



FCC Test Report

Test report no.: EMC_678FCC22-24_2004_GSM_129

FCC Part 22, 24 / RSS 132, 133

EUT Tablet PC Model: iX104-TM60+2200+MC56

With

BT Module Model: TM60M665

WLAN Model: 2200BG

GSM Module Model: MC56

FCC ID: Q2GIX104-129

IC: 4596A-iX104WBG



TTI-P-G 081/94-A0

Accredited according to ISO/IEC 17025



Bluetooth Qualification
Test Facility
(BQTF)

CTIA Authorized Test Lab

FCC listed # 101450

IC recognized # 3925

CETECOM Inc.

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Table of Contents

- 1 General information**
 - 1.1 Notes**
 - 1.2 Testing laboratory**
 - 1.3 Details of applicant**
 - 1.4 Application details**
 - 1.5 Test item**
 - 1.6 Test standards**
- 2 Technical test**
 - 2.1 Summary of test results**
 - 2.2 Test report**
- 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: Harpreet Sidhu****1.2 Testing laboratory**

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1.3 Details of applicant

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Country : USA
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Telephone : +1 512 336 7797
Tele-fax : +1 512 336 7791
e-mail : dfowler@xploretech.com

1.4 Application details

Date of receipt test item : 2004-06-21
Date of test : 2004-06-21/22/23

1.5 Test item

Manufacturer : Applicant
Marketing Name : iX104-TM60+2200+MC56
Model No. : iX104-TM60+2200+MC56
Description : [Tablet PC with BT, WLAN & GSM modules](#)
FCC-ID : Q2GIX104-129
IC ID : 4596A-iX104WBG

Additional information

Test sample ID : PARIS for 1900 band, TROY for 850 band
Frequency : 824.2MHz – 848.8MHz for GSM 850,
1850.2MHz – 1909.8MHz for PCS 1900
Type of modulation : GMSK
Number of channels : 124 for GSM-850, 299 for PCS-1900
Antenna : Embedded
Power supply : via host Tablet PC
Output power : 30.35dBm (1.085W) max. ERP measured in GSM-850
27.28dBm (534.56mW) max. EIRP measured in PCS-1900
Extreme temp. Tolerance : Lower: -30°C Upper: +50°C

1.6 Test standards

FCC Part 22, 24 / RSS 132,133 r1

Note: All radiated measurements were made in all three orthogonal planes. The values reported are the maximum values.

[The Tablet PC \(model# iX104-TM60\) carries pre-certified GSM module model# MC56 with FCC ID: QIPMC56](#)
[This test report only covers full radiated testing as per FCC 22/24 on Tablet PC with GSM module. All conducted measurements are covered under test report# 2_3450-01-01/03](#)

[For BT test results refer to test report# EMC_678FCC15.247_2004_BT_129](#)

[For WLAN test results refer to test report# EMC_678FCC15.247_2004_WLAN_129](#)

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 |

Technical responsibility for area of testing:

2004-07-14 EMC & Radio Lothar Schmidt (Manager)

**Date****Section****Name****Signature****Responsible for test report and project leader:**

2004-07-14 EMC & Radio Harpreet Sidhu (EMC Engineer)

**Date****Section****Name****Signature**

2.2 Test report

TEST REPORT

Test report no.: EMC_678FCC22-24_2004_GSM_129

TEST REPORT REFERENCE

| PARAMETER TO BE MEASURED | PARAGRAPH | PAGE |
|--|----------------------------------|-------------|
| POWER OUTPUT | §22.913(a) / § 24.232 (b) | 7 |
| EMISSION LIMITS TRANSMITTER | §2.1051 / §24.238 | 16 |
| RECEIVER RADIATED EMISSIONS | §2.1053 / RSS-133 | 43 |
| CONDUCTED EMISSIONS | §15.107/207 | 49 |
| TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS | | 50 |
| BLOCK DIAGRAMS | | 51 |

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 average output power, peak output power, EIRP & ERP measurements for the EUT. 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

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

| Power Control Level | Burst Peak ERP |
|----------------------------|-----------------------|
| 5 | ≤38.45dBm (7W) |

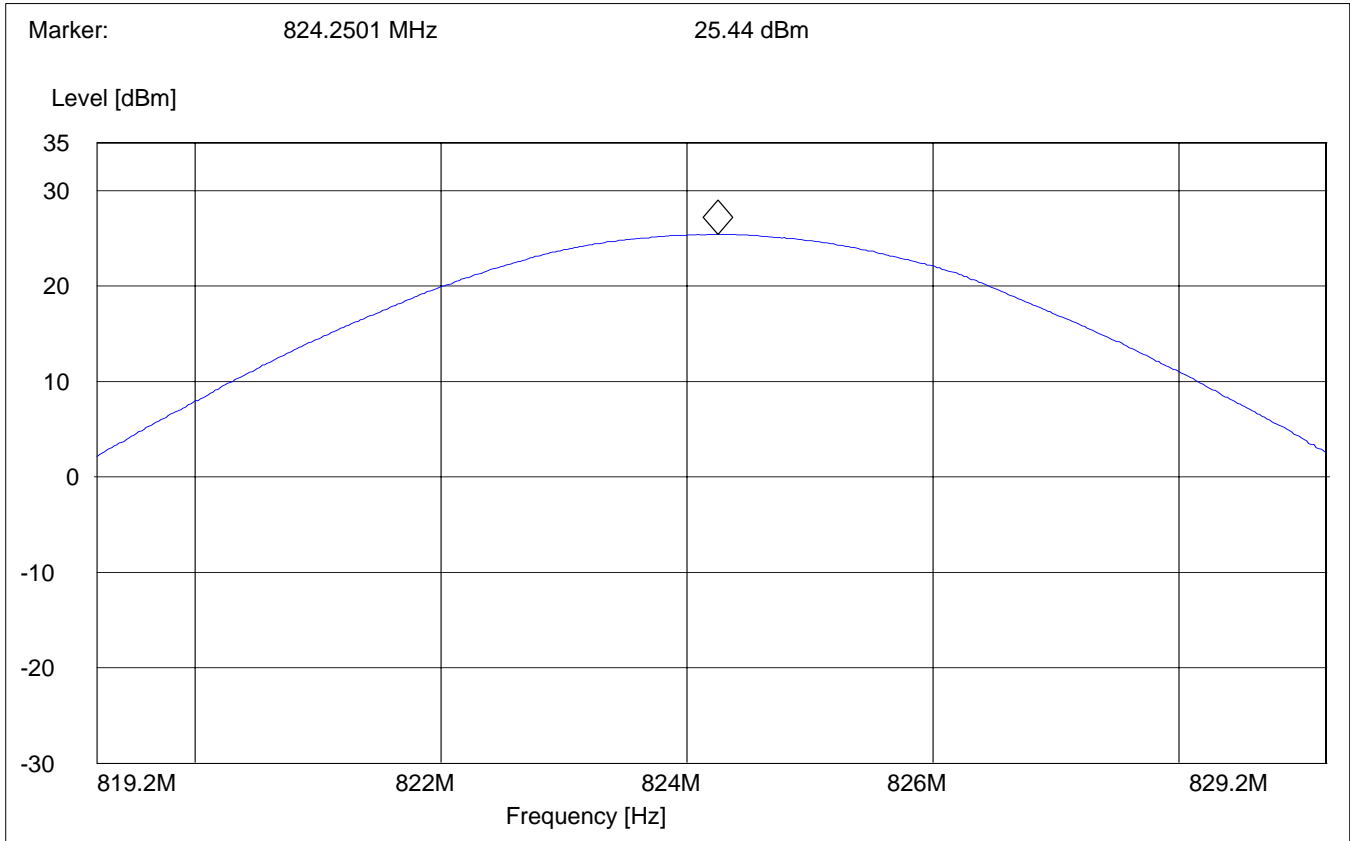
EIRP

| Frequency (MHz) | Power Control Level | Burst Peak (dBm) | |
|--------------------------------|----------------------------|-----------------------------|------------|
| | | EIRP | ERP |
| 824.2 | 5 | 25.44 | 23.30 |
| 836.6 | 5 | 28.76 | 26.62 |
| 848.8 | 5 | 32.49 | 30.35 |
| Measurement uncertainty | | ±0.5 dB | |

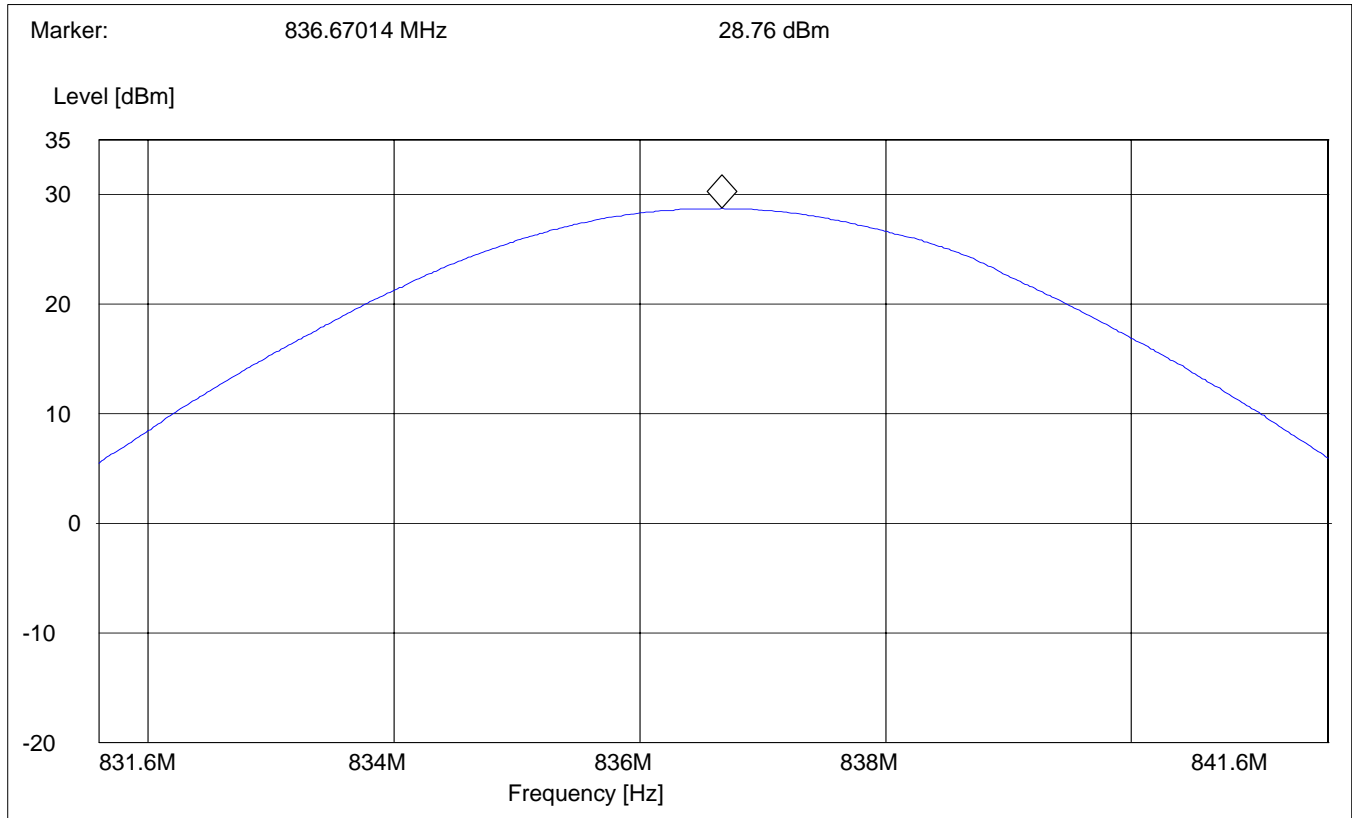
ANALYZER SETTINGS: RBW = VBW = 3MHz

EIRP (GSM-850)
CHANNEL 128

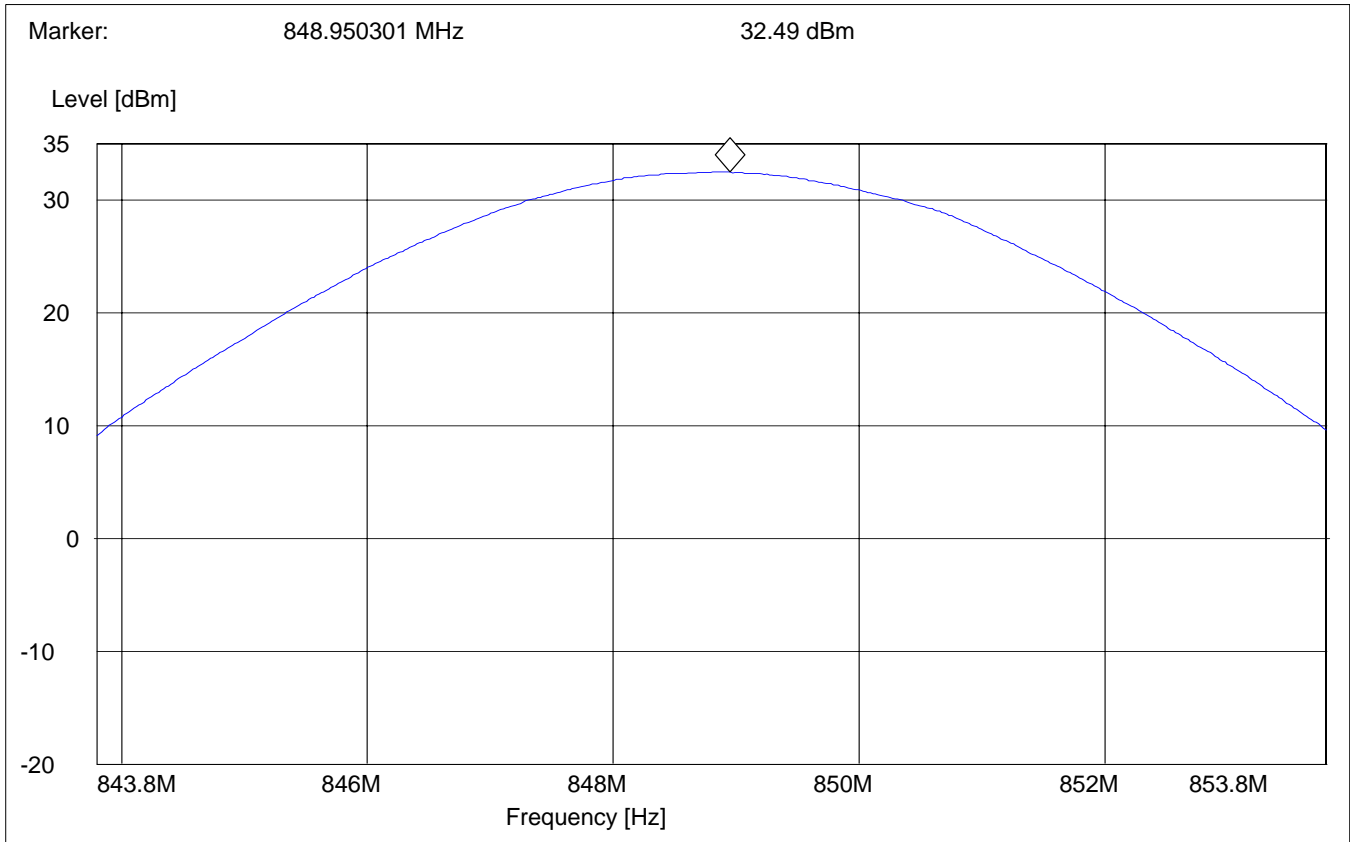
§22.913(a)



EIRP (GSM-850) §22.913(a)
CHANNEL 190



EIRP (GSM-850) §22.913(a)
CHANNEL 251



EIRP (PCS-1900) §24.232(b)**Limits:**

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

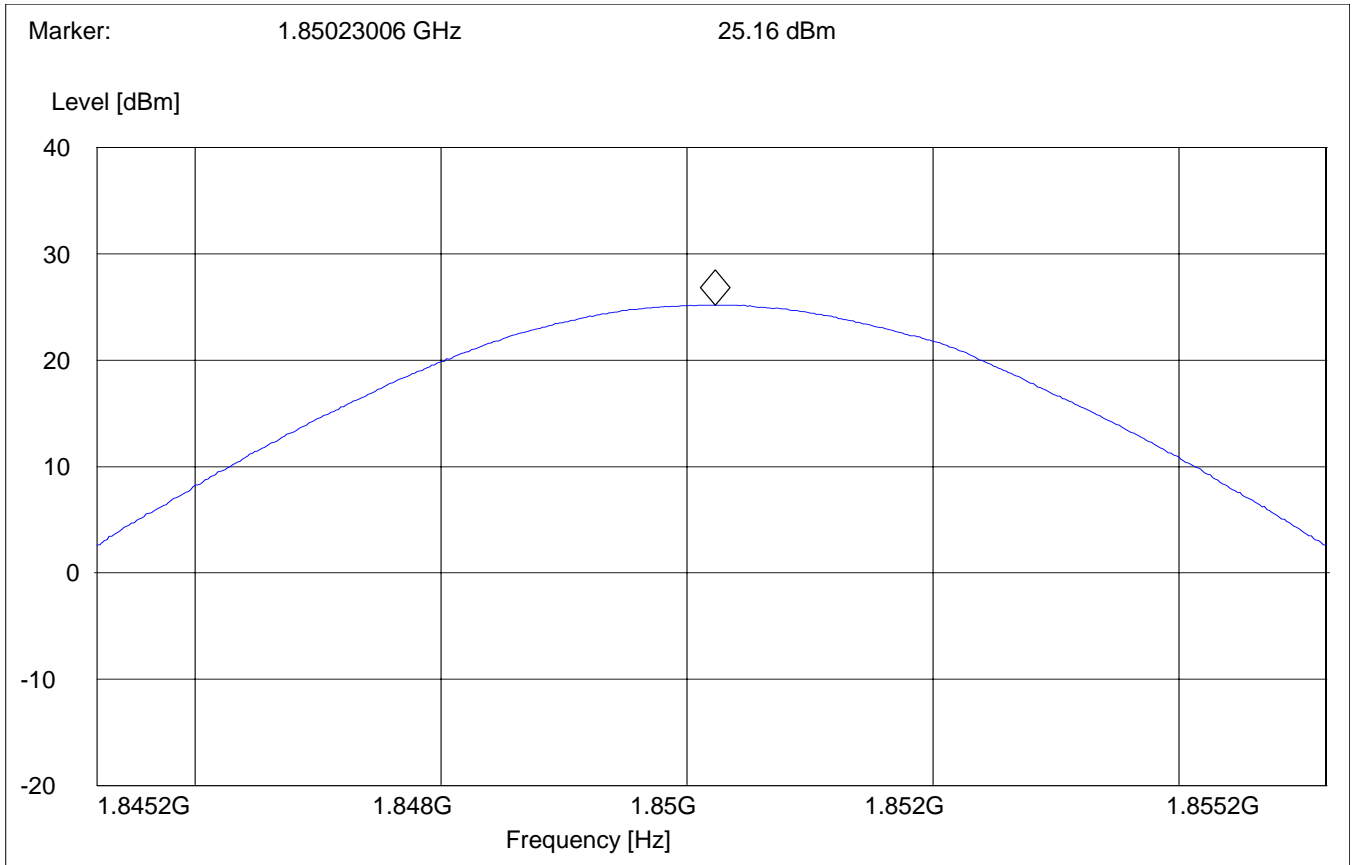
EIRP

| Frequency (MHz) | Power Control Level | Burst Peak (dBm) |
|--------------------------------|----------------------------|-----------------------------|
| | | EIRP |
| 1850.2 | 0 | 25.16 |
| 1880.0 | 0 | 27.12 |
| 1909.8 | 0 | 27.28 |
| Measurement uncertainty | | ±0.5 dB |

