FCC Test Report

FCC Part 22,24 / RSS 129,133

for the

SONY Corporation

Notebook PC

Model Number: VAIO-VGN TZ

FCC ID: AK8PCG4L2L

IC-ID: 409B-PCG4L2L

TEST REPORT #: SONYE_016_07001_ES720_FCC22_24CDMA_AK8PCG4L2L
DATE: 4/25/2007

ilac-MRA ACCREDITED Certificate # 2135.01

Bluetooth Qualification Test Facility (BQTF)

CTIA Authorized Testing Laboratory

FCC listed# 101450

IC recognized # 3925

***CETECOM* Inc.**
411 Dixon Landing Road ◆ Milpitas, CA 95035 ◆ U.S.A.
Phone: + 1 (408) 586 6200 ◆ Fax: + 1 (408) 586 6299 ◆ E-mail: info@cetecomusa.com ◆ http://www.cetecom.com
CETECOM Inc. is a Delaware Corporation with Corporation number: 2113686
Board of Directors: Dr. Harald Ansorge, Dr. Klaus Matkey, Hans Peter May

Table of Contents

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 and in compliance with the applicable criteria specified in Industry Canada rules RSS129 and RSS133.

Company	Description	Model #
SONY Corporation	**Notebook PC**	

Technical responsibility for area of testing:

Date	Section	Name	Signature
2007-04-25	EMC & Radio	Lothar Schmidt (Test Lab Manager)	Lothar Schmidt I am approving this document

This report is prepared by:

Date	Section	Name	Signature
2007-04-25	EMC & Radio	Pete Krebill (EMC Project Engineer)	Pete Krebill I am the author of this document

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 SAR Assessment Report

Company Name:	CETECOM Inc.
Department:	SAR
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

2.2 Identification of the Client

Applicant's Name:	SONY Corporation
Address:	1-7-1 Konan, Minato-ku, Tokyo 108-0075, Japan
Contact Person:	Michio Kobayashi
Phone No.	+81-263-72-5696
Fax:	+81-263-72-9755
e-mail:	Michio.Kobayashi@jp.sony.com

2.3 Identification of the Manufacturer

Manufacturer's Name:	Sony EMCS Corporation
Manufacturer's Address:	5432 Toyoshima, Azumino-Shi, Nagano 399-8282, Japan

3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

Product Type	Notebook PC
Marketing Name:	VAIO-VGN TZ
Model No:	PCG-4L2L
FCC-ID:	AK8PCG4L2L
IC-ID :	409B-PCG4L2L
Frequency Range:	824.7 MHz to 848.31 MHz & 1851.25 MHz to 1908.75 MHz
Type(s) of Modulation:	CDMA
Antenna Type:	PIFA
Output Power	ERP 23.76dBm (0.238W) @ 848.31 MHz EIRP 30.30dBm (1.072W) @1880 MHz

*The E725 and ES720 module are identical except for the function of GPS locating. All testing are done on the more inclusive E725 module.

Subject of Investigation

All testing was performed on the EUT listed in Section 3. 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. The maximization of portable equipment is conducted in accordance with ANSI C63.4.

4 Measurements

4.1 RF Power Output

4.1.1 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.

4.1.2 Limits:

4.1.2.1 FCC 22.913 (a) Effective radiated power limits.

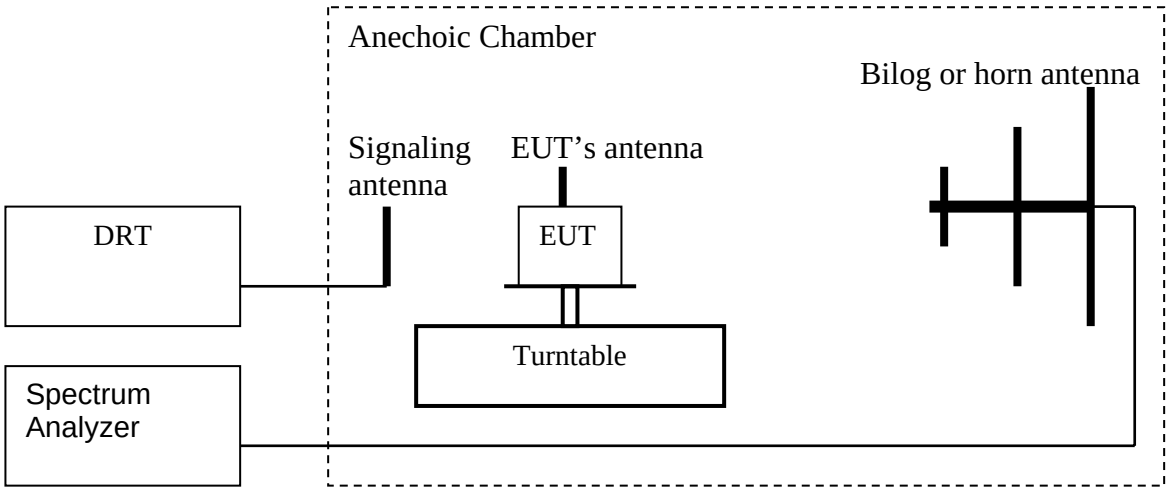
The effective radiated power (ERP) of mobile transmitters must not exceed 7 Watts.

4.1.2.2 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.

4.1.3 Radiated Output Power measurement procedure:

Based on TIA-603C 2004
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.)

4.1.4 ERP Results 800 MHz band:

	Burst Peak ERP
	≤38.45dBm (7W)

Frequency (MHz)	Effective Radiated Power (dBm)
824.7	21.93
836.6	23.29
848.31	23.76

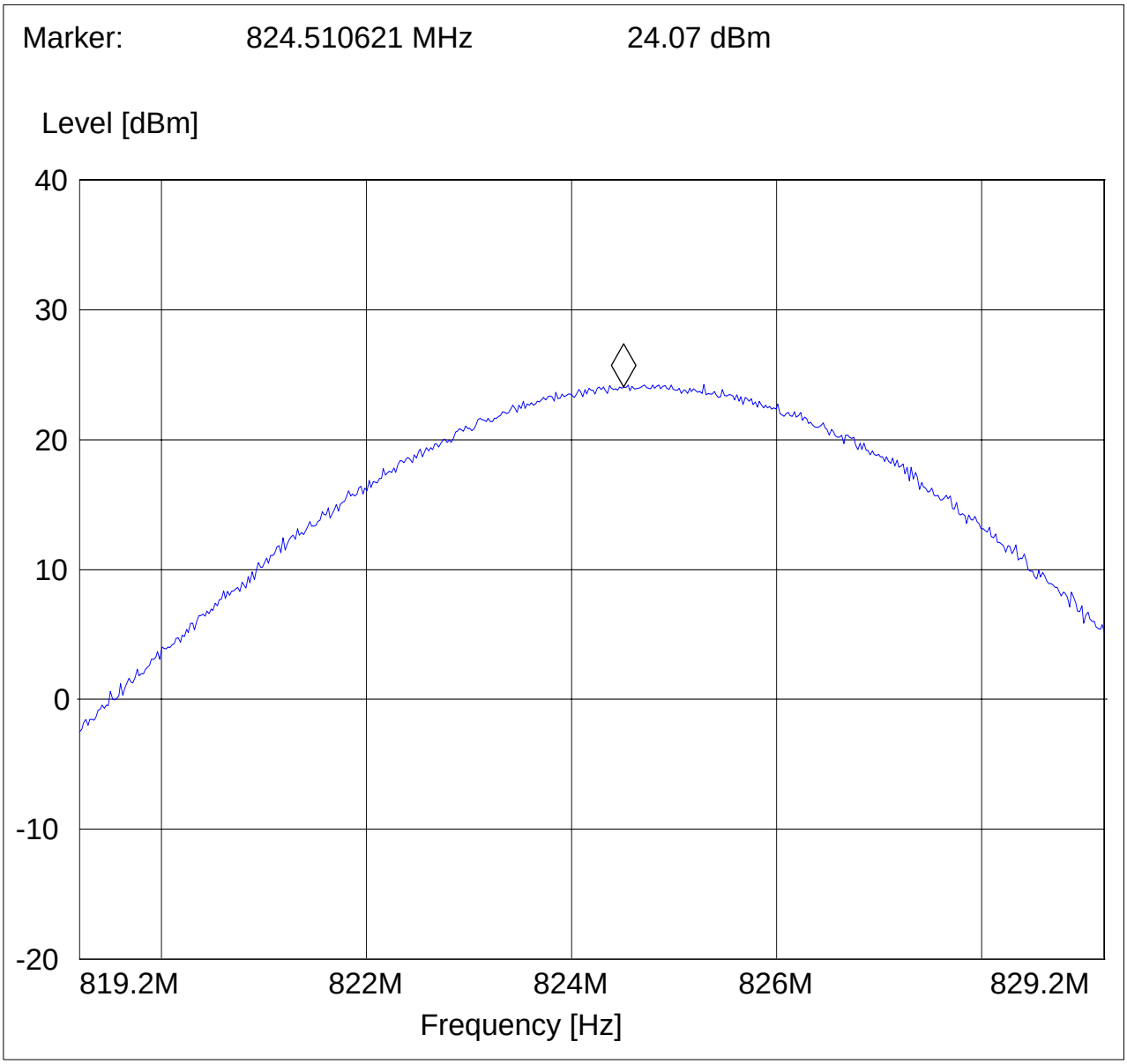
4.1.5 EIRP Results 1900 MHz band:

	Burst Peak EIRP
	≤33dBm (2W)

Frequency (MHz)	Equivalent Isotropic Radiated Power (dBm)
1851.25	29.82
1880.0	30.30
1908.25	28.60

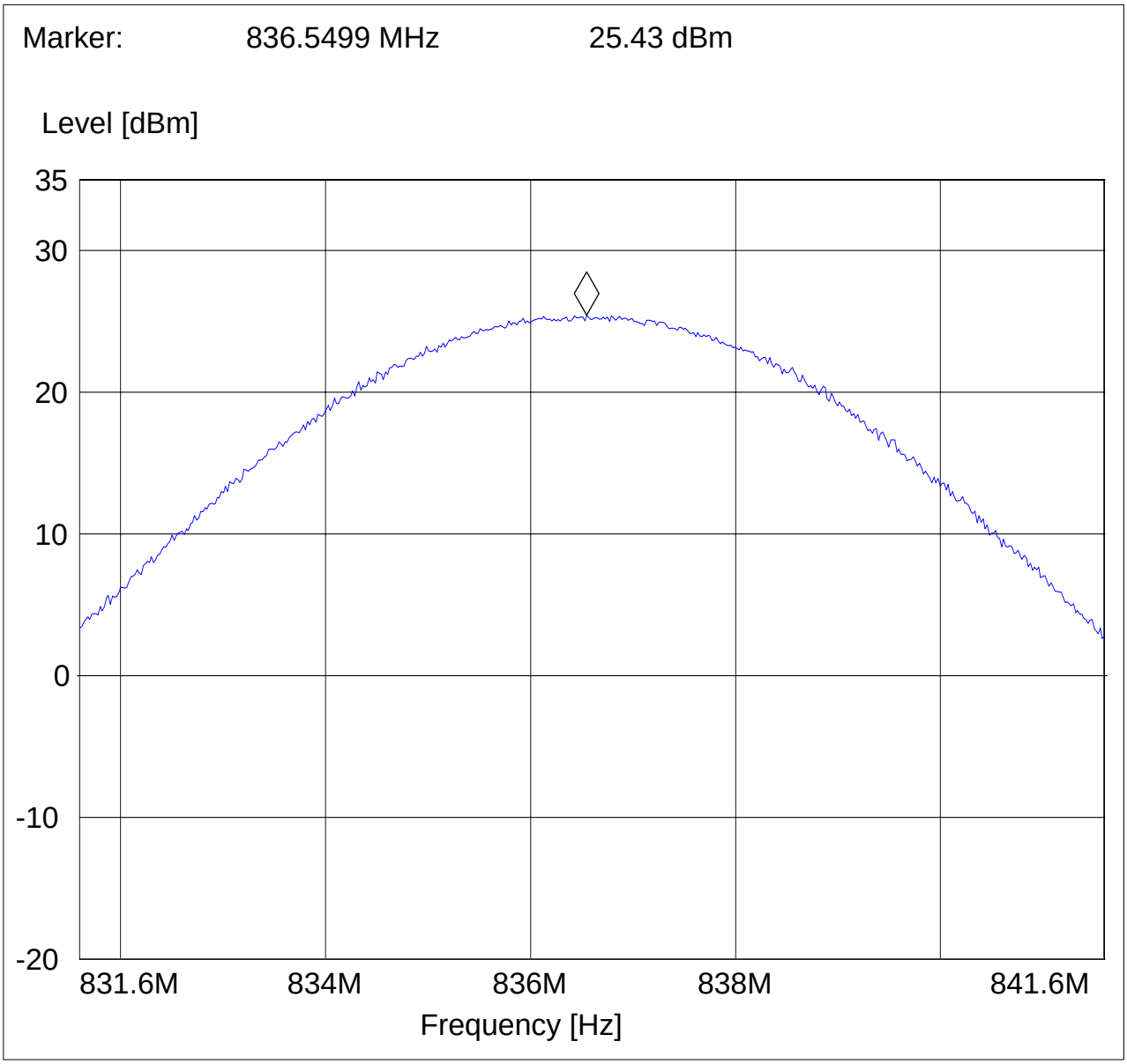
EIRP (800 band) **§22.913(a)**
CHANNEL 1013
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 800 Ch 1013
ANT Orientation: H
EUT Orientation: H
Test Engineer: Pete Krebill
Voltage: AC Adapter

SWEEP TABLE: "EIRP 850 CH 128 V"



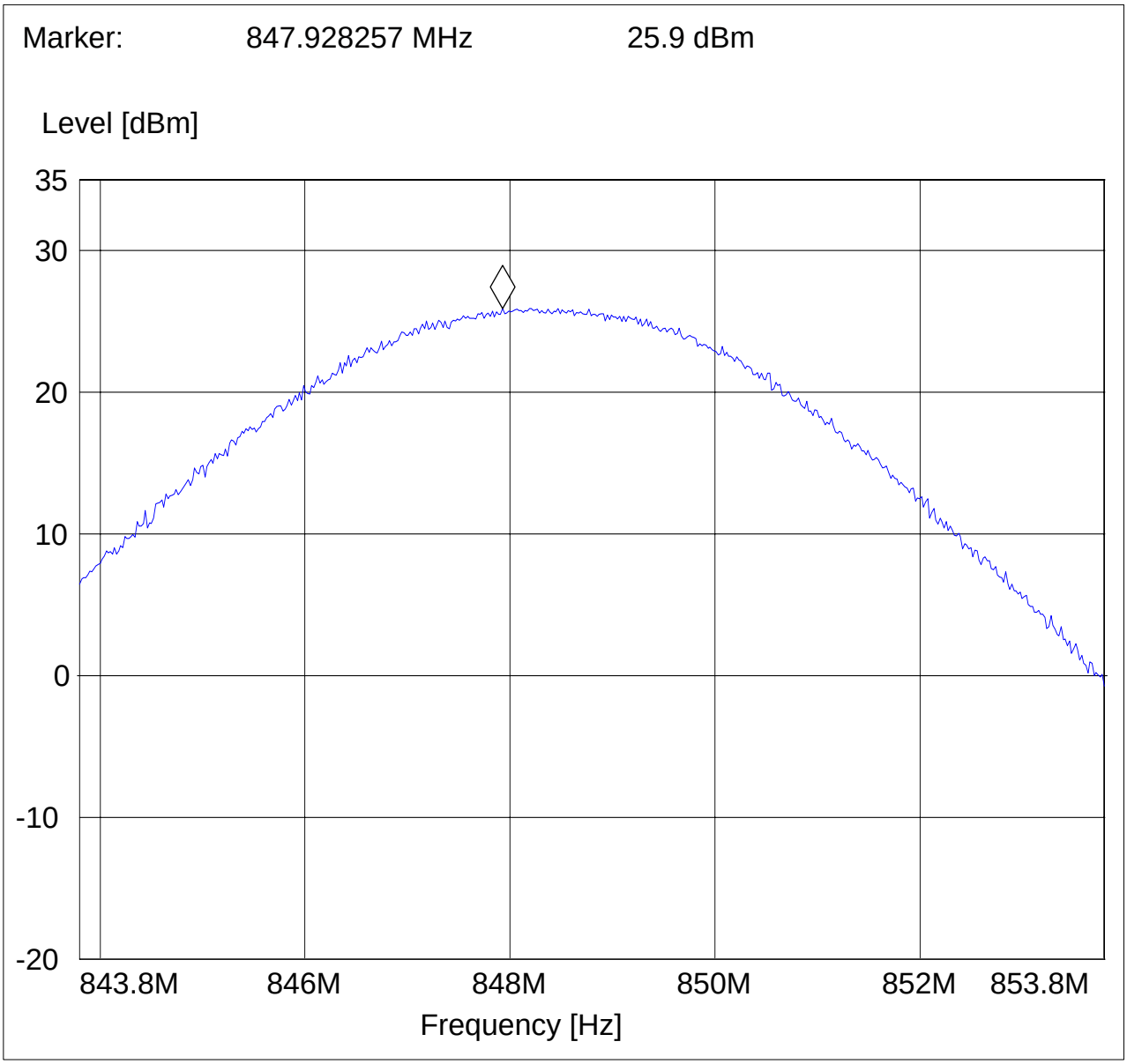
EIRP (800 band) **§22.913(a)**
CHANNEL 384
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 800 Ch 384
ANT Orientation: H
EUT Orientation: H
Test Engineer: Pete Krebill
Voltage: AC Adapter

SWEEP TABLE: "EIRP 850 CH 190 H"



