TEST REPORT

MEASUREMENT OF DC POWER OF FINAL STAGE AMPLIFIER

SECTION 2.1033(c) (8)

TEST REPORT

MEASUREMENT OF DC POWER OF FINAL STAGE AMPLIFIER

SECTION 2.1033(c) (8)
The dc voltages applied to and dc currents into the several elements of the final radio frequency amplifying device for normal operation over the power range.

RESPONSE: The SRFU19 nominally uses the following voltages and maximum currents:

Overall SRFU19 +26 VDC @ 5.14 A max.

Final Output Transistors: Final stage transistor draws 3.78 amps at 26V at rated output power transistor.

CIRCUITRY OF SUPPRESSION OF SPURIOUS RADIATION

SECTION 2.1033(c) (10)

(LUCENT TECHNOLOGIES CONFIDENTIAL PROPRIETARY INFORMATION)

CIRCUITRY OF SUPPRESSION OF SPURIOUS RADIATION

SECTION 2.1033(c) (10)

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

The frequency stabilization and accuracy of the GSM signal amplified by the SRFU19 is a function of oven controlled crystal oscillator (reference frequency generator) used by the Voltage Controlled Oscillator (VCO). The reference frequency generator produces highly accurate 13MHz reference frequencies. The performance exceeds a 0.05 ppm ETSI GSM requirement. The reference frequency generator is phase-locked with VCO of the SRFU19. The MRIF circuit description included in this Section describes the operation of Reference Frequency Generator.

External to the SRFU19 there is a cavity type Transmit Filters which limit spurious and harmonic content. The performance characteristics of these filters are included in the section Modulation Control (Section 2.1033(c) 13) of this filing.

Schematic diagram and description of all circuitry and devices provided for suppression of spurious radiation, limiting modulation and for limiting power is included. A confidential status has been requested for documents included in this section.

Document included in this section are:

1. Block Diagrams.
2. Circuit Descriptions.
3. Schematics.

LISTING OF REQUIRED MEASUREMENTS

SECTION 2.1033 (c) (14)

MEASUREMENT PER SECTION 2.999 OF THE RULES

SECTION 2.1033 (c) (14)

The data required by Section 2.1046 through 2.1057, inclusive, measured in accordance with the procedures set out in Section 2.1041.

RESPONSE:

The following pages include the data required for the Certification of the FCC ID **AS5BTS2K-01**, measured in accordance with the procedures set out in Section 2.999 of the Rules.

Each required measurement and its corresponding exhibit number are:

Measurement: 1	Section 2.1046	RF Power Output
Measurement: 2	Section 2.1047	Modulation Characteristics
Measurement: 3	Section 2.1049	Occupied Bandwidth
Measurement: 4	Section 2.1051	Spurious Emissions at Antenna Terminals
Measurement: 5	Section 2.1053	Field Strength of Spurious Radiation
Measurement: 6	Section 2.1055	Measurement of Frequency Stability
	Section 2.1057	Frequency Spectrum to be Investigated
	. . . . .	Test Instrumentation List

MEASUREMENT OF RADIO FREQUENCY POWER OUTPUT

SECTION 2.1046

MEASUREMENT: 1

MEASUREMENT OF RADIO FREQUENCY POWER OUTPUT

SECTION 2.1046

The test arrangements used to measure the radio frequency power output of the FCC ID: AS5BTS2K-01 "GSM 1900 Transceiver" Model SRFU19 is on the following page. Measurements were made respectively at each frequency where occupied Bandwidth measurements were performed. The use of the SRFU19 is for a Single GSM Carrier. This requires that the 4J power level be calibrated for the specific channel of use. The test configuration, Figure 1A, allowed the measurement of RF output power for each channel investigated for Occupied Bandwidth. These included the upper lower band edges and at the center channel for each Band.

The SRFU19 system has a maximum power output at the antenna terminals of 27 Watts (44.3 dBm) +0.5/-2 dB, it also has a minimum power output at the antenna terminals of 0.002 Watts (+0.5/-2 dB), across the PCS band (1930.2 –1989.8 MHz). Digitized pseudo-random traffic stored in an EROM in SRFU19 was used as input. The power was reset to 27 Watts at each measurement frequency to verify the spectral performance at that power level at each specific frequency of interest. The attenuation range was also verified. The specific frequencies and channels and set power level was documented on each "Occupied Bandwidth" sheet.

MEASUREMENT: 1

MEASUREMENT OF RADIO FREQUENCY POWER OUTPUT

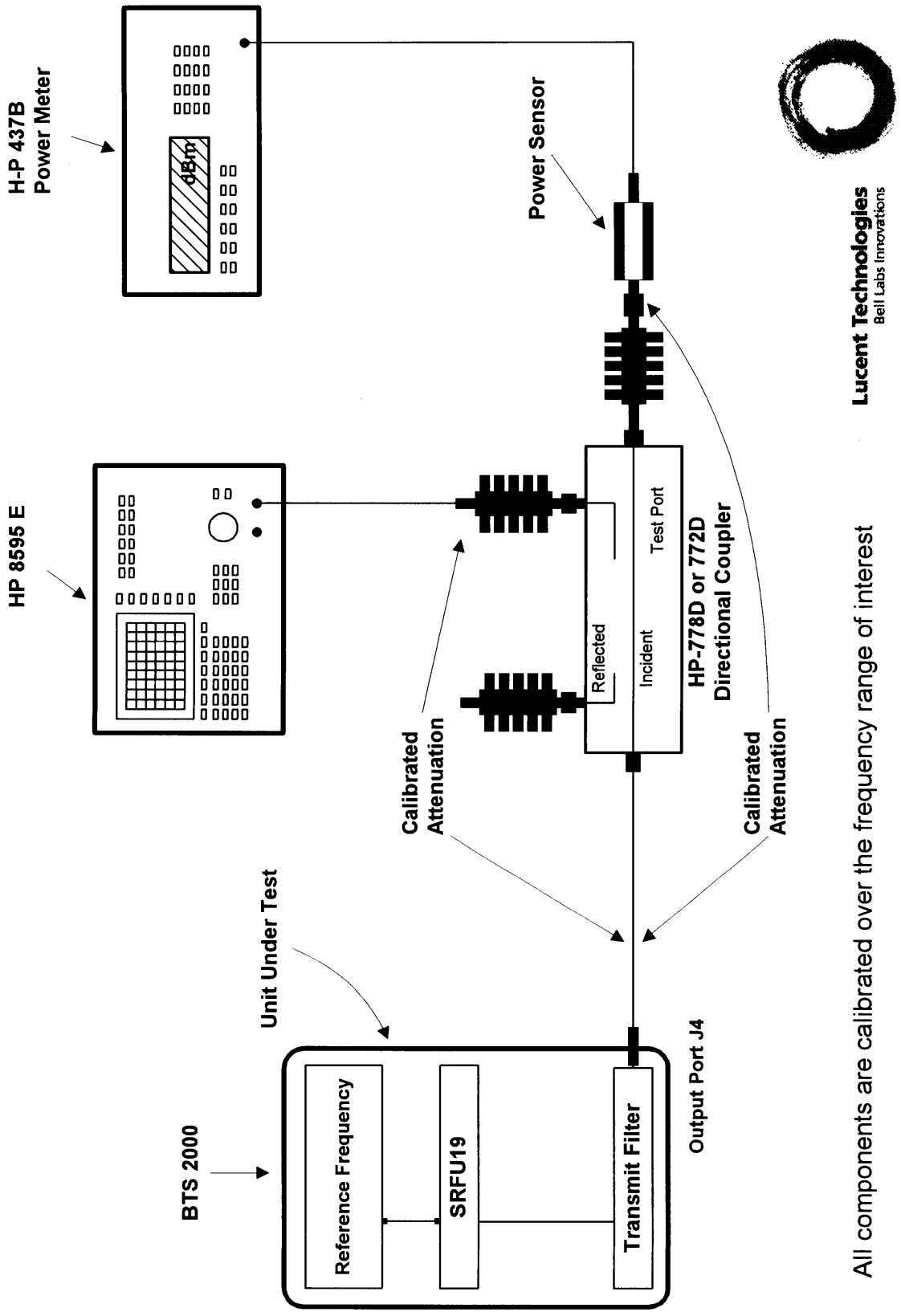
EQUIPMENT:

BTS 2000:	**BTS 2000 – 1900 MHz Cabinet**
SRFU19:	**Single Radio Frequency Unit**
Transmit Filter:	**Cellular Band Transmit Filter**
Directional Coupler:	**HP 778D Dual Directional Coupler**
Power Meter:	**HP 437B with HP 8481A Power Head**
Plotter:	**HP Model 520 DeskJet**
Spectrum Analyzer:	**Rohde & Schwarz FSEK EMI Test Receiver**

RESULTS:

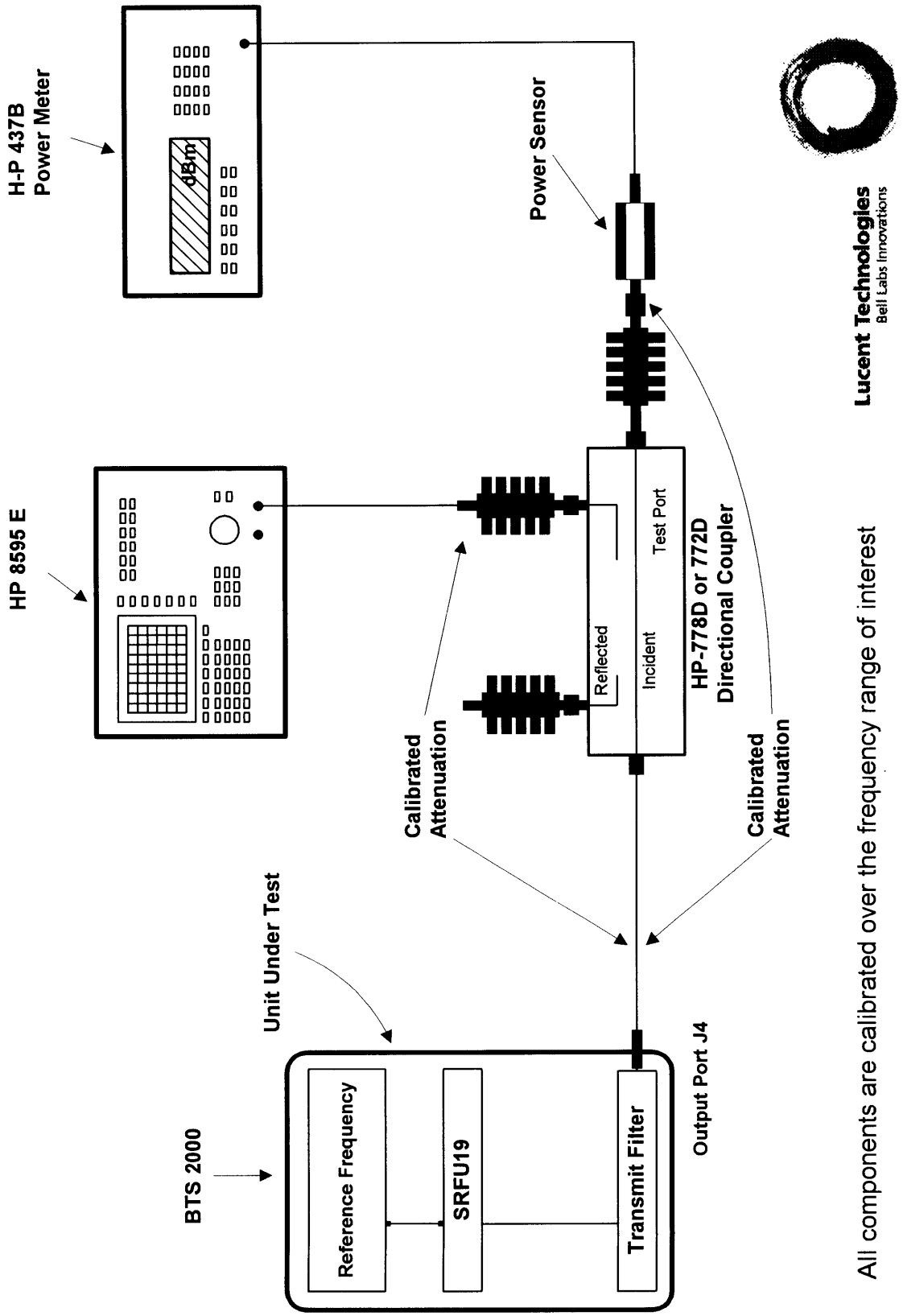
The SRFU19 was configured in the test setup shown in Figure 1A. For each of the PCS channels tested the SRFU19 delivered a 27 Watts when measured at the J4 output connection. This data is recorded on the SRFU19 Occupied Bandwidth Data Sheets.

3A. TEST CONFIGURATION FOR OCCUPIED BANDWIDTH



All components are calibrated over the frequency range of interest

1A. TEST CONFIGURATION FOR RF POWER OUTPUT



All components are calibrated over the frequency range of interest

MEASUREMENT OF MODULATION CHARACTERISTICS

SECTION 2.1047

MEASUREMENT OF MODULATION CHARACTERISTICS

SECTION 2.1047

MEASUREMENT: 2

SECTION 2.1047

MEASUREMENT OF MODULATION CHARACTERISTICS

The modulation methods used in "GSM 1900 Transceiver" is called GMSK Gaussian Minimum Shift Keying are completely different from those used in FM Analog system. An optional slow frequency hopping is used in which operating frequency within the band changes only once for every TDMA frame. The methods used in evaluating modulation characteristics of the SRFU19 are described in the Draft GSM 05.05 European Standard (Telecommunication Series): "Digital Cellular Telecommunications System (Phase 2+); Radio Transmission and reception (GSM 05.05 Version 8.0.0 Released 1999)".

1.0 Modulation Accuracy Section 4.6.1 of GSM 05.05

For any 148-bits subsequence of the 511-bits pseudo-random sequence, defined in CCITT Recommendation O.153 fascicle IV.4, the phase error trajectory on the useful part of the burst (including tail bits), shall be measured by computing the difference between the phase of the transmitted waveform and the phase of the expected one. The RMS phase error (difference between the phase error trajectory and its linear regression on the active part of the time slot) shall not be greater than 5° with a maximum peak deviation during the useful part of the burst less than 20°.

1.1 Required Results

SRFU19 was tested using CMD54/57/59 of Rohde and Schwarz a RF Test Instrument with Abis control. This equipment complies with test requirements indicated in prI-ETS 300 609-1 "Digital Cellular Telecommunications System (Phase 2); (Base Station (BSS) equipment specification, Part 1. Radio aspects (GSM 11.21 Version 4.13.0)" April 1999. The measured modulation phase error was less than 5 degrees.

2.0 Spectral Characteristics (Spectrum due to Modulation)

Figure A. 6a: PCS 1900 BTS Modulation and Noise Spectrum due to GMSK modulation.

2.1 Measured Results

The results are presented as plots for upper and lower edges and center channel for each Band in attachment Measurement 3: " Measurement of Occupied Bandwidth".

MEASUREMENT: 3

SECTION 2.1049

MEASUREMENT OF OCCUPIED BANDWIDTH

The occupied bandwidth of the FCC ID: AS5BTS2K-01 "GSM 1900 Transceiver" model SRFU19 was measured using a Rohde & Schwarz FSEK Spectrum Analyzer and an HP Model 520 DeskJet Printer. The RF power level was measured using a RF power meter as shown in the test setup in Figure 3A. The RF output from the transmitter to spectrum analyzer was reduced (to an amplitude usable by the spectrum analyzer) by using a calibrated attenuator. The reference line on the spectrum analyzer display correspond to level measured by the RF power meter.

The channel allocations with corresponding frequencies are given in the next page. The channels are available on each authorized frequency blocks are also indicated. The frequencies and channels used are tabulated on the bottom of each plot. Output signal is plotted for a frequency span of 2.4 MHz with channel frequency as center. Plots are provided for Left Edge, Center and Right Edge of each PCS band. These frequencies were chosen to show the occupied bandwidth in the channels in each of the PCS in which this radio can be operated, in compliance with Section 24.229 and 24.238 (c) of the Commission code.

The measurement procedure and specification limits for Occupied Bandwidth are indicated in Section 4.2.1 "spectrum due to the modulation and wide band noise" and Figure A.6a: PCS 1900 BTS Modulation and Noise Spectrum Mask due to GMSK Modulation" of GSM 05.05 "European Standard (Telecommunication Series); Digital Cellular Telecommunication System (Phase 2+); Radio Transmission and Reception" (Release 1999). The measurements were made in accordance with GSM 05.05 using 30 kHz Spectrum Analyzer Resolution Bandwidth. The Resolution Bandwidth setting also meets commissions rule indicated in paragraph 24.238(b) "in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. For conducted spurious emission tests (See Measurement: 4) a resolution bandwidth of 1 MHz is used throughout."

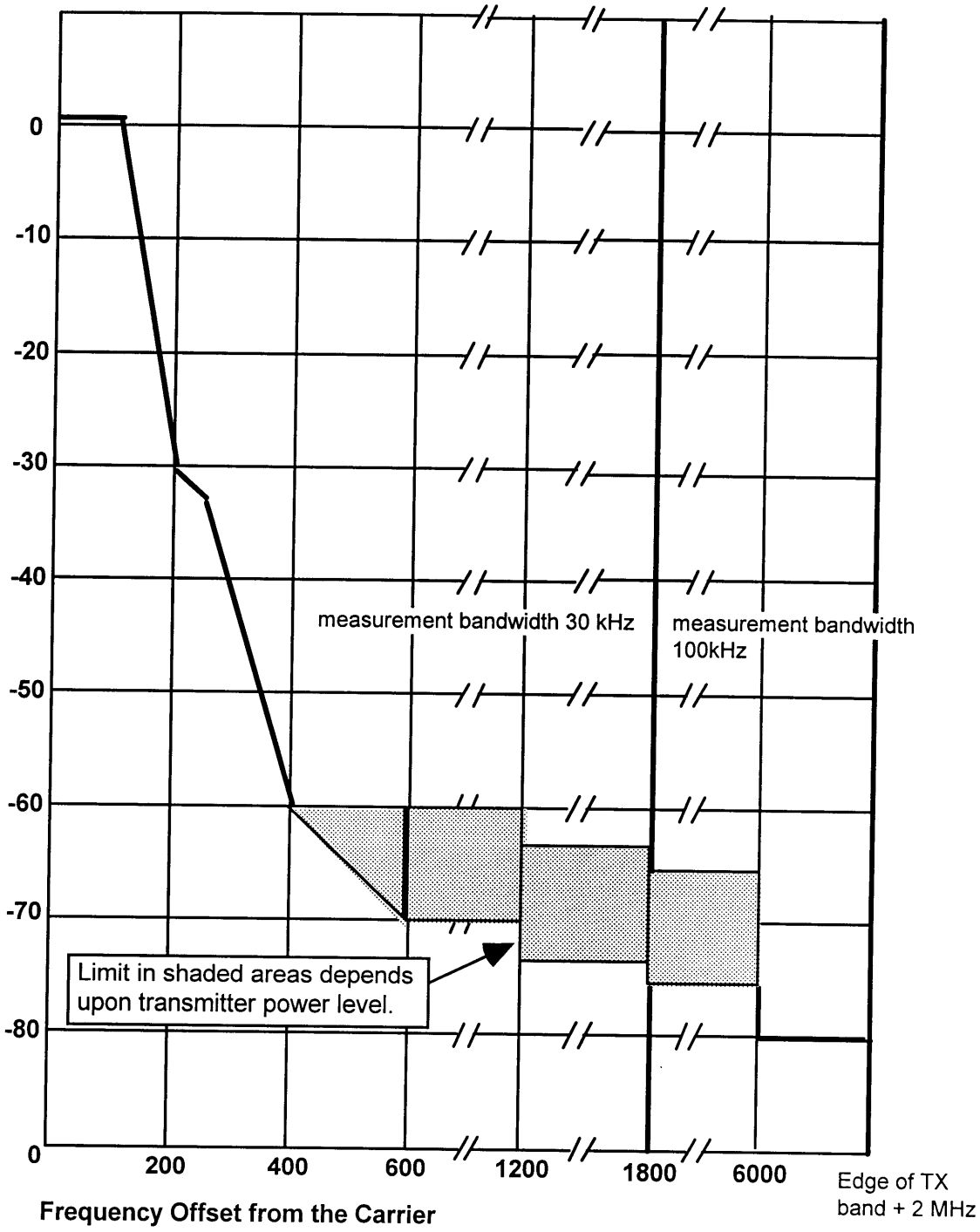


Figure A.6a: PCS 1 900 BTS Modulation & Noise Spectrum Mask due to GMSK modulation

Frequency range of PCS 1900 (n =512...810)

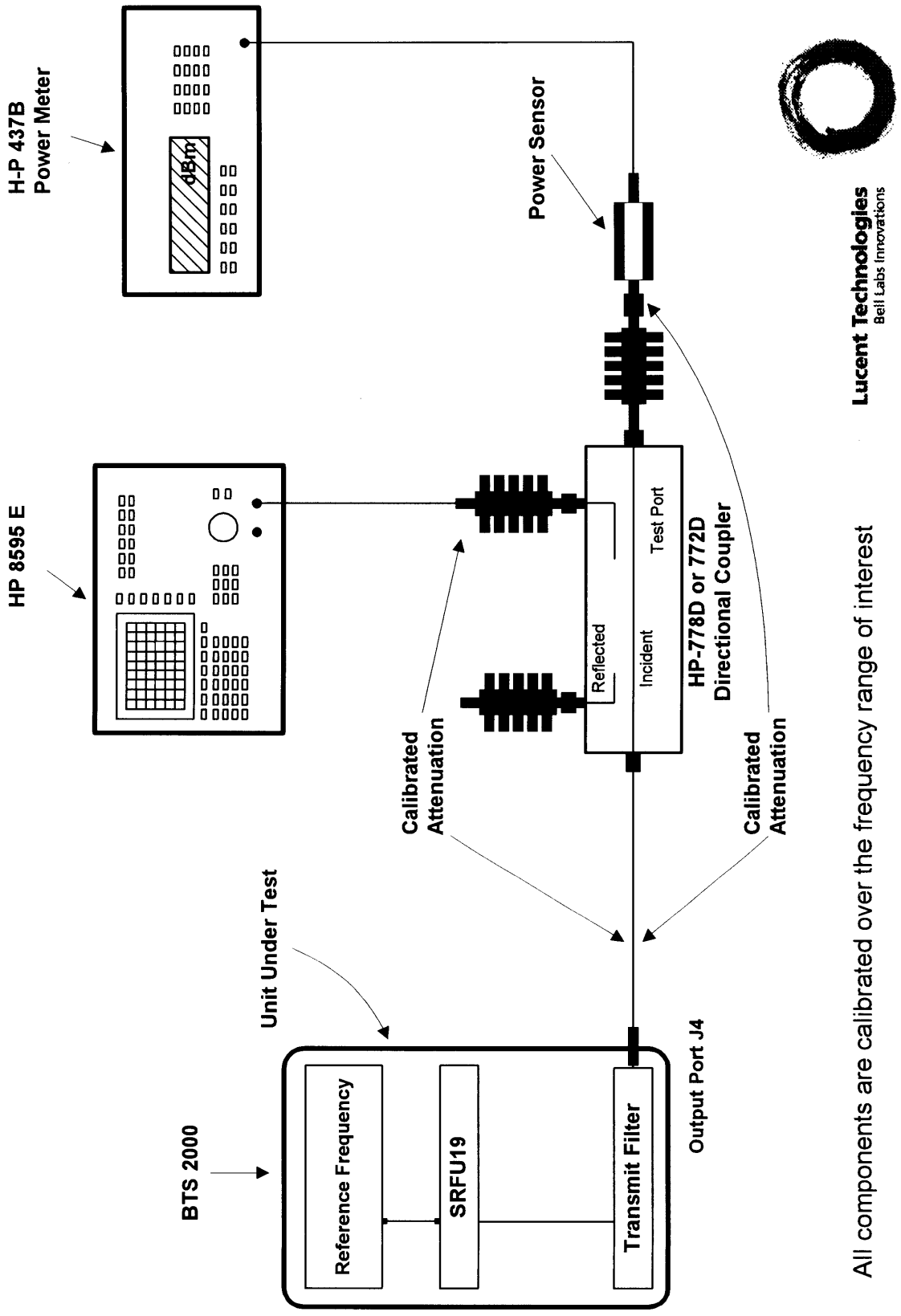
dl(n) = 1930.2 + 0.2*(n - 512)/MHz

ul(n) = 1850.2 + 0.2*(n - 512)/MHz

n	uplink	bl	downlink	n	uplink	bl	downlink	n	uplink	bl	downlink	n	uplink	bl	downlink	n	uplink	bl	downlink	n	uplink	bl	downlink	n	uplink	bl	downlink	n	uplink	bl	downlink
512	1850,2	x	1930,2	550	1857,8	A	1937,8	588	1865,4	D	1945,4	626	1873,0	B	1953,0	664	1880,6	B	1960,6	702	1888,2	E	1968,2	740	1895,8	C	1975,8	778	1903,4	C	1983,4
513	1850,4	A	1930,4	551	1858,0	A	1938,0	589	1865,6	D	1945,6	627	1873,2	B	1953,2	665	1880,8	B	1960,8	703	1888,4	E	1968,4	741	1896,0	C	1976,0	779	1903,6	C	1983,6
514	1850,6	A	1930,6	552	1858,2	A	1938,2	590	1865,8	D	1945,8	628	1873,4	B	1953,4	666	1881,0	B	1961,0	704	1888,6	E	1968,6	742	1896,2	C	1976,2	780	1903,8	C	1983,8
515	1850,8	A	1930,8	553	1858,4	A	1938,4	591	1866,0	D	1946,0	629	1873,6	B	1953,6	667	1881,2	B	1961,2	705	1888,8	E	1968,8	743	1896,4	C	1976,4	781	1904,0	C	1984,0
516	1851,0	A	1931,0	554	1858,6	A	1938,6	592	1866,2	D	1946,2	630	1873,8	B	1953,8	668	1881,4	B	1961,4	706	1889,0	E	1969,0	744	1896,6	C	1976,6	782	1904,2	C	1984,2
517	1851,2	A	1931,2	555	1858,8	A	1938,8	593	1866,4	D	1946,4	631	1874,0	B	1954,0	669	1881,6	B	1961,6	707	1889,2	E	1969,2	745	1896,8	C	1976,8	783	1904,4	C	1984,4
518	1851,4	A	1931,4	556	1859,0	A	1939,0	594	1866,6	D	1946,6	632	1874,2	B	1954,2	670	1881,8	B	1961,8	708	1889,4	E	1969,4	746	1897,0	C	1977,0	784	1904,6	C	1984,6
519	1851,6	A	1931,6	557	1859,2	A	1939,2	595	1866,8	D	1946,8	633	1874,4	B	1954,4	671	1882,0	B	1962,0	709	1889,6	E	1969,6	747	1897,2	C	1977,2	785	1904,8	C	1984,8
520	1851,8	A	1931,8	558	1859,4	A	1939,4	596	1867,0	D	1947,0	634	1874,6	B	1954,6	672	1882,2	B	1962,2	710	1889,8	x	1969,8	748	1897,4	C	1977,4	786	1905,0	C	1985,0
521	1852,0	A	1932,0	559	1859,6	A	1939,6	597	1867,2	D	1947,2	635	1874,8	B	1954,8	673	1882,4	B	1962,4	711	1890,0	x	1970,0	749	1897,6	C	1977,6	787	1905,2	C	1985,2
522	1852,2	A	1932,2	560	1859,8	A	1939,8	598	1867,4	D	1947,4	636	1875,0	B	1955,0	674	1882,6	B	1962,6	712	1890,2	x	1970,2	750	1897,8	C	1977,8	788	1905,4	C	1985,4
523	1852,4	A	1932,4	561	1860,0	A	1940,0	599	1867,6	D	1947,6	637	1875,2	B	1955,2	675	1882,8	B	1962,8	713	1890,4	F	1970,4	751	1898,0	C	1978,0	789	1905,6	C	1985,6
524	1852,6	A	1932,6	562	1860,2	A	1940,2	600	1867,8	D	1947,8	638	1875,4	B	1955,4	676	1883,0	B	1963,0	714	1890,6	F	1970,6	752	1898,2	C	1978,2	790	1905,8	C	1985,8
525	1852,8	A	1932,8	563	1860,4	A	1940,4	601	1868,0	D	1948,0	639	1875,6	B	1955,6	677	1883,2	B	1963,2	715	1890,8	F	1970,8	753	1898,4	C	1978,4	791	1906,0	C	1986,0
526	*1853,0*	A	1933,0	564	1860,6	A	1940,6	602	1868,2	D	1948,2	640	1875,8	B	1955,8	678	1883,4	B	1963,4	716	1891,0	F	1971,0	754	1898,6	C	1978,6	792	1906,2	C	1986,2
527	1853,2	A	1933,2	565	1860,8	A	1940,8	603	1868,4	D	1948,4	641	1876,0	B	1956,0	679	1883,6	B	1963,6	717	1891,2	F	1971,2	755	1898,8	C	1978,8	793	1906,4	C	1986,4
528	1853,4	A	1933,4	566	1861,0	A	1941,0	604	1868,6	D	1948,6	642	1876,2	B	1956,2	680	1883,8	B	1963,8	718	1891,4	F	1971,4	756	1899,0	C	1979,0	794	1906,6	C	1986,6
529	1853,6	A	1933,6	567	1861,2	A	1941,2	605	1868,8	D	1948,8	643	1876,4	B	1956,4	681	1884,0	B	1964,0	719	1891,6	F	1971,6	757	1899,2	C	1979,2	795	1906,8	C	1986,8
530	1853,8	A	1933,8	568	1861,4	A	1941,4	606	1869,0	D	1949,0	644	1876,6	B	1956,6	682	1884,2	B	1964,2	720	1891,8	F	1971,8	758	1899,4	C	1979,4	796	1907,0	C	1987,0
531	1854,0	A	1934,0	569	1861,6	A	1941,6	607	1869,2	D	1949,2	645	1876,8	B	1956,8	683	1884,4	B	1964,4	721	1892,0	F	1972,0	759	1899,6	C	1979,6	797	1907,2	C	1987,2
532	1854,2	A	1934,2	570	1861,8	A	1941,8	608	1869,4	D	1949,4	646	1877,0	B	1957,0	684	1884,6	B	1964,6	722	1892,2	F	1972,2	760	1899,8	C	1979,8	798	1907,4	C	1987,4
533	1854,4	A	1934,4	571	1862,0	A	1942,0	609	1869,6	D	1949,6	647	1877,2	B	1957,2	685	1884,8	x	1964,8	723	1892,4	F	1972,4	761	1900,0	C	1980,0	799	1907,6	C	1987,6
534	1854,6	A	1934,6	572	1862,2	A	1942,2	610	1869,8	x	1949,8	648	1877,4	B	1957,4	686	1885,0	x	1965,0	724	1892,6	F	1972,6	762	1900,2	C	1980,2	800	1907,8	C	1987,8
535	1854,8	A	1934,8	573	1862,4	A	1942,4	611	1870,0	x	1950,0	649	1877,6	B	1957,6	687	1885,2	x	1965,2	725	1892,8	F	1972,8	763	1900,4	C	1980,4	801	1908,0	C	1988,0
536	1855,0	A	1935,0	574	1862,6	A	1942,6	612	1870,2	x	1950,2	650	1877,8	B	1957,8	688	1885,4	E	1965,4	726	1893,0	F	1973,0	764	1900,6	C	1980,6	802	1908,2	C	1988,2
537	1855,2	A	1935,2	575	1862,8	A	1942,8	613	1870,4	B	1950,4	651	1878,0	B	1958,0	689	1885,6	E	1965,6	727	1893,2	F	1973,2	765	1900,8	C	1980,8	803	1908,4	C	1988,4
538	1855,4	A	1935,4	576	1863,0	A	1943,0	614	1870,6	B	1950,6	652	1878,2	B	1958,2	690	1885,8	E	1965,8	728	1893,4	F	1973,4	766	1901,0	C	1981,0	804	1908,6	C	1988,6
539	1855,6	A	1935,6	577	1863,2	A	1943,2	615	1870,8	B	1950,8	653	1878,4	B	1958,4	691	1886,0	E	1966,0	729	1893,6	F	1973,6	767	1901,2	C	1981,2	805	1908,8	C	1988,8
540	1855,8	A	1935,8	578	1863,4	A	1943,4	616	1871,0	B	1951,0	654	1878,6	B	1958,6	692	1886,2	E	1966,2	730	1893,8	F	1973,8	768	1901,4	C	1981,4	806	1909,0	C	1989,0
541	1856,0	A	1936,0	579	1863,6	A	1943,6	617	1871,2	B	1951,2	655	1878,8	B	1958,8	693	1886,4	E	1966,4	731	1894,0	F	1974,0	769	1901,6	C	1981,6	807	1909,2	C	1989,2
542	1856,2	A	1936,2	580	1863,8	A	1943,8	618	1871,4	B	1951,4	656	1879,0	B	1959,0	694	1886,6	E	1966,6	732	1894,2	F	1974,2	770	1901,8	C	1981,8	808	1909,4	C	1989,4
543	1856,4	A	1936,4	581	1864,0	A	1944,0	619	1871,6	B	1951,6	657	1879,2	B	1959,2	695	1886,8	E	1966,8	733	1894,4	F	1974,4	771	1902,0	C	1982,0	809	1909,6	C	1989,6
544	1856,6	A	1936,6	582	1864,2	A	1944,2	620	1871,8	B	1951,8	658	1879,4	B	1959,4	696	1887,0	E	1967,0	734	1894,6	F	1974,6	772	1902,2	C	1982,2	810	1909,8	x	1989,8
545	1856,8	A	1936,8	583	1864,4	A	1944,4	621	1872,0	B	1952,0	659	1879,6	B	1959,6	697	1887,2	E	1967,2	735	1894,8	x	1974,8	773	1902,4	C	1982,4				
546	1857,0	A	1937,0	584	1864,6	A	1944,6	622	1872,2	B	1952,2	660	1879,8	B	1959,8	698	1887,4	E	1967,4	736	1895,0	x	1975,0	774	1902,6	C	1982,6				
547	1857,2	A	1937,2	585	1864,8	x	1944,8	623	1872,4	B	1952,4	661	1880,0	B	1960,0	699	1887,6	E	1967,6	737	1895,2	x	1975,2	775	1902,8	C	1982,8				
548	1857,4	A	1937,4	586	1865,0	x	1945,0	624	1872,6	B	1952,6	662	1880,2	B	1960,2	700	1887,8	E	1967,8	738	1895,4	C	1975,4	776	1903,0	C	1983,0				
549	1857,6	A	1937,6	587	1865,2	x	1945,2	625	1872,8	B	1952,8	663	1880,4	B	1960,4	701	1888,0	E	1968,0	739	1895,6	C	1975,6	777	1903,2	C	1983,2				

Note:. Channels high lighted are **not available for GSM1900**, in accordance with **FCC Part 24**

3A. TEST CONFIGURATION FOR OCCUPIED BANDWIDTH



All components are calibrated over the frequency range of interest

MEASUREMENT: 3

MEASUREMENT

OF

OCCUPIED BANDWIDTH

BLOCK A

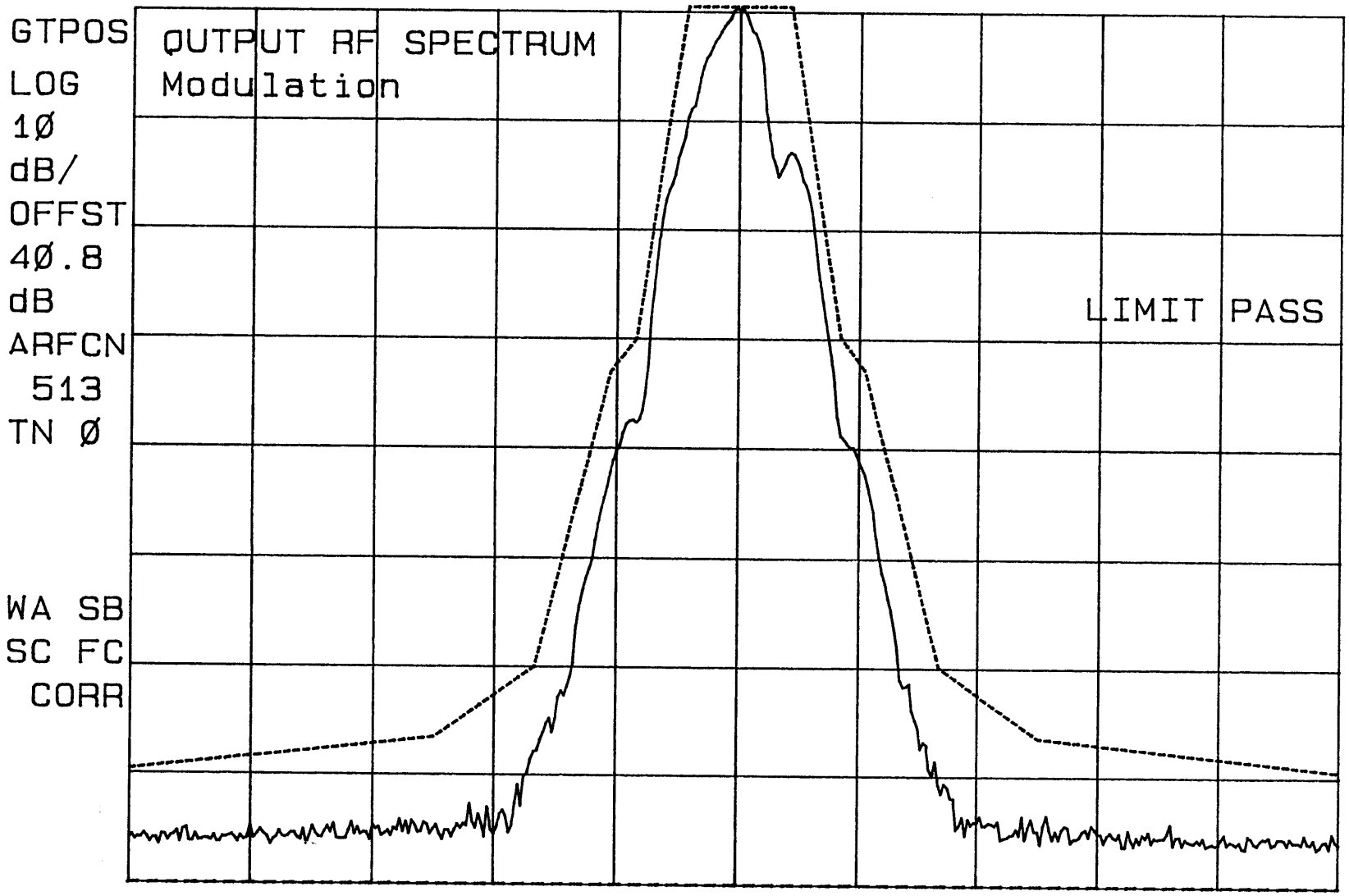
(1930 – 1945 MHz)

Left Edge:	**1930.6 MHz (Channel 513)**
Center:	**1937.6 MHz (Channel 547)**
Right Edge:	**1944.6 MHz (Channel 584)**

14: 52: 27 JUL 26, 1999

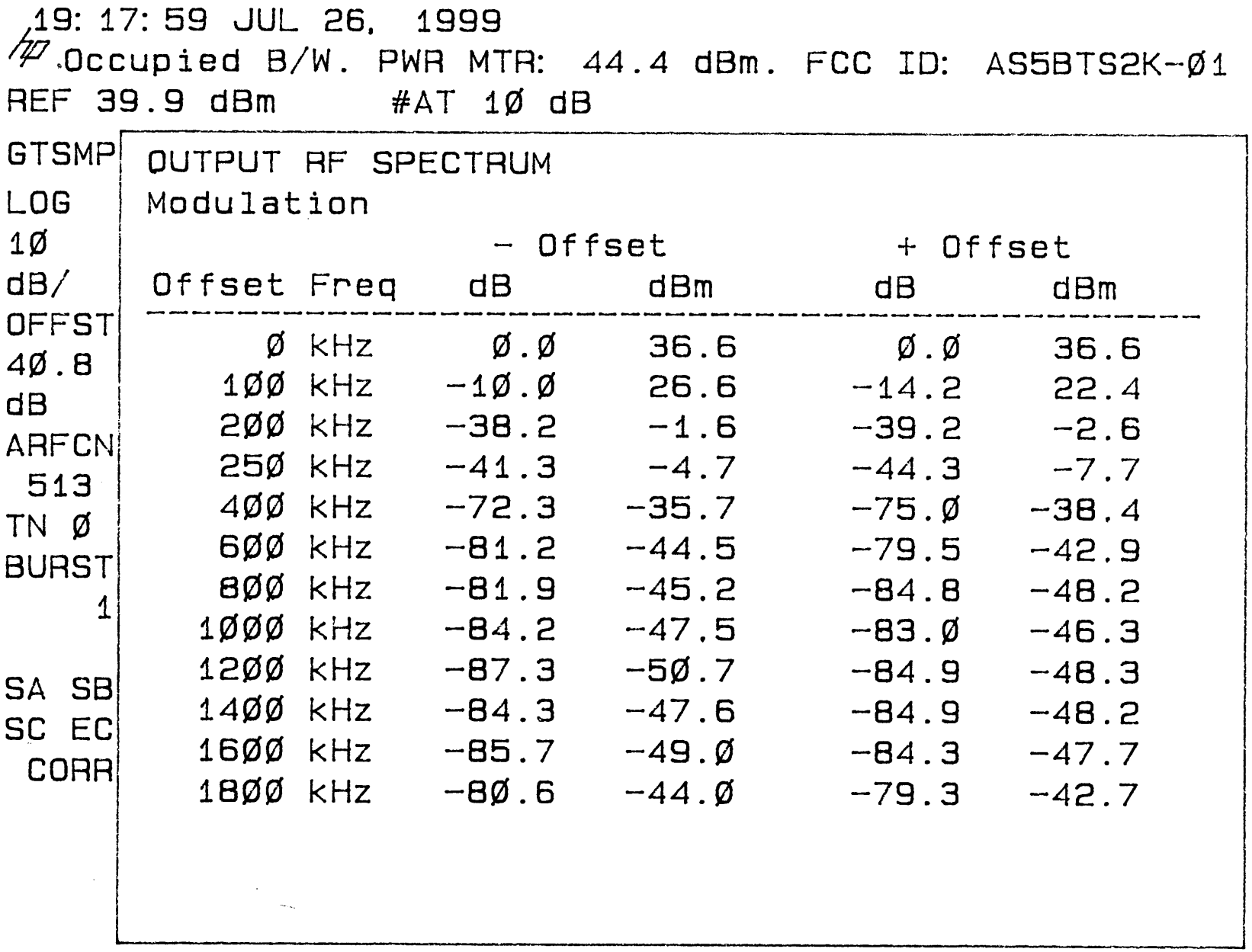
.Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1

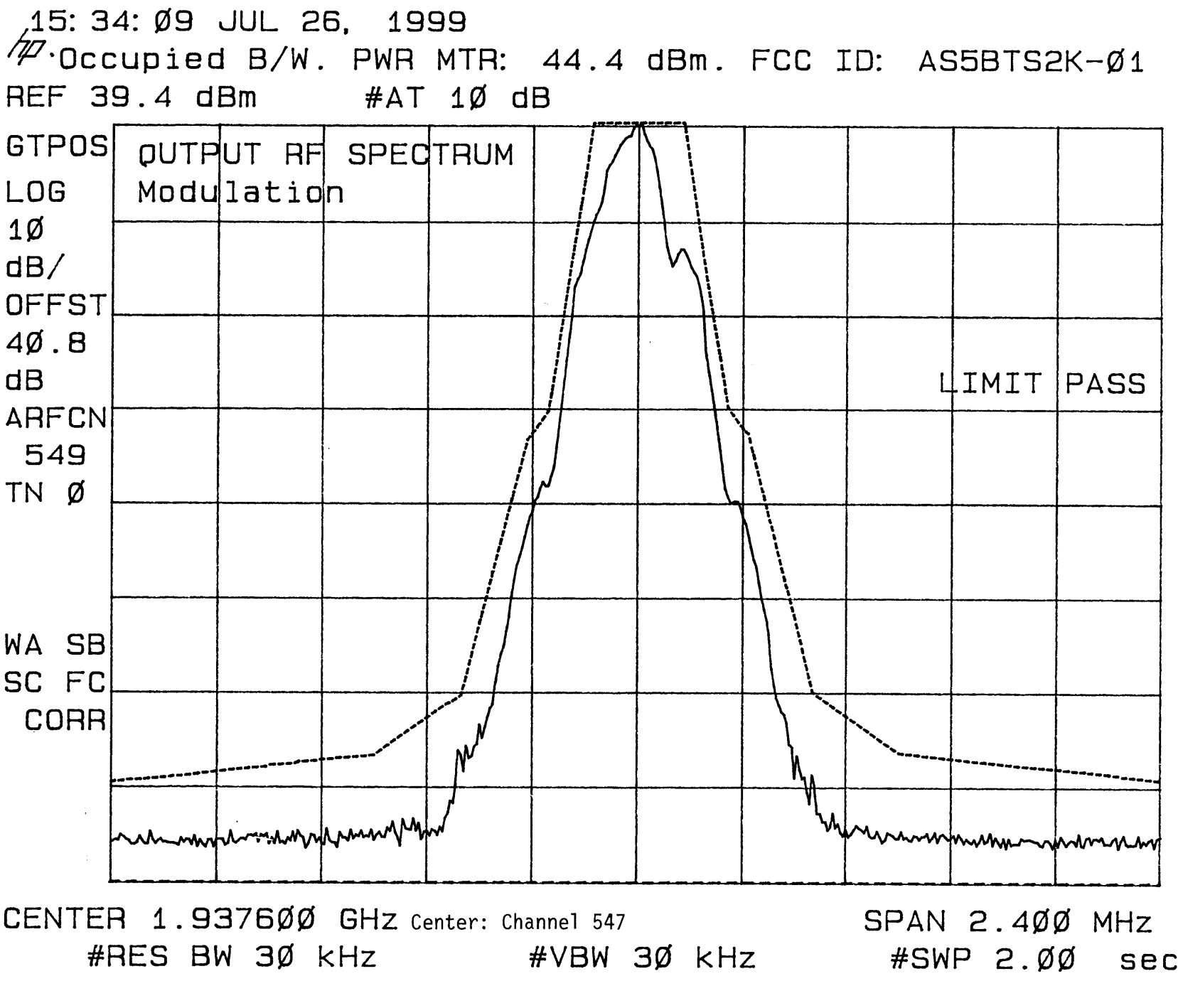
REF 39.5 dBm #AT 1Ø dB



CENTER 1.93Ø4ØØ GHz Left Edge: Channel 513 SPAN 2.4ØØ MHz

#RES BW 3Ø kHz #VBW 3Ø kHz #SWP 2.ØØ sec


19: 17: 59 JUL 26, 1999
Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1
REF 39.9 dBm
#AT 1Ø dB
GTSMP
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
513
TN Ø
BURST
1
SA SB
SC EC
CORR
OUTPUT RF SPECTRUM
Modulation
Offset Freq
- Offset dB
- Offset dBm
+ Offset dB
+ Offset dBm
Ø kHz Ø.Ø 36.6 Ø.Ø 36.6
1ØØ kHz -1Ø.Ø 26.6 -14.2 22.4
2ØØ kHz -38.2 -1.6 -39.2 -2.6
25Ø kHz -41.3 -4.7 -44.3 -7.7
4ØØ kHz -72.3 -35.7 -75.Ø -38.4
6ØØ kHz -81.2 -44.5 -79.5 -42.9
8ØØ kHz -81.9 -45.2 -84.8 -48.2
1ØØØ kHz -84.2 -47.5 -83.Ø -46.3
12ØØ kHz -87.3 -5Ø.7 -84.9 -48.3
14ØØ kHz -84.3 -47.6 -84.9 -48.2
16ØØ kHz -85.7 -49.Ø -84.3 -47.7
18ØØ kHz -8Ø.6 -44.Ø -79.3 -42.7
CENTER 1.93Ø4ØØØ GHz
Left Edge: Channel 513
SPAN Ø Hz
#RES BW 3Ø kHz
#VBW 3Ø kHz
#SWP 32Ø µsec


15: 34: Ø9 JUL 26, 1999
Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1
REF 39.4 dBm
#AT 1Ø dB
GTPOS
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
549
TN Ø
WA SB
SC FC
CORR
OUTPUT RF SPECTRUM
Modulation
LIMIT PASS
CENTER 1.937ØØØ GHz
Center: Channel 547
SPAN 2.4ØØ MHz
#RES BW 3Ø kHz
#VBW 3Ø kHz
#SWP 2.ØØ sec

15:39:51 JUL 26, 1999

Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1

REF 39.9 dBm #AT 1Ø dB

GTSMP
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
549
TN Ø
BURST
1

SA SB
SC EC
CORR

OUTPUT RF SPECTRUM
Modulation

		− Offset		+ Offset	
Offset	Freq	dB	dBm	dB	dBm
Ø	kHz	Ø.Ø	36.5	Ø.Ø	36.5
1ØØ	kHz	−1Ø.Ø	26.5	−14.3	22.2
2ØØ	kHz	−38.8	−2.3	−39.4	−2.9
25Ø	kHz	−41.1	−4.6	−44.6	−8.1
4ØØ	kHz	−72.Ø	−35.5	−75.8	−39.2
6ØØ	kHz	−8Ø.7	−44.1	−78.7	−42.1
8ØØ	kHz	−8Ø.5	−44.Ø	−83.2	−46.6
1ØØØ	kHz	−82.7	−46.1	−83.3	−46.7
12ØØ	kHz	−83.Ø	−46.4	−86.5	−49.9
14ØØ	kHz	−87.4	−5Ø.9	−86.1	−49.5
16ØØ	kHz	−86.3	−49.8	−86.2	−49.6
18ØØ	kHz	−77.4	−4Ø.8	−8Ø.3	−43.8

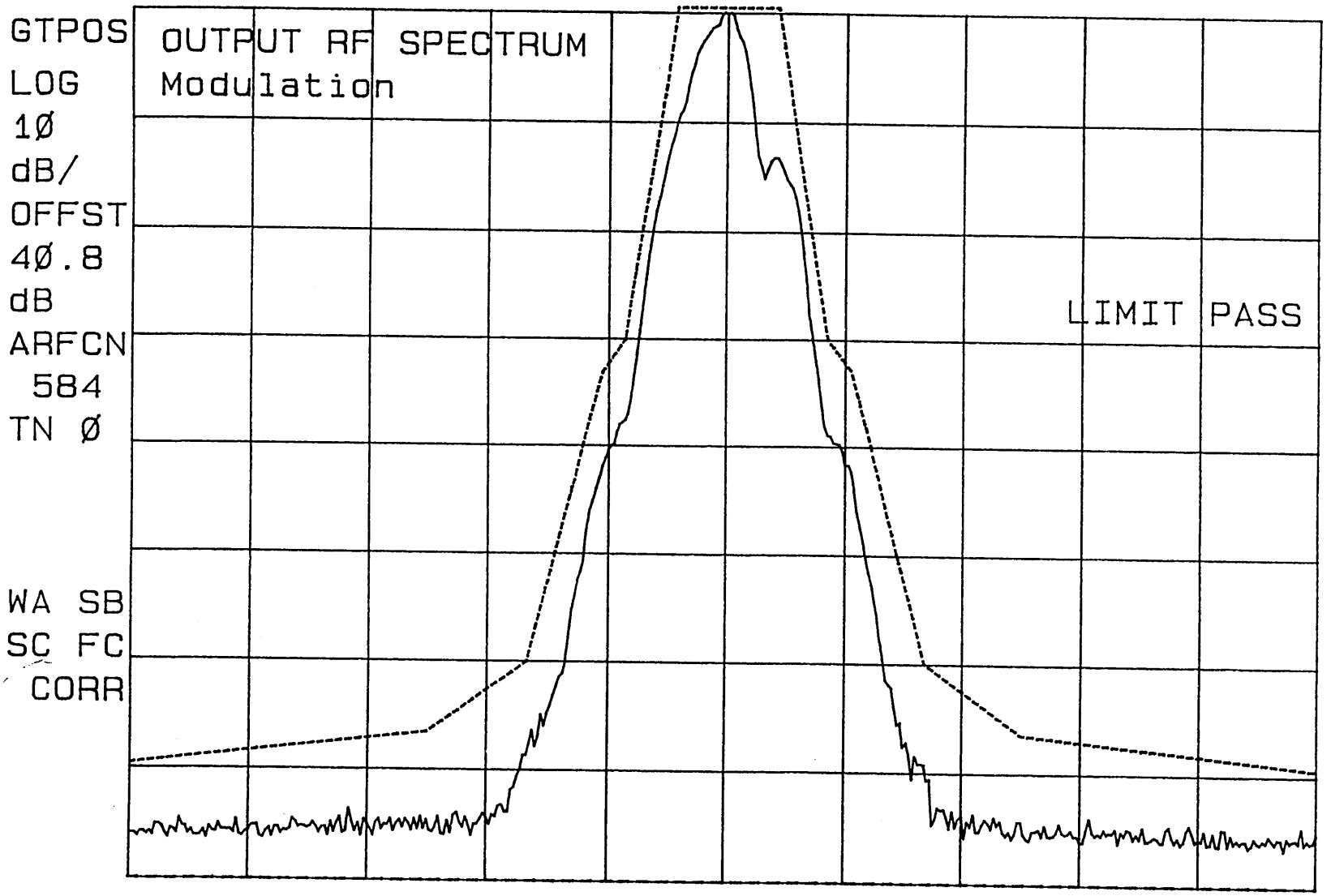
CENTER 1.9376ØØØ GHz Center: Channel 547 SPAN Ø Hz

#RES BW 3Ø kHz #VBW 3Ø kHz #SWP 32Ø µsec

14: 43: Ø1 JUL 26, 1999

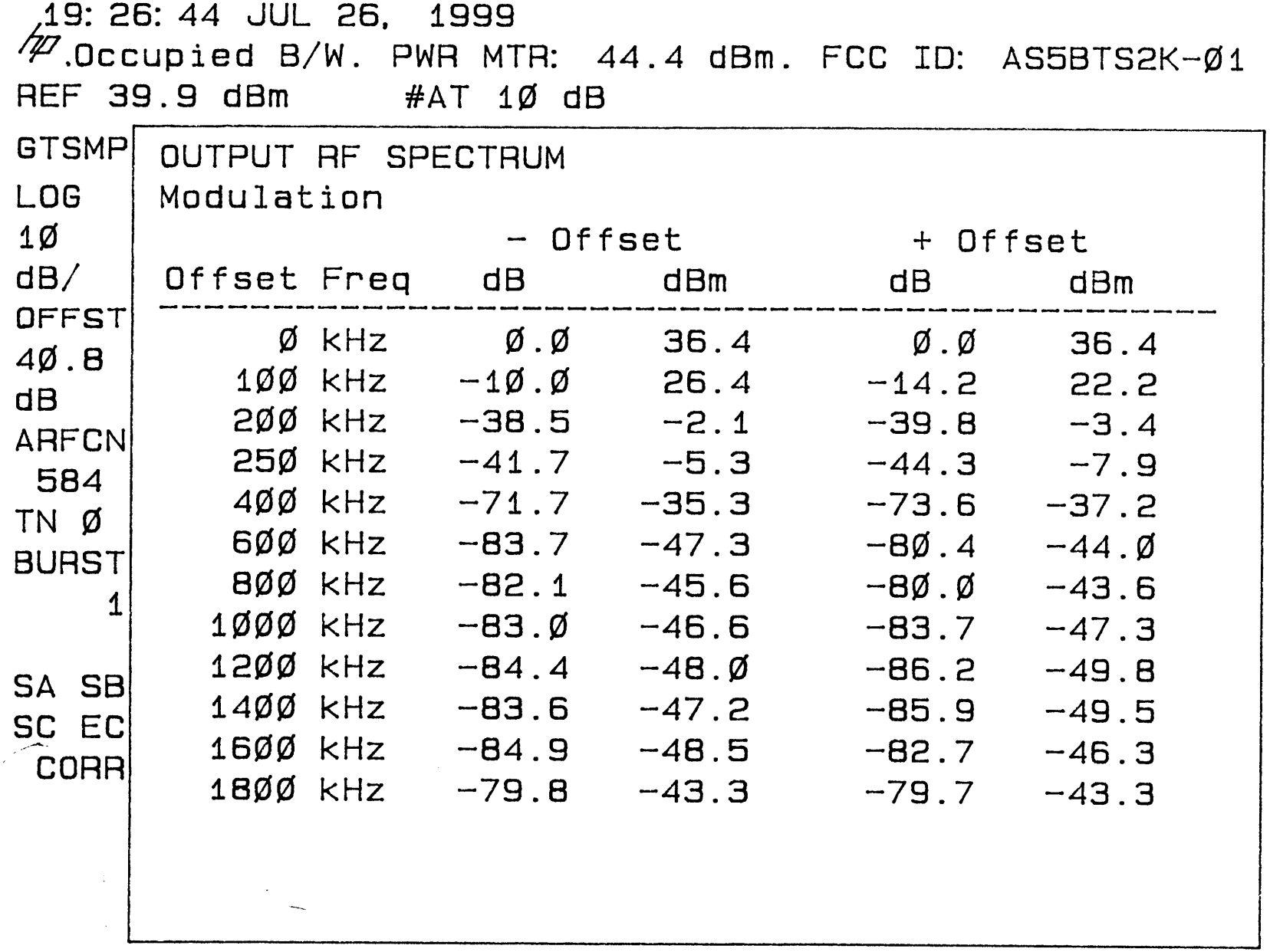
.Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1

REF 39.5 dBm #AT 1Ø dB



CENTER 1.944ØØ GHz Right Edge: Channel 584 SPAN 2.4ØØ MHz

#RES BW 3Ø kHz #VBW 3Ø kHz #SWP 2.ØØ sec



Offset Freq	− Offset dB	− Offset dBm	+ Offset dB	+ Offset dBm
Ø kHz	Ø.Ø	36.4	Ø.Ø	36.4
1ØØ kHz	−1Ø.Ø	26.4	−14.2	22.2
2ØØ kHz	−38.5	−2.1	−39.8	−3.4
25Ø kHz	−41.7	−5.3	−44.3	−7.9
4ØØ kHz	−71.7	−35.3	−73.6	−37.2
6ØØ kHz	−83.7	−47.3	−8Ø.4	−44.Ø
8ØØ kHz	−82.1	−45.6	−8Ø.Ø	−43.6
1ØØØ kHz	−83.Ø	−46.6	−83.7	−47.3
12ØØ kHz	−84.4	−48.Ø	−86.2	−49.8
14ØØ kHz	−83.6	−47.2	−85.9	−49.5
16ØØ kHz	−84.9	−48.5	−82.7	−46.3
18ØØ kHz	−79.8	−43.3	−79.7	−43.3

