

EXHIBIT 13

TEST REPORT

This test report presents the measurement data required by the Department for certifying the Flexent C2PAM Cellular transmit amplifier, subject of this application, under FCC ID: AS5 ONEBTS-13. All the testing was performed during the period of April 11 to May 20, 2005. The measurement results have demonstrated that Lucent Technologies Flexent C2PAM Cellular RF power amplifier is in full compliance with the Rules of the Department.

For some of the required measurements where FCC Parts 2 and 22 did not give specific requirements, TIA/EIA-97-D's requirements were used in the report, which are almost identical to the 3GPP2 C.S0010-A v1.0's requirements.

SUBEXHIBIT 13.1

SECTION 2.1033 (c)(14): REQUIRED MEASUREMENT DATA

The required measurement data is presented in the following exhibits as follows:

SUBEXHIBIT 10.2	Section 2.1046	Measurements Required: RF Power Output
SUBEXHIBIT 10.3	Section 2.1049	Measurements Required: Occupied Bandwidth
SUBEXHIBIT 10.4	Section 2.1051	Measurements Required: Spurious Emissions at Antenna Terminal
SUBEXHIBIT 10.5	Section 2.1053	Measurements Required: Field Strength of Spurious Radiation
SUBEXHIBIT 10.6	Section 2.947 (d)	List of Test Equipment Used

SUBEXHIBIT 13.2

Section 2.1046 MEASUREMENT REQUIRED: RF POWER OUTPUT

This test is a measurement of the RF power level transmitted at the AS5ONEBTS-13 Flexent C2PAM power transmit amplifier output terminal, as shown in the accompanying test set-up diagram. All the carriers were configured with a combination of Pilot, Sync, Paging and Traffic channels. The Pilot/Sync/Page channels were set up according to the recommended test model for base stations given in TIA/EIA-97-D (Section 6), as shown in the following table.

Table 13.2.1. Base Station Test Model, Nominal

Type	Number of Channels	Fraction of Power (linear)	Fraction of Power (dB)	Comments
Pilot	1	0.2000	-7.0	Walsh 0
Sync	1	0.0471	-13.3	Walsh 32, always 1/8 rate
Paging	1	0.1882	-7.3	Walsh 1, full rate only
Traffic	6	0.09412 each	-10.3 each	Variable Walsh assignments, full rate only

Power measurements were made with a Giga-tronics 8542C Universal Power Meter with 80621A Power Sensor (0.01 – 18 GHz) in the average mode. The test set-up for conducting the RF power output measurement from the Flexent C2PAM power amplifier module is shown in the following figure. Before the testing was started, the Base Station was given a sufficient “warm-up” period as required.

The measured channels and results are tabulated in the following table:

Table 13.2.2.1 Results of RF Power Output – Single Carrier

Cellular Channel No.	Frequency (MHz)	Cellular Frequency Band	C2PAM Output (dBm)
1019	869.88	A''	43.55
37	871.11	A3	43.80
78	872.34	A2	43.77
119	873.57		44.00
160	874.80		43.90
201	876.03	A1	43.72
242	877.26		43.80
283	878.49		43.85
384	881.52	B1	43.76
425	882.75		43.72
466	883.98		43.66
507	885.21	B2	43.80
548	886.44		43.56
589	887.67		43.68
630	888.90	B3	43.67
691	890.73	A'	43.70
777	893.31	B'	43.80

Table 13.2.2.2 RF Power Output – Multi-Carrier Left Edge / Right Edge

2 Carrier

Channel No.	Cellular Band	Power Output (dBm)	Power Output (Watts)
1019, 37	A ⁷ /A3	46.84	48.2
589, 630	B3/B2	46.88	48.7

3 Carrier

Channel No.	Cellular Band	Power Output (dBm)	Power Output (Watts)
1019, 37, 78	A ⁷ /A3/A2	46.92	49.2
548, 589, 630	B3/B2	46.98	49.9

4 Carrier

Channel No.	Cellular Band	Power Output (dBm)	Power Output (Watts)
1019, 37, 78, 119	A ⁷ /A3/A2	47.15	50.8
507, 548, 589, 630	B3/B2	47.08	50.2

5 Carrier

Channel No.	Cellular Band	Power Output (dBm)	Power Output (Watts)
1019, 37, 78, 119, 160	A ⁷ /A3/A2	46.30	41.35
466, 507, 548, 589, 630	B3/B2/B1	46.18	40.2

6 Carrier

Channel No.	Cellular Band	Power Output (dBm)	Power Output (Watts)
1019, 37, 78, 119, 160, 201	A ⁷ /A3/A2/A1	45.39	38.9
425, 466, 507, 548, 589, 630	B3/B2/A1	45.05	37.01

7 Carrier

Channel No.	Cellular Band	Power Output (dBm)	Power Output (Watts)
1019, 37, 78, 119, 160, 201, 242	A ⁷ /A3/A2/A1	44.80	30.40
384, 425, 466, 507, 548, 589, 630	B3/B2/B1	44.78	30.0

8 Carrier

Channel No.	Cellular Band	Power Output (dBm)	Power Output (Watts)
1019, 37, 78, 119, 160, 201, 242, 283	A ⁷ /A3/A2/A1	44.20	25.80

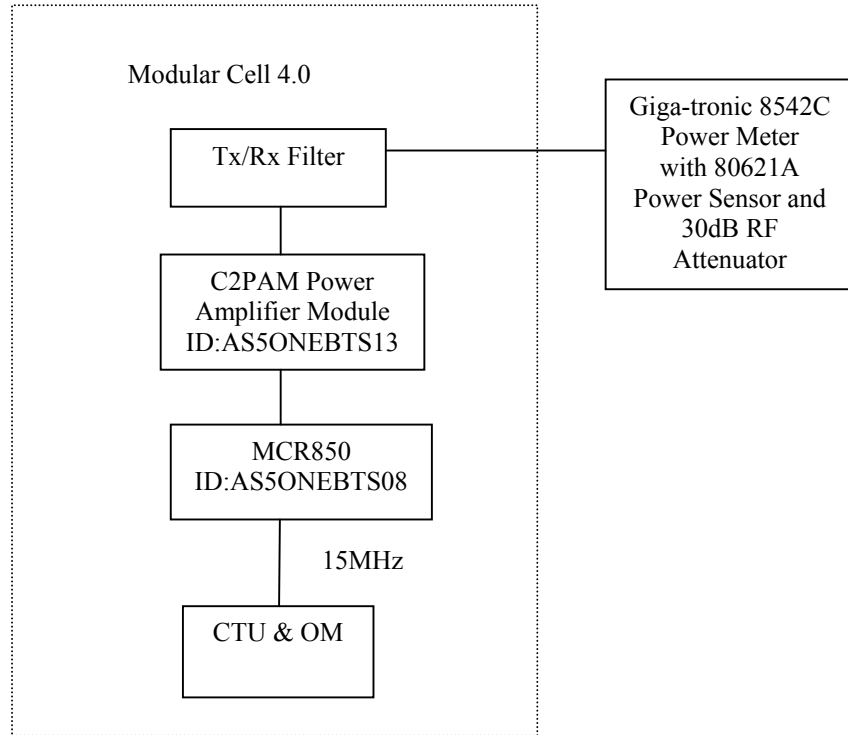
Results:

The above RF power measurements meet TIA/EIA-97-D, Section 4.3.1.3, which specifies that the total power per carrier should remain within +2dB and -4dB of the manufacturer’s rated power.

The RF power outputs of the Flexent C2PAM power amplifier module across the Cellular Frequency Band 869.0 – 894 MHz are in full compliance with the Rules of the Commission.

FIGURE 10.2.1 TEST SET-UP FOR MEASUREMENT OF RADIO FREQUENCY POWER OUTPUT

CTU – Common Timing Module
OM – Oscillator Module



SUBEXHIBIT 13.4

SECTION 2.1049 : MEASUREMENT REQUIRED: OCCUPIED BANDWIDTH

In compliance with Section 2.1049(h), the Flexent C2PAM power amplifier module was configured with a combination of Pilot, Sync, Paging and Traffic channels according to the recommended test model for base stations given in TIA/EIA-97-D (Section 6), as shown in Table 10.2.1.

The occupied bandwidth measurements were conducted with the following configurations: 1. the lowest available cellular CDMA channels in the A band, Ch 1019 at 869.88 MHz 2. two to eight contiguous A band channels (A", A3, A2 and A1), 3. the highest available cellular CDMA channels in the B band, Ch 777 at 893.31 MHz (B'), Ch 691 at 890.73 MHz (A'), and Ch 630 at 888.90 MHz (B3) 4. two to seven contiguous B band channels (B3, B2 and B1) The carrier power level at the output terminal combiner of the Flexent C2PAM power amplifier module was transmitting to the maximum rated mean power, which is 44dBm (25 watts) for single carrier and 47 dBm (50 watts) for multi carrier applications.

The emission limitations and the setting of measurement equipment for the occupied bandwidth measurement of a 1.23MHz CDMA cellular carrier were specified in Appendix A, Section 10 of FCC 02-229 Report and Order. FCC's requirements are tabulated in the following table:

Table 13.4.1 FCC Part 22 Spurious Emission Limits

Frequency	Required Minimum Attenuation below the Mean Carrier Power <i>P</i>	Minimum Resolution Bandwidth of Spectrum Analyzer
1MHz Bands Immediately Outside the Transmitting Frequency Band	(43 + P dBW) dBc	12.3 kHz
Out-of-Band (other than above)	(43 + P dBW) dBc	100 kHz

The requirements specified in TIA/EIA-97D Section 4.4 are tabulated in the following table:

Table 13.4.2 TIA/EIA-97D Spurious Emission Limits

Displacement from the Carrier Center Frequency f_c	Required Minimum Attenuation	Resolution Bandwidth of Spectrum Analyzer
$750 \text{ kHz} < f - f_c \leq 1.98 \text{ MHz}$	45 dBc	30 kHz
$1.98 \text{ MHz} < f - f_c \leq 4.0 \text{ MHz}$	55 dBc	30 kHz

A combined requirement of FCC Part 22 and TIA/EIA-97D was used as the required emissions limit mask in the measurement. The measurements were performed with an Rohde & Schwartz EMI Test Receiver (ESMI) which was calibrated in accordance with ISO 9001 process. The test set-up diagram is given in the following.

The spectrum analyzer was set with a 30 kHz resolution bandwidth and a 8 MHz span, as shown in the plots of the occupied bandwidth measurement attached in the following pages. The emissions outside the 8MHz span was evaluated in Measurement Required: Spurious Emissions at the Antenna Terminal. The maximum mean output power of the CDMA carrier, measured with a 3 MHz resolution bandwidth, aligns with the top of the spectrum analyzer display reticule, i.e., 0 dBm, by adjusting the REF LEVEL OFFSET

of the spectrum analyzer. The top of the carrier measured with a 30 kHz resolution bandwidth, thus, was 16.1 dB below the carrier power measured with a resolution bandwidth greater than the carrier bandwidth 1.23 MHz. This 16.1dB offset was due to the fact that $10 \log (1230\text{kHz}/30\text{kHz}) = 16.1 \text{ dB}$.

Results:

From the occupied bandwidth plots attached in the following, it can be seen that all the waveforms are under the required emission mask with adequate margins. The measurement results demonstrate the full compliance with the Rules of the Commission across the Cellular Frequency Band 869.0 – 894.0 MHz.

FIGURE 13.4.1 TEST SET-UP FOR MEASUREMENT OF OCCUPIED BANDWIDTH

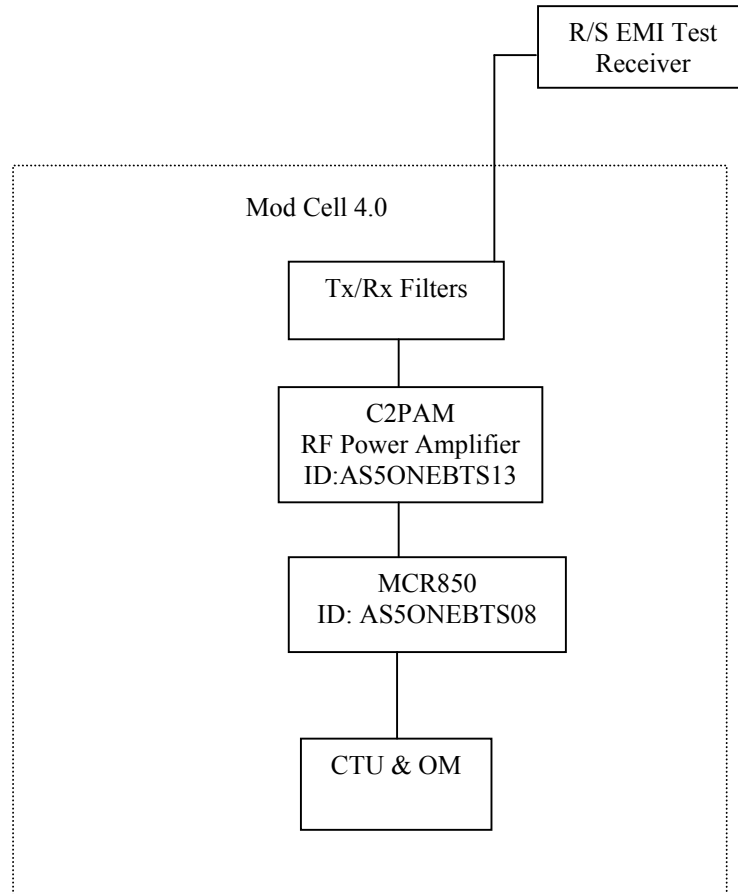
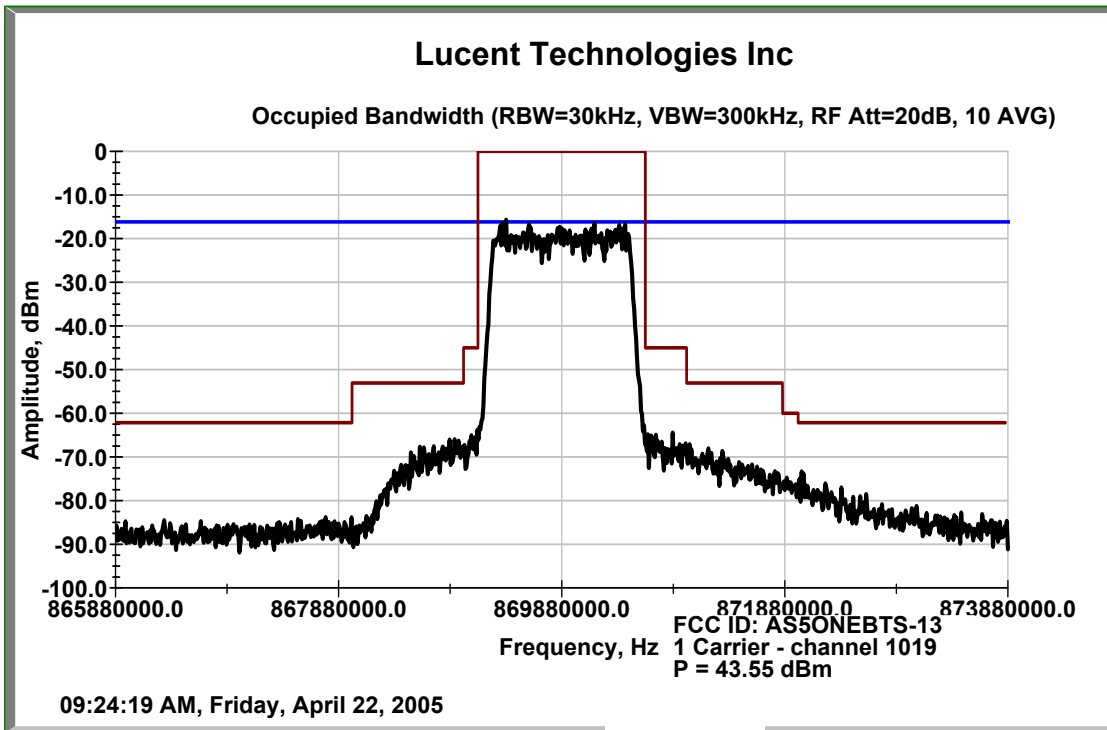
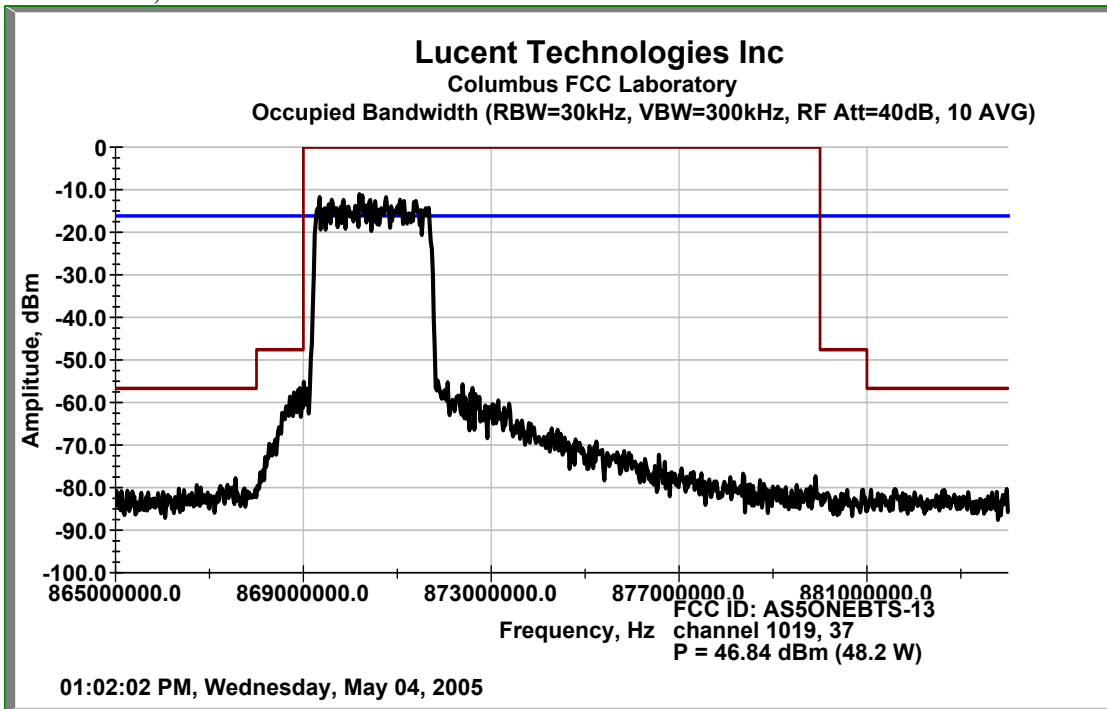


