

## Exhibit 2 QUALIFICATIONS and CERTIFICATIONS

January 27, 2006

### Section 2.911 (d) QUALIFICATION OF ENGINEERS

**Section 2.911 (d)** Technical test data shall be signed by the person who performed or supervised the tests. The person signing the test data shall attest to the accuracy of such data. The Commission may require such person to submit a statement showing that he is qualified to make or supervise the required measurements.

Walter Steven Majkowski is a Member of Technical Staff at Lucent Technologies Bell Laboratories. He holds a BSEE from New Jersey Institute of Technology and was trained in the FCC testing procedures. Mr Majkowski is the Lead engineer for the filing of CDMA Wireless Base station products at Lucent Technologies. Mr. Majkowski is a NARTE certified EMC engineer, Certificate number EMC-001859-NE, and has at least twenty eight years of EMC design and testing experience. Mr. Majkowski has previously filed over twenty one different wireless products.

Rudolf J. Pillmeier  
Technical Manager  
FCC/EMC Compliance Test Group  
Whippany, NJ

### Exhibit 2 *continued*

### SECTION 2.911 (e)(g) CERTIFICATION OF TECHNICAL TEST DATA

**Section 2.911(e)** The signatures of the applicant and the person certifying the test data shall be made personally by those persons on the original application; copies of such documents may be conformed. Signatures and certifications need not be made under oath.

**Section 2.911(g)** Signed, as used in this section, means an original handwritten signature; however, the Office of Engineering and Technology may allow signature by any symbol executed or adopted by the applicant with the intent that such symbol be a signature, including symbols formed by computer-generated electronic impulses.

I hereby certify that the technical test data are the results of tests performed or supervised by me.

**Walter Steven Majkowski NCE**  
**Member Technical Staff**  
**Whippany Compliance Laboratory**

### Exhibit 3 FCC REQUIRED INFORMATION

The following information is presented in the content and format requested by the FCC:

#### Section 2.1033 (c)(1):

The full name and mailing address of the manufacturer of the device and the applicant for certification.

**Manufacturer: Lucent Technologies Inc.**  
6200 E Broad St  
Columbus, OH 43213-1569 U S

**Applicant: Lucent Technologies Inc.**  
Michael D Garson Corporate Counsel  
8000 Towers Crescent Dr., Suite 400,  
**Email:** garson@lucent.com  
**Phone:** (703) 394-1450  
**Fax:** (703) 394-1420

Lucent Technologies, Inc. will be the manufacturer of this product. The **AS5ONEBTS-10** will only be marketed under the Lucent Technologies Inc. trademark.

#### Section 2.1033(c)(2): FCC Identifier

**AS5ONEBTS-10**

#### Section 2.1033(c)(4): Type or types of emission:

**4M1F9W** (This designator remains as previously filed for the 1930-1990 MHz spectrum)  
**1M25F9W** (This designator remains as previously filed for the 1930-1995 MHz spectrum)

The 4M1F9W emissions designator was previously authorized at the 40 Watt per carrier level.

The 1M25F9W emissions designator was previously authorized at the 40 Watts for single carrier applications and 20 watts/carrier for multi-carrier applications.

#### Section 2.1033(c)(5): Frequency range, Transmit: **1930–1995 MHz**

**The product was previously authorized over the 1930 to 1995 MHz Frequency range. There is no change to frequency range.**

#### Section 2.1033(c)(6): Range of operating power values or specific operating power levels, and description of any means provided for variation of operating power.

