

APPLICANT: LUCENT TECHNOLOGIES**FCC ID: AS5ONEBTS-05****EXHIBIT 10: TEST REPORT**

The test report attached to this exhibit demonstrates that the Lucent Technologies' Broadband PCS UMTS-CDMA Transceiver System, which is designed to operate in the Lucent UMTS Flexent® OneBTS™ W1900M (SD-2R521-01) Wireless Base Station, is in full compliance with all requirements of the Rules of the Commission as specified in the Code of Federal Regulations (CFR), Title 47 – Telecommunication; Part 24, Subpart E – Broadband PCS; Section 24.238 - Emission Limits; effective October 1, 2002. All testing was performed in accordance with CFR 47, Part 2, Subpart J – Equipment Authorization Procedures; effective October 1, 2002. It also demonstrates compliance with the spurious emissions limitations specified in ETSI TS 125 141 V4.1.0 (2001-06): Universal Mobile Telecommunications System (UMTS); Base Station Conformance Testing (FDD), (3GPP TS 25.141, Version 4.1.0, Release 4), which is the standard used as a guideline in the design of the UCR1900 transceiver. The objective of this application is to obtain FCC authorization for a Class II Permissive Change request, under FCC ID: AS5ONEBTS-05, for operation in the Universal Mobile Telecommunications System (UMTS) with a single 5 MHz carrier (5M0F9W) set to a maximum power level at the antenna terminal of 40 Watts (3-second), over the frequency spectrum 1930-1990 MHz. The initial FCC Authorization/Grant covered the PCS A&D frequency blocks 1930 – 1950 MHz. This Class II change request is seeking authorization to add the additional frequency blocks B&E and F&C: 1950 – 1990 MHz to FCC ID: AS5ONEBTS-05, to provide authorization for the entire Broadband PCS frequency spectrum: 1930 – 1990 MHz.

The UMTS1900 Transceiver System consists of the principle RF components: (1) Rubidium Reference Oscillator Module (OMR) 15 MHz, (2) UMTS-CDMA Radio (UCR1900), Model BNJ27B/BNJ27C, which was previously authorized by the Federal Communications Commission under FCC ID: AS5ONEBTS-04, (3) two parallel P2PAM power amplifiers per RF path, (4) 20 MHz wide Dual Duplex (DDpx), low loss, transmit filters covering the PCS frequency blocks: A&D 1930-1950 MHz, B&E 1950 – 1970 MHz and F&C 1970 – 1990 MHz, and (5) the Test and Diagnostic Unit (TDU) used to monitor the output of the P2PAMs and feed it back to the UCR for processing and distortion cancellation. These components are considered as a system due to (1) the DDpx filters providing RF feedback to the transceiver in the form of Closed Loop Gain Control (CLGC) to provide constant power over temperature, and (2) Lucent's proprietary Digital Pre Distortion (DPD) technology which enables software to communicate between the transceiver, power amplifier and the transmit filter to achieve this goal.

As a Transceiver System, all conducted RF characteristics and emissions measurements were performed at the transmit antenna terminal, using a production equipment frame. All testing was performed in the Lucent Technologies, Whippany, NJ, compliance laboratory by J. C. Fidler and M. P. Farina during the period April 16 to May 25, 2004; in adherence to a test plan generated by M. P. Farina, in accordance with Lucent's ISO/TL9000 Registration. All measurement instrumentation utilized were also calibrated in compliance with Lucent's ISO/TL9000 Registration. The Whippany 3 & 10 Meter Open Area Test Site (OATS) is authorized by the Federal Communications Commission (FCC) under Registration Number: 90770, in compliance with the requirements of Section 2.948 of the Rules of the Commission.

Frequency stability measurements were performed by V. Van and S. Stephens, at Lucent Technologies, Swindon, United Kingdom, under the direction of M. P. Farina, and in adherence to the previously cited ISO/TL9000 test plan. This test program was conducted during the interval February 19 to March 10, 2003.

The objective of this Class II Change Request is to add the additional PCS frequency blocks to the initial authorization. Since there are no changes to the Transceiver BNJ27B/BNJ27C, to the Reference Oscillator (OMR), and to the frequency determining and stabilization circuitry, the above cited frequency stability measurements remain valid and representative of the product. They need not be repeated.

APPLICANT: LUCENT TECHNOLOGIES**FCC ID: AS5ONEBTS-05**

Lucent Technologies
Bell Labs Innovations



67 Whippany Road
Whippany, NJ 07981

**Subject: Application for Class II Permissive Change Authorization
under FCC ID: AS5ONEBTS-05, Covering a Broadband
PCS UMTS (5 MHz) Transceiver System, Operating
Over the Spectrum 1930-1990 MHz.**

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June 8, 2004

TEST REPORT

SYNOPSIS:

The exhibits presented in this test report demonstrate that the Lucent Technologies' Broadband PCS UMTS-CDMA Transceiver System, which is designed to operate in the Lucent UMTS Flexent® OneBTS™ W1900M (SD-2R521-01) Wireless Base Station, is in full compliance with all requirements of the Rules of the Commission as specified in the Code of Federal Regulations (CFR), Title 47 – Telecommunication; Part 24, Subpart E – Broadband PCS; Section 24.238 - Emission Limits; effective October 1, 2002. All testing was performed in accordance with CFR 47, Part 2, Subpart J – Equipment Authorization Procedures; effective October 1, 2002. It also demonstrates compliance with the spurious emissions limitations specified in ETSI TS 125 141 V4.1.0 (2001-06): Universal Mobile Telecommunications System (UMTS); Base Station Conformance Testing (FDD), (3GPP TS 25.141, Version 4.1.0, Release 4). This standard was the guideline used in the design of the UCR1900 transceiver. The objective of this application is to obtain FCC authorization for a Class II Permissive Change Request, under FCC ID: AS5ONEBTS-05, for operation in the Universal Mobile Telecommunications System (UMTS) with a single 5 MHz carrier (5M0F9W) set to a maximum power level at the antenna terminal of 40 Watts (3-second), over the Broadband PCS frequency spectrum 1930-1990 MHz.

The UMTS1900 Transceiver System consists of the principle RF components: (1) Rubidium Reference Oscillator Module (OMR) 15 MHz, (2) UMTS-CDMA Radio (UCR1900), Model BNJ27B/BNJ27C, which was previously authorized by the Federal Communications Commission under FCC ID: AS5ONEBTS-04, (3) two parallel P2PAM power amplifiers per RF path, (4) 20 MHz wide Dual Duplex (DDpx), low loss, transmit filters covering the PCS frequency blocks: A/D 1930-1950 MHz, B/E 1950-1970 MHz and F/C 1970-1990 MHz, and (5) the Test and Diagnostic Unit (TDU) used to monitor the output of the P2PAMs and feed it back to the UCR for processing and distortion cancellation. These components are considered as a system due to (1) the DDpx filters providing RF feedback to the transceiver in the form of Closed Loop Gain Control (CLGC) to provide constant power over temperature, and (2) Lucent's proprietary Digital Pre Distortion (DPD) technology which enables software to communicate between the transceiver, power amplifier and the transmit filter to achieve this goal.

As a Transceiver System, all conducted RF characteristics and emissions measurements were performed at the transmit antenna terminal, using a production equipment frame. All testing was performed in the Lucent Technologies, Whippany, NJ, compliance laboratory by J. C. Fidler and M. P. Farina during the period April 16 to May 25, 2004; in adherence to a test plan generated by M. P. Farina, in accordance with Lucent's ISO/TL9000 Registration. All measurement instrumentation utilized were also calibrated in compliance with Lucent's ISO/TL9000 Registration. The Whippany 3 & 10 Meter Open Area Test Site (OATS) is authorized by the Federal Communications Commission (FCC) under Registration Number: 90770, in compliance with the requirements of Section 2.948 of the Rules of the Commission.

APPLICANT: LUCENT TECHNOLOGIES**FCC ID: ASSONEBTS-05**

Frequency stability measurements were performed by V. Van and S. Stephens, at Lucent Technologies, Swindon, United Kingdom, under the direction of M. P. Farina, and in adherence to the previously cited ISO/TL9000 test plan. This test program was conducted during the interval February 19 to March 10, 2003.

The objective of this Class II Change Request is to add the additional PCS frequency blocks to the initial authorization. Since there are no changes to the Transceiver BNJ27B/BNJ27C, to the Reference Oscillator (OMR), and to the frequency determining and stabilization circuitry, the above cited frequency stability measurements remain valid and representative of the product. They need not be repeated.

This report fully documents all required tests and the test results, sufficient to show full compliance with the Rules of the Commission.

APPLICABLE FCC RULES AND INDUSTRY STANDARDS:

The exhibits presented in this test report demonstrate that the Lucent Technologies' Broadband PCS UMTS-CDMA Transceiver System, which is designed to operate in the Lucent UMTS Flexent® OneBTS™ W1900M (SD-2R521-01) Wireless Base Station, is in full compliance with all requirements of the Rules of the Commission as specified in the Code of Federal Regulations (CFR), Title 47 – Telecommunication; Part 24, Subpart E – Broadband PCS; Section 24.238 - Emission Limits; effective October 1, 2002. All testing was performed in accordance with CFR 47, Part 2, Subpart J – Equipment Authorization Procedures; effective October 1, 2002. It also demonstrates compliance with the spurious emissions limitations specified in ETSI TS 125 141 V4.1.0 (2001-06): Universal Mobile Telecommunications System (UMTS); Base Station Conformance Testing (FDD), (3GPP TS 25.141, Version 4.1.0, Release 4). The specific test procedures that are both required for and are applicable to the UMTS1900 Transceiver System are:

Part 2.1046	RF Power Output	Pages 4 – 5
Part 2.1047	Modulation Characteristics	Pages 6-9
Part 2.1049	Occupied Bandwidth	Pages 10-17
Part 2.1051	Spurious Emissions at the Antenna Terminals.	Pages 18-22
Part 2.1053	Field Strength of Spurious Radiation	Pages 23-24
Part 2.1055	Frequency Stability	Pages 25-35
Part 2.1057	Frequency Spectrum to be Investigated	
Part 24	Personal Communications Services; Subpart E – Broadband PCS	
Part 24.238	Emission Limits	
ETSI	TS 125 141 V4.1.0 (2001-06): Universal Mobile Telecommunications System (UMTS); Base Station Conformance Testing (FDD), (3GPP TS 25.141, Version 4.1.0, Release 4).	
ANSI C63.4-2001	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic in the Range of 9 kHz to 40 GHz; June 6, 2001	

APPLICANT: LUCENT TECHNOLOGIES

FCC ID: ASSONEBTS-05

PART 2.1046 MEASUREMENTS REQUIRED: RF POWER OUTPUT

The Broadband PCS UMTS Transceiver System, subject of this application for certification, is designed to provide a maximum RF power level, per single 5 MHz carrier, of 40 Watts (+46 dBm) at the Equipment Antenna Terminal (EAC). This System is designed to operate in the PCS frequency blocks: A/D 1930-1950 MHz, B/E 1950-1970 MHz and F/C 1970-1990 MHz. A 20 MHz Wideband, Low Loss A/D, B/E and F/C Dual Duplex (DDpx), transmit filters are incorporated into this System. All conducted emission measurements are performed at the EAC. Nine 5 MHz UMTS carrier channels were used throughout this test procedure, as tabulated below, to represent the lowest and the highest settable channels in the PCS A, B and C-Blocks, and the center frequency of PCS D, E and F-Blocks. Each time the carrier is set to each of the channels, the power level is adjusted, by software control, to +46 dBm (40 Watts at 3-second average) before performing emission measurements. The carrier modulation is set to the full 20 Codes, as required by ETSI Test Model 1.

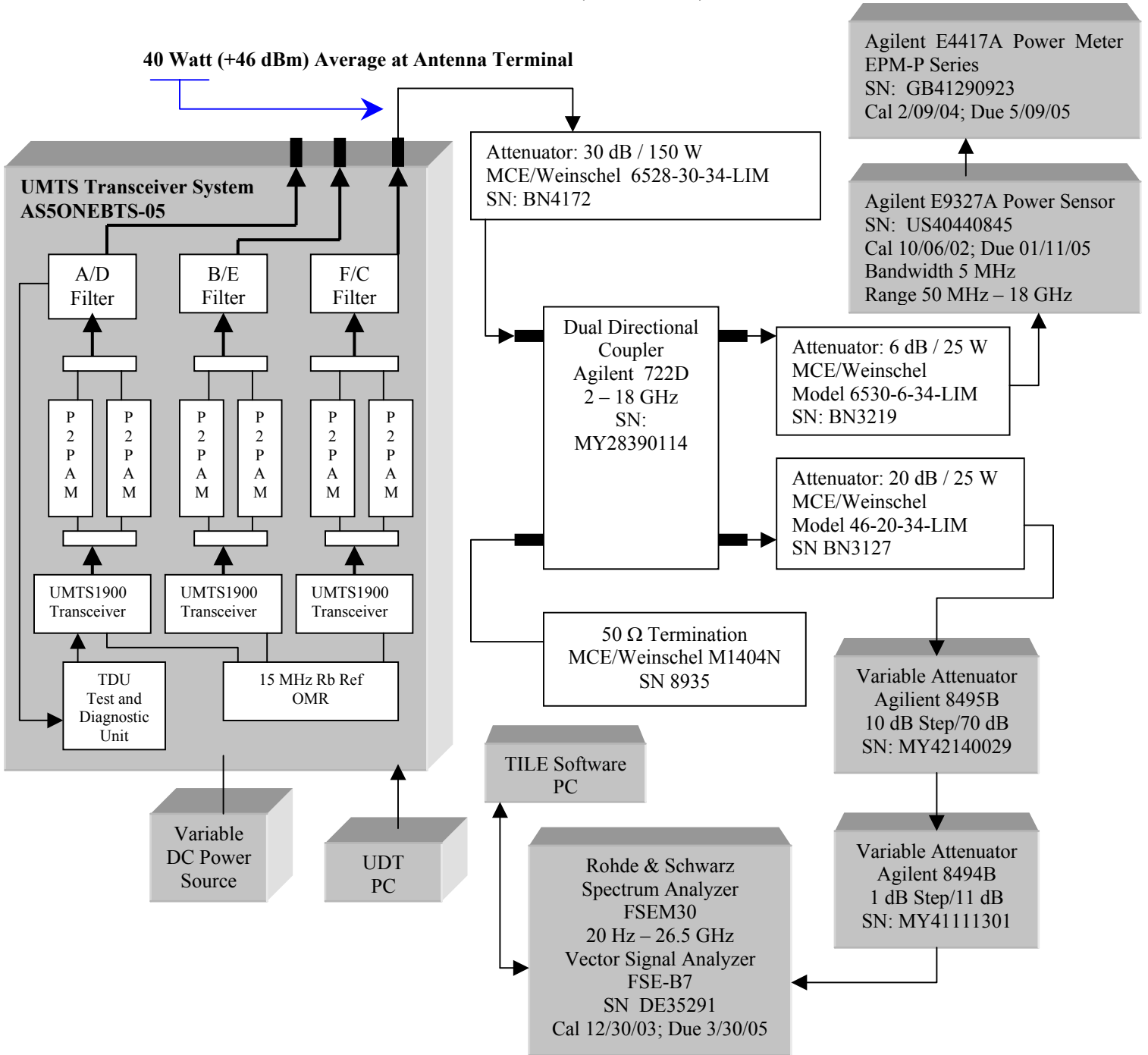
UMTS Frequency	PCS Frequency Block	Single Carrier Bandwidth	UMTS Channel Number	UMTS Carrier Center Frequency	Measured Power Level
A1	Lowest Settable Channel	5 MHz	12	1932.5 MHz	+46 dBm
A3	Highest Settable Channel	5 MHz	62	1942.5 MHz	+46 dBm
D	Block Center	5 MHz	87	1947.5 MHz	+46 dBm
B1	Lowest Settable Channel	5 MHz	112	1952.5 MHz	+46 dBm
B3	Highest Settable Channel	5 MHz	162	1962.5 MHz	+46 dBm
E	Block Center	5 MHz	187	1967.5 MHz	+46 dBm
F	Block Center	5 MHz	212	1972.5 MHz	+46 dBm
C3	Lowest Settable Channel	5 MHz	237	1977.5 MHz	+46 dBm
C5	Highest Settable Channel	5 MHz	287	1987.5 MHz	+46 dBm

These nine frequencies are used for all of the conducted emission tests that follow.

