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RF Power Output Data

The RF power output was measured with the indicated voltage and current applied into the final RF amplifying device(s).

The RF output, DC current and RF Input Power are all time-averaged values which reflect a 9.2 % (8.28 ms Tx bursts / 90 ms frame) transmit duty cycle characteristic of transceiver operation.

- RF Output Power: 0.584 Watts
- DC Voltage: 7.5 Volts
- DC Current: 0.404 Amps
- RF Input: 0.092 mW

Effective Isotropic Radiated Power

Since the transceiver is intended for use with a provided antenna (with a nominal 3 dB gain over isotropic and “non-standard” RF connector), EIRP is measured. The antenna substitution method was used. The result indicated is the maximum EIRP found over the channels and transceiver orientations tested. The measured value reported below again takes into account the transmit duty cycle of 9.2 %.

Maximum EIRP: +30.73 dBm (1.2W)

BANDWIDTH MEASUREMENT DATA FOR TRANSMITTER TYPES Q7W

DEVIATION OF THE CARRIER WITH QPSK MODULATION

HORIZONTAL SCALE = 1 MHz/DIVISION

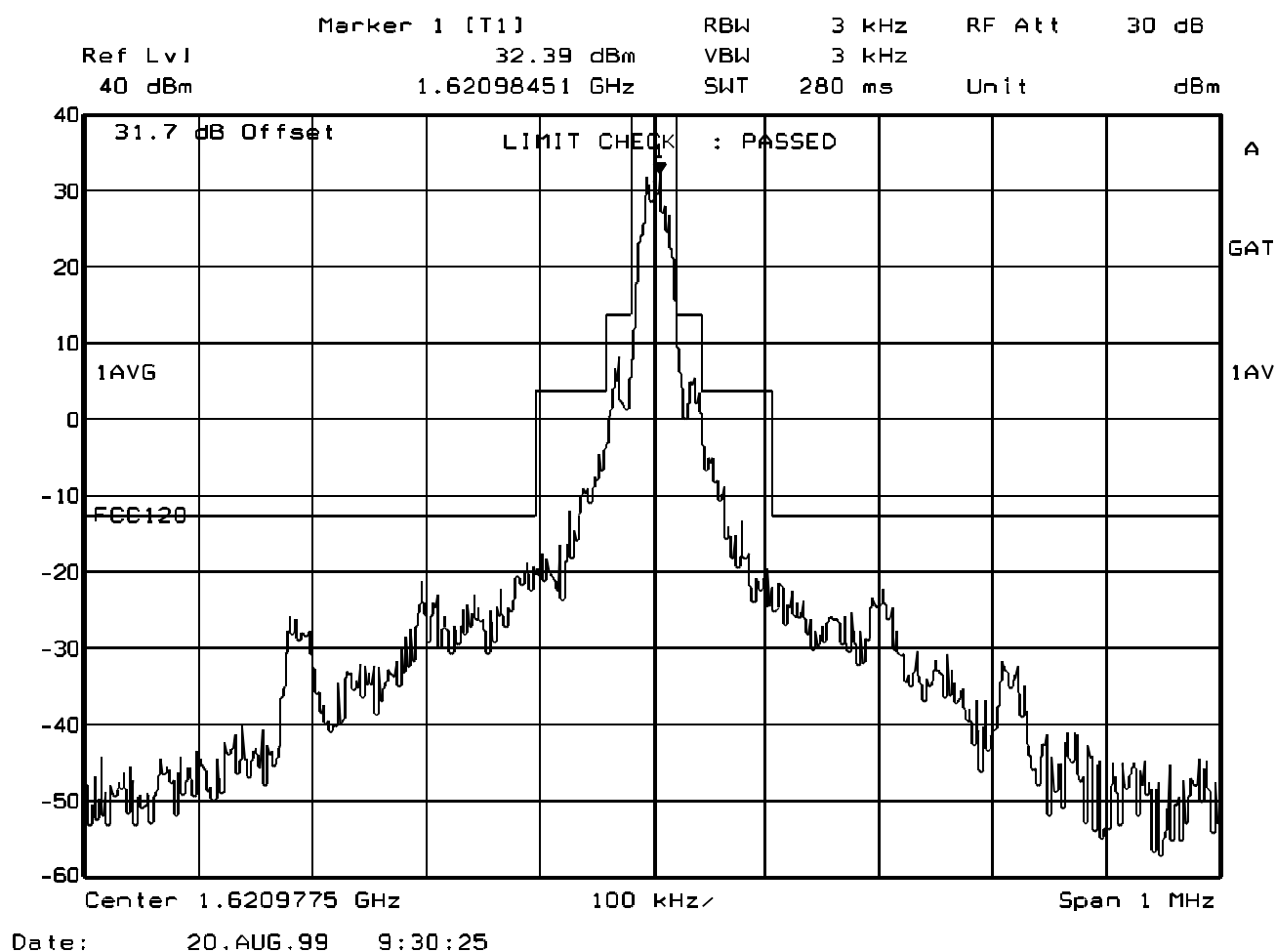
VERTICAL SCALE = 10 dB/DIVISION

RESOLUTION BANDWIDTH = 3 kHz

POWER LEVEL = .6 W (Mean Output Power)

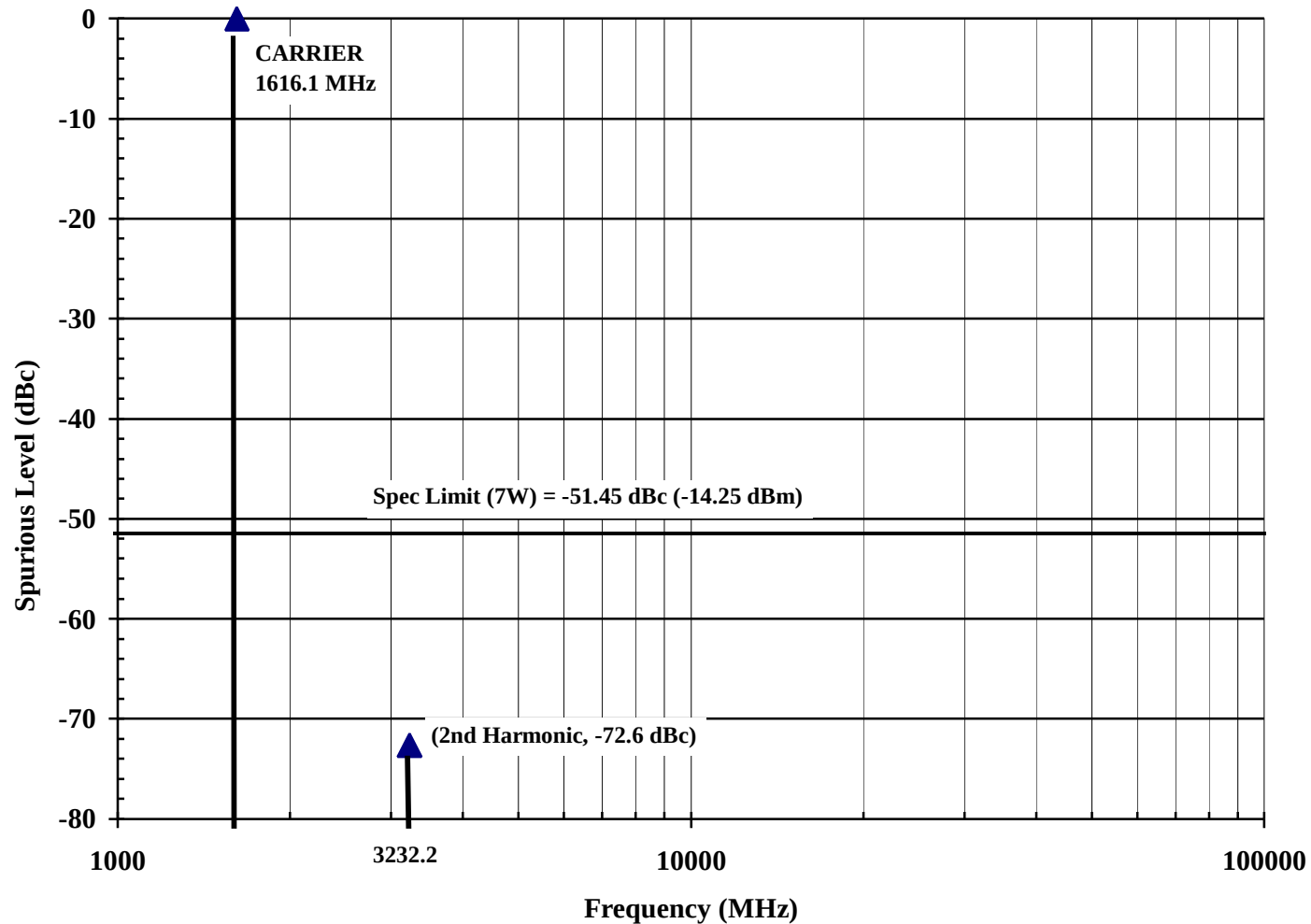
MEASURED DATA:

1. Modulate the transmitter with QPSK modulation, using pseudo random data.
Obtain image on spectrum analyzer.



COMMENTS:

A 3 kHz resolution bandwidth was used instead of the 4 kHz specified in 47 CFR 25.202. A correction factor was included in the limit for the bandwidth difference.

