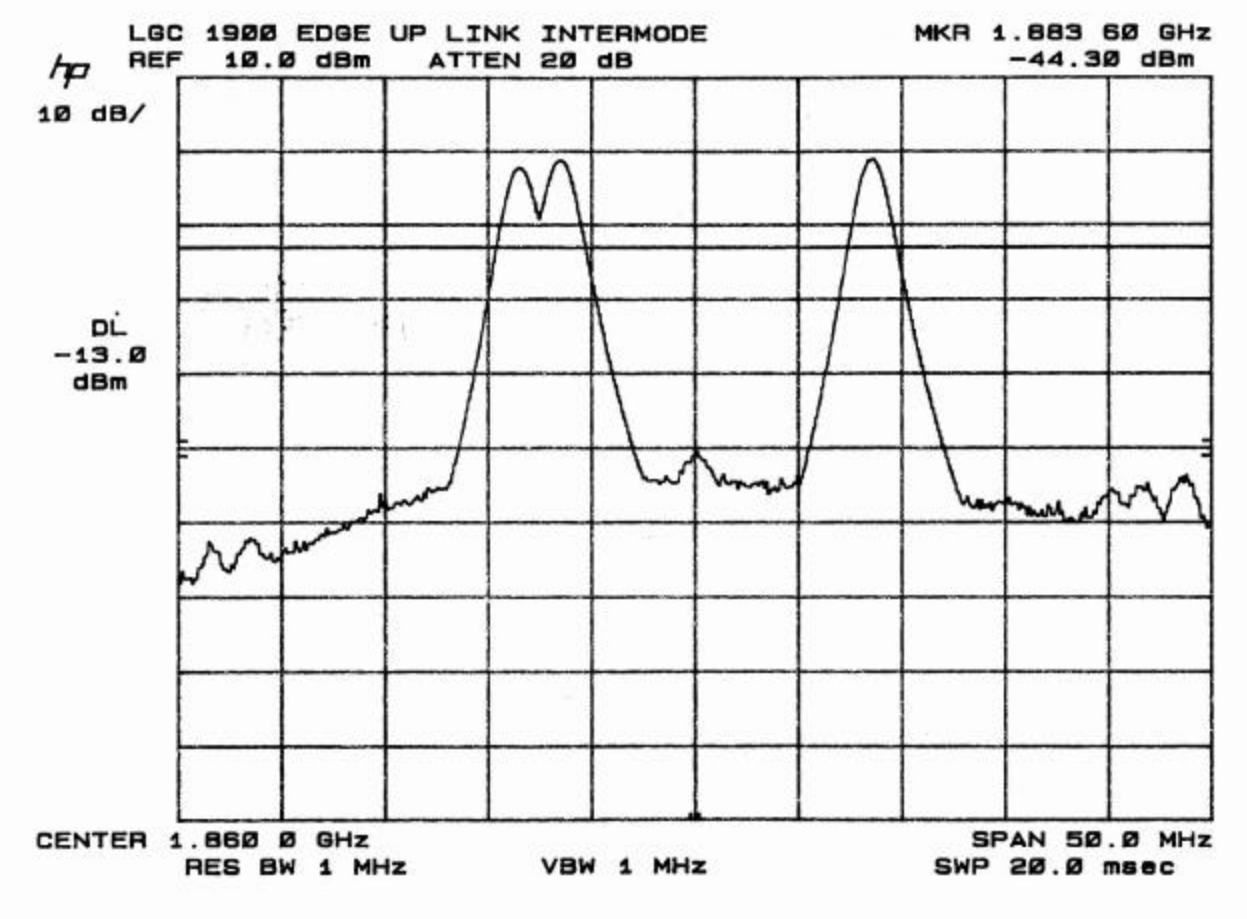
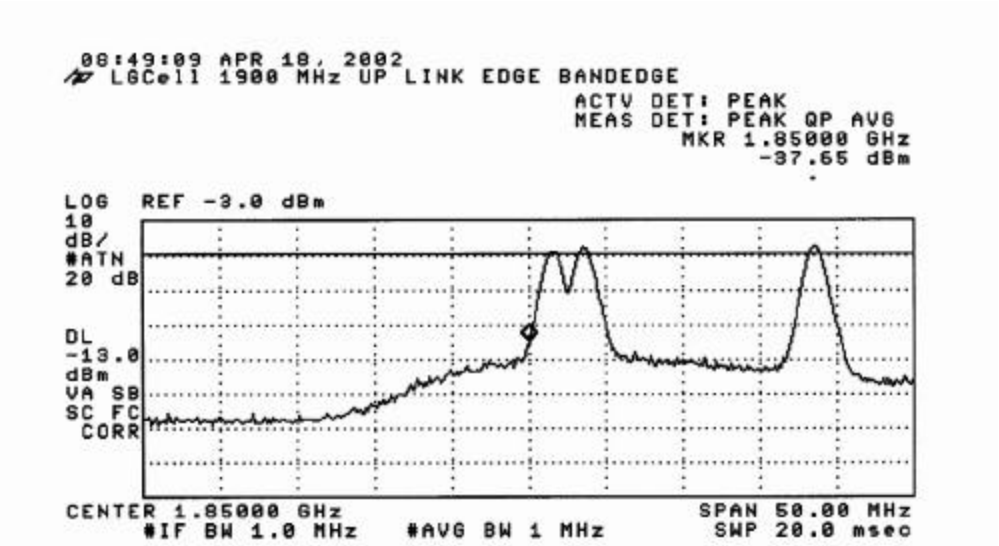
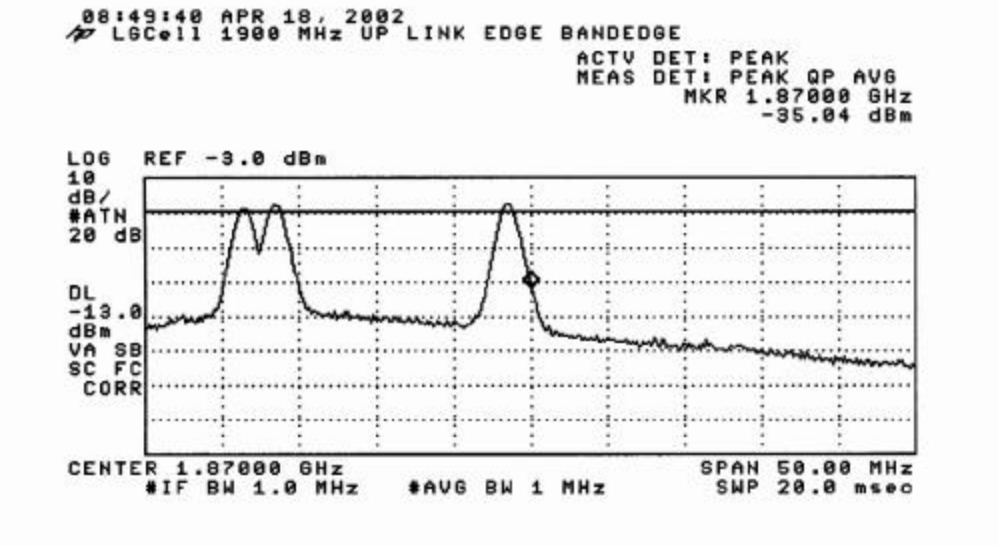
