

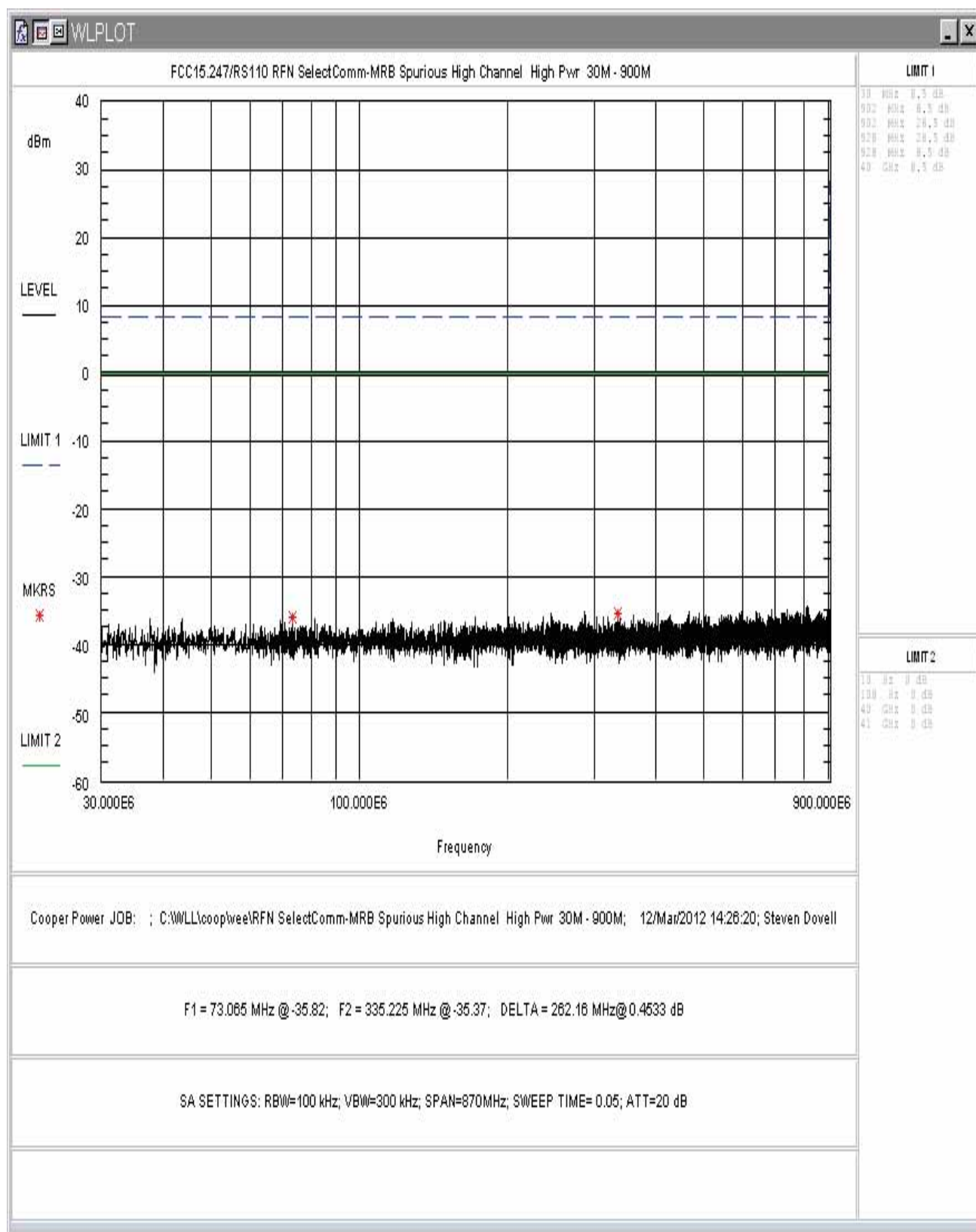


Figure 23: Conducted Spurious Emissions, High Power, High Channel 30 - 900MHz

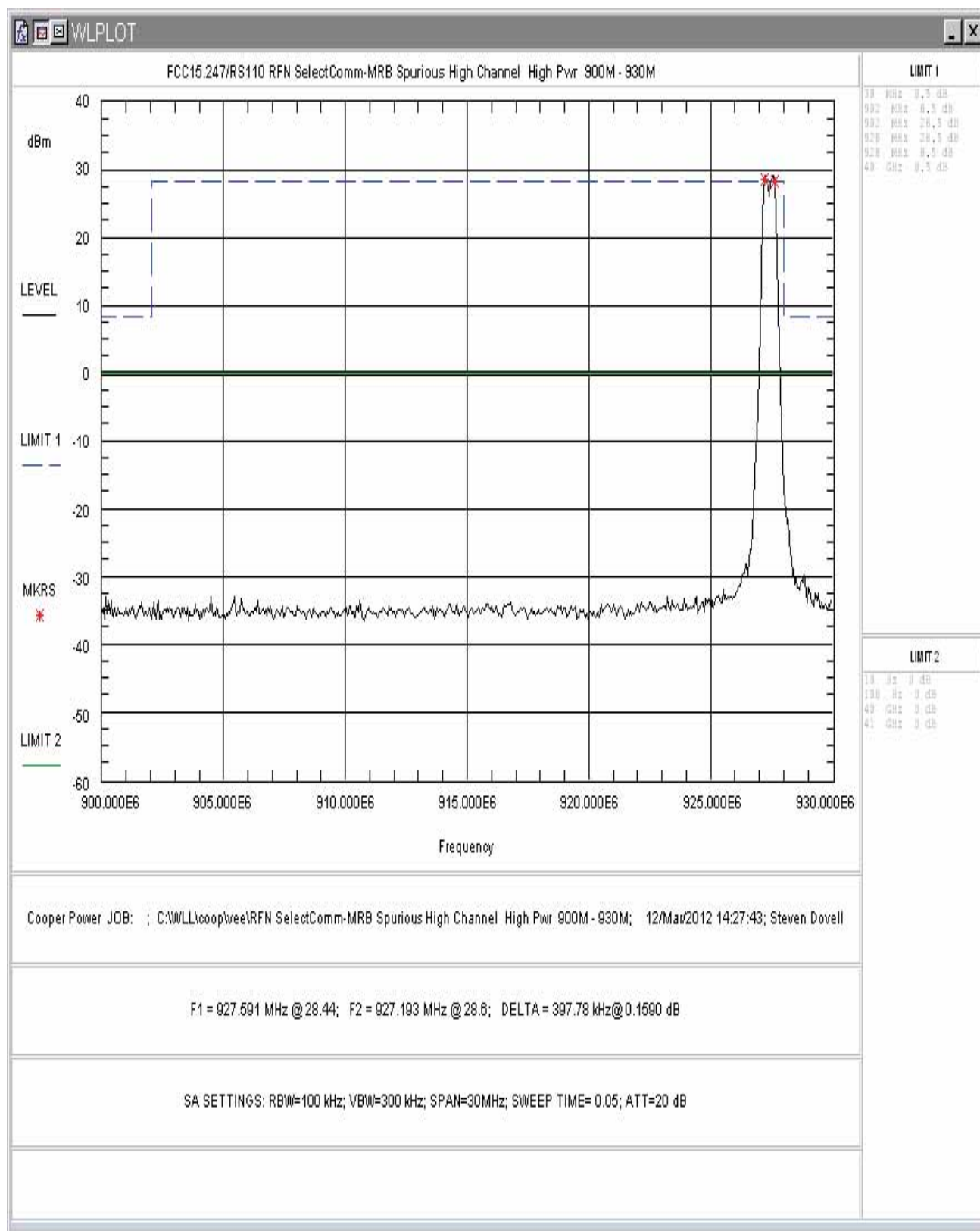


Figure 24: Conducted Spurious Emissions, High Power, High Channel 900 – 930MHz

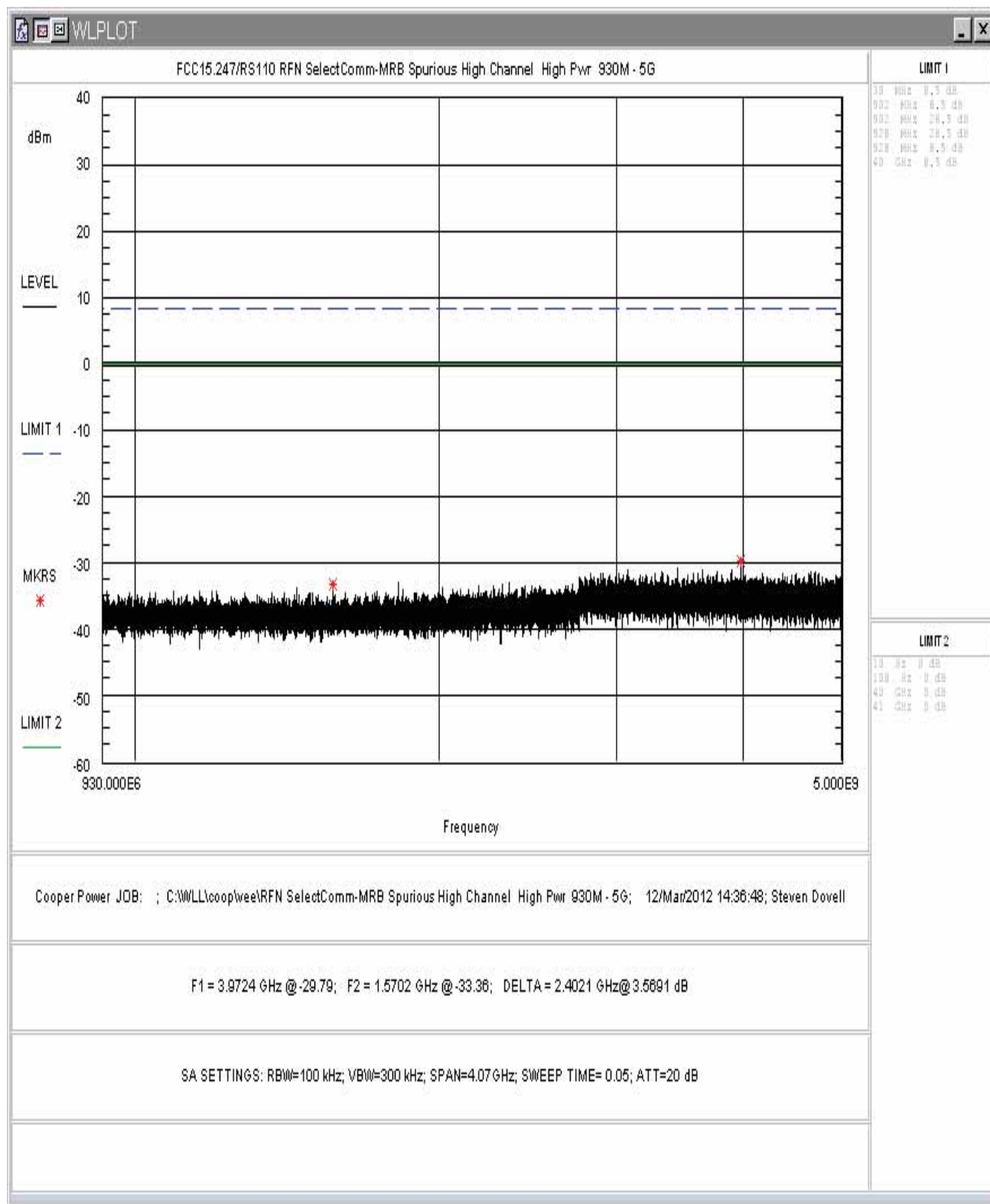


Figure 25: Conducted Spurious Emissions, High Power, High Channel 930-5000MHz

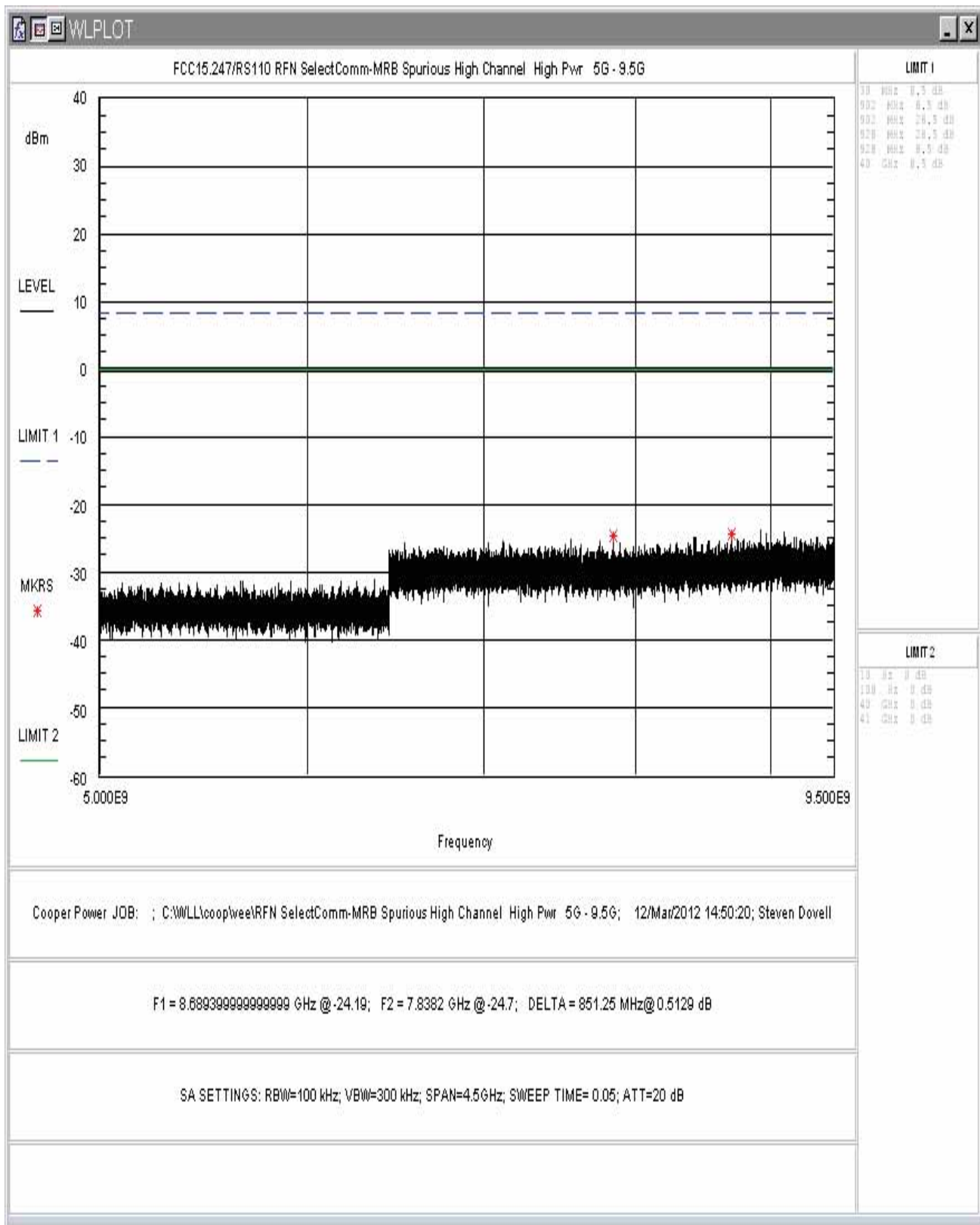


Figure 26: Conducted Spurious Emissions, High Power, High Channel 5-9.5GHz

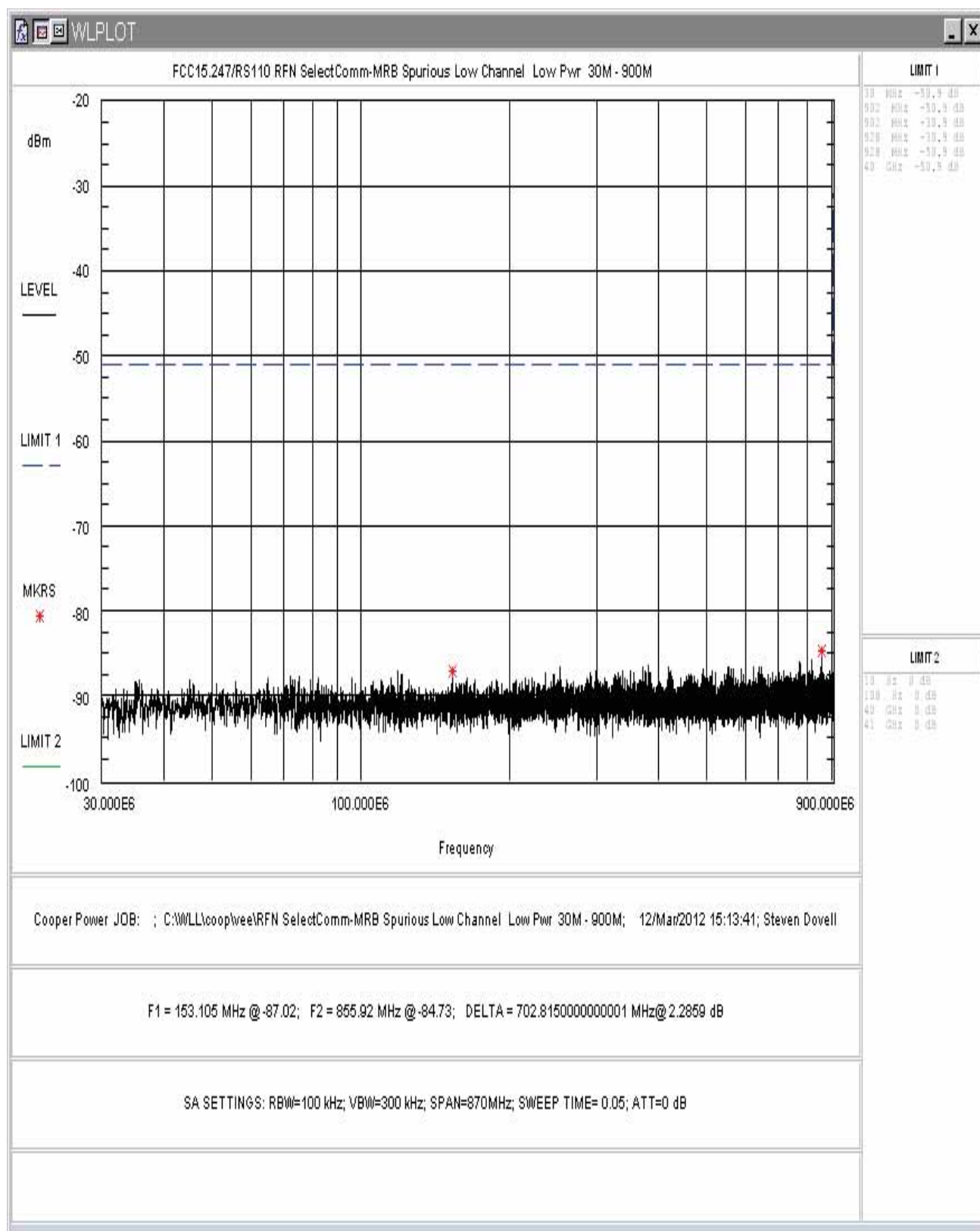