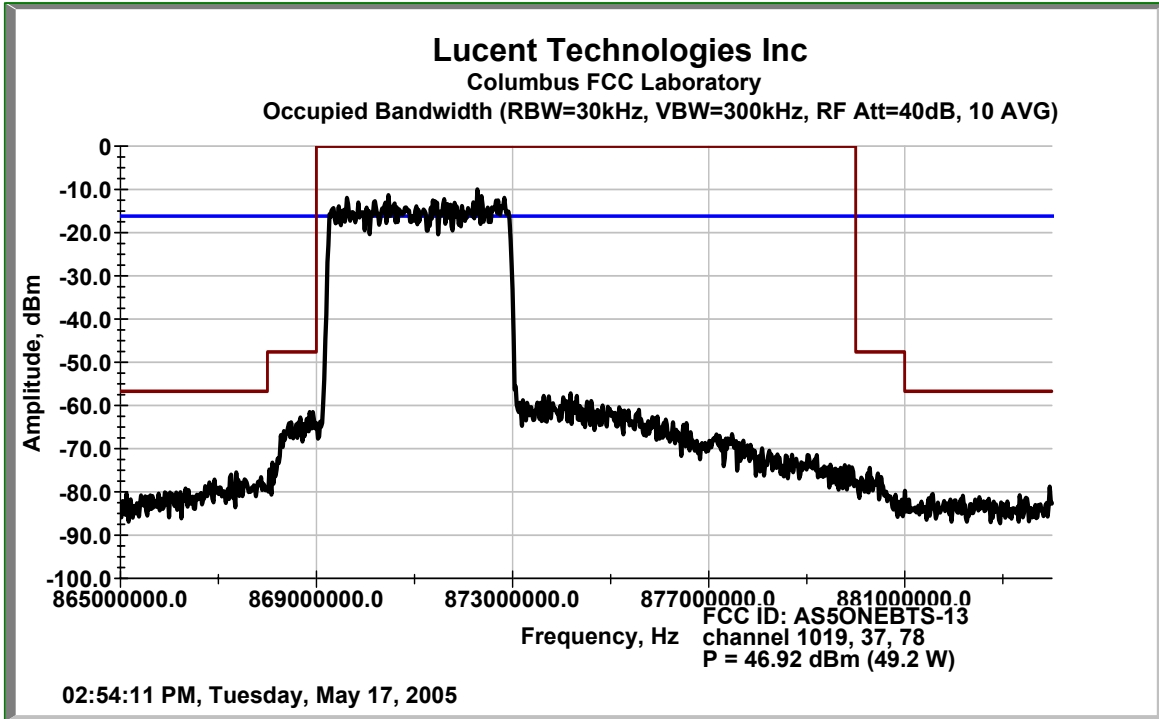
FIGURE 13.4.2 OCCUPIED BANDWIDTH PLOTS



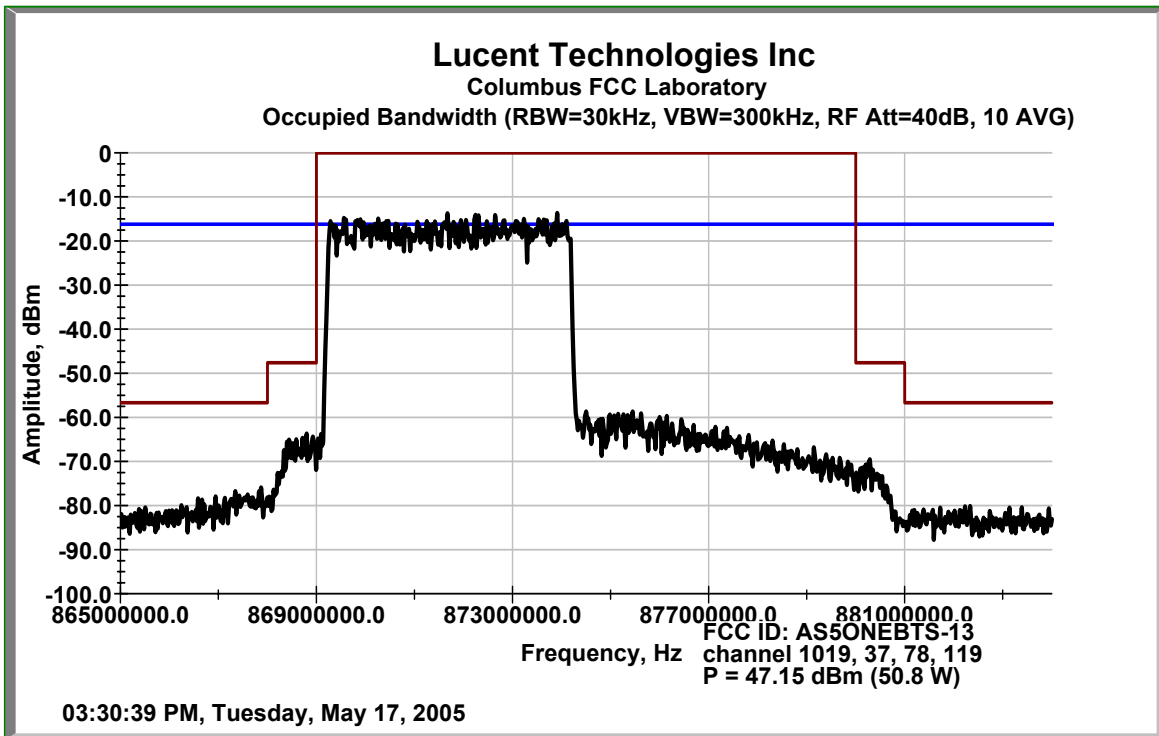
Cellular A" Band – Lower Edge Channel
Channel 1019, 869.88 MHz



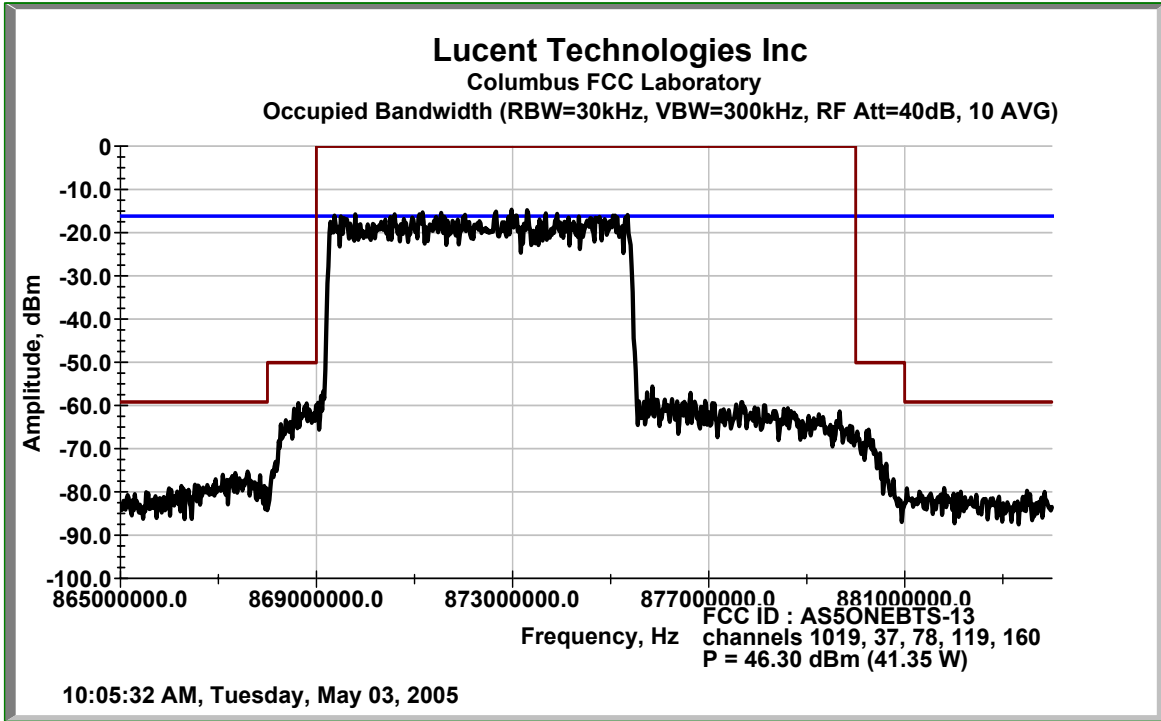
Cellular A-Band (A", A3)
2 Carrier - Channels 1019, 37



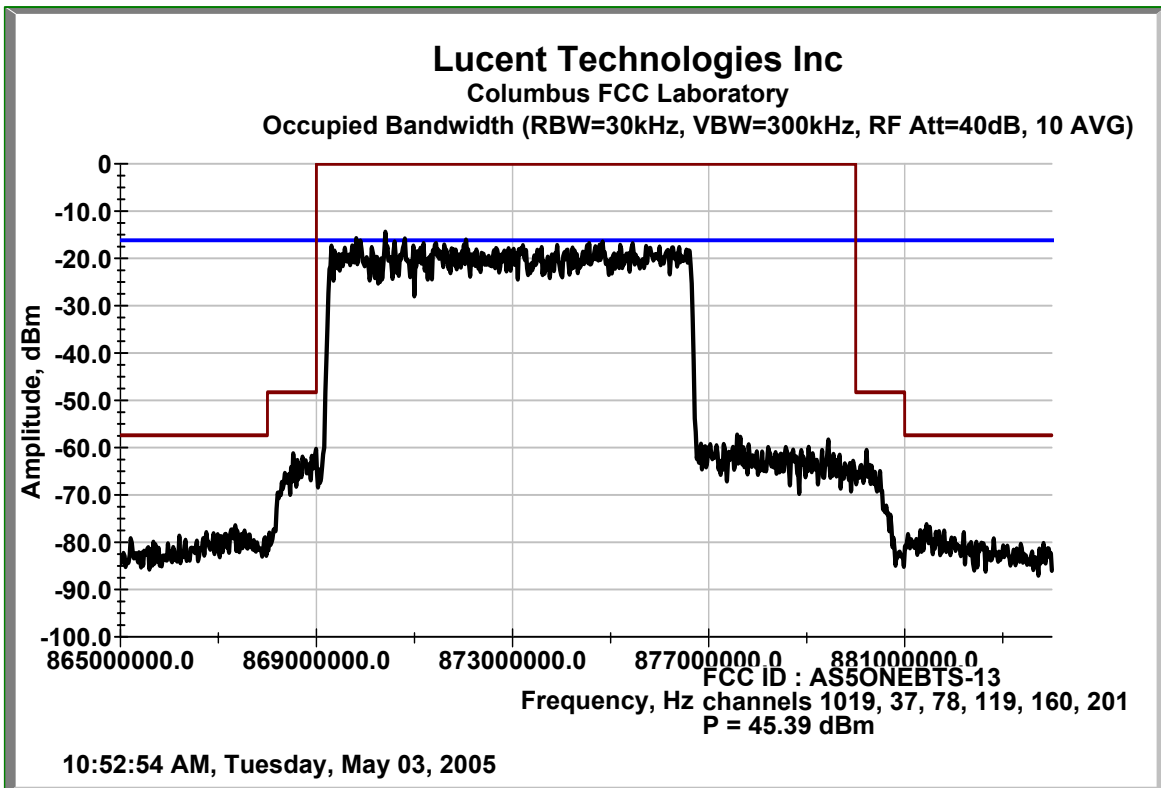
Cellular A-Band (A", A3, A2)
3 Carrier - Channels 1019, 37, 78



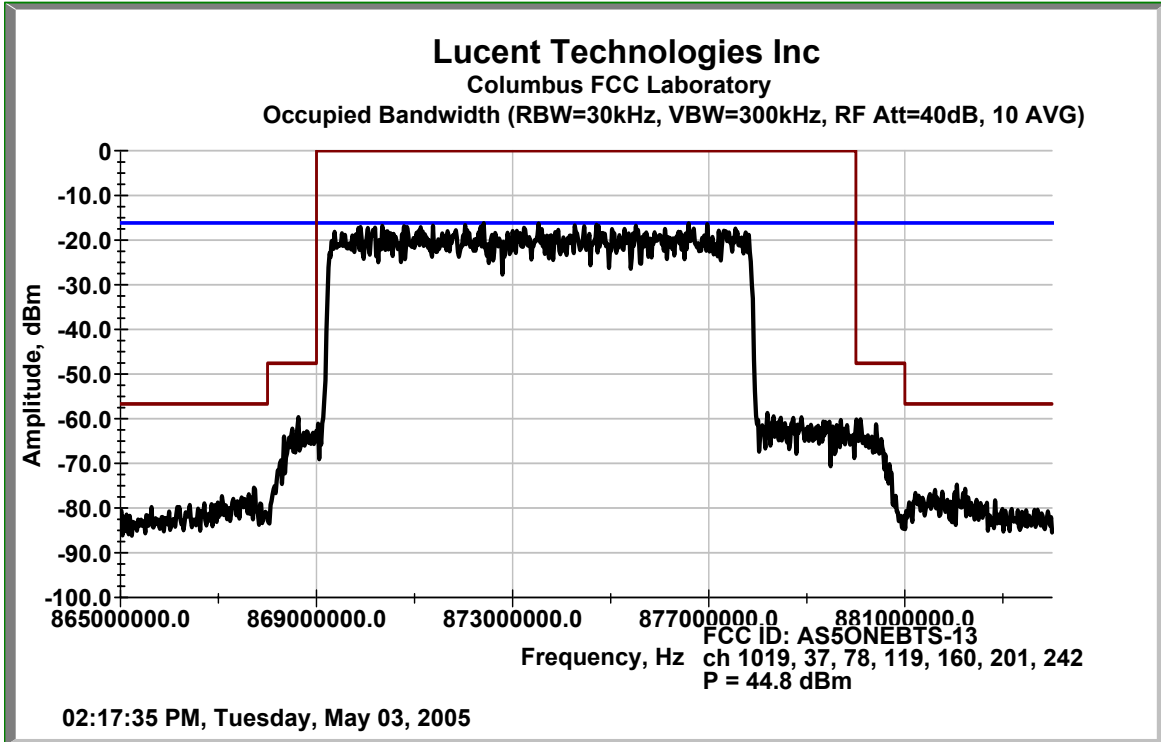
Cellular A-Band (A", A3, A2)
4 Carrier - Channels 1019, 37, 78, 119



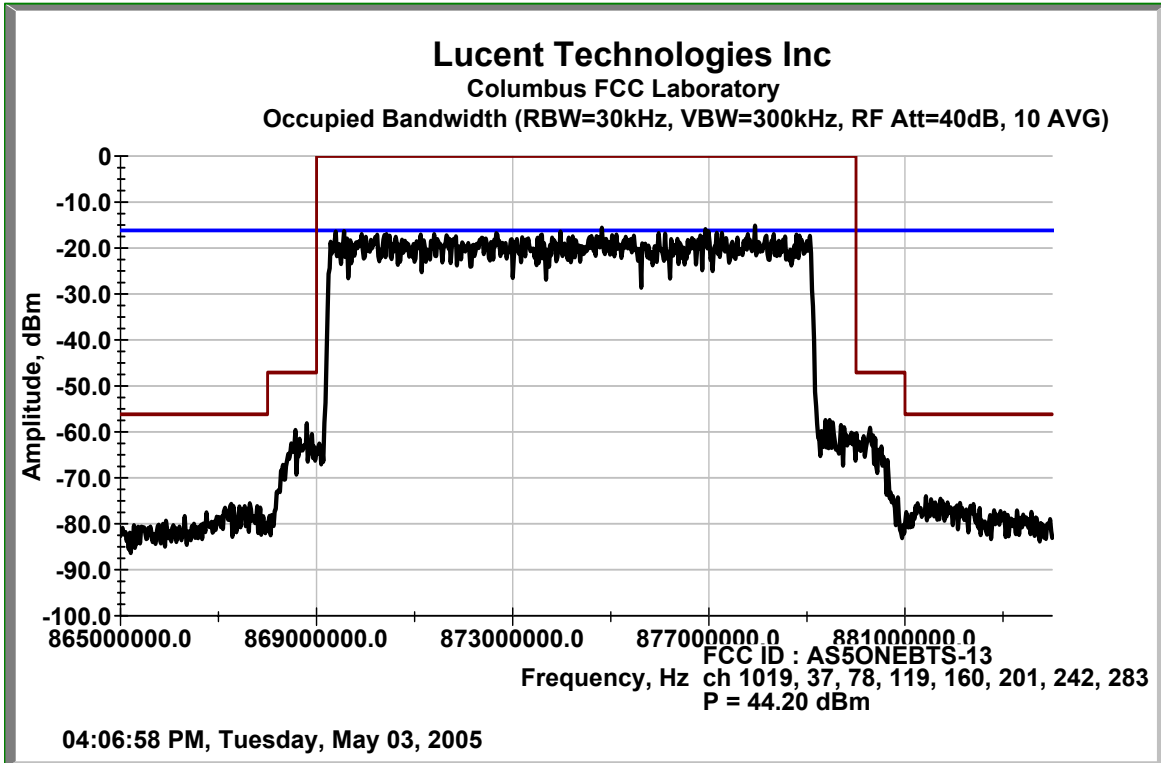
Cellular A-Band (A", A3, A2)
5 Carrier - Channels 1019, 37, 78, 119, 160