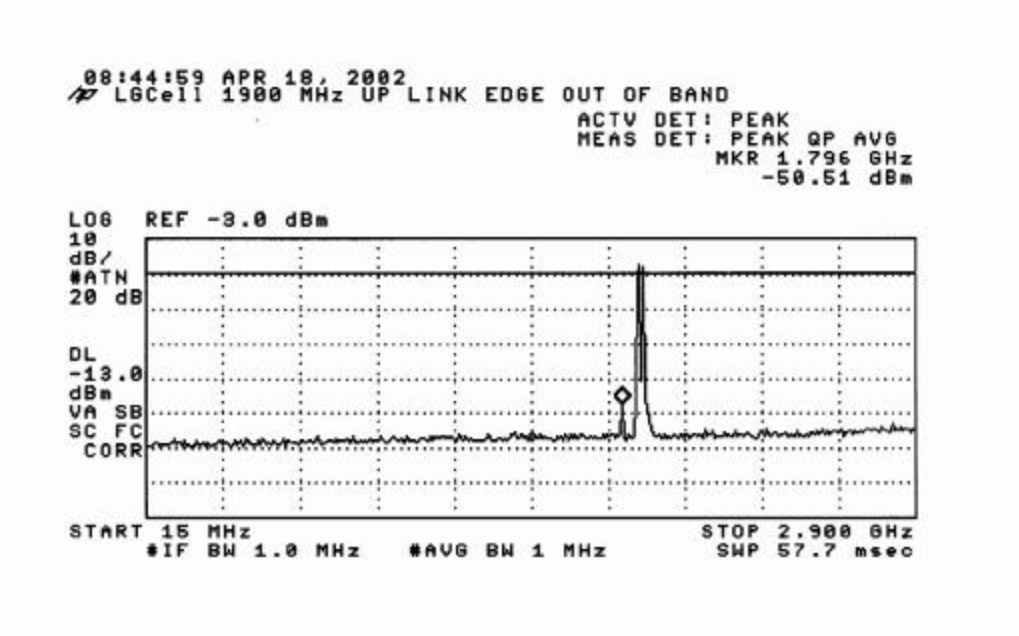
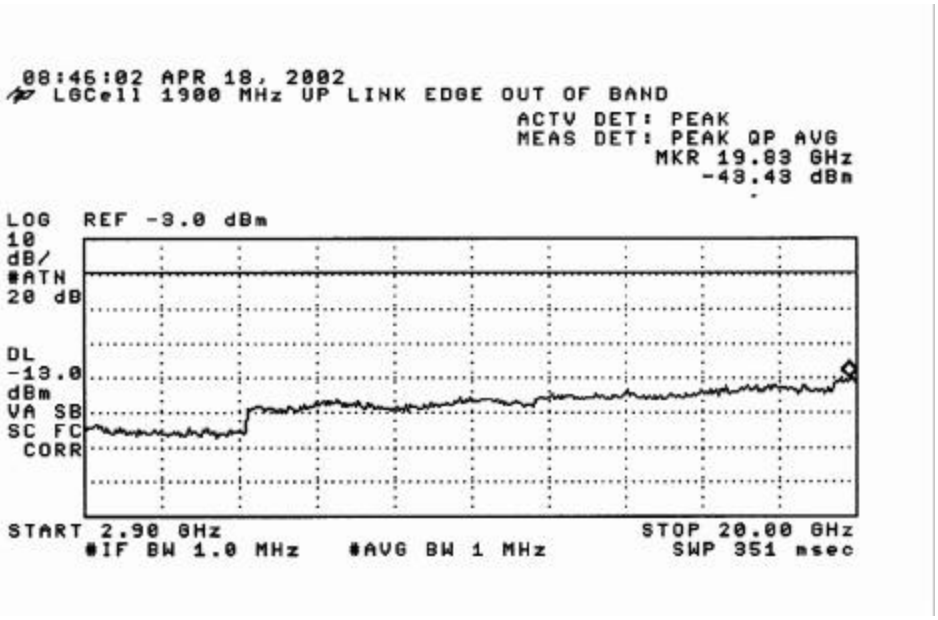
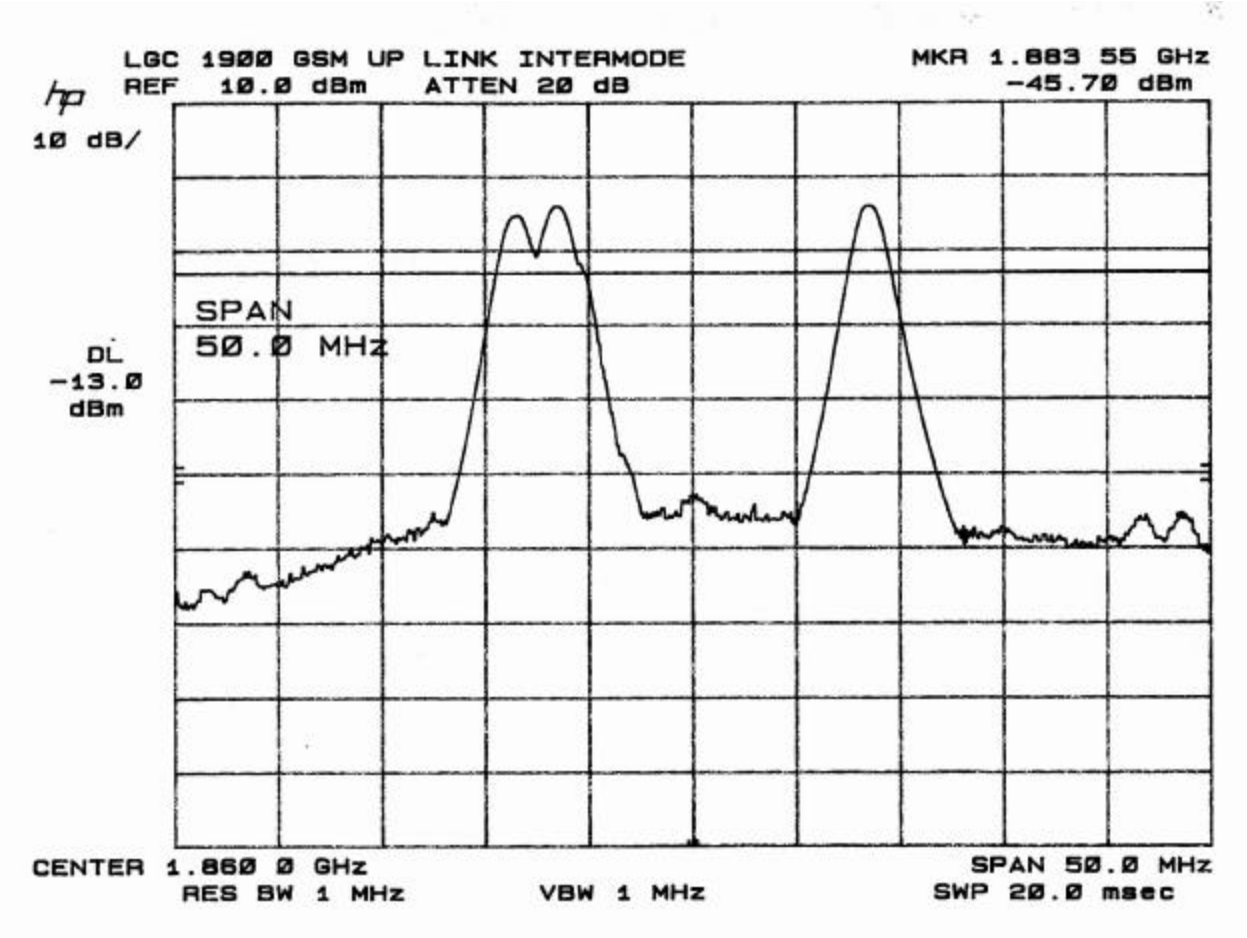


