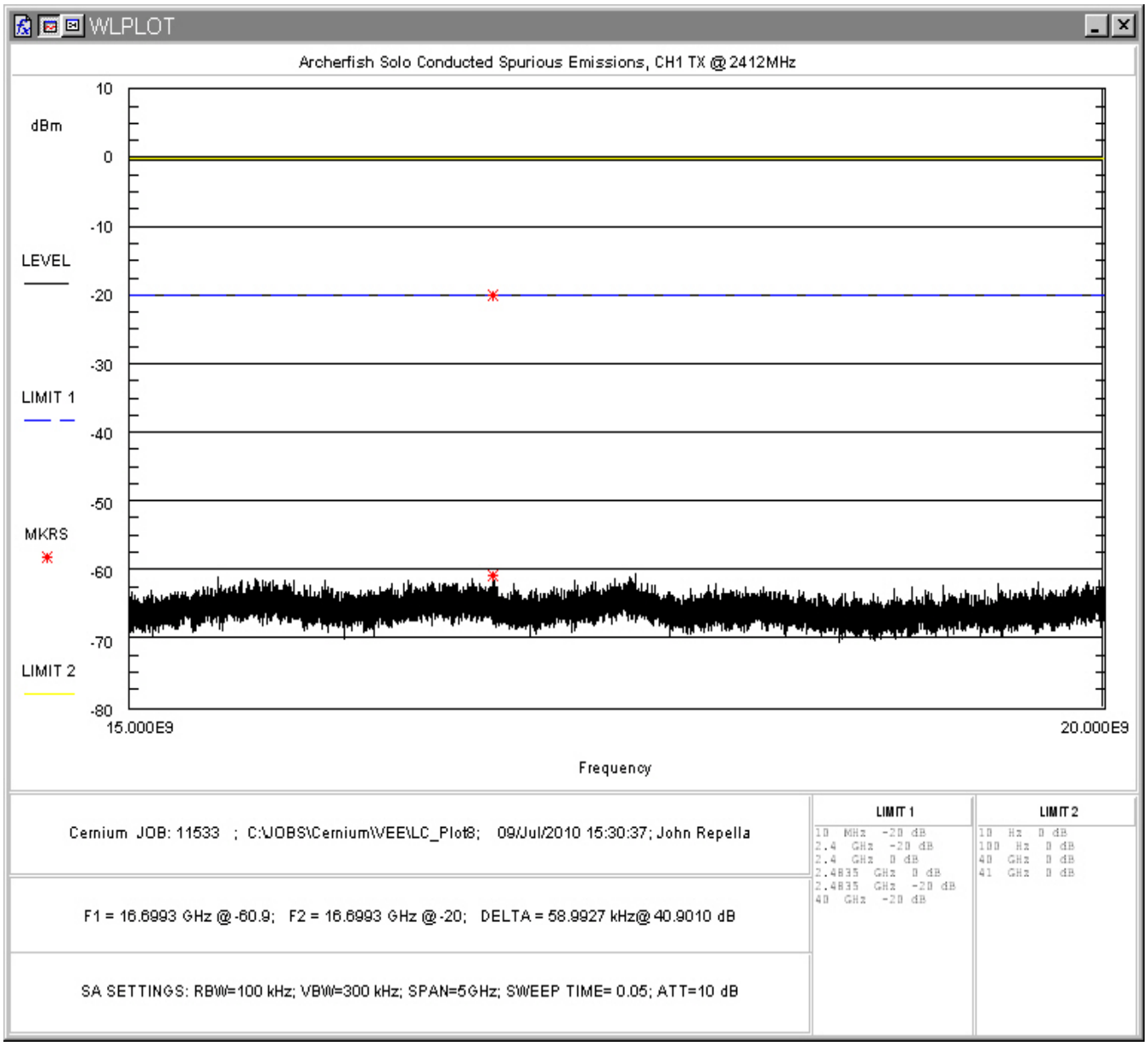

Figure 103: Conducted Spurious Emissions, 802.11g 54Mbps Low Channel, 15 - 20GHz

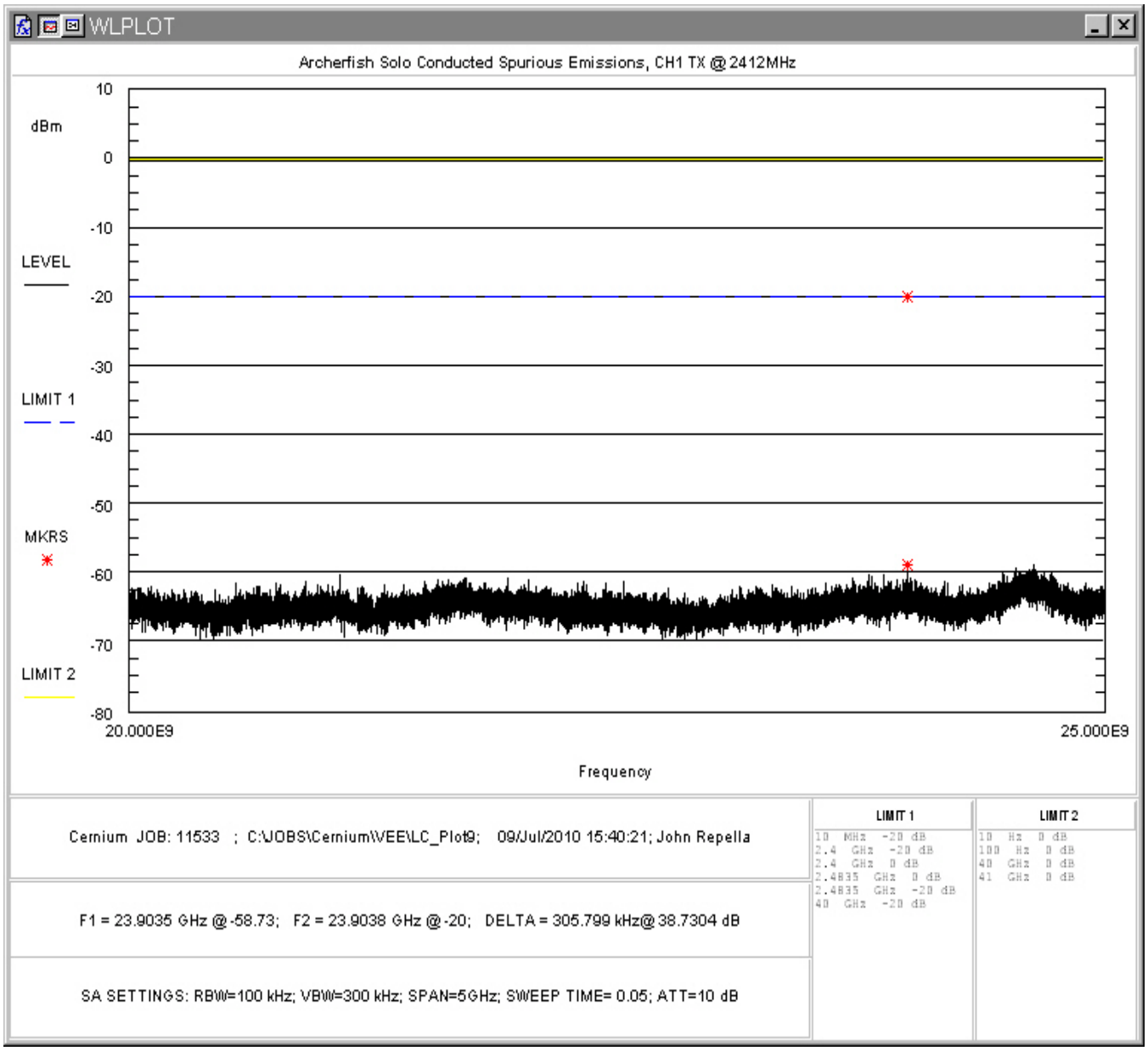

Figure 104: Conducted Spurious Emissions, 802.11g 54Mbps Low Channel, 20 - 25GHz

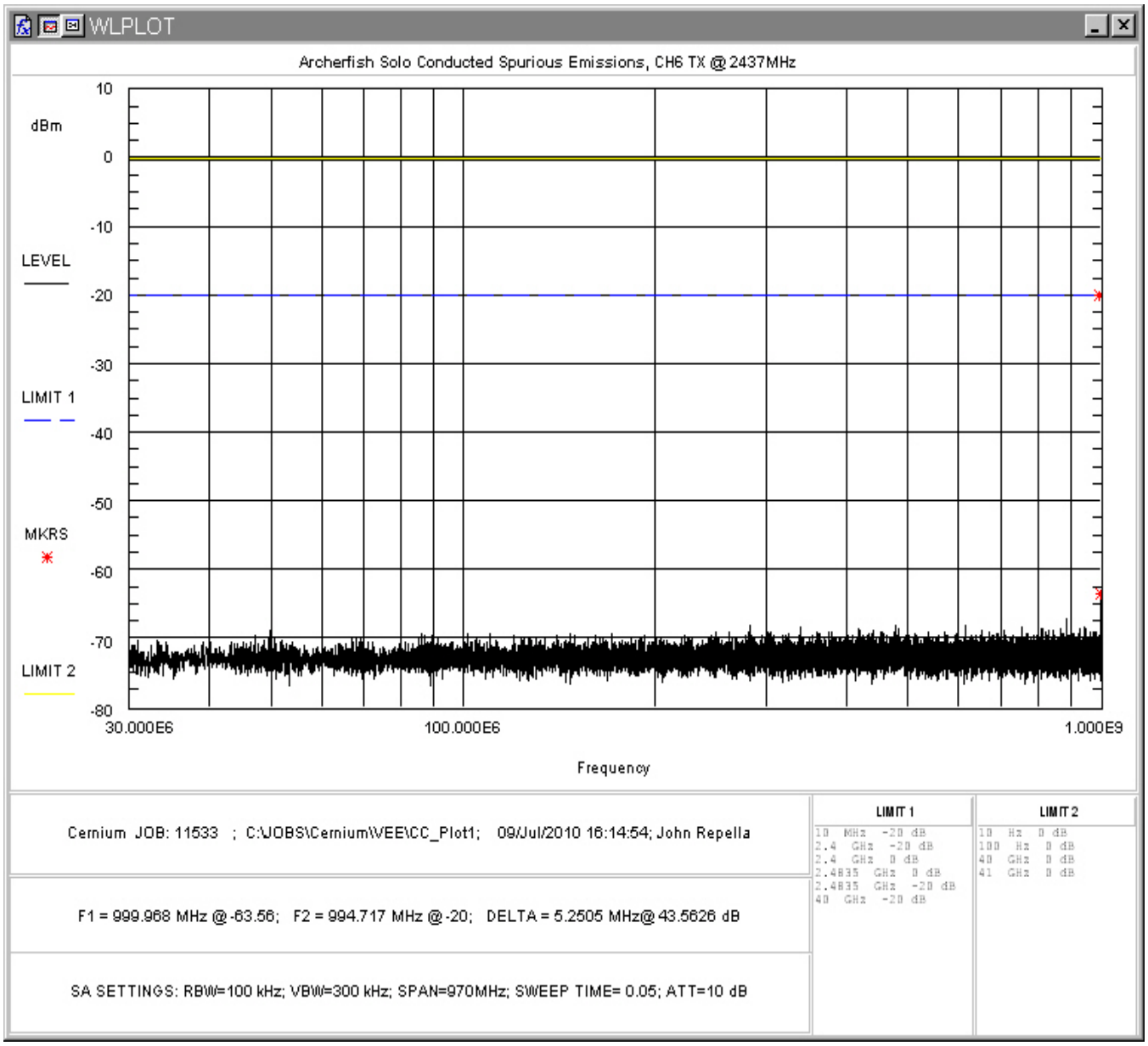

Figure 105: Conducted Spurious Emissions, 802.11g 54Mbps, Mid Channel 30 - 1000MHz