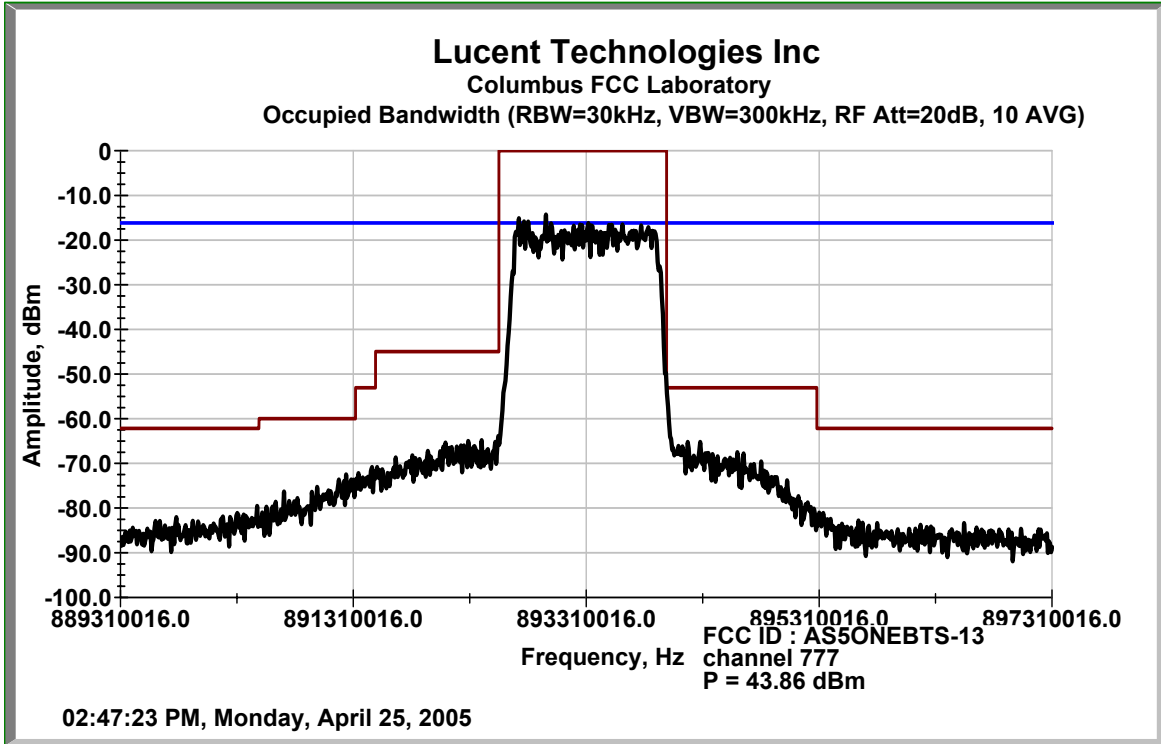
Cellular A-Band (A", A3, A2, A1)
6 Carrier - Channels 1019, 37, 78, 119, 160, 201



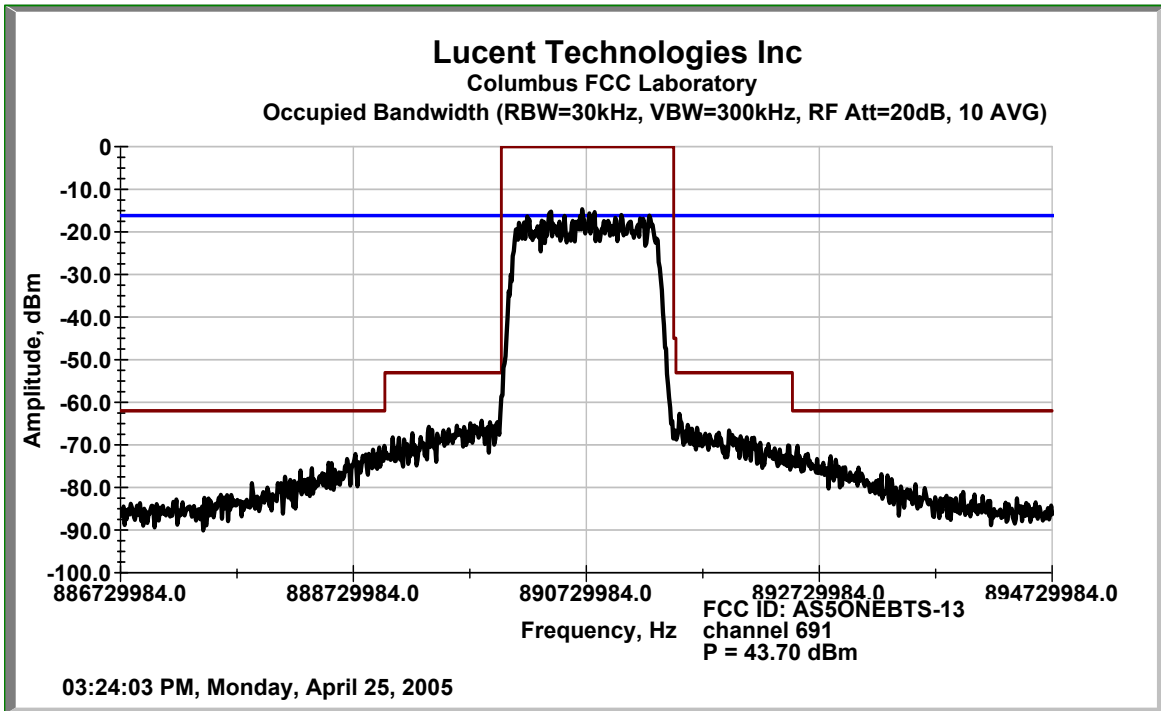
Cellular A-Band (A", A3, A2, A1)
7 Carrier - Channels 1019, 37, 78, 119, 160, 201, 242



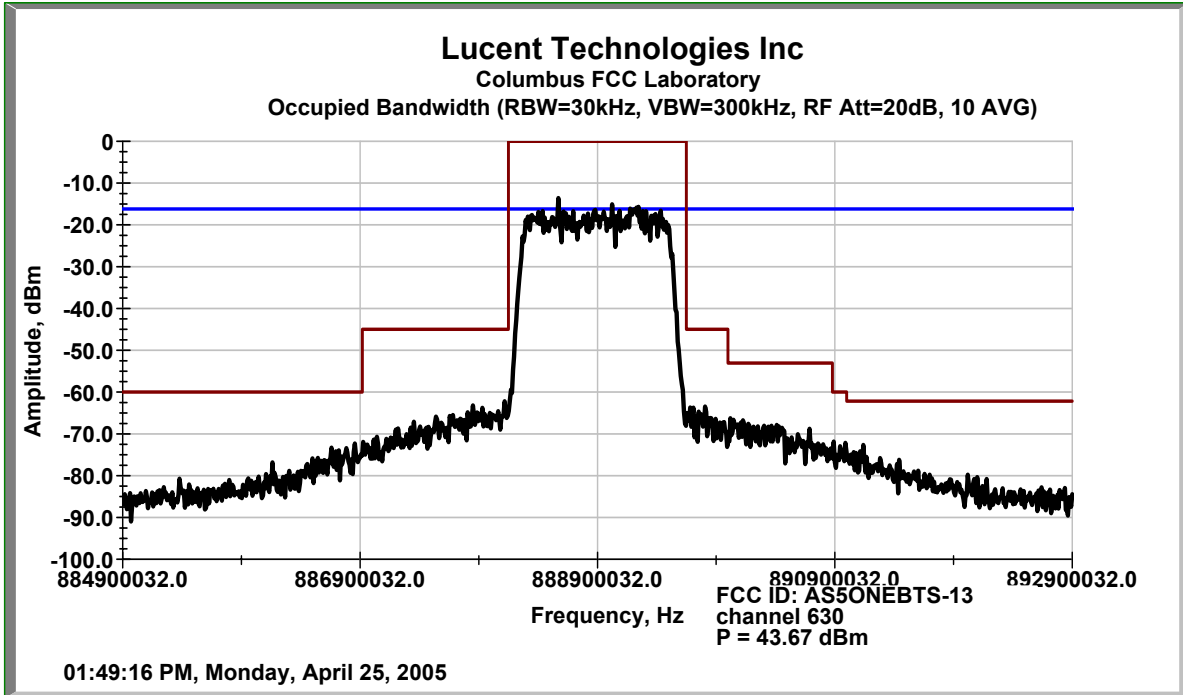
Cellular A-Band (A", A3, A2, A1)
8 Carrier - Channels 1019, 37, 78, 119, 160, 201, 242, 283



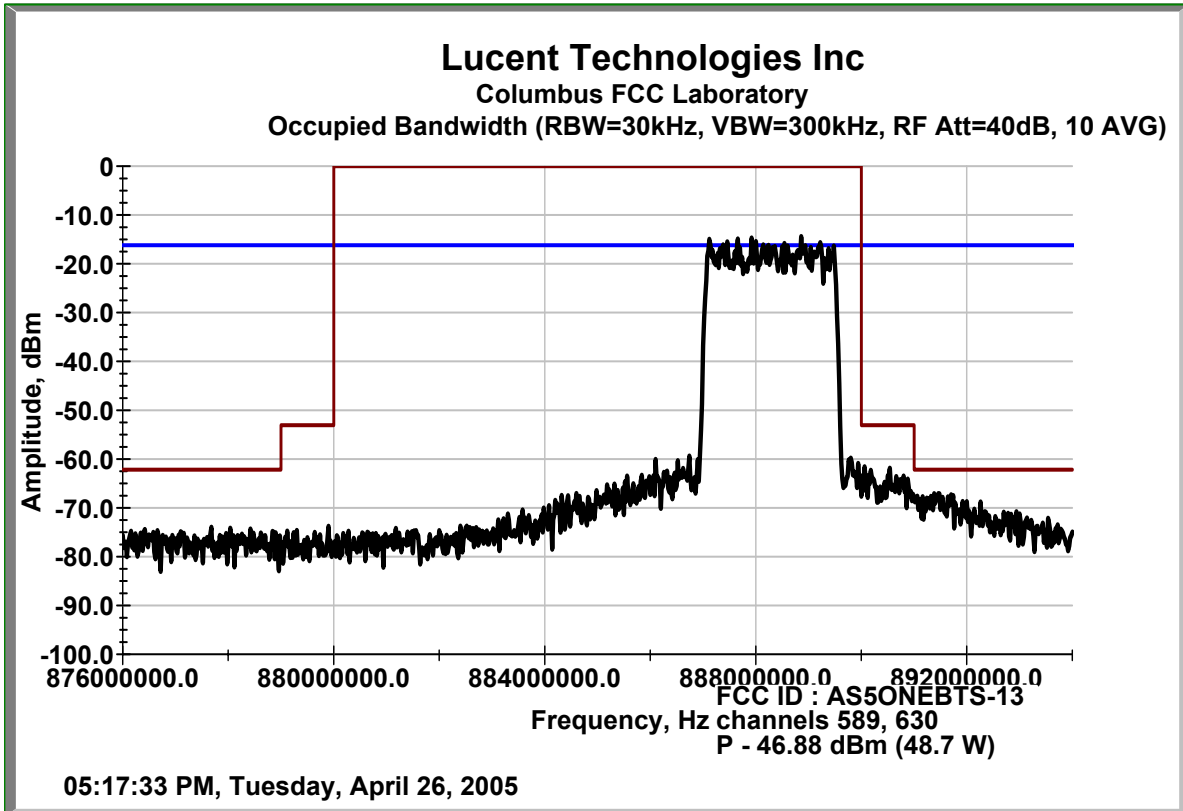
Cellular B'-Band: Upper Edge Channel
Channel 777, 893.31 MHz



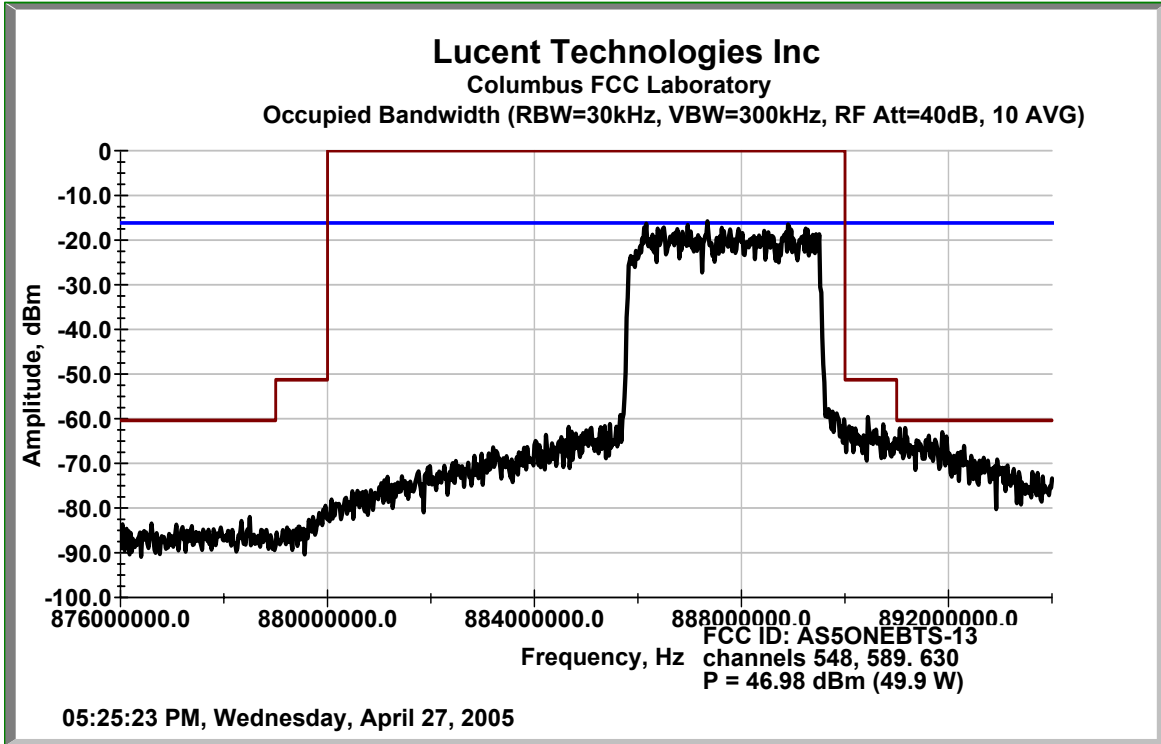
Cellular A'-Band: Upper Edge Channel
Channel 691, 890.73 MHz



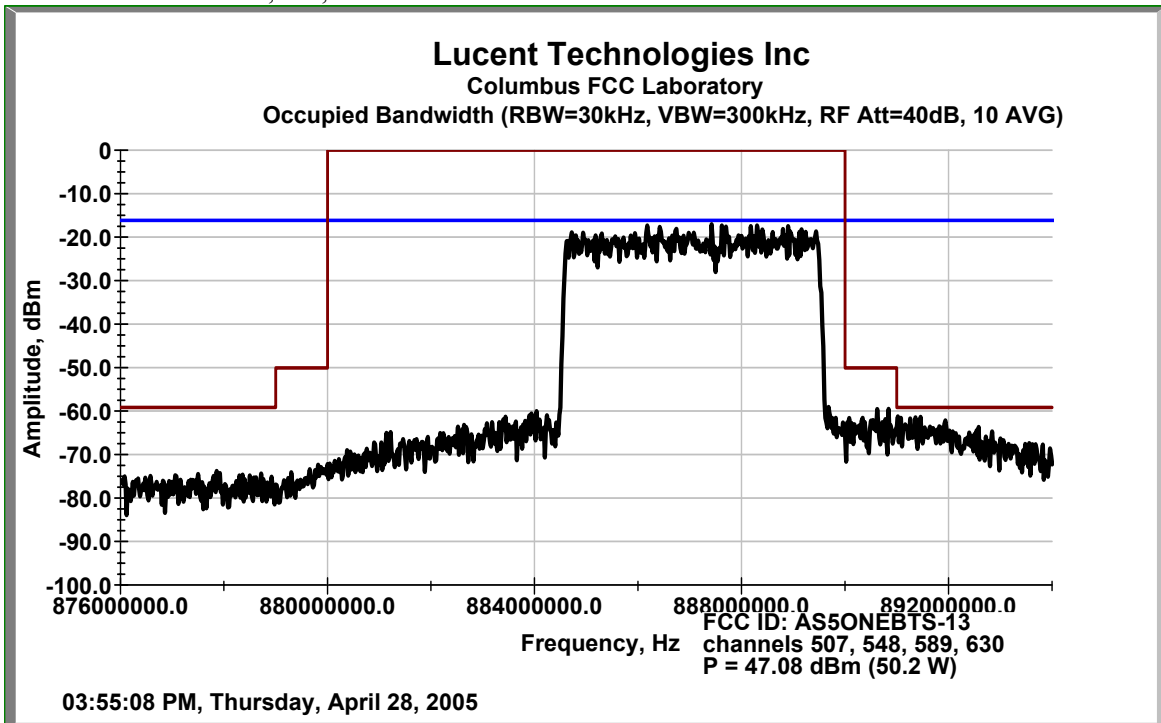
Cellular B-Band: Upper Edge Channel
Channel 630, 888.9 MHz