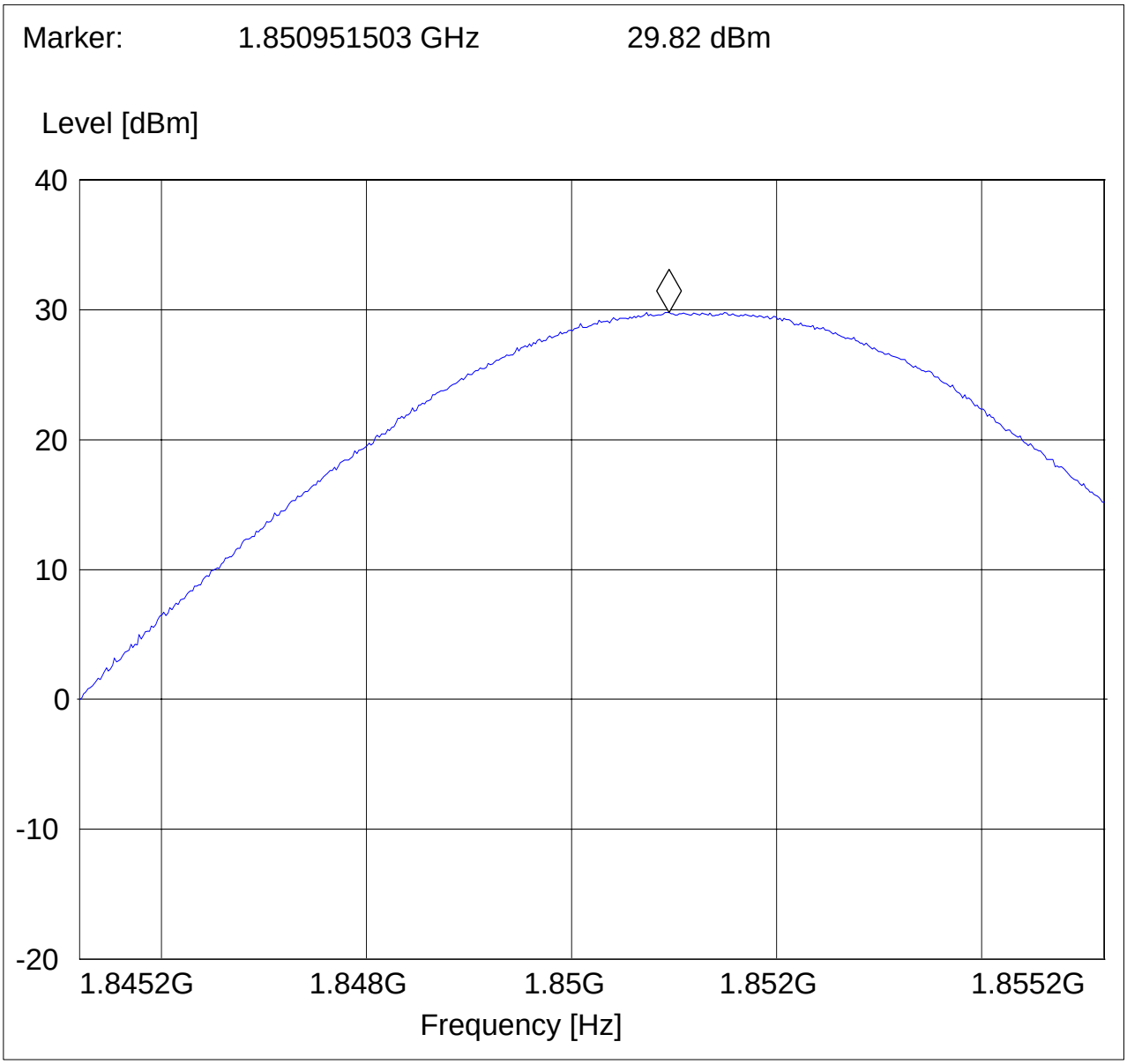
EIRP (800 band) **§22.913(a)**
CHANNEL 777
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 800 Ch 777
ANT Orientation: H
EUT Orientation: H
Test Engineer: Pete Krebill
Voltage: AC Adapter

SWEEP TABLE: "EIRP 850 CH 251 H"



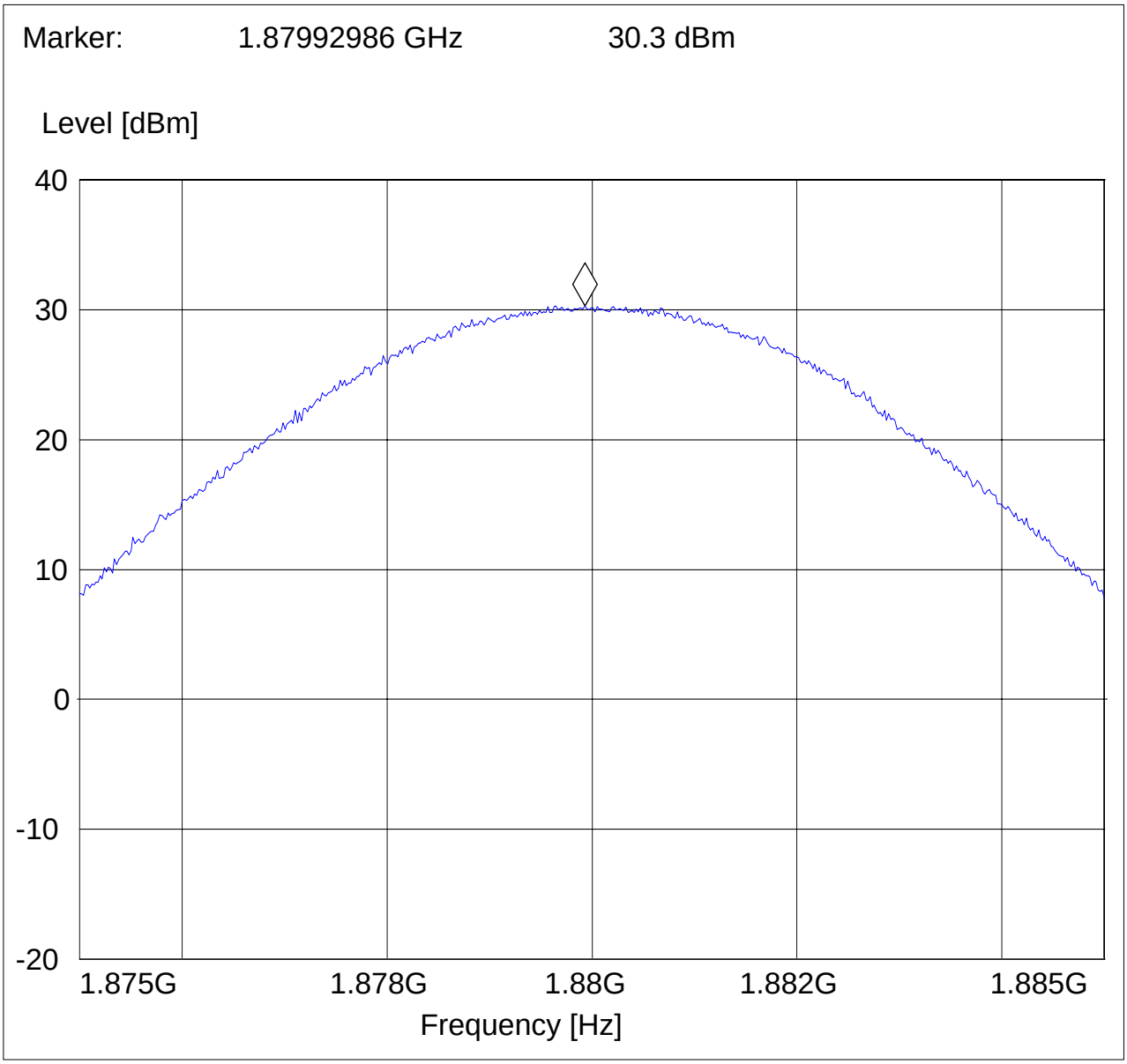
EIRP (PCS-1900) **§24.232(b)**
CHANNEL 25
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 1900, ch 25
ANT Orientation: H
EUT Orientation: H
Test Engineer: Ed
Voltage: AC adapter

SWEEP TABLE: "EIRP 1900 CH512"



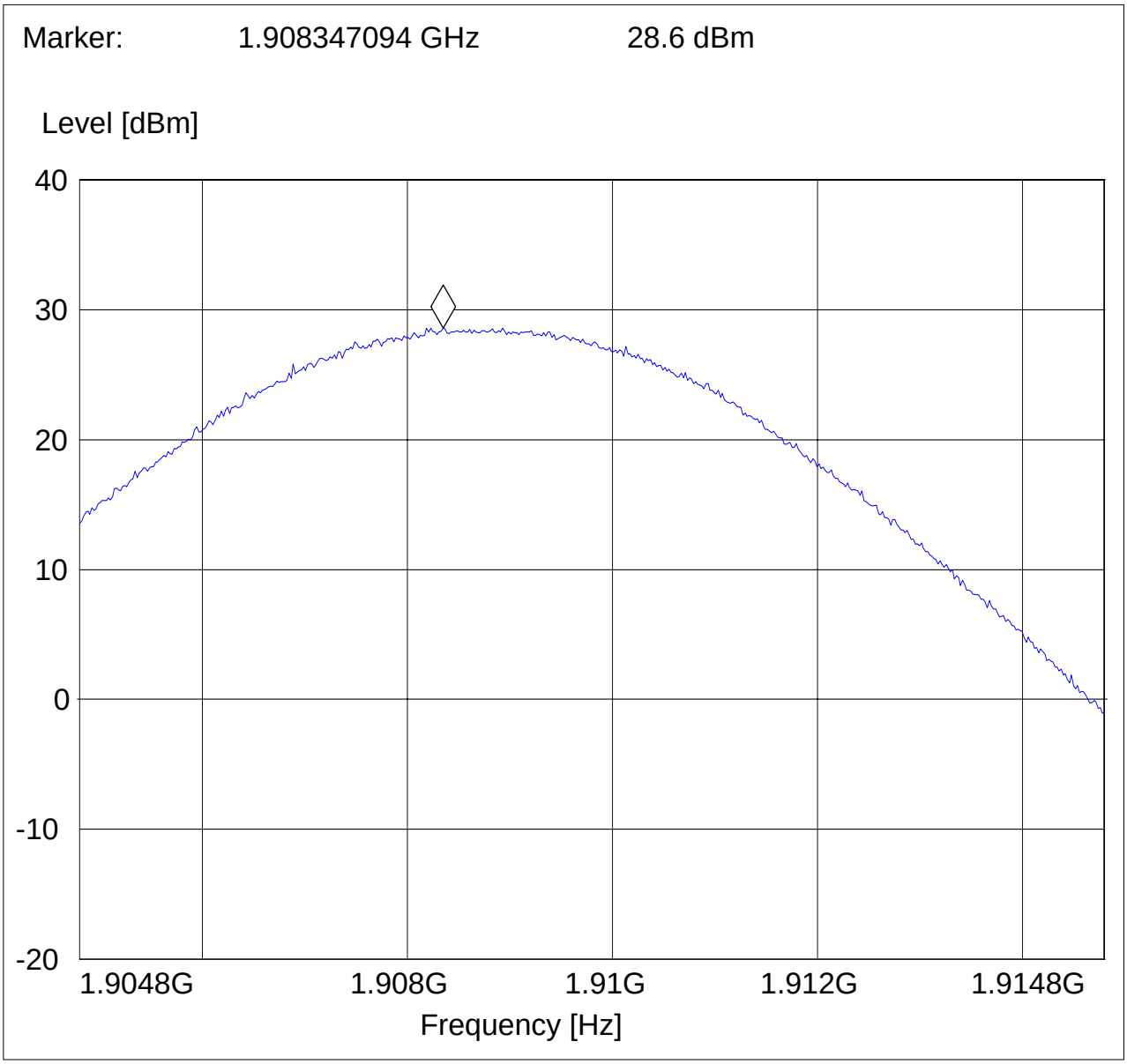
EIRP (PCS-1900) **§24.232(b)**
CHANNEL 600
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 1900, ch 600
ANT Orientation: H
EUT Orientation: H
Test Engineer: Ed
Voltage: AC adapter

SWEEP TABLE: "EIRP 1900 CH661"



EIRP (PCS-1900) **§24.232(b)**
CHANNEL 1175
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 1900, ch 1175
ANT Orientation: H
EUT Orientation: H
Test Engineer: Ed
Voltage: AC adapter

SWEEP TABLE: "EIRP 1900 CH810"



4.2 Spurious Emissions Radiated

4.2.1 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.

4.2.2 Limits:

4.2.2.1 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.

4.2.2.2 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.

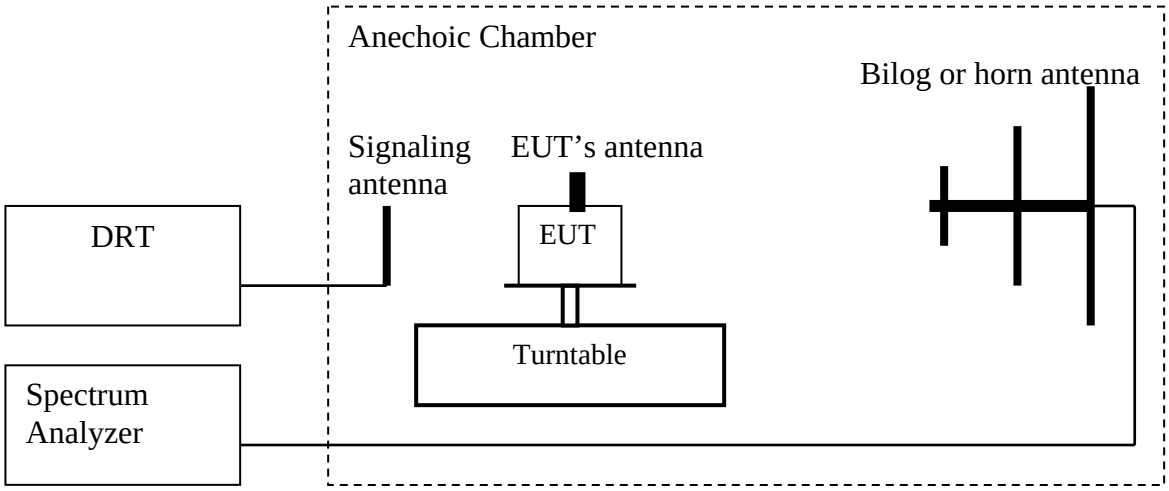
(b) Measurement procedure. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the 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.

4.2.3 Radiated out of band measurement procedure:

Based on TIA-603C 2004

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)**. **LOSS** = Generator Output Power (dBm) – Analyzer reading (dBm).
7. Determine the level of spurious emissions using the following equation: **Spurious** (dBm) = **LVL** (dBm) + **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: **Spurious** (dBm) = **LVL** (dBm) + **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.

4.2.4 Radiated out of band emissions results on EUT:

4.2.4.1 RESULTS OF RADIATED TESTS 800:

Harmonics	Tx ch-1013 Freq. (MHz)	Level (dBm)	Tx ch-600 Freq. (MHz)	Level (dBm)	Tx ch-777 Freq. (MHz)	Level (dBm)
2	**1648.4**	NF	**1673.2**	NF	**1697.6**	NF
3	**2472.6**	NF	**2509.8**	NF	**2546.4**	NF
4	**3296.8**	NF	**3346.4**	NF	**3395.2**	NF
5	**4121**	NF	**4183**	NF	**4244**	NF
6	**4945.2**	NF	**5019.6**	NF	**5092.8**	NF
7	**5769.4**	NF	**5856.2**	NF	**5941.6**	NF
8	**6593.6**	NF	**6692.8**	NF	**6790.4**	NF
9	**7417.8**	NF	**7529.4**	NF	**7639.2**	NF
10	**8242**	NF	**8366**	NF	**8488**	NF
NF = NOISE FLOOR						

