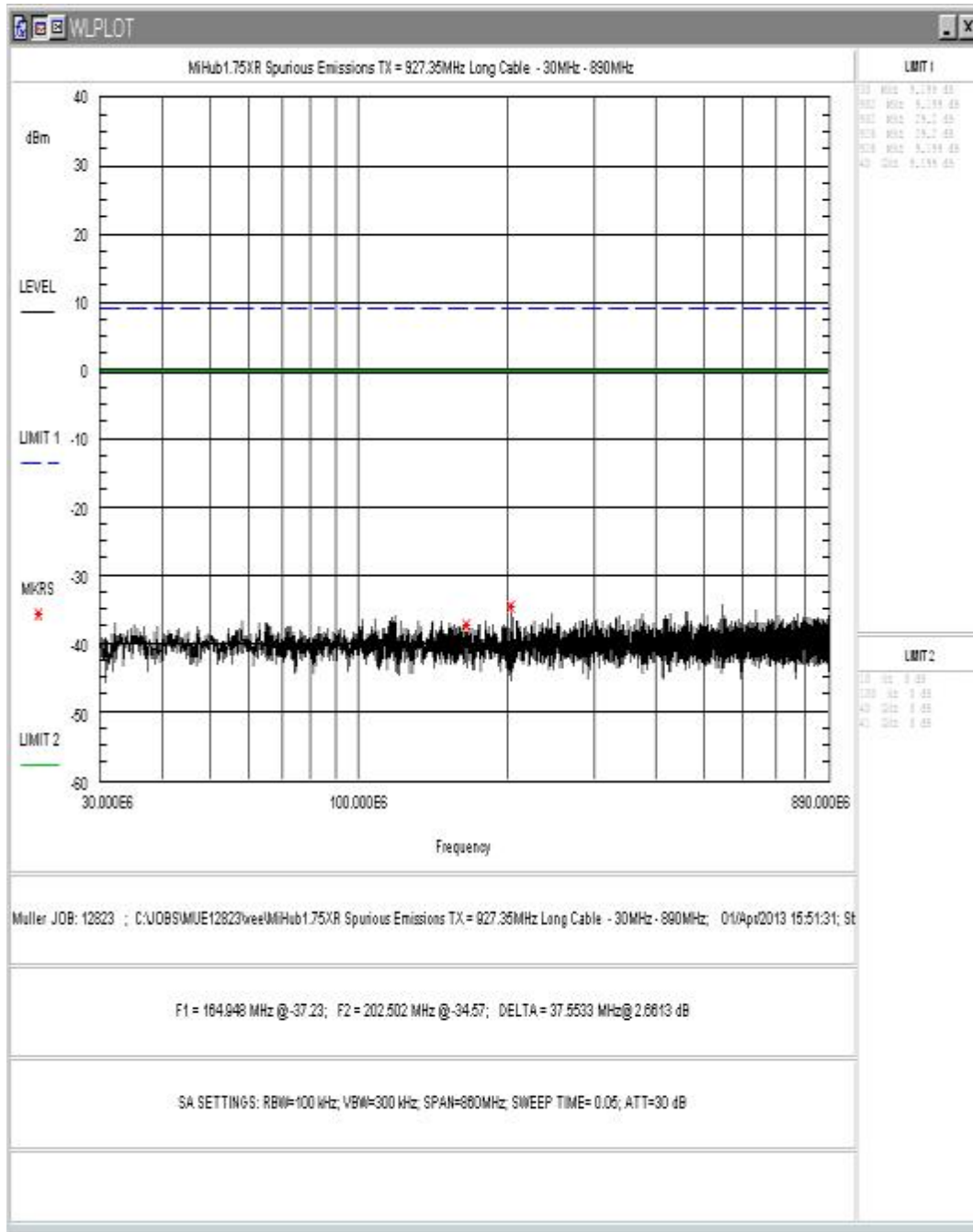


Figure 72. MIHUBXR-R Spurious Emissions TX = 927.35MHz Long Cable - 30MHz - 890MHz