Results: The 5 MHz UMTS 1900 Transceiver System is compliant with the manufacturer's rated power level at the transmit antenna terminal for the above listed carrier frequencies.

EXHIBIT 10: TEST REPORT

Block Diagram Of The Power Measurement Test Set-Up And Test Equipment Configuration for the Lucent UMTS Flexent® OneBTS™ W1900M (SD-2R521-01) Wireless Base Station



APPLICANT: LUCENT TECHNOLOGIES

FCC ID: ASSONENTS-05

EXHIBIT 10: TEST REPORT**PART 2.1047 MEASUREMENTS REQUIRED: MODULATION CHARACTERISTICS**

The modulation accuracy was measured at the Equipment Antenna Terminal (EAC) for each of the nine UMTS 1900 carriers A1, A3, D, B1, B3, E, F, C3 and C5. The power level was set 40 Watts (+46 dBm) and the modulation set to provide a single active channel/code (PCCPCH + SCH), as required for ETSI TS 25.141 Test Model 4 modulation. The requirement is that the Error Vector Magnitude (EVM) be less than 17.5% rms. The test equipment used was an Agilent E4406A VSA Series Transmitter Tester (SN US41513199) with a GPS Time and Frequency Reference Receiver providing the 10 MHz External Reference Input (Symmetricom 58503B, SN KR93200770).

RMS Error Vector Magnitude (EVM) Measurement Summary at the Antenna Terminal:

UMTS PCS Frequency Block	Broadband PCS Frequency Block	Power Level at Antenna Terminal	UMTS1900 Channel No.	UMTS 1900 Carrier Center Frequency MHz	Modulation Accuracy at Antenna Terminal: Error Vector Magnitude (EVM)
A1	Lowest Settable	46 dBm	12	1932.5	2.26 % rms
A3	Highest Settable	46 dBm	62	1942.5	2.65 % rms
D	Center	46 dBm	87	1947.5	2.89 % rms
B1	Lowest Settable	46 dBm	112	1952.5	2.51 % rms
B3	Highest Settable	46 dBm	162	1962.5	2.64 % rms
E	Center	46 dBm	187	1967.5	2.92 % rms
F	Center	46 dBm	212	1972.5	2.57 % rms
C3	Lowest Settable	46 dBm	237	1977.5	2.48 % rms
C5	Highest Settable	46 dBm	287	1987.5	3.24 % rms

Minimum Standard Requirement: The minimum standard requirement is that the RMS Error Vector Magnitude (EVM) shall be less than 17.5%.

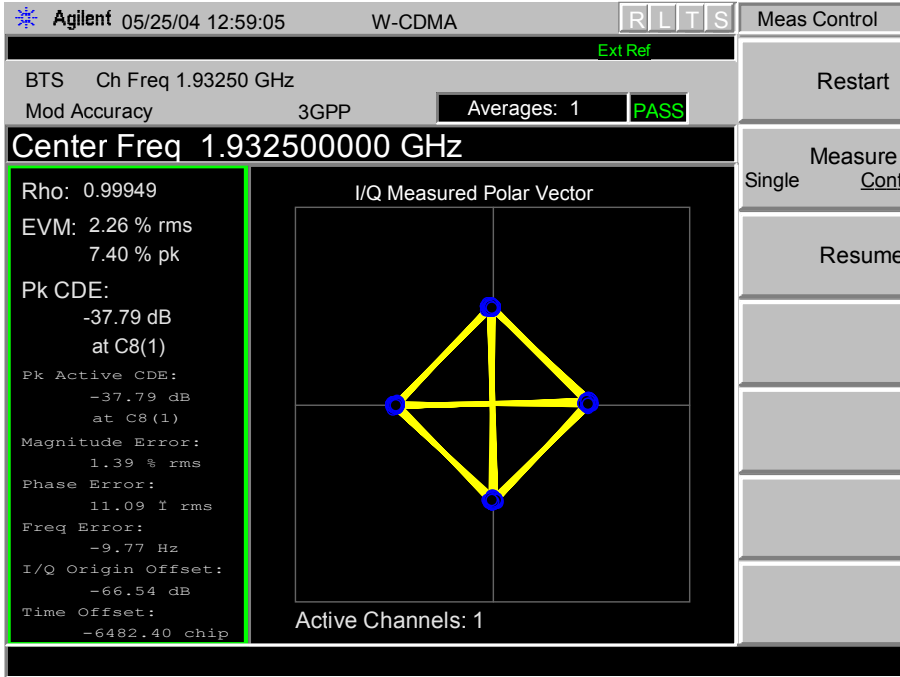
Test Set-up and Configuration: Same as previously used for Part 2.1046 RF Power Measurement, with exception that the FSEM30 Spectrum Analyzer is replaced by:

- 1) Agilent E4406A VSA Series Transmitter Tester, 7 MHz – 4.0 GHz, SN US41513199, Cal 07/09/03, Next Cal Due 10/09/04.
- 2) GPS Time and Frequency Reference Receiver, Symmetricom 58503B, SN KR93200770.

RESULTS: The UMTS1900 Transceiver System demonstrated full compliance with the modulation accuracy requirements specified in ETSI TS 25.141. All 9 channels were less than the 17.5% rms limitation. The plots for each channel are included in this exhibit as shown below.

EXHIBIT 10: TEST REPORT

Modulation Characteristics: Frequency Block A; Carrier Channel A1
UMTS1900 Ch 12; 1932.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



Modulation Characteristics: Frequency Block A; Carrier Channel A3
UMTS1900 Ch 62; 1942.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier

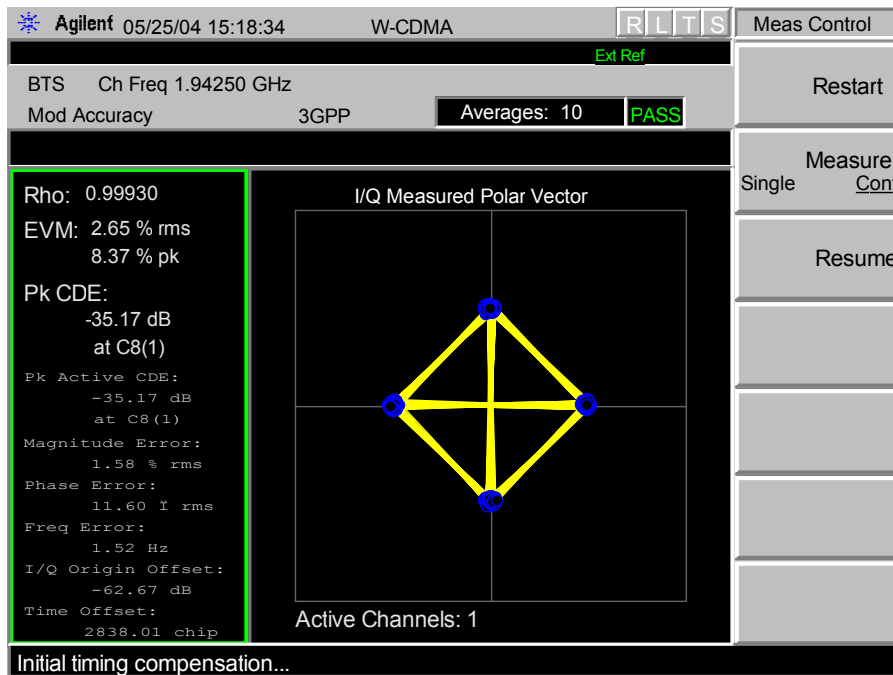


EXHIBIT 10: TEST REPORT

Modulation Characteristics: Frequency Block D, Carrier Channel D
UMTS1900 Ch 87; 1947.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier

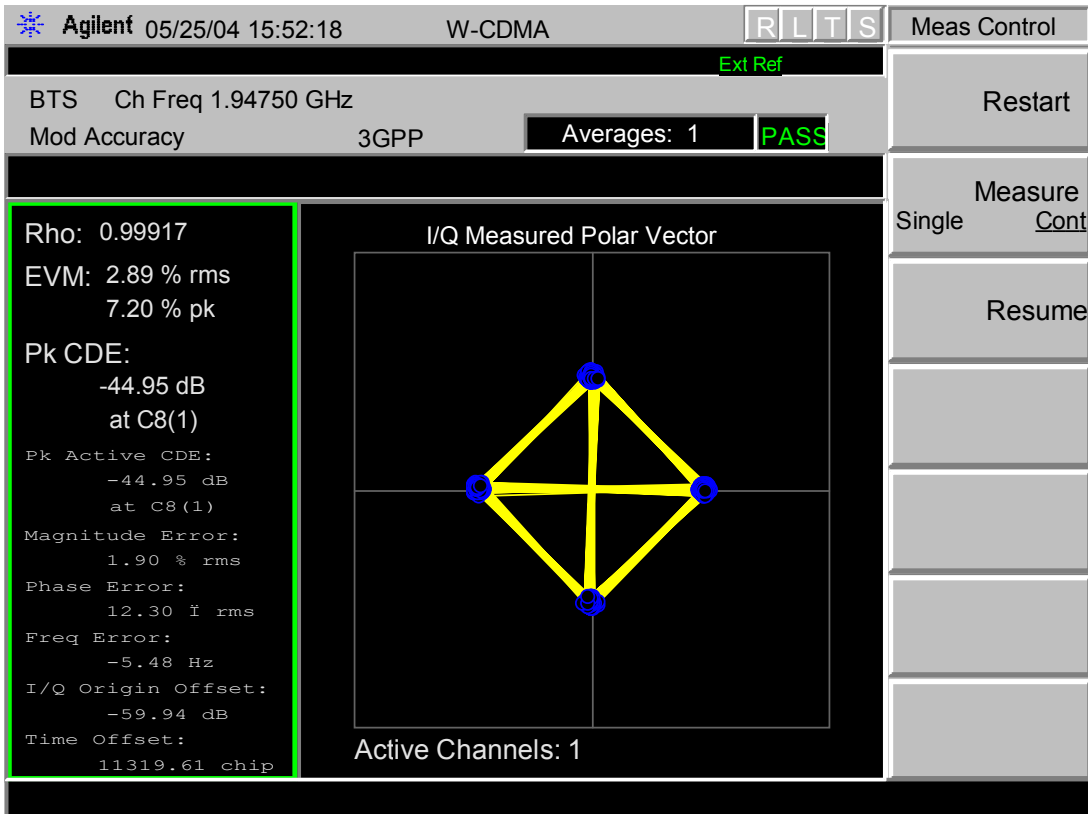
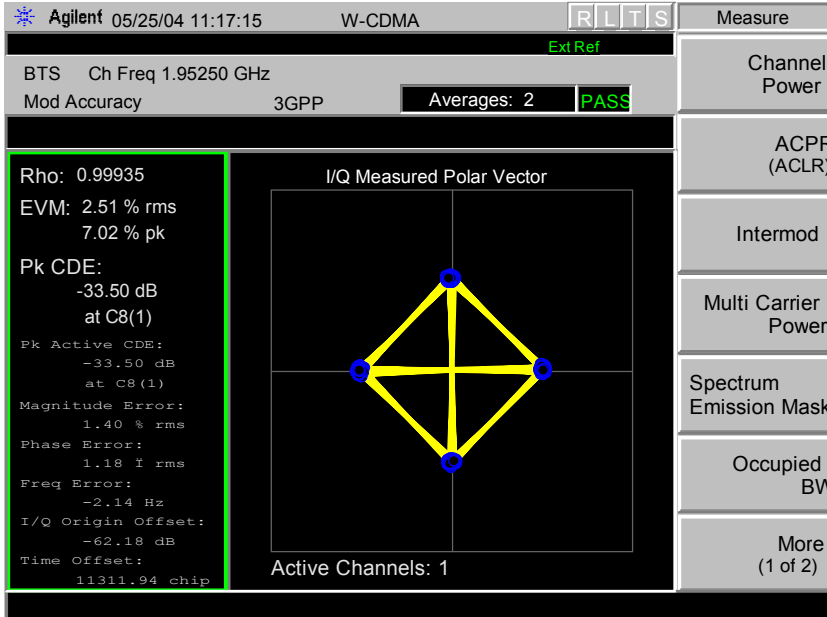


EXHIBIT 10: TEST REPORT

Modulation Characteristics: Frequency Block B, Carrier Channel B1
UMTS1900 Ch 112; 1952.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



Modulation Characteristics: Frequency Block B, Carrier Channel B3
UMTS1900 Ch 162; 1962.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier

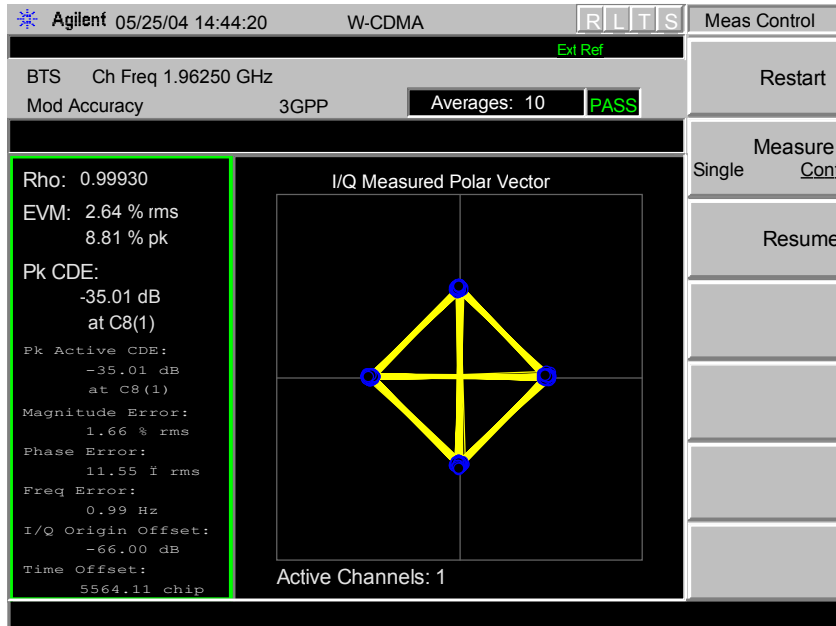
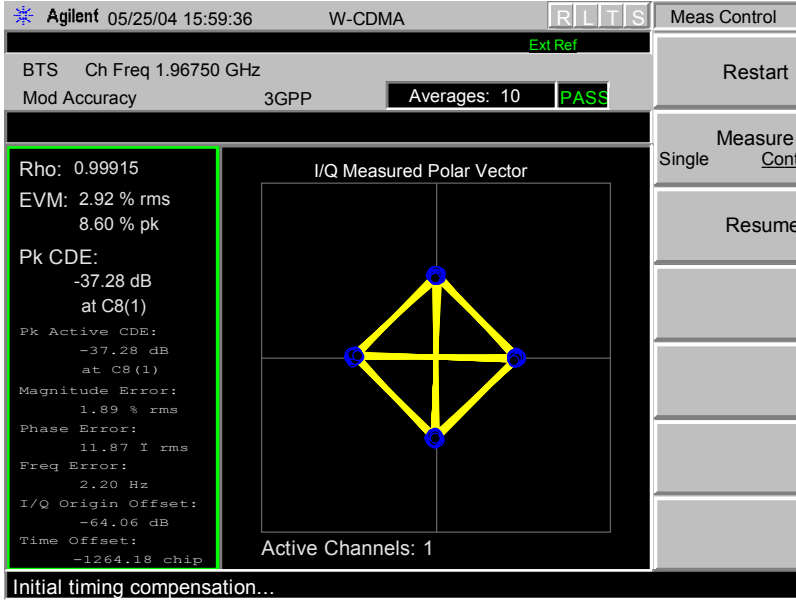