**TRANSMITTER CONDUCTED EMISSIONS, CHANNEL #3**

Carrier Power: 7 W max (+38.45 dBm), .645 W average (+28 dBm)

Carrier Frequency: 1616 to 1626.5 MHz (240 Channels)

Channels Tested: Channels #3, #120, and #238

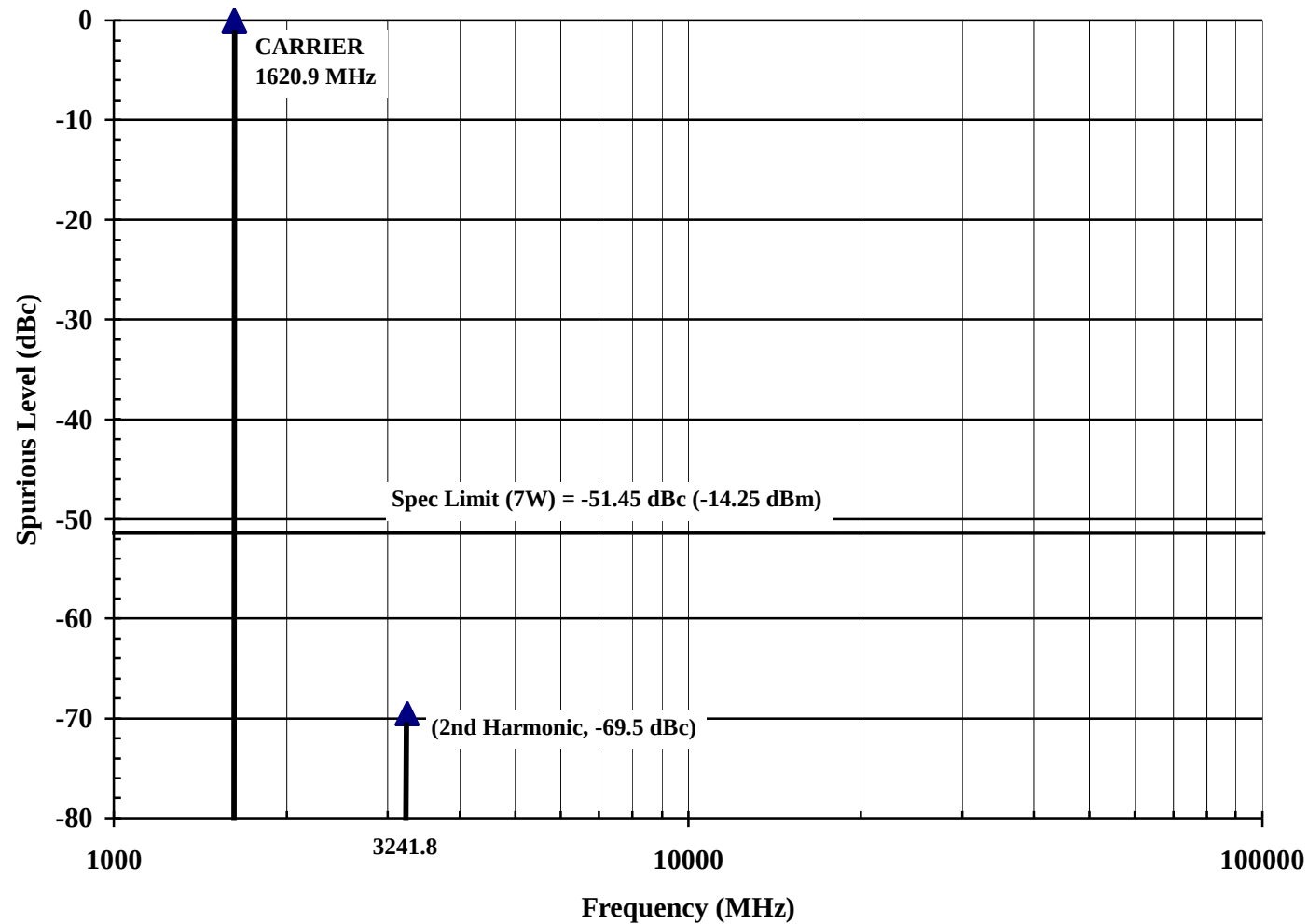
*All other emissions greater than 20 dB below the spec were not reported

*2nd harmonic was highest emission level measured and also more than 20 dB below the spec

*Spectrum search performed from 30 MHz to 16.3 GHz (10X Carrier Frequency)

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**TRANSMITTER CONDUCTED EMISSIONS, CHANNEL #120**

Carrier Power: 7 W max (+38.45 dBm), .645 W average (+28 dBm)

Carrier Frequency: 1616 to 1626.5 MHz (240 Channels)

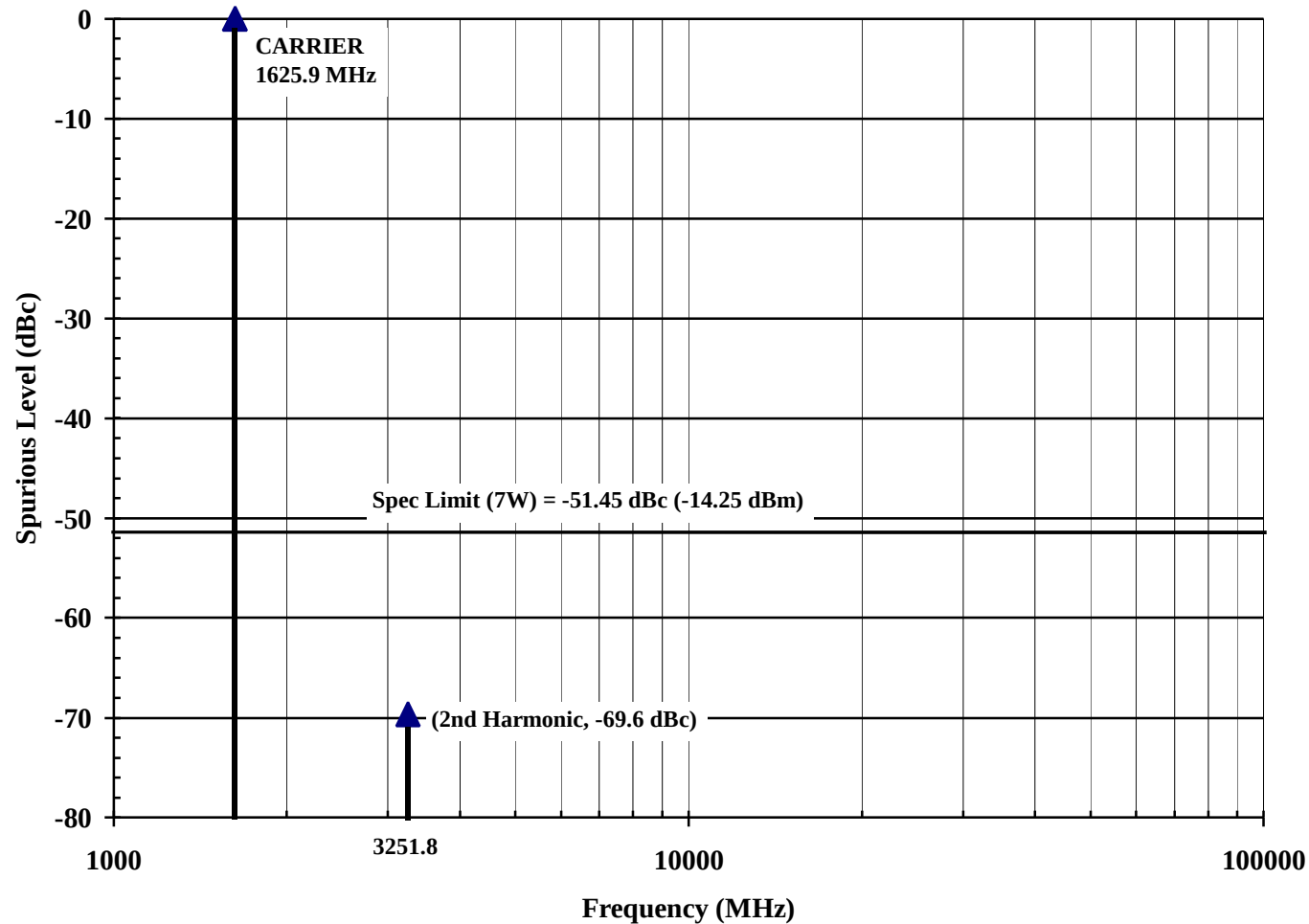
Channels Tested: Channels #3, #120, and #238

*All other emissions greater than 20 dB below the spec were not reported

*Spectrum search performed from 30 MHz to 16.3 GHz (10X Carrier Frequency)

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**TRANSMITTER CONDUCTED EMISSIONS, CHANNEL #238**

Carrier Power: 7 W max (+38.45 dBm), .645 W average (+28 dBm)

Carrier Frequency: 1616 to 1626.5 MHz (240 Channels)