MEASUREMENT: 3

MEASUREMENT

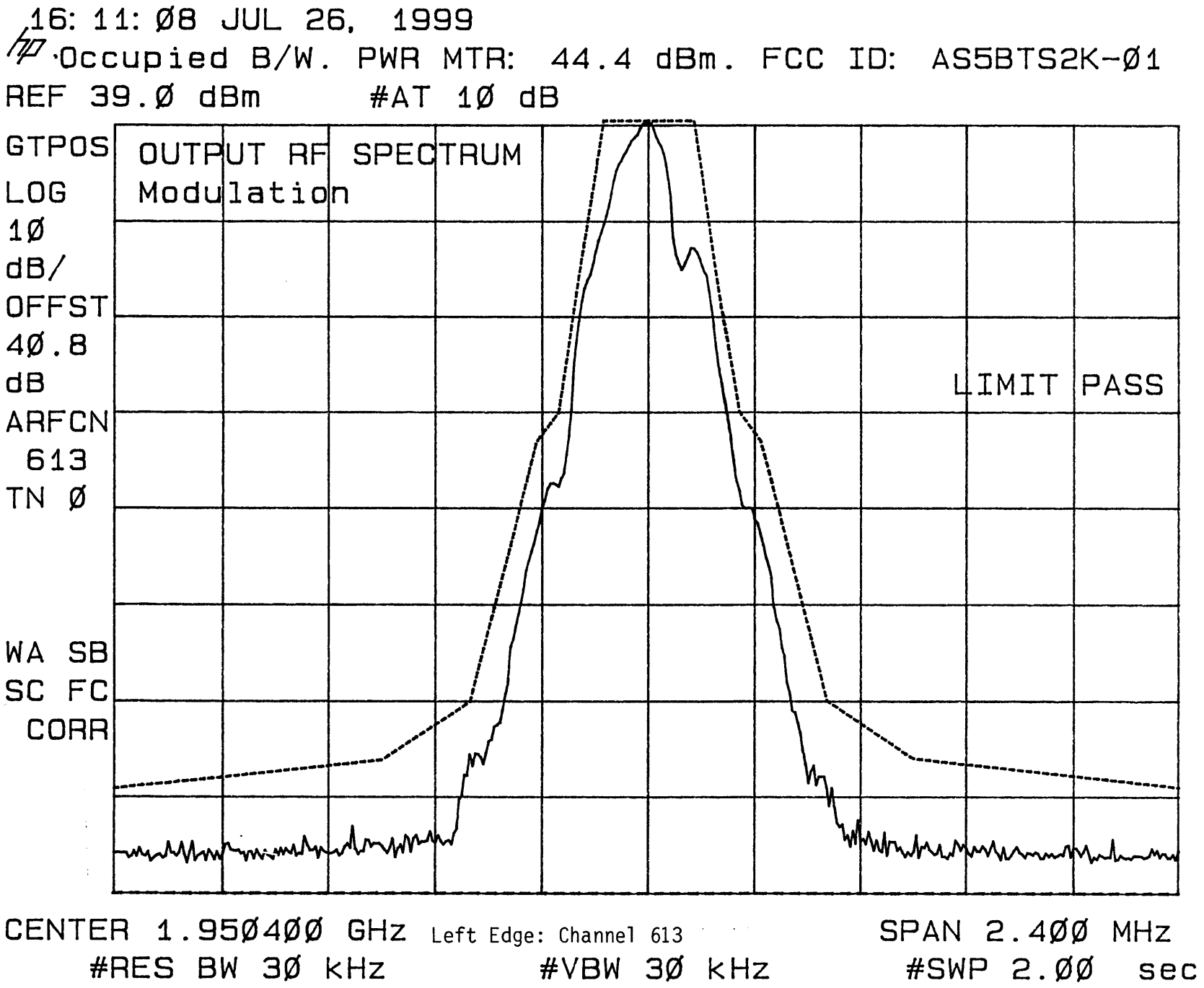
OF

OCCUPIED BANDWIDTH

BLOCK B

(1950 – 1965 MHz)

Left Edge:	**1950.4 MHz (Channel 613)**
Center:	**1957.6 MHz (Channel 649)**
Right Edge:	**1964.6 MHz (Channel 684)**


16: 11: ØØ JUL 26, 1999
Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1
REF 39.Ø dBm
#AT 1Ø dB
GTPOS
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
613
TN Ø
OUTPUT RF SPECTRUM
Modulation
LIMIT PASS
WA SB
SC FC
CORR
CENTER 1.95Ø4ØØ GHz
Left Edge: Channel 613
SPAN 2.4ØØ MHz
#RES BW 3Ø kHz
#VBW 3Ø kHz
#SWP 2.ØØ sec

16: 16: 59 JUL 26, 1999

Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1

REF 39.8 dBm #AT 1Ø dB

GTSMP
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
613
TN Ø
BURST
1

SA SB
SC EC
CORR

OUTPUT RF SPECTRUM
Modulation

Offset Freq	− Offset dB	− Offset dBm	+ Offset dB	+ Offset dBm
Ø kHz	Ø.Ø	36.3	Ø.Ø	36.3
1ØØ kHz	-1Ø.Ø	26.3	-14.4	21.9
2ØØ kHz	-38.4	-2.1	-39.7	-3.4
25Ø kHz	-41.6	-5.3	-44.2	-8.Ø
4ØØ kHz	-7Ø.5	-34.3	-73.8	-37.5
6ØØ kHz	-81.6	-45.3	-79.6	-43.3
8ØØ kHz	-82.8	-46.5	-81.6	-45.3
1ØØØ kHz	-84.8	-48.5	-83.4	-47.1
12ØØ kHz	-84.Ø	-47.7	-85.Ø	-48.7
14ØØ kHz	-83.7	-47.4	-81.Ø	-44.7
16ØØ kHz	-83.2	-46.9	-83.3	-47.Ø
18ØØ kHz	-8Ø.3	-44.Ø	-79.3	-43.Ø

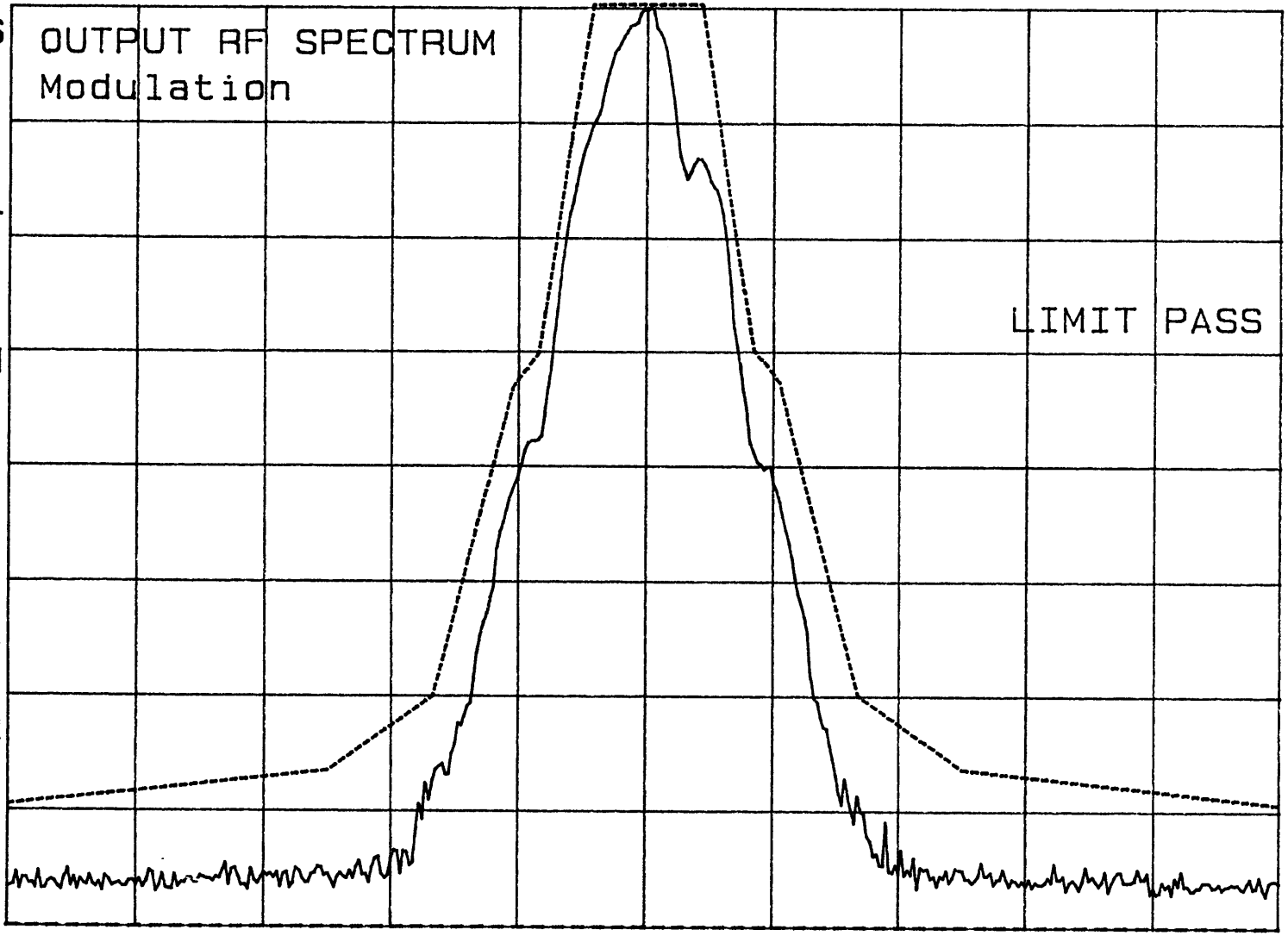
CENTER 1.95Ø4ØØØ GHz Left Edge: Channel 613 SPAN Ø Hz

#RES BW 3Ø kHz #VBW 3Ø kHz #SWP 32Ø µsec

16: 26: Ø5 JUL 26, 1999

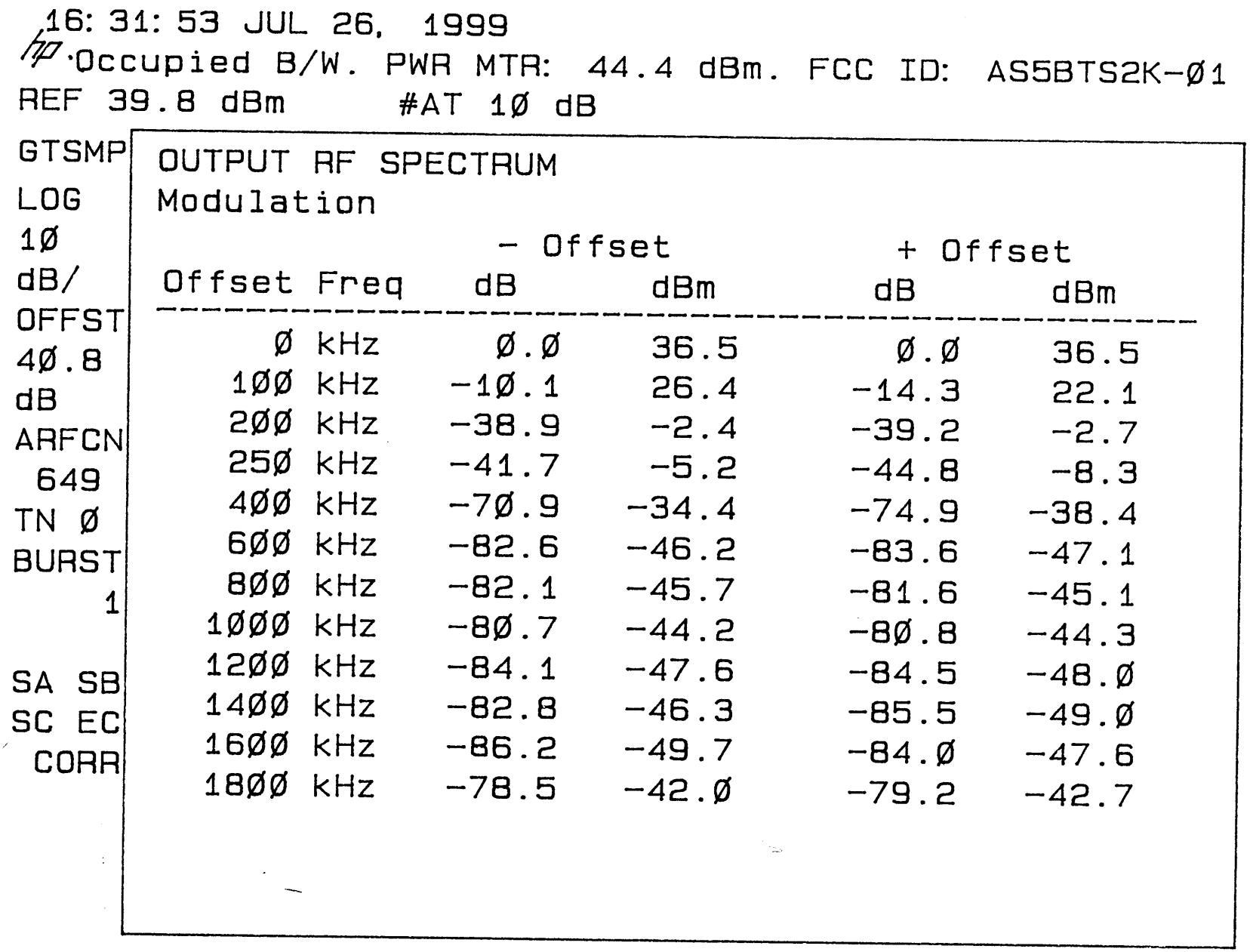
Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1

REF 39.4 dBm #AT 1Ø dB



CENTER 1.957ØØ GHz Center: Channel 649 SPAN 2.4ØØ MHz

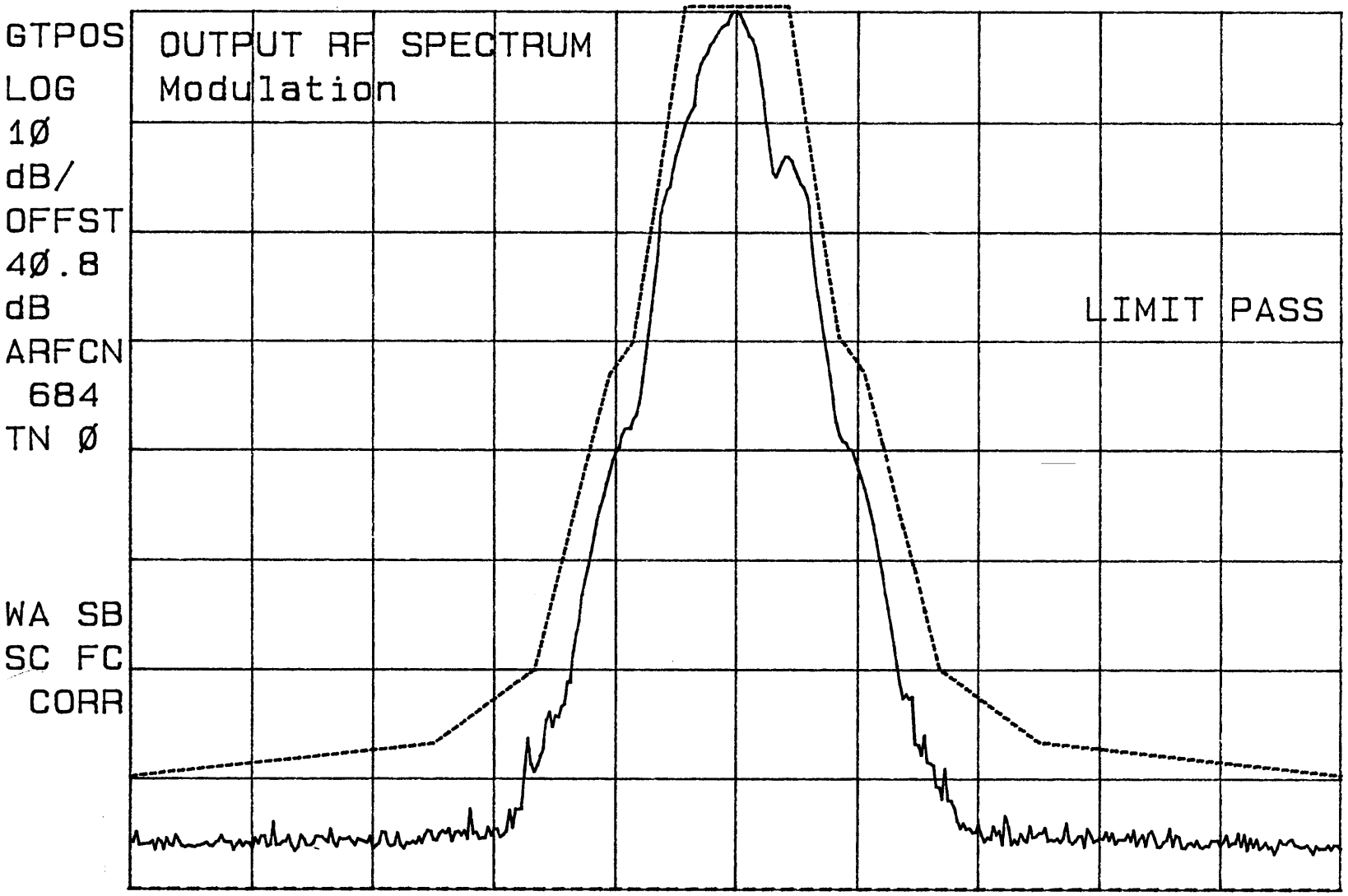
#RES BW 3Ø kHz #VBW 3Ø kHz #SWP 2.ØØ sec


16: 31: 53 JUL 26, 1999
Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1
REF 39.8 dBm
#AT 1Ø dB
GTSMP
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
649
TN Ø
BURST
1
SA SB
SC EC
CORR
OUTPUT RF SPECTRUM
Modulation
- Offset
+ Offset
Offset Freq dB dBm dB dBm
Ø kHz Ø.Ø 36.5 Ø.Ø 36.5
1ØØ kHz -1Ø.1 26.4 -14.3 22.1
2ØØ kHz -38.9 -2.4 -39.2 -2.7
25Ø kHz -41.7 -5.2 -44.8 -8.3
4ØØ kHz -7Ø.9 -34.4 -74.9 -38.4
6ØØ kHz -82.6 -46.2 -83.6 -47.1
8ØØ kHz -82.1 -45.7 -81.6 -45.1
1ØØØ kHz -8Ø.7 -44.2 -8Ø.8 -44.3
12ØØ kHz -84.1 -47.6 -84.5 -48.Ø
14ØØ kHz -82.8 -46.3 -85.5 -49.Ø
16ØØ kHz -86.2 -49.7 -84.Ø -47.6
18ØØ kHz -78.5 -42.Ø -79.2 -42.7
CENTER 1.9576ØØØ GHz
Center: Channel 649
SPAN Ø Hz
#RES BW 3Ø kHz
#VBW 3Ø kHz
#SWP 32Ø µsec

16: 42: 59 JUL 26, 1999

Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1

REF 39.7 dBm #AT 1Ø dB



CENTER 1.964ØØ GHz Right Edge: Channel 684 SPAN 2.4ØØ MHz

#RES BW 3Ø kHz #VBW 3Ø kHz #SWP 2.ØØ sec

16: 48: 33 JUL 26, 1999

Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1

REF 4Ø.1 dBm #AT 1Ø dB

GTSMP
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
684
TN Ø
BURST
1

SA SB
SC EC
CORR

OUTPUT RF SPECTRUM
Modulation

Offset Freq	− Offset dB	− Offset dBm	+ Offset dB	+ Offset dBm
Ø kHz	Ø.Ø	36.7	Ø.Ø	36.7
1ØØ kHz	−1Ø.1	26.6	−14.4	22.3
2ØØ kHz	−39.Ø	−2.3	−39.8	−3.1
25Ø kHz	−41.6	−4.9	−44.6	−7.9
4ØØ kHz	−69.9	−33.1	−75.2	−38.5
6ØØ kHz	−81.Ø	−44.3	−82.6	−45.9
8ØØ kHz	−83.5	−46.8	−81.9	−45.2
1ØØØ kHz	−82.1	−45.3	−85.3	−48.6
12ØØ kHz	−86.Ø	−49.2	−85.3	−48.6
14ØØ kHz	−84.8	−48.1	−86.Ø	−49.2
16ØØ kHz	−86.2	−49.5	−86.5	−49.8
18ØØ kHz	−79.5	−42.8	−8Ø.3	−43.6

CENTER 1.9646ØØØ GHz Right Edge: Channel 684 SPAN Ø Hz

#RES BW 3Ø kHz #VBW 3Ø kHz #SWP 32Ø µsec

MEASUREMENT: 3

MEASUREMENT

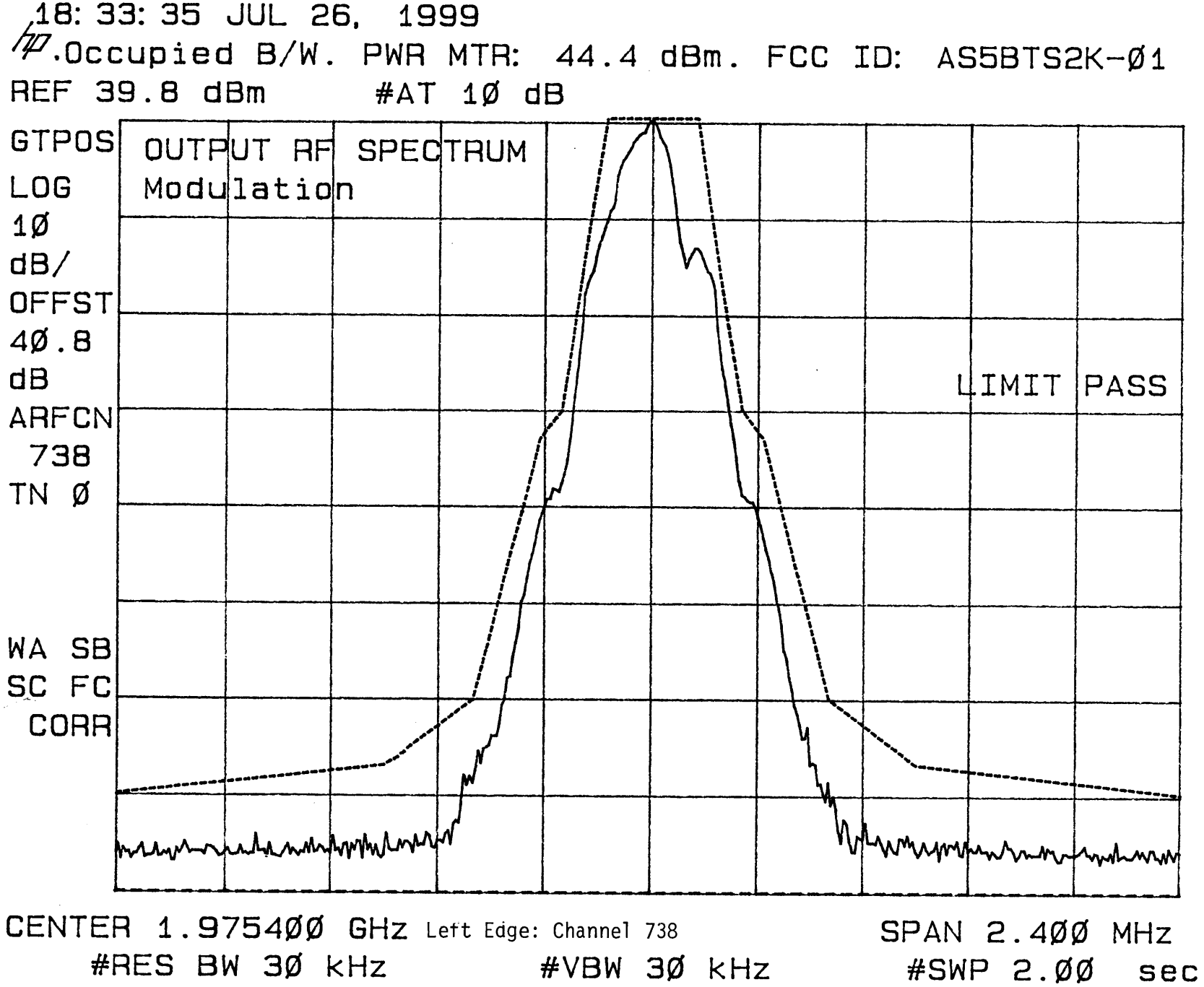
OF

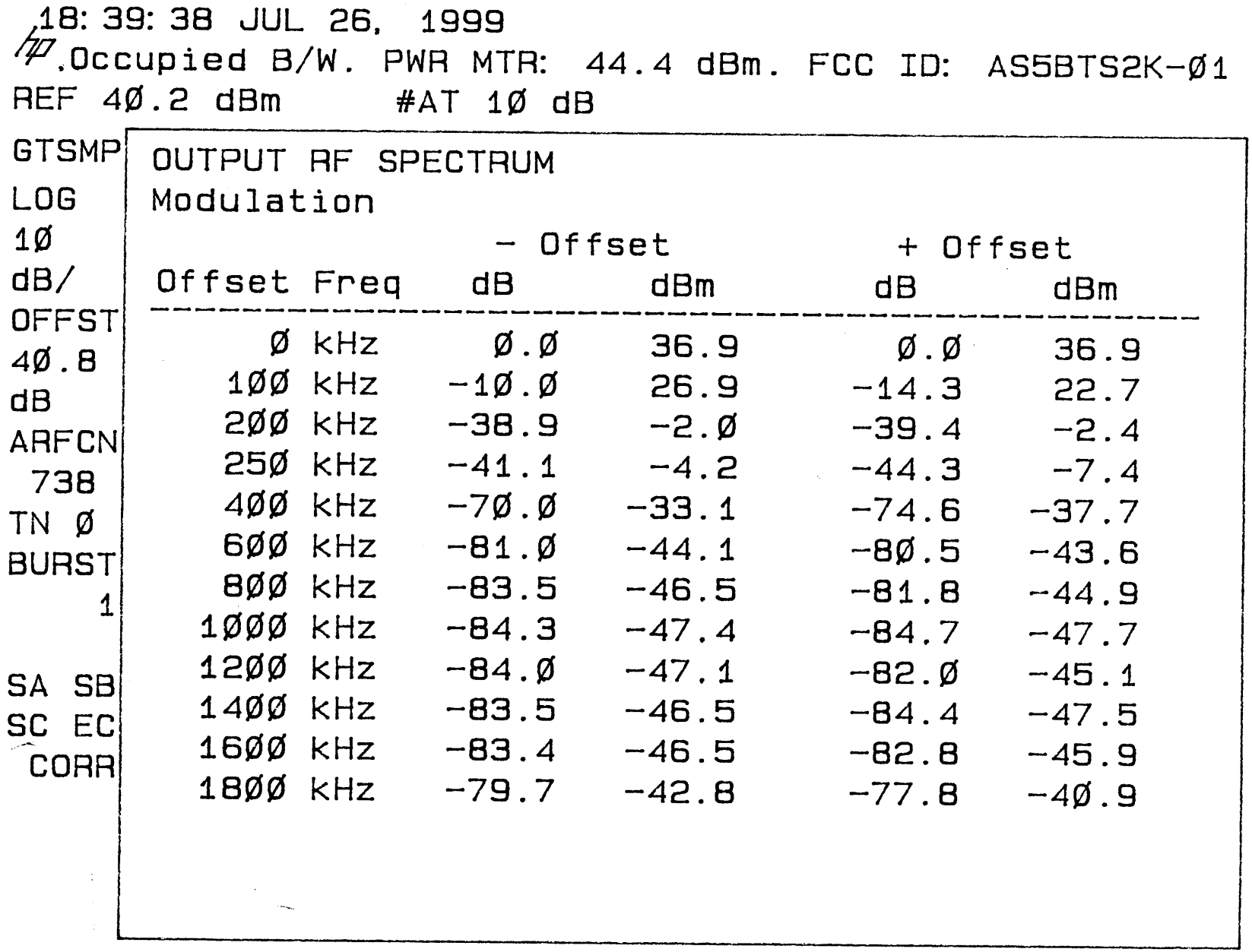
OCCUPIED BANDWIDTH

BLOCK C

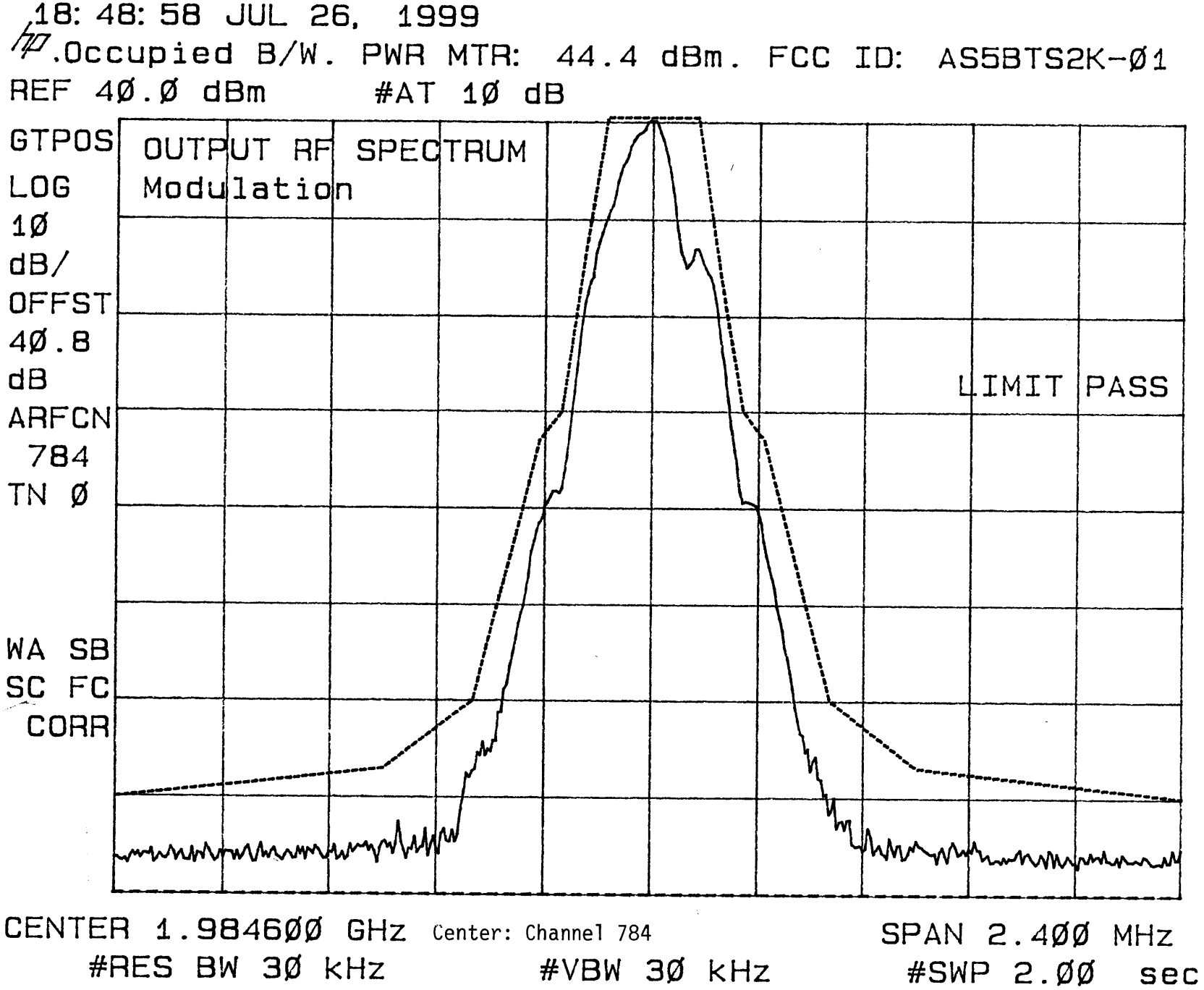
(1975 – 1990 MHz)

Left Edge:	**1975.4 MHz (Channel 738)**
Center:	**1984.6 MHz (Channel 784)**
Right Edge:	**1989.6 MHz (Channel 809)**


18: 33: 35 JUL 26, 1999
.Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1
REF 39.8 dBm
#AT 1Ø dB
GTPOS
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
738
TN Ø
OUTPUT RF SPECTRUM
Modulation
LIMIT PASS
WA SB
SC FC
CORR
CENTER 1.975ØØ GHz
Left Edge: Channel 738
SPAN 2.4ØØ MHz
#RES BW 3Ø kHz
#VBW 3Ø kHz
#SWP 2.ØØ sec



Offset Freq	− Offset dB	− Offset dBm	+ Offset dB	+ Offset dBm
Ø kHz	Ø.Ø	36.9	Ø.Ø	36.9
1ØØ kHz	−1Ø.Ø	26.9	−14.3	22.7
2ØØ kHz	−38.9	−2.Ø	−39.4	−2.4
25Ø kHz	−41.1	−4.2	−44.3	−7.4
4ØØ kHz	−7Ø.Ø	−33.1	−74.6	−37.7
6ØØ kHz	−81.Ø	−44.1	−8Ø.5	−43.6
8ØØ kHz	−83.5	−46.5	−81.8	−44.9
1ØØØ kHz	−84.3	−47.4	−84.7	−47.7
12ØØ kHz	−84.Ø	−47.1	−82.Ø	−45.1
14ØØ kHz	−83.5	−46.5	−84.4	−47.5
16ØØ kHz	−83.4	−46.5	−82.8	−45.9
18ØØ kHz	−79.7	−42.8	−77.8	−4Ø.9


18: 48: 58 JUL 26, 1999
.Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1
REF 4Ø.Ø dBm
#AT 1Ø dB
GTPOS
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
784
TN Ø
OUTPUT RF SPECTRUM
Modulation
LIMIT PASS
WA SB
SC FC
CORR
CENTER 1.984ØØ GHz
Center: Channel 784
SPAN 2.4ØØ MHz
#RES BW 3Ø kHz
#VBW 3Ø kHz
#SWP 2.ØØ sec

18:54:56 JUL 26, 1999

Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1

REF 4Ø.5 dBm #AT 1Ø dB

GTSMP
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
784
TN Ø
BURST
1

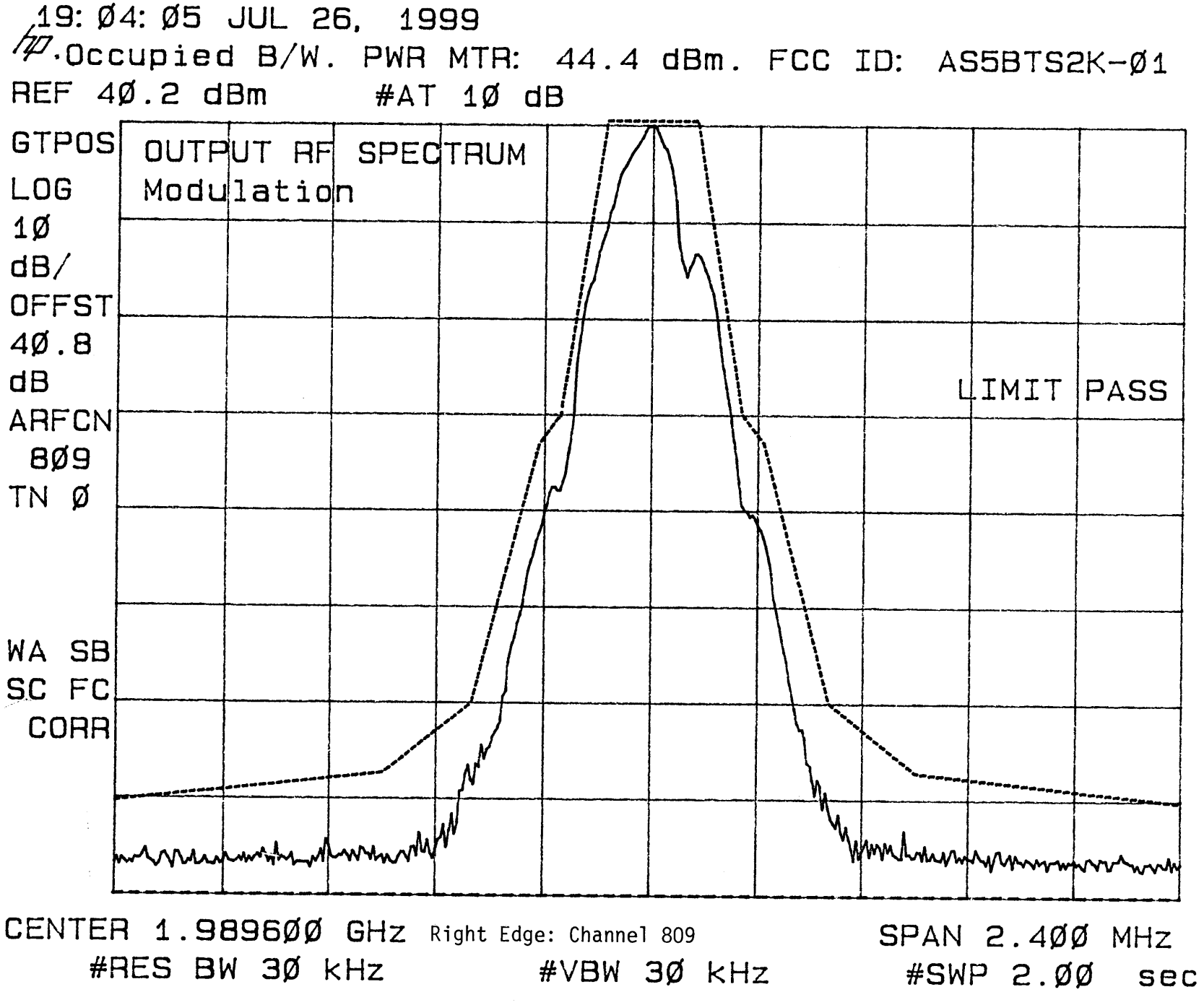
SA SB
SC EC
CORR

OUTPUT RF SPECTRUM
Modulation

		- Offset		+ Offset	
Offset	Freq	dB	dBm	dB	dBm
Ø	kHz	Ø.Ø	37.1	Ø.Ø	37.1
1ØØ	kHz	-1Ø.1	27.1	-14.2	22.9
2ØØ	kHz	-38.9	-1.8	-39.3	-2.2
25Ø	kHz	-41.4	-4.3	-44.5	-7.4
4ØØ	kHz	-69.9	-32.8	-74.3	-37.2
6ØØ	kHz	-8Ø.5	-43.4	-81.9	-44.8
8ØØ	kHz	-83.Ø	-45.9	-83.2	-46.1
1ØØØ	kHz	-82.1	-45.Ø	-83.9	-46.8
12ØØ	kHz	-83.1	-46.Ø	-84.1	-47.Ø
14ØØ	kHz	-86.5	-49.4	-83.9	-46.8
16ØØ	kHz	-83.6	-46.5	-86.2	-49.Ø
18ØØ	kHz	-79.5	-42.4	-79.8	-42.7

CENTER 1.9846ØØØ GHz Center: Channel 784 SPAN Ø Hz

#RES BW 3Ø kHz #VBW 3Ø kHz #SWP 32Ø µsec


19: Ø4: Ø5 JUL 26, 1999
Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1
REF 4Ø.2 dBm
#AT 1Ø dB
GTPOS
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
8Ø9
TN Ø
OUTPUT RF SPECTRUM
Modulation
LIMIT PASS
WA SB
SC FC
CORR
CENTER 1.989600 GHz
Right Edge: Channel 809
SPAN 2.400 MHz
#RES BW 30 kHz
#VBW 30 kHz
#SWP 2.00 sec

19:09:50 JUL 26, 1999

Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-01

REF 40.7 dBm #AT 10 dB

GTSMP
LOG
10
dB/
OFFST
40.8
dB
ARFCN
809
TN 0
BURST
1

SA SB
SC EC
CORR

OUTPUT RF SPECTRUM
Modulation

		- Offset		+ Offset	
Offset	Freq	dB	dBm	dB	dBm
0	kHz	0.0	37.2	0.0	37.2
100	kHz	-10.1	27.0	-14.3	22.9
200	kHz	-38.8	-1.6	-39.5	-2.4
250	kHz	-41.2	-4.0	-44.8	-7.6
400	kHz	-70.4	-33.2	-74.0	-36.8
600	kHz	-80.2	-43.0	-84.7	-47.5
800	kHz	-80.9	-43.8	-83.1	-46.0
1000	kHz	-82.3	-45.1	-86.4	-49.2
1200	kHz	-84.5	-47.4	-83.4	-46.2
1400	kHz	-83.2	-46.1	-83.6	-46.5
1600	kHz	-84.5	-47.3	-84.0	-46.8
1800	kHz	-79.8	-42.6	-79.4	-42.2

CENTER 1.9896000 GHz Right Edge: Channel 809 SPAN 0 Hz

#RES BW 30 kHz #VBW 30 kHz #SWP 320 µsec

MEASUREMENT: 3

MEASUREMENT

OF

OCCUPIED BANDWIDTH

BLOCK D

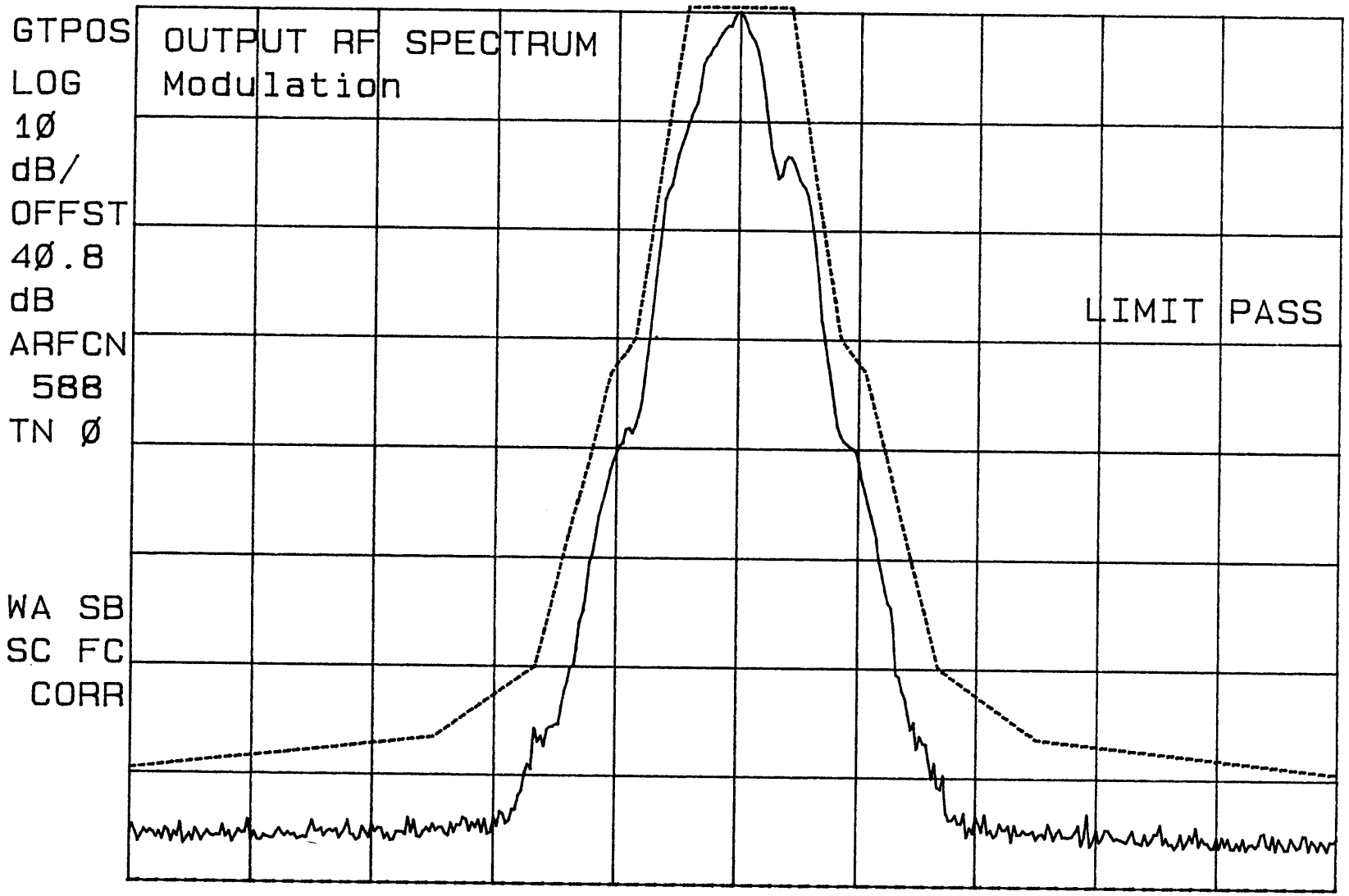
(1945 – 1950 MHz)

Left Edge:	**1945.4 MHz (Channel 588)**
Center:	**1947.6 MHz (Channel 599)**
Right Edge:	**1949.6 MHz (Channel 609)**

15: Ø5: 14 JUL 26, 1999

.Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1

REF 39.5 dBm #AT 1Ø dB



CENTER 1.945ØØ GHz Left Edge: Channel 588 SPAN 2.4ØØ MHz

#RES BW 3Ø kHz #VBW 3Ø kHz #SWP 2.ØØ sec

15: 11: 26 JUL 26, 1999

hp .Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1

REF 39.6 dBm #AT 1Ø dB

GTSMP
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
588
TN Ø
BURST
1

SA SB
SC EC
CORR

OUTPUT RF SPECTRUM
Modulation

Offset Freq	− Offset dB	− Offset dBm	+ Offset dB	+ Offset dBm
Ø kHz	Ø.Ø	36.3	Ø.Ø	36.3
1ØØ kHz	−1Ø.Ø	26.3	−14.3	22.Ø
2ØØ kHz	−38.8	−2.5	−39.8	−3.5
25Ø kHz	−41.2	−4.8	−44.3	−8.Ø
4ØØ kHz	−7Ø.5	−34.1	−74.9	−38.6
6ØØ kHz	−79.9	−43.6	−8Ø.4	−44.1
8ØØ kHz	−83.6	−47.2	−84.5	−48.1
1ØØØ kHz	−82.7	−46.4	−86.4	−5Ø.Ø
12ØØ kHz	−84.6	−48.3	−85.7	−49.4
14ØØ kHz	−85.5	−49.2	−85.9	−49.6
16ØØ kHz	−81.6	−45.3	−85.9	−49.6
18ØØ kHz	−79.4	−43.1	−79.2	−42.9

REPEAT
MEAS

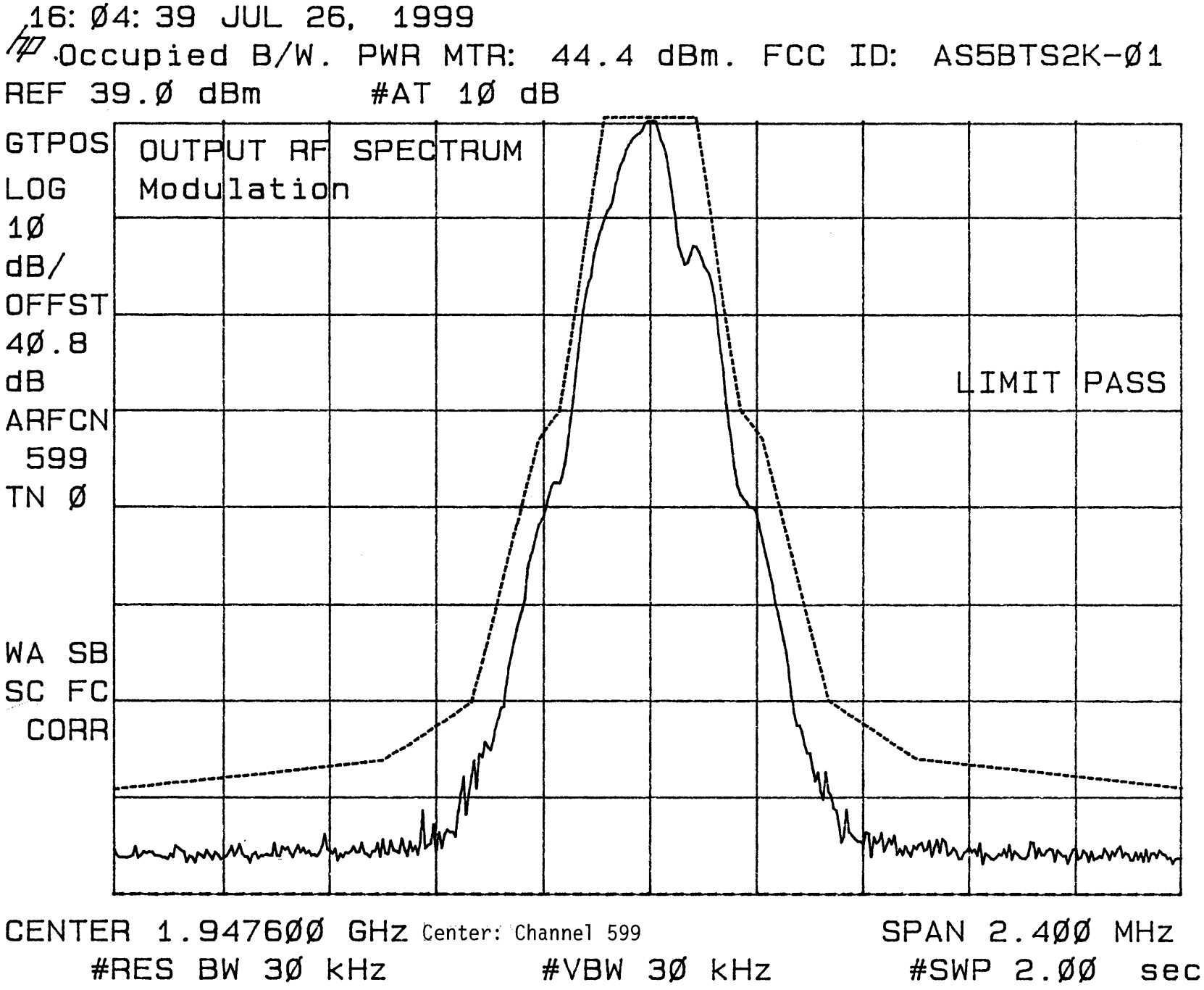
NUMBER
BURSTS

Physical
Channel

Previous
Menu

CENTER 1.9454ØØØ GHz Left Edge: Channel 588 SPAN Ø Hz

#RES BW 3Ø kHz #VBW 3Ø kHz #SWP 32Ø µsec


16: Ø4: 39 JUL 26, 1999
Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1
REF 39.Ø dBm
#AT 1Ø dB
GTPOS
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
599
TN Ø
WA SB
SC FC
CORR
OUTPUT RF SPECTRUM
Modulation
LIMIT PASS
CENTER 1.947ØØ GHz
Center: Channel 599
SPAN 2.4ØØ MHz
#RES BW 3Ø kHz
#VBW 3Ø kHz
#SWP 2.ØØ sec

15: 55: 18 JUL 26, 1999
Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1
REF 39.7 dBm #AT 1Ø dB

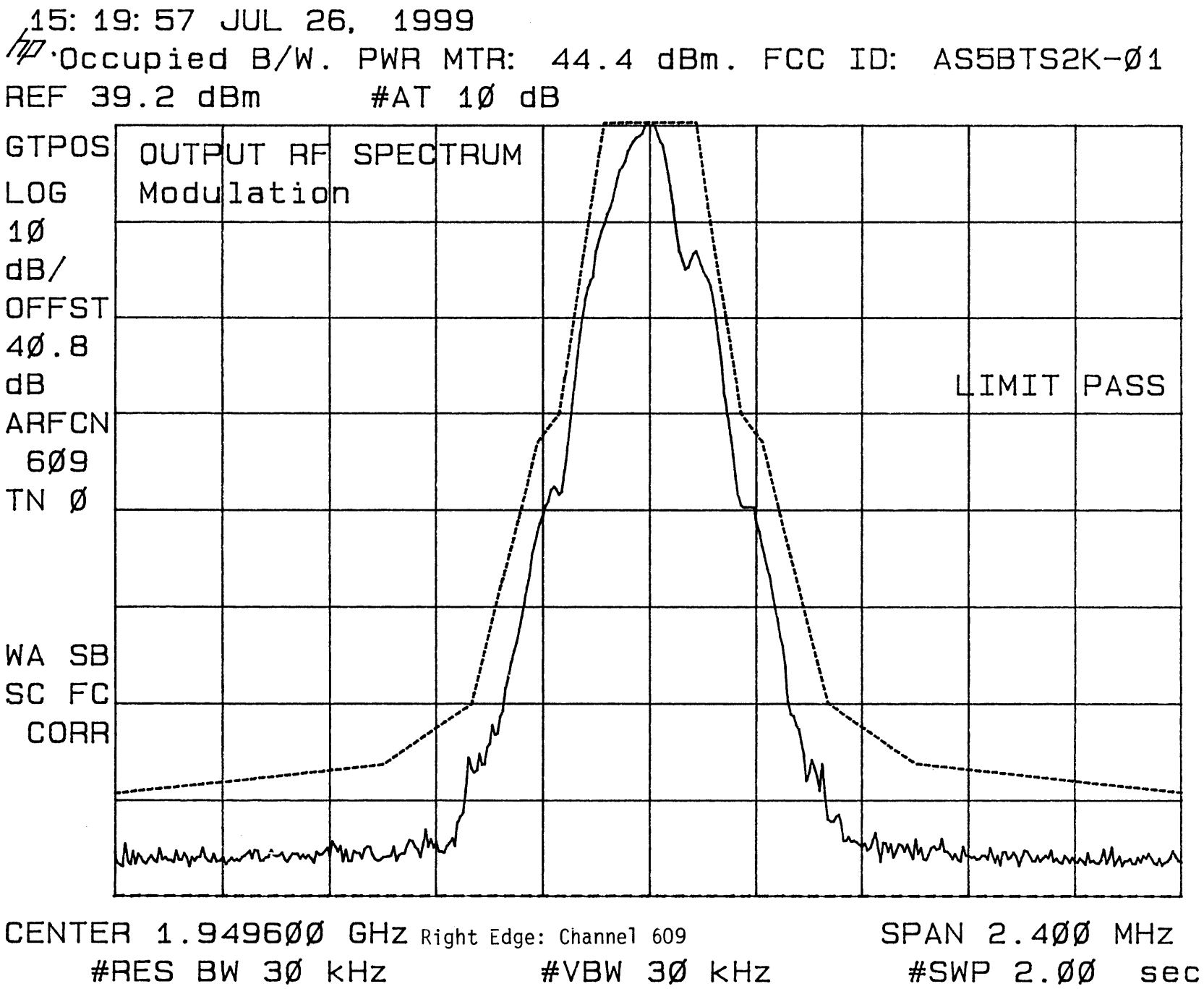
GTSMP
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
599
TN Ø
BURST
1

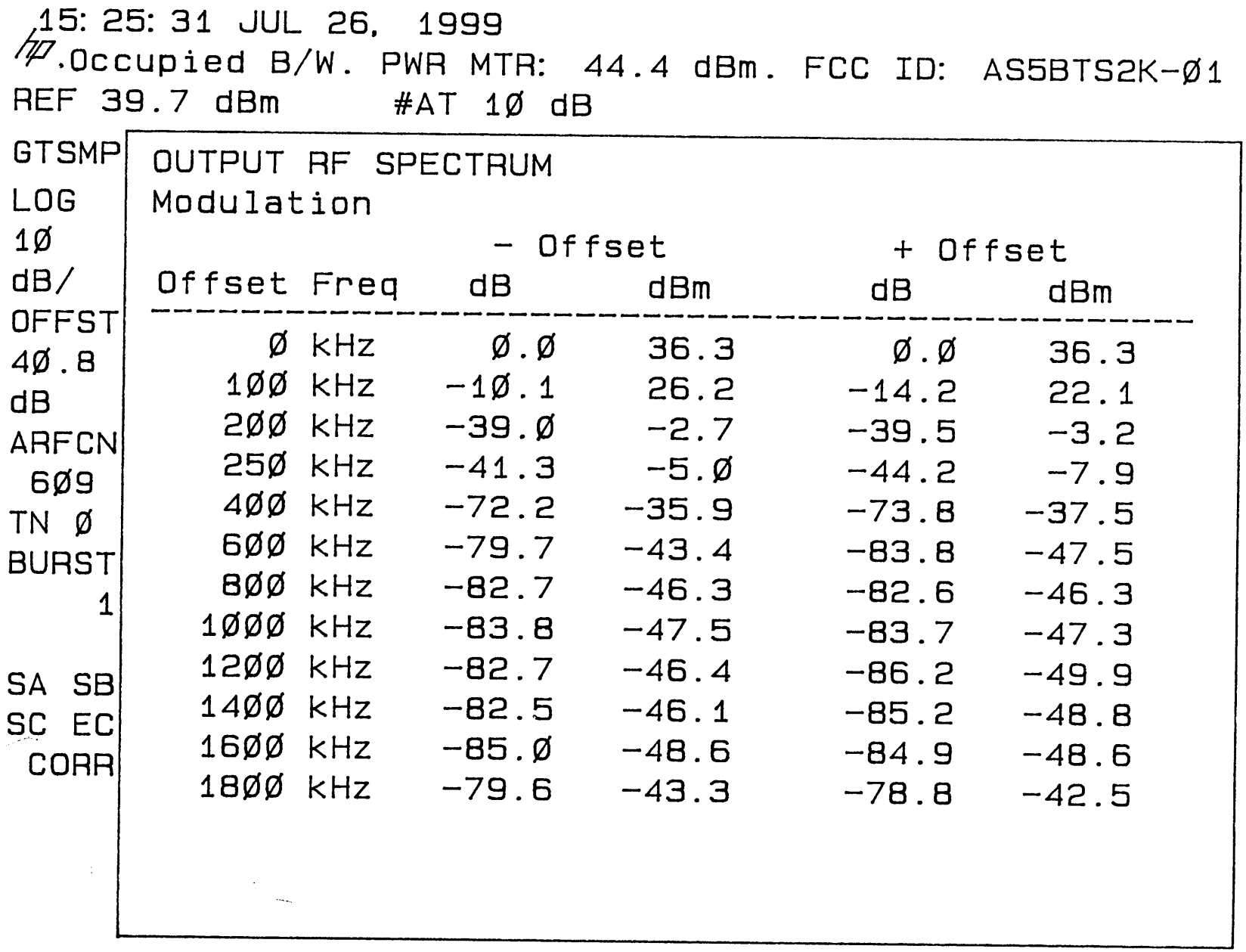
SA SB
SC EC
CORR

OUTPUT RF SPECTRUM
Modulation

Offset Freq	− Offset dB	− Offset dBm	+ Offset dB	+ Offset dBm
Ø kHz	Ø.Ø	36.3	Ø.Ø	36.3
1ØØ kHz	−1Ø.1	26.2	−14.4	21.9
2ØØ kHz	−38.8	−2.5	−39.8	−3.6
25Ø kHz	−41.Ø	−4.7	−44.7	−8.5
4ØØ kHz	−7Ø.1	−33.9	−76.1	−39.8
6ØØ kHz	−83.3	−47.Ø	−81.5	−45.3
8ØØ kHz	−86.7	−5Ø.4	−83.2	−47.Ø
1ØØØ kHz	−81.6	−45.3	−84.7	−48.4
12ØØ kHz	−82.6	−46.3	−86.9	−5Ø.6
14ØØ kHz	−83.2	−47.Ø	−84.7	−48.4
16ØØ kHz	−83.1	−46.8	−83.8	−47.5
18ØØ kHz	−79.6	−43.3	−78.3	−42.Ø

CENTER 1.9476ØØØ GHz Center: Channel 599 SPAN Ø Hz
#RES BW 3Ø kHz #VBW 3Ø kHz #SWP 32Ø µsec


15: 19: 57 JUL 26, 1999
Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1
REF 39.2 dBm
#AT 1Ø dB
GTPOS
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
6Ø9
TN Ø
OUTPUT RF SPECTRUM
Modulation
LIMIT PASS
WA SB
SC FC
CORR
CENTER 1.949600 GHz
Right Edge: Channel 609
SPAN 2.400 MHz
#RES BW 30 kHz
#VBW 30 kHz
#SWP 2.00 sec