4.2.4.2 RADIATED SPURIOUS EMISSIONS (800 band)

TX: 30MHz - 1GHz

Spurious emission limit –13dBm

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: ES725

Customer: Sony

Test Mode: CDMA 800 Ch 1013

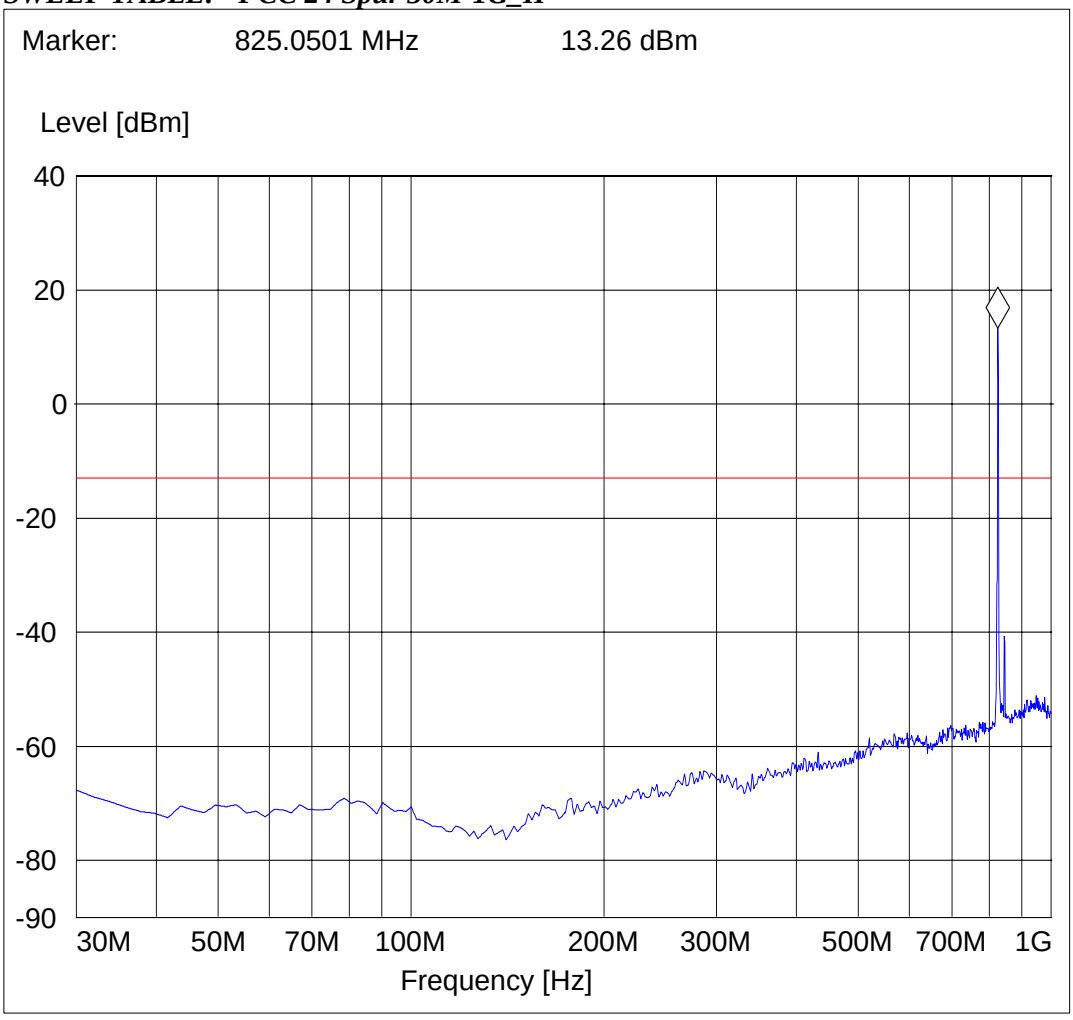
ANT Orientation: H

EUT Orientation: H

Test Engineer: Pete Krebill

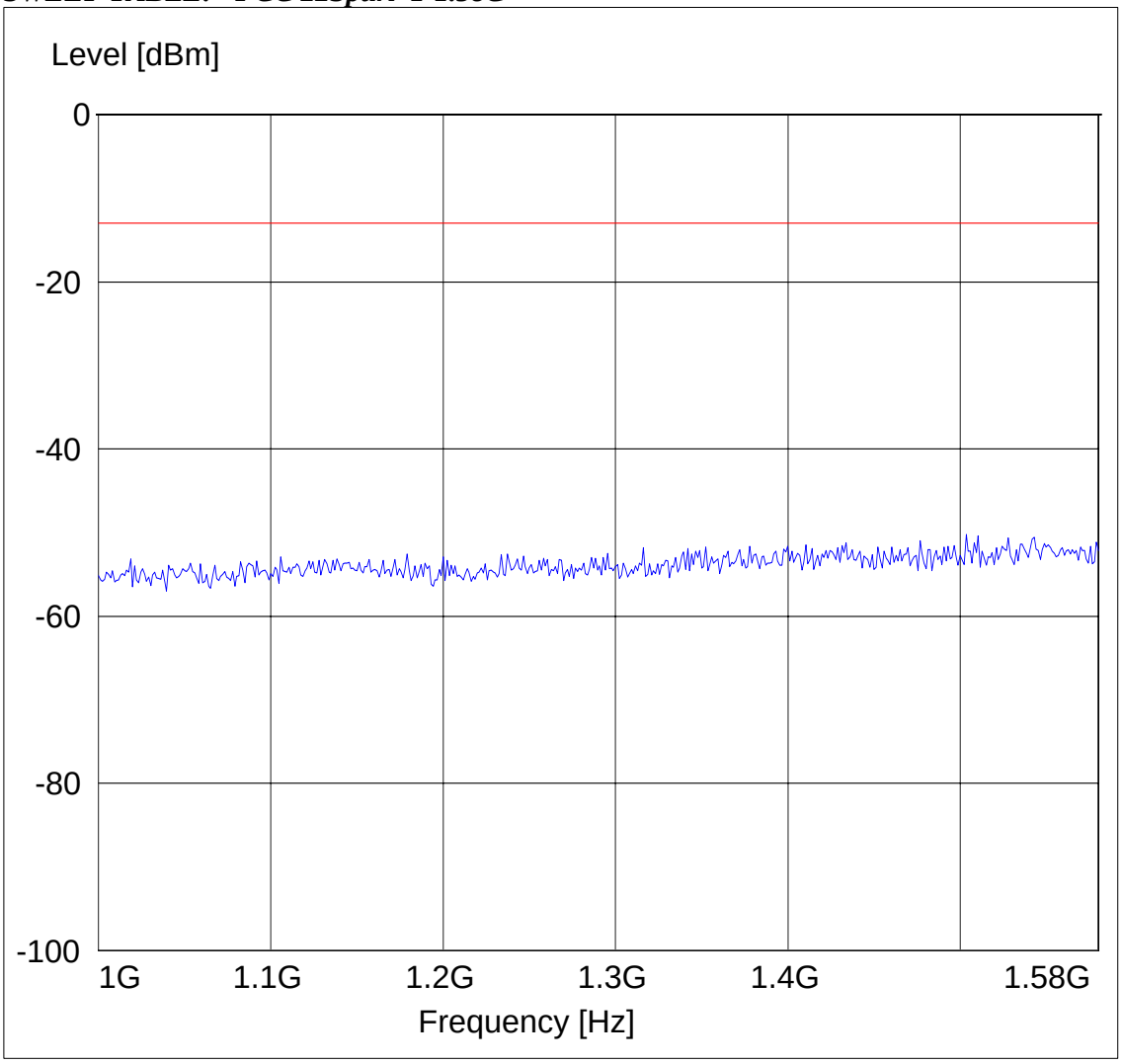
Voltage: AC Adapter

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



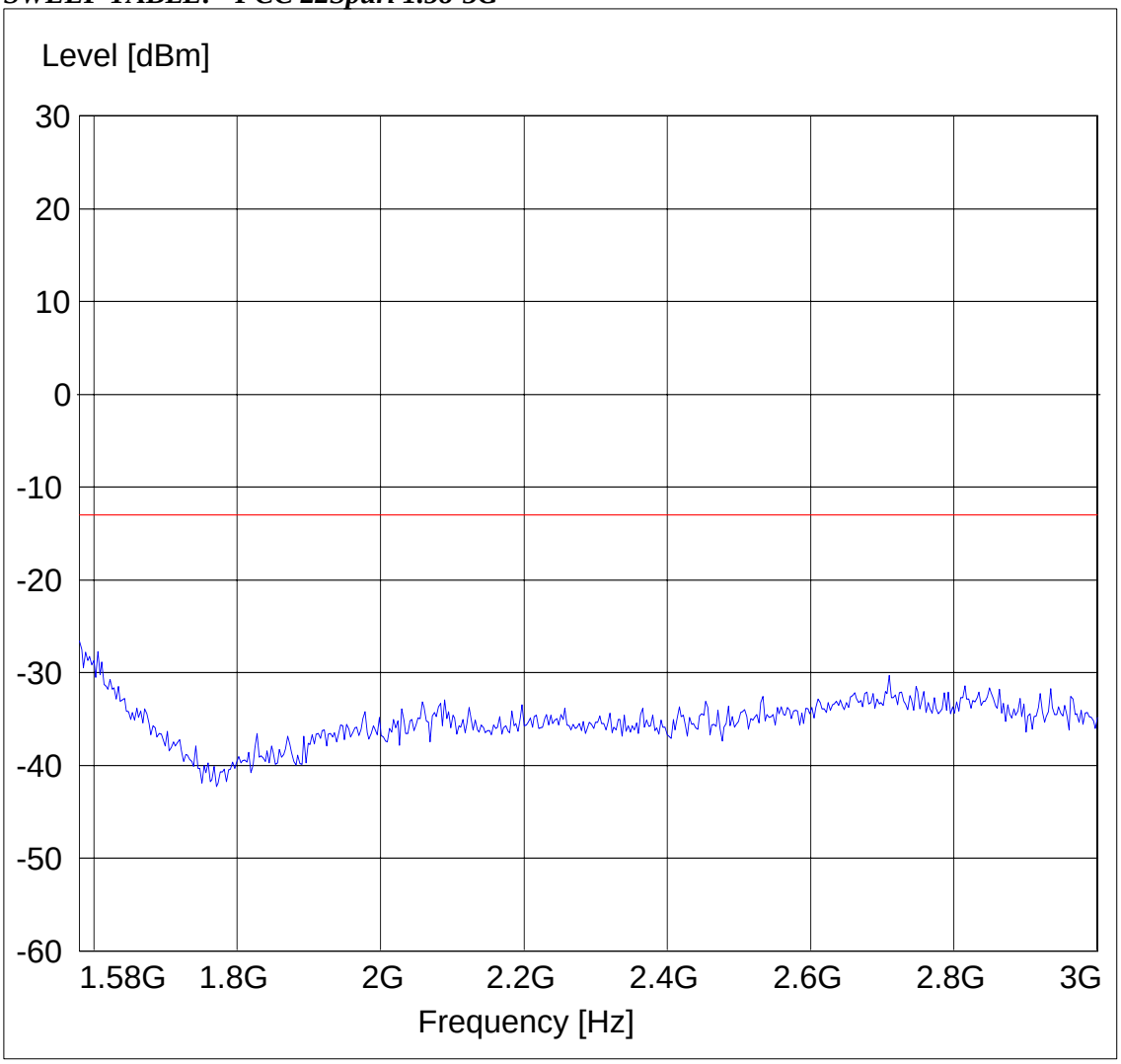
RADIATED SPURIOUS EMISSIONS (800 band)
Ch 1013
1GHz – 1.58GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 800 Ch 1013
ANT Orientation: H
EUT Orientation: H
Test Engineer: Pete Krebill
Voltage: AC Adapter

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



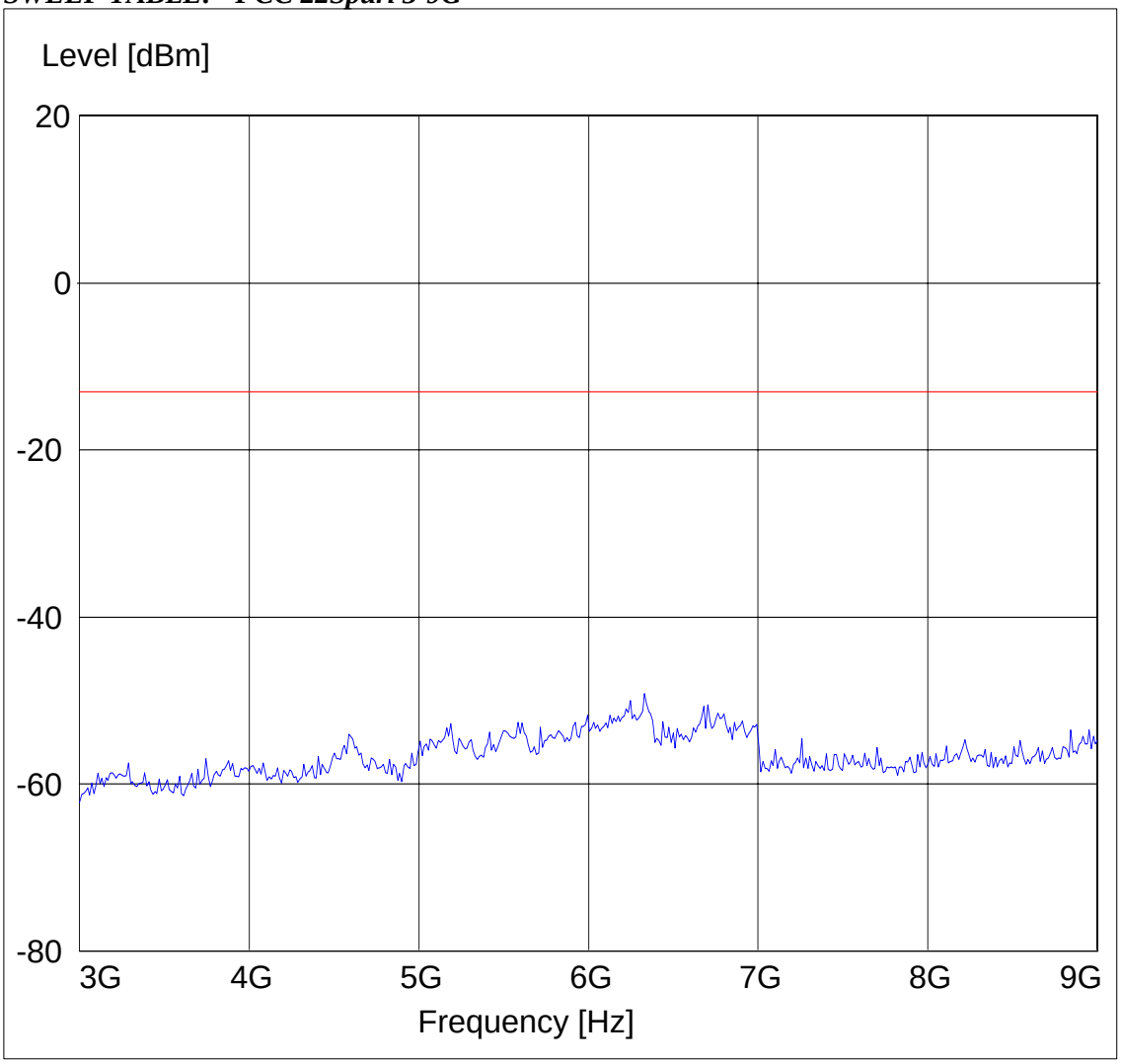
RADIATED SPURIOUS EMISSIONS (800 band)
Ch1013
1.58GHz – 3GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 800 Ch 1013
ANT Orientation: H
EUT Orientation: H
Test Engineer: Pete Krebill
Voltage: AC Adapter

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



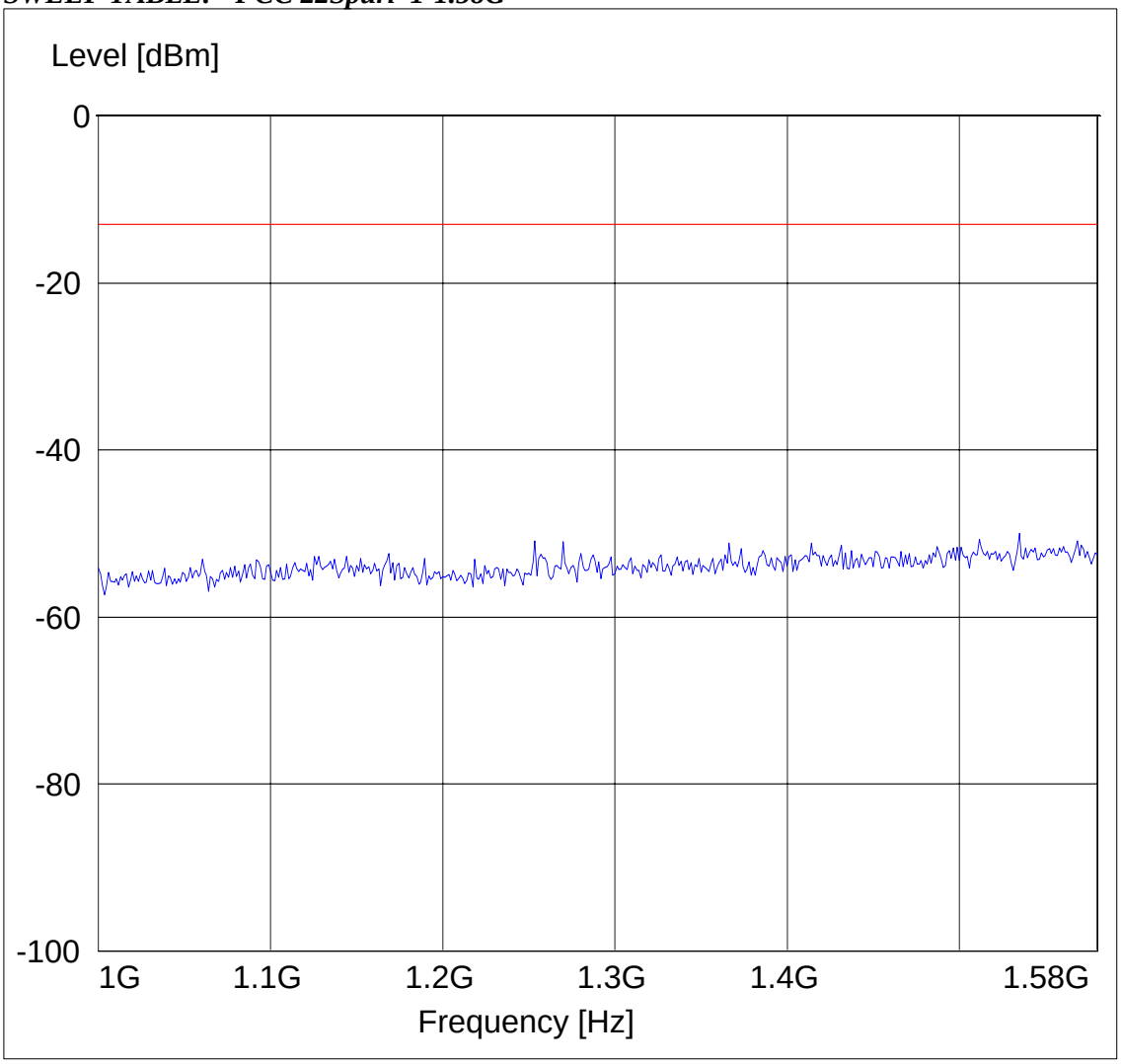
RADIATED SPURIOUS EMISSIONS (800 band)
Ch 1013
3GHz – 9GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 800 Ch 1013
ANT Orientation: H
EUT Orientation: H
Test Engineer: Pete Krebill
Voltage: AC Adapter