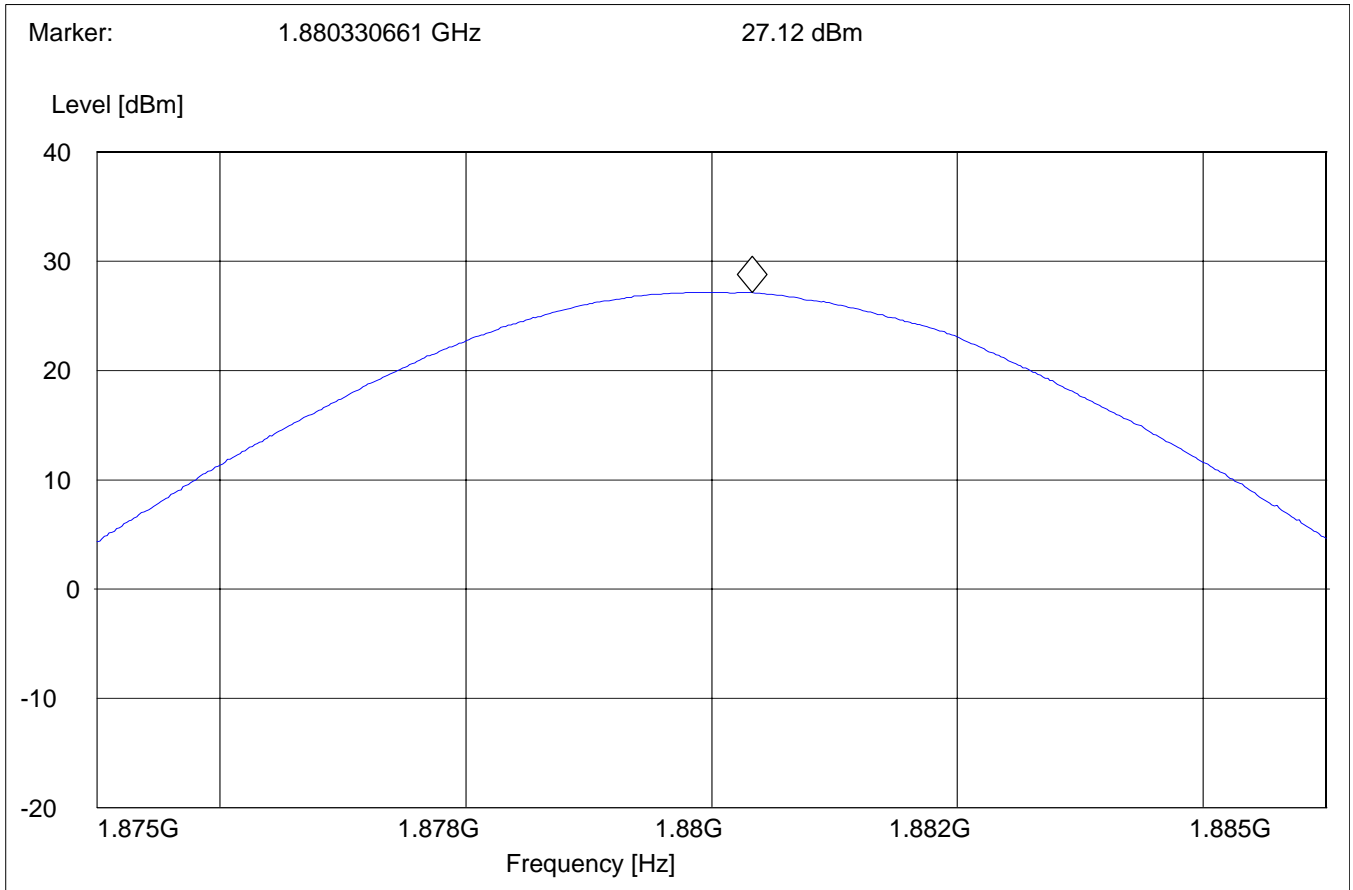
ANALYZER SETTINGS: RBW = VBW = 3MHz

**EIRP (PCS-1900)
CHANNEL 512**

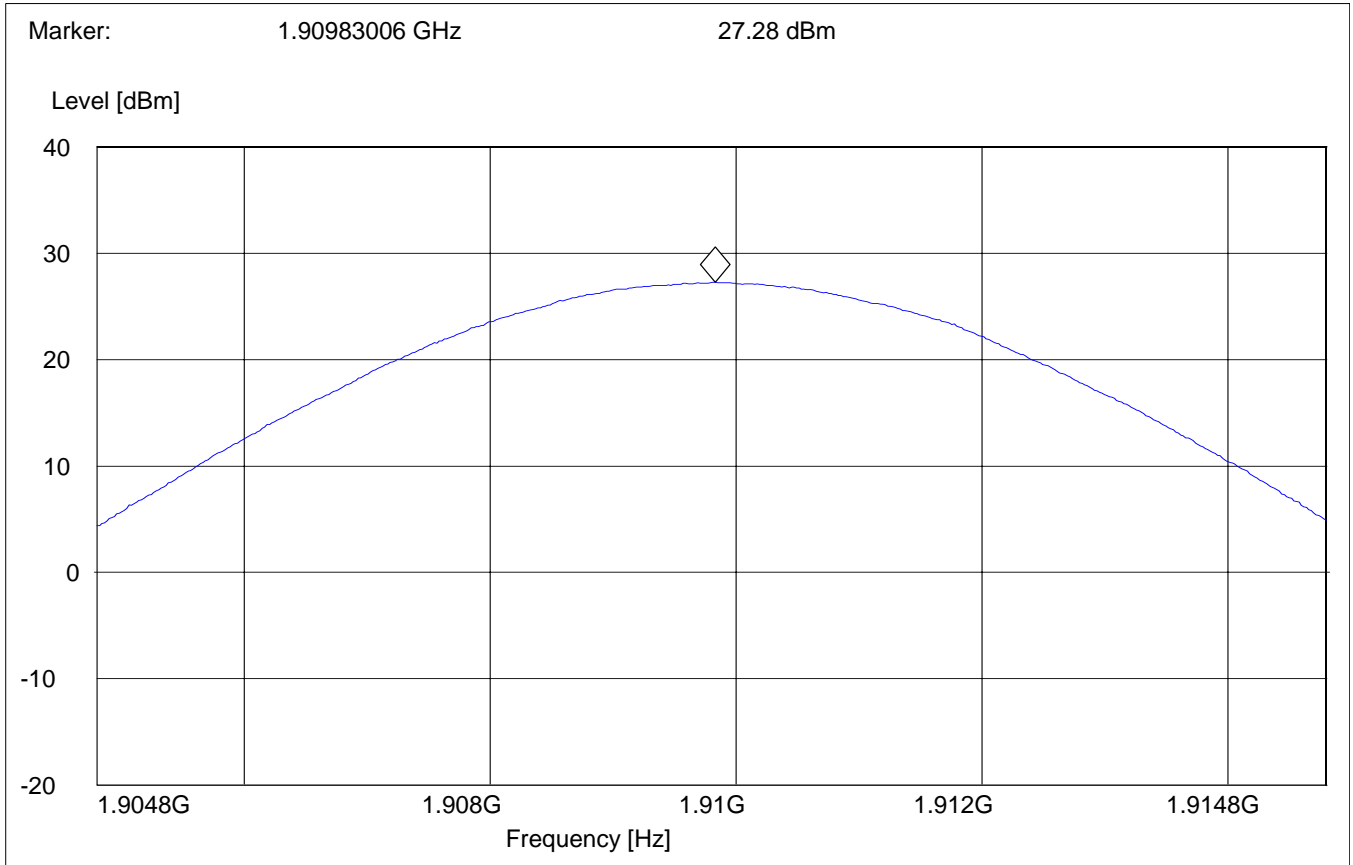
§24.232(b)



EIRP (PCS-1900) §24.232(b)
CHANNEL 661



EIRP (PCS-1900) §24.232(b)
CHANNEL 810



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 | nf | 1673.2 | -43.14 | 1697.6 | -37.55 |
| 3 | 2472.6 | nf | 2509.8 | -40.08 | 2546.4 | -33.51 |
| 4 | 3296.8 | -56.05 | 3346.4 | nf | 3395.2 | -53.36 |
| 5 | 4121 | -51.55 | 4183 | nf | 4244 | -54.13 |
| 6 | 4945.2 | nf | 5019.6 | -48.16 | 5092.8 | -43.76 |
| 7 | 5769.4 | nf | 5856.2 | nf | 5941.6 | -45.44 |
| 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

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

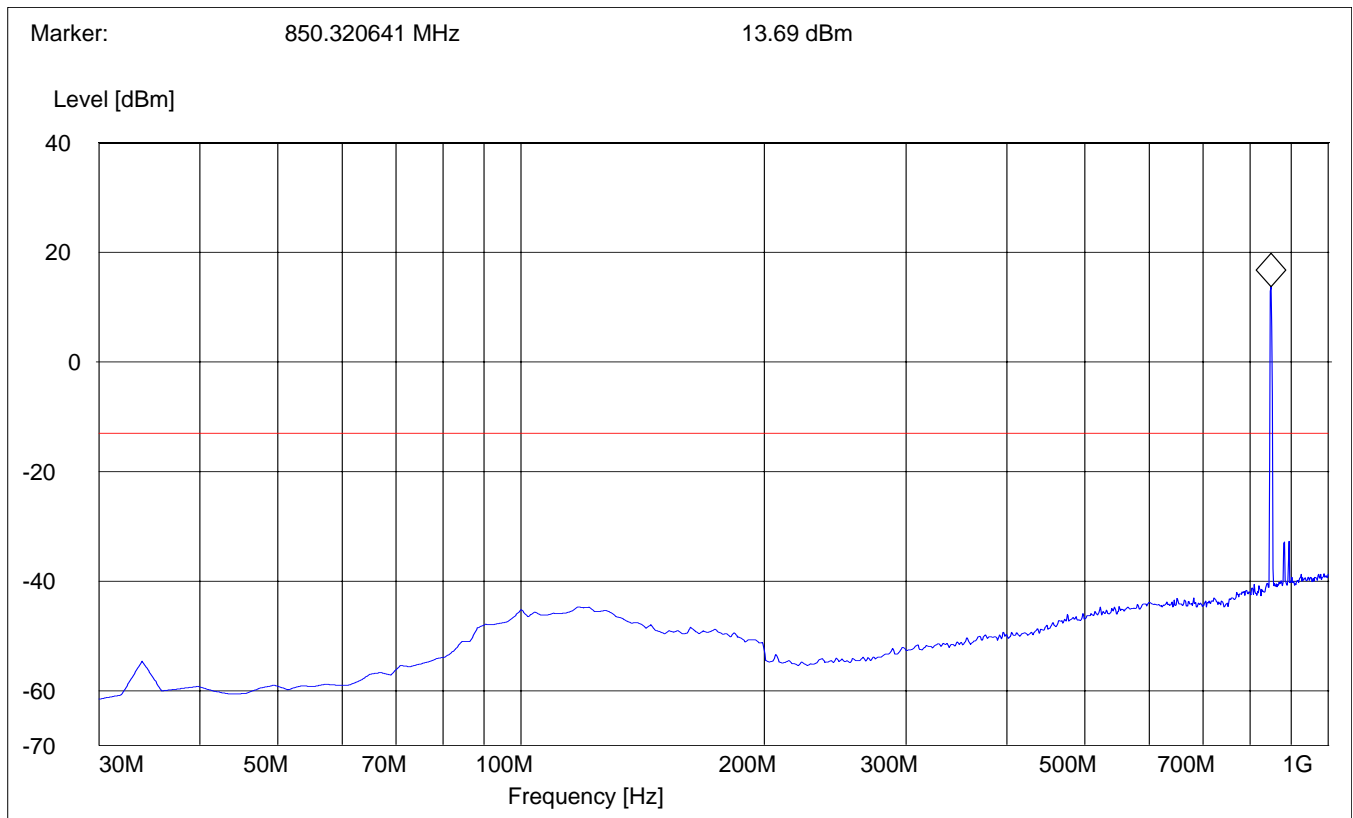
Spurious emission limit -13dBm

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

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



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

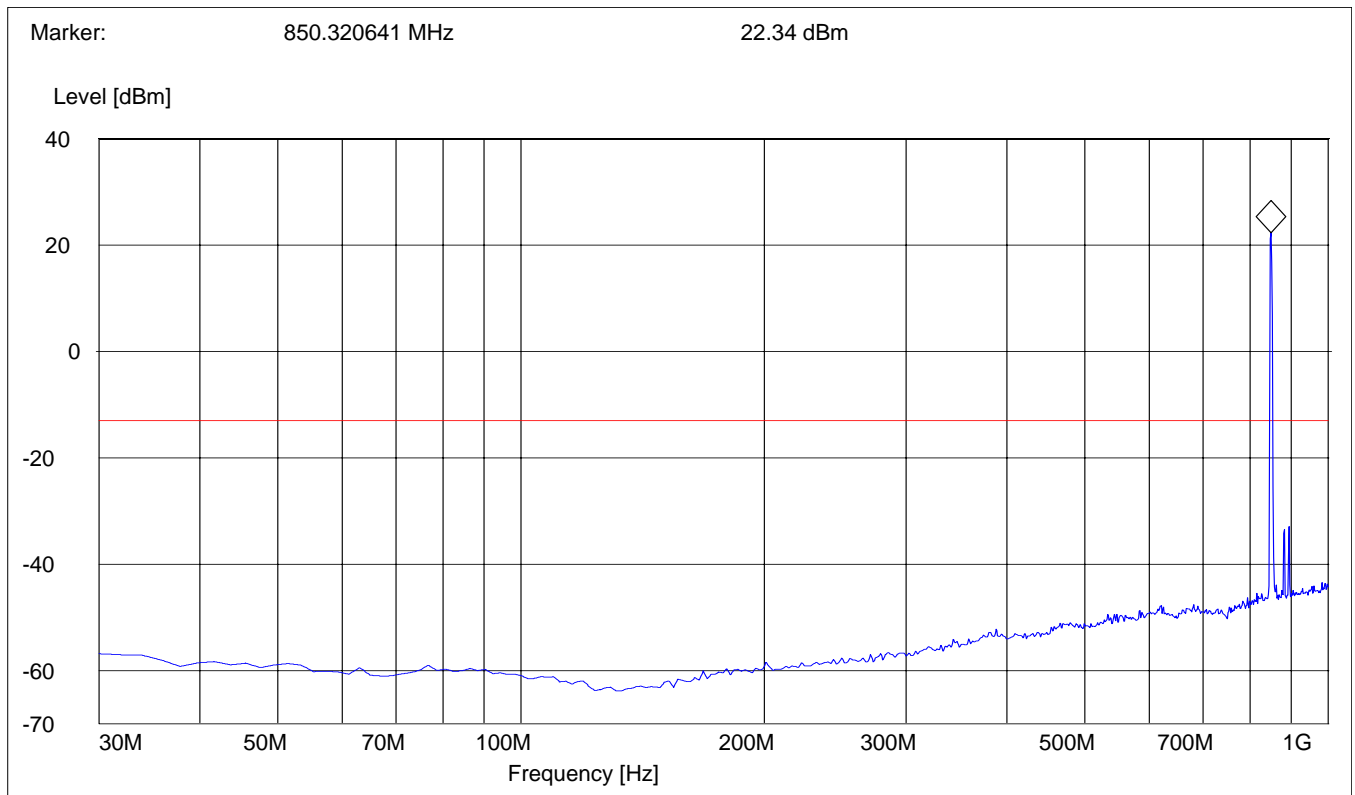
Spurious emission limit -13dBm

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

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

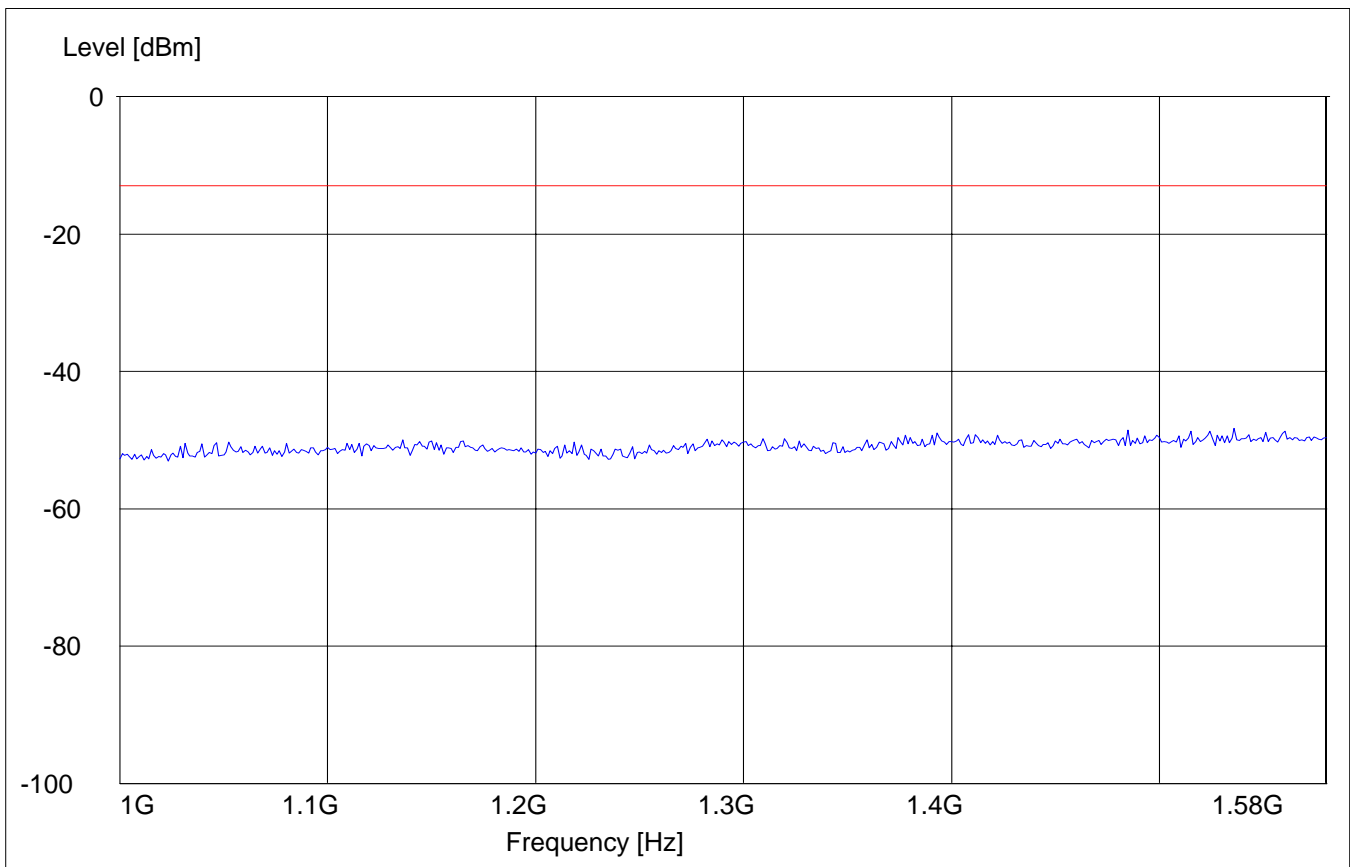


RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 824.2MHz: 1GHz – 1.58GHz**

