

APPLICANT: LUCENT TECHNOLOGIES**FCC ID: AS5CMP-38****EXHIBIT 10: TEST REPORT**

The test report attached to this exhibit demonstrates that the Lucent Technologies, AUTOPLEX™ System 1000, Series II, PCS TDMA Transmit Unit (TTU), subject of this application for certification under FCC ID: AS5CMP-38, 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, 2000. All testing was performed in accordance with CFR 47, Part 2, Subpart J – Equipment Authorization Procedures; Revised January 31, 2001.

All testing was performed in the Lucent Technologies, Whippany, NJ, compliance laboratory by F. E. Chetwynd and M. P. Farina during the period September 10 to November 30, 2001. This test program was implemented in adherence to a test plan generated by M. P. Farina, in accordance with Lucent's ISO-9001 and TL9000 Registration. All measurement instrumentation utilized were calibrated also in compliance with Lucent's ISO-9001 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 the requirements of Section 2.948 of the Rules of the Commission.

Frequency stability measurements were performed by T. N. Tye, Lucent Technologies, Columbus, Ohio under the direction of M. P. Farina, and in adherence to the previously cited ISO 9001 test plan. This test program was conducted during the interval April 19 to May 17, 2001.

Lucent Technologies
Bell Labs Innovations



67 Whippany Road
Whippany, NJ 07981

Subject: **Application for Certification of the Lucent Technologies PCS TDMA Transmit Unit (TTU) Base Station Power Amplifier, under FCC ID: AS5CMP-38.**

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November 30, 2001

TEST REPORT

SYNOPSIS:

The Lucent Technologies, AUTOPLEX™ System 1000, Series II, PCS TDMA Transmit Unit (TTU), subject of this application for certification under FCC ID: AS5CMP-38, is designed as a frequency up-converting, from cellular to PCS, base station power amplifier. The TTU is specifically designed as a single carrier amplifier and specifically for Time Domain Multiple Access (TDMA) technology carriers with 30 kHz bandwidth. The maximum rated average power output at the TTU RF output terminal 60 Watts (47.8 dBm), per single carrier. The TTU is also designed for utilization in Lucent's AUTOPLEX™ System 1000, Series II, PCS-TDMA Minicell. Path losses in the Minicell due to 2:1 combiner, dual band PCS transmit bandpass filter and coaxial cabling attenuate the 60 Watt TTU output power to nominally 16 Watts (42.0 dBm) average at the Minicell transmit antenna terminal (J4) per single carrier. All conducted emissions tests were performed at the J4 transmit antenna terminal with the single carrier power level adjusted to provide the *antenna terminal rated power level* of 16 Watts (42.0 dBm) average.

The TDMA signal source, utilized for all tests in this report, is Lucent's Enhanced Digital Radio Unit (EDRU) transceiver, which was previously authorized under FCC ID: AS5CMP-17. The EDRU transmits a single carrier, in the cellular frequency band (869-894 MHz), modulated in all three time slots using ¼ - DQPSK TDMA modulation. The emission designator characteristic of this TDMA carrier is 4K0GXW. Using appropriate frequency mixing and filtering, the TTU up-converts the cellular frequency carrier input signal, nominally at +10 dBm, to the PCS frequency band (1930-1990 MHz) and then performs power amplification to provide the rated 60 Watts (47.8 dBm) average maximum at the TTU RF output terminal (J5). The 60 Watt PCS carrier is then transmitted through a 2:1 signal combiner, band pass transmit filter and coaxial cabling to provide a corresponding and attenuated power level at the J4 transmit antenna terminal of nominally 16 Watts (42.0 dBm) average, which is the rated transmit power level for the Minicell. The TTU is designed to provide a nominal gain of 37 dB across the PCS frequency band, at a nominal supply source of +27.25 Vdc.

All testing was performed in the Lucent Technologies, Whippany, NJ, compliance laboratory by F. E. Chetwynd and M. P. Farina during the period September 10 to November 30, 2001. This test program was implemented in adherence to a test plan generated by M. P. Farina, in accordance with Lucent's ISO-9001 Registration. All measurement instrumentation utilized were calibrated also in compliance with Lucent's ISO-9001 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: AS5CMP-38**

Frequency stability measurements were performed by T. N. Tye, Lucent Technologies, Columbus, Ohio under the direction of M. P. Farina, and in adherence to the previously cited ISO 9001 test plan. This test program was conducted during the interval April 19 to May 17, 2001.

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 AUTOPLEX™ System 1000, Series II PCS TDMA Transmit Unit (TTU), subject of this application for certification under FCC ID: AS5CMP-38, and the PCS-TDMA Minicell were designed in accordance with the guidelines of TIA/EIA/IS-138-A, TDMA Cellular/PCS – Radio Interface – Minimum Performance Standards for Base Stations, July 1996. The TTU demonstrated full compliance with CFR 47, Part 24, Subpart E – Broadband PCS, and Part 24.238 Emission Limits, effective October 1, 2000; following the test procedures and requirements specified in CFR 47, Part 2, Subpart J – Equipment Authorization Procedures; Revised January 31, 2001. The specific test procedures that are both required for and are applicable to the TTU are:

| | | |
|-------------------------|--|--------------------|
| Part 2.1046 | RF Power Output | Pages 4 – 6 |
| Part 2.1047 | Modulation Characteristics | Pages 7-19 |
| Part 2.1049 | Occupied Bandwidth | Pages 20-57 |
| Part 2.1051 | Spurious Emissions at the Antenna Terminals. | Pages 58-62 |
| Part 2.1053 | Field Strength of Spurious Radiation | Pages 63-64 |
| Part 2.1055 | Frequency Stability | Pages 65-68 |
| Part 2.1057 | Frequency Spectrum to be Investigated | |
| Part 22.917 | Emission Limitations for Cellular (d) Occupied Bandwidth emission mask for F1D: wideband data and TDMA (h) Measurement Procedure: required spectrum analyzer settings for resolution bandwidth | |
| Part 24 | Personal Communications Services; Subpart E – Broadband PCS | |
| Part 24.238 | Emission Limits | |
| ANSI C63.4-1992 | 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; July 17, 1992. | |
| TIA/EIA/IS-138-A | TDMA Cellular/PCS – Radio Interface- Minimum Performance Standards for Base Stations; July 1996. | |

APPLICANT: LUCENT TECHNOLOGIES**FCC ID: AS5CMP-38****PART 2.1046 MEASUREMENTS REQUIRED: RF POWER OUTPUT**

This is a measure of the transmit power linearity, and control, across the PCS frequency band from PCS Ch 2 (1930.08 MHz) to PCS CH 1998 (1989.96 MHz), at the PCS TDMA Minicell J4 transmit antenna terminal. The TTU rated maximum output power is 60 Watts (47.8 dBm) average per single carrier, which corresponds to the Minicell rated output power level at the J4 transmit antenna terminal of 16 Watts (42.04 dBm) average. Note that all conducted emissions tests were performed at the J4 transmit antenna terminal with the single carrier power level adjusted to provide the *antenna terminal rated power level* of 16 Watts (42.0 dBm) average. The signal source was the current production, cellular frequency, Enhanced Digital Radio Unit (EDRU), 44WR8 1:11, previously authorized under FCC ID: AS5CMP-17. The TDMA carrier was modulated in all 3 time slots with a pseudo-random data stream. Current production PCS dual band transmit bandpass filters: A/D, B/E and F/C, were utilized in the tests covered by this report. In each individual PCS frequency block, the EDRU output power level was adjusted to provide 42.04 dBm (16 Watts) average at the J4 transmit antenna terminal for each designated PCS Block center frequency as specified below. Then, without making additional adjustments, the power level at each block edge frequency was measured and recorded. This was performed for each of the 6 PCS Frequency Blocks.

The FCC does not specify tolerance limits or values for the output power. However, IS-138-A, Section 3.2.1.2 recommends a range of +1dB to -3 dB of the nominal 42.04 dBm value. Similarly, the FCC does not specify what channels and how many channels are required for this procedure. Since Part 24.238 does require emissions to be measured at both the lower and upper frequency block edges for each PCS frequency block, the following table lists the channels/frequencies measured at the antenna terminal, corresponding to PCS Frequency Blocks: A, D, B, E, F and C:

- 1) Power level adjusted and measured at each block center frequency;
- 2) Measurement at the lowest settable block edge frequency for each block,
- 3) Measurement at the highest settable block edge frequency for each block.

These same frequencies are used for all conducted emission tests (i.e., Occupied Bandwidth) performed at the antenna terminal (J4) in this report.

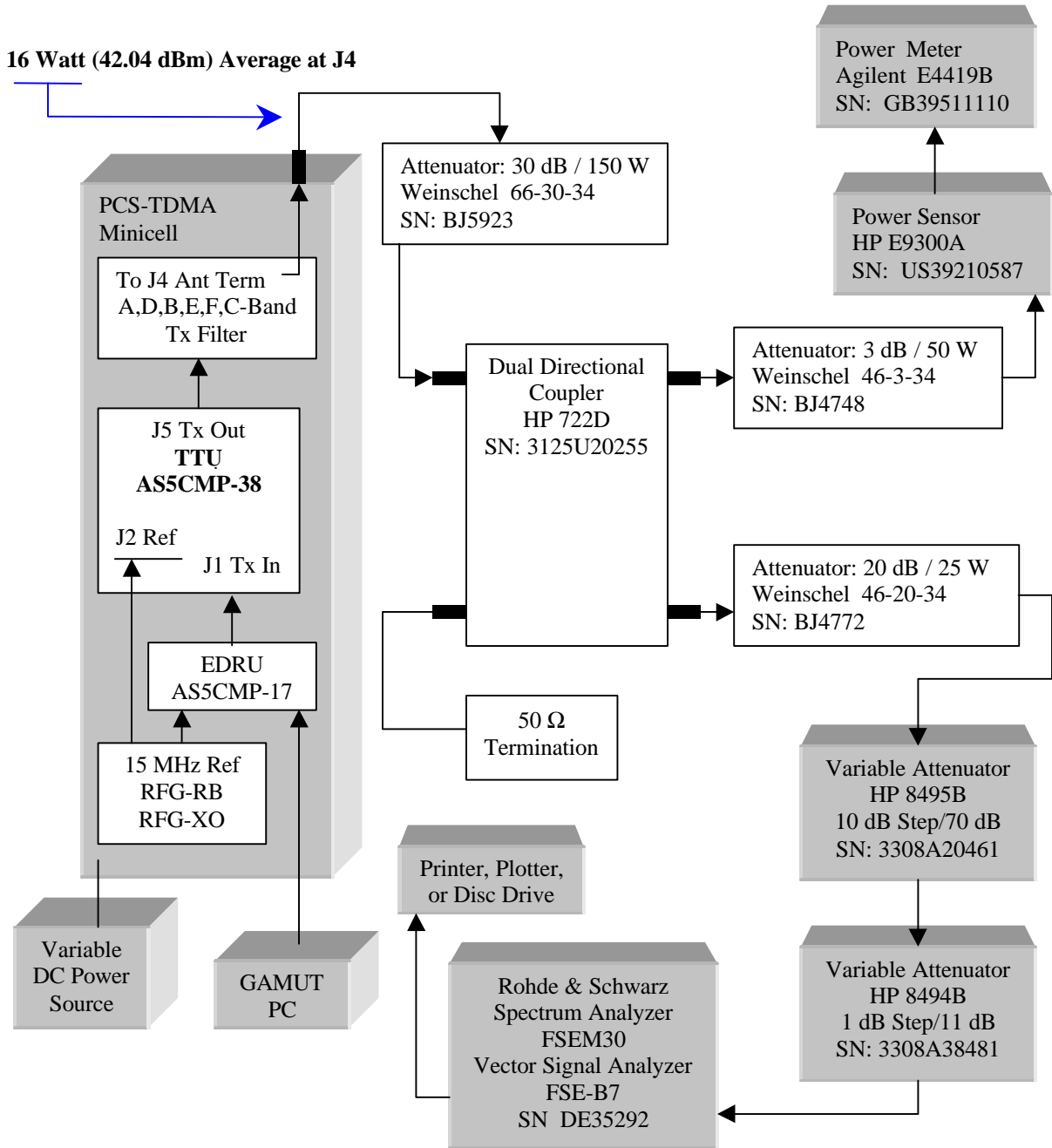
Single Carrier Power Measurement at the Minicell Transmit Antenna Terminal (J4) and the Corresponding Channel Frequency Assignment

| PCS Frequency Block | AMPS Channel No. | AMPS Frequency MHz | PCS Channel No. | PCS Frequency MHz | J4 Tx Antenna Terminal dBm |
|----------------------------|-------------------------|---------------------------|------------------------|--------------------------|-----------------------------------|
| A (Low) | 2 | 870.06 | 2 | 1930.08 | 41.98 |
| A (Center) | 250 | 877.50 | 250 | 1937.52 | 42.04 |
| A (High) | 498 | 884.94 | 498 | 1944.96 | 41.72 |
| | | | | | |
| D (Low) | 502 | 885.06 | 502 | 1945.08 | 41.86 |
| D (Center) | 583 | 887.49 | 583 | 1947.51 | 42.04 |
| D (High) | 664 | 889.92 | 664 | 1949.94 | 42.08 |
| | | | | | |
| B (Low) | 1 | 870.03 | 668 | 1950.06 | 41.53 |
| B (Center) | 250 | 877.50 | 917 | 1957.53 | 42.04 |
| B (High) | 497 | 884.91 | 1164 | 1964.94 | 41.64 |
| | | | | | |
| E (Low) | 501 | 885.03 | 1168 | 1965.06 | 42.05 |
| E (Center) | 583 | 887.49 | 1250 | 1967.52 | 42.04 |
| E (High) | 664 | 889.92 | 1331 | 1969.95 | 41.97 |
| | | | | | |
| F (Low) | 1 | 870.03 | 1335 | 1970.07 | 42.12 |
| F (Center) | 83 | 872.49 | 1417 | 1972.53 | 42.04 |
| F (High) | 164 | 874.92 | 1498 | 1974.96 | 42.01 |
| | | | | | |
| C (Low) | 168 | 875.04 | 1502 | 1975.08 | 42.14 |
| C (Center) | 416 | 882.48 | 1750 | 1982.52 | 42.04 |
| C (High) | 664 | 889.92 | 1998 | 1989.96 | 42.48 |

RESULTS: The power levels measured at the lowest settable and at the highest settable block edge frequencies are all well within +1 dB to -1 dB of the block center frequency adjustment to the rated 42.04 dBm (16 Watts) at the at the transmit (Tx) antenna terminal (J4). The PCS TDMA Transmit Unit (TTU), subject of this application for certification under FCC ID: AS5CMP-38, demonstrated full compliance with the requirements of FCC Rule Part 2.1046.

EXHIBIT 10: TEST REPORT

Block Diagram Of The Power Measurement Test Set-Up And Test Equipment Configuration:



APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5CMP-38

EXHIBIT 10: TEST REPORT

PART 2.1047 MEASUREMENTS REQUIRED: MODULATION CHARACTERISTICS

The TDMA Transmit Unit (TTU) is a frequency up-converting power amplifier and does not incorporate TDMA modulation circuitry or capability. However, this test does demonstrate that the frequency up-converting synthesizer and associated circuitry do not alter or degrade the modulation accuracy or characteristics of the TDMA cellular frequency carrier input to the TTU. It is sufficient to demonstrate this at the center frequency of each PCS Frequency Block.

The TDMA modulation type, accuracy and minimum standard, for both PCS and Cellular, are specified in TIA/EIA/IS-138-A: TDMA Cellular/PCS – Radio Interface – Minimum Performance Standards for Base Stations (July 1996), Section 3.3.2 Digital. The requirement for the EDRU (or equivalent TDMA transmitter), used as an authorized TDMA signal source, is that it be capable of generating a $\delta/4$ DQPSK modulated carrier. This test requires that the TDMA carrier be modulated in all three time slots with pseudo-random data field bits. The minimum standard requirement is that the RMS error vector magnitude (EVM) shall be less than 12.5%. Compliance was demonstrated for both the input to and output from the TTU, with the carrier power level at each frequency set to provide 42.04 dBm (16 Watts) average at the J4 transmit antenna terminal. The appropriate measurement equipment utilized was a Rohde & Schwarz FSEM30 Spectrum Analyzer, which incorporated the R&S Vector Signal Analyzer Option FSE-B7.

RMS Error Vector Magnitude (EVM) Measurement Summary:

| PCS Frequency Block | AMPS Channel No. | AMPS Frequency MHz | Cellular Frequency Input to TTU Vector Error | PCS Channel No. | PCS Frequency MHz | PCS Frequency Output from TTU at J4 Transmit Antenna Terminal Error Vector Magnitude |
|---------------------|------------------|--------------------|--|-----------------|-------------------|--|
| A (Center) | 250 | 877.50 | 3.67 % rms | 250 | 1937.52 | 4.81 % rms |
| D (Center) | 583 | 887.49 | 3.97 % rms | 583 | 1947.51 | 4.71 % rms |
| B (Center) | 250 | 877.50 | 3.97 % rms | 917 | 1957.53 | 4.58 % rms |
| E (Center) | 583 | 887.49 | 3.78 % rms | 1250 | 1967.52 | 5.41 % rms |
| F (Center) | 83 | 872.49 | 3.97 % rms | 1417 | 1972.53 | 5.01 % rms |
| C (Center) | 416 | 882.48 | 3.92 % rms | 1750 | 1982.52 | 5.43 % rms |

Minimum Standard Requirement: The minimum standard requirement is that the RMS error vector magnitude (EVM) shall be less than 12.5%.

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

RESULTS: The PCS TDMA Transmit Unit (TTU), subject of this application for certification under FCC ID: AS5CMP-38, demonstrated full compliance with the requirements of FCC Rule Part 2.1047. Both the cellular frequency input carriers to the TTU and the corresponding PCS frequency output carriers at the J4 transmit antenna terminal demonstrated full compliance by showing error vector magnitude (EVM) values that are well below the 12.5 % requirement. The difference between the cellular input values and the corresponding PCS output values are negligible.

APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5CMP-38

EXHIBIT 10: TEST REPORT

Modulation Characteristics; Block A; PCS Ch 250: Output at Tx Antenna Terminal (J4)


 Ref Lvl
 0 dBc

 CF 1.93752 GHz
 SR 24.3 kHz Symbol/Error
 Standard NADC

| 10 dB Offset | Symbol Table | | | | |
|--------------|-----------------|-----------------|-----------------|-----------------|----------|
| 0 | <u>10101001</u> | <u>00011101</u> | <u>11100100</u> | <u>10101111</u> | 10111000 |
| 40 | 10100110 | 11101001 | 10001011 | 00010011 | 01010000 |
| 80 | 00000010 | 10001101 | 01111101 | 11010001 | 01101001 |
| 120 | 00100101 | 11010101 | 01110111 | 10100100 | 11101011 |
| 160 | 01001101 | 00000000 | 01001101 | 01101110 | 11100010 |
| 200 | 10001000 | 10100100 | 11100100 | 00100011 | 00011100 |
| 240 | 01011000 | 11101110 | 00001100 | 01100111 | 01111110 |
| 280 | 01100010 | 00100001 | 00011001 | 11101101 | 10000000 |
| 320 | 11111010 | 10011101 | | | |

| Error Summary | | | | |
|------------------|--------------|--------------|-----------|--------|
| Error Vector Mag | 4.81 % rms | 10.98 % | Pk at sym | 73 |
| Magnitude Error | 2.56 % rms | -6.96 % | Pk at sym | 116 |
| Phase Error | 2.34 deg rms | 6.23 deg | Pk at sym | 73 |
| Freq Error | 506.80 Hz | 506.80 Hz | Pk | |
| Amplitude Droop | 0.71 dB/sym | Rho Factor | | 0.9977 |
| IQ Offset | 0.91 % | IQ Imbalance | | 0.64 % |

A

SGL

Title: AS5CMP-38

Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Modulation Characteristics; Output Block A, PCS Ch 250

Date: 4.OCT.2001 14:10:31

EXHIBIT 10: TEST REPORT

Modulation Characteristics; Block A; AMPS Ch 250: Input to TTU



Ref Lvl:
0 dB

CF 877.5 MHz
SR 24.3 kHz Symbol/Erro:
Standard NADC

| 10 dB Offset | Symbol Table | | | | |
|--------------|--------------|----------|----------|----------|----------|
| 0 | 10101001 | 00011101 | 11100100 | 10101010 | 11011000 |
| 40 | 00110110 | 11101001 | 11001110 | 00010011 | 00011000 |
| 80 | 00000000 | 10011111 | 01101100 | 11010000 | 00011000 |
| 120 | 00100110 | 11000011 | 00100110 | 00010101 | 10111011 |
| 160 | 00001110 | 00000000 | 01001101 | 00111110 | 11100001 |
| 200 | 10011101 | 10110000 | 11100000 | 00110011 | 01001100 |
| 240 | 01001001 | 11101011 | 00001101 | 00101110 | 01101100 |
| 280 | 01100111 | 00101000 | 00010101 | 11110110 | 10000000 |
| 320 | 11111010 | 10011101 | | | |

| Error Summary | | | | |
|------------------|--------------|--------------|-----------|--------|
| Error Vector Mag | 3.97 % rms | 11.64 % | Pk at sym | 28 |
| Magnitude Error | 2.10 % rms | -4.77 % | Pk at sym | 152 |
| Phase Error | 1.94 deg rms | 6.57 deg | Pk at sym | 28 |
| Freq Error | 229.50 Hz | 229.50 Hz | Pk | |
| Amplitude Droop | 0.56 dB/sym | Rho Factor | | 0.9986 |
| IQ Offset | 0.94 % | IQ Imbalance | | 0.82 % |

A
SGL

Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Modulation Characteristics; Input Block A, AMPS Ch 250
 Date: 4.OCT.2001 14:00:05

APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5CMP-38

EXHIBIT 10: TEST REPORT

Modulation Characteristics; Block D; PCS Ch 583: Output at Tx Antenna Terminal (J4)



Ref Lv.
0 dB

CF 1.94751 GHz
SR 24.3 kHz Symbol/Erro:
Standard NADC

| 10 dB Offset | Symbol Table | | | | |
|--------------|-----------------|-----------------|-----------------|-----------------|----------|
| 0 | <u>10101001</u> | <u>00011101</u> | <u>11100100</u> | <u>10101101</u> | 10111000 |
| 40 | 00000110 | 10101000 | 11001110 | 10010010 | 01011101 |
| 80 | 01000000 | 10011101 | 10111000 | 10000100 | 01101101 |
| 120 | 00100010 | 11000010 | 10100000 | 00010100 | 11111111 |
| 160 | 00000010 | 00000000 | 01001100 | 01110111 | 10000001 |
| 200 | 11001001 | 10100110 | 10110001 | 00110111 | 00111100 |
| 240 | 01011100 | 10101100 | 00011111 | 00101011 | 01111100 |
| 280 | 01000110 | 00111001 | 00111111 | 10100101 | 10000000 |
| 320 | 11111010 | 10011101 | | | |

| Error Summary | | | |
|------------------|--------------|--------------|--------------|
| Error Vector Mag | 4.71 % rms | 9.49 % | Pk at sym 92 |
| Magnitude Error | 2.52 % rms | -7.06 % | Pk at sym 91 |
| Phase Error | 2.29 deg rms | -5.44 deg | Pk at sym 92 |
| Freq Error | 509.34 Hz | 509.34 Hz | Pk |
| Amplitude Droop | 0.73 dB/sym | Rho Factor | 0.9974 |
| IQ Offset | 0.98 % | IQ Imbalance | 0.94 % |

A

SGL

Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Modulation Characteristics; Output Block D, PCS Ch 583
 Date: 4.OCT.2001 14:12:52

APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5CMP-38

EXHIBIT 10: TEST REPORT

Modulation Characteristics; Block D; AMPS Ch 583: Input to TTU



Ref Lv.
0 dB

CF 887.49 MHz
SR 24.3 kHz Symbol/Erro:
Standard NADC

| 10 dB Offsets | Symbol Table | | | | |
|---------------|-----------------|-----------------|-----------------|-----------------|----------|
| 0 | <u>10101001</u> | <u>00011101</u> | <u>11100100</u> | <u>10101010</u> | 11011000 |
| 40 | 11100110 | 10101011 | 11001110 | 01000010 | 01011101 |
| 80 | 00001001 | 10011101 | 11101100 | 11010001 | 01001100 |
| 120 | 00101010 | 11001111 | 11110001 | 00000000 | 01001010 |
| 160 | 01011011 | 00000000 | 01001101 | 01100110 | 10000001 |
| 200 | 11000000 | 11110011 | 10110001 | 00100010 | 00101100 |
| 240 | 00000000 | 10111101 | 00001010 | 00100110 | 01101100 |
| 280 | 00000110 | 00100001 | 00110111 | 11100110 | 10000000 |
| 320 | 11111010 | 10011101 | | | |

| Error Summary | | | | |
|------------------|--------------|--------------|-----------|--------|
| Error Vector Mag | 3.92 % rms | 10.42 % | Pk at sym | 77 |
| Magnitude Error | 2.14 % rms | -5.05 % | Pk at sym | 46 |
| Phase Error | 1.89 deg rms | -5.58 deg | Pk at sym | 77 |
| Freq Error | 232.32 Hz | 232.32 Hz | Pk | |
| Amplitude Droop | 0.60 dB/sym | Rho Factor | | 0.9986 |
| IQ Offset | 0.67 % | IQ Imbalance | | 0.91 % |

A
SGL

Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Modulation Characteristics; Input Block D, AMPS Ch 583
 Date: 4.OCT.2001 14:01:17

APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5CMP-38

EXHIBIT 10: TEST REPORT

Modulation Characteristics; Block B; PCS Ch 917: Output at Tx Antenna Terminal (J4)



