



FCC Test Report

FCC Part 22,24

For

MODEL #: Model 6000

**L-3 COMMUNICATIONS, GNS - Global Network Solutions
1519 Grundy's Ln, Bristol, PA 19007
USA**

FCC ID: T22-6000-8501900

**TEST REPORT #: L3COM_001_06002_6000_EMC
DATE: 3/3/2006**



Certificate # 2135.01



TTI-P-G 081/94-A0
Accredited according to
ISO/IEC 17025



**FCC listed#
101450**

**IC recognized #
3925**

CETECOM Inc.

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Board of Directors: Dr. Harald Ansorge, Dr. Klaus Matkey, Hans Peter May

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1 Assessment

The following is in compliance with the applicable criteria specified in FCC rules Parts 2, 22 and 24 of Title 47 of the Code of Federal Regulations.

Company	Description	Model #
L-3 COMMUNICATIONS, GNS - Global Network Solutions	GSM Subscriber Terminal, 850/1900MHz with battery option	Model 6000



3/3/2006
Pete krebill
Project Leader



Lothar Schmidt
Test Lab Manager

The test results of this test report relate exclusively to the test item specified in Identification of the Equipment under Test. The CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM Inc USA.

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	CETECOM Inc.
Department:	EMC
Address:	411 Dixon Landing Road Milpitas, CA 95035 U.S.A.
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
Responsible Test Lab Manager:	Lothar Schmidt
Responsible Project Leader:	Pete Krebill
Date of test:	3/1/2006 & 3/2/2006

2.2 Identification of the Client

Applicant's Name:	L-3 COMMUNICATIONS, GNS - Global Network Solutions
Street Address:	1519 Grundy's Ln
City/Zip Code	Bristol, PA 19007
Country	USA
Contact Person:	Ed Peterson
Phone No.	215-957-3752
Fax:	215-957-3790
e-mail:	Ed.Peterson@L-3com.com

2.3 Identification of the Manufacturer

Manufacturer's Name:	Same as applicant
----------------------	-------------------

3 Equipment under Test (EUT)

3.1 Identification of the Equipment under Test

Marketing Name:	Model 6000
Description:	GSM Subscriber Terminal, 850/1900MHz with battery option
Model No:	Model 6000
FCC ID:	T22-6000-8501900
Frequency Range:	FCC22= 824MHz-849MHz FCC24= 1850MHz-1910MHz
Type(s) of Modulation:	GSM
Number of Channels:	FCC22= 124 FCC24= 299
Channel spacing:	200KHz
Antenna Type:	Omnidirectional dipole, 3 dbi
Output Power:	<u>FCC 22:</u> GSM= 2.999W ERP@836.6 MHz <u>FCC 24:</u> GSM= 0.735W EIRP@1850.2MHz

4 Subject of Investigation

All testing was performed on the Model 6000 referred to as EUT hereafter. The EUT carries a pre-certified module by Wavecom SA model#: Q2426B. This report contains only radiated measurements with the EUT, for all conducted measurements please refer to FCC ID#: O9EQ2426-SK.

The EUT was maximized in the X,Y & Z positions , all data in this report shows the worst case between horizontal and vertical polarization for above 1GHz.

The objective of the measurements done by Cetecom Inc. was to measure the performance of the EUT as specified by requirements listed in FCC rules Parts 2, 22 and 24 of Title 47 of the Code of Federal Regulations.

5 Measurements

5.1 Radiated Power

5.1.1 FCC 2.1046 Measurements required: RF power output.

Power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on circuit elements as specified. The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.

5.1.2 Limits:

5.1.2.1 FCC 22.913 (a) Effective radiated power limits.

The effective radiated power (ERP) of mobile transmitters must not exceed 7 Watts.

5.1.2.2 FCC 24.232 (b)(c) Power limits.

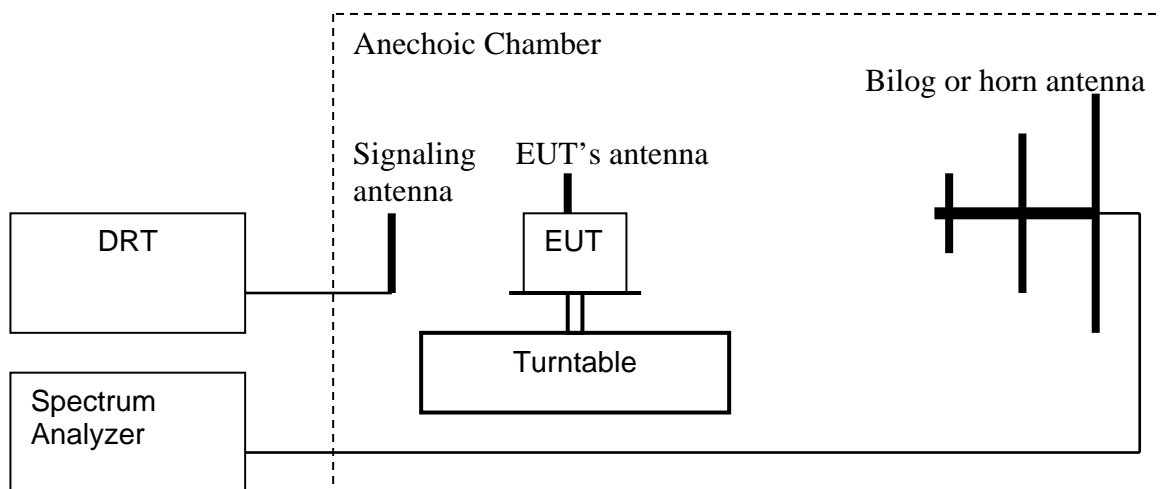
(b) Mobile/portable stations are limited to 2 Watts effective isotropic radiated power (EIRP).

(c) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms equivalent voltage. The measurement results shall be properly adjusted for any limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement over the full bandwidth of the channel.

5.1.3 Radiated Output Power Measurement procedure:

Based on TIA-603B November 2002

2.2.17.2 Effective Radiated Power (ERP) or Effective Isotropic Radiated Power (EIRP)



1. Connect the equipment as shown in the above diagram with the EUT's antenna in a vertical orientation.

2. Adjust the settings of the Digital Radiocommunication Tester (DRT) to set the EUT to its maximum power at the required channel.
 3. Set the spectrum analyzer to the channel frequency. Set the analyzer to measure peak hold with the required settings.
 4. Rotate the EUT 360°. Record the peak level in dBm (**LVL**).
 5. Replace the EUT with a vertically polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
 6. Connect the antenna to a signal generator with known output power and record the path loss in dB (**LOSS**). **LOSS** = Generator Output Power (dBm) – Analyzer reading (dBm).
 7. Determine the ERP using the following equation:
ERP (dBm) = LVL (dBm) + LOSS (dB)
 8. Determine the EIRP using the following equation:
EIRP (dBm) = ERP (dBm) + 2.14 (dB)
 9. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band. **Spectrum analyzer settings = rbw=vbw=3MHz**
- (note: Steps 5 and 6 above are performed prior to testing and **LOSS** is recorded by test software. Steps 3, 4, 7 and 8 above are performed with test software.)

5.1.4 ERP Results 850 MHz band:

Burst Peak ERP
≤38.45dBm (7W)

GSM

Frequency (MHz)	Effective Radiated Power (dBm)
824.2	34.24
837	34.77
848.8	34.29

5.1.5 EIRP Results 1900 MHz band:

Burst Peak EIRP
≤33dBm (2W)

PCS

Frequency (MHz)	Effective Isotropic Radiated Power (dBm)
1850.2	28.66
1880.0	28.13
1909.8	26.32

5.2 Spurious Emissions Radiated

5.2.1 FCC 2.1053 Measurements required: Field strength of spurious radiation.

- (a) Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonic and other spurious emission.

5.2.2 Limits:

5.2.2.1 FCC 22.917 Emission limitations for cellular equipment.

The rules in this section govern the spectral characteristics of emissions in the Cellular Radiotelephone Service.

- (a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

(b) *Measurement procedure.* Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. 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. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 100 kHz of 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

5.2.2.2 FCC 24.238 Emission limitations for Broadband PCS equipment.

The rules in this section govern the spectral characteristics of emissions in the Broadband Personal Communications Service.

- (a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

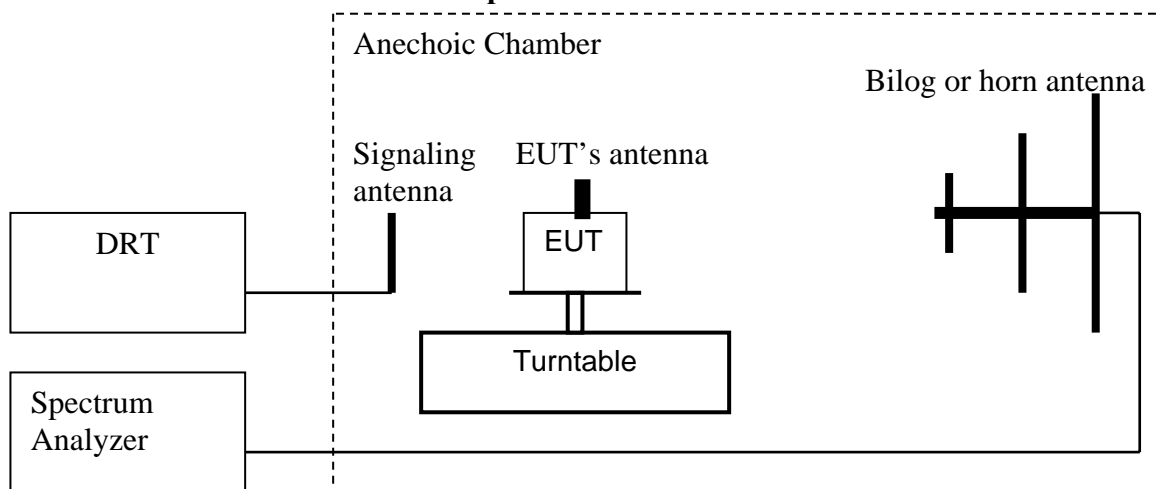
(b) *Measurement procedure.* Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 100 kHz of 1 percent of emission bandwidth, as specified). The

emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

5.2.3 Radiated out of band measurement procedure:

Based on TIA-603B November 2002

2.2.12 Unwanted emissions: Radiated Spurious



1. Connect the equipment as shown in the above diagram with the EUT's antenna in a horizontal orientation.
2. Adjust the settings of the Digital Radiocommunication Tester (DRT) to set the EUT to its maximum power at the required channel.
3. Set the spectrum analyzer to measure peak hold with the required settings.
4. Place the measurement antenna in a horizontal orientation. Rotate the EUT 360°. Raise the measurement antenna up to 4 meters in 0.5 meters increments and rotate the EUT 360° at each height to maximize all emissions. Measure and record all spurious emissions (LVL) up to the tenth harmonic of the carrier frequency.
5. Replace the EUT with a horizontally polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
6. Connect the antenna to a signal generator with known output power and record the path loss in dB (LOSS). $\text{LOSS} = \text{Generator Output Power (dBm)} - \text{Analyzer reading (dBm)}$.
7. Determine the level of spurious emissions using the following equation:
 $\text{Spurious (dBm)} = \text{LVL (dBm)} + \text{LOSS (dB)}$
8. Repeat steps 4, 5 and 6 with all antennas vertically polarized.
9. Determine the level of spurious emissions using the following equation:
 $\text{Spurious (dBm)} = \text{LVL (dBm)} + \text{LOSS (dB)}$
10. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.