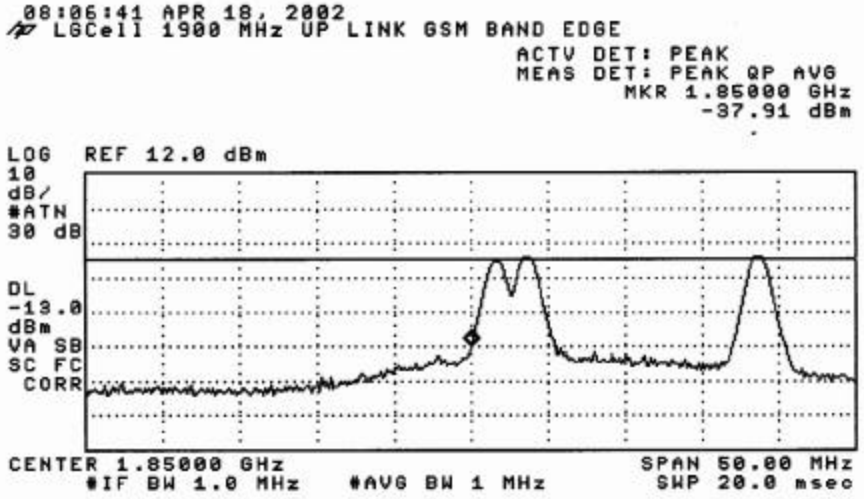


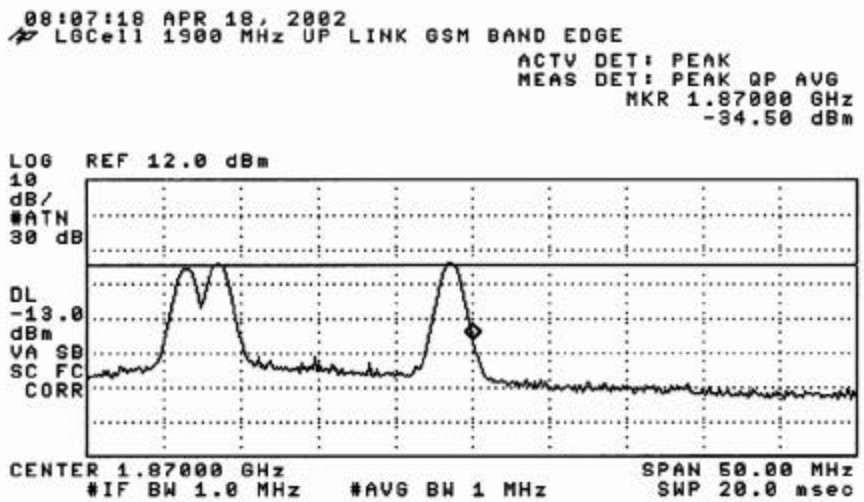


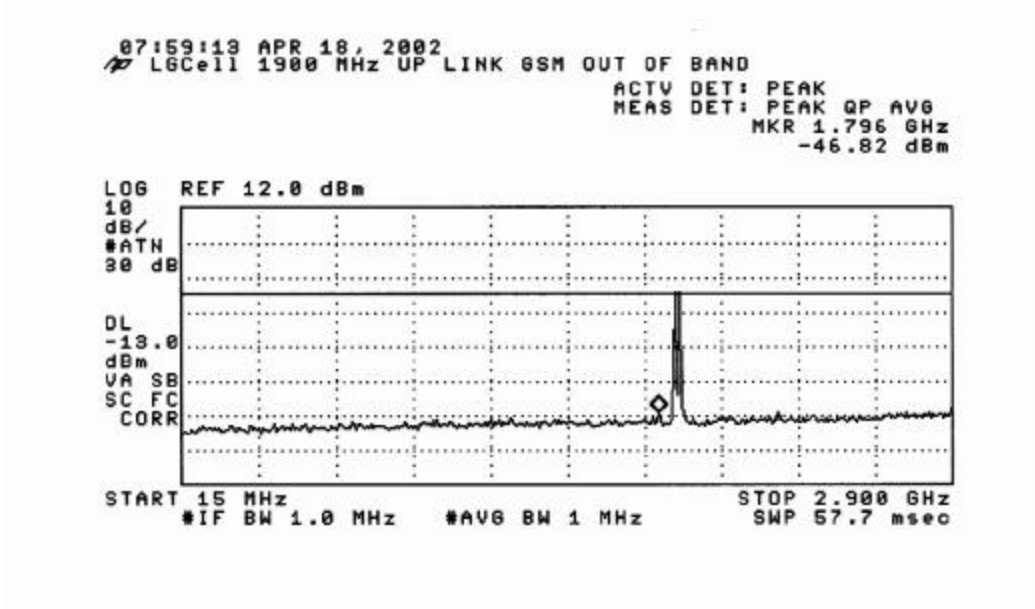


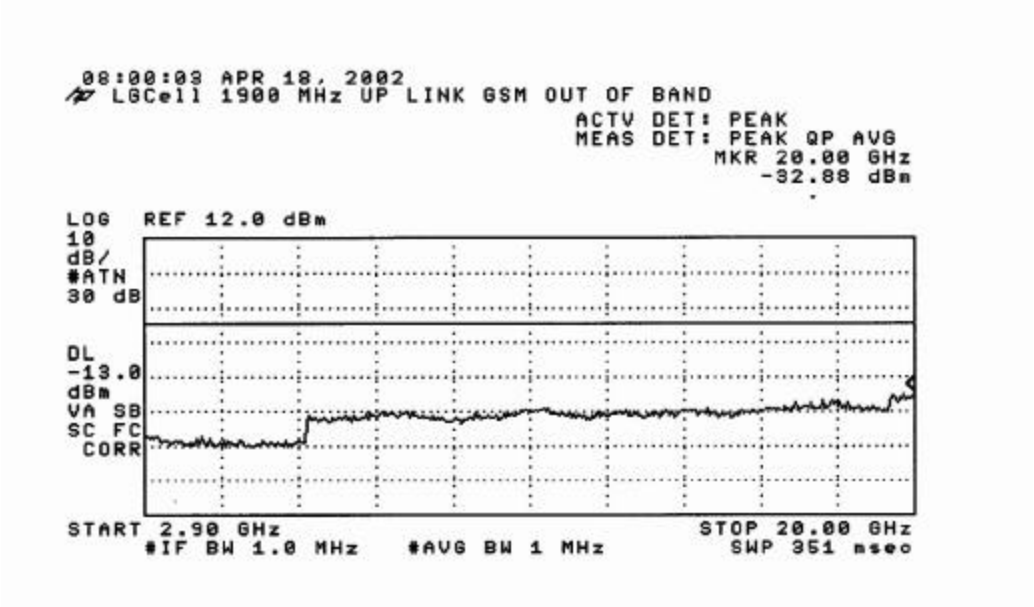


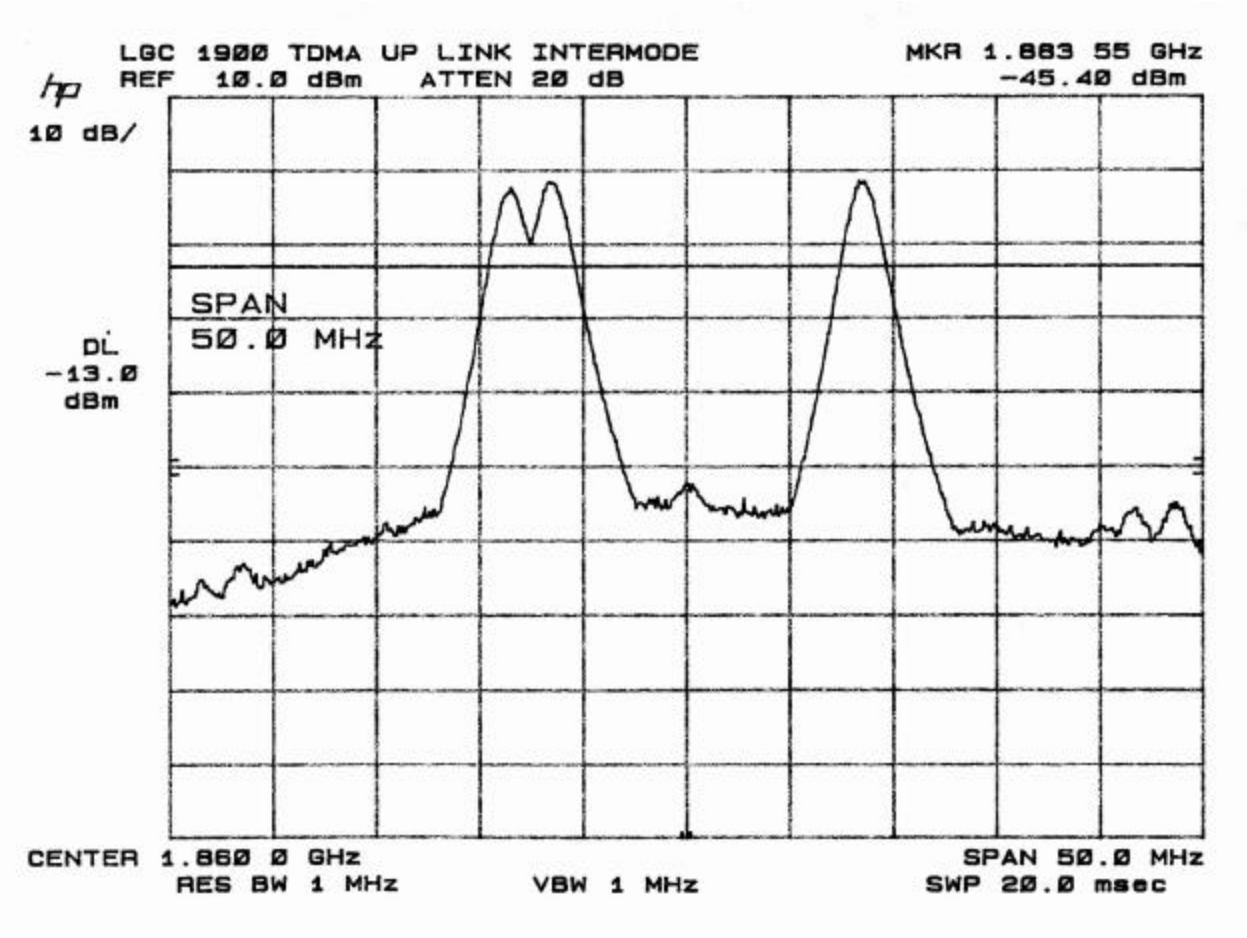


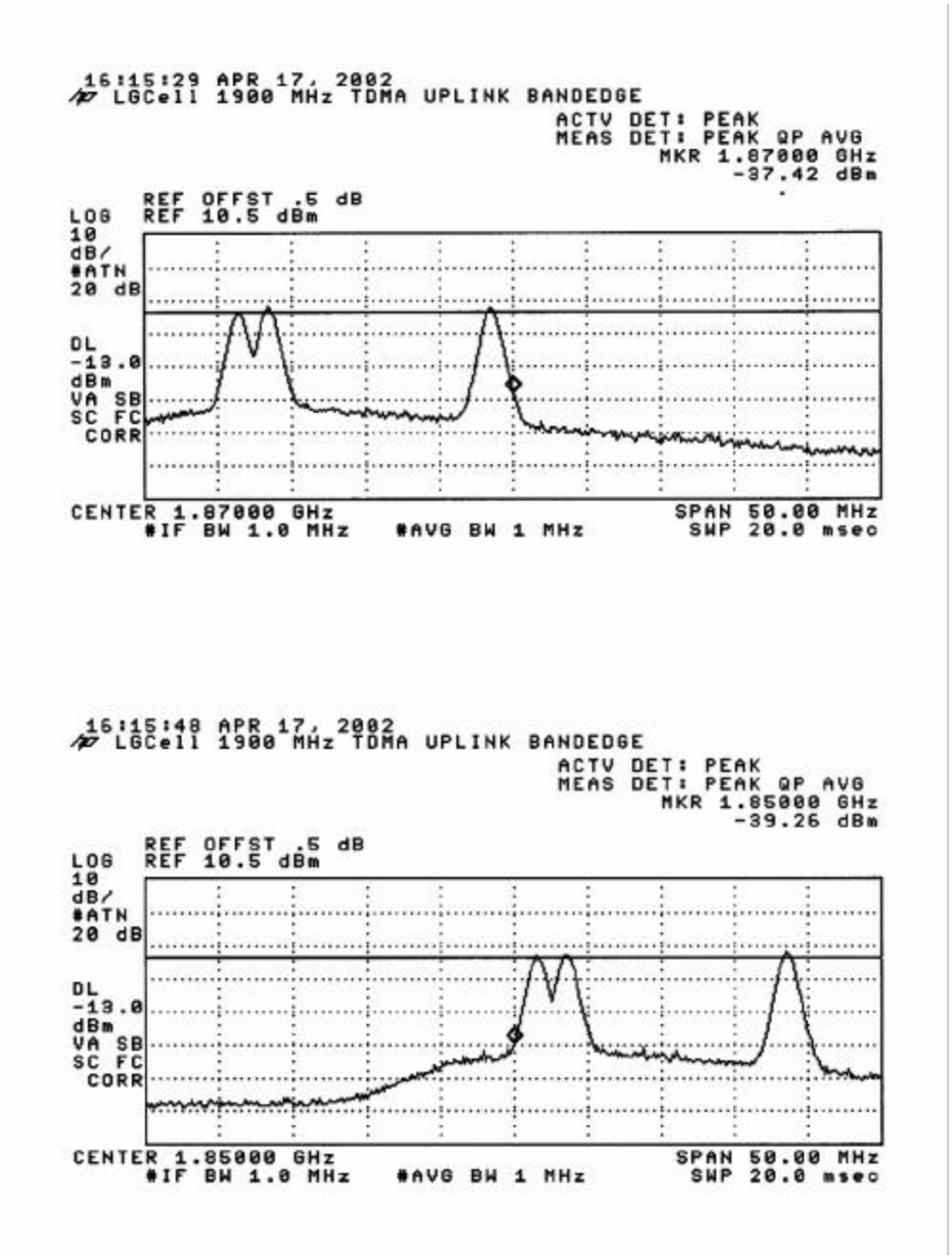


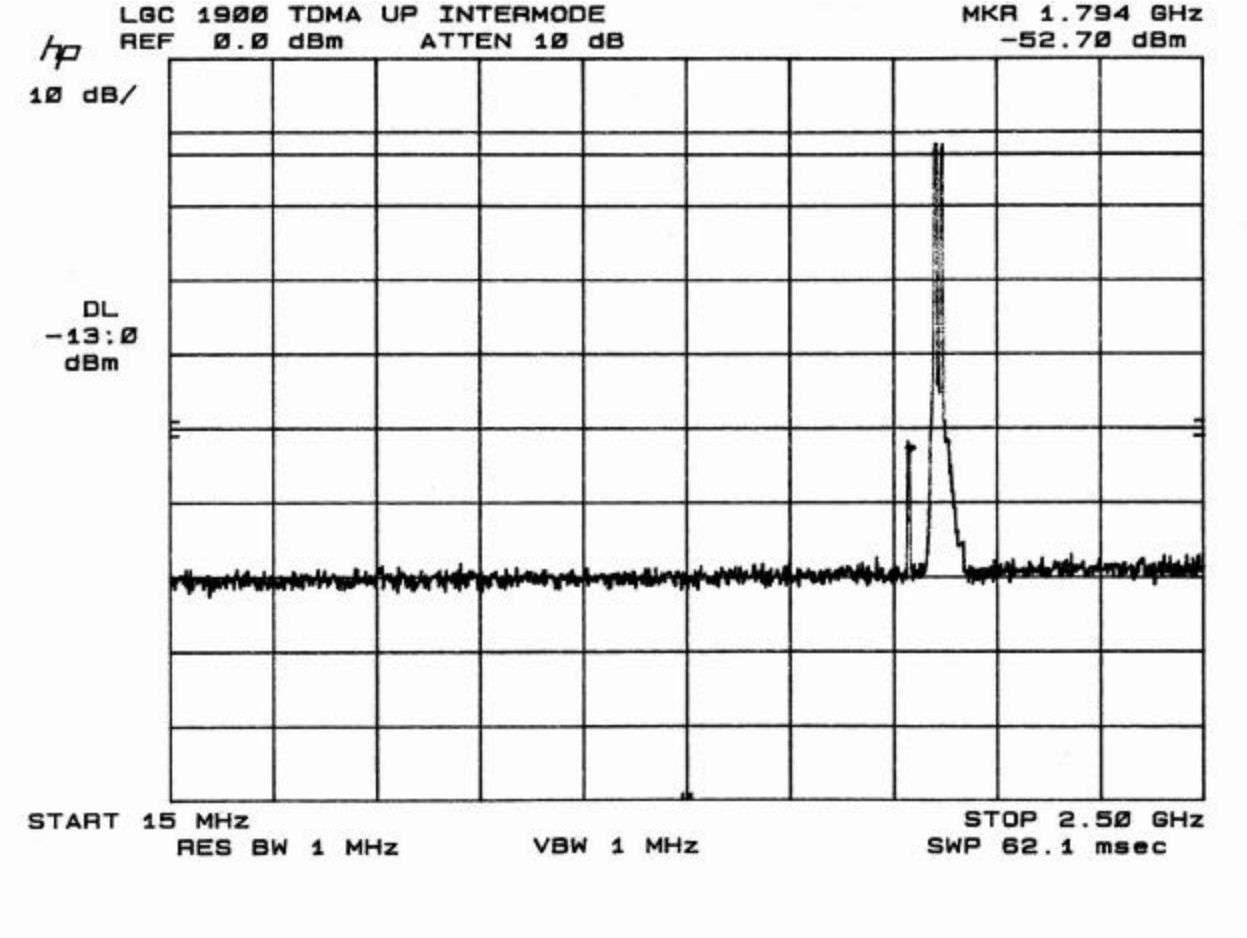