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



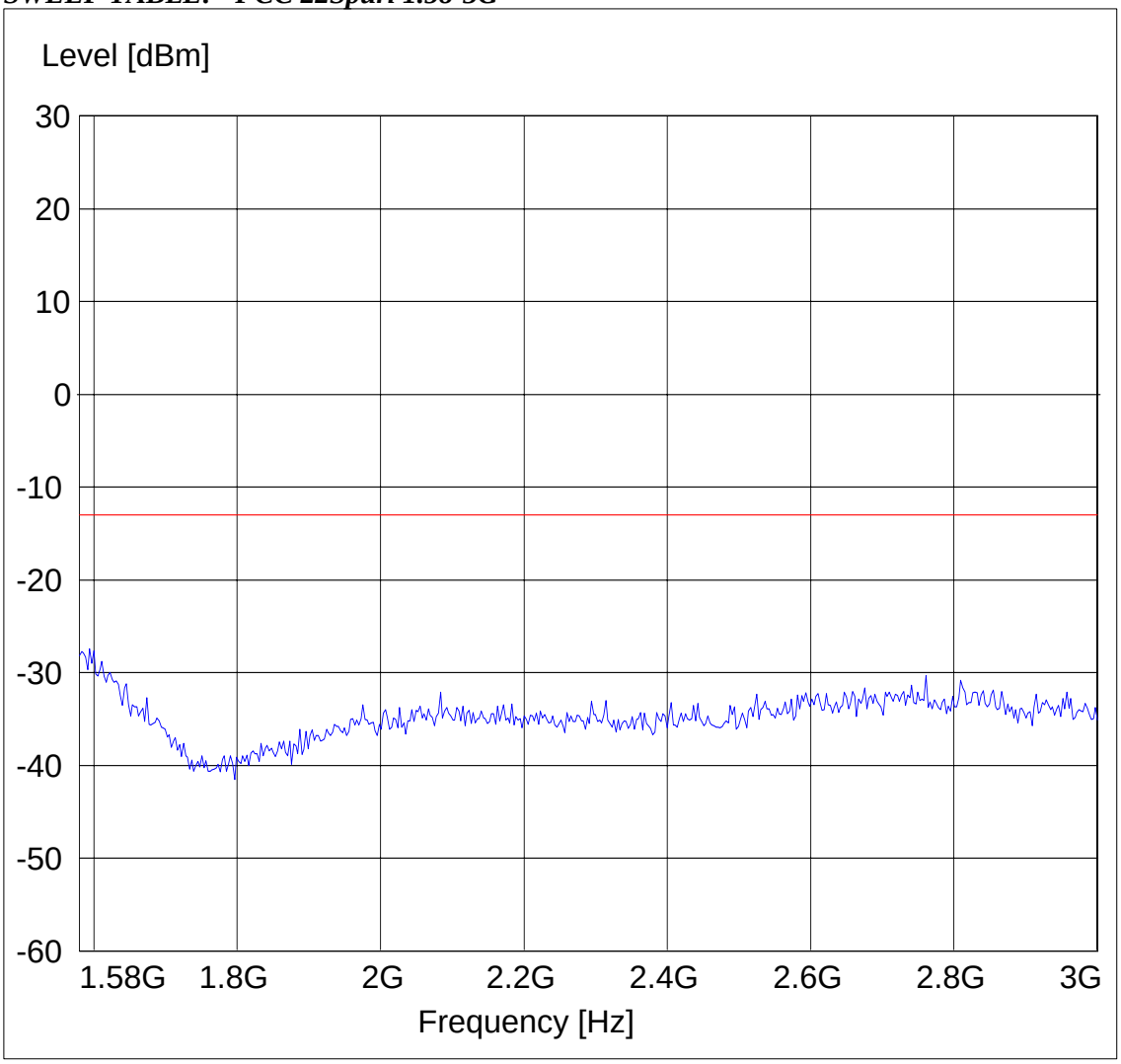
RADIATED SPURIOUS EMISSIONS (800 band)
Ch 384
1GHz – 1.58GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 800 Ch 384
ANT Orientation: H
EUT Orientation: H
Test Engineer: Pete Krebill
Voltage: AC Adapter

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



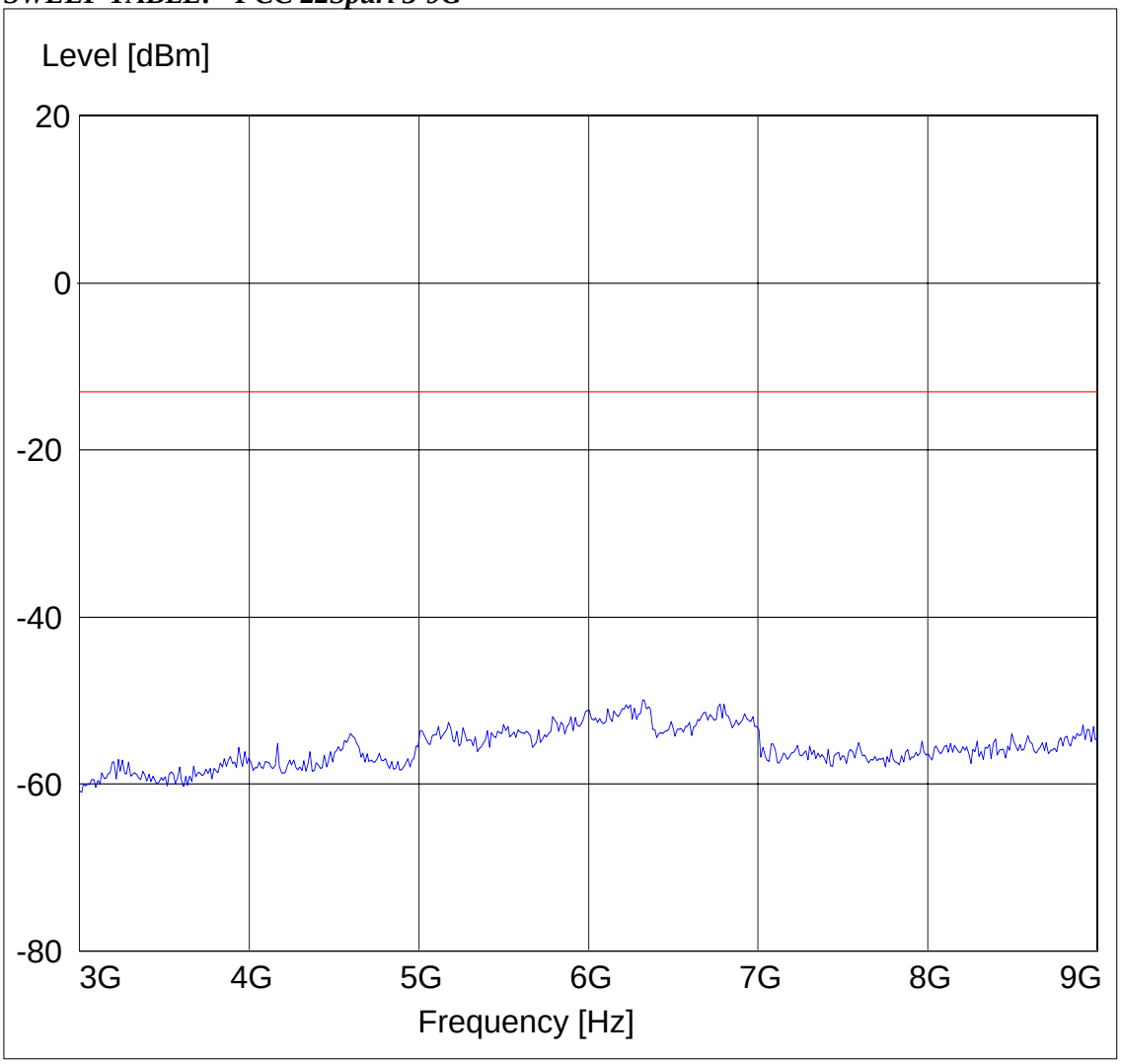
RADIATED SPURIOUS EMISSIONS (800 band)
Ch 384
1.58GHz – 3GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 800 Ch 384
ANT Orientation: H
EUT Orientation: H
Test Engineer: Pete Krebill
Voltage: AC Adapter

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



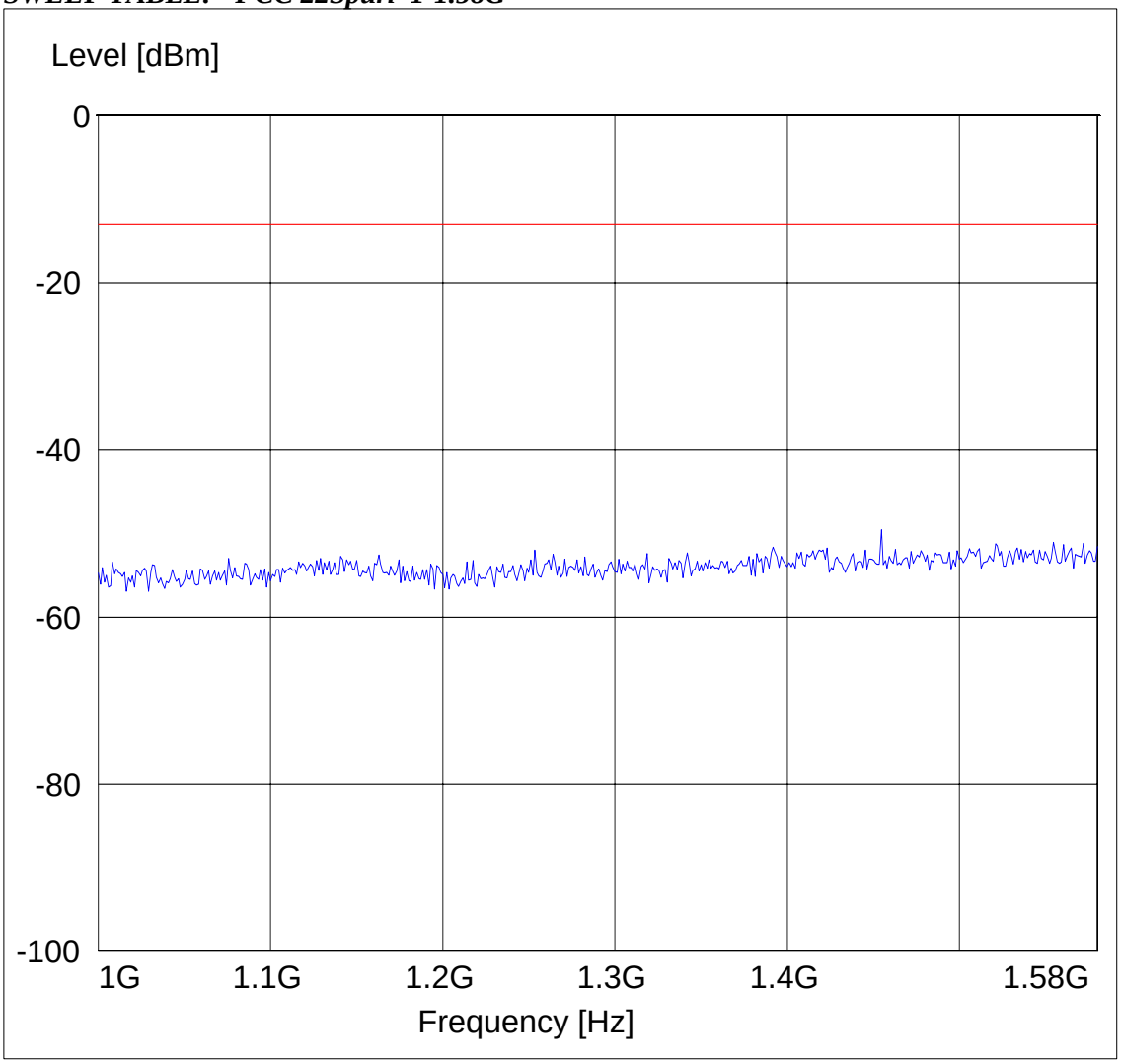
RADIATED SPURIOUS EMISSIONS (800 band)
Ch 384
3GHz – 9GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 800 Ch 384
ANT Orientation: H
EUT Orientation: H
Test Engineer: Pete Krebill
Voltage: AC Adapter

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



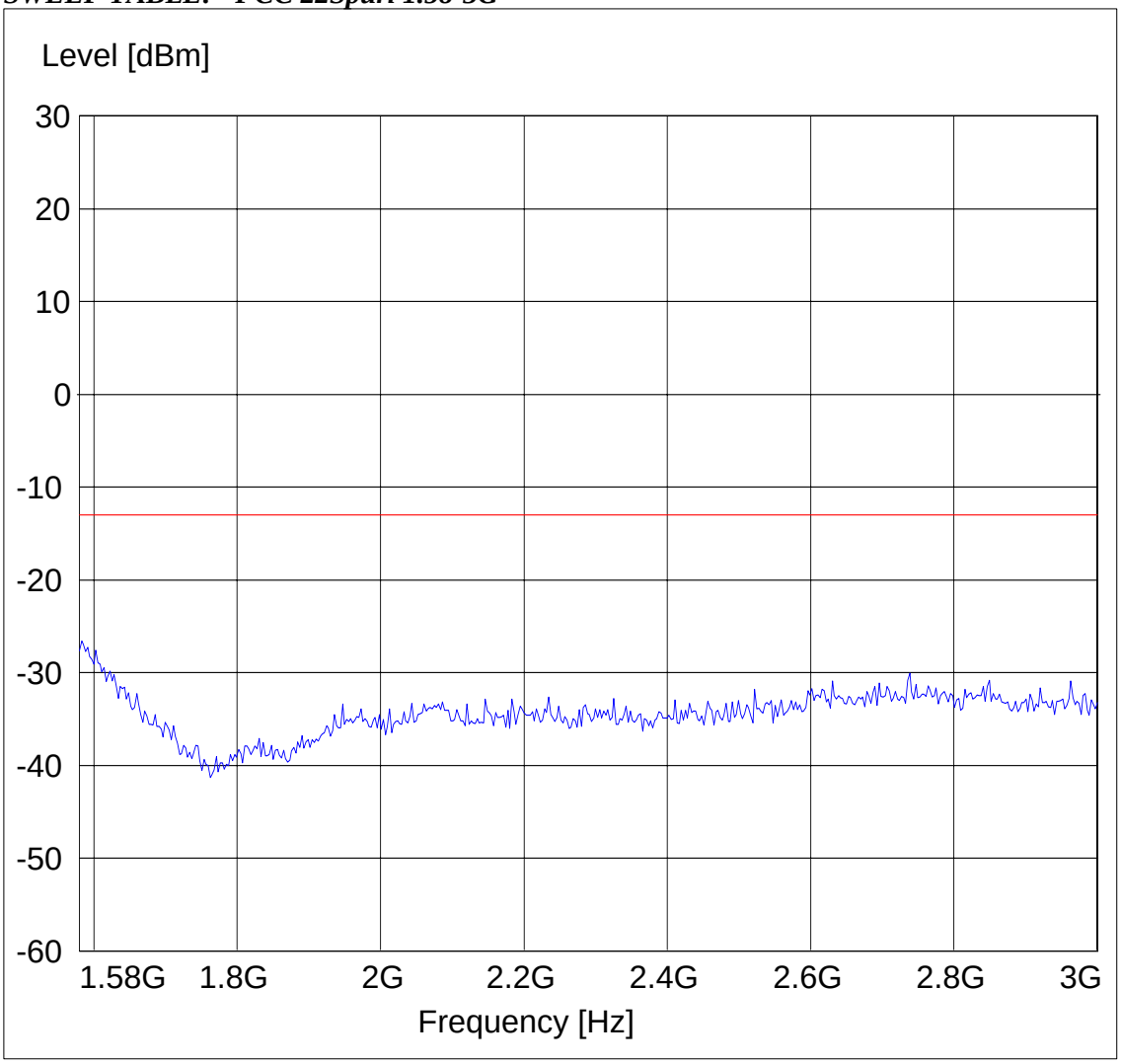
RADIATED SPURIOUS EMISSIONS (800 band)
Ch 777
1GHz – 1.58GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 800 Ch 777
ANT Orientation: H
EUT Orientation: H
Test Engineer: Pete Krebill
Voltage: AC Adapter

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



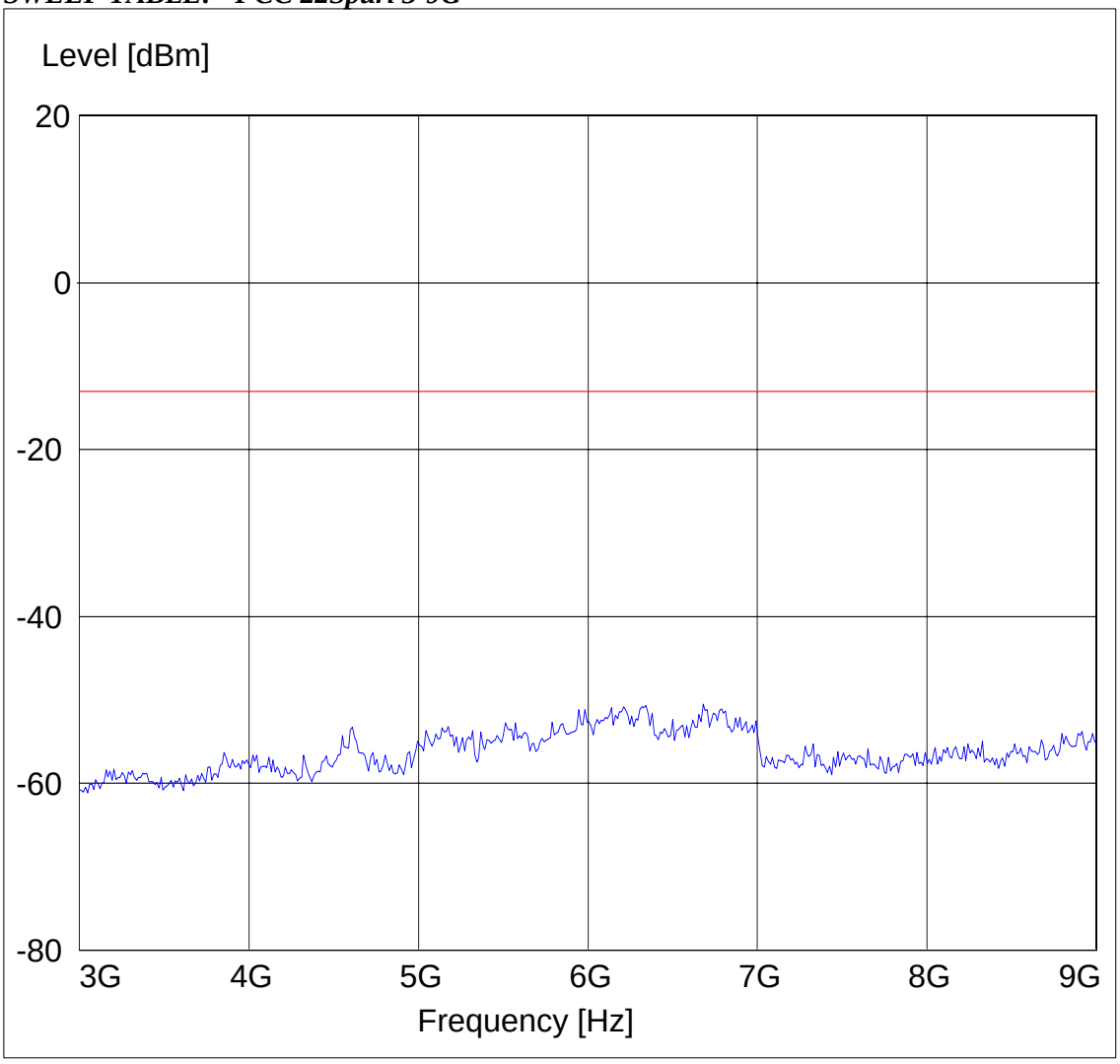
RADIATED SPURIOUS EMISSIONS (800)
Ch 777
1.58GHz – 3GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 800 Ch 777
ANT Orientation: H
EUT Orientation: H
Test Engineer: Pete Krebill
Voltage: AC Adapter