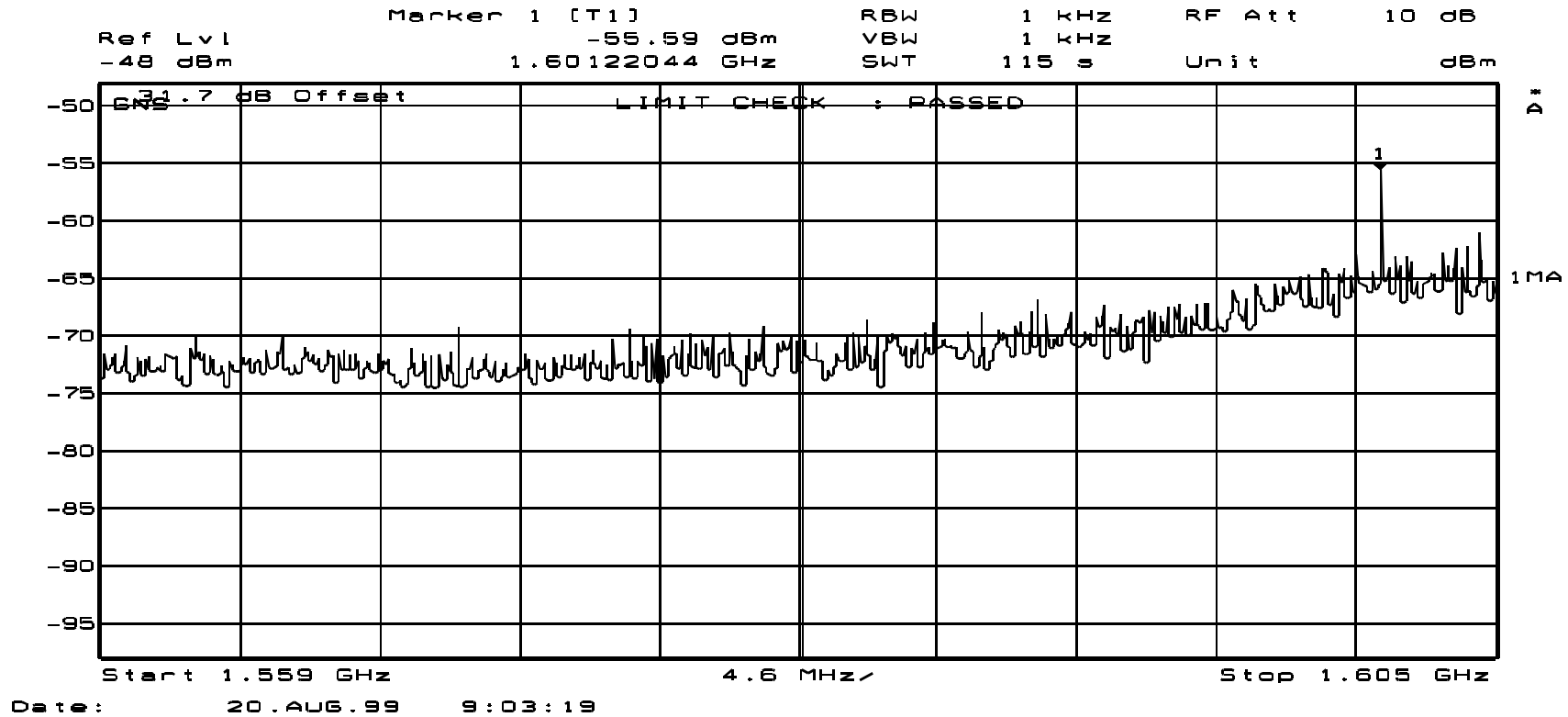
Channels Tested: Channels #3, #120, and #238

*All other emissions greater than 20 dB below the spec were not reported

*Spectrum search performed from 30 MHz to 16.3 GHz (10X Carrier Frequency)

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GPS/GLONASS NARROWBAND EMISSION SCANS

Channels Tested: Channels #3, #120, and #238

*Data measured in accordance with Part 25.200 (c)

*The data was similar for all three channels and only the worst case scans are included in this report

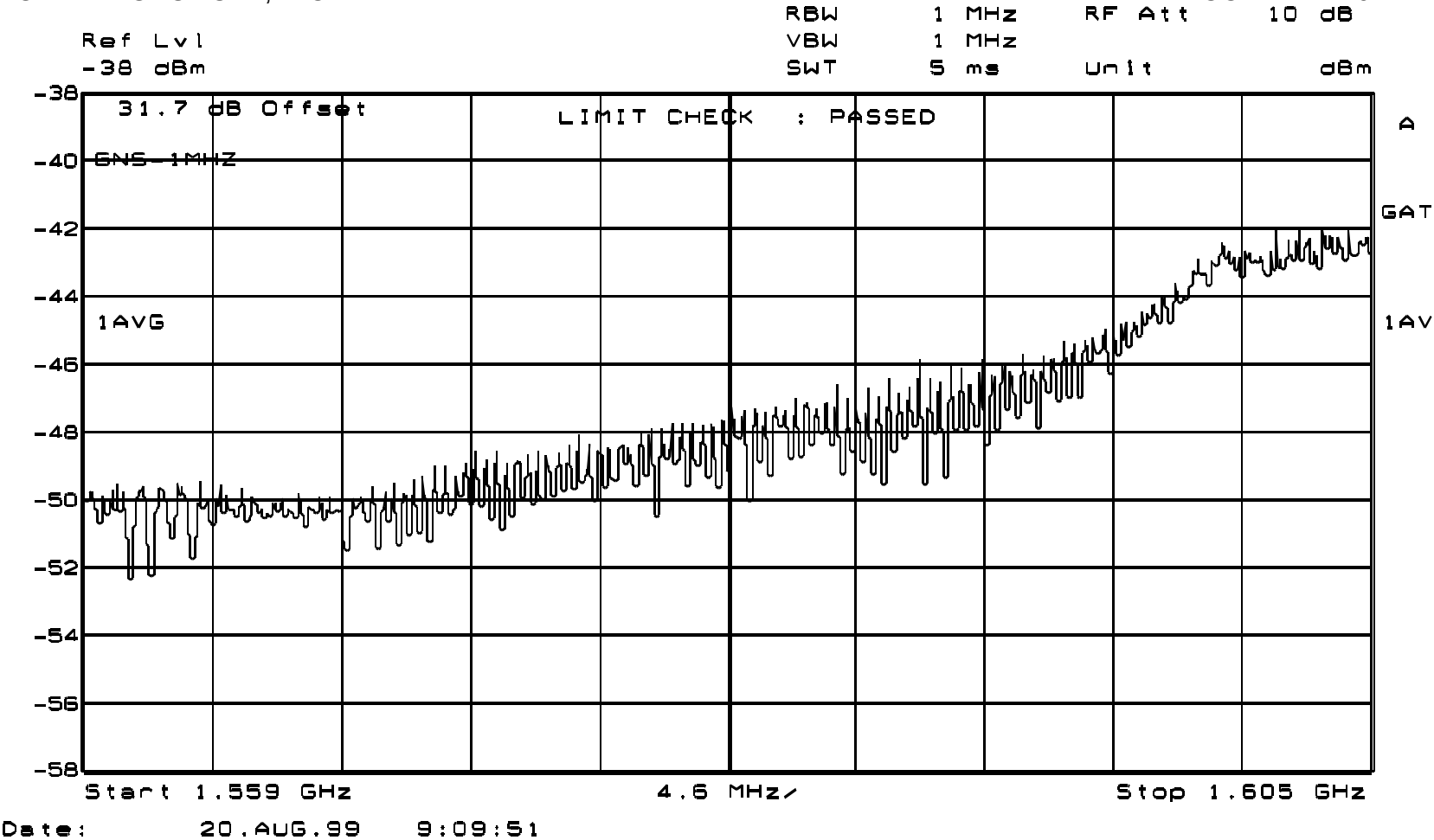
*A 1 kHz resolution bandwidth was used for the narrowband measurement instead of 700 Hz

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APPLICANT: MOTOROLA, INC.

FCC ID: IHDT6NF1



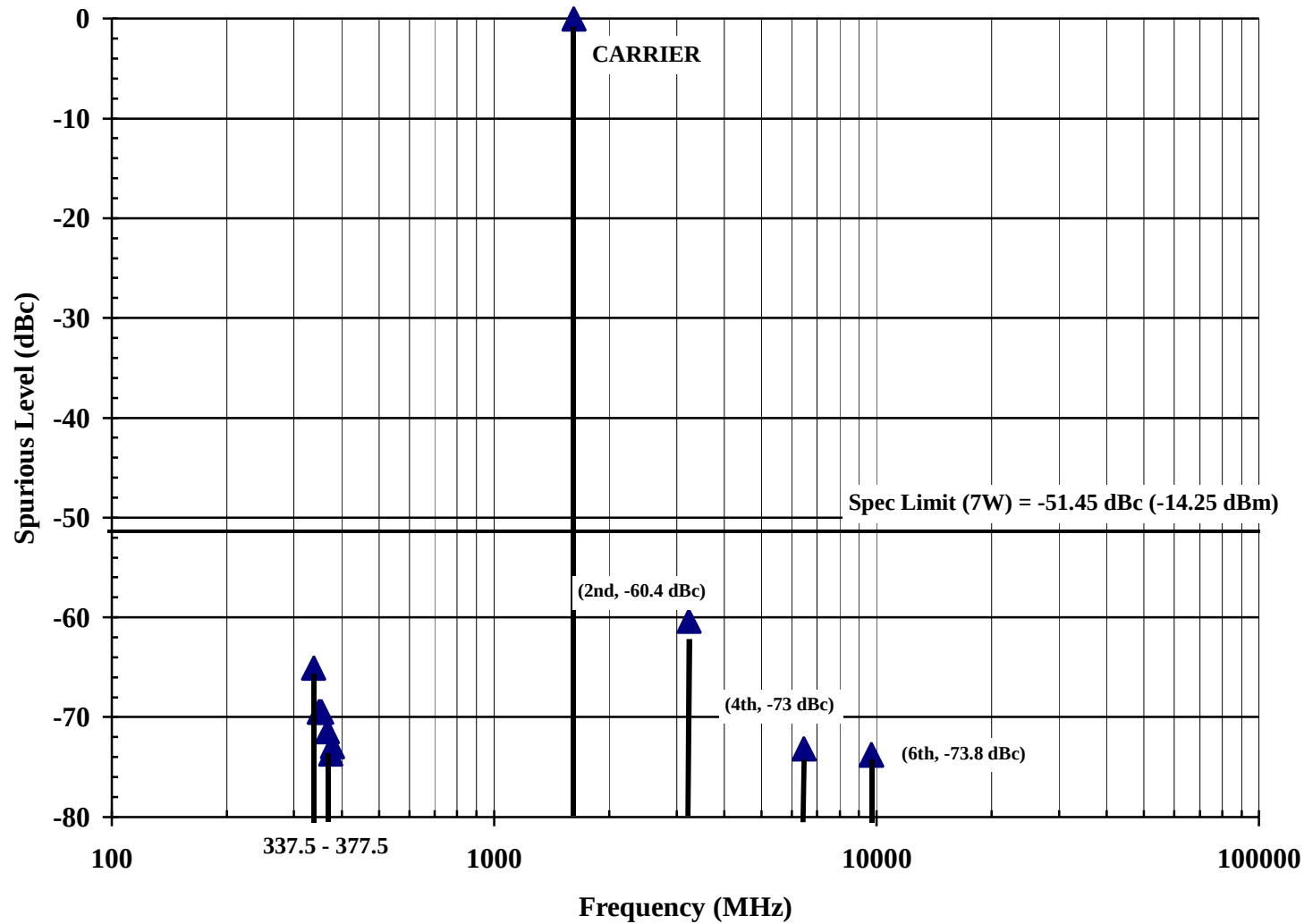
GPS/GLONASS WIDEBAND EMISSION SCANS

Channels Tested: Channels #3, #120, and #238

*Data measured in accordance with Part 25.200 (c)