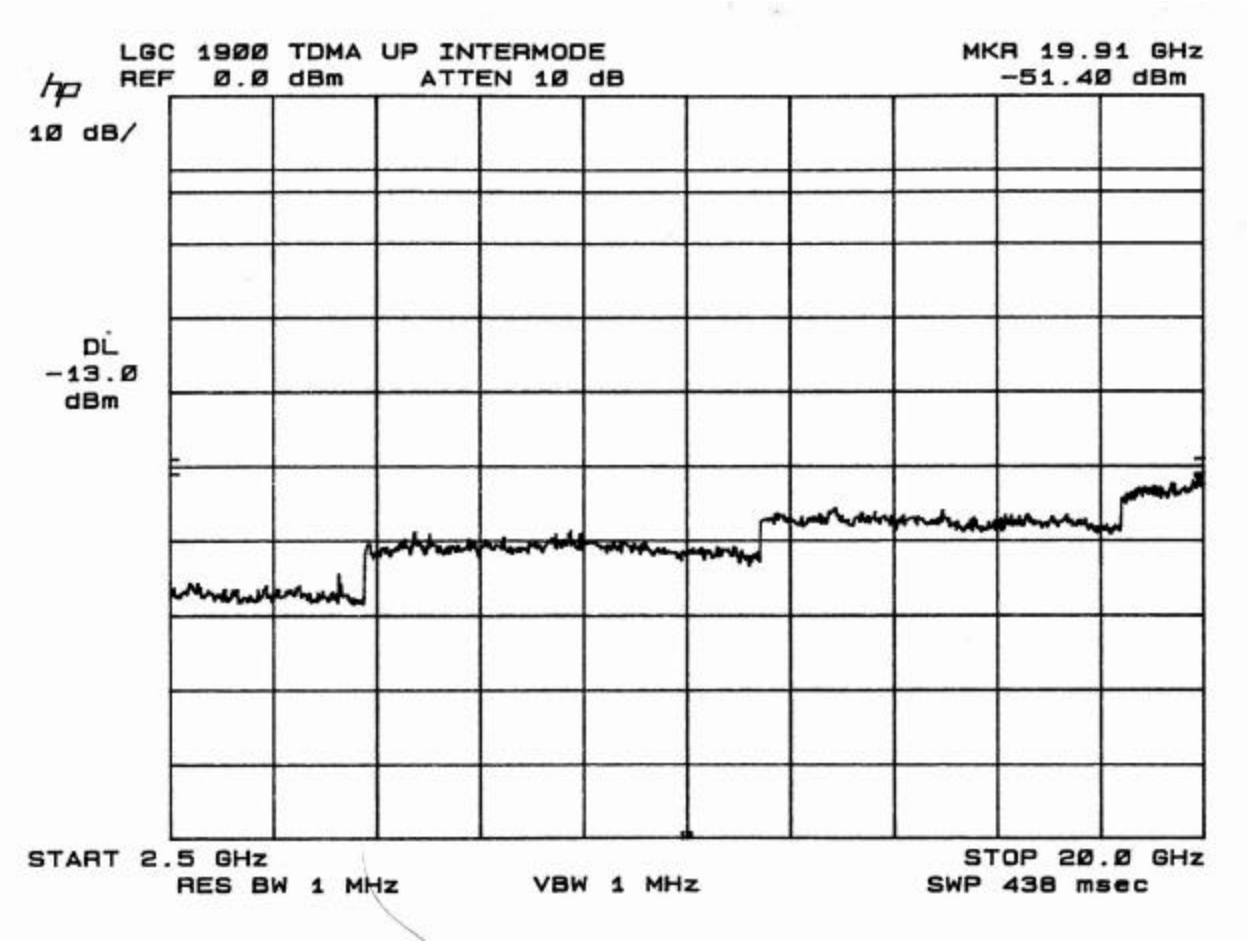












6.4. FIELD STRENGTH OF SPURIOUS RADIATION

INSTRUMENTS LIST

EQUIPMENT	MANUFACTURE	MODEL NO.	CAL. DUE DATE
Spectrum Analyzer	HP	8593EM	06/20/02
Amplifier	MITEQ	NSP2600-44	4/12/02
Signal Generator	Rohde & Schwarz	SMIQ 03	05/25/02
I/Q Mmodulator	Rohde & Schwarz	SMIQ 03	06/
Signal Generator	HP	83732B	3/21/02
Tx Horn Antenna	EMCO	3115	1/5/02
Rx Horn Antenna	EMCO	3115	9/24/01
HPF	MICROLAB	FH-2400H	N/A
50 ohm terminator	SHX	TF-5	N/A

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak ☐ Average	☒ 1 MHz ☐ 1 MHz	☒ 1 MHz ☐ 10 Hz