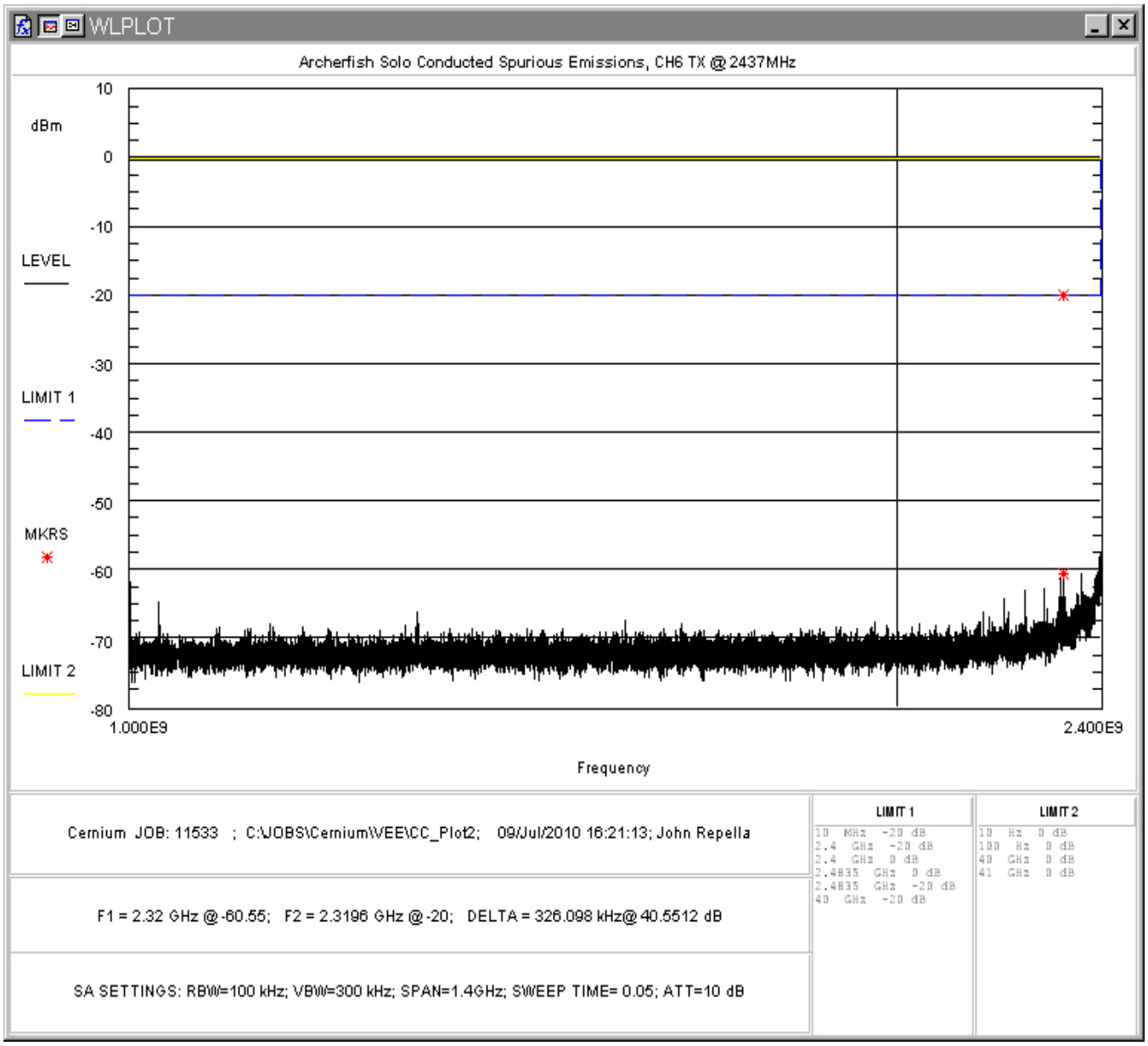

Figure 106: Conducted Spurious Emissions, 802.11g 54Mbps, Mid Channel 1 – 2.4GHz

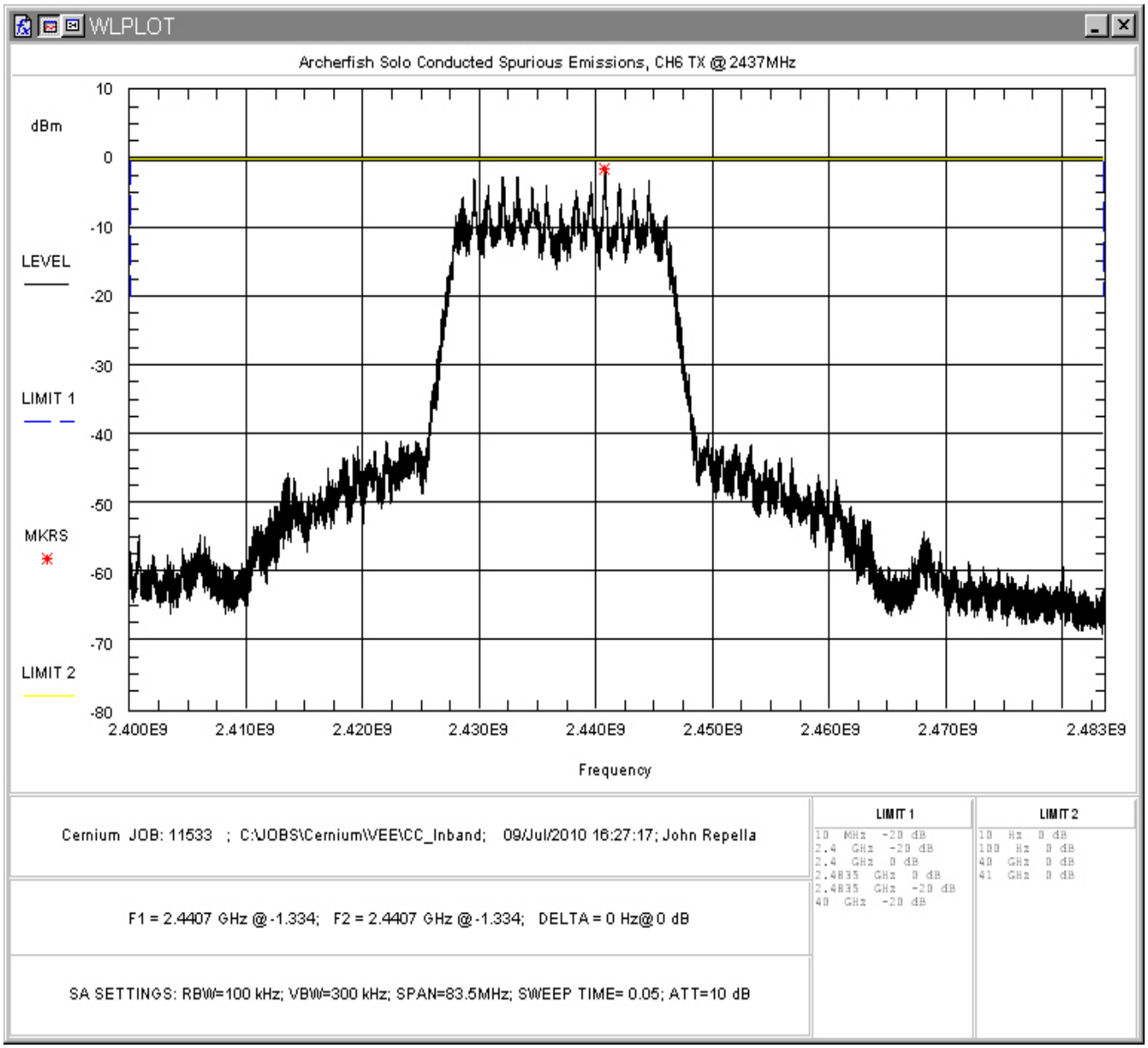

Figure 107: Conducted Spurious Emissions, 802.11g 54Mbps, Mid Channel 2.4 – 2.483GHz