EXHIBIT 10: TEST REPORT

Modulation Characteristics: Frequency Block E, Carrier Channel E
UMTS1900 Ch 187; 1967.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



Modulation Characteristics: Frequency Block F, Carrier Channel F
UMTS1900 Ch 212; 1972.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier

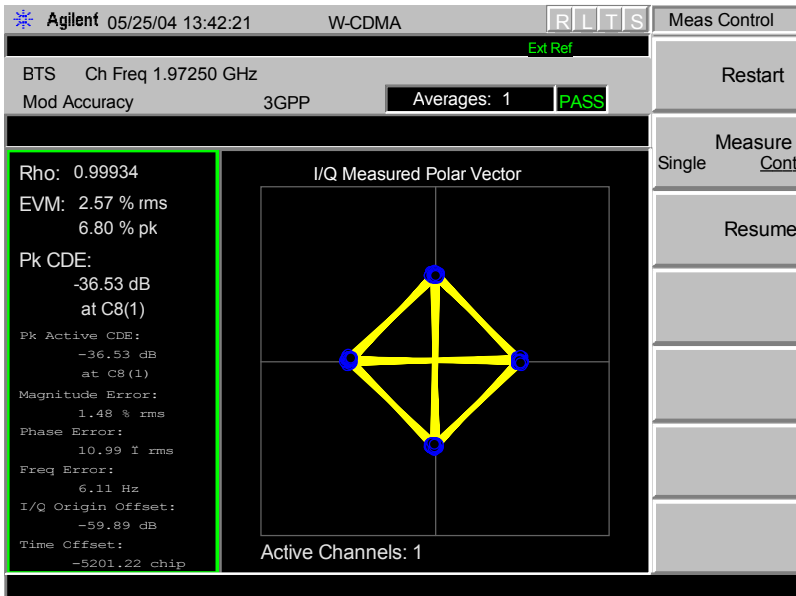
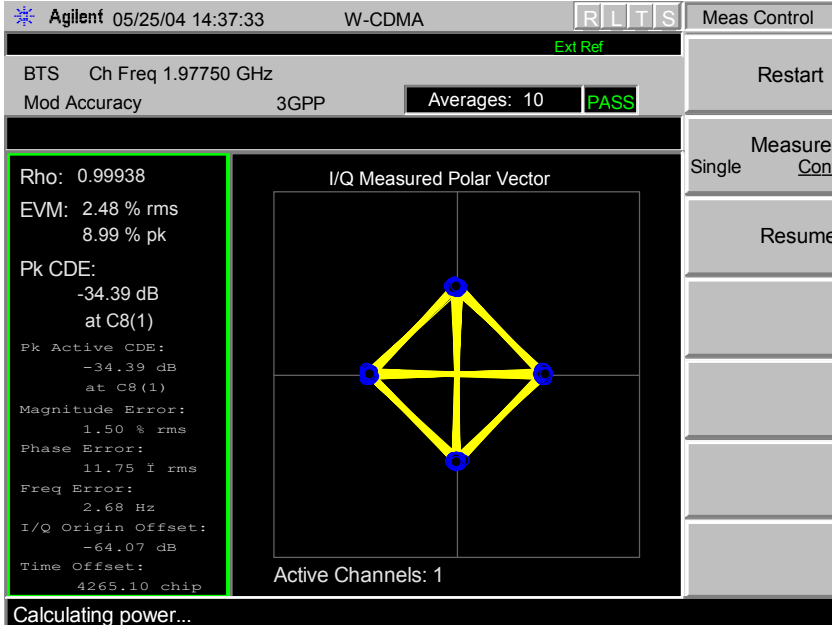
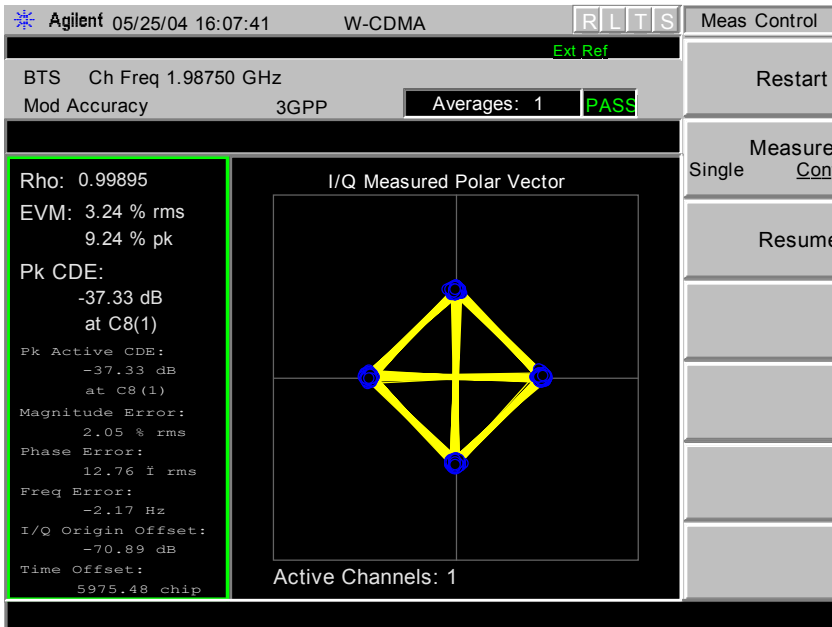


EXHIBIT 10: TEST REPORT

Modulation Characteristics: Frequency Block C, Carrier Channel C3
UMTS1900 Ch 237; 1977.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



Modulation Characteristics: Frequency Block C, Carrier Channel C5
UMTS1900 Ch 287; 1987.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS50NEBTS-05

EXHIBIT 10: TEST REPORT

PART 2.1049 MEASUREMENTS REQUIRED: OCCUPIED BANDWIDTH

The occupied bandwidth was measured at the Equipment Antenna Terminal (EAC) for each of the nine, UMTS 1900, 5 MHz carriers. The power level was set to 40 Watts (+46 dBm) and the modulation set to the full 20 active channels/codes, as required for ETSI TS 25.141 Test Model 1 modulation.

The occupied bandwidth was measured by two methods:

1. The carrier bandwidth using an Agilent E4406A VSA Series Transmitter Tester (SN US41513199).
2. Emission mask limitation using a Rohde & Schwarz: Spectrum Analyzer FSEM30 (SN DE35291)

Method 1: The carrier bandwidth was measured at the Equipment Antenna Terminal (EAC) with the 5 MHz carrier set to +46 dBm and modulated with the full 20 channels/codes. The measurement results show that the carrier is within the manufacturer's rated 5 MHz bandwidth for all nine carriers, as tabulated below. The actual data plots are attached to this exhibit.

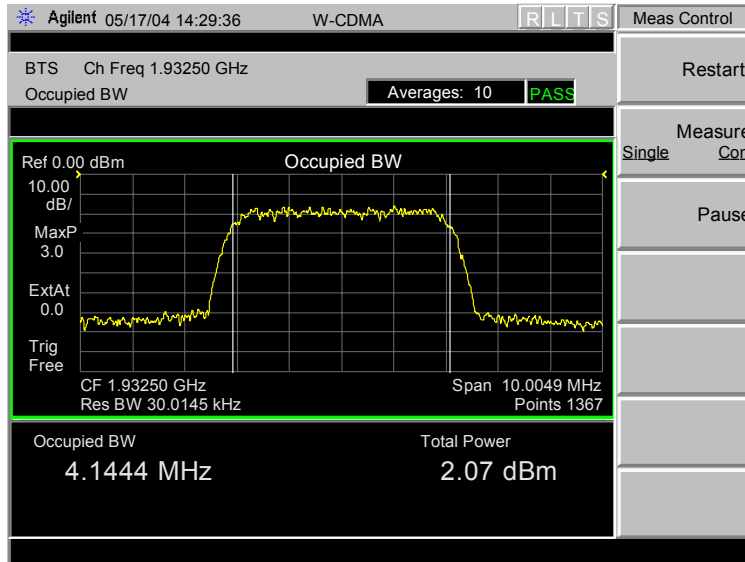
UMTS PCS Frequency Block	Broadband PCS Frequency Block	Power Level at Antenna Terminal	UMTS1900 Channel No.	UMTS 1900 Carrier Center Frequency MHz	Measured Carrier Bandwidth MHz
A1	Lowest Settable	46 dBm	12	1932.5	4.1444
A3	Highest Settable	46 dBm	62	1942.5	4.0924
D	Center	46 dBm	87	1947.5	4.1650
B1	Lowest Settable	46 dBm	112	1952.5	4.1573
B3	Highest Settable	46 dBm	162	1962.5	4.1298
E	Center	46 dBm	187	1967.5	4.1383
F	Center	46 dBm	212	1972.5	4.1224
C3	Lowest Settable	46 dBm	237	1977.5	4.1566
C5	Highest Settable	46 dBm	287	1987.5	4.1614

Results: For each UMTS1900 channel, the carrier does not exceed 5.0 MHz.

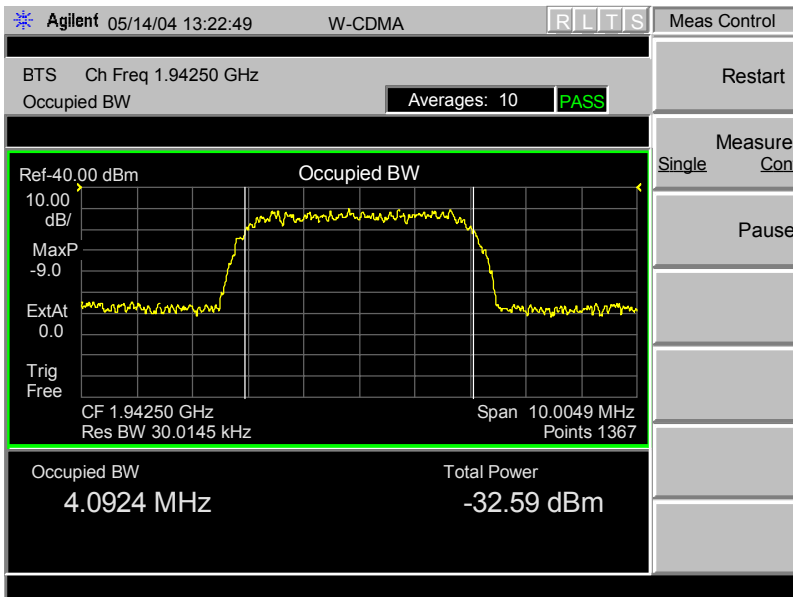
APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5ONEBTS-05

Carrier Bandwidth Characteristics: Frequency Block A; Carrier Channel A1
UMTS1900 Ch 12; 1932.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



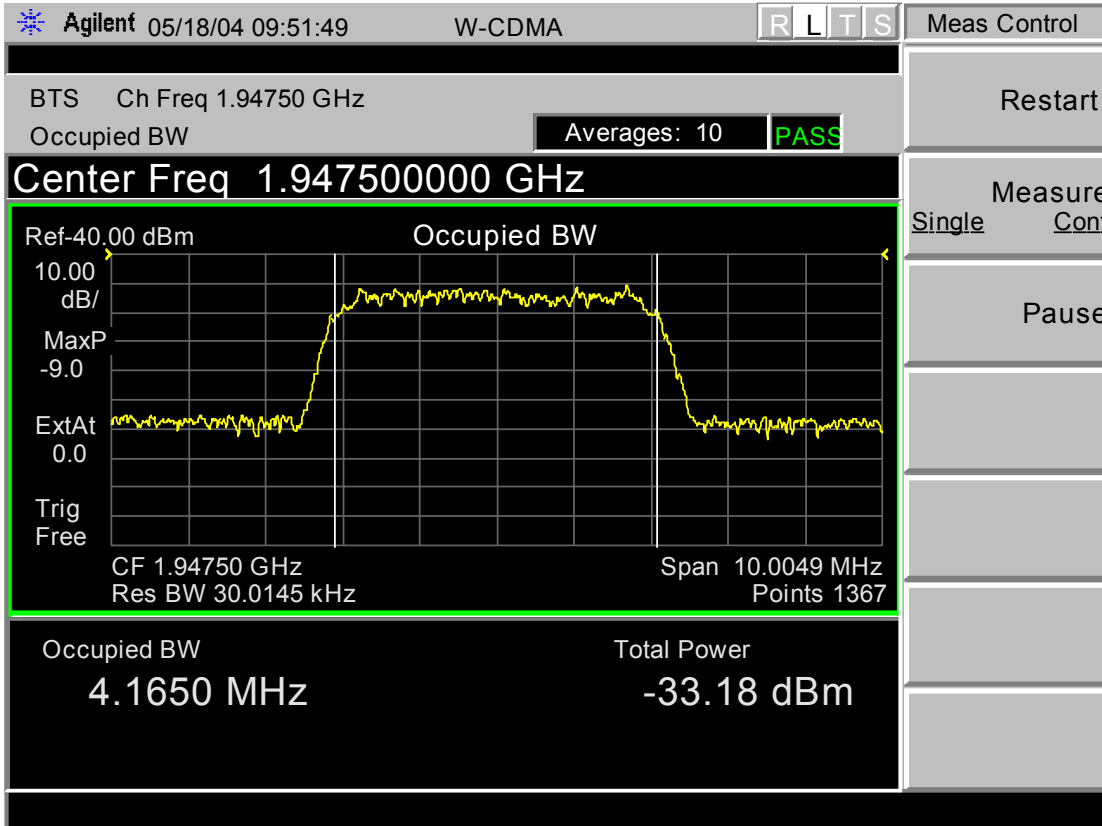
Carrier Bandwidth Characteristics: Frequency Block A; Carrier Channel A3
UMTS1900 Ch 62; 1942.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



APPLICANT: LUCENT TECHNOLOGIES

FCC ID: ASSONEBTS-05

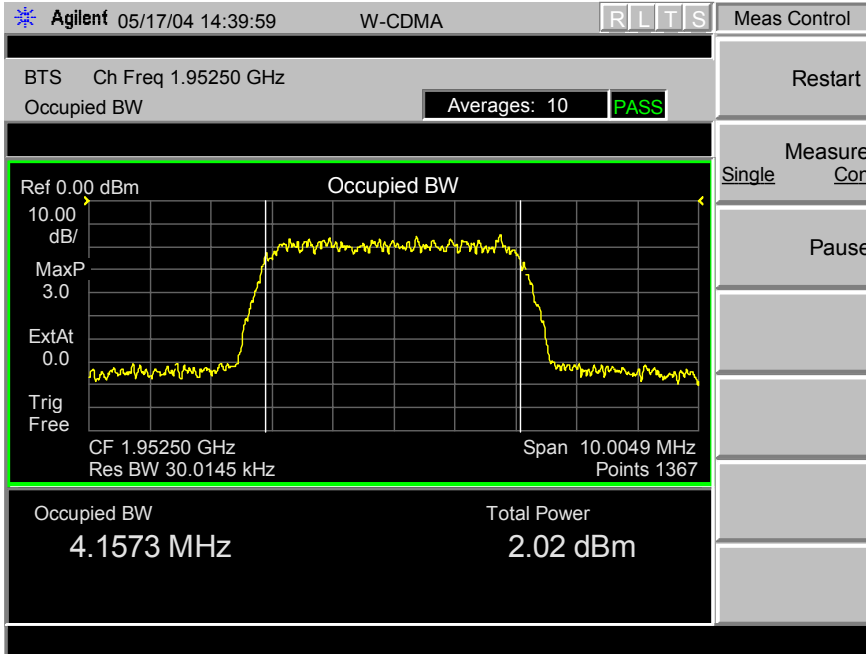
Carrier Bandwidth Characteristics: Frequency Block D; Carrier Channel D
UMTS1900 Ch 87; 1947.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