15: 25: 31 JUL 26, 1999
.Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1
REF 39.7 dBm
#AT 1Ø dB
GTSMP
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
6Ø9
TN Ø
BURST
1
SA SB
SC EC
CORR
OUTPUT RF SPECTRUM
Modulation
- Offset
+ Offset
Offset Freq dB dBm dB dBm
Ø kHz Ø.Ø 36.3 Ø.Ø 36.3
1ØØ kHz -1Ø.1 26.2 -14.2 22.1
2ØØ kHz -39.Ø -2.7 -39.5 -3.2
25Ø kHz -41.3 -5.Ø -44.2 -7.9
4ØØ kHz -72.2 -35.9 -73.8 -37.5
6ØØ kHz -79.7 -43.4 -83.8 -47.5
8ØØ kHz -82.7 -46.3 -82.6 -46.3
1ØØØ kHz -83.8 -47.5 -83.7 -47.3
12ØØ kHz -82.7 -46.4 -86.2 -49.9
14ØØ kHz -82.5 -46.1 -85.2 -48.8
16ØØ kHz -85.Ø -48.6 -84.9 -48.6
18ØØ kHz -79.6 -43.3 -78.8 -42.5
CENTER 1.9496ØØØ GHz
Right Edge: Channel 609
SPAN Ø Hz
#RES BW 3Ø kHz
#VBW 3Ø kHz
#SWP 32Ø µsec

MEASUREMENT: 3

MEASUREMENT

OF

OCCUPIED BANDWIDTH

BLOCK E

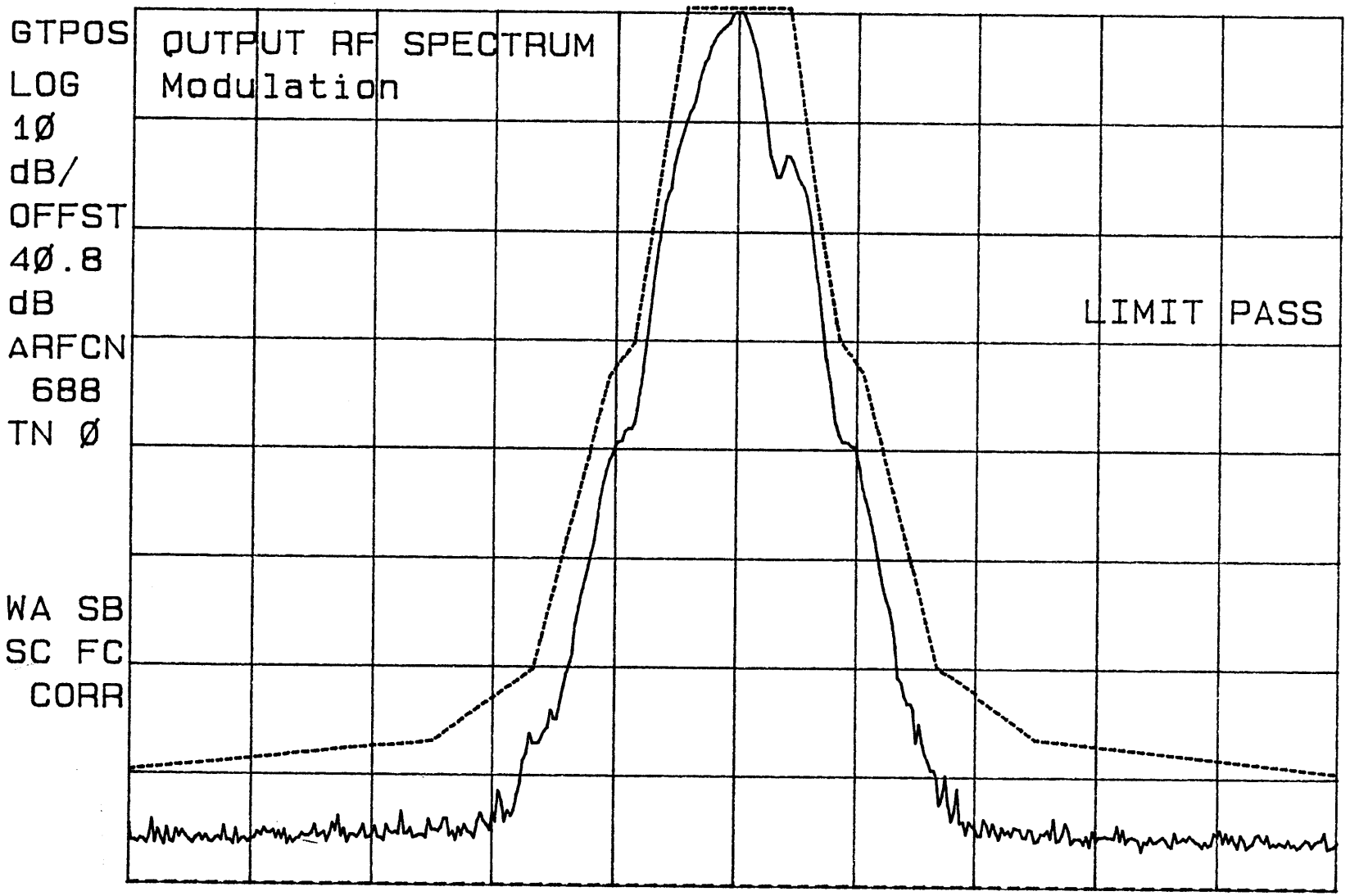
(1965 – 1970 MHz)

Left Edge:	**1965.4 MHz (Channel 688)**
Center:	**1967.6 MHz (Channel 699)**
Right Edge:	**1969.6 MHz (Channel 709)**

17: Ø3: 42 JUL 26, 1999

Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1

REF 39.6 dBm #AT 1Ø dB



CENTER 1.965400 GHz Left Edge: Channel 688 SPAN 2.400 MHz

#RES BW 30 kHz #VBW 30 kHz #SWP 2.00 sec

17: Ø9: 19 JUL 26, 1999

Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1

REF 4Ø.1 dBm #AT 1Ø dB

GTSMP
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
688
TN Ø
BURST
1

SA SB
SC EC
CORR

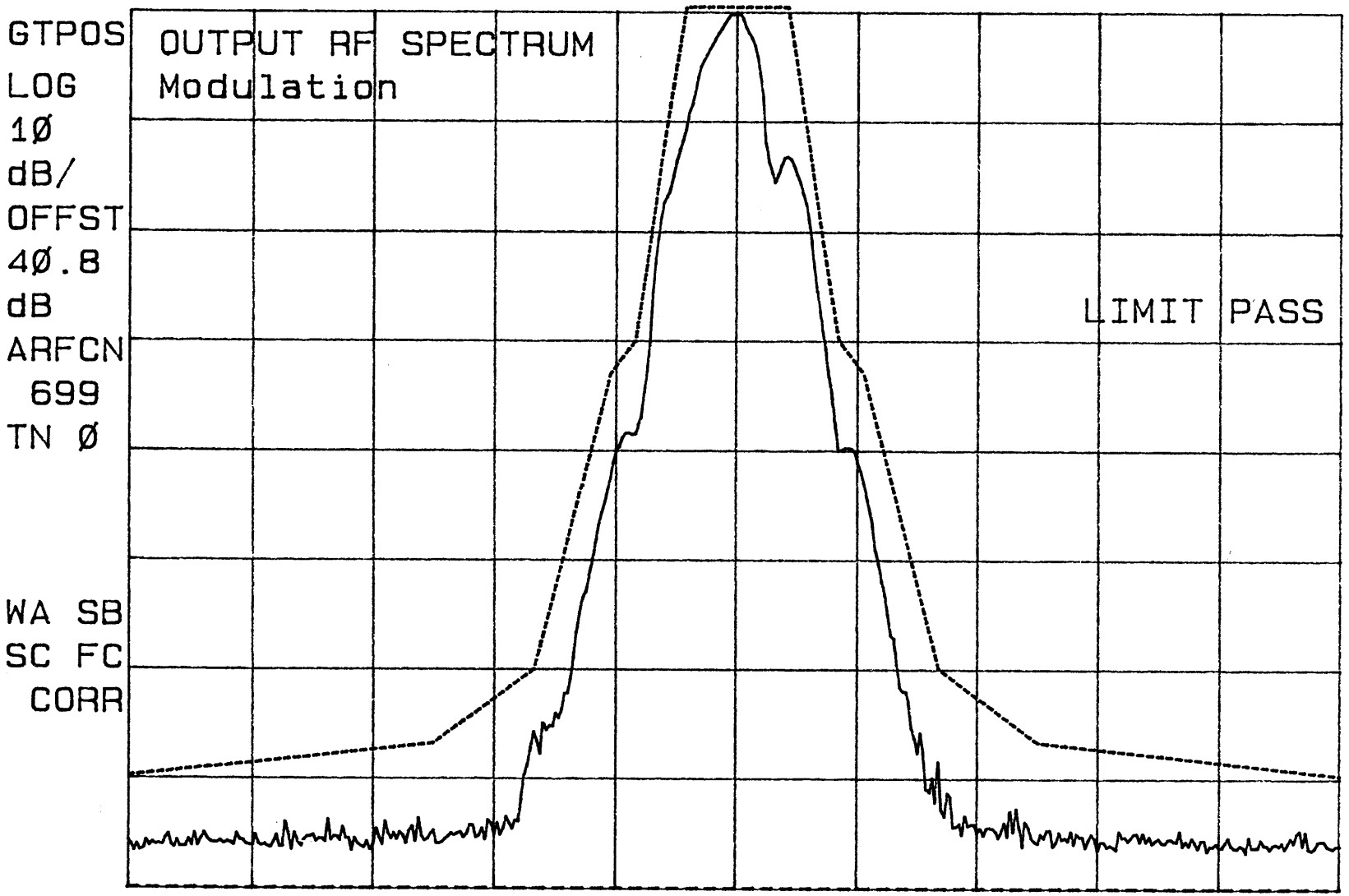
OUTPUT RF SPECTRUM
Modulation

		− Offset		+ Offset	
Offset	Freq	dB	dBm	dB	dBm
Ø	kHz	Ø.Ø	36.7	Ø.Ø	36.7
1ØØ	kHz	−1Ø.1	26.6	−14.4	22.3
2ØØ	kHz	−39.Ø	−2.3	−39.2	−2.5
25Ø	kHz	−41.8	−5.1	−44.4	−7.7
4ØØ	kHz	−69.7	−33.Ø	−72.6	−36.Ø
6ØØ	kHz	−83.1	−46.4	−83.Ø	−46.4
8ØØ	kHz	−85.Ø	−48.3	−86.2	−49.6
1ØØØ	kHz	−84.7	−48.Ø	−85.8	−49.1
12ØØ	kHz	−85.1	−48.4	−85.9	−49.2
14ØØ	kHz	−84.4	−47.7	−85.5	−48.8
16ØØ	kHz	−86.1	−49.4	−81.8	−45.1
18ØØ	kHz	−79.2	−42.5	−79.9	−43.2

CENTER 1.9654ØØØ GHz Left Edge: Channel 688 SPAN Ø Hz

#RES BW 3Ø kHz #VBW 3Ø kHz #SWP 32Ø µsec

17: 18: 32 JUL 26, 1999
Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1
REF 39.7 dBm #AT 1Ø dB



CENTER 1.967600 GHz Center: Channel 699 SPAN 2.400 MHz
#RES BW 30 kHz #VBW 30 kHz #SWP 2.00 sec

17: 24: 15 JUL 26, 1999
Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1
REF 4Ø.1 dBm #AT 1Ø dB

GTSMP
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
699
TN Ø
BURST
1

SA SB
SC EC
CORR

OUTPUT RF SPECTRUM
Modulation

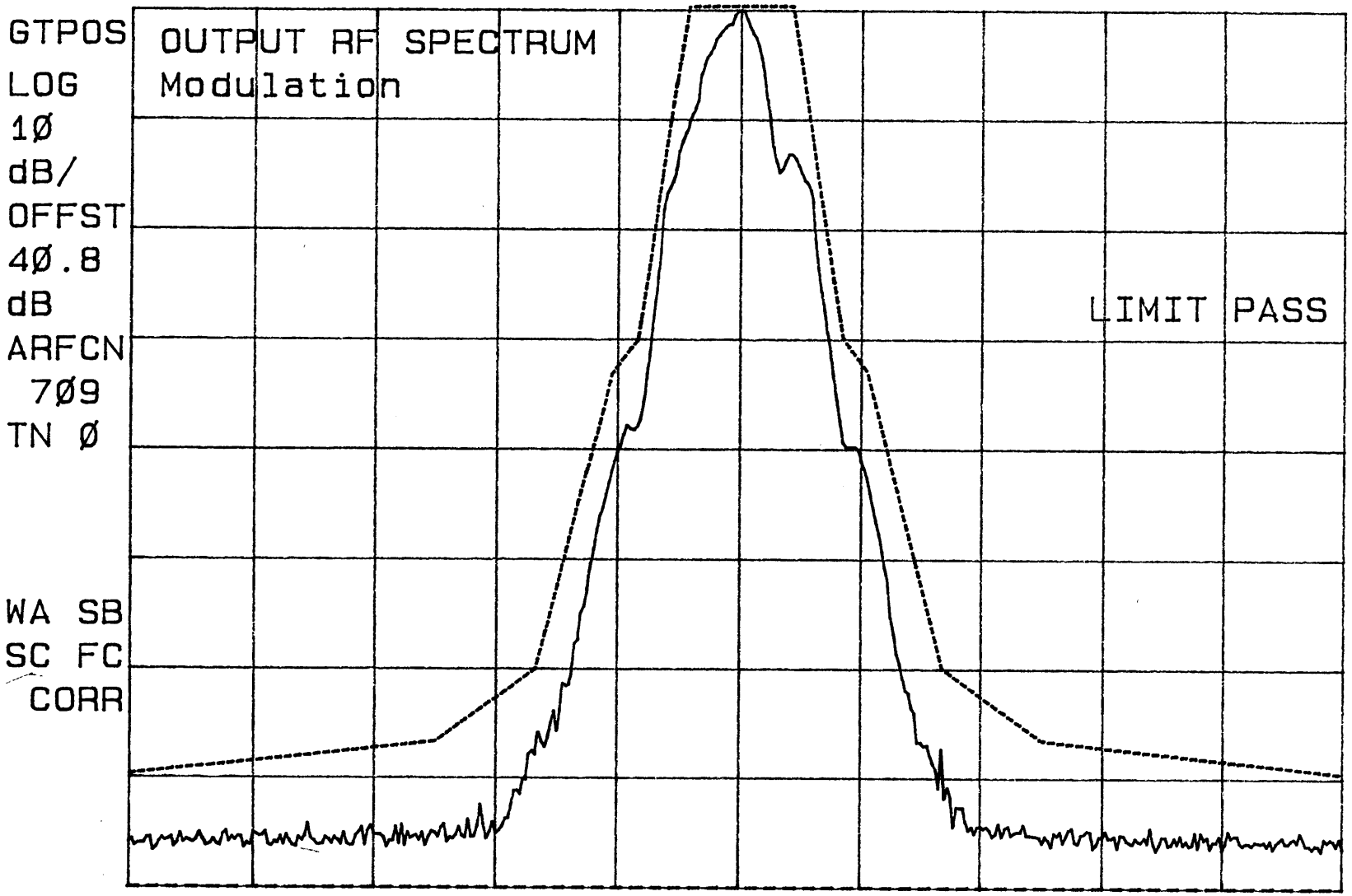
	- Offset		+ Offset	
Offset Freq	dB	dBm	dB	dBm
Ø kHz	Ø.Ø	36.7	Ø.Ø	36.7
1ØØ kHz	-1Ø.1	26.6	-14.2	22.4
2ØØ kHz	-38.2	-1.5	-39.3	-2.6
25Ø kHz	-41.3	-4.6	-44.3	-7.6
4ØØ kHz	-7Ø.5	-33.8	-74.3	-37.7
6ØØ kHz	-8Ø.8	-44.1	-82.8	-46.1
8ØØ kHz	-82.3	-45.7	-82.5	-45.8
1ØØØ kHz	-84.3	-47.6	-83.5	-46.9
12ØØ kHz	-86.5	-49.9	-84.4	-47.7
14ØØ kHz	-84.8	-48.1	-86.4	-49.7
16ØØ kHz	-83.Ø	-46.3	-82.9	-46.3
18ØØ kHz	-8Ø.9	-44.2	-78.Ø	-41.4

CENTER 1.9676ØØØ GHz Center: Channel 699 SPAN Ø Hz
#RES BW 3Ø kHz #VBW 3Ø kHz #SWP 32Ø µsec

17: 34: 13 JUL 26, 1999

.Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1

REF 39.6 dBm #AT 1Ø dB



CENTER 1.969600 GHz Right Edge: Channel 709 SPAN 2.400 MHz

#RES BW 30 kHz #VBW 30 kHz #SWP 2.00 sec

17: 4Ø: Ø2 JUL 26, 1999

Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1

REF 4Ø.3 dBm #AT 1Ø dB

GTSMP
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
7Ø9
TN Ø
BURST
1

SA SB
SC EC
CORR

OUTPUT RF SPECTRUM
Modulation

		− Offset		+ Offset	
Offset	Freq	dB	dBm	dB	dBm
Ø	kHz	Ø.Ø	36.8	Ø.Ø	36.8
1ØØ	kHz	−1Ø.1	26.7	−14.3	22.4
2ØØ	kHz	−38.7	−2.Ø	−39.4	−2.6
25Ø	kHz	−41.3	−4.6	−44.3	−7.5
4ØØ	kHz	−7Ø.3	−33.5	−74.7	−37.9
6ØØ	kHz	−79.4	−42.6	−82.8	−46.Ø
8ØØ	kHz	−83.4	−46.6	−85.4	−48.6
1ØØØ	kHz	−84.1	−47.4	−83.Ø	−46.2
12ØØ	kHz	−84.8	−48.1	−84.3	−47.5
14ØØ	kHz	−86.5	−49.7	−83.9	−47.1
16ØØ	kHz	−82.9	−46.2	−84.4	−47.6
18ØØ	kHz	−78.7	−42.Ø	−79.6	−42.9

CENTER 1.9696ØØØ GHz Right Edge: Channel 709 SPAN Ø Hz

#RES BW 3Ø kHz #VBW 3Ø kHz #SWP 32Ø µsec

MEASUREMENT: 3

MEASUREMENT

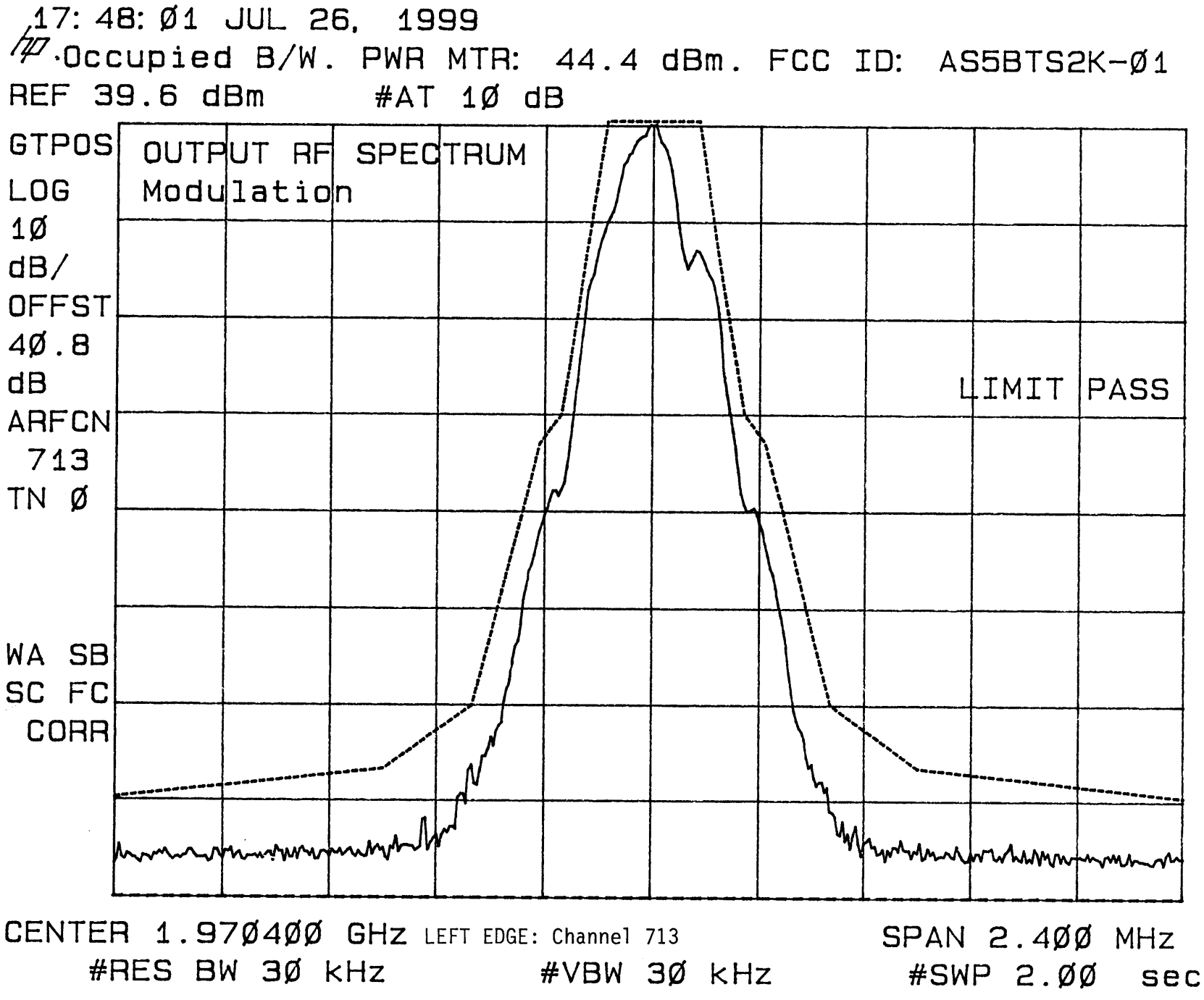
OF

OCCUPIED BANDWIDTH

BLOCK F

(1970 – 1975 MHz)

Left Edge:	**1970.4 MHz (Channel 713)**
Center:	**1972.6 MHz (Channel 724)**
Right Edge:	**1974.6 MHz (Channel 734)**


17: 48: Ø1 JUL 26, 1999
Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1
REF 39.6 dBm
#AT 1Ø dB
GTPOS
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
713
TN Ø
OUTPUT RF SPECTRUM
Modulation
LIMIT PASS
WA SB
SC FC
CORR
CENTER 1.97Ø4ØØ GHz
LEFT EDGE: Channel 713
SPAN 2.4ØØ MHz
#RES BW 3Ø kHz
#VBW 3Ø kHz
#SWP 2.ØØ sec

17:53:41 JUL 26, 1999

.Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1

REF 4Ø.3 dBm #AT 1Ø dB

GTSMP
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
713
TN Ø
BURST
1

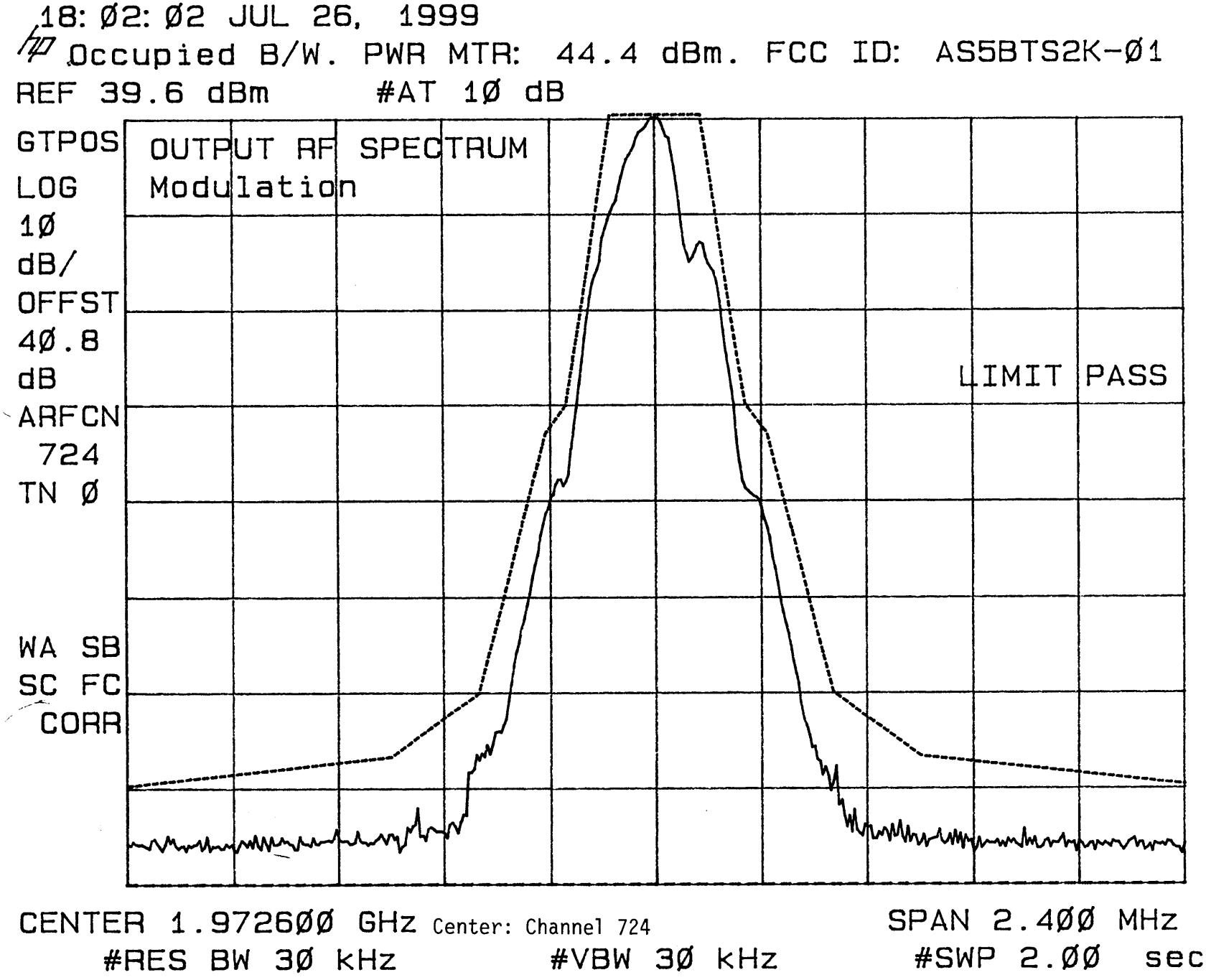
SA SB
SC EC
CORR

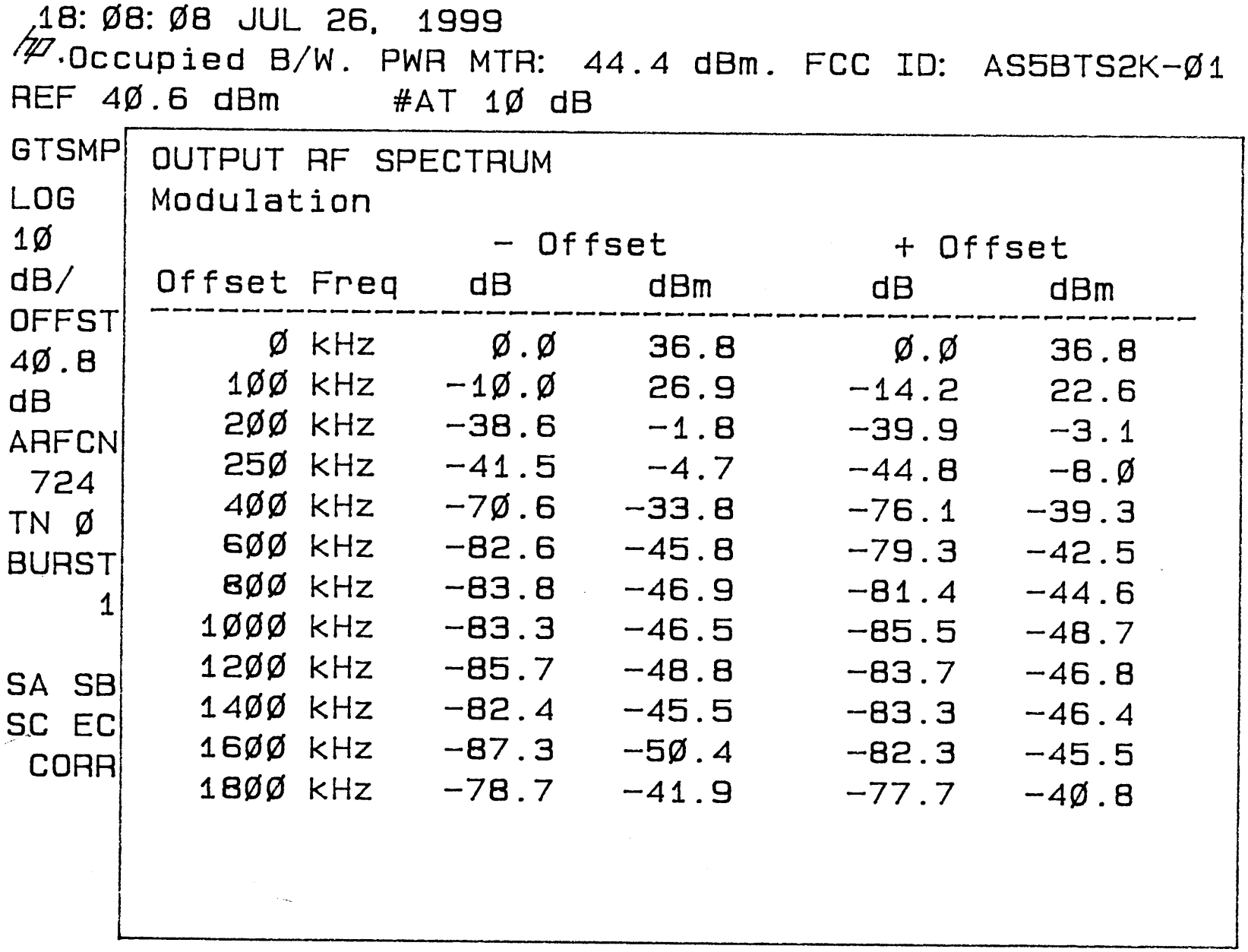
OUTPUT RF SPECTRUM
Modulation

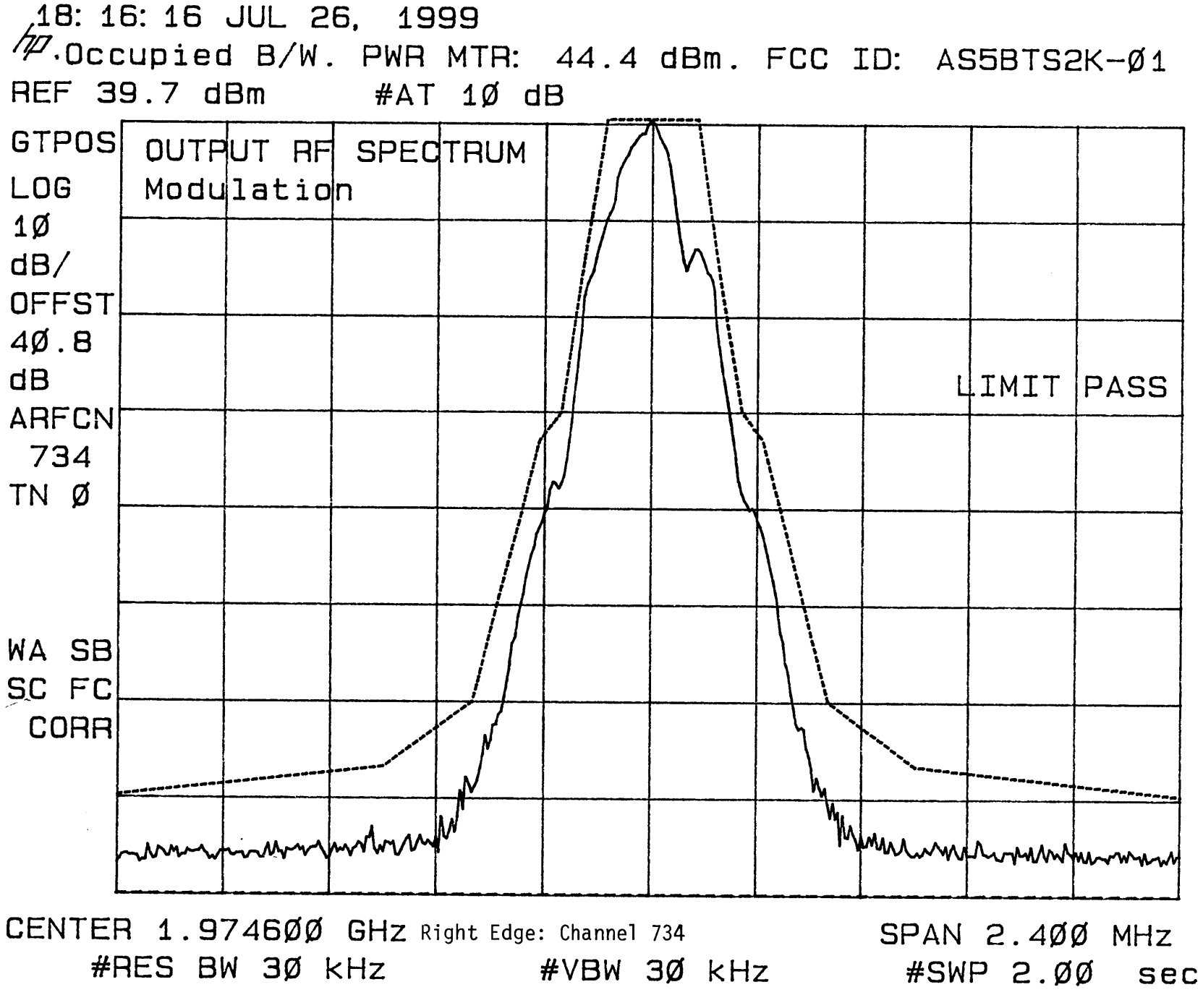
		− Offset		+ Offset	
Offset	Freq	dB	dBm	dB	dBm
Ø	kHz	Ø.Ø	36.8	Ø.Ø	36.8
1ØØ	kHz	−1Ø.Ø	26.8	−14.2	22.6
2ØØ	kHz	−38.5	−1.7	−39.4	−2.6
25Ø	kHz	−41.7	−5.Ø	−44.6	−7.8
4ØØ	kHz	−69.7	−32.9	−73.6	−36.8
6ØØ	kHz	−81.1	−44.3	−8Ø.4	−43.6
8ØØ	kHz	−85.6	−48.8	−85.4	−48.6
1ØØØ	kHz	−85.9	−49.1	−84.2	−47.4
12ØØ	kHz	−85.Ø	−48.2	−83.Ø	−46.2
14ØØ	kHz	−86.8	−5Ø.Ø	−84.6	−47.8
16ØØ	kHz	−85.3	−48.5	−82.1	−45.3
18ØØ	kHz	−78.3	−41.5	−8Ø.3	−43.5

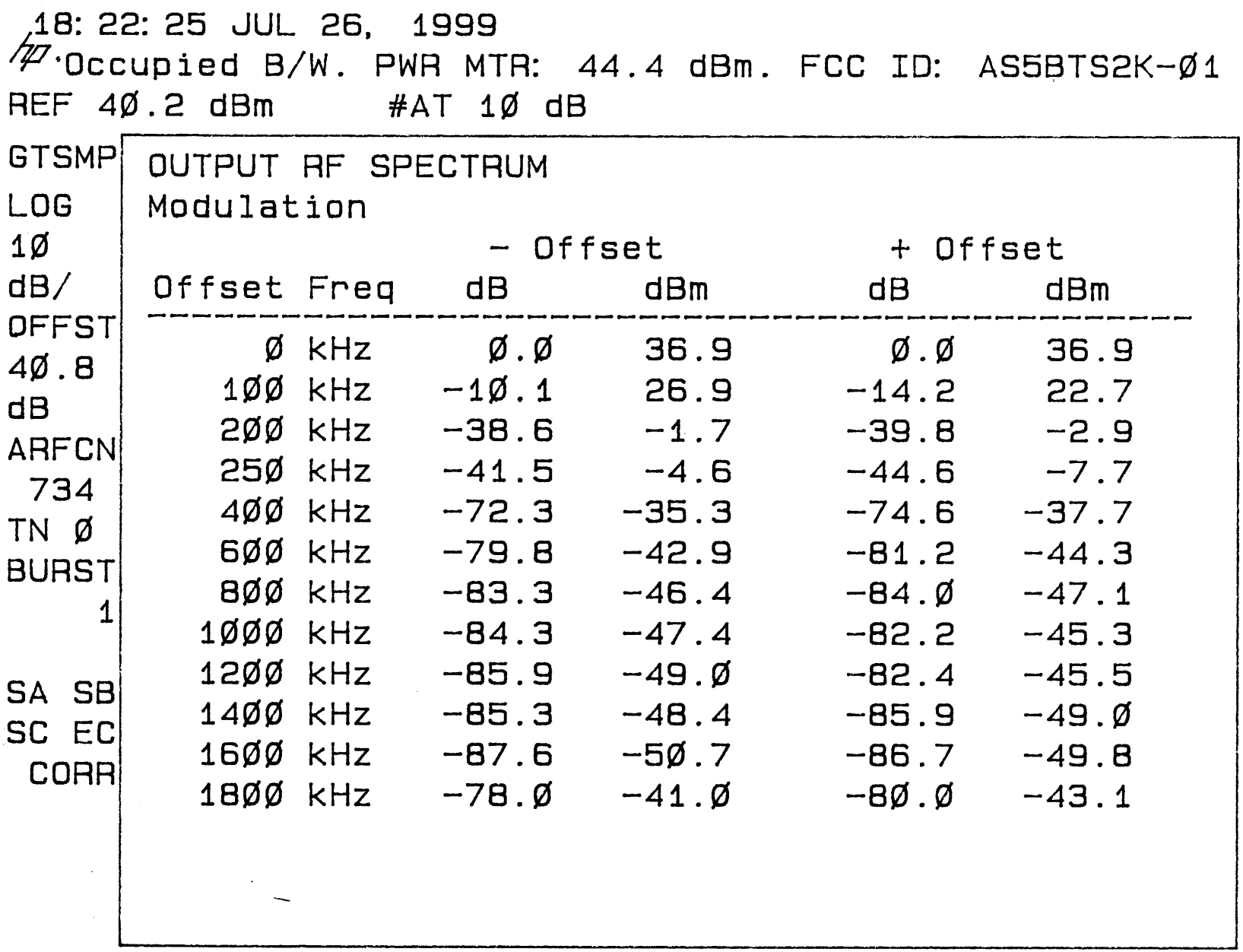
CENTER 1.97Ø4ØØØ GHz Left Edge: Channel 713 SPAN Ø Hz

#RES BW 3Ø kHz #VBW 3Ø kHz #SWP 32Ø µsec


18: Ø2: Ø2 JUL 26, 1999
Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1
REF 39.6 dBm
#AT 1Ø dB
GTPOS
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
724
TN Ø
OUTPUT RF SPECTRUM
Modulation
LIMIT PASS
WA SB
SC FC
CORR
CENTER 1.972600 GHz
Center: Channel 724
SPAN 2.400 MHz
#RES BW 30 kHz
#VBW 30 kHz
#SWP 2.00 sec


18: Ø8: Ø8 JUL 26, 1999
Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1
REF 4Ø.6 dBm
#AT 1Ø dB
GTSMP
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
724
TN Ø
BURST
1
SA SB
SC EC
CORR
OUTPUT RF SPECTRUM
Modulation
- Offset
+ Offset
Offset Freq dB dBm dB dBm
Ø kHz Ø.Ø 36.8 Ø.Ø 36.8
1ØØ kHz -1Ø.Ø 26.9 -14.2 22.6
2ØØ kHz -38.6 -1.8 -39.9 -3.1
25Ø kHz -41.5 -4.7 -44.8 -8.Ø
4ØØ kHz -7Ø.6 -33.8 -76.1 -39.3
6ØØ kHz -82.6 -45.8 -79.3 -42.5
8ØØ kHz -83.8 -46.9 -81.4 -44.6
1ØØØ kHz -83.3 -46.5 -85.5 -48.7
12ØØ kHz -85.7 -48.8 -83.7 -46.8
14ØØ kHz -82.4 -45.5 -83.3 -46.4
16ØØ kHz -87.3 -5Ø.4 -82.3 -45.5
18ØØ kHz -78.7 -41.9 -77.7 -4Ø.8
CENTER 1.9726ØØØ GHz
Center: Channel 724
SPAN Ø Hz
#RES BW 3Ø kHz
#VBW 3Ø kHz
#SWP 32Ø µsec


18: 16: 16 JUL 26, 1999
Occupied B/W. PWR MTR: 44.4 dBm. FCC ID: AS5BTS2K-Ø1
REF 39.7 dBm
#AT 1Ø dB
GTPOS
LOG
1Ø
dB/
OFFST
4Ø.8
dB
ARFCN
734
TN Ø
OUTPUT RF SPECTRUM
Modulation
LIMIT PASS
WA SB
SC FC
CORR
CENTER 1.974ØØ GHz
Right Edge: Channel 734
SPAN 2.4ØØ MHz
#RES BW 3Ø kHz
#VBW 3Ø kHz
#SWP 2.ØØ sec



	− Offset		+ Offset	
Offset Freq	dB	dBm	dB	dBm
Ø kHz	Ø.Ø	36.9	Ø.Ø	36.9
1ØØ kHz	−1Ø.1	26.9	−14.2	22.7
2ØØ kHz	−38.6	−1.7	−39.8	−2.9
25Ø kHz	−41.5	−4.6	−44.6	−7.7
4ØØ kHz	−72.3	−35.3	−74.6	−37.7
6ØØ kHz	−79.8	−42.9	−81.2	−44.3
8ØØ kHz	−83.3	−46.4	−84.Ø	−47.1
1ØØØ kHz	−84.3	−47.4	−82.2	−45.3
12ØØ kHz	−85.9	−49.Ø	−82.4	−45.5
14ØØ kHz	−85.3	−48.4	−85.9	−49.Ø
16ØØ kHz	−87.6	−5Ø.7	−86.7	−49.8
18ØØ kHz	−78.Ø	−41.Ø	−8Ø.Ø	−43.1

SPURIOUS EMISSIONS AT ANTENNA TERMINALS

SECTION 2.1051

MEASUREMENT: 4

SECTION 2.1051

SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Spurious Emissions at the antenna terminals were investigated over the frequency range of 0 MHz to the 10^{th} harmonic of the carrier frequency. The test setup was as described in Figure 4A. Measurements were made using a Rohde & Schwarz FSEK Spectrum Analyzer and an HP Model 520 DeskJet Printer. The RF output from the transmitter was reduced (to an amplitude usable by the spectrum analyzer) by using a calibrated attenuator. The RF power level was continuously monitored via RF Power Meter as shown in the test setup in Figure 4A. The required emission limitation specified in Section 24.238 of the Code was applied to these tests. All measurements were made for 27W output at antenna terminals. Plots are provided for Left-Edge and Right Edge of each PCS band.

The channel allocations with corresponding frequencies are given in the next page. Based upon the criterion given in Section 24.238 of the Code the required emission limitation is equal to −57 dBc or −13 dBm. The magnitude of spurious emissions that are attenuated more than 20 dB below the permissible value need not specified (Section 2.1051 and 2.1057 (2) and (c)).

RESULTS:

The attached spectral plots document for spurious emissions at antenna terminal shows that there are no emissions above the applicable limit.

Frequency range of PCS 1900 (n =512...810)

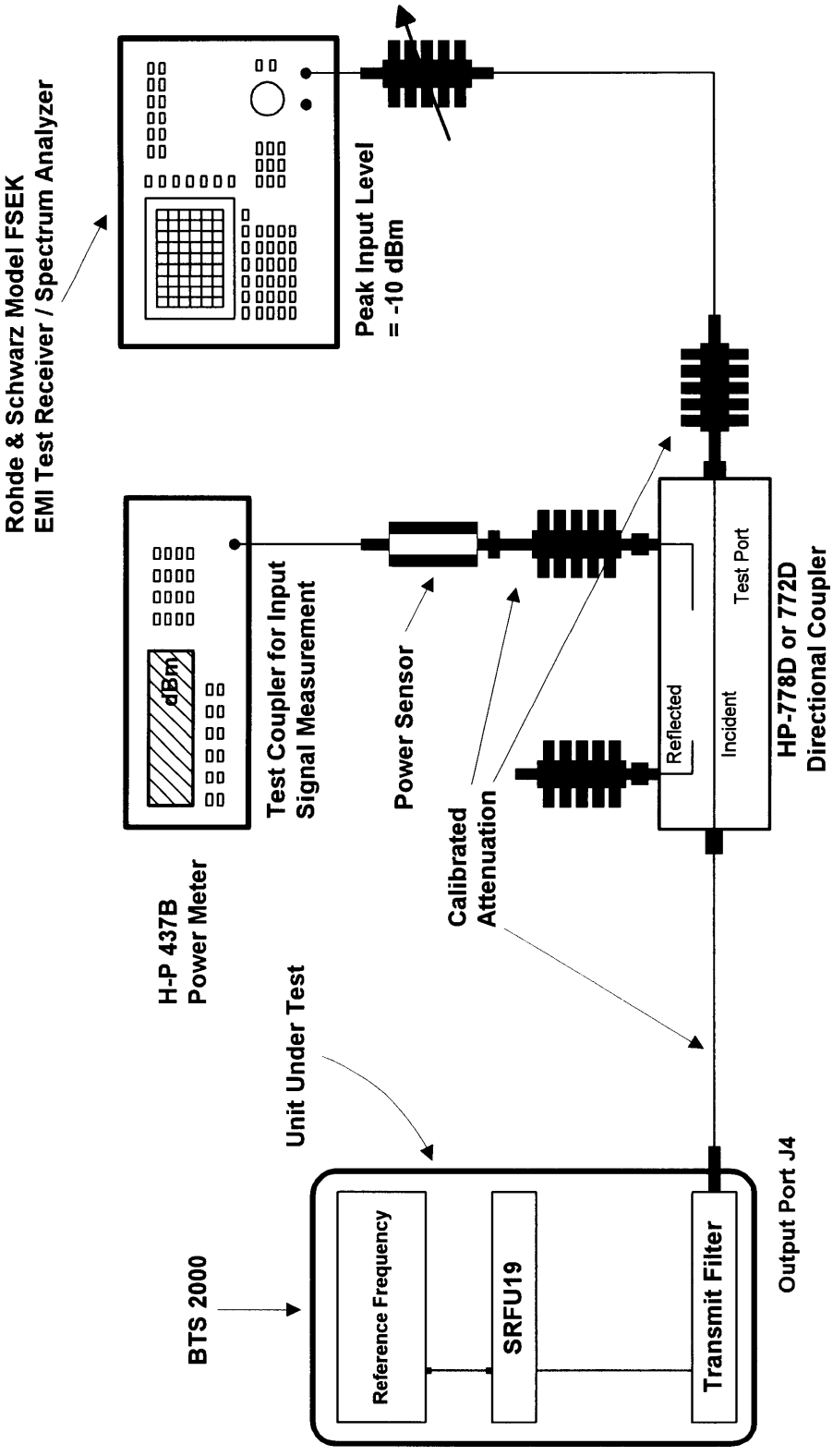
dl(n) = 1930.2 + 0.2*(n - 512)/MHz

ul(n) = 1850.2 + 0.2*(n - 512)/MHz

n	uplink	bl	downlink	n	uplink	bl	downlink	n	uplink	bl	downlink	n	uplink	bl	downlink	n	uplink	bl	downlink	n	uplink	bl	downlink	n	uplink	bl	downlink	n	uplink	bl	downlink
512	1850,2	x	1930,2	550	1857,8	A	1937,8	588	1865,4	D	1945,4	626	1873,0	B	1953,0	664	1880,6	B	1960,6	702	1888,2	E	1968,2	740	1895,8	C	1975,8	778	1903,4	C	1983,4
513	1850,4	A	1930,4	551	1858,0	A	1938,0	589	1865,6	D	1945,6	627	1873,2	B	1953,2	665	1880,8	B	1960,8	703	1888,4	E	1968,4	741	1896,0	C	1976,0	779	1903,6	C	1983,6
514	1850,6	A	1930,6	552	1858,2	A	1938,2	590	1865,8	D	1945,8	628	1873,4	B	1953,4	666	1881,0	B	1961,0	704	1888,6	E	1968,6	742	1896,2	C	1976,2	780	1903,8	C	1983,8
515	1850,8	A	1930,8	553	1858,4	A	1938,4	591	1866,0	D	1946,0	629	1873,6	B	1953,6	667	1881,2	B	1961,2	705	1888,8	E	1968,8	743	1896,4	C	1976,4	781	1904,0	C	1984,0
516	1851,0	A	1931,0	554	1858,6	A	1938,6	592	1866,2	D	1946,2	630	1873,8	B	1953,8	668	1881,4	B	1961,4	706	1889,0	E	1969,0	744	1896,6	C	1976,6	782	1904,2	C	1984,2
517	1851,2	A	1931,2	555	1858,8	A	1938,8	593	1866,4	D	1946,4	631	1874,0	B	1954,0	669	1881,6	B	1961,6	707	1889,2	E	1969,2	745	1896,8	C	1976,8	783	1904,4	C	1984,4
518	1851,4	A	1931,4	556	1859,0	A	1939,0	594	1866,6	D	1946,6	632	1874,2	B	1954,2	670	1881,8	B	1961,8	708	1889,4	E	1969,4	746	1897,0	C	1977,0	784	1904,6	C	1984,6
519	1851,6	A	1931,6	557	1859,2	A	1939,2	595	1866,8	D	1946,8	633	1874,4	B	1954,4	671	1882,0	B	1962,0	709	1889,6	E	1969,6	747	1897,2	C	1977,2	785	1904,8	C	1984,8
520	1851,8	A	1931,8	558	1859,4	A	1939,4	596	1867,0	D	1947,0	634	1874,6	B	1954,6	672	1882,2	B	1962,2	710	1889,8	x	1969,8	748	1897,4	C	1977,4	786	1905,0	C	1985,0
521	1852,0	A	1932,0	559	1859,6	A	1939,6	597	1867,2	D	1947,2	635	1874,8	B	1954,8	673	1882,4	B	1962,4	711	1890,0	x	1970,0	749	1897,6	C	1977,6	787	1905,2	C	1985,2
522	1852,2	A	1932,2	560	1859,8	A	1939,8	598	1867,4	D	1947,4	636	1875,0	B	1955,0	674	1882,6	B	1962,6	712	1890,2	x	1970,2	750	1897,8	C	1977,8	788	1905,4	C	1985,4
523	1852,4	A	1932,4	561	1860,0	A	1940,0	599	1867,6	D	1947,6	637	1875,2	B	1955,2	675	1882,8	B	1962,8	713	1890,4	F	1970,4	751	1898,0	C	1978,0	789	1905,6	C	1985,6
524	1852,6	A	1932,6	562	1860,2	A	1940,2	600	1867,8	D	1947,8	638	1875,4	B	1955,4	676	1883,0	B	1963,0	714	1890,6	F	1970,6	752	1898,2	C	1978,2	790	1905,8	C	1985,8
525	1852,8	A	1932,8	563	1860,4	A	1940,4	601	1868,0	D	1948,0	639	1875,6	B	1955,6	677	1883,2	B	1963,2	715	1890,8	F	1970,8	753	1898,4	C	1978,4	791	1906,0	C	1986,0
526	*1853,0*	A	1933,0	564	1860,6	A	1940,6	602	1868,2	D	1948,2	640	1875,8	B	1955,8	678	1883,4	B	1963,4	716	1891,0	F	1971,0	754	1898,6	C	1978,6	792	1906,2	C	1986,2
527	1853,2	A	1933,2	565	1860,8	A	1940,8	603	1868,4	D	1948,4	641	1876,0	B	1956,0	679	1883,6	B	1963,6	717	1891,2	F	1971,2	755	1898,8	C	1978,8	793	1906,4	C	1986,4
528	1853,4	A	1933,4	566	1861,0	A	1941,0	604	1868,6	D	1948,6	642	1876,2	B	1956,2	680	1883,8	B	1963,8	718	1891,4	F	1971,4	756	1899,0	C	1979,0	794	1906,6	C	1986,6
529	1853,6	A	1933,6	567	1861,2	A	1941,2	605	1868,8	D	1948,8	643	1876,4	B	1956,4	681	1884,0	B	1964,0	719	1891,6	F	1971,6	757	1899,2	C	1979,2	795	1906,8	C	1986,8
530	1853,8	A	1933,8	568	1861,4	A	1941,4	606	1869,0	D	1949,0	644	1876,6	B	1956,6	682	1884,2	B	1964,2	720	1891,8	F	1971,8	758	1899,4	C	1979,4	796	1907,0	C	1987,0
531	1854,0	A	1934,0	569	1861,6	A	1941,6	607	1869,2	D	1949,2	645	1876,8	B	1956,8	683	1884,4	B	1964,4	721	1892,0	F	1972,0	759	1899,6	C	1979,6	797	1907,2	C	1987,2
532	1854,2	A	1934,2	570	1861,8	A	1941,8	608	1869,4	D	1949,4	646	1877,0	B	1957,0	684	1884,6	B	1964,6	722	1892,2	F	1972,2	760	1899,8	C	1979,8	798	1907,4	C	1987,4
533	1854,4	A	1934,4	571	1862,0	A	1942,0	609	1869,6	D	1949,6	647	1877,2	B	1957,2	685	1884,8	x	1964,8	723	1892,4	F	1972,4	761	1900,0	C	1980,0	799	1907,6	C	1987,6
534	1854,6	A	1934,6	572	1862,2	A	1942,2	610	1869,8	x	1949,8	648	1877,4	B	1957,4	686	1885,0	x	1965,0	724	1892,6	F	1972,6	762	1900,2	C	1980,2	800	1907,8	C	1987,8
535	1854,8	A	1934,8	573	1862,4	A	1942,4	611	1870,0	x	1950,0	649	1877,6	B	1957,6	687	1885,2	x	1965,2	725	1892,8	F	1972,8	763	1900,4	C	1980,4	801	1908,0	C	1988,0
536	1855,0	A	1935,0	574	1862,6	A	1942,6	612	1870,2	x	1950,2	650	1877,8	B	1957,8	688	1885,4	E	1965,4	726	1893,0	F	1973,0	764	1900,6	C	1980,6	802	1908,2	C	1988,2
537	1855,2	A	1935,2	575	1862,8	A	1942,8	613	1870,4	B	1950,4	651	1878,0	B	1958,0	689	1885,6	E	1965,6	727	1893,2	F	1973,2	765	1900,8	C	1980,8	803	1908,4	C	1988,4
538	1855,4	A	1935,4	576	1863,0	A	1943,0	614	1870,6	B	1950,6	652	1878,2	B	1958,2	690	1885,8	E	1965,8	728	1893,4	F	1973,4	766	1901,0	C	1981,0	804	1908,6	C	1988,6
539	1855,6	A	1935,6	577	1863,2	A	1943,2	615	1870,8	B	1950,8	653	1878,4	B	1958,4	691	1886,0	E	1966,0	729	1893,6	F	1973,6	767	1901,2	C	1981,2	805	1908,8	C	1988,8
540	1855,8	A	1935,8	578	1863,4	A	1943,4	616	1871,0	B	1951,0	654	1878,6	B	1958,6	692	1886,2	E	1966,2	730	1893,8	F	1973,8	768	1901,4	C	1981,4	806	1909,0	C	1989,0
541	1856,0	A	1936,0	579	1863,6	A	1943,6	617	1871,2	B	1951,2	655	1878,8	B	1958,8	693	1886,4	E	1966,4	731	1894,0	F	1974,0	769	1901,6	C	1981,6	807	1909,2	C	1989,2
542	1856,2	A	1936,2	580	1863,8	A	1943,8	618	1871,4	B	1951,4	656	1879,0	B	1959,0	694	1886,6	E	1966,6	732	1894,2	F	1974,2	770	1901,8	C	1981,8	808	1909,4	C	1989,4
543	1856,4	A	1936,4	581	1864,0	A	1944,0	619	1871,6	B	1951,6	657	1879,2	B	1959,2	695	1886,8	E	1966,8	733	1894,4	F	1974,4	771	1902,0	C	1982,0	809	1909,6	C	1989,6
544	1856,6	A	1936,6	582	1864,2	A	1944,2	620	1871,8	B	1951,8	658	1879,4	B	1959,4	696	1887,0	E	1967,0	734	1894,6	F	1974,6	772	1902,2	C	1982,2	810	1909,8	x	1989,8
545	1856,8	A	1936,8	583	1864,4	A	1944,4	621	1872,0	B	1952,0	659	1879,6	B	1959,6	697	1887,2	E	1967,2	735	1894,8	x	1974,8	773	1902,4	C	1982,4				
546	1857,0	A	1937,0	584	1864,6	A	1944,6	622	1872,2	B	1952,2	660	1879,8	B	1959,8	698	1887,4	E	1967,4	736	1895,0	x	1975,0	774	1902,6	C	1982,6				
547	1857,2	A	1937,2	585	1864,8	x	1944,8	623	1872,4	B	1952,4	661	1880,0	B	1960,0	699	1887,6	E	1967,6	737	1895,2	x	1975,2	775	1902,8	C	1982,8				
548	1857,4	A	1937,4	586	1865,0	x	1945,0	624	1872,6	B	1952,6	662	1880,2	B	1960,2	700	1887,8	E	1967,8	738	1895,4	C	1975,4	776	1903,0	C	1983,0				
549	1857,6	A	1937,6	587	1865,2	x	1945,2	625	1872,8	B	1952,8	663	1880,4	B	1960,4	701	1888,0	E	1968,0	739	1895,6	C	1975,6	777	1903,2	C	1983,2				

Note:. Channels high lighted are **not available for GSM1900**, in accordance with **FCC Part 24**