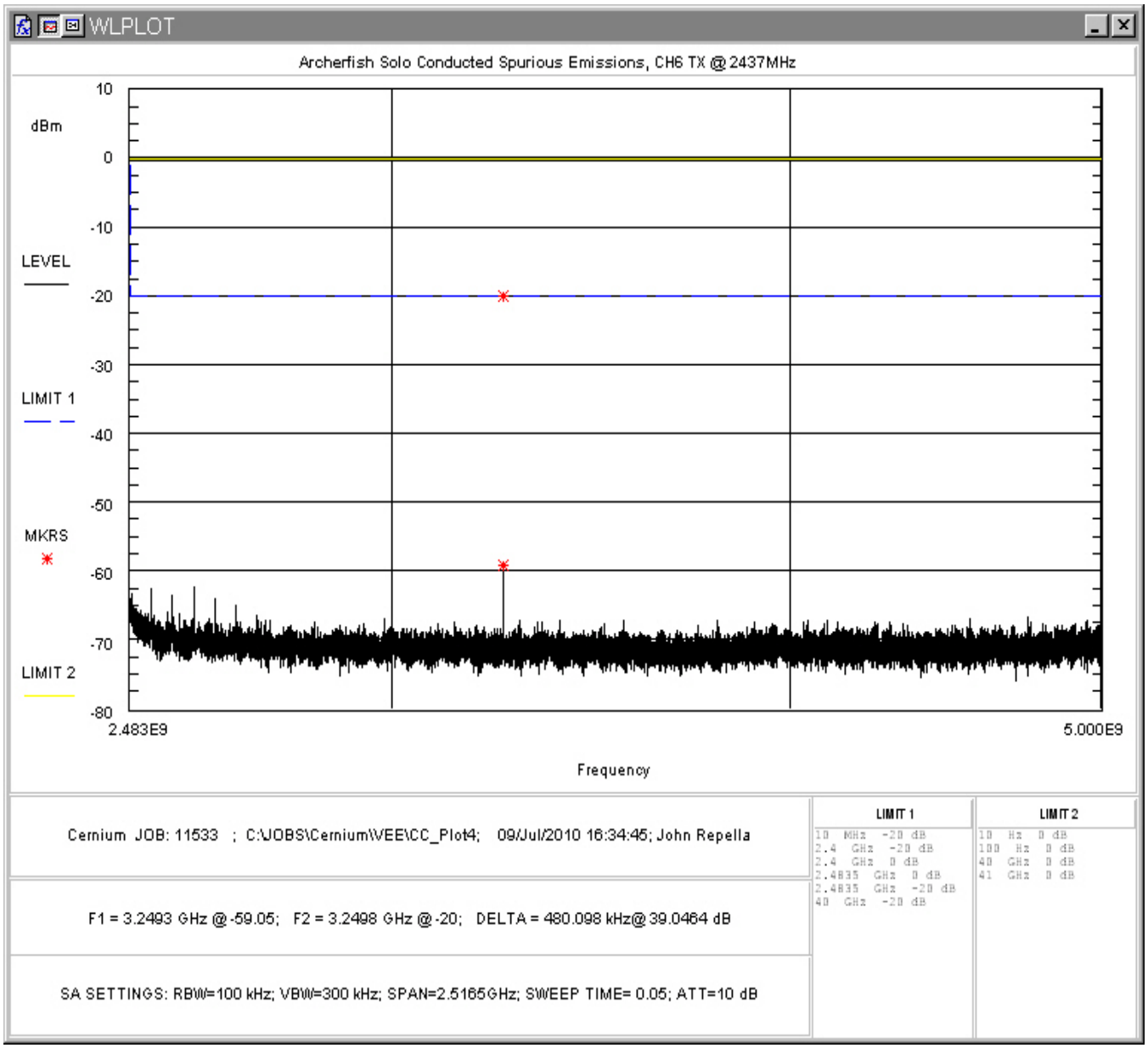

Figure 108: Conducted Spurious Emissions, 802.11g 54Mbps, Mid Channel 2.483 - 5GHz