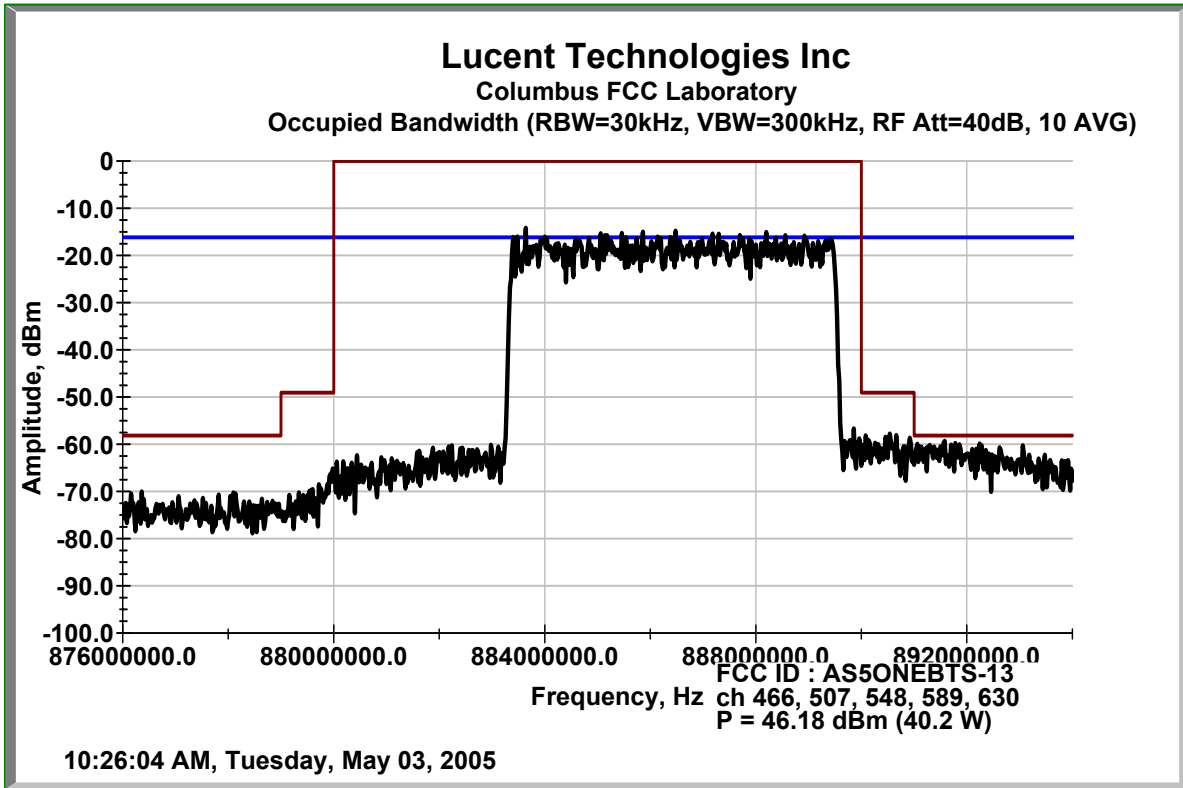
Cellular B-Band: B3, B2
2 Carrier - Channels 589, 630



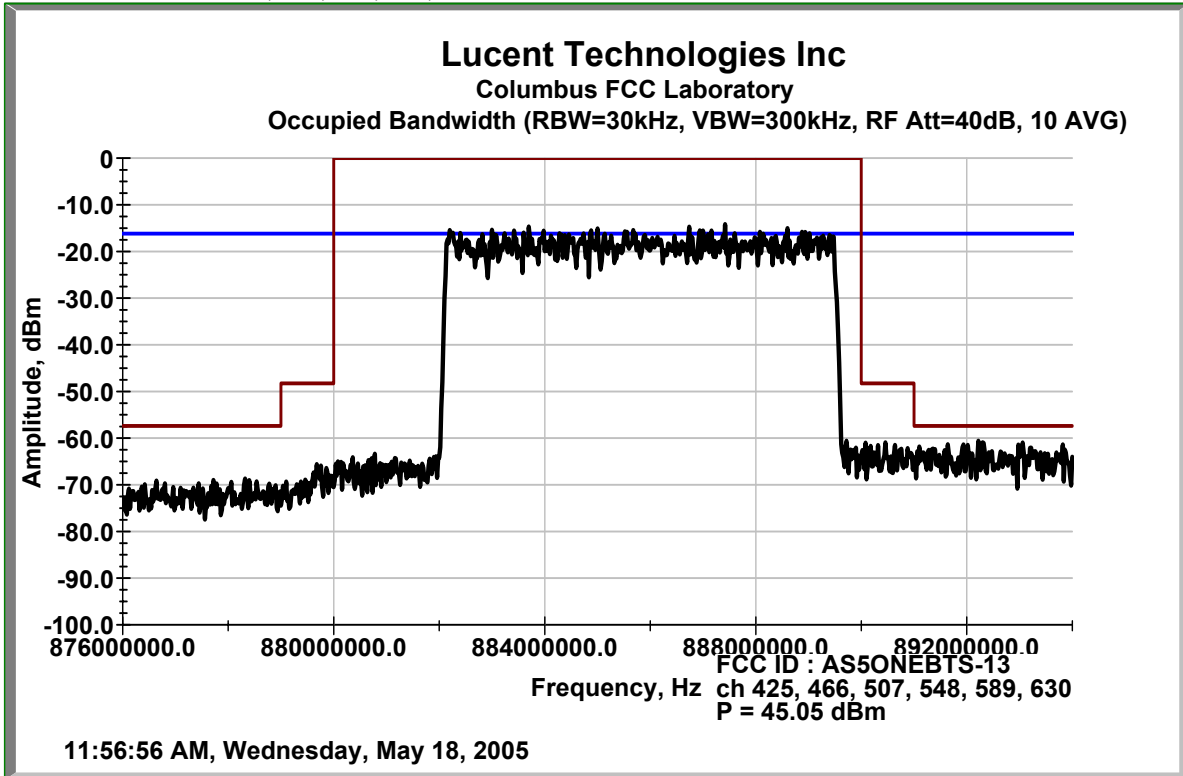
Cellular B-Band: B3, B2
3 Carrier - Channels 548, 589, 630



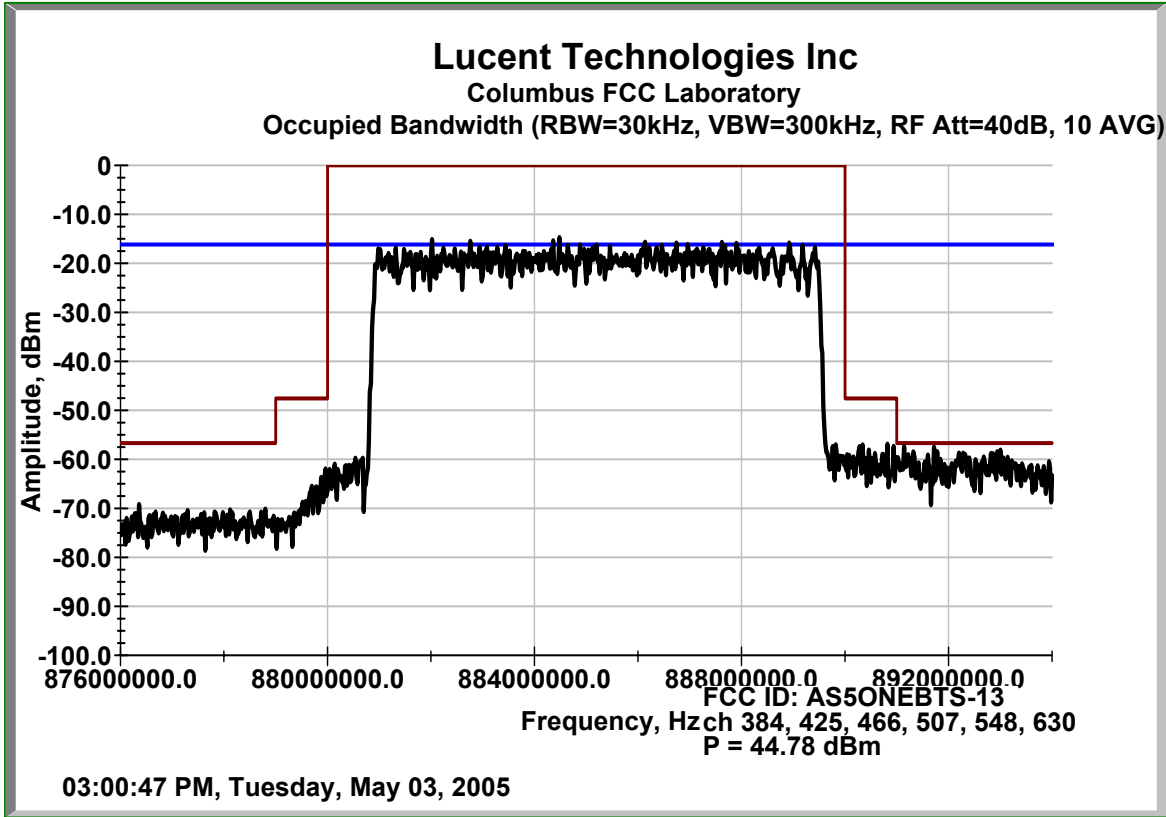
Cellular B-Band: B3, B2
4 Carrier - Channels 507, 548, 589, 630



Cellular B-Band: B3, B2, B1
5 Carrier - Channels 466, 507, 548, 589, 630



Cellular B-Band: B3, B2, B1
6 Carrier - Channels 425, 466, 507, 548, 589, 630



Cellular B-Band: B3, B2, B1
7 Carrier - Channels 384, 425, 466, 507, 548, 589, 630

SUBEXHIBIT 13.5

SECTION 2.1051 MEASUREMENT REQUIRED: SPURIOUS EMISSIONS AT THE ANTENNA TERMINAL

The spurious emissions at the output terminal of the Flexent C2PAM power amplifier module were investigated from 10 MHz to the 10th harmonic of the carrier or 10 GHz, per Section 2.1057(a)(1). The Flexent C2PAM power amplifier module was configured by Pilot, Sync, Paging and Traffic channels, as shown in Table 11.2.1.

The spurious emission measurements were made at the output terminal with the following configurations:
 1. the lowest available cellular CDMA channels in the A band, Ch 1019 at 869.88 MHz
 2. two to eight contiguous A band channels (A'', A3, A2 and A1),
 3. the highest available cellular CDMA channels in the B band, Ch 777 at 893.31 MHz (B'), Ch 691 at 890.73 MHz (A'), and Ch 630 at 888.90 MHz (B3)
 4. two to seven contiguous B band channels (B3, B2 and B1)
 The carrier power level transmitting to the maximum rated mean power.

The emission limitations and the setting of measurement equipment for the spurious emissions measurement of a 1.23MHz CDMA cellular carrier were specified in Appendix A, Section 10 of FCC 02-229 Report and Order. FCC's requirements are tabulated in the following table:

Table 11.4.1 FCC Part 22 Spurious Emission Limits

Frequency	Required Minimum Attenuation below the Mean Carrier Power <i>P</i>	Minimum Resolution Bandwidth of Spectrum Analyzer
1MHz Bands Immediately Outside the Transmitting Frequency Band	(43 + P dBW) dBc	12.3 kHz
Out-of-Band (other than above)	(43 + P dBW) dBc	100 kHz

Sections 2.1051 and 2.1057(c) specify that the spurious emissions attenuated more than 20 dB below the permissible value need not be reported.

The measurements were performed with a Rohde & Schwarz ESMI Spectrum Analyzer which was calibrated in accordance with ISO 9001 process. The test set-up diagram is given in the following.

Results:

No reportable conducted spurious emissions were detected during the entire spectrum investigated (10MHz to 10GHz). The measurement results of the AS5ONEBTS-13, Flexent C2PAM power amplifier module, subject of this application, demonstrate the full compliance with the Rules of the Commission of the Cellular bands

FIGURE 13.5.1 TEST SET-UP FOR MEASUREMENT OF CONDUCTED SPURIOUS EMISSIONS

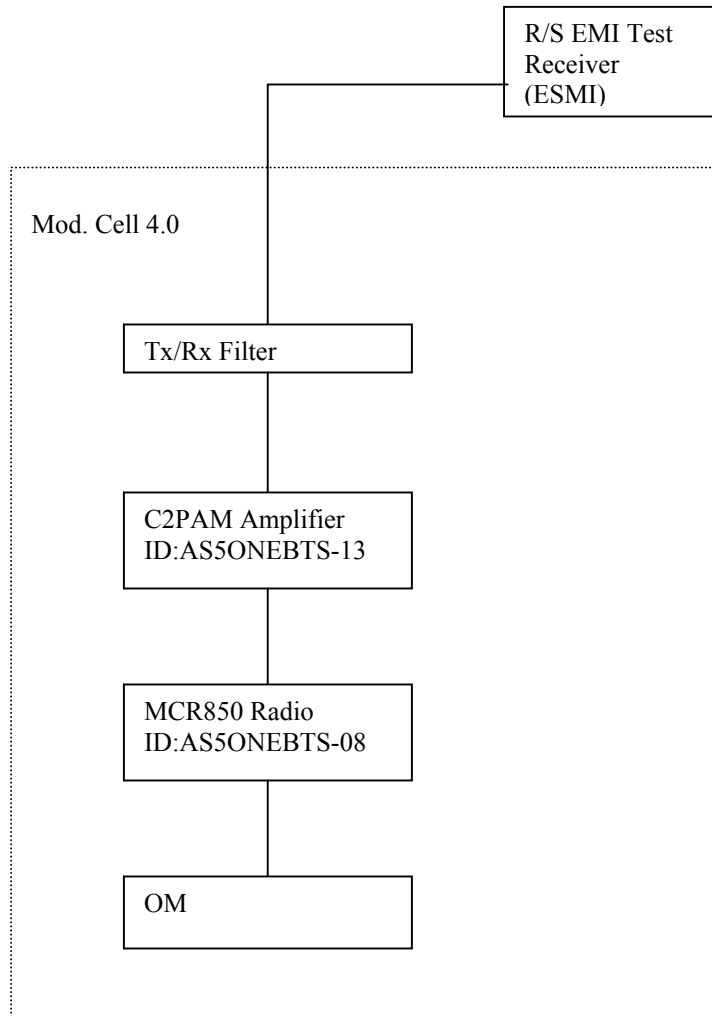
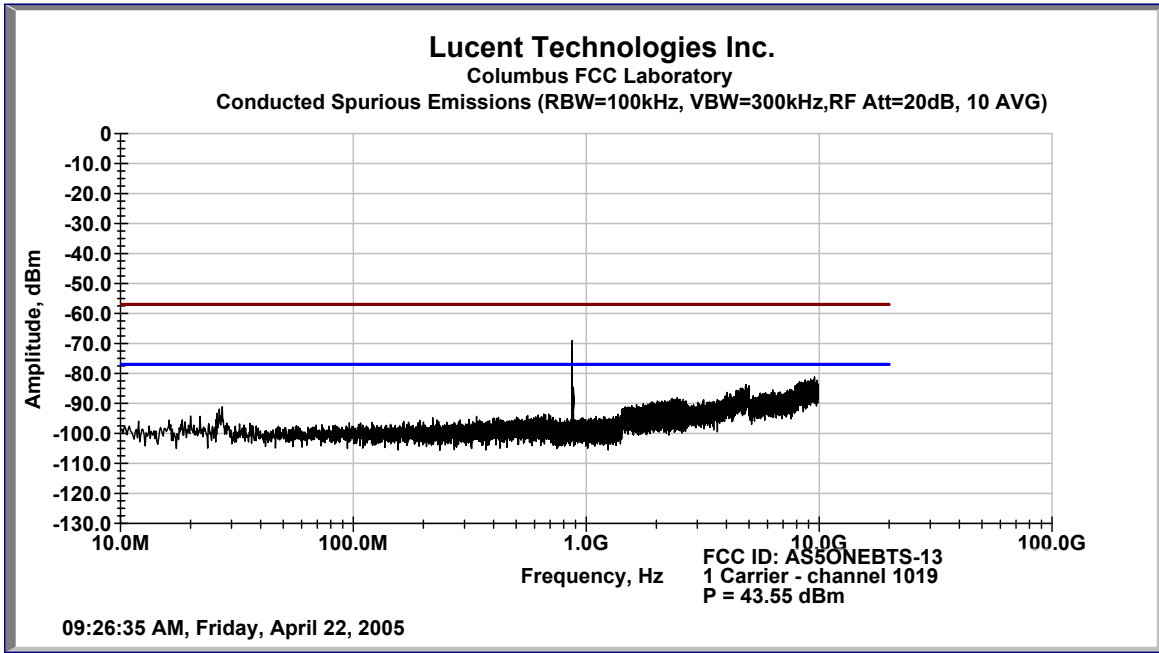
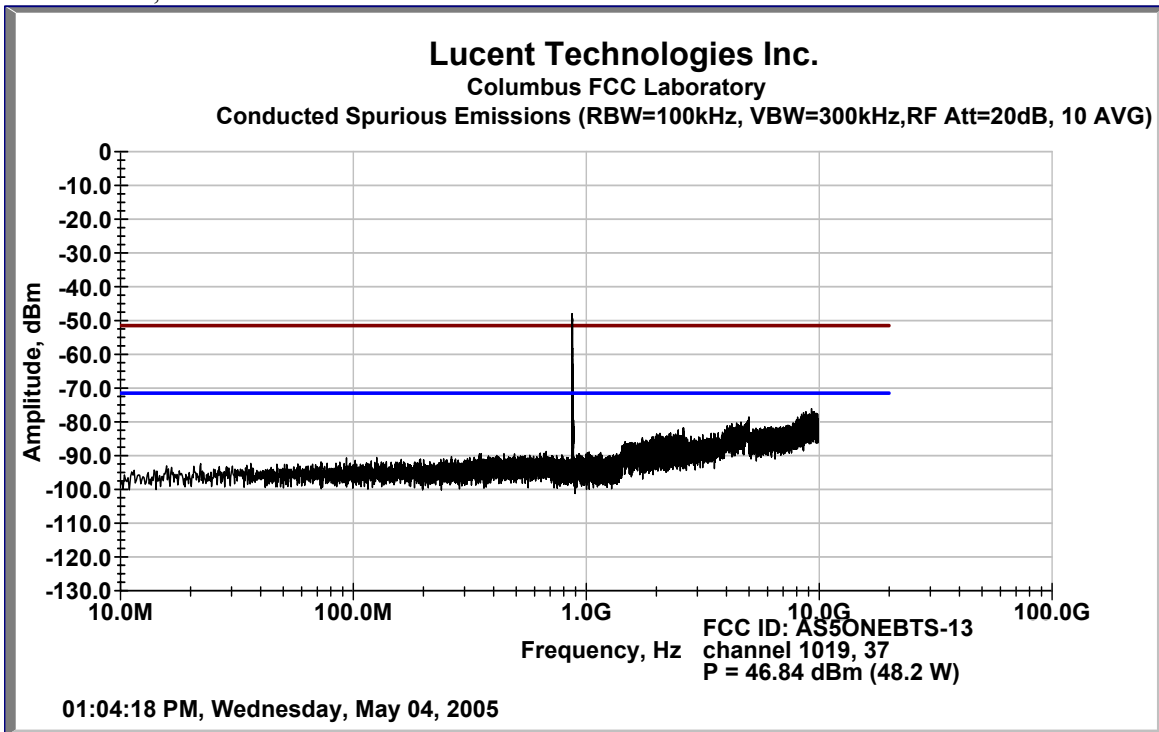