(note: Steps 5 and 6 above are performed prior to testing and LOSS is recorded by test software. Steps 3, 4 and 7 above are performed with test software.)

Spectrum analyzer settings:

Res B/W: 1 MHz

Vid B/W: 1 MHz

Measurement Survey:

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the GSM-850 & PCS-1900 bands. It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the GSM-850 & PCS-1900 band into any of the other blocks respectively. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

5.2.4 Radiated out of band emissions results on EUT:**RESULTS OF RADIATED TESTS GSM-850:**

Harmonics	Tx ch-128 Freq. (MHz)	Level (dBm)	Tx ch-192 Freq. (MHz)	Level (dBm)	Tx ch-251 Freq. (MHz)	Level (dBm)
2	1648.4	N/F	1674	N/F	1697.6	N/F
3	2472.6	N/F	2511	N/F	2546.4	N/F
4	3296.8	N/F	3348	N/F	3395.2	N/F
5	4121	N/F	4185	N/F	4244	N/F
6	4945.2	N/F	5022	N/F	5092.8	N/F
7	5769.4	N/F	5859	N/F	5941.6	N/F
8	6593.6	N/F	6696	N/F	6790.4	N/F
9	7417.8	N/F	7533	N/F	7639.2	N/F
10	8242	N/F	8370	N/F	8488	N/F
N/F = NOISE FLOOR						

RADIATED SPURIOUS EMISSIONS (GSM-850)**TX: 30MHz - 1GHz**

Spurious emission limit -13dBm

Antenna: vertical***SWEEP TABLE: "FCC 22 Spur 30M-1G"***

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
30MHz	1GHz	Max Peak	Coupled	1 MHz	1 MHz

Note:

- 1.The peak above the limit line is the carrier freq.
- 2.This plot is valid for low, mid & high channels (worst-case plot)

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @824.2MHz

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

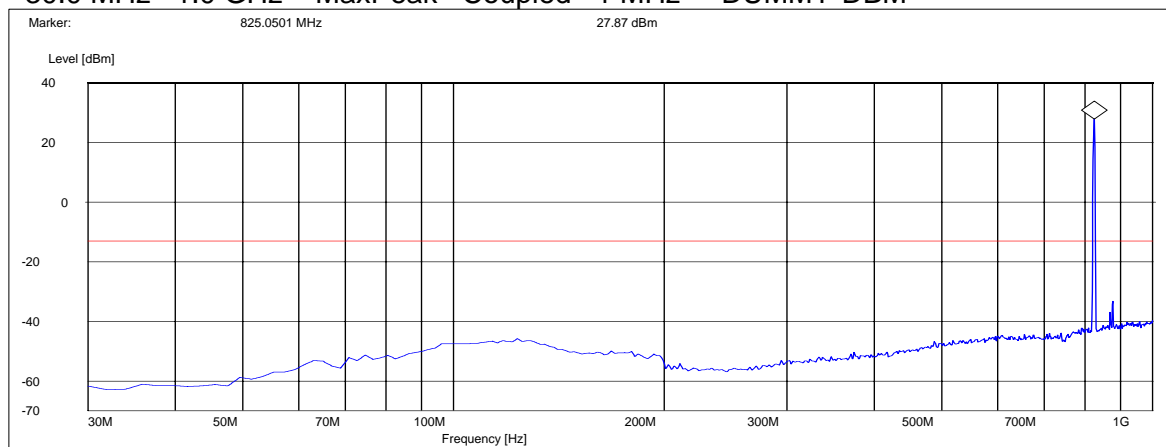
SWEEP TABLE: "FCC 24 Spur 30M-1G_V"

Short Description: FCC 24 30MHz-1GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

30.0 MHz 1.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (GSM-850)**TX: 30MHz - 1GHz**

Spurious emission limit -13dBm

Antenna: horizontal***SWEEP TABLE: "FCC 22 Spur 30M-1G"***

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
30MHz	1GHz	Max Peak	Coupled	1 MHz	1 MHz

Note:**1.The peak above the limit line is the carrier freq.****2.This plot is valid for low, mid & high channels (worst-case plot)****CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @824.2.2MHz

Antenna: H

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

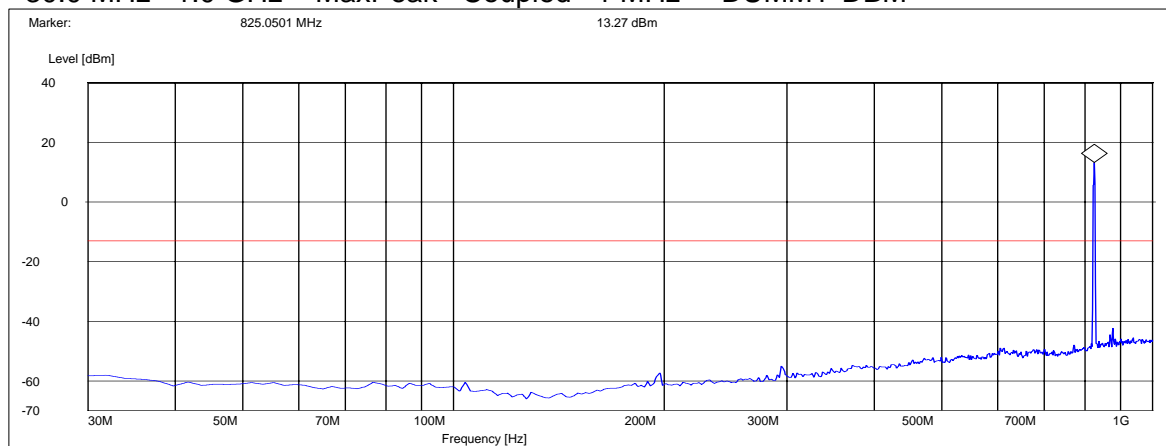
SWEEP TABLE: "FCC 24 Spur 30M-1G_H"

Short Description: FCC 24 30MHz-1GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

30.0 MHz 1.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 824.2MHz: 1GHz – 1.58GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC 22 Spur 1-1.58G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
1GHz	1.58GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @824.2MHz

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

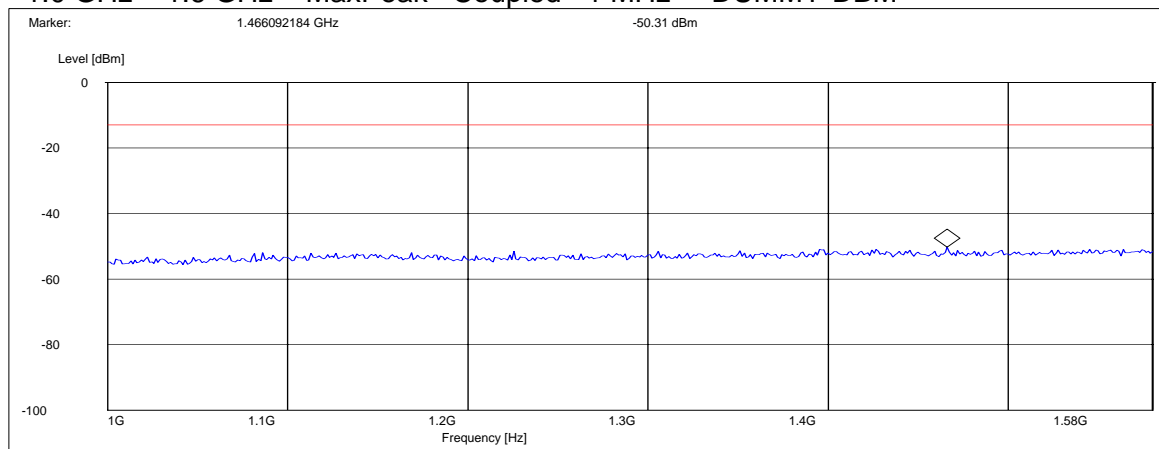
SWEEP TABLE: "FCC 22Spuri 1-1.58G"

Short Description: FCC 24 1GHz-8GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

1.0 GHz 1.6 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 824.2MHz: 1.58GHz – 3GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC 22 Spur 1.58-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
1.58GHz	3GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @824.2MHz