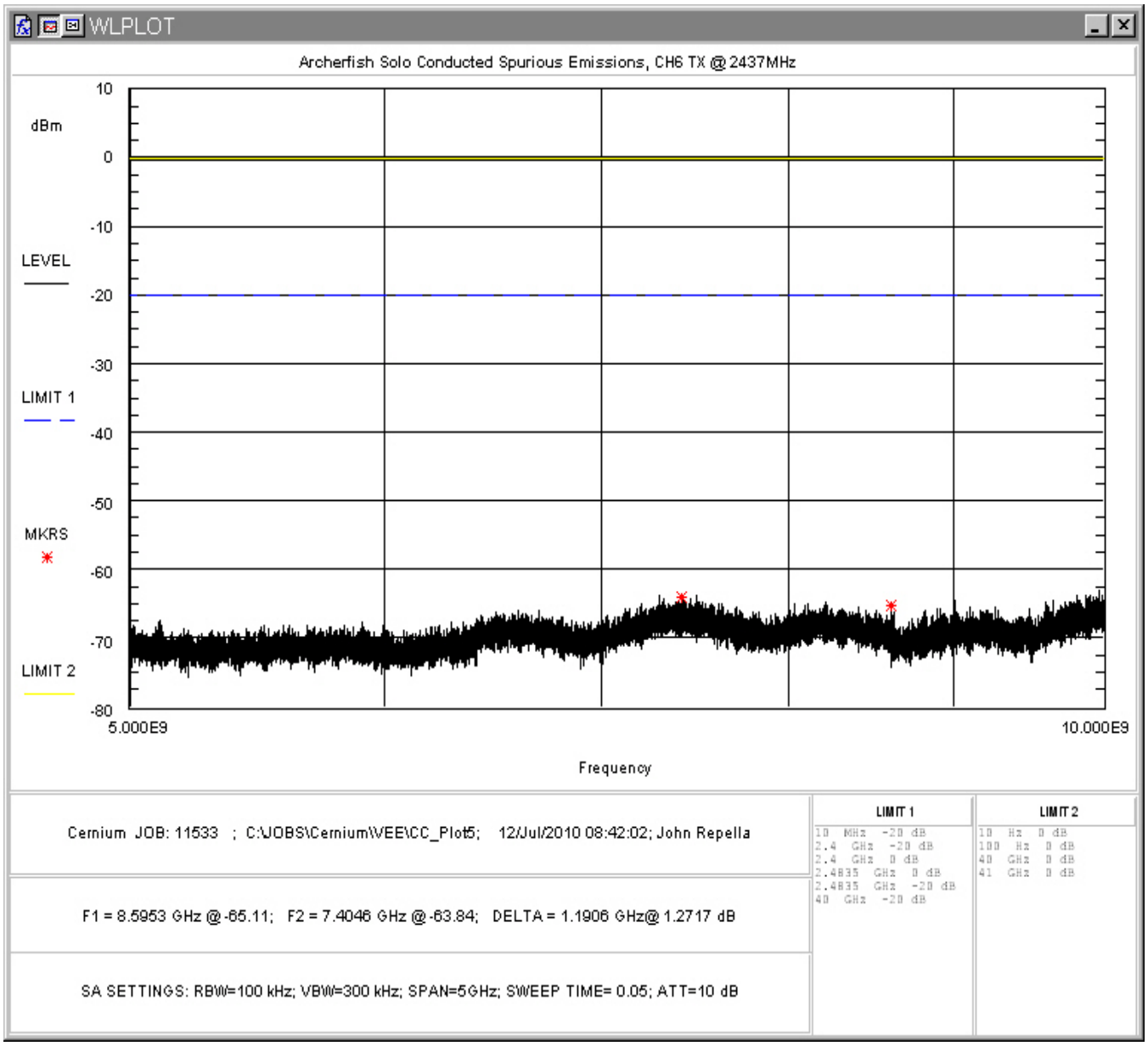

Figure 109: Conducted Spurious Emissions, 802.11g 54Mbps, Mid Channel 5 - 10GHz

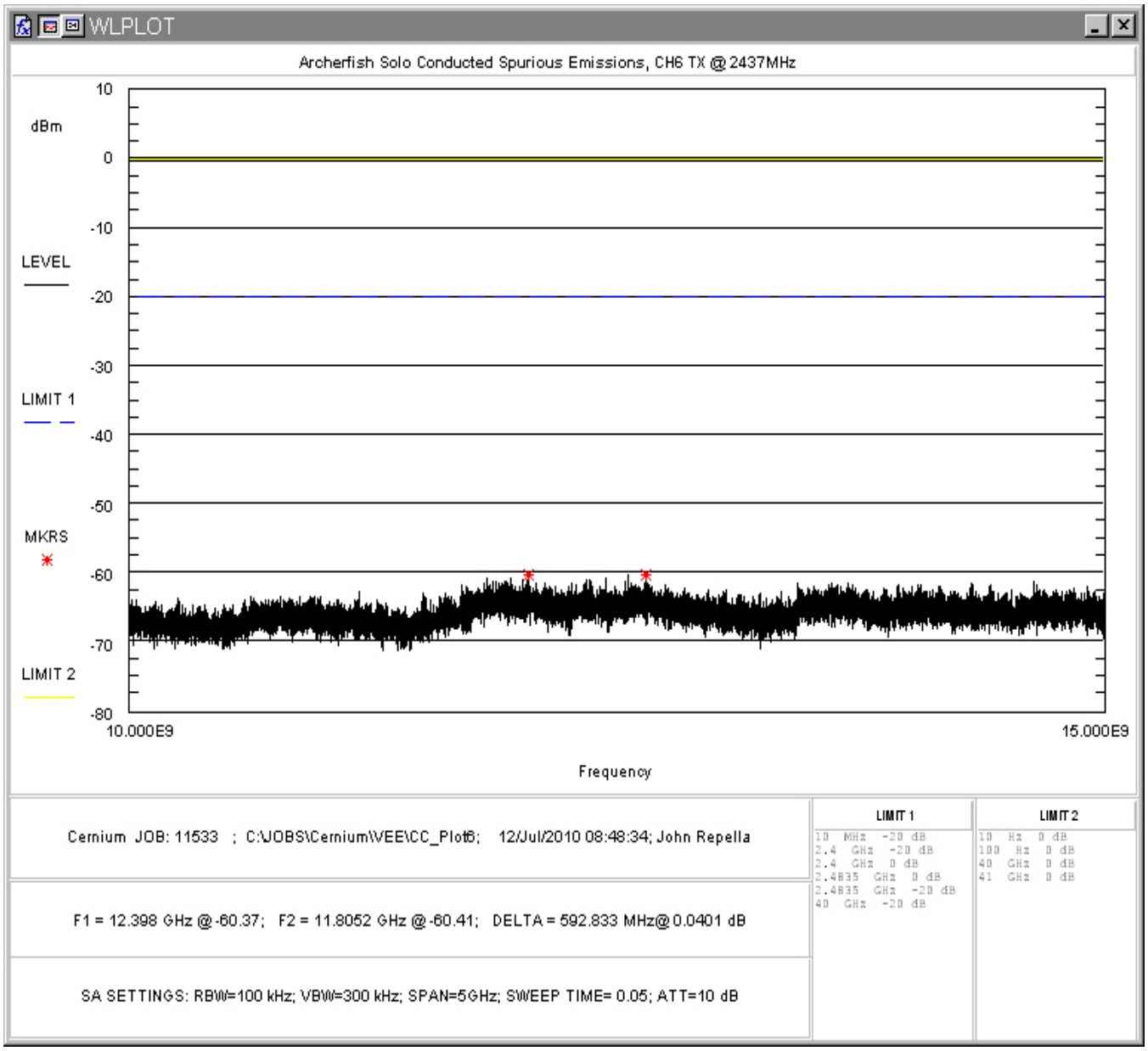

Figure 110: Conducted Spurious Emissions, 802.11g 54Mbps, Mid Channel 10 - 15GHz

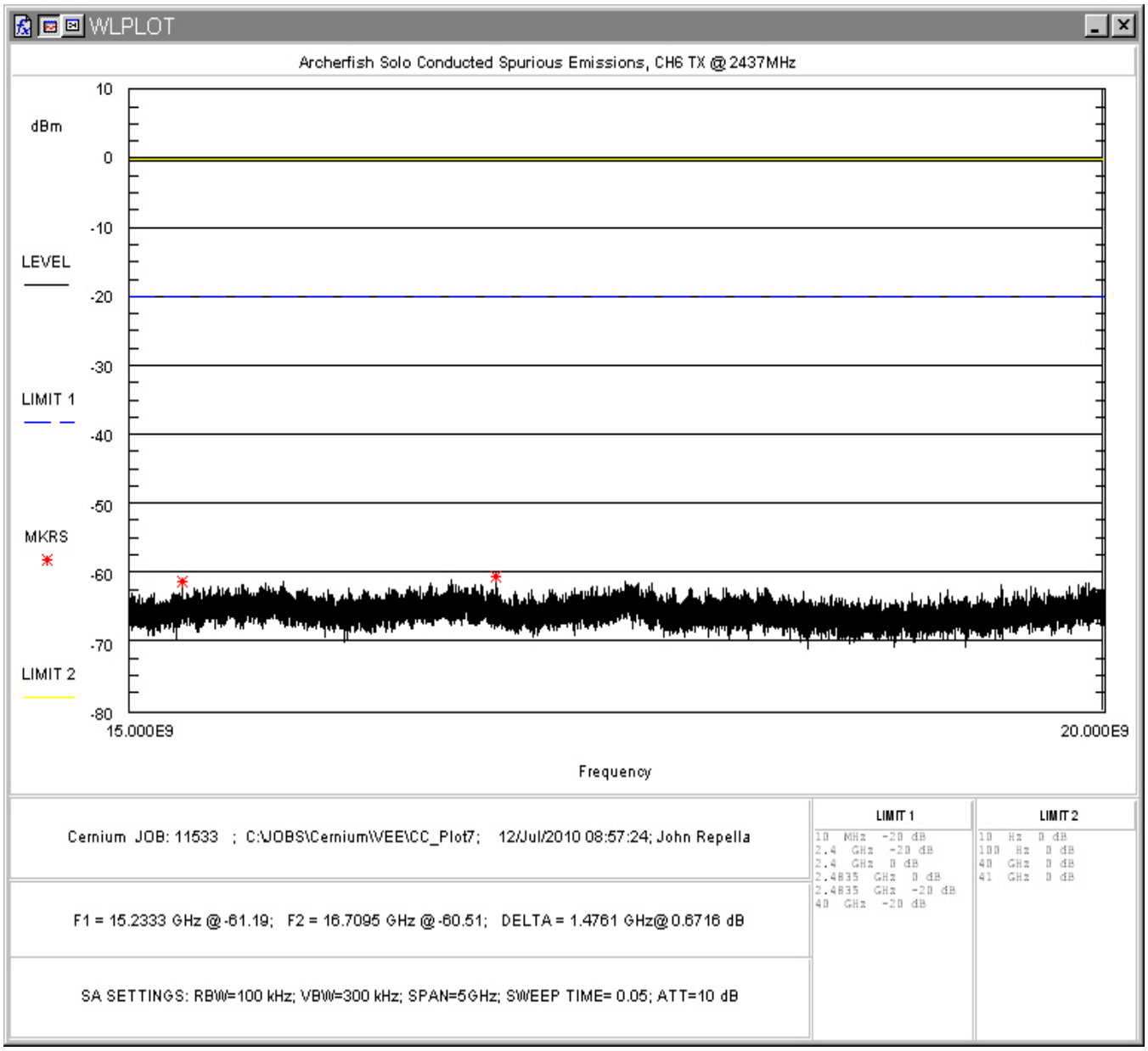

Figure 111: Conducted Spurious Emissions, 802.11g 54Mbps, Mid Channel 15 - 20GHz

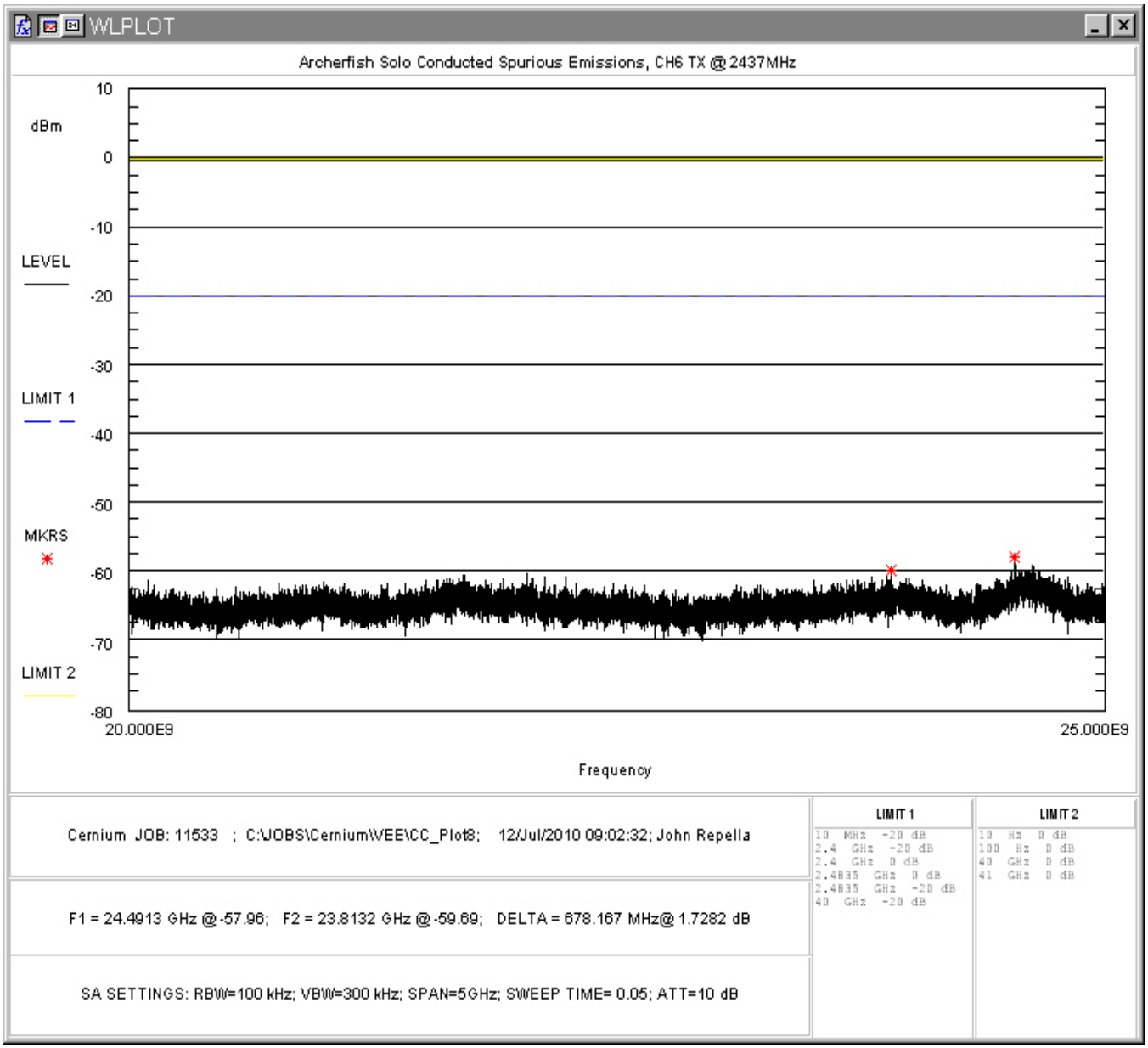

Figure 112: Conducted Spurious Emissions, 802.11g 54Mbps, Mid Channel 20 - 25GHz

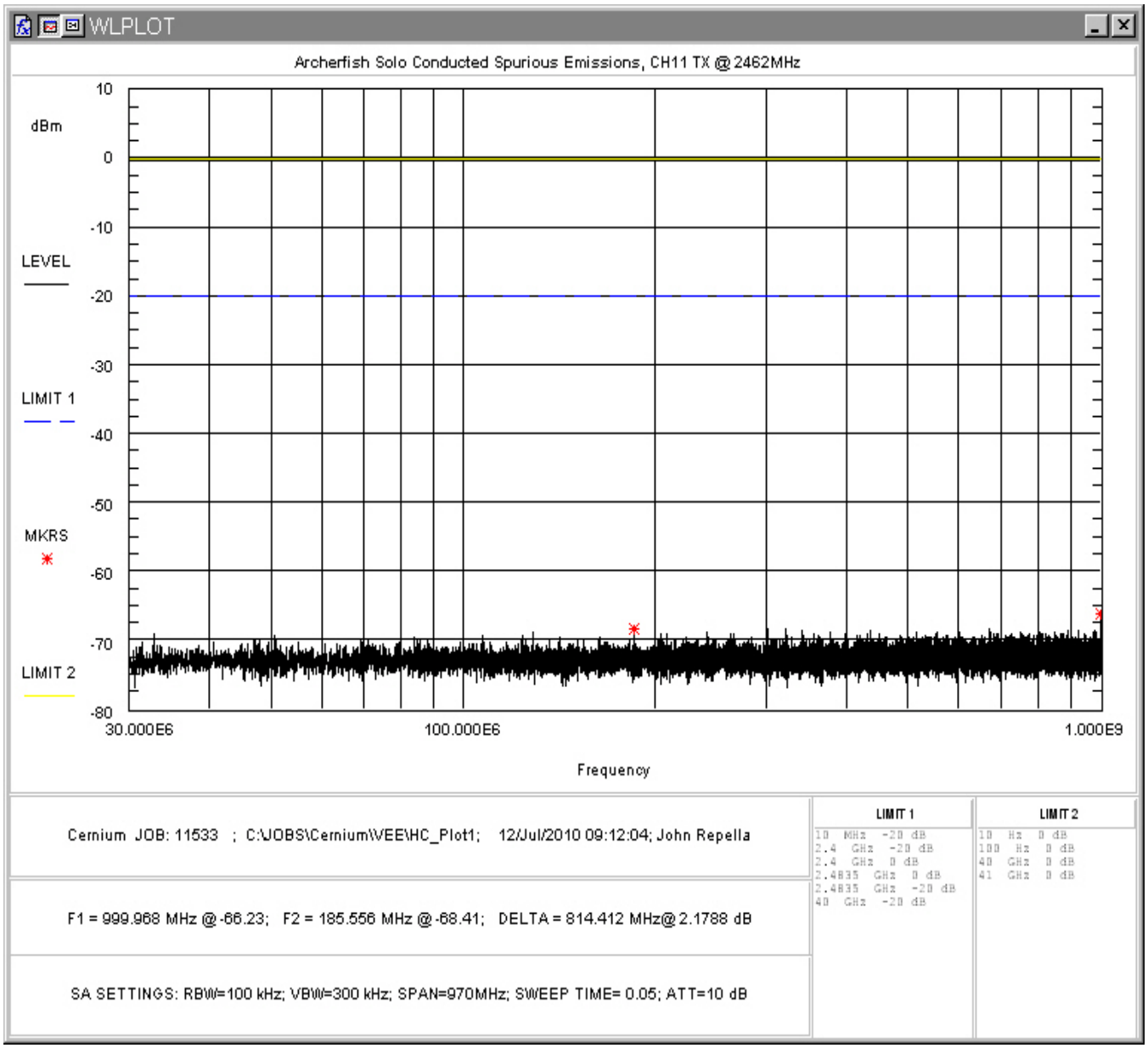

Figure 113: Conducted Spurious Emissions, 802.11g 54Mbps, High Channel 30 - 1000MHz