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 |

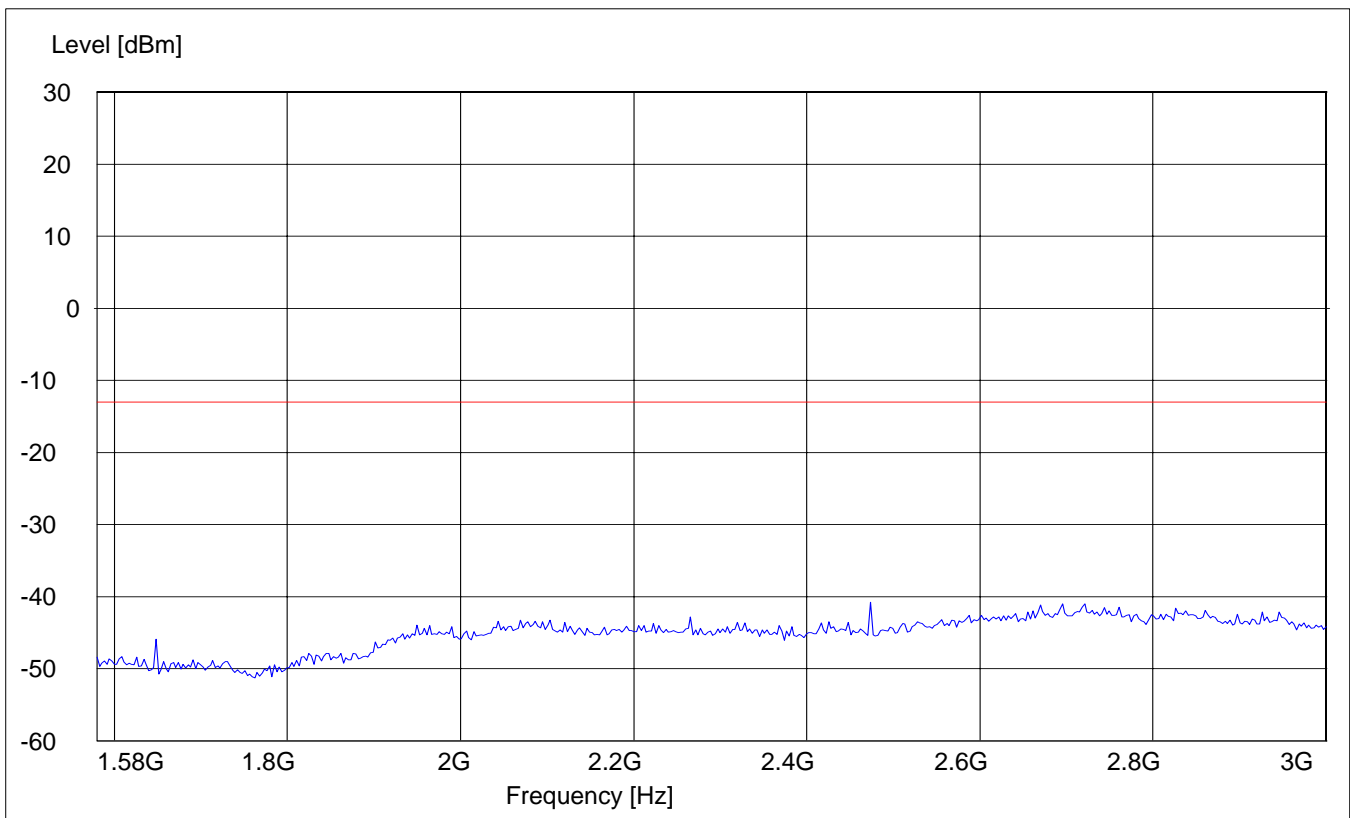


RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 824.2MHz: 1.58GHz – 3GHz**

Spurious emission limit -13dBm

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

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

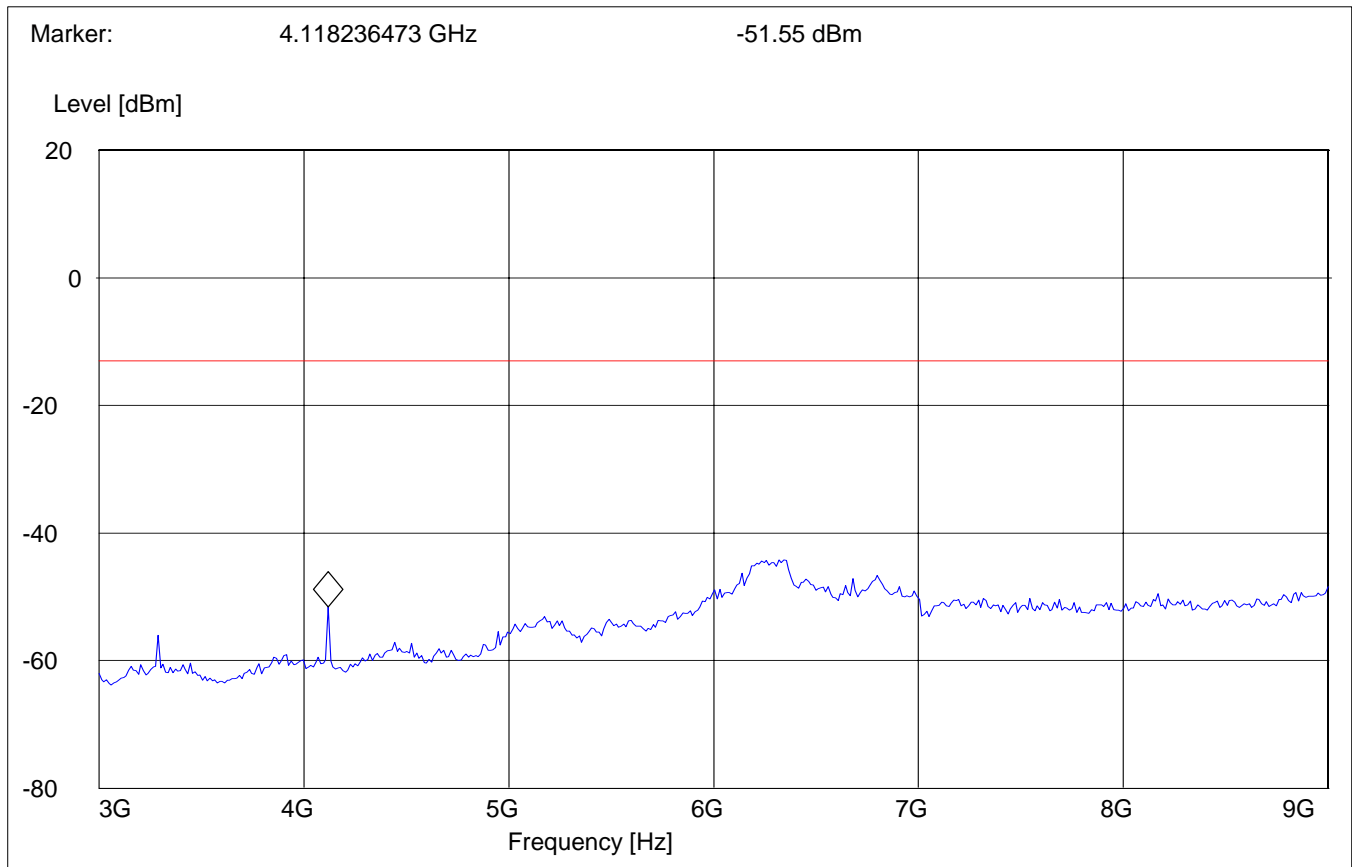


RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 824.2MHz: 3GHz – 9GHz**

Spurious emission limit -13dBm

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

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

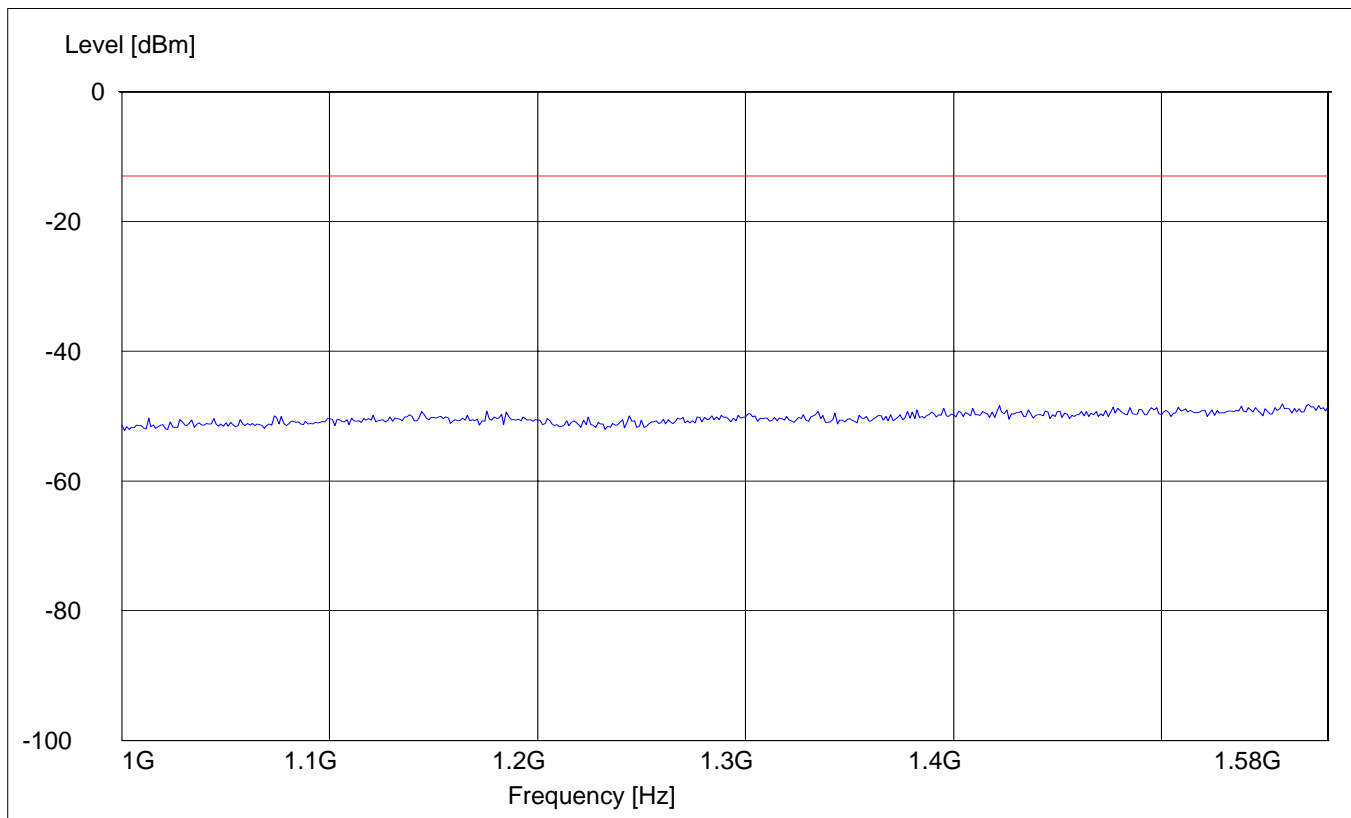


RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 836.6MHz: 1GHz – 1.58GHz**

Spurious emission limit -13dBm

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

| <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 | 1.58GHz | Max Peak | Coupled | 1 MHz |

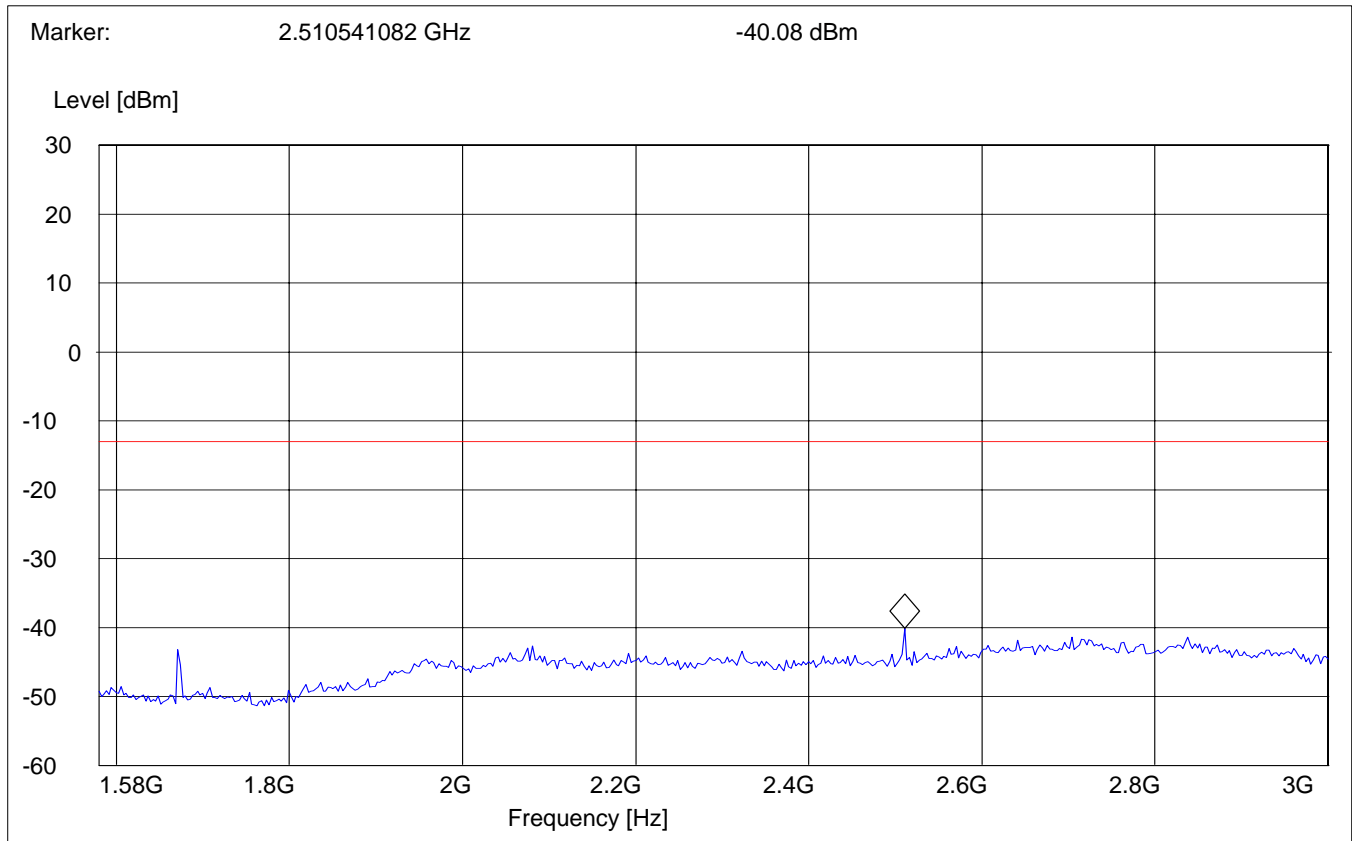


RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 836.6MHz: 1.58GHz – 3GHz**