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

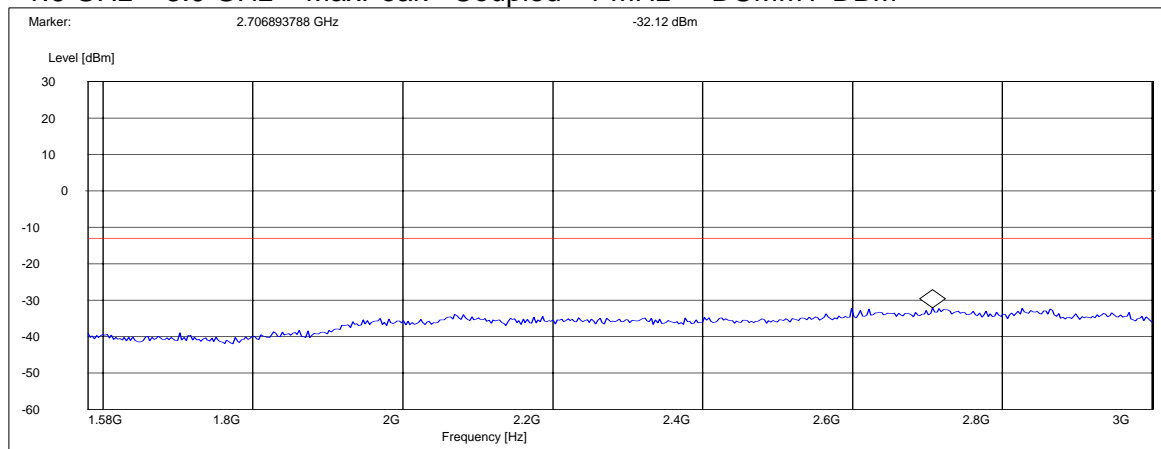
SWEEP TABLE: "FCC 22Spuri 1.58-3G"

Short Description: FCC 24 1GHz-8GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

1.6 GHz 3.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 824.2MHz: 3GHz – 9GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC 22 Spur 3-9G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
3GHz	9GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @824.2MHz

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

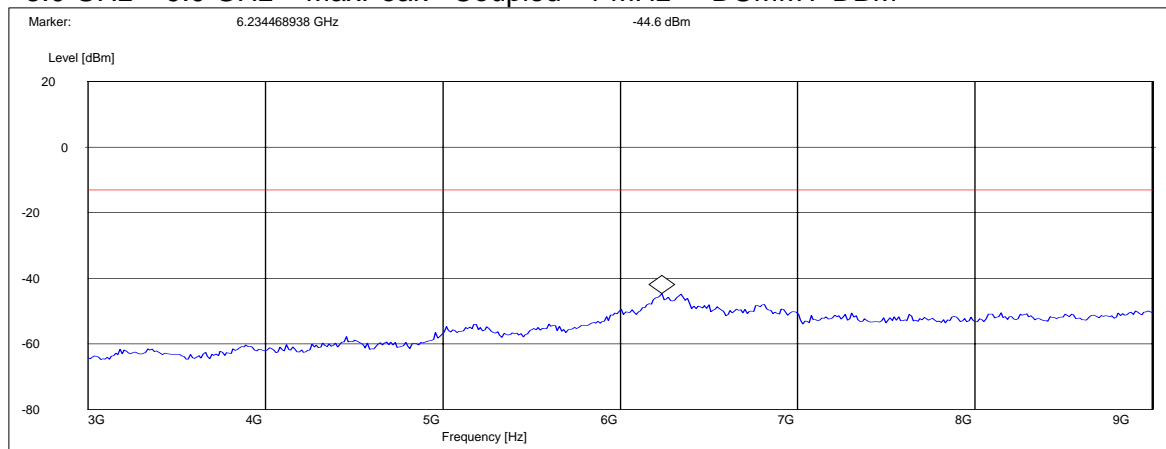
SWEEP TABLE: "FCC 22Spuri 3-9G"

Short Description: FCC 24 1GHz-8GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

3.0 GHz 9.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 837MHz: 1GHz – 1.58GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC 22 Spur 1-1.58G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
1GHz	1.58GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @836.6MHz

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

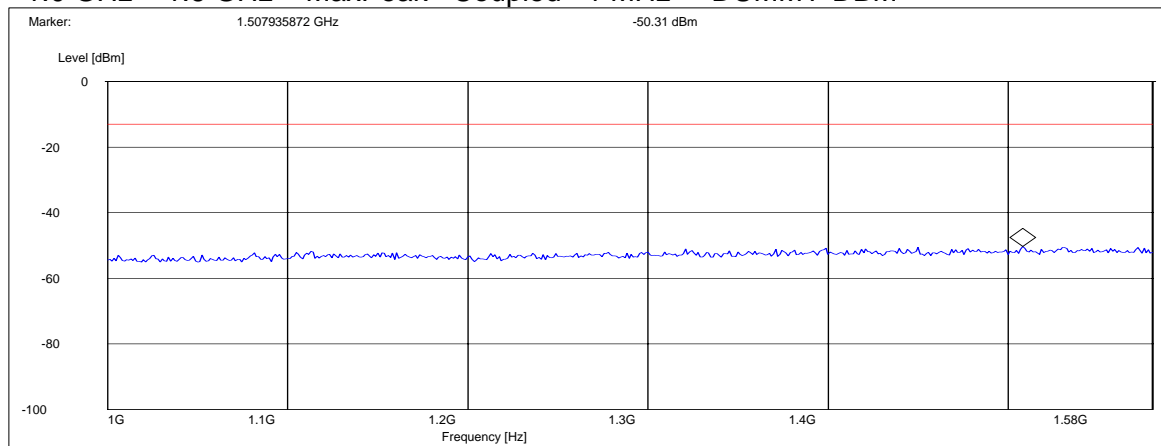
SWEEP TABLE: "FCC 22Spuri 1-1.58G"

Short Description: FCC 24 1GHz-8GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

1.0 GHz 1.6 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 837 MHz: 1.58GHz – 3GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC 22 Spur 1.58-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
1.58GHz	3GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @836.6MHz

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

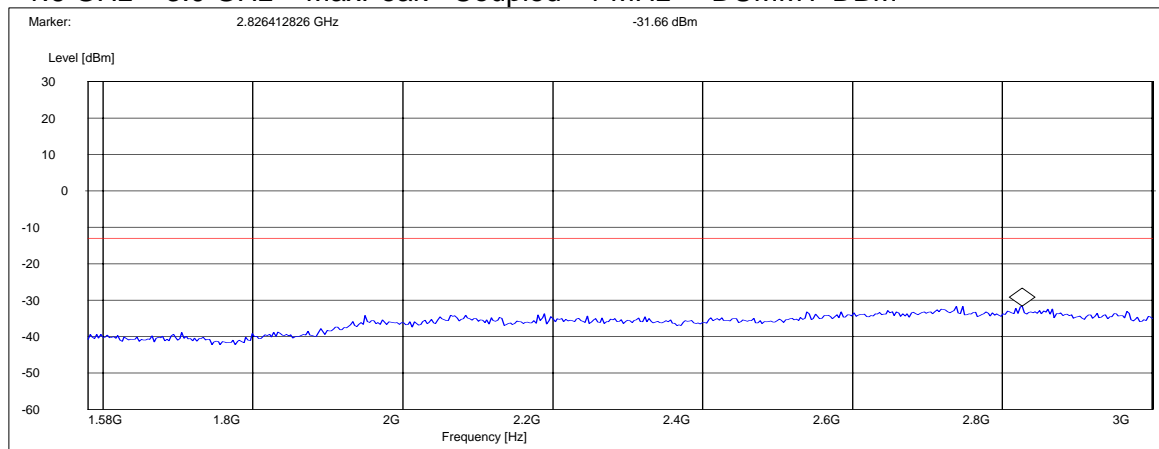
SWEEP TABLE: "FCC 22Spuri 1.58-3G"

Short Description: FCC 24 1GHz-8GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

1.6 GHz 3.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 837MHz: 3GHz – 9GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC 22 Spur 3-9G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
3GHz	9GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @836.6MHz

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

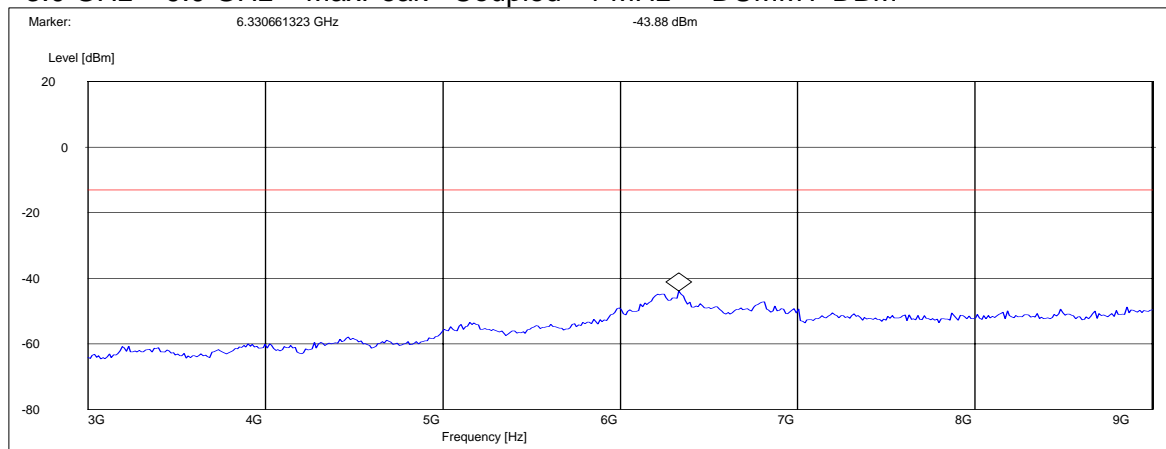
SWEEP TABLE: "FCC 22Spuri 3-9G"

Short Description: FCC 24 1GHz-8GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

3.0 GHz 9.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 848.8MHz: 1GHz – 1.58GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC 22 Spur 1-1.58G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
1GHz	1.58GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @848.8MHz