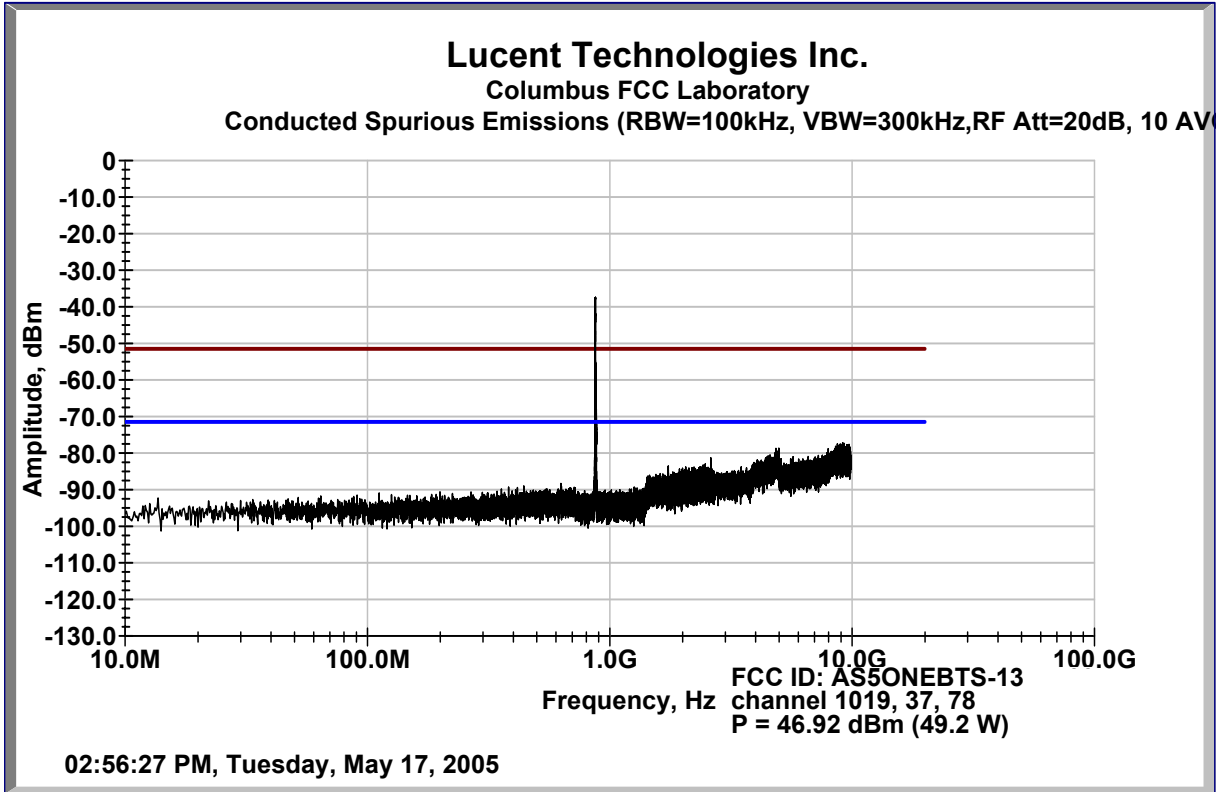
FIGURE 13.5.2 OUT-OF-BLOCK SPURIOUS CONDUCTED EMISSIONS PLOTS



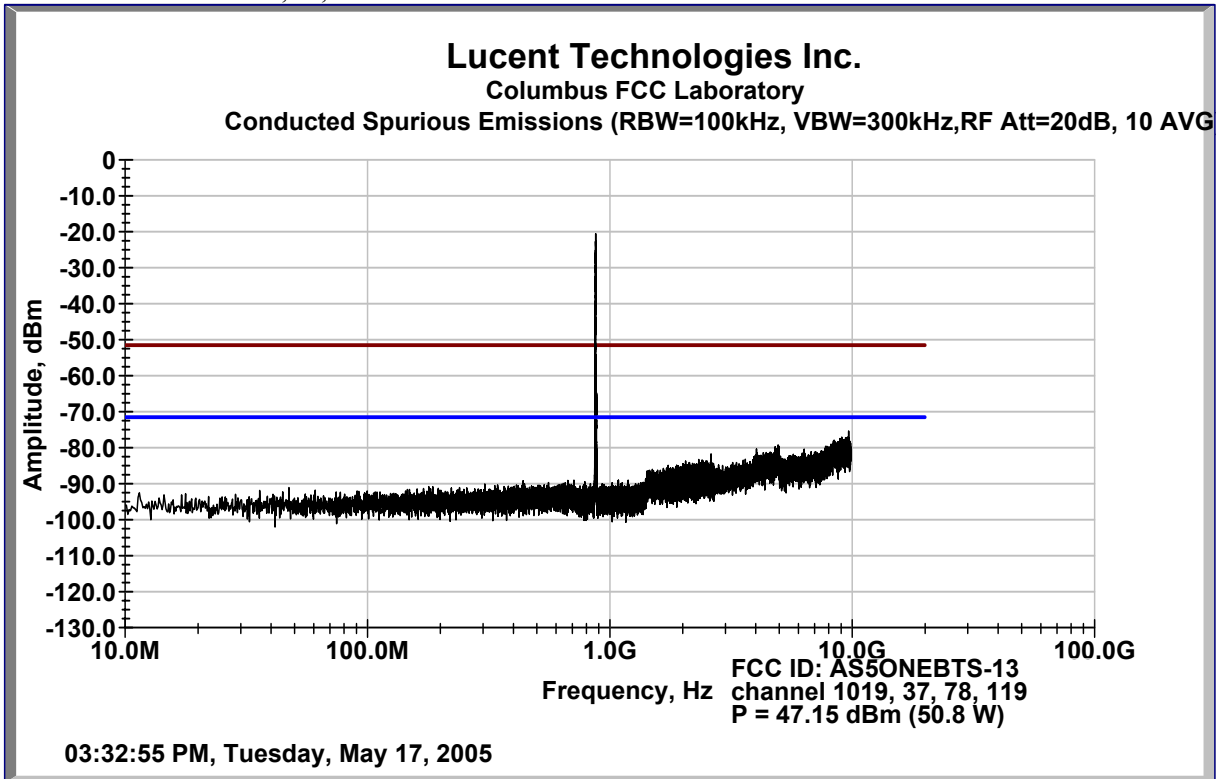
Cellular A'' Band – Lower Edge Channel
Channel 1019, 869.88 MHz



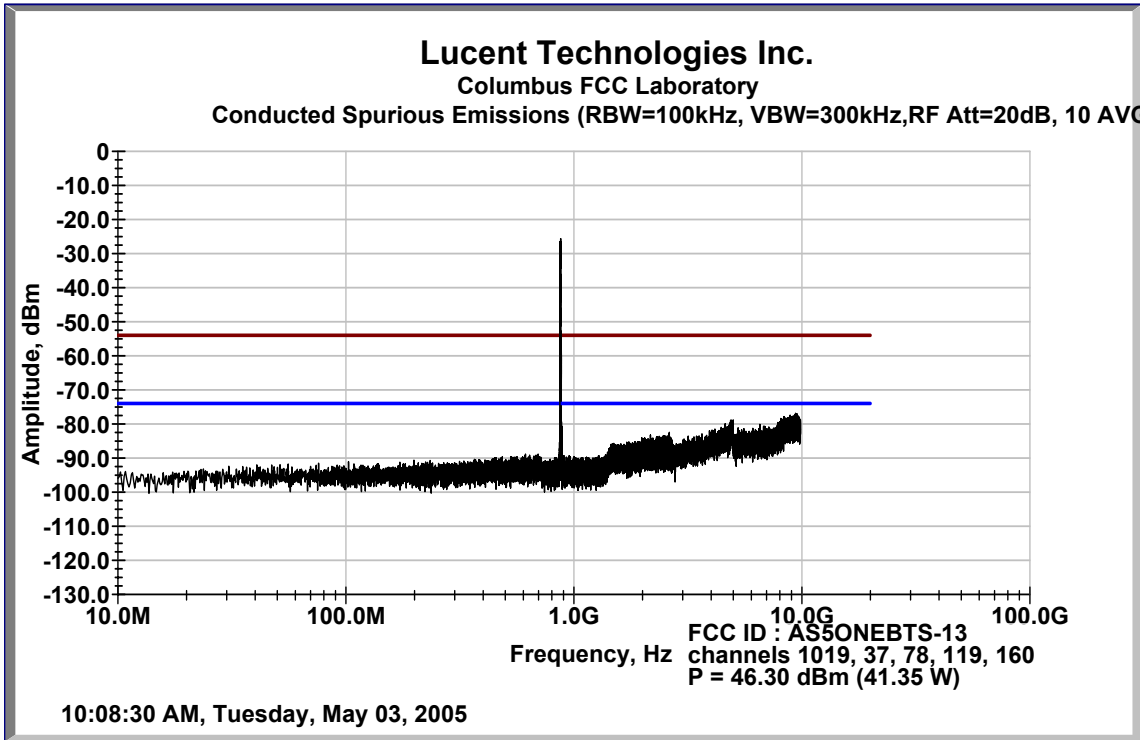
Cellular A-Band (A'', A3)
2 Carrier - Channels 1019, 37



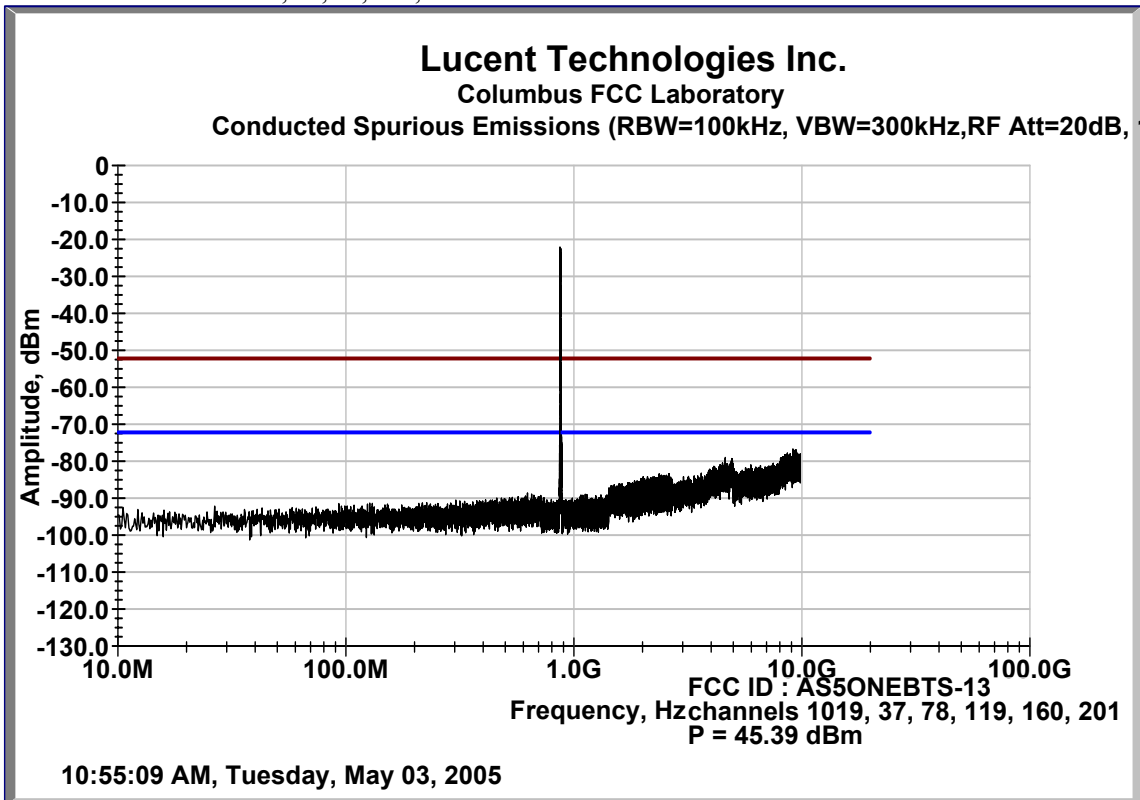
Cellular A-Band (A", A3, A2)
3 Carrier - Channels 1019, 37, 78



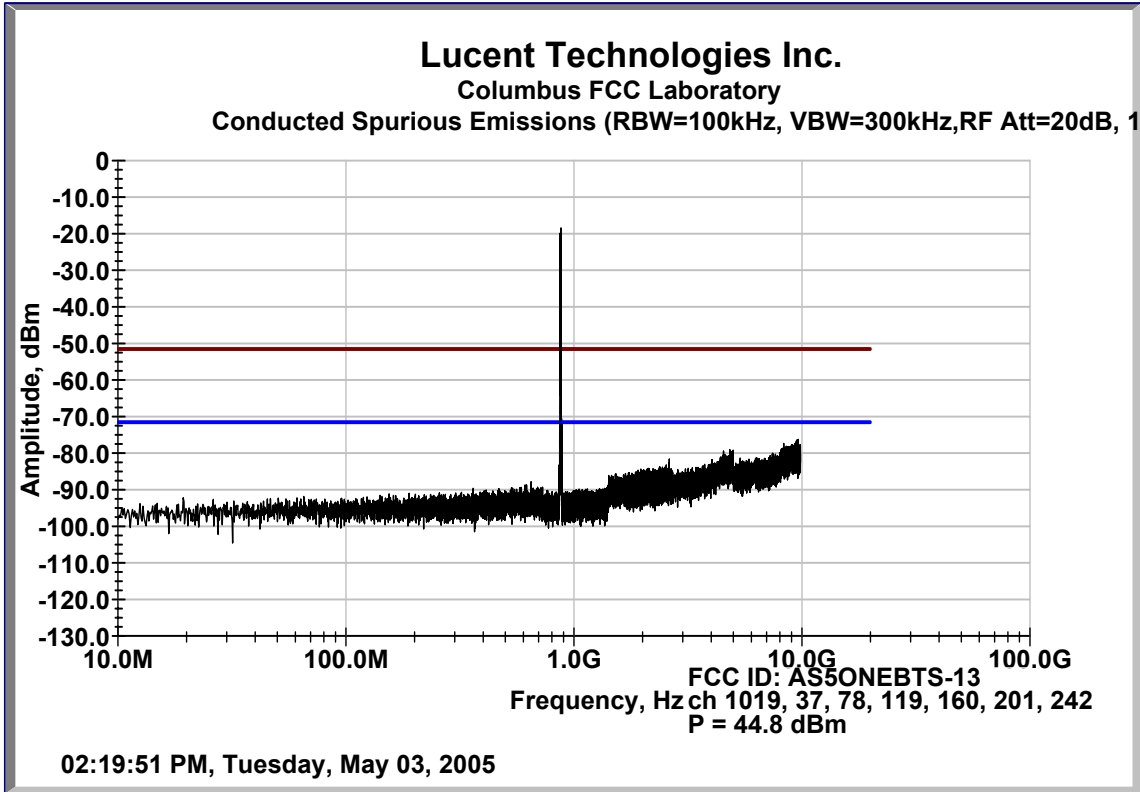
Cellular A-Band (A", A3, A2)
4 Carrier - Channels 1019, 37, 78, 119



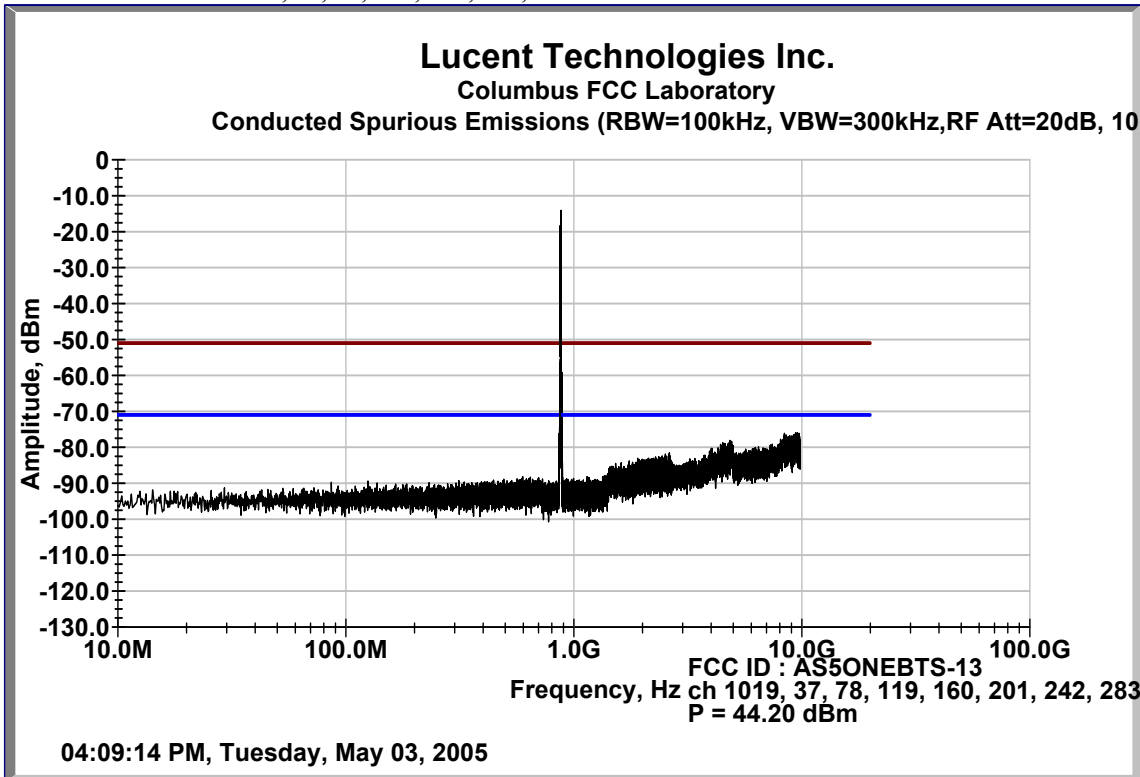
Cellular A-Band (A", A3, A2)
5 Carrier - Channels 1019, 37, 78, 119, 160