Spurious emission limit -13dBm

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

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

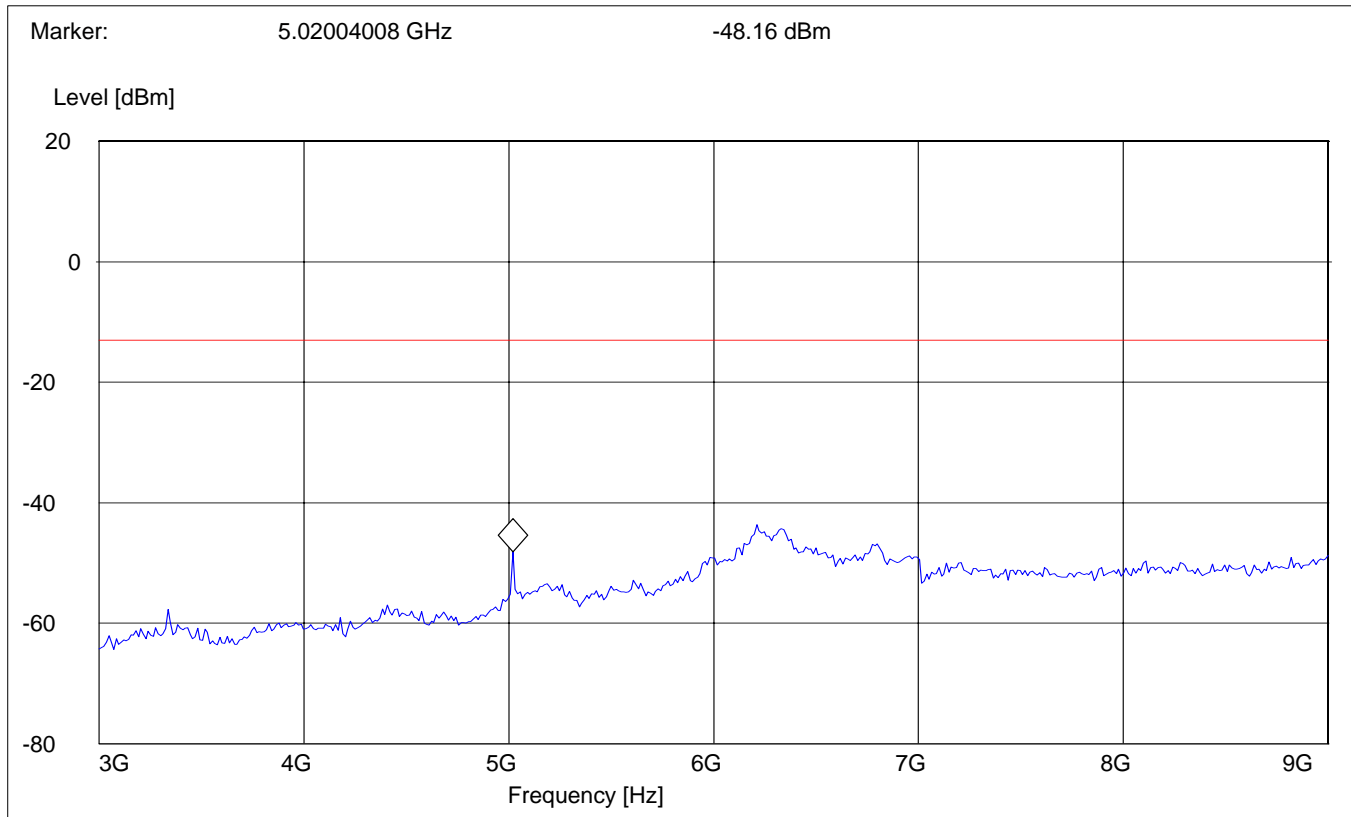


RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 836.6MHz: 3GHz – 9GHz**

Spurious emission limit -13dBm

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

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

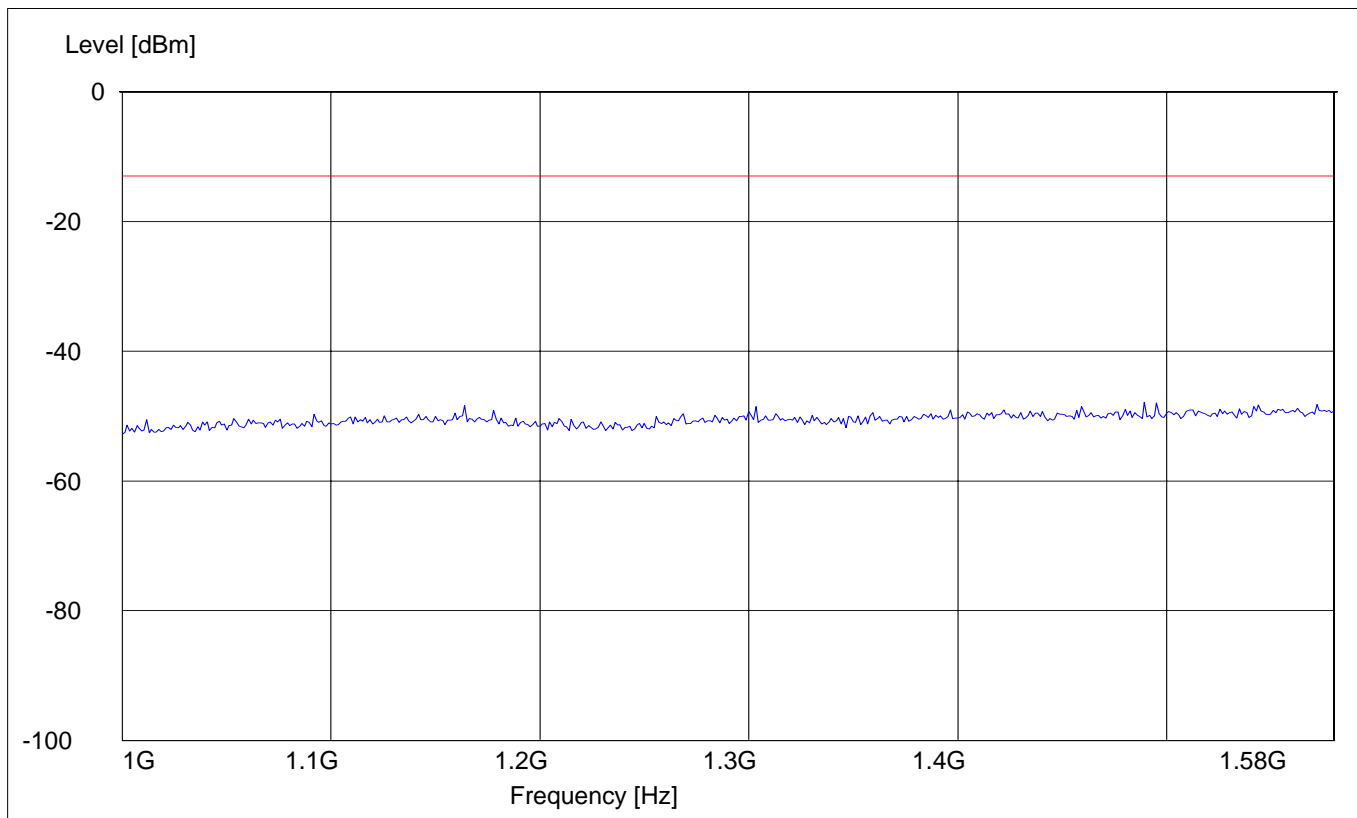


RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 848.8MHz: 1GHz – 1.58GHz**

Spurious emission limit -13dBm

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

| <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 | 1.58GHz | Max Peak | Coupled | 1 MHz |

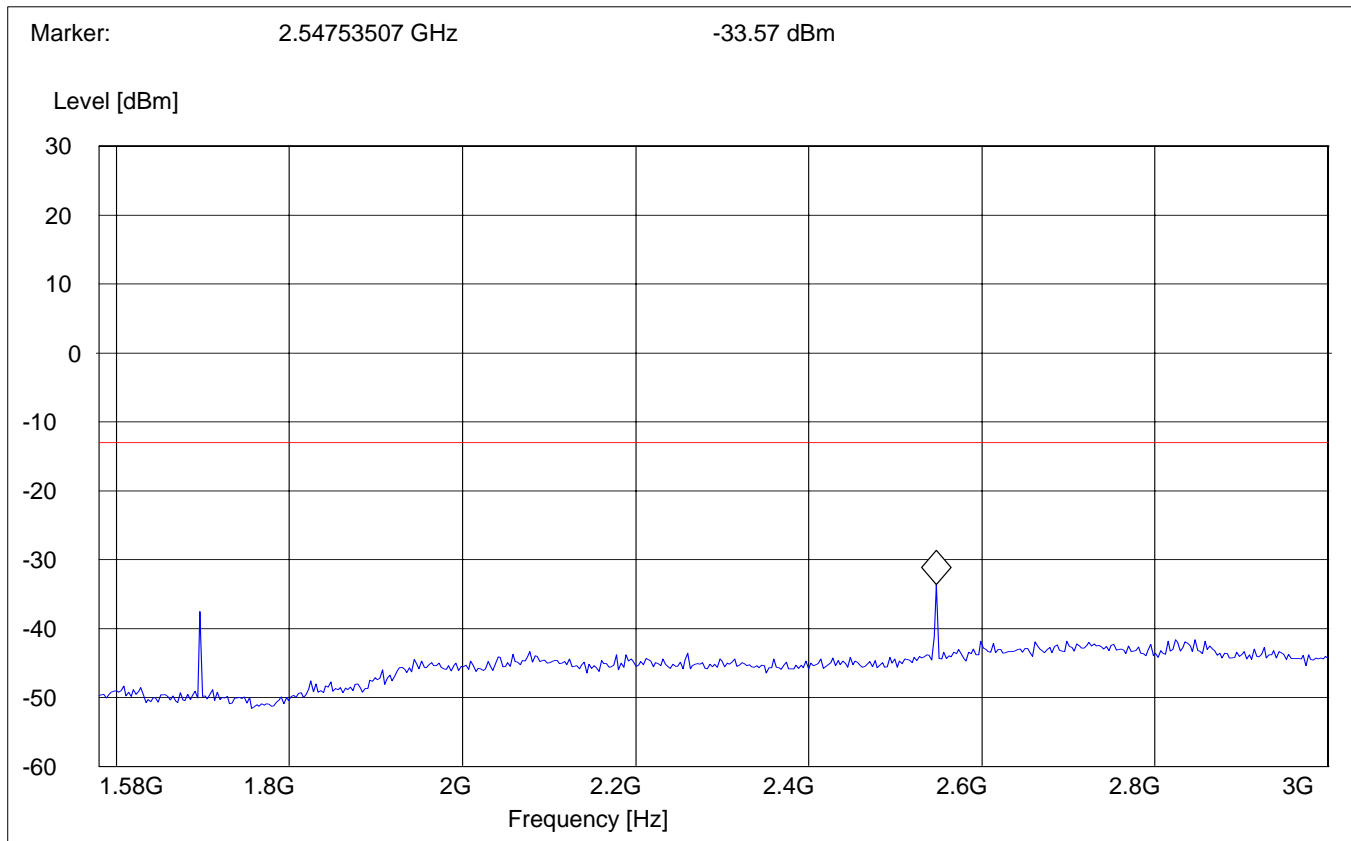


RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 848.8MHz: 1.58GHz – 3GHz**

Spurious emission limit -13dBm

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

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

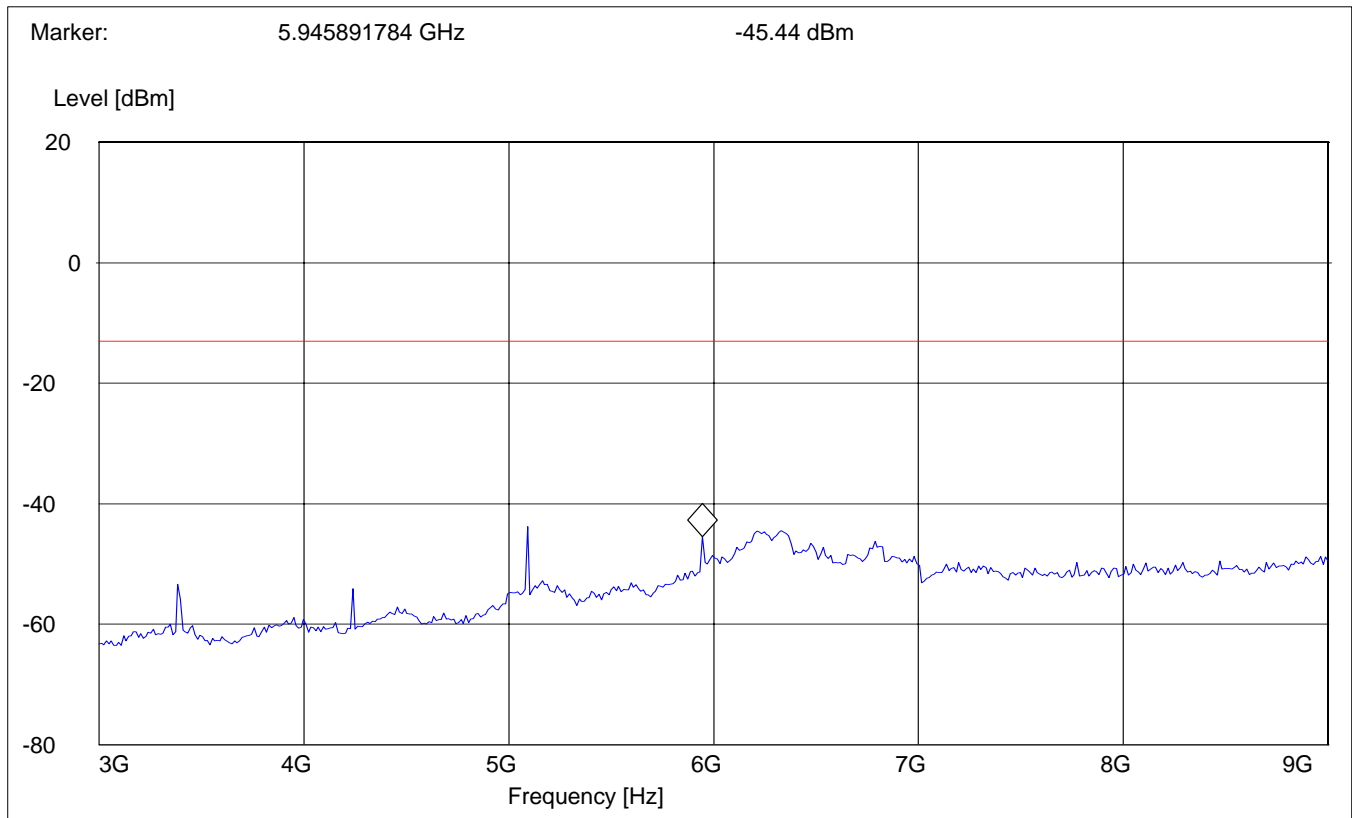


RADIATED SPURIOUS EMISSIONS (GSM-850)**Tx @ 848.8MHz: 3GHz – 9GHz**

Spurious emission limit -13dBm

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

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



RESULTS OF RADIATED TESTS PCS-1900:

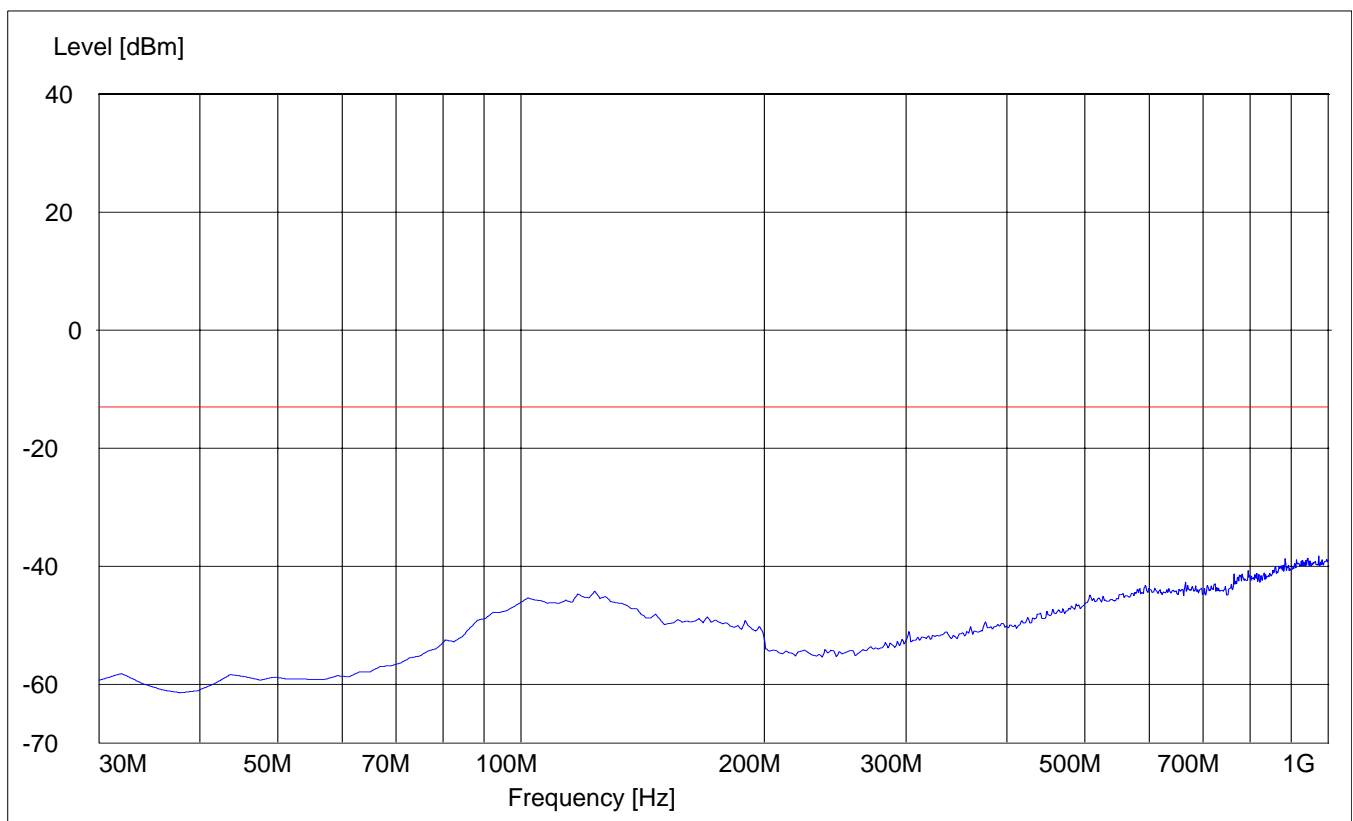
| Harmonic | Tx ch-512 Freq.(MHz) | Level (dBm) | Tx ch-661 Freq. (MHz) | Level (dBm) | Tx ch-810 Freq. (MHz) | Level (dBm) |
|-----------------|---------------------------------|------------------------|----------------------------------|------------------------|----------------------------------|------------------------|
| 2 | 3700.4 | -52.50 | 3760 | -52.16 | 3819.6 | -54.27 |
| 3 | 5550.6 | -47.27 | 5640 | -45.07 | 5729.4 | -49.29 |
| 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 |