Ref Lvl:
0 dB

CF 1.95753 GHz
SR 24.3 kHz Symbol/Erro:
Standard NADC

| 10 dB Offset | Symbol Table | | | | |
|--------------|--------------|----------|----------|----------|----------|
| 0 | 10101001 | 00011101 | 11100100 | 10101101 | 10010101 |
| 40 | 01101110 | 11111011 | 11001110 | 00000011 | 01001100 |
| 80 | 01000010 | 10011100 | 11101100 | 00000101 | 01011001 |
| 120 | 01110101 | 10010000 | 11110101 | 01110001 | 10111010 |
| 160 | 00001100 | 00000000 | 01001101 | 01110010 | 11010110 |
| 200 | 11011001 | 11100010 | 11100001 | 00110010 | 01101101 |
| 240 | 00011100 | 11101001 | 00001101 | 01100011 | 01101100 |
| 280 | 01100110 | 00100001 | 00010111 | 10100100 | 10000000 |
| 320 | 11111010 | 10011101 | | | |

| Error Summary | | | | |
|------------------|--------------|--------------|-----------|--------|
| Error Vector Mag | 4.58 % rms | 10.30 % | Pk at sym | 96 |
| Magnitude Error | 2.64 % rms | -6.96 % | Pk at sym | 148 |
| Phase Error | 2.15 deg rms | 5.91 deg | Pk at sym | 96 |
| Freq Error | 512.57 Hz | 512.57 Hz | Pk | |
| Amplitude Droop | 0.99 dB/sym | Rho Factor | | 0.9973 |
| IQ Offset | 0.45 % | IQ Imbalance | | 2.06 % |

A
SGL

Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Modulation Characteristics; Output Block B, PCS Ch 917
 Date: 4.OCT.2001 14:35:54

EXHIBIT 10: TEST REPORT

Modulation Characteristics; Block B; AMPS Ch 250: Input to TTU



Ref Lvl:
0 dB

CF 877.5 MHz
SR 24.3 kHz Symbol/Erro:
Standard NADC

| 10 dB Offset | Symbol Table | | | | |
|--------------|--------------|----------|----------|----------|----------|
| 0 | 10101001 | 00011101 | 11100100 | 10101010 | 11011000 |
| 40 | 00001110 | 11111000 | 10001010 | 10010111 | 00001001 |
| 80 | 01000010 | 10011100 | 00111100 | 10010101 | 00001100 |
| 120 | 00101001 | 10010111 | 01110100 | 10100001 | 10101110 |
| 160 | 00000000 | 00000000 | 01001101 | 01101111 | 10000010 |
| 200 | 10011100 | 10100110 | 10100001 | 01100011 | 00111101 |
| 240 | 01011101 | 10101101 | 00001101 | 01100010 | 01101100 |
| 280 | 00100111 | 10111000 | 00010111 | 10110110 | 10000000 |
| 320 | 11111010 | 10011101 | | | |

| Error Summary | | | | |
|------------------|--------------|--------------|-----------|--------|
| Error Vector Mag | 4.35 % rms | 10.46 % | Pk at sym | 67 |
| Magnitude Error | 2.27 % rms | -4.98 % | Pk at sym | 66 |
| Phase Error | 2.13 deg rms | 5.76 deg | Pk at sym | 64 |
| Freq Error | 229.65 Hz | 229.65 Hz | Pk | |
| Amplitude Droop | 0.67 dB/sym | Rho Factor | | 0.9985 |
| IQ Offset | 0.81 % | IQ Imbalance | | 0.82 % |

A
SGL

Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Modulation Characteristics; Input Block B, AMPS Ch 250
 Date: 4.OCT.2001 14:02:33

APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5CMP-38

EXHIBIT 10: TEST REPORT

Modulation Characteristics; Block E; PCS Ch 1250: Output at Tx Antenna Terminal (J4)



Ref Lv.
0 dB

CF 1.96752 GHz
SR 24.3 kHz Symbol/Erro:
Standard NADC

| 10 dB Offset | Symbol Table | | | | |
|--------------|--------------|----------|----------|----------|----------|
| 0 | 10101001 | 00011101 | 11100100 | 10101101 | 10010101 |
| 40 | 10110110 | 10101111 | 11001110 | 00010011 | 00010001 |
| 80 | 00000100 | 11011000 | 01101100 | 00010001 | 01101101 |
| 120 | 01100111 | 10010110 | 00110000 | 00000101 | 11111111 |
| 160 | 01011011 | 00000000 | 01001101 | 00111010 | 10010001 |
| 200 | 11001001 | 11110110 | 10110001 | 00100111 | 00101101 |
| 240 | 00011100 | 11101100 | 00001111 | 01101111 | 11111110 |
| 280 | 01000110 | 00101000 | 00110011 | 00100111 | 10000000 |
| 320 | 11111010 | 10011101 | | | |

| Error Summary | | | | |
|------------------|--------------|--------------|-----------|--------|
| Error Vector Mag | 5.41 % rms | 12.96 % | Pk at sym | 53 |
| Magnitude Error | 2.91 % rms | -8.40 % | Pk at sym | 98 |
| Phase Error | 2.62 deg rms | 6.96 deg | Pk at sym | 77 |
| Freq Error | 514.94 Hz | 514.94 Hz | Pk | |
| Amplitude Droop | 1.07 dB/sym | Rho Factor | | 0.9969 |
| IQ Offset | 0.69 % | IQ Imbalance | | 2.33 % |

A
SGL

Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Modulation Characteristics; Output Block E, PCS Ch 1250
 Date: 4.OCT.2001 14:38:43

APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5CMP-38

EXHIBIT 10: TEST REPORT

Modulation Characteristics; Block E; AMPS Ch 583: Input to TTU



Ref Lv.
0 dB

CF 887.49 MHz
SR 24.3 kHz Symbol/Erro:
Standard NADC

| 10 dB Offset | Symbol Table | | | | |
|--------------|--------------|----------|----------|----------|----------|
| 0 | 10101001 | 00011101 | 11100100 | 10100111 | 00001001 |
| 40 | 10101110 | 11101001 | 11001011 | 10000010 | 01010101 |
| 80 | 00010000 | 11011111 | 00111100 | 01000100 | 01111100 |
| 120 | 00110110 | 10000101 | 00100100 | 00000101 | 11111010 |
| 160 | 01010110 | 00000000 | 01001101 | 01111011 | 11000001 |
| 200 | 11011001 | 11110011 | 11100001 | 01110111 | 01101100 |
| 240 | 00011100 | 10111000 | 00001110 | 01101111 | 01101100 |
| 280 | 00100110 | 10100001 | 00011101 | 10101101 | 10000000 |
| 320 | 11111010 | 10011101 | | | |

| Error Summary | | | | |
|------------------|--------------|--------------|-----------|--------|
| Error Vector Mag | 3.92 % rms | 9.31 % | Pk at sym | 82 |
| Magnitude Error | 2.25 % rms | -5.14 % | Pk at sym | 46 |
| Phase Error | 1.85 deg rms | -5.33 deg | Pk at sym | 82 |
| Freq Error | 232.44 Hz | 232.44 Hz | Pk | |
| Amplitude Droop | 0.52 dB/sym | Rho Factor | | 0.9986 |
| IQ Offset | 1.11 % | IQ Imbalance | | 0.88 % |

A
SGL

Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Modulation Characteristics; Input Block E, AMPS Ch 583
 Date: 4.OCT.2001 14:03:31

APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5CMP-38

EXHIBIT 10: TEST REPORT

Modulation Characteristics; Block F; PCS Ch 1417: Output at Tx Antenna Terminal (J4)



Ref Lv.
0 dB

CF 1.97253 GHz
SR 24.3 kHz Symbol/Erro:
Standard NADC

| 10 dB Offset | Symbol Table | | | | |
|--------------|--------------|----------|----------|----------|----------|
| 0 | 10101001 | 00011101 | 11100100 | 10100111 | 00001001 |
| 40 | 01000110 | 11111111 | 11001110 | 10000011 | 01010001 |
| 80 | 01001000 | 10011000 | 01101100 | 01000100 | 00101100 |
| 120 | 00110011 | 10010010 | 01100101 | 01010100 | 10111111 |
| 160 | 00001011 | 00000000 | 01001100 | 01111110 | 10010101 |
| 200 | 10001001 | 10100110 | 10100000 | 00100011 | 01111100 |
| 240 | 00001100 | 11101101 | 00011110 | 01100010 | 11101110 |
| 280 | 00000110 | 10100001 | 00110101 | 00101101 | 10000000 |
| 320 | 11111010 | 10011101 | | | |

| Error Summary | | | | |
|------------------|--------------|--------------|-----------|--------|
| Error Vector Mag | 5.01 % rms | 10.91 % | Pk at sym | 96 |
| Magnitude Error | 2.84 % rms | -8.86 % | Pk at sym | 128 |
| Phase Error | 2.37 deg rms | 6.18 deg | Pk at sym | 96 |
| Freq Error | 515.74 Hz | 515.74 Hz | Pk | |
| Amplitude Droop | 1.00 dB/sym | Rho Factor | | 0.9974 |
| IQ Offset | 0.08 % | IQ Imbalance | | 0.20 % |

A

SGL

Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Modulation Characteristics; Output Block F, PCS Ch 1417
 Date: 4.OCT.2001 14:29:02

EXHIBIT 10: TEST REPORT

Modulation Characteristics; Block F; AMPS Ch 83: Input to TTU



Ref Lv.
0 dB

CF 872.49 MHz
SR 24.3 kHz Symbol/Erro:
Standard NADC

| 10 dB Offset | Symbol Table | | | | |
|--------------|--------------|----------|----------|----------|----------|
| 0 | 10101001 | 00011101 | 11100100 | 10100001 | 01111101 |
| 40 | 10101110 | 11111111 | 11001110 | 00010011 | 01100100 |
| 80 | 01000111 | 10011000 | 01111100 | 01000101 | 00101000 |
| 120 | 01110100 | 11010010 | 01100001 | 10100001 | 10111111 |
| 160 | 00000101 | 01000000 | 01001101 | 00111110 | 11010011 |
| 200 | 11011001 | 10100011 | 11100001 | 00110010 | 01101101 |
| 240 | 00011100 | 10111001 | 00011001 | 01101010 | 11101110 |
| 280 | 00100110 | 00100001 | 00110111 | 00100111 | 10000000 |
| 320 | 11111010 | 10011101 | | | |

| Error Summary | | | | |
|------------------|--------------|--------------|-----------|--------|
| Error Vector Mag | 4.02 % rms | 10.52 % | Pk at sym | 29 |
| Magnitude Error | 2.04 % rms | 4.16 % | Pk at sym | 13 |
| Phase Error | 1.99 deg rms | -6.04 deg | Pk at sym | 29 |
| Freq Error | 228.28 Hz | 228.28 Hz | Pk | |
| Amplitude Droop | 0.57 dB/sym | Rho Factor | | 0.9985 |
| IQ Offset | 0.96 % | IQ Imbalance | | 0.60 % |

A
SGL

Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Modulation Characteristics; Input Block F, AMPS Ch 83
 Date: 4.OCT.2001 13:55:52

APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5CMP-38

EXHIBIT 10: TEST REPORT

Modulation Characteristics; Block C; PCS Ch 1750: Output at Tx Antenna Terminal (J4)



Ref Lvl:
0 dB

CF 1.98252 GHz
SR 24.3 kHz Symbol/Erro:
Standard NADC

| 10 dB Offset | Symbol Table | | | | |
|--------------|--------------|----------|----------|----------|----------|
| 0 | 10101001 | 00011101 | 11100100 | 10101101 | 10111000 |
| 40 | 01100110 | 11101011 | 11001010 | 01010011 | 01010001 |
| 80 | 01001001 | 10011111 | 00101000 | 01010101 | 01011001 |
| 120 | 00110110 | 11000111 | 00110000 | 10010101 | 11011110 |
| 160 | 00001011 | 00000000 | 01001100 | 01111011 | 11000001 |
| 200 | 11011001 | 10100111 | 10110000 | 00110011 | 01101101 |
| 240 | 00011100 | 11101001 | 00001100 | 01101111 | 11101100 |
| 280 | 01100110 | 10111000 | 00010101 | 10101110 | 10000000 |
| 320 | 11111010 | 10011101 | | | |

| Error Summary | | | | |
|------------------|--------------|--------------|-----------|--------|
| Error Vector Mag | 5.43 % rms | 11.24 % | Pk at sym | 115 |
| Magnitude Error | 3.13 % rms | -8.32 % | Pk at sym | 4 |
| Phase Error | 2.55 deg rms | 6.40 deg | Pk at sym | 115 |
| Freq Error | 518.62 Hz | 518.62 Hz | Pk | |
| Amplitude Droop | 1.13 dB/sym | Rho Factor | | 0.9969 |
| IQ Offset | 0.24 % | IQ Imbalance | | 1.02 % |

A
SGL

Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Modulation Characteristics; Output Block C, PCS Ch 1750
 Date: 4.OCT.2001 14:30:54

EXHIBIT 10: TEST REPORT

Modulation Characteristics; Block C; AMPS Ch 416: Input to TTU



Ref Lvl
0 dB

CF 882.48 MHz
SR 24.3 kHz Symbol/Errors
Standard NADC

| 10 dB Offset | Symbol Table | | | | |
|--------------|-----------------|-----------------|-----------------|-----------------|----------|
| 0 | <u>10101001</u> | <u>00011101</u> | <u>11100100</u> | <u>10101101</u> | 10111000 |
| 40 | 01000110 | 11101001 | 11001110 | 10010010 | 01010001 |
| 80 | 01000001 | 11001101 | 00111100 | 01010101 | 01011001 |
| 120 | 00100111 | 11000111 | 00110000 | 01000100 | 11111111 |
| 160 | 01111010 | 00000000 | 01001100 | 01111011 | 11010101 |
| 200 | 11011001 | 10100001 | 10100000 | 00110010 | 01011100 |
| 240 | 00001000 | 10101111 | 00001000 | 01100011 | 11011110 |
| 280 | 01000110 | 00111000 | 00111111 | 10100110 | 10000000 |
| 320 | 11111010 | 10011101 | | | |

| Error Summary | | | | |
|------------------|--------------|--------------|-----------|--------|
| Error Vector Mag | 3.83 % rms | 8.96 % | Pk at sym | 57 |
| Magnitude Error | 2.10 % rms | -5.39 % | Pk at sym | 98 |
| Phase Error | 1.85 deg rms | -5.14 deg | Pk at sym | 57 |
| Freq Error | 230.74 Hz | 230.74 Hz | Pk | |
| Amplitude Droop | 0.54 dB/sym | Rho Factor | | 0.9986 |
| IQ Offset | 0.69 % | IQ Imbalance | | 0.89 % |

A
SGL

Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Modulation Characteristics; Input Block C, AMPS Ch 416
 Date: 4.OCT.2001 13:57:20

EXHIBIT 10: TEST REPORT**PART 2.1049 MEASUREMENTS REQUIRED: OCCUPIED BANDWIDTH**

This test procedure demonstrates that the TTU does not alter or degrade the occupied bandwidth of the modulated TDMA carrier, from cellular frequency input to PCS frequency output at the J4 transmit antenna terminal. Measurements were made at both the TTU J1 RF input terminal and at the J4 transmit antenna terminal with the carrier power level set to provide 42.04 dBm (16 Watts) average at the J4 antenna terminal. The measurements were then performed and recorded at both the TTU input terminal and at the J4 antenna terminal. The power level was measured and recorded on each data plot for both input and J4 output. The TDMA carrier was modulated in all 3 time slots with a pseudo-random data stream. In compliance with Part 24.238, occupied bandwidth emissions were measured at both the lowest settable and the highest settable frequency channels, corresponding to the block edge requirement, for each PCS frequency block.

Since the TDMA carrier input to the TTU is in the cellular frequency band, the spectrum analyzer configuration and the occupied bandwidth emission mask are as specified in Part 22.917(h) *Measurement Procedure* and (d) *FID Emission Mask*. For the 30 kHz carrier, both Part 22.917 and Part 24.238 (i.e., 1% of 30 kHz) require the spectrum analyzer to use a Resolution Bandwidth (RBW) of 300 Hz and a Video Bandwidth (VBW) of 3 kHz or greater (i.e., 10 x RBW). The Span utilized was 120 kHz.

In accordance with Part 22.917(d), the emission mask for wideband data (WBD) signals also applies to 30 kHz TDMA digital signals. The occupied bandwidth plot need not extend beyond a 120 kHz span.

| Occupied Bandwidth Emission Mask for TDMA | Displacement from the Carrier Center Frequency in a 120 kHz Span | Attenuation below the Unmodulated Carrier (dBc) in a 120 kHz Span |
|---|--|---|
| Part 22.917(d)(1) | 20 kHz to 45 kHz | 26 dBc |
| Part 22.917(d)(2) | 45 kHz to 90 kHz | 45 dBc |
| Part 22.917(d)(3) | > 90 kHz to 1 st Harmonic | At least 60 dBc Or $43 + 10 \log P$ (watts) dBc, Whichever is the lesser attenuation. |

In accordance with Part 24.238(a), emissions at each PCS Block edge frequency must be attenuated, in addition to the occupied bandwidth emission mask, by $43 + 10 \log (P)$ dBc, which corresponds to 55.04 dBc (i.e., attenuation below the unmodulated carrier) for 16 Watts at the J4 antenna terminal. In accordance with Part 24.229, the PCS block edge frequencies are: A-Block 1930-1945 MHz; D-Block 1945-1950 MHz; B-Block 1950-1965 MHz; E-Block 1965-1970 MHz; F-Block 1970-1975 MHz; and C-Block 1975-1990 MHz.

The following table lists the corresponding channel numbers and carrier center frequencies that were measured: **1**) the lowest settable block edge, **2**) block center, and **3**) the highest settable (upper) block edge:

| PCS Frequency Block | AMPS Channel No. | AMPS Frequency | PCS Channel No. | PCS Frequency |
|---------------------|------------------|----------------|-----------------|---------------|
| A (Low) | 2 | 870.06 MHz | 2 | 1930.08 MHz |
| A (Center) | 250 | 877.50 MHz | 250 | 1937.52 MHz |
| A (High) | 498 | 884.94 MHz | 498 | 1944.96 MHz |
| D (Low) | 502 | 885.06 MHz | 502 | 1945.08 MHz |
| D (Center) | 583 | 887.49 MHz | 583 | 1947.51 MHz |
| D (High) | 665 | 889.95 MHz | 665 | 1949.97 MHz |
| B (Low) | 1 | 870.03 MHz | 668 | 1950.06 MHz |
| B (Center) | 250 | 877.50 MHz | 917 | 1957.53 MHz |
| B (High) | 497 | 884.91 MHz | 1164 | 1964.94 MHz |
| E (Low) | 501 | 885.03 MHz | 1168 | 1965.06 MHz |
| E (Center) | 583 | 887.49 MHz | 1250 | 1967.52 MHz |
| E (High) | 664 | 889.92 MHz | 1331 | 1969.95 MHz |
| F (Low) | 1 | 870.03 MHz | 1335 | 1970.07 MHz |
| F (Center) | 83 | 872.49 MHz | 1417 | 1972.53 MHz |
| F (High) | 164 | 874.92 MHz | 1498 | 1974.96 MHz |
| C (Low) | 168 | 875.04 MHz | 1502 | 1975.08 MHz |
| C (Center) | 416 | 882.48 MHz | 1750 | 1982.52 MHz |
| C (High) | 664 | 889.92 MHz | 1998 | 1989.96 MHz |

Measurement Procedure:

The occupied bandwidth emission limitations are based on attenuation below the *unmodulated* carrier. However, the TDMA carrier must be modulated with a pseudo-random bit stream in all three time slots, and can not exist as an unmodulated carrier. The power level of the carrier was first set to 42.04 dBm (16 Watts) average at the J4 Tx antenna terminal for each block center frequency. The carrier power level was then measured for each occupied bandwidth measurement both at the TTU input and at the J4 antenna terminal, and recorded on the data plot.

The spectrum analyzer display is configured such that the top of the display reticle is set to 0 dBm reference level; all emission attenuation will then be read directly from the grid as dBc. Since the occupied bandwidth limitations are specified as required attenuation below the mean power of the unmodulated carrier, the center frequency of the carrier should be displaced from the top of the analyzer display reticle by the following value:

$$10 \log (\text{carrier bandwidth/resolution bandwidth}) \\ 10 \log (30 \text{ kHz}/300 \text{ Hz}) = 20.0 \text{ dB offset}$$

This is accomplished by using a variable attenuator. The spectrum analyzer is first set to a 1 MHz Resolution Bandwidth (RBW), or larger, and the center frequency of the modulated carrier is then positioned to the top of the spectrum analyzer reticle which was previously set at 0 dBm, to establish and set the reference level. The spectrum analyzer is next re-set to the required 300 Hz RBW; this method produces the required nominal 20 dB offset. The detector function is then set to 10 sweep average. The occupied bandwidth data plots for each of the 6 PCS frequency blocks are shown below for each corresponding TTU input and output signal, in accordance with the above cited table of required measurement frequencies.

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

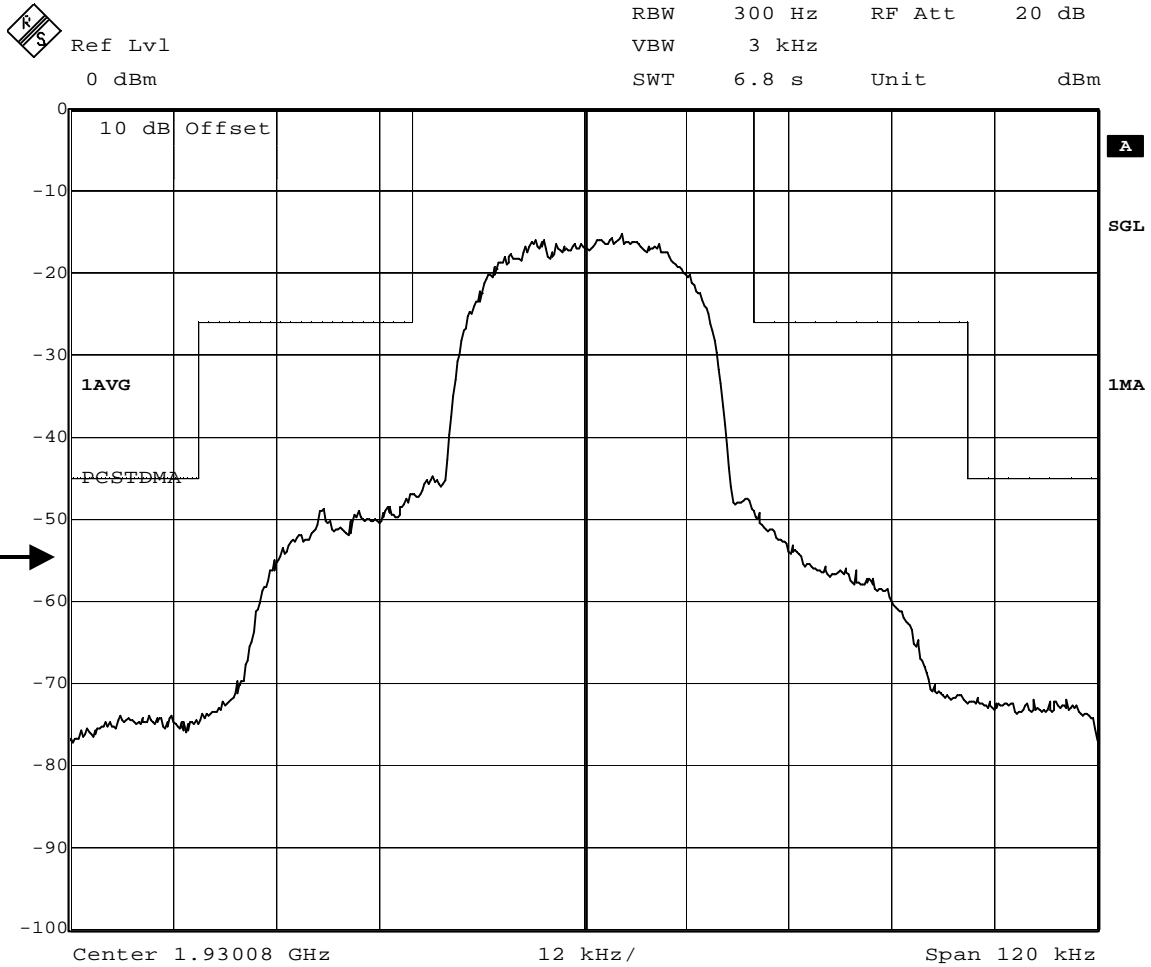
RESULTS: The PCS TDMA Transmit Unit (TTU), subject of this application for certification under FCC ID: AS5CMP-38, demonstrated full compliance with the requirements of FCC Rule Part 2.1049 and with Part 24.238. The occupied bandwidth emissions from the lowest settable to the highest settable frequency (channel) in each of the 6 PCS frequency blocks demonstrated full compliance with the emission mask limitations and with the PCS block edge limitations, for the carrier center frequencies shown above for each specific PCS block.

APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5CMP-38

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block A; PCS Ch 2: 1930.08 MHz
 Lowest Settable Frequency
 Output at Tx Antenna Terminal (J4)

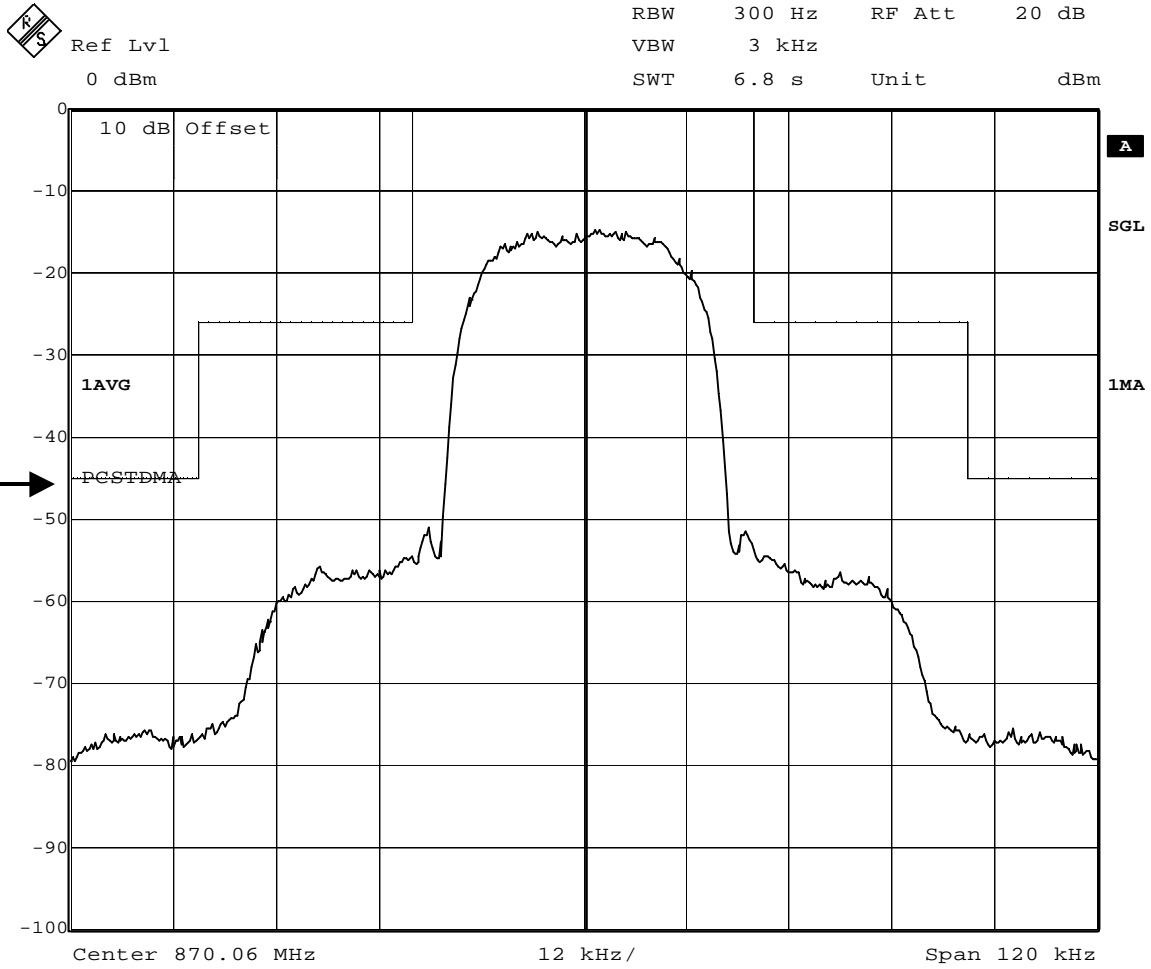


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Output
 Block A, PCS Ch2, 16W (42.0 dbm)
 Date: 3.OCT.2001 14:53:38

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block A; AMPS Ch 2: 870.06 MHz
 Lowest Settable Frequency
 Input to TTU



Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Input
 Block A, AMPS Ch 2, 9.72 dBm
 Date: 4.OCT.2001 10:02:53

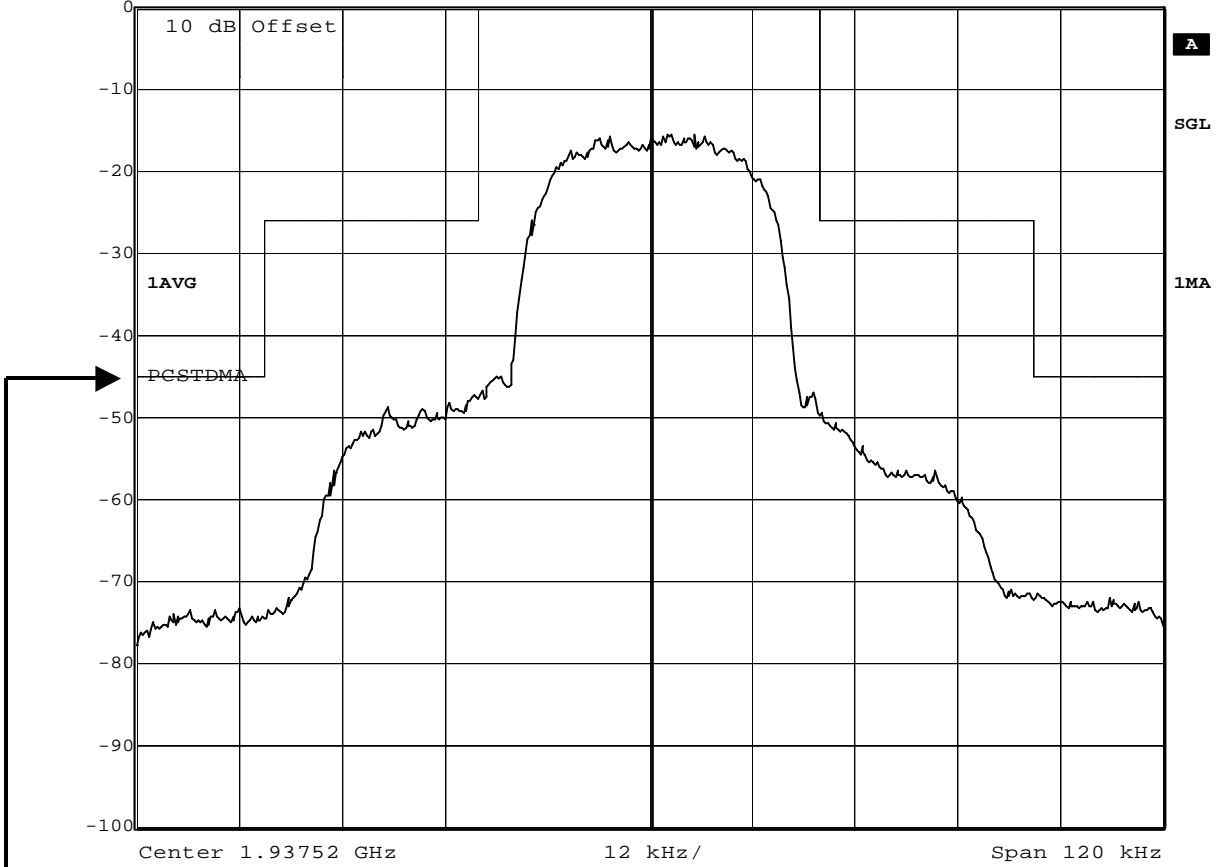
Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block A; PCS Ch 250: 1937.52 MHz
Center Frequency
Output at Tx Antenna Terminal (J4)



| | | | | |
|---------|-----|--------|--------|-------|
| Ref Lvl | RBW | 300 Hz | RF Att | 20 dB |
| 0 dBm | VBW | 3 kHz | | |
| | SWT | 6.8 s | Unit | dBm |



Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Output
 Block A, PCS Ch250, 16W (42.0 dbm)
 Date: 3.OCT.2001 15:09:45

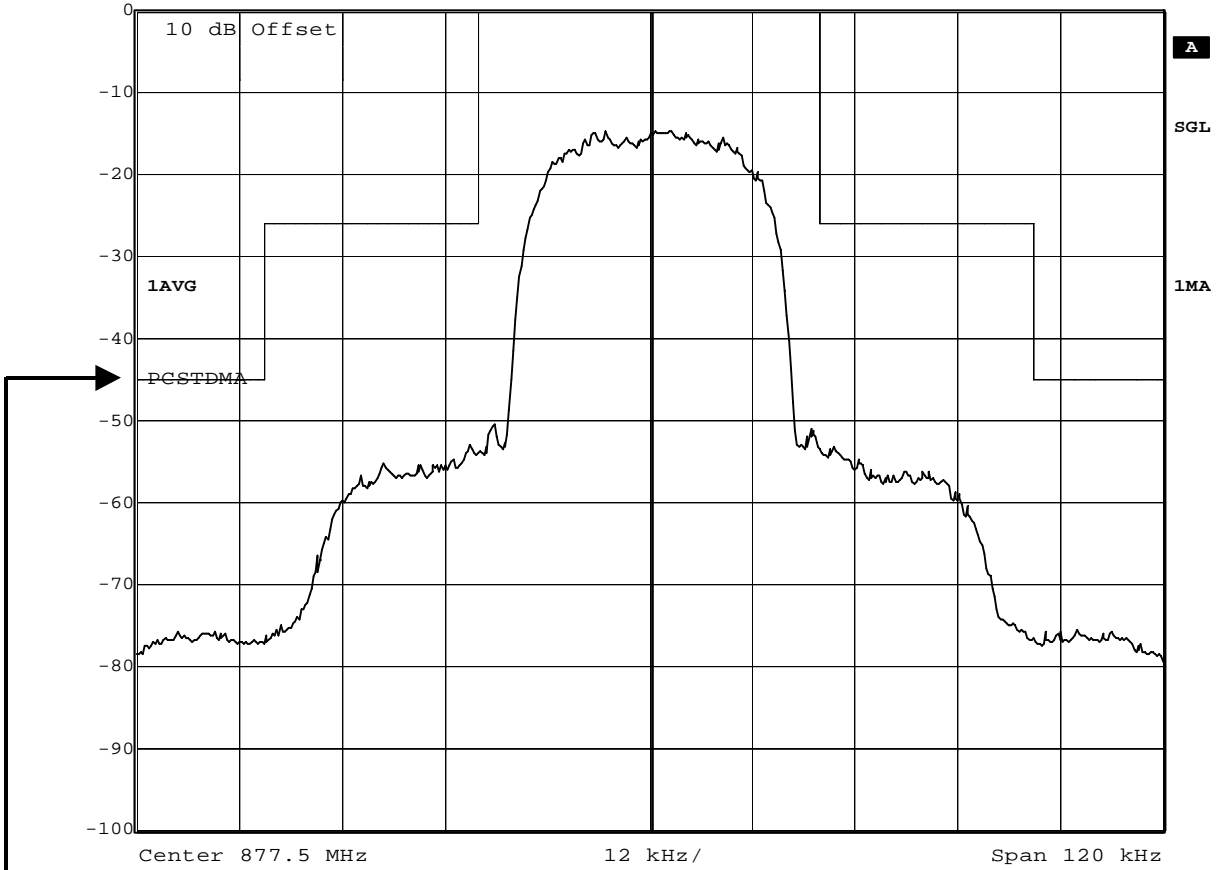
Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block A; AMPS Ch 250: 877.50 MHz
Center Frequency
Input to TTU



| | | | | |
|---------|-----|--------|--------|-------|
| Ref Lvl | RBW | 300 Hz | RF Att | 20 dB |
| 0 dBm | VBW | 3 kHz | | |
| | SWT | 6.8 s | Unit | dBm |

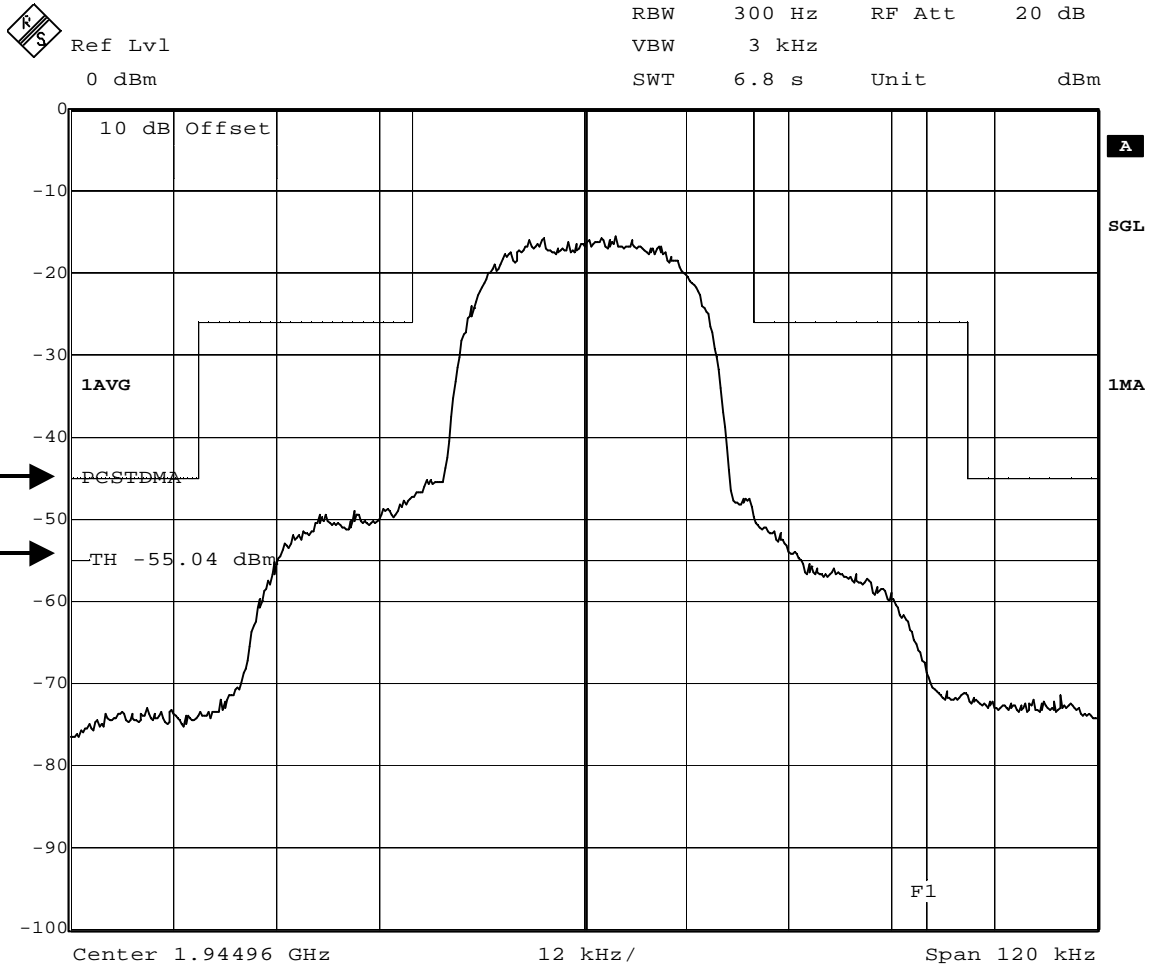


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Input
 Block A, AMPS Ch 250, 9.69 dBm
 Date: 4.OCT.2001 10:06:56

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block A; PCS Ch 498: 1944.96 MHz
 Highest Settable Frequency
 Output at Tx Antenna Terminal (J4)

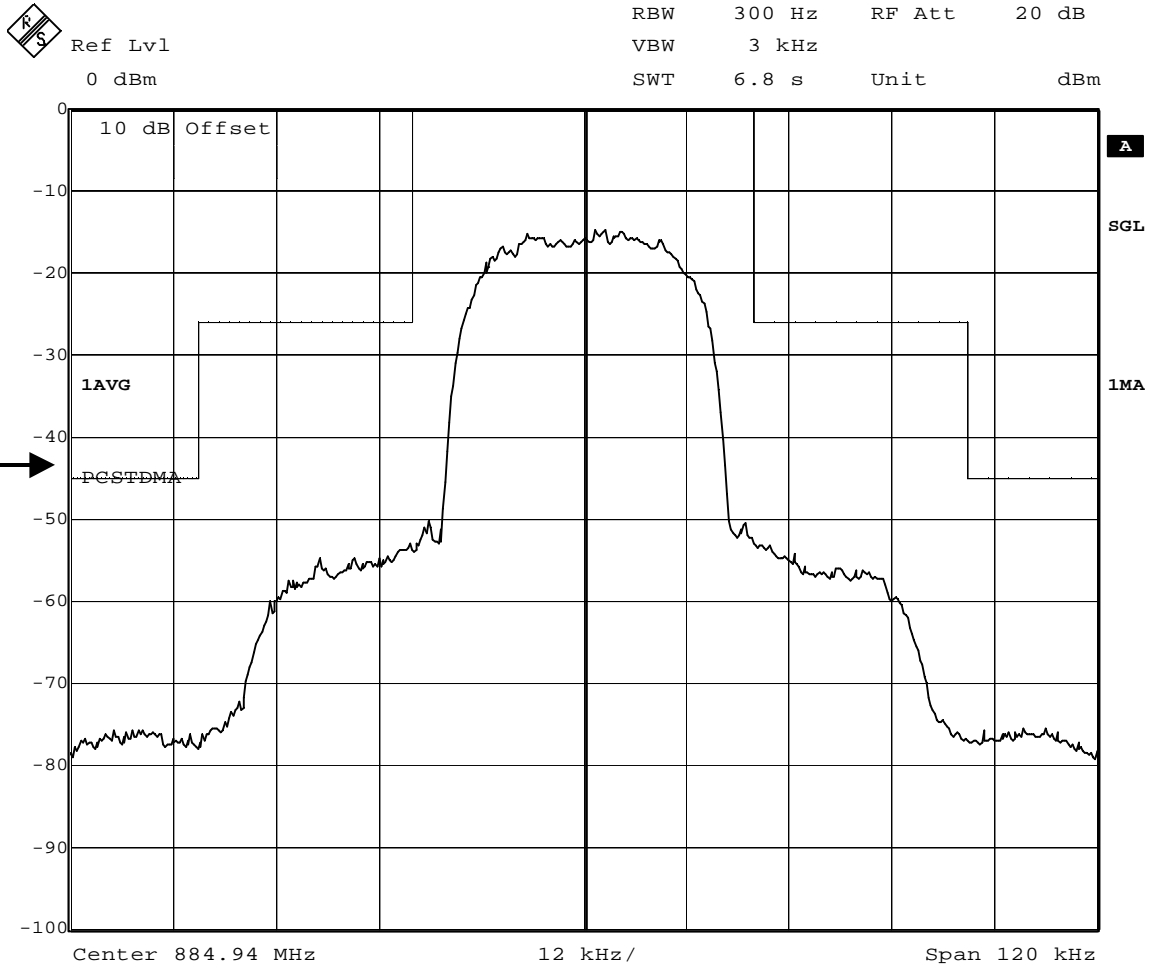


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Output
 Block A, PCS Ch498, 16W (42.0 dbm)
 Date: 3.OCT.2001 15:05:24

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block A; AMPS Ch 498: 884.94 MHz
 Highest Settable Frequency
 Input to TTU

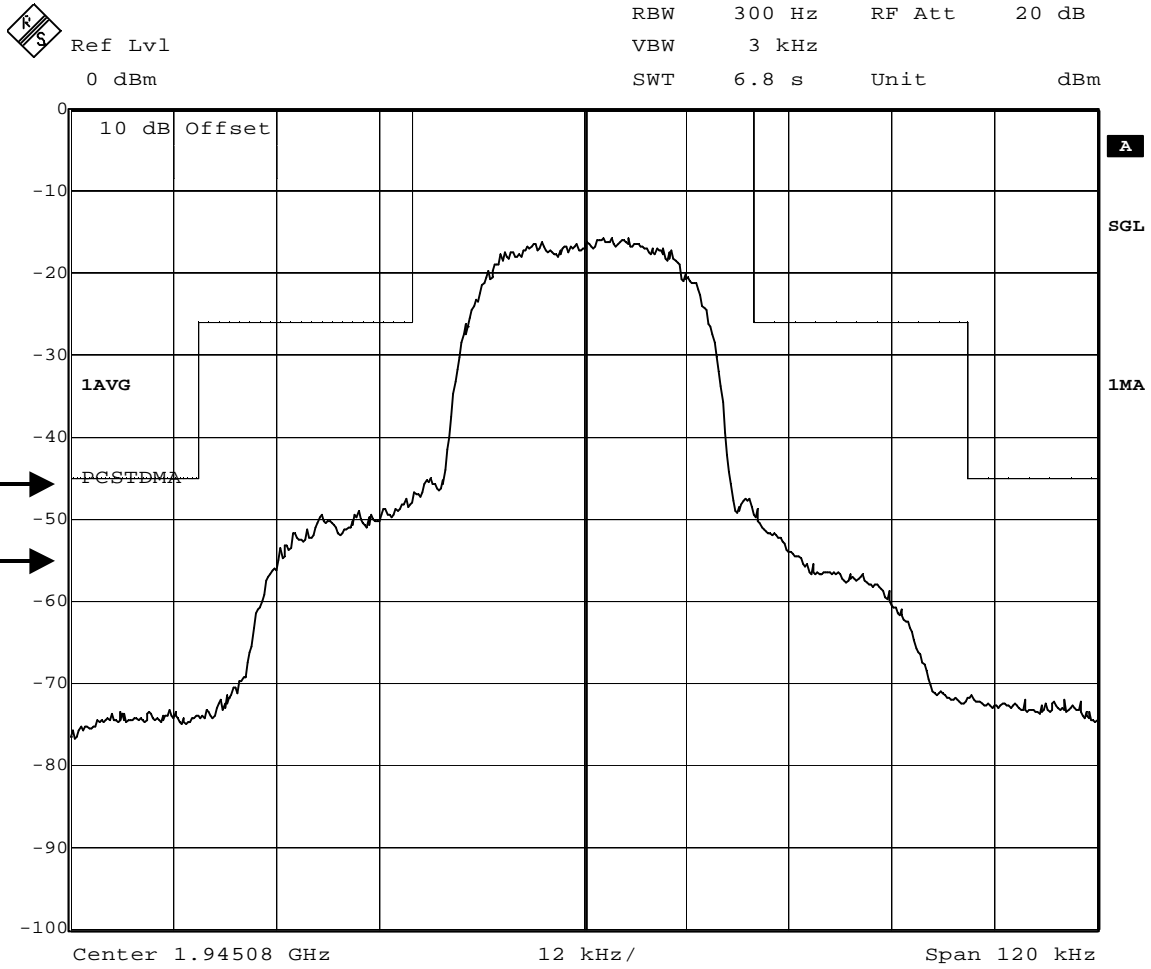


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Input
 Block A, AMPS Ch 498, 9.32 dBm
 Date: 4.OCT.2001 10:10:38

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block D; PCS Ch 502: 1945.08 MHz
 Lowest Settable Frequency
 Output at Tx Antenna Terminal (J4)



Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Output
 Block D, PCS Ch502, 16W (42.0 dbm)
 Date: 3.OCT.2001 15:17:34

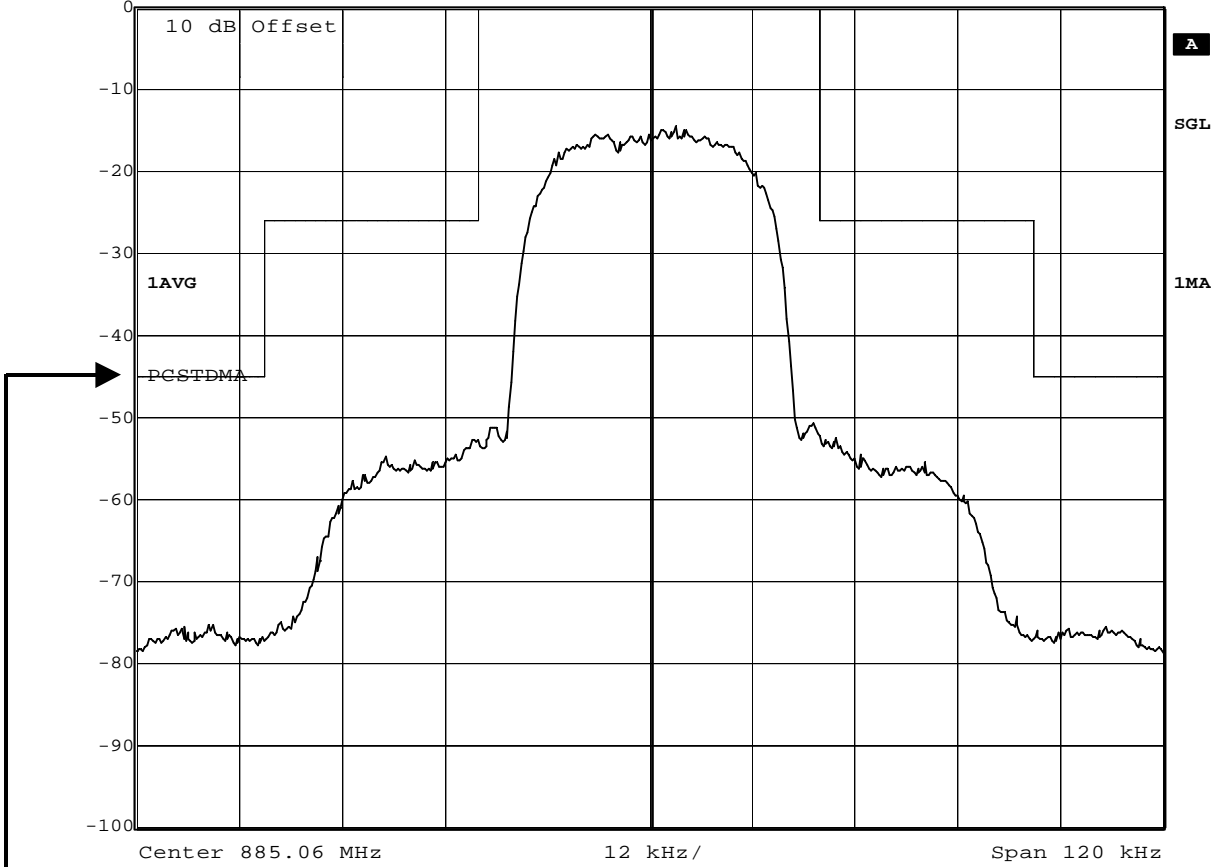
Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block D; AMPS Ch 502: 885.06 MHz
 Lowest Settable Frequency
 Input to TTU



Ref Lvl 0 dBm
 RBW 300 Hz RF Att 20 dB
 VBW 3 kHz
 SWT 6.8 s Unit dBm



Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Input
 Block D, AMPS Ch 502, 9.49 dBm
 Date: 4.OCT.2001 10:15:22