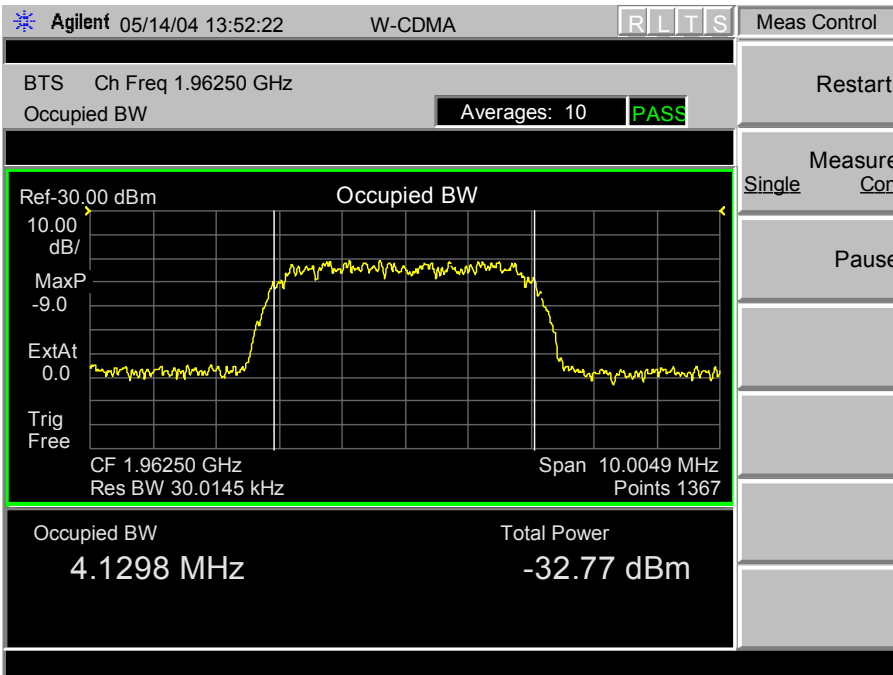
APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5ONEBTS-05

Carrier Bandwidth Characteristics: Frequency Block B, Carrier Channel B1
UMTS1900 Ch 112; 1952.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



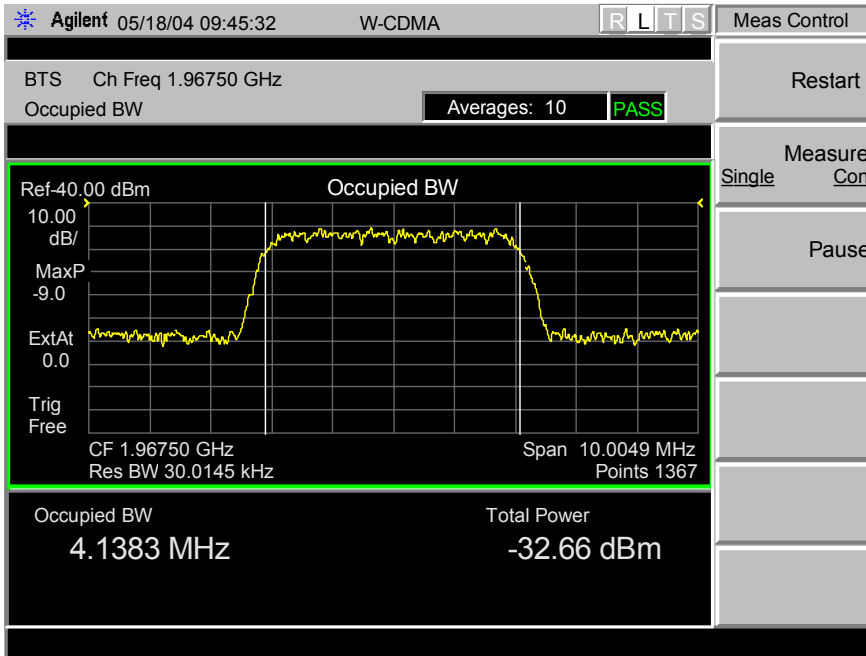
Carrier Bandwidth Characteristics: Frequency Block B, Carrier Channel B3
UMTS1900 Ch 162; 1962.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



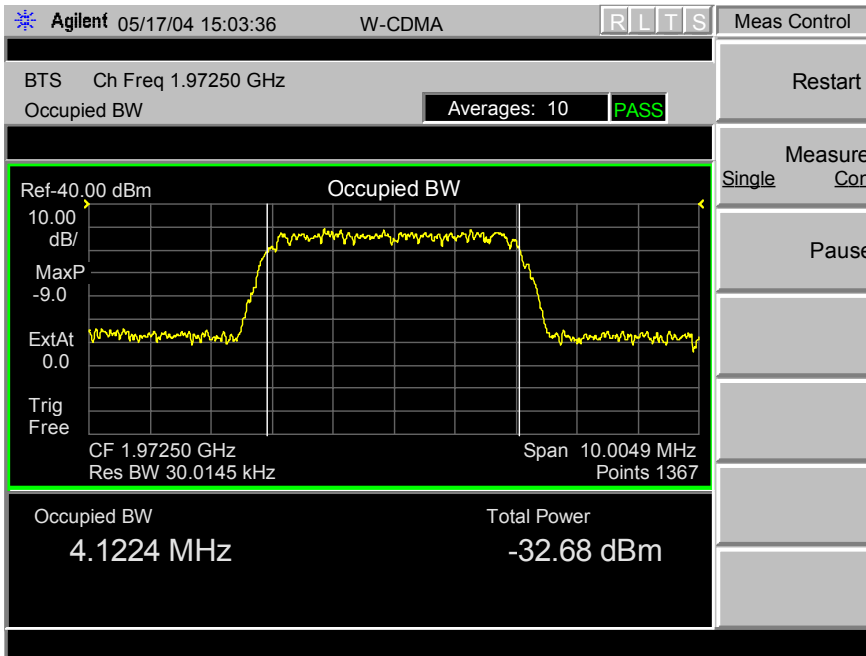
APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5ONEBTS-05

Carrier Bandwidth Characteristics: Frequency Block E, Carrier Channel E
UMTS1900 Ch 187; 1967.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



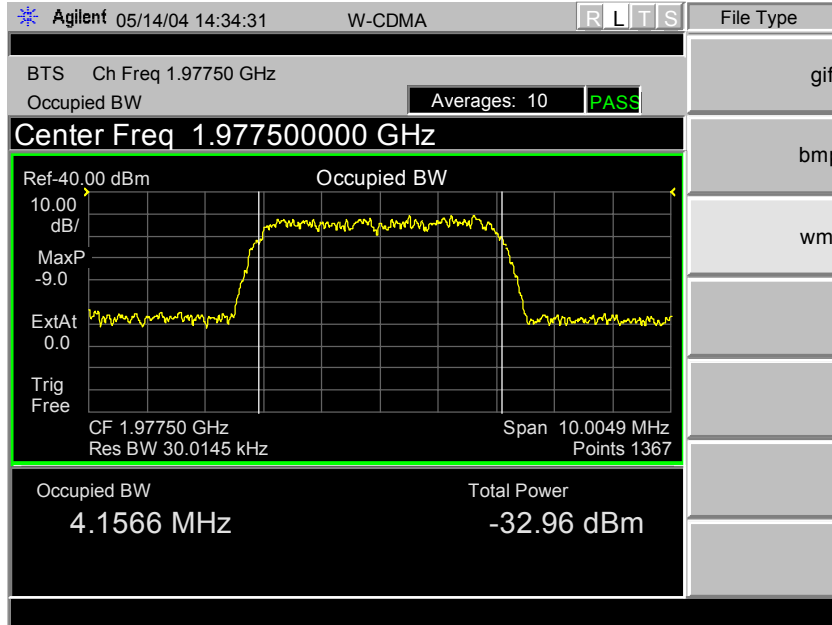
Carrier Bandwidth Characteristics: Frequency Block F, Carrier Channel F
UMTS1900 Ch 212; 1972.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



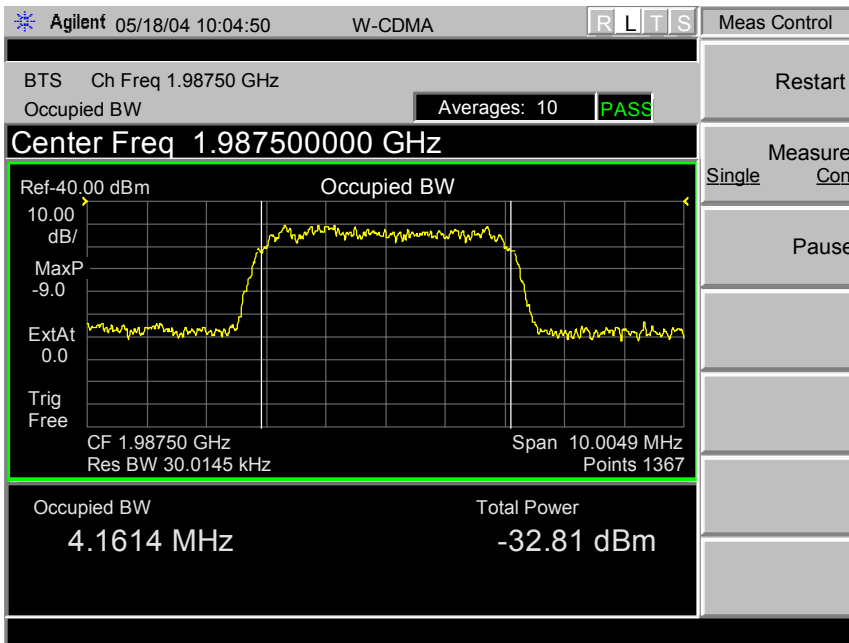
APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS50NEBTS-05

Carrier Bandwidth Characteristics: Frequency Block C, Carrier Channel C3
UMTS1900 Ch 237; 1977.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



Carrier Bandwidth Characteristics: Frequency Block C, Carrier Channel C5
UMTS1900 Ch 287; 1987.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5ONEBTS-05

Method 2. Emission mask limitation using a Rohde & Schwarz: Spectrum Analyzer FSEM30 (SN DE35291) with Total Integrated Laboratory Environment (TILE) test software.

Measurement of the occupied bandwidth emission characteristics was performed at the Equipment Antenna Terminal (EAC) with the 5 MHz carrier set to +46 dBm, and the modulation set to the full 20 channels/codes as required by ETSI TS 25.141, Test Model 1, for all frequency blocks and the nine carriers. In compliance with Part 24.238, A1/A3, B1/B3 and C3/C5 represented the lowest and the highest settable channels in their respective PCS frequency blocks. Since Blocks D, E and F are 5 MHz wide, a single channel was set to the respective block center frequency. The emission mask used to demonstrate compliance was as specified in ETSI TS 25.141 for $P \geq 43$ dBm. The mask attenuation values were based on a 30 kHz resolution bandwidth, which made the modulated 5 MHz carrier to be offset from +46 dBm by -22.2 dB, in accordance with the equation:

$$\text{Carrier Offset} = 10 \log (30 \text{ kHz}/5 \text{ MHz}) = -22.2 \text{ dB}$$

This series of measurements were performed using EMC software:

Total Integrated Laboratory Environment (TILE)
By Quantum Change/EMC Systems, Inc.

The data/measurement plots for the none channels are attached below.

Test Set-up and Configuration: Same as previously used for Part 2.1046 RF Power Measurement.

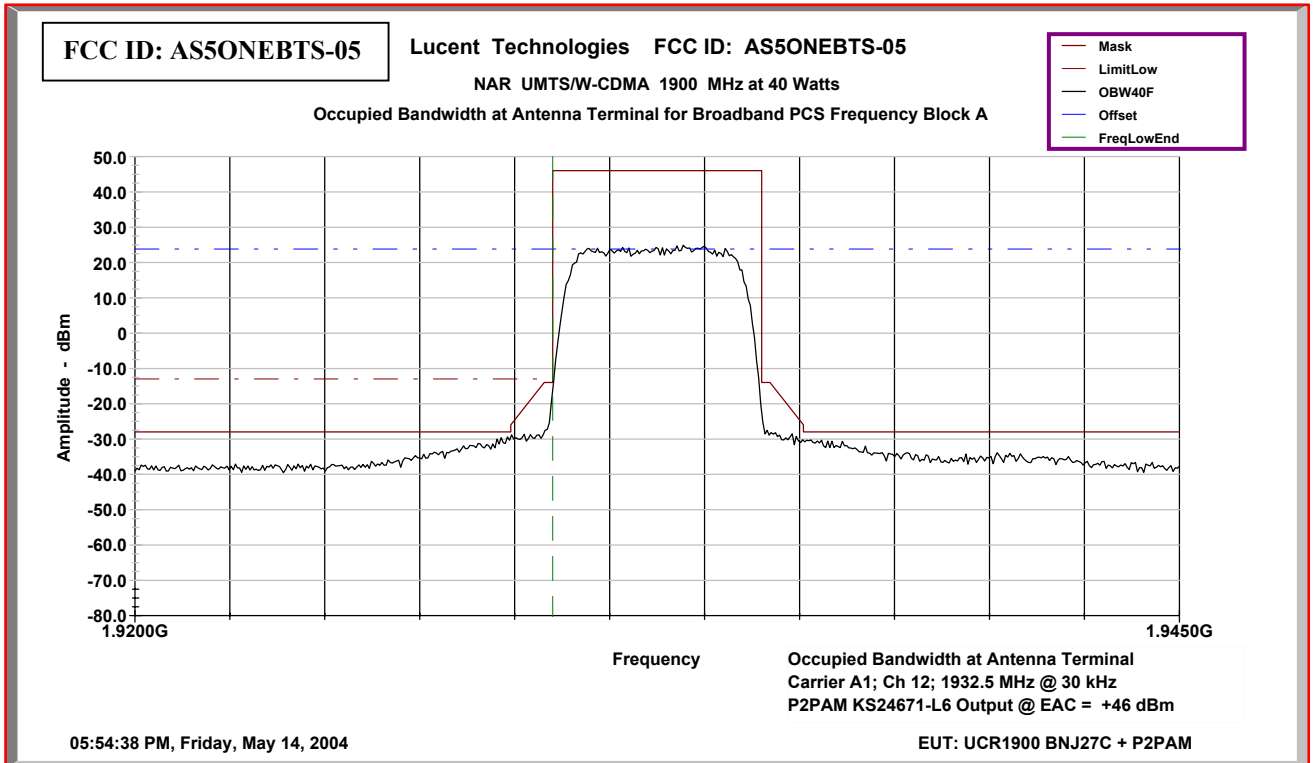
RESULTS: The A1, A3, D, B1, B3, E, F, C3 and C5 channels all demonstrate compliance with the emission mask specified by ETSI TS 25.141; the carriers do not exceed the mask limitation. Compliance is also demonstrated for each PCS frequency block edge requirement specified in Part 24.238.

The data plots are attached below.

APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5ONEBTS-05

Occupied Bandwidth Characteristics: Frequency Block A; Carreir/Channel A1
UMTS1900 Ch 12; 1932.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier

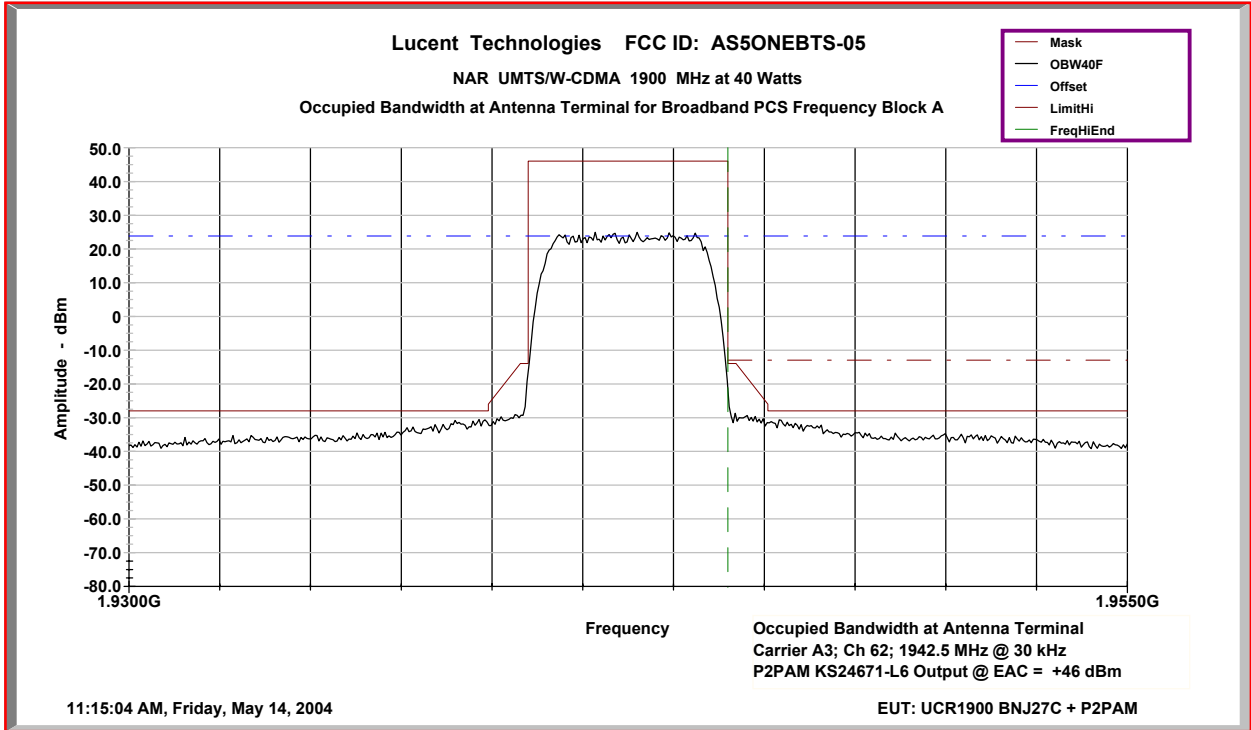


APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5ONEBTS-05

Occupied Bandwidth Characteristics Block A3

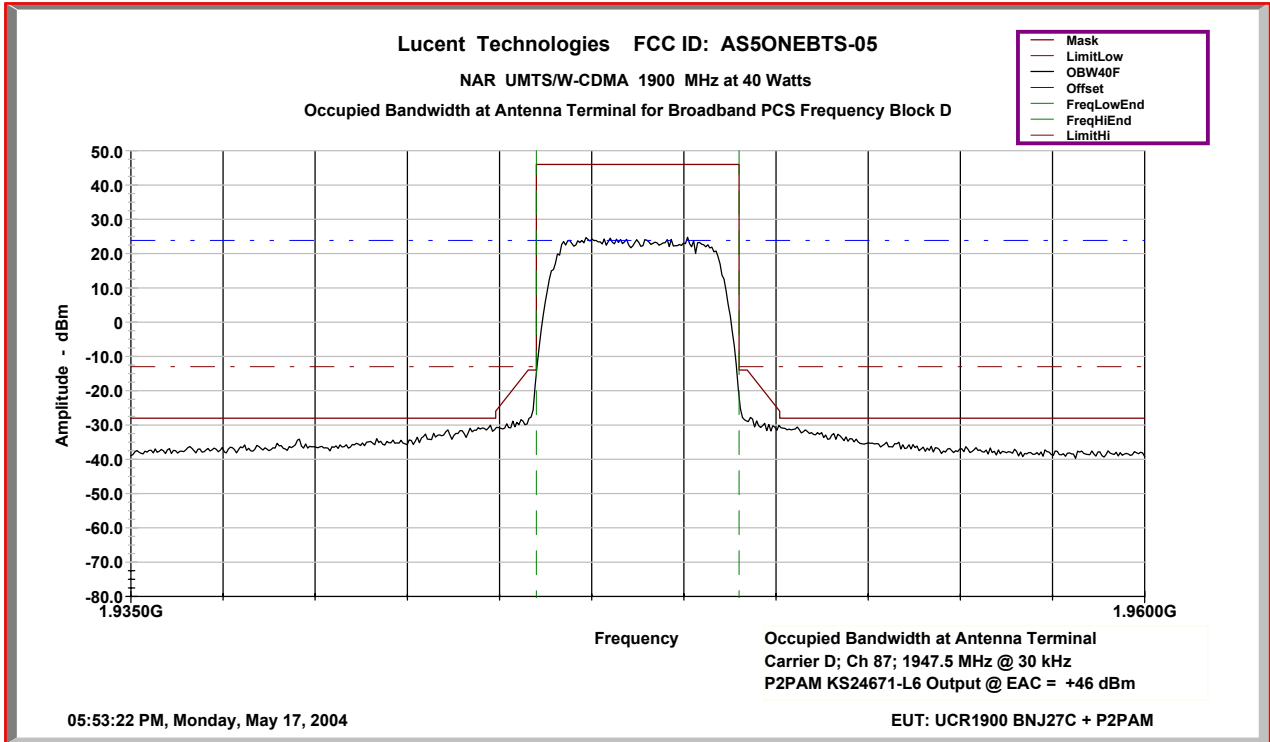
UMTS1900 Ch 62; 1942.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



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FCC ID: AS5ONEBTS-05

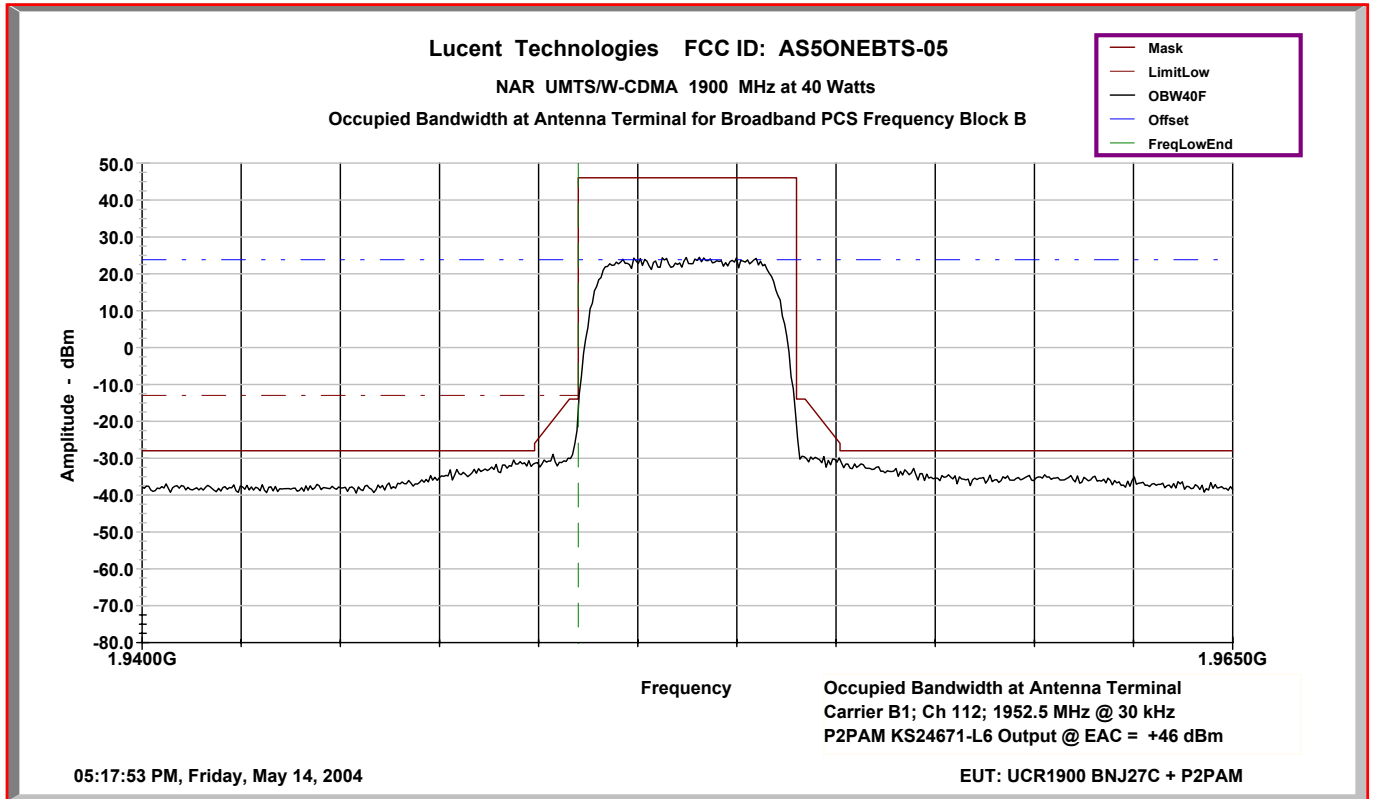
Occupied Bandwidth Characteristics: Frequency Block D; Carrier/Channel D
UMTS1900 Ch 87; 1947.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



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FCC ID: AS5ONEBTS-05

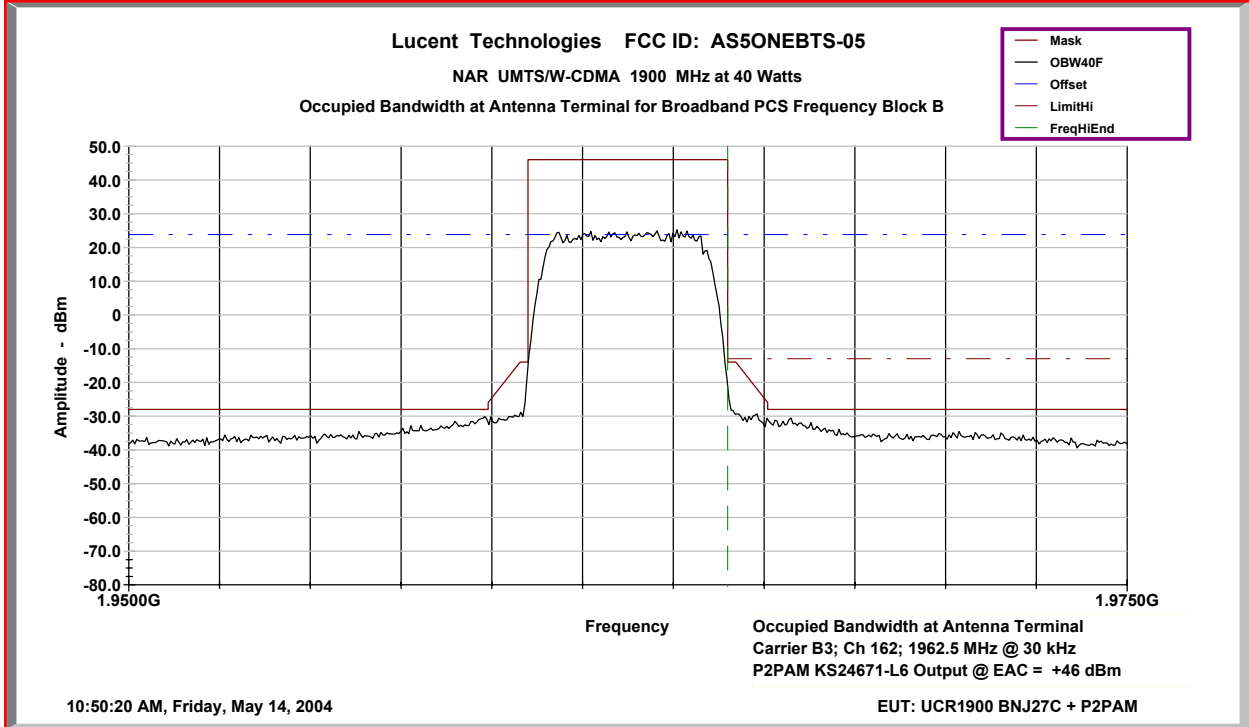
Occupied Bandwidth Characteristics: Frequency Block B, Carrier Channel B1
UMTS1900 Ch 112; 1952.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



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FCC ID: AS5ONEBTS-05

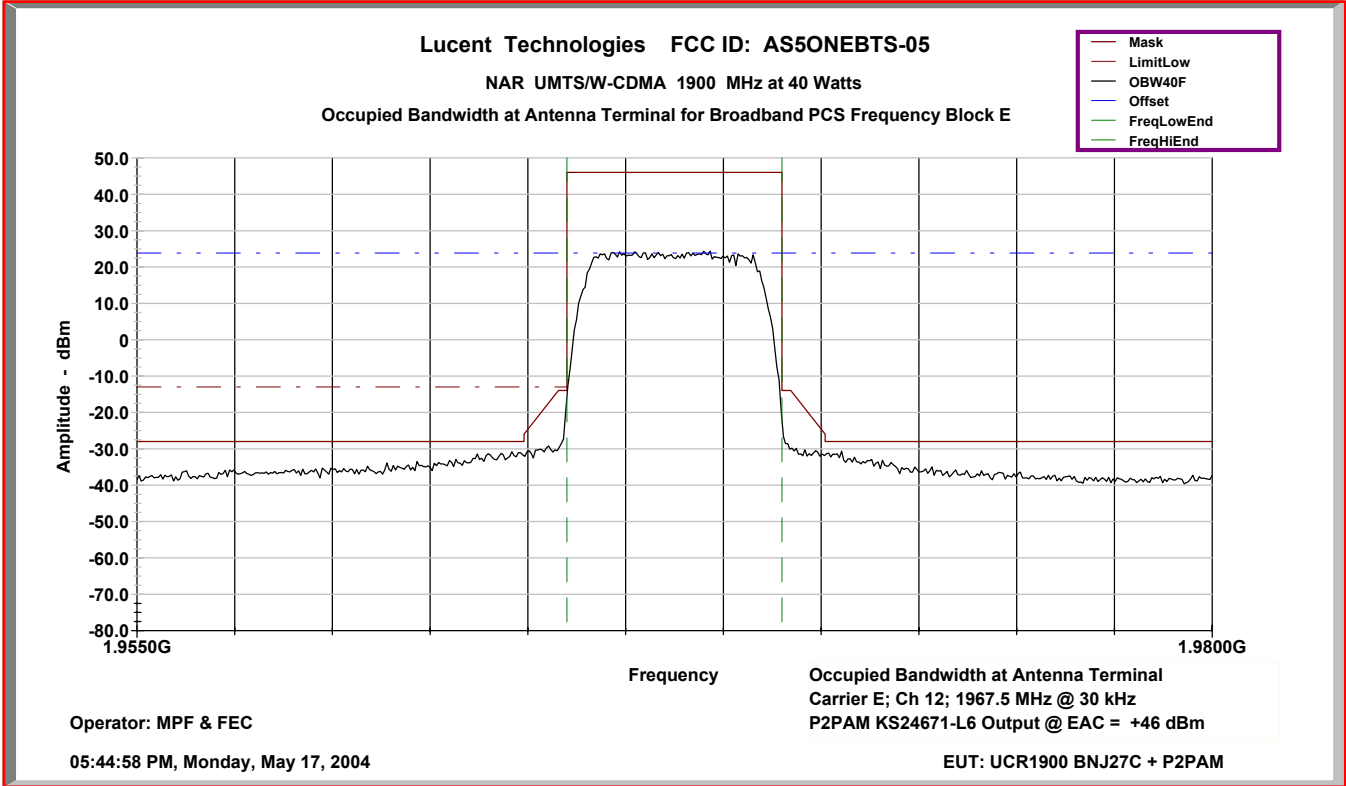
Occupied Bandwidth Characteristics: Frequency Block B, Carrier Channel B3
UMTS1900 Ch 162; 1962.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