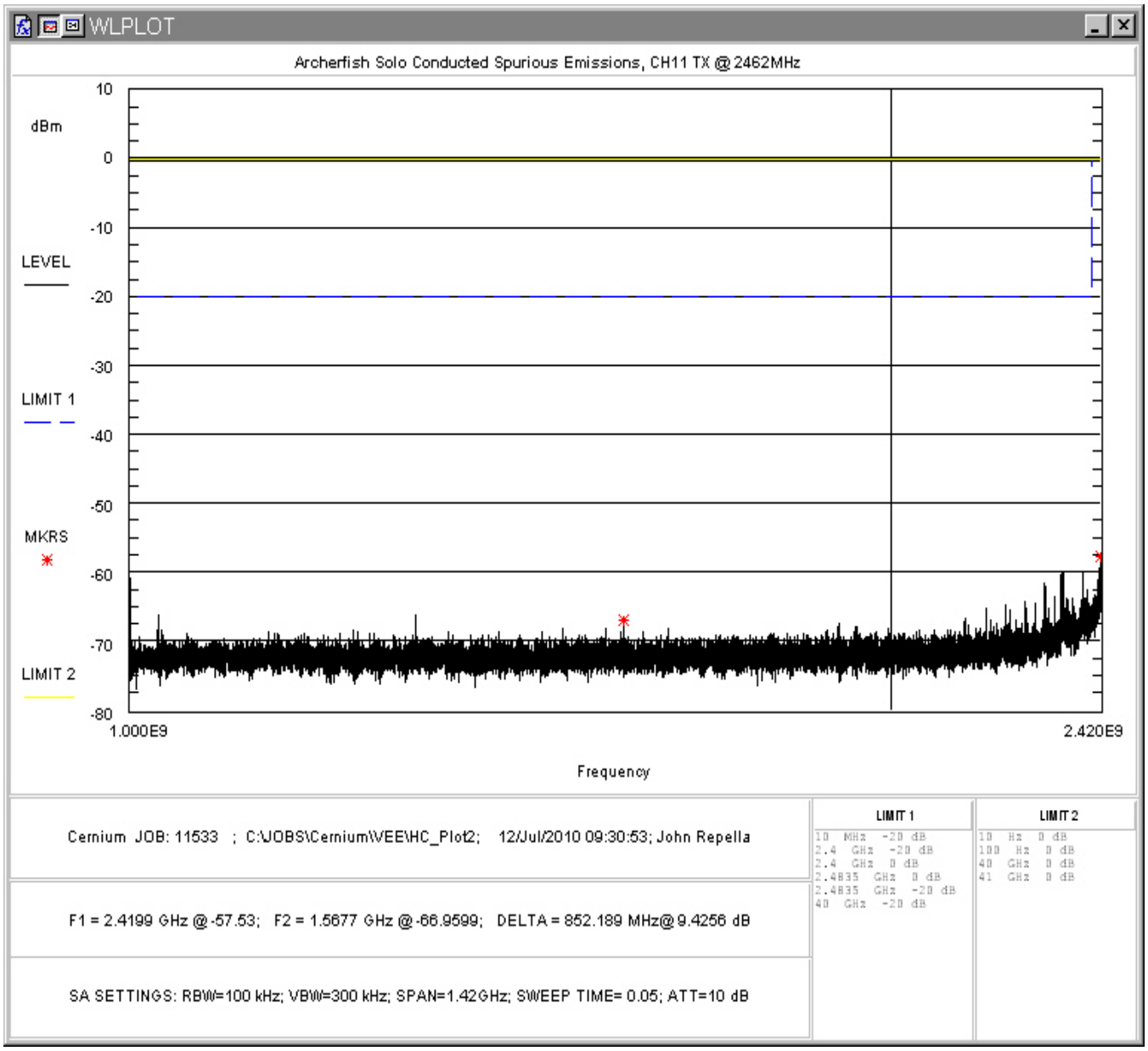

Figure 114: Conducted Spurious Emissions, 802.11g 54Mbps, High Channel 1 – 2.4GHz

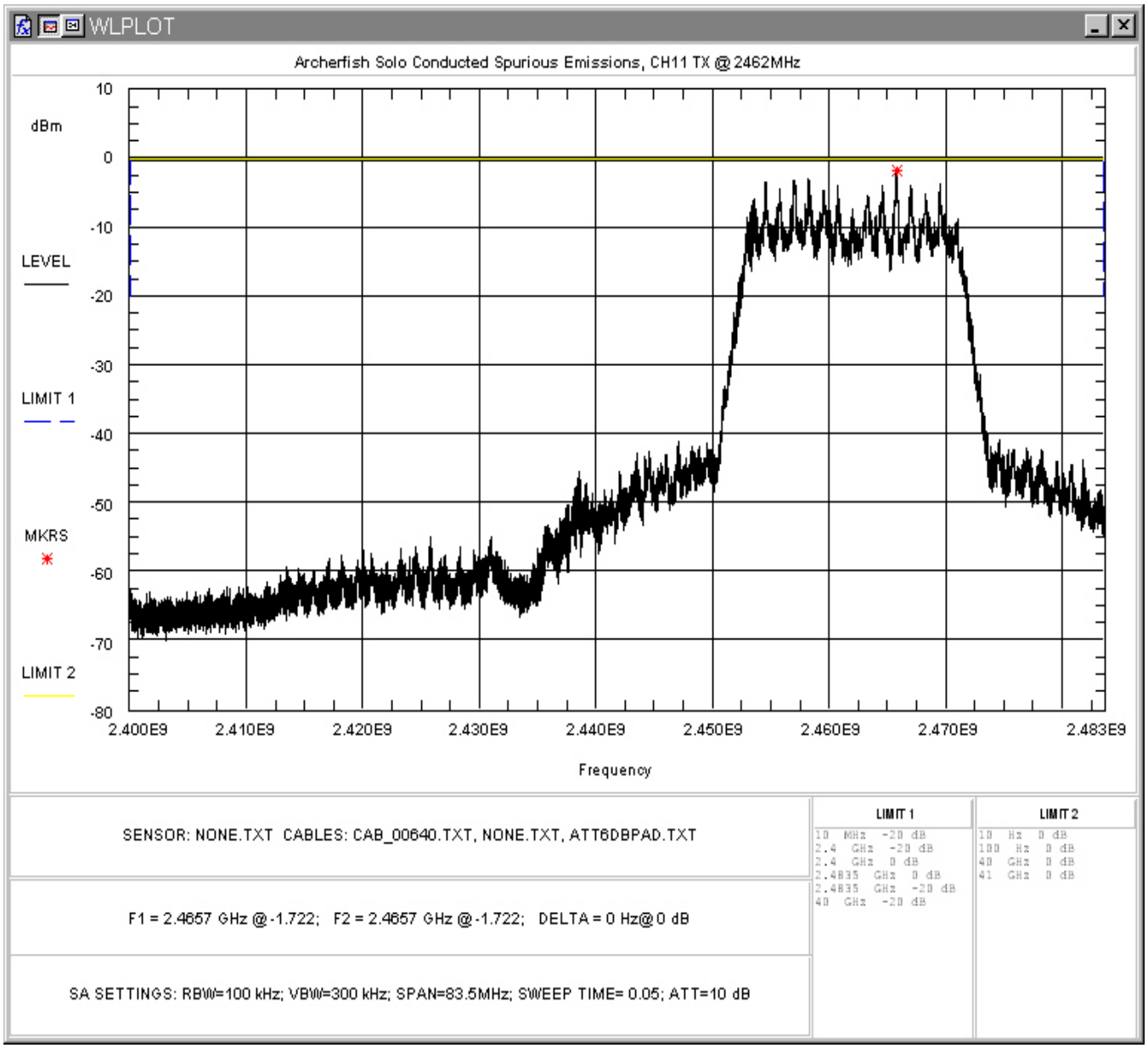

Figure 115: Conducted Spurious Emissions, 802.11g 54Mbps, High Channel 2.4 – 2.483GHz

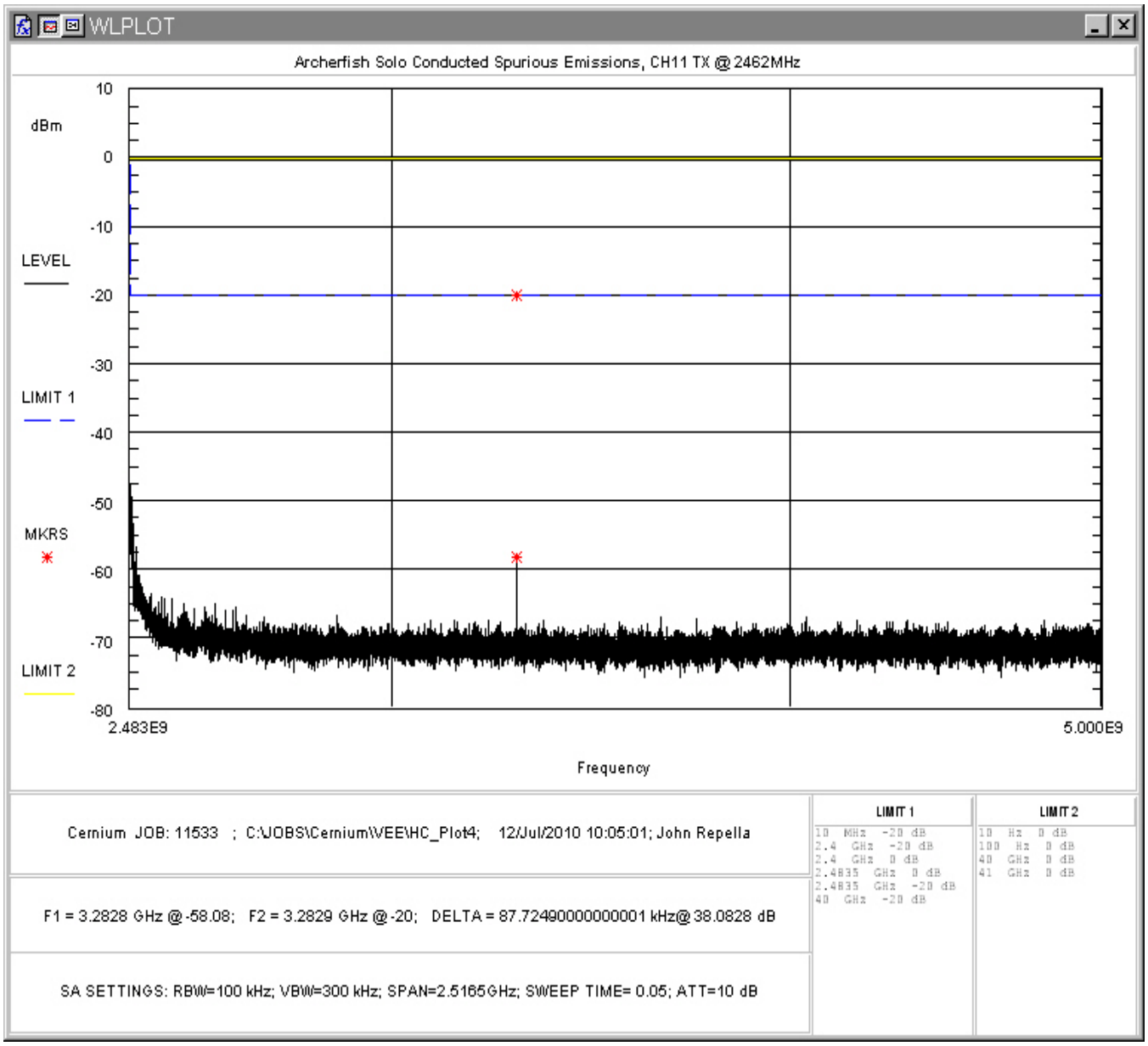

Figure 116: Conducted Spurious Emissions, 802.11g 54Mbps, High Channel 2.483 - 5GHz

