



FCC Test report

Test report no.: EMC_902FCC-24_2005_M75

FCC Part 24 / RSS 133

FCC ID: PWX-M75

IC ID: 267E-M75



Accredited according to **ISO/IEC 17025**



FCC listed # 101450

IC recognized # 3925

CETECOM Inc.

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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****CETECOM Inc.**

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1.3 Details of applicant

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1.4 Application details

Date of receipt test item : 2005-04-15
Date of test : 2005-04-15/18/19/20/25

1.5 Test item

Test Sample : IMEI: 00-4400-00-939544-1 radiated sample
IMEI: 00-4400-00-939519-3 conducted sample
Manufacturer : SIEMENS
Street Address : Suedstr. 9
City / Zip Code : 47475 Kamp-Lintfort
Country : Germany
Marketing Name : M75
Model No. : M75
Description : **GSM 1900 Mobile Phone with BT**
FCC-ID : PWX-M75
IC ID : 267E-M75

Additional information

Frequency : 1850.2MHz – 1909.8MHz for PCS 1900
Type of modulation : GMSK
Number of channels : 299 for PCS 1900
Antenna : External
Power supply : Battery or Charger (AC Adaptor)
Output power : 31.64dBm (1.46W) max. EIRP measured for PCS 1900
Extreme vol. Limits : 3.6VDC to 4.5VDC (nominal: 3.7VDC)
Extreme temp. Tolerance : -30°C to +50°C

1.6 Test standards

FCC Part 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 |

Technical responsibility for area of testing:

2005-05-27 EMC & Radio Lothar Schmidt (Manager)

| Date | Section | Name | Signature |
|------|---------|------|-----------|
|------|---------|------|-----------|

**Responsible for test report and project leader:**

2005-05-27 EMC & Radio Harpreet Sidhu (EMC Engineer)

| Date | Section | Name | Signature |
|------|---------|------|-----------|
|------|---------|------|-----------|



2.2 Test report

TEST REPORT

Test report no.: EMC_902FCC-24_2005_M75

TEST REPORT REFERENCE

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POWER OUTPUT**§ 24.232(b)****Summary:**

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMD-55) to ensure max. Power transmission and proper modulation.

This paragraph contains Burst Average conducted output power and EIRP measurements for the EUT. In all cases, 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, 1850.2 MHz, 1880.0 MHz and 1909.8 MHz (bottom, middle and top of operational frequency range)

Conducted:**Limits:**

| Power Step | Nominal Peak Output Power (dBm) | Tolerance (dB) |
|------------|------------------------------------|----------------|
| 0 | ≤30dBm (1W)* | ± 2 |

*GSM Specification – ETSI EN 300 910 V8.5.0 (2000-07) Section 4.1 {GSM05.05 Version 8.5.0 Release 1999}

Power Measurements:

Conducted Average power measurements are provided by SIEMENS

Please refer to attached document: “*ConductedOP_M75_2*”

(Page 3, section 2.1, Siemens M75, “004400.00.939544.1”)

| Frequency (MHz) | Burst Peak Power (dBm) |
|--------------------|---------------------------|
| 1850.2 | 28.9 |
| 1880.0 | 28.9 |
| 1909.8 | 28.9 |

Radiated:**EIRP Measurements****Limits:**

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

Power Measurements:

This measurement was done in Antenna pattern measurement chamber. No plots are available.

Radiated:

| Frequency (MHz) | Power Step | Burst Peak EIRP (dBm) |
|--------------------|------------|--------------------------|
| | | EIRP |
| 1850.2 | 0 | 31.64 |
| 1880.0 | 0 | 31.30 |
| 1909.8 | 0 | 30.04 |
| | | ±0.5 dB |

ANALYZER SETTINGS: RBW = VBW = 3MHz

FREQUENCY STABILITY**§ 2.1055 / § 24.235****Method of Measurement:**

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a "call mode". This is accomplished with the use of R&S CMD 55 DIGITAL RADIO COMMUNICATION TESTER.

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30 C.
3. With the EUT, powered via nominal voltage, connected to the CMD 55 and in a simulated call on channel 661 (centre channel), measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10 C increments from -30 C to +50 C. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
5. Remeasure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1 Volt increments remeasuring carrier frequency at each voltage. Pause at nominal voltage for 1 1/2 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50 C.
7. With the EUT, powered via nominal voltage, connected to the CMD 55 and in a simulated call on channel 661 (centre channel), measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 C increments from +50 C to -30 C. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5 C during the measurement procedure.

Measurement Limit:**For Hand carried battery powered equipment:**

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 3.6VDC and 4.5VDC, with a nominal voltage of 3.7VDC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. These voltages represent a tolerance of -2.7 % and +21.62 %. For the purposes of measuring frequency stability these voltage limits are to be used.

For equipment powered by primary supply voltage:

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. For this EUT section 2.1055(d)(1) applies. This requires varying primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

AFC FREQ ERROR vs. VOLTAGE

| Voltage (VDC) | Frequency Error (Hz) | Frequency Error (ppm) |
|--------------------------|---------------------------------|----------------------------------|
| 3.6 | 30 | 0.01595 |
| 4.5 | 26 | 0.0138 |

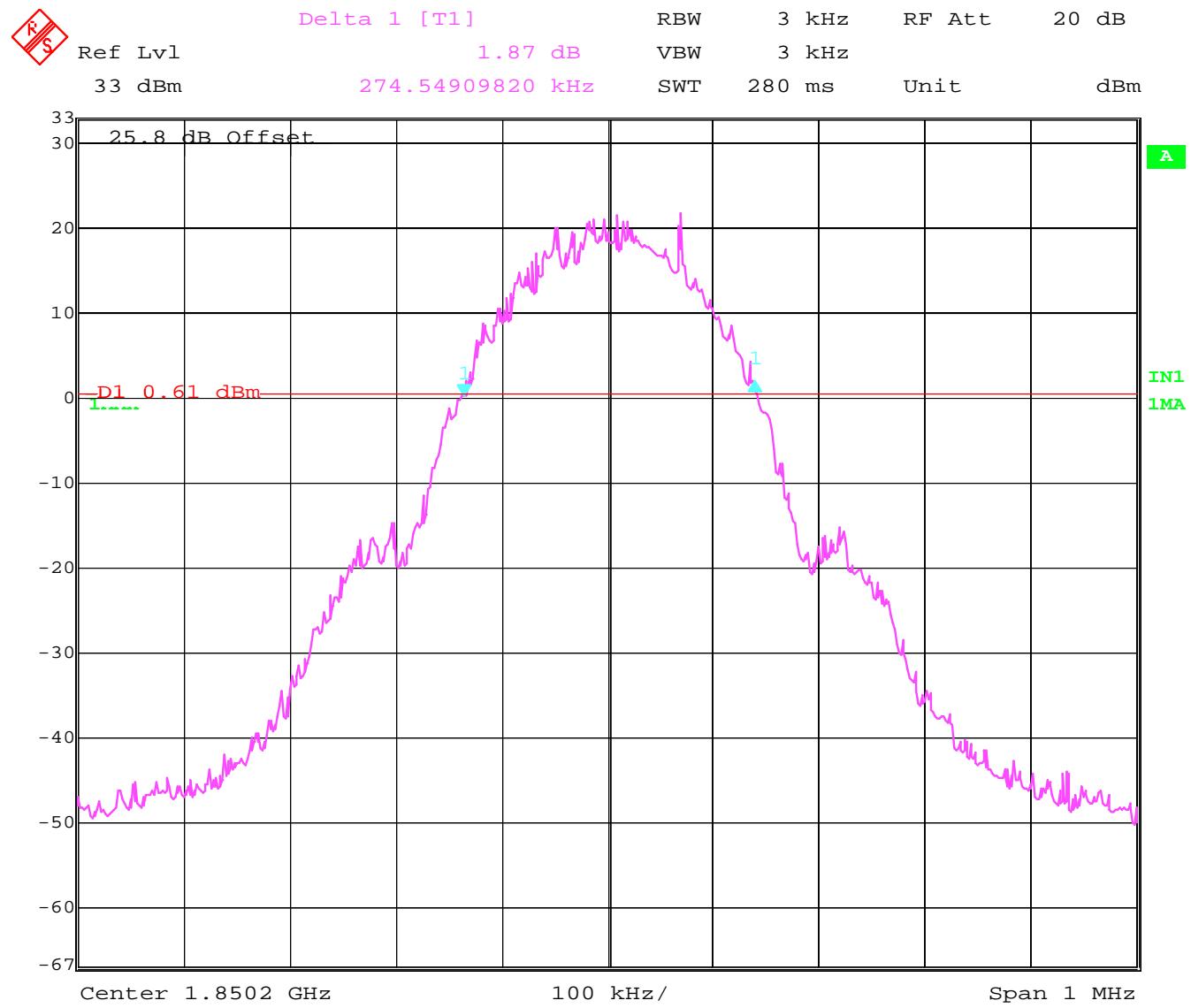
AFC FREQ ERROR vs. TEMPERATURE

| TEMPERATURE (°C) | Frequency Error (Hz) | Frequency Error (ppm) |
|-----------------------------|---------------------------------|----------------------------------|
| -30 | 30 | 0.01595 |
| -20 | 34 | 0.01808 |
| -10 | 31 | 0.0165 |
| 0 | 37 | 0.0197 |
| +10 | 31 | 0.0165 |
| +20 | 35 | 0.0186 |
| +30 | 34 | 0.01808 |
| +40 | 36 | 0.01915 |
| +50 | 33 | 0.01755 |

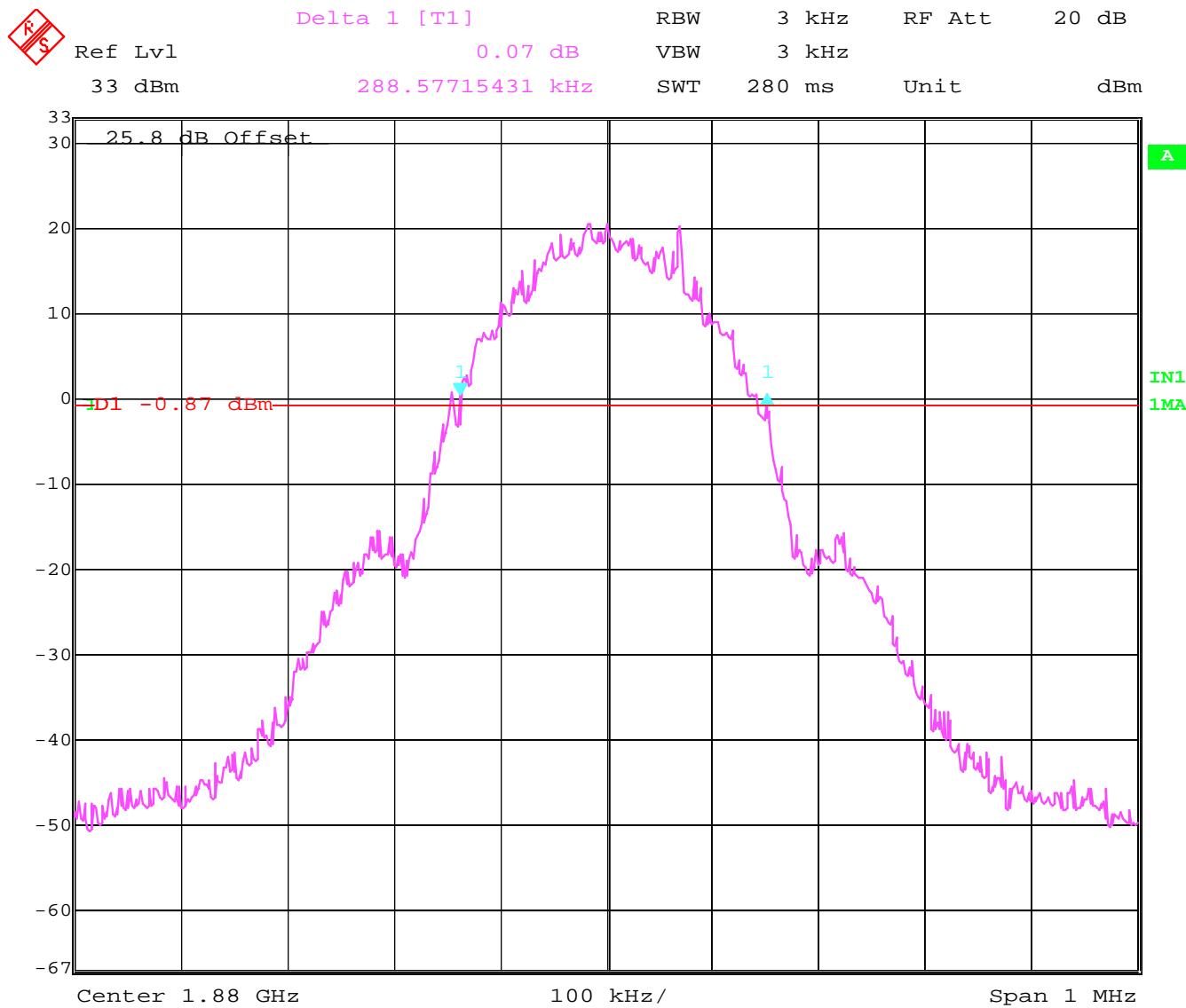
OCCUPIED BANDWIDTH**§2.1049(h)(i)****Occupied Bandwidth Results**

Similar to conducted emissions; occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the USPCS frequency band. Table below lists the measured -20dBc BW (99%). Spectrum analyzer plots are included on the following pages.

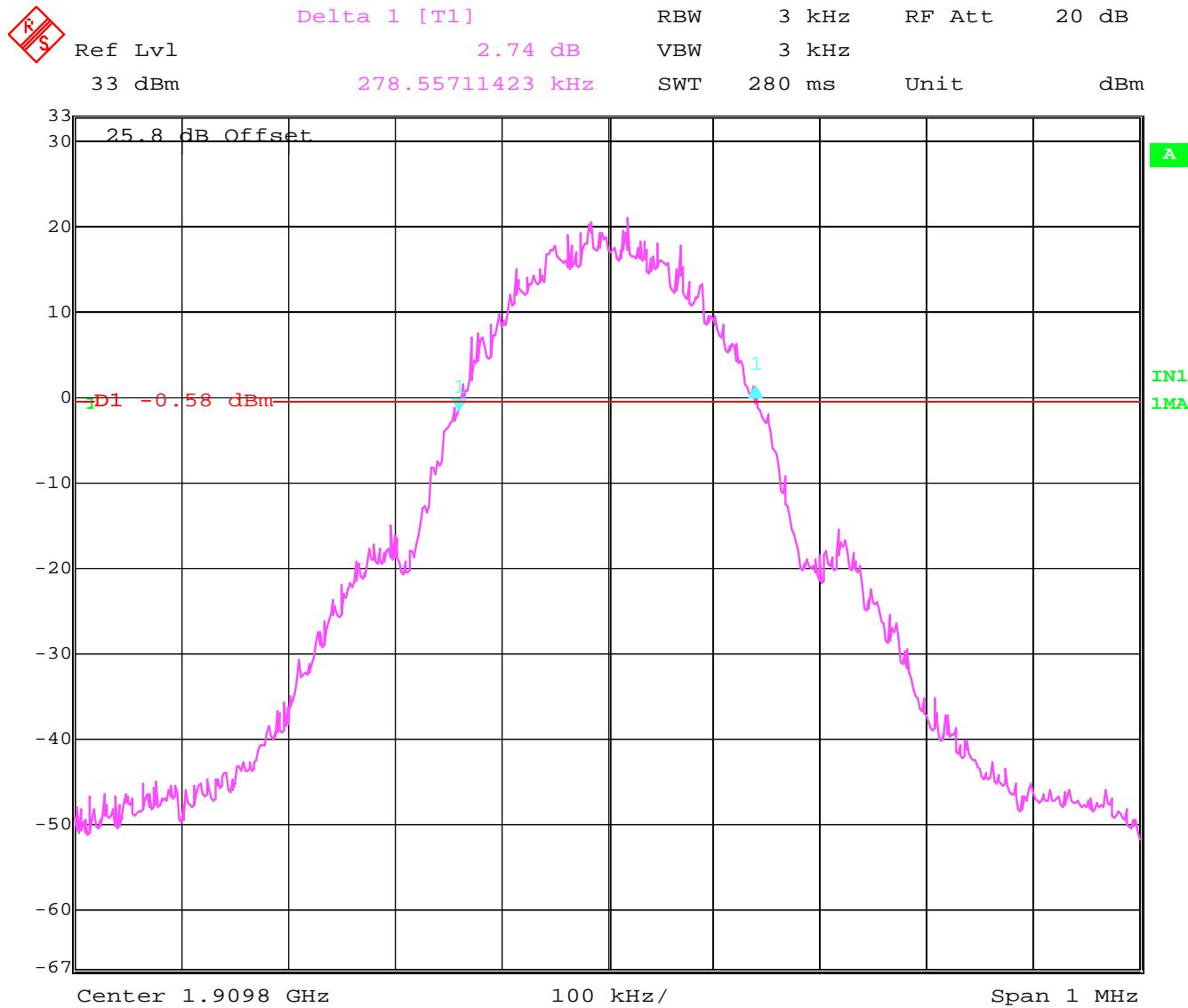
| Frequency | Occupied Bandwidth (-20dBc BW) |
|------------|--------------------------------|
| 1850.2 MHz | 274.55 |
| 1880.0 MHz | 288.58 |
| 1909.8 MHz | 278.56 |