RADIATED SPURIOUS EMISSIONS**Tx @ 1850.2MHz: 30MHz - 1GHz**

Spurious emission limit -13dBm

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

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

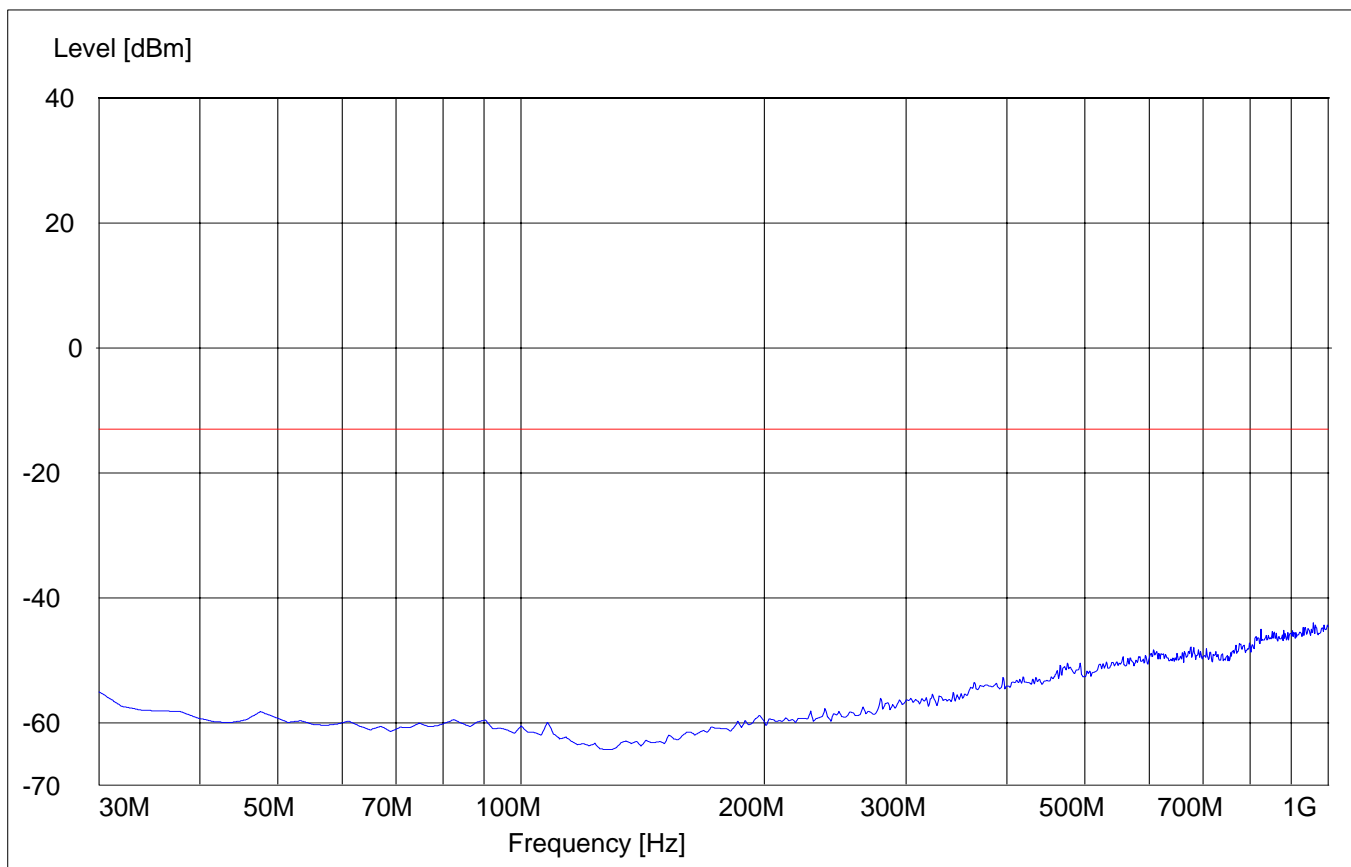
Note: This plot is valid for low, mid & high channels (worst-case plot)

RADIATED SPURIOUS EMISSIONS**Tx @ 1850.2MHz: 30MHz - 1GHz**

Spurious emission limit -13dBm

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

| <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> | | |
| 30MHz | 1GHz | Max Peak | Coupled | 1 MHz |

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

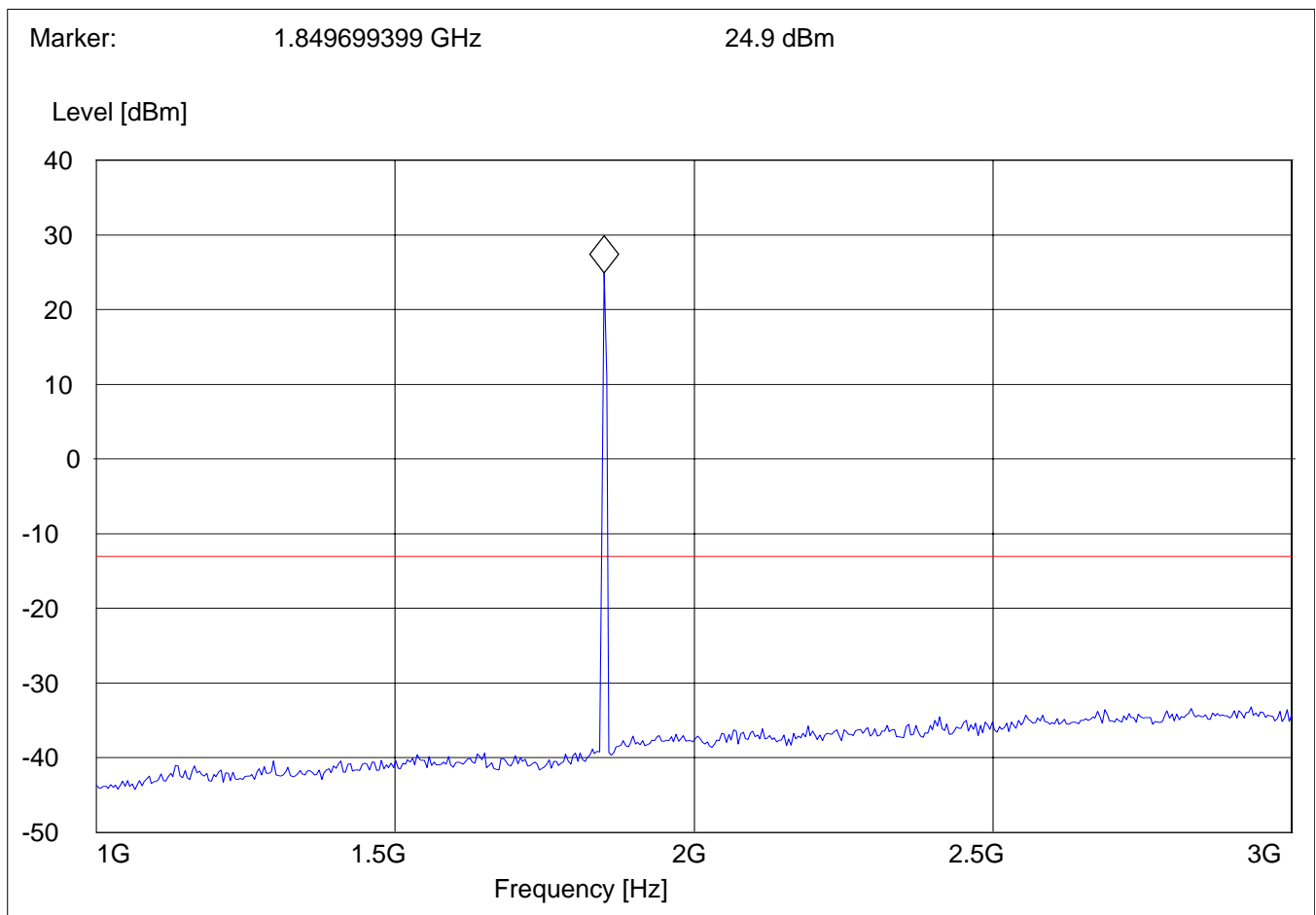
RADIATED SPURIOUS EMISSIONS**Tx @ 1850.2MHz: 1GHz – 3GHz**

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 |

Note: The peak above the limit line is the carrier freq. at ch-512.

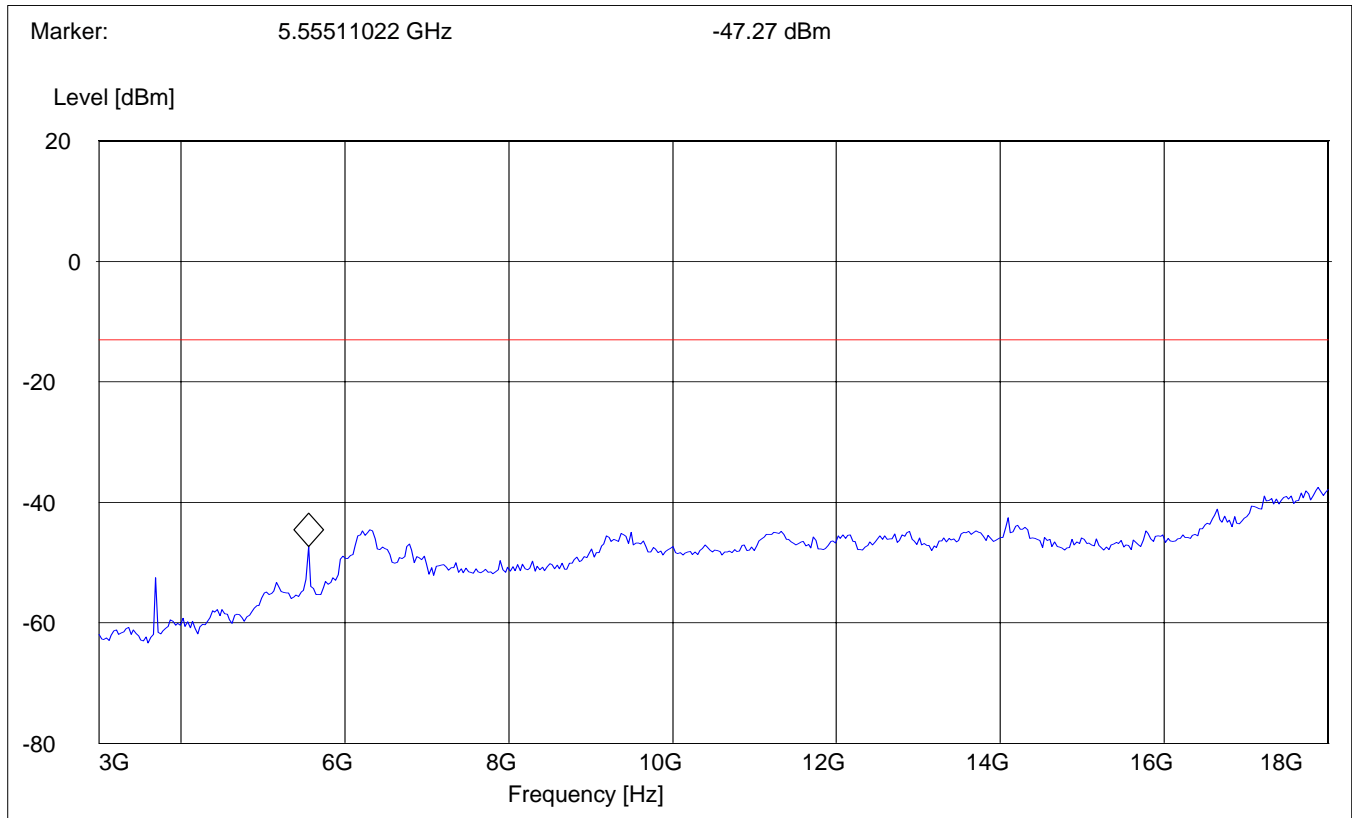


RADIATED SPURIOUS EMISSIONS**Tx @ 1850.2MHz: 3GHz – 18GHz**

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 |



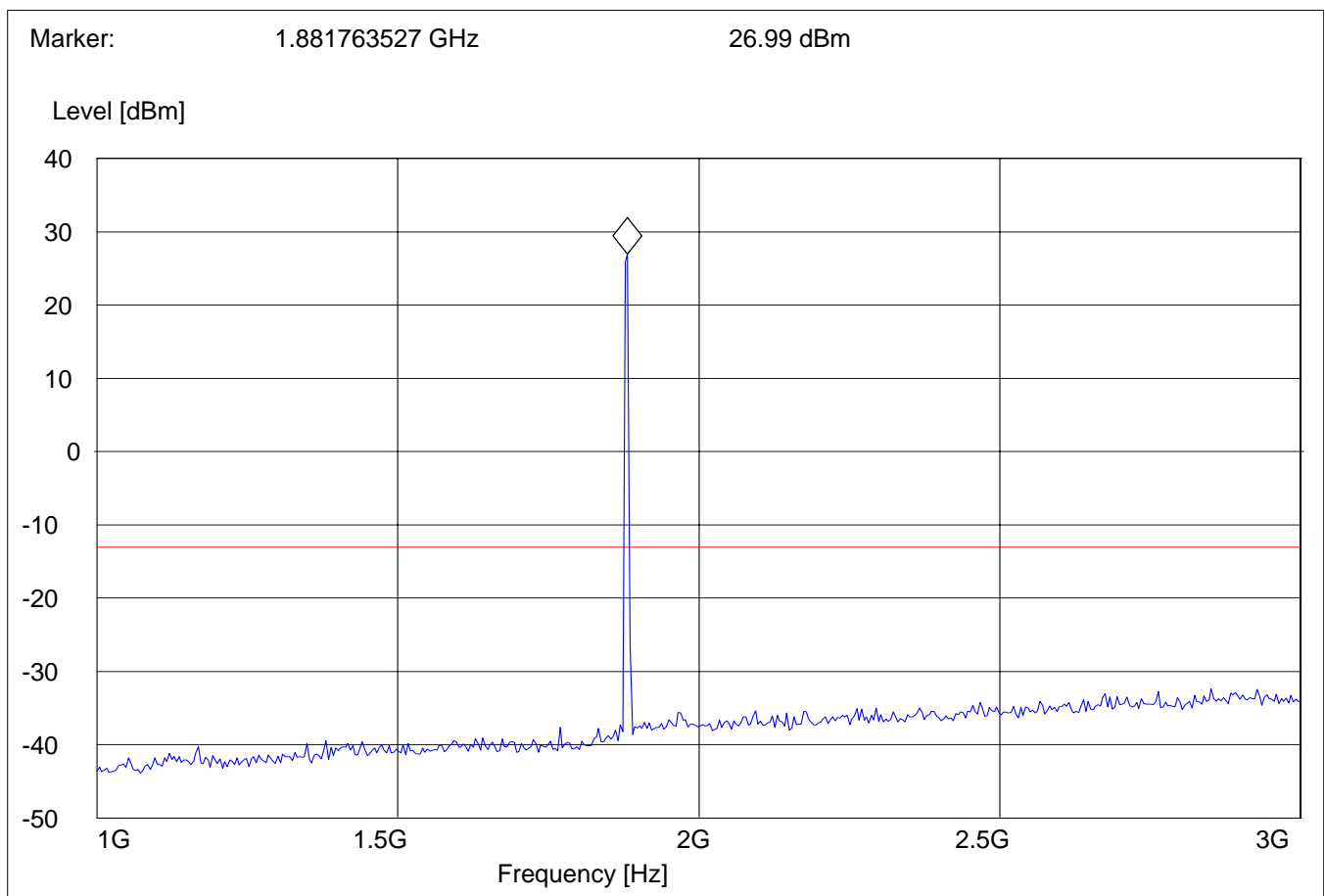
RADIATED SPURIOUS EMISSIONS**Tx @ 1880MHz: 1GHz – 3GHz**

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 |

Note: The peak above the limit line is the carrier freq. at ch-661.