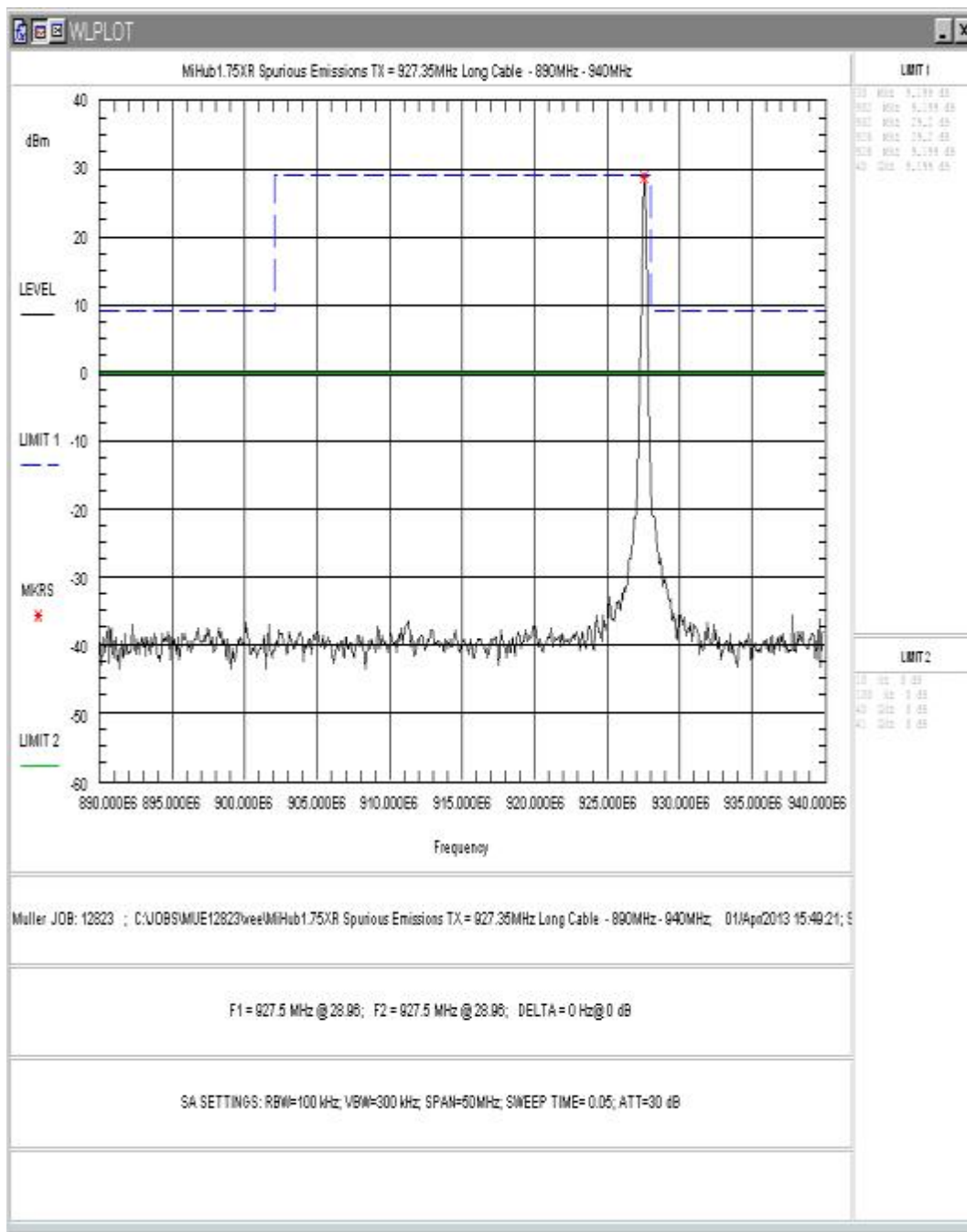


Figure 73. MIHUBXR-R Spurious Emissions TX = 927.35MHz Long Cable - 890MHz - 940MHz

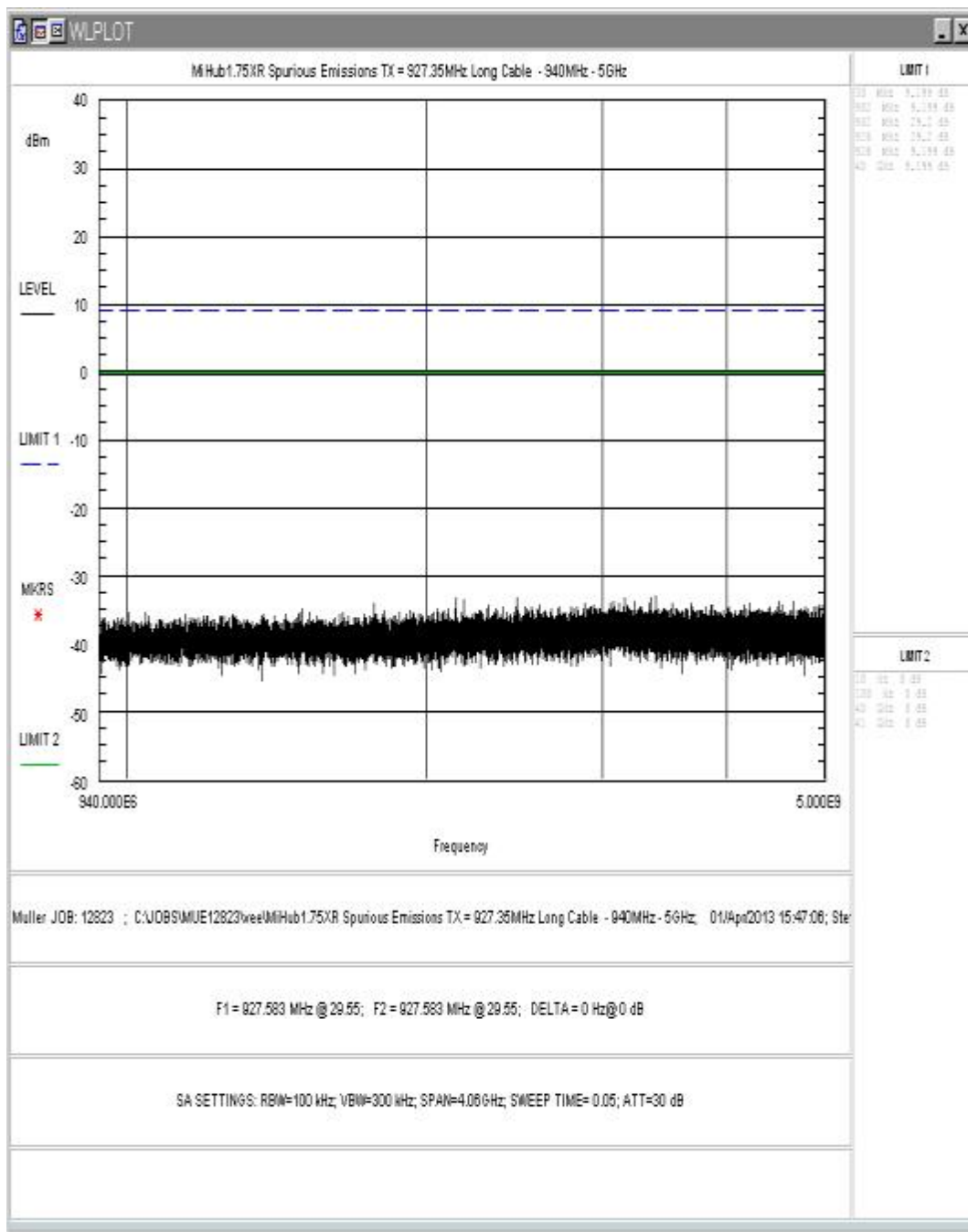


Figure 74. MIHUBXR-R Spurious Emissions TX = 927.35MHz Long Cable - 940MHz - 5GHz

