



FCC Test Report

Test report no.: EMC_448-2003FCC22-24_IX104-11
FCC Part 22,24 / RSS 133
(iX104-11)

FCC ID: Q2GIX104-112



Accredited according to ISO/IEC 17025



FCC listed # 101450

IC recognized # 3925

CETECOM Inc.

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| 1 | General information |
| 1.1 | Notes |

The test results of this test report relate exclusively to the test item specified in 1.5. The CETECOM Inc. does not assume responsibility for any conclusions and generalisations 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.

TEST REPORT PREPARED BY:**EMC Engineer: Philip Kim****1.2 Testing laboratory**

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1.3 Details of applicant

Name : Xplore Technologies
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City / Zip Code : Austin, TX 78759
Country : USA
Contact : Douglas L. Fowler
Telephone : 512-336-7797
Tele-fax : 512-336-7791
e-mail : dfowler@xploretech.com

1.4 Application details

Date of receipt of application : 2003-03-24
Date of receipt test item : 2003-03-24
Date of test : 2003-03-24~2003-03-28

1.5 Test item

Manufacturer : Winston Corporation
Street Address : 21F, 88, Sec. 1, Hsin Tai Wu Rd, Hsichih
City / Zip Code : Taipei Hsien 221
Country : Taiwan, R.O.C.
Marketing Name : iX104
Model No. : **iX104-11**
Serial No. (IMEI) :
Description : [Tablet PC with GPRS](#)
FCC-ID : Q2GIX104-112

Additional information

Frequency : 850 and 1900 MHz (GPRS)

Type of modulation :
Number of channels : 850: 124 Channels
1900: 299 Channels

Antenna : Internal
Power supply : 9-18Vdc
Output power : GPRS = 1W (Max rated)
Extreme vol. Limits : Lower:3.35Vdc Nominal:3.8Vdc Upper:4.7Vdc
Extreme temp. Tolerance : Lower:-20°C Upper: 60°C

1.6 Test standards

FCC Part 22,24 / RSS133 r1

2 Technical test**2.1 Summary of test results**

| | |
|--|---------------|
| No deviations from the technical specification(s) were ascertained in the course of the tests Performed | |
| Final Verdict: (only "passed" if all single measurements are "passed") | Passed |

Note: Please refer to the test report RIM-0204-04 for conducted results. This report contains only radiated results for the Tablet PC with the embedded module and antenna. The module is unchanged compared to the tested configuration in report # RIM-0204-04.

Test Reports:**Technical responsibility for area of testing:**

2003-04-24 EMC & Radio Lothar Schmidt (Manager)



Date

Section

Name

Signature

Responsible for test report and project leader:

2003-04-02 EMC & Radio Philip Kim (EMC Engineer)



Date

Section

Name

Signature

2.2 Test report

TEST REPORT

**Test report no.: EMC_448-2003FCC22-24_IX104-11
(iX104-11)**

TEST REPORT REFERENCE

| PARAMETER TO BE MEASURED | PARAGRAPH | PAGE |
|--|-----------------------------------|-------------|
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POWER OUTPUT**§ 22.913(a) / § 24.232 (b)****Summary:**

During the process of testing, the EUT was controlled via Rhode & Schwarz Universal Radio Communication tester (CMU 200) to ensure max. Power transmission and proper modulation.

This paragraph contains both average, peak output powers and EIRP measurements for the EUT.(ERP for GSM-850)
In all cases, the peak output power is within the specified limits.

Method of Measurements:

The EUT was set up for the max. Output power with pseudo random data modulation.

The power was measured with R&S Spectrum Analyzer ESIB 40 (peak)

These measurements were done at 3 frequencies,

824.2 MHz, 836.6 MHz and 848.8 MHz (bottom, middle and top of operational frequency range) for GSM-850

1850.2 MHz, 1880.0 MHz and 1909.8 MHz (bottom, middle and top of operational frequency range) for PCS-1900

EIRP / ERP Measurements

Description: This is the test for the maximum radiated power from the EUT.

Rule Part 22.913(a) specifies, "The ERP of mobile transmitters must not exceed 7 Watts".

Rule Part 24.232(b) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power" and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

Method of Measurement:

1. In an anechoic antenna test chamber, a half-wave dipole antenna for the frequency band of interest is placed at the reference centre of the chamber. An RF Signal source for the frequency band of interest is connected to the dipole with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A known (measured) power (P_{in}) is applied to the input of the dipole, and the power received (P_r) at the chamber's probe antenna is recorded.
2. A "reference path loss" is established as $P_{in} + 2.1 - P_r$.
3. The EUT is substituted for the dipole at the reference centre of the chamber and a scan is performed to obtain the radiation pattern.
4. From the radiation pattern, the co-ordinates where the maximum antenna gain occurs is identified.
5. The EUT is then put into pulse mode at its maximum power level (Power Step 0 for PCS 1900 & 5 for GSM 850).
6. "Gated mode" power measurements are performed with the receiving antenna placed at the coordinates determined in Step 3 to determine the output power as defined in FCC Rule 24.232 (b) and (c). The "reference path loss" from Step 1 is added to this result.
7. This value is EIRP since the measurement is calibrated using a half-wave dipole antenna of known gain (2.1 dBi) and known input power (P_{in}).
8. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.1\text{dBi}$.

ERP (GSM-850)**§22.913(a)****Limits:**

| GSM Power Class | Burst Peak ERP |
|------------------------|-----------------------|
| 7 | ≤38.45dBm (7W) |

Power Measurements:

Plots are shown on next pages

Radiated:

| Frequency (MHz) | GSM Power Class | BURST Peak (dBm) | |
|--------------------------------|------------------------|-----------------------------|------------|
| | | EIRP | ERP |
| 824.2MHz | 7 | 21.09 | 18.99 |
| 836.6MHz | 7 | 22.09 | 19.99 |
| 848.8MHz | 7 | 23.53 | 21.43 |
| Measurement uncertainty | | ±0.5 dB | |

ANALYZER SETTINGS: RBW = VBW = 3MHz

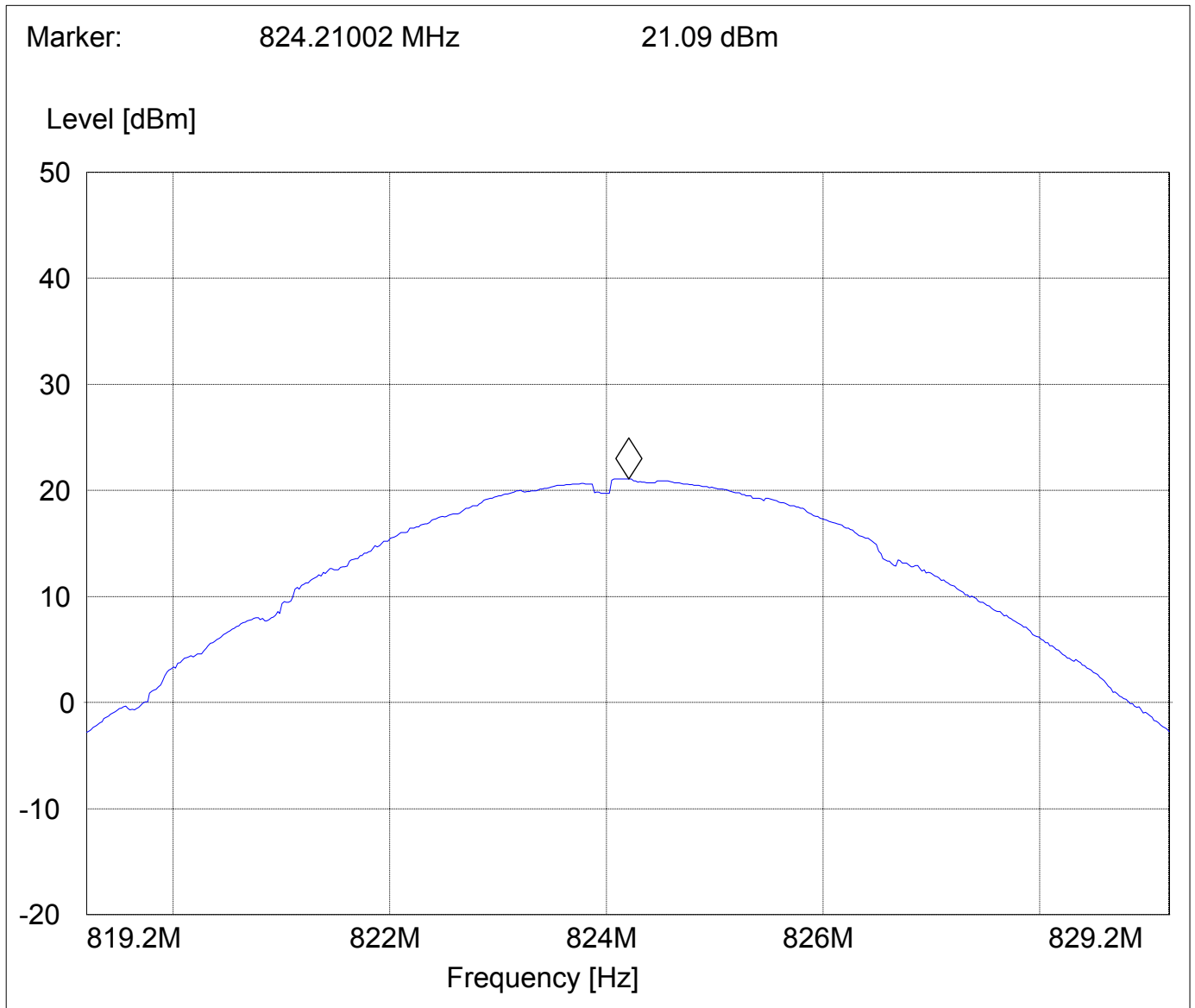
Note: The plots show EIRP measurements only.

EIRP CHANNEL 128 (GSM-850)

§22.913(a)

SWEEP TABLE: "EIRP 850 CH 128"

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW/VBW |
|-----------------|----------------|----------|------------|---------|
| 819.2 MHz | 829.2 MHz | MaxPeak | Coupled | 3 MHz |



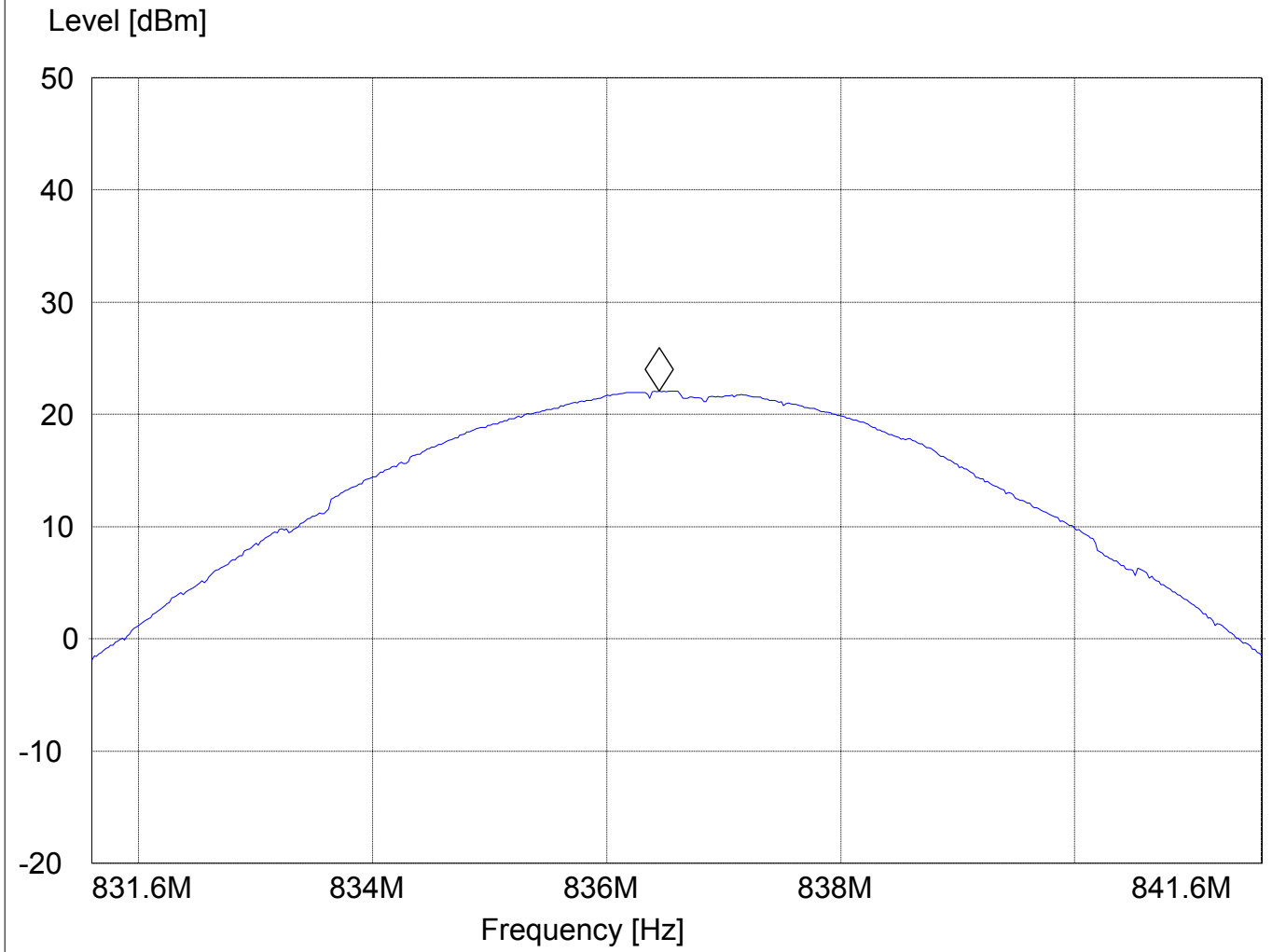
EIRP CHANNEL 190 (GSM-850)

§22.913(a)

SWEEP TABLE: "EIRP 850 CH 190"

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW/VBW |
|-----------------|----------------|----------|------------|---------|
| 831.6MHz | 841.6 MHz | MaxPeak | Coupled | 3 MHz |

Marker: 836.449699 MHz 22.09 dBm



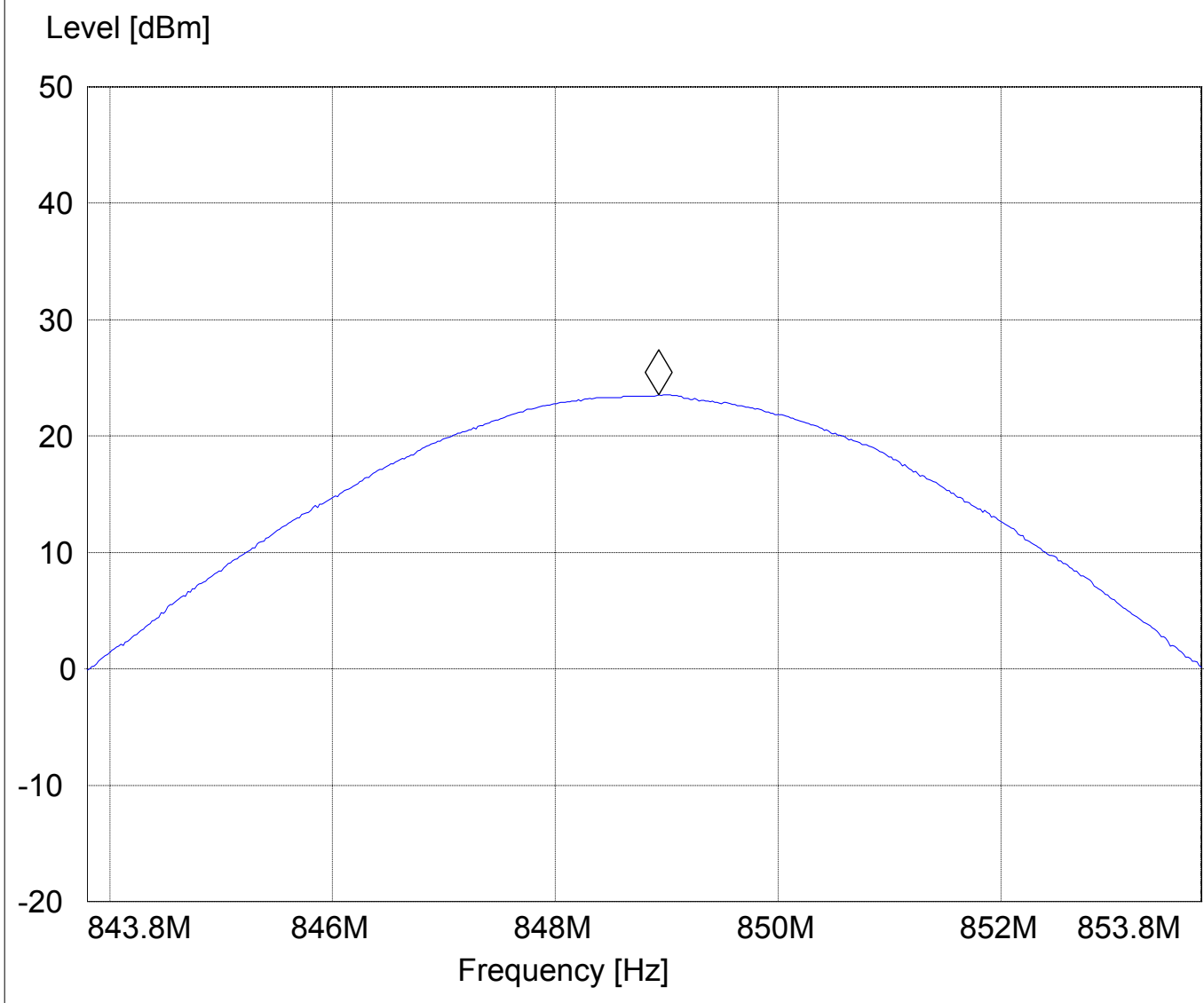
EIRP CHANNEL 251 (GSM-850)

§22.913(a)

SWEEP TABLE: "EIRP 850 CH 251"

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW/VBW |
|-----------------|----------------|----------|------------|---------|
| 843.8MHz | 853.8MHz | MaxPeak | Coupled | 3 MHz |

Marker: 848.930261 MHz 23.53 dBm



EIRP (PCS-1900)**§24.232(b)****Limits:**

| Power Step | Burst Peak EIRP |
|------------|-----------------|
| 0 | ≤33dBm (1W) |

Power Measurements:

Plots are shown on next pages

Radiated:

| Frequency (MHz) | Power Step | BURST Peak (dBm) | |
|-------------------------|------------|---------------------|-------|
| | | EIRP | ERP |
| 1850.2MHz | 0 | 28.63 | 26.53 |
| 1880MHz | 0 | 29.48 | 27.38 |
| 1909.8MHz | 0 | 27.54 | 25.44 |
| Measurement uncertainty | | ±0.5 dB | |