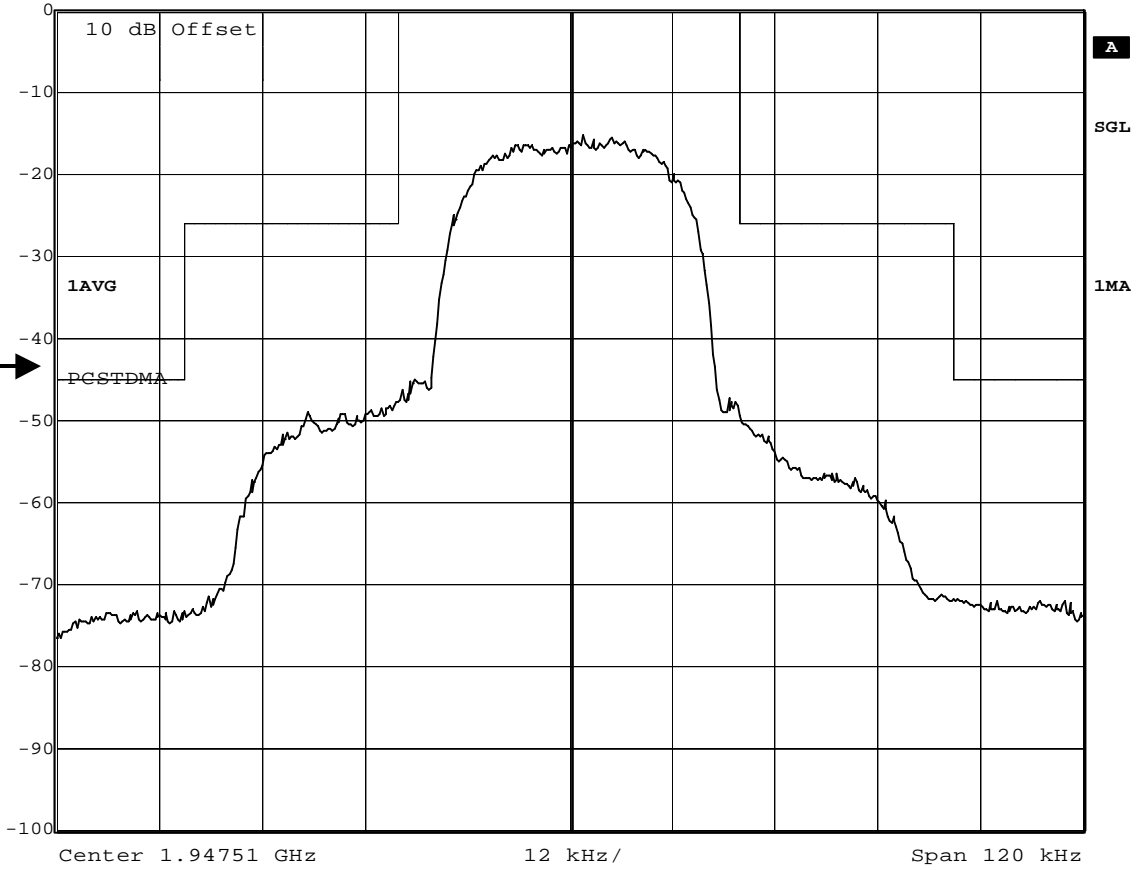
Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block D; PCS Ch 583: 1947.51 MHz
Center Frequency
Output at Tx Antenna Terminal (J4)



| | | | | |
|---------|-----|--------|--------|-------|
| Ref Lvl | RBW | 300 Hz | RF Att | 20 dB |
| 0 dBm | VBW | 3 kHz | | |
| | SWT | 6.8 s | Unit | dBm |



Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Output
 Block D, PCS Ch583, 16W (42.0 dbm)
 Date: 3.OCT.2001 15:21:32

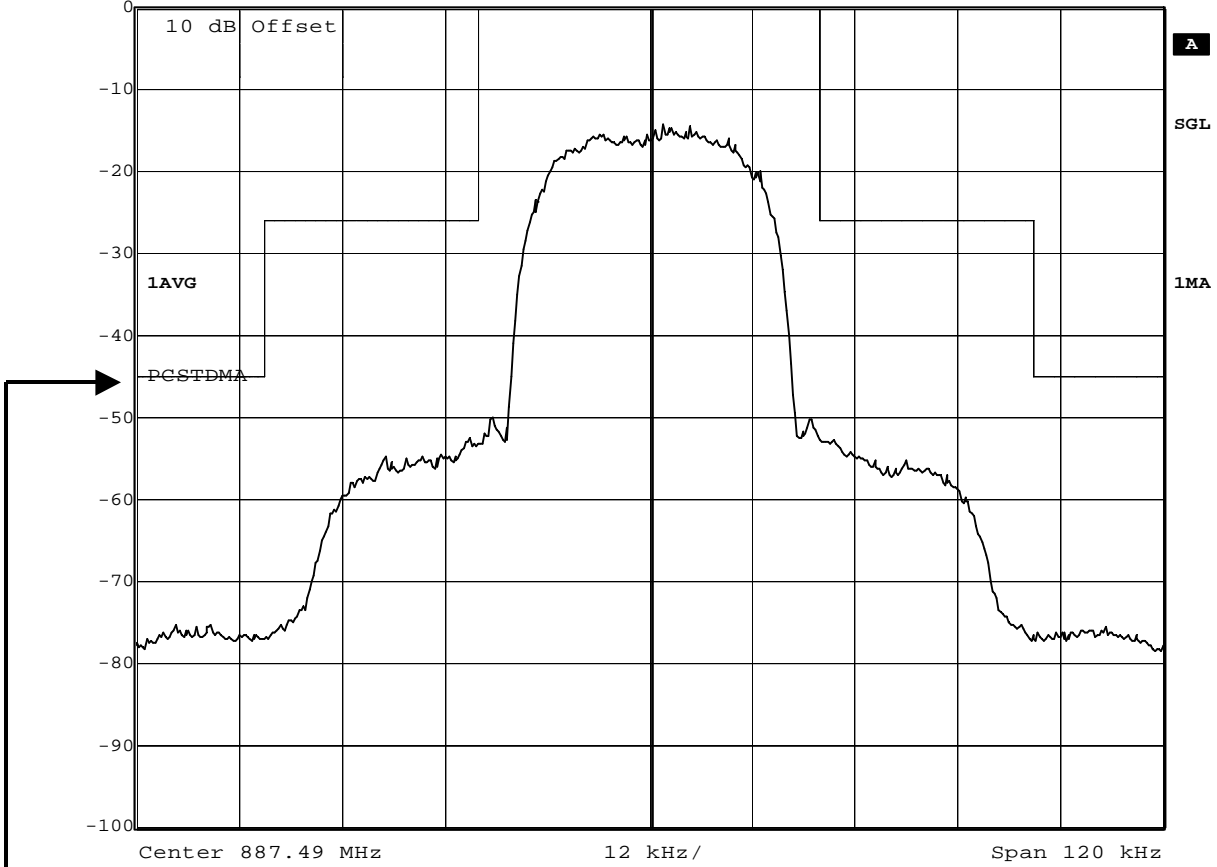
Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block D; AMPS Ch 583: 887.49 MHz
Center Frequency
Input to TTU



| | | | | |
|---------|-----|--------|--------|-------|
| Ref Lvl | RBW | 300 Hz | RF Att | 20 dB |
| 0 dBm | VBW | 3 kHz | | |
| | SWT | 6.8 s | Unit | dBm |

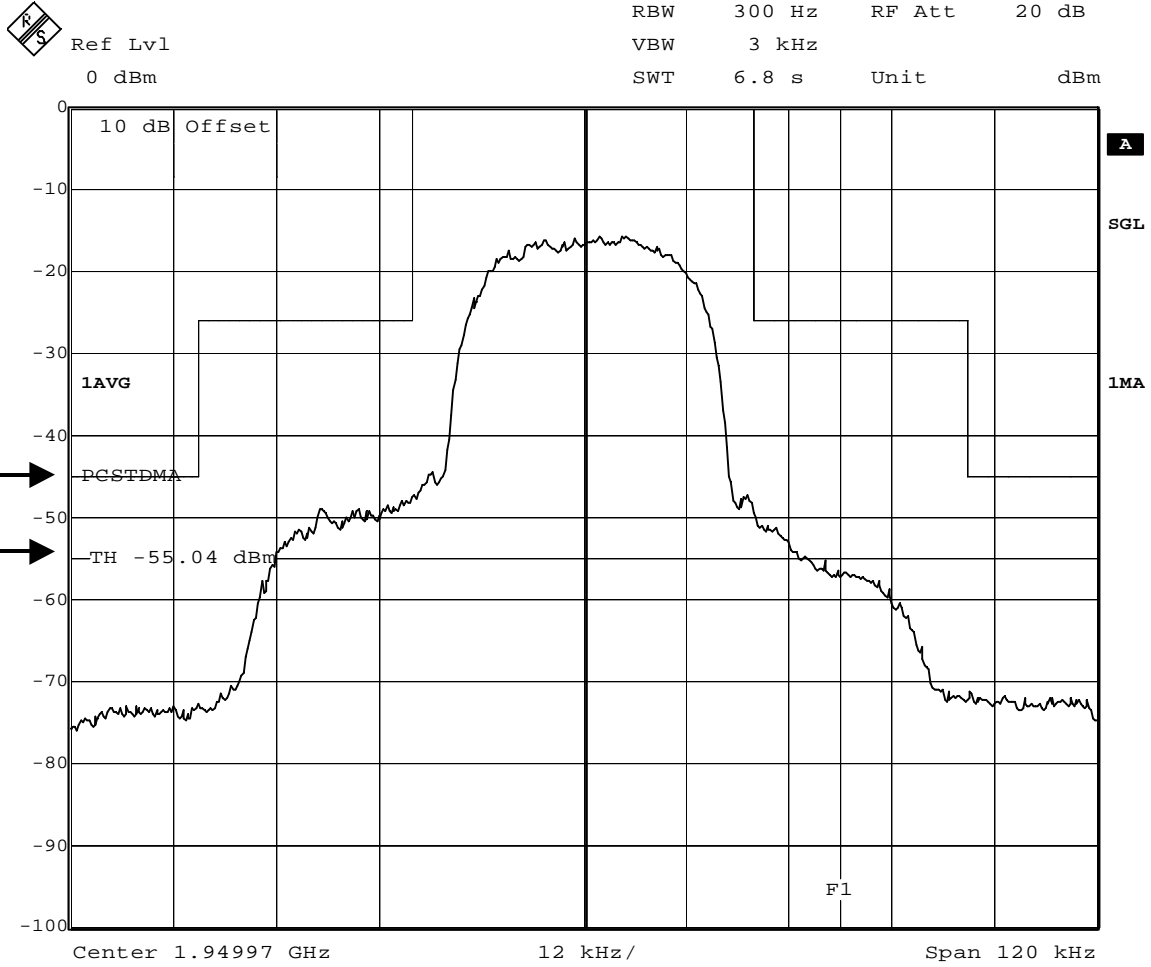


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Input
 Block D, AMPS Ch 583, 9.68 dBm
 Date: 4.OCT.2001 10:19:09

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block D; PCS Ch 665: 1949.97 MHz
 Highest Settable Frequency
 Output at Tx Antenna Terminal (J4)

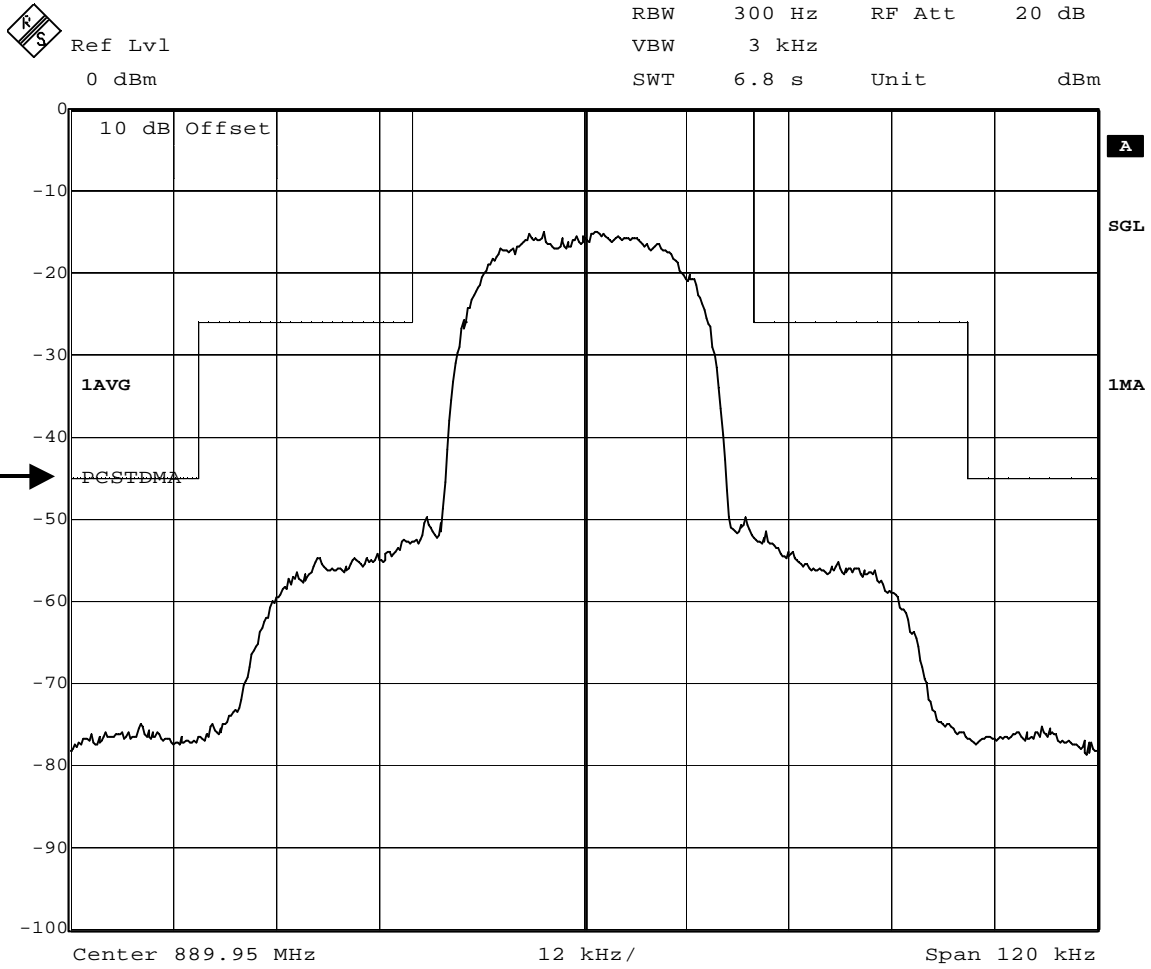


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Output
 Block D, PCS Ch665, 16W (42.0 dbm)
 Date: 3.OCT.2001 15:35:05

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block D; AMPS Ch 665: 889.95 MHz
 Highest Settable Frequency
 Input to TTU

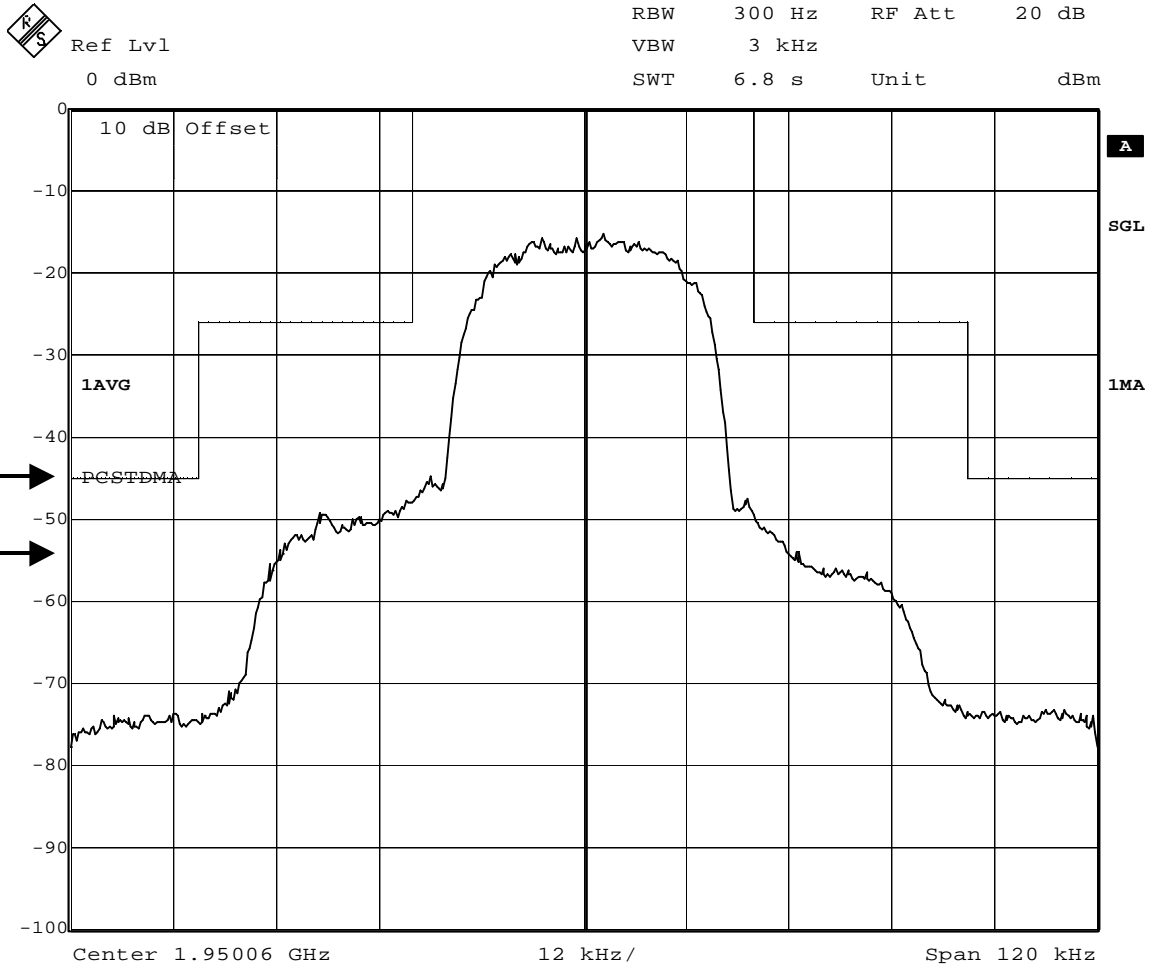


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Input
 Block D, AMPS Ch 665, 9.71 dBm
 Date: 4.OCT.2001 10:26:40

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block B; PCS Ch 668: 1950.06 MHz
 Lowest Settable Frequency
 Output at Tx Antenna Terminal (J4)

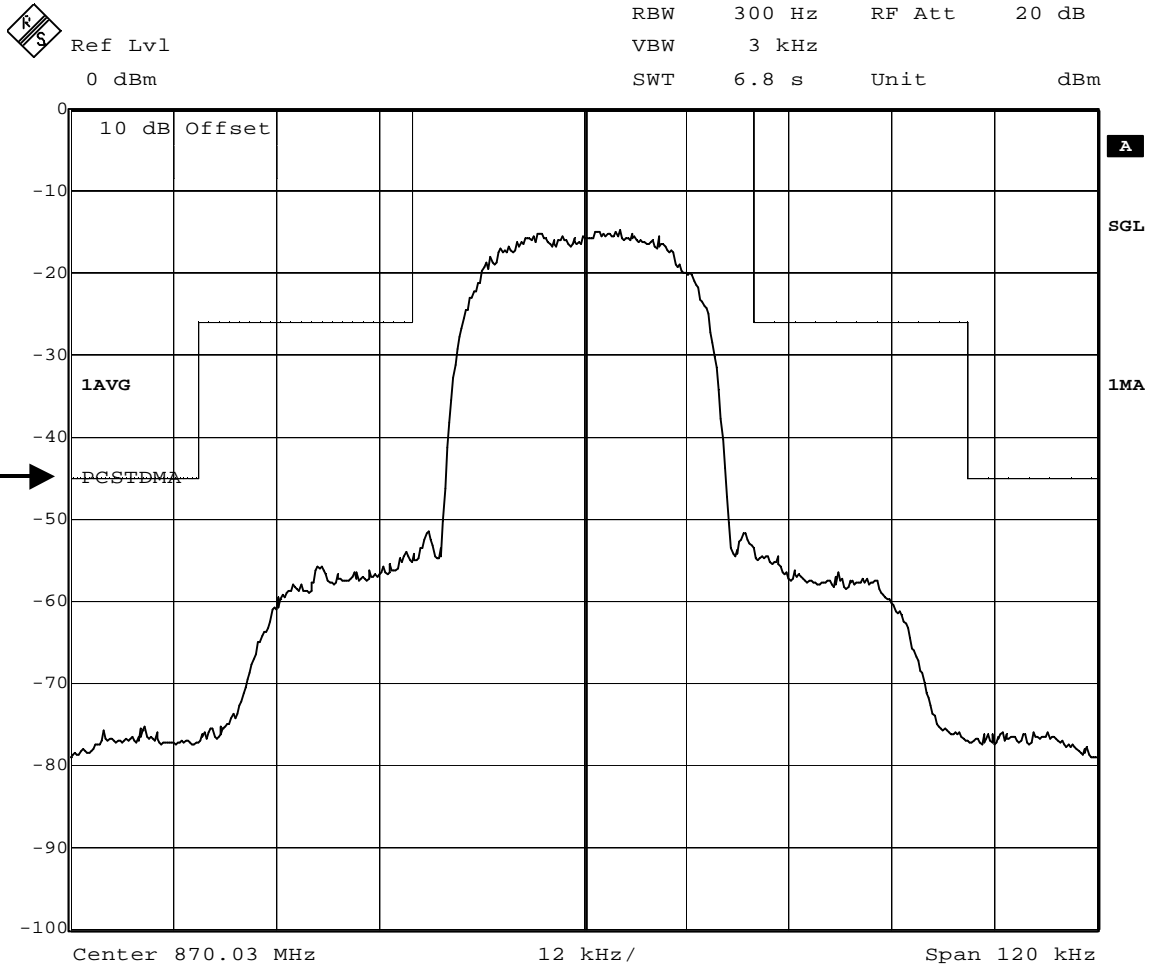


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Output
 Block B, PCS Ch668, 16W (42.0 dbm)
 Date: 3.OCT.2001 15:46:35

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block B; AMPS Ch 1: 870.03 MHz
 Lowest Settable Frequency
 Input to TTU



Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Input
 Block B, AMPS Ch 1, 8.87 dBm
 Date: 4.OCT.2001 10:33:16

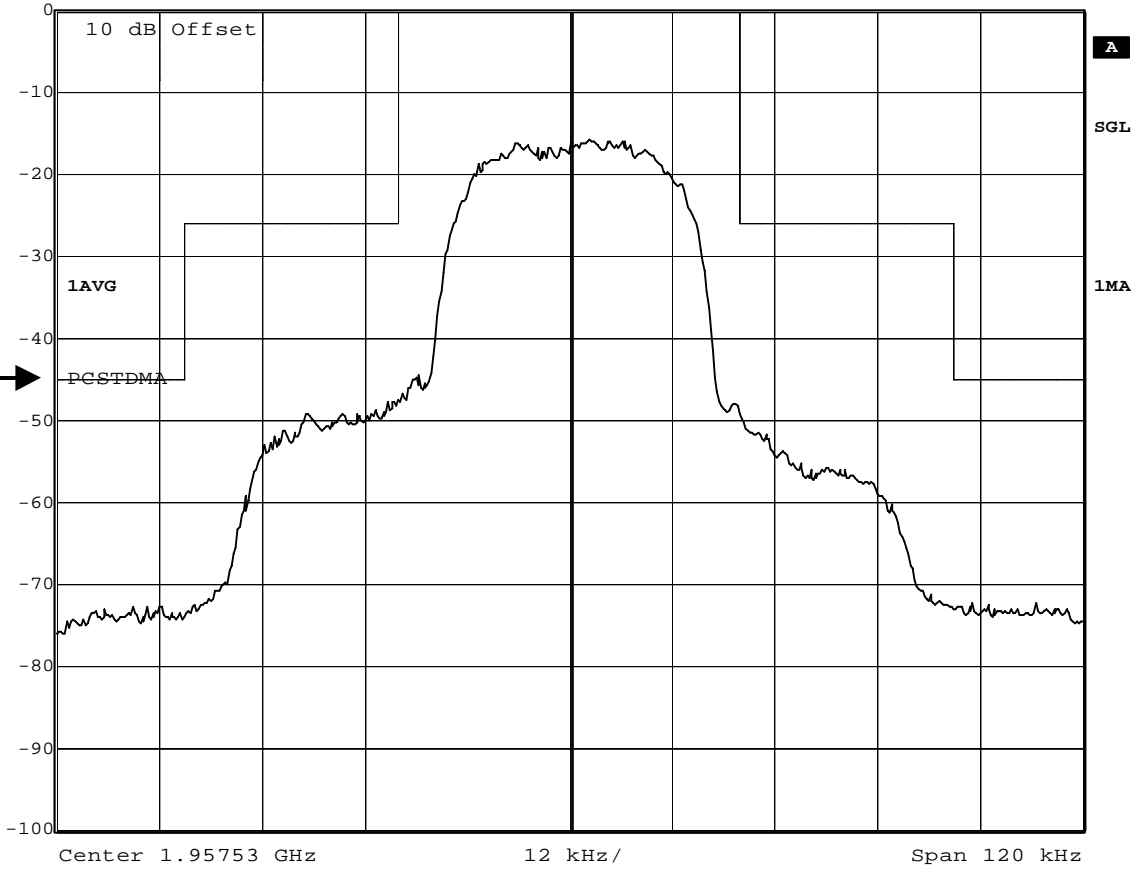
Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block B; PCS Ch 917: 1957.53 MHz
 Center Frequency
 Output at Tx Antenna Terminal (J4)



| | | | | |
|---------|-----|--------|--------|-------|
| Ref Lvl | RBW | 300 Hz | RF Att | 20 dB |
| 0 dBm | VBW | 3 kHz | | |
| | SWT | 6.8 s | Unit | dBm |



Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Output
 Block B, PCS Ch917, 16W (42.0 dbm)
 Date: 3.OCT.2001 15:51:01

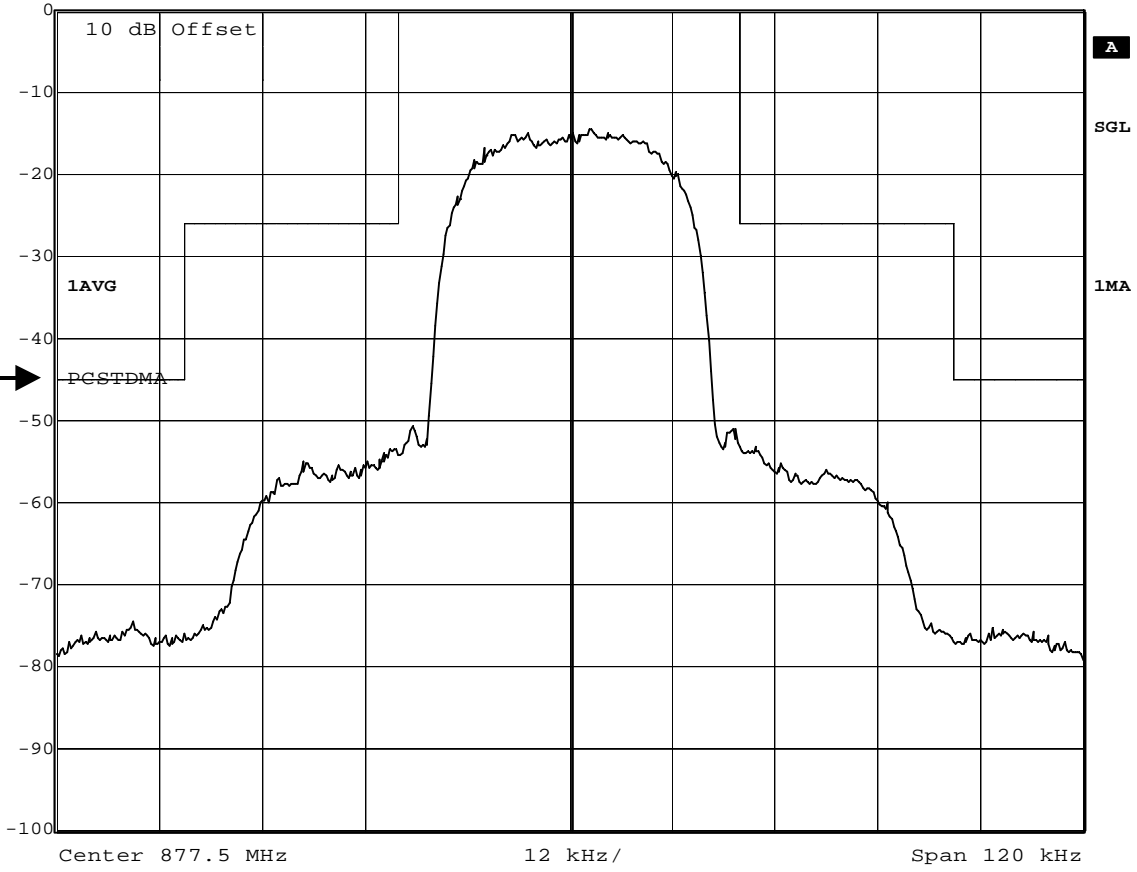
Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block B; AMPS Ch 250: 877.50 MHz
Center Frequency
Input to TTU



| | | | | |
|---------|-----|--------|--------|-------|
| Ref Lvl | RBW | 300 Hz | RF Att | 20 dB |
| 0 dBm | VBW | 3 kHz | | |
| | SWT | 6.8 s | Unit | dBm |