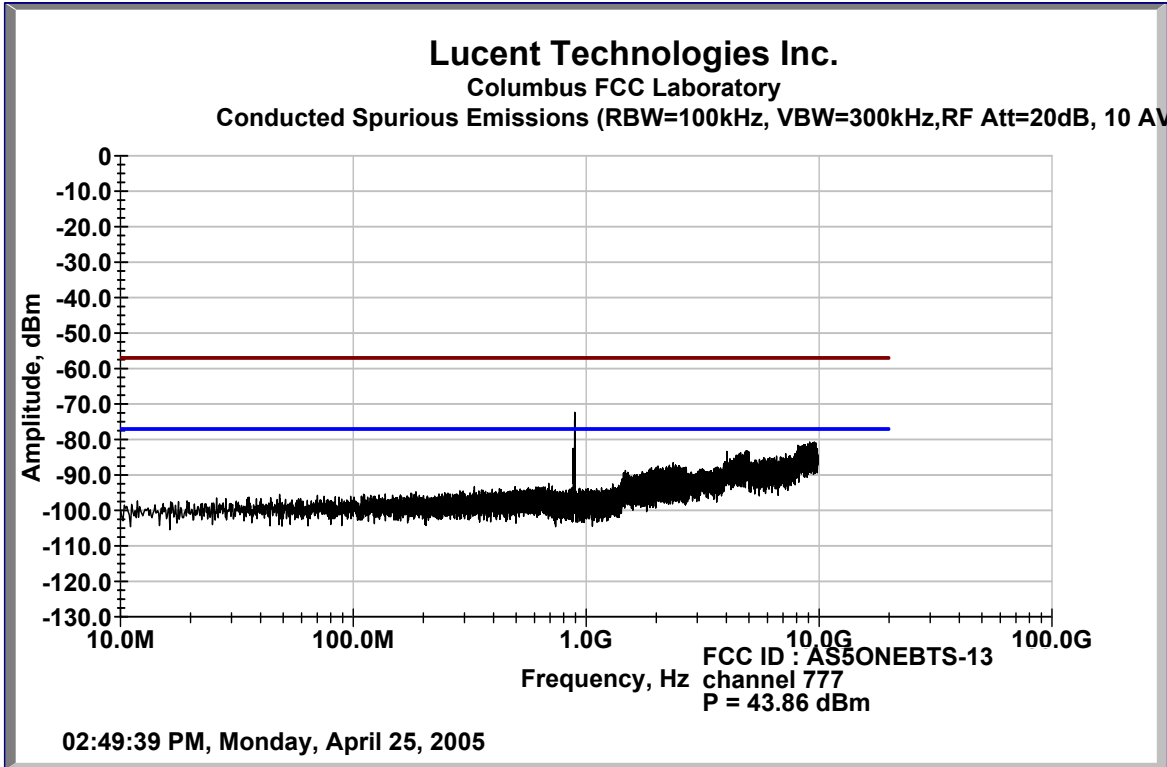
Cellular A-Band (A", A3, A2, A1)
6 Carrier - Channels 1019, 37, 78, 119, 160, 201



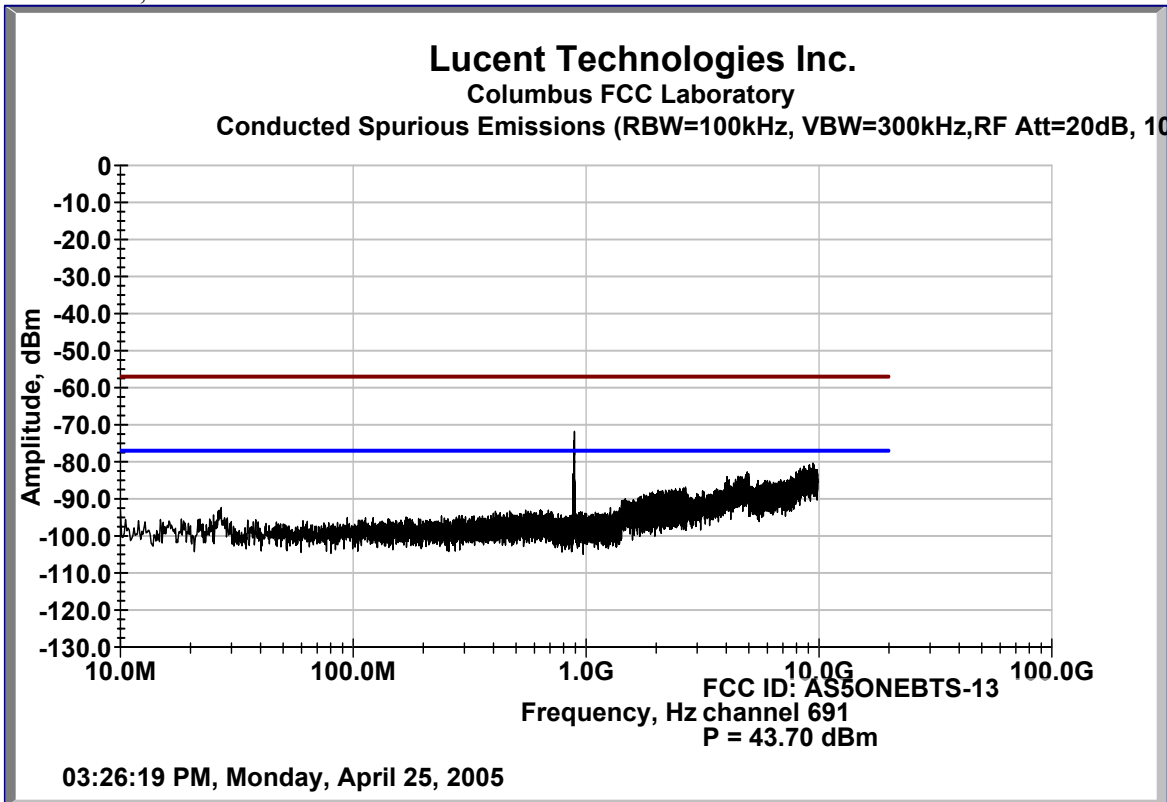
Cellular A-Band (A", A3, A2, A1)
7 Carrier - Channels 1019, 37, 78, 119, 160, 201, 242



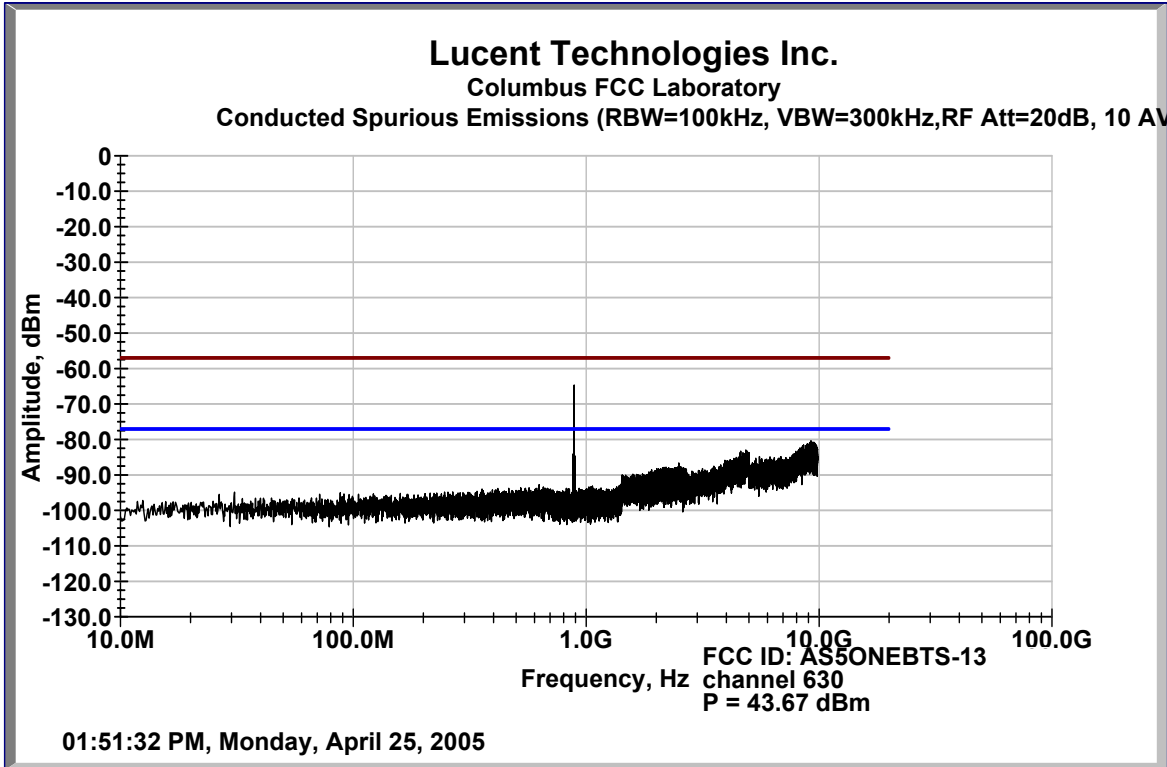
Cellular A-Band (A", A3, A2, A1)
8 Carrier - Channels 1019, 37, 78, 119, 160, 201, 242, 283



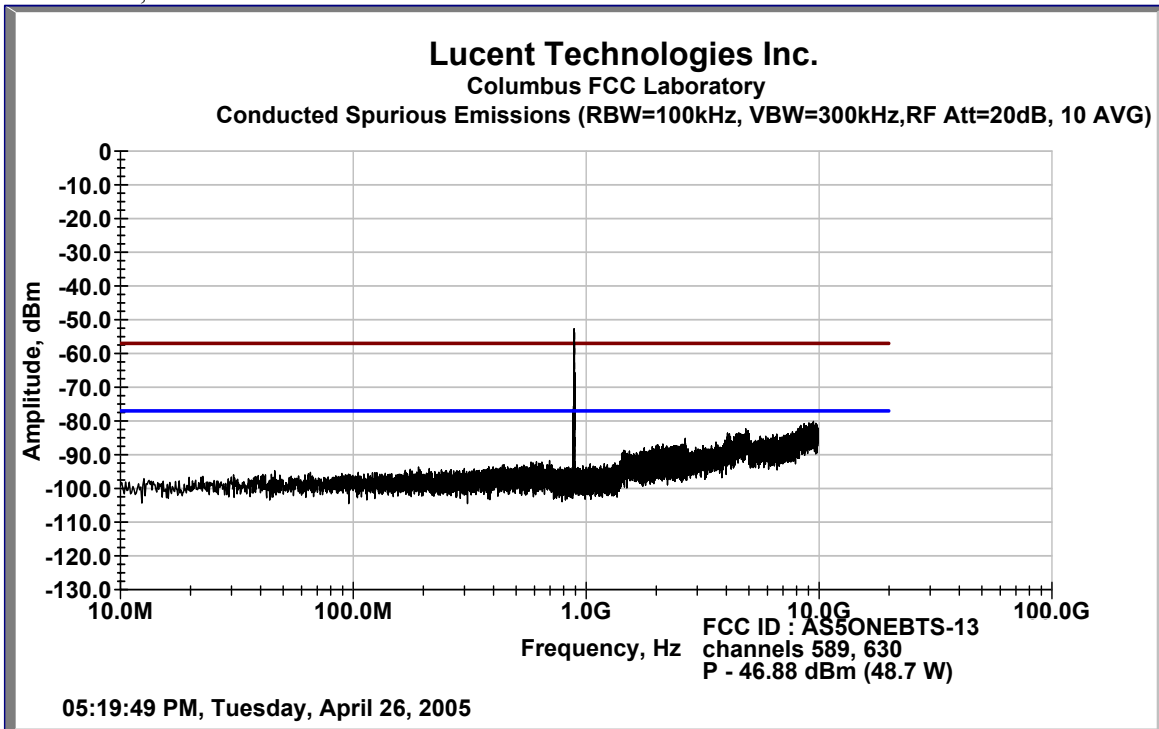
Cellular B'-Band: Upper Edge Channel
Channel 777, 893.31 MHz



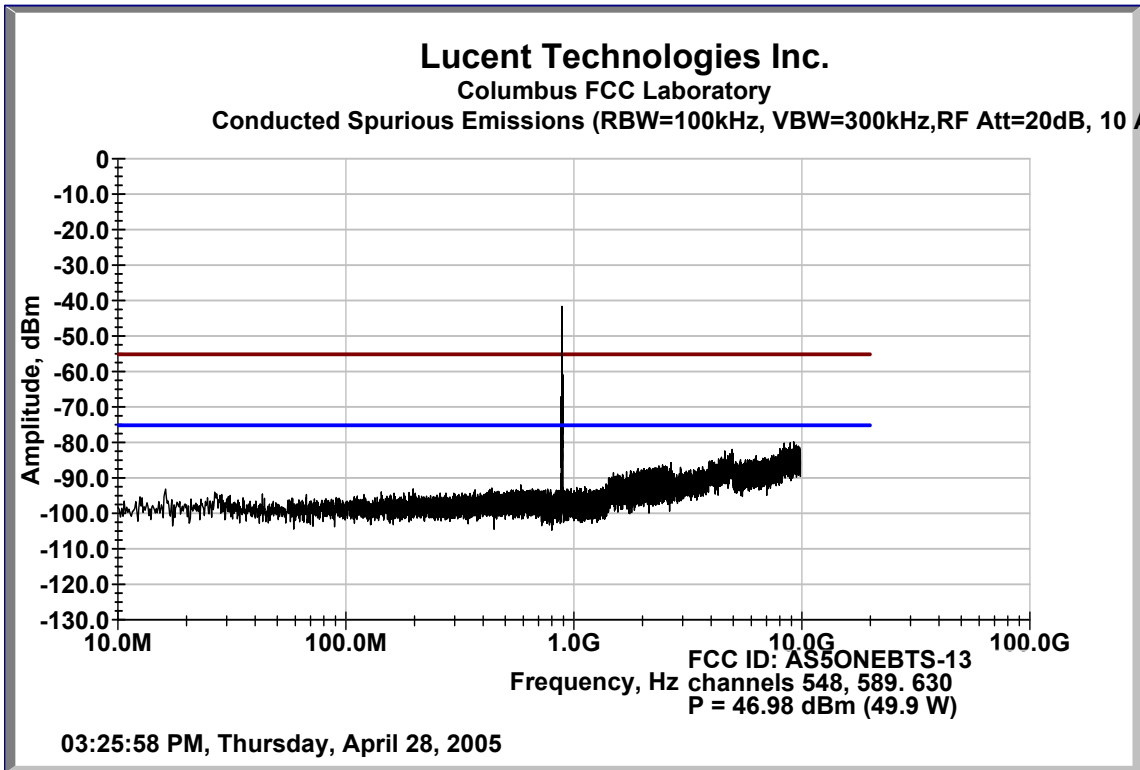
Cellular A'-Band
Channel 691, 890.73 MHz



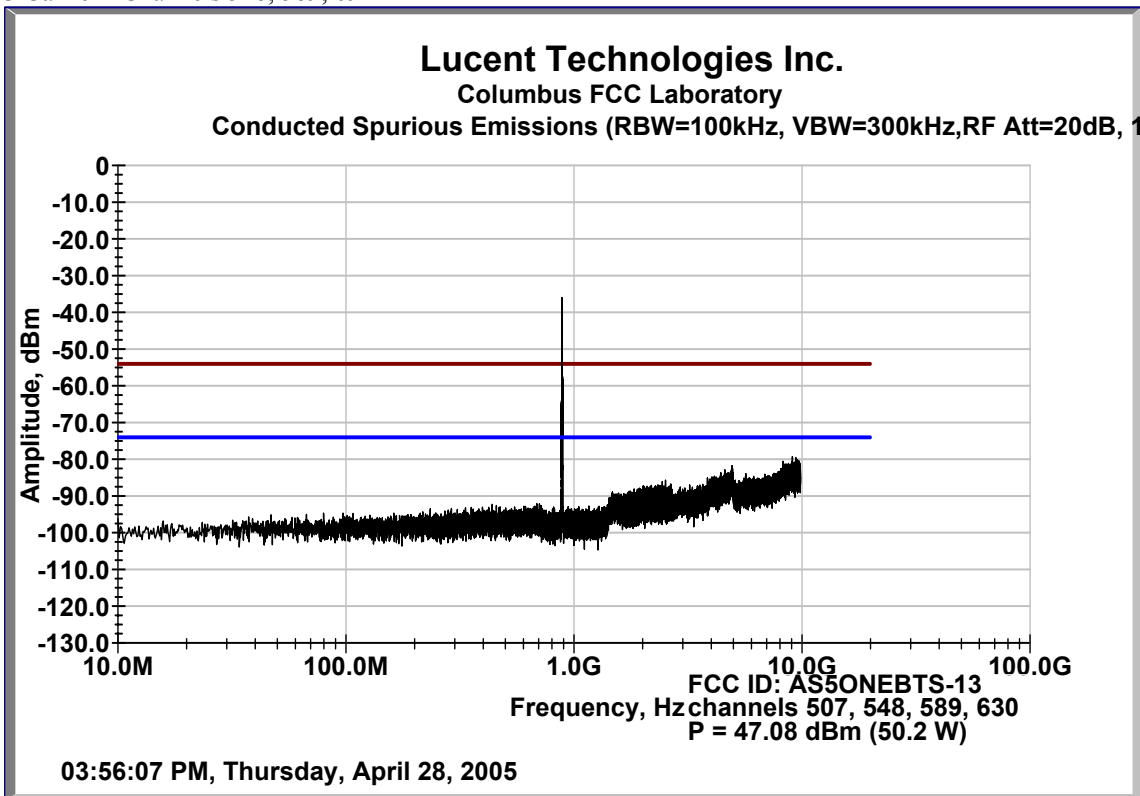
Cellular B-Band : Upper Edge Channel
Channel 630, 888.90 MHz