Lucent Technologies' Broadband PCS UMTS-CDMA EDPD Transceiver System (1900), which is incorporated into the CDMA Flexent® OneBTS™ Modular Cell 4.0B wireless base station, is the subject of this Class II Change under the FCC ID: **AS5ONEBTS-10**. The CDMA1900 Transceiver System consists of the principle RF components: (1) Crystal Reference Oscillator Module (OMA) at 15 MHz, (2) UMTS-CDMA Multi-Carrier CDMA Radio (MCR1900), Model BNJ64, which was previously authorized by the Federal Communications Commission under FCC ID: **AS5ONEBTS-09**, (3) P2PAM power amplifier, and (4) 60/65 MHz bandwidth Dual Duplex (DDpx) transmit filter covering the PCS spectrum 1930-1995 MHz. These components are considered as a system due to the DDpx filters providing RF feedback to the transceiver in the form of Closed Loop Gain Control (CLGC) to provide constant power with over temperature and Lucent's proprietary Enhanced Digital Pre-Distortion (EDPD) technology which enables software to communicate between the transceiver, power amplifier and the transmit filter to achieve this goal.

This CDMA EDPD Transceiver System is designed to operate in Lucent Flexent™ OneBTS™ Broadband PCS UMTS/CDMA wireless base station. The MCR1900 can operate for both multi-carrier CDMA and UMTS technologies; the subject of this request for certification is operation in the Code Domain Multiple Access Telecommunications System (CDMA) for single and multiple 1.25 MHz emission bandwidth CDMA carriers (1M25F9W). The transceiver can be converted from CDMA to UMTS (or UMTS to CDMA) by software alone, which can be performed at the installation site. There are no physical, hardware or circuit changes to the transceiver.

**(This data is unchanged from prior filings)**

**Alcatel-Lucent. - Proprietary**  
Use pursuant to Company Instructions.

## EXHIBIT 3: FCC REQUIRED INFORMATION

**Section 2.1033(c)(6):** *continued* Range of operating power values or specific operating power levels, and description of any means provided for variation of operating power.

For single carrier UMTS and CDMA the maximum rated output power at the antenna terminal of 40 Watts (+46.02 dBm), 3-second average, for either a single 4.1 MHz UMTS or 1.25MHz emission bandwidth carrier. Power adjustment is software controlled, using a digital signal to set and adjust voltage variable attenuators in the MCR1900 transceiver. The range of attenuation control is 30 dB, with a resolution of 0.05 dB.

For one to six carrier Multi-carrier CDMA applications using 3 P2PAMs the maximum rated output power at the antenna terminal, of 20 Watts per carrier (+43.01 dBm), 3-second average, for each 1.25MHz emission bandwidth carrier. Power adjustment is software controlled, using a digital signal to set and adjust voltage variable attenuators in the MCR1900 transceiver. The range of attenuation control is 30 dB, with a resolution of 0.05 dB. This Multi-Carrier applications cover one to six carriers.

**(This data is unchanged from prior filings)**

### Additional Capacity Operation

For a seven carrier Multi-carrier CDMA applications using 3 P2PAMs the maximum rated output power at the antenna terminal, of 17.1 Watts per carrier (+42.34 dBm), 3-second average, for each 1.25MHz emission bandwidth carrier. Power adjustment is software controlled, using a digital signal to set and adjust voltage variable attenuators in the MCR1900 transceiver. The range of attenuation control is 30 dB, with a resolution of 0.05 dB. This Multi-Carrier applications cover one to seven carriers.

For a eight carrier Multi-carrier CDMA applications using 3 P2PAMs the maximum rated output power at the antenna terminal, of 15 Watts per carrier (+41.76 dBm), 3-second average, for each 1.25MHz emission bandwidth carrier. Power adjustment is software controlled, using a digital signal to set and adjust voltage variable attenuators in the MCR1900 transceiver. The range of attenuation control is 30 dB, with a resolution of 0.05 dB. This Multi-Carrier applications cover one to eight carriers.

**(This is new data and is a change from prior filings)**

**Section 2.1033(c)(7):** Maximum power rating as defined in the applicable part (s) of the rules.

The Lucent Flexent™ OneBTS™ PCS UMTS-CDMA EDPD Transceiver System has a maximum rated CDMA or UMTS output power at the antenna terminal of 40 Watts (+46.02 dBm), for one carrier. This power will be available for either the 4M1F9W or the 1M25F9W emissions designator. This 40 Watt/carrier (+46.02 dBm) output is per a single 4.1 or 1.25 MHz emission bandwidth carrier.