*The data was similar for all three channels and only the worst case scans are included in this report

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**TRANSMITTER RADIATED EMISSIONS, MAX LEVELS OF CHANNELS #3, 120, 238**

Carrier Power: 7 W max (+38.45 dBm), .645 W average (+28 dBm)

Carrier Frequency: 1616 to 1626.5 MHz (240 Channels)

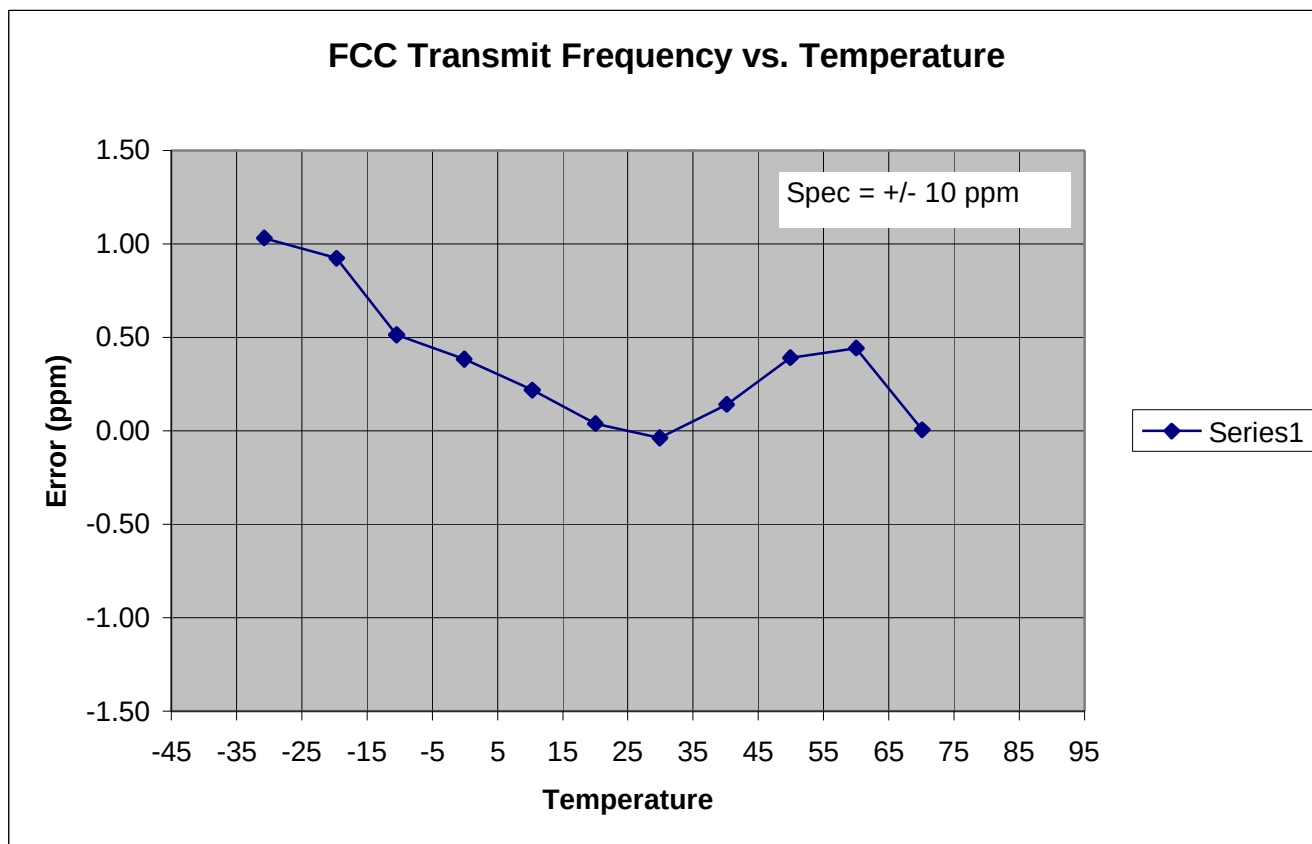
Channels Tested: Channels #3, #120, and #238 (worst case emission presented)

*All other emissions greater than 20 dB below the spec were not reported

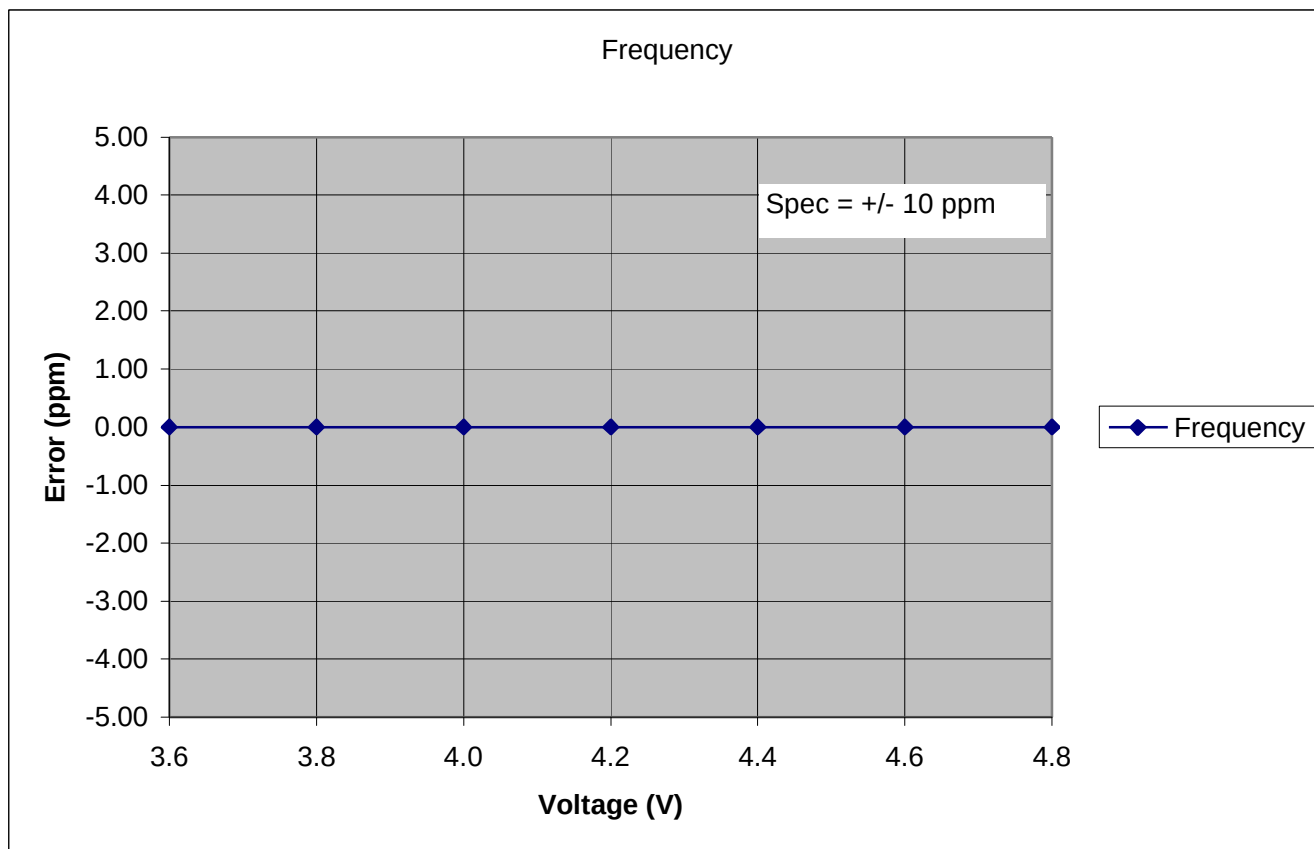
*Spectrum search performed from 30 MHz to 16.3 GHz (10X Carrier Frequency)