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



RADIATED SPURIOUS EMISSIONS (800 band)
Ch 777
3GHz – 9GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 800 Ch 777
ANT Orientation: H
EUT Orientation: H
Test Engineer: Pete Krebill
Voltage: AC Adapter

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



4.2.4.3 RESULTS OF RADIATED TESTS PCS-1900:

Harmonic	Tx ch-25 Freq.(MHz)	Level (dBm)	Tx ch-600 Freq. (MHz)	Level (dBm)	Tx ch-1175 Freq. (MHz)	Level (dBm)
2	**3700.4**	NF	**3760**	NF	**3819.6**	NF
3	**5550.6**	NF	**5640**	NF	**5729.4**	NF
4	**7400.8**	NF	**7520**	NF	**7639.2**	NF
5	**9251**	NF	**9400**	NF	**9549**	NF
6	**11101.2**	NF	**11280**	NF	**11458.8**	NF
7	**12951.4**	NF	**13160**	NF	**13368.6**	NF
8	**14801.6**	NF	**15040**	NF	**15278.4**	NF
9	**16651.8**	NF	**16920**	NF	**17188.2**	NF
10	**18502**	NF	**18800**	NF	**19098**	NF
NF = NOISE FLOOR						

4.2.4.4 RADIATED SPURIOUS EMISSIONS(PCS 1900)

TX: 30MHz - 1GHz

Spurious emission limit –13dBm

Antenna: vertical

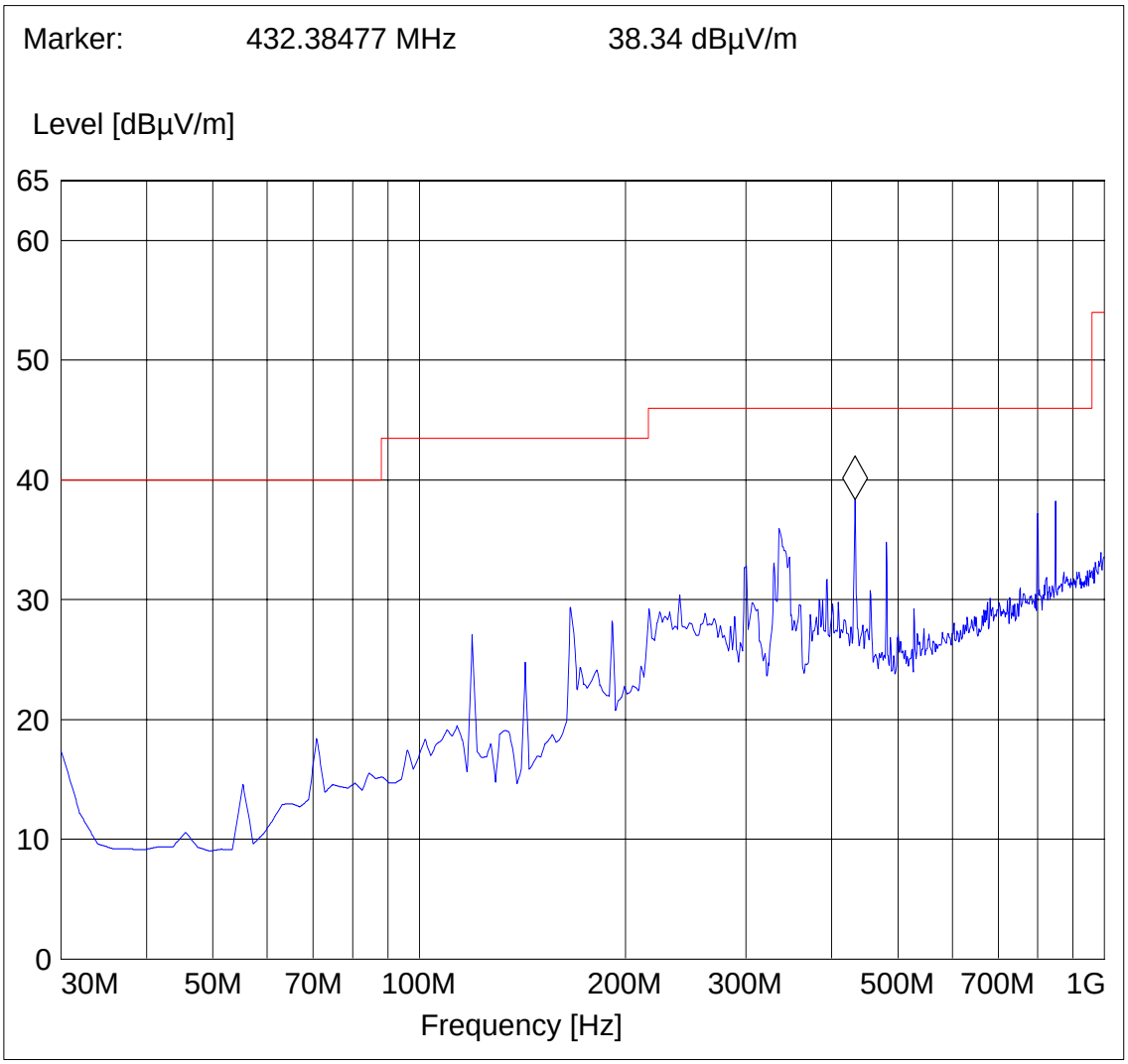
Note: This plot is valid for low, mid & high channels (worst-case plot)

CETECOM Inc.

411 Dixon Landing Road, Milpitas CA 95035, USA

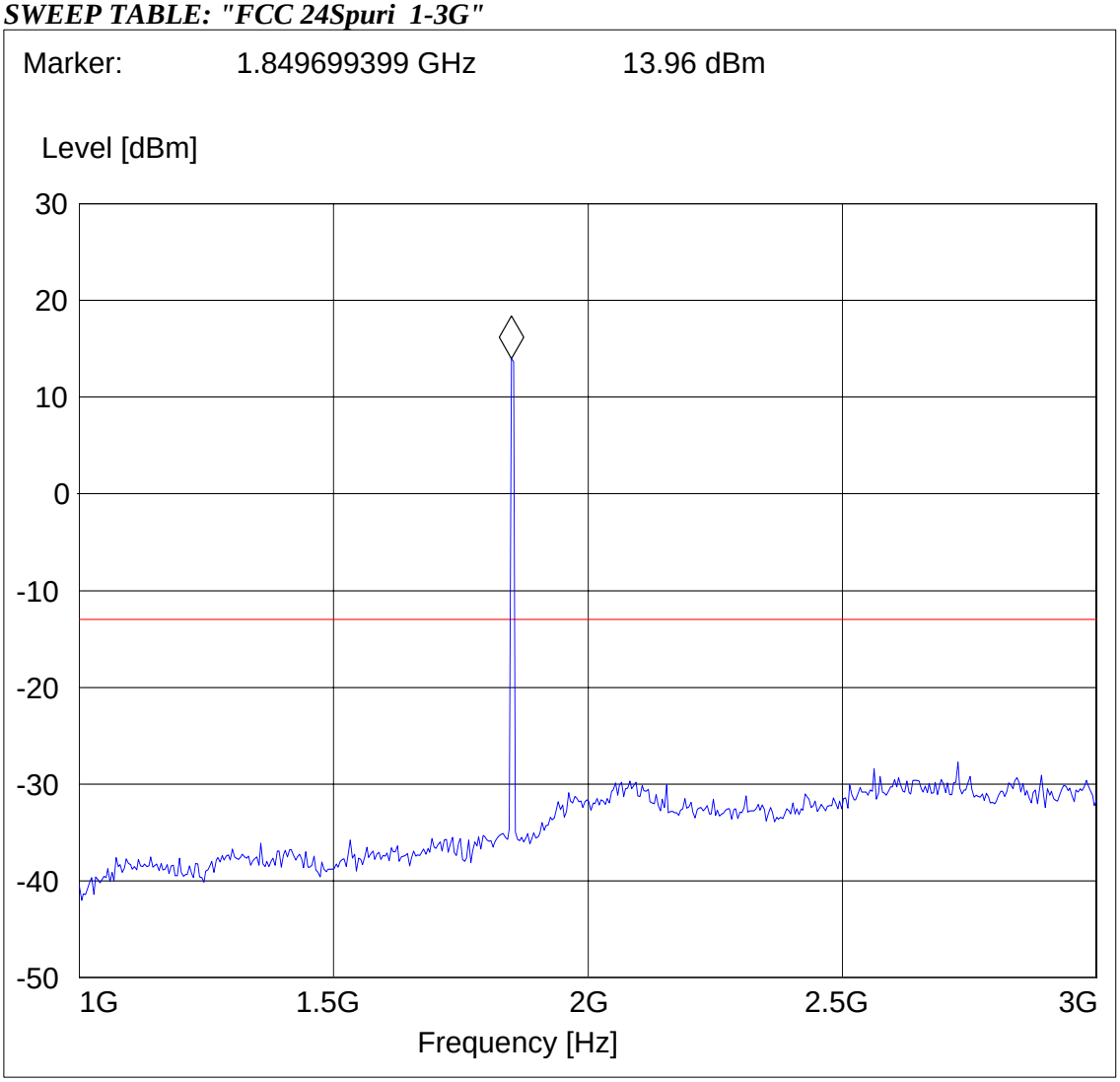
EUT: ES725
Customer: Sony
Test Mode: CDMA 1900, ch 25
ANT Orientation: H
EUT Orientation: H
Test Engineer: Ed
Voltage: AC adapter

SWEEP TABLE: "FCC15.247_30M-1G_Hor"


Marker: 432.38477 MHz 38.34 dBµV/m
Level [dBµV/m]
65
60
50
40
30
20
10
0
30M
50M
70M
100M
200M
300M
500M
700M
1G
Frequency [Hz]

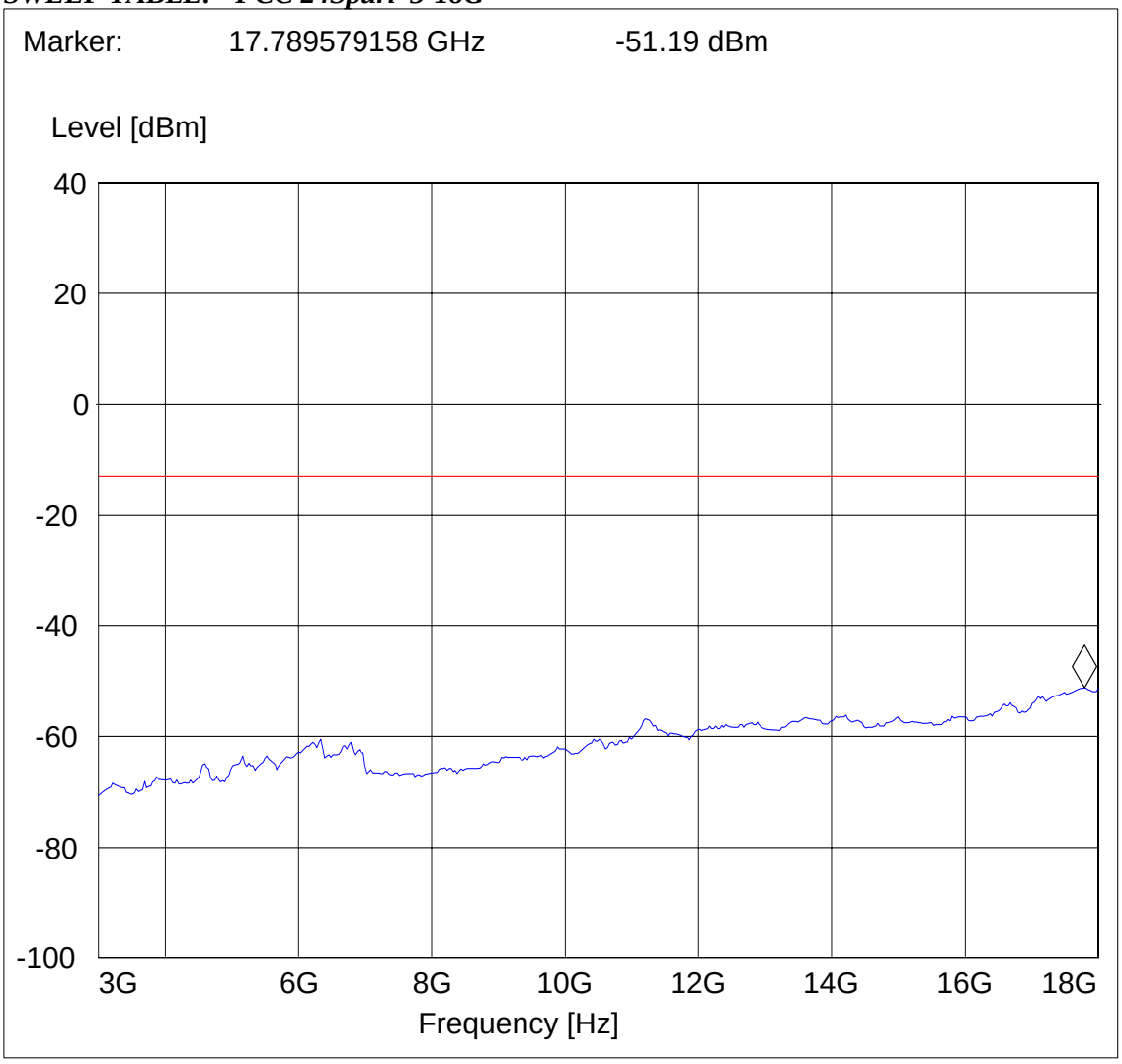
RADIATED SPURIOUS EMISSIONS(PCS 1900)
Ch 25
1GHz – 3GHz
Spurious emission limit –13dBm
Note: The peak above the limit line is the carrier freq. at ch-25.
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 1900, ch 25
ANT Orientation: H
EUT Orientation: H
Test Engineer: Ed
Voltage: AC adapter

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



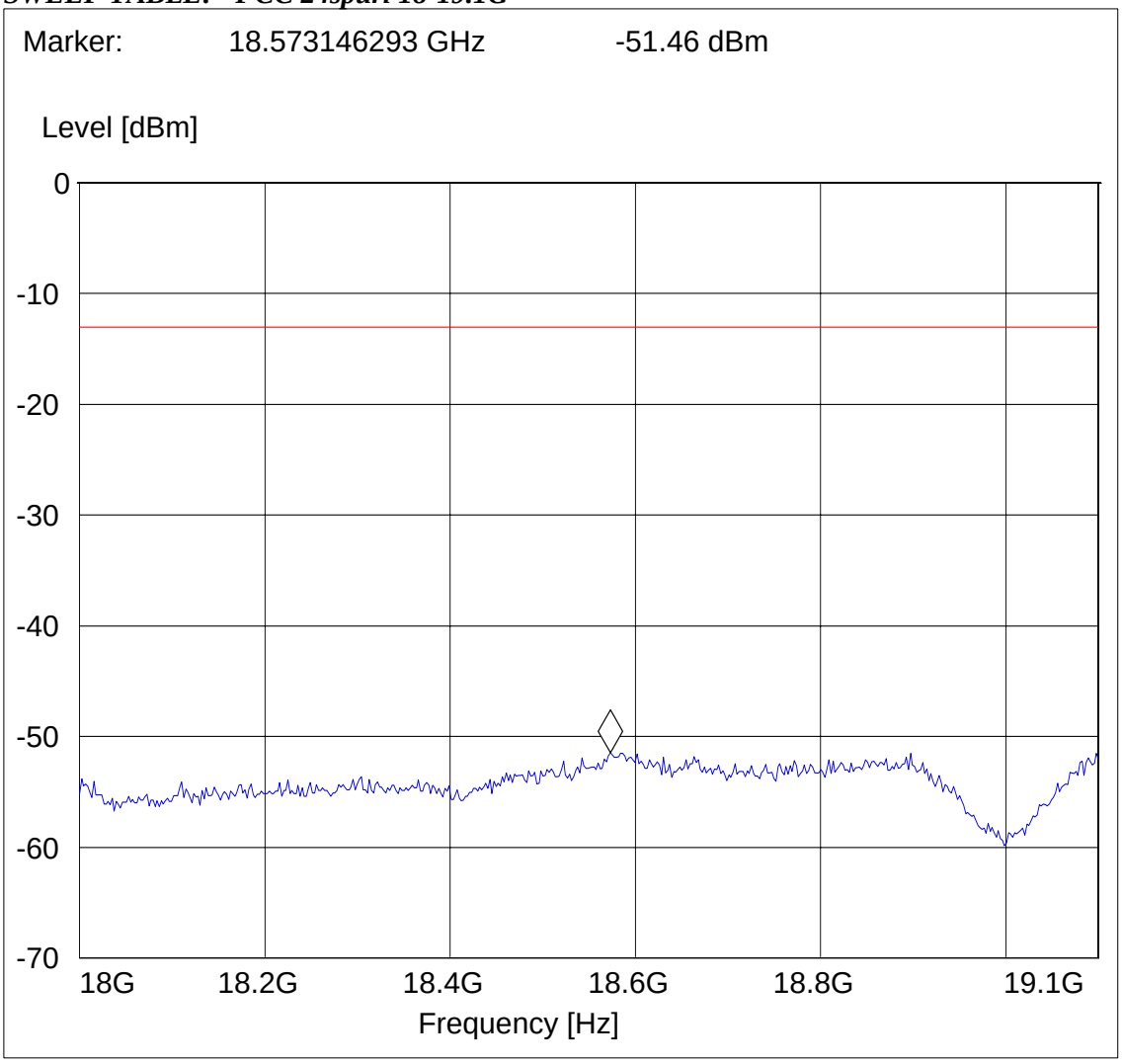
RADIATED SPURIOUS EMISSIONS(PCS 1900)
Ch 25
3GHz – 18GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 1900, ch 25
ANT Orientation: H
EUT Orientation: H
Test Engineer: Ed
Voltage: AC adapter