ANALYZER SETTINGS: RBW = VBW = 3MHz

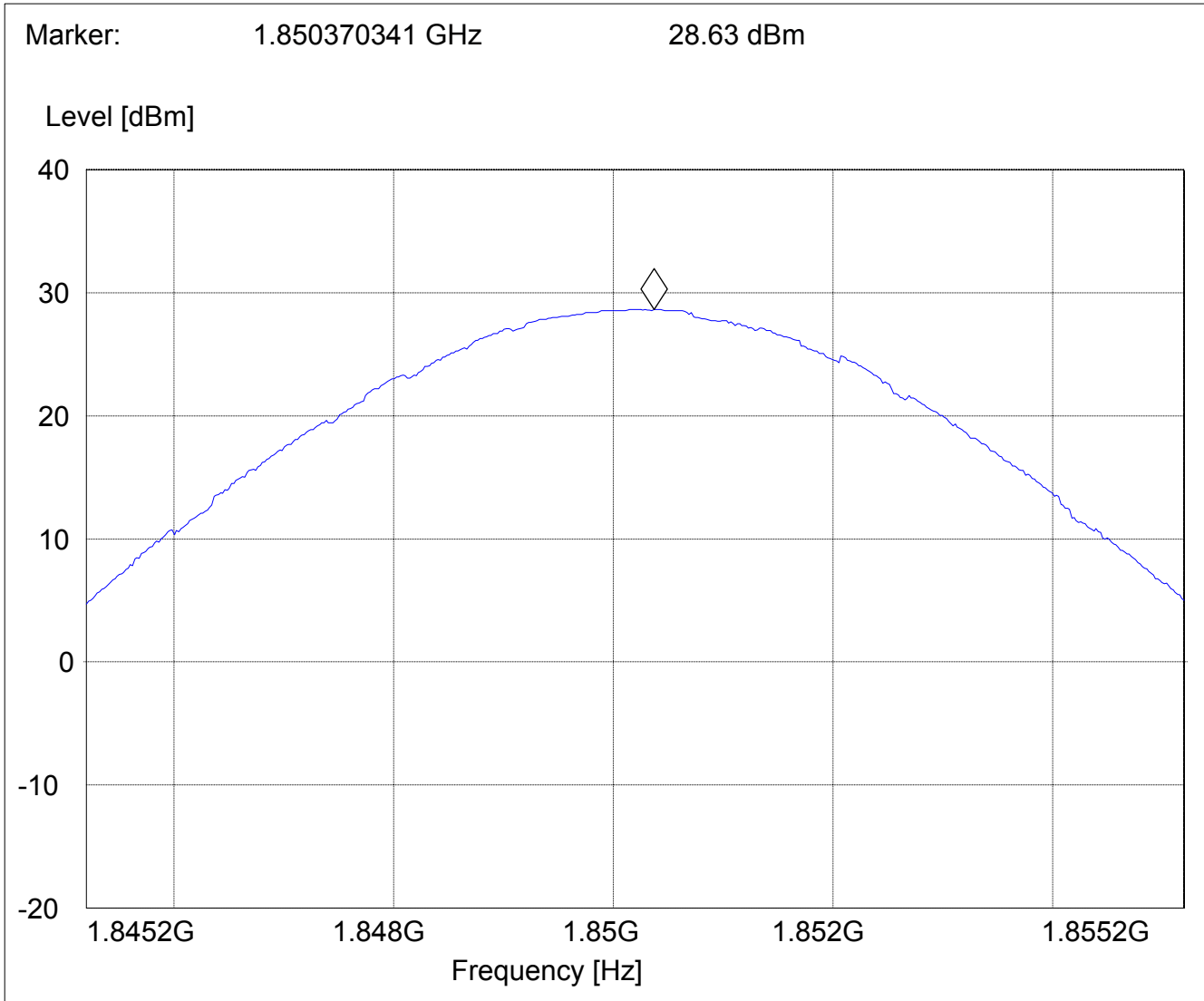
Note: The plots show EIRP measurements only.

EIRP CHANNEL 512 (PCS-1900)

§24.232(b)

SWEEP TABLE: "EIRP 1900 CH512"

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW/VBW |
|-----------------|----------------|----------|------------|---------|
| 1.8452 GHz | 1.8552 GHz | Max Peak | Coupled | 3 MHz |

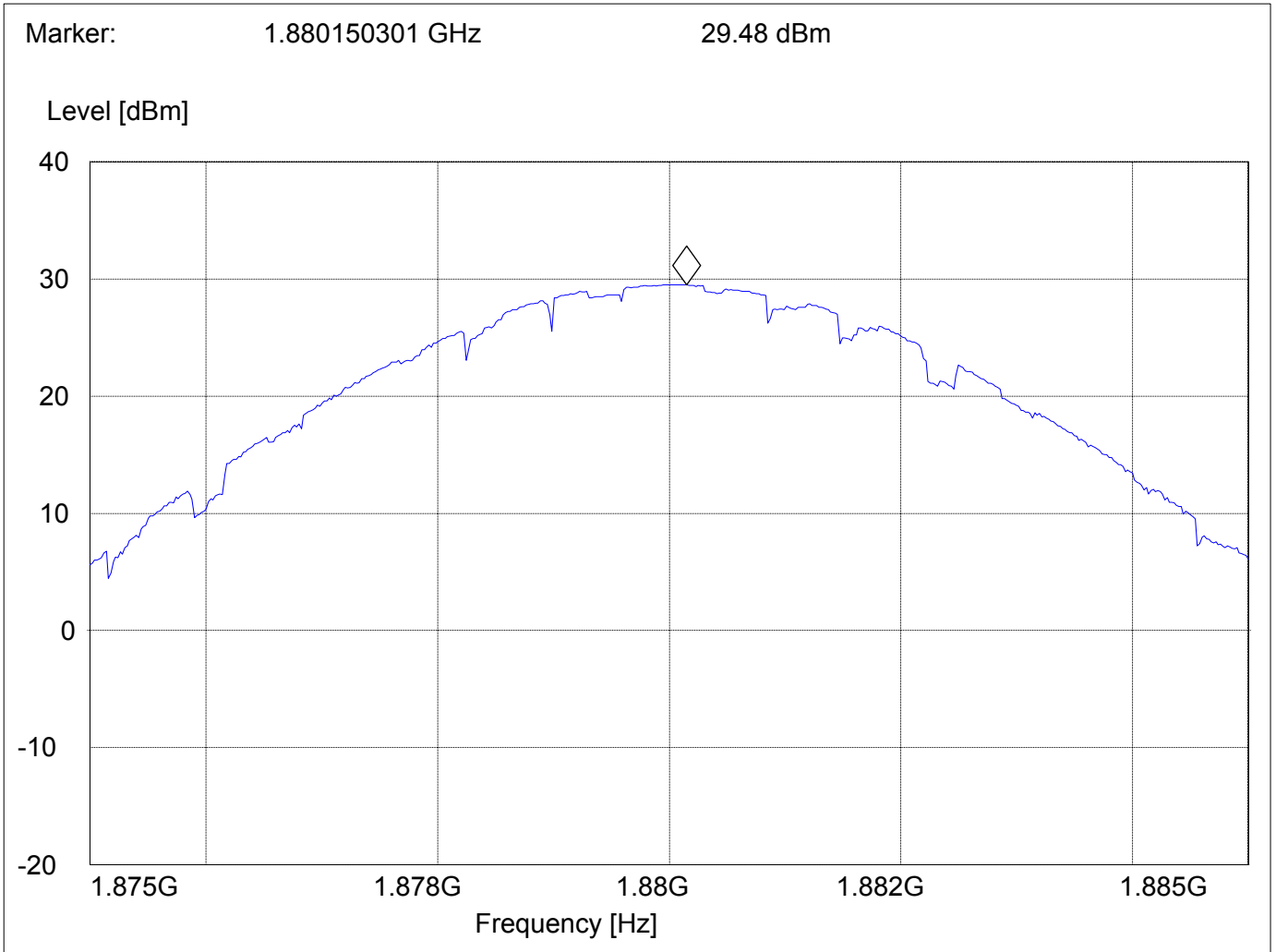


EIRP CHANNEL 661 (PCS-1900)

§24.232(b)

SWEEP TABLE: "EIRP 1900 CH661"

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW/VBW |
|-----------------|----------------|----------|------------|---------|
| 1.875 GHz | 1.885 GHz | Max Peak | Coupled | 3 MHz |

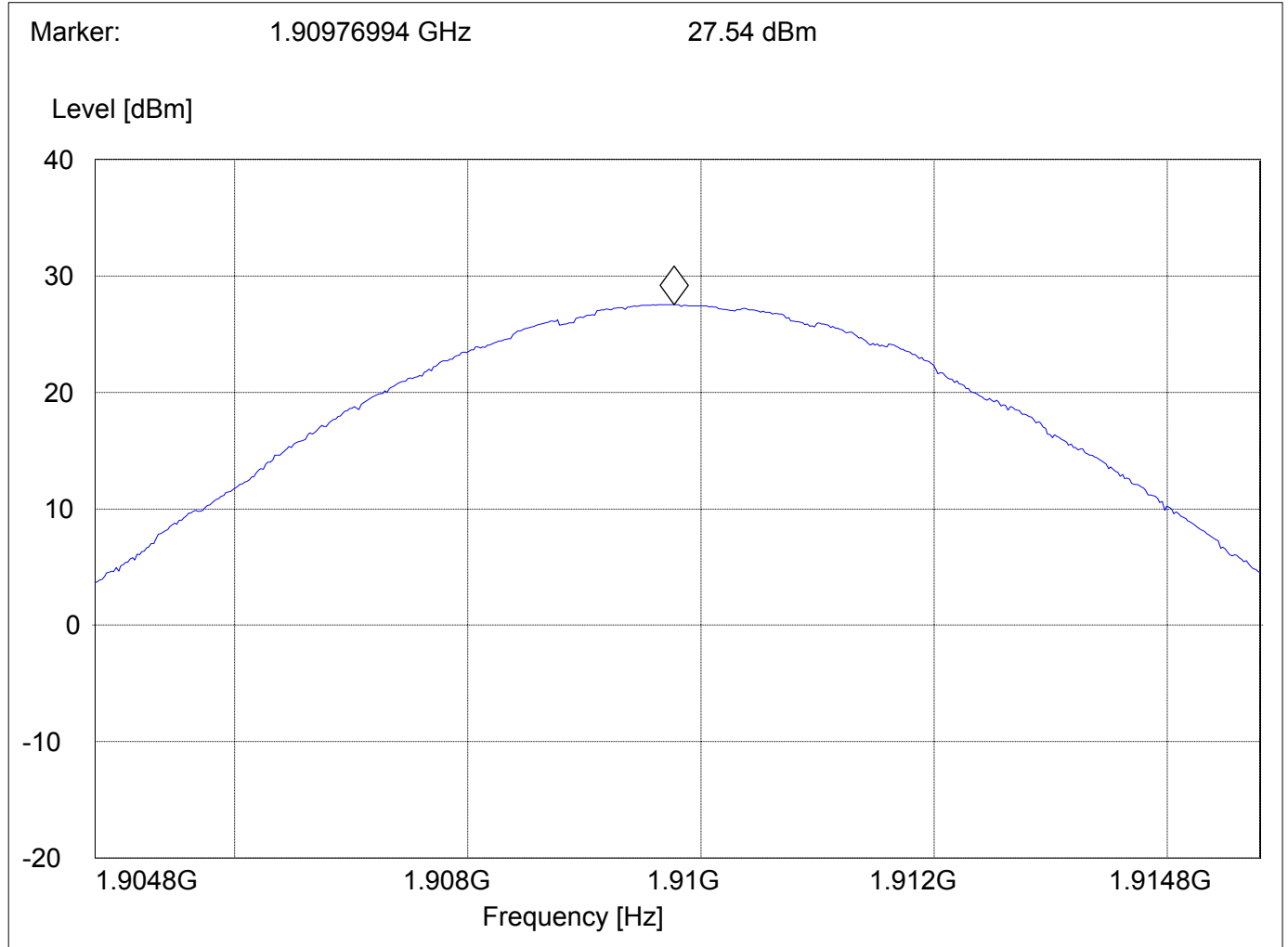


EIRP CHANNEL 810 (PCS-1900)

§24.232(b)

SWEEP TABLE: "EIRP 1900 CH810"

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW/VBW |
|-----------------|----------------|----------|------------|---------|
| 1.9048 GHz | 1.9148 GHz | Max Peak | Coupled | 3 MHz |



EMISSION LIMITS TRANSMITTER**§2.1051 / §24.238****Measurement Procedure:**

The following steps outline the procedure used to measure the radiated emissions from the EUT. The site is constructed in accordance with ANSI C63.4 – 1992 requirements and is recognised by the FCC. The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 848.8MHz for GSM-850 & 1910 MHz for PCS-1900. The resolution bandwidth is set as outlined in Part 24.238. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the GSM-850 & PCS-1900 bands.

The final Radiated emission test procedure is as follows:

- a) The test item was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna.
- b) The antenna output was terminated in a 50-ohm load.
- c) A double-ridged wave-guide antenna was placed on an adjustable height antenna mast 3 meters from the test item for emission measurements.
- d) Detected emissions were maximized at each frequency by rotating the test item and adjusting the receive antenna height and polarization. The maximum meter reading was recorded. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector and 1MHz bandwidth. If the harmonic could not be detected above the noise floor, the ambient level was recorded. The equivalent power into a dipole antenna was determined by the substitution method described for ERP measurements.

Measurement Limit:

Sec. 24.238 Emission Limits.

(a) On any frequency outside a licensee's frequency block (e.g. A, D, B, etc.) within the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least $43+10\log(P)$ dB. The specification that emissions shall be attenuated below the transmitter power (P) by at least $43 + 10 \log (P)$ dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

Measurement Results:

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.

RESULTS OF RADIATED TESTS GSM-850:

| Harmonics | Tx ch-128 Freq. (MHz) | Level (dBm) | Tx ch-190 Freq. (MHz) | Level (dBm) | Tx ch-251 Freq. (MHz) | Level (dBm) |
|------------------|----------------------------------|--------------------|----------------------------------|--------------------|----------------------------------|--------------------|
| 2 | 1648.4 | -39.78 | 1673.2 | -42.5 | 1697.6 | -35.45 |
| 3 | 2472.6 | -47.28 | 2509.8 | -47.19 | 2546.4 | -47.12 |
| 4 | 3296.8 | -43.49 | 3346.4 | -43.56 | 3395.2 | -42.66 |
| 5 | 4121 | --41.40 | 4183 | -43.55 | 4244 | -43.20 |
| 6 | 4945.2 | -37.14 | 5019.6 | -35.73 | 5092.8 | -34.59 |
| 7 | 5769.4 | -33.99 | 5856.2 | -32.60 | 5941.6 | -30.96 |
| 8 | 6593.6 | -29.38 | 6692.8 | -28.43 | 6790.4 | -25.28 |
| 9 | 7417.8 | -32.46 | 7529.4 | -31.58 | 7639.2 | -31.86 |
| 10 | 8242 | -30.98 | 8366 | -32.56 | 8488 | -31.21 |

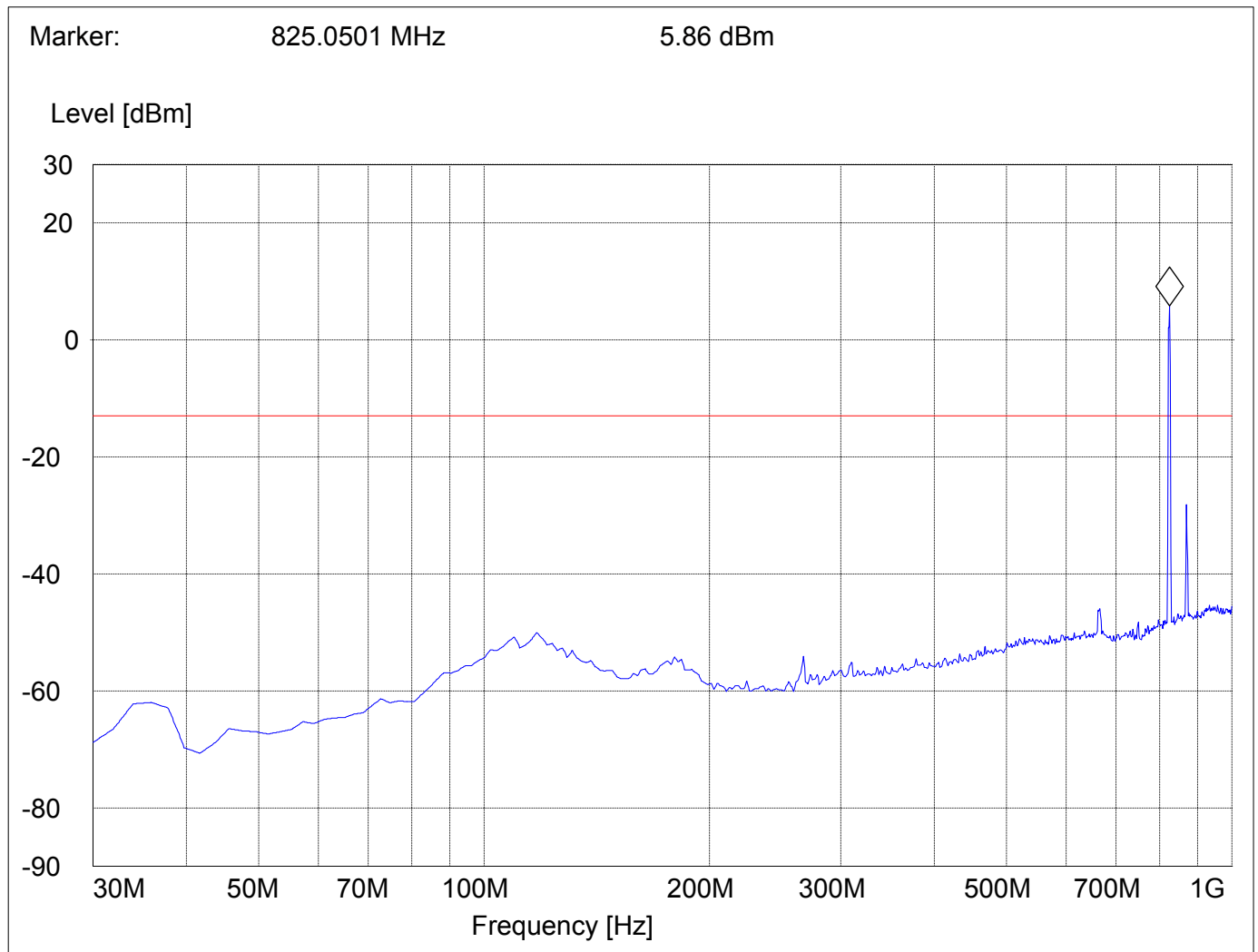
RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 824.2MHz: 30MHz - 1GHz**

Spurious emission limit -13dBm

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

| Start | Stop | Detector | Meas. Time | RBW/VBW |
|-------|------|----------|------------|---------|
| 30MHz | 1GHz | Max Peak | Coupled | 1 MHz |

Note: The peak above the limit line is the carrier freq. at ch-128.