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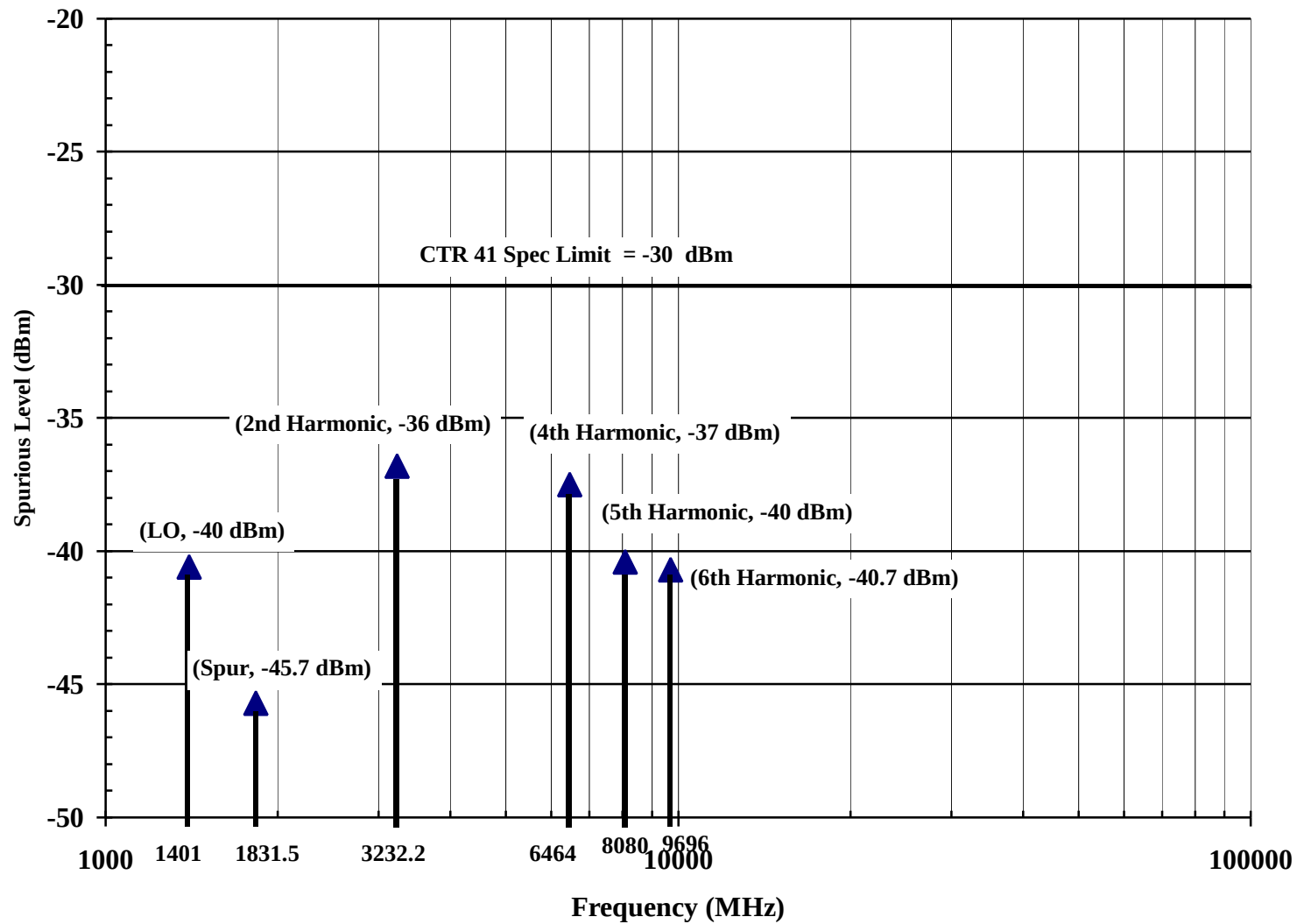
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TRANSMITTER FREQUENCY STABILITY VS. TEMPERATURE



TRANSMITTER FREQUENCY STABILITY VS. SUPPLY VOLTAGE

**CTR 41 OUT OF BAND CONDUCTED EMISSIONS, CHANNEL #3**

Carrier Power: 7 W max (+38.45 dBm), .645 W average (+28 dBm)

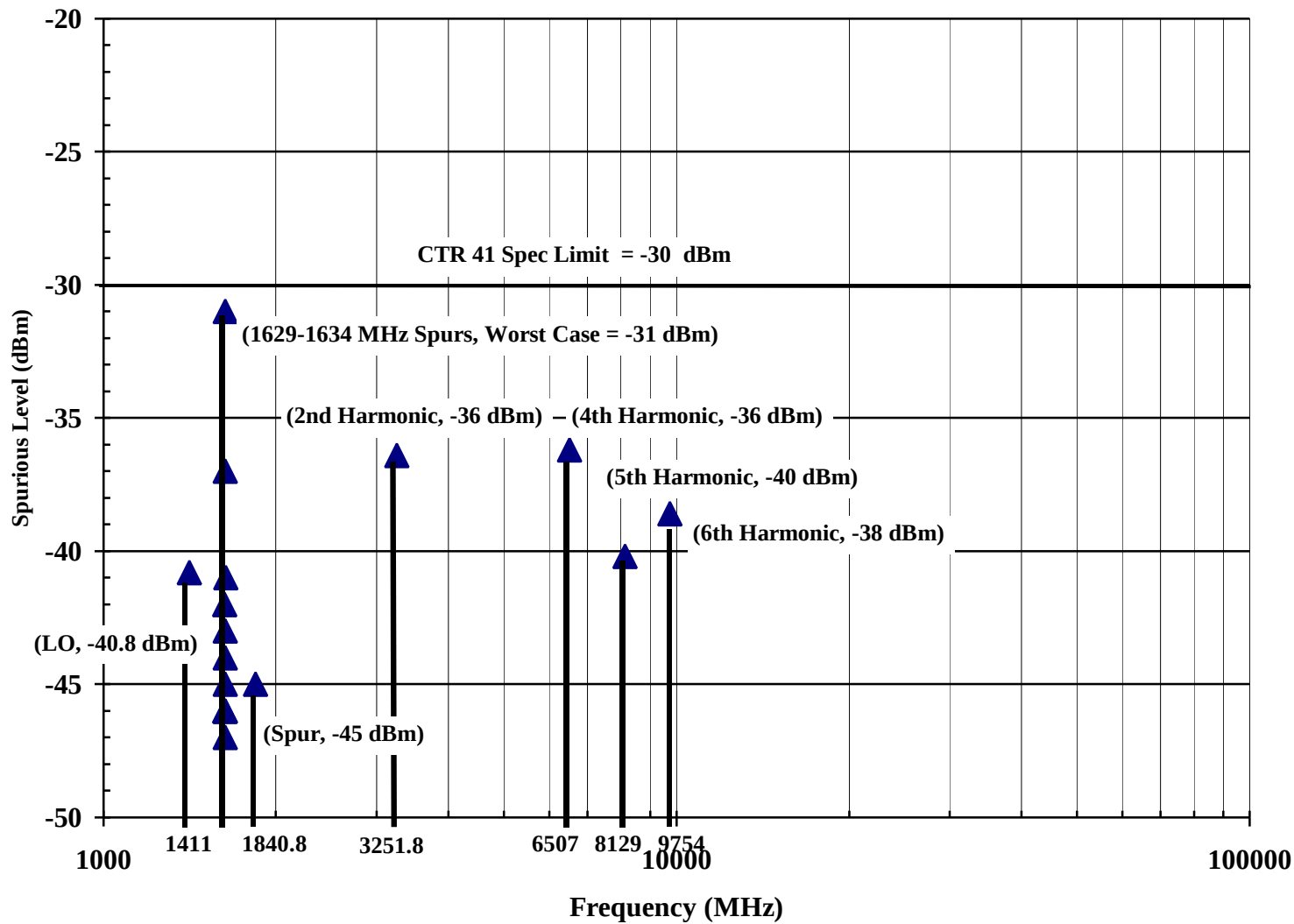
Carrier Frequency: 1616 to 1626.5 MHz (240 Channels)

Channels Tested: #3 and #238

*All other emissions greater than 20 dB below the spec were not reported

*Spectrum search performed from 100 kHz to 12.75 GHz

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8/25/99 9:57 AM



CTR 41 OUT OF BAND CONDUCTED EMISSIONS, CHANNEL #238

Carrier Power: 7 W max (+38.45 dBm), .645 W average (+28 dBm)

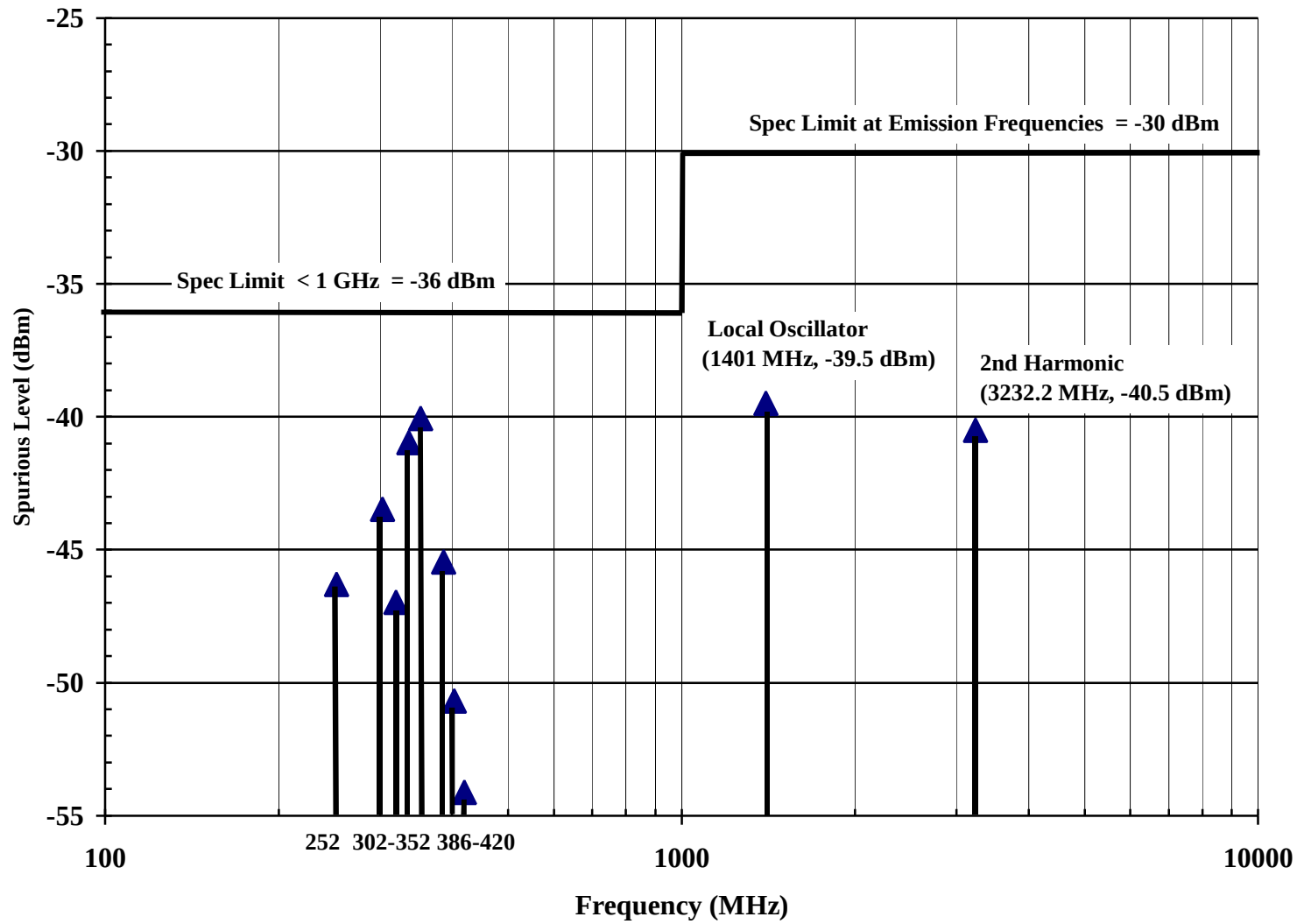
Carrier Frequency: 1616 to 1626.5 MHz (240 Channels)