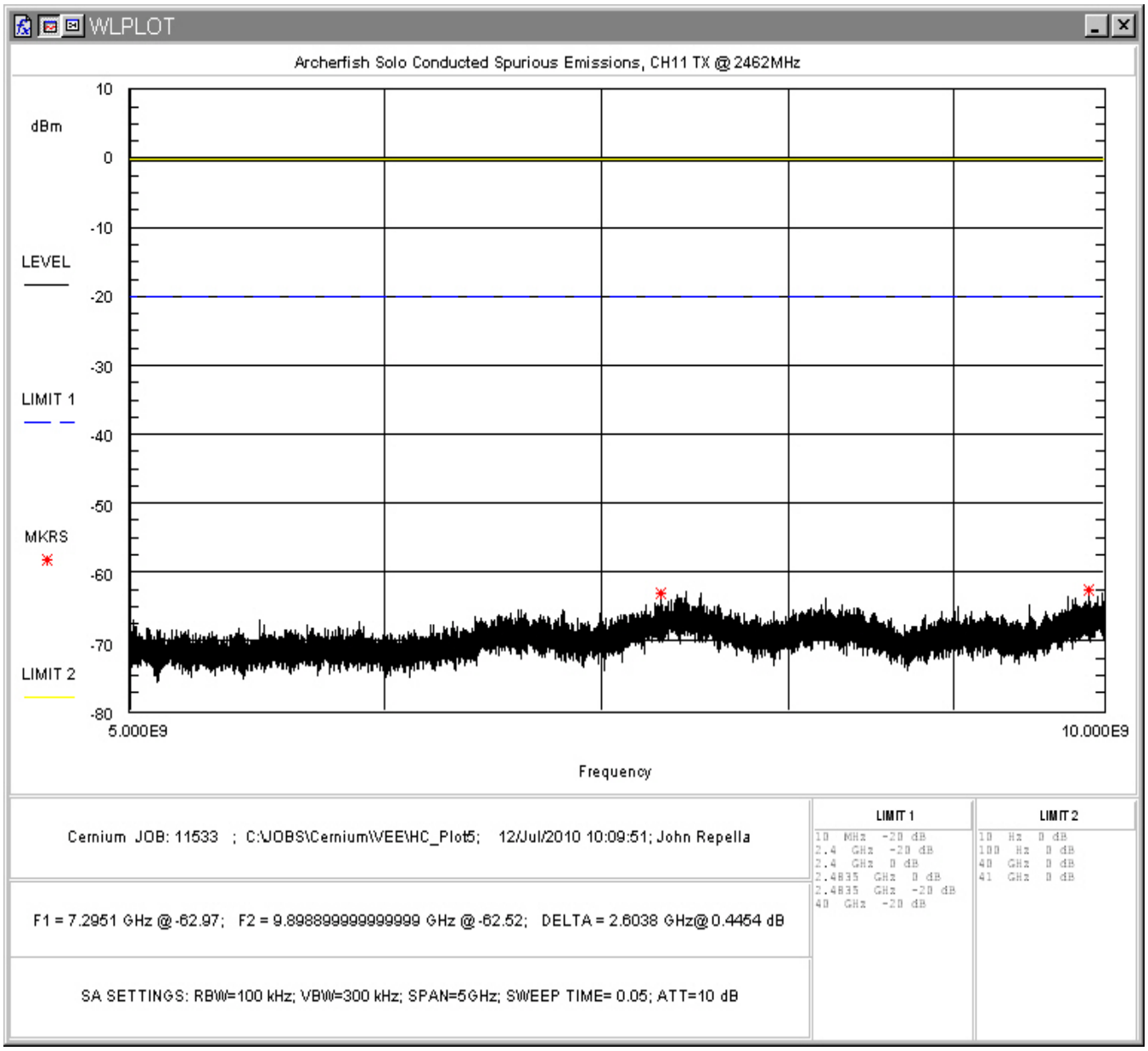

Figure 117: Conducted Spurious Emissions, 802.11g 54Mbps, High Channel 5 - 10GHz

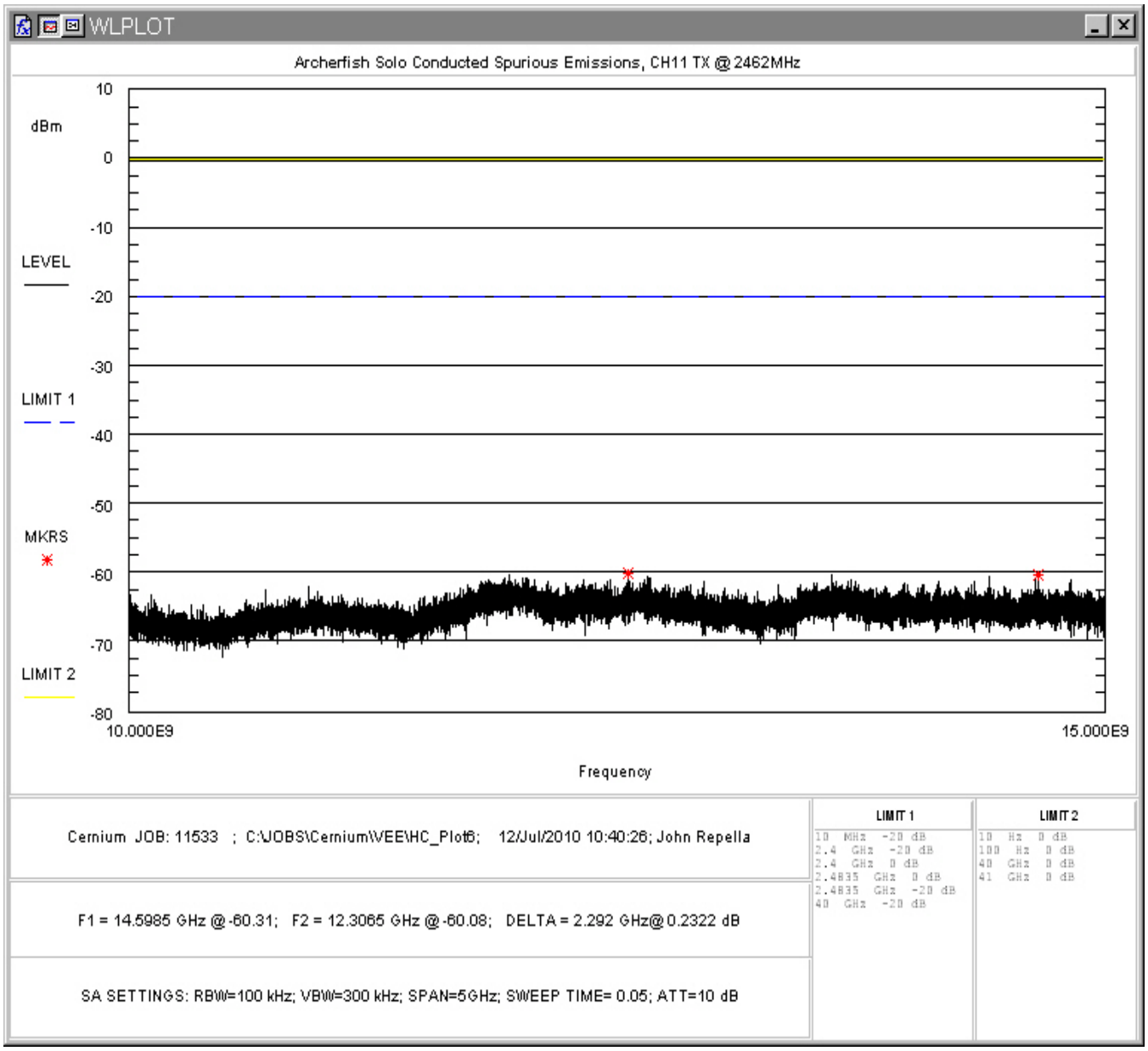

Figure 118: Conducted Spurious Emissions, 802.11g 54Mbps, High Channel 10 - 15GHz

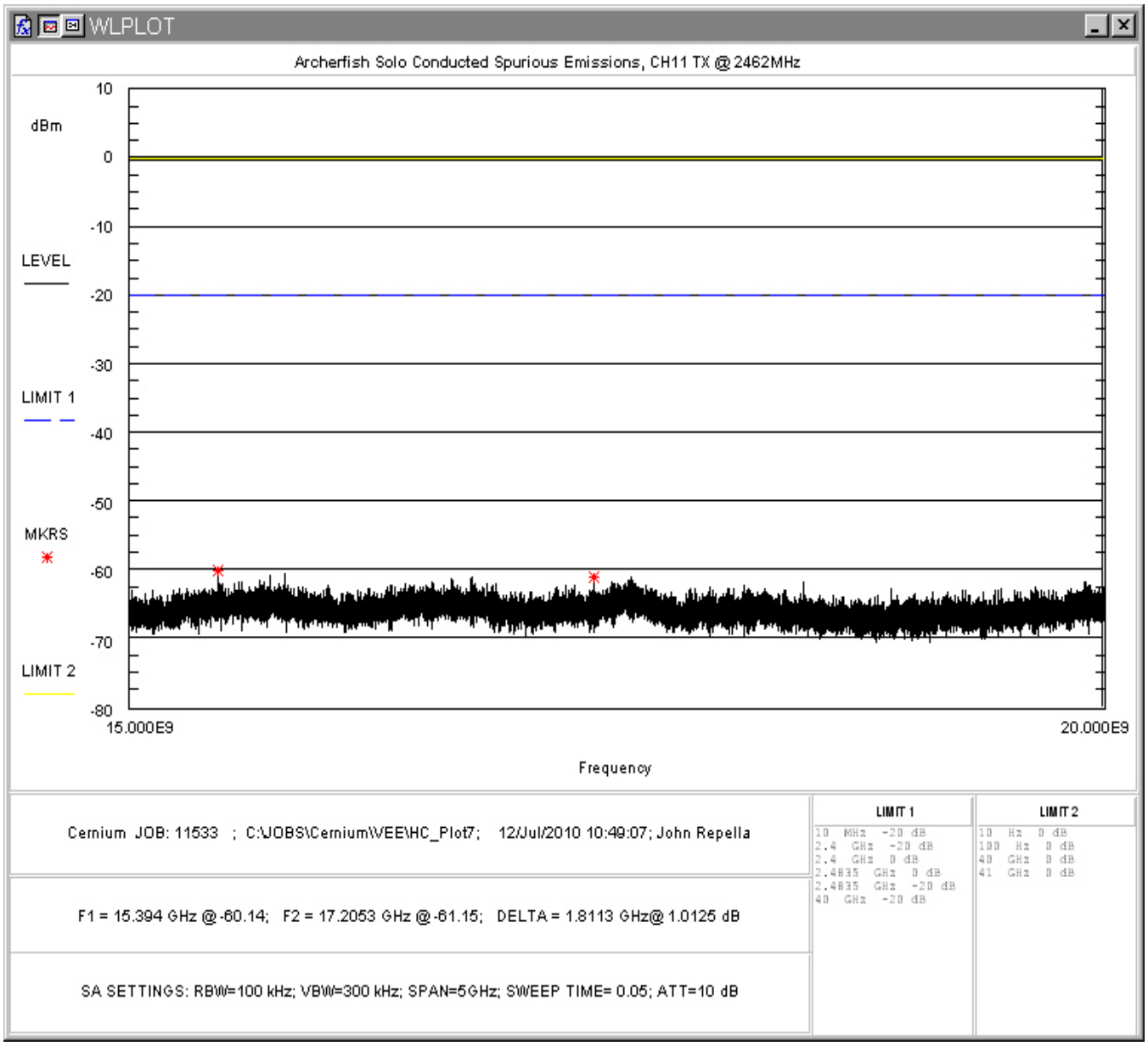

Figure 119: Conducted Spurious Emissions, 802.11g 54Mbps, High Channel 15 - 20GHz