Figure 4A. TEST CONFIGURATION FOR CONDUCTED SPURIOUS



MEASUREMENT: 4

MEASUREMENT

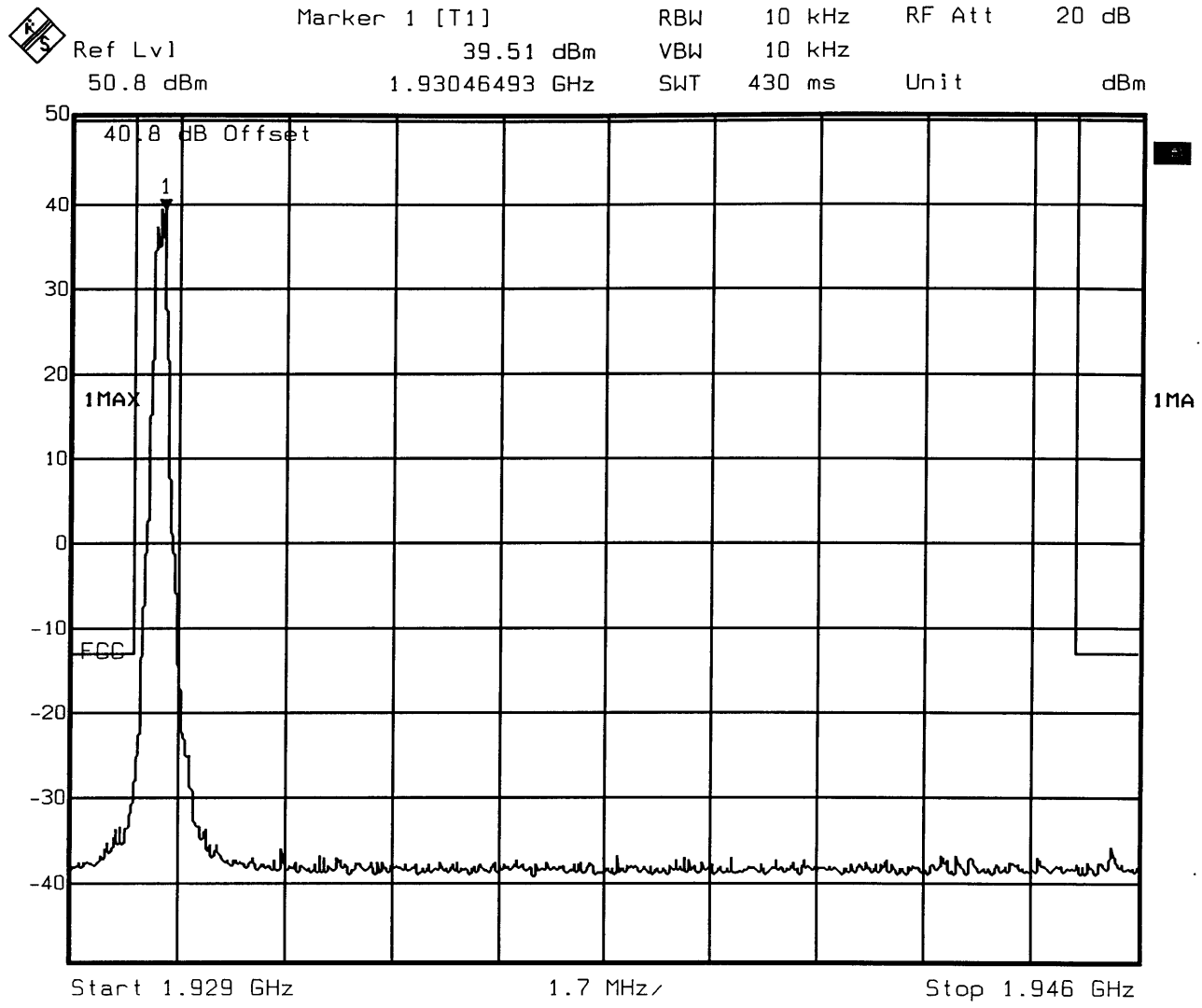
OF SPURIOUS EMISSIONS

AT ANTENNA TERMINALS

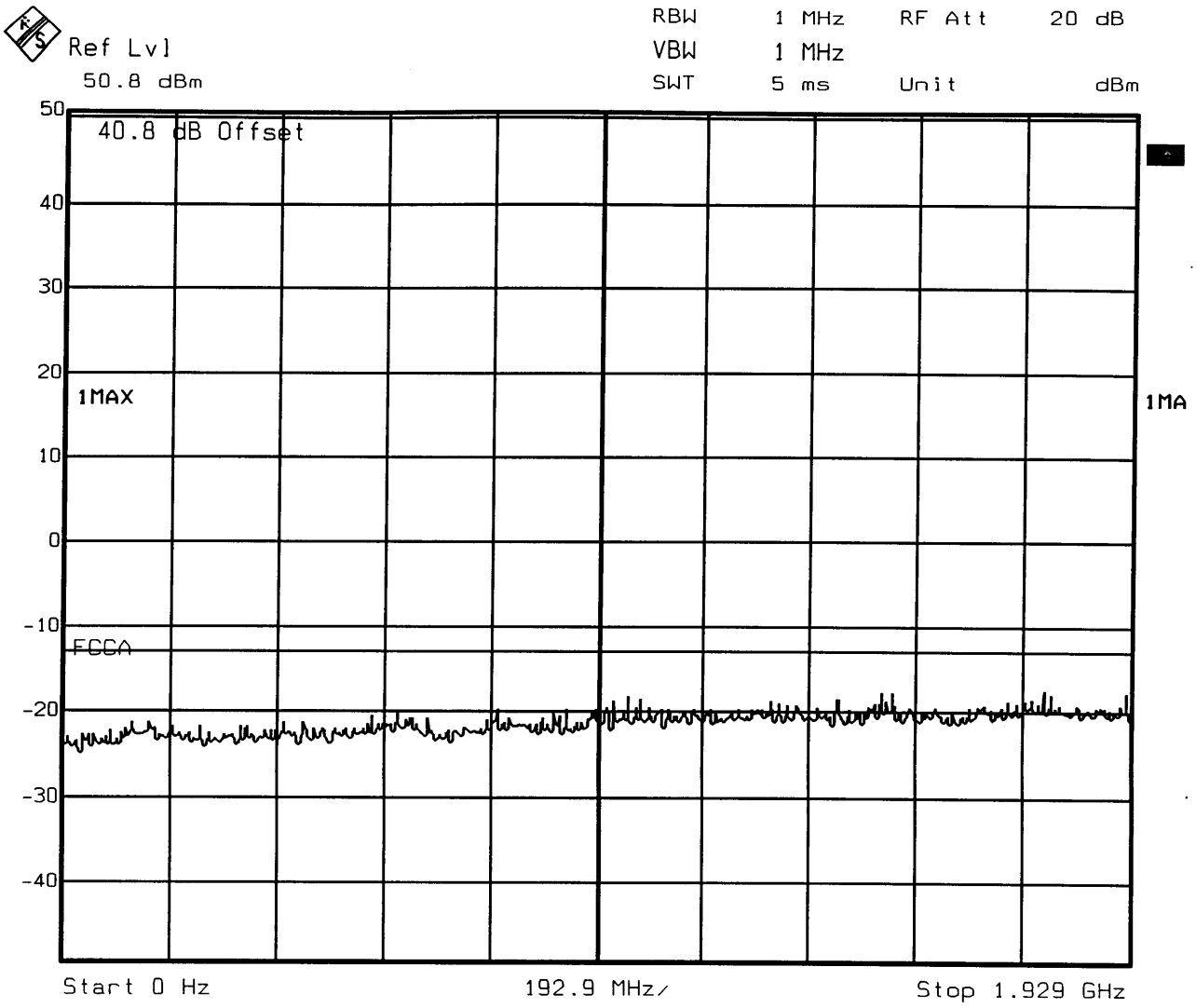
BLOCK A

(1930 – 1945 MHz)

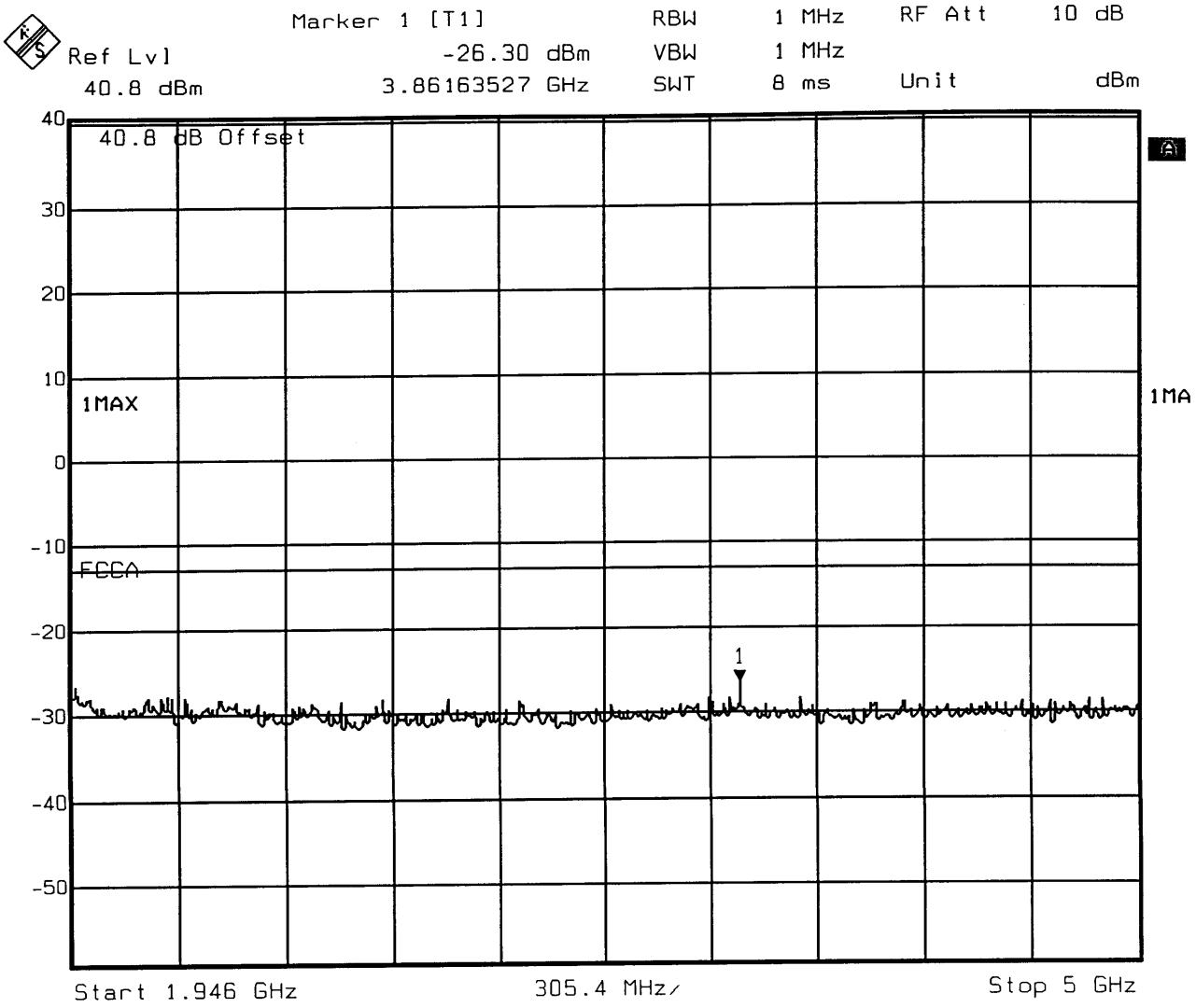
Left Edge: 1930.6 MHz (Channel 513)
Right Edge: 1944.6 MHz (Channel 584)



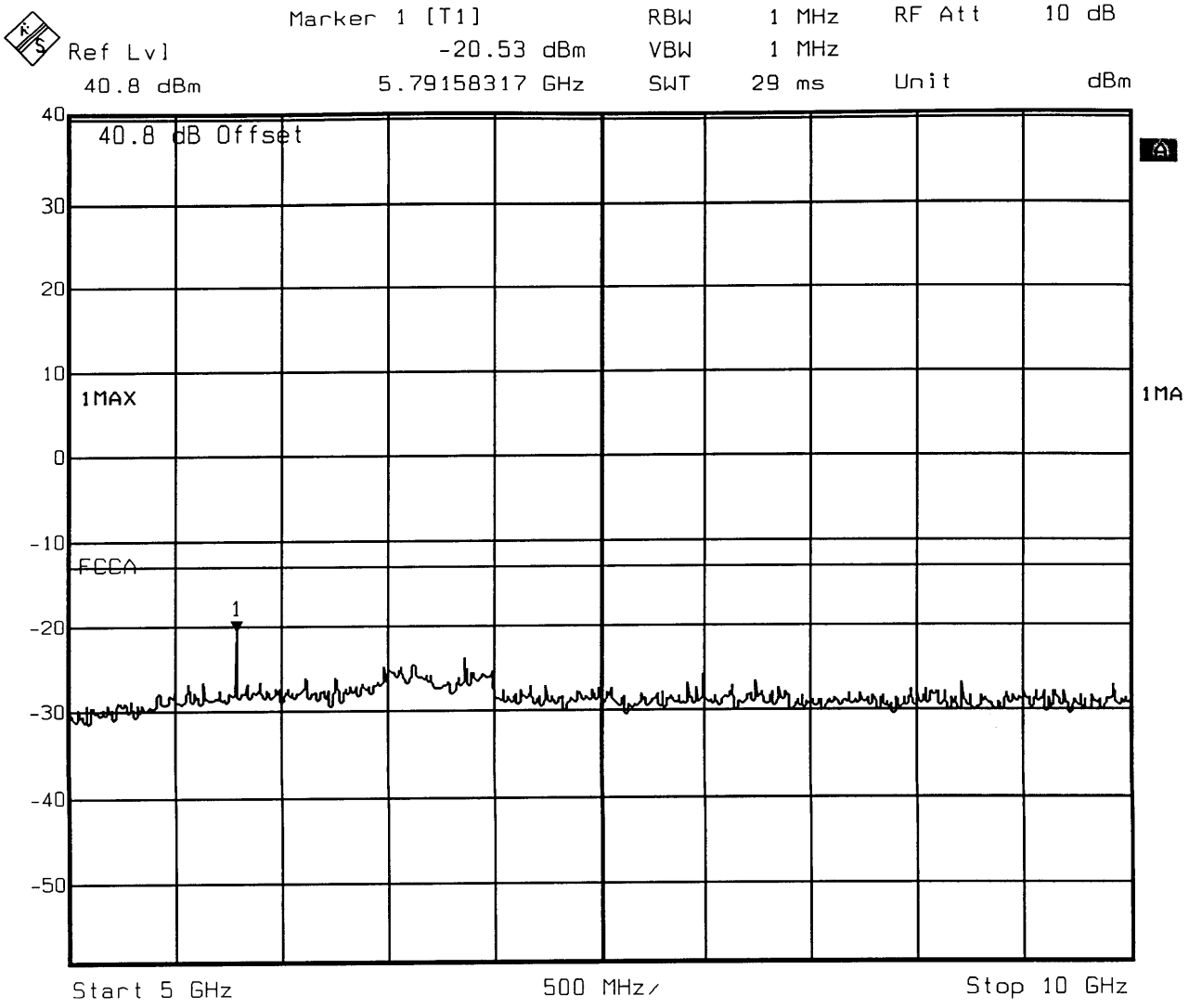
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block A, Ch 513. TX Power: 44.4dBm.
Date: 26.JUL.1999 22:53:17



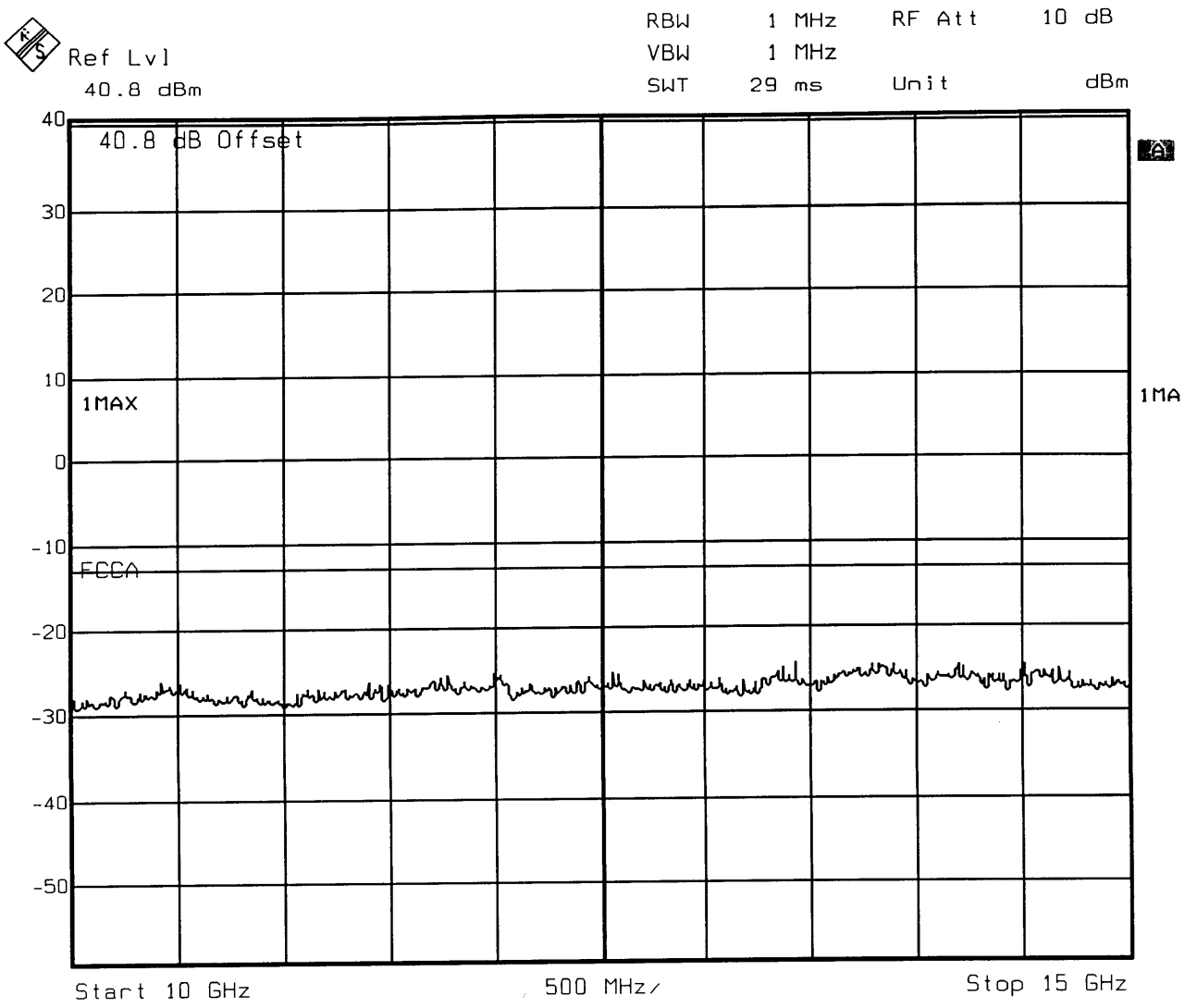
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block A, Channel: 513. TX Power 44.4 dBm.
Date: 27.JUL.1999 15:33:08



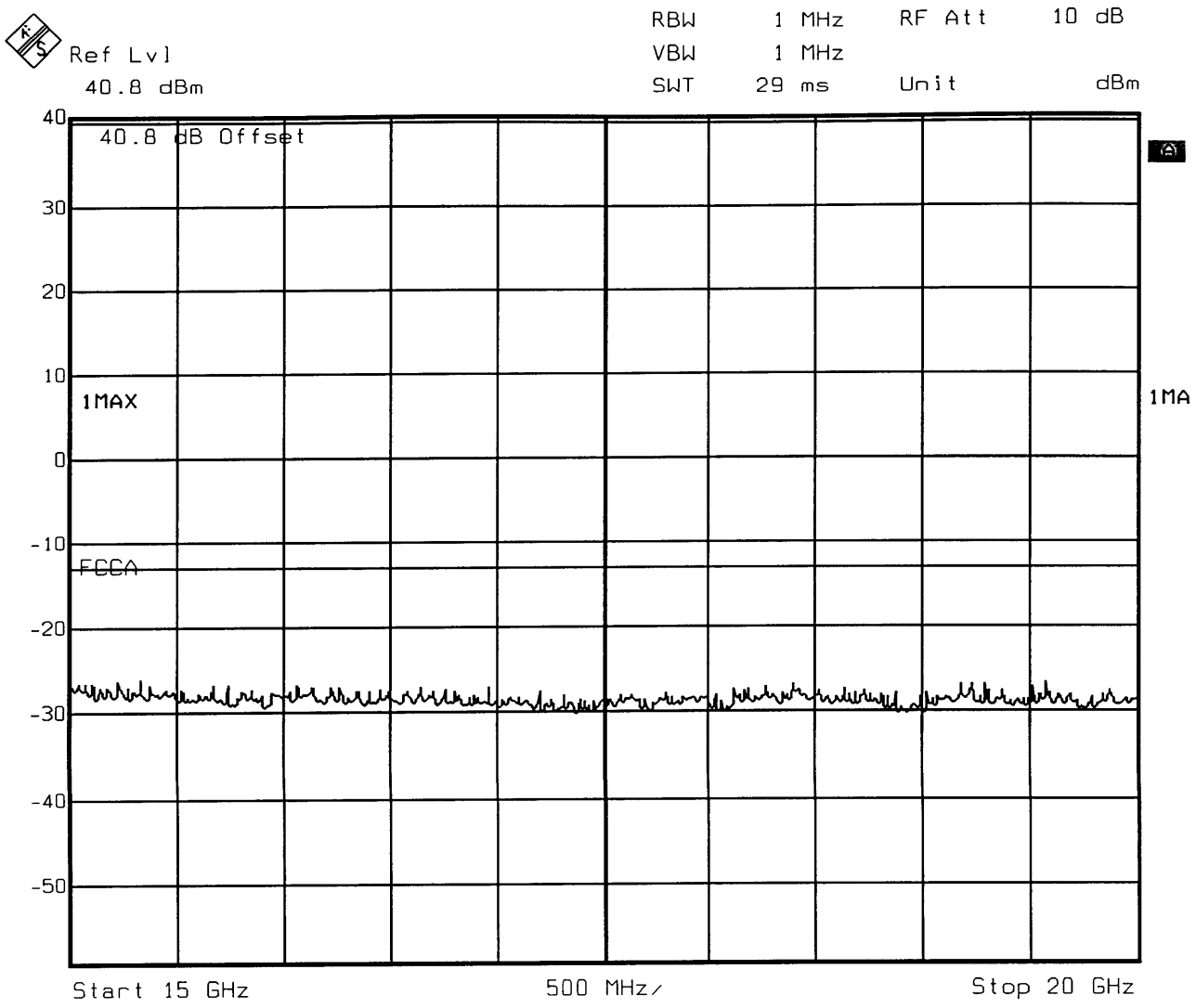
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block A Channel 513. TX Power: 44.4 dBm.
Date: 27.JUL.1999 22:25:39



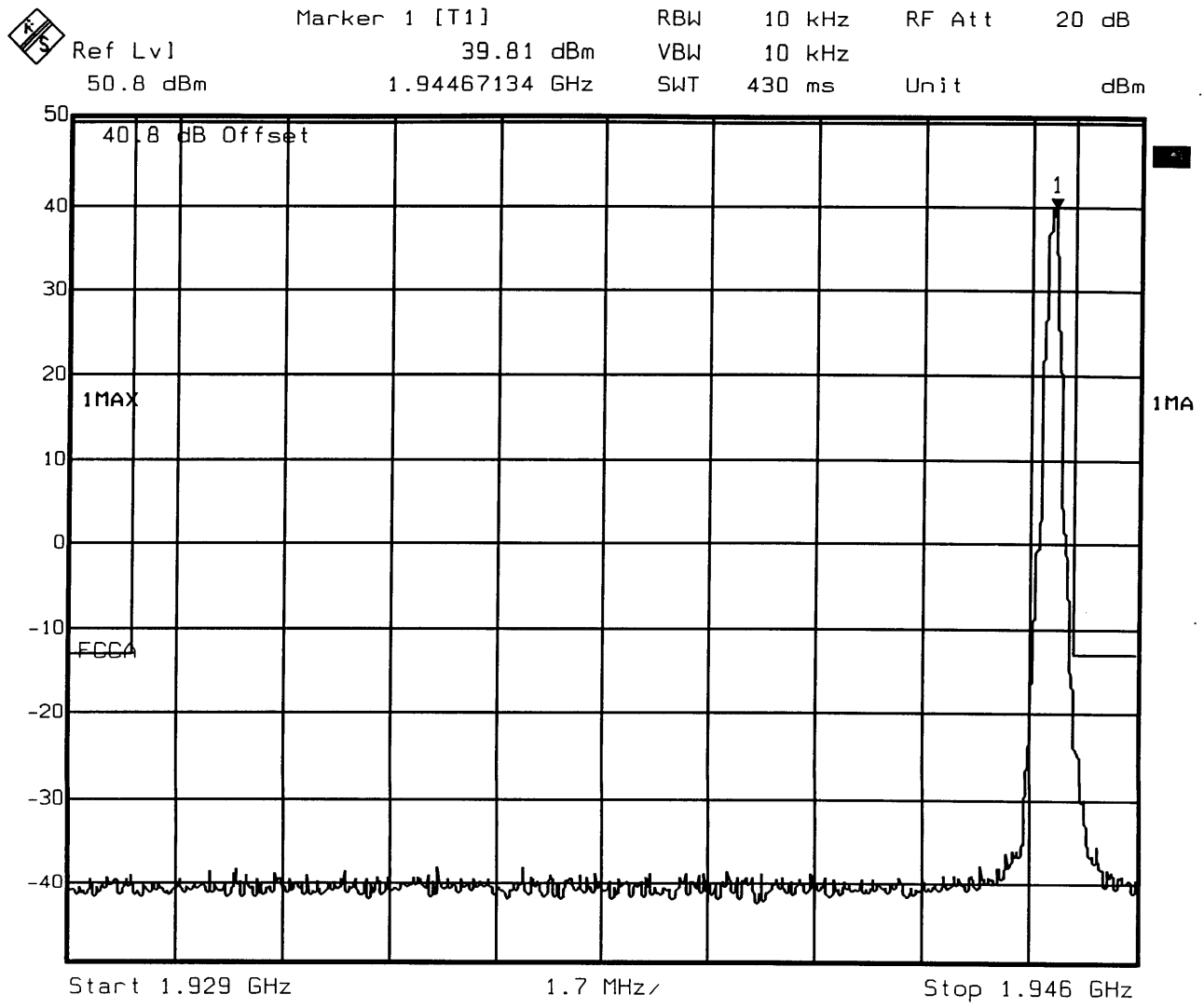
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block A Channel 513. TX Power: 44.4 dBm.
Date: 27.JUL.1999 21:26:08



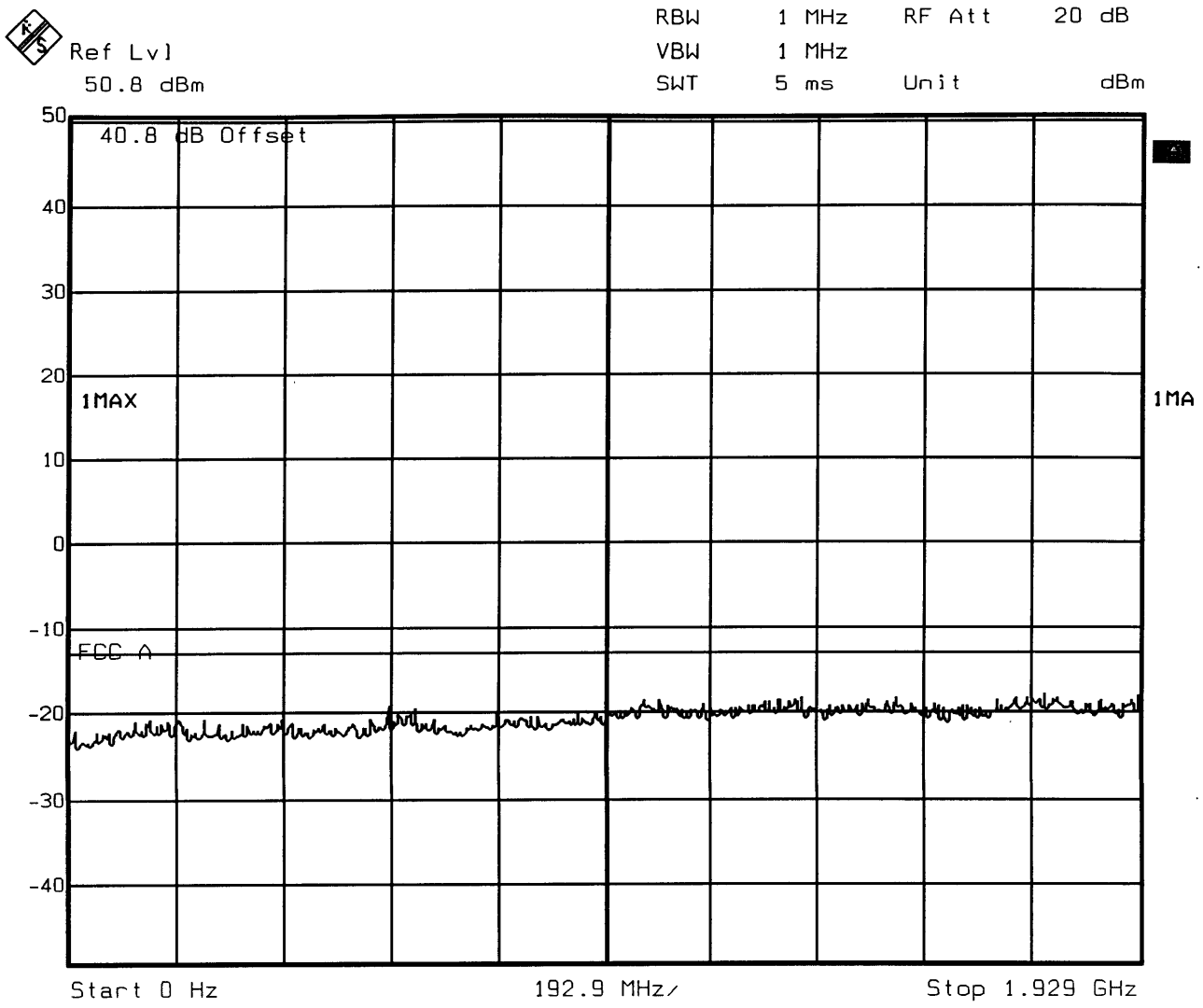
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block A Channel 513. TX Power: 44.4 dBm.
Date: 27.JUL.1999 21:24:00



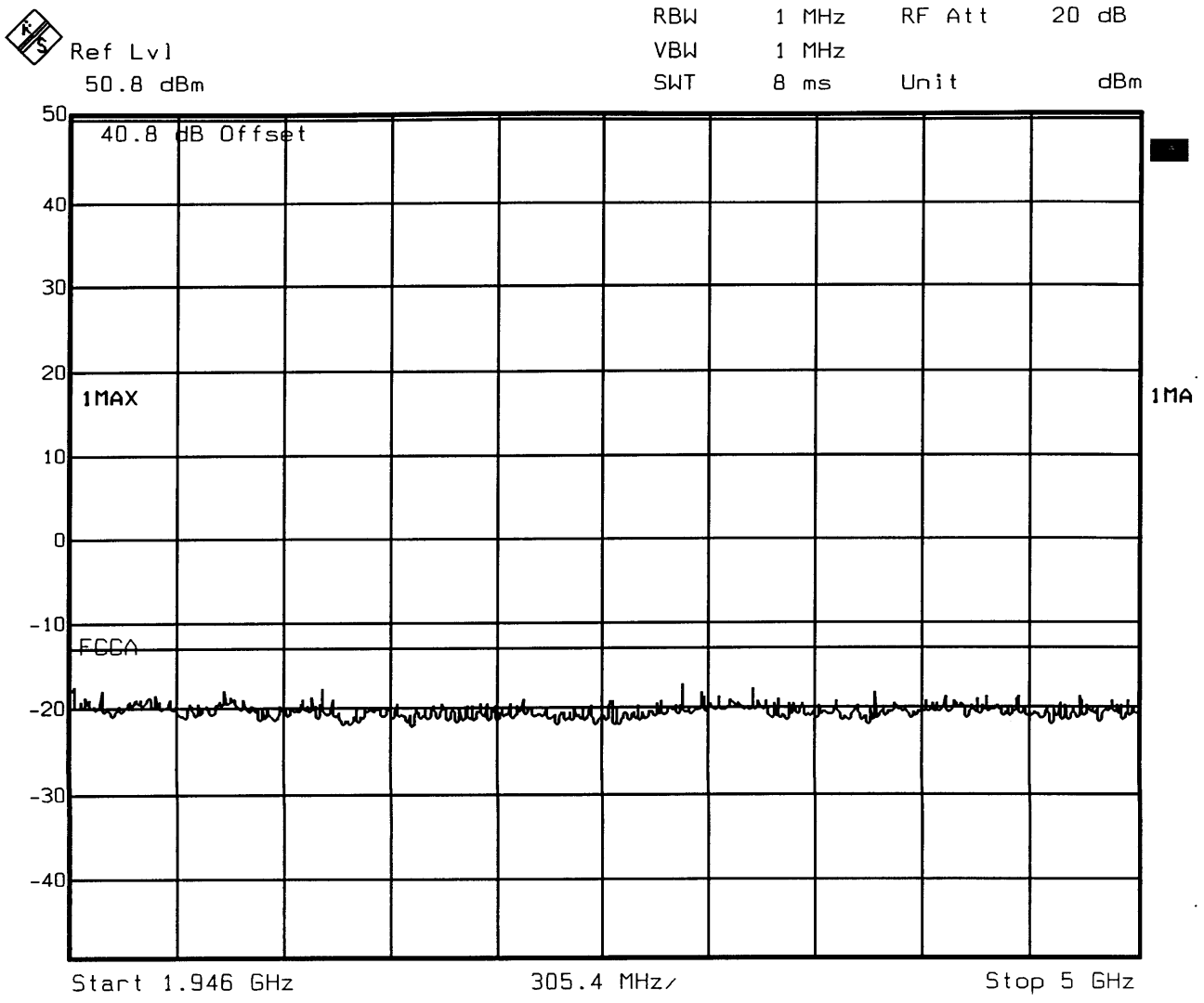
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block A Channel 513. TX Power: 44.4 dBm.
Date: 27.JUL.1999 21:22:55



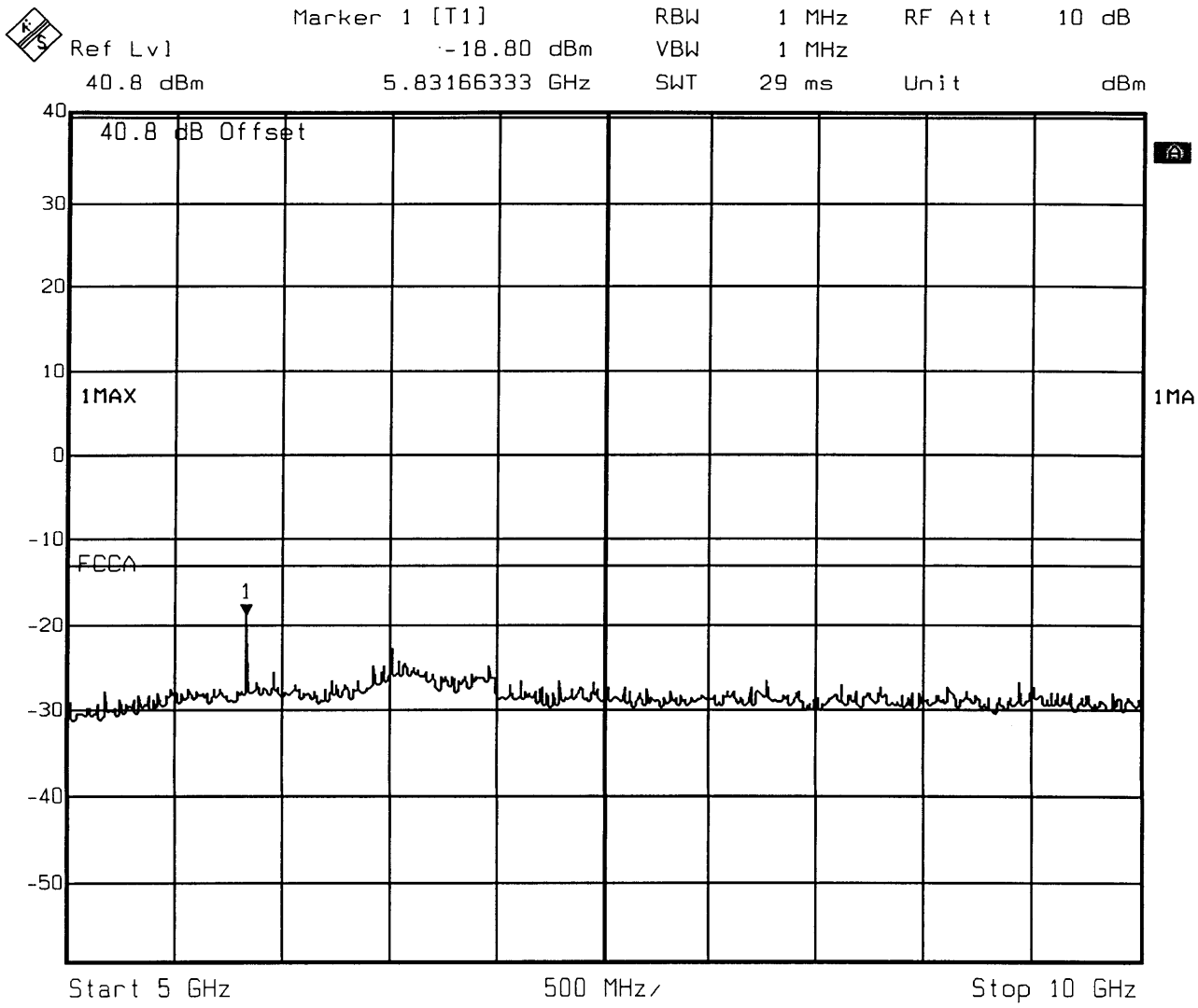
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block A, Channel: 584. TX Power 44.4 dBm.
Date: 27.JUL.1999 15:06:42



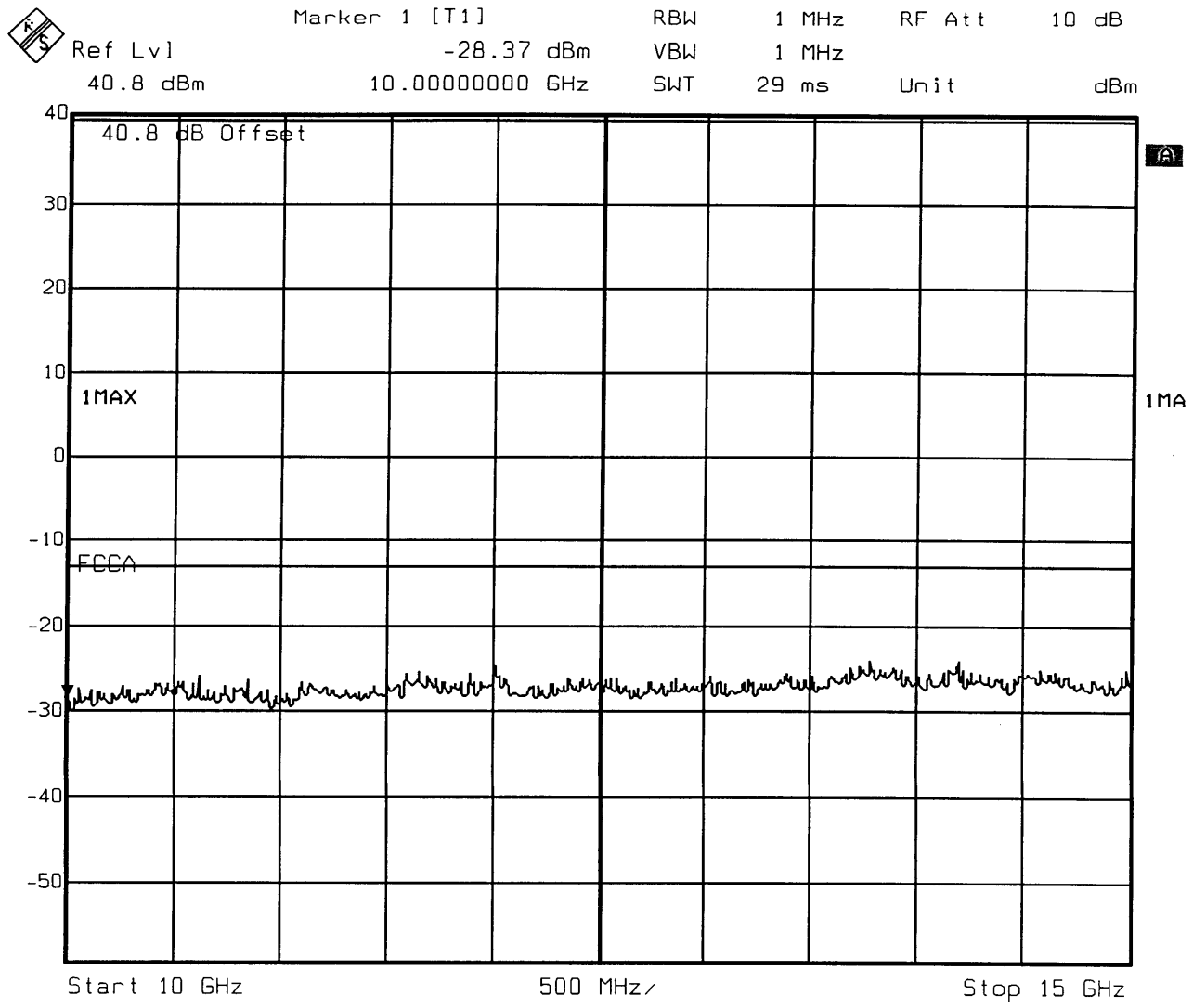
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block A, Channel: 584. TX Power 44.4 dBm.
Date: 27.JUL.1999 15:19:01



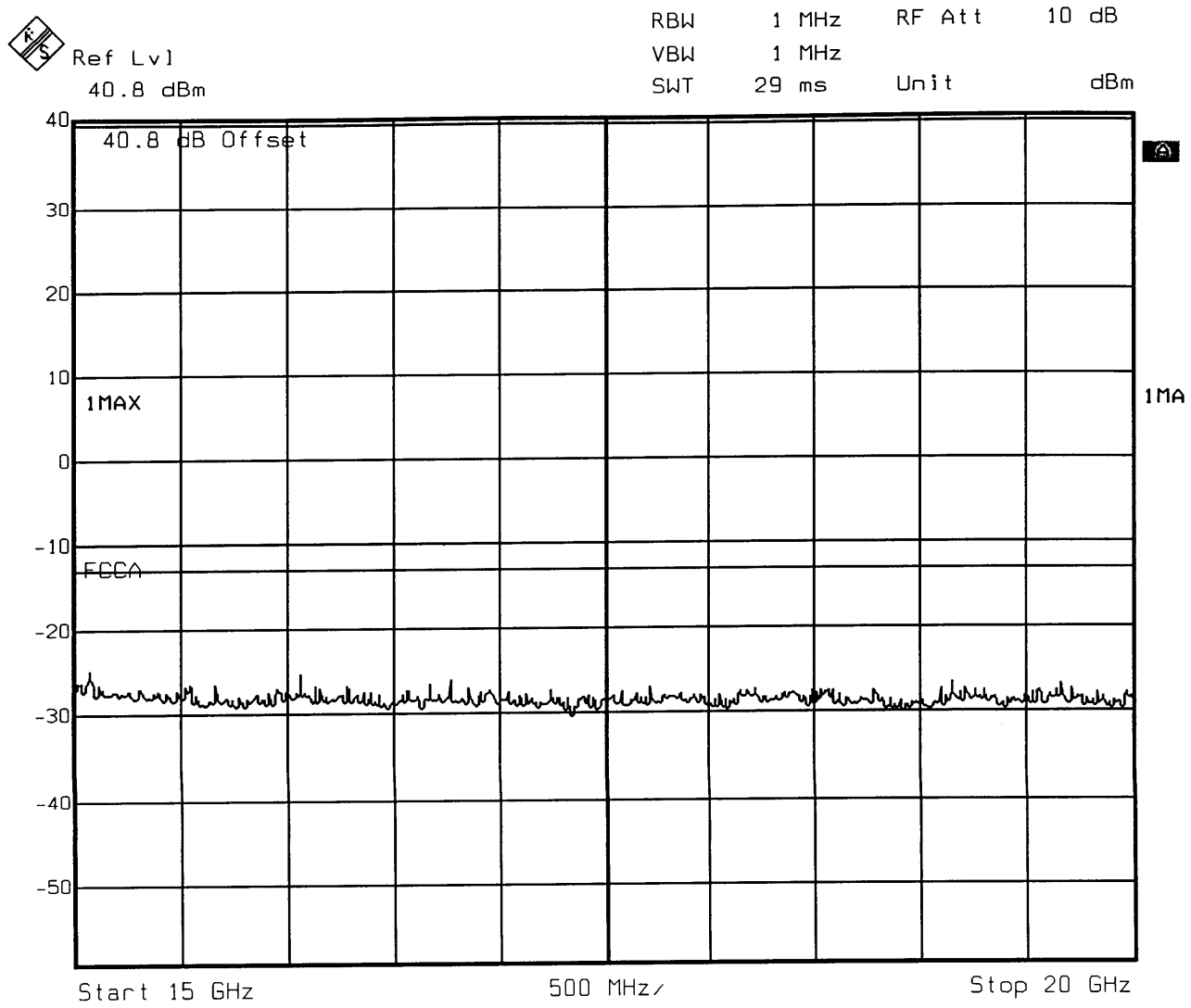
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block A, Channel: 584. TX Power 44.4 dBm.
Date: 27.JUL.1999 15:37:49



Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block A Channel 584. TX Power: 44.4 dBm.
Date: 27.JUL.1999 21:17:08



Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block A Channel 584. TX Power: 44.4 dBm.
Date: 27.JUL.1999 21:19:27



Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block A Channel 584. TX Power: 44.4 dBm.
Date: 27.JUL.1999 21:21:27

MEASUREMENT: 4

MEASUREMENT

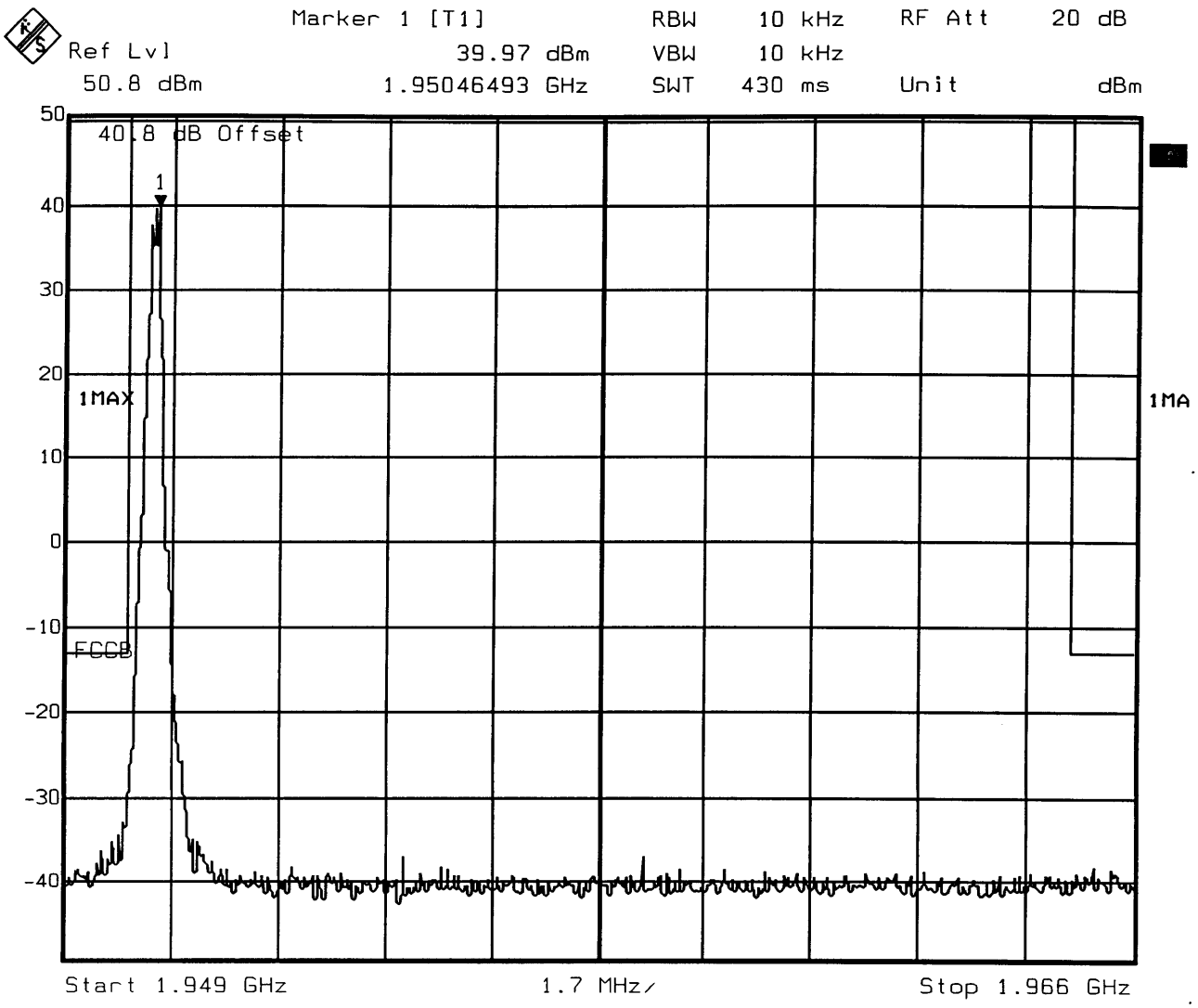
OF SPURIOUS EMISSIONS

AT ANTENNA TERMINALS

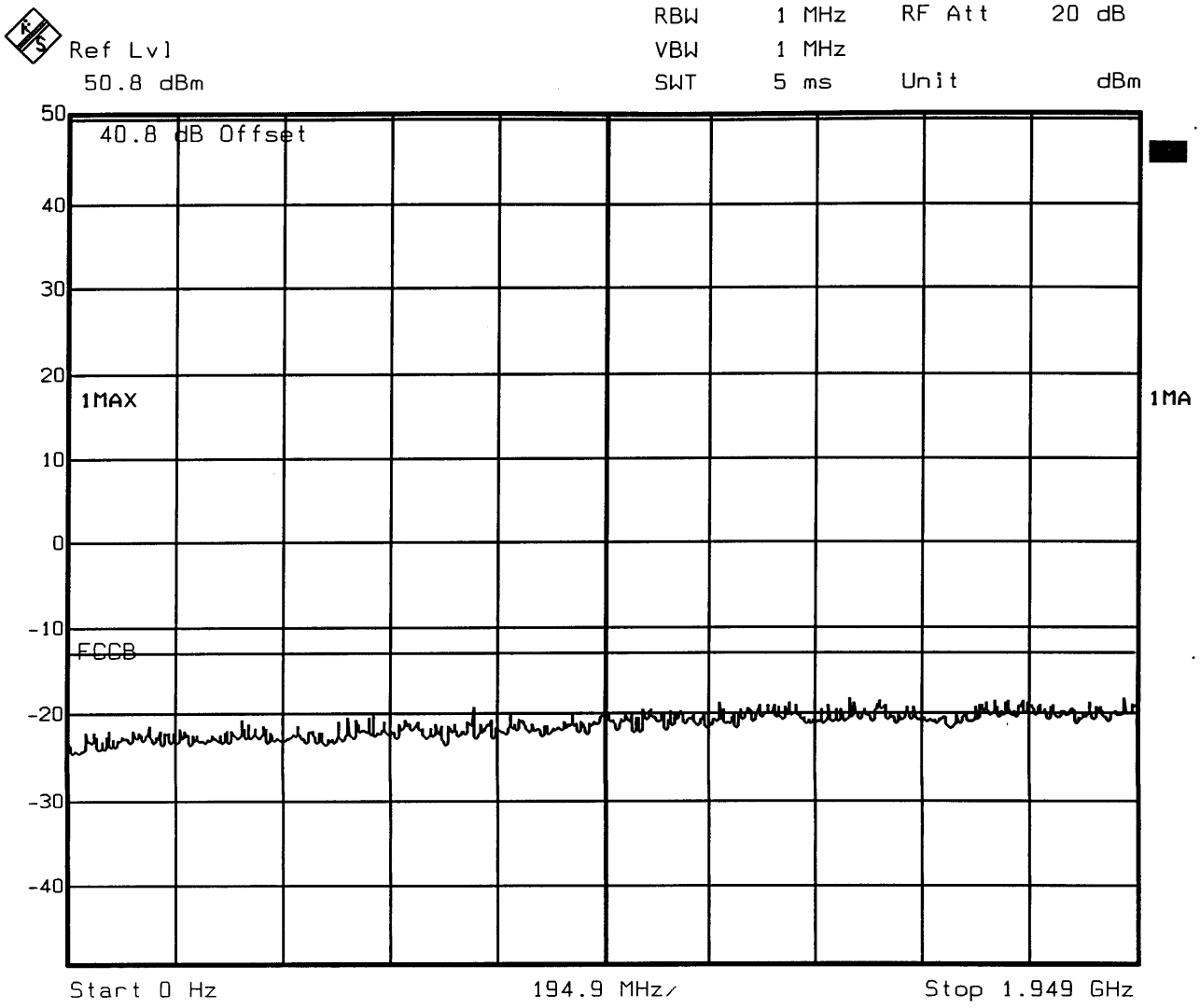
BLOCK B

(1950 – 1965 MHz)

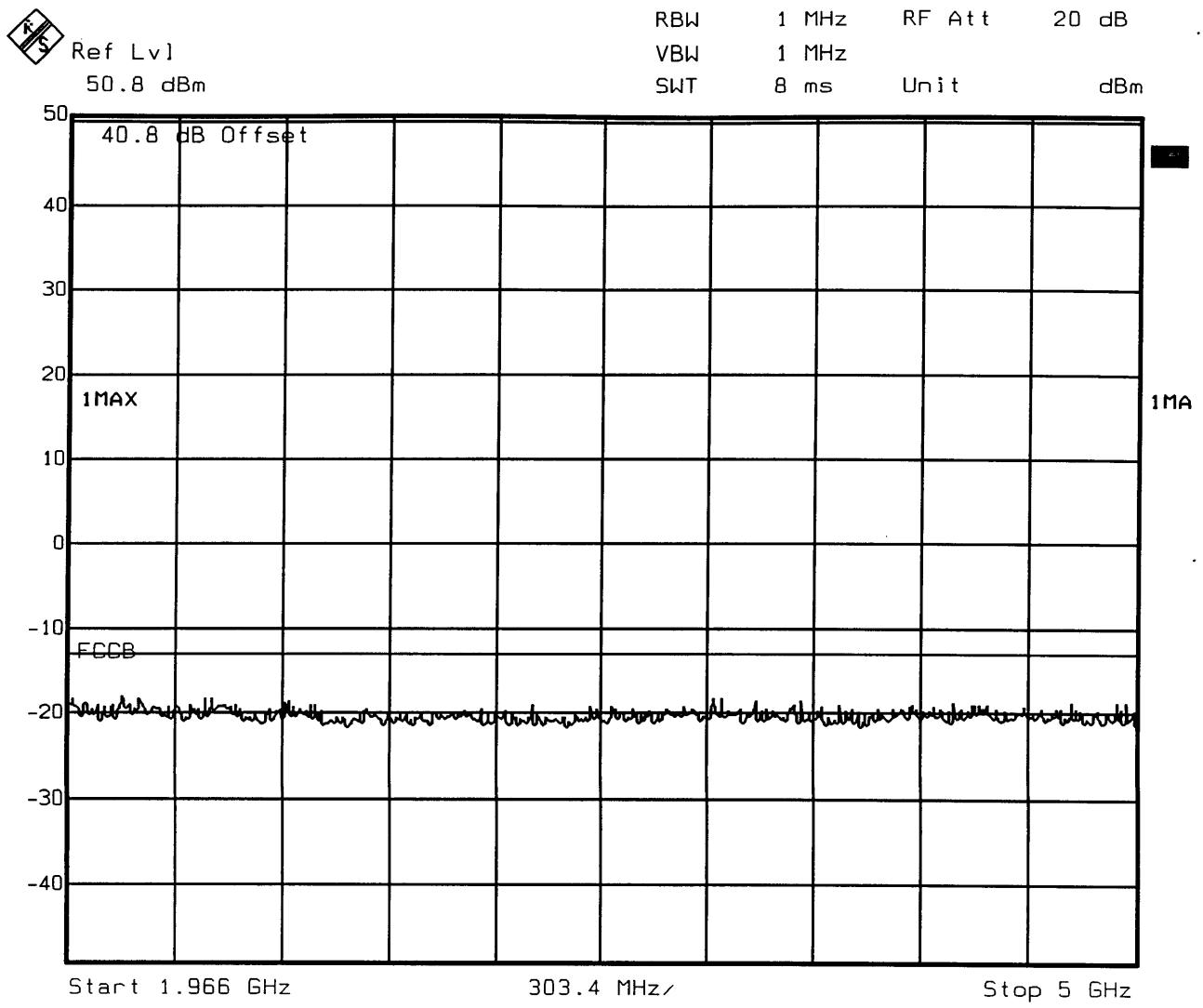
Left Edge: 1950.4 MHz (Channel 613)
Right Edge: 1964.6 MHz (Channel 684)



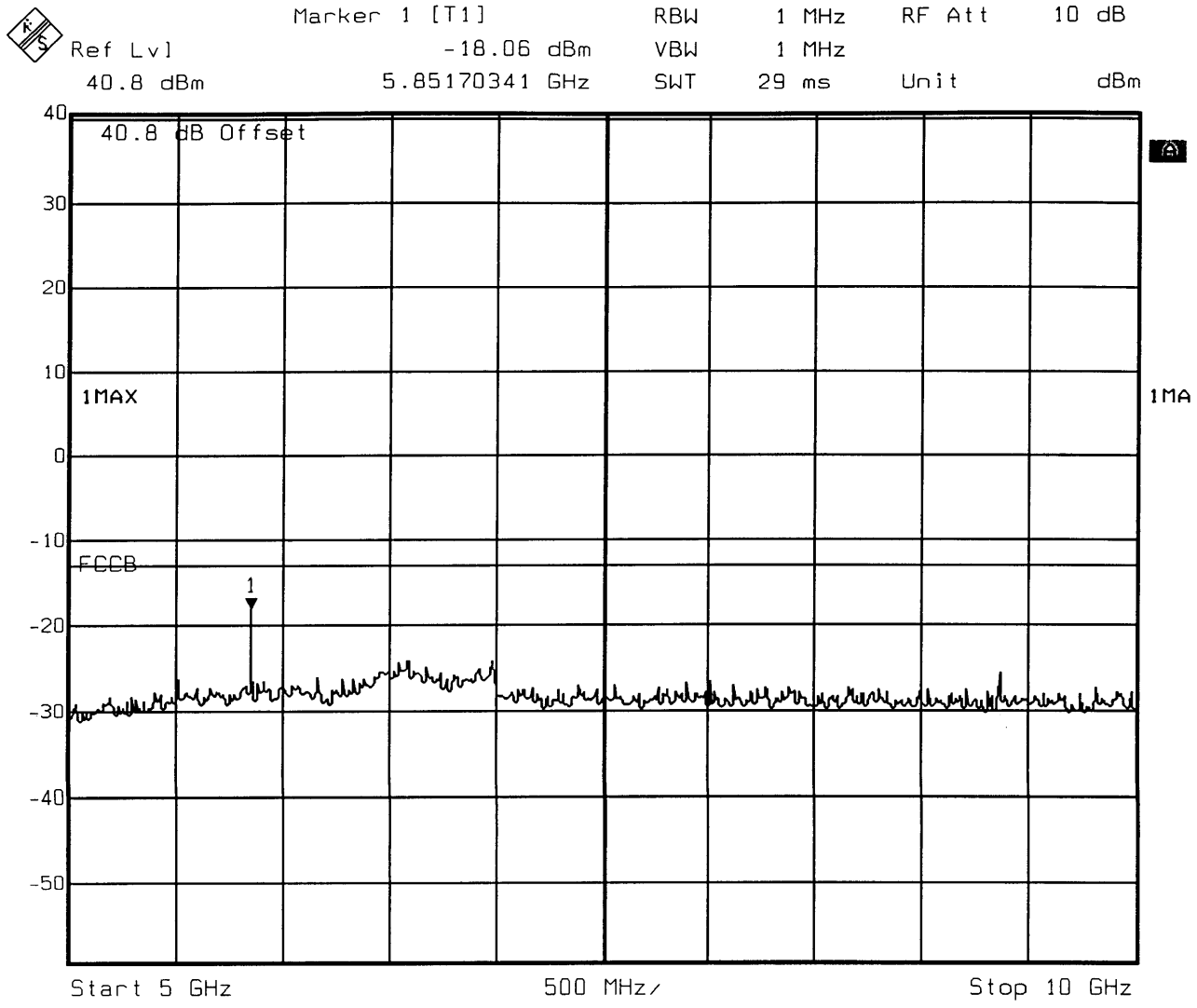
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block B, Channel: 613. TX Power 44.4 dBm.
Date: 27.JUL.1999 16:33:15