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

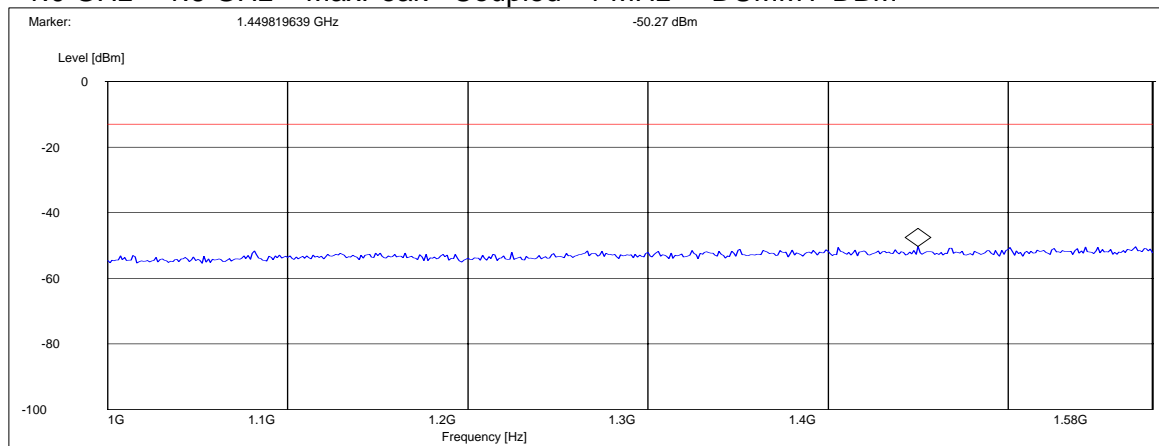
SWEEP TABLE: "FCC 22Spuri 1-1.58G"

Short Description: FCC 24 1GHz-8GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

1.0 GHz 1.6 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 848.8MHz: 1.58GHz – 3GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC 22 Spur 1.58-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
1.58GHz	3GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @848.8MHz

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

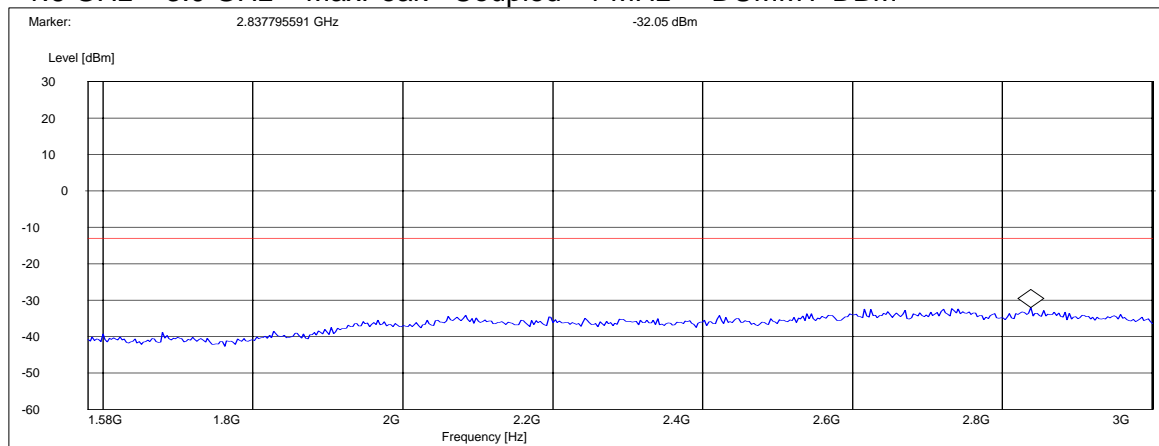
SWEEP TABLE: "FCC 22Spuri 1.58-3G"

Short Description: FCC 24 1GHz-8GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

1.6 GHz 3.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 848.8MHz: 3GHz – 9GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC 22 Spur 3-9G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
3GHz	9GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @848.8MHz

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

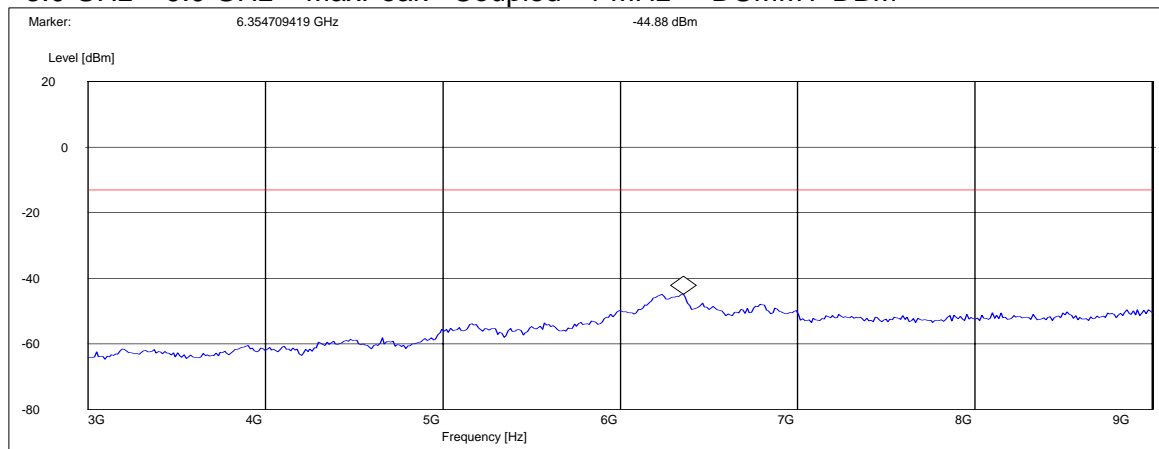
SWEEP TABLE: "FCC 22Spuri 3-9G"

Short Description: FCC 24 1GHz-8GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

3.0 GHz 9.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (GSM-850)**IDLE: 30MHz - 1GHz**

Spurious emission limit -13dBm

Antenna: vertical***SWEEP TABLE: "FCC 22 Spur 30M-1G"***

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
30MHz	1GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: Idle

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

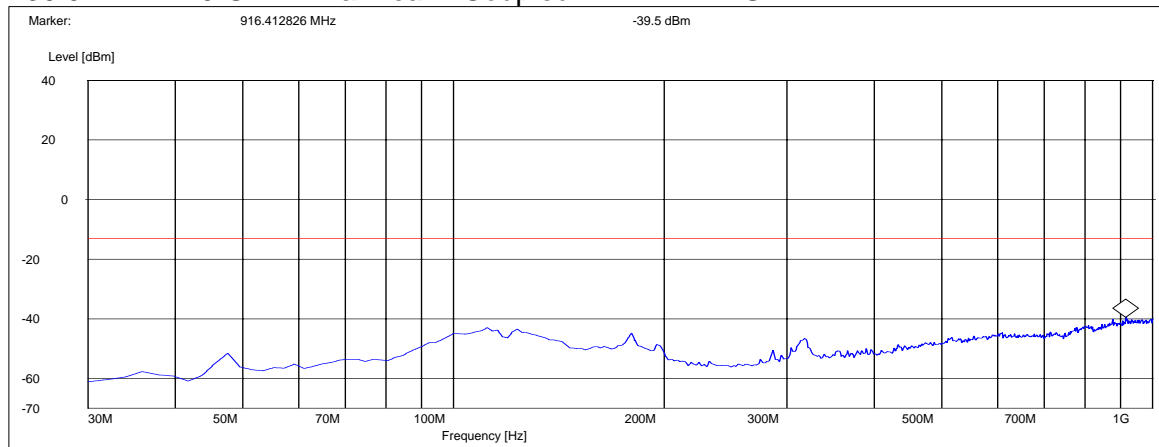
SWEEP TABLE: "FCC 24 Spur 30M-1G_V"

Short Description: FCC 24 30MHz-1GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

30.0 MHz 1.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (GSM-850)**IDLE: 30MHz - 1GHz**

Spurious emission limit -13dBm

Antenna: horizontal***SWEEP TABLE: "FCC 22 Spur 30M-1G"***

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
30MHz	1GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: Idle

Antenna: H

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

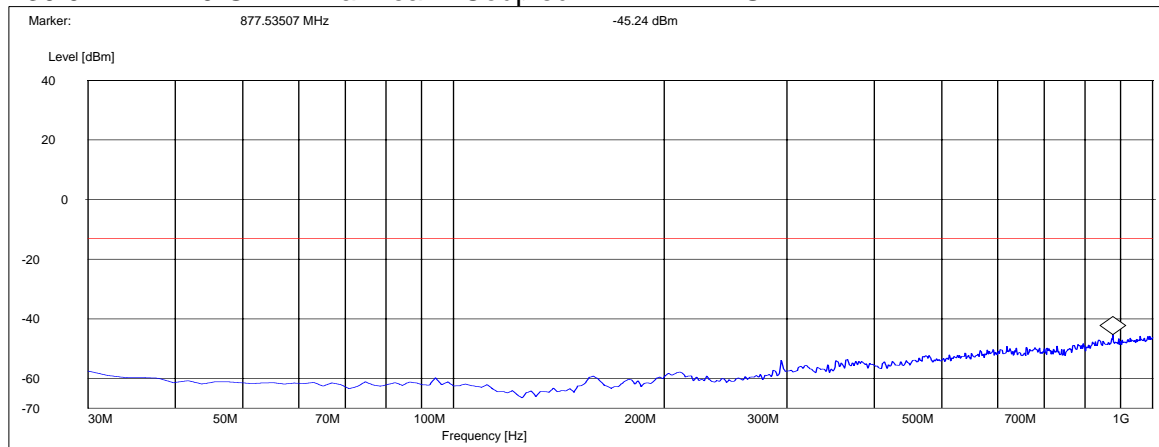
SWEEP TABLE: "FCC 24 Spur 30M-1G_H"

Short Description: FCC 24 30MHz-1GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

30.0 MHz 1.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (GSM-850)**IDLE: 1GHz – 3GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC 22 Spur 1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
1GHz	3GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: Idle

