

EXHIBIT 14**Test Report**

This test report presents the measurement data required by the Commission for certifying the AS5ONEBTS-06 P2PAM PCS Power Amplifier Module, subject of this application. All testing was performed during the period of September 2 ~ October 14, 2003. The measurement results have demonstrated the AS5ONEBTS-05 P2PAM amplifier is in full compliance with the Rules of Commission.

For some of the required measurements where FCC Parts 2 and 24 did not give specific requirements, TIA/EIA-97-D requirements were used in the report, which are almost identical to the 3GPP2 C.S0010-A v1.0 requirements.

SUBEXHIBIT 14.1**Section 2.1033 (c)(14) REQUIRED MEASUREMENT DATA**

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

SUBEXHIBIT 12.2	Section 2.1046	Measurements Required: RF Power Output
SUBEXHIBIT 12.3	Section 2.1047	Measurements Required: Modulation Characteristics
SUBEXHIBIT 12.4	Section 2.1049	Measurements Required: Occupied Bandwidth
SUBEXHIBIT 12.5	Section 2.1051	Measurements Required: Spurious Emissions at Antenna Terminal
SUBEXHIBIT 12.6	Section 2.1053	Measurements Required: Field Strength of Spurious Radiation

SUBEXHIBIT 14.2**Section 2.1046 MEASUREMENT REQUIRED: RF POWER OUTPUT**

This test is a measurement of the RF power level transmitted at the Lucent Technologies P2PAM AS5ONEBTS-06 end antenna connector (EAC), as shown in the accompanying test set-up diagram.

The P2PAM with UCR1900 was set-up with CDMA carrier as follows (table 13.2.1).

Table 14.2.1. 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

TIA/EIA-97-D, Section 4.3.1.3, specifies that the total power per carrier should remain within +2dB and -4dB of the manufacturer's rated power.

The channels that were measured are tabulated in the following table (table 14.2.2):

SUBEXHIBIT 13.2 Continued

Table 14.2.2. Results of RF Power Output

PCS Chan. No.	Frequency (Tx) MHz	P2PAM (EAC) Output (dBm)
25	1931.250	43.08
50	1932.500	42.98
75	1933.750	43.01
100	1935.000	42.95
125	1936.250	43.04
150	1937.500	43.08
175	1938.750	42.98
200	1940.00	43.07
225	1941.250	43.02
250	1942.500	43.02
275	1943.750	42.96
325	1946.250	42.89
350	1947.500	42.90
375	1948.750	42.88
425	1951.250	42.99
450	1952.500	42.92
475	1953.750	42.87
500	1955.000	42.90
525	1956.250	42.95
550	1957.500	42.92
575	1958.750	42.83
600	1960.000	42.87
625	1961.250	42.84
650	1962.500	42.99
675	1963.750	42.97
725	1966.250	43.02
750	1967.500	43.00
775	1968.750	42.99
825	1971.250	43.04
850	1972.500	43.02
875	1973.750	43.04
925	1976.250	42.93
950	1977.500	42.92
975	1978.750	42.91
1000	1980.000	43.02
1025	1981.250	42.99
1050	1982.500	42.96
1075	1983.750	42.87
1100	1985.000	42.81
1125	1986.250	42.84
1150	1987.500	42.82
1175	1988.750	42.73