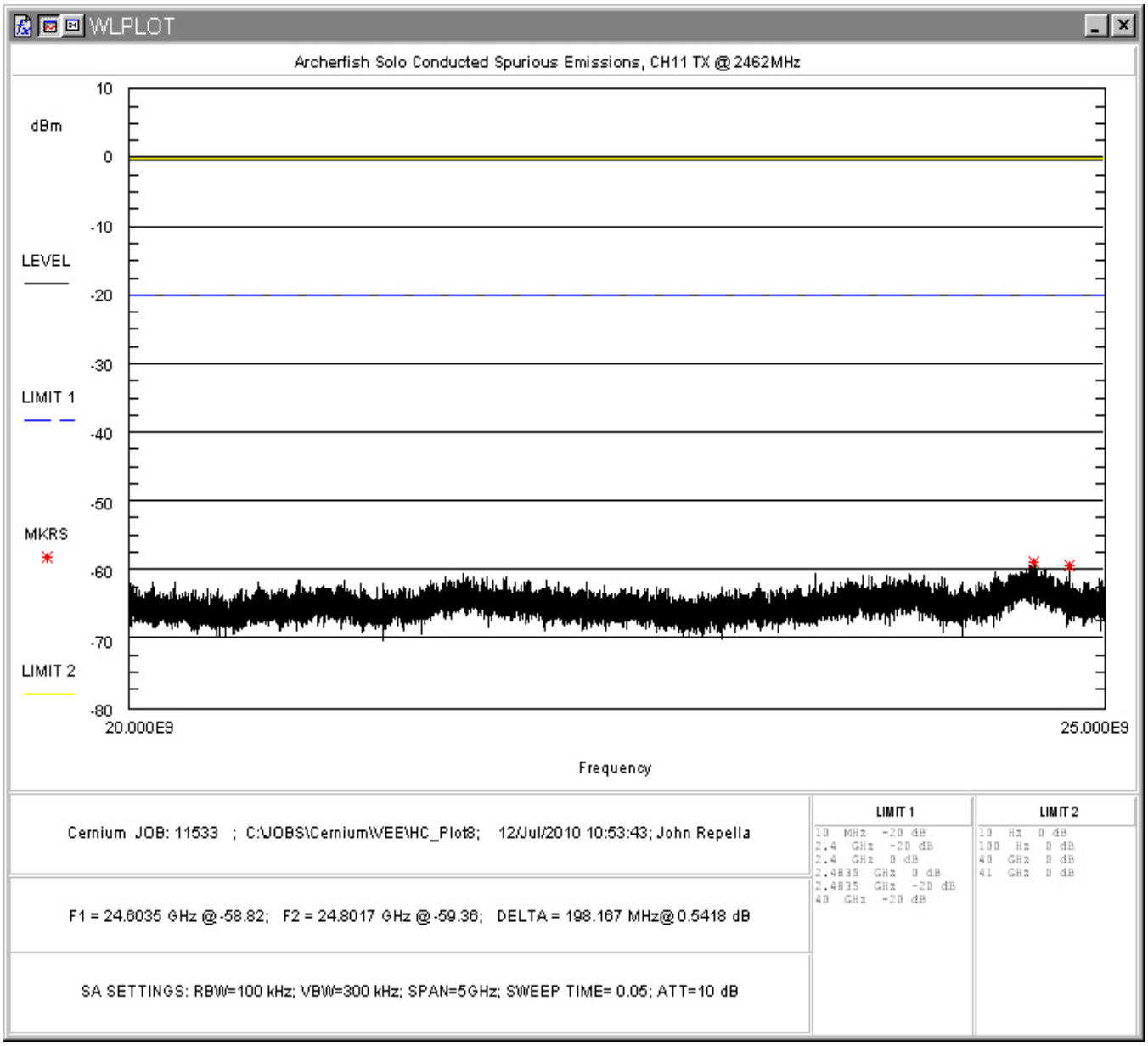

Figure 120: Conducted Spurious Emissions, 802.11g 54Mbps, High Channel 20 - 25GHz

4.6 AC Conducted Emissions (FCC Part §15.207)

4.6.1 Requirements

Test Arrangement: Table Top

Compliance Standard: FCC Class B

FCC Compliance Limits		
Frequency	**Quasi-peak**	**Average**
0.15 - 0.5MHz	66 to 56dBµV	56 to 46dBµV
0.5 - 5MHz	56dBµV	46dBµV
5 - 30MHz	60dBµV	50dBµV

4.6.2 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 µH 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: VdBµV

LISN Correction Factor: LISN dB

Cable Correction Factor: CF dB

Electric Field: EdBµV = V dBµV + LISN dB + CF dB

4.6.3 Test Data

The EUT complied with the Class B Conducted Emissions requirements. This system runs off of 100-240VAC providing 12VDC. Table 7 provides 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 2437MHz.

Table 8: 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)
0.156	42.9	22.1	10.3	0.5	53.7	32.9	65.7	55.7	-12.0	-22.8
0.335	43.7	24.8	10.2	0.4	54.4	35.4	59.3	49.3	-5.0	-13.9
0.407	41.6	20.2	10.2	0.4	52.1	30.8	57.7	47.7	-5.6	-16.9
1.086	36.6	15.6	10.4	0.4	47.3	26.4	56.0	46.0	-8.7	-19.6
2.560	36.9	12.5	10.6	0.4	47.9	23.5	56.0	46.0	-8.1	-22.5
10.820	35.8	15.5	11.1	0.8	47.6	27.3	60.0	50.0	-12.4	-22.7
16.220	33.6	20.4	11.4	1.4	46.3	33.1	60.0	50.0	-13.7	-16.9
21.740	34.7	20.7	11.6	2.0	48.2	34.2	60.0	50.0	-11.8	-15.8

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)
0.159	43.1	21.6	10.3	0.7	54.1	32.6	65.5	55.5	-11.5	-22.9
0.333	41.2	24.8	10.2	0.6	52.0	35.6	59.4	49.4	-7.4	-13.8
0.407	39.9	20.8	10.2	0.5	50.7	31.6	57.7	47.7	-7.0	-16.2
1.094	35.7	16.0	10.4	0.4	46.5	26.8	56.0	46.0	-9.5	-19.2
2.560	35.0	10.8	10.6	0.4	46.0	21.8	56.0	46.0	-10.0	-24.2
13.540	32.8	17.3	11.2	1.6	45.6	30.1	60.0	50.0	-14.4	-19.9
18.300	35.7	21.2	11.4	2.2	49.3	34.8	60.0	50.0	-10.7	-15.2
20.310	34.7	20.8	11.5	2.4	48.7	34.8	60.0	50.0	-11.3	-15.2

4.7 Radiated Spurious Emissions: (FCC Part §15.205 & §15.209)

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.

4.7.1 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 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	<30 Hz (Avg.), 1MHz (Peak)

Worst case emissions are presented.

Table 10: Radiated Emission Test Data, Low Frequency Data (<1GHz)

TX @ 2412MHz

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
38.13	V	0.00	1.00	8.40	14.3	13.6	100.0	-17.3	
74.99	V	195.00	1.00	6.90	10.6	7.5	100.0	-22.5	Peak
114.02	V	0.00	1.00	10.50	15.4	19.7	150.0	-17.6	Peak
121.49	V	20.00	1.00	12.60	15.7	25.9	150.0	-15.3	Peak
168.03	V	350.00	1.00	18.40	14.1	42.4	150.0	-11.0	Peak
240.00	V	135.00	1.00	9.70	13.8	15.0	200.0	-22.5	Peak
250.00	V	90.00	1.00	17.40	14.1	37.7	200.0	-14.5	Peak
256.51	V	90.00	1.00	14.10	14.6	27.4	200.0	-17.3	Peak
263.26	V	215.00	1.00	12.90	15.5	26.2	200.0	-17.6	Peak
276.74	V	90.00	1.00	12.10	16.5	27.0	200.0	-17.4	Peak
283.50	V	315.00	1.00	15.90	16.5	41.8	200.0	-13.6	Peak
324.00	V	90.00	1.00	13.20	17.8	35.6	200.0	-15.0	Peak
330.76	V	180.00	1.00	5.80	17.9	15.3	200.0	-22.3	Peak
405.01	V	180.00	1.64	12.80	19.0	39.1	200.0	-14.2	Peak
972.03	V	270.00	1.77	8.55	28.6	72.3	500.0	-16.8	Peak
38.14	H	225.00	4.00	5.60	14.3	9.8	100.0	-20.1	Peak
114.29	H	90.00	4.00	3.60	15.4	8.9	150.0	-24.5	Peak
121.51	H	0.00	4.00	2.90	15.7	8.5	150.0	-25.0	Peak
168.02	H	135.00	4.00	13.10	14.1	23.0	150.0	-16.3	Peak
239.99	H	325.00	3.25	11.70	13.8	18.9	200.0	-20.5	Peak
250.00	H	125.00	2.40	13.90	14.1	25.2	200.0	-18.0	Peak
256.51	H	90.00	2.15	19.10	14.6	48.7	200.0	-12.3	Peak
267.70	H	90.00	2.20	16.00	16.0	39.9	200.0	-14.0	Peak
276.52	H	90.00	2.00	13.90	16.5	33.2	200.0	-15.6	Peak
324.00	H	45.00	1.00	20.66	17.8	84.1	200.0	-7.5	QP
333.71	H	90.00	1.00	12.30	17.7	31.7	200.0	-16.0	Peak
405.01	H	90.00	1.00	12.70	19.0	38.7	200.0	-14.3	Peak
972.04	H	180.00	1.00	14.66	28.6	146.0	500.0	-10.7	QP