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

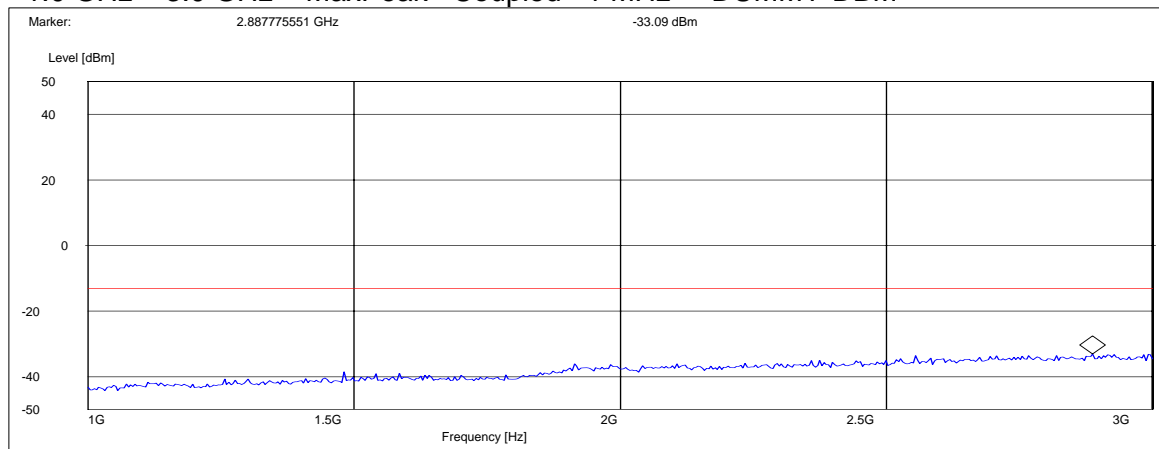
SWEEP TABLE: "FCC 24Spuri 1-3G"

Short Description: FCC 24 1GHz-8GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

1.0 GHz 3.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (GSM-850)**IDLE: 3GHz – 9GHz*****SWEEP TABLE: "FCC 22 Spur 3-9G"***

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
3GHz	9GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: Idle

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

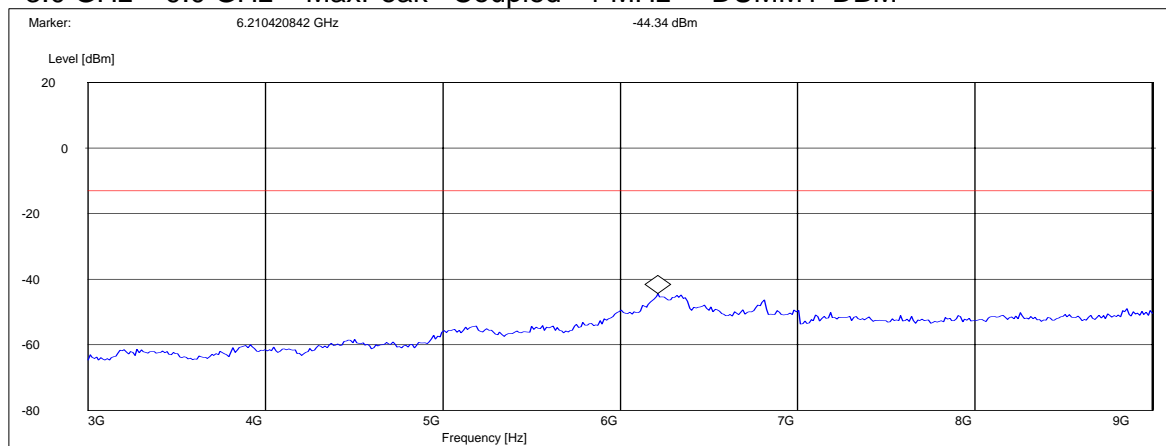
SWEEP TABLE: "FCC 22Spuri 3-9G"

Short Description: FCC 24 1GHz-8GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

3.0 GHz 9.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RESULTS OF RADIATED TESTS PCS-1900:

Harmonic	Tx ch-512 Freq.(MHz)	Level (dBm)	Tx ch-661 Freq. (MHz)	Level (dBm)	Tx ch-810 Freq. (MHz)	Level (dBm)
2	3700.4	N/F	3760	N/F	3819.6	N/F
3	5550.6	N/F	5640	N/F	5729.4	N/F
4	7400.8	N/F	7520	N/F	7639.2	N/F
5	9251	N/F	9400	N/F	9549	N/F
6	11101.2	N/F	11280	N/F	11458.8	N/F
7	12951.4	N/F	13160	N/F	13368.6	N/F
8	14801.6	N/F	15040	N/F	15278.4	N/F
9	16651.8	N/F	16920	N/F	17188.2	N/F
10	18502	N/F	18800	N/F	19098	N/F
N/F = NOISE FLOOR						

RADIATED SPURIOUS EMISSIONS(PCS 1900)**TX: 30MHz - 1GHz**

Spurious emission limit -13dBm

Antenna: vertical***SWEEP TABLE: "FCC 24 Spur 30M-1G"***

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
30MHz	1GHz	Max Peak	Coupled	1 MHz	1 MHz

Note: This plot is valid for low, mid & high channels (worst-case plot)
CETECOM Inc.

411 Dixon Landing Road, Milpitas CA 95035, USA

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @1850.2MHz

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

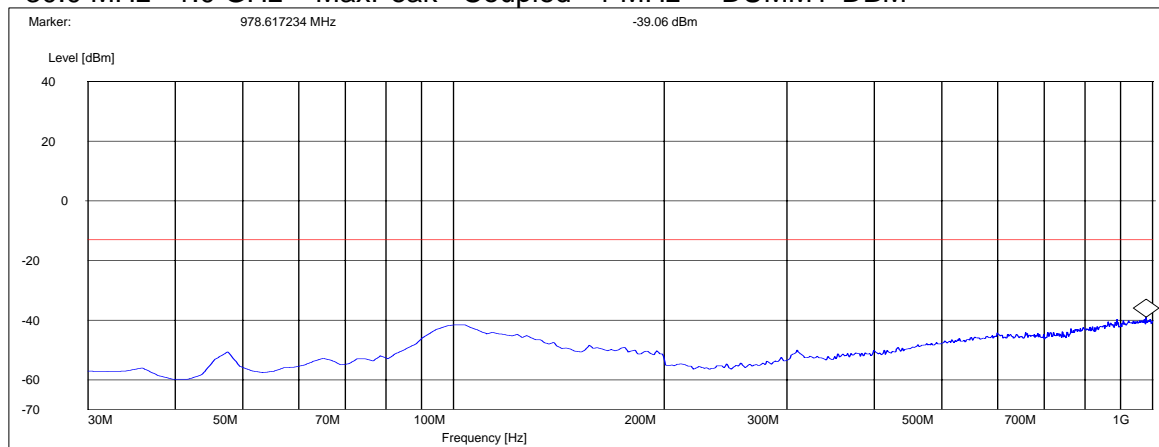
SWEEP TABLE: "FCC 24 Spur 30M-1G_V"

Short Description: FCC 24 30MHz-1GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

30.0 MHz 1.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS(PCS 1900)**TX: 30MHz - 1GHz**

Spurious emission limit -13dBm

Antenna: horizontal***SWEEP TABLE: "FCC 24 Spur 30M-1G"***

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
30MHz	1GHz	Max Peak	Coupled	1 MHz	1 MHz

Note: This plot is valid for low, mid & high channels (worst-case plot)
CETECOM Inc.

411 Dixon Landing Road, Milpitas CA 95035, USA

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @1850.2MHz

Antenna: H

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment: (ABSORBER ON BACK AND FRONT)

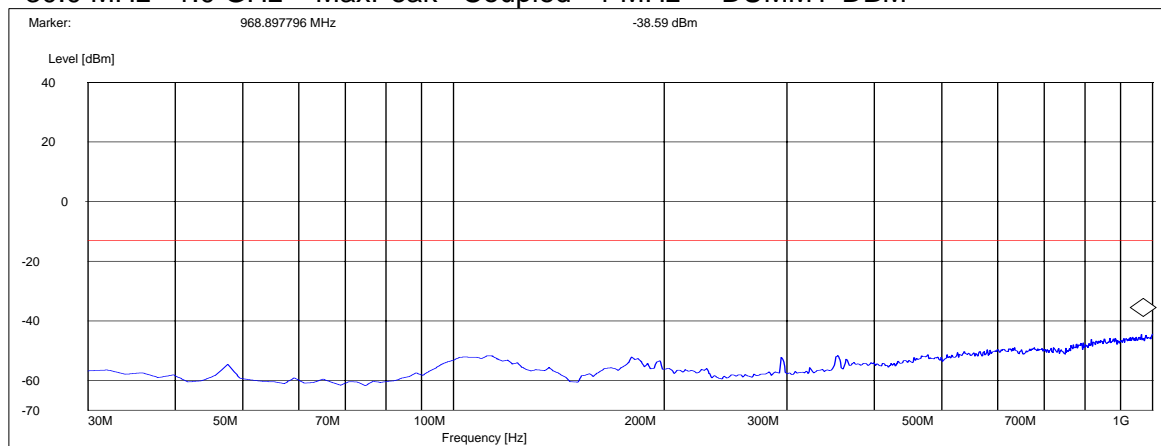
SWEEP TABLE: "FCC 24 Spur 30M-1G_V"

Short Description: FCC 24 30MHz-1GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

30.0 MHz 1.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS(PCS 1900)**Tx @ 1850.2MHz: 1GHz – 3GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC Spuri 1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
1GHz	3GHz	Max Peak	Coupled	1 MHz	1 MHz

Note: The peak above the limit line is the carrier freq.**CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @1850.2MHz

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

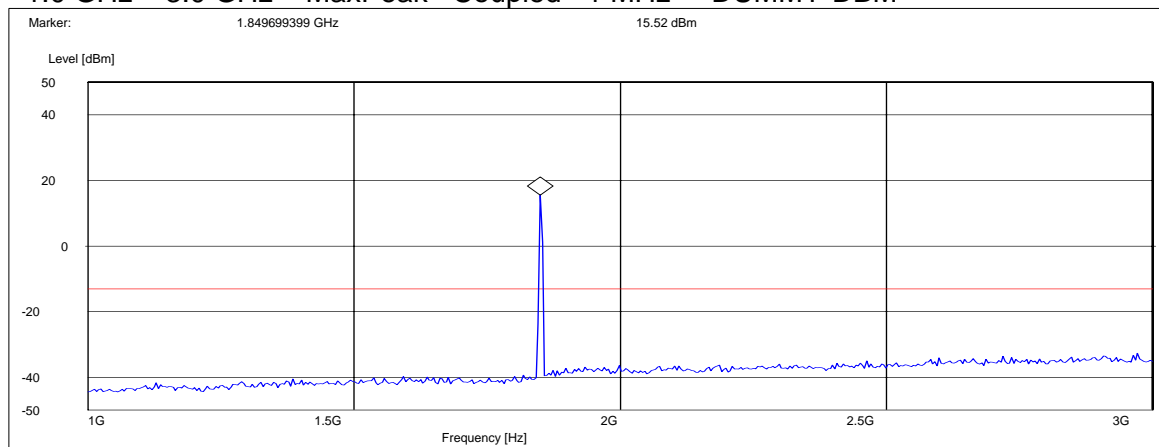
SWEEP TABLE: "FCC 24Spuri 1-3G"