SUBEXHIBIT 14.2 Continued

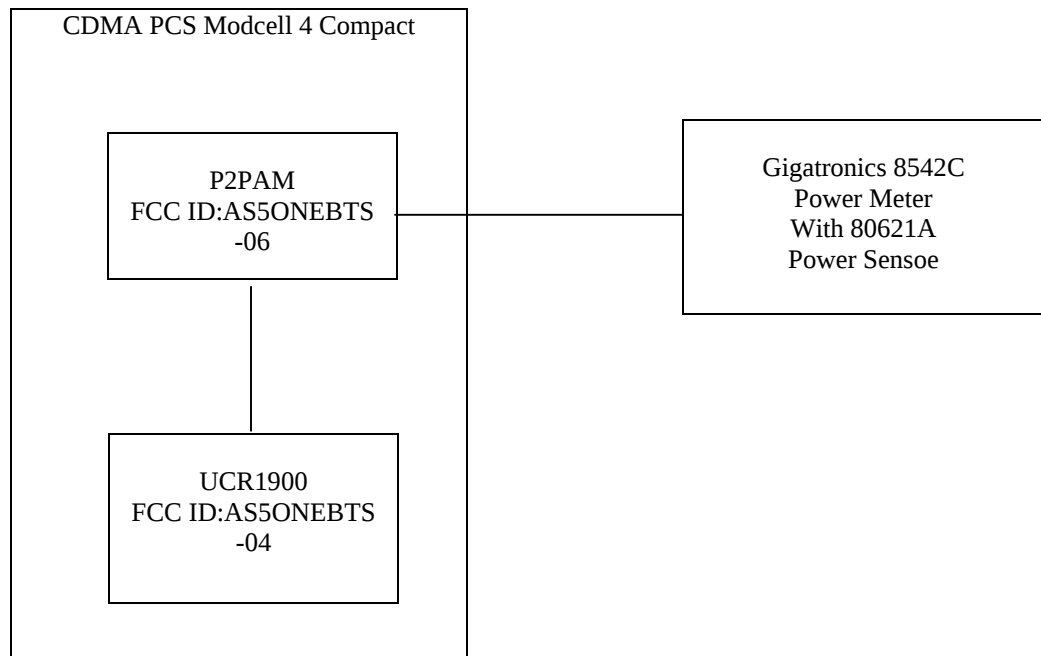
Power measurements were made with a Giga-tronics 8542C Universal Power meter with 8061A Power Sensor (0.01-18 GHz) in the modulated average mode. The test set-up for conducting the RF power output measurement from the Lucent Technologies P2PAM AS5ONEBTS-06 is shown in the following figure. All results are given in the above table. It can be seen from the above table that all the mean RF power outputs measured across the PCS band are within +/- 0.28 dB of the rated maximum power of 43.01 dBm (20 watts).

Results:

The RF power output of the Lucent Technologies P2PAM AS5ONEBTS-06 across the PCS Frequency Band 1930-1990 MHz are in full compliance with the Rules of the Commission

TEST SET-UP FOR MEASUREMENT OF RADIO FREQUENCY OUTPUT

Figure 14.2.1 Test Set-up for Measurement of Radio Frequency Power Output



SUBEXHIBIT 14.3

Section 2.1049 MEASUREMENT REQUIRED: OCCUPIED BANDWIDTH

In compliance with Section 2.1049(h), a single CDMA carrier was configured with a combination of Pilot, Paging, Sync and Traffic channels. The Pilot/Paging/Sync channels were setup according to the recommended test model for base stations given in TIA/EIA-97-D (Section 6), as shown in Table 13.2.1.

The occupied bandwidth measurements were made at the end antenna connector (EAC) of the P2PAM on twelve (12) channels which correspond to the highest and lowest channels in each of the six PCS bands (A,D,B,E,F and C). At each of the above twelve frequencies, the carrier power level at the EAC of the P2PAM was adjusted to the maximum rated power of 43.01 dBm (20 watts).

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

Table 14.3.1 FCC Part 24.238 Spurious Emission Limits

Displacement from the Carrier Center Frequency f_c	Required Minimum Attenuation below the Mean Carrier Power $P=43.01\text{dBm}$	Resolution Bandwidth of Spectrum Analyzer
$885\text{ kHz} < f - f_c \leq 1.25\text{ MHz}$	45 dBc	30 kHz
$1.25\text{ MHz} < f - f_c \leq 1.98\text{ MHz}$	52.21 dBc (note 1)	30 kHz
Block edge to $< 4\text{ MHz}$	71.21 dBc (note 2)	30 kHz