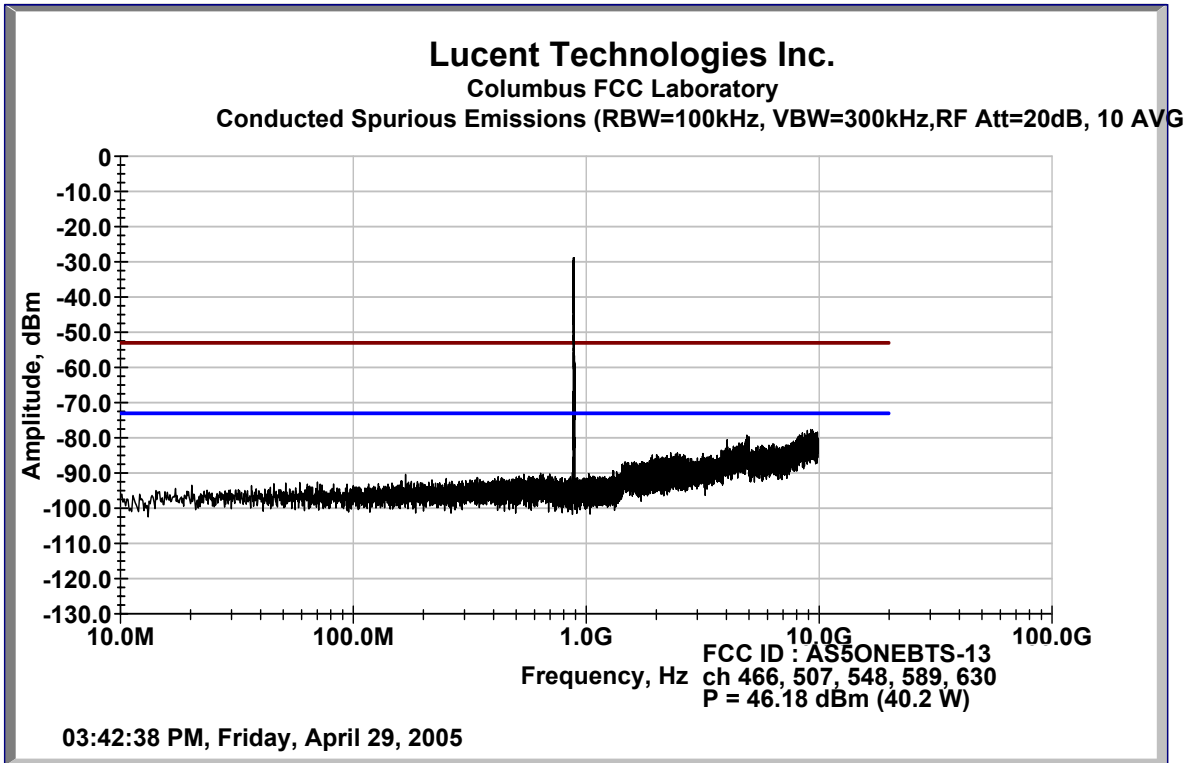
Cellular B-Band – B3, B2
2 Carrier - Channels 589, 691



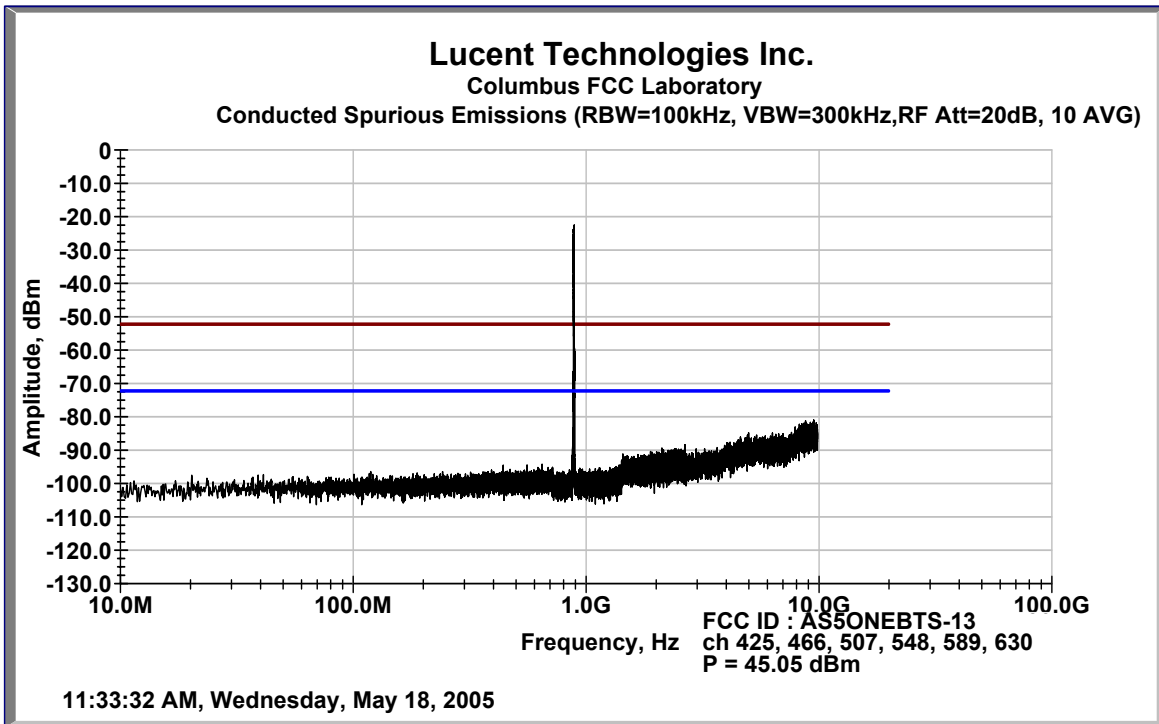
Cellular B-Band – B3, B2
3 Carrier - Channels 548, 589, 691



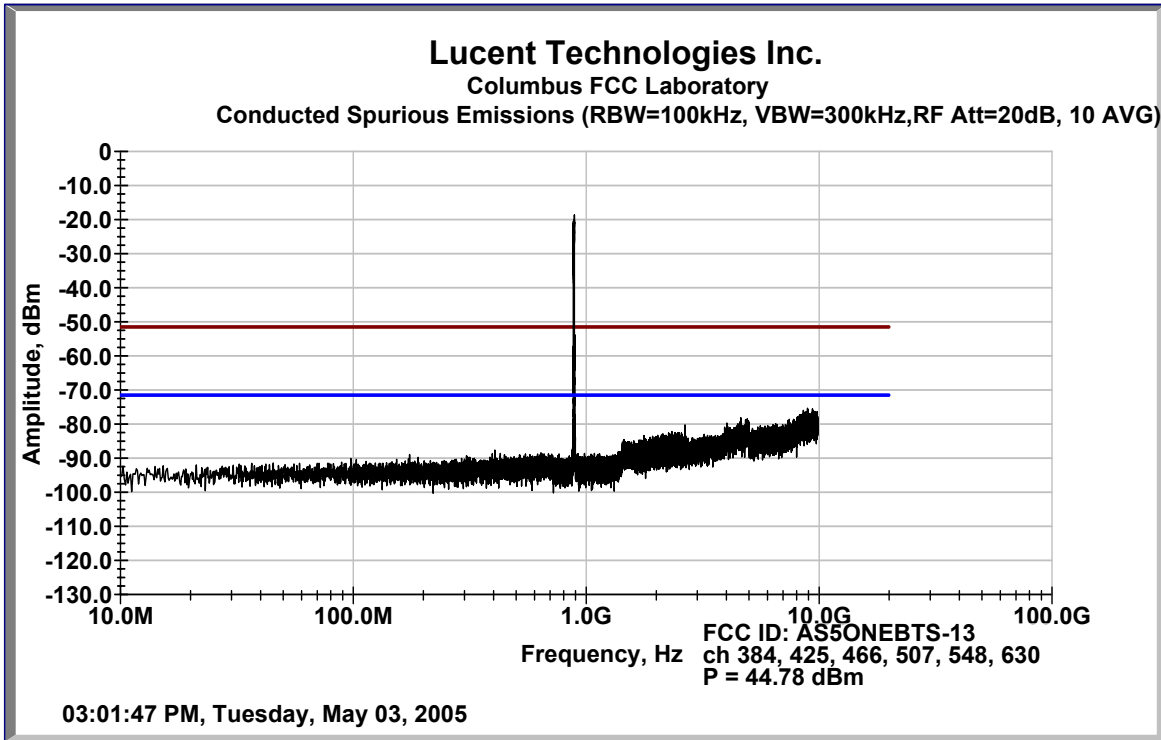
Cellular B-Band – B3, B2
4 Carrier - Channels 507, 548, 589, 691



Cellular B-Band – B3, B2, B1
5 Carrier - Channels 466, 507, 548, 589, 691



Cellular B-Band – B3, B2, B1
6 Carrier - Channels 425, 466, 507, 548, 589, 691



Cellular B-Band – B3, B2, B1
7 Carrier - Channels 384, 425, 466, 507, 548, 589, 691

SUBEXHIBIT 13.6

Section 2.1053 MEASUREMENT REQUIRED: FIELD STRENGTH OF SPURIOUS RADIATION

The field strength measurements of radiated spurious emissions were made in a FCC registered three meter semi-anechoic chamber which is maintained by Lucent Technologies Bell Laboratories in Columbus, Ohio.

The Flexent C2PAM power amplifier module was investigated from 10 MHz to the 10th harmonic of the carrier or 10 GHz, per Section 2.1057(a)(1). The equipment under test (EUT) was configured as in the normal mode of the installation and operation. The recommendations of ANSI C63.4–1992 were followed for EUT testing setup and cabling.

The emission limitations and the setting of measurement equipment for the occupied bandwidth measurement of a 1.23MHz CDMA cellular carrier were specified in Appendix A, Section 10 of FCC 02-229 Report and Order and shown in Table 11.4.1.

By using the relation between the electric field strength of an ideal dipole and its excitation power given in Reference Data for Radio Engineers, page 676, 4th edition, ITT Corp., the emission limit calculated equals

Frequency of Emission (MHz)	Distance (m)	E (dBμV/m)	E (dBm)	RBW
10-10,000	3	84.1	-22.9	100kHz

The field strength of radiated spurious emissions measured was determined by

$$E \text{ (dB}\mu\text{V/m)} = V_{\text{meas}} \text{ (dB}\mu\text{V)} + \text{Amplifier Gain / Cable Loss (dB)} + \text{Antenna Factor (dB1/m)}.$$

Sections 2.1051 and 2.1057(c) specify that the spurious emissions attenuated more than 20 dB below the permissible value need not be reported. Therefore, the reportable limit at 3 meter is 64.1 dBμV/m (-42.9 dBm).

All the measurement equipment used, including antennas, R/S ESMI EMI Test Receiver, HP Spectrum Analyzer, pre-amplifiers, etc., was calibrated in accordance with ISO 9001 process. The EUT configuration diagram is given in figure 13.6.1.

Results:

Over the frequency spectrum investigated (10MHz to 10GHz), no reportable radiated spurious emissions were detected. The measurement results of the Flexent C2PAM power amplifier module, subject of this application, demonstrate the full compliance with the Rules of the Commission.

Worst Case Radiated Spurious Emissions

Frequency (MHz)	Antenna Polarity	Measured Radiated Field Strength (dBm)	Measured Radiated Field Strength (dBuV/m)	Path Gain Amplifier / Cable (dB)	Antenna Factor (dB)	Equivalent Transmit Power (dBm)	Pass/Fail
71.6	V	-47.3	59.7	23.57	9.35	-61.52	Pass