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FCC ID: AS5ONEBTS-05

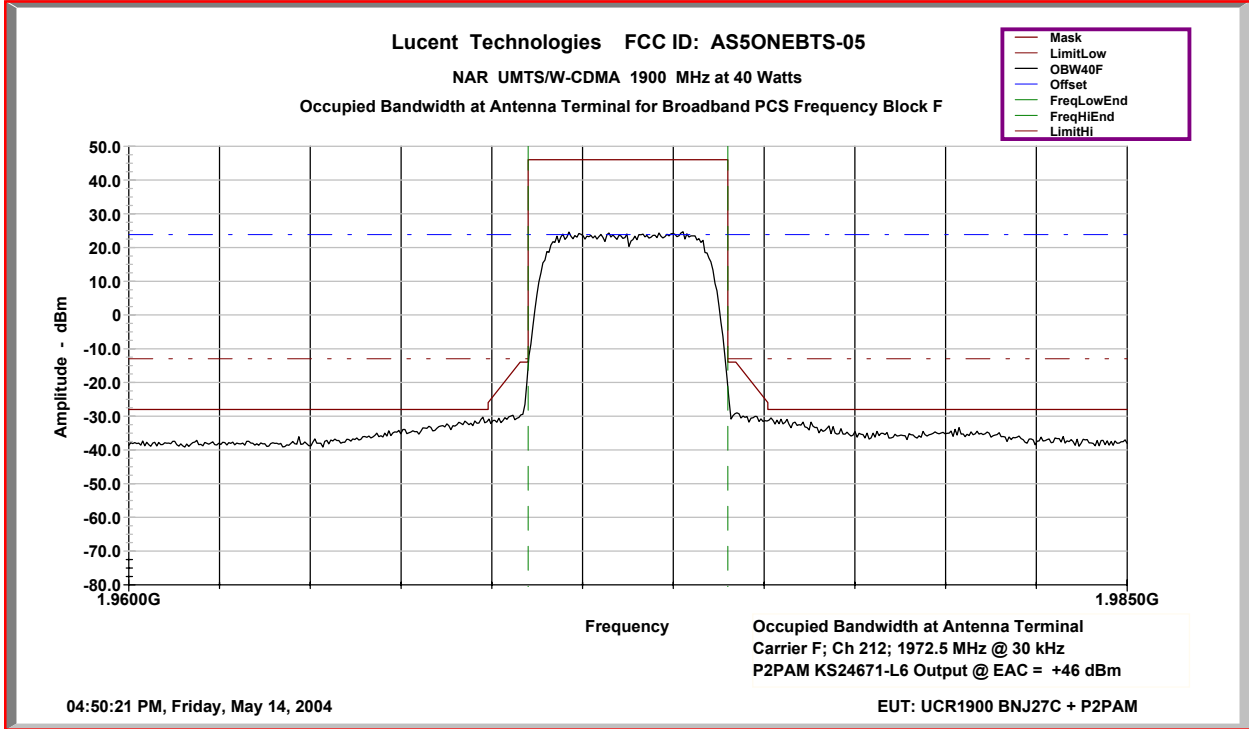
Occupied Bandwidth Characteristics: Frequency Block E, Carrier Channel E
UMTS1900 Ch 187; 1967.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



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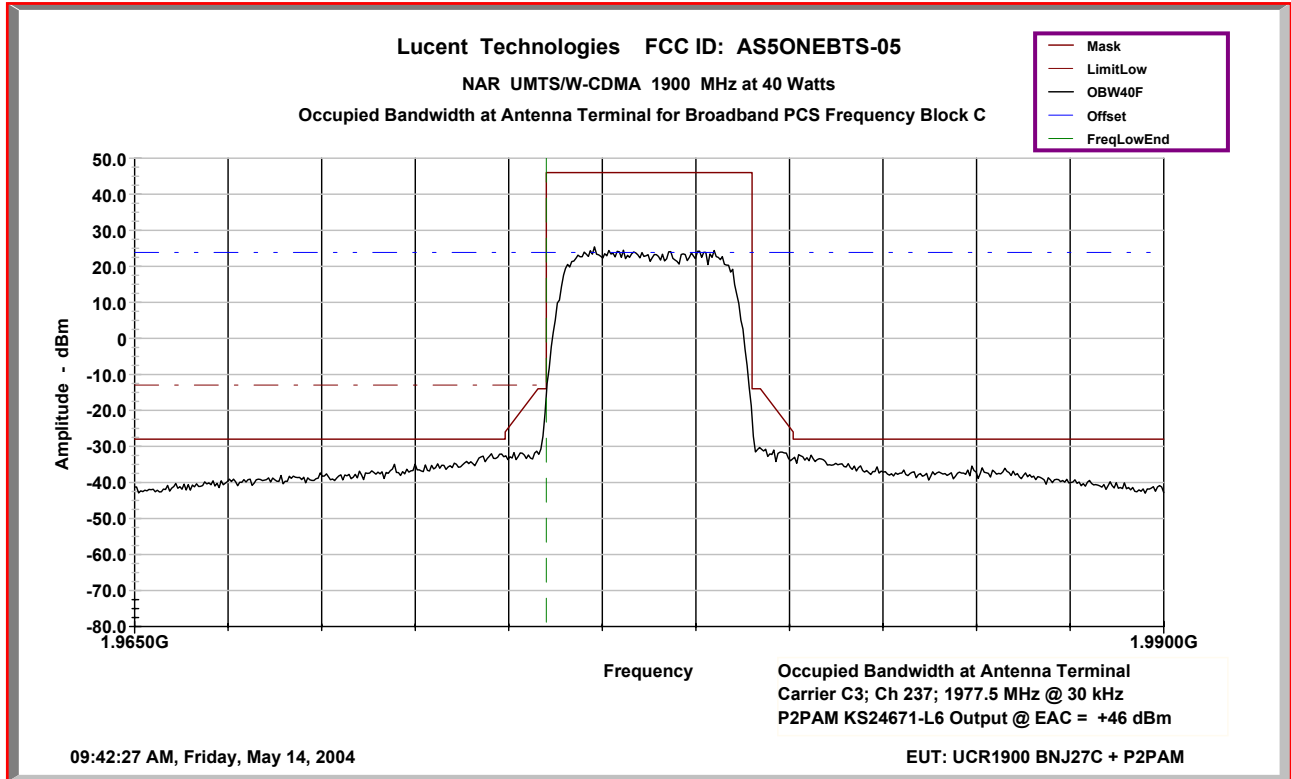
Occupied Bandwidth Characteristics: Frequency Block F, Carrier Channel F
UMTS1900 Ch 212; 1972.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



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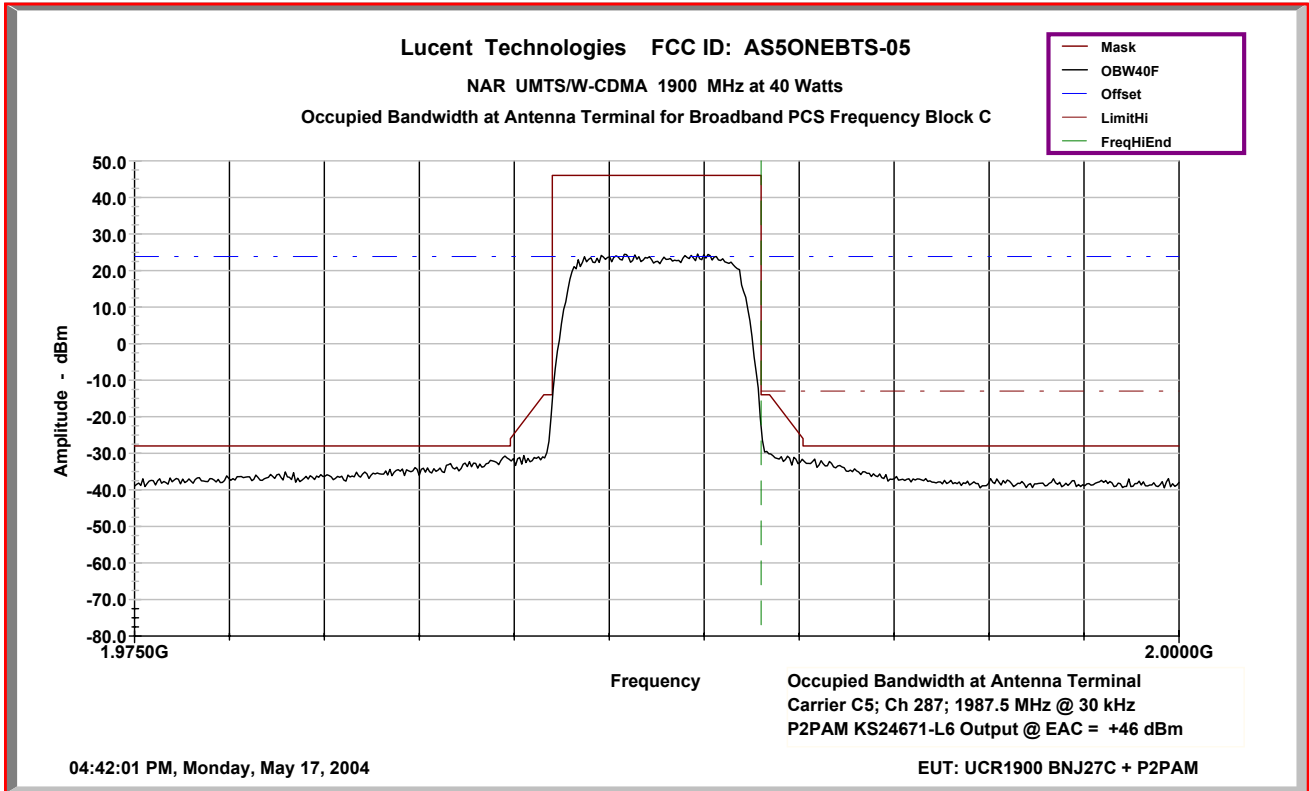
Occupied Bandwidth Characteristics: Frequency Block C, Carrier Channel C3
UMTS1900 Ch 237; 1977.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



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FCC ID: AS5ONEBTS-05

Occupied Bandwidth Characteristics: Frequency Block C, Carrier Channel C5
UMTS1900 Ch 287; 1987.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5ONEBTS-05

EXHIBIT 10: TEST REPORT

PART 2.1051 MEASUREMENTS REQUIRED: SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS.

This test procedure is an extension of the occupied bandwidth measurement at the Equipment Antenna Connector (EAC) terminal, using the same carrier frequencies, power level setting procedure and modulated carrier offset procedure. In accordance with Part 2.1057(a), the required frequency spectrum to be investigated extends from the lowest RF signal generated to the 10th harmonic of the carrier at the EAC terminal. The emission limits at the antenna terminal are specified in Part 24.238 (a) ... the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log (P)$ dBc. The power P is the average carrier power measured at the EAC (antenna) terminal in Watts. Setting the power level at EAC to 40 Watts average, produces an emission attenuation below the carrier of 59.0 dBc. Part 24.238 (b) specifies the required Resolution Bandwidth (RBW) to be 1 MHz. In accordance with Part 2.1051, "the magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified"; i.e., these are not reportable. Hence, the measurement equipment must be adjusted and configured to provide an instrumentation noise floor that is at least 20 dB or more below the $43 + 10 \log (P)$ dBc limit, which equates to 79.0 dBc. The pertinent test parameters are:

1. Frequency Spectrum: 10 MHz to 20 GHz
2. Resolution Bandwidth: 1 MHz (Part 24.238)
3. Emission Limitation: $43 + 10 \log (P)$ dBc = $43 + 10 \log (40 \text{ Watts}) = 59.0$ dBc
4. Instrumentation Noise Floor: at least 20 dB greater than " $43 + 10 \log (P)$ dBc" = 79.0 dBc

Minimum Standard Requirement:

The emission limits at the antenna terminal are specified in Part 24.238 (a) ... the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log (P)$ dBc (i.e., attenuation below the unmodulated carrier). The power P is the average carrier power measured at the J4 antenna terminal in Watts. The measurement equipment must be adjusted and configured to provide an instrumentation noise floor that is 20 dB or more below the $43 + 10 \log (P)$ dBc limit. In summary:

1. Carrier Power Level = 46.0 dBm
2. Emission Limitation = 46.0 dBm – 59.0 dBc = -13.0 dBm
3. Reportable Emission Limit = -13.0 dBm – 20 dBc = -33.0 dBm
4. Emission power levels less than -33.0 dBm are not reportable; i.e., at ≥ 79.0 dBc

Test Set-up and Configuration: Same as previously used for Part 2.1046 RF Power Measurement.

Method of Measurement:

In order to suppress the instrumentation noise floor sufficient to detect and measure spurious signals that have power levels as low as 20 dB below the required limit, or as low as -33.0 dBm (i.e., 79 dBc), an EMC software package was employed to drive the spectrum analyzer, collect and compile the acquired data, perform mathematical corrections to the data by incorporating (i.e., programming) pre-measured path losses into the software, and then generate a graphical display as shown in this exhibit. The software package is: *TILE/IC (Total Integrated Laboratory Environment/Instrument Control System)*; purchased and licensed from Quantum Change/EMC Systems, Inc. The instrumentation noise floor is suppressed by the software's ability to split the spectrum being measured into many small segments, perform the mathematical corrections to each segment, and then sequentially compile all the segments into a continuous graphical display.

APPLICANT: LUCENT TECHNOLOGIES**FCC ID: ASSONEBTS-05**

Part 24.238 requires that emissions over the required spectrum 10 MHz to 20 GHz be measured using an instrumentation resolution bandwidth of 1 MHz. The TILE/IC software was able to sufficiently suppress the normally high noise floor associated with 1 MHz RBW by measuring the spectrum in a sequential series of short segments using a peak detector, in combination with an appropriate low-pass filter and then with an appropriate high-pass filter, installed at the input terminal of the spectrum analyzer, to prevent the carrier from over driving the spectrum analyzer. The spectrum portion 1.8 – 2.5 GHz, in close proximity to the carrier, was measured without filters.

The specific EMC test filters used were manufactured by TRILITHIC, Inc., Indianapolis, IN:

1. Low Pass Filter: Model 10LC1790-3-AA; SN 200033011; Product No. 23042
2. High Pass Filter: Model 5HC2850/18050-1-.8-KK; SN 9926050; Product No. 23042

Part 24.238 requires that this test be performed for the lowest settable and for the highest settable carrier frequencies in each PCS frequency block, which are summarized in the following table.

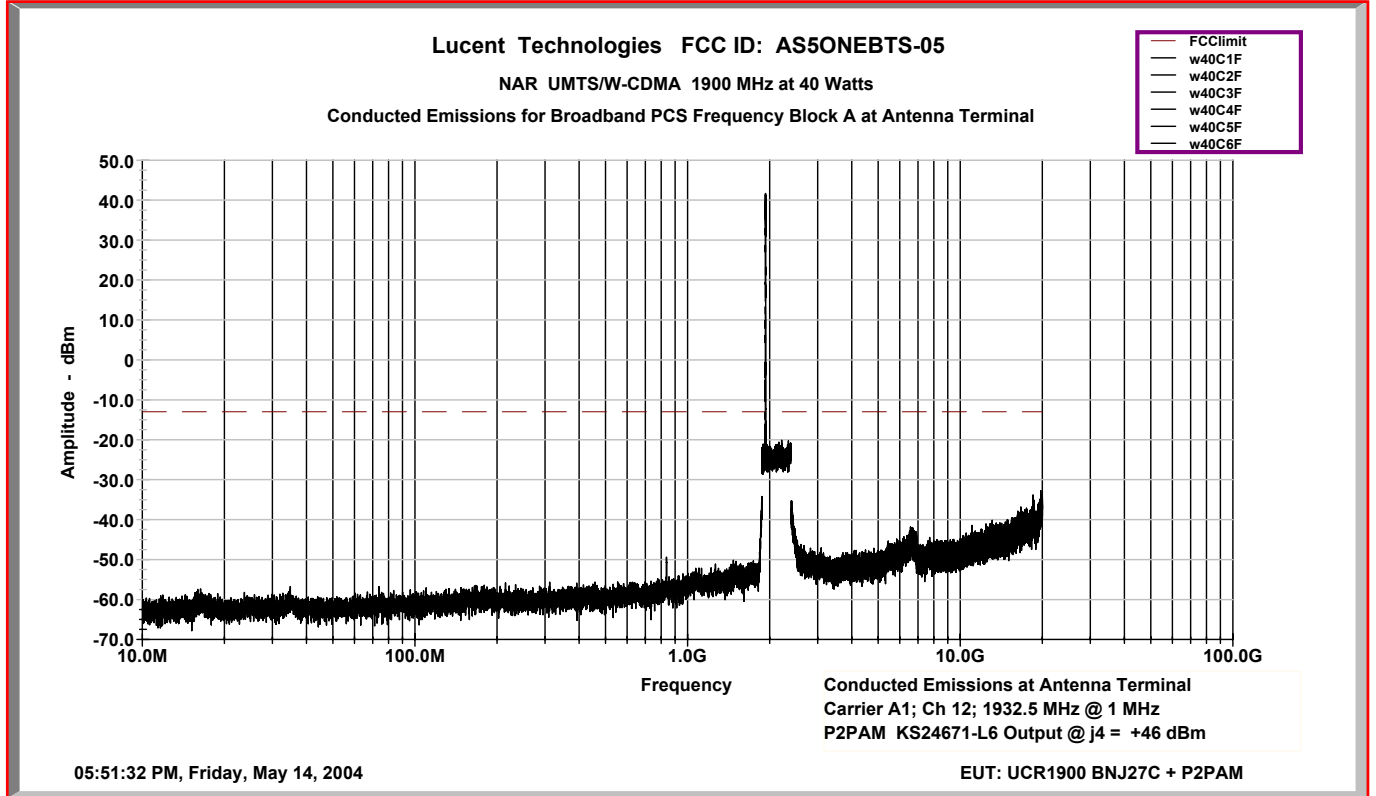
UMTS PCS Frequency Block	Broadband PCS Frequency Block	Power Level at Antenna Terminal	UMTS1900 Channel No.	UMTS 1900 Carrier Center Frequency
A1	Lowest Settable	46 dBm	12	1932.5 MHz
A3	Highest Settable	46 dBm	62	1942.5 MHz
D	Center	46 dBm	87	1947.5 MHz
B1	Lowest Settable	46 dBm	112	1952.5 MHz
B3	Highest Settable	46 dBm	162	1962.5 MHz
E	Center	46 dBm	187	1967.5 MHz
F	Center	46 dBm	212	1972.5 MHz
C3	Lowest Settable	46 dBm	237	1977.5 MHz
C5	Highest Settable	46 dBm	287	1987.5 MHz

Results: For each UMTS carrier, there were no reportable emissions. Data plots for each carrier are attached to this exhibit.

APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5ONEBTS-05

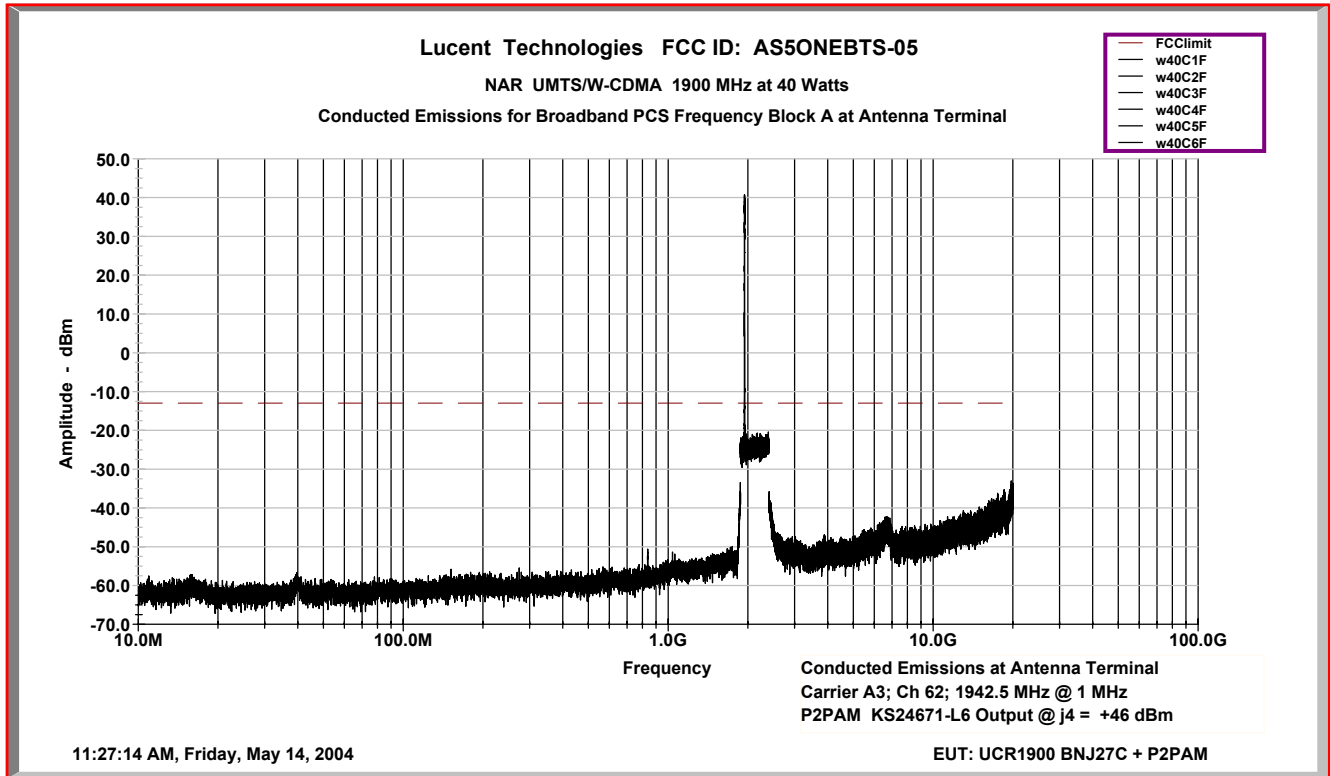
Conducted Emissions Characteristics: Frequency Block A; Carrier/Channel A1
UMTS1900 Ch 12; 1932.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5ONEBTS-05

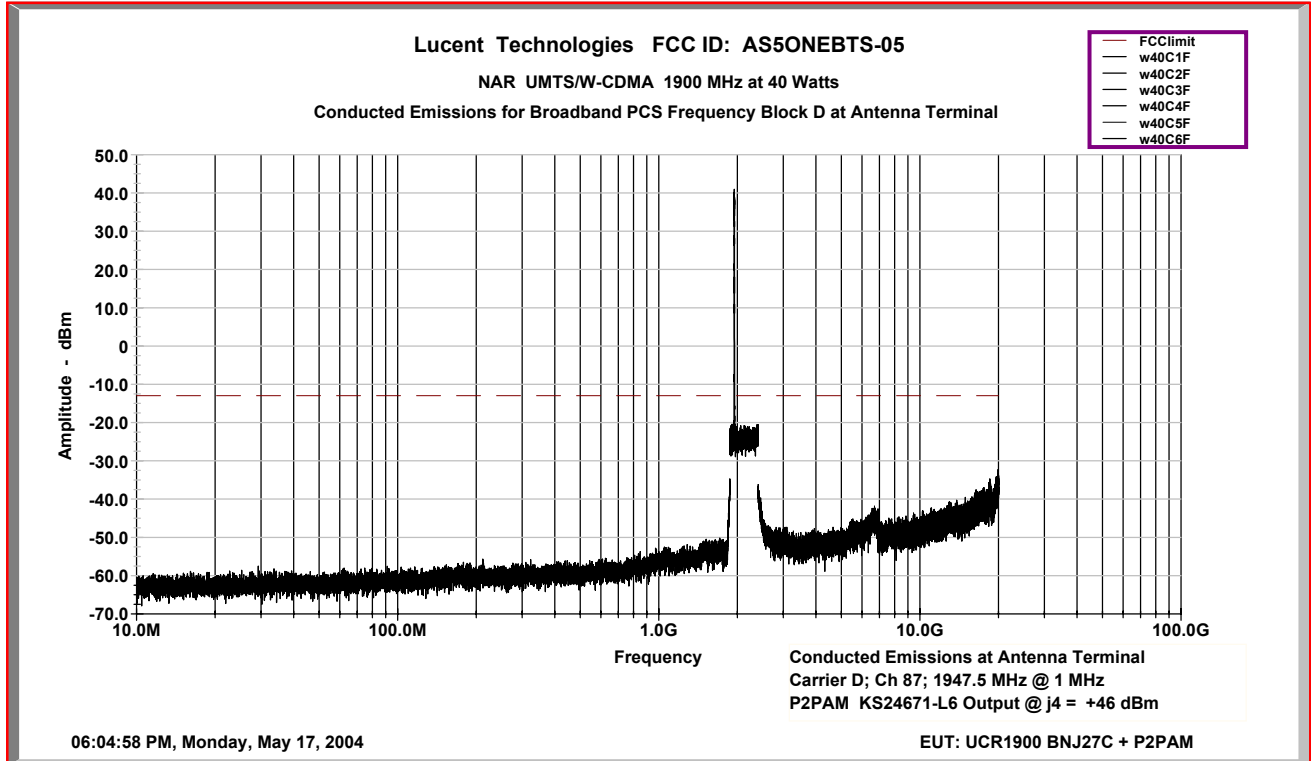
Conducted Emissions Characteristics: Frequency Block A; Carrier/Channel A3
UMTS1900 Ch 62; 1942.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5ONEBTS-05

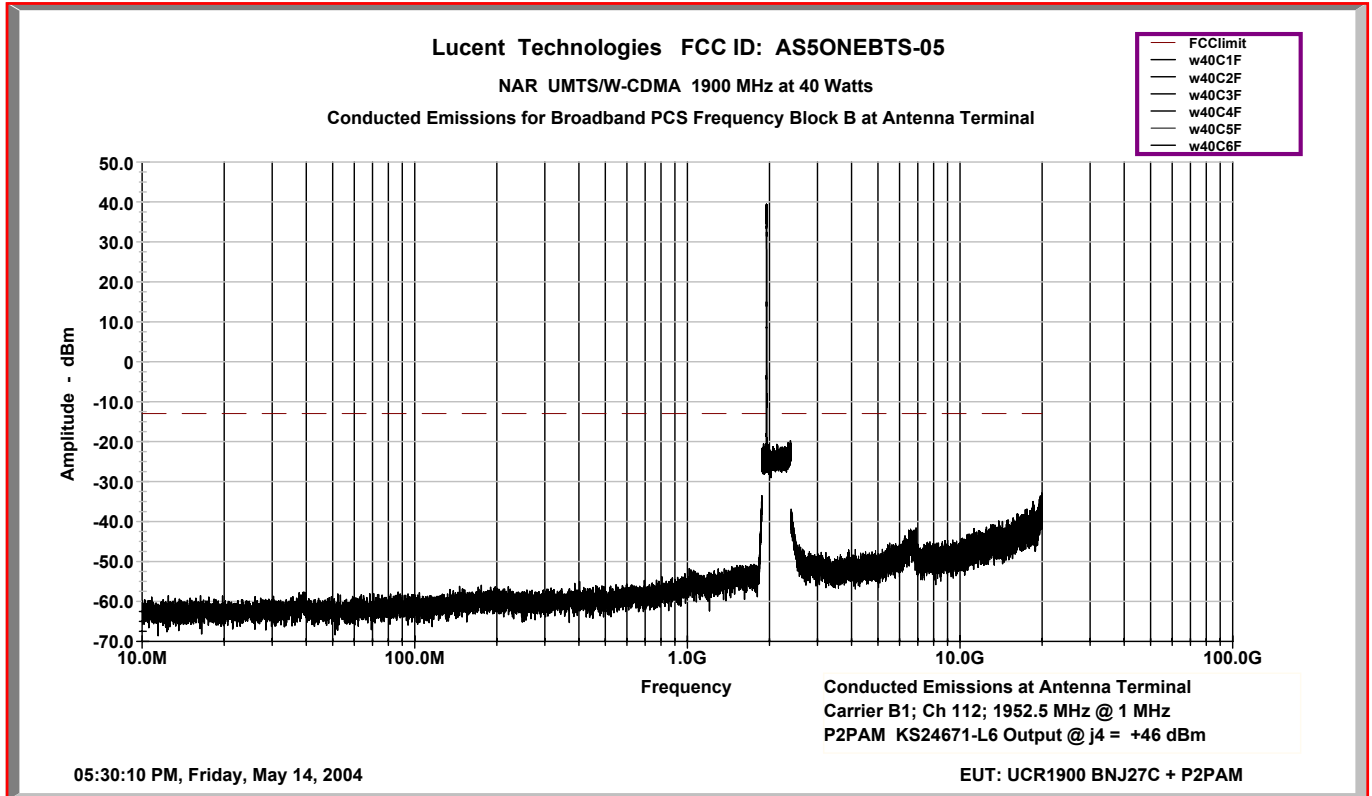
Conducted Emissions Characteristics: Frequency Block D; Carrier/Channel D
UMTS1900 Ch 87; 1947.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5ONEBTS-05

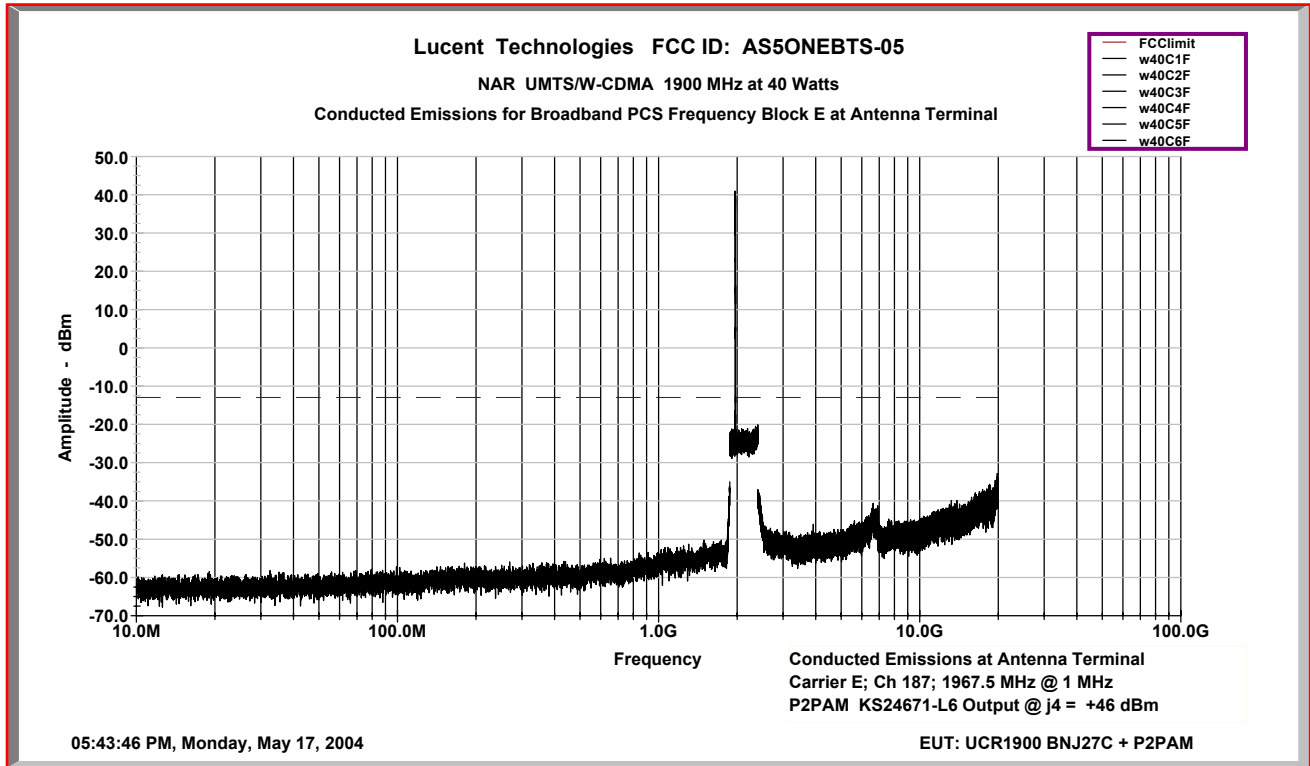
Conducted Emissions Characteristics: Frequency Block B, Carrier Channel B1
UMTS1900 Ch 112; 1952.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5ONEBTS-05