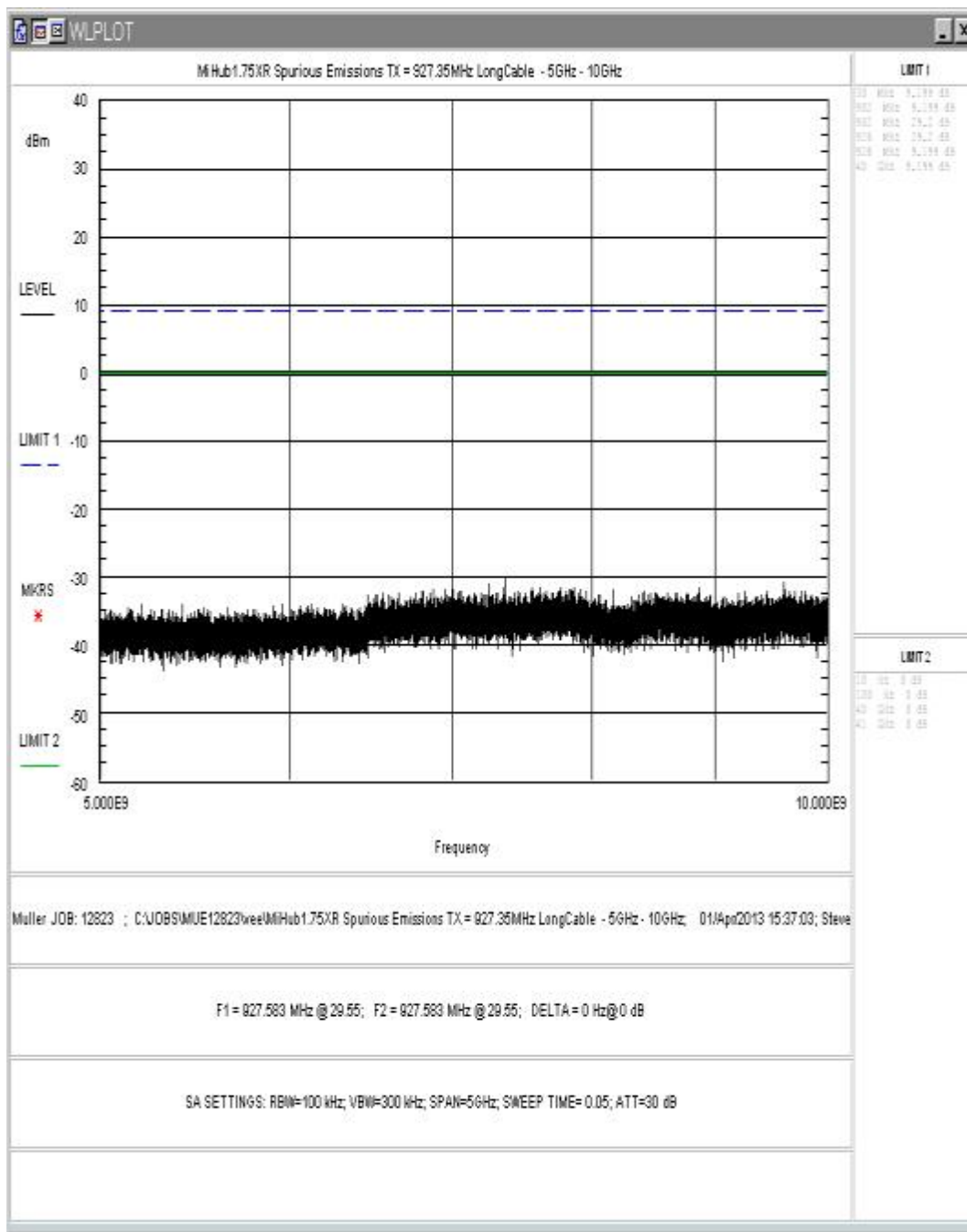


Figure 75. MIHUBXR-R Spurious Emissions TX = 927.35MHz Long Cable - 5GHz - 10GHz

5.5.2.6 High Channel 927.35MHz- Short Cable

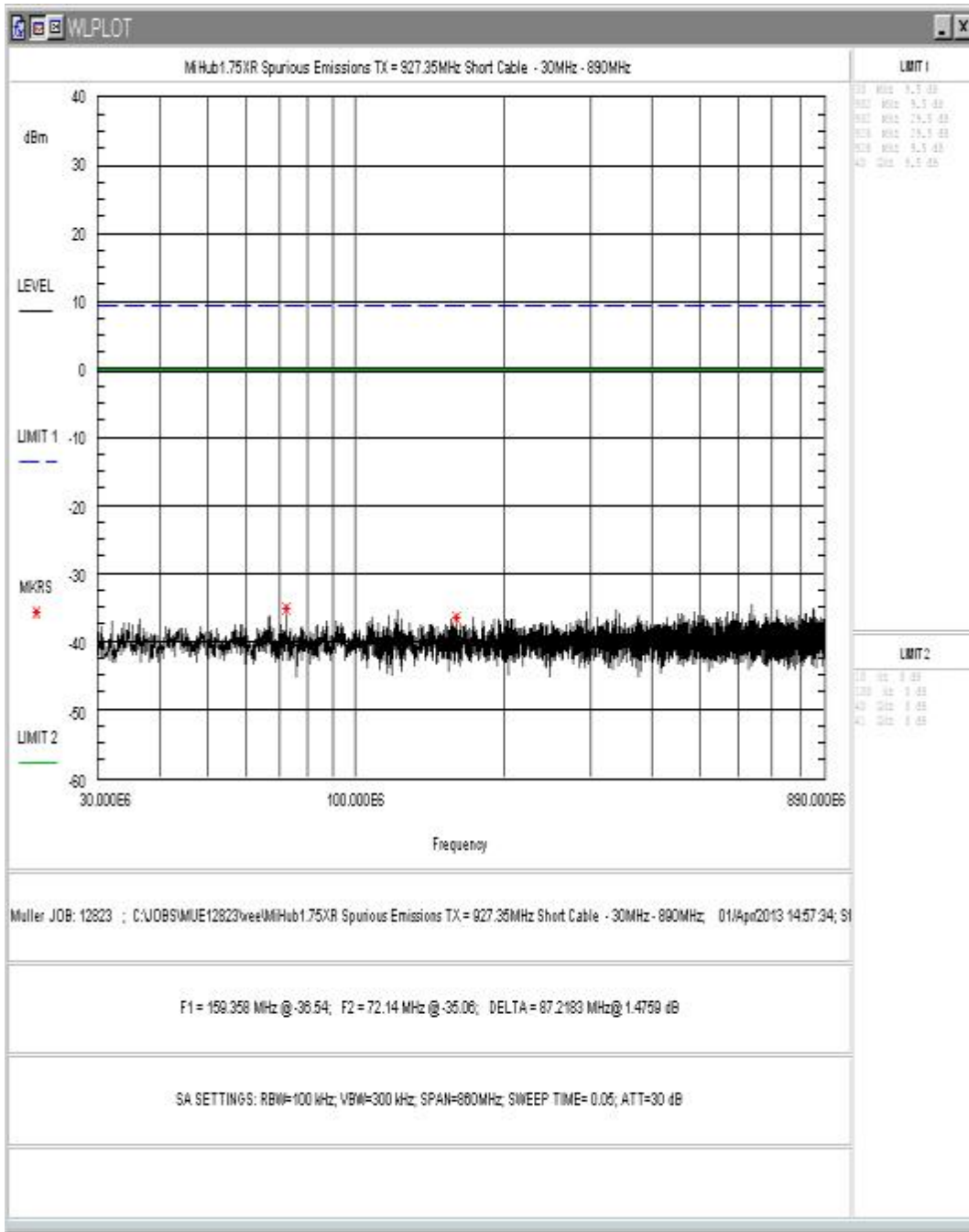


Figure 76. MIHUBXR-R Spurious Emissions TX = 927.35MHz Short Cable - 30MHz - 890MHz