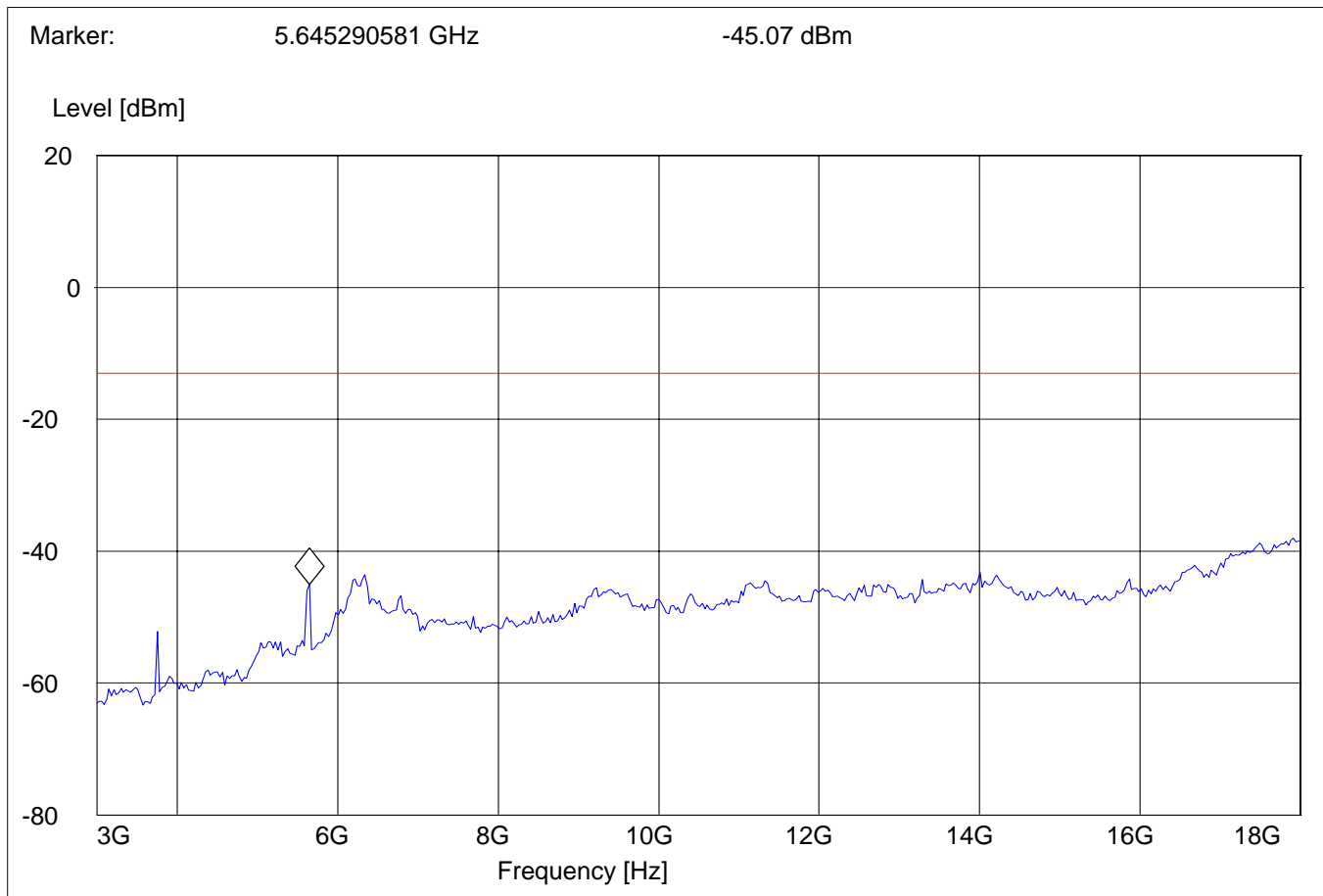


RADIATED SPURIOUS EMISSIONS**Tx @ 1880MHz: 3GHz – 18GHz**

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 |



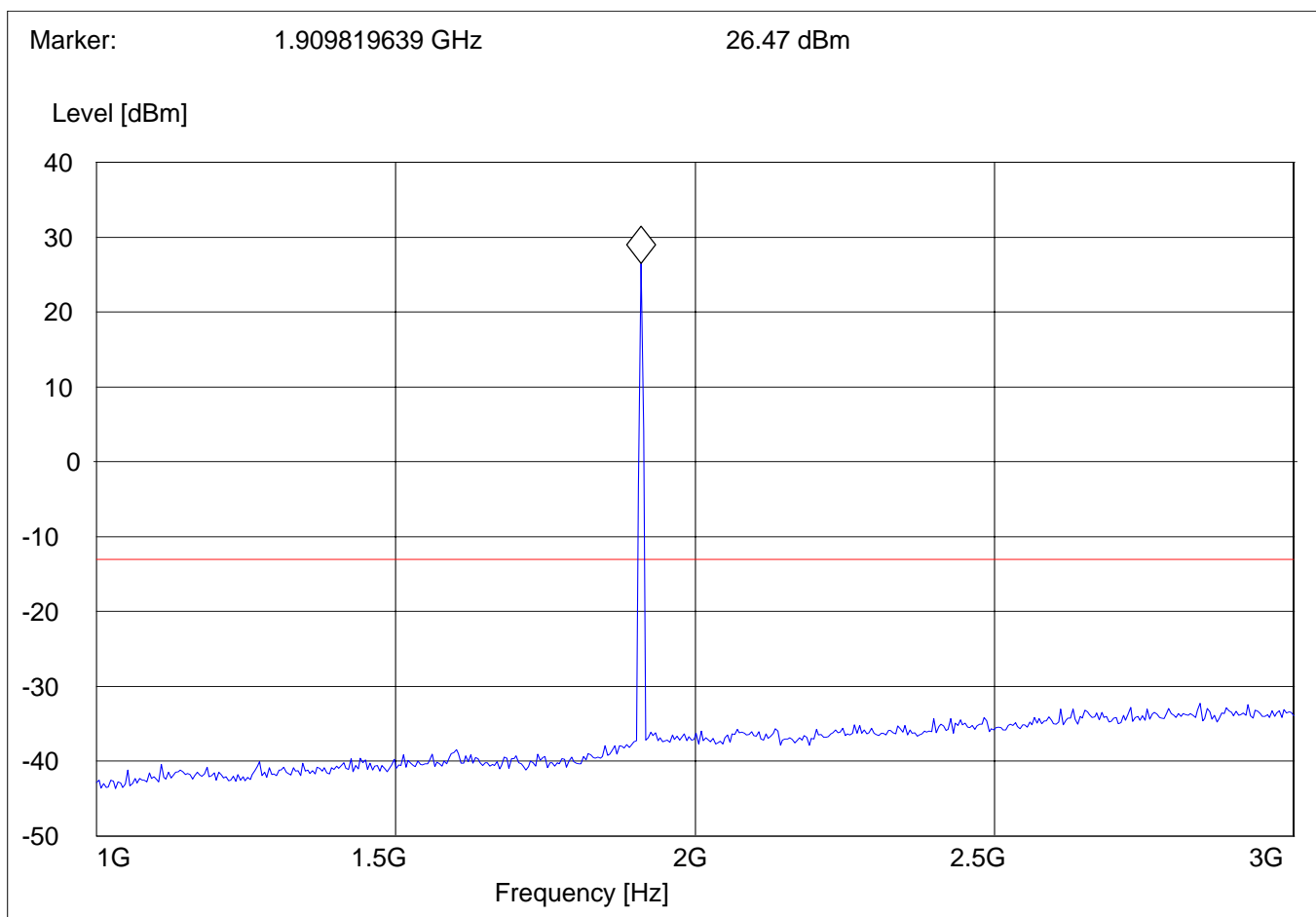
RADIATED SPURIOUS EMISSIONS**Tx @ 1909.8MHz: 1GHz – 3GHz**

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 |

Note: The peak above the limit line is the carrier freq. at ch-810.

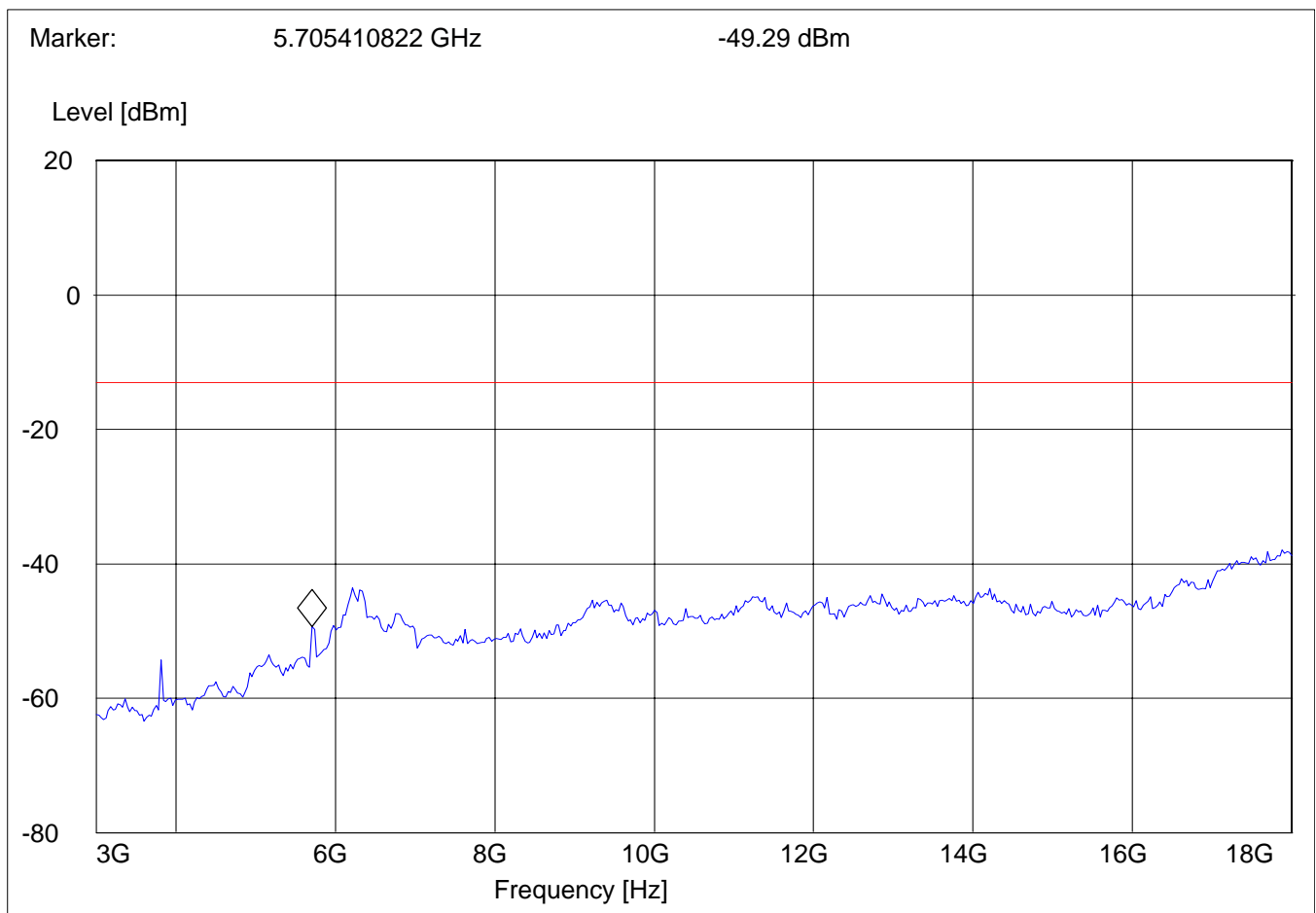


RADIATED SPURIOUS EMISSIONS**Tx @ 1909.8MHz: 3GHz – 18GHz**

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 |

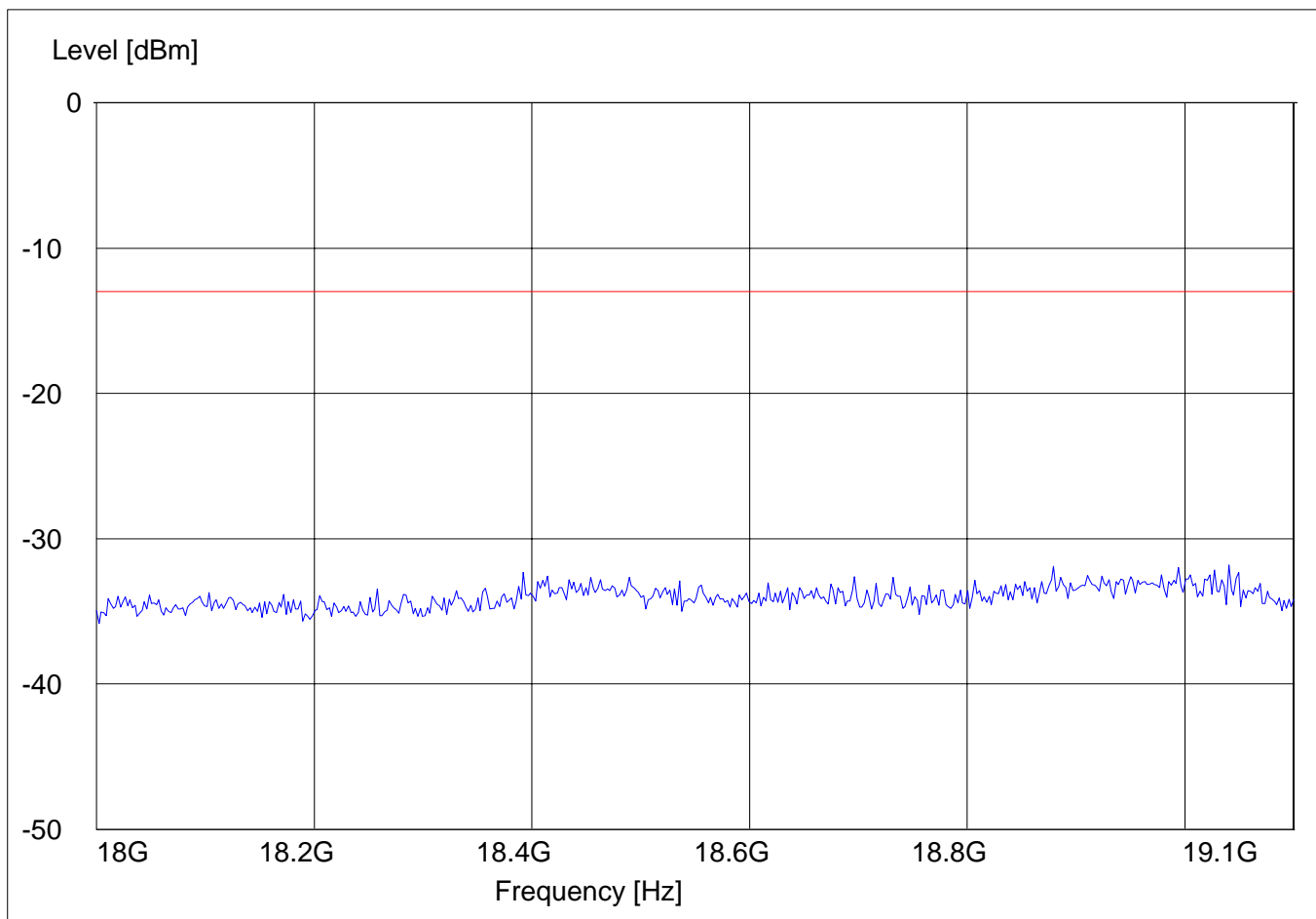


RADIATED SPURIOUS EMISSIONS**18GHz – 19.1GHz**

Spurious emission limit –13dBm

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

| <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> | |
| 18GHz | 19.1GHz | Max Peak | Coupled | 1 MHz |

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

RADIATED SPURIOUS EMISSIONS (IDLE MODE – GSM 850/1900)

Idle mode spurious was conducted for both GSM 850 & 1900 bands, only worst case plots are submitted in the test report.

Antenna: vertical

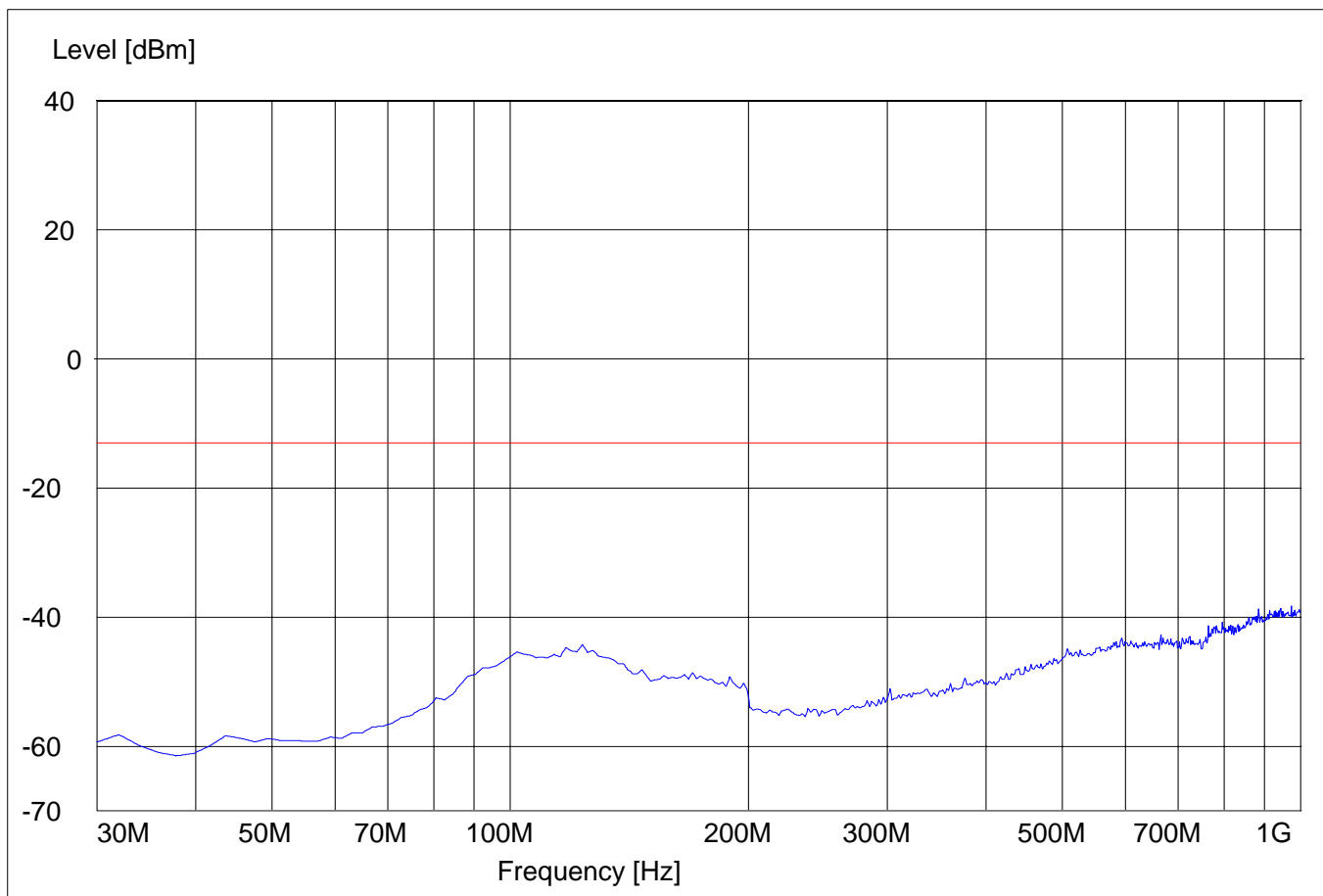
EUT in Idle Mode: 30MHz – 1GHz

Spurious emission limit –13dBm

Note: This plot is valid for both polarities (worst-case plot)