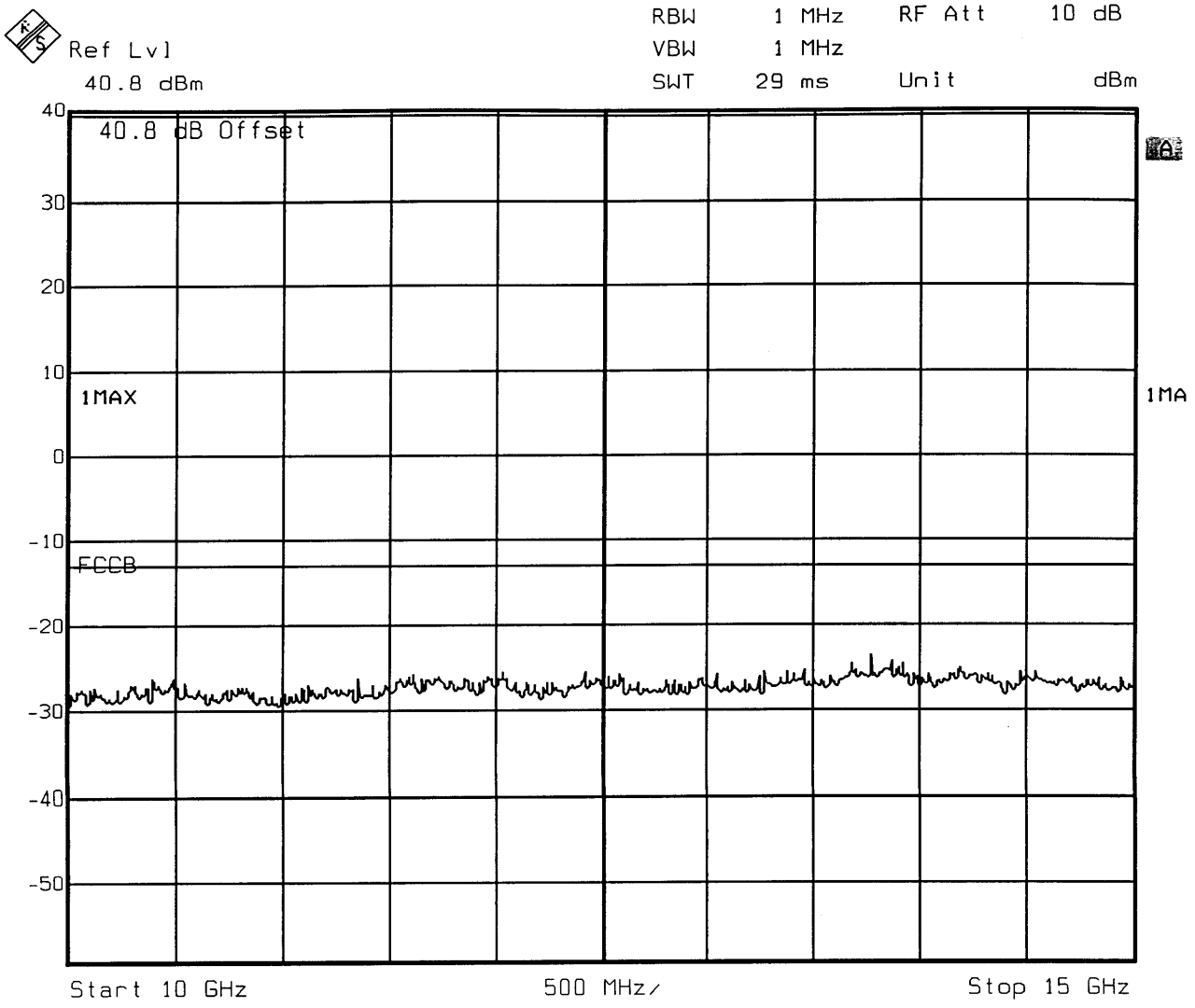
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block B, Channel: 613. TX Power 44.4 dBm.
Date: 27.JUL.1999 16:21:53



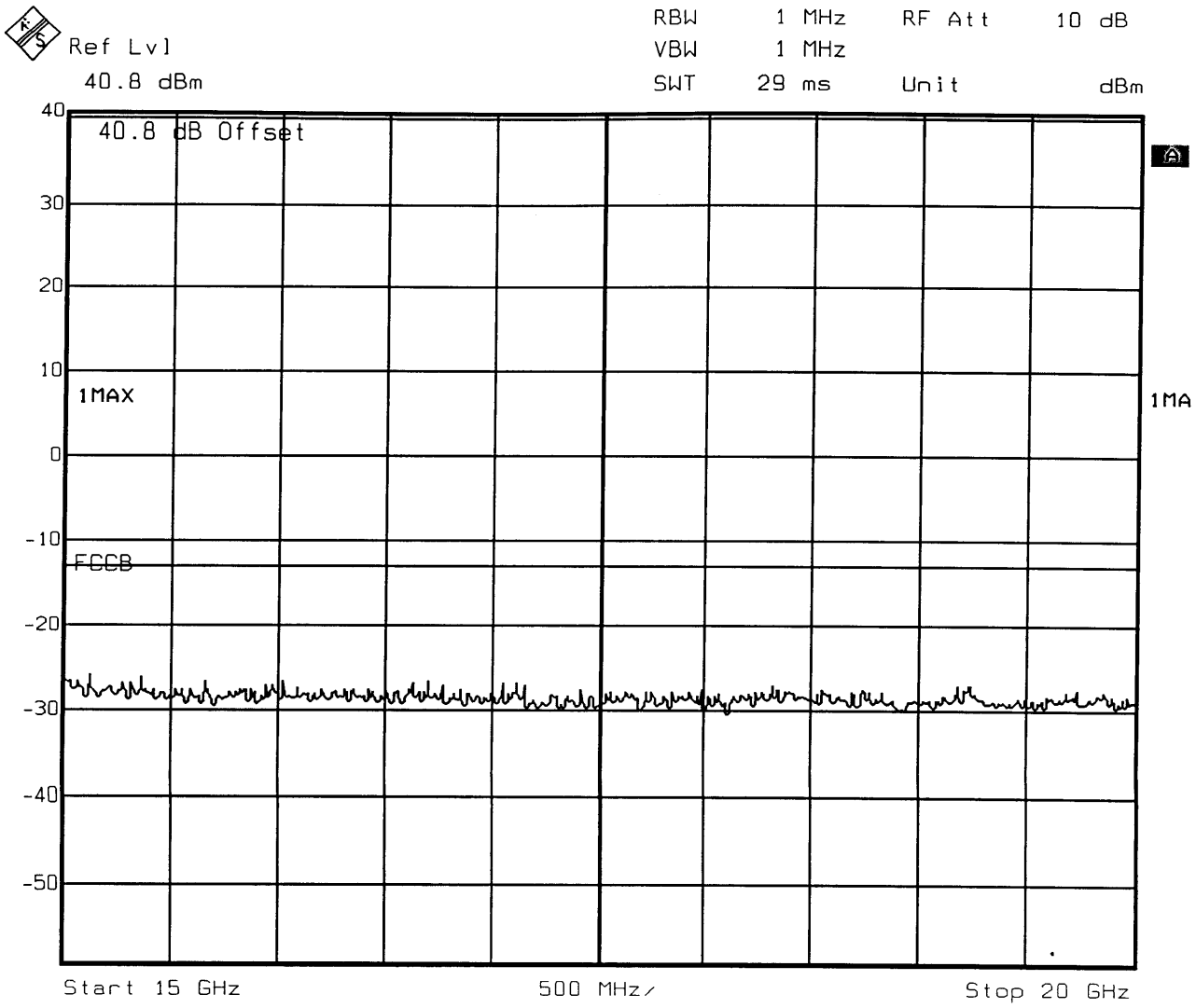
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block B, Channel: 613. TX Power 44.4 dBm.
Date: 27.JUL.1999 16:36:56



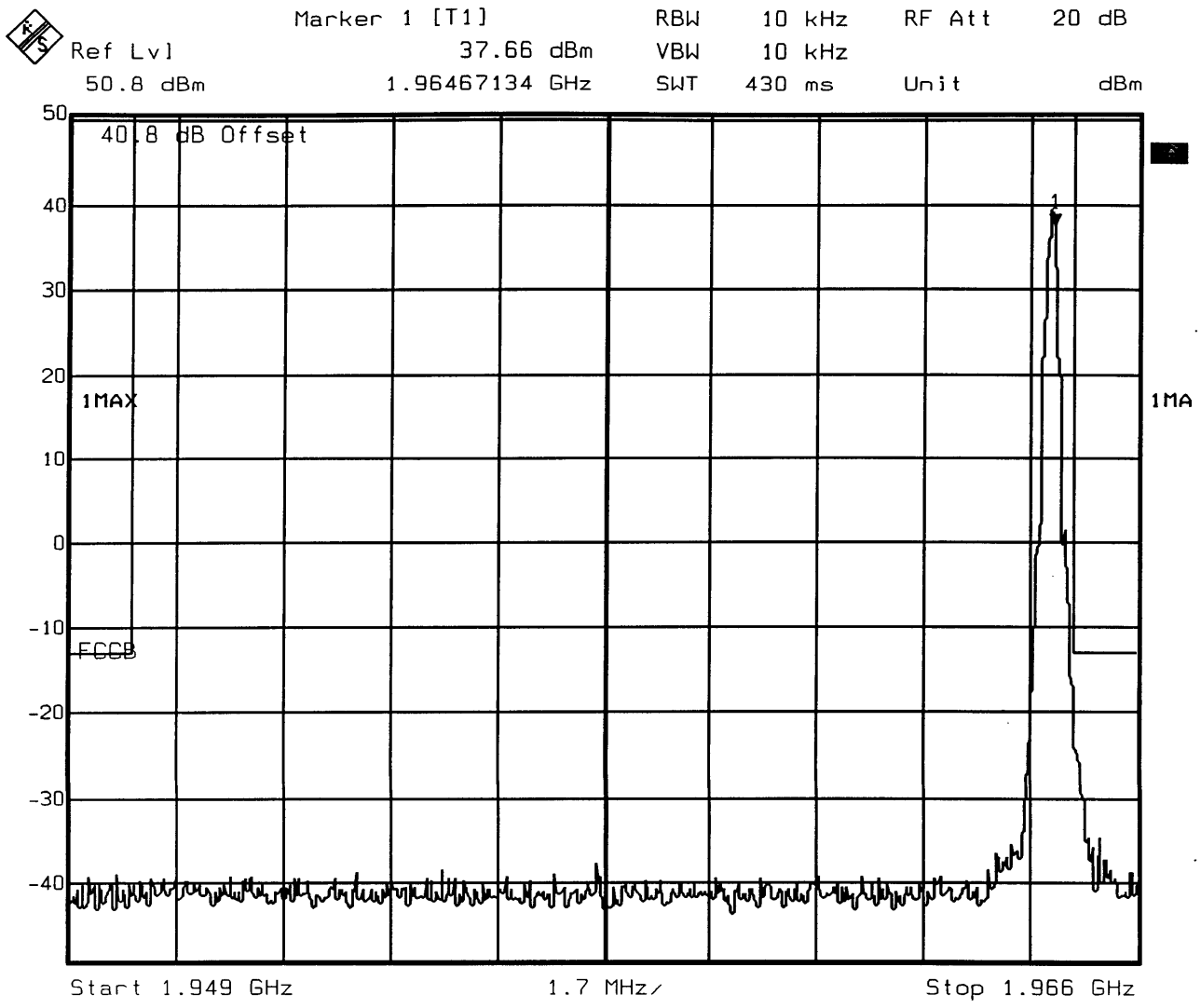
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block B Channel 613. TX Power: 44.4 dBm.
Date: 27.JUL.1999 20:59:53



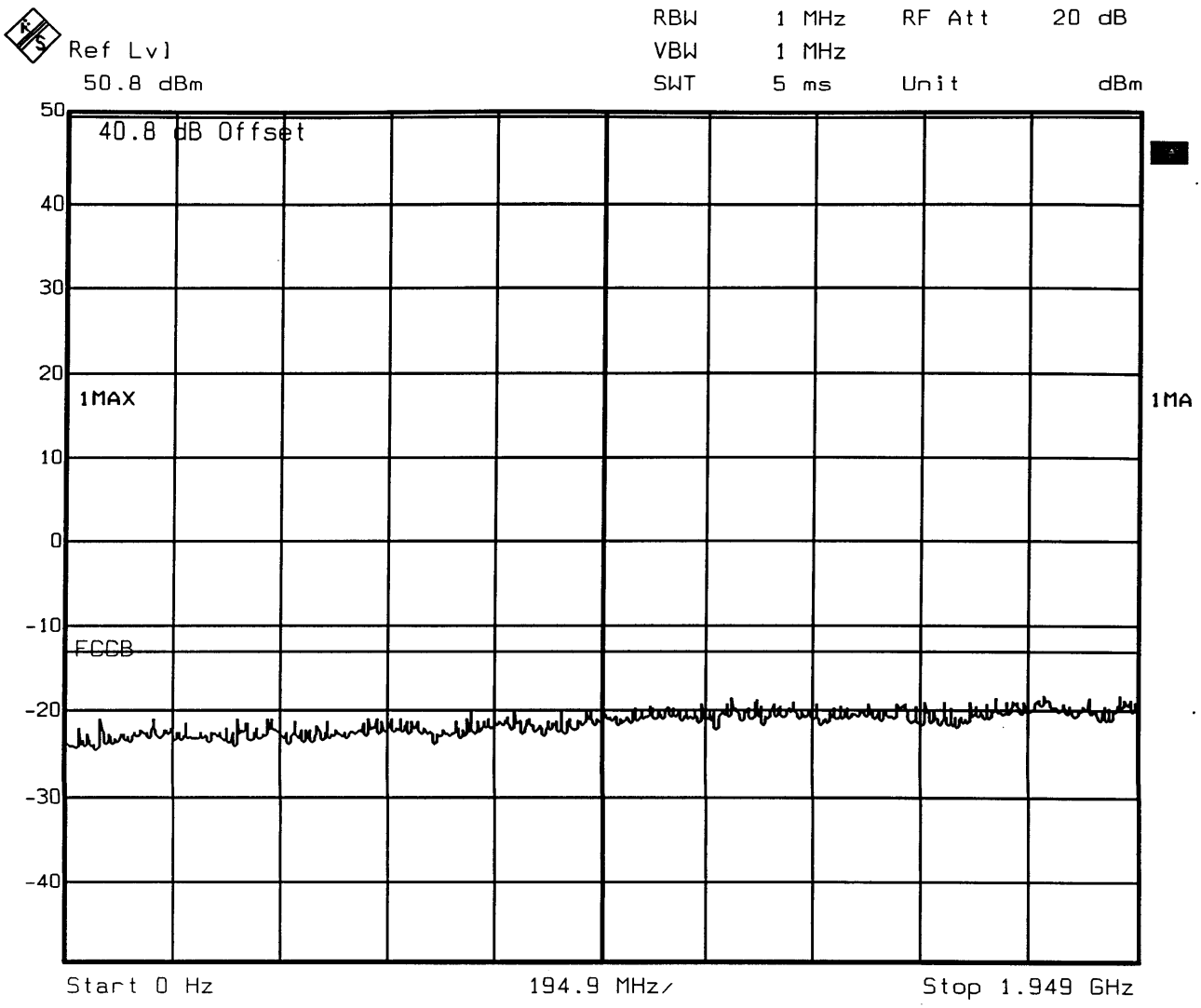
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block B Channel 613. TX Power: 44.4 dBm.
Date: 27.JUL.1999 21:01:11



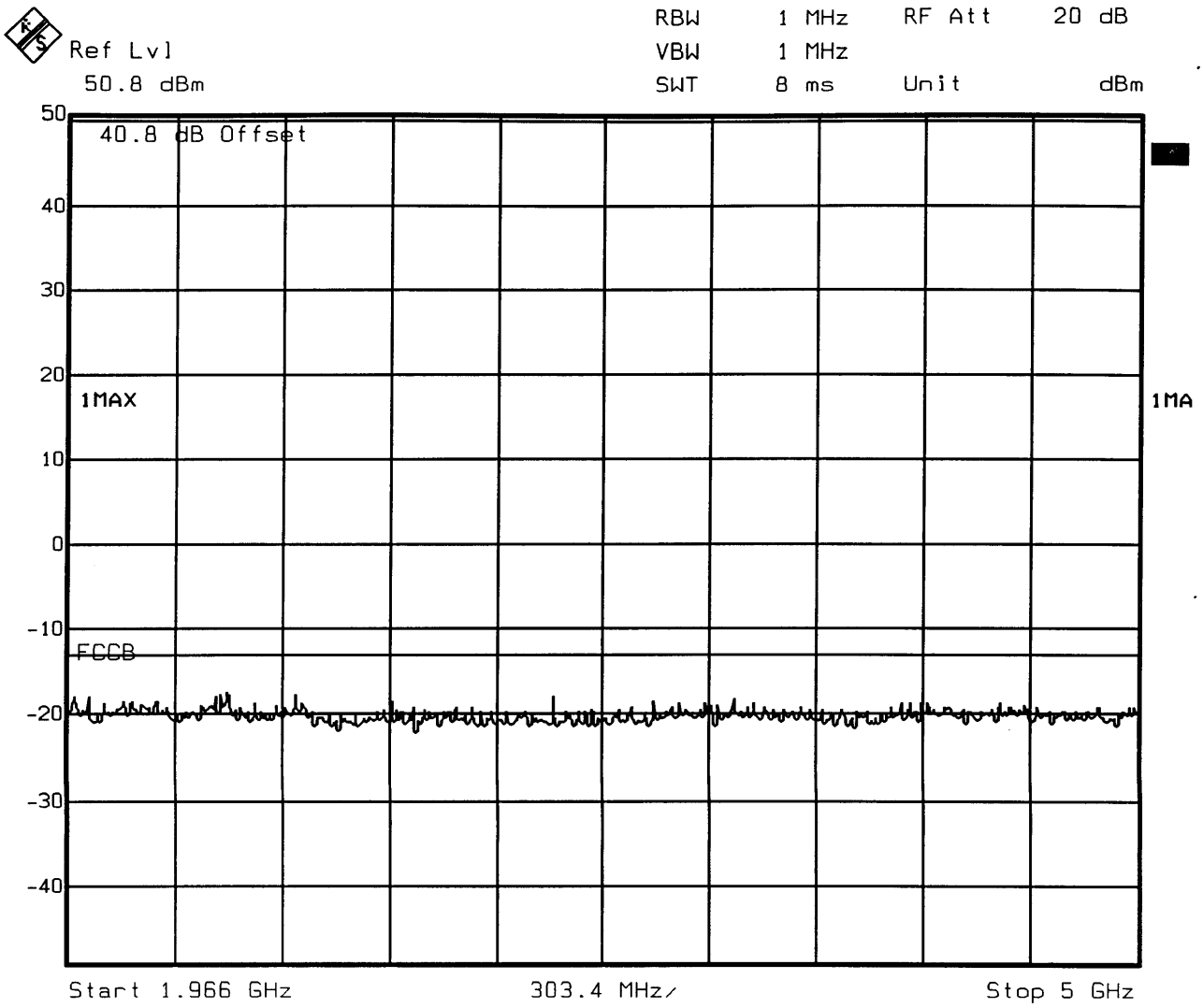
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block B Channel 613. TX Power: 44.4 dBm.
Date: 27.JUL.1999 21:02:23



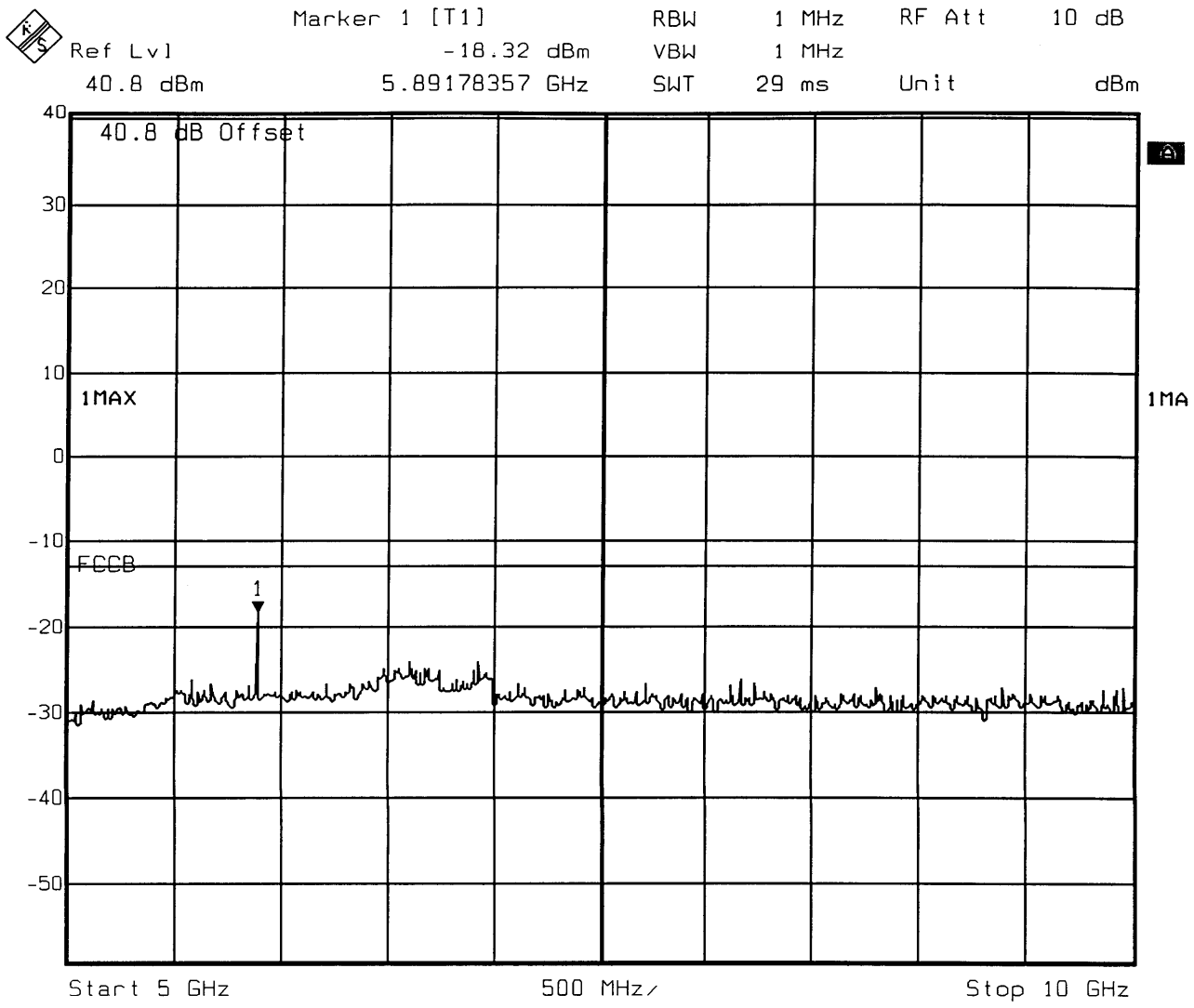
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block B, Channel: 684. TX Power 44.4 dBm.
Date: 27.JUL.1999 16:31:23



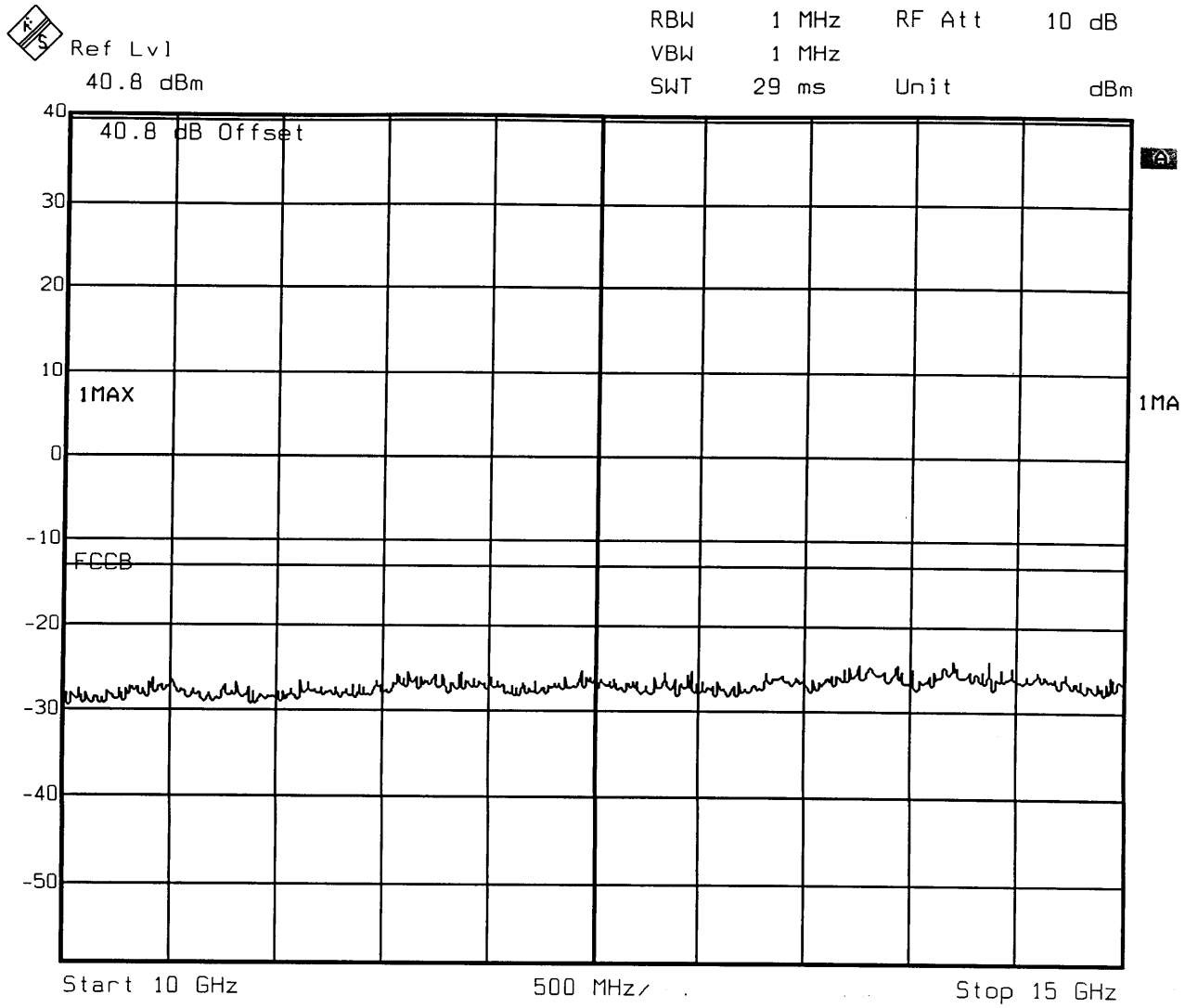
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block B, Channel: 684. TX Power 44.4 dBm.
Date: 27.JUL.1999 16:23:27



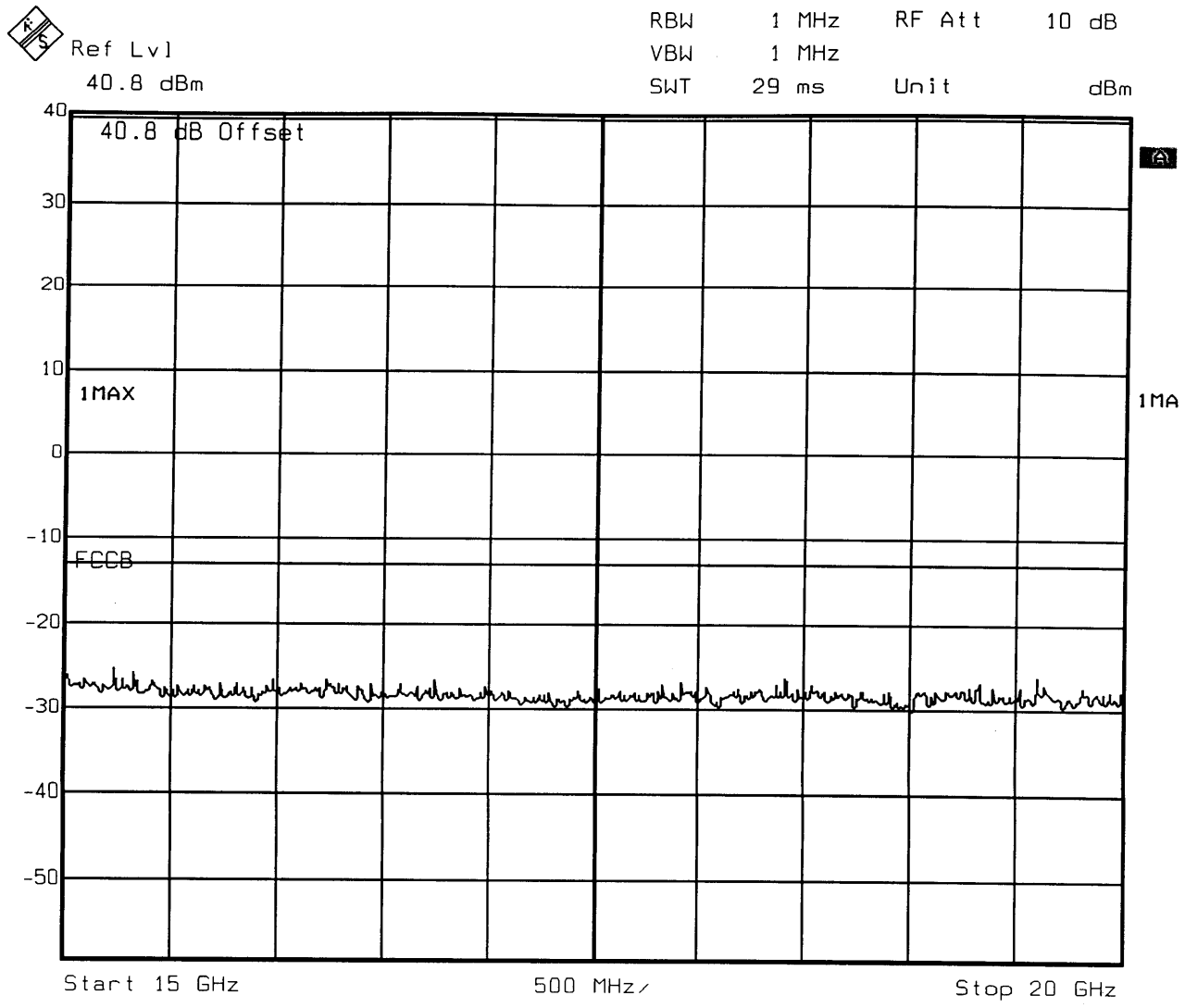
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block B, Channel: 684. TX Power 44.4 dBm.
Date: 27.JUL.1999 16:38:50



Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block B Channel 684. TX Power: 44.4 dBm.
Date: 27.JUL.1999 20:58:10



Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block B Channel 684. TX Power: 44.4 dBm.
Date: 27.JUL.1999 20:56:58



Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block B Channel 684. TX Power: 44.4 dBm.
Date: 27.JUL.1999 20:56:01

MEASUREMENT: 4

MEASUREMENT

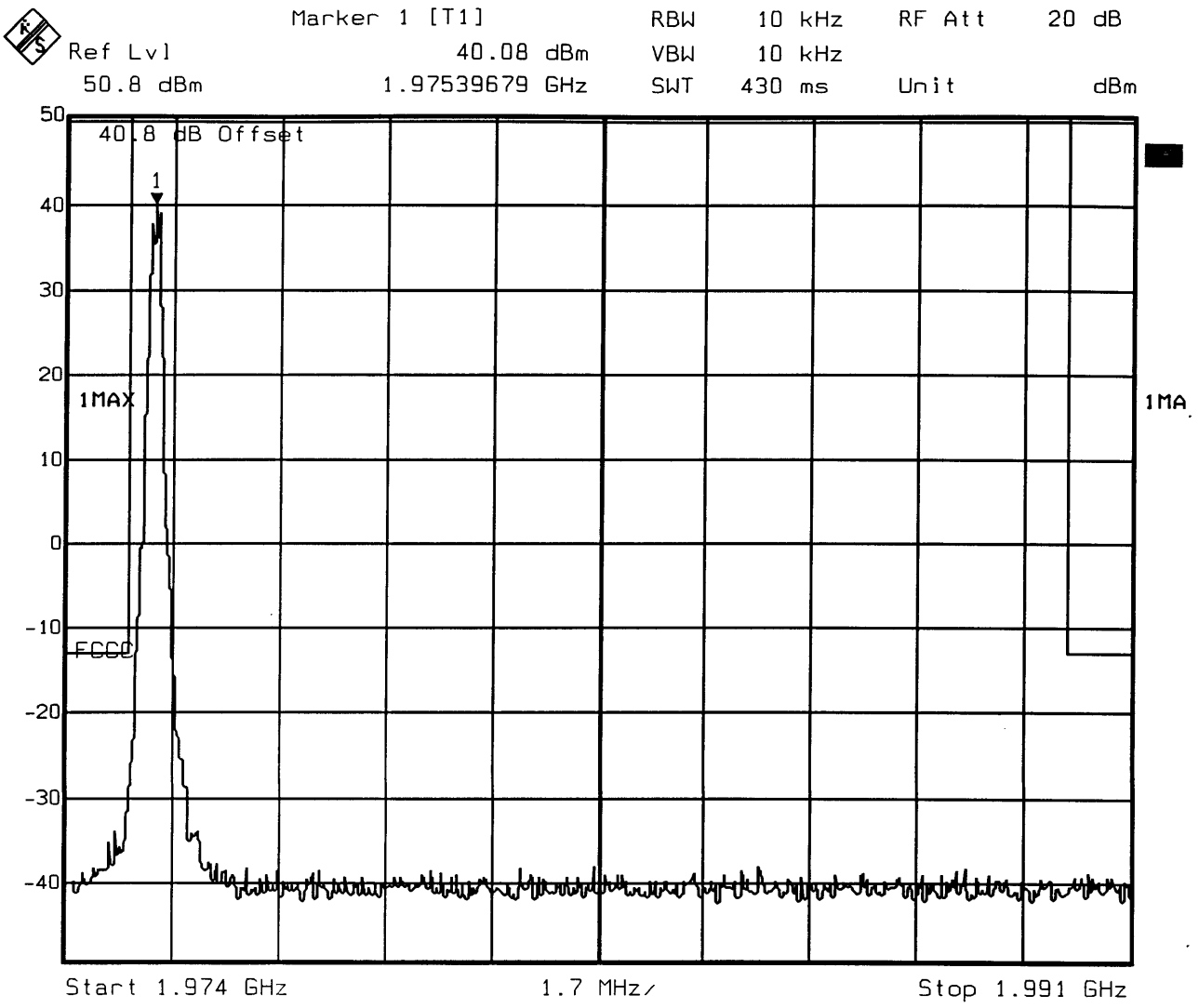
OF SPURIOUS EMISSIONS

AT ANTENNA TERMINALS

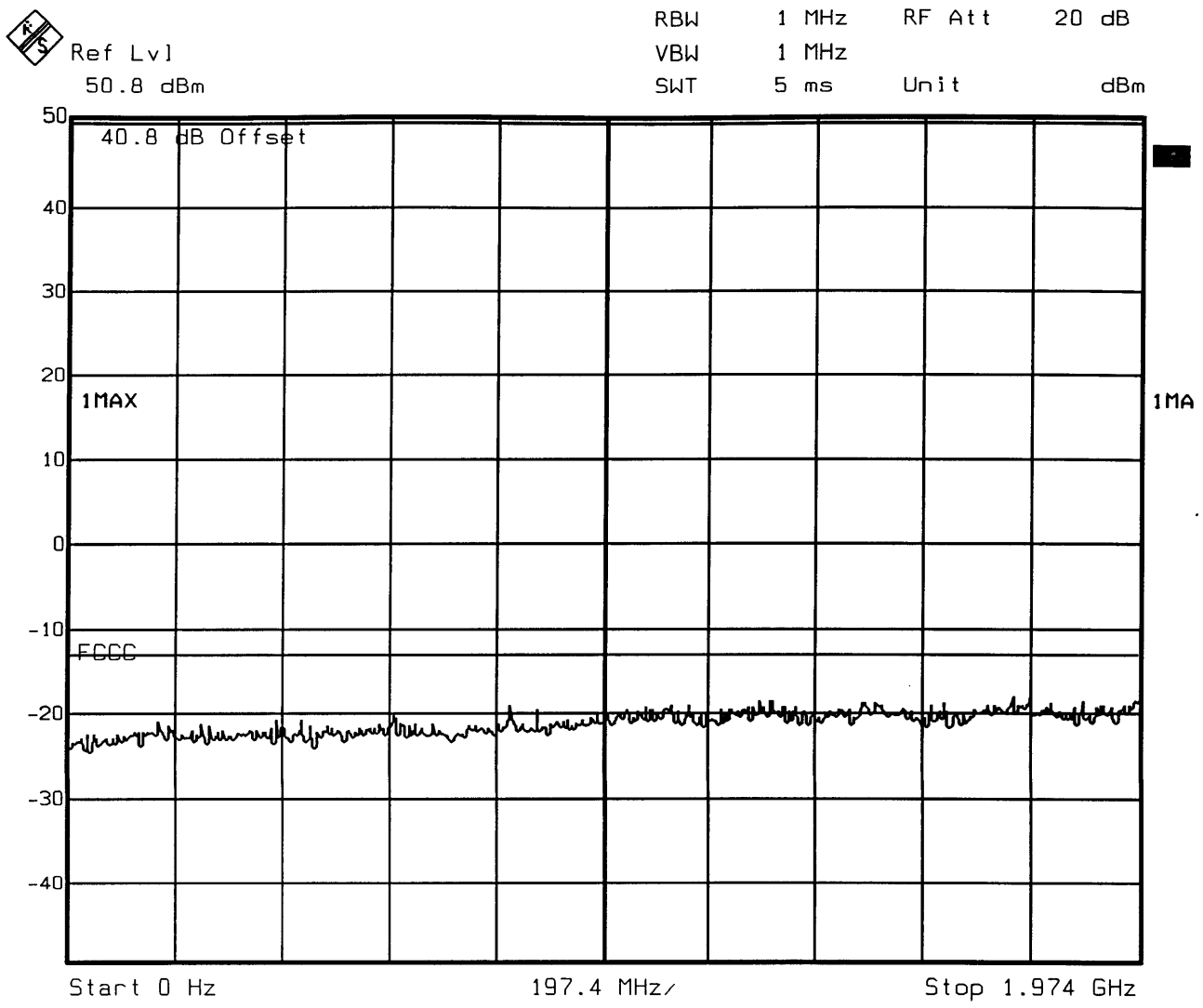
BLOCK C

(1975 – 1990 MHz)

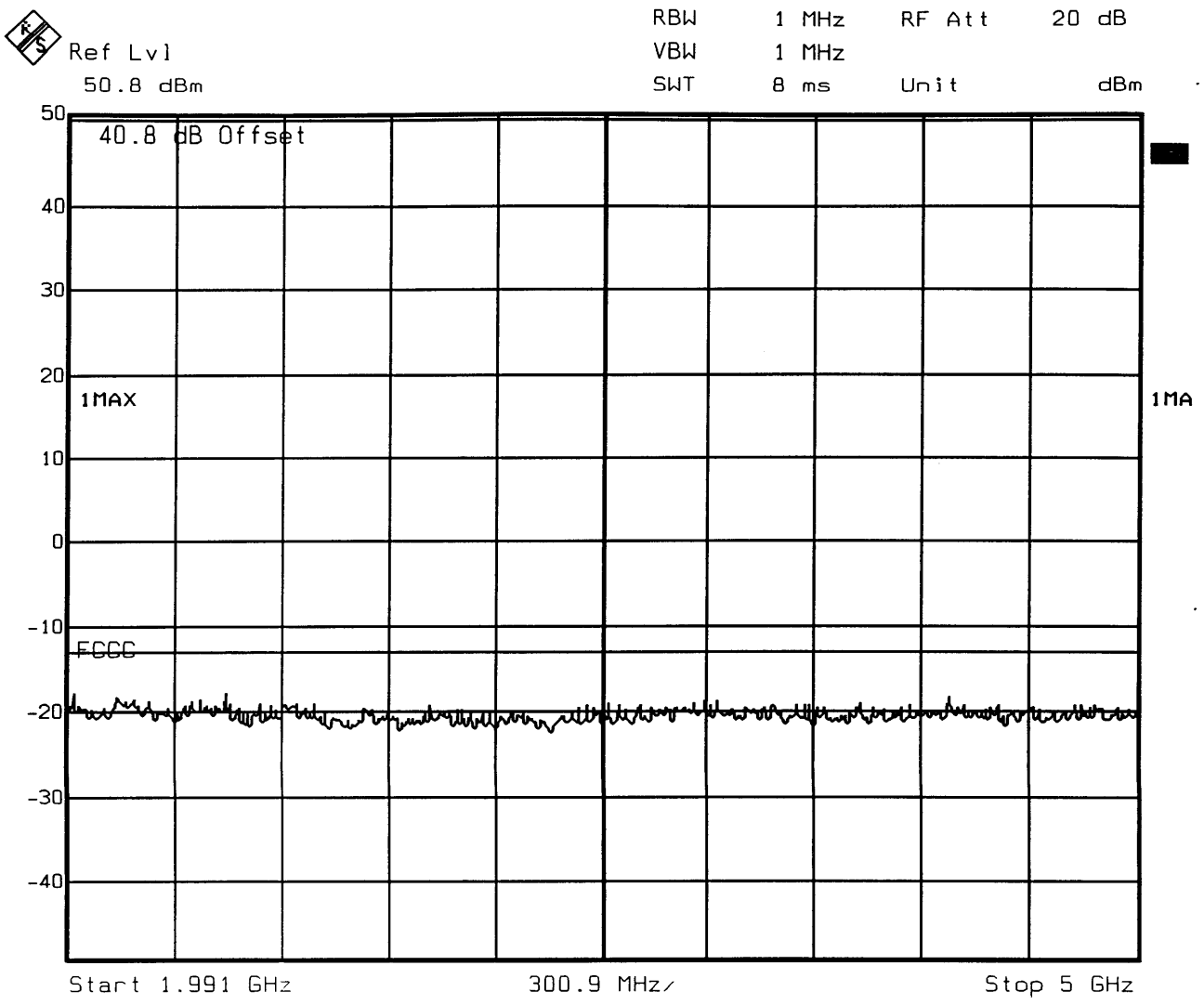
Left Edge: 1975.4 MHz (Channel 738)
Right Edge: 1989.6 MHz (Channel 809)



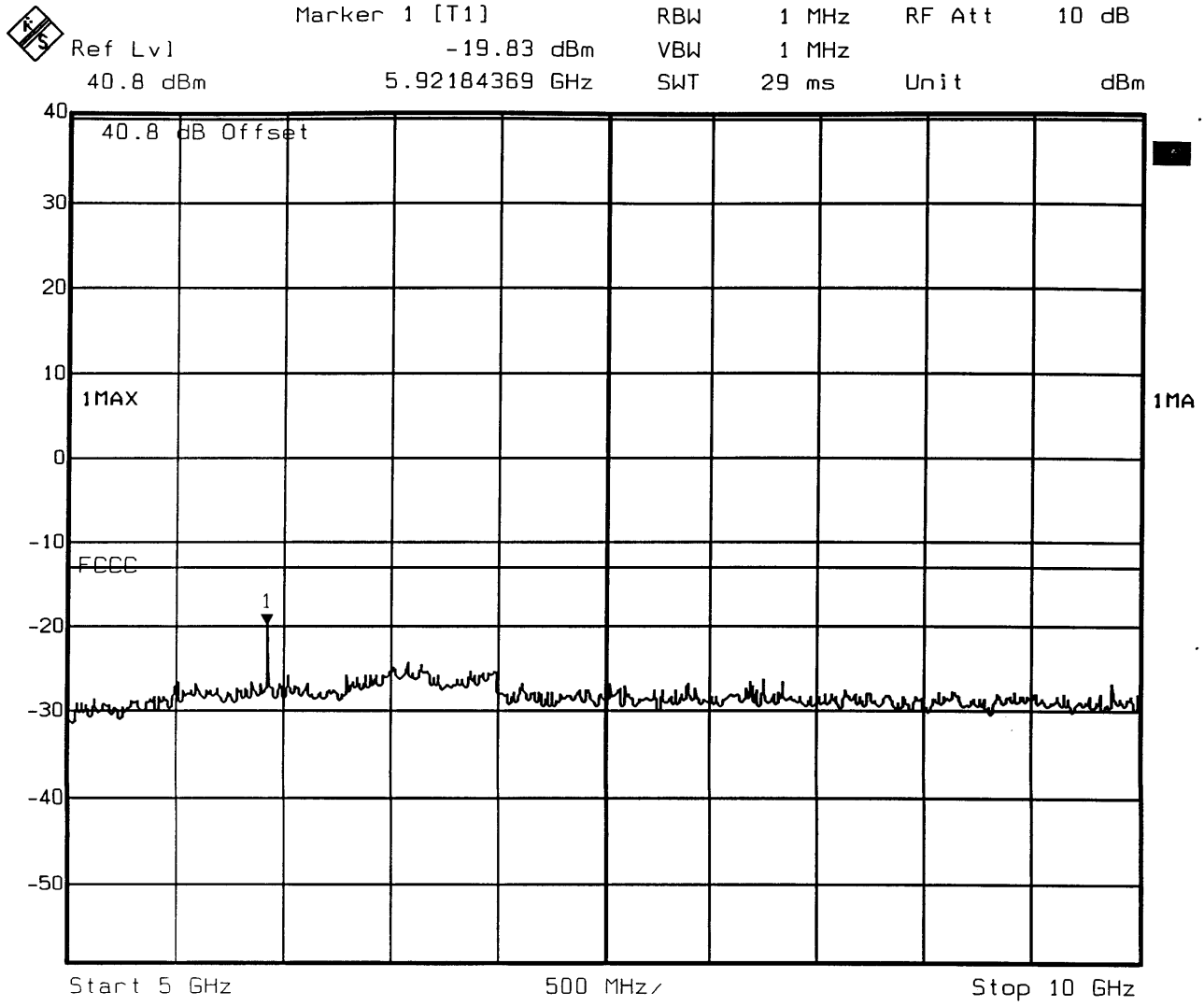
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block C, Channel: 738. TX Power 44.4 dBm.
Date: 27.JUL.1999 17:39:43



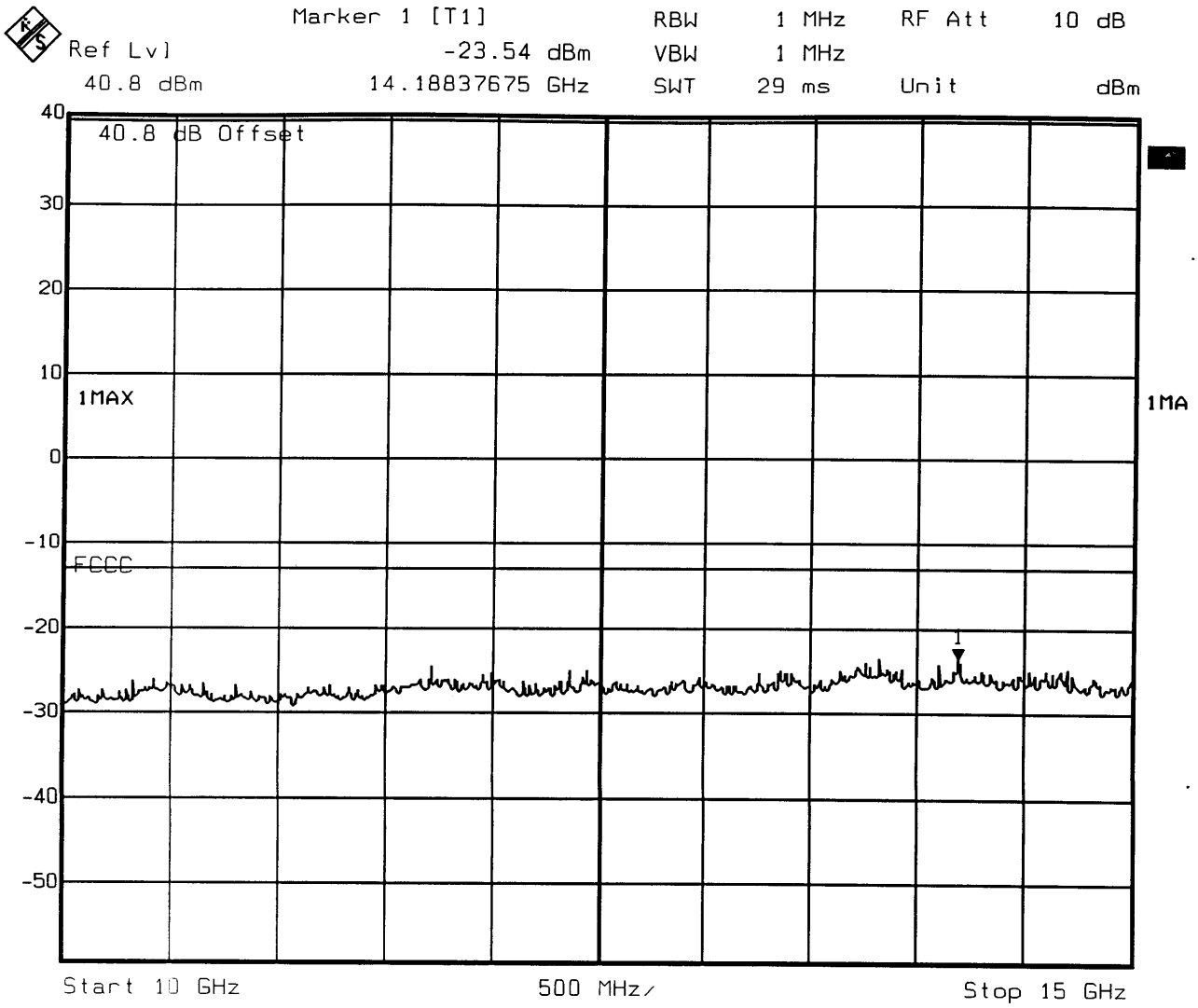
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block C, Channel: 738. TX Power 44.4 dBm.
Date: 27.JUL.1999 17:30:43



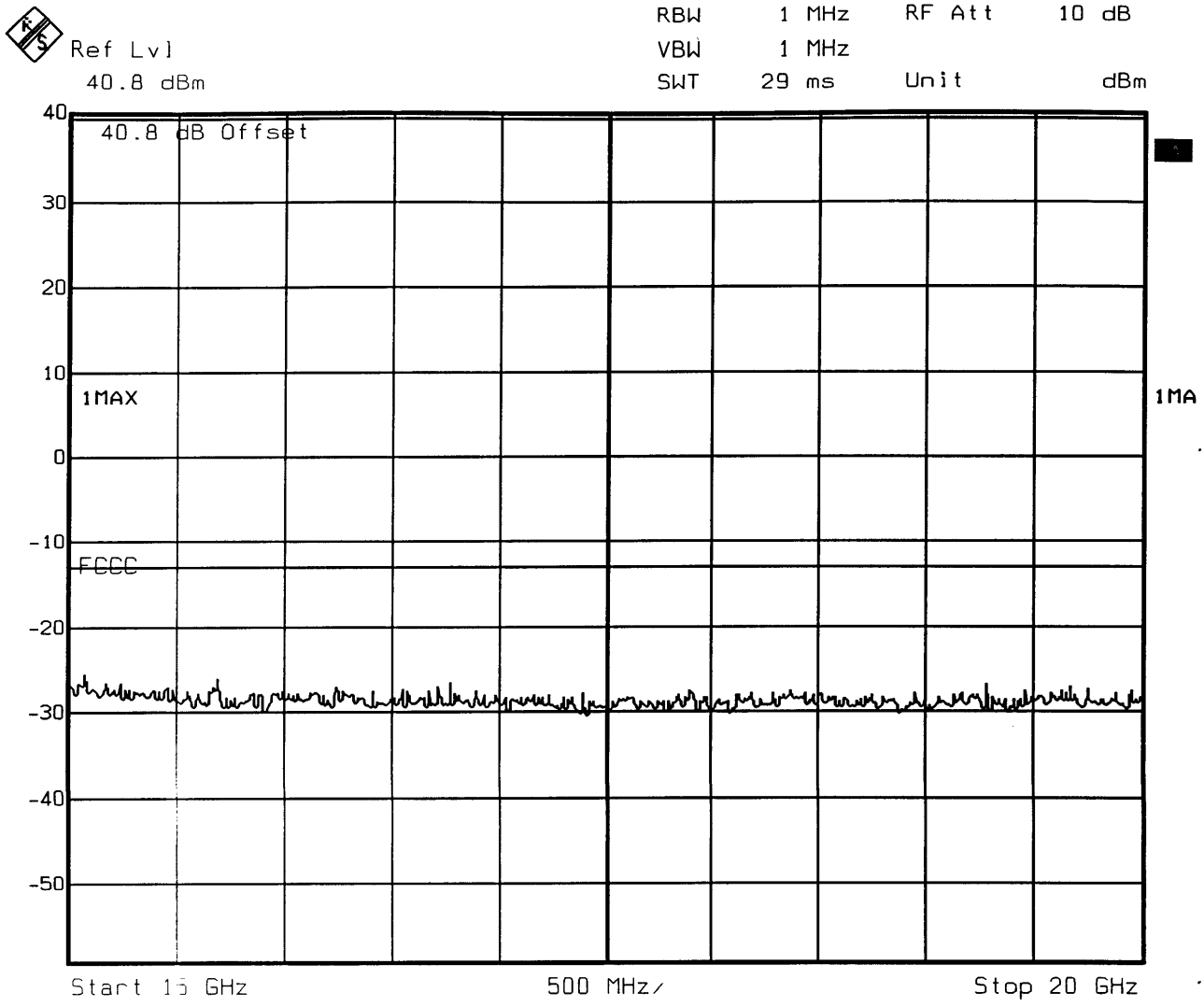
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block C, Channel: 738. TX Power 44.4 dBm.
Date: 27.JUL.1999 17:45:18



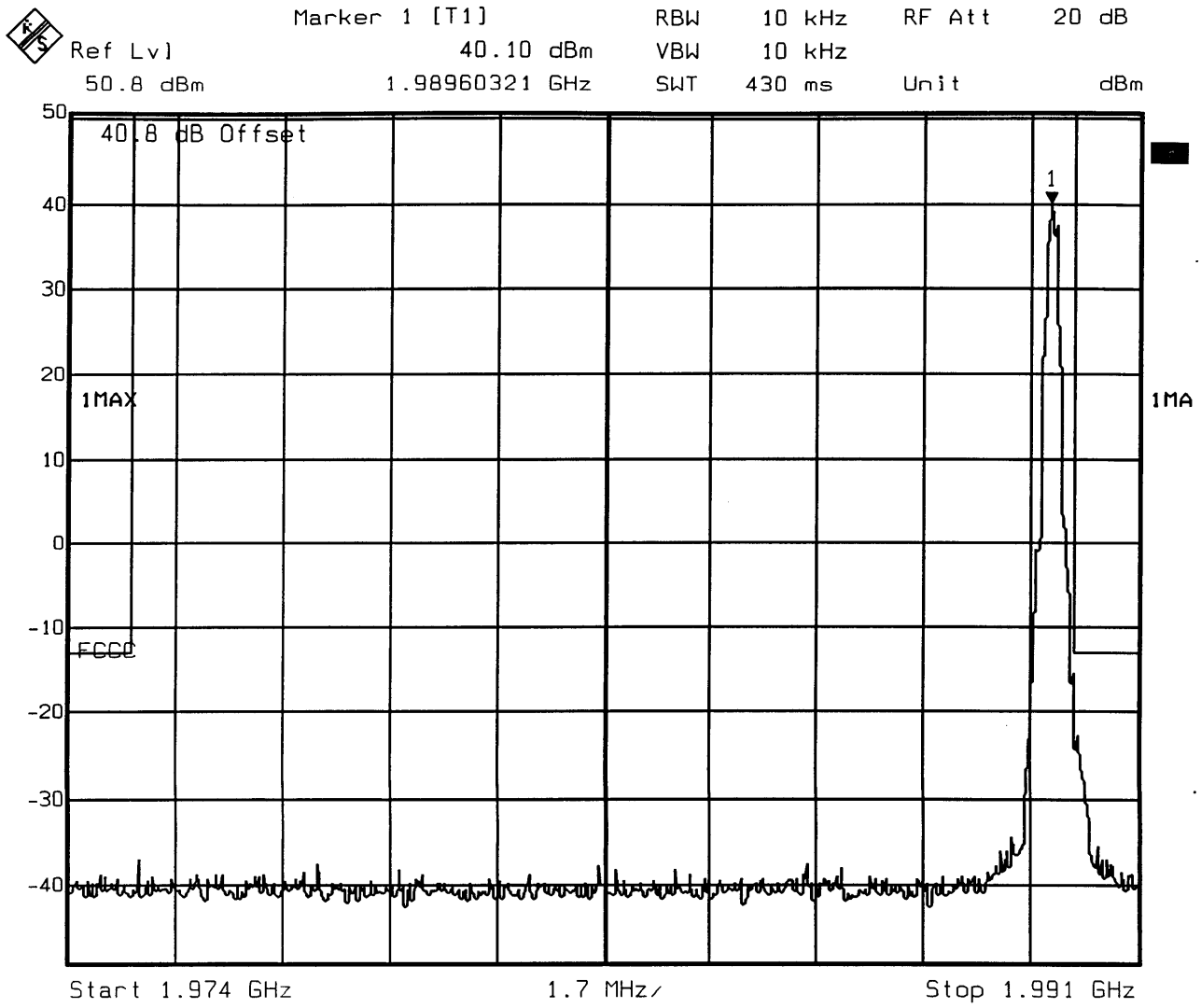
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block C, Channel: 738. TX Power 44.4 dBm.
Date: 27.JUL.1999 19:51:09