Channel 512
Occupied Bandwidth (-20dBc BW)

Date: 21.APR.2005 04:20:05

Channel 661
Occupied Bandwidth (-20dBc BW)

Date: 21.APR.2005 04:24:36

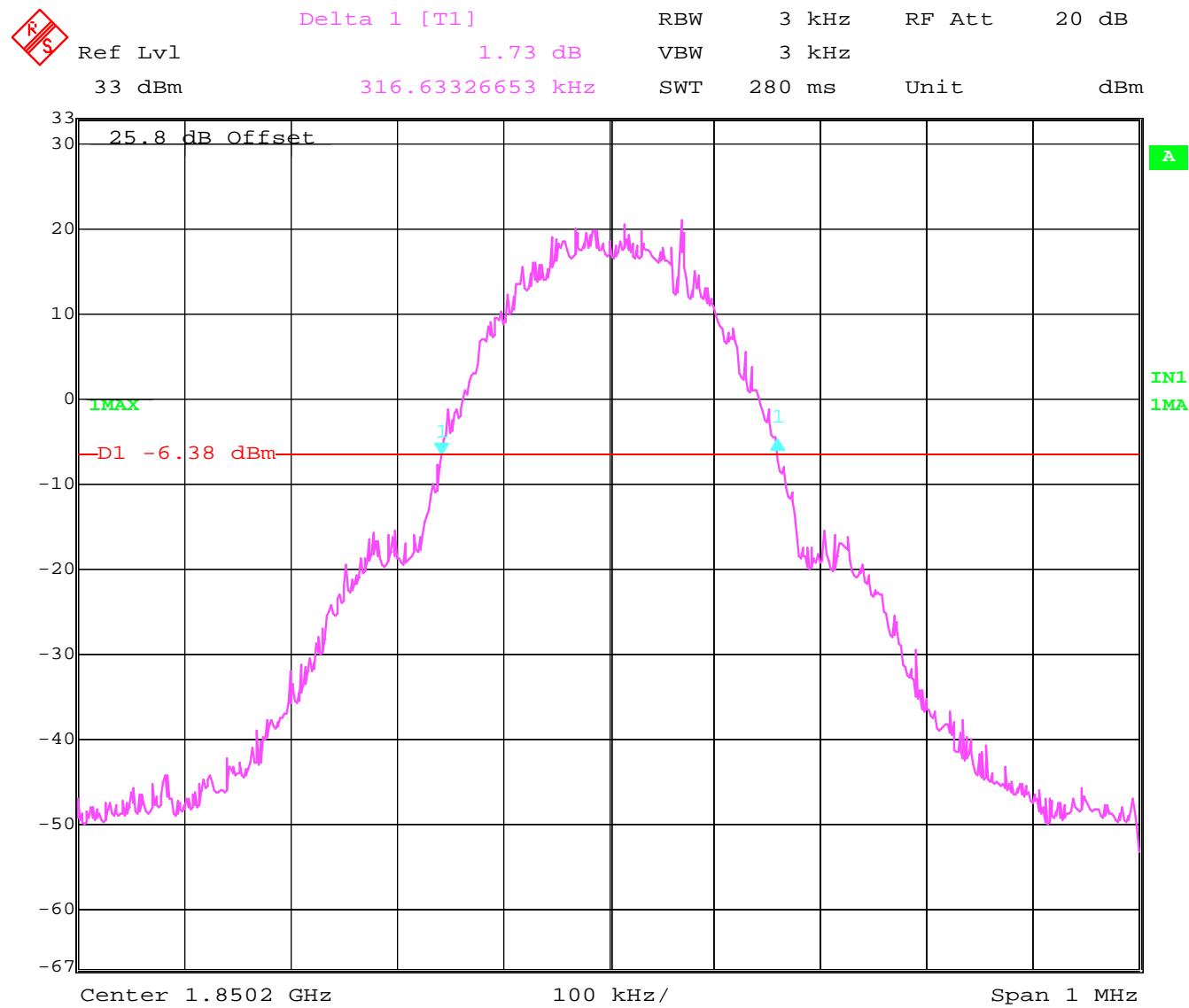
Channel 810
Occupied Bandwidth (-20dBc BW)

Date: 21.APR.2005 04:28:31

EMISSION BANDWIDTH**§24.238(b)****Emission Bandwidth Results**

Similar to conducted emissions; Emission bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the USPCS frequency band. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

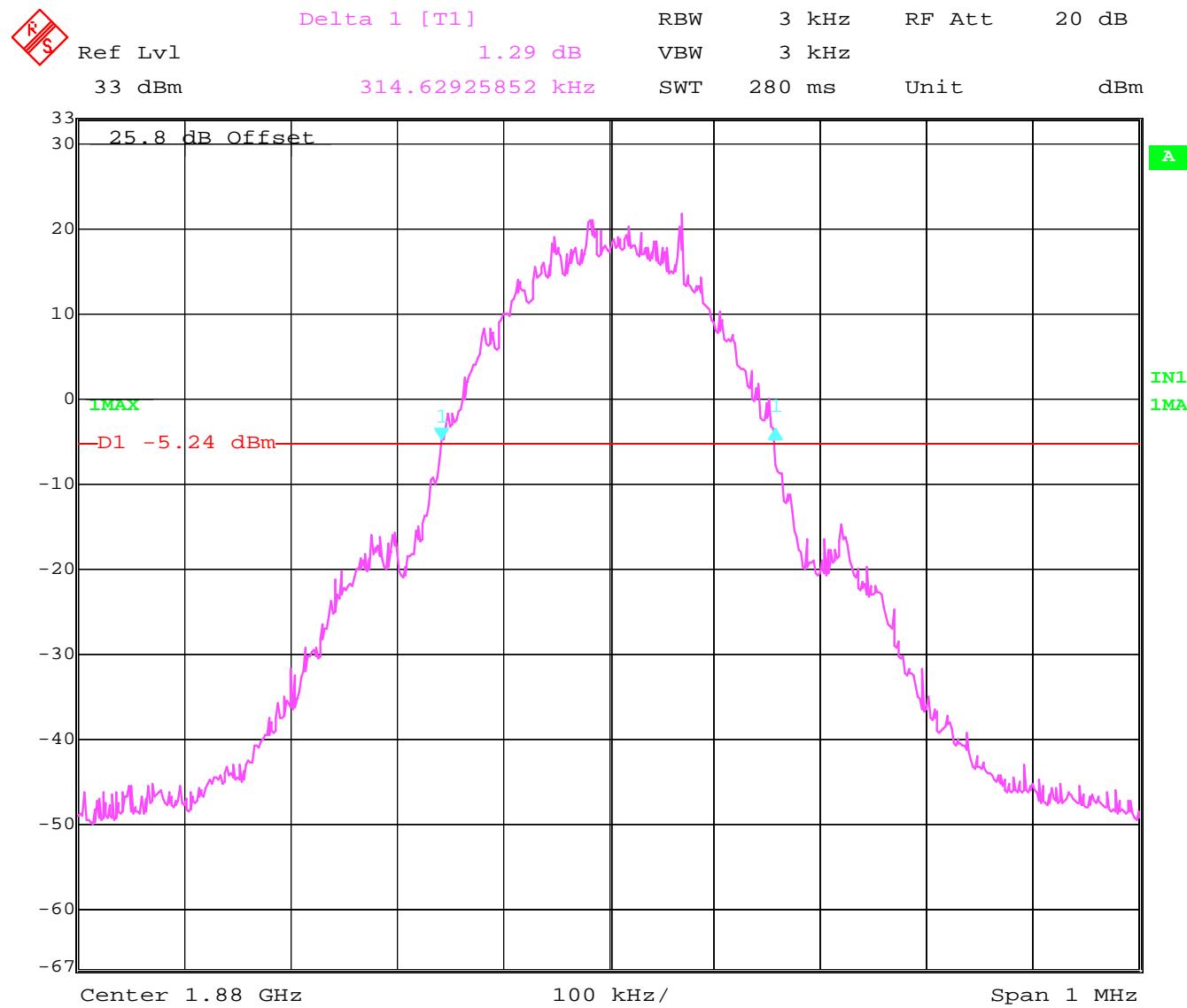
| Frequency | Emission Bandwidth (-26dBc BW) |
|------------|--------------------------------|
| 1850.2 MHz | 316.63 |
| 1880.0 MHz | 314.63 |
| 1909.8 MHz | 310.62 |

Channel 512**Emission Bandwidth (-26dBc BW)**

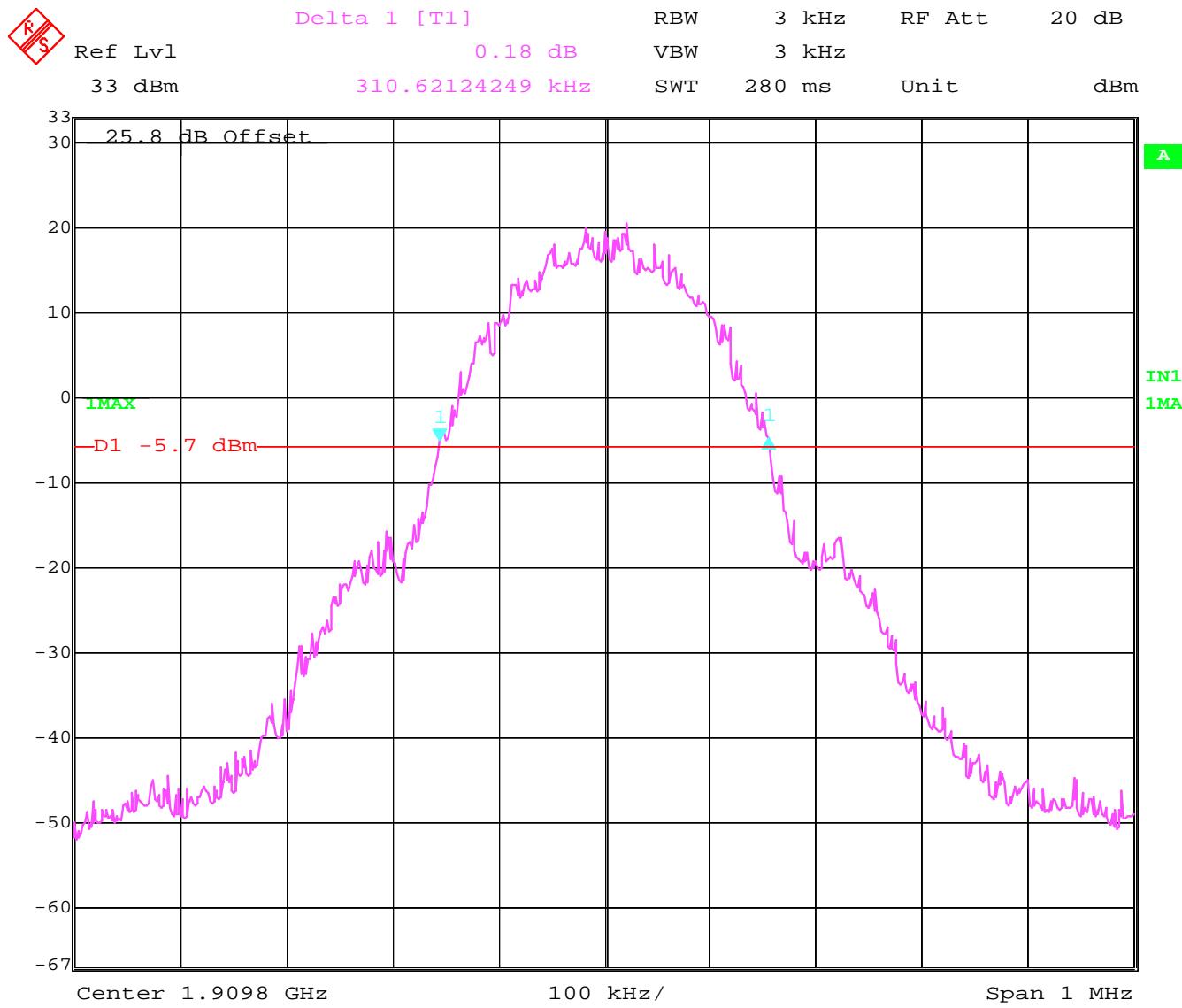
Date: 21.APR.2005 04:21:39

Channel 661

Emission Bandwidth (-26dBc BW)



Date: 21.APR.2005 04:26:26

Channel 810
Emission Bandwidth (-26dBc BW)

Date: 21.APR.2005 04:30:08

EMISSIONS LIMITS**§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 1910 MHz. 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 USPCS band.

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) A double-ridged wave-guide antenna was placed on an adjustable height antenna mast 3 meters from the test item for emission measurements.
- c) 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 EIRP 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 USPCS band (1850.2 MHz, 1880 MHz and 1909.8 MHz). 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 USPCS band into any of the other blocks. 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.