The Lucent Flexent™ OneBTS™ PCS UMTS-CDMA EDPD Transceiver System has a maximum rated CDMA output power at the antenna terminal of 20 Watts per carrier (+43.02 dBm), for one through six carrier. The total power at the antenna port is 120 Watts for the six carrier maximum configuration. This power will be available for the 1M25F9W emissions designator. This 20 Watt/carrier (+43.02 dBm) output is per each 1.25 MHz emission bandwidth CDMA carrier.

**(This data is unchanged from prior filings)**

### Additional Capacity Operation

For a seven carrier Multi-carrier CDMA applications using 3 P2PAMs the Lucent Flexent™ OneBTS™ PCS UMTS-CDMA EDPD Transceiver System has a maximum rated CDMA output power at the antenna terminal of 17.1 Watts per carrier (+42.34 dBm), for one through seven carrier. The total power at the antenna port is 120 Watts for this seven carrier/ 3 P2PAM configuration. This power will be available for the 1M25F9W emissions designator. This 17.1 Watt/carrier (+42.34 dBm) output is per each 1.25 MHz emission bandwidth CDMA carrier.

For one to eight carrier Multi-carrier CDMA applications using 3 P2PAMs the Lucent Flexent™ OneBTS™ PCS UMTS-CDMA EDPD Transceiver System has a maximum rated CDMA output power at the antenna terminal of 15 Watts per carrier (+41.76 dBm), for one through eight carrier. The total power at the antenna port is 120 Watts for this eight carrier/ 3 P2PAM configuration. This power will be available for the 1M25F9W emissions designator. This 15 Watt/carrier (+41.76 dBm) output is per each 1.25 MHz emission bandwidth CDMA carrier. **(This is new data and is a change from prior filings)**

**Section 2.1033 (c)(10):** A description of all circuitry and devices for determining and stabilizing frequency.

The Lucent Flexent™ OneBTS™ PCS UMTS-CDMA EDPD Transceiver System, which utilizes either a 4.1 or 1.25 MHz carrier emission bandwidth, is designed to operate in the Broadband PCS frequency spectrum. Frequency stability of the carrier frequency is achieved with an accuracy better than the rated  $\pm 0.05$  ppm by the 15 MHz reference frequency generated by a GPS locked stable Rubidium Oscillator Module (OMR) using proprietary phase-locked-loop (PLL) circuitry.

**(This data is unchanged from prior filings)**

**SECTION 2.1033(c) (6):** Range of operating power values or specific operating power levels, and description of any means provided for variation of operating power.

Response: The **PCS UMTS-CDMA EDPD Transceiver, FCC ID: AS5ONEBTS-10** utilizes the P2PAM/ AS5ONEBTS-06 with additional information from that presented in the P2PAM/ AS5ONEBTS-06 filings. The P2PAM/ AS5ONEBTS-06 is a nominally rated 52 Watt/ 47.16 dB fixed gain linear amplifier. The output power that is delivered to the J4 antenna output connector of the cabinet in which the P2PAM's are mounted is reduced from this maximum value by filter insertion loss, RF transmission losses and margin for long term reliability. For single carrier operation the FCC "Range of Power" delivered at the J4 antenna connection is 0.04 to 40 Watts per single carrier (+2 /-4 dB). This power is under continuous software control. The FCC "Range of Power", for Multi Carrier operation, delivered at the J4 antenna connection is 0.02 to 20 Watts per carrier (+2 /-4 dB) one to six carriers, 120 Watts total. This power is under continuous software control. **(This data is unchanged from prior filings)**

**Additional Capacity Operation**

The FCC "Range of Power", for seven carrier/ 3 P2PAM operation, delivered at the J4 antenna connection is 0.0171 to 17.1 Watts per carrier (+2 /-4 dB) one to seven carriers, 120 Watts total. This power is under continuous software control.