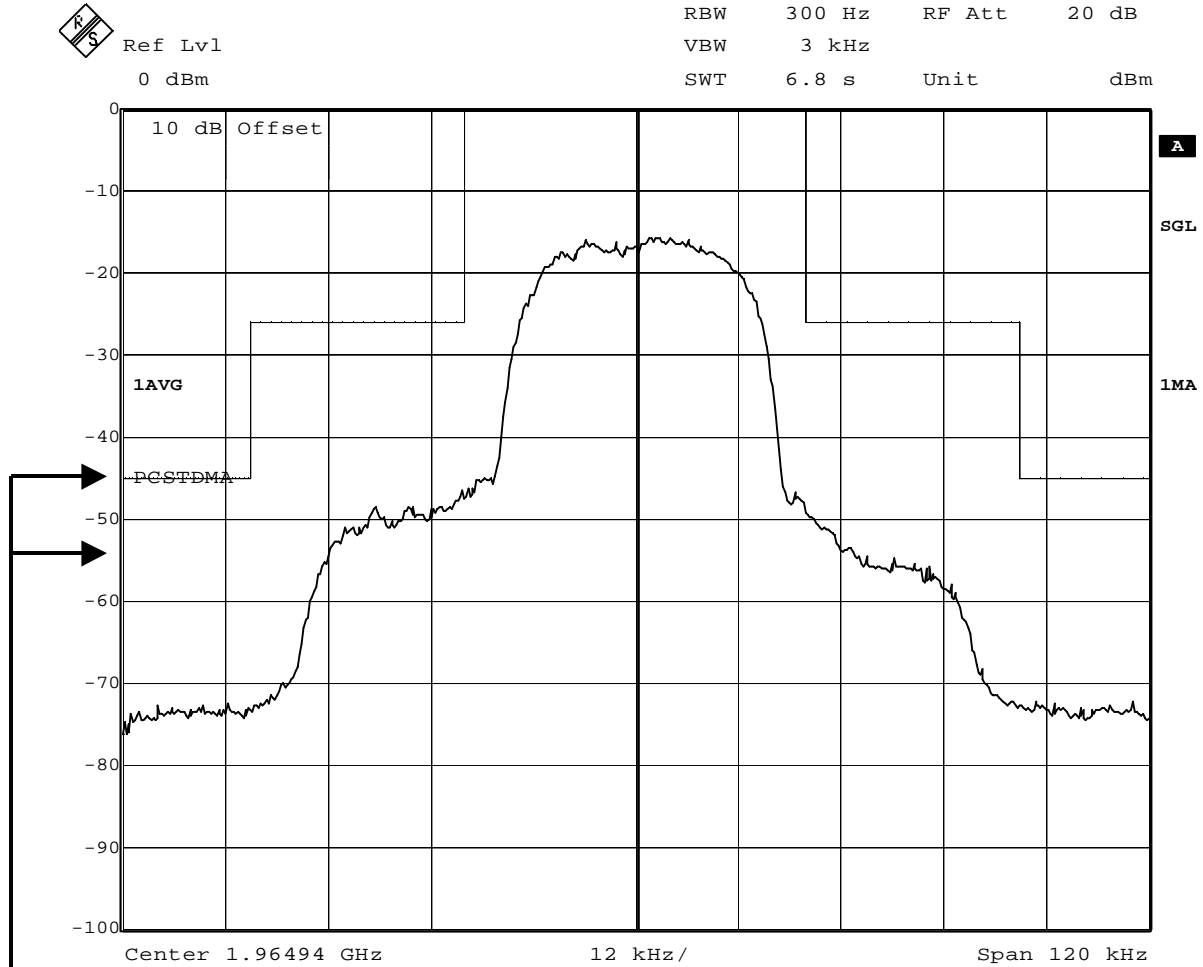


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Input
 Block B, AMPS Ch 250, 9.15 dBm
 Date: 4.OCT.2001 12:14:49

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block B; PCS Ch 1164: 1964.94 MHz
 Highest Settable Frequency
 Output at Tx Antenna Terminal (J4)

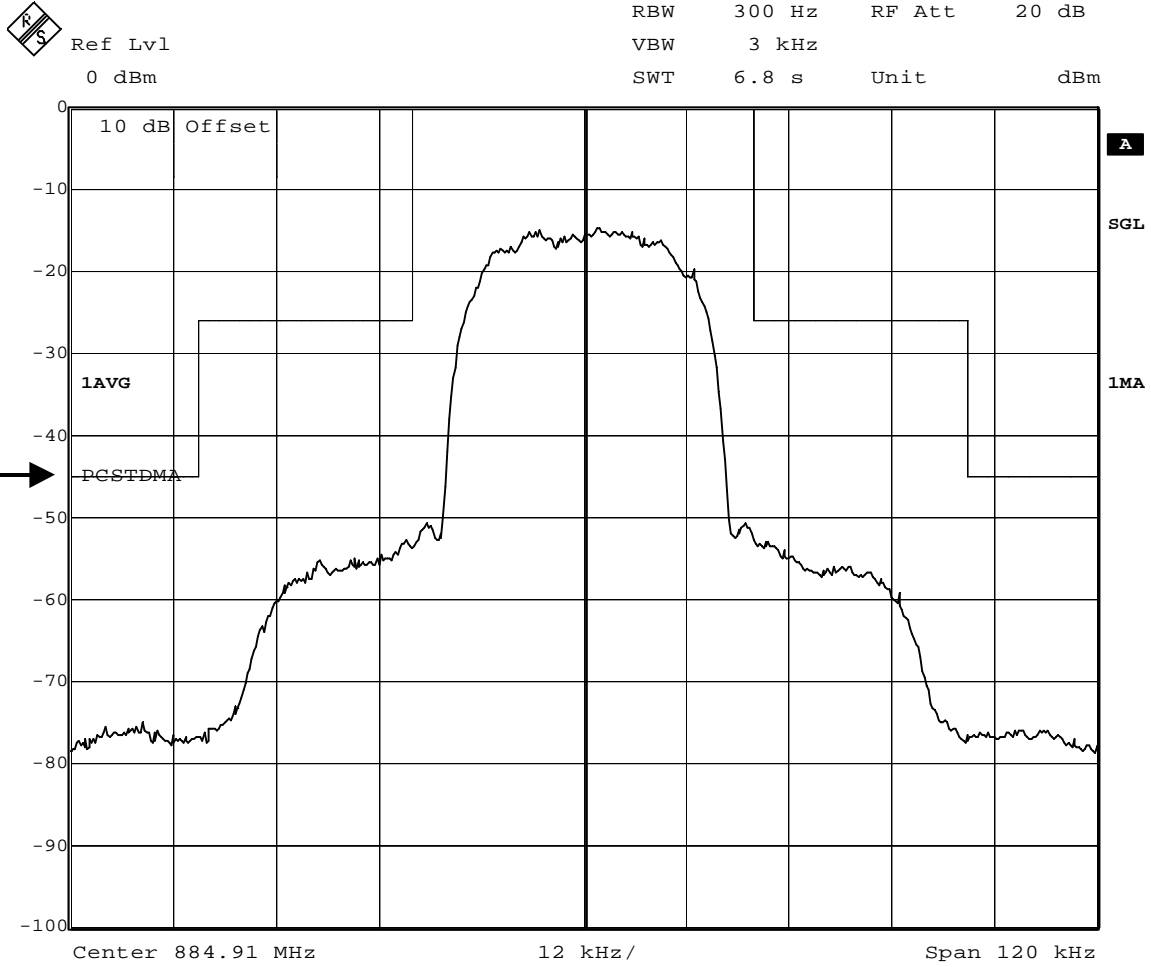


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Output
 Block B, PCS Ch1164, 16W (42.0 dbm)
 Date: 3.OCT.2001 15:55:06

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block B; AMPS Ch 497: 884.91 MHz
 Highest Settable Frequency
 Input to TTU

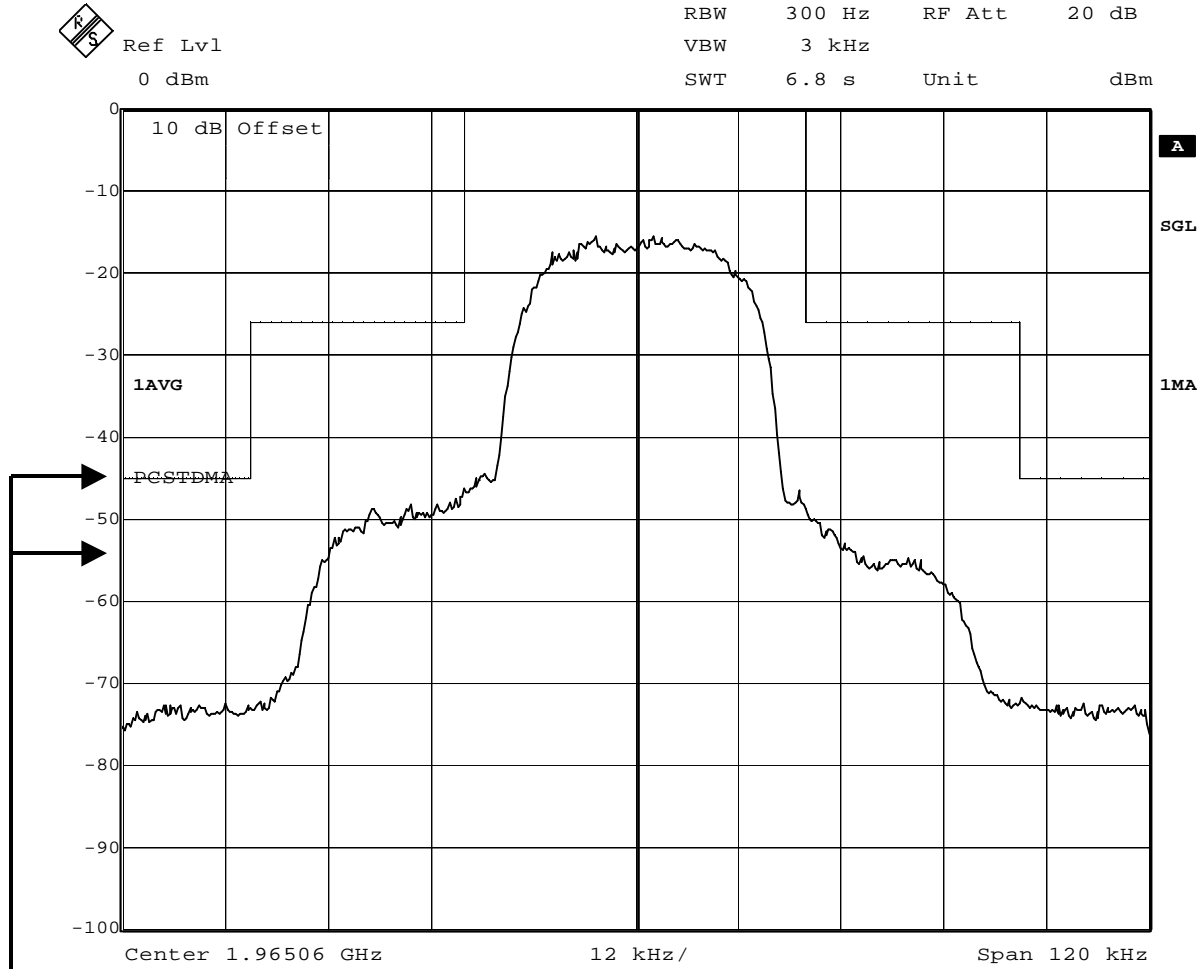


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Input
 Block B, AMPS Ch 497, 8.68 dBm
 Date: 4.OCT.2001 12:19:13

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block E; PCS Ch 1168: 1965.06 MHz
 Lowest Settable Frequency
 Output at Tx Antenna Terminal (J4)

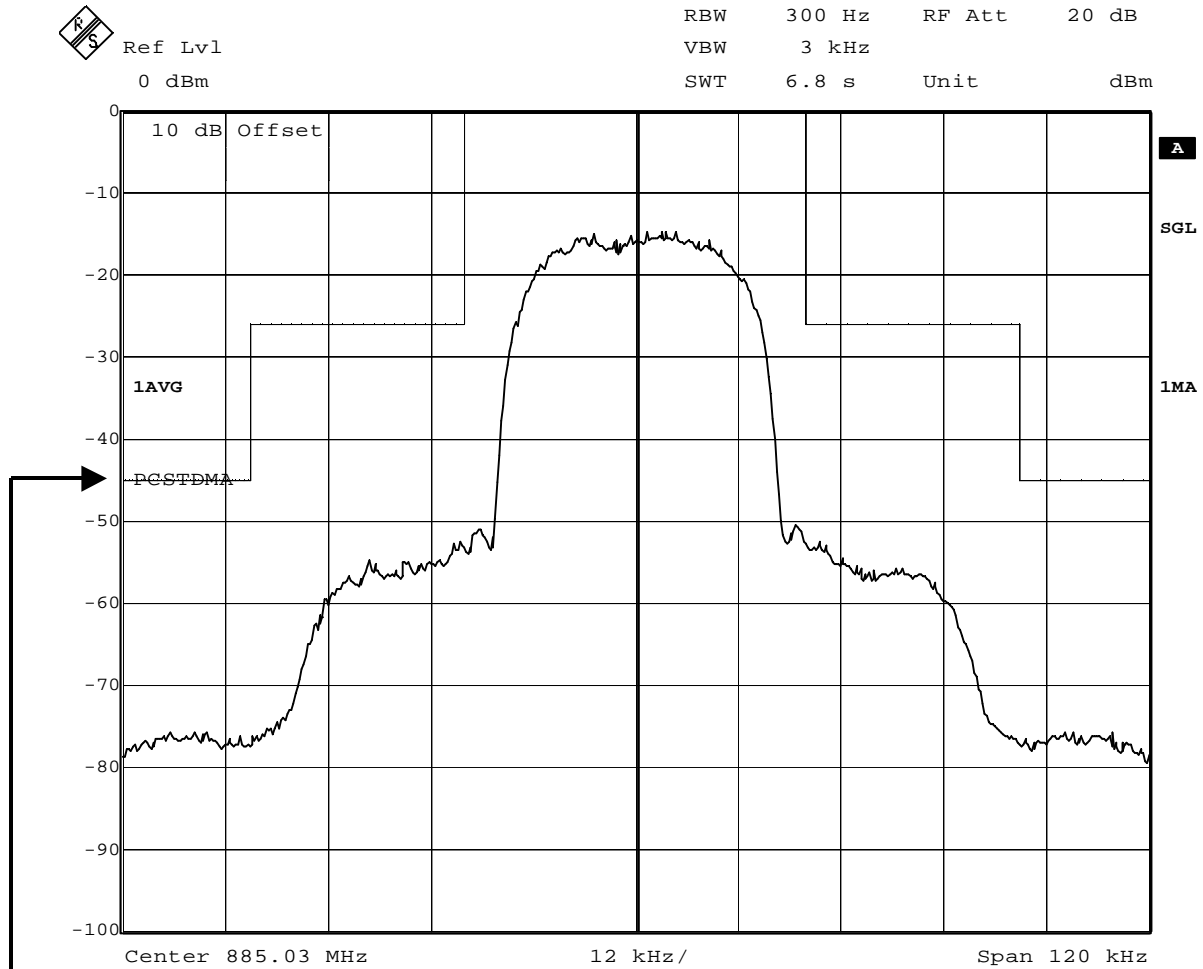


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Output
 Block E, PCS Ch1168, 16W (42.0 dbm)
 Date: 3.OCT.2001 16:07:01

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block E; AMPS Ch 501: 885.03 MHz
 Lowest Settable Frequency
 Input to TTU

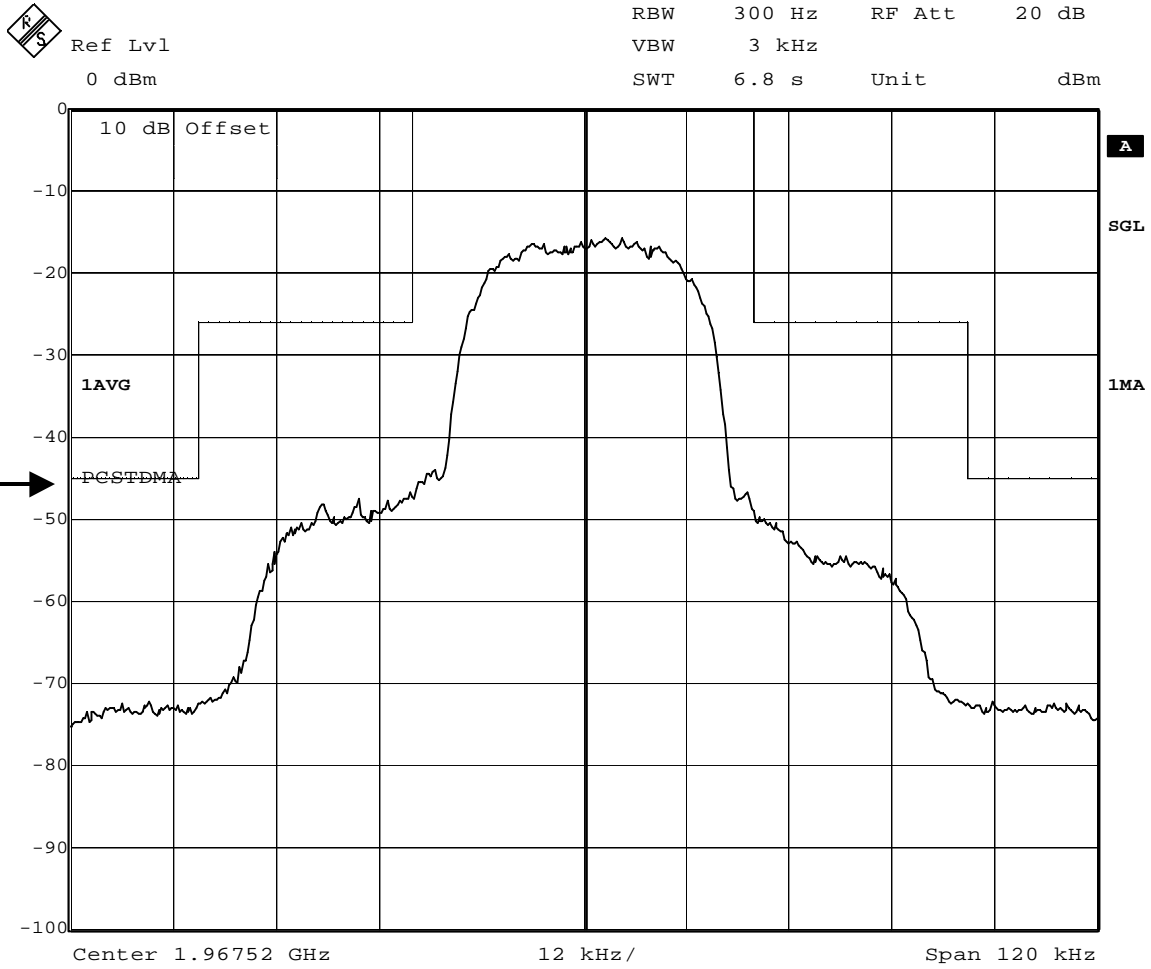


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Input
 Block E, AMPS Ch 501, 8.99 dBm
 Date: 4.OCT.2001 12:28:05

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block E; PCS Ch 1250: 1967.52 MHz
 Center Frequency
 Output at Tx Antenna Terminal (J4)



Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Output
 Block E, PCS Ch1250, 16W (42.0 dbm)
 Date: 3.OCT.2001 16:10:46



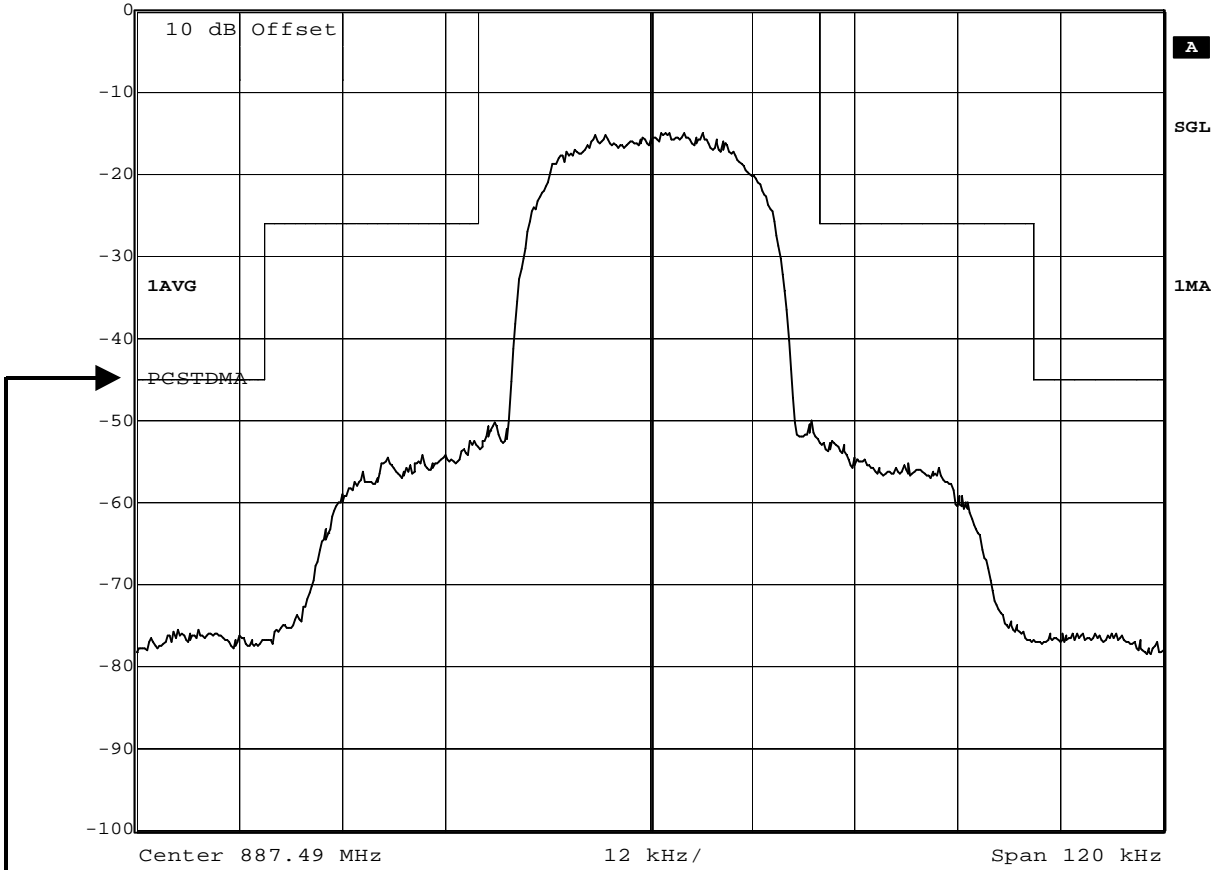
Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block E; AMPS Ch 583: 887.49 MHz
Center Frequency
Input to TTU



| | | | | |
|---------|-----|--------|--------|-------|
| Ref Lvl | RBW | 300 Hz | RF Att | 20 dB |
| 0 dBm | VBW | 3 kHz | | |
| | SWT | 6.8 s | Unit | dBm |