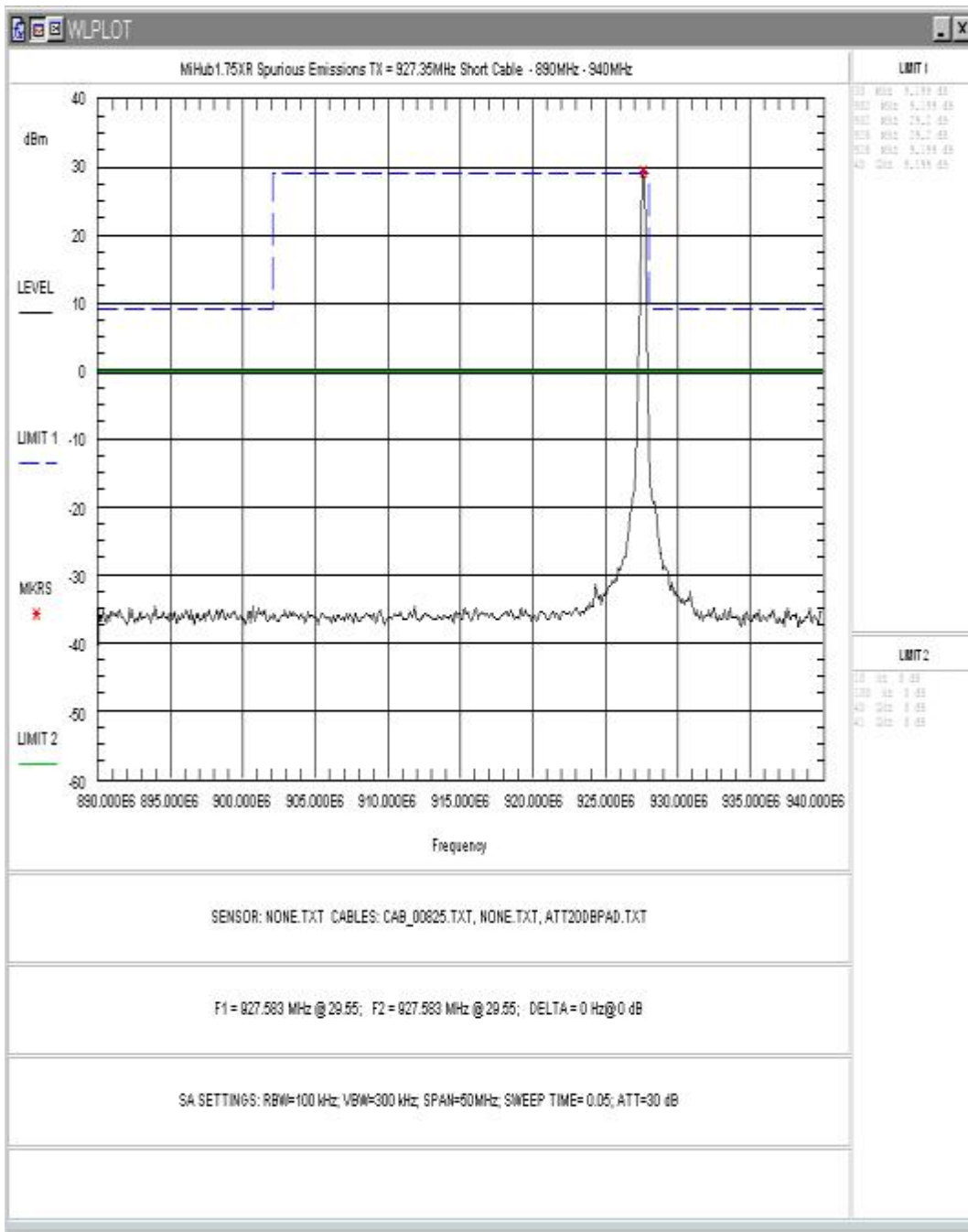


Figure 77. MIHUBXR-R Spurious Emissions TX = 927.35MHz Short Cable - 890MHz - 940MHz