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



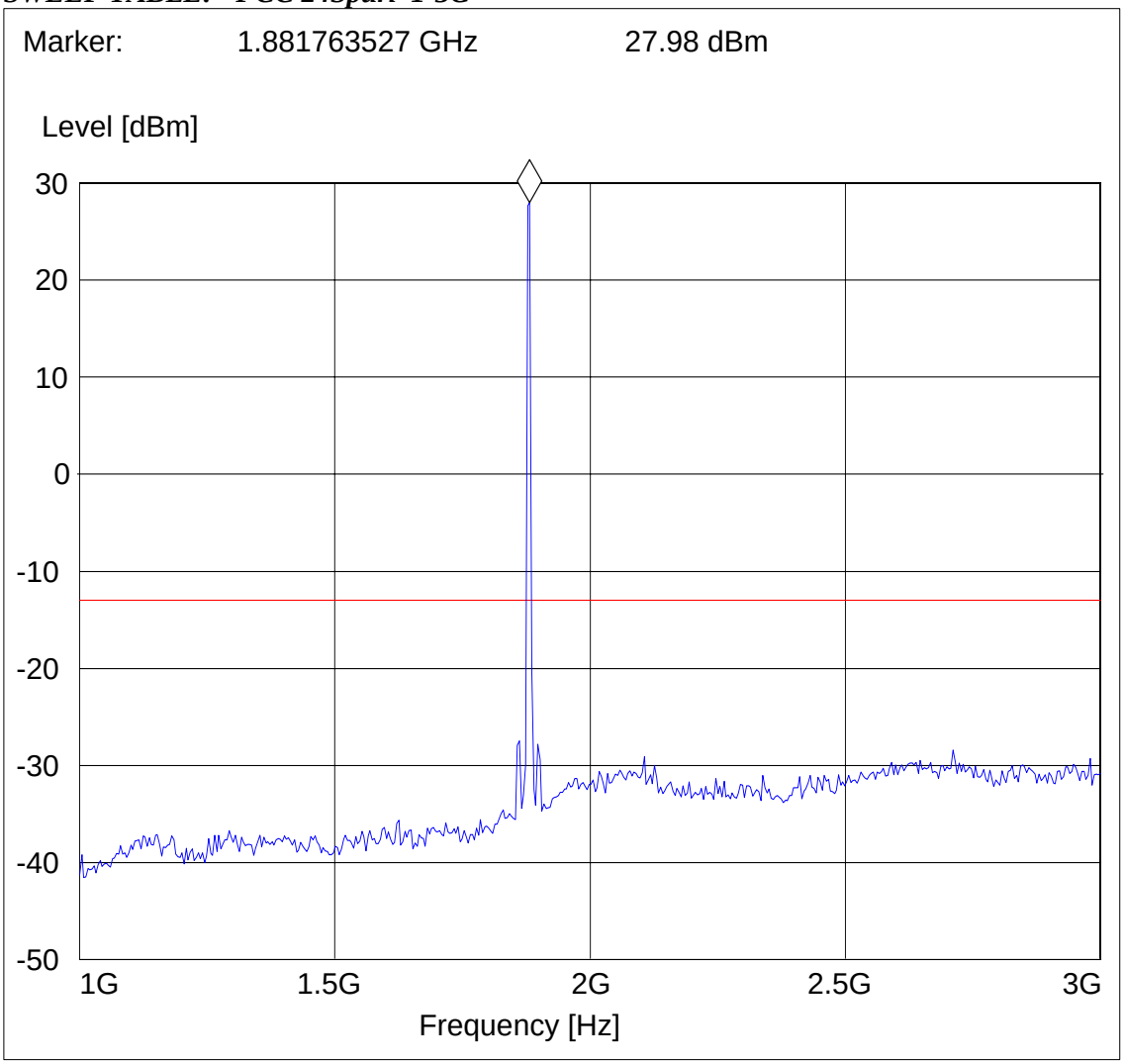
RADIATED SPURIOUS EMISSIONS(PCS 1900)
Ch 25
18GHz – 19GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 1900, ch 25
ANT Orientation: H
EUT Orientation: H
Test Engineer: Ed
Voltage: AC adapter

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



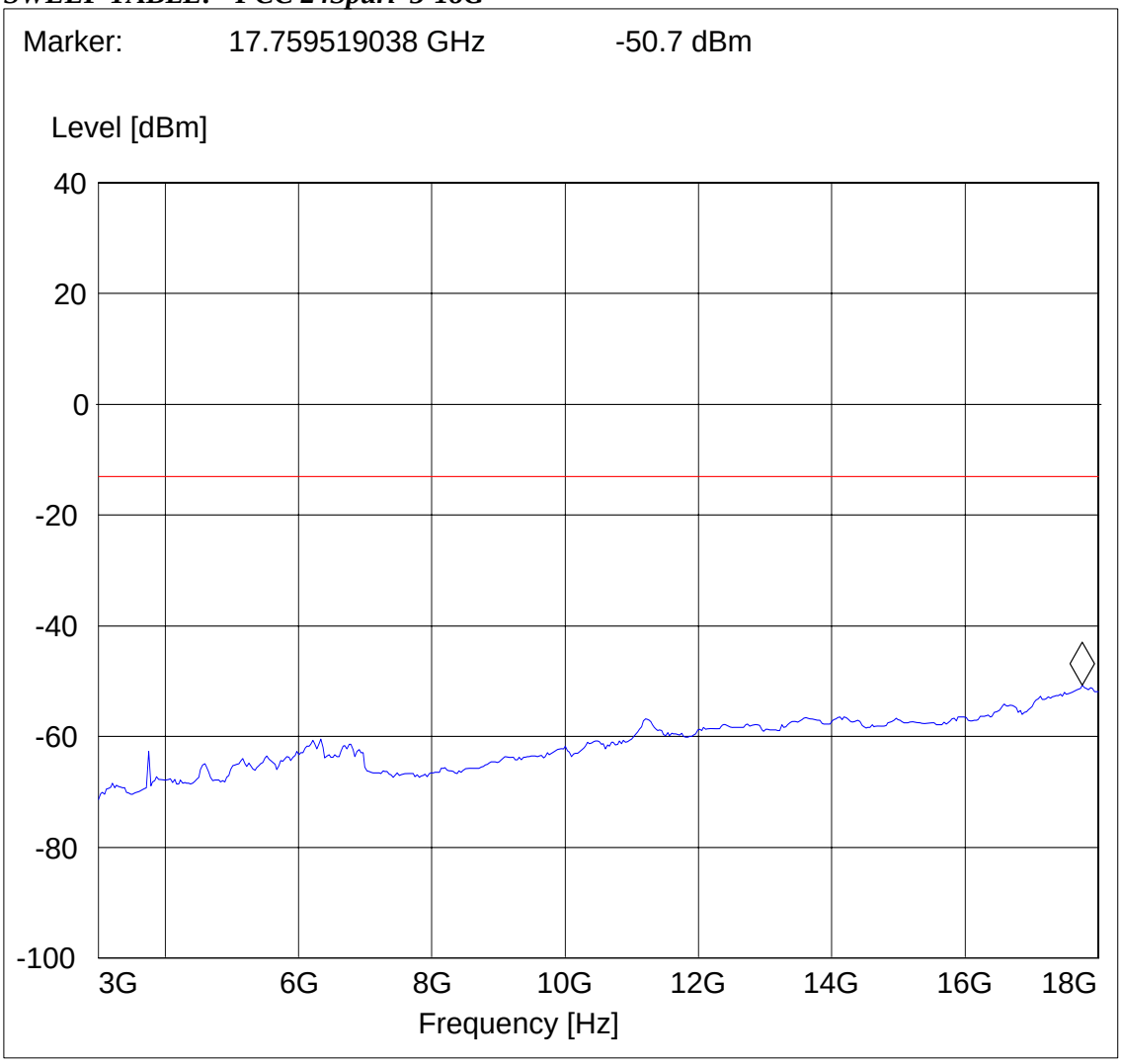
RADIATED SPURIOUS EMISSIONS(PCS 1900)
Ch 600
1GHz – 3GHz
Spurious emission limit –13dBm
Note: The peak above/close to the limit line is the carrier freq. at ch-600.
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 1900, ch 600
ANT Orientation: H
EUT Orientation: H
Test Engineer: Ed
Voltage: AC adapter

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



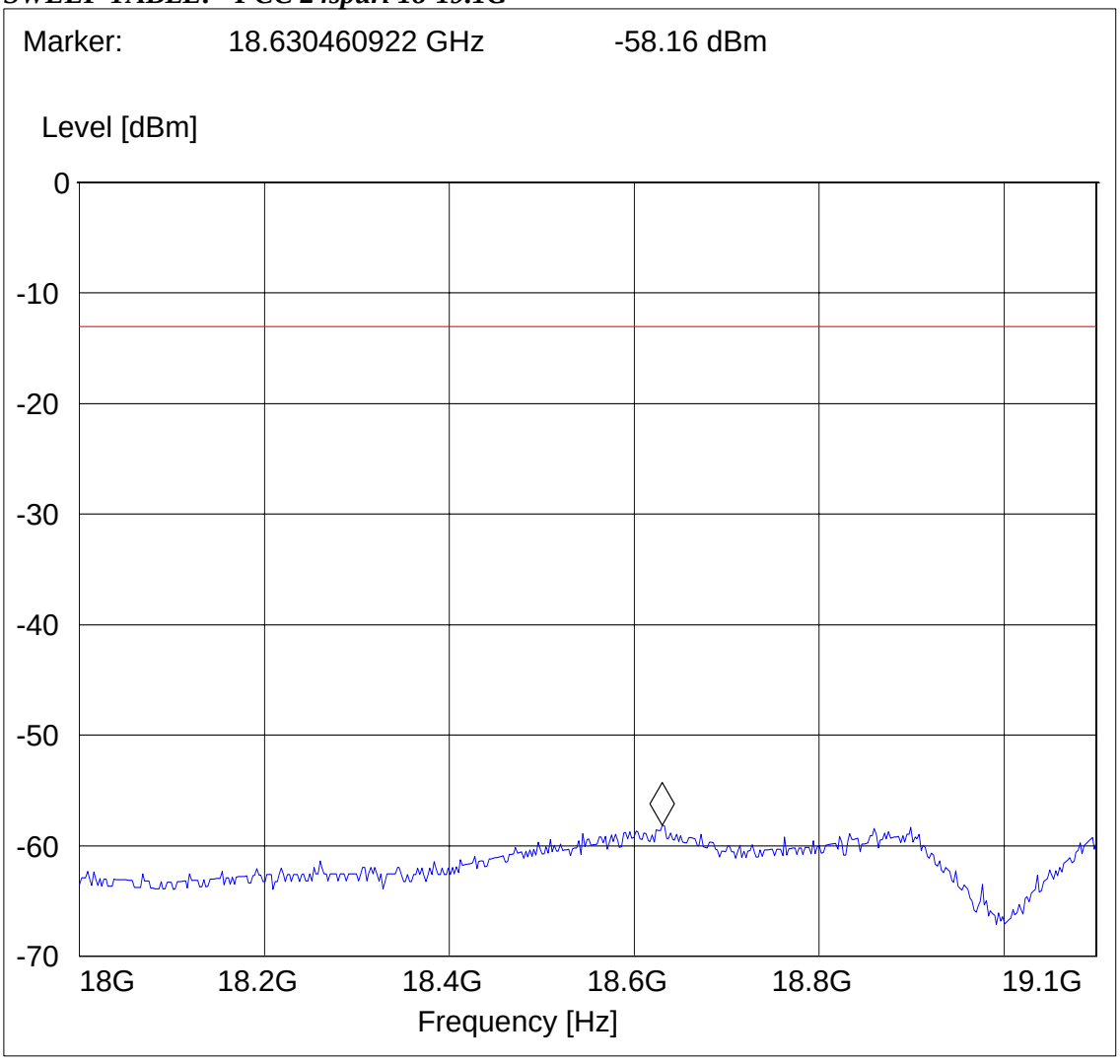
RADIATED SPURIOUS EMISSIONS(PCS 1900)
Ch 600
3GHz – 18GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 1900, ch 600
ANT Orientation: H
EUT Orientation: H
Test Engineer: Ed
Voltage: AC adapter

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



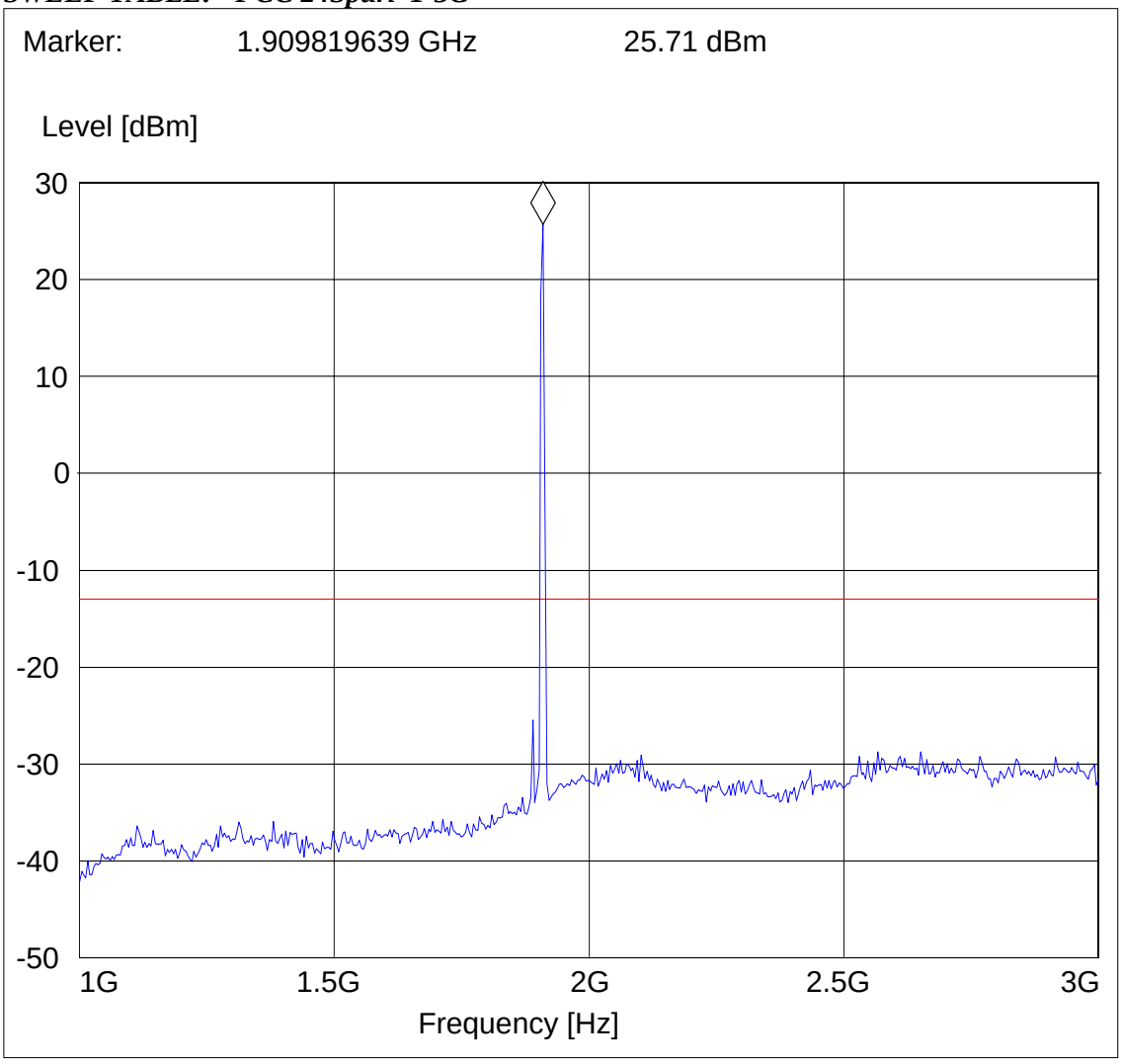
RADIATED SPURIOUS EMISSIONS(PCS 1900)
Ch 600
18GHz – 19GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 1900, ch 600
ANT Orientation: H
EUT Orientation: H
Test Engineer: Ed
Voltage: AC adapter

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



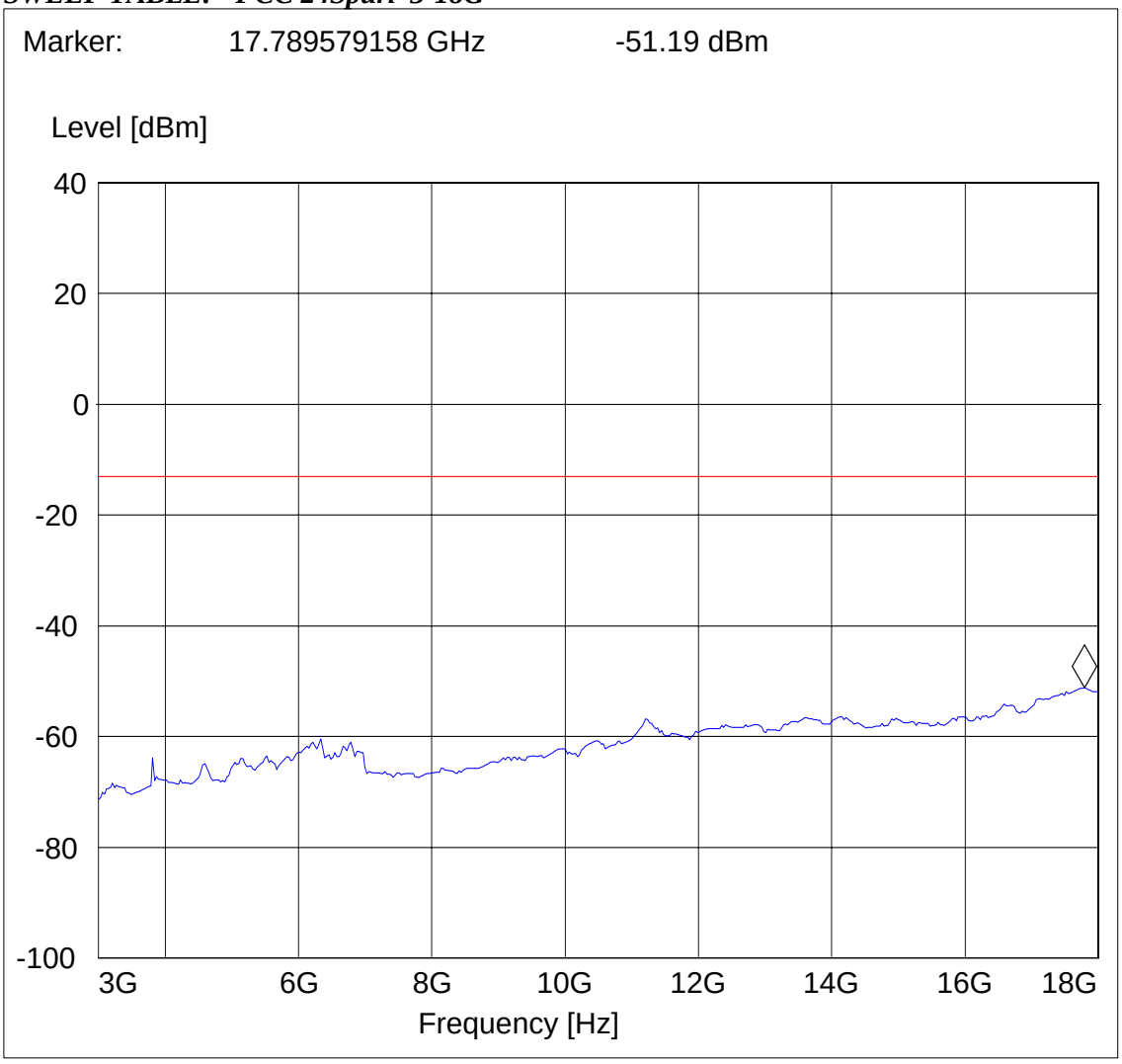
RADIATED SPURIOUS EMISSIONS(PCS 1900)
Ch 1175
1GHz – 3GHz
Spurious emission limit –13dBm
Note: The peak above the limit line is the carrier freq. at ch-1175.
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 1900, ch 1175
ANT Orientation: H
EUT Orientation: H
Test Engineer: Ed
Voltage: AC adapter