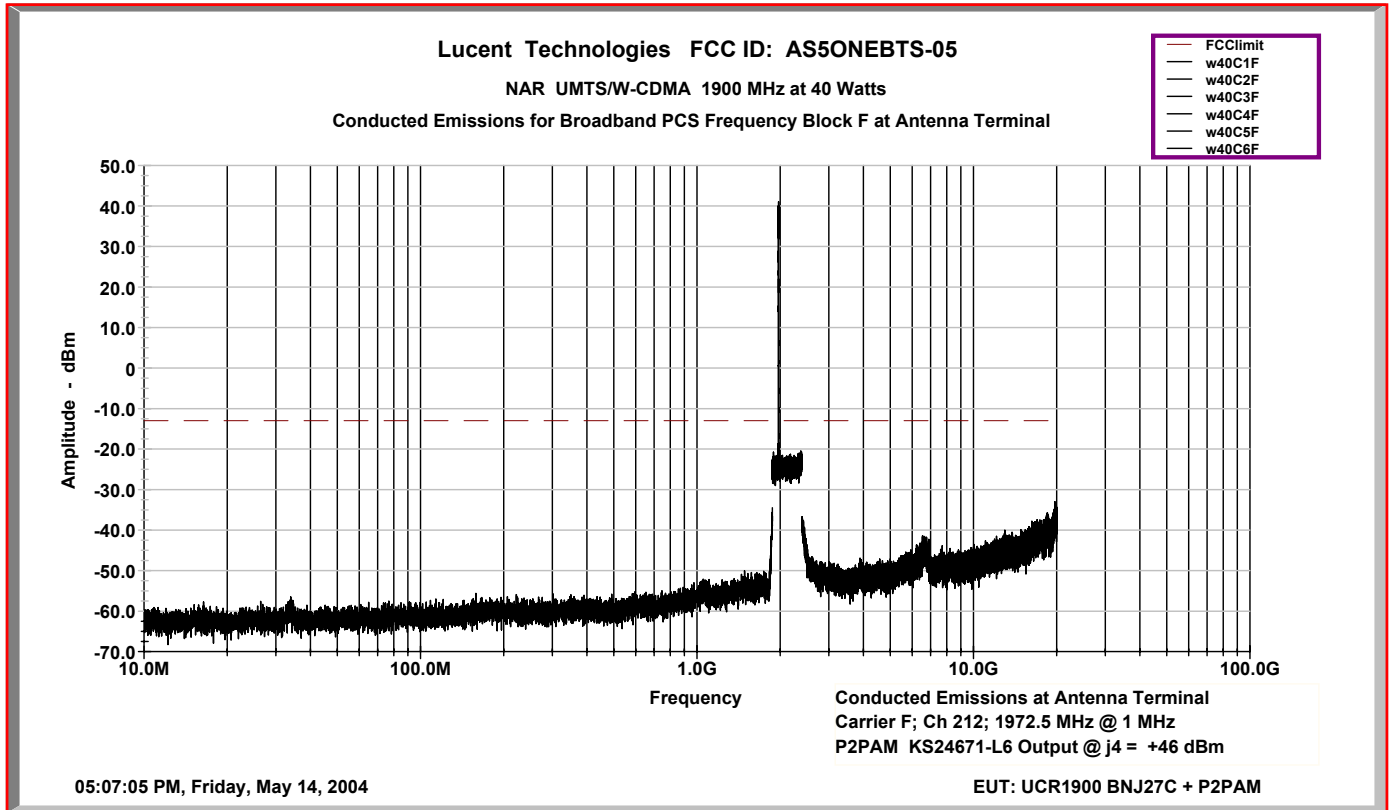
Conducted Emissions Characteristics: Frequency Block E, Carrier Channel E
UMTS1900 Ch 187; 1967.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5ONEBTS-05

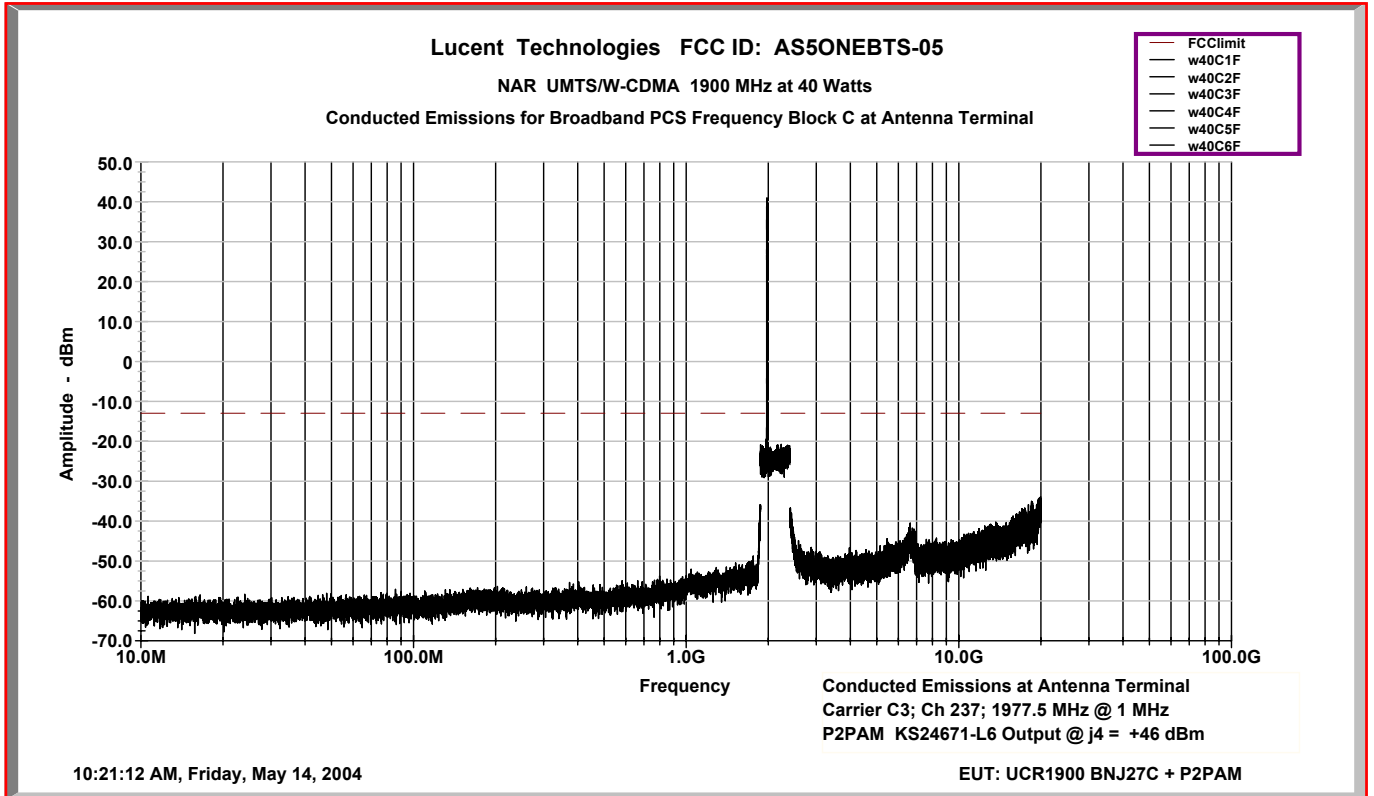
Conducted Emissions Characteristics: Frequency Block F, Carrier Channel F
UMTS1900 Ch 212; 1972.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5ONEBTS-05

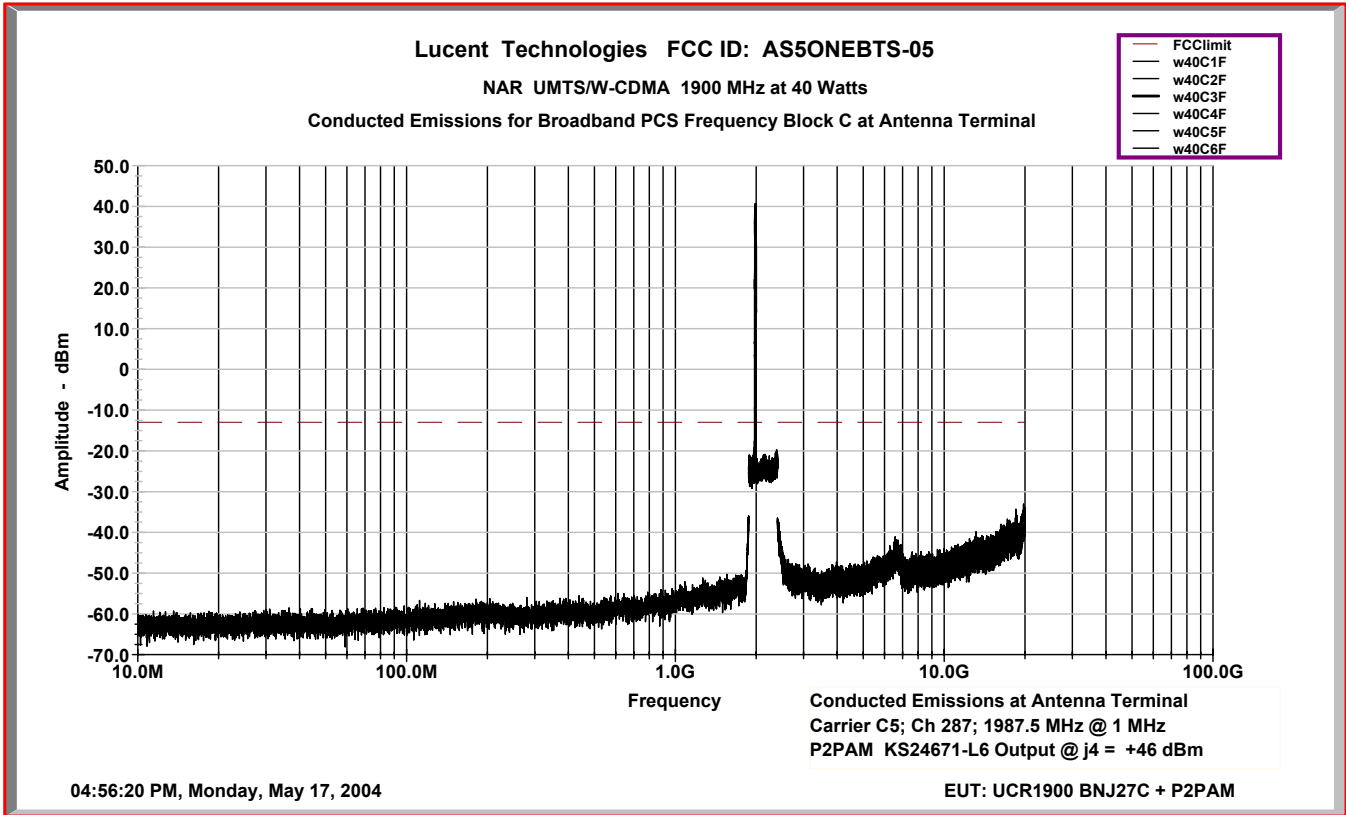
Conducted Emissions Characteristics: Frequency Block C, Carrier Channel C3
UMTS1900 Ch 237; 1977.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5ONEBTS-05

Conducted Emissions Characteristics: Frequency Block C, Carrier Channel C5
UMTS1900 Ch 287; 1987.5 MHz at Tx Antenna Terminal at +46 dBm per single 5 MHz carrier



APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5ONEBTS-05

EXHIBIT 10: TEST REPORT**PART 2.1053 MEASUREMENTS REQUIRED: FIELD STRENGTH OF SPURIOUS RADIATION**

This test requires a single carrier per sector, each at maximum rated power (40 Watts), transmitting into a non-radiating dummy load. The equipment frame is configured for 3 sectors at 1 carrier per sector. As required, the frequency range investigated was from 10 MHz to 20 GHz (10th harmonic of the carrier) as in the previous conducted spurious emissions test procedure. Sectors 1, 2 and 3 were set to the PCS frequency blocks A/D, B/E and F/C, respectively. Three separate radiated emission scans were made with all 3 sectors transmitting and the UMTS carriers/channels set to: (1) A1,B1,F; (2) A3, B3, C3; and (3) D, E, C5. The corresponding carrier center frequencies are as cited in the previous occupied bandwidth tests, with each carrier adjusted to provide 40 Watts (46.0 dBm) at the Equipment Antenna Connector (EAC) transmit antenna terminal.

In compliance with the guidelines of ANSI C63.4-2001, the equipment under test (EUT) was configured as recommended for *floor standing equipment*. The EUT was installed and operated as in the *normal mode of operation* with external alarm and T1 cables connected to the EUT and routed as prescribed in ANSI C63.4-2001. The standard Whippany procedure is to first evaluate the EUT in the Whippany 3-meter semi-anechoic RF chamber, which has been previously calibrated. If there are any signals/emissions measured that have field strengths that fall within 20 dB of the FCC's Part 24.238 limit, then they will be accurately remeasured on the Whippany Open Area Test Site (OATS), which is FCC listed and approved under Registration Number 90770, for 3 and 10 meters.

Any emissions radiating from the cabinet are treated as radiating from an isotropic radiator. The field strength, as a function of power and distance, is calculated from the equation below in accordance with *Reference Manual for Telecommunications Engineers, by Roger L. Freeman, page 523, Published 1984 by John Wiley & Sons, Inc.* Limitations are based on attenuation below the carrier (dBc) using the formula $43 + 10 \log (P \text{ Watts}) = \text{dBc}$, where P is the signal power level at the transmit antenna terminal (EAC). In accordance with Part 24.238, the required resolution bandwidth was 1 MHz; the detector function was set to peak. As stated in Part 2.1051, the magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.

For an isotropic radiator: $E = [(30)(P)\text{exp}(1/2)]/R$

Where: E = field intensity in Volts/Meter

P = effective isotropic radiated power in Watts

R = distance in meters

The required attenuation is: $\text{Att} = 43 + 10\log (P \text{ in Watts}) \text{ dBc}$

The required limitation is then: $E(\text{lim}) = E - \text{Att} \text{ (in dB}\mu\text{V/m)}$

For a carrier power level at 40 W and an antenna separation of 3 meters in the semi-anechoic chamber:

$$E = 11.5 \text{ V/m} = 141.2 \text{ dB}\mu\text{V/m}$$

$$\text{Att} = 59.0 \text{ dBc}$$

$$E(\text{lim}) = 82.2 \text{ dB}\mu\text{V/m}$$

APPLICANT: LUCENT TECHNOLOGIES**FCC ID: AS5ONEBTS-05****Method of Measurement:**

In order to suppress the instrumentation noise floor sufficient to detect and measure spurious signals that have power levels as low as 20 dB below the required limit, an EMC software package was employed to drive the spectrum analyzer, collect and compile the acquired data, perform mathematical corrections to the data by incorporating (i.e., programming) pre-measured path losses and antenna factors into the software, and then generate a graphical display. The software package is: *TILE/IC (Total Integrated Laboratory Environment/Instrument Control System)*; purchased and licensed from Quantum Change/EMC Systems, Inc. The instrumentation noise floor is suppressed by the software's ability to split the spectrum being measured into many small segments, perform the mathematical corrections to each segment, and then sequentially compile all the segments into a continuous graphical display, which also showed the required compliance limitations.

RESULTS:

The UMTS1900 Transceiver System, subject of this application for a Class II Permissive Change Request under FCC ID: AS5ONEBTS-05, demonstrated full compliance with the requirements of FCC Rule Part 2.1053 and with the requirements of Part 24.238. All radiated emissions that were detected and measured in the Whippany 3-meter semi-anechoic RF chamber had field strengths that were substantially suppressed more than 20 dB below the FCC limitation; i.e., field strengths suppressed lower than 62.2 dB μ V/m. Therefor, there are no reportable radiated spurious emissions. There were no signals of sufficient field strength to be detectable and measurable on the OATS.

APPLICANT: LUCENT TECHNOLOGIES**FCC ID: AS5ONEBTS-05****EXHIBIT 10: TEST REPORT****PART 2.1055 MEASUREMENTS REQUIRED: FREQUENCY STABILITY**

There are no changes to the UMTS 1900 transceiver, BNJ27B/BNJ27C, and no changes to the UMTS 1900 Transceiver System, as initially filed with the FCC, that could either affect or influence the frequency stability performance as initially reported. Therefore, there was no need to repeat these measurements. The actual measurements as initially reported are on file with the TCB and with the FCC. The frequency stability remains well within the required ± 0.05 ppm.