Note 1 – The 52.21 dBc level was derived from $-\{43+10\log(\text{mean power in watts})\} = -13\text{ dBm}$ When measured in a resolution bandwidth not less than 1% carrier signal. Since carrier is a 1.25 MHz bandwidth signal, the limit is adjusted to $-13 + 10\text{LOG}(30\text{ kHz}/12.5\text{ kHz})\text{ dBm} = -9.2\text{ dBm} / - 52.21\text{ dBc}$

Note 2 – See note 1 above, $-13 + 10\text{LOG}(30\text{ kHz}/1.0\text{ MHz})\text{ dBm} = -28.2\text{ dBm} / - 71.21\text{ dBm}$

Table 14.3.2 TIA/EIA-97D Spurious Emission Limits

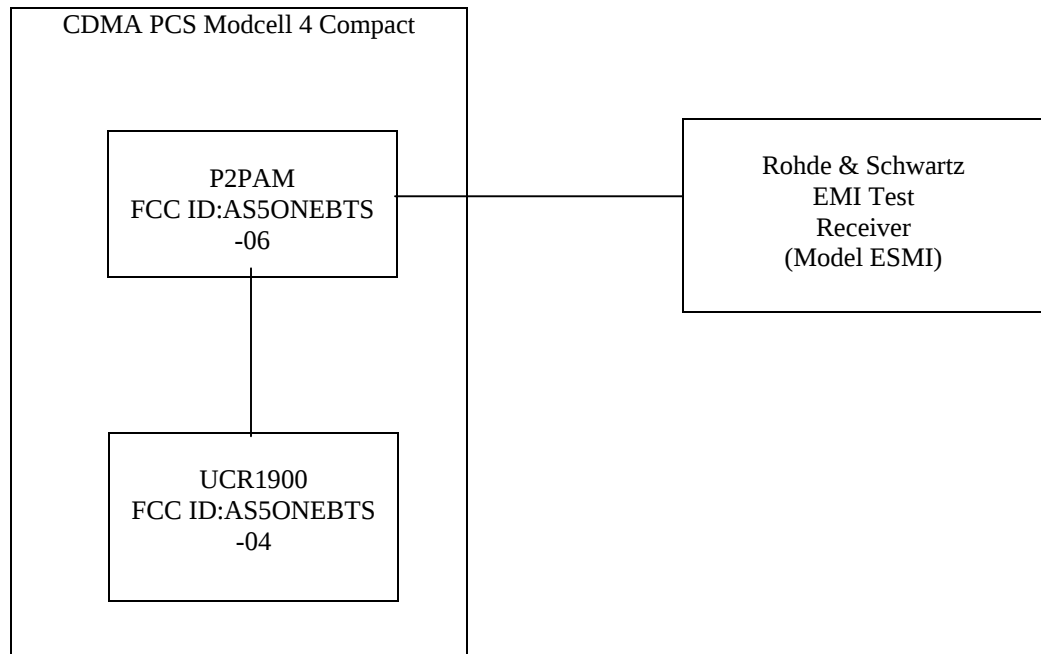
Displacement from the Carrier Center Frequency f_c	Required Minimum Attenuation below the Mean Carrier Power $P=43.01\text{ dBm}$	Resolution Bandwidth of Spectrum Analyzer
$750\text{ kHz} < f - f_c \leq 1.98\text{ MHz}$	45 dBc	30 kHz
$1.98\text{ MHz} < f - f_c \leq 4.0\text{ MHz}$	55 dBc	30 kHz