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

RESULTS OF RADIATED TESTS FOR FCC-24:

| 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 | 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 |

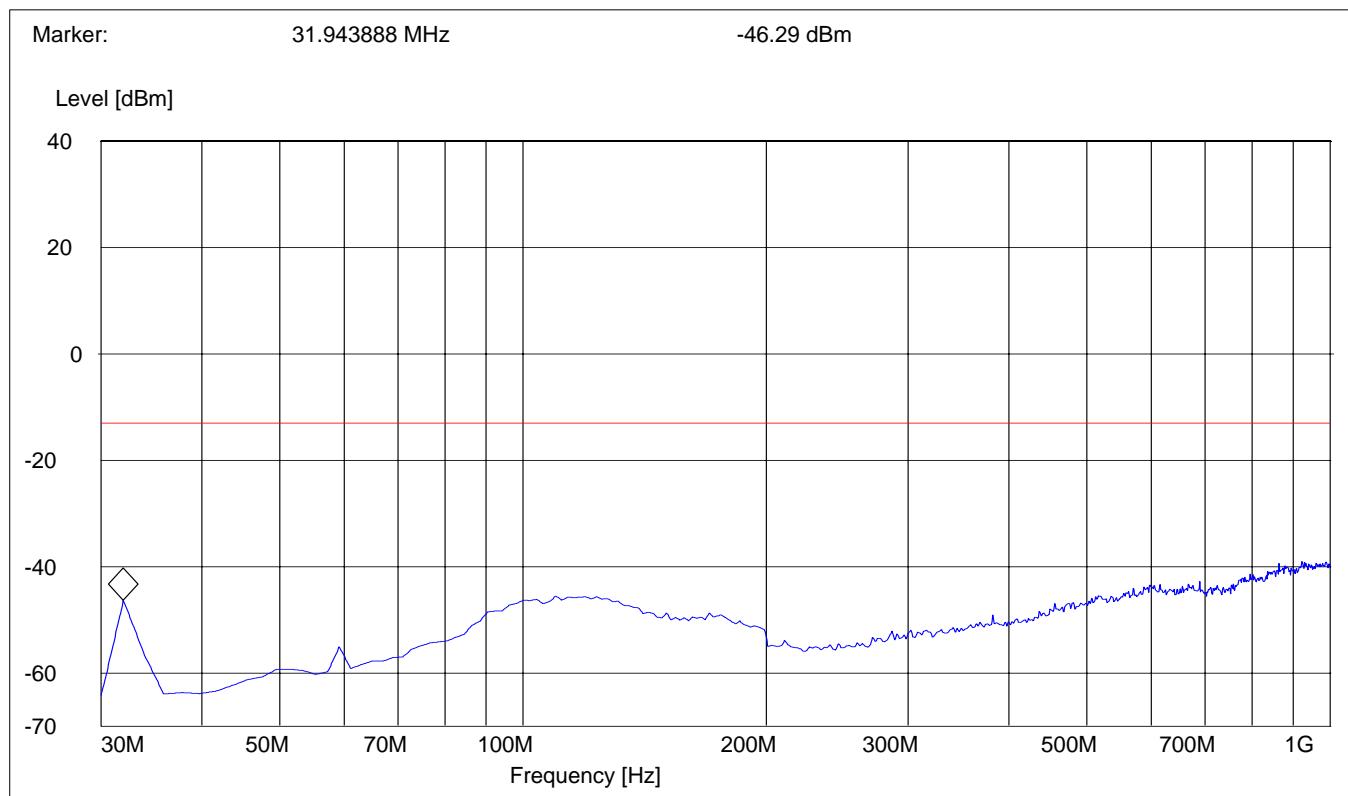
nf: noise floor

RADIATED SPURIOUS EMISSIONS**30MHz - 1GHz**

Spurious emission limit -13dBm

Antenna: vertical**Note: This plot is valid for low, mid & high channels (worst-case plot).****SWEEP TABLE: "FCC 24 Spur 30M-1G"**

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

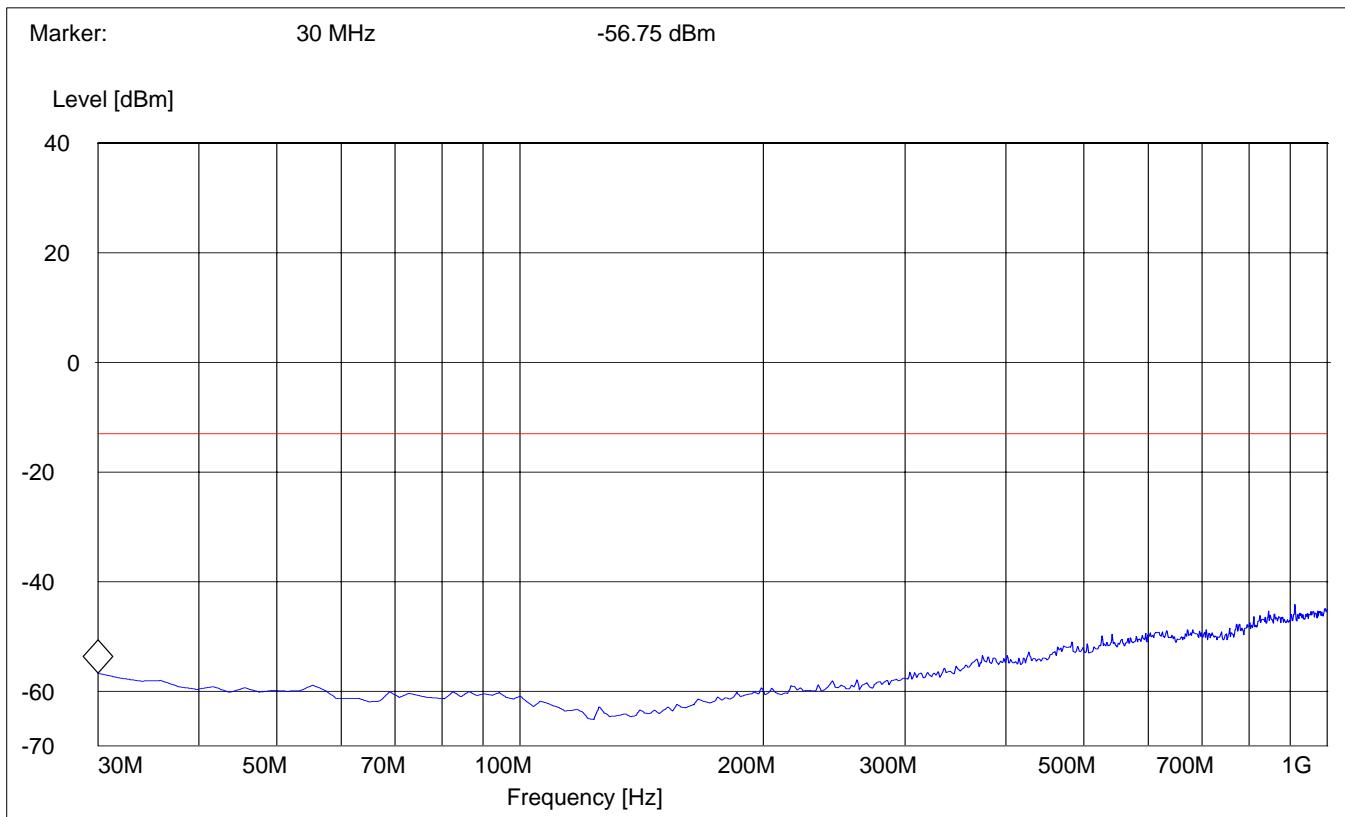


RADIATED SPURIOUS EMISSIONS**30MHz - 1GHz**

Spurious emission limit -13dBm

Antenna: horizontal**Note: This plot is valid for low, mid & high channels (worst-case plot).****SWEEP TABLE: "FCC 24 Spur 30M-1G"**

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



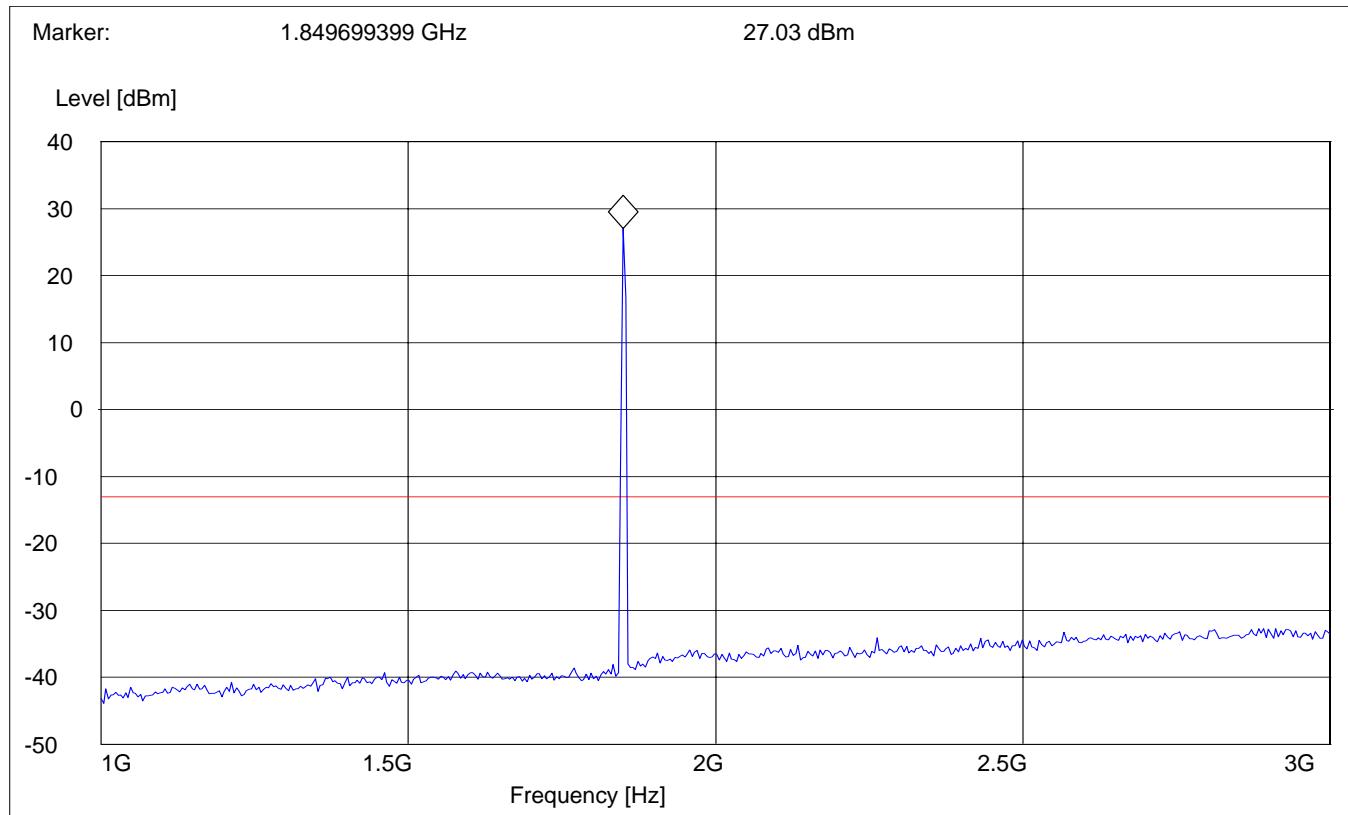
RADIATED SPURIOUS EMISSIONS**Channel 512: 1GHz – 3GHz**

Spurious emission limit –13dBm

NOTE: peak above the limit line is the Carrier frequency @ ch-512.

SWEEP TABLE: "FCC Spuri 1-3G"

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

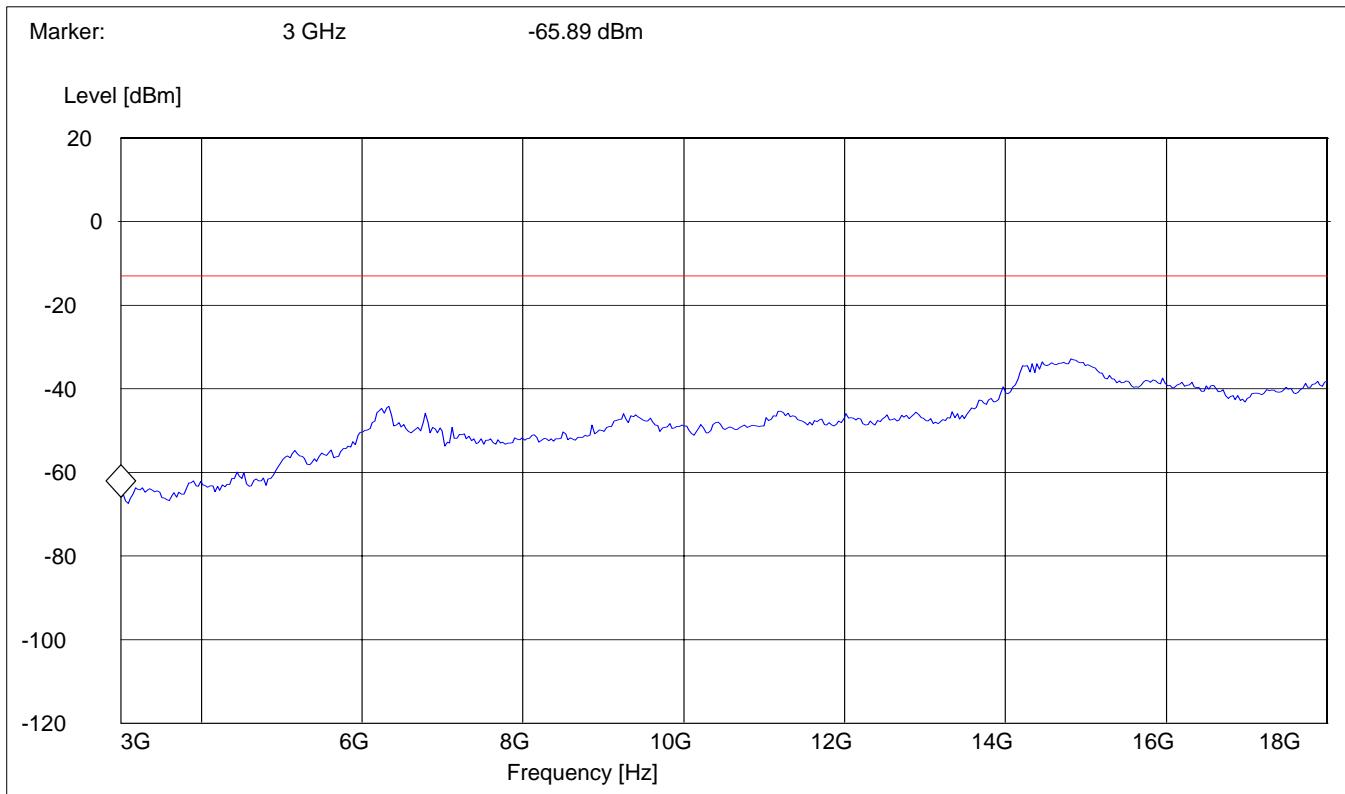


RADIATED SPURIOUS EMISSIONS**Channel 512: 3GHz – 18GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC Spuri 3-18G"

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



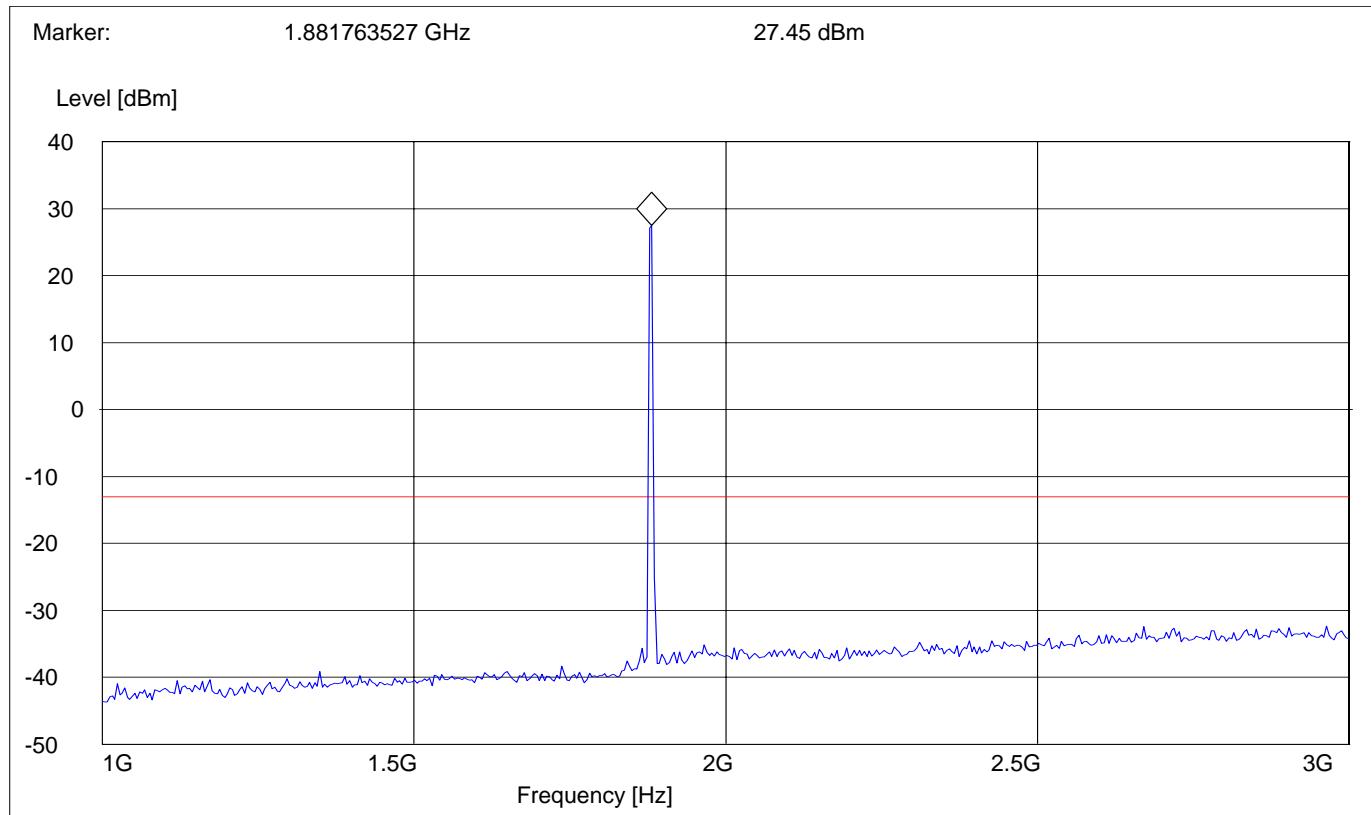
RADIATED SPURIOUS EMISSIONS**Channel 661: 1GHz – 3GHz**