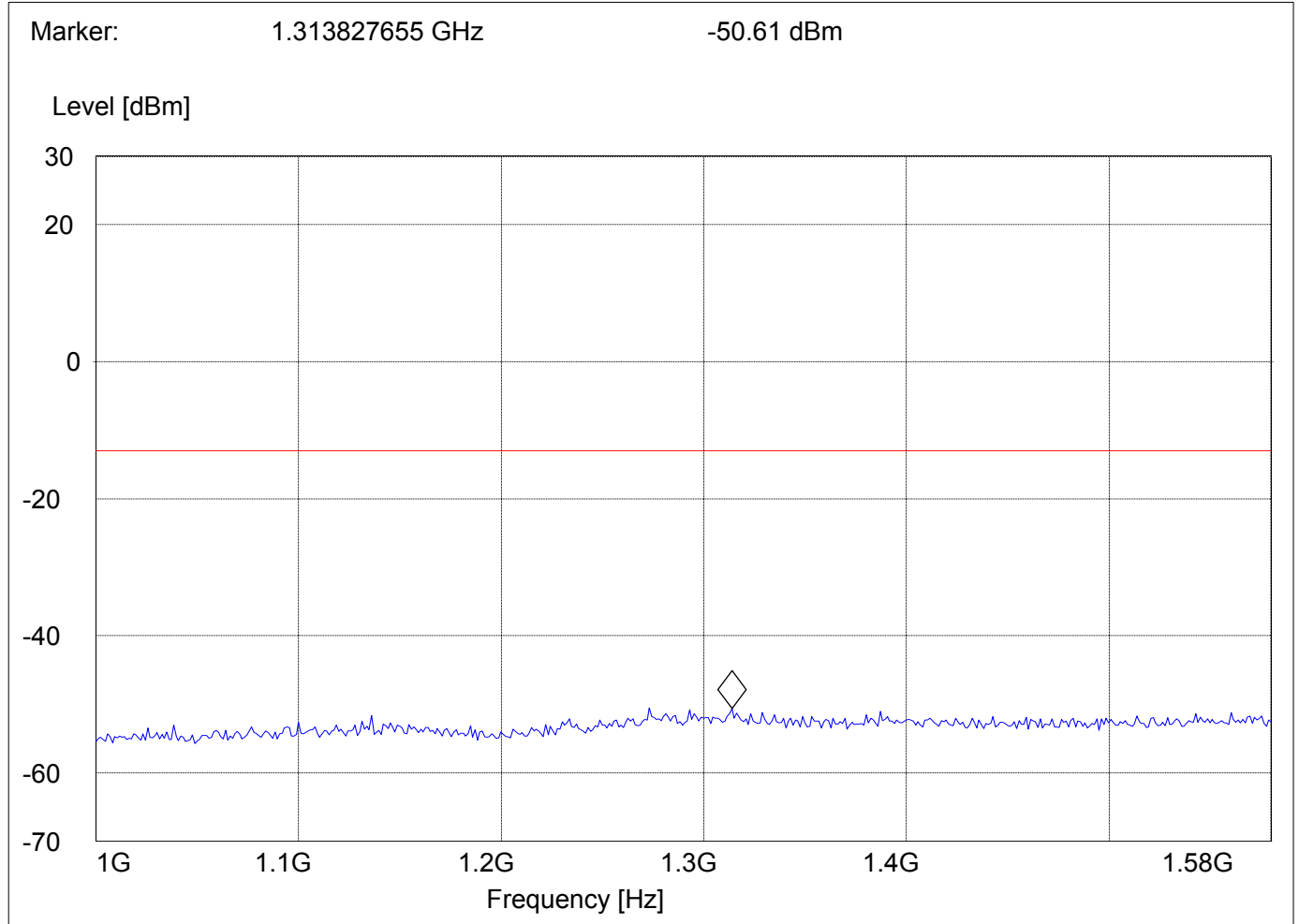
RADIATED SPURIOUS EMISSIONS (GSM-850)

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 |



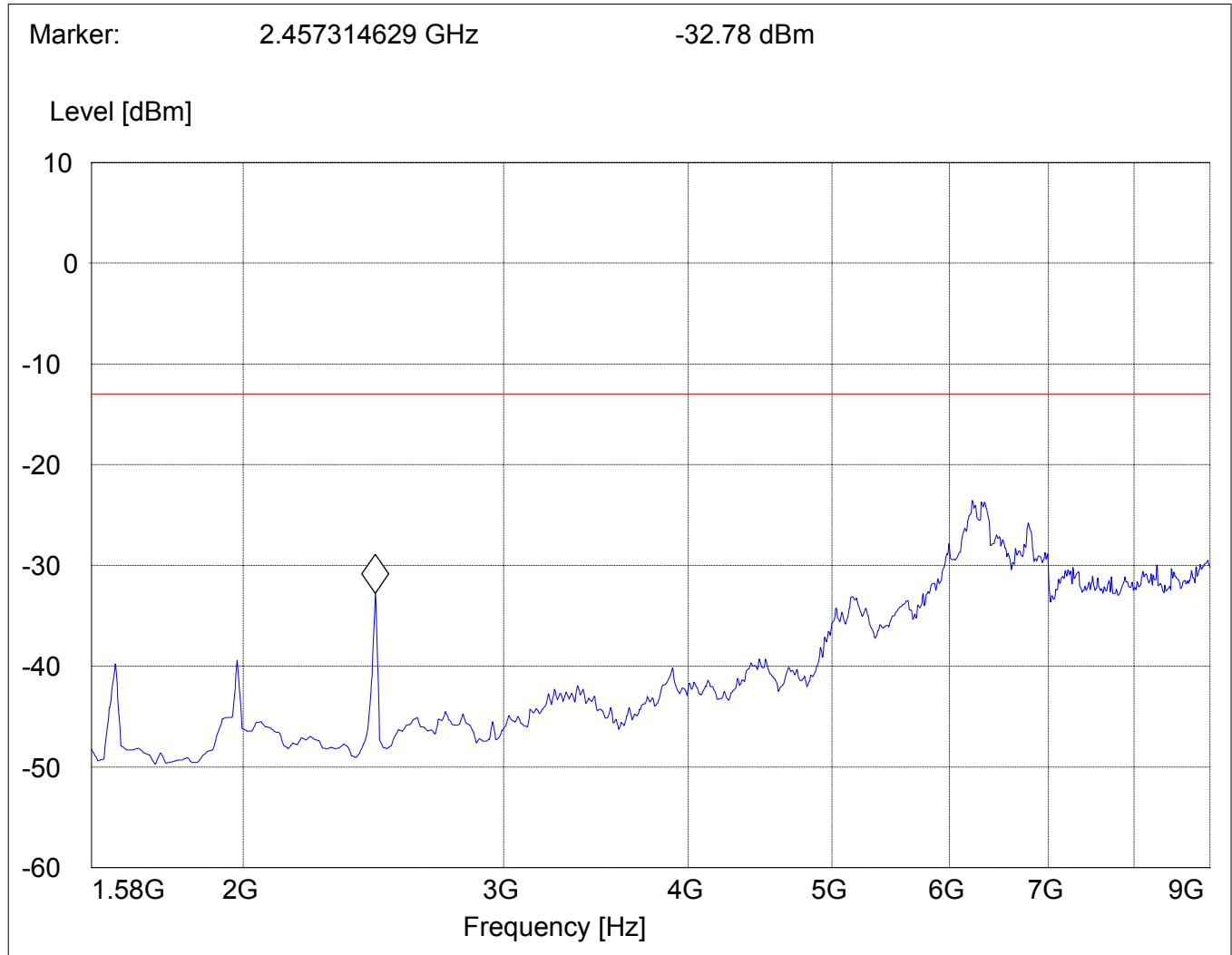
RADIATED SPURIOUS EMISSIONS (GSM-850)

Tx @ 824.2MHz: 1.58GHz – 9GHz

Spurious emission limit –13dBm

SWEEP TABLE: "FCC 22 Spur 1.58-9G"

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW/VBW |
|-----------------|----------------|----------|------------|---------|
| 1.58GHz | 9GHz | Max Peak | Coupled | 1 MHz |



RADIATED SPURIOUS EMISSIONS (GSM-850)

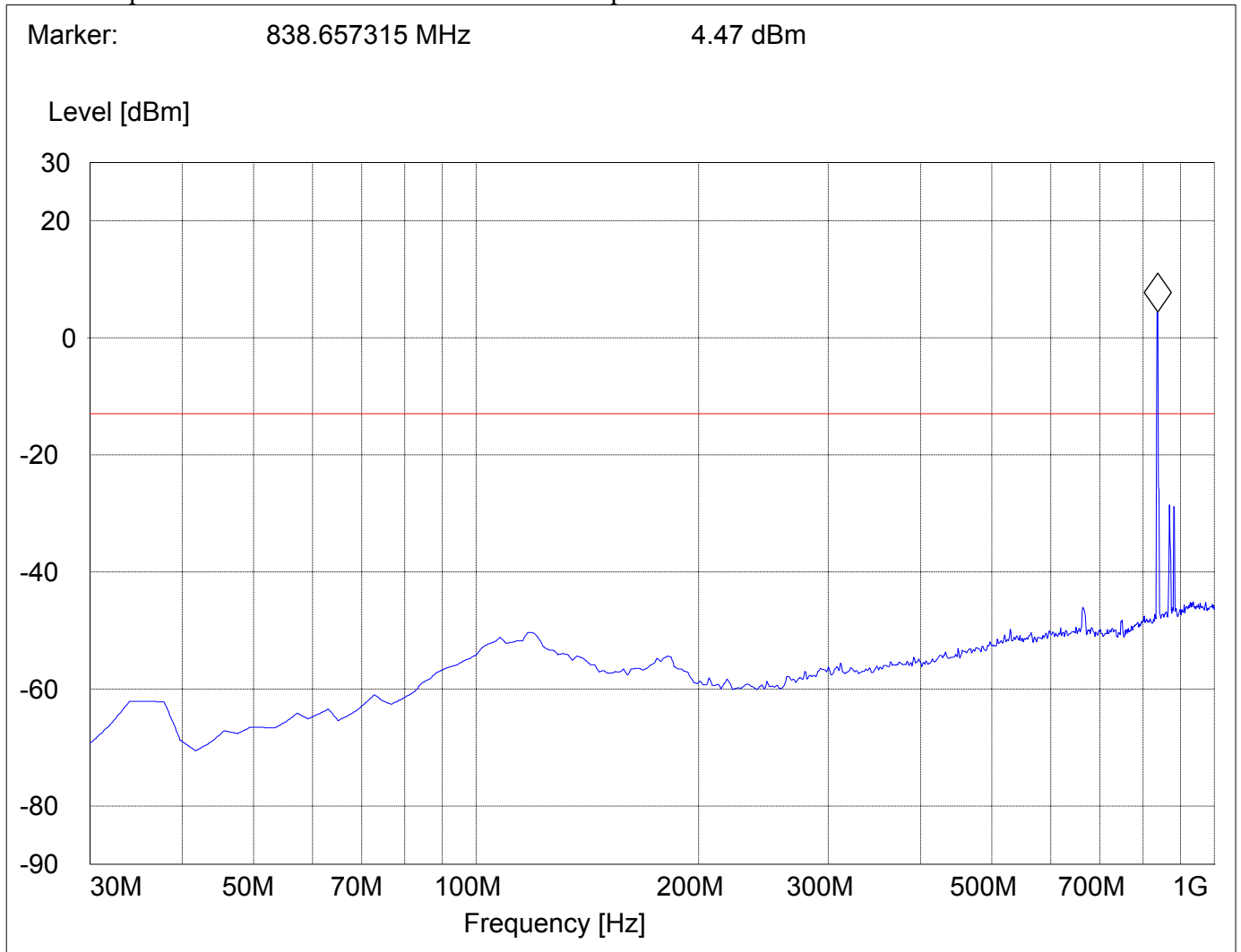
Tx @ 836.6MHz: 30MHz - 1GHz

Spurious emission limit -13dBm

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

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

Note: The peak above the limit line is the carrier freq. at ch-190.



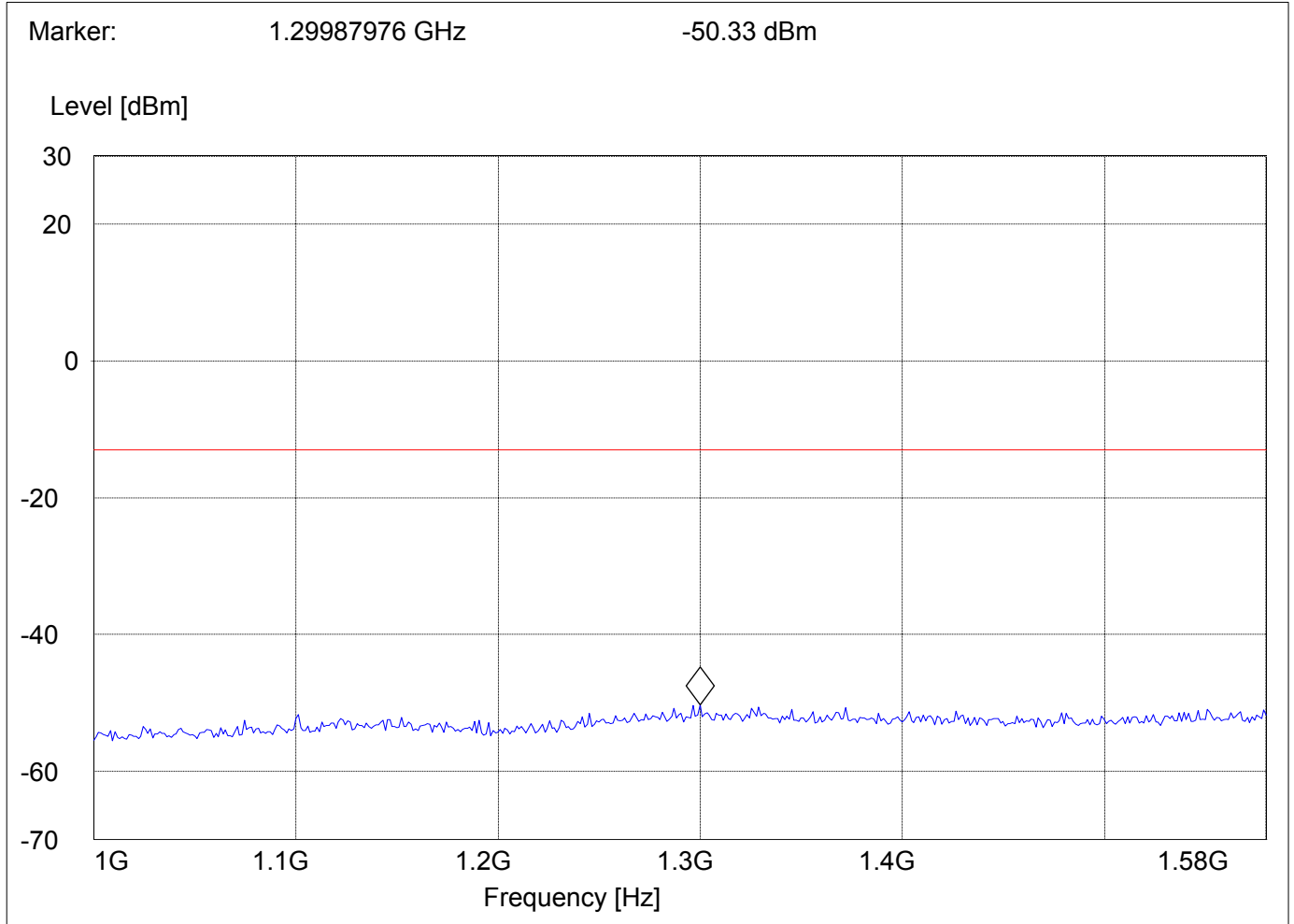
RADIATED SPURIOUS EMISSIONS (GSM-850)

Tx @ 836.6MHz: 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 |



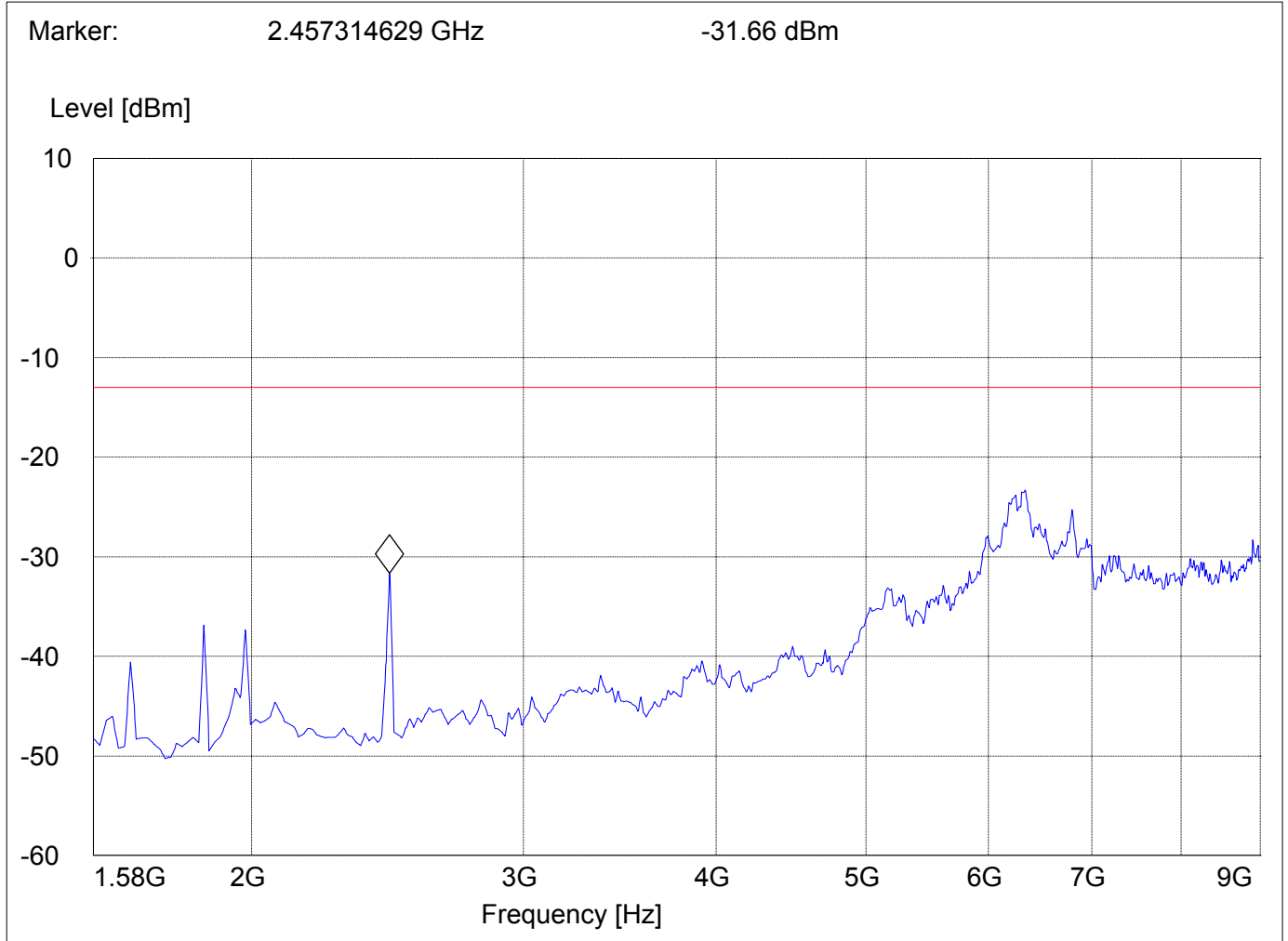
RADIATED SPURIOUS EMISSIONS (GSM-850)