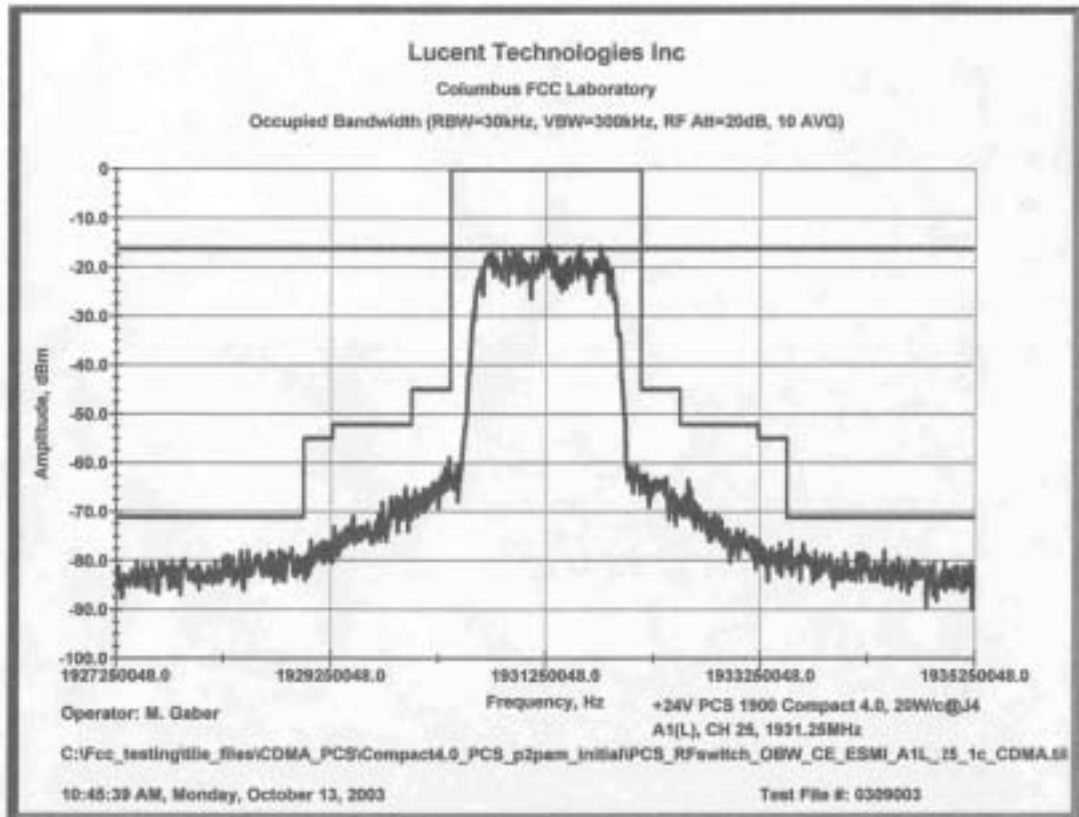
A combined requirement of FCC Part 24.238 and TIA/EIA-97D was used as the required emission limit mask in the measurement.

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 $10 \log (1230\text{kHz}/30\text{kHz}) = 16.1 \text{ dB}$.