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

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

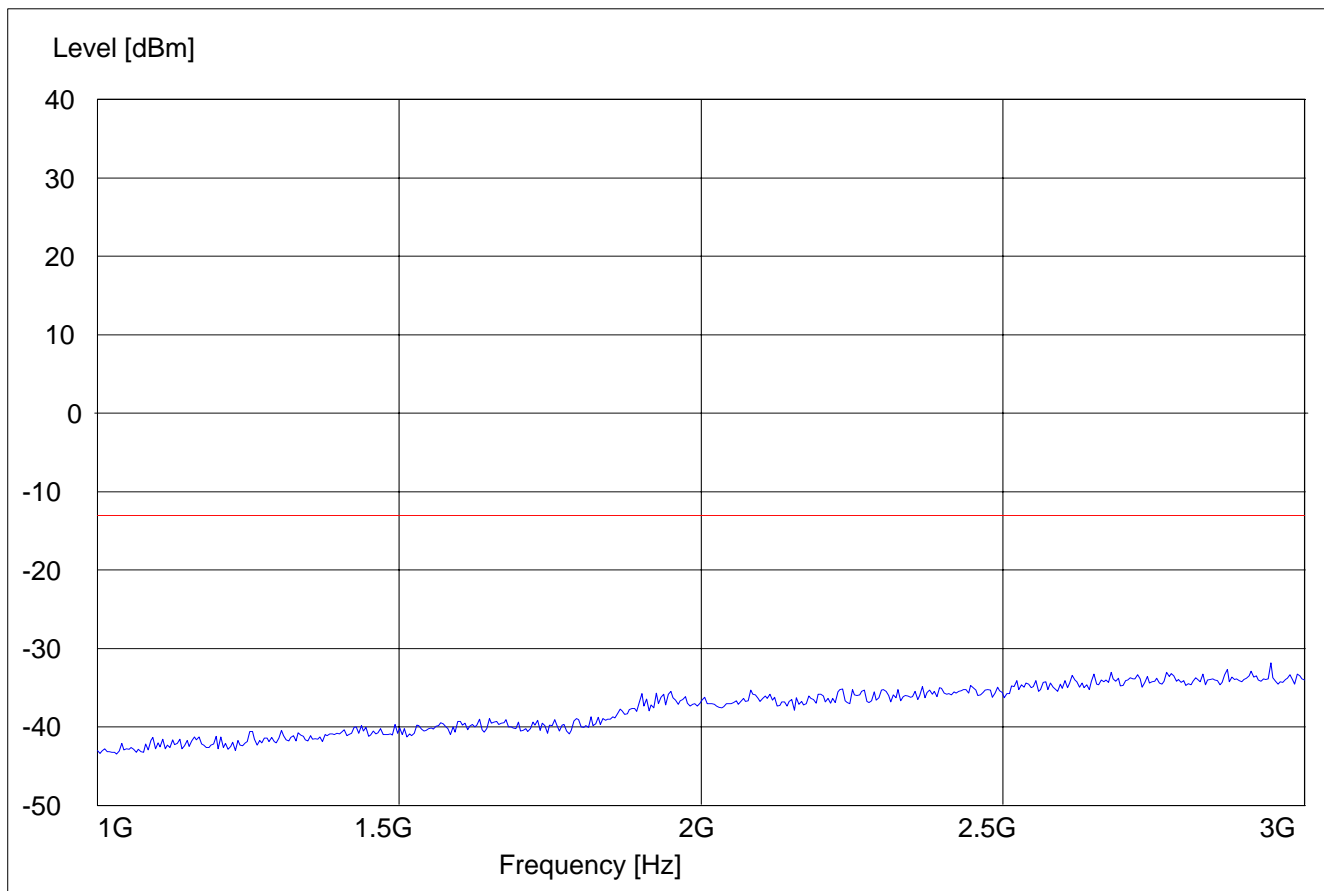


RADIATED SPURIOUS EMISSIONS (IDLE MODE – GSM 850/1900)**EUT in Idle Mode: 1GHz – 3GHz**

Spurious emission limit –13dBm

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 |

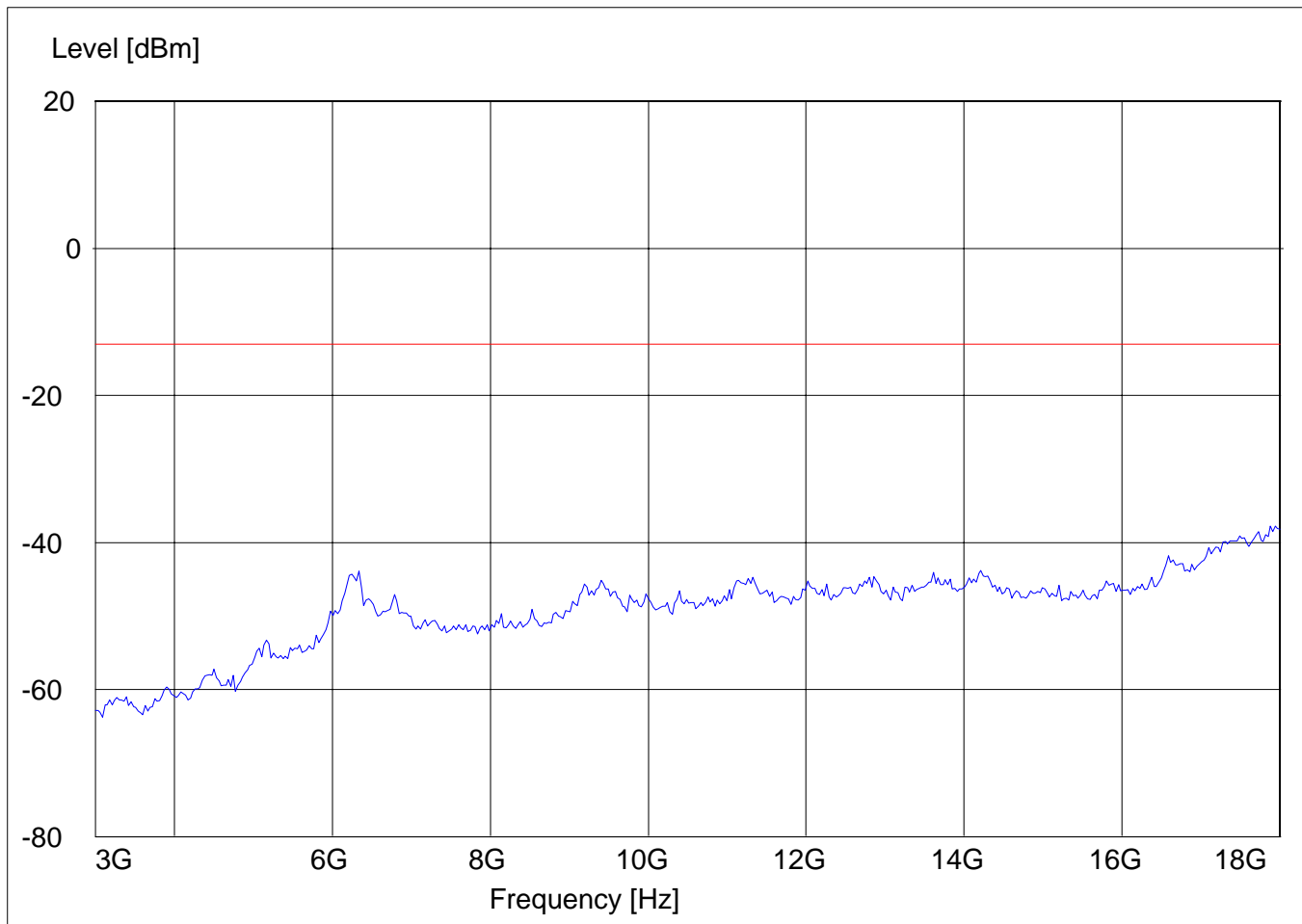


RADIATED SPURIOUS EMISSIONS (IDLE MODE – GSM 850/1900)**EUT in Idle Mode: 3GHz – 18GHz**

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 |

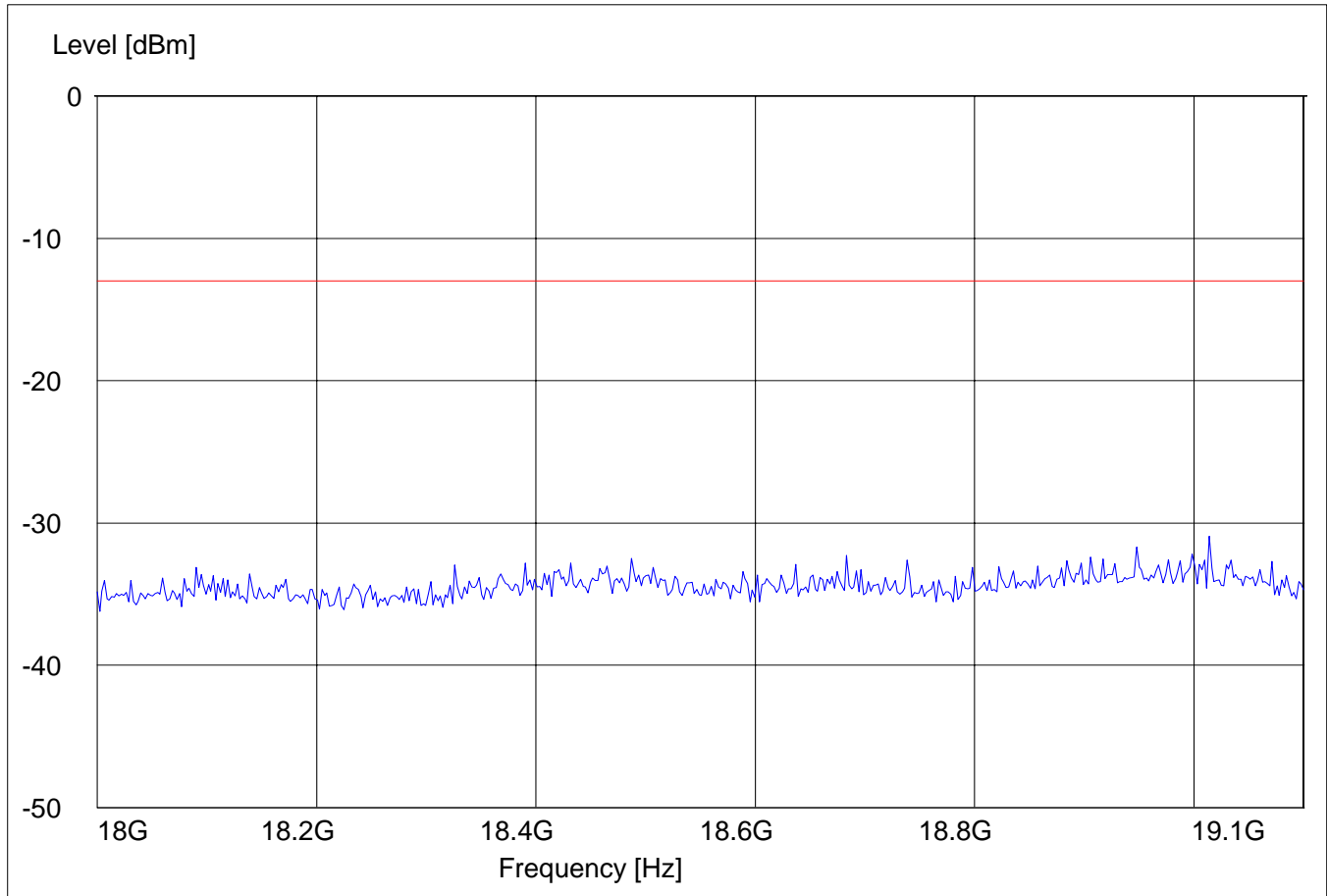


RADIATED SPURIOUS EMISSIONS (IDLE MODE – GSM 850/1900)**EUT in Idle Mode: 18GHz – 19.1GHz**

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:**

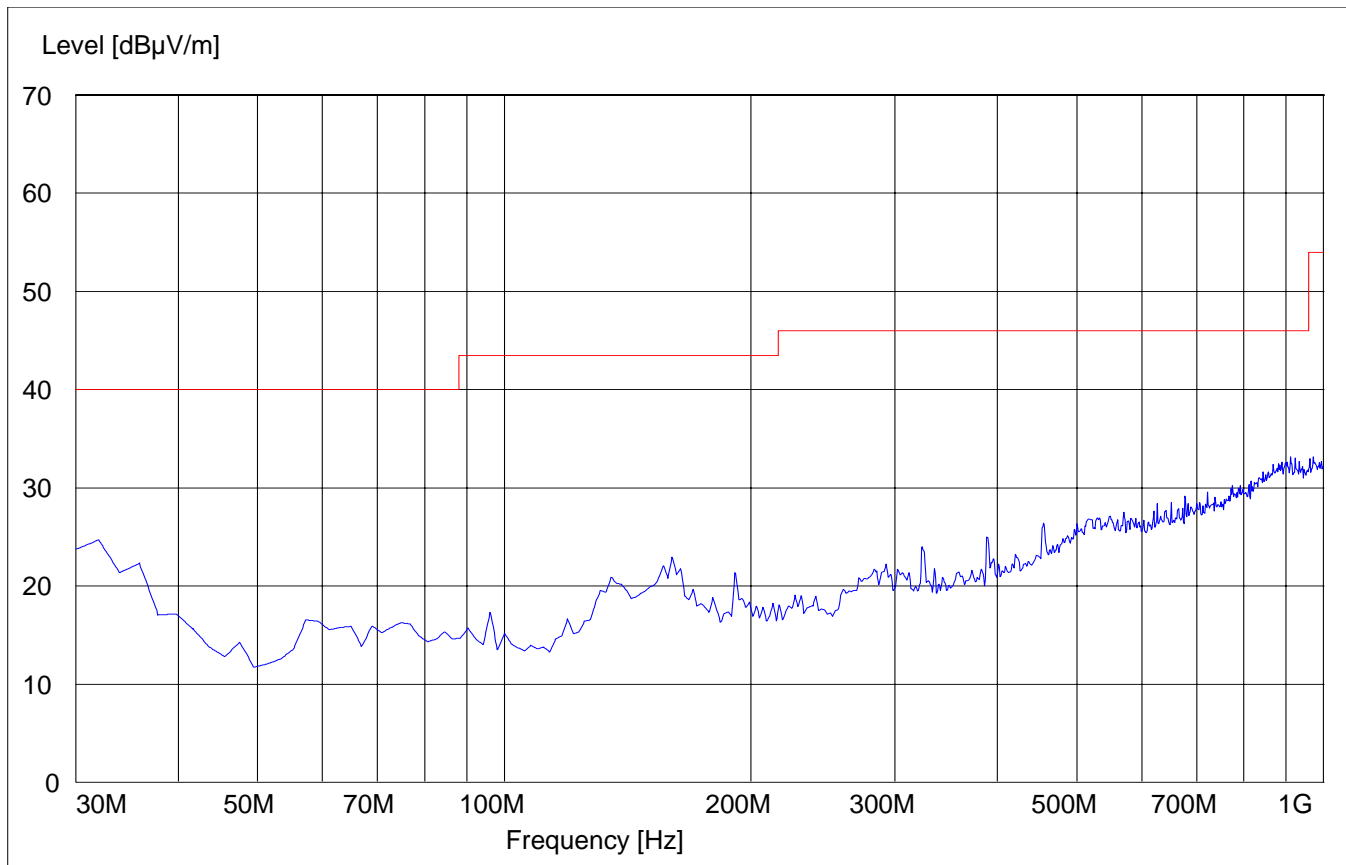
1. The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3GHz and 26.5GHz very short cable connections to the antenna was used to minimize the noise level.
2. Receiver radiated emissions were done on both 850/1900 bands, but only worst-case plots are submitted in the test reports.

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 |

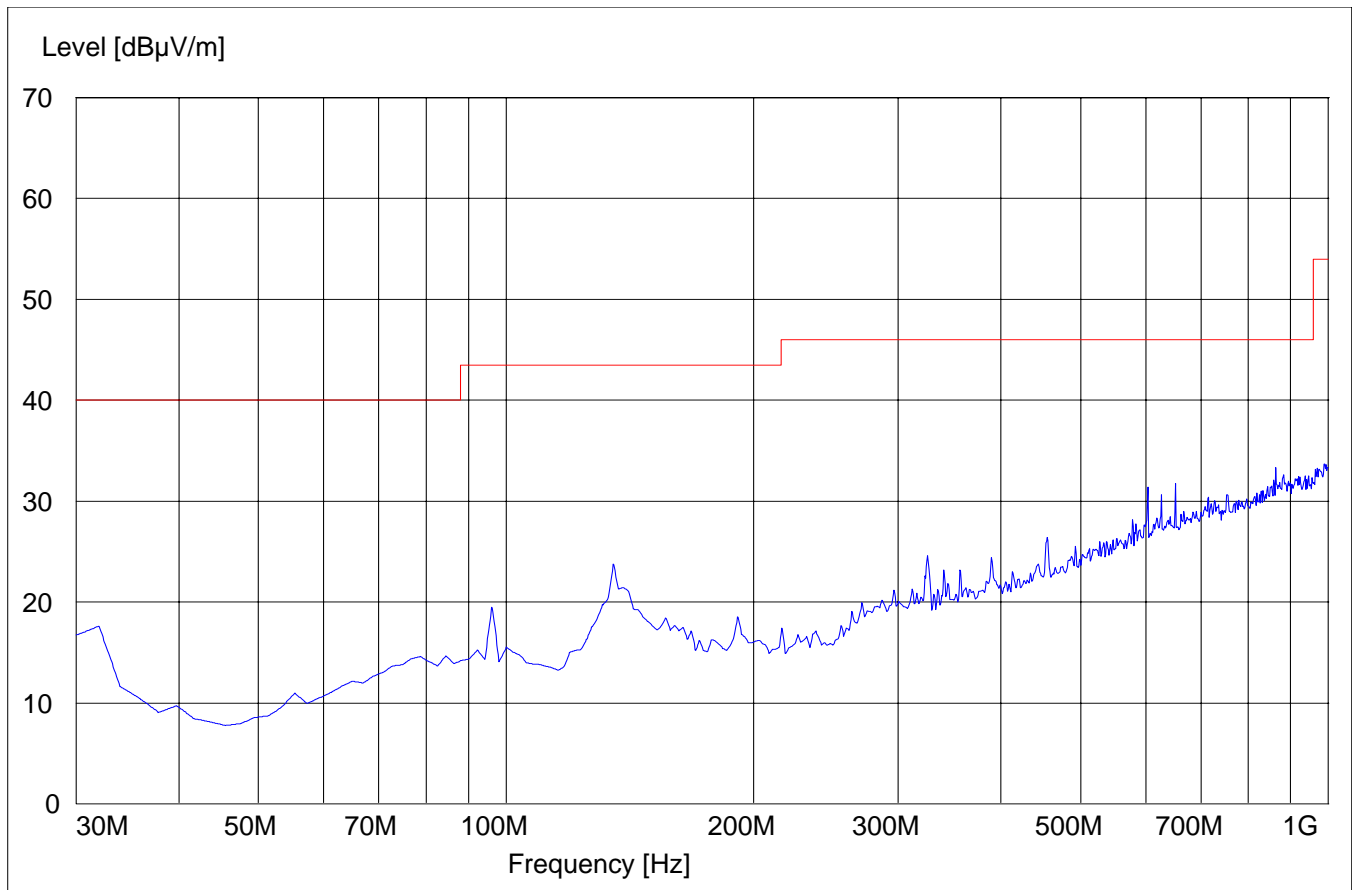
RECEIVER RADIATED EMISSIONS**EUT in Idle Mode: 30MHz – 1GHz****Antenna: vertical****SWEEP TABLE: "FCC 15 Spur 30M-1G"**

| <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> | |
| 30MHz | 1GHz | Max Peak | Coupled | 100KHz |