Spurious emission limit -13dBm

NOTE: peak above the limit line is the Carrier frequency @ ch-661

SWEEP TABLE: "FCC Spuri 1-3G"

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

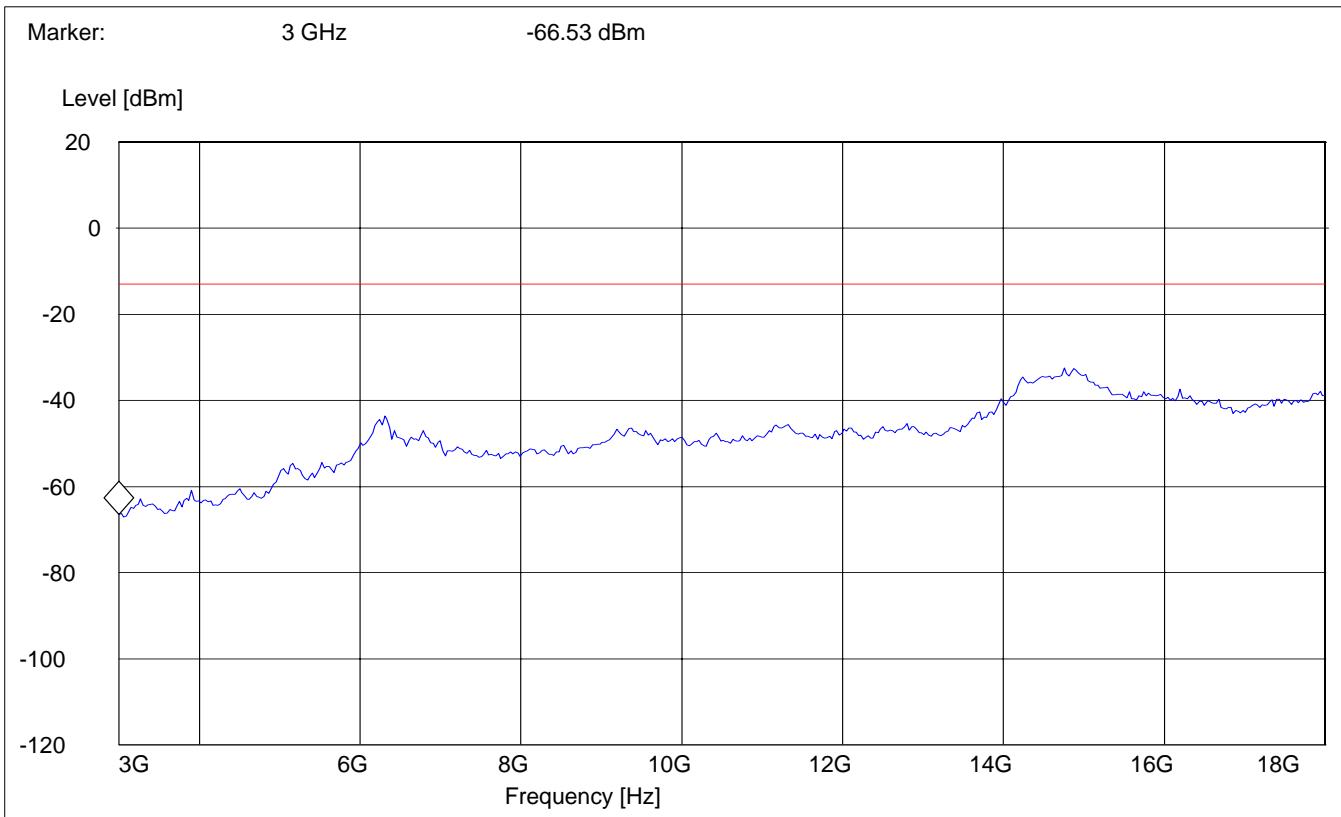


RADIATED SPURIOUS EMISSIONS**Channel 661: 3GHz – 18GHz**

Spurious emission limit -13dBm

SWEEP TABLE: "FCC Spuri 3-18G"

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

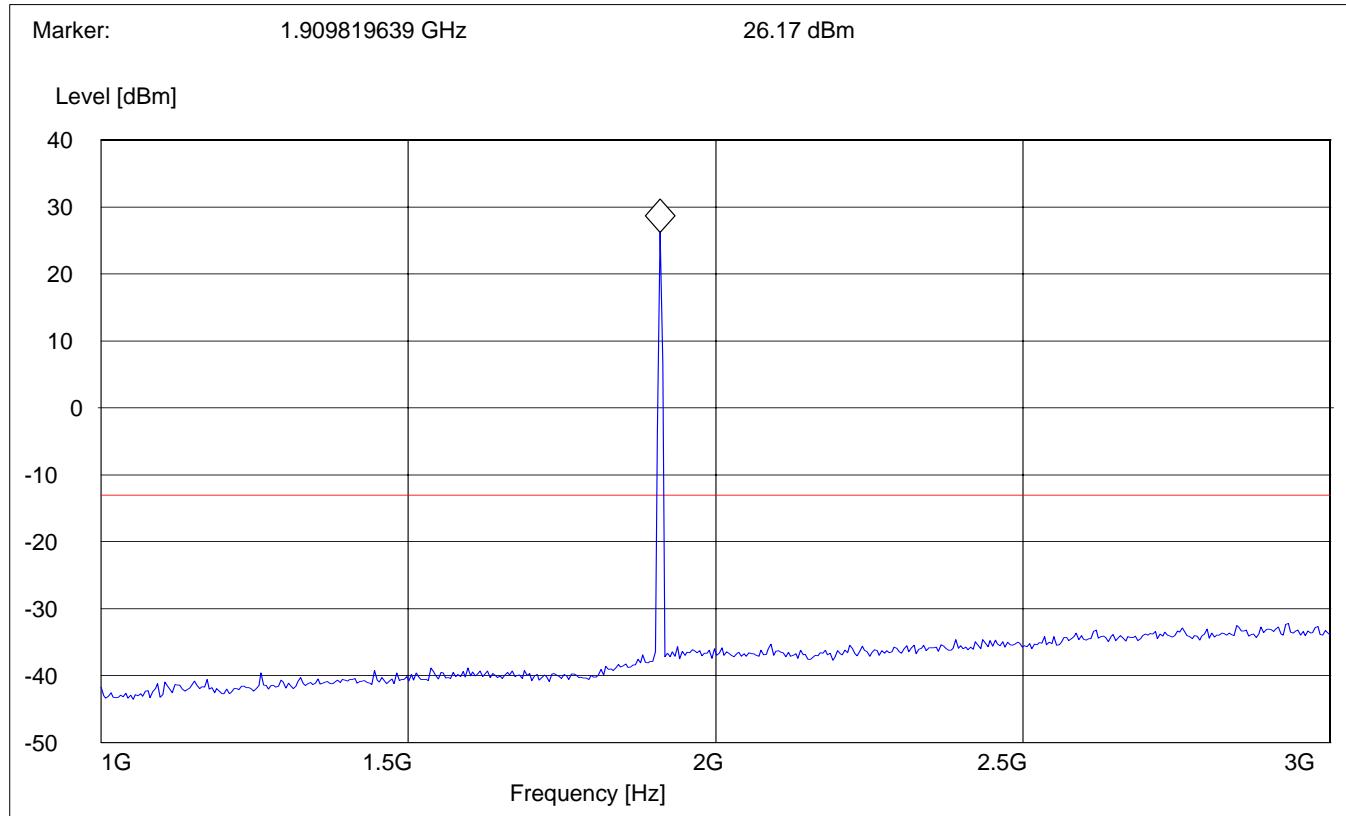


RADIATED SPURIOUS EMISSIONS**Channel 810: 1GHz – 3GHz**

Spurious emission limit –13dBm

NOTE: marked peak above the limit line is the Carrier frequency @ ch-810***SWEEP TABLE: "FCC Spuri 1-3G"***

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

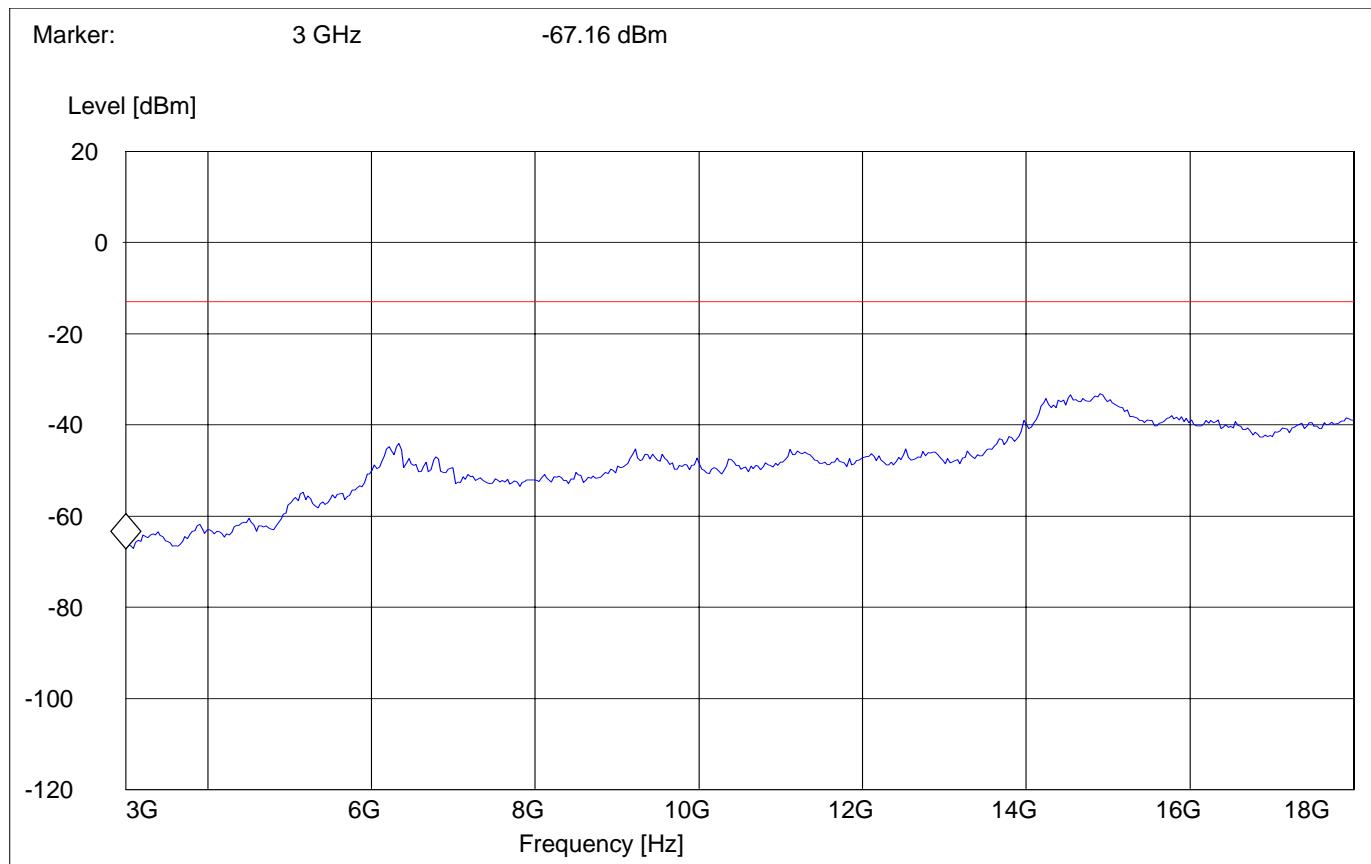


RADIATED SPURIOUS EMISSIONS**Channel 810: 3GHz – 18GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC Spuri 3-18G"

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

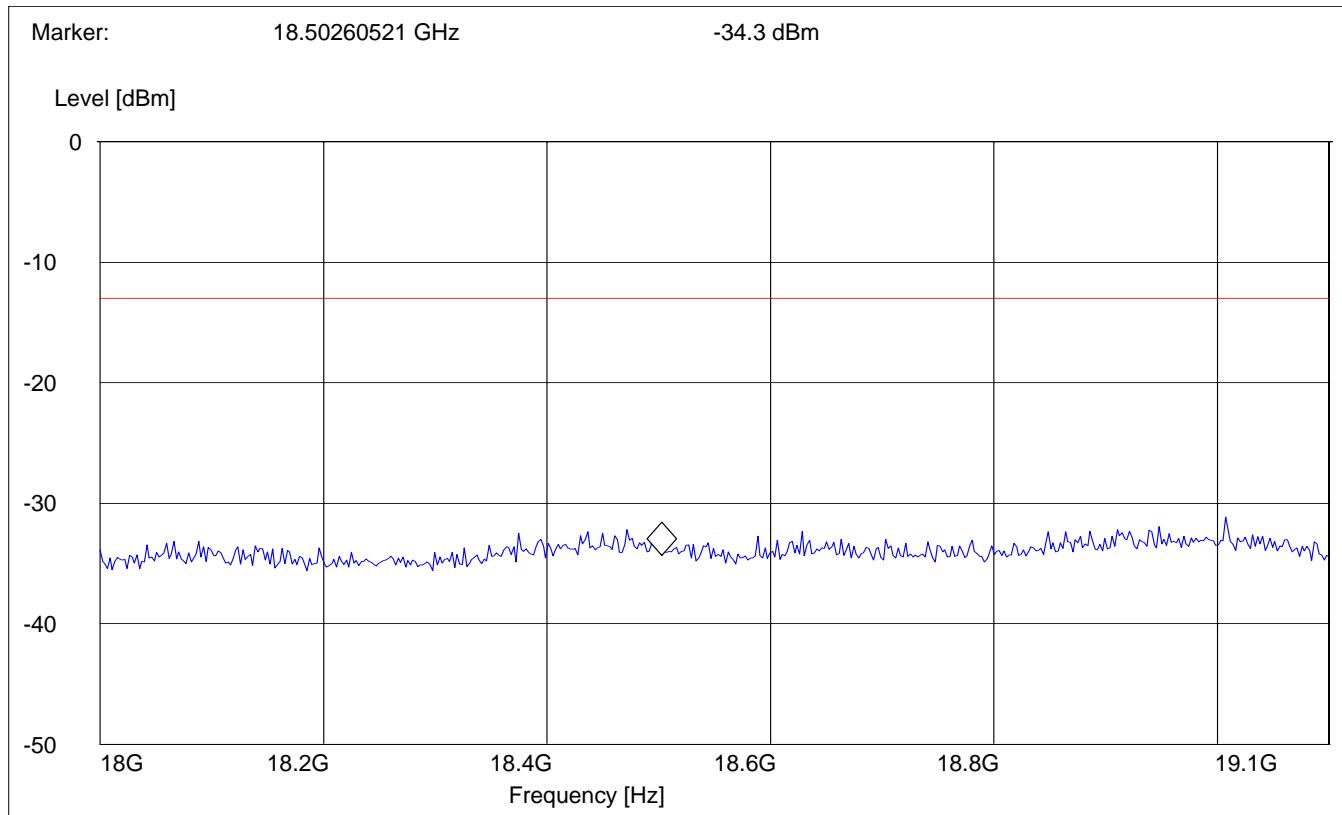


RADIATED SPURIOUS EMISSIONS**18GHz – 19.1GHz**

Spurious emission limit –13dBm

Note: This plot is valid for low, mid & high channels (worst-case plot).***SWEEP TABLE: "FCC 24 spuri 18-19.1G"***

| Start Frequency | Stop Frequency | Detector | Meas. | RBW/VBW |
|-----------------|----------------|----------|---------|---------|
| 18GHz | 19.1GHz | Max Peak | Coupled | 1 MHz |
| Bandw. | | | | |