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



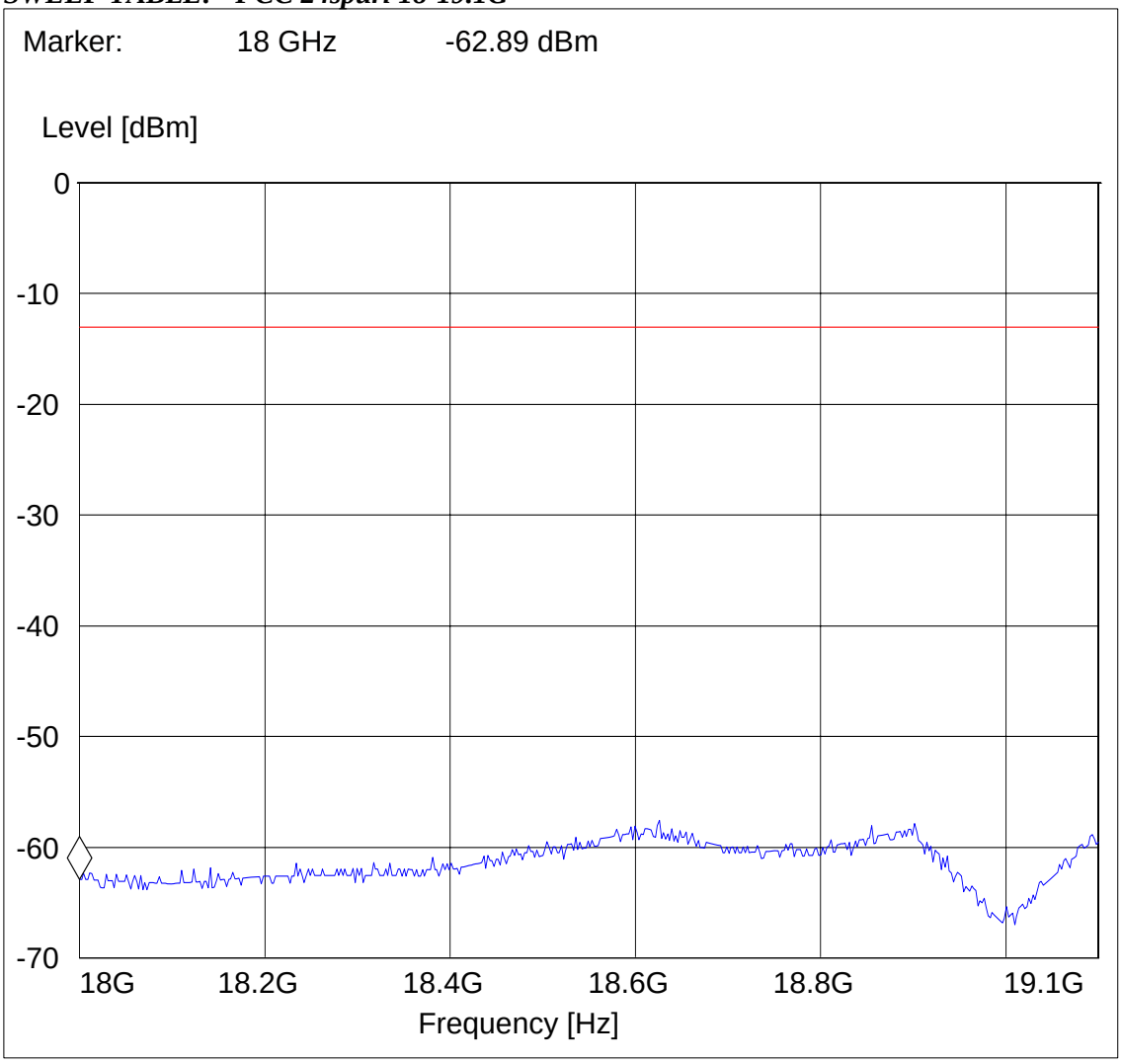
RADIATED SPURIOUS EMISSIONS(PCS 1900)
Ch 1175
3GHz – 18GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 1900, ch 1175
ANT Orientation: H
EUT Orientation: H
Test Engineer: Ed
Voltage: AC adapter

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



RADIATED SPURIOUS EMISSIONS(PCS 1900)
Ch 1175
18GHz – 19.1GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 1900, ch 1175
ANT Orientation: H
EUT Orientation: H
Test Engineer: Ed
Voltage: AC adapter

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



4.3 RECEIVER RADIATED EMISSIONS § 2.1053 / RSS-129 & 133

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**

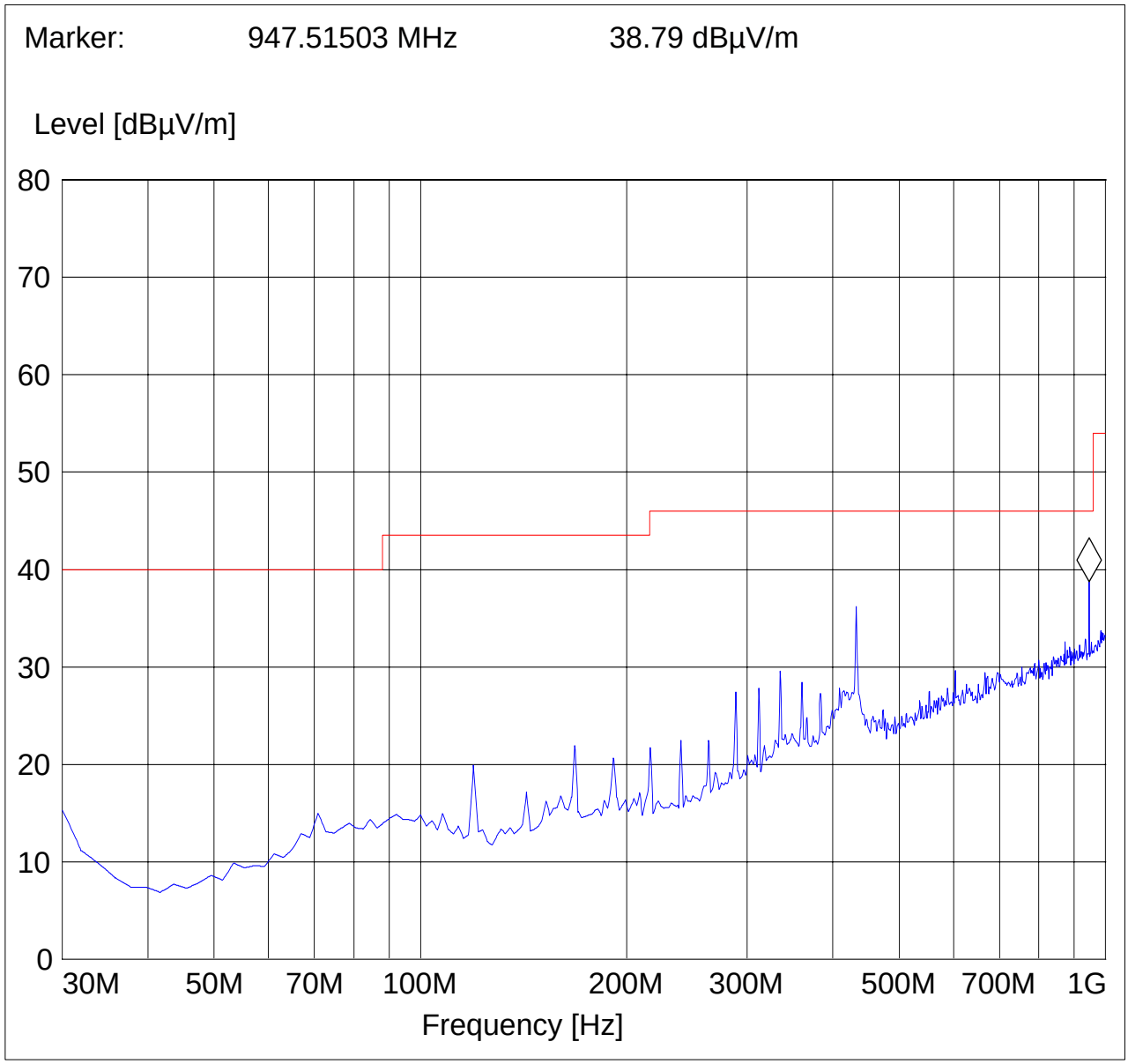
Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

4.3.1 Receiver Radiated Spurious Emissions Results

Measurements were performed with the EUT in X, Y and Z orientations with the measurement antenna in both horizontal and vertical polarity. The plots below show the results of the worst case orientation and polarity.

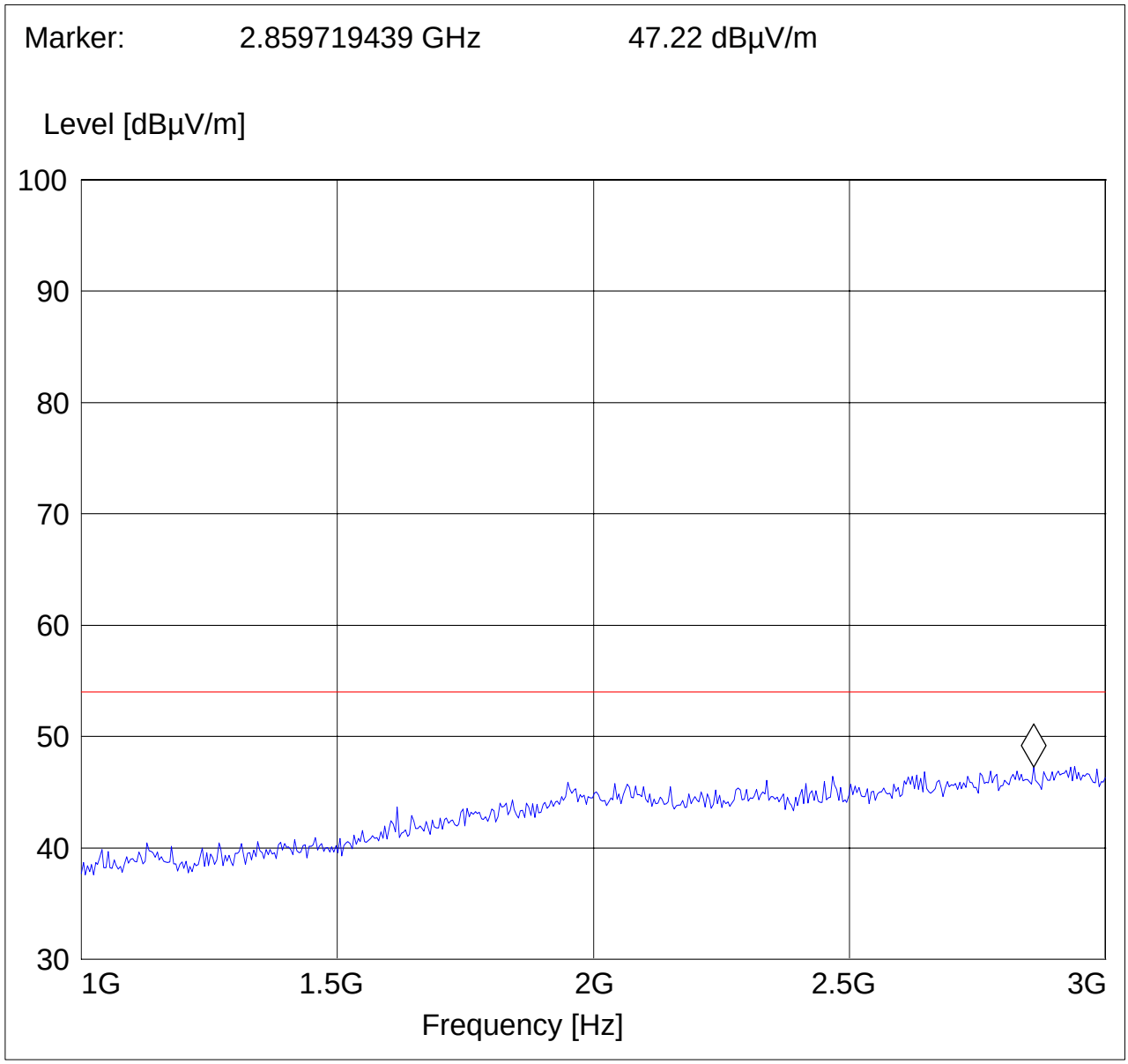
RECEIVER RADIATED SPURIOUS EMISSIONS(800 band)
RX: 30MHz - 1GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 800 Recive
ANT Orientation: H
EUT Orientation: H
Test Engineer: Ed
Voltage: AC Adapter

SWEEP TABLE: "CANDA RE_30M-1G_Hor"


Marker: 947.51503 MHz 38.79 dBµV/m
Level [dBµV/m]
80
70
60
50
40
30
20
10
0
30M
50M
70M
100M
200M
300M
500M
700M
1G
Frequency [Hz]

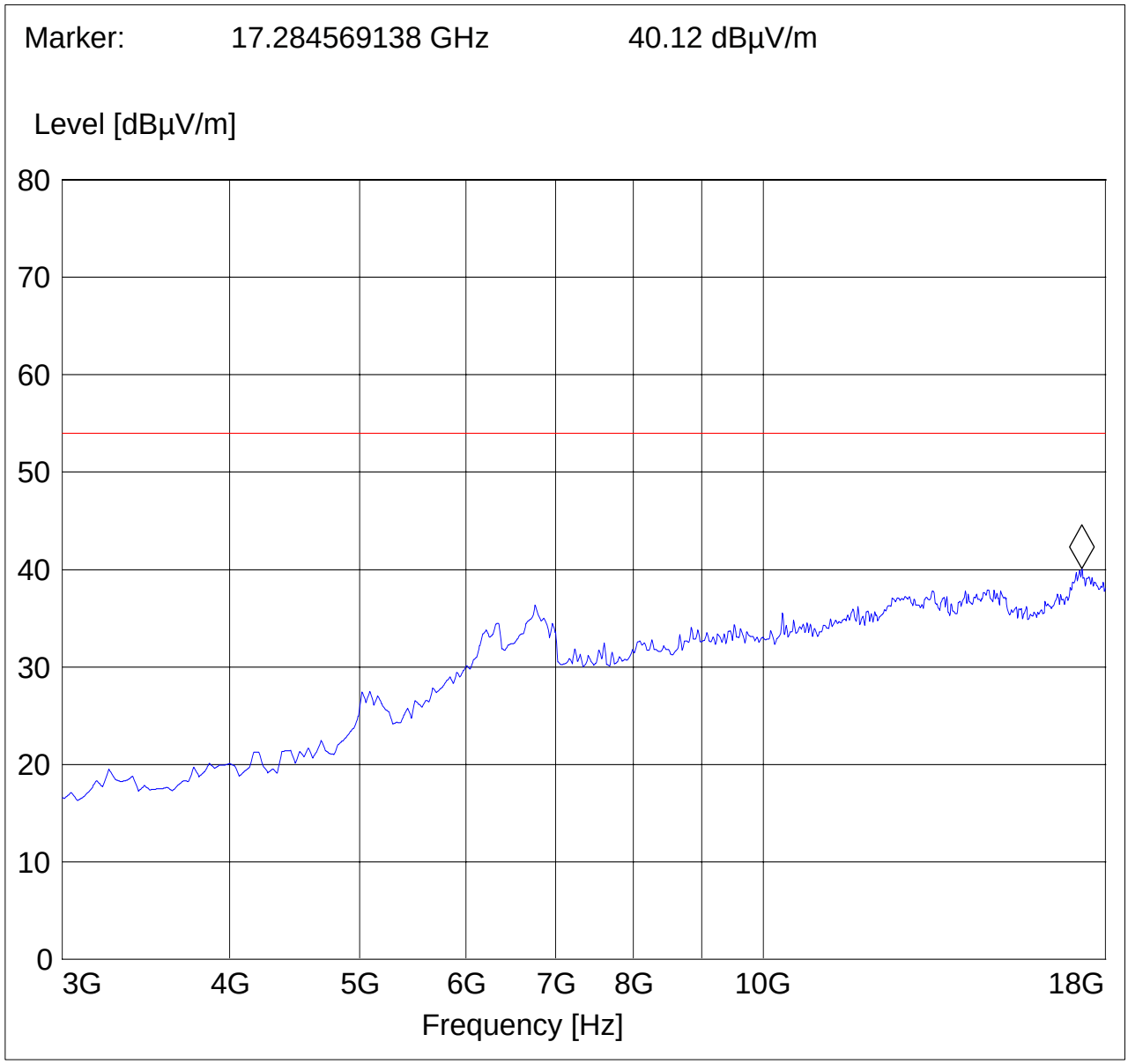
RECEIVER RADIATED SPURIOUS EMISSIONS(800 band)
RX: 1GHz - 3GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 800 Recive
ANT Orientation: V
EUT Orientation: H
Test Engineer: Ed
Voltage: AC Adapter

SWEEP TABLE: "CANADA RE_1-3G"