Short Description: FCC 24 1GHz-8GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

1.0 GHz 3.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS(PCS 1900)**Tx @ 1850.2MHz: 3GHz – 18GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC Spuri 3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
3GHz	18GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @1850.2MHz

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

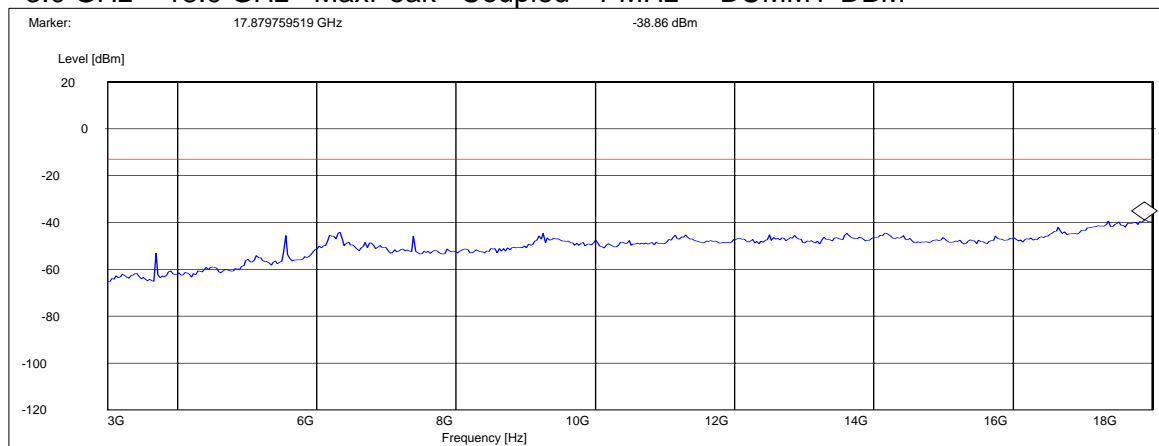
Comment:

SWEEP TABLE: "FCC 24Spuri 3-18G"

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

3.0 GHz 18.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS(PCS 1900)**Tx @ 1880.0MHz: 1GHz – 3GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC Spuri 1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
1GHz	3GHz	Max Peak	Coupled	1 MHz	1 MHz

**Note: The peak above the limit line is the carrier freq.
CETECOM Inc.**

411 Dixon Landing Road, Milpitas CA 95035, USA

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @1880MHz

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

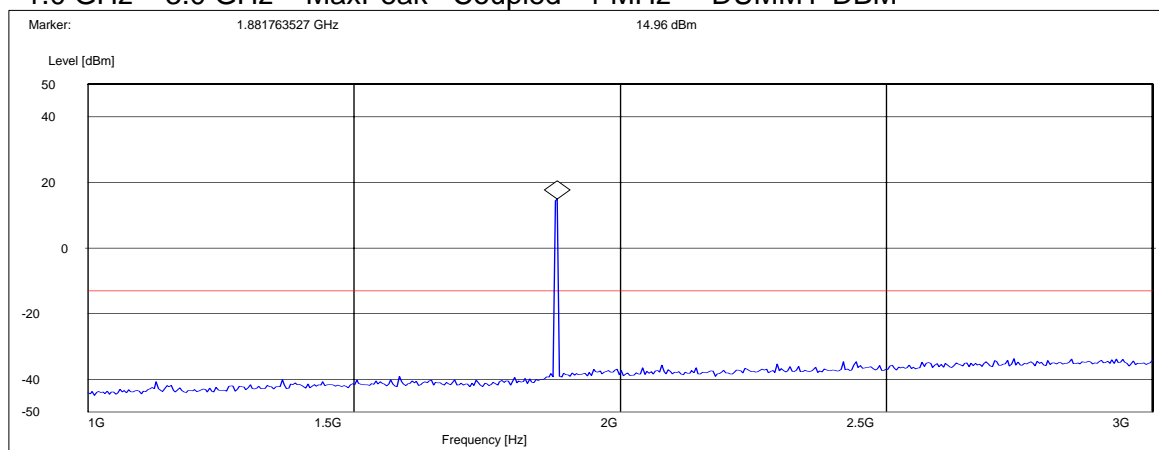
SWEEP TABLE: "FCC 24Spuri 1-3G"

Short Description: FCC 24 1GHz-8GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

1.0 GHz 3.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS(PCS 1900)**Tx @ 1880.0MHz: 3GHz – 18GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC Spuri 3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
3GHz	18GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @1880MHz

Antenna: V

EUT: V

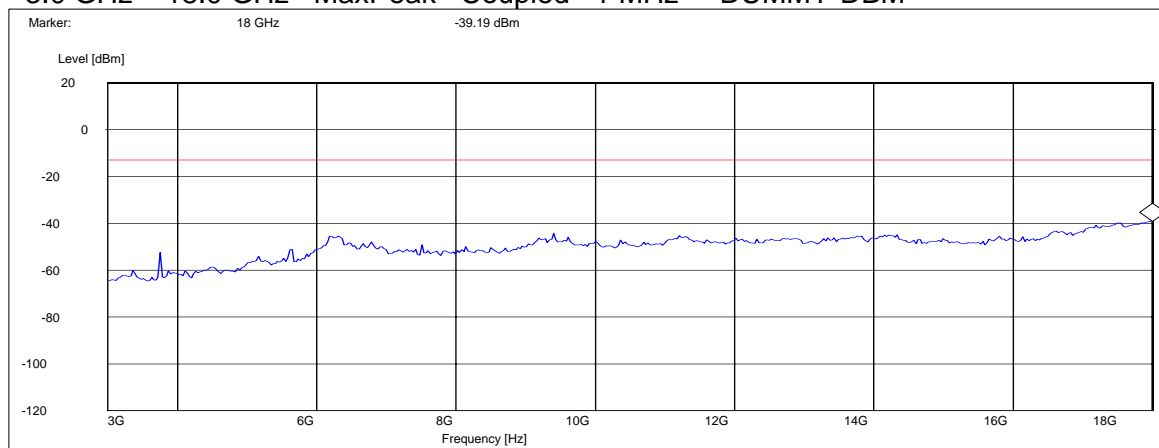
Test operator: Mike

Voltage: AC/DC

Comment:

SWEEP TABLE: "FCC 24Spuri 3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM



RADIATED SPURIOUS EMISSIONS(PCS 1900)**Tx @ 1909.8MHz: 1GHz – 3GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC Spuri 1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
1GHz	3GHz	Max Peak	Coupled	1 MHz	1 MHz

Note: The peak above the limit line is the carrier freq.**CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @1909.8MHz

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

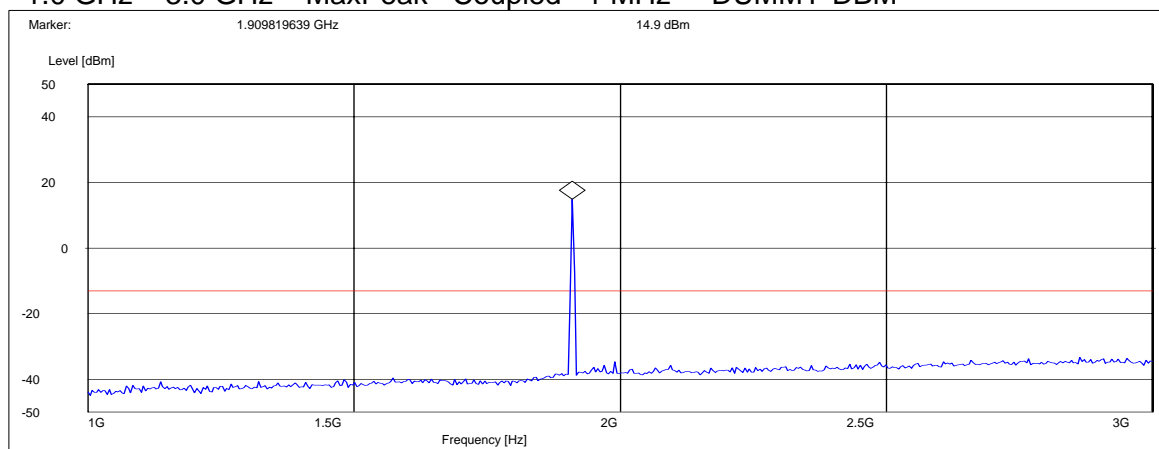
SWEEP TABLE: "FCC 24Spuri 1-3G"

Short Description: FCC 24 1GHz-8GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

1.0 GHz 3.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS(PCS 1900)**Tx @ 1909.8MHz: 3GHz – 18GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC Spuri 3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
3GHz	18GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @1909.8MHz