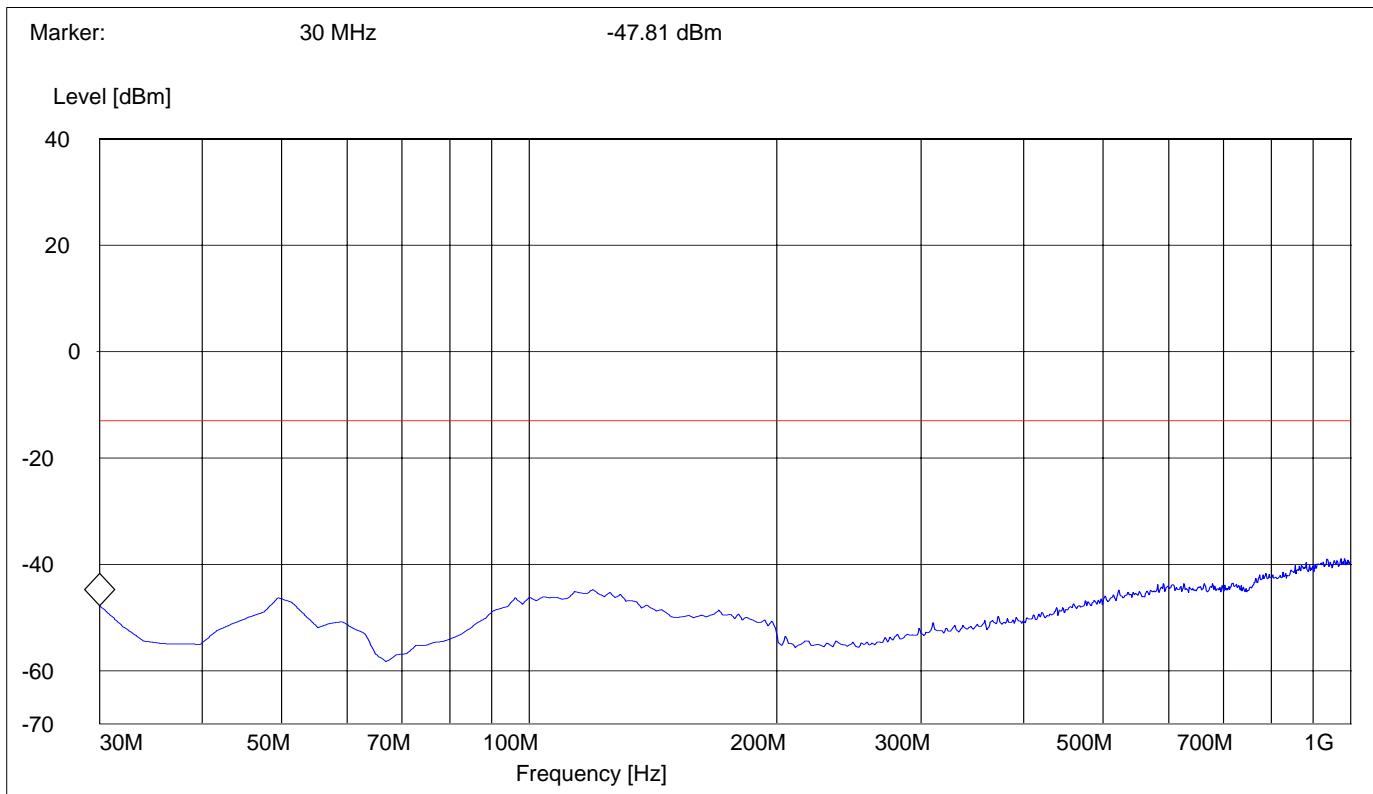


RADIATED SPURIOUS EMISSIONS**EUT in Idle Mode: 30MHz – 1GHz**

Spurious emission limit –13dBm

*Note: This plot is applicable for both polarities (worst-case plot)***SWEEP TABLE: "FCC 24 Spur 30M-1G"**

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

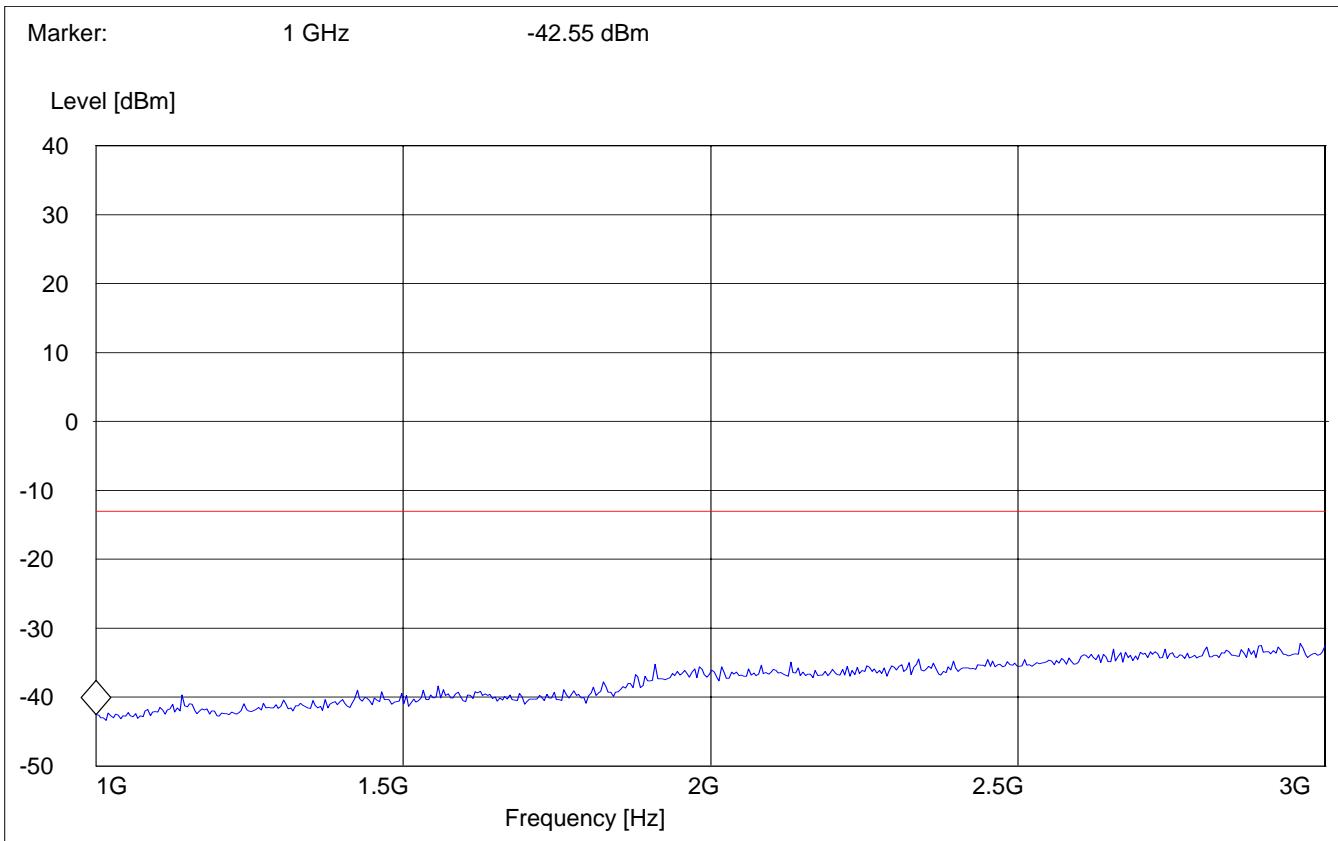


RADIATED SPURIOUS EMISSIONS**EUT in Idle Mode: 1GHz – 3GHz**

Spurious emission limit –13dBm

SWEEP TABLE: "FCC Spuri 1-3G"