TEST SETUP

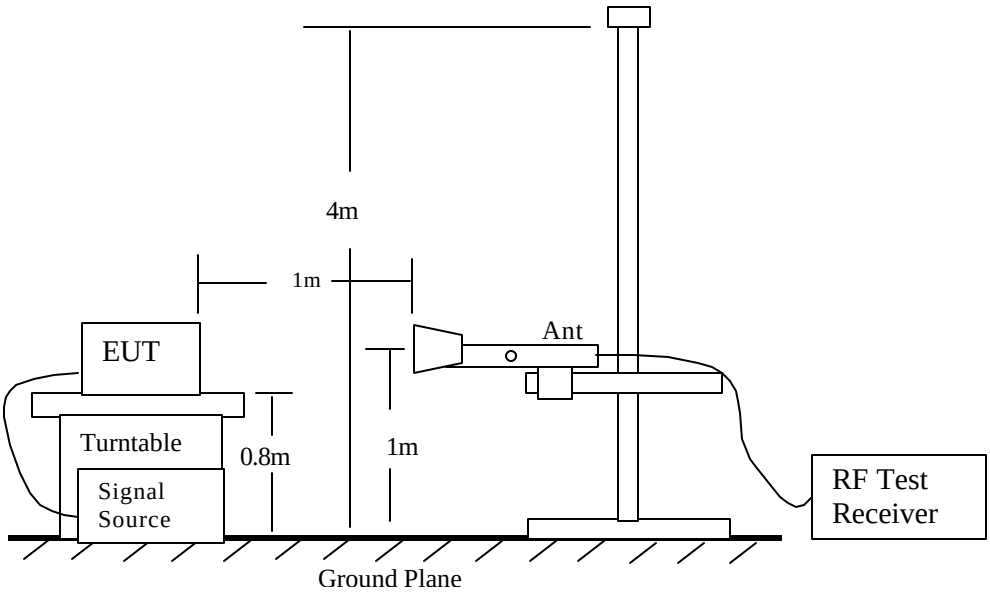


Fig 1: Radiated Emission Measurement

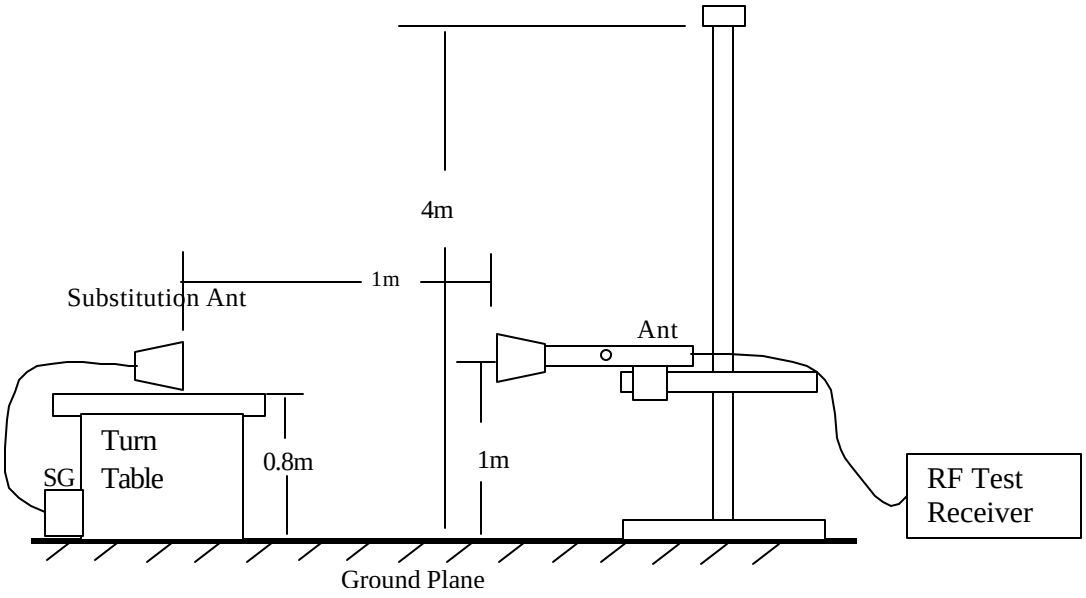


Fig 2: Radiated Emission – Substitution Method set-up

TEST PROCEDURE

1). On a test site, the EUT shall be placed on a turntable, and in the position closest to the normal use as declared by the user.
2). The test antenna shall be oriented initially for vertical polarization located 1m from the EUT to correspond to the frequency of the transmitter.
3). The output of the test antenna shall be connected to the measuring receiver and either a peak or average detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
4). The transmitter shall be switched on, if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
5). The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
6). The transmitter shall than be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
7). The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
8). The maximum signal level detected by the measuring receiver shall be noted.
9). The transmitter shall be replaced by a substitution antenna.
10). The substitution antenna shall be oriented for vertical polarization.
11). The substitution antenna shall be connected to a calibrated signal generator.

12). If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
13). The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
14). The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
15). The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
16). The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.
17). The measure of the effective radiated power is the larger of the two levels recorded, at the input to the substitution antenna, corrected for the gain of the substitution antenna if necessary.

RESULT

No non-compliance noted:

Compliance Certification Services

Radiated Emissions 4/22/02
22.917(e) A-Site (1 meter)
Jerry C. Hovey

LGC Wireless
869-894 MHz Multi-Channel Remote Access Unit

fo = 869 MHz (LOW)

frequency (MHz)	SA reading (dBuV)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
1738V	51	-67	1.1	8.4	6.25	-61.85	-13	-48.85
2607V	51.5	-65	1.3	9	6.85	-59.45	-13	-46.45
3476V	50	-69	1.5	8.9	6.75	-63.75	-13	-50.75
4345V	48.5	-71	1.7	10.1	7.95	-64.75	-13	-51.75
5214V	43.4	-75	1.9	9.9	7.75	-69.15	-13	-56.15
6083V	51.2	-67	2.1	10.6	8.45	-60.65	-13	-47.65
6952V	46.1	-75	2.3	10.5	8.35	-68.95	-13	-55.95
7821V	46.4	-75	2.4	10.4	8.25	-69.15	-13	-56.15
8690V	46.3	-75	2.6	10.5	8.35	-69.25	-13	-56.25

NOTE: * Measured noise floor (worse case vertical); H=horizontal and V=vertical
SA: Spectrum Analyzer
SG: Signal Generator
CL: SMA cable loss (5ft)

Gain (dBd) = Antenna Gain (dBi) - 2.15
ERP = SG reading - CL + Gain (dBd)
Margin = ERP - Limit

Compliance Certification Services

Radiated Emissions 4/22/02
22.917(e) A-Site (1 meter)
Jerry C. Hovey

LGC Wireless
869-894 MHz Multi-Channel Remote Access Unit

fo = 881.5 MHz (MID)

frequency (MHz)	SA reading (dBuV)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
1763V	53.2	-65	1.1	8.2	6.05	-60.05	-13	-47.05
2644.5V	54.5	-63.5	1.3	9	6.85	-57.95	-13	-44.95
3526V	50.2	-70	1.5	8.9	6.75	-64.75	-13	-51.75
4407.5V	48.3	-72	1.7	10.1	7.95	-65.75	-13	-52.75
5289V	45.7	-75	1.9	9.9	7.75	-69.15	-13	-56.15
6170.5V	45.3	-75	2.1	10.6	8.45	-68.65	-13	-55.65
7052V	46.5	-75	2.3	10.5	8.35	-68.95	-13	-55.95
7933.5V	46	-75	2.4	10.4	8.25	-69.15	-13	-56.15
8815V	46.4	-75	2.6	10.5	8.35	-69.25	-13	-56.25

NOTE: * Measured noise floor (worse case vertical); H=horizontal and V=vertical
SA: Spectrum Analyzer
SG: Signal Generator
CL: SMA cable loss (5ft)

Gain (dBd) = Antenna Gain (dBi) - 2.15
ERP = SG reading - CL + Gain (dBd)
Margin = ERP - Limit