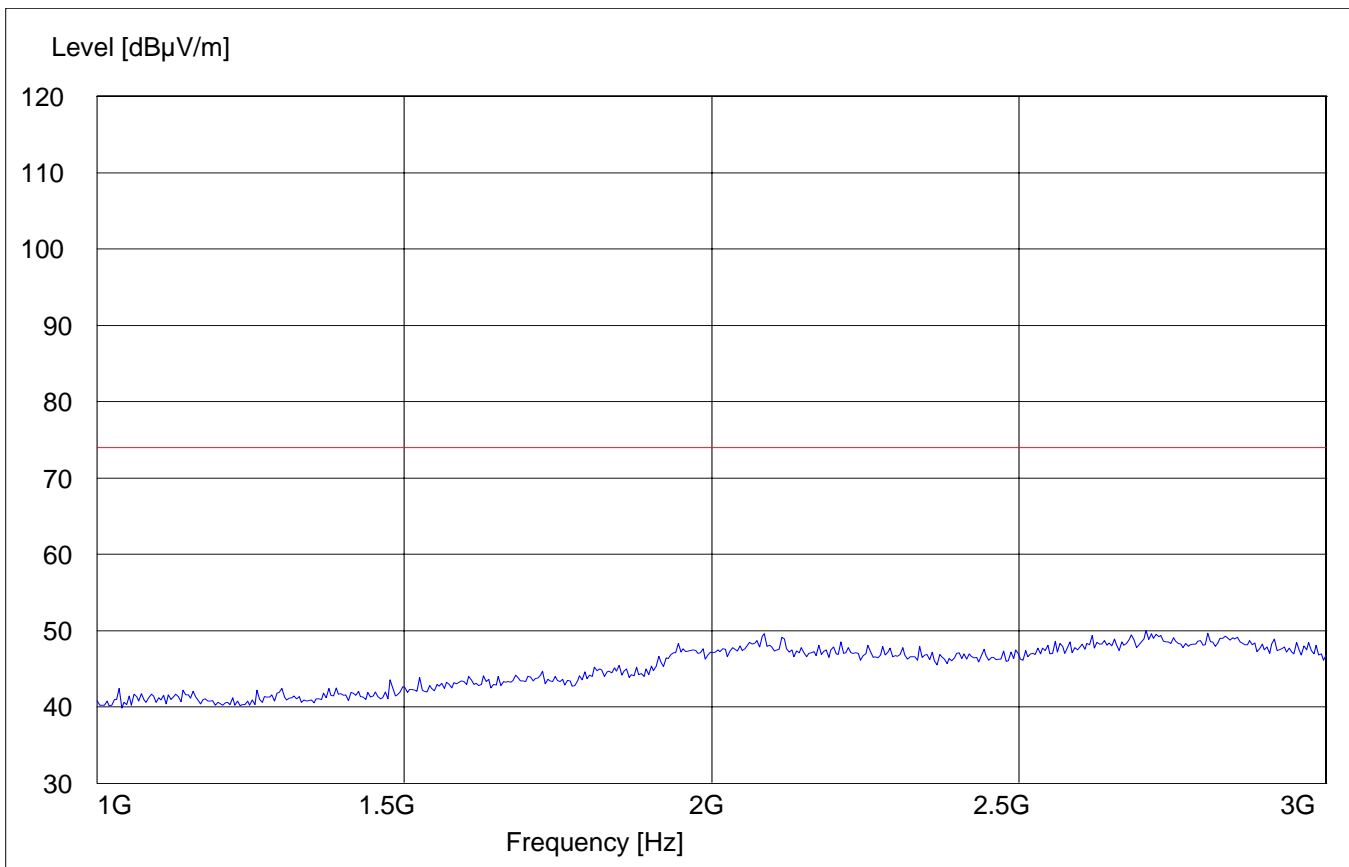
RECEIVER RADIATED EMISSIONS**EUT in Idle Mode: 30MHz – 1GHz****Antenna: horizontal****SWEEP TABLE: "FCC 15 Spur 30M-1G"**

| <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> | |
| 30MHz | 1GHz | Max Peak | Coupled | 100KHz |



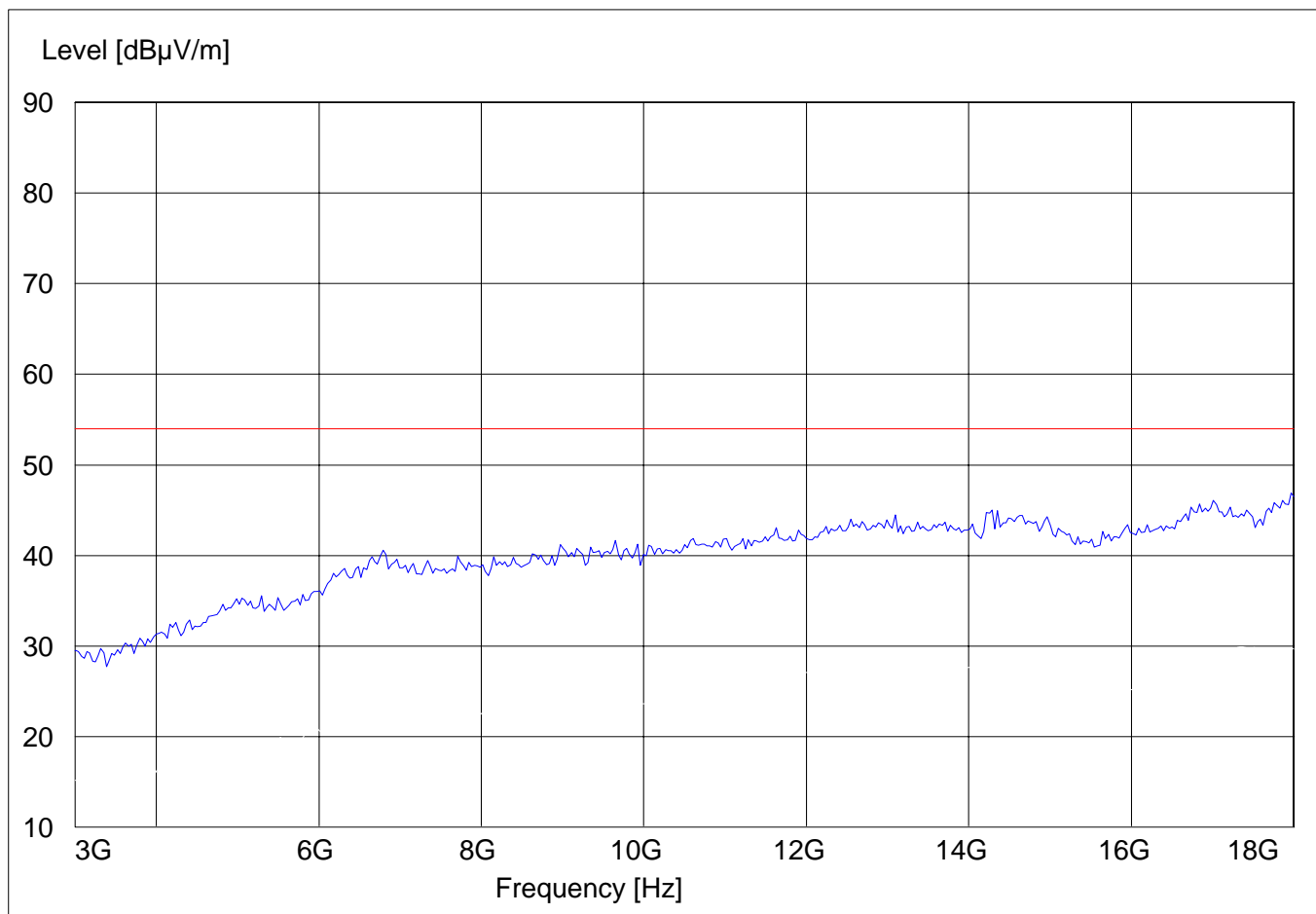
RECEIVER RADIATED EMISSIONS
EUT in Idle Mode: 1GHz – 3GHz**Note: marked peak is downlink from the base station****SWEEP TABLE: "FCC 15 Spuri 1-3G"**

| <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 |



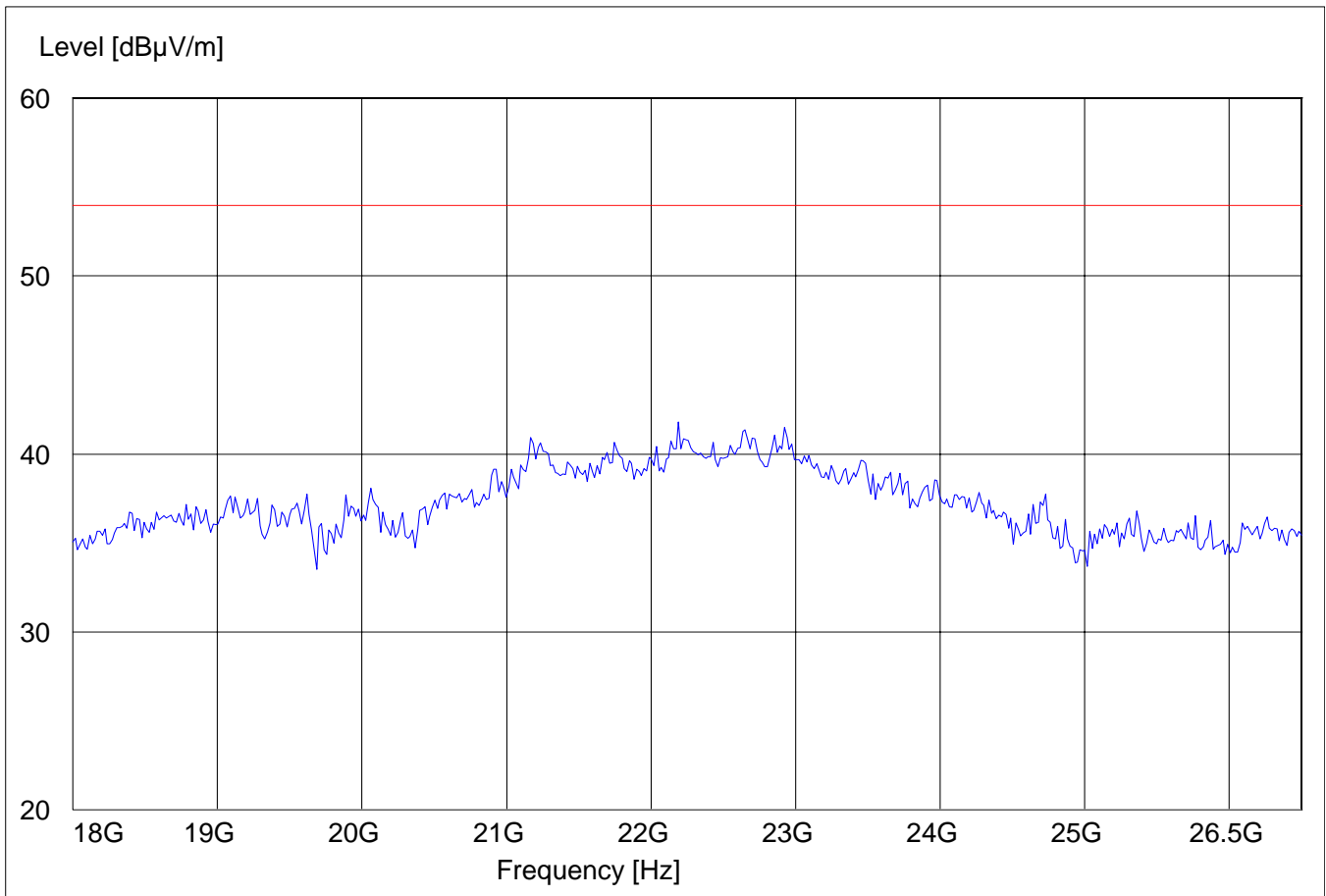
RECEIVER RADIATED EMISSIONS
EUT in Idle Mode: 3GHz – 18GHz**SWEEP TABLE: "FCC 15 spuri 3-18G"**

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



RECEIVER RADIATED EMISSIONS
EUT in Idle Mode: 18GHz – 26.5GHz**SWEEP TABLE: "FCC 15 spuri 18-26.5G"**

| <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> | |
| 18GHz | 26.5GHz | Max Peak | Coupled | 1 MHz |



CONDUCTED EMISSIONS

§ 15.107/207

Measured with AC/DC power adapter plugged in LISN

Technical specification: 15.107 / 15.207 (Revised as of August 20, 2002)

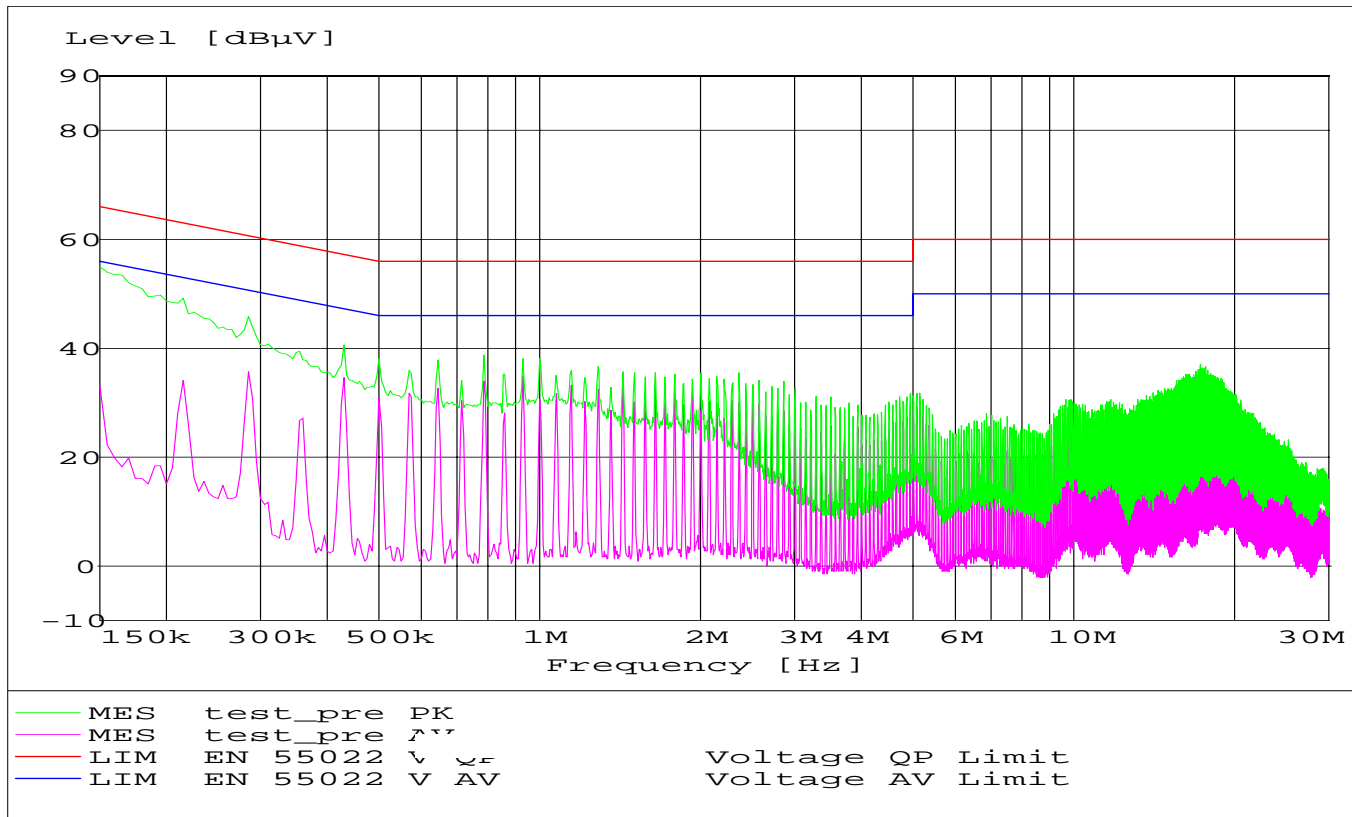
Limit

| Frequency of Emission (MHz) | Conducted Limit (dBµV) | |
|-----------------------------|------------------------|-----------|
| | 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



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 | Biconilog Antenna | 3141 | EMCO | 0005-1186 |
| 06 | Horn Antenna (1-18GHz) | SAS-200/571 | AH Systems | 325 |
| 07 | Horn Antenna (18-26.5GHz) | 3160-09 | EMCO | 1240 |
| 08 | Power Splitter | 11667B | Hewlett Packard | 645348 |
| 09 | Climatic Chamber | VT4004 | Voltsch | G1115 |
| 10 | High Pass Filter | 5HC2700 | Trilithic Inc. | 9926013 |
| 11 | High Pass Filter | 4HC1600 | Trilithic Inc. | 9922307 |
| 12 | Pre-Amplifier | JS4-00102600 | Miteq | 00616 |
| 13 | Power Sensor | URV5-Z2 | Rohde & Schwarz | DE30807 |
| 14 | Digital Radio Comm. Tester | CMD-55 | Rohde & Schwarz | 847958/008 |
| 15 | Universal Radio Comm. Tester | CMU 200 | Rohde & Schwarz | 832221/06 |

BLOCK DIAGRAMS
Radiated Testing

ANECHOIC CHAMBER