Figure 27: Conducted Spurious Emissions, Low Power, Low Channel 30 - 900MHz

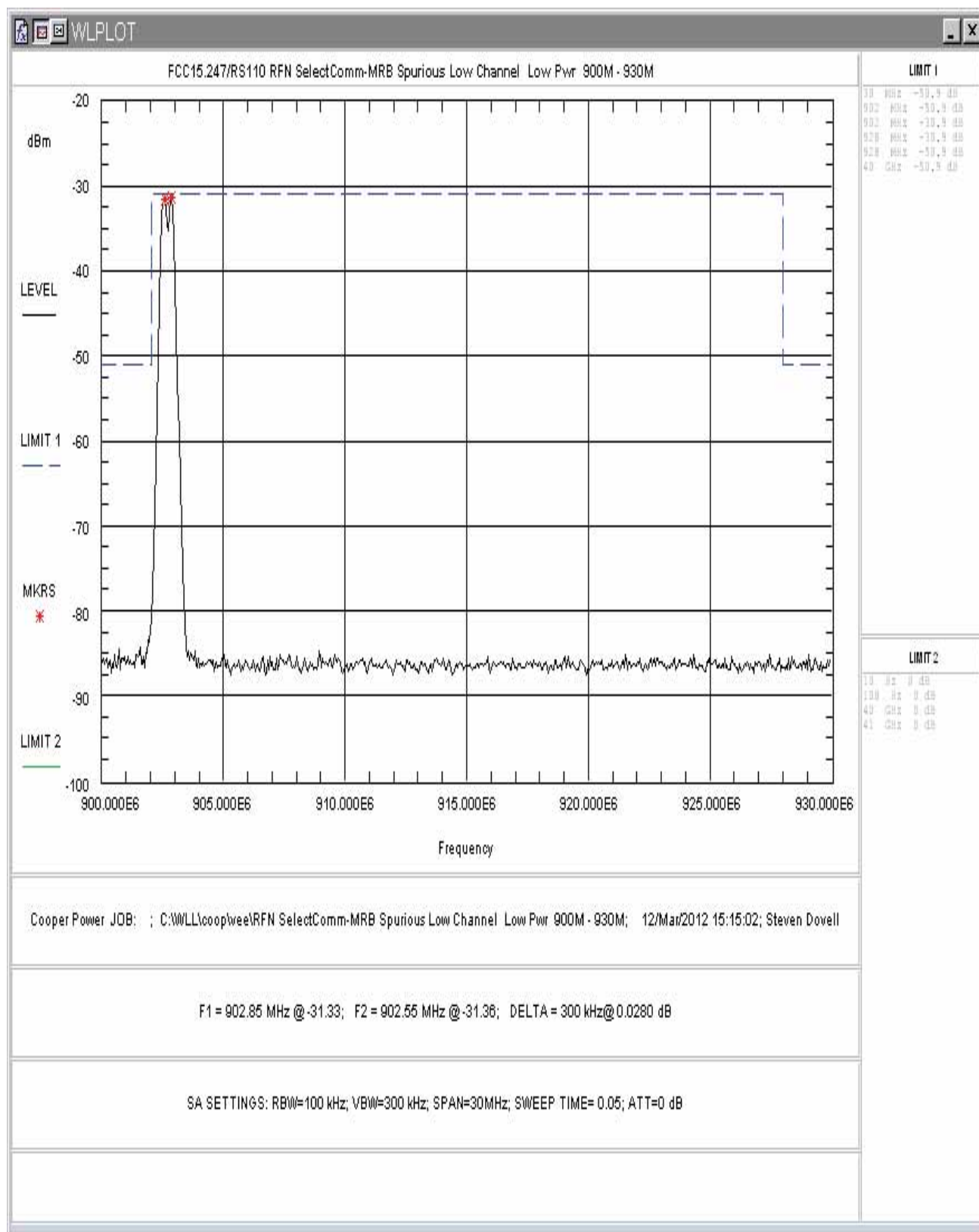


Figure 28: Conducted Spurious Emissions, Low Power, Low Channel 900 – 930MHz

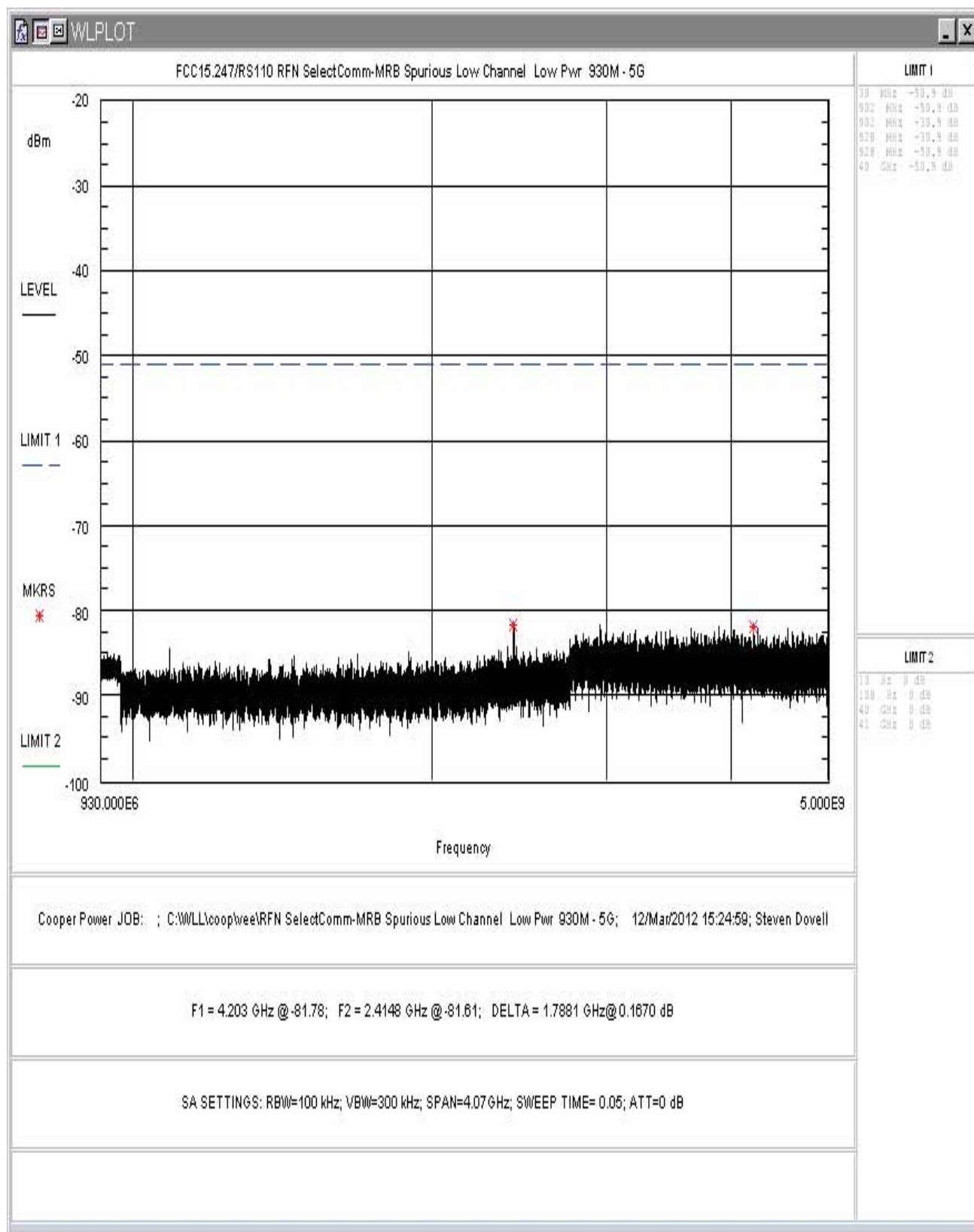


Figure 29: Conducted Spurious Emissions, Low Power, Low Channel 930-5000MHz

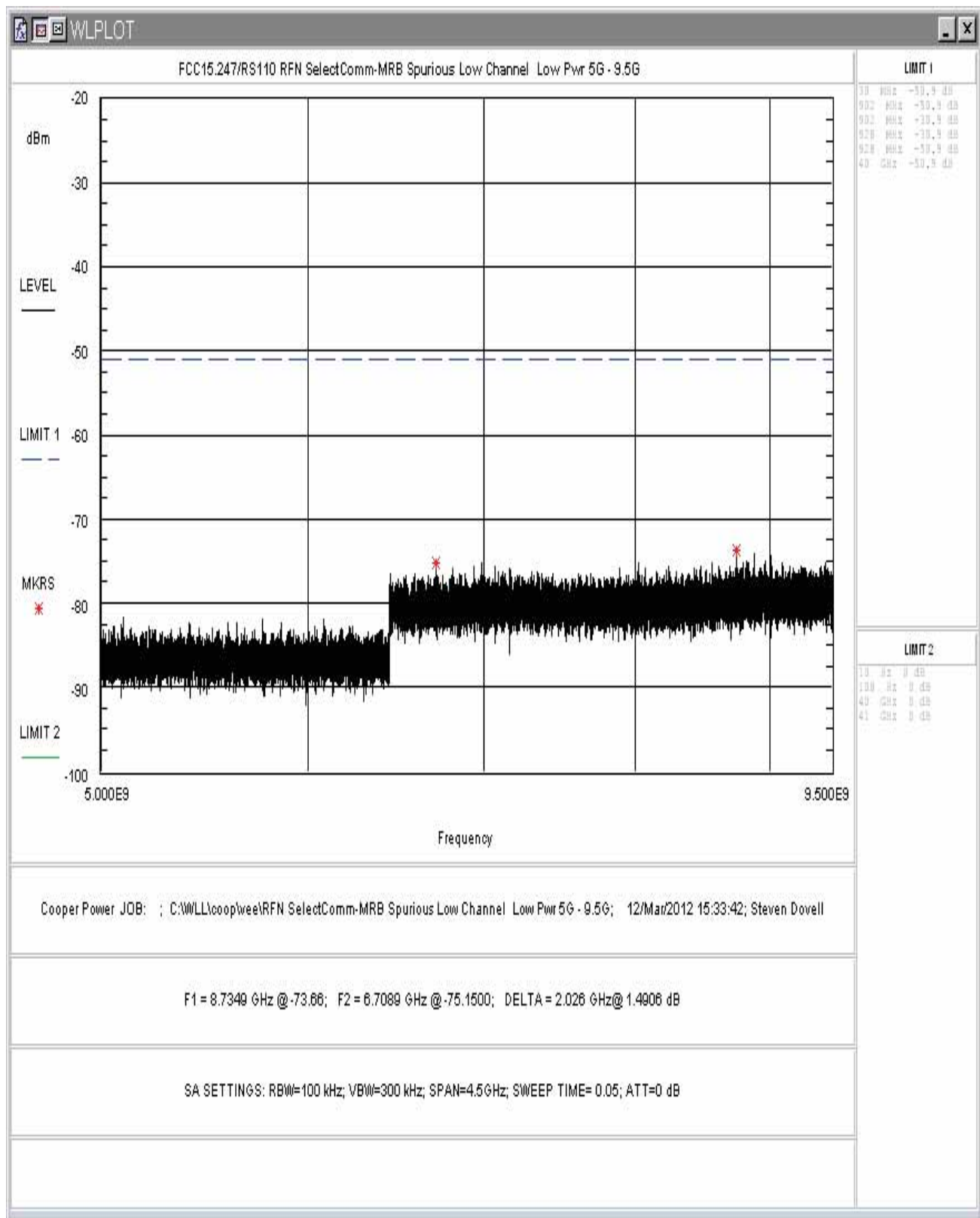


Figure 30: Conducted Spurious Emissions, Low Power, Low Channel 5-9.5GHz

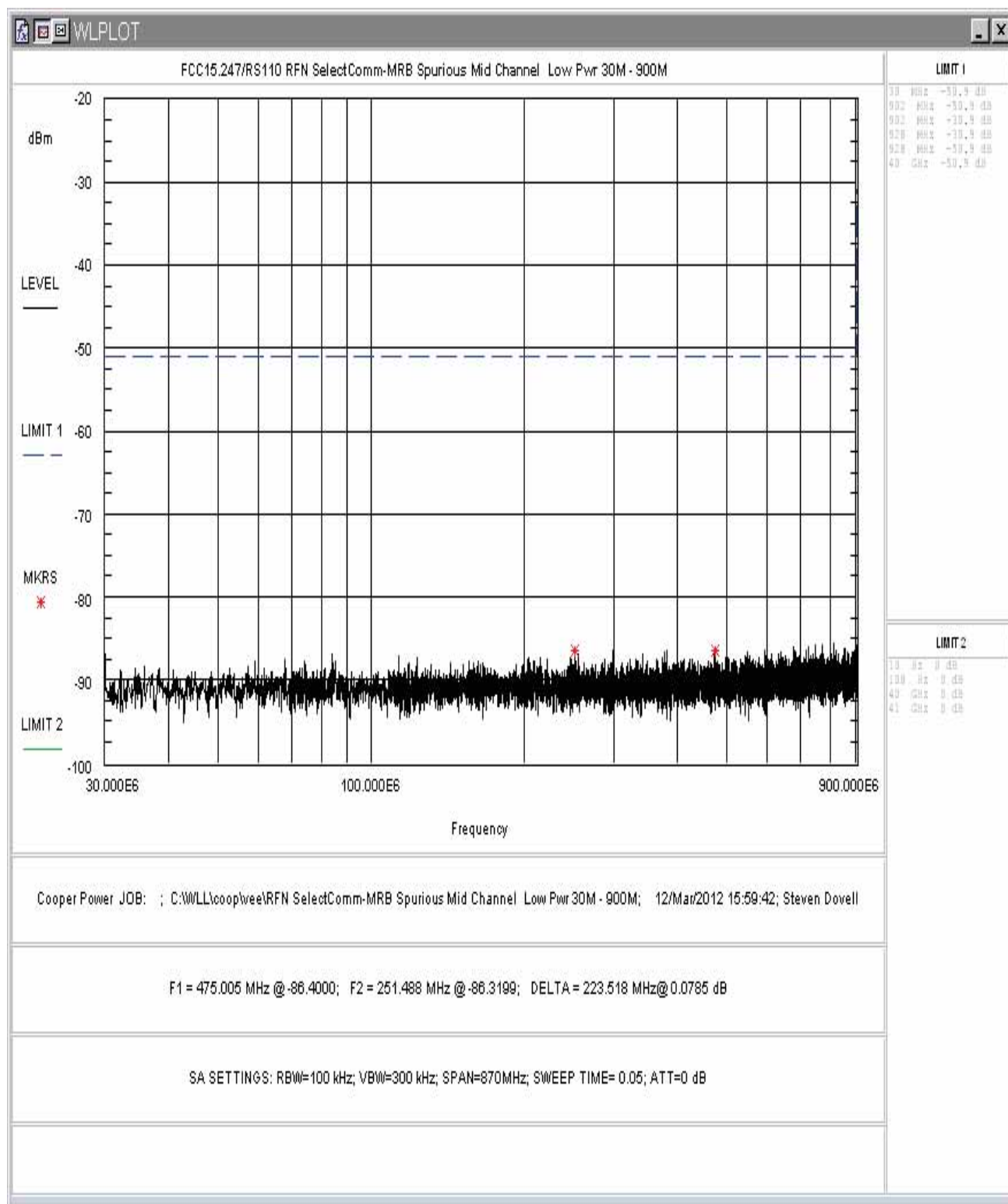


Figure 31: Conducted Spurious Emissions, Low Power, Center Channel 30 - 900MHz

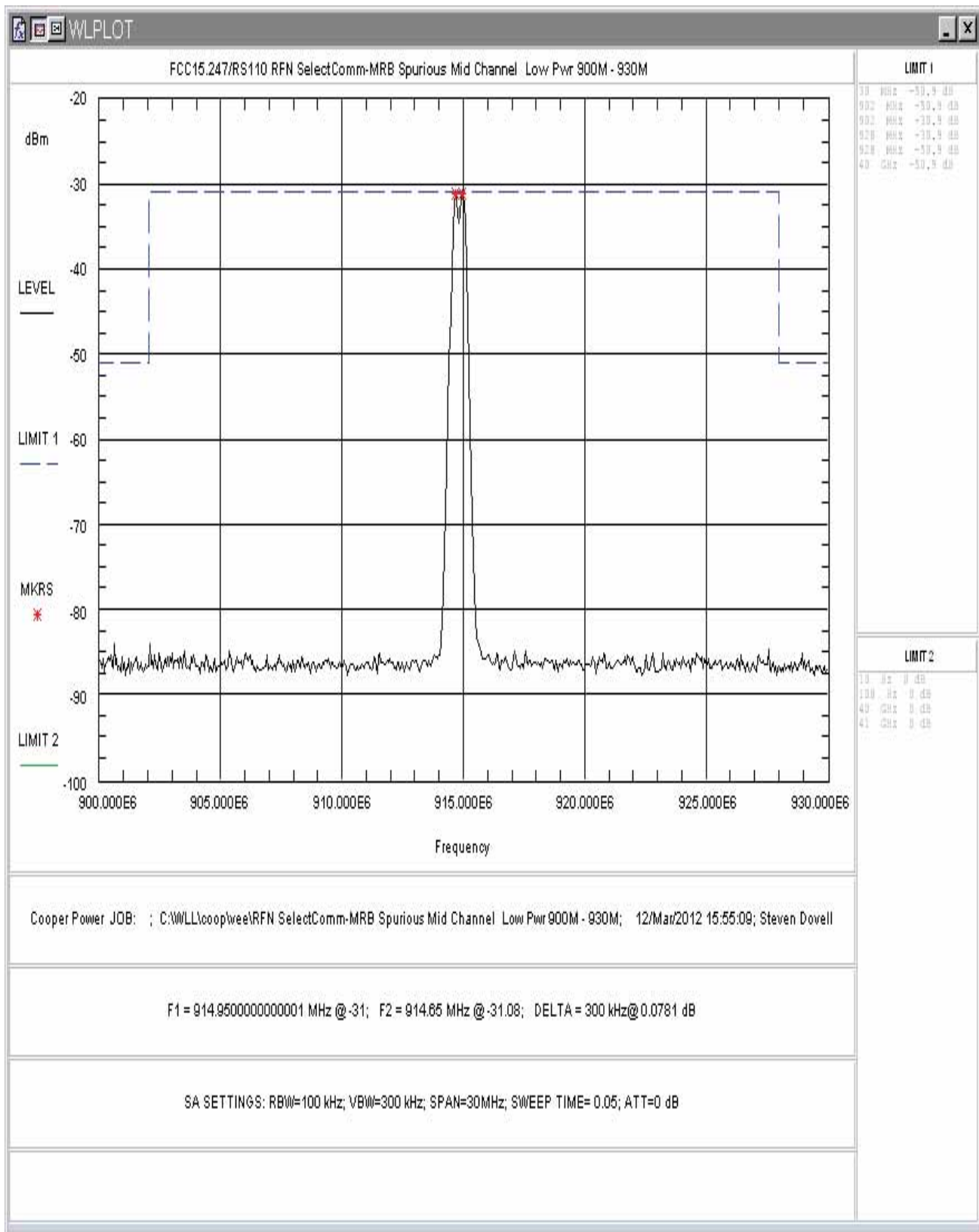