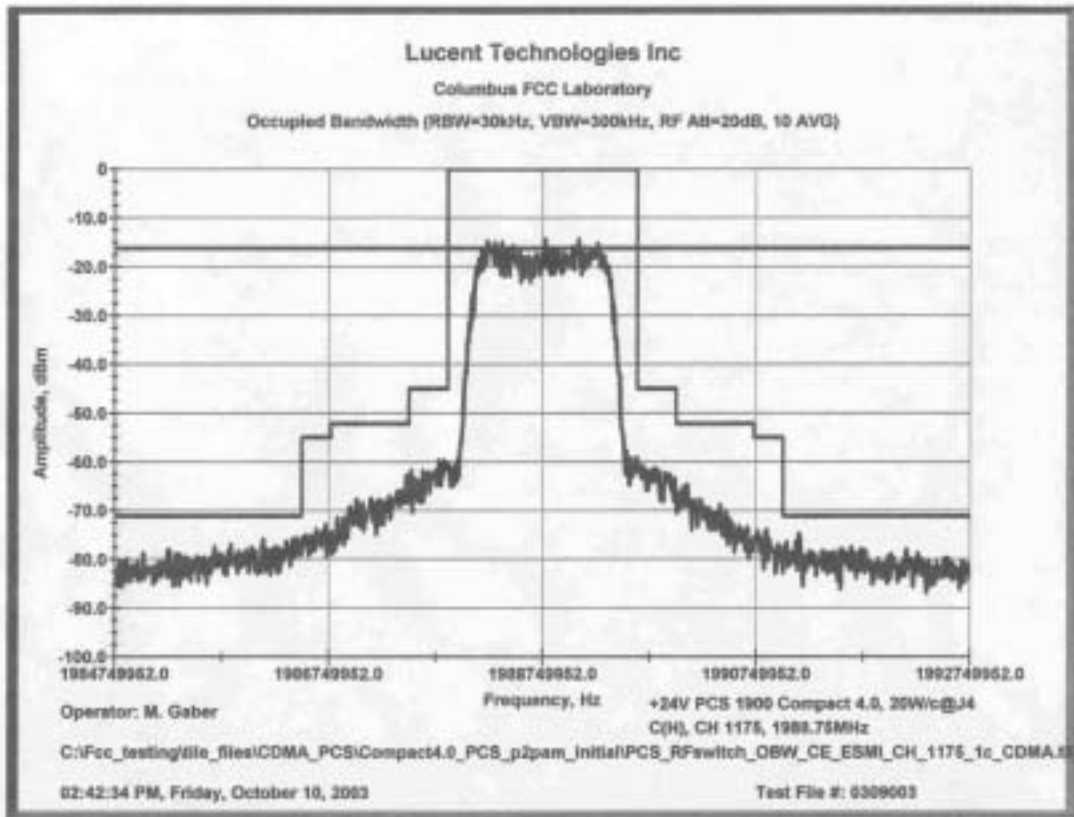
Results:

The measurement results demonstrate the full compliance with the Rules of the Commission. Attached are plots for lowest and highest channels of the PCS band (1930-1990 MHz).



Occupied Bandwidth Plots:

Channel 25, 1931.250 MHz
Measured at the P2PAM End Antenna Connector

Occupied Bandwidth Plots:

Channel 1175, 1988.750 MHz
Measured at the P2PAM End Antenna Connector

SUBEXHIBIT 14.4

Section 2.1051 MEASUREMENT REQUIRED: SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS

The spurious emissions at the output terminal of the Lucent Technologies P2PAM AS5ONEBTS-06 were investigated from 10 MHz to the 10th harmonic of the carrier or 20 GHz, per Section 2.1057(a)(1). A single CDMA carrier was configured by a Pilot, Sync, Paging and Traffic channels, as shown in Table 14.2.1.

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 14.3.1.

The required emission limit specified in Section 24.238 of the Code. Based upon criterion given in Section 24.238, the specified limit is -13 dBm when measured with a resolution bandwidth of 1 MHz. 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.