Tx @ 836.6MHz: 1.58GHz – 9GHz

Spurious emission limit –13dBm

SWEEP TABLE: "FCC 22 Spur 1.58-9G"

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW/VBW |
|-----------------|----------------|----------|------------|---------|
| 1.58GHz | 9GHz | Max Peak | Coupled | 1 MHz |



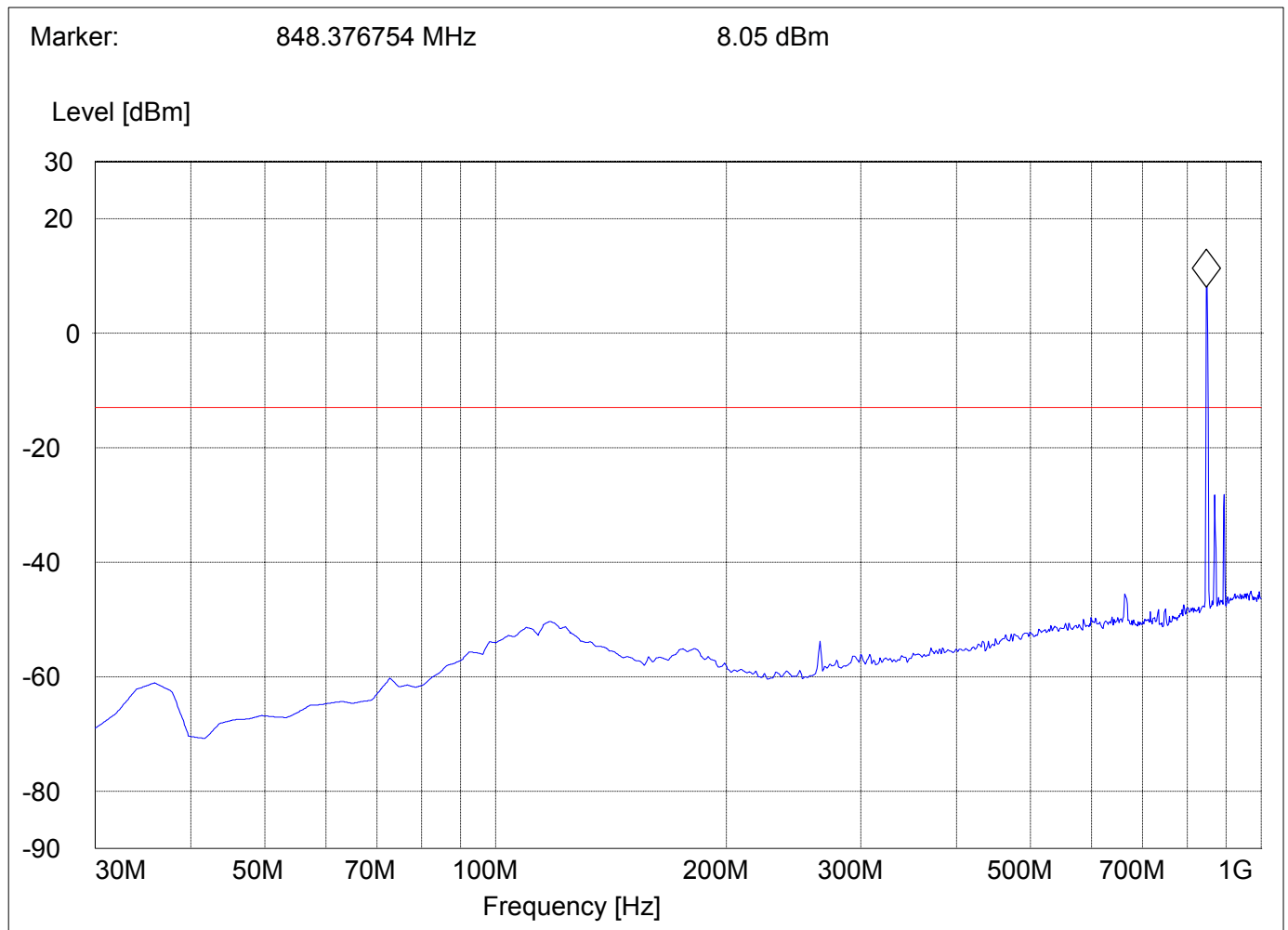
RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 848.8MHz: 30MHz - 1GHz**

Spurious emission limit -13dBm

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

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

Note: The peak above the limit line is the carrier freq. at ch-251.



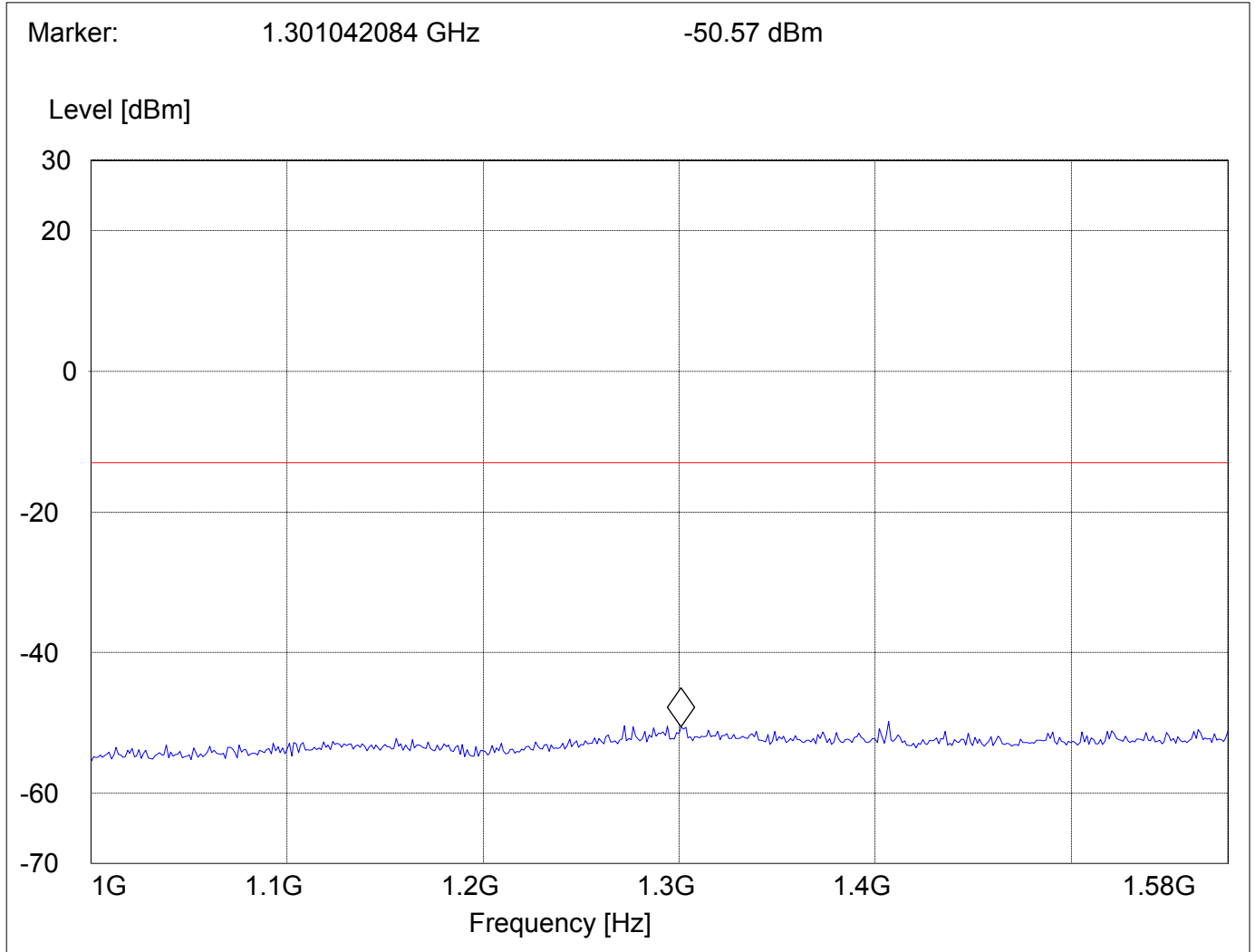
RADIATED SPURIOUS EMISSIONS (GSM-850)

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 |



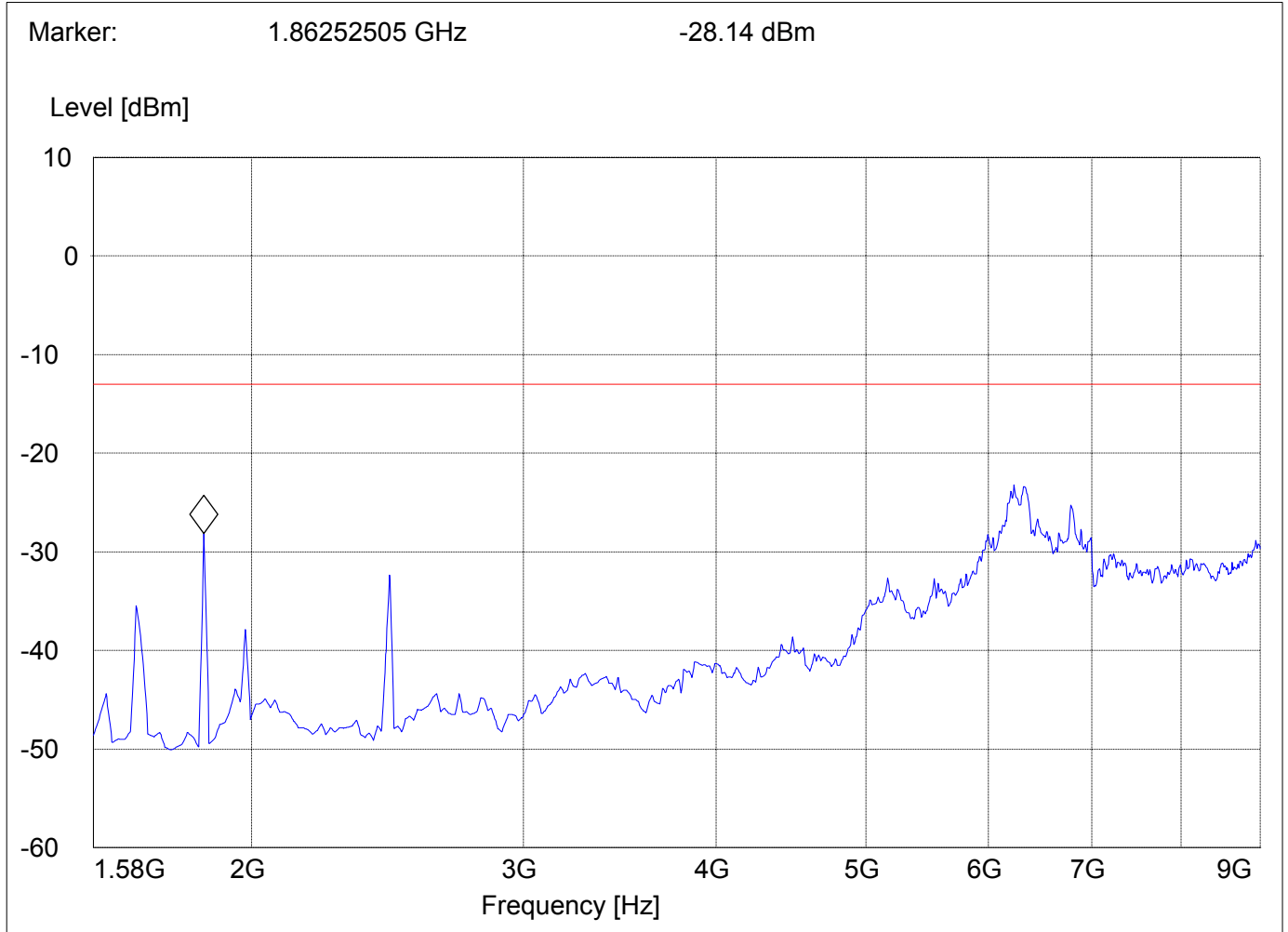
RADIATED SPURIOUS EMISSIONS (GSM-850)

Tx @ 848.8MHz: 1.58GHz – 9GHz

Spurious emission limit –13dBm

SWEEP TABLE: "FCC 22 Spur 1.58-9G"

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW/VBW |
|-----------------|----------------|----------|------------|---------|
| 1.58GHz | 9GHz | Max Peak | Coupled | 1 MHz |



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 | -44.81 | 3760 | -43.63 | 3819.6 | -44.33 |
| 3 | 5550.6 | -35.27 | 5640 | -36.04 | 5729.4 | -35.42 |
| 4 | 7400.8 | -32.17 | 7520 | -32.48 | 7639.2 | -32.64 |
| 5 | 9251 | .27.12 | 9400 | -26.33 | 9549 | -28.25 |
| 6 | 11101.2 | -25.20 | 11280 | -26.04 | 11458.8 | -28.28 |
| 7 | 12951.4 | -27.87 | 13160 | -29.01 | 13368.6 | -27.70 |
| 8 | 14801.6 | -28.75 | 15040 | -27.11 | 15278.4 | -28.11 |
| 9 | 16651.8 | -24.01 | 16920 | -23.44 | 17188.2 | -20.74 |
| 10 | 18502 | -24.16 | 18800 | -25.42 | 19098 | -25.02 |