FIGURE 13.6.1 EUT FOR MEASUREMENT OF FIELD STRENGTH OF SPURIOUS RADIATION

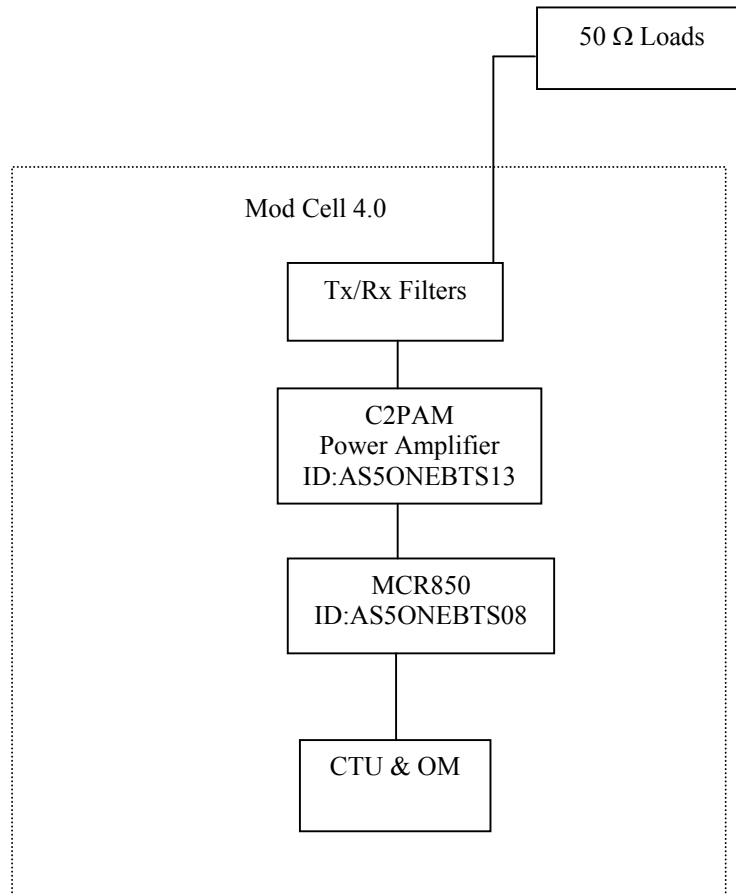
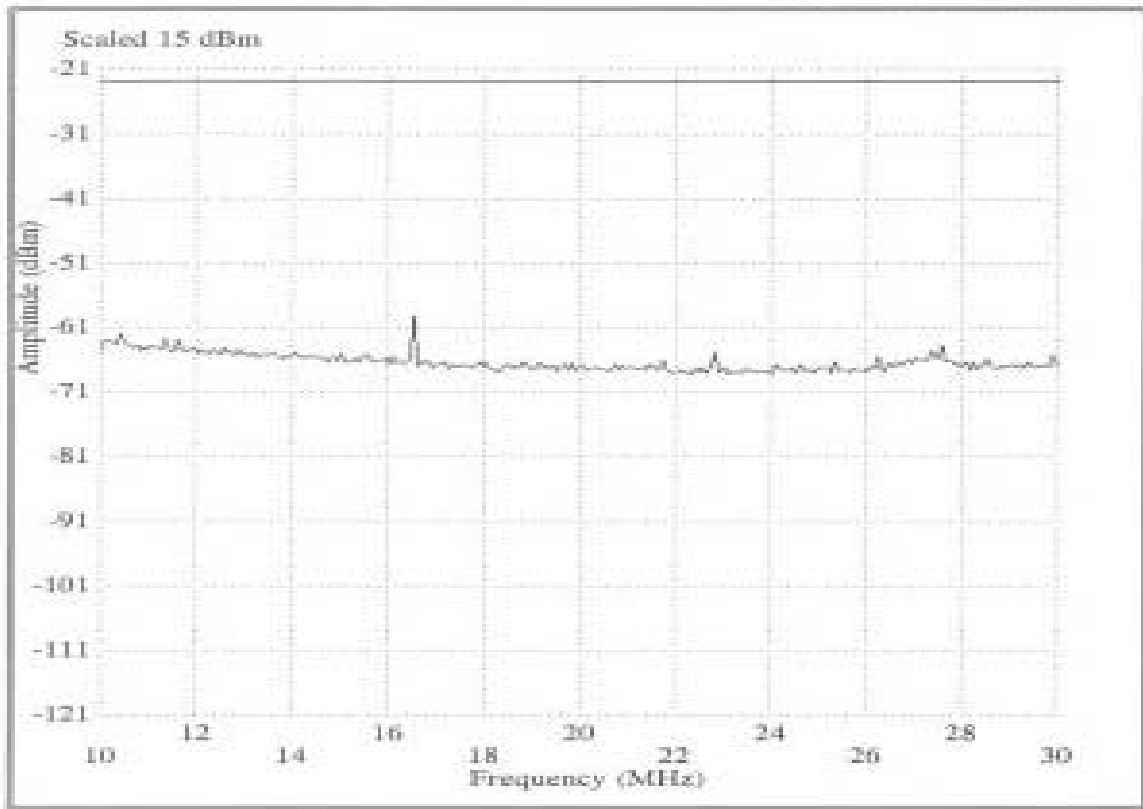
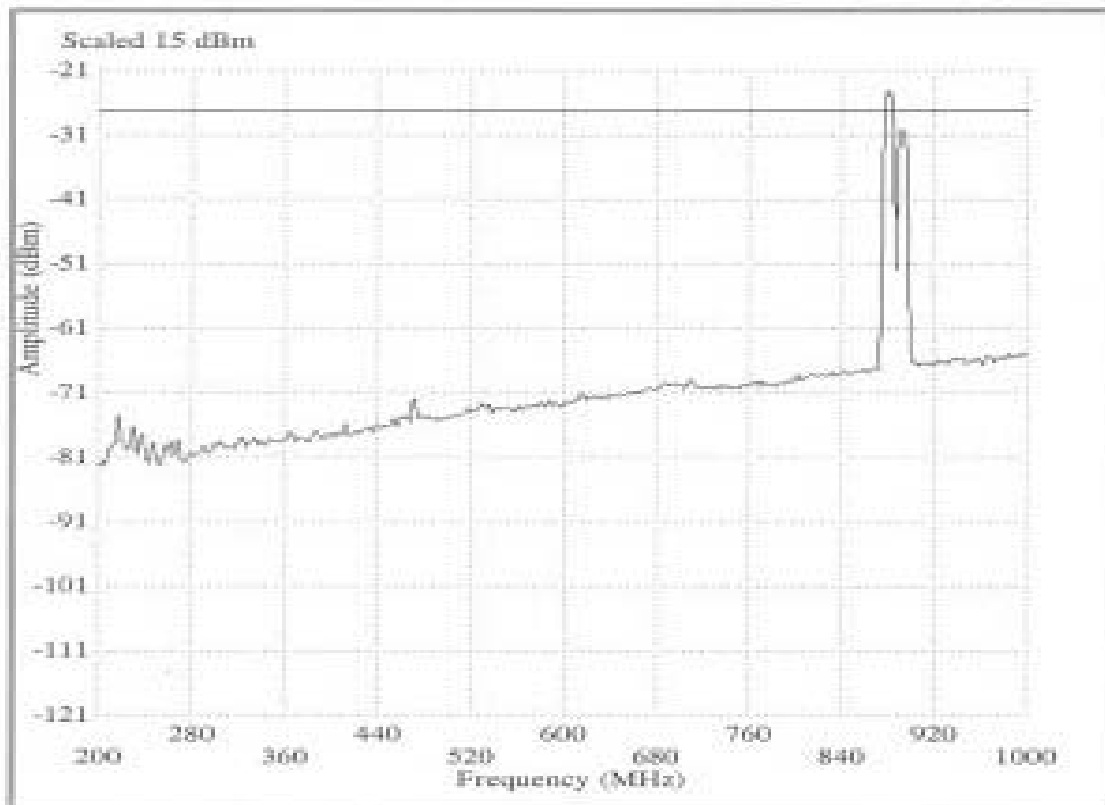
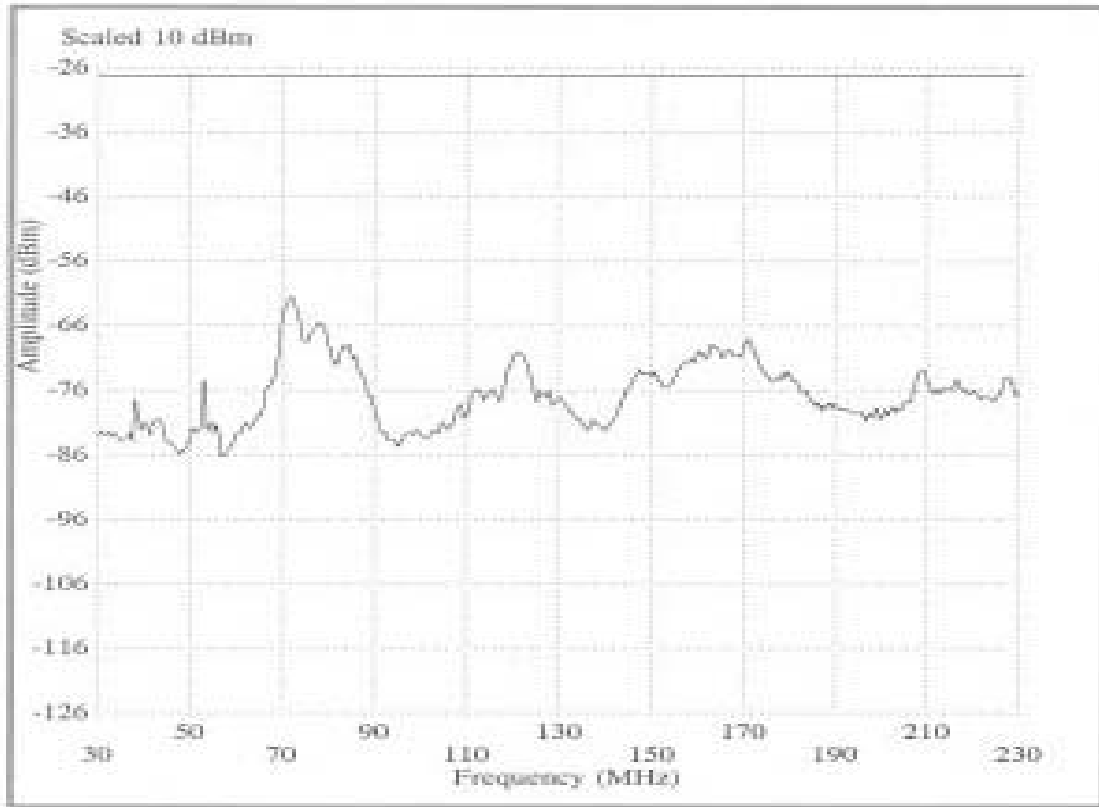
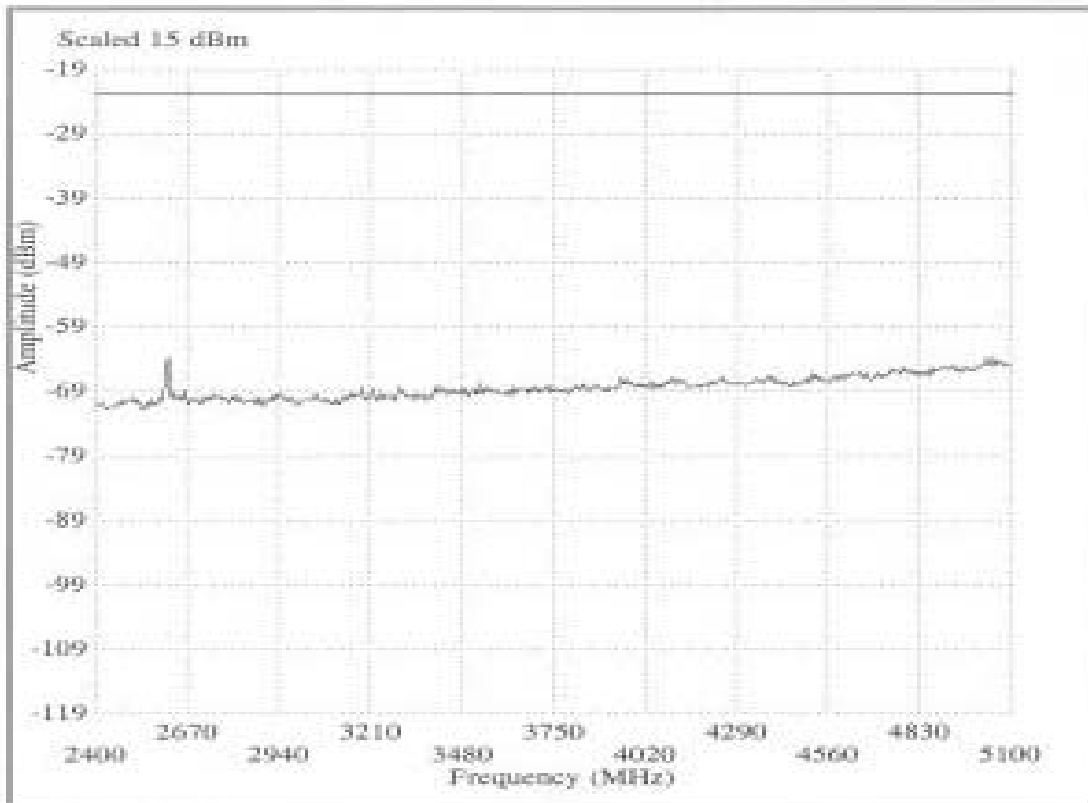
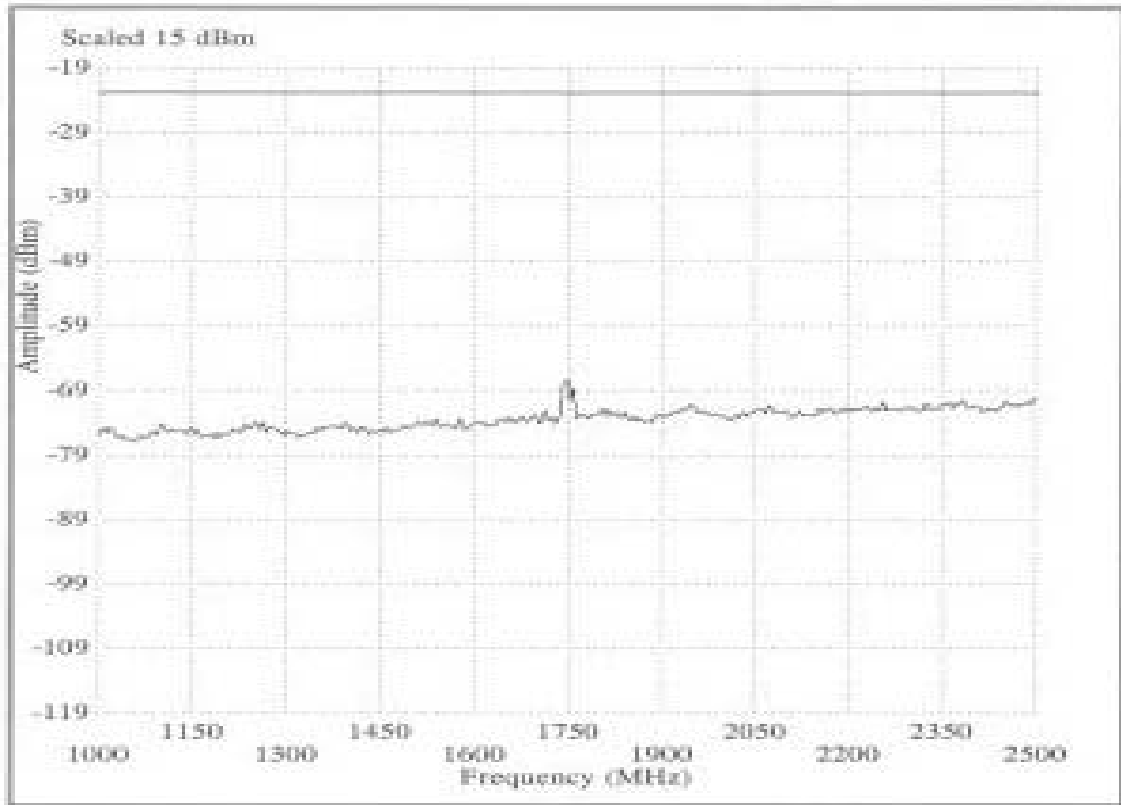
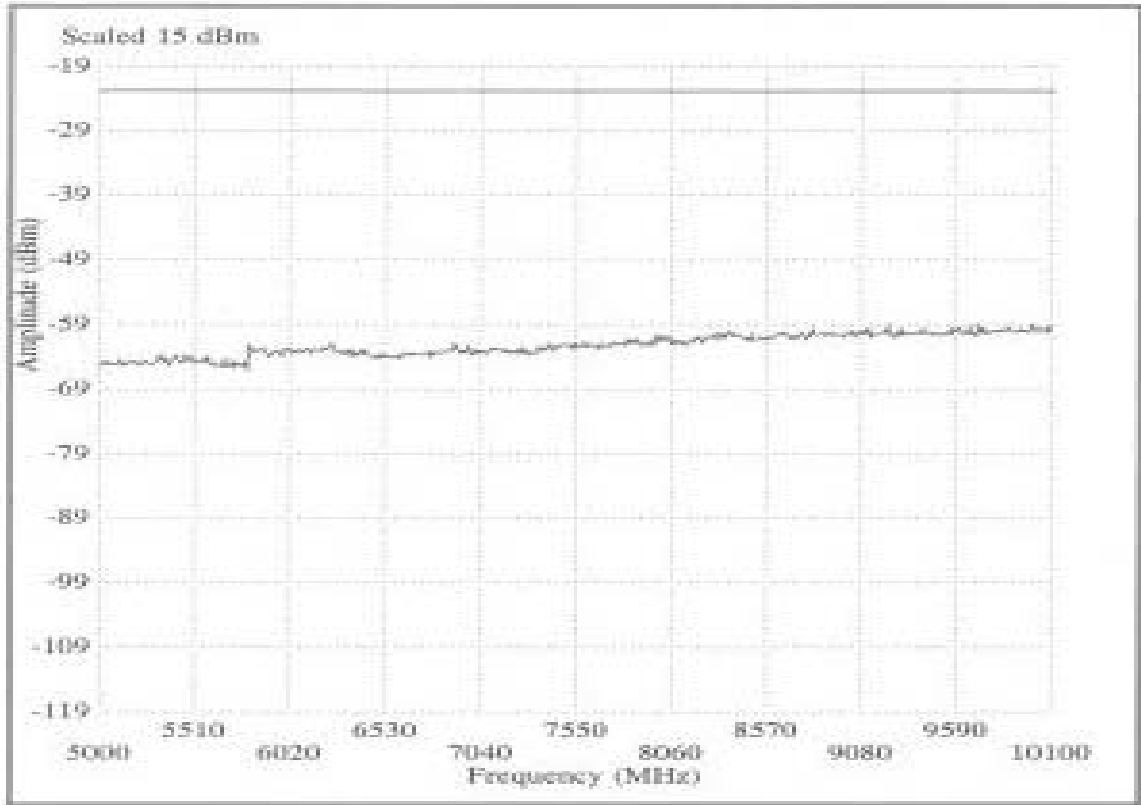


FIGURE 13.6.2 FIELD STRENGTH OF SPURIOUS RADIATION PLOTS









SUBEXHIBIT 13.6

Section 2.947 LISTING OF TEST EQUIPMENT USED

Equipment	Manufacturer	Model	Serial No.	Calibrated Date	Due Cal. Date
Power Meter	Giga-tronics	8542C	1834318	1/11/05	1/11/06
Power Sensor	Giga-tronics	80621A	1950054	1/11/05	1/11/06
Spectrum Analyzer	Agilent	E4440A	US42221614	10/22/04	10/22/05
Spectrum analyzer, RF Sec	Hewlett-Packard	8566B	3026A19151	4/8/05	4/8/06
Spectrum analyzer, Disp Sec	Hewlett-Packard	8566B	3014A06682	4/8/05	4/8/06
EMI Test Receiver, Disp Sec	Rohde & Schwarz	ESA1-D	DE25111	6/4/04	6/4/05
EMI Test Receiver, RF Sec	Rohde & Schwarz	EMS1-RF	DE25111	6/4/04	6/4/05
Attenuator	Weinschel	6dB	AV9010	N/A	N/A
RF Limiter	Hewlett-Packard	11867A	03533	N/A	N/A
Active Monopole Antenna	EMCO	3301B	9312-3477	1/24/05	1/24/06
Loop Antenna	EMCO	6502	3442	4/20/05	4/20/06
Biconical Antenna	EMCO	3110B	9807-3128	3/16/04	3/16/06
Log-periodic Antenna	EMCO	3148	9707-1029	3/12/04	3/12/06
Double Ridged Horn Ant.	EMCO	3115	5638	3/8/04	3/8/06
Pre-amplifier	Hewlett-Packard	8449B	3008A01355	1/11/05	1/11/06
Pre-amplifier	Sonoma - HP	310	185704	1/11/05	1/11/06
Multi-device Controller	EMCO	2090	9912-147-7	N/A	N/A
Temperature Record	Thermotran Controller	7800	228264	3/1/05	3/1/06
Frequency Counter	Hewlett-Packard	53132A	227247	1/19/05	1/19/06
Thermal Coupler	Omega	T	N/A	N/A	N/A
Directional Coupler	MECA	715-40-3.5	N/A	N/A	N/A
50Ω Resistive Load	Bird Electronic	8166	9349	N/A	N/A
50Ω Resistive Load	Bird Electronic	8166	8283	N/A	N/A
50Ω Resistive Load	Bird Electronic	8166	8276	N/A	N/A
28V Power Supply	Hewlett-Packard	6684A	US36410429	N/A	N/A
28V Power Supply	Hewlett-Packard	6684A	US36410433	N/A	N/A
DC Power Supply	Sorensen	P00-55-180T	226623	N/A	N/A
DC Power Supply	Hewlett-Packard	6038A	3025A-09939	N/A	N/A
Multi-meter	Fluke	23	49330331	1/5/05	1/5/06
RF Switch	Hewlett-Packard	11713A	2223A01767	N/A	N/A
RF Switch	Hewlett-Packard	44477A	MY42000146	N/A	N/A
RF Switch	Hewlett-Packard	44477A	MY42000147	N/A	N/A
RF Switch	Hewlett-Packard	8764C	3241A00605	N/A	N/A
RF Switch	Hewlett-Packard	8764C	3241A00622	N/A	N/A

RF Switch	Agilent	8761B	74304	N/A	N/A
RF Switch	Agilent	8761B	74261	N/A	N/A
RF Switch	Agilent	8761B	74305	N/A	N/A
RF Switch	Agilent	8761B	74263	N/A	N/A
Switch Control Unit	Hewlett-Packard	3488A	204925	N/A	N/A
Switch Control Unit	Hewlett-Packard	3488A	14202	N/A	N/A
Tunable Bandreject Filter	K&L	3TNF-500/1000-N/N	1	N/A	N/A
RF Switch	Hewlett-Packard	8762A	N/A	N/A	N/A
RF Switch/Attenuator Driver	Hewlett-Packard	11713A	231646	N/A	N/A
Low Pass Filter	TriliThic	10LC800-3-AA	200201001	N/A	N/A
High Pass Filter	Trilithic	5HC2850/18050-1.8-kk	200352136	N/A	N/A
Clip-on AC/DC Meter	F.W. Bell	C-600	94040227	1/5/05	1/5/06
Spectrum analyzer, RF Sec	Hewlett-Packard	8566B	2504A01322	6/29/04	6/29/05
Spectrum analyzer, Disp Sec	Hewlett-Packard	8566B	2803A07048	6/29/04	6/29/05
Spectrum Analyzer	Agilent	E7405A	US35440174	1/31/05	1/31/06