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

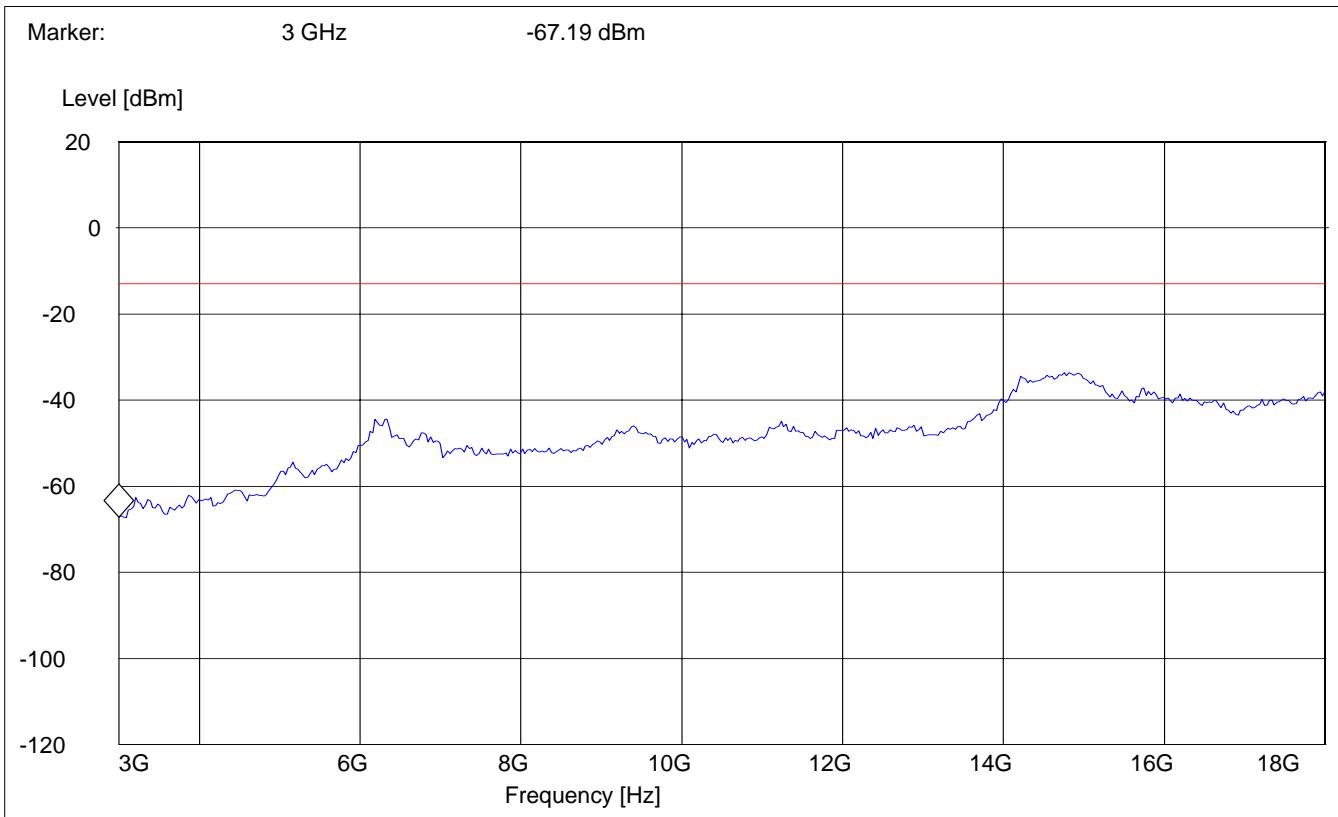


RADIATED SPURIOUS EMISSIONS**EUT in Idle Mode: 3GHz – 18GHz**

Spurious emission limit –13dBm

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

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

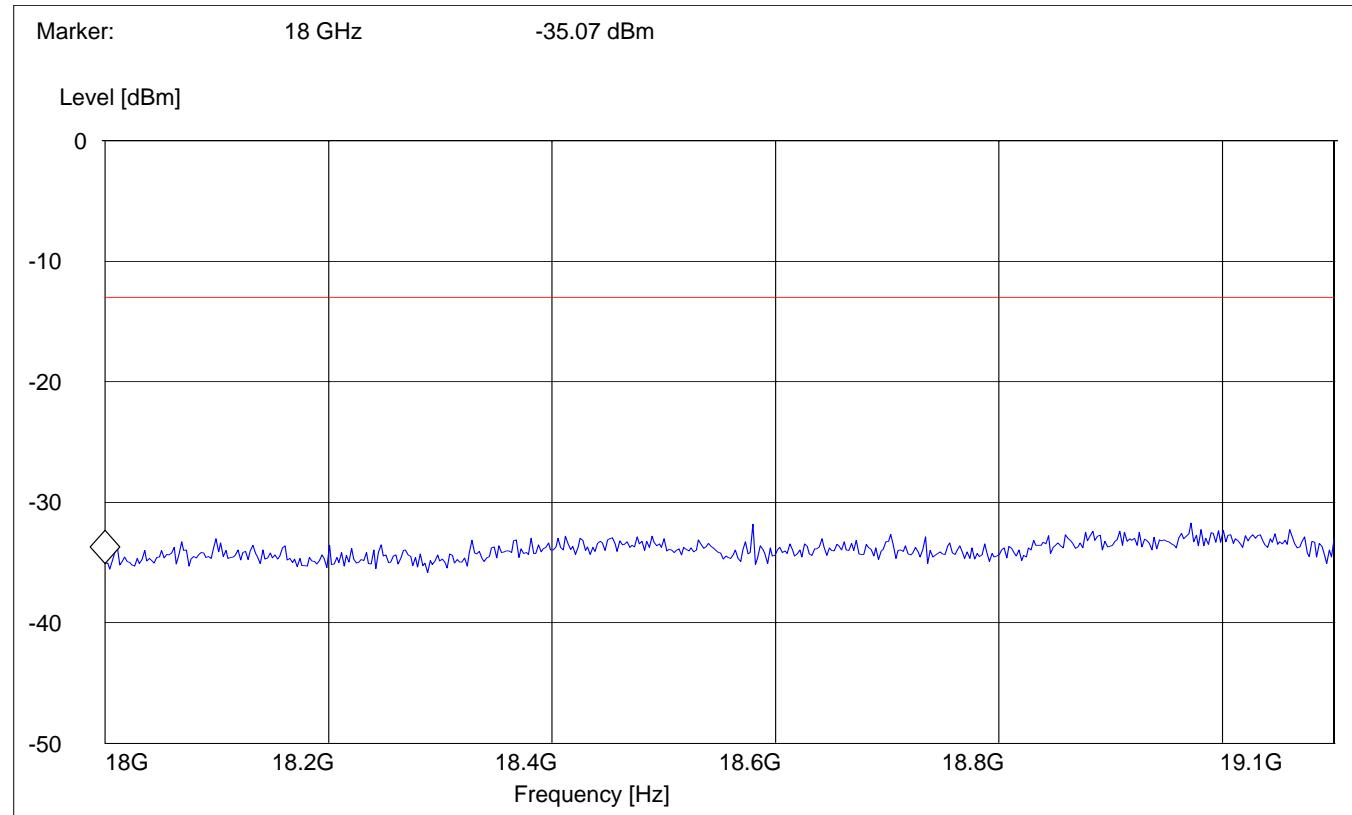


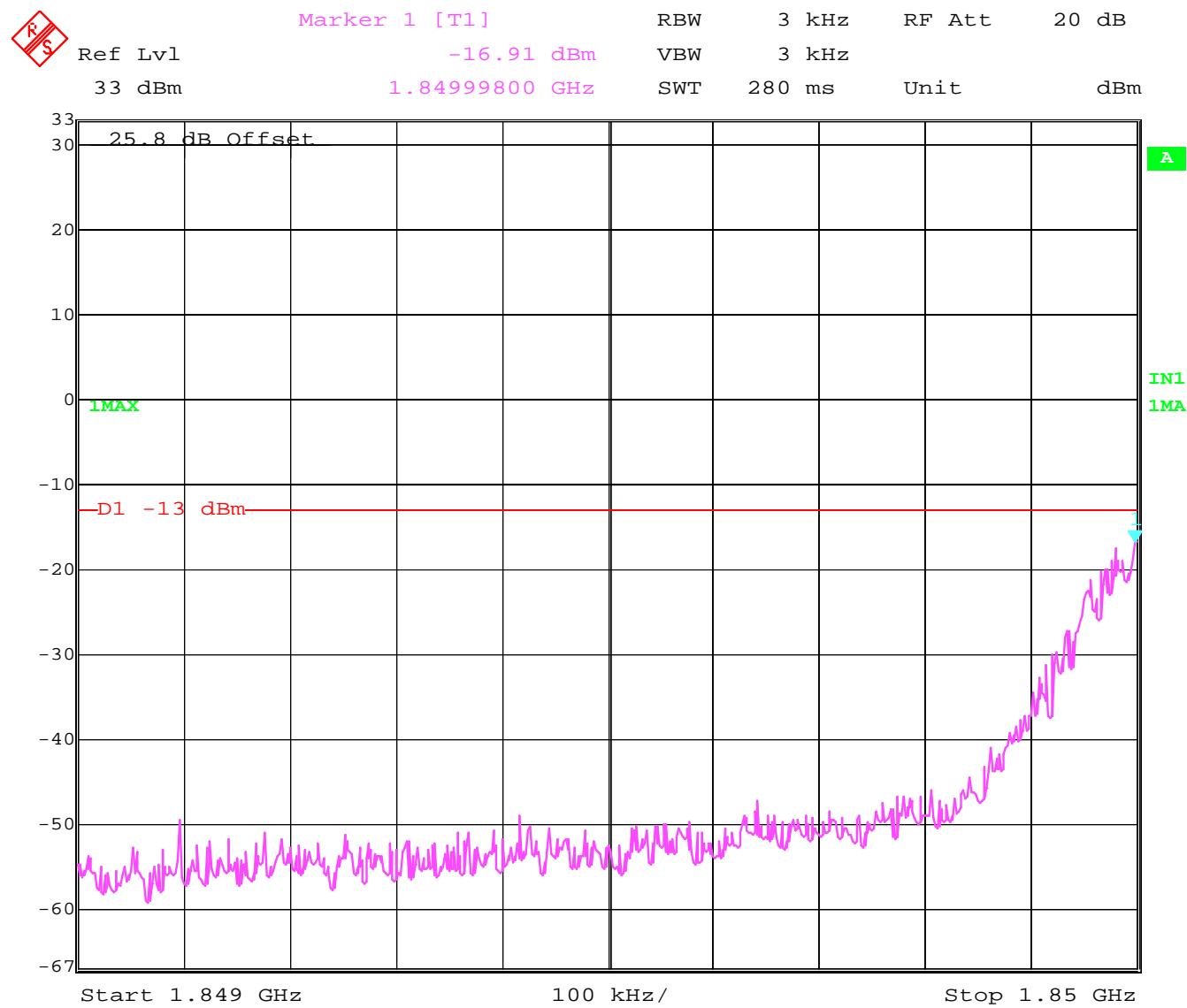
RADIATED SPURIOUS EMISSIONS**EUT in Idle Mode: 18GHz – 19.1GHz**

Spurious emission limit –13dBm

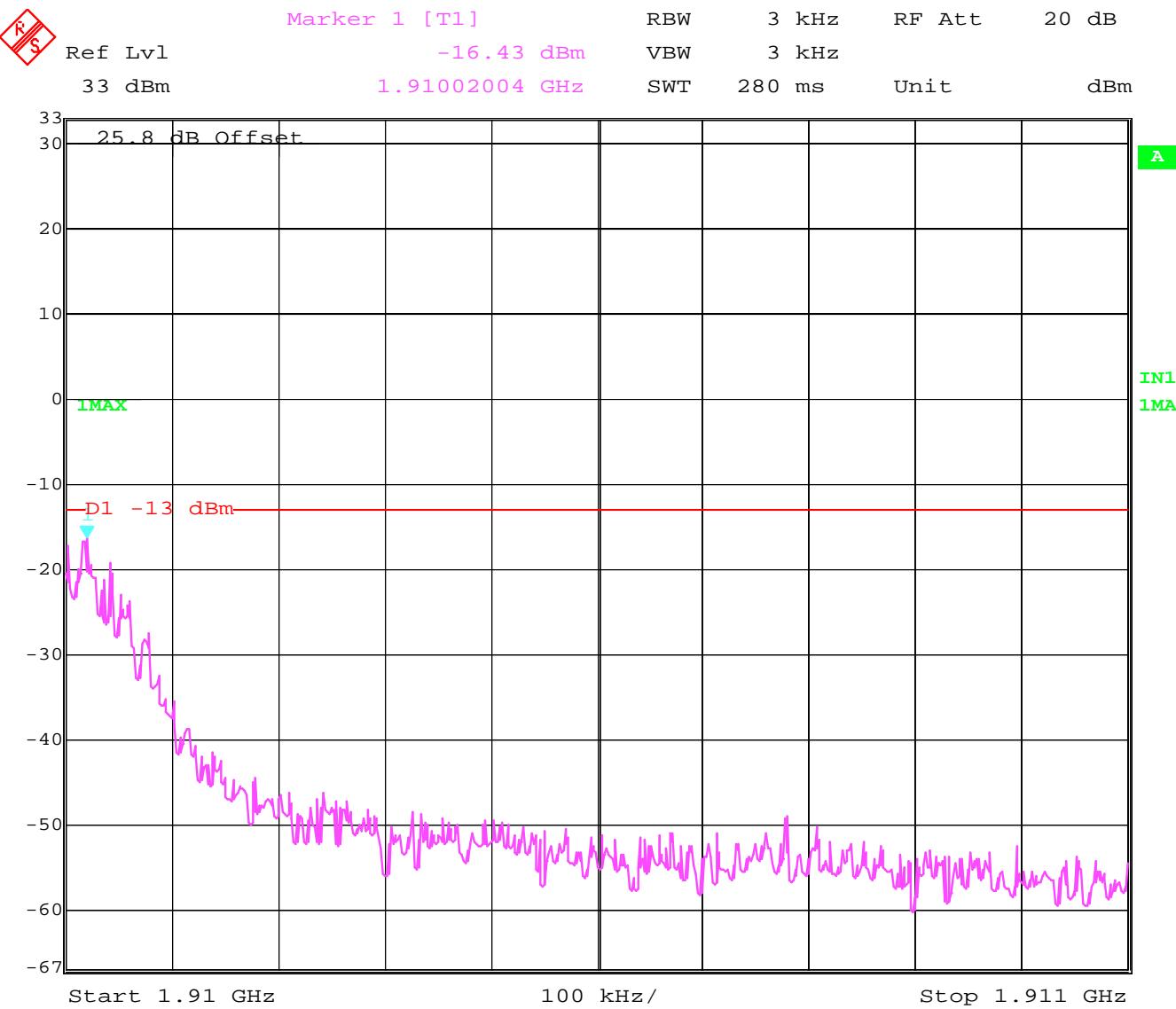
SWEEP TABLE: "FCC 24 spuri 18-19.1G"

| Start Frequency | Stop Frequency | Detector | Meas. | RBW/VBW |
|-----------------|----------------|----------|---------|-----------|
| 18GHz | 19.1GHz | Max Peak | Coupled | 1 MHz |
| 18.0 GHz | 19.1 GHz | MaxPeak | Coupled | 1 MHz |
| | | | | DUMMY-DBM |



BAND EDGE COMPLIANCE
(Conducted)**§24.238(b)****LOW BAND EDGE BLOCK-A (PCS-1900)**
(Conducted)
Channel: 512**§2.1049, §24.238 (a)(b)**

Date: 21.APR.2005 04:32:07

HIGH BAND EDGE BLOCK-C (PCS-1900)
(Conducted)
Channel: 810**§2.1049, §24.238 (a)(b)**

Date: 21.APR.2005 04:34:03

RECEIVER RADIATED EMISSIONS**§ 15.209**

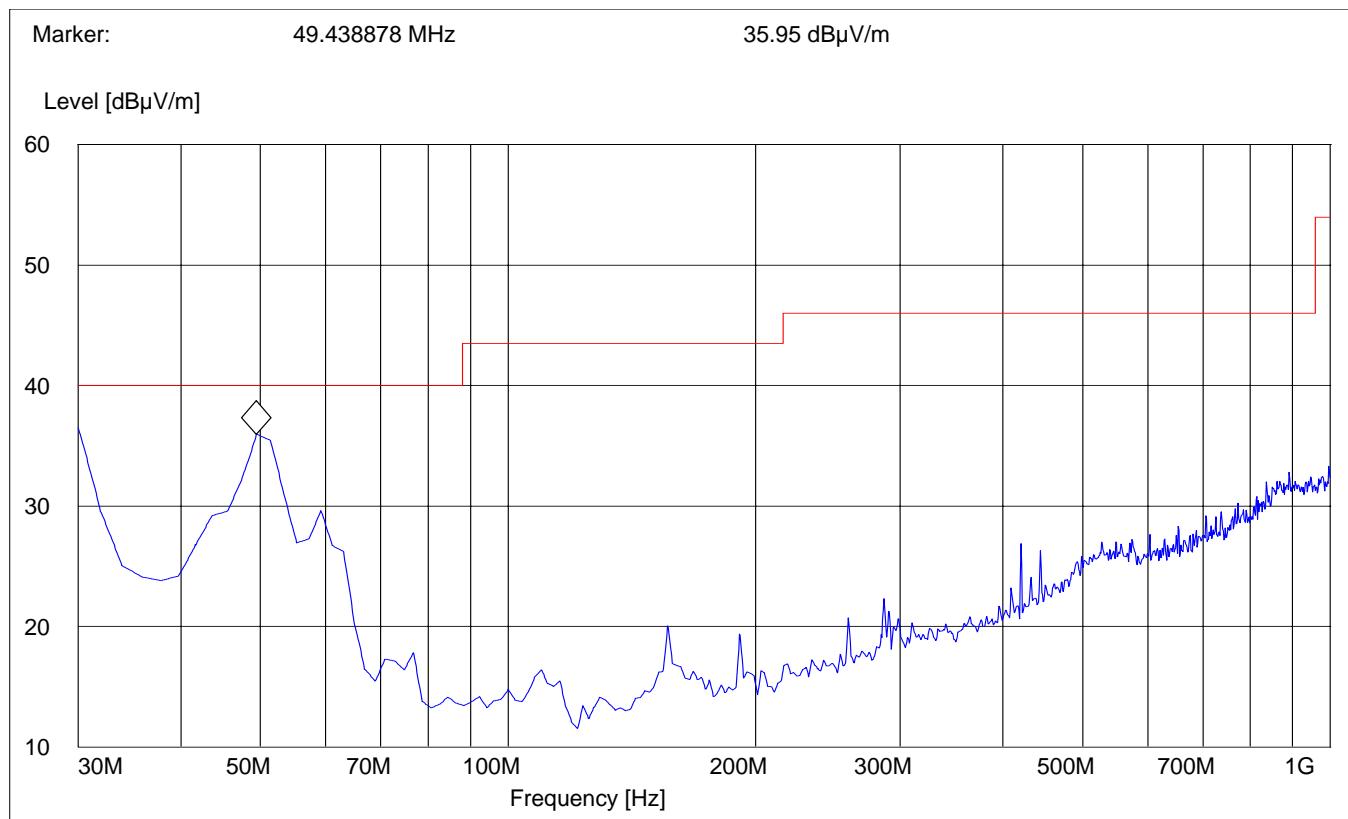
NOTE: The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3GHz and 19.1GHz very short cable connections to the antenna was used to minimize the noise level.

Limits**SUBCLAUSE § 15.209**

| Frequency (MHz) | Field strength (μ 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 |

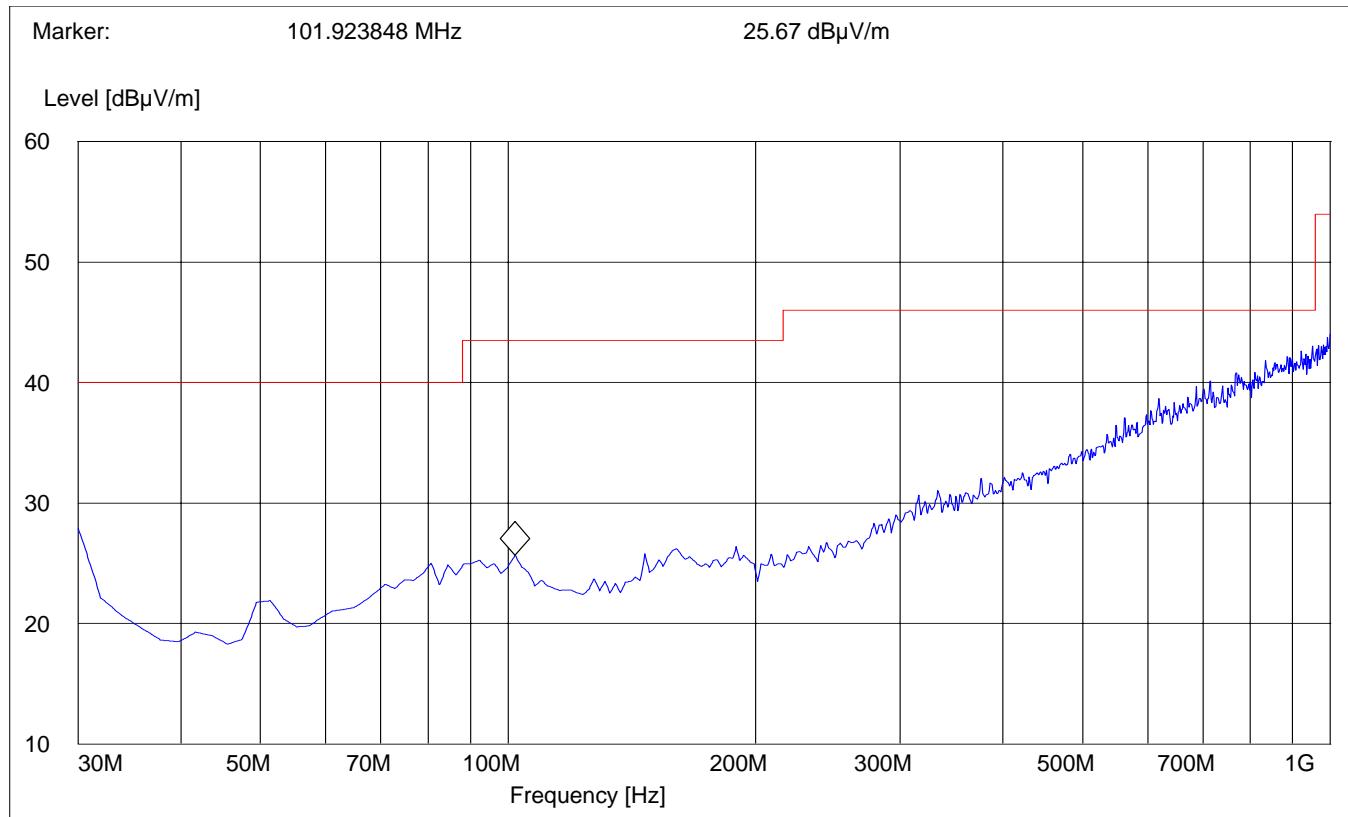
RECEIVER RADIATED EMISSIONS**EUT in Idle Mode: 30MHz – 1GHz****Antenna: vertical****SWEEP TABLE: "FCC 24 Spur 30M-1G"**