Compliance Certification Services

Radiated Emissions 4/22/02
22.917(e) A-Site (1 meter)
Jerry c. hovey

LGC Wireless
869-894 MHz Multi-Channel Remote Access Unit

fo = 894 MHz (HIGH)

frequency (MHz)	SA reading (dBuV)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
1788V	51.2	-69	1.1	8.2	6.05	-64.05	-13	-51.05
2682V	51.8	-68	1.3	9	6.85	-62.45	-13	-49.45
3576V	50.5	-70	1.5	8.9	6.75	-64.75	-13	-51.75
4470V	48.6	-71	1.7	10.1	7.95	-64.75	-13	-51.75
5364V	45.3	-75	1.9	9.9	7.75	-69.15	-13	-56.15
6258V	45.8	-75	2.1	10.6	8.45	-68.65	-13	-55.65
7152V	46.5	-75	2.3	10.5	8.35	-68.95	-13	-55.95
8046V	46.2	-75	2.4	10.4	8.25	-69.15	-13	-56.15
8940V	46.6	-75	2.6	10.5	8.35	-69.25	-13	-56.25

NOTE: * Measured noise floor (worse case vertical); H=horizontal and V=vertical
SA: Spectrum Analyzer
SG: Signal Generator
CL: SMA cable loss (5ft)

Gain (dBd) = Antenna Gain (dBi) - 2.15
ERP = SG reading - CL + Gain (dBd)
Margin = ERP - Limit

Compliance Certification Services

Radiated Emissions 5/6/02
24.238(a) A-Site (1 meter)
Jerry Hovey

LGC Wireless
1900 MHz PCS Multi-Channel Remote Access Unit

fo = 1930 MHz (LOW)

frequency (MHz)	SA reading (dBuV)	SG reading (dBm)	CL (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
3860.0*	39	-79	1.6	9	-71.6	-13	-58.6
5790.0*	46.7	-70	2.1	9.9	-62.2	-13	-49.2
7720.0*	47.2	-70	2.4	10.2	-62.2	-13	-49.2
9650.0*	47.1	-67	2.7	10.3	-59.4	-13	-46.4
11580.0*	46	-63	3	11.7	-54.3	-13	-41.3
13510.0*	49.8	-60	3.3	12.1	-51.2	-13	-38.2
15440.0*	50.1	-60	3.7	15.3	-48.4	-13	-35.4
17370.0*	50.5	-55	4.1	8	-51.1	-13	-38.1
19300.0*	54.8	-55	4.4	7.5	-51.9	-13	-38.9

NOTE: * Measured noise floor (worse case vertical); H=horizontal and V=vertical
SA: Spectrum Analyzer
SG: Signal Generator
CL: SMA cable loss (5ft)

Gain (dBi) = Antenna Gain
EIRP = SG reading - CL + Gain (dBi)
Margin = EIRP - Limit

Compliance Certification Services

Radiated Emissions 5/6/02
24.238(a) A-Site (1 meter)
Jerry Hovey

LGC Wireless
1900 MHz PCS Multi-Channel Remote Access Unit

fo = 1940 MHz (MID)

frequency (MHz)	SA reading (dBuV)	SG reading (dBm)	CL (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
3880*	39.1	-79	1.6	9	-71.6	-13	-58.6
5820*	46.9	-70	2.1	9.9	-62.2	-13	-49.2
7760*	47.7	-70	2.4	10.2	-62.2	-13	-49.2
9700*	47.4	-67	2.7	10.3	-59.4	-13	-46.4
11640*	45.9	-63	3	11.7	-54.3	-13	-41.3
13580*	51	-60	3.3	12.1	-51.2	-13	-38.2
15520*	50.4	-60	3.7	15.3	-48.4	-13	-35.4
17460*	50.8	-55	4.1	8	-51.1	-13	-38.1
19400*	54	-55	4.4	7.5	-51.9	-13	-38.9

NOTE: * Measured noise floor (worse case vertical); H=horizontal and V=vertical
SA: Spectrum Analyzer
SG: Signal Generator
CL: SMA cable loss (5ft)

Gain (dBi) = Antenna Gain
EIRP = SG reading - CL + Gain (dBi)
Margin = EIRP - Limit

Compliance Certification Services

Radiated Emissions 5/6/02
24.238(a) A-Site (1 meter)
Jerry Hovey

LGC Wireless
1900 MHz PCS Multi-Channel Remote Access Unit

fo = 1950 MHz (HIGH)

frequency (MHz)	SA reading (dBuV)	SG reading (dBm)	CL (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
3900*	39.3	-79	1.6	9	-71.6	-13	-58.6
5850*	46.9	-70	2.1	9.9	-62.2	-13	-49.2
7800*	47.9	-70	2.4	10.2	-62.2	-13	-49.2
9750*	47.4	-67	2.7	10.3	-59.4	-13	-46.4
11700*	46	-63	3	11.7	-54.3	-13	-41.3
13650*	51.2	-60	3.3	12.1	-51.2	-13	-38.2
15600*	51	-60	3.7	15.3	-48.4	-13	-35.4
17550*	50.9	-55	4.1	8	-51.1	-13	-38.1
19500*	54.9	-55	4.4	7.5	-51.9	-13	-38.9

NOTE: * Measured noise floor (worse case vertical); H=horizontal and V=vertical
SA: Spectrum Analyzer
SG: Signal Generator
CL: SMA cable loss (5ft)

Gain (dBi) = Antenna Gain
EIRP = SG reading - CL + Gain (dBi)
Margin = EIRP - Limit

6.5. FREQUENCY STABILITY

INSTRUMENTS LIST

EQUIPMENT	MANUFACTURE	MODEL NO.	CAL. DUE DATE
Signal Generator	Rohde & Schwarz	SMIQ 03	05/25/02
EMI Receiver	HP	8593EM	6/20/02
Environmental Chamber	Thermotron	SE 600-10-10	03/23/02

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	Peak	30 Hz	30 Hz

TEST SETUP

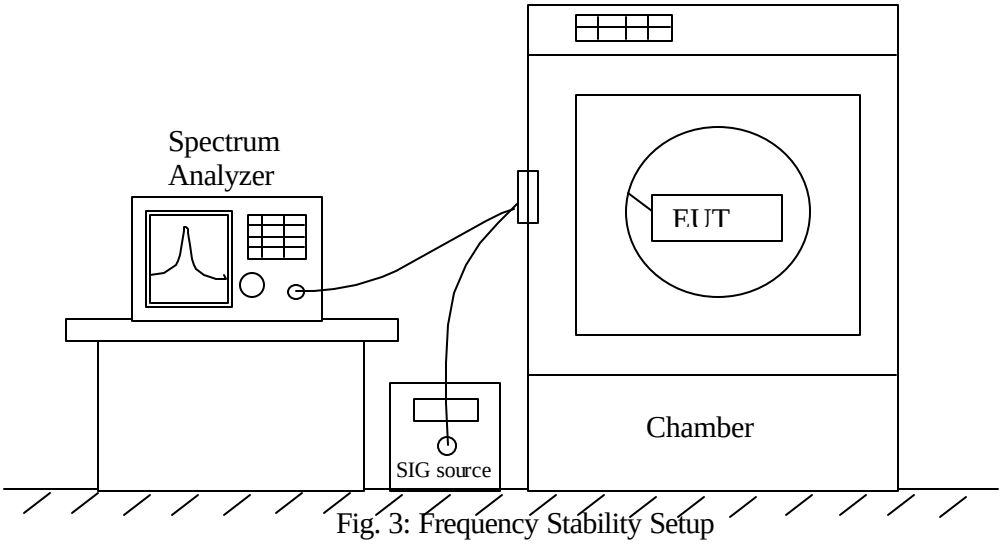


Fig. 3: Frequency Stability Setup

TEST PROCEDURE

- **Frequency stability versus environmental temperature**

1). Setup the configuration per figure 6 for frequencies measurement inside the environmental chamber. Set the temperature of the chamber to 25°C. Set SA Resolution Bandwidth low enough to obtain the desired frequency resolution and measure the EUT 25°C operating frequency as reference frequency.
2). Turn EUT off and set Chamber temperature to -30°C.
3). Allow sufficient time (approximately 20 to 30 minus after chamber reach the assigned temperature) for EUT to stabilize. Turn on EUT and measure the EUT operating frequency. Turn off EUT after the measurement.
4). Repeat step 3 with a 10°C increased per stage until the highest temperature of +50°C reached, record all measured frequencies on each temperature step.

