

EXHIBIT 2: FCC REQUIRED INFORMATION (PART 2.1033)

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

Section 2.911 (d) Qualification Of Engineers

Section 2.911 (d): Technical test data shall be signed by the person who performs or supervises 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.

Michael P. Farina is a Member of Technical Staff at Alcatel-Lucent USA, Inc., Murray Hill, NJ, formerly AT&T Bell Laboratories, with 51 years of Professional Experience in Research and Development. He holds a BS in Physics from Upsala College and an MSEE from New Jersey Institute of Technology. During the past 20 years, his expertise was focused on RF Engineering and Regulatory Agency EMC compliance and certification, covering Analog, TDM, CDMA and UMTS technologies. He has submitted numerous Applications for Certification filings to the FCC covering many product variations and evolutions in each of the four technologies. Currently, he is the Lead Engineer for filing UMTS Wireless Base Station products with the FCC.

Rudolf J. Pillmeier
Technical Manager
FCC/EMC Compliance Test Group
Murray Hill, New Jersey

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 document may be confirmed. 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 either performed or supervised by me.

Michael P. Farina
Member of Technical Staff
FCC/EMC Compliance Test Group
Murray Hill, New Jersey

Section 2.1033 (c)(1):

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

**Alcatel-Lucent USA, Inc.
600-700 Mountain Ave
Murray Hill, NJ 07974**

Section 2.1033(c)(2): FCC Identifier AS5ONEBTS-27

Section 2.1033(c)(4):

Type or types of emission: **4M20F9W**

Section 2.1033(c)(5): Frequency range **Transmit: 1930–1990 MHz**

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.

Alcatel-Lucent's -48V WCDMA **RRH2X60-1900** twin Remote Radio Head product will be deployed in the for Universal Mobile Telecommunications System (UMTS) operation in the North America Region (NAR). The Frequency Spectrum subject of this application is **Part 24—Personal Communications Services 1930-1990 MHz**. The rated RF power at the downlink (DL) antenna terminal is **60 Watts (+47.8 dBm)** total composite power for each of 2 DL transmit antenna terminals (RF paths) designated as Tx1 and Tx2. The fundamental frequencies can be either a single 60 W carrier per Tx1 and Tx2, or 2 carriers at 30W/C per Tx1 and Tx2. Power adjustment is software controlled, using baseband digital scaling to set and adjust voltage variable attenuators in the transceiver. A full discussion of the power control and adjustment is contained in the documents requested to be held confidential.

Section 2.1033(c)(7):

Maximum power rating as defined in the applicable part (s) of the rules.

The maximum power rating at each of the two transmit antenna terminals (downlink) is 60 Watts (+47.8 dBm) total composite RF power for either a single carrier (1C) at 60W or two carriers at 30W/C.

Section 2.1033 (c)(8):

The dc voltages applied to and the dc currents into the several elements of the final radio frequency amplifying device for normal operation over the power range.

	DC Current (Typical)	DC Voltage (Nominal)
Idle (No RF Input)	2-3 A	-48 V
Single Carrier (1C) at 60W (Tx1 or Tx2)	6-8 A	-48 V
Full Rated RF Power - 1C at 60W per DL antenna terminal (Tx1 + Tx2)	10 - 12 A	-48 V

EXHIBIT 3: FCC REQUIRED INFORMATION (PART 2.1033) - continued**Section 2.1033 (c)(9):**

Tune-up procedure over the power range, or at specific operating power levels.

There are no user tune-up features. All tuning is performed by the manufacturer during, and as part of, the manufacturing process.

Section 2.1033 (c)(10)

A description of all circuitry and devices for determining and stabilizing frequency.

The carrier frequency (the fundamental frequency) is determined by the up-conversion of digital baseband signals to IF frequencies. Frequency stability of the carrier frequency is achieved with an accuracy better than the rated ± 0.05 ppm by the 15 MHz reference frequency generated by a stable Crystal Oscillator Module (OMA) plus proprietary phase locked loop (PLL) circuitry.

Section 2.1033 (c)(10): Description of circuitry and devices for suppression of spurious radiation.

Spurious emissions radiated from Alcatel-Lucent's wireless -48V WCDMA **RRH2X60-1900** twin Remote Radio Head base station transceiver system, are suppressed by implementing sound Electromagnetic Compatibility (EMC) design practices extending from the circuit board level to the system level: 1) grounded RF shielding on coaxial cables, 2) grounded RF shielding "cans" mounted on specific circuit elements, 3) effective grounding throughout, and 4) effective transmit and receive bandpass filters to suppress transmitted spurious and harmonic emissions by more than 20 dB below the FCC required limitation.

Section 2.1033 (c)(10): Description of Circuitry and Devices for Limiting Modulation, and for Limiting Power.

Modulation limiting is described in the documents that must be held as confidential. Power control of the RF output from the transceiver is accomplished by software which controls a microprocessor that sends digital baseband signals to a voltage variable attenuator, which is used for output power adjustment. The transmitter can be disabled through firmware which sets the RF attenuator to maximum loss and thus disables the final RF amplifier stage. A complete description is provided in the exhibits that are required to be held as confidential.

Section 2.1033 (c)(13): Description of the modulation system.

The UMTS (W-CDMA) **RRH2X60-1900** base station transceiver is designed for both QPSK and 16QAM modulation, with an emission designator 4M20F9W. Typical modulation schemes are: 1) Voice only with up to 68 active channels (QPSK), and 2) Voice + HSDPA (High Speed Downlink Packet Access) with up to 44 active channels that include 8 HSDPA (16QAM). The modulation process is fully described in the documents that must be held as confidential.