Channels Tested: #3 and #238

*All other emissions greater than 20 dB below the spec were not reported

*Spectrum search performed from 100 kHz to 12.75 GHz

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8/25/99 9:58 AM

**RADIATED EMISSIONS, CABINET, ANTENNA PORT TERMINATED**

Carrier Power: 7 W max (+38.45 dBm), .645 W average (+28 dBm)

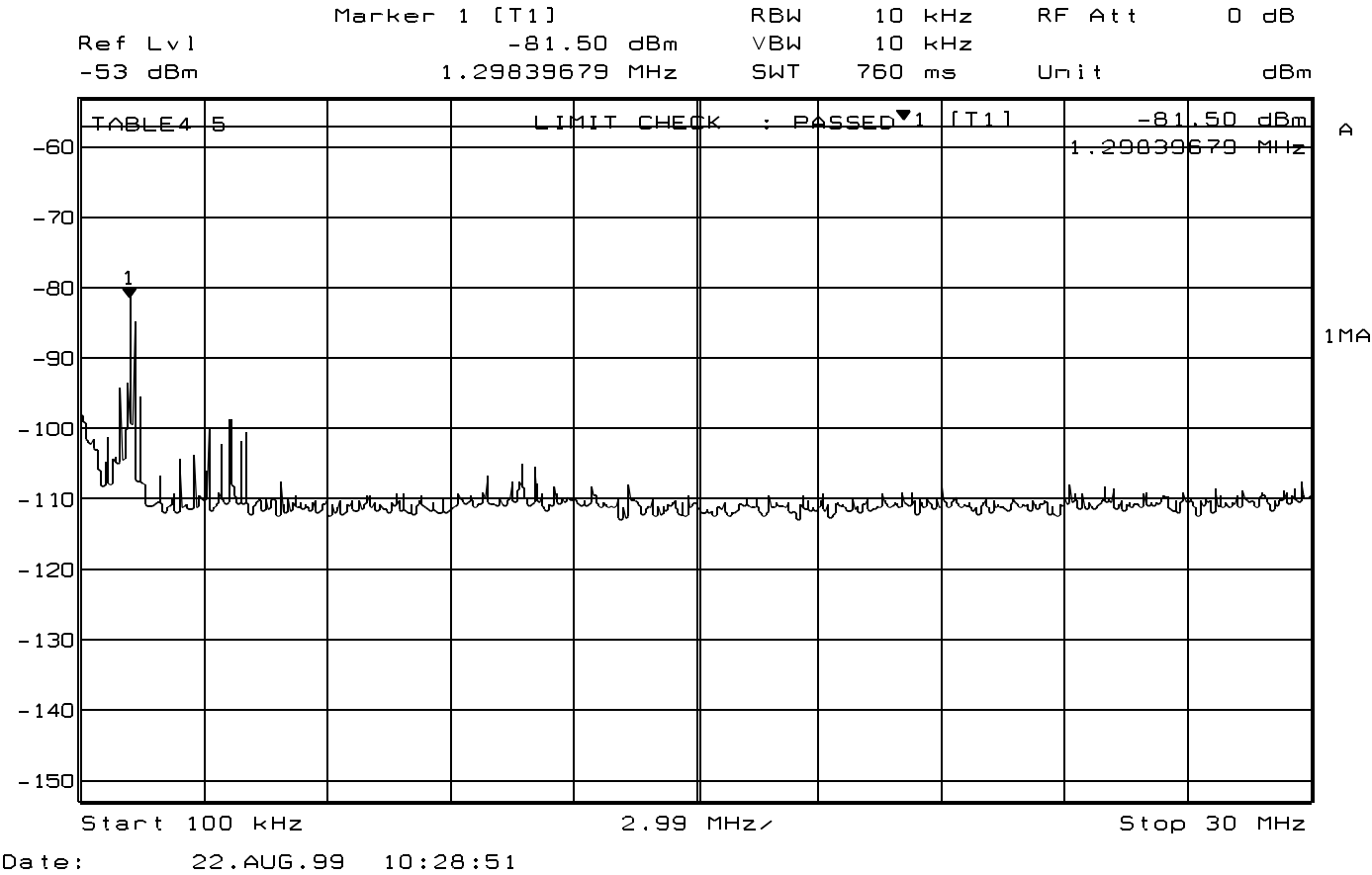
Carrier Frequency: 1616 to 1626.5 MHz (240 Channels)

Channels Tested: #3 and #238 (Graph represents worst case emissions)

*All other emissions greater than 20 dB below the spec were not reported

*Spectrum search performed from 30 MHz to 4 GHz

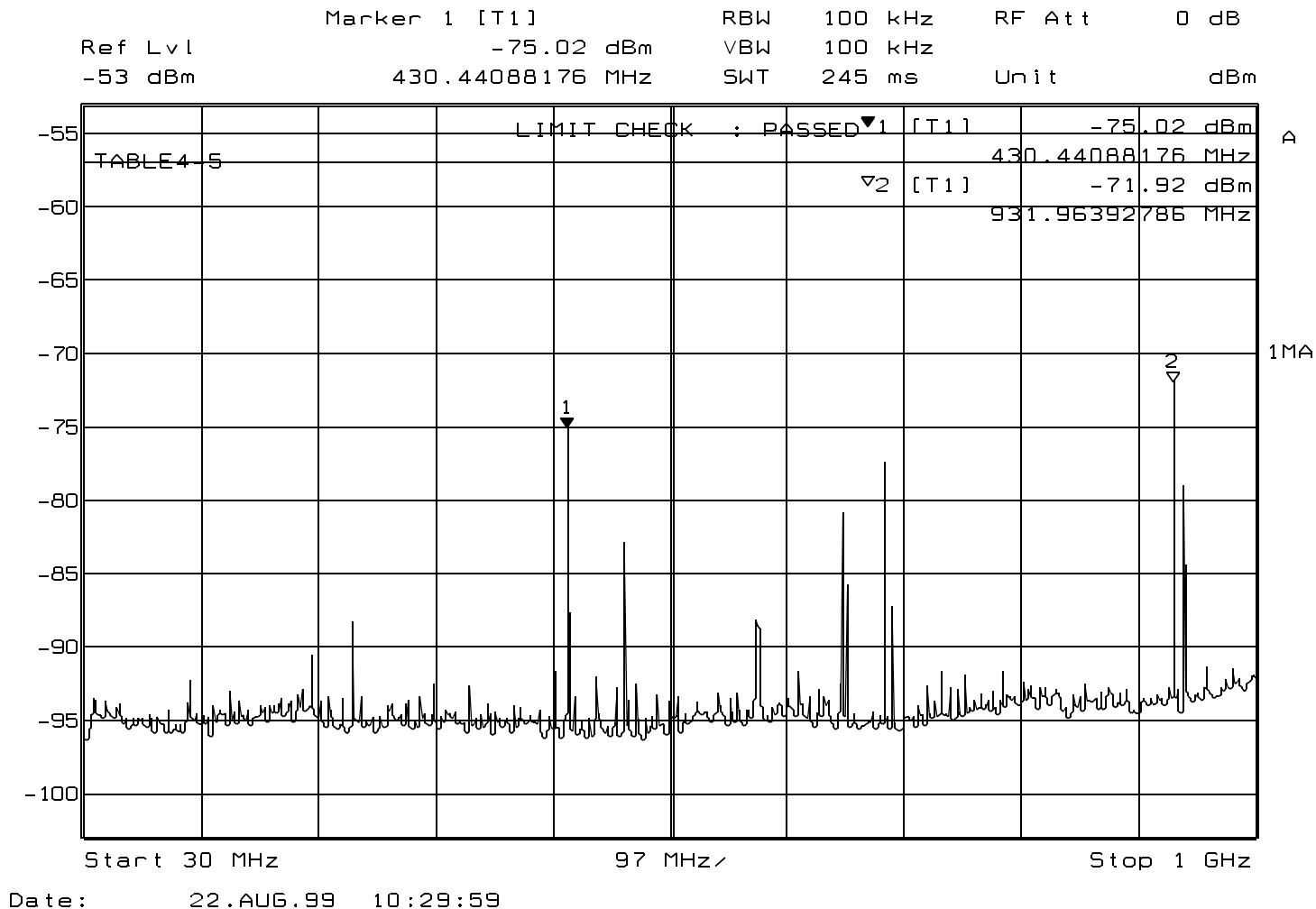
SSG EMC Group
8/25/99 9:58 AM



CTR 41 CONDUCTED EMISSIONS, CARRIER-OFF (1 of 3)