RADIATED SPURIOUS EMISSIONS

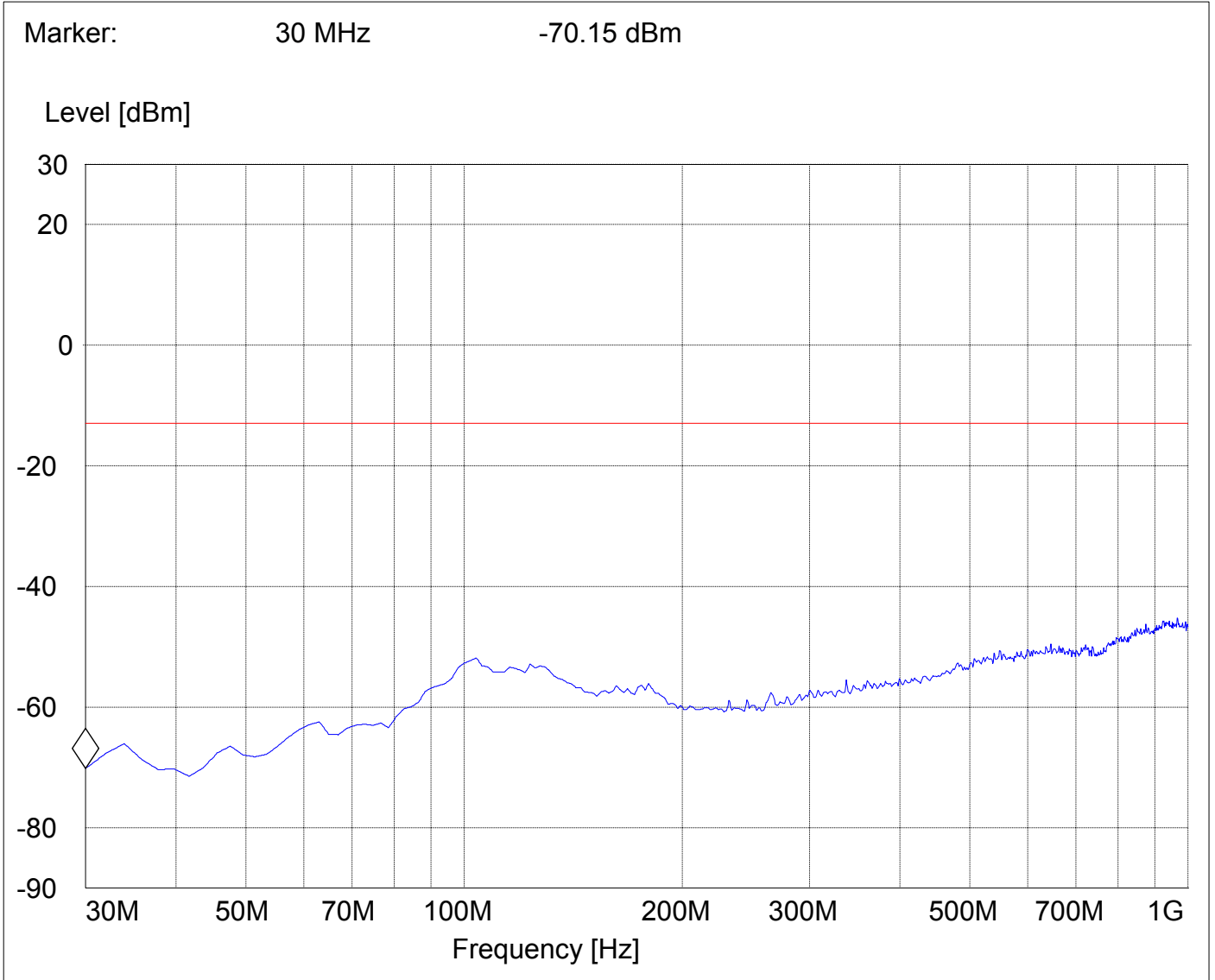
Tx @ 1850.2MHz: 30MHz - 1GHz

Spurious emission limit -13dBm

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

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

Marker: 30 MHz -70.15 dBm



RADIATED SPURIOUS EMISSIONS

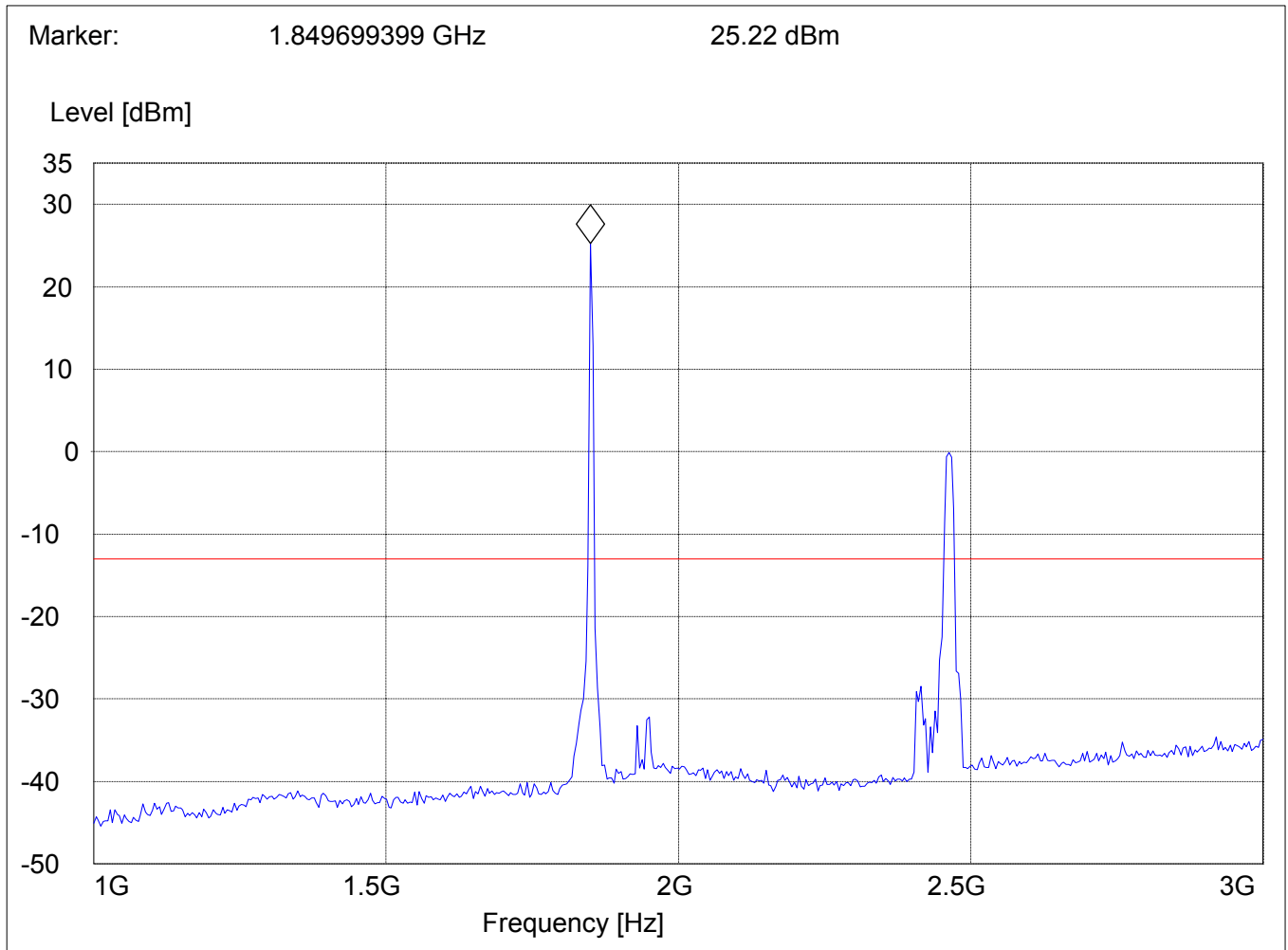
Tx @ 1850.2MHz: 1GHz – 3GHz

Spurious emission limit -13dBm

NOTE: peak above the limit line is the Carrier frequency. Frequency resolution is not fine enough to show the exact frequency of the carrier, refer to plots under EIRP. Other failing frequency is the Wireless Lan Built in the EUT.

SWEEP TABLE: "FCC Spuri 1-3G"

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



RADIATED SPURIOUS EMISSIONS

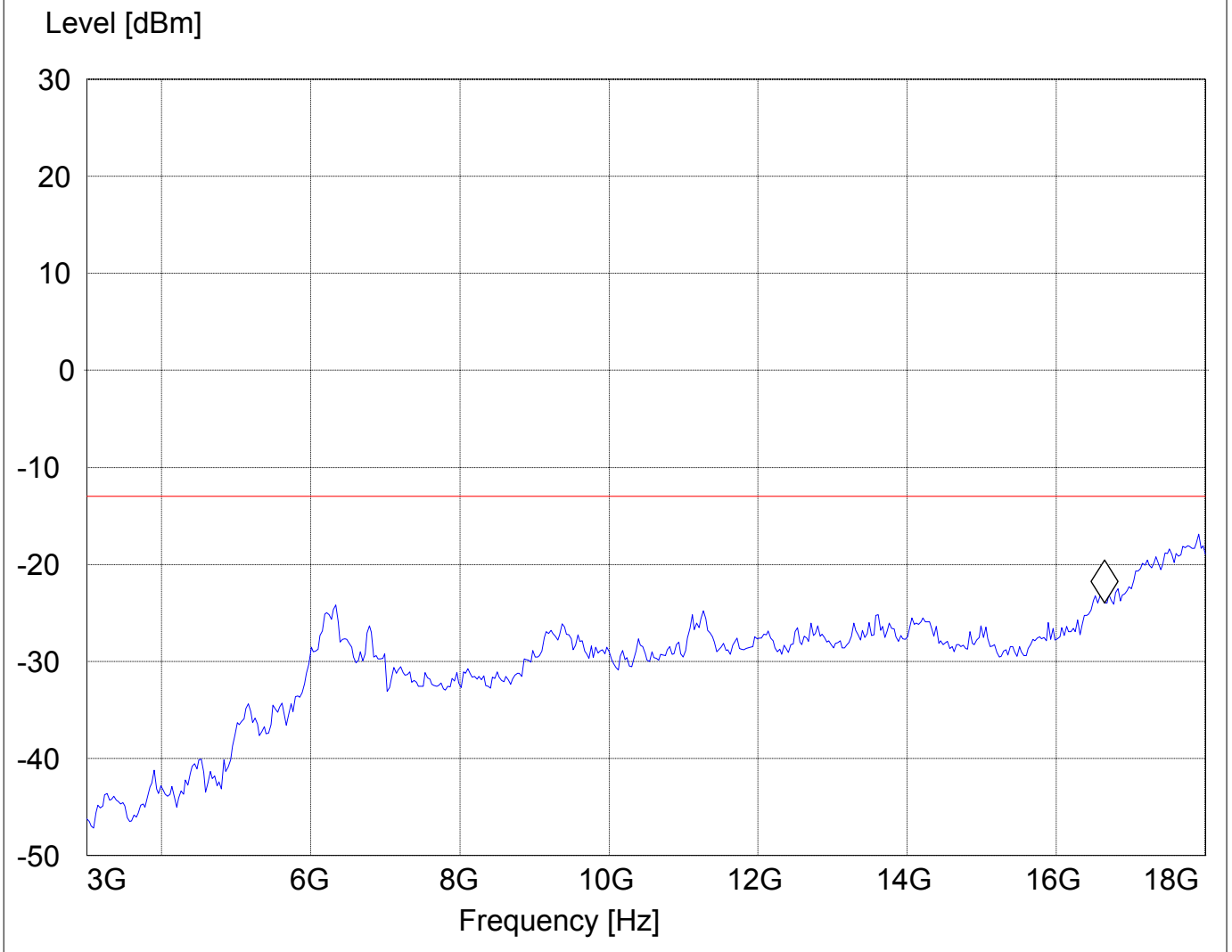
Tx @ 1850.2MHz: 3GHz – 18GHz

Spurious emission limit -13dBm

SWEEP TABLE: "FCC Spuri 3-8G"

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW/VBW |
|-----------------|----------------|----------|------------|---------|
| 3GHz | 8GHz | Max Peak | Coupled | 1 MHz |

Marker: 16.647294589 GHz -24.01 dBm



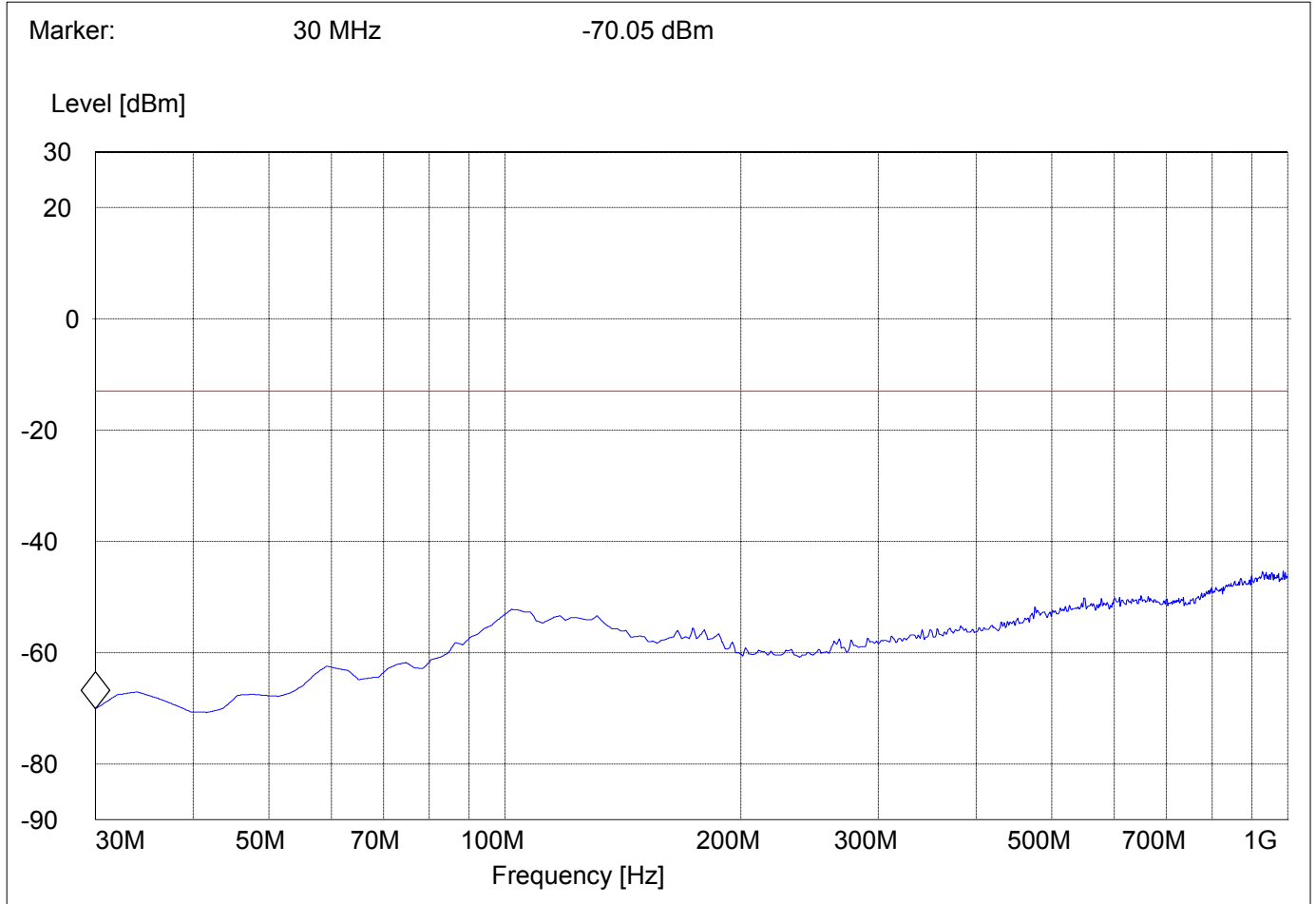
RADIATED SPURIOUS EMISSIONS

Tx @ 1880MHz: 30MHz –1GHz

Spurious emission limit –13dBm

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

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



RADIATED SPURIOUS EMISSIONS

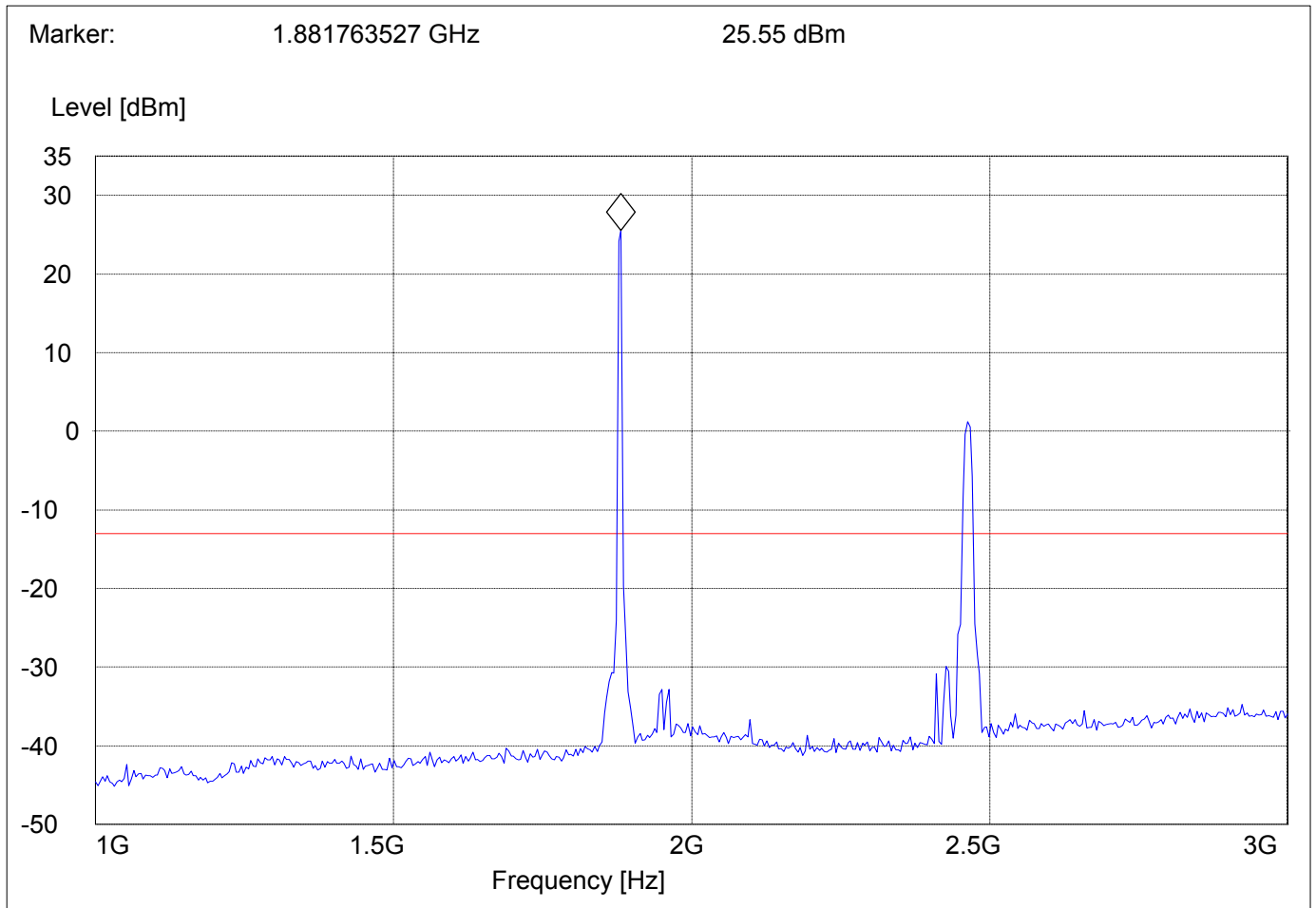
Tx @ 1880MHz: 1GHz – 3GHz

Spurious emission limit –13dBm

NOTE: peak above the limit line is the Carrier frequency. Frequency resolution is not fine enough to show the exact frequency of the carrier, refer to plots under EIRP. Other failing frequency is the Wireless Lan Built in the EUT.