Figure 32: Conducted Spurious Emissions, Low Power, Center Channel 900 – 930MHz

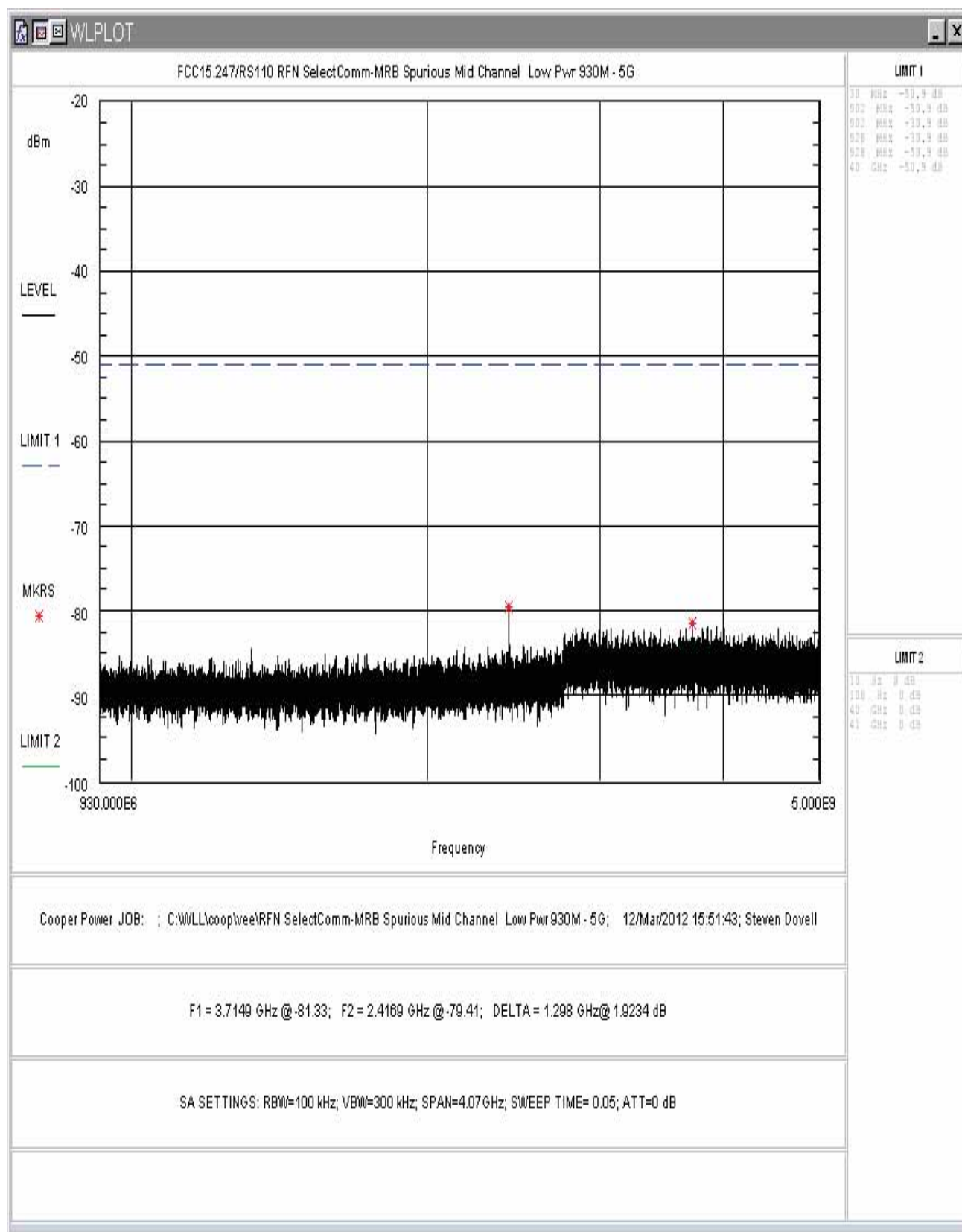


Figure 33: Conducted Spurious Emissions, Low Power, Center Channel 930-5000MHz

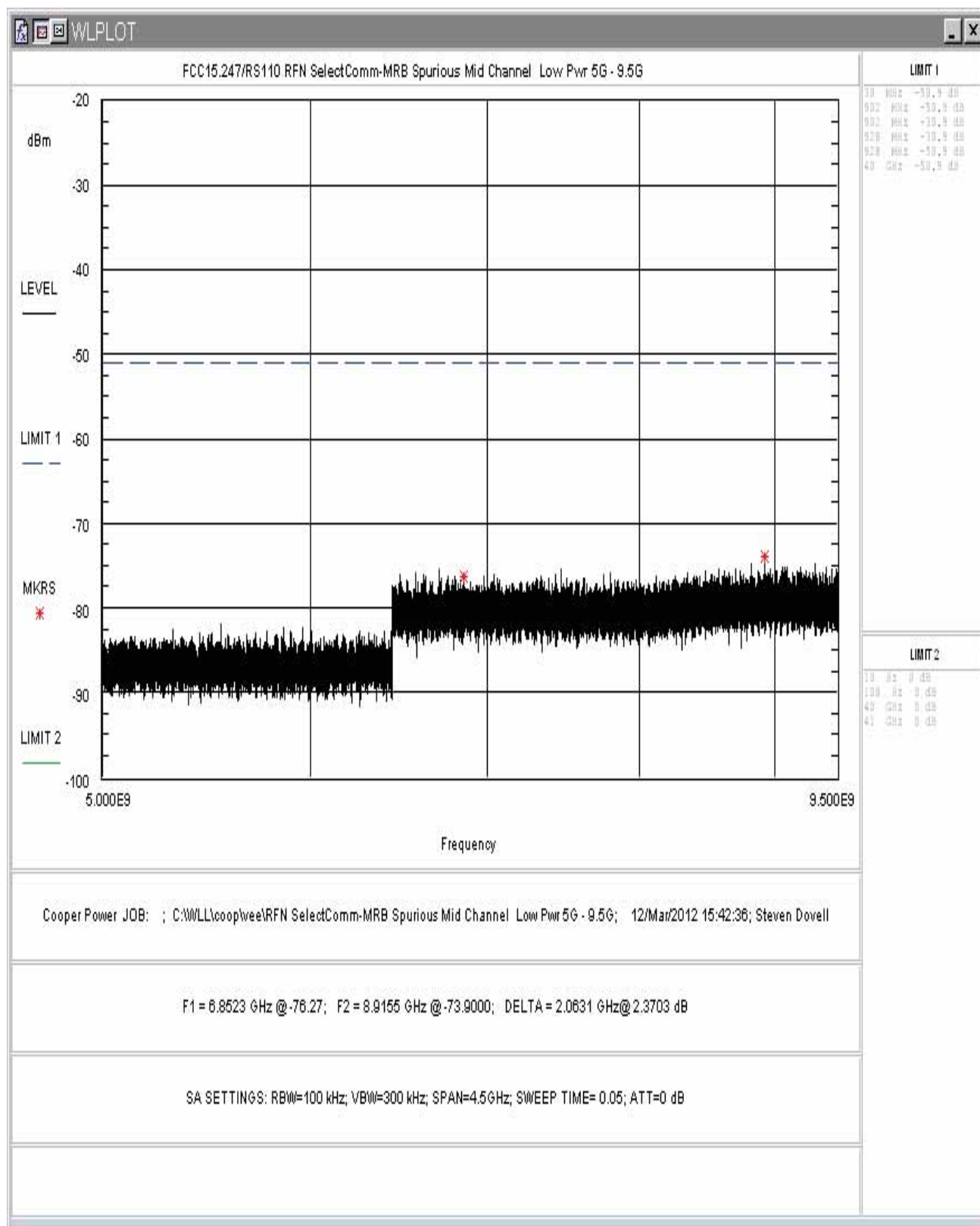


Figure 34: Conducted Spurious Emissions, Low Power, Center Channel 5-9.5GHz

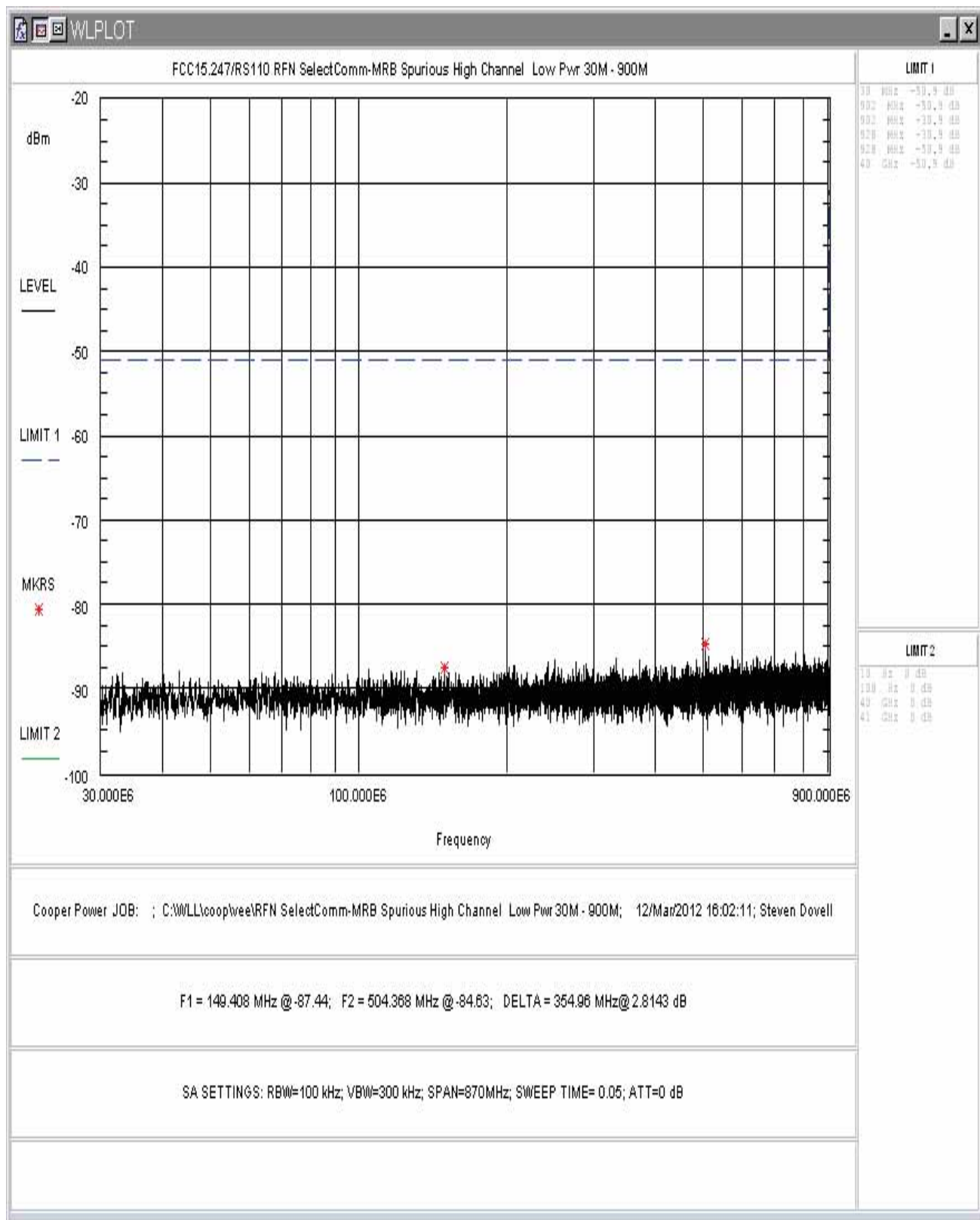


Figure 35: Conducted Spurious Emissions, Low Power, High Channel 30 - 900MHz

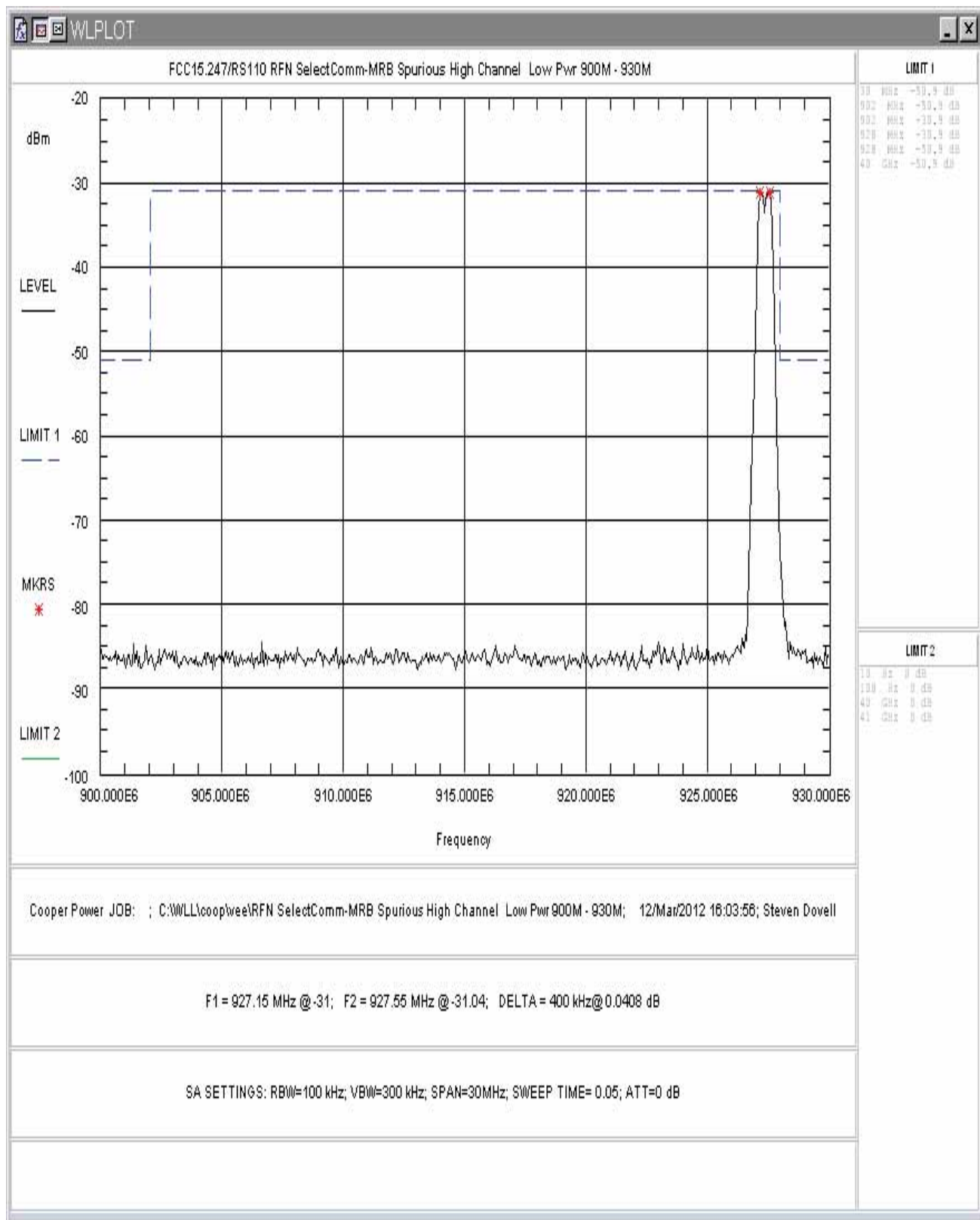


Figure 36: Conducted Spurious Emissions, Low Power, High Channel 900 – 930MHz