Antenna: V

EUT: V

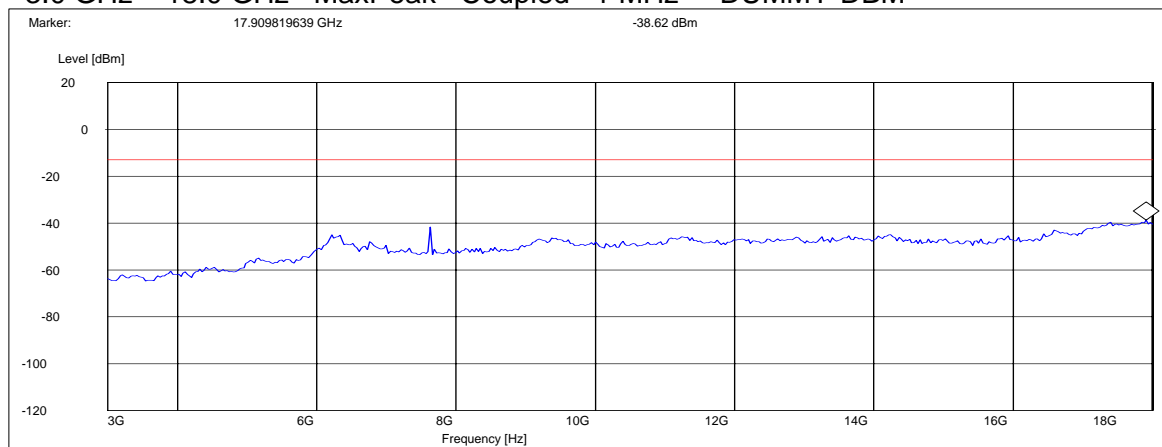
Test operator: Mike

Voltage: AC/DC

Comment:

SWEEP TABLE: "FCC 24Spuri 3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	DUMMY-DBM



RADIATED SPURIOUS EMISSIONS(PCS 1900)**18GHz – 19.1GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC 24 spuri 18-19.1G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
18GHz	19.1GHz	Max Peak	Coupled	1 MHz	1 MHz

Note: This plot is valid for low, mid & high channels (worst-case plot)**CETECOM Inc.****411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: TX (CW) @1850.2MHz

Antenna: H

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

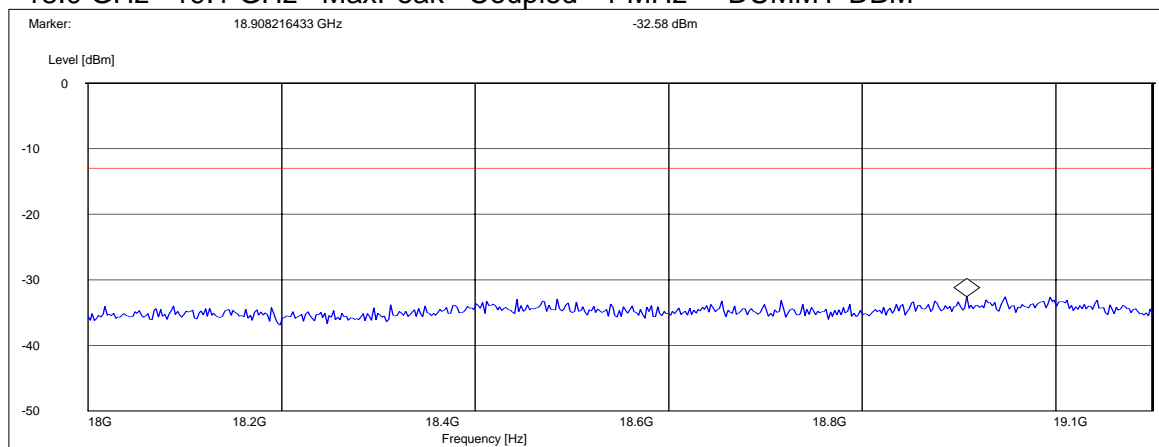
SWEEP TABLE: "FCC 24spuri 18-19.1G"

Short Description: FCC 24 18GHz-19.1GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

18.0 GHz 19.1 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



5.3 RECEIVER RADIATED EMISSIONS § 2.1053

NOTE:

1. The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3GHz and 26.5GHz very short cable connections to the antenna was used to minimize the noise level.

Limits**SUBCLAUSE § RSS-133**

Frequency (MHz)	Field strength (μV/m)	Measurement distance (m)
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

RADIATED SPURIOUS EMISSIONS (RX MODE)**EUT in Idle Mode: 30MHz – 1GHz**

Spurious emission limit –13dBm

Antenna: vertical***SWEEP TABLE: "FCC 22 Spur 30M-1G"***

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
30MHz	1GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: Idle

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

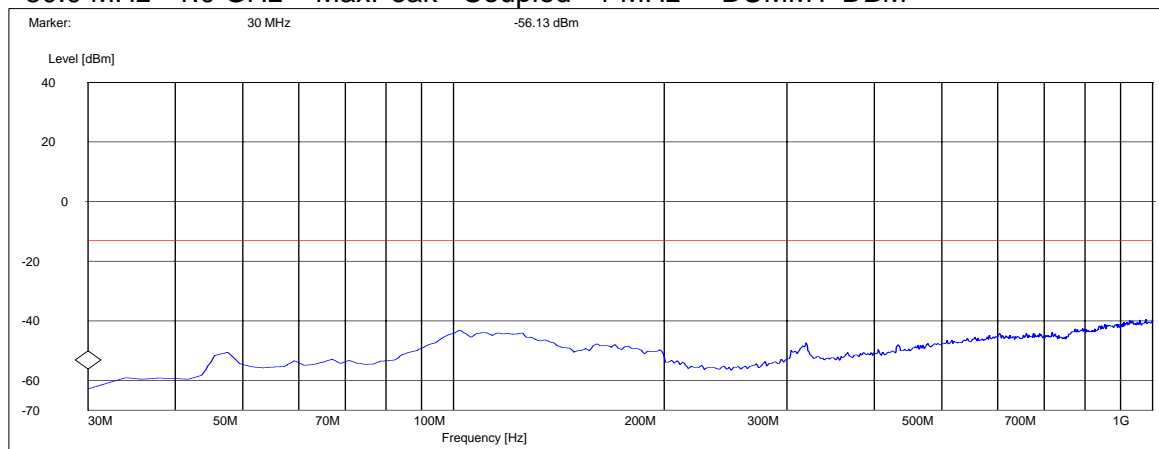
SWEEP TABLE: "FCC 24 Spur 30M-1G_H"

Short Description: FCC 24 30MHz-1GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

30.0 MHz 1.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (RX MODE)**EUT in Idle Mode: 30MHz – 1GHz**

Spurious emission limit –13dBm

Antenna: horizontal***SWEEP TABLE: "FCC 22 Spur 30M-1G"***

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
30MHz	1GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: Idle

Antenna: H

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

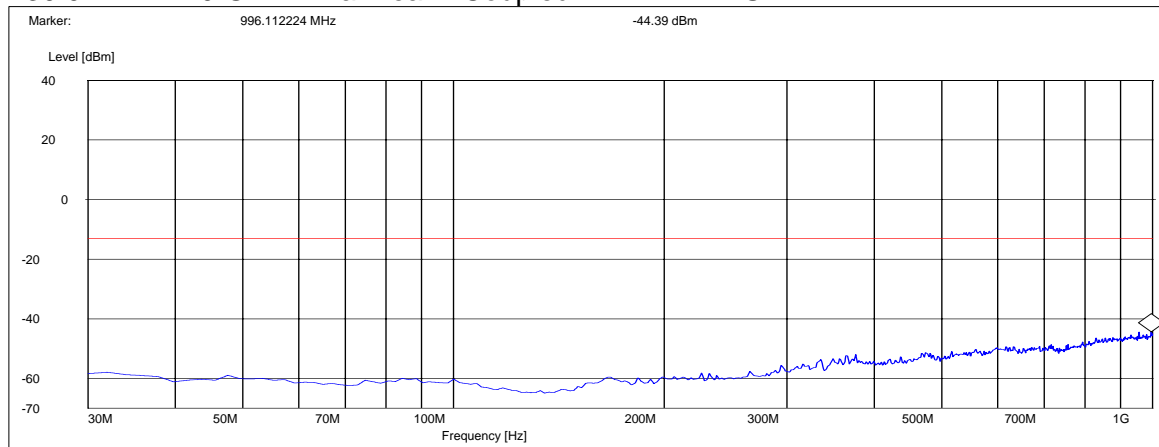
SWEEP TABLE: "FCC 24 Spur 30M-1G_H"

Short Description: FCC 24 30MHz-1GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

30.0 MHz 1.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (RX MODE)**EUT in Idle Mode: 1GHz – 3GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC Spuri 1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
1GHz	3GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: Idle

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

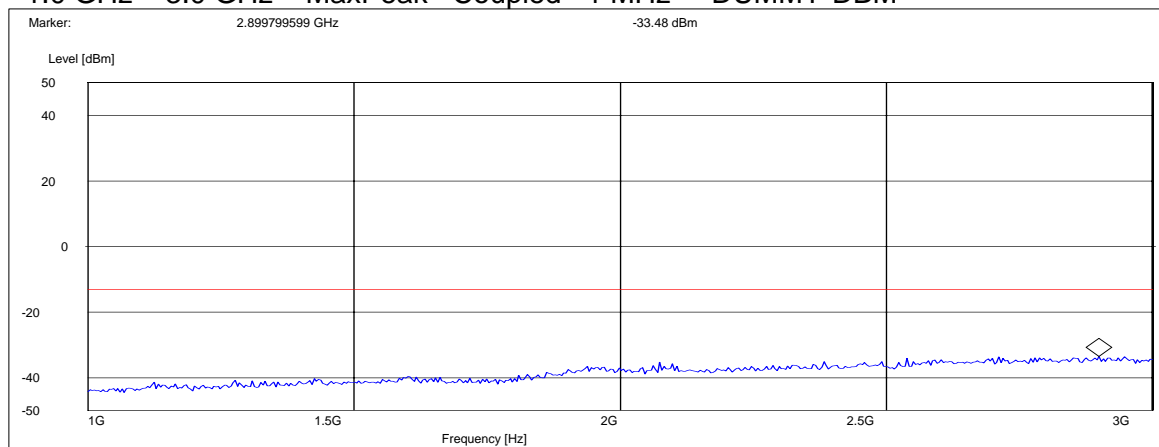
SWEEP TABLE: "FCC 24Spuri 1-3G"

Short Description: FCC 24 1GHz-8GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

1.0 GHz 3.0 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (RX MODE)**EUT in Idle Mode: 3GHz – 18GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC 24 spuri 3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
3GHz	18GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: Idle