SWEEP TABLE: "FCC Spuri 1-3G"

| <i>Start</i> | <i>Stop</i> | <i>Detector</i> | <i>Meas.</i> | <i>RBW/VBW</i> |
|------------------|------------------|-----------------|--------------|----------------|
| <i>Frequency</i> | <i>Frequency</i> | | <i>Time</i> | |
| 1GHz | 3GHz | Max Peak | Coupled | 1 MHz |



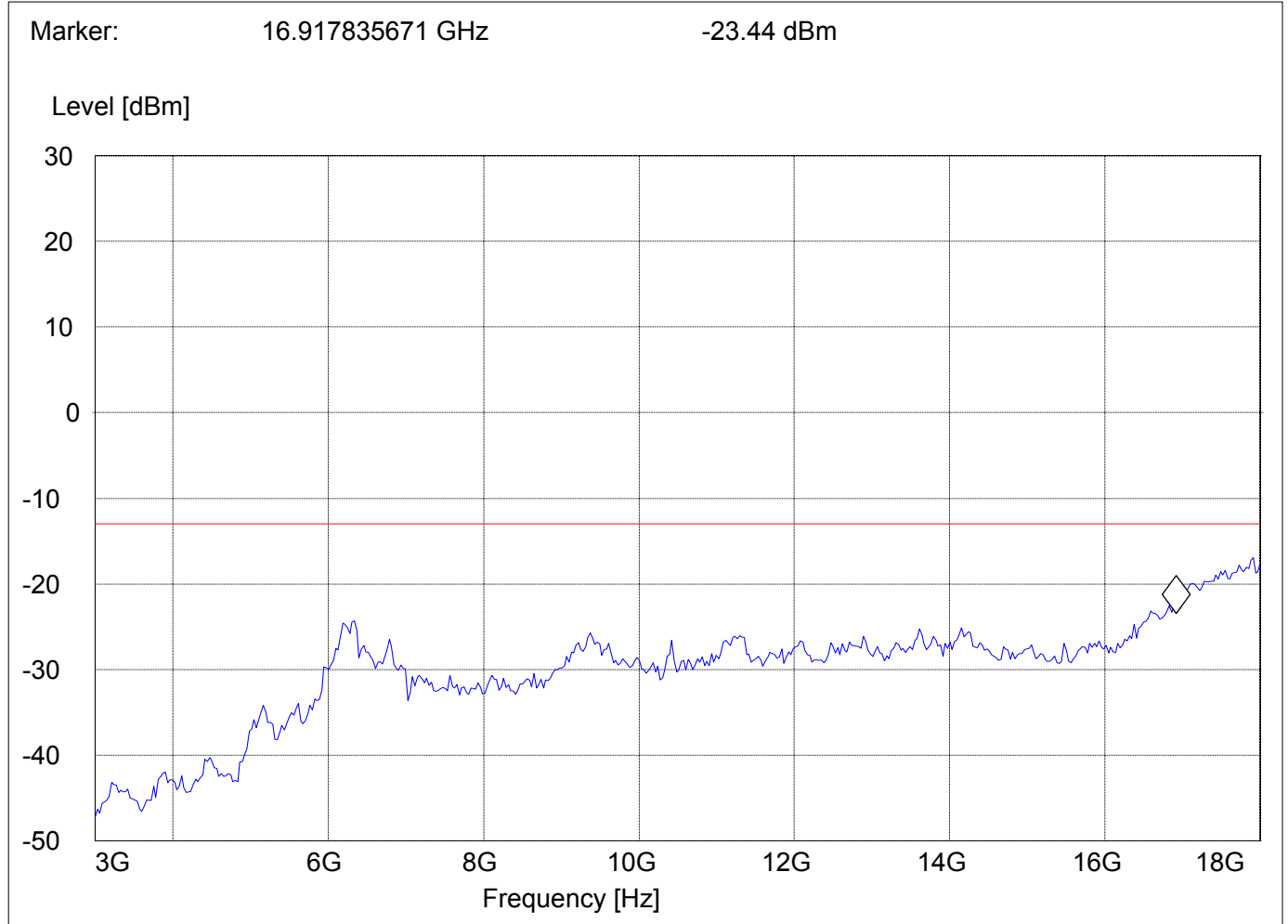
RADIATED SPURIOUS EMISSIONS

Tx @ 1880MHz: 3GHz – 18GHz

Spurious emission limit –13dBm

SWEEP TABLE: "FCC Spuri 3-8G"

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW/VBW |
|-----------------|----------------|----------|------------|---------|
| 3GHz | 8GHz | Max Peak | Coupled | 1 MHz |



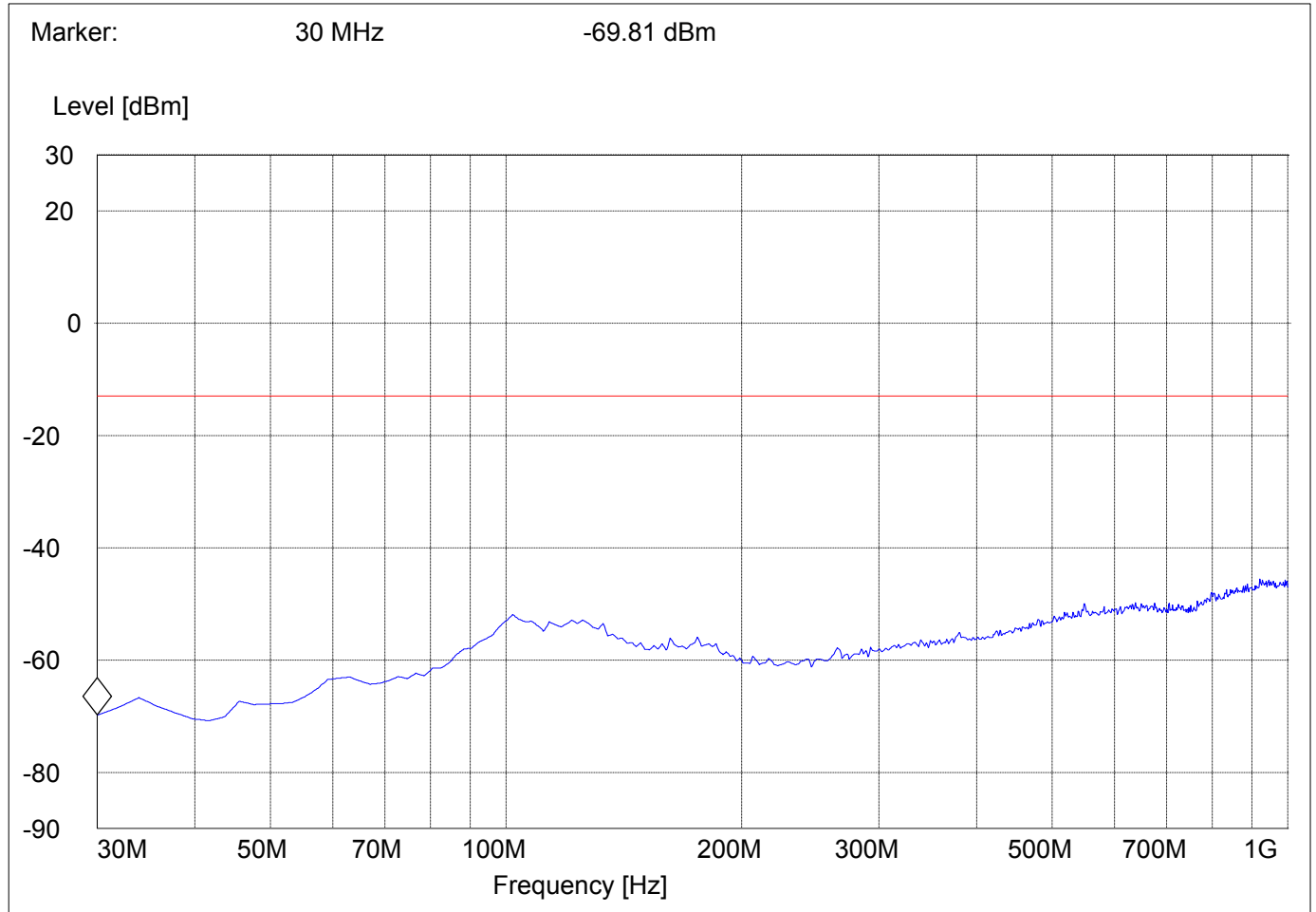
RADIATED SPURIOUS EMISSIONS

Tx @ 1909.8MHz: 30MHz – 1GHz

Spurious emission limit -13dBm

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

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



RADIATED SPURIOUS EMISSIONS

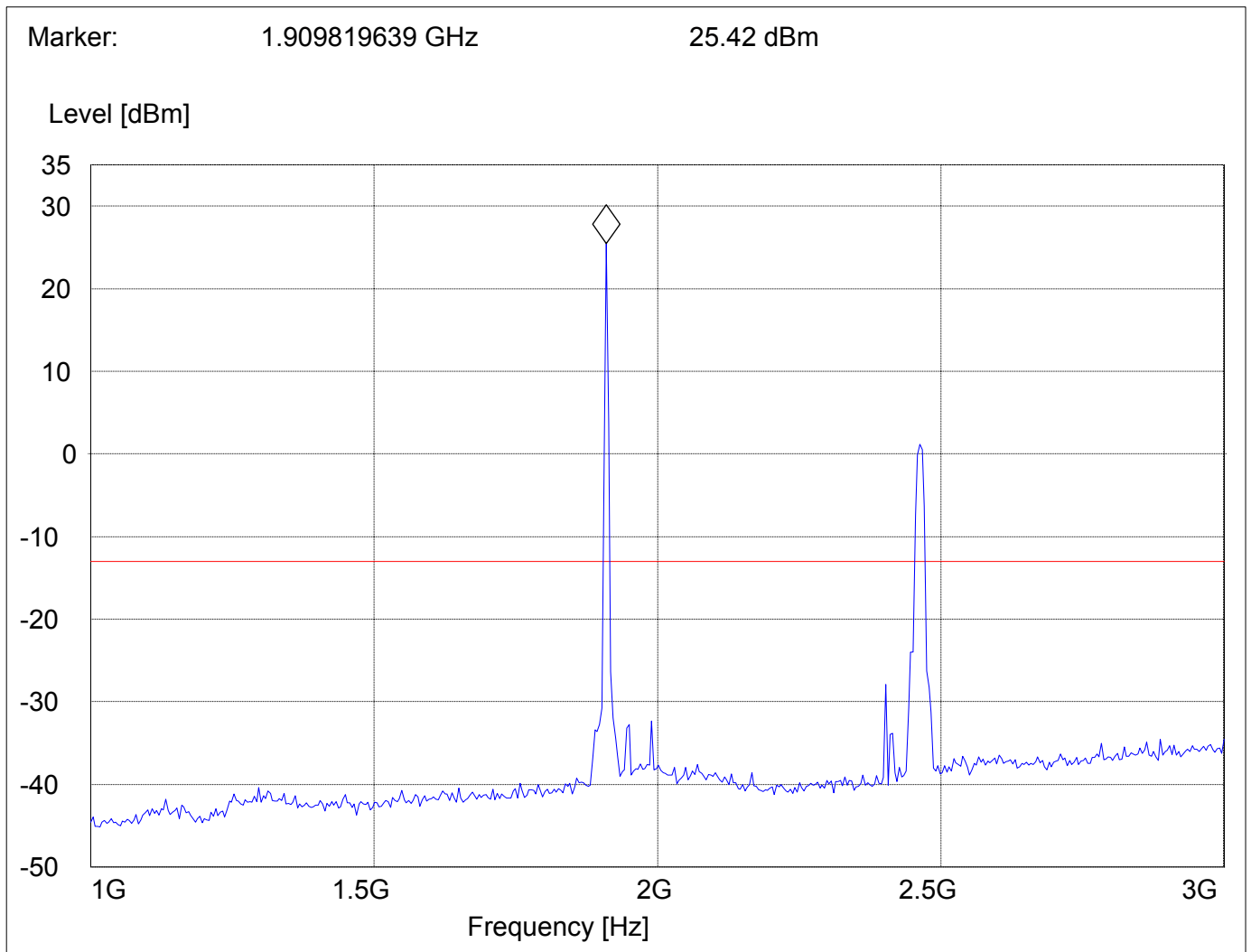
Tx @ 1909.8MHz: 1GHz – 3GHz

Spurious emission limit -13dBm

NOTE: peak above the limit line is the Carrier frequency. Frequency resolution is not fine enough to show the exact frequency of the carrier, refer to plots under EIRP. Other failing frequency is the Wireless Lan Built in the EUT.

SWEEP TABLE: "FCC Spuri 1-3G"

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



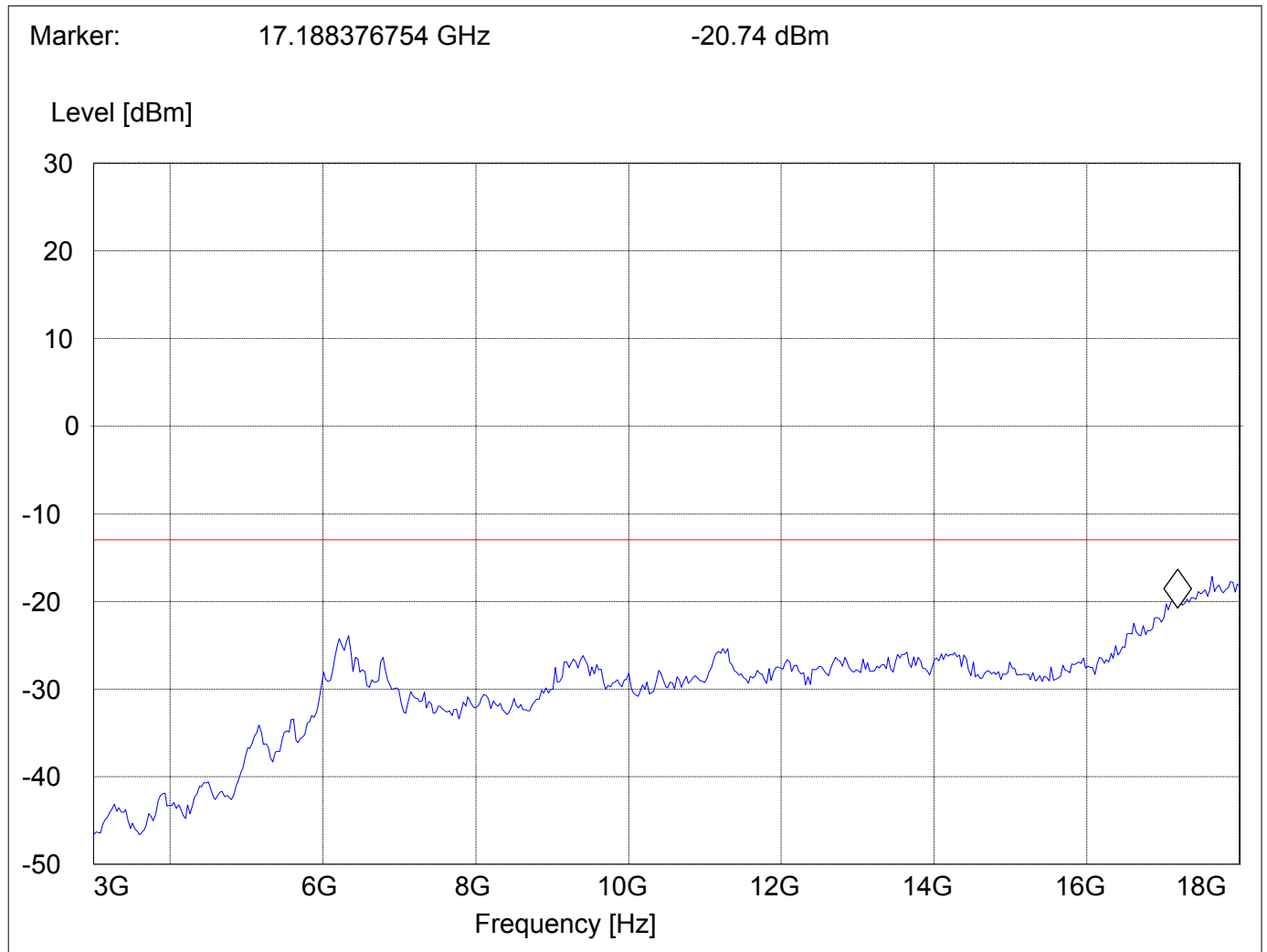
RADIATED SPURIOUS EMISSIONS

Tx @ 1909.8MHz: 3GHz – 8GHz

Spurious emission limit -13dBm

SWEEP TABLE: "FCC Spuri 3-8G"

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW/VBW |
|-----------------|----------------|----------|------------|---------|
| 3GHz | 8GHz | Max Peak | Coupled | 1 MHz |



RADIATED SPURIOUS EMISSIONS

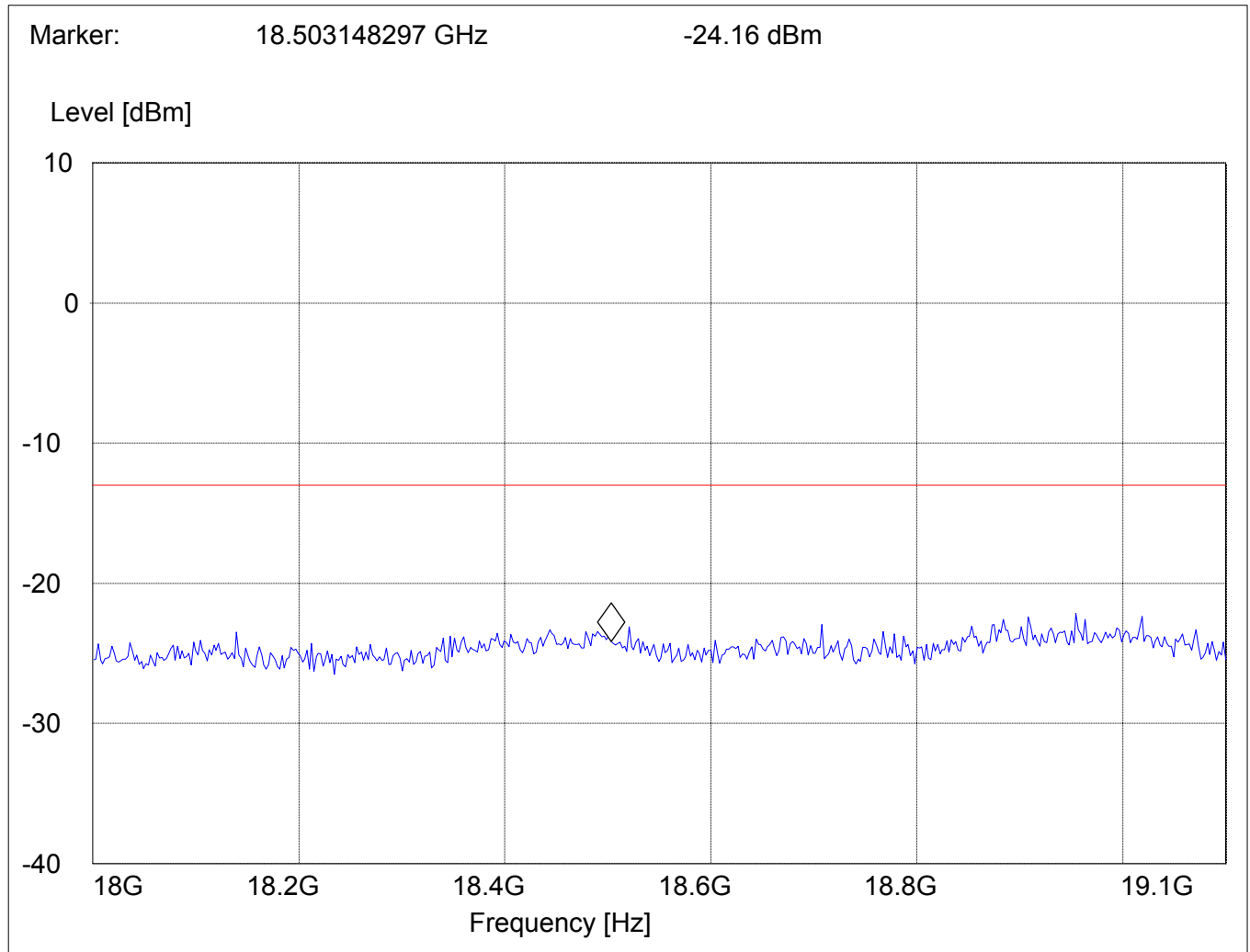
18GHz – 19.1GHz

Spurious emission limit –13dBm

(NOTE: This plot is valid for all three channels)