- **Frequency stability Ac Voltage**

1). Setup the configuration per figure 6 and set chamber temperature to 25°C. Use a variable AC power supply to power the EUT and set AC output voltage to EUT nominal input AC voltage. Set SA Resolution Bandwidth low enough to obtain the desired frequency resolution and measure the EUT 25°C operating frequency as reference frequency.
2). Slowly reduce the EUT input voltage to specified extreme voltage variation and record the maximum frequency change.

RESULT

No non-compliance noted. The frequency drift of the internal local oscillators that are utilized to establish the transmitting frequencies are low enough to ensure that the modulation products will remain within the authorized bands.

Frequency Stability Versus Environmental Temperature

Reference Frequency @ +25 ºC: Up Link 836.499454 MHz Down Link 881.499325 MHz		
Temperature & Link Direction (°C)	Frequency (MHz)	Deviation (Hz)
-30 Up Link	836.499315	-139
-30 Down Link	881.499235	-90
-20 Up Link	836.499335	-119
-20 down Link	881.499315	-10
-10 Up Link	836.499365	-89
-10 Down Link	881.499375	+50
0 Up link	836.499415	-39
0 Down Link	881.499405	+80
+10 Up Link	836.499435	-19
+10 Down Link	881.499525	+200
+20 Up Link	836.499575	+121
+20 Down link	881.499615	+290
+30 Up Link	836.499515	+61
+30 Down Link	881.499625	+300
+40 Up Link	836.499505	+51
+40 Down Link	881.499595	+270
+50 Up Link	836.499538	+84
+50 Down Link	881.499598	+273

Frequency Stability Versus AC Voltage

Reference Frequency @ 115 VAC: Up Link 836.499454 MHz Down Link 881.499325 MHz		
Voltage & Link Direction (VAC)	Frequency (MHz)	Deviation (Hz)
95 Up Link	836.499355	-99
95 Down Link	881.499307	-18
133 Up Link	836.499504	+50
133 Down Link	881.499356	+31

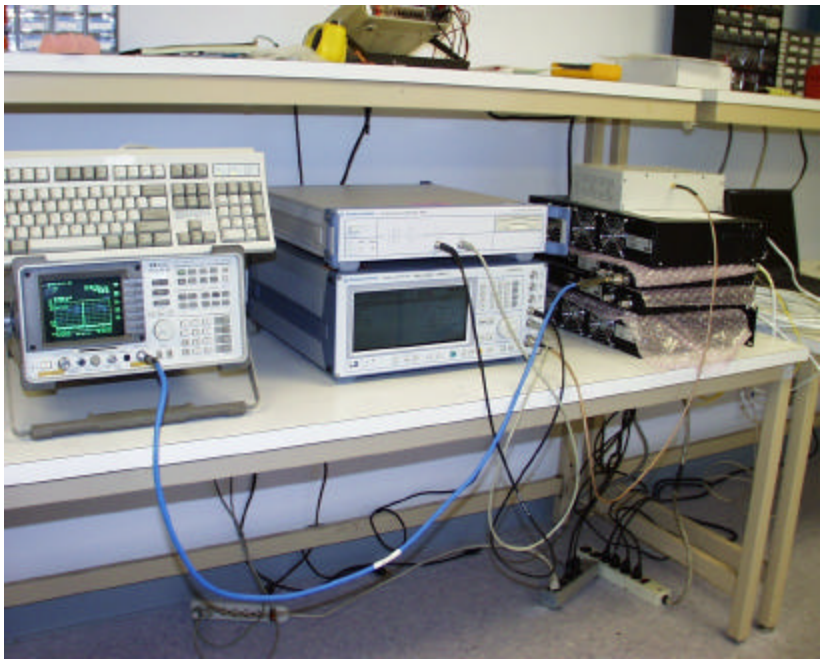
Frequency Stability Versus Environmental Temperature

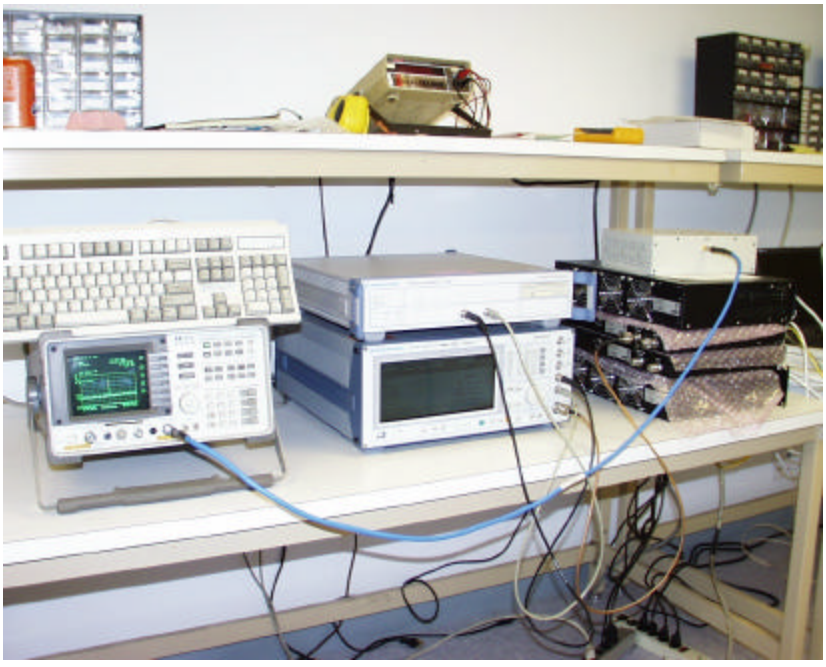
Reference Frequency @ +25 °C: Up Link 1.859999525 GHz Down Link 1.939999649 GHz		
Temperature & Link Direction (°C)	Frequency (GHz)	Deviation (Hz)
-30 Up Link	1.859999315	-210
-30 Down Link	1.939999340	-309
-20 Up Link	1.859999345	-180
-20 down Link	1.939999370	-279
-10 Up Link	1.859999405	-120
-10 Down Link	1.939999459	-190
0 Up link	1.859999454	-71
0 Down Link	1.939999599	-50
+10 Up Link	1.859999635	+110
+10 Down Link	1.939999619	-30
+20 Up Link	1.859999685	+160
+20 Down link	1.939999765	+116
+30 Up Link	1.859999675	+150
+30 Down Link	1.939999879	+230
+40 Up Link	1.859999645	+120
+40 Down Link	1.939999880	+231
+50 Up Link	1.859999638	+113
+50 Down Link	1.939999849	+200

Frequency Stability Versus AC Voltage

Reference Frequency @ 115 VAC: Up Link 1.859999525 GHz Down Link 1.939999649 GHz		
Voltage & Link Direction (VAC)	Frequency (MHz)	Deviation (Hz)
95 Up Link	1.859999351	-174
95 Down Link	1.939999618	-31
133 Up link	1.859999791	+266
133 Down Link	1.939999709	+60

7. EUT SETUP PHOTOS





CONDUCTED RF MEASUREMENTS

RADIATED MEASUREMENTS

END OF REPORT