| <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 | 100KHz |



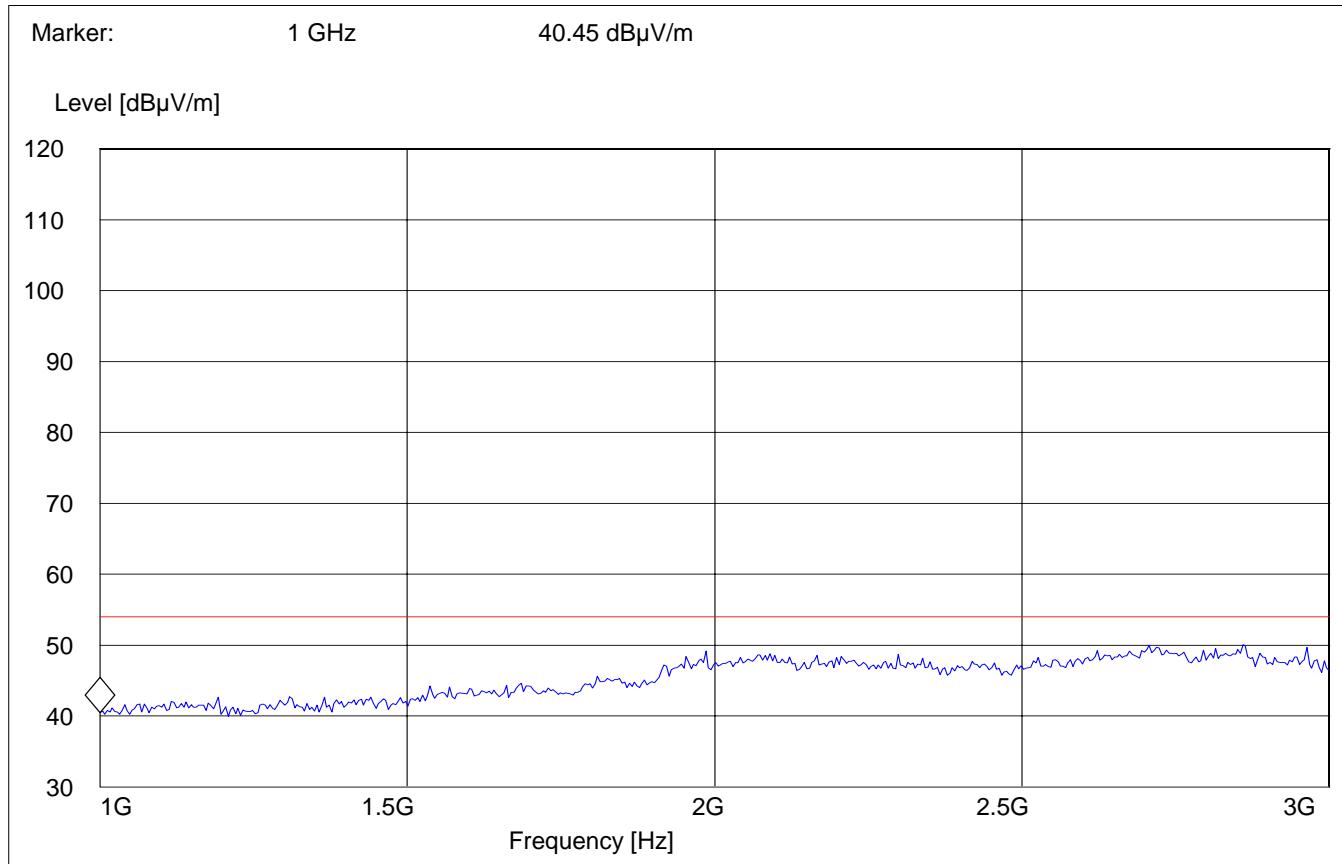
RECEIVER RADIATED EMISSIONS**EUT in Idle Mode: 30MHz – 1GHz****Antenna: horizontal****SWEEP TABLE: "FCC 24 Spur 30M-1G"**

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



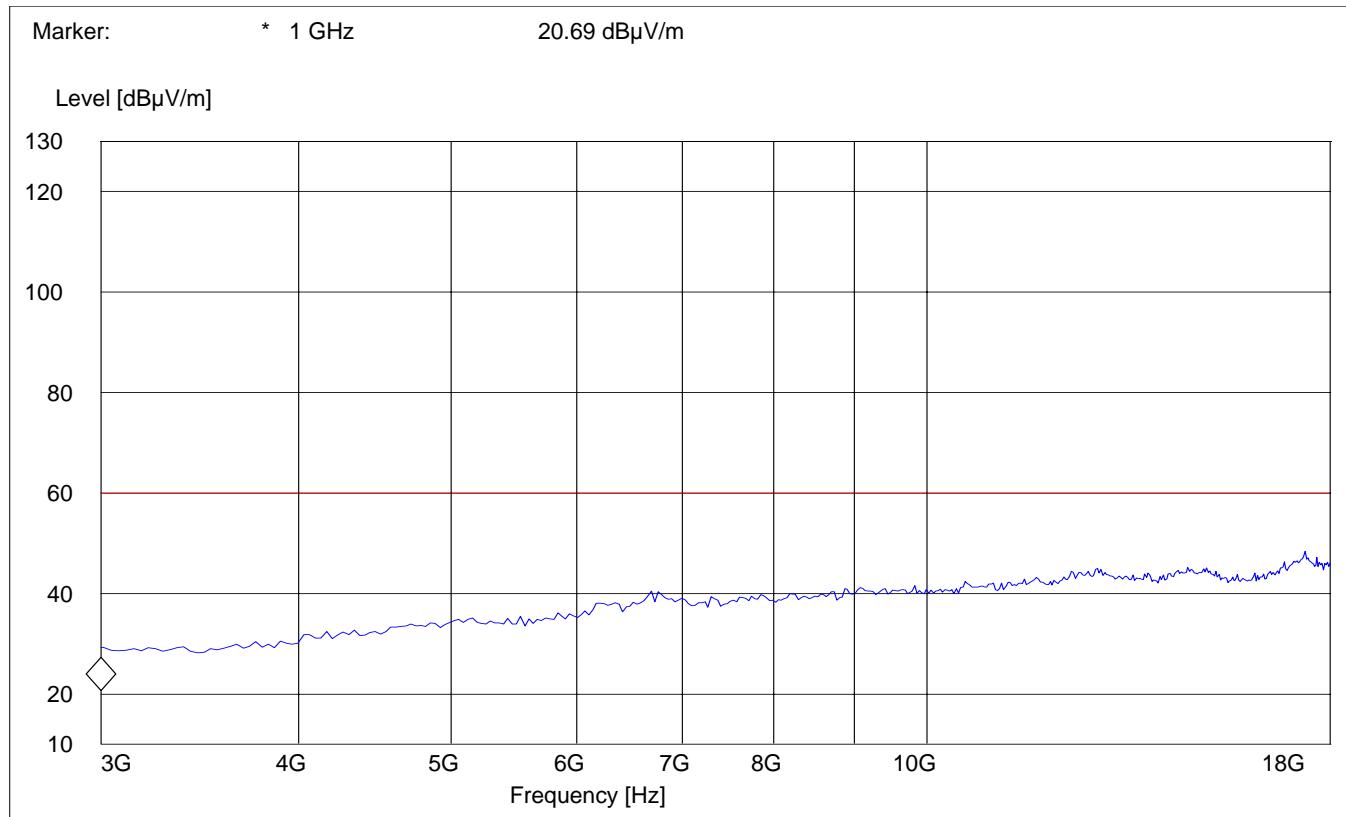
RECEIVER RADIATED EMISSIONS**EUT in Idle Mode: 1GHz – 3GHz*****SWEEP TABLE: "FCC Spuri 1-3G"***

| <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 |



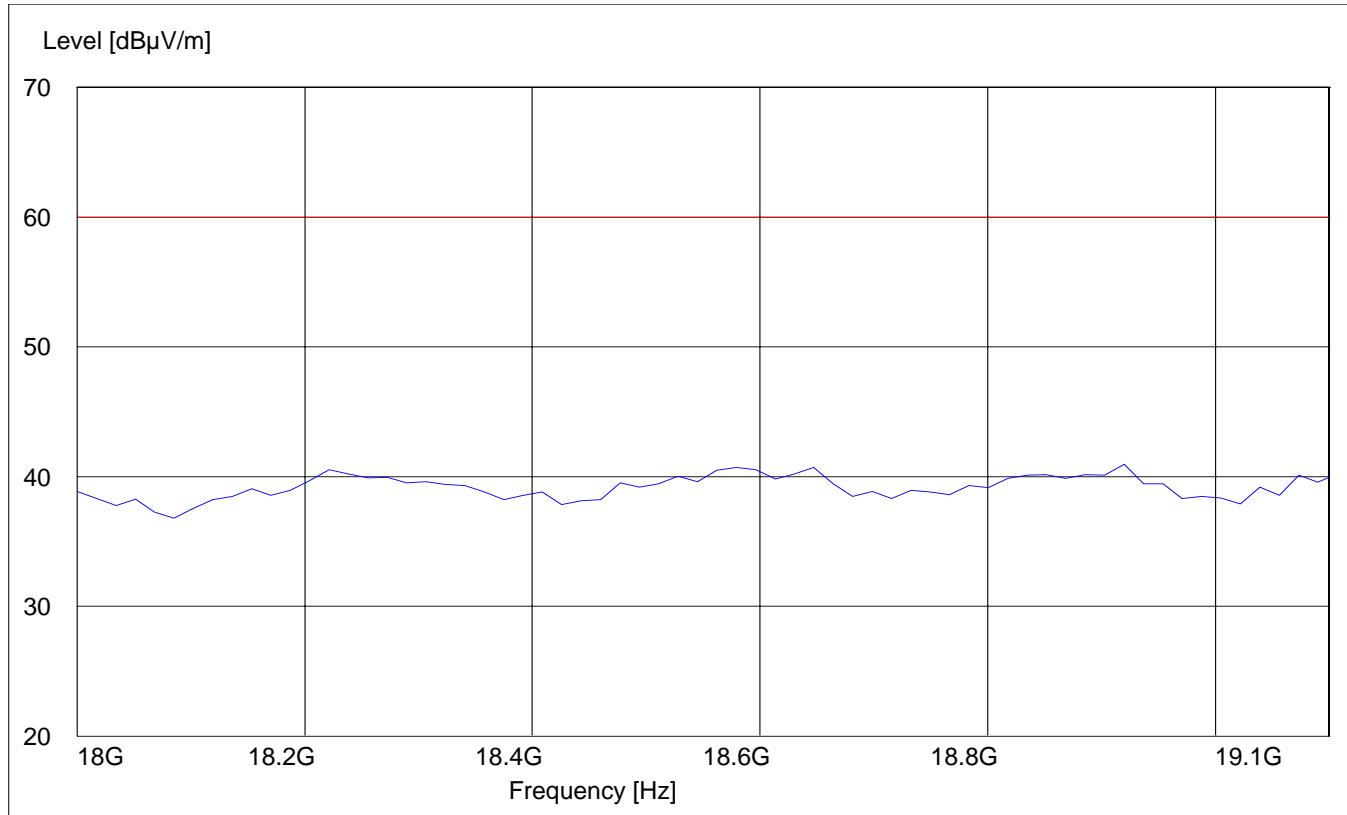
RECEIVER RADIATED EMISSIONS
EUT in Idle Mode: 3GHz – 18GHz***SWEEP TABLE: "FCC 24 spuri 3-18G"***

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



RECEIVER RADIATED EMISSIONS
EUT in Idle Mode: 18GHz – 19.1GHz***SWEEP TABLE: "FCC 24 spuri 18-19.1G"***

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



CONDUCTED SPURIOUS EMISSIONS**Measurement Procedure:**

The following steps outline the procedure used to measure the conducted emissions from the EUT.

1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency.

For the equipment under test, this equates to a frequency range of 30 MHz to 19.1 GHz, data taken from 30 MHz to 20 GHz.

2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

USPCS Transmitter

| Channel | Frequency |
|---------|------------|
| 512 | 1850.2 MHz |
| 661 | 1880.0 MHz |
| 810 | 1909.8 MHz |

Measurement Limit:

Sec. 24.238 Emission Limits.

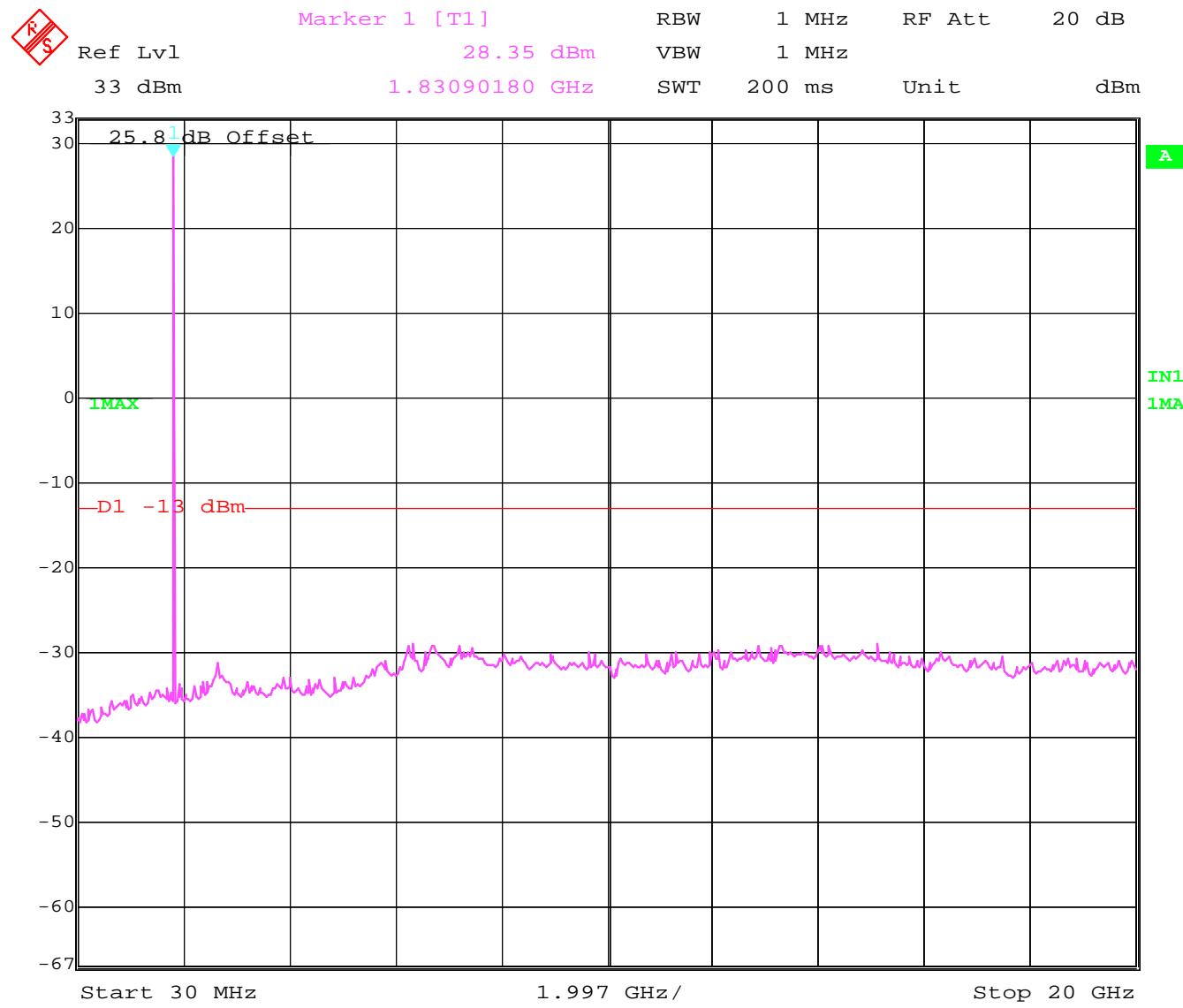
(a) On any frequency outside frequency band of the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least $43+10\log(P)$ dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

| 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 | 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