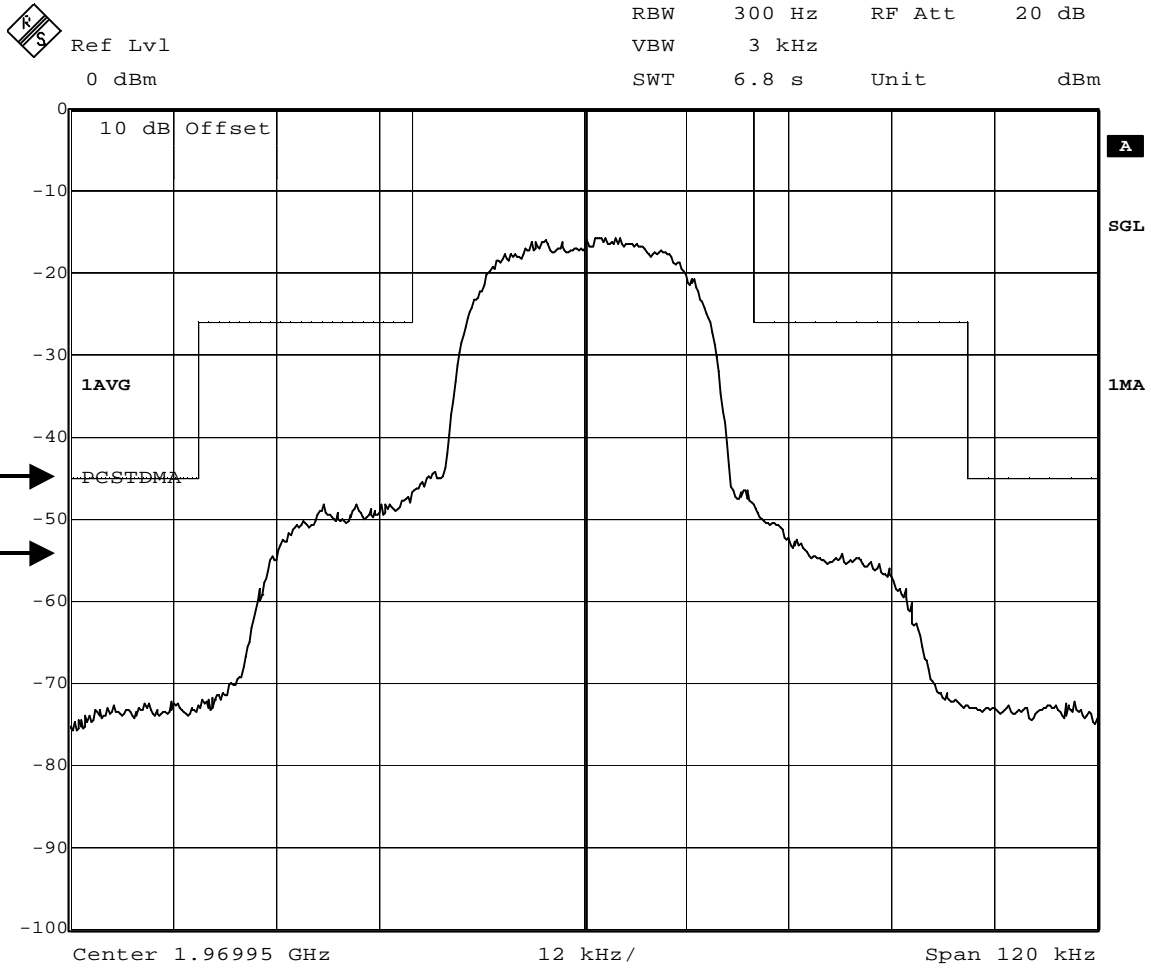


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Input
 Block E, AMPS Ch 583, 9.03 dBm
 Date: 4.OCT.2001 12:31:51

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block E; PCS Ch 1331: 1969.95 MHz
 Highest Settable Frequency
 Output at Tx Antenna Terminal (J4)



Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Output
 Block E, PCS Ch1331, 16W (42.0 dbm)
 Date: 4.OCT.2001 08:21:24

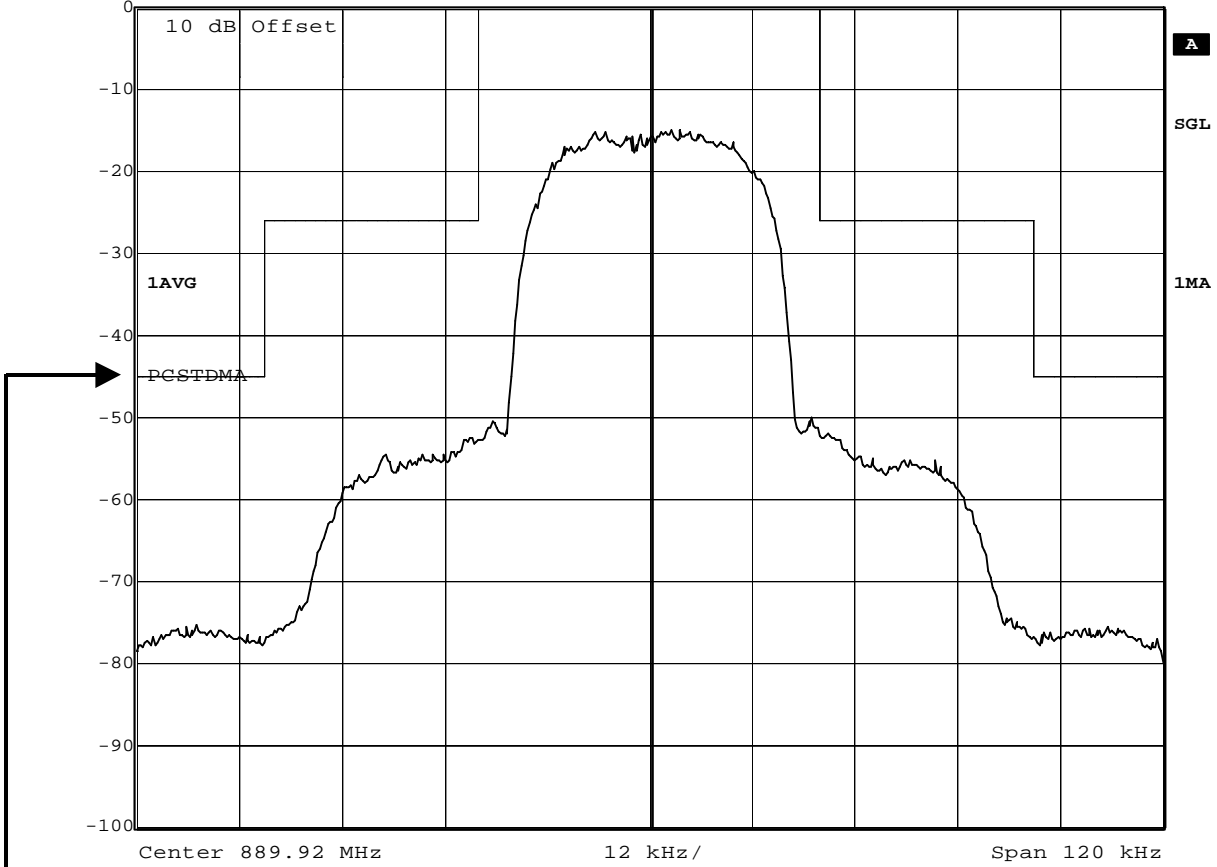
Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block E; AMPS Ch 664: 889.92 MHz
 Highest Settable Frequency
 Input to TTU



Ref Lvl 0 dBm
 RBW 300 Hz RF Att 20 dB
 VBW 3 kHz
 SWT 6.8 s Unit dBm



Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Input
 Block E, AMPS Ch 664, 9.00 dBm
 Date: 4.OCT.2001 12:36:12

Note: Ordinate is direct reading in dBc.

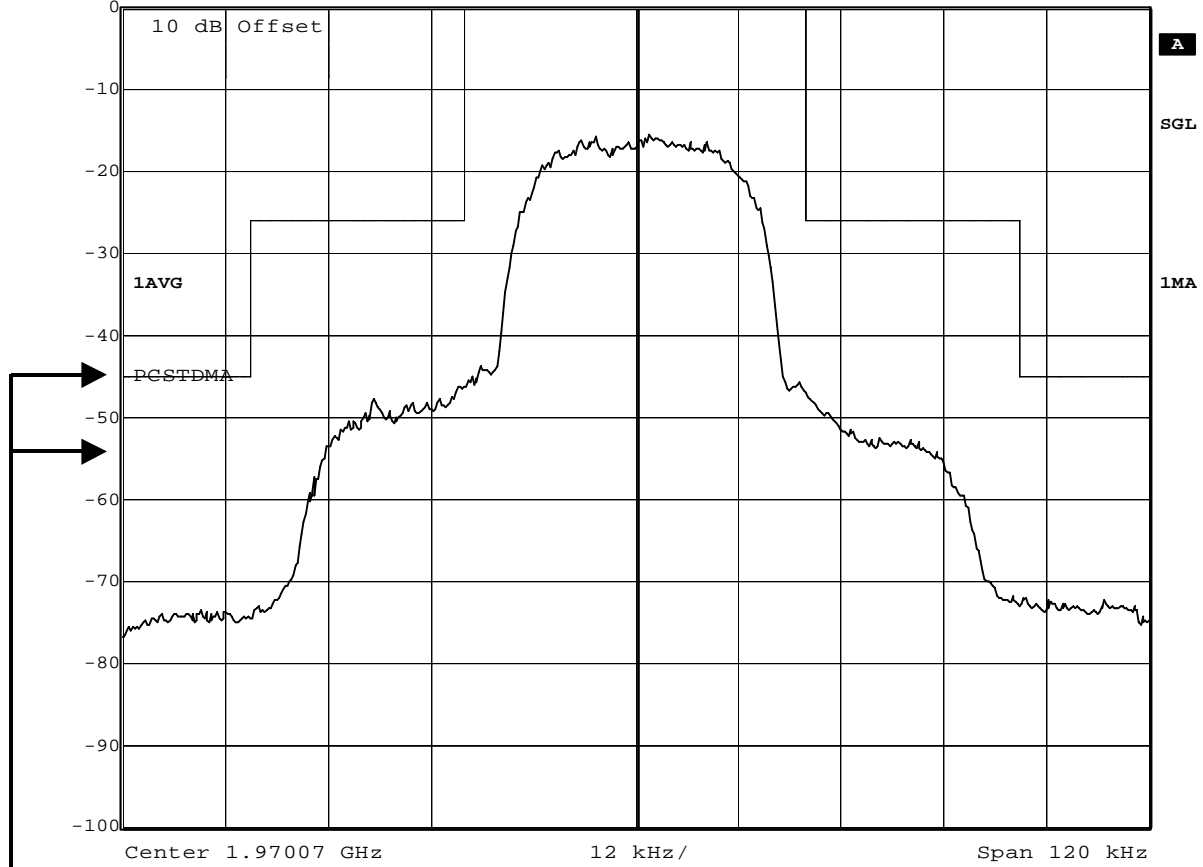
EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block F; PCS Ch 1335: 1970.07 MHz
 Lowest Settable Frequency
 Output at Tx Antenna Terminal (J4)



Ref Lvl
 0 dBm

RBW 300 Hz RF Att 20 dB
 VBW 3 kHz
 SWT 6.8 s Unit dBm



Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Output
 Block F, PCS Ch1335, 16W (42.0 dbm)
 Date: 4.OCT.2001 08:36:43

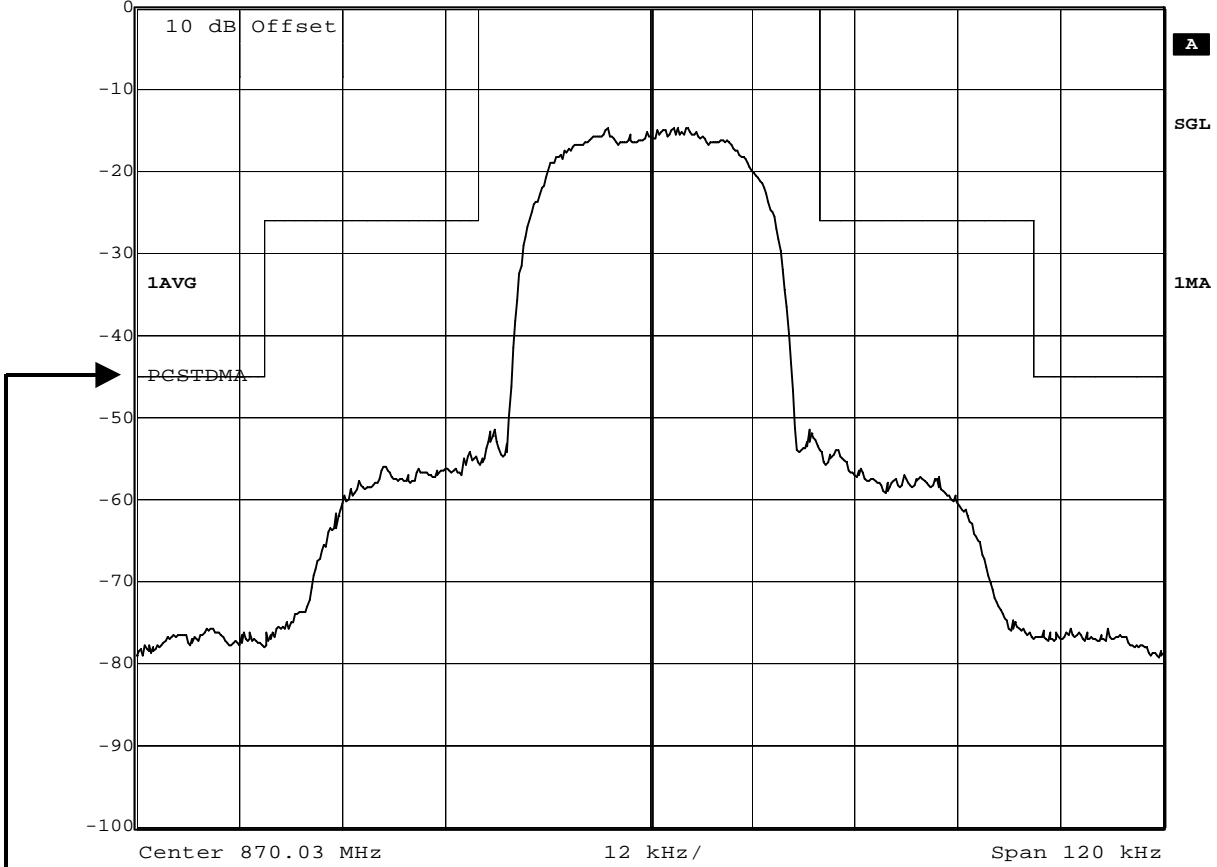
Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block F; AMPS Ch 1: 870.03 MHz
 Lowest Settable Frequency
 Input to TTU



| | | | | |
|---------|-----|--------|--------|-------|
| Ref Lvl | RBW | 300 Hz | RF Att | 20 dB |
| 0 dBm | VBW | 3 kHz | | |
| | SWT | 6.8 s | Unit | dBm |

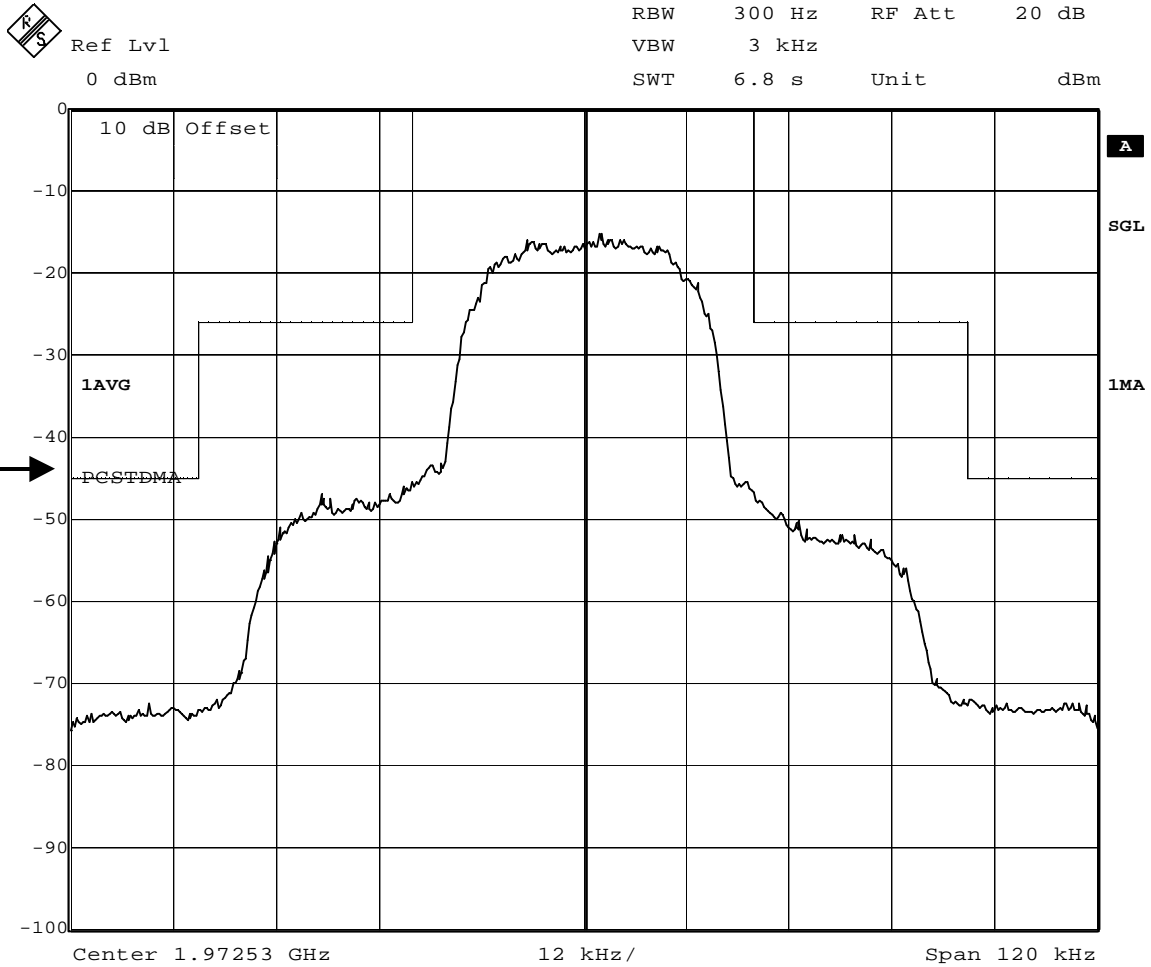


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Input
 Block F, AMPS Ch 1, 9.30 dBm
 Date: 4.OCT.2001 09:50:06

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block F; PCS Ch 1417: 1972.53 MHz
Center Frequency
Output at Tx Antenna Terminal (J4)



Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Output
 Block F, PCS Ch1417, 16W (42.0 dbm)
 Date: 4.OCT.2001 08:41:34

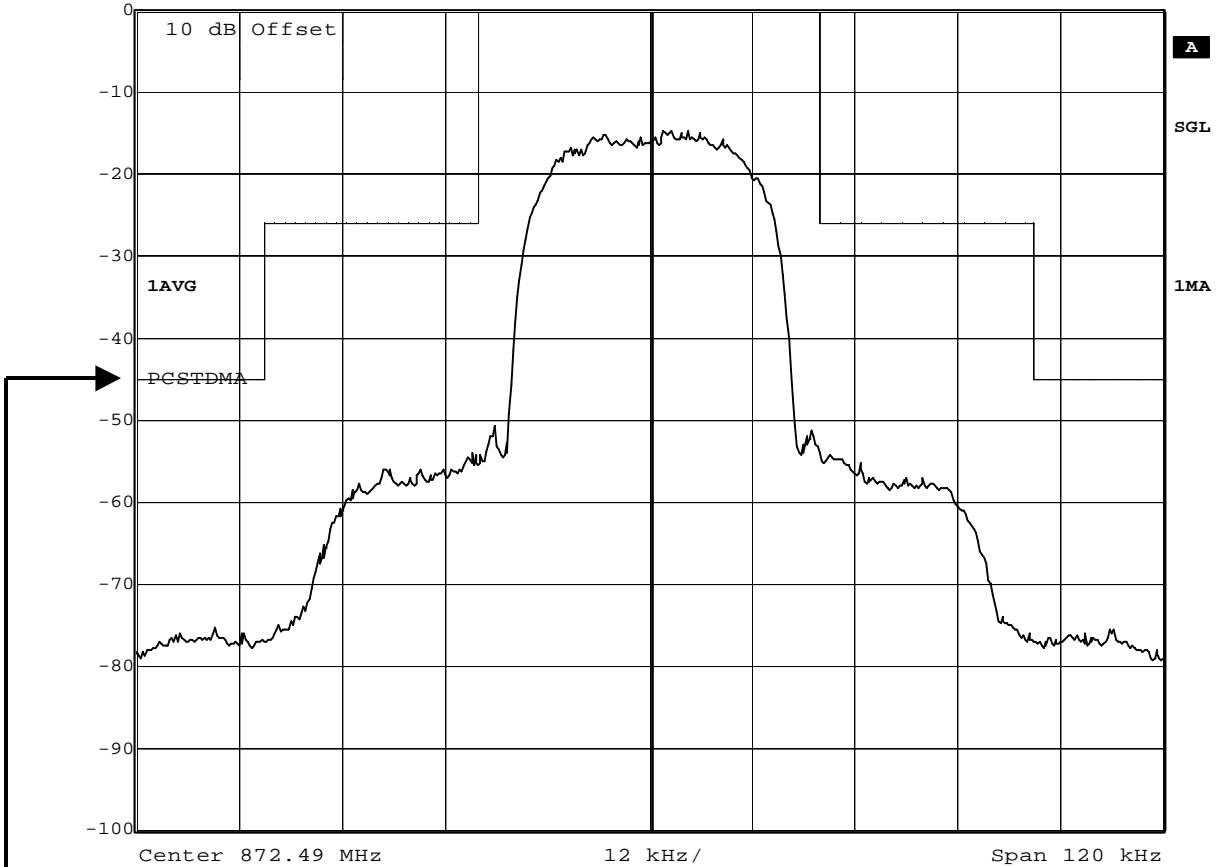
Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block F; AMPS Ch 83: 872.49 MHz
Center Frequency
Input to TTU



| | | | | |
|---------|-----|--------|--------|-------|
| Ref Lvl | RBW | 300 Hz | RF Att | 20 dB |
| 0 dBm | VBW | 3 kHz | Unit | dBm |
| | SWT | 6.8 s | | |

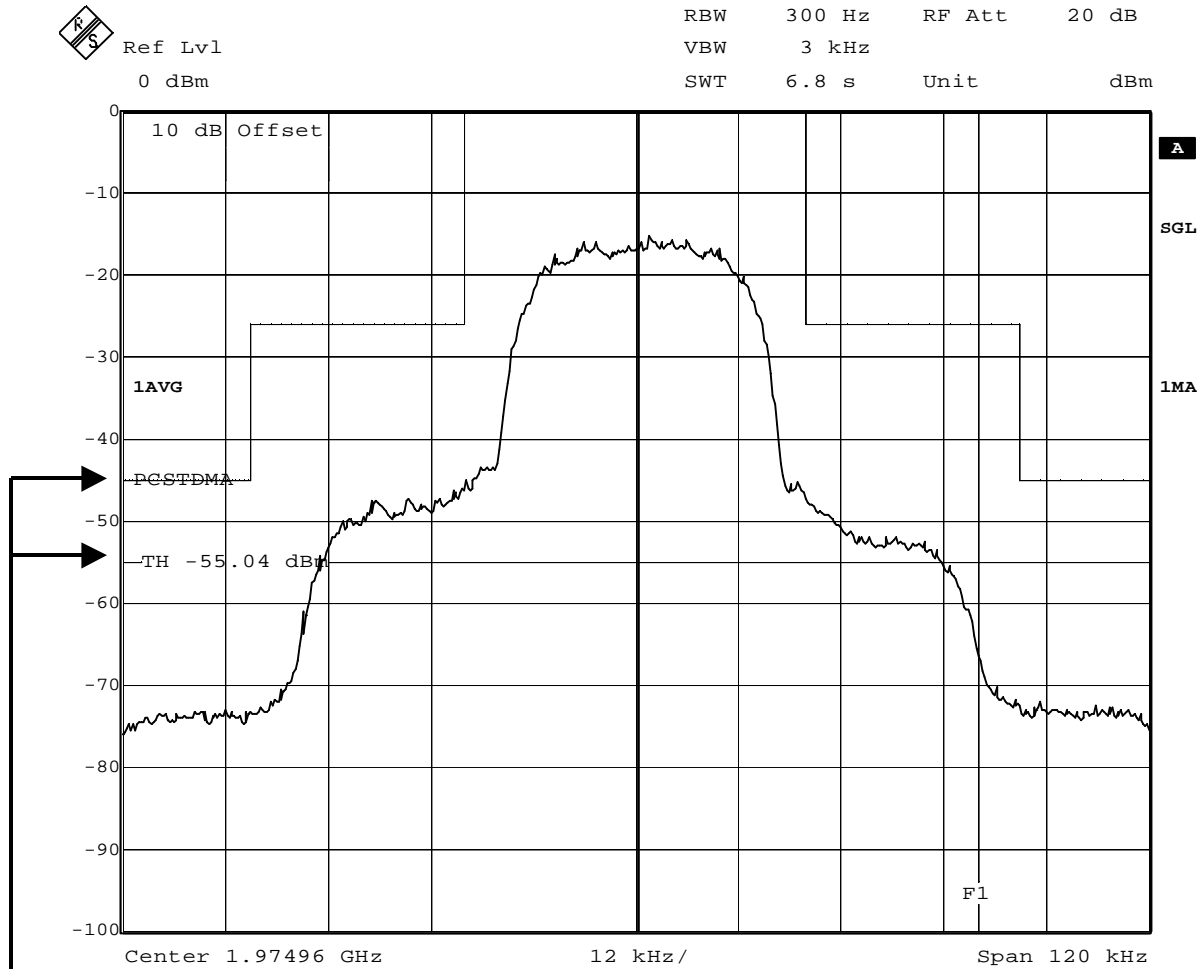


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Input
 Block F, AMPS Ch 83, 9.18 dBm
 Date: 4.OCT.2001 09:54:09

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block F; PCS Ch 1498: 1974.96 MHz
 Highest Settable Frequency
 Output at Tx Antenna Terminal (J4)

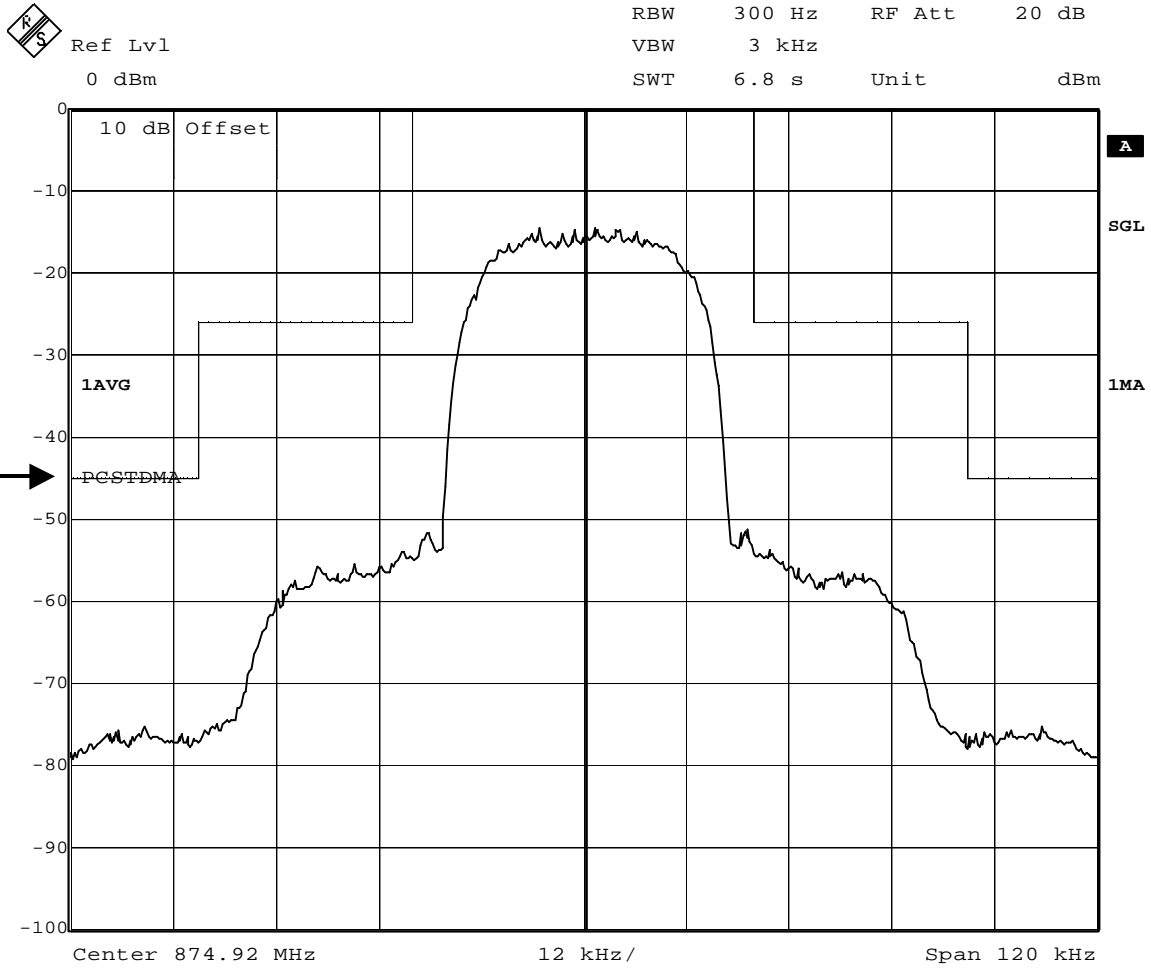


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Output
 Block F, PCS Ch1498, 16W (42.0 dbm)
 Date: 4.OCT.2001 08:46:06

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block F; AMPS Ch 164: 874.92 MHz
 Highest Settable Frequency
 Input to TTU



Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Input
 Block F, AMPS Ch 164, 9.16 dBm
 Date: 4.OCT.2001 09:58:26

Note: Ordinate is direct reading in dBc.