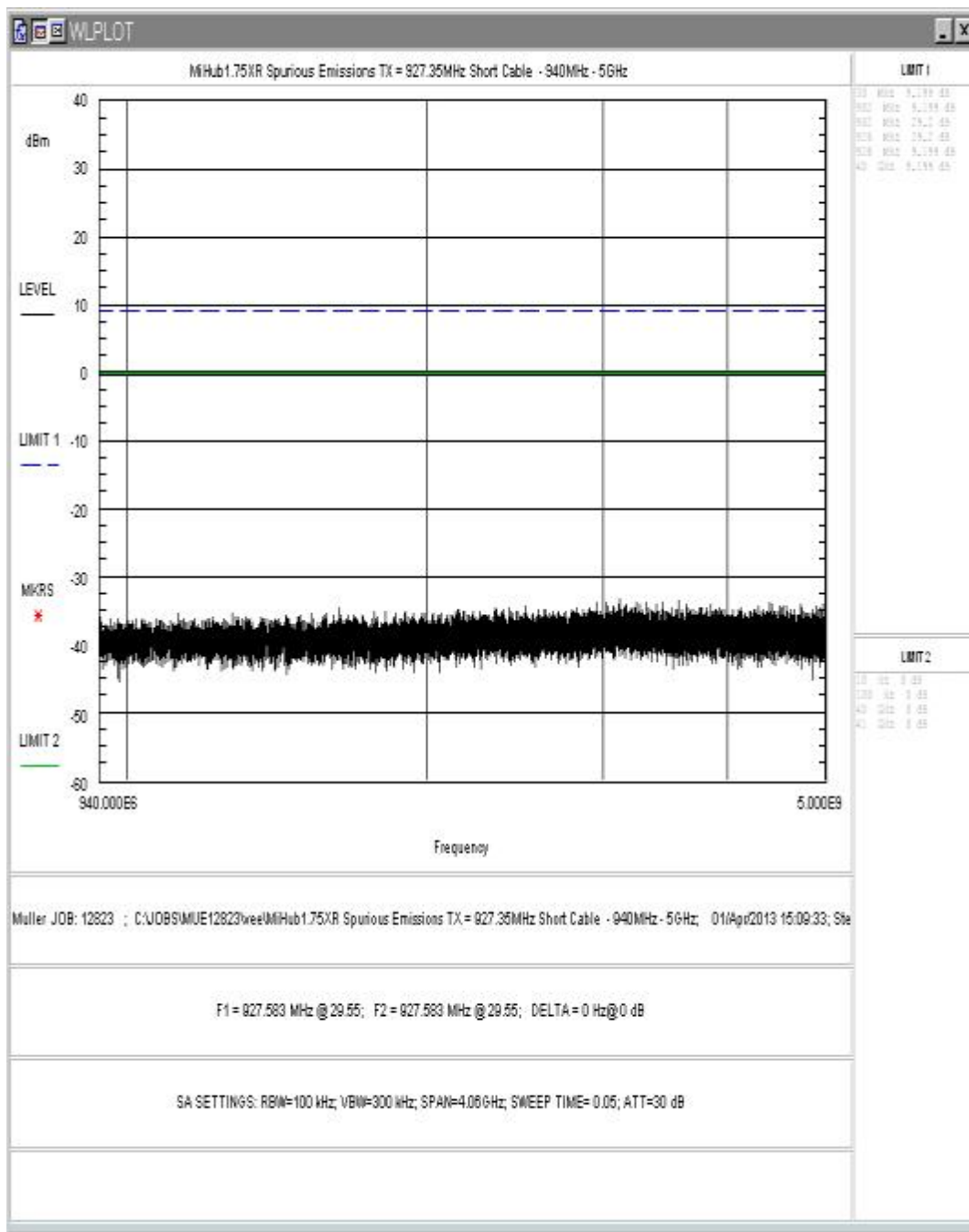


Figure 78. MIHUBXR-R Spurious Emissions TX = 927.35MHz Short Cable - 940MHz - 5GHz

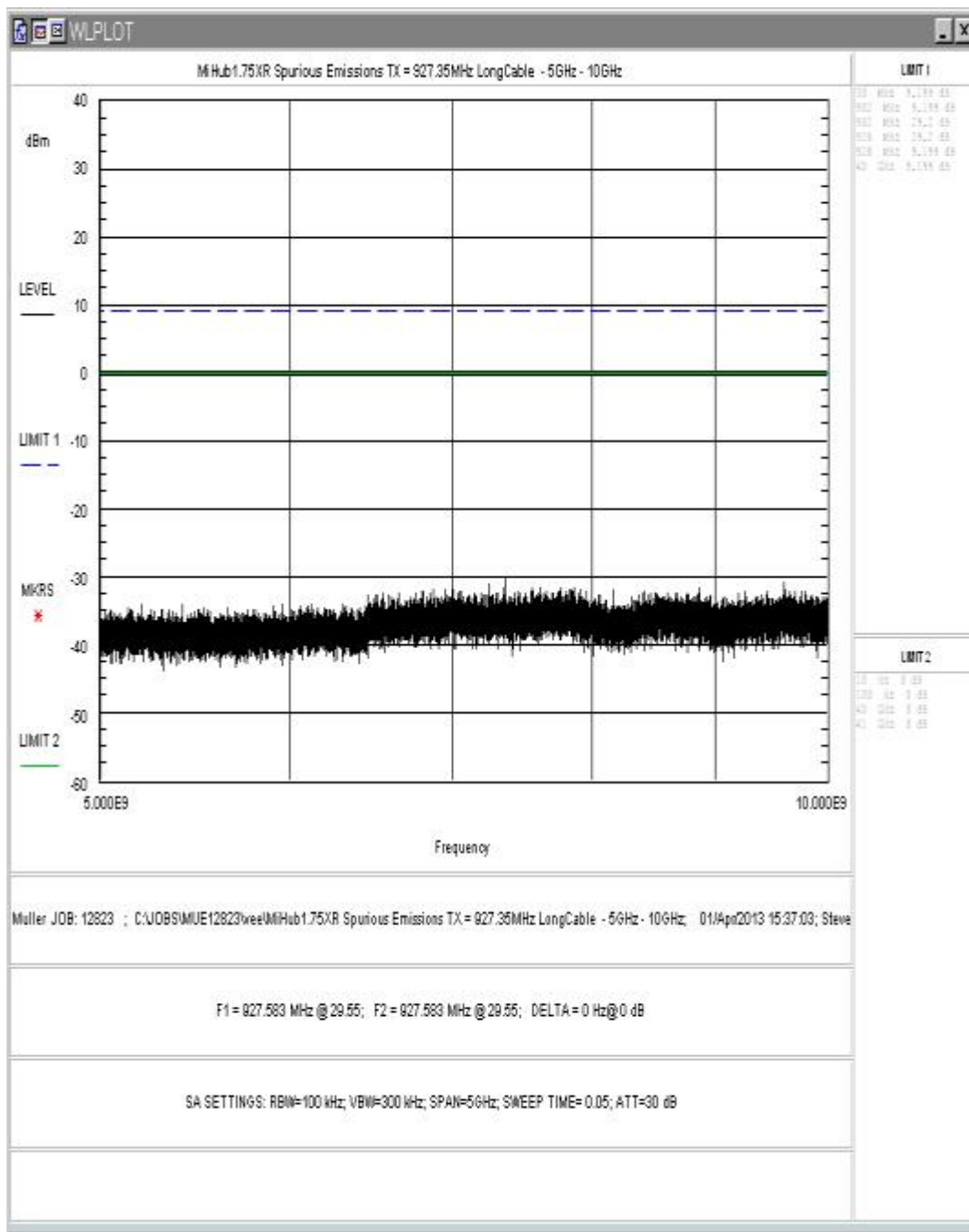


Figure 79. MIHUBXR-R Spurious Emissions TX = 927.35MHz Long Cable - 5GHz - 10GHz

5.6 Radiated Spurious Emissions: (FCC Part §2.1053)

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 §15.209 and §15.35(b) for peak measurements.

5.6.1 Test Procedure

The EUT was placed on a 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 EUT was tested in 3 orthogonal with the worst case readings provided. Both the horizontal and vertical field components were measured. Measurements below 1 GHz include both restricted and non-restricted bands.