CONDUCTED SPURIOUS EMISSIONS**Channel 512: 30MHz – 20GHz**

Spurious emission limit –13dBm

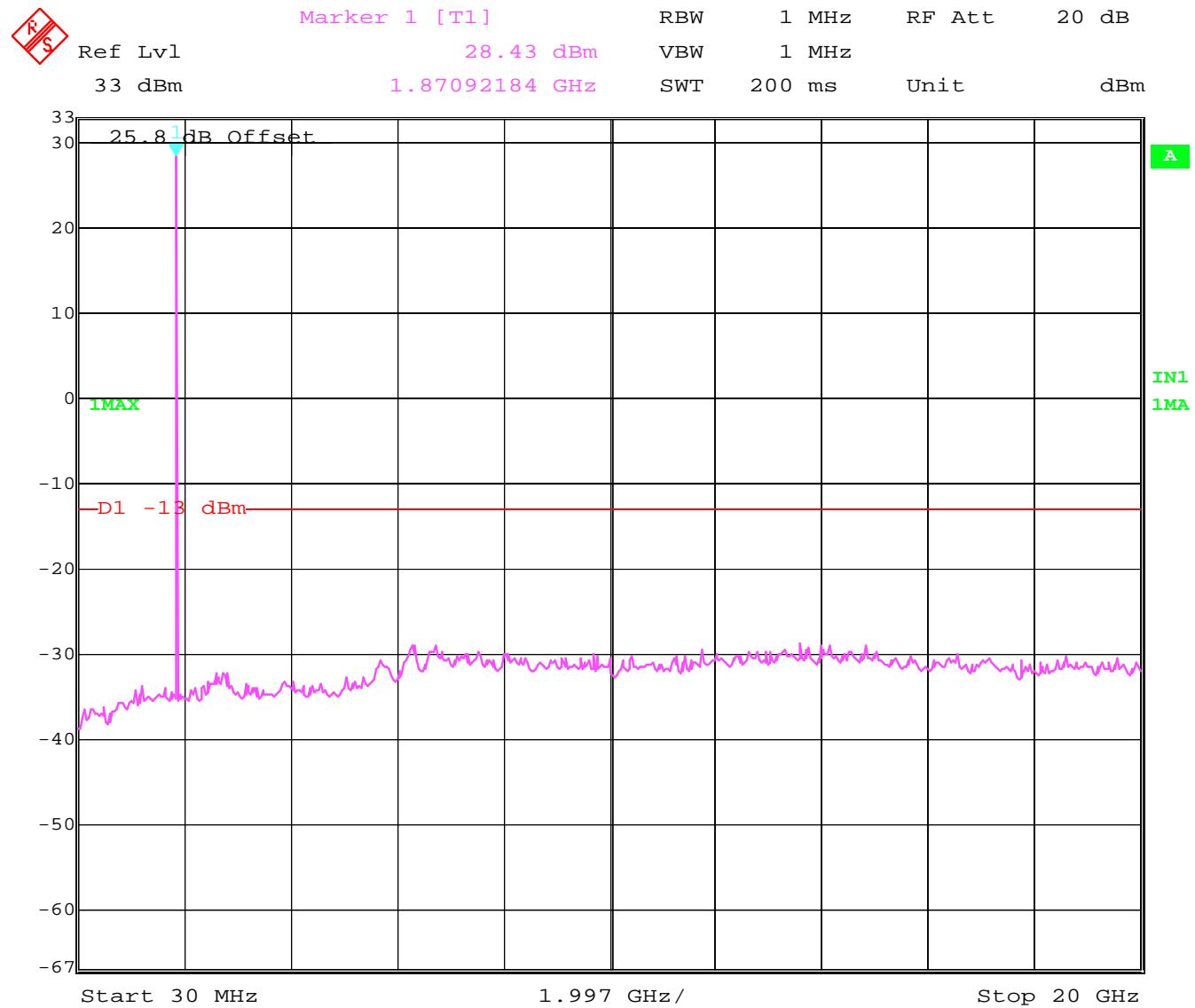
NOTE: peak above the limit line is the carrier frequency.

Date: 21.APR.2005 04:07:11

CONDUCTED SPURIOUS EMISSIONS**Channel 661: 30MHz – 20GHz**

Spurious emission limit –13dBm

NOTE: peak above the limit line is the carrier frequency.

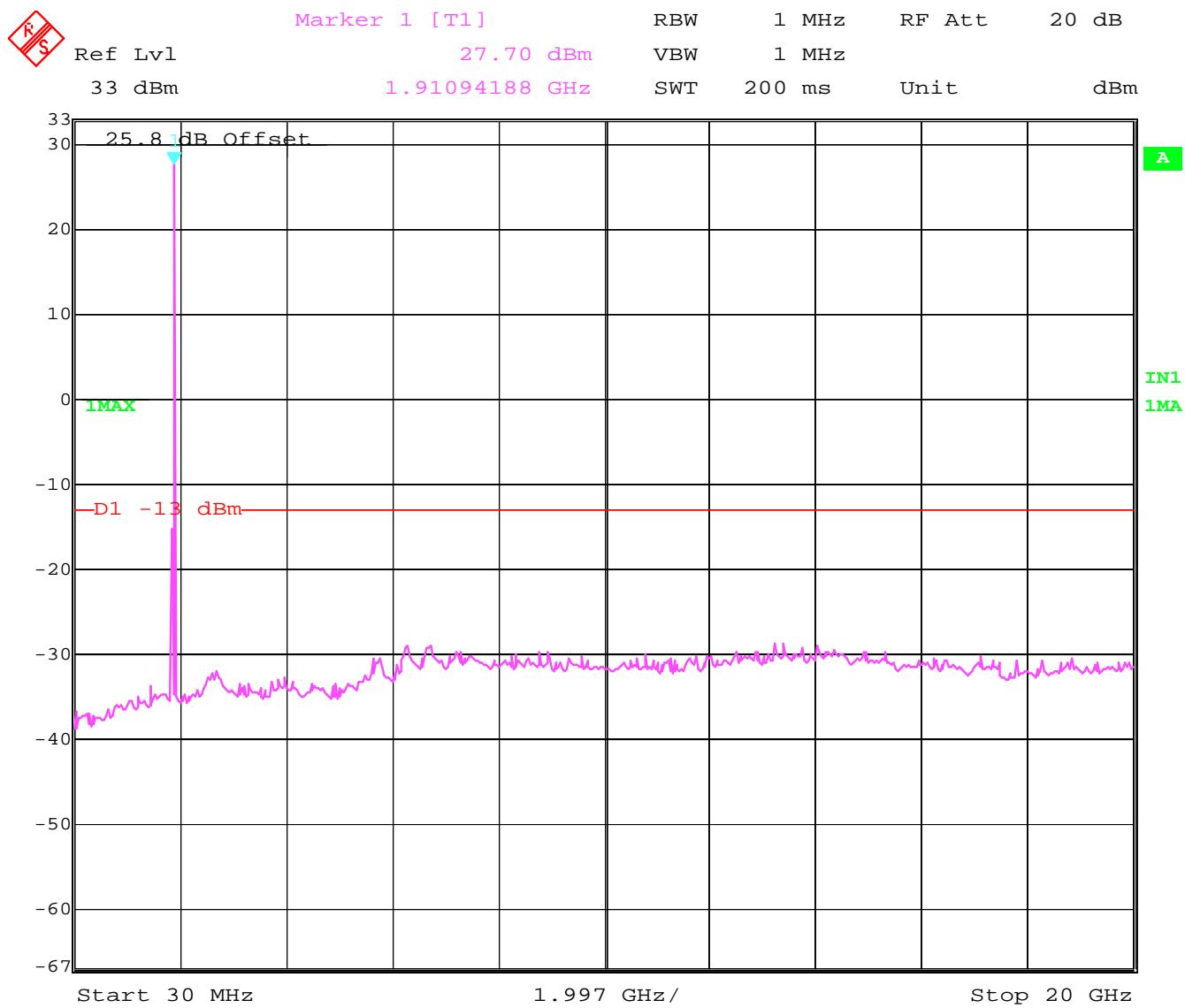


Date: 21.APR.2005 04:08:58

CONDUCTED SPURIOUS EMISSIONS**Channel 810: 30MHz – 20GHz**

Spurious emission limit –13dBm

NOTE: peak above the limit line is the carrier frequency.



Date: 21.APR.2005 04:10:24

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)

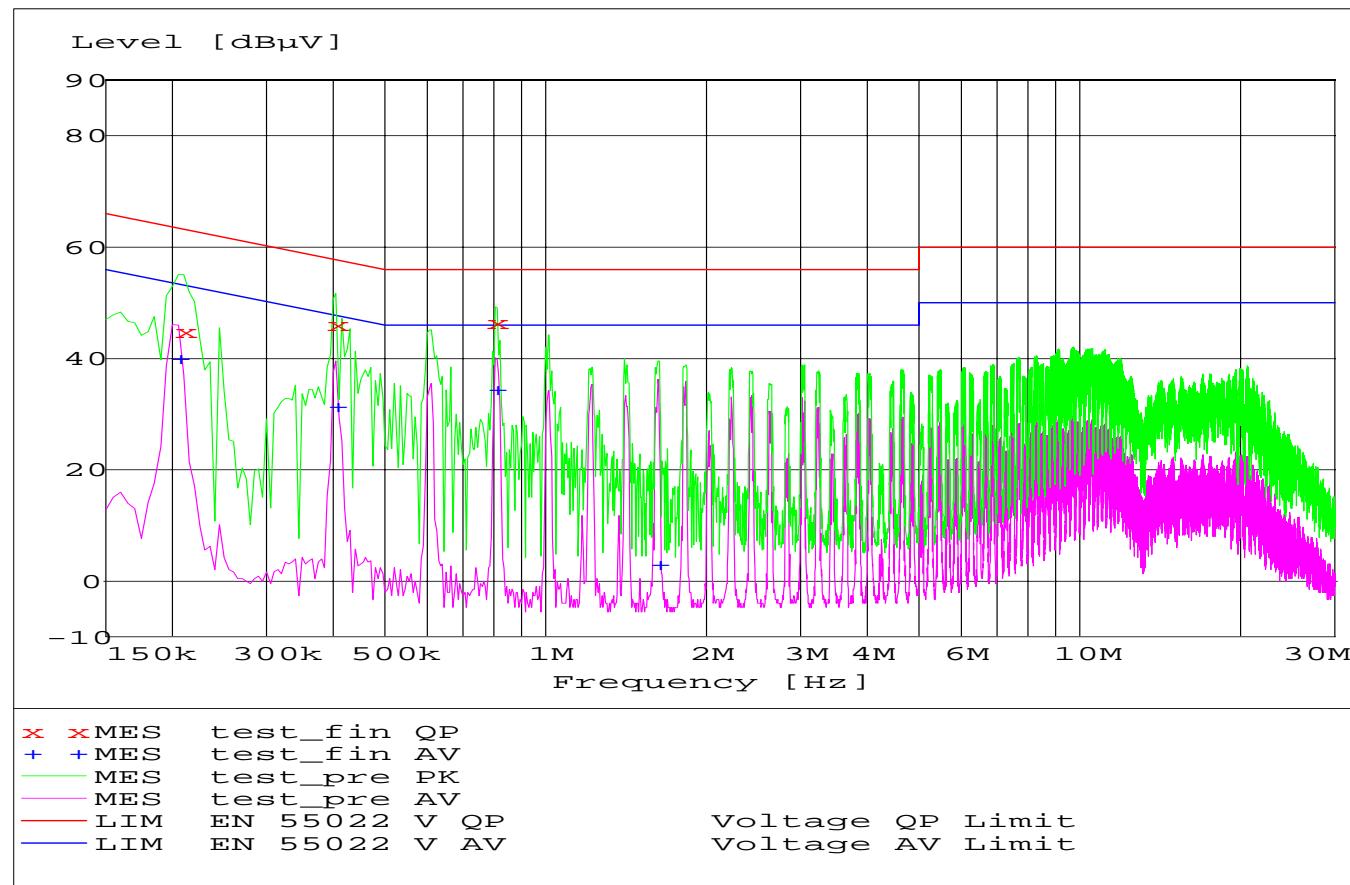
Limit

| Frequency of Emission (MHz) | Conducted Limit (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: "test_fin QP"

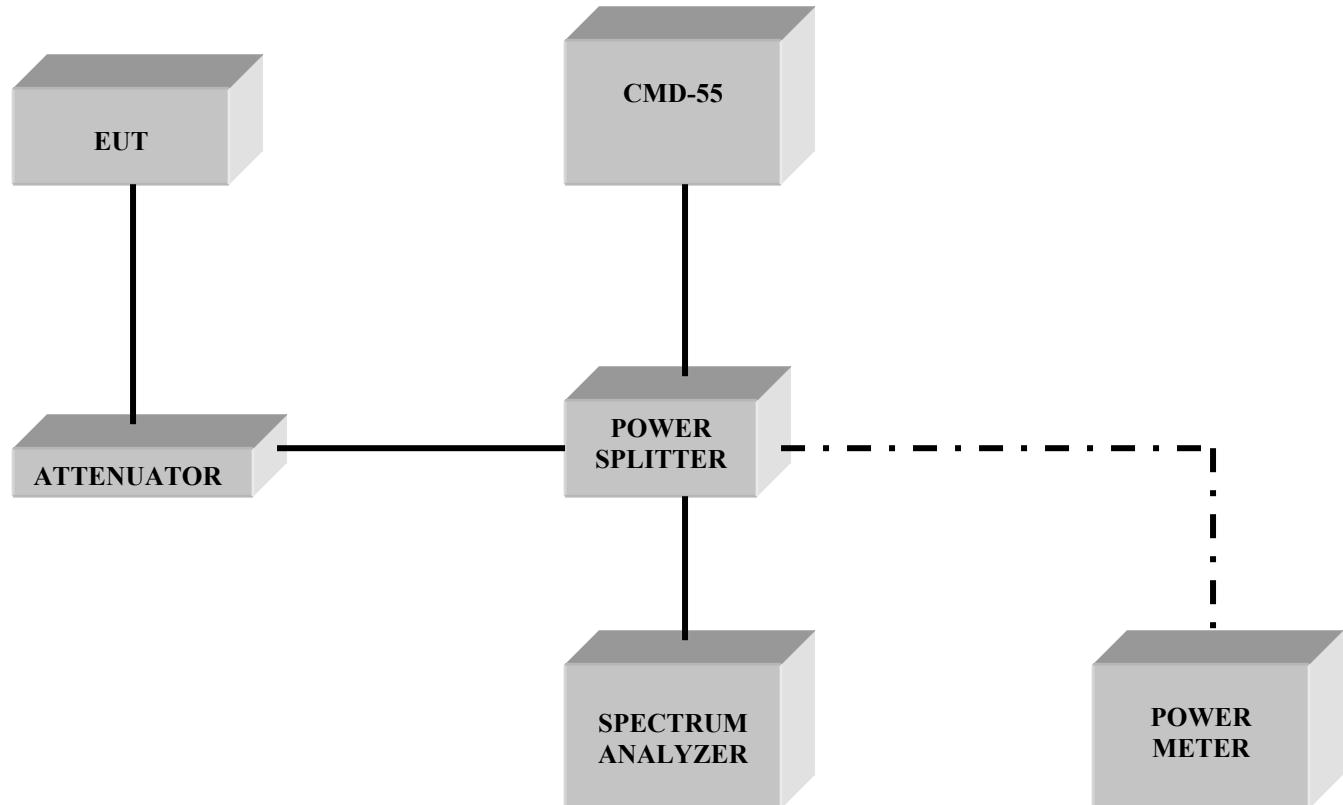
| Frequency MHz | Level dB μ V | Transd dB | Limit dB μ V | Margin dB | Line | PE |
|------------------|---------------------|--------------|---------------------|--------------|------|-----|
| 0.210000 | 44.80 | 0.0 | 63 | 18.4 | N | GND |
| 0.405000 | 46.20 | 0.0 | 58 | 11.6 | N | GND |
| 0.805000 | 46.50 | 0.0 | 56 | 9.5 | N | GND |

MEASUREMENT RESULT: "test_fin AV"

| Frequency MHz | Level dB μ V | Transd dB | Limit dB μ V | Margin dB | Line | PE |
|------------------|---------------------|--------------|---------------------|--------------|------|-----|
| 0.205000 | 40.00 | 0.0 | 53 | 13.4 | N | GND |
| 0.405000 | 31.30 | 0.0 | 48 | 16.4 | N | GND |
| 0.805000 | 34.40 | 0.0 | 46 | 11.6 | N | GND |
| 1.620000 | 3.10 | 0.0 | 46 | 42.9 | N | 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 | 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**Conducted Testing**

Radiated Testing