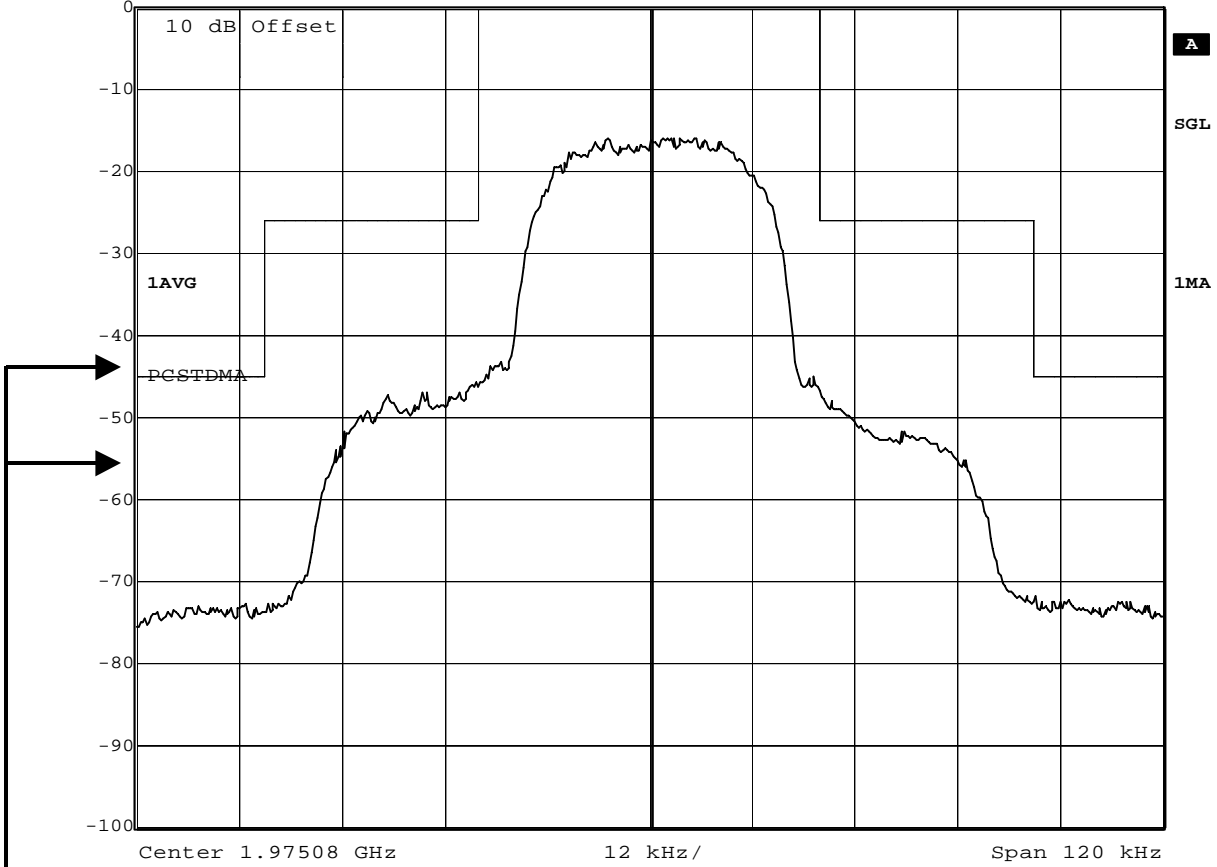
EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block C; PCS Ch 1502: 1975.08 MHz
 Lowest Settable Frequency
 Output at Tx Antenna Terminal (J4)



Ref Lvl
 0 dBm

RBW 300 Hz RF Att 20 dB
 VBW 3 kHz
 SWT 6.8 s Unit dBm

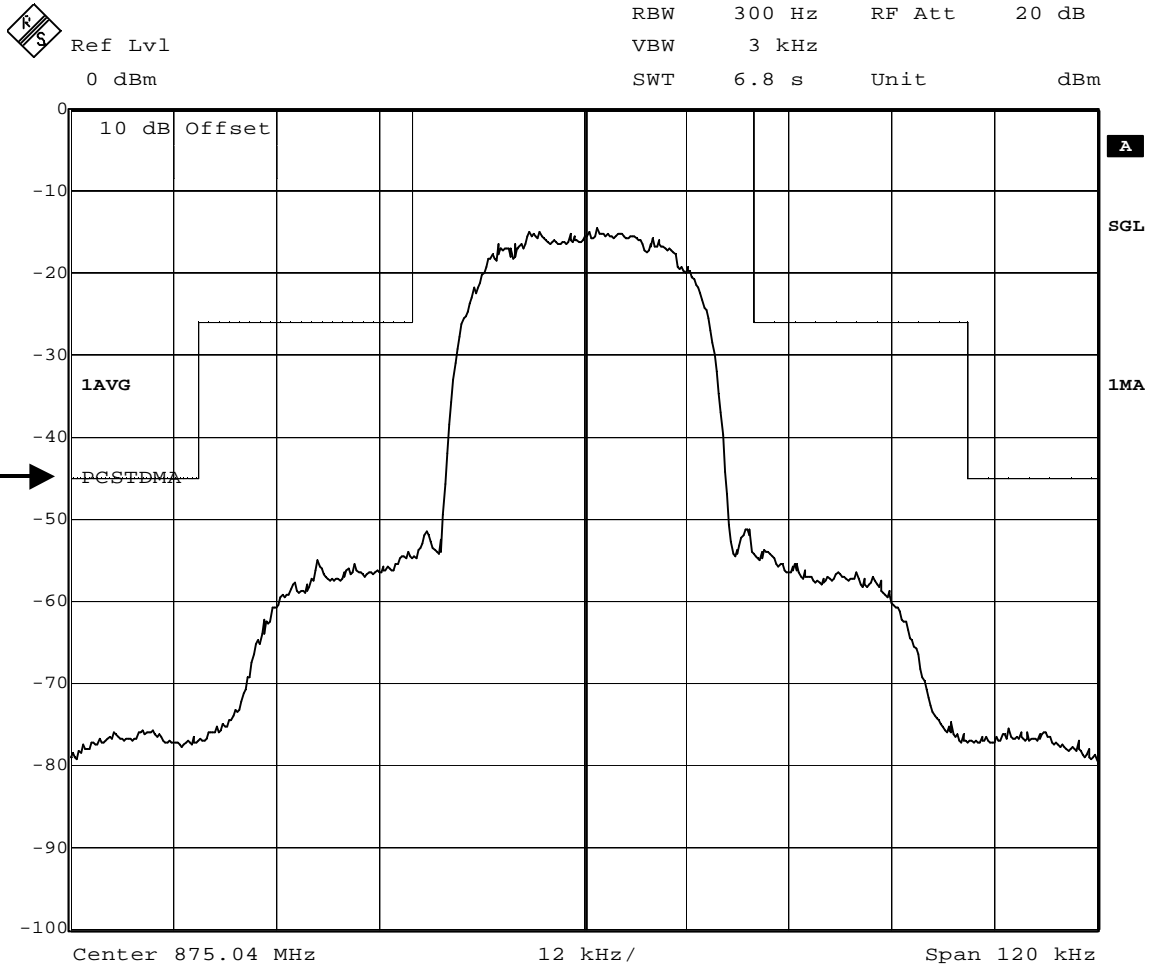


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Output
 Block C, PCS Ch1502, 16W (42.0 dbm)
 Date: 4.OCT.2001 08:54:51

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block C; AMPS Ch 168: 875.04 MHz
 Lowest Settable Frequency
 Input to TTU

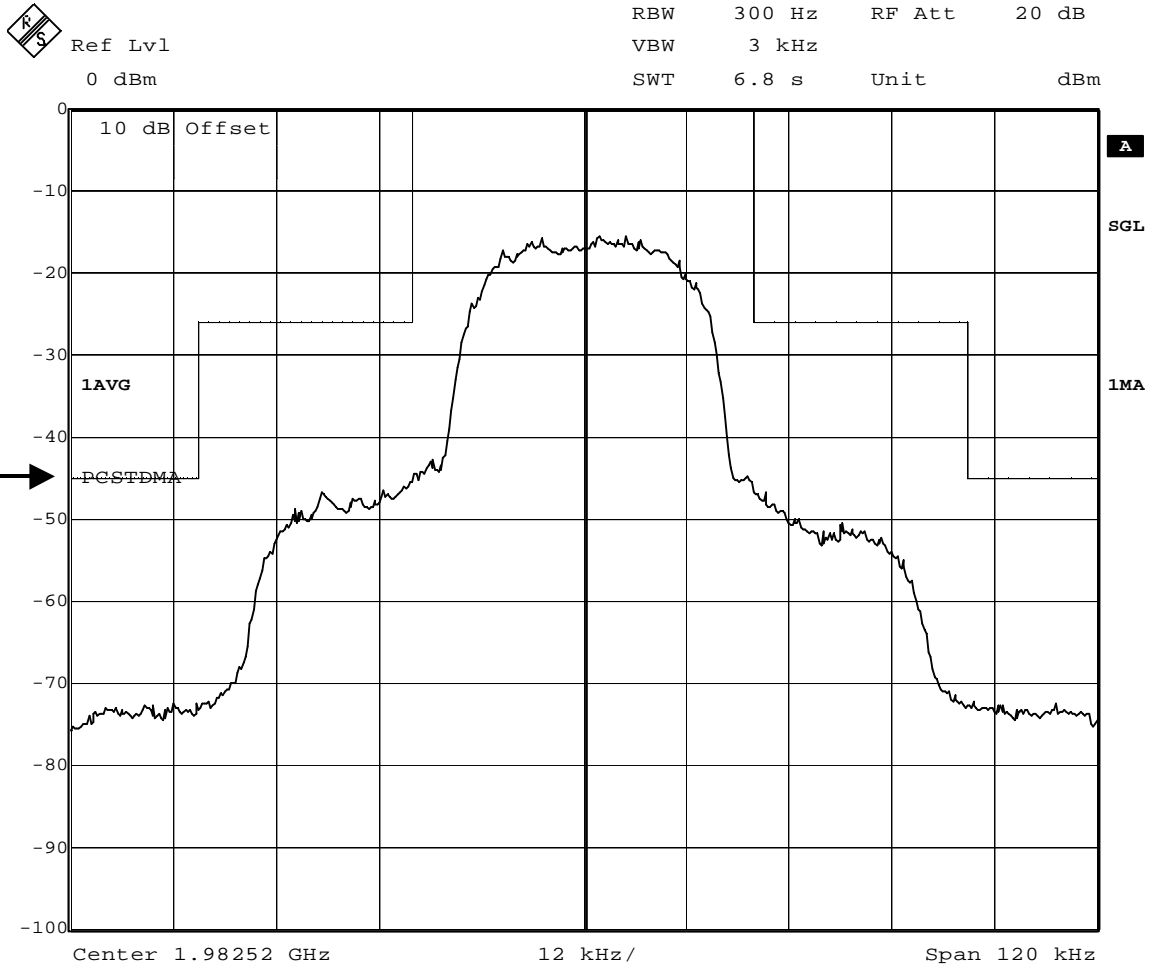


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Input
 Block C, AMPS Ch 168, 9.29 dBm
 Date: 4.OCT.2001 09:32:50

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block C; PCS Ch 1750: 1982.52 MHz
Center Frequency
Output at Tx Antenna Terminal (J4)

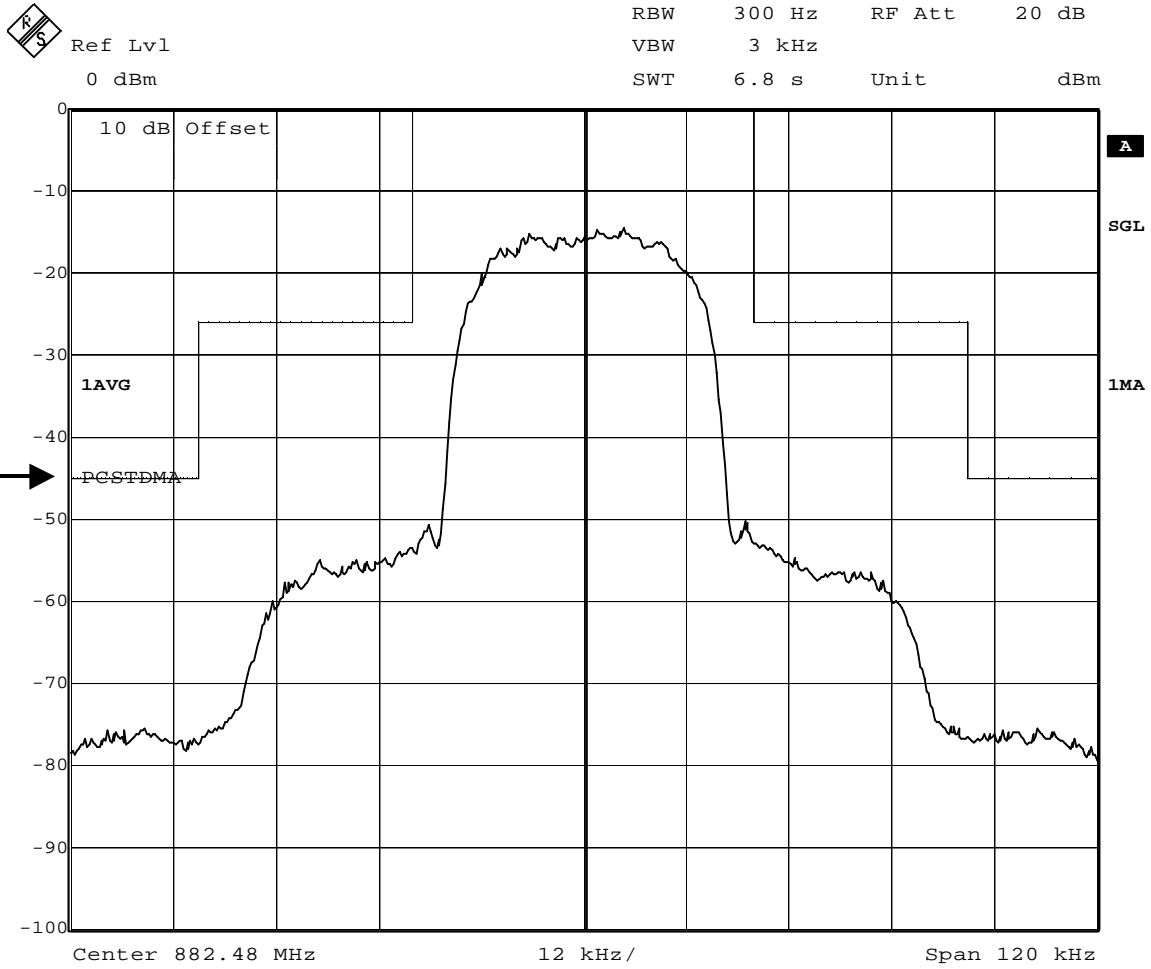


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Output
 Block C, PCS Ch1750, 16W (42.0 dbm)
 Date: 4.OCT.2001 08:59:26

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block C; AMPS Ch 416: 882.48 MHz
Center Frequency
Input to TTU

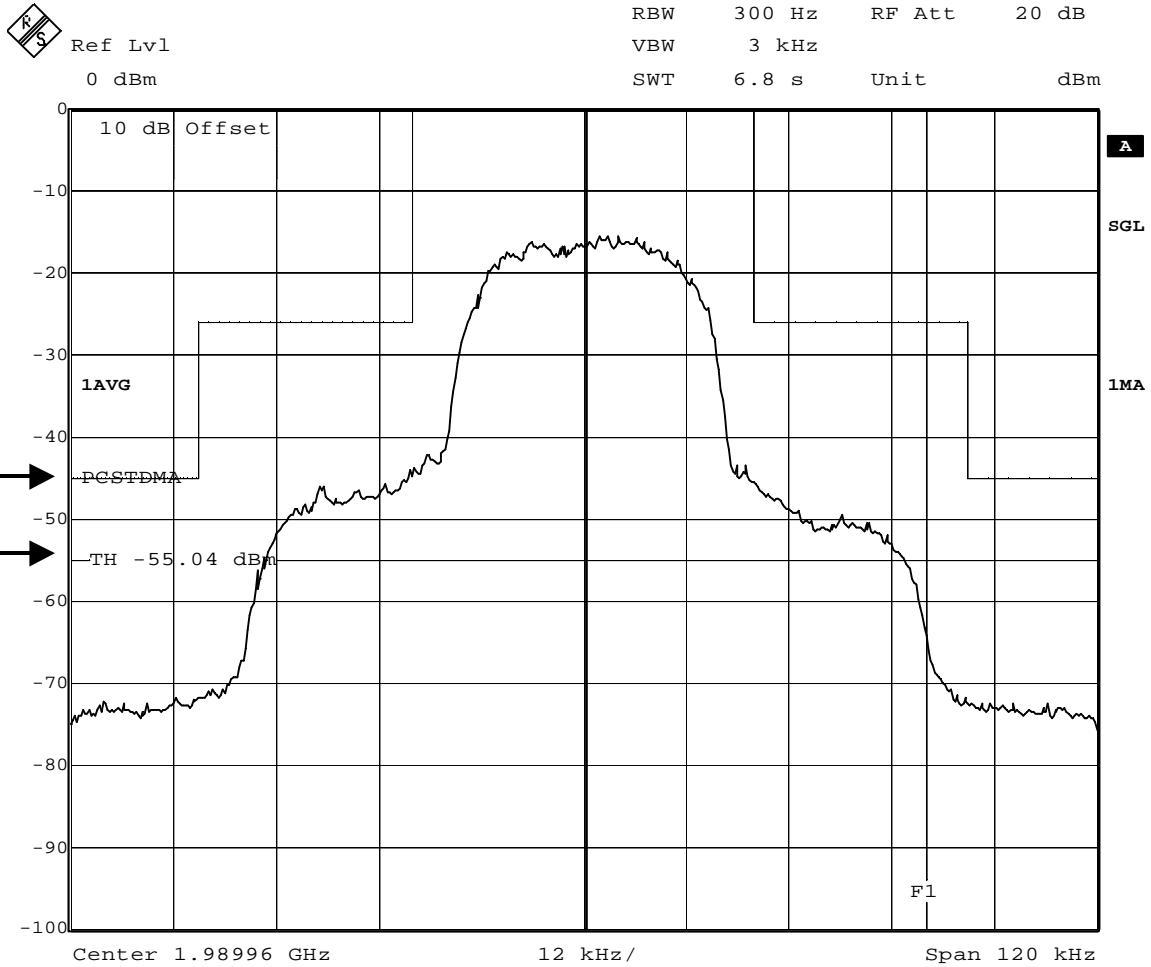


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Input
 Block C, AMPS Ch 416, 9.17 dBm
 Date: 4.OCT.2001 09:37:03

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block C; PCS Ch 1998: 1989.96 MHz
 Highest Settable Frequency
 Output at Tx Antenna Terminal (J4)

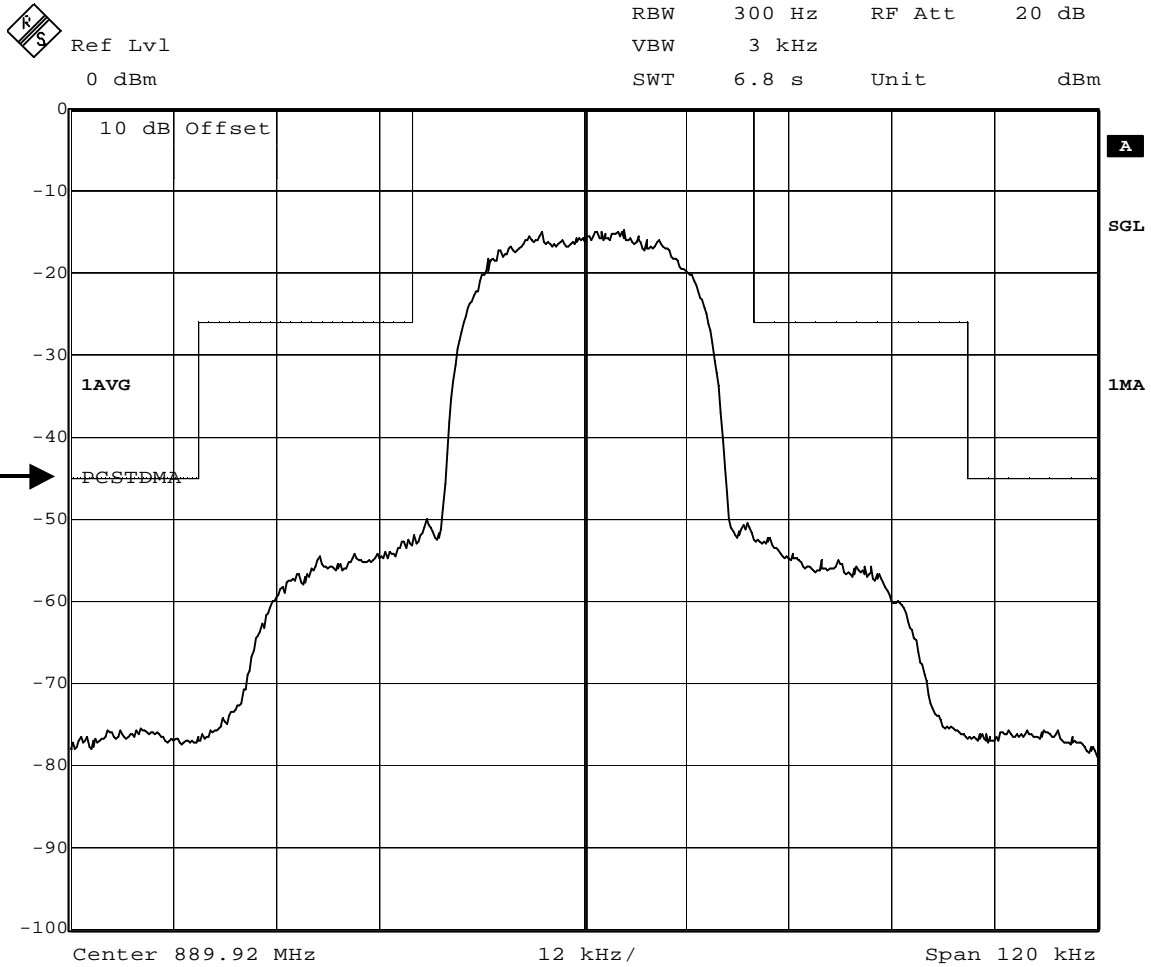


Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Output
 Block C, PCS Ch1998, 16W (42.0 dbm)
 Date: 4.OCT.2001 09:08:35

Note: Ordinate is direct reading in dBc.

EXHIBIT 10: TEST REPORT

Occupied Bandwidth; Block C; AMPS Ch 664: 889.92 MHz
 Highest Settable Frequency
 Input to TTU



Title: AS5CMP-38
 Comment A: Lucent Technologies: PCS-TDMA Transmit Unit; Occ. Bw. Input
 Block C, AMPS Ch 664, 8.76 dBm
 Date: 4.OCT.2001 09:42:37

Note: Ordinate is direct reading in dBc.