Antenna: V

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

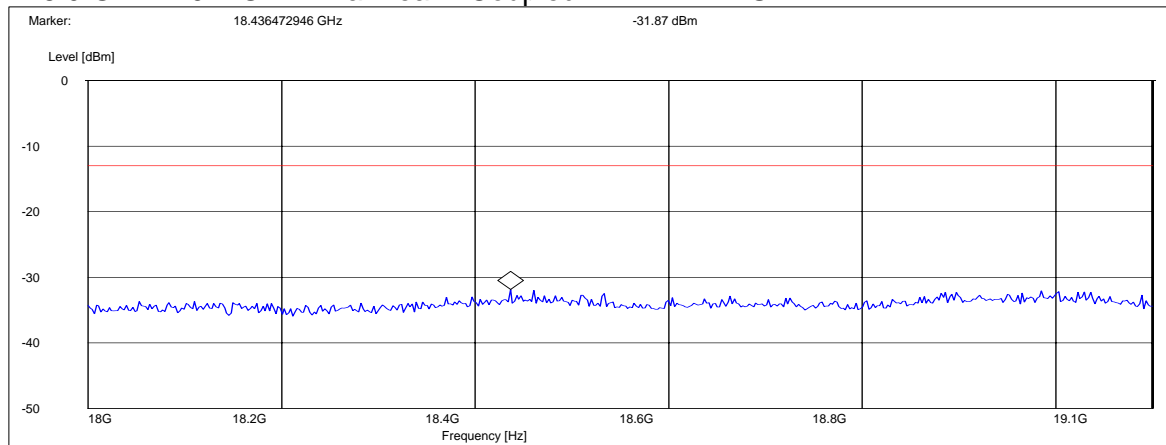
SWEEP TABLE: "FCC 24spuri 18-19.1G"

Short Description: FCC 24 18GHz-19.1GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

18.0 GHz 19.1 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



RADIATED SPURIOUS EMISSIONS (RX MODE)**EUT in Idle Mode: 18GHz – 19.1GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC 24 spuri 18-19.1G"

Start Frequency	Stop Frequency	Detector	Meas. Time	RBW	VBW
18GHz	19.1GHz	Max Peak	Coupled	1 MHz	1 MHz

CETECOM Inc.**411 Dixon Landing Road, Milpitas CA 95035, USA**

EUT / Description: Model 6000 GSM Subscriber Terminal

Customer: L3

Operating Mode: Idle

Antenna: H

EUT: V

Test operator: Mike

Voltage: AC/DC

Comment:

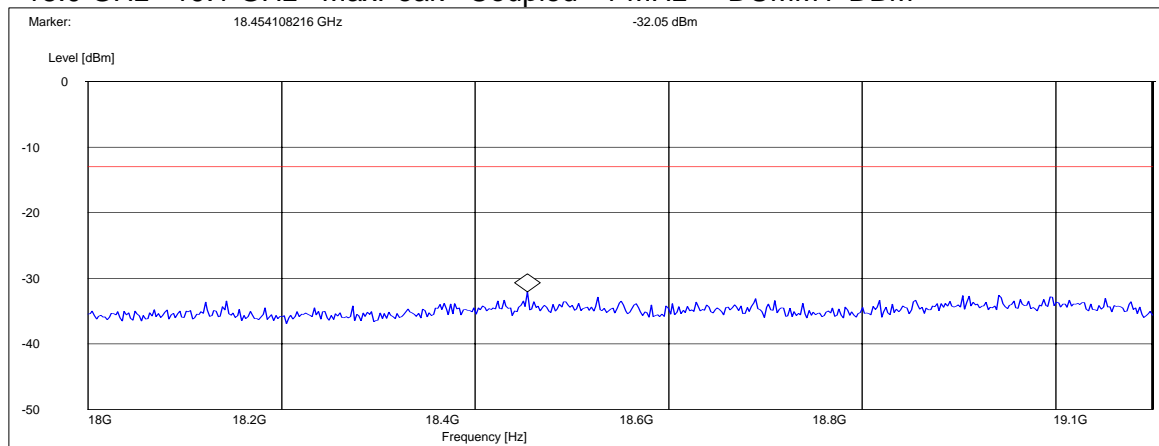
SWEEP TABLE: "FCC 24spuri 18-19.1G"

Short Description: FCC 24 18GHz-19.1GHz

Start Stop Detector Meas. IF Transducer

Frequency Frequency Time Bandw.

18.0 GHz 19.1 GHz MaxPeak Coupled 1 MHz DUMMY-DBM



5.4 AC POWERLINE CONDUCTED EMISSIONS § 15.107/207**Technical specification: 15.107 / 15.207 (Revised as of August 20, 2002)****Limit**

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50
* Decreases with logarithm of the frequency		

ANALYZER SETTINGS: RBW = 10KHzVBW = 10KHz

Prescans were performed on both 850/1900 bands, full testing on the worst-case band is submitted in the test report.

5.4.1 Results EUT**LISN****411 Dixon Landing Road, CA 95035**

EUT / Description: Model 6000 GSM Subscriber Terminal

Manufacturer: L3

Test mode: tx 1880 MHz

Test Engineer: Mike

Phase: I+n

Comment: 120vac

Start of Test: 3/2/2006 / 12:56:39PM

SCAN TABLE: "EN 55022 Voltage"

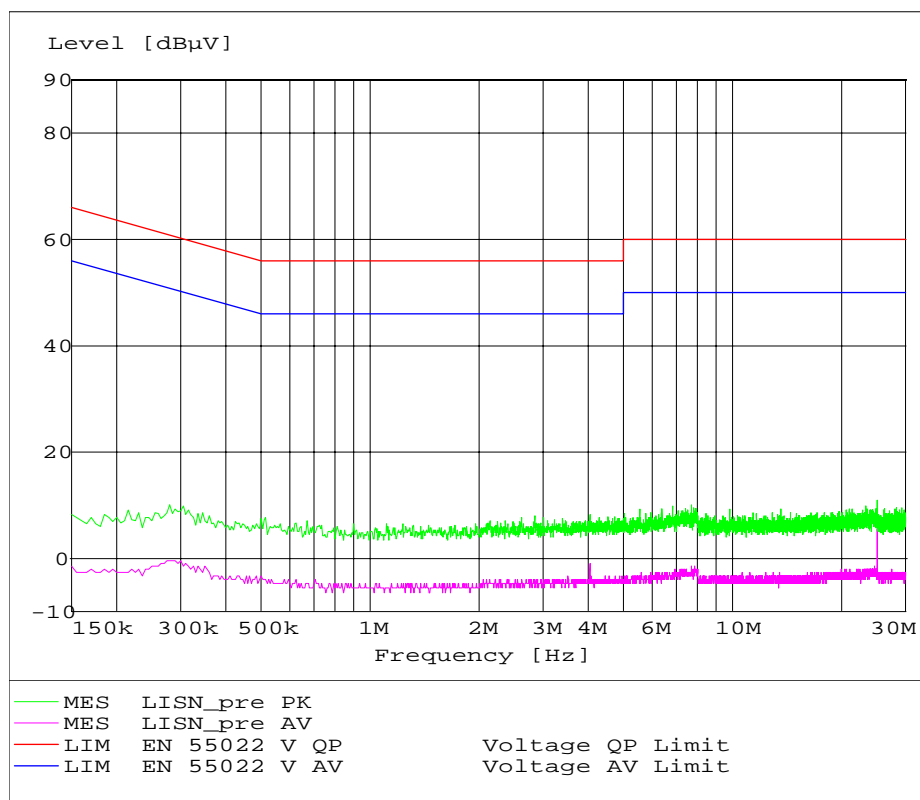
Short Description: EN 55022 Voltage

Start Stop Step Detector Meas. IF Transducer

Frequency Frequency Width Time Bandw.

150.0 kHz 30.0 MHz 5.0 kHz MaxPeak 10.0 ms 9 kHz None

Average



6 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Cal Due	Interval
01	Spectrum Analyzer	ESIB 40	Rohde & Schwarz	100107	May 2006	1 year
02	Spectrum Analyzer	FSEM 30	Rohde & Schwarz	100017	August 2006	1 year
03	Signal Generator	SMY02	Rohde & Schwarz	836878/011	May 2006	1 year
04	Power-Meter	NRVD	Rohde & Schwarz	0857.8008.02	May 2006	1 year
05	Biconilog Antenna	3141	EMCO	0005-1186	June 2006	1 year
06	Horn Antenna (1-18GHz)	SAS-200/571	AH Systems	325	June 2006	1 year
07	Horn Antenna (18-26.5GHz)	3160-09	EMCO	1240	June 2006	1 year
08	Power Splitter	11667B	Hewlett Packard	645348	n/a	n/a
09	Climatic Chamber	VT4004	Voltsch	G1115	May 2006	1 year
10	High Pass Filter	5HC2700	Trilithic Inc.	9926013	n/a	n/a
11	High Pass Filter	4HC1600	Trilithic Inc.	9922307	n/a	n/a
12	Pre-Amplifier	JS4-00102600	Miteq	00616	May 2006	1 year
13	Power Sensor	URV5-Z2	Rohde & Schwarz	DE30807	May 2006	1 year
14	Digital Radio Comm. Tester	CMD-55	Rohde & Schwarz	847958/008	May 2006	1 year
15	Universal Radio Comm. Tester	CMU 200	Rohde & Schwarz	832221/06	May 2006	1 year

7 References

Title 47—Telecommunication, CHAPTER I--FEDERAL COMMUNICATIONS COMMISSION,
PART 2--FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS October 1, 2001.

Title 47—Telecommunication, CHAPTER I--FEDERAL COMMUNICATIONS COMMISSION,
PART 22 PUBLIC MOBILE SERVICES October 1, 1998.

FCC Report and order 02-229 September 24, 2002.

Title 47—Telecommunication, CHAPTER I--FEDERAL COMMUNICATIONS COMMISSION,
PART 24 PERSONAL COMMUNICATIONS SERVICES October 1, 1998.

ANSI / TIA-603-B-2003 Land Mobile FM or PM Communications Equipment Measurement and Performance Standard November 7, 2002.

8 BLOCK DIAGRAMS

Radiated Testing

ANECHOIC CHAMBER