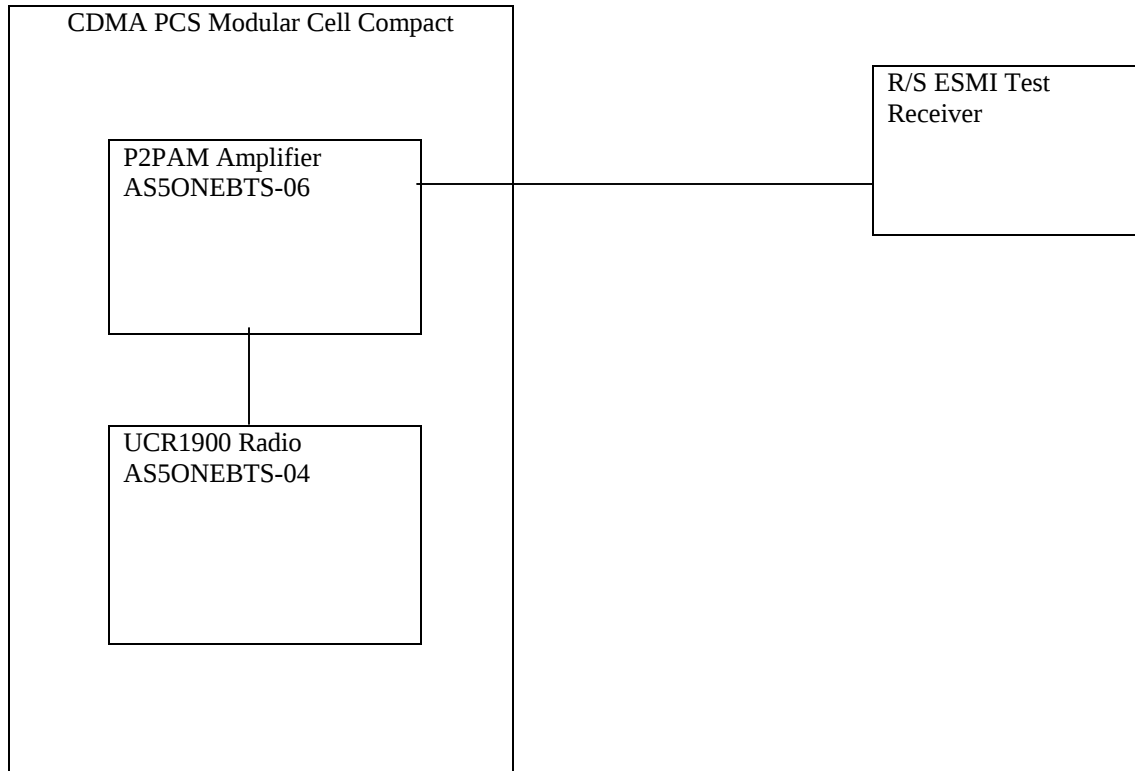
The carrier power level at the output terminal of the Lucent Technologies P2PAM AS5ONEBTS-06 was calibrated before the conducted spurious emissions testing at each frequency.

Results:

No reportable conducted spurious emissions were detected at the output terminal of the Lucent Technologies P2PAM AS5ONEBTS-06 during the entire spectrum investigated (10MHz to 20GHz). The measurement results of the Lucent Technologies P2PAM AS5ONEBTS-06, subject of this application, demonstrate the full compliance with the Rules of the Commission for PCS bands (1930-1990 MHz).

SUBEXHIBIT 14.4

**Figure 13.4.1 TEST SETUP FOR MEASUREMENT OF
CONDUCTED SPURIOUS EMISSIONS**



SUBEXHIBIT 14.5

Section 2.1053 MEASUREMENT REQUIRED: FIELD STRENGTH OF SPURIOUS RADIATION

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

The Flexent CDMA PCS Modular Cell Compact which incorporates six P2PAMs was investigated from 10 MHz to the 10th harmonic of the carrier or 20 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. Each CDMA carrier was configured by a Pilot, Sync, Paging and Traffic channels, as shown in Table 13.2.1, and was set to the maximum mean power of +43.01 dBm. All CDMA carriers were transmitting to non-radiating 50 Ω resistive loads.

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)	Separation Distance (m)	E (dB μ V/m)	Detector/RBW
10-10,000	3	84.1	Average/100kHz

The field strength of radiated spurious emissions measured was determined by

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

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 dB μ V/m.