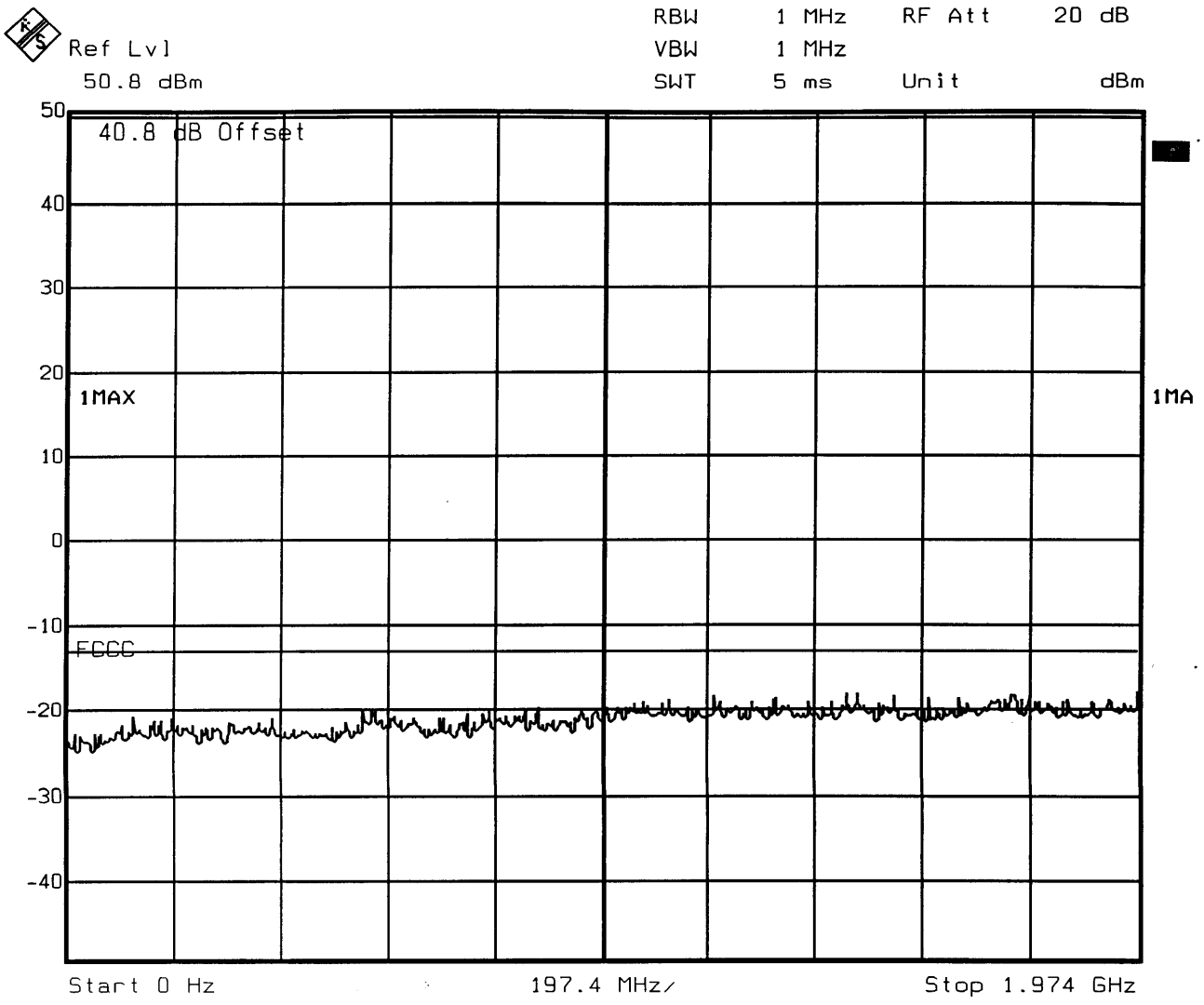
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block C, Channel: 738. TX Power 44.4 dBm.
Date: 27.JUL.1999 19:52:46



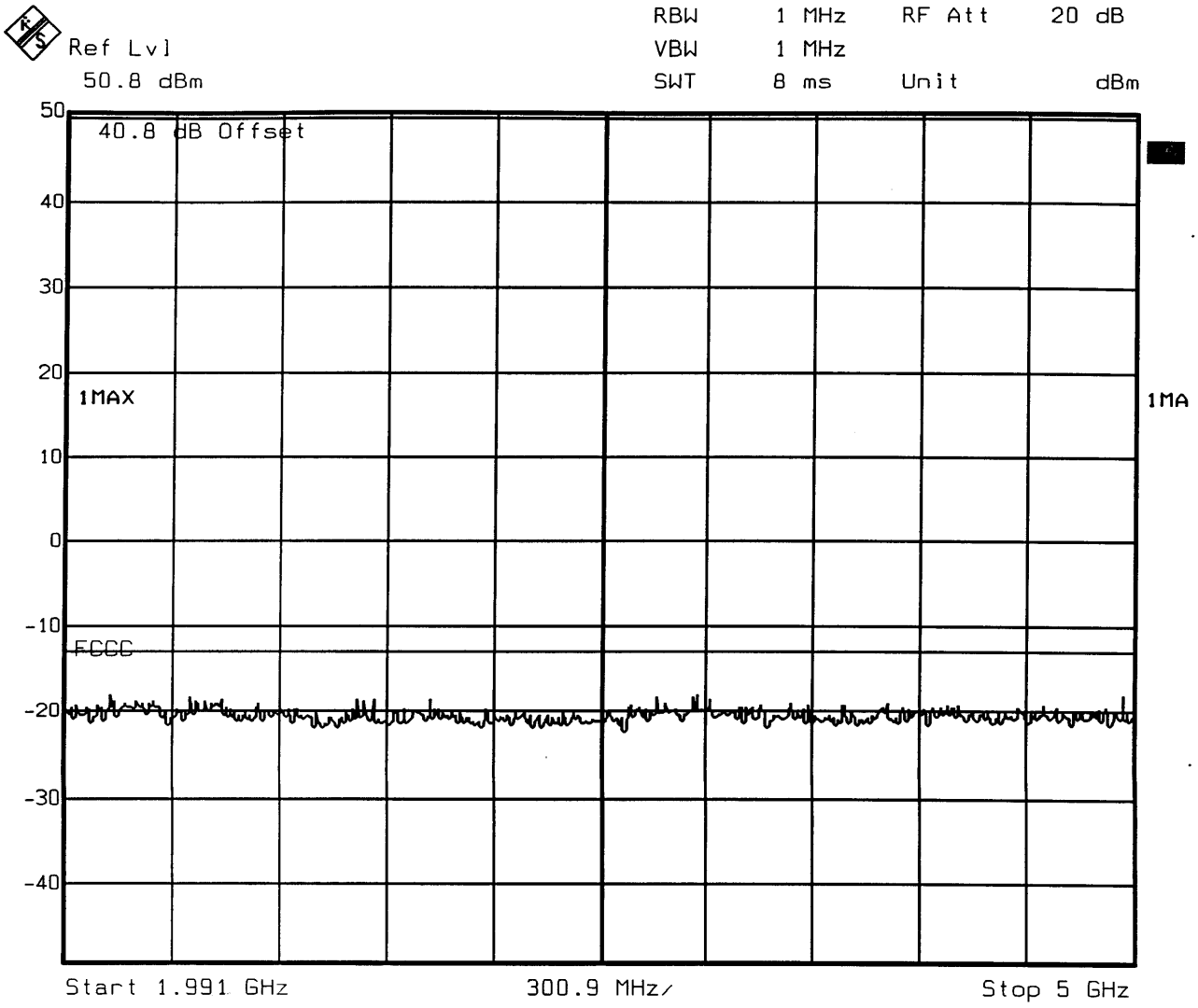
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block C, Channel: 738. TX Power 44.4 dBm.
Date: 27.JUL.1999 19:54:20



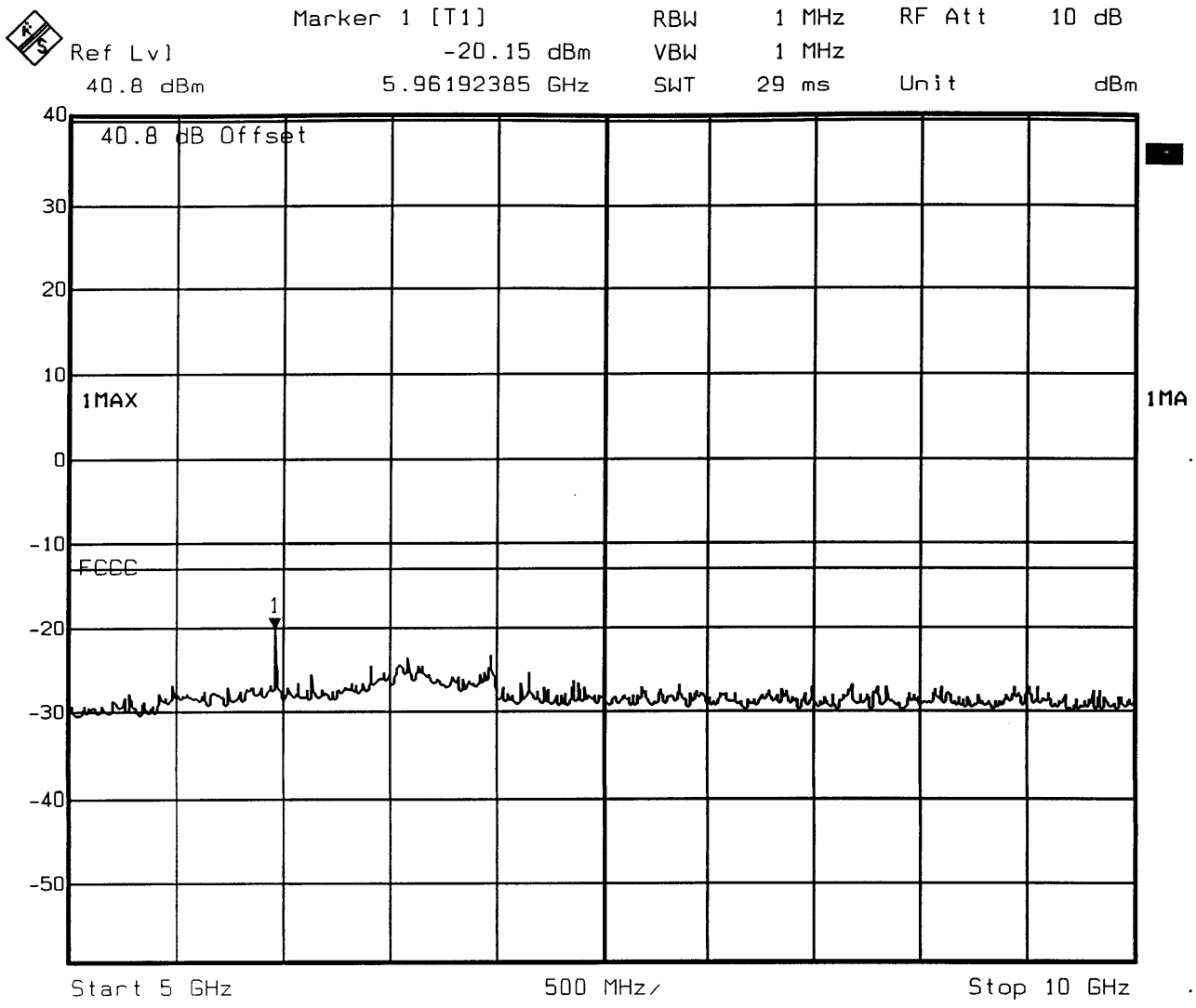
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block C, Channel: 809. TX Power 44.4 dBm.
Date: 27.JUL.1999 17:37:20



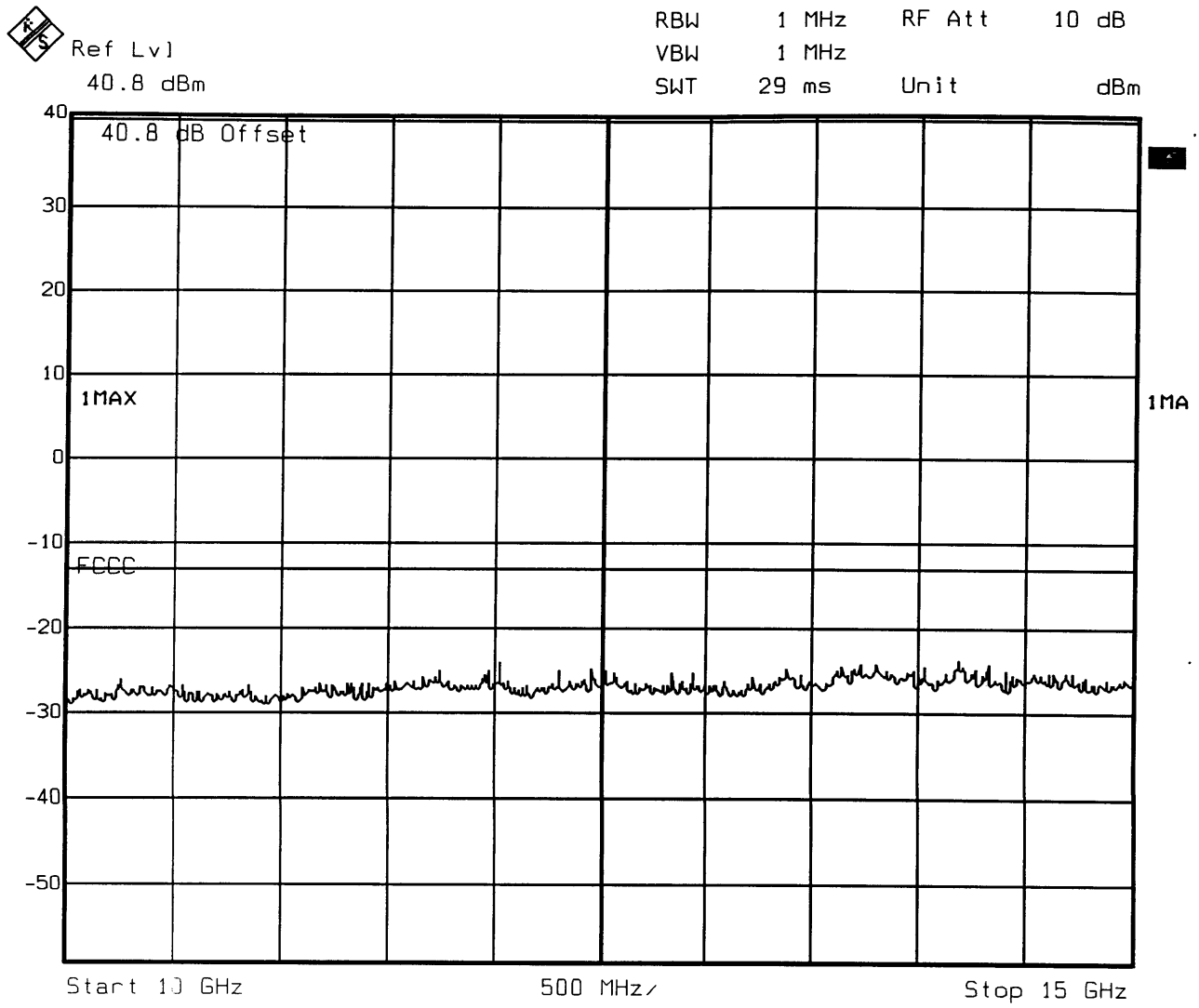
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block C, Channel: 809. TX Power 44.4 dBm.
Date: 27.JUL.1999 17:33:15



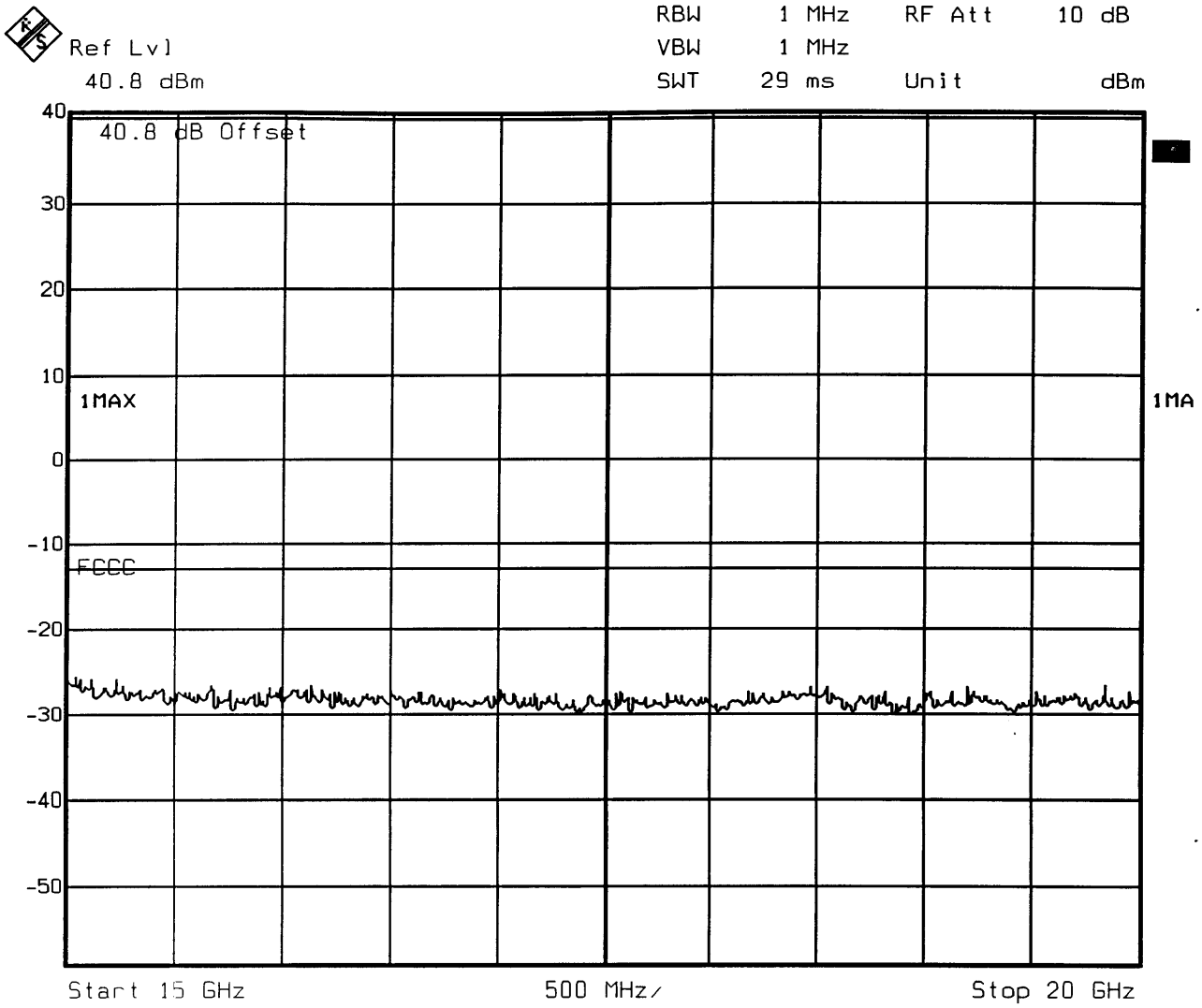
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block C, Channel: 809. TX Power 44.4 dBm.
Date: 27.JUL.1999 17:47:13



Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block C, Channel: 809. TX Power 44.4 dBm.
Date: 27.JUL.1999 19:48:19



Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block C, Channel: 809. TX Power 44.4 dBm.
Date: 27.JUL.1999 19:44:28



Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block C, Channel: 809. TX Power 44.4 dBm.
Date: 27.JUL.1999 19:46:16

MEASUREMENT: 4

MEASUREMENT

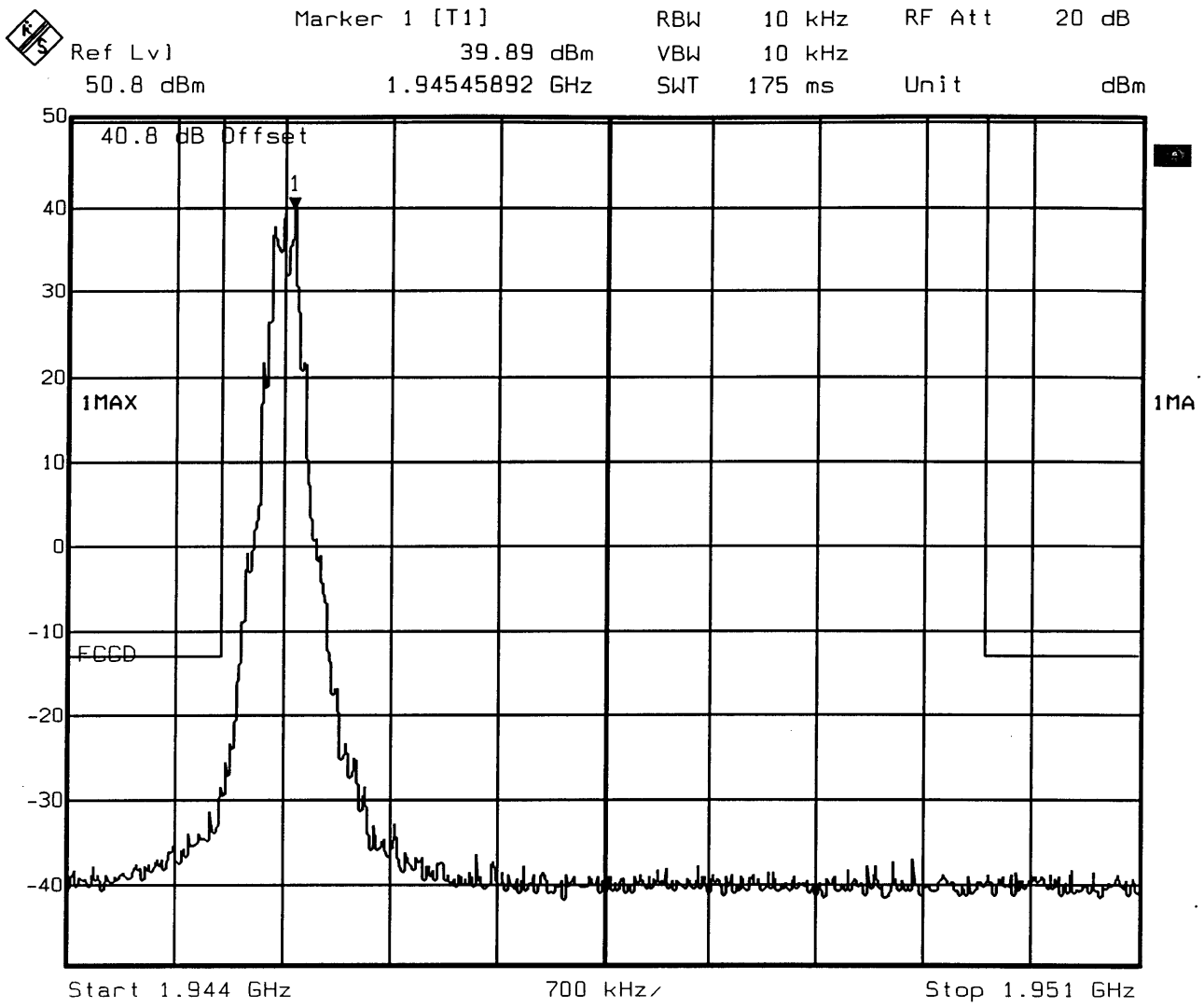
OF SPURIOUS EMISSIONS

AT ANTENNA TERMINALS

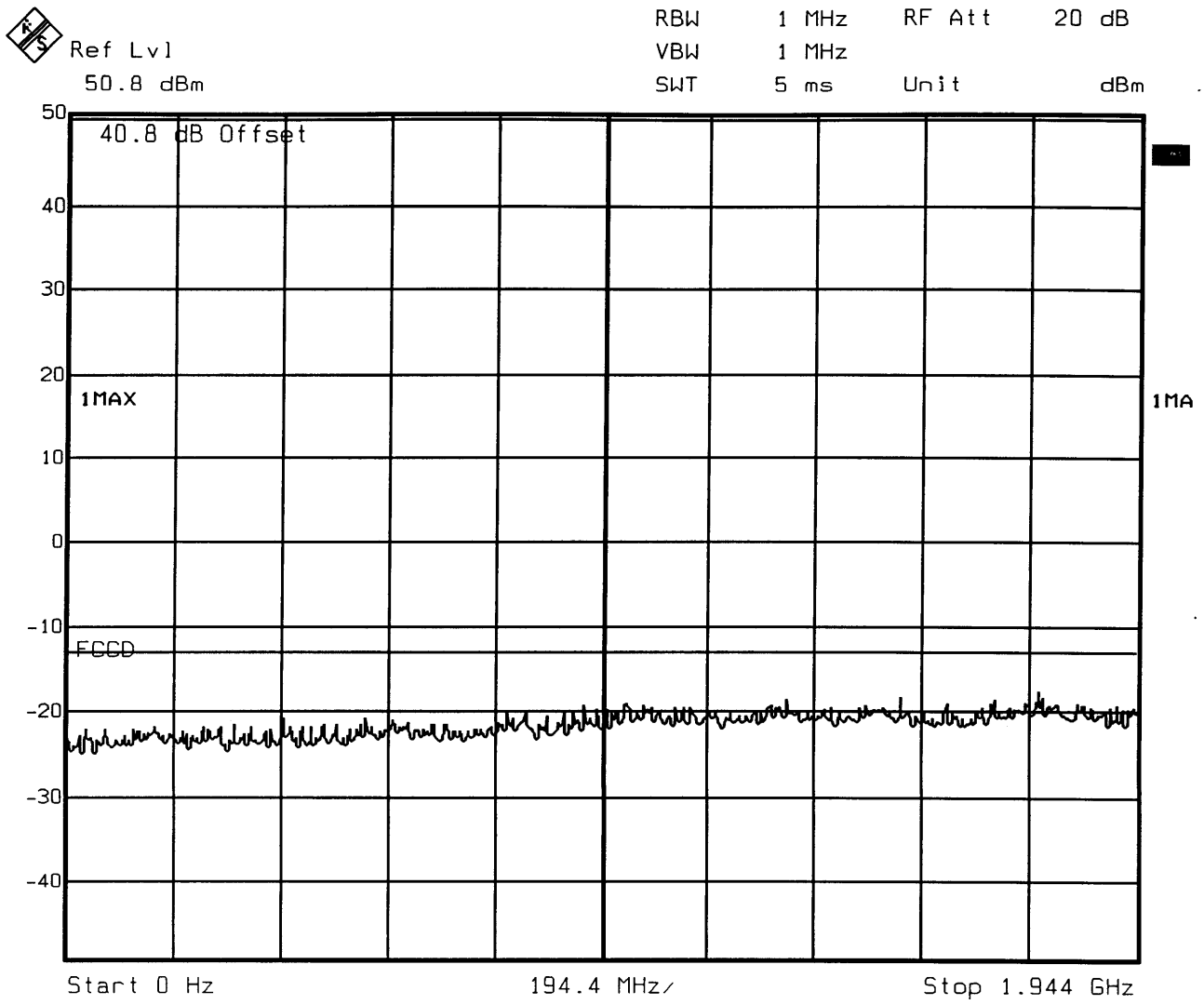
BLOCK D

(1945 – 1950 MHz)

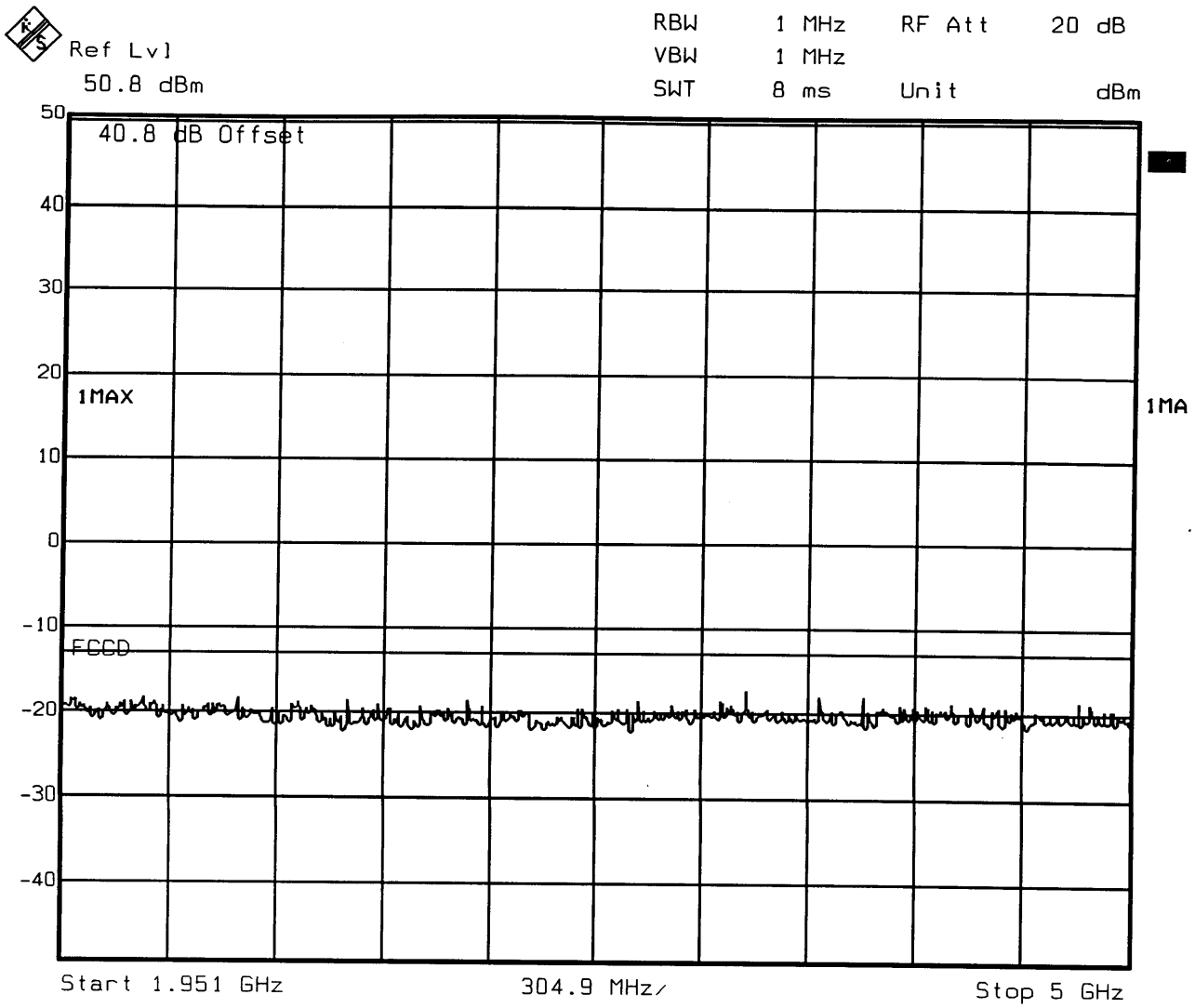
Left Edge: 1945.4 MHz (Channel 588)
Right Edge: 1949.6 MHz (Channel 609)



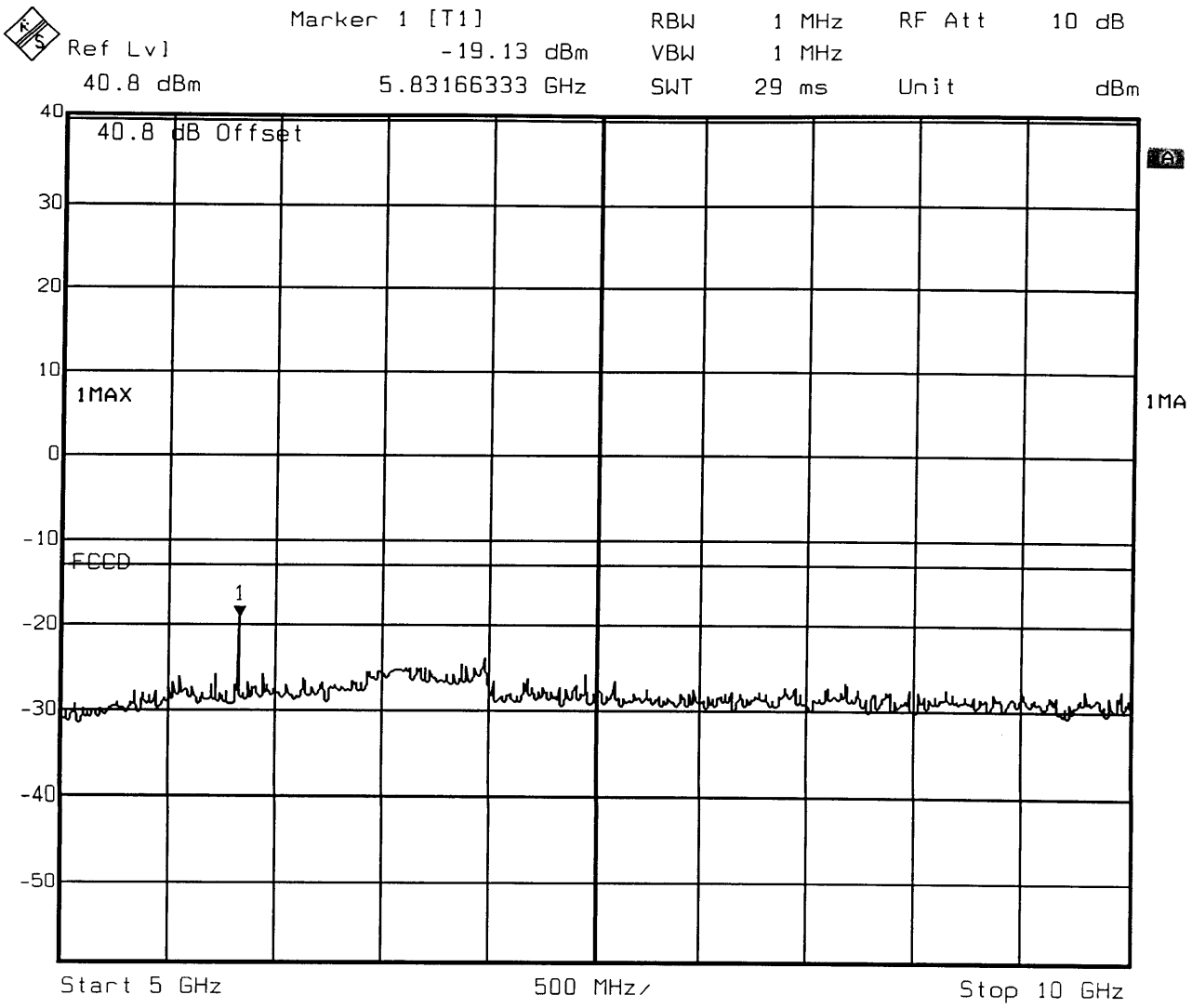
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block D, Channel: 588. TX Power 44.4 dBm.
Date: 27.JUL.1999 16:03:58



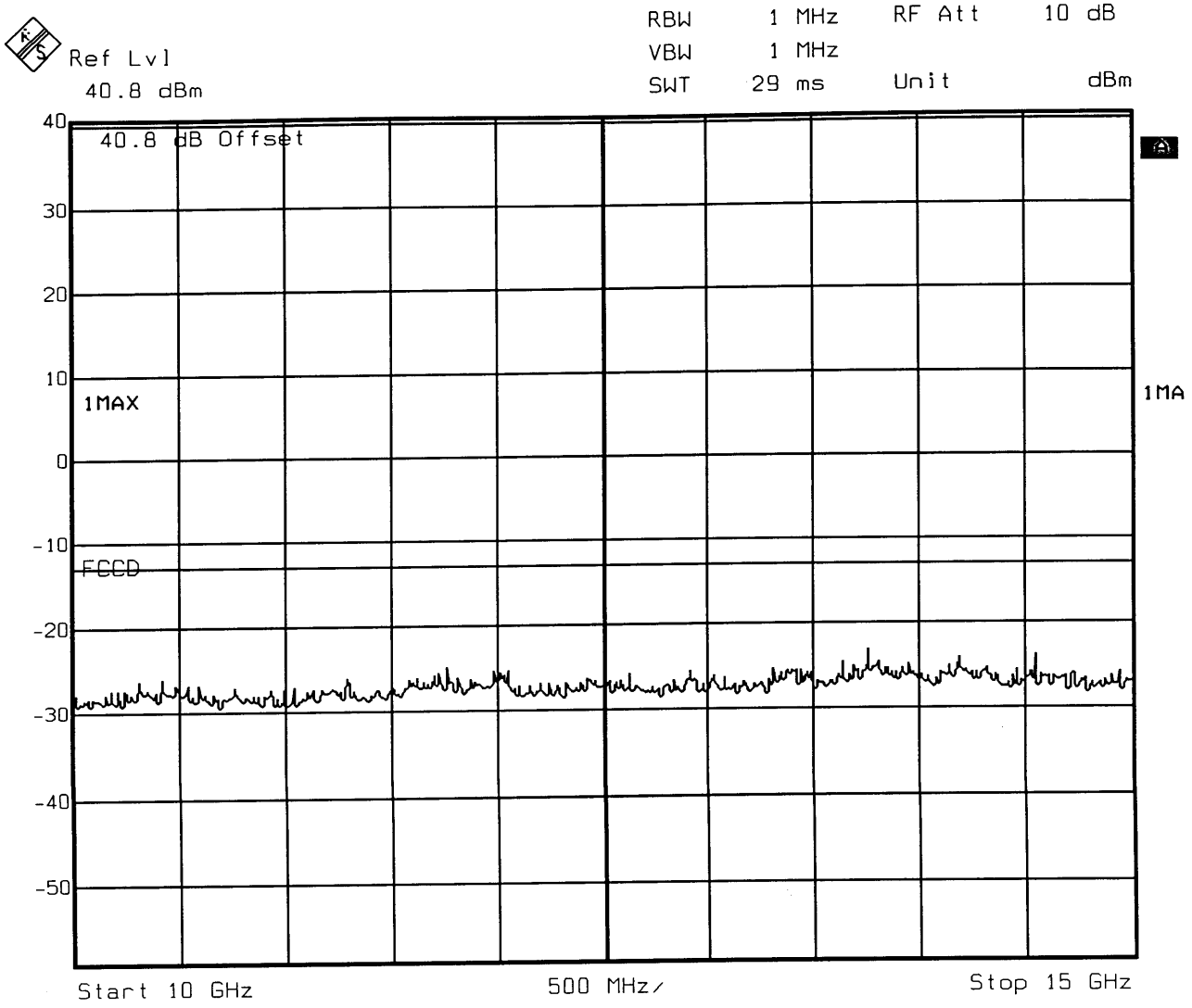
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block D, Channel: 588. TX Power 44.4 dBm.
Date: 27.JUL.1999 15:50:21



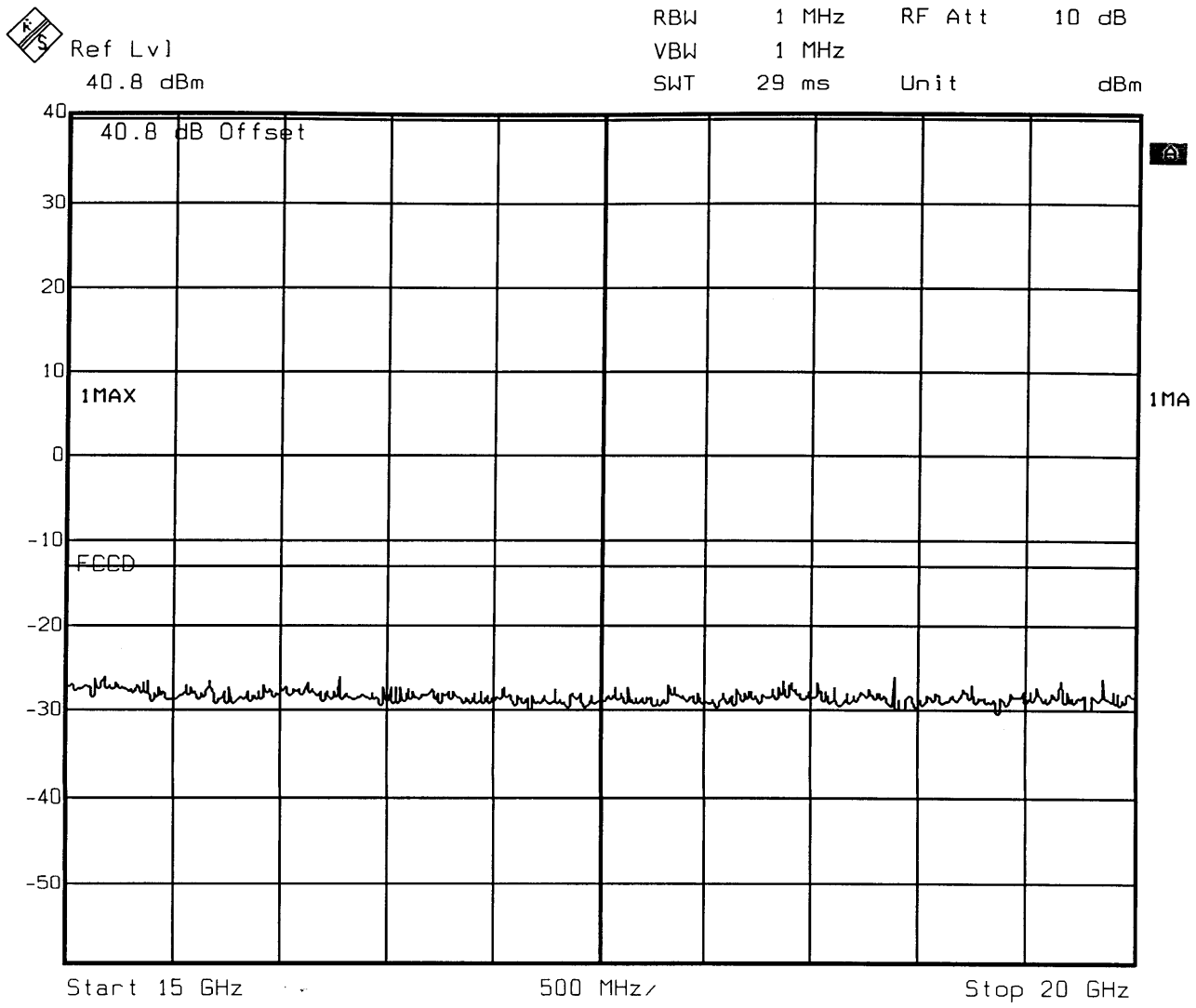
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block D, Channel: 588. TX Power 44.4 dBm.
Date: 27.JUL.1999 16:09:18



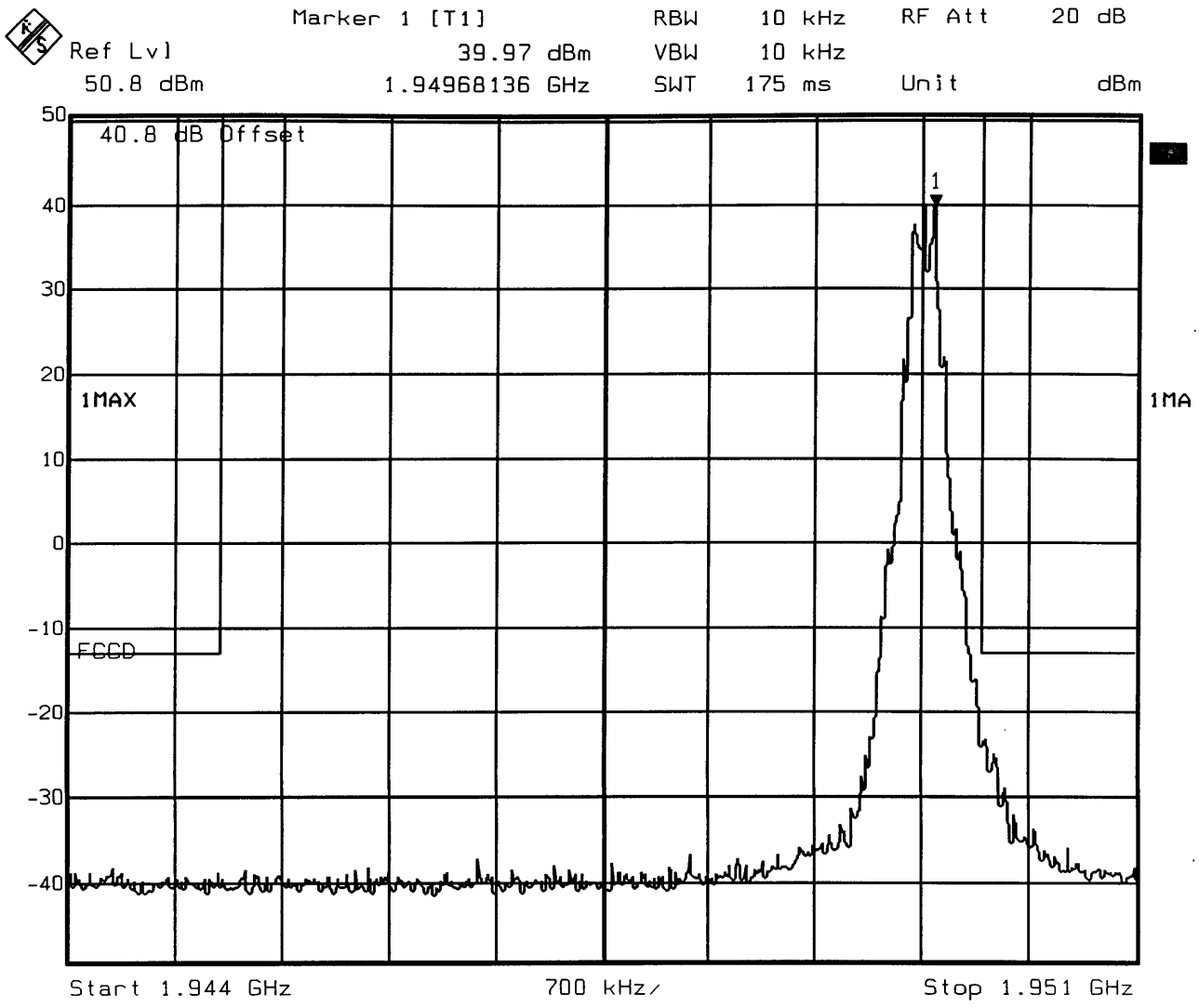
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block D Channel 588. TX Power: 44.4 dBm.
Date: 27.JUL.1999 21:11:29



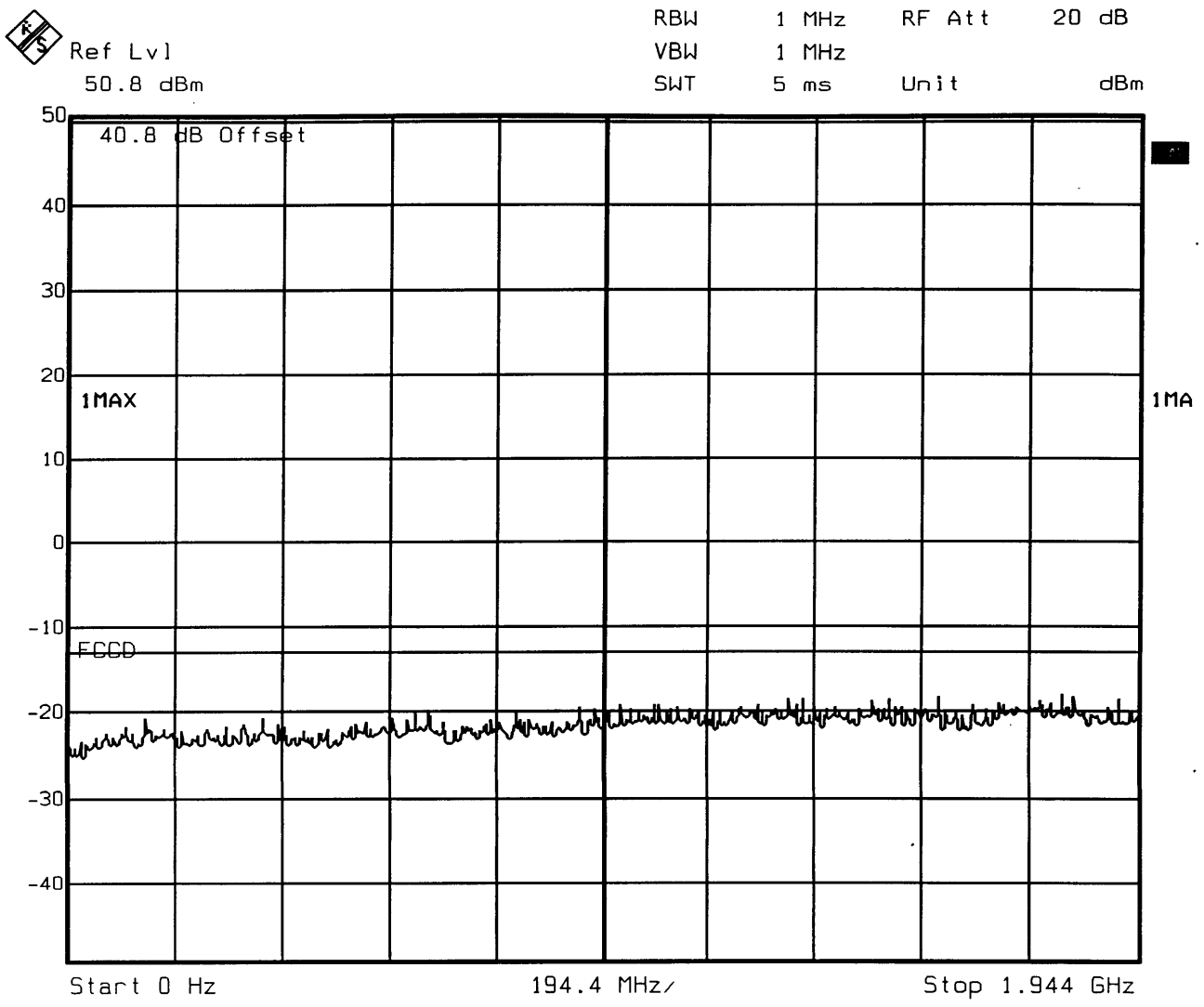
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block D Channel 588. TX Power: 44.4 dBm.
Date: 27.JUL.1999 21:13:04



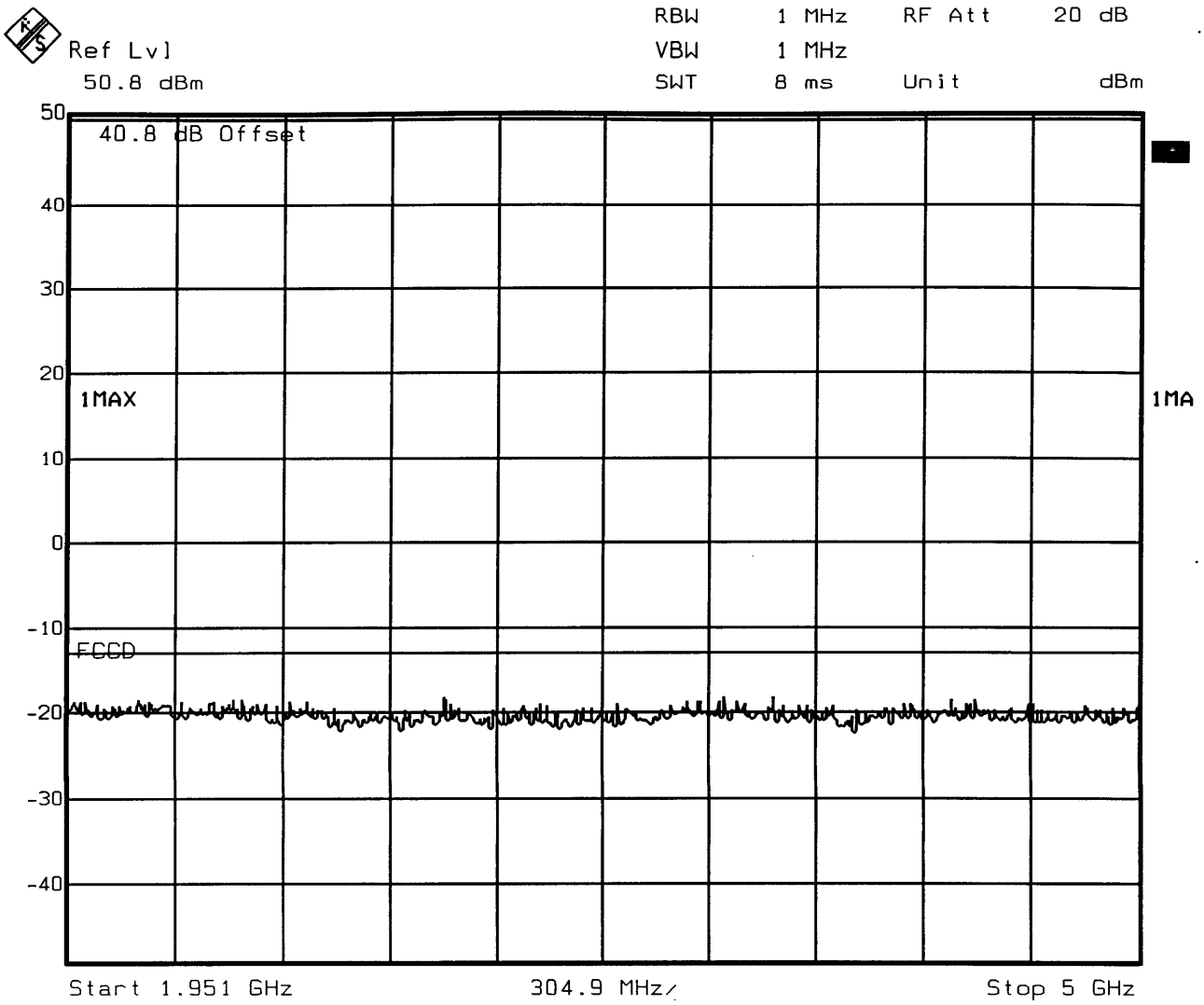
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block D Channel 588. TX Power: 44.4 dBm.
Date: 27.JUL.1999 21:14:14



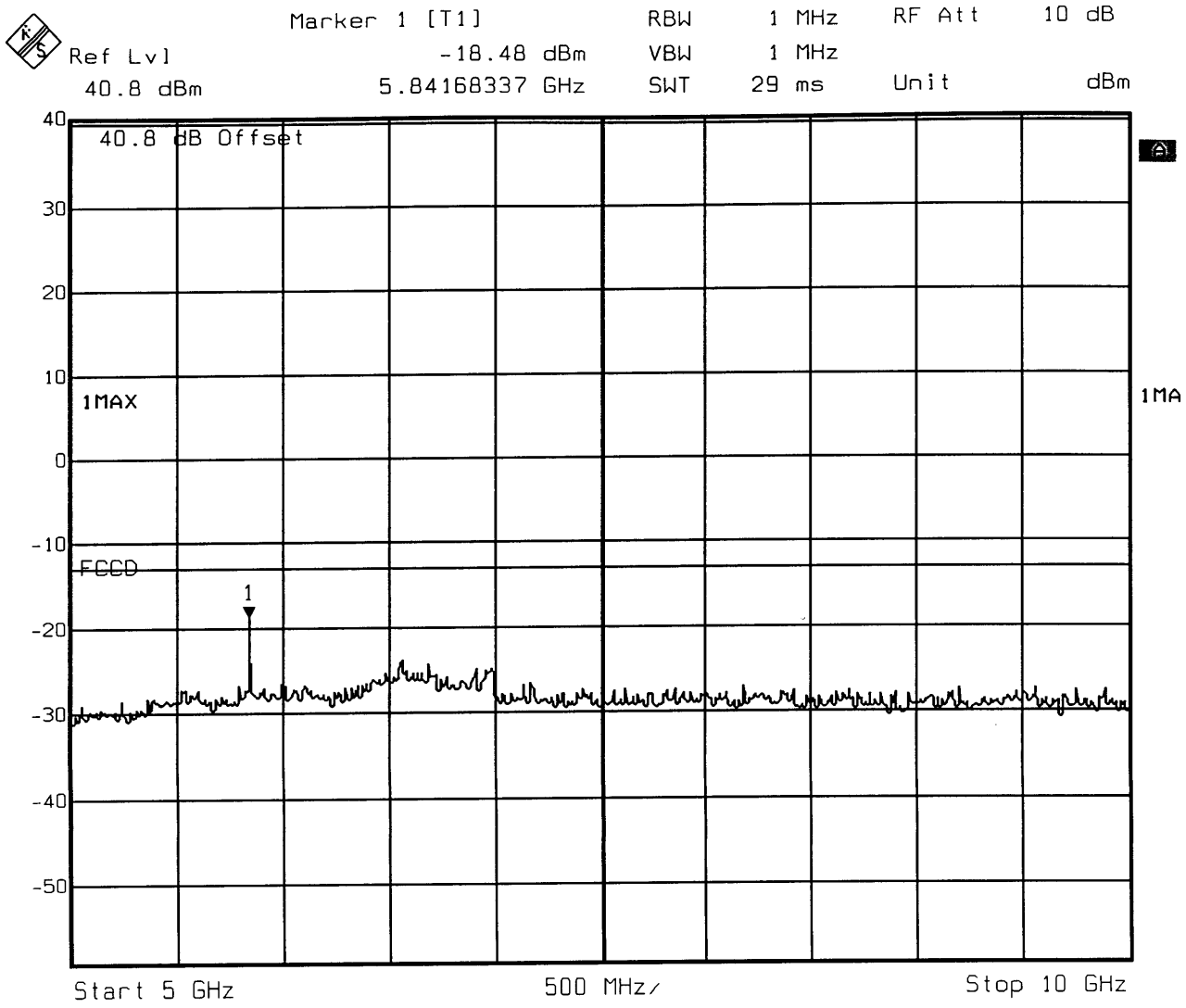
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block D, Channel: 609. TX Power 44.4 dBm.
Date: 27.JUL.1999 16:01:37



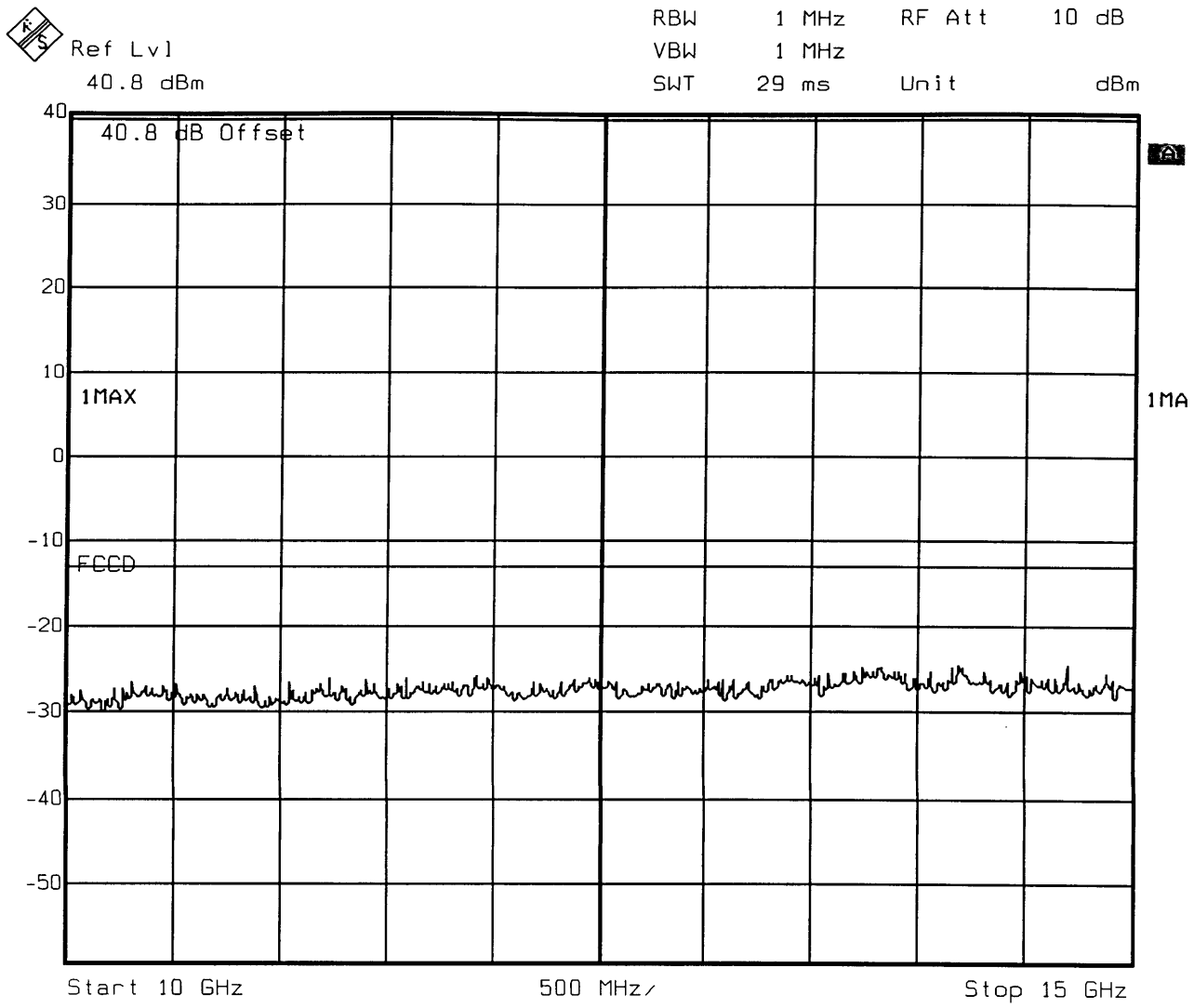
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block D, Channel: 609. TX Power 44.4 dBm.
Date: 27.JUL.1999 15:52:02