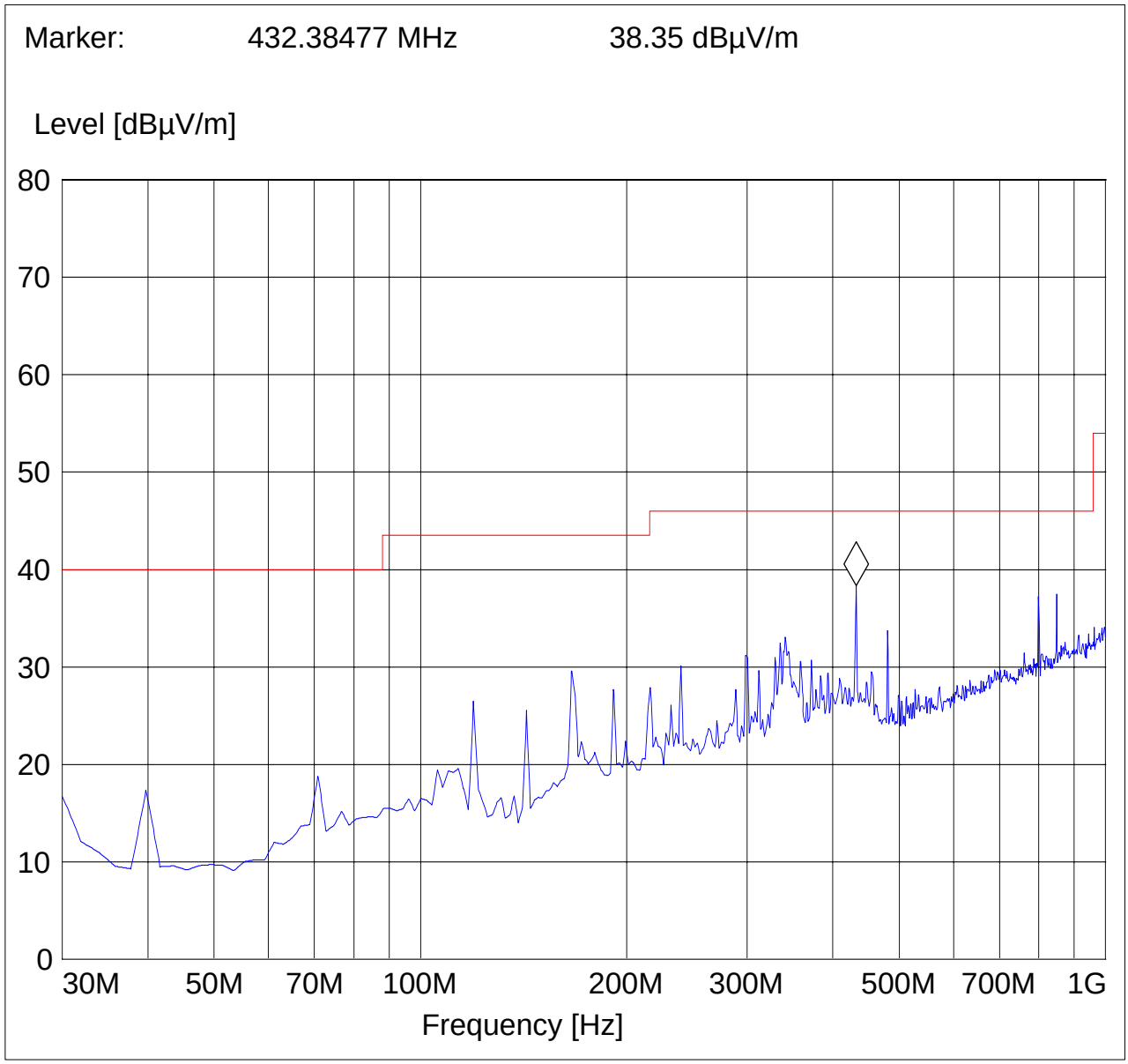
RECEIVER RADIATED SPURIOUS EMISSIONS(800 band)
RX: 3GHz -18GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 800 Recive
ANT Orientation: V
EUT Orientation: H
Test Engineer: Ed
Voltage: AC Adapter

SWEEP TABLE: "CANADA RE_3-18G"



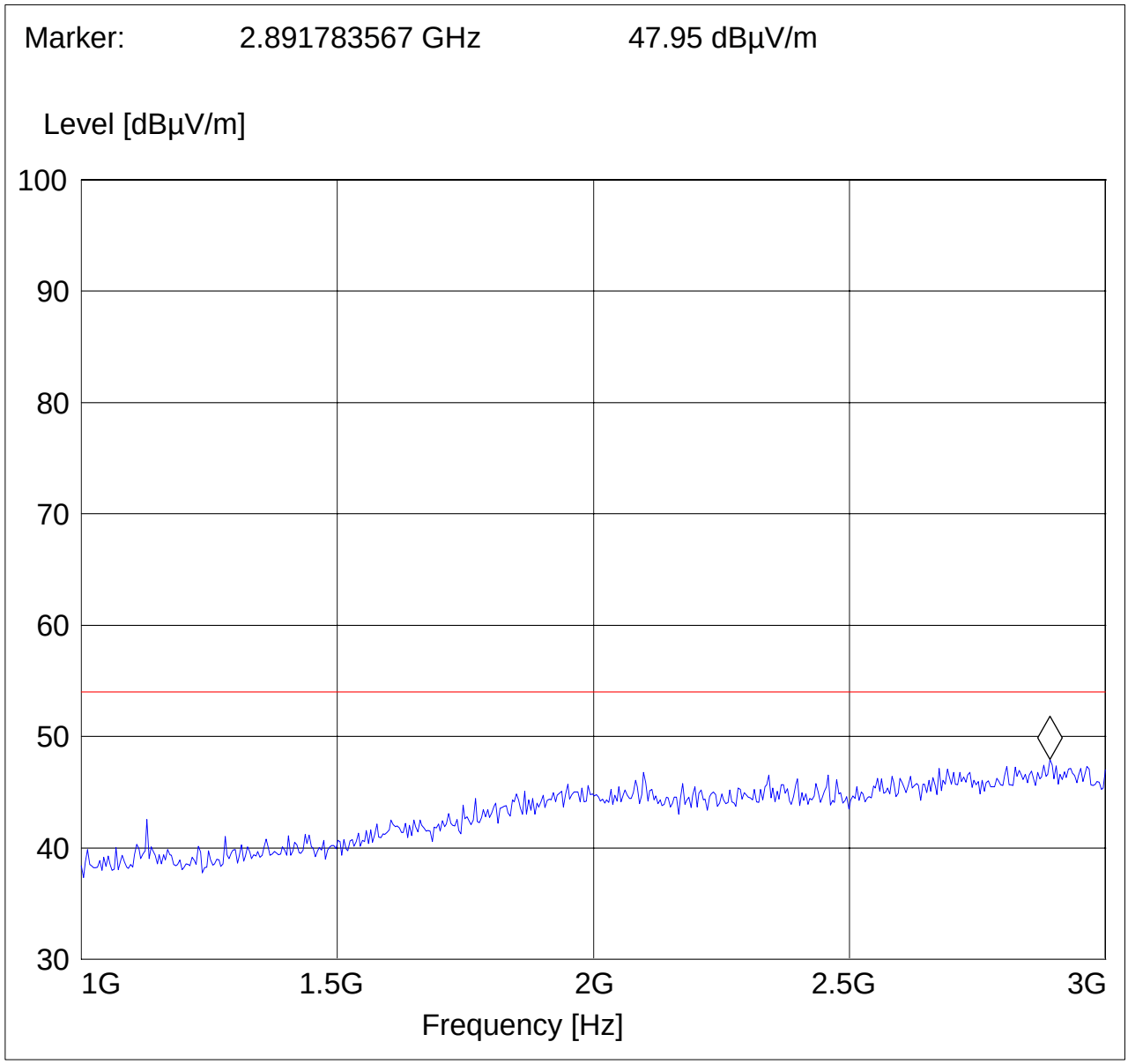
RECEIVER RADIATED SPURIOUS EMISSIONS(PCS 1900)
RX: 30MHz - 1GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 1900, Receive
ANT Orientation: H
EUT Orientation: H
Test Engineer: Ed
Voltage: AC adapter

SWEEP TABLE: "CANDA RE_30M-1G_Hor"


Marker: 432.38477 MHz 38.35 dBµV/m
Level [dBµV/m]
80
70
60
50
40
30
20
10
0
30M
50M
70M
100M
200M
300M
500M
700M
1G
Frequency [Hz]

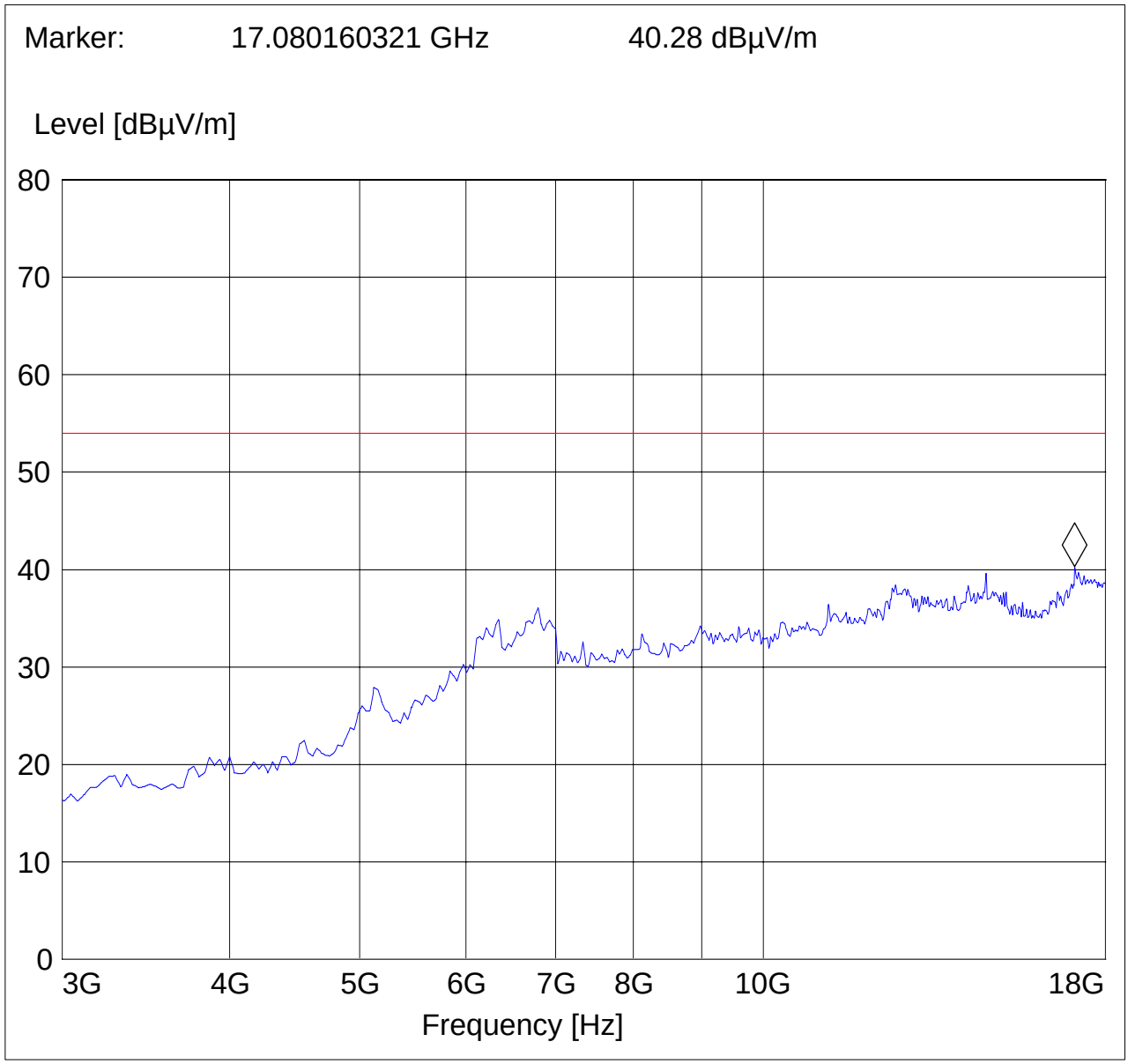
RECEIVER RADIATED SPURIOUS EMISSIONS(PCS 1900)
RX: 1GHz - 3GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 1900, RX
ANT Orientation: H
EUT Orientation: H
Test Engineer: Ed
Voltage: AC adapter

SWEEP TABLE: "CANADA RE_1-3G"


Marker: 2.891783567 GHz 47.95 dBµV/m
Level [dBµV/m]
100
90
80
70
60
50
40
30
1G
1.5G
2G
2.5G
3G
Frequency [Hz]

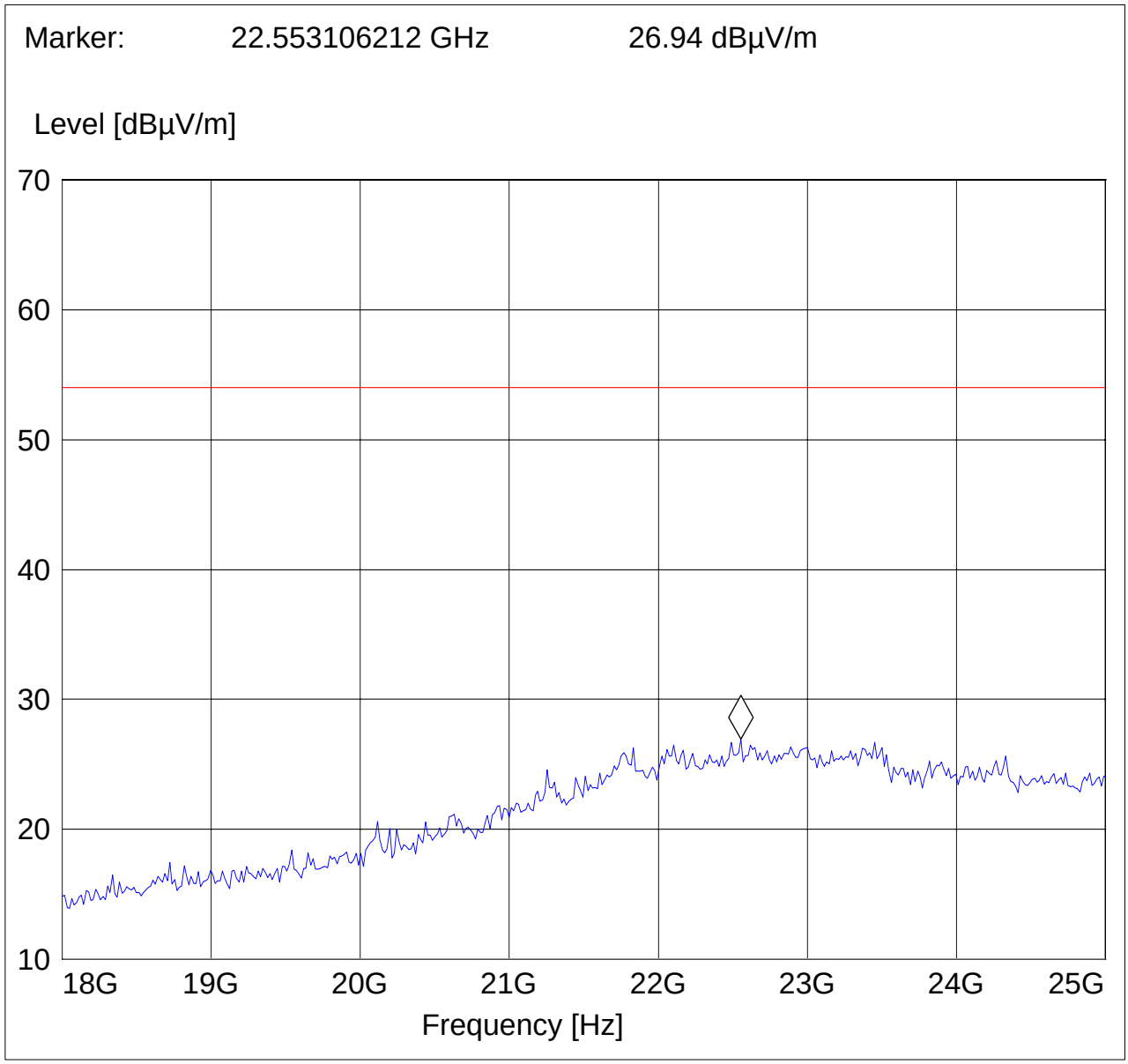
RECEIVER RADIATED SPURIOUS EMISSIONS(PCS 1900)
RX: 3GHz -18GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 1900, RX
ANT Orientation: H
EUT Orientation: H
Test Engineer: Ed
Voltage: AC adapter

SWEEP TABLE: "CANADA RE_3-18G"



RECEIVER RADIATED SPURIOUS EMISSIONS(PCS 1900)
RX: 18GHz – 19.1GHz
Spurious emission limit –13dBm
CETECOM Inc.
411 Dixon Landing Road, Milpitas CA 95035, USA
EUT: ES725
Customer: Sony
Test Mode: CDMA 1900, RX
ANT Orientation: H
EUT Orientation: H
Test Engineer: Ed
Voltage: AC adapter

SWEEP TABLE: "CANADA RE_18-26.5G"



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 2007	1 year
02	Spectrum Analyzer	FSEM 30	Rohde & Schwarz	100017	August 2007	1 year
03	Signal Generator	SMY02	Rohde & Schwarz	836878/011	May 2007	1 year
04	Power-Meter	NRVD	Rohde & Schwarz	0857.8008.02	May 2007	1 year
05	Biconilog Antenna	3141	EMCO	0005-1186	June 2007	1 year
06	Horn Antenna (1-18GHz)	SAS-200/571	AH Systems	325	June 2007	1 year
07	Horn Antenna (18-26.5GHz)	3160-09	EMCO	1240	June 2007	1 year
08	Power Splitter	11667B	Hewlett Packard	645348	n/a	n/a
09	Climatic Chamber	VT4004	Voltsch	G1115	May 2007	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 2007	1 year
13	Power Sensor	URV5-Z2	Rohde & Schwarz	DE30807	May 2007	1 year
14	Digital Radio Comm. Tester	CMD-55	Rohde & Schwarz	847958/008	May 2007	1 year
15	Universal Radio Comm. Tester	CMU 200	Rohde & Schwarz	832221/06	May 2007	1 year
16	LISN	ESH3-Z5	Rohde & Schwarz	836679/003	May 2007	1 year
17	Loop Antenna	6512	EMCO	00049838	July 2007	2 years

5 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-C-2004 Land Mobile FM or PM Communications Equipment Measurement and Performance Standard November 7, 2002.

6 BLOCK DIAGRAMS

Radiated Testing