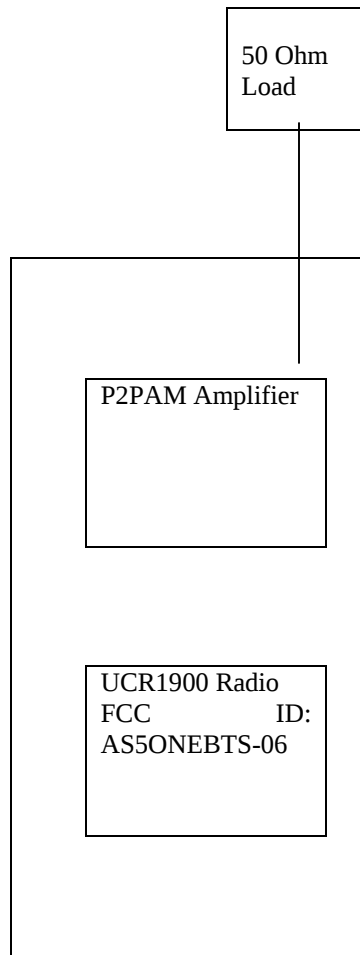
All the measurement equipment used, including antennas, R/S ESMI EMI Test Receiver, HP Spectrum Analyzer, pre-amplifiers, etc., was calibrated in accordance with ISO 9001 process. The EUT configuration diagram is given in the following.

Results:

Over the frequency spectrum investigated (10MHz to 20GHz), no reportable radiated spurious emissions were detected. The measurement results of the Lucent Technologies P2PAM AS5ONEBTS-06, subject of this application, demonstrate the full compliance with the Rules of the Commission.

SUBEXHIBIT 14.4 Continued

Figure 13.4.1 EUT FOR MEASUREMENT OF RADIATED SPURIOUS EMISSIONS



SUBEXHIBIT 14.6**Section 2.947 LISTING OF TEST EQUIPMENT USED**

Equipment	Manufacturer	Model	Serial No.	Calibrated Date	Due Cal. Date
Power Meter	Giga-tronics	8542C	1834280	10/17/02	10/17/03
Power Sensor	Giga-tronics	80621A	1950053	10/17/02	10/17/03
Power Meter	Hewlett-Packard	437B	312SU11066	7/22/03	7/22/04
Power Sensor	Hewlett-Packard	8482A	2652A22587	10/22/02	10/22/03
Spectrum Analyzer	Agilent	E4440A	US41421393	7/29/03	7/29/04
Spectrum analyzer, RF Sec	Hewlett-Packard	8566B	3026A19151	7/16/03	7/16/04
Spectrum analyzer, Disp Sec	Hewlett-Packard	8566B	3014A06682	7/16/03	7/16/04
EMI Test Receiver, Disp Sec	Rohde & Schwarz	ESA1-D	DE25102	9/9/02	10/9/03
EMI Test Receiver, RF Sec	Rohde & Schwarz	EMS1-RF	DE25102	9/9/02	10/9/03
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	1/24/03	1/24/04
Loop Antenna	EMCO	6502	3441	4/24/03	4/24/04
Biconical Antenna	EMCO	3110B	9807-3128	2/19/02	2/19/04
Log-periodic Antenna	EMCO	3148	9707-1029	2/19/02	2/19/04
Double Ridged Horn Ant.	EMCO	3115	9812-5638	2/20/02	2/20/04
Pre-amplifier	Hewlett-Packard	8449B	3008A01355	1/10/03	1/10/04
Pre-amplifier	Sonoma - HP	310	185704	10/16/02	10/16/03
Multi-device Controller	EMCO	2090	9912-147-7	N/A	N/A
Temperature Record	Fluke	Hydra Data Bucket Type T Thermocouples	206173	10/16/02	10/16/03
Frequency Counter	Hewlett-Packard	53131A	3736A18357	1/14/03	1/14/04
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	Hewlett-Packard	6683A	36420289	N/A	N/A
DC Power Supply	Hewlett-Packard	6038A	3025A-09939	N/A	N/A
Multi-meter	Tektronix	TX3	B015826	1/14/03	1/14/04
Multi-meter	Fluke	23	49330331	1/7/03	1/7/04
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
Low Pass Filter	Trilithic	10LC800-3-AA	200201001	N/A	N/A
High Pass Filter	Hewlett-Packard	84300-80037	015	N/A	N/A
Clip-on AC/DC Meter	F.W. Bell	C-600	94040227	1/7/03	1/7/04