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	10 Hz (Avg.) 1MHz (Peak)

Average measurements above 1GHz were made with the Spectrum analyzer set to the linear mode with a Video bandwidth of 10Hz, and the resultant reading mathematically converted to dBuV. Correction factors were then applied and the resulting value was compared to the limit.

5.6.2 Areas of concern

None

Table 11: Radiated Emission Test Data, Low Frequency Data (<1GHz)
(Restricted bands only, same for all Channels)

Frequency (MHz)	Polarity H/V	Azimuth (Degree)	Ant. Height (m)	SA Level (dBuV)	Corr Factors (dB)	Corr. Level (uV/m)	Limit (uV/m)	Margin (dB)
73.53	V	125.00	1.00	18.90	9.6	26.7	100.0	-11.5
114.40	V	180.00	1.00	13.60	14.8	26.4	150.0	-15.1
137.56	V	270.00	1.00	20.30	15.0	57.9	150.0	-8.3
149.95	V	180.00	1.00	22.20	14.2	66.0	150.0	-7.1
240.05	V	0.00	1.00	21.98	14.6	67.2	200.0	-9.5
110.32	H	180.00	2.33	16.10	14.2	32.9	150.0	-13.2
150.00	H	250.00	1.89	19.70	14.2	49.3	150.0	-9.7
240.05	H	270.00	1.49	22.00	14.6	67.4	200.0	-9.4
335.40	H	85.00	1.16	16.29	17.9	51.2	200.0	-11.8
269.19	H	90.00	1.49	12.40	16.3	27.1	200.0	-17.4
280.10	H	45.00	1.93	11.90	16.8	27.2	200.0	-17.3

Note: Emissions were common to all tested channels. The frequencies listed are the highest emitted restricted bands.

**Table 12: Radiated Emission Test Data, Short Cable, High Frequency Data (>1GHz)
(6dBi Whip antenna) (Restricted Bands)**

Low Channel-902.5MHz

Frequency (MHz)	Polarity H/V	Azimuth (Degree)	Ant. Height (m)	SA Level (dBuV)	Corr Factors (dB)	Corr. Level (uV/m)	Limit (uV/m)	Margin (dB)	Comments
2707.50	V	0.00	2.04	51.30	-1.7	303.3	5000.0	-24.3	Peak
2707.50	V	0.00	2.04	47.30	-1.7	191.4	500.0	-8.3	Average
3610.00	V	0.00	2.00	43.50	-0.2	145.4	5000.0	-30.7	Peak
3610.00	V	0.00	2.00	32.20	-0.2	39.6	500.0	-22.0	Average
4512.50	V	0.00	1.88	42.67	2.2	176.0	5000.0	-29.1	Peak
4512.50	V	0.00	1.88	31.70	2.2	49.8	500.0	-20.0	Average
2707.50	H	10.00	1.94	53.70	-1.7	399.9	5000.0	-21.9	Peak
2707.50	H	10.00	1.94	50.80	-1.7	286.4	500.0	-4.8	Average
3610.00	H	355.00	1.94	45.00	-0.2	172.8	5000.0	-29.2	Peak
3610.00	H	355.00	1.94	33.30	-0.2	44.9	500.0	-20.9	Average
4512.50	H	0.00	1.90	43.70	2.2	198.1	5000.0	-28.0	Peak
4512.50	H	0.00	1.90	32.20	2.2	52.7	500.0	-19.5	Average

Center Channel – 915MHz

Frequency (MHz)	Polarity H/V	Azimuth (Degree)	Ant. Height (m)	SA Level (dBuV)	Corr Factors (dB)	Corr. Level (uV/m)	Limit (uV/m)	Margin (dB)	Comments
2745.00	V	180.00	1.62	50.20	-1.7	266.3	5000.0	-25.5	Peak
2745.00	V	180.00	1.62	44.50	-1.7	138.1	500.0	-11.2	Average
3660.00	V	180.00	1.60	42.50	0.0	133.5	5000.0	-31.5	Peak
3660.00	V	180.00	1.60	32.00	0.0	39.9	500.0	-22.0	Average
4575.00	V	45.00	1.53	44.50	2.1	214.3	5000.0	-27.4	Peak
4575.00	V	45.00	1.53	34.70	2.1	69.3	500.0	-17.2	Average
2745.00	H	0.00	1.85	51.30	-1.7	302.2	5000.0	-24.4	Peak
2745.00	H	0.00	1.85	48.80	-1.7	226.6	500.0	-6.9	Average
3660.00	H	0.00	1.80	43.50	0.0	149.8	5000.0	-30.5	Peak
3660.00	H	0.00	1.80	32.50	0.0	42.2	500.0	-21.5	Average
4575.00	H	0.00	1.53	43.83	2.1	198.4	5000.0	-28.0	Peak
4575.00	H	0.00	1.53	35.20	2.1	73.4	500.0	-16.7	Average

High Hailing Channel-927.35MHz

Frequency (MHz)	Polarity H/V	Azimuth (Degree)	Ant. Height (m)	SA Level (dBuV)	Corr Factors (dB)	Corr. Level (uV/m)	Limit (uV/m)	Margin (dB)	Comments
2782.50	V	350.00	1.69	53.00	-1.7	366.2	5000.0	-22.7	Peak
2782.50	V	350.00	1.69	50.50	-1.7	274.6	500.0	-5.2	Average
3709.40	V	350.00	1.63	45.20	0.3	187.6	5000.0	-28.5	Peak
3709.40	V	350.00	1.63	34.20	0.3	52.9	500.0	-19.5	Average
4636.75	V	300.00	2.23	44.70	2.4	225.6	5000.0	-26.9	Peak
4636.75	V	300.00	2.23	36.50	2.4	87.8	500.0	-15.1	Average
2782.50	H	355.00	2.31	53.00	-1.7	366.2	5000.0	-22.7	Peak
2782.05	H	355.00	2.31	50.70	-1.7	281.0	500.0	-5.0	Average
3709.40	H	355.00	2.11	45.20	0.3	187.6	5000.0	-28.5	Peak
3709.40	H	355.00	2.11	35.83	0.3	63.8	500.0	-17.9	Average
4636.75	H	0.00	2.06	44.00	2.4	208.2	5000.0	-27.6	Peak
4636.75	H	0.00	2.06	37.00	2.4	93.0	500.0	-14.6	Average

**Table 13: Radiated Emission Test Data, Long Cable, High Frequency Data (>1GHz)
(6dBi Whip antenna) (Restricted Bands)**