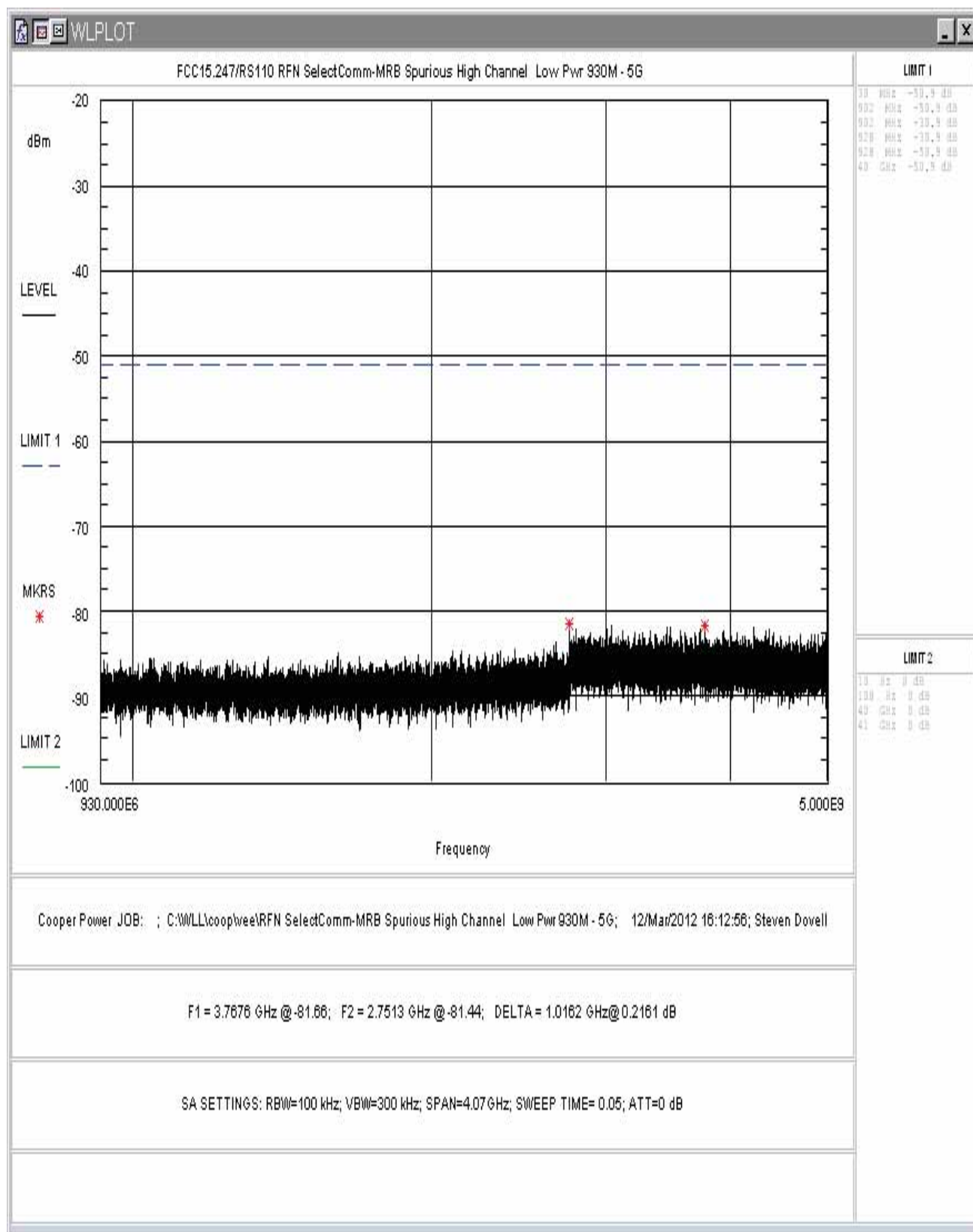


Figure 37: Conducted Spurious Emissions, Low Power, High Channel 930-5000MHz

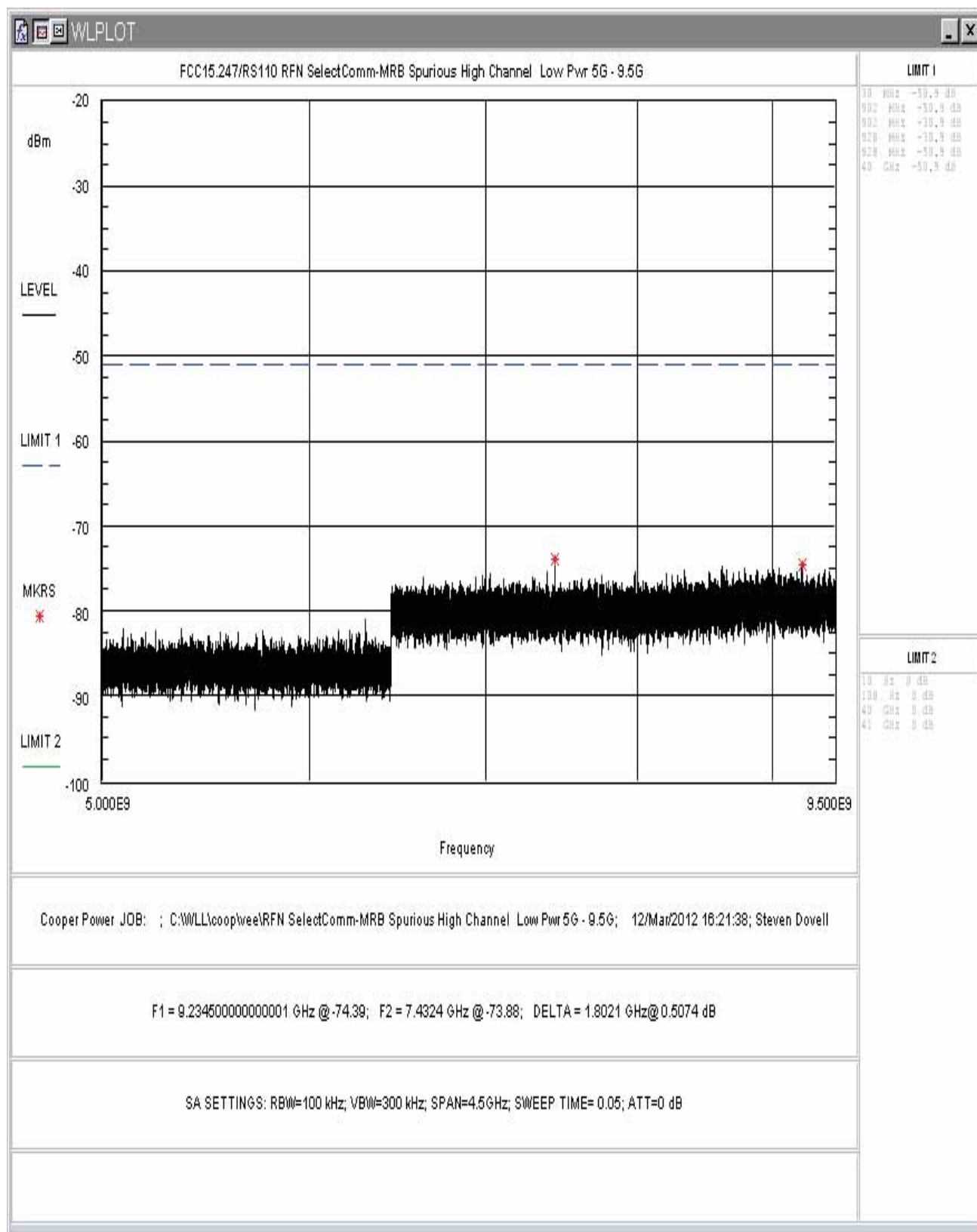


Figure 38: Conducted Spurious Emissions, Low Power, High Channel 5-9.5GHz

5.5.1 Band Edge Compliance

In accordance with FCC Public Notice DA-00-705 close-up plots of the upper and lower channels in both hopping and non-hopping modes with respect to the nearest authorized band-edges are provided below. The tests were performed in the same manner as the above conducted spurious emissions tests.