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 |



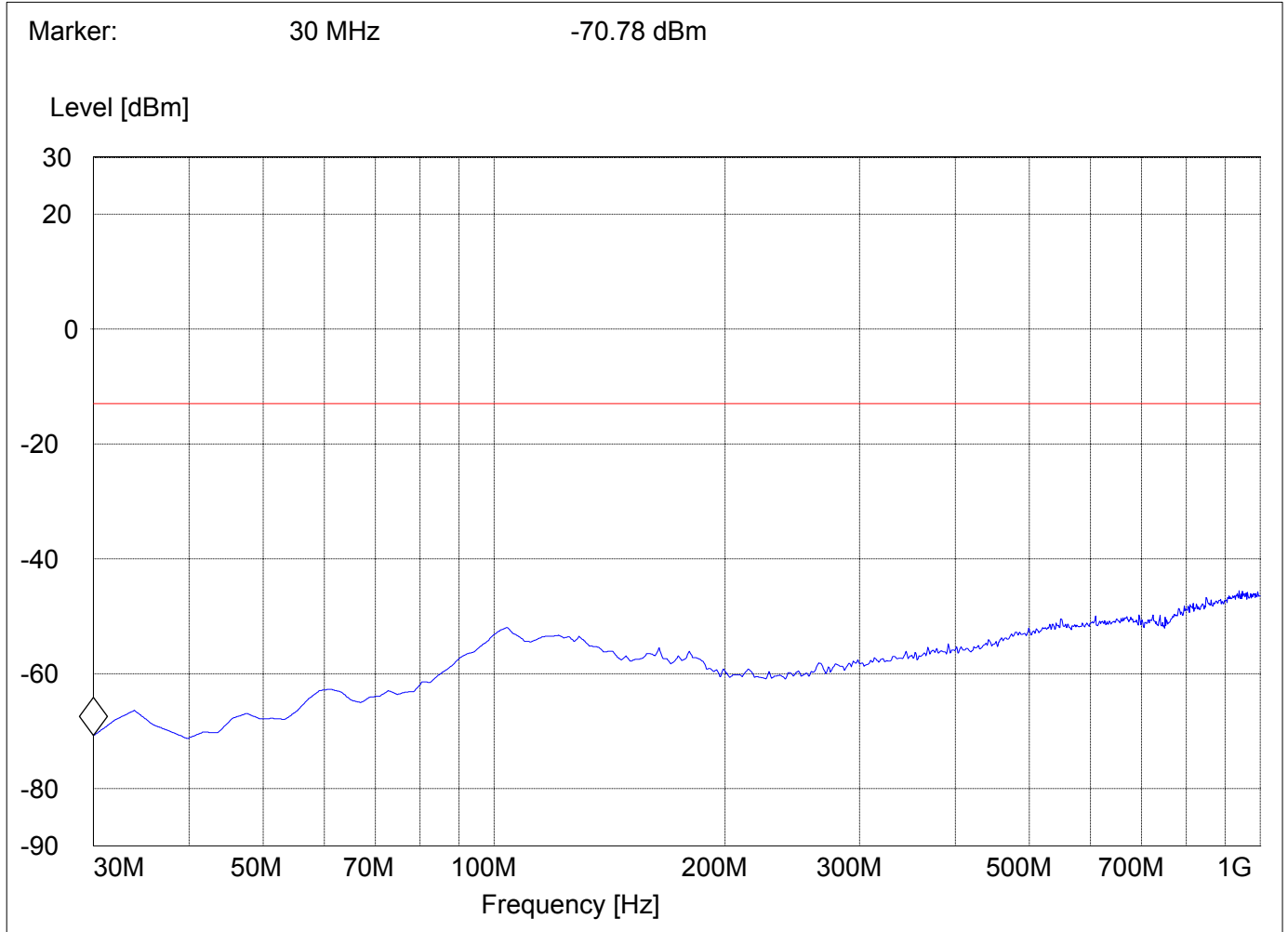
RADIATED SPURIOUS EMISSIONS

EUT in Idle Mode: 30MHz – 1GHz

Spurious emission limit -13dBm

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

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



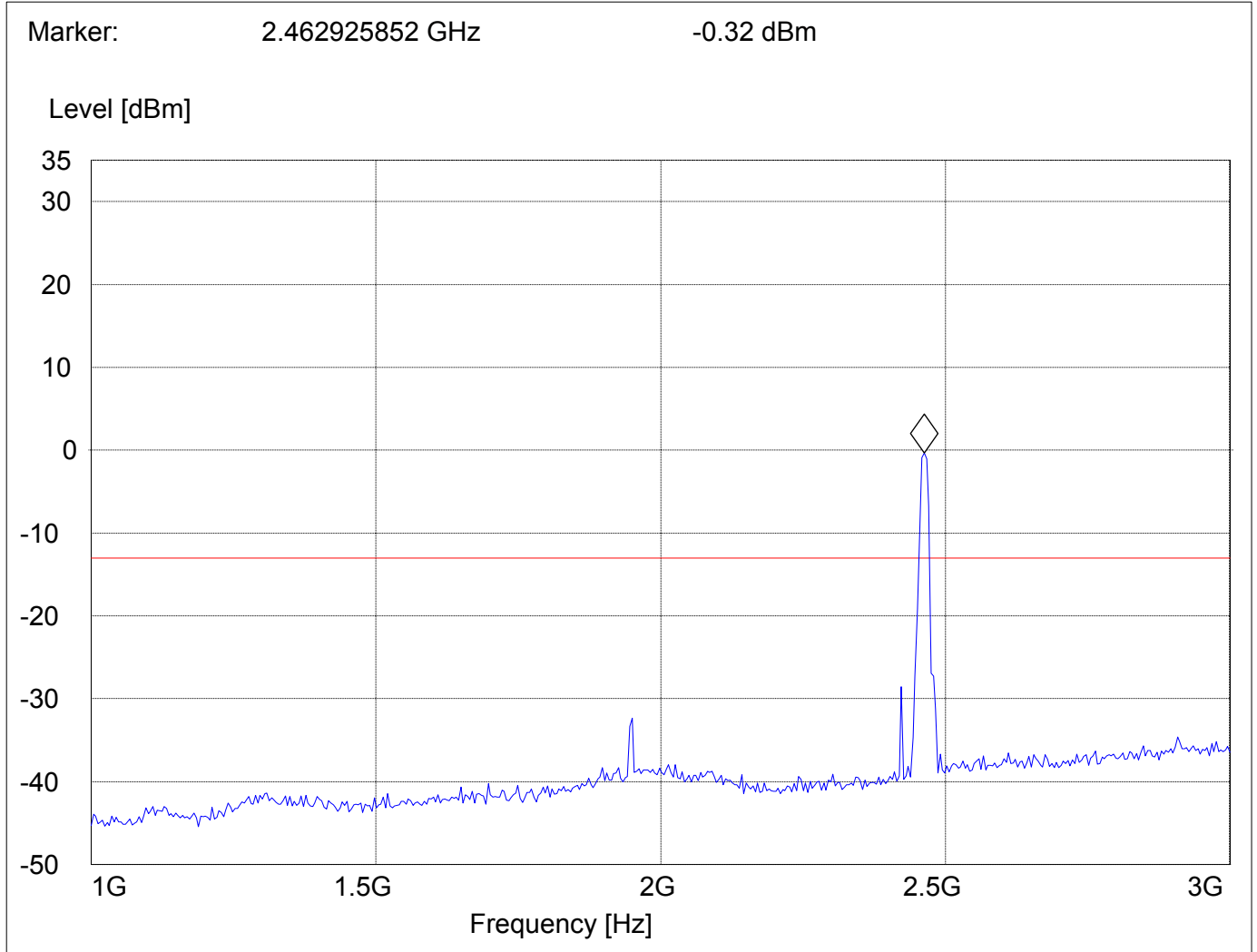
RADIATED SPURIOUS EMISSIONS

EUT in Idle Mode: 1GHz – 3GHz

Spurious emission limit -13dBm

SWEEP TABLE: "FCC Spuri 1-8G"

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW/VBW |
|-----------------|----------------|----------|------------|---------|
| 1GHz | 8GHz | Max Peak | Coupled | 1 MHz |



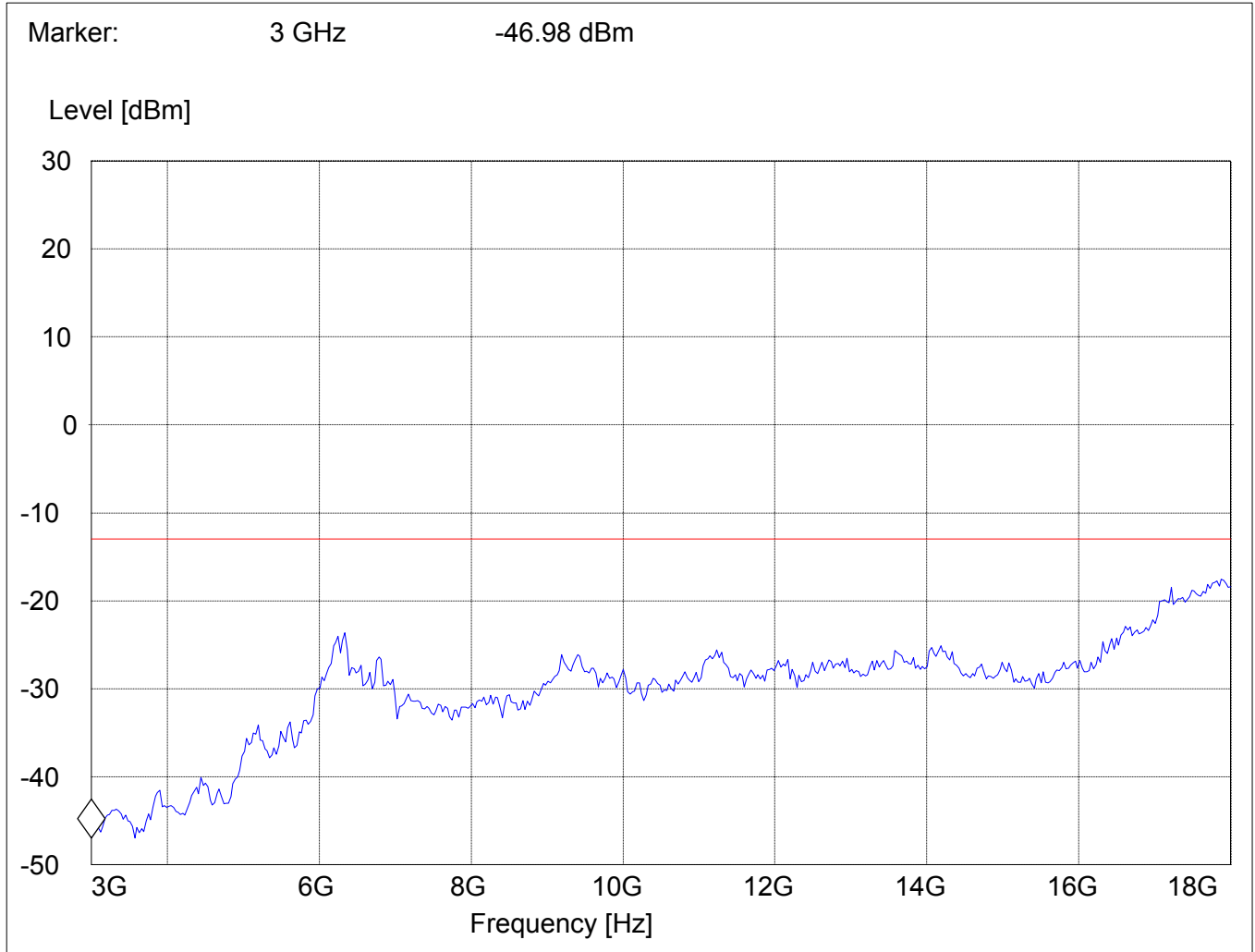
RADIATED SPURIOUS EMISSIONS

EUT in Idle Mode: 3GHz – 18GHz

Spurious emission limit -13dBm

SWEEP TABLE: "FCC 24 spuri 8-18G"

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW/VBW |
|-----------------|----------------|----------|------------|---------|
| 8GHz | 18GHz | Max Peak | Coupled | 1 MHz |



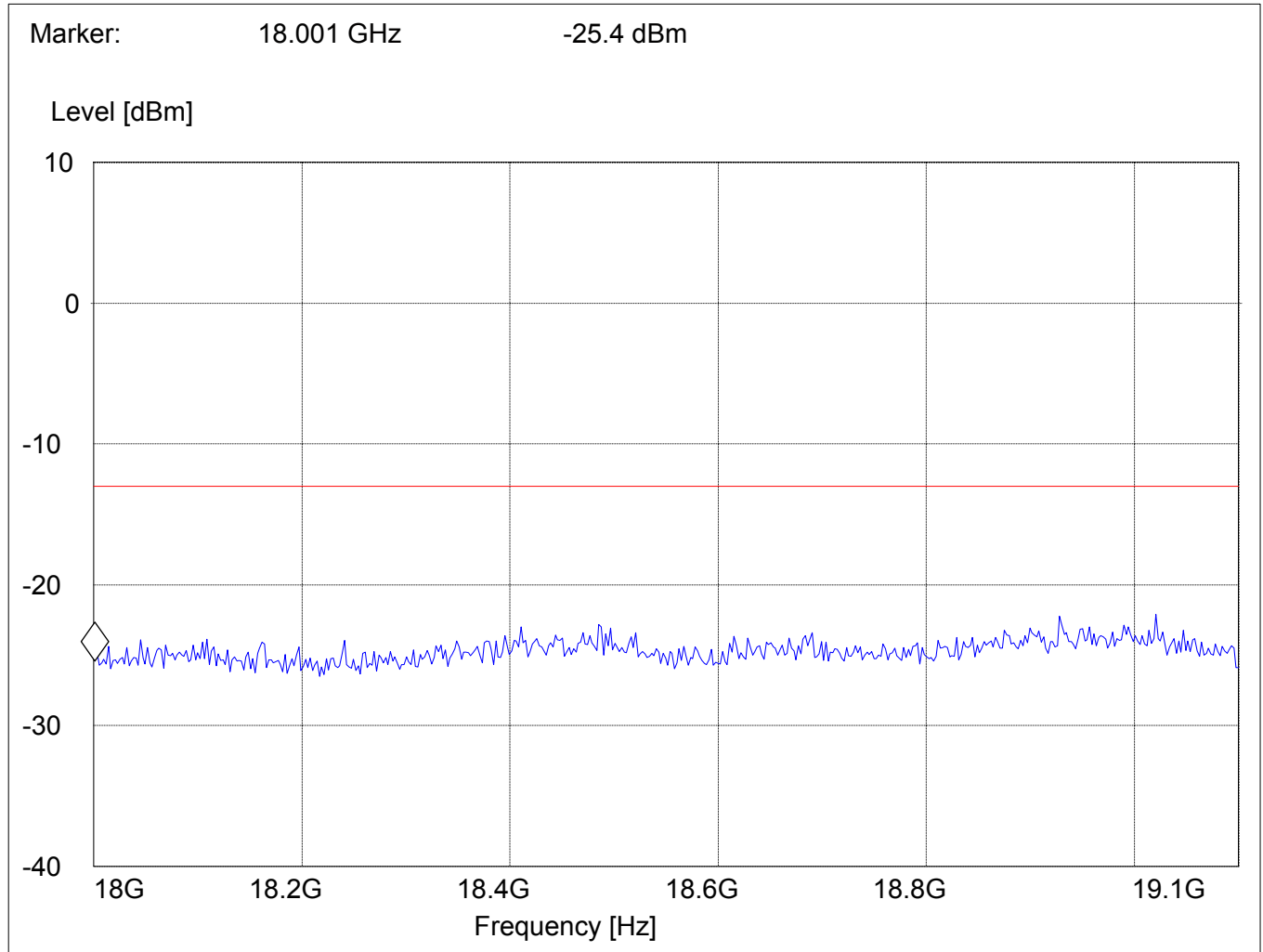
RADIATED SPURIOUS EMISSIONS

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 |



RECEIVER RADIATED EMISSIONS**§ 2.1053 / RSS-133**

NOTE: 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 18GHz and 19.1GHz very short cable connections to the antenna was used to minimize the noise level.

Limits**SUBCLAUSE § 15.209**

| Frequency (MHz) | Field strength ($\mu\text{V/m}$) | 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 |

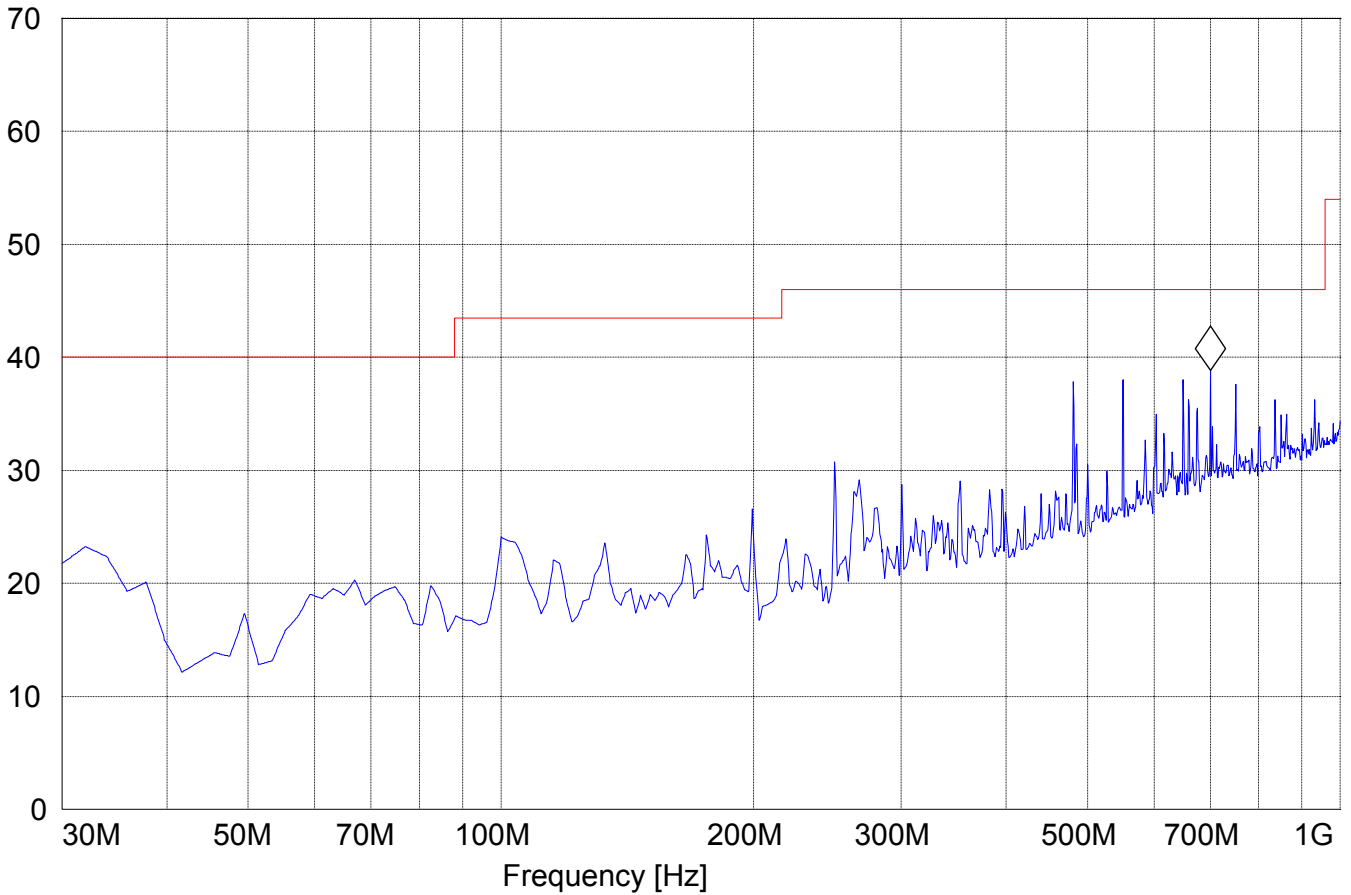
RECEIVER RADIATED EMISSIONS
EUT in Idle Mode: 30MHz – 1GHz