Low Channel-902.5MHz

Frequency (MHz)	Polarity H/V	Azimuth (Degree)	Ant. Height (m)	SA Level (dBuV)	Corr Factors (dB)	Corr. Level (uV/m)	Limit (uV/m)	Margin (dB)	Comments
2707.50	V	355.00	2.05	54.20	-1.7	423.6	5000.0	-21.4	Peak
2707.50	V	355.00	2.05	50.80	-1.7	286.4	500.0	-4.8	Average
3610.00	V	350.00	2.07	41.50	-0.2	115.5	5000.0	-32.7	Peak
3610.00	V	350.00	2.07	31.33	-0.2	35.8	500.0	-22.9	Average
4512.50	V	355.00	2.02	41.80	2.2	159.2	5000.0	-29.9	Peak
4512.50	V	355.00	2.02	31.50	2.2	48.6	500.0	-20.2	Average
2707.50	H	275.00	1.99	51.30	-1.7	303.3	5000.0	-24.3	Peak
2707.50	H	275.00	1.99	47.80	-1.7	202.7	500.0	-7.8	Average
3610.00	H	275.00	1.82	44.70	-0.2	166.9	5000.0	-29.5	Peak
3610.00	H	275.00	1.82	35.00	-0.2	54.6	500.0	-19.2	Average
4512.50	H	0.00	1.80	43.50	2.2	193.6	5000.0	-28.2	Peak
4512.50	H	0.00	1.80	31.50	2.2	48.6	500.0	-20.2	Average

Center Channel – 915MHz

Frequency (MHz)	Polarity H/V	Azimuth (Degree)	Ant. Height (m)	SA Level (dBuV)	Corr Factors (dB)	Corr. Level (uV/m)	Limit (uV/m)	Margin (dB)	Comments
2745.00	V	345.00	2.23	50.67	-1.7	281.1	5000.0	-25.0	Peak
2745.00	V	345.00	2.23	47.00	-1.7	184.2	500.0	-8.7	Average
3660.00	V	345.00	2.18	41.50	0.0	119.0	5000.0	-32.5	Peak
3660.00	V	345.00	2.18	31.20	0.0	36.3	500.0	-22.8	Average
4575.00	V	355.00	2.17	43.30	2.1	186.6	5000.0	-28.6	Peak
4575.00	V	355.00	2.17	32.50	2.1	53.8	500.0	-19.4	Average
2745.00	H	0.00	2.14	49.80	-1.7	254.3	5000.0	-25.9	Peak
2745.00	H	0.00	2.14	45.70	-1.7	158.6	500.0	-10.0	Average
3660.00	H	350.00	2.19	43.80	0.0	155.0	5000.0	-30.2	Peak
3660.00	H	350.00	2.19	33.20	0.0	45.8	500.0	-20.8	Average
4575.00	H	355.00	2.03	42.00	2.1	160.7	5000.0	-29.9	Peak
4575.00	H	355.00	2.03	31.50	2.1	48.0	500.0	-20.4	Average

High Hailing Channel-927.35MHz

Frequency (MHz)	Polarity H/V	Azimuth (Degree)	Ant. Height (m)	SA Level (dBuV)	Corr Factors (dB)	Corr. Level (uV/m)	Limit (uV/m)	Margin (dB)	Comments
2782.50	V	345.00	2.87	51.83	-1.7	320.0	5000.0	-23.9	Peak
2782.50	V	345.00	2.87	48.50	-1.7	218.1	500.0	-7.2	Average
3709.40	V	350.00	2.82	45.00	0.3	183.4	5000.0	-28.7	Peak
3709.40	V	350.00	2.82	34.00	0.3	51.7	500.0	-19.7	Average
4636.75	V	340.00	2.50	43.80	2.4	203.4	5000.0	-27.8	Peak
4636.75	V	340.00	2.50	35.80	2.4	81.0	500.0	-15.8	Average
2782.50	H	350.00	2.23	52.70	-1.7	353.7	5000.0	-23.0	Peak
2782.05	H	350.00	2.23	49.70	-1.7	250.4	500.0	-6.0	Average
3709.40	H	0.00	23.23	43.87	0.3	161.0	5000.0	-29.8	Peak
3709.40	H	0.00	23.23	35.00	0.3	58.0	500.0	-18.7	Average
4636.75	H	355.00	2.26	44.20	2.4	213.0	5000.0	-27.4	Peak
4636.75	H	355.00	2.26	37.70	2.4	100.8	500.0	-13.9	Average

5.7 AC Conducted Emissions (FCC Pt.15.207)

5.7.1 Requirements

Test Arrangement: Table Top

Compliance Standard: FCC Class B

FCC Compliance Limits		
Frequency	Quasi-peak	Average
0.15 - 0.5MHz	66 to 56dB μ V	56 to 46dB μ V
0.5 - 5MHz	56dB μ V	46dB μ V
5 - 30MHz	60dB μ V	50dB μ V

5.7.2 Test Procedure

The EUT was placed on an 80 cm high 1 X 1.5 m non-conductive table above a ground plane. Power to the EUT was provided through a Solar Corporation 50 W/50 mH Line Impedance Stabilization Network bonded to a 3 X 2 meter ground plane. The LISN has its AC input supplied from a filtered AC power source. Power was supplied to the peripherals through a second LISN. The peripherals were placed on the table in accordance with ANSI C63.4-2003. Power and data cables were moved about to obtain maximum emissions.

The 50 W output of the LISN was connected to the input of the spectrum analyzer and the emissions in the frequency range of 150 kHz to 30 MHz were measured. The detector function was set to quasi-peak, peak, or average as appropriate, and the resolution bandwidth during testing was at least 9 kHz, with all post-detector filtering no less than 10 times the resolution bandwidth. For average measurements the post-detector filter was set to 10 Hz.

At frequencies where quasi-peak or peak measurements comply with the average limit, no average measurements need be performed.

At frequencies where quasi-peak or peak measurements comply with the average limit, no average measurements need be performed. The Conducted emissions level to be compared to the FCC limit is calculated as shown in the following example.

Example:

Spectrum Analyzer Voltage: VdB μ V

LISN Correction Factor: LISN dB

Cable Correction Factor: CF dB

Electric Field: EdB μ V = V dB μ V + LISN dB + CF dB

5.7.3 Test Data

The EUT complied with the Class B Conducted Emissions requirements. Table 10-11 provide the test results for phase and neutral line power line conducted emissions.

Emissions were tested in the “transmit on” state with the EUT tuned to 915MHz.