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 J4 transmit antenna 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 J4 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 J4 antenna terminal in Watts. Setting the power level at J4 to 16 Watts average, produces an emission attenuation below the carrier limit of 55.04 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 75.04 dBc. The pertinent test parameters are:

1. Frequency Spectrum: 15 MHz to 20 GHz
2. Resolution Bandwidth: 1 MHz (Part 24.238)
3. Emission Limitation: $43 + 10 \log (P)$ dBc = $43 + 10 \log (16 \text{ Watts}) = 55.04$ dBc
4. Instrumentation Noise Floor: at least 20 dB greater than " $43 + 10 \log (P)$ dBc" = 75.04 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 = 42.0 dBm
2. Emission Limitation = 42.0 dBm – 55.0 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 75.0 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., 75 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: AS5CMP-38**

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 to 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, as shown in the table below. The spectrum portion 1.8 – 2.5 GHz, in close proximity to the carrier, was measured without filters, but with a 30 kHz RBW and sample detector.

| Start Frequency | Stop Frequency | Number of Ranges (Segements) | Resolution Bandwidth | Dectector Function |
|------------------------|-----------------------|-------------------------------------|-----------------------------|---------------------------|
| 10.0 MHz | 1.80 GHz | 15 | 1 MHz | Peak |
| 1.80 GHz | 1.93 GHz | 6 | 30 kHz | Sample |
| 1.93 GHz | 1.99 GHz | 12 | 30 kHz | Sample |
| 1.99 GHz | 2.50 GHz | 20 | 30 kHz | Sample |
| 2.50 GHz | 10.0 GHz | 8 | 1 MHz | Peak |
| 10.0 GHz | 20.0 GHz | 10 | 1 MHz | Peak |

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 of the 6 PCS frequency blocks, which are summarized in the following table.

| PCS Frequency Block | AMPS Channel No. | AMPS Frequency | PCS Channel No. | PCS Frequency |
|----------------------------|-------------------------|-----------------------|------------------------|----------------------|
| A (Low) | 2 | 870.06 MHz | 2 | 1930.08 MHz |
| A (High) | 498 | 884.94 MHz | 498 | 1944.96 MHz |
| D (Low) | 502 | 885.06 MHz | 502 | 1945.08 MHz |
| D (High) | 665 | 889.95 MHz | 665 | 1949.97 MHz |
| B (Low) | 1 | 870.03 MHz | 668 | 1950.06 MHz |
| B (High) | 497 | 884.91 MHz | 1164 | 1964.94 MHz |
| E (Low) | 501 | 885.03 MHz | 1168 | 1965.06 MHz |
| E (High) | 664 | 889.92 MHz | 1331 | 1969.95 MHz |
| F (Low) | 1 | 870.03 MHz | 1335 | 1970.07 MHz |
| F (High) | 164 | 874.92 MHz | 1498 | 1974.96 MHz |
| C (Low) | 168 | 875.04 MHz | 1502 | 1975.08 MHz |
| C (High) | 664 | 889.92 MHz | 1998 | 1989.96 MHz |

APPLICANT: LUCENT TECHNOLOGIES

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RESULTS: The PCS TDMA Transmit Unit (TTU), subject of this application for certification under FCC ID: AS5CMP-38, demonstrated full compliance with the requirements of FCC Rule Part 2.1051 and with Part 24.238. All of the above tabulated carriers displayed both 2nd and 3rd harmonic signals. The only reportable emissions between -13 dBm and -33 dBm, corresponding to 55 dBc and 75 dBc, respectively, are summarized in the table below. Only D-Block, PCS Channel 502 displayed a reportable 3rd harmonic of the carrier spurious signal. The measurement plot/graph is shown below.

Reportable Emission

| PCS Frequency Block | PCS Channel No. | Carrier Frequency MHz | Harmonic of the Carrier Measured | Emission Power Level | Passing Margin Relative to -13 dBm | Corresponding Attenuation Below the Carrier |
|----------------------------|------------------------|------------------------------|---|-----------------------------|---|--|
| D | 502 | 1945.08 | 2 nd | -36.7 dBm | 23.7 dB | 78.7 dBc |
| D | 502 | 1945.08 | 3rd | -31.3 dBm | 18.3 dB | 73.3 dBc |

The 2nd and 3rd harmonic emissions generated by A-Block Channels 2 and 498; D-Block Channel 665; B-Block Channels 668 and 1164; E-Block Channels 1168 and 1331; F-Block Channels 1335 and 1498; and C-Block Channels 1502 and 1998 were all suppressed greater than 20 dB below the required 55 dBc limitation.; i.e., greater than 75 dBc. Hence, they are not reportable.

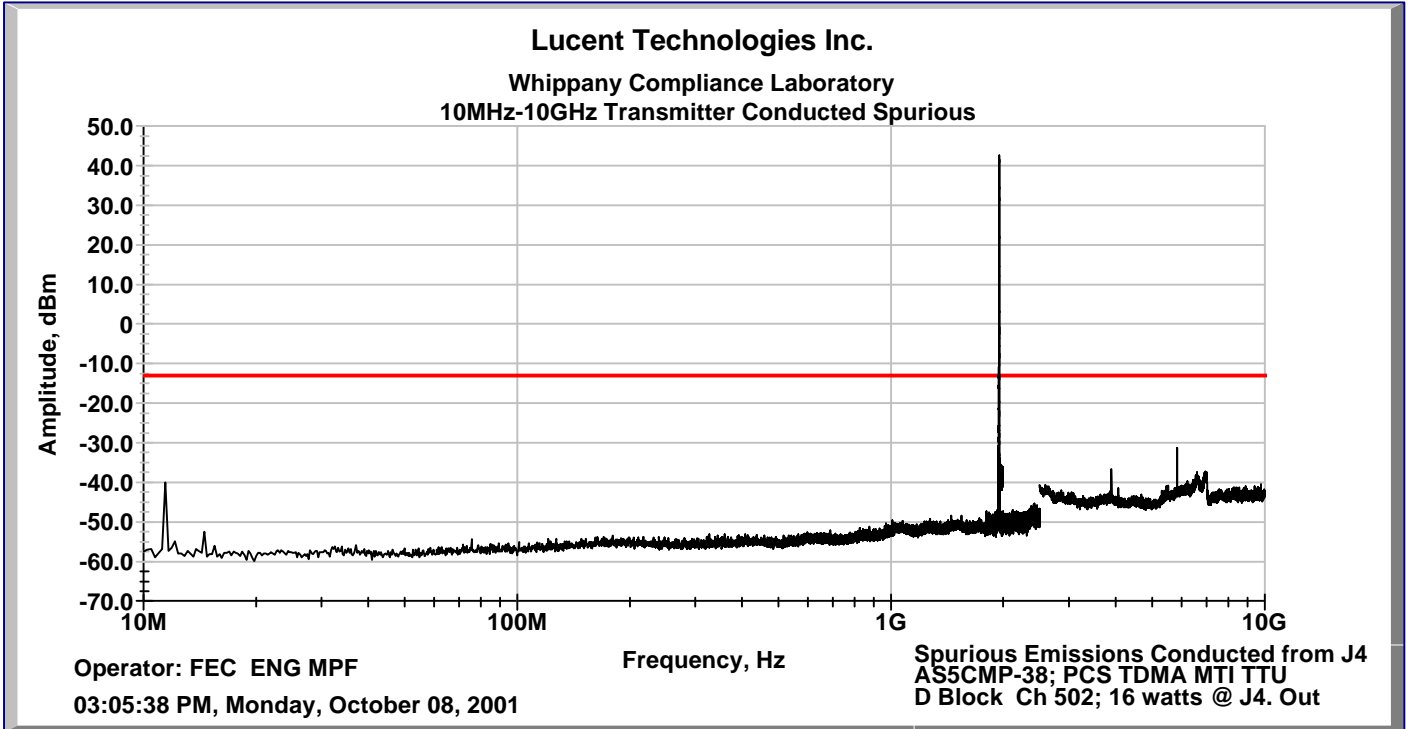
As required, the data plots of the above reportable emission are included in this exhibit.

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EXHIBIT 10: TEST REPORT

Conducted Spurious Emissions at the J4 Transmit Antenna Terminal
10 MHz to 10 GHz
Block D; PCS Ch 502; 1945.08 MHz

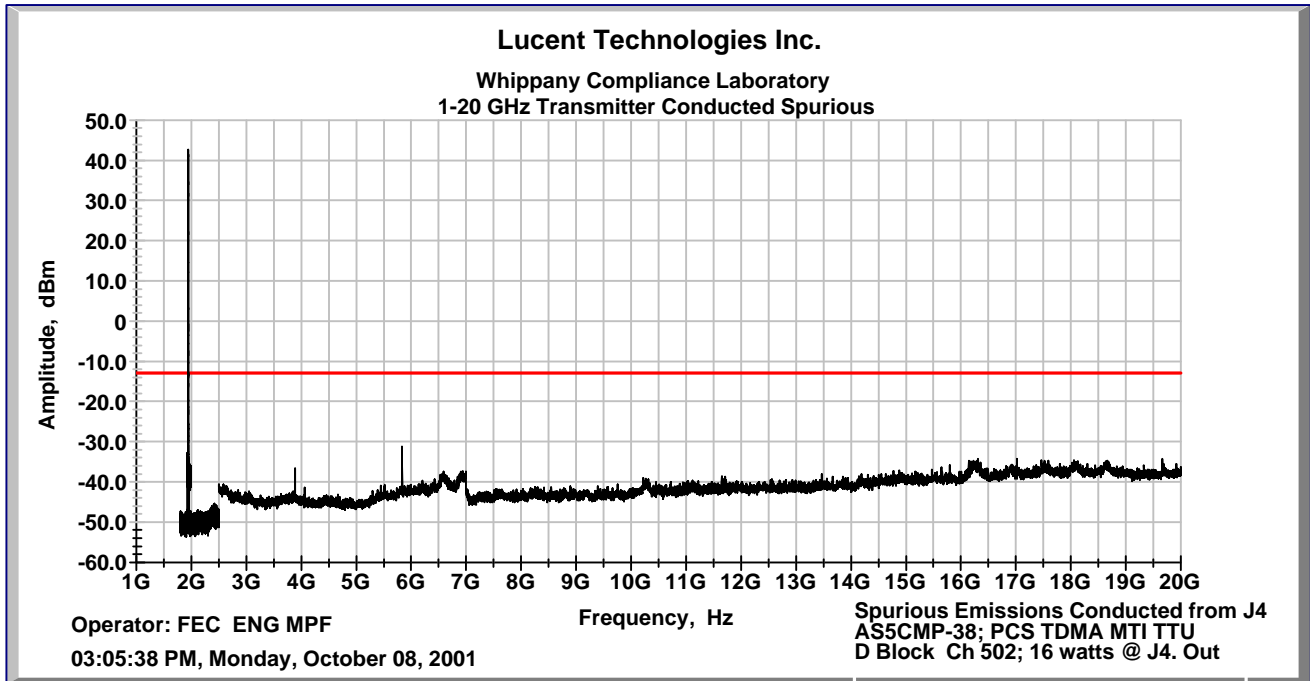


APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5CMP-38

EXHIBIT 10: TEST REPORT

Conducted Spurious Emissions at the J4 Transmit Antenna Terminal
1.0 GHz to 20 GHz
Block D; PCS Ch 502; 1945.08 MHz



APPLICANT: LUCENT TECHNOLOGIES

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

This test requires a single carrier, at maximum rated power, transmitting into a non-radiating dummy load. As required, the frequency range investigated was from 10 MHz to 20 GHz as in the previous conducted spurious emissions test procedure. This test was performed for each of the 6 PCS frequency blocks, with a single carrier set to the block center frequency, as cited in the previous occupied bandwidth tests, and adjusted to provide 16 Watts (42.0 dBm) at the J4 transmit antenna terminal. In compliance with the guidelines of ANSI C63.4-1992, the equipment under test (EUT) was first evaluated in an RF shielded chamber, while 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 C63.4-1992. The 10 highest field strength signals, between 10 MHz and 1000 MHz, were identified in the preliminary scans conducted in the RF chamber and then accurately remeasured on the Whippany Open Area Test Site (OATS), which is FCC listed and approved. Knowing the exact local oscillator (LO) and harmonic frequencies between 1 GHz and 20 GHz, these emissions were directly measured on the Whippany OATS, without the need of a preliminary procedure.

Any emissions radiating from the cabinet are treated as radiating from a halfwave dipole antenna, as specified in Part 2, Section 2.1053(a). 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 (J4). In accordance with Part 24.238, the required resolution bandwidth was 1 MHz. However, the 1 MHz RBW produced too high an instrumentation noise floor and was then reduced to 30 kHz in order to detect and measure the spurious emissions and be able to distinguish them from the RF ambient. In all tests, spectrum analyzer was set to max hold. 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 a dipole antenna in free space:

$$E = [(49.2)(P)\text{exp}(1/2)]/R$$

Where: E = field intensity in Volts/Meter
 P = transmitted 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:

$$E(\text{lim}) = E - \text{Att} \text{ (in dBuV/m)}$$

APPLICANT: LUCENT TECHNOLOGIES**FCC ID: AS5CMP-38****Minimum Standard Requirement:**

Radiated emission measurements in the frequency range 30 MHz to 1000 MHz were performed on the Whippany OATS using calibrated biconical and log periodic antennas, at a separation distance from the EUT of 4 meters. Both vertical and horizontal antenna polarization was utilized. This separation was necessary in order to aid distinguishing the EUT emission from the RF ambient. Using the above equations for a carrier power level of 16 Watts and 4 meters separation, the FCC field strength limitation is 81.9 dBuV/m.

Radiated emission measurements in the frequency range 1.0 GHz to 18 GHz were performed on the Whippany OATS using a calibrated double ridged guide antenna at a separation distance from the EUT of 3 meters, and both vertical and horizontal antenna polarization. Since the exact local oscillators (LO) and carrier harmonic frequencies were known above 1.0 GHz, a preliminary test procedure in an RF chamber was not required. Using the above equations for a carrier power level of 16 Watts and 3 meters separation, the FCC field strength limitation is 84.4 dBuV/m.

RESULTS:

The PCS TDMA Transmit Unit (TTU), subject of this application for certification under FCC ID: AS5CMP-38, 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 had field strengths that were substantially greater than 20 dB below the FCC limitation. Therefore, there are no reportable radiated spurious emissions.

APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5CMP-38

EXHIBIT 10: TEST REPORT

PART 2.1055 MEASUREMENTS REQUIRED: FREQUENCY STABILITY

The PCS TDMA Transmit Unit (TTU), subject of this application for certification under FCC ID: AS5CMP-38, incorporates carrier frequency determining circuitry which performs frequency up-conversion from cellular input to PCS output. This test procedure demonstrates that TTU is compliant with the FCC's requirements for frequency stability of the transmitted carrier at the J4 antenna terminal.

Frequency stability measurements were performed by T. N. Tye, Lucent Technologies, Columbus, Ohio under the direction of M. P. Farina, and in adherence to the previously cited ISO 9001 test plan. This test program was conducted during the interval April 19 to May 17, 2001.

The procedure required by the FCC is specified in CFR 47, Part 2, Subpart J – Equipment Authorization Procedures, Section 2.1055 – Measurements Required: Frequency Stability, Effective: October 16, 2000. The requirements for base station/land station equipment, are summarized as:

Section 2.1055(a)(1): The frequency stability shall be measured with variation of ambient temperature from -30°C to $+50^{\circ}\text{C}$

Section 2.1055(b): Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10°C through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement. The short term transient effects on the frequency of the transmitter due to keying (except for broadcast transmitters) and any heating element cycling normally occurring at each ambient temperature level also shall be shown. (*Note: The term "keying" does not apply to base station/land station equipment. "Heating element" applies to "heat cartridges" if used.*) Only the portion or portions of the transmitter containing the frequency determining and stabilizing circuitry need be subjected to the temperature variation test. Note: This applies to the TTU carrier frequency determining circuitry cited above.

Section 2.1055(d)(1): The frequency stability shall be measured with variation of primary supply voltage from 85% to 115% of the nominal value.

Frequency Stability Limitation:

The frequency stability is the measurement of the carrier center frequency deviation from its assigned value as a function of (1) temperature variation from -30°C to $+50^{\circ}\text{C}$, in $+10^{\circ}\text{C}$ increments, and (2) variation of supply voltage, at the equipment frame power input terminals, from 85% to 115% of the nominal value. This is a lengthy procedure and is performed one time with a single carrier set to approximately mid PCS frequency band. The required tolerance limit is specified for base station/land station equipment as follows:

| Standard | Effective Date | Technology | Tolerance |
|-------------------------------|-----------------|------------|----------------|
| FCC Part 22.355: Base Station | October 1, 2000 | 850 TDMA | ± 1.50 ppm |

Since the input signal to the TTU is a TDMA cellular frequency carrier, the above specified tolerance limit of ± 1.50 ppm applies. IS-138-A defines the frequency tolerance as "error from the nominal channel frequency". Hence, the center frequency deviation will be measured at the J4 transmit antenna terminal.

APPLICANT: LUCENT TECHNOLOGIES**FCC ID: AS5CMP-38****Measurement Procedure:**

This procedure required measurement at a single carrier frequency, as specified below. The procedure was performed for both Reference Frequency Generators: the primary rubidium RFG-RB, and the secondary crystal oscillator RFG-XO.

- A. The PCS TDMA Minicell was installed in an environmental chamber with thermocouples attached to (1) TTU faceplate, (2) EDRU faceplate, (3) exterior surface of the Minicell, and (4) chamber ambient. The Minicell was evaluated with all doors and panels secured in place and operated as in the normal operational mode.
- B. One EDRU + TTU was set to transmit in PCS B-Block , using AMPS Channel 250, which is up-converted to PCS Channel 917 at 1957.53 MHz. The carrier was modulated in all 3 time slots with pseudo-random data. The power level was adjusted to provide 16 Watts (42.04 dBm) at the J4 transmit antenna terminal, using the correct PCS Block transmit filter.
- C. The Minicell was first allowed to thermally stabilize at +20°C, with the power source set 100% of nominal supply voltage = 26.0 Vdc. Sufficient soak time was allowed to achieve thermal stability at each temperature prior to frequency measurement.
- D. Next the power source was adjusted to 85% of nominal = 22.1 Vdc, and the frequency measurement procedure was repeated.
- E. The power source was next adjusted to 115% of nominal = 29.9 Vdc and the frequency measurement procedure was repeated.
- F. The preceding procedure was repeated by sequentially thermally stabilizing the Minicell in -10°C steps, from +20°C to -30°C, and repeating the above procedure at each temperature.
- G. The Minicell was then returned to +20°C and thermally stabilized.
- H. The Minicell was then sequenced in +10°C steps, from +20°C to +50°C, with the above procedure repeated at each stabilized temperature.
- I. This procedure was performed using first the rubidium 15 MHz reference and then with the crystal oscillator reference generators.

Measurement Equipment:

| | Description | Model | Barcode/SN | Calibration Info |
|----|--------------------------|-----------------|------------|------------------|
| 1 | Main Power Supply | HP6683A | 228922 | Due on 12-19-01 |
| 2 | DC Power Supply | HP6644A | 227573A | Due on 08-11-01 |
| 3 | Frequency Counter | HP53132A | MY40001149 | Due on 07-27-02 |
| 4 | Spectrum Analyzer | HP8595E | 207930 | Due on 01-04-02 |
| 5 | Power Meter | HP438A | 207720 | Due on 07-31-01 |
| 6 | Power Sensor | HP8481D | 208187 | Due on 12-12-01 |
| 7 | Switch | HP 8769K | 3717A02593 | Not Required |
| 8 | Attenuator Switch Driver | HP11713A | 231652 | Not Required |
| 9 | GPS Receiver | HP58503B | 233646 | Not Required |
| 10 | Distribution Amplifier | HP58502A | 233647 | Not Required |
| 11 | Datalogger | Fluke Hydra SII | 229719 | Due on 07-05-01 |

APPLICANT: LUCENT TECHNOLOGIES

FCC ID: AS5CMP-38

Summary of Measurement Data:

The summary of the measurements are shown as deviations from the assigned channel frequency of 1957.53 MHz, measured at the J4 transmit antenna terminal with a carrier power level of 16 Watts (42.0 dBm).

Rubidium Reference Frequency Oscillator

Nominal Supply Voltage = 26.0 Vdc

85 % of Nominal Supply Voltage = 22.1 Vdc

115% of Nominal Supply Voltage = 29.9 Vdc

| Stabilized Temperature °C | Frequency Deviation at 85 % Nom. Supply ppm | Frequency Deviation at 100 % Nom. Supply ppm | Frequency Deviation at 115 % Nom. Supply ppm |
|---------------------------|---|--|--|
| - 30 | 2.52E-03 | 2.71E-03 | 2.39E-03 |
| - 20 | 9.44E-04 | 1.54E-04 | 1.04E-03 |
| - 10 | 1.54E-04 | 8.47E-04 | 1.21E-04 |
| 0 | 5.03E-02 | 7.73E-04 | 1.51E-04 |
| + 10 | 2.01E-04 | 2.99E-04 | 5.48E-04 |
| + 20 | 1.63E-04 | 5.18E-04 | 2.34E-04 |
| + 30 | 2.34E-04 | 1.42E-04 | 2.04E-04 |
| + 40 | 5.12E-04 | 9.18E-05 | 1.48E-04 |
| + 50 | 4.14E-04 | 2.96E-05 | 5.12E-04 |

Crystal Reference Frequency Oscillator

Nominal Supply Voltage = 26.0 Vdc

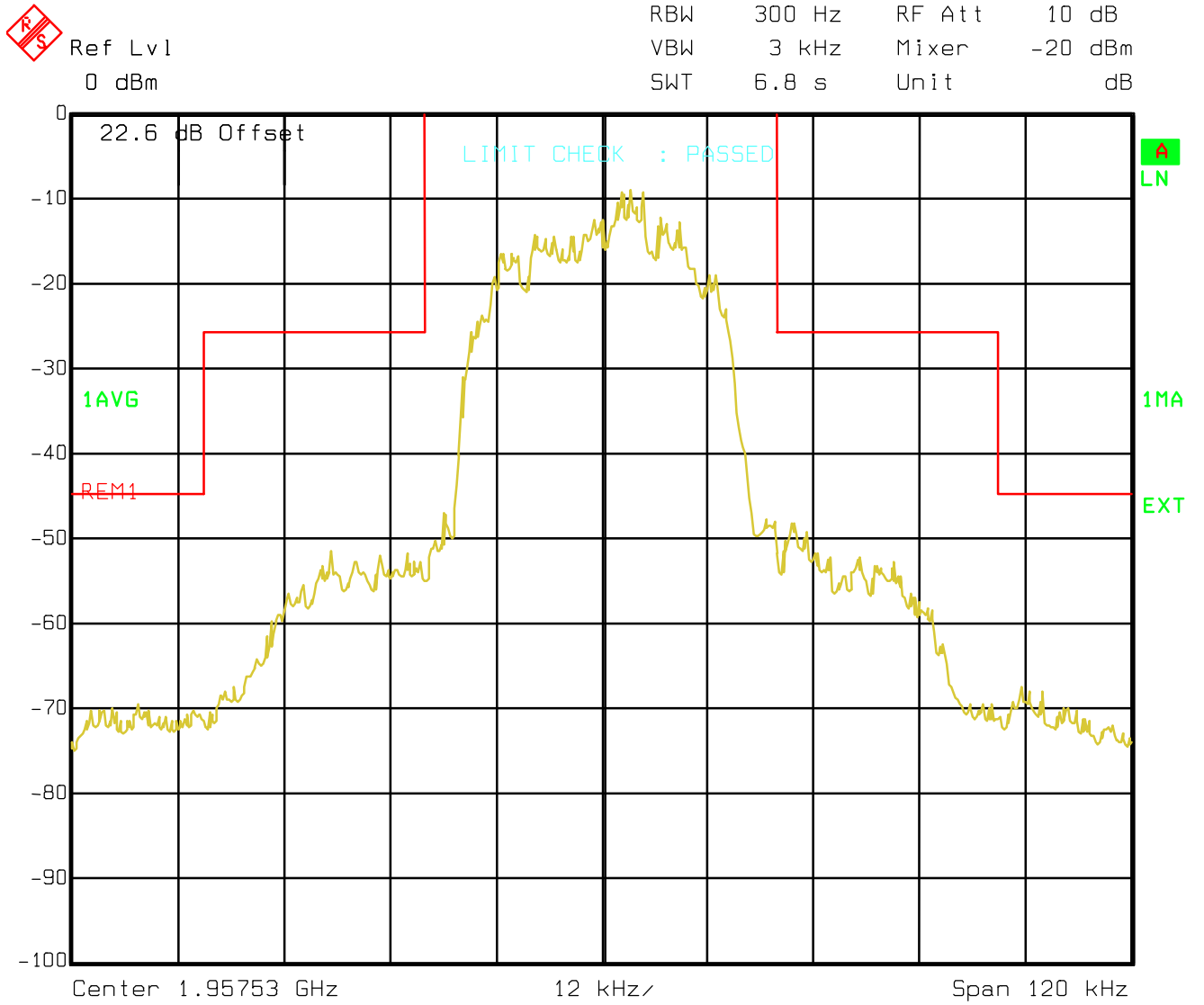
85 % of Nominal Supply Voltage = 22.1 Vdc

115% of Nominal Supply Voltage = 29.9 Vdc

| Stabilized Temperature °C | Frequency Deviation at 85 % Nom. Supply ppm | Frequency Deviation at 100 % Nom. Supply ppm | Frequency Deviation at 115 % Nom. Supply ppm |
|---------------------------|---|--|--|
| - 30 | 1.53E-03 | 2.68E-03 | 2.58E-03 |
| - 20 | 2.90E-04 | 3.46E-04 | 5.83E-04 |
| - 10 | 1.51E-04 | 6.81E-04 | 5.36E-04 |
| 0 | 3.82E-04 | 4.85E-04 | 2.28E-04 |
| + 10 | 2.40E-04 | 5.68E-04 | 6.54E-04 |
| + 20 | 8.32E-04 | 4.44E-04 | 4.97E-04 |
| + 30 | 7.10E-05 | 3.02E-04 | 1.78E-04 |
| + 40 | 4.06E-04 | 4.44E-05 | 3.34E-04 |
| + 50 | 1.16E-03 | 2.63E-04 | 5.00E-04 |

RESULTS: The PCS TDMA Transmit Unit (TTU), subject of this application for certification under FCC ID: AS5CMP-39, demonstrated full compliance with the requirements of FCC Rule Part 2.1055. The frequency stability of the carrier at the Minicell J4 transmit antenna terminal is substantially less than the required ± 1.50 ppm for both rubidium and crystal reference oscillators. A sample measurement is attached to this exhibit.

EXHIBIT 10: TEST REPORT



Title: TTU SN MTI-J008, File name M08P50mB.WMF
 Comment A: 100% Voltage, Temp(C) 50, Oscillator Xo
 FREQ. ERROR(PPM) 2.634E-4, EVM(%) 6.8675251,
 Date: 12.MAY.2001 23:52:22

Figure A2- 354

Screen capture of R&S Filename: M08P50MB.WMF
 TTU manufacturer: MTI
 Oscillator: Xo
 Chamber Temperature (degrees C): +50
 Voltage (percent nominal): 110%
 Signal: Output of TTU