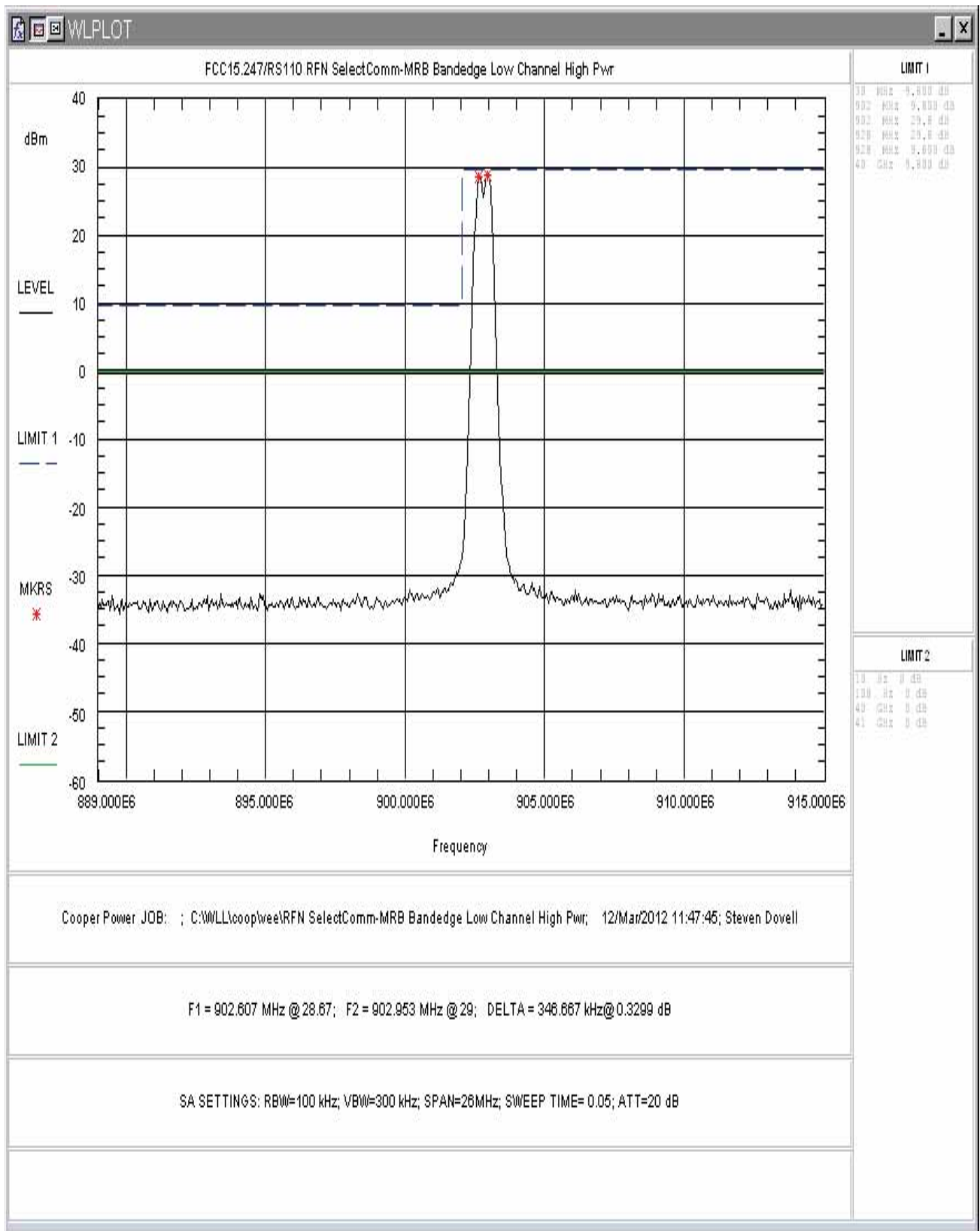


Figure 39: Lower Band-edge, Low Channel, High Power

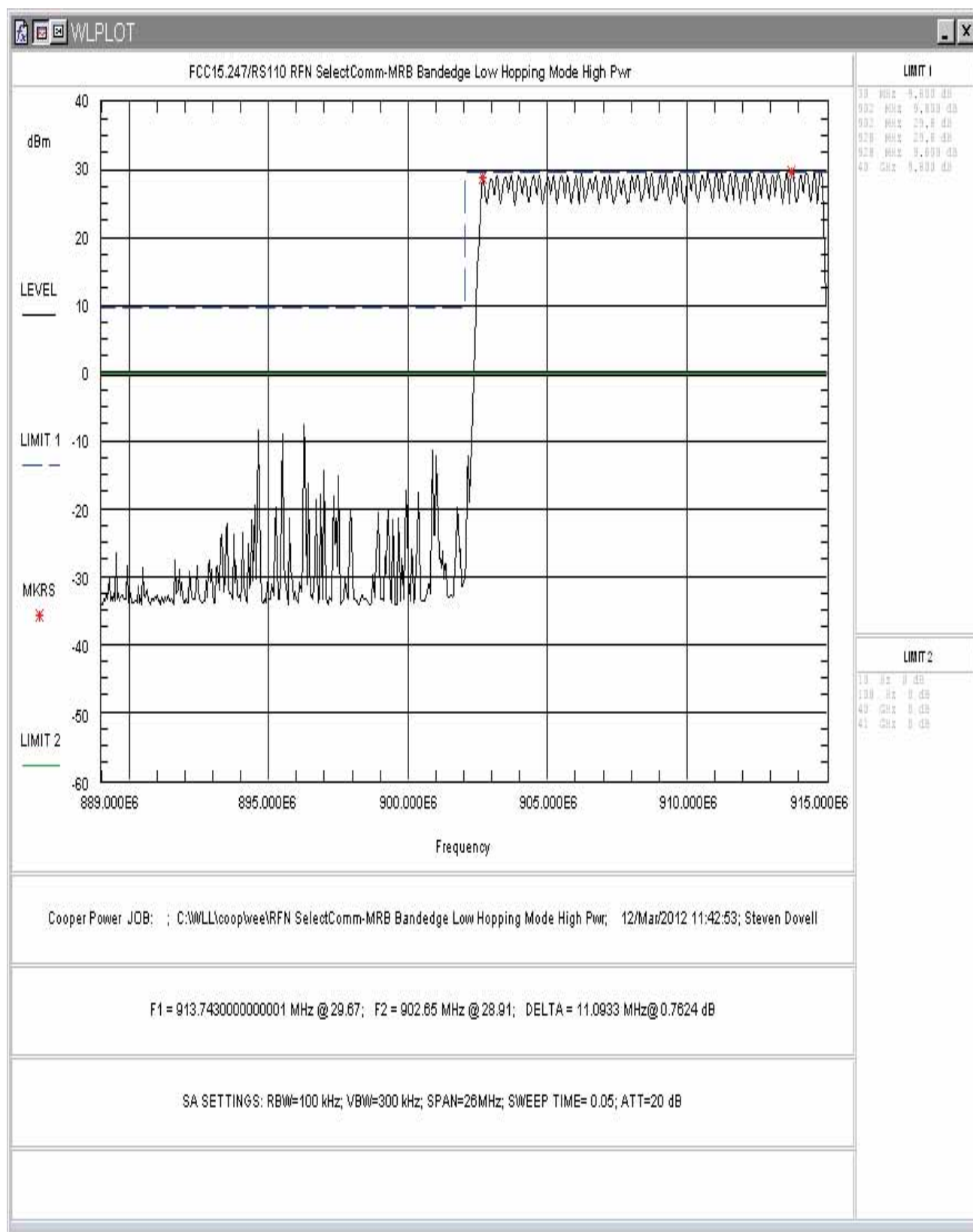


Figure 40: Lower Band-edge, Hopping Mode, High Power

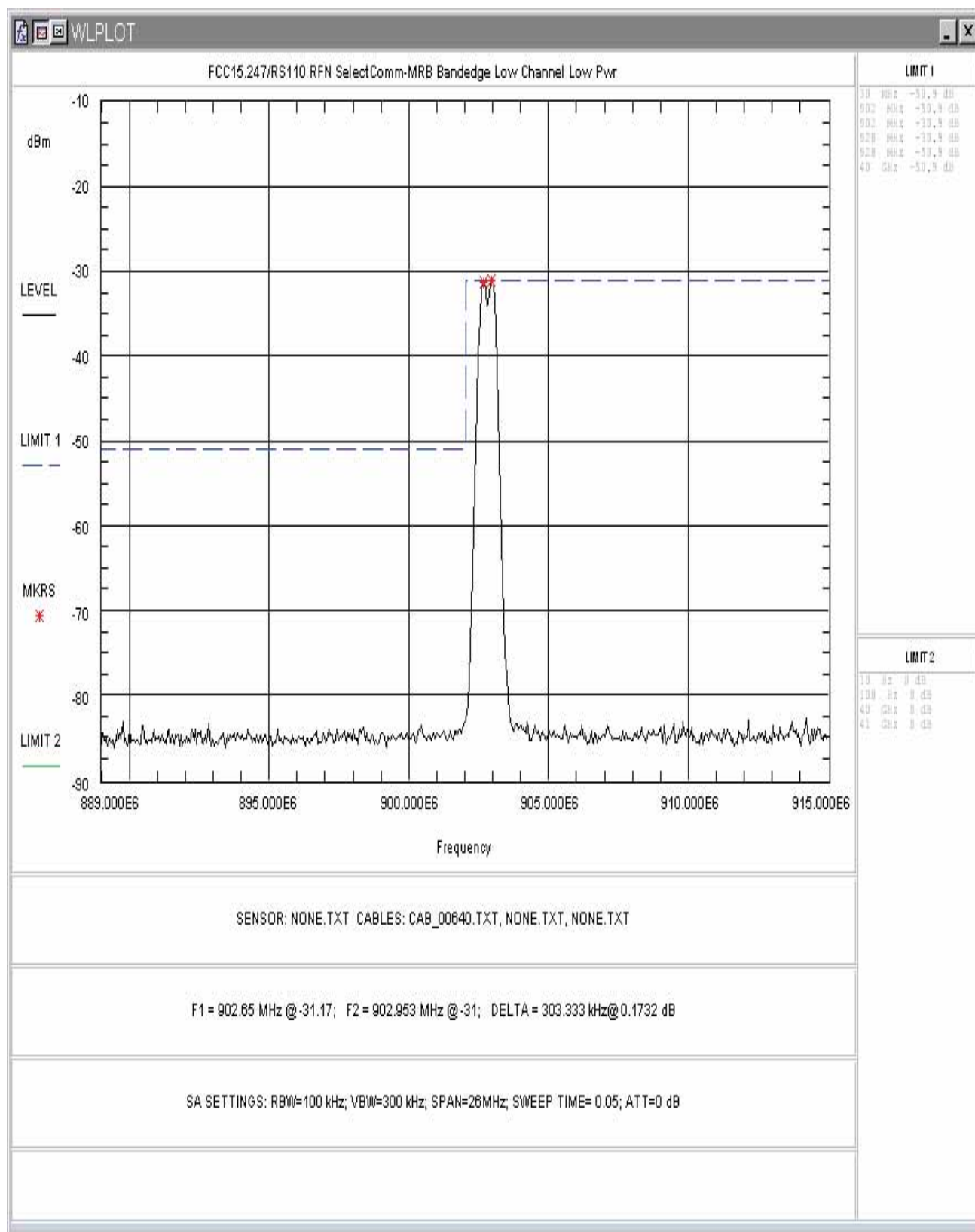


Figure 41: Lower Band-edge, Low Channel, Low Power

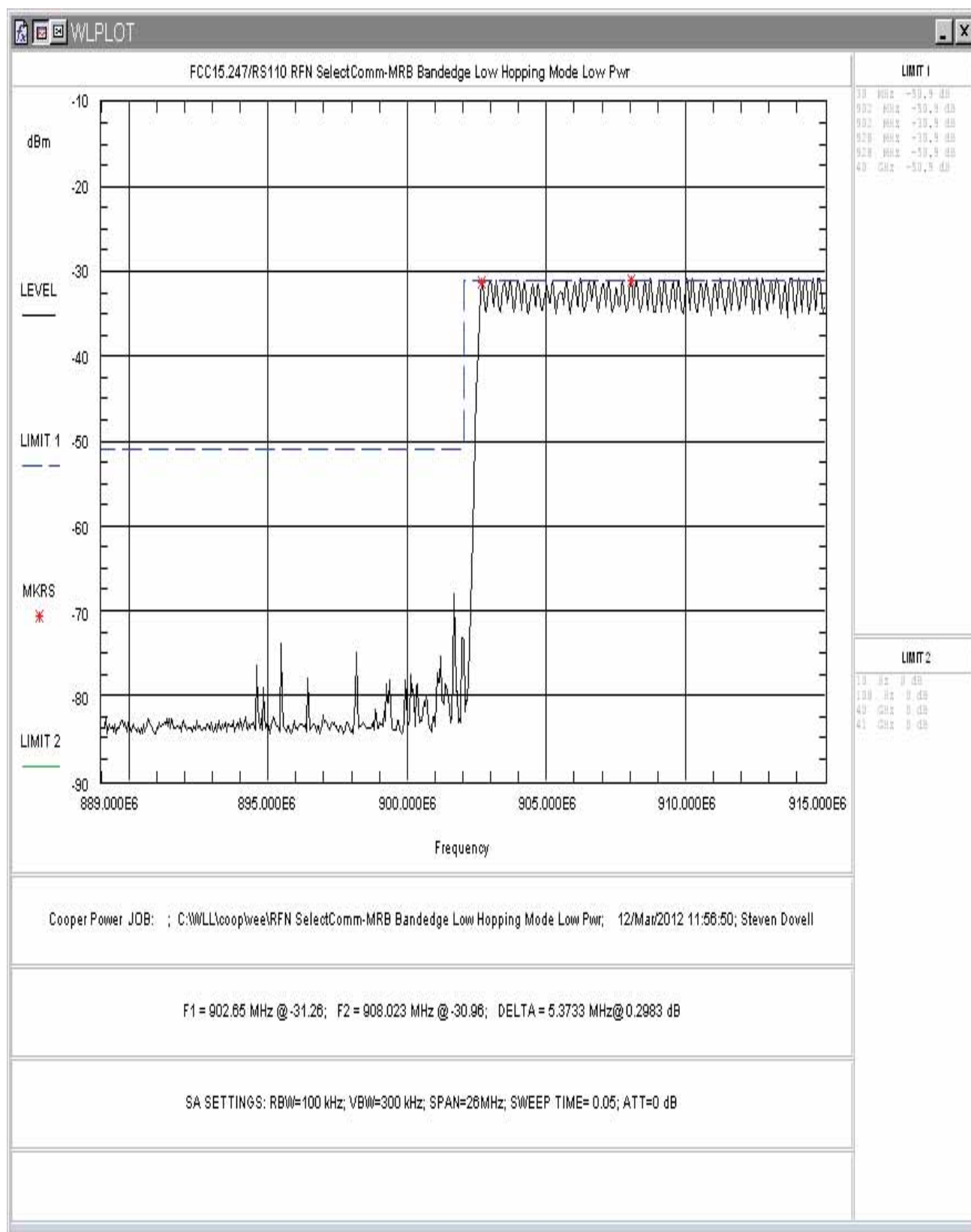


Figure 42: Lower Band-edge, Hopping Mode, Low Power

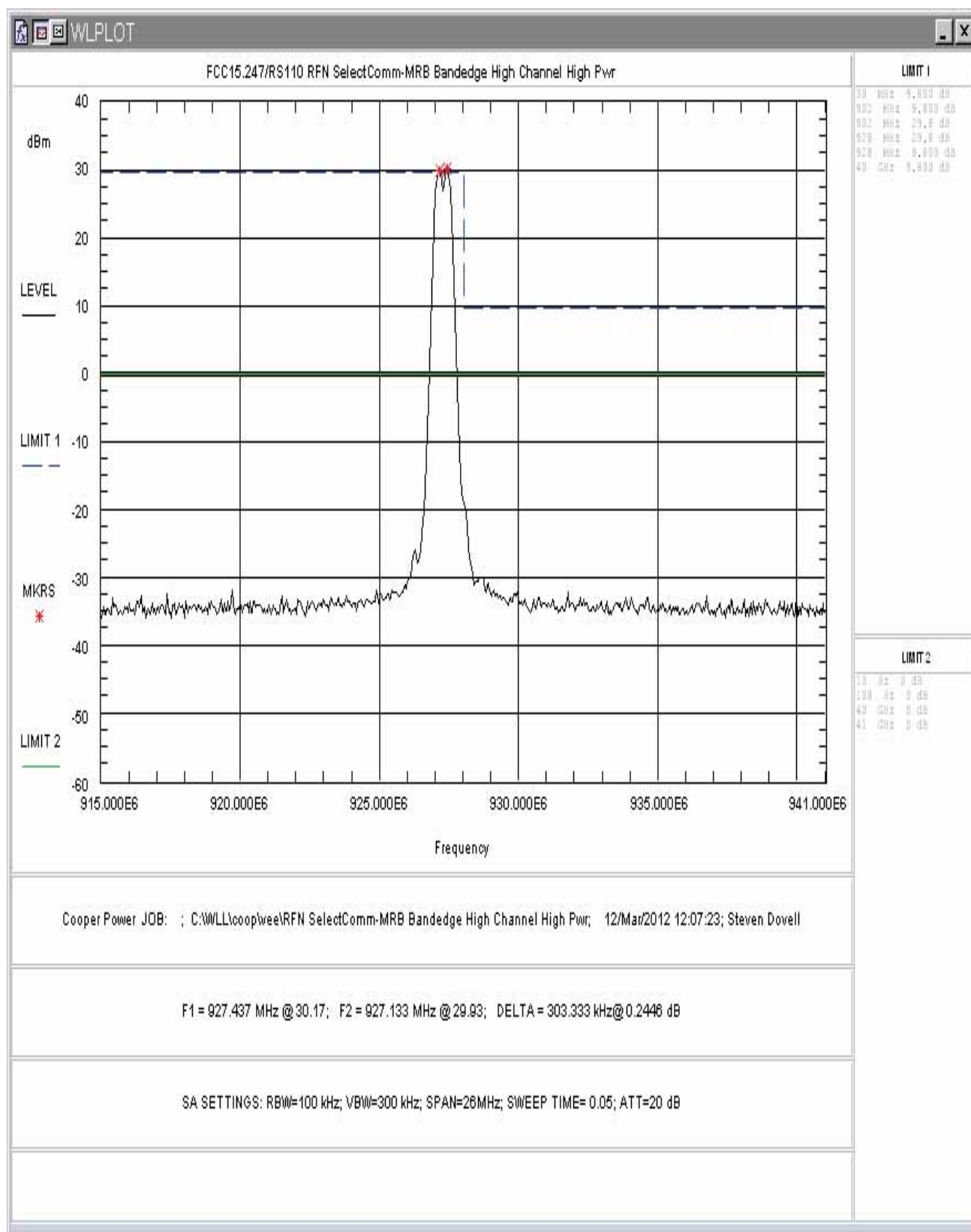


Figure 43: Upper Band-edge, High Channel, High Power

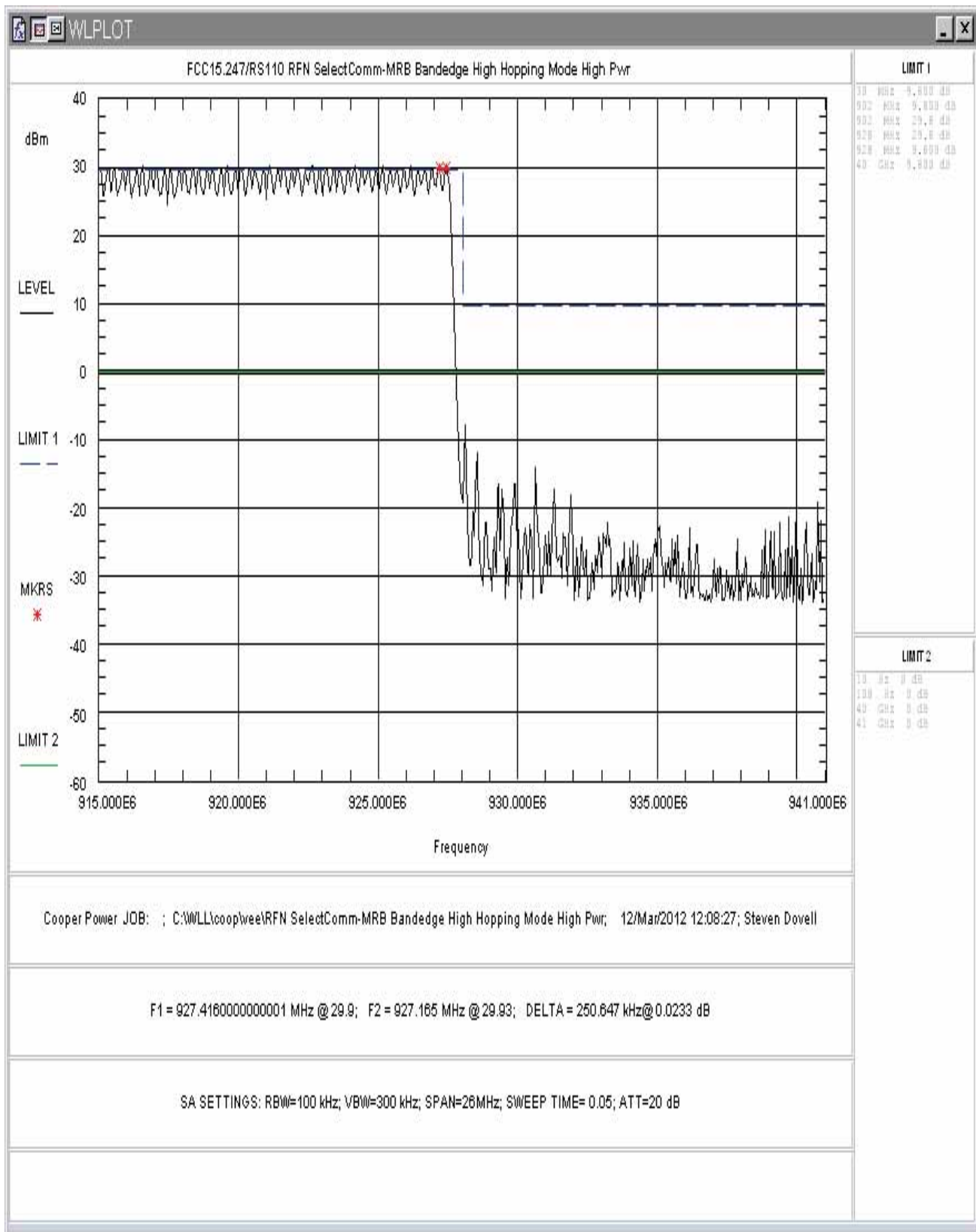


Figure 44: Upper Band-edge, Hopping Mode, High Power

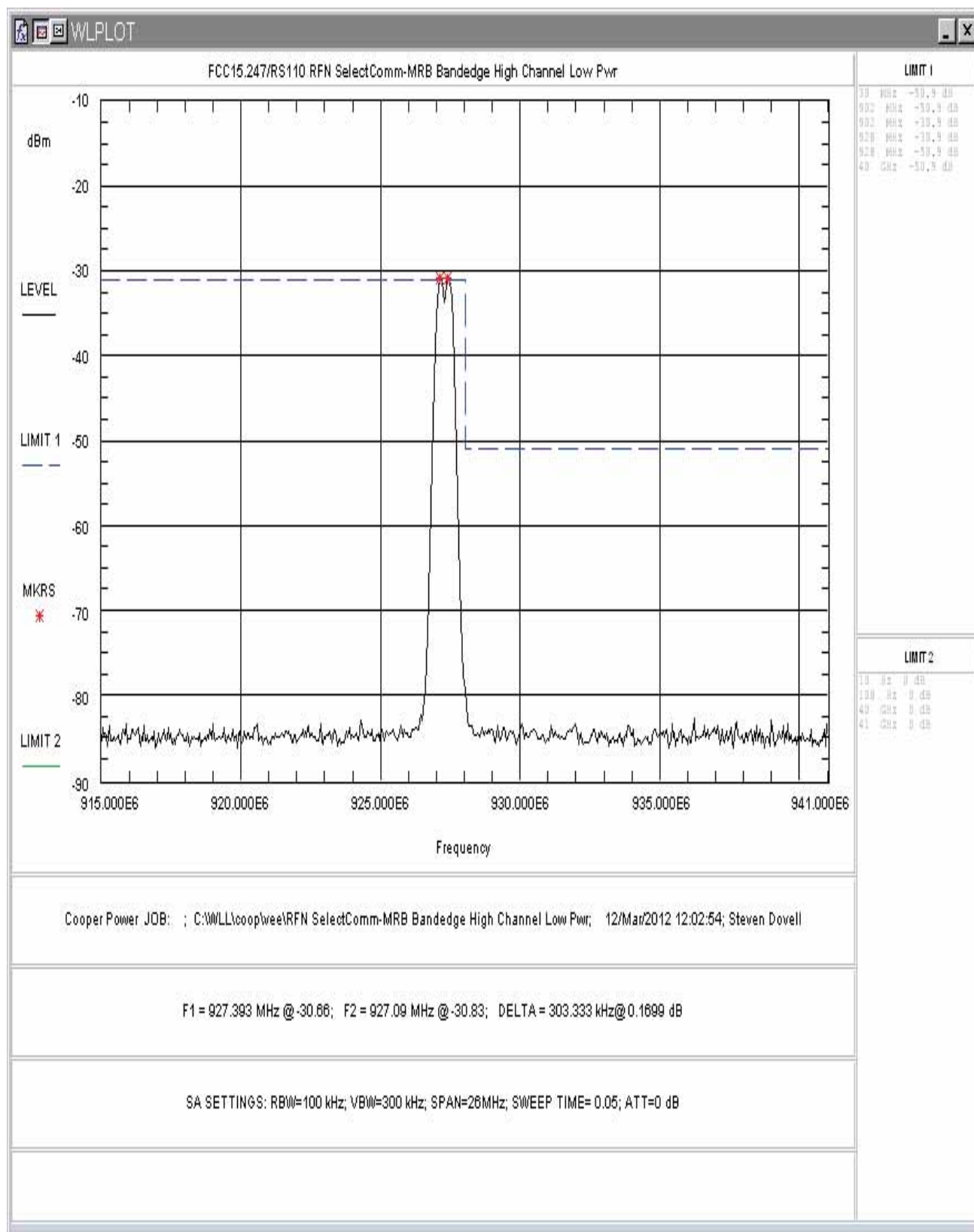


Figure 45: Upper Band-edge, High Channel, Low Power

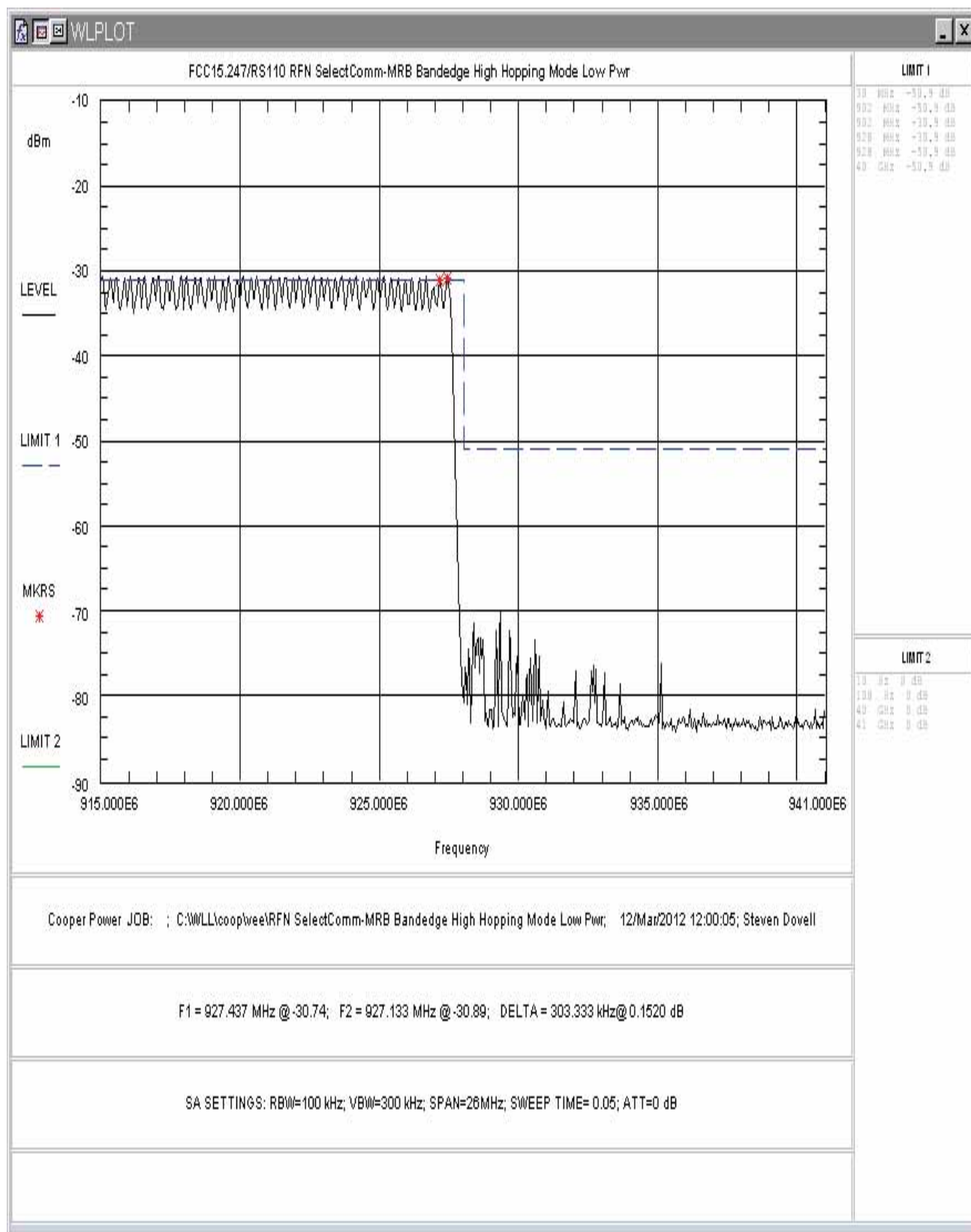


Figure 46: Upper Band-edge, Hopping Mode, Low Power

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 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. Both the horizontal and vertical field components were measured. The unit was pre-scanned in 3 orthogonal positions with full testing performed in the worst case position. The below 1 GHz data was the same for all antenna types and was reported with the 6dBi antenna attached. Above 1GHz data was reported for each of the 3 antenna types.

From the measured conducted duty cycle and in accordance with FCC Public Notice DA 00-705, Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems an additional duty cycle correction is allowed for hopping systems. This duty cycle correction has been calculated at -8.1dB and has been added to the average measurements for harmonics of the transmit frequency.