The FCC "Range of Power", for eight carrier/ 3 P2PAM operation, delivered at the J4 antenna connection is 0.0150 to 15 Watts per carrier (+2 /-4 dB) one to eight carriers, 120 Watts total. This power is under continuous software control.

**(This is new data and is a change from prior filings)**

**SECTION 2.1033(c) (7):** Maximum power rating as defined in the applicable part of the rules.

Response: The maximum average power output of the **PCS UMTS-CDMA EDPD Transceiver, FCC ID: AS5ONEBTS-10** at the J4 antenna output connector is 40.0 Watts per single carrier 40 watts total +2 /-4 dB maximum with a single transmit amplifier configuration. When configured with 3 P2PAM amplifiers in the six carrier Multi-Carrier Configurations the Maximum Power delivered at the J4 antenna connection is 0.02 to 20 Watts per carrier (+2 /-4 dB) one to six carriers, 120 Watts total.

**(This data is unchanged from prior filings)**

**Additional Capacity Operation**

When configured with 3 P2PAM amplifiers in the seven or eight carrier Multi-Carrier Configurations the Maximum Power delivered at the J4 antenna connection is 120 Watts total. **(This is new data and is a change from prior filings)**

The use of post transmit filter combiners can allow multiple J4 outputs to share a given antenna connection.

**(This data is unchanged from prior filings)**

## Exhibit 7- Circuitry For Determining Frequency, Limiting Modulation and Power

### SECTION 2.1033(c) (10)

A schematic diagram and a description of all circuitry and devices provided for determining and stabilizing frequency, for suppression of spurious radiation, for limiting modulation, and for limiting power.

#### Section 2.1033 (c)(10) A description of all circuitry and devices for determining and stabilizing frequency.

**Response:** Lucent Technologies' **Flexent® PCS UMTS-CDMA EDPD Transceiver System**, which is incorporated into the **FLEXENT® OneBTS® PCS CDMA Modular Cell 4.0** wireless base station, is designed to operate in the Broadband PCS frequency band. Frequency stability of the carrier frequency is achieved with an accuracy better than the rated  $\pm 0.05$  ppm by the 15 MHz reference frequency generated by a highly stable Rubidium oscillator module (OMR) plus proprietary phase locked loop circuitry (PLL).  
(This data has not changed from the original filing.)

The frequency stabilization and accuracy of the **PCS UMTS-CDMA EDPD Transceivers** CDMA signal amplified by the **P2PAM** and measured at the **PCS Modular Cell 4.0** J4 connector is solely a function of the input signal from the **MCR-1900 (FCC ID: AS5ONEBTS-09)**. The Common Timing Unit (CTU) provides the time and frequency reference used by the **MCR-1900 (FCC ID: AS5ONEBTS-09)**. The CTU is a highly accurate time and frequency unit which relies upon a signal lock of GPS satellite signals to provide the primary discipline of system timing. In the event of loss of GPS lock the Rubidium Reference Oscillator (**OMU-RB**) or the Crystal Oscillator Module (**OMU-XO**) can provides up to eight hours of flywheel operation. The system provides for automatic timing synchronization upon reacquisition of GPS lock. The system is powered by an AC-DC power converter with battery backup to provide immunity to power fluctuations and failures. A complete description of the system is fully documented in the supplied manual, **Flexent® CDMA Modular Cell 4.0 Operations, Administration and Maintenance Release 25.0**. This manual has been requested for confidentiality.

(This data has not changed from the original filing.)

#### Section 2.1033 (c)(10)

#### A description of all circuitry and devices for limiting modulation and power.

**Response:** The frequency determination, stabilization, modulation limiting and power control of the transmit signal is provided by the UMTS-CDMA Multi Carrier Radio (**MCR-1900**), Model BNJ64, which was previously authorized by the Federal Communications Commission under FCC ID: **AS5ONEBTS-09**, granted 22 February 2005 for all PCS Blocks. The **MCR-1900/ AS5ONEBTS-09** supplies the modulated signals to be amplified and all power control functions. The **PCS UMTS-CDMA EDPD Transceiver/ AS5ONEBTS-10** frequency conversion, stabilization and power control circuitry is fully described in the **MCR-1900/AS5ONEBTS-09** filing and in Exhibit 6 which details the basic frequency reference and has not changed.