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

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW/VBW |
|-----------------|----------------|----------|------------|---------|
| 30MHz | 1GHz | Max Peak | Coupled | 100KHz |

Marker: 700.641283 MHz 38.86 dBμV/m

Level [dBμV/m]

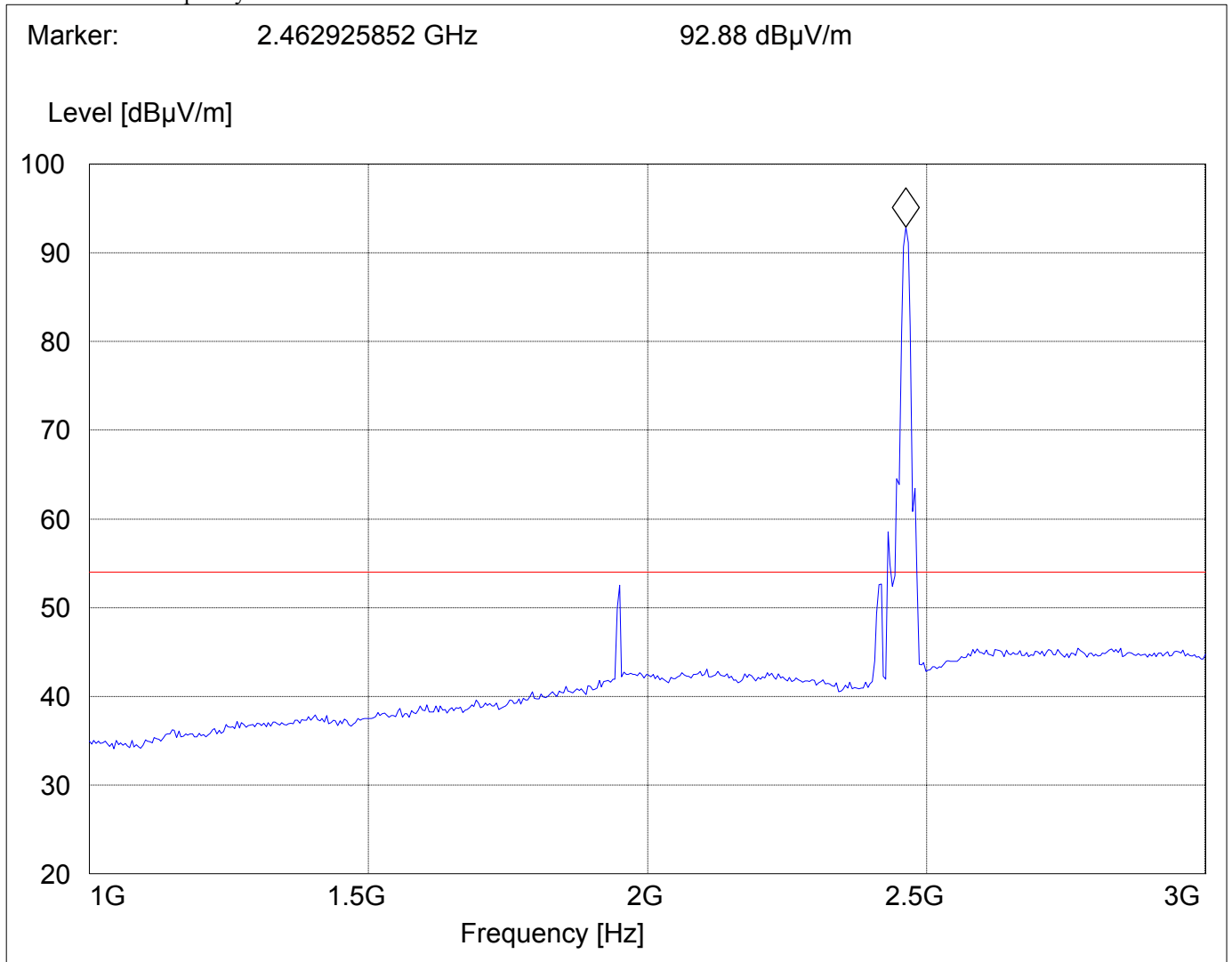


RECEIVER RADIATED EMISSIONS
EUT in Idle Mode: 1GHz – 3GHz

SWEEP TABLE: "FCC Spuri 1-8G"

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW/VBW |
|-----------------|----------------|----------|------------|---------|
| 1GHz | 8GHz | Max Peak | Coupled | 1 MHz |

Note: Marked frequency is the Wireless LAN built in EUT and WLAN never shuts off.



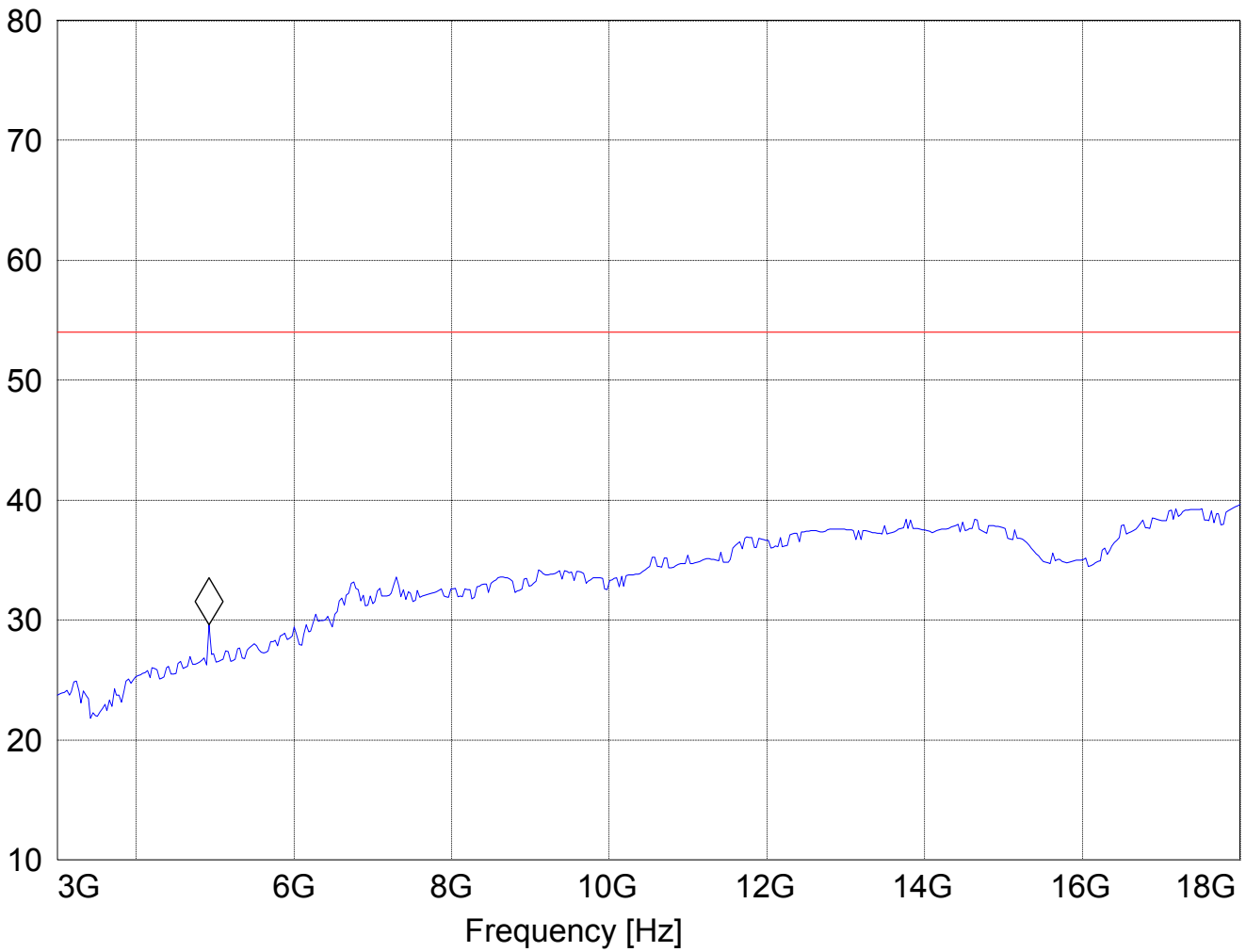
RECEIVER RADIATED EMISSIONS
EUT in Idle Mode: 3GHz – 18GHz

SWEEP TABLE: "FCC 24 spuri 8-18G"

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW/VBW |
|-----------------|----------------|----------|------------|---------|
| 8GHz | 18GHz | Max Peak | Coupled | 1 MHz |

Marker: 4.923847695 GHz 29.6 dB μ V/m

Level [dB μ V/m]



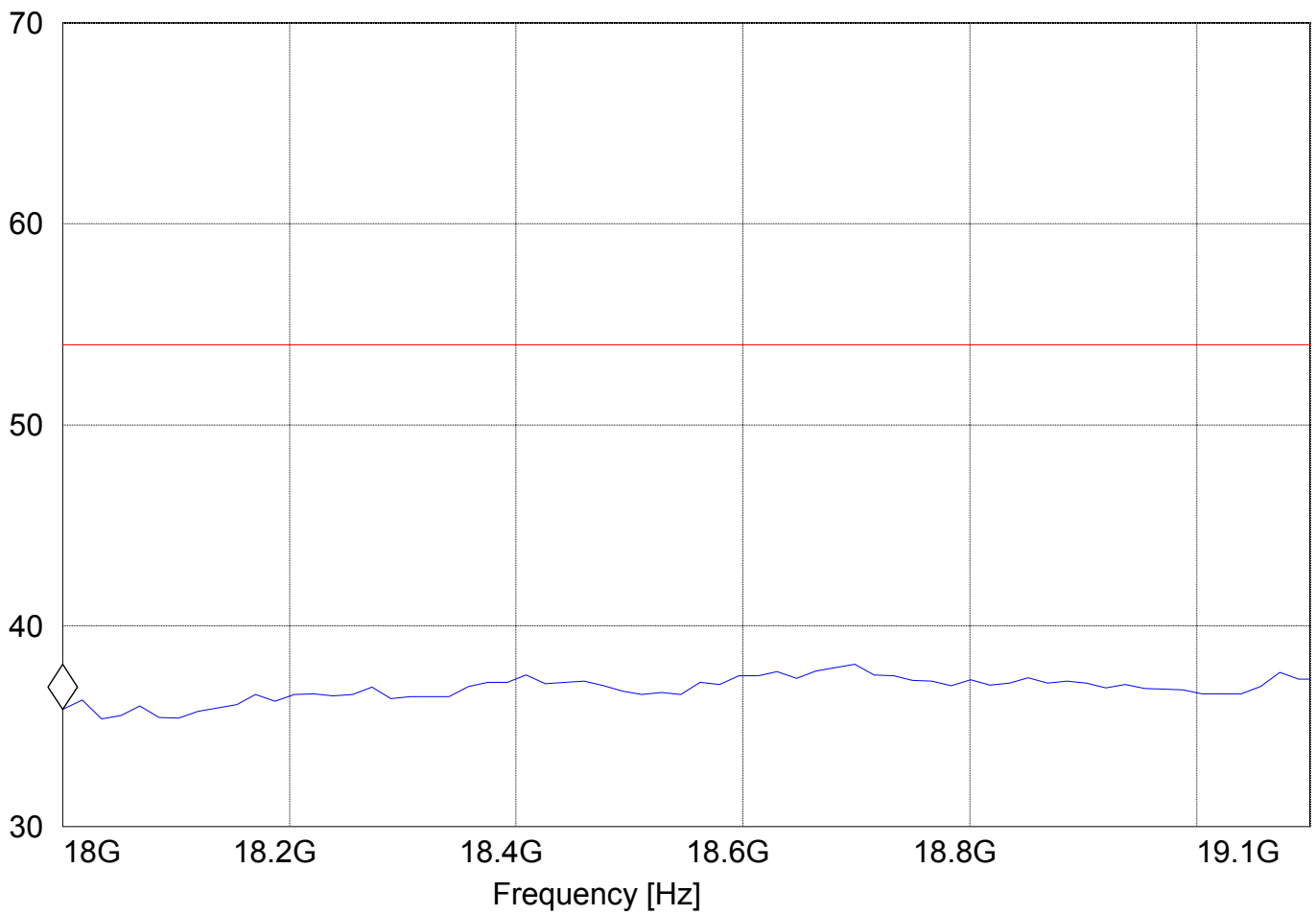
RECEIVER RADIATED EMISSIONS
EUT in Idle Mode: 18GHz – 19.1GHz

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 |

Marker: 18 GHz 35.82 dB μ V/m

Level [dB μ V/m]



CONDUCTED EMISSIONS**§ 15.107/207**

Measured with AC/DC power adapter

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 = 10KHz

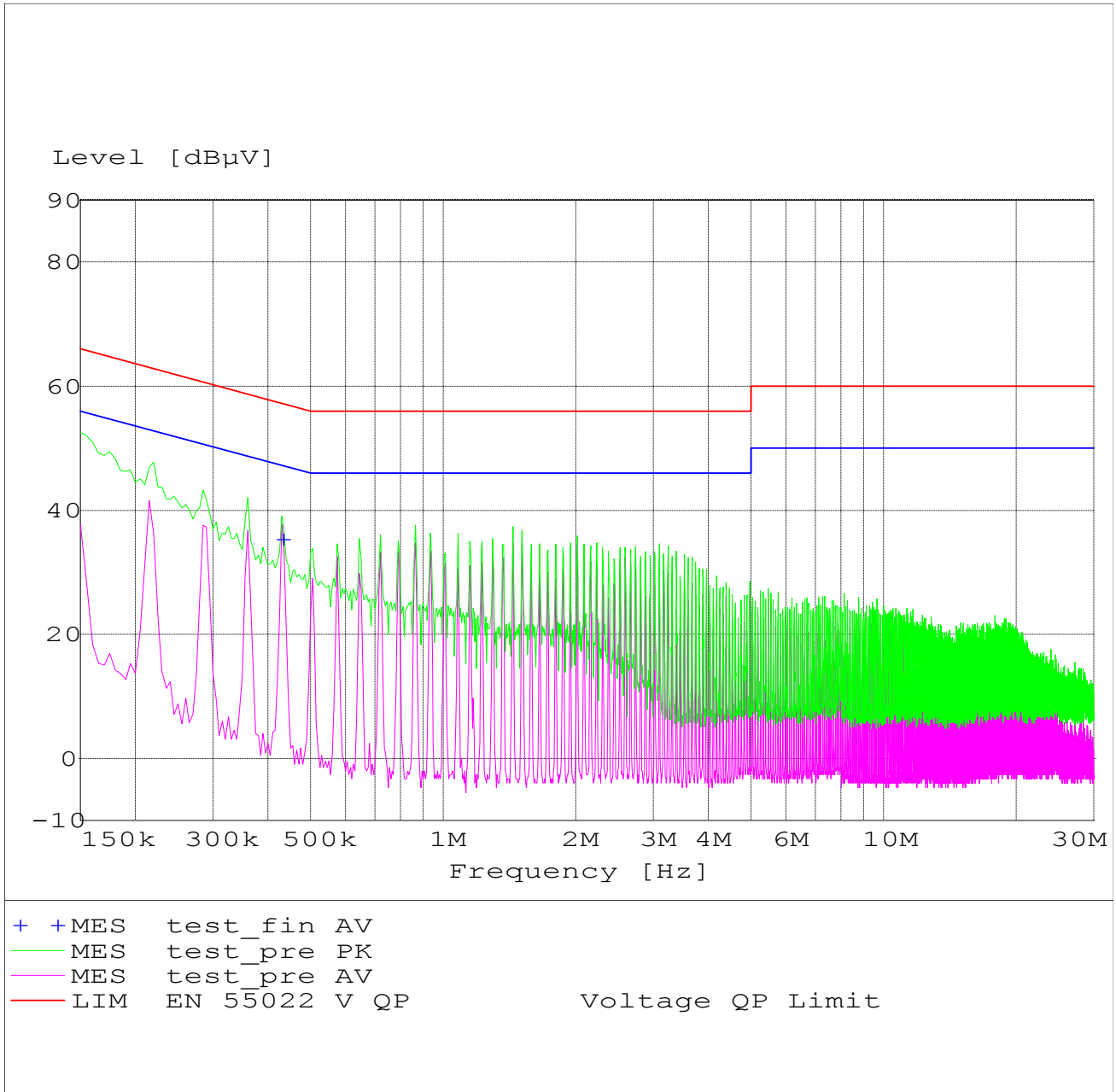
VBW = 10KHz

MEASUREMENT RESULT: "vol_0001_fin QP"

4/7/03 2:40PM

| Frequency MHz | Level dB μ V | Transd dB | Limit dB μ V | Margin dB | Line | PE |
|------------------|---------------------|--------------|---------------------|--------------|------|----|
|------------------|---------------------|--------------|---------------------|--------------|------|----|

| | | | | | | |
|----------|-------|-----|----|------|----|-----|
| 0.430000 | 35.30 | 0.0 | 47 | 12.0 | L1 | GND |
|----------|-------|-----|----|------|----|-----|



TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

| No | Instrument/Ancillary | Type | Manufacturer | Serial No. |
|----|------------------------------|--------------|--------------------|--------------|
| 01 | Spectrum Analyzer | ESIB 40 | Rohde & Schwarz | 100107 |
| 02 | Spectrum Analyzer | FSEM 30 | Rohde & Schwarz | 826880/010 |
| 03 | Signal Generator | SMY02 | Rohde & Schwarz | 836878/011 |
| 04 | Power-Meter | NRVD | Rohde & Schwarz | 0857.8008.02 |
| 05 | Power Amplifier | 250W1000 | Amplifier Research | 300031 |
| 06 | Biconilog Antenna | 3141 | EMCO | 0005-1186 |
| 07 | Horn Antenna | SAS-200/571 | AH Systems | 325 |
| 08 | Power Splitter | 11667B | Hewlett Packard | 645348 |
| 09 | Climatic Chamber | VT4004 | Votch | G1115 |
| 10 | Pre-Amplifier | JS4-00102600 | Miteq | 00616 |
| 11 | Power Sensor | URV5-Z2 | Rohde & Schwarz | DE30807 |
| 12 | Universal Radio Comm. Tester | CMU 200 | Rohde & Schwarz | 832221/06 |

Radiated Testing

ANECHOIC CHAMBER