Table 14: Conducted Emissions Data 120VAC, Transmit On

NEUTRAL

Frequency (MHz)	Level QP (dBµV)	Level AVG (dBµV)	Cable Loss (dB)	LISN Corr (dB)	Level QP Corr (dBµV)	Level Corr Avg (dBµV)	Limit QP (dBµV)	Limit AVG (dBµV)	Margin QP (dB)	Margin AVG (dB)
0.250	39.6	36.9	10.1	0.5	50.2	47.5	61.8	51.8	-11.5	-4.2
0.500	37.6	32.4	10.1	0.5	48.1	42.9	56.0	46.0	-7.9	-3.1
3.855	33.1	19.0	10.7	0.9	44.7	30.6	56.0	46.0	-11.3	-15.4
7.580	37.5	23.8	11.2	0.9	49.6	35.9	60.0	50.0	-10.4	-14.1
12.960	21.2	6.2	11.3	1.0	33.5	18.5	60.0	50.0	-26.5	-31.5
18.840	23.2	12.9	11.7	1.0	35.8	25.5	60.0	50.0	-24.2	-24.5

PHASE

Frequency (MHz)	Level QP (dBµV)	Level AVG (dBµV)	Cable Loss (dB)	LISN Corr (dB)	Level QP Corr (dBµV)	Level Corr Avg (dBµV)	Limit QP (dBµV)	Limit AVG (dBµV)	Margin QP (dB)	Margin AVG (dB)
0.250	37.6	35.4	10.1	0.4	48.1	45.9	61.8	51.8	-13.6	-5.8
0.500	37.8	31.8	10.1	0.2	48.1	42.1	56.0	46.0	-7.9	-3.9
3.729	32.9	18.7	10.7	0.7	44.3	30.1	56.0	46.0	-11.7	-15.9
5.160	31.4	19.4	10.7	0.8	42.9	30.9	60.0	50.0	-17.1	-19.1
8.150	39.8	23.9	11.2	0.9	51.8	35.9	60.0	50.0	-8.2	-14.1
17.940	25.6	16.0	11.6	1.0	38.2	28.6	60.0	50.0	-21.8	-21.4

5.8 Receiver Radiated Emissions

5.8.1 Requirements

Test Arrangement: Table Top

RSS210 Compliance Limits for Receivers	
Frequency	Limits
30-88 MHz	100 μ V/m
88-216 MHz	150 μ V/m
216-960 MHz	200 μ V/m
>960MHz	500 μ V/m

5.8.2 Test Procedure

The requirements of call for the EUT to be placed on an 80 cm high 1 X 1.5 meters non-conductive 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. Biconical and log periodic broadband 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 output of the antenna was connected to the input of the spectrum analyzer and the emissions in the frequency range of 30 MHz to 3 GHz were measured. The peripherals were placed on the table in accordance with ANSI C63.4-2003. Cables were varied in position to produce maximum emissions. Both the horizontal and vertical field components were measured.

The output from the antenna was connected, via a preamplifier, to the input of the spectrum analyzer. The detector function was set to quasi-peak, peak, or average as appropriate. The measurement bandwidth of the spectrum analyzer system was set to at least 120 kHz, with all post-detector filtering no less than 10 times the measurement bandwidth.

All measurements above 1GHz were made at a distance of 3m with a Resolution Bandwidth of 1MHz and a Video bandwidth of 10Hz.

5.8.3 Test Data

The EUT complied with the Receiver Radiated Emissions requirements. Table 9 provides the test results for radiated emissions.

5.8.4 Radiated Data Reduction and Reporting

To convert the raw spectrum analyzer radiated data into a form that can be compared with the FCC limits, it is necessary to account for various calibration factors that are supplied with the antennas and other measurement accessories. These factors are included into the antenna factor (AF) column of the table and in the cable factor (CF) column of the table. The AF (in dB/m) and the CF (in dB) is algebraically added to the raw Spectrum Analyzer Voltage in dB μ V to obtain the Radiated Electric Field in dB μ V/m. This logarithm amplitude is converted to a linear amplitude, then compared to the Industry Canada limit.

Example:

Spectrum Analyzer Voltage: $V_{dB\mu V}$

Antenna Correction Factor: $AF_{dB/m}$

Cable Correction Factor: CF_{dB}

Electric Field: $EdBV/m = V_{dB\mu V} + AF_{dB/m} + CF_{dB}$

To convert to linear units of measure: $EdBV/m/20 \text{ Inv log}$

Table 15: Receiver Radiated Emission Test Data

Frequency (MHz)	Polarity H/V	Azimuth (Degree)	Ant. Height (m)	SA Level (dBuV)	Corr Factors (dB)	Corr. Level (uV/m)	Limit (uV/m)	Margin (dB)
45.20	V	300.00	1.00	17.70	11.4	28.4	100.0	-10.9
73.53	V	125.00	1.00	18.90	9.6	26.7	100.0	-11.5
87.96	V	180.00	1.00	11.70	9.7	11.7	100.0	-18.6
114.40	V	180.00	1.00	13.60	14.8	26.4	150.0	-15.1
137.56	V	270.00	1.00	20.30	15.0	57.9	150.0	-8.3
149.95	V	180.00	1.00	22.20	14.2	66.0	150.0	-7.1
217.53	V	190.00	1.00	19.00	13.4	41.5	200.0	-13.7
240.05	V	0.00	1.00	21.98	14.6	67.2	200.0	-9.5
46.70	H	180.00	4.00	21.90	10.4	41.2	100.0	-7.7
57.20	H	90.00	4.00	19.20	8.3	23.8	100.0	-12.5
110.32	H	180.00	2.33	16.10	14.2	32.9	150.0	-13.2
149.09	H	250.00	1.89	20.02	14.2	51.6	150.0	-9.3
150.00	H	250.00	1.89	19.70	14.2	49.3	150.0	-9.7
224.94	H	250.00	1.68	18.80	13.7	42.0	200.0	-13.6
239.69	H	270.00	1.49	23.67	14.6	81.6	200.0	-7.8
240.05	H	270.00	1.49	22.00	14.6	67.4	200.0	-9.4
313.71	H	0.00	1.24	18.50	17.6	63.6	200.0	-9.9
335.40	H	85.00	1.16	16.29	17.9	51.2	200.0	-11.8
431.53	H	0.00	1.16	18.40	20.6	89.4	200.0	-7.0
455.79	H	180.00	1.16	17.60	21.1	85.9	200.0	-7.3