The emissions were measured using the following resolution bandwidths:

Table 9: Spectrum Analyzer Settings

Frequency Range	Resolution Bandwidth	Video Bandwidth
30MHz-1000 MHz	120kHz	>100 kHz
>1000 MHz	1 MHz	10 Hz (Avg.), 1MHz (Peak)

**Table 10: Radiated Emission Test Data < 1GHz, Low Channel
(Restricted Bands-covers all 3 antenna configurations)**

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)
38.22	V	90.00	1.00	16.50	15.1	37.9	100.0	-8.4
73.28	V	165.00	1.00	21.50	11.3	43.6	100.0	-7.2
109.87	V	195.00	1.00	9.30	15.5	17.4	150.0	-18.7
135.41	V	250.00	1.00	13.60	15.2	27.7	150.0	-14.7
156.83	V	270.00	1.00	7.10	15.0	12.8	150.0	-21.4
162.98	H	350.00	1.00	9.90	15.1	17.7	150.0	-18.6
169.90	V	0.00	1.00	6.10	14.4	10.6	150.0	-23.1
245.00	V	90.00	1.81	14.20	14.0	25.7	200.0	-17.8
336.04	V	190.00	1.85	8.30	17.2	18.9	200.0	-20.5
966.60	V	110.00	1.10	12.50	28.1	107.6	500.0	-13.3
73.26	H	125.00	4.00	18.10	11.3	29.5	100.0	-10.6
108.74	H	125.00	4.00	15.30	15.2	33.5	150.0	-13.0
132.20	H	185.00	4.00	16.40	15.5	39.2	150.0	-11.7
149.94	H	350.00	4.00	10.10	14.7	17.5	150.0	-18.7
154.54	H	185.00	4.00	9.20	15.0	16.2	150.0	-19.4
257.96	H	190.00	3.20	13.80	14.6	26.3	200.0	-17.6
402.54	H	280.00	2.89	7.20	19.3	21.1	200.0	-19.5
995.76	H	200.00	1.00	11.30	28.8	100.7	500.0	-13.9

**Table 11: Radiated Emission Test Data >1GHz, Low Channel
(6dbi –Omni directional Antenna)**

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)
Peak								
2708.25	V	270.00	1.72	31.50	-1.2	32.8	5000.0	-43.7
3611.00	V	5.00	1.70	35.80	0.6	65.9	5000.0	-37.6
4513.75	V	265.00	1.54	37.00	1.6	84.7	5000.0	-35.4
5416.50	V	0.00	1.50	37.33	4.3	120.6	5000.0	-32.4
8124.75	V	85.00	1.40	41.80	7.6	295.1	5000.0	-24.6
9027.50	V	265.00	1.40	43.70	8.3	399.3	5000.0	-22.0
AVG								
2708.25	V	270.00	1.72	20.80	-1.2	9.6	500.0	-34.4
3611.00	V	5.00	1.70	24.50	0.6	17.9	500.0	-28.9
4513.75	V	265.00	1.54	24.67	1.6	20.5	500.0	-27.7
5416.50	V	0.00	1.50	21.00	4.3	18.4	500.0	-28.7
8124.75	V	85.00	1.40	28.33	7.6	62.6	500.0	-18.0
9027.50	V	265.00	1.40	29.67	8.3	79.4	500.0	-16.0
Peak								
2708.25	H	45.00	1.93	33.80	-1.2	42.8	5000.0	-41.4
3611.00	H	90.00	1.90	43.33	0.6	156.9	5000.0	-30.1
4513.75	H	185.00	1.85	43.20	1.6	173.0	5000.0	-29.2
5416.50	H	180.00	1.80	41.30	4.3	190.5	5000.0	-28.4
8124.75	H	195.00	1.60	42.60	7.6	323.6	5000.0	-23.8
9027.50	H	250.00	1.50	41.00	8.3	292.6	5000.0	-24.7
AVG								
2708.25	H	45.00	1.93	31.00	-1.2	31.0	500.0	-24.2
3611.00	H	90.00	1.90	31.20	0.6	38.8	500.0	-22.2
4513.75	H	185.00	1.85	31.00	1.6	42.5	500.0	-21.4
5416.50	H	180.00	1.80	31.20	4.3	59.6	500.0	-18.5
8124.75	H	195.00	1.60	31.00	7.6	85.1	500.0	-15.4
9027.50	H	250.00	1.50	30.60	8.3	88.4	500.0	-15.1

**Table 12: Radiated Emission Test Data >1GHz, Low Channel
(3dbi –Phantom Antenna)**

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)
Peak								
2708.25	V	135.00	2.10	30.79	-1.2	52.6	5000.0	-39.6
3611.00	V	95.00	2.08	32.04	0.6	74.3	5000.0	-36.6
4513.75	V	195.00	1.85	34.21	1.6	106.8	5000.0	-33.4
5416.50	V	0.00	1.25	38.26	4.3	134.3	5000.0	-31.4
8124.75	V	85.00	1.40	39.00	7.6	213.8	5000.0	-27.4
9027.50	V	265.00	1.40	39.70	8.3	252.0	5000.0	-26.0
AVG								
2708.25	V	135.00	2.10	22.10	-1.2	14.7	500.0	-30.7
3611.00	V	95.00	2.08	23.60	0.6	21.3	500.0	-27.4
4513.75	V	195.00	1.85	23.87	1.6	24.6	500.0	-26.1
5416.50	V	0.00	1.25	25.50	4.3	30.9	500.0	-24.2
8124.75	V	85.00	1.40	28.33	7.6	56.9	500.0	-18.9
9027.50	V	265.00	1.40	29.67	8.3	67.8	500.0	-17.4
Peak								
2708.25	H	90.00	2.60	31.88	-1.2	45.2	5000.0	-40.9
3611.00	H	265.00	2.49	32.80	0.6	61.5	5000.0	-38.2
4513.75	H	275.00	2.34	33.14	1.6	71.6	5000.0	-36.9
5416.50	H	175.00	2.37	33.50	4.3	102.3	5000.0	-33.8
8124.75	H	195.00	1.60	42.60	7.6	224.7	5000.0	-26.9
9027.50	H	250.00	1.50	41.00	8.3	286.0	5000.0	-24.9
AVG	H							
2708.25	H	90.00	2.60	21.10	-1.2	13.1	500.0	-31.7
3611.00	H	265.00	2.49	22.60	0.6	19.0	500.0	-28.4
4513.75	H	275.00	2.34	22.64	1.6	21.4	500.0	-27.4
5416.50	H	175.00	2.37	22.81	4.3	29.9	500.0	-24.5
8124.75	H	195.00	1.60	31.00	7.6	54.5	500.0	-19.2
9027.50	H	250.00	1.50	30.60	8.3	65.5	500.0	-17.7

**Table 13: Radiated Emission Test Data >1GHz, Low Channel
(2dbi –Co-Linear Antenna)**

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)
Peak								
2708.25	V	125.00	2.30	37.56	-1.2	66.0	5000.0	-37.6
3611.00	V	195.00	2.20	37.95	0.6	84.4	5000.0	-35.4
4513.75	V	180.00	2.00	38.00	1.6	95.1	5000.0	-34.4
5416.50	V	85.00	2.00	37.66	4.3	125.3	5000.0	-32.0
8124.75	V	85.00	1.40	38.26	7.6	196.4	5000.0	-28.1
9027.50	V	265.00	1.40	39.00	8.3	232.5	5000.0	-26.7
AVG								
2708.25	V	125.00	2.30	23.73	-1.2	13.4	500.0	-31.4
3611.00	V	195.00	2.20	25.41	0.6	19.9	500.0	-28.0
4513.75	V	180.00	2.00	25.37	1.6	22.2	500.0	-27.0
5416.50	V	85.00	2.00	25.62	4.3	31.3	500.0	-24.1
8124.75	V	85.00	1.40	28.33	7.6	49.4	500.0	-20.1
9027.50	V	265.00	1.40	29.67	8.3	49.1	500.0	-20.2
Peak								
2708.25	H	265.00	2.76	37.03	-1.2	62.1	5000.0	-38.1
3611.00	H	145.00	2.70	37.16	0.6	77.1	5000.0	-36.2
4513.75	H	100.00	2.50	38.60	1.6	101.9	5000.0	-33.8
5416.50	H	270.00	2.40	37.66	4.3	125.3	5000.0	-32.0
8124.75	H	195.00	1.60	42.60	7.6	224.7	5000.0	-26.9
9027.50	H	250.00	1.50	41.00	8.3	286.0	5000.0	-24.9
AVG								
2708.25	H	265.00	2.76	23.60	-1.2	13.2	500.0	-31.6
3611.00	H	145.00	2.70	24.34	0.6	17.6	500.0	-29.1
4513.75	H	100.00	2.50	25.40	1.6	22.3	500.0	-27.0
5416.50	H	270.00	2.40	25.60	4.3	31.3	500.0	-24.1
8124.75	H	195.00	1.60	31.00	7.6	44.7	500.0	-21.0
9027.50	H	250.00	1.50	30.60	8.3	59.3	500.0	-18.5

**Table 14: Radiated Emission Test Data < 1GHz, Center Channel
(Restricted bands-covers all 3 antenna configurations)**

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)
38.23	V	90.00	1.00	14.30	15.1	29.4	100.0	-10.6
73.51	V	180.00	1.00	16.00	11.3	23.1	100.0	-12.7
118.46	V	200.00	1.00	9.30	16.6	19.7	150.0	-17.6
150.00	V	270.00	1.00	14.70	14.8	29.7	150.0	-14.1
166.38	V	265.00	1.00	10.80	15.0	19.5	150.0	-17.7
172.35	V	190.00	1.00	16.60	14.0	33.9	150.0	-12.9
246.03	V	190.00	1.00	16.60	14.0	33.9	200.0	-15.4
333.76	V	180.00	1.67	12.30	17.2	30.0	200.0	-16.5
991.38	V	180.00	1.19	15.10	28.8	156.9	500.0	-10.1
73.18	H	125.00	4.00	14.80	11.3	20.2	100.0	-13.9
75.00	H	180.00	4.00	17.00	11.0	25.2	100.0	-12.0
113.02	H	125.00	4.00	9.10	16.3	18.7	150.0	-18.1
150.00	H	0.00	4.00	14.20	14.8	28.0	150.0	-14.6
172.36	H	5.00	3.20	14.10	14.0	25.4	150.0	-15.4
248.30	H	355.00	1.80	23.40	14.0	74.1	200.0	-8.6
322.44	H	0.00	1.19	15.80	17.2	44.5	200.0	-13.0
406.43	H	110.00	2.20	18.30	19.3	76.0	200.0	-8.4

**Table 15: Radiated Emission Test Data >1GHz, Center Channel
(6dbi –Omni directional Antenna)**

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)
Peak								
2744.25	V	185	2.37	33.13	-1.2	39.5	5000.0	-42.0
3659.00	V	190	2.35	32.80	0.6	46.8	5000.0	-40.6
4573.75	V	90	2.31	33.40	1.6	56.5	5000.0	-38.9
8232.75	V	85	1.40	41.80	7.5	291.8	5000.0	-24.7
9147.50	V	270	1.40	43.70	8.6	412.1	5000.0	-21.7
AVG								
2744.25	V	185	2.37	22.50	-1.2	11.6	500.0	-32.7
3659.00	V	190	2.35	24.10	0.6	17.2	500.0	-29.3
4573.75	V	90	2.31	24.74	1.6	20.8	500.0	-27.6
8232.75	V	85	1.40	28.33	7.5	61.9	500.0	-18.1
9147.50	V	270	1.40	29.67	8.6	81.9	500.0	-15.7
Peak								
2744.25	H	100	2.82	31.34	-1.2	32.2	5000.0	-43.8
3659.00	H	275	2.60	33.35	0.6	49.9	5000.0	-40.0
4573.75	H	0	2.34	33.50	1.6	57.2	5000.0	-38.8
8232.75	H	195	1.60	42.60	7.5	320.0	5000.0	-23.9
9147.50	H	250	1.50	41.00	8.6	302.0	5000.0	-24.4
AVG								
2744.25	H	100	2.82	23.00	-1.2	12.3	500.0	-32.2
3659.00	H	275	2.60	23.40	0.6	15.9	500.0	-30.0
4573.75	H	0	2.34	23.90	1.6	18.9	500.0	-28.4
8232.75	H	195	1.60	31.00	7.5	84.2	500.0	-15.5
9147.50	H	250	1.50	30.60	8.6	91.2	500.0	-14.8

**Table 16: Radiated Emission Test Data >1GHz, Center Channel
(3dbi –Phantom Antenna)**

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)
Peak								
2744.25	V	270.00	2.40	35.40	-1.2	51.3	5000.0	-39.8
3659.00	V	260.00	2.20	35.80	0.6	66.1	5000.0	-37.6
4573.75	V	90.00	2.20	34.86	1.6	66.8	5000.0	-37.5
8232.75	V	0.00	2.10	38.26	7.5	194.1	5000.0	-28.2
9147.50	V	45.00	2.00	39.00	8.6	239.9	5000.0	-26.4
AVG	V							
2744.25	V	270.00	2.40	24.50	-1.2	14.6	500.0	-30.7
3659.00	V	260.00	2.20	25.00	0.6	19.1	500.0	-28.4
4573.75	V	90.00	2.20	25.20	1.6	22.0	500.0	-27.1
8232.75	V	0.00	2.10	26.27	7.5	48.8	500.0	-20.2
9147.50	V	45.00	2.00	25.50	8.6	50.7	500.0	-19.9
Peak	H							
2744.25	H	45.00	2.90	34.45	-1.2	46.0	5000.0	-40.7
3659.00	H	180.00	2.50	35.78	0.6	66.0	5000.0	-37.6
4573.75	H	190.00	2.46	36.10	1.6	77.1	5000.0	-36.2
8232.75	H	180.00	2.49	39.43	7.5	222.1	5000.0	-27.0
9147.50	H	270.00	2.00	40.80	8.6	295.1	5000.0	-24.6
AVG								
2744.25	H	45.00	2.90	26.36	-1.2	18.1	500.0	-28.8
3659.00	H	180.00	2.50	25.00	0.6	19.1	500.0	-28.4
4573.75	H	190.00	2.46	25.60	1.6	23.0	500.0	-26.7
8232.75	H	180.00	2.49	27.13	7.5	53.9	500.0	-19.3
9147.50	H	270.00	2.00	28.00	8.6	67.6	500.0	-17.4

**Table 17: Radiated Emission Test Data >1GHz, Center Channel
(2dbi –Co-Linear Antenna)**

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)
Peak								
2744.25	V	45.00	2.23	34.52	-1.2	46.4	5000.0	-40.7
3659.00	V	265.00	2.20	36.57	0.6	72.2	5000.0	-36.8
4573.75	V	40.00	2.00	37.81	1.6	93.9	5000.0	-34.5
8232.75	V	0.00	2.10	38.26	7.5	194.1	5000.0	-28.2
9147.50	V	45.00	2.00	39.00	8.6	239.9	5000.0	-26.4
AVG								
2744.25	V	45.00	2.23	23.90	-1.2	13.7	500.0	-31.3
3659.00	V	265.00	2.20	25.20	0.6	19.5	500.0	-28.2
4573.75	V	40.00	2.00	25.40	1.6	22.5	500.0	-26.9
8232.75	V	0.00	2.10	26.27	7.5	48.8	500.0	-20.2
9147.50	V	45.00	2.00	25.50	8.6	50.7	500.0	-19.9
Peak								
2744.25	H	0.00	2.15	36.50	-1.2	58.2	5000.0	-38.7
3659.00	H	265.00	2.00	38.63	0.6	91.6	5000.0	-34.7
4573.75	H	275.00	2.00	37.78	1.6	93.6	5000.0	-34.6
8232.75	H	180.00	2.49	39.43	7.5	222.1	5000.0	-27.0
9147.50	H	270.00	2.00	40.80	8.6	295.1	5000.0	-24.6
AVG								
2744.25	H	0.00	2.15	23.90	-1.2	13.7	500.0	-31.3
3659.00	H	265.00	2.00	25.20	0.6	19.5	500.0	-28.2
4573.75	H	275.00	2.00	25.40	1.6	22.5	500.0	-26.9
8232.75	H	180.00	2.49	27.13	7.5	53.9	500.0	-19.3
9147.50	H	270.00	2.00	28.00	8.6	67.6	500.0	-17.4