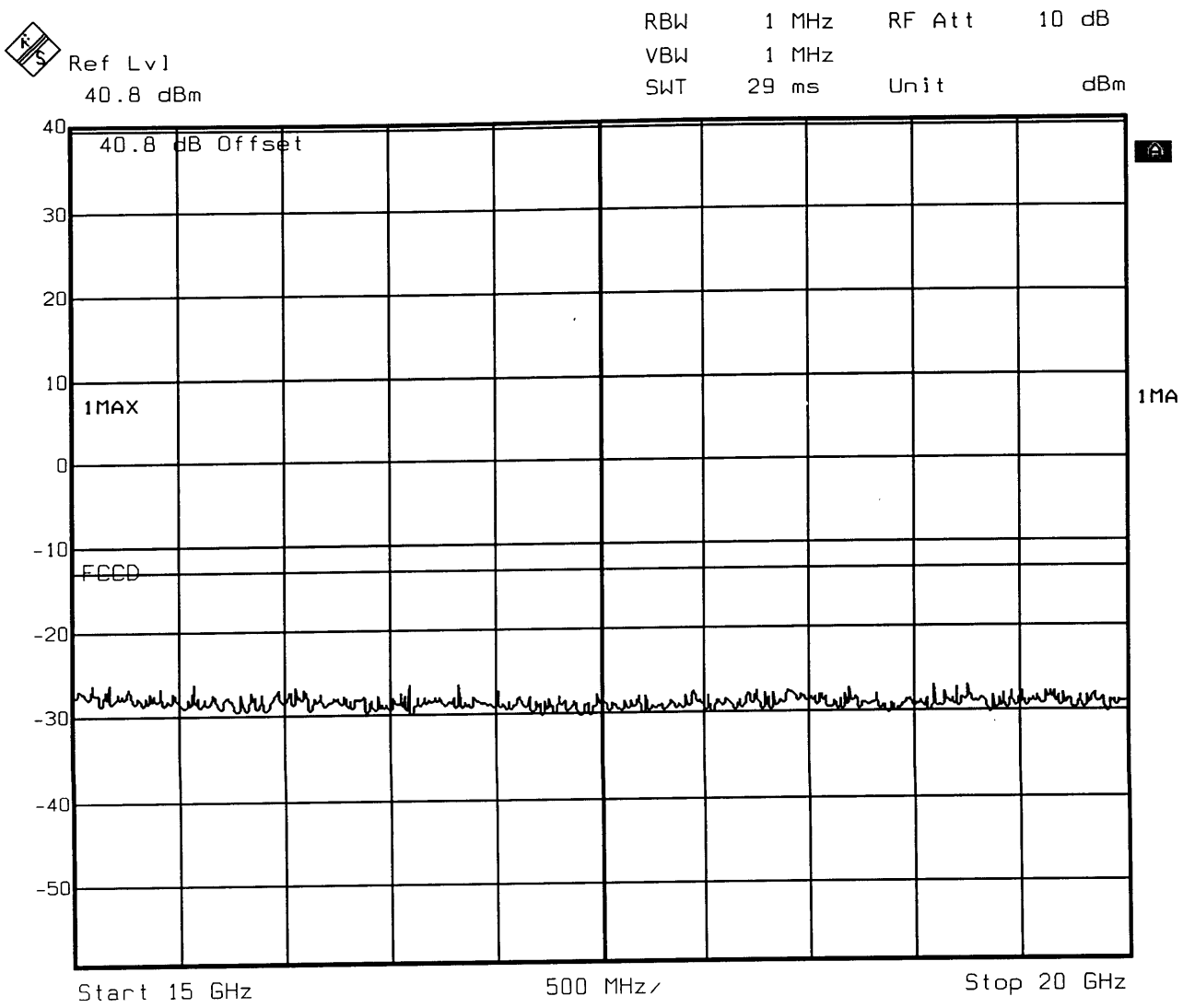
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block D, Channel: 609. TX Power 44.4 dBm.
Date: 27.JUL.1999 16:11:00



Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block D Channel 609. TX Power: 44.4 dBm.
Date: 27.JUL.1999 21:10:07



Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block D Channel 609. TX Power: 44.4 dBm.
Date: 27.JUL.1999 21:08:27



Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block D Channel 609. TX Power: 44.4 dBm.
Date: 27.JUL.1999 21:05:29

MEASUREMENT: 4

MEASUREMENT

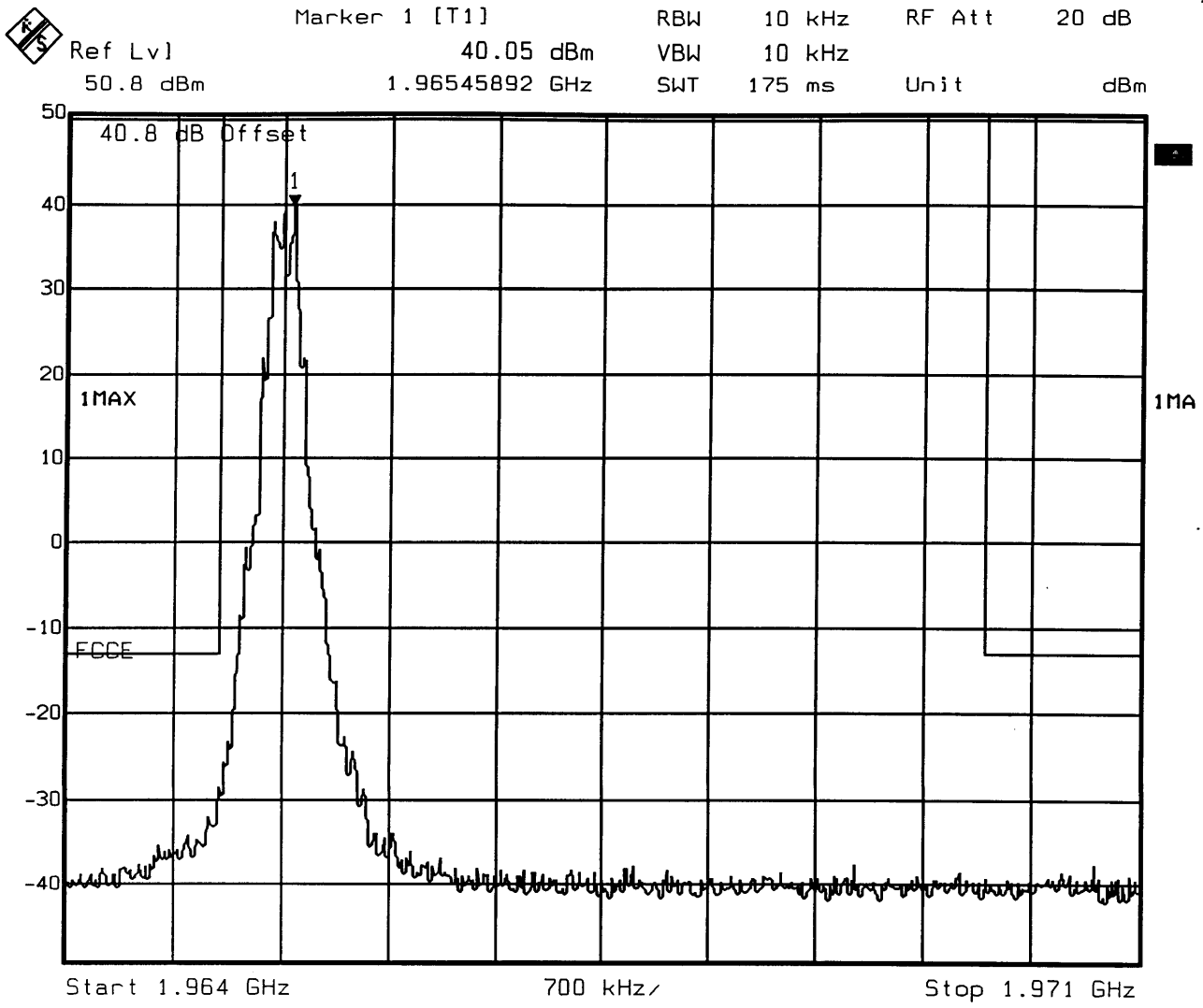
OF SPURIOUS EMISSIONS

AT ANTENNA TERMINALS

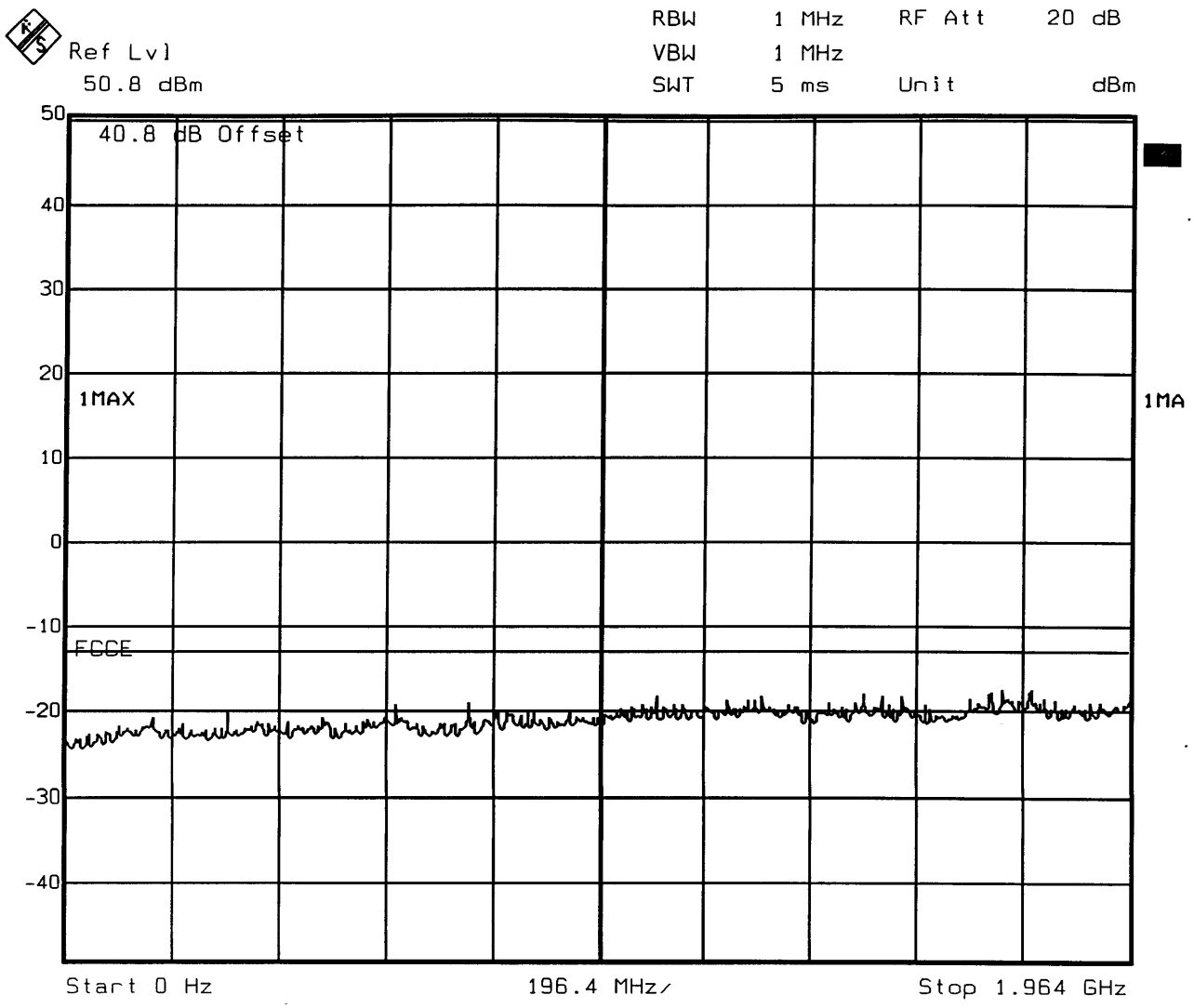
BLOCK E

(1965 – 1970 MHz)

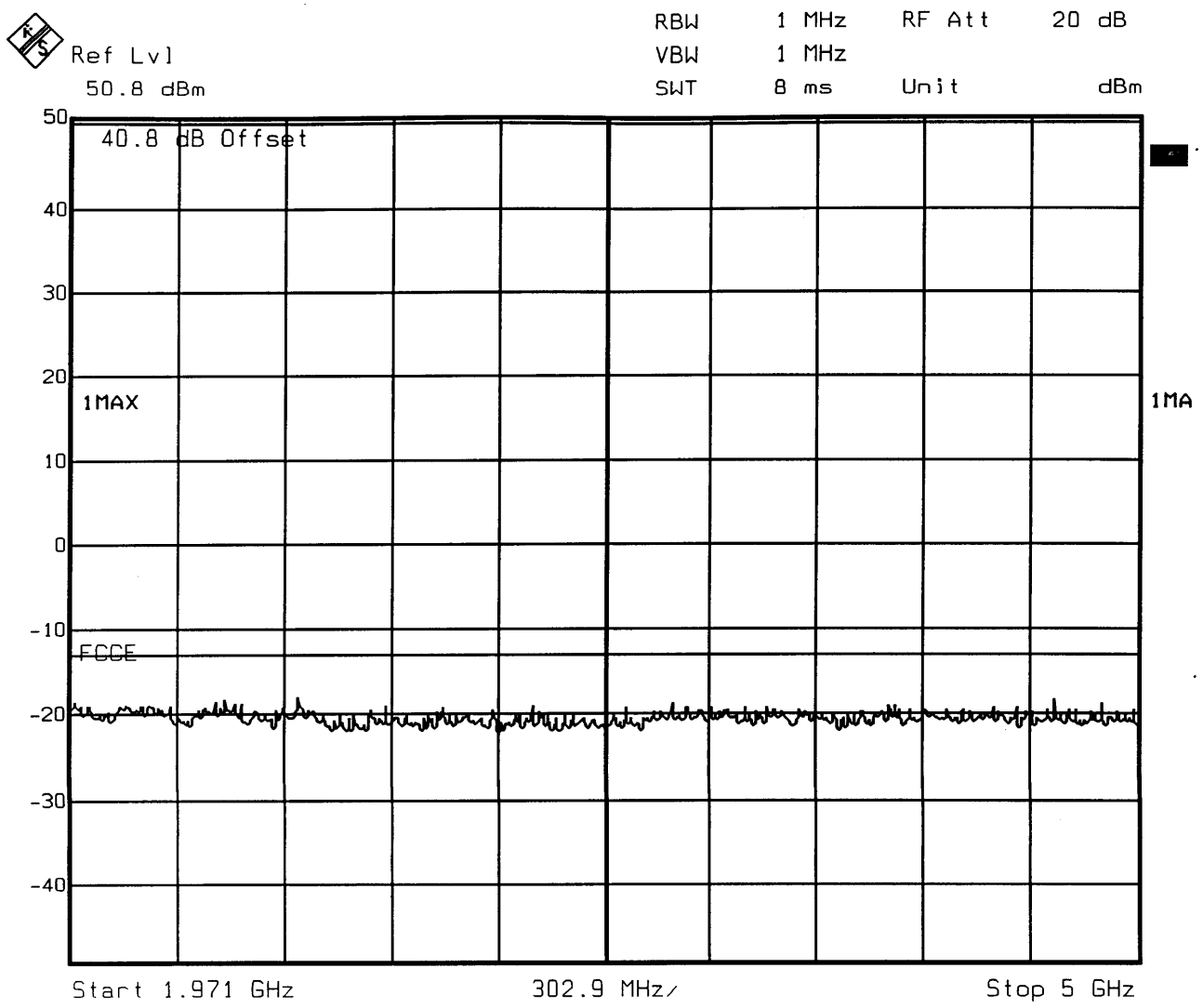
Left Edge: 1965.4 MHz (Channel 688)
Right Edge: 1969.6 MHz (Channel 709)



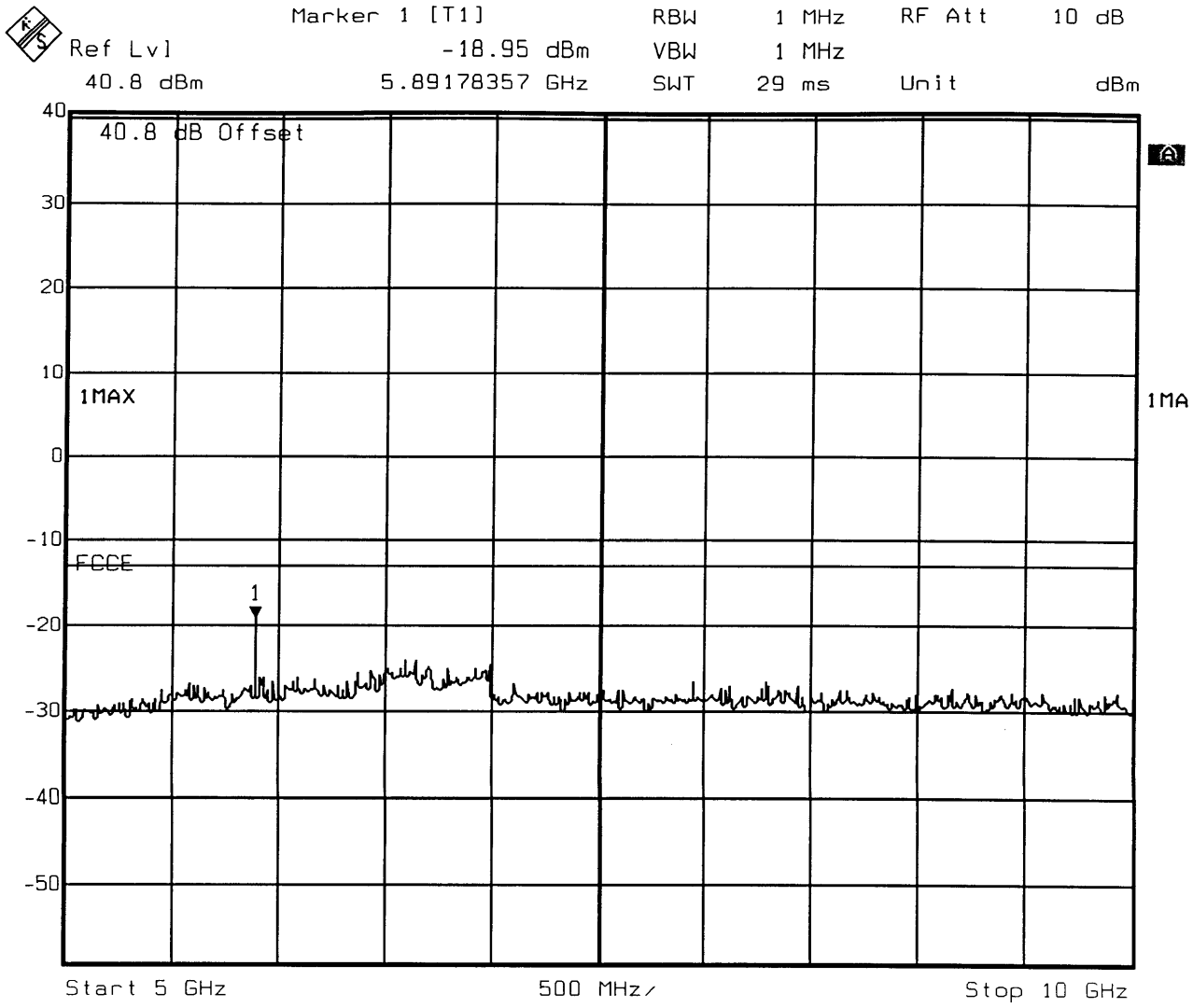
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block E, Channel: 688. TX Power 44.4 dBm.
Date: 27.JUL.1999 16:55:44



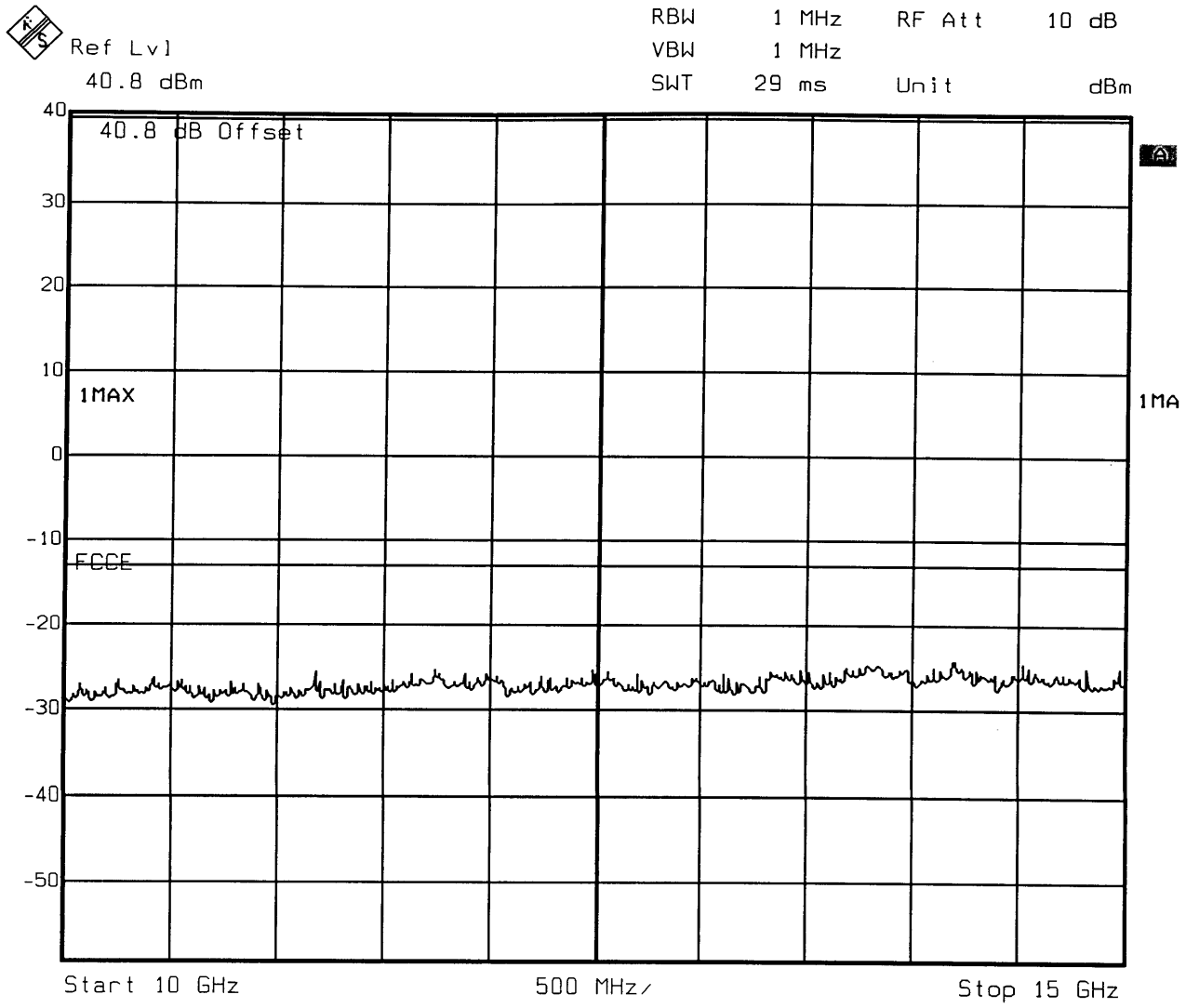
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block E, Channel: 688. TX Power 44.4 dBm.
Date: 27.JUL.1999 16:44:11



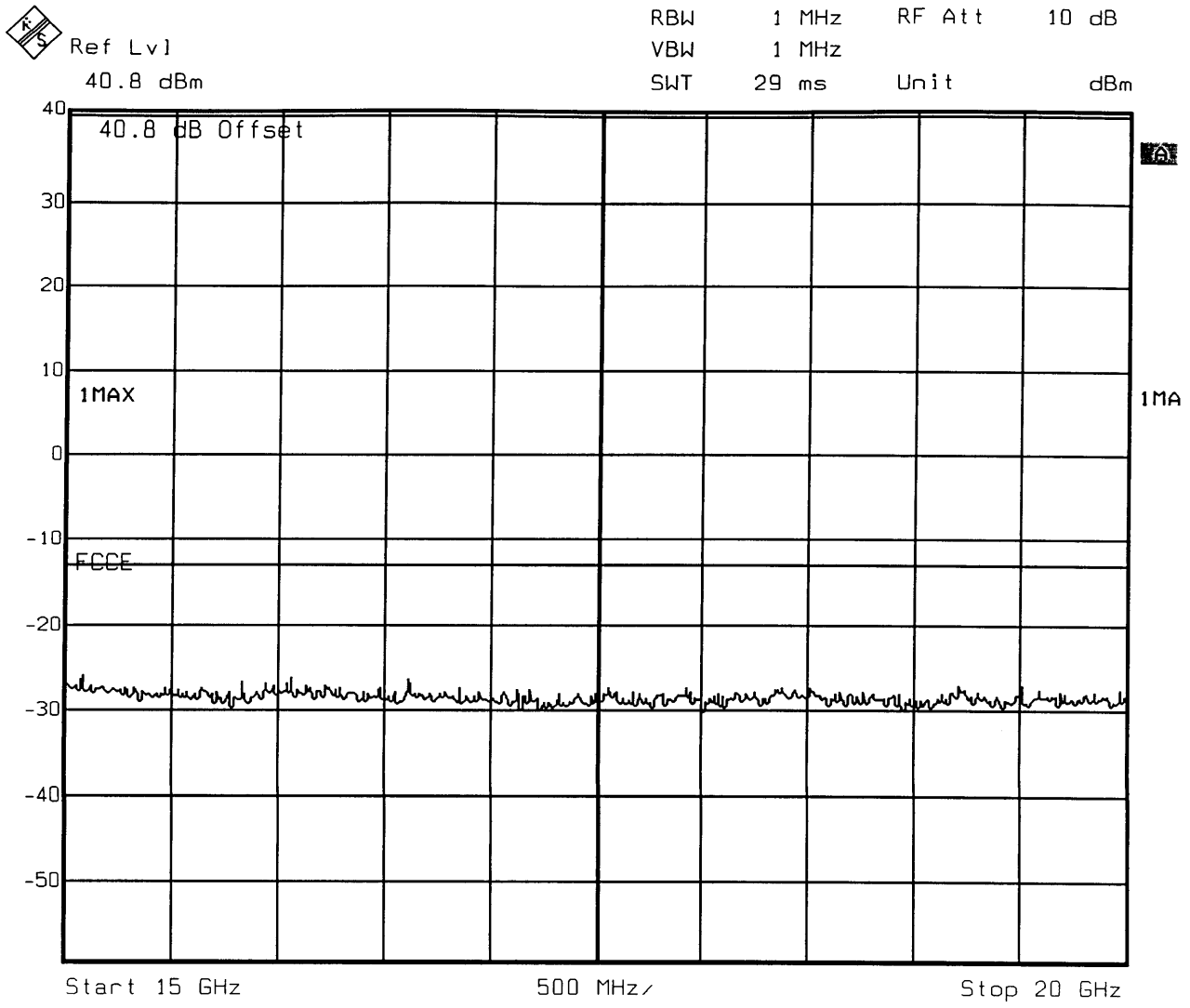
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block E, Channel: 688. TX Power 44.4 dBm.
Date: 27.JUL.1999 17:01:07



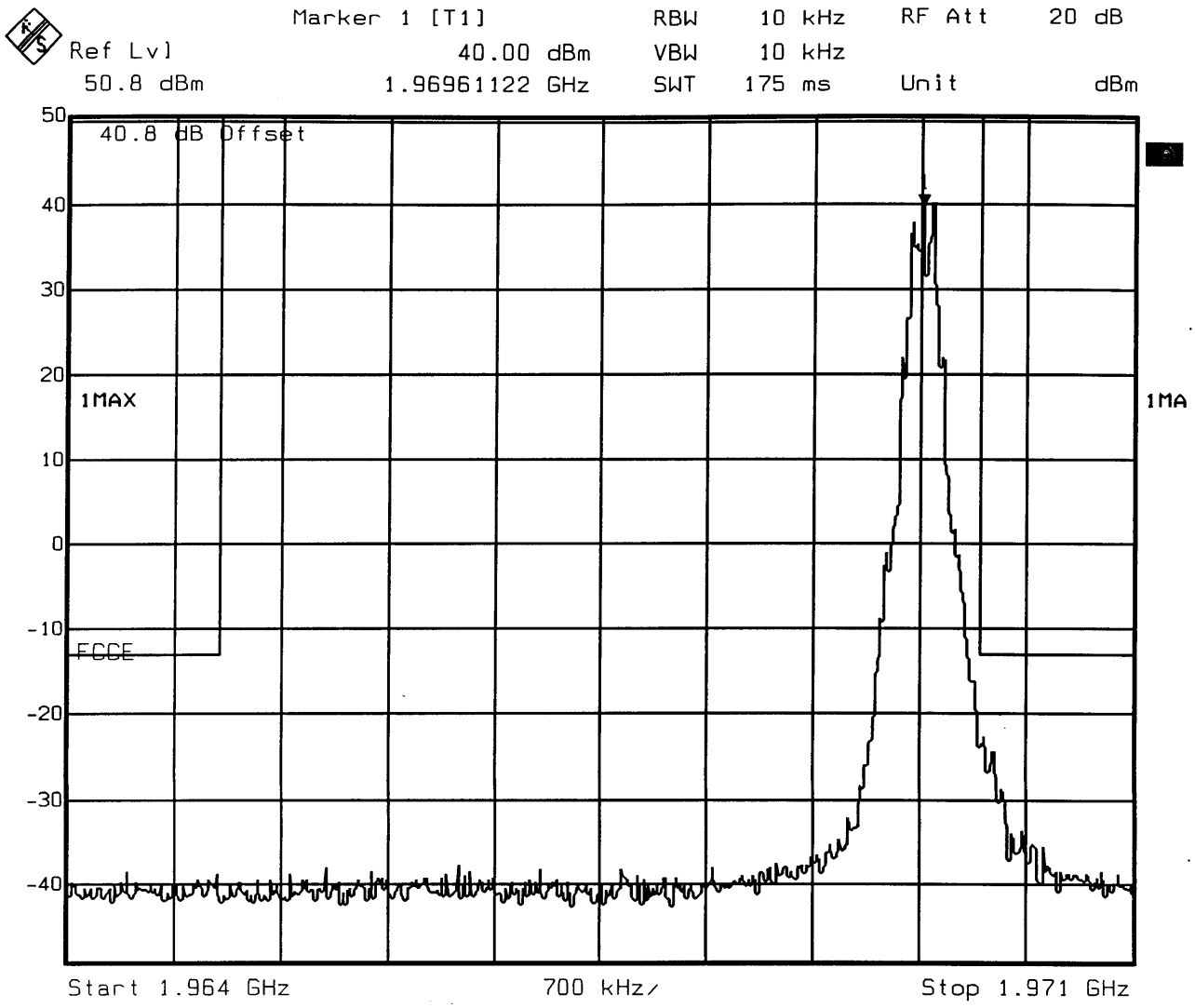
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block E Channel 688. TX Power: 44.4 dBm.
Date: 27.JUL.1999 20:48:23



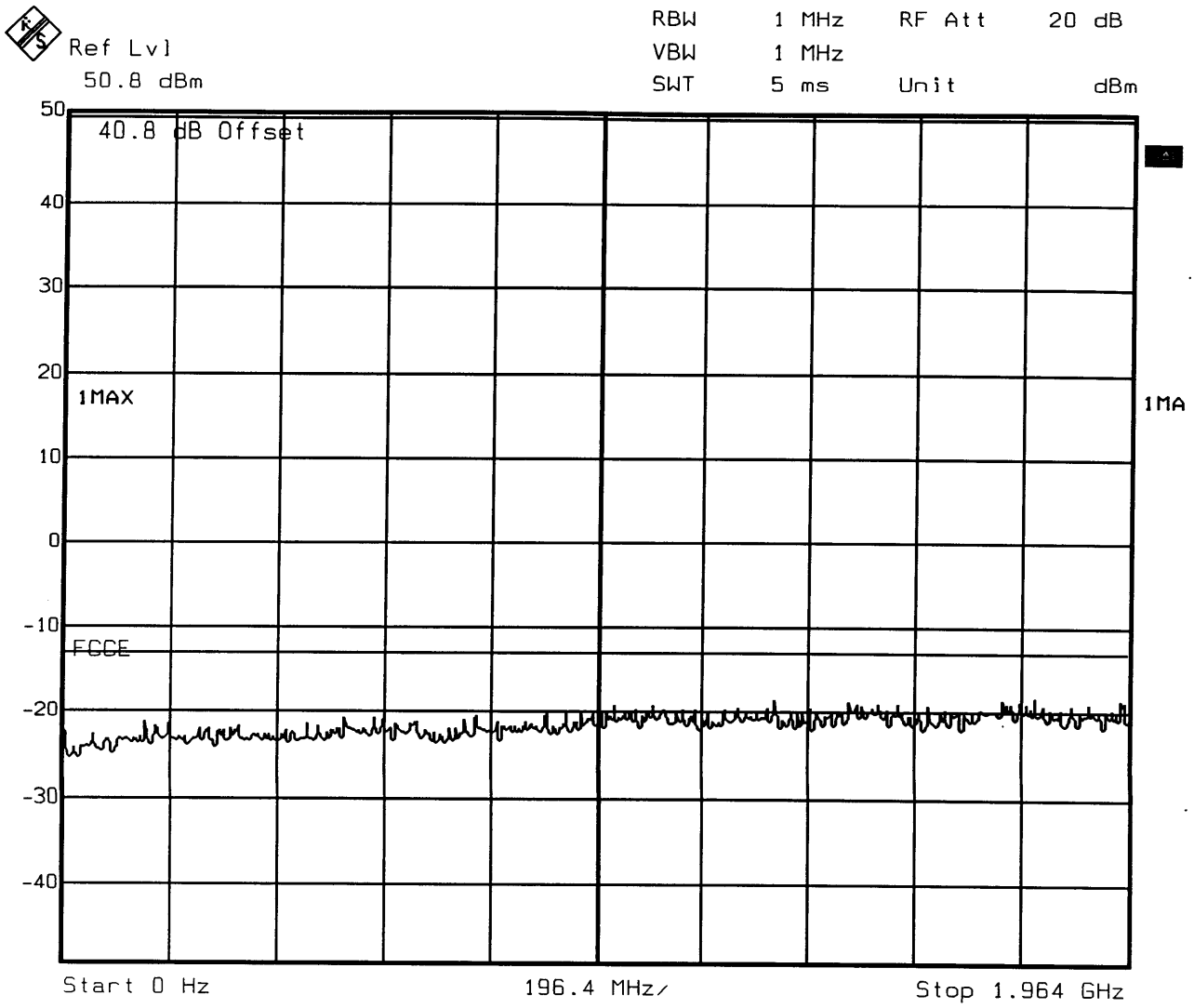
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block E Channel 688. TX Power: 44.4 dBm.
Date: 27.JUL.1999 20:49:54



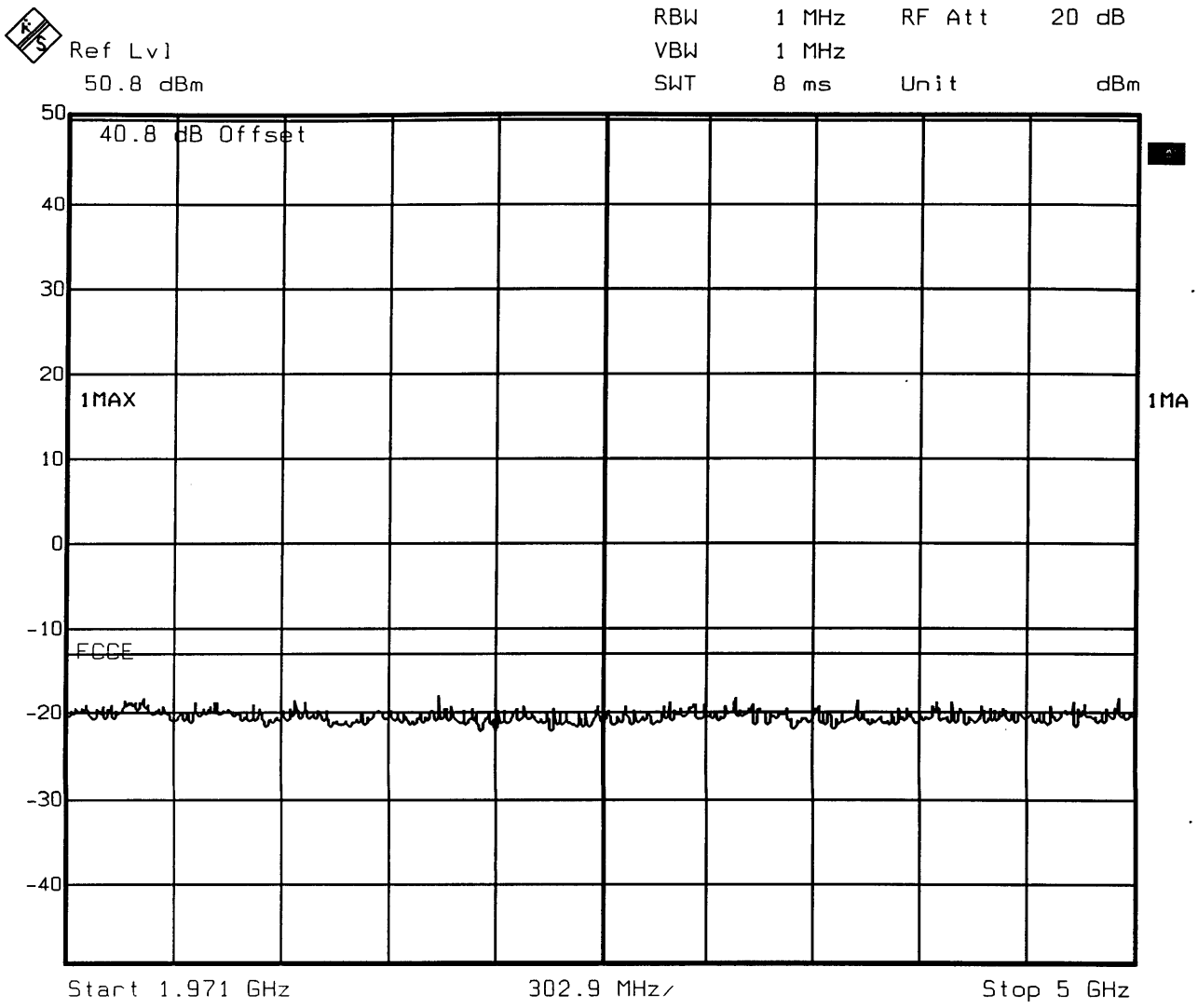
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block E Channel 688. TX Power: 44.4 dBm.
Date: 27.JUL.1999 20:51:25



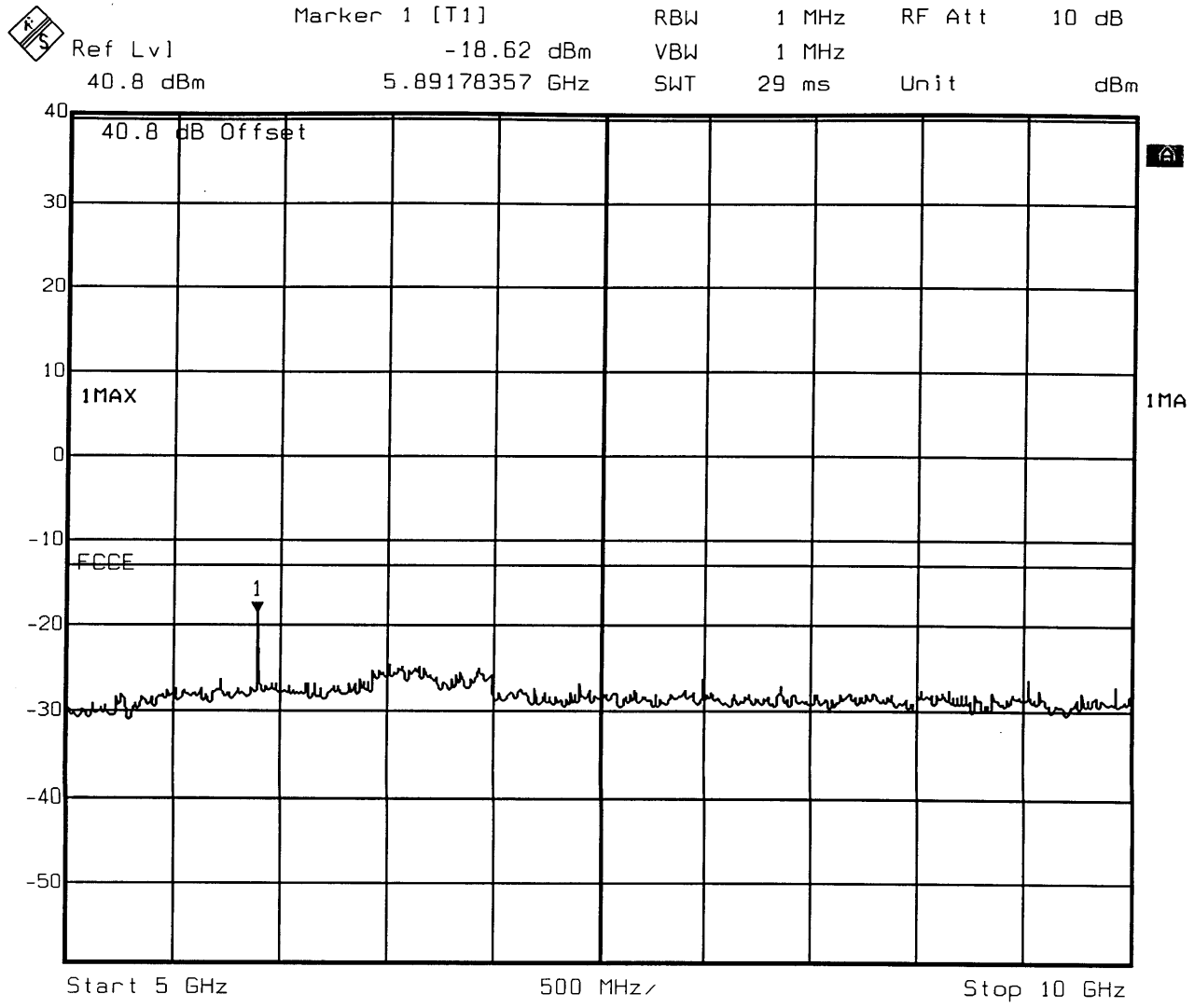
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block E, Channel: 709. TX Power 44.4 dBm.
Date: 27.JUL.1999 16:52:02



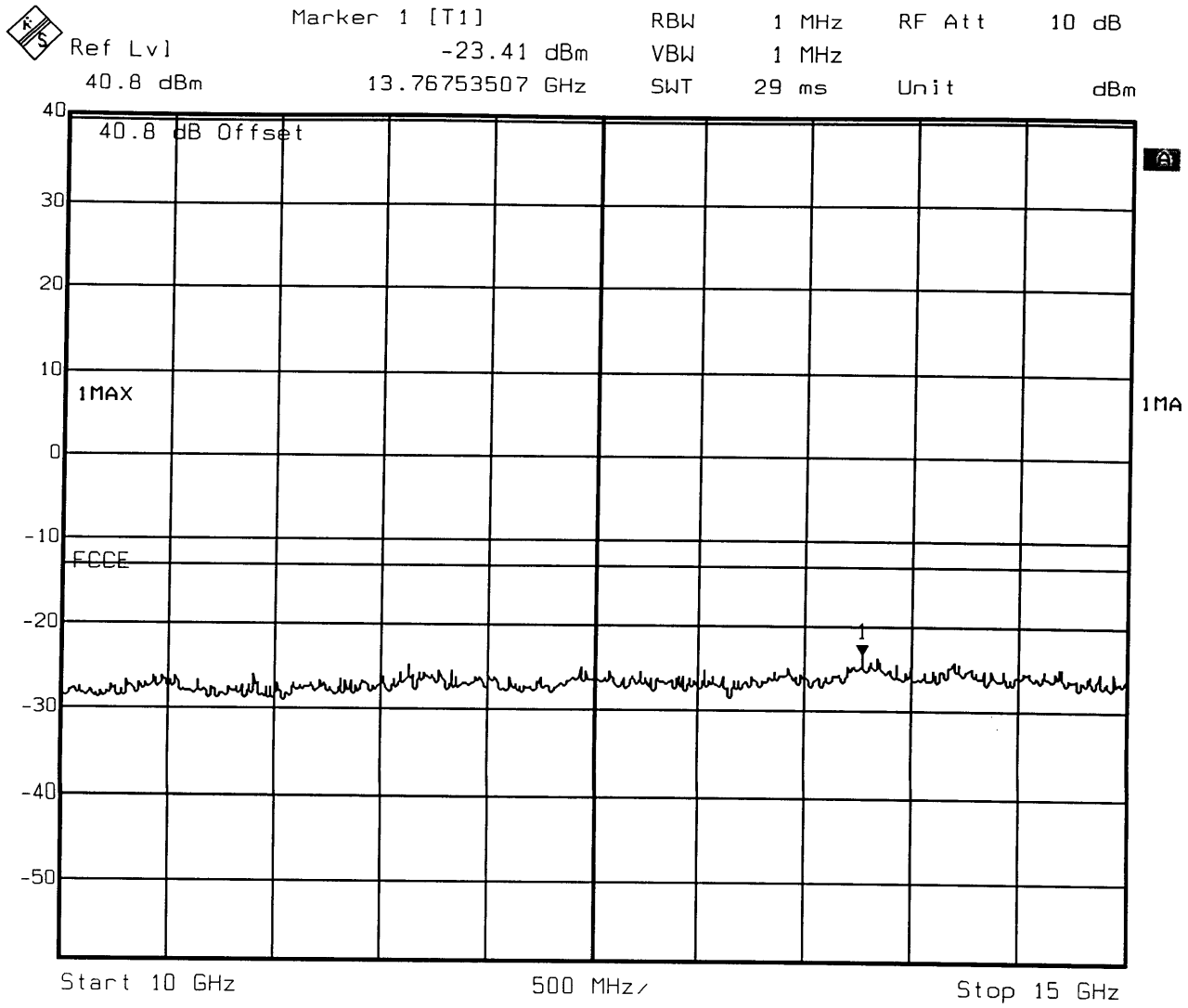
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block E, Channel: 709. TX Power 44.4 dBm.
Date: 27.JUL.1999 16:45:36



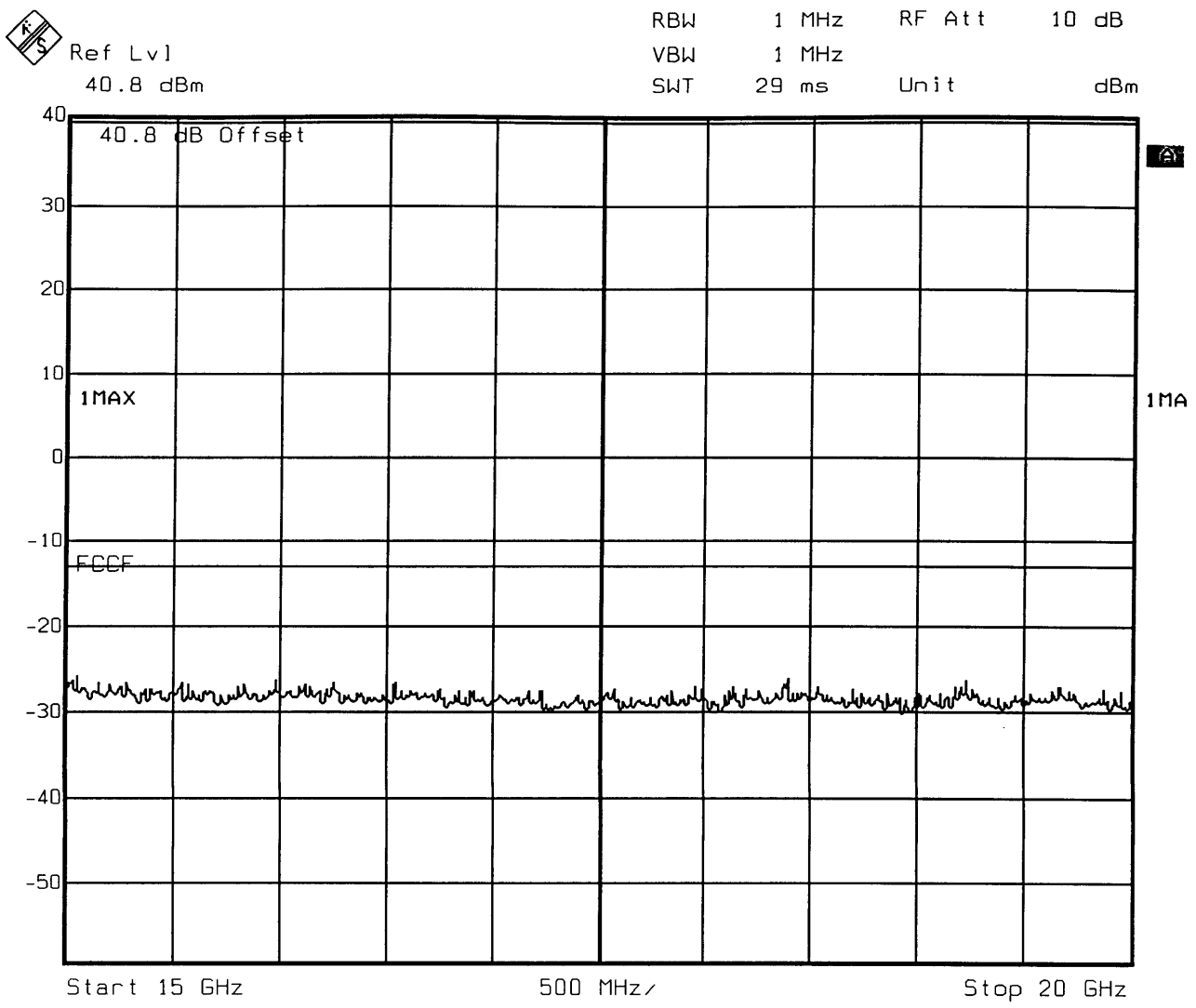
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block E, Channel: 709. TX Power 44.4 dBm.
Date: 27.JUL.1999 17:02:13



Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block E Channel 709. TX Power: 44.4 dBm.
Date: 27.JUL.1999 20:45:08



Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block E Channel 709. TX Power: 44.4 dBm.
Date: 27.JUL.1999 20:38:07



Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block E Channel 709. TX Power: 44.4 dBm.
Date: 27.JUL.1999 20:35:11

MEASUREMENT: 4

MEASUREMENT

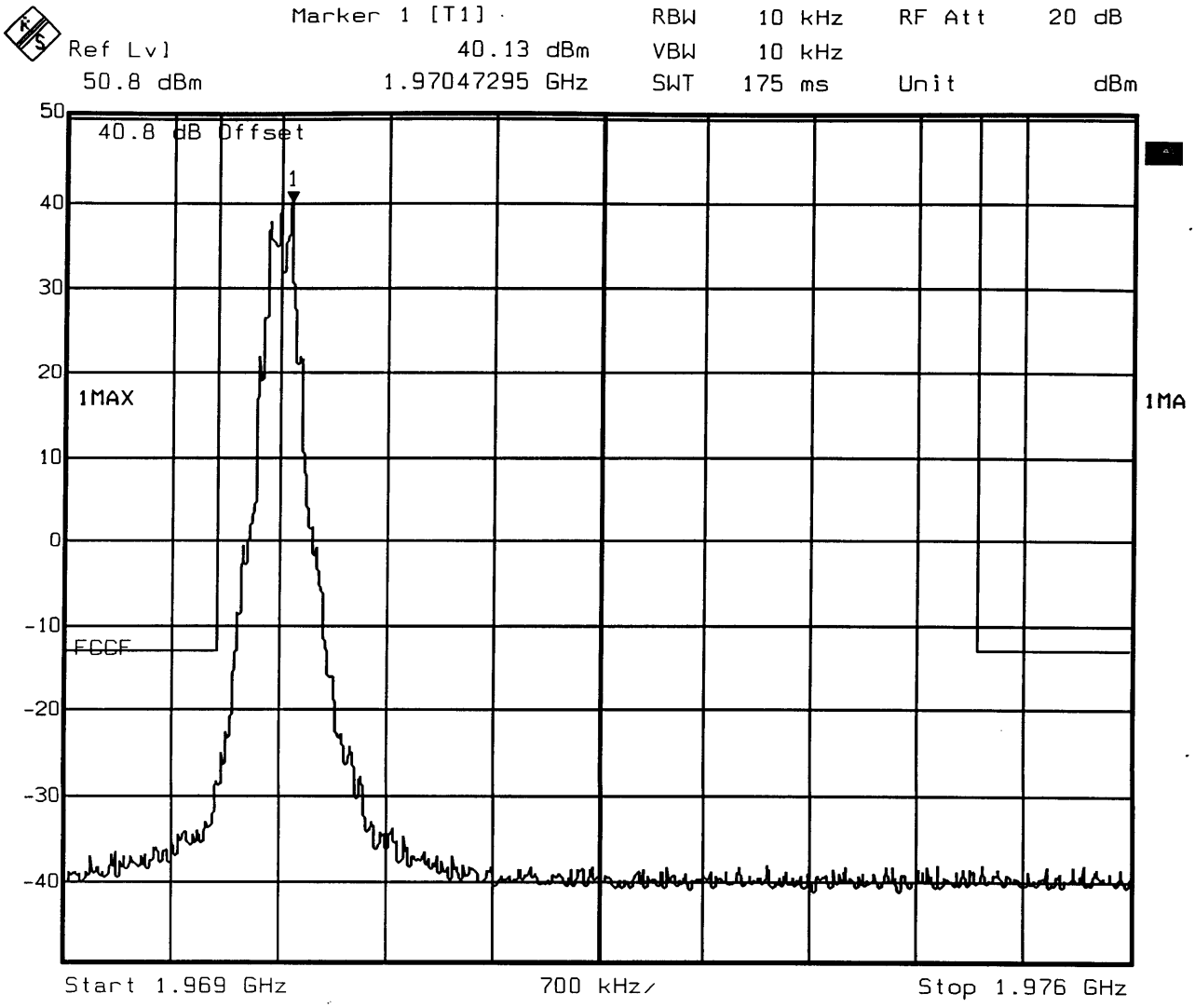
OF SPURIOUS EMISSIONS

AT ANTENNA TERMINALS

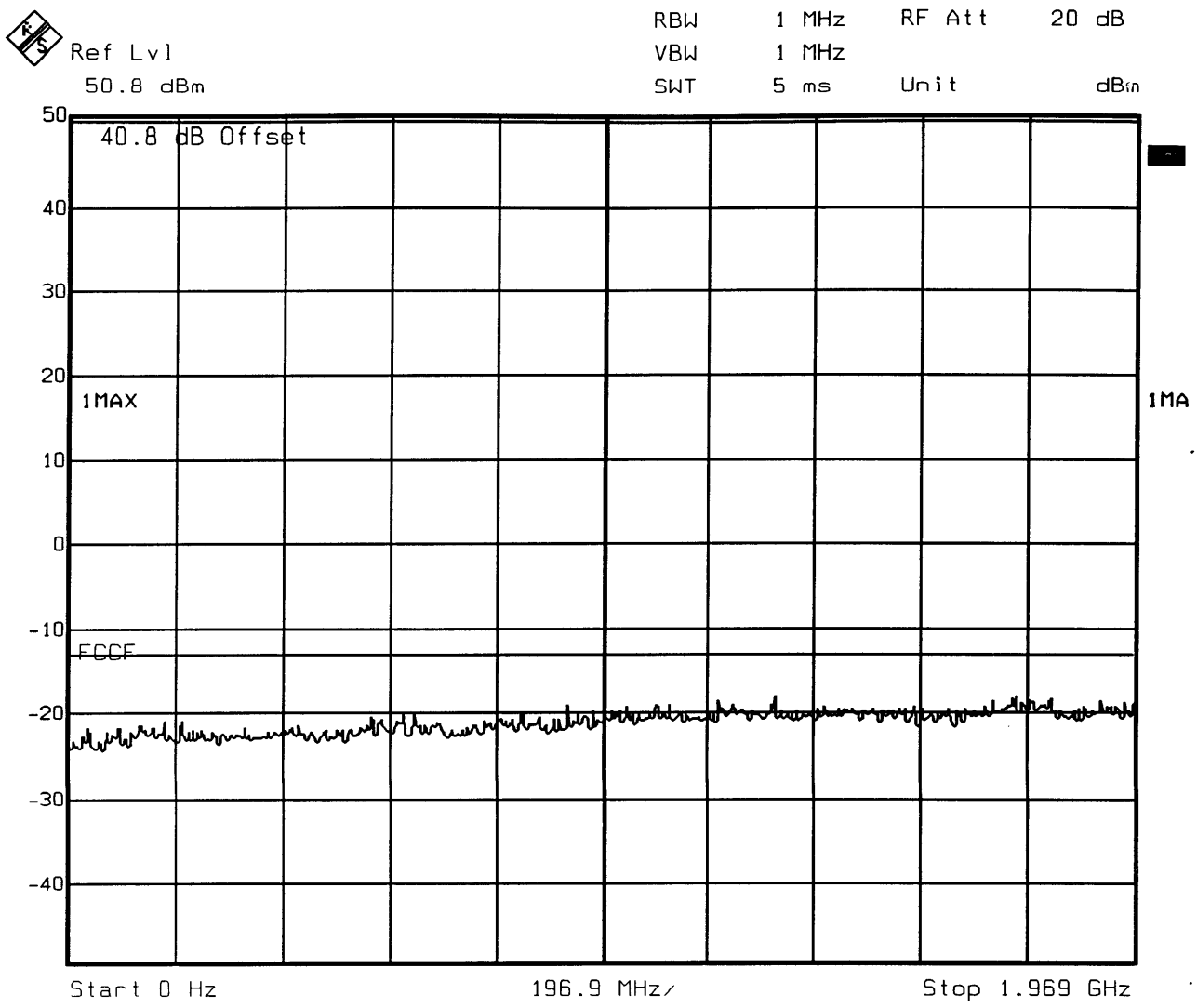
BLOCK F

(1970 – 1975 MHz)