TX @ 2437MHz

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
38.13	V	0.00	1.00	8.30	14.3	13.4	100.0	-17.4	
74.99	V	195.00	1.00	7.00	10.6	7.6	100.0	-22.4	Peak
114.02	V	0.00	1.00	10.40	15.4	19.5	150.0	-17.7	Peak
121.49	V	20.00	1.00	12.50	15.7	25.6	150.0	-15.4	Peak
168.03	V	350.00	1.00	20.42	14.1	53.5	150.0	-9.0	QP
240.00	V	135.00	1.00	9.80	13.8	15.2	200.0	-22.4	Peak
250.00	V	90.00	1.00	17.20	14.1	36.9	200.0	-14.7	Peak
256.51	V	90.00	1.00	14.50	14.6	28.7	200.0	-16.9	Peak
263.26	V	215.00	1.00	12.80	15.5	25.9	200.0	-17.7	Peak
276.74	V	90.00	1.00	12.20	16.5	27.3	200.0	-17.3	Peak
283.50	V	315.00	1.00	15.80	16.5	41.4	200.0	-13.7	Peak
324.00	V	90.00	1.00	14.90	17.8	43.4	200.0	-13.3	Peak
330.76	V	180.00	1.00	8.10	17.9	19.9	200.0	-20.0	Peak
405.01	V	180.00	1.64	12.80	19.0	39.1	200.0	-14.2	Peak
972.03	V	270.00	1.77	8.55	28.6	72.3	500.0	-16.8	Peak
38.14	H	225.00	4.00	5.60	14.3	9.8	100.0	-20.1	Peak
114.29	H	90.00	4.00	3.60	15.4	8.9	150.0	-24.5	Peak
121.51	H	0.00	4.00	2.90	15.7	8.5	150.0	-25.0	Peak
168.02	H	135.00	4.00	13.10	14.1	23.0	150.0	-16.3	Peak
239.99	H	325.00	3.25	11.70	13.8	18.9	200.0	-20.5	Peak
250.00	H	125.00	2.40	13.80	14.1	24.9	200.0	-18.1	Peak
256.51	H	90.00	2.15	18.70	14.6	46.5	200.0	-12.7	Peak
267.70	H	90.00	2.20	15.60	16.0	38.1	200.0	-14.4	Peak
276.52	H	90.00	2.00	14.70	16.5	36.4	200.0	-14.8	Peak
324.00	H	45.00	1.00	20.66	17.8	84.1	200.0	-7.5	Peak
333.71	H	90.00	1.00	12.30	17.7	31.7	200.0	-16.0	Peak
405.01	H	90.00	1.00	12.70	19.0	38.7	200.0	-14.3	Peak
972.04	H	180.00	1.00	14.66	28.6	146.0	500.0	-10.7	Peak

TX @ 2462MHz

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
38.13	V	0.00	1.00	8.30	14.3	13.4	100.0	-17.4	
74.99	V	195.00	1.00	7.70	10.6	8.2	100.0	-21.7	Peak
114.02	V	0.00	1.00	10.20	15.4	19.0	150.0	-17.9	Peak
121.49	V	20.00	1.00	12.80	15.7	26.5	150.0	-15.1	Peak
168.03	V	350.00	1.00	20.20	14.1	52.2	150.0	-9.2	QP
240.00	V	135.00	1.00	10.00	13.8	15.5	200.0	-22.2	Peak
250.00	V	90.00	1.00	15.70	14.1	31.0	200.0	-16.2	Peak
256.51	V	90.00	1.00	14.70	14.6	29.3	200.0	-16.7	Peak
263.26	V	215.00	1.00	12.80	15.5	25.9	200.0	-17.7	Peak
276.74	V	90.00	1.00	12.10	16.5	27.0	200.0	-17.4	Peak
283.50	V	315.00	1.00	14.90	16.5	37.3	200.0	-14.6	Peak
324.00	V	90.00	1.00	14.70	17.8	42.4	200.0	-13.5	Peak
330.76	V	180.00	1.00	7.90	17.9	19.5	200.0	-20.2	Peak
405.01	V	180.00	1.64	12.60	19.0	38.2	200.0	-14.4	Peak
972.03	V	270.00	1.77	7.90	28.6	67.1	500.0	-17.5	Peak
38.14	H	225.00	4.00	5.60	14.3	9.8	100.0	-20.1	Peak
114.29	H	90.00	4.00	3.60	15.4	8.9	150.0	-24.5	Peak
121.51	H	0.00	4.00	2.90	15.7	8.5	150.0	-25.0	Peak
168.02	H	135.00	4.00	13.10	14.1	23.0	150.0	-16.3	Peak
239.99	H	325.00	3.25	18.70	13.8	42.2	200.0	-13.5	Peak
250.00	H	125.00	2.40	16.20	14.1	32.9	200.0	-15.7	Peak
256.51	H	90.00	2.15	18.70	14.6	46.5	200.0	-12.7	Peak
267.65	H	90.00	2.20	20.40	16.0	66.2	200.0	-9.6	Peak
271.62	H	90.00	2.00	20.00	16.4	65.9	200.0	-9.6	Peak
276.52	H	90.00	2.00	18.00	16.5	53.2	200.0	-11.5	Peak
324.00	H	45.00	1.00	20.50	17.8	82.6	200.0	-7.7	Peak
333.71	H	90.00	1.00	13.00	17.7	34.3	200.0	-15.3	Peak
405.01	H	90.00	1.00	12.80	19.0	39.1	200.0	-14.2	Peak
972.04	H	180.00	1.00	15.10	28.6	153.6	500.0	-10.3	Peak

Table 11: Radiated Emission Test Data, High Frequency Data (>1GHz)

(Restricted Bands)

TX @ 2412MHz

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
1000.92	V	135.00	2.05	52.60	-13.0	95.2	5000.0	-34.4	Peak
1000.92	V	135.00	2.05	43.90	-13.0	34.9	500.0	-23.1	AVE
1039.54	V	135.00	2.05	54.60	-12.9	122.0	5000.0	-32.3	Peak
1039.54	V	135.00	2.05	52.04	-12.9	90.9	500.0	-14.8	AVE
4823.95	V	135.00	2.10	51.20	-2.1	285.9	5000.0	-24.9	Peak
4823.95	V	135.00	2.10	49.10	-2.1	224.5	500.0	-7.0	AVE
1000.92	H	135.00	2.23	56.26	-13.0	145.0	5000.0	-30.8	Peak
1000.92	H	135.00	2.20	51.58	-13.0	84.6	500.0	-15.4	AVE
1039.54	H	135.00	1.99	55.86	-12.9	141.0	5000.0	-31.0	Peak
1039.54	H	135.00	1.99	48.72	-12.9	62.0	500.0	-18.1	AVE
4823.95	H	270.00	2.00	50.98	-2.1	278.7	5000.0	-25.1	Peak
4823.95	H	270.00	2.00	48.70	-2.1	214.4	500.0	-7.4	AVE

TX @ 2437MHz

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
1000.92	V	135.00	2.05	52.60	-13.0	95.2	5000.0	-34.4	Peak
1000.92	V	135.00	2.05	43.90	-13.0	34.9	500.0	-23.1	AVE
1039.54	V	135.00	2.05	54.60	-12.9	122.0	5000.0	-32.3	Peak
1039.54	V	135.00	2.05	52.04	-12.9	90.9	500.0	-14.8	AVE
4874.00	V	135.00	2.00	51.36	-1.9	295.9	5000.0	-24.6	Peak
4874.00	V	135.00	2.10	46.87	-1.9	176.5	500.0	-9.0	AVE
1000.92	H	135.00	2.23	56.26	-13.0	145.0	5000.0	-30.8	Peak
1000.92	H	135.00	2.20	51.58	-13.0	84.6	500.0	-15.4	AVE
1039.54	H	135.00	1.99	55.86	-12.9	141.0	5000.0	-31.0	Peak
1039.54	H	135.00	1.99	48.72	-12.9	62.0	500.0	-18.1	AVE
4874.00	H	270.00	2.00	52.40	-1.9	333.5	5000.0	-23.5	Peak
4874.00	H	270.00	2.00	49.30	-1.9	233.4	500.0	-6.6	AVE

TX @ 2462MHz

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
1120.59	V	135.00	2.05	52.04	-12.6	94.2	5000.0	-34.5	Peak
1120.59	V	135.00	2.00	51.36	-12.6	87.1	500.0	-15.2	AVE
4923.95	V	135.00	2.10	46.87	-1.8	179.3	5000.0	-28.9	Peak
4923.95	V	0.00	0.00	0.00	-1.8	0.8	500.0	-55.8	AVE
1000.75	H	135.00	2.23	54.06	-13.0	112.6	5000.0	-33.0	Peak
1000.75	H	135.00	2.20	51.60	-13.0	84.8	500.0	-15.4	AVE
1039.54	H	135.00	1.99	56.11	-12.9	145.2	5000.0	-30.7	Peak
1039.54	H	135.00	1.99	48.40	-12.9	59.8	500.0	-18.5	AVE
4923.95	H	135.00	2.00	48.21	-1.8	209.2	5000.0	-27.6	Peak
4923.95	H	135.00	2.00	42.35	-1.8	106.5	500.0	-13.4	AVE

Table 12: Radiated Emission Test Data, Receive Only

Frequency (MHz)	Polarity (H/V)	Azimuth (Degree)	Ant. Height (m)	SA Level (dBuV)	Corr Factors (dB)	Corr. Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Peak or Average
57.21	V	180.0	1.0	11.1	8.9	20.0	30.0	-10.0	Peak
85.90	V	90.0	1.0	7.3	9.8	17.1	30.0	-12.9	Peak
155.94	V	90.0	1.0	10.6	14.9	25.5	30.0	-4.5	Peak
168.02	V	90.0	1.0	10.1	14.5	24.6	30.0	-5.4	QP
168.02	V	90.0	1.0	10.1	14.5	24.6	30.0	-5.4	QP
246.73	V	180.0	1.0	15.0	14.6	29.6	37.0	-7.4	Peak
250.00	V	180.0	1.0	14.4	14.7	29.1	37.0	-7.9	QP
256.51	V	90.0	1.0	14.8	15.1	29.9	37.0	-7.1	QP
263.26	V	0.0	1.0	8.0	15.9	23.9	37.0	-13.1	QP
275.10	V	0.0	1.0	6.7	16.7	23.4	37.0	-13.6	Peak
283.50	V	180.0	1.0	9.5	16.6	26.1	37.0	-10.9	Peak
324.00	V	225.0	1.0	8.9	17.7	26.6	37.0	-10.4	Peak
57.21	H	225.0	4.0	7.5	8.9	16.4	30.0	-13.6	Peak
155.94	H	45.0	4.0	5.7	14.9	20.6	30.0	-9.4	Peak
168.02	H	180.0	4.0	6.0	14.5	20.5	30.0	-9.5	Peak
171.21	H	180.0	4.0	8.3	14.3	22.6	30.0	-7.4	Peak
246.73	H	180.0	4.0	6.8	14.6	21.4	37.0	-15.6	Peak
250.00	H	180.0	4.0	9.7	14.7	24.4	37.0	-12.6	Peak
256.51	H	135.0	3.5	11.7	15.1	26.8	37.0	-10.2	Peak
263.26	H	135.0	3.5	5.5	15.9	21.4	37.0	-15.6	Peak
283.50	H	225.0	3.6	6.8	16.6	23.4	37.0	-13.6	Peak
324.00	H	225.0	4.0	12.7	17.7	30.4	37.0	-6.6	Peak