- *Phone placed in Ring Alert Monitor (Receive Only) Mode
- *Spectrum search performed from 100 kHz to 12.75 GHz
- *Frequency coverage presented in three segment scans

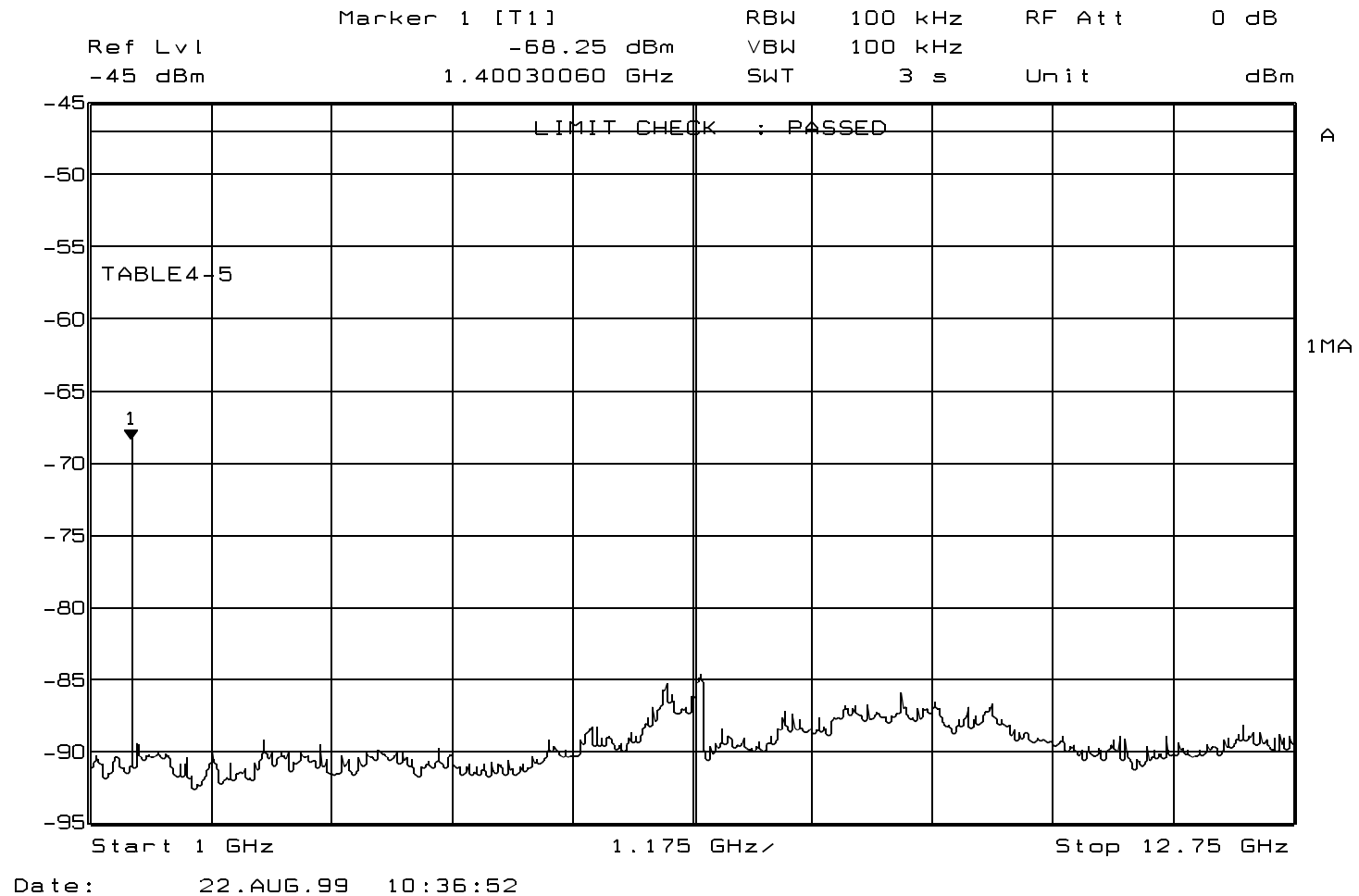
SSG EMC Group
 8/25/99 9:58 AM



CTR 41 CONDUCTED EMISSIONS, CARRIER-OFF (2 of 3)

- *Phone placed in Ring Alert Monitor (Receive Only) Mode
- *Spectrum search performed from 100 kHz to 12.75 GHz
- *Frequency coverage presented in three segment scans

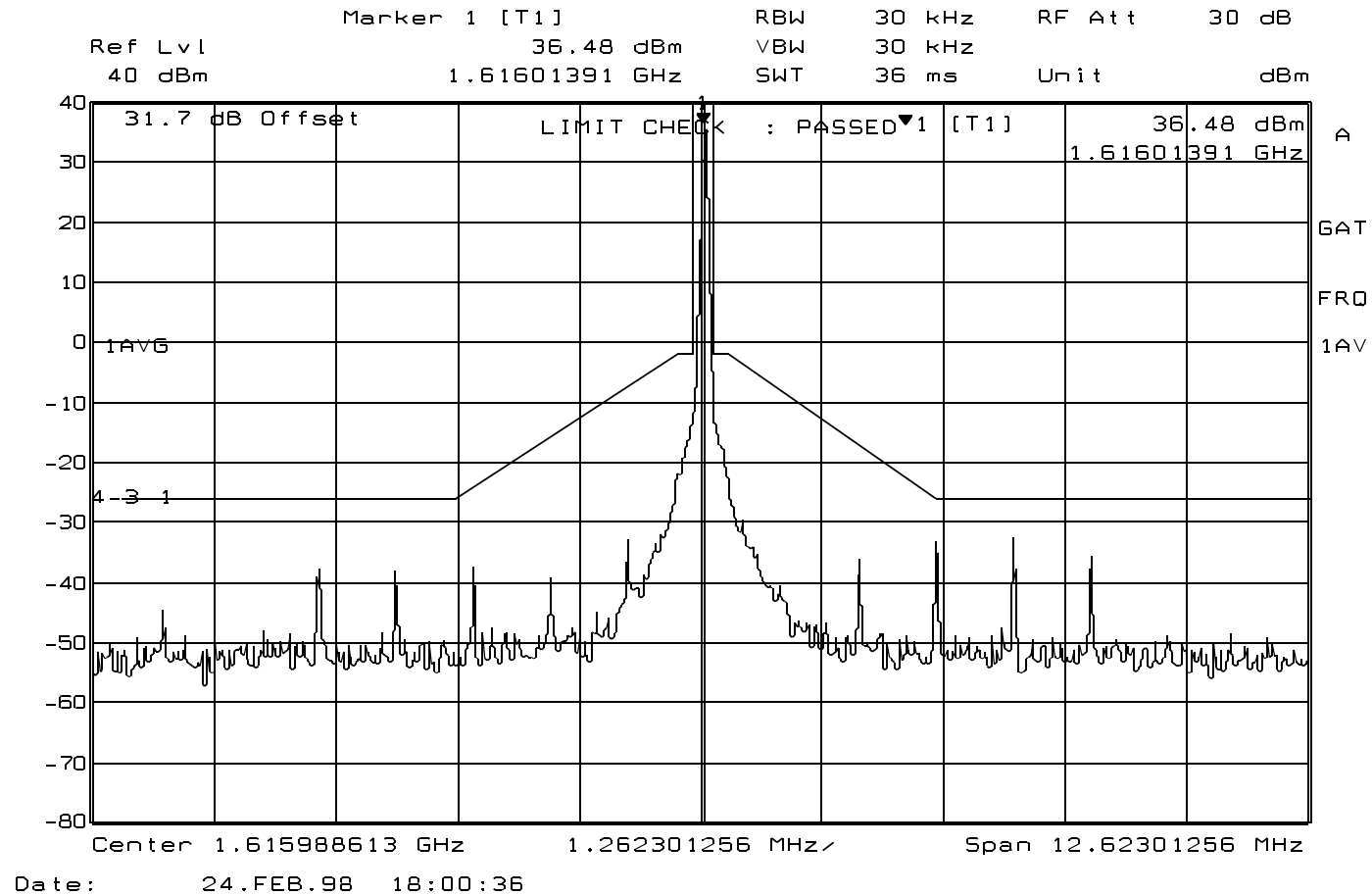
SSG EMC Group
 8/25/99 9:58 AM



CTR 41 CONDUCTED EMISSIONS, CARRIER-OFF (3 of 3)

*Phone placed in Ring Alert Monitor (Receive Only) Mode
 *Spectrum search performed from 100 kHz to 12.75 GHz
 *Frequency coverage presented in three segment scans