**Table 18: Radiated Emission Test Data < 1GHz, High Channel
(Restricted bands-covers all 3 antenna configurations)**

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)
38.22	V	90.00	1.00	16.50	15.1	37.9	100.0	-8.4
73.28	V	165.00	1.00	21.50	11.3	43.6	100.0	-7.2
109.87	V	195.00	1.00	9.30	15.5	17.4	150.0	-18.7
135.41	V	250.00	1.00	13.60	15.2	27.7	150.0	-14.7
156.83	V	270.00	1.00	7.10	15.0	12.8	150.0	-21.4
162.98	H	350.00	1.00	9.90	15.1	17.7	150.0	-18.6
169.90	V	0.00	1.00	6.10	14.4	10.6	150.0	-23.1
245.00	V	90.00	1.81	14.20	14.0	25.7	200.0	-17.8
336.04	V	190.00	1.85	8.30	17.2	18.9	200.0	-20.5
966.60	V	110.00	1.10	12.50	28.1	107.6	500.0	-13.3
73.26	H	125.00	4.00	18.10	11.3	29.5	100.0	-10.6
108.74	H	125.00	4.00	15.30	15.2	33.5	150.0	-13.0
132.20	H	185.00	4.00	16.40	15.5	39.2	150.0	-11.7
149.94	H	350.00	4.00	10.10	14.7	17.5	150.0	-18.7
154.54	H	185.00	4.00	9.20	15.0	16.2	150.0	-19.4
257.96	H	190.00	3.20	13.80	14.6	26.3	200.0	-17.6
402.54	H	280.00	2.89	7.20	19.3	21.1	200.0	-19.5
995.76	H	200.00	1.00	11.30	28.8	100.7	500.0	-13.9

**Table 19: Radiated Emission Test Data >1GHz, High Channel
(6dbi –Omni directional Antenna)**

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)
Peak								
2781.75	V	225.00	2.49	32.92	-1.2	38.5	5000.0	-42.3
3709.00	V	355.00	2.41	34.50	0.6	57.0	5000.0	-38.9
4636.25	V	135.00	2.48	36.37	1.9	81.8	5000.0	-35.7
7418.00	V	85.00	1.40	41.80	7.6	296.6	5000.0	-24.5
8345.25	V	265.00	1.40	43.70	7.3	356.1	5000.0	-22.9
AVG								
2781.75	V	225.00	2.49	22.10	-1.2	11.1	500.0	-33.1
3709.00	V	355.00	2.48	23.60	0.6	16.3	500.0	-29.8
4636.25	V	135.00	2.37	24.00	1.9	19.7	500.0	-28.1
7418.00	V	85.00	1.40	28.33	7.6	62.9	500.0	-18.0
8345.25	V	265.00	1.40	29.67	7.3	70.8	500.0	-17.0
Peak								
2781.75	H	195.00	1.25	32.54	-1.2	36.8	5000.0	-42.7
3709.00	H	15.00	1.22	33.70	0.6	52.0	5000.0	-39.7
4636.25	H	130.00	1.30	33.30	1.9	57.5	5000.0	-38.8
7418.00	H	195.00	1.60	42.60	7.6	325.2	5000.0	-23.7
8345.25	H	250.00	1.50	41.00	7.3	260.9	5000.0	-25.6
AVG								
2781.75	H	195.00	1.25	21.62	-1.2	10.5	500.0	-33.6
3709.00	H	15.00	1.22	23.60	0.6	16.3	500.0	-29.8
4636.25	H	130.00	1.30	24.00	1.9	19.7	500.0	-28.1
7418.00	H	195.00	1.60	31.00	7.6	85.5	500.0	-15.3
8345.25	H	250.00	1.50	30.60	7.3	78.8	500.0	-16.0

**Table 20: Radiated Emission Test Data >1GHz, High Channel
(3dbi –Phantom Antenna)**

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)
Peak								
2781.75	V	90.00	2.27	38.00	-1.2	69.1	5000.0	-37.2
3709.00	V	5.00	2.27	37.70	0.6	82.5	5000.0	-35.7
4636.25	V	350.00	2.10	38.63	1.9	106.1	5000.0	-33.5
7418.00	V	0.00	2.10	38.26	7.6	197.3	5000.0	-28.1
8345.25	V	45.00	2.00	39.00	7.3	207.3	5000.0	-27.6
AVG								
2781.75	V	90.00	2.27	26.00	-1.2	17.3	500.0	-29.2
3709.00	V	5.00	2.27	26.00	0.6	21.4	500.0	-27.4
4636.25	V	350.00	2.10	25.50	1.9	23.4	500.0	-26.6
7418.00	V	0.00	2.10	26.27	7.6	49.6	500.0	-20.1
8345.25	V	45.00	2.00	25.50	7.3	43.8	500.0	-21.1
Peak								
2781.75	H	0.00	2.63	39.00	-1.2	77.5	5000.0	-36.2
3709.00	H	95.00	2.60	36.80	0.6	74.3	5000.0	-36.6
4636.25	H	180.00	2.50	38.04	1.9	99.2	5000.0	-34.1
7418.00	H	180.00	2.49	39.43	7.6	225.7	5000.0	-26.9
8345.25	H	270.00	2.00	40.80	7.3	255.0	5000.0	-25.8
AVG								
2781.75	H	0.00	2.63	27.35	-1.2	20.3	500.0	-27.8
3709.00	H	95.00	2.60	25.50	0.6	20.2	500.0	-27.9
4636.25	H	180.00	2.50	25.50	1.9	23.4	500.0	-26.6
7418.00	H	180.00	2.49	27.13	7.6	54.8	500.0	-19.2
8345.25	H	270.00	2.00	28.00	7.3	58.4	500.0	-18.6

**Table 21: Radiated Emission Test Data >1GHz, High Channel
(2dbi –Co-Linear Antenna)**

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)
Peak								
2781.75	V	95.00	1.93	37.49	-1.2	65.1	5000.0	-37.7
3709.00	V	190.00	1.90	38.90	0.6	94.7	5000.0	-34.5
4636.25	V	125.00	1.80	38.75	1.9	107.6	5000.0	-33.3
7418.00	V	0.00	2.10	38.26	7.6	197.3	5000.0	-28.1
8345.25	V	45.00	2.00	39.00	7.3	207.3	5000.0	-27.6
AVG								
2781.75	V	95.00	1.93	23.67	-1.2	13.3	500.0	-31.5
3709.00	V	190.00	1.90	26.00	0.6	21.4	500.0	-27.4
4636.25	V	125.00	1.80	25.60	1.9	23.7	500.0	-26.5
7418.00	V	0.00	2.10	26.27	7.6	49.6	500.0	-20.1
8345.25	V	45.00	2.00	25.50	7.3	43.8	500.0	-21.1
Peak								
2781.75	H	350.00	2.65	36.80	-1.2	60.1	5000.0	-38.4
3709.00	H	200.00	2.60	37.55	0.6	81.0	5000.0	-35.8
4636.25	H	250.00	2.60	38.98	1.9	110.5	5000.0	-33.1
7418.00	H	180.00	2.49	39.43	7.6	225.7	5000.0	-26.9
8345.25	H	270.00	2.00	40.80	7.3	255.0	5000.0	-25.8
AVG	H							
2781.75	H	350.00	2.65	23.93	-1.2	13.7	500.0	-31.3
3709.00	H	200.00	2.60	25.45	0.6	20.1	500.0	-27.9
4636.25	H	250.00	2.60	25.50	1.9	23.4	500.0	-26.6
7418.00	H	180.00	2.49	27.13	7.6	54.8	500.0	-19.2
8345.25	H	270.00	2.00	28.00	7.3	58.4	500.0	-18.6

5.7 Receiver Radiated Spurious Emissions: (FCC Part §15.209)

The EUT must comply with the requirements for radiated spurious emissions while in receiver mode to the 3rd of the highest tunable frequency or local oscillator. These emissions must meet the limits specified in §15.209 and RSS210 section 2.6.

Test Arrangement: Table Top

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

5.7.1 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. Both the horizontal and vertical field components were measured. The units were scanned from 30-3000MHz.

The unit was pre-scanned in 3 orthogonal positions with full testing performed in the worst case position. The data was the same for all antenna types and was reported with the 6dBi antenna attached. No emissions were noted above those shown.

The emissions were measured using the following resolution bandwidths:

Table 22: Spectrum Analyzer Settings

Frequency Range	Resolution Bandwidth	Video Bandwidth
30MHz-1000 MHz	120kHz	>100 kHz
>1000 MHz	1 MHz	10 Hz (Avg.)

Table 23: 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)
38.22	V	90.00	1.00	16.50	15.1	37.9	100.0	-8.4
47.82	V	300.00	1.00	17.20	9.5	21.7	100.0	-13.3
67.38	V	350.00	1.00	15.20	11.6	21.9	100.0	-13.2
73.28	V	165.00	1.00	21.50	11.3	43.6	100.0	-7.2
112.21	V	180.00	1.00	9.80	16.2	19.9	150.0	-17.5
120.37	V	180.00	1.00	12.80	16.5	29.1	150.0	-14.3
123.99	V	350.00	1.00	11.60	16.2	24.6	150.0	-15.7
135.41	V	250.00	1.00	13.60	15.2	27.7	150.0	-14.7
154.14	V	300.00	1.00	12.20	15.0	22.9	150.0	-16.3
162.98	H	350.00	1.00	9.90	15.1	17.7	150.0	-18.6
172.64	V	190.00	1.00	13.90	14.0	24.8	150.0	-15.6
245.00	V	90.00	1.81	14.20	14.0	25.7	200.0	-17.8
336.04	V	190.00	1.85	8.30	17.2	18.9	200.0	-20.5
358.40	V	270.00	1.00	10.80	18.0	27.5	200.0	-17.2
966.60	V	110.00	1.10	12.50	28.1	107.6	500.0	-13.3
47.75	H	90.00	4.00	11.30	9.6	11.0	100.0	-19.1
51.43	H	270.00	4.00	15.10	8.6	15.2	100.0	-16.3
73.26	H	125.00	4.00	18.10	11.3	29.5	100.0	-10.6
86.95	H	5.00	4.00	13.30	10.4	15.2	100.0	-16.3
108.74	H	125.00	4.00	15.30	15.2	33.5	150.0	-13.0
121.36	H	100.00	3.00	12.50	16.3	27.7	150.0	-14.7
132.20	H	185.00	4.00	16.40	15.5	39.2	150.0	-11.7
149.94	H	350.00	4.00	10.10	14.7	17.5	150.0	-18.7
154.54	H	185.00	4.00	9.20	15.0	16.2	150.0	-19.4
221.93	H	0.00	1.70	15.50	13.8	29.0	200.0	-16.8
229.90	H	355.00	1.70	17.60	13.9	37.6	200.0	-14.5
245.03	H	350.00	1.78	23.80	14.0	77.6	200.0	-8.2
250.17	H	355.00	1.78	24.10	14.0	80.4	200.0	-7.9
257.96	H	190.00	3.20	13.80	14.6	26.3	200.0	-17.6
320.68	H	45.00	1.58	12.90	17.1	31.8	200.0	-16.0
402.54	H	280.00	2.89	7.20	19.3	21.1	200.0	-19.5
995.76	H	200.00	1.00	11.30	28.8	100.7	500.0	-13.9

5.8 AC Conducted Emissions (FCC Part §15.207)

5.8.1 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

5.8.2 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 Ω /50 μ H 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 Ω 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

5.8.3 Test Data

The EUT complied with the Class B Conducted Emissions requirements. This system runs off of 120 or 230VAC. Table 7 provides the test results for phase and neutral line power line conducted emissions.

Table 24: Conducted Emissions Data 120VAC, Transmit On

NEUTRAL - 120VAC

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)
0.167	36.2	20.6	10.2	0.1	46.4	30.8	65.1	55.1	-18.7	-24.3
0.513	35.9	23.1	10.2	0.5	46.6	33.8	56.0	46.0	-9.4	-12.2
1.164	38.3	19.4	10.3	0.5	49.1	30.2	56.0	46.0	-6.9	-15.8
1.467	33.9	14.6	10.2	0.5	44.6	25.3	56.0	46.0	-11.4	-20.7
3.140	23.3	13.7	10.3	0.6	34.2	24.6	56.0	46.0	-21.8	-21.4
6.060	26.0	10.2	10.8	0.2	37.0	21.2	60.0	50.0	-23.0	-28.8
12.570	23.2	7.4	11.2	0.1	34.6	18.8	60.0	50.0	-25.4	-31.2
27.940	18.0	5.7	11.9	0.5	30.4	18.1	60.0	50.0	-29.6	-31.9

PHASE - 120VAC

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)
0.176	29.6	20.7	10.2	0.1	39.9	31.0	64.7	54.7	-24.8	-23.7
0.520	38.5	27.1	10.2	0.7	49.4	38.0	56.0	46.0	-6.6	-8.0
1.177	35.0	17.3	10.3	0.7	46.0	28.3	56.0	46.0	-10.0	-17.7
3.370	27.5	13.3	10.4	0.8	38.7	24.5	56.0	46.0	-17.3	-21.5
6.300	25.6	10.8	10.9	0.2	36.6	21.8	60.0	50.0	-23.4	-28.2
12.030	24.1	8.3	11.2	0.2	35.5	19.7	60.0	50.0	-24.5	-30.3
20.930	20.4	6.6	11.5	0.2	32.1	18.3	60.0	50.0	-27.9	-31.7
29.610	20.2	6.6	12.0	0.3	32.5	18.9	60.0	50.0	-27.5	-31.1

Table 25: Conducted Emissions Data 230VAC, Transmit On

NEUTRAL - 230VAC

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)
0.169	50.1	22.2	10.2	0.1	60.3	32.4	65.0	55.0	-4.7	-22.6
1.233	38.4	17.6	10.3	0.5	49.2	28.4	56.0	46.0	-6.8	-17.6
1.370	35.5	16.4	10.2	0.5	46.2	27.1	56.0	46.0	-9.8	-18.9
6.240	28.8	12.2	10.9	0.1	39.8	23.2	60.0	50.0	-20.2	-26.8
7.050	28.1	12.0	11.0	0.0	39.1	23.0	60.0	50.0	-20.9	-27.0
13.970	20.1	6.4	11.3	0.2	31.6	17.9	60.0	50.0	-28.4	-32.1
22.060	16.1	4.9	11.6	0.4	28.1	16.9	60.0	50.0	-31.9	-33.1
29.010	18.4	6.8	11.9	0.5	30.8	19.2	60.0	50.0	-29.2	-30.8

PHASE - 230VAC

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)
0.165	42.5	21.5	10.2	0.2	52.9	31.9	65.2	55.2	-12.3	-23.3
0.180	31.2	24.7	10.2	0.1	41.5	35.0	64.5	54.5	-23.0	-19.5
1.160	39.0	21.6	10.3	0.7	50.0	32.6	56.0	46.0	-6.0	-13.4
2.630	27.3	12.2	10.1	0.8	38.3	23.2	56.0	46.0	-17.7	-22.8
6.210	28.9	12.8	10.9	0.2	39.9	23.8	60.0	50.0	-20.1	-26.2
7.970	27.7	12.2	11.0	0.1	38.8	23.3	60.0	50.0	-21.2	-26.7
16.840	19.4	6.0	11.4	0.2	31.0	17.6	60.0	50.0	-29.0	-32.4
29.070	19.9	7.3	11.9	0.3	32.2	19.6	60.0	50.0	-27.8	-30.4