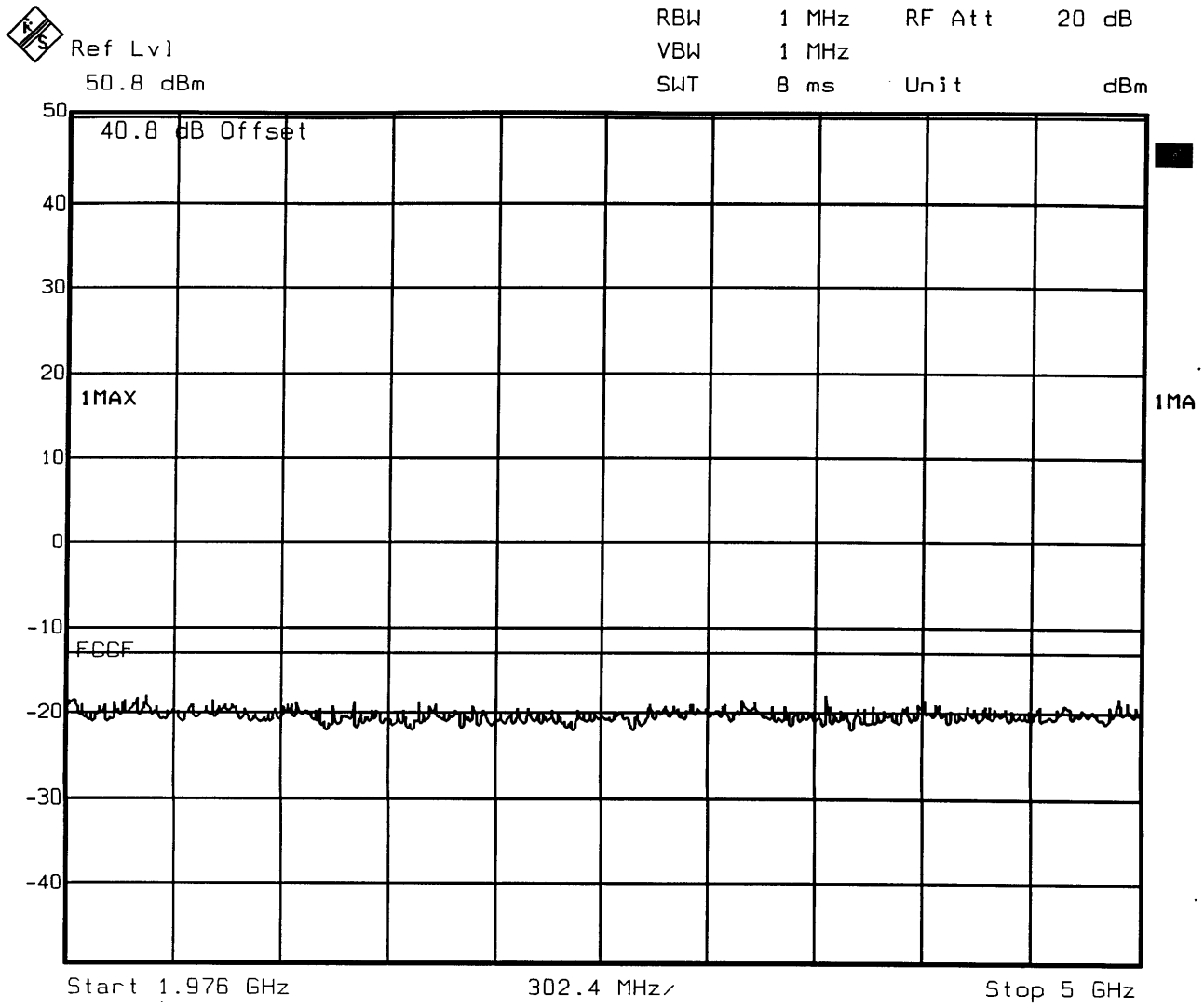
Left Edge: 1970.4 MHz (Channel 713)
Right Edge: 1974.6 MHz (Channel 734)



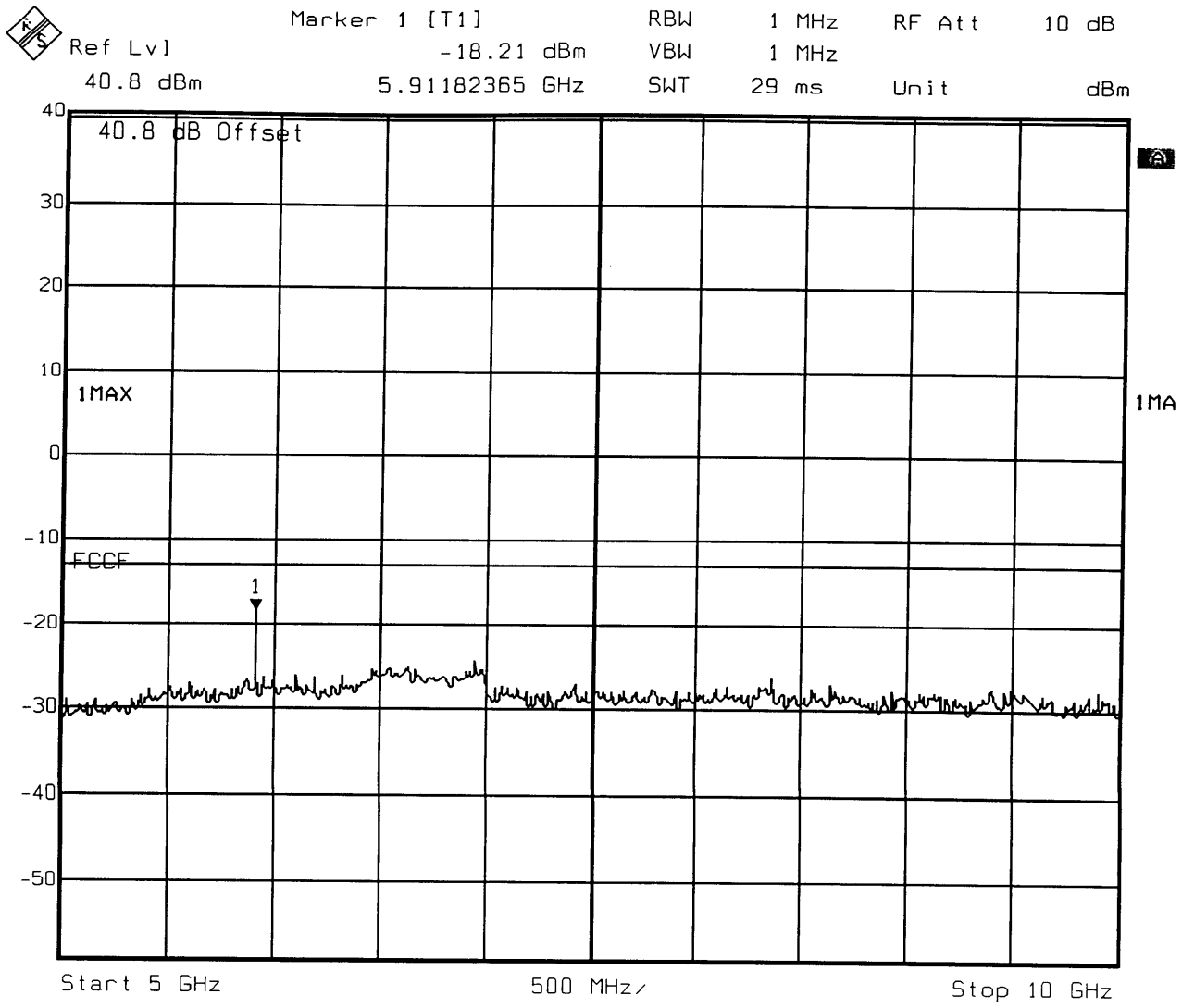
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block F, Channel: 713. TX Power 44.4 dBm.
Date: 27.JUL.1999 17:19:24



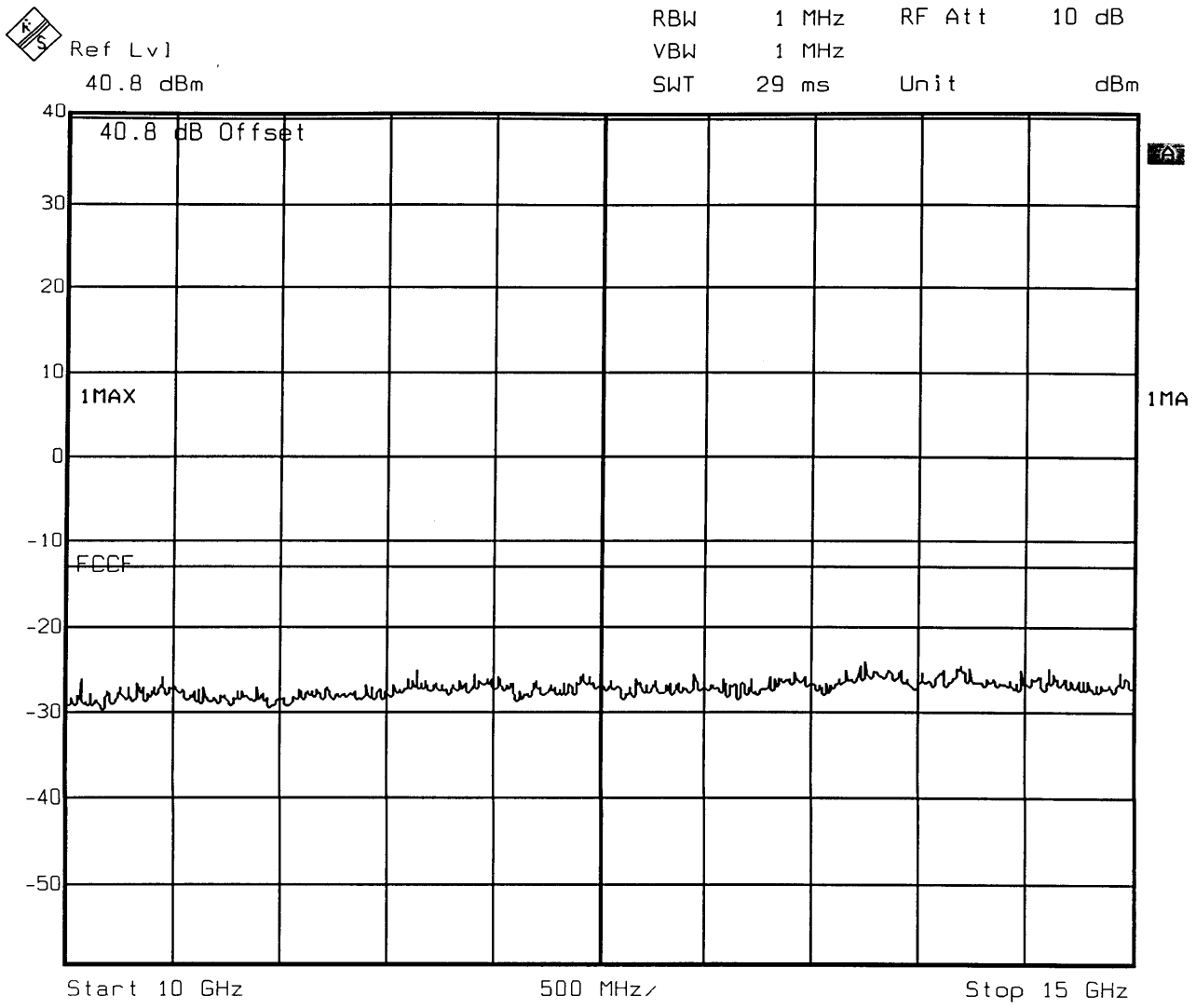
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block F, Channel: 713. TX Power 44.4 dBm.
Date: 27.JUL.1999 17:07:26



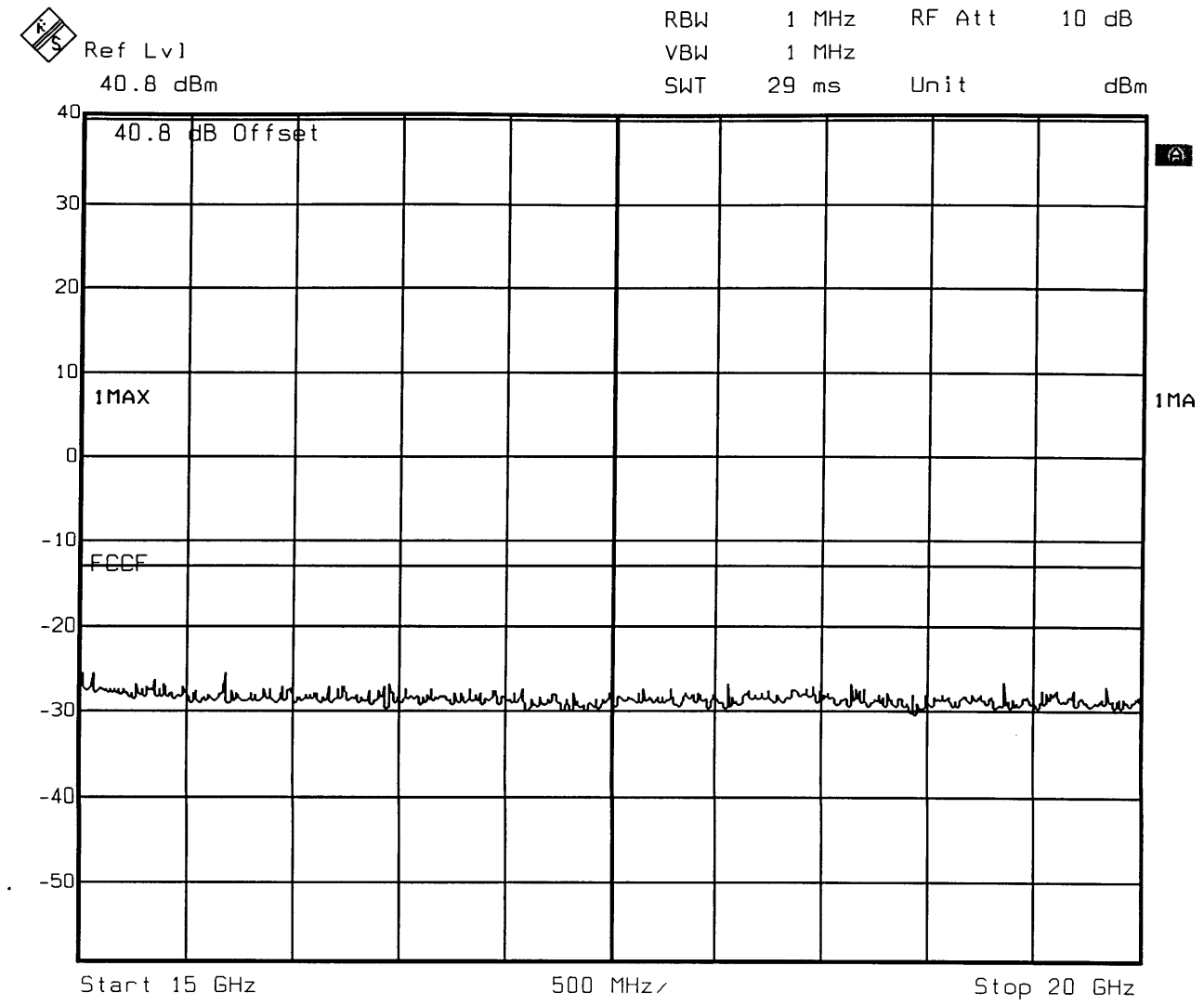
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block F, Channel: 713. TX Power 44.4 dBm.
Date: 27.JUL.1999 17:22:59



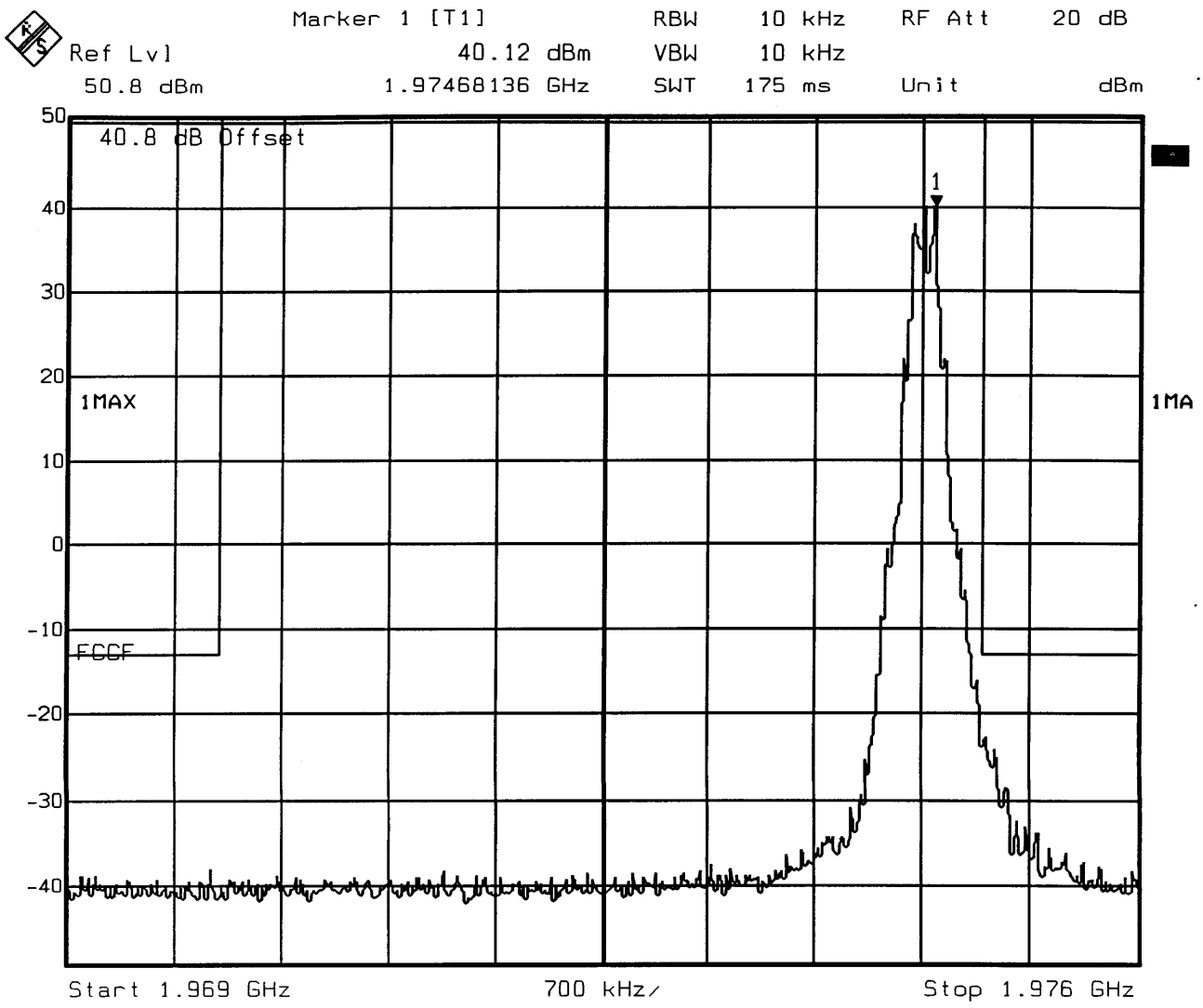
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block F Channel 713. TX Power: 44.4 dBm.
Date: 27.JUL.1999 20:26:02



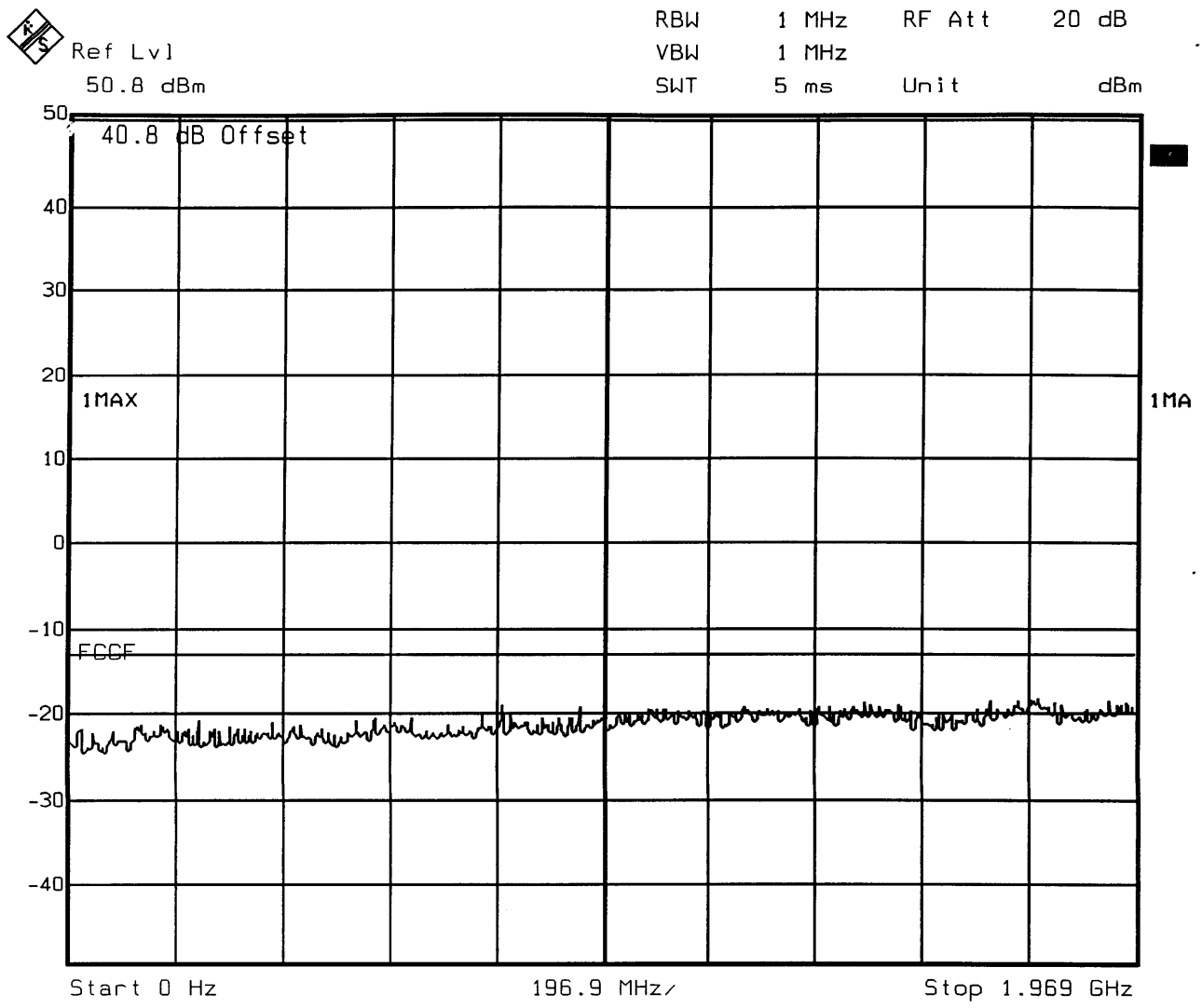
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block F Channel 713. TX Power: 44.4 dBm.
Date: 27.JUL.1999 20:24:33



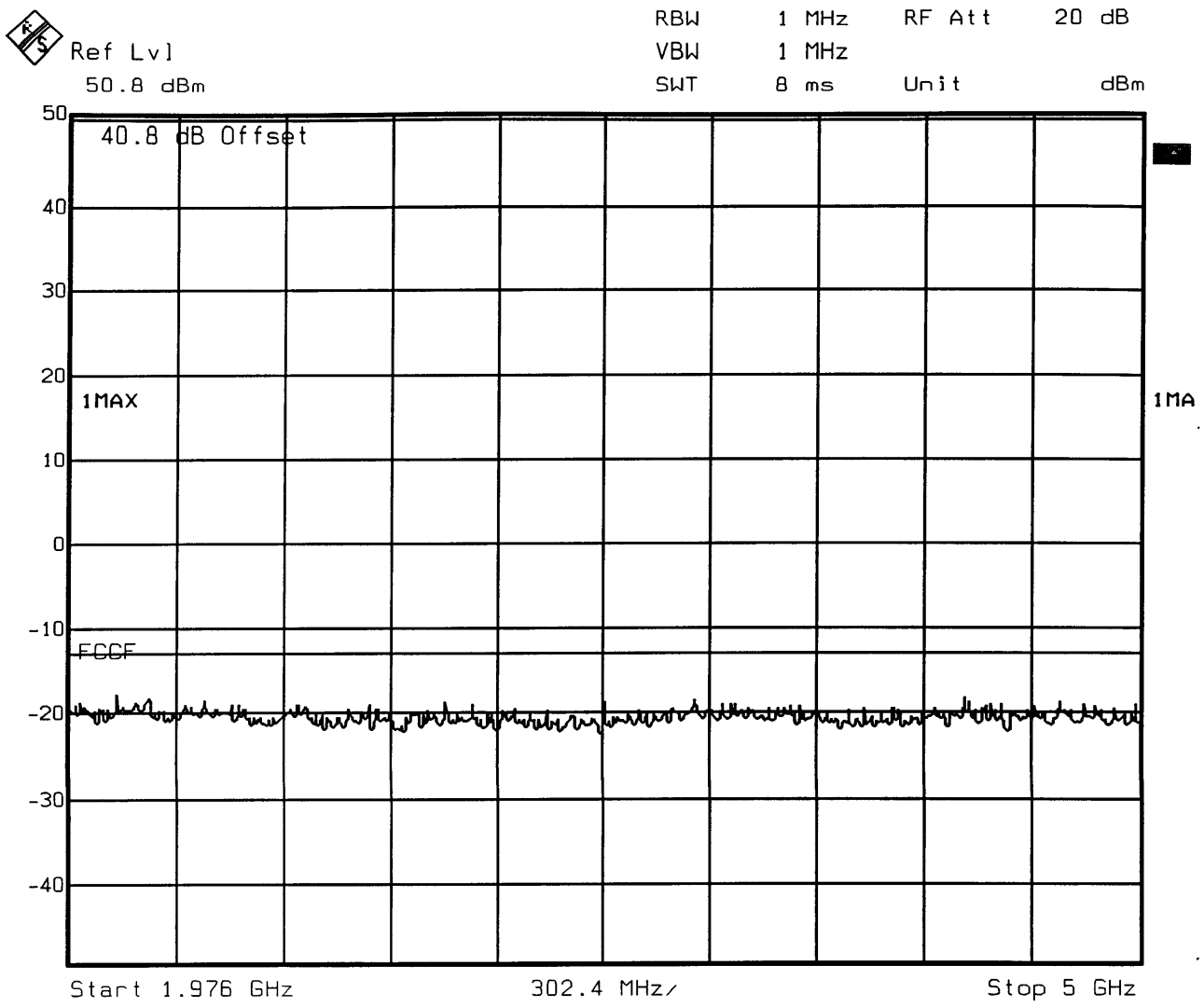
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block F Channel 713. TX Power: 44.4 dBm.
Date: 27.JUL.1999 20:23:20



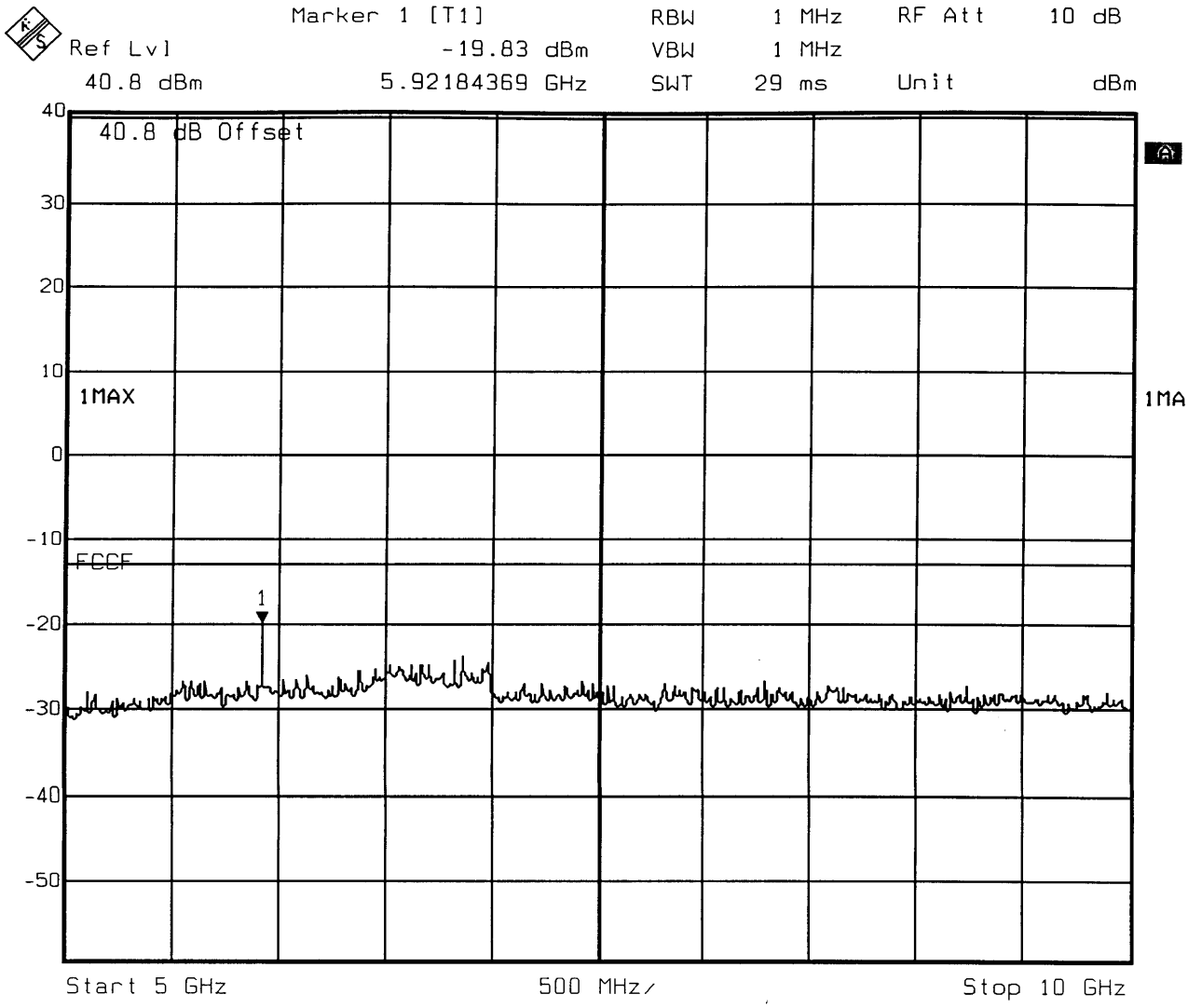
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block F, Channel: 734. TX Power 44.4 dBm.
Date: 27.JUL.1999 17:17:00



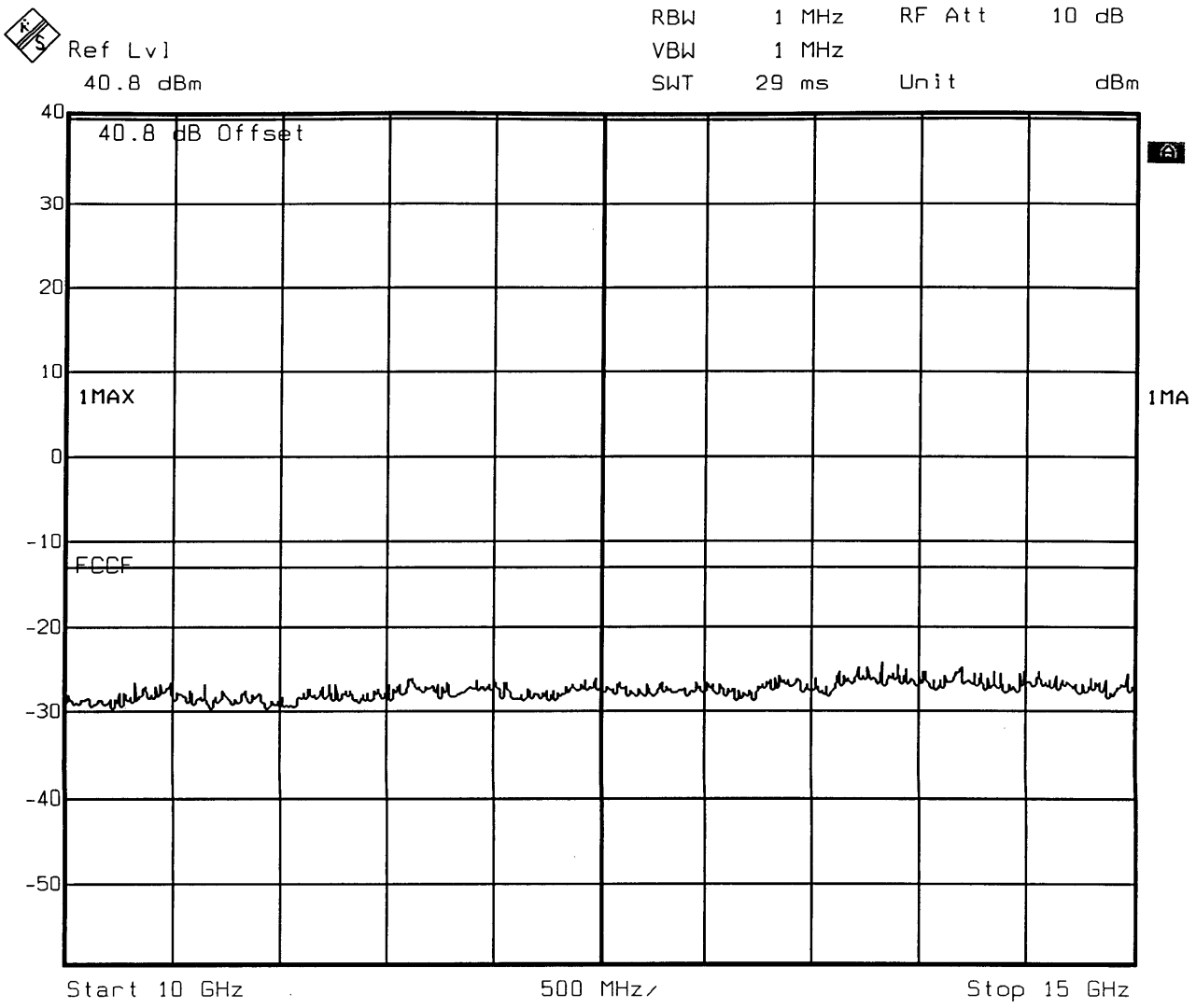
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block F, Channel: 734. TX Power 44.4 dBm.
Date: 27.JUL.1999 17:08:31



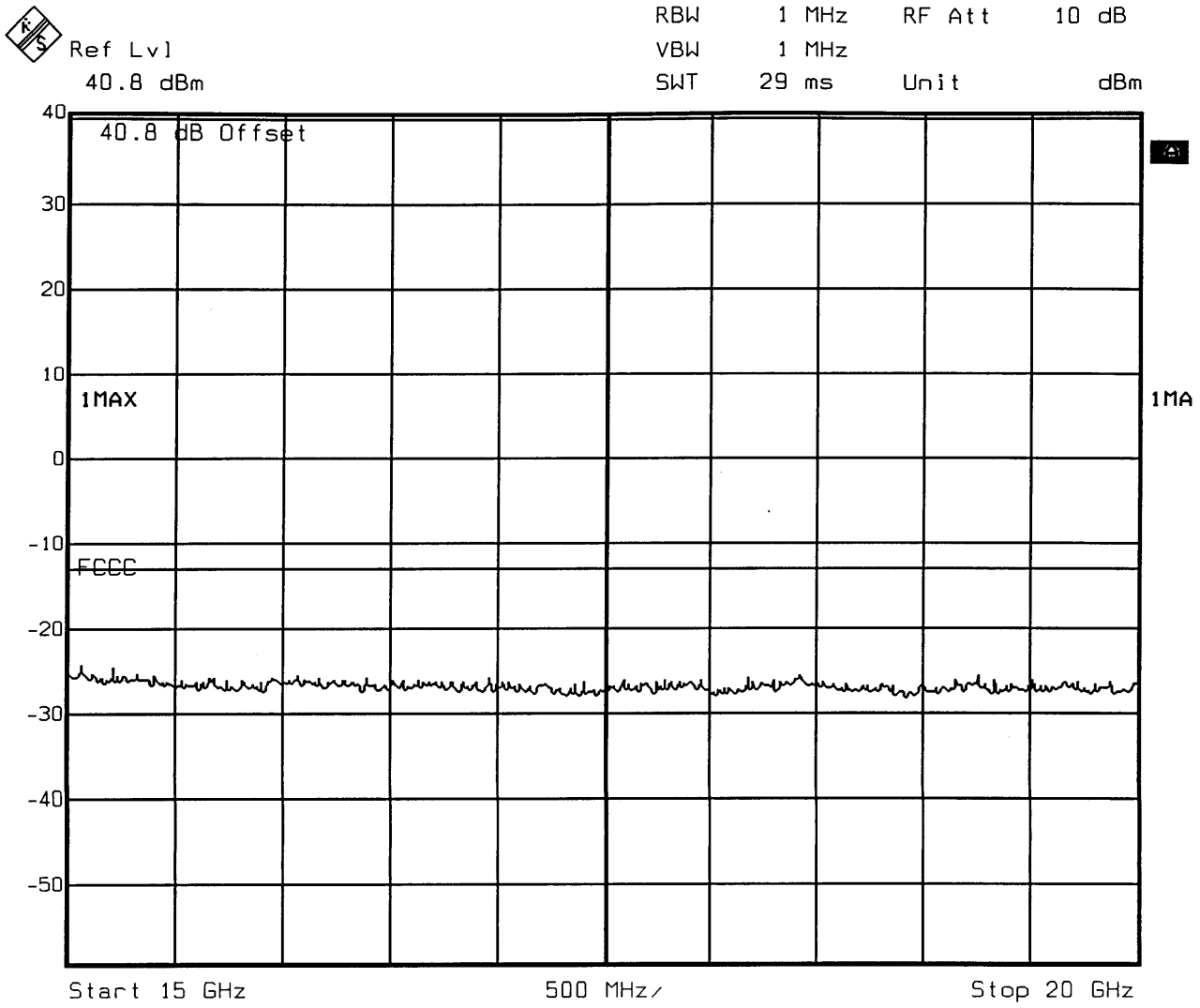
Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block F, Channel: 734. TX Power 44.4 dBm.
Date: 27.JUL.1999 17:24:47



Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block F Channel 734. TX Power: 44.4 dBm.
Date: 27.JUL.1999 20:27:45



Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block F Channel 734. TX Power: 44.4 dBm.
Date: 27.JUL.1999 20:29:49



Title: Spurious Emissions BTS 2000. FCC ID: AS5BTS2K-01
Comment A: Block F, Channel: 734. TX Power 44.4 dBm.
Date: 27.JUL.1999 20:02:29

FIELD STRENGTH OF SPURIOUS RADIATION

SECTION 2.1053

MEASUREMENT: 5

SECTION 2.1053

FIELD STRENGTH OF SPURIOUS RADIATION

Field strength measurements of radiated spurious emissions were made at a ten meter Open Area Test Site (OATS) maintained by Lucent Technologies Bell Laboratories Global Product Compliance Laboratory in Holmdel, New Jersey. A complete description and full measurement data for the site is on file with the Commission (FCC File 31040/SIT).

The 6 SRFU19s were assembled in an BTS2000 Cabinet. Each SRFU19's were operating on different frequency blocks and all other associated equipment. The SRFU19's were operating at a RF output level of 27 watts. The output terminals (J4) were terminated with 50 ohm load. The spectrum from 10 MHz to the 10th harmonic of the carrier was searched for spurious radiation. Measurements were made according to ANSI C63.4. All emissions more than 20 dB below the specification limit were considered not reportable (Section 2.1057(c)).

The calculated emission levels were found by:

Measured level (dBμV) + Cable Loss(dB)+Antenna Factor(dB) = Field Strength (dBμV/m)

Section 24.238 and 2.1053 contains the requirements for the levels of spurious radiation as a function of the level of the unmodulated carrier. The reference level for the unmodulated carrier is calculated as the field produced by an ideal dipole excited by the transmitter output power according to the following relation taken from Reference Data for Radio Engineers, page 676, 4th edition, IT&T Corp.

$$E= [(49.2*P)^{1/2}]/R$$

$$20 \log (E*10^{6}) – (43 + 10 \log P) = 73.9 \text{ dBμV/meter}$$

E = Field Intensity in Volts/meter
P = Transmitted Power in Watts = 27 W
R = Distance in meters = 10 m

RESULTS:
For this particular test, the field strength of any spurious radiation is required to be less than 73.9 dBμV/meter. Reportable measurements are equal to or greater than 53.9 dBμV/meter. Over the spectrum investigated, 10 MHz to 10th of the carrier, no reportable spurious emissions were detected. This demonstrates that the "GSM 1900 Transceiver", Single Radio Frequency Unit (SRFU19), the subject of this application, complies with Sections 2.1053, 24.238 and 2.1057 of the Rules.

MEASUREMENT OF FREQUENCY STABILITY

SECTION 2.1055

MEASUREMENT: 6

SECTION 2.1055

MEASUREMENT OF FREQUENCY STABILITY

RESPONSE:

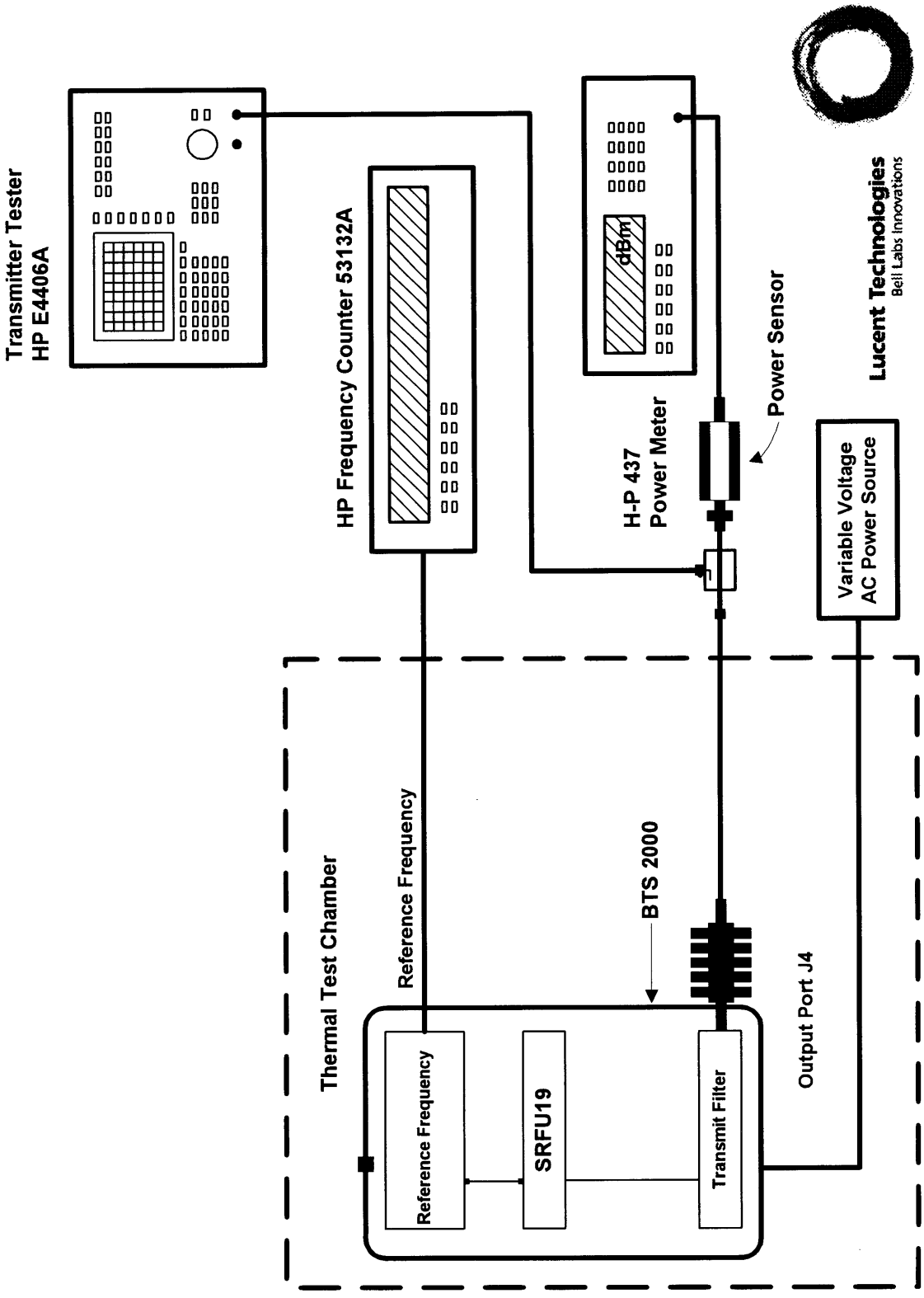
The frequency stabilization and accuracy of the GSM signal amplified by the SRFU19 is a function of reference frequency generator used by the Voltage Controlled Oscillator (VCO). The reference frequency generator is highly accurate frequency unit which is phase-locked with VCO of the SRFU19. Any change reference frequency generator will affect the output frequency of SRFU19.

The frequency stability test data was measured SRFU19 installed and tested in a fully configured BTS2000/6odB Cabinet. The cabinet contained 6 SRFU19s. The entire BTS 2000 Cabinet was subjected to the FCC specified environments while operating at full rated power. The 13 MHz reference oscillator deviations SRFU19 output power frequency deviations were measured. The measurement setup is depicted in Figure 6 A.

The nominal voltage input to BTS2000/6odB cabinet is either 208V or 240V AC and therefore, AC input voltage was varied from 176.8V(85% of 208V) to 276V (115% of 240V). The input power to SRFU19 is 48VDC and this voltage is derived from AC input to BTS2000.

RESULTS:
The attached data documents that the worse case frequency stability over temperature and voltage were 0.0207 ppm or 0.27 Hz for reference generator and 0.00319 ppm or 2.7 Hz for SRFU19 RF output.

Fig. 6A. TEST CONFIGURATION FOR FREQUENCY STABILITY POWER OUTPUT



MEASUREMENT OF FREQUENCY STABILITY
(BTS2000/6odB Cabinet)

Reference and Transmit Frequency Deviation at –40 degrees C @ 208 Volts		
Time (minutes)	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
0	13.0000000019	-1.0
0.5	13.0000000010	-1.2
1.0	13.0000000014	-2.0
1.5	13.0000000003	-1.7
2.0	12.9999999993	-0.6
2.5	12.9999999986	-0.9
3.0	12.9999999983	-1.0
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

Reference and Transmit Frequency Deviation at –40 degrees C over voltage/frequency range		
VAC	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
176.8	12.9999999771	-0.7
186.8	9759	-1.3
196.8	9740	-0.6
206.8	9742	-1.6
216.8	9728	-0.4
226.8	9724	-0.9
236.8	9721	-0.2
246.8	9704	-2.6
256.8	9633	-1.1
266.8	9616	0.1
276.0	9591	-0.5
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

J4 RF Tx Power Deviation = 0.3 dBm, Transmit Channel Monitored: 565 (1940.8MHz)

MEASUREMENT OF FREQUENCY STABILITY
(BTS2000/6odB Cabinet)

Reference and Transmit Frequency Deviation at –30 degrees C @ 208 Volts		
Time (minutes)	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
0	12.9999997986	-0.9
0.5	12.9999997991	-0.2
1.0	7993	-0.3
1.5	7998	-1.5
2.0	8004	-0.7
2.5	7989	-0.5
3.0	8001	-1.5
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

Reference and Transmit Frequency at –30 degrees C over voltage/frequency range		
VAC	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
176.8	12.9999998002	-1.1
186.8	8006	-2.5
196.8	8011	-1.6
206.8	8014	0.2
216.8	8007	-1.6
226.8	7998	-2.5
236.8	7996	-0.9
246.8	7988	-1.7
256.8	7990	0.7
266.8	7985	-0.2
276.0	7978	0.1
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz(+/-0.05 ppm)
RESULT	**PASS**	**PASS**

J4 RF Tx Power Deviation = 0.3 dBm, Transmit Channel Monitored: 565 (1940.8MHz)

MEASUREMENT OF FREQUENCY STABILITY
(BTS2000/6odB Cabinet)

Reference and Transmit Frequency Deviation at –30 degrees C @ 208 Volts		
Time (minutes)	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
0	12.9999997451	-0.9
0.5	12.9999997450	-0.9
1.0	7451	0.9
1.5	7441	-0.7
2.0	7465	-1.6
2.5	7464	-1.9
3.0	7461	-1.5
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

Reference and Transmit Frequency Deviation at –20 degrees C over voltage/frequency range		
VAC	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
176.8	12.9999997429	0.1
186.8	7429	-1.6
196.8	7451	-1.0
206.8	7446	-0.7
216.8	7447	-1.6
226.8	7481	-0.9
236.8	7468	0.5
246.8	7469	-0.3
256.8	7468	-0.7
266.8	7460	-1.2
276.0	7464	-0.6
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

J4 RF Tx Power Deviation = 0.3 dBm, Transmit Channel Monitored: 565 (1940.8MHz)

MEASUREMENT OF FREQUENCY STABILITY
(BTS2000/6odB Cabinet)

Reference and Transmit Frequency Deviation at –10 degrees C @ 208 Volts		
Time (minutes)	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
0	12.9999997889	0.6
0.5	12.9999997894	0.72
1.0	7898	0.88
1.5	7896	0.92
2.0	7904	0.56
2.5	7905	0.46
3.0	7902	0.98
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

Reference and Transmit Frequency Deviation at –10 degrees C over voltage/frequency range		
VAC	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
176.9	12.9999997902	-1.0
186.8	7913	-2.2
196.8	7921	-0.51
206.9	7930	-1.23
216.8	7931	-0.51
226.9	7935	-1.12
236.7	7940	-0.43
246.7	7937	-2.39
256.8	7932	-1.09
266.7	7930	-0.36
276.0	7934	-0.68
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

J4 RF Tx Power Deviation = 0.3 dBm, Transmit Channel Monitored: 565 (1940.8MHz)

MEASUREMENT OF FREQUENCY STABILITY
(BTS2000/6odB Cabinet)

Reference and Transmit Frequency Deviation at 0 degrees C @ 208 Volts		
Time (minutes)	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
0	12.9999997816	-1.1
0.5	12.9999997815	0.55
1.0	7814	-0.4
1.5	7816	1.4
2.0	7822	-1.8
2.5	7817	-0.6
3.0	7820	-0.8
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

Reference and Transmit Frequency Deviation at 0 degrees C over voltage/frequency range		
VAC	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
176.8	12.9999997845	-1.1
186.8	7844	0.5
196.8	7853	-1.1
206.8	7859	-0.2
216.8	7866	-1.4
226.8	7859	-0.4
236.8	7870	-2.4
246.8	7874	-0.4
256.8	7872	-3.1
266.8	7865	-0.4
276.0	7865	-1.3
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

J4 RF Tx Power Deviation = 0.3 dBm, Transmit Channel Monitored: 565 (1940.8MHz)

MEASUREMENT OF FREQUENCY STABILITY
(BTS2000/6odB Cabinet)

Reference and Transmit Frequency Deviation at +10 degrees C @ 208 Volts		
Time (minutes)	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
0	12.9999997602	-0.63
0.5	12.9999997609	-0.9
1.0	7606	-0.6
1.5	7607	-0.5
2.0	7610	-1.0
2.5	7608	-1.0
3.0	7605	-0.4
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

Reference and Transmit Frequency Deviation at +10 degrees C over voltage/frequency range		
VAC	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
176.8	12.9999997607	-0.8
186.8	7606	-0.6
196.8	7611	-1.2
206.8	7607	-0.5
216.8	7610	-0.4
226.8	7607	0.6
236.8	7608	0.4
246.8	7611	0.2
256.8	7609	-1.4
266.8	7610	1.3
276.0	7611	-1.3
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

J4 RF Tx Power Deviation = 0.3 dBm, Transmit Channel Monitored: 565 (1940.8MHz)

MEASUREMENT OF FREQUENCY STABILITY
(BTS2000/6odB Cabinet)

Reference and Transmit Frequency Deviation at +20 degrees C @ 208 Volts		
Time (minutes)	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
0	12.9999997271	4.7
0.5	12.9999997268	2.71
1.0	7262	1.29
1.5	7263	0.05
2.0	7264	0.39
2.5	7265	0.27
3.0	7262	0.07
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

Reference and Transmit Frequency Deviation at +20 degrees C over voltage/frequency range		
VAC	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
176.9	12.9999997259	0.77
186.8	7256	-0.9
196.8	7259	-1.1
206.9	7257	-0.7
216.8	7263	-0.5
226.9	7261	-1.2
236.7	7263	-0.9
246.7	7260	-1.2
256.8	7254	0.2
266.7	7264	-0.4
276.0	7261	-1.2
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

J4 RF Tx Power Deviation = 0.3 dBm, Transmit Channel Monitored: 565 (1940.8MHz)

MEASUREMENT OF FREQUENCY STABILITY
(BTS2000/6odB Cabinet)

Reference and Transmit Frequency Deviation at +30 degrees C @ 208 Volts		
Time (minutes)	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
0	12.9999997832	0.21
0.5	12.9999997836	-0.27
1.0	7835	-0.65
1.5	7835	-0.76
2.0	7836	-0.13
2.5	7834	0.19
3.0	7837	0.23
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

Reference and Transmit Frequency Deviation at +30 degrees C over voltage/frequency range		
VAC	**Measured Reference Frequency (Reference Frequency = 13MH)**	**Tx Frequency Deviation (Hz)**
176.7	12.9999997837	-0.36
186.6	7837	0.12
196.7	7834	-0.32
206.8	7836	-0.49
216.8	7834	-0.40
226.8	7837	-0.78
236.8	7835	-0.40
246.8	7833	-0.90
256.9	7829	-0.68
266.8	7827	-0.38
275.9	7828	-0.14
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

J4 RF Tx Power Deviation = 0.3 dBm, Transmit Channel Monitored: 565 (1940.8MHz)

MEASUREMENT OF FREQUENCY STABILITY
(BTS2000/6odB Cabinet)

Reference and Transmit Frequency Deviation at +40 degrees C @ 208 Volts		
Time (minutes)	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
0	12.9999997996	-0.3
0.5	12.9999998005	-1.1
1.0	8017	-0.4
1.5	8022	0.3
2.0	8019	-0.7
2.5	8011	-0.6
3.0	8007	-0.6
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

Reference and Transmit Frequency Deviation at +40 degrees C over voltage/frequency range		
VAC	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
176.8	12.9999997842	-0. 6
186.8	7848	-2.1
196.8	7855	-0.5
206.8	7864	-1.7
216.8	7874	-2.0
226.8	7883	-0.3
236.8	7897	0.5
246.8	7913	-0.5
256.8	7928	-1.9
266.8	7940	-0.4
276.0	7955	0.2
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

J4 RF Tx Power Deviation = 0.3 dBm, Transmit Channel Monitored: 565 (1940.8MHz)

MEASUREMENT OF FREQUENCY STABILITY
(BTS2000/6odB Cabinet)

Reference and Transmit Frequency Deviation at +50 degrees C @ 208 Volts		
Time (minutes)	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
0	12.9999998036	-0.7
0.5	12.9999998032	-1.0
1.0	8025	-0.5
1.5	8030	-0.2
2.0	8027	-0.2
2.5	8028	0.1
3.0	8024	-0.5
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

Reference and Transmit Frequency Deviation at +50 degrees C over voltage/frequency range		
VAC	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
176.8	12.9999998019	-0.39
186.8	8004	-0.40
196.8	8002	-0.46
206.8	7972	-0.80
216.8	7960	-0.30
226.8	7920	-1.59
236.8	7888	-0.70
246.8	7855	-0.80
256.8	7783	-1.55
266.8	7718	-0.53
276.0	7666	-0.69
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

J4 RF Tx Power Deviation = 0.3 dBm, Transmit Channel Monitored: 565 (1940.8MHz)

MEASUREMENT OF FREQUENCY STABILITY
(BTS2000/6odB Cabinet)

Reference and Transmit Frequency Deviation at +55 degrees C @ 208 Volts		
Time (minutes)	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
0	12.9999997949	-0.14
0.5	12.9999997951	-0.53
1.0	7950	-0.67
1.5	7949	-1.18
2.0	7952	-1.64
2.5	7951	-1.08
3.0	7947	-1.33
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

Reference and Transmit Frequency Deviation at +55 degrees C over voltage/frequency range		
VAC	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
176.8	12.9999997949	-0.63
186.8	7945	-1.20
196.8	7948	-1.22
206.8	7944	-1.06
216.8	7936	-1.14
226.8	7919	-0.14
236.8	7899	-0.64
246.8	7878	-1.02
256.8	7853	-0.48
266.8	7831	-1.27
276.0	7807	-0.74
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

J4 RF Tx Power Deviation = 0.3 dBm, Transmit Channel Monitored: 565 (1940.8MHz)

MEASUREMENT OF FREQUENCY STABILITY
(BTS2000/6odB Cabinet)

Upon return to 20 degrees C

Reference and Transmit Frequency Deviation at +20 degrees C @ 208 Volts		
Time (minutes)	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
0	12.9999998051	-1.33
0.5	12.9999998048	-1.47
1.0	8053	-0.97
1.5	8052	-1.48
2.0	8055	-1.03
2.5	8051	-1.70
3.0	8050	-1.14
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

Reference and Transmit Frequency Deviation at +20 degrees C over voltage/frequency range		
VAC	**Measured Reference Frequency (Reference Frequency = 13MHz)**	**Tx Frequency Deviation (Hz)**
176.8	12.9999998043	-1.54
186.8	8048	0.21
196.8	8049	-0.47
206.8	8049	-0.82
216.8	8046	0.27
226.8	8045	-0.54
236.8	8045	-0.66
246.8	8048	-0.67
256.8	8050	-0.75
266.8	8050	-0.97
276.0	8049	-0.41
SPECIFICATION	+/- .000000650 MHz or 0.65 Hz (+/-0.05 ppm)	+/- 97.04 Hz (+/-0.05 ppm)
RESULT	**PASS**	**PASS**

J4 RF Tx Power Deviation = 0.3 dBm, Transmit Channel Monitored: 565 (1940.8MHz)

FREQUENCY SPECTRUM TO BE INVESTIGATED

SECTION 2.1057

SECTION 2.1057

FREQUENCY SPECTRUM TO BE INVESTIGATED

Frequency Spectrum to be investigated, Measurement Bandwidth and detector function used meet or exceed the Specification contained in Section 2.1057, 22.917, ANSI C63.4, IS95A, and IS97.

TEST INSTRUMENTATION LIST

TEST INSTRUMENTATION LIST

Manufacturer	Model Number	Serial Number	Description	Last Calibrated mm/dd/yy	Cal Cycle Month
Rohde & Schwarz	FSEK	830656/033	Spectrum Analyzer	6/30/99	12
HP	772D	2839A01006	Dual Directional Coupler	5/19/99	12
HP	8595E	3723U00852	Spectrum Analyzer	7/9/99	12
HP	437B	3110A03795	Power Meter	8/13/99	12
HP	8482A	3318A26143	Power Sensor	4/20/99	12
HP	53132A	3736A06243	Universal Counter	9/11/98	12
HP	E4406A	US39030280	Transmitter Tester	2/26/99	12
Rohde & Schwarz	HFH2-Z6	863544/015	Rod Antenna, Monopole	3/31/99	12
EMCO	6512	8901-1050	Loop Antenna ".010 - 30MHz"	11/18/98	12
Electro-Metrics	ALP-11	323	Loop Antenna .020 - 100KHz	11/18/98	12
Eaton	96002	2436	Biconical Antenna	08/31/98	12
Electro-Metrics	EM-2135/EMC-60	44174	Test Receiver	5/13/98	12
EMCO	3146	9509-4165	Log-Periodic Antenna	7/16/98	12
Rohde & Schwarz	ESVP	879807/049	Test Receiver	8/10/98	12
Rohde & Schwarz	EPM	883613/014	Panorama Monitor	N/A	N/A
EMCO	3115	9006-3460	Double Ridged Horn 1-18 GHz	5/26/98	12