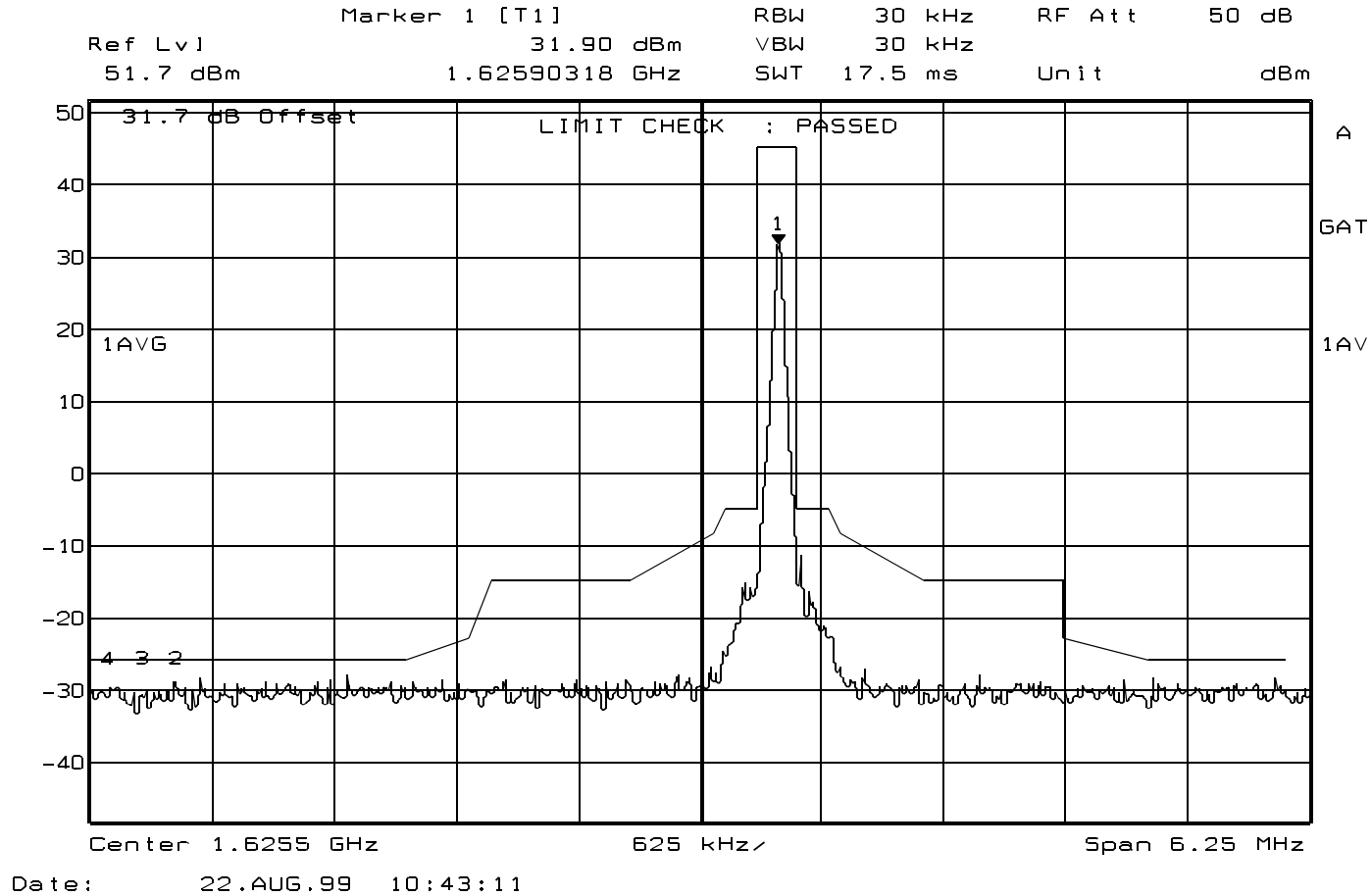
SSG EMC Group
 8/25/99 9:58 AM



CTR 41 IN-BAND CONDUCTED EMISSIONS

Carrier Power: 7 W max (+38.45 dBm), .645 W average (+28 dBm)
 Carrier Frequency: 1616 to 1626.5 MHz (240 Channels)
 Channel Tested: #3

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CTR 41 IN-BAND CONDUCTED EMISSIONS

Carrier Power: 7 W max (+38.45 dBm), .645 W average (+28 dBm)
 Carrier Frequency: 1616 to 1626.5 MHz (240 Channels)
 Channel Tested: #238

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 8/25/99 9:58 AM

MOTOROLA SSG DATA SHEET

CTR 41	EIRP Density Measurement		Comments:
	Equip. <u>Iridium Subscriber Unit</u>	Test Date: <u>8/26/99</u>	
	Mode: <u>Traffic Channel</u>	Test Technician: <u>R. Johnston</u>	
	Model#: <u>Laguna</u>	Measurement Distance (m) <u>Conducted</u>	
	Serial #: <u>EM01</u>	Equipment Class <u>N/A</u>	
Frequency (MHz)	EIRP Density (dBm/4kHz)	EIRP Density mean limit (dBm/4kHz)	
1616.100	+24.4 dBm/4kHz	+27	Channel # 03
1625.900	+25.6 dBm/4kHz	+27	Channel # 238

MEASUREMENT TECHNIQUES**2.1051 Measurements Required: Conducted Spurious and Harmonic Emissions at Antenna Terminals**

Graphs Attached
EXHIBIT NO. 6C

Definition - (as used herein) Spurious radiation is the radio frequency voltages or power generated within the equipment and appearing at the equipment's output terminals when properly loaded with its characteristic non-radiating artificial load.

Minimum Standard – The mean power of conducted spurious and harmonic emissions shall be attenuated below the mean output power of the transmitter by:

<u>Frequency Offset</u>	<u>Attenuation (per 4 kHz)</u>
20.833 to 41.667 kHz	25 dBc
41.667 to 104.16 kHz	35 dBc
>104.16 kHz	43 + 10log (Tx Pwr)

In the range of frequencies between 1559 to 1605 MHz, emissions shall not exceed an EIRP density level of -70 dBW/MHz (-40 dBm/MHz) averaged over any 20 ms period and -80 dBW (-50 dBm) for any discrete (BW =1kHz) spurious emission.

Method of Measurement - The transmitter was modulated with DE-QPSK modulation using pseudo random data. The spectrum was scanned from 30 MHz to the tenth harmonic of the carrier. The level of the carrier and the various conducted spurious and harmonic frequencies were measured by means of a calibrated receiving system. All signals were measured with peak detection (worst case) except within the offset frequencies from 50% to 250% and the 1559-1605 MHz narrowband scan where average measurements were taken using an external frame trigger from the UUT.

EIRP measurements were performed using a maximum antenna gain of 3 dBi included in the level offset of the measurement system.

2.1053 Measurement Required: Radiated Spurious and Harmonic Emissions.

Graph Attached
EXHIBIT NO. 6D

Definition - Radiated spurious and harmonic emissions from the equipment at a frequency or frequencies which are outside an occupied band sufficient to insure transmission of information of required quality for the class of communication desired. The reduction in the level of these spurious emissions will not effect the quality of information being transmitted.

Minimum Standard - The mean power of conducted spurious and harmonic emissions shall be attenuated below the mean output power of the transmitter by:

<u>Frequency Offset</u>	<u>Attenuation (per 4 kHz)</u>
20.833 to 41.667 kHz	25 dBc
41.667 to 104.16 kHz	35 dBc
>104.16 kHz	43 + 10log (Tx Pwr)

Method of Measurement:

Test Site - All final testing reported herein was performed at the Motorola SSTG open air test site (OATS), located at 8201 E. McDowell Rd., Scottsdale, AZ. 85252. The OATS is located on the roof of the building and is built in accordance with ANSI C63.7. The facility has been found to be in compliance with the requirements of Section 2.948 of the FCC rules, per FCC letter 31040/SIT, 1300F2, dated October 6, 1998. The facility has also been issued a Certificate of Accreditation through the National Voluntary Laboratory Accreditation Program (NVLAP) by NIST. This is under NVLAP Code: 100405-0 and is effective through September 30, 1999.

Installation of Equipment:

The equipment under test is placed on the turntable in normal operation using the intended power source. A receiving antenna located 3 meters from the turntable picks up any signal radiated from the transmitter and its operating accessories. The antenna is adjustable in height from 1 to 4 meters and can be horizontally and vertically polarized. An HP8566B spectrum analyzer system is used to scan the applicable frequency range to detect and measure any radiation picked up by the antenna. Preliminary radiated emission scans are conducted in a semi-anechoic enclosure in order to isolate emissions in an ambient free environment.

Measurement Procedure:

The procedures of ANSI 63.4 are followed for radiated emission measurements. The equipment under test is adjusted to obtain peak readings of received signals wherever they occur in the spectrum by:

1. Rotating the transmitter under test.
2. Adjusting the antenna height and polarization.

The testing procedure is repeated for both horizontal and vertical polarization of the receiving antenna. The radiated signal strength is derived from the received power levels and measured antenna factors. Also included in the field strength derivation are the cable losses and any other corrections for external attenuation and/or pre-amplification. The final measurement field strengths are recorded on the attached graphs.

For EIRP requirements, the measured Normalized Site Attenuation (NSA) data was used to convert the received signal levels to EIRP levels.

2.1055 Measurement Required: Frequency Stability

Graph Attached
EXHIBIT NO. 6E, 6F

Definition - The carrier frequency stability is the ability of the transmitter to maintain an assigned carrier frequency

Minimum Standard - The minimum frequency stability shall be $\pm 0.001\%$ (10 ppm) at any time during normal operation.

Method of Measurement: Frequency measurements shall be made at the extremes of the temperature range -30 to +70 degrees C and at intervals of not more than 10 degrees throughout the range. A period of time sufficient to stabilize all of the components in the equipment shall be allowed prior to each frequency measurement. The frequency stability of the transmitting equipment shall be checked with variations in:

- (a) Temperature
Vary ambient from -30 to +70 C

Graph attached
Exhibit 6E
- (b) Primary Supply Voltage:
Vary the primary supply voltage over the specified battery voltage range of 3.6 to 4.8 Vdc.

Graph attached
Exhibit 6F

Timing Period and Procedure

1. The carrier frequency of the transmitter and individual oscillators was measured at room temperature (between 25 and 27 C) to provide a reference.
2. Measurements were started at room temperature and subsequently made at each 10 degree interval in positive and negative temperature increments. A period of 60 minutes was allowed between temperature soaks to allow stabilization of the equipment between successive measurement intervals.