(This data has not changed from the original filing.)

**This information has not changed from the original filing**

## EXHIBIT 8: FCC ID LABEL SAMPLE AND LOCATION INFORMATION

### SECTION 2.1033(c) (11) also SECTION 2.925 (a) (1)

A photograph or drawing of the equipment identification plate or label showing the information to be placed thereon.

#### Response:

The photograph showing label location and drawing of the equipment identification plate of the Lucent Technologies' **FLEXENT® Broadband PCS UMTS-CDMA Transceiver System (1900)** as installed in the **FLEXENT OneBTS 4.0 PCS CDMA Indoor Modular Cell** remain as previously filed and have not changed.

## EXHIBIT 9: EXTERNAL and INTERNAL PHOTOGRAPHS

### SECTION 2.1033 (c) (12)

Photographs (8"x10") of the equipment of sufficient clarity to reveal equipment construction and layout, including meters, if any, and labels for controls and meters and sufficient views of the internal construction to define component placement and chassis assembly. Insofar as these requirements are met by photographs or drawings contained in the instruction manuals supplied with the product certification request, additional photographs are necessary only to complete the required showing.

#### Response:

The internal and external photographs of the Lucent Technologies' **FLEXENT® Broadband PCS UMTS-CDMA Transceiver System (1900)** as installed in the **FLEXENT OneBTS 4.0 PCS CDMA Indoor Modular Cell** remain as previously filed and have not changed.

## EXHIBIT 10: DETAILED DESCRIPTION OF THE MODULATION SYSTEM

### SECTION 2.1033(c) (13)

For equipment employing digital modulation techniques, a detailed description of the modulation system to be use, including response characteristics of any filters provided, and a description of the modulating wavetrain, shall be submitted for the maximum rated conditions under which the equipment will be operated.

#### Response:

The Lucent UMTS Flexent™ OneBTS™ PCS UMTS-CDMA Multi-Carrier Radio (MCR1900), BNJ64, previously authorized under FCC ID: **AS5ONEBTS-09** and **AS5ONEBTS-10**, is a 15 MHz / 11 CDMA carrier emission bandwidth base station transceiver designed to operate in the Broadband PCS frequency band 1930-1995 MHz. The MCR1900 which generates the modulated signal is able to generate either 5 MHz carrier emission bandwidth UMTS (W-CDMA) signals or 1.25 MHz carrier emission bandwidth CDMA signals. This system and circuitry was fully described in the original filings for the MCR1900 authorized under FCC ID: **AS5ONEBTS-09** granted 22 February 2005 for all PCS Blocks and has not changed.

EDPD functionality for the MCR-1900 transceiver was developed in accordance to the guidelines of 3GPP2.S0002-A, *Physical Layer Standard for cdma2000 Spread Spectrum Systems*, 3GPP2.C.S0024 - *cdma2000 High Rate Packet Data Air Interface Specification* and 3GPP2 TSG-C.S0032-1-*Recommended Minimum Performance Standards for CDMA2000 High Rate Packet Data Access Network*. These Standards contains the physical layer of the IMT-2000, CDMA Multi-Carrier Mode, IMT-2000 CDMA MC, for land mobile wireless systems based upon cellular principles. The Standards is a revision of the Telecommunications Industry Association Standard TIA/EIA/IS-2000.2, *Physical Layer Standard for cdma2000 Spread Spectrum Systems*. This Standards includes the capabilities of Telecommunications Industry Association Standard TIA/EIA-95-B and TIA/EIA/IS-856.

**The electrical design of the MCR-1900 is unchanged from the original filings.**